START

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Vol. 1166 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

September 6, 1994

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Patent
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Office

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
September 6, 1994 Volume 1166 Number 1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25 on Sept. 14, 1993.

International fees were changed effective on May 1, 1993, due to a changes in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992 and were announced in the *Official Gazette* at 1141 O.G. 68 on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars) effective Oct. 1, 1993 is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation)	230.00

U.S. National Stage Fees	Small Entity	Regular
Basic National Fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3,7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on September 3, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,044,011 through 5,046,190
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on September 8, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,689,828 through 4,692,386
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 30, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,400,829 through 4,402,090
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, and 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amount of the surcharges for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED June 29, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,986	07/173,937	07/07/92
(4,596,682)	(06/609,482)	(06/24/86)
4,336,617	06/226,704	06/29/82
4,336,659	06/221,374	06/29/82
4,336,689	06/282,256	06/29/82
4,336,751	06/241,448	06/29/82
4,336,760	06/243,368	06/29/82
4,336,765	06/272,917	06/29/82
4,336,791	06/263,635	06/29/82
4,336,842	06/222,292	06/29/82
4,336,862	06/274,254	06/29/82
4,337,005	06/235,042	06/29/82
4,337,033	06/222,055	06/29/82
4,337,087	06/230,953	06/29/82
4,337,091	06/246,472	06/29/82
4,337,094	06/262,488	06/29/82
4,337,098	06/225,666	06/29/82
4,337,127	06/267,081	06/29/82
4,337,136	06/239,700	06/29/82
4,337,145	06/267,097	06/29/82
4,337,155	06/225,036	06/29/82
4,337,165	06/216,290	06/29/82
4,337,166	06/255,188	06/29/82
4,337,168	06/300,836	06/29/82
4,337,172	06/225,559	06/29/82
4,337,193	06/258,182	06/29/82
4,337,209	06/225,623	06/29/82
4,337,226	06/233,422	06/29/82
4,337,235	06/258,498	06/29/82
4,337,245	06/302,313	06/29/82
4,337,249	06/289,641	06/29/82
4,337,258	06/220,648	06/29/82
4,337,267	06/250,627	06/29/82
4,337,277	06/253,844	06/29/82
4,337,279	06/228,019	06/29/82
4,337,293	06/266,581	06/29/82
4,337,297	06/284,149	06/29/82
4,337,298	06/291,642	06/29/82
4,337,305	06/236,654	06/29/82
4,337,317	06/257,835	06/29/82
4,337,320	06/247,397	06/29/82
4,337,341	06/230,556	06/29/82
4,337,342	06/263,042	06/29/82
4,337,361	06/238,920	06/29/82
4,337,362	06/271,456	06/29/82
4,337,364	06/228,037	06/29/82
4,337,365	06/233,971	06/29/82
4,337,369	06/229,822	06/29/82
4,337,372	06/266,615	06/29/82
4,337,374	06/228,242	06/29/82
4,337,390	06/227,434	06/29/82
4,337,405	06/235,738	06/29/82
4,337,420	06/259,343	06/29/82
4,337,421	06/259,344	06/29/82
4,337,430	06/228,324	06/29/82
4,337,452	06/242,813	06/29/82
4,596,058	06/744,019	06/24/86
4,596,064	06/631,855	06/24/86
4,596,071	06/640,833	06/24/86

Patent Number	Serial Number	Issue Date
4,596,072	06/496,461	06/24/86
4,596,074	06/700,296	06/24/86
4,596,075	06/722,277	06/24/86
4,596,076	06/573,916	06/24/86
4,596,077	06/505,765	06/24/86
4,596,080	06/679,076	06/24/86
4,596,084	06/761,308	06/24/86
4,596,089	06/553,629	06/24/86
4,596,106	06/661,602	06/24/86
4,596,109	06/716,804	06/24/86
4,596,111	06/508,353	06/24/86
4,596,114	06/771,292	06/24/86
4,596,117	06/706,191	06/24/86
4,596,119	06/556,085	06/24/86
4,596,121	06/742,542	06/24/86
4,596,128	06/758,811	06/24/86
4,596,136	06/700,609	06/24/86
4,596,148	06/592,241	06/24/86
4,596,153	06/562,750	06/24/86
4,596,154	06/649,387	06/24/86
4,596,156	06/580,632	06/24/86
4,596,157	06/751,324	06/24/86
4,596,160	06/653,232	06/24/86
4,596,161	06/582,477	06/24/86
4,596,163	06/589,234	06/24/86
4,596,164	06/523,715	06/24/86
4,596,167	06/634,686	06/24/86
4,596,172	06/693,620	06/24/86
4,596,175	06/693,605	06/24/86
4,596,180	06/643,295	06/24/86
4,596,186	06/782,265	06/24/86
4,596,189	06/584,985	06/24/86
4,596,198	06/695,583	06/24/86
4,596,213	06/746,707	06/24/86
4,596,222	06/729,679	06/24/86
4,596,226	06/739,330	06/24/86
4,596,229	06/683,629	06/24/86
4,596,230	06/668,486	06/24/86
4,596,233	06/434,878	06/24/86
4,596,234	06/699,025	06/24/86
4,596,235	06/595,921	06/24/86
4,596,238	06/753,034	06/24/86
4,596,243	06/498,093	06/24/86
4,596,246	06/583,226	06/24/86
4,596,248	06/674,243	06/24/86
4,596,253	06/714,631	06/24/86
4,596,259	06/525,055	06/24/86
4,596,268	06/724,325	06/24/86
4,596,271	06/613,953	06/24/86
4,596,276	06/716,610	06/24/86
4,596,277	06/667,290	06/24/86
4,596,280	06/656,875	06/24/86
4,596,281	06/414,041	06/24/86
4,596,282	06/732,082	06/24/86
4,596,283	06/737,242	06/24/86
4,596,287	06/548,012	06/24/86
4,596,288	06/706,021	06/24/86
4,596,289	06/732,677	06/24/86
4,596,296	06/665,071	06/24/86
4,596,299	06/586,022	06/24/86
4,596,300	06/602,554	06/24/86
4,596,301	06/559,701	06/24/86
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4,596,305	06/531,836	06/24/86
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4,596,309	06/535,575	06/24/86
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4,596,333	06/745,362	06/24/86
4,596,335	06/723,218	06/24/86
4,596,339	06/694,006	06/24/86
4,596,340	06/743,755	06/24/86
4,596,342	06/756,582	06/24/86
4,596,348	06/681,298	06/24/86
4,596,351	06/641,681	06/24/86
4,596,354	06/751,414	06/24/86
4,596,357	06/699,474	06/24/86
4,596,360	06/686,304	06/24/86
4,596,362	06/668,828	06/24/86
4,596,363	06/621,611	06/24/86
4,596,364	06/569,815	06/24/86
4,596,366	06/701,718	06/24/86
4,596,367	06/584,773	06/24/86
4,596,371	06/615,727	06/24/86
4,596,382	06/642,255	06/24/86
4,596,391	06/794,269	06/24/86
4,596,396	06/553,842	06/24/86
4,596,397	06/722,966	06/24/86
4,596,399	06/539,268	06/24/86
4,596,401	06/597,841	06/24/86
4,596,410	06/613,274	06/24/86
4,596,411	06/528,873	06/24/86
4,596,412	06/703,848	06/24/86
4,596,414	06/713,125	06/24/86
4,596,415	06/709,899	06/24/86
4,596,420	06/632,386	06/24/86
4,596,421	06/573,032	06/24/86
4,596,425	06/603,495	06/24/86
4,596,426	06/568,590	06/24/86
4,596,428	06/588,652	06/24/86
4,596,438	06/719,049	06/24/86
4,596,440	06/586,797	06/24/86
4,596,442	06/563,128	06/24/86
4,596,444	06/627,874	06/24/86
4,596,451	06/507,051	06/24/86
4,596,452	06/722,921	06/24/86
4,596,457	06/717,380	06/24/86
4,596,458	06/570,521	06/24/86
4,596,460	06/572,451	06/24/86
4,596,461	06/580,921	06/24/86
4,596,463	06/554,219	06/24/86
4,596,466	06/323,482	06/24/86
4,596,471	06/689,109	06/24/86
4,596,472	06/744,051	06/24/86
4,596,473	06/612,073	06/24/86
4,596,481	06/679,104	06/24/86
4,596,482	06/715,647	06/24/86
4,596,483	06/629,416	06/24/86
4,596,488	06/568,696	06/24/86
4,596,491	06/556,416	06/24/86
4,596,492	06/600,360	06/24/86
4,596,493	06/549,154	06/24/86
4,596,494	06/450,612	06/24/86
4,596,502	06/457,276	06/24/86
4,596,503	06/669,590	06/24/86
4,596,504	06/587,238	06/24/86
4,596,505	06/612,279	06/24/86
4,596,509	06/622,651	06/24/86
4,596,525	06/693,929	06/24/86
4,596,527	06/679,009	06/24/86
4,596,528	06/626,966	06/24/86
4,596,530	06/679,537	06/24/86
4,596,531	06/650,792	06/24/86
4,596,536	06/647,884	06/24/86
4,596,541	06/530,627	06/24/86
4,596,543	06/642,048	06/24/86
4,596,544	06/645,230	06/24/86
4,596,546	06/572,672	06/24/86
4,596,549	06/687,184	06/24/86
4,596,553	06/607,714	06/24/86
4,596,554	06/725,138	06/24/86
4,596,556	06/715,930	06/24/86
4,596,566	06/785,542	06/24/86
4,596,572	06/702,648	06/24/86
4,596,573	06/566,353	06/24/86
4,596,578	06/575,018	06/24/86
4,596,579	06/597,729	06/24/86
4,596,588	06/722,592	06/24/86
4,596,594	06/774,115	06/24/86
4,596,595	06/623,805	06/24/86
4,596,596	06/747,464	06/24/86
4,596,597	06/747,465	06/24/86
4,596,598	06/662,010	06/24/86

Patent Number	Serial Number	Issue Date
4,596,601	06/677,422	06/24/86
4,596,606	06/647,333	06/24/86
4,596,616	06/617,537	06/24/86
4,596,623	06/599,794	06/24/86
4,596,625	06/750,154	06/24/86
4,596,626	06/465,369	06/24/86
4,596,634	06/581,544	06/24/86
4,596,636	06/642,094	06/24/86
4,596,637	06/488,749	06/24/86
4,596,645	06/663,768	06/24/86
4,596,651	06/459,182	06/24/86
4,596,653	06/661,711	06/24/86
4,596,654	06/781,816	06/24/86
4,596,666	06/557,680	06/24/86
4,596,672	06/747,395	06/24/86
4,596,673	06/481,140	06/24/86
4,596,676	06/593,442	06/24/86
4,596,687	06/617,197	06/24/86
4,596,688	06/449,567	06/24/86
4,596,689	06/412,186	06/24/86
4,596,690	06/564,061	06/24/86
4,596,692	06/702,603	06/24/86
4,596,703	06/557,111	06/24/86
4,596,704	06/716,518	06/24/86
4,596,709	06/543,990	06/24/86
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Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,821,440, Re. S.N. 08/268,353, June 30, 1994, Cl. 40/642, WEATHERIZED CONSTRUCTION SITE INSPECTION BOARD ASSEMBLY, Gary D. Dunn, Owner of Record: *Inventor,* Attorney or Agent: Ronald E. Smith, Ex. Gp.: 3507

4,865,736, Re. S.N. 08/153,269, Nov. 16, 1993, Cl. 210/321.79, HOLLOW FIBER SEPARATORY MODULE WITH ENCASED FIBER BUNDLE, Myron J. Coplan, Owner of Record: *Albany International Corporation, Albany, N.Y.,* Attorney or Agent: Ronald R. Santucci, Ex. Gp.: 1306

4,878,903, Re. S.N. 08/271,110, July 6, 1994, Cl. 604/199, PREFILLED CATHETER TIP SYRINGE KIT, Louis Mueller, Owner of Record: *Inventor,* Attorney or Agent: Charles A. McClure, Ex. Gp.: 3306

5,008,401, Re. S.N. 08/269,396, June 30, 1994, Cl. 548/455, CYANINE COMPOUNDS, Masayuki Utsunomiya, et. al., Owner of Record: *Asahi Chemical Company, Ltd., Osaka-Shi, Japan,* Attorney or Agent: Le-Nhung McLeland, Ex. Gp.: 1201

5,180,857, Re. S.N. 08/263,842, June 22, 1994, Cl. 568/617, REDUCTION OF MOLECULAR WEIGHT OF POLY(TETRAMETHYLENE ETHER)GLYCOL, Suriyanarayanan Dorai, Owner of Record: *E. I. Du Pont De Nemours & Company, Wilmington, Del.,* Attorney or Agent: Robert B. Stevenson, Ex. Gp.: 1206

5,127,230, Re. S.N. 08/271,041, July 6, 1994, Cl. 62/7, LNG DELIVERY SYSTEM FOR GAS POWERED VEHICLES, Timothy A. Neeser, et. al., Owner of Record: *Minnesota Valley Engineering, Inc., New Prague, Minn.,* Attorney or Agent: Dennis J. Williamson, Ex. Gp.: 3404

5,133,726, Re. S.N. 08/280,673, July 27, 1994, Cl. 606/166, AUTOMATIC CORNEAL SHAPER, Luis A. Ruiz, et. al., Owner of Record: *Inventor,* Attorney or Agent: Steven P. Schad, Ex. Gp.: 3309

5,208,305, Re. S.N. 08/269,368, June 30, 1994, Cl. 526/249, FLUORINE-CONTAINING POLYMERS AND PREPARATION AND USE THEREOF, Werner M. Grootaert, Owner of Record: *Minnesota Mining and Manufacturing Company, St. Paul, Minn.,* Attorney or Agent: Robert H. Brink, Ex. Gp.: 1505

5,256,745, Re. S.N. 08/269,192, June 30, 1994, Cl. 526/194, FLUORINE-CONTAINING POLYMERS AND PREPARATION AND USE THEREOF, Werner M. Grootaert, Owner of Record: *Minnesota Mining and Manufacturing Company, St. Paul, Minn.,* Attorney or Agent: Robert H. Brink, Ex. Gp.: 1505

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,500,748, Reexam. No. 90/003,395, Apr. 13, 1994, Cl. 174/121, FLAME RETARDENT ELECTRICAL CABLE, Gary S. Klein, Owner of Record: *Flurocarbon Co., Laguana Niguel, Calif.,* Attorney or Agent: Eaton Corp., Cleveland, Ohio, Ex. Gp.: 2103, Requester: Comtran Corp., Whitinsville, Mass.

4,565,917, Reexam. No. 90/003,396, Apr. 14, 1994, Cl. 219/388, MULTI-ZONE THERMAL PROCESS SYSTEM UTILIZING NONFOCUSED INFARED PANEL EMITTERS, Edward J. Furtek, Owner of Record: *Vitronics Corp., New Market, N.H.*, Attorney or Agent: Lawrence M. Green, Wolf, Greenfield & Sacks, Boston, Mass., Ex. Gp.: 2106, Requester: Conceptronics, Inc., c/o Weingarten, Schurgin, Gagnebin & Hayes, Boston, Mass.

5,096,890, Reexam. No. 90/003,394, Apr. 11, 1994, Cl. 514/422, PYRROLIDINE DERIVATIVES, Peter E. Cross, et. al., Owner of Record: *Pfizer, Inc., New York, N.Y.*, Attorney or Agent: Seymour G. Bekelnitzky, Pfizer, Inc., New York, N.Y., Ex. Gp.: 1205, Requester: Owner

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JULY 11, 1994
DUE TO FAILURE TO RENEW

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978,137	72/408,419	02/05/1974

Erratum

"All reference to Patent No. 5,336,890 to Hiroshi Kitaguchi of Japan for 'A SEMICONDUCTOR DETECTION APPARATUS FOR DETECTING NUCLEAR RADIATION' appearing in the *Official Gazette* of August 9, 1994, should be deleted since no patent was granted."

Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

Patent No. 4,617,228, Paul R. Newman, Leslie F. Warren, Edward F. Witucki, PROCESS FOR PRODUCING ELECTRICALLY CONDUCTIVE COMPOSITES AND COMPOSITES PRODUCED THEREIN, Interference No. 102,522, final judgment adverse to the patentee rendered Aug. 3, 1994, as to claims 8-13.

Patent No. 4,686,252, Theodor A. Burge, Reinhard Schweizer, PROCESS FOR PREPARING A BUILDING AND/OR CONSTRUCTION MATERIAL, A POLYMER MODIFIED AQUEOUS DISPERSION, AND USE THEREOF FOR THE PREPARATION OF A BUILDING AND/OR CONSTRUCTION MATERIAL, Interference No. 102,237, final judgment adverse to the patentee rendered Apr. 14, 1994, as to claims 1, 2 and 12.

Patent No. 4,699,009, Samuel H. Maslak, Hugh G. Larsen, DYNAMICALLY FOCUSED LINEAR PHASED ARRAY ACQUSTIC IMAGING SYSTEM, Interference No. 102,253, final judgment adverse to the patentee rendered Feb. 25, 1993, adverse as to claims 1, 2, 4/1, 8-13, 15, 16 and 18.

Patent No. 4,809,863, William F. Woodcock, William E. Ruhig, Jr., FILL NECK ASSEMBLY FOR ON BOARD REFUELING VAPOR RECOVERY SYSTEM, Interference No. 103,147, final judgment adverse to the patentee rendered June 7, 1994, as to claims 1-20.

Patent No. 4,838,268, Peter T. Keith, Gerald G. Voegele, NON-OVER-THE WIRE BALLOON CATHETER, Interference No. 102,430, final judgment adverse to the patentee rendered Mar. 16, 1994, as to claims 1, 8, 11, 15, 23 and 26.

Patent No. 4,857,548, Gary J. Grover, METHOD OF PREVENTING OR REDUCING PLATELET LOSS DURING EXTRACORPOREAL CIRCULATION USING A THROMBOXANE A2 RECEPTOR ANTAGONIST, Interference No. 103,179, final judgment adverse to the patentee rendered June 9, 1994, as to claims 1, and 3-20.

Patent No. 4,867,761, Nils G.L. Brandt, Zeljka Senesan, CERAMIC CUTTING TOOL REINFORCED BY

WHISKERS, Interference No. 103,219, final judgment adverse to the patentee rendered July 20, 1994, as to claims 1 and 3.

Patent No. 4,963,369, Joo H. Song, Michael J. Greenberg, David W. Record, Steven E. Zibell, Kevin Broderick, Philip G. Schnell, GUM COMPOSITION CONTAINING DISPERSED POROUS BEADS CONTAINING ACTIVE CHEWING GUM INGREDIENTS AND METHOD, Interference No. 102,846, final judgment adverse to the patentee rendered Aug. 2, 1994, as to claims 1-4, 6/1, 7-10, 19 and 21/19.

Patent No. 4,998,203, Peter C. Digiulio, Warren G. Hafner, Henry Stalzer, POSTAGE METER WITH A NON-VOLATILE MEMORY SECURITY CIRCUIT, Interference No. 102,717, final judgment adverse to the patentee rendered June 9, 1994, as to claim 2.

Patent No. 5,032,291, Kerry L. Sublette, CATALYTIC REDUCTION OF NITRO- AND NITROSO- SUBSTITUTED COMPOUNDS, Interference No. 103,220, final judgment adverse to the patentee rendered July 19, 1994, as to claims 1-17.

Patent No. 5,047,248, Massimo Calanchi, Leonardo Gentilini, Luigi Mapelli, Marco Meroni, FORMULATION FOR PREPARING SUSTAINED RELEASE DRUGS FOR ORAL ADMINISTRATION, Interference No. 103,318, final judgment adverse to the patentee rendered Aug. 8, 1994, as to claims 1-9.

Patent No. 5,057,531, Rainer Seele, Stefan Karbach, Norbert Goetz, Gisela Lorenz, Eberhard Ammermann, POLYMETHYLOXIRANES AND FUNGICIDES CONTAINING THESE COMPOUNDS, Interference No. 103,306, final judgment adverse to the patentee rendered July 15, 1994, as to claims 1-5 and 10.

Patent No. 5,058,359, Curtis H. Lindblom, LIGHTWEIGHT OVERHEAD BEAM FOR PORTABLE DISPLAY STRUCTURE, Interference No. 102,859, final judgment adverse to the patentee rendered June 2, 1994, as to claims 1-18.

Patent No. 5,080,177, Mark L. Robin, Yuichi, Iikubo, FIRE EXTINGUISHING METHODS UTILIZING 1-BROMO-1, 1, 2, 2, TETRA-FLUOROETHANE, Interference No. 103,369, final judgment adverse to the patentee rendered Aug. 2, 1994, as to claims 1-8.

Patent No. 5,090,303, Osman Ahmed, LABORATORY FUME HOOD CONTROL APPARATUS HAVING IMPROVED SAFETY CONSIDERATIONS, Interference No. 103,341, final judgment adverse to the patentee rendered July 5, 1994, as to claims 1-12.

Patent No. 5,092,227, Osman Ahmed, Steven A. Bradley, Steven L. Fritsche, Steven D. Jacob, APPARATUS FOR CONTROLLING THE VENTILATION OF LABORATORY FUME HOODS, Interference No. 103,271, final judgment adverse to the patentee rendered July 5, 1994, as to claims 1-31.

Patent No. 5,086,685, Kohtaro Hanzawa, Kunihiro Sugita, Hiroyuki Sasaki, MUSICAL TONE GENERATING APPARATUS FOR ELECTRONIC MUSICAL INSTRUMENT, Interference No. 103,308, final judgment adverse to the patentee rendered July 19, 1994, as to claims 7 and 21.

Patent No. 5,093,556, Clifford M. Oelfke, RETHERMALIZATION CART ASSEMBLY, Interference No. 103,332, final judgment adverse to the patentee rendered Aug. 3, 1994, as to claim 20.

Patent No. 5,102,557, Jonathan S. Nimitz, Robert E. Tapscott, Stephanie R. Skaggs, FIRE EXTINGUISHING AGENTS FOR STREAMING APPLICATIONS, Interference No. 103,265, final judgment adverse to the patentee rendered Aug. 8, 1994, as to claim 2.

Patent No. 5,123,322, Kohtaro Hanzawa, Kunihiro Sugita, Hiroyuki Sasaki, MUSICAL TONE GENERATING APPARATUS FOR ELECTRONIC MUSICAL INSTRUMENT, Interference No. 103,309, final judgment adverse to the patentee rendered July 19, 1994, as claims 8 and 11.

Patent No. 5,135,054, Jonathan S. Nimitz, Robert E. Tapscott, Stephanie R. Skaggs, FIRE EXTINGUISHING AGENTS FOR FLOODING APPLICATIONS, Interference No. 103,268, final judgment adverse to the patentee rendered Aug. 8, 1994, as to claim 1.

Patent No. 5,157,092, Tadashi Asanuma, Tetsunosuke Shiomura, Nobutaka Uchikawa, Yukari Tamai, Tateyo Sasaki, Tutomu Iwatani, POLYMER OF 4-METHYLPENTENE-1, Interference No. 103,381, final judgment adverse to the patentee rendered Aug. 3, 1994, as to claims 1 and 2.

Patent No. 5,187,250, Tadashi Asanuma, Tetsunosuke Shiomura, Yukari Nishimori, Nobutaka Uchikawa, NOVEL POLY-ALPHA-OLEFINS, Interference No. 103,380, final judgment adverse to the patentee rendered Aug. 3, 1994, as to claims 1-8.

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Removal From Register

Pursuant to 37 CFR § 10.11(b), a survey letter was directed on January 18, 1994 to the last post office address furnished to the Office of Enrollment and Discipline by each of the persons whose name and address appear on the following list. With respect to some of the letters, no reply was received within the period of forty-five (45) days therein set. Other letters were returned to the Post Office with notations to the effect that the addressee was deceased, unknown, or had moved and left no forwarding address or the forwarding had expired.

Accordingly, the names of the following persons have been removed from the Register of Patent Attorneys and Agents.

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Certificate of Correction
For Week of September 6, 1994

Re. 33,922	5,104,755	5,194,623	5,217,027
Re. 34,352	5,105,639	5,194,625	5,217,246
Re. 34,562	5,108,464	5,196,314	5,218,103
D. 319,488	5,109,024	5,197,033	5,218,726
D. 345,458	5,110,049	5,198,549	5,219,727
D. 346,160	5,110,800	5,199,428	5,219,943
D. 347,665	5,112,614	5,200,040	5,221,217
D. 347,725	5,116,943	5,200,211	5,221,252
4,518,735	5,117,097	5,200,471	5,221,474
4,802,931	5,122,124	5,200,733	5,221,599
4,851,107	5,125,961	5,201,140	5,223,391
4,855,360	5,126,214	5,202,233	5,223,605
4,866,038	5,129,943	5,202,316	5,224,153
4,869,774	5,136,566	5,202,853	5,226,978
4,911,865	5,140,819	5,203,060	5,227,375
4,992,305	5,142,905	5,203,930	5,227,587
5,017,273	5,143,655	5,203,986	5,228,537
5,021,236	5,145,508	5,204,099	5,229,148
5,033,390	5,147,469	5,204,374	5,230,374
5,033,778	5,150,325	5,204,628	5,231,345
5,041,997	5,153,198	5,205,108	5,231,966
5,045,568	5,153,207	5,205,704	5,232,261
5,046,822	5,154,730	5,206,670	5,233,308
5,052,669	5,159,087	5,208,111	5,234,756
5,055,024	5,159,610	5,208,262	5,234,900
5,057,776	5,171,844	5,208,491	5,236,759
5,061,957	5,174,593	5,209,422	5,237,357
5,066,515	5,176,671	5,210,620	5,237,434
5,068,174	5,180,072	5,210,661	5,238,734
5,070,605	5,181,096	5,210,724	5,239,039
5,071,443	5,182,752	5,211,914	5,239,070
5,082,717	5,184,213	5,212,147	5,239,217
5,082,845	5,185,360	5,212,297	5,241,042
5,084,842	5,186,842	5,213,859	5,243,314
5,091,391	5,190,145	5,213,977	5,243,720
5,092,357	5,190,618	5,215,854	5,243,945
5,103,607	5,192,771	5,216,651	5,244,477

5,244,602	5,268,270	5,283,574	5,293,944	5,300,282	5,307,463	5,313,405	5,320,281
5,245,452	5,268,816	5,283,606	5,293,963	5,300,363	5,307,576	5,313,560	5,320,295
5,247,482	5,269,204	5,283,628	5,294,482	5,300,470	5,307,924	5,313,565	5,320,299
5,248,672	5,269,388	5,283,647	5,294,542	5,300,484	5,308,186	5,313,634	5,320,512
5,249,539	5,269,435	5,283,720	5,294,561	5,300,548	5,308,350	5,313,798	5,320,649
5,249,795	5,269,561	5,284,192	5,294,733	5,300,744	5,308,425	5,314,008	5,320,650
5,250,418	5,269,610	5,284,258	5,294,825	5,300,786	5,308,538	5,314,223	5,320,662
5,250,651	5,269,674	5,284,504	5,294,923	5,300,814	5,308,611	5,314,432	5,320,940
5,250,884	5,269,746	5,284,535	5,294,957	5,300,902	5,308,612	5,314,701	5,321,259
5,250,993	5,270,336	5,284,784	5,295,111	5,301,020	5,308,647	5,314,726	5,321,309
5,251,700	5,270,378	5,284,856	5,295,129	5,301,243	5,308,751	5,314,754	5,321,312
5,251,728	5,270,404	5,285,233	5,295,223	5,301,917	5,308,995	5,314,813	5,321,480
5,252,133	5,270,406	5,285,246	5,295,287	5,301,977	5,309,009	5,314,932	5,321,570
5,252,598	5,270,878	5,285,290	5,295,337	5,302,354	5,309,056	5,315,036	5,321,577
5,252,852	5,271,277	5,285,313	5,295,513	5,302,525	5,309,250	5,315,109	5,321,699
5,252,865	5,272,156	5,285,377	5,295,562	5,303,147	5,309,459	5,315,127	5,321,815
5,252,881	5,272,600	5,286,469	5,295,586	5,303,149	5,309,779	5,315,228	5,321,883
5,253,084	5,273,716	5,286,486	5,295,714	5,303,200	5,309,858	5,315,750	5,321,952
5,253,340	5,274,184	5,286,732	5,295,770	5,303,539	5,309,867	5,316,153	5,321,972
5,254,066	5,274,189	5,286,752	5,295,824	5,303,609	5,309,965	5,316,797	5,322,217
5,254,321	5,274,408	5,286,756	5,295,873	5,303,703	5,310,065	5,316,917	5,322,298
5,254,849	5,274,834	5,286,917	5,295,959	5,303,739	5,310,082	5,317,035	5,322,484
5,255,355	5,274,967	5,286,954	5,296,022	5,303,748	5,310,353	5,317,077	5,322,552
5,255,357	5,275,336	5,287,058	5,296,245	5,303,876	5,310,627	5,317,157	5,322,647
5,255,746	5,275,433	5,287,144	5,296,251	5,304,022	5,310,663	5,317,305	5,323,357
5,255,784	5,275,624	5,287,340	5,296,320	5,304,098	5,310,740	5,317,431	5,323,486
5,255,908	5,276,036	5,288,074	5,296,340	5,304,258	5,310,898	5,317,552	5,323,706
5,256,329	5,276,068	5,288,433	5,296,383	5,304,265	5,310,954	5,317,620	5,323,759
5,256,502	5,276,777	5,288,473	5,296,494	5,304,332	5,311,195	5,317,680	5,323,795
5,257,188	5,277,212	5,289,048	5,296,624	5,304,360	5,311,243	5,317,711	5,323,802
5,257,202	5,277,606	5,289,081	5,296,635	5,304,672	5,311,276	5,317,730	5,324,006
5,257,376	5,277,664	5,289,207	5,297,050	5,304,770	5,311,397	5,317,739	5,324,072
5,258,098	5,278,684	5,289,214	5,297,148	5,304,955	5,311,599	5,317,760	5,324,119
5,258,976	5,278,758	5,289,234	5,297,285	5,305,033	5,312,034	5,317,777	5,324,382
5,259,594	5,279,423	5,289,245	5,297,444	5,305,057	5,312,052	5,317,860	5,324,389
5,259,870	5,279,609	5,289,557	5,297,542	5,305,065	5,312,207	5,317,923	5,324,517
5,259,933	5,279,693	5,290,509	5,297,604	5,305,087	5,312,319	5,318,236	5,325,075
5,260,276	5,280,328	5,290,670	5,297,606	5,305,180	5,312,340	5,318,490	5,325,142
5,260,846	5,281,028	5,290,853	5,297,709	5,305,254	5,312,431	5,318,757	5,325,291
5,260,991	5,281,057	5,291,345	5,298,009	5,305,274	5,312,453	5,318,761	5,325,420
5,261,037	5,281,076	5,291,384	5,298,193	5,305,461	5,312,467	5,318,777	5,325,433
5,261,061	5,281,371	5,291,390	5,298,214	5,305,641	5,312,520	5,318,805	5,325,982
5,261,822	5,281,803	5,291,395	5,298,245	5,305,705	5,312,630	5,318,906	5,326,027
5,261,990	5,282,086	5,291,522	5,298,313	5,305,782	5,312,647	5,319,188	5,326,492
5,262,049	5,282,111	5,291,775	5,298,318	5,305,809	5,312,696	5,319,207	5,326,529
5,262,186	5,282,156	5,291,799	5,298,520	5,306,054	5,312,758	5,319,379	5,326,632
5,262,307	5,282,225	5,292,116	5,298,523	5,306,152	5,312,835	5,319,398	5,326,657
5,262,484	5,282,279	5,292,172	5,298,923	5,306,271	5,312,914	5,319,410	5,326,706
5,262,922	5,282,303	5,292,457	5,299,176	5,306,339	5,312,936	5,319,438	5,327,044
5,263,608	5,282,670	5,292,465	5,299,209	5,306,539	5,312,985	5,319,479	5,327,436
5,264,017	5,282,723	5,292,572	5,299,624	5,306,614	5,313,015	5,319,703	5,327,583
5,264,155	5,282,801	5,292,610	5,299,692	5,306,675	5,313,060	5,319,746	5,328,687
5,266,399	5,282,886	5,292,799	5,299,756	5,306,913	5,313,192	5,319,754	5,328,709
5,266,708	5,282,948	5,292,880	5,299,781	5,306,930	5,313,226	5,319,893	5,329,298
5,267,007	5,283,116	5,293,006	5,299,824	5,307,157	5,313,299	5,320,114	5,329,959
5,267,035	5,283,155	5,293,107	5,299,897	5,307,334	5,313,354	5,320,133	
5,267,258	5,283,364	5,293,348	5,300,057	5,307,441	5,313,371	5,320,232	
5,267,704	5,283,564	5,293,360	5,300,102				

Notice of Hearings and Request for Comments on Preliminary Draft of the Report of the Working Group on Intellectual Property Rights

AGENCY: Patent and Trademark Office, Commerce

ACTION: Notice of hearings and request for public comments

SUMMARY: The Working Group on Intellectual Property Rights of the White House Information Infrastructure Task Force has issued a preliminary draft of its report, "Intellectual Property and the National Information Infrastructure," and is soliciting public comment. Copies of the preliminary report may be obtained by calling the U.S. Patent and Trademark Office at (703) 305-9300 or by sending a written request to the Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, Box 4, Washington, D.C. 20231, marked to the attention of Terri A. Southwick, Office of Legislative and International Affairs. The Working Group will hold public hearings on the preliminary report in Washington, D.C., Chicago and Los Angeles.

DATES: The public hearing in Chicago will be held on September 14, 1994, from 9 a.m. to 5 p.m. The public hearing in Los Angeles will be held on September 16, 1994, from 9 a.m. to 5 p.m. The public hearing in Washington, D.C., will be held on September 22 and 23, 1994 from 9 a.m. to 5 p.m. Requests to present oral testimony at the Chicago or Los Angeles hearings must be received on or before September 7, 1994. Requests to present oral testimony at the Washington, D.C., hearings must be received on or before September 15, 1994. As announced in the previous notice regarding the submission of written comments on the preliminary report, published at 59 Fed. Reg. 35912 (July 14, 1994), all written comments must be submitted on or before September 7, 1994. Comments in reply to initial written comments may be submitted no later than September 28, 1994.

ADDRESSES: The hearing in Chicago will be held at the University of Chicago, Ida Noyes Hall, 1212 East 59th Street, Chicago, Illinois. The hearing in Los Angeles will be held at the University of California at Los Angeles, 1100 Schoenberg Hall, 405 Hilgard Avenue (Southeast side of UCLA Campus), Los Angeles, California. The hearings in Washington, D.C. will be held at the Andrew W. Mellon Auditorium, Constitution Avenue between 12th and 14th Streets, N.W., Washington, D.C. Requests to present oral-testimony should be submitted to the Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, Box 4, Washington, D.C. 20231, marked to the attention of Terri A. Southwick, Attorney-Advisor, Office of Legislative and International Affairs. Requests should specify the date and location of the hearing at which the requester wishes to present oral testimony, and should include the name, address, telephone number, fax number and professional affiliation, if any, of the requester.

The transcripts of the hearings will be made available for public inspection 10 days after the hearings at the Scientific and Technical Information Center of the Patent and Trademark Office, Room 2C01, Crystal Plaza 3/4, 2021 Jefferson Davis Highway, Arlington, Virginia, between the hours of 9 a.m. and 4 p.m., Monday through Friday, except holidays. Information about obtaining copies of transcripts of the hearings may be obtained by calling (703) 305-9300 no sooner than 10 days after the hearings.

FOR FURTHER INFORMATION CONTACT: Terri A. Southwick or Michael O'Neil, Office of Legislative and International Affairs, U.S. Patent and Trademark Office, Box 4, Washington, D.C. 20231. Telephone: (703) 305-9300; Fax: (703) 305-8885.

SUPPLEMENTARY INFORMATION: The Working Group on Intellectual Property Rights, chaired by Assistant Secretary of Commerce and Commissioner of

Patents and Trademarks Bruce A. Lehman, was established as part of the White House Information Infrastructure Task Force. The Task Force, chaired by Secretary of Commerce Ronald H. Brown, was created to work with Congress and the private sector to develop comprehensive telecommunications and information policies aimed at articulating and implementing the Administration's vision for the National Information Infrastructure (NII).

"Intellectual Property and the National Information Infrastructure: A Preliminary Draft of the Report of the Working Group on Intellectual Property Rights" represents the Working Group's examination and analysis to date of the intellectual property implications of the NII, and includes the Group's draft findings and recommendations. While it addresses each of the major areas of intellectual property law, including patent, trademark and trade secret, the preliminary report focuses primarily on copyright law and its application and effectiveness in the context of the NII.

The Working Group solicited written comments from the public on the preliminary report in a notice published at 59 Fed. Reg. 35912 on July 14, 1994.

Dated: August 12, 1994

Bruce A. Lehman
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

July 25-29, 1994

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
6-16**	EX	74/272,473	National Tobacco Co., L.P.	Section 6 Disclaimer Requirement	Refusal Reversed		"TROPHY THE SPORTSMAN'S CHEW" [chewing tobacco]		No
7-25	EX	74/114,029	Postal Buddy Corp	2(e)(1)	Refusal Reversed		"OPINIONGRAM" ["providing computer terminals for use by the public to create interactively recommended opinion correspondence and to recommend selected policy and decision makers to receive such correspondence"		No
7-25	EX	74/041,372	King Louie Int'l, Inc	whether the matter sought to be registered functions as a service mark for the services recited in the application	Refusal Affirmed		"FOOTBOWLING" [promoting the sale of goods and services of others through distribution of printed materials in the field of professional football and bowling]		No
7-26	EX	74/092,227	Raymvac Corp.	2(d)	Refusal Affirmed		"BRIGHT EYE" [hand held lights, battery-powered combination keyring/ flashlight, namely, keying lights]	"BRIGHTEYES HEADLIGHTS" and "BRIGHTEYES PRO HEADLIGHTS" [head-mounted, battery powered flashlights]	No

**Inadvertently omitted from the report for the week of June 13-17, 1994
(1)EX=EX PARTE APPEAL, OPP=OPPOSITION; C=CANCELLATION, CU=CONCURRENT USE; (R)=REQ FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
7-27	C	78,134	Giuliano Ceccato	2(d); counterclaim to cancel under Sections 2(b) and 2(c)	Opposition Sustained; Counterclaim Dismissed	DUCA D'AOSTA" (and design) [men's clothing]	"DUCA D'AREZZO" (in stylized lettering) [men's suits, jackets, and trousers]		Yes
7-27	EX	74/110,295	Argyles Custom Clothier, Inc	2(e)(1)	Refusal Affirmed		"ARGYLES" [men's suits, sports jackets, trousers, shirts, and ties]		No
7-27	EX	74/256,022	O-Ratchet, Inc.	2(e)(1)	Refusal Affirmed		"HEXX DRIVE" [hand tools, namely, socket wrenches and socket wrench sets		No
7-27	EX EX	74/342,352 74/342,353	H. Bahlsens Kekstabrik KG	2(d)	Refusal Affirmed (in both cases)		"CRUNCHEEZ" and "CRUNCHEESE" [cookies, candies, and crackers]	"CROWNCHIES" [bread, breadsticks, crackers, and cookies]	No
7-28	OPP	87,293	PC Connection, Inc. v. Uni Connection, Inc	2(d)	Opposition Sustained	"PC CONNECTION" and "MACCONNECTION" [retail store and mail-order services in the field of computer software and hardware]	"UNI-CONNECTION" [mail order catal- services in the f[illegible] of multi-user computer hardware and software]		No

(1)EX - EX PARTE APPEAL, OPP - OPPOSITION, C - CANCELLATION, CU - CONCURRENT USE, (R) - REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
7-29	EX	74/302,181	Ciba Corning Diagnostics Corp	2(e)(1)	Refusal Affirmed (as to both classes of goods in the application)		"CANCER CARE DIAGNOSTICS" [chemicals for detection and/or quantitation of analytes or substances in a test sample, including but not limited to immunologically reactive materials or derivatives, drugs and proteins, for diagnostic and [illegible]nical use (in class 1); reagents and test kits for detection and/or quantitation of analytes or substances in a test sample, including but not limited to immunologically reactive materials or derivatives, drugs and proteins for diagnostic and clinical use (class 5)]		No
7-29	EX	74/281,655	Sava Research Corp	2(e)(3)	Refusal Reversed		"SAVA" [secure communications systems]		Yes
7-29	EX	74/301,493	Ingram Enterprises Inc	2(d)	Refusal Affirmed		"NUTTY MONKEY" [Class C fireworks and firecrackers]	"MONKEY'S BRAND" [firecrackers]	No

(1)EX - EX PARTE APPEAL, OPP - OPPOSITION, C - CANCELLATION, CU - CONCURRENT USE, (R) - REQ. FOR RECONSIDERATION

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Special PTO mail department numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special departments. If any documents other than the specified type identified for each department are addressed to that department, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Washington, D.C. 20231

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Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislation and International Affairs.
Box 5	"No Fee" mail related to trademarks.
Box 6	Mail for the Office of Procurement
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation*; papers relating to pending litigation shall be mailed only to the Office of the Solicitor, P.O.Box 15667, Arlington, Va. 22215
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Box 11	Electronic Ordering Service (EOS).
Box 12	Contributions to the Examiner Education Program.
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Assignment	All assignment documents except those filed with new applications.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box EEO	Mail for the Office of Equal Employment Programs.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85 "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
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Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
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Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

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State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	Not Yet Operational
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-8847
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2873
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	Not Yet Operational
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
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Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
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	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
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	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
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New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
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North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	Not Yet Operational
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
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Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	09/06/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	07/01/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	11/15/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	09/13/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/05/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—JOSEPH J. ROLLA, JR., Director	308-1782	10/06/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	01/25/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	08/03/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	08/08/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/03/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	01/13/93
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	11/10/92
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	08/16/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	07/26/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	09/02/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	03/12/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	07/29/93

*A communication from the examiner should have been received in most applications filed prior to this date

Expiration of Patents: The patents within the range of numbers indicated below expire during July 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151
Patents.....Numbers 4,032,989 to 4,038,696 inclusive
Plant Patents.....4,069 to 4,085

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of July 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/16/94	05/23/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/08/94	01/21/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/94	03/04/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/94	02/14/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/02/94	03/09/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/94	05/02/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/07/94	04/19/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/22/94	04/28/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/24/94	04/01/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/14/94	05/16/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/94	03/16/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/10/94	04/20/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/23/94	03/03/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	03/01/94	—0—
Renewals (All Classes)	03/24/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

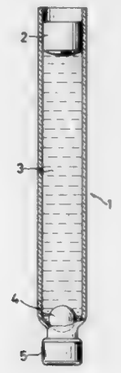
1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

SEPTEMBER 6, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,850,966 (2377th)
DEVICE FOR THE ADMINISTRATION OF MEDICAMENT SUSPENSIONS
Ulrich Grau, and Wolfgang Pohler, both of Hofheim am Taunus, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
Reexamination Request No. 90/003,082, Jun. 3, 1993.
Reexamination Certificate for Patent No. 4,850,966, issued Jul. 25, 1989, Ser. No. 17,617, Feb. 24, 1987.
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1986, 3606163
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—82



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–11** is confirmed.

1. A device for the administration of medicament suspensions comprising: a container for receiving an essentially gas-bubble-free medicament suspension;

at least one mixing element disposed in said container, said mixing element being inert towards the suspension and having a density which is greater than the density of the suspension, said at least one mixing element being dimensioned relative to the size of said container such that the suspension is homogenized by shaking movements of said container.

B1 4,947,506 (2378th)
PORTABLE APPLIANCE COVER
David W. Foster, Germantown, Md., assignor to Soft Vac, Inc., Washington, D.C.
Reexamination Request No. 90/003,018, Mar. 30, 1993.
Reexamination Certificate for Patent No. 4,947,506, issued Aug. 14, 1990, Ser. No. 407,453, Sep. 14, 1989.
Continuation of Ser. No. 223,093, Jul. 22, 1988, Pat. No. 4,876,762
Int. Cl.[5] A47L *9/00*
U.S. Cl. 15—247

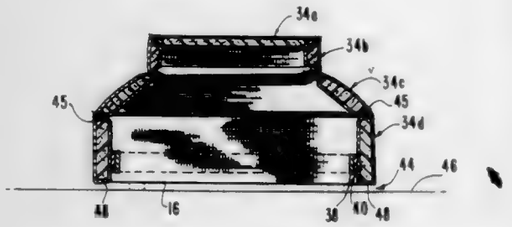
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **5** are determined to be patentable as amended.

Claims **2–4** and **6**, dependent on an amended claim, are determined to be patentable.

1. A cover for portable appliance, the appliance including a body section having a bottom surface disposed adjacent a floor when the appliance is in use, a top surface opposite the bottom surface and a side surface between and connecting the top and bottom surfaces, the cover comprising:

removable bonnet means for substantially covering one or more of the top surface and side surface of the body section and being capable of absorbing mechanical energy,



the bonnet means including a portion that traverses the top surface of the body section and is capable of absorbing mechanical energy; and

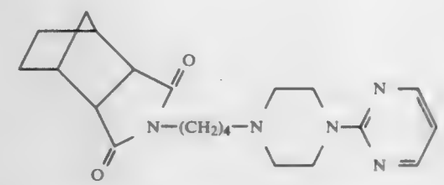
retaining means for removably attaching said removable bonnet means to the body section of the appliance, said retaining means being capable of holding said bonnet means at a fixed spaced relationship to the bottom surface of the body section of the appliance to establish a selected spacing between the cover and the floor when the appliance is disposed on the floor.

B1 5,011,841 (2379th)
TREATMENT OF DEPRESSION
Karen A. Scappaticci, New York, N.Y., assignor to Pfizer Inc., New York, N.Y.
Reexamination Request No. 90/003,143, Jul. 26, 1993.
Reexamination Certificate for Patent No. 5,011,841, issued Apr. 30, 1991, Ser. No. 436,405, Nov. 14, 1989.
Int. Cl.[5] A61K *31/50, 31/495*
U.S. Cl. 514—253

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

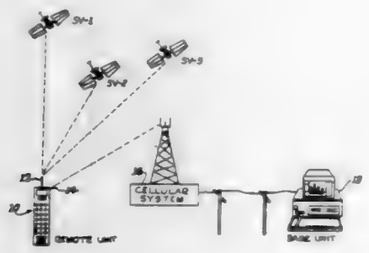
The patentability of claims **1–5** is confirmed.

1. A method for treating depressive disorder in a human in need of said treatment which comprises administering to said human an antidepressive effective amount of a compound of the formula



or a pharmaceutically acceptable acid addition salt thereof.

B1 5,043,736 (2380th)
CELLULAR POSITION LOCATION SYSTEM
Ralph D. Darnell, Friendswood, and Claude C. Douglas, Houston, both of Tex., assignors to CAE-Link Corporation, Binghamton, N.Y.
Reexamination Request No. 90/002,943, Jan. 28, 1993.
Reexamination Certificate for Patent No. 5,043,736, issued Aug. 27, 1991, Ser. No. 558,651, Jul. 27, 1990.
Int. Cl.[5] H04B *7/185*
U.S. Cl. 342—357



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

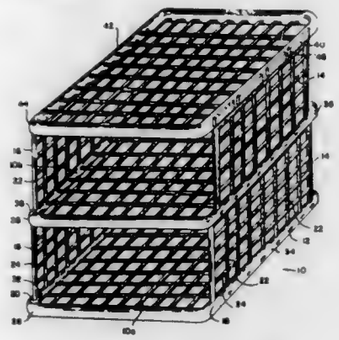
Claims **1**,**2** and **3** are determined to be patentable as amended.

Claim **4**, dependent on an amended claim, is determined to be patentable.

New claims **5** and **6** are added and determined to be patentable.

1. A cellular position locating system for locating the geographical coordinates of a person at a remote location [using a portable hand held remote unit and a cellular telephone system] comprising:
a portable hand held remote unit, said remote unit comprising:
receiver means for receiving navigational signals from satellites in orbit about the earth;
signal processing means for demodulating the satellite navigational signals;
means for generating a pseudo random code;
timing means connected to said signal processing means demodulating means and said signal processing means;
means for generating position information signals by comparing the time difference of the navigational signals and the pseudo random code signals;
means for converting said position information signals into cellular telephone signals;
means for temporarily storing said position information signals; and
cellular telephone signals transmitting means, *said cellular position locating system further comprising;*
cellular telephone system for receiving and transmitting said transmitted cellular telephone signals;
base unit means coupled to said cellular telephone system of processing cellular telephone signals received from said cellular transmitter;
said base unit means including means for decoding the received signal for determining geographic location position data; and
a display means connected to said base unit for displaying the geographical coordinate information.

B1 5,191,985 (2381st)
MODULAR SUPPORT AND DISPLAY UNIT
Yaffa Licari, Elberon, N.J., assignor to Basic Line Industries Inc., Cliffwood, N.J.
Reexamination Request Nos. 90/003,168, Aug. 20, 1993 and 90/003,224, Oct. 25, 1993.
Reexamination Certificate for Patent No. 5,191,985, issued Mar. 9, 1993, Ser. No. 826,281, Jan. 6, 1986.
Int. Cl.[5] A47B *47/00*
U.S. Cl. 211—188



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–11** is confirmed.

Claims **12**, **13**, **15** are cancelled.

Claims **14**, **16–18** are determined to be patentable as amended.

New claims **19**, **20** are added and determined to be patentable.

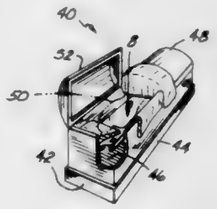
1. Stackable one-piece integral plastic modular support and display unit comprising
side walls of selective thickness, each having a top edge and a bottom edge, the bottom edge having a bottom edge lateral boundary surface portion,
a generally horizontal base of selective thickness and having a top side and an underside, the top side having opposed corresponding top side lateral boundary surface portions to the bottom edge lateral boundary surface portions of the side walls,
a corresponding integral plastic flexible hinge of reduced thickness relative to the thickness of the side walls and relative to the thickness of the base integrally permanently connecting each corresponding said side wall to the base, each said hinge being disposed between the bottom edge of the corresponding side wall and the top side of the base and arranged in laterally offset relation thereto at a corresponding lateral boundary surface portion of the bottom edge of the side wall thereat and at a corresponding opposed lateral boundary surface portion of the top side of the base thereat, for movement of the side walls relative to the base from an outward generally flat horizontal position in generally horizontal alignment with the base to an upward generally vertical position generally normal to the base, and
two cooperating joining means comprising modular extensions having an outer surface as first joined means and corresponding modular recesses having an inner surface as second joining means, one of said first and second joining means being provided on the top edges of said side walls and the other of said first and second joining means being provided in the underside of the base and corresponding adjacent the hinges,
the outer surface of said extensions being of similar dimensions as the dimensions of the inner surface of said recesses to accomplish a snap fit or friction fit therebetween upon stacking one such unit upon the next.

STATUTORY INVENTION REGISTRATIONS

PUBLISHED SEPTEMBER 6, 1994

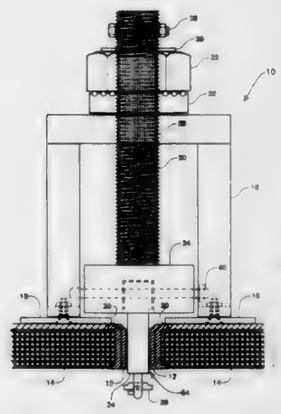
A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157

H1348
COMBUSTIBLE BED FOR CASKET
John E. Linville, 641 Columbia Ave., Osgood, Ind. 47037, and Donald R. Maier, 630 E. Mitchell, Cincinnati, Ohio 45217, assignors to Batesville Casket Company, Inc., Batesville, Ind.
Filed Jun. 3, 1993, Ser. No. 72,131
Int. Cl.[5] A61G *17/00*
U.S. Cl. 27—5 **4 Claims**



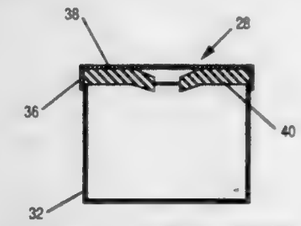
4. A casket comprising:
end, side and bottom walls defining a space for a body;
a lid; and
a support made of a combustible material for supporting said body in said space.

H1349
BUSHING REMOVAL TOOL
Malcolm E. Kelley, Yellow Springs, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Division of Ser. No. 907,958, Jul. 2, 1992, abandoned. This application May 24, 1993, Ser. No. 70,006
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—259 **1 Claim**



1. A bushing removal tool for removing a bushing having a front and back from an opening in a plastic structure, comprising:
(a) a tool body;
(b) support means attached to the tool body for supporting the tool body over the front of the bushing, the support means including a plurality of flat plates arranged so that a flat side of each plate bears on the surface of the plastic structure near and about the opening so that damage from bending forces at the edge of the opening during removal of the bushing is reduced;
(c) a bushing puller for engaging the bushing, the bushing puller comprising:
(i) a shaft having a top and a bottom, the shaft shaped and sized to completely fill the bushing and to be longer than the bushing;
(ii) a fixed flange integral with the bottom of the shaft, the flange sized and shaped to engage the back of the bushing; and,
(iii) first counterpart latching means integral with the top of the shaft; and,
(d) pulling means attached to the tool body and having second counterpart latching means for latching to the first counterpart latching means.

H1350
SEALANT APPLICATOR AND METHOD OF SEALANT APPLICATION FOR AMMUNITION
Anthony T. Desmond, Budd Lake, and William J. Russell, Sparta, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Continuation of Ser. No. 936,173, Aug. 27, 1992, abandoned. This application Oct. 28, 1992, Ser. No. 967,310
Int. Cl.[5] F42B *33/14*
U.S. Cl. 86—17 **14 Claims**



1. A sealant applicator for holding and applying sealant to an ammunition, comprising:
a chamber containing sealant and a means for applying the sealant; and
an integral lid on the chamber for penetrating the ammunition through into the chamber for sealant application inside the chamber, and removal after sealant application, during removal the integral lid intimately contacting the ammunition and wiping excess sealant from the ammunition.

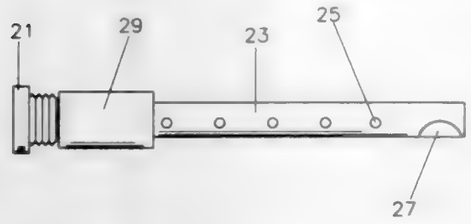
H 001,351

Patent Not Issued For This Number

H1352
COMBUSTIBLE METALLIC PROPELLANT CHARGE IGNITER
Mark L. Bundy, Belcamp; Frederick W. Robbins, Havre De Grace, and Lawrence E. Sturla, Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Oct. 1, 1992, Ser. No. 955,188
Int. Cl.[5] F42C *19/08*
U.S. Cl. 102—202 **9 Claims**

1. A propellant charge igniter for tank ammunition, said igniter comprising a primer head, a metallic igniter tube which

is combustible and provided with a plurality of vent holes along its length, an igniter charge disposed within said igniter

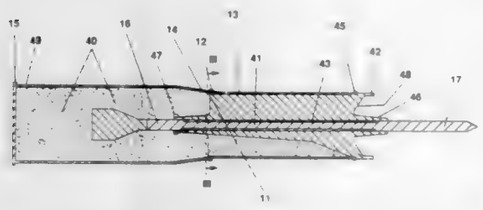


tube, and flexible means for attaching said primer head and igniter tube.

H1353
VELOCITY ENHANCING PROJECTILE SABOT

Gregory Malejko, Hackettstown, and John C. Grau, Sussex, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 96,496, Jul. 26, 1993, abandoned. This application Feb. 18, 1994, Ser. No. 200,801
Int. Cl.[5] F42B *5/00, 14/06*
U.S. Cl. 102—439 11 Claims



1. A cartridge for propelling a saboted projectile from a gun bore, the cartridge comprising:

a cartridge case having a base end and an opened end, said cartridge case defining a cartridge volume;

a penetrator used as the projectile, said penetrator having a cartridge portion positioned in said cartridge case and a bore portion extending out of said opened end of said cartridge case, a diameter of said bore portion of said penetrator being less than an inside diameter of the gun bore;

a sabot attached to said penetrator and positioned between said penetrator and the gun bore, a first end of said sabot being positioned adjacent said bore portion of said penetrator and having a closing disk radially extending in all directions to the inside diameter of the gun bore, said sabot including obturation band means for providing a sealing connection between said first end of said sabot and the inside of the gun bore, said sabot also including a plurality of longitudinal ribs radially extending from said penetrator to the inside diameter of the gun bore;

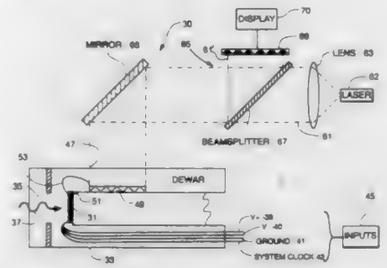
a shell positioned adjacent the inside diameter of the gun bore and axially extending from said open end of said cartridge to said closing disk, said shell and said sabot defining a sabot volume;

propellant means positioned in said cartridge volume and said sabot volume, and for propelling said sabot and said penetrator along said gun bore.

H1354
OPTICAL DATA TRANSDUCER

Otto R. Martinez, Fort Walton Beach, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 7, 1991, Ser. No. 772,199
Int. Cl.[5] G01J *1/00*
U.S. Cl. 250—352 8 Claims



1. A cryogenic data transducer system, comprising:

(a) a cryogenic dewar having optical window means therein for admitting an optical signal and a probe beam;

(b) an infrared focal plane array disposed within said dewar near said optical window means for receiving an optical signal from external of said dewar;

(c) a spatial light modulator disposed within said dewar near said optical window means, said spatial light modulator being operatively connected to said infrared focal plane array;

(d) a source of a collimated laser beam source and optical means for directing a probe beam from said source onto said spatial light modulator through said optical window means and directing a reflected beam external of said dewar from said spatial light modulator; and

(e) detection means for detecting and analyzing said reflected beam.

H1355
REMOTE VOICE-CONTROLLED SYSTEM OF UNMANNED SMOKE GENERATOR DEVICES

Paul G. Schabdach, Churchville, and Irving F. Barditch, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

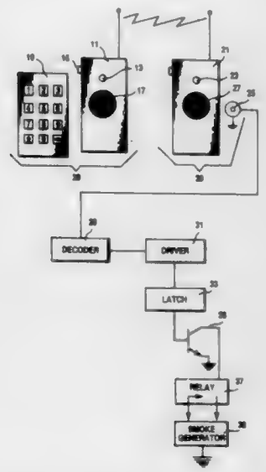
Filed Jun. 7, 1993, Ser. No. 71,877
Int. Cl.[5] G08C *19/28*
U.S. Cl. 340—825.74 6 Claims

1. A system for remote control operation from a command location of an unmanned smoke generation machine positioned at a location remote from said command location said system comprising:

a transmission means at the command location for transmitting signals in the band of frequencies between RF and UHF to said remote location, said transmission means comprising a tone generator device for generating a particular acoustic DTMF tone binary coded decimal output signal, and a first microphone means for converting such DTMF tone signal into DTMF pulses which can be transmitted as first signals by said transmission means, said first microphone means also accepting human voice sounds which can be transmitted as second signals at a predetermined frequency by said transmission means; wherein said first and said second signals can be simultaneously transmitted;

receiving means at the remote location for receiving and detecting said first and second signals, said receiving means comprising a speaker means for producing audible sounds in response to said signals being received by said receiving means, a second microphone means acoustically coupled to said speaker means for converting said audible

sounds into third signals, a decoder-driver means for receiving said third signals and generating a fourth signal when a particular DTMF tone signal is detected within said third signals, a latch-transistor means for generating a steady-on electrical signal in response to receipt of said fourth signal from said decoder-driver means, for closing



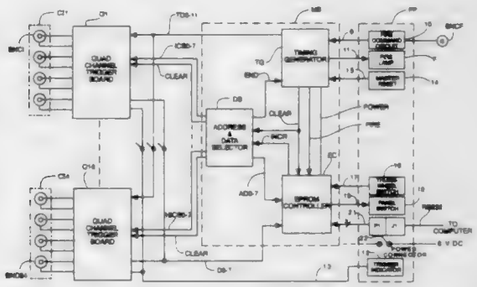
a relay means selectively supplying or discontinuing connection of a high voltage power to said smoke generation machine in response to said steady-on signal from said latch-transistor means,

whereby said receiving means can receive both said human voice sounds and said DTMF pulses transmitted from said command location transmission means.

H1356
BOMB SENSOR SYSTEM

Howard C. McCormick, Crestview, and David M. Onuffer, Mary Esther, both of Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 17, 1990, Ser. No. 583,613
Int. Cl.[5] H04R *17/00*
U.S. Cl. 364—423 4 Claims



4. A sensor system for monitoring an event at a plurality of points using a channel for each point wherein said system comprises;

detector means individual to each channel for detecting a pulse associated with the event to define the time of arrival at the point for the individual channel;

timing means comprising a counter, a timing pulse source providing a train of timing pulses at a given interval, timing input gate means coupling the timing pulse source to a clock input of the counter, a timing bus comprising N conductors coupled to parallel outputs of the counter on which a count value is encoded;

command means comprising start detector means for detecting a start of an event and means set in response thereto for enabling the input gate means to start the counter running at a time designated t0;

channel register means individual to each channel, each having N parallel data input terminals coupled to the timing bus, a gate control terminal for controlling the loading of data, an output control terminal for enabling placing the data on a data bus, the gate control terminal being coupled to the detector means to load the the count value from the timing bus upon the detection of a pulse to thereby record the time with respect to T0;

data selector means coupled to the output control terminals of the channel register means for addressing the channel register means of each channel in turn and reading the data onto the data bus;

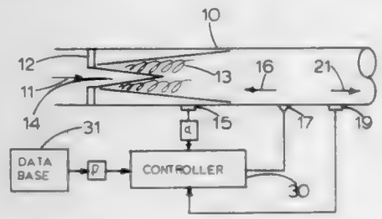
a memory unit having a set of address inputs coupled to the data selector means, and data terminals coupled to the data bus for storing the data from the channel register means as each channel is addressed by the data selector means;

transceiver means coupling the memory unit to a computer interface line for receiving addresses from a computer and coupling them to the memory unit, and for reading data from the memory unit for each address and supplying it to the computer.

H1357
ACTIVE SOUND CANCELLATION SYSTEM FOR TIME-VARYING SIGNALS

Kam W. Ng, Barrington, and Henry A. Leinhos, Newport, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 27, 1990, Ser. No. 573,415
Int. Cl.[5] G10K *11/16;* H04R *1/28*
U.S. Cl. 381—71 18 Claims



1. An apparatus for actively canceling acoustic noise in a fluidborne or structureborne sound system by introducing a canceling acoustic wave into said system from a cancellation source and for adaptively compensating for feedback to said input from said cancellation source, said system having an input for receiving an input acoustic wave and an output for radiating an output acoustic wave, comprising:

a database having a predicted, off-line model or the canceling acoustic wave;

an input sensing means for sensing the combination of said input acoustic wave and said feedback to said input and for providing an on-line input signal indicative thereof;

an error sensing means for sensing the combination of said output acoustic wave and said canceling acoustic wave and for providing an error signal indicative thereof; and

a controller means for adaptively modeling said system based upon a model input and an error input, said model input comprising a combination of: 1) a selected percentage of said on-line input signal and 2) a selected percentage of said offline model, and said error input comprising said error signal, said controller means further outputting a correction signal to said cancellation source to introduce said canceling acoustic wave such that said error signal is

minimized by said model input, wherein said selected on-line input signal percentage and said selected off-line model percentage are complementary percentages.

H1358

DIAMOND/SILVER COMPOSITES

William A. Ferrando, Arlington, Va., and James B. Clark, Ellicott City, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 6, 1993, Ser. No. 105,324

Int. Cl.[5] B32B *7/00*

U.S. Cl. 427—217 **10 Claims**

1. A process for preparing a diamond particle/silver metal matrix composite material object comprising:

A. coating the surfaces of diamond powder particles with molten silver nitrate at a temperature of from just above the melting point of silver nitrate to just below the decomposition temperature of silver nitrate;

B. heating the molten silver nitrate coated diamond particles produced in step A at a temperature from the decomposition temperature of silver nitrate up to 550° C. until the molten silver nitrate decomposes to form a coating of silver metal on the surfaces of the diamond particles;

C. consolidating the silver metal coated particles produced in step B into a composite structure having continuous pores between the silver coated diamond particles;

D. infiltrating the continuous pores of the composite structure produced in step C with molten silver nitrate at a temperature of from just above the melting point of silver nitrate to just below the decomposition temperature of silver nitrate;

E. heating composite structure at a temperature of from the decomposition temperature of silver nitrate to 550° C. until the molten silver nitrate in the pores of the composite structure decomposes to silver metal; and

F. repeating steps D and E until the pores of the composite structure are essentially filled with silver metal.

H 001,359

Patent Not Issued For This Number

REISSUES

SEPTEMBER 6, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,715

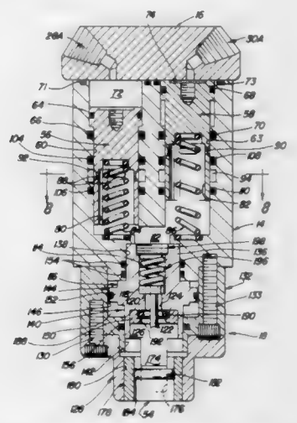
MULTIFUNCTION FLUID CHARGING DEVICE

Ronald A. Gudenau, Mt. Clemens, and Charles Tamasiunas, Farmington, both of Mich., assignors to Lucas Hartridge, Inc., Reston, Va.

Original No. 4,869,300, dated Sep. 26, 1989, Ser. No. 95,641, Sep. 14, 1987. Application for reissue Feb. 21, 1990, Ser. No. 484,361

Int. Cl.[5] B65B *3/04*

U.S. Cl. 141—59 **9 Claims**



1. A device for dispensing a pressurized fluid into a system, said system including a charging inlet tube, and device comprising:

a valve body assembly, including an end cap having an end cap nozzle opening adapted to be received over said inlet tube;

air operated clamping means for clamping said inlet tube within said end cap opening;

said clamping means including a clamping piston, and a bore formed in said valve body assembly, said clamping piston movably mounted in said bore in said valve body assembly for movement between clamping and unclamping positions;

said clamping means further including a series of clamping elements moved radially inward upon movement of said clamping piston to said clamping position;

air pressure inlet porting means on said valve body assembly for connection to a source of clamping means air pressure;

first internal passage means in said valve body assembly connecting said air inlet porting means and said bore in said valve body assembly included in said clamping means;

respective vacuum and pressurized fluid porting means on said valve body assembly for connection to a source of vacuum and pressurized fluid respectively;

selectively operable distributor valving means within said valve body assembly for selectively communicating said vacuum or said pressurized fluid porting means to said end cap nozzle opening to allow applying a vacuum to said system and thereafter dispensing pressurized fluid thereinto through said end cap nozzle opening;

[air] *fluid* pressure activating means for operating said distributor valving means by the application of [air] *fluid* pressure;

a [Schroeder] *Schrader type* valve stem engagement member having a rod element centered with respect to said end cap opening, and [air] *fluid pressure* operated actuating means [bring] *bringing* said rod element into engagemnt with a [Schroeder] *Schrader type* valve stem when said device is clamped to an inlet tube equipped with a [Schroeder] *Schrader type* valve;

valve actuator porting means comprising a series of ports adapted to be connected to [air lines] *pressurized fluid* communicating with said distributor valving means and said [air] *fluid* pressure actuating means to enable selective operation of said distributor valving means.

Re. 34,716

AQUEOUS DISPERSIONS OF POLYESTER AND POLYESTER-AMIDES CROSS-LINKED WITH METALLIC IONS AND CASTS MADE THEREFROM

Mohan Vishnupad, Monroe, and Jose Ramirez, Trumball, both of Conn., assignors to Imaginative Research Associates, Inc., Bridgeport, Conn.

Original No. 5,110,862, dated May 5, 1992, Ser. No. 652,233, Feb. 5, 1991. Continuation of Ser. No. 578,018, Sep. 5, 1990, abandoned, which is a division of Ser. No. 367,183, Jun. 16, 1989, Pat. No. 4,992,508. Application for reissue Feb. 11, 1993, Ser. No. 16,808

Int. Cl.[5] C08L *67/00*

U.S. Cl. 524—601 **3 Claims**

1. A cross-linked emulsion comprising:

a water dissipatable polymer in an amount from 18 to b 30 percent by weight based on the total weight of the composition:

water in an amount from [67] *30* to 80 percent by weight based on the total weight of the composition:

emollient oils in an [mount] *amount* from 0.1 to 25 percent by weight based on the total weight of the composition;

a source of multivalent metallic ions in an [mount] *amount* from 0.1 to 5 percent by weight based on the total weight of the composition:

humectants in an amount from 0.1 to 40 percent by weight based on the total weight of the composition; and

emulsifier in an amount from 0.01 to 5 percent by weight based on the total weight of the composition.

Re. 34,717

LIGHT STRING ORNAMENT CIRCUITRY

Robert E. Sanders, Lenexa, Kans.; Charles J. Flynn, and John L. Vertreese, both of Kansas City, Mo., assignors to Hallmark Cards Inc., Kansas City, Mo.

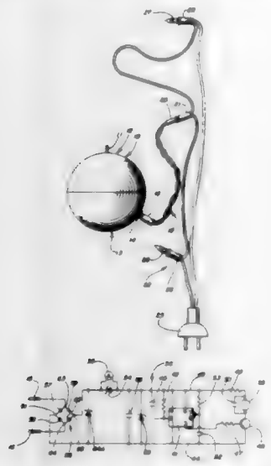
Original No. 4,682,079, dated Jul. 21, 1987, Ser. No. 657,680, Oct. 4, 1984. Application for reissue Apr. 8, 1991, Ser. No. 681,905

Int. Cl.[5] H05B *37/00, 39/00, 41/00*

U.S. Cl. 315—186 **54 Claims**

30. A decorative device for electrical connection in a string of conventional sockets for miniature Christmas lights or the like, each of said conventional sockets including a hollow housing of insulating material having an open end with a pair of contacts within said housing arranged for engagement with contacts of a conventional miniature Christmas light and interconnected through flexible conductors with contacts of other conventional sockets of said string, said device comprising electrical circuit means which includes electrically energizeable *electromechanical* load means producing enhanced sensory effects and a connector for connecting said device to said string, said connector being arranged for connection to a selected socket of [a] *said* string of conventional sockets mounted in a stationary position on a tree and said connector being arranged to provide an extension cord to obtain flexibil-

ity and mobility in the placement of said electrically operated load means on the tree with respect to said string of stationary conventional sockets, said connector including an elongated flexible cable having at least two conductors, first connection means at one end of said cable for connection of said conductors thereof to said load means, and second connection means at the opposite end of said elongated flexible cable for connection of said conductors thereof to contacts of a selected one of said conventional sockets, said second connection means including a member of insulating material and contact means



carried by said member to form a plug assembly arranged to fit within the hollow housing of said one of said conventional sockets and to electrically connect said conductors of said cable with the contacts of said selected one of said conventional sockets, said load means being thereby connected electrically in said string in place of a light which might otherwise be inserted in said selected one of said conventional sockets and said load means being thereby movable to any desired position on said tree within the length of said flexible cable from said selected one of said stationary conventional sockets.

Re. 34,718
DRAM WITH REDUCED-TEST-TIME-MODE

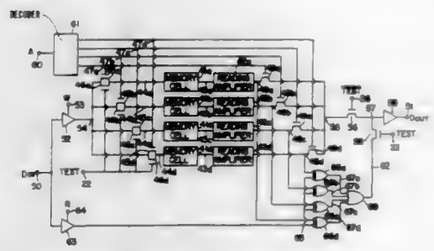
Youichi Tobita, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Original No. 4,860,259, dated Aug. 22, 1989, Ser. No. 278,374, Dec. 1, 1988. Continuation of Ser. No. 939,137, Dec. 8, 1986, abandoned. Application for reissue Aug. 22, 1991, Ser. No. 748,340

Claims priority, application Japan, Jan. 21, 1986, 61-12319

Int. Cl.[5] **G11C** *7/00, 29/00*

U.S. Cl. 365—201 **17 Claims**



14. A semiconductor memory device, comprising:

(a) a plurality of address lines;

(b) a plurality of memory cells coupled with said address lines;

(c) a test request detection circuit means to produce a test signal upon receipt of a higher voltage which is higher than a range of voltages applied under ordinary operation conditions, said test request detection circuit means comprising

(i) an input terminal for receiving said higher voltage,

(ii) a series connection of a plurality of MOSTs, each having a gate and a drain, wherein said series connection of MOSTs is connected at a first end to said input terminal, and wherein each of said MOSTs has its gate and drain coupled together,

(iii) a latch circuit, coupled to a second end of second series connection of MOSTs at a first end of said latch circuit,

(iv) an inverted test signal generating circuit responsive to an output end of said latch circuit, wherein said test signal generating circuit produces an inverted test signal, and

(v) a reset circuit for resetting said latch circuit;

(d) means responsive to the test signal for causing writing of data, which has been supplied to the semiconductor memory device, into a plurality of memory cells simultaneously, and thereafter, simultaneously reading data from said plurality of memory cells; and

(e) means for judging whether or not the data read from each of said plurality of memory cells coincides with one another.

Re. 34,719
OPTICAL RECORDING APPARATUS FOR FORMING GROOVES AND PITS IN AN OPTICALLY RECORDABLE DISC

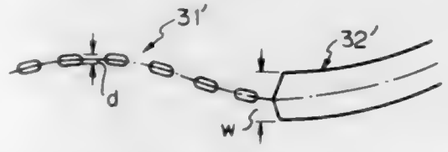
Masanobu Yamamoto, Kanagawa, and Sohmei Endoh, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Original No. 4,982,398, dated Jan. 1, 1991, Ser. No. 225,917, Jul. 29, 1988. Application for reissue Aug. 3, 1992, Ser. No. 926,511

Claims priority, application Japan, Jul. 31, 1987, 62-192229

Int. Cl.[5] **G11B** *7/00*

U.S. Cl. 369—119 **10 Claims**



[1. An optical recording apparatus to form a tracking groove onto an optically recordable disc, comprising:

recording beam generating means for generating a recording beam having a predetermined spot size such as to form a pattern of a predetermined width onto the disc;

light deflecting means arranged on an optical path of said recording beam generating means; and

drive means for driving said light deflecting means, for reciprocatingly moving the recording beam in a radial direction of the disc at a high frequency, and for multiple exposing the disc by the recording beam due to the movement of the recording beam in said radial direction,

thereby a groove having a width wider than the pattern of said predetermined width is formed.]

Re. 34,720
TELEVISION SIGNAL ENHANCEMENT AND SCRAMBLING SYSTEM

Martin L. Zelenz, DeWitt, N.Y., assignor to Andrew F. Tresness, Syracuse, N.Y.

Original No. 5,022,078, dated Jun. 4, 1991, Ser. No. 490,788, Mar. 8, 1990. Application for reissue May 14, 1993, Ser. No. 61,924

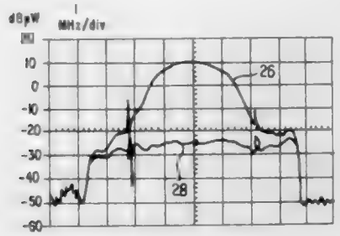
Int. Cl.[5] **H04N** *7/167*

U.S. Cl. 380—7 **46 Claims**

1. A television system comprising:

means for generating a television signal having frequency spaced video and audio carriers;

means for distorting said television signal in the region of said signal between said video and audio carriers by increasing the peak amplitude of [the signals] *said signal* in said region [by an amount such that said video carrier experiences carrier pinch off] *in accordance with a distortion curve*, wherein said means for distorting comprises means for increasing the amplitude of said signal in said region as a function of frequency.



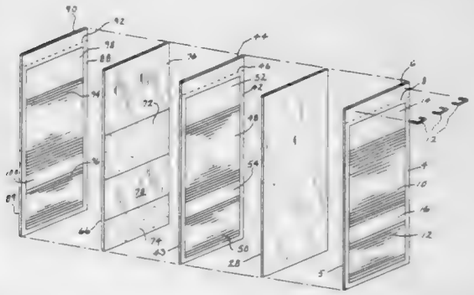
Re. 34,721
MANIFOLD FORM ASSEMBLY

Gary J. Thompson, 2610 Brookdale, Green Bay, Wis. 54313

Original No. 4,715,620, dated Dec. 29, 1987, Ser. No. 921,964, Oct. 22, 1986. Application for reissue Mar. 1, 1991, Ser. No. 662,730

Int. Cl.[5] **B41L** *1/00, 1/20;* **B41M** *5/10*

U.S. Cl. 462—18 **3 Claims**



15. An integral manifold form assembly for providing a completed two-sided original document and one or more completed two-sided copies of the original document, comprising:

a first sheet having a front surface and a back surface, the front and back surfaces having one or more non-overlapping image-receiving areas disposed thereon, the first sheet being movable between a first position in which its front surface is exposed and a second position in which its back surface is exposed;

one or more duplicate sheets underlying the first sheet and each having a front surface and a back surface, the front surface of a first duplicate sheet located immediately adjacent the first sheet facing the back surface of the first sheet when the first sheet is in its first position, and the back surface of an outermost duplicate sheet facing the front surface of the first sheet when the first sheet is in its second position, each duplicate sheet having front and back surface image-receiving areas substantially corresponding in location to the first sheet front and back surface image-receiving areas, and wherein the first sheet and the one or more duplicate sheets are in substantial alignment when the first sheet is in its first and second positions;

an carbon image-transferring sheet disposed between the first sheet and the first duplicate sheet, the image-transferring sheet having a front surface and a back surface and having image-transferring material on its back surface for transferring images from the front surface of the first sheet to the front surface of the first duplicate sheet when the first sheet is in its first position;

a first carbonless coating disposed on the front surface of the first sheet and a second carbonless coating disposed on the back surface of the outermost duplicate sheet for transferring images from the back surface of the first sheet to the back surface of the outermost duplicate sheet when the first sheet is in its second position; and

binder means for binding the first sheet, the one or more duplicate sheets, and the image-transferring sheet together for accommodating movement of the first sheet between its first and second positions, so that pressure-created images formed on the first sheet front surface are transferred to the first duplicate sheet front surface by the image-transferring sheet when the first sheet is in its first position, and pressure-created images formed on the first sheet back surface are transferred to the outermost duplicate sheet back surface by the first and second carbonless coatings when the first sheet is in its second position for providing a completed original document on the first sheet and a copy of the completed document on at least one duplicate sheet.

Re. 34,722
QUINOLINE AMINO ACID DERIVATIVES OF CARBOSTYRIL COMPOUNDS

Minoru Uchida, Komatsujima; Makoto Komastu, and Kazuyuki Nakagawa, both of Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Japan

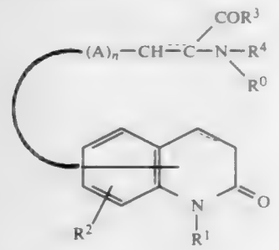
Original No. 4,578,381, dated Mar. 25, 1986, Ser. No. 510,241, Jul. 1, 1983. Application for reissue Aug. 31, 1992, Ser. No. 937,382

Claims priority, application Japan, Jul. 5, 1982, 57-117311; Jul. 5, 1982, 57-117312

Int. Cl.[5] **A61K** *31/47;* **C07D** *215/22*

U.S. Cl. 514—312 **39 Claims**

1. (a) A carbostyril derivative or *a pharmaceutically acceptable* salt thereof represented by the formula



wherein:

R^1 is a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group or a phenyl-lower alkyl group;

R^2 is a hydrogen atom, [a halogen atom, a benxoyloxy group, said benzoyloxy group having a halogen atom substituent,] a hydroxyl group, a lower alkyl group or a lower alkoxy group;

R^3 is a hydroxyl group, an amino group, said amino group having a cycloalkyl-lower alkyl group substituent, *or* said amino group having a cycloalkyl-lower alkyl group substituent having a carboxy group or a lower alkoxycarbonyl group substituent on the cycloalkyl ring[a lower alkoxy group, a lower alkoxycarbonyl-lower alkoxy group, a benzoyl-lower alkoxy group or a lower alkanoyloxy-lower alkoxy group];

R^4 is [a hydrogen atom,] a phenylsulfonyl group, said phenylsulfonyl group having lower alkyl group or halogen atom substituents, [a lower alkyl group, a phenyl-lower alkyl group, said phenyl-lower alkyl group having halogen atom substituents on the phenyl ring,] or a group of the formula $-COR^5$ wherein R^5 is [a lower alkyl group, said lower alkyl group having amino group or phenyl-lower alkoxycarbonylamino group substituents,] a cycloalkyl group, said cycloalkyl group having an

amino-lower alkyl group or a phenyl-lower alkoxycarbonylamino-lower alkyl group substituent on the cycloalkyl ring, a phenyl group, said phenyl group having 1 to 3 halogen atom, lower alkyl group, lower alkoxy group, nitro group, amino group or hydroxyl group substituents on the phenyl ring, or a 5- or 6-membered unsaturated heterocyclic ring selected from the group consisting of pyridyl, 2-methylpyridyl, 3-ethylpyridyl, 4-butylpyridyl, [thienyl, 2-methylthienyl, 3-propylthienyl, pyrimidyl, 2-pentylpyrimidinyl, pyrrolyl, 3-methyl-pyrrolyl, 1-pyrazinyl, 4-pentyl-1-pyraxinyl, pyrazoylyl, 3-methyl-pyrazolyl, 4-ethylpyrazolyl, imidazolyl, 2-propylimidazolyl, 4-pentylimidazolyl, pyridazinyl, 4-methylpyridazinyl, pyrazinyl, 2-ethylpyrazinyl, oxazolyl, 4-butyloxazolyl, isoxazolyl, 4H-1,4-oxazinyl,] thiazolyl, 4-methylthiazolyl, 2-ethylthiazolyl, 5-propylthiazolyl, isothiazolyl, 3-methylisothiazolyl, furyl, 3-methylfuryl, *and* 2-ethylfuryl[, 2-methylthianyl, 4-methylthianyl and 4-methylthianyl] groups;

R^0 is a hydrogen atom[, a phenylsulfonyl group or said phenylsulfonyl group having lower alkyl group or halogen atom substituents];

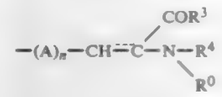
A is a lower alkylene group;

n is 0 or 1;

the carbon-carbon bond of —CH C< is a single or double carbon-carbon *bond, wherein the dashed bond becomes two hydrogen atoms when the carbon-carbon bond is a single* bond;

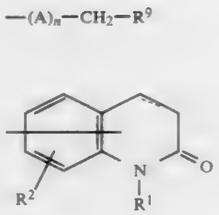
the carbon-carbon bond between the 3- and 4-positions in the carbostyril skeleton is a single or double bond; and

the substitution position of the side-chain of the formula



is any one of the 3-, 4-, 5-, 6-[7-] or 8-positions in the carbostyril skeleton[;

(b) a carbostyril derivative represented by the formula

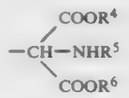


wherein:

R^1 is a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group or phenyl-lower alkyl group;

R^2 is a hydrogen atom, a hydroxyl group, a lower alkyl group, a lower alkoxy group, a halogen atom, a benzoyloxy group or said benzoyloxy group having halogen atom substituents;

R^9 is a group of the formula



wherein R^4 and R^6 are lower alkyl groups and R^5 is a lower alkanoyl group;

A is a lower alkylene group;

n is 0 or 1;

the carbon-carbon bond between the 3- and 4- positions in the carbostyril skeleton is a single or double bond; and

the substitution position of the side-chain of the formula $-(A)_n-CH_2-R^9$ is any one of the 3-, 4-, 5-, 6-, 7-, or 8-positions in the carbostyril skeleton;

provided that when R^2 is a hydrogen atom and n is 1, and R^9 is a halogen atom, then the substitution position of the side chain of the formula $-(A)_n-CH_2-R^9$ is the 3- or 4-position in the carbostyril skeleton].

PLANT PATENTS

GRANTED SEPTEMBER 6, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,878

SHRUB ROSE PLANT NAMED KORADES

Wilhelm Kordes, Sparrieshoop, Fed. Rep. of Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Sep. 22, 1993, Ser. No. 126,216

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of rose plant of the shrub class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, well-branched and upright habit of growth; its dark green, glossy and disease resistant foliage; its attractive pink flowers and its ease of propagation from softwood cuttings.

8,879

PETUNIA PLANT NAMED CAS 1

Gabriel Danziger, Post Beit Dagan, Israel, assignor to Florfis AG, Binningen, Switzerland

Filed Dec. 7, 1993, Ser. No. 162,351

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Petunia plant named Cas 1, as illustrated and described.

8,880

PETUNIA PLANT NAMED CAS 3

Garbriel Danziger, Post Beit Dagan, Israel, assignor to Florfis AG, Binningen, Switzerland

Filed Dec. 7, 1993, Ser. No. 162,352

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Petunia plant named Cas 3, as illustrated and described.

8,881

MINI-SPRAY CARNATION PLANT NAMED 'STAGILAC'

Jacob van Andel, Aalsmeer, Netherlands, assignor to Van Staaveren, B.V., Aalsmeer, Netherlands

Continuation of Ser. No. 756,798, Sep. 9, 1991, abandoned. This application Jul. 29, 1993, Ser. No. 99,271

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—70.2 **1 Claim**

1. A new and distinct miniature spray carnation plant, substantially as herein shown and described, characterized by its recurrent profuse production of small flowers, which are white at the base and purple to the outer edge.

8,882

MINI-SPRAY CARNATION PLANT NAMED 'STAGIROS'

Jacob van Andel, Aalsmeer, Netherlands, assignor to Van Staaveren, B.V., Aalsmeer, Netherlands

Continuation of Ser. No. 770,402, Oct. 3, 1991, abandoned. This application Jul. 29, 1993, Ser. No. 99,780

Int. Cl.[5] H01H *5/00*

U.S. Cl. Plt.—70.2 **1 Claim**

1. A new and distinctive miniature spray carnation plant, substantially as herein shown and described, particularly characterized by its small cyclamen-purple flowers, which are produced profusely in clusters on strong, upright branches of the main stem of a strong, tall, upright bush.

8,883

MINI-SPRAY CARNATION PLANT NAMED 'STAGIBORD'

Jacob van Andel, Aalsmeer, Netherlands, assignor to Van Staaveren, B. V., Aalsmeer, Netherlands

Continuation of Ser. No. 770,401, Oct. 3, 1991, abandoned. This application Jul. 29, 1993, Ser. No. 100,073

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—70.2 **1 Claim**

1. The new and distinctive miniature spray carnation plant, substantially as herein shown and described, particularly characterized by its small flat tyrian-purple flowers, which are produced profusely in clusters on strong, erect branches of the main stem of a tall, upright bush.

8,884

CHRYSANTHEMUM NAMED YELLOW REAGAN

Martinus Van der Jagt, Langeraar, Netherlands, assignor to Chrysanthemum Breeders Association, N.V., Netherlands Antilles

Continuation of Ser. No. 767,881, Sep. 30, 1991, abandoned. This application Jul. 19, 1993, Ser. No. 92,943

Claims priority, application Netherlands, Oct. 2, 1990, CHR1866

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—82.2 **1 Claim**

1. A new and distinctive variety of Chrysanthemum plant as described and illustrated.

8,885

GERANIUM NAMED KLEFELI

Siegfried Klemm, Stuttgart, Fed. Rep. of Germany, assignor to Klemm & Sohn, Stuttgart-Muhlhausen, Fed. Rep. of Germany

Filed Dec. 23, 1993, Ser. No. 173,415

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct Geranium cultivar substantially as herein shown and described, particularly distinguished by its early flowering velvet dark red florets carried in clusters, said cultivar having medium green foliage and which forms a tall bushy plant.

8,886

GERANIUM NAMED KLEUGUDO

Siegfried Klemm, Stuttgart, Fed. Rep. of Germany, assignor to Klemm & Sohn, Stuttgart-Muhlhausen, Fed. Rep. of Germany

Filed Dec. 23, 1993, Ser. No. 172,437

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct Geranium cultivar substantially as herein shown and described, particularly distinguished by its very round and strong umbels with long lasting double petals of an orange color, having abundant dark foliage and compact growth.

PATENTS

GRANTED SEP. 6, 1994

ERRATA

For CLASS	See PATENT NO.
451-540	5,343,656
451-029	5,343,657
212-151	5,343,739
477-108	5,343,780
477-107	5,343,781
477-156	5,343,782
477-131	5,343,783
601-035	5,343,856
137-077	5,343,883
152-209	5,343,914
224-274	5,344,020
296-100	5,344,159
273-138	5,344,199
294-103	5,344,207
434-037	5,344,316
440-041	5,344,344
440-044	5,344,345
440-066	5,344,346
600-038	5,344,396
427-288	5,344,620
585-452	5,344,806
514-739	5,344,850
525-054	5,344,870
525-054	5,344,871
524-443	5,344,907
530-321	5,344,913
530-350	5,344,915
546-153	5,344,922
204-157	5,345,003
505-193	5,345,115
307-326	5,345,183
347-100	5,345,254
347-020	5,345,256
385-059	5,345,323
242-343	5,345,355
395-500	5,345,396
385-141	5,345,545

PATENTS

GRANTED SEPTEMBER 6, 1994

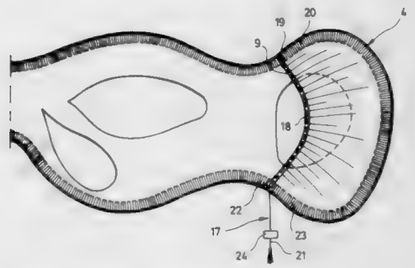
GENERAL AND MECHANICAL

5,343,561

SLEEPING MASK AND NECK REST

René Adamo, Drei-Eichen-Weg 41, Salzburg, Austria

PCT No. PCT/EP90/00247, § 371 Date Jun. 14, 1991, § 102(e) Date Jun. 14, 1991, PCT Pub. No. WO91/02502, PCT Pub. Date Mar. 7, 1991
PCT Filed Feb. 15, 1990, Ser. No. 671,772
Claims priority, application Austria, Aug. 17, 1989, 1952/89
Int. Cl.[5] A61F *9/04*
U.S. Cl. 2—15 13 Claims



1. In a sleeping mask adapted to be mounted to a users had in covering light blocking relation over the users eyes, the sleeping mask having an eye mask having an outer surface, an inner surface, and opposite ends, the inner surface being adapted to face the user's eyes, and a holding device for securing said eye mask to the head of the user, the improvement wherein:

the holding device comprises two side parts of the eye mask which join the opposite ends of said eye mask and which comprise outer and inner surfaces in extension of said outer and inner surfaces of said eye mask and of which each comprises a receiving pocket for securing said eye mask to the outer ears of the user, each of said receiving pockets being formed by said inner surface of said side parts and by a holding member having a free opening edge and an outer edge connected firmly to said side part, said opening edge being provided with a drawstring which is passed through a seam extending along said opening edge, the drawstring having a secured end secured to an upper edge of said side part and a free end which projects out of a recess provided in a lower edge of said side part.

5,343,562

RESTRAINING AND PROTECTIVE DEVICE AND METHOD

Kenneth G. Bible, 201 Butler Dr., Greenville, S.C. 29611

Filed Apr. 10, 1992, Ser. No. 866,973
Int. Cl.[5] A41D *13/08*
U.S. Cl. 2—16 9 Claims

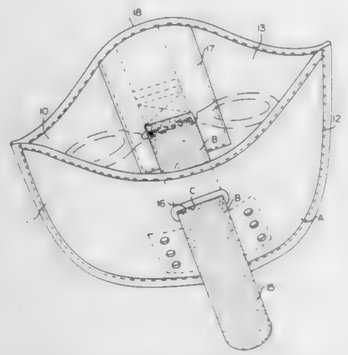
1. A restraining and protective device for receiving the handcuffed hands of a person under restraint comprising:

a pouch open at the top and having opposed respective first and second side panels secured and closed thereabout;

a strap provided with a first plurality of attachment hooks or loops, and secured on one end thereof a predetermined distance from said pouch top in a relatively central portion of said first side panel, and said strap having a second end which is free for passing between said side panels;

a slotted guide, formed in a relatively central portion of said second side panel, and situated generally opposite said strap secured one end, for receiving said strap free second end therethrough; and

a fastener provided with a second plurality of attachment hooks or loops, complementary to said strap first plurality thereof, and affixed to an outside relatively central portion of said first side panel for selective attachment of said strap to said fastener, wherein said strap free second end, when received in said slotted guide, extends from said relatively central portion of said first side panel, through



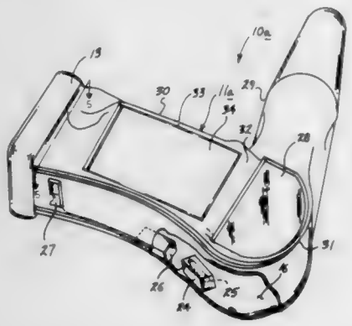
said corresponding slotted guide and over said pouch top for surrounding a middle connecting portion of a pair of handcuffs, and wherein said strap is tightenable and fastenable for securing and protecting handcuffed hands.

5,343,563

OUTBOARD MOTOR STEERING ROD RECEIVING MITT

Robert J. Goucher, 15806 5th Pl. S., Seattle, Wash. 98148, and Morris R. Walls, 6211 1st Ave. NW., Seattle, Wash. 98107

Filed Oct. 22, 1993, Ser. No. 139,766
Int. Cl.[5] A41D *13/08*
U.S. Cl. 2—17 2 Claims



1. An outboard motor steering rod receiving mitt, comprising,

an L-shaped body, the L-shaped body having a first housing leg and a second housing leg, with an L-shaped cavity extending throughout the L-shaped body within the first housing leg and the second housing leg, the first housing leg having a rod receiving first end, with the second housing leg having an entrance second end, with the entrance second end and the rod receiving first end in communication with the body cavity,

and

the rod receiving first end having a first end opening to include a resilient interior wall arranged to engage an outboard motor steering rod,

the second end includes a surrounding flexible cup in adja-

cency relative to the second end formed of a shape retentive material,

the L-shaped body includes an outer polymeric fluid impermeable shell and an inner removable lining removably mounted relative to the shell, wherein the inner lining is arranged coextensively throughout the body cavity,

the first housing leg and the second housing leg intersect one another at a housing junction, with the L-shaped body having a body top wall and body side walls, and the body top wall including a transparent lens directed therethrough permitting visual views within the body cavity,

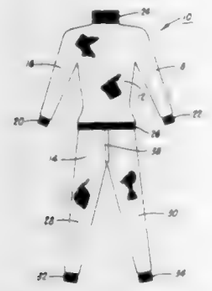
including an illumination housing mounted within the body cavity in adjacency to the housing junction, with the illumination housing including an illumination bulb arranged to permit illumination in the junction, and a battery mounted within the body cavity in adjacency to the illumination housing, and a switch member directed through one of said body side walls arranged to effect selective illumination of the illumination bulb within the illumination housing.

5,343,564

PROTECTIVE BODY UNDERGARMENT

Craig S. Reynolds, 8122 G. Brown Ct., Tinker AFB, Okla. 73145, and William W. Harris, 1533 Midwest Blvd., Apt. 5, Midwest City, Okla. 73110

Filed Jul. 15, 1993, Ser. No. 91,285
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—70 **4 Claims**



1. A form-fitting insect-proof, protective undergarment, comprising:

an upper body form-fitting garment having a torso section and arm sections and being formed from a synthetic plastic woven material of 90 percent nylon and 10 percent spandex weighing about 3.5 ounces per square yard and having approximately equal stretch in any direction, and having an open weave allowing air passage but preventing small insect passage;

a first elastic cuff secured to define the neck opening of the torso section;

a second elastic cuff secured to define the waist band around the torso section;

a pair of third elastic cuffs disposed at the outer terminus of each of the arm sections;

a shirt tail extending from said upper garment torso section in extension below the second elastic cuff so that the second and fourth elastic cuffs interlock over said shirt tail;

a lower body, form-fitting garment having a waist section and left and right leg sections and being formed from said synthetic plastic woven material of 90 percent nylon and 10 percent spandex weighing about 3.5 ounces per square yard and having approximately equal stretch in any direction, and having an open weave that allows air passage but prevents small insect passage;

a fourth elastic cuff secured to define the waist band around the waist section;

a pair of fifth elastic cuffs disposed at the terminus of each of the left and right leg sections;

a fly flap disposed vertically in said waist section with hook and loop fastener means aligned therealong to effect closure; and

hook and loop fastener means for securing the second elastic cuff and the fourth elastic cuff to secure the torso section waist band to the waist section waist band.

5,343,565

CLOTHING, IN PARTICULAR FOR COOKS

Bruno Berni, Haus Mura, CH-7132 Vals, Switzerland

Filed Nov. 29, 1991, Ser. No. 809,284
Claims priority, application Switzerland, Mar. 29, 1990, 1041/90-4
Int. Cl.[5] A41D *1/06*
U.S. Cl. 2—79 **19 Claims**



1. A jump suit comprising

a jacket portion having a collar;

a trouser portion having a fly;

a waist band in the area of a waist and sewn onto the jacket portion in an area of the waist;

a zip fastener attached to the trouser portion wherein the zip fastener closes and opens an opening in the trouser portion, and wherein the zip fastener extends from the fly over the waist band of the trouser portion toward the collar of the jacket portion;

hook and loop fasteners disposed at least at two sides, located opposite to each other, at the waist band of the portion;

an apron, wherein the apron includes the hook and loop fastener counter parts disposed in a waist band region, and disposed opposite to the waist band of the trouser portion, on the left and right side of the apron and further comprising

a hem wherein the hem is folded upside down to cover the hook and loop fasteners and the hook and loop fastener counter parts disposed on one side of the apron, wherein the hem can be fixed for remaining in a covering position.

5,343,566

METHOD OF MAKING GOLFER'S PROTECTIVE MITTEN

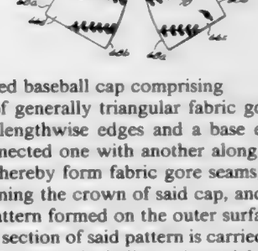
John A. Solheim, Phoenix, and Nip T. Lim, Glendale, both of Ariz., assignors to Karsten Manufacturing Corporation, Phoenix, Ariz.

Division of Ser. No. 936,794, Aug. 28, 1992. This application Jan. 11, 1994, Ser. No. 180,140
Int. Cl.[5] A41D *19/02*
U.S. Cl. 2—169 **7 Claims**

1. A method of making a protective mitten having a finger receiving portion, a thumb receiving portion and a wrist receiving portion, said method comprising the steps of:

providing a pair of hand shaped blanks made of water resistant material wherein each of said blanks has a finger section, a thumb section, a wrist section, a first side edge extending along said finger and wrist sections, a top edge extending along said finger section, a second side edge extending along said finger, thumb and wrist sections, and a bottom edge extending along said wrist section;

attaching a strip of resilient material to the wrist sections of said blanks in a manner such that said strip of resilient material extends substantially between said first and second side edges of each blank;



folding said blanks into a face-to-face, inside-out relationship with said strip of resilient material facing outwardly;

sewing said blanks together on a seam which extends adjacent said first side edges, adjacent said top edges and adjacent said second side edges in order to form an outer shell which is inside-out;

turning said outer shell right-side-out so that said strip of resilient material and said seam are facing inwardly and wherein said strip of resilient material extends circumferentially of the wrist receiving portion of the mitten; and

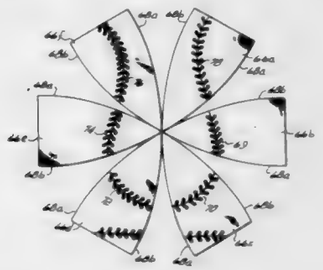
inserting a lining made of insulating material into said outer shell, said inserting step being performed after said turning step has been completed and including initially inserting said outer shell into said lining which is right-side-out.

5,343,567

SIMULATED BASEBALL CAP

Michael W. Zumbiel, 5026 Relleum Ave., Cincinnati, Ohio 45238

Filed Feb. 16, 1993, Ser. No. 18,057
Int. Cl.[5] A42B *1/00*
U.S. Cl. 2—195.1 **1 Claim**



1. A simulated baseball cap comprising

a plurality of generally triangular fabric gores having two opposing lengthwise edges and a base edge, said gores being connected one with another along said lengthwise edges to thereby form fabric gore seams, said connected gores defining the crown of said cap, and

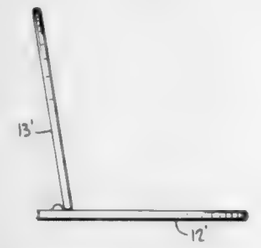
a baseball pattern formed on the outer surface of said gores wherein a section of said pattern is carried by each of said gores, said pattern including substantial portions of two peanut-shaped regions defined by a simulated ball seam and said pattern sections on said gores being aligned to simulate approximately one half of a baseball when said gores are connected, wherein said simulated ball seam traverses a majority of said fabric gore seams when said gores are connected.

5,343,568

FLIP VISOR FOR HEADGEAR

Nina O. May, 2338 Walnut St., Falls Church, Va. 22046

Filed May 13, 1993, Ser. No. 60,643
Int. Cl.[5] A42B *1/00*
U.S. Cl. 2—195.1 **16 Claims**



1. Headgear, comprising:

a lower visor lid member and a flexible upper visor lid member connected to one another in a region where both members are attached to the headgear, said upper visor lid member being flexible and weakened along an area which enables the flexible upper visor lid member to be separated from the lower visor lid member to an open position, said flexible upper visor lid member including a protruding portion of the visor lid member that overlaps said lower visor lid member when the visor lid members are closed on one another, thereby enabling said protruding portion to be grasped by the wearer so that the flexible upper lid member may be separated from the lower visor lid member;

a storage space being provided between the closed upper and lower visor lid members for containing a display and/or for storage; and

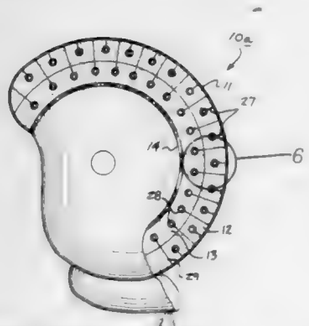
said lower visor member includes a protrusion formed thereon in the region near where said upper and lower visor lid members are attached so that a lower portion of the upper visor lid member pushes against and over said protrusion upon opening of said upper visor lid member to maintain the flexible upper visor lid member in an open position.

5,343,569

PROTECTIVE HELMET CONTAINING DYE CAPSULES

Michael K. Asare, and Edna M. Asare, both of 2710 Chameleon Dr., Killeen, Tex. 76542

Filed Jul. 26, 1993, Ser. No. 96,902
Int. Cl.[5] A42B *3/00*
U.S. Cl. 2—412 **2 Claims**



1. A protective helmet, comprising,

a helmet body, having a cylindrical configuration including

an outer rigid wall, with a polymeric foam first layer coextensive within the wall, with the first layer having a first density, and

a polymeric foam second layer having a second density less than said first density coextensive with the first layer, and

an inner flexible fibrous web mounted to the second layer, with the web positioned about a helmet cavity, with a plurality of ear openings directed through the helmet cavity on opposed sides of the helmet cavity, a facial opening directed through the outer wall in communication with the helmet cavity, with an elastomeric skirt projecting from the outer wall about the neck opening, and

a chin panel mounted between the facial opening and the neck opening, with the chin panel selectively mounted relative to the other wall, with the chin panel including a chin panel strap, a buckle mounted to the outer wall for securement to the chin panel strap, and

a reinforcing strap, having reinforcing strap connectors at opposed distal ends of the reinforcing strap and second connectors mounted to the outer wall, with an individual of said second connectors mounted adjacent to an individual of said ear openings, and

the first layer includes a plurality of first dye capsules having a first fluid dye of a layer, and a plurality of first conduits, each of said first conduits in communication with an individual one of said first dye capsules, and each of said first conduits projecting through the outer wall.

5,343,570

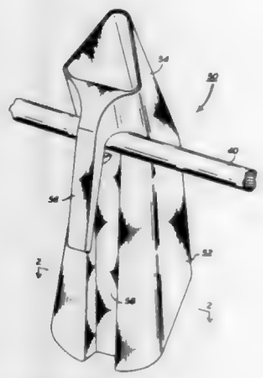
PORTABLE URINAL

Josephine J. Arpaia, and Paschal J. Arpaia, both of 1500 E. Whitney Rd., Fairport, N.Y. 14450

Division of Ser. No. 984,520, Dec. 2, 1992, Pat. No. 5,282,599. This application Nov. 1, 1993, Ser. No. 143,659

Int. Cl.[5] A61G *9/00;* **A47K** *11/00*

U.S. Cl. 4—144.1 **2 Claims**



1. A portable urinal including:

a vessel with a back wall, a perimeter wall connected to opposite sides of said back wall, and a bottom wall;

a handle having a first end depending from an upper portion of said back wall and a second end spaced from said back wall to serve as a means to hang said urinal upon a horizontal bar of a bed rail;

said back wall including a central vertical exteriorly concave recess underlying said handle for engagement by a vertical bar of a bed rail when said handle is hung from a horizontal bar of the bed rail;

said perimeter wall being narrower than said back wall to facilitate placement of said urinal between the legs of a user.

5,343,571

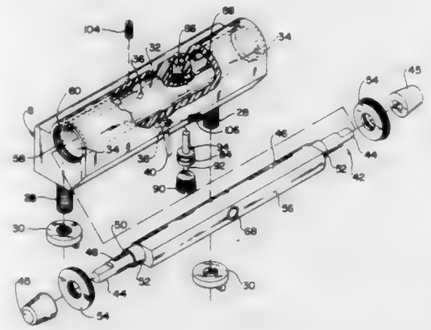
AUTOMATIC TOILET SEAT LOWERING APPARATUS

Harold G. Guerty, 14161 69th Dr. North, Palm Beach Gardens, Fla. 33418

Continuation-in-part of Ser. No. 795,721, Nov. 21, 1991, Pat. No. 5,193,230. This application Mar. 16, 1993, Ser. No. 33,695 The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.

Int. Cl.[5] A47K *13/04*

U.S. Cl. 4—246.2 **7 Claims**



1. A toilet seat lowering apparatus for automatically lowering a toilet seat from an upright position, said apparatus comprising:

a housing mountable to an upper surface of a toilet bowl, said housing defining an internal cavity, a water inlet passage for permitting supply of water to said internal cavity, and a water evacuation passage for permitting drainage of water from said internal cavity;

a rotatable descent assembly disposed in said internal cavity and providing mounting ends extending outside said housing for connection to the toilet seat;

means for sealing the water inlet passage when the toilet seat is in a lowered position for preventing further introduction of water to said internal cavity, said inlet sealing means being operatively connected to said descent assembly for movement to and from said water inlet when the toilet seat is lowered and raised;

means for sealing the water evacuation passage when the toilet is in the upright position, said evacuation sealing means being operatively connected to said descent assembly for movement to and from said water evacuation passage when the toilet seat is raised and lowered; and

a descent initiating means for moving the toilet seat from the upright position.

5,343,572

PRESSURED TOILET TANK FLUSH VALVE

Myron Ament, Bethel Park, Pa., assignor to Fluidmaster, Inc., Anaheim, Calif.

Filed Jul. 12, 1993, Ser. No. 90,336

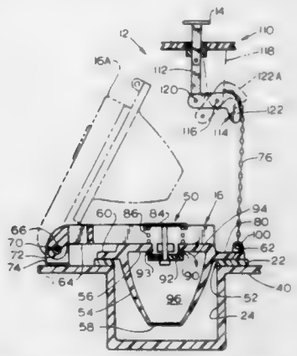
Int. Cl.[5] E03D *3/10*

U.S. Cl. 4—356 **3 Claims**

1. A toilet which includes a toilet bowl, a flush conduit for passing water to said bowl, a source of flush water which holds water under pressure, and a flush valve device which is operable to flow water out of said source and into said flush conduit at the beginning of a flushing, wherein

said flush valve device includes a valve seat with an opening that leads to said flush conduit, and a flush valve member which includes a float which lifts off said seat at the beginning of a flushing;

said flush valve device includes a pressure relief valve which is mounted on said flush valve member and which opens to a region within said valve seat opening, said pressure relief valve being constructed to open at a predetermined pressure difference between the pressure of water in said source and air pressure in said flush conduit, to thereby



drain high pressure water in said source through said valve seat opening to said toilet bowl when said predetermined pressure difference is reached.

5,343,573

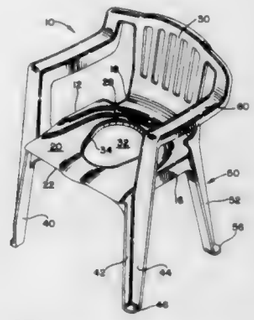
INTEGRALLY MOLDED STACKABLE COMMODE CHAIR

Eric P. Rose, Van Nuys; Stuart Karten, Marina Del Rey, and Alfredo Nuno, Glendale, all of Calif., assignors to Guardian Products Inc., Simi Valley, Calif.

Filed Sep. 16, 1992, Ser. No. 945,725

Int. Cl.[5] A47K *11/04*

U.S. Cl. 4—449 **38 Claims**



1. An unitary stackable commode chair comprising:

a. a generally horizontal seat with a top surface, an underside, a front, a first and a second lateral side, and a rear terminating in a substantially vertical backrest extending upward, the seat having a central opening;

b. two front legs extending downward from the front of the seat;

c. two rear legs extending downward from the rear of the seat;

d. armrests integrally formed with the seat and front legs at one end and the backrest at the other end, the armrests joining each of the two front legs to the backrest;

e. the seat further having a plurality of subjacent ribs comprising

i. at least one front rib adjacent and substantially parallel to the front of the seat and joining the two front legs,

ii. at least one first lateral rib adjacent to and substantially parallel to the first lateral side and extending from the front of the seat to the rear leg,

iii. at least one second lateral rib adjacent to and substantially parallel to the second lateral side and extending from the front of the seat to the rear leg,

iv. at least one rear rib adjacent and substantially parallel to the rear of the seat and joining the two rear legs; and,

f. the seat further having a slightly resilient transition zone partially bordering the central opening and being free from subjacent ribs and gussets, with the seat being able to withstand an impact force of about 225 pounds at a height from about 5 to about 16 inches; and,

g. at least one stacking rib extending downward from the underside of the seat and being coextensive with one of the front and rear legs.

5,343,574

MOVABLE WASHSTAND WITH ARTICULATED UPPER TRAY

Patrick Butte, 20 rue Professeur Pattel, 69009 Lyon, France

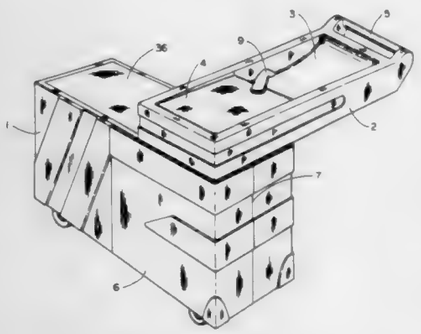
PCT No. PCT/FR92/00155, § 371 Date Oct. 22, 1992, § 102(e) Date Oct. 22, 1992, PCT Pub. No. WO92/14392, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 18, 1992, Ser. No. 941,442

Claims priority, application France, Feb. 26, 1991, 91 02518

Int. Cl.[5] A45D *19/04*

U.S. Cl. 4—516 **7 Claims**



1. A movable washstand, comprising:

a trolley mounted on castors;

an upper tray, securely fastened to the trolley, having a hollow trough near a first end of said tray, and further having a tap associated with said trough;

said upper tray having an articulation with said trolley about a vertical axis that is near a second end of said tray opposite said trough;

an annular turntable, disposed at an interface of said upper tray and said trolley, said turntable having a ball bearing and being coaxial with said vertical axis, and being fixed on an upper face of said trolley;

an annular duct having an upper half-ring which rotates independently of a lower half-ring, said half-rings being positioned coaxially with said vertical axis on said trolley and below said turntable;

means for evacuating waste water from said trough to a waste-water storage tank; and

means for supplying clean water to said tap for delivery into said trough connectable to said annular duct such that said upper tray is allowed to pivot 360 degrees with respect to the trolley.

5,343,575

PORTABLE BATHING UNIT

Floyd Cartwright, 310 Gelpi Dr., Lake Charles, La. 70601

Filed Sep. 3, 1993, Ser. No. 116,505

Int. Cl.[5] A61H *33/00*

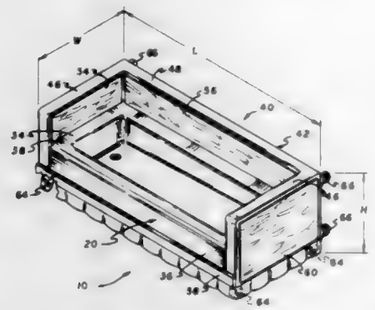
U.S. Cl. 4—547 **2 Claims**

1. A portable unit comprising:

a bathing section, a sofa section and a housing;

said housing having a back wall defining a continuous rear flat surface;

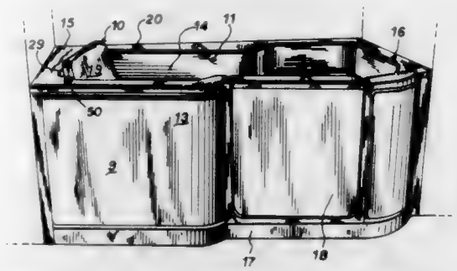
said bathing section including:
a bath tub supported by said housing and having a bathing chamber;
means for delivering water to and retrieving water from said bath tub and being used with a preexisting vessel;
said means for delivering water to and retrieving water from said bath tub further including:
a submersion pump selectively insertable into a water filled one of a preexisting vessel for pumping said water into said bath tub and a bath tub for pumping water into a preexisting vessel;
a conduit having an inlet end and an outlet end, said inlet end being attachable to said submersion pump, and said outlet end being selectively insertable into one of said bath tub and a preexisting vessel;
said sofa section including:



a cover member removably mounted on said bathing chamber;
a seat cushion removably supported by said cover member, and
a back cushion removably supported by said back wall; whereby, the use of said sofa unit converts said bathing unit into an article of sofa furniture;
said housing including:
a frame having a bottom surface on which said bath tub is supported;
rear and end walls extending upwardly from said bottom surface, and substantially above said bath tub; and
a plurality of castes mounted on said bottom surface of said frame and also mounted on said rear flat surface, whereby, said portable unit is rolled either upright or on its side.

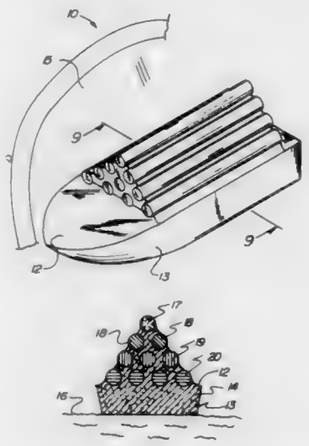
5,343,576
COMBINED BATHING SEAT AND BACK REST MEMBER
Todd D. Dannenberg; Thomas C. Jorsch, both of Sheboygan; Peter W. Swart, Oostburg, and Larry H. Panzer, Sheboygan Falls, all of Wis., assignors to Kohler Co., Kohler, Wis.
Continuation of Ser. No. 825,432, Jan. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 717,230, Jun. 18, 1991, abandoned. This application Jun. 16, 1993, Ser. No. 78,800
Int. Cl.[5] A47K *3/022*
U.S. Cl. 4—590 **8 Claims**

1. A tub having a combined seat and back rest assembly, said tub having an enclosure defined by side walls, a bottom wall, and an upwardly open interior cavity, at least one of said side walls being an end wall and two of said side walls adjacent thereto having ledges to provide arm rests, the assembly comprising:
a combined seat and back rest shelf which is pivotably mounted in the cavity adjacent said end wall of the cavity so that a seating surface of said combined seat and back rest shelf is contained within said cavity when said combined seat and back rest shelf is in a first position so as to form a seat;
hinging means mounting said seat and back rest shelf to said end wall, said hinging means being operatively connected to permit pivotal movement of said combined seat and back rest shelf from said first position to a second position where said combined seat and back rest shelf provides a back rest; and
a recessed portion in said end wall of said tub to receive said hinging means and said shelf when the shelf is in said second position, said recessed portion being defined by two opposed peripheral walls that are stepped inwardly



from the side walls on both sides of the tub and a portion of said end wall defining a ledge said hinging means being located entirely within said recessed portion in said end wall said recessed portion being of such a size so as to receive said seat and back rest shelf whereby there is provided a generally smooth back rest surface form the tub bottom up along the shelf and generally smooth side walls adjacent and immediately above the arm rests when the seat is in the second position.

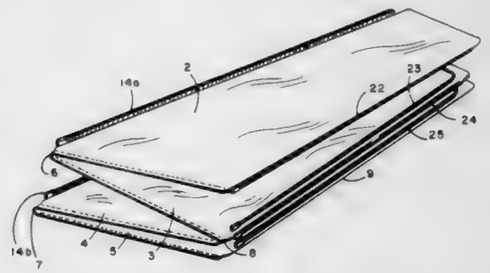
5,343,577
COMMODE FLOAT TOY TRAINING DEVICE
Melinda L. Petrovich, HCR 78 Box 350P, Naselle, Wash. 98638
Filed Jun. 29, 1992, Ser. No. 905,679
Int. Cl.[5] A47K *17/00;* **A63H** *23/02*
U.S. Cl. 4—661 **1 Claim**



1. A commode float toy training device, comprising,
a toy member formed of a water soluble, buoyant material of a predetermined coloration; and
the toy member including a top wall of a generally planar configuration, and a curvilinear side wall to permit rocking of the toy member when positioned upon a water surface, and
a first dye rod of a first coloration mounted to a portion of the toy member spaced above and parallel to the top wall,

a second row of second dye rods of a second coloration mounted to a portion of the toy member and positioned parallel to and between the first dye rod and the top wall, and a third row of third dye rods of a third coloration mounted to a portion of the toy member and oriented between the second dye rods and the top wall, wherein the dye rods provide for a changing of coloration of water within a commode upon impacting of the dye rods with urine during urination within the commode by a user, thereby maintaining interest and focus of the user during urination.

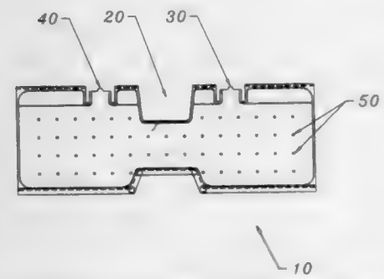
5,343,578
HINGE-ZIPPER MULTI-ENTRY SLEEPING BAG
Robert Kettenhofen, Fallbrook, Calif., assignor to Summersea International, Inc., Fallbrook, Calif.
Filed Jun. 28, 1993, Ser. No. 82,780
Int. Cl.[5] A47C *29/00*
U.S. Cl. 5—413 **1 Claim**



1. A multi-entry and multi-layered sleeping blanket comprising: (a) four or more generally rectangular blanket layers;
(b) a first hinge means connecting a first layer of said layers to a second layer of said layers;
(c) a second hinge means connecting said second layer to a third layer of said layers with said second hinge means being on a side of said second layer opposite from the side of said second layer which is attached to said first hinge means;
(d) a third hinge means connecting said third layer to a fourth layer of said layers with said third hinge means being on a side of said third layer opposite from the side of said third layer which is attached to said second hinge means: and
(e) zipper means attached to each of said layers sufficient to removably attach said first layer to said second layer: to removably attach said second layer to said third layer; and sufficient to removably attach said third layer to said fourth layer.

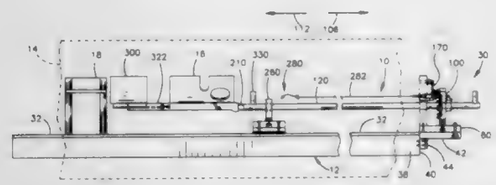
5,343,579
WARMING BLANKET HAVING MULTIPLE INLETS
Scott D. Dickerhoff, Ballwin; Thomas F. Kappel, St. Louis, and Robert A. Virag, Chesterfield, all of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 924,269, Jul. 3, 1992. This application Mar. 12, 1993, Ser. No. 30,933
Int. Cl.[5] A61F *7/00*
U.S. Cl. 5—421 **2 Claims**

1. A blanket for use with a forced air convection system,
wherein said blanket includes an inflation chamber with multiple inlet ports;
wherein said multiple inlet ports may be reversibly sealed with a reversible sealing means comprising folding wire or plastic bars such that at least one of said multiple inlet



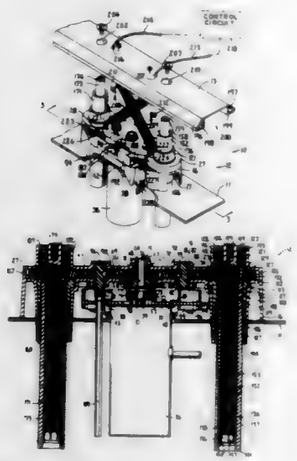
ports remains closed when the blanket is supplied with forced air.

5,343,580
INDEXING ASSEMBLY FOR SHOULDER IMAGING
Peter M. Bonutti, Effingham, Ill., assignor to Apogee Medical Products, Inc., Effingham, Ill.
Continuation-in-part of Ser. No. 802,358, Dec. 4, 1991. This application Sep. 24, 1992, Ser. No. 950,600
Int. Cl.[5] A61B *6/04;* **A47C** *20/00*
U.S. Cl. 5—601 **15 Claims**



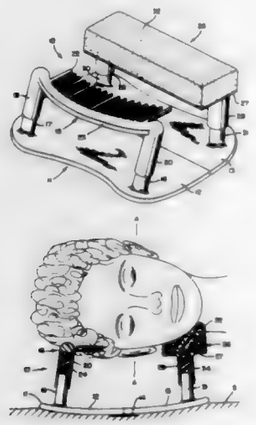
1. Self-contained shoulder indexing apparatus for use during imaging of a shoulder joint of a patient, with the patient lying on an imaging table slidable into and out of a primary imaging coil, said self-contained shoulder indexing apparatus comprising:
an index mechanism having an index member lockable in any selected one of a plurality of sequential index positions;
table attachment means for connecting said index mechanism with the table for sliding movement with the table;
a cuff support member connected with said index member for movement with said index member; and
a cuff supported on said cuff support member at a location remote from said index member for clamping onto the patient's arm, said cuff being connected with said support member for movement with said support member and with said index member and being lockable with said index member in any selected one of the plurality of sequential spaced index positions;
said index mechanism including limiting means for ensuring movement of said index member into the next one of said sequential index positions upon movement of said index member out of any one of said sequential index positions;
wherein said limiting means includes an index locking member movable between an engaged position in locking engagement with said index member and a disengaged position not in locking engagement with said index member, and a trigger mechanism connected with said index mechanism and movable between a first condition blocking movement of said index locking member into the engaged position and a second condition freeing said index locking member for movement into the engaged position.

5,343,581
HOUSING AND DRIVE MECHANISM FOR SCREW LIFT OF HOSPITAL BED
Gary L. Bartley, and Christopher J. Hopper, both of Kalamazoo, Mich., assignors to Stryker Corporation, Kalamazoo, Mich.
Filed Oct. 21, 1992, Ser. No. 964,602
Int. Cl.[5] A61G *7/00*
U.S. Cl. 5—611 **25 Claims**



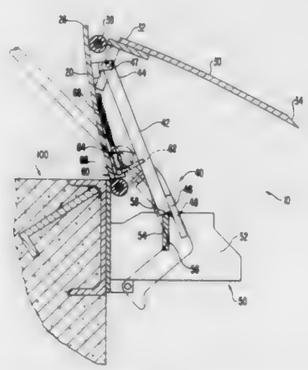
16. A bed comprising:
a base portion, a patient support portion, and lift means cooperable with said base portion and said patient support portion for effecting vertical movement of said patient support portion relative to said base portion, including a coiled electrical cord extending between a first location on said base portion and a second location on said patient support portion, said coiled electrical cord including means integral to said cord for causing said cord to automatically expand and contract in length in response to vertical movement of said patient support portion relative to said base portion.

5,343,582
HAIR STYLE PROTECTING HEAD REST
Avery L. Baylor, Rte. 2 Box 838, Colonial Beach, Va. 22443
Filed Sep. 23, 1993, Ser. No. 125,172
Int. Cl.[5] A47G *9/00*
U.S. Cl. 5—639 **20 Claims**



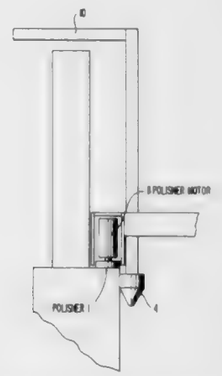
1. A head rest apparatus for supporting an individual's head when resting to protect their coiffure and which supports the head both above and below the ear line, the apparatus comprising, a base having upper and lower surfaces, a cradle support means having a plurality longitudinal extending teeth, means for mounting said cradle support means in spaced relationship from said upper surface of said base, said cradle support means being selectively engagable with the individual's head above the ear line, a second support means said second support means being spaced apart from and discontinuous from said cradle support means, means for mounting said second support means in spaced relationship with respect to said upper surface of said base whereby said second support means is engagable with the individual's head or neck below the ear line when the apparatus is in use.

5,343,583
RUNOFF GUARD AND DOCK LEVELER LOCKING APPARATUS
Bobby A. Cook, Malvern, Ark., assignor to Dock Leveler Manufacturing, Malvern, Ark.
Filed Apr. 9, 1992, Ser. No. 865,444
Int. Cl.[5] E01D *1/00*
U.S. Cl. 14—71.3 **12 Claims**



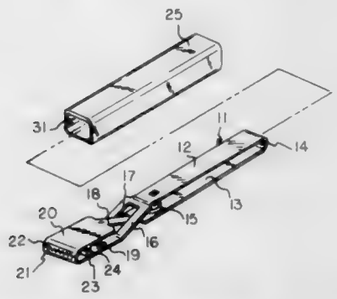
1. A dock leveler operable as a runoff guard for a loading dock, the dock leveler comprising:
a base plate adapted to be mounted on the loading dock;
a center plate having a bottom surface and opposite first and second edges, said first edge of the center plate being pivotally connected to the base plate for pivotal movement of the center plate in forward and rearward directions between a forward position and an upright rearward position;
a lip plate having opposite first and second edges, said first edge of the lip plate being pivotally connected to said second edge of the center plate for pivotal movement of the lip plate between a retracted position and an extended position;
a stop member attached to the base plate;
locking means for securing the center plate in the upright rearward position to selectively preclude pivotal movement of the center plate, wherein the locking means is adapted to automatically secure pivotal movement of the center plate when the center plate is moved into the upright rearward position, the locking means including a locking bar having a first end hingedly connected to the bottom surface of the center plate and an opposite second end adapted to move into abutting engagement with the stop member when the center plate is moved into the upright rearward position to brace the center plate against subsequent pivotal movement in the forward direction; and
means for selectively releasing the locking means, the releasing means being connected to the center plate and adapted to selectively move said second end of the locking bar out of abutting engagement with the stop member to permit subsequent pivotal movement of the center plate in the forward direction.

5,343,584
NUCLEAR REACTOR PRESSURE VESSEL AND HEAD FLANGE POLISHER
Bengt I. Baversten, Weatogue, Conn., and Rolf Petersson, Vasteras, Sweden, assignors to Combustion Engineering, Inc., Conn.
Filed Apr. 30, 1993, Ser. No. 54,268
Int. Cl.[5] B08B *1/04;* **A46B** *13/02*
U.S. Cl. 15—97.1 **12 Claims**



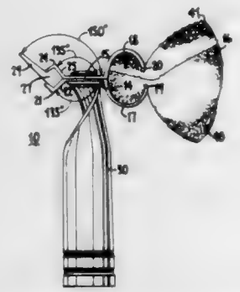
1. A circular flange polishing arrangement comprising:
selectively energizable polishing means;
guide means for guiding the polishing means in a predetermined polishing pattern with respect to a surface on said flange to be polished; and
means for sensing movement of said polishing element relative to the surface of said flange to be polished and for enabling the polishing element to be energized when relative movement is detected.

5,343,585
PAINT BRUSH ASSEMBLY
Vernon L. Howell, 3200 S. Arville, #303, Las Vegas, Nev. 89102
Filed Aug. 4, 1992, Ser. No. 924,756
Int. Cl.[5] A46B *17/02, 17/08*
U.S. Cl. 15—111 **3 Claims**



1. A paint brush assembly, comprising, a clip member, the clip member having a U-shaped body, including a first plate coextensive with a second plate, with the first plate having a first plate first end, and the second plate having a second plate first end, with the second plate first end and the first plate first end having an interconnecting web pivotally mounting the first plate relative to the second plate, and
a spring member interposed between the first plate and the second plate, the first plate having a first plate second end, the second plate having a second plate second end, with first clamp means mounted to the first plate second end, and second clamp means mounted to the second plate second end, wherein the first clamp means and the second clamp means are arranged for biased confronting projection towards one another, and
a brush member, the brush member having a brush head, and the first clamp means and the second clamp means arranged for selectively securing the brush head between the first clamp means and the second clamp means, with the brush head having a matrix of bristles extending from the brush head beyond the clip member, and
the first clamp means includes a first clamp leg, and the second clamp means includes a second clamp leg, with the first clamp leg including a first clamp leg slot, and the second clamp leg directed through the first clamp leg slot, and a first clamp jaw plate fixedly secured to the first clamp leg parallel to the first plate, and a second clamp jaw plate mounted to the second clamp leg arranged parallel relative to the second plate, and the first clamp jaw plate including a first jaw and the second clamp jaw plate including a second jaw, and the first jaw and the second jaw including interdigitated teeth member, wherein the first jaw and second jaw engage opposed sides of the brush head at an interface between the bristles and the brush head, and
the first clamp jaw plate includes a first jaw plate flange fixedly and orthogonally mounted to the first clamp jaw plate, the second clamp jaw plate includes a second jaw plate flange fixedly and orthogonally mounted to the second clamp jaw plate, wherein the first jaw plate flange and the second jaw plate flange are arranged in a coextensive aligned and confronting relationship relative to one another, and the brush head includes a first groove receiving the first jaw plate flange, and the brush head includes a second groove receiving the second jaw plate flange, and
a tubular sleeve, the tubular sleeve including a tubular sleeve end having a rear wall and a tubular sleeve second end, the second end including an entrance opening slidably receiving the clip member within the tubular sleeve for encasing the first plate and the second plate within the tubular sleeve for manual grasping of the clip member.

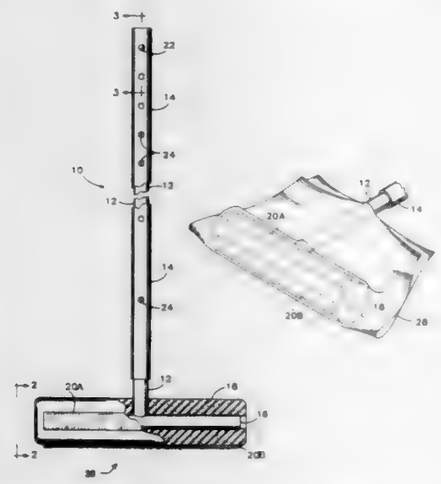
5,343,586
WINDOW CLEANING DEVICE
Peter S. Vosbikian, Moorestown, N.J., assignor to Quickie Manufacturing Corporation, Cinnaminson, N.J.
Filed Aug. 14, 1992, Ser. No. 930,715
Int. Cl.[5] A47L *13/12, 1/05*
U.S. Cl. 15—121 **18 Claims**



1. A window cleaning device of the type having a head to be secured on a handle, the head securing a sponge means and a squeegee blade means, the head comprising:
a pair of oppositely facing securing plates, said plates being substantially identical, said plates each having an inner

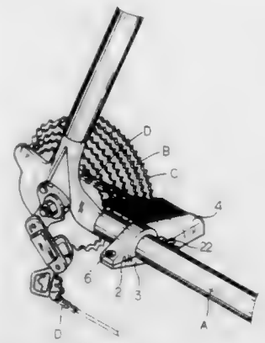
and an outer wall, each of said plates having an essentially horizontal section, each of said horizontal sections having laterally disposed edges, one of said laterally disposed edges on each of said horizontal sections being a sponge clamping edge terminating in a radial section, each of said radial sections terminating in a longitudinal edge for providing a clamping means and essentially defining a C-shaped cross-section when said plates are longitudinally aligned with respect to each other and fastened together at their respective inner walls, thereby clamping and securing a sponge to said head, said radial sections oppositely facing thereby providing a cavity for holding a portion of the clamped sponge, an opposite of said laterally disposed edges on each of said horizontal sections is a squeegee blade edge defining a squeegee blade holding means.

5,343,587
MOP CONSTRUCTION INCLUDING DETACHABLE FABRIC CLEANING ELEMENT
Mary L. Findley, 1370 Bond La., Eugene, Oreg. 97401
Continuation of Ser. No. 646,101, Jan. 24, 1991, abandoned. This application Jun. 17, 1993, Ser. No. 79,227
Int. Cl.[5] A47L *13/24, 13/46*
U.S. Cl. 15—228 **12 Claims**



1. An improved mop construction comprising:
a mop handle;
a mop head attached to said mop handle at an upper portion of said mop head to form a rigid "T" shape;
a nonabsorbent cushion layer completely enclosing said mop head, a portion of the outer surface of said cushion layer defining a work surface;
a hook material zone attached to the outer surface of said cushion layer, at least a portion of said hook material zone being attached to said work surface at a point substantially opposite the point of attachment of said mop handle; and
an absorptive loop fabric cleaning element substantially surrounding said cushion layer and secured thereto solely by direct engagement with said hook material zone, said loop fabric cleaning element providing multiple simultaneously usable cleaning surfaces.

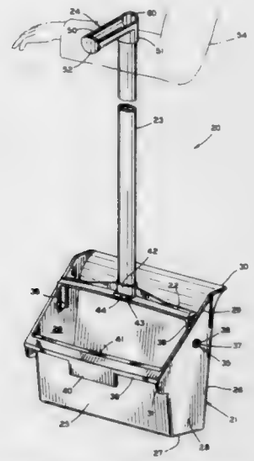
5,343,588
GEAR CLEANER FOR BICYCLES
Liu Chen, Changhua, Taiwan, assignor to Lu Goo Co., Ltd., Taiwan
Filed Oct. 8, 1993, Ser. No. 133,285
Int. Cl.[5] A46B *15/00*
U.S. Cl. 15—256.5 **1 Claim**



1. A gear cleaner comprising:
a mounting device fastened to the chain stays of a bicycle, said mounting device comprised of an upper clamping plate and a lower clamping plate fastened together around the chain stays, said upper clamping plate comprising a flat mounting portion at one end and a half-round clamping portion at an opposite end mounted around the chain stays at the top, the flat mounting portion of said upper clamping plate having a screw hole, the half-round clamping portion of said upper clamping plate having two barrels aligned on a front end thereof at two opposite sides, said lower clamping plate comprising a flat mounting portion at one end and a half-round clamping portion at an opposite end mounted around the chain stays at the bottom, the flat mounting portion of said lower clamping plate having a screw hole connected to the screw hole on the flat mounting portion of said upper clamping plate by a screw, the half-round clamping portion of said lower clamping plate comprising a transverse pin hole connected between the two barrels of said upper clamping plate by a pivot pin, and a brush mounting groove made in a substantially C-shaped cross section and transversely disposed in parallel with said pivot pin;
a brush fastened to said mounting device, said brush comprising a circular mounting rod portion transversely linked to a brush head thereof at one end and fitted into the mounting groove on said lower clamping plate, and bristles fastened in the brush head and disposed in contact with the gear wheels of the speed change gear of the bicycle.

5,343,589
LOBBY DUST PAN
Robert A. Davenport, Sylvania, Ohio, assignor to Impact Products, Inc., Toledo, Ohio
Filed Apr. 26, 1993, Ser. No. 53,110
Int. Cl.[5] A47L *13/52*
U.S. Cl. 15—257.4 **2 Claims**

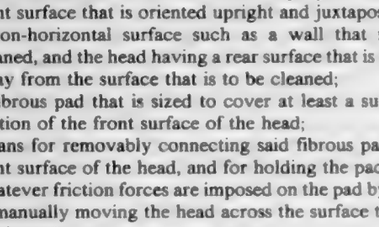
1. A lobby dust pan comprising:
a) a receptacle which includes a generally flat, rectangular bottom wall, a rear wall extending transversely from the bottom wall, a front wall extending transversely, in the same direction as said rear wall, from the bottom wall to a height greater then the rear wall, said front and rear wall being spaced apart, and a pair of side walls extending transversely from the bottom wall, in the same direction as said rear wall, each side wall being coupled with the front and rear walls to form a continuous upper edge of all the walls which defines an aperture into said receptacle;
b) retaining means formed in the upper edge of the rear wall for engaging a latching means, said retaining means including a slot formed in the upper edge;
c) a flexible yoke pivotally mounted to said pair of side walls and extending therebetween, said receptacle being pivotal on said yoke between a first position in which the rear wall is generally horizontal and a second position in which the rear wall is generally vertical;
d) an elongated, straight, vertical shaft having a bottom end and a top end, said bottom end is secured to said flexible yoke at a position approximately midway between the pair of side walls, said yoke is movable between a deformed



and an undeformed position by application of downward force on said shaft;
e) an elongated handle having a first end connected to a top end of said vertical shaft and extending transversely from said shaft to a second end, said handle having a hollowed out trough portion therein to receive a users thumb, said handle has a transverse downwardly extending end wall formed at the second end of said handle; and
f) latching means for holding said yoke in said first position, said latching means formed on said yoke at a position adapted to engage said slot when the receptacle is in the first position, said latching means being retained in said slot, in said first position, when the yoke is in the undeformed position and released from said slot, in said first position, when the yoke is in the deformed position.

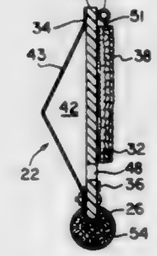
5,343,590
LOW VOLTAGE CENTRAL VACUUM CONTROL HANDLE WITH AN AIR FLOW SENSOR
Kurtis R. Radabaugh, Ponca City, Okla., assignor to Lindsay Manufacturing, Inc., Ponca City, Okla.
Filed Feb. 11, 1992, Ser. No. 833,984
Int. Cl.[5] A47L *5/38*
U.S. Cl. 15—319 **13 Claims**

1. A control handle for a central vacuum cleaning system comprising:
a) a body having a hand hold for grasping;
b) said body having outlet and inlet air connection means;
c) electrical transmission lines having means for connecting said body to said vacuum system for operation of said handle and said vacuum system;
d) an air flow passage through said body interconnecting said outlet and inlet air connection means;
e) an air flow sensor mounted in said body having means for sensing an air flow characteristic in said air flow passage, said air flow characteristic being the magnitude of the pressure of the air flow;
f) a converter having means for converting the magnitude of said sensed air flow pressure to a voltage signal;
g) a voltage amplifier having means for amplifying said voltage signal; and



h) a voltage comparator having means for comparing said amplified voltage signal to preselected control signals, and means for transmitting a signal to an indicator mounted in said body having means for indicating whether sufficient vacuum air flow pressure is present for proper operation of said vacuum system.

5,343,591
WASHING APPARATUS FOR WALLS AND OTHER NON-HORIZONTAL SURFACES
Lloyd T. Clark, 1913 Ruth St., Arlington, Tex. 76010
Filed Aug. 11, 1992, Ser. No. 927,958
Int. Cl.[5] A47L *7/00*
U.S. Cl. 15—322 **3 Claims**



1. An apparatus having utility for cleaning large, non-horizontal surfaces such as walls, comprising:
a. a head adapted to be oriented during use in a generally vertical mode, such that it will have a top and a bottom and two sides, and the head also having a generally planar front surface that is oriented upright and juxtaposed with a non-horizontal surface such as a wall that is to be cleaned, and the head having a rear surface that is oriented away from the surface that is to be cleaned;
b. a fibrous pad that is sized to cover at least a substantial portion of the front surface of the head;
c. means for removably connecting said fibrous pad to the front surface of the head, and for holding the pad against whatever friction forces are imposed on the pad by the act of manually moving the head across the surface that is to be cleaned;
d. means for supplying a selected liquid at a controlled rate to the top of the head, such that the liquid will flow downward into the fibrous pad when the head is held so that its front face is generally vertical, said means including a plurality of reservoirs, a conduit, and a pump, and each of the reservoirs being adapted to contain a liquid that is useful in the cleaning of a generally vertical surface such as a wall;
f. a chamber sealingly mounted on the head and adjacent the

rear of the head, and further including a plurality of openings extending from the front of the head to the rear thereof, said opening being located below the fibrous pad and providing communication between the front of the head and the chamber, whereby any liquid that has passed through the fibrous pad will be drawn through the plurality of openings and into the chamber when the chamber is at a pressure lower than atmospheric;

g. means for selectively establishing a pressure in the chamber that is lower than atmospheric;

h. a resilient seal around the sides and the bottom of the head, said seal being effective to inhibit the leakage of liquid from around the boundaries of the head for as long as the head is maintained upright and a pressure lower than atmospheric is maintained in the chamber;

i. means at the top of the head for admitting a significant quantity of air to the interior of the head, said air also being drawn into the chamber along with the liquid when the chamber is at a pressure that is lower than atmospheric;

j. an elongated handle; and

k. means including a swivel joint for connecting the elongated handle to the rear of the head, whereby an operator can grasp a handle and manipulate the head up and down and sideways with respect to a surface to be cleaned at the same time that a selected liquid is being passed through the conduit; and

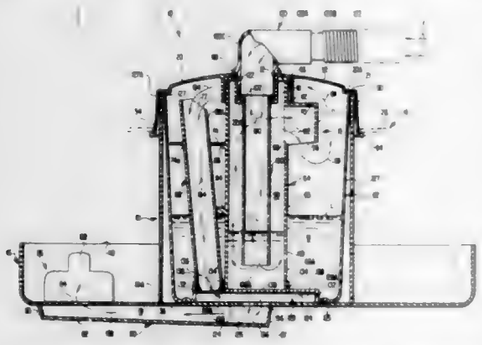
l. wherein the weight of the head, the fibrous pad, the handle, the resilient seal and the conduit is about three pounds.

5,343,592

HOT WATER VACUUM EXTRACTION MACHINE WITH SUBMICRON SIZE PARTICLE

Carl Parise, Reno, Nev., assignor to Thermax, Reno, Nev.

Filed Oct. 8, 1993, Ser. No. 133,288
Int. Cl.[5] A47L *9/18*
U.S. Cl. 15—353 **10 Claims**



1. In a hot water vacuum extraction machine comprising:

an outer casing of electrical and thermal insulation material having a bottom wall, a top wall and generally vertical sidewalls, a circular opening within said top wall, a removable tubular recovery tank positioned within said circular opening within said top wall, a dome overlying the circular opening within said casing top wall, a hydropneumatic water filtration system within said recovery tank including a mixing tube structure extending upwardly from and supported by a recovery tank bottom wall including an aqua filtration tube coupled to a dome inlet duct within said dome at one end and extending coaxially within a larger diameter water entraining tube, said water entraining tube being closed at its bottom and spaced axially from an open lower end of said aqua filtration tube, at least one water inlet port within said water entraining tube opening to the interior of said recovery tank and being open to an annular space between said concentric water entraining tube and said aqua filtration tube, such that liquid filling the recovery tank above the level of said at least one water inlet port is aspirated by return fluid moving through contaminants within said return fluid entering said annular space in the vicinity of said water inlet port to cause contaminants within said return flow to be entrained by said water for primary filtration of said return flow stream, a hollow riser tube extending upwardly from the bottom of said recovery tank and being open at a level above the level of water within said recovery tank, and means for applying vacuum pressure to said riser tube at the bottom of said recovery tank to effect filtering of the return fluid stream, the improvement comprising:

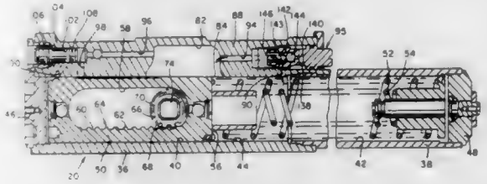
means within said recovery tank and interposed between the bottom wall of said recovery tank and said outer casing defining an air filter chamber, means for sealing the bottom of the riser tube to said tank bottom wall and open to said air filter chamber, means within said recovery tank bottom wall and said case for defining a sealed outlet for said return fluid stream and being open to said source of vacuum pressure, and a secondary filter holder assembly mounted within said air filter chamber and comprising a perforate filter holder supporting internally an open pore filter element, whereby said secondary air filter may remove contaminants of submicron size to render the air discharging from the case virtually contaminant free.

5,343,593

DOOR CLOSER

Zakhary Fayngersh, West Hartford, Conn., assignor to Emhart Inc., Newark, Del.

Filed Feb. 24, 1993, Ser. No. 21,995
Int. Cl.[5] E05F *3/00*
U.S. Cl. 16—52 **3 Claims**



1. A door closer to be secured to a door which can be opened by applying an opening force which, if larger than a selected force when the door is opened beyond a predetermined angle, could subject the door to damage comprising

a closer housing including

a cylindrical chamber having opposed ends,

a cylindrical piston located proximate one of said ends and slidably displaceable within said cylindrical chamber and defining with said other end a variable volume for containing a non-compressible liquid,

coaxial compression spring means located within said volume,

means for displacing said cylindrical piston as said door is opened to compress said spring means and to impart a pressure to the contained liquid,

means operable when the door has been displaced beyond the predetermined angle to release liquid from said variable volume including

a cylindrical housing open at one end and closed at the other end,

an inlet conduit in said closed end,

a sealing ball,

second spring means for urging said sealing ball against said inlet conduit to prevent flow of liquid therethrough into said cylindrical housing below a selected pressure,

conduit means for connecting said variable volume and said inlet conduit, and

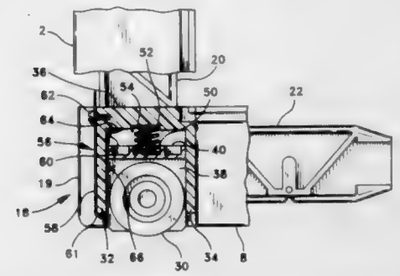
a second conduit in said cylindrical housing downstream of said sealing ball, said second conduit communicating with said conduit means so that when the pressure of the liquid is below a selected pressure, the liquid will be released through said second conduit and when the pressure is above said selected pressure, the liquid will be conjointly released through said inlet conduit and said second conduit.

5,343,594

CORNER ROLLER ARRANGEMENT FOR SLIDING PANELS

Daniel H. Harvey, Placentia, Calif., assignor to Metal Industries, Inc., Elizabethville, Pa.

Filed Apr. 28, 1993, Ser. No. 53,413
Int. Cl.[5] A47H *15/00*; **E05D** *15/06*
U.S. Cl. 16—105 **7 Claims**



1. A corner roller arrangement for each of the corners of a sliding panel of the type including a pair of parallel, elongated spaced side members defining the length of the panel and top and bottom members defining the width of the panel, said corner roller arrangement comprising:

a corner member including a frame, and having corner keys integral therewith, the corner keys fitting into the side, top and bottom panel members whereby said panel members abut the corner member frame for providing a rigid panel frame;

a roller housing rotatably supporting a roller and displaceably disposed within the corner member frame;

the corner member frame having an inward side and an outward side, said inward and outward sides being in substantially parallel spaced relation, and the roller housing being displaceably disposed between the inward and outward corner member frame sides;

means cooperatively arranged with the corner member frame and with the roller housing for supporting a biasing spring therebetween, whereby said roller housing is biased for displacement inwardly and outwardly of the corner member frame; and

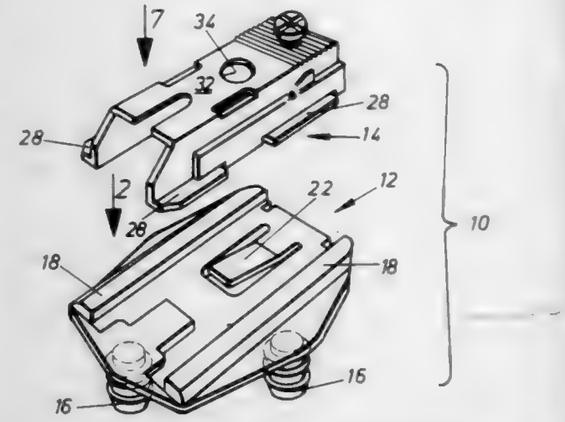
means cooperatively arranged with the corner member frame and with the roller housing for adjustably limiting said displacement including a generally U-shaped clip having an outward leg, an inward leg and a base, said outward and inward legs and said base fitting over and around the outward side of the corner member frame, the outward leg of the U-shaped clip being adjustably secured to the outward side of the corner member frame, the inward leg of said clip having an inwardly extending ledge and an inwardly extending lip in longitudinal spaced relation, the inwardly displacement of the roller housing being limited when the top member of said roller housing abuts the inwardly extending ledge, and the outwardly displacement of the roller housing being limited when the top member of said roller housing abuts the inwardly extending lip.

5,343,595

MOUNTING PLATE FOR FURNITURE HINGES

Gerhard W. Lautenschläger, Brensbach-Wersau, Fed. Rep. of Germany, assignor to Mepla-Werke Lautenschläger GmbH & Co. KG, Reinheim, Fed. Rep. of Germany

Filed Oct. 6, 1992, Ser. No. 957,226
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1991, 9112453[U]
Int. Cl.[5] E05D *7/10*
U.S. Cl. 16—257 **14 Claims**



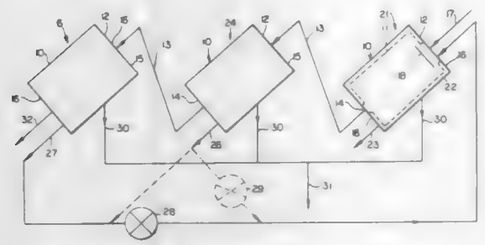
1. A mounting plate composed of an upper portion and a lower portion for adjustably securing a support wall abutment portion of a furniture hinge to a support wall of a carcass in which the mounting Upper portion is slidable from a rear end of the lower portion onto the mounting plate lower portion along a sliding guide defined between the portions, said upper portion of said mounting plate being held in a predetermined assembled position such as to prevent a lifting away of the upper portion of the predetermined assembled position on the mounting plate lower portion in the region situated below the mounting plate upper portion (**14**) in the predetermined assembled position, the mounting plate lower portion (**12**) has a resilient tongue (**22**) which is directed opposite to an interior end of the lower portion and said tongue having a free end which projects beyond an upper surface of the mounting plate lower portion (**12**), said mounting plate upper portion (**14**) having a lower surface which is directed towards the mounting plate lower portion (**12**), and said lower surface having a recess, said recess having arranged a transversely extending locking edge and, said free end of the resilient tongue (**22**) and said locking edge on the mounting plate upper portion (**14**) being positionable such that the free end of the resilient tongue (**22**) inserted into the recess in the predetermined assembled position of the mounting plate upper portion (**14**) on the mounting plate lower portion (**12**) engages the locking edge, the mounting plate upper portion (**14**) is made of stamp-pressed metal plate and has an inverted U-shaped cross-section having lateral cheeks with free ends and edge strips (**28**), said strips are bent out at right-angles from said free ends of said lateral cheeks, and the mounting plate lower portion (**12**) is provided with two elongate, bar-like projections (**18**) which accommodate the upper portion (**14**) fittingly between said two elongate, bar-like projections (**18**), said elongate, bar-like projections having side surfaces which are directed towards the lateral cheeks of a mounting web and said side surfaces having a respective elongate groove (**20**) which is open and fittingly accommodates one of the edge strips associated therewith (**28**).

5,343,596

INCLINED ROTATABLE DRUMS AND METHOD FOR GRADING FIBROUS MATERIAL

Andrew F. Kaldor, Dover Heights, Australia, assignor to Ankal Pty. Limited, Sydney, Australia

Filed May 15, 1991, Ser. No. 700,587
Claims priority, application Australia, Jan. 29, 1991, PK4363
Int. Cl.[5] D01B *1/38;* B07B *1/24*
U.S. Cl. 19—24 13 Claims



1. A fibre separator comprising:
two or more perforated cylindrical enclosures each rotatable about an inclined axis;
each enclosure having an inlet at an upper end and an outlet at a lower end;
the outlet of a first enclosure feeding a conveyor which discharges into the inlet of a second enclosure;
at least one of the enclosures having at least one internal longitudinal baffle, the baffle extending radially inwardly from an internal surface of the at least one enclosure, said at least one enclosure being located concentrically within a secondary perforated cylindrical enclosure, the secondary perforated cylindrical enclosure and the at least one enclosure within it defining a gap space which discharges through an opening located adjacent to a lower imperforate end wall.

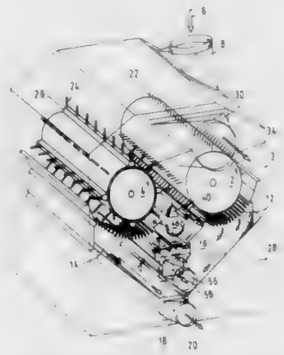
5,343,597

METHOD AND DEVICE FOR OPENING AND CLEANING FIBER MATERIAL

Akiva Pinto, Duesseldorf-Wittlaer; Guenter Lucassen, Haltern, and Manfred Scholbrock, Duelmen, all of Fed. Rep. of Germany, assignors to Hergeth Hollingsworth GmbH, Duelmen, Fed. Rep. of Germany

PCT No. PCT/EP90/01631, § 371 Date May 21, 1993, § 102(e) Date May 21, 1993, PCT Pub. No. WO91/05095, PCT Pub. Date Apr. 18, 1991
PCT Filed Sep. 27, 1990, Ser. No. 844,580
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1989, P3932282.3
Int. Cl.[5] D01B *3/00*
U.S. Cl. 19—205 18 Claims

2. A device for opening and cleaning foreign matter from fiber material, comprising:
a housing having an outlet side defining an outlet for delivering the fiber material;
first and second opener rollers associated with said housing for rotation in the same direction as one another, said first and second opener rollers each being substantially cylindrical and extending substantially parallel to and in close proximity with one another to form a nip zone therebetween, said first opener roller defining a first end and a second end opposite said first end, said outlet being spaced opposite said first end of said first opener roller and being proximate said second end of said first opener roller;
at least one grate segment associated with said housing and positioned below said first and second opener rollers for receiving foreign matter;
at least one guide sheet positioned below said nip zone and extending substantially the length of said first and second opener rollers;
a first collecting chamber adjacent said at least one grate segment for collecting foreign matter from the fiber material, said first collecting chamber defining a first inlet slit adjacent said first opener roller and adjacent said at least one guide sheet;
a second collecting chamber below and in communication with said at least one grate segment and said first collecting chamber;
a discharge channel positioned below and in communication with said at least one grate segment for discharging foreign matter received by said at least one grate segment;
a feeder associated with said housing, said feeder configured



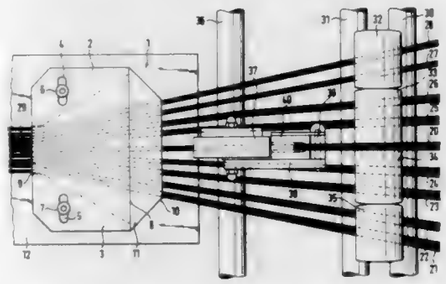
to downwardly direct fiber material tangentially onto said first end of said first opener roller; and
said housing defining a peripheral portion adjacent said first end of said first opener roller and flow path for carrying the fiber material from said feeder to said outlet, such that said feeder directs the fiber material to between said first end of said first opener roller and said peripheral portion of said housing opposite said second opener roller, and such said first opener roller rotates in a direction to cause the fiber material to be directed downwardly between said first opener roller and said peripheral portion of said housing.

5,343,598

DEVICE TO PROCESS A PLURALITY OF FIBER SLIVERS

Friedrich Hauner, Ingolstadt, Fed. Rep. of Germany, assignor to Rieter Ingolstadt, Ingolstadt, Fed. Rep. of Germany

Filed Dec. 2, 1992, Ser. No. 983,479
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1991, 4142038
Int. Cl.[5] D01H *5/72*
U.S. Cl. 19—292 5 Claims



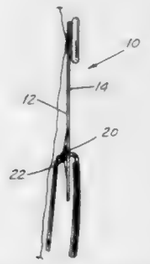
1. A device for processing a plurality of fiber slivers, said device utilizing drawing-in cylinders for joint feed of fiber slivers into said device, said device comprising a funnel for uniting the fiber slivers into a fiber amalgam as the fiber slivers pass therethrough, said funnel including horizontal surfaces and lateral surfaces defining a passage opening into said funnel, said lateral surfaces being adjustable relative to said horizontal surfaces so that the total effective cross-sectional area of said passage opening presented to the fiber slivers is adjustable depending on the degree of compression of the fiber slivers desired, said device further comprising lateral elements defining said lateral surfaces, said funnel comprising a cover supported above said adjustable lateral elements, said lateral surfaces being adjustable below and relative to said cover so that said passage opening is defined by said cover and said lateral surfaces, the degree of movement of said lateral surfaces relative said cover being defined by oblong holes defined in said lateral elements, said oblong holes engaged by attaching devices for attaching said lateral elements to said cover.

5,343,599

EYEGLASSES HOLDER

Rudolph E. Reeves, 6650 Mariner Dr. #201, Racine, Wis. 53406

Filed Oct. 19, 1992, Ser. No. 963,428
Int. Cl.[5] A45F *5/00*
U.S. Cl. 24—36 3 Claims



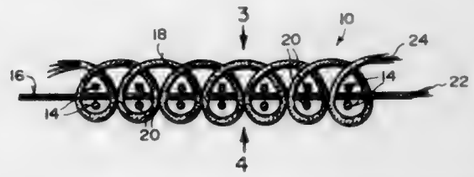
1. A clothing-supported eyeglass suspension involving accessible securement of eyeglasses by eyeglass temple member insertion, comprising in combination:
clothing having an exposed button;
a substantially planar holder, all of which is in a single plane, such planar holder including a button aperture therethrough for removable engagement with the button at a first position on the holder and a self-adjusting aperture through the holder at a second position, said self-adjusting aperture including a plurality of slits, each said slit having a length dimension and intersecting the others at a point substantially halfway along said slit dimension; and
a pair of eyeglasses having one temple member fully inserted only through the self-adjusting aperture.

5,343,600

WORN LOOK CARPET WEAVE

Alexander Peykar, 100 Park Plaza Dr., Secaucus, N.J. 07094

Filed Dec. 9, 1992, Ser. No. 987,792
Int. Cl.[5] D03D *29/00, 3/00*
U.S. Cl. 28—143 5 Claims



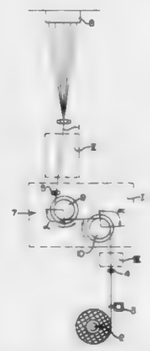
1. A worn look carpet weave for an oriental rug which comprises:
a) a plurality of warp threads that run vertically on two levels, one directly behind the other;
b) a plurality of ground weft threads that run horizontally between the two levels of said warp threads, so as to be utilized as a strong foundation for the oriental rug; and
c) a plurality of decorative weft-wrapping brocading threads that run horizontal, with each looping successively about a group of two of said warp threads on the two levels, making a continuous chain structure, whereby said decorative weft-wrapping brocading threads alternates with said ground weft threads, so as to form a very fine tightly made oriental rug.

5,343,601

YARN SPINNING METHOD WITH HIGH-SPEED WINDING

Heinz Schippers, Remscheid, Fed. Rep. of Germany, assignor to Barmag AG, Remscheid, Fed. Rep. of Germany

Filed Oct. 26, 1992, Ser. No. 966,699
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1991, 4135350; Dec. 19, 1991, 4141967; Feb. 4, 1992, 4203076; Mar. 21, 1992, 4209235; Jun. 13, 1992, 4219456
Int. Cl.[5] D02G *1/20;* D01D *10/04, 10/02;* D02J *1/22*
U.S. Cl. 28—258 20 Claims



1. A method of processing an advancing endless synthetic filament yarn, and comprising the steps of
providing a yarn feed system which includes at least one rotating feed roll having a circumferential surface which defines a circumferential periphery,
advancing the yarn into contact with the feed system, and including looping the advancing yarn about at least a portion of the circumferential periphery of said at least one rotating feed roll and so as to define a looping angle,
selecting the looping angle of the advancing yarn about said at least one feed roll and a circumferential speed thereof such that the circumferential speed is greater than the speed of the yarn at the point it contacts said one feed roll, and such that the yarn slips with respect to the surface of said one feed roll and a frictional force is produced therebetween which is substantially speed independent, and
withdrawing the advancing yarn from said feed system and winding the advancing yarn onto a rotatably driven tube to form a yarn package and including laterally traversing the advancing yarn along the length of the package and so as to form a traversing triangle which is located downstream of the yarn feed system.

5,343,602

PROCESS FOR SEPARATING ACCELERATION SENSORS CONSTRUCTED AS DIFFERENTIAL CAPACITORS

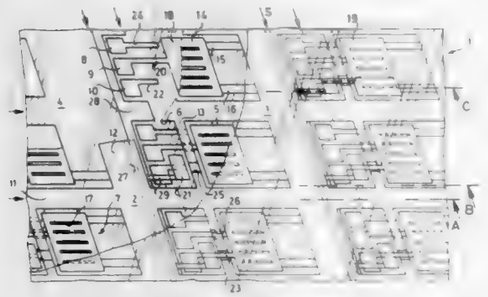
Horst Plankenhorn, Villingen-Schwenningen, Fed. Rep. of Germany, assignor to Mannesmann Kienlze GmbH, Villingen, Fed. Rep. of Germany

Filed Jan. 14, 1993, Ser. No. 4,396

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1992, 4201104

Int. Cl.[5] H01G *5/16*

U.S. Cl. 29—25.41 10 Claims



1. A process for separating acceleration sensors, which are constructed as differential capacitors and, which are produced from a glass-silicon-glass layer package, wherein a disk-shaped silicon layer has a grid structure with flexural resonators which are cut free therefrom, and further wherein a plurality of glass disks, which are bonded with the silicon disk, carry metal layers which face plate-shaped masses of the flexural resonators, and further wherein metal layers have substantially identical surface areas and are connected so as to be electrically conductive with connection contacts which are arranged on a glass disk, which comprises the steps of:

providing a notch in said glass-silicon-glass layer package in a cross-wise manner;

performing a first cutting operation so as to make first cuts, which are reciprocal cuts, at least in one direction and in two parallel planes in order to free said connection contacts;

providing an intermediate layer, for preventing a bonding connection, between webs of said silicon layer which serves to support said plurality of glass disks and, in particular, supports at least one of said plurality of glass disks which carries said connection contacts prior to bonding, at least in an edge area between an outer cutting plane, for freeing acceleration sensor connection contacts; and

performing a breaking operation so as to break said layer package at predetermined breaking points which are created by at least one of said first cutting operation and a second cutting operation.

5,343,603

MACHINE FOR MACHINING PARTS FROM LONG PROFILES OR BARS

Michel Pioch, Saint-Cere, France, assignor to Cepede, A French Societe Anonyme of Zone Industrielle De Saint-Laurent, Saint Cere, France

Filed Dec. 8, 1992, Ser. No. 988,304

Int. Cl.[5] B23D *23/02;* B23B *13/04*

U.S. Cl. 29—27 C 10 Claims

1. A machine for successively machining successive portions of a long bar or profile, said machine comprising:

a base,

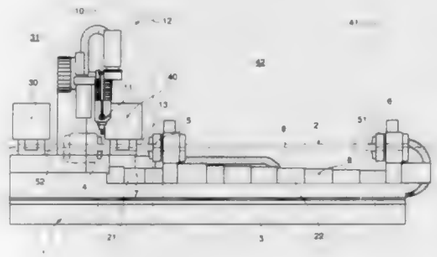
a first mandrel aligned on a machining axis;

a second mandrel aligned on said machining axis;

each of said mandrels being mounted on said base and having clamping means to firmly hold said bar or profile at both ends of a portion of said bar or profile defined by the distance between said first and said second mandrels,

at least said second mandrel being movable in translation on said base along a direction parallel to said machining axis between a position where said first mandrel and said second mandrel are close together and a position where said first and said second mandrel are spaced by said distance,

machining device means adapted to be located between said first and second mandrels for machining said portion of said bar or profile firmly held by said first and second mandrels,



and a third mandrel which is mounted on said base, which is aligned with said machining axis on a side of said second mandrel opposite to a side facing said first mandrel, and which has clamping means for holding said bar or profile at an end thereof,

said third mandrel being movable in translation on said base along said direction parallel to said bar or profile, in order to translate it through the distance between said first and second mandrels when the clamping means thereof are loosened.

5,343,604

COMBINED WORKING MACHINE

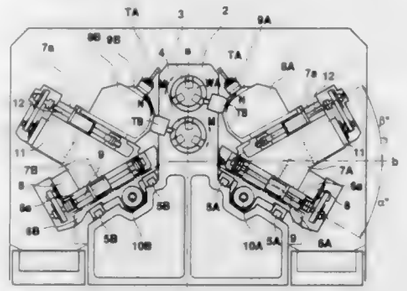
Nobuyuki Takagi, Aichi, Japan, assignor to Okuma Corporation, Nagoya, Japan

Filed May 4, 1993, Ser. No. 57,702

Claims priority, application Japan, May 13, 1992, 4-146226

Int. Cl.[5] B23B *11/00;* B23P *23/02*

U.S. Cl. 29—27 C 8 Claims



1. In a combined working machine for machining a workpiece held by a chuck rotatably and detachably mounted on a headstock by bringing a tool into contact with the workpiece, the improvement comprising a mechanism for bringing the tool into contact with the workpiece, said mechanism comprising:

(1) a bed having an upper surface, with the headstock being disposed at the upper surface of the bed and having a first slant surface having an upward slope directed to the workpiece held by the chuck;

(2) a first guide rail provided on the first slant surface, extending in a direction of a rotational axis of the workpiece;

(3) a saddle guided by and slidably mounted on the first guide rail to move in the direction of the rotational axis of the workpiece, the saddle having a second guide rail extending in a slope direction of the first slant surface of the bed;

(4) first drive means for sliding the saddle along the first guide rail;

(5) a carriage guided by the second guide rail to slide in the slope direction of the first slant surface, the carriage having a second slant surface having a downward slope directed to the workpiece;

(6) a third guide rail provided on the second slant surface, extending in a slope direction of the second slant surface;

(7) second drive means for sliding the carriage along the second guide rail:

(8) a tool post for holding the tool, guided by the third guide rail to slide in the slope direction of the second slant surface so as to bring the tool into contact with the workpiece held by the chuck at an appropriate position;

(9) third drive means for sliding the tool post along the third guide rail; and

(10) a turret for holding a plurality of tools, which is pivotally mounted on the tool post so as to index the tools to predetermined positions.

5,343,605

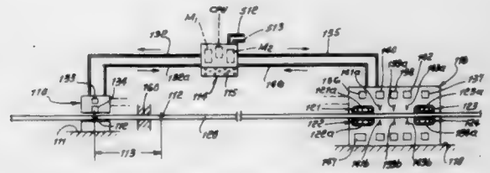
WIRE MARKING, CUTTING AND STRIPPING APPARATUS AND METHOD

Greg Nazerian, Pasadena; Ronald Bailey, Alta Loma, and Jack L. Hoffa, Brea, all of Calif., assignors to Eubanks Engineering Company, Monrovia, Calif.

Continuation-in-part of Ser. No. 765,986, Sep. 26, 1991, Pat. No. 5,253,555. This application Feb. 25, 1993, Ser. No. 22,954

Int. Cl.[5] H02G *1/12*

U.S. Cl. 29—33 M 33 Claims



1. In a system for marking elongated wire and for cutting the wire and stripping insulation therefrom, the combination comprising

a) first means operable to mark the wire,

b) second means operable to cut the marked wire and to strip insulation from the wire,

c) the wire extending between and movable between said first and second means, said first and second means comprising separate stand-alone devices,

d) and control means operatively connected with said first and second means for controlling operation of said first and second means in time sequence relation to wire movement therebetween, and characterized in that changes in timing of markings by operation of said first means can occur while said second means operates to complete cutting and severing of wire associated with prior markings, thereby to reduce or eliminate wire waste,

e) said control means including a computer located externally of said first and second means.

5,343,606

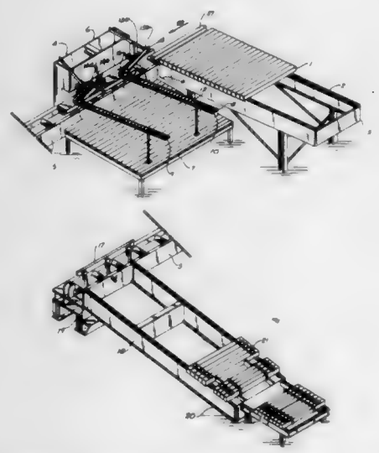
CROSS-TIE PRE-PLATING SYSTEM

Gerald D. Girouard, Sr., New Iberia; Gerald D. Girouard, Jr., Lafayette, and Donald Darcey, New Iberia, all of La., assignors to Coastal Timbers, Inc., New Iberia, La.

Continuation of Ser. No. 85,400, Jun. 30, 1993, abandoned. This application Feb. 28, 1994, Ser. No. 207,118

Int. Cl.[5] E01B *29/32*

U.S. Cl. 29—33 K 11 Claims



1. A railroad cross-tie pre-plating apparatus for fastening first and second plates having first and second spike apertures to a cross-tie, comprising:

a central, horizontal conveyor having first and second ends, and a medial area generally therebetween;

a cross-tie dispenser situated in contact with said first end of said central conveyor, said dispenser configured to selectively dispense a single cross-tie onto said central conveyor upon demand;

a pro-plating apparatus juxtaposed said central conveyor, comprising an upper and a lower template, each template having a front side and rear side, and first and second ends, said upper template having disposed thereon vertical manipulation means for lifting or lowering said upper template on demand, said upper template further having formed therein first and second plate cut-outs, said first and second cut-outs arranged to provide the appropriate area for placement of first and second plates, respectively, to a single tie under said upper template, said pre-plating apparatus further comprising:

lateral manipulation means for laterally situating a tie between said upper and lower templates for appropriate positioning under said upper template,

first and second plate conveyors having first and second ends, respectively, said first end of said first plate conveyor near the first plate cut-out of said upper template, said first end of said second plate conveyor situated near said second plate cut-out of said upper template, said plate conveyors configured such that a plate dispensed from said first end of first or second conveyor would land on or near the first or second plate cut-out of said upper template, respectively;

plate dispensing means for dispensing individual plates from said first and second plate conveyors automatically, said plate dispensing means comprising first and second pivotal loading members fitted to said first and second plate conveyors, said pivotal loading members having a front blocking member configured to interface with a first plate, selectively preventing the movement of or dispensing said first plate, said pivotal loading members having a rear blocking member configured to interface with a second plate when said first plate has been dispensed, said plate

dispensing means operated by a control rod having first and second ends, said first end connected to a pivotal loading member, said second end connected to said lateral manipulation means;

first and second pairs of spike feeders, each having spike feeder having first and second ends, each one of said spike feeders of said first pair terminating in equal spaced relation about either side of the first plate cut-out of said upper template, each one of said spike feeders of said second pair terminating in equal spaced relation about the second plate cut-out of said upper template, said spike feeders each having a holding means at their respective first ends for holding a dispensed spike,

spike dispensing means for dispensing individual spikes from said spike feeders automatically, said spike dispensing means comprising a pivotal spike loading member fitted to said spike feeders, said pivotal spike loading member having a front blocking member configured to interface with a first spike, selectively preventing the movement of or dispensing of said first spike, said pivotal spike loading members further comprising a rear blocking member configured to interface with a second, following spike when said first spike has been dispensed, said spike dispensing means initiated by a control piece having first and second ends, said first end connected to a pivotal spike loading member, said second end connected to said upper template, such that upward vertical motion of said upper template pivots said pivotal spike loading members such that said front blocking member interfaces with the first spike, and the downward vertical motion of said upper template pivots said pivotal spike loading members such that said front blocking member no longer interfaces with the first spike, dispensing said first spike, and the rear blocking member interfaces with the second, following spike;

spike driving means for driving said spikes through the dispensed plates and into the dispensed tie, said spike driving means further comprising a vertically situated spike manipulation arm template;

first and second pairs of spike manipulation arms for individually positioning each dispensed spike above a respective spike aperture formed in one of said first or second dispensed plates, so that said spike may be driven into the dispensed tie, fastening said plate to the tie, said spike manipulation arms actuated by the vertical movement of said spike driving means via said spike manipulation arm template.

5,343,607

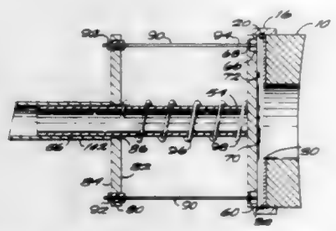
GASKET AND SNAP RING INSTALLATION TOOL

James M. Southerland, Jr., Aiken, and Curtis N. Barringer, Jr., Orangeburg, both of S.C., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 23, 1993, Ser. No. 109,925

Int. Cl.[5] B23P *19/02*

U.S. Cl. 29—229 **20 Claims**



1. A tool for installing a snap ring in an internal seating groove in a pipe, said snap ring having a diameter, said tool comprising:

a shaft having a forward end and a rearward end;

a first plate attached to said forward end of said shaft, said first plate having a forward surface and a rearward surface, said forward surface having means formed therein for receiving said snap ring;

a second plate having a forward surface and a rearward surface, said second plate slidably carried by said shaft; and

pushing means attached to said forward surface of said second plate, said pushing means communicating with said receiving means for urging said snap ring from said receiving means when said second plate is moved towards said first plate.

5,343,608

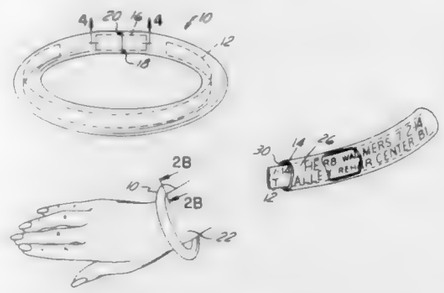
METHOD OF FORMING AN IDENTIFICATION BAND

Robert D. MacDonald, 8012 E. Via Campo, Scottsdale, Ariz. 85258

Division of Ser. No. 872,291, Apr. 22, 1992, abandoned. This application Jul. 28, 1993, Ser. No. 98,575

Int. Cl.[5] B23P *11/02*

U.S. Cl. 29—450 **3 Claims**



1. A method of forming an identification band comprising the steps of:

measuring a predetermined length of a transparent flexible tube having a generally constant circular cross-section with a hollow interior and an outer periphery with a pre-determined curvature;

cutting said tube to correspond to said predetermined length and creating an identification band body with first and second free ends;

placing a planar indicia member in said hollow interior of said band body between said first and second free ends, said indicia member having a substantially planar surface including a plurality of alphanumeric characters thereon, said substantially planar surface being free from contact with an interior surface of said hollow interior, thereby magnifying said plurality of alphanumeric characters by said pre-determined curvature of said outer periphery of said band body and producing a pre-determined magnified image because of a relative position of said planar indicia member in said band body;

providing a connection plug with first and second ends, said first and second ends adapted to engage said interior surface of said hollow interior of said band body;

inserting said first end of said connection plug into said first free end of said band body;

inserting said second end of said connection plug into said second free end of said band body; and

securing said first and second free ends of said band body to said connection plug, thereby forming a generally circular identification band, and retaining said indicia member in said relative position in said band body of said identification band.

5,343,609

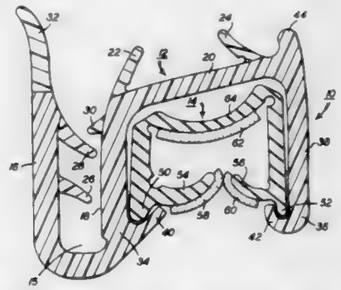
METHOD FOR ASSEMBLING A FLUSH GLASS WINDOW SEAL

Michael J. McManus, Rockford, Tenn., assignor to Schlegel Corporation, Rochester, N.Y.

Filed Sep. 15, 1993, Ser. No. 121,704

Int. Cl.[5] B23P *11/00*

U.S. Cl. 29—451 **6 Claims**



1. A method for assembling a flush glass window seal comprising:

coextruding thermoplastic elastomers of different durometer values to form a substantially rigid, dual durometer thermoplastic elastomer carrier in a one-piece, generally U-shaped configuration for receiving a resilient insert;

extruding a generally flat, resilient insert for said thermoplastic elastomer carrier;

folding said resilient insert into a generally U-shaped configuration; and

pressing said folded insert into the carrier to mechanically secure the insert to the carrier.

5,343,610

METHOD OF MAKING AN ANTI-SKID APPARATUS FOR AN AUTOMOBILE TIRE

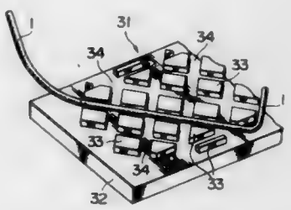
Osamu Haruda, Chiba; Shin Imamura; Suguru Hanzawa, both of Fukushima; Nobuo Amada, Gunma; Kazuo Kunii, Fukushima; Hidetaka Kobayashi, Fukushima; Shinichi Yano, Fukushima, and Muneo Nishiyama, Fukushima, all of Japan, assignors to Okamoto Industries, Inc., Tokyo, Japan

Division of Ser. No. 506,563, Apr. 5, 1990, Pat. No. 5,247,980, which is a continuation of Ser. No. 945,659, Dec. 9, 1986, abandoned. This application May 14, 1993, Ser. No. 66,252

Claims priority, application Japan, Aug. 19, 1985, 60-182495; Nov. 22, 1985, 60-181265; Feb. 25, 1986, 61-41132; Feb. 26, 1986, 61-28001; Feb. 27, 1986, 61-28441; Feb. 27, 1986, 61-28442; Apr. 14, 1986, 61-55931; Apr. 17, 1986, 61-58658; May 24, 1986, 61-119779; Jun. 12, 1986, 61-90265; Jun. 30, 1986, 61-100562; Jun. 30, 1986, 61-100563; Jun. 30, 1986, 61-100564; Jul. 4, 1986, 61-103408; Jul. 4, 1986, 61-158339; Jul. 5, 1986, 61-103868

Int. Cl.[5] B23P *11/02;* **B29C** *35/02*

U.S. Cl. 29—525.1 **3 Claims**



1. A method for making an anti-skid apparatus for an automobile tire comprising the steps of:

a) coating a plurality of core materials with rubber to form a plurality of cords by extruding rubber over the plurality of core materials;

b) placing cords in crossing grooves of a preliminary molding plate and placing other cords on top of the cords at crossing sections to form a non-vulcanized net body;

c) pressing the crossing sections of the non-vulcanized net body in the preliminary molding plate so as to cause the cords to be adhered to each other at the crossing sections; and

d) removing the non-vulcanized net body from the preliminary molding plate and placing the non-vulcanized net body in a press mold and vulcanizing the non-vulcanized net body to form a vulcanized anti-skid net body after the crossing sections have been pressed.

5,343,611

METHOD AND A FIXTURE SYSTEM FOR POSITIONING AND FIXING DETAILS FOR ASSEMBLY

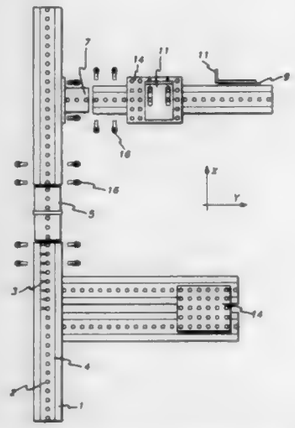
Göran Lager, Toftvägen 20, Borlänge S-781 32, and Nils Eriksson, Moje 106, Gagnef S-780 41, both of Sweden

PCT No. PCT/SE90/00735, § 371 Date May 10, 1993, § 102(e) Date May 10, 1993, PCT Pub. No. WO92/08572, PCT Pub. Date May 29, 1992

PCT Filed Nov. 14, 1990, Ser. No. 50,063

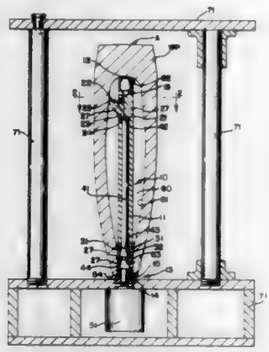
Int. Cl.[5] B23Q *7/00*

U.S. Cl. 29—559 **19 Claims**



1. A fixture system for the positioning and clamping of details to be assembled, characterized by selectively interconnectable standard fixture components (**1**, **5**, **7**, **14**) provided with hole systems (**2**, **6**, **8**, **15**) where the holes are provided in exact positions with predetermined pitch, tile standard fixture components being interconnectable in predetermined exact positions in the longitudinal, transversal and vertical direction with the hole systems (**2**, **6**, **8**) selectively extendable along the X-, Y- and/or Z-axis of a coordinate system, all of the holes of the hole systems having specified positions in tile coordinate system, said fixture system comprising a computer for storing drawing information regarding a product, for storing fixture standard component data and fixture means data and for establishing an installation plan for the specific fixture to be built in each case, based on the stored drawing information and the fixture component data.

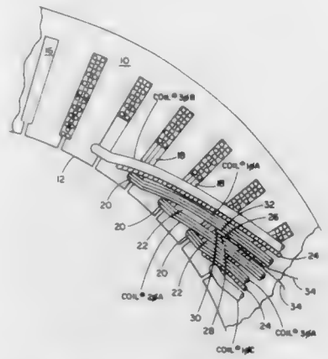
5,343,612
INTERIOR CENTERLINE BASED SEATING METHOD
Charles L. Casad, Dalton City, Ill., assignor to Wagner Castings Company, Decatur, Ill.
Division of Ser. No. 706,044, May 28, 1991, Pat. No. 5,244,192.
This application Sep. 10, 1993, Ser. No. 119,724
Int. Cl.[5] B23B *31/40*
U.S. Cl. 29—559 4 Claims



1. An interior centerline based seating method for use in combination with a work piece having an internal cavity with a cavity side wall and with a throat at one end and a cavity end wall at the other end comprising the steps of:
seating the work piece on a post shaft having a first end and a second end within the internal cavity with said first end of said shaft contacting the cavity end wall;
activating a push rod positioned within said post shaft and having a head portion and an outwardly extending portion from a non-engaging position to an engaging position;
contacting said head portion with a plurality of pivot bars rotatably connected to said post shaft causing said pivot bars to rotate from a retracted position to an expanded position of engaging the cavity side wall; and,
contacting said outwardly extending portion with a plurality of clamp bars seated within said post shaft from a retracted position to an expanded position of engaging the throat of the internal cavity.

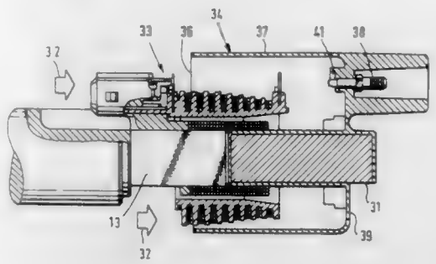
5,343,613
METHOD OF INSTALLING THERMAL PROTECTION FOR AN ELECTRIC MOTOR STATOR
Lawrence J. Kintz; David W. Okey, both of Rockford, Ill.; Joseph F. Leicht, Placentia, Calif.; Francis T. Carriglitto, Rockford, Ill.; Colum O'Hare, San Diego, Calif.; Keith E. Garr, Rockford, Ill., and Valerie Clark, Corona, Calif., assignors to Sundstrand Corporation, Rockford, Ill.
Filed Jan. 27, 1993, Ser. No. 9,720
Int. Cl.[5] H02K *15/06*
U.S. Cl. 29—596 7 Claims

1. A method of fabricating the stator of a dynamoelectric machine, comprising:
a) winding a dynamoelectric machine with a plurality of coils such that adjacent coils are separated by a small gap;
b) separating the coils of at least one pair of adjacent coils without plastically deforming the same;
c) inserting a sensor having a dimension slightly larger than said gap before the performance of step c) into the gap between the separated coils; and



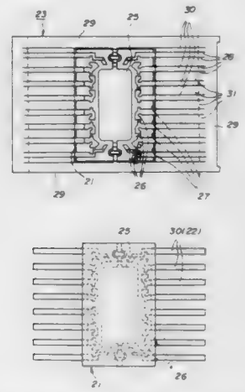
d) allowing the coils to resiliently return toward their original positions.

5,343,614
METHOD FOR MANUFACTURING COILS
Dieter Betz, Vaihingen/Enz; Karl-Heinz Nuebel, Schwieberdingen, both of Fed. Rep. of Germany; José Luis Almendro, Madrid, Spain; Fernando Garcia, Madrid, Spain, and Eduardo Ramirez, Madrid, Spain, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE91/00906, § 371 Date Aug. 10, 1992, § 102(e) Date Aug. 10, 1992, PCT Pub. No. WO92/11648, PCT Pub. Date Jul. 9, 1992
PCT Filed Nov. 19, 1991, Ser. No. 920,301
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1990, 4040604
Int. Cl.[5] H01F *41/06*
U.S. Cl. 29—605 1 Claim



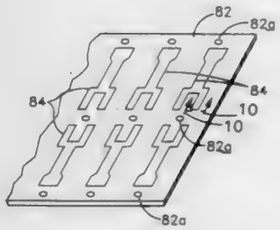
1. A method of manufacturing a coil having a housing accommodating an encapsulated electrically insulated iron core, primary and secondary windings arranged in the housing, and a plastic block enclosing at least the primary winding, the method comprising the steps of wrapping a primary winding onto a core rod of a wrapping machine; arranging a secondary winding on a winding form; pushing the secondary winding on the winding form coaxially over the primary winding; pushing the secondary winding with the primary winding onto the encapsulated iron core so that the core rod is withdrawn out of the primary winding and the encapsulated iron core is arranged coaxially with respect to the core rod directly in the primary winding without intermediate elements while the housing connected with the encapsulated iron core encloses the primary winding and the secondary winding; and filling the housing with casting resin to form the plastic block.

5,343,615
SEMICONDUCTOR DEVICE AND A PROCESS FOR MAKING SAME HAVING IMPROVED LEADS
Michio Sono; Akihiro Kubota; Junichi Kasai; Masanori Yoshimoto, all of Kawasaki, and Keiichi Masaki, Nagano, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Mar. 19, 1992, Ser. No. 853,798
Claims priority, application Japan, Mar. 22, 1991, 3-059060
Int. Cl.[5] H01R *43/00*; B29B *13/00*
U.S. Cl. 29—827 5 Claims



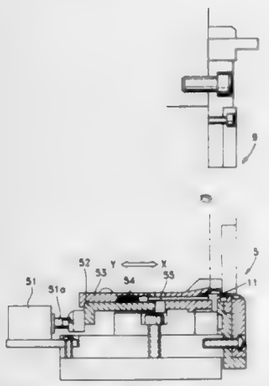
1. A process for producing a semiconductor device having a package with a semiconductor element molded therein, and a plurality of leads, each lead being constituted by an inner lead located inside said package and an outer lead located outside said package, said leads being arranged in a line at a predetermined pitch, the semiconductor element being electrically connected to said inner lead of each of said leads, and each side edge of said outer lead being flat, said process comprising the steps of:
(a) providing a lead frame,
said lead frame comprising:
a frame body having a space formed therein, said space having an inner edge;
a stage part projecting inwardly from the inner edge of the space;
a plurality of inner leads projecting inwardly from the inner edge of the space so as to surround said stage part;
a plurality of outer leads formed on said frame body, a first end of each of said plurality of outer leads being continuously connected to one of said plurality of inner leads, each of said plurality of outer leads having a first end extending inwardly in a direction in which a corresponding one of said inner leads extends, and a second end which is integral with said frame body;
a plurality of fragments formed on said frame body, each of said plurality of fragments being located between adjacent outer leads and separated therefrom by straight slits which form flat side edges on each of said outer leads, a first end of each of said plurality of fragments reaching the inner edge of the space of said frame body, and a second end of each of said plurality of fragments being integral with said frame body;
(b) bonding the semiconductor element on said stage part of said lead frame;
(c) electrically connecting the semiconductor element to each of said plurality of inner leads of said lead frame;
(d) encapsulating said semiconductor element so that said semiconductor element, said stage part, and said plurality of inner leads are located in a package; said package being formed so that an outer surface of said package is located in an area within a range of ±0.3 mm with respect to the first end of each of said plurality of fragments; and
(e) cutting said lead frame in a direction crossing said plurality of said outer leads and said plurality of fragments, so that said plurality of fragments are removed from said package.

5,343,616
METHOD OF MAKING HIGH DENSITY SELF-ALIGNING CONDUCTIVE NETWORKS AND CONTACT CLUSTERS
Joseph A. Roberts, Hudson, N.H., assignor to Rock Ltd., Grafton, N.H.
Filed Feb. 14, 1992, Ser. No. 837,357
Int. Cl.[5] H05K *3/02*
U.S. Cl. 29—846 50 Claims



1. A method for manufacturing a conductive network comprising the steps of
forming a planar metallic sheet into a non-planar pattern having
a dielectric material on a first side of said metallic sheet; and
removing raised portions of said metallic sheet from a second side of said metallic sheet to form electrically insulated conductive paths.

5,343,617
EQUIPMENT FOR CONNECTING WIRES TO ELECTRICAL CONNECTORS
Hiromi Tanaka, Machida, and Hiroshi Yagawa, Sugimani, both of Japan, assignors to The Whitaker Corporation, Wilmington, Del.
Filed Mar. 19, 1993, Ser. No. 35,100
Claims priority, application Japan, Apr. 7, 1992, 4-085596
Int. Cl.[5] B23P *21/00*
U.S. Cl. 29—705 14 Claims



1. A position-determining apparatus for use with a wire termination machine and at least one electrical connector housing, wherein the connector housing has electrical terminals therein and surfaces for engaging the position-determining apparatus, said apparatus comprising:
a power means connected to a frame of said machine, the power means being operatively connected to a reciprocat-

ing rod, said rod being connected to a retaining block, said retaining block being supported by said frame for reciprocating motion thereon to and from advanced and retracted positions;

said retaining block supports a position-determining means for aligning said at least one connector housing during the wire termination process, wherein the position-determining means aligns said connector for disposition of wires in said connector by a wire stuffer during the wire termination process; and

wherein said position-determining means comprises a plurality of pins positioned for contact with said housing, each of said pins having biasing means connected thereto for allowing independent movement of said pins relative to each other as said pins contact said housing.

5,343,618

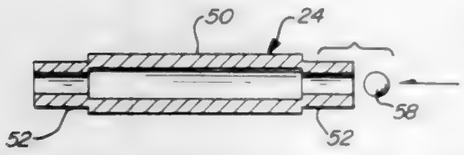
METHOD OF ASSEMBLING A SHAFT AND APERTURED MEMBER

Philip D. Arnold, Mt. Clemens, and Roy G. Kaywood, Stockbridge, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 753,554, Sep. 3, 1991, abandoned. This application Sep. 8, 1992, Ser. No. 942,051

Int. Cl.[5] B23P *15/00*

U.S. Cl. 29—888.08 **18 Claims**



1. The method of assembling a shaft in an aperture comprising the steps of:

forming in a first member an aperture with a lobular cross section having an odd number of lobes;

forming a hollow tubular shaft having a body portion, and an end portion sized to snugly fit within the aperture of the first member, the end portion having an inner diameter smaller than that of the body portion;

inserting the shaft end portion into the aperture;

restraining the shaft against elongation by application of longitudinal clamping force to both ends of the shaft; and

expanding the end portion into tight conformity with the aperture by forcing through the end portion at least one hardened ball having a diameter larger than the end portion inner diameter and smaller than the body portion inner diameter.

5,343,619

HOLLOW BLADE FOR A TURBOMACHINE AND METHOD OF MANUFACTURING SAID BLADE

Alain M. J. Lardellier, Melun, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A." , Paris, France

Filed Aug. 26, 1993, Ser. No. 111,892

Claims priority, application France, Sep. 2, 1992, 9210470

Int. Cl.[5] B23P *15/00*

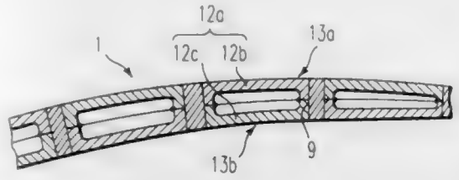
U.S. Cl. 29—889.7 **2 Claims**

1. A method of manufacturing a hollow blade for a turbomachine comprising the following steps:

a) producing a unitary blade blank by forging, said blade blank including an airfoil shaped portion;

b) machining a multiplicity of holes in said airfoil shaped portion such that a zone of specific width is left clear at the edge of said airfoil shaped portion and said holes are substantially evenly distributed over the remaining area of said airfoil portion and provide a cavity ratio of about 90% in said remaining area;

c) producing plugs with a shape adapted to the holes formed during step (b) and to the profile of the respective surface of said airfoil shaped portion, be it the intrados face or the extrados face;



d) placing said plugs in position in said holes formed during step (b);

e) fixing said plugs to said blade blank by high energy beam welding while said plugs are in position in said holes; and

f) finishing said blank to obtain the required aerodynamic profile.

5,343,620

TUBULAR HEADER FOR A HEAT EXCHANGER AND A METHOD OF MAKING SUCH A HEAT EXCHANGER

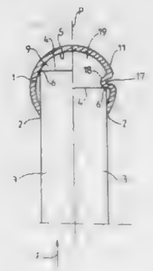
Pascal Velluet, Cernay la Ville, France, assignor to Valeo Thermique Moteur, Le Mesnil-Saint-Denis, France

Filed Apr. 13, 1993, Ser. No. 46,452

Claims priority, application France, Apr. 16, 1992, 92 04708

Int. Cl.[5] F28F *9/02*

U.S. Cl. 29—890.043 **2 Claims**



1. A method of making a heat exchanger having a fluid header and a multiplicity of fluid flow tubes disposed parallel with each other and aligned with each other to define a median plane of alignment of the tubes, the fluid header having a continuous tubular wall extending along the plane and defining a plurality of apertures, with the tubes extending through the apertures, the wall being formed with at least one internal projection, wherein the method comprises the steps of forming the at least one internal projection from the outside of the continuous tubular wall, introducing end portions of the respective tubes into the apertures in the continuous tubular wall, and displacing the tubes parallel to their length until the free end of each tube comes into abutment with the at least one internal projection of the continuous tubular wall, the end of each tube contacting the at least one internal projection through at least one of its two regions lying furthest away from the median plane, the tubular wall has at least one internal projection extending continuously along the wall and facing towards the set of tubes, and forming a recess on the outside of the continuous tubular wall to form a corresponding internal projection.

5,343,621

SHAVING APPARATUS

Gerhard Hildebrand, Steinbach; Gunther Seidel, Frankfurt am Main; Hans-Eberhard Heintke, Wächtersbach; Klaus Ramspeck, Langen; Reinhold Eichhorn, Idstein-Kröftel; Helmut Dürr, Frankfurt am Main; Wolfgang Franke, Langen; Gebhard Braun, Kelkheim; Manfred Ohle, Walldürn, and Roland Ullmann, Offenbach am Main, all of Fed. Rep. of Germany, assignors to Braun Aktiengeselischaft, Kronberg, Fed. Rep. of Germany

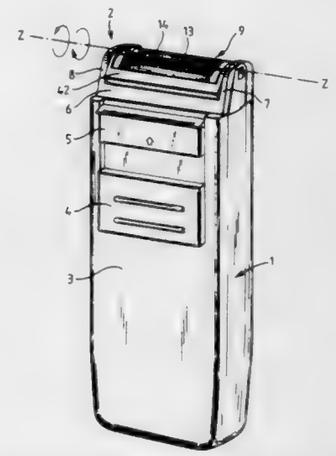
Division of Ser. No. 931,858, Aug. 18, 1992, Pat. No. 5,235,749. This application May 20, 1993, Ser. No. 65,554

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1991, 4128218

The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.

Int. Cl.[5] B26B *19/06, 19/00, 19/14, 21/42*

U.S. Cl. 30—43.92 **2 Claims**



1. A method of manufacturing a shaving apparatus that includes housing structure, a drive mechanism in said housing structure, a shaving head assembly adapted to pivot relative to said housing structure about a pivotal axis (Z), said shaving head assembly comprising shaving head frame structure demountably attached to said housing structure, outer cutter structure defining a shaving plane (SE), said outer cutter structure including a frame member, two bearing pins, said outer cutter frame member and said shaving head frame structure each having end wall structures and said outer cutter frame member being mounted on said end wall structures of said shaving head frame by means of said two bearing pins so as to be pivotal about said pivotal axis (Z), said shaving head frame structure having an open end proximate to said housing structure, inner cutter structure received in said shaving head frame structure through said open end for operative association with said outer cutter structure, said inner cutter structure being directly driven by said drive mechanism and coupled thereto in a manner pivotal about said pivotal axis (Z), comprising the steps of exerting pressure on said end wall structures of said shaving head frame structure to reduce the relative distance (C) of said end wall structures, securing said outer cutter frame member to said end wall structure by means of said bearing pins while said end wall structures of said shaving head frame structure are acted on by said pressure, and releasing said pressure exerted on said end wall structures to provide a horizontally immovable mounting of said outer cutter frame member on said bearing pins by the force of the tensioned end wall structures of said shaving head frame structure, said force acting through said bearing pins on said outer cutter frame member.

5,343,622

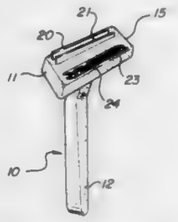
BI-DIRECTIONAL RAZOR DEVICE

Edward A. Andrews, 6835 Beach Rd., Troy, Mich. 48098

Filed Feb. 22, 1993, Ser. No. 20,594

Int. Cl.[5] B26B *21/00, 21/14*

U.S. Cl. 30—50 **5 Claims**



1. A bi-directional razor comprising a single unitary elongated, narrow, strip-like razor head formed of molded plastic material, and having an elongated narrow exposed face, said head having an overall generally rectangular shape with a first and second longitudinal edge and a longitudinal axis;

an elongated, narrow, molded plastic hand grip having a single end formed integral with the head between the opposite ends of the head and extending transversely of the head and said face;

a first, elongated, thin, narrow razor blade strip extending along the length of the head and having an inner portion embedded in the head and an integral, sharpened outer, elongated edge portion extending outwardly of the face at an acute angle relative to the face and projecting toward the first longitudinal edge away from the longitudinal axis;

a second, elongated, thin, narrow razor blade strip substantially identical in size and shape to the first razor blade strip extending along the length of the head and having an elongated inner portion embedded in the head and an integral, sharpened outer, elongated edge portion extending outwardly of the face at an acute angle to the face and projecting toward the second longitudinal edge away from the longitudinal axis and at an acute angle relative to the first blade, so that the two blades extend in generally opposite directions towards their respective first and second edge;

said blade edges being in a single flat plane generally parallel to said razor head;

the razor hand grip being adapted for manually grasping and for moving the hand grip and the head in one direction along the user's skin for cutting hair extending therefrom and then for reversing the direction of movement of hand grip for moving the head in the opposite direction along the user's skin for cutting hair extending therefrom without lifting, tilting or repositioning the head from the user's skin during movements in the opposite directions;

whereby the user of the razor may slide the razor back and forth in his own normal manner of moving a conventional razor upon his skin without changing his manner of holding the handgrip during the back and forth sliding movement upon his skin.

5,343,623

KNIFE ASSEMBLY FOR CUTTING A FOOD PRODUCT

Eugene H. Cole, and Charles Rowell, both of Valparaiso, Ind., assignors to Urschel Laboratories, Inc., Valparaiso, Ind.

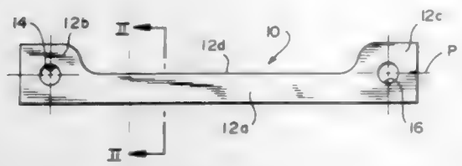
Filed May 11, 1992, Ser. No. 881,292

Int. Cl.[5] B26B *3/04, 3/00;* **B26D** *7/01*

U.S. Cl. 30—304 **20 Claims**

1. A knife blade for a knife assembly to cut food products comprising:

a) a cutting portion having a cutting edge extending in a plane; and,



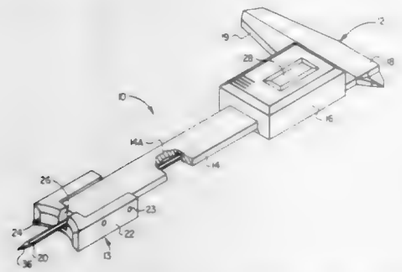
b) mounting portions defining means for applying a tension force to the knife blade substantially in the plane of the cutting edge.

5,343,624

MEASUREMENT TOOL

Daniel A. Symons, Marquette, Mich., assignor to American Airlines, Inc., Dallas, Tex.

Filed Aug. 26, 1992, Ser. No. 935,583
Int. Cl.[5] G01B *5/14*
U.S. Cl. 33—810 18 Claims



1. A measuring apparatus for measuring a curved surface of known desired curvature comprising:

a measurement device having an extendable probe;

said measurement device having a means for indicating the magnitude of extension of said probe relative to said measurement device;

an attachment member having means for engaging said curved surface to be measured, said engaging means including a rigid outwardly facing surface having a curvature matching that of said known desired curvature of said curved surface to be measured; and

said attachment member being mounted upon said measuring device permitting said probe to extend and engage said curved surface.

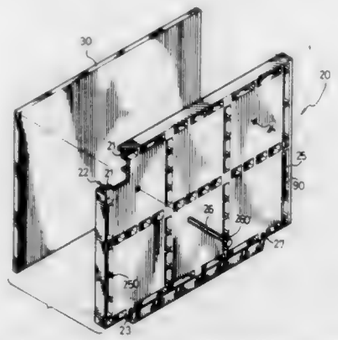
5,343,625

PORTABLE MAGNETIC DRAFTING BOARD

Chiang M. Chen, and Kun M. Chen, both of No. 3, Lane 50 Chung Nan, Kuang Hsing Rd., Taiping Hsiang, Taichung Hsien, Taiwan

Filed Nov. 25, 1992, Ser. No. 981,505
Int. Cl.[5] B43L *13/02*
U.S. Cl. 33—403 3 Claims

1. A drafting board comprising a base including an upper edge and a lower edge and including an upper surface and a bottom surface, a shoulder formed in said upper surface of said base and formed along the perimeter of said upper surface, a magnetic board mounted in said shoulder of said base, said shoulder having a depth, and said magnetic board having a thickness equal to said depth of said shoulder such that said magnetic board is flush with said base, a ruler being attracted by said magnetic board and movable on said magnetic board, two holes formed in said bottom surface of said base, and a rod engaged in each of said holes of said base for elevating said upper edge of said base, whereby, said upper edge is located



higher than said lower edge such that said base is supported by said rods in a sloped fashion.

5,343,626

METHOD FOR MEASURING GEARS AND SYSTEM FOR MACHINING AND MEASURING GEARS

Hiroshi Nagata, Niihama, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Jan. 26, 1993, Ser. No. 9,094
Int. Cl.[5] G01B *5/00*; B24B *1/00*
U.S. Cl. 33—501.14 7 Claims

5. An NC grinding system combined with a gear measuring device which comprises:

an NC gear grinding machine which includes a grindstone holder for a grindstone and a gear holder,

a ground gear mounted on said gear holder,

at least one gauge head attached to the grindstone holder on a grindstone side of the gear when measuring said gear so that the gauge head is located between the grindstone and the gear and contacts a tooth flank of the ground gear, when measuring said gear and

a mechanism for retracting said gauge head to a position such that said gauge head does not interfere with the gear and the grindstone during grinding operation.

5,343,627

METHOD AND MEANS FOR MEASURING SQUARENESS OF PLATE STRUCTURES

Dennis R. Hesseltine, 1208 15th St., W. Des Moines, Iowa 50265

Filed May 24, 1993, Ser. No. 65,067
Int. Cl.[5] G01B *3/56*
U.S. Cl. 33—535 12 Claims

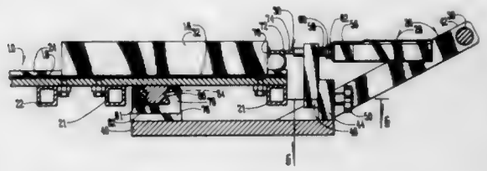
1. The device for measuring the squareness of a fabricated plate, comprising:

a table having a flat top surface with opposite sides and ends,

a straight reference gauge secured to said surface adjacent one end of said table and extending at right angles to the sides thereof,

a carriage means secured to said table for longitudinal movement along one side of said surface,

a measuring gauge rigidly mounted on said carriage means, said measuring gauge comprising a spring loaded horizontally disposed plunger element positional for direct contact with the side edge of a plate supported on said table surface, said plate further having an end edge in



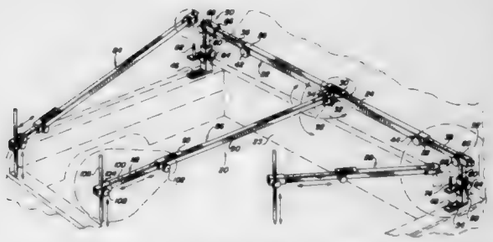
contact and in alignment with said reference gauge, whereby said plunger element can be longitudinally moved along the side of said surface in continuous and direct contact with the side edge of said plate to measure deviations from squareness between said side edge and said end edge of said plate.

5,343,628

VEHICLE REPAIR MEASURING DEVICE

Arthur E. Ham, 16218 N. 62nd Way, Scottsdale, Ariz. 85254

Filed Nov. 12, 1992, Ser. No. 975,402
Int. Cl.[5] G01D *21/00*
U.S. Cl. 33—608 3 Claims



1. Apparatus for measuring distances along the body of a vehicle, the vehicle having a longitudinal axis, said apparatus comprising in combination:

a. a cross bar adapted to extend laterally perpendicular to the longitudinal axis of the vehicle, said cross bar having first and second opposing ends and a center point midway between said first and second opposing ends;

b. securing means for releasably securing said first and second opposing ends of said cross bar to opposing sides of the vehicle at first and second attachment points, respectively, of the vehicle body that are equidistant from the longitudinal axis of the vehicle body, the attachment points lying in an axis perpendicular to the longitudinal axis of the vehicle body;

c. at least one tram bar having first and second opposing ends, the first end of said tram bar being pivotally secured to the center point of said cross bar, the second end of said tram bar including probe means for contacting various points along the vehicle body as said tram bar is pivoted about the center point of said cross bar;

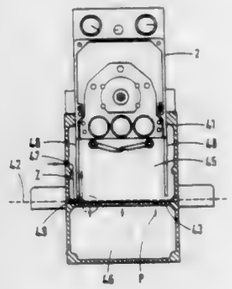
d. a first pivot point aligned with the vertical axis of said first attachment point and a second pivot point aligned with the vertical axis of said second attachment point, each of said first and second pivot points being adapted to releasably receive the first end of said tram bar.

5,343,629

UV DRYERS

Malcolm C. Rae, Reigate, England, assignor to G.E.W. (EC) Limited, United Kingdom

PCT No. PCT/GB92/01293, § 371 Date Mar. 9, 1993, § 102(e) Date Mar. 9, 1993, PCT Pub. No. WO93/02329, PCT Pub. Date Feb. 4, 1993
PCT Filed Jul. 15, 1992, Ser. No. 984,589
Claims priority, application United Kingdom, Jul. 25, 1991, 9116120.8
Int. Cl.[5] F26B *3/28*
U.S. Cl. 34—278 23 Claims



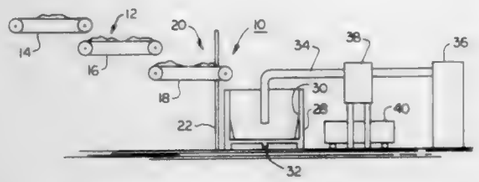
1. An ultra-violet air-cooled dryer for drying printing inks and other U.V. photopolymerisable materials wherein a U.V. lamp is supported in a reflector housing having an open mouth for directing U.V. light onto printed sheets or web, said dryer including first air-cooling means comprising means for establishing a stream of cooling air over said lamp and a tubular heat barrier disposed between the lamp and the path of said sheets or web, and blocking off the mouth of said housing and second air-cooling means for causing a stream of air to flow through said tubular barrier.

5,343,630

FIBERGLASS RECYCLING SYSTEM

John H. Ferguson, Sr., P.O. Box 116, Linwood, N.C. 27299

Filed May 1, 1992, Ser. No. 877,888
Int. Cl.[5] F26B *5/08*
U.S. Cl. 34—379 17 Claims



1. A fiberglass recycling system for the dewatering of fiberglass that has been stripped from bobbins by liquid jets, comprising:

a) a conveyor system for transporting clusters of wetted fiberglass from an input section to a discharge section;

b) a centrifuge disposed adjacent to the discharge section of the conveyor system for receiving and dewatering the wetted fiberglass;

c) means for detecting and measuring the quantity of fiberglass clusters passing on the conveyor system and being discharged into the centrifuge; and

d) control means responsive to the detection means for controlling the speed of the centrifuge in relationship to the detected amount of fiberglass discharged from the conveyor system into the centrifuge.

5,343,631

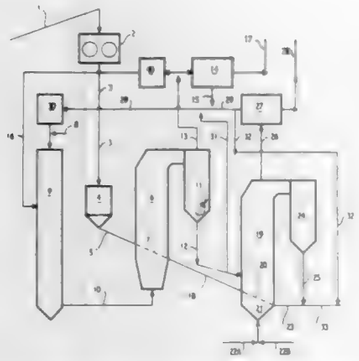
TREATMENT OF FRIABLE MATERIALS IN FLUID BED REACTORS

Michael W. Shackelford, Carmel, Ind.; Robert G. Bauer, Gillette, Wyo., and George W. Land, Greenwood, Ind., assignors to Amax Coal West, Inc., Gillette, Wyo.

Continuation of Ser. No. 678,033, Apr. 1, 1991, abandoned. This application Feb. 3, 1993, Ser. No. 12,651

Int. Cl.[5] F26B *3/08*

U.S. Cl. 34—370 26 Claims



1. Plant for drying coal comprising drying means for contacting said coal to be dried with a stream of heated gas, said drying means having a deck for retaining the coal and the coal being at least partially fluidized during drying with coarser particles of said coal exiting said drying means substantially at the same level of said deck and finer particles of said coal exiting said drying means with the exiting gas stream, and cooling means for cooling the dried coal, said cooling means having a split deck for retaining the coal, wherein said coarser dried particles and said finer dried particles are contacted by separate cooling gas streams supplied through said split deck, said finer particles being cooled separately from said coarser particles.

5,343,632

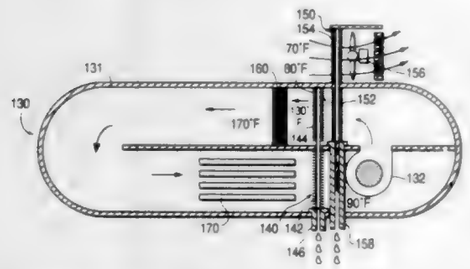
CLOSED-LOOP DRYING PROCESS AND SYSTEM

Khanh Dinh, Gainesville, Fla., assignor to Advanced Dryer Systems, Inc., Gainesville, Fla.

Filed Apr. 10, 1992, Ser. No. 866,416

Int. Cl.[5] F26B *3/00*

U.S. Cl. 34—507 28 Claims



1. A dryer comprising:

(A) an enclosed housing having a drying compartment located therein for receiving materials to be dried in contact with a drying medium;

(B) a heating element located in said housing which heats said drying medium;

(C) means for dehumidifying said drying medium which includes a regenerative heat exchanger which is self-regenerative and which is located in said housing between said drying compartment and said heating element; and

(D) means for recirculating said drying medium within said enclosed housing in a closed-loop manner from said heating element, through said drying compartment and said means for dehumidifying, and then back to said heating element without venting said drying medium outside of said enclosed housing.

5,343,633

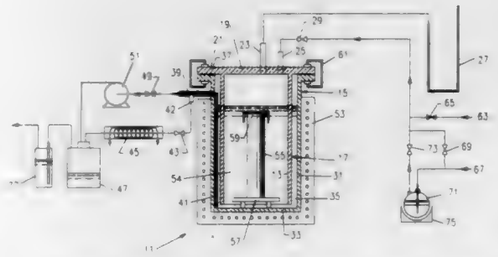
APPARATUS FOR RAPIDLY DRYING A WET, POROUS GEL MONOLITH

Shiho Wang, Ventura; Fikret Kirkbir, Newbury Park; Satyabrata Raychaudhuri, Agoura, and Arnab Sarkar, West Hills, all of Calif., assignors to Yazaki Corporation, Tokyo, Japan

Division of Ser. No. 904,858, Jun. 26, 1992. This application Apr. 29, 1993, Ser. No. 28,961

Int. Cl.[5] F26B *13/30*

U.S. Cl. 34—92 9 Claims



1. A drying chamber assembly for drying a wet, porous gel monolith, comprising:

an outer container having a closed side wall and a bottom wall;

an inner container having a closed side wall and a top wall, the inner container being disposed with its side wall radially inwardly of the side wall of the outer container, to define a thin annular space between the two side walls, and to define a drying chamber between the bottom wall of the outer container and the side wall and top wall of the inner container;

an inlet port extending through the top wall of the inner container;

an outlet port extending through the side wall of the outer container; and

means for expelling liquids, while in a liquid state, from the drying chamber via the outlet port.

5,343,634

OSTOMY POUCH DRYING CONTAINER

Carol A. Dailey, 476 Jeffreys Dr., Elizabeth, Pa. 15037

Filed Nov. 23, 1993, Ser. No. 156,303

Int. Cl.[5] F26B *25/00*

U.S. Cl. 34—104 20 Claims

1. An apparatus for drying an ostomy pouch comprising:

a) a plurality of panels, including a top panel, a bottom panel, a back panel and a pair of side panels, joined together along adjacent outer edges to form a hollow, box-shaped structure, and further including a front panel attached to one of said bottom, top and side panels and moveable from a closed position adjacent said top, bottom and side panels, to an open position providing access to an interior of said box-shaped structure, with at least two of said top, front and side panels having a plurality of perforations therethrough and permitting air to flow to the interior of said box-shaped structure; and

b) a substantially L-shaped extensor rod positioned within the interior of said box-shaped structure, said extensor rod including a first segment attached to an inner surface of one of said back and side panels and extending substantially horizontally therefrom, said extensor rod further including a second segment attached to said first segment and extending downwardly and vertically toward said bottom panel and having a lower end which is spaced above said bottom panel, said extensor rod further including a raised ridge on an upper surface thereof where the first and second segments are joined together, with said extensor rod configured to receive and hold an ostomy pouch thereon by passing a mouth rim of the ostomy pouch over the lower end of the second segment, along the second segment and over the raised ridge with said mouth rim resting securely on the first segment behind the raised ridge and with the ostomy pouch hanging along and held open by the first segment of said extensor rod and thereby permitting the ostomy pouch to be dried.

11. An apparatus for drying an ostomy pouch comprising:

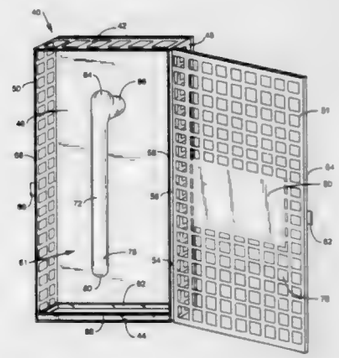
a) a plurality of panels, including a top panel, a bottom panel, a back panel and a pair of side panels, joined together along adjacent outer edges to form a hollow, box-shaped structure, and further including a front panel attached to one of said bottom, top and side panels, and moveable from a closed position adjacent said top, bottom and side panels, to an open position providing access to an interior of said box-shaped structure, with each of said top, front and side panels having a plurality of perforations therethrough and permitting air to flow to the interior of said box-shaped structure; and

b) a substantially L-shaped extensor rod positioned within the interior of said box-shaped structure, said extensor rod including a first segment attached to an inner surface of said back panel and extending substantially horizontally therefrom, said extensor rod further including a flexible second segment attached to said first segment and extending downwardly and vertically toward said bottom panel and having a lower end which is spaced above said bottom panel, said extensor rod further including a raised ridge on an upper surface thereof where the first and second segments are joined together, with said extensor rod configured to receive and hold an ostomy pouch thereon by passing a mouth rim of the ostomy pouch over the lower end of the second segment, along the second segment and over the raised ridge with said mouth rim resting securely on the first segment behind the raised ridge and with the ostomy pouch hanging along and held open by the first segment of said extensor rod and thereby permitting the ostomy pouch to be dried.

16. An apparatus for drying an ostomy pouch comprising:

a) a plurality of panels, including a top panel, a bottom panel, a back panel and a pair of side panels, joined together along adjacent outer edges to form a hollow, box-shaped structure, and further including a front panel connected by at least one hinge along a first vertical edge of said front panel to a front vertical edge of one of said side panels, with said front panel moveable from a closed position adjacent said top, bottom and side panels, in which said front panel is latched by a latching means along a second vertical edge of said front panel to a latch receiving means along a front vertical edge of the other of said side panels, to an open position providing access to an interior of said box-shaped structure, and with each of said top, front and side panels having a plurality of perforations therethrough and permitting air to flow to the interior of said box-shaped structure; and

b) a substantially L-shaped extensor rod positioned within the interior of said box-shaped structure, said extensor rod including a first segment attached to an inner surface of said back panel and extending substantially horizontally therefrom, said extensor rod further including a flexible second segment attached to said first segment and extending downwardly and vertically toward said bottom panel and having a lower end which is spaced above said bottom panel, said extensor rod further including a raised ridge on an upper surface thereof where the first and second segments are joined together, with said extensor rod configured to receive and hold an ostomy pouch thereon by passing a mouth rim of the ostomy pouch over the lower end of the second segment, along the second segment and over the raised ridge with said mouth rim resting securely on the first segment behind the raised ridge and with the ostomy pouch hanging along and held open by the first segment of said extensor rod and thereby permitting the ostomy pouch to be dried.



5,343,635

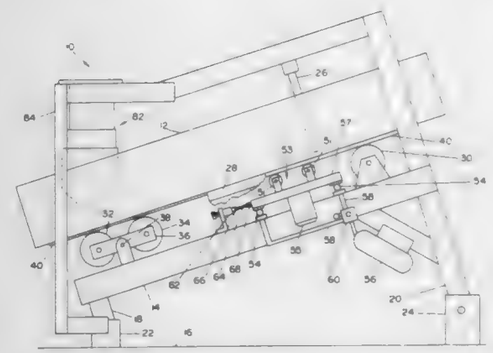
INCREASED CAPACITY DISC DRYER

Lam T. Nguyen, Lancaster, Pa., assignor to Aggregates Equipment, Inc., Leola, Pa.

Division of Ser. No. 901,947, Jun. 22, 1992, Pat. No. 5,271,165. This application Dec. 2, 1993, Ser. No. 160,228

Int. Cl.[5] F26B *9/00*

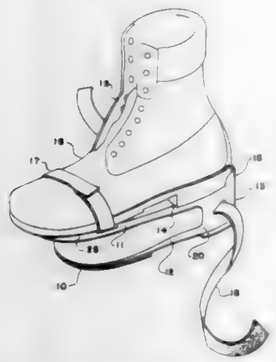
U.S. Cl. 34—164 2 Claims



1. In a dryer for aggregate materials of the type comprising a pan with retainer sides, the pan being oriented at an angle to the horizontal, being rotated upon wheels by which it is supported and being impacted by an impactor assembly to induce vibration, the improvement comprising:

a feed box for supplying material to the pan, the feed box including a material exit means which provides the material leaving the feed box with some horizontal motion so that the material does not fall directly below the feed box, and further including means to rotate the material exit means around the center axis of the feed box so that rotation of the material exit means moves the location of material entry into the pan.

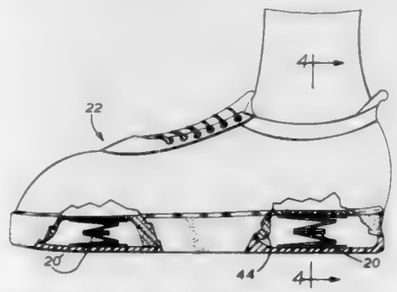
5,343,636
ADDED FOOTWEAR TO INCREASE STRIDE
Albert Sabol, 120 Ramblewood Dr., Statesboro, Ga. 30458
Filed May 24, 1993, Ser. No. 42,655
Int. Cl.[5] A43B *13/18, 5/06*
U.S. Cl. 36—78 **1 Claim**



1. An energy efficient footwear device comprising:
a) a horizontally disposed platform upon which the user's foot rests, said platform having front and rear extremities and upper and lower surfaces, said upper surface having forwardly and rearwardly disposed stops to prevent movement of said foot upon said upper surface,
b) a heel section downwardly emergent from the lower surface and rear extremity of said platform as a continuous integral extension thereof,
c) leaf spring means disposed in part as a flat panel portion beneath said platform and parallel thereto, and extending rearwardly through said heel section and upwardly into said platform as an integral spring structure of cantilevered shape, said flat panel portion extending to a forward extremity located rearwardly of the front extremity of said platform, said panel portion having top and bottom surfaces, the thickness of said panel portion, measured between said top and bottom surfaces diminishing in tapered fashion in going from said heel section to said forward extremity, the spacing between the lower surface of said platform and top surface of said panel portion being about one sixth the length of said panel portion,
d) heel and sole pads of wear resistant resilient material joined to the bottom surface of said panel portion, and
e) means interactive with said platform to secure said device to the user's foot, whereby
f) said panel portion during use bends in a uniform radius of curvature and imparts forward thrust to the user's stride.

5,343,637
SHOE AND ELASTIC SOLE INSERT THEREFOR
Jerry Schindler, 757 Spartan Dr., Rochester Hills, Mich. 48063
Continuation of Ser. No. 824,701, Jan. 21, 1992, abandoned, which is a continuation of Ser. No. 587,522, Sep. 24, 1990, abandoned, which is a continuation of Ser. No. 287,458, Dec. 21, 1988, abandoned. This application Aug. 21, 1992, Ser. No. 933,885
Int. Cl.[5] A43B *13/18, 13/28*
U.S. Cl. 36—28 **19 Claims**

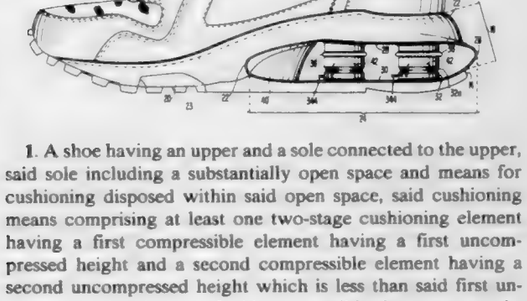
1. A shoe adapted to be worn on a foot of a person, said shoe comprising:
a. an outer sole having a peripheral edge;
b. an upper fixed to the periphery of said sole for enclosing the foot of the person;
c. an insole overlying said outer sole in spaced relation thereto to form a cavity between said outer sole and said insole, said cavity having substantially flat, opposed surfaces, said outer sole and said insole being relatively movable toward and away from one another; and
d. a spring member accommodated in said cavity and engagable with said outer sole and said insole for yieldably resisting relative movement of said outer sole and said insole toward one another,
e. said spring member comprising a unitary, substantially planar body of uniform thickness, springy material seated on one surface of said cavity and having a peripheral edge,
f. a leaf cut from said body and joined at one end to said body adjacent said edge,
g. said leaf when in its unstressed condition being inclined outwardly of the plane of said body for engagement by the other surface of said cavity,



h. said leaf having a bearing portion remote from said one end of said leaf and which in the unstressed condition of said leaf occupies a position of maximum spacing of said leaf from the plane of said body,
i. said leaf being resiliently deformable in response to the application thereto of a compressive force to move said bearing portion and the remainder of said leaf in a direction toward the plane of said body, thereby resiliently stressing said leaf,
j. the surface of said cavity on which said base seats preventing movement of said leaf in said direction beyond the plane of said body,
k. said leaf being of substantially uniform thickness corresponding to that of said body and of varying width which narrows in a direction from said one end toward said bearing portion.

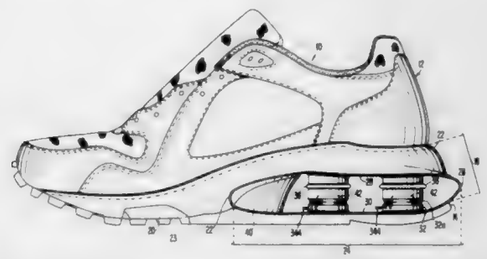
5,343,638
UPPER FOR AN ATHLETIC SHOE AND METHOD FOR MANUFACTURING THE SAME
Charles P. Legassie, Canton; Paul E. Litchfield, S. Cerafton; David Lacorazza, Canton, and Peter M. Foley, Needham, all of Mass., assignors to Reebok International Ltd., Stoughton, Mass.
Continuation of Ser. No. 828,440, Jan. 31, 1992, abandoned. This application Aug. 23, 1993, Ser. No. 109,995
Int. Cl.[5] A43B *7/06, 7/14*
U.S. Cl. 36—29 **29 Claims**

1. An athletic shoe, comprising:
a sole;
a first elastic material;
a second elastic material, said first elastic material and said second elastic material being joined to each other along their common peripheral edge to form a substantially fluid impervious chamber; and
a foot conforming support member attached to said sole, said fluid impervious chamber being attached to the exterior of said foot conforming support member at selected locations such that at least a portion of said foot conforming support member forms an outermost surface of said upper; and



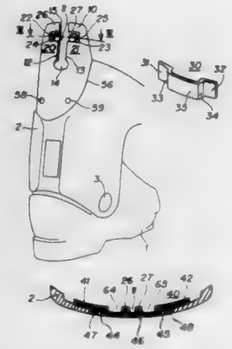
wherein the volume and pressure of the fluid within said fluid impervious chamber remains substantially constant as a force is applied to said sole.

5,343,639
SHOE WITH AN IMPROVED MIDSOLE
Bruce J. Kilgore, Lake Oswego, Oreg.; Thomas McMahon, Wellesley, Mass.; John C. Tawney, Portland, and Gordon Valiant, Beaverton, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Continuation of Ser. No. 738,031, Aug. 2, 1991, abandoned. This application Oct. 18, 1993, Ser. No. 136,992
Int. Cl.[5] A43B *13/20, 21/28*
U.S. Cl. 36—29 **17 Claims**



1. A shoe having an upper and a sole connected to the upper, said sole including a substantially open space and means for cushioning disposed within said open space, said cushioning means comprising at least one two-stage cushioning element having a first compressible element having a first uncompressed height and a second compressible element having a second uncompressed height which is less than said first uncompressed height, one of said compressible elements comprising a resilient support element and the other of said compressible elements comprising a fluid-filled bladder, one of said compressible elements disposed within the other of said compressible elements, said first compressible element compressible to a height which is less than said second uncompressed height, said first compressible element compressible jointly with said second compressible element when said first compressible element is compressed below said second uncompressed height, wherein, said open space is maintained substantially about said cushioning means.

5,343,640
SKI BOOT
Mario Mattiuzzo, Treviso, and Alessandro Condini, Trento, both of Italy, assignors to Lange International S.A., Fribourg, Switzerland
Filed Jan. 28, 1993, Ser. No. 10,592
Claims priority, application Switzerland, Jan. 28, 1992, 234/92-2
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—121 **7 Claims**

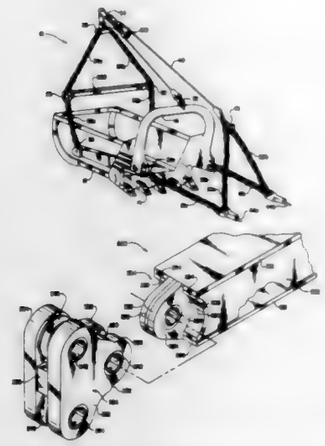


1. A ski boot made of plastic material comprising:
a rigid shell intended to receive an inner boot, into which to foot of the skier having a certain morphology of the skier's calf, is inserted,
a shaft articulated on the shell, and having a top and a rear, and a wall having a certain thickness, the top having an adjustable diameter,
means for clamping the foot in the shell and the lower leg in the region of the top of the shaft,
the rear of the shaft having at least one slit having two lips and an opening therebetween and being open on the top of the shaft, the opening being adjustable, notches on each side of he lips of the slit, a rigid rider having adjusting means for assuring the continuity of the shaft wall and for adjusting the width of the opening of the slit inserted into the notches, the adjusting means serving to adjust the diameter of the top of the shaft to the morphology of the calf of the skier, while ensuring a backward lean which is form in position.

5,343,641
SPREADER BAR FOR STRIP MINE RIGGING APPARATUS
George Gregory, 1114 Brookshire, Tyler, Tex. 75703
Filed Oct. 16, 1992, Ser. No. 962,246
Int. Cl.[5] E02F *3/46*
U.S. Cl. 37—397 **8 Claims**

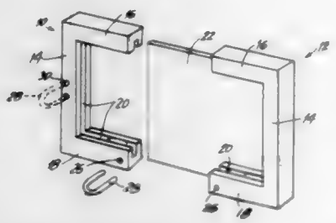
1. A spreader bar assembly for an excavating bucket, comprising:
(a) a structural member which serves to separate the lifting chains of an excavating bucket, said structural member having opposite ends;
(b) a pair of pivotal end pieces adapted to pivotally attach to the opposite ends of said structural member; and
(c) connection means on the pivotal end pieces for connecting to the lifting chains of a hoist and to an excavating bucket for lifting the excavating bucket and controlling its

position wherein the opposite ends of the structural member and the pivotal end pieces have a cooperating stop



member which limits the pivotal motion of the pivotal end pieces with respect to the ends of the structural member.

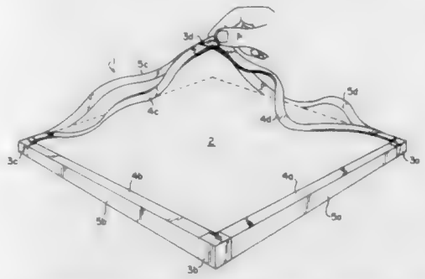
5,343,642
PICTURE FRAME ASSEMBLY
Emanuela F. Magnusson, 350 E. 57th St., New York, N.Y. 10022
Filed Jun. 10, 1993, Ser. No. 74,970
Int. Cl.[5] G09F *1/12*
U.S. Cl. 40—152.1 **11 Claims**



1. A picture frame construction assembly comprising first and second frame sections, first and second openings respectively formed in each of said sections, and a frame support member having free ends adapted to be respectively received in said first and second openings, said frame support member when inserted into said first and second openings being effective to provide a unitary assembly of said first and second frame sections and said frame support member extending from said first and second frame section to provide a support for the assembled picture frame on a horizontal surface.

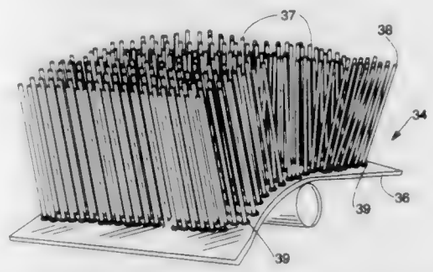
5,343,643
COLLAPSIBLE BORDER ASSEMBLY
Ian R. Cochrane, 5 Lees Heights, Charlbury, Oxon, OX7 3EZ, England
PCT No. PCT/GB90/01881, § 371 Date Jun. 4, 1992, § 102(e) Date Jun. 4, 1992, PCT Pub. No. WO91/07986, PCT Pub. Date Jun. 13, 1991
PCT Filed Dec. 4, 1990, Ser. No. 867,215
Claims priority, application United Kingdom, Dec. 4, 1989, 8927376.7; Jun. 5, 1990, 9012549.3
Int. Cl.[5] A47G *1/10, 1/06*
U.S. Cl. 40—155 **13 Claims**

1. A collapsible border assembly comprising:
a plurality of spaced apart corner pieces; and
a plurality of elastic elements;
wherein adjacent corner pieces are interconnected by at least one of said elastic elements; and
wherein said elastic elements are connected to said corner pieces in such a manner that said elastic elements conform



to a right-angular cross-section when stretched taut between said corner pieces;
said stretched elastic elements at least in part providing an exposed border of frame-like appearance.

5,343,644
PLIABLE PIN STRIP
Ward Fleming, 1527 Manorville Rd., Saugerties, N.Y. 12477
Filed May 8, 1992, Ser. No. 879,985
Int. Cl.[5] G09F *19/00*
U.S. Cl. 40—446 **6 Claims**

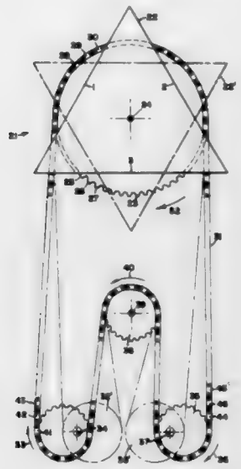


1. A display device comprising a pliable first web having opposite inner and outer faces and responsive to deformation of said inner face to correspondingly deform said outer face, and array of closely spaced pins carried by said web, each of said pins including an enlarged head anchored to said web and an elongated shank projecting outwardly from said outer face perpendicular to said outer face adjacent to said respective pin head and shaping means for applying pressure to said web inner face varying in amount and direction to form said web to a predetermined contour.

5,343,645
MULTI-FACETED DISPLAY DRIVE MECHANISM
Mortimer J. Huber, St. Paul, Minn., assignor to Quality Manufacturing Incorporated, St. Paul, Minn.
Filed Feb. 20, 1992, Ser. No. 839,250
Int. Cl.[5] G09F *11/02;* **F16H** *35/02*
U.S. Cl. 40—505 **13 Claims**

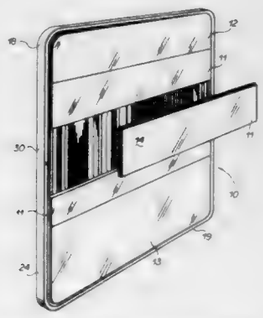
1. A convertible sign mechanism, comprising:
(a) a convertible sign member, said convertible sign member being rotatable about an axis thereof; and
(b) drive means for rotating said convertible sign member at a variable velocity, said drive means operating continuously throughout the rotation of said convertible sign member, wherein said drive means includes:
(i) a motor, said motor having a shaft rotatably mounted thereon; and

(ii) a drive gear having a symmetrical center axis, said drive gear being operatively connected to said shaft



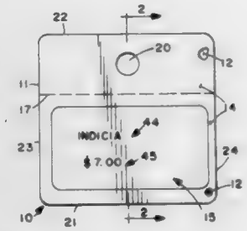
about a drive axis, said drive axis being parallel to and offset from said symmetrical center axis, whereby said drive gear rotates eccentrically about said shaft.

5,343,646
SIGN APPARATUS WITH IMPROVED MOUNTING OF MESSAGE PANELS
Ronald W. Cobb, Atlanta, and Benjamin H. Bell, Avondale Estates, both of Ga., assignors to Apco Graphics, Inc., Atlanta, Ga.
Filed Oct. 23, 1992, Ser. No. 966,134
Int. Cl.[5] G09F *7/00*
U.S. Cl. 40—585 **20 Claims**



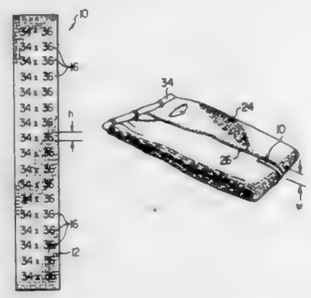
1. Sign apparatus having a positionable sign insert, comprising:
a sign insert having a front surface and a back surface;
an elongated support member disposed for juxtaposition with the back surface of the sign insert, the support member having a channel and a slot facing the back surface and providing access to the channel;
a fastener on the back surface of the sign insert for alignment with the slot;
the fastener being elastically deformable to pass through the slot and enter the channel and thereafter expanding within the channel to a configuration exceeding the width of the slot; and
the fastener thereafter being slidable within the channel so that the sign insert is retained against the support member in sliding relation to the slot and can be positioned along the support member by sliding the fastener.

5,343,647
PRESSURE SENSITIVE PRICING TAG/LABEL
Tricia Bulka, Merrimack, N.H., assignor to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Sep. 3, 1991, Ser. No. 753,994
Int. Cl.[5] G09F *3/10*
U.S. Cl. 40—630 **15 Claims**



1. An identifying device, comprising:
a paperboard panel having first and second faces;
a release coating applied to at least a first area of said panel first face;
a label having an adhesive face, and disposed over said first area of said panel first face with said adhesive face in contact with said release coating, said label having dimensions significantly less than the dimensions of said panel;
said panel uncovered except by said label and said release coating;
means defining a line of weakness in said panel for allowing separation of said panel along said line of weakness, and dividing said panel into first and second portions, said label being disposed in said first portion; and
means defining an opening capable of receiving an attachment mechanism in said second portion of said panel.

5,343,648
GARMENT INDICIA STRIP
Frank D. Bracken, Dallas, Tex., assignor to Haggar Apparel Company, Dallas, Tex.
Continuation of Ser. No. 522,220, May 11, 1990, abandoned, which is a continuation of Ser. No. 409,765, Sep. 20, 1989, abandoned, which is a continuation of Ser. No. 223,438, Jul. 22, 1988, abandoned. This application Jan. 18, 1991, Ser. No. 643,769
Int. Cl.[5] G09F *3/10*
U.S. Cl. 40—638 **5 Claims**



1. A method of size labeling a pair of pants for display in a vertical stack, comprising:
printing sizing information for said pair of pants repeatedly on a first major surface of a flexible strip of material;
providing a second major surface of said strip with a pressure-sensitive adhesive material suitable for releasably affixing said flexible strip to said pair of pants;
affixing said strip onto a leg of said pair of pants with said

strip substantially parallel to an outseam of said pair of pants; and

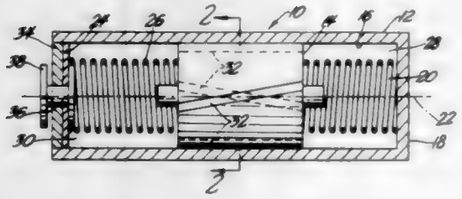
folding said pair of pants such that said strip is affixed to an outer surface of said folded pants and such that said strip spans a fold of said folded pants, whereby the size of said pair of pants can be readily determined when said pair of pants is displayed in a stack of garments on a store shelf.

5,343,649

SPIRAL RECOIL ABSORBER

Paul A. Petrovich, 11269 Judd Rd., Fowlerville, Mich. 48836

Filed Sep. 9, 1993, Ser. No. 118,348
Int. Cl.[5] F41A *25/14, 25/18*
U.S. Cl. 42—1.06 **11 Claims**



1. A device mounted to a gun for dampening and absorbing the recoil of the gun during the firing thereof, comprising:

means for mounting the device to the gun;

a cylinder having a first end and a second end;

liquid in the cylinder;

a longitudinal axis of the cylinder;

a piston in the cylinder axially sliding therein;

a spring between the piston and the first end;

the piston defining a channel having a helical twist relative to the longitudinal axis;

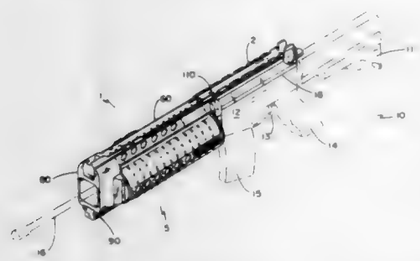
adjustment means for varying a rate of piston rotation for a given spring force.

5,343,650

EXTENDED RIGID FRAME RECEIVER SLEEVE

Richard E. Swan, 375 West St., W. Bridgewater, Mass. 02379

Filed Mar. 30, 1992, Ser. No. 859,958
Int. Cl.[5] F41G *1/387, 1/00*
U.S. Cl. 42—100 **24 Claims**



1. An extended rigid frame receiver sleeve for interfacing integrated and modular enhancements to a firearm having forward and rearward portions, said firearm having minimally a receiver with a stock and barrel attached thereto, said barrel defining the forward portion of the firearm and said stock defining the rearward portion of the firearm, said firearm longitudinal axis being defined as horizontal and running from said stock through said receiver to said barrel, said receiver being comprised of an upper receiver and a lower receiver, said upper receiver having a forward portion, a top and a rearward portion, said barrel being joined to the forward portion of the upper receiver, comprising:

a forward interface portion having sides, a front and a rear; and

a rearward interface portion having sides comprised of:

a fixed receiver interface sleeve element joined to the top of the upper receiver and having a front joined to the rear of said forward interface portion; and

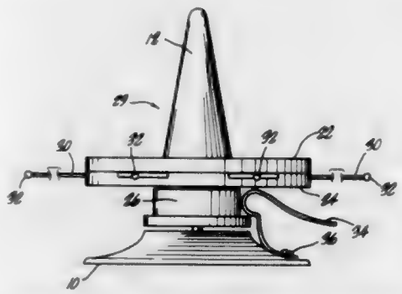
a slidable sleeve element slidably mounted on said fixed receiver interface sleeve element.

5,343,651

METHODS AND MECHANICAL APPARATUS FOR DETERRING BIRDS

Victor H. Chatten, 1567 W. 215th St., Torrance, Calif. 91501

Continuation of Ser. No. 565,659, Aug. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 523,744, May 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 475,215, Feb. 5, 1990, abandoned. This application Nov. 5, 1991, Ser. No. 789,430
Int. Cl.[5] A01M *29/00*
U.S. Cl. 43—1 **12 Claims**



1. A mechanical apparatus for deterring birds from landing at undesirable perch locations comprising:

a structurally supportive base having a first support member fixed onto said base;

a carriage assembly, axially adjoining and mating with said first support member at bearing surfaces provided therein;

a multiplicity of horizontally disposed rods, of stainless steel or rigid plastic or metal material, mechanically attached to said carriage assembly and projecting radially outward from said carriage assembly; and

a coil latch attached to said supportive base with said coil latch initially engaging said carriage assembly and located adjacent to said carriage assembly after so engaging.

5,343,652

METHOD AND APPARATUS FOR LASER PEST CONTROL

W. Dudley Johnson, N128 W17741 Holy Hill Rd., Germantown, Wis. 53022

Filed Jun. 12, 1992, Ser. No. 898,012
Int. Cl.[5] A01M *1/20*
U.S. Cl. 43—132.1 **20 Claims**

1. A method for automatic extermination of pests which comprises:

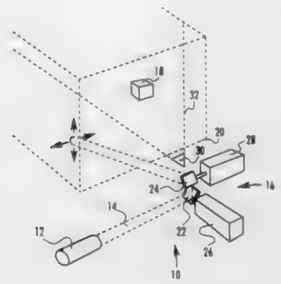
(A) placing an automatic laser scanning system in a target location frequented by the pests;

(B) scanning the target location according to a predetermined scanning pattern with a laser beam having an intensity sufficient to exterminate the pests;

(C) repeating step (B) multiple times so that the target location is repetitively scanned;

(D) detecting whether or not a pest is present in the target location using an automated sensor;

(E) ceasing scanning if no pest is detected in step (D); and



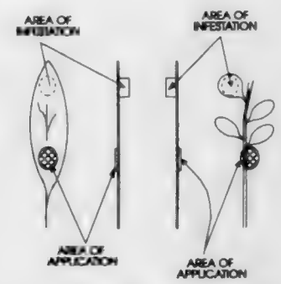
(F) resuming scanning when a pest is detected in the target location by the sensor.

5,343,653

DEVICE FOR TRANSCUTICULAR APPLICATION OF ACTIVE SUBSTANCE TO PLANTS

Hanshelmut Itzel, Gau-Algesheim; Bernd Zierenberg, Bingen; Christo Drandarevski, Ingelheim am Rhein, and Wilfried Heupt, Malborn, all of Fed. Rep. of Germany, assignors to Celaflor GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 936,006, Aug. 27, 1992, abandoned, which is a division of Ser. No. 844,866, Mar. 2, 1992, Pat. No. 5,201,925, which is a continuation of Ser. No. 727,362, Jul. 9, 1991, abandoned, which is a continuation of Ser. No. 601,604, Oct. 23, 1990, abandoned, which is a continuation of Ser. No. 453,176, Dec. 26, 1989, abandoned, which is a continuation of Ser. No. 74,277, Jul. 16, 1987, abandoned. This application Sep. 27, 1993, Ser. No. 127,458
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1986, 3624074
The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.
Int. Cl.[5] A01B *79/02*
U.S. Cl. 47—1.5 **2 Claims**



1. A device for transcuticular administration to a plant of a substance systemically active in the plant, the device being in the form of a laminate including a systemically active substance to be released to the plant in metered quantities, said laminate comprising in order:

(1) a backing layer impervious to the active substance,

(2) an internal active substance reservoir layer formed of a carrier matrix in the form of a polymeric or absorbent material layer having incorporated therein said active substance, and

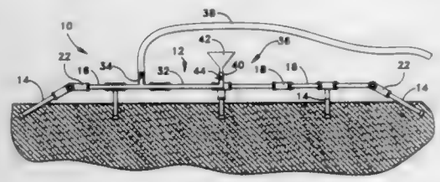
(3) an outer adhesive layer adherable to the plant and permeable to the active substance, said laminate being adhered to said plant through contact with said adhesive layer, and releasing said active substance in metered quantities from said reservoir layer through said adhesive layer to said plant.

5,343,654

SUPPORTING, WATERING AND FERTILIZING STRUCTURE FOR PLANTS

Alexander Z. Paquin, and Marjorie Paquin, both of 56 Statler Ave., Debary, Fla. 32713

Filed Jan. 14, 1994, Ser. No. 181,007
Int. Cl.[5] A01G *29/00*
U.S. Cl. 47—48.5 **12 Claims**



1. A plant support device for supporting, watering, and fertilizing a plurality of plants, said plant support device comprising:

an octagonal frame, said octagonal frame comprising eight hollow tubular segments, said eight hollow tubular segments being sequentially disposed end to end to form an octagonal conduit;

a plurality of legs, one each of said plurality of legs extending downward from one of said eight hollow tubular segments;

each of said plurality of legs comprising a hollow tubular leg member enclosing a leg channel communicating with said octagonal conduit, each of said plurality of legs having at least one aperture disposed on a downward distal end thereof communicating with said leg channel;

a feeder conduit communicating with said octagonal conduit, said feeder conduit comprising:

a feeder tube;

a pressurized fluid fitting for connecting said feeder tube to a pressurized fluid source; and

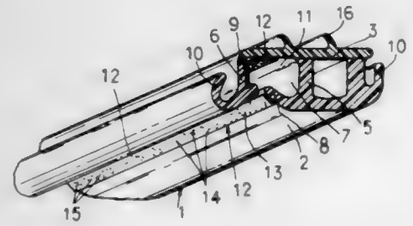
fertilizer introduction means for introducing a fertilizer into said feeder tube.

5,343,655

WEATHER STRIP FOR THE WINDOW GLASS OF AN AUTOMOBILE

Naohisa Miyakawa, Inba; Minoru Masuzawa, Kashiwa, and Katsuhisa Kato, Kitasouma, all of Japan, assignors to Tokiwa Chemical Industries Co., Ltd.; Masuzawa Chemical Sales Co., Ltd., both of Chiba and System Technical Co., Ltd., Ibaragi, all of Japan

Filed Oct. 27, 1992, Ser. No. 968,153
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—441 **8 Claims**



1. A weather strip for a window glass, comprising:

a base portion comprising a hard synthetic resin;

a support portion for supporting the window glass, said

support portion being connected with said base portion and comprising a soft synthetic resin; and

a contacting band layer disposed on at least said support portion for contacting the window glass, said contacting band layer comprising two synthetic resins having different melting points, including a first synthetic resin having a high melting point and a second synthetic resin having a low melting point, and wherein said first synthetic resin is mixed with said second synthetic resin such that said contacting band layer has an integral rough surface.

5,343,656

GRINDING TOOL AND THE LIKE MADE OF A CERAMIC MATERIAL COATED WITH EXTREMELY HARD ABRASIVE GRANULES

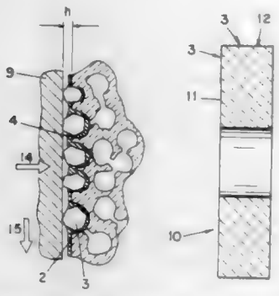
Herbert Loos, Dorfen-Stadt; Manfred Erhardt, Puchheim, and Gerhard Reichert, Esting, all of Fed. Rep. of Germany, assignors to Hurth Maschinen und Werkzeuge G.m.b.H., Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 559,638, Jul. 30, 1990, abandoned. This application Mar. 1, 1993, Ser. No. 25,358

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1989, 3925364

Int. Cl.[5] B24D *3/14, 3/18*

U.S. Cl. 451—540 **2 Claims**



1. In a tool suited for a precision working of hardened workpieces comprising a base member covered with extremely hard grinding granules, the improvement wherein the base member consists of a porous ceramic material having a plurality of outwardly open pores of a predetermined average pore diameter (d_p) provided in an area of a work surface, wherein extremely hard grinding granules having an average granule diameter (d_K) are provided and are received in the outwardly open pores, wherein an adhesive is provided for adhesively securing the extremely hard grinding granules in the outwardly open pores, the average granule diameter (d_K) of the extremely hard grinding granules being only a little less than the average pore diameter (d_p) so that the plurality of outwardly open pores, aside from the adhesive, each receives only one extremely hard grinding granule therein, and wherein the extremely hard grinding granules received in the outwardly open pores project a specific measurement (h) from the work surface of the base member, which assures that only the extremely hard grinding granules participate in the precision working.

5,343,657

METHOD AND APPARATUS FOR MASKING REMOVABLE OPTICAL LENS MARKINGS DURING LENS GRINDING

John R. Ohlin, Jr., Sandy, Utah, assignor to Venture Tape Corporation, Rockland, Mass.

Filed Sep. 18, 1992, Ser. No. 947,706

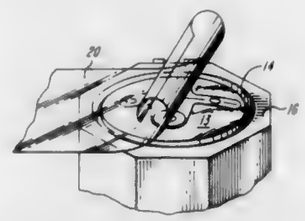
Int. Cl.[5] B24B *1/00*

U.S. Cl. 451—29 **16 Claims**

1. A method of preparing prescription eyeglass lenses having removable markings on one surface thereof, the one surface having an outer edge defining a perimeter of the one surface, said method comprising the steps of:

placing a mask over the markings on the one surface of the lens, the mask covering an area which is less than a total area of the one surface of the lens, said mask not extending beyond the perimeter of the one surface of the lens;

removably adhering a second layer of material to the one surface of the lens, the second layer of material completely covering the mask;



securing to the second layer of material a member adapted for grasping and holding the lens, the member contacting only the second layer of material and not the mask;

grinding the lens to a desired prescription while grasping the member in a grinding machine;

removing the member;

removing the mask and the second layer of material from the one surface of the lens; and

aligning the lens in its desired frame using the markings.

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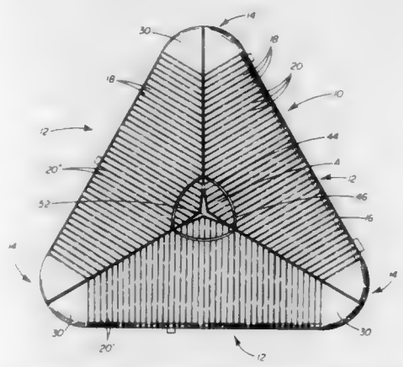
AIR SUPPORTED STRUCTURE WITH FUNICULAR CABLE ASSEMBLY

Anthony B. McLorg, Lexington, Ky., assignor to Fabric Enclosures, Inc., Lexington, Ky.

Continuation-in-part of Ser. No. 685,231, Apr. 12, 1991, abandoned. This application May 28, 1993, Ser. No. 69,961

Int. Cl.[5] E04B *7/08;* **E04H** *15/20*

U.S. Cl. 52—2.26 **14 Claims**



1. An air supported structure for anchoring to the ground, comprising:

a wall portion, formed from a plurality of panel members joined together by seam means, including an apex;

means for reinforcing said seam means interconnected along said seam means;

a plurality of header cable means for carrying loads placed on said structure;

crown harness means extending along said apex;

funicular cable means including first and second cable strands with two degrees of curvature forming inner and outer funicular polygon rings extending peripherally about said apex for balancing static loads and for redistributing dynamic loads placed on said structure;

means for joining said first and second cable strands with a terminus of each of said plurality of header cable means;

means for connecting said reinforcing means to said first and second cable strands; and

means for anchoring said structure to the ground.

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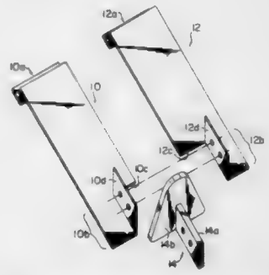
SNOW GUARD

Joseph D. Zaleski, 49 Reservoir Rd., Farmington, Conn. 06032

Filed Mar. 24, 1993, Ser. No. 36,452

Int. Cl.[5] E04D *13/00*

U.S. Cl. 52—24 **3 Claims**



1. A roof snow guard of the type adapted to be hooked over the upper edge of a shingle that is partially overlapped by the next higher course of shingles of a pitched roof, said guard including a base made from weather resistant sheet metal, said base having an elongated generally rectangular shape with a medial center line, at least two sheet metal strips laid one on top of the other, both said two strips having upper edges that are formed into a hook adapted to be hooked over the upper edge of a shingle, one of said two strips having a lower edge portion with a lateral cut extending from one side of said one strip to said medial center line, said other of said two strips having a lower edge portion with a lateral cut extending from an opposite side of said other strip to said medial center line, and said two strips having abutting flanges bent upwardly and extending along said medial center line, and a web or shelf secured to said abutting flanges.

5,343,660

SCAFFOLD TUNNEL

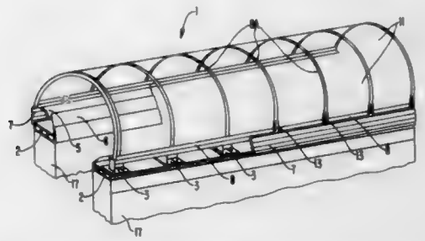
Paolo Caoduro, Via Europa, 15 Zane (Vicenza), and Carlo Caoduro, Via Chiuppese, 15 Monticello Conte Otto (Vicenza) both of Italy

Filed Jun. 29, 1992, Ser. No. 905,362

Claims priority, application Italy, Aug. 5, 1991, PD91 U 000079

Int. Cl.[5] E04B *1/32*

U.S. Cl. 52—86 **16 Claims**



1. A scaffold tunnel comprising a metal scaffold structure supporting cover sheets made of glass or plastic material, characterized in that said metal scaffold structure comprises hollow base section bars (**8**) and hollow vault section bars (**8***a*) mounted on hinged mounting structures, said mounting structures including a bearing block (**3**) and a hinged body (**4**) and secured on a base mounting section bar (**2**) of a length generally equal to that of the scaffold tunnel, and finish section strips (**5, 6, 12, 12***a*) covering predetermined sections of said bearing (**3**) block and hinged body (**4**), shaped sealing strips (**7, 8, 10**) covering predetermined sections of said metal scaffold structure, and safety tensioners (**13**) connected to distal ends of said hollow vault section bars (**8***a*).

5,343,661

MORTAR AND DEBRIS COLLECTION DEVICE AND SYSTEM

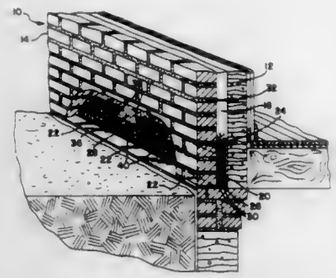
Tom Sourlis, 3646 Ridge Rd., Highland, Ind. 46322

Continuation of Ser. No. 862,324, Apr. 2, 1992, Pat. No. 5,230,189. This application Jul. 20, 1993, Ser. No. 95,053

The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.

Int. Cl.[5] E02D *19/00*

U.S. Cl. 52—169.5 **3 Claims**



1. A mortar and debris collection device for use in a cavity wall construction having an inner wall and an outer wall with channels formed therein through which channels water can drain from a channel opening communicating with a cavity defined between the walls, comprising:

a water-permeable body having pathways therethrough extending from an upper surface upon which water and debris can fall, and yielding a porosity for said body sufficient to permit water to pass therethrough, but mortar and other debris is substantially prevented from passing therethrough, said body being emplaceable within the cavity without any fixation device required.

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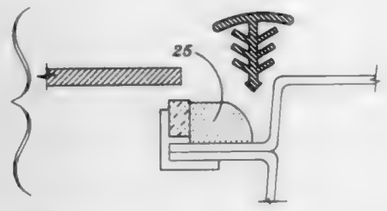
AUTO GLASS MOULDING AND DAM

Jack R. Nelson, 5920 McKinley Dr., Garden Valley, Calif. 95633

Filed Oct. 29, 1992, Ser. No. 968,355

Int. Cl.[5] E06B *3/00*

U.S. Cl. 52—208 **26 Claims**



1. A method for securing automobile glass to a window frame of an automobile, the window frame having a pinch weld, including the steps of:

forming an elongated strip of moulding to have a cross-section with two fingers which are dimensioned to grasp the pinch weld therebetween and a lower portion extending

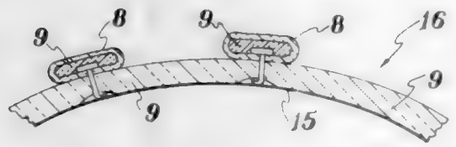
from the fingers such that the cross-section of the moulding is F-shaped and has:
a lower portion of elongate form having a first end and a second end,
an upper finger extending substantially perpendicularly from the first end of the lower portion, and
a lower finger extending from the lower portion at a point on the lower portion between the first end and the second end of the lower portion;
locating the moulding adjacent the pinch weld with the fingers grasping the pinch weld therebetween and orienting the lower portion toward an exterior of the automobile;
positioning a porous dam adjacent the lower portion and one of the two fingers on an exterior of the pinch weld, the porous dam spaced a distance away from the pinch weld similar to a desired thickness of a urethane sealant;
placing an interior surface of the automobile glass adjacent a side of the porous dam distant from the pinch weld;
directing uncured urethane sealant between the glass and the pinch weld; and
curing the urethane sealant, including allowing air to pass through the porous dam and into contact with the urethane sealant.

5,343,663

QUILTING PIN AND METHOD FOR ITS USE

Fernando L. Larrea, 3700 Rue Foret, Flint, Mich. 48532, and Frank W. Vaydik, 97320 Shattuck Rd., Saginaw, Mich. 48603

Filed May 7, 1992, Ser. No. 879,569
Int. Cl.[5] E04B *2/00*
U.S. Cl. 52—506.02 **3 Claims**



1. In combination, a fastener, said fastener comprising a penetration device having a metal head and an elongated malleable metal shank;
said head being essentially flat and having a top surface and a bottom surface;
said elongated metal shank being fixedly attached to the bottom surface of the metal head, and near the center thereof;
said elongated metal shank having a piercing end at an end distal to its attachment to the head;
said metal head being essentially enveloped by an insulating material which is enveloped by a jacketing material;
a securing base for the fastener and,
located therebetween, an insulating material covered by a jacketing material.

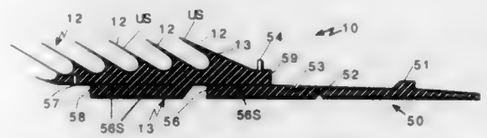
5,343,664

ROOFING STRUCTURE AND METHOD

Harry Loucks, 1812 Spring St., Little Rock, Ark. 72206

Filed Oct. 7, 1992, Ser. No. 957,136
Int. Cl.[5] E04D *1/30*
U.S. Cl. 52—518 **25 Claims**

1. A roofing element for a pitched roof, comprising:
one or more vane members having upper and lower sides,
a mounting element integral with said one or more of thin vane members for securing said one or more vane members on said pitched roof,
each of said one or more vane members extending at an angle from said mounting element, said angle being other than 90 degrees, and having a length and being spaced such that upon installation on said pitched roof except for the upper-most of said vane members, each vane member is shaded by an immediately upper vane member so that



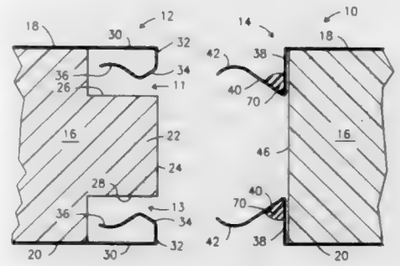
heat generated in the vanes by impingement of sun rays can be carried away by air convection on said upper and lower sides of said vane members.

5,343,665

CABANA PANELS HAVING ADJUSTABLE-STRENGTH INTERLOCKING MEANS

Michael J. Palmersten, Safety Harbor, Fla., assignor to Ramp R & D, Ormond, Fla.

Filed Jun. 28, 1993, Ser. No. 84,035
Int. Cl.[5] E04C *3/30*
U.S. Cl. 52—588.1 **8 Claims**



1. An interlocking means for joining together, at first and second opposite edges thereof, modular panels of the type having a core of a predetermined material and a metallic skin for covering top and bottom surfaces of said core, comprising:
first and second interlocking means for interlocking said metallic skins to one another;
said first interlocking means including a first end of a metallic skin, said first end having a first flat part adhered to the core which it overlies, a second flat part that is integral to said first flat part and disposed in coplanar relation therewith, said second flat part extending in cantilever relation to said core and having a distal free end;
said distal free end of said second flat part having three bends formed therein;
a first bend of said three bends being a substantially ninety degree bend and defining a first bent part that extends a predetermined distance towards a center of said core, said first bent part overlying the first edge of said core;
a second bend of said three bends being a substantially forty five degree bend and defining a second bent part that extends a predetermined distance generally towards said center of said core and generally away from a first edge of said core;
a third bend of said three bends having a substantially arcuate configuration and defining a third bent part that extends a predetermined, rearwardly-extending distance relative to said first edge, said third bend extending in substantially parallel relation to the top and bottom surfaces of said core;
said second interlocking means being formed complimentarily to said first interlocking means;
said first and second interlocking means being flexible so that they are transiently displaced from respective positions of repose when they are brought into interlocking relation to one another, and being resilient so that they substantially return to said respective positions of repose when the interlocking process has been completed;
said first and second interlocking means snapping together after an initial resistance to interlocking has been overcome, under a self-bias created by the resiliency and configuration of the metallic skin, said self-bias bringing mating cores tightly together and forming a seam between mating panels that is not misaligned;
a second end of said metallic skin having a first flat part adhered to the core which it overlies;
said second end also having a second part having three bends formed therein, said second part not being adhered to its associated core;
a first bend of said bends being a substantially ninety degree bend and defining a first bent part that extends a predetermined distance towards a center of said core, said first bent part overlying the second edge of said core;
a second bend of said three bends being a substantially forty five degree bend and defining a second bent part that extends a predetermined distance generally away from said center of said core and generally away from said second edge of said core;
a third bend of said three bends having a substantially arcuate configuration and defining a third bent part that extends a predetermined, forwardly-extending distance relative to said second edge, said third bend extending in substantially parallel relation to the top and bottom surfaces of said core;
the first end of said core being sculpted to provide a forwardly-extending tongue, said tongue extending a predetermined distance, said tongue formed by a pair of grooves formed in top and bottom surfaces of said core, each groove of said pair of grooves being in open communication with its associated top or bottom surface, and said second and third bent parts of said first interlocking means extending into their associated grooves;
said second core end being sculpted, there being a pair of grooves of uniform predetermined depth formed in said second core end, defining a forwardly-projecting tongue of predetermined extent therebetween, each of said grooves being in open communication with its associated top or bottom surface of said core, and each of which is formed by a bevelled sidewall and a flat bottom wall, each of said bevelled sidewalls being sloped at an approximate forty five degree angle relative to said top and bottom surfaces and at least partially supporting said second bent part of said second interlocking means, said second bent part having increased support as the respective depths of said grooves increases, said increased support decreasing the flexibility of said second interconnecting means.

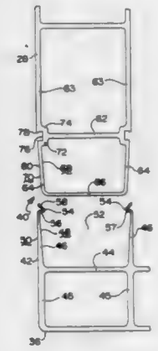
5,343,666

SPACE FRAME JOINT CONSTRUCTION

Charles J. Haddad, Bloomfield Township, Oakland County, and Robert L. Maliszewski, Canton Township, Wayne County, both of, assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 28, 1992, Ser. No. 967,886
Int. Cl.[5] F16B *7/04*
U.S. Cl. 52—648.1 **15 Claims**

1. A space frame for an automobile vehicle, comprising:
a plurality of structural members;
joint means for joining and locking at least a pair of said the structural members together;
said joint means comprising channel means forming a channel on one of said structural members, extension means forming an extension on another of said structural members, and locking means for locking said extension into said channel;
said locking means comprising means forming a pair of grooves on opposed sides of said extension, and means forming a pair of opposed tabs on opposed sides of said channel, said tabs having a ledge portion extending inwardly into said grooves and a retainer portion extending from said ledge portion; and
said extension having a flange at least partially overlapping



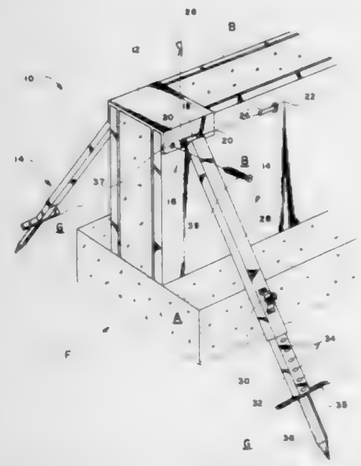
each of said grooves, either one of said retainer portion and said flange being moved inwardly such that said retainer portion is disposed behind said flange and retained in said groove.

5,343,667

FORM BRACE

Frank G. Peden, 17382 Hwy. 126, Sisters, Oreg. 97759

Filed Jul. 6, 1993, Ser. No. 86,041
Int. Cl.[5] E04B *1/38*
U.S. Cl. 52—699 **8 Claims**



1. A bracing system for concrete forms having opposed vertical form boards, said bracing system including:
at least one inclined brace having an upper and a lower end and comprising telescoping inner and outer struts,
one of said inner and outer struts having means defining at least one first hole, and the other of said inner and outer struts having means defining a plurality of second holes, said first and second holes selectively aligning, said inclined brace also including a pin corresponding in cross sectional configuration to said first and second holes, whereby said pin is inserted through one said first hole and one said second hole, said inclined brace being adjusted as to length thereby,
one of said inner and outer struts engaging the ground and including a foot having a foot plate and a spike penetrating

the ground, whereby said foot anchors said inclined brace in the ground,

the other of said inner and outer struts including strut attachment means secured thereto at said upper end and anchoring at the concrete form, and

at least one spacer having opposing sides and comprising two pairs of parallel walls for surroundingly engaging, respectively, opposed form boards, and two spacer attachment means cooperating with and attaching to said strut attachment means, whereby said spacer holds two form boards in parallel, spaced apart relation and secures one said upper end of one said inclined brace on one side of said spacer and secures another said upper end of another said inclined brace to an opposed side of said spacer, while said one inclined brace is also secured at said lower end by penetrating the ground, whereby said bracing system, when assembled, is braced against collapse in opposing directions,

said strut attachment means comprising a first dowel socket, and said spacer attachment means comprising a second dowel socket, said first and second dowel sockets aligning with one another when said strut and said spacer are in operative positions with respect to an assembled concrete form, said strut attachment means further comprising a dowel which is placed in and unites said strut attachment means and said spacer attachment means, said dowel having means defining a radial bore therein, there further being a clip which is manually inserted into and withdrawn withdrawn from said bore, and

said outer strut further having means captively retaining said pin and a spring biasing said pin into an operative position.

5,343,668

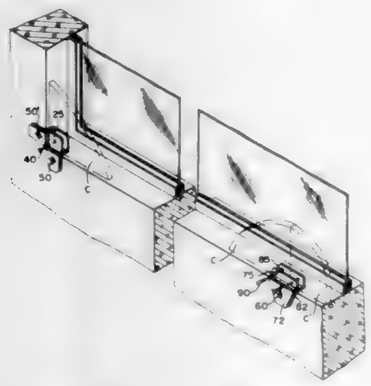
SHUTTER ANCHORAGE SYSTEM

Alfredo I. Gonzalez, 15941 SW. 83 Ave., Miami, Fla. 33157

Filed Jun. 14, 1993, Ser. No. 76,078

Int. Cl.[5] E04B *1/38*

U.S. Cl. 52—712 **12 Claims**



1. A side anchorage device for supporting adjacent co-planar flat cover members, having a plurality of through holes, to be used in protecting openings of building structures, comprising:

A. first side stepped-plate means having a first flat anchorage section, a first step wall and a flat supporting section, and said first step wall keeps the respective planes of said first flat anchorage section and said first flat supporting section at a spaced apart and parallel relationship with respect to each other, and said first flat anchorage section having at least one opening and said first flat supporting section having at least one hole;

B. second side stepped-plate means having a second flat anchorage section, a second step wall and a second flat supporting section, and said second step wall keeps the respective planes of said second flat anchorage section and said second supporting section at a spaced apart and parallel relationship with respect to each other, and said second flat anchorage having at least one opening and said second flat supporting section having at least one hole and wherein said second step wall being larger than said first step wall so that the planes of said first and second flat supporting sections are sufficiently separated to cooperatively receive said flat cover member when said first and second side stepped-plate means are cooperatively brought against each other;

C. first fastening means cooperatively received by the openings in said first and second flat anchorage sections and said first fastening means being removably mountable to said building structures in an area adjacent to the opening being protected; and

D. second fastening means cooperatively received by the holes in said first and second flat supporting sections and adapted to be received by the through holes in said flat cover member thereby urging said first and second flat supporting sections towards each other.

5,343,669

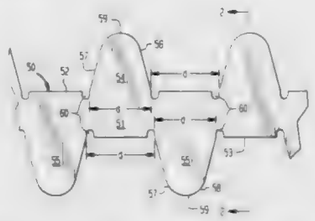
GROMMET STRIP

Hector D. Petri, 384 Edmands Rd., Framingham, Mass. 01701

Filed Jul. 6, 1992, Ser. No. 909,334

Int. Cl.[5] E04C *2/38*

U.S. Cl. 52—716.8 **19 Claims**



1. A grommet strip of the type including a spring tempered metal substrate strip having an elongated base portion and a plurality of discrete spaced apart finger portions extending in a common direction from each longitudinal edge of said base portion and substantially normal thereto, inner surfaces of said base and finger portions forming an elongated channel with an open end opposite to said base portion and adapted to receive an exposed edge of a wall with the inner surface of said base portion juxtaposed to the exposed edge and said inner surfaces of said finger portions engaging marginal sections of the wall directly adjacent tc the edge, and wherein said finger portions extending from each of said edges are substantially spaced apart so as to establish therebetween strip voids each bounded by an exposed edge of said base portion and facing side edges of longitudinally adjacent said finger portions; and wherein the improvement comprises a resilient non-metallic coating providing an elongated resilient surface covering over a surface of the base portion facing opposite to said channel and providing over each of said exposed edges of said base portion a resilient edge length surface that forms with said elongated resilient surface covering an angle substantially greater than 90° and thereby providing between said surface covering and said edge length surfaces a gradual transition that reduces abrasion to insulated electrical wires retained by said grommet strip.

5,343,670

METHOD OF FORMING SELECTED SIZE AND WEIGHT BALES OF HAY INTO A SELECTED SIZE AND WEIGHT NON-PALLETIZED UNIT

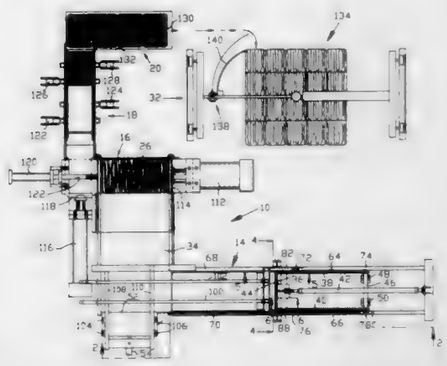
John M. Gombos, Bakersfield, and Moshe Leashno, Long Beach, both of Calif., assignors to A.C.X. Trading, Inc., Bakersfield, Calif.

Division of Ser. No. 674,863, Mar. 25, 1991, Pat. No. 5,175,981, which is a continuation-in-part of Ser. No. 526,186, May 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 353,811, May 17, 1989, Pat. No. 5,001,974. This application Dec. 8, 1992, Ser. No. 987,120

The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.

Int. Cl.[5] B65B *5/10, 25/02, 27/12, 35/50*

U.S. Cl. 53—399 **22 Claims**



1. A method of unitizing and containerized shipping of a cargo consisting of multiple substantially identical high density bales of hay, comprising:

forming said bales into a plurality of non-palletized cargo units of selected different sizes which together fit the cargo space of a shipping container and are capable of being handled by a forklift truck, selected units of which alone or in combination fit motor vehicle cargo spaces, comprising the steps of:

selecting a plurality of substantially identical size and weight high density partially compressible bales of hay;

arranging said plurality of bales of hay into multiple stacks of a plurality of non-palletized cargo units of selected different sizes, each stack consisting of multiple coextensive layers of multiple horizontal rows having coextensive peripheral sides;

binding each of said multiple stacks into a non-palletized unit solely by the application of a continuous inward directed lateral force on the peripheral sides of said stack, thereby at least partially compressing each of said bales and forcing the vertical surfaces of the bales into partially interlocking binding engagement with laterally adjacent bales for holding them against vertical movement relative to one another, said application of a continuous lateral force carried out by the step of wrapping multiple layers of an elongated continuous sheet of pre-stretched polymeric film having a memory horizontally around the sides of said plurality of bales of hay, thereby forcing said bales into binding engagement with laterally adjacent bales for binding said stack as a unit without bottom engaging support while maintaining said bottom bale layer in place due to said partially interlocking of the vertical surfaces of the bales for support by direct engagement of said bottom surface on a pair of tines of a forklift truck without a pallet; and

loading selected combinations of said different size cargo units into said shipping container in a manner to substantially fill the cargo space therein so that said cargo units may be unloaded by directly engaging a bottom surface of each stack by forks of a forklift truck.

5,343,671

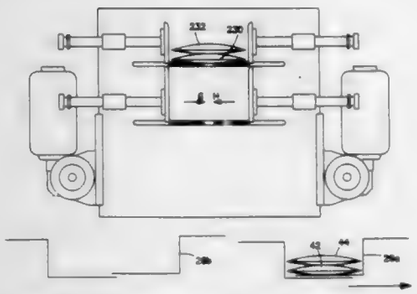
MEANS FOR AND METHODS OF LOADING IRREGULARLY SHAPED OBJECTS INTO AUTOMATIC PACKAGING MACHINES

Stevan Tisma, Chicago, Ill., assignor to Tisma Machinery Corporation, Elk Grove Village, Ill.

Continuation of Ser. No. 762,497, Sep. 19, 1991, Pat. No. 5,170,610, which is a continuation of Ser. No. 508,269, Apr. 11, 1990, Pat. No. 5,072,573, which is a continuation of Ser. No. 464,162, Jan. 12, 1990, abandoned. This application Nov. 17, 1992, Ser. No. 977,578

Int. Cl.[5] B65B *1/04, 5/06*

U.S. Cl. 53—437 **4 Claims**



1. A process of preconditioning and loading product in an automatic packaging machine, said method comprising the steps of:

(a) transporting a plurality of mandrels around a path which passes at least two work stations;

(b) making said mandrel relatively wide at one work station;

(c) making said mandrel relatively narrow at another work station;

(d) shaping product by adjusting the width of said mandrel between said one and other work stations; and

(e) repeatedly adjusting the mandrel through cycles of wide and narrow configurations in order to condition product during said transporting of said mandrels around said path.

5,343,672

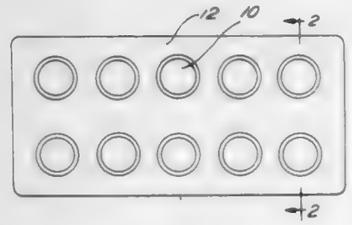
METHOD FOR MANUFACTURING FREEZE DRIED DOSAGES IN A MULTILAMINATE BLISTER PACK

Patrick Kearney, 59 Belsay, Toothill, Swindon, Wilts, England SN5 8HD ; Andrew R. Thompson, 1 Willowbrook, Purton, Wiltshire, England SN5 9AG , and Richard J. Yarwood, 3 Orchard Close, Bockland, Oxon, England SN7 8RJ

Filed Dec. 1, 1992, Ser. No. 985,040

Int. Cl.[5] B65B *63/08*

U.S. Cl. 53—440 **7 Claims**



1. A method for packaging a freeze-dried dosage formed from a liquid comprising the steps of:

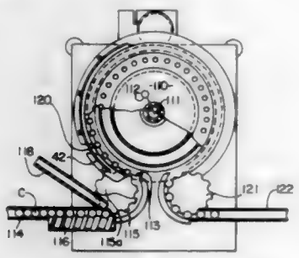
a) forming a first polymeric sheet;

b) forming a second polymeric sheet having substantially the same coefficient of thermal expansion as the first polymeric sheet;
c) forming an aluminum sheet;
d) sandwiching the aluminum sheet between the first and second polymeric sheets to form a multilayer blister film defining a film plane, the multilayer blister film providing a substantially thermally balanced laminate;
e) forming a plurality of depressions in the multilayer blister film;
f) introducing the liquid into the depressions;
g) freezing the liquid, the thermally balanced laminate substantially avoiding warpage of the film plane interposed between the depressions;
h) freeze drying to provide the freeze-dried dosage; and
i) attaching a lidding sheet to the multilayer blister film to seal the depressions thereof.

5,343,673
METHOD AND APPARATUS FOR PLACING AN INSERT IN A CONTAINER

Brain Beanland, Hampton, Peter F. Kershaw; Warcs, Edward R.; Costello, Coventry, all of Great Britain, assignors to Guinness Brewing Worldwide Limited, London, United Kingdom

PCT No. PCT/GB90/01599, § 371 Date Mar. 10, 1993, § 102(e) Date Mar. 10, 1993, PCT Pub. No. WO91/06481, PCT Pub. Date May 16, 1991
PCT Filed Oct. 16, 1990, Ser. No. 852,127
Claims priority, application United Kingdom, Oct. 30, 1989, 8924368.7
Int. Cl.[5] B65B *31/00, 61/20*
U.S. Cl. 53—470 **22 Claims**



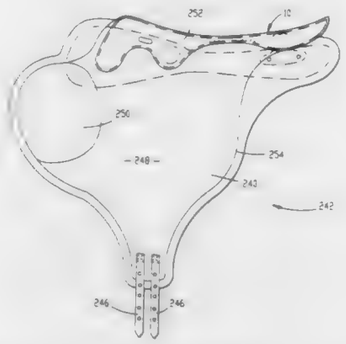
1. A method of placing an insert in a container having a neck wherein the insert is of greater longitudinal extent than the cross-section of the neck, comprising the steps of holding the insert in a first orientation while causing relative movement between the insert and the container to introduce the insert into the container through the neck and subsequently permitting the insert to move under the influence of gravity into a second, different, orientation relative to the first orientation within the container, said step of holding the insert in said first orientation while causing relative movement between the insert and the container to introduce the insert into the container through the neck comprises a step of causing the insert to fall under gravity through a guideway which extends through the neck.

5,343,674
RACING SADDLE

Roy L. Brown, Nevada, Mo., assignor to Ortho-Flex Saddle Co., Inc., Nevada, Mo.

Filed Oct. 1, 1993, Ser. No. 130,240
Int. Cl.[5] B68C *1/00*
U.S. Cl. 54—44.1 **12 Claims**

1. A damped saddle tree having progressively loaded spring panel skirts, comprising:
a pair of resilient skirts adapted to conformably overlie a horse's back, each skirt presenting a forward portion and a rearward portion;
a spanning element coupled with each of said skirts;
a seat member positioned above said skirts and slidably engaging said spanning element;
means for coupling said seat member to said skirts in a manner allowing pivotal and sliding motions;

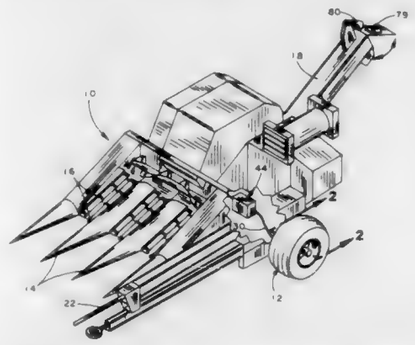


said seat member having a resiliently deformable region intermediate said forward and rearward portions, said deformable region having less rigidity than said pommel and cantle portions and including means for damping vibrations traveling between a horse and rider.

5,343,675
MOTION SENSING SAFETY INTERLOCK

Louis Norton, Pella, Iowa, assignor to Vermeer Manufacturing Company, Pella, Iowa

Filed Jun. 26, 1991, Ser. No. 721,298
Int. Cl.[5] A01D *45/02, 75/18*
U.S. Cl. 56—10.2 R **5 Claims**

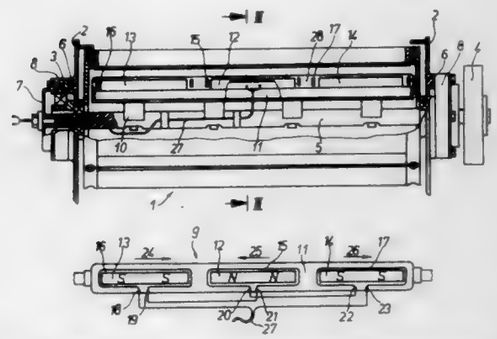


1. A motion sensor and safety controller for controlling the operation of an equipment element of a ground-traveling machine, comprising:
(a) ground-engaging rotary means for generating a signal in response to movement of the machine over the ground;
(b) means for monitoring said signal;
(c) switch means controlled by said monitor means for interrupting the operation of the equipment element when movement of the machine drops below a preselected speed for a preselected time.

5,343,676
DEVICE FOR RECOGNIZING FERROMAGNETIC FOREIGN BODIES, IN PARTICULAR IN RESPECT OF HARVESTING MACHINES

Burkhard Weiss, Weigsdorf-Koeblitz, Fed. Rep. of Germany, assignor to Claas Saulgau GmbH, Saulgau, Fed. Rep. of Germany

Filed Dec. 10, 1992, Ser. No. 989,841
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1991, 4140812
Int. Cl.[5] A01D *75/18*
U.S. Cl. 56—10.2 J **2 Claims**



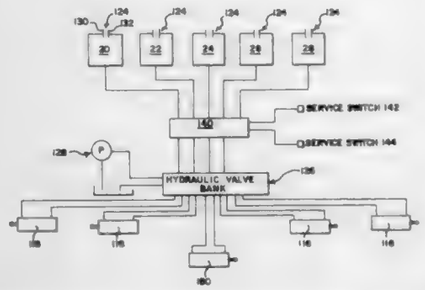
1. A device for recognizing ferromagnetic foreign bodies, in particular for protecting the working members of a harvesting machine, comprising:
a magnetic field generating device having a plurality of magnetic poles for generating magnetic fields, the magnetic poles extending in a line transversely to a transport path of the harvesting machine, the magnetic fields extending across the entire width of the transport path of the harvesting machine, lines of flux thereof running transversely to a direction of transport of a harvested crop on the transport path, and having pick-up coils connected in series such that voltages induced therein are added together, and
a signal analyzing device connected down-stream from the pick-up coils,
wherein the magnetic field generating device comprises an odd number of magnetic poles, two outer magnetic poles thereof possessing the same polarity, and
wherein at least every second magnetic pole is enclosed by a respective pick-up coil.

5,343,677
METHOD AND SYSTEM FOR MOUNTING AND SUPPORTING ROW UNITS ON AN AGRICULTURAL IMPLEMENT

Michael J. Covington, LaGrange, and George H. Hale, Naperville, both of Ill., assignors to Case Corporation, Racine, Wis.

Filed Dec. 15, 1992, Ser. No. 990,688
Int. Cl.[5] A01D *46/08*
U.S. Cl. 56—10.2 F **18 Claims**

1. A system for mounting and supporting a plurality of harvesting units in side-by-side relation relative to each other on a fore-and-aft extending frame of a cotton harvester, each harvesting unit including a harvesting mechanism for removing cotton from plants arranged in generally parallel rows, said system comprising:
a harvesting unit support frame connected to the frame of the cotton harvester and including a generally horizontal bar extending laterally across a forward end of the cotton harvester;
mounting structure for individually mounting the harvesting units on said bar to prevent fore-and-aft movements of the harvesting units relative the support frame, with at least one of the harvesting units being mounted on the bar for lateral movement endwise therealong;
an actuator associated with each movable harvesting unit for effecting powered lateral movement of each movable harvesting unit laterally along said bar; and

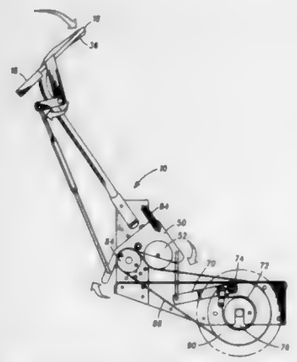


a sensor mounted on each movable harvesting unit for sensing the lateral position of said movable harvesting unit relative to a respective plant row and for controlling the respective actuator to align said movable harvesting unit with respect to said respective plant row thereby facilitating harvesting of the cotton by the harvesting mechanism of the movable harvesting unit.

5,343,678
LAWN MOWER CONTROL DEVICE

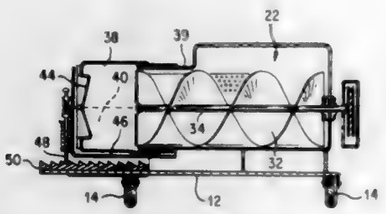
Thomas G. Stuart, Mukwonago, Wis., assignor to Ransomes, Inc., Johnson Creek, Wis.

Filed Feb. 4, 1993, Ser. No. 17,210
Int. Cl.[5] A01D *34/68, 69/10*
U.S. Cl. 56—11.3 **21 Claims**



5. A control apparatus for a lawn mower, comprising:
at least two substantially elongate members pivotable between their ends about only a single axis;
each of said substantially elongate members being substantially coupled to and capable of actuating a drive means for a lawn mower and capable of being independently operable from one another;
means for returning said drive means to a neutral configuration when external forces are absent; and
said drive means being actuated to drive at least one side of said mower in substantially the same direction as a force applied to pivot one of said substantially elongate members.

5,343,679
LEAF BALER
Hermann K. Cymara, 106 Stonehaven Cir., Newfield, N.Y. 14867
Filed Dec. 1, 1993, Ser. No. 159,514
Int. Cl.[5] A01D *43/02*
U.S. Cl. 56—16.6 **20 Claims**



1. Apparatus for picking up and bagging leaves and other loose material from a lawn or other surface, said apparatus comprising:

a) a frame mounted upon wheels for movement of the apparatus over said surface;

b) a housing including integral, forward and rear housing sections;

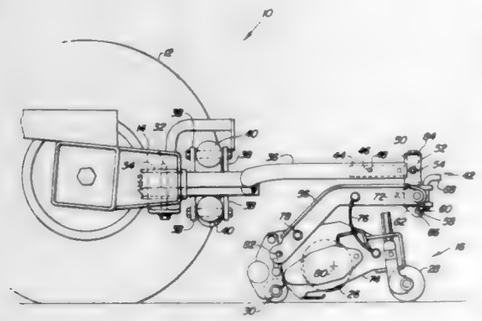
c) pick-up means for picking up said loose material, said pick-up means being mounted for rotation about an axis extending laterally across said front housing section and adapted to propel said loose material from said surface into said rear housing section;

d) a rotary compaction mechanism communicating with said rear housing section to receive said loose materials therefrom, said rotary compaction mechanism having a discharge end and moving said material in a predetermined direction to said discharge end;

e) support means for contacting an exterior surface of a flexible bag and holding said bag in a predetermined position with an open end thereof adjacent said discharge end to receive said loose material in said bag; and

f) means for inhibiting rotation of said loose material within said bag due to forces applied to said material by said rotary compaction mechanism.

5,343,680
SUSPENSION MECHANISM FOR REEL MOWERS
Ronald L. Reichen, Horicon, Wis.; David H. Diebold, Ottumwa, Iowa; Larry N. Smith, Beaver Dam, Wis.; Stephen E. O'Brien, Ottumwa, Iowa, and David L. Phillips, Mayville, Wis., assignors to Deere & Company, Moline, Ill.
Filed Sep. 3, 1992, Ser. No. 940,418
Int. Cl.[5] A01D *34/62*
U.S. Cl. 56—249 **35 Claims**



7. A reel mower suspension mechanism for use with a vehicle, comprising:

a reel mower cutting unit having front and rear portions, said cutting unit including:

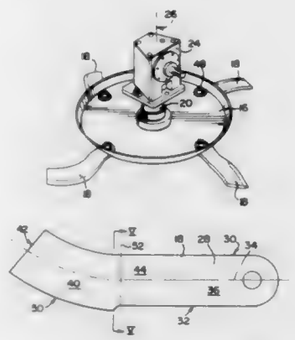
at least one side frame,

a ground engaging front roller coupled with the front portion of the cutting unit for generally supporting the front portion of the cutting unit during mowing operation,

a ground engaging rear roller coupled with the rear portion of the cutting unit for generally supporting the rear portion of the cutting unit during mowing operation, and

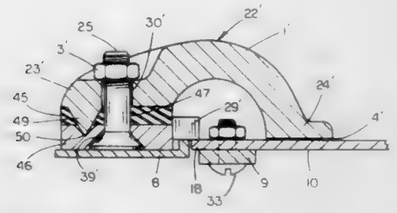
an arm coupled with the vehicle and operatively coupled with the side frame of the cutting unit at a pivotal connection point, said pivotal connection point being located to the rear of the cutting unit's center of gravity and above the front and rear rollers for generally equalizing the force transmitted to the ground by the front and rear support means during forward travel of the vehicle and cutting unit, thereby reducing the tendency of the front portion of the cutting unit to dip during forward travel.

5,343,681
CUTTER BLADE FOR A ROTARY CUTTER
Gerard de Jong, Natal Province, South Africa, assignor to Falcon Equipment Limited, Howick, South Africa
Filed Jan. 19, 1993, Ser. No. 5,438
Int. Cl.[5] A01D *34/64*
U.S. Cl. 56—255 **24 Claims**



1. A cutter blade for a rotary cutter which is formed of an elongated flat bar having a substantially parallel longitudinal side edges and defining a longitudinal axis midway between and parallel to said side edges, the flat bar being formed to define a mounting section adjacent one end thereof that can be rotatably mounted on a blade carrier of a rotary cutter, a cutting section adjacent the other end thereof that defines a sharpened cutting edge along one of its side edges, and an intermediate section that links the mounting section to the cutting section and that is cranked to offset the plane of the cutting section with respect to the plane of the mounting section, the side edge portion of the flat bar that is formed to define the cutting edge being curved operatively rearwardly with respect to a straight line defined by the remainder of the side edge of the flat bar including the said side edge portion, the curvature of the side edge portion defining the cutting edge being such that the line defining the cutting edge defines an arc of a circle with the centre of the circle being defined along a line dividing the cutting section and the intermediate section of the flat bar and which is perpendicular to the longitudinal axis of the straight section of the flat bar along the mounting section and the intermediate section, the ratio of the radius of the circle and the length of the cutting section being between 2:1 and 1.5:1.

5,343,682
ADJUSTABLE HOLD DOWN CLIP
James C. Puncochar, Rte. 2, Box 101, St. Paul, Nebr. 68873
Filed May 21, 1993, Ser. No. 65,938
Int. Cl.[5] A01D *34/17*
U.S. Cl. 56—305 **8 Claims**



1. In combination:

a sickle bar mower having an elongated frame member and a sickle blade mounted thereon for reciprocating movement, said sickle blade projecting forwardly from said frame member and reciprocating transversely with respect thereto;

an elongated base plate mounted to said frame member rearwardly of said sickle blade, said base plate having an upper surface and forward and rearward edges;

means for adjustably and pivotably mounting a hold down clip to said base plate;

a hold down clip having forward and rearward ends, said forward and rearward ends having bottom surfaces, said clip adjustably and pivotably connected to said frame member;

said hold down clip forward end projecting forwardly over said sickle blade and having a wear pad on the bottom surface thereof for contact with said sickle blade;

said means for adjustably and pivotably mounting said clip including:

an adjustment bolt extending upwardly from said base and through said rearward portion of said clip and having one end projecting upwardly from said clip;

an adjustment nut operably engaged on the projecting end of said bolt for selective upward and downward movement thereon;

tensioning means interposed between said base plate and said clip for biasing said clip upwardly on said bolt against said adjustment nut; and

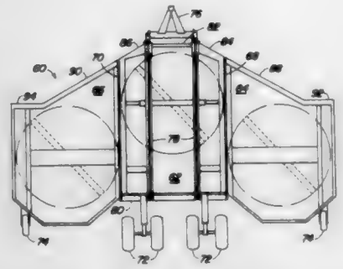
a pivot member located rearwardly of said adjustment bolt about which said clip pivots upon selective movement of the adjustment nut;

said pivot member including a depending portion depending from the rearward end bottom surface, having a pivot edge oriented transversely to a longitudinal axis of the clip about which the clip will pivot, said pivot edge in pivotal contact with said base plate.

5,343,683
ROTARY MOWER HAVING MODIFIED "DELTA WING" SHAPE
Henry Friesen, Niagara Falls, Canada, assignor to Deere & Company, Moline, Ill.
Filed Jun. 14, 1993, Ser. No. 75,421
Int. Cl.[5] A01D *34/66*
U.S. Cl. 56—320.1 **2 Claims**

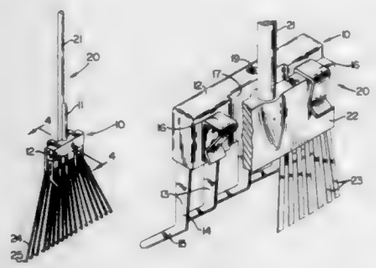
2. In a rotary cutter including a center housing section having a hitch pivotally connected to a forward end thereof and right and left wing housing sections respectively hinged to right and left sides thereof for flexing about respective fore-and-aft axes, each housing section being supported at its rear end by a ground wheel assembly, and said wing housing sections including respective inner leading profile sections diverging rearwardly relative to each other, the improvement comprising:

said inner leading profile sections each having a rear end terminating at an outer leading profile section extending outwardly by rearwardly relative to said rear end of the leading profile section and terminating at an outer extreme of said housing; and,



said outer leading profile sections serving to bend plant stems and stalks over in the forward direction prior to being contacted and cut off by said rotary cutter and able to mow a swath which is the entire width traversed by said rotary cutter.

5,343,684
RAKE ATTACHMENT
John R. Siler, III, 707 Armstrong Dr., Belmont, N.C. 28012
Filed Apr. 14, 1993, Ser. No. 46,615
Int. Cl.[5] A01D *7/10*
U.S. Cl. 56—400.08 **21 Claims**



1. A hand rake having an elongated handle for being manually grasped by the user, a header connected to one end of said handle, a plurality of flexible tines connected to said header with said tines arranged in spaced apart diverging relation and extending in a general direction away from said header, the combination therewith of a rake attachment removably mounted on said rake and being of much smaller size for ready accessibility for use in cleaning the tines of said rake of debris such as leaves and the like and for use as an auxiliary hand rake in confined spaces such as between closely spaced plants, said rake attachment comprising a header adapted for being hand held or connected to one end of a handle, a plurality of spaced apart tines connected to said header of said rake attachment, and means connected to said header of said rake attachment for removably mounting said rake attachment on said header of said rake.

5,343,685

MACHINE FRAME FOR A RING SPINNING OR RING TWISTING MACHINE

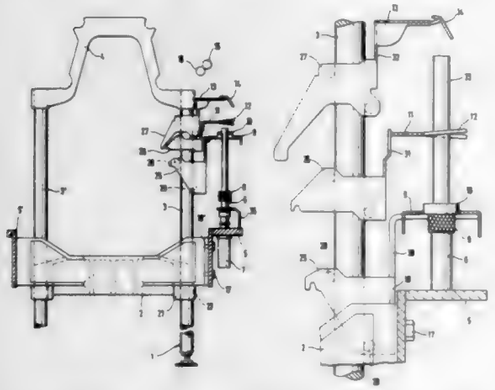
Horst Burgermeister, Geislingen/Steige, Fed. Rep. of Germany, assignor to Spindelfabrik Süssen, Schurr, Stahlecker & Grill GmbH, Fed. Rep. of Germany

Filed Apr. 20, 1992, Ser. No. 871,200

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1991, 4122882

Int. Cl.[5] D01H *7/40*

U.S. Cl. 57—136 19 Claims



1. A machine frame for a ring spinning machine having on each side stationary spindle rails, ring rails that can be moved up and down and yarn guide rails that can also be moved up and down, the machine frame comprising:

a plurality of vertical supporting columns that extend to a floor surface and support the spindle rails of the machine, and which are arranged on each side of the machine opposite one another in pairs,

intermediate pieces for connecting the vertical columns with one another, said intermediate pieces holding the spindle rails of the machine and extending transversely to the longitudinal direction of the machine,

ring rail holders for holding the ring rails of the machine, and

yarn guide rail holders for holding the yarn guide rails of the machine,

wherein the ring rail holders and yarn guide rail holders are coupled to the vertical columns so as to be guidingly vertically movable on the vertical columns independently of one another,

and wherein the intermediate pieces have recesses substantially adjacent said vertical columns at the upper surface of said intermediate pieces for accommodating the ring rail holders when said ring rail holders are moved downward to the spindle rails of the machine.

5,343,686

PROCESS AND DEVICE FOR PNEUMATIC INTRODUCTION OF FIBERS INTO A SPINNING MACHINE

Thorsten Büchner, and Michael Ueding, both of Ingolstadt, Fed. Rep. of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Fed. Rep. of Germany

Filed Aug. 5, 1992, Ser. No. 926,003

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1991, 4126552; Sep. 13, 1991, 4130510

Int. Cl.[5] D01H *15/02, 1/40*

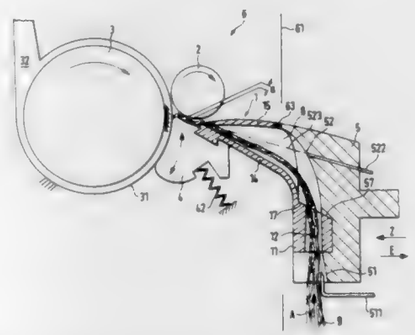
U.S. Cl. 57—263 31 Claims

1. A process for introducing a fiber sliver into a fiber processing machine which has an openable sliver feeding device and a sliver introduction funnel, comprising the following steps:

(a) locating a travelling sliver injector device in front of said fiber processing machine;

(b) opening said openable sliver feeding device with said sliver injector device;

(c) configuring said sliver injector device into contact with said sliver introduction funnel so as to define a sliver feeding channel therewith;



(d) grasping a leading end of said sliver and conveying the sliver end into the sliver injector;

(e) pneumatically conveying said leading end of said sliver into and through said sliver feeding channel and said sliver introduction funnel and into said opened feeding device; and

(f) closing said sliver feeding device on said sliver.

5,343,687

WINDER-TO-DOUBLE TWISTER CONNECTING SYSTEM

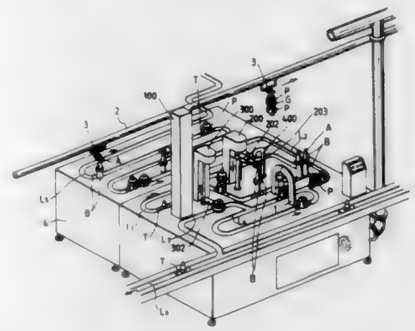
Yasuo Okuyama, Ohtsu, and Nobuo Sakamoto, Kyoto, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Division of Ser. No. 795,933, Nov. 15, 1991. This application Mar. 24, 1993, Ser. No. 36,362

Claims priority, application Japan, Nov. 17, 1990, 2-120649; Dec. 10, 1990, 2-410031; Jan. 17, 1991, 3-004717

Int. Cl.[5] D01H *9/14;* B65H *54/02*

U.S. Cl. 57—278 3 Claims



1. A yarn end preparing device, comprising:

an adapter for a double twister, the adapter having a lower collar and an upper collar and defining a core,

a tray on which the adapter is mounted,

upper yarn end suction means for sucking and holding a predetermined length of yarn end from a package inserted on the adapter,

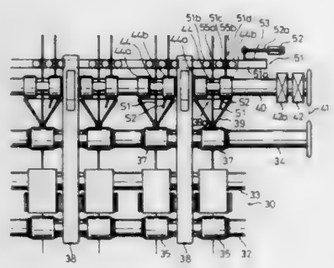
a first rotatable lever for hooking and retracting a yarn end from a package inserted on the adapter,

a second rotatable lever for hooking and retracting a yarn end from a package inserted on the adapter and for moving a yarn end vertically between a location below the lower collar of the adapter and a location above the upper collar of the adapter,

means for turning the tray, whereby a yarn end from a package inserted on the adapter is wound around a section of the adapter located below the lower collar and around a section of the adapter located above the upper collar,

cutting means disposed between the upper yarn end suction means and the adapter for cutting a yarn end held by the upper yarn end suction means, and

lower yarn end suction means for sucking the cut yarn end through the core of the adapter.



5,343,688

Patent Not Issued For This Number

5,343,689

METHOD AND APPARATUS FOR SYNCHRONOUSLY PIECING ROVING FOR A CONTINUOUS FEEDING THEREOF TO A RING SPINNING FRAME

Kenji Sasaki, Komaki, and Shinji Kato, Nagoya, both of Japan, assignors to Howa Machinery, Ltd., Aichi, Japan

Continuation-in-part of Ser. No. 908,807, Jul. 7, 1992, abandoned, which is a continuation of Ser. No. 670,582, Mar. 18, 1991, abandoned. This application Dec. 7, 1992, Ser. No. 986,491

Claims priority, application Japan, Mar. 22, 1990, 2-73133

Int. Cl.[5] D01H *13/04, 5/28*

U.S. Cl. 57—315 14 Claims

1. A method of synchronously piecing rovings for carrying out a roving bobbin exchanging operation between second roving bobbins in an almost exhausted condition and corresponding full packaged first roving bobbins, in a ring spinning frame which is provided with (a) a plurality of spindles arranged with an identical spindle pitch in an alignment along a lengthwise direction of said spinning frame at each side thereof, (b) a creel portion, (c) a plurality of draft parts arranged along said alignment of spindles at a position between said creel portion and said spindle alignment, said draft parts being positioned in relation to respective spindles and perpendicular to the lengthwise direction of said spindle alignment; a roving bobbin transporting system for introducing bobbin carriages to said creel portion of said spinning frame and for discharging said bobbin carriages therefrom, wherein said roving exchange operation is carried out between said almost exhausted second roving bobbin of said bobbin carriage positioned at said creel portion of said ring spinning frame and corresponding ones of said full packaged first roving bobbins of another bobbin carriage carried to said creel portion of said spinning frame,

said method comprising the steps of:

synchronously reserving a leading free end of a roving taken from each one of a plurality of full packaged first roving bobbins at a position in proximity to a roving being fed from a corresponding one of a plurality of second roving bobbins until said second roving bobbins become almost exhausted, said reserving being done in a region upstream of feeding said roving to a corresponding one of said draft parts,

a step of synchronously cutting said rovings from said second roving bobbins, at corresponding upstream feeding positions of said draft parts, when said second roving bobbins reach an almost exhausted condition, so that tail ends of said rovings of said second roving bobbins are created;

synchronously feeding said reserved leading free end of a roving from said full packaged first roving bobbin together with said tail end portion of said roving from a corresponding one of said second roving bobbins, which is feeding to said draft part, in a doubled condition, at a time immediately before said tail end portion of said roving from said second roving bobbin is fed into said draft part;

thereby carrying out a synchronous piecing operation of said leading free end of said roving taken from said one of said full packaged first roving bobbins with said tail end portion of said roving from a corresponding one of said almost exhausted second roving bobbins.

5,343,690

STARTING OF A SMALL TURBOJET

Jack R. Shekleton, and Colin Rodgers, both of San Diego, Calif., assignors to Sundstrand Corporation, Rockford, Ill.

Division of Ser. No. 612,109, Nov. 9, 1990, Pat. No. 5,263,315. This application Mar. 16, 1993, Ser. No. 33,170

Int. Cl.[5] F02C *7/26*

U.S. Cl. 60—39.02 5 Claims

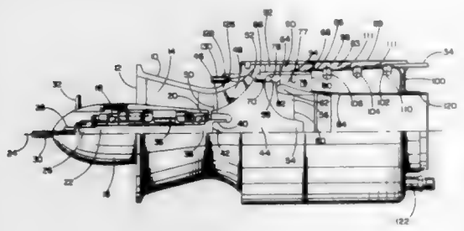
1. A method of starting a turbine engine having a rotor, a combustor for supplying hot gases to cause rotation of said rotor, a rotatable compressor for supplying gases to said combustor, said compressor having a plurality of blades extending outwardly therefrom, a fuel source for supplying fuel to said combustor, comprising:

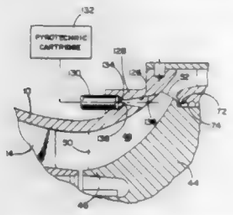
a) prior to operation of said turbine engine, forming at least said blades of the compressor of ceramic material;

b) thereafter, directing pyrotechnic gases having a tempera-

ture of at least about 3,000° F. and a supersonic velocity against said blades of the compressor until said rotor has reached a predetermined rotational speed;

c) introducing fuel into said combustor and igniting that fuel to cause combustion to produce said hot gases; and





d) continuing said combustion to maintain said predetermined rotational speed of said rotor after said directing of pyrotechnic gases ceases.

5,343,691

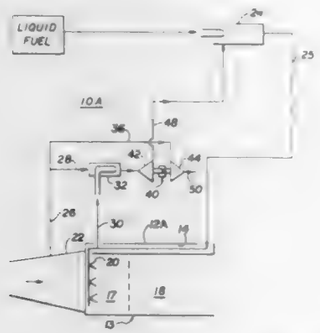
REDUCING THERMAL DEPOSITS IN PROPULSION SYSTEMS

George A. Coffinberry, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 919,459, Jul. 27, 1992, Pat. No. 5,247,792. This application Jul. 26, 1993, Ser. No. 96,391

Int. Cl.[5] F02C *7/224*

U.S. Cl. 60—39.06 **3 Claims**



1. A method for combusting fuel in a gas turbine engine comprising the following steps:

mixing a compressed gas with liquid fuel in a first mixing means to form a liquid and gas mixture prior to heating the liquid and gas mixture,

flowing the liquid and gas mixture through a heat exchanger and gasifying all of the liquid fuel and gas thereby forming a fuel and air gaseous mixture,

flowing a first portion of the fuel and air gaseous mixture to the gas turbine engine combustion section and combusting the fuel and air gaseous mixture,

flowing a second portion of the fuel and air gaseous mixture to a second mixer, and

mixing air compressed by the compressor section of the gas turbine engine with the second portion of the fuel and air gaseous mixture in the second mixer thereby forming a relatively cool air and fuel gaseous mixture and flowing the relatively cool air and fuel gaseous mixture to the first mixing means to serve as the compressed gas for mixing with the liquid fuel.

5,343,692

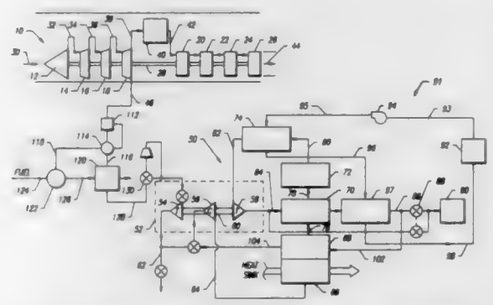
CONTAMINATE NEUTRALIZATION SYSTEM FOR USE WITH AN ADVANCED ENVIRONMENTAL CONTROL SYSTEM

Mark W. Thomson, Ventura, and Dan S. Matulich, Rolling Hills Estates, both of Calif., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Jun. 23, 1989, Ser. No. 370,540

Int. Cl.[5] F02C *6/18*

U.S. Cl. 60—39.07 **8 Claims**



1. An environmental control system for conditioning air delivered to an enclosed space operated in conjunction with a multistage turbine engine providing power for the enclosed space, comprising:

bleed air means for extracting an air flow of pressurized bleed air from the high pressure stage of said multistage turbine engine;

neutralization means for neutralizing airborne chemical and biological contaminates entrained within said bleed air by heating said bleed air to a minimum of 1200 degrees Fahrenheit;

means for recovering heat energy added to said bleed air flow by said heater means;

conditioning means for cooling and dehumidifying said chemically and biologically neutralized bleed air flow from said neutralization means, said conditioning means receiving power from said means for recovering; and

conduit means for delivering said conditioned bleed air flow to said enclosed space.

5,343,693

COMBUSTOR AND METHOD OF OPERATING THE SAME

Yasutaka Komatsu; Michio Kuroda; Yasuhiko Ootawara; Nobuyuki Iizuka; Isao Sato; Masayuki Taniguchi, and Noriyuki Hayashi, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 947,828

Claims priority, application Japan, Sep. 19, 1991, 3-239979

Int. Cl.[5] F23C *3/00;* **F23R** *3/22*

U.S. Cl. 60—39.23 **5 Claims**

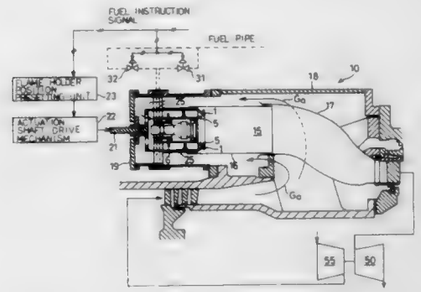
1. A combustor comprising:

a combustion cylinder formed in a cylindrical form around a virtual combustor axis directed to a predetermined direction to have an interior space to be provided as a combustion chamber;

a diffusion combustion nozzle for injecting a fuel into said combustion chamber to form a diffusion flame;

a premixed combustion nozzle provided adjacent to said diffusion combustion nozzle, and having a passage extending in parallel to said virtual combustor axis for letting a premixed gas of a fuel and air pass therethrough, and an injection slot for injecting said premixed gas which has passed said passage into said combustion chamber in a direction parallel to said virtual combustor axis;

a flame holder formed in the vicinity of said injection slot of said premixed combustion nozzle and within said combustion chamber, and having a first slanted surface for directing said premixed gas from said premixed combustion nozzle toward a downstream side with respect to a direction in which said premixed gas is injected from said



premixed combustion nozzle while directing said premixed gas towards said diffusion combustion nozzle and a second surface extending from a downstream edge of said first slanted surface in a direction substantially perpendicular to and away from said virtual combustor axis to form a circulating flow of a combustion gas generated as a result of the combustion of said premixed gas; and

a passage area changing mechanism for moving at least one of said premixed combustion nozzle and said flame holder relative to each other in the direction parallel to said virtual combustor axis to change the passage area between said injection slot of said premixed combustion nozzle and said downstream edge of the first slanted surface of said flame holder through which said premixed gas passes.

5,343,694

TURBINE NOZZLE SUPPORT

Steven M. Toborg, Lynn, and Roger W. Schonewald, Ipswich, both of Mass., assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 734,008, Jul. 22, 1991, abandoned. This application May 10, 1993, Ser. No. 59,863

Int. Cl.[5] F02C *7/20*

U.S. Cl. 60—39.31 **6 Claims**

1. A gas turbine nozzle arrangement comprising:

a plurality of nozzle segments each comprising:

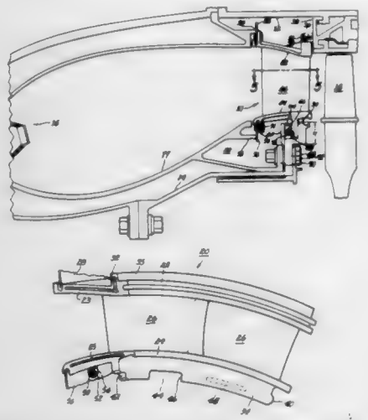
an outer arcuate shroud segment;

an inner arcuate shroud segment comprising: a generally arcuate, axially extending platform; a circumferential nozzle mounting flange projecting radially inward from said platform; and a circumferential retention slot passing through said flange and a radial retention slot in generally circumferential alignment with said circumferential retention slot and extending partially through said flange; and

a plurality of vanes extending between and connected to said outer and inner shroud segments;

annular nozzle retaining means for securing said plurality of nozzle segments in a generally annular configuration;

a nozzle support flange attached to a gas turbine combustor around the axis of the gas turbine; and



a plurality of fasteners for securing said nozzle retaining ring to said nozzle support flange.

5,343,695

COMBINED JET ENGINE PROVIDED WITH MEANS FOR SWITCHING BETWEEN TWO OPERATING STATES

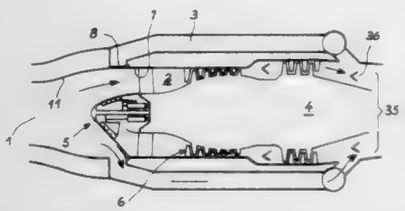
Noël B. Pascal, Lieusaint; Georges Mazeaud, Yerres, and Claude W. Pascal, Savigny Le Temple, all of France, assignors to Societe Nationale d'Etude Et de Construction de Moteurs d'Aviation "SNECMA", Paris, France

Filed Jun. 14, 1993, Ser. No. 75,879

Claims priority, application France, Jun. 24, 1992, 9207712

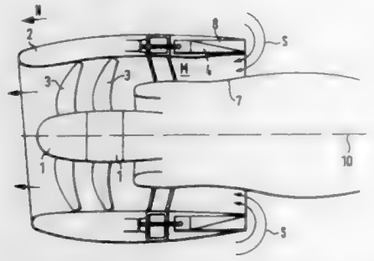
Int. Cl.[5] F02K *9/00*

U.S. Cl. 60—225 **3 Claims**



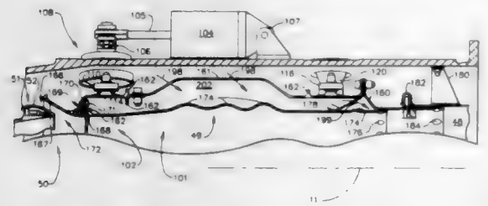
1. A jet engine having a gas circulation stream subdivided over part of its length into a central stream and a peripheral stream, the jet engine incorporating internal flaps which are mobile about internal articulated joints located at a center of an inlet of the central stream and external flaps which are mobile about external articulated joints located in an area between the central stream and the peripheral stream, the internal flaps having a substantially axial orientation in a first operating mode where the central stream is open and a conical orientation in a second operating mode where the central stream is obstructed, wherein the external flaps are positioned in front of an inlet of the peripheral stream and are mobile in such a way that the external flaps obstruct the inlet of the peripheral stream during the first operating mode and assume a conical orientation during the second operating mode by meeting at an end opposite to the external articulated joints with an end of the internal flaps opposite to the internal articulated joints, the internal and external flaps then forming a substantially conical common surface, which deflects gases towards the peripheral stream and obstructs the central stream.

5,343,696
THRUST REVERSER FOR A PROPFAN ENGINE
Alois Rohra, München, and Peter Tracksdorf, Gröbenzell, both of Fed. Rep. of Germany, assignors to MTU Motoren- Und Turbinen-Union, Fed. Rep. of Germany
PCT No. PCT/EP91/02040, § 371 Date Jun. 14, 1993, § 102(e) Date Jun. 14, 1993, PCT Pub. No. WO92/10660, PCT Pub. Date Jun. 25, 1992
PCT Filed Oct. 29, 1991, Ser. No. 75,510
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1990, 4039810
Int. Cl.[5] F02K *3/02*
U.S. Cl. 60—226.2 **15 Claims**



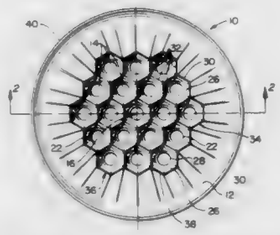
1. An engine having a shroud which surrounds one of a propfan and a propeller having blades, said shroud having a variable geometry, a direction of an air flow inside a duct of said shroud being reversible via an adjustment of said blades for the reversal of the thrust of said engine, comprising:
a separately movable nozzle ring forming a rearward end of the shroud, said nozzle ring being axially displaceable to an extent such that its trailing edge forms with an end of the shroud an edge of greater radial cross section than said trailing edge wherein air flow is promoted around said end of the shroud.

5,343,697
VARIABLE AREA BYPASS INJECTOR
Kenneth L. Johnson; Donald M. Corsmeier, both of Cincinnati; William L. Weaver, West Chester, and Eric H. Lewis, Loveland, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Division of Ser. No. 816,694, Jan. 2, 1992, Pat. No. 5,287,697. This application Jul. 29, 1993, Ser. No. 98,994
Int. Cl.[5] F02K *3/02*
U.S. Cl. 60—226.3 **13 Claims**



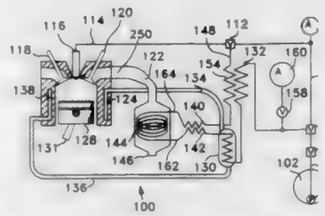
1. A variable area bypass injector (VABI) for a variable cycle gas turbine engine having a longitudinal axis, an inner casing defining a core gas flow, and an outer casing spaced from said inner casing defining a bypass duct for supplying a bypass air flow, said VABI comprising:
a VABI valve comprising a circumferentially continuous conical surface for directing a portion of bypass air flow into the core gas flow;
a VABI seal comprising a plurality of circumferentially adjacent VABI seal segments, each of said segments comprising a seal body having a seat portion complimentary to said VABI valve conical surface; and
actuation means for moving said VABI valve Conical surface axially between a closed position wherein said valve conical surface is substantially sealingly engaged by said segmented seal seat portions and an open position wherein bypass air is injected into the core flow.

5,343,698
HEXAGONAL CLUSTER NOZZLE FOR A ROCKET ENGINE
Lane Porter, Jupiter, and Edward B. Thayer, Palm Beach Gardens, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.
Filed Apr. 28, 1993, Ser. No. 54,915
Int. Cl.[5] F02K *1/00*
U.S. Cl. 60—271 **10 Claims**



1. A thrust nozzle for a rocket engine comprising:
a plurality of modular rocket engines clustered about a first axis that is perpendicular to a first plane, each modular rocket engine including
a combustion chamber having a circular cross section and a circular discharge hole for discharging combustion products of the combustion chamber, and
a modular nozzle having a modular nozzle inlet of the same diameter as the circular discharge hole and connected thereto for receiving the combustion products therefrom, and a modular nozzle outlet for discharging the combustion products from the modular nozzle, said modular nozzle outlet defining a hexagonally shaped exhaust area located in the first plane; and,
a main nozzle having a main nozzle inlet and a main nozzle outlet, said main nozzle inlet located in the first plane for receiving the combustion products from the modular nozzle outlets;
wherein the modular nozzle outlets are clustered together to form a notched-hexagonal shape in the first plane, and the main nozzle inlet circumscribes and conforms to the notched-hexagonal shape.

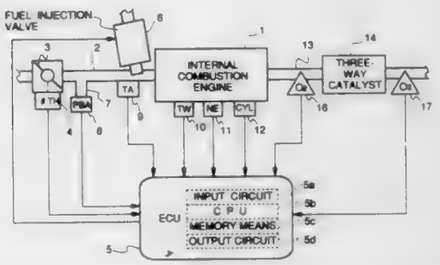
5,343,699
METHOD AND APPARATUS FOR IMPROVED OPERATION OF INTERNAL COMBUSTION ENGINES
Roy E. McAlister, 216 S. Clark, MS 103, Tempe, Ariz. 85281
Continuation of Ser. No. 364,309, Jun. 12, 1989, abandoned. This application Dec. 14, 1992, Ser. No. 990,071
Int. Cl.[5] F02B *17/00, 43/00;* **F02M** *21/02, 57/06*
U.S. Cl. 60—273 **15 Claims**



1. A process for operating an internal combustion engine

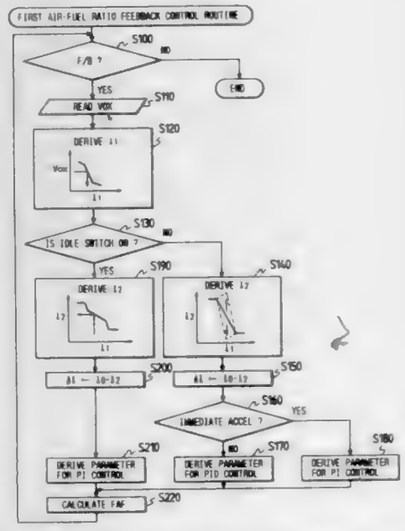
with intake, compression, power, and exhaust cycle-portions having a combustion chamber which comprises: subjecting primary fuel containing combined hydrogen to waste heat developed by said engine to produce engine-fuel containing free hydrogen, introducing air into said chamber during the air intake cycle-portion of said chamber, injecting substantial amounts of said engine-fuel into said chamber during the compression cycle-portion of said chamber following said intake cycle-portion, and creating ignition spark in said chamber at the point of injection of said engine-fuel into said chamber to ignite said injected engine-fuel.

5,343,700
AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES
Sachito Fujimoto; Toshikazu Oketani, and Yoshiharu Abe, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 1, 1992, Ser. No. 876,996
Claims priority, application Japan, May 13, 1991, 3-138206
Int. Cl.[5] F01N *3/20*
U.S. Cl. 60—276 **10 Claims**



1. In an air-fuel ratio control system for an internal combustion engine having an exhaust passage, and a three-way catalyst arranged across said exhaust passage, said air-fuel ratio control system comprising:
a first air-fuel ratio sensor arranged in said exhaust passage at a location upstream of said three-way catalyst;
a second air-fuel ratio sensor arranged in said exhaust passage at a location downstream of said three-way catalyst;
control means for controlling an air-fuel ratio of a mixture supplied to said engine in a feedback manner responsive to a result of a comparison between an output from said first air-fuel ratio sensor and a reference value which is compared with said output from said first air-fuel ratio sensor, said control means controlling said reference value based on an output from said second air-fuel ratio sensor such that as the output from said second air-fuel ratio sensor indicates a richer air-fuel ratio value, said reference value is set to a value which makes said air-fuel ratio of said mixture leaner;
engine load-detecting means for detecting load on said engine; and
reference value-changing means for selectively changing said reference value in dependence on the detected load on said engine to make said air-fuel ratio of said mixture richer and leaner, wherein an increase in an output from said engine is obtained upon an increase in said load on said engine.

5,343,701
AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE
Hisayo Douta, Kariya; Masumi Kinugawa, Okazaki, and Atsushi Suzuki, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Sep. 23, 1992, Ser. No. 949,689
Claims priority, application Japan, Sep. 24, 1991, 3-243499; Feb. 21, 1992, 4-035397; May 22, 1992, 4-131155
Int. Cl.[5] F02D *41/14*
U.S. Cl. 60—276 **14 Claims**



1. An air-fuel ratio control system for an internal combustion engine, comprising:
a first sensor for monitoring a preselected component contained in an exhaust gas and for producing an air-fuel ratio indicative signal;
first storing means for pre-storing a standard relation between said first sensor signal and a standard air-fuel ratio indicative value;
first deriving means responsive to said first sensor signal for deriving said standard air-fuel ratio indicative value according to said pre-stored standard relation;
second storing means for pre-storing a first modified relation between said standard air-fuel ratio indicative value and a for-control air-fuel ratio indicative value said first modified relation defining said for-control air-fuel ratio indicative value to vary corresponding to a variation of said standard air-fuel ratio indicative value within a given range across said standard air-fuel ratio indicative value representing a stoichiometric air-fuel ratio, while, defining said for-control air-fuel ratio indicative value to be held constant outside said given range;
second deriving means responsive to said standard air-fuel ratio indicative value derived by said first deriving means to derive said for-control air-fuel ratio indicative value according to said first modified relation;
third deriving means for deriving a deviation between said for-control air-fuel ratio indicative value derived by said second deriving means and a target air-fuel ratio indicative value; and
controller means for performing a feedback control of an air-fuel ratio of a mixture gas to be fed into an engine cylinder, said controller means performing said feedback control based on said deviation derived by said third deriving means.

5,343,702

ZEOLITE CONVERTER FOR DIESEL ENGINE

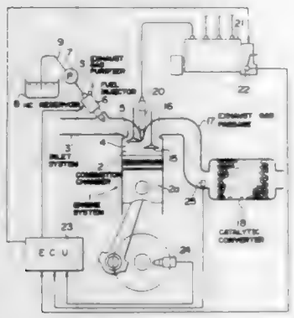
Kiyoshi Miyajima; Hiroshi Oikawa; Yoichiro Kono, all of Tokyo; Yasuaki Kumagai, Kanagawa; Shinji Nakayama, Tokyo; Hiroshi Nakagawa, and Masayoshi Nakashima, both of Nagasaki, all of Japan, assignors to Mitsubishi Jidosha Kokyo Kabushiki Kaisha, Minato and Mitsubishi Jukogyo Kabushiki Kaisa, Tokyo, both of Japan

Filed Nov. 27, 1991, Ser. No. 798,751

Claims priority, application Japan, Nov. 30, 1990, 2-340593; Dec. 7, 1990, 2-407261; Dec. 7, 1990, 2-407262; Dec. 14, 1990, 2-400700[U]

Int. Cl.[5] F01N *3/28;* **F02B** *7/00*

U.S. Cl. 60—285 **4 Claims**



1. An exhaust gas purifier for a diesel engine, comprising:

(a) a main fuel injection nozzle for supplying a main fuel to a combustion chamber of the diesel engine;

(b) HC supply means for supplying HC (hydrocarbon), said HC supply means being located in an inlet system for supplying air to the combustion chamber;

(c) a converter located in an exhaust gas passage for guiding exhaust gas from said combustion chamber, said converter being activated by hydrocarbon as a reduction agent to crack NO_X (oxides of nitrogen);

(d) an inlet valve for enabling and disabling communication between said combustion chamber and an inlet port, said HC supply means comprises a fuel injector for injecting HC to said inlet port; and

(e) an exhaust valve for enabling and disabling communication between said combustion chamber and an exhaust port, wherein supply of HC is started prior to closure of said exhaust valve and part of HC is introduced to the exhaust passage from said HC supply means during an overlapping period in which both said inlet valve and said exhaust valve remain open.

5,343,703

CONTROL APPARATUS OF CONTROL SURFACE OF AIRCRAFT

Toshio Kamimura, Gifu, Japan, assignor to Teijin Seiko Co., Ltd., Osaka, Japan

Filed Nov. 4, 1993, Ser. No. 145,604

Claims priority, application Japan, Nov. 12, 1992, 4-302222

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—403 **14 Claims**

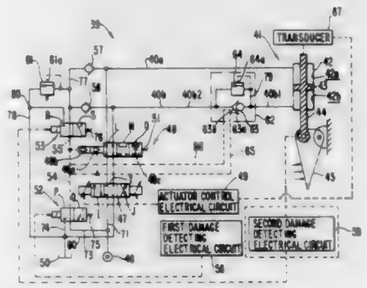
1. A control apparatus comprising a plurality of servomechanisms for controlling the Control surface of an aircraft and control signal producing means for producing first and second control signals to said servomechanisms, the first control signal of said control signal producing means being produced to at least one of said servomechanisms which happens to be damaged, and said second control signal of said control signal producing means being produced to all of said servomechanisms which happen to be damaged, each of said servomechanisms comprising:

a hydraulic working oil source for supplying hydraulic working oil under pressure;

a hydraulic working oil reservoir for reserving said hydraulic working oil;

an actuator assembly for driving said control surface of said aircraft, said actuator assembly having a cylinder member and a piston member slidably received in said cylinder member, said cylinder member and said piston member collectively defining a pair of hydraulic chambers, said piston member being operatively connected to said control surface of said aircraft;

a control valve held in fluid communication with said hydraulic chambers of said actuator assembly through a pair of fluid passageways, with said hydraulic working oil source and with said hydraulic working oil reservoir, said control valve being operative to assume a first control valve position in which said hydraulic working oil is supplied from said hydraulic working oil source to one of said hydraulic chambers through said control valve and discharged from the other of said hydraulic chambers to said hydraulic working oil reservoir through said control valve to force said piston member of said actuator assembly to be moved in a first driving direction, a second control valve position in which said hydraulic working oil is supplied from said hydraulic working oil source to said other of said hydraulic chambers through said control valve and discharged from said one of said hydraulic chambers to said hydraulic working oil reservoir through said control valve to force said piston member of said actuator assembly to be moved in a second driving direction, and a third control valve position in which said



hydraulic working oil is interrupted from being supplied from said hydraulic working oil source to said hydraulic chambers of said actuator assembly and discharged from said hydraulic chambers of said actuator assembly to said hydraulic working reservoir through said control valve to prevent said piston member of said actuator assembly from being moved;

a switching valve provided on said pair of fluid passageways between said actuator assembly and said control valve to be held in fluid communication with said hydraulic chambers of said actuator assembly and said control valve and having a throttle valve member, said switching valve being operative to assume a first switching valve position in which said hydraulic working oil is permitted to be supplied from said hydraulic working oil source alternatively to one and the other of said hydraulic chambers and discharged alternatively from one of the other said hydraulic chambers of said actuator assembly to said hydraulic working oil reservoir to move said piston member of said actuator assembly alternatively in said first and second directions in the state of the first and second control valve positions of said control valve, a second switching valve position in which said hydraulic working oil is interrupted from being supplied from said hydraulic working oil source to said hydraulic chambers of said actuator assembly and from being discharged from said hydraulic chambers of said actuator assembly to said hydraulic working oil reservoir to cause said hydraulic chambers of said actuator assembly to be held in fluid communication with each other through said pair of fluid passageways, and a third switching valve position in which said hydraulic working oil is interrupted from being supplied from said hydraulic working oil source to said hydraulic chambers of said actuator assembly and from being discharged from said hydraulic chambers of said actuator assembly to said hydraulic working oil reservoir to cause said hydraulic chambers of said actuator assembly to be held in fluid communication with each other through said throttle valve member and said pair of fluid passageways;

first change-over means for causing said switching valve to assume said second switching valve position in response to said first control signal from said control signal producing means; and

second change-over means for causing said switching valve to assume said third switching valve position in response to said second control signal from said control signal producing means.

5,343,704

DOUBLE-HEADED AND SWASH PLATE TYPE STIRLING ENGINE

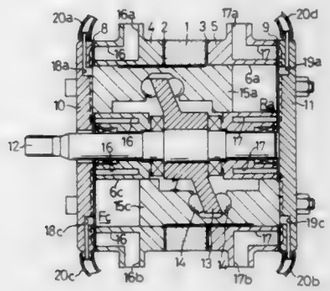
Shigeki Kanzaki; Tatsuyuki Hoshino, and Kunifumi Goto, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Feb. 12, 1993, Ser. No. 17,624

Claims priority, application Japan, Feb. 21, 1992, 4-34890

Int. Cl.[5] F02G *1/043*

U.S. Cl. 60—525 **14 Claims**



1. A double-headed and swash plate type Stirling engine, comprising:

a cylinder block including a heat insulator disposed at a central portion in an axial direction, an axial central hole, a plurality of bores disposed in parallel with the axial central hole, and a swash plate chamber formed therein and opened to a center of the bores;

a front housing enclosing a front end of said cylinder block;

a rear housing enclosing a rear end of said cylinder block;

a shaft rotatably disposed in said axial central hole of said cylinder block;

a swash plate fixed around said shaft, and disposed rotatably in said swash plate chamber of said cylinder block;

a plurality of double-headed pistons coupled to said swash plate by shoes, and disposed reciprocally in said bores of said cylinder block;

a plurality of front spaces formed by said front housing, said bores and a front end of said double-headed pistons in said cylinder block, and containing an operating gas therein;

a plurality of rear spaces formed by said rear housing, said bores and a rear end of said double-headed pistons in said cylinder block, and containing said operating gas therein;

a first heat exchanger for carrying out heat exchange around said front spaces;

a second heat exchanger for carrying out heat exchange around said rear spaces; and

a plurality of connecting pipes connecting said front spaces to said rear spaces with a predetermined phase difference, each of said plurality of connecting pipes and the connected front and rear spaces having a constant volume, and including a heat accumulator disposed between said front spaces and said rear spaces.

5,343,705

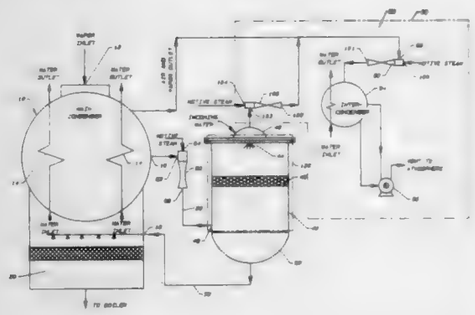
METHOD AND APPARATUS FOR MAINTAINING A REQUIRED TEMPERATURE DIFFERENTIAL IN VACUUM DEAERATORS

Roderick E. Athey, Pittsford, N.Y.; Elliot Spencer, Cranbury, N.J., and Lance L. Frens, Byron, N.Y., assignors to Graham Corporation, Batavia, N.Y.

Division of Ser. No. 926,349, Aug. 6, 1992, Pat. No. 5,297,389, which is a division of Ser. No. 666,807, Mar. 8, 1991, Pat. No. 5,165,237. This application Jan. 12, 1994, Ser. No. 180,560

Int. Cl.[5] F01K *13/02*

U.S. Cl. 60—646 **9 Claims**



1. A method for deaerating incoming water in a steam generation system having a vacuum deaerator, comprising:

(a) introducing incoming water into a cooling section of the vacuum deaerator to flash cool the incoming water;

(b) raising the temperature of a sparge steam; and

(c) introducing the heated sparge steam into a deaerating section of the vacuum deaerator.

5,343,706

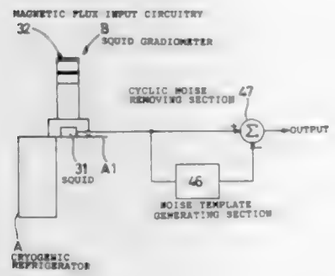
Patent Not Issued For This Number

5,343,707

METHODS AND APPARATUS FOR REMOVING CYCLIC NOISE FROM THE OUTPUT SIGNAL OF A MAGNETIC SENSOR

Ken-ichi Sata, Tsukuba, Japan, assignor to Daikin Industries, Ltd., Osaka, Japan

Filed Jun. 4, 1993, Ser. No. 71,004
Claims priority, application Japan, Jun. 29, 1992, 4-170538
Int. Cl.[5] F25B *9/00*
U.S. Cl. 62—6 **14 Claims**



1. A method for removing cyclic noise from an output signal from a magnetic sensor which removes cyclic noise caused by vibration of a refrigerator from said output signal from said magnetic sensor which is cooled by said refrigerator to an operable low temperature so as to obtain an object signal, said method comprising the steps of;

(a) arithmetically averaging said output of said magnetic sensor for every integral fundamental period of noise caused by vibration of said refrigerator so as to generate a template of a cyclic noise, said template substantially omitting said object signal for measurement and other noise; and

(b) subtracting said template from said output of said magnetic sensor so as to obtain said object signal.

5,343,708

ELECTRONICALLY CONTROLLED CRYOPUMP

Peter W. Gaudet, Chelmsford, and Donald A. Olsen, Millis, both of Mass., assignors to Helix Technology Corporation, Mansfield, Mass.

Division of Ser. No. 704,664, May 20, 1991, Pat. No. 5,157,928, which is a continuation of Ser. No. 461,534, Jan. 5, 1990, abandoned, which is a division of Ser. No. 243,707, Sep. 13, 1988, Pat. No. 4,918,930. This application Sep. 11, 1992, Ser. No. 944,040
Int. Cl.[5] B01D *8/00*
U.S. Cl. 62—55.5 **8 Claims**

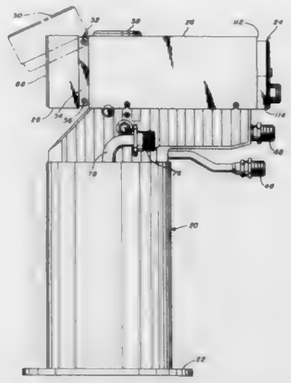
1. A method of controlling and performing diagnostic procedures with respect to a cryopump comprising:

coupling local electronics to the cryopump, the electronics being programmed to provide individual control the cryopump during operation and to store diagnostic operating parameters of the cryopump in a data history;

controlling operation of the cryopump, including regeneration of the cryopump, by the local electronics;

sensing diagnostic regeneration parameters for an individual cryopump during operation of the cryopump;

storing the sensed parameters in the data history of the local electronics coupled to the cryopump; and



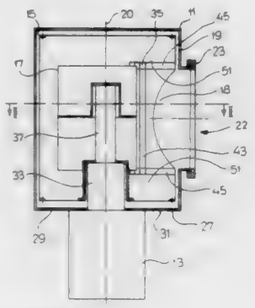
accessing the stored data history through a modem by means of host computer and processing the accessed data in diagnostic procedures in the host computer.

5,343,709

CRYOPUMP

Marcel Kohler, Egerta 517, FL-9496 Balzers, Liechtenstein

Filed Jul. 20, 1993, Ser. No. 93,744
Claims priority, application Switzerland, Jul. 21, 1992, 02299/92
Int. Cl.[5] B01D *8/00*
U.S. Cl. 62—55.5 **11 Claims**



1. A cryopump comprising:

a housing having a first input opening;

a cooling head having first and second stages within said housing;

at least one cooling surface connected to said second stage;

a shield for said cooling surface, said shield having a second input opening;

a diaphragm mounted within said housing and thermally coupled to said shield, said diaphragm being interposed between said cooling surface and said second input opening to protect said cooling surface from radiation entering said first input opening; and

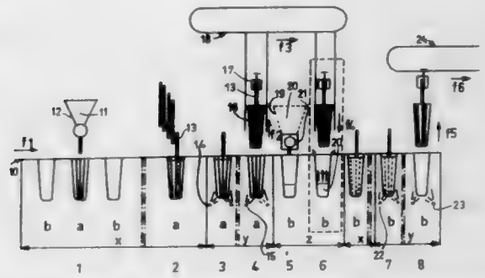
means for adjusting said shield with respect to said housing to adjust the relative positions of said first and second input openings.

5,343,710

PREPARATION OF STRIPED LOLLY-TYPE CONFECTIONS

Philip I. Cathenaut, Beauvais, France, and Friedrich Wendelin, Vallirana/Barcelona, Spain, assignors to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 848,216, Mar. 10, 1992, abandoned. This application May 28, 1993, Ser. No. 70,637
Claims priority, application European Pat. Off., Mar. 30, 1991, 91105129.0
Int. Cl.[5] A23G *9/14*
U.S. Cl. 62—71 **7 Claims**



1. A process for preparation of a frozen ice product comprising:

freezing a first ice mixture in a first mold having a grooved hollow frustocylindrical molding interior to obtain a molded frozen core having outer edge surfaces which define grooves therebetween;

partly filling a second mold with a second ice mixture, wherein the second mold has a frustocylindrical hollow molding interior and wherein the hollowed interior of the second mold has a cross-section size not larger than a cross-section size of the hollow of the first mold;

demolding and removing the frozen core from the mold and introducing the first frozen core into the second mold and second ice mixture so that the outer edge surfaces of the frozen core contact the second mold;

freezing the second ice mixture to obtain a frozen ice product; and

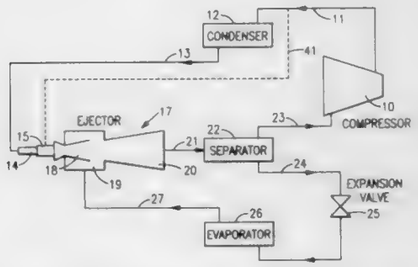
demolding the frozen ice product.

5,343,711

METHOD OF REDUCING FLOW METASTABILITY IN AN EJECTOR NOZZLE

Alan A. Kornhauser, and Peter Menegay, both of Blacksburg, Va., assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Filed Jan. 4, 1993, Ser. No. 118
Int. Cl.[5] F25B *1/06*
U.S. Cl. 62—116 **3 Claims**



1. In an ejector process wherein a pressurized fluid flows initially as a liquid through a relatively large diameter first portion of an ejector nozzle and thereafter partially flashes to vapor upon exiting from a relatively small diameter diverging portion of the nozzle, a method of achieving reduction in flow metastability which comprises

a) generating relatively large bubbles in the initial liquid flow of the liquid within the relatively large diameter first portion of the ejector nozzle,

b) thereafter directing the fluid through a second portion of the ejector nozzle having a diameter substantially less than that of said first portion and an extended length so that the flow within said second portion is of sufficient velocity and duration to break the large bubbles into finely dispersed small bubble before the fluid reaches and exits from the diverging portion of the nozzle,

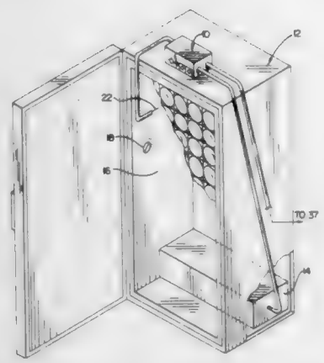
c) thereby reducing the density of the flowing mixture and providing boiling nucleation sites which cause the exiting mixture to expand in substantial thermodynamic equilibrium with maximum nozzle velocity.

5,343,712

TEMPERATURE CONTROLLER AND METHOD FOR FACILITATING THE STORAGE OF WINE AND LIKE PERISHABLES

William A. Gowan, Raleigh, N.C., assignor to Precision Storage, Inc., Raleigh, N.C.

Filed Jul. 15, 1993, Ser. No. 92,255
Int. Cl.[5] F25B *49/02*
U.S. Cl. 62—126 **28 Claims**



1. A temperature controller for converting a refrigeration unit of the type including an electrically powered chiller, a chilled compartment and a thermostat for controlling operation of said chiller, to a unit for storing perishables for extended periods of time, comprising:

a housing;

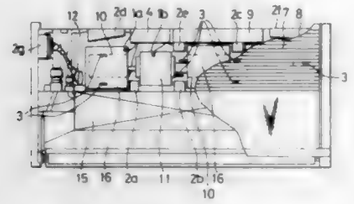
means, adapted to be positioned in said chilled compartment, for sensing a temperature of said chilled compartment; and

means in said housing, operatively connected to said temperature sensing means, for overriding the thermostat control of said chiller by enabling the supply of electrical power from an electrical power supply to said chiller, when the sensed temperature of said chilled compartment is above a preselected temperature, and disabling the supply of electrical power from the electrical power supply to said chiller when the sensed temperature is below said preselected temperature.

5,343,713
ACTIVE NOISE CONTROL APPARATUS FOR THREE-DIMENSIONAL SPACE

Shinya Okabe, Shimizu; Shinichi Shimode, Minori; Ryouji Sato; Masamichi Hanada, both of Shimizu; Takao Senshu; Hirokiyo Terada, both of Shizuoka; Minetoshi Izushi, Shimizu; Hiroshi Takenaka, Shimizu, and Masahiro Ito, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 19, 1993, Ser. No. 19,708
Claims priority, application Japan, Feb. 19, 1992, 4-032029; Sep. 21, 1992, 4-250942
Int. Cl.[5] A61F *11/06;* **F25D** *19/00*
U.S. Cl. 62—296 **37 Claims**

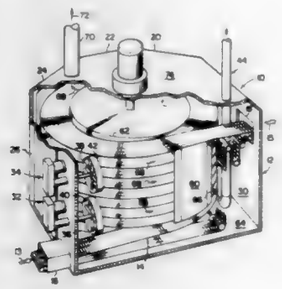


1. An active noise control apparatus for a three-dimensional space including a noise detecting means for detecting a noise radiated from a noise source, a control device for controlling an active noise control, a plurality of sound generating means and a plurality of noise control effect detecting means, said sound generating means being disposed at positions surrounding said noise source with distances between said noise source and each sound generating means and between respective sound generating means being shorter than ½ of a wavelength of a maximum frequency of a noise to be controlled, said control device for active noise control being arranged to cause said sound generating means to radiate a sound wave having an opposite phase to and a same sound pressure, same wavelength and same directivity as those of a noise having a wide frequency range radiated from said noise source into a three-dimensional space, on a basis of output signals of said noise detecting means and said noise control effect detecting means.

5,343,714
SPIRAL FREEZER

Edward F. Kiczek, Long Valley, N.J.; David J. Klee, Emmaus; Kevin S. McAfee, Alburtis, and Roger A. Howells, Orefield, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 20, 1992, Ser. No. 886,544
Int. Cl.[5] F25D *25/02*
U.S. Cl. 62—381 **7 Claims**



1. In a freezer of the type having a spiral conveyor disposed within an insulated chamber, said spiral adapted to move items to be refrigerated and from a lower inlet in said chamber to an elevated outlet in said chamber said spiral conveyor having an axis of rotation, the improvement comprising:

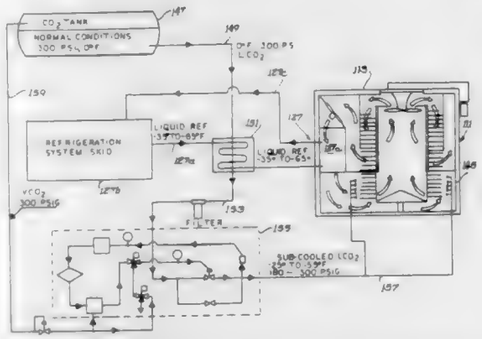
means for introducing a source of refrigerated atmosphere into a lower portion of said chamber; and

means to circulate said refrigerated atmosphere inside said chamber from the point of introduction to a point of egress at an upper location in said chamber, said means to circulate refrigerated atmosphere is effected by including at least two circulating fans disposed generally perpendicular to the axis of rotation of said conveyor and directed to circulate refrigeration around said chamber, an inner solid cage disposed inside said spiral conveyor, said chamber having a cross-sectional shape perpendicular to the axis of rotation of a five sided irregular polygon with only two of the included angles being right angles, said chamber being disposed around said conveyor to effect circulation of refrigeration around said conveyor generally parallel to the direction of movement of said conveyor whereby, when in use, said insulated chamber is operated under non-isothermal conditions.

5,343,715
HELICAL CONVEYOR FREEZER

Gary D. Lang, Wooster, Ohio, assignor to Liquid Carbonic Corporation, Oak Brook, Ill.

Division of Ser. No. 791,893, Nov. 13, 1991, Pat. No. 5,205,135.
This application Feb. 1, 1993, Ser. No. 12,008
Int. Cl.[5] F25B *25/00*
U.S. Cl. 62—381 **3 Claims**



1. A combination food freezer having mechanical and cryogenic cooling apparatus comprising:

a source of cryogen;

an insulated enclosure including a conveyor for conveying food products through said enclosure;

refrigeration apparatus including a first heat exchanger receiving mechanically cooled refrigerant, said refrigerant having a composition different from said cryogen, and disposed within said enclosure and gas circulation means to circulate an atmosphere gas through said first heat exchanger and across said food products to cool said food products;

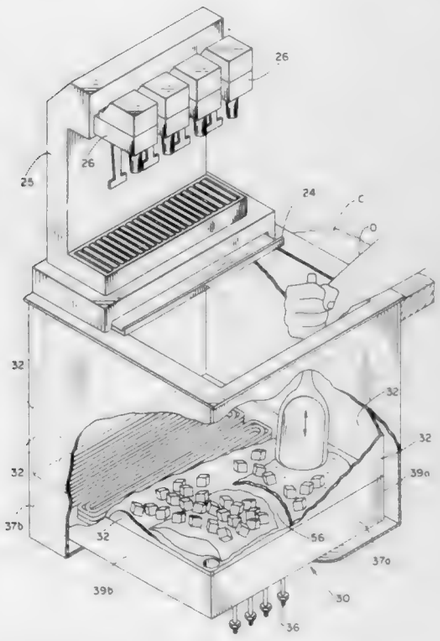
said refrigeration apparatus including mechanical refrigeration connected to said first heat exchanger to circulate a mechanically-cooled refrigerant through said first heat exchanger, said refrigeration apparatus further including cryogenic cooling apparatus coupled to said source of cryogen and having means within said enclosure for spraying said cryogen across the food products on said conveyor; and

a second heat exchanger connected between said mechanical refrigeration and said first heat exchanger, so as to receive said mechanically-cooled refrigerant and said second heat exchanger coupled to said source of cryogen to subcool said cryogen with the mechanically-cooled refrigerant prior to spraying said cryogen across said food products and prior to circulating the mechanically-cooled refrigerant through said first exchanger.

5,343,716
BEVERAGE DISPENSER WITH IMPROVED COLD PLATE

Craig Swanson; Henry E. Ramon, III, and Ty C. Taylor, all of San Antonio, Tex., assignors to IMI Cornelius Inc., Anoka, Minn.

Filed Jun. 29, 1993, Ser. No. 85,217
Int. Cl.[5] B67D *5/62*
U.S. Cl. 62—389 **14 Claims**



6. A beverage dispenser, comprising:

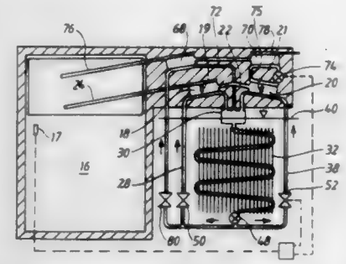
a lower housing, the housing having front, rear, right and left vertical side walls extending upward to a top horizontal end wall from a bottom horizontal end surface for defining a cold plate retaining interior area,

a cold plate held within the cold plate retaining interior are and the cold plate having front, rear, right and left ends, and the cold plate positioned within the housing interior are along the bottom end surface thereof wherein the cold plate front, rear, right and left ends are positioned adjacent the housing front, rear, right and left vertical end walls respectively, the cold plate having a top surface and having one or more beverage lines extending through an interior thereof below the cold plate top surface, the one or more beverage lines each having an inlet end extending from the cold plate for connection to a source of beverage and each one or more beverage line having an outlet end for connecting to a beverage dispensing valve so that ice retained on the cold plate top surface provides for heat exchange cooling of a beverage as it passes through its respective beverage line through the cold plate from the source thereof to a beverage dispensing valve, and the one or more lines each having an initial high heat exchange portion defined by an initial heat exchange portion generally located in a front portion of said plate defining a high heat exchange portion of the cold plate so that with the positioning of the cold plate within the housing interior with respect to the vertical side walls thereof the high heat exchange portion of the cold plate lies substantially directly below an access opening in the housing top horizontal end wall.

5,343,717
REFRIGERATOR WITH INTERMITTENTLY WORKING SORPTION REFRIGERATING APPARATUS

Bengt E. O. Ebbeson, Ettenhausen, Switzerland, assignor to Aktiebolaget Electrolux, Sweden

Filed May 19, 1993, Ser. No. 63,602
Claims priority, application Sweden, Jun. 9, 1992, 9201768-0
Int. Cl.[5] F25B *17/08*
U.S. Cl. 62—481 **5 Claims**

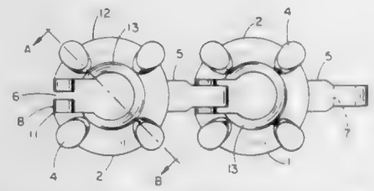


1. Refrigerator with a refrigerating unit in the form of an apparatus having a first and a second container (**18** and **20**, respectively; **68** and **70**, respectively) communicating with each other through a conduit (**22**; **72**), each container containing a substance which, when being heated, gives off a gaseous working medium and, when being cooled, absorbs the gaseous working medium, the first container (**18**; **68**) being arranged to be heated from a storage compartment (**16**) of the refrigerator to thereby cool the compartment. the second container (**20**; **70**) being provided with a heating means (**34**, **46**, **75**; **78**), and each container being provided with means for, when need arises, conducting heat away from the container, wherein the means for conducting heat away from at least one of the containers is constituted by a cooling circuit (**26**, **28**, **30**, **32**; **48**, **50**, **28**, **30**, **32**; **48**, **50**, **28**, **80**, **82**, **30**, **32** and **36**, **38**, **30**, **32**; **48**, **52**, **38**, **30**, **32**, respectively), in which a pump (**26**, **36**) brings a cooling liquid to cool the container, said liquid being cooled in a radiator (**32**) arranged on the refrigerator, said cooling circuit being only partly filled with the cooling liquid so that the liquid returns to a level (**40**) below the container when circulation of the cooling liquid is discontinued.

5,343,718
CHAIN LINK FOR GEMS, AND ORAMENTAL CHAIN COMPRISING SUCH LINKS, AND A METHOD FOR PRODUCING SAID CHAIN

Martin Pöll, Fritzens, Austria, assignor to D. Swarovski & Co., Wattens, Austria

Continuation of Ser. No. 836,064, Feb. 12, 1992, abandoned.
This application Jul. 12, 1993, Ser. No. 90,481
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1991, 4104339
Int. Cl.[5] A44C *17/02, 5/02*
U.S. Cl. 63—26 **14 Claims**



1. A link for forming an ornamental chain of mounted gems comprising a mounting portion and a fastening element for receiving a gem; the mounting portion including a receiving means having an open and a closed position and a linking

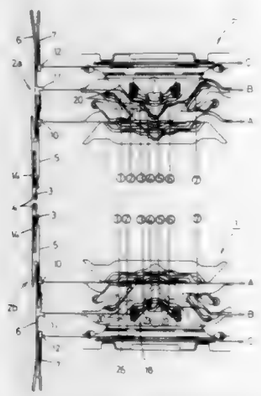
element and the fastening element having an open position for receiving a gem and a closed position for fixing the gem in the link; one of the linking element or the receiving means of the mounting portion comprising a pair of generally opposed pins and the other of the linking element or the receiving means comprising a recess for receiving the pins, the receiving means being sized in its open position to receive the linking element of a like link so that when the receiving means of one link is urged into its closed position it will simultaneously urge the pins into the recess and urge the fastening element into its closed position to fix a gem.

5,343,719

METHOD OF TRANSFERRING LOOPS INTEGRATED WITH A FLAT KNITTING MACHINE

Toshinori Nakamori, and Minoru Sonomura, both of Wakayama, Japan, assignors to Shima Seiki Mfg., Ltd., Wakayama, Japan

Filed Oct. 2, 1992, Ser. No. 956,133
Claims priority, application Japan, Oct. 4, 1991, 3-257830
Int. Cl.[5] D04B *7/00, 15/66*
U.S. Cl. 66—75.1 **2 Claims**



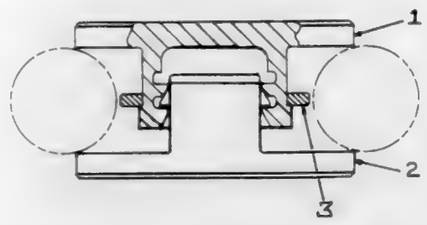
1. A method of transferring loops from respective delivery-side knitting needles to confronting loop receiving-side knitting needles with a flat knitting machine having a pair of needle beds in front and rear positions each having a plurality of knitting needles aligned in parallel and a loop expanding member provided on a lateral surface of each delivery-side knitting needle and an opening between each expanding member and each delivery-side knitting needle comprising the steps of:
- moving each of the confronting receiving-side knitting needles forward adjacent to each loop expanding member of the delivery-side knitting needles,
- pushing down loops held by the delivery-side knitting needles to the expanding members by using the receiving-side knitting needles,
- expandably opening the loops with the loop expanding members,
- forcing each receiving-side knitting needle to penetrate an opening between each expanding member and each delivery-side knitting needles,
- hooking the loops expandably opened by those loop expanding members with hooks of the receiving-side knitting needles, and
- transferring the loops of those delivery-side knitting needles to the confronting receiving-side knitting needles by retracting those delivery-side knitting needles with the hooks of those delivery-side knitting needles closed.

5,343,720

NO-TOW-LUNETTE EYE LOCKING DEVICE WHICH PREVENTS PENTEL HOOK CONNECTION

David R. Slater, 8 Ridge Path, Granby, Mass. 01033

Filed Jun. 2, 1992, Ser. No. 852,385
Int. Cl.[5] B60R *25/00*
U.S. Cl. 70—14 **5 Claims**



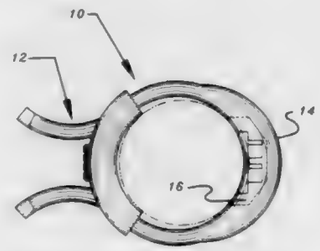
1. A locking device for preventing use of 2⅜", 2½" and 3" eye ring trailer connectors, comprising:
- an upper housing including an enlarged top coverplate and a bottom collar to retain a flat, floating ring therebetween;
- a bottom housing to be secured to the upper housing to block access to the eye ring trailer connectors;
- wherein the floating ring occupies plural positions between the top coverplate and bottom collar of the upper housing when the housings are selectively secured to the 2⅜", 2½" and 3" eye ring trailer connectors.

5,343,721

IGNITION LOCKING DEVICE

Charles R. Calnen, 8173 Wolfe Rd., Cattaraugus, N.Y. 14719

Filed Jul. 19, 1993, Ser. No. 92,954
Int. Cl.[5] E05B *65/12*
U.S. Cl. 70—18 **5 Claims**



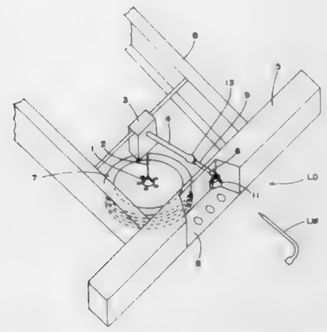
1. A new and improved ignition locking device comprising:
- a horseshoe shaped cable section, including
- a circular portion having a recess extending along an inside section; and
- first and second end portions arced outward from each other wherein each of the first and second end portions includes serrated edges on an inside portion thereof; and
- a locking housing, including
- first and second holes, each hole having a respective bolt extending therethrough and positioned at opposite ends of a midsection of said housing; and
- a locking device, located within the midsection of the housing, wherein the circular portion is positioned around a key ignition of a vehicle, the first and second end portions are positioned within the first and second holes, respectively, and the first and second end portions are locked in position within the respective hole by the respective bolt,
- wherein the housing includes first and second end portions each positioned on an outside of the first and second holes respectively and wherein each of the housing first and second end portions is composed of a double wire braid covered with neoprene rubber.

5,343,722

SPARE TIRE LOCKING DEVICE

Ernest W. Richardson, 4250 Easton Rd., Owosso, Mich. 48867

Filed Jul. 21, 1993, Ser. No. 95,283
Int. Cl.[5] E05B *65/12*
U.S. Cl. 70—259 **10 Claims**



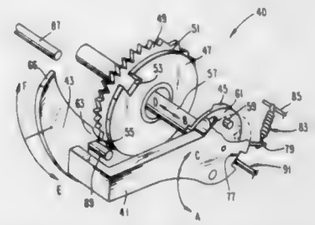
1. A locking device for a vehicle including a hoist system for storing a spare tire, the hoist system including a hoist tube operably connected to the hoist system for lowering the spare tire, the vehicle including a bumper having an access hole therein for accessing the hoist tube, comprising:
- a tubular member including a first end adapted for engagement with the hoist tube and further including a configured end, the length of the tubular member being such that the configured end extends through the access hole when the first end is positioned in the hoist tube;
- retaining means, for retaining the tubular member, on the inside of the bumper to prevent removal of the first end from the hoist tube, said retaining means including a fastener that extends through said tubular member; and
- a lock releasibly engageable with the configured end, said lock including a body that engages the bumper to prevent rotation of said tubular member when the lock is engaged with the configured end, thereby preventing rotation of the hoist tube and in turn preventing theft of the spare tire.

5,343,723

COMBINATION LOCK

J. Clayton Miller, Nicholasville, and Thomas Jasper, Bryantsville, both of Ky., assignors to Lockmasters, Inc., Nicholasville, Ky.

Filed Sep. 3, 1992, Ser. No. 940,133
Int. Cl.[5] E05B *37/04*
U.S. Cl. 70—303 A **22 Claims**



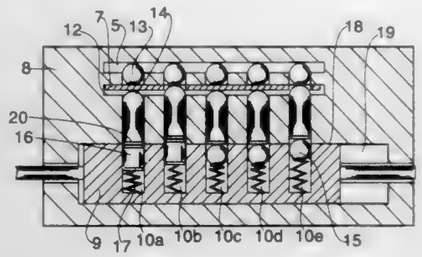
1. In a combination lock having a lock casing and a lock cover, a combination dial attached to one end of a spindle extending through said lock casing, a drive cam attached to the other end of the spindle, a plurality of wheels rotatably mounted around said spindle, each wheel having a gate, a lock lever having a nose, and a bolt adapted to be extended or retracted by translation of said lock lever, wherein said spindle is adapted to longitudinally translate for checking a combination, the improvement comprising:
- a) a kicker arm assembly rotatably mounted within said lock casing;
- b) means for translating a longitudinal movement of said spindle into a first rotational movement of said kicker arm assembly; and
- c) means for transmitting said first rotational movement to one of said wheels adjacent said lock casing such that when the spindle is translated to check the combination, if the combination is incorrect one of said wheels is rotated to scramble said combination.

5,343,724

LOCK ARRANGEMENT EMPLOYING MECHANICALLY ACTING CODE CARD AND KEY CARD

Tor Sornes, Moss, Norway, assignor to Trioving a.s, Norway

Filed May 7, 1993, Ser. No. 59,114
Int. Cl.[5] E05B *35/10, 25/00*
U.S. Cl. 70—340 **1 Claim**



1. In a lock apparatus having a lock housing and a locking member slidable in said lock housing between a locked and an unlocked position and a plurality of bores in both said lock housing and said locking member which are aligned when said lock apparatus is in a locked position, a plate-like code member having regions corresponding to said bores, at least one of said regions having a hole therein, a plate-like key member having regions corresponding to said bores, said regions having holes therein corresponding to said regions of said plate-like code member having no holes therein, the improvement comprising:
- a bullet-shaped upper blocking member positioned in each of said bores in said lock housing;
- each said bore having either a lower blocking pin or a lower ball therein, with at least one said bore having said lower blocking pin;
- a spring means acting to push said lower blocking pin or said lower ball against the bottom of said bullet-shaped upper blocking pin;
- a plate-like master member having regions corresponding to said bores, said regions having holes corresponding to said bores having lower balls and the same combination of holes or no holes as said plate-like code member for said bores having lower blocking pins.

5,343,725

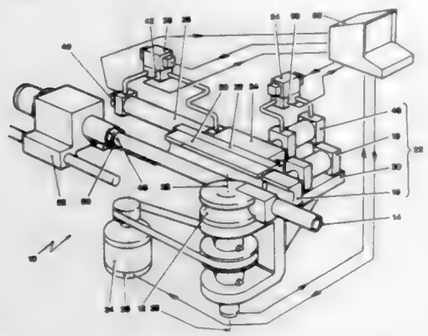
TUBE BENDING APPARATUS AND METHOD

James R. Sabine, Burlington, Canada, assignor to Eagle Precision Technologies Inc., Brantford, Canada

Filed Jul. 7, 1993, Ser. No. 86,866
Int. Cl.[5] B21D *7/02*
U.S. Cl. 72—155 **8 Claims**

1. An improved process for rotary draw bending a tube comprising contacting said tube with a pressure die to provide frictional contact; subjecting said tube to a bending torque to bend said tube and effect movement of said tube; applying a longitudinal pressure boost to said pressure die at a speed according to a pre-programmed speed profile; applying a perpendicular reaction force to said pressure die to maintain said frictional contact; the improvement comprising providing a pre-programmed friction profile of said tube and said pressure

die interaction; measuring any change in the speed of said pressure die relative to said tube; causing said boost pressure acting on said pressure die to following a pre-selected boost



profile; and automatically changing said reaction force in response to said change in said relative speed of said pressure die to maintain said friction profile.

5,343,726

ROLLING TRAIN FOR ROLLING GIRDER SECTIONS

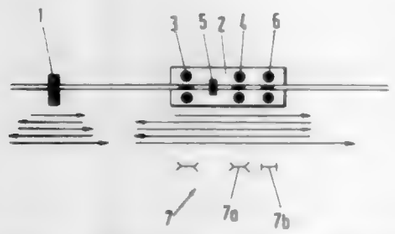
Erich Reth, Duisberg, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Oct. 2, 1992, Ser. No. 956,719

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1991, 4133072

Int. Cl.[5] B21B *1/12*

U.S. Cl. 72—225 **2 Claims**



1. A method of rolling girder sections on a rolling train, the rolling train including at least one two-high reversing roughing stand and wherein two universal stands and an upsetting stand are combined to form a reversing tandem group, a universal sizing stand for passing rolling being arranged immediately following the tandem group, the universal stands of the tandem group having double-cone shaped vertical rolls and the universal sizing stand having cylindrical vertical rolls, the method comprising the steps of:

(a) moving the girder section in a plurality of successive reversing passes within the reversing tandem group and the immediately following universal sizing stand;

(b) rolling the girder section in the plurality of successive reversing passes with outwardly directed flanges in the tandem group while maintaining the universal sizing stand in an open position; and

(c) adjusting the universal sizing stand and carrying out a final smoothing pass in the universal sizing stand for rolling the outwardly directed flanges so as to extend parallel to each other; said smoothing pass being carried out with a pass reduction of 5% to 20%.

5,343,727

PANEL BENDER

Hisao Osaka, Ishikawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Japan

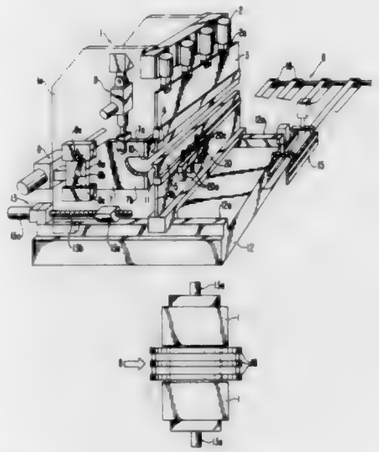
PCT No. PCT/JP91/00311, § 371 Date Aug. 31, 1992, § 102(e) Date Aug. 31, 1992, PCT Pub. No. WO91/13705, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 7, 1991, Ser. No. 923,805

Claims priority, application Japan, Mar. 7, 1990, 2-22116

Int. Cl.[5] B21D *5/04, 43/12*

U.S. Cl. 72—306 **11 Claims**



1. A panel bender for bending a work held between a depression die vertically moved by means of a plurality of work holding cylinders fixed in alignment within regular intervals on the upper portion of a main body of the panel bender, and a receiving die provided at the lower portion of the main body and fixed on a bed of the main body, with a downward bending die and an upward bending die provided on a pivotal arm pivoted about a support shaft by a vertical bending driving device provided on said main body for bending said work downwardly and upwardly, wherein a plurality of such main bodies are provided at opposite sides of a conveyer for feeding said work to a working position within the panel bender and aligned to each other in a direction substantially perpendicular to a transporting direction of said conveyer, each of said main bodies being movable in a back and forth direction with respect to the other by a back and forth feeding device, and means for cooperating said main bodies and said conveyer relative to the positions of said main bodies in such a manner that the width of said conveyer disposed between said main bodies is capable of being expanded and contracted in the width direction in synchronism with back and forth movement of the main bodies.

5,343,728

HEAVY DUTY SHEET BENDING BRAKE

Arthur B. Chubb, Romulus, and James E. Suyak, Lincoln Park, both of Mich., assignors to Tapco Products Company, Inc., Detroit, Mich.

Continuation of Ser. No. 798,207, Nov. 26, 1991, abandoned. This application Dec. 7, 1992, Ser. No. 987,249

Int. Cl.[5] B21D *5/04*

U.S. Cl. 72—319 **7 Claims**

1. A sheet bending brake comprising

a base,

a plurality of C-shaped members positioned on said base at longitudinally spaced points,

each said C-shaped member comprising a lower arm fixed to said base and an upper arm spaced from and overlying said lower arm,

a first member fixed to the lower arms of said C-shaped members and having a clamping surface,

means movable toward and away from said clamping surface for locking a piece of sheet material on said clamping surface,

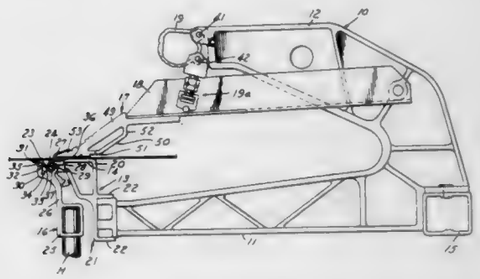
a second member for bending a workpiece clamped on said clamping surface extending longitudinally with respect to said first member,

each of said first and second members having substantially the entire length of the longitudinal edges thereof formed with longitudinally spaced intermeshing integral projections,

the projections on said first member having a plurality of aligned openings comprising slots extending axially with respect to the longitudinal axis of said member,

a hinge pin extending through said openings of said second member and said slots of said first member,

said second member having a fixed workpiece contacting portion spaced from the projections, said workpiece contact surface being fixed relative to said hinge pin,



said slots having a configuration such that as the second member is moved relative to said first member to bend a workpiece, the hinge pin is guided along said slots such that the contacting portion of said second member remains substantially in the same position relative to the workpiece during the bending operation,

handle means attached to said bending member adapted to be grasped for bending a workpiece clamped on said clamping surface,

said means movable toward and away from the clamping surface including a hollow clamping member pivoted to said C-shaped members and a handle member that is pivoted to said C-shaped members and to said movable means,

said handle member including spaced recesses for receiving pins on said respective members,

said clamping member extending longitudinally of said brake and being generally hollow,

said hollow clamping member comprising spaced generally parallel walls, said walls including an upper wall having a greater thickness than said lower wall and integral portions connecting said two walls.

5,343,729

FABRICATING ONE-PIECE CAN BODIES WITH CONTROLLED SIDE WALL ELONGATION

William T. Saunders, Weirton, W. Va., assignor to Weirton Steel Corporation, Weirton, W. Va.

Continuation-in-part of Ser. No. 831,624, Feb. 21, 1986, Pat. No. 5,014,536, which is a continuation-in-part of Ser. No. 712,238, Mar. 15, 1985, abandoned, and a continuation-in-part of Ser. No. 573,548, Aug. 27, 1990, Pat. No. 5,119,657. This application Oct. 12, 1990, Ser. No. 596,854

Int. Cl.[5] B21D *22/21*

U.S. Cl. 72—349 **6 Claims**

1. Draw-processing method, which is free of side wall ironing, for forming precoated flat-rolled sheet metal into a one-piece can body having

a closed endwall,

a side wall, and

a curved-surface unitary juncture therebetween,

such can body side wall having a cylindrical configuration, which is symmetrical in relation to the central longitudinal axis of such can body, and a flange at its open end longitudinally opposite to such closed endwall,

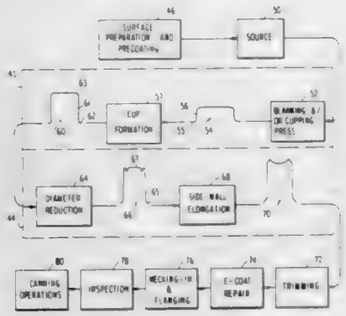
such flange being disposed in transverse relationship to such central longitudinal axis during forming of such side wall so as to define a uniform side wall height which, at the completion of draw-processing has a substantially greater height dimension than the diameter of such endwall diameter,

comprising the steps of:

providing work product in the form of a cut blank of predetermined diameter cut from flat-rolled sheet metal substrate of preselected starting thickness gage precoated on both its surfaces with organic coating and draw lubricant for forming such one-piece can body,

draw-processing such cut blank to decrease its diameter by moving peripheral can stock from such cut blank into a cup-shaped work product having a closed end wall and a side wall with a flange at its open end,

progressively decreasing diameter of the cup-shaped work product by a plurality of successive redraw operations in which substrate resulting from each such diameter reduction is moved from the end wall into the cylindrical can body side wall, with such side wall being formed with a flange at its open end during each such redraw operation, and



elongating side wall substrate under tension during each such diameter-reduction utilizing solely draw-processing tooling means and relying on solely planar clamping surfaces, including

a cylindrical configuration punch,

a clamping means presenting a planar surface circumscribing such punch,

die means presenting a die cavity having an internal cavity wall of circular cross-sectional configuration in a plane transversely perpendicular to a central longitudinal axis of the die cavity a planar clamping surface circumscribing such die cavity in confronting relationship with the clamping means planar surface, and a curved-surface transition zone between such die clamping surface and such internal cavity wall,

selecting the die cavity transition zone to have a curved surface which, as projected onto a clamping plane, which is transversely perpendicular to such central longitudinal axis, has a radial dimension between about one-half to about five times such preselected starting thickness gage for such substrate,

moving such precoated substrate into cylindrical configuration side wall during each such diameter-reduction operation by relative movement of a punch into a die cavity with such precoated sheet metal substrate intermediate such punch and die cavity,

maintaining such preselected substrate thickness gage

for such closed end wall at such preselected starting thickness gage, throughout such plurality of diameter-reductions, with such preselected thickness gage extending from the geometric center of the endwall to the curved-surface juncture between such closed endwall and such can body side wall, and

progressively elongating side wall substrate under tension during each of such plurality diameter-reduction operations to progressively decrease side wall substrate thickness gage with clearance between the internal die cavity wall and the cylindrical punch peripheral wall for each such successive diameter-reduction operation being selected so as to achieve a relatively uniform side wall substrate gage, with total decrease of side wall thickness gage for such can body being between about twenty-five percent and about fifty percent of substrate starting thickness gage,

such uniform side wall thickness gage extending over side wall height from a location contiguous to such unitary curved-surface juncture to a location contiguous to such open end flange.

5,343,730

TURNING DEVICE FOR AN AUTOMATIC CROSS-TRANSFER PRESS

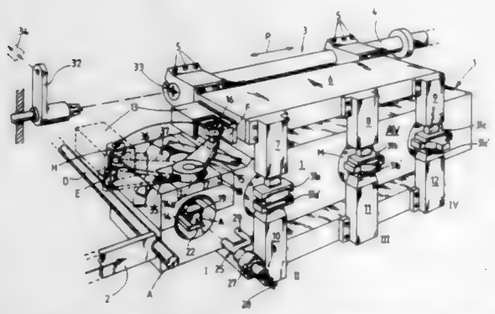
Ulrich Steinhauser, Allschwil, Switzerland, assignor to Hatebur Umformmaschinen AG, Switzerland

Filed Feb. 4, 1993, Ser. No. 13,299

Claims priority, application European Pat. Off., Feb. 11, 1992, 92810098.1

Int. Cl.[5] B21D *43/05*

U.S. Cl. 72—405 **16 Claims**



1. A turning device for an automatic cross-transfer press for processing metallic portions (A), sheared off from a wire, to give pressed parts, the extent of which transverse to the pressing direction is greater than their extent in the pressing direction, the cross-transfer press having a die carrier (anvil **1**) with a plurality of fixed dies (M) arranged horizontally adjacent to one another along a front surface (AV) of said die carrier (anvil **1**), a press slide driven backwards and forwards with punches arranged coaxially in front of the dies (M), and a transfer device having a reciprocating tong carrier (**3**) which grasps with at least one gripper pair (**31***a*/**31***a'*) the portion (A) to be formed and moves it from one forming station (II–IV) to the other, to a position in front of the respective die (M), comprising a vertical pivot pin (**14**) which is rotatably mounted in the die carrier (**1**) behind the front surface (AV) thereof, and an upper end of which is connected in torsionally rigid fashion to an oscillating lever (**15**), a guideway (**13**) being arranged on the tong carrier (**3**), in which guideway a transmission member (**16**) arranged on the oscillating lever (**15**) is mounted such that the reciprocating movement of the tong carrier (**3**) is transmitted via the guideway (**13**) and the transmission member (**16**) to the pivot pin (**14**) and from the latter to the portion (A) to be turned 90°±45° in a horizontal plane.

5,343,731

SEMICONDUCTOR ACCELEROMETER

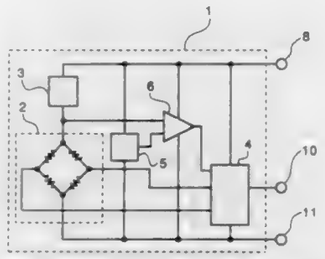
Soichiro Miyano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 1, 1992, Ser. No. 955,062

Claims priority, application Japan, Oct. 2, 1991, 3-254036

Int. Cl.[5] G01P *21/02*

U.S. Cl. 73—1 D **5 Claims**



1. A semiconductor accelerometer, comprising:

a body including at least one mass supported at its opposite end by beams;

means on said beam for sensing strains of said beams, said sensing means generating a voltage corresponding to accelerations;

means for amplifying said voltage as voltage signals received from said sensing means to detect accelerations; and

means for detecting abnormalities in said sensing means by comparing a voltage applied to said sensing means with a predetermined reference voltage, wherein said amplifying means outputs detecting signals received from said detecting means to a common terminal which also outputs said voltage corresponding to accelerations.

5,343,732

APPARATUS FOR DETERMINING THE DEVIATION IN THE LEVEL OF LIQUID IN A VESSEL

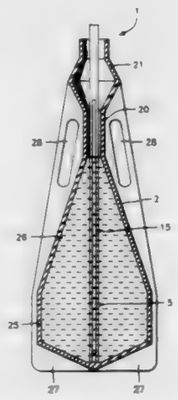
James K. Glynn, 37 Grange Park Rise, Raheny, Dublin 5, Ireland, assignor to James Kevin Glynn, Dublin, Ireland

Filed Aug. 15, 1991, Ser. No. 745,080

Claims priority, application Ireland, Aug. 15, 1990, 546/90; Jun. 13, 1991, 2006/91

Int. Cl.[5] G01F *19/00, 25/00*

U.S. Cl. 73—3 **3 Claims**



1. Apparatus for determining the deviation in the level of liquid in a vessel from a desired level corresponding to a preset volume, the apparatus comprising a vessel for collecting liquid, the vessel having a narrowed neck portion with a neck cross-sectional area, a displacement means insertable into the narrowed neck portion of the vessel to temporarily reduce the neck cross-sectional area and displace a portion of the liquid in the vessel over a weir means, and measuring means for receiving the liquid displaced over the weir means to determine the deviation in the volume of liquid in the vessel from a preset volume;

wherein the displacement means comprises:

an elongate member which is inserted into the vessel to displace the level of liquid in the vessel upwardly over the weir means; and

a hollow tubular member which is closed at the lower end thereof, said tubular member having an inlet defining the weir means over which the displaced liquid flows on insertion of the tubular member.

5,343,733

ABRASION TESTING METHOD

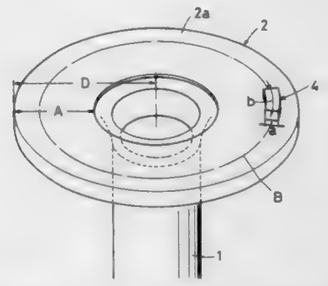
Mitsuhiko Nakagawa, and Shiro Nakajima, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 27, 1992, Ser. No. 827,709

Claims priority, application Japan, Jan. 30, 1991, 3-009581

Int. Cl.[5] G01N *3/56*

U.S. Cl. 73—7 **5 Claims**



3. A testing method for evaluating the abrasion of rotating disks of brakes having rotating disks and friction members for frictional contact with the rotating disks, said testing method comprising the steps of:

pressing a test piece friction member, which is a test piece smaller than an actual one of the friction members, against a portion of a frictional surface of an actual one of the rotating disks at a predetermined position, maintaining a portion of the frictional surface out of contact with the test piece friction member and rotating the test piece friction member and the actual disk relative to each other; and

measuring the degree of abrasion of the disk with respect to the portion of the frictional surface maintained out of contact with the test piece friction member.

5,343,734

SAMPLING METHOD IN INFUSION PUMP APPARATUS

Akihiro Maeda, Kyoto, Japan, and Thomas Callaghan, Algonquin, Ill., assignors to Sharp Kabushiki Kaisha, Osaka, Japan and Baxter Int'l Inc., Deerfield, Ill.

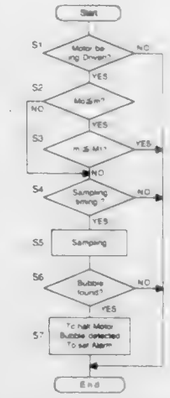
Filed Sep. 3, 1992, Ser. No. 940,342

Claims priority, application Japan, Sep. 4, 1991, 3-223935; Jul. 13, 1992, 4-185033

Int. Cl.[5] G01N *7/00*

U.S. Cl. 73—19.01 **4 Claims**

1. A sampling method for sampling an output emerging from a bubble detector used in an infusion device of a type comprising an resilient infusion tubing communicated at an upstream end thereof with a source of medical solution and at a downstream end thereof with a destination, a peristaltic means including a plurality of juxtaposed finger members adapted to be sequentially driven to operatively engage a portion of the infusion tubing to sequentially squeeze said portion of the infusion tubing while producing at least one moving zone of occlusion along said infusion tubing for infusing a medical solution from the source of the medical solution towards the destination, a drive means for driving the peristaltic means to sequentially drive the finger members, said sampling of the output from the bubble detector being carried out only during a first period from the timing at which one of the finger members closer to the source of the medical solution squeezes that portion of the infusion tubing to the timing at which one of the finger members closer to the destination squeezes that portion of the infusion tubing, but not during a second period from the timing at which one of the finger members closer to the destination squeezes that portion of the infusion tubing to the timing at which one of the finger members closer to the source squeezes that portion of the infusion tubing.



5,343,735

APPARATUS FOR ACCURATELY MEASURING THE WATER CONTENT OF GASES

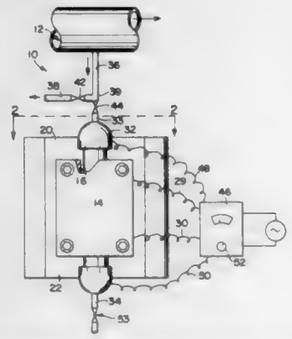
Marco Succi, Milan; Carolina Solcia, Grezzago; Fabrizio Doni, Milan, and Antonio Coppola, Turate, all of Italy, assignors to SAES Getter S.p.A., Milan, Italy

Filed Oct. 27, 1992, Ser. No. 967,030

Claims priority, application Italy, Nov. 6, 1991, MI-A002941

Int. Cl.[5] G01W *1/11*

U.S. Cl. 73—29.01 **5 Claims**



1. An apparatus for accurately measuring, at a given measuring temperature within the range of about 0° to about 20° C., the water content of a moist gas containing less than 50 parts per million (ppm) of water comprising:

A. an isothermal heat sink;

B. a radiator;

C. a Peltier heater-cooler thermally arranged between the

isothermal heat sink and the radiator, wherein said heater-cooler transfers heat from the isothermal heat-sink to the radiator and vice versa;

D. a phosphoric acid moisture cell in thermal contact with the isothermal heat sink;

E. means for passing the moist gas through the cell; and

F. means for measuring an electrical current in the cell and thereby determining the amount of moisture in the moist gas; and

G. means for passing electrical current through the Peltier heater-cooler in a cell-heat-removing direction thereby removing heat from the heat sink and thereby from the cell when the cell has a temperature above the measuring temperature; and

H. means for passing electrical current through the Peltier heater-cooler in a cell-heat-adding direction, opposite to the cell-heat-removing direction, thereby adding heat to the heat sink and thereby to the cell when the cell has a temperature below the measuring temperature; and

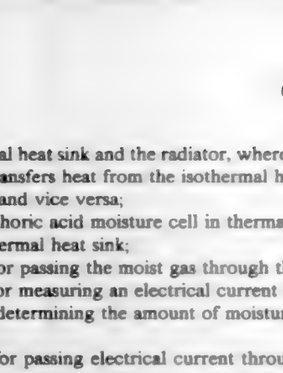
I. means for maintaining the temperature of the cell at the given measuring temperature.

5,343,736

OPTICAL LEAK SENSOR AND POSITION DETECTOR

Byron C. Cady, Gilroy; Carl E. Story, and David A. Guerra, III, both of Cupertino, all of Calif., assignors to Systems Chemistry, Inc., Milpitas, Calif.

Filed Jun. 15, 1992, Ser. No. 899,663
Int. Cl.[5] G01M *3/04*
U.S. Cl. 73—40 **18 Claims**



1. A sensor for detecting fluid leaks and the position of a moving component within a fluid handling device, comprising:

a body member, said body member including a detector bore formed therein;

a position sensor means, said position sensor means including an optical emitter and receiver means being engaged within said detector bore of said body member and functioning to emit and receive optical signals indicative of the position of a movable member within a fluid handling device and disposed away from said body member;

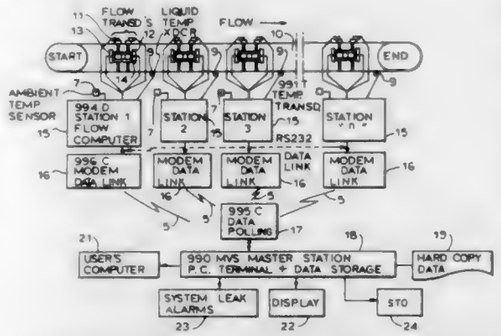
a leak detection means, said leak detection means being engaged within said detector bore of said body member and functioning to emit and receive optical signals indicative of the contact by a fluid upon an exterior surface of said body member.

5,343,737

METHOD AND APPARATUS FOR LEAK DETECTION AND PIPELINE TEMPERATURE MODELLING METHOD AND APPARATUS

Joseph Baumoel, 155 Plant Ave., Hauppauge, N.Y. 11788

Filed Sep. 22, 1992, Ser. No. 949,076
Int. Cl.[5] G01M *3/28*
U.S. Cl. 73—40.50 R **92 Claims**



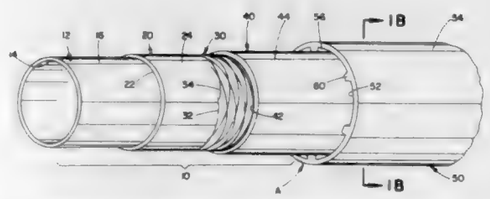
1. Apparatus for detecting a leak in an elongated fluid conducting pipe, said apparatus comprising at least first and second flowmeter means for measuring an amount of fluid per unit time flowing within said pipe; said first and second flowmeter means coupled to said pipe at axially spaced locations with said second flowmeter means being downstream of said first flowmeter means; measurement means for determining a total amount of fluid flowing through said pipe at each of said locations for equivalent periods of time; comparison means coupled to said measurement means for comparing the total flow amounts at said first and second locations for said equivalent periods of time and for producing a volume difference value; and output means operable in response to a predetermined volume difference value from said comparison means, and further comprising means for determining the temperature of fluid at said first and second flowmeter means, and means for correcting the flow amount determined at said second location to compensate said difference value for effects of temperature on the entire pipeline.

5,343,738

DOUBLE WALLED CONTAINMENT FUEL TRANSFER HOSE

Steven Skaggs, Cortland, Ohio, assignor to Furon Company, Aurora, Ohio

Filed Oct. 16, 1992, Ser. No. 962,979
Int. Cl.[5] F16L *11/20;* **G01M** *3/18*
U.S. Cl. 73—40.5 R **23 Claims**



1. A multi-walled hose assembly comprising:

an elongate inner hose made of resilient, flexible materials, said inner hose comprising

a fluid-resistant layer;

an elongate outer hose closely encircling said inner hose, said outer hose being made from a resilient, flexible material; and,

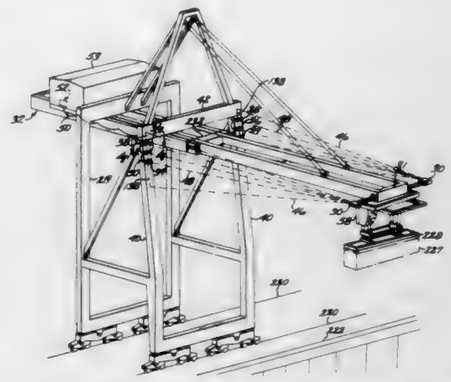
at least one rib extending between said inner hose and said outer hose, said at least one rib being secured to one of said inner hose and said outer hose wherein said at least one rib contacts the other of said inner hose and said outer hose to retard movement therebetween but is not adhered to said other of said inner hose and outer hose, said at least one rib being made of a resilient, flexible material, wherein the hose assembly can be bent as necessary.

5,343,739

GANTRY CRANE COLLISION AVOIDANCE DEVICE

John R. Curry, 419 E. Walnut Ave., El Segundo, Calif. 90245

Filed Aug. 6, 1993, Ser. No. 102,915
Int. Cl.[5] B66C *15/04*
U.S. Cl. 212—151 **19 Claims**



1. A gantry crane collision avoidance apparatus for detecting objects alongside an elongated gantry boom carried on one end from a support tower and terminating in a free end, said apparatus comprising:

a transmitter device mounted on said free end of said boom and including a laser generator for directing a laser beam back along a path defining a boundary alongside at least one side of said boom at said tower to form an interface point on said tower;

at least one receiver device mounted at said interface point and operative in response to the absence of said laser beam to generate a response signal;

an alarm generator connected in circuit with said receiver and responsive to a control signal to generate an alarm signal; and

a logic circuit device connected with said receiver device and alarm generator and in response to said operation signal operative to generate said control signal whereby said transmitter device projects said laser beam along said boundary at said interface point such that upon introduction of an object into said boundary, said receiver device will detect the absence of said laser beam to generate said response signal causing said logic circuit device to generate said control signal to activate said alarm generator to generate said alarm signal.

5,343,740

HIGH SENSITIVITY LEAK DETECTION METHOD AND APPARATUS

Ganapatic R. Myneni, Grafton, Va., assignor to Southeastern Universities Research Association, Newport News, Va.

Filed Aug. 27, 1993, Ser. No. 113,718
Int. Cl.[5] G01M *3/20*
U.S. Cl. 73—40.7 **20 Claims**

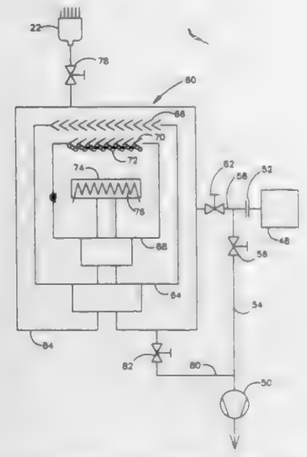
1. An apparatus for detecting leaks from a test object comprising:

a vacuum line for connecting to a test station where a test sample may be placed for determining leakage of helium by said test sample;

a vacuum pump connected to said vacuum line for creating a vacuum at the test station on one side of a test sample being tested in said test station;

a scavenger module connected to said test station for receiving gases leaking through a test sample in said test station and capable of removing all of said gases except helium;

a helium adsorber/desorber associated with said scavenger for cyclically adsorbing said helium and desorbing said helium a multiple number of times;



a non-porous thermally conducting surface in said helium adsorber/desorber on to which said helium will be cyclically adsorbed and desorbed;

a source of cooling to cool said thermally conducting surface to a temperature of approximately 9 K or lower;

a heater for said thermally conducting surface to heat said surface to 10 K to 20 K; and

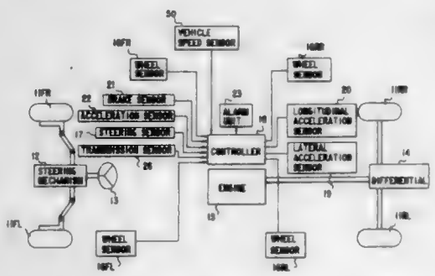
a residual gas analyzer for measuring the amount of helium present during a desorption cycle.

5,343,741

SYSTEM FOR DETERMINING PNEUMATIC TIRE PRESSURE FOR MOTOR VEHICLE BY COMPARING ACTUAL TO ADEQUATE WHEEL ROTATIONAL SPEED

Takeshi Nishihara; Keiyu Kin, and Shuji Shiraishi, all of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1993, Ser. No. 9,238
Claims priority, application Japan, Jan. 31, 1992, 4-046016
Int. Cl.[5] B60C *23/02, 23/00*
U.S. Cl. 73—146.2 **6 Claims**



1. A system for determining a reduction in the pneumatic tire pressure of road wheels on a motor vehicle, comprising:

first means for detecting an actual rotational speed differ-

ence between rotational speeds of front left and right road wheels of the motor vehicle;

second means for detecting an operating condition of the motor vehicle;

third means for calculating an adequate rotational speed difference between rotational speeds of the front left and right road wheels based on an output signal from said second means; and

fourth means for comparing said adequate rotational speed difference calculated by said third means and said actual rotational speed difference detected by said first means, and determining a pneumatic tire pressure reduction when the difference between the compared actual and adequate rotational speed differences exceeds a predetermined value.

5,343,742

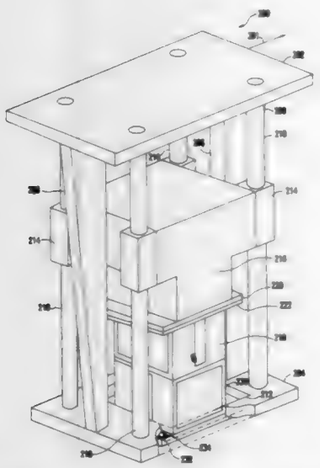
FLOATING PLATFORM TOW POST

Dominic S. Cusanelli, Frederick, Md., and Jeffrey A. Bradel, Centreville, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 28, 1993, Ser. No. 127,618

Int. Cl.[5] B63B *9/08*

U.S. Cl. 73—145 **20 Claims**



1. Apparatus for coupling a model with testing means, said testing means including force transducer means, said apparatus including

a carriage,

a housing for said carriage, said housing having an upper member, a lower member and a plurality of vertical tracks, each said vertical track joining said upper member and said lower member,

a plurality of linear bearings attached to said carriage, each said linear bearing engaging one said vertical track, thereby providing vertical movability of said carriage, said lower member being configured so as to provide clearance for said vertical movability,

means for attaching, so as to permit said vertical movability, said force transducer means to said model, and

means for attaching, so as to permit said vertical movability, said force transducer means to said carriage.

5,343,743

ASYMMETRICAL DISPLACEMENT FLOWMETER

Michael J. L. Chapman, Room 1311, Yongan Apartment, 5A Zao Ying Road, North Dongsanhuan, Beijing, China

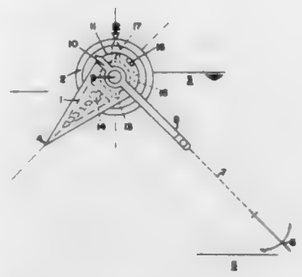
PCT No. PCT/GB89/00223, § 371 Date Dec. 31, 1990, § 102(e) Date Dec. 31, 1990, PCT Pub. No. WO90/01146, PCT Pub. Date Feb. 8, 1990

PCT Filed Mar. 6, 1989, Ser. No. 543,771

Claims priority, application European Pat. Off., Jul. 28, 1988, 88112208.9

Int. Cl.[5] G01F *1/00*

U.S. Cl. 73—170.07 **5 Claims**



1. A liquid flow measuring device for determining the flow of a liquid comprising:

(a) a streamlined body having a leading and a trailing end, with at least a portion of the body proximate the trailing end being disposed within a liquid to be measured, the body being pivotable about a horizontal axis proximate the leading end which is substantially perpendicular to the direction of flow of the liquid, the body having a no-flow orientation indicating a null flow condition of the liquid and being pivotable from the no-flow orientation by frictional forces subjected on the body by the flowing liquid such that the body has an angular displacement from the no-flow orientation proportional to the flow of the liquid; and

(b) a mobile reference pendulum pivotable about the horizontal axis to provide a no-flow reference point, the pendulum being arranged and configured such that it is unaffected by frictional forces from the flowing liquid.

5,343,744

ULTRASONIC ANEMOMETER

Stephen K. Ammann, Cupertino, Calif., assignor to TSI Incorporated, St. Paul, Minn.

Filed Mar. 6, 1992, Ser. No. 846,870

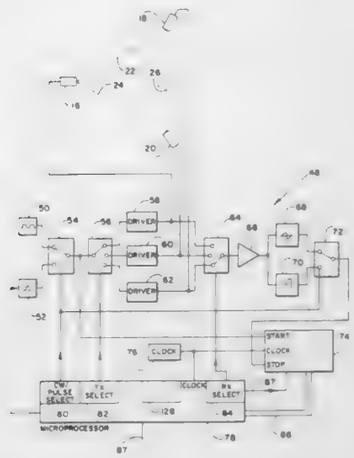
Int. Cl.[5] G01W *1/00*

U.S. Cl. 73—170.13 **18 Claims**

1. In a fluid flow measurement system including at least two spaced apart electroacoustic transducing means, a process for determining ultrasonic signal propagation times along a bidirectional signal propagation path between the transducing means, including the steps of:

a. (i) causing a first one of the transducing means to generate a continuous wave acoustic signal in a first direction and receiving the continuous wave acoustic signal at the second transducing means; (ii) causing the second transducing means to generate the continuous wave acoustic signal in a second direction opposite to the first direction, and receiving the continuous wave acoustic signal at the first transducing means; (iii) causing the first transducing means to generate a single pulse acoustic signal in the first direction and receiving the single pulse acoustic signal at the second transducing means; and (iv) causing the second transducing means to generate the single pulse acoustic signal in the second direction and receiving the single pulse acoustic signal at the first transducing means;

b. Determining respective signal propagation times $T_{CW}-1$ and $T_{CW}-2$ corresponding to propagation between the transmission means in the first and second directions based on respective phase comparisons of the sent and received continuous wave signal and determining a continuous wave time differential ΔT_{CW} based upon the difference in the respective propagation times;



c. Measuring respective single pulse propagation times $T_{SP}-1$ and $T_{SP}-2$ corresponding to propagation of the single pulse in the first and second directions, and determining a pulse time differential ΔT_{SP} based on the difference in the respective signal propagation times; and

d. Determining a value for the propagation time based upon a combination of the values ΔT_{SP} and ΔT_{CW}.

5,343,745

APPARATUS AND METHOD FOR DETECTING INTAKE AIR QUANTITY FOR INTERNAL COMBUSTION ENGINE

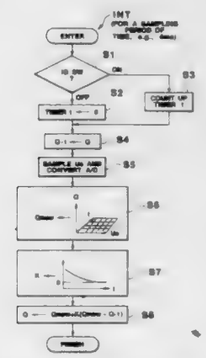
Naoki Tomisawa, Isezaki, Japan, assignor to Japan Electronic Control Systems Co., Ltd., Isezaki, Japan

Filed Jan. 15, 1993, Ser. No. 2,837

Claims priority, application Japan, Jan. 17, 1992, 4-006949

Int. Cl.[5] G01F *1/68*

U.S. Cl. 73—204.18 **9 Claims**



1. An apparatus for detecting an intake air quantity for an internal combustion engine, comprising:

a) a temperature sensitive airflow meter having a temperature-sensitive resistor disposed in an intake air passage and which is so constructed as to output a detection signal based on a change in a value of a resistance of the temperature-sensitive resistor according to an intake airflow quantity through the temperature-sensitive resistor, the detection signal corresponding to the intake air quantity of the engine;

b) passed time measuring means for measuring a passed time upon a turn on of a power supply to the temperature sensitive airflow meter;

c) change rate calculating means for calculating a change rate between a detection value of the intake air quantity before a predetermined period of time and the present detection value by means of the temperature sensitive airflow meter;

d) intake air quantity correcting means for outputting the detection value derived by an addition of a value of the change rate calculated by the change rate calculating means multiplied by a predetermined coefficient to the present detection value as a present final detection value; and

e) coefficient varying means for variably setting the predetermined coefficient according to the measured passed time.

5,343,746

HUMIDITY SENSING APPARATUS

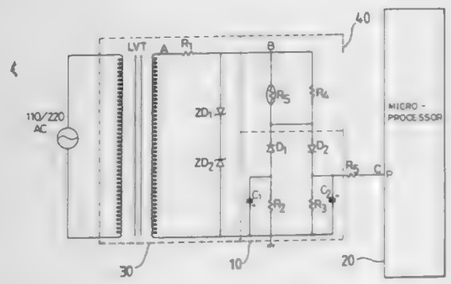
Jin K. Choi, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 22, 1993, Ser. No. 20,714

Claims priority, application Rep. of Korea, Feb. 20, 1992, 92-2485

Int. Cl.[5] G01N *25/56*

U.S. Cl. 73—335.05 **5 Claims**



1. A humidity sensing apparatus, comprising:

means for supplying a predetermined AC voltage, said means including a first AC output terminal and a second AC output terminal;

a humidity sensor connected between a first humidity sensor terminal and a second humidity sensor terminal, said first humidity sensor terminal being connected to said first AC output terminal;

a first diode, a cathode of said first diode being connected to said second humidity sensor terminal;

a first charging/discharging means connected between an anode of said first diode and said second AC output terminal;

a second diode, an anode of said second diode being connected to said second humidity sensor terminal;

a second charging/discharging means connected between a cathode of said second diode and said second AC output terminal; and

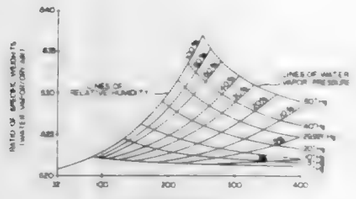
means connected to said cathode of said second diode for calculating a humidity level based on a current signal passing through said second diode.

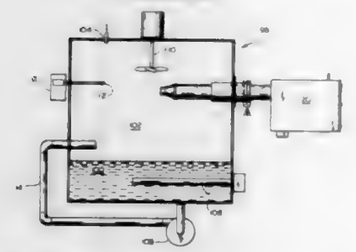
5,343,747

NORMALIZED RELATIVE HUMIDITY CALIBRATION

Jay Rosen, 142 Friedley Ave., Bellevue, Ohio 44811

Filed Jun. 8, 1992, Ser. No. 895,089
Int. Cl.[5] G01N *25/00*
U.S. Cl. 73—335.06 **3 Claims**





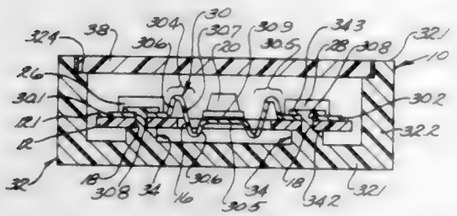
1. A chamber comprising:
an enclosure partially filled with liquid water;
an atmosphere above said water and within said enclosure;
means to vent said atmosphere;
means to circulate said water;
means to circulate said atmosphere;
means to regulate the temperature of said water;
means to measure the temperature of said atmosphere; and
means to regulate said atmosphere to an absolute moisture content measurable for calibration of a humidity measuring instrument.

5,343,748

ACCELEROMETER WITH STRAIN ISOLATED SENSOR

Mark D. Mozgowiec, Boston; Kai L. Keasey, Somerville, and Steven Beringhause, N. Attleboro, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 725,844, Jul. 3, 1991, Pat. No. 5,233,873.
This application Mar. 31, 1993, Ser. No. 40,730
The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.
Int. Cl.[5] G01P *1/02*
U.S. Cl. 73—497 **1 Claim**



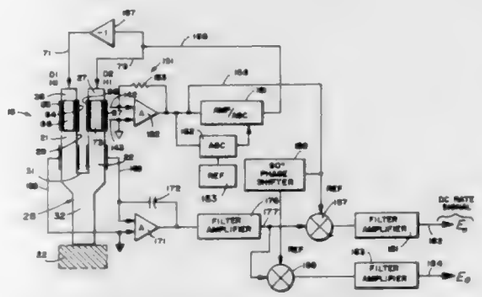
1. An accelerometer device comprising an electrically insulating substrate having electrically conductive circuit paths thereon, an accelerometer having a silicon mass movable in a silicon body relative to an integral silicon support to provide strain in the silicon body in response to acceleration and having a piezoresistive sensor in the body responsive to the strain to provide an electrical signal corresponding to the acceleration, means electrically connecting the piezoresistive sensor to the circuit paths, circuit component means mounted on the substrate electrically connected to the circuit paths for conditioning the electrical signal, and a member having only end portions secured to the substrate and an intermediate portion mounting the accelerometer thereon and means to absorb thermal coefficient of expansion mismatch between the substrate and the accelerometer, the member being formed of a material having a selected coefficient of thermal expansion substantially corresponding to that of the silicon material of the accelerometer thereby minimizing the effects of strain to the piezoresistive sensor from the silicon body due to differences in thermal expansion of the silicon body and the substrate during temperature changes likely to be encountered.

5,343,749

SINGLE ENDED TUNING FORK INERTIAL SENSOR AND METHOD

David F. Macy, Mission Viejo, Calif., assignor to New SD, Inc., San Francisco, Calif.

Continuation of Ser. No. 667,828, Mar. 12, 1991, abandoned.
This application Nov. 15, 1993, Ser. No. 152,816
Int. Cl.[5] G01P *9/04*
U.S. Cl. 73—505 **9 Claims**



1. In a single ended tuning fork inertial rate sensor, a housing, a single ended tuning fork of a piezoelectric material of a predetermined thickness having first and second tines lying in a plane and having an axis of symmetry serving as an input axis and a body formed integral with said first and second tines and having a width, means mounting said body in said housing for rigidly securing said single-ended tuning fork to said housing, said tines having a rectangular cross section, said body having a stem formed therein which has a width less than that of the body, drive electrodes and pickup electrodes secured to the tines, drive oscillator means for supplying an oscillatory frequency to the drive electrodes to drive them in a drive mode and electronic means connected to the pickup electrodes and operating in a pickup mode for supplying an angular rate signal in response to rotation about said input axis, said times having a width which is different from the thickness so that the pickup mode is separated in frequency from the drive mode, said stem having a length and width to cause a reduction in the frequency separation between the pickup mode and the drive mode to provide means for independently adjusting the frequency of the pickoff mode.

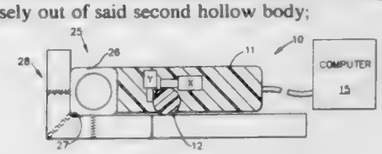
5,343,750

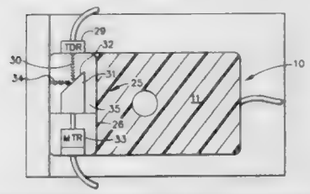
MANUAL ULTRASONIC SCANNER FOR COMPLEX SURFACES

Manohar Bashyam, Mason, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Nov. 25, 1991, Ser. No. 797,020
Int. Cl.[5] G01N *29/26*
U.S. Cl. 73—635 **5 Claims**

1. A hand held ultrasonic scanning device for manually traversing a surface of a material to be inspected for subsurface flaws, comprising:
a first body;
a second hollow body mounted on said first body;
an ultrasonic transducer mounted at one end of Said second hollow body to generate and project an ultrasound beam axially into said second hollow body;
an ultrasound reflector in said second hollow body and axially spaced from said transducer, said reflector being positioned at a 45° angle with respect to said transducer to reflect the ultrasound beam therefrom at a 90° angle transversely out of said second hollow body;





drive means coupled to said reflector for rotating said reflector to cause said ultrasound beam to rotate through an arcuate path in a plane perpendicular to the surface to be inspected;
an omnidirectional rolling element in said first body for rolling contact with the surface to be inspected; and
a pair of encoders in said first body and operated by said omnidirectional rolling element to provide separate electrical signals representing position coordinates of said second hollow body on the surface.

5,343,751

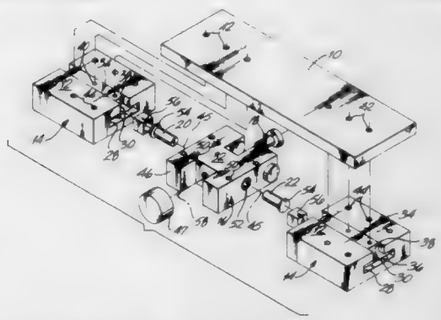
Patent Not Issued For This Number

5,343,752

HIGH FREQUENCY VIBRATION TEST FIXTURE WITH HYDRAULIC SERVO VALVE AND PISTON ACTUATOR

William B. Woyski, La Habra Heights; Robert C. Tauscher, Hacienda Heights, both of Calif., and Klaus L. Cappel, Madison, Ala., assignors to Team Corporation, Burlington, Wash.

Filed Apr. 20, 1992, Ser. No. 871,678
Int. Cl.[5] G01M *7/02, 7/06*
U.S. Cl. 73—665 **19 Claims**



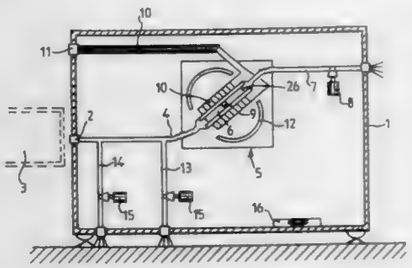
1. A vibration test fixture comprising:
a fixture base for carrying a unit under test;
a hydraulic servo valve affixed to the fixture base and having an axis and a pair of opposed fluid flow control outlet ports on opposite sides of the axis;
a hydraulic vibration actuator affixed to the fixture base and comprising a pair of opposed cylinders positioned within the fixture base on opposite sides of the servo valve and aligned on an axis of vibration intersecting the axis of the servo valve, each cylinder having a separate piston that reciprocates in a corresponding bore within each cylinder, the pistons having corresponding reciprocating piston rods extending in opposite directions away from the servo valve, each piston having an end face opposite from its corresponding piston rod exposed to a separate trapped volume of hydraulic fluid contained in a space within the bore adjacent the end face of the piston, the two cylinders being positioned so the trapped volumes of fluid are in close proximity to the opposite sides of the servo valve, each cylinder having a separate inlet port leading to the trapped volume of fluid adjacent the end face of the piston; and
means mounting the actuator to the fixture base to transfer reciprocating motion of the piston rods into vibrational motion of the test fixture for vibration testing of the unit under test;
the hydraulic servo valve having an alternating energy input source that induces the servo valve to produce alternating fluid flow control outputs from the outlet ports at a frequency corresponding to the desired vibration frequency of the unit under test, the flow control outlet ports from the opposite sides of the servo valve being in close proximity to and passing directly into the inlet ports of the cylinders and to said trapped volumes of hydraulic fluid adjacent the end faces of the pistons to thereby substantially minimize the total volume of trapped fluid between the servo valve outlet ports and the end faces of the pistons so that alternating fluid flow control outputs to alternating volumes of the trapped volumes of fluid in the cylinders reciprocates the piston rods at a high frequency to impart corresponding vibration motion to the fixture base and the unit under test.

5,343,753

DEVICE FOR DETECTING A VARIATION IN A PRESSURE BEING MONITORED BY SENSING DISPLACEMENT OF A BALL IN A TUBE

Guy Boutin, Villeneuve les Avignon, France, assignor to Societe Civile d'Etudes et de Recherches Revo'Reg, Cavaillon, France

PCT No. PCT/FR91/00592, § 371 Date Jan. 15, 1993, § 102(e) Date Jan. 15, 1993, PCT Pub. No. WO92/01917, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 18, 1991, Ser. No. 969,271
Claims priority, application France, Jul. 19, 1990, 90 09226
Int. Cl.[5] G01L *7/00*
U.S. Cl. 73—701 **15 Claims**



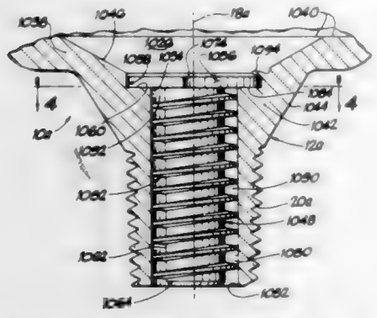
1. A device for detecting and transmitting a variation in air pressure or depression, for emission of an analog or digital signal, comprising a detector tube containing a displaceable ball, a signal representing the movement of said displaceable ball being detected and transmitted by a detection unit, the pressure in said tube varying as a function of the pressure and/or depression to be monitored, wherein said detector tube is an air micro-wave tube supplied with air at an adjustable pressure which is balanced by at least two adjustable air leaks, at least one on a conduit upstream of said tube and the other on

a conduit downstream, to adjust position of said ball in said tube, and wherein a complementary means for adjusting position of said ball is obtained by a manual inclination of said tube between an extreme vertical position and a position slightly inclined with respect to a horizontal axis.

5,343,754
PRESSURE TRANSDUCER

John R. Stone, Mansfield, Ohio, assignor to Hi-Stat Manufacturing Co., Inc., Sarasota, Fla.

Continuation of Ser. No. 21,475, Feb. 22, 1993, which is a division of Ser. No. 860,326, Mar. 30, 1992, Pat. No. 5,228,334, which is a continuation of Ser. No. 635,206, Dec. 28, 1990, abandoned. This application Nov. 4, 1993, Ser. No. 148,067
Int. Cl.[5] G01L *7/00*
U.S. Cl. 73—707 **7 Claims**

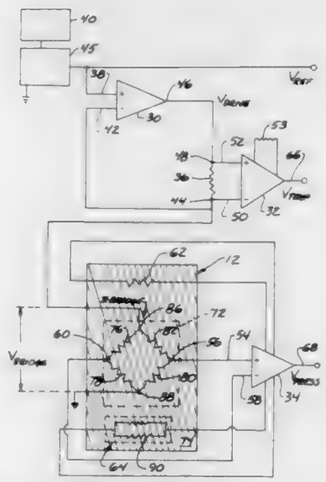


6. An insert member for insertion into a fluid conveying conduit of an associated conduit-defining-structure, wherein said fluid conveying conduit is comprised of an inner axially extending conduit surface, wherein said fluid conveying conduit has a first cross-sectional effective flow area for the flow of said fluid therethrough, said insert member comprising a body comprised of plastics material, said body having a longitudinal axis and extending generally therealong, a ridge-like portion comprised of plastics material integrally formed with and carried by said body and radiating generally outwardly of said body and extending helically along said longitudinal axis, said helically extending ridge-like portion defining a helical space also extending helically along said longitudinal axis, wherein said ridge-like portion comprises a radially outer surface which for at least the major portion thereof comprises a generally flatted segment of helical extension and lying in the cylindrical trace of a right circular cylinder, and wherein when said insert member is by press-fit inserted into said fluid conveying conduit the radially outer surface as defined operatively engages said inner axially extending conduit surface, wherein said insert member upon being inserted into said fluid conveying conduit defines a first flow passage for the flow of said fluid therethrough, wherein said first flow passage is of a single continuous helical direction and has a second cross-sectional effective flow area substantially less than said first cross-sectional effective flow area, whereby said helical space becomes said first flow passage by virtue of said inner axially extending conduit surface operatively engaging said flatted segment of helical extension and spanning successively helically spaced coils of said ridge-like portion, said insert member further comprising an abutment comprised of plastics material integrally formed with said body and situated at least near an axial end of said body, wherein said abutment extends generally transversely to said body and comprises at least one abutment portion extending generally radially outwardly of said longitudinal axis so as to extend a distance greater than the radial dimension of said helically extending ridge-like portion, wherein said at least one abutment portion is effective to operatively abut against said conduit-defining-structure to thereby limit the extent of insertion of said insert member into said fluid conveying conduit, wherein said abutment comprises at least two wall-like surfaces the first of which extends generally transversely to said body and is carried by said abutment at one axial side thereof as to be facing said helically extending ridge-like portion, wherein the second of said at least two wall-like surfaces is carried by said abutment at a second axial side thereof opposite to said one axial side, wherein said helically extending ridge-like portion terminates as not to be in full contact with said one axial side thereby defining an annularly uninterrupted and continuous annular space of a ring-like configuration generally about said body axially between said helically extending ridge-like portion and next adjacent to said first wall-like surface, a second passage formed through said abutment and communicating with said ring-like annular space, wherein said second passage comprises a slot, and wherein said slot extends generally radially of said longitudinal axis.

5,343,755
STRAIN GAGE SENSOR WITH INTEGRAL TEMPERATURE SIGNAL

Charles G. Huss, Shakopee, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed May 5, 1993, Ser. No. 57,745
Int. Cl.[5] G01L *19/04*; **G01B** *7/16*
U.S. Cl. 73—708 **12 Claims**

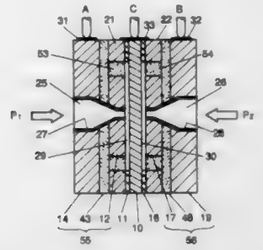


1. A pressure sensor comprising:
a resistive bridge circuit having output terminals for providing a pressure output signal and power terminals for receiving power;
power supply means for providing power to the resistive bridge circuit at a substantially constant voltage across the power terminals such that temperature caused variations in the resistance of the bridge circuit are reflected in the current flowing through the resistive bridge circuit;
a resistive element having a first end electrically coupled to the bridge circuit and having a second end electrically coupled to the power supply to carry at least a known portion of the current through the bridge circuit; and
a first amplifier electrically coupled to the resistive element for amplifying the voltage drop across the resistive element to provide a temperature output signal.

5,343,756
ELECTROSTATIC CAPACITY TYPE DIFFERENTIAL PRESSURE DETECTOR

Kimihiro Nakamura; Tadanori Yuhara; Toshiyuki Takano, and Hironobu Yao, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Jul. 23, 1992, Ser. No. 917,276
Claims priority, application Japan, Jul. 26, 1991, 3-186699
Int. Cl.[5] G01L *9/12*
U.S. Cl. 73—718 **1 Claim**



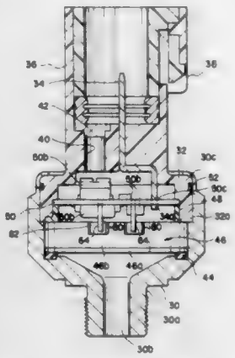
1. In an electrostatic capacity type differential pressure detector wherein capacitances are formed between a diaphragm as a movable electrode which is subjected to displacement depending on a differential pressure and fixed electrodes which are arranged on opposite sides of the diaphragm
each of said fixed electrodes having
a first electrically conductive plate closely adjoining and confronting a surface of a central portion of said diaphragm;
an annular support joined to the surface of a circumferential edge portion of said diaphragm and spaced from and surrounding the outer circumferential surface of the first electrically conductive plate;
a solid insulator completely filling an annular space between said first electrically conductive plate and the annular support, said solid insulator being spaced from said diaphragm;
an insulating plate commonly joined to each surface of said annular support and said first electrically conductive plate on the side of said annular support and conductive plate opposite said diaphragm; and
a second electrically conductive plate joined to the surface of the insulating plate opposite the diaphragm and electrically connected with said first electrically conductive plate,
there being a pressure introducing hole extending through said first and second electrically conductive plates and through said insulating plate;
the improvement wherein both the first electrically conductive plate and the annular support are composed of silicon, the insulator being composed of a glass material which has a thermal expansion coefficient substantially that of silicon.

5,343,757
PRESSURE SENSOR

Kikuo Tate, Kawasaki, Japan, assignor to Fuji Koki Manufacturing Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1992, Ser. No. 974,021
Claims priority, application Japan, May 21, 1992, 4-033651[U]; May 21, 1992, 4-033652[U]
Int. Cl.[5] G01L *7/08, 9/12*
U.S. Cl. 73—724 **7 Claims**

1. A pressure sensor comprising:
a first cap-like half housing which has a fluid inlet channel at its top portion;
a capacitive pressure transducer which is mounted on an enlarged opening of the first half housing, wherein the capacitive pressure transducer airtightly partitions the enlarged opening and has a terminal member extending in a direction away from the fluid inlet channel of the first half housing;
an annular spacer ring which is placed on a peripheral edge portion of a back surface of the capacitive pressure transducer opposite to a front surface of the capacitive pressure transducer, wherein the front surface faces the fluid inlet channel;
a circuit board which is placed on a surface of the spacer ring facing away from the capacitive pressure transducer, wherein the circuit board has a first electrical connection terminal insertion hole and a second electrical connection terminal insertion hole, wherein the second electrical connection terminal insertion hole is independent of the first electrical connection terminal insertion hole and receives an elongated portion of the terminal member of the capacitive pressure transducer; and



a second cap-like half housing which supports an outer connection terminal, wherein the second cap-like half housing is placed on a peripheral edge portion of a surface of the circuit board facing away from the spacer ring, and wherein the second cap-like half housing is engaged with the first half housing so that an end portion of the outer connection terminal is inserted into the first electrical terminal insertion hole of the circuit board, and so that the capacitive pressure transducer, the spacer ring, and the circuit board are sandwiched by the first and second cap-like half housings,
wherein the terminal member of the capacitive pressure transducer is bent like a crank, and wherein a terminal member guiding portion is formed in a peripheral wall of the spacer ring to receive the terminal member of the capacitive pressure transducer and to guide the terminal member to the second electrical connection terminal insertion hole of the circuit board.

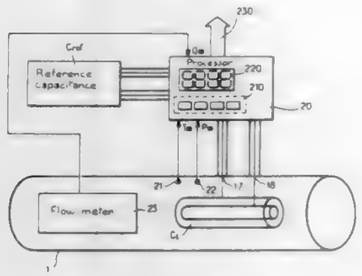
5,343,758
METHOD AND APPARATUS FOR MEASURING GAS FLOW

Dominique Ingrain, Villeneuve la Garenne, France; Tapan Bose, and Jean-Marie Saint-Arnaud, both of Trois Rivieres, Canada, assignors to Gaz de France, France and Universite du Quebec à Trois Rivieres, Canada

Filed Dec. 30, 1992, Ser. No. 998,591
Claims priority, application France, Dec. 30, 1991, 91 16324
Int. Cl.[5] G01F *15/04*
U.S. Cl. 73—861.02 **13 Claims**

1. A method of measuring the gas flow of a fluid flowing along a duct, the method comprising the following steps:
a) measuring the temperature Tm and the pressure Pm of said gas under its flow conditions by means of temperature and pressure sensors disposed in the duct;
b) determining the flow rate Qm of said gas under its flow conditions by means of a flow measuring device;
c1) causing said gas to flow through a capacitive transducer

which has been placed in the same thermodynamic conditions as apply to the flow of gas; measuring the capacitance of the capacitive transducer through which the gas passes, the capacitance in vacuo of said transducer having previously been established by measurements performed in vacuo, to determine the dielectric constant ϵ of the gas under its flow conditions;



d) calculating the compressibility factor by means of a processing and control unit on the basis of the determined dielectric constant ϵ of the gas and of the measured temperature and pressure Tm, Pm, using the following equation:

$$Zm = \frac{Pm}{RTm}\left[\frac{A_\epsilon}{CM} + \frac{B_\epsilon}{A_\epsilon} + \frac{C_\epsilon CM}{A_\epsilon^2} - \frac{B_\epsilon^2 CM}{A_\epsilon^2}\right]$$

with:

$$CM = \frac{\epsilon - 1}{\epsilon + 2}$$

R being the perfect gas constant and A_ϵ, B_ϵ, and C_ϵ being coefficients depending in determined manner on the composition of the gas; and

e) calculating the gas flow rate Q along the duct as reduced to predetermined reference conditions of temperature To, pressure To, and compressibility factor Zo in the processing and control unit, using the following equation:

$$Q = Qm(Pm/Po)(To/Tm)(Zo/Zm).$$

5,343,759

SENSOR SYSTEM

Tore Hesthamar; Fredrik Althoff, both of Mölndal; Thomas Larsson, Västra Frölanda, all of Sweden, and Bram Veenhuizen, IJsselstein, Netherlands, assignors to SKF Nova AB, Gothenburg, Sweden

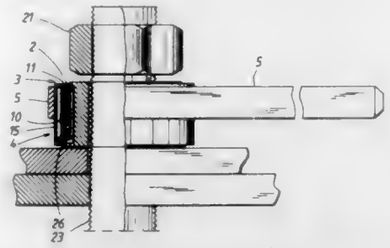
Filed Jun. 29, 1992, Ser. No. 905,374
Claims priority, application Sweden, Jul. 8, 1991, 9102121
Int. Cl.[5] G01L *1/00*
U.S. Cl. 73—761 **17 Claims**

1. A sensor system for measuring stress on a bolt having a nut, comprising:

a sensor comprised of a magnetoelastic material;

a sensing device comprising a contact portion for at least partly surrounding said sensor, and a gripping portion extending from said contact portion;

wherein said sensor is positioned between an object being fastened and said nut such that said sensor senses compressive forces created between said nut and said object; and



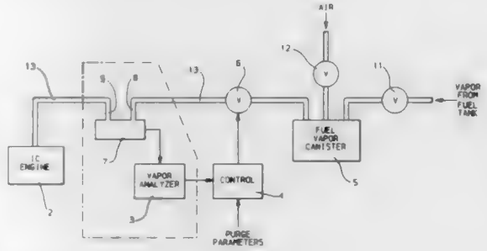
an electronic system connected to said sensing device for monitoring loads sensed by said sensor.

5,343,760

GAS CONCENTRATION AND FLOW RATE SENSOR

Michel F. Sultan, Troy; Joseph L. Kenty, Birmingham, and Michael J. O'Rourke, Warren, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 9, 1992, Ser. No. 910,913
Int. Cl.[5] G01F *1/74*; **G01N** *29/02*
U.S. Cl. 73—861.04 **10 Claims**



1. A sensor for detecting concentrations of a gas mixture comprising:

a chamber bounding the gas mixture, the chamber having a fundamental resonant acoustic frequency varying with the gas concentrations of the mixture therein;

means for detecting acoustic noise in said chamber and producing therefrom a spectrum signal; and

means for measuring the fundamental resonant frequency of said chamber from said spectrum signal, said measured fundamental resonant frequency being a measure of the gas concentrations.

5,343,761

METHOD AND APPARATUS FOR MEASURING GRAIN MASS FLOW RATE IN HARVESTERS

Allen Myers, R.R. 2, Ames, Iowa 50010

Filed Jun. 17, 1991, Ser. No. 716,293
Int. Cl.[5] G01F *3/00*
U.S. Cl. 73—861.73 **56 Claims**

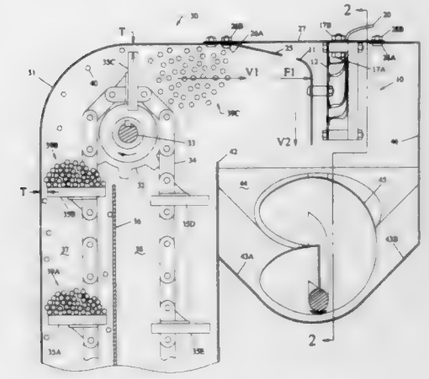
1. A system for measuring mass flow rate of grain exiting a power driven conveying means in a harvester, said system comprising

an impact plate positioned to be impacted by grain exiting said conveying means,

force measuring means for generating an electrical signal proportional to the impact force exerted on said impact plate by said grain,

computing means, in electrical communication with said force measuring means for analyzing a finite time record of said electrical signal to compute a characteristic frequency which is proportional to the actual operating speed of said conveying means,

wherein said computing means operates to calculate grain mass flow rate by averaging said impact force to obtain an average impact force and by utilizing a mass flow calibration characteristic which relates said grain mass flow rate to said average impact force, and



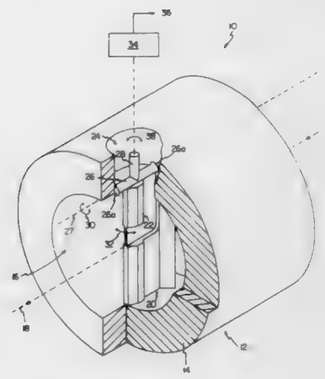
wherein said computing means operates to adjust said calculated grain mass flow rate to correct for the difference between said actual operating speed, as determined by said characteristic frequency, and a constant reference speed.

5,343,762

VORTEX FLOWMETER

Melvin R. Beulke, Hopkins, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Oct. 5, 1992, Ser. No. 956,398
Int. Cl.[5] G01F *1/32*
U.S. Cl. 73—861.24 **27 Claims**



1. A vortex flowmeter for measuring fluid flow, comprising:

a conduit having a wall surrounding a bore for carrying the fluid along a bore axis, the wall having a hole formed therein;

a pivoting member extending from the hole into the bore, the pivoting member moving in response to disturbances within the fluid at a frequency indicative of the flow;

sensing means coupled to the pivoting member for sensing the motion thereof to provide an output indicative of the flow;

a torsional pin disposed in the hole and coupled to the pivoting member, the pin having a first pin end attached to the wall; and

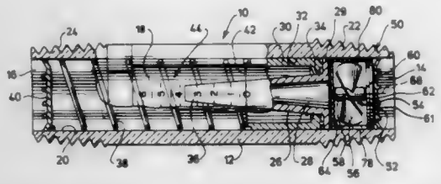
a region of reduced stiffness formed in the wall and sealingly extending across the hole, wherein the pin reinforces the region.

5,343,763

FLOW INDICATOR IMPELLER MODULE

John C. Nielsen, Racine; Mark A. Loeffler, Kenosha, and Dominic A. Cariello, Racine, all of Wis., assignors to Racine Federated Inc., Racine, Wis.

Filed Jun. 15, 1992, Ser. No. 899,641
Int. Cl.[5] G01F *1/22*
U.S. Cl. 73—861.58 **18 Claims**



1. A fluid flow indicator module for insertion within a transparent conduit defining a path of a fluid, the fluid flow indicator module comprising:

a transparent housing insertable lengthwise within the conduit, the housing having a fluid inlet and a fluid outlet;

an impeller rotatable about an axis in response to the fluid flow for providing a visual indication of fluid flow; and

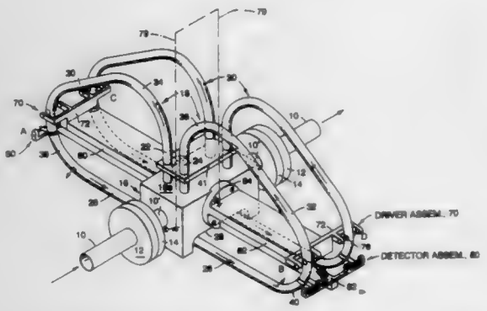
means for mounting the impeller in the housing in fluid communication with the fluid inlet.

5,343,764

CORIOLIS-TYPE MASS FLOWMETER

Wade M. Mattar, Wrentham; Duane T. Thompson, Franklin; Joseph P. DeCarlo, Wrentham, all of Mass.; Yousif Hussain, Surrey, United Kingdom, and Gordon W. Chitty, Norfolk, Mass., assignors to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 751,598, Aug. 21, 1991, abandoned, which is a continuation of Ser. No. 462,623, Jan. 8, 1990, abandoned, Division of Ser. No. 923,847, Oct. 28, 1986, Pat. No. 4,891,991. This application Apr. 30, 1992, Ser. No. 879,156
The portion of the term of this patent subsequent to Jan. 9, 2007, has been disclaimed.
Int. Cl.[5] G01F *1/84*
U.S. Cl. 73—861.38 **42 Claims**



1. A dual drive Coriolis-type mass flowmeter, comprising

a support,

a continuous loop of conduit solidly mounted at its inlet and outlet ends to the support,

a pair of drivers acting on said loop at different respective points along the loop for oscillating said loop about an oscillation axis between said points, and

a pair of sensors for measuring the magnitude of Coriolis forces arising as a result of mass flow in the portion of said

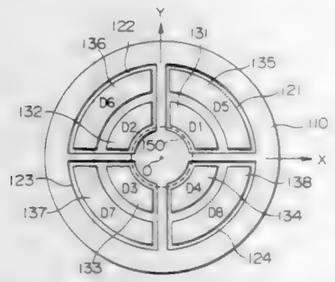
conduit undergoing oscillatory motion, said sensors being juxtaposed respectively with said drivers.

5,343,765

DETECTOR FOR FORCE, ACCELERATION OR MAGNETISM WITH RESPECT TO COMPONENTS IN MULTI-DIMENSIONAL DIRECTIONS

Kazuhiro Okada, 73, Sugaya 4-Chome, Ageo-Shi, Saitama 362, Japan

Filed Oct. 13, 1992, Ser. No. 960,545
Claims priority, application Japan, Oct. 25, 1991, 3-306587
Int. Cl.[5] G01L *5/04*
U.S. Cl. 73—862.043 **6 Claims**



1. A force detector for detecting components in multi-dimensional directions of force in an XYZ three-dimensional coordinate system, comprising:

eight sets of detection elements constituted by piezoelectric elements in a plate form, upper electrodes formed on upper surfaces of said piezoelectric elements, and lower electrodes formed on lower surfaces of said piezoelectric elements, and

a substrate having flexibility wherein the origin is defined at a point within the substrate, an X-axis is defined so that it passes through the origin and extends in a direction parallel to the substrate surface, a Y-axis is defined so that it is perpendicular to the X-axis at the origin and extends in a direction parallel to the substrate surface, and a Z-axis is defined so that it passes through the origin and extends in a direction perpendicular to the substrate surface,

wherein said eight sets of detection elements are such that the first detection element is arranged on the substrate in a central area corresponding to the first quadrant of the XY plane, the second detection element is arranged on the substrate in a central area corresponding to the second quadrant of the XY plane, the third detection element is arranged on the substrate in a central area corresponding to the third quadrant of the XY plane, the fourth detection element is arranged on the substrate in a central area corresponding to the fourth quadrant of the XY plane, the fifth detection element is arranged on the substrate in a peripheral area corresponding to the first quadrant of the XY plane, the sixth detection element is arranged on the substrate in a peripheral area corresponding to the second quadrant of the XY plane, the seventh detection element is arranged on the substrate in a peripheral area corresponding to the third quadrant of the XY plane, and the eight detection element is arranged on the substrate in a peripheral area corresponding to the fourth quadrant of the XY plane, one electrode of said respective detection elements being fixed to the substrate,

wherein either of peripheral portion of said substrate or a central portion in a vicinity of the origin thereof is fixed to a detector casing,

wherein there is a working point having a function to transmit a force produced on the basis of a physical action exerted from an external point to the peripheral portion or the central portion of said substrate, and

wherein potentials of one electrode with respect to the other electrodes fixed on the substrate are obtained in the respective detection elements,

the detector detecting a force component in the x-axis direction produced at said working point by detecting a difference between a sum of respective potentials of said first, fourth, sixth and seventh detection elements and a sum of respective potentials of said second, third, fifth and eighth detection elements, and

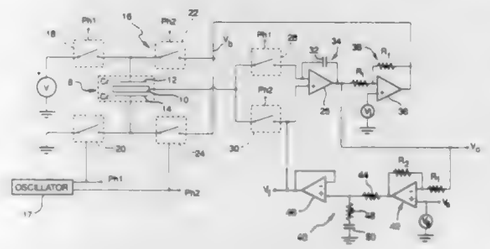
the detector detecting a force component in the Y-axis direction produced at said working point by detecting a difference between a sum of respective potentials at said first, second, seventh, and eight detection elements and a sum of respective potentials of said third, fourth, fifth and sixth, detection elements.

5,343,766

SWITCHED CAPACITOR TRANSDUCER

Chen Y. Lee, Fort Wayne, Ind., assignor to C & J Industries, Inc., Fort Wayne, Ind.

Filed Feb. 25, 1992, Ser. No. 841,363
Int. Cl.[5] G01L *1/00*
U.S. Cl. 73—862.61 **14 Claims**



1. A capacitive transducer comprising:

first and second variable capacitors comprising first and second fixed capacitor electrodes and a common capacitor electrode interposed between the first and second electrodes, the common electrode being displaceable from a rest position to vary the capacitances of the capacitors as a function of a parameter being measured;

capacitance sensing means for generating an output voltage which is a function of the sensed parameter and having inverting and non-inverting inputs tied to a biasing voltage;

first switch means for connecting the first and second electrodes to first and second dc reference voltages and for coupling the input of the capacitance sensing means to the common electrode to thereby couple the biasing voltage to the common electrode;

second switch means for connecting the first and second electrodes to a variable dc reference voltage intermediate the first and second reference voltages and connecting the common electrode to the non-inverting input of the capacitance sensing means;

means for opening and closing the first and second switch means in non-overlapping sequence; and

an attenuating circuit responsive to the output voltage for generating the said variable reference voltage.

5,343,767

LOW PARTICLE LOSS CASCADE IMPACTOR

Virgil A. Marple, Maple Plain, and Nicholas C. Miller, White Bear Lake, both of Minn., assignors to MSP Corporation, Minneapolis, Minn.

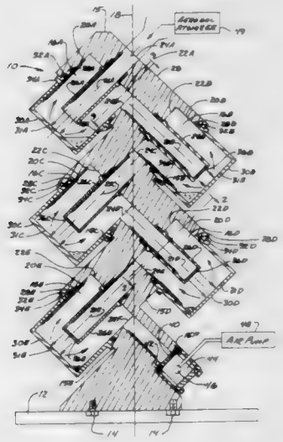
Filed Mar. 16, 1992, Ser. No. 851,570
Int. Cl.[5] G01N *15/02*
U.S. Cl. 73—863.22 **14 Claims**

1. A low particle cascade impactor assembly for determining the size distribution of particles delivered from a source, comprising:

a body having formed therein a plurality of at least three downwardly facing cavities which are arranged from a first end to a second end of the body in a generally zig-zag pattern, each cavity having a wall surface formed around a central axis and encompassing the cavity and defining an opening facing in a second direction, and each cavity having an outlet opening through the encompassing wall;

the body having an entrance passage having an inlet opening located at an outer surface adjacent the first end, the entrance passage extending from the outer surface of the body at the first end to a central region of a first cavity;

a plurality of cavity passages in the body, each cavity passage extending between adjacent cavities from an outlet opening of the encompassing inner wall of one cavity to a



central region of the adjacent cavity positioned in a direction toward the second end of the body;

nozzle means formed in the entrance passage and each cavity passage;

a separate particle collection cup associated with each cavity and having an end wall to provide a separate impaction surface for the collection of particles impinging thereon from the respective nozzle means, the nozzle means each comprising an elongated tube extending into the associated cup in a direction along the respective central axis and having a discharge end adjacent the end wall of the associated cup; and

air flow generator means connected to the cavity adjacent the second end of the body to cause air to flow into the body at the inlet opening of the entrance passage, and in series through the nozzle means and plurality of cavities and cavity passages.

5,343,768

SAMPLER FOR HOLDING SLIDES AND POLYMER SCRIMS OR PADS

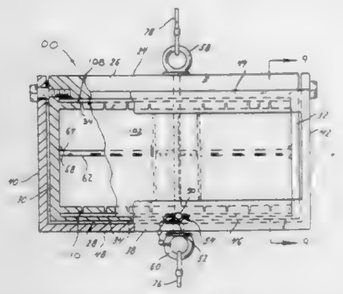
M. Brent McClane, 3504 W. Main St., Belleville, Ill. 62223

Continuation-in-part of Ser. No. 759,411, Sep. 13, 1991, Pat. No. 5,219,390. This application Jul. 27, 1992, Ser. No. 922,026
The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.
Int. Cl.[5] G01N *1/10*
U.S. Cl. 73—864 **12 Claims**

1. A sampler device for supporting a polymer scrim or pad under water for the collection of plant and animal samples, the device comprising:

a frame having a top member, a bottom member, and left and right side members, the top and bottom members having a recess therein for engaging the edges of the polymer scrim or pad;

a guard pivotally mounted to the frame, and movable between a closed position, in which portions of the guard overlap the grooves in the top and bottom members of the frame, thereby securing the scrim or pad in the frame, and



an open position in which the guard does not overlap the grooves so that scrim or pad can be inserted into and removed from the grooves;

means for releasably locking the guard in its closed position;

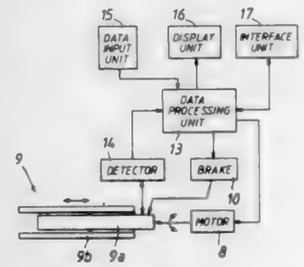
a mounting bolt extending through the top and bottom of the frame, and attaching means associated with the bolt above and below the frame for securing the sampler device.

5,343,769

PROCEDURE FOR FILLING AND EMPTYING A PIPETTE, AND PIPETTE

Osmo Suovaniemi, and Pertti Ekholm, both of Helsinki, Finland, assignors to Biohit Oy, Helsinki, Finland

PCT No. PCT/FI91/00133, § 371 Date Dec. 30, 1992, § 102(e) Date Dec. 30, 1992, PCT Pub. No. WO91/16974, PCT Pub. Date Nov. 14, 1991
PCT Filed May 3, 1991, Ser. No. 949,826
Claims priority, application Finland, May 4, 1990, 902267
Int. Cl.[5] B01L *3/02;* **G01N** *1/14*
U.S. Cl. 73—864.18 **4 Claims**



1. A pipette comprising: a cylinder volume (**4**); a plunger which is fitted into said cylinder volume, said plunger being reciprocatingly movable within said cylinder volume; a liquid volume (**6**) communicating with said cylinder volume; operating means (**8**,*9a*,*9b*) for moving said plunger in said cylinder volume and for filling and emptying said pipette with quantitative accuracy when said plunger is moved, said operating means including a threaded rod and sleeve assembly in communication with said plunger; measuring means (**14**,**23**,**24**) for measuring the distance travelled by said plunger; control means (**13**) for controlling the movement of said plunger; and brake means (**21**) for arresting said plunger, said brake means acting on said threaded and sleeve assembly, said brake means being operatively connected to said control means.

5,343,770

AUTOMATIC SAMPLE INTRODUCER FOR ANALYZER

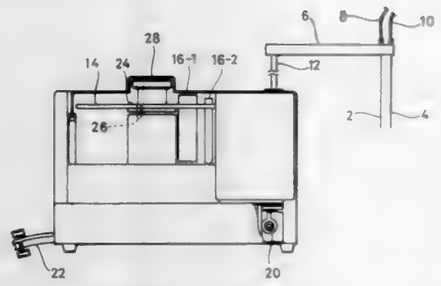
Akinori Seidoh; Youzo Morita, and Hiroaki Matsuhisa, all of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Jul. 29, 1991, Ser. No. 737,061

Claims priority, application Japan, Jul. 27, 1990, 2-80324[U]; Jul. 27, 1990, 2-199863

Int. Cl.[5] G01N *35/06*

U.S. Cl. 73—864.22 **17 Claims**



10. A sample introducer, comprising:

a support;

a sample table accommodated on said support, said sample table capable of accommodating a plurality of sample containers and move the sample containers to a prescribed sampling position;

a washing port accommodated on aid support;

an actuating arm accommodated on said support;

a sampling needle for sampling the sample containers, said sampling needle supported for movement by said actuating arm;

a ventilation pretreatment needle for sparging the sample containers, said ventilation pretreatment needle supported for movement on said actuating arm;

a sparging gas supply fluidly connected to said ventilation pretreatment needle;

a mechanism accommodated on said support for manipulating said actuating arm for inserting the needles into said sample containers provided on said sample table and, alternatively, said washing port, and for moving said needles back and forth between said sampling position and said washing port; and

a sample supply mechanism for withdrawing liquids from said sample containers through said sampling needle by suction and supplying said liquids to other equipment.

5,343,771

TOOL FOR SAMPLING SOIL CONTAINING VOLATILE ORGANIC COMPOUND

David E. Turriff, Green Bay; JoAnn L. Johnson, Denmark; Lloyd E. Jacobs, and Nils K. Melberg, both of Green Bay, all of Wis., assignors to En Chem, Inc., Green Bay, Wis.

Filed Jul. 20, 1992, Ser. No. 915,309

Int. Cl.[5] G01N *1/08*

U.S. Cl. 73—864.44 **9 Claims**

1. In a soil sampling tool having a handle, a cylindrical sampling barrel with an interior region and an enlarged aperture, an ejector movable to extend through the aperture and an ejector-driven plunger movable within the barrel, the improvement wherein:

the handle is tubular and has an interior wall;

the ejector and the interior wall define an air exhaustion passage therebetween, such passage extending between the interior region and ambient air;

the passage terminates in the enlarged aperture which is defined by a perimeter surface;

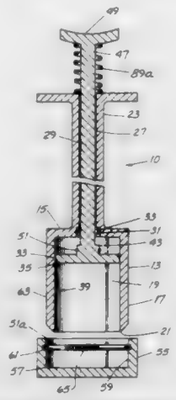
the plunger includes a boss having an aperture seal thereon;

the boss is telescoped within the aperture;

the aperture seal is between the boss and the aperture perimeter surface and seals the aperture;

and wherein:

the tool includes a cap which is hand-removable from the barrel;



the barrel is closed by the cap capturing a resilient barrel seal between the barrel and the cap,

whereby vaporized volatile organic compound is prevented from escaping from the barrel.

5,343,772

Patent Not Issued For This Number

5,343,773

DEVICE FOR GENERATING AND DECOUPLING DIFFERENT MOVEMENTS IN CLEANING AND SEALING STATIONS IN INK PRINTERS

Heinz Lehna, Rosenheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

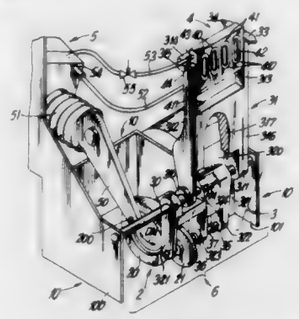
PCT No. PCT/DE90/00939, § 371 Date Sep. 10, 1992, § 102(e) Date Sep. 10, 1992, PCT Pub. No. WO91/10568, PCT Pub. Date Jul. 25, 1991

PCT Filed Dec. 4, 1990, Ser. No. 910,089

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1990, 4000417

Int. Cl.[5] F16H *27/02, 53/06;* **G01D** *15/16*

U.S. Cl. 74—89 **7 Claims**



1. A device for generating and decoupling different movements in cleaning and sealing stations in ink printers, comprising:

a motor-driven cam disk having two directions of rotation and a projecting, eccentrically arranged crank pin for generating a first movement,

the motor-driven cam disk further having first and second cam paths which are offset relative to one another in a stepped manner and merge into one another at two locations on the cam disk;

a running wheel guided by the cam paths and arranged in a resilient manner on the cam disk by a spring force for generating a second movement in a radial direction relative to the cam disk; and

a switch tongue arranged on the cam disk so as to decouple the second movement from the first movement in one of the directions of rotation of the cam disk by controlling a rotating path of the running wheel around the cam disk as a function of the rotating direction of the motor-driven cam disk.

5,343,774

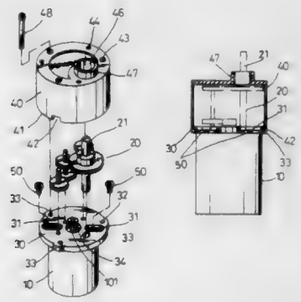
TRANSMISSION GEAR BOX FOR MINIATURE MOTOR

Shuh Y. Jang, No. 24-2 Wann Nian Lane, Yuan Lin, Chang Hua, Taiwan

Filed Feb. 9, 1993, Ser. No. 15,514

Int. Cl.[5] F16H *57/02*

U.S. Cl. 74—421 A **2 Claims**



1. An improved transmission gear box adapted for a miniature motor, comprising:

a transmission gear set;

a round plate secured to the side of said miniature motor with the extended shaft of said motor passing therethrough;

a cylindrical cap disposed on top of said round plate with said gear set housed therebetween;

said round plate being provided with a central through hole for the passing of said shaft of said motor; and a pair of symmetrical oval-shaped through holes disposed on the opposite sides of said central through hole for the location of fastening means; and a number of screw holes disposed in proximity to the periphery thereof; and a number of other holes for the mounting of the shafts of said gear set thereto;

a number of protrusions disposed on the periphery of said round plate having a thickness equal to the wall of said cap;

a number of corresponding recesses in conformance to and in engagement with said protrusions disposed on the periphery of said round plate being disposed on the bottom peripheral edge of said cap;

a number of through holes disposed on the periphery of the top of said cap and in alignment with said screw holes of said round plate so as to permit bolt means to go therethrough and engage with said screw holes and secure the two together;

a number of equally spaced screw holes disposed on the periphery and in proximity to said through holes of the top end of said cap so that a positioning plate can be secured thereto;

an eccentric hole having a peripheral flanged skirt disposed thereon for the passing of an output shaft of said transmission gear set.

5,343,775

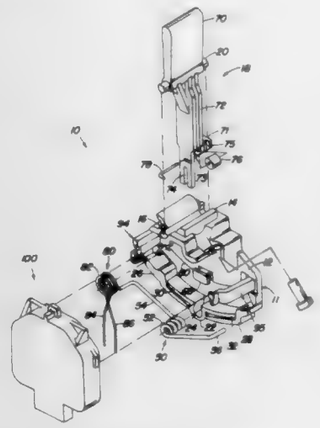
CONTROL LEVER ASSEMBLY

David J. Easton, Cedar Falls, and Terence D. Pickett, Waterloo, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 28, 1993, Ser. No. 55,171

Int. Cl.[5] G05G *5/06;* **F16F** *1/00*

U.S. Cl. 74—532 **18 Claims**



1. A lever assembly comprising:

a cylindrical pivot pin;

a housing having a pivot slot formed therein, the pivot slot slidably and pivotally receiving the pivot pin, the pivot slot being elongated to permit sliding movement of the pivot pin in a direction which is perpendicular to a central axis of the pivot pin;

a lever coupled to the pivot pin, the lever comprising a first arm projecting away from the pivot pin and a second arm projecting from the pivot pin and away from the first arm, the lever being pivotal from a centered position to a displaced position;

a lever spring biassed to urge the lever to its centered position;

a stop member engagable with the lever to prevent pivoting of the lever away from the centered position and into a first displaced position unless the pivot pin slides within the slot and towards the stop member;

detent means for releasably holding the lever in the first displaced position; and

means for coupling the lever to a transducer for generating electrical signals as a function of the position of the lever.

5,343,776

HANDLE GRIP COVER AND PROCESS FOR MAKING SAME

Robert N. Falco, Indianapolis, Ind., and Colin Williams, Signal Mountain, Tenn., assignors to Cabot Corporation, Boston, Mass.

Continuation of Ser. No. 592,403, Oct. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 555,136, Jul. 19, 1990.

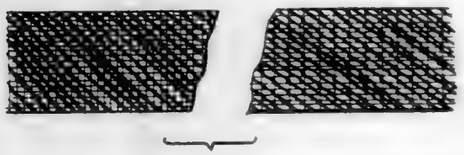
This application Aug. 18, 1992, Ser. No. 931,796

Int. Cl.[5] B62D *1/06;* **G05G** *1/04;* **B32B** *3/00*

U.S. Cl. 74—558 **10 Claims**

1. A handle grip cover selected from the group consisting of

knitted, braided and woven continuous, elastic, tubular, open weave fabric impregnated with a synthetic or natural elastomer, wherein the fabric is made of strands that are interlaced and knotted.

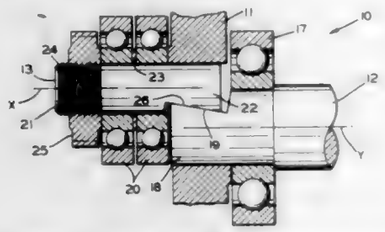


5,343,777

ECCENTRIC CRANK ASSEMBLY FOR A RECIPROCATING PISTON AIR COMPRESSOR

Mark W. Wood, and Brian M. Steurer, both of Jackson, Tenn., assignors to DeVilbiss Air Power Company, Jackson, Tenn.

Filed Apr. 2, 1992, Ser. No. 862,331
Int. Cl.[5] F16C *3/04*; F16B *2/02*
U.S. Cl. 74—598 **7 Claims**



1. An eccentric crank assembly for a reciprocating-piston device comprising:
- an eccentric plate having a pair of parallel overlapping openings formed therethrough;
- a drive shaft having one end disposed in one of said openings of said eccentric plate, said one end of said drive shaft including a generally flat surface angled inwardly toward an opposite end thereof;
- an eccentric shaft having one end disposed in the other of said openings of said eccentric plate, said one end of said eccentric shaft including a generally flat surface angled inwardly toward an opposite end thereof; and
- means causing said generally flat surface of said drive shaft and said generally flat surface of said eccentric shaft to cooperate with one another to urge said drive shaft and said eccentric shaft radially away from one another and into engagement with said openings of said eccentric plate, thereby connecting said eccentric plate, said drive shaft, and said eccentric shaft together.

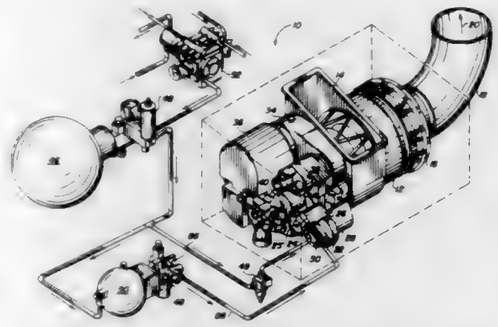
5,343,778

MULTIFUNCTION SECONDARY POWER SYSTEM

Daniel Romero, Mesa; Ronald J. Kubinski, Tempe; Durward S. Benham, Jr., Phoenix, all of Ariz.; Michael S. Koerner, Harbor City; Scott J. Goldberg, West Minster, both of Calif., and Barry J. Kingery, Phoenix, Ariz., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Nov. 9, 1992, Ser. No. 973,502
Int. Cl.[5] F16H *37/06*
U.S. Cl. 74—661 **5 Claims**

1. A power system comprising:
- a gearbox having a first clutch for transmitting power from a second geartrain to a first geartrain when engaged;
- at least one accessory device coupled to said first geartrain;
- an auxiliary power means coupled to said first geartrain;
- a second clutch transmitting power from said second geartrain to said auxiliary power means when engaged;
- an emergency power means coupled to said second geartrain for driving said accessory when said first clutch is engaged, and for driving said auxiliary power means when said second clutch is engaged; and



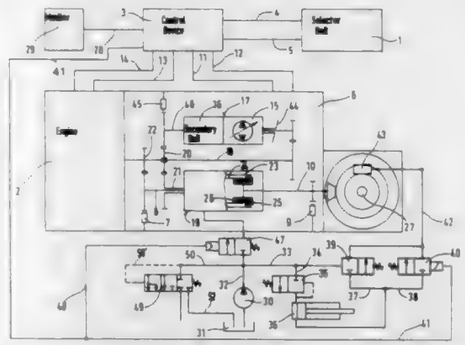
- a third clutch transmitting power from said auxiliary power means to said first geartrain when engaged and said first and second clutches are disengaged.

5,343,779

ARRANGEMENT AND PROCESS FOR OPERATING A FAIL SAFE BRAKING SYSTEM IN A CONTINUOUSLY VARIABLE DRIVING UNIT OF A MOTOR VEHICLE

Heinrich Nikolaus, Hamburg, and Robert Paton, Passau, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Fed. Rep. of Germany

PCT No. PCT/EP90/01106, § 371 Date Dec. 19, 1991, § 102(e) Date Dec. 19, 1991, PCT Pub. No. WO91/01461, PCT Pub. Date Feb. 7, 1991
PCT Filed Jul. 7, 1990, Ser. No. 778,846
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1989, 3923218
Int. Cl.[5] F16H *47/04*, *61/12*
U.S. Cl. 74—733.1 **10 Claims**



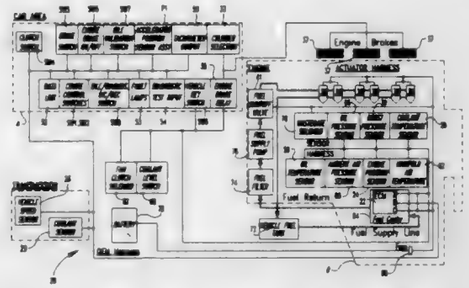
1. An arrangement for operating a continuously variable drive unit of a motor vehicle comprising:
- a regulatable internal combustion engine (**2**);
- a hydrostatic mechanical power-distribution transmission (**6**), with a continuously variable gear ratio, having a rotatable input shaft (**18**), connected to the engine, and a rotatable output shaft (**10**),
- a mechanical branch (**19**) of the hydrostatic mechanical power-distribution transmission (**6**) being at least driven by said input shaft and having a plurality of gear ratios and a plurality of hydraulically actuated multi-disc clutches,
- a hydrostatic branch (**17**) of the hydrostatic mechanical power-distribution transmission (**6**) having a primary unit (**15**) connected to said input shaft and a secondary unit (**16**) for a continuous change of a gear ratio, said secondary unit (**16**) being connected to said mechanical branch (**19**),
- at least two coupling shafts (**23**, **24**) each being connectable with the output shaft (**10**) of said transmission (**6**) via one of said plurality of hydraulically actuated multi-disc clutches (**25**, **26**), and each of said at least two coupling shafts being coordinated with a gear ratio of said mechanical branch,
- wherein a control device is connected with an input shaft sensor for sensing the speed of said input shaft and with an output shaft sensor for sensing the speed of said output shaft, and said control device (**3**) actuates a monitoring device (**29**), said plurality of multi-disc clutches (**25**, **26**) and a brake of the motorvehicle (**43**) in accordance with the ratio of said sensed speeds, a pump (**30**) conveys pressurized fluid to actuation devices for said multi-disc clutches (**25**, **26**) via a first line (**32**), a second line (**33**) branches off from said first line (**32**) and a third line (**34**) branches off from said second line (**33**), said third line (**34**) divides into parallel fourth and fifth lines (**37**, **38**), and a sixth line (**42**) connects an actuation device of said brake (**43**) with said fourth and fifth lines (**37**, **38**), said fourth line (**37**) contains a value (**39**), control by pressure in said second line (**33**), which controls the flow of pressurized fluid through said fourth line (**37**), and an electrically actuated valve (**40**), connected with the control device (**3**), controls the flow of pressurized fluid through said fifth line (**38**).

5,343,780

VARIABLE POWER DRIVETRAIN ENGINE CONTROL SYSTEM

John R. McDaniel; Paul R. Rabe; John H. Stang, all of Columbus, Ind.; Peter J. Griffen, Newton Aycliffe, United Kingdom; Mark W. Stasell, Fort Wayne, Ind.; Edward E. Londt, Fort Wayne, Ind., and Barrie L. Wilson, Fort Wayne, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jul. 27, 1992, Ser. No. 920,250
Int. Cl.[5] F16H *59/18*
U.S. Cl. 477—108 **20 Claims**



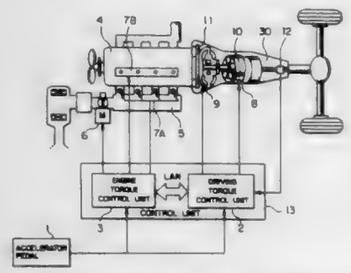
1. A method of operating a vehicle having an internal combustion engine coupled to a transmission and wherein the engine includes a fuel delivery system responsive to a throttle control for delivering fuel to the engine according to a first fuel delivery curve or a second fuel delivery curve, and wherein fuel delivery to the engine according to the second fuel delivery curve results in higher power output from the engine compared with fuel delivery according to the first curve, the method comprising the steps of:
- (1) sensing throttle demand;
- (2) supplying fuel to the engine according to the first fuel delivery curve;
- (3) sensing a throttle demand from the driver in excess of a predetermined throttle level;
- (4) sensing instantaneous vehicle speed;
- (5) determining an average vehicle speed from instantaneous vehicle speed sensed over a recent predetermined time period;
- (6) determining vehicle deceleration from sensed vehicle speed; and
- (7) enabling said fuel delivery system to deliver fuel according to said second fuel delivery curve only if:
  - (a) the sensed throttle demand is in excess of a predetermined throttle demand value, —AND—
  - (b) ((the instantaneous vehicle speed has decreased a predetermined DELTA mph from said average vehicle speed) —OR— (the vehicle deceleration is in excess of a predetermined deceleration value)).

5,343,781

METHOD AND APPARATUS FOR CONTROLLING DRIVING POWER OF MOTOR VEHICLE

Toshimichi Minowa, Ibaraki, and Yoshishige Ohyama, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 686,527, Apr. 17. 1991, Pat. No. 5,150,635.
This application Aug. 27, 1992, Ser. No. 936,005
Claims priority, application Japan, Apr. 18, 1990, 2-100321
Int. Cl.[5] F16H *59/18*
U.S. Cl. 477—107 **11 Claims**



1. A method for controlling driving power of a vehicle having an engine and a transmission, comprising the steps of:
- providing a first driving torque method for controlling a driving torque of a vehicle by controlling a flow rate of air sucked into the engine; and
- providing a second driving torque method for controlling the driving torque of the vehicle by controlling at least the transmission gear ratio of the transmission; wherein a ratio of a variable range of a driving torque of said first driving torque method and a variable range of a driving torque of said second driving torque method changes with vehicle speed.

5,343,782

ANTI-FLARE METHOD USING OFFGOING SLIP SPEED AND RATE OF CHANGE OF SLIP-SPEED TO DETERMINE PRESSURE COMPENSATION FOR INCOMING CLUTCH

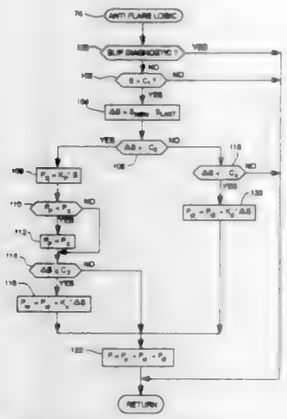
Fereydoon Jamzadeh, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1992, Ser. No. 936,994
Int. Cl.[5] B60K *41/02*
U.S. Cl. 477—156 **12 Claims**

1. In a control for an automatic transmission having a turbine driving an output shaft through a gearset which achieves an upshift by controllably releasing an off-going torque transmitting device for a current speed ratio and controllably applying a fluid operated on-coming torque transmitting device for a lower speed ratio by a commanded on-coming pressure, wherein the turbine is subject to flare if the on-coming pressure is insufficient when the off-going torque transmitting device is released, a method of controlling the turbine flare comprising the steps of:
- determining a slip speed across the off-going torque transmitting device, wherein the slip speed is a measure of flare;

calculating a rate of slip speed change;

when the determined slip speed is positive and the calculated rate of slip speed change is positive, calculating a proportional term based on the detected slip and a first integral term based on the calculated rate of slip speed change;



summing the proportional and integral terms to form a compensation term; and

correcting the commanded on-coming pressure in accordance with the compensation term.

5,343,783

SPEED CHANGE CONTROLLER FOR A VEHICLE AUTOMATIC TRANSMISSION

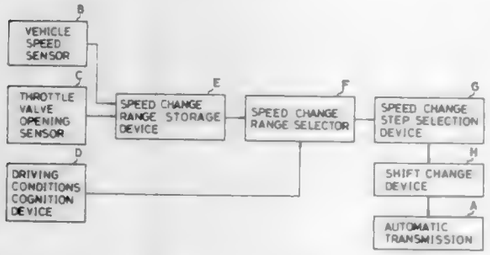
Yoshikazu Tanaka, and Masuo Kashiwabara, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Filed Jun. 29, 1993, Ser. No. 81,243

Claims priority, application Japan, Nov. 7, 1991, 3-291547

Int. Cl.[5] **F16H** *59/24*

U.S. Cl. 477—131 **5 Claims**



1. A speed change controller for a vehicle automatic transmission, and controller comprising;

an automatic transmission provided on the output side of an internal combustion engine of the vehicle,

a vehicle speed sensing means for sensing vehicle speed,

a throttle valve opening sensing means for sensing the opening of a throttle valve in an air intake system of the engine,

a driving conditions cognition means for cognition/judgment of vehicle driving conditions.

a speed change range storage means for pre-storing, on the basis of vehicle driving conditions, speed change ranges contained in a plurality of speed change steps and classified into a number of partitions ranging from a first speed change range for traveling speeds of n or n+1, to a k+1 speed change range for traveling speeds of n+k or n+k+1,

a speed change range selection means for selecting from said speed change range storage means, a single speed change range out of the speed change ranges from said first speed change range to said k+1 speed change range, on the basis of vehicle speed and throttle valve opening sensed by said vehicle speed sensing means and said throttle valve opening sensing means respectively,

a speed change step selection means for selecting from said selected speed change range, a speed change position for either a low speed change step or a high speed change step, on the basis of vehicle driving conditions recognized by said driving conditions cognition means, and

a shift change means for changing the shift step of said automatic transmission according to said selected speed change position.

5,343,784

ROTARY TOOL

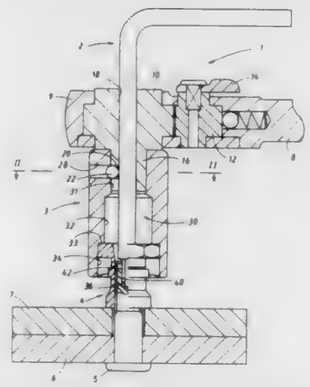
Klaus Neuhaus, Wuppertal, Fed. Rep. of Germany, assignor to Eduard Wille GmbH Co., Fed. Rep. of Germany

Filed Aug. 20, 1993, Ser. No. 110,091

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1992, 9211729[U]

Int. Cl.[5] **B25B** *13/00*

U.S. Cl. 81—55 **5 Claims**



1. A rotary tool having an element (**10**) rotatable about an axis of rotation and provided with a polygonal pin (**16**); a wrench socket insert (**3**) having a recess complementary to the polygonal pin (**16**) and adapted to be placed onto the polygonal pin (**16**); the polygonal pin (**16**) and the tool (**3**) having longitudinal throughbores (**18**, **30**) extending along the axis of rotation; a retaining control member (**2**) for passing through the longitudinal throughbores (**18**, **30**); a transverse bore (**20**) provided in the polygonal pin (**16**) and opening, at one of its ends, into the longitudinal throughbore (**18**) and, at an other end, at the outer surface of the polygonal pin (**16**); a detent ball (**22**) located in the transverse bore (**20**); and a detent passage (**28**) in the rotary tool (**3**) for lockingly receiving therein the detent ball (**22**),

(a) the element (**10**) is a pivot portion inserted into a head portion (**9**) in which a ratchet (**1**) is mounted for rotation about the axis of rotation, the ratchet (**1**) including said pivot portion (**10**) on which the polygonal pin (**16**) is located;

(b) the wrench socket insert (**3**) is placed onto the polygonal pin (**16**);

(c) the retaining control member (**2**) is a removable screwdriver (**2**) having a cylindrical shaft, which is dimensioned to be adapted to the longitudinal throughbore (**18**), and having a profiled engagement portion (**40**);

characterized in that

(d) the retaining control member constitutes a rotary tool element (**2**) adapted to be pulled out from the longitudinal throughbore (**18**), rotatable in the longitudinal throughbore (**18**), and defining a cylindrical peripheral surface which is engaged by an inner side of said detent ball (**22**) in order to thereby keep the detent ball (**22**) in engagement with the tool element (**3**);

(e) the transverse bore (**20**) defines an inner end provided with a constriction (**24**) engaged by the detent ball (**22**) in an innermost position thereof and preventing the detent ball (**22**) from falling out from the transverse bore (**20**) into the longitudinal throughbore (**18**) when the rotary tool element (**2**) is pulled out from the longitudinal throughbore; and

(f) the detent ball (**22**), when assuming its innermost position, is forced out completely from the detent passage (**28**) and back into the transverse bore (**20**).

5,343,785

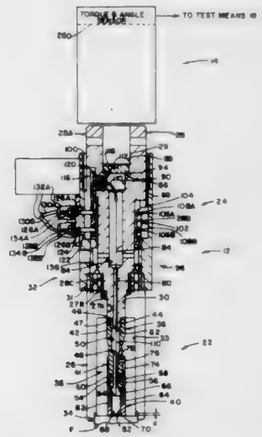
ULTRASONIC BOLTING CONTROL APPARATUS

William J. Holt, Aptos, and Kenneth R. Boyd, Santa Cruz, both of Calif., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 23, 1991, Ser. No. 781,780

Int. Cl.[5] **B25B** *29/02*

U.S. Cl. 81—57.38 **22 Claims**



1. (Amended) Apparatus for measuring and controlling the tensile load on a fastener comprising:

means for positioning a fastener used to connect together two or more components;

drive means coupled to the fastener to thread the fastener into place whereby the fastener exerts a clamping force on the components to connect them together, the clamping force created by the fastener producing an equal and opposite tensile force on the fastener;

control means for starting and stopping operation of the drive means, the control means controlling the drive means to thread the fastener into place until it exerts a predetermined amount of clamping force on the components;

test means for generating ultrasonic waves, for transmitting the waves lengthwise through the fastener, and for measuring the transit time therethrough, the transit time of the waves being a function of the tensile force on the fastener and, in turn, a function of the clamping force exerted by the fastener the test means including transducer means positioned adjacent one end of the fastener, the transducer means generating and transmitting ultrasonic waves longitudinally of the fastener, the velocity of the ultrasonic waves passing through the fastener decreasing as the tensile force thereon increases;

pulser means for applying an electrical input to the transducer means to generate an ultrasonic wave, the pulser means providing a range of inputs which allow ultrasonic signals to be produced and transmitted through fasteners having a range of lengths; and,

computer means interfacing with both the test means and the control means, the computer means supplying test parameter information to the test means and receiving test results information therefrom, and the computer means receiving fastener status information from the control means, the test means including couplant means for coupling an output from the pulser means with the transducer means with the couplant means being interposed between the drive means and the fastener, and the couplant means including socket means for turning the fastener and slip ring means mounted on the socket means, the slip ring means including sleeve means fitting over the socket means.

5,343,786

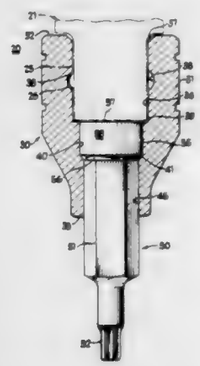
BIT AND SOCKET COMBINATION

Gerald A. Wridt, Racine Gaw, Wis., assignor to Snap-on Incorporated, Kenosha, Wis.

Filed Mar. 24, 1993, Ser. No. 36,321

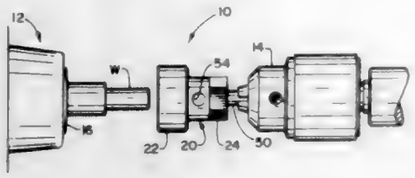
Int. Cl.[5] **B25B** *23/00*

U.S. Cl. 81—438 **7 Claims**



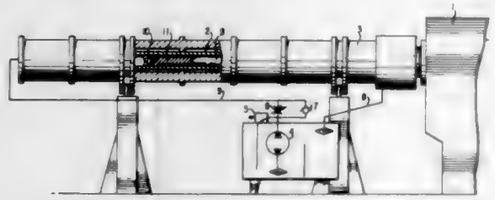
1. A tool combination for transmitting torque from a drive lug of a driver to a workpiece, comprising: a unitary one-piece socket member having a drive end and a bit end and a longitudinal hole therethrough from end to end, said hole having an open drive portion adjacent to said drive end for receiving the drive lug in driven engagement therewith and a bit portion adjacent to said bit end and a retaining portion between said drive portion and said bit portion, a first shoulder in said hole between said retaining portion and said bit portion facing said drive end, a second shoulder in said hole between said retaining portion and said drive portion facing said drive end and disposed for engagement with the drive lug when it is received in said drive portion, and an elongated bit having an application end engageable with the workpiece and a coupling end and laterally extending projection means adjacent to said coupling end, said application end of said bit being insertable in and removable from said hole from said drive end thereof with said projection means being engageable with said first shoulder to limit the depth of insertion at a working position wherein said application end of said bit projects outwardly beyond said bit end of said socket member, said coupling end having an end surface substantially coplanar with said second shoulder when said projection means is disposed in engagement with said first shoulder.

5,343,787
DIE HOLDER ASSEMBLY
George P. McDonnell, 5 Rowe Ct., Bethany, Conn. 06524-3606
Filed Mar. 23, 1993, Ser. No. 36,060
Int. Cl.[5] B23G 5/00
U.S. Cl. 82—110 18 Claims



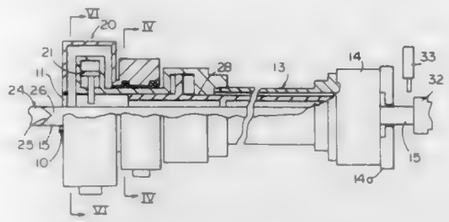
1. A die holder assembly for a lathe comprising:
holder body means having opposite first and second end portions and a central axis, said body means comprising cavity means at said first end portion for defining a cavity dimensioned to receive a die insert, said body means comprising bore means for defining a cylindrical mounting bore traversing through said second end portion, and comprising opening means for defining a pair of aligned radial openings, said bore and cavity being coaxial with said axis, said body means exteriorly defining a plurality of flat surfaces equiangularly oriented about said central axis;
securement means mounted to said holder means for fixedly securing a die insert received in said cavity to said holder means;
shaft means slidably received by said bore, said body means being angularly and slidably displaceable thereon; and
a rod slidably removably received in said openings and extending through said body means and said central axis to radially protrude to form a lever arm for rotating said body means about said shaft.

5,343,788
HYDRODYNAMIC SUPPORT PUMP
Henry E. Goforth, Hendersonville, N.C., assignor to Spego, Inc., Asheville, N.C.
Filed Aug. 31, 1992, Ser. No. 937,262
Int. Cl.[5] B23B 13/08; B23Q 5/26
U.S. Cl. 82—127 2 Claims



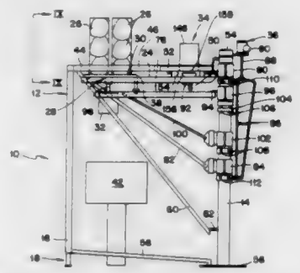
1. In a machine tool having a machine tool spindle for rotating a barstock and a hydraulic barfeed apparatus for feeding the barstock to the machine tool spindle, said hydraulic barfeed apparatus comprising a guide tube containing the barstock with a space therebetween and a piston pusher in the guide tube for pushing the barstock, the improvement comprising a pump disposed in said guide tube driven by the rotation of the barstock to provide fluid to the space between the barstock and the guide tube.

5,343,789
THROUGH HOLE AND BAR FEED SUPPORT
William F. Richardson, Solon, Ohio, assignor to SP/Sheffer Incorporated, Solon, Ohio
Filed Apr. 2, 1992, Ser. No. 861,945
Int. Cl.[5] B23B 13/08
U.S. Cl. 82—163 11 Claims



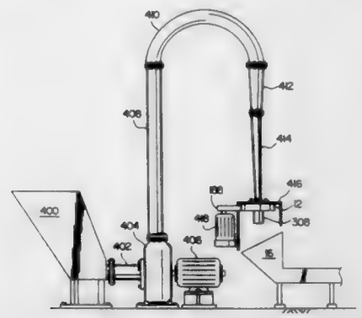
1. An apparatus for controlling the radial flexing of bar or rod stock entering a through-hole stock feed support of a machine tool, said machine tool including a discharge end and a stock machining device at the discharge end thereof, said stock feed support having an entry end and said stock having an axis of rotation while in said machine tool, said apparatus comprising:
an annular grip at said entry end of said stock feed support, said annular grip having a plurality of equally spaced stock gripping members arranged circumferentially of said stock with said stock gripping members spaced from said stock machining device, and an annular grip support adapted to rotatably support said stock gripping members and provide for the rotation thereof concentrically of the axis of rotation of said stock presented for machining;
a separate piston provided and adapted to actuate each of said stock gripping members, a source of liquid under pressure common to all of said pistons, and a check valve between each of said pistons and said common liquid source adapted to prevent return of liquid from said pistons to said liquid source in the event of failure to maintain pressure on said liquid.

5,343,790
METHOD AND APPARATUS FOR SLICING ARTICLES OF FOOD AND THE LIKE
Darwin H. Kuhrt, Rice Lake, Wis., assignor to Food Service Products Company, Oakland, Calif.
Filed Jul. 15, 1992, Ser. No. 914,681
Int. Cl.[5] B26D 1/16
U.S. Cl. 83—395 21 Claims



1. A machine for slicing articles, comprising
a base structure,
multiple feed tube stations, each station including a plurality of generally vertically arranged feed tubes for supplying articles by gravity flow,
a table mounted on the base structure beneath the feed tube stations for engaging and positioning the articles to be sliced,
a rotary blade assembly mounted on the base structure and comprising a rotary blade arranged generally horizontally just above the table,
the multiple feed tube stations being respectively arranged on opposite sides of the rotary blade assembly for supplying articles to be substantially simultaneously sliced at each feed tube station by the rotary blade assembly,
means for driving the rotary blade in rotation,
means mounted on the base structure and operatively coupled with the table and rotary blade assembly for oscillating both the table and rotary blade, the blade oscillating between and respectively past each feed tube station whereby articles from the feed tubes are sliced as they are positioned by the table, and
means for collecting the article slices.

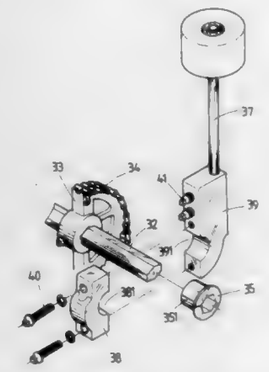
5,343,791
FOOD PROCESSING APPARATUS
John C. Julian, Richland; Gary D. Cuddeford, Kennewick, both of Wash., and Kenneth J. Stanley, Aloha, Oreg., assignors to Lamb-Weston, Inc., Tri-Cities, Wash.
Continuation of Ser. No. 723,447, Jun. 28, 1991, Pat. No. 5,174,181, which is a continuation of Ser. No. 408,738, Sep. 18, 1989, Pat. No. 5,042,342, which is a continuation-in-part of Ser. No. 292,926, Jan. 3, 1989, Pat. No. 4,926,726, which is a continuation-in-part of Ser. No. 119,662, Nov. 12, 1987, Pat. No. 4,979,418. This application Dec. 28, 1992, Ser. No. 997,587
The portion of the term of this patent subsequent to Aug. 27, 2008, has been disclaimed.
Int. Cl.[5] B26D 7/06, 3/11
U.S. Cl. 83—865 24 Claims



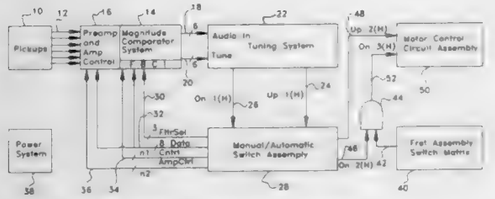
21. An apparatus for slicing food products into helical strips:
hydraulic conveying means for transporting potatoes sequentially in a fluid flow to a cutting location; and
a rotatable cutting head assembly located at the cutting location, which is capable of slicing the food products into helical strips of varying diameters;
the cutting head assembly having an axis of rotation, at least one radial knife edge portion extending substantially radially relative to the axis of rotation, and at least one longitudinal knife edge portion extending substantially parallel to the axis of rotation.

5,343,792
BEATER AMPLITUDE ADJUSTMENT DEVICE FOR THE BASE DRUM PEDAL MECHANISM OF A BASE DRUM
Tsun-Chi Liao, Taichung, Taiwan, assignor to Hwa Shin Musical Instrument Co., Ltd., Taichung, Taiwan
Filed Sep. 14, 1993, Ser. No. 120,513
Int. Cl.[5] G10D 13/02
U.S. Cl. 84—422.1 1 Claim

1. A base drum beater amplitude adjustment device comprising: a revolving shaft supported between two upright supports on the base frame of a pedal mechanism of a base drum; a beater holder mounted around said revolving shaft to hold a beater; and a locating device fastened between said beater holder and said revolving shaft to prevent relative movement between said revolving shaft and said beater holder, said revolving shaft having a polygonal cross section, said locating device being made from a split cylinder having an inner diameter fitting around said polygonal cross section of said revolving shaft and a longitudinal split through the length, said beater holder being comprised of two opposing parts connected together by screw bolts, each part of said beater holder having a respective half-round recess linked to each other and respectively fitted over said locating device.



5,343,793
AUTOMATICALLY TUNED MUSICAL INSTRUMENT
Michael Pattie, 12706 La Salle Dr., Austin, Tex. 78727
Filed Oct. 6, 1992, Ser. No. 957,276
Int. Cl.[5] A10G 7/02
U.S. Cl. 84—454 17 Claims



1. A stringed musical instrument comprising:
a. an instrument body, the body comprising a trunk and a neck;
b. a plurality of tensioned strings removably attached to the body;
c. a plurality of tuning system pickups, one of said plurality of pickups corresponding to one of said strings, each mounted to the body adjacent to said one of the strings;
d. frets on the neck for manually altering the pitch of the strings;
e. a plurality of guidereel assemblies coupled to the body and one of said plurality of guidereel assemblies associated with a respective one of said strings to provide mechanical coupling and tensioning of each of said strings;
f. a motor coupled to the body and to one of the guidereel assemblies
g. means electrically coupled to the motor for automatically and continuously tuning the instrument comprising
i. a magnitude comparator to receive frequency signals from the pickups indicative of the frequency of vibration of selected ones of said strings and to distinguish the frequency of vibration of one of the selected ones of said strings from the frequency of another one of said selected ones which is adjacent to said one and to de-

velop and output a tuning signal when a string of said selected ones of said strings requires tuning;

ii. an audio tuning system to receive the tuning signal from the magnitude comparator and develop a motor control signal at an output;

iii. a manual/automatic switch assembly to receive the motor control signal from the output of the audio tuning system and to provide a motor actuation signal at an output; and

iv. a motor control circuit assembly to receive the actuation signal from the output of the manual/automatic switch assembly and to energize the motor to tune said string of said selected ones; and

h. a switch means coupled to the motor control circuit assembly to disable the motor control circuit assembly when said string is in contact with one of said frets.

5,343,794

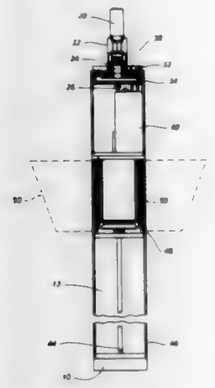
INFRARED DECOY METHOD USING POLYDIMETHYLSILOXANE FUEL

John Andreotti, and Abraham Hirschman, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 31,284, Apr. 4, 1979. This application Oct. 7, 1981, Ser. No. 313,887

Int. Cl.[5] F42B *4/26;* **F41H** *9/00, 13/00*

U.S. Cl. 89—1.11 **3 Claims**



1. A method of decoying heat seeking, antiship missiles comprising:

(1) spraying a fuel consisting essentially of a liquid polydimethylsiloxane having a viscosity of from about 2.0 to 10.0 centistokes at 25° C. to form an inverted cone having its vertex at approximately sea level and its base at about 20 to about 30 feet above sea level;

(2) igniting the fuel; and

(3) continuing to feed the fuel to the resulting cone of flames.

5,343,795

SETTABLE ELECTRONIC FUZING SYSTEM FOR CANNON AMMUNITION

Richard T. Ziemba, Burlington, and David G. Hoyt, Milton, both of Vt., assignors to General Electric Co., Burlington, Vt.

Filed Nov. 7, 1991, Ser. No. 788,911

Int. Cl.[5] F42C *17/04*

U.S. Cl. 89—6.5 **20 Claims**

1. A system for setting a projectile fuse of each of a succession of ammunition rounds being fed to a rapid-fire cannon, said system comprising, in combination:

A. a fuze setter including

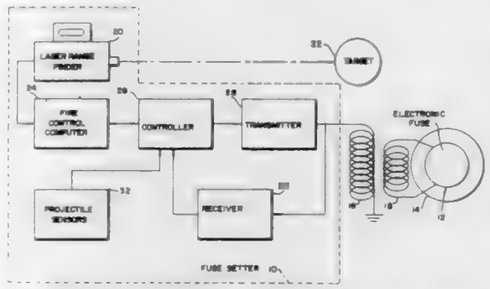
1) a controller,

2) a transmitter connected with said controller, and

3) a first inductive coil connected with said transmitter and located in a coupling zone situated along an ammunition round feedpath leading to the cannon; and

B. an electronic fuze incorporated in the projectile of each ammunition round and including

1) a second inductive coil assuming an inductively coupled relationship with said first inductive coil during movement along the ammunition round feedpath through said coupling zone, so as to receive time-of-



flight data transmitted by said transmitter under the control of said controller,

2) first means for registering a projectile flight time count indicative of said time-of-flight data,

3) a detonator,

4) second means for timing the flight of the projectile, and

5) third means for triggering said detonator to explode the projectile when the projectile flight time achieves correspondence with said flight time count.

5,343,796

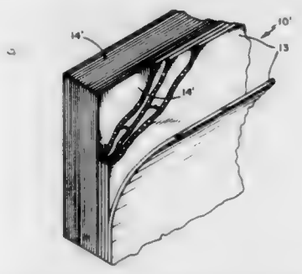
ARMOR SYSTEMS

David S. Cordova, Midlothian, and Kevin M. Kirkland, Richmond, both of Va., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 490,179, Mar. 8, 1990, abandoned. This application Aug. 5, 1992, Ser. No. 924,566

Int. Cl.[5] F41H *5/04*

U.S. Cl. 89—36.02 **7 Claims**



1. An armor system comprising a first pliable fibrous layer and a second pliable, cut resistant fibrous layer, the first layer being arranged to receive a high velocity impact from a projectile prior to the second layer and being resistant to said impact, the second layer minimizing any deformation of the system by the projectile impact to the first layer and engaging the projectile upon penetration by the projectile of the first layer, both of said first and second layers comprising fibers having a tensile modulus of at least about 200 g/d, and an energy-to-break of at least about 8 J/g and a tenacity equal to or greater than about 10 g/d, wherein the first layer comprises a plurality of nonwoven networks of oriented fibers, and the second layer comprises an uncoated needle punched felt of discontinuous fibers having a length ranging from about 0.25 to 10.0 inches (0.63 to 25.4 cm).

5,343,797

CYLINDER DEVICE

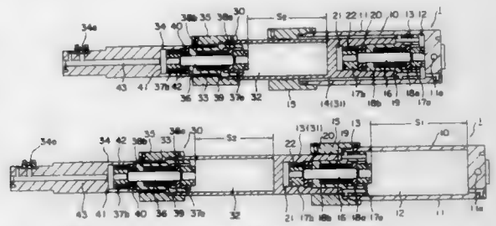
Akira Ochiai, Susono; Akihiko Yunsa, and Shigeki Otaka, both of Numazu, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1993, Ser. No. 42,271

Claims priority, application Japan, Apr. 2, 1992, 4-080684

Int. Cl.[5] F01B *11/02*

U.S. Cl. 92—85 A **2 Claims**



1. A cylinder device, comprising:

a hollow cylinder tube having a supply flow path formed therein for a working fluid;

a first piston slidably accommodated in said hollow cylinder tube;

a first guide bar inserted through said first piston;

a first piston rod connected to said first piston through said first guide bar and provided with a cylindrical room therein;

said first piston rod being provided with a first cushion chamber formed between an inner peripheral surface of said piston rod and an end portion of said guide bar;

a plurality of belleville springs provided between said guide bar and an inside of said first piston;

a second piston slidably accommodated in said cylindrical room of said first piston rod;

a second guide bar inserted through said second piston;

a second piston rod connected to said second piston through said second guide bar;

said second piston rod being provided with a second cushion chamber formed between an inner peripheral surface of said piston rod and an end portion of said guide bar;

a plurality of belleville springs provided between said guide bar and an inside of said second piston; and

a means for supplying the working fluid into said cylindrical room of said first piston rod.

5,343,798

APPARATUS FOR GRIPPING AND SEALING A FLUID CONDUIT

Stanlee W. Meisinger, Golden Valley, and Mark D. Medved, Stillwater, both of Minn., assignors to FasTest Inc., St. Paul, Minn.

Filed Sep. 15, 1992, Ser. No. 945,813

Int. Cl.[5] F01B *31/00;* **F16J** *15/16;* **B65D** *53/00;* **F16L** *33/16*

U.S. Cl. 92—130 A **35 Claims**

1. A connection apparatus for connection with an inside of a fluid conduit, comprising:

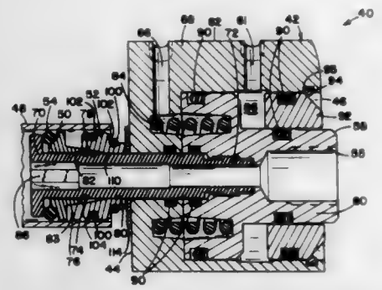
a housing defining a chamber, the housing having first and second ends;

piston means, having first and second ends, slidably mounted in the chamber;

stem means, having first and second ends, attached to the piston and having a first end portion projecting from the first end of the housing, the stem means defining a fluid passageway;

seal and collet means mounted on the first end portion of the stem means for sealing and gripping the inside of the fluid conduit so as to interconnect the fluid conduit to the fluid passageway of the stem means, the seal and collet means including a seal member, a sleeve member, and a collet assembly; and

pneumatic means in the housing for causing actuating and deactuating relative movement between the stem means and the housing, the actuating relative movement causing



an outer surface of the sleeve member to slide under an inner surface of the collet assembly, thereby forcing the collet assembly against the inside of the fluid conduit, and causing the seal member to be squeezed axially along the fluid passageway, thereby forcing the seal member to radially expand to seal the inside of the fluid conduit.

5,343,799

DEVICES FOR USE WITH ESPRESSO MACHINES

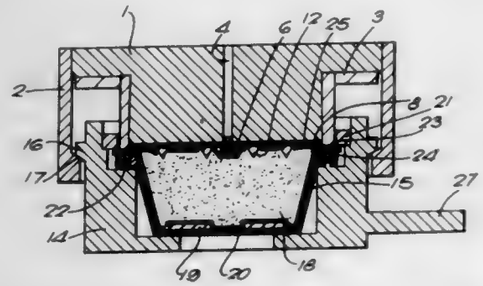
Olivier Fond, Yverdon, Switzerland, assignor to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 899,333, Jun. 16, 1992, abandoned. This application Dec. 22, 1993, Ser. No. 171,762

Claims priority, application European Pat. Off., Jul. 5, 1991, 91111210.0

Int. Cl.[5] A47J *31/24*

U.S. Cl. 99—295 **5 Claims**



1. A device for containing a cartridge which contains a material to be extracted for preparation of a beverage and or use with an extraction apparatus of the type including an extraction head wherein the extraction head has a base, an annular peripheral sidewall portion which extends from and laterally with respect to the base, and a member which forms an extraction head base grill for distributing water from a passage opening in the base and which extends to an annular grill rim positioned adjacent the peripheral sidewall portion of the extraction head, the device comprising:

a cartridge holder member having a substantially planar base for supporting a cartridge which contains a material to be extracted for preparation of a beverage and having inner and outer annular wall surfaces which extend about and from the holder base to an edge to form a frustoconically shaped holder enclosure having an opening defined by the wall edge for being positioned adjacent the base grill; and

a holder extension member which is integral with the outer wall surface and has a first portion which extends laterally away from the outer wall surface and which is substan-

tially parallel to the base and a second portion which is substantially perpendicular to the first portion and extends in a direction away from the base to define a groove between the outer wall surface and second portion at a position suitable for being fitted adjacent the grill rim, the groove further being laterally spaced from the outer wall surface; and

a seal positioned in the groove for providing a seal between the holder member and the grill rim during extraction of the beverage in the cartridge.

5,343,800

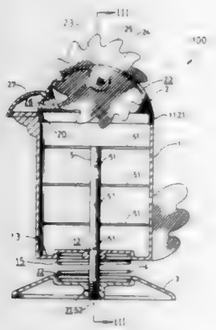
SEASONING CAN STRUCTURE

Otto Wu, Room 918, 15 Fu Hsing N. Road, Taipei, Taiwan

Filed Nov. 24, 1993, Ser. No. 156,728

Int. Cl.[5] A21C *9/04*; B01F *15/02*

U.S. Cl. 99—494 **7 Claims**



1. A seasoning can structure comprising:

a can body having a closed lower end defining a bottom and an open upper end defining an upper opening so as to form a container for receiving therein seasoning particles;

a cover having a lower flange releasably engageable with the upper opening of said can body, said cover having an outlet opening formed thereon to allow the seasoning particles to pass therethrough for dispensing; and

breaking means comprising a base disposed under the bottom of said can body with biasing means disposed therebetween to biasingly support said can body on said base and allow said can body to be movable relative to said base, an elongated rod mounted on said base and extending therefrom to insert into said can body from a hole formed on the bottom thereof, a plurality of breaking arms fixed on said rod along the longitudinal direction and around a circumferential direction thereof and extending sideward to be movable within and relative to the container defined by said can body so that by moving said can body relative to said base and against said biasing means and then releasing said can body to allow said biasing means to return said can body, said breaking arms are allowed to reciprocally moved relative to said can body and seasoning blocks formed by the seasoning particles bonding together within said can body to break the seasoning blocks into small particles.

5,343,801

MULTI-ROLL CALENDER WITH ADJUSTABLE LINEAR FORCE

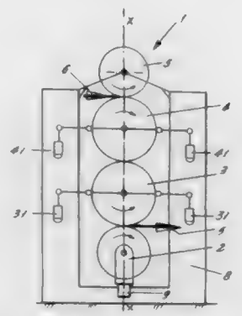
Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J.M. Voith GmbH, Fed. Rep. of Germany

Division of Ser. No. 747,620, Aug. 20, 1991, Pat. No. 5,226,357. This application Apr. 23, 1993, Ser. No. 53,044

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1990, 4026773

Int. Cl.[5] B30B *3/04*; D21G *1/02*

U.S. Cl. 100—47 **5 Claims**



1. A multi-roll calender capable of developing an adjustable linear force for treating a web material, comprising:

at least two rolls stacked one above the other in a press plane, the rolls including a top roll and a bottom roll and other rolls;

a roll stand including a pair of roll supports, the bottom roll being constituted as a sag-compensation roll having an internal pressure and the other rolls being mounted relative to the sag-compensation roll equidistantly from the pair of roll supports;

the top roll being fixedly mounted in said stand;

a moveable support including two columns for movably mounting all the other rolls;

means for applying to the other rolls support forces which act in the plane of the stack;

a controller for adjusting the support forces and the internal pressure of the sag-compensation roll, the controller being such that even with sagging of the rolls a distribution of a linear force associated with each roll is uniform over the width of each roll; and

wherein all rolls arranged above the sag-compensation roll have substantially equal stiffnesses and wherein the moveable support is moveable up and down between the two columns.

5,343,802

OFFSET PRINTING METHOD AND OFFSET PRINTING MACHINE FOR THE SAME

Mikinari Shimada, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 1, 1992, Ser. No. 955,067

Claims priority, application Japan, Oct. 2, 1991, 3-255039; Oct. 2, 1991, 3-255143

Int. Cl.[5] B41F *17/00*

U.S. Cl. 101—35 **7 Claims**

1. An offset printing apparatus for printing a thick film fine pattern having a width of 50 μm or smaller and a thickness larger than several μm on a substrate comprising:

(a) a screen stencil on which a fine pattern to be printed is formed;

(b) a stencil moving means for moving said screen stencil in a horizontal direction;

(c) a squeegee disposed above said screen stencil;

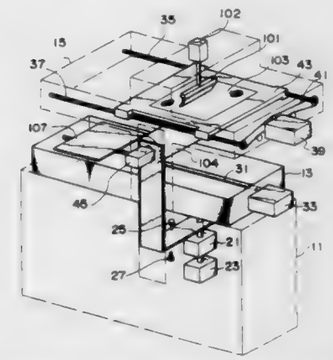
(d) a squeegee support means for supporting said squeegee in contact with said screen stencil and so that said squeegee applies pressure to said screen stencil while allowing movement of said screen stencil;

(e) a cylindrical transfer roller disposed under said screen stencil, said cylindrical roller having a transfer sheet wound thereon via a compressive layer, said transfer sheet comprised of a silicone rubber layer laminated on a resin sheet;

(f) a roller support means for supporting said cylindrical transfer roller rotatably about a center axis thereof so as to enable said cylindrical transfer roller to be positioned at up, neutral or down positions in a vertical direction while keeping said center axis of said cylindrical transfer roller in parallel to said screen stencil;

(g) a positioning means for positioning said cylindrical transfer roller to its original rotation position when said cylindrical transfer roller is placed at said neutral position in the vertical direction;

(h) a distance restriction means for maintaining a distance between said screen stencil and said center axis of said cylindrical transfer roller at a predetermined constant



value during transfer operation of said thick film fine pattern onto said transfer sheet;

(i) a substrate support table disposed under said cylindrical transfer roller for supporting the substrate onto which said thick film fine pattern is to be printed; and

(j) a table feed means for moving said substrate support table in a horizontal direction while keeping said table in parallel with said center axis of said cylindrical transfer roller and at a predetermined constant distance during transfer operation of said thick film fine pattern onto said substrate;

wherein said thick film fine pattern is transferred from said screen stencil to said transfer sheet by pressing said screen stencil by said squeegee against said cylindrical transfer roller positioned at said up position, while moving said screen stencil, then said cylindrical transfer roller is positioned at said down position via said neutral position, and said substrate support table is moved so that said thick film fine pattern is transferred from said transfer sheet to said substrate supported by said substrate support table.

5,343,803

METHOD AND APPARATUS FOR DIRECT CONTACT PRINTING SCREENS ON CRT FACEPLATES

Richard J. Duchek, Schaumburg, and Paul Strauss, Chicago, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 654,843, Feb. 13, 1991. This application Feb. 26, 1993, Ser. No. 24,004

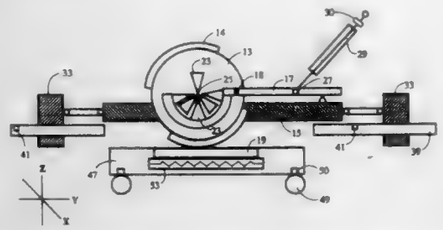
Int. Cl.[5] B41F *3/36*; B41L *1/10, 1/34*

U.S. Cl. 101—35 **9 Claims**

1. An apparatus for the application of color display screens to display device panels, comprising:

a) a main frame defining an aperture sized to admit a collector frame;

b) a collector frame sized to fit within the main frame aperture and pivotably connected to the main frame so as to pivot substantially about an axis parallel to the plane of a printing substrate, the collector frame also defining an aperture;



c) a collector sized to fit within the collector frame aperture and pivotably connected to the collector frame so as to pivot substantially about an axis parallel to the plane of a printing substrate and perpendicular to the pivot axis of the collector frame.

5,343,804

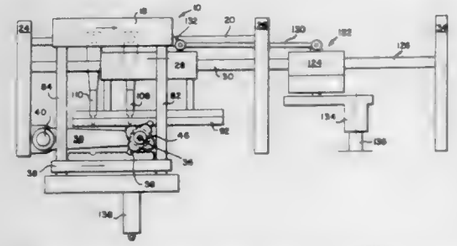
APPARATUS AND METHOD FOR THE SILK-SCREEN PRINTING OF MULTIPLE CURVED PERIPHERAL SURFACES OF AN ARTICLE DEFINED BY MULTIPLE CURVED PERIPHERAL SURFACES

William M. Karlyn, 602 Chestnut St., Lynnfield, Mass. 01940; David J. Podalsky, 12 Osgood Rd., Kensington, N.H. 03833, and Thomas D. Wiseley, 132 Humphrey Ave., Swampscott, Mass. 01907

Filed Apr. 5, 1993, Ser. No. 43,162

Int. Cl.[5] B41F *17/18*

U.S. Cl. 101—39 **18 Claims**



1. Apparatus for the silk-screen printing of images on each of a multiple of peripheral surfaces of an article having multiple peripheral surfaces in one printing stroke, said apparatus comprising in combination:

(a). an elongated fixture bar disposed in a horizontal plane having an upstream end and a downstream end extending in longitudinal direction of said apparatus, said fixture bar being pivotally mounted at said downstream end for reciprocal movement vertically upwardly and then downwardly to said horizontal plane;

(b). an elongated spindle being rotatably mounted on the fixture bar at its upstream end and being disposed transversely in the same horizontal plane as said elongated fixture bar and perpendicular thereto, said elongated spindle being defined by an axis and having first and second ends;

(c). means provided at said spindle first end for fixedly supporting the article to be printed and for causing the article to be rotated about said axis and in the proper orientation relative to the elongated spindle;

(d). a silk-screen support carriage comprising a horizontally disposed body member defined by inner and outer sides and being mounted for movement in a horizontal plane in

a direction lengthwise of the silk-screen printing apparatus, a silk-screen frame having top and bottom surfaces being fixedly mounted to the silk-screen support carriage so that the bottom surface of said frame is disposed vertically above and in a horizontal plane parallel to the plane defined by said fixture bar, a silk-screen having an upstream end and a downstream end and top and bottom surfaces being supportedly mounted to said screen frame, the screen support carriage being located in superposed position above the fixture bar whereby the surfaces of the multiple surfaced article to be silk-screen printed can be operatively engaged with the bottom surface of the silk-screen, a multiplicity of image patterns each being provided in the silk-screen corresponding to the number of surfaces on the article to be provided with a silk-screen printed image, said multiplicity of image patterns being provided in predetermined spaced-apart locations extending in serial fashion from the upstream end of the screen toward the downstream end of the silk-screen;

(e). a squeegee support carriage being disposed above said screen support carriage and being mounted for movement in a direction opposite to that of the screen carriage while said screen carriage is being moved, a multiplicity of squeegee support members being fixedly mounted to said squeegee support carriage in predetermined spaced-apart locations and being of a number corresponding to the number of image patterns provided in the silk-screen, said squeegee support members being provided in serial fashion corresponding operatively to the spaced-apart image patterns provided on the silk-screen, said squeegee support members each comprising a squeegee and being mounted so as to operatively engage the squeegees in turn with the top surface of the silk-screen and with respective image patterns;

(f). means for driving at least one of the squeegee and silk-screen carriages so as to force the driver carriage in one direction a predetermined distance during the printing stroke; and

(g). cam means provided at the second end of the spindle operatively associated with the at least one squeegee carriage and silk-screen carriage being forced in said one direction for causing the spindle to be rotated about its longitudinal axis and the other of said at least one of the squeegee and silk-screen carriages to be forced in the opposite direction a predetermined distance and the multiple surfaced article to be rotated whereby the surfaces to be printed each are operatively engaged, in turn, with the bottom surface of the screen and each said squeegee to be operatively engaged, in turn, with the top surface of the screen in synchronized fashion and with an image pattern whereby each of the image patterns provided in the silk-screen can be printed onto a respective surface of the article to be printed, as desired.

5,343,805

APPARATUS FOR INK SUPPLY

Jan Lövenbrant, Lomma, and Alvar Olsson, Dalby, both of Sweden, assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Filed Apr. 22, 1992, Ser. No. 872,010

Claims priority, application Sweden, May 17, 1991, 9101497-7

Int. Cl.[5] B41F *31/02*

U.S. Cl. 101—366 **5 Claims**

1. An apparatus for supplying ink to an inking roller, comprising:

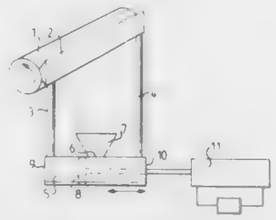
a cylinder having a reciprocating piston therein, the cylinder having first and second ends and an aperture between the ends for receiving ink;

a doctor blade having a chamber for containing ink;

a first conduit connecting the first end of the cylinder to the chamber of the doctor blade;

a second conduit connecting the second end of the cylinder to the chamber of the doctor blade, said first and second conduits being connected with the chamber at spaced apart locations;

means for reciprocating the piston between the first and second ends of the cylinder;



whereby ink flows from the cylinder to the chamber when the reciprocating means moves the piston toward an end of the cylinder.

5,343,806

SWIVELLABLE PRE-GRIPPER OF A SHEET-FED PRINTING PRESS AND METHOD OF OPERATION THEREOF

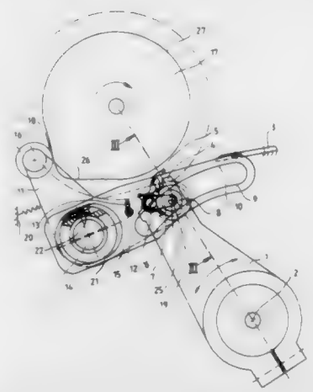
Andreas Fricke, Eberbach, and Siegfried Kurtzer, Mannheim, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Sep. 10, 1993, Ser. No. 120,128

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1992, 4230218

Int. Cl.[5] B41F *1/30*

U.S. Cl. 101—408 **7 Claims**



5. Method for setting an instant of opening and an instant of closing of a gripper on a pre-gripper of a sheet-fed printing press, which comprises swivelling the pre-gripper into one position selected from a closing position and an opening position, respectively, of the gripper; setting the gripper, in a first setting, so that, in the selected position, the gripper just closes and opens, respectively; swivelling the pre-gripper into the other of the respective opening and closing positions; and, independently of the first setting and without any reaction on the first setting, setting the gripper in a second setting, so that, in the selected position, the gripper just closes and opens, respectively.

5,343,807

SHEET-GUIDING IMPRESSION-CYLINDER CASING PROFILE

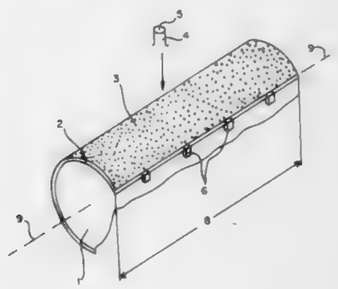
Gerhard Hackelborger, and Werner Sondergeld, both of Offenbach am Main, Fed. Rep. of Germany, assignors to Man Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Mar. 8, 1993, Ser. No. 27,684

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1992, 4207119

Int. Cl.[5] B41F *1/28*

U.S. Cl. 101—415.1 **12 Claims**



1. A rotatable printing cylinder in a sheet-fed printing machine about which printed sheets are directed without substantial relative movement between the printing cylinder and the sheet comprising

a cylindrical drum, means defining a surface surrounding the cylindrical drum, said surface defining a plurality of substantial equal length elevational elements extending radially from a base surface, said elevational elements having flat outermost surfaces which define a cylindrical sheet bearing surface having an area substantially less than the total area of the printing cylinder and upon which sheets may be supported during direction about the printing cylinder, and said elevational elements each individually having a substantially constant cross-sectional area along substantially the length thereof such that upon wear of said elevational elements the total area of the sheet bearing surface remains substantially unaffected and the sheets can be continuously directed about the cylinder without substantial relative movement between the sheets and printing cylinder and without smearing of printing on the sheets.

5,343,808

FIRECRACKER CONSTRUCTION

David L. Collar, Leawood, Kans., assignor to Winco Fireworks, Inc., Overland Park, Kans.

Filed Jun. 1, 1993, Ser. No. 68,788

Int. Cl.[5] F42B *4/04*

U.S. Cl. 102—361 **14 Claims**

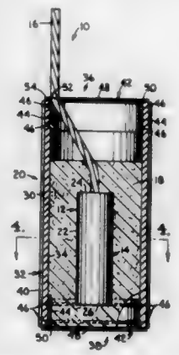
1. A firecracker construction comprising:

a. a firecracker having an explosive charge coupled with an elongated fuse member;

b. an enlarged housing having walls;

c. said firecracker and said fuse being mounted within said housing in spaced relationship to said walls, with a portion of said fuse member projecting outwardly from said housing for permitting remote ignition of said firecracker; and

d. a quantity of solid, noncombustible material disposed between said firecracker and said housing walls and contacting said firecracker in completely surrounding relationship, except for said projecting portion of said fuse



member, for enhancing the report of said firecracker upon explosion.

5,343,809

WEAPON WITH GUIDING WIRE

Lennart Wennberg, Kungsängen; Lena Sarholm, Dalarö; Egon Svensson, Tyresö; Jan Erikson, Sollentuna, and Ralf Holmlin, Södertälje, all of Sweden, assignors to Forsvarets Forskningsanstalt, Sundbyberg, Sweden

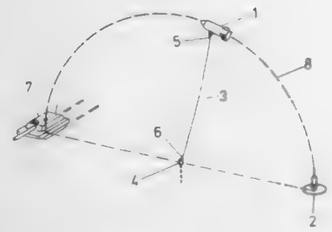
PCT No. PCT/SE91/00607, § 371 Date May 12, 1993, § 102(e) Date May 12, 1993, PCT Pub. No. WO92/04591, PCT Pub. Date Mar. 19, 1992

PCT Filed Sep. 12, 1991, Ser. No. 50,093

Claims priority, application Sweden, Sep. 12, 1990, 9002905-9

Int. Cl.[5] F42B *23/00*

U.S. Cl. 102—401 **7 Claims**



1. A weapon comprising:

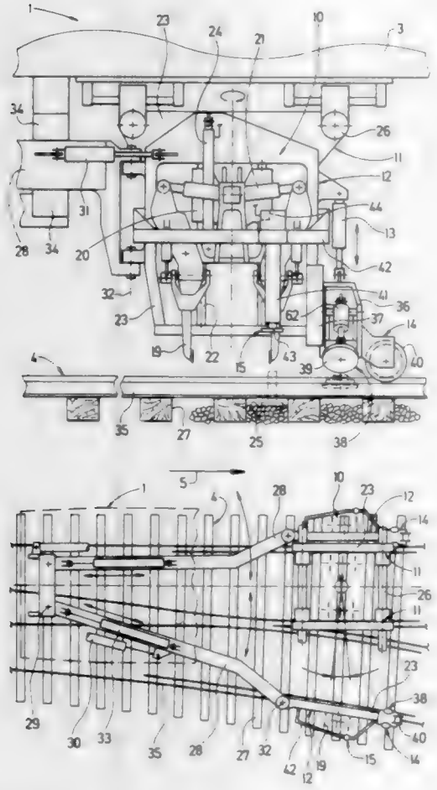
a projectile,

a line attached at one end of said line to said projectile and at an opposite end of said line to an anchorage attachment, said anchorage attachment being fixed in relation to a site of a contemplated target,

a propulsion unit associated with said projectile for propelling said projectile at least at a velocity such that said line will be held taut when said projectile travels in a circular arcuate path towards the contemplated target, said circular arcuate path being achieved with the aid of a restraining force exerted by said line, and

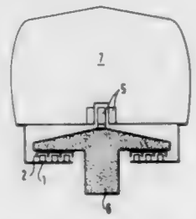
aiming means for directing said projectile towards said circular arcuate path, said anchorage attachment being located between said aiming means and said site of said contemplated target so that said line is generally taut.

5,343,810
SWITCH TAMPER
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft M.B.H., Vienna, Austria
Filed Jul. 12, 1993, Ser. No. 90,808
Claims priority, application Austria, Aug. 12, 1992, 1624/92
Int. Cl.[5] E01B *27/00*
U.S. Cl. 104—12 **10 Claims**



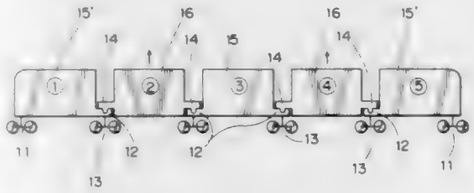
1. A switch tamping machine comprising
(a) a machine frame extending in a direction of elongation and supported on undercarriages for mobility on a track resting on ballast,
(b) a track lifting and lining unit,
(c) lifting and lining drives linking the track lifting and lining unit to the machine frame between the undercarriages,
(d) at least one ballast tamping unit mounted on the machine frame for displacement transversely to the direction of elongation, the tamping unit comprising
(1) a carrier frame,
(2) a tamping tool carrier vertically adjustably mounted on the carrier frame for vertical displacement along vertical guide means, and
(3) a pair of vibratory tamping tools mounted on the tamping tool carrier for reciprocation in the direction of elongation,
(e) an auxiliary lifting device vertically adjustably mounted on the carrier frame of the transversely displaceable tamping unit, for lifting a switch rail transversely spaced from the machine frame, the auxiliary lifting device comprising
(1) a vertically adjustable rail engaging tool, and
(f) a lifting drive linking the auxiliary lifting device to the carrier frame.

5,343,811
MAGNETIC POWER SYSTEM FOR LOW-FRICTION TRANSPORTATION OF LOADS
Peter Schuster, Prinzregentenstr. 41, D-8201 Raubling, Fed. Rep. of Germany
Continuation of Ser. No. 853,894, Mar. 19, 1992, abandoned, which is a continuation of Ser. No. 733,954, Jul. 19, 1991, abandoned, which is a continuation of Ser. No. 664,413, Feb. 28, 1991, abandoned, which is a continuation of Ser. No. 559,382, Jul. 24, 1990, abandoned, which is a continuation of Ser. No. 423,684, Oct. 17, 1989, abandoned, which is a continuation of Ser. No. 124,937, Oct. 23, 1987, abandoned. This application Nov. 23, 1993, Ser. No. 157,356
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1986, 3606459; Oct. 16, 1986, 3635258
Int. Cl.[5] B60L *13/04, 13/06, 13/10*
U.S. Cl. 104—283 **16 Claims**



1. In a magnetic force system for low friction transportation of loads in a direction of transportation, the system including:
at least one ferromagnetic support profile and a stationary support, the support profile being secured to the stationary support, the support profile having vertically orientated profile wall which extends parallel to the direction of transportation and to each other;
at least one permanent magnet disposed between the profile walls and extending essentially parallel to the profile walls, the permanent magnet having poles orientated horizontally relative to the direction of transportation;
an essentially constant air gap being defined between each of the at least one permanent magnet and the support profile, wherein the loads are attached to the at least one permanent magnet; and
mechanical means for permanently maintaining the air gaps, the improvement comprising:
a downwardly open U-section including the vertical ferromagnetic walls of the support profile which extend parallel to each other, wherein the permanent magnet is disposed between the two profile walls.

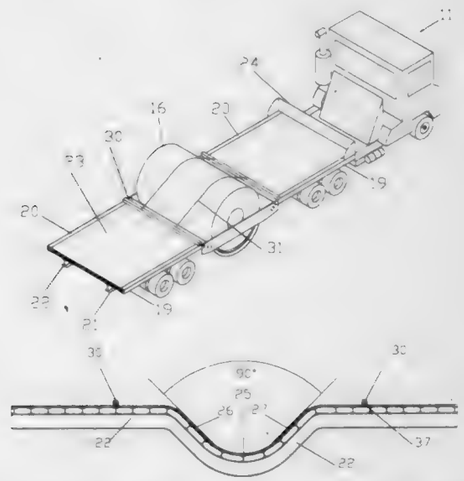
5,343,812
TRAIN OF ARTICULATED VEHICLES
Takeshi Ishida, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan
Filed Oct. 7, 1992, Ser. No. 957,110
Claims priority, application Japan, Oct. 16, 1991, 3-267578
Int. Cl.[5] B61D *49/00*
U.S. Cl. 105—4.3 **8 Claims**



1. A train of articulated vehicles, comprising:
a plurality of receiving side vehicle bodies each having at least one receiving side articulating portion;

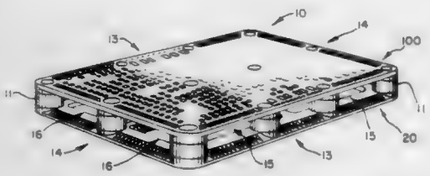
at least one received side vehicle body having two received side articulating portions, said at least one received side vehicle body and said receiving side vehicle bodies being disposed alternately such that the two received side articulating portions are connected to the receiving side articulating portions of two different ones of the plurality of receiving side vehicle bodies, the receiving side vehicle bodies having articulating portions that are only receiving side articulating portions, and the at least one received side vehicle body having articulating portions that are only received side articulating portions; and
a plurality of articulating trucks supporting each receiving side articulating portion such that the at least one received side vehicle body is only supported by two receiving side articulating portions.

5,343,813
COIL TRANSPORTER
Donald R. Septer, 18158 Bracken Cir., Port Charlotte, Fla. 33948
Continuation-in-part of Ser. No. 904,949, Jun. 26, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 89,244
Int. Cl.[5] B60P *3/00*
U.S. Cl. 105—355 **3 Claims**



1. A body for a trailer for carrying loads of long, coiled articles disposed transversely of said trailer, and various shaped articles on a flat surface of the trailer, said body comprising:
a plurality of longitudinal outer channels and inner longitudinal "I" beams, said longitudinal beams each having a front end, a back end, top and bottom sides, and being spaced from one another in a horizontal direction, each of said beams having a "V" shaped notch formed downwardly, intermediate said front and back ends,
steel transverse beams, having top and bottom sides, fastened across said top side of said longitudinal "I" beams for forming flat bed areas and retaining said "I" beams in a spaced relationship,
steel plates fastened across said top side of said "V" notches, for seating said coil and preventing marring and scratching thereof,
steel bars fastened across said top side of said steel plates, a first bar being located forward of said notch and a second bar being located rearward of said notch,
steel cross bar members fastened to said outer channels at the open ends of the "V" formed by said outer channels for providing additional stiffness and to prevent transverse motion of said articles, and
holding means for locking said loads in carrying position.

5,343,814
PLASTIC PALLET ASSEMBLY
Maurice J. Pigott, 591 Cherry St., Winnetka, Ill. 60093; Brandon L. Pigott, 1017 Elmwood Ave.; Peter S. Pigott, 803 Elmwood Ave., both of Wilmette, Ill. 60091, and Schuyler F. Pigott, 1122 N. Patton St., Arlington Heights, Ill. 60004
Continuation-in-part of Ser. No. 644,928, Jan. 23, 1991, Pat. No. 5,197,395, which is a continuation-in-part of Ser. No. 230,025, Aug. 9, 1988, Pat. No. 4,843,976. This application Oct. 15, 1992, Ser. No. 961,396
Int. Cl.[5] B65D *19/00*
U.S. Cl. 108—56.1 **14 Claims**

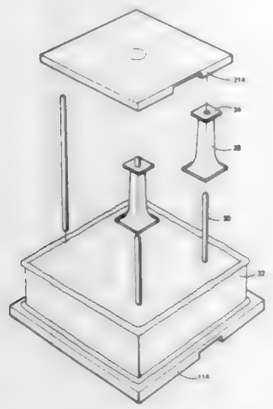


1. A pallet base for use in combination with a second pallet base or a pallet deck and a plurality of connectors, the pallet base having an outer perimeter, an inner surface and an outer surface and being interconnected to the second pallet base or deck by the connectors, comprising:
a pair of substantially parallel side members and a pair of substantially parallel end members that are substantially perpendicular to said side members, both said side and said end members having a plurality of openings therein for receiving the connectors, and being hooked-shaped in cross-section, and including a substantially horizontal first portion forming the outer perimeter, a ramp portion, a substantially horizontal second portion and a vertical portion, the outer surface of said ramp portion, said horizontal second portion and said vertical portion being concave;
a first cross member disposed between and connected to said end members and a second cross member disposed between and connected to said side members, both said first and second cross members having a plurality of openings therein for receiving the connectors, and being U-shaped in cross section, and including a substantially horizontal second portion having two sides with a ramp portion and a substantially horizontal first portion integral with each of said two sides of said horizontal second portion, the outer surface of said ramp portions and said horizontal second portion being concave;
a second cross member disposed between said side members and connected to said side members,
said inner surface having a plurality of spaced apart transverse inner ribs, projecting therefrom; and,
said opposed outer surface having a plurality of spaced apart transverse outer ribs projecting therefrom.

5,343,815
CONFECTIONARY BOARD
Thomas E. Dickinson, Liverpool, England, assignor to Dibro Limited, Liverpool, England
Filed Jul. 2, 1992, Ser. No. 907,683
Claims priority, application United Kingdom, Jul. 5, 1991, 9114592.0
Int. Cl.[5] B65D *19/16;* **A47B** *57/00*
U.S. Cl. 108—56.3 **14 Claims**

1. In a kit for supporting a cake, including at least a pair of confectionery boards and removable cake pillar means for spacing the pair of confectionery boards from one another and for helping to position accurately the confectionery boards relative to one another and the cake therebetween, one of the boards comprising:
an upper surface and a lower surface connected by a side surround, said upper surface being a substantially planar

face adapted to receive the cake, the board being composed of a food contaminate resistant material for reducing substantially risk of food contamination, and opposed thereto is said lower surface which has provided thereon a plurality of mating members which are closed to said planar face, which mating members serve to engage di-



rectly or indirectly said cake pillar means to enable said board and cake to be positioned accurately relative to one another, in which said mating members comprise a plurality of cells, each cell being defined by a plurality of cross members which extend from the side surround across said lower surface, thereby defining a regular lattice which is closed to said planar face.

5,343,816
REVOLVING BOOKCASE

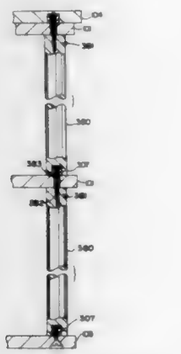
Xen N. Sideris, 666 Georgia Ave., Palo Alto, Calif. 94306

Continuation-in-part of Ser. No. 801,539, Dec. 2, 1991, Pat. No. 5,253,594, which is a continuation-in-part of Ser. No. 614,305, Nov. 16, 1990, Pat. No. 5,101,738. This application Aug. 24, 1992, Ser. No. 934,415

The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.

Int. Cl.[5] A47B *57/00*

U.S. Cl. 108—94 **14 Claims**



1. A revolving storage shelf unit comprising:
at least three shelf panels including a bottom shelf panel and a top shelf panel;
said shelf panels being square planar members, each having four corners and four edges;
a cover panel;
a plurality of vertical support members vertically interspacing adjacent shelf panels and defining storage bins, each of said vertical support member having an axis and two planar ends substantially perpendicular to said axis,
each of said vertical support members includes
an insert for receiving screw type fasteners in one of said ends axially mounted with said axis, and
an anchor bolt type fastener in the other one of said ends axially mounted with said axis,
said anchor bolt type fastener having a wood screw type end and a machine type screw end, said machine screw type end matching said insert for receiving machine screw type fasteners;
said vertical support members interspacing the same shelf panels constituting a set of vertical support members;
each set of vertical support members being arranged in "L" patterns, said "L" patterns extending from each corner of a shelf panel with the long side of each L parallel to and proximal to one edge of said shelf panel and extending to a point on said edge, the base of said L extending inward from said edge at said point, the base of the "L" at a first corner along with the long side of an "L" at a second, adjacent corner defining one of said storage bins,
said "L" patterns of different shelf panels being coaxially arranged, and corresponding vertical support members of said "L" patterns of different shelf panels being axially aligned;
said cover panel including means for receiving screw type fasteners in locations corresponding to the arrangement of said vertical support members; wherein said panels having openings for passing said screw type fasteners in locations corresponding to the arrangement of said vertical support members; said bottom panel having openings for receiving screw type fasteners in locations corresponding to the arrangement of said vertical support member; said top shelf panel being mounted between said cover panel and the highest set of vertical support members in said shelf unit,
additional shelf panels being mounted between vertically adjacent sets of vertical support members, and
said bottom panel being attached to the lowest set of vertical support members;
a base secured to the bottom of said bottom shelf panel in a freely rotating manner.

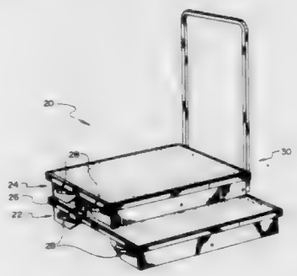
5,343,817
PORTABLE PODIUM AND PERFORMANCE PLATFORM SYSTEM

Leslie R. Abraham, and John H. Kniefel, both of Owatonna, Minn., assignors to Wenger Corporation, Owatonna, Minn.

Continuation-in-part of Ser. No. 790,214, Nov. 7, 1991. This application Oct. 1, 1992, Ser. No. 955,280

Int. Cl.[5] A47B *57/00*

U.S. Cl. 108—97 **17 Claims**



1. A portable podium system designed for selective resting engagement on a ground surface adjacent to a performance area said podium system being selectively positionable between a transport orientation and a performance orientation, said podium system comprising:

two or more platform sections, each platform section having:
a platform member having a top surface and a bottom surface, said top surface being oriented generally perpendicular to said ground surface when said podium is positioned in the transport orientation and said top surface being oriented generally parallel to the ground surface when said podium is positioned in the performance orientation; and
a support frame adapted for operable resting engagement with said ground surface operably coupled to and oriented to extend downwardly from the bottom surface of the platform member when said podium is oriented in said performance orientation, whereby the platform member presents a generally horizontal surface elevated above said ground surface when the podium is in the performance orientation;
means for operably connecting a platform section to one or more vertically adjacent platform sections so as to provide a multi-level elevated platform surface;
at least one of the platform section means having a transport assembly means operably coupled to said support frame, the transport assembly means including:
two or more wheels; and
means for mounting each of the wheels on an axis of rotation that is generally perpendicular to the platform surface and positioned to allow at least an arcuate section of the wheels to extend beyond a peripheral edge of the support frame, whereby the wheels engage the ground surface when said podium is in the transport position and the wheels clear the ground surface when said podium is in the performance position.

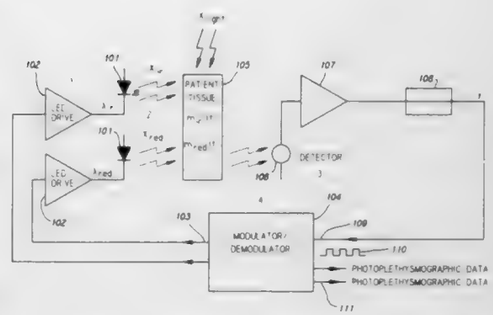
5,343,818
PHOTOPLETHYSMOGRAPHICS USING ENERGY-REDUCING WAVEFORM SHAPING

Rex McCarthy, Newbury Park, and Robert Smith, Corona, both of Calif., assignors to Sensormedics Corp., Yorba Linda, Calif.

Filed Mar. 5, 1991, Ser. No. 664,782

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **51 Claims**



1. A device for collecting photoplethysmographic data, comprising
means for generating a first and a second signal, said first and second signals each comprising at least one carrier component, each said carrier component having a component energy, wherein at least one of said first and second signals has a plurality of said carrier components and has an energy less than the sum of its respective component energies;
means for applying said first and second signal to a modulating medium;
means for detecting a composite signal at an output of said modulating medium, said modulating medium having a first and a second modulating effect; and
means for generating a first and a second output signal responsive to said composite signal, said first output signal corresponding to said first modulating effect applied to said first signal and said second output signal corresponding to said second modulating effect applied to said second signal.

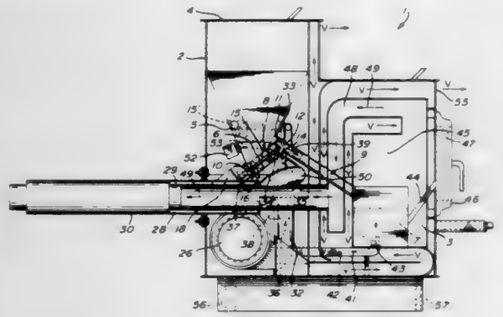
5,343,819
CORN FURNACE

Gilles Charest, Pointe-au-Chêne, Canada, assignor to Charest Deu Feu Inc., Canada

Filed Oct. 1, 1993, Ser. No. 130,365

Int. Cl.[5] F23B *7/00*

U.S. Cl. 110—233 **13 Claims**



1. An endless screw for conveying seeds, comprising:
a proximate end for receiving said seeds;
a distal end for discharging said seeds;
an elongate tubular member having a substantially cylindrical inner surface, and extending between said proximate and distal ends; and
a generally helicoid blade rotatively mounted in the tubular member for conveying the seeds in said tubular member from the proximate end to the distal end of the endless screw, said helicoid blade having a distal substantially helical outer edge section that is sharpened to cut any seed squeezed between the sharpened helical edge section and the inner cylindrical surface of the tubular member and thereby prevent jamming of the helicoid blade in the tubular member.

5,343,820
ADVANCED OVERFIRE AIR SYSTEM FOR NO_x CONTROL

John L. Marion, Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Continuation of Ser. No. 908,113, Jul. 2, 1992, abandoned. This application Aug. 18, 1993, Ser. No. 61,374

Int. Cl.[5] F23D *1/02*

U.S. Cl. 110—264 **3 Claims**

1. In a fossil fuel-fired furnace having a plurality of walls embodying therewithin a burner region, the improvement comprising an advanced overfire air system for accomplishing NO_x control in the fossil fuel-fired furnace, said advanced overfire air system comprising:
a. a windbox mounted in supported relation within the burner region of the fossil fuel-fired furnace, said windbox embodying a plurality of elevations;
b. a first fossil fuel nozzle supported in said windbox at a first elevation thereof operative for introducing fossil fuel in a first direction into the burner region of the fossil fuel-fired furnace through said windbox at said first elevation thereof;
c. a combustion supporting secondary air nozzle supported in said windbox at a second elevation thereof operative for introducing combustion supporting secondary air in the first direction into the burner region of the fossil fuel-fired

furnace through said windbox at said second elevation thereof;

d. a second fossil fuel nozzle supported in said windbox at a third elevation thereof operative for introducing fossil fuel in the first direction into the burner region of the fossil fuel-fired furnace through said windbox at said third elevation thereof;

e. a plurality of overfire air compartments mounted in supported relation in the burner region of the fossil fuel-fired furnace above and in spaced relation to said windbox;

f. a first overfire air nozzle supported in one of said plurality of overfire air compartments operative for introducing overfire air in a second direction opposite to the first direction into the burner region of the fossil fuel-fired furnace through said one of said plurality of overfire air compartments;

g. a second overfire air nozzle supported in another one of said plurality of overfire air compartments operative for introducing overfire air in a direction other than the second direction into the burner region of the fossil fuel-fired furnace through said another one of said plurality of overfire air compartments;

h. a third overfire air nozzle supported in said windbox at a fourth elevation thereof operative for introducing overfire air in the first direction into the burner region of the fossil fuel-fired furnace through said windbox at said fourth elevation thereof; and

i. air supply means connected to said first overfire air nozzle, said second overfire air nozzle and said third overfire air nozzle for supplying overfire air thereto, said air supply means being operative to supply to said first overfire air nozzle and said second overfire air nozzle more overfire air for introduction into the burner region of the fossil fuel-fired furnace through said plurality of overfire air compartments than is supplied by said air supply means to said third overfire air nozzle for introduction into the burner region of the fossil fuel-fired furnace through said windbox at said fourth elevation thereof.

5,343,821

SEWING MACHINE HAVING AN ACCESSORY BOX

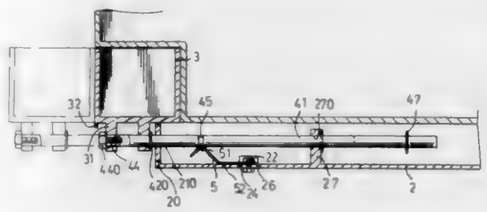
Hsien-Chang Tseng, P.O. Box 63-151, Taichung, Taiwan

Filed Jun. 1, 1993, Ser. No. 69,822

Int. Cl.[5] D05B *73/00*

U.S. Cl. 112—258 **2 Claims**

1. A sewing machine comprising a body including a base formed in a bottom portion thereof, a pair of rods slidably disposed in said base, a box including at least two protrusions extended downward therefrom and fixed to said rods respectively such that said box moves in concert with said rods, at least one of said rods including an annular groove formed therein, a spring including a first end disposed on said base and including a second end having a bent portion formed thereon



for engaging with said annular groove of said rod so as to retain said rod in place.

5,343,822

EMERGENCY TRANSFER OF OIL FROM A RUPTURED SHIP'S TANK TO A RECEIVING VESSEL OR CONTAINER, PARTICULARLY DURING THE MAINTENANCE OF AN UNDERPRESSURE IN THE TANK

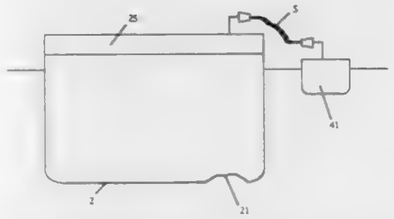
Mo Husain, 908 Stratford Ct., Del Mar, Calif. 92014

Continuation-in-part of Ser. No. 377,886, Jul. 10, 1989, Pat. No. 5,156,109, and Ser. No. 503,712, Apr. 3, 1990, Pat. No. 5,092,259. This application Mar. 2, 1992, Ser. No. 844,140

The portion of the term of this patent subsequent to Mar. 3, 2010, has been disclaimed.

Int. Cl.[5] B63B *25/08*

U.S. Cl. 114—74 R **18 Claims**



1. A system to transfer liquid from a ship's tank containing liquid after rupture of the tank, the system comprising:

underpressure means for creating an underpressure less than atmospheric pressure in an ullage space of a ruptured tank of a ship, and for dynamically maintaining this underpressure so as to produce a balance in all forces acting on liquid contents of the ruptured tank, said balance of forces tending to preclude that the liquid contents of the tank should egress through the rupture;

conduit means, flow-connecting to the liquid of the ruptured tank at a level above a location of the rupture, for channeling under pressure forces a flow of the tank's liquid; and

pump means, flow connected to the conduit means, for pumping with a suction force that is stronger than the underpressure the liquid from the ruptured tank through the conduit means;

wherein the underpressure means is operative to maintain the underpressure necessary to produce the balance of forces regardless that during the pumping of liquid by the pump means this necessary underpressure may change.

5,343,823

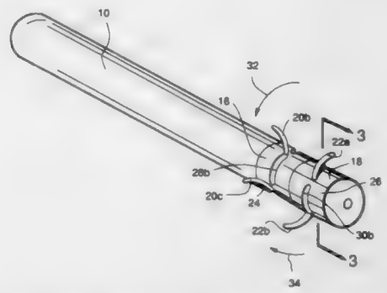
LARGE DIAMETER LOW RPM PROPELLER FOR TORPEDOES

John G. Blaha, Garden Grove, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 819,430, Jan. 10, 1992. This application Apr. 1, 1993, Ser. No. 41,535

Int. Cl.[5] B63G *8/08*

U.S. Cl. 114—338 **8 Claims**



1. A low RPM underwater propulsion system for a submerged vehicle which comprises:

a drive mechanism for producing counterrotating torques;

a first propeller unit fixedly attached to said drive mechanism, said first propeller unit having a cylindrically shaped cross-section providing a curved outer surface and having a plurality of blades, each said blade being hingedly attached to said propeller unit, said outer surface of said first propeller unit having a plurality of arcuate slots for housing said plurality of blades in a first configuration, each of said blades being curved to conform to the outer surface of said first propeller unit to minimize the cross-section of the first propeller unit in said first configuration, said plurality of blades being deployed in a second configuration by centrifugal force upon activation of said drive mechanism for rotation of said first propeller unit in a first direction at a first RPM, said deployment of each of said blades on said first propeller unit occurring within a first plane perpendicular to a thrust axis of said propulsion system; and

a second propeller unit fixedly attached to said drive mechanism, said second propeller unit having a cylindrically shaped cross-section providing a curved outer surface and having a plurality of blades, each said blade being hingedly attached to said second propeller unit, said outer surface of said second propeller unit having a plurality of arcuate slots for housing said plurality of blades in a first configuration, each of said blades being curved to conform to the outer surface of said second propeller unit to minimize the cross-section of the second propeller unit in said first configuration, said plurality of blades being developed in a second configuration by centrifugal force upon activation of said drive mechanism for rotation of said second propeller unit in a second direction at a second RPM, said deployment of each of said blades on said second propeller unit occurring within a second plane perpendicular to a thrust axis of said propulsion system.

5,343,824

REMOVABLE COVER FOR BOATS AND OTHER OBJECTS

Richard S. Floyd, 22 Bruce St., Williamston, S.C. 29697

Filed Oct. 18, 1993, Ser. No. 136,913

Int. Cl.[5] B63B *17/00*

U.S. Cl. 114—361 **4 Claims**

1. A detachable cover device for boats and other objects; said detachable cover device including:

A) a cover member formed of a piece of flexible sheet material having length and width dimensions sufficient to extend beyond the outer perimeters of the area to be covered;

B) an attachment means having an elongated locking rail for securing said cover member over the area to be covered; said elongated locking rail including:

a) a base component for mounting around the perimeter edges of the area to be covered; said base component having:

i) a flat undersurface for fitting flush against the surface to which it is to be mounted;

ii) opposite said flat surface, an outer face having an elongated U-shaped track defined by opposing side walls and extending the length of said rail; said U-shaped track having a plurality of apertures spaced apart along the bottom of said U-shaped track for receiving a selected fastener means therethrough;

b) a middle, locking rail having a first, rearwardly oriented face including a channel extending the length thereof for receiving said outer face of said base component securely therein; said middle locking rail further including a second, outwardly oriented face having a pair of spaced, parallel T-nodes extending outwardly therefrom, and an intermediate elongated channel defined by said parallel T-nodes;

c) an outer, cover rail having a flat outer face, and an inward face having spaced, parallel tracks for receiving said parallel T-nodes therein; said inward face further including a centrally oriented, enlarged T-node defined by and extending between, said parallel tracks, for engagement in said elongated channel on said second face of said middle, locking rail;

C) said cover member being gripped between the multiple interlocking surfaces of said middle and said outer rails; forming a substantially waterproof cover device for boats and other objects.

5,343,825

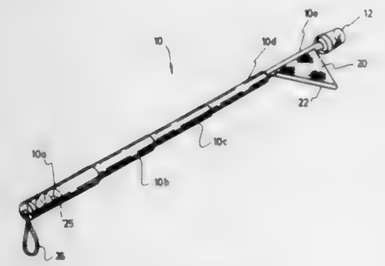
PORTABLE SAFETY FLAG

George Gazecimeon, 880 McEachran, Outremont, Quebec, Canada H2V 3E1 ; Nancy Kamisis, 39 Alie Street, Dollard-des-Ormeaux, Quebec, Canada H9A 1G9 , and Richard Degroote, Montreal, Canada, assignors to George Gazecimeon and Nancy Kamisis, both of Quebec, Canada

Filed Jul. 19, 1993, Ser. No. 94,487

Int. Cl.[5] G09F *17/00*

U.S. Cl. 116—173 **14 Claims**



1. A portable safety flag comprising:

a plurality of telescopic members including a base member and an end member, the base member having a largest cross-section and the end member having a smallest cross-section;

a knob member connected to an end of said end member, said knob member having a cross-section substantially equal to said largest cross-section;

fastening means for fastening said knob to said base member when said flag is closed;

a signalling sheet having one side connected to said end member, said sheet being flexible;

a rod member pivotally connected to a base of said end member for radial movement away and toward said end member, and connected to another side of said sheet; and

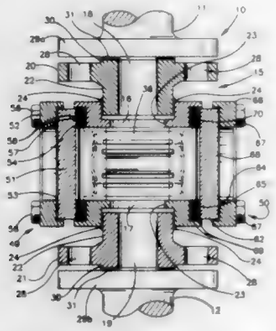
biassing means for biassing said rod member away from said end member as said end member is extended from a remainder of said telescopic members and for allowing said rod member to return to said end member as said end member is retracted into said remainder of said telescopic members, said rod member holding at least part of said sheet taut when biased away from said end member.

5,343,826

FLUID INDICATOR ASSEMBLIES FOR SIGHT FLOW APPARATUS

David E. Brown, Brunswick, and David E. Purcel, Lorain, both of Ohio, assignors to Clark-Reliance Corporation, Strongsville, Ohio

Continuation-in-part of Ser. No. 747,263, Aug. 19, 1991, Pat. No. 5,249,464. This application Jul. 31, 1992, Ser. No. 922,814
Int. Cl.[5] G01F *15/06, 23/02*
U.S. Cl. 116—275 **45 Claims**



1. A fluid indicator assembly for a sight flow apparatus, wherein the sight flow apparatus includes a body having at least one transparent window for visually inspecting the fluid flow through the apparatus, the fluid indicator assembly comprising:

a fluid indicator suspended within said body transverse to the fluid flow and movable responsive to the fluid flow through the apparatus,

at least one indicator cap attached to an end of said fluid indicator and movable therewith, and

an axle received in an aperture in said at least one indicator cap to rotatably support said indicator cap, said axle being supported by apertures in opposite sides of said body,

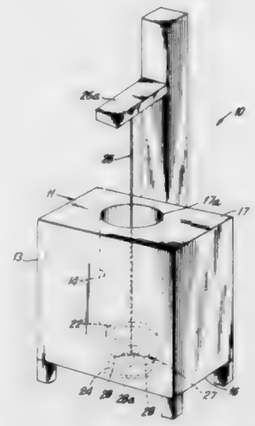
said at least one indicator cap being located between said end of said fluid indicator and said window when said axle is attached to said body for facilitating visual inspection of the orientation of said fluid indicator within the body.

5,343,827

METHOD FOR CRYSTAL GROWTH OF BETA BARIUM BORATEAN

Peter F. Bordui, Menlo Park, and George D. Calvert, Sunnyvale, both of Calif., assignors to Crystal Technology, Inc., Palo Alto, Calif.

Filed Feb. 19, 1992, Ser. No. 838,628
Int. Cl.[5] C30B *7/08*
U.S. Cl. 117—28 **20 Claims**



1. A method of growing a crystal of β-BaB_2O_4 from solution, comprising the steps of:

a. preparing a mixture of a BaB_2O_4 solution and a pure NaCl solvent;

b. heating said mixture to produce a melt thereof;

c. suspending a seed crystal of BaB_2O_4 in said melt;

d. maintaining particular thermal field conditions throughout said melt; and

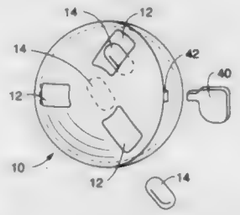
e. decreasing the temperature of said melt to thereby cause β-BaB_2O_4 to crystalize from said melt on said seed crystal.

5,343,828

PRIMATE AMUSEMENT AND ENVIRONMENTAL ENRICHMENT DEVICE

Paul W. Houghton, Woodside, and Kenneth R. Bloom, Fairfax, both of Calif., assignors to Primate Products, Redwood City, Calif.

Filed May 7, 1993, Ser. No. 59,167
Int. Cl.[5] A01K *5/00, 15/00*
U.S. Cl. 119—51.03 **3 Claims**



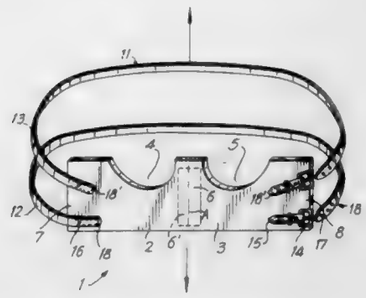
1. An amusement and environment enrichment device comprising a housing having an interior space and at least one hole through the housing to the interior space and at least one item disposed within the interior space, the housing comprising a first section, a second section separable from the first section, and a locking mechanism holding the first section and the second section together, the locking mechanism comprising a cam surface on the first section, and the at least one item having a size and shape permitting it to pass through the at least one hole in at least one spatial orientation of the at least one item and prohibiting it from passing through the at least one hole in at least one spatial orientation of the at least one item, or such that the item will have corners or edges of food and treats too large to be retrieved whole to be chewed until the food is small enough to be aligned with the at least one hole and be removed in its entirety.

5,343,829

DEVICE FOR PREVENTING HORSE WIND SUCKING

Leonard L. Lookingbill, 401 Apple Dr., Bath, Pa. 18014

Filed Apr. 12, 1993, Ser. No. 44,750
Int. Cl.[5] A01K *13/00;* **B68B** *1/00*
U.S. Cl. 119—821 **11 Claims**



1. A device for preventing horse wind sucking, comprising

a main part applicable onto a front outer surface of a horse throat, said main pat including two side portions each having a cavity which opens upwardly and reduces downwardly in an applied condition of the main part so that each of the cavities conforms to a horse jawbone so that in the applied condition said main part is reliably oriented by the horse jawbones, and a central portion located centrally between said two side portions and projecting upwardly so that in the applied condition said central portion applies an inward pressure and an upward pressure to the horse throat; and

means for removably fixing and tightening said main part on a horse head and including an element which extends from opposite ends of said main part and is formed to surround a part of the horse, each of said cavities having a laterally inner portion with a smaller radius and a laterally outer portion with a greater radius.

5,343,830

CIRCULATING FLUIDIZED BED REACTOR WITH INTERNAL PRIMARY PARTICLE SEPARATION AND RETURN

Kiplin C. Alexander, Wadsworth; Felix Belin, Brecksville; David E. James, Barberton, and David J. Walker, Wadsworth, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 25, 1993, Ser. No. 37,986
Int. Cl.[5] F22B *1/00*
U.S. Cl. 122—4 D **28 Claims**

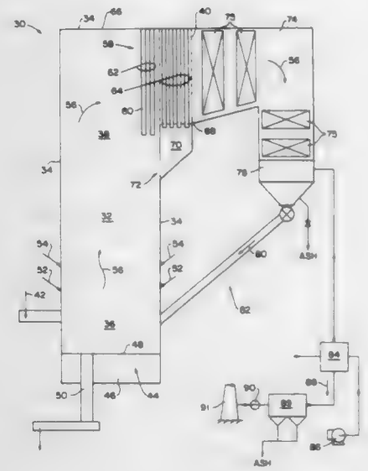
1. A circulating fluidized bed reactor, comprising:

a reactor enclosure partially defined by enclosure walls and having a bottom portion, an upper portion, and an exit opening located at an outlet of the upper portion;

a primary, impact type particle separator located within the upper portion of the reactor enclosure, for collecting particles entrained within a gas flowing within the reactor enclosure from the lower portion to the upper portion thereof, causing them to fall towards the bottom portion;

cavity means, connected to the primary, impact type particle separator and located entirely within the reactor enclosure, for receiving collected particles as they fall from the primary, impact type particle separator; and

returning means, connected to the cavity means and located entirely within the reactor enclosure, for returning particles from the cavity means directly and internally into the reactor enclosure so that they free fall unobstructed and unchanneled down along the enclosure walls to the bottom portion of the reactor enclosure for subsequent recirculation.

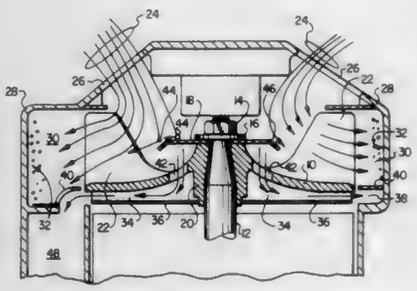


5,343,831

DYNAMIC AIR CLEANER AND CARBURETOR PRESSURIZATION SYSTEM FOR AIR COOLED INTERNAL COMBUSTION ENGINE

Imack L. Collins, Shreveport, La., assignor to WCI Outdoor Products, Inc., Cleveland, Ohio

Filed Sep. 1, 1993, Ser. No. 115,910
Int. Cl.[5] F01P *7/04*
U.S. Cl. 123—41.65 **8 Claims**



1. A blower for producing first and second high velocity air streams from a single air intake, the second high velocity air stream being substantially particle-free; the blower comprising:

a centrifugal impeller having on a front side blades arrayed about a hub, the centrifugal impeller mounted within a fan housing for rotation to draw in air through an air intake located above the hub in fan housing and into the center of the impeller, and to blow the air radially outwardly into the fan housing to create a first high velocity air stream;

an opening defined through the hub for communicating air from the front of the centrifugal impeller to a back side of the first impeller;

a second impeller positioned for rotation on the back side of the centrifugal impeller, the second impeller creating a vacuum in the vicinity of the opening in the hub of the first impeller that draws air from the front side of the

centrifugal impeller into the second impeller for creating a second high velocity air stream; and

a screen extending radially outwardly from the hub's center and over the opening; the screen having a size and position whereby it does not substantially interfere with air flowing from the intake of the housing to the first impeller but permits some air to flow into the hub opening; whereby smaller particles tend to be carried with the air into the first impeller, away from the hub opening; and whereby larger particles that are not carried with the air deflect off the screen and into the first impeller; the screen and the hub opening thereby cooperating to produce a generally particle-free second air stream.

5,343,832

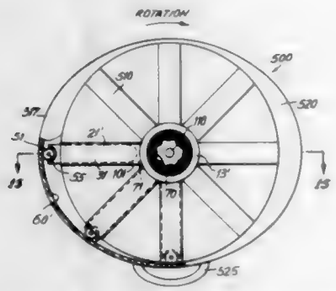
COMBINATION ROTARY INTERNAL COMBUSTION ENGINE AND DUCTED FAN

Jerome L. Murray, Budd Lake, N.J., assignor to Murray United Development Corporation, Ramsey, N.J.

Continuation-in-part of Ser. No. 855,719, Mar. 20, 1992, Pat. No. 5,211,138, which is a division of Ser. No. 682,699, Apr. 9, 1991, Pat. No. 5,161,378, which is a division of Ser. No. 570,169, Aug. 17, 1990, abandoned, which is a division of Ser. No. 478,726, Feb. 12, 1990, Pat. No. 4,974,553, which is a division of Ser. No. 277,714, Nov. 30, 1988, abandoned. This application Nov. 16, 1992, Ser. No. 977,240

Int. Cl.[5] F02B *57/08*

U.S. Cl. 123—44 B **4 Claims**



1. A combination rotary engine and fan, comprising

a generally open stationary housing including a generally circular duct portion;

a rotatable engine block disposed within said housing;

at least one cylinder assembly on said block, said cylinder assembly including at least one cylinder having a longitudinal axis extending generally radially outwardly from the rotational axis of said block, said cylinder including means defining an end wall, a piston member disposed within said cylinder and adapted to reciprocate within said cylinder, said piston and said end wall together defining a combustion chamber; a plurality of radial fan blades within said duct portion for axially propelling air through said duct portion, said fan blades having tips closely spaced from said duct portion, at least one of said cylinders being disposed inside one of said radial fan blades;

a cam track internally disposed within said housing and adapted to receive a cam follower, said cam follower being operatively connected to said piston and adapted to ride along said cam track so that said cam follower forces and motions are transmitted to and from said piston, said cam track including at least a first segment and at least a second segment thereof, said first segment having a generally positive slope wherein said segment has a generally increasing radial distance from the rotational axis of said engine block whereby as a piston moves outwardly in a cylinder on a power stroke while the cam follower is in radial register with said cam track segment, the reactive force of the respective cam follower acts in a direction tending to impart rotation to said engine block in the direction of the positive slope of said cam track segment, said second segment having a generally negative slope wherein said segment has a generally decreasing radial distance from the rotational axis of said engine block whereby as a cam follower rides along said negative slope of said cam track as said engine block rotates, said cam follower will cause a radially inward motion of the respective piston in its respective cylinder;

means permitting periodic introduction of air and fuel into said combustion chamber;

means for causing combustion of a compressed mixture of air and fuel within said combustion chamber; and

means permitting periodic exhaust of products of combustion of air and fuel from said combustion chamber.

5,343,833

VALVE GEAR DEVICE FOR INTERNAL COMBUSTION ENGINES

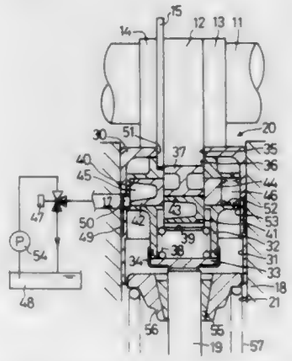
Eiji Shirai, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 14, 1993, Ser. No. 120,424

Claims priority, application Japan, Sep. 14, 1992, 4-244968

Int. Cl.[5] F01L *1/34*

U.S. Cl. 123—90.16 **2 Claims**



1. A valve gear device for an internal combustion engine comprises:

a high-speed cam and low-speed cams which are fixed to a cam shaft, being adjacent to each other; and

at least one of an intake and exhaust valve which is driven by at least one of said high-speed cam and low-speed cams through a lifter;

wherein said lifter comprises:

a body which slides inside of a lifter hole formed at a cylinder head of the engine;

a slider which slides inside a slider hole formed in said body and which engages with said high-speed cam;

a spring which urges said slider toward said high-speed cam;

a pin which is supported inside of said body and which is capable to control the relative movement between said body and said slider; and

a guide groove which is formed on a top portion of said body and which constantly engages with a guide plate fixed to said cam shaft.

5,343,834

DEVICE FOR ADJUSTING THE ROTATIONAL ANGLE RELATIONSHIP BETWEEN A CAMSHAFT AND ITS DRIVE ELEMENT

Helmut Rembold, Stuttgart, and Ernst Linder, Mühlacker, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

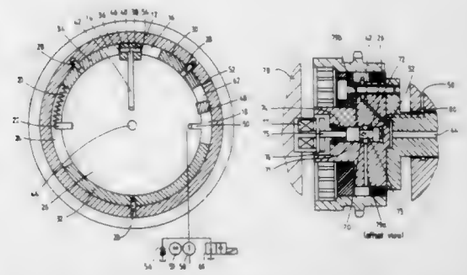
PCT No. PCT/DE92/00337, § 371 Date Jan. 5, 1993, § 102(e) Date Jan. 5, 1993, PCT Pub. No. WO92/20907, PCT Pub. Date Nov. 26, 1992

PCT Filed Apr. 25, 1992, Ser. No. 962,213

Claims priority, application Fed. Rep. of Germany, May 17, 1991, 4116152

Int. Cl.[5] F01L *1/34*

U.S. Cl. 123—90.17 **14 Claims**



1. A device for adjusting a rotational angle relationship between a camshaft and its drive element, comprising two circular segment shells provided on the drive element together with an interposed part forming two working spaces therebetween, said both shells being connected to one of said camshaft and said drive element, and said interposed part being connected to the other of said cam shaft and said drive element while said circular segment shells being movable relative to said interposed part in a setting action such that during adjustment in a setting direction said circular segment shells are adjusted so that the volume enclosed in a first one of said working spaces increases while the volume enclosed in a second one of said working spaces decreases; means for connecting each of said working spaces to a first setting pressure medium source separately via a non-return valve which opens toward a respective one of said working spaces, and said working spaces can be directly connected to one another by means of a control valve; and a third circular segment shell and a first one of said circular segment shells form a third working space for an additional adjustment of the rotational angle relationship.

5,343,835

VALVE SPRING RETAINER

Myron G. Rhodes, Hartland, Wis., assignor to Charter Manufacturing Company, Inc., Milwaukee, Wis.

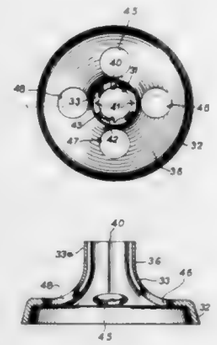
Filed Dec. 7, 1992, Ser. No. 986,218

Int. Cl.[5] F01L *3/10*

U.S. Cl. 123—90.67 **15 Claims**

8. A one piece valve spring retainer means of a valve stem in an internal combustion engine comprising:

a valve spring retaining portion having a continuous peripheral wall and an integrally formed curved arm portion, said curved arm portion extending between said spring retaining portion and a connecting portion to said valve stem, said connecting portion being derived only from said curved arm portion and said connecting portion is



aligned substantially parallel with the axis of said valve stem.

5,343,836

DRIVE MECHANISM OF ENGINE IGNITION SYSTEM

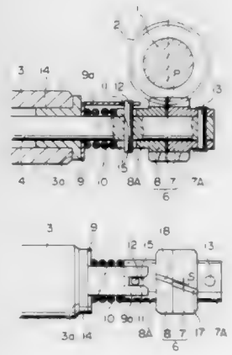
Hiroshi Fujiwara, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo and Hitachi Automotive Engineering, Katsuta, both of Japan

Filed Aug. 18, 1993, Ser. No. 107,582

Claims priority, application Japan, Sep. 24, 1992, 4-254556

Int. Cl.[5] F02P *7/10;* **F16H** *55/06*

U.S. Cl. 123—146.5 A **6 Claims**



1. In a drive mechanism of an engine ignition system having

a housing fixed to an engine, and

a driven shaft of the engine ignition system rotatably supported by the housing, said engine providing a driving force for rotating a drive shaft, the rotation of which is transmitted to the driven shaft through screw gears having axes crossing each other, the improvement comprising

a screw gear provided on said driven shaft and having a main gear fixed to said driven shaft and an auxiliary gear opposed to an end face of said housing and rotatably and axially movably mounted on said driven shaft, the respective teeth of said main and auxiliary gears being staggered from each other when the main and auxiliary gears come in contact with each other; and

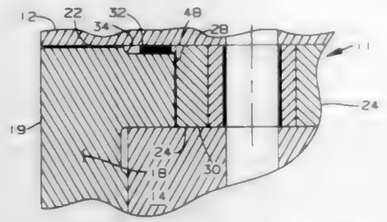
a resilient member provided between the end face of said housing and said auxiliary gear; said screw gear on said drive shaft pushing said auxiliary gear against the resilient force of said resilient member toward the end face of said housing so that the screw gears on said drive and driven shafts are engaged with each other.

5,343,837

CYLINDER HEAD SEALING SYSTEM AND METHOD

Lloyd A. Ward, Washington, Ill., and Allyn P. Bock, West Lafayette, Ind., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jul. 27, 1993, Ser. No. 98,172
Int. Cl.[5] F16J 15/12
U.S. Cl. 123—193.5 21 Claims



1. A combustion gas seal for sealing receipt about a cylinder bore clamped between a cylinder head and a cylinder block or liner of an internal combustion engine, comprising:

an annular sleeve generally U-shaped in cross-section, said annular sleeve including an upper sealing member adapted for sealing contact against the cylinder head and a lower sealing member adapted for sealing contact against the cylinder block or liner;

a malleable sealing ring disposed in said annular sleeve between said upper sealing member and said lower sealing member, said malleable sealing ring being crushable within said annular sleeve between the cylinder head and the cylinder block or liner to form a seal when clamped therebetween;

a backing ring disposed in said annular sleeve adjacent to and radially outward of said malleable sealing ring for supporting said malleable sealing ring against deformation during operation of the engine, said backing ring being constructed from a material having an ultimate tensile strength greater than 70,000 pounds per square inch; and

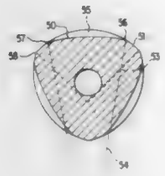
means for centering said combustion gas seal about the cylinder bore, said means for centering including a plurality of peripherally spaced tabs attached to said annular sleeve and cooperative with the cylinder block or cylinder liner to locate said combustion gas seal centered about the cylinder bore.

5,343,838

DUAL RADIUS ROTOR FOR PRE-MIXED-CHARGE ROTARY ENGINE COMBUSTION

John Abraham, Parsippany, N.J., assignor to Gas Research Institute, Chicago, Ill.

Filed Jul. 29, 1993, Ser. No. 99,105
Int. Cl.[5] F02B 55/02, 55/14
U.S. Cl. 123—218 6 Claims



1. In a rotary piston, internal combustion engine having a rotary piston eccentrically mounted for rotation in a multi-lobe, trochoidal-shaped engine housing and defining, with the housing, intake, compression, expansion and exhaust working chambers, each of which vary in volume as the rotary piston rotates within the housing in combination with ignition means for initiating fuel combustion disposed within the housing at a point relative to the direction of rotary piston rotation preceding the lobe junction between the compression and expansion combustion-working chambers, the improvement comprising:

a rotary piston comprising a plurality of contiguous, convex, arcuate peripheral surfaces which, in combination with said engine housing, define said combustion-working chambers;

said rotary piston further comprising a plurality of apex seals and a plurality of side seals disposed between said rotary piston and said engine housing;

each of said convex, arcuate peripheral surfaces defining a convex, arcuate rotor recess, said convex, arcuate rotor recess having a recess radius greater than a peripheral surface radius of said rotary piston; and

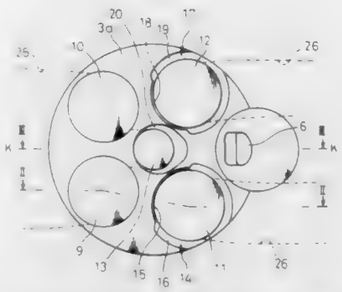
said convex, arcuate rotor recess comprising a crescent-shaped cross-section.

5,343,839

TWO-STROKE ENGINE

Toyokazu Baika, and Koichi Nakae, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Nov. 29, 1993, Ser. No. 158,278
Claims priority, application Japan, Dec. 18, 1992, 4-339151
Int. Cl.[5] F02B 25/20
U.S. Cl. 123—257 14 Claims



1. A two-stroke engine having a piston, a cylinder head and a combustion chamber formed between the piston and the cylinder head, said engine comprising:

at least one exhaust valve arranged on a peripheral portion of an inner wall of the cylinder head;

at least one intake valve arranged on a peripheral portion of the inner wall of the cylinder head at a position opposite to said exhaust valve;

preventing means for preventing an inflow of fresh air into the combustion chamber from a portion of the valve opening of said intake valve which is located on the exhaust valve side, and causing the fresh air to flow into the combustion chamber from a portion of the valve opening of said intake valve which is located at a position opposite to said exhaust valve, to cause the fresh air to flow along a periphery of the combustion chamber; and

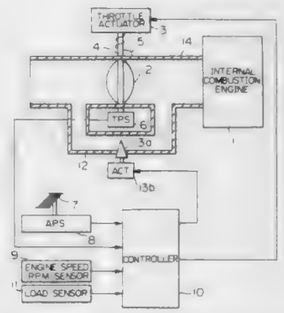
an auxiliary exhaust valve arranged in the center of the inner wall of the cylinder head to discharge burned gas from the combustion chamber.

5,343,840

FAIL-SAFE INTAKE AIR FLOW CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Seiji Wataya; Yukinobu Nishimura, and Nobutake Taniguchi, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1993, Ser. No. 54,140
Claims priority, application Japan, May 7, 1992, 4-114709
Int. Cl.[5] F02D 9/00
U.S. Cl. 123—399 5 Claims



1. An intake air flow control system for an internal combustion engine of a motor vehicle, comprising:

accelerator pedal sensor means (8) for detecting an actuation level of an accelerator pedal;

throttle actuator means (3) for controlling an opening degree of a throttle valve (2) in dependence on the detected actuation level of said accelerator pedal;

a bypass intake passage (12) bypassing an intake pipe (14) of said engine at a location where said throttle valve is disposed;

bypass control valve means (13*a*) installed in said bypass intake passage;

abnormality detecting means for detecting an abnormality occurring in the control performed by said throttle actuator means when the throttle valve is in a fully closed state; and

means (10, 13*b*) for controlling the opening degree of said bypass control valve in dependence on the detected actuation level of said accelerator pedal in response to a detection of abnormality in the control performed by said throttle actuator means,

wherein said abnormality detecting means detects an abnormality based on a difference in magnitude between the actuation level of said accelerator pedal and a real opening degree of said throttle valve, in comparison with a predetermined value.

5,343,841

INTAKE CONTROL DEVICE OF INTERNAL COMBUSTION ENGINE

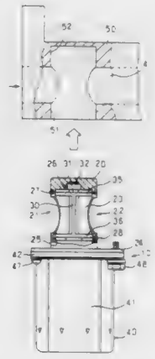
Isao Hattori, Gifu; Yurio Nomura, Nagoya; Shigeo Nomura, Toyohashi, and Tokio Kohama, Nishio, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

PCT No. PCT/JP92/00553, § 371 Date Mar. 1, 1993, § 102(e) Date Mar. 1, 1993, PCT Pub. No. WO92/19853, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 27, 1992, Ser. No. 934,649
Claims priority, application Japan, May 8, 1991, 3-102696
Int. Cl.[5] F02D 33/02, 9/16
U.S. Cl. 123—403 41 Claims

1. An intake control device of an internal combustion engine including an intake control valve mounted in an intake air passage of said internal combustion engine and driven in timed relation with rotation of said internal combustion engine to open and close said intake air passage, and an intake manifold having said intake air passage formed inside and a mounting bore communicating with the upstream and downstream sides of said intake air passage, said intake control valve comprising:

a case inserted in said mounting bore and having an inlet and an outlet communicating with said upstream and downstream sides of said intake air passage in said mounting bore and having an opening-closing passage connecting said inlet to said outlet;

a valve body rotatably mounted in said case and opening and closing said opening-closing passage; and



driving means for rotating said valve body,

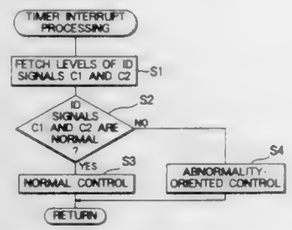
said intake control valve being driven in timed relation with the operation of an intake valve mounted at the inlet of a combustion chamber of said internal combustion engine, controlling, by each intake stroke, the amount of intake air being supplied into said combustion chamber of said internal combustion engine.

5,343,842

CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Wataru Fukui, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1993, Ser. No. 76,141
Claims priority, application Japan, Jun. 17, 1992, 4-157654; Jun. 19, 1992, 4-161200
Int. Cl.[5] F02P 5/00, 3/12
U.S. Cl. 123—414 12 Claims



1. A control apparatus for controlling operation of an internal combustion engine, comprising:

a plurality of individual cylinder identification signal generating means for generating cylinder identification signals each different from the other in synchronism with rotation of said engine; and

control means for controlling said engine on the basis of said individual cylinder identification signals;

wherein each of said cylinder identification signals comprises a plurality of different types of pulses corresponding to each of said engine cylinders, respectively;

said plurality of different types of pulses including:

a first type pulse having a first pulse duration corresponding to a reference position for each of said cylinders; and

a second type pulse having a second pulse duration shorter than said first pulse width and bearing no relation to said reference position;

wherein said control means includes:

an internal reference position signal generating means for generating a reference position signal corresponding to said reference position on the basis of a logical product of said individual cylinder identification signals;

determining means for determining whether said individual cylinder identification signals are within normal expected criteria; and

back-up means for controlling said engine on the basis of other cylinder identification signal(s) when one of said cylinder identification signals is determined to be abnormal.

5,343,843

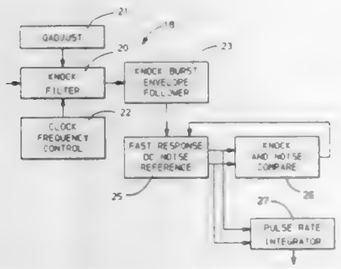
KNOCK CONTROL FOR HIGH SPEED ENGINE INCLUDING A KNOCK BURST ENVELOPE FOLLOWER

Glen C. Hamren, Greentown, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed May 24, 1993, Ser. No. 66,295

Int. Cl.[5] F02P *5/14*

U.S. Cl. 123—425 **11 Claims**



1. An ignition system for a vehicle engine of the type which may exhibit bursts of knock induced engine vibrations at a knock frequency, the apparatus comprising, in combination:

knock sensor means responsive to the knock induced engine vibrations for generating a rectified knock sensor signal having peaks in accordance with the knock induced engine vibrations;

trigger apparatus responsive to each consecutive peak of the rectified knock sensor signal at the knock frequency for generating a trigger signal;

sample and hold apparatus responsive to each consecutive trigger signal to sample and hold each successive peak amplitude of the rectified knock sensor signal and thereby generate a knock burst envelope signal in which knock burst envelopes correspond in amplitude and duration to knock vibration bursts in the knock sensor signal without phase shift induced delays; and

output circuit means responsive to the amplitude and duration of the knock burst envelopes in the knock burst envelope signal for deriving ignition timing for the engine, whereby knock control is enabled at high engine speed.

5,343,844

APPARATUS AND METHOD FOR DETECTING MISFIRING IN AN INTERNAL COMBUSTION ENGINE

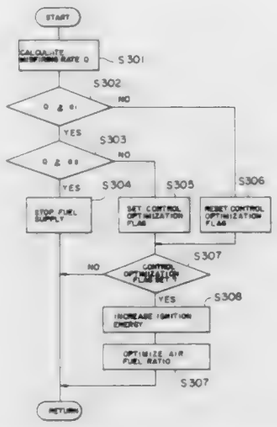
Wataru Fukui; Toshio Iwata, and Toshio Ohsawa, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1991, Ser. No. 718,129

Claims priority, application Japan, Jun. 25, 1990, 2-164185; Jun. 25, 1990, 2-164186; Jun. 25, 1990, 2-164187

Int. Cl.[5] F02P *17/00;* **F02D** *41/22*

U.S. Cl. 123—481 **13 Claims**



1. A method for detecting misfiring in an internal combustion engine comprising the steps of:

generating a misfiring signal representative of misfiring in a cylinder;

comparing the misfiring signal with a threshold so as to determine whether the misfiring signal is equal to or less than the threshold;

incrementing a misfiring counter if the misfiring signal is equal to or less than the threshold;

resetting the misfiring counter if the misfiring signal is greater than the threshold; and

determining that there is misfiring in the cylinder when the misfiring counter reaches a prescribed number,

further comprising the steps of:

detecting an engine operating condition; and

modifying the prescribed number based on the detected engine operating condition.

5,343,845

FUEL INJECTION PUMP FOR INTERNAL-COMBUSTION ENGINES

Wolfang Fehlmann, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00341, § 371 Date Nov. 3, 1992, § 102(e) Date Nov. 3, 1992, PCT Pub. No. WO91/18200, PCT Pub. Date Nov. 28, 1991

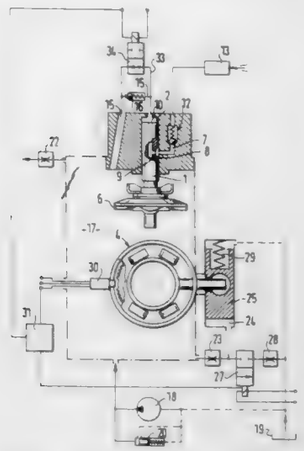
PCT Filed Apr. 25, 1991, Ser. No. 946,485

Claims priority, application Fed. Rep. of Germany, May 21, 1990, 4016309

Int. Cl.[5] F02M *37/04*

U.S. Cl. 123—506 **8 Claims**

1. A fuel injection pump for internal combustion engines, comprising a pump cylinder; a pump plunger enclosing a pump work space and reciprocating in said pump cylinder; a fuel injection valve; a fuel injection line connectable with said pump work space and leading to said fuel injection valve; a fuel supply; a fuel duct connecting said pump work space with said fuel supply; an electrically actuated valve controlling said fuel duct; a filling duct connecting said pump work space with said fuel supply and containing a non-return valve which opens in the direction of said pump work space, said fuel flowing through said fuel duct when said electrically actuated valve is open in a filling position as well as in an emptying position depending on a pump plunger movement, said filling duct



extending parallel to said electrically actuated valve, said fuel duct having portions which are located upstream and downstream of said electrically actuated valve and are connected with one another.

5,343,846

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

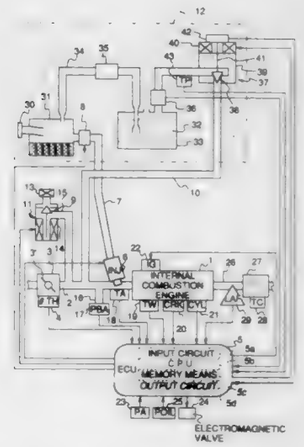
Ken Ogawa, and Yoshikazu Oshima, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1993, Ser. No. 156,070

Claims priority, application Japan, Nov. 26, 1992, 4-339849

Int. Cl.[5] F02M *33/02;* **F02D** *41/04*

U.S. Cl. 123—520 **12 Claims**



1. A control system for an internal combustion engine having an intake passage having an inner wall surface, a fuel tank, at least one fuel injection valve, at least one combustion chamber, and an evaporative emission control system, said evaporative emission control system including a canister for adsorbing evaporative fuel generated from said fuel tank, a purging passage connecting between said intake passage and said canister, a flowmeter arranged in said purging passage for generating an output indicative of a flow rate of a gas containing said evaporative fuel and purged through said purging passage into said intake passage, and a purge control valve for controlling the flow rate of said gas,

the control system comprising:

auxiliary air supply means for supplying auxiliary air to said engine,

operating condition-detecting means for detecting operating conditions of said engine including at least the rotational speed of said engine and load on said engine;

purging flow rate-calculating means for calculating a value of said flow rate of said gas based on results of detection by said operating condition-detecting means;

concentration-calculating means for calculating concentration of evaporative fuel contained in said gas based on a result of calculation by said purging flow rate-calculating means and said output from said flowmeter;

purged gas volume-calculating means for calculating a volume of said gas purged over a predetermined time period, based on said output from said flowmeter;

purged gas dynamic characteristic-determining means for calculating a Datameter indicative of dynamic characteristics of said gas based on a result of detection by said operating condition-detecting means;

purged air amount-calculating means for calculating an amount of air contained in said purged gas drawn into said combustion chamber during the present cycle of operation of said engine, at least based on a result of calculation by said concentration-calculating means, a result of calculation by said purged gas volume-calculating means, and a result of calculation by said purged gas dynamic characteristic-determining means; and

auxiliary air amount control means for controlling an amount of auxiliary air supplied by said auxiliary air supply means depending on a result of calculation by said purged air amount-calculating means.

5,343,847

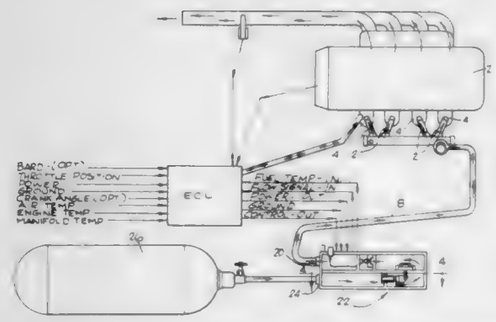
ELECTRONIC GASEOUS FUEL INJECTION SYSTEM

Ronald E. Chasteen; Sean O. Harnett, and Terry L. Cornelison, all of Washington, Mo., assignors to Pacer Industries, Inc., Washington, Mo.

Filed Sep. 13, 1993, Ser. No. 120,286

Int. Cl.[5] F02M *21/04*

U.S. Cl. 123—527 **5 Claims**



1. A gaseous fuel delivery system for an internal combustion engine having at least one cylinder with fuel intake and exhaust gas ports and an ignition system and having a controlled air intake system for each of the cylinders of the engine, comprising;

a source of gaseous fuel in fluid form,

a fuel plenum having at least one fuel atomizer nozzle for each cylinder of the engine, where each nozzle is in communication with the air intake system proximate the intake port in each cylinder,

fuel flow control means connected between the source of gaseous fuel and the fuel plenum, said control means having,

an electrically controlled linearly operating fuel valve for regulating the flow of fuel from the gaseous source to the fuel plenum, and

electronic control means having a plurality of inputs and an output connected to the linearly operating fuel valve.

5,343,848

ELECTRONIC FUEL INJECTOR CONTROL FOR ROTARY VACUUM FUEL CONVERSION DEVICE

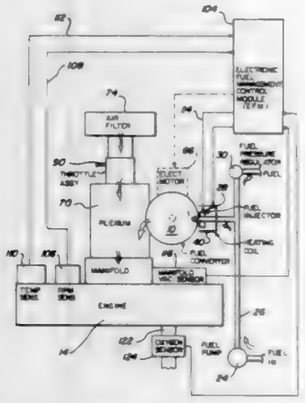
Desmond A. Birch, Golden, and John W. New, Littleton, both of Colo., assignors to MicroFuels, Inc., Englewood, Colo.

Continuation-in-part of Ser. No. 958,006, Oct. 8, 1992, Pat. No. 5,226,400. This application May 3, 1993, Ser. No. 55,294

The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.

Int. Cl.[5] F02M *31/00*

U.S. Cl. 123—557 **11 Claims**



1. A device for converting a combustible liquid fuel from macroscopic droplets into converted fuel in the form of a mixture of microscopic liquid droplets and vaporized fuel and supplying the converted fuel to a combustion chamber, said device comprising:

a vacuum chamber including a cylindrical housing, having a first longitudinal axis, with an inlet in said housing wall and an outlet in said housing wall offset from said inlet;

an eccentrically mounted cylindrical rotor within said housing wall for rotation about a second longitudinal axis offset from said first axis;

at least one radial slot in said rotor; and

a generally rectangular vane slidably received in said slot, said vane being urged outwardly against said housing wall when said rotor is rotated.

5,343,849

RAPID FIRE BALL GUN

Michael Steer, 416 W. Huron, Ann Arbor, Mich. 48103

Filed Aug. 17, 1992, Ser. No. 930,634

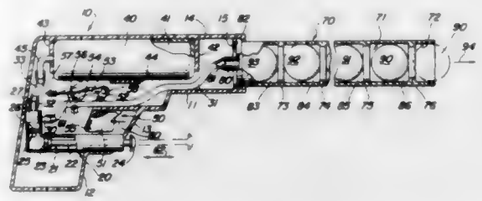
Int. Cl.[5] F41B *11/26, 11/32*

U.S. Cl. 124—72 **10 Claims**

7. A ball gun for shooting a plurality of ball projectiles comprising:

a barrel defining a generally cylindrical ball chamber having first and second ends and a diameter at least as large as said ball projectiles and defining a plurality of generally annular inwardly extending intermediate seal constrictions and a generally annular inwardly extending final seal constriction proximate said second end; and

air pressure means coupled to said first end of said ball chamber for applying air pressure thereto for a selected



time interval to expel one or more ball projectiles outwardly from said second end.

5,343,850

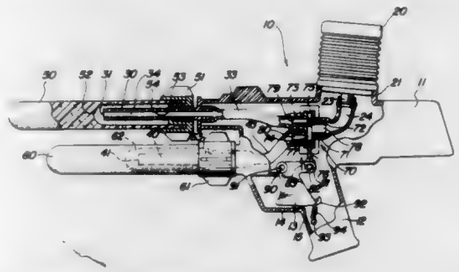
DOUBLE SHOT PROJECTILE LAUNCHER

Michael Steer, 416 W. Huron, Ann Arbor, Mich. 48103

Filed Aug. 17, 1992, Ser. No. 931,085

Int. Cl.[5] F41B *11/24*

U.S. Cl. 124—64 **13 Claims**



13. A projectile launching toy comprising:

a plurality of launcher tubes;

a launcher housing supporting said plurality of launcher tubes in a fixed stationary generally parallel arrangement;

a source of pressurized air; and

a valve selectively coupling said source of pressurized air to selected ones of said launcher tubes.

5,343,851

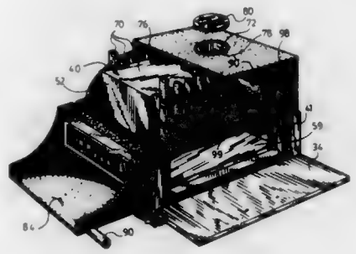
TRANSFORMER HEAT GENERATING ASSEMBLY

Robert Cusson, 41 2° Avenue, Delson, J0H 1G0, Quebec, Canada

Filed Jul. 19, 1993, Ser. No. 92,870

Int. Cl.[5] F24C *15/08*

U.S. Cl. 126—4 **6 Claims**



1. A transformer heating unit defining:

(a) a main self-standing frame, defining a generally box-like enclosure having a bottom tray and a top mouth and air feed means for enabling outside air flow over said tray within said enclosure;

(b) independant, adjustable, heat-generating means, mounted spacedly over said tray, for self-generating heat within said enclosure;

(c) first means, to be combined with said main frame for transforming said heating unit into an indoor space-heating furnace unit, said first means including flue means for discharge of combustion gases generated by said heat generating means at a distance from said heating unit;

(d) second means, to be combined with said main frame for transforming said heating unit into a cooking oven;

(e) third means, to be combined with said main frame for transforming said heating unit into a roaster;

(f) fourth means, to be combined with said main frame for transforming said heating unit into a barbecue grill unit; and

(g) fifth means, to be combined with said main frame for transforming said heating unit into a foodstuff smoking unit;

wherein said first to fifth means are all detachably mounted together into said main frame for transportation or storage.

5,343,852

Patent Not Issued For This Number

5,343,853

SIDE-LOOKING TYPE ELECTRONIC ENDOSCOPE WHICH ALLOWS MANIPULATING TOOL TO BE INSERTED THEREINTO

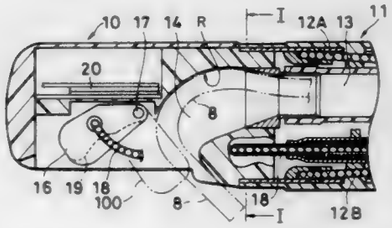
Shuji Komi, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Aug. 25, 1992, Ser. No. 934,260

Claims priority, application Japan, Sep. 20, 1991, 3-084849[U]; Sep. 20, 1991, 3-270222; Sep. 20, 1991, 3-270223

Int. Cl.[5] A61B *1/00*

U.S. Cl. 128—4 **6 Claims**



1. A side-looking endoscope which allows a manipulating tool to be inserted thereinto comprising:

a manipulation tool insertion channel provided in said endoscope; and

a raising table disposed in the vicinity of the exit passage of said manipulation tool insertion channel so as to bend a manipulation tool toward side surface of said endoscope in the state of being engaged with an arcuate groove which is formed in said raising table said arcuate groove comprising an arcuate portion with its bottom line bent so that the curved manipulating tool is guided at its stand position, and a straight portion with its bottom line linear on the end side of said raising table and situated so that the inclination of the straight bottom line is not aligned with and is different from a wall of the exit passage of the manipulating tool insertion channel when said manipulating tool straightened by means of the guide mechanism of said arcuate and straight portions comes into contact with the wall of the exit passage opposed to said arcuate groove.

5,343,854

DEVICE FOR ESTABLISHING COMMUNICATION BETWEEN THE INTERIOR AND EXTERIOR OF ENDOSCOPE

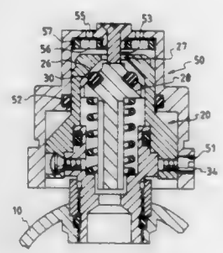
Hiroyuki Katsurada, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1993, Ser. No. 52,672

Claims priority, application Japan, Apr. 28, 1992, 4-108269

Int. Cl.[5] A61B *1/00*

U.S. Cl. 128—4 **7 Claims**



1. A device for establishing communication between the interior and the exterior of an endoscope, in which a communicating adapter is detachably mounted on the outside of a communicating valve of the endoscope, the communicating valve being provided on an outer wall portion of the endoscope and having a valve body which is biased toward a valve seat by a biasing member so as to isolate the interior of the endoscope from the exterior of the endoscope, the communicating valve defining communication channels, which extend between the interior of the endoscope and the exterior of the endoscope, when the valve body is moved away from the valve seat, said device comprising:

a valve opening member extending from an interior surface of said communicating adapter and pressing said valve body against a force of said biasing member, when said communicating adapter is mounted on the communicating valve, to move said valve body away from said valve seat;

at least one porous member positioned on said communicating adapter so as to block said communication channels when said communicating adapter is mounted on the communicating valve, said porous members being permeable to air but not permeable to water.

5,343,855

ENDOSCOPE PIPELINE CONTROLLING APPARATUS AND ENDOSCOPE SYSTEM

Yoshihiro Iida, Tama; Masaaki Nakazawa, Hino; Takahiro Kishi, Yokohama, and Tsugio Okazaki, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 16, 1991, Ser. No. 701,381

Claims priority, application Japan, May 18, 1990, 2-128888

Int. Cl.[5] A61B *1/06*

U.S. Cl. 128—6 **26 Claims**

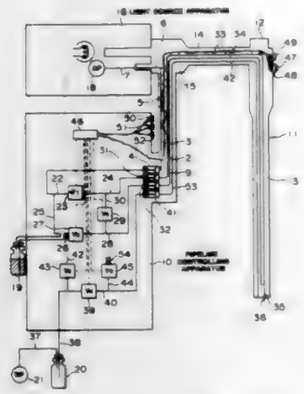
1. A line control apparatus for an endoscope, comprising:

a body separate from said endoscope and having line control means for controlling air feed, and water feed;

a leading line connected to the outside of said body, for communicating said line control means with an air feed pump provided on the outside of said endoscope; and

a single connecting pipeline for communicating and con-

necting said line control means to a plurality of lines provided within the endoscope wherein said connecting



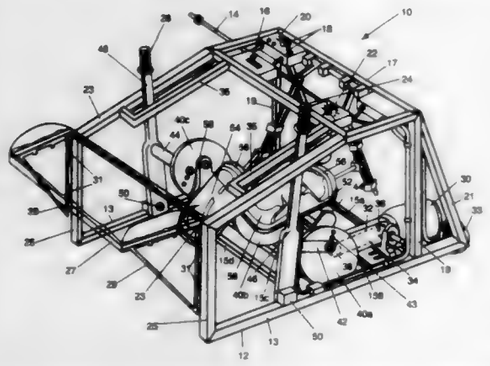
pipeline contains said leading line and said plurality of lines.

5,343,856

COMPLETE BODY PASSIVE EXERCISE MACHINE

Alfred E. Proctor, P.O. Box 183, Beechmont, Ky. 42322

Filed Nov. 18, 1992, Ser. No. 977,666
Int. Cl.[5] A61H *1/02*
U.S. Cl. 601—35 **9 Claims**



9. A device for exercising the feet, arms, legs, hips and torso of a user comprising:

a. a frame;

b. a rotating crank shaft attached to said frame;

c. right and left foot plates, each of said foot plates having an upper side and a lower side, said underside of each of said foot plates slidably and pivotally attached to a cam arm, each of said cam arms attached to said crank shaft whereby rotation of said shaft causes movement of the feet and legs of the user in a generally circular pattern along a vertical plane;

d. means attached to said foot plates for moving said plates in a generally up and down motion in response to said generally circular movement of the feet and the legs of the user, said up and down motion of said plates causing flexing of the feet and ankles of the user comprising limited slide joints pivotally attached to said frame, each of said limited slide joints having an adjustment rod attached to a guide shaft by two brackets which are releasibly and adjustibly attached along adjustment rod, each of said limited slide joint having a spring receiving said guide shaft, each of said limited slide joint attached to one of said foot plates;

e. left and right arm levers operatively connected to said crank shaft whereby rotation of said crank shaft causes opposing forward and rearward movements of the arms of the user when grasping said levers; and

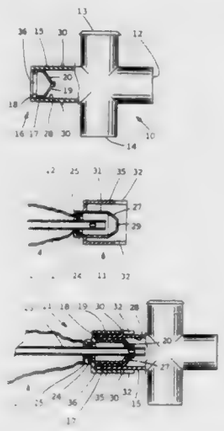
f. means joining said means for moving said plates and said frame for limiting the flexing of the ankles of the user.

5,343,857

RESPIRATORY ACCESSORY ACCESS PORT AND ADAPTOR THEREFORE

James Schneider, and Kok-Hiong Kee, both of St. Louis, Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Continuation of Ser. No. 873,470, Apr. 24, 1992, abandoned. This application Jul. 27, 1993, Ser. No. 98,013
Int. Cl.[5] A61M *16/20*
U.S. Cl. 128—202.27 **9 Claims**



1. A respiration system for use with respiration system accessories, comprising:

a manifold for connecting a patient to a ventilator circuit said manifold including an accessory access port,

an adaptor for attachment to said manifold, said adaptor being formed of a generally hollow tubular member having a proximal end and a distal end, said distal end including a cylindrical central section sized to be received within said accessory port, and

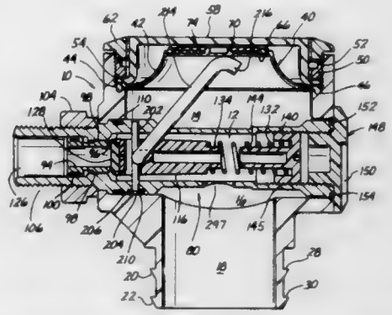
said accessory access port allowing attachment of said adaptor to said manifold, said accessory access port including a normally closed valve formed of a soft elastomeric material which is closed to fluid flow through said accessory access port when said adaptor is not present therein, said adaptor having means for forcing said valve to an open position to allow fluid flow through said accessory access port responsive to said cylindrical central section of said adaptor being positioned completely within said accessory access port, said valve completely surrounding any portion of said cylindrical central section of said adaptor in a sealing manner to seal against fluid flow between said accessory access port and the outside of said cylindrical central section whenever any portion of said cylindrical central section is positioned within said accessory access port.

5,343,858

SECOND STAGE DEMAND BREATHING REGULATOR

Carl Winefordner, El Toro, and Frank Hermansen, Newport Beach, both of Calif., assignors to U.S. Divers Company, Inc., Santa Ana, Calif.

Continuation of Ser. No. 649,909, Feb. 4, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 24,667
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—204.26 **17 Claims**



1. A regulator for demand regulation of air or breathing gas comprising:

a regulator body;

a valve body mounted within said regulator body;

a diaphragm in said regulator body which responds to pressure differentials on either side of said diaphragm;

a breathing gas chamber in communication with said diaphragm and also in communication with at least one exhaust valve;

spring loaded poppet means within said valve body for valving gas into said regulator body; and,

lever means in contact with said diaphragm having a lateral arm portion with an axis of rotation substantially parallel to the lateral arm portion for movement about its axis by said lever movement and in contact with said poppet means distally from said diaphragm, said lateral arm portion being in contact with a fixed operating surface the surface of said lever lateral arm portion contacting said fixed operating surface cooperatively forming an interface between them providing at least a first and second point of contact as it moves through its axis of rotation wherein said lever lateral arm portion provides a greater mechanical advantage of movement when contacting said fixed operating surface at said first point of contact in its initial movement by said diaphragm and a lesser mechanical advantage at said second point of contact after initial movement during inhalation.

5,343,859

PASSENGER OXYGEN MASK HAVING INTERNAL FLOW CONFIRMATION BALLOON

Aksi Kikut, Manhattan Beach, Calif., assignor to Puritan-Bennett Corporation, Overland Park, Kans.

Filed Jun. 17, 1993, Ser. No. 77,604
Int. Cl.[5] A62B *7/00*
U.S. Cl. 128—205.13 **10 Claims**

1. Oxygen dispensing apparatus, comprising:

means defining a relatively large, primary oxygen supply chamber, including an oxygen inlet and an oxygen outlet;

means operably coupled with said oxygen outlet for delivery of oxygen from said primary chamber to a user;

means including an elongated tubular oxygen supply conduit operably coupled with said oxygen inlet; and

means defining a relatively small, apertured, inflatable indicator element positioned within the confines of said primary chamber and operably coupled with said supply conduit for delivery of oxygen from said conduit into said element for inflation thereof, and for flow of such oxygen



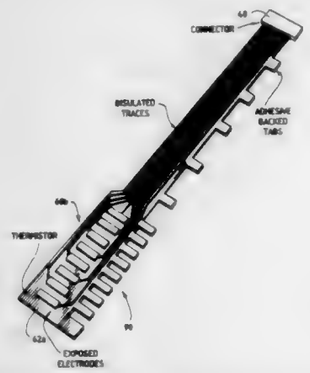
through said element aperture to the interior of said primary chamber.

5,343,860

ESOPHAGEAL RECORDING/PACING CATHETER WITH THERMISTOR AND CARDIAC IMAGING TRANSCEIVER

William T. Metzger, Libertyville; Rimas Buinevicius, Palos Park, and Richard M. Bilof, Wonder Lake, all of Ill., assignors to Arzco Medical Systems, Inc., Vernon Hills, Ill.

Division of Ser. No. 608,200, Nov. 2, 1990, Pat. No. 5,199,433, which is a continuation-in-part of Ser. No. 306,997, Feb. 6, 1989, Pat. No. 5,069,215. This application Nov. 6, 1992, Ser. No. 973,162
Int. Cl.[5] A61B *5/0402, 8/12;* **A61N** *1/05*
U.S. Cl. 128—642 **23 Claims**



1. A disposable esophageal pacing and monitoring member usable with an esophageal cardiac imaging probe comprising:

a flexible, planar sheet member;

a layer of adhesive carried on said sheet member;

a removable protective cover overlying said adhesive layer;

a plurality of spaced apart planar electrodes carried on said sheet member; and

a temperature sensor carried on said sheet member.

5,343,861

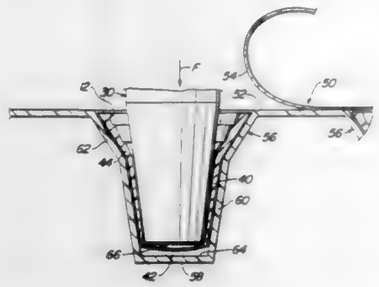
DISPOSABLE TONOMETER COVER WITH FLUORESCEIN DYE

Wesley K. Herman, 5421 La Sierra Dr., Dallas, Tex. 75231

Continuation-in-part of Ser. No. 335,237, Apr. 10, 1989, Pat. No. 5,113,863. This application May 18, 1992, Ser. No. 884,789
Int. Cl.[5] A61B *3/16*
U.S. Cl. 128—652 **20 Claims**

1. A disposable cover for use with a tip of applanation tonometry equipment for contacting an eye, said cover comprising: a body of flexible, optically transparent material for re-

movably mounting on the tip, said body having a mounting portion comprising means for recovering said tip and a circular transparent portion, attached to said mounting portions said



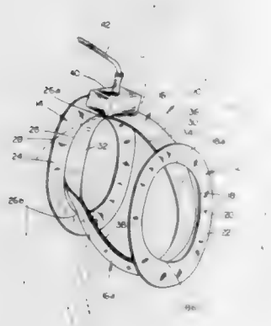
circular transparent portion having an effective amount of a photoactive material therein for enhancing the view of an image therethrough.

5,343,862

NMR SHOULDER COIL

Randall W. Jones, Elkhorn, Nebr., assignor to Board of Regents of the Univ. of Nebraska, Lincoln, Nebr.

Filed Aug. 10, 1993, Ser. No. 105,455
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.5 6 Claims



1. A shoulder coil, comprising:

a generally annular anterior housing supporting a first antenna loop;

a generally ring-shaped transverse housing oriented in a vertical plane and mounted to said anterior housing to support the anterior housing in a slightly off-vertical plane, said transverse housing supporting a solenoid therein; and

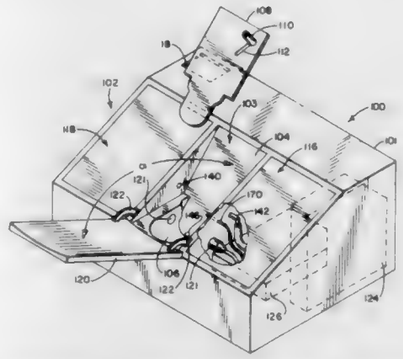
a generally annular posterior housing supporting a second antenna loop, mounted on said transverse housing diametric to said anterior housing in a slightly off-vertical plane.

5,343,863

ULTRASONIC DENSITOMETER DEVICE AND METHOD

Scott A. Wiener, Mount Horeb, and James G. Deluhery, Madison, both of Wis., assignors to Lunar Corporation, Madison, Wis.

Continuation-in-part of Ser. No. 772,982, Oct. 7, 1991, Pat. No. 5,119,820, which is a continuation-in-part of Ser. No. 343,170, Apr. 25, 1989, Pat. No. 5,054,490, which is a continuation-in-part of Ser. No. 193,295, May 11, 1988, Pat. No. 4,930,511. This application Jun. 8, 1992, Ser. No. 895,494
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.01 11 Claims



1. An apparatus for measuring the physical properties and integrity of a human heel in vivo comprising:

a receptacle having a generally planar bottom surface for supporting a sole of a foot of the heel and containing a liquid coupling medium,

an ultrasonic transmit/receive assembly positioned with respect to the receptacle so that ultrasonic waves may be propagated through the heel; and

a foot guide having a peg extending upward with respect to the planar bottom surface and located with respect to the ultrasonic transmit/receive assembly to engage at least two toes of the foot.

5,343,864

ULTRASONIC DIAGNOSTIC APPARATUS

Yuichi Sugiyama, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 5, 1993, Ser. No. 26,784
Claims priority, application Japan, Mar. 19, 1992, 4-063768
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—661.01 21 Claims

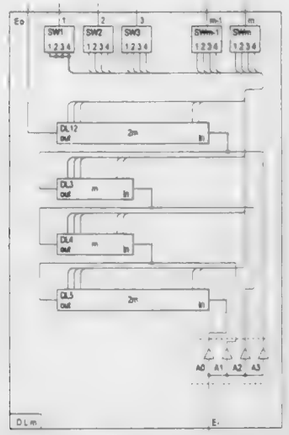
1. An ultrasonic diagnostic apparatus for use with a subject, comprising:

an ultrasonic probe including a plurality of ultrasonic transducers arranged in a predetermined arrangement, for generating and transmitting ultrasonic waves into the subject, receiving the ultrasonic waves reflected in the subject, and generating signals from respective ultrasonic transducers, based on the reflected ultrasonic waves;

a delay control circuit coupled to said ultrasonic probe, for performing at least one of delay time control and phase control on the signals, to generate a display of the subject, said delay control circuit including

a delay line including a predetermined number of delay control blocks coupled in series using at least one of external input and external output terminals of each of the delay control blocks, the delay control blocks including sub-delay line circuits with at least one of internal input and internal output terminals coupling the sub-delay line circuits in series, each sub-delay line circuit including a plurality of series-coupled delay elements and a plurality of delay taps coupled to respective points between or at

first and second ends of the series-coupled delay elements, the first and second ends being coupled to the internal input and internal output terminals, respectively, and each of the delay elements providing a predetermined unit amount of delay, and



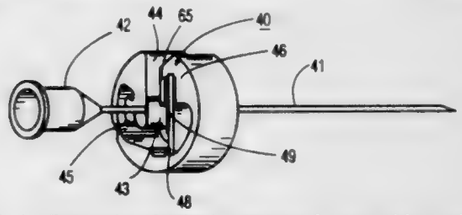
a plurality of matrix switches coupled to the delay taps and to receive the signals, to select a group of cyclically adjacent delay taps, said group being determined based on a frequency of said ultrasonic probe, to delay said signals by respective predetermined amounts of delay based on the group selected.

5,343,865

APPARATUS AND METHOD FOR LOCATING AN INTERVENTIONAL MEDICAL DEVICE WITH A ULTRASOUND COLOR IMAGING SYSTEM

Bayard Gardineer, Skillman, and David Vilkomerson, Princeton, both of N.J., assignors to Echocath, Monmouth Junction, N.J.

Division of Ser. No. 22,112, Feb. 25, 1993. This application Jan. 11, 1994, Ser. No. 180,126
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—662.05 8 Claims



1. A vibrator (mechanism) apparatus for use with an ultrasound imaging system including signal processing means for detecting motion and including display means for displaying a structural image of an interior region of a body in which said motion is represented, said vibrator adapted to be positioned on an interventional medical device employed by a user of said imaging system to place and move said device within the interior of said body for observing areas of said interior, comprising:

a annular vibrator member having a peripheral slot, with one side of said slot contiguous with a depending arm extending towards an inner surface of said member and having a larger mass at the end of said arm closest to said surface to form a pendulum like structure, with said other end of said slot contiguous with a vibratable wall which when vibrated causes vibrations to couple to said depending arm to cause said arm to vibrate about at least one of the axis, which vibrations are capable of propagating flexural waves, and

means positioned on said depending arm adapted to accommodate said medical interventional device to cause said device when coupled to said vibrator member to exhibit flexural wave motions, whereby said motion can be detected by said ultrasound imaging system transducer means coupled to said wall to vibrate said wall at a given frequency to cause said depending arm to vibrate at at least one frequency.

5,343,866

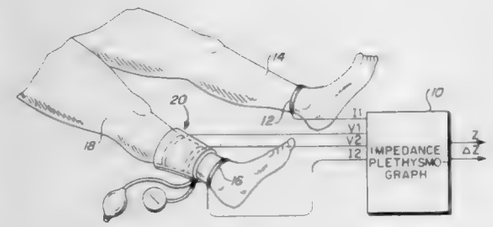
Patent Not Issued For This Number

5,343,867

METHOD AND APPARATUS FOR DETECTING THE ONSET AND RELATIVE DEGREE OF ATHEROSCLEROSIS IN HUMANS

Ravi Shankar, Boca Raton, Fla., assignor to Florida Atlantic University Research Corp., Boca Raton, Fla.

Continuation of Ser. No. 9,340, Jan. 26, 1993, Pat. No. 5,241,963, which is a continuation of Ser. No. 715,106, Jun. 12, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 90,800
The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—668 23 Claims



1. An apparatus for detecting the onset of atherosclerosis comprising:

means for changing blood flow through an artery with the application of differing amounts of induced pressure thereat;

means for sensing an arterial blood volume differential while said artery is placed under said differing amounts of induced pressure and generating a representative signal;

means for determining whether a function of said volume differential representative signal at said differing amounts of induced pressure defines a waveform peak; and,

means, coupled to said means for determining, for generating an atherosclerosis indicator signal in the absence of said waveform peak.

5,343,868

METHOD AND APPARATUS FOR DETECTING ARTIFACTS IN A BLOOD PRESSURE MEASURING SYSTEM

Regina Kurscheidt, Solingen; Martin Felger, Tuebingen, both of Fed. Rep. of Germany, and Michael P. Beech, Bristol, United Kingdom, assignors to Hewlett-Packard Company, Palo Alto, Calif.

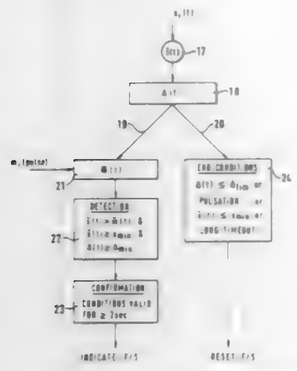
Filed Mar. 26, 1993, Ser. No. 38,672
Claims priority, application European Pat. Off., Apr. 2, 1992, 92105665.1
Int. Cl.[5] A61B *5/0215*
U.S. Cl. 128—673 19 Claims

1. A method for detecting artificial artifacts in a blood pressure measuring system comprising the steps of:

obtaining a time sequence of samples representative of the actual blood pressure of a being,

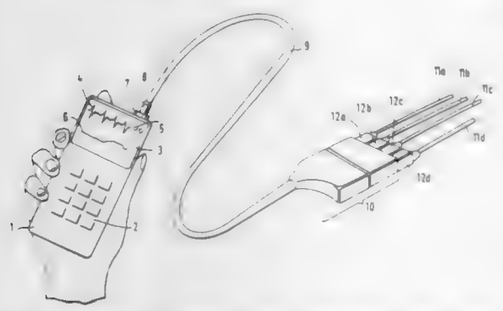
calculating a short-term mean value based on preceding values of the blood pressure,

comparing at least one of said samples of said time sequence with said mean value,
repeating said step of comparing for a period of time,



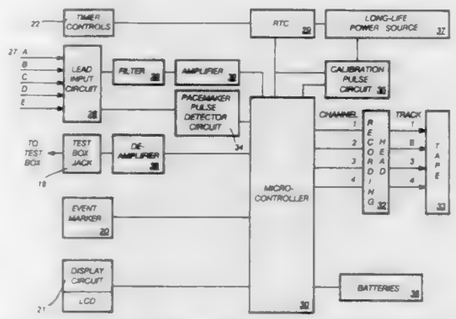
indicating an artificial artifact if substantially all of said comparisons reveal that the samples exceed said mean value, and
inhibiting said indicating step if pulsations is detected.

5,343,869
METHOD AND SYSTEM FOR MONITORING VITAL SIGNS
Gerhard Pross, Weil im Schoenbuch, and Malte Schlueter, Boeblingen, both of Fed. Rep. of Germany, assignors to Hewlett Packard Company, Palo Alto, Calif.
Filed Jan. 7, 1993, Ser. No. 1,183
Claims priority, application European Pat. Off., Jan. 29, 1992, 92101398.3
Int. Cl.[5] A61B *5/0404*
U.S. Cl. 128—700 **17 Claims**



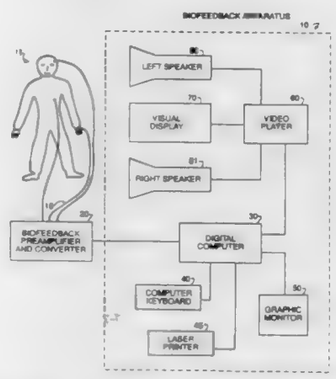
1. A method for retrieving and/or monitoring vital signs of a patient, wherein n≧2 sensors comprising electrocardiogram electrodes, a temperature sensor and/or a cuff for measuring non-invasive blood pressure, are connected to connection means and are applied to a patient, comprising the steps of:
connecting at least 2 of said connection means to a combining means;
linking said combining means to a portable, hand held electronic data acquisition unit via m releaseable connector(s), m<n both m and n being integers, said releasable connector(s) directly connected to said data acquisition unit by cable(s);
retrieving vital signs information from at least one of said n sensors and transmitting said vital signs information via said combining means and releasable connector(s), to said electronic data acquisition unit; and
displaying said vital signs information on a display contained in said portable electronic data acquisition unit.

5,343,870
RECORDER UNIT FOR AMBULATORY ECG MONITORING SYSTEM
Stuart L. Gallant, Owings Mills; Paul R. Caron, Laurel; Walter E. Palmer, Catonsville, all of Md., and David J. Lubocki, Bellevue, Wash., assignors to Quinton Instrument Company, Seattle, Wash.
Filed Nov. 12, 1991, Ser. No. 790,035
Int. Cl.[5] A66B *5/04*
U.S. Cl. 128—711 **63 Claims**



1. A recorder for recording information onto a tape, at least a portion of the information including data related to analog ECG signals, said recorder comprising:
means for receiving the information, and
means for recording at least a portion of the information onto the tape in a reverse format.

5,343,871
METHOD AND APPARATUS FOR BIOFEEDBACK
Barry B. Bittman, Meadville, Pa., and Jeffrey R. Cram, Nevada City, Calif., assignors to Mindscope Incorporated, Meadville, Pa.
Filed Mar. 13, 1992, Ser. No. 850,673
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—732 **20 Claims**
MICROFICHE APPENDIX INCLUDED
(2 Microfiche, 111 Pages)



1. An apparatus for mediating a biofeedback session with a subject, at least one of whose electrophysiological parameters is being measured, comprising:
a) means for receiving signals indicative of the measurements of the parameters;
b) audio-visual storage means capable of recalling in any order audio-visual sequences of acoustically and visually degraded versions of a scene, said sequences being prestored in said storage means;

c) control means for receiving said signals and controlling an order of recall of said sequences based on said signals; and
d) audio-visual output means whereby the subject is able to view and hear said sequences.

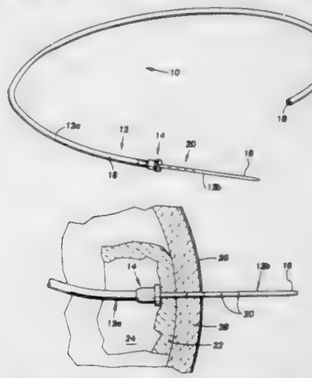
5,343,872

Patent Not Issued For This Number

5,343,873

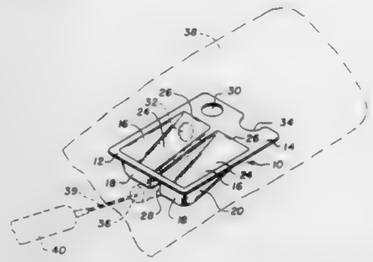
Patent Not Issued For This Number

5,343,874
TRACT MEASURING DEVICE
George J. Picha, Independence; Dean J. Secrest, Concord, and Angela P. Nguyen, Sagamore Hills, all of Ohio, assignors to Applied Medical Technology, Inc., Independence, Ohio
Continuation of Ser. No. 767,124, Sep. 27, 1991, abandoned. This application May 18, 1993, Ser. No. 63,118
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—780 **18 Claims**



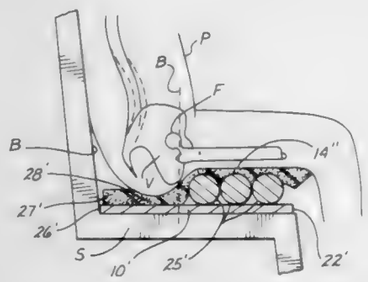
1. A device for measuring an incised tract or passage extending between an outer surface of a living body and an inner wall of an internal body cavity, said device comprising:
an elongated tubular member comprising a relatively reduced diameter portion and an elongated relatively enlarged diameter portion, said enlarged diameter portion being larger than said reduced diameter portion, said portions cooperating to define a lengthwise extending bore, said reduced diameter portion having visible scale indicia along at least a portion of its length, a proximal end of the reduced diameter portion being received by and attached to a distal end of the enlarged diameter portion, a distal end of the reduced diameter portion and a proximal end of the enlarged diameter portion having openings therethrough in communication with the bore; and
a stop member, said stop member interconnecting the enlarged and reduced diameter portions and providing a stop surface which defines a reference point for said visible scale indicia, said visible scale indicia being located between a distal end of said reduced diameter portion and said stop member, said stop member being of fixed dimensions to preclude its passage through said incised tract, wherein said device, when located in said body cavity, is adapted to be manipulated so as to insert the distal end of the reduced diameter portion into and through said incised tract to a position wherein said scale indicia is visible from outside said body when the stop surface provided by the stop member engages and is positioned against said inner wall, said scale indicia being readable from outside said body so as to determine the length of said incised tract.

5,343,875
PROTECTIVE DEVICE
Marjorie L. Chase, Delta, Canada, assignor to Superior Diapering Products Ltd., Delta, Canada
Filed Sep. 28, 1992, Ser. No. 952,397
Int. Cl.[5] A61G *15/00;* **A61M** *5/00;* **A61F** *5/37*
U.S. Cl. 128—846 **7 Claims**



1. A protective device to protect against needle stick injuries in health care comprising:
a base;
a pair of troughs in the base to receive and protect the fingers, where the bottom of said pair of troughs is located in a plane different from that of the base, and
each trough has an inner side wall and an opposed outer side wall; where the opposing inner side walls of the troughs are connected at the top of the trough, defining a retaining passage between the troughs and a grip for the fingers on the surface remote from the retaining passage.

5,343,876
MODULAR PAD
John E. Rogers, P.O. Box 1437, Blue Jay, Calif. 92317
Continuation-in-part of Ser. No. 324,442, Mar. 16, 1989, abandoned. This application Oct. 15, 1991, Ser. No. 775,832
Int. Cl.[5] A61F *5/00*
U.S. Cl. 128—870 **7 Claims**



1. In a patient support system comprising a seat having a seating surface between a back and a front edge including a substantially upright back rest the improvement comprising:
a planar base having top and bottom surfaces between a forward end and a rear end and two side edges, said base being sized such that said forward end and said rear end lie between the back and the forward edge of said seating surface; and
support means mounted on said upper surface, said support means defining a support plane elevated above said top surface and extending from said forward end to a termination approximately halfway between said forward and rear ends to define a rear area of said base devoid of said support means, said termination characterized by a substantially steep transition from said support plane to said upper surface, so as to support the thighs of said patient while seated on said seat above said upper surface of said

base board while the buttocks are supported directly on said rear area of said base, whereby the user's pelvis is tilted in one direction with attendant correction in spinal column posture,

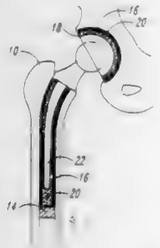
said base being reversible on the seat for positioning said support means under the buttocks of the user while the knees are unsupported by said support means at the forward edge of the seat whereby the user's pelvis is tilted in an opposite direction with a corresponding correction in spinal column posture.

5,343,877

ORTHOPEDIC IMPLANT AND METHOD

Joon B. Park, Coralville, Iowa, assignor to University of Iowa Research Foundation, Oakdale, Iowa

Filed Sep. 9, 1992, Ser. No. 942,515
Int. Cl.[5] A61B *19/00;* **A61F** *2/32, 2/30, 2/28*
U.S. Cl. 128—898 **12 Claims**



1. In the process of orthopedic implantation of a prosthetic device in a prepared bed of a bone cavity having a surface readied to receive a prosthesis to be fixed in to said bone cavity by a bone cement composition, the improvement comprising:

forming a pre-coat on substantially all of the surface of the prepared bed of said bone cavity with a mixture of bone cement composition and resorbable particles to form a resorbable particle layer; and wherein said pre-coat has a predetermined thickness; and thereafter,

inserting within the pre-coated bed a substantially pure bone cement composition thereby forming a fully prepared bone cement composition bed; and thereafter,

positioning the prosthesis into the fully prepared bone cement composition bed.

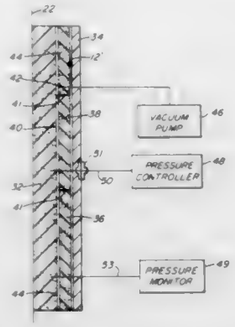
5,343,878

PRESSURE APPLICATION METHOD

Eugene N. Scarberry, Trafford; Patrick M. Handke, Monroeville, and Mark H. Sanders, Wexford, all of Pa., assignors to Respironics Inc., Murrysville, Pa.

Division of Ser. No. 895,225, Jun. 8, 1992, Pat. No. 5,222,478. This application Jun. 1, 1993, Ser. No. 69,739
Int. Cl.[5] A61F *5/00*
U.S. Cl. 128—898 **3 Claims**

1. In the medical treatment of sleep apnea syndrome, the method of treatment comprised of applying to frontal portions of a patient's neck a pressure sufficiently less than ambient



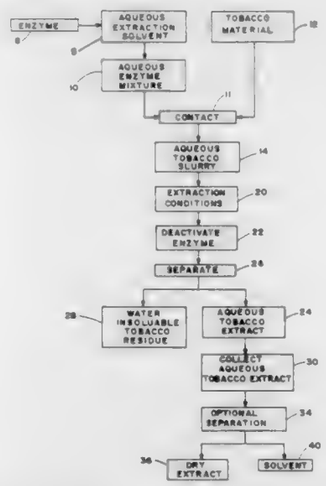
pressure to distend adjacent neck tissue in a manner effective for alleviating obstruction of the patient's airway in sleep.

5,343,879

TOBACCO TREATMENT PROCESS

Richard A. Teague, Pfafftown, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jun. 21, 1991, Ser. No. 721,860
Int. Cl.[5] A24B *15/20, 15/24, 15/26*
U.S. Cl. 131—297 **6 Claims**



1. A process for providing a tobacco extract, the process comprising the steps of:

(a) subjecting a tobacco material to extraction conditions in the presence of an extraction solvent and at least one active enzyme, wherein the extraction conditions comprise maintaining the pH at about 4.0 to about 5.0 and maintaining the temperature at about 40° C. to about 50° C.;

(b) separating solvent and tobacco extract therein from tobacco material not extracted by the solvent; and

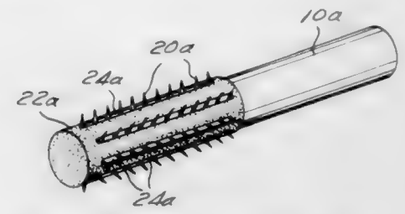
(c) collecting solvent and tobacco extract therein.

5,343,880

FLUID DISPENSING WAND

William D. McKay, 528 Kelso St., Flint, Mich. 48506

Continuation-in-part of Ser. No. 917,854, Jul. 17, 1992. This application Aug. 19, 1992, Ser. No. 932,891
Int. Cl.[5] A45D *24/22*
U.S. Cl. 132—116 **12 Claims**



1. A fluid dispensing wand for applying a fluid to the hair, said fluid dispensing wand comprising:

(a) a reservoir;

(b) a wand member attached to said reservoir, said wand member having fluid delivery means formed therein for providing fluid communication from the reservoir;

(c) pump means for effecting flow of fluid from said reservoir to said fluid delivery means, said pump means comprising:

(i) a squeeze bulb having an air vent formed therein;

(ii) a first check valve in fluid communication with said squeeze bulb and said reservoir for allowing air to flow from said squeeze bulb to said reservoir and not allowing fluid to flow from said reservoir to said squeeze bulb; and

(iii) a second check valve in fluid communication with said reservoir and said fluid delivery means for allowing fluid to flow from said reservoir to said fluid delivery means and not allowing fluid to flow from said fluid delivery means to said reservoir.

5,343,881

HAIR TREATMENT APPARATUS AND METHOD

Zeev Golan; Ruth Golan, both of 9 Yair Stern Street, both of Herzliya; Shlomo Gilboa, and Liora Gilboa, both of Kibbutz Glil Yam, Nr. Herzliya, all of Israel

Continuation-in-part of Ser. No. 443,693, Nov. 30, 1989, Pat. No. 5,078,157. This application Dec. 6, 1991, Ser. No. 802,873
Claims priority, application Israel, Dec. 1, 1988, 88550; Feb. 12, 1989, 89267; Feb. 24, 1989, 89416; Mar. 9, 1989, 89561; Nov. 23, 1989, 92414
The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.
Int. Cl.[5] A45D *24/00*
U.S. Cl. 132—119.1 **17 Claims**

1. A lice comb for treating and systematically delousing hair comprising:

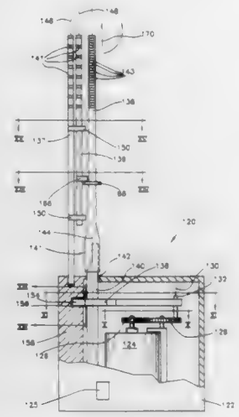
a handle;

hair separation means including:

a single elongate base means associated with said handle; and

a plurality of closely spaced parallel teeth attached to said base means and extending transversely therefrom, each of said parallel teeth having a free end; and

drive means for oscillating said plurality of teeth at a frequency of at least about 4,750 cycles per minute and for limiting a stroke of said free end of each said tooth to a length of no greater than approximately 8 mm, and for bringing said plurality of teeth into repeated engagement with a group of hairs attached to skin, thereby easing passage of said hair separation means through the group of hairs at a level of discomfort tolerable to a user while at the same time striking and pulling any lice and



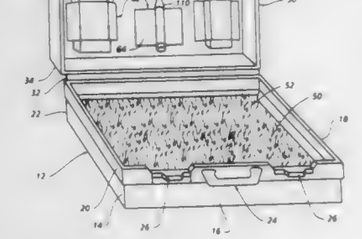
lice eggs from said hair at high speed causing them fatal injury.

5,343,882

FOOT CARE KIT

Sam Iannone, 15 W. Willow St., Beacon, N.Y. 12508

Filed Jun. 7, 1993, Ser. No. 72,098
Int. Cl.[5] A45D *33/26*
U.S. Cl. 132—294 **19 Claims**



1. A foot care kit comprising:

A) a case having a bottom section, a top section, a hinge connecting said top section to said bottom section, said bottom and said top sections each including an inner surface;

B) a carrying handle on said case;

C) lock means on said case for holding said top section to said bottom section;

D) a porous, powder-absorbing mat fixed to said bottom section inner surface, said mat having a top surface and means for releasably holding powder on said top surface for retaining powder dropped on said mat when said case is moved and applying the powder to a user's foot that is placed on said said top surface;

E) a plurality of accessory mounts on said top section inner surface, each of said accessory mounts including a strap;

F) a plurality of foot-care accessories, each mounted in an accessory mount;

means for releasably fixing said accessory mounts to said top section including hook-and-loop fasteners on said top

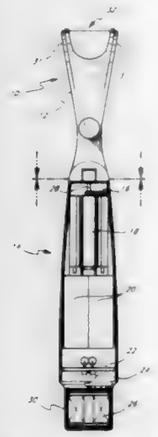
section inner surface and covering a major portion of said top section inner surface and hook-and-loop fastener means on each of said straps whereby said straps can be placed and retained anywhere on said top section in any orientation.

5,343,883

SONIC DENTAL DEVICE AND METHOD

Ronald K. Murayama, 32241 Crown Valley Pkwy., Suite 240, Monarch Beach, Calif. 92629

Filed Dec. 30, 1992, Ser. No. 998,378
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—322 | 28 Claims



1. A device for cleaning teeth comprising
a handle containing a motor which rotates an eccentric counterweight thereby producing vibrational energy in frequencies between 2,000 and 20,000 Hertz, and
a floss-holding member comprising a pair of tines for holding a strand of floss therebetween, the floss-holding member being attached to the handle to allow the vibrational energy produced by the motor to be transmitted to the floss-holding member to cause the floss-holding member to move and thereby the strand of floss to move.

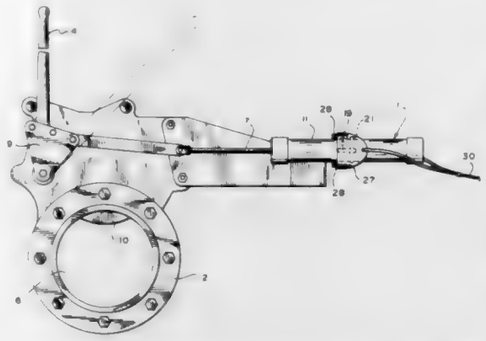
5,343,884

SELF-CLOSING GATE VALVE SYSTEM AND EXTERNAL SELF-CLOSING ACTUATOR MECHANISM THEREFOR

Tom Henderson, 303 E. Kern St., and Wayne Gibbs, 127 Kern St., both of Taft, Calif. 93268

Filed Sep. 2, 1993, Ser. No. 114,847
Int. Cl.[5] F16K *17/38*
U.S. Cl. 137—77 | 17 Claims

1. A self-closing actuator mechanism for gate valve systems having a manually operable hand lever comprising:
(A) an operating rod having means for pivotally connecting it to a hand lever of a gate valve system, said rod being displacable in a first direction corresponding to a valve closing direction of movement of said hand lever and in an opposite, second direction corresponding to a valve opening direction of movement of said hand lever;
(B) spring means for applying a force to said operating rod in said first direction;
(C) securing means for releasably securing said spring means in a stressed readiness condition; and
(D) thermally responsive releasing means for releasing said securing means in response to exposure to a temperature above a predetermined minimum value;
wherein said spring means is operable for moving said operating rod in said first direction into a position corresponding to a valve closed position of said hand lever when released by said securing means; and wherein said operating rod is freely displacable in said first and second directions when said spring means is secured in readiness condition; wherein said spring means comprises a spring and a spring retainer, said spring retainer being mounted with clearance about said operating rod and being engageable against an abutment stop thereon when said spring means is released; wherein said securing means comprises



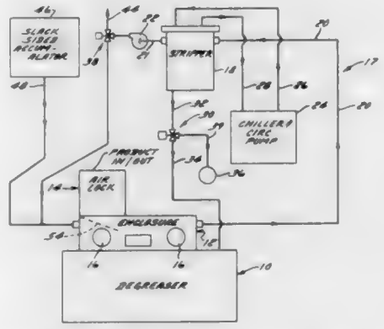
retaining clips, resilient means for applying a force acting to move said retaining clips to a position radially outward of said spring retainer, and releasable retaining means, acting on said thermally responsive means, for displacing said retaining clips against the force of said resilient means radially inwardly into a position blocking movement of said spring retainer for holding the spring means in its readiness condition.

5,343,885

VACUUM AIR LOCK FOR A CLOSED PERIMETER SOLVENT CONSERVATION SYSTEM

David C. H. Grant, Selbyville, Del., assignor to Baxter International Inc., Deerfield, Ill.

Filed Mar. 4, 1992, Ser. No. 845,689
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—105 26 Claims



8. A solvent conservation system for use with a cleaning device wherein articles are treated with a solvent, comprising:
an enclosure configured to cover an access opening of the cleaning device and prevent escape of solvent vapor therefrom;
an enclosed air lock having an internal air lock chamber and at least one opening that permits loading and unloading of the chamber with an article;
a door that seals the access opening of the enclosure when closed, and permits loading and unloading of the enclosure when open, the air lock then being closed to the outside;

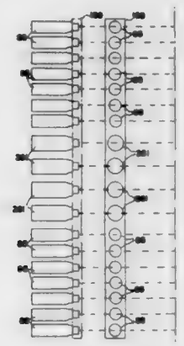
a vacuum pump system that evacuates air from the air lock chamber when an article has been loaded therein from outside the system, and that evacuates solvent vapor from the air lock chamber when a treated article has been loaded therein from the enclosure;
means for sealing the air lock chamber when the door is closed so that a vacuum is created in the air lock chamber during operation of the vacuum pump; and
a solvent recovery system that condenses solvent vapor evacuated from the air lock chamber.

5,343,886

BOTTLE WASHER WITH MULTIPLE SIZE CARRIER

Frank Beswick, Phoenixville, Pa., assignor to The West Company, Incorporated, Lionville, Pa.

Division of Ser. No. 798,500, Nov. 26, 1991, Pat. No. 5,235,996, which is a continuation of Ser. No. 518,757, May 2, 1990, Pat. No. 5,135,014. This application Aug. 20, 1992, Ser. No. 932,781
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—131 4 Claims



1. An apparatus for washing bottles comprising a washer housing having an inlet and a discharge end;
means for transferring bottles through the washer housing including a plurality of bottle holders arranged in at least two sets of different fixed configurations, one set of bottle holders for like-sized bottles of a predetermined first size and the other set of bottle holders for like-sized bottles of a second size different than said first size;
means for intermittently actuating the bottle holders to deliver bottles received at the inlet end to the discharge end; and
means for selectively feeding the different sized bottles to the different sets of fixed bottle holders, respectively.

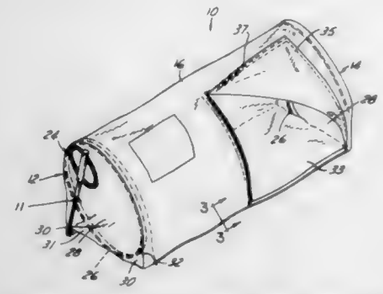
5,343,887

SELF-ERECTING PORTABLE FABRIC STRUCTURE

Thomas C. Danaher, 484 W. 43rd St., Apt. No. 42-S, New York, N.Y. 10036

Filed Jan. 11, 1993, Ser. No. 2,588
Int. Cl.[5] E04H *15/40*
U.S. Cl. 135—104 38 Claims

1. An elongated portable structure for use as a tent or the like, said structure having an end panel at each end thereof, each said end panel comprising an annular hoop of flexible, resilient, strip material, a sheet of substantially non-stretchable, flexible fabric in the space within each hoop and marginally secured to said hoop to maintain said sheet of fabric taut and to resist collapse or distortion of said hoop, means for holding said end panels in longitudinally spaced, generally upright positions, a flexible fabric cover extending between and cooperating with said end panels to provide shelter for a person or persons occupying the structure, and means providing an entry



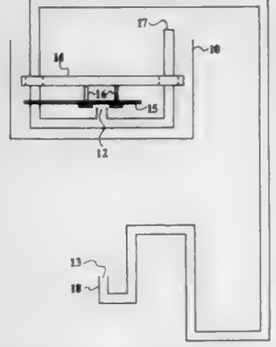
to said structure, at least one of said hoops being capable of being twisted into a flat coil of reduced diameter for storage.

5,343,888

AUTOMATIC SYPHON SYSTEM

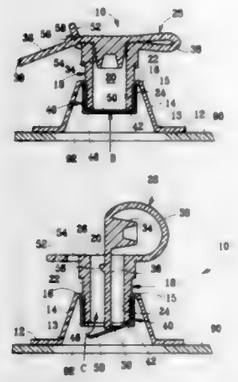
Ceil Stelzer, 606 S. Front St., Philadelphia, Pa. 19147

Filed Mar. 26, 1993, Ser. No. 37,556
Int. Cl.[5] F04F *10/00*
U.S. Cl. 137—135 3 Claims



1. A level activated syphon system, which syphons liquid which accumulates at a first higher elevation to a second lower elevation, comprising: a liquid conduit having an inlet end and an outlet end, said inlet end having a valve assembly at the first higher elevation, said outlet end having a water seal assembly at the second lower elevation; a liquid level sensing means at the first higher elevation which closes said valve assembly when the liquid level is lowered to a predetermined point which will not allow air to enter said liquid conduit and displace liquid already contained within said liquid conduit between said inlet and said outlet end, and said liquid level sensing means which opens said value assembly when the liquid level is raised to a predetermined point, which opening of said valve assembly restarts the syphon action from the first higher elevation to the second lower elevation; said water seal assembly which allows liquid to flow from said outlet end when said valve assembly is opened and prevents liquid from flowing from said outlet end when said valve assembly is closed; an air tight seal at the end of the conduit which forms a pocket of air in the conduit beyond the inlet to allow for expansion and contraction of the liquid such as when the liquid freezes and thaws.

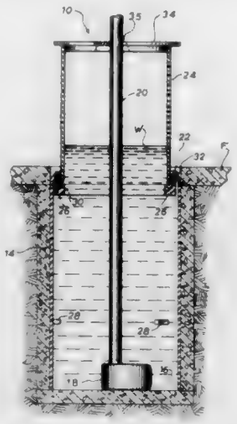
5,343,889
NOZZLE FQR INFLATABLE OBJECTS
Horng-Chang Jaw, 6th Floor, No. 21, Alley 29, Lane 372, Chung-Hsiao E. Road Section 5, Taipei, Taiwan
Filed Sep. 21, 1992, Ser. No. 947,486
Int. Cl.[5] F16K *15/18, 15/20*
U.S. Cl. 137—232 **3 Claims**



1. A nozzle for an inflatable object, comprising:
a tubular body (**18**) forming an air passage, said tubular body having an inner end presented to the space circumscribed by the inflatable object, and an outer end facing away from the inflatable object; means for mounting said tubular body on the inflatable object, comprising an annular diaphragm (**14** hingedly connected to said tubular body at a point approximately - midway between inner and outer ends of said tubular body, whereby the tubular body can be pushed into the inflatable object or pulled out of the inflatable object;
a sealing element formed separately from said tubular body, said sealing element comprising a mounting sleeve, and a flap-like membrane hingedly joined to said mounting sleeve for sealing engagement against the inner end of said tubular body; said mounting sleeve having a telescopic fit on the tubular body, and said membrane having a normal position extending transversely across the mounting sleeve;
an elongated flexible arm (**28**) hingedly connected to said tubular body near its outer end; and a sealing plug (**34**) carried by said arm for sealing engagement with the air passage when said elongated arm is extended transversely across the outer end of said tubular body;
said elongated arm being insertable into the air passage to push said membrane away from the inner end of said tubular body, whereby pressurized air can then flow out of the inflatable object through said air passage.

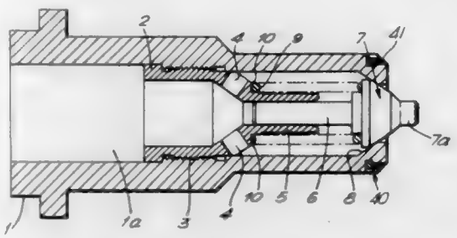
5,343,890
SUMP PROTECTOR
Todd D. Deutch, 9420 N. Broadmoor Rd., Bayside, Wis. 53217
Filed Jul. 28, 1993, Ser. No. 98,434
Int. Cl.[5] B65D *25/00*
U.S. Cl. 137—363 **10 Claims**

1. An overflow protector for a sump having a wall defining an open top reservoir comprising:
a stop member forming an abutment along the wall of said reservoir;
a floating sleeve member movable between a retracted position contained within said reservoir and an extended position projecting from said reservoir for increasing the storage capacity of said reservoir;
sealing means for sealing the sleeve member against said abutment when said sleeve member moves to its extended position; and
the bottom of said floating sleeve member is provided with a rubber seal matingly engageable with said stop member



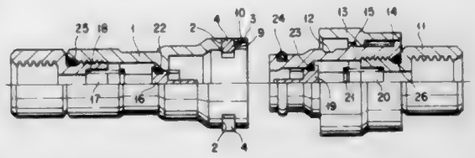
when said floating sleeve member is movable to the extended position.

5,343,891
FLUID COUPLINGS
Kevin J. Bosley, Aberdeen, Scotland, assignor to FSSL Limited, Ellon, Scotland
PCT No. PCT/GB91/01665, § 371 Date Apr. 30, 1993, § 102(e) Date Apr. 30, 1993, PCT Pub. No. WO92/07165, PCT Pub. Date Apr. 30, 1992
PCT Filed Sep. 26, 1991, Ser. No. 987,270
Claims priority, application United Kingdom, Oct. 13, 1990, 9022284.5
Int. Cl.[5] F16L *37/28*
U.S. Cl. 137—614.04 **9 Claims**



1. A fluid coupling comprising a female coupler and a male coupler having peripheral surface portions which resist disengageable self-sealing means for allowing fluid flow between the couplers on the mating thereof, the female coupler having means which accommodates an elastomeric ring for sealing engagement with the periphery of the male coupler, the male coupler having periphoral surface portions which resist displacement of the ring while said surface portions engage said ring during withdrawal of the male coupler from the female coupler and at least one channel or passage which allows fluid to flow past the ring while the said portions are resisting displacement of the ring.

5,343,892
PIPE COUPLING
Shunichi Saito, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 948,640, Sep. 23, 1992, abandoned. This application Jul. 10, 1993, Ser. No. 93,147
Claims priority, application Japan, Jan. 9, 1992, 4-000339[U]
Int. Cl.[5] F16L *37/28*
U.S. Cl. 137—614.04 **6 Claims**

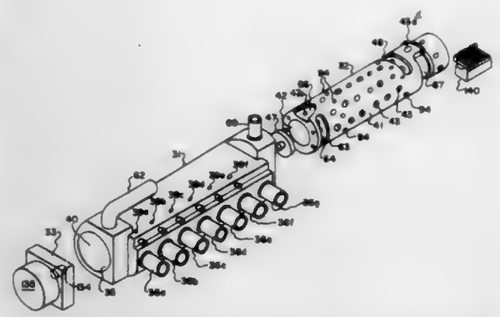


1. A freely-detachable pipe coupling comprising:
a socket having plural slits each formed at a plug-connected front end area of the socket, extending in the circumferential direction of the socket, and also having stopper members each capable of coming into and out of its corresponding slit in the radial direction of the socket;
a plug having a circumferential surface and a circular stopper groove formed therein to elastically stop and hold the plural stopper members therein and also having a portion having an outer diameter substantially equal to the inner diameter of that plug-connected front end of the socket where the slits are formed, said portion of the plug serving to partly project the stopper members outwards from the slits of the socket before the plural stopper members are elastically stopped and held in the stopper groove; and
a sleeve freely slidably fitted on the plug and biased forward to press the stopper members to the axis of the socket, when the plug is pushed into the socket, to thereby elastically stop and hold the stopper members in the stopper groove of the plug;
wherein each of the slits has a guide portion in the inner face of the socket, extending, parallel to the axial line of the socket, from a front side of the slit, and each of the stopper members has a stopper projection movable in the guide portion in the radial direction of the socket.

6. The freely-detachable pipe coupling according to claim **1**, wherein said socket and said plug have valves, and the valves are struck against each other and retreated in the socket and the plug against valvesurging elasticity, when the plug is pushed into the socket, so that fluid passages in the socket and the plug are opened and communicated with each other.

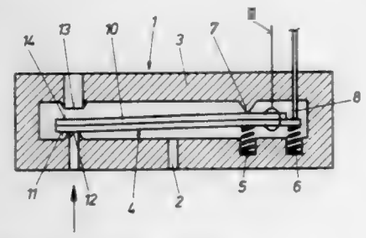
5,343,893
DISTRIBUTION VALVE
James V. Hogan, and Stephen J. Matheson, both of Fort Erie, Canada, assignors to Irvin Industries Canada Ltd., Fort Erie and Namtec Corporation, London, both of Canada
Filed Mar. 12, 1993, Ser. No. 30,634
Int. Cl.[5] F16K *3/26*
U.S. Cl. 137—624.13 **23 Claims**

1. A fluid distribution valve comprising:
a housing, having a chamber therein with a surface containing a plurality of spaced apart ports in fluid communication with outlets from said housing;
a port select element, sized to insert and be rotatably mounted within said chamber of said housing;
said port select element comprising a surface having a plurality of spaced apart ports that are in fluid communication with a manifold chamber within said port select element, said plurality of spaced apart ports of said element being greater than the plurality of ports of said housing in fluid communication with outlets;
wherein a plurality of said ports of said port select element are arranged such that they align with a port of said chamber of the housing at different positions in rotation of said port select element within said chamber of said housing, said manifold chamber of said port select element being in fluid communication with an inlet of a fluid supply pump



means through a port of said port select element which aligns at a position of rotation with a port of said chamber of said housing.

5,343,894
PIEZO VALVE
Herbert Frisch, Vienna, Austria, and Johannes Wirtl, Schongau, Fed. Rep. of Germany, assignors to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna, Austria
Filed Sep. 29, 1992, Ser. No. 953,115
Claims priority, application Austria, Sep. 30, 1991, 1962/91
Int. Cl.[5] F15B *13/044*
U.S. Cl. 137—625.65 **2 Claims**



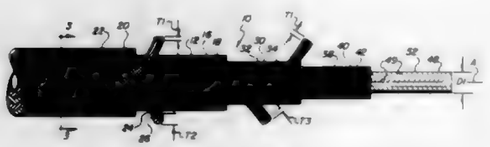
1. A piezo valve which comprises:
a housing that defines a chamber, a medium output channel which communicates with said chamber, a medium input channel which communicates with said chamber, and a medium discharge channel which communicates with said chamber, said medium discharge channel being located generally opposite said medium input channel and having a larger cross section than the cross section of the medium input channel,
a piezo bending element located within said chamber and defining a sealing end which can alternatively block said medium discharge channel and said medium input chanel,
an electrical lead connected to said piezo bending element for supplying one of a first and a second control voltage to said piezo bending element, and
means for mounting said piezo bending element in said chamber so as to be biased into a first switch position wherein said sealing end thereof blocks said medium input channel but allows bending of said piezo bending element into a second switch position wherein said sealing end blocks said medium discharge channel, said piezo bending element bending into said second switch position when said first control voltage is supplied thereto and is retained in said second switch position by fluid passing into said chamber through said medium input channel, and said piezo bending element bending into said first switch posi-

tion when said second control voltage is supplied thereto and is retained in said second switch position without an electrical voltage supplied thereto.

5,343,895
HEAT RESISTIVE SLEEVE ASSEMBLY

Michael G. King, 147 E. Avenue, Napoleon, Mich. 49261, and Michael R. Jusick, 151 Bennett Dr., Michigan Center, Mich. 59254

Filed Jun. 7, 1993, Ser. No. 73,161
Int. Cl.[5] F16L *9/14, 11/24*
U.S. Cl. 138—149 **8 Claims**

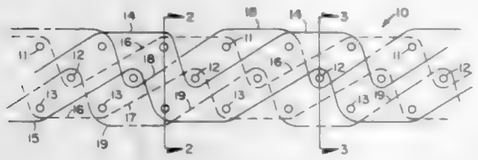


1. A heat resistive sleeve assembly (10) comprising:
a first sleeve (20) having a hollow interior (14) and defining a longitudinal axis (A) being fabricated from first (22) and second (24) sets of non-metallic fibers interwoven together, said first set of non-metallic fibers (22) having a first radial thickness (T1) and said second set of non-metallic fibers (24) having a second radial thickness (T2), said second radial thickness (T2) being greater than said first radial thickness (T1), said heat resistive sleeve assembly (10) characterized by
said second set of non-metallic fibers (22) being braided together into a first solid braid (26) for preventing said second radial thickness (T2) from decreasing during usage of said first sleeve (20) to maintain thermal insulation between said hollow interior (14) and the outside of said heat resistive sleeve assembly (10).

5,343,896
PAPERMAKERS FABRIC HAVING STACKED MACHINE DIRECTION YARNS

Ernst Schroder, Eupen, Belgium, and Henry J. Lee, Summerville, S.C., assignors to Asten Group, Inc., Charleston, S.C.

Continuation-in-part of Ser. No. 829,985, Feb. 3, 1992, Pat. No. 5,230,371, which is a continuation-in-part of Ser. No. 534,164, Jun. 6, 1990, Pat. No. 5,103,874, and a continuation-in-part of Ser. No. 654,008, Feb. 14, 1991, Pat. No. 5,117,865, and a continuation-in-part of Ser. No. 567,974, Aug. 15, 1990, Pat. No. 5,092,373. This application Sep. 25, 1992, Ser. No. 951,081
Int. Cl.[5] D03D *13/00, 15/00*
U.S. Cl. 139—383 A **20 Claims**

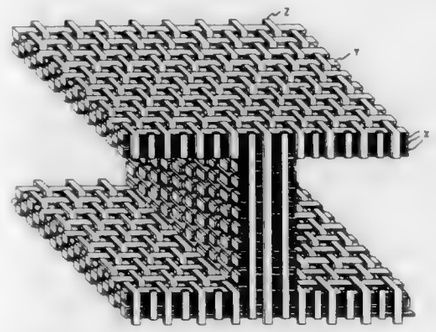


1. A woven papermakers fabric of the type having a paper side which is in contact with a paper sheet and a machine side which is in contact with machine rollers, the woven fabric being comprised of:
a first system of longitudinal, monofilament machine direction yarns that dominate the paper side of the fabric;
an intermediate system of longitudinal, monofilament machine direction yarns that do not appear on either the paper side or the machine side of the fabric;
a second system of longitudinal, monofilament machine direction yarns that dominate the machine side of the fabric; and
a multilayer system of cross machine direction yarns, the yarns of the first, intermediate and second systems are arranged in vertically stacked groups of first, intermediate and second machine direction yarns positioned one above the other in a superimposed relationship and are interwoven with the yarns of the cross machine direction system in a repeated pattern that maintains the stacked relationship of the yarns such that the yarns of the first system do not pass to the machine side of the fabric, the yarns of the second system do not pass to the paper side of the fabric and the yarns of the intermediate system do not pass to either the paper or the machine side of the fabric and the intermediate yarns are interlaced with the cross machine direction yarns of at least two layers of said multilayer system.

5,343,897
PROFILED CROSS-SECTION THREE DIMENSIONAL WOVEN FABRIC

Yoshiaki Sakatani; Tetsuya Yamamoto; Shigeru Nishiyama, all of Nagoya, and Yoshiharu Jin, Omihachiman, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo and Shikishima Boseki Kabushiki Kaisha, Osaka, both of Japan

Division of Ser. No. 802,708, Dec. 6, 1991, Pat. No. 5,236,020, Continuation of Ser. No. 311,251, Feb. 16, 1989, abandoned. This application Jun. 3, 1993, Ser. No. 70,861
Claims priority, application Japan, Feb. 29, 1988, 63-47072
The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.
Int. Cl.[5] D03D *3/06*
U.S. Cl. 139—384 R **7 Claims**

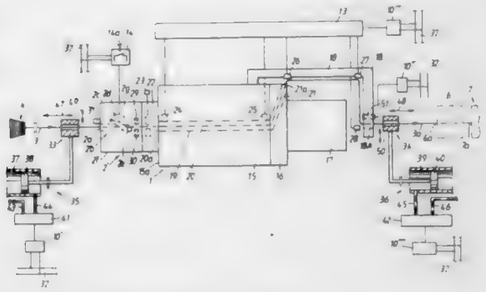


1. A profiled cross-section three-dimensional woven fabric having a plurality of mutually intersecting longitudinal, transverse and vertical filaments woven in longitudinal, transverse and vertical planes,
said transverse planes being of differing width and said vertical planes being of differing height within a cross-section of said woven fabric perpendicular to said longitudinal woven filament planes,
a woven filament in said transverse filament planes moving from one transverse plane to the next transverse plane after reciprocating transversely the longitudinal filaments in the width of the longitudinal plane traversed,
a woven filament in said vertical woven filament planes moving from one vertical plane to the next vertical plane after reciprocating vertically the longitudinal filaments in the height of the vertical plane traversed, said transversely woven filament and said vertically woven filament clamping said longitudinal filaments, uniting all of said woven filaments together into a profiled cross-section three-dimensional woven fabric,
wherein said woven fabric comprises a plurality of portions including at least an upper portion, a middle portion and a lower portion and is characterized in that an even number of transverse filaments are included in each transverse plane of at least one of said upper, middle and lower portions between longitudinal filaments in said longitudinal planes and transversely between adjacent vertical filaments in said vertical planes, and at least one of said filaments is included in a loop formed by adjacent vertical filaments above the longitudinal filaments in the uppermost longitudinal plane and below the longitudinal filaments in the lowermost longitudinal plane.

5,343,898
METHOD AND APPARATUS FOR THREADING-UP YARN IN A PULSATING MANNER

Lars-Berno Fredriksson, Kinna, Sweden, assignor to IRO AB, Ulricehamn, Sweden

PCT No. PCT/SE91/00274, § 371 Date Nov. 24, 1992, § 102(e) Date Nov. 24, 1992, PCT Pub. No. WO91/16483, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 17, 1991, Ser. No. 952,848
Claims priority, application Sweden, Apr. 17, 1990, 9001376-4; Apr. 25, 1990, 9001516-5
Int. Cl.[5] D03D *47/30, 47/34*
U.S. Cl. 139—450 **32 Claims**

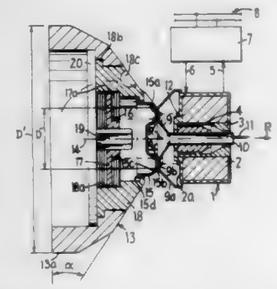


1. A thread feeding system comprising:
at least one thread regulator having a fixed housing; a hollow tubular shaft extending through the fixed housing, the shaft being rotatable around a longitudinal central axis of the housing; a rotatable winding section positioned coaxially adjacent a downstream end of the fixed housing and secured to the rotatable shaft; a thread duct extending through the thread regulator, the thread duct having a first duct portion extending through the tubular shart, a second duct portion extending through the winding section at an angle with respect to the first duct portion, and an angled duct portion coupling the first duct portion to the second duct portion; an inlet positioned at an upstream end of the first duct portion; and a plurality of ejectors positioned within the duct portions, the ejectors supplying a working medium from a pressurized working medium source to the duct portions to facilitate threading of a thread through the thread duct, the inlet receiving a free end of the thread from a thread spool assembly disposed upstream from the thread regulator;
control means for controlling the ejectors so that the ejectors generate a pressure proximate to the inlet to develop a flow of the working medium into the inlet; and
pulsating means for feeding the thread through the thread regulator in a pulsating manner to insure that the free end of the thread passes unobstructed through the thread duct.

5,343,899
OUTPUT YARN BRAKE

Kurt A. G. Jacobsson, Ulricehamn, and Lars-Berno Fredriksson, Kinna, both of Sweden, assignors to IRO AB, Ulricehamn, Sweden

PCT No. PCT/SE91/00185, § 371 Date Nov. 12, 1992, § 102(e) Date Nov. 12, 1992, PCT Pub. No. WO91/14032, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 12, 1991, Ser. No. 952,850
Claims priority, application Sweden, Mar. 12, 1990, 9000881-4; Mar. 13, 1990, 9000911-9; Mar. 19, 1990, 9000997-8; Nov. 13, 1990, 9003624-5; Nov. 18, 1990, 9003680-7; Nov. 29, 1990, 9003813-4; Jan. 7, 1991, 9100066-1
Int. Cl.[5] D03D *47/34*
U.S. Cl. 139—452 **59 Claims**



1. A yard braking system for use at an output side of a yarn feeding device, the yarn feeding device including a yarn storage surface member and an output surface member, the output surface member guiding a yarn from the storage surface member to an output channel extending coaxially downstream from the output surface member along a longitudinal central axis of the yarn feeding device, the yarn braking system comprising a first clamping member associated with the yarn feeding device and a second clamping member associated with a yarn brake coaxially positioned downstream from the yarn feeding device, the clamping members being relatively movable along the longitudinal axis and having respectively a first clamping surface and a second annular clamping surface associated therewith, the yarn passing in an axial movement outwardly over the first clamping surface and then passing inwardly through the second annular clamping surface before entering the output channel during a withdrawal of the yarn, the yarn braking system further comprising means for urging at least one of the clamping members against the other one of the clamping members to effect a selectable basic yarn clamping force acting on the yarn passing between the clamping surfaces, and means for independently and instantaneously varying the yarn clamping force by relatively movably repositioning at least one of the clamping members during the withdrawal of the yarn from the yarn feeding device.

5,343,900
NEEDLE BUNDLE DRIVER AND METHODS

Edwin J. Galloway, Menasha, Wis., assignor to Galloway Company, Neenah, Wis.

Continuation-in-part of Ser. No. 39,748, Mar. 30, 1993, Pat. No. 5,269,350, which is a division of Ser. No. 787,545, Nov. 4, 1991, Pat. No. 5,199,473, which is a division of Ser. No. 543,747, Jul. 11, 1990, Pat. No. 5,086,813, which is a division of Ser. No. 261,020, Oct. 20, 1988, Pat. No. 4,941,517. This application May 18, 1993, Ser. No. 63,550
Int. Cl.[5] B65D *41/20*
U.S. Cl. 141—1 **24 Claims**

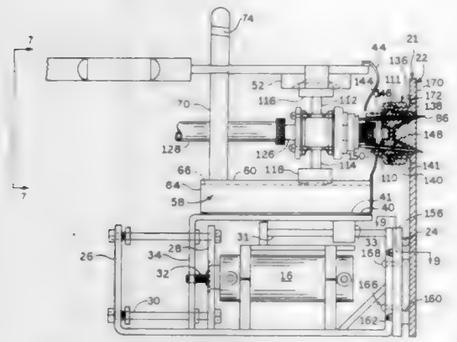
1. A method of aseptically adding fluid to a closed tank, said method comprising the steps of:
(a) securing a fluid receiver assembly in said wall of said tank, said fluid receiver assembly comprising a plug extending from the outside of the tank to the inside of the

tank, said plug comprising needle channels adapted to convey needles from the outside of the tank toward the inside of the tank;

(b) mounting a needle bundle in a needle bundle driver propinquant said fluid receiver assembly, to thereby make a needle bundle driver assembly,

said needle bundle driver comprising (i) a tank bracket mounted adjacent said tank, said tank bracket having first and second ends facing toward and away from said tank, respectively, (ii) a needle bundle holder mounted to said tank bracket and moveable on said tank bracket, toward and away from said first end of said tank bracket, and (iii) a power ram secured to said tank bracket and adapted to move said needle bundle holder toward, and away from, said first end of said tank bracket;

said needle bundle comprising (i) a needle holder, said needle holder having first and second ends, (ii) a plurality of needles extending from said first ends of said



needle holder, to ends of said plurality of needles, (iii) a sheath covering said ends of said plurality of needles, and (iv) a spring disposed against said first end of said needle holder, and positioning said sheath with respect to said plurality of needles, said mounting of said needles bundle in said needle bundle driver including the step of removing said needle bundle cover;

(c) engaging a first index on said needle bundle with a second cooperating index on a plug;

(d) immobilizing said needle bundle in said needle bundle driver;

(e) after step (d), connecting an aseptic fluid carrier to said second end of said needle holder;

(f) after step (e), driving said needle bundle driver assembly toward said tank, whereby said ends of said plurality of needles pass through said plug and into said tank, thereby establishing fluid communication with the interior of said tank; and

(g) passing fluid through said plurality of needles between said aseptic fluid carrier and said closed tank.

5,343,901

INSERTABLE BARRIER BAG OR LINER FOR A NARROW NECK DISPENSING CONTAINER AND METHOD OF FILLING SUCH A BARRIER BAG OR LINER

Philip Meshberg, 2770 S. Ocean Blvd., Apartment 602, Palm Beach, Fla. 33480

Filed Mar. 17, 1993, Ser. No. 32,585

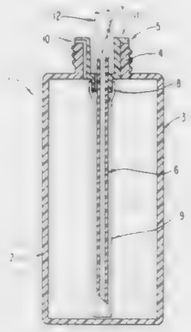
Int. Cl.[5] B65B *1/04;* **B65D** *37/00*

U.S. Cl. 141—2 **10 Claims**

1. A method of providing a dispensing container comprising the steps of:

(a) providing a container;

(b) inserting a sealed barrier structure into an interior of said container, said barrier structure being collapsed around a dip tube structure extending substantially within the barrier structure, said dip tube structure being connected to a retaining structure including a vent providing fluid communication between the interior of said container and the atmosphere;



(c) expanding said barrier structure to substantially fill the interior of said container;

(d) filling said barrier structure with a product to be dispensed through said dip tube structure; and

(e) attaching a pump structure to said container in fluid communication with said dip tube structure.

5,343,902

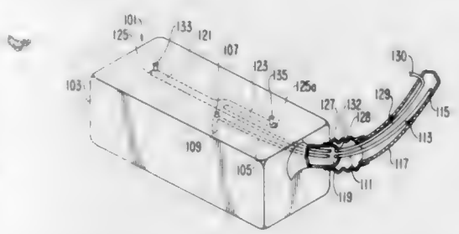
INTERNAL GAS REMOVAL SYSTEM FOR FUEL TANK AND METHOD OF MAKING THEREOF

Frederic Ramioulle, Auburn Hills, Mich., assignor to Solvay Automotive, Inc., Houston, Tex.

Filed Sep. 18, 1992, Ser. No. 896,577

Int. Cl.[5] B65D *25/00*

U.S. Cl. 141—7 **5 Claims**



1. A method of venting gases from a fuel tank at the time fuel is introduced into the fuel tank and when the fuel is not introduced into the fuel tank, comprising, at the time the fuel is introduced into the fuel tank, collecting the gases inside the fuel tank into a breathing system, including a fill vent tube placed substantially inside the fuel tank and a first exit line, the fill vent tube connected to a first end of the first exit line and, at the time the fuel is not introduced into the fuel tank, collecting the gases inside the fuel tank into a venting system, including a venting tube and a second exit line, place substantially inside the fuel tank, the venting tube connected to a first end of the second exit line, and conducting the gases outside of the fuel tank through a second end of the first exit line and a second end of the second exit line, the fill vent tube and the venting tube egressing the fuel tank through a single opening in the fuel tank.

5,343,903

METHOD OF TRANSFERRING A LIQUID TO A RESERVOIR USING A STORAGE BAG HAVING A PASSAGE THERETHROUGH

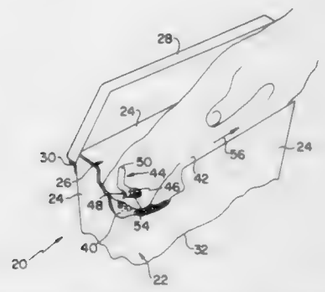
D. Howard Winder, 25 Wendell Avenue, Weston, Ontario, M9N 3K6, Canada

Continuation-in-part of Ser. No. 709,260, Jun. 3, 1991, Pat. No. 5,190,081. This application May 29, 1992, Ser. No. 890,209

The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.

Int. Cl.[5] B65D *47/36*

U.S. Cl. 141—10 **5 Claims**



1. A method of transferring a liquid to a reservoir, comprising the steps of:

(a) selecting a storage bag comprising at least one flexible web impermeable to said liquid sealed to define an enclosed cavity containing said liquid and having a passage therethrough at least partially surrounded by said liquid;

(b) positioning said bag in alignment with a receptacle dimensioned to receive said bag, and having a cutter therein to open said bag and a guide to facilitate positioning of said bag to a cutting position, said guide extending upwardly above said cutter and being dimensioned to be received through said passage of said bag, and also having fluid communication means for directing said liquid to said reservoir;

(c) moving said bag into said receptacle with said guide passing through said passage of said bag such that said bag is directed to a position in which said passage is adjacent said cutter; and

(d) pulling said bag upon said cutter to cut open said bag thereby allowing said liquid to flow out of said bag and thence through said fluid communication means to said reservoir.

5,343,904

AEROSOL CAN PRESSURIZING DEVICE AND AEROSOL CAN THEREFOR

Charles Kaeser, Route de St-Amour 22, CH - 1073 Savigny, Switzerland

PCT No. PCT/CH92/00185, § 371 Date Apr. 27, 1993, § 102(e) Date Apr. 27, 1993, PCT Pub. No. WO93/04928, PCT Pub. Date Mar. 18, 1993

PCT Filed Sep. 9, 1992, Ser. No. 39,333

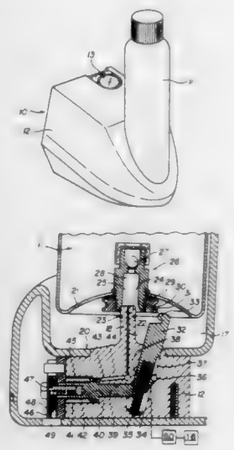
Claims priority, application France, Sep. 9, 1991, 91 11137

Int. Cl.[5] B65B *3/16;* **B67C** *3/16*

U.S. Cl. 141—20 **11 Claims**

1. An aerosol can for use with a device for pressurizing said aerosol can, said device comprising a housing (**12**) including an air compressor, for supplying pressurized air, and a seat (**17**) for supporting an aerosol can; a mechanism for activating and deactivating said air compressor; and a mechanism for releasably coupling said aerosol can with said air compressor so that said air compressor supplies pressurized air to said aerosol can, said mechanism for releasably coupling said aerosol can with said air compressor cooperating with said mechanism for activating and deactivating said air compressor to activate said air compressor when said aerosol can is positioned on said seat (**17**), and to deactivate said air compressor when air pressure inside said aerosol can (**11**) reaches a predetermined pressure level, and said mechanism for releasably coupling said aerosol can with said air compressor including a lever mechanism (**32**), engagable with said aerosol can, for maintaining said aerosol can properly positioned on said seat (**17**) until such time as the air pressure inside said aerosol can reaches the predetermined pressure level;

said aerosol can comprising an enclosed area for containing



an aerosol and air, a spray device communicating with said enclosed area for allowing selective discharge of aerosol and air contained with said aerosol can, a base having means for engaging a filling nozzle supported by said seat, and said base having a fluid control valve for controlling the flow of pressurized air into said aerosol can;

wherein said base (**26**) comprises an attachment surface which cooperates with said lever mechanism (**32**).

5,343,905

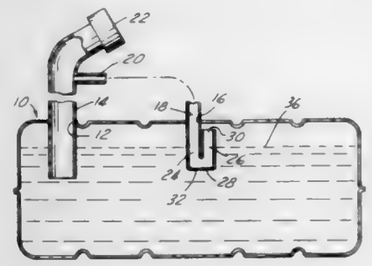
VEHICULAR FUEL TANK VENT

William S. Gryc, Hartland, and Chester Cox, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 7, 1993, Ser. No. 72,026

Int. Cl.[5] B65B *31/00*

U.S. Cl. 141—59 **6 Claims**



1. A vapor vent for a vehicular type fuel tank having a large diameter capped fuel inlet pipe projecting through the top of the tank for receiving fuel therethrough upon insertion of a fuel nozzle into the inlet pipe, the pipe having a pressure relief cap covering the same, the nozzle being responsive to a predetermined air/vapor pressure buildup in the tank against the nozzle for terminating fuel flow from the nozzle, the tank having a small diameter vapor vent tube extending from inside to outside the tank for connection with said fill pipe, the tube being bent back upon itself within the tank to define a second

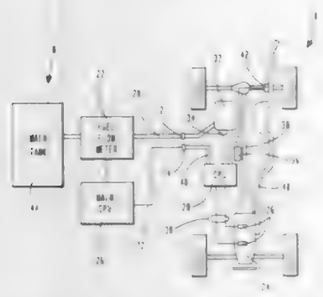
portion extending vertically towards the top of the tank to a point above a normal fuel level in the tank and providing an opening at the end of the tube for the passage of fuel vapors/air thereinto and for venting the same, and an opening of smaller cross-section in the tube at the base point of joinder of the two portions for receiving fuel therethrough at times only slowly, the smaller opening upon removal of the cap minimizing fuel expulsion through the tube as a result of a rise in tank fuel pressure conditions above a predetermined level.

5,343,906

EMISSON VALIDATION SYSTEM

Harry F. Tibbals, III, McKinney, Tex., assignor to Biodigital Technologies, Inc., McKinney, Tex.

Filed May 15, 1992, Ser. No. 884,531
Int. Cl.[5] B65B *1/04. 1/30*
U.S. Cl. 141—83 **22 Claims**



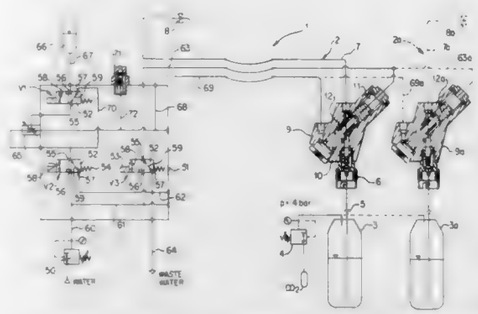
1. An emissions validation system, comprising:
a vehicle refueling system having:
a sensor for sensing emission parameters of a vehicle over a predetermined period of time;
a memory device for storing said sensed emission parameters of the vehicle over said predetermined period of time to provide a history of said sensed emission parameters over said predetermined period of time,
a vehicle interface device for allowing said stored accrued emission parameters to be accessed, and
a fuel intake port for allowing fuel to be input to a fuel tank on the vehicle; and
a fuel station for storing an accrued history of said sensed emission parameters of the vehicle indicating the history of the emission parameters of the vehicle, over a larger period of time than said predetermined period time, said fuel station having
a main fuel tank,
a fuel station interface device for being interfaced with said vehicle interface device,
a fuel dispensing system for delivering fuel to the fuel intake port of the vehicle,
a fuel flow meter for sensing the fuel delivered to the vehicle,
a database for containing said accrued history of said sensed emission parameters of the vehicle, and
a processor for controlling said vehicle interface device and said fuel station interface device to access said accrued emission parameters from said memory device in said vehicle refueling system and operable to update said accrued history with said accessed accrued emission parameters over said predetermined period of time.

5,343,907

CLEANING DEVICE FOR BEVERAGE DISPENSING SYSTEMS

Ewald Wagner, Bachstr. 37b, 5403 Mülheim-Kärlich 1,, Fed. Rep. of Germany

Filed Aug. 14, 1992, Ser. No. 929,441
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1991, 9113750[U]
Int. Cl.[5] B65B *1/04*
U.S. Cl. 141—89 **20 Claims**



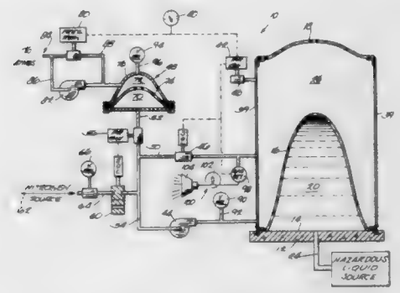
1. A cleaning device for beverage drafting and dispensing systems used with sodas, juices, beer and the like which is adapted to inject a liquid, chemical cleaning agent from a storage container into at least one beverage drafting line and other components of the system and to remove said cleaning agent after a predetermined settling time, comprising a plurality of solenoid valves having rods, a valve exit, a valve entry and a valve side entry, a change valve having a housing and a piston movably arranged within the housing, and operatively controlled, via the solenoid valves, to utilize pressure controlled tap water hydraulically to change position of the piston within the housing between two operating positions; the piston being configured to provide, in one of the operating positions constituting a drafting position, a first flow channel reaching from a beverage container adaptor with check valve at the bottom of the housing through a channel alongside the piston to an upper end of the housing where a first pipe thread adapted to provide a connection to at least one beverage drafting line is located; the piston being further configured to provide, in one of the operating positions constituting a cleaning position, a second flow channel reaching from a second pipe thread on a first side of the housing for a set water and cleaning mixture carrying line to open into the first flow channel while allowing the piston to block the second flow channel from communication with the adaptor for the beverage container; a third pipe thread on an opposite side of the housing operatively associated with a set water line; a water pressure control valve; the solenoid valves having a pull-back spring for retaining tne rods in a rest position to provide a connecting channel between the valve exit and valve side entries and having an activatable magnet which provides an operation position in which a connecting channel is arranged between a valve exit and a valve entry; a multiline for operatively connecting the valve entry of two of the halves with the water pressure control valve; the valve exit of one of the valve constituting a drafting line being operatively connected with the third pipe thread of the change valve via said set water line; the valve exit of another of the valves constituting a rinsing valve being operatively connected with the second pipe thread on a side of the change valve via a set water and cleaning mixture line which leads through a cleaning agent injection device having a Venturi-injector system; a by-pass connection operatively arranged between the valve exit of the rinsing valve and the entry to the cleaning agent injection device, leading from the set water line to the valve side entry of another of the valves constituting a cleaning valve, and the valve exit of the cleaning valve is connected via a line with a cleaning agent entry of the cleaning agent injection device, and the valve entry of the cleaning valve is operatively connected to a gravity feed line of the storage container; and the valve side entries of the drafting and rinsing valves being operatively connected to a drain.

5,343,908

VAPORLESS LIQUID CONTAINMENT SYSTEM

John L. Furstenberg, Brookfield, Wis., assignor to Envirex Inc., Waukesha, Wis.

Continuation of Ser. No. 849,755, Mar. 12, 1992, Pat. No. 5,255,722. This application Sep. 9, 1993, Ser. No. 119,427
The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.
Int. Cl.[5] B65B *3/16*
U.S. Cl. 141—114 **21 Claims**



1. An apparatus for storing a liquid and for preventing the formation of vapor from the liquid, the apparatus comprising:
a support structure having a supporting surface and a rigid wall structure surrounding and extending upwardly from the supporting surface,
a first membrane supported by the support structure, the first membrane and the supporting surface defining therebetween a fluid containment space for storing the liquid,
a member supported by the wall structure, the member in conjunction with the first membrane and the wall structure defining therebetween a fluid-tight gas containment space, the gas containment space being adapted to house a gas under pressure, and
means for supplying the gas under pressure to and withdrawing the gas under pressure from the gas containment space such that pressure is applied to the first membrane sufficient to maintain the liquid in the fluid containment space in a liquid state and to prevent the formation of vapor in the fluid containment space.

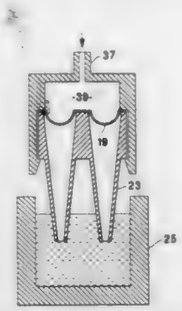
5,343,909

LIQUID TRANSFER DEVICE

Jack Goodman, 3011 N. 3rd St., Arlington, Va. 22201

Continuation-in-part of Ser. No. 990,954, Dec. 17, 1992. This application Jun. 25, 1993, Ser. No. 81,051
Int. Cl.[5] B65B *3/04*
U.S. Cl. 141—242 **2 Claims**

1. A liquid transfer device comprising a housing, said housing having an enclosing top and sides, said housing being open at the bottom, a flexible thin inelastic membrane covering said bottom, said housing defining a space, fluid pressure changing means in operable communication with said space in said housing for reducing or increasing the fluid pressure in said space, said thin inelastic membrane having a plurality of blister-like projections arranged in rows lengthwise and crosswise thereon with relatively small planar web areas of said thin inelastic membrane between each of said blister-like projections, a lower carrier means positioned under said flexible thin inelastic membrane, said lower carrier being mounted with a plurality of pipettes perpendicular to said thin inelastic membrane, each of said pipettes terminating in an open proximal end, having a rim each of which is respectively aligned with an individual blister-like projection, said rims of said pipettes being affixed to portions of said small planar web areas, said blister-like projection extending into said proximal end of said pipette when said



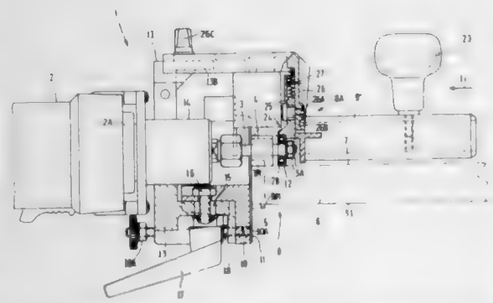
space of said housing is under a first fluid pressure gradient and said blister-like projection is everted from said proximal end of said pipette when said fluid pressure gradient is reduced.

5,343,910

EDGE ROUTER WITH A GUIDE DEVICE

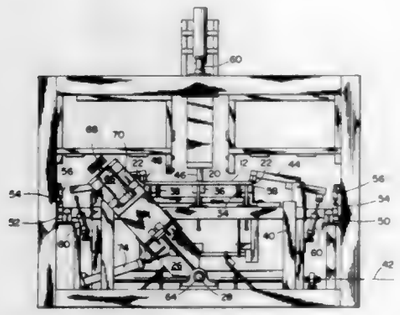
Wolfgang Reines, Nuertingen, Fed. Rep. of Germany, assignor to Karl M. Reich Maschinenfabrik GmbH, Nuertingen, Fed. Rep. of Germany

Filed Jul. 26, 1993, Ser. No. 97,757
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1992, 4227071
Int. Cl.[5] B27C *5/10;* **B23C** *1/20*
U.S. Cl. 144—134 D **6 Claims**



1. An edge router comprising a housing, a guide mechanism secured to said housing, a motor in said housing, a drive shaft (3) driven by said motor for driving a router bit, at least one sensor roller on said drive shaft for sensing a work piece surface, said guide mechanism comprising a first guide stop device (8A) extending in parallel to a longitudinal rotational router axis of said drive shaft (3) and a second guide stop device (10) extending perpendicularly to said drive shaft (3), said first guide stop device (8A) comprising two separate guide elements (9, 9') arranged in parallel to each other and in parallel to said drive shaft (3), one of said separate guide elements being arranged on one side of said drive shaft, while the other of said separate guide elements is arranged on the opposite side of said drive shaft for guiding said edge router when milling off margins of an edge cover band bonded to flat, rounded, or curved edges of a panel work piece.

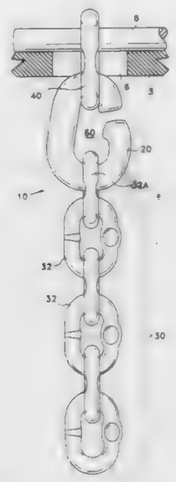
5,343,911
STAVE-CUTTING MACHINE
Thomas Humphrey, 342 W. Main St., Lebanon, Ky. 40033
Filed Aug. 30, 1993, Ser. No. 114,735
Int. Cl.[5] B27M *3/00*; B27C *5/00*
U.S. Cl. 144—134 R 7 Claims



6. A stave-cutting machine, comprising:
a clamping device for holding a stave and defining an end and a midpoint;
a pivot arm mounted so as to pivot about a pivot axis which is in line with said midpoint;
a cutter head mounted on said pivot arm such that, as said pivot arm pivots, said cutter head is moved from one end of the stave, through the midpoint, to the other end of the stave, with the height of said cutter head relative to the stave changing as said pivot arm pivots;
wherein said cutter head includes cutter knives, and said cutter knives are at non-right-angles to said pivot axis, such that, when the height of said cutter head relative to said clamping device changes, it causes the distance from said cutter knives to the clamping device to change, so as to cut more material from the stave at the ends and less at the middle.

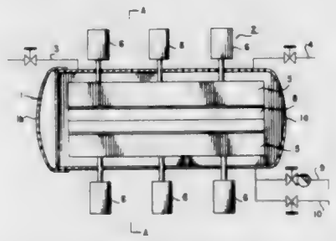
5,343,912
DEBARKING CHAIN QUICK CHANGE FITTING
Michael R. Chronister; Frederick J. Brindisi, both of York, Pa., and Phillip A. Schmidt, Tacoma, Wash., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Jun. 7, 1993, Ser. No. 72,380
Int. Cl.[5] B27L *1/00*; F16G *13/06*
U.S. Cl. 144—341 35 Claims

1. A debarking chain with a quick disconnect for attaching the debarking chain to a rotating member comprising:
an open link having one side with an opening;
a chain comprised of closed links with a first closed link having an interior aperture with a width and a length, said first closed link having a side with a reduced cross section;
said open link opening forming a terminal end of said one side, said terminal end having a cross section with a width and a length;
said cross section length being greater than said aperture width and smaller than said aperture length; and



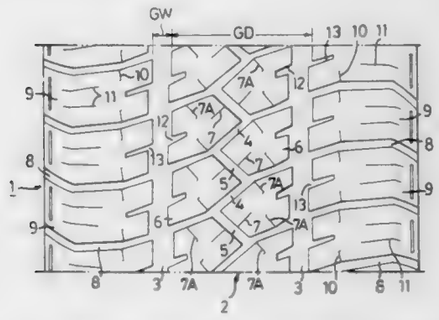
said first closed link and said open link and said open link being removably attached by a series of translational and rotational movements.

5,343,913
WOOD TREATING METHOD AND APPARATUS
Mitsuhiko Tanahashi, 3-8, Daidokasiwadai 1-chome, Gifu-shi, Gifu 501-31; Masafumi Inoue, Nara; Syuzo Fukada, Kyoto; Chikayoshi Ota, Osaka, and Senji Kimoto, Yamatokoriyama, all of Japan, assignors to Hisaka Works Limited, Osaka and Mitsuhiko Tanahashi, Gifu, both of Japan
Continuation of Ser. No. 741,417, Aug. 1, 1991, Pat. No. 5,247,975. This application May 21, 1993, Ser. No. 43,088
Claims priority, application Japan, Dec. 25, 1989, 1-335595; May 7, 1990, 2-117979; Jun. 5, 1990, 2-147746; Nov. 30, 1990, 2-337340
Int. Cl.[5] B27M *1/00*; B27H *1/00*
U.S. Cl. 144—380 6 Claims



1. A wood treating method comprising the steps of softening a piece of wood in a high temperature, high pressure, water vapor atmosphere having a temperature between 100° and 230° C. and a pressure between 5 and 25 kgf/cm^2, then compression-molding the wood under a high temperature, ordinary pressure condition so that the wood is compressed to between $\frac{1}{4}$ and $\frac{1}{7}$ of its original size and fixing the resulting deformation by holding the wood in a compressed state for a predetermined length of time.

5,343,914
ALL SEASON PNEUMATIC TIRE
Iwamura Wako, Kobe, Japan, assignor to Sumitomo Rubber Industries Limited, Hyogo, Japan
Continuation of Ser. No. 588,091, Sep. 25, 1990, abandoned. This application May 7, 1992, Ser. No. 881,324
Claims priority, application Japan, Oct. 2, 1989, 1-258222
The portion of the term of this patent subsequent to Nov. 27, 2007, has been disclaimed.
Int. Cl.[5] B60C *11/11*
U.S. Cl. 152—209 R 1 Claim



1. An all season pneumatic tire comprising a tread section including only two main grooves (3) dividing the tread width into three tread regions formed substantially in a circumferential direction and in a continuous arrangement, each of said two main grooves (3) having a groove width (GW) and a center block (6) therebetween, and a distance (GD) includes one of the two main grooves (3) and a tread section between the two main grooves (3), when the maximum tire width is (TW), is expressed as:

$$0.2TW \leqq GD \leqq 0.5TW,$$

and the width (GW) of each said main groove (3) is expressed as:

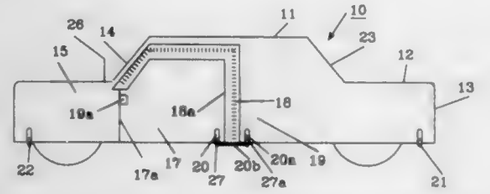
$$0.02TW \leqq GW \leqq 0.07TW;$$

each of said main grooves (3) being provided with two opposed side walls, the side walls being substantially parallel to the circumferential direction of the tire with jogs (JW) shifted thread-width-wise by a distance the same as or smaller than the groove width (GW), said jog width (JW) being expressed as:

$$0.5\ mm \leqq JW \leqq GW,$$

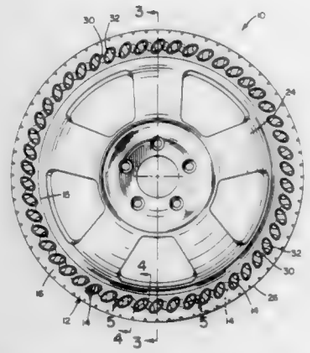
and being formed substantially, in a circumferential direction and in a continuous arrangement, between the two main grooves (3), inclined grooves (4) are provided which are extended tread-width-wise to connect the two main grooves (3) and with interconnecting grooves (5) extended in circumferential direction to connect said inclined grooves, side blocks being formed tread-width-wise at both side areas outside the main grooves (3), said side blocks (9) comprising sideways grooves (8) extending in the tread-width-wise direction and spaced a predetermined distance from one another in the circumferential direction, sips (7A) extending generally perpendicularly from the inclined grooves (4) and sipes (7) extending generally perpendicularly from the interconnecting grooves (5) and said side blocks (9) possess sipes (11) extended tread-width-wise and sipes (10) extended in the circumferential direction, inclined slits (12), (13) being formed on elevated walls of the main groove (3) which extend tread-width-wise and are positioned approximately at the center of clocks (6), (9) with intervals disposed in the circumferential direction.

5,343,915
INSULATED SECURITY CAR COVER
Willie D. Newsome, 1007 Cascade St., Apt. B, Mesquite, Tex. 75149
Filed Oct. 2, 1992, Ser. No. 955,452
Int. Cl.[5] B60J *11/00*
U.S. Cl. 150—166 18 Claims



1. A protective security cover for protecting vehicles during storage, comprising:
a multi layer cover, including at least first, second and third layers for covering a vehicle;
a security cable extending through an enclosed channel in said cover between two of said layers and extending completely around said vehicle to secure the vehicle; and
a plurality of tie-down cables, attached to said cover for securing the cover over the vehicle.

5,343,916
NON-PNEUMATIC SPARE TIRE
James E. Duddey, Akron, and John M. Cady, Munroe Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation of Ser. No. 661,158, Feb. 27, 1991, abandoned. This application Nov. 19, 1992, Ser. No. 978,617
Int. Cl.[5] B60C *7/10*
U.S. Cl. 152—5 21 Claims



1. An improved nonpneumatic tire of the type having a rim and one or more elastomeric materials bonded to the rim or to one another, the tire having an equatorial plane, an axis perpendicular to the equatorial plane, an annular tread rotatable about the axis, an annular elastomeric body made from a material having a Shore A hardness in the range of 60 to 100, the body having first and second spaced lateral sides equidistant from the equatorial plane and extending between the tread and the rim, the body having at least 48 openings positioned equidistant from the axis, at least 24 of which extend from the first side and at least 24 of which extend from the second side to form first and second sets of openings extending from the respective sides toward the equatorial plane, the openings forming equally-spaced columns of elastomeric material in the body, the columns formed by the first set of openings being generally inclined to the radial direction of the tire, the columns formed

by the second set of openings being generally inclined to the radial direction of the tire but opposite in inclination with respect to the columns formed by the first set of openings, the improved tire being characterized by:

the columns of the first and second set sets having respective cross-sections, the cross-sections of the columns of the first set having a minimum thickness t1s1 located radially inwardly of the tread and radially outwardly of a radially innermost portion of the annular body, t1s1 being measured as a line passing through the circumferential centerline of the openings and being the shortest distance between adjacent openings of the first set, the thickness of the columns of the first set increasing as they extend radially outwardly from the minimum thickness t1s1 to a maximum radially outer thickness t2s1 at a radially outermost portion of the columns of the first set, t2s1 being measured along a line that is tangent to the radially outer extremes of adjacent openings, and the thickness of the columns of the first set increasing as they extend radially inwardly from the minimum thickness t1s1 to a maximum radially inner thickness t3s1 at a radially innermost portion of the column as measured along a line that is tangent to the radially inner extremes of adjacent openings, and the ratio of t2s1 to t1s1 and the ratio of t3s1 to t1s1 both being at least 150% in the cross-section, the cross-section of the columns of the second set having a minimum thickness t1s2 located radially inwardly of the tread and radially outwardly of a radially innermost portion of the annular body, t1s2 being measured as a line passing through the circumferential centerline of the openings and being the shortest distance between adjacent openings of the second set, the thickness of the columns of the second set increasing as they extend radially outwardly from the minimum thickness t1s2 to a maximum radially outer thickness t2s2 at a radially outermost portion of the columns of the second set, t2s2 being measured along a line that is tangent to the radially outer extremes of adjacent openings, and the thickness of the columns of the second set increasing as they extend radially inwardly from the minimum thickness t1s2 to a maximum radially inner thickness t3s2 at a radially innermost portion of the column as measured along a line tangent to the radially inner extremes of adjacent openings and the ratio of t2s2 to t1s2 and the ratio of t3s2 to t1s2 both being at least 150% in the cross-section and wherein the openings of the first set communicate with the openings of the second set, the openings taper downwardly as the openings extend axially inwardly, the openings having a maximum size at a side of the tire.

5,343,917

PNEUMATIC RADIAL TIRE FOR PASSENGER CAR WITH DEFINED TREAD DEPTHS

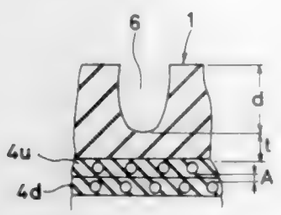
Masakazu Okihara, Hiratsuka, and Tomohiko Kogure, Ashigara, both of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1992, Ser. No. 899,970

Claims priority, application Japan, Jul. 8, 1991, 3-166987

Int. Cl.[5] B60C *11/04, 9/18*

U.S. Cl. 152—209 R 6 Claims



1. A pneumatic radial tire for a passenger car, which includes a plurality of grooves provided on the surface of a tread and extending at least in a tire circumferential direction and a belt layer having a double layer structure with both layers formed of steel cords and provided within the tread, wherein the total sectional area, α, of steel wires per 50 mm width of belt layer is in a range satisfying $5 \leqq \alpha \leqq 9$ mm^2; the groove depth, d, is in a range satisfying $6.0 \leqq d \leqq 8.0$ mm; the thickness, t, of rubber under the grooves defined as the distance from the bottom of the groove to the cord surface of the outermost belt layer independent of any belt cover layer is in a range satisfying $1.0 \leqq t \leqq 2.0$ mm; the angles of the steel cords constituting the belt layer having a double layer structure to the tire circumferential direction are both 5–50°; and the steel cords in the two belt layers cross each other.

5,343,918

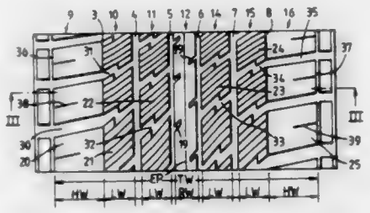
TREAD FOR A PNEUMATIC TIRE WITH DIFFERING TREAD STIFFNESS REGIONS

Jean F. L. Fontaine, Burden, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 524,616, May 17, 1990, abandoned. This application Jul. 13, 1992, Ser. No. 913,125

Int. Cl.[5] B60C *11/11*

U.S. Cl. 152—209 R 1 Claim



1. A tread for a pneumatic tire comprising an annular shaped band of elastomeric material when in place on the tire, said tread having a central groove and two lateral portions, each lateral portion having grooves therein defining at least one circumferentially extending row of high stiffness blocks and one row of low stiffness blocks, all low stiffness blocks having a radial height being between 4 to 10% greater than the radial height of said high stiffness blocks when measured from the bottom of the tread groove and a Shore A hardness of less than 65.

5,343,919

PNEUMATIC RADIAL TIRE WITH SPECIFIED BELT CURVATURE

Masanao Yoshida, Akashi, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Jul. 24, 1992, Ser. No. 917,961

Claims priority, application Japan, Aug. 26, 1991, 3-240397; Jun. 9, 1992, 4-176269

Int. Cl.[5] B60C *3/00, 9/28, 11/00*

U.S. Cl. 152—209 R 1 Claim

1. A pneumatic radial tire

having a sum of tire maximum width W and tire maximum diameter D defined in a range from 750 mm to 1250 mm and

comprising a carcass extending from a tread part, the tread part including a central part and a shoulder part axially outward of each side of the central part, through sidewall parts and turned up around a bead core in each of two bead parts, and a belt layer composed of at least one belt ply disposed radially outside the carcass, wherein, on the tire meridian section,

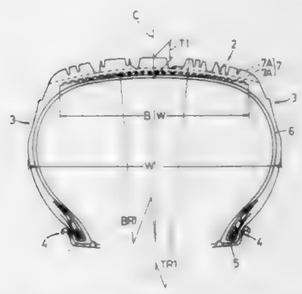
a tread surface is curved along a single arc with a curvature radius TR1 having a center on the tire's equatorial plane,

a radially outer surface of the belt layer is curved along a single arc with a curvature radius BR1 having a center on the tire's equatorial plane,

said curvature radius TR1 is larger than said curvature radius BR1,

a product of said curvature radius TR1 and said curvature radius BR1, that is, (TR1×BR1) is in a range from 33.7×10^4 mm^2 to 45.0×10^4 mm^2,

a tread rubber thickness of the tread center part between the radially outer surface of the belt layer and the tread surface is thinner than a tread rubber thickness of the tread



shoulder part between the radially outer surface of the belt layer and the tread surface, the tread rubber thickness of the tread shoulder part being measured near the tread edge, and

a ratio T1/W of the total thickness T1 of the tread outer part on the tire equator from the tread surface to the radially inner surface of the tire to the tire maximum width W is in a range of 0.5 to 0.073.

5,343,920

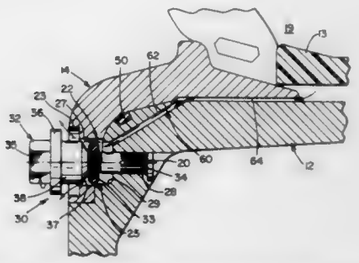
WHEEL ASSEMBLY WITH FLANGE SECURING AND PRESSURE RELIEVING MEANS

John M. Cady, Munroe Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 26, 1991, Ser. No. 750,163

Int. Cl.[5] B60B *25/04*

U.S. Cl. 152—396 13 Claims



1. A wheel assembly for a tubeless pneumatic tire, the wheel assembly comprising:

a rim for supporting the tire;

a flange, removably attached to the rim, for engaging a bead area of the tire, the assembled rim and flange together with the tire forming an air tight chamber for pressurization; and

a plurality of spaced means for securing the flange to the rim and relieving pressurization from a mounted and inflated tire, the spaced means for securing and relieving pressurization including a removable means for applying axial force between the flange and the rim, upon loosening of one of the removable means depressurization of the tire is initiated.

5,343,921

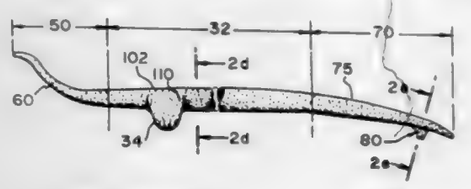
TIRE IRON FOR TUBELESS TRUCK TIRES

John D. Kusner, Lyndhurst, Ohio, assignor to Ken-Tool, Akron, Ohio

Continuation of Ser. No. 818,776, Jan. 13, 1992, abandoned. This application May 27, 1993, Ser. No. 68,278

Int. Cl.[5] B60C *25/02*

U.S. Cl. 157—1.3 5 Claims



1. A tire iron, comprising:

an elongated body having first and second end portions, an intermediate portion having a substantially cylindrical configuration and extending between said first and second end portions, said intermediate portion further including upper and lower surfaces;

an integral knob element, said integral knob element extending outwardly from said intermediate portions, said integral knob element comprising a top semi-cylindrical part, an engaging part and two side walls connecting said top part to the engaging part, said top-semi-cylindrical part having a longitudinal axis being substantially parallel to a longitudinal axis of said intermediate portion, so that said top substantially cylindrical part extends along said semi-cylindrical intermediate portion,

said side walls being connected to said top part by connecting means for providing a smooth and gradual transition between said side walls and said top part, so that an integral, homogeneous structure is formed by said intermediate portion and said integral knob element;

said second end portion having top and bottom parts, an integral depending pad element extending outwardly from said bottom part,

said integral depending pad element having a base, a front portion facing said integral knob element, a rear portion, an engaging surface and two side surfaces, said side surfaces connecting said base to said engaging surface; and

said front portion consisting of first and second members interposed to each other at an obtuse angle, said front portion connecting said base to said engaging surface in such a manner that an acute angle is formed between said base and said first member.

5,343,922

SLATTED CURTAIN FOR ROLLER BLINDS

Gerald Rankl, Hof, and Gerhard Haubenwallner, Ybbs, both of Austria, assignors to Gerald Rankl, Hof, Austria

Filed Jun. 19, 1992, Ser. No. 901,598

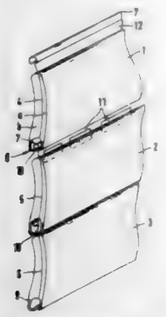
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1991, 4120424

Int. Cl.[5] E06B *9/08*

U.S. Cl. 160—133 12 Claims

1. A slatted curtain for roller blinds comprising plural slats, said slats having carrier elements that have joint portions for interconnecting said slats, said slats being formed from compressed or cast wood material, said carrier elements being cast or pressed into said wood material and having plural recesses, at least one of said recesses being positioned along at least one longitudinal free edge of said wood material and defining

means for anchoring said wood material to said respective carrier element along said at least one longitudinal free edge,



and ventilation means for permitting light and air to pass between adjacently disposed pairs of said slats.

5,343,923

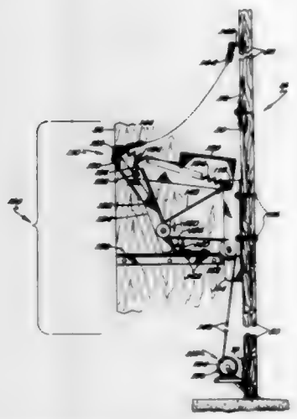
AUTOMATIC JAMB LATCH MECHANISM FOR OVERHEAD BIFOLD DOOR

Daniel N. Keller, River Falls, Wis., assignor to Hi-Fold Door Corporation, River Falls, Wis.

Continuation-in-part of Ser. No. 653,770, Feb. 11, 1991, Pat. No. 5,168,914. This application Dec. 8, 1992, Ser. No. 987,150

Int. Cl.[5] **E05D** *15/26*

U.S. Cl. 160—207 **34 Claims**



1. A latch mechanism for use with and attachable to an overhead bifold door movable between open and closed positions over a doorway, the doorway having a first door jamb and a second door jamb and the overhead bifold door having a first door panel and a second door panel hingedly attached to each other, the latch mechanism comprising:

a latch arm assembly, including a movable latch arm and biasing means, attachable to the first door panel of the overhead bifold door adjacent the first door jamb of the doorway, said latch arm assembly having a first, latched position and a second, unlatched position of said latch arm, said latch arm including a first member, a second member and a third member, said second member being pivotally attached to said first member, and said third member being pivotally attached to said second member;

a latch member attachable to the first door jamb, and positioned for selective, cooperative engagement with said second member of said latch arm;

actuation means attachable to the first door panel of the overhead bifold door for operative activation of said latch arm assembly between said latched and unlatched positions and for moving said latch arm into latching relation to said latch member;

connecting means linking said actuation means and said latch arm assembly;

a power source for driving the latch mechanism; and

power transmission means between said power source and said actuation means.

5,343,924

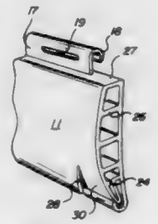
SYSTEM FOR MAINTAINING ALIGNMENT OF ROLL-UP BLIND SLATS

Robert E. Hoffman, 5618 Riviera Dr., Coral Gables, Fla. 33146

Continuation of Ser. No. 922,868, Jul. 31, 1992, abandoned. This application Nov. 24, 1993, Ser. No. 158,017

Int. Cl.[5] **E06B** *9/16*

U.S. Cl. 160—235 **1 Claim**



1. In a horizontal slat-type, roll-up, blind formed of numerous, substantially identical, elongated slats which are normally arranged one above another and are hingedly connected together along their adjacent longitudinal edges, with said slats each being formed of a pair of substantially parallel, spaced apart walls which are secured together to provide upper and lower longitudinal edges; with the upper edge of each slat formed with an integral, elongated flange having an upper free edge bent into a downward opening hook and with the lower edge of each slat formed as a downwardly opening channel defined by opposite, lower portions of the two walls, and with the lower edge of one of the two walls being bent into the channel and upwardly to form an upwardly opening hook within the channel, and with the lower edge of the opposite wall portion forming the channel extending along side of the upwardly opening hook and spaced a short distance therefrom, and with the hook on the upper free edge of one slat extending into the channel and pivotally engaged with the upwardly opening hook on the adjacent lower edge of the next slat, the improvement comprising:

said slat walls each being completely formed of thin sheet metal pieces which are bent and joined together to form the slats;

a notch formed at opposite ends of the flange hook, by removing a short length of the flange hook at the opposite ends of each slat, and with the flange hook extending along the length of the slat between the notches;

a cover portion integrally formed with said opposite wall portion such that a curve having an overall V-shape, when viewed in cross section, is formed at the free end of said opposite wall between said opposite wall portion and cover portion and said cover portion abutting said flange hook when said blind is in a hanging position;

a continuous projection formed on said opposite wall portion and extending toward said cover portion within said V;

horizontally elongated openings formed in each of the flanges between their free ends and the upper edges of the walls for providing for ventilation through the slats when the blind is arranged to cover an opening such as a window or door opening;

a transverse slot formed in end portions of the areas of said opposite wall portion which overlaps the notches at the opposite ends of the flange hook, a tab formed at the end portions only on said opposite wall portion, said tabs being inwardly bent to extend inwardly of the channel towards the upwardly opening hook for substantially closing the channel at the opposite ends thereof and whereby said projection is adjacent said cover portion on said tab;

said slats being formed of continuous type elongated extrusions which are cut to predetermined slat length and, are of uniform cross section along their lengths, and with the notches being cut in the opposite ends of the flange hook of each slat, with slits arranged transversely in the slats along their opposite wall portion in alignment with the notches and with the tabs being bent at the slits;

whereby the tabs are engageable with the opposite ends of the flange hook to prevent the flange hook from moving endwise relative to the channels within which they are inserted and to thereby prevent the slats from shifting endwise relative to each other.

5,343,925

DEVICE FOR DRAPING CURTAINS

Christer Hannerstig, Hollviksnas, Sweden, assignor to AB A. Svensson & Co., Malmö , Sweden

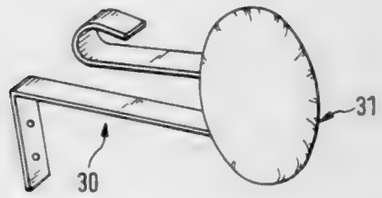
PCT No. PCT/EP91/01858, § 371 Date Sep. 8, 1992, § 102(e) Date Sep. 8, 1992, PCT Pub. No. WO92/11792, PCT Pub. Date Jul. 23, 1992

PCT Filed Sep. 27, 1991, Ser. No. 910,012

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1991, 4100282; Apr. 5, 1991, 4111067

Int. Cl.[5] **A47H** *13/14*

U.S. Cl. 160—348 **13 Claims**



1. A device for draping curtains, comprising:

a holder for fixing curtain fabric with a predetermined folding, said holder having a mounting end and a supporting end;

a disk-like cover having a front and a rear surface whereby said rear surface is supported on the supporting end of the holder; and

a holding ring selectively mounted relative to said disk-like cover, said disk-like cover including a peripheral skirt protruding rearwardly from said rear surface for receiving said holding ring to thereby firmly clamp decorative fabric positioned over the front surface of the disk-like cover and the peripheral skirt and trapped between the peripheral skirt and rear surface and said holding ring.

5,343,926

METAL SPRAY FORMING USING MULTIPLE NOZZLES

Harvey P. Cheskis, North Haven; W.Gary Watson, Cheshire, both of Conn.; Jeffrey S. Coombs, West Glamorgan, United Kingdom, and Peter F. Chesney, Duncanville, Tex., assignors to Olin Corporation, New Haven, Conn. and Osprey Metals Limited, West Glamorgan, United Kingdom

Continuation of Ser. No. 636,862, Jan. 2, 1991, abandoned. This application Dec. 3, 1992, Ser. No. 985,525

Int. Cl.[5] **B22D** *11/06, 23/00*

U.S. Cl. 164—46 **28 Claims**

1. A process of spray casting a metal or metal alloy comprising the steps:

holding at least one supply of metal or metal alloy in a molten state;

allowing at least first and second streams of said molten metal or metal alloy to issue from said supply;

atomizing each of said first and second streams into a respective first and second sprays of partially solid particles in an atomization chamber having an inert or non-oxidizing atmosphere effective to extract heat from said particles;

depositing each of said first and second sprays onto a collecting member wherein said particles solidify into a desired shape;

moving said collecting member in at least one desired direction during deposition;

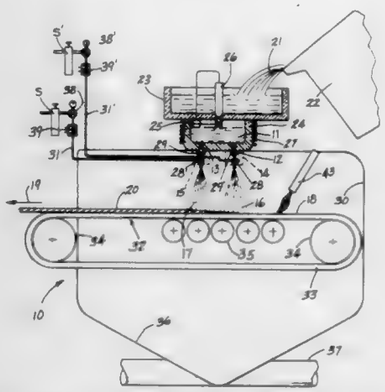
said second spray being arranged to deposit onto said collecting member downstream of said first spray in each desired direction;

providing said first spray as it deposits onto said collecting member with a first volume fraction of solid greater than 30%; and

providing said second spray as it deposits onto said collecting member with a second volume fraction of solid, said second volume fraction of solid being greater than said first volume fraction of solid whereby the porosity of said metal or metal alloy is substantially minimized.

16. An apparatus for spray casting a metal or metal alloy comprising:

a means for holding at least one supply of metal or metal alloy in a molten state;



a means for allowing at least a first and second stream of said molten metal or metal alloy to issue from said supply;

a means for atomizing each of said first and second streams into respective first and second sprays of partially solid particles in an atomization chamber having an inert or non-oxidizing atmosphere effective to extract heat from said particles;

a means for collecting deposits of each of said first and second sprays, said means having a collecting member upon said which said particles solidify into a desired shape;

with said collecting means further including a means for moving said collecting member in at least one desired direction during deposition;

said second spray being arranged to deposit onto said collecting member downstream of said first spray in said desired direction;

a means for providing said first spray as it deposits onto said collecting member with a first volume fraction of solid greater than 30%; and

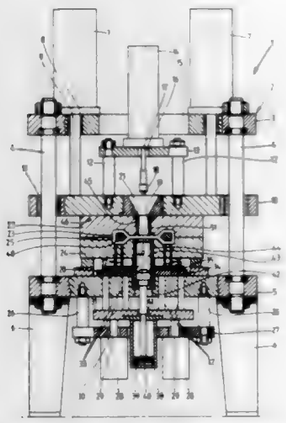
a means for providing said second spray as it deposits onto said collecting means with a second volume fraction of solid which is greater than said first volume fraction of solid whereby the porosity of said metal or metal alloy is substantially minimized.

5,343,927

METHOD AND A DEVICE FOR PRESS CASTING

Hans Ivansson, Herrljunga, Sweden, assignor to Tour & Andersson AB, Sweden

PCT No. PCT/SE91/00661, § 371 Date Mar. 23, 1993, § 102(e) Date Mar. 23, 1993, PCT Pub. No. WO92/05900, PCT Pub. Date Apr. 16, 1992
PCT Filed Oct. 3, 1991, Ser. No. 30,224
Claims priority, application Sweden, Oct. 5, 1990, 9003193-1
Int. Cl.[5] B22D *17/12, 17/20, 27/09*
U.S. Cl. 164—120 9 Claims



1. A method of press casting in which a liquid metal (**49**) in a filling chamber (**20**) is displaced by a lower piston (**43**) mounted to a lower machine table (**5**), under the influence of an upper piston (**18**) mounted in an upper machine table (**10**), the tables (**5** and **10**) support a lower mold part (**24**) and an upper mold part (**22**) respectively, said lower piston (**43**) is adjustable in the filling chamber (**20**) to cause the liquid metal to reach a desired level below a mold cavity (**51**) between the mold parts (**22, 24**) and has a larger diameter than the upper piston, characterized by the steps of:

a) lowering the upper piston, subsequent to pouring of the liquid metal into the filling chamber, to a desired position in a guiding and feeding sleeve (**19**) in the upper mold part;
b) biasing the upper piston to this desired position;
c) moving the lower piston upwards in the filling chamber to feed the liquid metal into the mold cavity;
d) applying sufficient upward feeding force by way of the lower piston and the liquid metal to the upper piston, once the mold cavity is full of the liquid metal, to move the upper piston upward against the bias;
e) allowing the liquid metal to solidify;
f) lowering the upper piston to a lower position; and
g) opening the mold parts to release the casting.

9. A press casting machine comprising:

a stationary base plate (**3**) supporting an upper machine table (**10**) by hydraulic cylinders (**7**) for vertical movement relative to the base plate, the base plate and the upper machine table being supported above a lower machine table;

the upper machine table (**10**) having an upper mold part (**22**) rigidly mounted to a lower surface thereof, a lower mold part (**24**) supported, beneath the upper mold part, by the upper machine table (**10**) (**22**) by hydraulic cylinders (**3'**) for vertical movement relative thereto, and an upper piston mounted in the upper machine table (**1**) that extends down into a guide sleeve (**19**) in the upper mold part that communicates with a mold cavity defined by the upper and lower mold parts (**22,24**);

the lower machine table (**5**) having a filling chamber (**20**) for receiving a liquid metal (**49**) and a lower piston (**43**) mounted to the lower machine table (**5**) that extends upwards into the filling chamber (**5**) to fill the mold cavity (**23,25**) with the liquid metal under the influence of the upper piston (**18**),

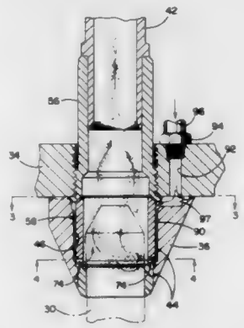
the lower piston (**43**) being adjustable from a first position adjacent an upper edge of the filling chamber (**20**) to a second position at a desired level below the upper edge of the filling chamber (**20**) to maintain the lowest pouring height possible during pouring of the liquid metal and to measure the desired amount of liquid metal.

5,343,928

TWO-PIECE LINER FOR USE IN A MATCHPLATE MOLDING MACHINE

William A. Hunter, Naples, Fla., assignor to Hunter Automated Machinery Corporation, Schaumburg, Ill.

Filed Aug. 2, 1993, Ser. No. 100,298
Int. Cl.[5] B22C *15/02, 23/00*
U.S. Cl. 164—158 6 Claims



1. In a molding machine, the combination of, a pattern plate having an upwardly extending sprue former, a cope flask located above said pattern plate, a squeeze head located above said cope flask, said pattern plate and said cope flask being adapted to be closed vertically relative to said squeeze head to pack sand in said cope flask against said pattern plate and thereby form a cope mold having a sprue, a basin former extending downwardly from said squeeze head for forming a pouring basin in the upper side of said mold adjacent the upper end of said sprue, said basin former having a vertically extending passage therethrough, a sand discharge tube communicating with the upper end of said passage, a tubular liner disposed within said passage and communicating with said discharge tube, said molding machine being characterized in that said liner comprises;

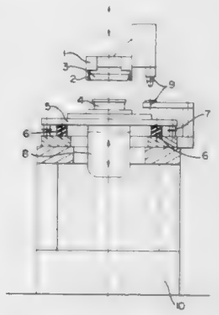
two separately formed tubular top and bottom members each having upper and lower end portions; said top member being axially aligned with said bottom member; one end portion of one of said members being formed with a plurality of slots and being seated against the adjacent end portion of the other of said members thereby forming a plurality of openings in said liner; said openings communicating with the interior of said liner, and means for admitting a flow of pressurized air through said openings and into the interior of said liner thereby to blow loose sand from said liner and into said discharge tube.

5,343,929

APPARATUS FOR DEBURRING FOUNDRY CORES AND SIMILAR WORKPIECES

Werner Landua, Mannheim, and Werner Pichler, Brühl, both of Fed. Rep. of Germany, assignors to Adolf Hottinger Maschinenbau GmbH, Mannheim-Rheinau, Fed. Rep. of Germany

PCT No. PCT/DE91/00036, § 371 Date Jul. 30, 1992, § 102(e) Date Jul. 30, 1992, PCT Pub. No. WO91/11280, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 18, 1991, Ser. No. 915,997
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1990, 4002555
Int. Cl.[5] B22C *9/10, 23/00*
U.S. Cl. 164—262 7 Claims



7. A method for deburring a workpiece such as a molded foundry core comprising the steps of

providing a workpiece having burrs which protrude from the peripheral edge thereof,

providing a template having a fixed internal profile which closely conforms to the entire outline of said peripheral edge of the workpiece, with no significant clearance therebetween,

supporting the workpiece and the template so that the peripheral edge of the workpiece is aligned in a predetermined direction with said internal profile of said template,

vibrating said template so that the template moves exclusively along said predetermined direction, and

guiding said workpiece supporting means for linear movement along said predetermined direction and so that the supported workpiece moves through said internal profile of the vibrating template and the internal profile acts to sever the protruding burrs from the peripheral edge of the workpiece.

5,343,930

CENTRIFUGAL CASTING SYSTEM HAVING A CARRIER OF ELONGATED MATERIALS

Yutaka Yagi, and Keizo Ishijima, both of Tokai, Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Japan

Filed Mar. 23, 1993, Ser. No. 35,642
Claims priority, application Japan, Mar. 30, 1992, 4-074562
Int. Cl.[5] B22D *13/10*
U.S. Cl. 164—295 8 Claims

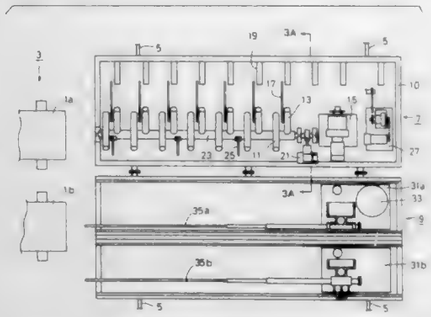
1. A centrifugal casting system comprising a centrifugal casting unit having a single casting mold and a casting carrier provided in a position to draw a casting from the centrifugal casting unit, wherein said casting carrier comprises:

a fixed roller conveyor arranged in the direction in which castings are drawn and laterally tilted at a predetermined oblique angle to the horizontal;

a pivotal roller conveyor provided in the direction in which castings are drawn capable of pivoting between a first and second positions for forming in the first position a V-shape path together with the fixed roller conveyor in the direction in which castings are drawn and opening the V-shape path by pivoting downward about lower ends of the rollers to the second position;

drawing means for drawing castings through the V-shape path;

a lateral conveying lane for conveying castings in the direction lateral to the V-shape path; and



stock means, provided at the far end of the lateral conveying lane, for stocking castings; and

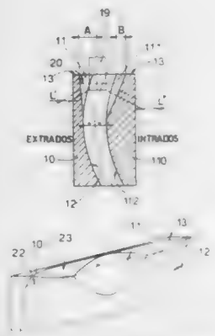
pivoting means for pivoting the pivotal roller conveyor between the first and second positions.

5,343,931

CRYSTALLIZER, OR INNER PORTION, OF A MOLD FOR THE CONTINUOUS CURVED CASTING OF THIN SLABS

Mirco Striuli, S. Dona' Di Piave; Fabio Borlina, Torre Di Mosto, and Wogler Ruzza, Udine, all of Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Oct. 30, 1992, Ser. No. 969,339
Claims priority, application Italy, Oct. 31, 1991, UD91 A 000182
Int. Cl.[5] B22D *11/04*
U.S. Cl. 164—418 19 Claims



1. A crystallizer of a mold for the continuous curved casting of thin slabs lengthwise through the crystallizer, comprising an outer curved extrados plate spaced from an inner curved intrados plate defining a casting channel therebetween, wherein at least the outer curved extrados plate contains a substantially central enlargement hollow starting from an upper surface of the outer curved extrados plate and being reduced progressively to zero at a lengthwise intermediate position along the curved inner surface of the outer curved extrados plate, and a funnel-type flaring cooperating with the enlargement hollow, the enlargement hollow being defined by a profile determined lengthwise by an angle "α" and crosswise by an angle "β", wherein the angle "α" should not exceed a maximum value of 5° and may vary, from a center line to the sides of the hollow, according to a substantially linear development contained within a field limited at its upper end by that maximum value and at its lower end by zero, and wherein the angle "β" should not exceed a maximum value of 4.5° and may vary, from the

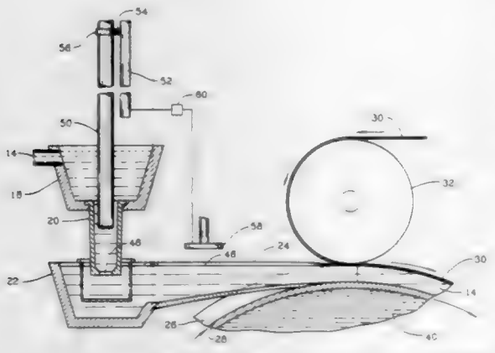
upper surface of the crystallizer to the lower end of the hollow, according to a linear development contained within a field limited at its upper end by that maximum value and at its lower end by zero.

5,343,932

SYSTEM FOR FEEDING MOLTEN METAL STREAM TO CONTINUOUS STRAND CASTER

Tabb H. Williams; Robert B. Augustine, III, both of Richmond, and James L. Kirby, Mechanicsville, all of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Apr. 26, 1993, Ser. No. 53,781
Int. Cl.[5] B22D *11/06, 11/18*
U.S. Cl. 164—449.1 5 Claims



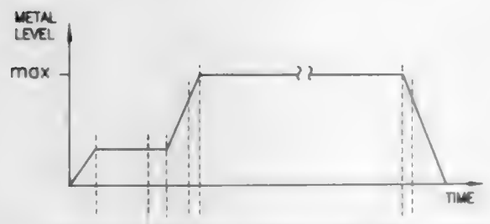
1. Apparatus comprising a casting wheel having a peripheral groove for receiving and solidifying molten metal, an upper chamber for receiving molten metal, a downspout from the upper chamber, a lower chamber to receive molten metal from the downspout, a trough extending laterally to convey molten metal from the lower chamber to the groove, means to regulate flow through the down spout, a sensor mounted above the trough to determine the level of molten metal in the trough, means connecting the sensor to operate the down spout flow control means, and means to prevent turbulence in the molten metal flowing through the trough beneath the sensor, said preventive means comprising a foraminous receptacle positioned in the lower chamber to receive molten metal from the down spout and cause it to pass through multiple openings through the receptacle before emerging from the receptacle.

5,343,933

PROCESS AND APPARATUS FOR CONTINUOUSLY CASTING METALS

Wolfgang Schneider, St. Augustin; Horst-Dieter Lindlar, Hennef, and Roland Schmoll, Bonn, all of Fed. Rep. of Germany, assignors to VAW Aluminium AG, Fed. Rep. of Germany

Filed Feb. 5, 1993, Ser. No. 14,405
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1992, 4203337
Int. Cl.[5] B22D *11/07, 11/16*
U.S. Cl. 164—452 37 Claims



1. A process for casting of continuous metal billets, ingots or bars in a multiple mould casting apparatus in which each mould comprises a hot top attachment, a movable casting base or table and a gas pipeline for introducing pressurized gas to said mould, comprising the steps of (a) supplying gas through each pipeline to each mould at a predetermined flow rate during a first casting-initiation step from the moment of introducing molten metal to each said mould until after the movable casting base is lowered and a portion of said metal casting is cooled; (b) sensing the gas pressure in said pipeline, and (c) automatically adjusting the gas flow rate to maintain the gas pressure at a predetermined nominal value during the formation of said continuous castings in a second casting step.

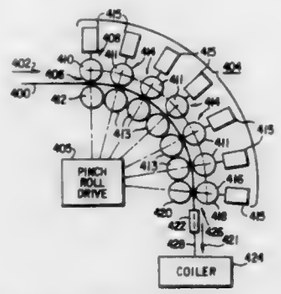
32. A multiple mould casting apparatus for the continuous casting of metals in a plurality of moulds each comprising a hot top attachment having a pressurized gas supply and a movable casting base which is lowerable to a cooling zone to cool continuous metal castings formed in the mould cavity between said hot top attachment and said casting base, said apparatus comprising a pipeline connected to each mould for supplying pressurized gas downstream thereto; means for regulating the flow rate of said pressurized gas to each of said moulds; means for sensing the gas pressure in each said pipeline at a location downstream of said regulating means and upstream of each said mould, and means for automatically adjusting said regulating means to maintain the gas pressure in said pipeline at a predetermined nominal value, whereby the gas flow rate is maintained constant at a predetermined value, independent of the gas pressure, during the first casting phase in which the mould cavities are being filled with molten metal and the casting base is lowered to initiate cooling of the casting and, subsequently thereto, the gas flow rate is regulated to a higher or lower value whenever the sensed gas pressure varies from a predetermined nominal pressure.

5,343,934

MULTIPLE PINCH ROLL APPARATUS AND METHOD FOR ADVANCING A CONTINUOUS ROD

Thomas N. Wilson, Carrollton County, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Feb. 1, 1993, Ser. No. 11,588
Int. Cl.[5] B21B *1/46, 13/22;* B22D *11/12*
U.S. Cl. 164—476 33 Claims



13. A method of conveying a continuous rod product from a continuous casting machine and rolling mill along a path of travel to a coiler comprising the steps of:

passing the rod product over the periphery of at least one inner roll having a rotational axis;

engaging the rod product against the periphery of said at least one inner roll with a plurality of at least three outer rolls, each having rotational axes;

applying a compressive force to the rod product with each of said outer rolls and said at least one inner roll; and

rotating said rolls about their respective rotational axes.

27. A continuous metal casting and rolling system, comprising:

a) a continuous casting machine followed by a rod rolling mill producing a continuous rod product;

b) apparatus for conveying the continuous rod product from the rolling mill along a path of travel, further comprising:

i) at least one inner roll having a periphery over which said rod product passes and a plurality of at least three outer rolls each engageable with said rod product as it passes over the periphery of said at least one inner roll,

ii) means for moving said inner roll and said plurality of outer rolls relative to one another so as to apply a compressive force to the rod product between said inner roll and each of said outer rolls, each of said rolls having a rotational axis,

iii) means coupled to at least some of said rolls for rotating such rolls about their respective rotational axes, whereby the rod product is advanced along said path by the rotation of said rolls and the compressive force applied thereto by said plurality of rolls; and

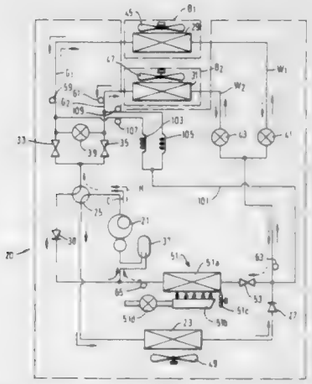
c) means for coiling the rod product.

5,343,935

MULTIPLE TYPE AIR CONDITIONING APPARATUS

Shigeto Sumitani, Shizuoka, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 6, 1991, Ser. No. 756,313
Claims priority, application Japan, Sep. 14, 1990, 2-242460
Int. Cl.[5] F25B *29/00, 13/00*
U.S. Cl. 165—22 6 Claims



1. A multiple type air conditioning apparatus comprising:

a refrigerant supply unit having a variable capacity compressor, a four-way valve connected to its output, an external heat-exchanger connected to a port of the four-way valve and a fan device associated with the external heat-exchanger;

at least two air conditioning units each having a heat-exchanger and fan device associated with each heat-exchanger, the heat-exchangers of the at least two air conditioning units being connected in parallel to one another and each connected to the compressor through the four-way valve, each heat-exchanger producing a variable refrigerant evaporation temperature and variable refrigerant super heating when refrigerant flows therethrough,

means for controlling each air conditioning unit respectively at a required capacity;

first variable expansion valve means for variably throttling refrigerant, fed from the compressor through the external heat exchanger, flowing through one of the heat-exchangers of the at least two air conditioning units;

second variable expansion valve means for variably throttling refrigerant, fed from the compressor through the external heat exchanger, flowing through the other heat-exchanger of the at least two air conditioning units;

variable flow rate control means arranged at an opposite side of the heat-exchangers of the at least two air conditioning units from which the first and second variable expansion valve means are connected for regulating a distribution of refrigerant flowing into each heat-exchanger of the at least two air conditioning units;

mean control means for controlling the capacity of the compressor based on the total amount of the required capacities of the at least two air conditioning units; and

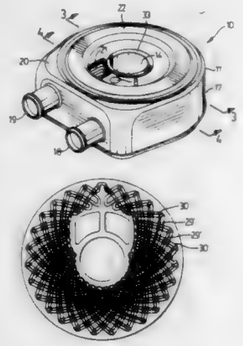
wherein the variable flow rate control means includes a flow rate control valve connected between the heat-exchangers of the at least two air conditioning units, a first bidirection valve means connected between the four way valve and one of the heat-exchangers of the at least two air conditioning units and wherein the flow rate control valve allows refrigerant to flow through the one of the heat-exchangers and a second bidirectional valve means connected between the four way valve and the other heat-exchanger and wherein the variable opening valve allows refrigerant to flow through the other heat-exchanger.

5,343,936

SPIRAL RIPPLE CIRCUMFERENTIAL FLOW HEAT EXCHANGER

Paul K. Beatenbough, Medina; Kris J. Meekins, Bemus Point, and Clark E. Stohl, Lakewood, all of N.Y., assignors to Long Manufacturing Ltd., Oakville, Canada

Continuation-in-part of Ser. No. 437,680, Nov. 17, 1989, Pat. No. 5,203,832. This application Nov. 24, 1992, Ser. No. 980,871
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] F28F *3/04, 3/12, 3/08*
U.S. Cl. 165—41 13 Claims



1. An improved energy exchange structure, comprising: first and second generally parallel opposing plates joined to define a hollow passageway therebetween and further defining an inlet and an outlet therein and a generally overall circular flow path from the inlet to the outlet, each of said opposing plates undulating in cross-section to define a plurality of opposing valleys forming the hollow passageway, at least some of the valleys of each said plate being arranged to follow spiral curves disposed at an oblique angle to the circular flow path, the oblique angle being higher near the center of the circular flow path than at the outer periphery thereof with apexes of valleys of the first plate arranged to cross apexes of valleys of the second plate such that the area between opposing valleys defines crossing passages.

5,343,937

THERMAL CONTROL OF CONCENTRIC TUBE LIQUID SOURCE GAS LINES

Timothy D. Gross, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 342,112, Apr. 24, 1989, abandoned. This application Mar. 24, 1992, Ser. No. 856,816
Int. Cl.[5] F16L *53/00*
U.S. Cl. 165—70 17 Claims

1. Fluid transfer line having fluid supply and fluid discharge

connections for a working fluid, and providing safety containment of a working fluid which is discharged from the line in a gaseous state, characterized by:

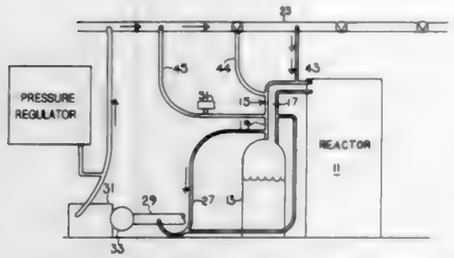
a) concentric inner and outer chambers, configured such that, if the inner chamber develops a breach in its integrity, the inner chamber leaks to the outer chamber or the outer chamber leaks to the inner chamber, depending on the relative pressures of the inner and outer chambers, and the outer chamber contains any fluid which may leak from the inner chamber;

b) working fluid supply and discharge connections communicating with the inner concentric chamber;

c) the working fluid and discharge connections and the inner concentric chamber configured so as to establish working fluid flow in a downstream direction;

d) the inner concentric chamber not communicating with the outer concentric chamber during a normal mode of operation;

e) thermal control fluid inlet and outlet connections on the outer concentric chamber, said inlet being located at a location on the outer concentric chamber downstream of



the outlet connection, thereby permitting a thermal control fluid to flow in the outer concentric chamber from the inlet connection to the outlet connection in an upstream direction with respect to the working fluid, the thermal control fluid comprising hot water and the outer chamber being used to flow the hot water around the inner chamber;

f) a pump for causing the thermal control fluid to flow in said upstream direction;

g) temperature maintenance means for bringing the thermal control fluid to a temperature which will maintain the thermal control fluid at a predetermined temperature when it reaches the thermal control fluid inlet connection, the temperature maintenance means being a water heater;

h) means to detect a breach in the integrity of the inner chamber, including means for detecting presence of the working fluid within the outer concentric chamber, whereby the detection of the working fluid within the outer concentric chamber is used as indicator of failure and

i) said working fluid, the working fluid being a liquid source gas.

5,343,938

METHOD AND APPARATUS FOR THERMALLY INSULATING A WAFER SUPPORT

Bryan D. Schmidt, San Antonio, Tex., assignor to VLSI Technology, Inc., San Jose, Calif.

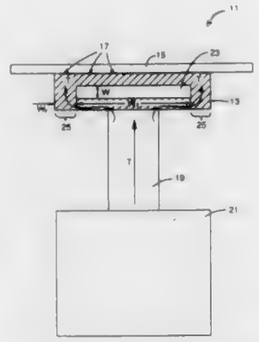
Filed Dec. 24, 1992, Ser. No. 996,447
Int. Cl.[5] F28F *7/00*
U.S. Cl. 165—80.2 **22 Claims**

1. A method for controlling heat transfer to a wafer from a motor that causes rotation of the wafer, the method comprising the steps of:

providing a wafer chuck having a water support surface that can support a wafer for rotation;

providing a motor means having a spindle coupled to said wafer chuck, said spindle being adapted to rotate the wafer chuck around a spindle axis; and

providing a fully enclosed internal gap within at least one of



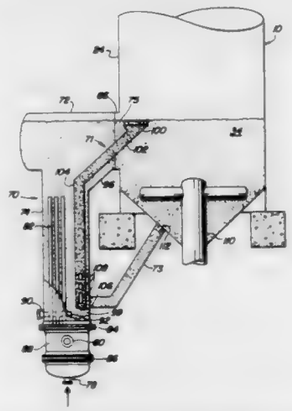
the wafer chuck and the spindle that inhibits heat conduction from the motor to the wafer, such that there is substantially no fluid communication between said gap and a space between said wafer and said wafer support surface.

5,343,939

OFFSET FCC COOLERS WITH IMPROVED CATALYST CIRCULATION

Ismail B. Cetinkaya, Palatine, and David A. Lomas, Barrington, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Dec. 14, 1992, Ser. No. 989,682
Int. Cl.[5] F28C *3/16;* **B01J** *38/32*
U.S. Cl. 165—104.18 **3 Claims**



1. An apparatus for regenerating fluidized particles comprising:

a) a regeneration vessel for contacting coke contaminated particles with a regeneration gas;

b) a vertically disposed cooling vessel containing a plurality of heat exchange tubes;

c) a horizontally extending passageway providing open communication between said catalyst regeneration vessel and said cooling vessel;

d) a conduit that extends through said cooler and into said passage-way having a bottom opening located in a lower portion of said cooling vessel, a top opening in communication with said regeneration vessel, and a structurally uninterruptible flow path between said top and bottom opening; and,

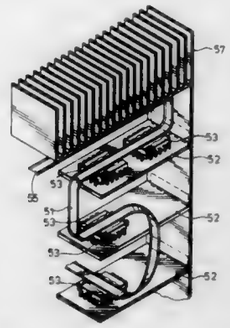
e) means for adding fluidizing gas to a lower portion of said cooling vessel and varying the amount of said fluidizing gas that enters said conduit with respect to the remainder of said cooling vessel.

5,343,940

FLEXIBLE HEAT TRANSFER DEVICE

Amigo Jean, No. 18, Alley S, Lane 19, Nu-Chung Rd., I-Lan City, Taiwan

Continuation of Ser. No. 969,785, Oct. 29, 1992, abandoned. This application Oct. 29, 1993, Ser. No. 146,432
Int. Cl.[5] H01L *23/427;* **F28D** *15/02*
U.S. Cl. 165—104.33 **1 Claim**



1. A flexible heat transfer device for dissipating heat from first and second electronic elements respectively mounted to first and second circuit boards disposed in a casing, the first circuit board disposed parallel to and below the second circuit board, the device comprising:

a plurality of heat dissipation plates disposed on an exterior portion of the casing above the first and second circuit boards;

a flexible envelopment defining a receiving space, the flexible envelopment formed as a flat tubular strip of plastic film comprising,

a lower section attached to the first electronic element and defining a lower portion of the receiving space,

an intermediate section attached to the second electronic element and defining an intermediate portion of the receiving space, and

an upper section attached to the dissipation plates and defining an upper portion of the receiving space;

a heat transfer fluid disposed within the receiving space and having a boiling point between an ambient temperature outside the casing and a desired temperature of the first and second electronic elements when active;

wherein the heat from the first and second elements respectively conducts through the lower and intermediate sections of the envelopment into the lower and intermediate portions of the receiving space and converts the fluid into a vapor;

wherein the vapor flows to and condenses in the upper portion of the receiving space, thereby transferring the heat through the upper section of the envelopment to the heat dissipation plates;

wherein the condensed vapor flows back to the intermediate and lower portions of the receiving space; and

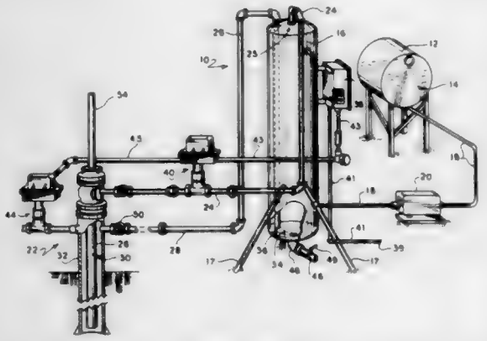
whereby a reciprocal flow of the heat transfer liquid is formed between the upper portion and the intermediate and lower portions of the receiving space and the heat is transferred via the heat transfer fluid to the heat dissipation plates.

5,343,941

APPARATUS FOR TREATING OIL AND GAS WELLS

Michael L. Raybon, 2711 Rebecca St., Big Spring, Tex. 79720

Filed Dec. 3, 1992, Ser. No. 985,136
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—53 **10 Claims**



1. An apparatus for treating wells having well pipe with a piping pressure, casing pressure, casing with a well casing pressure, and a well annulus defined by the space between the piping and the casing, said apparatus comprising:

a storage tank for retaining chemical treatment fluids;

a Closed and Sealed mixing vessel filled with produced reservoir liquids to establish a liquid fluid packed state, wherein said mixing vessel combines the chemical treatment fluids with the produced reservoir liquids prior to reinjection into the well annulus;

a first conduit for delivering the produced reservoir liquids from the well piping to said mixing vessel, said first conduit having a port opening into the top of said mixing vessel;

a second conduit for delivering chemical treatment fluids from said mixing vessel to the well annulus, said second conduit extending vertically into said mixing vessel and having a port opening proximate to the bottom of said mixing vessel;

a first valve for regulating fluid flow within said first conduit; and

an actuating and timing mechanism associated with said first valve and adapted to open and close said first valve, wherein the volume of the produced reservoir fluid introduced into said vessel from the well piping is regulated to maintain the liquid fluid packed state;

wherein the chemical fluids and the produced reservoir liquids in the mixing vessel are delivered to the well annulus when said first valve opens., whereby the piping pressure at said first conduit being higher than the casing pressure at said second conduit forces the displacement of the chemical fluids and the reservoir liquids into the well annulus via said second conduit.

5,343,942

SUBMERSIBLE PUMP LINE PROTECTOR

David Del Serra, and Lawrence E. Doty, both of Claremore, Okla., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Jan. 13, 1993, Ser. No. 3,919
Int. Cl.[5] E21B *4/04*
U.S. Cl. 166—66.4 **23 Claims**

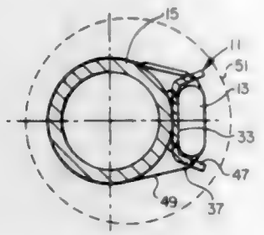
1. An apparatus for protecting a line which is strapped to a string of well tubing, the tubing having a plurality of projections protruding from an outer diameter of the tubing, the apparatus comprising in combination:

a channel member having upper and lower ends, a base and two spaced apart sidewalls having inner edges joined to the base and outer edges extending therefrom, the channel

member being open at the outer edges of the sidewalls defining an outward facing open receptacle for receiving the line;

an aperture located in a central portion of the base between the upper and lower ends and configured for receiving an outer edge portion of one of the projections; and

securing means for securing the upper and lower ends of the



channel member to the tubing with the base in direct contact with the tubing, with the outer edge portion of the projection located in the aperture, and with the line located in the receptacle; and

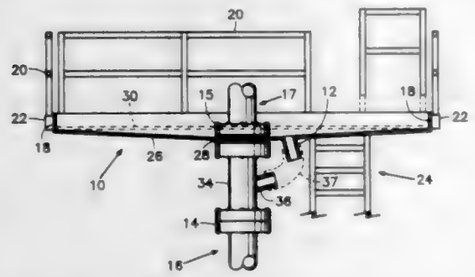
wherein the securing means comprises a pair of straps which extend around the tubing, over the outer edges of the sidewalls, overlying the line, one at each end of the channel member.

5,343,943

PORTABLE OIL-DRILLING WASTE RECOVERY SYSTEM

Jimmy D. Norris, 277 Burnham Rd., Oak View, Calif. 93022, and Orville C. Hibdon, 88 West Crown, Ojai, Calif. 93023

Continuation-in-part of Ser. No. 576,964, Sep. 4, 1990, Pat. No. 5,121,794. This application May 26, 1992, Ser. No. 889,128
Int. Cl.[5] E21B *33/08*
U.S. Cl. 166—81 **13 Claims**



1. Waste fluid containment and recovery apparatus for installation in-line with a piping system between a pair of horizontal interfacing flanges thereof comprising:

a) a pan having a bottom and surrounding sidewalls, said bottom having a bore therethrough;

b) flange interface means having a pair of opposed interfacing surfaces which interface with respective ones of the pair of interfacing flanges disposed around said bore for sealably connecting said bottom in line with the piping system;

c) a plurality of guide members carried by said bottom at spaced intervals about a periphery thereof;

d) a plurality of vertical support members removably connected to respective ones of said guide members; and,

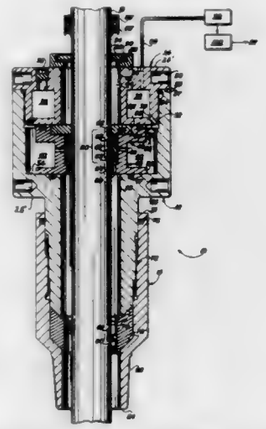
e) locking adjustment means for releasably and adjustably attaching said plurality of guide members to respective ones of said plurality of vertical support members at selected vertical heights.

5,343,944

SELF ALIGNING STUFFING BOX FOR PUMPJACK UNITS

Grey Bassinger, 1308 S. Midkiff, Ste. 125, Midland, Tex. 79701

Filed Sep. 10, 1992, Ser. No. 942,897
Int. Cl.[5] E21B *33/03*
U.S. Cl. 166—84 **20 Claims**



13. In a pumpjack unit having a polished rod reciprocatingly received through a stuffing box in a sealed manner therewithin; the stuffing box being attached to the upper end of 4 a production tubing string by an adaptor; the combination of said stuffing box and adaptor comprising:

an upwardly opening annular chamber within said stuffing box; a passageway extending through the annular chamber and through said stuffing box through which the polished rod is reciprocatingly received; a closure member for said stuffing box, said closure member forms a chamber roof, a floor in said stuffing box that forms a bottom of the annular chamber;

an annular spool having a spool passageway and opposed flanges; a seal assembly mounted in the spool passageway for reciprocatingly receiving the polished rod; said spool is received within said chamber with said opposed flanges, respectively, slidably engaging the roof and floor, respectively, of said annular chamber; said chamber has an interior wall spaced from said spool, a lubrication chamber jointly formed by said spool, said interior wall, and said chamber roof and floor within which the spool can move radially of said chamber wall and thereby align the polished rod with the production tubing string.

5,343,945

DOWNHOLDE GAS/OIL SEPARATION SYSTEMS FOR WELLS

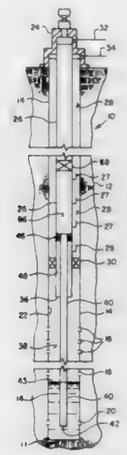
Jean S. Weingarten; M. Jane Williamson, both of Anchorage, and Jeffrey L. Harris, Eagle River, all of Ak., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 19, 1993, Ser. No. 20,524
Int. Cl.[5] E21B *43/12*
U.S. Cl. 166—105.5 **15 Claims**

1. In a well operable to produce both gas and oil into a wellbore space from at least one zone of interest of an earth formation wherein said well includes a casing extending in and defining at least part of a wellbore, a tubing string extending within said casing and defining a wellbore annulus extending to a wellhead, a seal between said tubing string and said casing delimiting said annulus and means forming a gas flow passage between the interior of said tubing string and said annulus, the improvement characterized by:

a tubing extending into said wellbore beyond the distal end of said tubing string, said tubing extending into a column

of liquid in said wellbore space beyond said distal end of said tubing string and means delimiting a space within said tubing string in communication with said wellbore space and with said annulus by way of said gas flow passage for conducting gas between said wellbore space and said



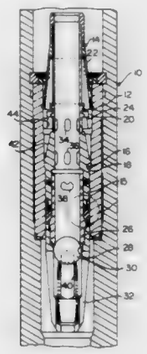
annulus whereby liquid separated from gas in said wellbore space may flow through the interior of said tubing and said tubing string to the surface and gas may flow from said wellbore space through said space between said tubing and said tubing string, said gas flow passage and said annulus to the surface.

5,343,946

HIGH PRESSURE PACKER FOR A DROP-IN CHECK VALVE

Charles D. Morrill, Humble, Tex., assignor to Hydril Company, Houston, Tex.

Filed Aug. 9, 1993, Ser. No. 104,332
Int. Cl.[5] F21B *33/12*
U.S. Cl. 155—148 **23 Claims**



1. A drop-in check valve assembly for sealing off a drill string for controlling downhole high pressures, comprising

a landing sub with a central bore included as a joint in the drill string, said landing sub including a lower shoulder and an upward locking shoulder,

a check valve subassembly having a body with a central bore, said check valve subassembly being constrained against downward movement by the lower shoulder of said landing sub and against upward movement by said upward locking shoulder of said landing sub, said check valve further including

a ball valve housing with a ball seat at its lower end,

a ball for seating with said ball seat when the downhole pressure is in excess of the uphole pressure, and

a ball cage surrounding the lower end of said housing and telescoping therewith,

a compressible packer assembly located about said ball valve housing, the upper surface being in contact with the lower end of said check valve subassembly body and the lower surface being in contact with the upper end of said ball cage, said compressible packer assembly including

a soft elastomer ring,

an adjacent hard elastomer ring above said soft elastomer ring,

an upper multi-part anti-extrusion ring located above said hard elastomer ring for deflecting laterally by the movement of said hard elastomer ring when the downhole pressure exceeds the uphole pressure to seal off the gaps in the annulus between said ball valve housing and bore surface of said landing sub to prevent elastomer extrusion resulting from high downhole pressures, and

an expansible lower anti-extrusion metal ring to minimize elastomer extrusion at the lower end of said packer assembly.

5,343,947

ANCHOR PLUG FOR OPEN HOLE TEST TOOLS

Kenneth M. Cowan, Sugar Land, and Arthur H. Hale, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 22, 1992, Ser. No. 964,810
Int. Cl.[5] E21B *47/00, 33/134*
U.S. Cl. 166—250 **5 Claims**

1. A method for drilling a borehole and providing a cement anchor plug in a soft or weak formation existing in the borehole below a zone to be tested, comprising

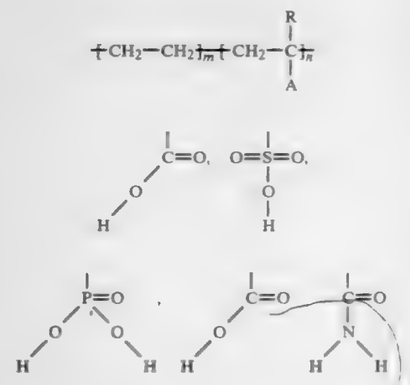
preparing a universal fluid by mixing a drilling fluid and a cementitious component selected from blast furnace slag and a proton acceptor metal compound;

drilling the borehole with the universal fluid and laying down a settable filter cake on the walls of the borehole;

diluting at least part of the universal fluid with a water source selected from water, brine, seawater, water base drilling fluid, and water emulsion drilling fluid;

forming a cementitious slurry from said at least part of the universal fluid by adding additional cementitious component and/or

an activator wherein, when said cementitious component is said blast furnace slag, said activator is an alkaline agent, and when said cementitious component is said metal compound, said activator is a phosphorus acid or one of a polymer component of the formula:



and wherein R is H or a 1–10 carbon atom alkyl radical and the ratio of m to n is within the range of 0:1 to 100:1;

circulating the cementitious slurry to the soft or weak forma-

tion in the borehole below a zone to be tested, the cementitious slurry being in direct contact during and after placement with the universal fluid in the borehole; and

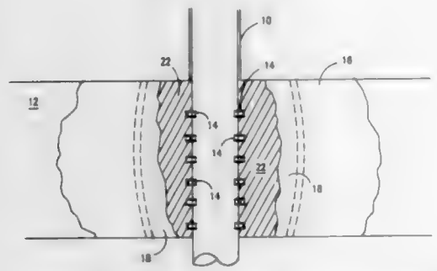
allowing the cementitious slurry to solidify in-situ adjacent to the settable filter cake covering the soft or weak formation, to form an anchor plug in the wellbore.

5,343,948

SAND CONTROL AGENT AND PROCESS

Paul Shu, Cranbury, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 810,468, Dec. 19, 1991, Pat. No. 5,211,236.
This application Aug. 16, 1993, Ser. No. 63,200
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] F21B *33/138*
U.S. Cl. 166—276 **11 Claims**



1. A method for forming a cement for controlling sand production through a consolidated gravel pack in an unconsolidated or loosely consolidated formation penetrated by a cased borehole where sand is placed within a washed-out area adjacent said borehole, comprising the steps of:

a) injecting into said zone an aqueous hydroxide solution where the hydroxide is a member selected from the group consisting of an alkali metal hydroxide, ammonium hydroxide, or organoammonium hydroxide;

b) injecting next into said zone a spacer volume of a water-immiscible hydrocarbonaceous liquid; and

c) injecting thereafter a water-miscible organic solvent containing an alkylpolysilicate in an amount sufficient to react with said aqueous hydroxide solution so as to form a permeability retentive silica cement within said sand in a washed-out area which cement is of a strength sufficient to bind sand containing particles within the washed-out area and formation adjacent thereto while producing hydrocarbonaceous fluids and excluding formation fines or sand.

5,343,949

ISOLATION WASHPIPE FOR EARTH WELL COMPLETIONS AND METHOD FOR USE IN GRAVEL PACKING A WELL

Colby M. Ross; Dhirajlal C. Patel, both of Carrollton, Tex., and Timothy F. LaBruyere, Houma, La., assignors to Halliburton Company, Houston, Tex.

Filed Sep. 10, 1992, Ser. No. 943,100
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—278 **23 Claims**

1. A method of isolating a production zone and subsequently placing the isolated zone on production comprising the steps of:

running and setting first and second wellpackers each having a smooth seal bore therein above and below the production zone;

running a production string including at least one well production screen and having seal bore subs attached to each end thereof and having a sufficient number of sections of threadedly interconnected blank pipe to space the first packer and the second packer above and below the production zone threadedly connected to one end of the well screen, the uppermost of said sections of blank pipe having releasable latching means attached thereof;

placing a gravel pack assembly including a crossover service tool and a sleeve valve shifting tool within the flow bore of the second well bore packer, and well bore packer having a wash pipe releasably engaged with the gravel pack assembly by shearable means and depending therefrom, the wash pipe having sealing means and releasable latching means mounted thereon;

simultaneously running the gravel pack assembly, the well bore packer and the wash pipe into the hole;



gravel packing the well bore;

manipulating the gravel pack assembly to seal the washpipe into said first packer and to latch the wash pipe into sealing engagement therewith;

removing the gravel pack assembly from within the bore of the production string leaving the wash pipe in sealing engagement with said first packer and the second packer; and,

establishing communication between the flow bore of the wash pipe and the producing zone.

5,343,950

DRILLING AND CEMENTING EXTENDED REACH BOREHOLES

Arthur H. Hale, Houston, and Kenneth M. Cowan, Sugar Land, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 22, 1992, Ser. No. 964,990
Int. Cl.[5] E21B *21/00, 33/14;* **C09K** *7/02*
U.S. Cl. 166—293 **17 Claims**

1. A method comprising:

drilling a deviated wellbore with a drill string comprising a drill pipe utilizing a drilling fluid comprising granulated water-quenched blast furnace slag and water;

circulating said drilling fluid down said drill pipe and up an annulus between said drill pipe and walls of said wellbore, thus laying down a filter cake on said walls of said wellbore during said drilling;

withdrawing said drill string and inserting a casing;

adding an activator to said drilling fluid to produce a cementitious slurry; and

circulating said cementitious slurry down said casing and up into an annulus formed between said casing and the walls of said wellbore.

5,343,951

DRILLING AND CEMENTING SLIM HOLE WELLS

Kenneth M. Cowan, Sugar Land, and Arthur H. Hale, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 22, 1992, Ser. No. 964,991
Int. Cl.[5] E21B *21/00, 33/14;* **C09K** *7/02*
U.S. Cl. 166—293 **17 Claims**

1. A method comprising:

drilling a slim hole wellbore with a drill string comprising a drill pipe utilizing a drilling fluid comprising granulated water-quenched blast furnace slag and water;

circulating said drilling fluid down said drill pipe and up an annulus between said drill pipe and walls of said wellbore, thus laying down a filter cake on said walls of said wellbore during said drilling;

withdrawing said drill string and inserting a casing, thus creating an annulus having a dimension between 0.1 and 1.25 inches between said casing and said walls of said wellbore;

adding an activator to said drilling fluid to produce a cementitious slurry; and

circulating said cementitious slurry down said casing and up into said annulus between said casing and said walls of said wellbore.

5,343,952

CEMENT PLUG FOR WELL ABANDONMENT

Kenneth M. Cowan, Sugar Land, and Arthur H. Hale, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

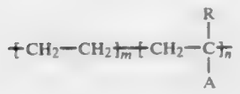
Filed Oct. 22, 1992, Ser. No. 964,814
Int. Cl.[5] E21B *33/13, 33/134*
U.S. Cl. 166—295 **5 Claims**

1. A method for preventing zonal communication or migration of fluids, in a well to be abandoned, by placement of a plug, comprising:

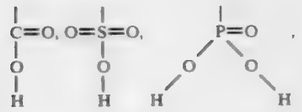
preparing a cementitious slurry comprising:

(a) a cementitious component selected from blast furnace slag or a proton acceptor metal compound; and

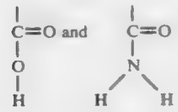
(b) an activator wherein, when said cementitious component is said blast furnace slag, said activator is optionally an alkaline agent, and when said cementitious component is said metal compound, said activator is a phosphorus acid or one of a polymer component of the formula:



wherein A is



or a mixture of



and wherein R is H or a 1–10 carbon atom alkyl radical and the ratio of m to n is within the range of 0:1 to 100:1;

(c) a water source selected from water, brine, seawater, water base drilling fluid, and water emulsion drilling fluid;

drilling the borehole with a universal fluid containing a minor quantity of the cementitious slurry, and depositing a settable filter cake on the wall of the borehole;

sequentially displacing the slurry in the borehole to various depths, beginning with the lowest depth, and following with successively higher depths, said various depths being chosen to prevent zonal communication or migration of fluids in the well; and

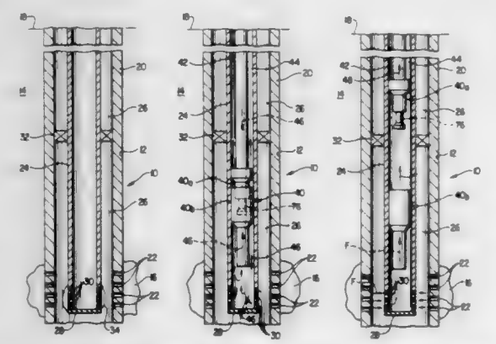
allowing the filter cake to set and the slurry to solidify and form plugs at the various selected depths.

5,343,953

THROUGH-TUBING RECIRCULATING TOOL ASSEMBLY FOR WELL COMPLETIONS

Dhirajlal C. Patel, Carrollton, and Tommy F. Grigsby, Plano, both of Tex., assignors to Halliburton Company, Houston, Tex.

Filed Aug. 24, 1993, Ser. No. 110,851
Int. Cl.[5] E21B *37/04*
U.S. Cl. 166—312 **24 Claims**



1. A method of restoring production fluid inflow through obstructed perforations in the production tubing portion of a subterranean well completion, said method comprising the steps of:

providing a recirculating tool;

connecting said recirculating tool to an end of tubing means having an outer diameter less than the inner diameter of the production tubing;

lowering said recirculating tool into the production tubing, on said tubing means, to a position above the obstructed production tubing perforations;

unblocking the obstructed perforations by the steps of:

flowing a recirculation fluid downwardly through said tubing means and a first portion of said recirculating tool, and discharging the fluid downwardly into the production tubing beneath said recirculating tool,

forcing a first portion of the discharged recirculation fluid outwardly through the obstructed perforations to unblock them, and

flowing a second portion of the discharged recirculation fluid upwardly through a second portion of said recirculating tool into the production tubing externally around said tubing means;

removing said recirculating tool from the production tubing; and

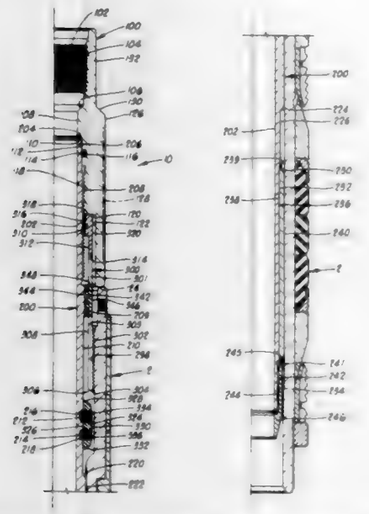
permitting production fluid to flow into the unblocked perforations and upwardly through the production tubing.

5,343,954

APPARATUS AND METHOD OF ANCHORING AND RELEASING FROM A PACKER

J. Tad Bohlen, Duncan; Donald R. Smith, Wilson, and Kevin T. Berscheidt, Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 3, 1992, Ser. No. 971,185
Int. Cl.[5] E21B *23/00*
U.S. Cl. 166—382 17 Claims



1. An apparatus for anchoring to and releasing from a downhole device of the type having threads in the upper end thereof, said apparatus comprising:

a stinger adapted for insertion into the downhole device;

thread mating means for threadingly engaging said stinger with the threads in said downhole device;

engaging means for engaging said thread mating means such that said thread mating means is held in engagement with said threads in said downhole device, said engaging means being characterized by a ring member disposed around said stinger;

means for transmitting torque from said stinger to said mating means without transmitting torque to said engaging means; and

releasing means for releasing said engaging means from engagement with said thread mating means such that said thread mating means may be disengaged from said threads in said downhole device without rotation, said releasing means comprising means for shearably attaching said ring member to said stinger and being adapted for shearing in response to a predetermined tension applied to said stinger.

14. A method of anchoring a work string to a packer set in a wellbore and releasing the work string from the packer, said method comprising the steps of:

stinging an anchoring apparatus into the packer;

engaging collet fingers on said anchoring apparatus with a threaded surface in the packer;

holding said collet fingers in engagement with said threads in said packer by engaging an engaging means with said collet fingers;

rotating the work string such that torque is applied to said collet fingers without applying torque to said engaging means; and

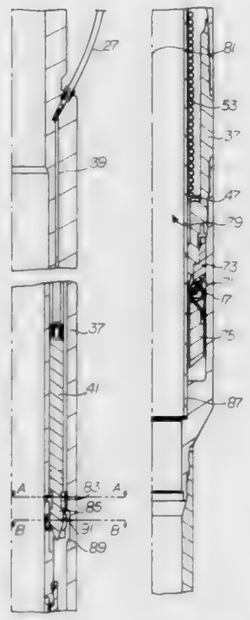
applying tension to the work string for releasing said engaging means such that said collet fingers may be disengaged from said threads in said packer.

5,343,955

TANDEM WELLBORE SAFETY VALVE APPARATUS AND METHOD OF VALVING IN A WELLBORE

Ronald D. Williams, Morris, Okla., assignor to Baker Hughes Incorporated, Houston, Tex.

Continuation of Ser. No. 875,635, Apr. 28, 1992, abandoned.
This application Aug. 16, 1993, Ser. No. 107,424
Int. Cl.[5] E21B *34/10*
U.S. Cl. 166—386 40 Claims



1. A tandem safety valve for use in a tubing string in a wellbore to selectively permit fluid flow through the tubing string, the tandem safety valve comprising:

a housing for connection into the tubing string, the housing having a fluid conduit therethrough in fluid flow communication with the tubing string; and

a first valve and a second valve disposed in series in the housing to selectively permit fluid flow through the fluid conduit of the housing, each of the first valve and the second valve including:

a flow tube disposed in the housing and selectively mechanically couplable to a closure member to selectively open and close the closure member, the flow tube including a locking dog for selective engagement with the housing to maintain the closure member in a selectable locked-open condition;

a flow tube biasing member coupled between the housing and the flow tube to urge the flow tube away from the closure member and into a fail-safe position;

a normal-operation actuator including a normal-operation cylinder in fluid flow communication with a normal-operation fluid pressure source to urge the normal-operation actuator into and out of engagement with the flow tube for selective opening and closing of the closure member;

a latch coupled to the flow tube to selectively engage and couple the normal-operation actuator to the flow tube; and

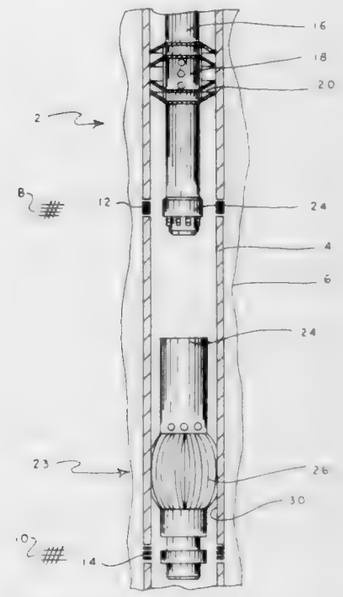
a locking actuator including a locking actuator cylinder in fluid flow communication with a locking fluid pressure source to selectively uncouple the normal-operation actuator from the latch.

5,343,956

COILED TUBING SET AND RELEASED RESETTABLE INFLATABLE BRIDGE PLUG

Martin P. Coronado, Houston, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Dec. 30, 1992, Ser. No. 998,979
Int. Cl.[5] E21B *23/06*
U.S. Cl. 166—387 42 Claims



1. A resettable wellbore tool for running into a wellbore on a workstring and urging into a setting engagement with a wellbore surface by filling with a pressurized fluid, said resettable wellbore tool comprising:

a source of pressurized fluid for urging said settable wellbore tool into said setting engagement;

an inflatable packer having a mandrel which extends longitudinally within said resettable wellbore tool, an inflatable element which is retained about said mandrel and includes an inflation chamber defined therebetween, and a fluid flowpath which includes said inflation chamber, at least one inflation port for passing said pressurized fluid within said mandrel, and at least one deflation port for passing said pressurized fluid from said fluid flowpath;

a fluid control member having at least one valve member which is repeatably moveable about said at least one inflation port for selectively passing said pressurized fluid through said at least one inflation port for repeatably inflating said inflatable packer, and for controlling flow of said pressurized fluid through said at least one deflation port for deflating said inflatable packer;

a release latch having a latch member which is repeatably moveable between a latched position for securing said inflatable packer to said workstring, and an unlatched position for releasing said inflatable packer from said workstring; and

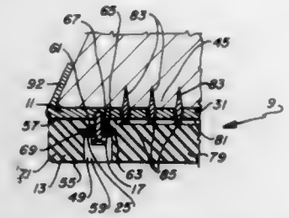
said resettable wellbore tool operable for resecuring said inflatable packer to said workstring for deflation of said inflatable packer to release said resettable wellbore tool from said setting engagement at a first depth within said wellbore, and reinflation of said inflatable packer to again urge said resettable wellbore tool into said setting engagement at a second depth within said wellbore on a single trip within said wellbore.

5,343,957

HORSESHOE MADE OF RESILIENT MATERIAL, HORSESHOEING SYSTEM AND METHOD

Larry L. Chapman, 999 E. 160th Ave., Broomfield, Colo. 80020

Filed Jul. 19, 1993, Ser. No. 93,551
Int. Cl.[5] A01L *1/04*
U.S. Cl. 168—11 16 Claims



8. An improved horseshoe utilized with a rigid shoe structure including inside and outside branches, the rigid shoe structure being applied to a horse's hoof utilizing nails in a horseshoe nailing pattern commonly utilized by horseshoers having a first row of nails in the inside branch and a second row of nails in the outside branch, said improved horseshoe comprising:

a shoe body made of resilient nonmetallic material and having a plurality of openings extending therethrough between a face intended to be ground engageable and an opposite face, said openings each including an enlarged bore at said face and a smaller bore at said opposite face, said bores each having a depth and meeting at a position in said shoe body, said openings being spaced from one another so that at least the first row of nails is located between adjacent ones of said openings;

bushings made of relatively rigid, nonmetallic material and each including a tubular portion and an annular shoulder at one end of said tubular portion, said bushings each at least partially embedded in said resilient nonmetallic material of said shoe body with different ones of said tubular portions of said bushings lining a portion of different ones of said smaller bores of said openings and with said annular shoulders at least partially embedded in said resilient nonmetallic material adjacent to different ones of said positions in said shoe body; and

connectors having heads of a size so that each said head of each said connector is completely receivable in different ones of said enlarged bores of said openings a distance below said face of said shoe body, said annular shoulders of said bushings providing a positive stop for said heads of said connectors when applying said shoe body to the rigid shoe structure, said shoe body adjacent to said smaller bores of said openings being pinched between said annular shoulders and the rigid shoe structure when said connectors are applied.

5,343,958

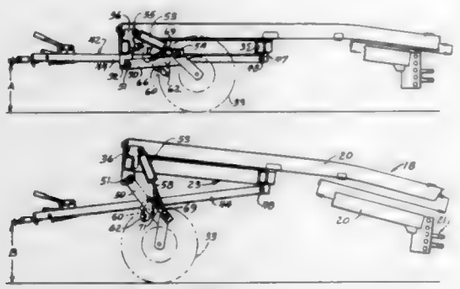
AGRICULTURAL FERTILIZER APPLICATOR INCLUDING SELF-LEVELING WAGON HITCH

Gaylen Kromminga, Morton; William J. Dietrich, Sr., and Dean Knobloch, both of Congerville, all of Ill., assignors to DMI, Inc., Goodfield, Ill.

Filed Jul. 2, 1992, Ser. No. 907,836
Int. Cl.[5] A01B *59/04*
U.S. Cl. 172—680 6 Claims

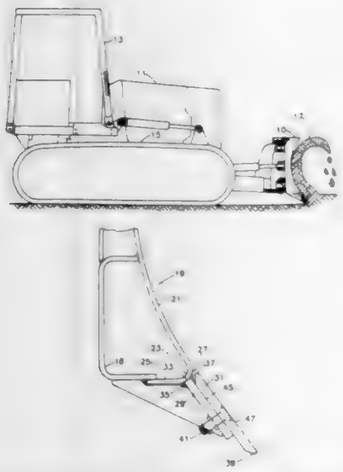
1. In an agricultural implement having a frame, at least first and second support wheels, a wheel pedestal for each support wheel connected to said frame, said implement being adapted to be pulled by a tractor and to pull a wheeled vehicle having a draft tongue, said implement including power means for adjusting said implement between a raised transport position and a lowered use position by rotating said wheel pedestals relative to said frame, the improvement comprising:

an elongated hitch frame having forward and rear ends;
first mounting means for pivotally mounting said forward end of said hitch frame to said implement frame to permit the rear end of said hitch frame to rotate downwardly relative to said implement frame about a horizontal axis transverse of the direction of travel of said implement;
a wagon hitch mounted to said rear end of said hitch frame and adapted to hitch to said draft tongue of said wheeled vehicle;



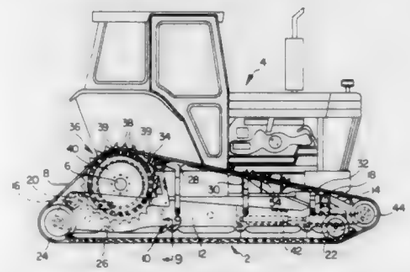
and guide means carried by said wheel pedestals for supporting said hitch frame at a location intermediate of said forward and rear ends thereof for lowering said intermediate location of said hitch frame relative to said implement frame in response to the raising of said implement frame; whereby as said implement frame is raised, said guide means lowers said hitch frame at said intermediate location, and said hitch frame rotates about said first mounting means and maintains said wagon hitch at a substantially uniform distance above ground for both the raised and lowered positions of said implement frame.

5,343,959
DOZER BLADE, FACE PLATE, AND EDGE PLATE ARRANGEMENT
Claude M. Frisbee, Schofield, and Ronald H. Werner, Edgar, both of Wis., assignors to Case Corporation, Racine, Wis.
Filed Oct. 23, 1992, Ser. No. 965,163
Int. Cl.[5] E02F *3/815*
U.S. Cl. 172—701.3 **8 Claims**



1. In a method for making a dozer blade for moving material and comprising (a) a face plate with an exterior surface, (b) an edge plate having a front surface, and (c) a replaceable cutting portion having a front surface and a thickness, the improvement comprising the steps of:
forming the face plate to include (a) an arcuate lower portion, (b) a lip extending rearward from the arcuate lower portion and terminating in a lip rear edge, and (c) knee-like transition region between the arcuate lower portion and the lip;
attaching the edge plate to the transition region at a position generally parallel to a projection of the exterior surface, the edge plate being spaced from the projection by a dimension about equal to the thickness of the cutting portion; and
attaching the cutting portion to the edge plate.

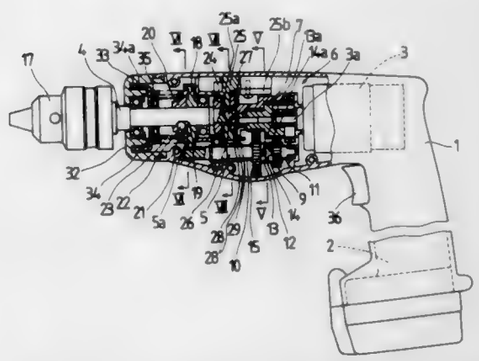
5,343,960
CATERPILLAR TRACK ATTACHMENT
Sylvain Gilbert, Roberval, Canada, assignor to Les Equipements Industriels, Roberval, Canada
Filed Sep. 8, 1992, Ser. No. 941,970
Int. Cl.[5] E02F *3/76;* **B62D** *55/00*
U.S. Cl. 172—823 **18 Claims**



1. A caterpillar track attachment adaptable to a vehicle having a drive shaft and a steering mechanism, comprising:
a pair of endless caterpillar tracks for propelling said vehicle;
a frame for supporting said vehicle, said frame having securing means for connecting said vehicle onto said frame, and a pair of spaced apart elongated side members around which the tracks are respectively mounted, each of said members having front and rear sets of wheels located substantially at its front and rear extremities for guiding therearound the corresponding track, and straight slide means located at its lower portion between the corresponding rear and front sets of wheels for guiding the corresponding track, said slide means having a substantially flat elongated lower surface slidingly engaging an inside surface of the corresponding track;
drive means for transmitting motive power from said drive shaft to said tracks, said drive means being operatively connectable to said drive shaft and engaging said tracks; and
hydraulic means connectable to said steering mechanism for providing at least one hydraulic fluid outlet controlled by commands from said steering mechanism;
whereby said attachment is adaptable to said vehicle by operatively connecting said drive means to said drive shaft, by connecting said frame to said vehicle by said securing means, and by coupling said steering mechanism to said hydraulic means.

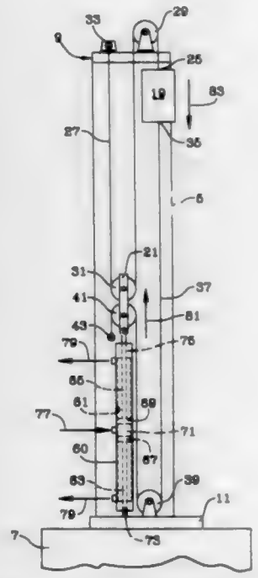
5,343,961
POWER TRANSMISSION MECHANISM OF POWER-DRIVEN ROTARY TOOLS
Kiyotaka Ichikawa, Okazaki, Japan, assignor to Makita Corporation, Anjo, Japan
Filed Oct. 30, 1992, Ser. No. 969,481
Claims priority, application Japan, Oct. 31, 1991, 3-097774[U]
Int. Cl.[5] B23B *45/16*
U.S. Cl. 173—48 **5 Claims**

1. A compact power-driven rotary tool including a spindle having a front end and a rear end and extending along a longitudinal axis, said spindle being alternately disposable between an impact mode to allow for both a rotating movement and a reciprocating movement of said spindle, and a non-impact mode to allow only a rotating movement of said spindle, said tool comprising
a splittable housing including a front end and a rear end and being split along said longitudinal axis,
motor means mounted substantially in said housing rear end having a rotatable output shaft with a selected rotational speed and extending therefrom along said longitudinal axis,
force transmission means extending substantially parallel to said motor output shaft and associated therewith for receiving and transmitting said rotation of said motor output shaft, said transmission means including change gear means for changing the rotational speed of said motor output shaft,
said spindle being rotatably mounted in said housing front end for receiving said rotation of said transmission means, and having a front end to which a tool implement is replaceably and detachably attached,
impact means disposed on said rear end of said spindle for imparting a reciprocating movement along said longitudinal axis to said spindle, and
clutch means, mounted on said spindle between said front



and rear ends and axially spaced from said impact means along said axis, said clutch means including
spring means having a first end and extending along said longitudinal axis,
a rotatable first clutch member mounted on said spindle and rotatably coupled to said transmission means, said first clutch member being free of movement along said longitudinal axis, and
a movable second clutch member movable along said longitudinal axis and mounted on said spindle, and having a first face and a second face, said first face being placed in intimate facing contact with said first clutch member by said spring means, said movable clutch member second face supporting said first end of said spring means,
wherein said spindle includes one or more ball spline grooves formed thereon and having one or more rotatable balls received therein, respectively, said movable clutch member of said clutch means having one or more ball grooves formed thereon at a location substantially complementary to said one or more ball spline grooves, said one or more balls slidably coupling said second clutch member and said first clutch member with said spindle for allowing said second clutch member to rotate and reciprocatingly move along said longitudinal axis in response to a rotating movement and a reciprocating movement of said spindle.

5,343,962
DOUBLE ROD CYLINDER FEED SYSTEM
Odee P. Daigle, and Laszlo Gyongyosi, both of Garland, Tex., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Continuation of Ser. No. 933,846, Aug. 24, 1992, abandoned.
This application Aug. 16, 1993, Ser. No. 107,415
Int. Cl.[5] E21C *5/06*
U.S. Cl. 173—147 **11 Claims**



1. In an earth drilling machine having a mast and a drilling head movable in a rectilinear motion between a mast crown and a mast table, means for moving said drilling head comprising:
(a) a double rod hydraulic cylinder having a first and second piston rod slidably mounted within a cylinder barrel, said first piston rod having one end extending out of a bottom of said cylinder barrel and said second piston rod having an end extending out of a top of said cylinder barrel, said cylinder barrel movable over at least part of the length of said mast;
(b) said first piston rod end being connected to said mast table;
(c) a traveling sheave block connected to said end of said second piston rod, said sheave block and said end of said second piston rod being movable over at least part of the length of said mast, said sheave block having an upper and lower sheave connected thereto;
(d) a crown sheave connected to said mast crown and a pulldown sheave connected to said mast table;
(e) a flexible pullback member having a first end connected to a top portion of said drilling head, a second end connected to said mast crown, and an intermediate portion reeved around both said crown sheave and said upper sheave on said traveling sheave block;
(f) a flexible pulldown member having a first end connected to a bottom portion of said drilling head, a second end connected to said mast at a location between said mast crown and said mast table, and an intermediate portion reeved around said pulldown sheave and said lower sheave on said traveling sheave block; and
(g) hydraulic circuit means for activating said first and second piston rods, said circuit means having a portion thereof extending internally along a portion of length of only said first piston rod.

5,343,963

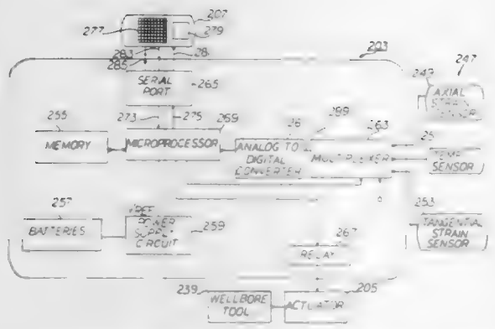
METHOD AND APPARATUS FOR PROVIDING CONTROLLED FORCE TRANSFERENCE TO A WELLBORE TOOL

Brett W. Bouldin, 15802 St. Lawrence Ct., Friendswood, Tex. 77546; Steven C. Owens, 6019 Fernhollow Ct., Katy, Tex. 77449; Dave E. Rothers, 21717 Inverness Forest Blvd. #607, Houston, Tex. 77073, and Kevin R. Jones, 7215 Dillon, Houston, Tex. 77061

Continuation-in-part of Ser. No. 751,861, Aug. 28, 1991, Pat. No. 5,179,349, and Ser. No. 784,666, Oct. 24, 1991, abandoned, which is a continuation of Ser. No. 549,803, Jul. 9, 1990, abandoned. This application Jan. 31, 1992, Ser. No. 831,202

Int. Cl.[5] E21B *44/00*

U.S. Cl. 175—27 **43 Claims**



1. An actuator apparatus for use in a subterranean wellbore having a wellbore tool disposed therein which is operable in a plurality of operating modes and is switchable between selected modes of said plurality of operating modes upon receipt of a selected force pattern with respect to time by at least one force receptor member, wherein said subterranean wellbore has at least one tubular conduit disposed therein, one of which carries said wellbore tool, and wherein said subterranean wellbore includes at least one fluid column disposed therein which is in contact with said at least one tubular conduit, comprising:

an electrically-actuable force generator assembly in force-transferring communication with said at least one force receptor member;

a controller, electrically coupled to said electrically-actuable force generator assembly, operable in a plurality of operating modes, including:

a programming mode of operation, wherein said controller receives selected force parameters which define said selected force pattern with respect to time which is required to switch said wellbore tool between selected modes of operation of said plurality of operating modes;

an armed mode of operation, wherein said controller continually monitors for receipt of an actuation signal for initiation of force transfer to said wellbore tool; and

a force moderation mode of operation, wherein said controller continually monitors force transference from said electrically-actuable force generator to said at least one force generator to said at least one force receptor member and selectively actuates said electrically-actuable force generator to obtain said selected force pattern.

5,343,964

PETROLEUM, GAS OR GEOTHERMAL DRILING APPARATUS

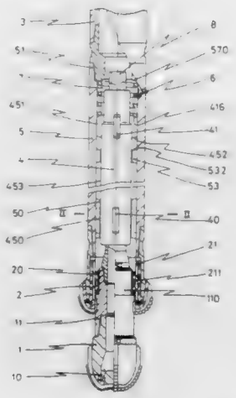
André Leroy, 64 Chaussée de Binche, St Symphorien, B 7030 Mons, Belgium

Filed Dec. 10, 1993, Ser. No. 129,170

Claims priority, application France, Apr. 12, 1991, 91 04824

Int. Cl.[5] E21B *4/02*

U.S. Cl. 175—61 **4 Claims**



1. A petroleum, gas or geothermal drilling apparatus comprising a central tool (**1**) and a coaxial bit (**2**), wherein the central tool (**1**) is driven by the rotor of a bottom engine which is fed by the drilling mud and wherein the bit (**4**) is driven from the surface by the rods (**3**) of a drill gear which is part of a rotary system, these same rods subjecting the apparatus to an axial load, this drilling apparatus being

characterized in that it comprises a prismatic connection (**450**) between the stator (**4**) of the bottom engine and the base (**5**) of the bit, which allows the relative axial displacement of the two tools, and that a resilient means (**6**) is interposed between the stator (**4**) and the base (**5**) in such a way as to form a constraint on the stator when the central tool tends to fall behind in respect to the bit during their respective forward movements, so as to control the relative axial displacement of the two tools and to distribute between them, as a function of the displacement, the axial load to which the apparatus is subjected.

5,343,965

APPARATUS AND METHODS FOR HORIZONTAL COMPLETION OF A WATER WELL

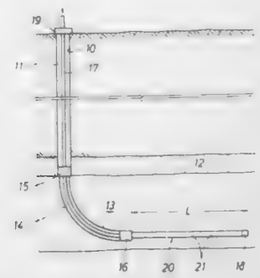
Robert R. Talley, 1806 Crutchfield, Katy, Tex. 77449, and David L. Moseley, 14128 Apple Tree La., Houston, Tex. 77079

Filed Oct. 19, 1992, Ser. No. 962,870

Int. Cl.[5] E21B *7/00*

U.S. Cl. 175—62 **26 Claims**

1. A method of casing a water well that extends into an aquifer where a borehole has been drilled vertically downward to the level of the air-water interface of the aquifer, comprising the steps of: positioning a surface section of casing in the borehole so that its lower end extends approximately to said level; running a bend section of casing having a preformed curvature throughout an angle of about 90° down through said casing section in a straightened condition and out the said lower end into the aquifer where said bend section assumes its original curved shape as it emerges from said lower end, said bend section having an upper end portion and an outer end portion; coupling said upper end portion of said bend section to said lower end of said surface section; running a production section of casing having water entry ports through the walls thereof down through said surface section, around said bend section and out said outer end portion thereof so that said production section extends substantially horizontal, said production section having an inner end; and coupling said inner end of said production section to said outer end portion of said bend section to establish a horizontal completion of the water well.



5,343,966

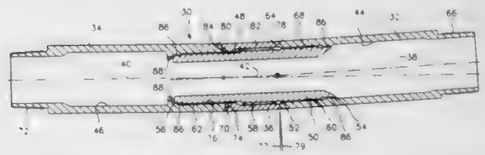
ADJUSTABLE BENT HOUSING

Kenneth H. Wenzel, and Dean Foote, both of Edmonton, Canada, assignors to Vector Oil Tool Ltd., Canada

Filed Jun. 16, 1992, Ser. No. 898,003

Int. Cl.[5] F21B *7/08, 17/042*

U.S. Cl. 175—74 **1 Claim**



1. An adjustable bent housing comprising:

a. three tubular members arranged in end to end relation, each of the tubular members having an interior bore, the tubular members comprising;

i. a first tubular member having a first axis,

ii. a second tubular member having a second axis,

iii. a central tubular member centrally disposed between the first tubular member and the second tubular member and having a third axis, the first axis and the second axis being offset from the third axis such that adjustment is effected by rotating at least one of the first tubular member and the second tubular member in order to alter the positioning of the first axis or the second axis relative to the third axis,

b. an internal tubular member extending into and engaging the interior bores of the three tubular members thereby maintaining the tubular members in end to end relation with the axes in a predetermined relative position;

c. the internal tubular member having an external surface, a first end and a second end, a spline extending radially outwardly from the external surface intermediate the first end and the second end and threads on the external surface adjacent the first end and the second end, the threads at one of the first end and the second end being offset;

d. the first tubular member having a first end face and an interior bore, the interior bore having interior threads adjacent the first end face such that the first tubular member is adapted to threadedly engage the first end of the internal tubular member;

e. the second tubular member having a second end face and an interior bore, the interior bore having interior threads adjacent the second end face such that the second tubular member is adapted to threadedly engage the second end of the internal tubular member;

f. the central tubular member having an interior bore, a first end and a second end, the central tubular member telescopically receiving and being axially moveable between the first end and the second end of the internal tubular member, the interior bore having a spline extending radially inwardly, such that the spline mates with the spline on the exterior surface of the internal tubular member to non-rotatably couple the internal tubular member with the central tubular member, at least one of the ends of the central tubular member having a mating clutch engagement with at least one of the first end of the first tubular member and the second end of the second tubular member.

5,343,967

APPARATUS FOR OPTIONAL STRAIGHT OR DIRECTIONAL DRILLING UNDERGROUND FORMATIONS

Volker Kruger, Celle, and Rolf Panzke, Blenhorst, both of Fed. Rep. of Germany, assignors to Baker Hughes Incorporated, Houston, Tex.

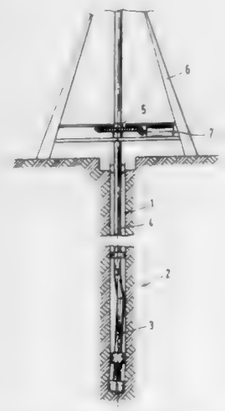
Continuation of Ser. No. 793,786, Nov. 18, 1991, abandoned, which is a continuation of Ser. No. 418,970, Oct. 10, 1989, Pat. No. 5,065,826, which is a continuation of Ser. No. 281,975, Nov. 30, 1988, abandoned, which is a continuation of Ser. No. 145,055, Jan. 19, 1988, abandoned, which is a continuation of Ser. No. 910,286, Sep. 17, 1986, Pat. No. 4,739,842, which is a continuation of Ser. No. 731,181, May 6, 1985, abandoned. This application Oct. 20, 1992, Ser. No. 963,508

Claims priority, application Fed. Rep. of Germany, May 12, 1984, 3417743; May 12, 1984, 8414613; Jun. 26, 1984, 3423465

The portion of the term of this patent subsequent to Apr. 26, 2005, has been disclaimed.

Int. Cl.[5] E21B *7/06, 4/02*

U.S. Cl. 175—75 **12 Claims**



1. A drilling system for optionally drilling generally straight or curved boreholes, comprising:

a drill string;

means associated with said drill string for selectively rotating said drill string; and

a downhole assembly secured to said drill string, comprising,

a drill bit having a longitudinal axis;

a housing assembly including an upper section and a lower section, said upper section defining a main tool axis and said lower section being disposed at a predetermined angle thereto;

a downhole motor located in said upper section and having an output shaft extending through said lower section and operatively coupled to said drill bit so that the longitudinal axis of said drill bit is disposed at said predetermined angle relative to said main tool axis; and

a first concentric stabilizer mounted to said downhole

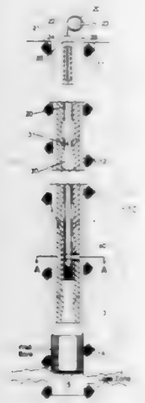
assembly above said drill bit and below said downhole motor and being substantially axially aligned with said longitudinal axis of said drill bit.

5,343,968

DOWNHOLE MATERIAL INJECTOR FOR LOST CIRCULATION CONTROL

David A. Glowka, Tijeras, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 17, 1991, Ser. No. 686,442
Int. Cl.[5] E21B *33/138, 33/14*
U.S. Cl. 175—231 4 Claims



1. A downhole grout injector system for circulation control in a borehole extending downhole from a surface whereby two streams of grout component materials are simultaneously and separately emplaced through said borehole to a downhole location, said system comprising:

pipe means extending from said surface to a downhole location for delivering one of said two streams;

tubing means retractively positioned within said pipe means for delivery of the other of the two streams, the downhole end of said tubing means including in a section of heavy wall tubing of sufficient weight to facilitate its movement downward within said pipe means and including centering means attached thereto for approximately centering said section of heavy wall tubing within said pipe means without significantly blocking the flow of said one stream;

an injection assembly centrally positioned within and fastened to said pipe means near the lower end thereof, said injector assembly comprising;

a short length of tubular housing fastened to the interior surface of said pipe means by fastening means that do not significantly block the flow of the other of said fluids;

an input port within said pipe means aligned with the downhole end of said tubing means;

an ejection port extending through said pipe means; and

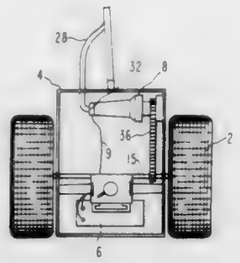
valve means to control communication of fluid from said input port to said ejection port, said valve means comprising a piston having a cut-out portion at the input end, said piston sliding within said tubular housing from a first position where its body at the opposite end blocks fluid flow through said ejection port to a second position where said cut-out portion allows fluid flow from the input end through said ejection port; and spring means for resiliently supporting said piston in said first position, said tubing means selectively engaging said piston at its input end to cause it to move against said spring means to said second position.

5,343,969

TWO WHEELED BATTERY POWERED TRAILER DOLLY

Randell Taylor, Mojave, Calif., assignor to E Z Duz It, Inc., Las Vegas, Nev.

Filed Jun. 12, 1992, Ser. No. 898,100
Int. Cl.[5] B62D *51/04*
U.S. Cl. 180—19.1 1 Claim



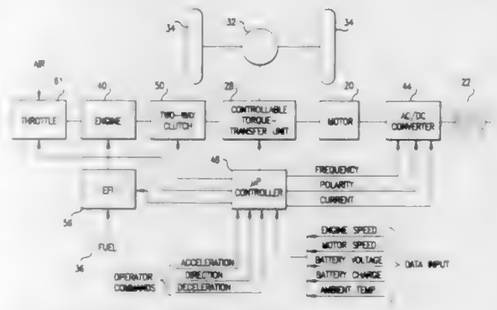
1. A battery powered dolly to assist in the towing of vehicles comprising: a superstructure; left and right wheels on the superstructure, a wheel base having at least one planar portion, a battery secured to said wheel base, an axle having an inner collar at each end, each of said wheels having an outer collar rotatably connected to said axle, a first key stock in connection with said inner collar and a second key stock in connection with said outer collar; said key stocks abutting one another during the movement of said inner collar so that said wheels may turn independently of one another for a fraction of a revolution of each, winch means in electrical connection with said battery, said winch means attached to said axle for turning said wheels, a handle in connection with said wheel base, said handle having pivoting control means for supplying power from said battery to said winch, said pivoting control means for supplying power to said winch in one direction when said pivoting control means is turned in one direction and for supplying power to said winch means in the other direction when said pivoting control means is pivoted in the other direction so that said dolly may be powered in different directions by the movements of said pivoting control means.

5,343,970

HYBRID ELECTRIC VEHICLE

Alex J. Severinsky, 10904 Pebble Run, Silver Spring, Md. 20902

Filed Sep. 21, 1992, Ser. No. 947,691
Int. Cl.[5] B60K *6/04*
U.S. Cl. 180—65.2 40 Claims



11. A hybrid electric vehicle, comprising:

two or more drive wheels receiving torque for propelling said vehicle from an output shaft, and a power unit supplying drive torque to said output shaft, said power unit comprising:

a controllable torque transfer unit adapted to receive torque from two sources and transfer said torque to said output shaft;

an engine adapted to consume combustible fuel and supply torque to said torque transfer unit;

an AC electric motor adapted to receive electric energy from a battery and supply torque to said torque transfer unit, said motor being further adapted to be operable as a generator;

a battery for supply of stored electric energy to said motor, and for receiving and storing electric energy from said motor when operated as a generator;

solid state switching means for converting DC supplied by said battery to AC for supply to said electric motor, and for rectifying AC generated by said motor when operated in a regenerative mode to provide DC to charge said battery; and

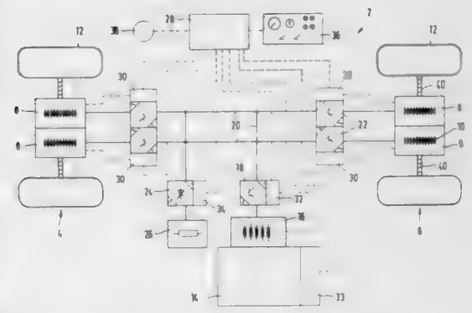
a controller for controlling the operation of said engine, said electric motor, said solid state switching means, and said torque transfer unit, such that said torque transfer unit receives torque from either or both of said internal combustion engine and said electric motor and transmits torque therefrom to said drive wheels by way of said output shaft, and for controlling the relative contributions of the internal combustion engine and electric motor to the torque driving the wheels.

5,343,971

ELECTRIC VEHICLE WITH INDIVIDUALLY CONTROLLED DRIVE ELECTROMOTORS

Götz Heidelberg, Starnberg-Percha; Andreas Gründl, and Peter Ehrhart, both of München, all of Fed. Rep. of Germany, assignors to Magnet-Motor Gesellschaft für Magnetmotorischetechnik mbH, Starnberg, Fed. Rep. of Germany

PCT No. PCT/EP91/00656, § 371 Date Dec. 4, 1992, § 102(e) Date Dec. 4, 1992, PCT Pub. No. WO91/15378, PCT Pub. Date Oct. 17, 1991
PCT Filed Apr. 5, 1991, Ser. No. 949,632
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1990, 4011291
Int. Cl.[5] B60K *1/02;* B60L *11/02*
U.S. Cl. 180—65.4 43 Claims



1. A non-rail bound vehicle comprising:

(a) at least two drive electromotors, a first one thereof being provided for driving a driving wheel on the left side of the vehicle and a second one thereof being provided for driving a driving wheel on the right side of the vehicle;

(b) each of the at least two electromotors has a respective motor controller associated therewith for presetting an instantaneous nominal torque of the respective electromotor;

(c) a superior central controller which is connected to the motor controllers and controls the at least two electromotors via the motor controllers to prevent drive slip;

(d) with at least one of the superior central-controller and the motor controllers obtaining and utilizing information on:

the instantaneous actual electrical power, of the at least two electromotors

the instantaneous actual speed of the at least two electromotors, and

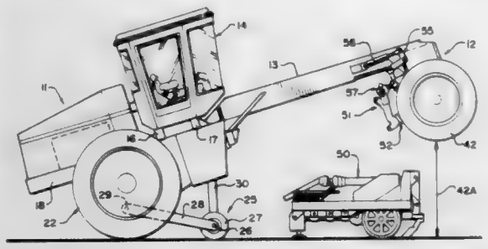
the instantaneous actual torque of the at least two electromotors.

5,343,972

BELLY MOUNT TRACTOR

Charles Balmer, Box 34, Elie, Manitoba, Canada R0H 0H0

Filed Jun. 25, 1992, Ser. No. 903,221
Int. Cl.[5] B62D *61/12*
U.S. Cl. 180—209 15 Claims



1. An agricultural tractor comprising a tractor frame having a rear frame section, a front frame section and an elongate boom extending from the rear frame section forwardly to the front frame section, a pair of rear drive wheels mounted on the rear frame section, an engine mounted on the rear frame section for generating a motive force for driving the rear drive wheels, a cab mounted on the rear frame section at a forward position thereon for observation by a driver in the cab in the forward direction and in an area of the ground underlying the boom, a pair of front wheels mounted on the front frame section, steering means for steering the front wheels relative to a longitudinal forward direction of the tractor, a hitch coupling mounted on the front frame section and arranged to support an agricultural implement rearwardly of the front wheels and underneath the boom, and auxiliary wheel means mounted on the tractor frame forwardly of the rear wheels and rearwardly of the implement including means for raising and lowering the auxiliary wheel means between a first position raised above a plane containing ground contact points of the front and rear wheels such that the tractor is supported on said front and rear wheels and a second position in which the auxiliary wheel means is lowered to a position below said plane such that the front wheels are raised from the ground to a height sufficient to allow the front wheels to pass over an implement on the ground as the tractor is moved forwardly across the ground.

5,343,973

LIGHTWEIGHT ELECTRIC VEHICLE

Willi Lanker, In der Gandstrasse 10, CH-8126 Zumikon, Switzerland

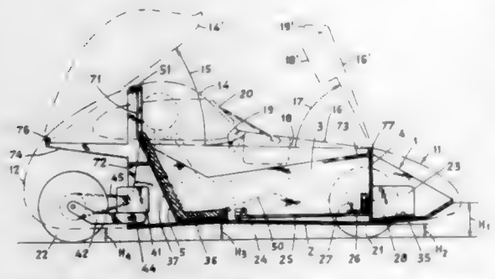
PCT No. PCT/CH90/00151, § 371 Date Feb. 4, 1991, § 102(e) Date Feb. 4, 1991
PCT Filed Jun. 22, 1990, Ser. No. 634,219
Claims priority, application Switzerland, Jun. 23, 1989, 02340/89-3
Int. Cl.[5] B62D *61/06*
U.S. Cl. 180—211 24 Claims

1. A lightweight electric vehicle comprising

a load-bearing narrow shell-shaped chassis of high-strength rigid construction forming a safety cell for surrounding a driver, said chassis having a pair of coextensive side walls, at least one front transverse connection connected to and between said side walls and one rear transverse connection connected to and between said side walls, each said side wall extending upwardly to maintain the body of a driver between said side walls;

a pair of front wheels connected to and situated outside said chassis;

at least one rear wheel connected to said chassis; and



a separate light-weight plastics body of an aerodynamic slender tear-drop outer shape covering all said wheels and said chassis.

5,343,974

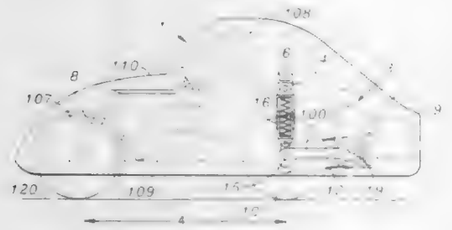
AN ELECTRICALLY POWERED MOTOR VEHICLE

Jan W. Rabek, 2150 Patricia Ave., Los Angeles, Calif. 90025

Filed Jul. 10, 1992, Ser. No. 911,928

Int. Cl.[5] B62D *61/08;* **B60K** *1/02;* **B60G** *3/12*

U.S. Cl. 180—216 **7 Claims**



1. A motor vehicle comprising:

(a) a frame and means on the frame for accommodating a load;

(b) at least three wheels supported by the frame including a pair of driven wheels, the driven wheels being selectively rear wheels of the vehicle, and wherein there is at least one forward wheel for the vehicle;

(c) electrical motive means for driving at least two of the wheels as the driven wheels, the motive means including an electrical motor located selectively adjacent to or integrally with the motive means;

(d) the motive means being connected to the driven wheels so as to permit relative pivotal movement between the driven wheels and the respective motive means;

(e) the connection including a mechanical link between the motive means and the respective driven wheels, the mechanical link being mounted relative to the motive means and mounted relative to the respective driven wheel such that as the driven wheel moves relatively vertically, the link moves about a mounting with the motive means and a mounting with the driven wheel;

(f) drive means for transmitting power between the motive means and each driven wheel whereby the driven wheels apply a traction force to a surface on which the vehicle moves; and

(g) a single speed activating means for regulating both the driven wheels, and steering means for a forward wheel, both the speed activating means and steering means being selectively separately operable by a passenger in the vehicle, the speed-activating means and steering means generating respective inputs to regulate a speed controller means, and wherein the relative speeds of the driven wheels regulates effective steering of the vehicle.

5,343,975

PERSONNEL FALL-ARREST SYSTEMS

David Riches, and Leonard J. Feathers, both of Gwynedd, United Kingdom, assignors to Barrow Hepburn Sala Ltd., Portishead, England

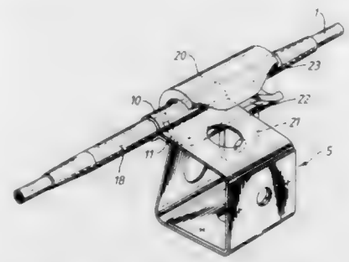
Continuation-in-part of Ser. No. 807,873, Feb. 13, 1992, Pat. No. 5,224,427. This application May 18, 1993, Ser. No. 63,292

Claims priority, application United Kingdom, May 22, 1990, 9011370.5

The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.

Int. Cl.[5] E01B *25/18*

U.S. Cl. 182—3 **13 Claims**



1. A personnel fall-arrest system for arresting the fall of a person relative to a fixture (2) wherein there is a flexible safety track (1), track supports (5,31,53) which are secured to the fixture (2) by fastening means (6), each of said supports having a track-locating head portion (10,25,52) of tubular form through which such track extends and is thereby held in spaced relation to said fixture (2);

including a coupling component (7) by which a safety line (8) attached to a worker's safety harness can be coupled to said safety track (1), said coupling component (7) being coupled to said track but being freely displaceable therealong;

and wherein each of said track supports (5,31,53) comprises a metal strap device which follows a course extending from said fastening means (6) to the safety track, around the said safety track and back again to said fastening means (6), which fastening means extends through overlapping portions of said strap device;

said metal strap device having an ultimate strength more than sufficient to prevent release of the track under the greatest load liable to be imposed on it in the event of the fall of a person using the system, but undergoes obvious permanent deformation under a load substantially smaller than that maximum whereby the occurrence of permanent deformation of the strap device serves as an inspectorate alert signal warning that the support has been subjected to heavy stress which might be due to a fall.

5,343,976

SAFETY DEVICE

Meyer Ostrobrod, 2070 Bennett Rd., Philadephia, Pa. 19116

Filed Mar. 3, 1993, Ser. No. 25,461

Int. Cl.[5] B66D *1/06;* **A62B** *35/04*

U.S. Cl. 182—4 **20 Claims**

1. A combined safety device and lifting and lowering means comprising:

a housing having a drum and a drum shaft rotatably mounted within said housing;

a cable adapted to be wound around said drum and having one end secured thereto, the other end of said cable being adapted to be connected to a workman;

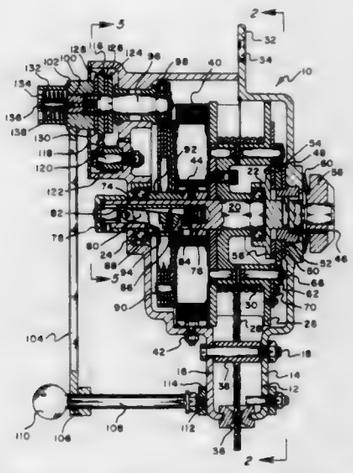
spiral spring means connected between said drum and said

housing so that during unwinding of said cable and rotation of said drum, said spiral spring means is tensioned and during winding of said cable and therefore rotation of said drum in an opposite direction, said spring means is relaxed;

centrifugal first brake means within said housing for preventing rapid rotation of said drum and therefore rapid unwinding of said cable;

a manually operable drive means carried by said housing, said drive means including a drive shaft mounted for rotation and carrying a gear thereon which rotates with said drive shaft and a handle threaded onto said drive shaft and selectively rotatable in first and second directions in order to rotate said drive shaft;

means for selectively connecting said drive means to said drum and for disconnecting said drive means from said drum such that when said drive means is disconnected



from said drum, rotation of said drum is not affected by said drive means and when said drive means is connected to said drum, movement of said handle in said first direction rotates said drum so as to wind said cable on said drum and movement of said handle in said second direction allows said cable to unwind from said drum, wherein when said drive means is connected to said drum and said handle is rotated in said second direction, said handle tends to unthread itself from said drive shaft and said drive shaft is rotated by movement of said drum to thereby rethread said drive shaft into said handle, and

said drive means further including second brake means for preventing rotation of said drum when said handle is at rest and which allows said drum to rotate to wind or unwind said cable when said handle is moving, said second brake means including a ratchet means and at least one friction disk.

5,343,977

LADDER SHIELD

Robin R. Bryan, P.O. Box 9712, Greensboro, N.C. 27429

Filed May 19, 1992, Ser. No. 885,511

Int. Cl.[5] E06C *5/32*

U.S. Cl. 182—106 **4 Claims**

1. An improved safety shield for permanent ladders of the type having a pair of side rails and a plurality of rungs permanently secured to a support structure such as storage tanks, smoke stacks, television towers, tall buildings, bins and silos, said shield comprising:

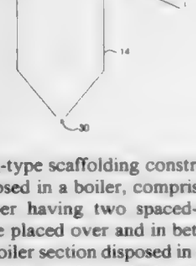
a. a front plate having two longitudinal side edges;

b. a pair of side flanges, each of which extends rearwardly and outwardly from one of said side edges in angular relationship thereto;

c. a hinge means connecting a first of said side flanges and said front plate along juxtaposed side edges;

d. at least one support bracket for connecting said first side flange to said ladder;

e. said front plate having an opening and being movable between a first open position and a second closed position wherein said front plate, side flanges, and supporting structure substantially enclose said ladder to prevent unauthorized access thereto;



f. a locking means including a looped portion for insertion through said opening in said front plate to secure said front plate in said closed position, including a support bracket for connecting said looped portion to the ladder; and

g. a biasing element mounted on said looped portion to bias said plate outwardly to minimize the play of the plate when secured in the closed position by a padlock through said loop.

5,343,978

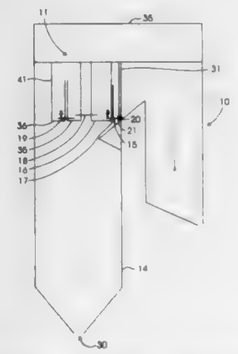
TELESCOPING SCAFFOLDING FOR MAINTENANCE AND REPAIR OF MULTI-STORY, POWER-GENERATING BOILER SYSTEMS

Roy R. VanAmburg, Gasport, N.Y., assignor to New York State Electric & Gas Corporation, Binghamton, N.Y.

Filed Apr. 23, 1993, Ser. No. 51,967

Int. Cl.[5] E04G *3/10*

U.S. Cl. 182—128 **6 Claims**



1. A telescoping-type scaffolding constructed in situ among tiers of tubes disposed in a boiler, comprising:

a header member having two spaced-apart legs that are designed to be placed over and in between tubes in a tier of tubes of a boiler section disposed in a boiler firebox, said legs being used to anchor said header member with respect to said tubes and to provide a bridge for workers;

an extension member extending from said header member for bridging a gap disposed between tiers of tubes to be reached, said extension member comprising tandemly attached extension bars that are attached in situ, projected

from the header member to a length necessary to bridge the gap between the tiers of tubes; and

a planking member disposed upon said extension member in order to provide a walkway for workers to enable them to cross from one tier of tubes to an adjacent tier of tubes.

5,343,979

WORKING GONDOLA

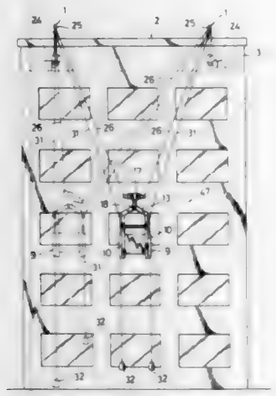
Hideo Goto, Kuwana, Japan, assignor to Doei Gaiso Yugen-Gaisha, Kuwana, Japan

Filed Nov. 26, 1991, Ser. No. 797,873

Claims priority, application Japan, Dec. 17, 1990, 2-411153; Oct. 14, 1991, 3-293579

Int. Cl.[5] E04G *3/10*

U.S. Cl. 182—147 **3 Claims**



1. A working gondola comprising:

a gondola capable of carrying a worker for use in cleaning e.g. glass windows of a building structure;

at least a pair of gondola support arms arranged at a distance from each other on the rooftop of the building structure and extending outward;

a T-shaped suspender pivotably mounted to the upper of the gondola;

a gondola driver system for winding and unwinding a pair of ropes which extend downward from the distal ends of their respective gondola support arms to two side ends of the suspender respectively for up-, down-, left-, and rightward movement of the gondola;

a pair of supplementary rope guide cases having supplementary rope guide passages therein and mounted to two outer side walls of the gondola respectively;

a pair of supplementary ropes coupled at one end to their respective gondola support arms or to proper locations of the rooftop of the building structure and hanging down through their respective supplementary rope guide passages of the two supplementary rope guide cases to the ground;

two lock devices installed in the two supplementary rope guide cases respectively, each lock device having a lock lever which, when its corresponding supplementary rope is accidentally snapped off, will automatically be pressed down against the supplementary rope guide passage by the movement of the snapped rope extending through the supplementary rope guide passage; and

two lock release retainer devices provided for urging their respective lock levers of the two lock devices in lock release directions for free movement of the supplementary ropes, each device being arranged to, when its corresponding supplementary rope is accidentally snapped, release the lock action of the lock device through tilting motion of the T-shaped suspender.

5,343,980

CHILD/PARENT PLAY LADDER

Shlomo Elfanbaum, P.O. Box 579, Doar Kfar Vitkin, 40201, Beit Herut, Israel

Continuation of Ser. No. 970,890, Nov. 3, 1992, abandoned. This application Sep. 14, 1993, Ser. No. 120,491

Claims priority, application Israel, Nov. 22, 1990, 96440

Int. Cl.[5] E06C *1/52*

U.S. Cl. 182—199 **12 Claims**



1. A method by which a first person climbs onto a second person, comprising the steps of:

(a) attaching a climbing device to the second person; and

(b) climbing by the first person using said climbing device, said device including:

(i) a ladder; and

(ii) attaching means connected to said ladder for attaching said ladder to the second person.

5,343,981

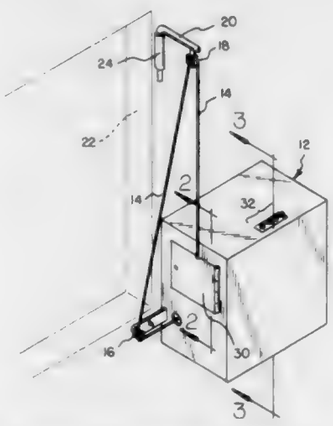
EMERGENCY CABLE DESCENT SYSTEM

Cyril R. Schroemges, and Gene F. Kull, Jr., both of American Embassy, PSC 74 Box 026, APO AE 09718, Rabat, Morocco

Filed Sep. 24, 1993, Ser. No. 125,767

Int. Cl.[5] A62B *1/00*

U.S. Cl. 182—231 **5 Claims**



1. A new emergency cable descent system for lowering a person from a building having a window, said system comprising:

a cylindrical axle secured to said building;

a spool having an interior surface rotatably, concentrically positioned on said cylindrical axle;

a cable having a pair of ends and being partially wound upon said spool;

a boom pivotally mounted to said building proximate said window;

a pulley coupled to said boom, said cable passing over said pulley;

a harness coupled to one of said pair of ends of said cable; and,

brake means coupled to said building for controlling a rotational speed of said spool with respect to said cylindrical axle, wherein said brake means comprises a solenoid in electrical communication with a power source and positioned within said cylindrical axle, and a brake pad coupled to said solenoid, with said cylindrical axle having an aperture formed therein, whereby said solenoid is operable to bias said brake pad through said aperture in said cylindrical axle and into engagement with said interior surface of said spool.

5,343,982

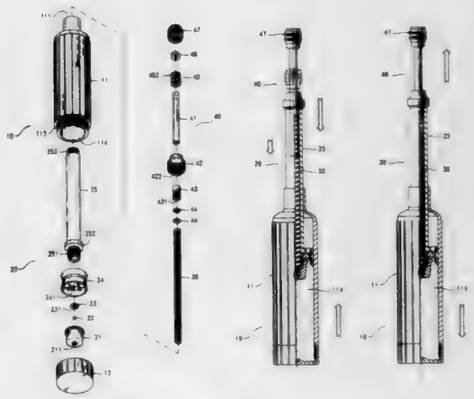
GREASE PUMP

Mao C. Min, P.O. Box 82-144, Taipei, Taiwan

Filed Jan. 26, 1993, Ser. No. 981,297

Int. Cl.[5] F16N *3/12*

U.S. Cl. 184—28 **1 Claim**



1. A grease pump comprising:

a body portion including a main tube and a cover threadedly engaged with a bottom end of said main tube, said main tube being formed with a neck portion on a top end, a ventilation hole on a shoulder and a threaded portion on the bottom end;

an adjusting device slidably mounted within said main tube and having a throttle valve, a steel ball, a seat, a first piston, and a first Venturi tube, said throttle valve being threadedly engaged with an end of said first Venture tube and having a smaller hole and a larger hole which are communicated and aligned with each other and associated with said steel ball and said seat to form a check valve, said seat being a circular member formed with an elongated slot and fitted into the larger hole of said throttle valve, said first piston being fitted into a chamber of said main tube and having a center hole;

a resilient member disposed within said first Venturi tube;

a pumping device including a second Venturi tube, a sleeve, a second piston, two oil seals, a head, a packing, and a nozzle, said sleeve being engaged with said first Venturi tube and formed with a through hole and internal threads and put onto said second Venturi tube, said second piston having a passage and rivetted on said second Venturi tube and engaged with said two oil seals and fitted into said first Venturi tube, said head being provided with an orifice and external threads and rivetted on a top end of said second Venture tube; and

a sealing ring mounted between said nozzle and said head, said nozzle having a conical opening and threadedly engaged with said head.

5,343,983

THREAD BRAKE

Atila J. Horvath, Freudenstadt; Hermann Schmodde, Albstadt, and Josef Fecker, Bisingen-Steinhofen, all of Fed. Rep. of Germany, assignors to Memminger-IRO GmbH, Dornstetten, Fed. Rep. of Germany

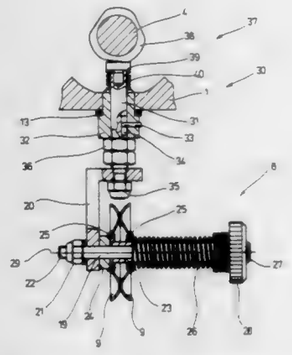
PCT No. PCT/DE92/00096, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO92/14670, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 12, 1992, Ser. No. 930,656

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1991, 4104663

Int. Cl.[5] B65H *59/16;* **D04B** *35/32*

U.S. Cl. 188—65.1 **27 Claims**



1. A thread brake having two essentially disc-shaped or plate-shaped brake elements (**9**, **9***a*);

loading means (**26**, **65**) for resiliently pressing the brake elements (**9**) against each other and to permit at least one thread (**10**) passed between said brake elements to be braked;

bearing means (**19**, **23**, **25**; **190**) for mounting said brake elements on a common bearing axis;

oscillatory motion generating means (**30**) coupled to said brake elements (**9**) and oscillating said brake elements in a direction which is oriented substantially transversely to said bearing axis (**29**) for imparting oscillatory motions essentially transversely to said bearing axis (**29**) to said brake elements.

5,343,984

ROTATING DRIVE FOR AN ADJUSTING SPINDLE OF A DISK BRAKE FOR MOTOR VEHICLES

Dieter Bieker, Munich; Johann Iraschko, Schweitenkirchen, and Werner Stein, Remscheid, all of Fed. Rep. of Germany, assignors to Knorr-Bremse AG, Fed. Rep. of Germany

Filed Feb. 16, 1993, Ser. No. 18,241

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1992, 4204307

Int. Cl.[5] F16D *65/40*

U.S. Cl. 188—71.9 **5 Claims**

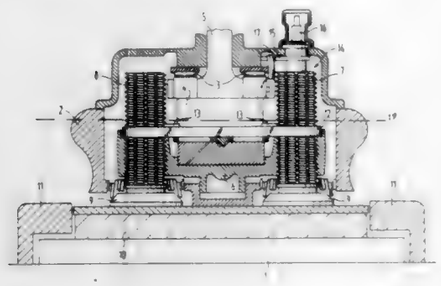
1. A rotating drive for an adjusting spindle (**7**) of a disk brake for motor vehicles, said disk brake comprising a caliper (**2**) which extends over a brake disk (**1**) and is provided on one side thereof with a clamping mechanism;

said clamping mechanism comprising a cam lever (**4**) adapted for pivoting movement about an axis of rotation (**19**) extending parallel to a plane of said brake disk (**1**);

said cam lever (**4**) comprising a cam (**22**) which is coupled to at least one adjusting spindle (**7**) in a direction of clamping movement at least substantially at a right angle to said plane of said brake disk (**1**);

said at least one adjusting spindle (7) extending at least approximately at a right angle to said plane of said brake disk (1) and being adjustably screwed to one of said cam (22) and an intermediate piece (6), said at least one adjusting spindle (7) comprising an adjusting drive (14) non-rotatably coupled with a drive lever (15) for adjustment of play between said brake disk (1) and said brake lining (1);

said intermediate piece (6) having a disc-sided end and being movable by said cam (22) for bracing a brake lining (10) against said brake disk-sided end;



said brake lining (10) being movable transversely of said caliper (2);

two radially protruding pins (17, 17') being disposed on said cam lever (4) in a radial plane on an axial face, said two pins (17, 17') being offset from each other by about 10° and 40°, said drive lever (15) comprising two transversely offset recesses (25, 25'), and an end of each one of said two radially protruding pins (17, 17') engaging with a corresponding one of said two recesses (25, 25').

5,343,985

FLOATING-CALIPER SPOT-TYPE DISC BRAKE FOR HIGH-POWERED VEHICLES

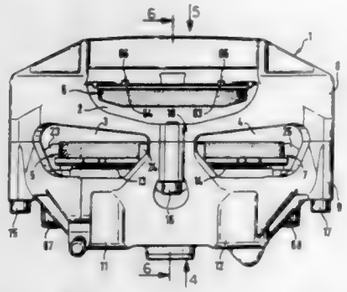
Rudolf Thiel; Andreas Doell, both of Frankfurt am Main, and Georg Halasy-Wimmer, Eschborn, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 7, 1992, Ser. No. 926,489

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1991, 4126339

Int. Cl.[5] F16D *65/092, 55/227*

U.S. Cl. 188—72.5 20 Claims



1. A floating-caliper spot-type disc brake for an automotive vehicle having a brake disc and a steering knuckle, said disc brake including a brake carrier which is fixed to said steering knuckle; a floating caliper having a first part on an axially internal side of said brake disc and a second part on an axially external side of said disc, said first and second parts connected together across an external edge of said brake disc;

means axially slidingly guiding said floating caliper on said brake carrier including pin guides received in said floating caliper and brake carrier; a plurality of brake shoes disposed on either side of said brake disc, said plurality of brake shoes including a first and a second brake shoe arranged on an axial internal side of said brake disc along the circumference thereof and widely spaced apart a substantial distance from each other in the circumferential direction, said first and second brake shoes supported on portions of said brake carrier extending between and on either side of said first and second brake shoes; hydraulic actuating means adapted to urge said plurality of brake shoes against said brake disc, said hydraulic actuating means mounted on said first part of said floating caliper on said axially internal side of said brake disc;

said hydraulic actuating means comprised of at least two brake cylinders with brake pistons sliding therein;

said plurality of brake shoes also including a third brake shoe disposed on said second part of said floating caliper on said axially external side of said brake disc;

each of said first and second brake shoes having a friction surface facing said axially internal side of said brake disc;

said third brake shoe having a friction surface facing said axially external side of said brake disc a centroid of said friction surface of said third brake shoe substantially centered between a centroid of the friction surface of each of said first and second brake shoes, said third brake shoe extending across said widely spaced apart distance of said first and second brake shoes.

5,343,986

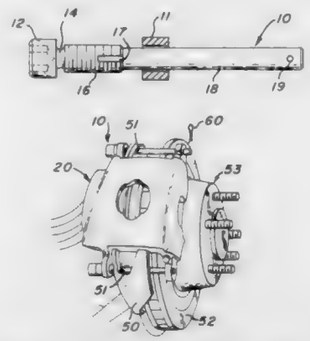
DISC BRAKE REPAIR MEANS AND METHOD

William C. Rogers, Dresher, and William R. Lawson, Glenside, both of Pa., assignors to R & B, Inc., Colmar, Pa.

Filed May 20, 1992, Ser. No. 886,601

Int. Cl.[5] F16D *65/14*

U.S. Cl. 188—73.45 3 Claims



1. A method for remounting a caliper assembly of a disk brake onto a supporting structure having a selectively sized threaded caliper bolt receiving aperture defined therein which has a stripped thread, the caliper assembly having mounting ears for floatable mounting on at least first and second axially aligned pin mounting surfaces having selected first and second diameters, respectively, the method comprising:

providing a replacement bolt having a selectively configured threaded portion which defines a primary retention means, said bolt threaded portion being made of a material which is harder than the portion of the supporting structure wherein said bolt receiving aperture is defined, said bolt threaded portion having a diameter of at least 0.008 inches greater than said bolt receiving aperture to enable said threaded portion to cut a new thread having a depth of at least 0.004 inches in said bolt receiving aperture, said bolt threaded portion having a selectively defined channel defined therein to facilitate the thread cutting action of said threaded portion in said bolt receiving aperture, said replacement bolt further including a pin portion having a diameter equal to said first selected diameter;

providing a bolt sleeve having an outside diameter equal to said second selected diameter, said sleeve having an inside diameter at least 0.008 inches greater than said bolt receiving aperture of the supporting structure;

aligning the mounting ears of the caliper assembly with said bolt receiving aperture defined in said supporting structure;

inserting said replacement bolt with said sleeve into the aligned ears and bolt receiving aperture such that said replacement bolt pin portion is positioned as said first pin mounting surface and said bolt sleeve is positioned as said second pin mounting surface of said caliper assembly and such that said bolt threaded portion is positioned for engaging said bolt receiving aperture of said support structure; and

forcibly rotating said bolt to tappingly, threadingly engage said support structure such that said bolt threaded portion cuts a new thread in said bolt receiving aperture of at least 0.004 inches in depth thereby defining a primary bolt retention means.

5,343,987

DUAL SECONDARY SHOE DRUM BRAKE WITH MEANS PREVENTING DEPLETION OF HYDRAULIC CYLINDER

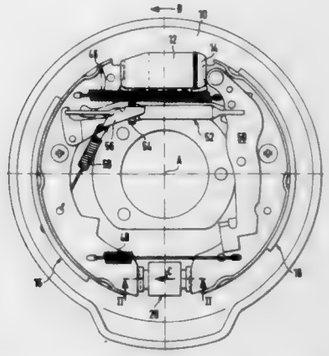
Victor Varzescu, Koblenz, Fed. Rep. of Germany, assignor to Lucas Industries public limited company, Birmingham, England

PCT No. PCT/EP90/01675, § 371 Date Jan. 17, 1992, § 102(e) Date Jan. 17, 1992, PCT Pub. No. WO92/06314, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 5, 1990, Ser. No. 820,660

Int. Cl.[5] F16D *65/09, 65/56, 51/18*

U.S. Cl. 188—79.63 5 Claims



1. Hydraulically and mechanically actuable drum brake comprising

a hydraulic wheel brake cylinder (12) which is fixed to an anchor plate (10) and includes a piston (14),

a first brake shoe (16) which bears with one end on the wheel brake cylinder (12),

a second brake shoe (18) which bears with one end on the piston

an intermediate support (20) on which bear both of those ends (16, 18) of brake shoes which are remote from the wheel brake cylinder (12), and

a mechanical actuating means (50-58) with which the brake shoes (16, 18) can be moved apart in the vicinity of the wheel brake cylinder (12),

the wheel brake cylinder (12) and the intermediate support being so arranged that on hydraulic actuation of the brake during forward travel both brake shoes (16, 18) are secondary shoes; characterized in that

the intermediate support (20) comprises a housing (22) which is fixed to the anchor plate (10) ad has a guide (24) at least approximately parallel to the wheel brake cylinder (12) and a stop (26),

an adjusting member (28) axially displaceable to a limited extent in said guide and

a push member (34) which with one of its two ends supports the first brake shoe (16) and on hydraulic actuation of the brake is displaceable by a force (c) acting on its second end by said second brake shoe (16) in a direction towards the first brake shoe (16), said push member (34) being connected to the adjusting member (28) in a manner permitting free movement of said push member (34) in the direction of said first shoe (16) while movement in the opposite direction is prevented.

5,343,988

SUITCASE OR SIMILAR CONTAINER WITH WHEEL BRAKE

Georg Bartsch; Ulf Rasch, both of Iserlohn, and Michael Spiekermann, Menden, all of Fed. Rep. of Germany, assignors to Sudhaus Schloss - Und Beschlagtechnik Gmbh & Co., Iserlohn, Fed. Rep. of Germany

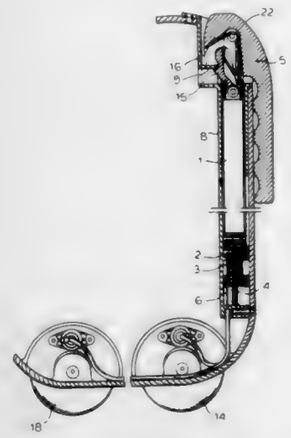
PCT No. PCT/EP91/00152, § 371 Date Oct. 15, 1991, § 102(e) Date Oct. 15, 1991, PCT Pub. No. WO91/11127, PCT Pub. Date Aug. 8, 1991

PCT Filed Jan. 26, 1991, Ser. No. 768,662

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1990, 9000882[U]

Int. Cl.[5] A45C *5/14, 13/22;* B62B *5/04, 33/02*

U.S. Cl. 190—18 A 21 Claims



1. An article of luggage, comprising:

a traveling case having a bottom;

at least three rollers on said bottom enabling rolling of said case upon a surface upon free rotation of said rollers;

rotation-blocking means at at least one of said rollers engageable to prevent rotation of said one of said rollers and thereby prevent rolling of said case upon said surface;

first spring means for biasing said rotation-blocking means in a direction to engage said rotation-blocking means;

means defining a movable handle on said case upon gripping by a user to draw said case over said surface;

coupling means operatively connected to said rotation-blocking means and to said handle means stressing said first spring means upon gripping of said handle means by said user and for disengaging said rotation-blocking means to enable rotation of said one of said rollers; and

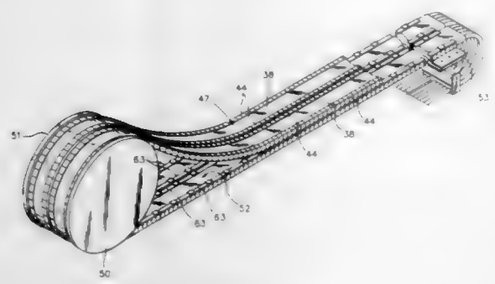
second spring means acting upon said coupling means and via said coupling means upon said rotation-blocking means for urging said rotation-blocking means out of engagement, said second spring means being prestressed at a greater force than said first spring means.

5,343,989

REDUCED WEAR CABLE CARRIER AND PADS

Paul Y. Hu; David R. Lyman, and D. Kenneth Walston, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1992, Ser. No. 991,687
Int. Cl.[5] H01B *7/24;* H02G *11/00*
U.S. Cl. 191—12 R 13 Claims



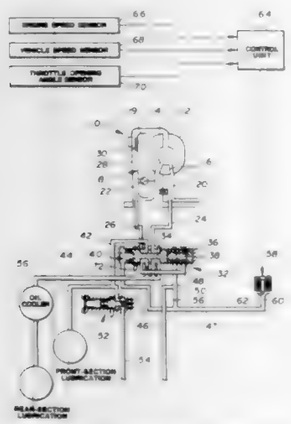
1. A combination comprising:
an elongate plastic carrier which has a pair of ends and which is capable of looping back on itself between its ends to form a loop;
the elongate plastic carrier having an inside elongate plastic surface which forms an inside of the loop and which extends therebeyond for sliding action upon itself when one end of the carrier is moved longitudinally;
a plurality of metallic pads; and
means mounting the pads along the inside elongate plastic surface of the carrier in a spaced relationship for sliding action between the metallic pads and the inside elongate plastic surface when said one end of the carrier is moved longitudinally,
whereby, upon the inside elongate surface of the carrier sliding upon itself, plastic to plastic sliding engagement is minimized.

5,343,990

CONTROL SYSTEM FOR LOCK-UP TORQUE CONVERTER FOR AUTOMATIC TRANSMISSIONS

Naonori Iizuka, Fuji, Japan, assignor to Jatco Corporation, Fuji, Japan

Filed Jan. 25, 1993, Ser. No. 8,142
Claims priority, application Japan, Jan. 28, 1992, 4-037130
Int. Cl.[5] F16D *33/00;* B60K *41/02*
U.S. Cl. 192—3.31 6 Claims



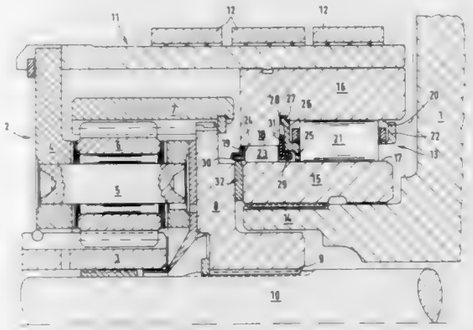
1. A control system in combination with a lock-up clutch employed in an automatic transmission of an automotive vehicle having a lock-up clutch releasing means for gradually releasing said lock-up clutch so as to reduce an engaging force of said lock-up clutch, a transient state in which said lock-up clutch is shifted from a lock-up clutch engaged state to a lock-up clutch released said control system comprising:
a change-speed determination means for judging whether a change-speed operation of the vehicle should be performed depending on a running condition of the vehicle and for generating a change-speed instruction when said change-speed determination means determines that the change speed should be performed;
a lock-up judgment means for judging whether said lock-up clutch should be conditioned in either one of an engaged state and a disengaged state, depending on the vehicle running condition; and
a quick releasing means, responsive to said change-speed instruction generated at a same time as when said lock-up judgment means determines that said lock-up clutch should be conditioned in a disengaged state, for reducing the engaging force of said lock-up clutch at a higher lock-up clutch releasing speed than during non-change-speed operation.

5,343,991

ROLLER ELEMENT OVERRUNNING CLUTCH

Vladimir Premiski, Willerscheidt; Wilhalm Wehren, Blatzheim; Mark Silk, Cologne, and Sieghart Biedermann, Max-Liebermann-Strasse all of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed May 3, 1993, Ser. No. 55,591
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1992, 4219154
Int. Cl.[5] F16D *15/00, 41/00;* F16C *19/54, 33/48*
U.S. Cl. 192—45 6 Claims



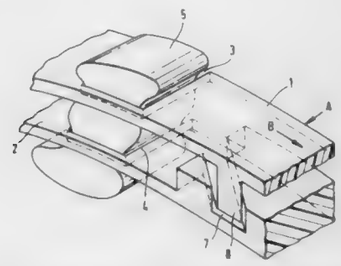
1. An overrunning clutch for producing one-way drive, comprising:
an inner ring;
an outer ring surrounding the inner ring;
a roller located between the inner ring and outer ring, driveably engaging said rings and producing a driving connection therebetween in a first direction of rotation, driveably disengaging said rings in a second direction of rotation;
a first cage containing the roller;
fastening means for restraining movement of the first cage against displacement relative to the outer ring;
a rolling element located between the inner ring and outer ring, rotatably supporting said rings for relative rotation in the first and second directions therebetween;
a second age containing the rolling element, having a guide flange located between a surface of the outer ring and the fastening means, thereby restraining said second cage against displacement therebeyond.

5,343,992

SWITCHABLE FREEWHEEL WITH LOCKING ELEMENTS

Johann Stark, Höchstadt, and Joachim Ritter, Herzogenaurach, both of Fed. Rep. of Germany, assignors to Ina Walalager Schaeffler KG, Fed. Rep. of Germany

PCT No. PCT/EP91/01411, § 371 Date Jan. 19, 1993, § 102(e) Date Jan. 19, 1993, PCT Pub. No. WO92/02742, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 27, 1991, Ser. No. 976,972
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1990, 4024616
Int. Cl.[5] F16D *15/00, 41/08*
U.S. Cl. 192—45.1 12 Claims



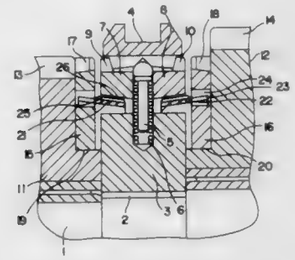
1. In a switchable locking element freewheel comprising two concentric cage rings (1,2) and locking elements (5,6) located in pockets (3,4) thereof, the locking elements (5,6) changing their locking position as a result of a relative displacement of the cage rings (1,2), the improvement which comprises at least one of the cage rings (1,2) including facility (8) which is guided along a surface (7) provided on the other cage ring (2,1) and inclined relative to a freewheel axis so that, under an axial force on one of the cage rings (1,2), they are moved relative to each other both in an axial and a circumferential direction, to cause tilting of the locking elements (5,6) for switching the freewheel.

5,343,993

SYNCHRONIZING DEVICE FOR TRANSMISSION ASSEMBLIES AND HAVING FRICTION-COUPLED ASSEMBLIES

Franz Soffa, Burggen, Fed. Rep. of Germany, assignor to Hoerbiger & Co., Schongau, Fed. Rep. of Germany

Continuation of Ser. No. 866,063, Apr. 10, 1992, abandoned.
This application May 26, 1993, Ser. No. 67,395
Claims priority, application Austria, Apr. 10, 1991, 753/91
Int. Cl.[5] F16D *23/04*
U.S. Cl. 192—53 F 2 Claims



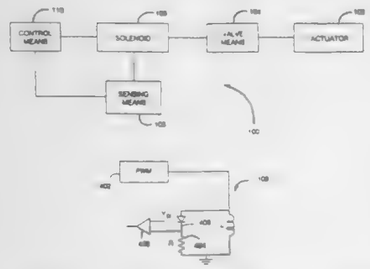
1. Synchronizing device for transmission assemblies, comprising:
a gear shaft having a detent mounted thereon in a twist-proof manner;
a sliding sleeve and at least one speed wheel rotatable on said gear shaft to be interconnected in a twist-proof manner with said detent by movement of said sliding sleeve;
a clutch connected in a shape-locking manner to said at least one speed wheel;
a friction ring body assembly comprising a friction ring including a conically-shaped coupling surface having a sintered-on friction lining and cams for providing engageable and disengageable friction coupling of said clutch with said detent by engagement of said cams with said clutch, said friction ring body assembly further comprising at least one synchronizing ring engageable with said sliding sleeve and including a conically-shaped coupling surface engageable with said friction lining with movement of said sliding sleeve, and wherein said clutch or the speed wheel includes a frictionless surface and recesses for the coupling connection with said detent and the shape-locking accomodation of said cams of said friction ring body assembly.

5,343,994

END OF FILL DETECTOR FOR A HYDRAULIC CLUTCH

Christos T. Kyrtsos, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Mar. 23, 1993, Ser. No. 35,779
Int. Cl.[5] F16D *25/14;* F15B *13/00*
U.S. Cl. 192—85 R 16 Claims



1. An apparatus for detecting an end-of-fill condition of an actuator having a varying control volume, said end-of-fill condition corresponding to said varying control volume being pressurized to a predetermined end-of-fill pressure, comprising:
a solenoid having a coil and an armature, said armature being movable relative to said coil in response to energization of said coil;
valve means for delivering a flow of fluid to said actuator, said fluid flow having a rate responsive to the movement of said armature;
control means for controllably energizing said coil with a control current;
sensing means for detecting a flyback current in said coil, sensing noise in said flyback current, detecting a change in the level of noise in said flyback current, and responsively producing an end-of-fill signal in response to said change being greater than a predetermined threshold.

5,343,995

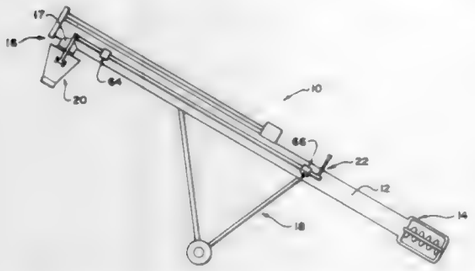
AUGER OR CONVEYOR DISCHARGE SPOUT

Dennis A. Scarrow, Saskatchewan, Canada, assignor to FAB TEC Manufacturing Ltd., Saskatchewan, Canada

Filed Aug. 23, 1993, Ser. No. 110,698
Int. Cl.[5] B65G *21/10*
U.S. Cl. 198—311 18 Claims

1. A discharge spout assembly for controlling the direction of particulate material delivery from a conveyor of the type having a fixed outlet, said spout assembly comprising:
a single tubular spout with an inlet end and a delivery end;
spout mounting means for mounting the spout on the conveyor with the inlet end of the spout positioned to receive

particulate material from the fixed outlet of the conveyor, the mounting means including pivot means mounting the spout for rotation about a first axis transverse to the spout and a second axis also transverse to the spout, the first and second axes being mutually transverse, whereby the orientation of the spout may be altered within a range of orientations; and



control means for selectively and controllably varying the orientation of the spout from a location remote from the spout.

5,343,996

DEVICE FOR QUICK CHANGE OF PIECE-SUPPORTING PALLETS IN AN ASSEMBLING MACHINE

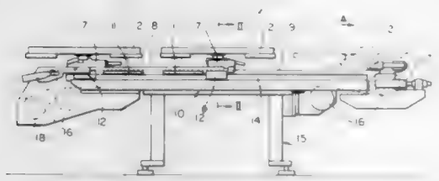
Gianni Nuschak, Torino, Italy, assignor to Comau S.p.A., Grugliasco, Italy

Filed Jul. 29, 1993, Ser. No. 98,772

Claims priority, application Italy, Sep. 30, 1992, T092 U 000236

Int. Cl.[5] B65G *47/00*

U.S. Cl. 198—345.3 **2 Claims**



1. Device for rapidly feeding piece-supporting pallets to a machine, comprising:

a pallet feeding line including two side beds serving for guiding two pallet transporting chains,

a fixed support structure located at the center between said two beds and including a longitudinal guide rail,

at least a gripping device for gripping a lower central appendage of a pallet, said device being slidably mounted on said guide rail,

a motorized endless belt, whose upper run is fixed to said gripping device for driving a reciprocating movement thereof, including a forward stroke for introducing the pallet into the machine, and a rearward stroke subsequent to the release of the pallet, for coming back into the starting position.

5,343,997

METHOD AND DEVICE FOR SUCCESSIVELY FEEDING OF COMPONENTS TO A MOUNTING APPARATUS

Henning Maerkedahl, Roersangervej 31, DK-8382 Hinnerup, Denmark

Filed Nov. 6, 1992, Ser. No. 972,833

Claims priority, application Denmark, Nov. 12, 1991, 1857/91

Int. Cl.[5] B65G *29/00*

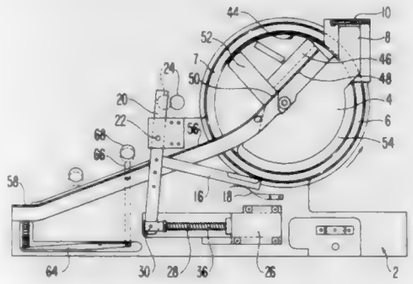
U.S. Cl. 198—392 **13 Claims**

1. A method for successively feeding loose components including SMD-components, to a delivery position of a mounting apparatus with the components having a distance between terminal ends which is larger than a width of the components comprising;

supplying a quantity of loose components to a dosing wheel rotating on a horizontal axis so that the components are carried by carrier shelves disposed along an inside periphery of the dosing wheel upwards to an elevated position;

causing the components to fall from the elevated position into an inclined sorting groove having a V-shaped cross section and a bottom surface having a width corresponding to a width of the components;

causing the components to slide from the sorting groove into an open groove having a width corresponding to a width of the components so that components which do not have a correct orientation in the open groove are blown away by a first air stream contacting the components not having the correct orientation;



causing the components to slide from the open channel to a feeder channel having a cross section which corresponds to a cross section of the components so that components which are correctly oriented in the feeder channel are conveyed by contact with a second air stream in a direction of movement of the components in the feeder channel; and

causing delivery of the components after passage through the feeder channel to the delivery position by moving the components upward from the end of the feeder channel to the delivery position.

5,343,998

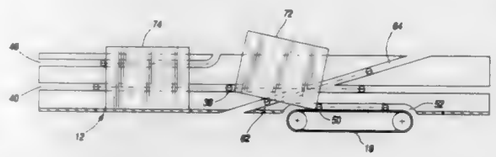
METHOD AND APPARATUS FOR TURNING A BLOCK OF SIGNATURES

Paul E. Depinet, Tiffin, and Don E. Detterman, Willard, both of Ohio, assignors to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed Aug. 31, 1993, Ser. No. 115,178

Int. Cl.[5] B65G *47/24*

U.S. Cl. 198—415 **23 Claims**



1. A method for turning a rectangular block having a pair of first sides and a pair of second sides substantially orthogonal to the pair of first sides, comprising the steps of:

pushing the block downstream through a trough using a conveyor pin, the bottom surface of the trough supporting one of the first sides of the block prior to turning the block;

disengaging the block from the conveyor pin by advancing the block downstream away from the conveyor pin with a block advance pin;

maintaining a lower portion of the leading second side of the block against a pivot pin;

pivoting the block approximately ninety degrees forward about the pivot pin using a flip pin while the lower portion of the leading second side is maintained against the pivot pin; and

after pivoting the block approximately ninety degrees, pushing the block downstream through the trough using the conveyor pin, the bottom surface of the trough supporting one of the second sides of the block.

5,343,999

FEEDING APPARATUS

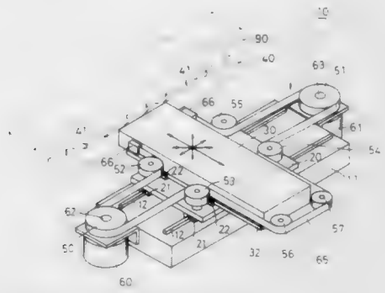
Koji Yoshida, and Shouichi Nishimura, both of Ogaki, Japan, assignors to Kabushiki Kaisha N-Tech, Gifu, Japan

Filed Sep. 29, 1993, Ser. No. 128,214

Claims priority, application Japan, Nov. 24, 1992, 4-086843

Int. Cl.[5] B65G *47/34*

U.S. Cl. 198—468.11 **13 Claims**



1. A feeding apparatus comprising:

a base frame;

a first movable frame which is movably supported on the base frame so as to move in a first direction;

a second movable frame which is movably supported on the first movable frame so as to move in a second direction different from the first direction;

a plurality of separate drivers on the base frame;

first rollers provided on the first movable frame on opposite sides of the second movable frame;

second rollers provided on the second movable frame; and,

a connecting band-like member connecting the separate drivers and the first and second rollers and wound about the first and second rollers so as to change the lengths of the portions of the connecting member that are located between the first and second rollers and the associated drivers when the latter are driven, said connecting band-like member being secured at opposite ends to the second movable frame.

5,344,000

BELT CLEANER

Dennis L. Gleason, Kentwood, Mich., assignor to Clipper Belt Lacecer Company, Grand Rapids, Mich.

Filed Dec. 27, 1993, Ser. No. 174,200

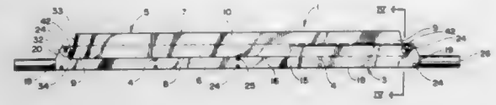
Int. Cl.[5] B65G *45/16*

U.S. Cl. 198—499 **24 Claims**

1. A scraper for cleaning conveyor belts and the like, comprising:

an elongate holder including mutually parallel front and rear plates defining a groove therebetween, and at least two support pins extending between said front and rear plates at locations disposed a predetermined distance inwardly from opposite ends of said holder;

an elongate blade mounted in said holder, having opposite side faces closely received in the groove of said holder for sliding movement therein, and opposite end portions positioned adjacent to the opposite ends of said holder; said blade having an outer edge shaped for scraping a belt, an opposite inner edge abuttingly supported on said support pins at locations thereon spaced a predetermined distance inwardly from the end portions of said blade, and a center portion disposed generally centrally in said holder; said blade being resiliently flexible along its length, whereby as contact between the outer edge of said blade and the belt wears away the center portion of said blade, the end portions of said blade are flexed back about said support pins in a direction away from the belt, thereby bowing the center portion of said blade inwardly toward the belt for improved conformance and cleaning performance.



5,344,001

CONVEYOR CHAIN WITH PROTECTIVE COVERS

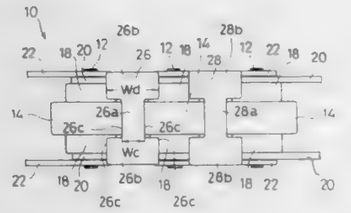
Yuichi Kawaai, Daito; Katsutoshi Shibayama, Osaka; Tetsuya Murano; Susumu Hamaguchi, both of Hirakata, and Tomoo Suko, Katano, all of Japan, assignors to Tsubakimoto Chain Co., Japan

Filed Feb. 25, 1993, Ser. No. 22,191

Claims priority, application Japan, Feb. 28, 1992, 4-18228; Mar. 4, 1992, 4-19915

Int. Cl.[5] B65G *17/24*

U.S. Cl. 198—779 **8 Claims**



3. A conveyor chain having a large diameter load-carrying roller and a small diameter running roller coaxially mounted on a connecting pin which alternately connects an inner link plate with an outer link plate, comprising a cover mounted on said link plates of configuration to cover a gap between adjacent load-carrying rollers and a gap between adjacent running rollers preventing entrance of foreign matter; said covering having flexible engaging pieces; and said inner link plate and said outer link plate having a window hole or a cutout, so that said engaging pieces engage with said window hole or said cutout of said inner link plate from outside and of said outer link plate from inside.

5,344,002

COMBINATION EYEGLASS LENS POLISHER AND EYEGLASS HOLDER DEVICE

Mark Baczkowski, 2020 Broom Firth Ct., Westlake Village, Calif. 91361

Filed Feb. 26, 1993, Ser. No. 23,456

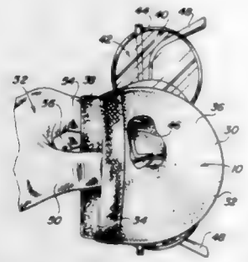
Int. Cl.[5] A45C *11/04*

U.S. Cl. 206—5 **14 Claims**

1. An improved combination eyeglass lens polisher and eyeglass holder device, said device comprising, in combination:

a) a generally flat, flexible, resilient, elongated bottom strip having opposite ends and a bottom surface and opposite

upper surface, said bottom surface being non-abrasive to eyeglass lenses and adapted for polishing eyeglass lenses;
b) a pair of flexible, resilient eyeglass holder pockets secured in spaced relation from each other on said upper surface of said bottom strip adjacent said opposite ends to define therebetween a central, readily foldable portion of said



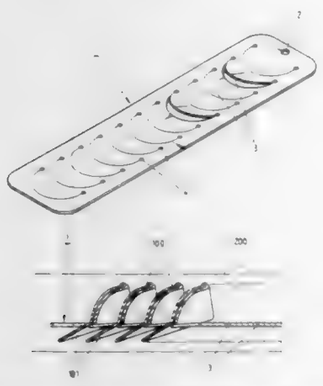
device, whereby said opposite ends of said bottom strip can be folded towards each other around said central portion so as to releasable embrace and polish opposite sides of an eyeglass lens; and
c) wherein said central portion is a separate, flexible, resilient strip secured to said upper surface of said bottom strip.

5,344,003

PACKAGING PAD PREVENTING WRINKLES OF CAPS WITH EYESHADES

Boo-Yl Park, Seoul, Rep. of Korea, assignor to Dada Corp., Seoul, Rep. of Korea

Filed Apr. 22, 1993, Ser. No. 51,501
Claims priority, application Rep. of Korea, Feb. 22, 1993, 1993-2403
Int. Cl.[5] B65D *85/18*
U.S. Cl. 206—8 | **4 Claims**



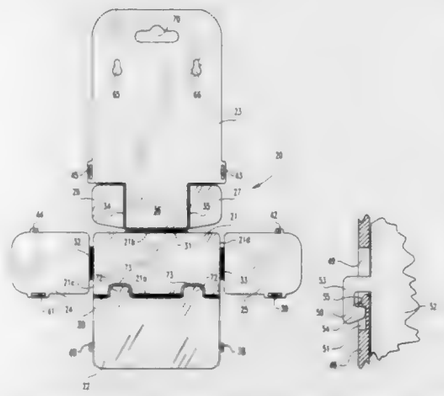
1. In combination, a plurality of caps and a packaging pad for transporting and displaying said caps, the caps including a collapsible main body and a planar eyeshade having a specified width, the planar eyeshade provided with a curved edge connected to a corresponding curved edge of the main body to form a junction, the packaging pad comprising:
a) a planar pad made from an elastic resin material;
b) a first row of apertures formed in said pad, the apertures positioned in spaced-apart relationship;
c) a second row of apertures formed in said pad in parallel relationship to said first row of apertures, said first row of apertures including apertures aligned directly across from a corresponding aperture in said second row of apertures to form a plurality of parallel pairs of apertures, said first and second rows, and the apertures forming a pair, being spaced apart a distance equal to the approximate width of the eyeshade; and
d) a plurality of curved slits cut in said planar pad, each slit extending from an aperture in said first row in a curved path to a corresponding parallel pair aperture in said second row to form a tongue edge, a pad edge, and an inwardly flexible tongue, whereby a cap is retained by flexing the tongue inward, sliding the eyeshade through the slit, and releasing the tongue such that the cap is secured between the tongue edge and the pad edge at the approximate junction of the eyeshade and main body of the cap.

5,344,004

FOLD-UP DISPLAY CONTAINER

Stephen T. Meyer, Indianapolis, Ind., assignor to Deflecto Corp., Indianapolis, Ind.

Continuation of Ser. No. 61,417, May 13, 1993. This application Sep. 21, 1993, Ser. No. 124,947
Int. Cl.[5] B65D *6/22*
U.S. Cl. 206—45.25 **2 Claims**



1. A fold-up display container for printed material and discrete articles which is initially in flat form and folded into a receiving configuration, said fold-up display container comprising:
a main flange designed and arranged into three hinged panels including a front panel, a rear panel and disposed therebetween a base panel hinged along a first edge to said front panel and hinged along a second edge to said rear panel;
a pair of oppositely disposed side panels hinged to opposite sides of said main flange and designed to attach with said main flange; and
a plurality of two-part locking assemblies for securing together pairs of adjacent panels into said folded-up receiving configuration so as to create a box-like form with a base, four sides, four corner edges and an open top into which material may be placed for display and selection, each corner edge being defined by a pair of panels, at least one of said plurality of two-part locking assemblies being disposed adjacent each corner edge and including a tab which is outwardly extending from and which is integral with a side edge of one panel of said pair of panels defining the corresponding corner edge, said tab being generally coplanar with said one panel, wherein said tab includes a first arm portion extending out from its corresponding side edge, a second arm portion spaced apart from said first arm portion and a connecting arm portion extending between said first and second arm portions creating a generally U-shaped configuration for said tab, each two-part locking assembly further including a flange which is outwardly extending from and which is integral with a side edge of the other panel of said pair of panels defining the corresponding corner edge, said flange being generally coplanar with said other panel, said flange defining a generally rectangular receiving slot designed to receive a corresponding tab, wherein said slot includes a first portion extending completely through the corresponding flange, a second portion which extends only part way down into the thickness of the corresponding flange and a tab-locking edge disposed within the thickness dimension of said corresponding flange and being positioned between said first and second portions, wherein said second arm portion extends into the second portion of said receiving slot when the fold-up display container is in a receiving configuration, and wherein said generally U-shaped configuration of said tab defines a receiving space into which said tab locking edge extends when said fold-up display container is in said receiving configuration.

5,344,005

PACKAGE WITH SUTURE MATERIAL FOR SURGICAL PURPOSES

Ralf Kettner, Lubeck, and Dieter Brunken, Huettblek, both of Fed. Rep. of Germany, assignors to Ethicon, Inc., Somerville, N.J.

Filed Jun. 17, 1993, Ser. No. 78,698
Int. Cl.[5] A61B *17/06*
U.S. Cl. 206—63.3 **3 Claims**

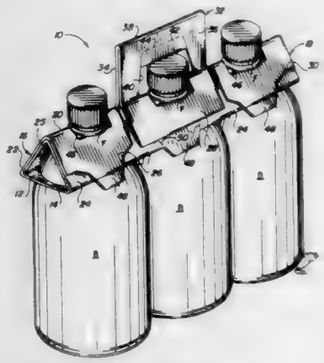
1. Package with suture material for surgical purposes, in particular as an inner package for sterile packaging characterized by
(a) a bottom plate with a rear carrier strip, the latter running in the rear zone parallel to the longitudinal edges of the bottom plate and being secured on said bottom plate, consisting of several partial sections and having guide cuts open to the top, and with several transverse carrier strips, the latter running in the front zone perpendicular to the longitudinal edges of the bottom plate being secured on said bottom plate and having guide cuts open to the top;
(b) at least one intermediate sections which extends essentially in the zone between the front longitudinal edge of the rear carrier strip and the rear ends of the transverse carrier strips;
(c) a plurality of needle/thread combinations, the needles of which are held in guide cuts of the transverse carrier strips and the thread-end zones of which are held in guide cuts of the rear carrier strip, the threads being divided into groups which are separated from one another by the intermediate sections;
(d) a cover plate which is connected to the rear longitudinal edge of the bottom plate and can be turned onto the bottom plate, covering in its areal extension said bottom plate roughly as far as the rear ends of the transverse carrier strips; and
(e) a closure plate which is connected to the front longitudinal edge of the bottom plate and is so dimensioned in its areal extension that, after being turned down onto said bottom plate, it covers the front zone of the bottom plate not covered by the cover plate.

5,344,006

NECK CLIP BOTTLE CARRIER WITH EASY ACCESS FEATURE

Christine Mazzeo, Roswell, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Sep. 17, 1993, Ser. No. 123,492
Int. Cl.[5] B65D *75/00*
U.S. Cl. 206—153 **15 Claims**



1. A neck clip bottle carrier, comprising:
a bottom panel having openings therein for receiving the necks of bottles;
side panels connected to the bottom panel along fold lines, the side panels being angled toward each other and meeting at an apex;
each side panel being comprised of inner and outer plies of material;
the upper portions of both plies of the side panels containing openings for receiving the necks of bottles, the openings in both plies including adjacent lower edges for engaging the underside of outwardly extending flanges on the bottle necks to support the bottles in the carrier;
the inner ply of one of the side panels including a tear-away section beneath each bottle neck opening; and
the outer ply of said one side panel being comprised of a plurality of separate individual flaps having side edges and lower edges, each separate flap overlying one of the tear-away sections and extending from a fold line at the apex of the carrier, adjacent side edges of adjacent flaps being spaced from each other.

5,344,007

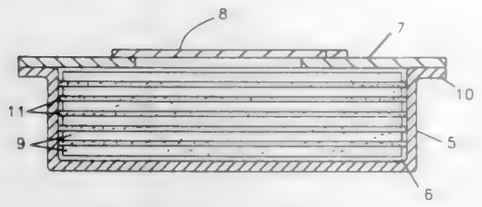
RESEALABLE PACKAGE COMPRISING A CONTAINER AND WET ABSORBENT SHEET MATERIAL WITH INTERPOSED LIQUID BARRIER LAYER

Kenji Nakamura, Ashiya, and Isao Kuraishi, Kyoto, both of Japan, assignors to Kennak U.S.A., Inc., New York, N.Y.

Continuation of Ser. No. 749,112, Aug. 23, 1991, abandoned. This application Jun. 25, 1993, Ser. No. 83,201
Int. Cl.[5] B65D *81/24, 85/48;* **B32B** *1/04;* **B29D** *22/00*
U.S. Cl. 206—205 **10 Claims**

1. A resealable package comprising:
a stack of wetted absorbent sheets;
a container formed by a liquid and gas impermeable material for holding said stack, said container including closure means for permitting access to said wetted absorbent sheets through an opening in said container and for resealing said opening; and
at least one liquid barrier sheet interposed in said stack between a predetermined number of wet absorbent sheets, each said liquid barrier sheet being detached from said container to provide gaseous communication between

opposite sides of said liquid barrier sheet and each said liquid barrier sheet having opposite sides, with one side in



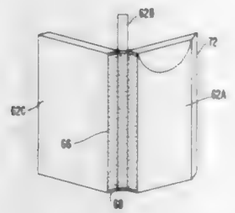
contact with a first wetted absorbent sheet and the opposite side in contact with a second wetted absorbent sheet.

5,344,008

PACKAGING FOR ARTICLES SUCH AS CIGARETTES

James A. DeBlasio, Midlothian; Donald L. Brookman, Richmond; James B. Draucker, Chesterfield; Donald H. Evers; Charles D. Hansen, both of Richmond; Pamela D. Moore, Chesterfield; Reginald W. Newsome, Richmond, and William J. Rech, Midlothian, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jun. 2, 1993, Ser. No. 70,289
Int. Cl.[5] B65D *85/10*
U.S. Cl. 206—256 22 Claims



1. A cigarette package comprising a plurality of packs each containing a plurality of cigarettes, said packs being arranged in a bundle such that the packs are independently swingable about an edge of the bundle and are individually detachable from the package; wherein there are three packs in said package; two of said three packs containing a single row of seven cigarettes each, and one of said three packs containing a single row of six cigarettes; and wherein said one pack includes a beveled edge located opposite an edge of the bundle about which the packs are swingable.

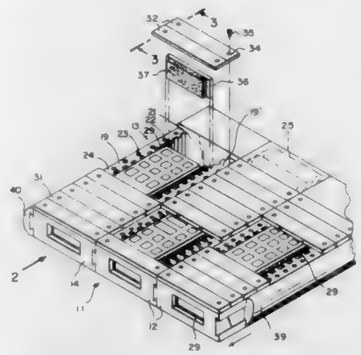
5,344,009

WIRELESS REMOTE CONTROL PANEL HOUSING ASSEMBLY

Mansung Choi, 54 E. 8th St., #6L, New York, N.Y. 10003

Filed Nov. 3, 1992, Ser. No. 970,567
Int. Cl.[5] B65D *85/38, 21/02*
U.S. Cl. 206—305 27 Claims

1. A portable remote control panel for wireless remote control of domestic electronic equipment comprising a housing assembly having an operating face and a leading end and comprising means defining a series of elongate wireless remote controller-receiving compartments with apertures at the operating face and beam-admitting windows at the leading end; moveable partition means in each compartment for adjusting the longitudinal sizes of the respective compartments for receiving remote controllers of different lengths and means for retaining individual remote controllers in respective compartments so that the individual remote controllers are arrayed in side-by-side relation with control buttons thereof exposed at respective apertures in the operating face and with leading,



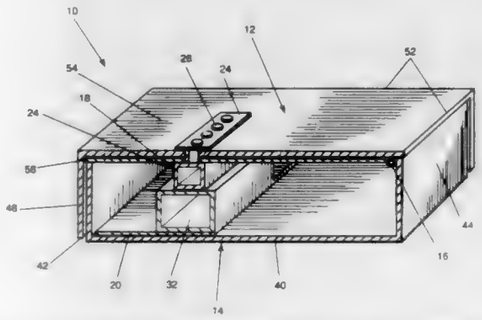
beam-emitting ends aligned with the respective beam-admitting windows.

5,344,010

HAND GUN CASE WITH LOCK AND BLOCK

Arthur J. Dyer; Tommie L. Crawford, both of McMinnville; Kenneth L. Beaty, Readyville; Charles E. Morgan, Rock Island; Garry D. Mooneyham, Woodbury; Alton L. Monneyham, McMinnville, and Charlie F. Watts, Hermitage, all of Tenn., assignors to Metal Products Company, McMinnville, Tenn.

Filed Mar. 30, 1993, Ser. No. 40,124
Int. Cl.[5] B65D *85/00, 55/14*
U.S. Cl. 206—317 8 Claims



3. A case for preventing unauthorized access to a firearm comprising:

a. a bottom section;

b. a top section hingedly attached to said bottom section;

c. a lock attached to said top section proximate said forward section; and

d. a block attached to said bottom section so that it aligns proximate said lock when said top section is in a closed position.

5,344,011

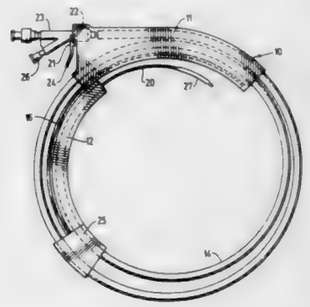
PACKAGING SYSTEM FOR AN ELONGATED FLEXIBLE PRODUCT

Dinah K. DiBernardo, San Jose; Kenneth L. Osborn, and Ruth M. Fricker, both of Mountain View, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Feb. 12, 1993, Ser. No. 17,029
Int. Cl.[5] B65D *85/671*
U.S. Cl. 206—364 10 Claims

1. A packaging system for an elongated flexible product in a coiled condition having more than one complete turn, comprising

a housing which has a main portion and a movable portion connected to the main portion and a plurality of separate passageways within the housing which receive a coiled elongated flexible product, the movable portion of the housing being movably connected to the main housing



portion to facilitate exposure of only a small distal portion of an elongated flexible product disposed within the passageways; and

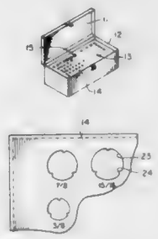
an elongated tubular sheath which has at least in part an arcuate shape, which has at least proximal and distal portions disposed within the passageways of the housing and which has an inner luman configured to slidably receive an elongated flexible product therein.

5,344,012

SOCKET CADDY

James R. Matthews, 35391 Wanki Ave., Wildomar, Calif. 92595

Filed Sep. 7, 1993, Ser. No. 116,578
Int. Cl.[5] B65D *85/20*
U.S. Cl. 206—372 1 Claim



1. A tool caddy apparatus for organizing a variety of different sized wrench sockets comprising:

a tool box having a tray therein, said tray having a bottom consisting a supporting surface;

a socket support member having a flat planar surfaced plate with a plurality of different sized openings provided within its perimeter;

said plate having a downwardly depending flange about its perimeter and terminating with an edge adapted to engage with said supporting surface;

retaining means associated with each of said plate openings for releasably holding a socket therein;

said retaining means includes at least three pliable elements carried on said plate at each of said openings and projecting in a plane defined by said plate into said openings to provide an interference fit with said socket;

said retaining means includes a magnetic layer disposed beneath said plate between portions of said flange and having a magnetic flux field occupying an area defined between the underside of said plate and said magnetic layer;

said plate includes indicia adjacent each of said openings for identifying that opening with a particular socket;

said indicia is raised above the upper surface of said plate augmenting its visual observance;

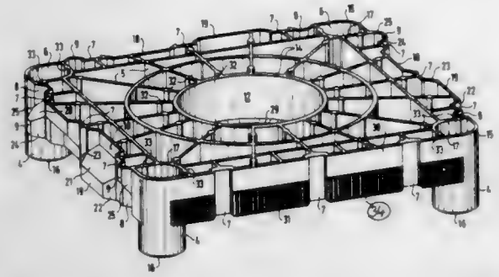
said plurality of openings are arranged substantially in rows and columns across said plate in fixed spaced-apart relationship.

5,344,013

END WALL MADE OF MATERIAL WHICH CAN BE SHAPED WITHOUT CUTTING FOR A WINDING FILM

Norbert Born, Blieskastel, and Wolfgang Oberhausen, Mainz-Ebersheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 23, 1992, Ser. No. 949,224
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1991, 4132442
Int. Cl.[5] B65D *85/671*
U.S. Cl. 206—391 20 Claims



1. An end wall for a winding roll made of a material shapable without cutting, said end wall being generally rectangular with rounded corners and comprising:

(a) a front side facing the winding roll which forms a flat surface, said front side including

a central push-in peg; and

hollow cylindrical locking bosses located on said rounded corners and having substantially the same radius as said rounded corners wherein said locking bosses further include a boss extension and a shoulder;

(b) a rear side facing away from the winding roll and reinforced by radial and annular ribs, said radial ribs including reinforcing webs disposed in the radial ribs, said rear side further having recesses defined by said rounded corners and by rounded webs wherein said rounded webs have cylindrical reinforcing webs disposed therein, said cylindrical reinforcing webs having a diameter larger than a thickness of said radial ribs and larger than a thickness of said rounded webs, said reinforcing webs of said rounded webs and said radial ribs extending at right angles to said front side, wherein said recesses adjoin said hollow-cylindrical locking bosses;

(c) a plurality of first side walls located between said front and rear sides, each of said first side walls including:

a plurality of stacking bosses; and

a plurality of stacking pockets, wherein said stacking bosses are complementary in shape to said stacking pockets for providing mutual engagement without a gap of the stacking bosses and stacking pockets during lateral stacking of a plurality of end walls; and

(d) at least one second side wall located between said front and rear sides, each said second side wall including grooving extending over a portion of the length of said second side wall interrupted by guide slots that are inwardly recessed with respect to said grooving.

13. An end wall for a winding roll made of a material shapable without cutting, said end wall being generally rectangular with rounded corners and comprising:

(a) a front side facing the winding roll which forms a flat surface, said front side including:
a central push-in peg; and
locking bosses;
(b) a rear side facing away from the winding roll and reinforced by radial and annular ribs, said radial ribs including reinforcing webs;
(c) a plurality of first side walls located between said front and rear sides, each of said first wide walls including:
a plurality of stacking bosses; and
a plurality of stacking pockets, wherein said stacking bosses are complementary in shape to said stacking pockets for providing mutual engagement without a gap of the stacking bosses and stacking pockets during lateral stacking of a plurality of end walls; and
(d) at least one second side wall located between said front and rear sides, each said second side wall including grooving extending over a portion of the length of said second side wall interrupted by guide slots that are inwardly recessed with respect to said grooving;
wherein said grooving includes a plurality of grooves, each groove being in the shape of a prism cut in a diagonal plane, the cross-section of said groove being triangular and the diagonal plane forming a base surface of a half-prism.

5,344,014

REUSABLE MULTIPACK FOR STACKED WOUND ROLLS

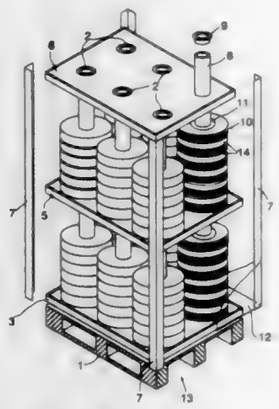
José Toral, Munich; Gottfried Lutz, Seefeld; Hartmut Thiele, Munich; August Liepold, Munich, and Hermann Brandstetter, Munich, all of Fed. Rep. of Germany, assignors to BASF Magnetics GmbH, Mannheim, Fed. Rep. of Germany

Filed Jul. 27, 1992, Ser. No. 918,749

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1991, 9109284

Int. Cl.[5] B65D *85/02*

U.S. Cl. 206—394 **3 Claims**



1. A right-parallelepipedal multipack for vertically stacked wound rolls, comprising a rectangular pallet (**1**), a rectangular base plate (**3**), located on said pallet and provided with a multiplicity of clearances (**2**), an identically constructed intermediate plate (**5**) and a likewise identical top plate (**6**), a multiplicity of wound rolls respectively stacked in-between said plates and means (**7, 8, 9**), including a hub sleeve, for fixing the multi pack and the wound rolls, wherein the wound rolls are recording media (**10**) in tape form which are wound-up on flangeless hubs (**11**) which are provided with inner bores and through which there is fitted said hub sleeve (**8**) which is mounted non-displaceably in the clearances (**2**) of the base plate (**3**), intermediate plate (**5**) and top plate (**6**), and a cover (**9**), provided with a ring, being adapted to fit onto the upper end of the hub sleeve (**8**) above the top plate, the lateral four corners of the multi pack being secured by vertically attached corner parts (**7**) and a stretch film (**12**) being drawn around the side parts of the multi pack.

5,344,015

CARDHOLDER AND CARRYING CASE THEREFOR

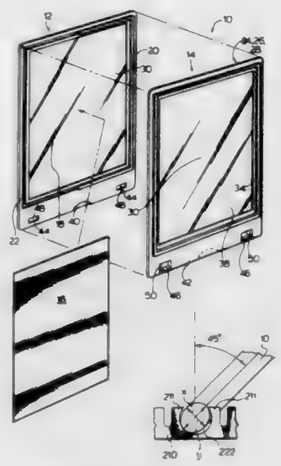
Ira W. Carlin, Thornhill, and Morris Fischtein, Downsview, both of Canada, assignors to Pro-Index Corp., Concord, Canada

Filed Sep. 18, 1992, Ser. No. 946,892

Claims priority, application Canada, Feb. 28, 1992, 2062055

Int. Cl.[5] B65D *85/48*

U.S. Cl. 206—449 **4 Claims**



4. A holder comprising:
a first planar-shaped member;
a complementary opposing second planar-shaped member;
complementary snap-fit engaging means on each said first and second planar-shaped member for receiving and engaging said planar-shaped members together, an inner space being defined between said planar-shaped members adapted to retain a planar-shaped exhibit; and
mounting means for releasably resiliently mounting the holder in a substantially cylindrical recess of a case, a longitudinal axis of said recess being coplanar with an associated holder, the cylindrical recess having an elongate opening subtending a radial angle of less than 90°, the mounting means comprising an elongate member, on the bottom edge of the holder, having a substantially elliptical cross-section with a longer axis and a shorter axis, a longitudinal axis of the elliptical elongate member and the longer axis of said elliptical cross-section being coplanar the planar-shaped holder, the dimension of the longer axis being greater than the diameter of said cylindrical recess and the shorter axis of said elliptical cross-section being less than or equal to the diameter of said cylindrical axis."

5,344,016

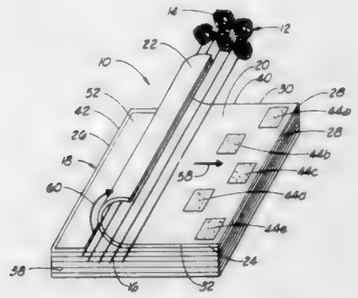
WRAPPING MATERIAL FOR WRAPPING A FLORAL GROUPING HAVING STAGGERED STRIPS OF ADHESIVE MATERIAL APPLIED THERETO AND METHOD

Donald E. Weder, Highland, Ill., and Franklin J. Craig, Valley Park, Mo., assignors to Highland Supply Corporation, Highland, Ill.

Continuation-in-part of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 391,463, Aug. 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned. This application Dec. 4, 1991, Ser. No. 803,318

Int. Cl.[5] B41L *1/32;* **B65D** *5/02;* **B65B** *25/14*

U.S. Cl. 206—451 **22 Claims**



1. A pad of wrapping material, comprising:
a plurality of sheets of material stacked one on top of the other, each sheet of material having an upper surface, a lower surface, and a plurality of staggered strips of adhesive disposed on one of the upper and lower surfaces such that each sheet of material is releasably connected to an adjacent sheet of material via the staggered strips of adhesive, the staggered strips of adhesive arranged on each sheet of material so that the staggered strips of adhesive are in alternating vertical alignment when the sheets of material are stacked.

5,344,017

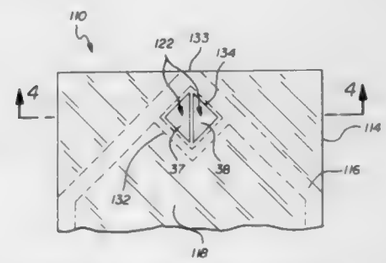
INSTRUMENT POUCH WITH IN-POUCH STERILE PROCESSING INDICATOR

Paul M. Wittrock, 1545 Flowerdale St., Simi Valley, Calif. 93063

Filed Aug. 13, 1993, Ser. No. 106,213

Int. Cl.[5] B65D *73/00*

U.S. Cl. 206—459.1 **12 Claims**



1. Medical instrument sterilization processing pouch comprising first and second sheet material walls joined by a perimetrical seal to have a closed volume within which medial instruments are sealed and sterile-processed and stored for later use, said perimetrical seal being tapered at one end of said pouch to limit locally the area of seal between said sheet material walls for ease of separating said sheet material walls and opening said seal, and within said pouch closed volume a sterile-processing indicator having signal response to sterile processing conditions experienced by said instruments, said sterile processing indicator being enclosed within said closed volume by additional seal lines of relatively less width than said perimetrical seal and extending at right angles to the tapered portions of said perimetrical seal to form a diamond shaped enclosure for said sterile processing indicator to limit the increase in seal area forming said sterile processing indicator enclosure.

5,344,018

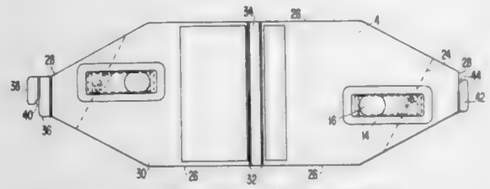
DISPENSING PACKAGE ASSEMBLY

Jane E. Severin, Wonder Lake, Ill., assignor to Pitman-Moore, Inc., Mundelein, Ill.

Filed Jun. 1, 1992, Ser. No. 891,694

Int. Cl.[5] B65D *35/56, 85/14*

U.S. Cl. 206—469 **24 Claims**



1. A dispensing package assembly, comprising:
a base sheet;
a blister overlay having a main cavity and a secondary cavity opening into said main cavity, said overlay being secured to said base sheet to thereby close said cavities and said secondary cavity including a shear depression extending laterally across and into said secondary cavity to thereby define an area of reduced depth in said secondary cavity; and
a dispenser pouch for containing fluent materials, said pouch being confined within-the extent of said overlay substantially within said main cavity and extending into said secondary cavity.

17. A dispensing package assembly, comprising:
a base sheet;
a blister overlay having a main cavity and a secondary cavity opening into said main cavity, said overlay being secured to said base sheet to thereby close said cavities; and
a dispenser pouch for containing fluent materials, said pouch being confined within the extent of said overlay substantially within said main cavity and extending into said secondary cavity, wherein said blister overlay includes a dispensing depression protruding downward into said main cavity and extends such that a portion of said dispensing depression is in proximity to said main body of said pouch.

21. A method for applying a pre-measured amount of a fluent composition to a localized area on a mammalian host or other substrate, wherein said method comprises:
opening a package assembly containing said composition by shearing said assembly, wherein said assembly includes a base sheet, a blister overlay having a main cavity and a secondary cavity opening into said main cavity wherein said overlay is secured to said base sheet to thereby close said cavities, and a dispenser pouch containing said composition wherein said pouch is confined substantially within said main cavity and extends into said secondary cavity, the assembly being sheared through at least a portion of said sheet, said overlay and said pouch extension to thereby open said pouch extension;
inverting said sheared assembly such that the opened pouch extension is positioned immediately adjacent said localized area for application thereto; and
manually pressing upon said overlay to compress said pouch such that said composition is expelled from said Pouch

through said opened pouch extension on to said localized area.

5,344,019

TRAY FROM FOLDED SHEET MATERIAL AND BLANK FOR THIS TRAY

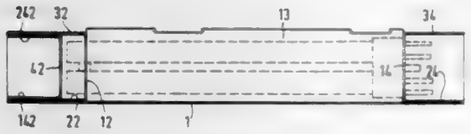
Wilhelmus J. J. Van Hest, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 25, 1993, Ser. No. 8,115

Claims priority, application European Pat. Off., Feb. 19, 1992, 92200481.7

Int. Cl.[5] B65D *85/42*

U.S. Cl. 206—485 15 Claims



1. A tray mode of folded sheet material for accommodating several elongate objects arranged next to one another, comprising:

a rectangular base portion having a first set of two mutually opposing edges and a second set of mutually opposing edges,

two first walls, positioned remote from said first set of mutually opposing edges, each of said first walls resting on said base portion and extending in a direction parallel to the axis of said first set of mutually opposing edges,

each of said first walls being provided with mutually opposing openings adapted for accommodating respective end portions of each of said objects,

first and second sets of two buffering bands each, each band in said first set of buffering bands integral with one of said first walls and extending outwardly from said base portion in a direction parallel thereto, one of said bands of said first set of buffering bands positioned adjacent to said base portion and the other of said bands of said first set of buffering bands positioned remote from said base portion, each band in said second set of buffering bands integral with the other of said first walls and extending outwardly from said base portion in a direction parallel thereto, one of said bands in said second set of buffering bands being positioned adjacent to said base portion and the other of said bands of said second set of buffering bands positioned remote from said base portion;

characterized in that:

two second walls are present each positioned along one of the edges of said second set of edges, each resting on said base portion and each connected to a separate one of said remote buffering bands and

the base portion is connected to both of said second walls.

13. A blank of sheet material having a profile, openings and slits positioned in a manner such that said blank is suitable for folding to form a tray for accommodating several elongate objects arranged next to one another:

said array comprising:

a rectangular base portion having a first set of two mutually opposing edges and a second set of mutually opposing edges,

two first walls, positioned remote from said first set of mutually opposing edges, each of said first walls resting on said base portion and extending in a direction parallel to the axis of said first set of mutually opposing edges,

each of said first walls being provided with mutually opposing openings adapted for accommodating respective end portions of each of said objects,

first and second sets of two buffering bands each, each band in said first set of buffering bands integral with one of said first walls and extending outwardly from said base portion in a direction parallel thereto, one of said bands of said first set of buffering bands positioned adjacent to said base portion and the other of said bands of said first set of buffering bands positioned remote from said base portion, each band in said second set of buffering bands integral with the other of said first walls and extending outwardly from said base portion in a direction parallel thereto one of said bands in said second set of buffering bands being positioned adjacent to said base portion and the other of said bands of said second set of buffering bands positioned remote from said base portion;

characterized in that:

two second walls are present each positioned along one of the edges of said second set of edges, each resting on said base portion and each connected to a separate one of said remote buffering bands and

the base portion is connected to both of said second walls.

5,344,020

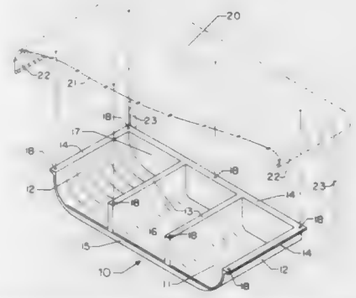
STORAGE DEVICE FOR GOLF CARTS

Steve Ferguson, R.R. 3 Box 271, Galesburg, Ill. 61401

Filed Jun. 1, 1993, Ser. No. 68,779

Int. Cl.[5] B60R *7/08*

U.S. Cl. 224—274 7 Claims



1. An improved storage device for attachment to the underside of a roof of a golf cart, comprising:

a bottom, generally-planar shelf structure;

side wall structures attached to the outer edges of opposite sides of the bottom shelf structure in an upwardly-disposed and generally perpendicular manner to the bottom shelf structure;

a back wall structure attached to the rear outer edge of the bottom shelf structure in an upwardly-disposed and generally perpendicular manner to the bottom shelf structure, and generally perpendicular to the side wall structures;

wherein the side wall structures and back wall structure are of generally equivalent heights;

a retaining lip structure projecting upwardly from and perpendicular to the edge of the bottom shelf structure that is opposite to the edge of the bottom shelf structure to which the back wall structure is attached;

wherein the height of the retaining lip structure is less than the height of the back wall structure and side wall structures;

a continuous lip structure projecting outwardly from the upper edge of the side wall and back wall structures, and in a plane that is generally parallel to the plane of the bottom shelf structure; and

means integrally included in the continuous lip structure for removably attaching the entire storage device to the underside of the roof of a golf cart.

5,344,021

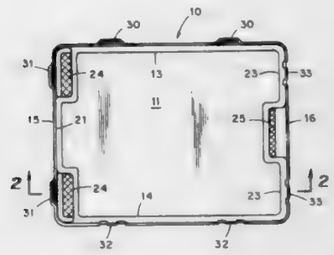
MOLDED CRATE WITH INTERLOCKING RIM APPLIANCES

Henry H. Rose, Knoxville, Tenn., assignor to Formall, Inc., Knoxville, Tenn.

Filed Sep. 21, 1993, Ser. No. 125,032

Int. Cl.[5] B65D *21/00*

U.S. Cl. 206—505 10 Claims



1. A utility crate of integrally molded, unitary construction having a pair of end walls, a pair of side walls and a bottom panel bounding an interior container volume; an open top area above said interior volume; vertical stacking support surfaces disposed on said end walls outside of said open top areas to support another, superposed crate above said interior volume; a perimeter band having substantially straight, planar sections upstanding from said side and end walls surrounding said open top area and outside of said support surfaces whereby said support surfaces are disposed between said perimeter band and said open top area and said perimeter band laterally confines said superposed crate on said stacking support surfaces; first sections of said perimeter band above one of said end walls and one of said side walls having spade elements projecting upwardly therefrom, second sections of said perimeter band above said other end wall and said other side wall having spade receptacle elements, said space and receptacle elements having substantially identical relative spacing whereby the side wall spade elements of a first crate may be meshed with the side wall receptacle elements of a second crate positioned laterally adjacent said first crate.

5,344,022

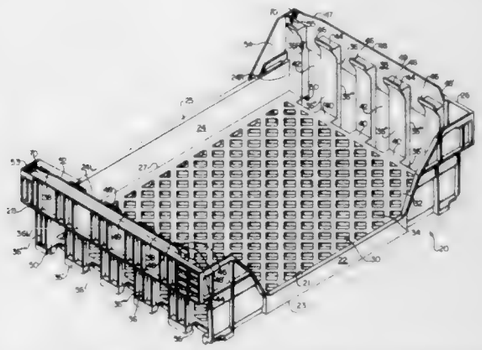
STACKABLE AND NESTABLE MULTI-LEVEL BREAD TRAY

Edward L. Stahl, Plano, Tex., assignor to Piper Industries of Texas, Inc., Garland, Tex.

Filed Nov. 19, 1993, Ser. No. 154,479

Int. Cl.[5] B65D *21/04*

U.S. Cl. 206—507 11 Claims



1. A tray adapted for alternately stacking or nesting with a similarly configured tray comprising:

(a) a pair of opposed left and right side walls, a pair of opposed front and rear walls, a floor, and a plane of symmetry perpendicular to said floor, and parallel to and equidistant from said left and right side walls;

(b) said left and right side walls being mirror images of each other and each having a plurality of normally upright, spaced apart stacking posts of substantially uniform width and height, each of the stacking posts having a top end, a bottom end, an inner side and an outer side, the stacking posts being interconnected at their top ends by a vertical strip of material, said strip of material being spaced above the floor by a predetermined distance, the stacking posts being connected directly to the floor, thereby leaving a void that extends between each of the stacking posts and that extends from the floor to said vertical strip of material;

(c) said vertical strip having an upper rim extending along said vertical strip wherein said upper rim is a constant height for a forward portion of its length, inclines downwardly from front to rear from the rear extent of said constant height portion and terminates in a constant height at its rearmost extent; and

(d) each of said stacking posts is flared inwardly at its top end which comprises a horizontally extending flat portion, said flat portion being cantilevered out from the inner side of the stacking post towards said plane of symmetry and a vertical lip provided at an edge of said horizontally extending flat portion closest to said plane of symmetry, thereby providing a surface on which a basket having smaller overall dimensions than said basket can be stacked.

5,344,023

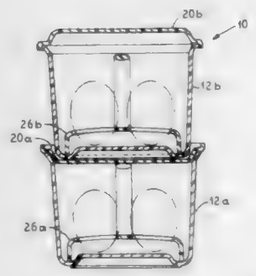
EGG CONTAINER ASSEMBLY

Patricia A. Cox, Ohio Township, Warrick County, and David K. Miller, Evansville, both of Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 30, 1993, Ser. No. 176,028

Int. Cl.[5] B65D *85/62, 81/02*

U.S. Cl. 206—508 18 Claims



1. A three piece egg container assembly comprising:

a bottom member having a base wall and four upstanding sidewalls with an open top;

a lid member having a planar center section and a peripheral lip portion;

a nest member having a planar section with receptacles therein for receiving eggs and a peripheral wall portion to elevate said planar section above a supporting surface;

said planar center section of said lid member sized to receive said base wall when said lid member is placed under said bottom member with said peripheral lip portion extending upwardly, said peripheral lip portion sized to engage said bottom member sidewalls to support said lid member in said open top with said peripheral lip portion extending upwardly, and said peripheral lip portion sized to engage around an outside of said sidewalls at said open top with said peripheral lip portion extending downwardly;

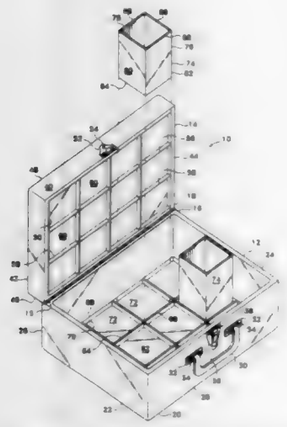
said nest member sized to be received on said base wall of

said bottom member and on said planar center section of said lid member with said peripheral lip portion extending upwardly.

5,344,024
CASE FOR STORING, ORGANIZING AND SORTING SMALL ARTICLES

Gary D. Cohu, P.O. Box 28252, Kansas City, Mo. 64118

Filed Sep. 28, 1993, Ser. No. 128,464
Int. Cl.[5] B07C *7/04, 5/00;* B65D *85/00*
U.S. Cl. 206—526 20 Claims



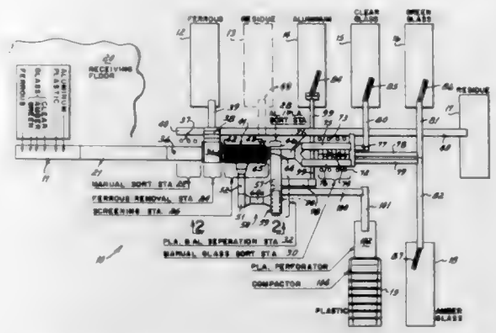
1. A case for storing, organizing and sorting small articles, comprising:
   a. a body having a hinged lid attached thereto;
   b. a plurality of removable containers seated within said case, each said removable container further comprising an open top;
   c. means for sealing the tops of said removable containers when said case is closed; and
   d. means for preventing movement of said removable containers within said case when said case is closed, said movement preventing means further comprising a plurality to raised webs in a bottom interior surface of said body, said webs defining a plurality of cells, with each said cell receiving and surrounding a lower perimeter of each said removable container.

5,344,025
COMMINGLED WASTE SEPARATION APPARATUS AND METHODS

Mike W. Tyler, Louisville, and Franklin E. Whitson, Jeffersontown, both of Ky., assignors to Griffin & Company, Louisville, Ky.

Filed Apr. 24, 1991, Ser. No. 690,621
Int. Cl.[5] B07B *9/00*
U.S. Cl. 209—35 8 Claims

1. Apparatus for separating aluminum, plastic and glass articles from a commingled stream of such articles including:
   means for generating and defining a closed loop of moving air, a portion of which loop is directed vertically upward;
   means for introducing articles in said commingled stream to and across said vertically upward moving air, wherein said air lifts plastic and aluminum articles away from glass articles;
   means for receiving aluminum and plastic articles lifted in said closed loop from said stream;
   means for receiving glass articles not lifted from said stream;
   means for separating said lifted aluminum from lifted plastic articles received from said closed loop; and
   further including a vibrating screen conveyor carrying said commingled stream toward said loop and comprising means for separating relatively small objects from said stream, said vibrating screen conveyor having a wide portion for expanding the interface of said stream with

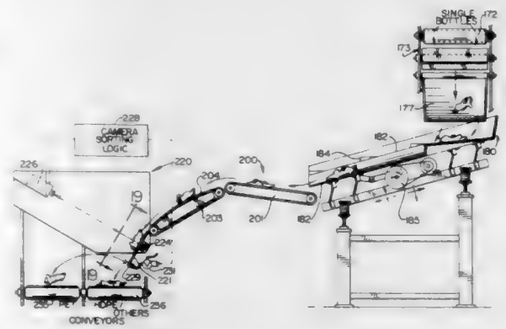


said small object separating means, and a narrower portion downstream of the wide portion for concentrating said stream for introduction to said closed loop.

5,344,026
METHOD AND APPARATUS FOR SORTING PLASTIC ITEMS

Hubert J. Booth; Paul H. Steagall, III, and Michael W. Wright, all of Florence, S.C., assignors to Wellman, Inc., Johnsonville, S.C.

Continuation-in-part of Ser. No. 669,043, Mar. 14, 1991, abandoned. This application Mar. 13, 1992, Ser. No. 850,850
Int. Cl.[5] B07B *5/342*
U.S. Cl. 209—580 35 Claims

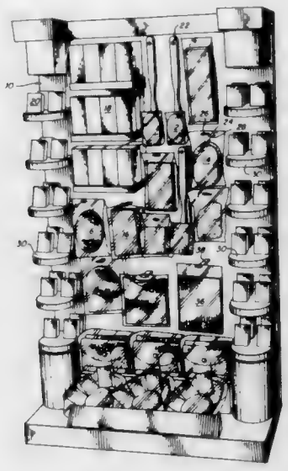


20. An apparatus for separating individual plastic items from a mixed stream of plastic items, and that is particularly useful in recycling plastic items from waste sources such as municipal waste, and in which each of the individual plastic items is formed predominantly of a single type of plastic, but in which different individual items within the mixture are made of different types of plastic, the apparatus comprising:
   (a) a conveyor for presenting a sliding stream of items;
   (b) a light source for emitting light of a predetermined character;
   (c) a line scan camera detector opposed to said light source for measuring the effect each individual sliding item has on light emitted by said light source as a stream of sliding individual items is successively directed between said light source and said line scan camera detector; and
   (d) sortation means responsive to said line scan camera detector for selectively removing individual sliding items from the stream based on a comparison of the light produced by said source and any light detected by said line scan camera detector.

5,344,027
MERCHANDISE DISPLAY SYSTEM

Mark Kaplan, Newton, Mass., assignor to Laloren, Inc., Stoughton, Mass.

Filed Sep. 30, 1992, Ser. No. 954,002
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—1 6 Claims

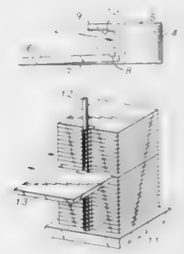


1. A merchandise display system comprising
   a display device;
   a plurality of packaged products displayed for sale on the display device, by means of which packaging the products are removably attached to the display device; and
   a plurality of decorative containers also displayed on the display device, said containers being sized to receive one or more of the packaged products, and said containers and said packaged products bearing common indicia.

5,344,028
STORAGE FOR DATA MEDIA, PARTICULARLY COMPACT DISCS (CDS)

Boris Angele, Holzweg 23, Herrsching, Fed. Rep. of Germany D-8036

PCT No. PCT/DE92/00493, § 371 Date Feb. 17, 1993, § 102(e) Date Feb. 17, 1993, PCT Pub. No. WO92/22902, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 16, 1992, Ser. No. 977,412
Claims priority, application Fed. Rep. of Germany, Jun. 17, 1991, 9107451[U]
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—40 25 Claims

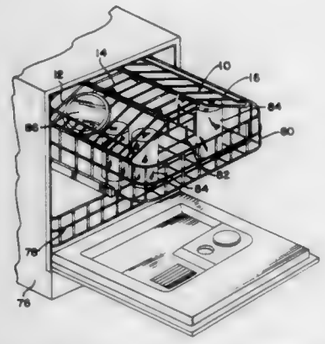


1. Storage apparatus for data media, particularly compact discs, separately arranged with hinged boxes, the apparatus comprising clip means for attaching to the boxes in the hinged area of the box, the clip means including a U-shaped bracket having at least two legs with spacing corresponding to a depth of each box and one leg being larger than the other leg, and the brackets being provided with a hole within a ring extension for receiving a rod insertable to hold the clip means.

5,344,029
DISHWASHER HOLDDOWN RACK

Anne T. Oghia, and Hady G. Oghia, both of 14 Cliffwood Pl., Metuchen, N.J. 08840, assignors to Ann T. Oghia, Metuchen, N.J.

Filed Mar. 25, 1994, Ser. No. 218,712
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—41 4 Claims



1. Structure adapted to overlie items placed in the upper rack of a dishwasher comprising:
   a plurality of planar panels each including a generally rectangular outer rail having four sides and a plurality of parallel spaced transverse rails each connected to an opposed pair of sides of said outer rail; and
   means for pivotally connecting said panels in side-to-side relationship.

5,344,030
EXPANDABLE MODULAR WALL FILE WITH HIDDEN ATTACHMENT AND SUPPORT MEANS

Mel Evenson, Rancho Palos Verdes, Calif., assignor to Rubbermaid Office Products Group, Inc., Inglewood, Calif.

Filed Aug. 11, 1993, Ser. No. 105,894
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—55 16 Claims



1. A module expandable wall file apparatus comprising:
   at least first and second identical separable pocket modules, each pocket module having an interior defined by a bottom, a substantially vertical back wall, a front wall extending outwardly at an angle from the vertical, and first and

second side walls extending outwardly at an angle from the vertical, whereby a bottom end of the first pocket module may fit into a top end of the second pocket module such that a portion of their respective back walls are adjacent to one another;

hidden interconnected suspending means, located on the back wall of each pocket module, for interconnecting and suspending the back wall of the second module from the back wall of the first module; and

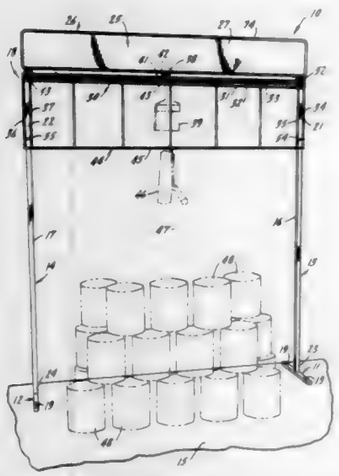
means for attaching at least the first one of the interconnected suspended pocket modules to the wall.

5,344,031

STRUCTURE FOR DISPLAYING AND SELLING ARTICLES

James J. Jarecki, Greendale, and Jason R. Landmark, Milwaukee, both of Wis., assignors to EZ Paintr Corporation, Milwaukee, Wis.

Filed Oct. 14, 1992, Ser. No. 960,155
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—59.1 **14 Claims**



1. A structure for the displaying and selling of products in confined spaces, the structure comprising:

a horizontal frame member,

means for providing vertical support for right and left sides of the horizontal frame member, the means for providing vertical support including a first end and a second end,

means for detachably mounting the right and left sides of the horizontal frame member to the first ends of the means for providing vertical support,

the horizontal frame member including an upper area for the display of indicia, at least one middle horizontal hang means for the displaying of products, and at least one lower horizontal hang means for the displaying of products, the middle horizontal hang means includes three parallel horizontal bars extending from the right side to the left side of the horizontal frame member,

each second end of the means for providing vertical support including a base member, each base member supporting the structure when the second ends are placed on a lower horizontal surface, each base member also being mountable to an upper horizontal surface,

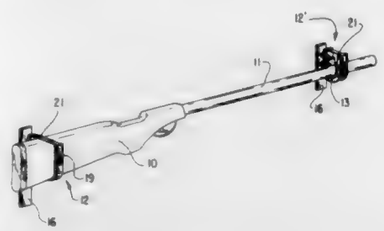
whereby the second ends may be placed on a lower horizontal surface for an upright configuration of the structure and the second ends may be suspended from an upper horizontal surface for an inverted configuration of the structure.

5,344,032

GUN HOLDER FOR VEHICLES

Wayne W. Ramsdell, Rte. 1, Box 129, Westfield, Iowa 51062

Filed Nov. 26, 1993, Ser. No. 157,468
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—64 **5 Claims**



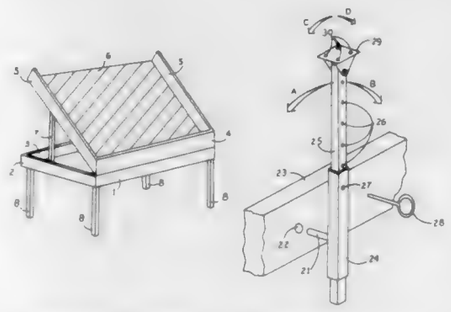
5. For holding a gun having a gun stock and a barrel, a gun rack comprising two U-shaped brackets, a first bracket being adapted to hold said stock and a second bracket spaced from said first bracket in position to hold said barrel, said brackets both being composed of a bendable metal core and a formed covering material for said core, said second bracket including a removable liner adapted to securely grip said barrel and adjustable strap means on each bracket engaged with the legs of said U-shapes whereby said strap means is effective to pull said U-shapes together to securely grip said stock and said barrel.

5,344,033

PRODUCE STAND

Richard Herman, P.O. Box 1757, Hendersonville, N.C. 28739

Filed May 28, 1993, Ser. No. 70,095
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—150 **14 Claims**



1. An adjustable display rack comprising:

a bottom frame comprising a front end and a rear end;

a bin pivotally mounted to said front end of said bottom frame;

at least one adjustable support rotatably mounted to said frame;

wherein said adjustable support comprises:

a tube;

an elongated member slidably mounted to said tube;

a locking element for reversibly fixing the position of said elongated member relative to said tube;

a mounting bracket pivotally attached to one end of said elongated member;

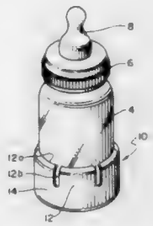
wherein said mounting bracket is rigidly attached to said bin.

5,344,034

MUSICAL ADAPTOR FOR BABY NURSING BOTTLES

Chris S. Eagan, 670 Eldorado Ln., Las Vegas, Nev. 89123

Filed Dec. 16, 1992, Ser. No. 991,387
Int. Cl.[5] A61J *9/00*; **G10F** *1/00*; **G10H** *7/00*
U.S. Cl. 215—11.1 **11 Claims**



1. An electronic musical adaptor for removable attachment to a baby nursing bottle to produce a musical tune to soothe and amuse the baby upon movement of the bottle during the feeding process, said adaptor comprising:

a) a cup-shaped housing having a cylindrical side wall and a bottom wall, the upper portion of said side wall including bottle-gripping means for releasably holding said housing onto the lower portion of a baby nursing bottle;

b) melody producing circuit means including an integrated circuit microchip within which is stored musical tune information, a battery power source electrically interconnected to said microchip, a buzzer-type speaker electrically interconnected to said microchip, and a motion-activated microswitch electrically interconnected to said microchip for activating said microchip; and

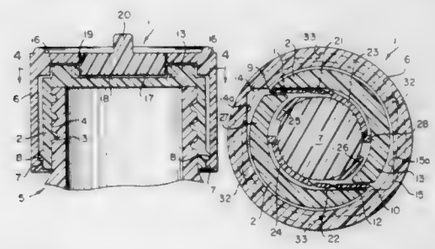
c) a wafer-like container encapsulating the melody producing circuit means and removably situated within the cup-shaped housing proximate the bottom wall thereof, said melody producing circuit means including means external of said container for interacting with said housing to activate said circuit means only when said container is seated within said housing.

5,344,035

CHILD RESISTANT CLOSURE

David A. Manera, Vineland, N.J., assignor to Comar Inc., Buena, N.J.

Continuation-in-part of Ser. No. 974,228, Nov. 10, 1993, abandoned. This application Jan. 27, 1994, Ser. No. 186,852
Int. Cl.[5] B65D *55/02*
U.S. Cl. 215—219 **11 Claims**



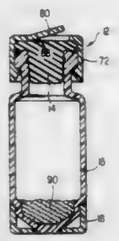
1. A child resistant closure for a container comprising, an inner cap having internal threads for engagement with threads on the container, an outer cap freely rotatable on said inner cap in a closure removal direction, each of said caps having a top wall and a depending skirt portion, the top wall of said outer cap being spaced above the top wall of said inner cap, an annular wall positioned in said space and being integral with the top wall of said inner cap and extending upwardly therefrom, at least one passageway extending through said annular wall, at least one recess in a portion of the skirt of the outer cap alignable with said passageway, at least one latch tab slidably mounted in said passageway, and means mounted on the top wall of said inner cap and connected to said at least one latch tab for sliding said at least one latch tab into the recess to thereby interconnect the inner and outer caps, whereby the closure can be removed from the container.

5,344,036

CONTAINER SYSTEM

Liana V. Stanescu, Durham; Timothy J. Fischer, Raleigh; Kristin L. Leese, Cary, and Kenneth J. Leonhardt, Rougemount, all of N.C., assignors to Akzo N.V., Arnhem, Netherlands

Filed Jun. 4, 1992, Ser. No. 894,531
Int. Cl.[5] B65D *41/00*
U.S. Cl. 215—251 **17 Claims**



1. A container system, comprising:

a blow-molded plastic vial having a bottom portion with an inwardly tapering region which is configured as a truncated cone with a flat bottom, the vial additionally having an annular groove adjacent the bottom portion; and

a plastic auxiliary member having a flat portion with a central aperture and having means connected to the flat portion for snap-connecting the auxiliary member to the bottom portion of the vial so that the vial can be supported on a flat surface in an upright position by the auxiliary member, the means for snap-connecting engaging the annular groove,

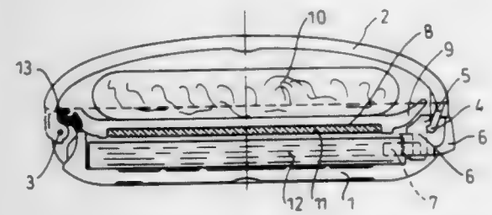
wherein part of the bottom portion of the vial extends into the central aperture of the flat portion of the auxiliary member when the auxiliary member is snap-connected to the bottom portion.

5,344,037

CASE WITH ARTICULATED COVER URGED TO OPEN POSITION

Bernard Favre, Chevilly-Larue, France, assignor to LIR France, Chevilly-Larue, France

Filed Apr. 20, 1993, Ser. No. 49,702
Claims priority, application France, May 15, 1992, 92 05932; Dec. 11, 1992, 92 14942
Int. Cl.[5] B65D *42/26*; **A45C** *13/34*
U.S. Cl. 220—264 **4 Claims**



1. A case comprising a base (**1**), a cover (**2**) hinged on an edge of said base (**1**) at an articulation (**3**), catch means (**4**, **5**) for latching the cover (**2**) and the base (**1**) on an edge opposite the articulation (**3**), a thumb piece (**6**) for freeing said catch means (**4**, **5**), an elastically deformable block (**13**) buttressed between the base (**1**) and the cover (**2**) and disposed adjacent to and

abutting the articulation so as to be prestressed during closing of the cover (2), and a platform (8) having an edge adjacent said articulation (3) of the cover (2) and the base (1), said adjacent edge being embedded in said block (13).

5,344,038

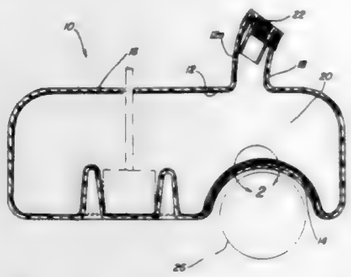
COMPOSITE FUEL TANK

Richard B. Freeman, Oxford, and Bruce N. Greve, Davisburg, both of Mich., assignors to The Budd Company, Troy, Mich.

Division of Ser. No. 851,758, Mar. 16, 1992, Pat. No. 5,258,159, which is a division of Ser. No. 668,758, Mar. 14, 1991, abandoned, which is a continuation of Ser. No. 517,936, May 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 257,996, Oct. 14, 1988, Pat. No. 5,000,990. This application Nov. 1, 1993, Ser. No. 145,795

Int. Cl.[5] B65D *1/40*

U.S. Cl. 220—453 **12 Claims**



1. A molded article comprising a generally hollow body portion having an interior surface defined by a generally thin walled member that has seamless exterior and interior surfaces, said interior surface defining an interior cavity within said hollow body and said exterior surface being surrounded by and in direct surface contact with a resin impregnated fibrous material which defines an exterior surface of said body portion, said resin impregnated fibrous material having a thickness greater than said member, said member providing means for supporting said resin impregnated material within a mold as resin is injected into said mold around said member, said member being sufficiently rigid such that it is self standing and generally conforms to an inner surface of the mold prior to said resin being injected into said mold.

5,344,039

STORAGE CONTAINER

Yoshihiko Taniyama, 9380 Old Southwick Pass, Alpharetta, Ga. 30202

Filed Sep. 8, 1992, Ser. No. 941,670

Int. Cl.[5] B65D *85/00*

U.S. Cl. 220—520 **13 Claims**



1. An enclosure adapted to hold at Least one object, said enclosure comprising:

an upper shell wherein the length, the width, and the height of said upper shell are only slightly greater than the length, the width, and the height of the object and wherein said upper shell includes,

an inside bottom surface including,

at least one upper shell protrusion support extending upwardly from said inside bottom surface, said support having a top surface substantially parallel to said bottom surface, wherein at least one of said upper shell protrusion supports is positioned for laterally contacting the object when the object is in inserted within said upper shell,

a pair of side walls extending upwardly from said inside bottom surface, and a front wall extending upwardly from said inside bottom surface;

a lower shell wherein the length, the width, and the height of said lower shell are only slightly greater than the length, the width, and the height of the object and wherein said lower shell includes,

an inside bottom surface including,

at least one lower shell protrusion extending upwardly from said inside bottom surface said support having a top surface substantially parallel to said inside bottom surface, wherein at least one said lower shell protrusion supports is positioned for laterally contacting another object when the other object is inserted into said lower shell,

a pair of side walls extending upwardly from said inside bottom surface, and a front wall extending upwardly from said inside bottom surface;

wherein said top surface of said lower shell protrusion support is engageable with said top surface of said upper shell protrusion support when said enclosure is in a closed position; and connecting means for connecting said upper shell to said lower shell.

5,344,040

REUSABLE RIBBED BEVERAGE CONTAINER FOR USE WITH VEHICLE BEVERAGE HOLDERS

Thomas J. Schaeppi, 5650 Juneau La. N., Plymouth, Minn. 55446

Continuation of Ser. No. 991,993, Dec. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 895,400, Jun. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 822,566, Jan. 16, 1992, Pat. No. Des. 339,029. This application Sep. 20, 1993, Ser. No. 123,866

Int. Cl.[5] B65D *71/00*

U.S. Cl. 220—737 **10 Claims**



1. A combination tall beverage container and vehicle beverage holder, comprising:

a) a vehicle beverage holder with a substantially planar surface attached to a vehicle at a readily accessible location in the vehicle for a vehicle operator, the planar surface having an aperture sized to receive and support a standard twelve ounce beverage can of approximately two and one half inches in diameter; and

b) a tall beverage container comprising:

i) a lower base hollow cylindrical portion having a first diameter approximating the diameter of the beverage can, a first height, and a closed lower end defining a substantial open interior and adapted to fit within the aperture of the vehicle holder;

ii) an upper hollow cylindrical portion having a second diameter greater than the first diameter as to not be receivable within the holder aperture and a second height approximately one half the first height, the upper portion being coaxial with and integral with the lower base portion forming a size differentiating flange at their union for supporting the beverage container, the upper portion having a top opening; and including a rib forming a touch identification reference to indicate orientation of the container;

iii) a grippable handle on one of the cylindrical portions.

5,344,041

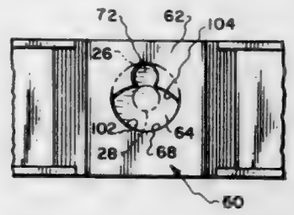
BAIL FOR CONTAINER AND ATTACHMENT MEANS THEREFOR

Frano Luburic, Fullerton, and Dennis R. Willis, Corona, both of Calif., assignors to Ropak Corporation, Fullerton, Calif.

Filed Sep. 14, 1993, Ser. No. 121,338

Int. Cl.[5] B65D *25/32*

U.S. Cl. 220—760 **11 Claims**



1. In a bail mounting, the combination of: a bail securement socket including an opening having an enlarged receptor portion and a reduced locating portion; bail securement means on said bail engagable with said bail securement socket and having a head of a first radius and a shank of a second radius, said head engaging said receptor portion, said receptor portion having a lower edge radius corresponding to said first radius and an upper edge having a greater radius than said first radius; and said shank engaging said locating portion having a radius corresponding to said second radius, said head having an engagement surface area larger than said receptor portion and said shank being larger than said locating portion and there being a modulus of deflection between the materials of said head and said receptor opening and between the materials of said shank and said locating opening.

5,344,042

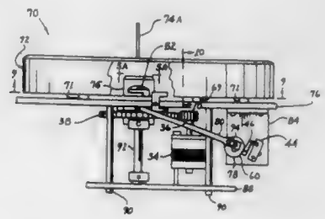
OBJECT DISPENSER APPARATUS AND METHOD

Kennith D. Crosby; William J. Tuten, both of Scottsdale, and Walter Luckeneder, Mesa, all of Ariz., assignors to Creative Technology, Inc., Scottsdale, Ariz.

Division of Ser. No. 746,491, Aug. 16, 1991, Pat. No. 5,251,782. This application Jul. 2, 1993, Ser. No. 85,074

Int. Cl.[5] G07F *11/00*

U.S. Cl. 221—2 **29 Claims**



1. An apparatus for dispensing items comprising, combination:

an external housing;

a plurality of items to be dispensed one at a time located within said housing;

means coupled to said housing for verifying authorization to dispense said items;

a round carousel having a plurality of slots located within said housing and said items to be dispensed are placed one per slot onto said carousel;

locking means for assuring positive engagement of said carousel to said apparatus and for permitting removal of said carousel from said apparatus;

dispensing means comprising:

a gear motor having a shaft;

a hub fixedly attached to said shaft, said hub having a flat side normal to a plane of rotation;

a puller arm movably attached to an eccentric position of said hub to translate rotational movement of said hub to substantially linear movement of said puller arm;

activation means for turning said gear motor;

switch means for stopping said activation means after said hub has accomplished one complete revolution;

gate means nominally disposed in a non-dispensing position and movably coupled to said puller arm for pivoting away from said carousel in a dispensing position and for allowing one of said items to be dispensed to fall by the force of gravity out of said carousel;

access means for loading said items to be dispensed onto said carousel;

means for programming said means for verifying authorization to dispense when said items to be dispensed are placed on said carousel; and

rotation means for rotating said carousel until one item to be dispensed is disposed directly above said dispensing means, such that activating said dispensing means causes the desired item to be dispensed to fall by the force of gravity; said rotation means allows for random selection of said items to be dispensed.

5,344,043

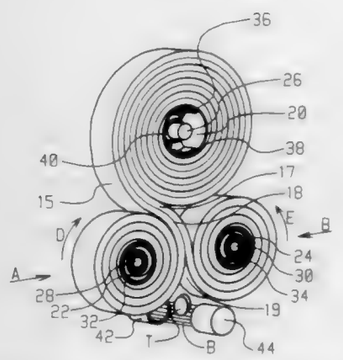
DISPENSER ESPECIALLY ADAPTED FOR DISPENSING MEDICATION UNITS

Thomas S. Moulding, 214 Via La Soledad, Redondo Beach, Calif. 90277, and Donald G. Ellis, Boulder, Colo., assignors to Thomas S. Moulding, Redondo Beach, Calif.

Continuation-in-part of Ser. No. 878,169, May 4, 1992, Pat. No. 5,219,093, which is a division of Ser. No. 414,454, Sep. 29, 1989, Pat. No. 5,110,008. This application May 10, 1993, Ser. No. 60,829

Int. Cl.[5] B65H *5/28*

U.S. Cl. 221—71 **95 Claims**



1. A dispenser for dispensing objects, comprising:

a storage reel mounted for rotation;

at least one band at least partially wrapped around said storage reel for holding objects to be dispensed in frictional engagement between adjacent layers of said at least one band; and

means for maintaining sufficient tension on said at least one band to keep adjacent layers of said at least one band in contact with each other on said storage reel except in regions separated by objects to be dispensed and for hold-

ing said objects in place between said layers of said at least one band by frictional engagement; and

release means for unwinding said at least one band from said storage reel and separating two layers of said at least one band to dispense objects disposed between said layers.

5,344,044

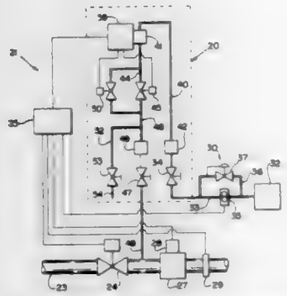
ADDITIVE INJECTION SYSTEM AND METHOD

Al P. Hayden, Norcross; Patrick L. Hayden, and Chuck Miller, both of Duluth, all of Ga., assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 832,200, Feb. 6, 1992, Pat. No. 5,251,785. This application Sep. 7, 1993, Ser. No. 117,603

Int. Cl.[5] **B67B** *7/00*

U.S. Cl. 222—1 **21 Claims**



1. An additive injection system for injecting a controlled amount of a first fluid into a main stream of a second fluid, comprising:

an additive flow line for flow of the first fluid from a source thereof to a main flow line for the second fluid;

at least one valve for controlling the flow of the first fluid through said first line;

an electrical controller for controlling said at least one valve for passing a prescribed amount of the first fluid through said additive flow line;

an explosion-proof housing for enclosing said electrical controller; and

a flow meter connected to said additive flow line for providing to said electrical controller electrical signals representative of the amount of flow of the first fluid through said additive flow line, said flow meter being located at a side wall of said explosion-proof housing and forming a closure for an opening in said side wall of said explosion-proof housing, and said flow meter including a flow rate signal generator for producing said electrical signals, said flow rate signal generator communicating with the interior of said explosion-proof housing through said opening in said side wall of said explosion-proof housing.

21. A method for controlling or monitoring a fluid process comprising:

using a controlling device to control a fluid process or a monitoring device to monitor a fluid process;

using an electronic device to produce control signals that are supplied to the controlling device to control the fluid process or to receive monitoring signals from the monitoring device for monitoring the fluid process, the electronic device being enclosed in a housing having a window through which can be transmitted an infrared signal encoded with information; and

transmitting an infrared signal encoded with information through the window of the housing for instructing the electronic device to carry out at least one predetermined function based on the information encoded in the infrared signal.

5,344,045

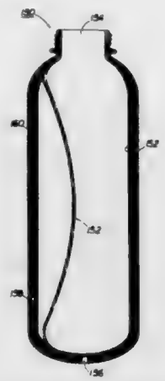
LIQUID CONTAINER SYSTEM

Simon J. Richter, Marietta, and Gary V. Paisley, Lilburn, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 803,241, Dec. 5, 1991, Pat. No. 5,242,085, which is a continuation-in-part of Ser. No. 628,819, Dec. 17, 1990, abandoned. This application May 24, 1993, Ser. No. 66,834

Int. Cl.[5] **B65D** *35/28, 83/00;* **B67D** *1/00*

U.S. Cl. 222—1 **7 Claims**



1. A method for making a multilayer liquid container comprising:

(a) providing a blow molded, multi-layer liquid container including a wall, a container opening at a top end of said container opposite a bottom end thereof for filling and evacuating said container surrounded by a container neck, and a plurality of air vents including at least one bottom air vent in said bottom of said container, said air vents extending partway through said wall; said wall including a main plastic layer and a separate, delaminatable inner plastic layer such that said inner layer can separate from said main layer when syrup is evacuated by suction from said container and air flows in through said plurality of air vents; said air vents extending completely through said main layer and terminating at said inner layer and said plurality of air vents being permanently open to atmosphere, such that air can flow in through said air vents and in between said inner and main layers as syrup is withdrawn by suction from said container; and

(b) after said main and inner layers have been blow molded, at least partially predelaminating said inner layer from said main layer starting at said bottom end of said container, said predelaminating step comprising applying a gas pressure differential across said inner layer at said bottom air vent.

5,344,046

UNIVERSAL PULL-OUT DRAWER FOR VENDING MACHINE

Algert J. Maldanis, Heath, Tex.; Walter L. Koch, Ormond Beach, Fla.; David K. Giegerich, Fair Lawn, and Andris C. Sloss, Sussex, both of N.J., assignors to C-Power Companies, Inc., Rockwall, Tex.

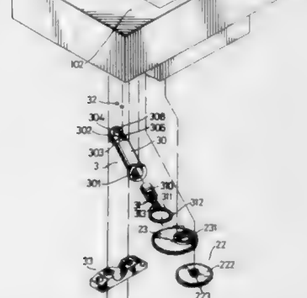
Filed Jun. 3, 1993, Ser. No. 71,720

Int. Cl.[5] **B67D** *5/10*

U.S. Cl. 222—2 **20 Claims**

1. A control panel drawer for a consumer-operated vending machine of a type having a cabinet defining an internal volume in which vendable products are held for selectable vending, a front display at which vendable products are designated with price and selection indicia and a money acceptance and product selection panel at which an amount of money corresponding to the price of a desired product selection and instructions for dispensing the desired product selection are entered by the consumer and an operatively associated vending mechanism connected through an electronic circuit to respond to said insertion of money and instructions by vending the selected product to the consumer, said control panel drawer comprising:

(a) a drawer slidably connected to said vending machine cabinet having a first position enclosed within said vending machine cabinet adjacent to said internal product holding volume and a second position slidably extended forward of the front display;



(b) said selection panel attached to a front surface of said drawer which is substantially parallel to said product front display with said drawer in said first position; and

(c) said electronic circuit comprises a circuit board attached to said drawer and movable therewith, so that it is enclosed within said cabinet with said drawer in said first position and accessibly exposed with said drawer in said second position; and

(d) flexible connectors between said electronic circuit board and said vending mechanism so that said drawer is slidable between said first and second positions without disconnecting said electronic circuit board from said vending mechanism.

5,344,047

AUTOMATIC LIQUID SOAP DISPENSER

Ching-Shih Chen, Taipei, Taiwan, assignor to Shih Kong, Inc., Taipei, Taiwan

Filed Oct. 8, 1993, Ser. No. 134,240

Int. Cl.[5] **B67D** *5/08*

U.S. Cl. 222—63 **5 Claims**

1. An automatic liquid soap dispenser, comprising:

a liquid soap container which confines a hollow space for receiving liquid soap therein, said soap container having a bottom wall which is formed with an outlet port and which has a bottom surface;

a flow control unit including: a tubular body with an open front portion and a closed rear portion which is formed with adjacent first and second annular outward projections that respectively confine a through-hole communicated with an interior of said tubular body, said tubular body being secured to said bottom surface of said bottom wall of said liquid soap container such that said through-hole of said first annular outward projection is aligned with said outlet port, said closed rear portion of said tubular body being further formed with an upright soap outlet disposed adjacent to and communicated with said through-hole of said second annular outward projection, said second annular outward projection having a lower end which is formed with a valve seat, and a first ball member disposed movably within said second annular outward projection on said valve seat, said second annular outward projection and said first ball member serving as a ball valve unit to control flow of said liquid soap through said soap outlet; and a plunger having a piston which extends fittingly and movably into said tubular body via said open front portion, and a flexible shaft portion which has a first end connected to said piston and a second end; and

an actuating unit mounted on said liquid soap container and including: an infrared unit for detecting a target; a driving unit connected to said infrared unit and activated by said infrared unit upon detection of said target; a speed changing gear set driven rotatably by said driving unit; a driving gear driven rotatably by said speed changing gear set, said second end of said shaft portion of said plunger being connected eccentrically to said driving gear, rotation of said driving gear resulting in linear movement of said piston of said plunger within said tubular body to open said ball valve unit and dispense a predetermined amount of said liquid soap through said soap outlet; and a contact switch disposed on one side of said driving gear and activated by said driving gear when said driving gear completes one revolution, said contact switch being connected to said driving unit and deactivating said driving unit when activated.

5,344,048

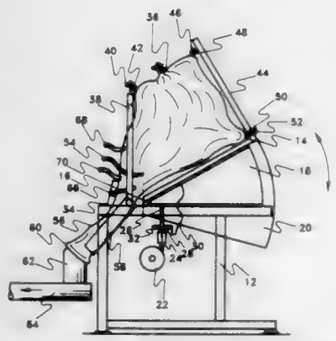
FLEXIBLE BULK CONTAINER APPARATUS AND DISCHARGE METHOD

Timothy C. Bonerb, 15 Christmas Mountain Rd., Box 367, Glen, N.H. 03838

Continuation-in-part of Ser. No. 705,349, May 24, 1991, abandoned. This application May 17, 1993, Ser. No. 62,426

Int. Cl.[5] **B65D** *35/56*

U.S. Cl. 222—105 **13 Claims**



1. A dry bulk material containment receptacle comprising:

a polyhedral shaped enclosure having substantially planar

top and bottom panels and at least one side panel connected between said top and bottom panels, said panels constructed from a flexible material selected in accordance with the dry bulk material to be contained therein; said top panel having a closable opening through which said enclosure can be filled with the dry bulk material;

discharge spout means for discharging the dry bulk material that can be contained within said enclosure, attached to said side panel adjacent to said bottom panel; wherein said discharge spout means for discharge represents at least 10 % of the total volume of said bag.

5,344,049

VINYL OR PLASTIC DISPENSING TUBE FOR PASTES, CREAMS, OR GELS

Florence C. MacDonald, 8113 High Point Blvd., Brooksville, Fla. 34613

Filed Jun. 28, 1993, Ser. No. 83,359
Int. Cl.[5] B65D *35/08*
U.S. Cl. 222—107 **3 Claims**



1. A dispensing tube for pastes, creams, or gels, the dispensing tube further comprising;

an elongated tube made of a flexible but resilient material, said tube further comprising a closed end which is configured in a line and an opposite end which is adapted with an opening through which said paste, cream, or gel may be forced by compressing the tube;

said closed end being further adapted with a fastening strip, said fastening strip being adapted to extend out beyond the closed end line in one or both directions;

said fastening strip further comprising a flexible sheath within which a pliable wire is housed, said sheath being fastened to or along said seam and protruding out from said seam on one or both ends a distance sufficient to substantially wrap around said tube as it may be rolled up from said closed end toward said opposite end;

said metallic wire being positioned within the length of said sheath and of adequate strength to hold said rolled tube in place; and

said fastening strip further being of adequate length and strength to substantially surround said tube and hold it into position as it may be rolled up from said closed end toward said open end.

5,344,050

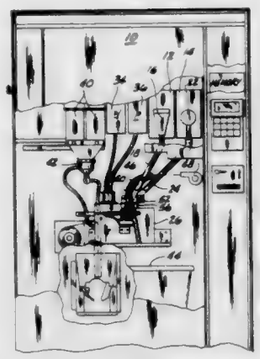
MOISTURE REDUCTION SYSTEM FOR AN AUTOMATIC VENDING MACHINE

Leonard A. Ficken, Manchester, Mo., assignor to Unidynamics Corporation, Stamford, Conn.

Filed Apr. 1, 1993, Ser. No. 41,669
Int. Cl.[5] B67D *5/56*
U.S. Cl. 222—129.4 **5 Claims**

1. A moisture reduction system for an automatic vending machine of the beverage brewing-type having a brewing chamber mounted for movement between at least a brewing position and a product filling position with an opening through which brewing product is supplied when the brewing chamber is in the filling position, a product storage container and a product delivery conduit for supplying product from the product storage container to the opening in the brewing chamber when the brewing chamber is in the filling position, the system comprising:

a suction tube having an opening disposed adjacent the opening in the brewing chamber and the product delivery conduit when product is being supplied to the brewing chamber in the filling position,



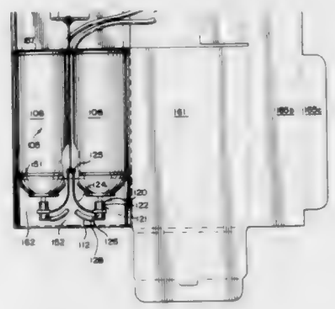
a product filter covering the opening in the suction tube, and means for creating a suction in the tube sufficient to draw moisture into the suction tube from around the opening in the brewing chamber when product is being supplied thereto.

5,344,051

TWO-COMPONENT FOAM DISPENSING APPARATUS

Daniel P. Brown, Palos Park, Ill., assignor to Insta-Foam Products, Inc., Joliet, Ill.

Filed Apr. 27, 1992, Ser. No. 874,004
Int. Cl.[5] B67D *5/60*
U.S. Cl. 222—135 **19 Claims**



1. A dispensing apparatus for dispensing a multi-component foam from two separate foam component supply containers, the apparatus comprising;

a carrier assembly adapted to receive said two supply containers in a preselected orientation and a handle member which permits said apparatus to be carried by a user,

a mechanism for actuating said apparatus to release foam components of said supply containers for the dispensing thereof,

a dispenser for dispensing a foam mixed and reacted from the supply container foam components, the dispenser having a body portion containing a reaction surface and a valve member rotatably held by said body portion, the valve member having an outer cam surface thereon disposed proximate to said reaction surface, said valve member being operable between a first and second position, said dispenser including a member which detachably engages said carrier assembly and said carrier assembly includes a member for receiving said dispenser engagement member such that said dispenser may be operated either in place on said carrier assembly or remote therefrom,

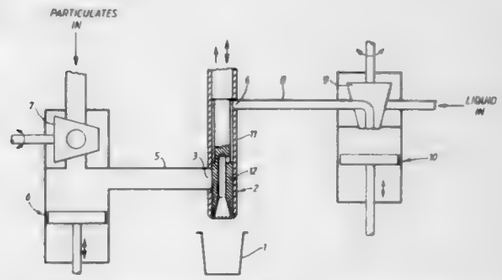
a pair of material supply tubes extending from said supply containers to said dispenser and further being disposed in said dispenser body portion between said cam surface and said reaction surface whereby, when said valve member is in said first position, said cam surface contacts said material supply tubes in a manner to prevent flow of foam components through said material supply tubes and when said valve member is in said second position, the flow of foam components through said material supply tubes is substantially unimpeded, said actuating mechanism further including an actuator for opening valves of said supply containers to release said foam components therefrom into said material supply tubes, said actuator being capable of maintaining said valves of said supply containers in an open condition by engaging a surface of said carrier assembly.

5,344,052

DOSING SYSTEM

John E. Divall, Grove, and John A. Perigo, Witney, both of England, assignors to Odin Development Ltd., Stevenage, Great Britain

Continuation of Ser. No. 734,230, Jul. 22, 1991, abandoned, which is a continuation of Ser. No. 159,243, Feb. 23, 1988, Pat. No. 5,052,591. This application Apr. 28, 1993, Ser. No. 54,890
Claims priority, application United Kingdom, Feb. 24, 1987, 8704343
The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.
Int. Cl.[5] B67D *5/52, 1/08*
U.S. Cl. 222—135 **3 Claims**



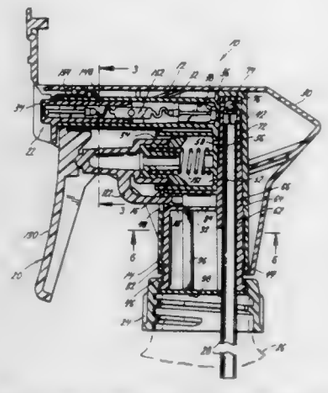
1. Dosing apparatus comprising a piston-and-cylinder device, the piston having a cylindrical external peripheral surface and an axial end, and the cylinder having a cylindrical internal peripheral surface and a peripheral port debouching at said cylindrical internal peripheral surface, said peripheral port being swept by the piston as the piston moves between an open position in which said peripheral port is open and in which said axial end of said piston faces towards said port, and a closed position in which said cylindrical external peripheral surface closes said port and extends face-to-face with said cylindrical internal peripheral surface in both longitudinal directions of said cylinder from said peripheral port, drive means for reciprocating the piston in the cylinder, means for supplying a flowable material to said port, a conduit extending in said piston and debouching longitudinally of said cylinder at said axial end in the form of a mouth, means for supplying a liquid to said conduit, and a cover provided on said mouth and having an inner face and an outer face and formed with through holes distributed over its area, said holes being small enough that surface tension in the liquid prevents liquid from dripping from the mouth under gravity, said outer face of said cover serving to contact said flowable material, said holes enabling said liquid to wash away such flowable material contacting said outer face, and said cylinder having an outlet for said flowable material and said liquid.

5,344,053

TRIGGER SPRAYER HAVING A TWO-PIECE HOUSING CONSTRUCTION

Donald D. Foster, St. Charles, and Martin S. Laffey, O'Fallon, both of Mo., assignors to Contico International, Inc., St. Louis, Mo.

Filed Mar. 9, 1992, Ser. No. 848,706
Int. Cl.[5] B67D *5/46*
U.S. Cl. 222—383 **16 Claims**



13. A trigger sprayer apparatus for dispensing liquid from a container connected to the apparatus, the apparatus comprising:

a sprayer housing with a nozzle for dispensing fluid;

a trigger mounted on the sprayer housing for pivoting movement relative thereto;

a pump chamber formed in the sprayer housing;

a pump piston connected with the trigger and received in the pump chamber for reciprocating movement therein in response to pivoting movement of the trigger, the reciprocating movement of the pump piston alternately drawing fluid from a container into the pump chamber for forcing fluid out of the pump chamber and through the nozzle; and,

a vent housing formed separate from the sprayer housing with a vent chamber therein, the vent chamber having at least one sidewall surrounding an interior volume of the vent chamber, the sidewall having a vent opening extending therethrough, the vent opening providing fluid communication between the vent chamber and an interior volume of a container connected to the sprayer apparatus, and the vent housing being assembled to the sprayer housing.

5,344,054

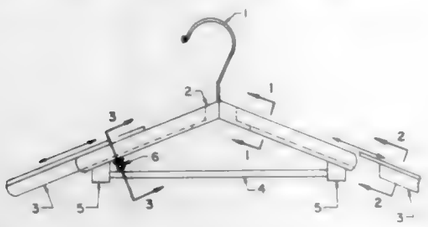
ADJUSTABLE GARMENT HANGER

Dale E. Nutter, Rte. 1, Box 4, Little Hocking, Ohio 45742

Filed Oct. 15, 1992, Ser. No. 961,263
Int. Cl.[5] A47G *25/44*
U.S. Cl. 223—94 **4 Claims**

1. An adjustable garment hanger for storage of clothing comprising: a hook for supporting the hanger, two stationary arms each attached to the hook and each having a slot extending therethrough, an adjustable arm placed in each slot of the stationary arms for longitudinal movement therein, and a tension device to restrict movement of each arm in each slot, said

tension device comprising a self-tapping eyelet screw piercing a cupped washer, a spring, and another cupped washer, said



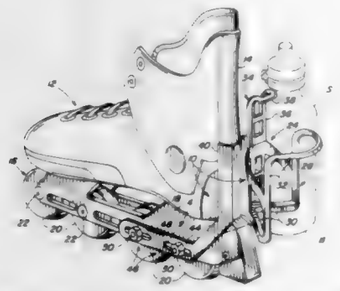
tension device attached to said adjustable arm through said slot from the bottom of the stationary arm.

5,344,055

BOTTLE HOLDER ACCESSORY FOR AN INLINE ROLLERSKATE

David A. Edwards, 3025 Broadway, #37, Boulder, Colo. 80304

Filed Aug. 12, 1993, Ser. No. 105,642
Int. Cl.[5] B60R *7/00*
U.S. Cl. 224—42.45 R 18 Claims



1. A bottle holder accessory for an inline rollerskate, comprising:

(a) a holder structure adapted to hold a water bottle; and

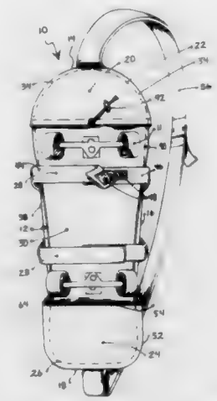
(b) a support structure adapted to mount said holder structure to an inline rollerskate, said support structure having a rear portion attached to said holder structure to support said holder structure and the water bottle therewith in a position rearwardly of and above said support structure and rearwardly of the inline rollerskate, said support structure also having a forward portion including a pair of elongated arms spaced forwardly of and below said holder structure and connected to said rear portion of said support structure, said elongated arms extending forwardly from said rear portion and being laterally spaced apart and adapted to extend along and releasably attach to opposite sides of the inline rollerskate, said arms having respective elongated slots defined therein being adapted to receive fasteners for releasably securing said elongated arms to predetermined attachment locations on opposite sides of the inline rollerskate, said slots being elongated in directions extending parallel to and along said arms so as to adapt said arms to be adjustably movable in forward and rearward directions relative to the predetermined attachment locations on the opposite sides of the inline rollerskate and thereby change the position of said holder structure toward and away a rear end of the inline rollerskate.

5,344,056

CARRIER CASE FOR RECREATIONAL BOARDS

Audrey Challoner, 399 W. Broadway, New York, N.Y. 10012, and Michael Swick, 53 W. 70, 3A, New York, N.Y. 10023

Filed Sep. 8, 1992, Ser. No. 941,666
Int. Cl.[5] A45C *15/00*
U.S. Cl. 224—151 6 Claims



1. A carrier case having an in use position for carrying a recreational board and a storage position, said carrier case comprising:

a base having a proximate end, a midsection and a distal end;

a first board engagement means connected to the proximate end of the base for holding a proximate end of a recreational board in contact with the proximate end of the base when said carrier case is in said in use position;

a second board engagement means connected to the distal end of the base for holding a distal end of a recreational board in contact with the distal end of the base when said carrier case is in said in use position, wherein the second board engagement means is a compartment having an inside and an outside; and

at least one support strap connected to the inside of the compartment such that when the inside of the compartment is turned out a portion of the base can be folded into the outside of the compartment thereby defining said storage position and the support strap can be used to support the carrier case on a user when said carrier case on a user when said carrier case is in said storage position.

5,344,057

METHOD FOR INCORPORATION OF POST-PRODUCTION OPERATIONS TO A WEB OUTPUT FROM AN IMAGE TRANSFER DEVICE

H. W. Crowley, Newton, Mass., assignor to Roll Systems, Inc., Burlington, Mass.

Division of Ser. No. 560,127, Jul. 31, 1990, Pat. No. 5,193,727.
This application Mar. 9, 1992, Ser. No. 848,039
Int. Cl.[5] B65H *9/00*
U.S. Cl. 226—2 10 Claims

1. A method for incorporating, in the production of a continuous stream of images by an image transfer device upon a moving web, post-production operations upon the web at a plurality of locations thereon, said method comprising the steps of:

directing a web through an image transfer device that applies images to the web at predetermined points therealong, the step of directing including generating electronic pulses as predetermined length increments of web pass through the image transfer device;

a first counting of the electronic pulses from the step of generating;

a first indicating, in response to the first step of counting, a section of the web having an image thereon based upon a predetermined number of pulses;

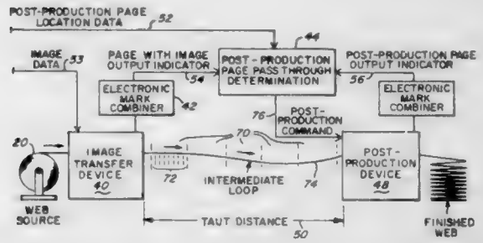
receiving the web output from the image transfer device at a post-production device positioned downstream of the image transfer device and performed a post-production process on the web received by the post-production device;

a second generating of electronic pulses as predetermined length increments of the web pass through the post-production device, the length increments of web passing through the post-production device being equal in length to the predetermined length increments passing through the image transfer device;

a second counting the electronic pulses from the second step of generating;

a second indicating, in response to the second step of counting, a section of web having an image thereon based upon a predetermined number of pulses;

establishing a plurality of shift register blocks for storing values therein, a number of blocks in the shift register equal to a number of sections on the web positioned between the image transfer device and the post-production



device, the values in each of the blocks of the established shift register each corresponding to a specific post-production operation, the values shifting along the established shift register from an upstream end to a downstream end thereof as sections pass from the image transfer device to the post-production device;

shifting the values in each of blocks downstream by one block as each section of the web passes through the post-production device;

adding a block to the upstream end of the shift register when a section is output from the image transfer device before a section is input to the post-production device;

removing a block from the upstream end of the shift register when a section is input to the post-production device before a section is output from the image transfer device; and

reading the value of the downstream block and instructing the post-production device to perform the post-production process corresponding to the value in the downstream block on the web as the section corresponding to the downstream block is input into the post-production device.

5,344,058

METHOD AND APPARATUS FOR PRECISELY DRIVING FILM MATERIAL

Mario Baffo, Woburn, Mass., assignor to ECRM Trust, Tewksbury, Mass.

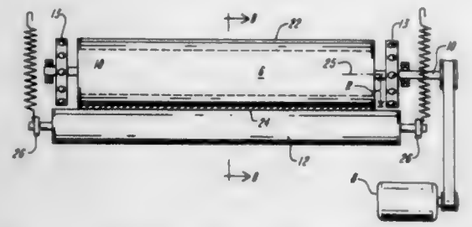
Continuation of Ser. No. 902,507, Jun. 23, 1992, abandoned, which is a continuation of Ser. No. 664,819, Mar. 5, 1991, abandoned. This application Jun. 29, 1993, Ser. No. 84,772
Int. Cl.[5] B65H *20/02;* B30B *3/00*
U.S. Cl. 226—181 9 Claims

1. Apparatus for driving a film between two rollers comprising:

a driven roller including a core having an outer cylindrical surface, an axially-extending portion of said surface being covered with a resilient coating that extends axially of said core such that said coating will contact said film being driven by said apparatus across the film's entire width;

a non-driven roller having an outer cylindrical surface harder than that of the resilient coating on said driven roller;

a pair of cylindrical precision alignment surfaces, one of said pair of alignment surfaces being provided adjacent each end of the resilient coating of the driven roller, and each of said precision alignment surfaces being coaxial with the axis of one of said rollers and being arranged to contact a respective portion of the outer cylindrical surface of the other of said rollers; and



means for causing said contact between each of said precision alignment surfaces and a said respective portion,

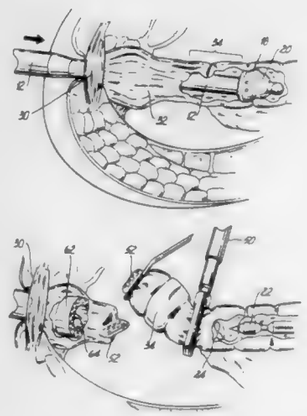
the distance between the axis of said driven roller and the axis of said non-driven roller being determined by said contact, and said means and said distance being such that said precision alignment surfaces remain in contact with said respective portions when said film is interposed between said rollers and said resilient coating compresses where said coating on said driven roller surface contacts said film.

5,344,059

SURGICAL APPARATUS AND ANVIL DELIVERY SYSTEM THEREFOR

David T. Green, Westport; Henry Bolanos, East Norwalk; Henry R. Sienkiewicz, Stamford, all of Conn., and Patrick Leahy, Dublin, Ireland, assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 886,040, May 19, 1992. This application Sep. 23, 1992, Ser. No. 950,435
Int. Cl.[5] A61B *17/115*
U.S. Cl. 227—179 15 Claims



6. A surgical system for delivering an anvil assembly within a hollow tubular organ comprising:

a) an anvil assembly for use with an apparatus for performing circular anastomosis, said anvil assembly comprising

an anvil rod having proximal and distal end portions and an anvil head mounted to said distal end portion, said proximal end portion including a conical shaped mounting portion to facilitate mounting of said anvil rod to an apparatus for performing circular anastomosis, said proximal end portion defining a longitudinal axis, said distal end portion being pivotable between a first position and a second position wherein at least one dimension of said anvil assembly in said second position is effectively less than the corresponding dimension in said first position; and

b) an elongated delivery member positionable within a hollow tubular organ, said delivery member including mounting means for releasably mounting said proximal end portion of said anvil rod of said anvil assembly thereto and releasing means for releasing said anvil assembly therefrom.

15. A surgical system for delivering an anvil assembly within a hollow tubular organ, comprising:

a) an anvil assembly for use with an apparatus for performing circular anastomosis, said anvil assembly comprising an elongated anvil rod having a proximal end portion for mounting to an apparatus for performing circular anastomosis, a distal end portion defining a longitudinal axis and a generally hemispherical-shaped anvil head defining an arcuate anvil surface for forming staples ejected by the apparatus, said anvil head defining a central axis and being coaxially mounted to said distal end portion of said anvil rod, said proximal end portion defining a longitudinal axis, said distal end portion of said anvil rod being pivotal between a first operative position wherein said longitudinal axis of said distal end portion is in general alignment with said longitudinal axis of said proximal end portion and a second nonoperative position wherein said longitudinal axis of said distal end portion is angularly displaced relative to said longitudinal axis of said proximal end portion, said anvil rod including a plurality of longitudinally extending external splines disposed intermediate said proximal and distal end portions, said external splines engageable with cooperating longitudinally extending internal splines formed within a distal end of the apparatus to properly align said anvil rod with the apparatus; and

b) an elongated delivery member positionable within a hollow tubular organ, said delivery member including:

proximal and distal end portions;

mounting means associated with said distal end portion of said delivery member for releasably mounting said proximal end portion of said anvil rod of said anvil assembly; and

releasing means for releasing said anvil assembly from said mounting means.

5,344,060

SURGICAL FASTENER APPARATUS

Roy Gravener, Southport; Ernie Aranyi, Easton, both of Conn., and Boris Zvenyatsky, Bronx, N.Y., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 817,741, Jan. 7, 1992, abandoned, which is a division of Ser. No. 488,182, Mar. 5, 1990, Pat. No. 5,100,042. This application Aug. 24, 1993, Ser. No. 111,026

Int. Cl.[5] **A61B** *17/072*

U.S. Cl. 227—180 **7 Claims**

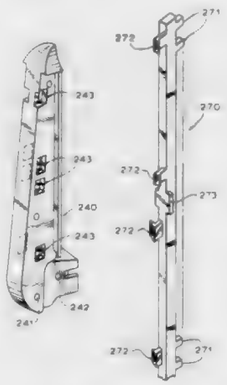
1. An apparatus for applying a plurality of two-part surgical fasteners to body tissue, said two-part surgical fasteners each having a fastener portion and a retainer portion, said apparatus comprising:

a body with a longitudinal portion enclosing an axial drive means for translating a user applied drive force;

a handle associated with said body;

a trigger means associated with said body for receiving a user applied drive force;

an anvil assembly including a retainer mounting bar comprising an elongated bar having a plurality of mounting posts projecting transversely from said bar, said posts being frictionally engageable with the retainers for holding said retainers in a fixed position relative to the apparatus until said retainers are engaged with their respective fasteners, said anvil assembly having a frame for mounting said mounting bar, and said mounting bar having means for resiliently engaging said frame, wherein said anvil assembly frame includes a plurality of apertures and said means for resiliently engaging said anvil assembly frame includes a plurality of resilient hook means for detachably engaging said apertures of said anvil assembly frame in a snap fit manner, each resilient hook means being engageable with a respective one of said apertures;



a fastener holding cartridge pivotally mounted relative to the anvil assembly adjacent one end of the anvil assembly thereby defining a gap between them, said fastener holding cartridge containing a plurality of surgical fasteners and optionally including a knife means for cutting body tissue, said knife means being movable in response to movement of the axial drive means;

approximating means for actuating the fastener holding cartridge; and

a fastener pushing means responsive to movement of the drive means for pushing said fasteners from the fastener holding cartridge.

5,344,061

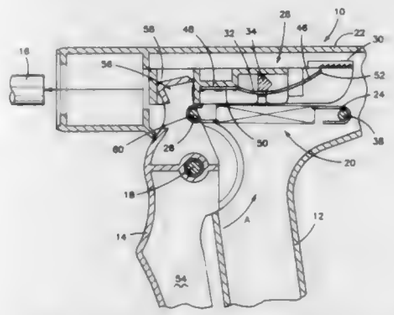
RATCHET ASSEMBLY FOR MEDICAL INSTRUMENT

Lawrence Crainich, Ceda Rd., Charlestown, N.H. 03603

Filed Aug. 3, 1993, Ser. No. 100,983

Int. Cl.[5] **A61B** *17/068*

U.S. Cl. 227—182 **18 Claims**



16. A ratchet assembly for a medical instrument having a handle and a trigger member for operating the medical instrument, the trigger member being movable relative to the handle between a first position and a second position and being biased by biasing member toward the first position, the ratchet assembly comprising:

rack member disposed in the handle;

an engagement member for engaging the rack means, slidably disposed in the handle relative to the rack means and connected to the trigger member so that displacement of the trigger member slides the engagement member relative to the rack means, the engagement member being biased into engagement with the rack means so that, as the trigger is displaced from the first position to the second position, the engagement member engages the rack means in a plurality of positions so as to hold the trigger member at a desired point between the first position and the second position against the biasing means and wherein the engagement member includes a ratchet leaf spring slidably mounted relative to the rack means in the handle and having a first end associated with the trigger member and a second end biased into contact with the rack means, and wherein the ratchet leaf spring includes at least one slot formed on the ratchet leaf spring to define at least two ratchet leaf spring elements and wherein the at least two ratchet leaf spring elements have different lengths so as to contact the rack means at different locations; and

cam means, arranged in the handle, for disengaging the engagement member from the rack means when the trigger member is displaced to the second position, and for reengaging the engagement member with the rack means when the trigger member is returned to the first position from the second position.

5,344,062

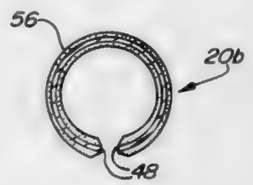
METHOD OF FORMING SEAMED METAL TUBE

Theodore H. Krengel, Flossmoor, Ill.; John J. Borzym, Birmingham, Mich., and Charles A. Willetts, Stourbridge, England, assignors to The IDOD Trust, Warren, Mich.

Filed Jun. 24, 1993, Ser. No. 83,078

Int. Cl.[5] **B23K** *101/06, 31/02*

U.S. Cl. 228—147 **32 Claims**



1. A method of forming a seamed metal tube having a metal coating from a continuously moving relatively flat metal strip, comprising the following steps performed in sequence:

a) applying a coating to at least one side surface of said strip with a metal coating selected from the group consisting of zinc, aluminum and their alloys;

b) rolling and forming said strip into a tube-shaped strip having opposed adjacent spaced lateral edges in a lower portion of said tube-shaped strip;

c) heating and integrally welding said adjacent edges of said strip to form a tube having a welded seam in said lower portion of said tube; and

d) reheating at least said lower portion of said tube to the melting temperature of said metal coating, said metal coating then flowing downwardly over and coating said seam.

5,344,063

METHOD OF MAKING DIFFUSION BONDED/SUPERPLASTICALLY FORMED CELLULAR STRUCTURES WITH A METAL MATRIX COMPOSITE

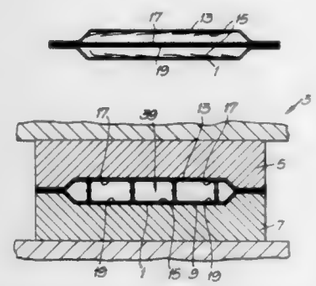
Stephen H. Johnston; Duncan R. Finch, and Brian Ginty, all of Balderstone, England, assignors to British Aerospace Public Limited Company, Hampshire, United Kingdom

Filed Sep. 28, 1992, Ser. No. 951,192

Claims priority, application United Kingdom, Oct. 4, 1991, 9121107

Int. Cl.[5] **B23K** *20/00, 31/00*

U.S. Cl. 228—157 **6 Claims**



1. A method of manufacturing a component having an external shape from at least three sheets of material, each of said sheets is a superplastically formable sheet, said method comprising the steps of:

forming two of said sheets superplastically to said external shape of said component;

attaching at least one ply of metal matrix composite (MMC) to an inner surface of at least one of said two formed sheets;

positioning the third of said at least three sheets between the two formed sheets with said formed sheets enclosing a space;

a first step of diffusion bonding said third sheet to selected areas of said two formed sheets;

superplastically forming the third sheet to form an internal shape bounded by inner surfaces of said two formed sheets and said at least one ply of MMC; and

a second step of diffusion bonding said third sheet to at least part of said at least one ply of MMC.

5,344,064

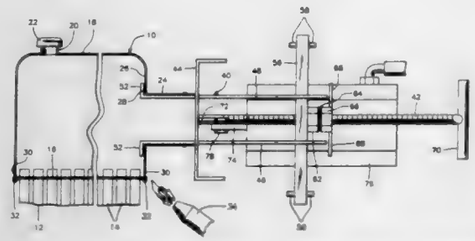
METHOD FOR UNSOLDERING HEAT EXCHANGER END TANK FROM CORE HEADER PLATE

Dyrell K. Stokes, Rte. 3, Box 1354, and Bennie J. Stokes, 1031 W. Verdine, both of Sulphur, La. 70663

Filed Aug. 6, 1993, Ser. No. 102,828

Int. Cl.[5] **B23K** *1/018*

U.S. Cl. 228—264 **5 Claims**



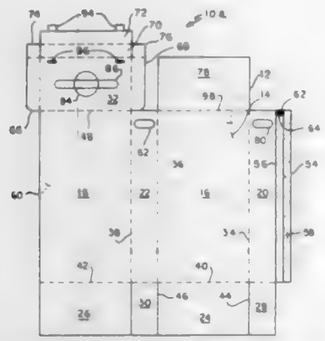
3. The method of unsoldering a heat exchanger end tank from a core end plate of said heat exchanger in a manner to effect the desired unsoldering operation with a minimum amount of heat and thus little likelihood of unsoldering adja-

cent core tube ends from the end plate and wherein said end tank includes a liquid flow tubular nipple projecting and opening outwardly through a selected wall portion of said end tank, said method including rigidly attaching a vibrator to said nipple for vibrating the same, and applying sufficient local heat gradually along an elongated solder seam connection between said end tank and said core end plate sufficient to locally melt the solder of said seam connection.

5,344,065
REVERSIBLE CONTAINERS

Charles E. C. Moran, P.O. Box 1166, Charlottesville, Va. 22902-1166

Continuation-in-part of Ser. No. 709,424, Jun. 3, 1991, Des. No. 339,438. This application Sep. 13, 1993, Ser. No. 119,839
Int. Cl.[5] B65D *5/06*
U.S. Cl. 229—103 **15 Claims**



1. A reversible container having a first surface and an opposite second surface and including means providing for the everting of said reversible container from a first state wherein said first surface comprises the outer surface comprises the outer surface of said reversible container, to an everted second state wherein said second surface comprises said outer surface of said reversible container, comprising:

a front panel and an opposite rear panel connected by first and second side panels, with an adhesive tab extending from said first side panel and securable to said rear panel;

said adhesive tab providing first means for closure of said reversible container in said first state and second means for the everted closure of said reversible container in said second state to form a substantially rectangular structure;

said first and second means for closure of said reversible container respectively comprise a first layer of adhesive material disposed upon said adhesive tab second surface and a second layer of adhesive material disposed upon said adhesive tab second surface and having a release sheet releasably installed thereover, with said second layer of adhesive material being substantially parallel to said first layer of adhesive material; and

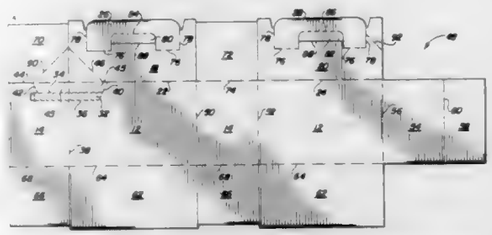
top and bottom closure means providing for the complete closure of said reversible container, whereby;

said reversible container is closed with said first surface outward and sealed by said first closure means on said first surface, and then opened and everted to place said second surface outward and resealed by said second closure means on said first surface.

5,344,066
CARTON WITH RECLOSABLE CORNER POUR OPENINGS

James C. Fogle, Marietta, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Sep. 29, 1993, Ser. No. 128,945
Int. Cl.[5] B65D *5/70*
U.S. Cl. 229—231 **2 Claims**



1. A carton for packaging pourable material, comprising:

side panels connected to end panels, a top panel and a bottom panel;

a closure flap in a corner portion of the top panel, the closure flap being connected to the top panel by a fold line about which the closure flap pivots when moved from closed to open position, the fold line extending diagonally across the corner portion of the top panel between adjacent side and end panels;

the closure flap including a flange comprised of upper portions of said adjacent side and end panels;

the carton including corner edges over which material packaged in the carton can be poured after the closure flap has been moved from closed to open position;

said corner edges being comprised of upper edges of two inner panel layers, one of the inner panel layers being in face-to-face relationship with a portion of the side panel forming part of the flange of the closure flap and the other inner panel layer being in face-to-face relationship with a portion of the end panel forming part of the closure flap, said inner panel layers being nonadhered to said portions of the side and end panels but being adhered to lower portions of the side and end panels, said other inner panel layer being foldably connected to the side panel opposite the side panel containing part of the closure flap and said one inner panel layer being foldably connected to said other inner panel layer;

tear lines connecting the flange to portions of the adjacent side and end panels, the tear lines maintaining the closure flap in closed position until severed; and

the flange fitting tightly over said inner panel layers when reclosed after being opened.

5,344,067
MIXER VALVE REGULATING UNIT, AND A REGULATING UNIT PISTON SLIDE

Bo E. K. Axelsson, Blåbärsstigen, and Henry E. Krang, Bogghed, both of Sweden, assignors to FM Mattsson AB, Mora, Sweden

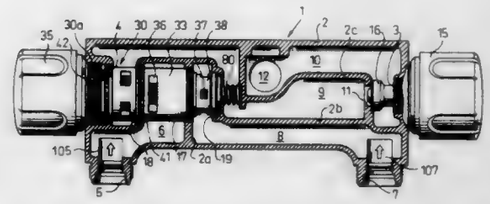
PCT No. PCT/SE92/00035, § 371 Date Jun. 22, 1993, § 102(e) Date Jun. 22, 1993, PCT Pub. No. WO92/14086, PCT Pub. Date Aug. 20, 1992
PCT Filed Jan. 21, 1992, Ser. No. 81,262
Claims priority, application Sweden, Feb. 1, 1991, 91 00319
Int. Cl.[5] G05D *23/13*
U.S. Cl. 236—12.2 **12 Claims**

1. A regulating unit for hot and cold water mixing valves, comprising:

a) a pressure responsive part having an axially movable piston slide (**60**; **60'**) which functions to equalize pressure differences occurring between the hot and cold water delivered thereto, such that hot and cold water flows of

essentially the same pressure exit from said pressure responsive part, and

b) a temperature responsive part which is activated by a thermostat element (**45**; **45'**) and which includes an axially movable regulating valve body (**50**; **50'**; **50''**) which is displaced in accordance with the temperature of the mixed water, wherein:



c) the regulating valve body and the piston slide are mutually concentric, and one of these components is accommodated at least partially in the other,

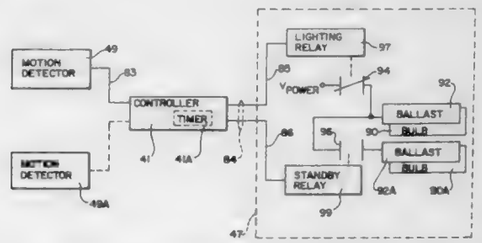
d) at least a major part of the thermostat element is located in a mixing chamber (**40**; **40'**) axially on one side of the regulating valve body concentric with the piston slide, and

e) the thermostat element or a part coacting with said element engages an end surface of the valve body.

5,344,068
DYNAMICALLY CONTROLLED ENVIRONMENTAL CONTROL SYSTEM

David L. Haessig, Poway, Calif., assignor to Staefa Control System, Inc., San Diego, Calif.

Filed Apr. 16, 1993, Ser. No. 48,494
Int. Cl.[5] F24F *7/00*
U.S. Cl. 236—47 **21 Claims**



1. A method for helping to minimize energy utilization within a given area comprising:

generating a detection signal indicative of motion within the given area;

activating a timer to help control energy utilization within the given area, said timer having a time out period;

enabling energy utilization within the given area in response to said detection signal;

disabling energy utilized within the given area when said time out period has elapsed;

using a zone controller for facilitating respective scheduled and unscheduled energy utilization within the area;

scheduling energy requirements within the given area;

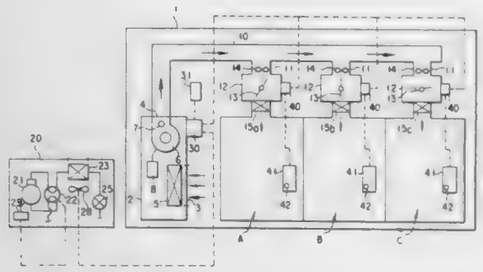
enabling a service operator to change scheduled energy requirements within the given area remotely; and

programming said timer to a specific programmable time out period to facilitate scheduled and unscheduled energy requirements within the given area.

5,344,069
AIR CONDITIONING APPARATUS FOR DISTRIBUTING PRIMARILY-CONDITIONED AIR TO ROOMS

Hidetoshi Narikiyo, Fujinomiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 30, 1992, Ser. No. 983,220
Claims priority, application Japan, Nov. 30, 1991, 3-317176
Int. Cl.[5] F24F *7/00*
U.S. Cl. 236—49.3 **2 Claims**



1. An air conditioning apparatus for distributing primarily-conditioned air to a plurality of rooms, comprising:

a heat source for discharging the primarily-conditioned air;

an air duct for distributing the primarily-conditioned air which has been discharged from the heat source;

a plurality of air passages, each diverging from the air duct into a corresponding one of the rooms;

a plurality of dampers, each disposed in a corresponding one of the air passages, each for adjusting an amount of the primarily-conditioned air distributed into the corresponding one of the rooms by varying an opening degree;

opening degree-limiting means for limiting the opening degree of each damper to a corresponding value which is not less than a corresponding allowable minimum value;

first detection means for detecting a thermal load in each room;

second detection means for detecting a required flow of the primarily-conditioned air in each room on the basis of the thermal loads detected by the first detection means;

first control means for controlling the opening degree of each damper on the basis of the required flow detected by the second detection means;

a compressor, disposed in the heat source, for compressing, and discharging a refrigerant;

an outdoor heat exchanger, disposed in the heat source, for performing heat exchange between the refrigerant and outdoor air;

an indoor heat exchanger, disposed in the heat source, for performing heat exchange between the refrigerant and indoor air, the indoor heat exchanger being connected with the compressor and the outdoor heat exchanger, thereby forming a refrigeration cycle;

a plurality of air heat exchangers, each disposed in one of the air passages, each for performing temperature adjustments and heat exchange between the refrigerant and the primarily-conditioned air distributed to the corresponding one of the rooms; the air heat exchangers being connected in parallel with the indoor heat exchanger;

second control means for returning the refrigerant discharged by the compressor, back to the compressor via the outdoor heat exchanger and the indoor heat exchanger, thereby performing a cooling operation;

third control means for controlling the refrigerant discharged by the compressor, thereby causing the refrigerant to flow into the air heat exchangers, and for controlling the refrigerant flow through the air heat exchangers so as to form a refrigerant flow toward the indoor heat exchanger when the open degree of at least one of the dampers is at the corresponding allowable minimum value during the cooling operation and a corresponding one of

the thermal loads detected by the first detection means is in an excessive reduction state;

pressure-reducing means for reducing a pressure of the refrigerant discharged by the compressor during a heating operation;

fourth control means for returning the refrigerant discharged by the compressor, back to the compressor via the indoor heat exchanger, the pressure-reducing means, and the outdoor heat exchanger, thereby performing the heating operation;

fifth control means for controlling the refrigerant via the indoor heat exchanger so as to cause the refrigerant to flow into the air heat exchangers, and for controlling the refrigerant via the air heat exchangers so as to cause the refrigerant to return to the compressor when the open degree of at least one of the dampers is at the corresponding allowable minimum value during the heating operation and a corresponding one of the thermal loads detected by the first detection means is in the excessive reduction state; and

sixth control means for controlling an amount of the refrigerant flowing through the air heat exchangers so that the thermal loads detected by the first detection means are zero during one of the heating operation and the cooling operation.

5,344,070

COMPUTER-CONTROLLED AUTOMOTIVE AIR CONDITIONING SYSTEM WITH FUZZY INFERENCE

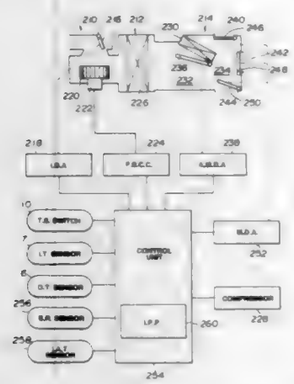
Hitoshi Akasaka; Tomoko Kojima; Yuji Daimon, and Hiroaki Saito, all of Tokyo, Japan, assignors to Calsonic Corporation, Tokyo, Japan

Filed Jan. 4, 1994, Ser. No. 177,607

Claims priority, application Japan, Jan. 7, 1993, 5-001194; Jan. 13, 1993, 5-004373; Jan. 13, 1993, 5-004374; Jan. 13, 1993, 5-004375; Jan. 13, 1993, 5-004376; Jan. 13, 1993, 5-004377; Feb. 24, 1993, 5-035818

Int. Cl.[5] F24F *7/00*

U.S. Cl. 236—49.3 **18 Claims**



1. A computer-controlled automotive air conditioning system comprising:

an air conditioning unit which, when operated, produces a conditioned air fed to a passenger room of the vehicle;

an outside temperature sensor issuing a first signal representative of the temperature of surrounding air of the vehicle;

an inside temperature sensor issuing a second signal representative of the temperature of air in a passenger room of the vehicle;

a temperature setter switch which issues a third signal for setting the temperature in the passenger room when manipulated;

a solar radiation sensor issuing a fourth signal representative of the quantity of solar radiation pouring on the vehicle;

an intake air temperature sensor issuing a fifth signal representative of the temperature of air flowing in said air conditioning unit;

a computer-installed control unit for controlling operation of said air conditioning unit in accordance with said first, second, third, fourth and fifth signals; and

means for operating said control unit under a fuzzy system theory so that the magnitude of at least one of said first, second, third, fourth and fifth signals is divided into a predetermined number of fuzzy labels of membership function to derive a parameter for the operation of said air conditioning unit.

5,344,071

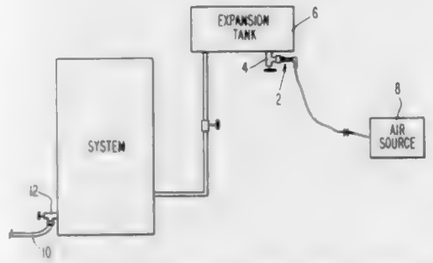
EXPANSION TANK AIRATION DEVICE

Frederick Peifer, 368 Bennett Rd., Springfield, Pa. 19064

Filed Nov. 25, 1992, Ser. No. 981,555

Int. Cl.[5] F24D *3/10*

U.S. Cl. 237—81 **8 Claims**



1. A method for the purging of water from a flooded expansion tank in a hydronic heating system comprising:

a) calculating the volume of water equivalent to one-half the volume of the expansion tank;

b) pumping air into the drain valve of the expansion tank;

c) opening the drain valve of the associated boiler unit;

d) draining an amount of water forced out by the air in an amount approximately equivalent to one-half the volume of said expansion tank and;

e) closing the valves.

5,344,072

RAIL ANCHORAGE ARRANGEMENT WITH ADJUSTABLE ECCENTRIC CAM

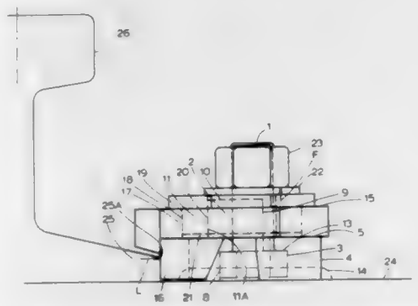
Godfrey M. O. Molyneux, 321 Squire Cir., Pittsburgh, Pa. 15212

Filed Jul. 15, 1993, Ser. No. 91,974

Claims priority, application United Kingdom, Jul. 17, 1992, 9215255.2

Int. Cl.[5] E01B *9/28*

U.S. Cl. 238—341 **9 Claims**



1. An adjustable rail anchorage arrangement comprising:

a support surface for supporting a rail;

a platform base fast with said support surface;

a boss upstanding from said platform base;

a passageway in said boss;

a threaded bolt and nut assembly captively received in said passageway;

a shaft of said bolt and nut assembly;

a rail clip;

a hole in said rail clip that encompasses said boss and said shaft;

a cam;

a hole in said cam, said hole receiving both said boss and said shaft and preventing movement of said shaft relative to said boss but allowing rotation of said cam about said boss; and

a cam surface of said cam that engages said rail clip whereby rotation of the cam causes lateral movement of the rail clip, the bolt and nut assembly serving for clamping the cam in the position to which it is rotated.

5,344,073

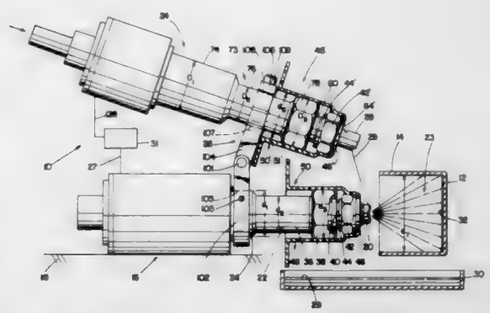
NOZZLE CLEANING SYSTEM INCLUDING SPRAY GUN COVER FOR CAN COATING SYSTEM

Joseph C. Waryu, Amherst; Thomas A. Loparo; Guy H. McMillan, both of Elyria; Mark W. Novotny, Avon Lake, and Jeffrey M. Buckler, Stow, all of Ohio, assignors to Nordson Corporation, Westlake, Ohio

Filed Apr. 29, 1992, Ser. No. 875,922

Int. Cl.[5] B05B *1/28, 15/02*

U.S. Cl. 239—1 **27 Claims**



25. A method for protecting a coating gun in a can coating system from oversprayed coating material, comprising the steps of:

inserting a spray gun cover onto an extension of said coating gun which carries a spray nozzle for spraying said coating material from said coating gun onto a can whereby said spray gun cover substantially covers the forward portion of said coating gun except for said spray nozzle; and

periodically spraying a cleaning solution onto said spray nozzle from a cleaning gun to periodically rinse oversprayed coating material off said spray nozzle.

5,344,074

DISPENSING APPARATUS HAVING A REMOVABLE VARIABLE PROPORTIONING AND METERING DEVICE

John R. Spriggs, Minneapolis; James D. Decker; James L. Copeland, both of Apple Valley, and Spencer B. Larson, Lilydale, all of Minn., assignors to Ecolab Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 765,576, Sep. 25, 1991, abandoned. This application Feb. 11, 1993, Ser. No. 16,776

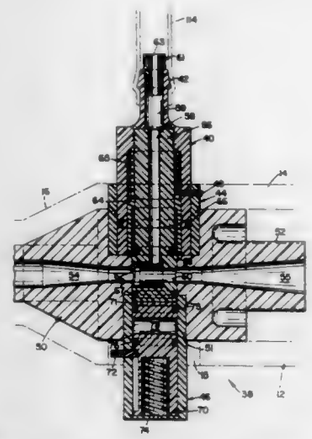
Int. Cl.[5] B05B *7/04, 7/30*

U.S. Cl. 239—10 **32 Claims**

1. A dispensing device for proportioning and dispensing a liquid chemical diluted with a liquid solvent, comprising:

(a) a removable aspirator means for aspirating a liquid chemical into a liquid solvent and being contained within an aspirator housing, said aspirator housing being removable from a remainder of said dispensing device, said aspirator means being operatively interconnected to a conduit for a concentrated liquid chemical and to a conduit for a liquid solvent;

(b) a locking means for attaching and detaching said aspirator mean so as to interconnect said aspirator means within said dispensing device;



(c) a sealing means disposed on said aspirator means, said sealing means being biased to cover a channel in said aspirator means when said aspirator means is removed from said dispensing device; and

(d) at least one concentrate container containing a concentrated chemical, with one end of a concentrate pickup tube extending into said concentrate container and the other end connected to said aspirator means.

5,344,075

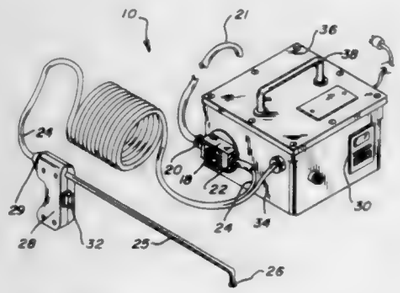
LIQUID DISPENSER WITH RELEASE ACTUABLE TRIGGER SWITCH

Marlin G. Springer, Danbury; Joseph M. Magrath, McCook, and Kenneth D. Wilson, Culbertson, all of Nebr., assignors to The Magrath Company, McCook, Nebr.

Filed May 27, 1993, Ser. No. 68,440

Int. Cl.[5] B05B *12/00*

U.S. Cl. 239—70 **4 Claims**



1. A dispenser-assembly for dispensing liquids from a source thereof, comprising in combination, a pump having an inlet and an outlet, an electric motor for controllably driving said pump, an inlet suction conduit connecting the inlet of said pump to said source of liquid, a dispensing nozzle assembly including a wand and an outlet nozzle on one end of said wand, a pistol grip handle on said wand, an outlet discharge pressure conduit connecting the outlet of said pump to said wand, an electrical timer switch control for actuating said motor to drive said pump in a predetermined cycle, and a release actuable trigger

switch on said pistol grip handle for actuating said switch control, said switch control controllably actuating said electric motor to drive said pump for pumping a measured amount of said liquid from said source through said outlet nozzle.

5,344,076

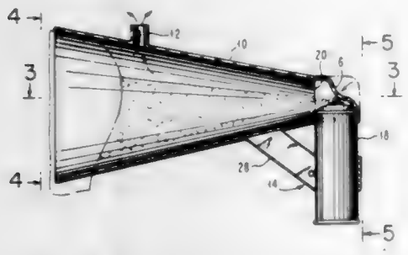
HAIRSPRAY APPLICATOR

Anthony Mercurio, 2296 William Ct., Yorktown Heights, N.Y. 10598

Continuation of Ser. No. 717,529, Jun. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 503,995, Apr. 3, 1990, abandoned. This application Nov. 25, 1992, Ser. No. 982,154

Int. Cl.[5] **B05B** *1/28*

U.S. Cl. 239—120 **11 Claims**



1. A spray applicator for spraying particles onto a person's hair, comprising:

a generally cone-shaped funnel having an outlet end of sufficient diameter to enclose a substantial portion of a person's head, said outlet end containing a concave portion generally adapted to be placed against a person's head, neck, or face and an inlet end to which a source of spray is attached,

an exhaust port located in said cone-shaped funnel through which fumes developed by said spray can exhaust from said funnel,

holding means attached to said funnel for holding a source of said spray at said inlet end, said holding means being adjustable for securely holding spray sources of different sizes,

pliable activation means attached to the inlet end of said funnel into which said spray source extends, said pliable activation means being depressible to activate said spray source to cause the dispersion of spray particles within said funnel, said activation means including a flexible region providing a generally air-sealing closure at the inlet end of said funnel.

5,344,077

APPARATUS FOR DELIVERING COMPRESSED PARTICULATE SOLID FIRE FIGHTING AGENT

Roy D. A. Terry, Apt. 13, 6900 W. 25th Ave., Edgewater, Colo. 80214, and Roger G. Terry, 352 S. Tucson Way, Aurora, Colo. 80012

Division of Ser. No. 944,395, Sep. 14, 1992, Pat. No. 5,242,023. This application Jun. 24, 1993, Ser. No. 82,246

Int. Cl.[5] **B05B** *9/00*

U.S. Cl. 239—126 **48 Claims**

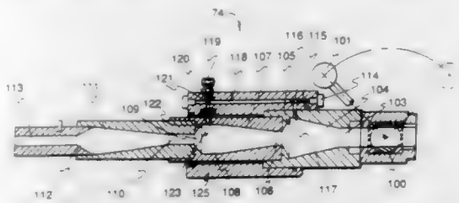
1. A nozzle comprising:

a plurality of stages including spaced compression throats;

a primary flow path connecting at least two of said spaced compression throats;

a secondary flow path operatively connected for allowing fluid back flow between said at least two spaced compression throats; and

pressure feed back means operatively associated with said secondary flow path for allowing back flow of fluid between said at least two of said compression throats only when pressure in a downstream one of said at least two compression throats exceeds pressure in an upstream one of said at least two compression throats plus a predetermined limit value and for substantially preventing flow of



fluid from said upstream compression throat through said secondary flow path to said downstream compression throat.

5,344,078

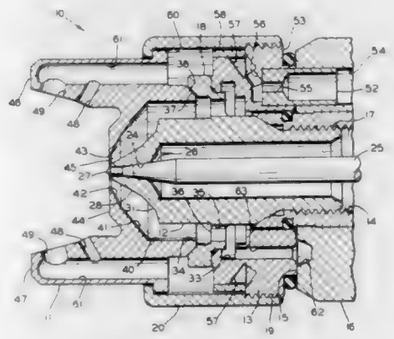
NOZZLE ASSEMBLY FOR HVLP SPRAY GUN

Alan H. Fritz, Toledo; Roger T. Cedoz, and Mark D. Miller, both of Curtice, all of Ohio, assignors to Ransburg Corporation, Indianapolis, Ind.

Filed Apr. 22, 1993, Ser. No. 52,072

Int. Cl.[5] **B05B** *1/28*

U.S. Cl. 239—296 **14 Claims**



1. A nozzle assembly for an HVLP spray gun including a fluid tip and an air cap, said fluid tip having an axial passage terminating at a fluid discharge orifice and having an exterior surface adjacent said fluid discharge orifice, said air cap having an opening cooperating with said exterior fluid tip surface for defining an annular atomization air discharge orifice surrounding said fluid discharge orifice, said air cap having a conic interior surface surrounding said opening, said nozzle assembly being characterized by said exterior fluid tip surface being conical, wherein said orifice is disposed at substantially the vertex of said conical surface and said vertex has an included angle of between 60° and 90°, and wherein said interior air cap surface adjacent said opening is a frustum of a right circular cone having a vertex angle of between 100° and 150°.

5,344,079

FOAMING NOZZLE FOR SPRAYER

Takaharu Tasaki, and Tadao Saito, both of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

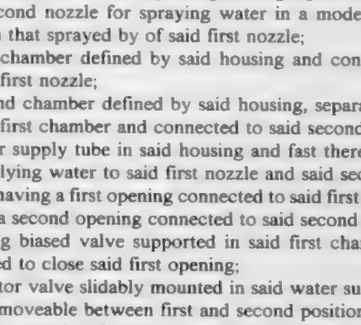
Filed May 20, 1992, Ser. No. 858,973

Claims priority, application Japan, Oct. 12, 1990, 2-107050[U]; Nov. 5, 1990, 2-116345[U]; Nov. 5, 1990, 2-116346[U]; May 21, 1991, 3-145380; Jun. 5, 1991, 3-162215

Int. Cl.[5] **B05B** *1/26*

U.S. Cl. 239—498 **14 Claims**

1. A spin spray nozzle and a coaxially mounted foaming nozzle of a sprayer, said foaming nozzle comprising a foaming cylinder through which a mist is capable of being spin-sprayed from a spray port in said spin spray nozzle in a shape of a hollow cone, said foaming cylinder having an elliptical section with longer and shorter diameters, including a pair of longer diameter sides located at opposed ends of said longer diameter and a pair of shorter diameter sides located at opposed ends of said shorter diameter;



wherein a denser ring-shaped mist portion at an outer circumference of the mist impinges in its substantial entirety upon said shorter diameter sides and passes in its substantial entirety over said longer diameter sides while coming close to but not impinging upon said longer diameter sides.

5,344,080

SHOWER HEAD

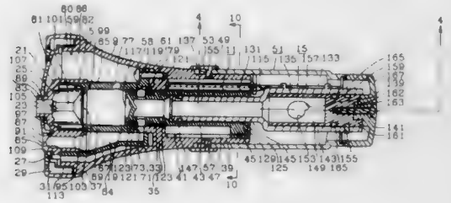
Kazuhiro Matsui, Toyoake, Japan, assignor to Kitagawa Industries Co., Ltd., Japan

Filed Jun. 28, 1993, Ser. No. 83,895

Claims priority, application Japan, Mar. 25, 1993, 5-066960

Int. Cl.[5] **B05Q** *1/16*

U.S. Cl. 239—449 **8 Claims**



1. A shower head comprising:

a housing defining an axis;

a shower face disposed in said housing and being provided with a first nozzle for spraying a straight jet of water and a second nozzle for spraying water in a mode different from that sprayed by of said first nozzle;

a first chamber defined by said housing and connected to said first nozzle;

a second chamber defined by said housing, separated from said first chamber and connected to said second nozzle;

a water supply tube in said housing and fast therewith, for supplying water to said first nozzle and said second nozzle, having a first opening connected to said first chamber, and a second opening connected to said second chamber;

a spring biased valve supported in said first chamber and biased to close said first opening;

a selector valve slidably mounted in said water supply tube and moveable between first and second positions to connect a supply of water to said first opening or to said second opening; and

a means for slidably moving said selector valve to and from said first position in which water is supplied through said second opening and a second position in which water is supplied through said first opening and the spring biased valve is opened against said spring bias; whereby

when said selector is in said first position, said shower head issues water from said second nozzle,

when said selector is in said second position said showerhead issues water from said first nozzle, and

when in the second position the selector valve physically contacts the spring biased valve in order to open the spring biased valve.

5,344,081

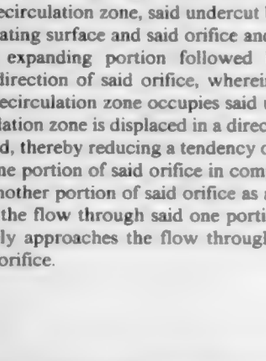
INJECTOR VALVE SEAT WITH RECIRCULATION TRAP

Russell J. Wakeman, Newport News, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.

Continuation of Ser. No. 861,709, Apr. 1, 1992, abandoned. This application Sep. 7, 1993, Ser. No. 117,888

Int. Cl.[5] **F02M** *51/06*

U.S. Cl. 239—585.4 **7 Claims**



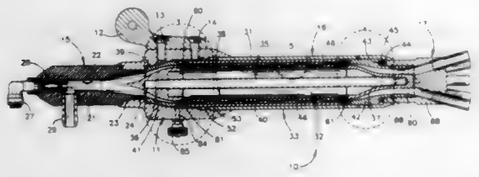
1. A fuel injector comprising a body having an inlet at which pressurized liquid fuel is delivered to the fuel injector, a nozzle from which the fuel injector injects fuel, passage means for conveying fuel from said inlet to said nozzle, said nozzle comprising an orifice through which fuel is injected from the nozzle, said passage means comprising a seating surface that is disposed upstream of said orifice proximate said orifice and that converges in the downstream direction to give at the narrowest convergence of said seating surface a diameter that is spaced upstream and radially outwardly of said orifice, an electromechanically actuated mechanism comprising a valve member that is operated to selectively seat on and unseat from said seating surface and thereby allow and disallow fuel to be injected through said orifice, said seating surface and said valve member being constructed to have a coaction that, when said valve member is unseated from said seating surface to define a lift opening between them, directs the fuel in the direction of the convergence of said seating surface, said orifice being disposed out of the direction of the convergence of said seating surface such that fuel that has already passed through said lift opening and is flowing in the direction of convergence of said seating surface is required to execute a bend that diverges from the direction of the convergence of said seating surface before it passes through said orifice resulting in the creation of a fuel recirculation zone, said recirculation zone being characterized by some of the fuel approaching said orifice being recirculated as an eddy before it reaches said orifice, said passage means being formed as an undercut in the region of said recirculation zone, said undercut being disposed between said seating surface and said orifice and comprising a frustoconically expanding portion followed by a circular groove in the direction of said orifice, wherein a substantial portion of the recirculation zone occupies said undercut, such that the recirculation zone is displaced in a direction out of the path of said bend, thereby reducing a tendency of reduced fuel flow through one portion of said orifice in comparison to fuel flow through another portion of said orifice as a result of said eddy, whereby the flow through said one portion of said orifice more closely approaches the flow through said another portion of said orifice.

5,344,082

TRIBO-ELECTRIC POWDER SPRAY GUN

Curtis B. Haller; Lorain, Alan J. Knobbe, Amherst, and Gerald W. Crum, Elyria, all of Ohio, assignors to Nordson Corporation, Westlake, Ohio

Filed Oct. 5, 1992, Ser. No. 956,615
Int. Cl.[5] B05B *5/047*
U.S. Cl. 239—697 30 Claims



1. A tribo-electric powder spray gun, which comprises:

means for mixing powder with a conveying gas; charging section downstream of the mixing means, the charging section including means for electrically charging the powder as it flows therethrough, the charging means comprising an inner core having at least one inner core member positioned within a hollow outer cylinder having at least one outer cylinder member, the outer cylinder member having an inner dimension, the inner core member having an outer dimension, an annular gap being formed between the outer cylinder member and inner core member providing a friction charging flowpath for the powder, the outer dimension of the inner core member and the inner dimension of the outer cylinder member each have a plurality of increases and decreases providing undulating charging surfaces, the outer dimension of the inner core member increasing at generally the same longitudinal position that the inner dimension of the outer cylinder member increases, the outer dimension of the inner core member decreasing at generally the same longitudinal position that the inner dimension of the outer cylinder member decreases, the charging surfaces of the inner core member and the outer cylinder member each made of electrically insulating material, whereby the powder is frictionally charged by repeated contact with the cylinder member and the core member during flow through the annular gap; and

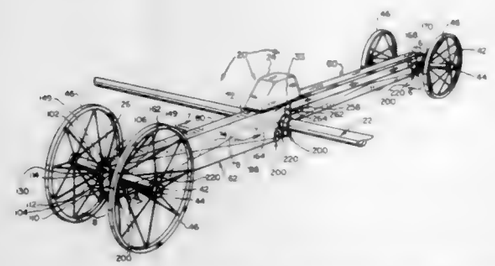
a sprayhead downstream of the charging section for dispensing the charged powder.

5,344,083

IRRIGATION MOVERS

Brent Jackson, 3847 S. 1750 E., and Marvin Jackson, 1652 E. 4000 S., both of, Vernal, Utah 84078

Filed Sep. 7, 1993, Ser. No. 117,478
Int. Cl.[5] B05B *3/18*
U.S. Cl. 239—737 17 Claims



2. A method of alleviating the deleterious effects of irrigation water upon a drive chain of an irrigation mover comprising chain driver wheels, comprising the steps of:

placing a spaced hood around the otherwise exposed drive chain;

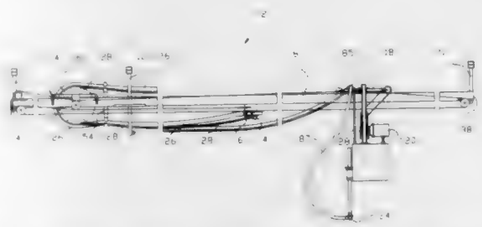
causing the hood to be supported away from the drive chain adjacent a motor of the irrigation mover and adjacent the chain-driven wheels.

5,344,084

WATERING SYSTEM FOR CONNECTION TO A WATER SUPPLY AND AN ELECTRICAL SUPPLY FOR USE IN WATERING PLANTS AND THE LIKE

F. Keith Andrews, Waterford, and Richard R. Ryszanek, Kitchener, both of Canada, assignors to ANDPRO Ltd., Waterford, Canada

Filed Jan. 11, 1993, Ser. No. 2,965
Int. Cl.[5] A01G *25/09*
U.S. Cl. 239—751 11 Claims



1. A watering system for connection to a water supply and electrical supply for use in watering plants and the like located within an area to be watered, said system comprising:

(a) a substantially horizontal single track extending within said area to be watered, said track being supported at a fixed elevation, said track having brackets for a flexible hose and electrical conductor mounted along said track;

(b) a hose carrier movably supported entirely on said single track, said carrier having distribution means for said hose and conductor thereon;

(c) an electrically powered drive system movably supported on said track, said drive system having propulsion means thereon to move said drive system in either direction along said track, said hose carrier being connected by a cable to said drive system so that as said drive system moves, the carrier moves simultaneously in the same direction as said drive system but at one-half of the velocity of said drive system;

(d) spraying means on said drive system and control means to spray water as the drive system moves along said track;

(e) a water outlet and an electrical outlet located substantially at a mid-point along said track;

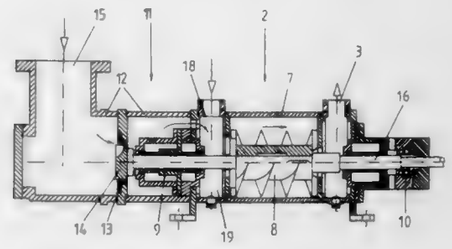
(f) said flexible hose extending from said water outlet to said distribution means on said carrier and to said drive system, said electrical conductor extending from said electrical outlet to said distribution means on said carrier and to said drive system to power said propulsion means, said conductor extending adjacent to said hose, said distribution means placing said hose and said conductor on said brackets as said drive means moves along said track from one end to the other end and vice-versa, the carrier being located substantially at the mid-point when the drive is at one end and substantially at an opposite end when the drive is at said opposite end, said hose and said conductor always being substantially fully extended but not being used to move said hose carrier relative to said drive system.

5,344,085

VACUUM DRAINAGE SYSTEM

Olav Hofseth, Dragsund, 6080 Gurskoy, Norway

PCT No. PCT/EP90/00349, § 371 Date Nov. 4, 1991, § 102(e) Date Nov. 4, 1991, PCT Pub. No. WO90/10123, PCT Pub. Date Sep. 7, 1990
PCT Filed Mar. 2, 1990, Ser. No. 775,966
Claims priority, application Norway, Mar. 3, 1989, 890927
Int. Cl.[5] B02C *23/36*
U.S. Cl. 241—46.02 7 Claims



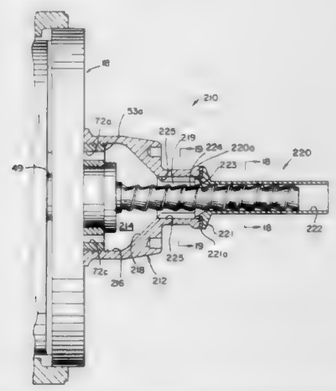
1. Vacuum draw type drainage system for sewerage-generating sanitary equipment comprising branching pipes connected to the sanitary equipment, at least one collection pipe. said branching pipes opening into said at least one collection pipe, and a vacuum device, said vacuum device being connected to the at least one collection pipe and being equipped with means for producing sufficient vacuum in the at least one collection pipe for drawing the sewerage from the sanitary equipment through the drainage system thereto; wherein the vacuum device comprises at least one screw pump, said at least one screw pump being equipped with a pump, said at least one screw pump being equipped with a comminuting means for grinding solid particles in the sewerage and being connected directly to the collection pipe.

5,344,086

HARD MATERIAL COLLECTING SYSTEM FOR A MEAT GRINDER

Nick J. Lesar, Palmyra, Wis., assignor to Weiler & Company, Inc., Whitewater, Wis.

Continuation-in-part of Ser. No. 778,010, Oct. 17, 1991, which is a continuation-in-part of Ser. No. 654,942, Feb. 13, 1991, Pat. No. 5,251,829. This application Mar. 24, 1992, Ser. No. 856,665
The portion of the term of this patent subsequent to Oct. 12, 2000, has been disclaimed.
Int. Cl.[5] B02C *18/36*
U.S. Cl. 241—82.6 7 Claims



1. A grinder for use in grinding soft material from material which comprises a mixture of soft material and hard material, comprising:

a housing having an inlet and an outlet;

an orifice plate located at the housing outlet;

an advancing arrangement for moving the mixture of material through the housing toward the orifice plate;

a rotatable knife assembly located adjacent a surface of the orifice plate;

a hard material collection arrangement for collecting the hard material and for discharging the hard material to the exterior of the orifice plate;

collection structure located downstream of the orifice plate and defining an internal collection cavity for receiving the hard material discharged to the exterior of the orifice plate;

a discharge conduit mounted to the collection structure and defining an internal discharge passage in communication with the collection cavity, the discharge passage being defined by at least one wall;

a rotatable flighted discharge auger disposed within the discharge passage of the discharge conduit for advancing hard material through the discharge passage from the collection cavity; and

a plurality of radially spaced axially extending flutes formed in the discharge passage wall, wherein hard material located within the plurality of flutes is moved along the plurality of flutes upon rotation of the discharge auger;

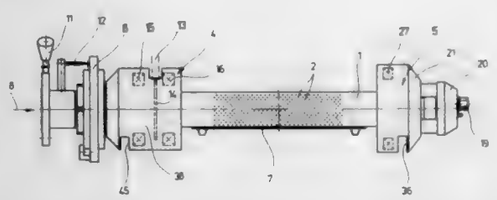
wherein the discharge auger is sized and the discharge passage dimensioned such that the outermost extent of the discharge auger flighting is in close proximity to the at least one wall of the discharge passage, to cooperate with the at least one wall of the discharge passage to define a rotating flow path for discharging hard material therethrough.

5,344,087

DEVICE FOR PRODUCING GRANULATE

Reinhard Froeschke, Weinstadt-Beutelsbach, Fed. Rep. of Germany, assignor to Santrade Ltd., Luzern, Switzerland

Filed Dec. 7, 1993, Ser. No. 162,603
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1992, 4244035
Int. Cl.[5] B01J *2/20*
U.S. Cl. 241—91 8 Claims



1. Apparatus for producing granulate from meltable compounds, comprising

a stationary inner drum supported at least at one end and having an inner cavity for receiving melted compound, said inner drum having an outer periphery formed with at least one row of downwardly directed first openings communicating with said cavity,

a rotatable outer drum disposed coaxially on said outer periphery and including second openings which are cyclically aligned with said first openings for enabling melted compound to drip from said apparatus,

bearing/sealing assemblies disposed at respective ends of said inner drum and each comprising:

a bell affixed to said inner drum and including an axially extending wall spaced radially outwardly from said inner drum to form a space therebetween,

a supporting ring disposed in said space and arranged coaxially relative to said inner drum, said supporting

ring being operatively connected to said outer drum for rotation therewith,

anti-friction bearing means disposed within said space and positioned radially outside of said supporting ring, said bearing means including inner and outer bearing rings arranged co-axially with respect to said drum, said outer bearing ring being mounted to said wall, and said inner bearing ring being mounted on said supporting ring for rotation therewith,

a portion of said space defining an annulus extending circumferentially around said inner drum and communicating with said bearing means, and

sealing means including axially opposing sealing faces engaging one another to form a seal extending circumferentially around said inner drum at a location disposed radially between said inner drum and said annulus,

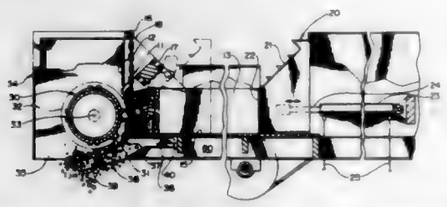
a lower portion of said annulus communicating with a downwardly directed outlet opening for discharging particles that have leaked past said sealing faces to prevent such particles from fouling said bearing means.

5,344,088

MATERIALS GRINDER

James H. Page, Bottineau, N. Dak., assignor to Rexworks, Inc., Milwaukee, Wis.

Filed Oct. 17, 1991, Ser. No. 778,322
Int. Cl.[5] B02C *1/08*
U.S. Cl. 241—282 **9 Claims**



1. Materials grinding apparatus comprising, in combination;

a hopper for receiving materials to be ground including an open top, a horizontal floor and exit opening adjacent the floor;

a ram reciprocally disposed on the floor of said hopper and operable to displace materials on the floor of said hopper toward and through said exit opening;

a materials grinding drum trsansversly, rotatably disposed adjacent said exit opening, said drum having a surface including a plurality of material abrading means;

a plurality of transversely extending shear bars disposed adjacent the surface of said drum, one of said shear bars being disposed below the exit opening and said drum; and

a concave for mounting said shear bars, said concave having a top surface for mounting said shear bars and being rotatable about an axis parallel to the axis of said grinding drum.

5,344,089

ROLL SUPPORT AND FEED APPARATUS

H. W. Crowley, Newton, and R. Langdon Wales, deceased, late of Moccasin Hill, both of Mass. by Ruth Wales, executrix , assignors to Roll Systems, Inc., Burlington, Mass.

Continuation-in-part of Ser. No. 452,245, Dec. 18, 1989, Pat. No. 5,000,394, which is a continuation of Ser. No. 136,812, Dec. 22, 1987, Pat. No. 4,893,763. This application Jan. 29, 1991, Ser. No. 647,545
Int. Cl.[5] B65H *19/30*
U.S. Cl. 242—417 **113 Claims**

17. Apparatus for supporting and manipulating web material transferred between a roll having a support core and a utilization device, said apparatus comprising:

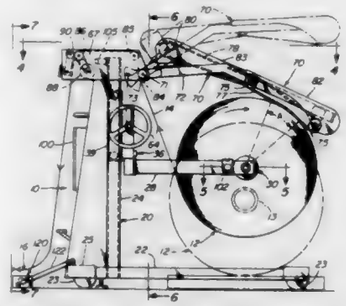
a frame having a base with wheels so as to make the frame portable,

a pair of arms that support a roll core, the arms extending from the frame and being positioned over the frame base,

a roll drive, supported from the frame and including a drive member that drives the roll,

a guide structure that supports the web material between the web material roll and the utilization device,

a controller that senses movement of the web between the



web material roll and the utilization device to, in turn, control a rate of the roll drive, and

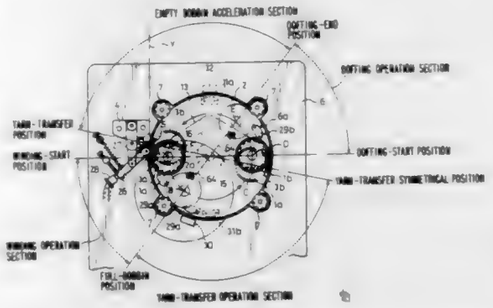
a torque roller engaging the web material between the web material roll and the utilization device to provide tensioning of the web material as it moves between the web material roll and the utilization device, the torque roller being positioned so that the web defines between the torque roller and the utilization device a sensing loop, the controller controlling the rate of the roll drive based upon a size of the sensing loop.

5,344,090

TURRET TYPE YARN WINDER

Shoji Nakai, Ibaraki, and Shuichiro Iami, Toyonaka, both of Japan, assignors to Kamitsu Seisakusho Ltd., Hyogo, Japan

Division of Ser. No. 689,950, May 22, 1991, Pat. No. 5,228,630. This application Apr. 22, 1993, Ser. No. 52,342
Claims priority, application Japan, Sep. 27, 1989, 1-249191; Sep. 27, 1989, 1-249192; Mar. 29, 1990, 2-32982[U]; Jun. 29, 1990, 2-170260; Aug. 28, 1990, 2-89739[U]
Int. Cl.[5] B65H *67/048*
U.S. Cl. 242—18 A **6 Claims**



1. A turret type yarn winder for carrying out a continuous yarn-winding operation, comprising:

a) a frame;

b) a turret disc rotatably supported on said frame;

c) first driving means for rotatably driving said turret disc about its axis;

d) a pair of spindles supported on said frame and extending through said turret disc;

e) second driving means for rotatably driving said spindles about their respective axes by imparting a torque transmission thereto, wherein said spindles are rotatably driven along with the turret disc with the first driving means, and wherein said spindles are rotatably driven about their own respective axes with the second driving means;

f) a pair of bobbin chucks, each said bobbin chuck being carried by a respective spindle for rotation therewith:

g) said bobbin chucks being carried by said spindles at diametrically symmetrical positions on said turret disc symmetrically with each other relative to a center of said turret disc for rotation therewith, each said chuck being adapted to carry a bobbin thereon such that each said chuck and associated bobbin can be selectively moved from a winding-start position, through a full-bobbin position, a doffing-start position where said full bobbin is replaced by an empty bobbin, a doffing-end position, a yarn-transfer position, and returning to said winding-start position;

i) mechanical clutch means for independently regulating the torque transmission imparted from the second driving means to at least one of said spindles;

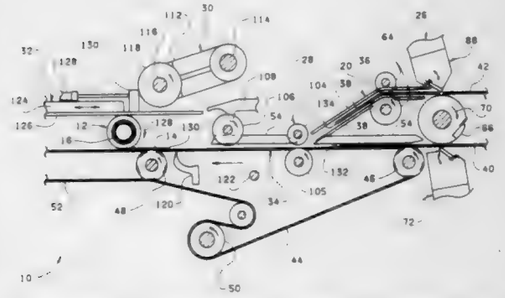
j) actuating means for actuating the clutch mechanism in relation to the position of the bobbin as said bobbin is rotated along with the turret disc, whereby the torque transmission from said second driving means to a respective spindle in the full bobbin position is effectively decreased in relation to the torque transmission from the second driving means to a respective said spindle in said winding-start position.

5,344,091

APPARATUS FOR WINDING STIFFENED CORELESS ROLLS AND METHOD

Robert E. Molison, Hanover, Pa., assignor to Elsner Engineering Works, Inc., Hanover, Pa.

Filed Aug. 20, 1993, Ser. No. 110,122
Int. Cl.[5] B65H *35/08*
U.S. Cl. 242—527.1 **33 Claims**



1. Apparatus for winding a spiral paper roll having a stiffening layer, the apparatus comprising,

A) product paper feed means for moving product paper from a source of product paper downstream along a product paper feed path;

B) web rolling means for forming a spiral roll from product paper fed downstream along the product paper feed path;

C) stiffening paper feed means for feeding stiffening paper from a source of stiffening paper downstream along a stiffening paper feed path, the stiffening paper feed path joining the product paper feed path upstream of the web rolling means; and

D) a paper cutting assembly including,

i. a cutter roll located between said feed paths, a cutter knife on the cutter roll, and drive means for rotating the cutter roll so that the cutter knife is rotated downstream along one path and upstream along the other path;

ii) a product paper anvil blade located on the side of the product paper feed path away from the cutter roll, said product paper feed path extending between the product paper anvil blade and the cutter roll; and

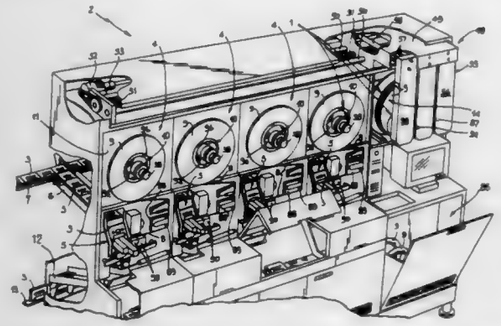
iii) a stiffening paper anvil blade located on the side of the stiffening paper feed path away from the cutter roll, said stiffening paper feed path extending between the stiffening paper anvil blade and the cutter roll;

5,344,092

METHOD AND APPARATUS FOR SUPPLYING TAPE LOADING MACHINES WITH REELS OF TAPE

Luciano Perego, Milan, Italy, assignor to Tapematic U.S.A., Inc., Orlando, Fla.

Division of Ser. No. 585,710, Sep. 20, 1990, Pat. No. 5,203,801. This application Oct. 20, 1992, Ser. No. 963,917
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] B65M *19/30, 75/24*
U.S. Cl. 242—538 **13 Claims**



1. An automated apparatus for supplying magnetic tape reels to cassette loading machines, comprising:

at least one rotatable support hub capable of engaging a magnetic tape reel;

reel storage means comprising: reel support means capable of supporting, on a central support shaft having at lease one free end, a plurality of reels of magnetic tape for mounting on said support hub, and reel biasing means connected to said storage unit for biasing said plurality of reels toward a free end of said central support shaft;

a main carriage slidably movable in relation to a loading machine and said storage means wherein said main carriage has at least one support arm extending therefrom, and wherein said support arm is movable relative to said support hub from a rest position in which it is spaced apart from a front wall of the loading machine to a working position in which it is located close to said front wall; and

at least one grasping and release member connected to said support arm capable of engaging said support hub and said storage means in order to remove an empty tape reel from said support hub, pick up a new tape reel from said storage means and fit said new tape reel on said support hub in place of the empty reel.

5,344,093

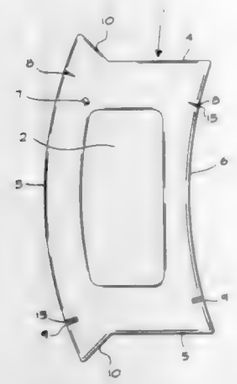
HAND CASTING LINE REEL

Jack H. Cohen, Rte. 2 Box 196 A, Templeton, Calif. 93465

Filed Jun. 26, 1992, Ser. No. 904,560
Int. Cl.[5] B65H *75/18*
U.S. Cl. 242—407 **3 Claims**

1. A hand held line casting and retrieval reel consisting essentially of: a planar member, said planar member defining a handle having opposed ends; reeling ends defined by opposed, parallel line holding sections which are each substantially parallel to one another and perpendicularly extending from said handle, whereupon line is wound and stored, and when stored said line stretches between said line holding sections

substantially parallel to said handle; an edge opposed to and substantially parallel to said handle and substantially perpendicular to each line holding section, said edge connected to the ends of said line holding sections opposite said handle to define an opening between said handle and said edge providing passage for an operator's fingers; each opposed end of said handle



defining a flared extension connecting each opposed end to each line holding section of said reeling ends, each flared extension extending at an angle to a corresponding line holding section and intersecting with an outer edge surface of said handle, each flared extension catching and moving errant winds of said line to said line holding sections of said reeling ends.

5,344,094

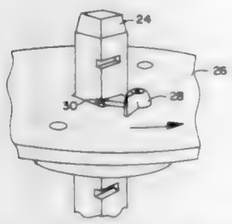
PROCESS AND APPARATUS FOR RETAINING AND DISPENSING A COILED ARTICLE

Julius E. Hoffman, 475 Cornmill Rd., Cowpens, S.C. 29330

Filed Mar. 19, 1992, Ser. No. 855,061

Int. Cl.[5] B65H *75/00*

U.S. Cl. 242—395 **2 Claims**



1. An apparatus for retaining and dispensing a coiled article comprising:

a disc-shaped base having a platform rotatably mounted thereto and bearings therebetween;

a support structure for supporting the coiled article fixedly and co-axially attached to said platform said support structure having a tapered outer peripheral surface extending upwardly and inwardly to form a flat raised center portion;

a post extending co-axially from said platform, said post having a bottom positioned against said platform and said post held in position against said platform by said support structure;

an upper plate mounted co-axially and adjustably on said post for slidable movement toward and away from said support structure, said upper plate having a centrally located portion with a tapered outer peripheral surface, which extends inwardly toward said post and downwardly toward said support structure to form a flat lower center portion;

means for locking said upper plate into position along said post; and

additional means for retaining an additional coiled article, said additional means positioned between said platform and said upper plate generally parallel to said post.

5,344,095

SAFETY BELT RETRACTOR WITH A BELT PRETENSIONER DEVICE ACTING ON THE BELT DRUM

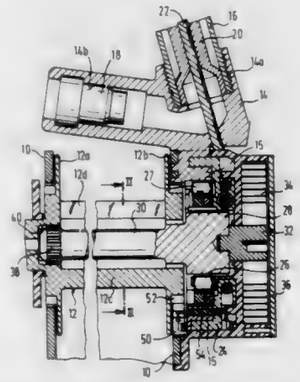
Bernhard Frei, Waldstetten, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Mar. 23, 1993, Ser. No. 36,177

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1992, 4209540

Int. Cl.[5] B60R *22/46*

U.S. Cl. 242—374 **8 Claims**



1. A safety belt retractor with a frame, a belt drum rotatably mounted in said frame for coiling and uncoiling of belt webbing and a belt pretensioner device comprising a rotary drive with a drive member for rotating, in operation, said belt drum in a coiling direction, said drive member engaging said belt drum through a coupling mechanism and a torsion bar, said torsion bar having a first axial end connected to said belt drum and a second axial end adapted to be engaged by said drive member through said coupling mechanism, said second axial end being free to rotate in said frame with said belt drum in a normal condition where said coupling mechanism is disengaged and coupled with said drive member for joint rotation in an operative condition where said coupling mechanism is engaged, and means for holding said second axial end of said torsion rod fixed against rotation in said frame after operation of said rotary drive while said first axial end of said torsion rod rotates with said belt drum and said torsion rod is twisted under the action of tension occurring in the belt webbing and exceeding a predetermined threshold.

5,344,096

SAFETY BELT RESTRAINING SYSTEM FOR VEHICLES

Bernhard Frei, Waldstetten; Uwe Hirzel, Backnang; Martin Röhrle, Mutlangen, and Wolf-Dieter Hönl, Böbingen, all of Fed. Rep. of Germany, assignors to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

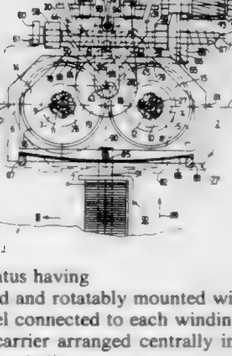
Filed Feb. 17, 1993, Ser. No. 19,368

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1992, 9202219[U]

Int. Cl.[5] B60R *22/42*

U.S. Cl. 242—379 **5 Claims**

1. A safety belt restraining system for vehicles, comprising a belt retractor with a frame and a webbing clamping means arranged downstream of said retractor, said clamping means having a housing and two clamping wedges which are arranged opposite each other in said housing on either side of the webbing, said clamping wedges having slide faces on their side remote from the webbing and bearing against support surfaces on the housing, and said wedges being movable jointly in vehicle-sensitive and/or webbing-sensitive manner out of a rest position and with their mutually opposite clamping faces in the direction towards a clamping position located in a direction corresponding to withdrawal of webbing from said retractor



into engagement with the webbing, said belt retractor having a reel which is rotatably mounted in said frame and is blockable in vehicle-sensitive and/or webbing-sensitive manner, and said webbing clamping means being connected with the frame of said retractor by connecting means which yield with plastic deformation and permit a limited moving of the webbing clamping means away from the belt retractor when the force exerted on the webbing exceeds a predetermined value.

5,344,097

RECORDING AND REPRODUCING APPARATUS FOR A RECORD CARRIER IN TAPE FORM

Winfried Schafler, Korneuburg, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 566,742, Aug. 13, 1990, abandoned. This application May 13, 1992, Ser. No. 883,811

Claims priority, application Austria, Aug. 25, 1989, 2015/89

Int. Cl.[5] G11B *15/26*

U.S. Cl. 242—356.7 **6 Claims**

1. In an apparatus having

a pair of spaced and rotatably mounted winding spindles,

a friction wheel connected to each winding spindle,

a swivellable carrier arranged centrally in relation to said two winding spindles,

a rotatable driving part mounted on said carrier for driving said friction wheels, said carrier being swivellable to alternately bring said driving part into driving friction contact with a respective friction wheel, the improvement comprising:

biasing means engageable with said carrier for swivelling said carrier toward each respective friction wheel and for biasing said driving part against the respective friction wheel;

two spaced swivel bearings each associated with a respective friction wheel, each bearing being adjustable between an initial position and a fixed operating position, said fixed operating positions being selected such that said carrier swivels about and bears on a respective said swivel bearing in its fixed operating position when said biasing means swivels said carrier to engage a respective one of said friction wheels and such that when said driving part is in contact with said respective one of said friction wheels a plane through the axis of said driving part and the axis of the respective swivel bearing about which said carrier swivelled to engage said respective one of said friction wheels extends essentially perpendicularly to a plane through the axis of said driving part and the axis of said respective one of said friction wheels; and

control means for controlling the movement of said swivel bearings between said initial and fixed operating positions to control the swivelling of said carrier.

5,344,098

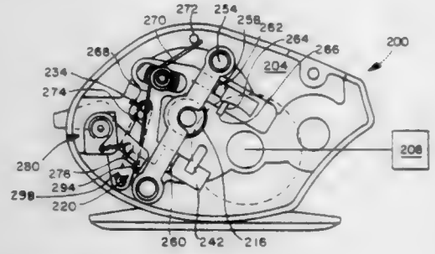
MECHANISM TO INHIBIT LATCHING OF TRIP MECHANISM ON A BAIT CAST FISHING REEL

Dennis E. Roberts, Owasso, Okla., assignor to Zebco Corporation, Tulsa, Okla.

Filed Jul. 23, 1990, Ser. No. 556,844

Int. Cl.[5] A01K *89/015*

U.S. Cl. 242—261 **13 Claims**



1. A fishing reel comprising:

a rotatable line-carrying spool;

means for rotating the spool to direct line thereon with the fishing reel in a retrieve mode;

spool control means for disengaging the spool from the spool rotating means and for allowing the spool to rotate freely in a direction to allow line to pay out of the spool with the fishing reel in a cast mode,

said spool control means including means for maintaining the fishing reel in the cast mode,

said spool control means further including a movable clutch plate/latching element having a tab thereon and means acting against the tab for biasing the clutch plate/latching element to a first position whereby the maintaining means maintains the fishing reel in the cast mode with the clutch plate/latching element in said first position;

means on the spool rotating means and means on the spool control means cooperating with each other for changing the fishing reel from the cast mode to the retrieve mode in response to the spool rotating means being operated so as to rotate the spool to direct line thereon; and

means for selectively 1) preventing the maintaining means from maintaining the fishing reel in the cast mode with the preventing means sin an "on" position and 2) allowing the maintaining means to maintain the fishing reel in the cast mode with the preventing means in an "off" position,

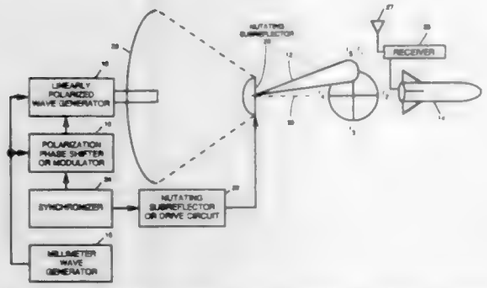
said preventing means including an arm that is movable to engage the clutch plate/latching element tab with the preventing means in an "on" position to prevent the clutch plate/latching element from realizing the position wherein the maintaining means maintains the fishing reel in a cast mode.

5,344,099

MISSILE BEAMRIDER GUIDANCE USING POLARIZATION-AGILE BEAMS

William C. Pittman, and Susan D. Terrill, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 12, 1993, Ser. No. 45,144
Int. Cl.[5] F41G *7/26*
U.S. Cl. 244—3.13 **7 Claims**



6. A system for guiding a missile during its flight through space by a polarization-agile millimeter wave beam comprising:

a) generator means for generating a polarization-agile millimeter wave beam having a linearly polarized vector;

b) means coupled to said generator means for varying the rotation rate of the linearly polarized vector of said polarization-agile millimeter wave beam through a 360° rotation of the vector;

c) transmitting and nutating means coupled to said generator means for transmitting said wave beam into space, and nutating said wave beam around a line-of-sight centerline emanating from said transmitting and nutating means;

d) means for synchronizing said varying rotation rate of said linearly polarized vector with said nutation of said transmitted wave beam;

e) a missile flying substantially along ja centerline; and

f) means on said missile for receiving said nutating beam and directing the flight of said missile through space along said line-of-sight centerline in accordance with spatially encoded information received from said nutating beam.

5,344,100

VERTICAL LIFT AIRCRAFT

Allan Jaikaran, 136 Crest Camp, Fyzabad, Trinidad and Tobago

Filed Feb. 17, 1993, Ser. No. 18,101
Int. Cl.[5] B64C *39/06*
U.S. Cl. 244—12.2 **6 Claims**

1. An aircraft capable of vertical take-off and landing comprising:

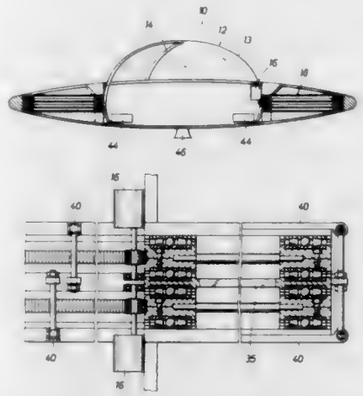
(a) a substantially disc-shaped body having a cross-section generally in the shape of an airfoil;

(b) a central cabin located in the center of the body;

(c) a pair of concentric, circular power blade assemblies disposed within said body, wherein the power blade assemblies are positioned one above the other, and wherein each power blade assembly comprises;

(i) a first circular band generally disposed around the periphery of the disc-shaped body and a second circular band generally disposed inward of the periphery and surrounding the central cabin;

(ii) a plurality of rotor blades extending generally radially outward from the center of the disc-shaped body and fixedly secured between the first and second bands, wherein the rotor blades are oriented at a fixed angle in relation to the flow of air through the power blade assembly and to the direction of rotation of the power



blade assembly such that the air flows in a single direction;

(iii) a plurality of roller bearings securely positioned above and below each circular band; and

(iv) controllable means to adjust the bearing pressure compressing each set of bearings; and

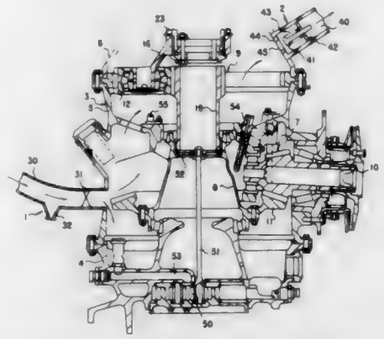
(d) means located in said cabin to cause the pair of power blade assemblies to rotate in opposite directions.

5,344,101

SAFEGUARD SYSTEM OF A SPEED INCREASING/REDUCING MECHANICAL ASSEMBLY, ESPECIALLY OF THE HELICOPTER "GEAR BOX" TYPE, IN CASE OF LUBRICATING OIL LOSS

Roland C. Francois, Cabries, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Oct. 27, 1992, Ser. No. 966,750
Claims priority, application France, Oct. 30, 1991, 91 13439
Int. Cl.[5] B64C *27/12*
U.S. Cl. 244—17.11 **18 Claims**



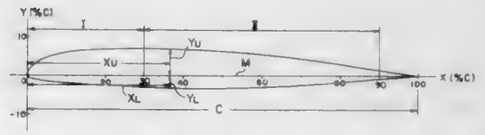
1. Safeguard system of a speed increasing/reducing mechanical assembly in case of lubricating oil loss, characterized by the fact it contains an additional cooling system of the casing of said mechanical assembly, with an inlet and an outlet arranged on the casing of this mechanical assembly, which are closed during normal operation and that open under the action of a control device at a preset value of a parameter significant for the lubricating oil loss, this control device actuating simultaneously the additional cooling system in order to provide a circulation of the coolant between the inlet and the outlet, so that this coolant, loaded with the calories further to the warm-up caused by the lubricating oil loss, may evacuate the calories via the outlet of the additional cooling system.

5,344,102

ROTARY-WING BLADE OF ROTARY-WING AIRCRAFT

Masaaki Nakadate, and Masahiro Obukata, both of Utsunomiya, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1992, Ser. No. 889,800
Claims priority, application Japan, Jun. 3, 1991, 3-131428
Int. Cl.[5] B64C *3/00*
U.S. Cl. 244—35 R **9 Claims**



1. A rotary-wing blade for a rotary-wing aircraft, said blade having a leading edge and a trailing edge, and cross sections constituting airfoil sections, each of which has a chord line, chord length, and upper and lower blade surface curves, said rotary-wing blade being based in shape on a basic airfoil section comprising:

an asymmetrical region of positive camber from the leading edge aft to a point at approximately 30 percent of the chord length from the leading edge;

another region essentially of symmetry of the upper and lower surface curves from said 30-percent chord length point to a point approximately 90 percent of the chord length from the leading edge; and

said basic airfoil section from the leading edge to the 90-percent chord length point being defined by the X-coordinates in Table 1 in the specification which represent the distance aft from the leading edge expressed as a percentage of the chord length, and by the Y coordinates set forth in the table 1 in the specification times a multipier coefficient of 0.5 to 1.5 wherein: Y is the coordinate distance of the surface curves from and perpendicular to the chord line, being positive and negative, respectively, above and below the chord line; all distances are expressed as percentages of the chord length C; and subscripts U and L denote upper and lower surface curves, respectively, and

said airfoil being dimensioned and arranged such that a plotted point for Mdd (zero lift) and Cl max at (0.4 Mach) values of the airfoil fall above a line extending between points of about (0.80, 1.5) and (0.90, 0.80) on a Mdd (zero lift) abscissa and Cl max (at 0.4 Mach) ordinate graph.

5,344,103

ACTUATING SYSTEM FOR AIRCRAFT WING SLAT AND FLAP PANELS

Thomas F. Fitzgibbon, Long Beach, and Paul U. Hamilton, Palos Verdes Est., both of Calif., assignors to AlliedSignal, Inc., Morris Township, Morris County, N.J.

Filed Jan. 24, 1992, Ser. No. 825,664
Int. Cl.[5] B64C *9/06*
U.S. Cl. 244—75 R **10 Claims**

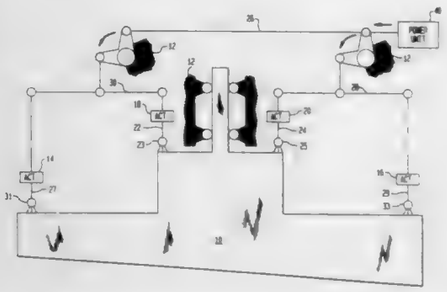
1. An actuating system for aircraft wing slat and flap panels, comprising:

a plurality of actuators spaced along an aircraft wing for hinging a panel to the wing and for rotating the panel, the plurality including first and second pairs of actuators;

a coaxial input shaft coupled to a power unit and coupled to each of the plurality of actuators for driving said actuators, each actuator of said first and second pairs of actuators having an arm mounted to the panel;

means for mounting the arms of each actuator of the first pair to the panel so as to permit wing to panel rotation during wing/panel bending;

means for mounting the arms of each actuator of the second pair to the panel so as to permit angular displacement of said arms relative to the arms of the actuators of the first



pair so that the panel does not resist wing bending via the actuators; and

differential gear means coupling the coaxial input shaft to the arms of the actuators in the first and second pairs for permitting relative angular displacement between selected actuator arms in said first and second actuator pairs and for permitting one of the arms in each of the first and second pairs to be angularly displaced as a unit.

5,344,104

LOW COST, SELECTABLE CONFIGURATION SPACECRAFT

Peter K. Homer, Newtown, Pa.; Robert V. Parenti, Roebling, N.J.; Joel DeStefano, Westampton, N.J.; Wensen Chen, Long Valley, N.J.; Eric Talley, Allentown, N.J., and John E. Close, East Windsor, N.J., assignors to General Electric Co., East Windsor, N.J.

Filed Sep. 21, 1992, Ser. No. 948,230
Int. Cl.[5] B64G *1/00*
U.S. Cl. 244—158 R **14 Claims**



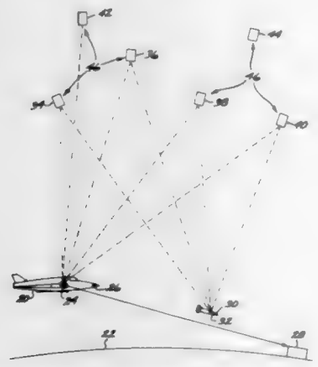
1. A member of a set of spacecraft, each member spacecraft of said set defining a longitudinal axis which is longitudinal during launch, said set of spacecraft including member spacecraft having overall longitudinal dimensions parallel to said longitudinal axis which differ, among members of said set, by a dimension which is a multiple, including the integer one, of a predetermined incremental dimension, each said member comprising:

at least one propellant tank including (a) an axis parallel to said longitudinal axis, and cross-sectional dimensions orthogonal to said axis of said propellant tank, said cross-sectional dimensions of said propellant tank being identical to those of a corresponding propellant tank of other members of said set of spacecraft, and (b) dimensions in

the direction of said axis of said propellant tank which differ from those of other members of said set by an integer multiple of said predetermined incremental dimension, where said integer multiple may include the integer one; and

a launch vehicle adapter, including first and second ends and a longitudinal axis, said launch vehicle adapter having a circular cross-section at said first end and a polygonal cross-section at said second end, said first end being free, and available for coupling to a launch vehicle, said adapter including a smooth transition between said first and second ends, the circumference of said transition, along any path thereabout intersection an orthogonal to said longitudinal axis, being equal to that along any other such path.

5,344,105
RELATIVE GUIDANCE USING THE GLOBAL POSITIONING SYSTEM
Mark Youhanaie, West Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Sep. 21, 1992, Ser. No. 947,623
Int. Cl.[5] F41G *7/28*
U.S. Cl. 244—3.14 **15 Claims**



6. A method for guiding a missile to a target, comprising the steps of:

furnishing a targeting vehicle having a targeting vehicle global positioning system receiver fixed to receive global positioning signals from a selected constellation of satellites in orbit above the earth;

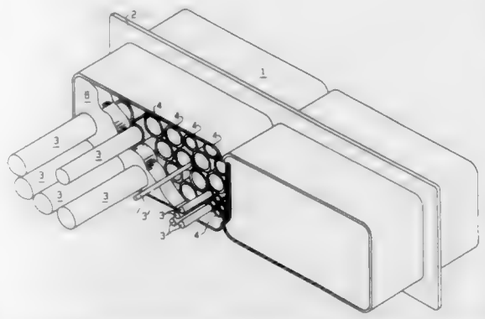
furnishing a missile having a missile global positioning system receiver fixed to receive global positioning signals from the same selected constellation of satellites in orbit above the earth;

the targeting vehicle locating a target with an onboard sensor and converting the location of the target to the frame of reference of the selected constellation of satellites of the global positioning system;

the targeting vehicle communicating the position of the target, expressed in the frame of reference of the selected constellation of satellites of the global positioning system, to a navigation system of the missile; and

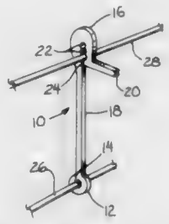
the missile proceeding to the target location under control of its navigation system using the target position communicated from the targeting vehicle and the positioning signal derived from the missile global positioning system receiver fixed to receive positioning signals from the selected constellation of satellites, wherein the missile remains within a sufficiently small operating distance of the position of the targeting vehicle, at the time of the step of locating and converting, that variations in systematic bias errors between the targeting global positioning system receiver and the missile global positioning system receiver are negligible.

5,344,106
FIRE RESISTING CABLE SYSTEM
Johannes A. Beele, Opmeer, Netherlands, assignor to Beele Engineering B.V., Aalten, Netherlands
Filed Sep. 25, 1992, Ser. No. 951,966
Claims priority, application Netherlands, Sep. 27, 1991, 91.01637
Int. Cl.[5] H02G *3/22*
U.S. Cl. 248—56 **18 Claims**



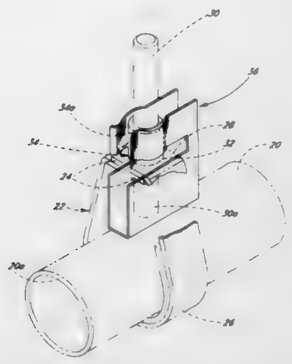
1. A fire resisting system comprising a wall with an opening in the wall, at least one elongated member extending through said opening in a liquid ad gastight manner, and fire resisting means at least partially disposed in said opening and at least partially disposed around one of said at least one member, said fire resisting means being substantially formed in the shape of a first sleeve means placed around said at least one member, and said system further includes fire resisting filling means defined by at least one additional sleeve means, empty of any elongated members, positioned in at least part of the remaining space in the opening and extending side by side with said first sleeve mans of the fire resisting means.

5,344,107
TUBING STRAP
William R. Lee, Ventura, Calif., assignor to Hall Surgical, Carpinteria, Calif.
Filed Sep. 23, 1993, Ser. No. 125,390
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—60 **8 Claims**



1. A flexible medical tubing strap for supporting a tube adjacent a support, the tubing strap including a first end for connection to the tube and a second end for connection to the support, the second end being substantially hook shaped and defining apertures for accommodating a portion of the support, the first and second ends being spaced apart by an integral shaft.

5,344,108
PIPE SURGE RESTRAINER FOR USE WITH PIPE HANGER
Richard W. Heath, Yorba Linda, Calif., assignor to Tolco, Incorporated, Corona, Calif.
Filed May 14, 1992, Ser. No. 882,815
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—62 **7 Claims**



1. A pipe surge restrainer for a pipe and a hanger supporting the pipe to restrict upward surging movement of the pipe within the hanger towards an upper yoke of the hanger caused by fluid pressure surfaces in the pipe, said restrainer comprising:

a pair of spaced legs sized to extend between said yoke and said pipe, the upper ends of said legs defining a gap therebetween for receiving the lower end of a pipe hanger rod extending through said yoke;

a connector joining the lower ends of said legs; and

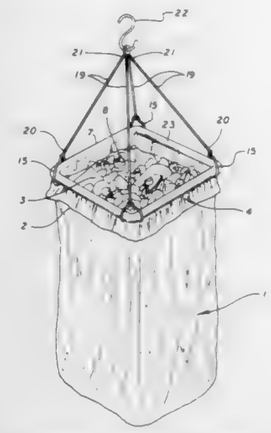
a pair of spaced arms, each arm being spaced above but connected to said legs for securing said restrainer in position between said pipe and said yoke, and each arm having a section formed to grip a nut mounted on said rod, said restrainer being formed of springy material that enables said arms to be spread and grip the nut, and enable said arms to be installed or removed from said pipe and hanger with said hanger is position supporting said pipe.

5,344,109
APPARATUS FOR THE ENGAGEMENT AND SUSPENSION OF A BAG ABOVE THE GROUND FOR THE SUSPENDABLE STORAGE OF ITEMS WITHIN THE BAG
Abel K. Hokoana, Jr., 2238 Kaluaopalena St. Apt. A-101, Honolulu, Hi. 96819
Filed Mar. 10, 1993, Ser. No. 29,007
Int. Cl.[5] B65B *67/04*
U.S. Cl. 248—100 **20 Claims**

1. An apparatus for the suspension of a bag from a support structure for suspendable storage of items held within the bag, the bag having a rim defining an opening of the bag, the apparatus comprising:

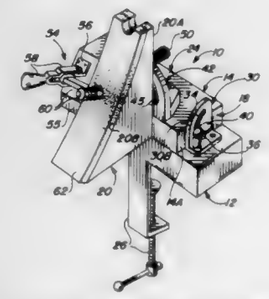
a support frame having a plurality of sides defining a plurality of corners formed by adjoining sides of the support frame, the support frame further having a top surface with an inner perimeter defined by a first aperture formed in the top surface, the rim of the bag being attached about the support frame in a plurality of locations to maintain the bag in an open position;

a plurality of engagement members for engaging and supporting the support frame each having two upturned ends for attachment to different adjoining sides of a corner of the support frame such that each corner is supported by an engagement member; and



a plurality of suspension arms having first and second ends for attachment of the suspension arms between the engagement members and the support structure.

5,344,110
HOLDER APPARATUS FOR POSITIONING ARCHERY BOW RELATIVE TO ORTHOGONAL AXES
Ralph J. Scarpa, 2 Buffalo St., Hicksville, N.Y. 11801
Filed Feb. 8, 1993, Ser. No. 14,714
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—229 **18 Claims**



1. An archery bow holder apparatus, comprising:

(a) a first support member stationarily mountable to a support structure;

(b) a second support member mounted to said first member for pivotal movement relative thereto about a first pivotal axis;

(c) first adjustable means for holding said second support member at a selected angular position relative to said first support member;

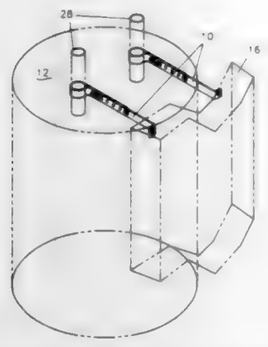
(d) a bow support member mounted to said second support member for pivotal movement relative thereto about a second pivotal axis extending in a orthogonal relationship to said first pivotal axis;

(e) second adjustable means for holding said bow support member at a selected angular position relative to said second support member;

(f) clamping means mounted to said bow support member for releasably locking an archery bow on said bow support member; and

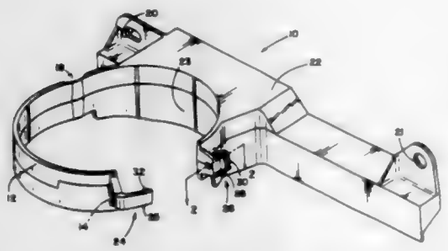
(g) a hinge pivotally connecting said second support member to said first support member about said first pivotal axis.

5,344,111
ANCHORING DEVICE FOR A WATER HEATER
Bob Gantzert, 205 Cleveland Ave., San Jose, Calif. 95126
Filed Aug. 20, 1993, Ser. No. 109,668
Int. Cl.[5] E04G *3/00*
U.S. Cl. 248—274 1 Claim



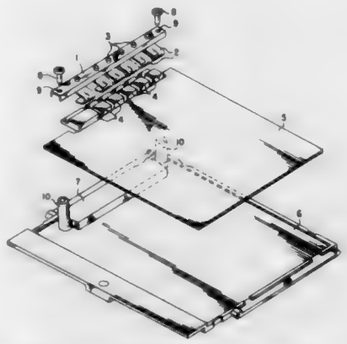
1. A water heater anchoring device comprising:
multiple bracket elements which are adjustable in length, the brackets each including two separate elements, a water heater attachment element and a wall stud attachment element, the attachment elements each including a series of corresponding holes whereby the length of the bracket elements may be adjusted by changing the relative positions of the attachment elements, then anchoring the bracket in the desired position by inserting one or more bolts through corresponding holes;
the brackets further including integral loops which are attached to inlet and outlet water pipes, and a mounting means which is flexible at an end where it is attached to a wall stud to accommodate various angles of attachment, so as to allow secure attachment of the water heater to the wall stud.

5,344,112
CANISTER BRACKET
Francis C. Peterson, Prescott, Wis., and Bipin Parekh, Plymouth, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Jan. 28, 1993, Ser. No. 10,548
Int. Cl.[5] A47K *1/08*
U.S. Cl. 248—313 1 Claim



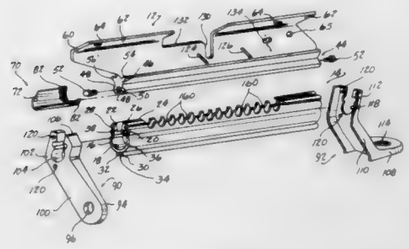
1. A canister bracket for retaining a cylindrical structure comprising:
a mounting base (22);
an attachment band (12);
a hinge (18) connecting the attachment band (12) to the mounting base (22);
a clasp (24) structure formed at the terminal end of said attachment band (12);
said clasp structure having a complimentary surface (25);
said clasp (24) structure having a plurality of clasp teeth (32);
a ratchet (26) structure formed on said mounting base (22) proximate said clasp (24) structure;
said ratchet (26) structure having a lip (28) formed on said ratchet (26) structure for engaging said complimentary surface (25) formed on said clasp (24) structure;
said ratchet (26) structure having a plurality of ratchet teeth (30) for mating engagement with said clasp teeth (32), said ratchet structure being loosely engaged with said clasp teeth (32);
means for clamping said ratchet structure and said clasp structure, said clamping means including a clearance screw hole (14) on said clasp structure and a clearance screw hole (16) on said ratchet structure, said clasp structure and said ratchet structure being tightly engaged with each other by tightening a screw member in said clearance screw holes (14,16); and
whereby, said complimentary surface abuts said lip when said ratchet teeth are pushed into engagement with said clasp teeth.

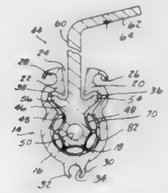
5,344,113
MULTIPLE SPRING-RETENTION DEVICE AND METHOD FOR MANUFACTURING IT
Gilles Jurek, Plaisance-du-Touch, France, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
PCT No. PCT/EP91/01148, § 371 Date Nov. 19, 1992, § 102(e) Date Nov. 19, 1992, PCT Pub. No. WO91/19420, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 21, 1991, Ser. No. 952,870
Claims priority, application France, Jun. 21, 1990, 90 07760
Int. Cl.[5] A47G *1/10*
U.S. Cl. 248—316.7 15 Claims



1. A modular spring-retention device, comprising:
a support,
a plurality of mutually aligned elastic tab means cooperating with said support for clamping a plurality of mutually aligned components between respective ones of said tabs and said support,
a connecting bar interconnecting said elastic tabs, said bar being formed separately from said support and said bar and said tabs being formed individually and separately, and
a plurality of fastening means for individually fastening each of said tabs to said connecting bar in a predetermined position corresponding to respective individual positions of said components.

5,344,114
VEHICLE SEAT ADJUSTER
Richard W. A. Rees, Rochester Hills, Mich., assignor to ITT Corporation, New York, N.Y.
Filed Mar. 31, 1993, Ser. No. 40,478
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—430 44 Claims

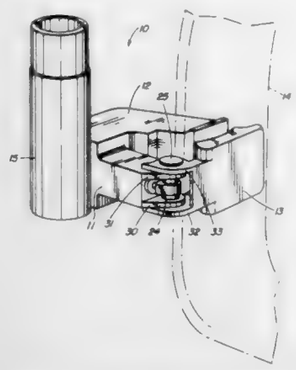




1. A seat adjuster for supporting a vehicle seat on a floor of a vehicle comprising:
first and second space track assemblies, each of the first and second track assemblies including:
a lower track having a bore extending longitudinally therethrough, a longitudinally extending slot formed in the lower track and opening to the bore;
an upper track slidably mounted in the bore in the lower track;
a seat support arm connected to the upper track and slidably extending outward through the slot in the lower track;
means for anchoring a seat belt to said seat support arm;
bearing means disposed in the bore in the lower track between the upper track and the lower track for slidingly engaging the upper track to the lower track;
support means, connected to the lower track, for mounting the lower track to a floor of a vehicle; and
cooperating resisting means, formed in the upper and lower tracks, for resisting separation of the upper track from the lower track; and
lock means for releasably locking the upper track against movement relative to the lower track.

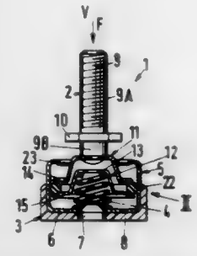
5,344,115
CLAMPING AND HOLDING DEVICE
Richard C. Mayne; Laurence Gray, and Richard Whyte, all of Kingston, Canada, assignors to Manova Products Inc., Kingston, Canada
Filed Dec. 9, 1992, Ser. No. 988,210
Claims priority, application Canada, Aug. 14, 1992, 2,076,202-1
Int. Cl.[5] A47G *25/12*
U.S. Cl. 248—514 9 Claims

7. A clamping device comprising a clamp with a recess and a holder; a mounting portion for said holder telescopically received in the recess in the clamp and having a first position permitting pivotal movement of the holder and a second position in which the holder is locked to prevent pivotal movement; and a spring with a locking button acting on the mounting portion normally to retain it in the first position in which said mounting portion has a conically shaped surface with its narrow diameter close to the holder, and said spring is a compression spring extending laterally from the mounting portion



and acting to urge the locking button against the conically shaped surface.

5,344,116
FOOT FOR AN APPLIANCE, SUCH AS A WASHING MACHINE
Herbert Winkler, Velbert, Fed. Rep. of Germany, assignor to YMOS Aktiengesellschaft Industrieprodukte, Obertshausen, Fed. Rep. of Germany
Filed Nov. 23, 1992, Ser. No. 980,271
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1991, 4138961
Int. Cl.[5] F16M *11/20*
U.S. Cl. 248—677 14 Claims



1. A self-levelling machine foot, comprising a housing (5) having a central axis and an axially facing opening in said housing (5), a spring holding member (12) inside said housing, a spring (4) held axially inside said housing (5) by said spring holding member (12), means (9, 11) for applying a load (F) to said spring holding member (12) through said axially facing opening, said load applying means (9, 11) comprising a load dividing member (18) positioned in said housing in contact (P) with an inner surface (21) of said housing (5) and in contact with said spring holding member (12) for transmitting a first load component directly into said housing so that said first load component bypasses said spring (4) while a second load component passes through said spring into said housing, wherein said load dividing member (18) and said spring (4) work in series up to a certain load level and in parallel above said certain load level.

5,344,117

MICRO-ACTUATOR

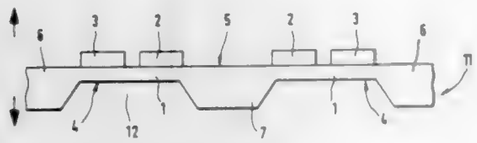
Hans-Peter Trah, Reutlingen, and Gottfried Flik, Leonberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 12, 1993, Ser. No. 135,606

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1992, 4234237

Int. Cl.[5] F16K *31/02, 31/70*

U.S. Cl. 251—11 **12 Claims**



1. A micro-actuator, comprising:

a) a bending element, said bending element having a first thermal coefficient of expansion;

b) a force element, said force element

i) having a variable length relative to said bending element,

ii) being arranged on said bending element, and

iii) having a second thermal coefficient of expansion different from the first thermal coefficient of expansion of said bending element; and

c) a compensation element, said compensation element

i) having a third thermal coefficient of expansion different from the first thermal coefficient of expansion of said bending element, and

ii) being arranged on said bending element,

wherein said compensation element compensates for a force effect of said force element on said bending element resulting from a change in environmental temperature.

5,344,118

SOLENOID VALVE

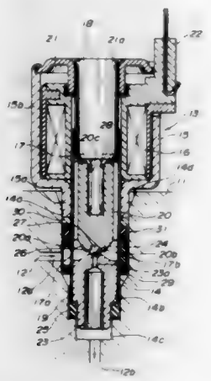
Haruo Kamiya, Atsugi, and Chiaki Shiokawa, Kyoto, both of Japan, assignors to Unisia Jecs Corp, Kanagawa Prefecture and Japan Powder Metallurgy Co. Ltd., Tokyo, both of Japan

Filed Oct. 8, 1993, Ser. No. 133,677

Claims priority, application Japan, Oct. 13, 1992, 4-71175

Int. Cl.[5] F16K *31/06*

U.S. Cl. 251—129.15 **8 Claims**



1. A solenoid valve comprising:

a valve body;

a solenoid coil disposed inside said valve body;

an armature core fixedly disposed inside said solenoid coil;

a valve seat member formed with a fluid passage through which a fluid is flowable;

a movable member formed of a sintered metal and formed at its one end with a fitting groove, said movable member being moved in opposite directions upon energizing and de-energizing of said armature core;

a spherical valve member fixedly fitted in said fitting groove of said movable member, said spherical valve member being brought into contact with said valve seat member to close said fluid passage when said movable member is moved in a direction toward said valve seat member; and

means defining a caulked section formed around said fitting groove and urgingly contacting with said spherical valve member to securely keep said spherical valve member in said fitting groove, said caulked section forming part of said movable member.

5,344,119

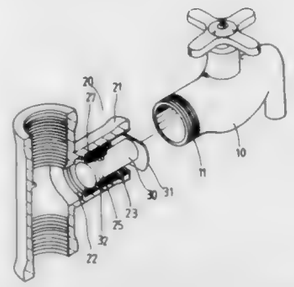
HOSE COUPLING

Der-Shing Wang, P.O. Box 1750, Taichung, Taiwan

Filed Sep. 21, 1993, Ser. No. 124,862

Int. Cl.[5] F16L *29/02*

U.S. Cl. 251—149.1 **1 Claim**



1. A hose coupling for coupling a faucet comprising a body including a cylindrical member having a first end, a middle portion and a second end, an annular rib formed in said first end of said cylindrical member, an inner thread formed in said middle portion and said second end of said cylindrical member for engaging with said faucet; a ring element threadedly engaged with said inner thread of said cylindrical member, a packing engaged between said annular rib and said ring element so as to make a water tight seal between said annular rib and said ring element and including a bevel formed therein and close to said annular rib, a tue slidably engaged in said packing and said ring element and including a bore formed therein, said tube including a first end having a tapered surface formed on an outer peripheral surface thereof for engaging with said bevel of said packing and including a second end having a panel secured thereon, said panel being located close to said second end of said body for engaging with said ring element so as to limit the movement of said tube, at least one hole formed in said tube close to said first end of said tube and communicating with said bore of said tube, said hole being blocked when said tapered surface of said first end of said tube is engaged with said bevel of said packing such that water supplied into said coupling is blocked and prevented from flowing through said tube, said packing making a water tight seal between said tube and said ring element, and said hole being opened when said panel is engaged with said ring element and when said tapered surface of said tube is disengaged from said bevel of said packing, whereby, water supplied into said coupling is allowed to flow into said tube via said hole and to flow out of said coupling through said bore of said tube.

5,344,120

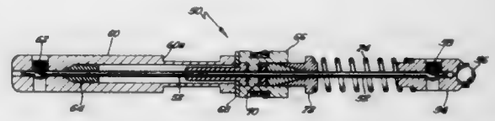
AIRLESS SPRAY GUN NEEDLE ASSEMBLY

Jimmy W. S. Tam, Shoreview; Lawrence L. Lanerd, Loretto; Albert W. Lubenow, Inver Grove Heights, and Tera D. McCutcheon, Coon Rapids, all of Minn., assignors to Graco Inc., Minneapolis, Minn.

Filed May 3, 1993, Ser. No. 56,676

Int. Cl.[5] B05B *7/02*

U.S. Cl. 251—214 **4 Claims**



1. A needle assembly for an airless spray gun, said needle assembly comprising:

a needle; having first and second ends and a sealing area, said needle having a centerless ground and electropolished surface, said needle being plated on one of said ends and unplated on the other of said ends;

a needle retainer retaining said needle first end; and

a ball retainer containing said needle second end.

5,344,121

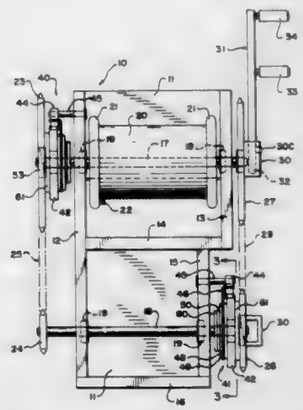
SAFETY WINCH

Morris Baziuk, Box 53, Group 6, R.R. #1, Winnipeg, Manitoba, Canada R3C 4A3

Continuation-in-part of Ser. No. 680,996, Apr. 5, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 221

Int. Cl.[5] B66D *3/16*

U.S. Cl. 254—358 **7 Claims**



1. A safety winch comprising a main frame, a cable, a main axle, a secondary axle, means mounting the main axle and the secondary axle on the main frame each for rotation about a respective one or two parallel axes, a drum mounted on the main axle for rotation therewith in a first direction to cause pay-out of said cable and in a second direction to cause reel in of said cable, chain drive means for communicating rotation of each of the main axle and the secondary axle to the other of the main axle and the secondary axle, the chain drive means including a first sprocket mounted on the main axle at one end thereof for rotation about the axis of the main axle, a second sprocket mounted on adjacent end of the secondary axle for rotation about the axis of the secondary axle, a chain wrapped around the first and second sprockets, means for manually driving the secondary axle including a drive member mounted on the secondary axle at an end thereof opposite to said second sprocket for rotation about the axis of the secondary axle, and a manually graspable handle for driving said drive member, a first safety brake assembly comprising a first ratchet wheel mounted on the main axle at said first sprocket for rotation about the axis of the main axle relative to the main axle, a first pawl mounted on the frame and cooperating with the first ratchet wheel to prevent rotation of the first ratchet wheel in said first direction, first friction pad means mounted between the first sprocket and the first ratchet wheel and first cam means between the main axle and the first sprocket allowing limited rotational movement between the main axle and the first sprocket and operable in said second direction of movement of the first sprocket to cause the first friction pad means to form a frictional connection between the first sprocket and the first ratchet wheel to communicate drive from the first sprocket to the first ratchet wheel and operable in said first direction of movement of the first sprocket to move the first friction pad means axially to separate said frictional connection to allow rotation of the first sprocket and the main axle relative to the first ratchet wheel; and a second safety brake assembly comprising a second ratchet wheel mounted on the secondary axle at said drive member for rotation about the axis of the secondary axle relative to the secondary axle, a second pawl mounted on the frame and cooperating with the second ratchet wheel to prevent rotation thereof in said first direction, second friction pad means mounted between the drive member and the second ratchet wheel and second cam means between the secondary axle and the drive member allowing limited rotational movement between the secondary axle and the drive member and operable in said second direction of movement of the drive member to cause the second friction pad means to form a frictional connection between the drive member and the second ratchet wheel to communicate drive from the drive member to the second ratchet wheel to communicate drive from the drive member to the second ratchet wheel and operable in said first direction of movement of the drive member to move the second friction pad means axially to separate said frictional connection to allow rotation of the drive member and the secondary axle relative to the second ratchet wheel.

5,344,122

TUBULAR ROD AND DEVICE FOR SAMPLING AND ANALYZING FUMES AND APPARATUS INCLUDING SUCH DEVICE

Jean-Claude Vuillermoz, Versailles; Nicolas Perrin, Louveciennes, and Michel Devaux, Magny les Hameaux, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

PCT No. PCT/FR91/01084, § 371 Date Sep. 8, 1992, § 102(e) Date Sep. 8, 1992, PCT Pub. No. WO92/13108, PCT Pub. Date Aug. 6, 1992

PCT Filed Dec. 31, 1991, Ser. No. 930,381

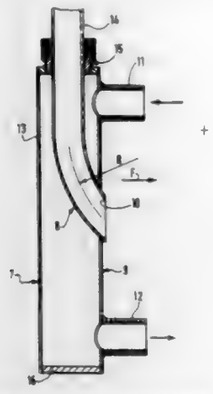
Claims priority, application France, Jan. 15, 1991, 91 00340

Int. Cl.[5] C21C *5/52*

U.S. Cl. 266—79 **21 Claims**

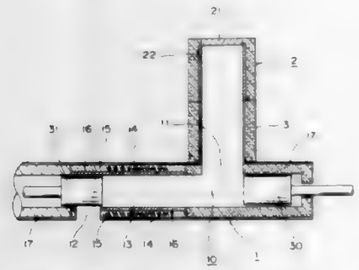
1. A fume sampling unit comprising a casing including a main part having an axis and comprising means for connection to a source of a cooling fluid, an extractor tube having an end part extending in the casing and opening outwardly of the casing by a fume inlet opening, and an intermediate tubular member housed in the casing and surrounding the end part of

the extractor tube, the intermediate tubular member being spaced from the casing and from the extractor tube to define



with the casing and with the extractor tube an inner circuit for the cooling fluid.

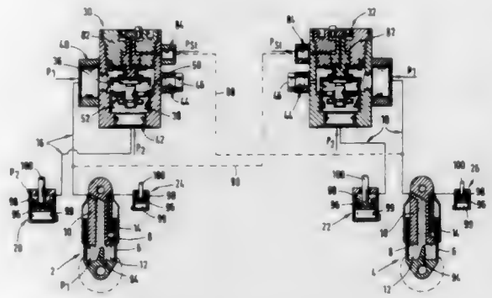
5,344,123
MELTING AND FILLING DEVICE
Takashi Hanano, Kobe, and Shigeo Furuta, Takarazuka, both of Japan, assignors to Hanano Corporation, Hyogo, Japan
Continuation of Ser. No. 979,272, Nov. 20, 1992, abandoned.
This application Dec. 27, 1993, Ser. No. 173,480
Claims priority, application Japan, Jan. 31, 1992, 4-016091
Int. Cl.[5] B22D *39/00*
U.S. Cl. 266—207 **2 Claims**



1. A melting and filling device for melting a non-ferrous alloy lump and transferring the melted alloy to a mold, comprising:
a device body including an inside space having an airtightness able to provide an nonactive gas atmosphere, the inside space having a charging port, a filling port and a melting chamber surrounded by an induction heating coil;
a first piston for transporting the non-ferrous alloy lump to the melting chamber;
and a second piston, axially aligned with the first piston, for allowing the molten metal of non-ferrous alloy, formed in the melting chamber, to flow out of the filling port.

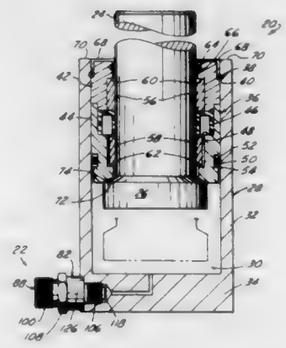
5,344,124
SUSPENSION SYSTEM
Walter Runkel, Wuppertal, Fed. Rep. of Germany, assignor to Hemscheidt Fahrwerktechnik GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany
Filed May 27, 1992, Ser. No. 889,715
Claims priority, application Fed. Rep. of Germany, May 28, 1991, 4117455; Sep. 7, 1991, 4129773; Sep. 7, 1991, 4129819
Int. Cl.[5] B60G *11/28*
U.S. Cl. 267—64.15 **36 Claims**

1. Suspension system for wheel support in motor vehicles, comprising at least one spring leg (**2**, **4**) having a cylinder (**6**) and a piston (**8**) moving in said cylinder (**6**) for contraction and extension of the spring leg and being applied by a hydraulic medium, whereby said spring leg during contraction acts against a spring force causing the subsequent extension, and whereby at least during the extension the hydraulic medium passes on a flow path of a damping valve (**30**, **32**), characterized by:



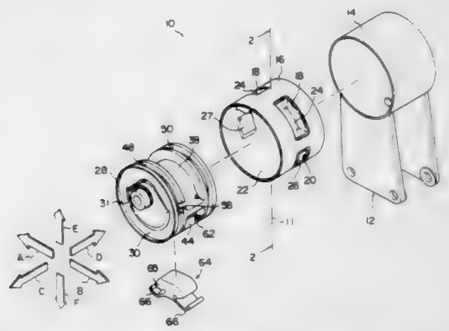
means operative during the extension of the spring leg (**2**,**4**) to continuously alternately block and reopen the flow path of the damping valve (**30**, **32**) until the extension motion of the spring leg has ceased, so that a damping function is achieved by a controlled measured, successive release of individual portions of the hydraulic medium,
whereby the hydraulic pressure in said spring leg decreases during each blocking of the flow path and increases during each opening of the flow path.

5,344,125
GAS SPRING WITH FILLER VALVE
Jonathan P. Cotter, Dearborn, Mich., assignor to Diebolt International, Inc., Detroit, Mich.
Filed Sep. 17, 1993, Ser. No. 123,638
Int. Cl.[5] F16F *9/43*
U.S. Cl. 267—64.28 **21 Claims**



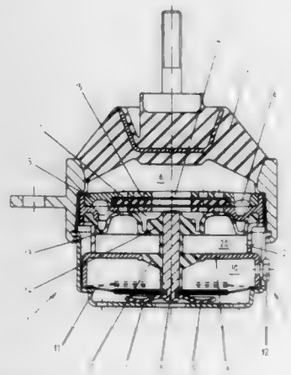
1. A gas spring comprising a cylinder defining at least in part a gas chamber, a rod with a head telescopically received in said cylinder and movable between extended and retracted positions and constructed and arranged to compress a gas within said chamber when moving from its extended position toward its retracted position, and a gas passage in communication with said cylinder and opening to the exterior of said cylinder, a filler valve having a housing exterior of the cylinder with a passage therethrough defining a valve cavity having an inlet and an outlet in communication therewith and a bleed passage in said housing in communication with said valve cavity and opening exteriorly of said housing, said housing constructed and arranged to be operably associated with the gas spring with said outlet in communication with said gas passage, a valve body having generally opposed ends constructed and arranged to be slidably received in said valve cavity for movement between a first position to prevent said outlet from communicating with said bleed passage and a second position disposed from said first position so that said outlet is in communication with said bleed passage to permit gas flow through said outlet and bleed passage to reduce the pressure of gas within the chamber and said valve body having a passage therethrough in communication with said inlet and said outlet of said housing, an inlet valve carried by said valve body for allowing gas to flow through said passage to charge the chamber with gas, said inlet valve being normally closed and opening in response to gas supplied to said valve cavity upstream of said valve through said inlet at a pressure substantially greater than the pressure of gas in the chamber and closing when the gas pressure in the chamber approaches such upstream pressure, and a seal associated with said housing and disposed between one end of said valve body and said outlet for sealing against said valve body when in said first position to prevent said outlet from communicating with said bleed passage, whereby said valve body has a first effective area communicating with said inlet in said housing and a second effective area communicating with said outlet in said housing, said second effective area being smaller than said first effective area and constructed and arranged so that when gas under pressure is applied to said valve cavity through said inlet upstream of said inlet valve and said valve body is in said first position, said valve body is moved toward its second position only when the force acting on said valve body in a direction tending to cause movement of said second body toward said valve position as a result of the pressure of said gas downstream of said inlet valve acting on said second effective area of said valve body exceeds the force acting on said valve body in a direction tending to cause movement of said valve body toward said first position due to the pressure of the gas applied upstream of said inlet valve acting on said first effective area of said valve body.

5,344,126
VIBRATION ISOLATION APPARATUS
Tatsuro Ishiyama, Yokohama, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed Mar. 11, 1992, Ser. No. 851,008
Claims priority, application Japan, Mar. 15, 1991, 3-051657; Apr. 25, 1991, 3-095572
Int. Cl.[5] F16M *1/00*; **F16F** *5/00*
U.S. Cl. 267—140.12 **21 Claims**



1. A vibration isolation apparatus comprising:
an inner cylinder connected to one of a vibration generating portion and a vibration receiving portion, said inner cylinder having a first and second end portions;
an outer cylinder connected to the other of the vibration generating portion and the vibration receiving portion;
an elastic member provided between said inner cylinder and said outer cylinder, and being deformable when vibration is generated;
a thin rubber membrane being expandably provided on an inner periphery of said outer cylinder;
at least one main fluid chamber able to expand and contract according to deformation of said elastic member;
a plurality of auxiliary fluid chambers being partially defined by at least a portion of said thin rubber membrane and being able to expand and contract according to deformation of said thin rubber membrane;
restricted path means disposed respectively adjacent to said main fluid chamber and said plurality of auxiliary fluid chambers, and being elongated circumferentially at the first and second end portion of said inner cylinder to respectively communicate said main fluid chamber with at least one of said plurality of auxiliary fluid chambers;
said main fluid chamber and said plurality of auxiliary fluid chambers being provided at an intermediate portion between said restricted path means around said inner cylinder, and disposed circumferentially at different portions of said inner cylinder;
wherein said main fluid chamber, said auxiliary fluid chambers and said restricted path means are filled with fluid which flows therebetween.

5,344,127
SWITCHABLE BEARING
Werner Hettler, Mannheim, and Arnold Simuttis, Bad Kreuznach, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim/Bergstr., Fed. Rep. of Germany
Filed Dec. 10, 1992, Ser. No. 988,546
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1991, 4141332
Int. Cl.[5] F16F *5/00*
U.S. Cl. 267—140.13 **15 Claims**



1. A switchable bearing comprising:
a cup-shaped housing;
an annular spring element of an elastomeric material sealing said cup-shaped housing;
a separating wall between the spring element and the housing, said separating wall having at least one flow-through opening, said separating wall and said spring element delimiting a working chamber, said separating wall and said cup-shaped housing delimiting a compensating chamber, the working chamber and the compensating chamber communicating through the flow-through opening, said working chamber and said compensating chamber being filled with a hydraulic fluid; and
a control unit, said control unit comprising a piston operative to seal the flow-through opening, the piston arranged at least partially in the compensating chamber, the piston being actuated by a pressurized medium, the control unit further comprising an aneroid chamber, said aneroid chamber being mounted in the cup-shaped housing and capable of being charged with a pressurized medium, the

aneroid chamber being delimited by a first ring diaphragm, said first ring diaphragm being resilient and sealing off said piston and said aneroid chamber from said housing.

5,344,128

SELF-EXPANDING MOUNT

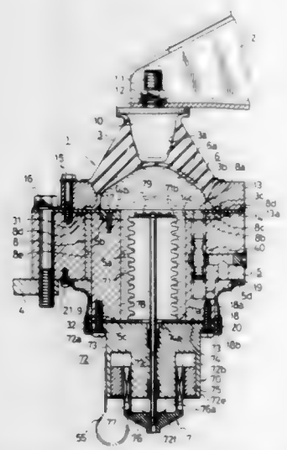
Toshiaki Kobayashi; Koji Okazaki; Masaki Ueyama, and Susumu Toki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 958,232

Claims priority, application Japan, Oct. 9, 1991, 3-290639; Oct. 9, 1991, 3-290640

Int. Cl.[5] B60K *5/12*

U.S. Cl. 267—140.14 17 Claims



1. A self-expanding mount for controlling transmission of vibration of a vibration source to a base, including a resilient member fixed to one of said vibration source and said base, a casing fixed to the other of said vibration source and said base, a main liquid chamber defined between said resilient member and said casing and filled with liquid, liquid pressure-changing means for changing pressure of said liquid within said main liquid chamber in response to a control signal corresponding to vibration of said vibration source, an auxiliary liquid chamber, and a communication passage having a restriction and communicating said auxiliary liquid chamber with said main liquid chamber, wherein a variation in pressure of said liquid is caused by said liquid pressure-changing means to cause contraction and expansion of said resilient member to thereby control the transmission of vibration from said vibration source to said base,

the improvement wherein said liquid pressure-changing means comprises a cylinder formed in said casing and defining part of said main liquid chamber, a driven member received in said cylinder for axial displacement therein, and electromagnetic driving means for driving said driven member, and wherein said communication passage includes pressure-relieving means for allowing liquid from one of said main liquid chamber and said auxiliary liquid chamber to the other when an excessive change occurs in the pressure of liquid within said main liquid chamber.

5,344,129

ELASTIC MOUNT HAVING FLUID CHAMBER PARTIALLY DEFINED BY OSCILLATING PLATE ACTUATED BY MOVING COIL IN ANNULAR GAP BETWEEN TWO YOKES CONNECTED TO PERMANENT MAGNET

Akiyoshi Ide, Inuyama; Katsuhiro Goto, Komaki; Yutaka Ishioka, Nagoya; Yoshiki Funahashi, Iwakura; Rentaro Kato; Tetsu Matsui, both of Kasugai; Ryouji Kanda, Komaki; Atsushi Muramatsu, Komaki, and Keiichi Ishiba, Komaki, all of Japan, assignors to Tokai Rubber Industries, Ltd., Japan

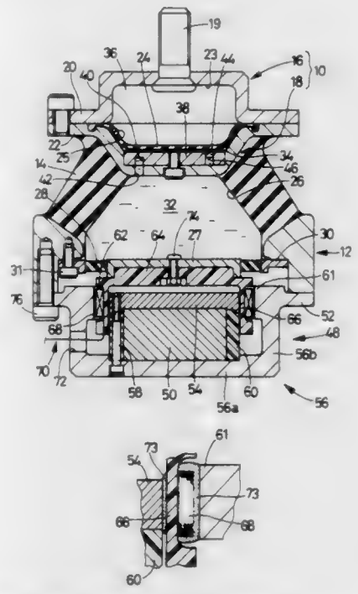
Filed Dec. 3, 1992, Ser. No. 985,107

Claims priority, application Japan, Dec. 6, 1991, 3-349587

The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.

Int. Cl.[5] F16M *5/00*

U.S. Cl. 267—140.14 8 Claims



1. A fluid-filled elastic mount comprising:

a first and a second support which are spaced apart from each other;

an elastic body which is interposed between said first and second supports for elastically connecting the first and second supports and which partially defines a fluid chamber filled with a non-compressible fluid;

an oscillating plate which partially defines said fluid chamber and which is displaceable to change a pressure of the fluid in said fluid chamber;

a permanent magnet disposed on one of opposite sides of said oscillating plate remote from said fluid chamber;

a first and a second yoke member which are connected to respective opposite magnetic pole faces of said permanent magnet and which cooperate with said permanent magnet to define a closed magnetic circuit, said first and second yoke members defining therebetween an annular gap in said magnetic circuit;

an annular moving coil received in said annular gap and fixed to said oscillating plate, said moving coil being displaced in said annular gap in an axial direction thereof, to oscillate said oscillating plate upon energization of said moving coil; and

a magnetic fluid which fills said annular gap in which said annular moving coil is received, said magnetic fluid including magnetic particles dispersed in a liquid medium.

5,344,130

DEVICE FOR FURTHER PROCESSING AFTER COPYING

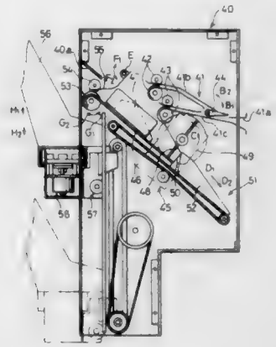
Kaoru Suzuki, Yamatokoriyama; Tadahiro Ando; Hiroshi Naka, both of Nara; Mitsutoshi Sawada, Yamatokoriyama; Tomonori Ohata, Osaka; Hiroshi Miura, Yamatokoriyama; Masayoshi Nakabayashi, Wakayama, and Eiiti Ando, Higashiosaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 25, 1992, Ser. No. 982,320

Claims priority, application Japan, Nov. 25, 1991, 3-309009; Nov. 25, 1991, 3-309012; Nov. 29, 1991, 3-316299; Nov. 29, 1991, 3-316306; Dec. 9, 1991, 3-324712; Dec. 9, 1991, 3-324715; Feb. 26, 1992, 4-039793; Feb. 27, 1992, 4-041135; Mar. 16, 1992, 4-058250; Mar. 26, 1992, 4-068534

Int. Cl.[5] B65H *39/10, 31/08;* B42B *2/00*

U.S. Cl. 270—53 30 Claims



1. A device for further processing after copying, comprising:

sheet holding means for placing thereon a plurality of sheets;

a transport path for guiding sheets fed into the device to said sheet holding means;

sheet transport means for transporting the sheets through said transport path;

means for processing after copying which carries out a predetermined process on a plurality of copied sheets stacked on said sheet holding means;

sheet discharge means for discharging the processed set of sheets from said sheet holding means,

a discharge tray for placing thereon the sheets discharged by said discharge means;

guide transport means for guiding the sheets discharged through said transport path to directly transport to said discharge tray when a functioning mode is other than the process after copying mode; and

angle adjusting means for adjusting a slope of a support face either to be on an extended line of said transport path or on an extended line of said sheet holding means according to each mode of an offset mode and a process after copying mode.

5,344,131

STAPLING SORTER WITH ROTATING SHEET JOGGER

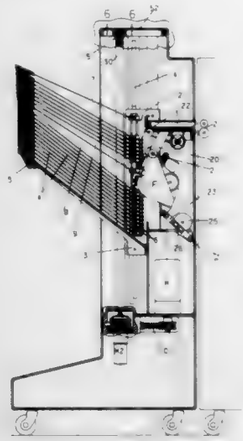
Frederick J. Lawrence, Tustin, Calif., assignor to Gradco (Japan) Ltd., Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 44,439

Int. Cl.[5] B42B *2/02;* B65H *31/36, 39/10*

U.S. Cl. 270—53 11 Claims

1. In a sorting apparatus for receiving successive sheets from a copy producing machine, comprising tray means including at least one tray for receiving sheets, jogging means for aligning the edges of sheets in said tray means in two directions, the improvement wherein said jogging means includes opposed jogging rods moveable towards and away from one another to engage and align opposite sides of sheets therebetween, means for moving said rods towards and away from one another, means for rotating said rods in opposite directions responsive to said movement of said rods to frictionally engage said sides of said sheets to move the sheets at a right angle to the movement of said rods, and an alignment surface on said tray engageable by said sheets upon movement of said sheets at said



right angle, said means for moving said rods towards and away from one another including a pair of horizontally movable slides, said rods being connected to said slides, and means for simultaneously moving said slides horizontally in opposite directions, said slides and said rods having rack and pinion means for simultaneously rotating said rods as aforesaid.

5,344,132

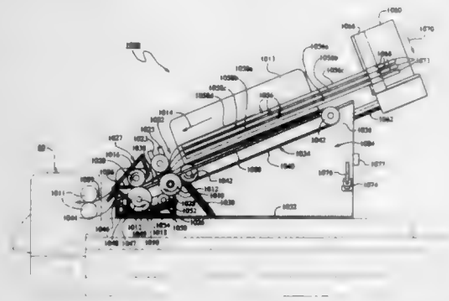
IMAGE BASED DOCUMENT PROCESSING AND INFORMATION MANAGEMENT SYSTEM AND APPARATUS

Thomas Q. LeBrun, Dallas; Kerry Cage, and Dennis D. Arnold, both of Carrollton, all of Tex., assignors to Digital Image Systems, Dallas, Tex.

Continuation of Ser. No. 053,302, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 865,491, Apr. 9, 1992, abandoned, which is a division of Ser. No. 465,411, Jan. 16, 1990, Pat. No. 5,191,525. This application Feb. 1, 1994, Ser. No. 190,231

Int. Cl.[5] B65H *3/04*

U.S. Cl. 271—35 29 Claims



1. Apparatus usable for feeding a stack of documents and detecting the boundary of a transaction included in the stack of documents, comprising:

a base on which a stack of documents is located:

means associated with said base for feeding a single document from the stack of documents while leaving the remaining documents stacked on said base;

isolating means located in the stack of documents to isolate the documents of a transaction below said isolating means from the documents above said isolating means, said isolating means moving as the documents are fed one at a time, and separating from the stack when the last document of the transaction below said isolating means has been fed;

guide means adjacent said isolating means and associated with said base for controlling the motion of said isolating means; and

means for detecting the separation of said isolating means from said stack for determining the end of the transaction;

wherein the document is fed forward across said base to a device positioned in front of said base for receiving the document, and wherein said means for feeding a single document includes:

pick drive means in front of said base for driving the lowermost document of the stack forward from the stack for feeding the document while aligning the next document of the stack to be fed;

continuous drive means along said base for urging the stack adjacent said pick drive means;

detecting means adjacent said pick drive means and engaged by the movement of the lower portion of the stack adjacent said pick drive means for activating said pick drive means; and

means adjacent said pick drive means for allowing only one document to leave the stack at a time.

23. An apparatus for automatically feeding a paper document from a stack of pieces of paper having differing sizes to a paper transport, the apparatus comprising:

a base for receiving a stack of pieces of paper for feeding to a paper transport;

a drive for picking a piece of paper from a stack of paper documents and feeding the picked piece of paper toward the paper transport for being taken up by the paper transport, the paper transport being adjacent the drive;

a support adjacent the drive and on a side of the drive opposite the base for supporting a piece of paper as it is being fed from the drive to the paper transport; the support deflecting in a first direction under tension of a piece of paper being taken up by the paper transport; the support further being biased to deflect in a second direction generally opposite the first direction when a paper document being fed by the drive begins to buckle toward the second direction; the support being adapted to bias a paper document being driven to buckle in the second direction;

a sensor responsive to the position of the support for indicating that a piece of paper being fed to the paper transport is buckling, the drive coupled to the sensor for responding to an indication that the piece of paper is buckling.

5,344,133

VACUUM BELT FEEDER HAVING A POSITIVE AIR PRESSURE SEPARATOR AND METHOD OF USING A VACUUM BELT FEEDER

Gregory R. Jantsch, Macedon; James D. Shifley, Spencerport; Michael T. Dobbertin, Honeoye; Theophilus C. Wituszynski, Fairport; Larry J. Mortellaro, Batavia, and Henry P. Mitchell, Jr., Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

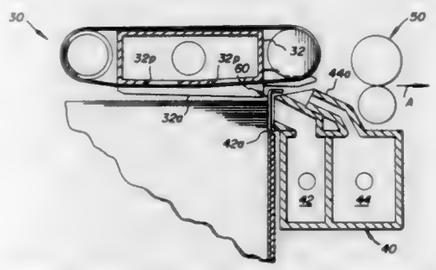
Filed Feb. 25, 1993, Ser. No. 23,032
Int. Cl.[5] B65H *3/12*
U.S. Cl. 271—94 **28 Claims**

1. Apparatus for feeding sheets seriatim from a sheet supply stack, said apparatus comprising:

a sheet feed head assembly including a plenum, a vacuum source in flow communication with said plenum, and means associated with said plenum for urging a sheet acquired by vacuum in a sheet feeding direction away from the sheet supply stack;

means for supporting the sheet supply stack so as to maintain the topmost sheet in such stack at a predetermined level in spaced relation with respect to said urging means of said sheet feed head assembly;

first positive air supply means for directing a flow of air at the sheet supply stack to levitate the top several sheets in the supply stack to an elevation enabling the topmost sheet to be acquired by vacuum from said sheet feed head assembly plenum, said first air supply means including a source of pressurized air and a nozzle in flow communication with said pressurized air source of said first air supply means, said nozzle being located in a plane substantially coincident with the center of the supported sheet stack measured in a direction transverse to the sheet feed direction, and oriented so as to aim a stream of pressurized air



at the top portion of a sheet supply stack supported on said stack supporting means; and

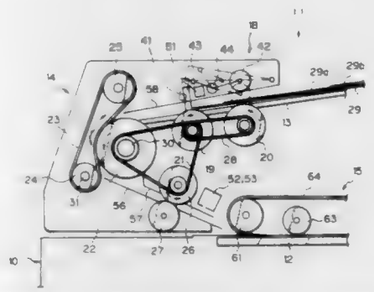
second positive air supply means for directing a flow of air at an acquired sheet to assure separation of any additional sheets adhering to such topmost sheet, said second air supply means including a source of pressurized air and a plurality of nozzles in flow communication with said pressurized air source of said second air supply means said nozzles being oriented so as to aim a stream of pressurized air with a component in the direction opposite to the sheet feeding direction, toward the sheet supply stack, substantially parallel to the air stream of said first air supply means and downstream of the aim of the air stream of said first air supply means.

5,344,134

AUTOMATIC DOCUMENT FEEDER FOR AN IMAGE FORMING APPARATUS

Shirou Saeki, Yokohama; Akira Hirose, Tokyo; Takashi Fujii, Omiya, and Motoya Sano, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 29, 1993, Ser. No. 142,930
Claims priority, application Japan, Nov. 11, 1992, 4-300717
Int. Cl.[5] B65H *3/52*
U.S. Cl. 271—122 **9 Claims**



1. An automatic document feeder (ADF) for an image forming apparatus, comprising:

a table to be selectively loaded with multiple documents or a single document;

transporting means for transporting the document fed from said table to a predetermined position on a glass platen included in a body of said image forming apparatus, and then transporting said document away from said predetermined position;

feeding means comprising a feeding member for feeding the document from said table to said transporting means, and a separating member movable in opposite direction to an intended direction of document feed into engagement with said feeding member;

mode selecting means for selecting either of a multiple feed mode for sequentially feeding the multiple documents from said table while separating the individual documents, and a single feed mode for feeding the single document from said table;

drive means for driving said separating member while switching a drive direction of said separating member; and

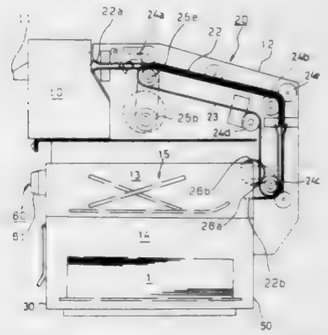
control means for controlling said drive means such that when said multiple feed mode is selected, said separating member contacts said feeding member with friction acting therebetween, while when said single feed mode is selected, said separating member contacts said feeding member without friction.

5,344,135

CURRENCY STACKER RESISTIBLE AGAINST UNAUTHORIZED EXTRACTION OF CURRENCY THEREFROM

Atsushi Isobe; Taichi Sato; Takayuki Takeda, and Katutoshi Ookawa, all of Sagamihara, Japan, assignors to Japan Cash Machine Co., Ltd., Osaka, Japan

Filed Dec. 21, 1992, Ser. No. 993,604
Int. Cl.[5] B65H *29/38*
U.S. Cl. 271—180 **8 Claims**



1. A currency stacker for accumulating bills supplied thereto through conveyer means from validator means, said currency stacker comprising:

a metallic casing including first and second chambers and a slit through which a bill is supplied to the first chamber;

pusher means positioned within the first chamber of said casing for pushing a bill in said first chamber into said second chamber, said pusher means comprising a base plate, a pusher plate and link means connecting said base plate and pusher plate for traveling said pusher plate from a retracted position within said first chamber to an extended position in the second chamber toward and away from said base plate to push the bill into the second chamber by movement of said pusher plate from the retracted position to the extended position;

driving means disposed within said first chamber for operating said link means to travel said pusher plate between the retracted and extended position;

said driving means being disengageably in driving connection with a motor provided in said conveyer means for receiving driving force; and

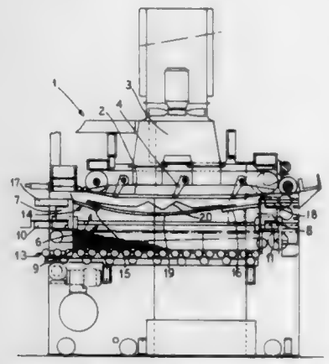
said driving means retaining the pusher plate of said pusher means in the extended position to prevent movement of the bill from the second chamber to the first chamber except when the bill is supplied through said slit into said first chamber.

5,344,136

SHEET SUPPORTING ARRANGEMENT FOR USE IN A STACKER

Bernard Capdeboscq, St. Just-Chaleyssin, France, assignor to SA Martin, Villeurbanne, France

Filed Jun. 29, 1993, Ser. No. 82,974
Claims priority, application France, Jul. 3, 1992, 92 08679
Int. Cl.[5] B65H *31/26*
U.S. Cl. 271—189 **6 Claims**



1. In a sheet supporting arrangement for a stacker which stacks sheets and comprises a front wall and a rear wall, a plurality of actuators mounted on the front and rear wall, each actuator having a cylinder receiving a piston with a piston rod, said rods forming an upper support grid, the improvements comprising each actuator of the upper grid comprising an elastically, though not permanently deformable rod which is set at one of its ends in the piston that is also elastically, though not permanently deformable and each rod being guided by a bearing and by the circumferential surface of the piston sliding in the inner wall of the cylinder of the jack as the rod moves between an extended and retracted position.

5,344,137

METHOD FOR IMPROVING THE ACCURACY OF A BASEBALL PITCHING MACHINE

Yutaka Komori, Ayase, Japan, assignor to Taito Corporation, Tokyo, Japan

Division of Ser. No. 777,612, Oct. 16, 1991, Pat. No. 5,174,565.
This application Sep. 16, 1992, Ser. No. 945,702
Int. Cl.[5] F41B *15/00*
U.S. Cl. 273—26 D **7 Claims**

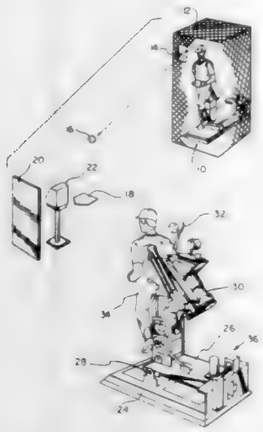
1. In a method of pitching a baseball from a baseball pitching machine wherein a ball throwing assembly is mounted on a secondary platform that may be inclined to adjust the elevation of a pitched baseball, the improvement comprising the steps of:

a. tracking at a control assembly the inclination of the secondary platform, the control assembly controlling the inclination of the secondary platform;

b. determining with an indicator means located at least in part on said secondary platform when the secondary platform has a predetermined inclination; and

c. correcting the inclination tracked by the control assembly

to the predetermined inclination when the tracked inclination is not the predetermined inclination and the indicator



means determines that the secondary platform has the predetermined inclination.

5,344,138

TENNIS TRAINING APPARATUS

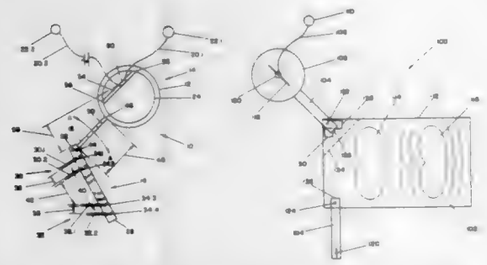
Ernst W. Hellriegel, 367A Fantail Loop NE., Austin, Tex. 78734

Filed Jun. 14, 1991, Ser. No. 715,356

Claims priority, application South Africa, Nov. 15, 1990, 90/9156

Int. Cl.[5] A63B *61/00*

U.S. Cl. 273—29 A **42 Claims**



1. An apparatus for training a tennis player to properly toss and strike a tennis ball on service, the apparatus comprising:

means defining a circular target base area for receiving a tennis ball when the tennis ball is properly tossed but not struck by a tennis player, said target base area having a diameter between approximately 150 mm and 500 mm;

means for positioning the feet of the tennis player relative to said target base area means;

a connecting member pivotally connecting said target base area means to said feet positioning means by a pivot means; and

an imaginary vertical cylinder having a base thereof defined by said target base area means.

5,344,139

RACKET SHAFT MOUNTING DEVICE

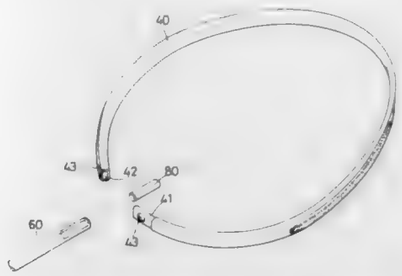
Chao-I Wu, Taichung Hsien, Taiwan, assignor to Jan Sports Products Corp., Taichung Hsien, Taiwan

Filed Nov. 9, 1993, Ser. No. 149,300

Int. Cl.[5] A63B *49/02*

U.S. Cl. 273—73 G **4 Claims**

1. A racket shaft mounting device comprising a head frame to hold a network of catgut, a shaft having a rear end terminated to a hand grip and a front end connected to said head frame by a connecting device, wherein said head frame is made in the shape of an open loop having a projecting rod with a first through hole on one end thereof, a recess and a second through hole on an opposite end thereof, said projecting rod being fitted into said recess permitting said first and second through



holes to be aligned; said connecting device comprises a connecting rod having one end fitted into said first and second through hole and an opposite end fitted into a hole on the front end of said shaft, and a thermosetting covering layer covered over the connecting area between said head frame and said shaft.

5,344,140

GOLF CLUB HEAD AND METHOD OF FORMING SAME

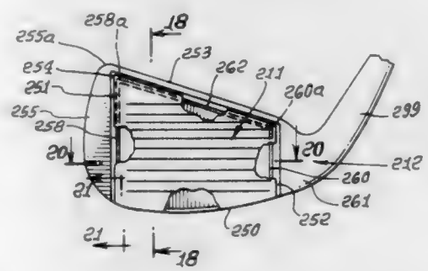
Donald A. Anderson, 6600 Werner Ave., #150, Huntington Beach, Calif. 92649, assignor to Donald A. Anderson, Huntington Beach and Donald J. C. Sun, San Diego, both of Calif., a part interest

Continuation-in-part of Ser. No. 806,348, Dec. 13, 1991, Pat. No. 5,261,663, which is a continuation-in-part of Ser. No. 549,973, Jul. 9, 1990, Pat. No. 5,094,383, which is a continuation-in-part of Ser. No. 492,973, Mar. 13, 1990, Pat. No. 5,024,437, which is a continuation-in-part of Ser. No. 364,698, Jun. 12, 1989, abandoned. This application Dec. 28, 1992, Ser. No. 997,161

The portion of the term of this patent subsequent to Jun. 18, 2008, has been disclaimed.

Int. Cl.[5] A63B *53/04*

U.S. Cl. 273—78 **37 Claims**



10. A golf club head, comprising

a) a main body portion formed by an investment casting of a first metallic material,

b) a face plate formed of a second metallic material which is forged and is substantially softer than said first material,

c) means joining the periphery of the face plate to said main body portion to form a high strength, forged face plate for said golf club head,

d) the metallic materials for said face plate and main body portion being of substantially the same composition,

e) said means joining the periphery of the face plate to said main body portion consisting of welding extending in a loop,

f) said head having a top wall, a bottom wall, a toe and a heel, and said loop characterized by at least one of the following:

i) projects toward and closer to said top wall than to said toe

ii) projects toward and closer to said bottom wall than to said toe

iii) projects toward and closer to said top wall than to said heel

iv) projects toward and closer to said bottom wall than to said heel.

5,344,141

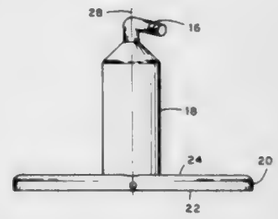
PUTTER

James D. Smith, 509 Parlem Dr., Chattanooga, Tenn. 37415

Filed Apr. 8, 1993, Ser. No. 44,641

Int. Cl.[5] A63B *53/02*

U.S. Cl. 273—80.2 **9 Claims**



1. A putter for use in the game of golf to impart motion to a golf ball on a surface comprising:

a putter face having front and rear surfaces and top and bottom edges, said front surface of said putter face defining a substantially planar contact surface for contacting the golf ball;

an elongate putter barrel, having at least a bottom edge, fixedly connected to said rear surface of said putter face and defining a barrel axis passing through the center of said barrel along its length, said barrel disposed with respect to said putter face such that said barrel axis is substantially perpendicular to said contact surface, said putter face and putter barrel together comprising a putter head;

connector means fixedly connected to said putter barrel at an attachment point for providing a connection to said putter head;

elongate shaft means fixedly connected to said connector means having grip and putter head ends and defining a shaft axis generally passing through said shaft for being gripped by a user at said grip end, connected to said connector means at said putter head end and moved by a user to impart motion to said putter head;

said connector means and shaft means being configured to provide that said shaft axis does not intersect the center of mass of said putter head; and

said connector means further connected to said putter barrel to impart motion along a line lying within a vertical plane oriented perpendicular to said putter face, passing through said center of mass of said putter head and containing said barrel.

5,344,142

SIMULATED VOLLEYBALL GAME AND AIR BUBBLE SCORING SYSTEM

Jeane K. Barreira, 35D Middlesex Ave., Metuchen, N.J. 08840

Filed Oct. 14, 1993, Ser. No. 136,556

Int. Cl.[5] A63F *9/00*

U.S. Cl. 273—85 F **24 Claims**

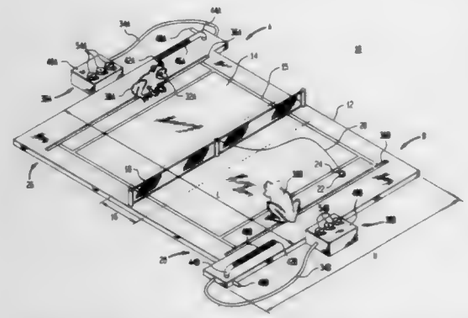
1. A simulated volleyball game comprising:

a game board having a playing surface with a center zone thereon and having a predetermined width and a predetermined length, said predetermined length including opposing first and second sides;

a tethered object fixed to said game board within said center zone and being adapted for projected movement thereacross;

a plurality of simulated players arranged on said playing surface for movement thereabout, said plurality of simulated players being adapted to propel said tethered object across said center zone;

propulsion means associated with each of said simulated players for propelling said tethered object across said center zone toward one of said opposing first and second sides; and



scoring means for constantly displaying the score, said scoring means including at least one pneumatic scoring mechanism and a display device, said display device including a translucent container having a liquid therein and being fluidly connected to said pneumatic scoring mechanism so that a preselected number of air bubbles are selectively released from said at least one pneumatic scoring mechanism to said translucent container.

5,344,143

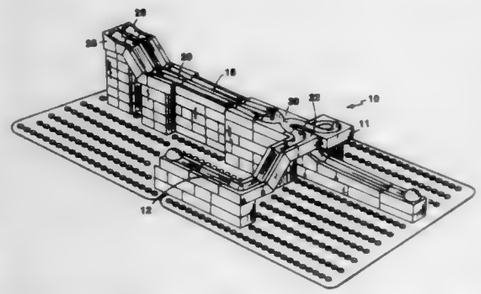
MARBLE RUN GAME

Lance Yule, 218 Main St., Silver Lake, N.H. 03875

Filed Jul. 19, 1993, Ser. No. 93,803

Int. Cl.[5] A63F *7/00*

U.S. Cl. 273—118 R **11 Claims**



1. A marble run game comprising a set of block elements constructed and arranged for assembly and disassembly by a user to create an extended, generally horizontal path for travel of a marble,

each said block element having a top surface and one or more side surfaces, said top surface and at least one said side surface of said block element together defining at least one groove for generally horizontal travel of a marble along said top surface and through a plane of said side surface, and

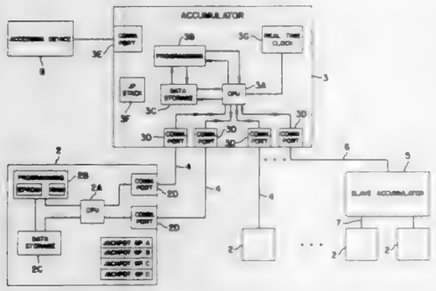
each said block element further comprising means for securement with an adjacent block element, said means for securement comprising a first securement element defined by a side surface of a first block element and a cooperating second securement element defined by an adjacent side surface of an adjacent second block element, said first and

second securement elements adapted to inter-engage in a manner to secure alignment of grooves defined by the first and second block elements and to resist separation of the first and second block elements under axially-applied horizontal forces.

5,344,144
PROGRESSIVE JACKPOT GAMING SYSTEM WITH ENHANCED ACCUMULATOR

Joseph W. Canon, Las Vegas, Nev., assignor to Mikohn, Inc., Las Vegas, Nev.

Filed Sep. 27, 1990, Ser. No. 589,428
Int. Cl.[5] A63F *9/24*; G07F *17/34*; G06F *15/44*
U.S. Cl. 273—138 A **40 Claims**
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 35 Pages)



1. A progressive accumulator for use in a progressive jackpot gaming system in which a plurality of gaming machines are adapted to receive coins-in and to have one or more jackpot groups whose respective jackpot values are determined based upon the coins-in and the jackpot-wins at the gaming machines, said gaming machines developing coins-in information including information related to each coin-in and jackpot-win information including information related to each jackpot-win and being adapted to make said coins-in information and said jackpot-win information available to the accumulator; the accumulator comprising:

a real time clock;

means responsive to said real time clock: for receiving said coins-in and jackpot-win information from said gaming machines; for electronically tagging each jackpot-win in said jackpot-win information with a time and date of receipt; and for establishing jackpot values for said gaming machines based on said coins-in information and said jackpot-win information;

means for storing each said electronically tagged jackpot-win;

and means for enabling said established jackpot values to be made available for supply to said gaming machines.

5,344,145
GAMING OR AMUSEMENT MACHINES

Neville D. Chadwick, and Terence Howard, both of Nottingham, England, assignors to Bell-Fruit Manufacturing Company Limited, Nottingham, England

Filed Dec. 21, 1992, Ser. No. 994,274
Claims priority, application United Kingdom, Jul. 1, 1992, 9213945
Int. Cl.[5] A63F *9/24*
U.S. Cl. 273—138 A **15 Claims**

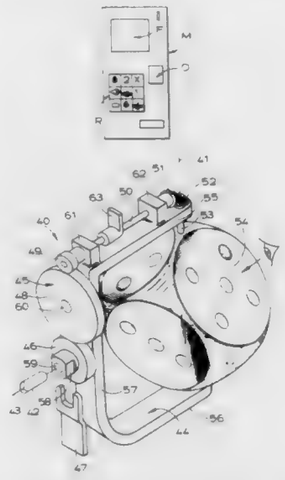
1. A machine for playing a game or for amusement comprising:

a viewing station;

a body having a plurality of symbols provided at said viewing station, said body being viewable in use at said viewing station along a sight-line and being supported by axle means, said axle means comprising a single axle passing through said body, said body having a plurality of orientations with respect to said viewing station;

sensor means for detecting the orientation of said body and for producing signals indicative of said symbol presented to said viewing station by said body;

drive means for moving said body between different orientations in which different symbols on said body are presented in turn to said viewing station; and

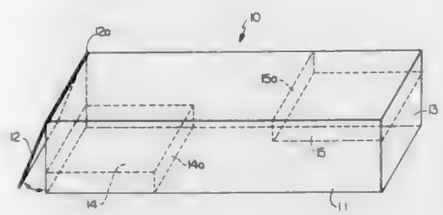


control means for receiving signals from said sensor means and for controlling said drive means so that a chosen symbol presented to said viewing station is known to said control means and is controlled by it, wherein said body is movable about a first axis, and said first axis is movable about a second axis, and wherein said chosen symbol is presented to said viewing station face-on substantially perpendicular to said sight-line.

5,344,146
PLAYING CARD SHUFFLER

Rodney S. Lee, 601 E. Parmelee St. #15, Buffalo, Wyo. 82834

Filed Mar. 29, 1993, Ser. No. 38,841
Int. Cl.[5] A63F *1/12*
U.S. Cl. 273—149 R **12 Claims**



1. A card shuffler for shuffling a plurality of cards, comprising:

a hollow housing having a substantially rectangular interior of a predetermined size, and having first and second ends;

first card cutting means attached proximally to said first end of said hollow housing, wherein said first card cutting means includes means for defining a partition parallel with said first end;

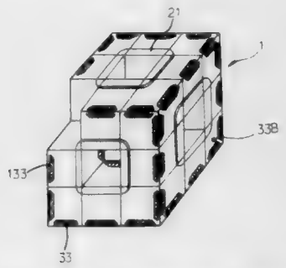
second card cutting means attached proximally to said second end of said hollow housing, said second card cutting means being diametrically opposite to said first card cutting means, wherein said second card cutting means includes means for defining a partition parallel with said second end, and said second card cutting means is disposed from said first card cutting means sufficient to accommodate some of said plurality of cards therein; and

means for providing access to said hollow housing for placing and removing said plurality of cards inside said hollow housing.

5,344,147
MULTI-CUBE PUZZLE

Sang-dae Lee, 1403-403, Mokdong Apartment, 329 Sinjung-6 dong, Yangchun-ku, Rep. of Korea

Filed Sep. 18, 1992, Ser. No. 946,840
Claims priority, application Rep. of Korea, Oct. 28, 1991, 1991/19000; Jul. 7, 1992, 1992/12040
Int. Cl.[5] A63F *9/08*
U.S. Cl. 273—153 S **12 Claims**



1. A multi-cube puzzle for arranging a defined pattern, the multi-cube puzzle comprising:

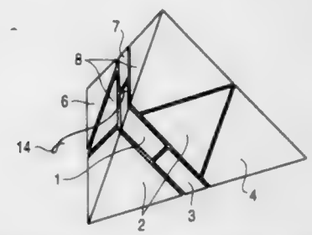
a body assembly having a plurality of tracks formed thereon, the body assembly including a plurality of body elements centrally interconnected and extending radially outward, wherein each of the body elements of the body assembly has a bottom with legs extending therefrom which are configured to directly interlock with legs of the other body elements for centrally interconnecting the body elements of the body assembly together, the tracks being formed to extend in at least three different directions; and

a number of cubic elements inserted within the tracks for linear movement of the cubic elements around the body assembly, each cubic element including a portion of the defined pattern formed on at least one side thereof.

5,344,148
THREE-DIMENSIONAL PUZZLE

Sabine Asch, Heilbronner Strasse 100, 7120 Bietigheim-Bissingen, Fed. Rep. of Germany

Filed Feb. 17, 1993, Ser. No. 971,821
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1990, 9012477[U]
Int. Cl.[5] A63F *9/08*
U.S. Cl. 273—156 **12 Claims**



1. A three-dimensional link chain puzzle including puzzle elements which together constitute chain links when in an unassembled condition and form a polyhedron when in an assembled condition, said puzzle elements comprising:

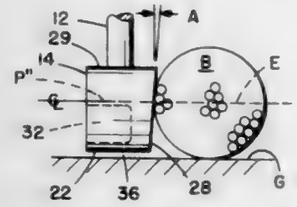
a plurality of cornered rings which form an interrupted plane disk which extends through a center of the assembled polyhedron, and

a plurality of irregular polyhedron parts which are disposed above and below the plane disk formed of the rings in the assembled polyhedron.

5,344,149
GOLF PUTTER

Charles J. Miller, 1 Jennings Ct., Westport, Conn. 06880

Filed Apr. 26, 1993, Ser. No. 54,054
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 B **16 Claims**



5. A golf putter comprising:

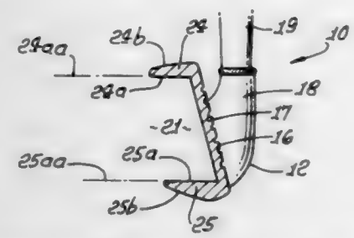
a shaft; and

a head connected to an end of the shaft, the head having a front ball-striking face with a negative loft, a prime striking area for striking an equator of a golf ball and, a main body with a weight distribution such that a centerline of weight distribution of the head is located above an upper boundary of the prime striking area, wherein the negative loft of the ball-striking face and the weight distribution of the head additively combining to very quickly reduce the amount of skid of the golf ball after being hit by the putter.

5,344,150
IRON GOLF CLUB HEAD WITH STRAIGHT, HORIZONTAL RECESS

Glenn Schmidt, Malibu, and Richard C. Helmstetter, Carlsbad, both of Calif., assignors to Callaway Golf Company, Carlsbad, Calif.

Continuation-in-part of Ser. No. 921,857, Aug. 5, 1992, Pat. No. 5,282,625. This application Jan. 19, 1993, Ser. No. 999,251
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 H **18 Claims**



1. A golf club head having a body defining a heel, toe, top wall, sole, and a front wall defining an upwardly and rearwardly inclined front face in ball-addressing position of the head, and comprising

a) said body defining a forwardly extending main recess located rearwardly of said front wall.

b) and said body having upper and lower projections extending rearwardly from said front wall above and below said main recess, said projections being rearwardly elongated and said recess being horizontally elongated in said ball-addressing position of the head,

c) said upper projection having a lowermost surface and said lower projection having an uppermost surface, vertical

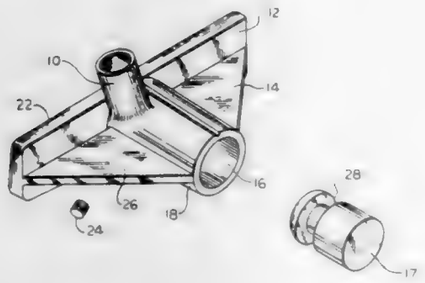
planes normal to said front face intersecting said surfaces to define lines that extend horizontally rearwardly in said ball-addressing position, said lines throughout their lengths extending in parallel relation,

d) each of said upper and lower projections having an overall rearward length dimension and a thickness dimension outwardly from said recess, said length dimension substantially exceeding said thickness dimension.

5,344,151
GOLF PUTTER HEAD

Bartley D. Anderson, 3925 Pine Meadow Rd., New Albany, Ohio 43054, and Robert V. Carney, Sr., 3962 Courter Rd., Pataskala, Ohio 43062

Filed Aug. 11, 1993, Ser. No. 107,291
Int. Cl.[5] A63B *53/08*
U.S. Cl. 273—171 **1 Claim**



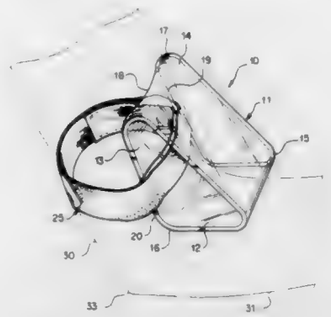
1. A golf putter head comprising in combination:
a. a putter blade having a striking surface, a rear and a center;
b. a hosel for accepting a gripped shaft;
c. a weight receptacle having a plurality of screw holes and positioned at the longitudinal center of said putter head and positioned perpendicular to a plane containing the rear of said putter blade;
d. a plurality of set screws;
e. a variety of graduated weights each notched for allowing said notch to align with said set screws when said weight is properly introduced into said weight receptacle;
f. said weight receptacle being configured for accepting any one of said variety of graduated, notched weights which are secured into said weight receptacle using said set screws which tighten through said screw holes of said weight receptacle into said notch of said one weight, and
g. a plurality of horizontally positioned stabilizers which are affixed to both said weight receptacle and said rear of said putter blade for enabling said weight receptacle to be embodied into the general configuration of said putter head.

5,344,152
GOLF SWING TRAINING DEVICE

Thomas W. Brannen, 12485 Preserve La., Alpharetta, Ga. 30201

Filed Aug. 2, 1993, Ser. No. 100,412
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—189 R **9 Claims**

1. A golf swing training device suitable for being positioned on an upper arm of a golfer to limit the degree of bending of the forearm relative to the upper arm during a golf swing, the device comprising:
a base portion including a rear end, a forward end, a pair of opposed side edges, an upper surface and a lower surface, said lower surface including a concave portion intermediate said side edges and being positionable on the golfer's bicep;
a forward wall extending upwardly from said upper surface of said base portion at said forward end, said forward wall and said base portion forming a substantially L-shaped configuration, said forward wall being adapted to contact the golfer's forearm during the golf swing; and

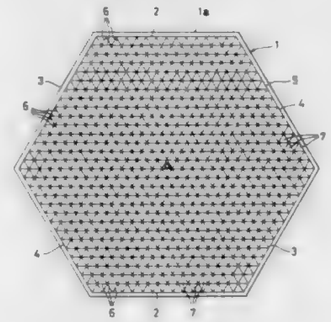


a strap attached to said base portion and fastening means for securing said strap about the upper arm.

5,344,153
BOARD GAME

Sadatoshi Watanabe, No. 26-5, Tokiwadaira 7-chome, Matsudo-shi, Chiba, Japan

Continuation of Ser. No. 629,955, Dec. 19, 1990, abandoned.
This application Aug. 5, 1992, Ser. No. 924,786
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—271 **9 Claims**



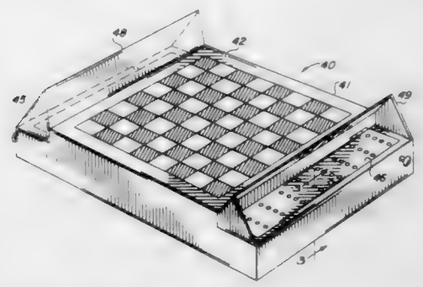
1. A method for playing a game, comprising the steps of:
providing a game board in which a triangular non-playable central space and a plurality of playable triangular spaces therearound are defined within an interior of a hexagon having three pairs of parallel sides, said triangular non-playable and playable spaces being defined by three pluralities of straight lines spaced equidistantly from each other and respectively extending parallel to corresponding ones of the three pairs of parallel sides of the hexagon, wherein the triangular non-playable central space is provided a distinctive appearance to identify it as a space upon which a play piece is not to be placed during play and is located substantially at the center of the board and three triangular center-adjacent playable spaces are located immediately adjoining said central space, the center-adjacent playable spaces being defined by lines that are thicker than lines defining all other triangular spaces;
providing each of three players with one of three mutually distinguishable sets of pluralities of play pieces each shaped and sized to be placed on the triangular playable spaces of the game board, the total number of play pieces of all three sets taken together being equal to the total number of playable spaces;
placing of a respective play piece, by each of at least two players playing in a selected order on a different one of the three center-adjacent playable spaces;

placing of respective play pieces on one of then available unoccupied playable spaces immediately adjacent to one of then occupied playable spaces, by each player in accordance with said selected order; and
playing of respective pieces by the players in said selected order in accordance with rules requiring that
when two of the playable spaces adjacent one of the then occupied center-adjacent spaces are occupied by play pieces of a player different from that of the player whose one play piece is occupying said then occupied center-adjacent playable space, said occupying one play piece is removed and is replaced by a play piece of the different player who played said two play pieces earlier,
when a particular player's play piece is occupying a particular playable space, and another player's play pieces are placed on playable spaces immediately surrounding that particular playable space, the play piece on the surrounded playable space is replaced by a play piece from the same set of play pieces as the surrounding play pieces,
when a first plurality of play pieces is surrounded by a second plurality of play pieces all of which belong to another player, the surrounded play pieces are removed and are replaced by a corresponding number of play pieces that are of the same set as the surrounding play pieces,
when one playable space between two playable spaces is unoccupied, the next player to play in said order must place his play piece on said unoccupied playable space,
when play pieces of a particular player surround a plurality of playable spaces but there is an unoccupied playable space among the surrounded playable spaces, then none of the surrounded play pieces may be replaced, no player placing a play piece on the non-playable central space at any time during the play of the game, and
when all available playable spaces on the hexagon are occupied by said play pieces, the winner of the game is declared on the basis of a numerical difference between the number of play pieces available to each of the players for play as compared to each player's play pieces removed from the board.

5,344,154
BOARD GAME WITH TRAP DOORS

Steven W. Langstroth, 500 S. Carmichael Ave. #332 D, Sierra Vista, Ariz. 85635

Filed Sep. 30, 1993, Ser. No. 129,347
Int. Cl.[5] A63F *3/02*
U.S. Cl. 273—287 **10 Claims**

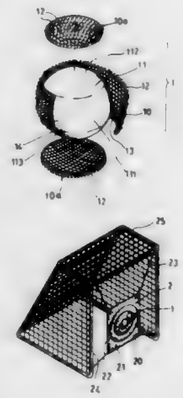


9. A game comprising:
a plurality of squares in an array in a single plane wherein said squares collectively form a playing field and each of said squares is a trap door;
a first control panel and a second control panel, each control panel having a plurality of holes in an array corresponding to the squares in respective halves of said playing field;
a plurality of switch mechanisms connected one to each square for moving the square out of said plane, wherein said plurality of switch mechanisms are situated one to each hole; and
a plurality of removable buttons located in some of said holes in each control panel for actuating some of said switch mechanisms, the number and placement of said buttons being determined by a set of rules for play in which pieces are moved on said squares.

5,344,155
HOOK AND LOOP FASTENED PROJECTILE AND TARGET DEVICE

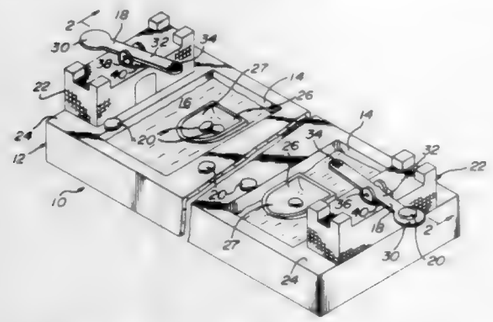
Jung-Feng Huang, Taichung, Taiwan

Filed Mar. 28, 1994, Ser. No. 218,812
Int. Cl.[5] A63B *67/00*; **F41J** *7/00*
U.S. Cl. 273—346 **3 Claims**



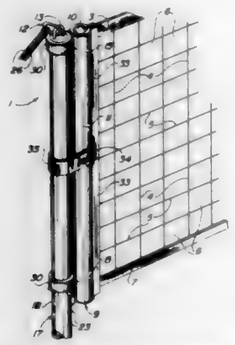
1. A projectile and target means comprising:
a target means **2**; and
at least one spherical projectile **1** operatively thrown onto said target means **2** to be fastened to said target means;
each said spherical projectile **1** including: a spherical core **11** made of elastomer materials; a plurality of hook-threaded sheet members **10**, **10***a*, **10***b* circumferentially coated on the spherical core **11** by an elastic bonding adhesive **14**; each said hook-threaded sheet member **10**, **10***a*, **10***b* including a hook-threaded surface portion **12** having a knitting base interlaced with a plurality of elastic rubber threads **13** with the elastic bonding adhesive **14** adhered on a back portion of the knitting base of each said hook-threaded sheet member **10**, **10***a*, **10***b* and on a circumferential surface of the spherical core **11**, whereby upon curing and setting of the elastic bonding adhesive **14** in between each hook-threaded sheet member **10**, **10***a*, **10***b* and the core **11**, the hook-threaded sheet members **10**, **10***a*, **10***b* will be firmly coated on the spherical core **11**; and a sealant adhesive **15** filled in a plurality of apertures, each said aperture existing at each junction portion between every two neighbouring hook-threaded sheet members **10**, **10***a*, **10***b* and between two opposite end portions of the hook-threaded sheet member **10** for sealing each said aperture; and
said target means **2** including: a target blanket **20** secured to a supporting frame **24** by a plurality of fasteners **23**, a screen **25** circumferentially disposed on the supporting frame **24**, with the target blanket **20** having a loop-threaded surface portion **21** formed on a surface portion of a fabric sheet **22** of the target blanket **20**, whereby upon throwing of the spherical projectile **1** onto the target means **2**, the hook-threaded surface portion **12** on each hook-threaded sheet member **10**, **10***a*, **10***b* will be fastened to the loop-threaded surface portion **21** on the target means **2** for attaching the projectile **1** on the target means **2**.

5,344,156
ACTION GAME
John M. Levin, 412 Fairview Rd., Penn Valley, Pa. 19072
Filed Nov. 2, 1992, Ser. No. 970,355
Int. Cl.[5] A63F *9/02*
U.S. Cl. 273—355 9 Claims



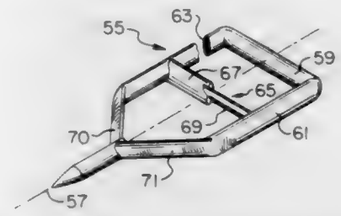
1. An action game comprising:
(a) a reservoir means for holding a quantity of a material therein;
(b) a plurality of projectiles;
(c) a floatable object which floats on the material within the reservoir means, the object comprising a compartment for holding a sufficient number of the projectiles for submerging the object in the material; and
(d) means for propelling at least one of the projectiles toward the reservoir, wherein the material is liquid,
and wherein the reservoir means comprises two reservoirs located adjacent one another, each of the two reservoirs being capable of holding at least one of the floatable objects.

5,344,157
PORTABLE VOLLEYBALL NET ASSEMBLY
Mahan K. McCord, 301 Live Oak, Atlanta, Tex. 75551
Filed Sep. 13, 1993, Ser. No. 121,150
Int. Cl.[5] A63B *61/00*
U.S. Cl. 273—411 13 Claims



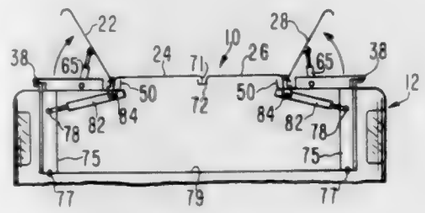
1. A portable volleyball net assembly for erection on a playing surface, comprising a volleyball net having opposite edges; elongated, cylindrical net mounts fixedly attached to said edges of said volleyball net; at least one support means fixedly carried by said net mounts; support legs engaging the playing surface and slidably receiving said support means in vertically adjustable relationship for vertically adjusting the height of said volleyball net above the playing surface; at least one loop-pile fastener engaging said support legs and said net mounts for adjustably securing said net mounts and said net at a selected height on said support legs above the playing surface; and tensioning cords connected to the tops of said support legs and anchored to the playing surface for applying tension to said volleyball net and securing said net mounts and said support means in a selected position on said support legs.

5,344,158
MARTIAL ART THROWING AND HAND WEAPON
Lance E. Gridley, 13473 W. Oregon Ct., Lakewood, Colo. 80228
Filed Jan. 14, 1994, Ser. No. 181,014
Int. Cl.[5] A63B *65/02*
U.S. Cl. 273—419 12 Claims



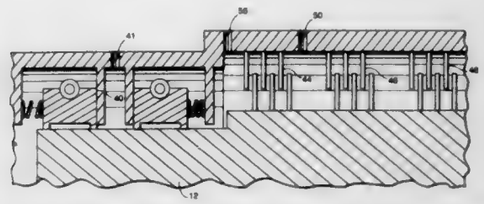
1. Martial arts throwing and hand-held weapon, said weapon comprising:
a. an oblong frame having a pair of spaced-apart parallel opposite side members, an integral rear bar that connects rear ends of said members, and a forward portion comprising a pair of oblique members that converge from front ends of said side members and connect at an apex;
b. a cross member spaced forwardly of said frame rear bar and extending transversely between said side members, wherein the spacing between said side members is sufficient to admit several fingers of the weapon user, said cross bar being adapted for grasping by the user's fingers and said rear bar adapted to be engaged by the palm of the user's hand;
c. a central stem extending forwardly from said apex; and
d. a pointed weapon tip secured to said stem and extending forwardly therefrom.

5,344,159
MULTIPLE PANEL CLOSURE FOR OPEN TOP OF BED OF PICKUP TRUCK
David L. Powell, 1221 Fairview, Angels Camp, Calif. 95222
Continuation of Ser. No. 790,862, Nov. 12, 1991, abandoned.
This application May 4, 1993, Ser. No. 58,811
Int. Cl.[5] B60P *7/02*
U.S. Cl. 296—100 23 Claims



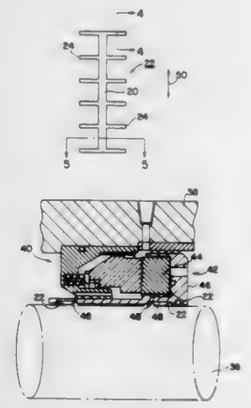
1. A closure assembly for a structure having an opening surrounded by a main frame having a pair of opposed ends and a pair of opposed sides comprising:
a first pair of panels for one side of the frame and a second pair of panels for the opposite side of the frame, the panels having closed positions in which the panels are generally coplanar with each other, each panel being movable to an open position from the closed position thereof, there being a first junction between the first pair panels, a second junction between the second pair of panels, and a third junction between the first and second pairs of panels;
first pivot means at the first junction for mounting each of the first pair of panels for pivotal movement about a first axis substantially parallel to the sides of the frame, whereby the portion of the opening of the structure covered by each of the first pair of panels can be opened;
second pivot means at the junction of the second pair of panels for mounting each of the second pair of panels for pivotal movement about a second axis substantially parallel with the first axis, whereby the portion of the opening covered by each of the second pair of panels can be opened;
third means coupled with the first pivot means for pivoting the first pair of panels as a unit into a respective side position generally coextensive with one side of the structure and generally transverse to a plane of the opening when one of the panels of the first pair has been pivoted into a position adjacent to the other panel of the first pair;
fourth means coupled with the second pivot means for pivoting the second pair of panels as a unit into a respective side position generally coextensive with the other side of the structure and generally transverse to the plane of the opening when one of the panels of the second pair has been pivoted into a position adjacent to the other panel of the second pair; and
brace means for supporting the first and second pairs of panels when the panels are in the respective side positions, said brace means having elongated, extensible structure extending transversely of the sides near one of said ends and inwardly of the opening when the panels are generally coplanar with each other, the first pivot means having a first channel member for channelling rain water to one end of a first panel, and a second channel member for channelling rain water to an end of one of a second panel.

5,344,160
SHAFT SEALING OF STEAM TURBINES
Steven P. Scarlata, Averill Park, and Adrian Missana, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Dec. 7, 1992, Ser. No. 986,573
Int. Cl.[5] F16J *15/447*
U.S. Cl. 277—3 3 Claims



1. In a multi-stage steam turbine having a first rotating member including a shaft, a second stationary member surrounding said first member and defining a steam flow path having a high-pressure inlet at one end of the turbine and a low-pressure outlet at its opposite end, a shaft sealing system adjacent the inlet and outlet ends of said turbine, comprising:
a pair of axially spaced labyrinth seals about said shaft adjacent said high-pressure inlet end and defining an annulus therebetween;
a pair of axially segmented circumferential seals about and contacting said shaft defining an annulus therebetween and spaced axially outwardly of said labyrinth seals;
an axially outermost segmented circumferential seal of said pair of segmented circumferential seals constituting an air seal sealing between ambient and the annulus between said segmented circumferential seals;
another of said pair of segmented circumferential seals constituting an outer steam seal sealing between said labyrinth seals and the annulus between said segmented circumferential seals,
means connecting the annulus between said labyrinth seals and a stage of said turbine for supplying steam leaked past an axially innermost one of said pair of labyrinth seals to a stage of said turbine;
segmented circumferential seal about said shaft adjacent the outlet end of said turbine for sealing between ambient and turbine exhaust flow; and
said outer steam seal and an outermost of said pair of labyrinth seals defining an annulus therebetween and means connecting the latter annulus with another stage of said turbine downstream of the first-mentioned turbine stage.

5,344,161
SPRING FOR CENTERING TWO ANNULAR BODIES RELATIVE TO EACH OTHER
Jan Sandgren, Providence, R.I., assignor to EG&G Sealol, Inc., Cranston, R.I.
Continuation of Ser. No. 842,000, Feb. 28, 1992, abandoned.
This application Mar. 15, 1993, Ser. No. 31,472
Int. Cl.[5] F16J *15/34*
U.S. Cl. 277—12 2 Claims



1. A ring carrier for holding a ring, the carrier comprising:
an annular body;
an annular pocket formed in said annular body for holding the ring, said pocket having a bottom, a radially inner wall, and a radially outer wall;
an annular groove formed in said radially inner wall of said pocket; and
a spring in said annular groove, the spring including a central spine, said spine being elongated along one axis thereof and multiple fingers extending from the spine, said fingers being elongated along an axis substantially orthogonal to the elongated axis of the spine, wherein each of the fingers has an area cross-sectional to its elongated axis which is smaller than an area of said spine which is cross-sectional to its elongated axis,
whereby the spring serves to center the ring regardless of the relative thermal expansion between the ring and the carrier.

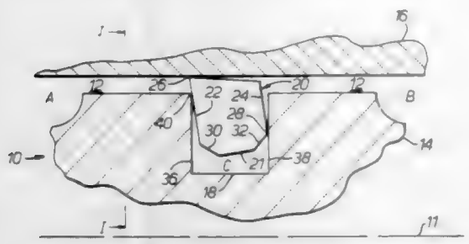
5,344,162
SEALING RING FOR GAS TURBINE ENGINES
John D. Kernon, Clevedon, and Mark J. Knight, Alveley, both of England, assignors to Rolls-Royce plc, London, England
Filed Jan. 22, 1993, Ser. No. 7,962
Claims priority, application United Kingdom, Feb. 29, 1992, 9204421
Int. Cl.[5] F16J *15/42*
U.S. Cl. 277—25 5 Claims

1. A rotor assembly comprising a first rotatable member having a surface with a groove formed therein, a second rotatable member concentric with the first member and spaced apart therefrom to define an annular gap therebetween, and an

expandable sealing ring located in the groove for sealing the annular gap, the sealing ring comprising:

a first pair of adjoining surfaces defining a first edge, said first edge being the radially outermost part of the sealing ring, and a second pair of adjoining surfaces defining a second edge diagonally opposite and spaced a predetermined distance from the first edge, and

an expandable scarf joint connecting circumferential ends of



said sealing ring, wherein said predetermined distance is defined to permit, via the centrifugal force generated when the rotor is rotated at high speed, the first edge to sealingly contact the second member, the second edge to sealingly contact the groove, and one of the first pair of adjoining surfaces to contact the groove, wherein the plane of the scarf joint lies between the first and second edges of the ring so that continuous line seal contacts are maintained at both the first and second edges of the ring.

5,344,163

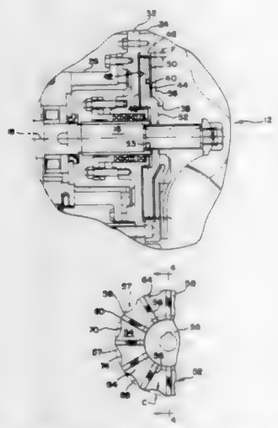
DYNAMIC SHAFT SEAL FOR PUMPING FIBROUS SLURRIES

Daniel R. Roll, Seneca Falls, and George Wilson, Skaneateles, both of N.Y., assignors to Gould's Pumps, Incorporated, Seneca Falls, N.Y.

Filed Sep. 28, 1992, Ser. No. 952,290

Int. Cl.[5] F16J *15/44*

U.S. Cl. 277—67 **10 Claims**



1. A dynamic shaft seal device for a fluid handling apparatus for pumping fibrous slurries, the fluid handling apparatus comprising an impeller mounted on a rotating shaft disposed in a pump housing, the shaft extending through an aperture extending from the pump housing into an impeller casing forming part of the pump housing, prime mover means adapted to rotate the shaft and the impeller, a slurry of a dispersed fibrous material in a fluid disposed in the impeller casing, a repeller chamber formed in the pump housing and in communication with the impeller casing, the repeller chamber having an outer annular surface, the repeller chamber located in proximity to the aperture, a repeller attached for rotation with the shaft, the repeller extending into the repeller chamber to force a portion of the fluid in the impeller casing to move in a vortex in a direction away from the aperture, means associated with the repeller to apply shear forces to the fluid vortex, and create circulatory flow within the vortex to maintain the dispersion of the fibrous material in the slurry, the means including an outer circumferential surface on the repeller, and scalloped indentations formed in the outer circumferential surface of the repeller, the repeller including a plurality of radially extending vanes on one face of the repeller, and each scalloped indentation extends between two adjacent vanes.

5,344,164

MECHANICAL SEALS

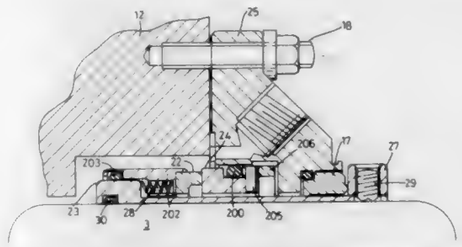
Christopher J. Carmody, Conisbrough, and Christopher J. Rea, Moorgate, both of England, assignors to AES Engineering Limited, South Yorkshire, England

Filed Oct. 8, 1992, Ser. No. 960,092

Claims priority, application United Kingdom, Oct. 10, 1991, 9121565.7

Int. Cl.[5] F16J *15/34, 15/54*

U.S. Cl. 277—81 R **25 Claims**



1. A cartridge-mounted mechanical seal comprising a sleeve on which are mounted a rotary and a stationary component, having adjacent faces, and bellows acting against the rotary component to urge the rotary component face into mating contact with the stationary component face, wherein the stationary component of the seal is pivotally mounted about a first axis perpendicular to the longitudinal axis of the seal on at least one primary pivot pin, set in a pivot ring which is in turn pivotally mounted about a second axis perpendicular to the longitudinal axis of the seal with respect to a fixed part of the seal which, in use, remains fixed in equipment in which the seal is used, the arrangement allowing a degree of pivotal movement, when the seal is in use, of the stationary component relative to the pivot ring about the at least one primary pivot and a degree of pivotal movement of the pivot ring relative to the stationary parts of the item of equipment and hence maintaining the stationary and rotary components of the seal substantially in alignment despite any out-of-squareness in the equipment, wherein the said at least one primary pivot is located in at least one respective slot provided in the stationary component and enters the slot in a radial direction, at least part of the pivot ring encircling at least part of the outside diameter of the stationary component.

5,344,165

METAL GASKET HAVING FLUID HOLE SEALING DEVICE WITH DIFFERENT SPRING CONSTANT

Yoshio Miyaoh, Tokyo, Japan, and Takashi Okano, West Bloomfield, Mich., assignors to Ishikawa Gasket Co., Ltd., Tokyo, Japan

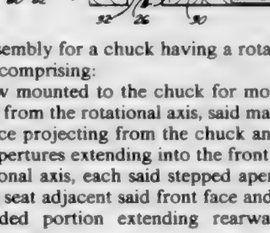
Continuation of Ser. No. 698,704, May 13, 1991, abandoned. This application Aug. 24, 1992, Ser. No. 931,415

Int. Cl.[5] F16J *15/08*

U.S. Cl. 277—235 B **10 Claims**

1. A metal gasket with a fluid hole sealing device for an internal combustion engine, said engine having at least one cylinder bore, a plurality of bolt holes and at least one fluid hole and being formed of a cylinder block and a cylinder head, said cylinder head having a rigidity such that when tightened to the cylinder block, sufficient surface pressure is not applied to portions away from the bolt holes due to distortion of the cylinder head along a rigid portion of the gasket, said gasket comprising:

a first metal plate extending substantially throughout an entire area of the engine and including at least one first hole corresponding to the cylinder bore, a cylinder bore sealing device situated around the first hole, a plurality of second holes corresponding to the bolt holes and at least one third hole corresponding to the fluid hole, and



a bead formed on the first metal plate around the third hole for sealing around the same, said bead having at least one first portion where high tightening pressure is applied when the gasket is tightened, said first portion being located adjacent to at least one of the bolt hole and the cylinder bore, and at least one second portion where moderate tightening pressure is applied when the gasket is tightened, said second portion having spring constant less than that of the first portion so that an area around the third hole is sealed effectively and sufficient tightening pressure is applied to the second portion due to insufficient rigidity when the gasket is tightened by the bolts.

5,344,166

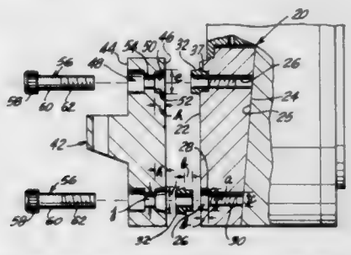
JAW ASSEMBLY FOR CHUCKS

Anton Fink, Searington, N.Y., assignor to MicroCentric Corporation, New York, N.Y.

Filed Sep. 30, 1993, Ser. No. 130,101

Int. Cl.[5] B23B *31/16*

U.S. Cl. 279—123 **10 Claims**



1. A jaw assembly for a chuck having a rotational axis, said jaw assembly comprising:

a master jaw mounted to the chuck for movement toward and away from the rotational axis, said master jaw having a front face projecting from the chuck and a plurality of stepped apertures extending into the front face parallel to the rotational axis, each said stepped aperture defining a mounting seat adjacent said front face and a small diameter threaded portion extending rearwardly from the mounting seat;

a mounting button for each said stepped aperture, each said mounting button including a stem secured in said mounting seat and a frustum extending from said stem and projecting from the front face of the master jaw, the frustum defining a major diameter adjacent said stem, said major diameter being greater than cross-sectional dimensions of said stem, such that said mounting button includes a generally annular surface intermediate said stem and said frustum, said generally annular surface being seated against portions of the front face of the master jaw surrounding the respective stepped aperture, an aperture extending through each said mounting button and registered with the threaded portion of the respective stepped aperture;

a top jaw having a rear face abutting the front face of the master jaw and an opposed front face, a plurality of apertures extending through the top jaw and registered with the respective apertures through the mounting buttons, portions of each said aperture in said top jaw adjacent the rear face thereof defining a frustum-shaped recess engaged over the frustums of the respective mounting buttons; and

mounting bolts passing respectively through the apertures in the top jaw and the mounting buttons and threadedly engaged with the threaded portions of the respective stepped apertures.

5,344,167

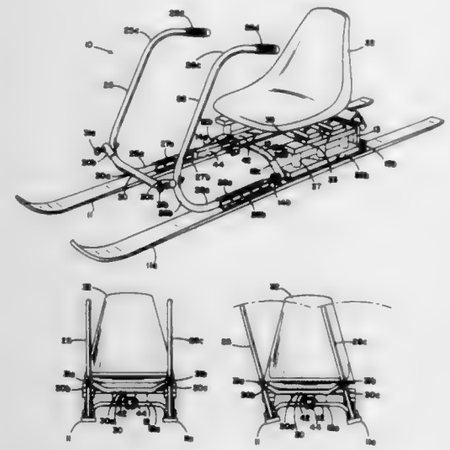
SKI SLED

John E. Strouth, 3070 Larch La., Plymouth, Minn. 55441

Filed Apr. 21, 1993, Ser. No. 50,707

Int. Cl.[5] B62B *13/12*

U.S. Cl. 280—14.1 **10 Claims**



1. A ski sled, comprising:

(a) a pair of spaced, parallel skis;

(b) a pair of longitudinally spaced frame members each having opposite ends pivotally connected to each ski;

(c) a steering frame assembly comprising a pair of steering members each having a handle portion at an upper end thereof and being rigidly connected to one of said skis at a lower end portion thereof and each steering member being pivotally connected by a transverse frame member permitting transverse pivotal movements thereof to tilt said skis;

(d) a seat platform separate from said spaced frame members mounted between said spaced frame members having first support means mounted to said skis connected by flexible support means to an upper platform portion carrying a seat, said flexible means permitting said skis to be tilted with respect to said upper platform portion;

(e) a brake member mounted on said ski sled for movement into and out of engagement with a ground surface on which said ski sled is operating; and

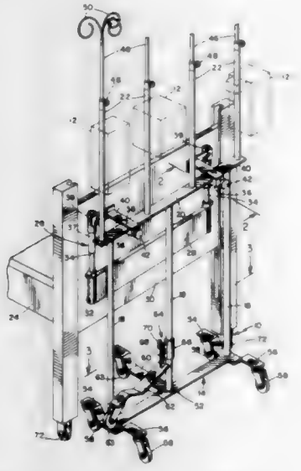
(f) means for moving said brake member into and out of engagement with the ground surface.

5,344,168
SNOWMOBILE SKI
Alan S. Olson, and Robert W. Przekwas, both of Roseau, Minn., assignors to Polaris Industries, L.P., Roseau, Minn.
Filed Nov. 8, 1991, Ser. No. 790,379
Int. Cl.[5] B62B *17/00*
U.S. Cl. 280—28 **16 Claims**



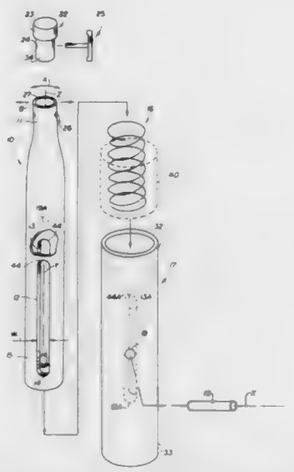
1. A snowmobile ski comprising:
a longitudinally extending runner having a bottom surface;
a generally flat, elongate bar having top and bottom surfaces, the top surface being generally contoured to abut the bottom surface of the runner;
a steering skag extending-longitudinally along the runner beneath the bar; and
attachment means for attaching the skag and the bar to the ski;
the bar extending laterally and longitudinally beyond the skag so that the track left by the skag in the snow will be at least partially filled in by the bar.

5,344,169
MULTI-POLE SUPPORT STAND
John W. Pryor, Oceanside; Jeffery W. Pryor, Vista, and Jack W. Ratcliff, Carlsbad, all of Calif., assignors to Pryor Products, Oceanside, Calif.
Continuation-in-part of Ser. No. 826,012, Jan. 27, 1992, abandoned. This application Jan. 27, 1993, Ser. No. 9,655
Int. Cl.[5] A47G *21/00;* **B62B** *3/10*
U.S. Cl. 280—79.3 **6 Claims**



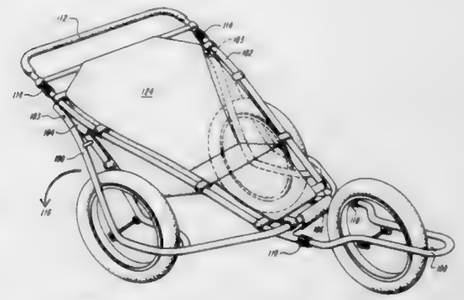
1. A multi-pole support stand, comprising:
a wheeled base having an elongate bar with fixed legs projecting from each end and a pair of stabilizer legs extending from opposite sides of a central portion of the elongate bar, each leg carrying a wheel at an outer end thereof;
a plurality of poles extending upwardly from the elongate bar for supporting equipment;
a slide rail bracket attached to said plurality of poles and extending above said elongate bar; and
securing means for securing the stand to spaced apart, vertical mounting holes of a hospital bed, said securing means comprises a pair of sliders slidably mounted on said slide rail bracket, each slider having a connector piece projecting transversely from one side of the slide rail, a hollow sleeve member affixed to an outer end of the connector piece, and a pin member telescopically received within the sleeve member and extending downwardly therefrom, each pin member being receivable in a respective one of the vertical mounting holes for securing the stand to the hospital bed.

5,344,170
BICYCLE SEAT ASSEMBLY
Adam A. Ochoa, 1211 N. Miller Rd., Scottsdale, Ariz. 85257
Filed Nov. 4, 1992, Ser. No. 971,320
Int. Cl.[5] B62J *1/02*
U.S. Cl. 280—283 **4 Claims**



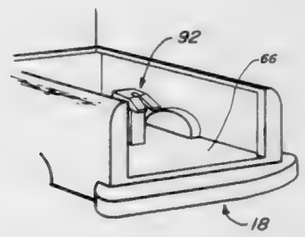
1. In combination with a bicycle seat assembly including a seat, an elongate tubular seat post mast, and an attachment member extending outwardly from said seat and normally secured to said seat post mast, said seat post mast having a longitudinal axis, the improvement comprising a seat supporting shock absorbing seat post, said seat post including
(a) an elongate tube having an inner diameter, an upper end and a lower end and slidably disposed within said seat post mast and adjustable to various fixed positions with respect thereto;
(b) an elongate member having a proximate end rotatably disposed in said elongate tube, said proximate end having an outer diameter less than said inner diameter of said elongate tube, said elongate member having a distal end normally extending out of and spaced away from said upper end of said elongate tube and shaped to receive said attachment member of the bicycle seat;
(c) at least one opening formed in one of the pair consisting of said tube and said elongate member, said opening having a width and including at least one peripheral edge bounding and defining said opening;
(d) a pin having a diameter and extending through said opening and fixed in one of said tube and said elongate member, said pin being fixed in said tube when said opening is formed in said elongate member, said pin being fixed in said elongate member when said opening is formed in said tube, said diameter of said pin being less than said width of said opening;
wherein said opening is larger than said pin and is oriented with respect to said pin to permit said elongate member and the bicycle seat to rotate in said tube about said longitudinal axis until said pin contacts said peripheral edge of said opening.

5,344,171
WHEELED VEHICLE FOR CARRIAGE OF CHILDREN CONVERTIBLE BETWEEN JOGGING AND BICYCLE TRAILER CONFIGURATIONS
Timothy Garforth-Bles, TOR House, 1511 19th Avenue, SW., Calgary, Alberta, Canada T2T 0J2
Continuation-in-part of Ser. No. 780,927, Oct. 22, 1991, Pat. No. 5,176,395. This application Jan. 4, 1993, Ser. No. 1,130
Int. Cl.[5] B60F *5/00*
U.S. Cl. 280—415.1 **3 Claims**



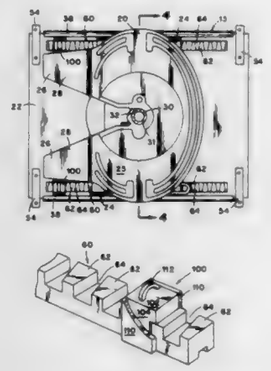
1. A multi-purpose sports vehicle convertible between stroller configuration and a trailer configuration, comprising
a rear wheel assembly including front transverse member and rear end and first and second sides;
a pair of wheels rotatably mounted on the first and second sides proximate the rear end of said rear wheel assembly;
an integral handle and front wheel fork;
at least one strip of hook and loop material releasably securing said rear wheel assembly to said integral handle and front wheel fork;
a wheel rotatably mounted on said front wheel fork;
front clip means mounted on said integral handle and front wheel fork for releasable receipt of said rear wheel assembly front transverse member;
rear clip means mounted on said rear wheel assembly for releasably receipt of said integral handle and front wheel fork;
rotating collar means mounted on said rear wheel assembly and slidingly connected to said handle; and
a seat mounted on the vehicle.

5,344,172
TRAILER HITCH ASSEMBLY SYSTEM
Fritz Jaun, 22060 Palo Way, Palo Cedro, Calif. 96073
Filed Feb. 5, 1993, Ser. No. 14,265
Int. Cl.[5] B60D *1/52*
U.S. Cl. 280—415.1 **16 Claims**



1. A trailer hitch system for a vehicle comprising:
a. a support member, said support member including a well accessible at the exterior surface of the vehicle;
b. mounting means for connecting said support member to the vehicle such that said well only extends below the exterior surface of the vehicle, said mounting means including a clamp connected to said support member for releasably fixing said support member to the frame of the vehicle, said clamp comprising a first plate substantially vertically disposed and mated to said support member, a first holding means for holding said first plate to the frame of the vehicle, a second plate substantially horizontally disposed, and a second holding means for sandwiching the frame of the vehicle between said second plate and said support member;
c. a hitch element said hitch element including a base portion capable of lying within said well of said support member, said hitch element further including a fitting for hitching a trailer; and
d. locking means for removably holding said hitch element base portion within said well of said support member.

5,344,173
FIFTH WHEEL SLIDE STOP
Dwight E. Beeler, Rt. 2, Box 271; Perry S. Bailey, Rt. 2, Box 272, both of Washburn, Tenn. 37888, and Joseph Z. Bailey, 150 Barber Rd., Corryton, Tenn. 37721
Filed Nov. 29, 1993, Ser. No. 158,961
Int. Cl.[5] B62D *53/08*
U.S. Cl. 280—438.1 **8 Claims**



1. A slide stop for fifth wheel trailer coupling means secured to a fifth wheel carrier assembly that is longitudinally guided along a length of rail means, said rail means having a plurality of rack teeth of substantially uniform height and width that are distributed along the length thereof, adjacent rack teeth along said rail means being separated by rack tooth spaces to receive selectively disengaged carrier assembly anchoring means, said slide stop comprising tooth space meshing means depending from abutment means disposed between fences that are separated by the approximate width of said rack teeth, said meshing means, abutment means and fences being a structurally independent, static and substantially integral body that may be freely meshed with sand removed from said rail means in a direction substantially perpendicular to said rail length for securing said slide stop to said rail means at a location corresponding to a desired positional location of said carrier assembly along said rail means and when said carrier assembly anchoring means is disengaged from said rail means, displacement of said carrier assembly along said rail means is terminated by physical abutment of said carrier assembly with said slide stop.

5,344,174

TRAILER COUPLING WITH FRICTION DAMPER

Teun J. H. L. Sanders, Benedendorpsweg 137, Oosterbeek, Netherlands 6862 WG

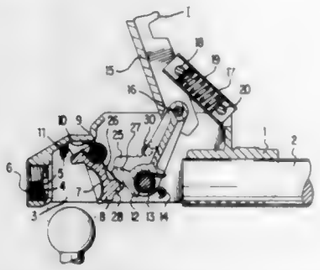
PCT No. PCT/NL91/00214, § 371 Date Apr. 29, 1993, § 102(e) Date Apr. 29, 1993, PCT Pub. No. WO92/07727, PCT Pub. Date May 14, 1992

PCT Filed Oct. 30, 1991, Ser. No. 50,031

Claims priority, application Netherlands, Oct. 30, 1990, 9002357

Int. Cl.[5] B60D *1/00*

U.S. Cl. 280—504 12 Claims



1. A trailer coupling comprising a housing, one wall of which forms a first part-spherical coupling surface, a movable coupling element which is movably mounted on the housing and which forms a second part-spherical coupling surface, a control lever pivotally mounted on the housing and operable by an operating handle connected with the control lever, said control lever being engageable with the movable coupling element for displacement of the movable coupling element between an open position, in which the movable coupling element is at a distance from the first coupling surface, and an engaging position, in which the coupling element is close to the first coupling surface, wherein at least one of the coupling surfaces carries friction material, and wherein resilient pre-loading means are arranged for constraining the movable coupling element into the engaging position with a pre-loading towards the first coupling surface, said pre-loading means being pivotally connected to an engaging point on the operating handle and pivotally connected to an engaging point on the housing, such that the pre-loading of the pre-loading means is transferred from the operating handle to the control lever and therefrom onto the movable coupling element when said coupling element is in said engaging position.

5,344,175

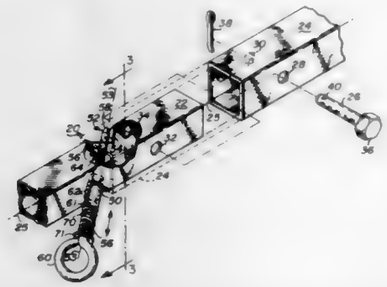
RECEIVER HITCH MECHANISM FOR ELIMINATING MOVEMENT IN TRAILER HITCH RECEIVERS

William W. Speer, 1323 Eleanor Way, Sunnyvale, Calif. 94087

Filed Nov. 24, 1993, Ser. No. 157,677

Int. Cl.[5] B60D *1/58*

U.S. Cl. 280—506 10 Claims



1. A receiver hitch mechanism for mounting to a vehicle and of the type having a receiver tube extending along a longitudinal axis with an opening for receiving, a receiver insert sized for mating engagement within the receiver hitch opening and along the longitudinal axis and means for securing the receiver insert to the receiver hitch, the improvement comprising

a receiver insert including a first aperture extending through a wall of the receiver insert and a second aperture extending through a wall of the receiver insert with said first and second apertures being along an axial line extending through the receiver insert;

a securing pin extending through said first and second apertures, the securing pin having a first end with a surface for frictional engagement with an interior wall surface of the receiver hitch, the securing pin having a second end protruding from the first aperture and the receiver insert; and

means for adjusting the positioning of said first end.

5,344,176

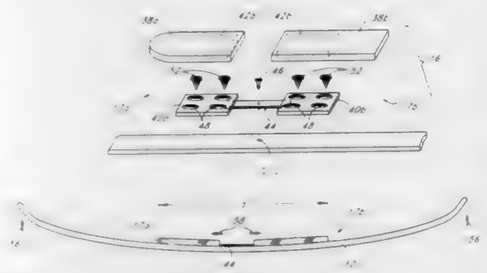
SKI BINDING BLOCK

Alan M. Trimble, 25445 Via Estudio, Laguna Niguel, Calif. 92677

Continuation of Ser. No. 716,535, Jun. 17, 1991, abandoned. This application Jul. 10, 1992, Ser. No. 911,885

Int. Cl.[5] A63C *5/07*

U.S. Cl. 280—602 9 Claims



1. An elongated ski binding block assembly for enhancing a ski's flex characteristics, comprising:

a first plate having at least one slotted opening and an associated fastener passing therethrough for mounting said plate on an upper surface of said ski, said slotted opening allowing relative sliding movement of said plate longitudinally along the length of said ski upon the flexing of said ski;

a second plate aligned longitudinally with said first plate, said second plate having at least one slotted opening and associated fastener passing therethrough for mounting said second plate on an upper surface of said ski, said slotted opening allowing relative sliding movement of said second plate longitudinally along the length of said ski in a direction opposite from that of said first plate upon the flexing of said ski; and

a central connector plate adapted to be fixed longitudinally to said ski and connected to each of said first and second plates, said connector plate being rigid in a longitudinal direction to fix and locate said first and second plates with respect to each other, whereby said fixing of said connector plate allows said relative sliding movement of said first and second plates.

5,344,177

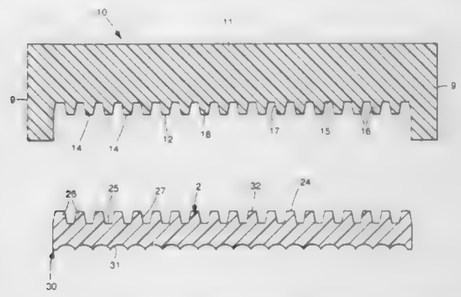
SKI BASE AND RUNNING SURFACE

Forrest J. Rouser, San Rafael, Calif.; John D. Chang, Afton, and Mark E. Reeves, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 875,186, Apr. 28, 1992, Pat. No. 5,201,101. This application Jan. 22, 1993, Ser. No. 9,312

Int. Cl.[5] A63C *5/04, 7/04*

U.S. Cl. 280—610 14 Claims



1. An elongate body for a ski which defines a longitudinal axis and a transverse direction generally perpendicular to the longitudinal axis, the body for the ski comprising:

generally opposite top and attachment surfaces,

said body attachment surface comprising a structured surface extending transversely across at least portions of the ski body for releasably and repeatably attaching the ski body to a reusable ski base sheet having generally opposite running and attachment surfaces,

the structured surface comprising a common plane or surface, and a plurality of tapered elements, each element having at least one side inclined relative to the common plane at an angle sufficient to form a taper,

wherein the structured surface of the ski body is adapted to frictionally adhere to a structured surface of the attachment surface of the reusable ski base sheet,

wherein the tapered elements have a geometry including a height and cross-sectional shape,

the ski body has a length along the longitudinal axis, and

the geometry of the tapered elements along the length of the ski body is not uniform to alter the flexure characteristics of the ski body along its length when the ski base sheet is attached to the ski body.

5,344,178

ADJUSTABLE COUPLING DEVICE FOR A SKI

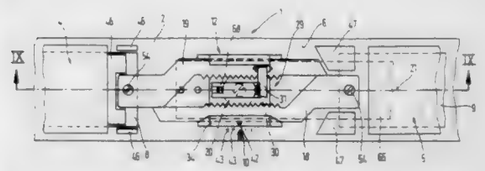
Alois Rohrmoser, Wagrain, Austria, assignor to Varpat Patentverwertungs AG, Littau, Switzerland

Division of Ser. No. 809,461, Dec. 17, 1991, Pat. No. 5,261,688. This application Sep. 8, 1993, Ser. No. 117,992

Claims priority, application Austria, Dec. 21, 1990, 2630/90

Int. Cl.[5] A63C *9/00*

U.S. Cl. 280—617 40 Claims



1. An adjustable coupling device for coupling a ski boot to a ski, the coupling device having a longitudinal axis comprising:

a toe binding and a toe binding guide;

a heel binding and a heel binding guide;

length adjustment means for altering the distance between the toe binding and the heel binding along the longitudinal axis of the coupling device to accommodate different size ski boots, said length adjustment means having a first drive element connected to said toe binding and a second drive element connected to said heel binding;

means for synchronously moving said first and second drive elements;

means for independently moving (a) said toe binding along said toe binding guide in a direction parallel to the longitudinal axis, and (b) said heel binding along said heel binding guide in a direction parallel to the longitudinal axis;

means for setting said toe and heel bindings at a position corresponding to the length of the ski boot; and

attachment means to attach said length adjustment means to a surface of the ski in the area of one of said bindings, the remainder of the coupling device being unattached to the ski so that the remainder of the coupling device can move freely in a direction perpendicular to the surface, whereby the distance between said toe binding and said heel binding remains substantially constant during bending of the ski.

5,344,179

ADJUSTABLE LENGTH BINDING SYSTEM FOR SNOWBOARDS HAVING INDEPENDENTLY VARIABLE HEEL AND TOE SPANS

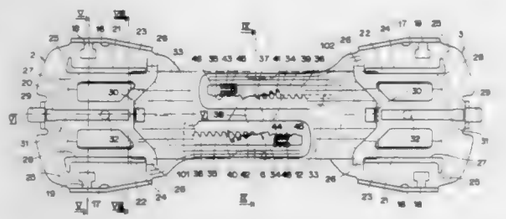
Andreas Fritschi, Wimmis, and Christian Fritschi, Reichenbach im Kandertal, both of Switzerland, assignors to Fritschi Ag. Apparatebau, Reichenbach Im Kandertal, Switzerland

Filed Nov. 23, 1992, Ser. No. 980,532

Claims priority, application Switzerland, Nov. 28, 1991, 3491/91

Int. Cl.[5] A63C *9/00, 5/03*

U.S. Cl. 280—618 18 Claims



3. An adjustable length binding unit for securing a boot to a gliding board, comprising:

forward and rear sole-holding means;

an opening device associated with at least one of said sole-holding means;

two independently slidable support plates, oppositely disposed along the longitudinal axis of the binding unit, for holding said forward and rear sole-holding means respectively, each of said support plates having an extension which is disposed laterally and runs parallel to the longitudinal axis of the support plate and, in each case, is directed toward the opposite support plate such that said extensions lie next to each other;

two spaced apart guide elements, one for each of said support plates, for slidably guiding each respective support plate independently of the other said support plate and in a direction parallel to said longitudinal axis of the binding unit; each of said guide elements including a central longitudinal groove-shaped recess having a pair of side walls extending therealong;

means for connecting said guide elements to the gliding board comprising a base plate formed on each of said guide elements and removably and adjustably mounted to the gliding board;

a single fixing element, operable without the aid of tools and centrally disposed along the longitudinal axis of the binding unit, for selectively engaging both of said extensions of

said independently slidable support plates simultaneously, whereby engagement of said extensions by said fixing element fixes the position of said extensions along the longitudinal axis of the binding unit and disengagement therefrom allows each of said extensions to be manually, independently, and slidably displaced along the longitudinal axis of the binding unit so that variable heel and toe spans from said fixing element are establishable; and

means for securing said fixing element to the gliding board.

a support plate cover for each of said support plates being detachably mounted thereto;

a central cover detachably mounted to said fixing element; and

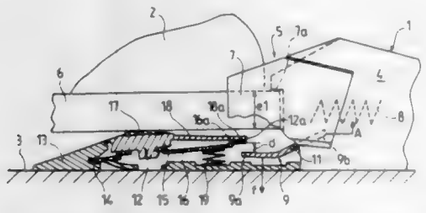
wherein each of said support plates includes, at the end remote from said fixing element, two slider edges disposed parallel to the longitudinal axis of said support plates, said pair of side walls of said groove-shaped recess being slidingly engaged by a corresponding pair of slider edges on the respective support plate.

5,344,180

SAFETY SKI BINDING

Bruno Lancon, Villy le Polloux; Pierre Desarmaux, Evires, and Jean-Francois Merino, Annecy, all of France, assignors to Salomon S.A., Courbevoie, France

Filed Jul. 29, 1993, Ser. No. 98,831
Claims priority, application France, Jul. 31, 1992, 92 09513
Int. Cl.[5] A63C *9/08*
U.S. Cl. 280—625 **4 Claims**



1. Safety ski binding designed to hold releasibly in place the front of a boot (2) mounted on the ski (3), comprising a body (4) attached to said ski and having a rear portion carrying a boot position-retention jaw (5) incorporating two lateral position-retention wings located opposite each other (7), an energy-generating mechanism (8) housed in said body and for returning said jaw elastically to a locked position, and a forward fall-compensation mechanism comprising a forward fall-sensor pedal (12) mounted on said ski to the rear of a front stop (1), said pedal having a rear portion jointed to a seating (13) attached to said ski for pivoting movement about a horizontal, transverse axis (14,23), said pedal being returned upward to a predetermined rest position by a spring (19,25) and having a forward extension (18) which, in the event that the skier falls forward, exerts a downward force on a movable control element belonging to the forward fall-compensation mechanism and housed in said body (4) of said front stop so as to lower a release threshold of said front stop, wherein a front end (12*a*,21*a*) of said pedal (12) is, in said predetermined rest position, located at a distance (d) above said movable control element (9) which approximates a standard tolerance for the thickness of a sole (6) of said boot, said tolerance being equal to a standard distance between maximum (e2) and minimum (e1) thicknesses of said sole 6.

5,344,181

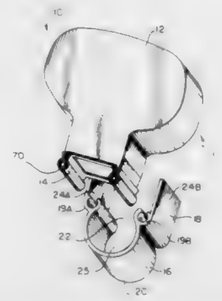
Patent Not Issued For This Number

5,344,182

AIR BAG RETENTION IN INFLATABLE RESTRAINT SYSTEMS

Donald R. Lauritzen, Hyrum, and Larry D. Rose, Layton, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 840,238, Feb. 24, 1992. This application Dec. 18, 1992, Ser. No. 993,280
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 A **20 Claims**



1. A system for the attachment of an inflatable cushion to a reaction housing member comprising:

an inflatable cushion having a thickened peripheral gas inlet opening;

a cushion retainer having a channel portion for the securing therein of said thickened peripheral gas inlet opening to form a cushion/retainer subassembly wherein said secured gas inlet opening forms an attachment insert; and

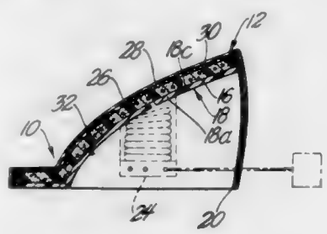
a reaction housing member comprising an attachment sleeve portion adapted for the insertion therein of said attachment insert to secure said cushion to said housing.

5,344,183

MULTI-LAYER AIR BAG COVER WITH FILLED REINFORCED VINYL

Marie J. Hersman, Durham, and Wayne C. Salsibury, Middleton, both of N.H., assignors to Davidson Textron Inc., Dover, N.H.

Filed May 17, 1993, Ser. No. 62,239
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 B **11 Claims**



1. A method of making a cast thermoplastic reinforced shell, the method including the steps of:

casting a first layer of unreinforced thermoplastic castable material as an outer decorative layer in a mold,

casting a second layer of thermoplastic castable material and randomized reinforcing material mixed therein on the first layer,

heating the mold and first and second layers to fuse the first and second layers to one another, and

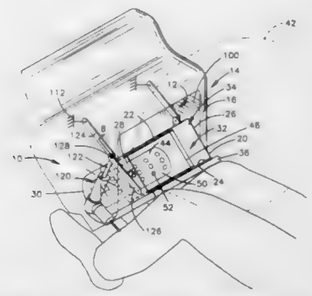
cooling and removing the formed thermoplastic reinforced shell comprising the first and second layers of thermoplastic with reinforcing material interspersed within said second layer.

5,344,184

METHOD AND APPARATUS FOR RESTRAINING A VEHICLE OCCUPANT

Laurence H. Keeler, Washington; Robert E. Resh, Dryden, and Susan A. Richards, Sterling Heights, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Dec. 21, 1993, Ser. No. 170,698
Int. Cl.[5] B60R *21/22*
U.S. Cl. 280—730 R **27 Claims**



1. An apparatus for restraining a vehicle occupant comprising:

a container with at least one fluid discharge opening;

a source of pressurized fluid in said container, said pressurized fluid being released in response to a deployment signal, said released pressurized fluid passing through said at least one fluid discharge opening and thereby creating a force vector;

pivotal mounting means for mounting said container to the vehicle for pivotal movement about a pivot axis offset from said force vector so that said force vector acts to pivot said container from a stored position to an occupant restraining position; and

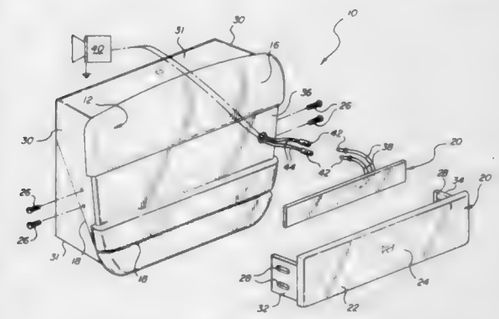
restraining means secured to said container for restraining movement of the vehicle occupant when said container pivots to said occupant restraining position.

5,344,185

AIR BAG COVER DOOR HORN SWITCH AND COVER BAND

Robert L. Cooke, II, Dover, N.H., assignor to Davidson Textron Inc., Dover, N.H.

Filed Feb. 7, 1994, Ser. No. 192,342
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—731 **13 Claims**



1. A cover door assembly (10) for a steering wheel mounted air bag assembly of the type which breaks open when the air bag is activated, said cover door comprising:

a top wall (12) including an outer periphery defining an inside surface (14) facing the air bag assembly when said cover door (10) is installed and an oppositely disposed outside surface (16), said top wall (12) being made from a predetermined material;

said top wall (12) including at least one tear seam (18) comprising material which is mechanically weaker than said predetermined material;

horn switching means (20) disposed adjacent said outside surface (16) for generating an electrical signal in response to a predetermined horn actuating force being applied to said horn switching means (20), said outside surface defining an elongated channel (36) extending across said top wall (12), said horn switching means being disposed in said channel;

a cover band (22) extending over and concealing said horn switching means (20), said cover band (22) including an outer surface directly accessible to engagement by a driver's hand for applying a force through said cover band (22) for generating the predetermined horn actuating force;

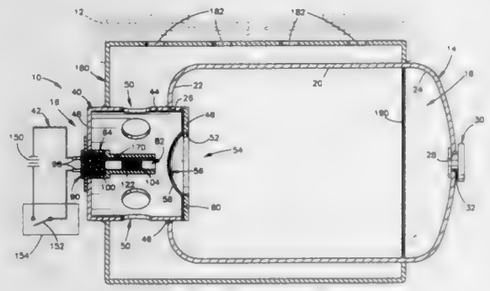
said cover band (22) including removable attachment means for moving between an engaged position in which said cover band (22) is fixed with respect to said cover door (10) and a disengaged position in which said cover band (22) is not fixed with respect to said cover door (10) whereby said cover band may be removed from said cover door (10) to replace said horn switching means (20), said cover band (22) includes an elongated strip having first and second ends and said attachment means includes a first flange extending from said first end and a second flange extending from said second end.

5,344,186

INFLATOR ASSEMBLY

Lee D. Bergerson, Fountain Valley; Ivan L. Stonich, Hermosa Beach, and William J. Sipes, Canyon Country, all of Calif., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Dec. 24, 1992, Ser. No. 996,665
Int. Cl.[5] B60R *21/28*
U.S. Cl. 280—741 **14 Claims**



1. An apparatus for use in inflating a vehicle occupant restraint, said apparatus comprising:

means defining a storage chamber for storing gas which is releasable to inflate the vehicle occupant restraint, and for containing a first ignitable material which produces first combustion products to pressurize and supplement the stored gas;

actuator means for igniting the first ignitable material, said actuator means including supporting means for supporting a second ignitable material which produces second combustion products to ignite the first ignitable material; and

said actuator means further including moving means for moving said supporting means within said storage chamber when said second ignitable material is burning.

5,344,187

SPRING STRUT MOUNTING ASSEMBLY OF A VEHICLE BODY

Gundolf Kreis, Oberstimm, and Heinrich Timm, Ingolstadt, both of Fed. Rep. of Germany, assignors to Audi A.G., Fed. Rep. of Germany

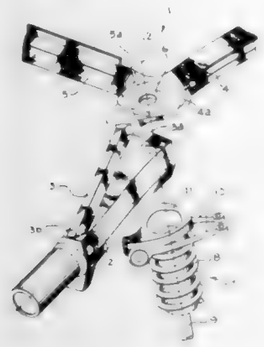
PCT No. PCT/EP91/02115, § 371 Date Jun. 18, 1992, § 102(e) Date Jun. 18, 1992, PCT Pub. No. WO92/11143, PCT Pub. Date Jul. 9, 1992

PCT Filed Nov. 8, 1991, Ser. No. 78,183

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1990, 4040957

Int. Cl.[5] B62D *21/11, 23/00;* **B60G** *15/06*

U.S. Cl. 280—788 **7 Claims**



1. In a vehicle body, an assembly for mounting a spring strut to the vehicle body wherein the spring strut includes a bearing block at an upper end thereof and wherein the bearing block is adapted for preassembly of vehicle suspension elements including dampers, springs and links, the mounting assembly comprising in operative combination:

a) a plurality of suspension strut assembly support members, each of said support members having a first end connected to the vehicle body and a second end; and wherein said plurality of support members includes:

i) an obliquely angled first support member which extends rearwardly and upwardly from its first end connection at a lower longitudinal bearer member towards a free space region;

ii) a second transversely oriented support member which extends horizontally outward from its first end connection at a central interior region of the vehicle body towards said free space region;

iii) a third longitudinally oriented support member which extends forwardly and downwardly from its first end connection at an A pillar of the vehicle body towards said free space region;

b) each of said support members converge a distance towards a common vertical axis such that their corresponding second ends define a plurality of boundary points along said free space region located at a desired position in space relative to the vehicle body for supporting the bearing block of the spring strut; and

c) means for connecting said second ends of said support members directly to said bearing block.

5,344,188

VEHICLE SEAT BELT ANCHOR ARRANGEMENT

Mark W. Mims, White Lake, and Frederick J. Zweng, Rochester Hills, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 29, 1993, Ser. No. 174,722

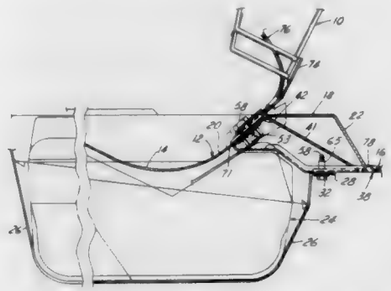
Int. Cl.[5] B60R *22/00*

U.S. Cl. 280—808 **6 Claims**

1. A seat restraint belt anchorage arrangement for a vehicle generally planar floor pan adapted for support on a subjacent body frame, said floor pan being formed with an upwardly contoured hump defined in part by a forwardly sloped planar floor pan side portion, and wherein the hump terminates in a rearwardly extending planar floor pan portion, said anchorage arrangement comprising:

an anchorage member adapted to be secured to the underside of the hump forwardly sloped side portion, said member fabricated from a one piece elongated sheet metal strip having, in cross sectional view, a forward closed loop and an elongated tailing blade;

said anchorage member loop formed by at least three planar segments in the form of an upwardly and forwardly extending angled first segment terminating at a forward end in a downwardly and forwardly bent second segment, said second segment terminating in a reverse bent rearwardly extending portion, and means securing an upper surface of said reverse bent portion in under-lapped relation to an opposed undersurface of said blade;



said loop second section having an exterior surface adapted for flush attachment with an underside of the hump forwardly sloped side portion, means securing an axially bored weld nut to an interior surface of said second segment, said nut bore aligned with an aperture in the hump side portion and said loop second segment;

whereby upon an occupant restraining belt anchor bracket being mounted on a complementary upper surface of the hump side portion, such that with a threaded fastener extending through said aperture means for threaded reception in said weld nut bore securing said second segment to the hump side portion and means for securing a distal end upper surface of said blade in a flush manner to an opposed underside of the floor pan said anchorage member providing, with the floor pan, a structural component adapted for transferring seat belt anchor bracket loads a predetermined longitudinal dimension rearwardly to the vehicle subjacent main frame.

5,344,189

VEHICLE HEIGHT ADJUSTING DEVICE

Koji Tanaka, and Takashi Shima, both of Kawasaki, Japan, assignors to Isuzu Motors Limited, Kawasaki, Japan

PCT No. PCT/JP92/00199, § 371 Date Dec. 22, 1992, § 102(e) Date Dec. 22, 1992, PCT Pub. No. WO92/15465, PCT Pub. Date Sep. 17, 1992

PCT Filed Feb. 25, 1992, Ser. No. 945,650

Claims priority, application Japan, Feb. 27, 1991, 3-056063

Int. Cl.[5] B60S *9/00*

U.S. Cl. 280—840 **12 Claims**

1. A vehicle height adjusting device, comprising:

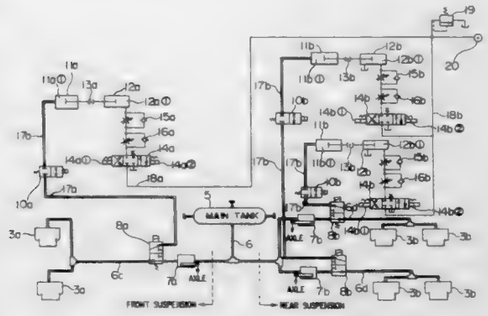
an automatic vehicle height adjusting circuit connecting a pneumatic source to air springs through a leveling valve;

an air switch-over valve unit provided between said leveling valve and said air springs;

a kneeling circuit connected to said air springs through said air switch-over valve unit;

a hydraulic source coupled to said air springs; and

control means for storing the air from said air springs in said kneeling circuit by switching over said air switch-over valve unit when kneeling, and for returning said air to said air springs under hydraulic pressure from said hydraulic source in the return of the vehicle height, said kneeling circuit including an air reservoir device which has a volume variable air chamber and a hydraulic mechanism that



varies the volume of said air chamber based on the hydraulic pressure, a first shut-off valve, an air pipe which connects said air chamber to said air switch-over valve unit via said first shut-off valve, a hydraulic switch-over valve, and a hydraulic pipe that connects said hydraulic mechanism to said hydraulic switch-over valve and said hydraulic source.

5,344,190

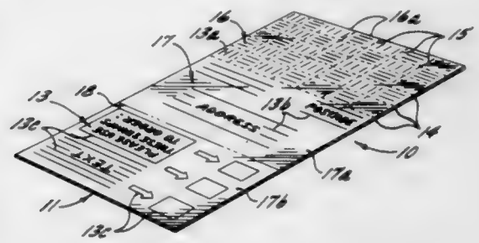
PRINTED SHEET WITH INTEGRALLY FORMED STAMPS

Richard J. Volz, Box 460, R.R. 1, Jermyn, Pa. 18433

Filed Mar. 29, 1993, Ser. No. 38,454

Int. Cl.[5] G09F *3/00*

U.S. Cl. 283—71 **17 Claims**



1. A combination printed sheet and stamps comprising

a sheet of readily imprintable material having a substantially uniform thickness and including a first portion and a second portion integral with said first portion, said first portion having rows and columns of fracturable lines extending longitudinally and transversely thereof to define a plurality of interconnected but removable stamps, said second portion having at least one medial fold line extending transversely thereof dividing said second portion into first and second segments,

an adhesive coating on one side of said sheet, said adhesive coating being normally inactive, but being activatable when desired, and

printed indicia on the other side of said sheet on said first and second portions thereof,

whereby said sheet may be folded along said fold line to position said first and second segments thereof in superposed relation and, with the adhesive coated side thereof contiguous, the contiguous adhesive coating being activatable to secure said first and second segments together.

5,344,191

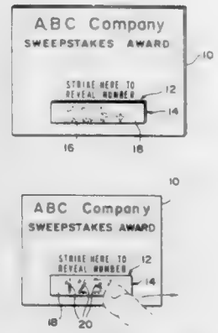
HIDDEN ENTRY SYSTEM AND USE THEREOF

John C. H. Chang, Naperville, and Peter A. Walter, Schaumburg, both of Ill., assignors to Wallace Computer Services, Inc., Hillside, Ill.

Filed Dec. 9, 1992, Ser. No. 987,694

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—72 **31 Claims**



1. A method for revealing hidden indicia on a contest form or promotional form, said form comprising a support having an information area bearing a localized coating of a heat activatable chromogenic composition, said heat activatable chromogenic composition comprising a chromogenic compound and a color developer, said heat activatable chromogenic composition providing a latent image of indicia, said latent image convertible to a visible colored image by application of heat;

applying heat to said heat activatable chromogenic coating thereby causing conversion of said latent image of indicia to a visible colored image of said indicia.

5,344,192

VISUAL VALIDATION MARK FOR BANK CHECKS AND OTHER SECURITY DOCUMENTS

George K. Phillips, 301 Beverly Ave., Paso Robles, Calif. 93446

Filed Apr. 1, 1993, Ser. No. 24,675

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—91 **6 Claims**





1. A validation mark on a sheet of paper, said validation mark comprising:

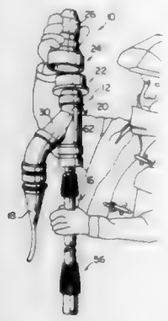
a coating covering a portion of the sheet of paper, said coating so thin as not to be visible to an unaided eye when viewed by a light shining through the sheet of paper, said coating having substantially the same color as the paper, and having more uniform directional reflective properties than the sheet of paper, whereby when the mark is illuminated by a light source located to one side of the mark, the mark appears lighter than the paper around it when viewed from the same side as the light source and the mark appears darker than the paper around it when viewed from the side opposite the light source.

5,344,193

SPRINKLER HEAD WATER DAMAGE CONTROL DEVICE

Gerald J. Rio, Amston, Conn., assignor to Rite Line Incorporation, Tolland, Conn.

Filed Jul. 16, 1992, Ser. No. 914,792
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—8 **19 Claims**



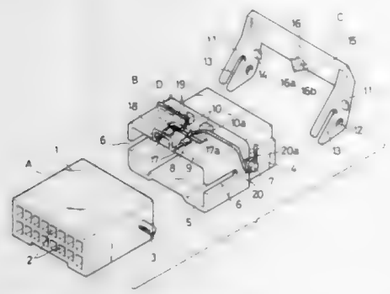
19. A sprinkler head water damage control device comprising a telescopically adjustable pole of axially variable length, a collector body directly mounted on one end of said pole and defining a water receiving chamber for receiving and containing at least a portion of an open sprinkler head, a flexible drain hose connected to said collector in communication with said chamber for diverting water received within said chamber to a selected location remote from said chamber, said drain hose having a storage position wherein said hose is folded onto itself alternately in one and an opposite direction and fastening means for releasably retaining said hose in its storage position.

5,344,194

CONNECTORS WITH LEVER

Yuji Hatagishi, and Naoto Taguchi, both of Shizuoka, Japan, assignors to Yazaki Corporation, Japan

Filed Jun. 2, 1992, Ser. No. 889,939
Claims priority, application Japan, Jun. 3, 1991, 3-041075[U]
Int. Cl.[5] H01R *13/62;* **F16L** *35/00*
U.S. Cl. 285—26 **12 Claims**



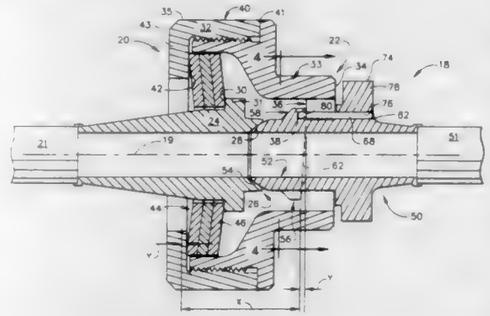
1. A connector system comprising:
a first connector;
a second connector coupled to said first connector, said second connector having at least one guide member projecting therefrom;
a lever pivotably mounted to said first connector and movable between an open position and a closed position, said lever including at least one guide groove for capturing said at least one guide member in the closed position, and a locking catch member for maintaining said closed position; and
a unitary elastic locking member disposed between said lever and said first connector and having a spring portion engaging and outwardly biasing said lever into said open position and a locking clasp portion integral to said spring portion and engaging said locking member of said lever for maintaining said closed position;
wherein said first and second connectors are coupled by mating said connectors and pivoting said lever toward said closed position, thereby pulling said second connector further toward said first connector, until the locking clasp portion of said elastic locking member engages said locking catch member of said lever to maintain said closed position, and wherein said first and second connectors are uncoupled by disengaging the locking clasp portion of said elastic locking member from said locking catch member of said lever, said spring portion of the elastic locking member thereby biasing said lever into said open position for withdrawal of said first and second connectors.

5,344,195

BIASED FLUID COUPLING

Thomas N. Parimore, Jr., West Chester, and Gerald A. Pauley, Hamilton, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 29, 1992, Ser. No. 921,870
Int. Cl.[5] F16L *19/00*
U.S. Cl. 285—91 **9 Claims**



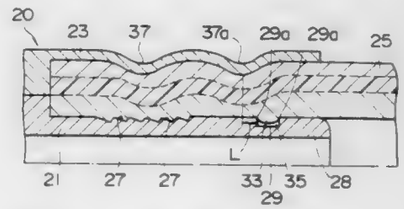
1. A gas turbine engine fluid coupling having a longitudinal axis, said coupling comprising:
(a) a first coupling element having a first end portion including an integral seat;
(b) a second coupling element having a first end portion including an integral sealing segment for sealingly engaging said seat;
(c) one of said first and second coupling elements further comprising
(1) an inner member having a first end including one of said seat and said sealing segment, and further including a biasing surface facing away and extending radially outward from said inner member first end,
(2) a coupling nut having a first end, a housing section extending axially away from said coupling nut first end, and a biasing surface extending radially inward from said housing section distal said coupling nut first end, and
(3) means for biasing said coupling nut biasing surface away from said inner member first end interposed between said coupling nut biasing surface and said inner member biasing surface;
(d) the other of said first and second coupling elements further comprising means for engaging said coupling nut;
such that engaging said coupling nut with said engagement means and rotating said coupling nut in a tightening direction causes compressive axial movement of said coupling nut with respect to said inner member, engaging said biasing means with said biasing surfaces and compressing said biasing means, forcing said seat and said sealing segment together to achieve a fluid tight seal.

5,344,196

METALLIC HOSE JOINT

Hajime Kozuka, Tokyo; Youichi Furuya, Kanagawa; Takahiro Yoda, Kanagawa; Kazuo Kitamura, Kanagawa, and Terutsugu Ijima, Kanagawa, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Meiji Gomu Kasei, both of Tokyo, Japan

PCT No: PCT/JP91/00005, § 371 Date Nov. 4, 1991, § 102(e) Date Nov. 4, 1991, PCT Pub. No. WO91/10860, PCT Pub. Date Jul. 25, 1991
Continuation-in-part of Ser. No. 752,691, Nov. 4, 1991, abandoned. This PCT application Jan. 9, 1991, Ser. No. 91,737
Claims priority, application Japan, Jan. 11, 1990, 2-1503; Jan. 11, 1990, 2-1504; Jun. 6, 1990, 2-60025
Int. Cl.[5] F16L *33/02*
U.S. Cl. 285—149 **13 Claims**



1. A metallic hose joint which comprises:
a nipple, with an inner periphery and a tip end, to be inserted in a rubber hose, with an inner wall,
a sleeve, with a base end and a tip end, formed concentrically with said nipple, wherein said tip end of said nipple and said tip end of the sleeve are disposed approximately adjacent to each other;
a ring-shaped caulking portion defined on said sleeve;
wherein said sleeve is used to tightly fix the hose by inserting the hose into a gap between the nipple and the sleeve wherein said gap at the tip end has a size approximately equivalent to the hose and by applying said caulking portion of the sleeve wherein when said caulking portion is applied a bulge in said hose is created;
and external bulge prevention means for preventing formation of an external bulge when the hose is fixedly held by the sleeve, wherein said external bulge preventing means comprises an annular groove, with a bottom and an upper edge, defined on an outer periphery of said nipple to receive the inner rubber wall of the hose when the sleeve is caulked, wherein said groove has a size to allow a gap between said bottom thereof and the rubber wall bulging therein, and wherein said annular groove is formed at a position offset from being in-line with said caulking portion and nearer to said tip end of the nipple.

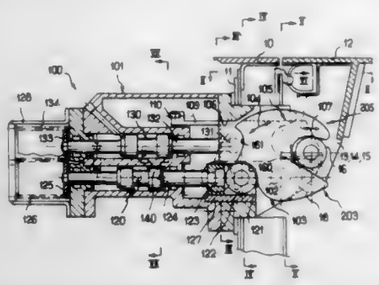
5,344,197

SAFETY LOCKING DEVICE HAVING A TILTING HOOK

Dominique Rouzaud, Angervilliers, France, assignor to Messier-Bugatti, Velizy-Villacoublay, France

Filed Oct. 29, 1992, Ser. No. 968,403
Claims priority, application France, Nov. 6, 1991, 91 13681
Int. Cl.[5] E05C *5/00*
U.S. Cl. 292—5 **9 Claims**

1. A locking device comprising a box mounted on a first structure, a primary latch implemented in the form of a hook cantilevered out from a tilt axis carried by said box to enable the hook to tilt between an open position and a closed position in which said hook supports a first catch member mounted on a second structure to be locked with said first structure, and a retractable locking member disposed to oppose tilting of the hook when said hook is in its closed position by a locking portion of said hook bearing directly against said locking member, wherein the locking device further comprises a secondary latch adjacent to the primary latch and made in the form of a member that is slidably mounted in said box to slide between a retracted, open position and an extended, closed position in which said sliding member is in the direct vicinity of an associated second catch member, said second catch member being mounted on said second structure adjacent to said first catch member.

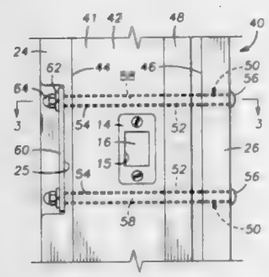


5,344,198

FRAME STRENGTHENING APPARATUS AND METHOD

Roy L. Elliott, P.O. Box 56765, Houston, Tex. 77256

Continuation of Ser. No. 955,277, Oct. 1, 1992, abandoned. This application Nov. 19, 1993, Ser. No. 155,093
Int. Cl.[5] E05B *15/02*
U.S. Cl. 292—340 **20 Claims**



1. Frame strengthening apparatus, comprising:
a doorjamb having a facing surface adjacent to an unhinged edge of a hinged door and a pair of outer edge surfaces adjacent to said facing surface, said outer edge surfaces defining the width of said doorjamb;
a bore formed in said facing surface of said doorjamb, said bore having an axis generally perpendicular to said facing surface;
a first means for compressing said pair of outer edge surfaces of said doorjamb in a direction substantially perpendicular to said axis;
a second means for compressing said pair of outer edge surfaces of said doorjamb in a direction substantially perpendicular to said axis;
wherein said first and second compressing means are disposed on opposite sides of said bore and clamp the entire width of said doorjamb.

5,344,199

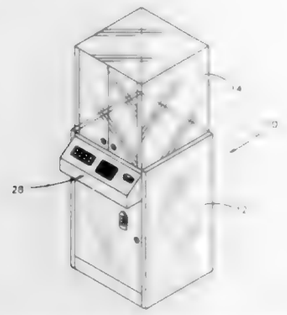
NUMBER MATCH GAMING MACHINE

Dennis L. Carstens, Columbus, and Donn H. Vanden Bosch, Omaha, both of Nebr., assignors to Technik Mfg., Inc., Columbus, Nebr.

Filed Apr. 12, 1993, Ser. No. 44,744
Int. Cl.[5] A63F *5/04*
U.S. Cl. 273—138 A **16 Claims**

1. A gaming machine for distribution of a prize, said machine comprising:
display cabinet means including a prize display section hav-

ing at least one transparent surface for allowing exterior viewing of a prize held therein;
access means on said prize display section for allowing access to a prize held therein;
locking means mounted on said display cabinet means for disengagably closing said access means whereby access to a prize held therein is restricted;
a random number generator operatively associated with said display cabinet means;



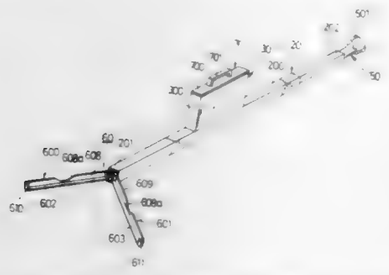
input means operatively associated with said display cabinet means for inputting an input number by a user of said machine;
comparison means operatively connected to said random number generator and input means for comparing said random number to said input number;
said comparison means being operatively connected to said locking means for disengaging said locking means upon finding an input number equal to said random number such that said access means may be opened to gain access to a prize displayed in said display cabinet means.

5,344,200

IMPLEMENT FOR DISPOSING OF DUNG OF A PET ANIMAL

Mashayuki Yoshioka, Kanagawa, Japan, assignor to Olive Corporation, Tokyo, Japan

Filed Jul. 16, 1992, Ser. No. 915,106
Claims priority, application Japan, Apr. 27, 1992, 4-136276
Int. Cl.[5] A01K *29/00;* **E01H** *1/12*
U.S. Cl. 294—1.5 **28 Claims**



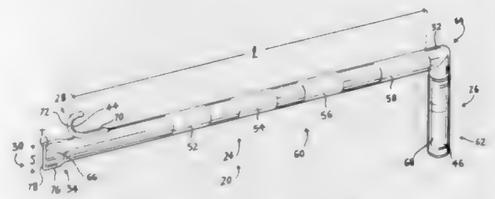
1. An implement for disposing of dung of a pet animal, comprising:
tubular means comprising an elongated tubular body having first and second ends;
storage means mounted on an upper wall of said elongated tubular body of said tubular means for carrying vertically stacked cartridges therein;
each of said cartridges including a pair of casing members hingedly connected at one ends thereof to each other and sack means having an opening for receiving dung of the pet animal, said sack means supported between said casing members in a manner to be folded up;
cartridge receiving means inserted in a longitudinal bore of said tubular body for receiving a lowermost one of said cartridges vertically stacked within said storage means when said lowermost cartridge drops down from said storage means toward said longitudinal bore of said tubular body by gravity;
pusher means movably inserted in said longitudinal bore of said tubular body for pushing toward said first end of said tubular body said lowermost cartridge received by said cartridge receiving means;
said cartridge receiving means including a pair of cartridge receiving members pivotally connected at one ends thereof to said pusher means, and spring means provided between said cartridge receiving members to always urge said cartridge receiving members to be opened away from each other; and
cooperating means on said cartridge receiving members and said casing members of each of said cartridges for causing one of said casing members to be held on one of said cartridge receiving members and causing the other of said casing members to be held on the other of said cartridge receiving members when each of said cartridges is received by said cartridge receiving means.

5,344,201

MULTI-FUNCTION TOOL FOR TRUCK OPERATORS

A. Dean Offin, 12623 SE. 42nd St., Bellevue, Wash. 98006

Filed Jul. 12, 1993, Ser. No. 90,889
Int. Cl.[5] B25F *1/00*
U.S. Cl. 294—24 **3 Claims**



1. A method of performing routine non-driving duties associated with tractor/trailer vehicles, comprising the steps of:
a. providing a tool having
i. an elongate central portion,
ii. a handle portion projecting from a first end of the elongate central portion, and
iii. a hook portion attached adjacent to a second end of the elongate central portion, the hook portion being adapted to engage a grasping projection of a fifth wheel pin of the tractor of the tractor/trailer vehicle, where a length of the central portion between the handle portion and the hook portion being such that, when the hook portion engages the grasping projection, the handle portion may be easily grasped and pulled by the operator;
b. grasping the handle portion of the tool;
c. arranging the tool such that the hook portion is adjacent to the grasping projection;
d. pulling the tool such that the hook portion engages and displaces the grasping projection in a manner that causes the fifth wheel pin to move from an engaged position into a released position.
e. providing the tool such that the tool has a prying portion formed on the second end of the central portion; and
f. prying landing gear of a trailer portion of the tractor/-trailer vehicle to loosen the landing gear.

5,344,202

END EFFECTORS WITH INDIVIDUALLY POSITIONABLE VACUUM CUPS

David J. Ramler, Maple Grove, and Lon A. Adamietz, Plymouth, both of Minn., assignors to Dimension Industries, Inc., Maple Grove, Minn.

Filed Sep. 24, 1992, Ser. No. 950,021
Int. Cl.[5] B25J *15/06;* **B66C** *1/02*
U.S. Cl. 294—64.1 **3 Claims**



1. An end effector housing carrying a pair of end effectors for picking up articles through air pressure differential across the articles comprising:
a plenum chamber;
a first bellows-shaped collapsible vacuum cup for directly contacting a first article to be picked up, said bellows-shaped collapsible vacuum cup having a central passage therein;
a first stabilizer located proximate said first bellows-shaped collapsible vacuum cup to act as a stop to prevent an article carried by said first bellows-shaped collapsible vacuum cup from moving with respect to said first bellows-shaped collapsible vacuum cup as said first bellows-shaped collapsible vacuum cup is moved from place to place with said first stabilizer and said first bellows-shaped collapsible vacuum cup located on the same side of an article to be picked up;
a first movable pipe having a first end connected to said first bellows-shaped collapsible vacuum cup, said first movable pipe having a second end and an intermediate region;
a first flexible hose having a first end and a second end with said first end connected to said plenum chamber and said second end connected to said second end of said first movable pipe to form an elongated air evacuation chamber for rapid air evacuation from said first bellows-shaped collapsible vacuum cup;
a second bellows-shaped collapsible vacuum cup for directly contacting a first article to be picked up, said second bellows-shaped collapsible vacuum cup having a central passage therein;
a second stabilizer located proximate said second bellows-shaped collapsible vacuum cup to act as a stop to prevent an article carried by said second bellows-shaped collapsible vacuum cup from moving with respect to said second bellows-shaped collapsible vacuum cup as said second bellows-shaped collapsible vacuum cup is moved from place to place with said second stabilizer and said second bellows-shaped collapsible vacuum cup located on the same side of an article to be picked up;
a second movable pipe having a first end connected to said second bellows-shaped collapsible vacuum cup, said second movable pipe having a second end and an intermediate region;
a second flexible hose having a first end and a second end with said first end connected to said plenum chamber and said second end connected to said second end of said second movable pipe to form an elongated air evacuation chamber for rapid air evacuation from said second bellows-shaped collapsible vacuum cup;
a first annular piston located around and secured to said intermediate region of said first movable pipe;
a first housing having a chamber therein, said first annular piston slidable in said chamber of said first housing with said first annular piston coacting with said chamber of said first housing to define an upper and a lower compartment in said chamber of said first housing so that when air pressure in the upper compartment of said first housing exceeds the air pressure in the lower compartment of said first housing, the first annular piston slides in said chamber of said first housing to move said first movable pipe in a first direction and when the air pressure in the lower compartment of said first housing exceeds the air pressure in the upper compartment of said first housing, the first annular piston slides in said chamber of said first housing to move said first movable pipe in a second direction opposite said first direction;
a second annular piston located around and secured to said intermediate region of said second movable pipe; and
a second housing having a chamber therein, said second annular piston slidable in said chamber of said second housing with said second annular piston coacting with said chamber of said second housing to define an upper and a lower compartment in said chamber of said second housing so that when air pressure in the upper compartment of said second housing exceeds the air pressure in the lower compartment of said second housing, the second annular piston slides in said chamber of said second housing to move said second movable pipe in a first direction and when the air pressure in the lower compartment of said second housing exceeds the air pressure in the upper compartment of said second housing, the second annular piston slides in said chamber of said second housing to move said second movable pipe in a second direction opposite said first direction with said first flexible hose connected to said first movable pipe and said second flexible hose to said second movable pipe to permit lifting articles from a surface by rapidly drawing air through said first bellows-shaped collapsible vacuum cup and said second bellows-shaped collapsible vacuum cup to thereby quickly provide a pressure differential across an article when an article to be lifted is located proximate said bellows-shaped collapsible vacuum cups so that said first bellows-shaped collapsible vacuum cup and said second bellows-shaped collapsible vacuum cup can simultaneously pick up different articles for transport to a second location.

5,344,203

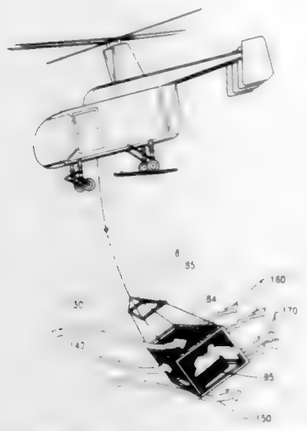
AERODYNAMICALLY-STABILIZED COLLAPSIBLE PERSONNEL AND CARGO BASKET FOR HELICOPTERS

Donald J. Tollenaere, P.O. Box 1, Bavon, Va. 23013

Continuation-in-part of Ser. No. 848,310, Mar. 9, 1992, abandoned. This application Jan. 8, 1993, Ser. No. 2,829
Int. Cl.[5] B65D *6/08;* **B64D** *9/00*
U.S. Cl. 294—68.1 **7 Claims**

1. An elongated rectangular basket having vertical sides and an elongated bottom frame and floor with a short dimension and a long dimension for carrying a load suspended from a helicopter comprising:
a. means for supporting the load;
b. means for aerodynamically stabilizing the basket for both unloaded and loaded configurations during high speed transport comprising aerodynamic slats aligned across the short dimension of the floor, thereby providing an empty flight mode with the basket aligned longwise in the direc-

tion of flight and further comprising mesh screen on the vertical sides, thereby providing a second stable flight



mode for loaded flight with the basket aligned with the long dimension crosswise to the direction of flight; and

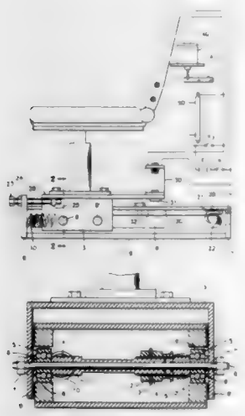
c. means for attaching the basket to the helicopter.

5,344,204

SAFE DRIVER SEAT UNIT IN A MOTOR VEHICLE

Liu, Yunzhao, Building #9, Litangnandiweixiaofushuyiyuan, Binyang County, Guangxi Province, P.R.C., China

Filed Feb. 8, 1993, Ser. No. 14,552
Claims priority, application China, Feb. 9, 1992, 92 1 00620.9
Int. Cl.[5] B60N *2/42*
U.S. Cl. 296—68.1 **7 Claims**



1. A safe driver seat unit in a motor vehicle comprises:

a seat, a supporting arrangement, a rail unit, a locking arrangement, sensors, an electric braker; a sensing switch connected with the sensors in parallel; a braking electromagnetic controller connected with an electromagnetic controller of the locking arrangement in parallel; with said parallel connections being connected with an electric battery and a power switch in series;

the seat being provided on the rails; and in front of the seat are arranged springs; the locking arrangement being controlled by the electromagnetic controller; the springs being used to push the seat to move backwardly in an off-lock state of the seat;

the electric braker comprises the braking electromagnetic controller and a braking control lever is provided to apply an automotive braking operation on the motor vehicle synchronized with the releasing operation by the lock arrangement when the sensor is deformed during a vehicle collision; the braking control lever being connected with a brake pedal operated by the driver;

the sensors being arranged at parts of the motor vehicle prone to collision, each of which comprises a deformable thin wall metal pipe and a metal rod which inserts in and is insulated from the wall pipe; wherein:

a supporting arrangement has an n-shaped frame; two supporting shafts respectively extend through the two side walls of the frame in parallel and mounted therein by nuts;

at inner sides of the frame, backup plates, ball bearings and spring acting cylinders are respectively and serially arranged on each supporting shaft; the backup plates and the spring acting cylinders have outer diameters less than the inner diameter of outer rings of the ball bearings;

on each of said two supporting shafts, an adjusting cylinder is arranged between each pair of spring acting cylinders; a thread is formed in one end of the adjusting cylinder to fit with an adjusting nut, a clamping nut of the adjusting nut, and a spacer;

one end of the adjusting nut has a shape of a cylinder and a follower sheet being arranged between the tip of the cylindrical end and the spring acting cylinder;

under the coaction of the nuts and the adjusting nut, inner rings of the ball bearings and side walls of the frame are fixedly mounted together;

the rail unit having two parallel rails mounted on a fixed floor and extending longitudinally thereon; an upper cover being fixed on the rails with screws, and back and front plates being mounted at front and back ends of the rails, respectively;

the rails being rectangular blocks; a longitudinal groove being formed in each rail; fourth ball bearings arranged in pairs in the longitudinal grooves; the width of the longitudinal grooves corresponding to the outer diameter of the outer ring of the ball bearings;

at the back ends of the rails is pivoted a retaining hook having a head formed downwardly and backwardly; the upper cover having a hole formed correspondingly to a position of the hook for rotation of the hook; a hole being formed in a back plate for manual operation to release the seat locked by the hook; buffer cushions made of sponge material being arranged at back ends of the longitudinal grooves;

the two ends of each spring being mounted on the front plate and the spring acting cylinders of the front supporting shaft respectively;

a reset arrangement comprising a return bolt extending through the front plate and fit with the nut mounted at the inner side of the n-shaped frame; between a head of the bolt and an outer side of the front plate is fit with a nut on a threaded body of the bolt;

the locking arrangement comprises the electromagnetic controller, a moving bar, a moving head, a locking member, an upper locking socket and a lower locking socket; the upper locking socket being mounted on a plate on the n-shaped frame; the lower locking socket being correspondingly arranged on the cover of the rails; in a normal state of the seat unit, the upper and lower locking sockets being in alignment; the locking member, having a shape correspondent to that of the center holes of the locking sockets, extends therein;

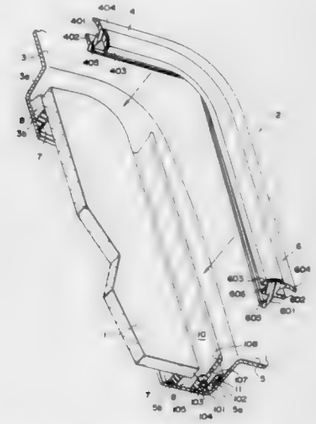
the moving bar being fixedly connected with the moving head; the moving head being arranged in the electromagnetic controller, the moving bar extending in the center hole of the locking member, a flange being formed at an end of the moving bar, which extends out of the center hole of the locking member; the outer diameter of the flange being less than the least diameter of the center holes of the upper and lower locking sockets, and greater than that of the center hole of the locking member.

5,344,205

AUTOMOBILE WINDSHIELD MOLDING

Yukihiko Yada, and Tosikazu Ito, both of Aichi, Japan, assignors to Tokai Kogyo Kabushiki Kaisha, Ohbu, Japan

Filed Nov. 6, 1991, Ser. No. 788,353
Claims priority, application Japan, Nov. 7, 1990, 117095
Int. Cl.[5] B60J *10/02*
U.S. Cl. 296—93 **3 Claims**



1. An automobile windshield molding for sealing a space between a windshield and a periphery of a window opening of an automobile body panel, said molding comprising:

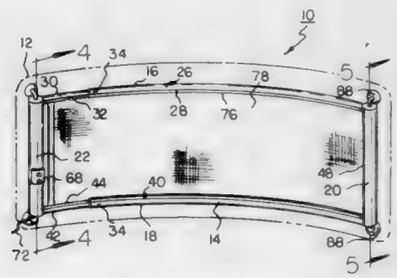
a molding body and a fastener, said fastener including a bendable protector which is bent as said molding body is inserted into said fastener, said bendable protector being bent by the insertion of said molding body from an upright position in which said bendable protector has a longitudinal axis which is substantially perpendicular to an upper surface of said windshield for permitting an insertion of the windshield, to a bent position in which the bendable protector is bent by said molding body and pressed against said upper surface of said inserted windshield by said molding body so as to maintain a position of said windshield with respect to the automobile body panel.

5,344,206

AUTOMOBILE SHADES

Roy J. Middleton, 15730 Walnut Creek, San Antonio, Tex. 78247

Filed Sep. 22, 1993, Ser. No. 124,597
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.8 **7 Claims**



1. A retractable sun deflector shade adapted to be secured to the interior of an automotive windshield, the shade comprising:

a first upper C-shaped frame element having a forward end, a rearward end, an upper closed portion, and a lower open portion and a second upper C-shaped frame element having a forward end, a rearward end, an upper closed portion, and a lower open portion, the forward end of the second upper frame element being telescopically received within the rearward end of the first upper frame element

an upper thumb screw positioned within the rearward end of the first upper frame element, the upper thumb screw serving to selectively allow and prevent telescopic movement between the first and second upper frame elements;

a first lower C-shaped frame element having a forward end, a rearward end, an upper open portion, and a lower closed portion and a second lower C-shaped frame element having a forward end, a rearward end, an upper open portion, and a lower closed portion, the forward end of the second lower frame element being telescopically received within the rearward end of the first lower frame element;

a lower thumb screw positioned within the rearward end of the first lower frame element, the lower thumb screw serving to selectively allow and prevent telescopic movement between the first and second lower frame elements;

a cylindrical supply housing having an upper extent, a lower extent, and a longitudinal slit extending from the upper extent to the lower extent, the supply housing being coupled to the first upper and lower frame elements such that the lower open portions of the first and second upper frame elements and the upper open portions of the first and second lower frame elements are in communication with the longitudinal slit of the supply housing;

a cylindrical roll rotatively received within the supply housing with spring means operatively coupled to the cylindrical roll, the spring means serving to rotate the cylindrical roll to a first angular position;

a cylindrical take-up housing having an upper extent, a lower extent, and a longitudinal slit extending from the upper extent to the lower extent, the take-up housing being coupled to the second upper and lower frame elements such that the lower open portions of the first and second upper frame elements and the upper open portions of the first and second lower frame elements are in communication with the longitudinal slit of the supply housing;

an upper cable take-up reel and a lower cable take-up reel positioned within the take-up housing;

an axle positioned within, and coaxial with, the take-up housing, the axle serving to join the upper and lower cable take-up reels;

a two-way switch coupled to the lower cylindrical take-up housing, the switch serving to rotate the axle in one of two angular directions;

a sheet of material having an upper edge, a lower edge, a forward edge and a rearward edge, the forward edge of the sheet of material being secured to the cylindrical roll;

an upper cable having a forward end and a rearward end, the upper cable being sewn within the upper edge of the sheet of material, the upper cable being positioned within the first and second upper frame elements, the rearward end of the cable extending beyond the rearward edge of the sheet of material and being coupled to the upper cable take-up reel;

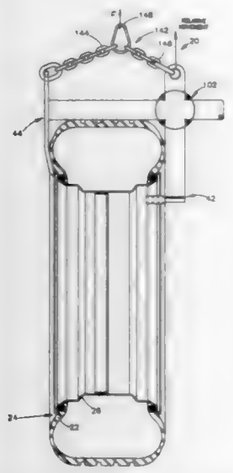
a lower cable having a forward end and a rearward end, the lower cable being sewn within the lower edge of the sheet of material, the lower cable being positioned within the first and second lower frame elements, the rearward end of the cable extending beyond the rearward edge of the sheet of material and being coupled to the lower cable take-up reel.

5,344,207

TIRE LIFTING APPARATUS

Federick L. Grimm, Taylors, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland

Filed Jan. 29, 1993, Ser. No. 10,826
Int. Cl.[5] B66C *1/66*
U.S. Cl. 294—103.1 **9 Claims**



1. An apparatus for engaging an article for subsequent displacement of the article by displacing movement of the apparatus while the apparatus engages the article, comprising:

a first contact men%her positionable at a contact position for contacting a first portion of the article, the first contact men%her having means for receiving an adjusting force applied thereto such that the first contact member moves from a spaced apart position remote from its contact position to its contact position in response to the application of an adjusting force;

a second contact member positionable at a contact position for contacting the article at a second portion thereof spaced from the first portion of the article relative to a lateral axis, the first and second contact men%bets being effective, when both are deployed in their respective contact positions with the article, to retain the article therebetween during application of a displacement force to the apparatus;

means for guiding the first contact member to move laterally relatively toward the second contact member;

means for guiding the first contact member to move along a longitudinal axis forming a substantially perpendicular angle with the lateral axis; and

means, movably interconnecting the lateral and longitudinal guiding means, for controlling both guiding means to automatically guide the first contact member from its spaced apart position to its contact position in response to the application of an adjusting force to the first contact member.

5,344,208

REINFORCEMENT ASSEMBLY FOR VEHICLE PANELS

Alfred A. Bien, West Bloomfield, and Jerry F. Loughlin, Jr., St. Clair Shores, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

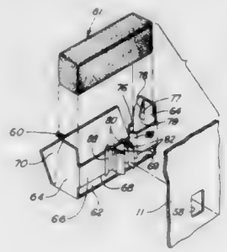
Filed Dec. 9, 1991, Ser. No. 803,928
Int. Cl.[5] B60R *27/00*
U.S. Cl. 296—187 **7 Claims**

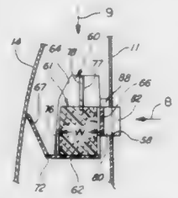
1. In a bracket for supporting a heat expandable sealer block arrangement which, upon being thermally activated to a predetermined temperature, provides a foamed stiffener operative for reinforcing a panel secured to an automobile vehicle body substructure having a mounting aperture formed therein, said panel supported on the substructure such that a variable tolerance dimensional space is defined between the substructure and the panel inner surface, the improvement in said bracket comprising:

a one-piece thin-walled plastic box-like bracket enclosed on four sides having a base panel, a pair of opposite upright identical side panels secured to said base panel at the lower edges thereof, and an upright rear panel extending between and secured to said side panels, said four panels forming between them an open-fronted open-topped cavity sized for receiving the heat expandable sealer block;

said base panel having front and rear longitudinal edges, an oblique shield panel being flexibly connected along said base panel front longitudinal edge such that said shield panel is inclined upwardly and outwardly therefrom at a predetermined obtuse angle with said base panel;

said rear panel having a lower longitudinal edge thereof spaced a predetermined dimension vertically upwardly from said base panel rear longitudinal edge so as to define an elongated opening therewith, said rear panel formed with a pair of longitudinally spaced apart mirror image flexure fingers adapted to extend a distance into the substructure mounting aperture, each said finger having an integral locking prong comprising a ramp and a shoulder, each said prong ramp adapted to coact with the substructure mounting aperture in a manner to deflect said pair of fingers inward upon insertion through the aperture and thereafter returning to their normal state wherein each said prong shoulder lockingly engages an associated edge of the substructure aperture;





said side panels having its upstanding pair of forward edges thereof being respectively provided with opposed vertically extending rails disposed parallel to said rear panel, said rail members spaced a predetermined dimension from said rear panel slightly greater than said sealer block width dimension thereof, said pair of rails defining a vertically disposed plane that includes the open-front of said bracket cavity;

said side panels having their opposed inner surfaces formed with opposed mirror image integral retention members adjacent their associated upper transverse edges adapted to coact with the sealer block upper surface thereof in a manner to deflect said side panels outward upon insertion of said sealer block through the opened-top of said bracket cavity and thereafter upon said sealer block having a bottom surface thereof supported on said base panel each said side panel returning to its normal state, wherein each retention member lockingly engages an associated upper end edge of said block upper surface and each said side panel rail member engaging an associated opposed block front surface portion thereof capturing said block in said bracket cavity; and

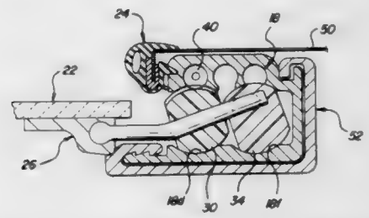
said sealer block adapted upon being heat activated to a predetermined expanding temperature to foam-in-place in a predetermined directed manner by said side, rear and guide panels thereby defining a foamed stiffener bridging the space between the body panel and the substructure so as to sealing engaging both inner opposed surfaces thereof providing a high compressive resistant foam stiffener bridge therebetween.

5,344,209

SUNROOF ASSEMBLY

Otto Regner, 5491 Winchester, Troy, Mich. 48098

Filed Apr. 2, 1993, Ser. No. 42,326
Int. Cl.[5] B60J *7/057*
U.S. Cl. 296—223 **21 Claims**



1. A lift-up sunroof assembly for a motor vehicle including a frame adapted to fit in an opening in the roof of the vehicle and defining a track positioned along one longitudinal side edge of the opening, a panel sized to fit within the frame to close the roof opening, a cam member slidably mounted on the track and defining a longitudinally extending cam surface, and a lever arm operatively associated at an inboard end thereof with the panel and having a portion outboard of the inboard end cammingly engaging the cam member cam surface and operative in response to sliding movement of the cam member on the track to move the panel between opened and closed positions as the cam member cam surface moves slidably along the lever arm cam portion, characterized in that:

the sunroof assembly further includes means operative to impart angular movement to the cam member about a longitudinal axis of the track as the cam member slides longitudinally on the track so that the resultant vertical movement imparted to the panel by the inboard end of the lever arm includes a component corresponding to the vertical rise of the cam member cam surface and a further component attributable to the angular movement of the cam member.

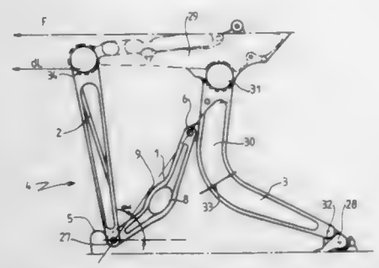
5,344,210

ENERGY-ABSORBING DEVICE, STRUCTURE FORMING A MOUNTING FOR AN AIRCRAFT SEAT HAVING SUCH A DEVICE, AND SEAT HAVING SUCH A STRUCTURE

Dannawi Marwan, Chapelle, and Prott Thierry, Nantes, both of France, assignors to Sicma Aero Seat, Societe Industrielle et Commerciale de Materiel Aeronautique, Paris, France

Filed Jan. 21, 1992, Ser. No. 823,327
Claims priority, application France, Jan. 22, 1991, 91 00684
Int. Cl.[5] B60N *2/42*
U.S. Cl. 297—216.2 **36 Claims**

1. An energy-absorbing device interposed between the front foot and the rear foot of a structure forming a mounting of an aircraft seat, in such a way that, when the structure is deformed in the event of a shock, the device undergoes at least one longitudinal compressive force, comprising a substantially elongate one-piece element, each end of which is associated respectively with one of the feet,3 in that said element comprises a first portion which shape is predetermined in such a way that this element undergoes a natural general structural plastic deformation according to a mode of deformation prescribed by said predetermined shape of said first portion, and in that said element comprises a second portion arranged so as to



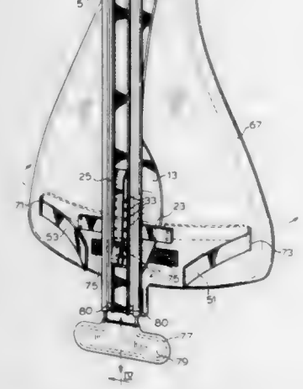
oppose the general structural plastic deformation of the element and to undergo a natural plastic bending deformation by buckling from a predetermined value of the longitudinal compressive force applied between said ends of said element.

5,344,211

ADJUSTABLE BACKREST

Riyaz Adat, 29 Overbank Crescent, Don Mills, Ontario,, Canada M3A 1W1 ; Kevin Mar, 42 Aldridge Avenue, Toronto, Ontario, Canada M4S 3W2 ; Craig Pirie, 220 Balloil Road, Toronto, Ontario, Canada M4S 1C5 , and Tim Poupore, 51 Southvale Drive, Toronto, Ontario, Canada M4G 1G1

Filed Aug. 5, 1993, Ser. No. 102,284
Int. Cl.[5] A47C *7/46*
U.S. Cl. 297—230.14 **13 Claims**



1. An adjustable backrest for supporting a human back comprising:

a) a straight spine member;

b) a lumbar support member projecting from said straight spine member;

c) an upper back support member projecting from said straight spine member adjacent to said lumbar support member;

d) a back pad resting on said lumbar support member and said upper back support member for supporting said human back, said back pad including a pair of individually adjustable side support members;

e) lumbar adjustment means connected to said lumbar support member for adjusting curvature of said lumbar support member relative to said straight spine member to

accommodate different sizes and shapes of lower back portions of said human back;

f) upper back adjustment means connected to said upper back support member for adjusting curvature of said upper back support member relative to said straight spine member to accommodate different sizes and shapes of upper back portions of said human back;

g) said adjustment means connected to said side support members for independently adjusting curvature of each of said pair of individually adjustable side support members relative to said back pad to accommodate different side contours of said human back;

h) means connected to said straight spine member and said back pad for providing side-to-side mobility of said back pad to accommodate twisting movement of said human back.

5,344,212

OPPOSING PASSENGER-INFANT SEAT SYSTEM

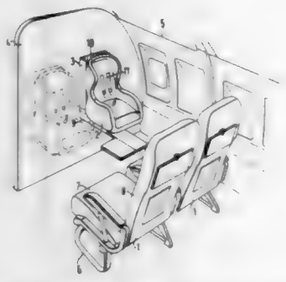
Hans-Jürgen Müller, Henstedt-Ulzburg, and Wilfried Sprenger, Issendorf, both of Fed. Rep. of Germany, assignors to Deutsche Airbus GmbH, Hamburg, Fed. Rep. of Germany

Filed Aug. 6, 1992, Ser. No. 926,796

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1991, 4125959

Int. Cl.[5] A47C *1/08*

U.S. Cl. 297—245 **8 Claims**



1. An opposing passenger-infant seat system for a transportation carrier having a partition means, said passenger-infant seat system comprising:

an adult seat having a seating surface;

a removable infant seat located opposite said adult seat above a plane of said seating surface of said adult seat and at a distance from said adult seat wherein said distance is less than an average length of a human arm; and

an adapter for attaching said infant seat to the partition means of the carrier, wherein said adapter includes a substantially horizontally extending support and a backrest arranged perpendicularly to said support for receiving said infant seat, and a belt for securing said infant seat to said adapter.

5,344,213

RESTRAINING PROTECTIVE SEAT FOR INFANTS

Toshiro Koyanagi, Hikone, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,202

Claims priority, application Japan, Dec. 5, 1991, 3-322096

Int. Cl.[5] B60N *2/28*

U.S. Cl. 297—256.13 **3 Claims**

1. An infant-restraining protective seat comprising:

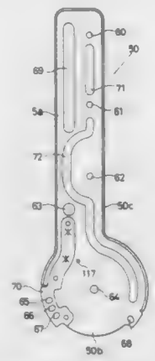
a seat portion for seating an infant;

a seat back for supporting the back of the seated infant;

infant restraining means such as an infant seat belt device for restraining and protecting the seated infant, said seat back being tiltably attached to said seat portion, and said seat portion and seat back being foldable relative to each other; and

locking means for locking said seat back at a prescribed backward tilt angle,

said locking means having a through-hole provided in said seat portion, a first locking hole provided in said seat back so as to correspond to a prescribed backward tilt angle, a second locking hole provided in said seat back so as to



correspond to a folded position of said seat back and a locking pin that is passed through said through-hole and one of said first and second locking holes, said first and second locking holes being on a similar circumferential path about a pivot of said seat back, at least one of said first and second locking holes being formed as an elongated hole such as of elliptical shape having a minor axis in the tilting direction of said seat back and a major axis in a diametric direction.

5,344,214

GLIDING-STYLE ROCKING CHAIR

B. C. Trent, Rte. 2, Box 174, Sneedville, Tenn. 37869

Continuation-in-part of Ser. No. 833,969, Feb. 11, 1992, Pat. No. 5,280,996. This application Dec. 7, 1992, Ser. No. 986,485

Int. Cl.[5] A47C *3/02*

U.S. Cl. 297—270 **11 Claims**



1. An improved gliding-style rocking chair comprising:

a base for engaging a support surface;

a seat member for supporting a load exerted by a user, said seat member being pivotally connected to said base such that as said user exerts a force in a selected direction along a central axis of said seat member, said seat member is moved in said direction and is tilted in a direction substantially similar to said direction of force, said seat member carrying a plurality of face members which are continuous and extend vertically downward;

a pivoting device for pivoting said seat member in relation to said base when said force is exerted on said seat member, said pivoting device including a plurality of connecting members each defining first and second ends, said first ends being pivotally connected to said base and said second ends being pivotally connected to said seat member, each of said connecting members defining a fender section, said connecting members being positioned such that as each of said connecting members are pivoted each of said connecting members prevent an appendage from becoming lodged between one of said plurality of face members and said connecting member;

a limiting device for limiting said movement of said seat member when said force is applied, said limiting device being connected to at least one of said connecting members and being configured to engage said base when said seat member is displaced in a selected direction a selected distance, thereby preventing further displacement in said selected direction; and

a damping member for minimizing displacement of said base in relation to said support surface upon said engagement of said limiting device and said base.

5,344,215

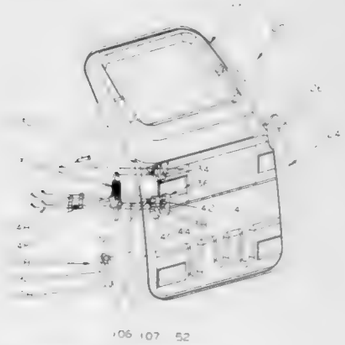
BACKREST RECLINER MECHANISM

Bruce B. Dahlbacka, Port Washington, Wis., assignor to Milsco Manufacturing Company, Milwaukee, Wis.

Filed Mar. 10, 1993, Ser. No. 29,105

Int. Cl.[5] B60N *2/20*

U.S. Cl. 297—375 **26 Claims**



1. A seat assembly comprising:

a. a seat shell including

i. a seat cushion portion, and

ii. a backrest portion pivotally connected to said seat cushion portion; and

b. a backrest recliner mechanism including

i. a connector having a first end connected to said backrest portion and having a second end,

ii. a backrest biasing spring which biases said backrest portion towards an extreme position, and

iii. a locking mechanism which engages said connector between said first and second ends, and which is movable from

(1) a first position preventing movement of said connector relative to said locking mechanism and thus preventing said backrest portion from reclining, to

(2) a second position permitting movement of said connector relative to said locking mechanism and thus permitting said backrest portion to recline, said locking mechanism being biased towards said first position by said backrest biasing spring.

5,344,216

SOFA OR ARMCHAIR WITH ADJUSTABLE SITTING DEPTH

Kersti H. Suominen, Paulinkatu 35, SF-304200 Forssa, Finland

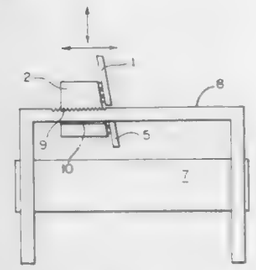
PCT No. PCT/FI91/00064, § 371 Date Sep. 3, 1992, § 102(e) Date Sep. 3, 1992, PCT Pub. No. WO91/13574, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 6, 1991, Ser. No. 923,798

Claims priority, application Finland, Mar. 9, 1990, 901193

Int. Cl.[5] B60N *2/02*

U.S. Cl. 297—383 **9 Claims**



1. In a sofa or armchair having armrests and a backrest, the improvement which comprises:

a movable and adjustable locking device mounted on each end of the backrest for adjusting the sitting depth of the backrest horizontally to accommodate people of differing height; and

means for mounting each of said adjustable locking devices on said backrest such that each adjustable locking is movable between a locking position in which said device engages said armrest such that said backrest is secured in a desired sitting depth position and such that said backrest is prevented from being lifted off of said armrests, and a disengaged position in which said locking device is disengaged from said armrest such that, when both of said adjustable locking devices are in said disengaged position, said backrest can be moved horizontally along said armrests to adjust said sitting depth of the backrest, and can be lifted off of or placed down on said armrests;

each of said adjustable locking devices, after being moved into said locking position to locate said backrest in said desired sitting depth position, engaging said armrest for locking the backrest in said desired sitting depth position.

5,344,217

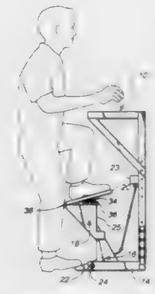
ERGONOMIC FOOT REST

Richard S. McLaughlin, Plano, Tex., assignor to Levi Strauss & Co., San Francisco, Calif.

Filed Aug. 26, 1992, Ser. No. 935,589

Int. Cl.[5] A47C *7/50*

U.S. Cl. 297—423.25 **11 Claims**



1. An ergonomic foot rest associated with a work station and comprising:

a stable, substantially horizontal base;
a first member movably attached to said base to permit horizontal adjustment of said first member along the base to a desired position, wherein said first member is moved in a horizontal plane;
a second member movably attached to said first member to permit vertical adjustment of said second member along said first member to a desired height, wherein said second member is moved in a vertical plane;
a footplate attached pivotally to the second member to permit adjustment of the footplate whereby a top surface of said footplate is secured at a desired angle between a vertical position and a horizontal position relative to said base;
said base including a means for pivotally attaching to said base a foot activated control pedal associated with the work station, whereby a user can operate said foot pedal with a first foot while simultaneously resting a second foot on said footplate.

5,344,218

APPARATUS FOR PRODUCING BRISTLE BUNDLES

Georg Weihrauch, Wald-Michelbach, Fed. Rep. of Germany, assignor to Coromet-Werke Heinrich Schlerf GmbH, Wald-Michelbach/Odw., Fed. Rep. of Germany

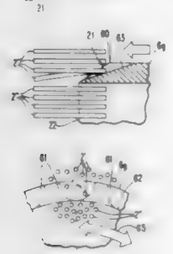
Filed Aug. 21, 1991, Ser. No. 748,070

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1990, 4027288

Int. Cl.[5] A46D *1/08*

U.S. Cl. 300—2 **32 Claims**







1. Apparatus for producing bristle bundles, the apparatus comprising:
a shaft-like magazine for receiving a supply of cut-to-length parallel-positioned bristles; and
at least one tubular bundle gripper having an opening with an internal cross-section corresponding to a desired cross-section of the bristle bundle, said bundle gripper being movable into the magazine so as to separate at least one bristle bundle from the bristles in the magazine, and
wherein an interior of the bundle gripper widens from the opening in a constant curve portion over a short axial length portion, and, over a substantial remaining portion of an axial length a wall portion of the interior of the bundle gripper extends in parallel to a longitudinal center axis of the tubular bundle gripper such that the tubular bundle gripper has an internal cross-section greater than said opening.

7. Apparatus according to claim 1, wherein a piston disposed in and forming a rear termination of the at least one tubular bundle gripper includes narrow channels connected to a vacuum source.

5,344,219

MOTOR VEHICLE WHEEL FRAME

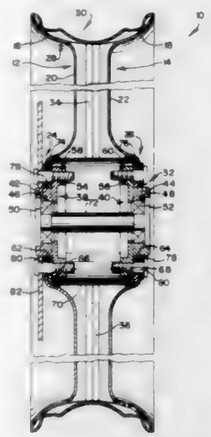
Christian A. Adrian; Robert Speth, and William G. Angus, all of Pretoria, South Africa, assignors to CSIR, Pretoria, South Africa

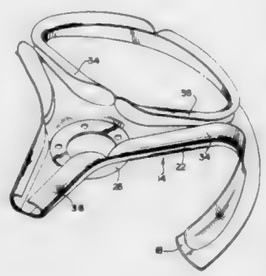
Filed Oct. 22, 1992, Ser. No. 964,939

Claims priority, application United Kingdom, Oct. 24, 1991, 9122593.8

Int. Cl.[5] B60B *1/00*

U.S. Cl. 301—64.1 **10 Claims**





1. A motor vehicle wheel frame comprising
complemental first and second members, each being of separate, integrally molded, construction of fiber-reinforced synthetic plastics material and comprising
an outer, circular, band portion,
a plurality of spoke portions respectively of concave section, and integral with and extending inwardly from the band portion,
hub mounting formations at inner ends of the spoke portions, the first and second members being closed upon and bonded to each other in opposite oriented arrangement such as to form an outer, circular, outwardly concave band, a plurality of hollow spokes and such as to position the hub mounting formations oppositely to each other;
a molded, integral, circular rim of fiber-reinforced synthetic plastics material seated in and bonded to said outwardly concave band and providing a radially outwardly exposed seat adapted to seat a tire in use; and
hub components forming a hub and which are seated in and secured to the hub mounting formations in which said outer, circular, outwardly concave band has a wall of generally constant thickness and which wall has a radially inner surface and a radially outer surface, said radially inner surface, along portions intermediate said hollow spokes, as viewed in cross section, being of continuous convex shape, in which said molded, integral, circular rim has a wall of generally constant thickness and which wall has a radially inner surface and a radially outer surface, said radially outer surface providing said radially outwardly exposed seat, said radially inner surface, as viewed in cross section, being of undulating shape having portions of convex shape and portions of concave shape, said radially outer surface of said outer, circular, outwardly concave band and said radially inner surface of said molded, integral, circular rim, when seen in cross section, touching at predetermined spaced positions only, and being spaced apart intermediate said predetermined spaced positions, bonding of said rim to said band being along said predetermined spaced positions only.

5,344,220

ANTI-LOCK CONTROL SYSTEM FOR MOTORCYCLES

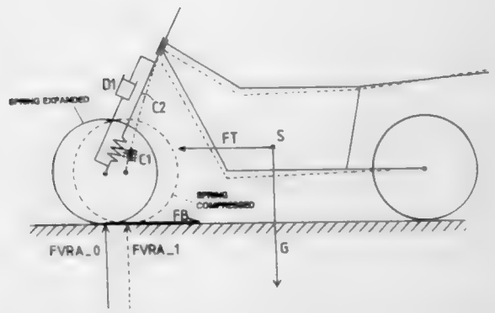
Georg Roll, Heusenstamm; Heinz F. Ohm, Weiderstadt, and Berthold Hauser, Jakobsneuharting, all of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer Kommanditgesellschaft auf Aktien and Bayerische Motorenwerke AG, Fed. Rep. of Germany

Filed Feb. 11, 1993, Ser. No. 16,748

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1992, 4204350

Int. Cl.[5] B60T *8/28*

U.S. Cl. 303—9.64 **5 Claims**



1. An anti-lock system for motorcycles, which comprises:
means for sensing respective speeds of the front and rear wheels of the motorcycle;
means for applying braking pressure to the front wheel at a first rate;
means responsive to the sensing means for determining deceleration of the motorcycle;
means for comparing the pressure applied to the front wheel with a predetermined pressure reference threshold and, if said threshold is exceeded, along with simultaneous exceeding of a predetermine motorcycle deceleration limit, for generating a control signal to the brake pressure applying means for increasing the pressure applied to the front wheel at a second rate lower than the first rate.

5,344,221

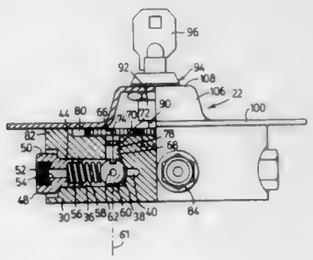
ANTI-THEFT METHOD AND APPARATUS FOR LOCKING THE BRAKES OF A VEHICLE

Mark W. MacWilliam, 419 Dovercourt Road, Toronto, Ontario, Canada M6J 3E8

Filed Jan. 27, 1993, Ser. No. 9,666

Int. Cl.[5] B60T *17/16*

U.S. Cl. 303—89 **21 Claims**



1. An anti-theft apparatus for a wheeled vehicle, the vehicle including a wheel-braking system having at least one conduit for braking fluid such that a) when the fluid moves in one direction in said conduit the brakes are applied, and b) when the fluid moves in the opposite direction in said conduit the brakes are released; said apparatus comprising:
A) valve means including:
recess means defining a valve chamber,
within said chamber a valve seat surrounding a passageway,
a valve member defining a surface which is radially symmetrical about an axis of symmetry, said surface seating against said valve seat, said valve member having internal passage means and being rotatable about said axis of symmetry between 1) a first position in which it blocks fluid flow from said chamber to said passageway and functions as a one-way check valve, and 2) a second position in which it permits fluid flow in both directions along said passage means between said chamber and said passageway,
and resilient means for urging said valve member against said valve seat,
B) connecting means adapted to permit the apparatus to be installed in said braking fluid conduit such that when the braking fluid moves in said one direction it passes from said passageway to said chamber, and when the braking fluid moves in said opposite direction it passes from said chamber to said passageway, and
C) locking means operatively associated with said valve member and adapted a) to move said valve member between said first and second positions, and b) to lock said valve member in said first position.

5,344,222

METHOD FOR CONTROLLING A BRAKING OPERATION INCLUDING DETERMINING BRAKE COEFFICIENT FORCES

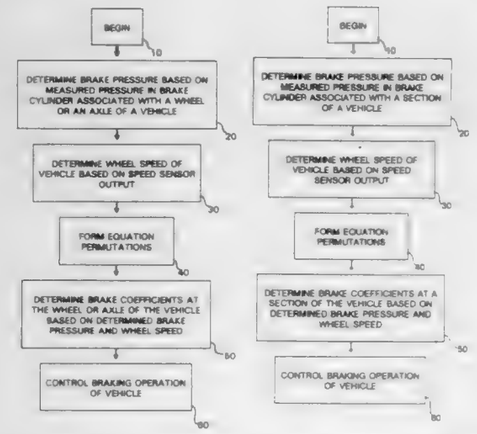
Reinhard Helldörfer, Igelsdorf; Jürgen Leuteritz, Nuremberg; Matthias Gramann, Neunkirchen a. Sand, and Bernhard Töpfer, Stuttgart, all of Fed. Rep. of Germany, assignors to Temic Telefunken microelectronic GmbH, Heilbronn and Mercedes-Benz Aktiengesellschaft, Stuttgart, both of Fed. Rep. of Germany

Filed Mar. 23, 1993, Ser. No. 35,782

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1992, 4210576

Int. Cl.[5] B60T *8/32;* **G01P** *15/02, 3/00;* **G05D** *15/00*

U.S. Cl. 303—100 **17 Claims**



1. A method for controlling a braking operation of a vehicle using a brake coefficient for defining a relationship between brake pressure and brake force associated with one of a wheel and an axle of a vehicle and a section of a vehicle combination during the braking operation of the vehicle, the method comprising the steps of:
determining a brake pressure associated with the wheel or axle of the vehicle or the section of the vehicle combina-

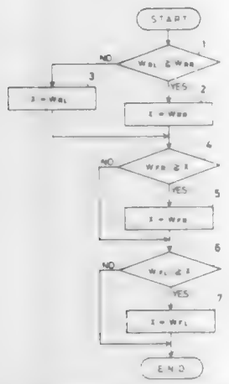
tion during at least one measurement interval during the braking operation;
determining a speed associated with at least one wheel of the vehicle during the braking operation during the at least one measurement interval;
determining a force of inertia associated with the wheel or axle of the vehicle or the section of the vehicle combination based on the determined speed;
determining a mass-related brake coefficient associated with the brake-pressure-sensed wheel, axle or section of the vehicle based on the determined force of inertia and the determined brake pressure;
determining a mean value for a mass-related brake coefficient associated with any non-brake-pressure-sensed wheel, axle or section of the vehicle; and
controlling the braking operation of the vehicle based on the determined mass-related brake coefficient associated with the brake-pressure sensed wheel, axle or section of the vehicle and the mean value for a mass-related brake coefficient associated with the non-brake-pressure-sensed wheel or axle of the vehicle or section of the vehicle combination.

5,344,223

ANTI-SKID BRAKE CONTROL METHOD

Ryuta Sugawara, and Satoshi Akimoto, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 882,861, May 14, 1992, abandoned. This application Aug. 20, 1993, Ser. No. 109,473
Claims priority, application Japan, May 16, 1991, 3-111984
Int. Cl.[5] B60T *8/68, 8/64*
U.S. Cl. 303—103 **9 Claims**



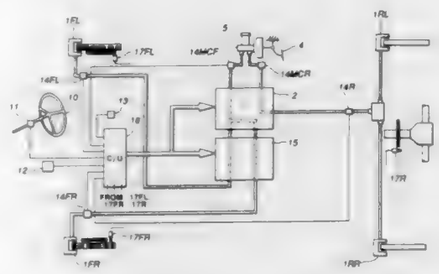
1. A method for performing anti-skid brake control in a vehicle when the vehicle is turning, which comprises:
braking while turning said vehicle,
detecting when wheels of said vehicle are in a skid condition,
detecting wheel speeds of front and rear wheels of said vehicle,
comparing wheel speeds of said rear wheels and selecting a lowest rear wheel speed based thereon,
comparing wheel speeds of said front wheels and said lowest rear wheel speed and selecting a highest wheel speed based thereon,
estimating vehicle body speed based on said selected highest wheel speed, and
increasing and decreasing braking force on said wheels based on said estimated vehicle speed for stabilizing steering of said vehicle and shortening braking distance.

5,344,224

SYSTEM AND METHOD FOR CONTROLLING BRAKING FORCE FOR AUTOMOTIVE VEHICLE

Yoshiki Yasuno, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 22, 1992, Ser. No. 917,180
Claims priority, application Japan, Jul. 22, 1991, 3-181110
Int. Cl.[5] B60T *8/06;* **B60G** *17/00*
U.S. Cl. 303—111 **15 Claims**



8. A braking system for an automotive vehicle having a front wheel pair, a rear wheel pair, and a steering wheel, said braking system comprising:
a) means for detecting an angular displacement of said steering wheel and for producing a first signal indicative of said angular displacement;
b) means for detecting a forward or rearward speed of said vehicle and for producing a second signal indicative of said speed;
c) means, responsive to said first and second signals, for setting a target value of a preselected variable corresponding to a desired vehicular motion, said preselected variable corresponding to a yaw rate in a lateral direction;
d) right and left braking means, disposed on at least one of said front or rear wheel pairs, said right and left braking means comprising right and left front wheel cylinders disposed on right and left front wheels, and right and left rear wheel cylinders disposed on right and left rear wheels, said braking means further comprising a first actuator for controlling the brake fluid pressure in each rear wheel cylinder, and a second actuator which in combination with said first actuator controls the brake fluid pressure in each front wheel cylinder,
wherein said first actuator includes:
first, second and third three-port, three-position solenoid-operated valve members, each of said valve members having an A port, a B port, and a P port, said valve members controlling brake fluid pressure in the wheel cylinders at levels below the brake fluid pressure of a master cylinder,
P ports of the first and second solenoid-operated valve members being connected to a first hydraulic line emanating from the master cylinder,
A ports of the first and second solenoid-operated valve members being connected to said second actuator,
and B ports of the first and second solenoid-operated valve members being connected to the second actuator by means of said first hydraulic line emanating from the master cylinder and a first hydraulic pressure pump which is driven by means of a motor,
the P port of the third solenoid-operated valve member being connected to a second hydraulic line emanating from the master cylinder, the A port of the third solenoid-operated valve member being connected to the rear wheel cylinders, and the B port of the third solenoid-operated valve member being connected to the first hydraulic line by means of a hydraulic pump which is driven by means of a motor;
a first accumulator connected to a conduit communicated between the P ports of the first and second solenoid-operated valve members and said first hydraulic pump;
a first reservoir tank connected to a conduit between the B ports of the first and second solenoid-operated valve members and said first hydraulic pump;
a second accumulator connected to a conduit communicated between the P port of said third solenoid-operated valve member and said second hydraulic pump; and,
a second reservoir tank connected to a conduit between the B port of said third solenoid-operated valve member and the second hydraulic pump;
and wherein said second actuator includes:
fourth and fifth solenoid-operated valve members which are disposed between said first actuator and said front wheel cylinders and which supply brake fluid under pressure to the front wheel cylinders; and
sixth and seventh three-port, three-position solenoid-operated valve members, each of said valve members having an A port, a B port and a P port, said sixth and seventh valve members controlling the brake fluid pressures in the front wheel cylinders above the brake fluid pressure of the master cylinder,
a third hydraulic Dump disposed between each of said P ports and B ports by means of conduit;
a third reservoir disposed between said third hydraulic pump and said P ports by means of conduit; and
first and second plunger-type pistons, said first piston being disposed between an A port of one of said sixth or seventh valve members and said fourth valve member, said second piston being disposed between an A port of the other of said sixth or seventh valve members and said fifth valve member, said pistons each having a rod which operates in reciprocating fashion to open and close one of said fourth and fifth valve members according to predetermined pressure thresholds so that an output from said first actuator can be cut-off and brake fluid pressure supplied from said third reservoir by means of said third hydraulic pump and through said sixth and seventh valve members to said wheel cylinders;
e) means for calculating a first target braking force for each of said right and left braking means independently, said first target braking forces being calculated so as to achieve in combination said target value of a preselected variable corresponding to a desired vehicular motion;
f) means for detecting a wheel speed of at least one of the wheels on which one of said left and right braking means is disposed, and for producing a third signal indicative of said wheel speed;
g) means for calculating a second target braking force for at least one of said right and left braking means in response to said third signal, said second target braking force being calculated so as to maintain within a predetermined range the slip rate of the wheel whose speed has been detected; and
h) means for independently controlling the braking force applied to each of said braking means in accordance with the lesser of the first target braking force or second target braking force corresponding to the particular braking means being controlled;
wherein said means for setting a target value of a preselected motion variable sets the target value of the vehicular motion as follows:

$$\Psi'r(n)=\Psi'r(n-1)+\Psi''r(n)\cdot\Delta T$$

wherein $\Psi'r(n)$ denotes the target yaw rate, $\Psi'r(n-1)$ denotes a previous value of the target yaw rate, $\Psi''r(n)$ denotes a differential value of the target yaw rate, and ΔT denotes a timer interrupt period of time; and $\Psi''r(n)$ is calculated as follows:

$$\Psi''r(n)=\tau^{-1}H_0-\tau^{-1}\Psi'r(n-1)$$

wherein

$$H_0=(L*N)^{-1}V_x/(1+A*V_x^2)$$

and L denotes a wheel base, A denotes a stability factor, H_0 denotes a steady-state yaw rate gain, V_x denotes the value of the second signal of said means for detecting a forward or rearward speed of said vehicle, N denotes a steering gear ratio, and Θ denotes the steering angle, and wherein said means for setting a target value of a preselected motion variable sets the target value of the lateral direction speed as follows:

$$Vyr(n)=Vyr(n-1)+V'yr(n)\Delta T$$

wherein

$$V'yr(n)=a_{21}\Psi'r(n)+a_{22}Vry(n-1)+b_2\theta$$

and wherein $a_{21}v/Vx-Vx$, $a_{21}v=-2(K_f*L_f-K_r*L_f/M$, $a_{22}=a_{22}v=-2(K_f+K_r)/M$, K_f denoting a front wheel cornering power, K_r denoting a rear wheel cornering power, $b_2=2$ $K_f(M*N)$, and M denotes a vehicular weight.

5,344,225

LAWN MOWER ATTACHMENT

Clinton A. Blyth, 4742 Devonshire St., Boulder, Colo. 80301

Filed Nov. 6, 1992, Ser. No. 972,897
Int. Cl.[5] G09F *11/02;* **B65D** *85/00*
U.S. Cl. 312—34.4 **11 Claims**

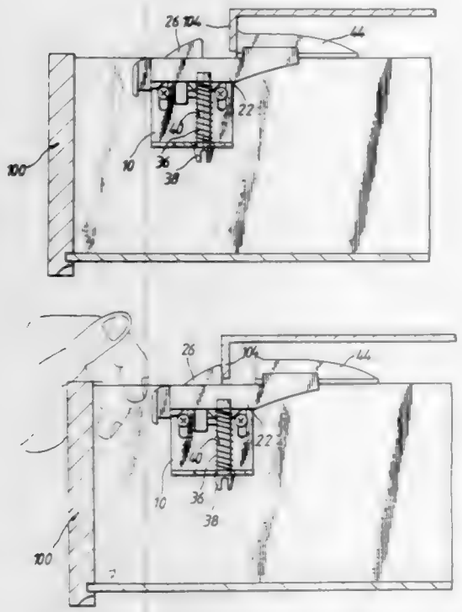
1. A lawn mower attachment for use with a lawn mower to store and dispense bags to dispose of lawn clippings comprising:
a housing, said housing having a hollow interior,
an attachment means, said attachment means including a first bar and a second bar,
a plastic bag storage area, said bag storage area located in said hollow interior,
dispensing means, said dispensing means including an access slot for said bags in said housing communicating with said hollow interior whereby said attachment is adapted to affix to a lawn mower and said bags are adapted to dispense through said access slot and utilized to dispose of clippings,
wherein said housing has a first end panel and a second end panel, said first end panel having said first bar secured thereto and extending laterally therefrom, and said second end panel having said second bar secured thereto and extending laterally therefrom, said second bar being further connected to bar extension means, and
wherein said housing has a top panel extending between said first and second end panels, said housing further including a storage area located below said top panel in said housing interior, said top panel having an opening communicating with said storage area.

5,344,226

SAFETY DEVICE FOR DRAWERS

Wen-Ting Lee, No. 25, Lane 38, Yung Leh St., Lu Chou Hsiang, Taipei Hsien, Taiwan

Filed Mar. 12, 1993, Ser. No. 31,215
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—334.47 10 Claims



1. A safety device for a drawer of a desk having a panel with an inner wall, said desk having an upper edge to define a compartment for receiving said drawer, said safety device comprising:

a mount securely mounted to said inner wall of said panel of said drawer, said mount comprising a vertical portion on which a first track is provided and a horizontal portion in which a hole is formed;

a sliding assembly comprising:

a body having at least one compartment,

a stop being received in one of said one compartments, said stop having an upper operative curvature for guiding said upper edge during a closing movement of said drawer, said upper operative curvature inclining from an end thereof closer to a user to the other end thereof, a stopping surface being defined on said other end,

a second track extending longitudinally from said body,

a slider slidably received in said second track means, said slider having a second upper operative surface for guiding said upper edge during an opening movement of said drawer,

a member projecting from said body and being vertically and slidably received in said first track,

a pin extending downward from said body passing said hole and having a means at a distal end thereof to prevent said pin from disengagement with said hole, and

a spring means being wound around the pin;

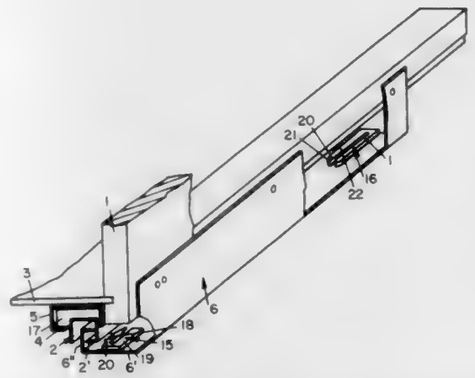
a top of said stop and said second surface being high above a bottom of said upper edge of said desk when said spring means is in an original uncompressed status, whereby a motion of said drawer is restrained in two positions defined by said stopping surface of said stop and an end of said slider which is adjacent to the user.

5,344,227

EXTENSION GUIDE ASSEMBLY FOR A DRAWER

Erich Röck, Höchst, Austria, and Fredi Dubach, Adetswil, Switzerland, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

PCT No. PCT/AT92/00017, § 371 Date Oct. 8, 1992, § 102(e) Date Oct. 8, 1992, PCT Pub. No. WO92/13473, PCT Pub. Date Aug. 20, 1992
PCT Filed Feb. 11, 1992, Ser. No. 938,136
Claims priority, application Austria, Feb. 12, 1991, 297/91; Jul. 9, 1991, 1367/91; Dec. 11, 1991, 2457/91; Dec. 11, 1991, 2458/91
Int. Cl.[5] A47B *88/06*
U.S. Cl. 312—334.6 23 Claims



1. An extension guide assembly for use on a side of a drawer to guide movement of the drawer into and out of a furniture body, said assembly comprising:

a support rail to be attached to the furniture body;

an extension rail to be attached to the drawer;

a central rail between said extension rail and said support rail, said central rail having a U-shaped transverse profile opening downwardly;

carriages positioned within said profile of said central rail and supporting rolling bodies transferring a load of the drawer from said central rail to said support rail;

guide members disposed on top of said central rail between said central rail and said extension rail;

said extension rail having a downwardly open U-shaped transverse cross section including an upper horizontal leg above said guide members, lateral vertical legs extending downwardly from opposite sides of said upper horizontal leg along respective sides of said guide members, and a lower horizontal leg extending from one said vertical leg to a position beneath each said guide member, thus preventing lifting of said extension rail and the drawer from said guide members and said central rail;

a pin on said extension rail; and

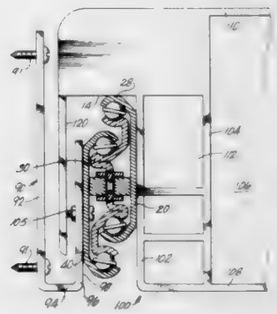
a pivot member mounted on said central rail to pivot in opposite directions and biased by a spring to pivot, said pivot member having a slot receiving said pin in one direction of pivoting of said pin member, thereby preventing longitudinal movement of said extension rail relative to said central rail in said one direction of pivoting of said pivot member, said slot releasing said pin member in an opposite direction of pivoting of said pivot member, thereby allowing longitudinal movement of said extension rail relative to said central rail in said opposite direction of pivoting of said pivot member.

5,344,228

THIN OFFSET DRAWER SLIDE WITH PROGRESSION ROLLER

Franz Kovarik, Limburg, Fed. Rep. of Germany, and James Ongley, Glendale, Calif., assignors to Accuride International Inc., Santa Fe Springs, Calif.

Filed Jun. 8, 1992, Ser. No. 895,264
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—334.9 12 Claims



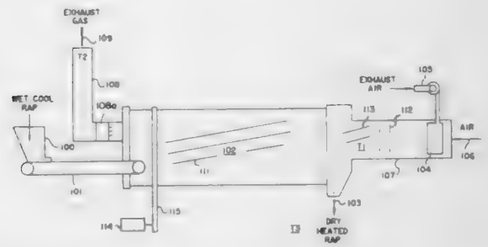
4. A slide mechanism comprising first and second channel members and four sets of bearings rollable on and retained by an intermediate slide member comprising a unitarily formed combination of a central wall, a first pair of bearing raceways joined to ends of the central wall, and a second pair of raceways each joined to a wall extending angularly outwardly from one of the first pair of bearing raceways, wherein the central wall is generally vertical and further comprises a roller clearance window with a progression roller mounted therein for rotation about a generally vertical axis.

5,344,229

ANGLE AND VELOCITY ADJUSTMENT OF A HOT MIX ASPHALT DRUM WHEN OUTPUT GAS TEMPERATURES ARE UNEVEN

Robert H. Nath, Albuquerque, N. Mex.; John Wiley, Leander; Robert Erickson, Georgetown; Carl R. Hutchison, Austin, and Mike Miles, Georgetown, all of Tex., assignors to Cyclean, Inc., Round Rock, Tex.

Continuation of Ser. No. 803,642, Nov. 27, 1991, which is a continuation-in-part of Ser. No. 754,264, Aug. 29, 1991, which is a continuation-in-part of Ser. No. 387,160, Jul. 31, 1989, abandoned. This application Sep. 23, 1992, Ser. No. 949,564
Int. Cl.[5] B28C *5/46*
U.S. Cl. 366—25 5 Claims



1. A counterflow drum mixer for production of hot mixed asphalt (HMA) comprising in combination:

said drum mixer having a hot gas inlet and means for generating hot gas;

said drum mixer having a gas outlet;

said drum mixer having a veil of falling HMA within said drum mixer;

an array of gas temperature sensing means located at said outlet for detecting gas temperature; and

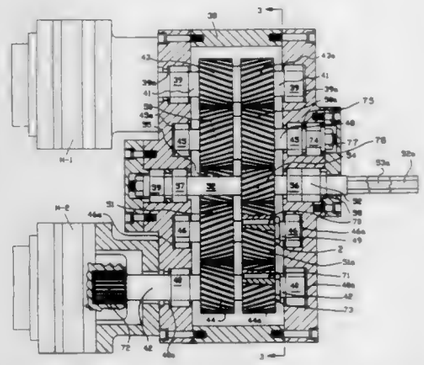
means responsive to a gas outlet temperature rise, not detected on all of said sensing means, for changing at least one drum operating parameter of said drum which changes said veil of falling HMA.

5,344,230

HIGH HORSEPOWER HYDRAULICALLY DRIVEN CONTINUOUS MIXING AND PROCESSING SYSTEM

James E. Kowalczyk, and Bernard A. Loomans, both of Saginaw, Mich., assignors to APV Chemical Machinery Inc., Saginaw, Mich.

Filed Feb. 19, 1991, Ser. No. 656,583
Int. Cl.[5] B01F *7/08*; F16H *37/06*
U.S. Cl. 366—100 18 Claims



4. A high horsepower continuous processing machine for mixing, blending, compounding, reacting, devolatilizing, and pyrolytically combusting comprising:

a. an elongate barrel having walls forming an elongate continuous processing chamber of the configuration of a plurality of intersecting cylinders, and having a material entrance at one end of the chamber and a material discharge at the other;

b. at least a pair of spaced apart, parallel, rotatable chamber shafts extending in said processing chamber axially in each intersecting cylinder and having co-extensive, parallel chamber shaft drive portions outboard of said chamber;

c. radially interacting, relatively angularly oriented material processing portions on each chamber shaft in co-wiping engagement with like portions on the other chamber shaft, the processing member portions being configured to also wipe the chamber walls;

d. at least a pair of synchronously driven rotary motors for driving said chamber shafts at the same speed of rotation in the same direction, each motor having an output shaft system;

e. a separate gear with peripheral teeth for driving each chamber shaft drive shaft portion, the respective gears lying in different radial planes so that the gear teeth of the gear for driving each chamber shaft drive shaft portion are radially offset from the gear teeth for the other chamber shaft drive shaft portion and the respective gear teeth for each said gear are not in mesh; and

f. a pair of separate elongate drive gear mechanisms driven independently by each of the output shaft systems, each said drive gear mechanism being of an axial extent to simultaneously radially overlie the radially offset teeth of said gears for driving said chamber shaft drive shaft portions, each separate drive gear mechanism having teeth in mesh with the gear teeth of both of said gears so that each chamber shaft drive shaft portion and chamber shaft is driven by the output shaft system of both motors.

5,344,231

SYSTEM FOR THE PREPARATION OF A FLUID CONCENTRATE INTENDED FOR MEDICAL USE

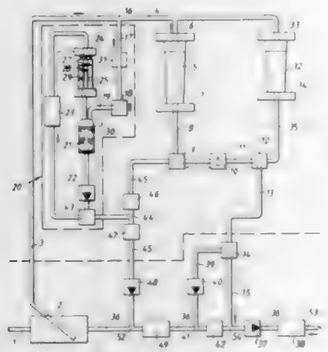
Lennart Jönsson, Furulund, and Stefan Knutsson, Bjärred, both of Sweden, assignors to Gambro AB, Sweden

Continuation of Ser. No. 643,468, Jan. 22, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 3,844

Claims priority, application Sweden, Feb. 19, 1990, 9000586-9

Int. Cl.[5] B01F *15/04*

U.S. Cl. 366—137 | 25 Claims



19. Apparatus for the preparation of a concentrate solution from water and powder or powder concentrate comprising water supply means for supplying said water, cartridge means for retaining said powder or powder concentrate, dissolution means for dissolving said powder or powder concentrate with said water whereby said water supply means is adapted to supply said water to said cartridge means in order to dissolve at least a portion of said powder or powder concentrate and provide said concentrate solution in said cartridge means, and recirculation means for withdrawing said concentrate solution from said cartridge means and recirculating said concentrate solution through said cartridge means to further concentrate said concentrate solution to a predetermined concentration, said recirculation means including at least one conduit for providing a recirculation path for said concentrate solution during said recirculation, said at least one conduit being connected to said cartridge means so that said concentrate solution flows through said at least one conduit into said cartridge means, concentration determination means arranged in the flowpath defined by said at least one conduit for determining the concentration of said concentrate solution and regulating the concentration thereof until said predetermined concentration is obtained, and valve means connected to said at least one conduit, said valve means being operatively associated with said concentration determination means for selectively providing a flowpath for said concentrate solution to said cartridge means in response to said concentration determination means whereby said powder contained within said cartridge means is further dissolved in said concentrate solution.

5,344,232

BONE CEMENT MIXING AND LOADING APPARATUS

Charles L. Nelson, Richland; Michael W. Steffler, Kalamazoo, and Douglas L. Tyler, Sr., Paw Paw, all of Mich., assignors to Stryker Corporation, Kalamazoo, Mich.

Division of Ser. No. 769,004, Sep. 30, 1991, Pat. No. 5,265,956. This application Oct. 5, 1993, Ser. No. 132,134

Int. Cl.[5] B01F *13/06, 15/02, 7/20*

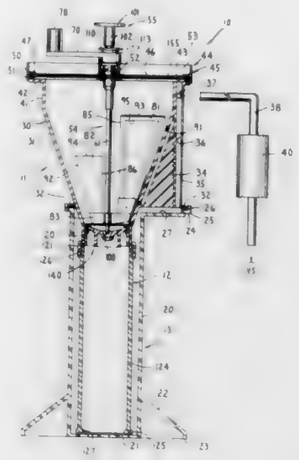
U.S. Cl. 366—139 | 15 Claims

3. An apparatus for mixing bone cement and containing the mixed bone cement preparatory to dispensing, the apparatus comprising:

a mixing chamber having a top portion and a bottom portion, said bottom portion including an outlet for outputting mixed cement;

a cartridge having a top portion including an inlet releasably coupled to the outlet of said mixing chamber for receiving mixed bone cement therefrom;

means for preventing incorporation of air into the cement



mixture comprising a vacuum shroud surrounding the cartridge and extending up substantially to the bottom portion of the mixing chamber and means for connecting a vacuum source to the interior of said mixing chamber and vacuum shroud to keep the mixing chamber and cartridge at a subatmospheric pressure during cement mixing and loading into said cartridge.

5,344,233

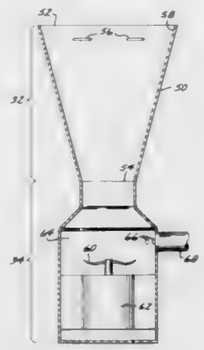
APPARATUS FOR DISPENSING HYDRATABLE MATERIAL

William E. Barger, Afton, Wyo., assignor to J. R. Simplot Co., Pocatello, Id.

Filed May 11, 1993, Ser. No. 60,238

Int. Cl.[5] B01F *15/02*

U.S. Cl. 366—165 18 Claims



1. Apparatus for dispensing a hydratable material , comprising:

a source of the hydratable material to be dispensed;

a continuous-flow first mixer comprising a hydratable material inlet and a water inlet, the hydratable material inlet and the water inlet being disposed to mix a flow of the hydratable material and a flow of water to produce a flow of a mixture of hydratable material and water; and

a continuous-flow second mixer positioned directly adjacent to the first mixer , and which second mixer receives the flow of mixture from the first mixer and includes

a mixing chamber,

at least one outlet opening in the wall of the mixing chamber of a size less than a preselected acceptable size of an agglomeration of the hydratable material,

an impeller disposed to mix the mixture of hydratable material and water and force the mixture rapidly through the mixing chamber and toward the outlet opening so that the mixture is not retained within the mixing chamber.

5,344,234

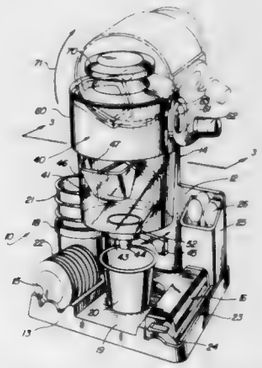
TOY BEVERAGE MIXER AND DISPENSER

Martin J. Caveza, Redondo Beach, Calif., assignor to Mattel, Inc., El Segundo, Calif.

Filed Jan. 29, 1993, Ser. No. 10,738

Int. Cl.[5] B01F *15/02;* A63H *33/30*

U.S. Cl. 366—192 7 Claims



1. A beverage mixer and dispenser comprising:

a base having a vertically extending support;

a mixing container coupled to said vertically extending support and defining an interior cavity, a bottom surface having an aperture, an upwardly facing opening, an edge encircling said opening and a material input spout;

a crank housing pivotally coupled to said vertically extending support and positionable in a first position overlying said mixing container and a second position pivoted away from said mixing container, said crank housing defining a lower edge generally conforming to said upper edge of said mixing container exclusive of said spout;

a crank rotatably supported upon said crank housing;

a dispensing valve coupled to said bottom surface for opening or closing said aperture.;

a mixing blade; and

mixing blade drive means supporting said mixing blade and coupled to said crank for rotating said mixing blade in response to crank rotation,

said crank housing and said mixing container cooperating when said crank housing is in said first position to generally enclose said mixing blade while said input spout facilitates introduction of material into said interior cavity.

5,344,235

EROSION RESISTANT MIXING IMPELLER

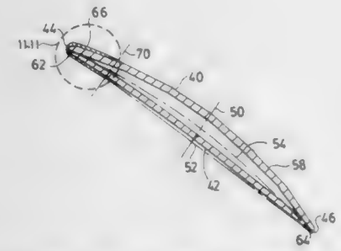
Ronald J. Weetman, Rochester; Frederick W. Kehr, III, Webster; Thomas A. Taylor, Caledonia, and Jonathan C. Everdyke, Canandaigua, all of N.Y., assignors to General Signal Corp., Rochester, N.Y.

Filed Jan. 21, 1993, Ser. No. 6,552

Int. Cl.[5] B01F *5/12*

U.S. Cl. 366—270 26 Claims

1. In an impeller having an airfoil blade with opposite sides having external surfaces which provide pressure and suction surfaces of said blade, said blade having leading and trailing edges and extending radially of said impeller from an axis of rotation of said impeller between a tip at an outer end thereof and a base at an inner end thereof, said blade being oriented to produce flow of material which causes erosion principally near the leading edge thereof by sliding of the material as it flows over the suction surface and impact with the pressure surface, the improvement which comprises a first plate and a second plate which are disposed in overlapping relationship and respectively define the suction and pressure surfaces of said blade on exterior sides thereof, said exterior sides extending to interior sides over a thickness which extends the life of said blade in the presence of erosion, an edge of said first plate defining the leading edge of said blade and extending continuously



toward the trailing edge covering a distance and area where erosion by sliding of the material principally occurs, said second plate having an edge which contacts the interior surface of said first plate near said edge of said first plate where said blade is subject to erosion by impact, and a layer of erosion resistant material around said leading edge of said blade over the edge of said first plate which defines said leading edge and the edge of said second plate and extending toward said trailing edge over an area of a region of sufficient size at least where erosion by sliding and by impact principally occurs thereby further extending the life of said blade in the presence of erosion, wherein said airfoil blade has a chord between the leading and trailing edges thereof, said airfoil blade having camber and defining a location behind said leading edge where said camber is maximized at a distance about 50% of the length of said chord from said leading edge.

5,344,236

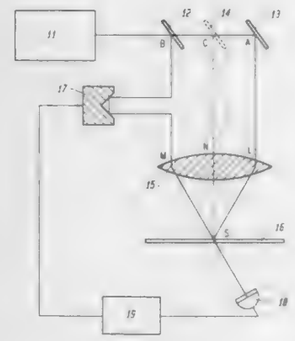
METHOD FOR EVALUATION OF QUALITY OF THE INTERFACE BETWEEN LAYER AND SUBSTRATE

Iiya M. Fishman, 558 Cambridge Ave., Palo Alto, Calif. 94306

Filed Jan. 23, 1992, Ser. No. 824,373

Int. Cl.[5] G01N *25/20, 25/72*

U.S. Cl. 374—5 9 Claims



1. A method for evaluation of the quality of the interface

between a layer disposed on a substrate, said interface being nonuniform in adhesion of said layer and said substrate, comprising the steps of:

providing a model of expected values for quantitative description of the process of thermal relaxation in the nonuniform interface between layer and substrate;

irradiating said layer with a plurality of laser beams to provide a non-uniform thermal excitation across said layer;

measuring thermal relaxation of said thermal excitation;

comparing said thermal relaxation of said thermal excitation with said expected values for the later stage of the thermal process in said interface obtained from said model;

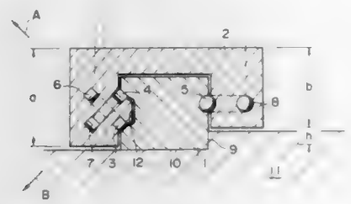
evaluating mismatch of said layer with said substrate by selecting the portion of said thermal relaxation that diverges from the expected values.

5,344,237

LINEAR MOTION ROLLING CONTACT GUIDE UNIT HAVING OPPOSITE ROLLER AND BALL CONTACTS

Seiji Takei, Yokohama, and Azuyasu Kitayama, Kukizaki, both of Japan, assignors to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1993, Ser. No. 51,025
Claims priority, application Japan, Apr. 22, 1992, 4-129547
Int. Cl.[5] F16C *29/06*
U.S. Cl. 384—45 **8 Claims**



1. A linear motion rolling contact guide units, comprising:

a rail extending over a desired length;

a slider slidably mounted on said rail with only two rolling contacts at one side of the rail and with only one rolling contact at an opposite side of the rail;

a pair of separate first and second guide channels formed at a first height and a second height, respectively, between a first side surface of said rail and a corresponding opposite side surface of said slider, said first height being different in vertical level from said second height;

said only two rolling contracts being provided by a plurality of rollers provided in each of said pair of first and second guide channels;

a third guide channel formed at a third height inbetween said first and second heights between a second side surface of said rail opposite to said first side surface of said rail and a corresponding opposite side surface of said slider; and

said only rolling contact being provided by a plurality of balls provided in said third guide channel.

5,344,238

BALL BEARING ASSEMBLY

Jaques L. Roch, Mountain View, Calif., assignor to Electroglas, Inc., Santa Clara, Calif.

Filed Dec. 18, 1992, Ser. No. 992,994
Int. Cl.[5] F16C *29/04*
U.S. Cl. 384—49 **16 Claims**

1. A ball bearing assembly comprising:

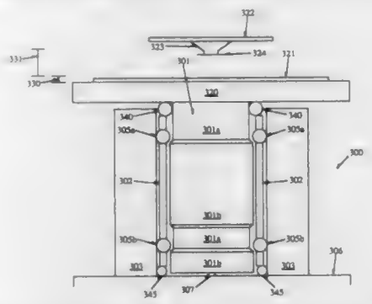
a housing;

a shaft disposed in said housing;

retaining means for retaining balls, said retaining means disposed between said shaft and said housing;

a plurality of balls disposed in said retaining means;

wherein said ball bearing assembly has a total stroke range of said shaft relative to said housing comprising a first stroke range and a second stroke range, said first stroke range



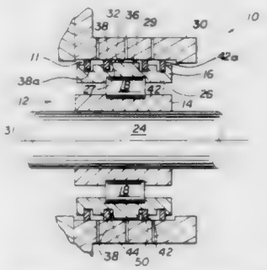
having a clearance fit, and said second stroke range having an interference fit.

5,344,239

SQUEEZE FILM BEARING DAMPER WITH ANNULAR END PLENUMS

Michael J. Stallone, and Daniel E. Mollmann, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Nov. 25, 1992, Ser. No. 982,192
Int. Cl.[5] F16C *32/06*
U.S. Cl. 384—99 **8 Claims**



1. A sealed squeeze film damper disposed between radially spaced apart inner and an outer annular elements that are circumscribed about an axially extending centerline, said sealed squeeze film damper comprising;

a squeeze film annulus radially disposed between the inner annular element and the outer annular element,

at least one pair of annular forward and aft sealing plenums at axial spaced apart forward and aft ends respectively of said squeeze film annulus, and

each of said annular sealing plenums having axially spaced apart forward and aft annular walls wherein said forward and aft annular walls are forward and aft rings that are partially disposed in corresponding forward and aft annular grooves in an outer circumference of one of said elements.

5,344,240

BEARING SYSTEM FOR AUTOMOTIVE ALTERNATORS

Tommy T. Tatro, Rte. 1, Box 180, Okmulgee, Okla. 74447; Doppre W. Duncan, 901 West Gentry, Henryetta, Okla. 74437; Robert S. Tatro, 1340 North Kern, Okmulgee, Okla. 74447

Filed Apr. 29, 1992, Ser. No. 875,965
Int. Cl.[5] F16C *33/58, 35/07*
U.S. Cl. 384—569 **3 Claims**

1. An improved bearing system for use in an alternator having an external housing with a support hole, comprising:

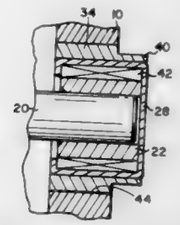
a shaft;

a bearing journal positioned on the end of the shaft;

a bearing having an inner surface and an outer surface wherein the inner surface is fit over the bearing journal;

a bearing sleeve having a guide fixed to the alternator housing;

said bearing sleeve extends through the support hole in the external housing such that the guide extends beyond the external housing;



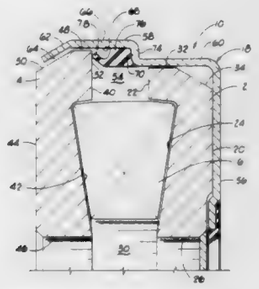
the bearing journal is fitted into the bearing so that the bearing outer surface is in contact with the bearing sleeve fixed in the alternator housing.

5,344,241

BEARING ASSEMBLY WITH INTERNAL SEAL

David E. Wells, Shawnee, Okla., assignor to L&S Bearing Co., Oklahoma City, Okla.

Filed Nov. 15, 1993, Ser. No. 152,607
Int. Cl.[5] F16C *33/76*
U.S. Cl. 384—607 **4 Claims**



1. A thrust bearing assembly comprising:

a first annular race having a peripheral surface, an upper surface, an inner surface which partially defines a central bore, and a lower surface which partially defines a roller receiving recess;

a second annular race having a peripheral surface, an upper surface which is spaced a distance from the lower surface of the first annular race to form an annular chamber therebetween and which partially defines a roller receiving recess, a lower surface, and an inner surface which partially defines a central bore;

a plurality of rollers positioned between the first and second annular races in the roller receiving recesses;

a closure cup for containing the first and second races and the rollers in operative relationship;

wherein the closure cup has a top wall which encloses the upper surface of the first annular race and a side wall extending down from the top wall which side wall encloses the peripheral surface of the first and second annular races, wherein the side wall of the closure cup has a first portion which encloses the peripheral surface of the first race, a lip portion which encloses the peripheral surface of the second race and is spaced a distance therefrom to form an annular space continuous with the annular chamber, and a central portion between the upper portion and the lip portion enclosing the annular chamber;

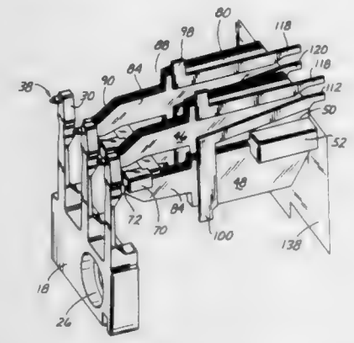
an annular seal attached to the inner surface of the central portion of the side wall of the closure cup, the seal having a flexible flange with a tip that contacts the upper surface of the second annular race so as to divide the annular space and the annular chamber, whereby entry of debris through the annular space into the bearing assembly is prevented and whereby escape of grease from inside the bearing assembly through the annular space is permitted.

5,344,242

PRINTER HAMMERBANK WITH LOW RELUCTANCE MAGNETICS

Norman E. Farb, Villa Park, Calif., assignor to Printronix, Inc., Irvine, Calif.

Filed Dec. 8, 1992, Ser. No. 987,378
Int. Cl.[5] B41J *2/245*
U.S. Cl. 400—124.2 **27 Claims**



1. A low reluctance magnetic circuit for a dot matrix line printer for retaining hammersprings by said magnetic circuit comprising:

a pair of pole pieces formed of a magnetically conductive metal with ends proximate the hammersprings, having a space between them with a permanent magnet emplaced in said space;

a coil wrapped around a portion of each of said pole pieces between the magnet and said ends thereof to provide a reverse magnetic field to the magnetic field provided by said permanent magnet through said pole pieces; and,

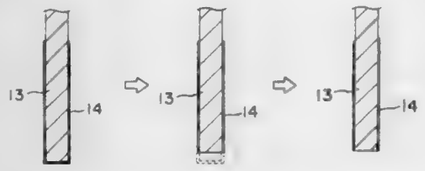
a metallic magnetic shunt between said pole pieces.

5,344,243

HEAD WIRE AND MANUFACTURING PROCESS THEREOF

Tsutomu Sawa, Fujisawa; Hiroyuki Takenoshita, Yokohama; Kohei Shibata, Isehara, and Hirohide Komatsu, Machida, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y. and K.R.D. Corporation, Kanagawa, Japan

Continuation of Ser. No. 835,630, Feb. 13, 1992, abandoned. This application Jan. 11, 1993, Ser. No. 3,198
Claims priority, application Japan, Jun. 18, 1991, 3-173172
Int. Cl.[5] B41J *2/23*
U.S. Cl. 400—124.32 **2 Claims**



1. A head wire for use in a high-speed impact dot matrix printer head including an armature, said head wire, comprising:

an elongate body formed of one of a high speed steel wire material and a titanium alloy wire material;

a first end connectable to the armature and a second end

having an end surface for printing characters on a paper material by acting on an ink ribbon arranged above the paper material; and

a coating formed around only the perimetric periphery of said second end, wherein said end surface is not coated, said coating comprises one of a ceramic hard titanium compound and an aluminum oxide.

5,344,244

PRINTER AND INK RIBBON CARTRIDGE HAVING COLOR BLOCK DETECTION MEANS

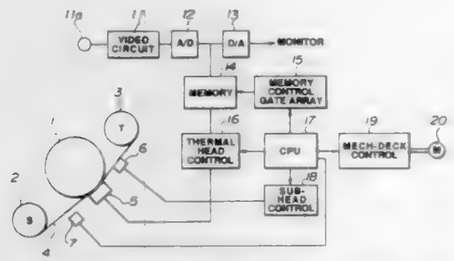
Kenichi Fukahori, Kanagawa; Shin Iima, Tokyo; Shuji Sato; Masaki Shimoha; Hideki Ito, and Mutsuko Narita, all of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Sep. 3, 1992, Ser. No. 940,393

Claims priority, application Japan, Sep. 11, 1991, 3-230679

Int. Cl.[5] B41J *33/14*

U.S. Cl. 400—249 **7 Claims**



1. A video printing apparatus including a thermal head and an ink ribbon cartridge in which an ink ribbon having a plurality of color blocks is accommodated, comprising:

means for addressing the color blocks when used in a printing operation, said addressing means including means for recording identification marks on said ribbon indicative of used color blocks and of an absolute value of at least one of the used color blocks; and

sensor means for detecting the used color blocks based on the presence of said identification marks and for ascertaining the absolute value of said at least one of the used color blocks;

wherein said addressing means provides means for recording said identification marks in 3-bit patterns on a predetermined portion of each of the used color blocks, said predetermined portion being unused in the printing operation.

5,344,245

SERIAL PRINTER

Akio Tajima; Hiroyuki Harada; Harukazu Shimizu; Haruo Inoue, all of Tokyo; Takashi Kougo, Chiba; Hajime Oda, Chiba; Tadashi Nakagawa, Chiba, and Tsuyoshi Hayakawa, Chiba, all of Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

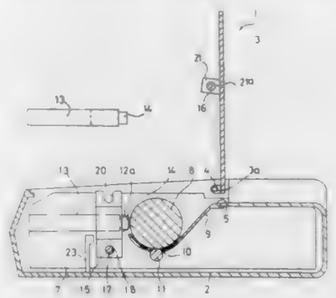
Continuation-in-part of Ser. No. 702,554, May 20, 1991, abandoned, and a continuation-in-part of Ser. No. 742,117, Aug. 8, 1991, abandoned. This application Jul. 13, 1992, Ser. No. 912,459

Claims priority, application Japan, May 23, 1990, 2-133188; Aug. 10, 1990, 2-213080; Nov. 30, 1990, 2-337297

Int. Cl.[5] B41J *25/304*

U.S. Cl. 400—320 **19 Claims**

1. In a printing head guide device comprising a printer casing means, a carrier means carrying a printing head, a pair of parallel guide rods for guiding said carrier means disposed in said printer casing means, said carrier means having one side thereof formed with engaging means for slidably engaging one of said guide rods, said one guide rod being mounted in a fixed position on said printer casing means, said printer casing means having mounting means movable between engaged and non-engaged positions, the other of said guide rods being mounted on said mounting means such that when in said engaged position, said other guide rod slidably supports said printing head and when in said non-engaged position, said other guide rod is



spaced from said carrier means, said mounting means comprising a cover movable between open and closed positions, said other guide rod being mounted on said cover.

5,344,246

PRINTER HAVING A VIBRATING PLATEN

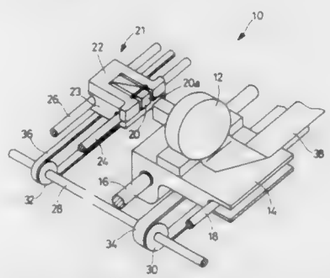
Yasuo Imoto; Akira Iriguchi, both of Nagoya; Atsuo Sakaida, Gifu; Yasuji Chikaoka, Aichi, and Akira Ninomiya, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 29, 1992, Ser. No. 997,077

Claims priority, application Japan, Jan. 9, 1992, 4-021878; May 29, 1992, 4-164196; Jun. 3, 1992, 4-170178

Int. Cl.[5] B41J *11/14*

U.S. Cl. 400—552 **35 Claims**



1. A printer for recording information on one of opposite surfaces of a recording medium, comprising:

a recording head which is displaceable along said one surface of said recording medium and records said information on said one surface of said recording medium,

a platen member having a platen surface which is opposed to said recording head;

a flat spring having opposite surfaces to one of which said platen member is fixed;

a frame member supporting said flat spring;

vibration means for applying vibration to said platen member and thereby vibrating said platen surface, said vibration means comprising a piezoelectric element which is at one of opposite ends thereof fixed to said frame member and at the other end thereof fixed to the other of said opposite surfaces of said flat spring; and

actuating means for, when said recording head is displaced along said one surface of said recording medium, displacing said platen member, said flat spring, said frame member and said piezoelectric element, as a unit, along the other of said opposite surfaces of said recording medium in a same direction as a direction of the displacement of said recording head and in synchronism with said displacement of said recording head, so that said platen surface continues to be opposed to said recording head.

5,344,247

PRINTING DEVICE

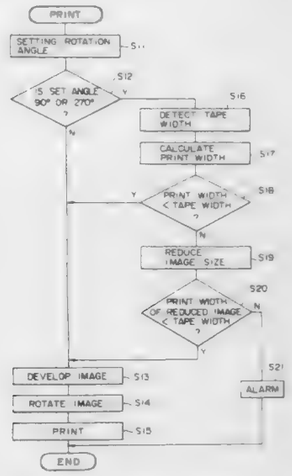
Shoji Sakuragi; Akihiro Sawada, and Hideo Ueno, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Feb. 19, 1993, Ser. No. 20,282

Claims priority, application Japan, Feb. 21, 1992, 4-72566

Int. Cl.[5] B41J *11/42*

U.S. Cl. 400—582 **16 Claims**



1. A printing device capable of printing an image onto a tape-type recording medium along the longitudinal direction of said tape-type recording medium, comprising:

means for printing said image on said tape-type recording medium in a rotated fashion with respect to said longitudinal direction;

means for detecting a width of said tape-type recording medium;

means for detecting the length of the image to be printed and for comparing said length with the width of said tape-type recording medium;

means for reducing a size of said image to be printed on said tape-type recording medium in said rotated fashion if the length of the image to be printed is greater than the width of the tape-type recording medium;

second means for detecting a reduced length of the image to be printed after reducing the size of said image to be printed; and

means for rotating said image with respect to said longitudinal direction if the width of the tape-type recording medium is greater than the reduced length of the image to be printed.

5,344,248

FRAMEWORK FOR PORTABLE PRINTERS

Jürgen Schoon, Eberbach; Heinrich Volk, Beerfelden; Ulf Hoch, Eberbach, and Peter Schneider, Schönau, all of Fed. Rep. of Germany, assignors to Esselte Meto International Produktions GmbH, Hirschhorn am Neckar, Fed. Rep. of Germany

Filed Apr. 23, 1991, Ser. No. 689,970

Claims priority, application United Kingdom, Apr. 24, 1990, 9009157.0

Int. Cl.[5] B41J *29/02*

U.S. Cl. 400—693 **30 Claims**

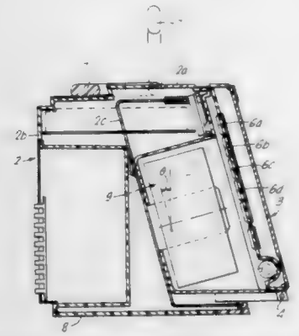
1. A portable substrate printer, comprising:

a mainframe including a primary support member oriented at an angle from 15–25 degrees to a vertical reference axis;

a front and a rear housing portion directly mounted on said primary support member;

a modular printing unit releasably mounted directly on said primary support member;

substrate supply means, directly mounted on said primary support member, for storing multiple substrates, said supply means including at least one spool holder directly attached to said primary support member and oriented in an acute angle to said vertical reference axis so as to retain a spool mounted on said spool holder and containing a roll of multiple substrates in place within the housing, and



further including a substrate sensor for detecting the presence of a substrate at an input to said printing unit;

means for inputting data to control the nature of indicia printed at said printing unit, including an alphanumeric keyboard, wherein said mainframe primary support member directly supports functional components of the printer, including said modular printing unit and said substrate supply means, and said front and rear housing portions function as protective members without serving to support functional components of said portable printer.

5,344,249

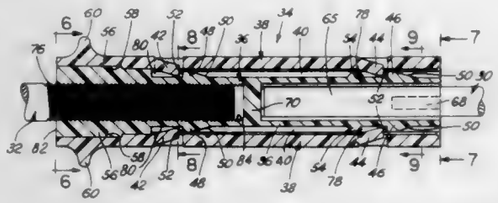
DOOR ROD LOCK LINK

Arthur P. Seifert, Englewood, Ohio, assignor to Master Industries, Inc., Ansonia, Ohio

Continuation-in-part of Ser. No. 898,558, Jun. 15, 1992, abandoned. This application Dec. 18, 1992, Ser. No. 992,572

Int. Cl.[5] F16B *27/00*

U.S. Cl. 403—3 **26 Claims**



1. A door rod lock link for receiving, joining and positively linking two ends of two rods comprising:

(a) an elongate clip base having a first opening and means in an inner peripheral surface of said opening for receiving and positively interlocking one end of a rod;

(b) a recessed longitudinal channel in an opposite end of said base for transversely receiving one end of a second rod into said base;

(c) one or more axially extending channels in an outer peripheral surface of said base and spaced detent projections along said channels to interengage and interlock with a plurality of hook projections of a sleeve; and

(d) an elongate hollow sleeve having a plurality of spaced hook projections for interengaging and interlocking with said detent projections of said channels of said clip base for positively locking said sleeve over said base and for

radially locking said second rod within said recessed channel.

5,344,250

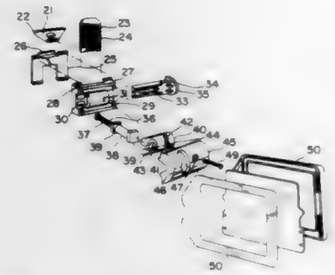
ADVERTISING DISPLAY MOUNTING DEVICE

George Kringel, Westport; Robert S. Frichette, Trumbull, and James E. Richardson, Weston, all of Conn., assignors to ActMedia, Inc., Darien, Conn.

Division of Ser. No. 704,835, May 20, 1991, Pat. No. 5,289,652, which is a continuation of Ser. No. 311,743, Feb. 17, 1989, abandoned. This application Sep. 24, 1992, Ser. No. 949,991

Int. Cl.[5] G09F *3/18;* **F16B** *7/00*

U.S. Cl. 403—228 7 Claims



1. A connecting means for coupling a display means to a mounting means comprising:

a tensile spring means for resiliently connecting said display means to said mounting means;

an extension limiting sheath surrounding said spring means, said sheath having a higher rate of cross sectional reduction under elastic deformation than said spring means, said extension limiting sheath being heat shrunk onto said tensile spring means;

a locking plate for attaching said sheath to said mounting means;

a shroud abutting said locking plate and having a slot;

wherein a proximal end of said sheath is anchored under said shroud and against said locking plate and said sheath extends through said slot and said shroud; and wherein a distal end of said sheath is anchored in said display means; and

whereby extension of said tensile spring means is restricted when said sheath and said tensile spring means reach a cross point in their elastic deformation, preventing inelastic deformation of said tensile spring means.

5,344,251

SHEAR PLUG CONNECTOR ARRANGEMENT

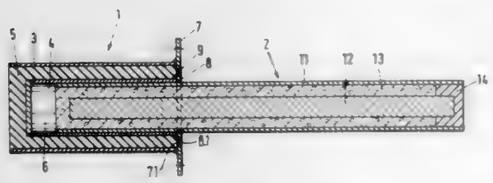
Anton H. Erb, 37, rue des Clos, CH-2012 Auvernier, Switzerland

Filed Nov. 16, 1992, Ser. No. 977,244

Claims priority, application Switzerland, Nov. 29, 1991, 3503/91

Int. Cl.[5] E04B *1/00*

U.S. Cl. 403—297 11 Claims



1. A shear plug connector assembly comprising, a plug element to be anchored in a first component, a bearing element to be anchored in a second component, an elastic element connected in said bearing element, said plug element mounted in said elastic element whereby said plug element is floatingly mounted in said bearing element by said elastic element, cooperating means connected between said bearing element and said plug element for limiting the motion amplitudes between said plug element and bearing element through said elastic element and said cooperating means operable at greater motion amplitudes to transfer shear force directly between said plug element and bearing element, whereby said elastic element is not excessively stressed and subjected to damage.

5,344,252

KEY FOR COUPLING DRIVING AND DRIVEN MEMBERS TOGETHER

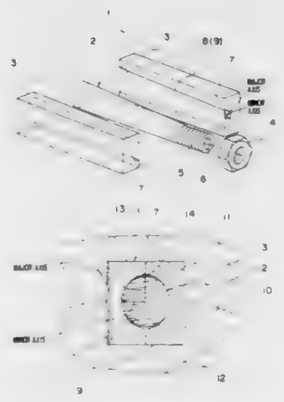
Hiroshi Kakimoto, 31-8, Akitsu-cho 4-chome, Higashimurayama-shi, Tokyo 189, Japan

Filed Feb. 12, 1993, Ser. No. 17,310

Claims priority, application Japan, Feb. 12, 1992, 4-059378; Feb. 24, 1992, 4-073506

Int. Cl.[5] F16D *1/00;* **F16B** *19/02*

U.S. Cl. 403—358 13 Claims



1. A key adapted to be fitted into a key groove provided between a driving member and a driven member, comprising:

(a) a tapered pin having a circular cross-section and an outer periphery fashioned into a taper surface, said tapered pin including at its one end surface in its longitudinal direction a threaded portion;

(b) a clamping means adapted to be screwed to said threaded portion of said tapered pin; and

(c) a pair of elongated blocks each having at its one side surface a tapered recess to be matched with said tapered pin;

said pair of blocks being brought together in such a manner that their respective recesses confront each other, thereby inserting said pair of blocks into said key groove,

thus matched tapered recesses define a tubular tapered portion having a non-circular cross-section with a major axis and a minor axis and receiving said tapered pin,

the outer periphery of said tapered pin being allowed to be in contact with only the inner periphery of said tubular tapered portion on the side of minor axis when said tapered pin is inserted into said tubular tapered portion;

said clamping means being screwed to said threaded portion provided in said tapered pin so as to relatively axially displace said tapered pin with respect to said tubular tapered portion in the direction where said tapered pin is drawn out from said tubular tapered portion, thereby separating said pair of blocks from each other by virtue of said tapered pin.

13. A key adapted to be fitted into a key groove provided between a driving member and a driven member, comprising:

(a) a tapered pin having a circular cross-section and an outer periphery fashioned into a taper surface;

(b) a pair of elongated blocks each having at its one side surface a tapered recess to be matched with said tapered pin and having a threaded portion at its one end on the side of enlarged tapered recess in the longitudinal direction;

(c) a clamping means adapted to be screwed into said threaded portion of said tapered recess; and

said pair of blocks being brought together in such a manner that their respective recesses confront each other, thereby allowing said pair of blocks to be inserted into said key groove,

thus matched tapered recesses define a tubular tapered portion having a non-circular cross-section with a major axis and a minor axis and receiving said tapered pin,

the outer periphery of said tapered pin being allowed to be in contact with only the inner periphery of said tubular tapered portion on the side of said minor axis when said tapered pin is inserted into said tubular tapered portion;

said clamping means being screwed into said threaded portion provided in said tapered recess so as to axially relatively displace said tapered pin with respect to said tubular tapered portion in the direction where said tapered pin is drawn out from said tubular tapered portion, thereby separating said pair of blocks from each other by virtue of said tapered pin.

5,344,253

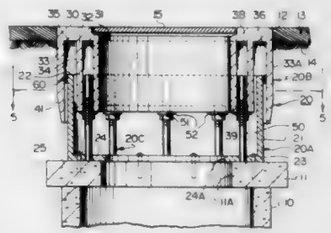
ADJUSTABLE MANHOLE COVER

Cesare Sacchetti, 36 Enniskillen Avenue, Thunder Bay, Ontario, Canada P7B 4L7

Filed Sep. 1, 1993, Ser. No. 114,392

Int. Cl.[5] E02D *29/14*

U.S. Cl. 404—26 11 Claims



1. An adjustable manhole cover support frame comprising:

(a) a base unit having an open ended sleeve with flange means on a bottom end portion thereof, said flange means extending laterally from said sleeve and securable with respect to an upper end portion of a vertical manhole conduit means providing an upward extension thereof;

(b) a top manhole cover support unit adjustably supported on said base unit and having a first outer annular wall and a second inner wall, said inner and outer walls being spaced apart from one another and extending a selected distance downwardly from a top plate providing a first cavity on the underside of said top unit, said top plate having an opening therethrough surrounded by said inner wall and by a shoulder with such shoulder providing means to removably support a manhole cover, said first cavity telescopically receiving therein said annular sleeve of said base unit; said top unit having second cavity means adjacent and radially inwardly of said first cavity means; said second cavity means being open only at a bottom end thereof for screw jacks to project thereinto; and

(c) screw jack means for selectively adjusting the relative telescopic position of said base unit and top unit; said screw jack means comprising a plurality of spaced apart rods slidably projecting through the bottom open end of said second cavity means each rod having a nut threaded thereon which acts against a bottom end of said top unit; each said rod having a lower end portion engaging said flange means on said base unit for support thereby.

5,344,254

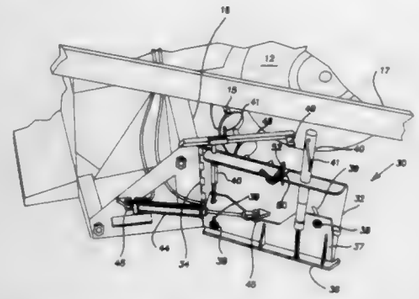
PIVOTING SCREED EDGER

Gene Sartain, Hodges, S.C., assignor to Blaw-Knox Construction Equipment Corporation, Mattoon, Ill.

Filed Apr. 14, 1993, Ser. No. 47,691

Int. Cl.[5] E01C *19/48*

U.S. Cl. 404—104 12 Claims



1. A paving apparatus, comprising:

a movable vehicle capable of distributing paving material;

a laterally elongated screed disposed on the vehicle for forming a substantially level mat of the paving material;

a continuously movable edger comprising a substantially vertical plate having a bottom edge and journaled on an end of the floating screed to pivot on a substantially vertical axis;

remotely controlled powered means to move and secure the edger at a selected horizontal angle relative to the screed to control distribution of paving material beyond an end of the screed during a paving operation;

a generally horizontal wear plate pivotably mounted to extend along the bottom edge of the vertical plate for levelling the paving material;

means to move and secure the wear plate at a selected vertical angle relative to the bottom edge.

5,344,255

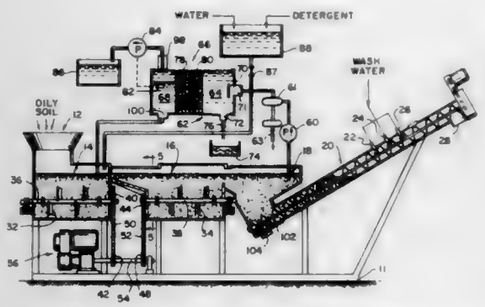
OIL, WATER AND SAND SEPARATOR

Irfan A. Toor, Plano, Tex., assignor to Itex Enterprises, Inc., Dallas, Tex.

Filed Jan. 3, 1992, Ser. No. 816,486

Int. Cl.[5] B09B *3/00;* **B08B** *7/04*

U.S. Cl. 405—128 23 Claims



1. A method for removing oil from soil containing said oil comprising the steps of:

adding said soil to a detergent solution;

agitating said soil and said detergent solution at low speed with a first horizontal rotary impeller to separate any

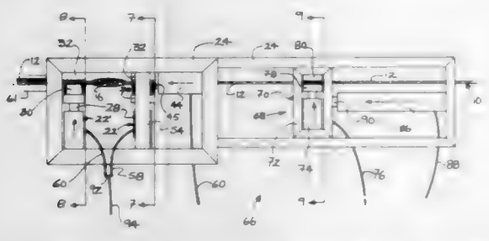
aggregate from said soil and provide a homogenized mixture of said soil and said detergent solution;
agitating said homogenized mixture of said soil and said detergent solution as high speed with a second horizontal rotary impeller to transfer said oil from said soil to said detergent solution;
removing sand from a bottom portion of said homogenized mixture of said soil and said detergent solution having been agitated at high speed;
rinsing said sand removed from said homogenized mixture; and
recycling said detergent solution through an oil-water separator to separate said oil from said detergent solution.

5,344,256

ROCK ANCHOR AND METHOD OF MANUFACTURE

Neville A. Hedrick, Fadbury, Australia, assignor to Garford Pty Ltd, Lansdale, Australia

Continuation of Ser. No. 679,037, May 14, 1991, abandoned. This application May 13, 1993, Ser. No. 63,129
Claims priority, application Australia, Nov. 14, 1988, PJ1416
Int. Cl.[5] E21D *20/00*
U.S. Cl. 405—259.1 **11 Claims**



1. An apparatus for manufacturing a rock anchor comprising a tendon composed of a plurality of strands, the tendon having at least one bulbous portion wherein all the strands in the bulbous portion are spaced apart from one another substantially around the periphery of each bulbous portion characterized in that the apparatus comprises at least two first clamp means spaced apart and movable relative to one another and able to clamp a tendon, and a clamp displacement means arranged to displace the first clamp means relatively towards one another so as to form a bulbous portion in a clamped tendon, each first clamp means comprising a hydraulic ram means bearing a plate arranged to clamp the tendon against an opposed plate, wherein there is also provided a tendon displacement means arranged to displace the tendon longitudinally relative to the first clamp means after a bulbous portion has been formed in the tendon, the tendon displacement means comprising a second clamp means arranged to grip the tendon for longitudinal displacement of the tendon, the second clamp means of the tendon displacement means being separate from the first clamp means used for formation of the bulbous portion.

5,344,257

MINE ROOF EXPANSION ANCHOR AND BAIL ELEMENT

Raymond L. Wright, Syracuse, and Carl A. Clark, Liverpool, both of N.Y., assignors to The Eastern Company, Naugatuck, Conn.

Filed Dec. 2, 1992, Ser. No. 984,498
Int. Cl.[5] E21D *20/00*
U.S. Cl. 405—259.4 **29 Claims**

1. A bail element formed of a unitary blank of springy sheet metal for maintaining shell and plug portions of a mine roof expansion anchor in assembled relation prior to installation, said bail element comprising:
a) a medial portion of predetermined length having first and second ends;
b) a pair of substantially identical legs extending integrally from respective first junctures with said first and second ends of said medial portion to terminal ends, symmetrically with respect to a centerline through said medial portion, both of said legs lying entirely on one side of a line through said first junctures;
c) each of said legs including integral, first, second and third segments having a configuration in an undeformed condition relative to one another and to said medial portion such that:
i) said first segments extend from said first junctures along respective, first, linear axes to second junctures of said first segments with said second segments;
ii) said second segments extend from said second junctures along respective, second, linear axes to third junctures of said second segments with said third segments;
iii) said third segments extend from said third junctures along respective, third, linear axes to said terminal ends;
iv) said first, second and third axes extending outwardly at respective first, second and third acute angles with



respect to said centerline, said first and third angles each being less than about 15° and said second angle being substantially greater than said first and third angles; and
v) said first segment having a length greater than the combined length of said second and third segments;
vi) said second junctures being spaced a greater distance from said centerline than said first junctures;
vii) said third junctures being spaced a greater distance from said centerline than said second junctures;
viii) said terminal ends being spaced a greater distance from said centerline than said third junctures; and
d) said medial portion including outer segments extending inwardly from said first junctures along a fourth axis substantially perpendicular to said centerline, a pair of laterally spaced parts extending from said fourth axis in a direction generally opposite the direction in which said legs extend from said first junctures, and a central part extending from said fourth axis in generally the same direction in which said legs extend from said first junctures.

5,344,258

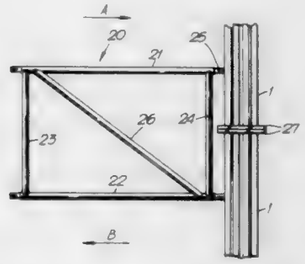
SHORING SYSTEM: A CONNECTOR FOR A SHORTING SYSTEM

Demetrios G. Papadopoulos, Whitton, England, assignor to SGB Holdings Limited, Mitcham, England

Filed Dec. 16, 1992, Ser. No. 992,054
Claims priority, application United Kingdom, Dec. 20, 1991, 9127100.7
Int. Cl.[5] E02D *17/04*
U.S. Cl. 405—282 **5 Claims**

1. A connector for a shoring system, the connector comprising:

a housing adapted to be mounted on a frame or the like to be connected to a plurality of axially extending channels, the housing slidably receiving a bolt having a head shaped and dimensioned so that in one orientation, axial movement of the bolt may introduce the head through a slot into the channel defined by the leg, and in an alternate orientation the bolt may not be withdrawn from the channel by axial movement, the bolt being associated with means adapted



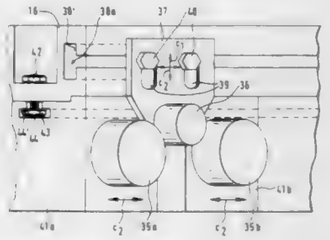
to rotate the bolt and to move the bolt axially relative to the housing; and
a plate, the plate defining a slot engaging part of the bolt, the plate being movable transversely relative to the housing, such transverse movement causing axial movement of the bolt, the plate, in at least one position, also being capable of undergoing a rotary motion about the axis of the bore receiving the bolt.

5,344,259

METHOD AND DEVICE FOR DRILLING OF HOLES INTO A MANTLE OF A CYLINDER IN A PAPER MACHINE

Kari Rajala, and Seppo Parviainen, both of Jyväskylä , both of Finland, assignors to Valmet Paper Machinery Inc., Finland

Filed Nov. 27, 1992, Ser. No. 982,518
Claims priority, application Finland, Nov. 29, 1991, 915664
Int. Cl.[5] B23B *35/00, 41/12*
U.S. Cl. 408—46 **20 Claims**



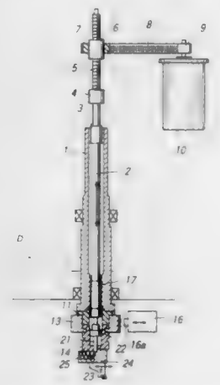
1. A device for drilling holes into a mantle of a cylinder in a paper machine, comprising
a base frame,
a drilling machine mounted on said base frame and comprising a spindle box having a plurality of drill bits, each of said drill bits comprising a displaceable first slide frame,
first drive means for rotating said drill bits,
second drive means for displacing said spindle box relative to said base frame so as to produce a feed movement for said drill bits when said drill bits are moved toward a mantle face of a cylinder to be machined,
guides for supporting said base frame,
slide bushings arranged on said base frame for guiding said base frame and said spindle box along said guides when said drilling machine is shifted to the next drilling position in the direction of the longitudinal axis of the cylinder being machined,
a fastening belt for supporting said guides, and
a drill guide, said device being mounted on support of a cylinder adjacent to the cylinder to be machined and being tensioned during the drilling process between the cylinder to be machined and the adjacent cylinder by bringing said drill guide into contact with the mantle face of the cylinder to be machined by means of an actuator.

5,344,260

MAIN SPINDLE APPARATUS OF MACHINE TOOL

Shigeru Suzuki, Kawasaki; Motonori Kobara; Yasuhiro Hisatomi, both of Futtu; Yoshinori Yamaguchi, Yamatokoriyama; Hiroshi Yonetani, Yamatokoriyama; Kiyoyuki Fukushima, Yamatokoriyama; Yoshimasa Sakamoto, Yamatokoriyama; Toru Yagami, Yamatokoriyama, and Toshihide Kamei, Yamatokoriyama, all of Japan, assignors to Kuroda Seiko Co., Ltd., Kawasaki and Mori Seiki Co., Ltd., Yamatokoriyama, both of Japan

Filed Mar. 26, 1993, Ser. No. 37,378
Claims priority, application Japan, Apr. 2, 1992, 4-109243
Int. Cl.[5] B23B *41/00*
U.S. Cl. 408—168 **7 Claims**



1. A main spindle apparatus of a machine tool comprising:
a main spindle having a male screw formed in an outer surface of one portion of the main spindle;
a clamping nut having a female screw which is screwed with said male screw of the main spindle and a plurality of clamping claws for detachably securing a tool holder having a tool arranged movably in a radial direction perpendicular to an axial direction of the main spindle;
a first driving member provided within said main spindle and having first and second end portions, said first end portion being connectable to a driving source;
a second driving member provided within said tool holder such that the second driving member is detachably coupled with said second end portion of said first driving member; and
a coupling means for coupling said second end portion of said first driving member with said second driving member when the tool holder is coupled with the main spindle; wherein when said first driving member is driven, said second member is driven such that the tool secured to the tool holder is moved in said radial direction perpendicular to the axial direction of the main spindle.

5,344,261

LENS GENERATOR AND TOOL CUTTER

Richard M. Cliber, G-7200 W. Potter Rd., Flushing, Mich. 48433

Filed Jun. 1, 1993, Ser. No. 69,438
Int. Cl.[5] B23C *3/00*
U.S. Cl. 409—132 **25 Claims**

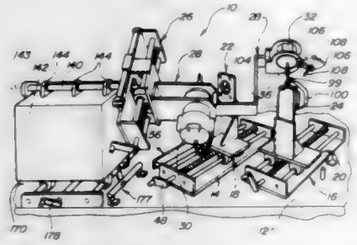
23. A method of cutting a concave curved surface into a lens blank having a finished convex surface and an unfinished sur-

face and said lens blank having an optical axis, said concave surface to be cut into said unfinished surface of said lens blank, said method comprising:

mounting said lens blank in a fixture with said unfinished surface exposed;

moving said lens blank along a first circular arc with said optical axis extending radially of said first circular arc with said unfinished surface disposed radially inward of said finished surface;

rotating a cutting bit having an elongated shaft and at least one knife edge about the axis of said shaft;



oscillating said cutting bit back and forth in a second circular arc with said shaft axis extending radially of said second arc and with said shaft axis oscillating in a plane transverse to the plane of said optical axis as said lens blank moves along said first circular arc; and

positioning said lens blank and said cutting bit relative to one another so that said cutting bit intersects with said lens blank and cuts into said lens blank unfinished surface as said lens blank moves in said first arc and said bit moves in said second arc.

5,344,262

SLOTTING APPARATUS FOR PRODUCING A SLOT IN INNER CIRCUMFERENTIAL SURFACE OF TUBULAR WORKPIECE

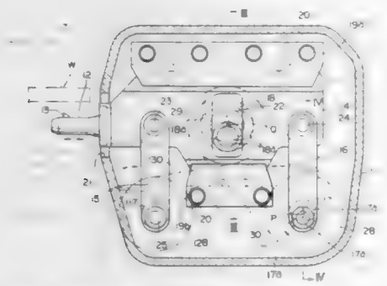
Tadatomo Hatayama, and Tatsuya Takeuchi, both of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1992, Ser. No. 843,198

Claims priority, application Japan, Mar. 1, 1991, 3-035990; Jan. 8, 1992, 4-001476

Int. Cl.[5] B23D *5/00*

U.S. Cl. 409—307 **31 Claims**



17. A slotting apparatus for producing a slot having a substantially arcuate cross section axially in an inner circumferential surface of a tubular workpiece held in position, comprising:

a tool support means for supporting on a distal end thereof a slotting tool to be inserted into the tubular workpiece for slotting said tubular workpiece;

said mounting means for mounting said tool support means and said slotting tool for movement in axial and transverse directions of said tubular workpiece;

first and second link arms disposed on said mounting means and spaced from each other substantially in the axial direction of said tubular workpiece, said first and second link arms being pivotally mounted at respective first ends thereof on said tool support means and extending from said tool support means;

a first support shaft disposed on said mounting means; one of said first and second link arms having a second end pivotally supported on said mounting means through said first support shaft;

a second support shaft eccentrically rotatably disposed on said mounting means, the other of said first and second link arms having a second end pivotally supported on said second support shaft, wherein said second support shaft is eccentrically mounted about an axis of rotation and disposed a predetermined distance from said axis of rotation;

said tool support means being pivotally supported by said first and second link arms for pivoting movement about said first and second support shafts, respectively, to cause the slotting tool to move along the inner circumferential surface of the tubular workpiece;

means for displacing said tool support means to move said tool support means and said slotting tool reciprocally substantially in the axial direction of said tubular workpiece, wherein said tool support means is displaced in said axial direction simultaneously as said second support shaft is rotated about said eccentric axis;

wherein when said tool support means is moved in one direction axially with respect to said tubular workpiece by said means for displacing and upon rotation of said second support shaft, said slotting tool follows a path to cut off substantially arcuately the inner circumferential surface of the tubular workpiece, and when said tool support means is moved in an opposite direction axially with respect to said tubular workpiece, said slotting tool follows a path transversely spaced from the inner circumferential surface of the tubular workpiece and substantially parallel to the axis of the tubular workpiece.

5,344,263

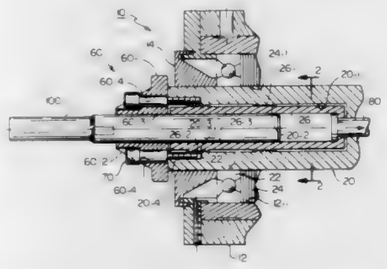
HIGH-PRECISION INTERCHANGEABLE TOOL HOLDER

Warren A. Cook, Arkadelphia, Ark., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 23, 1992, Ser. No. 980,032

Int. Cl.[5] B23C *5/26*

U.S. Cl. 409—233 **3 Claims**



1. A high precision interchangeable tool holder comprising:

a spindle means having an axial bore therein;

a quill means located in said bore in said spindle means so as to be rotatable therein;

tool means having a shaft portion;

attachment means secured to said tool means at an intermediate position on said shaft portion so as to be integral therewith and dividing said tool means into a shank portion and a tool portion;

an axial bore in said quill means;

tool receiving means for receiving said shank portion of said tool means and adapted to be securely received in said axial bore in said quill means such that said quill means and said tool receiving means define integral means;

means for securing said attachment means to said integral means whereby said quill means, said tool receiving means, said attachment means and said tool means are rotatable as a unit.

5,344,264

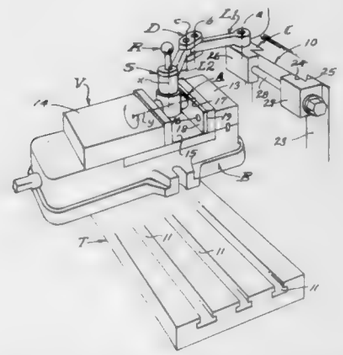
VISE TRANSPORT FOR MILLING MACHINES

Varoujan H. Hevoyan, 6318 W. 77th St., Los Angeles, Calif. 90045

Filed Jul. 27, 1993, Ser. No. 96,967

Int. Cl.[5] B23Q *3/00*

U.S. Cl. 409—235 **11 Claims**



1. A vise transport for a milling machine and the like having a work table to and from which a vise is to be transported and manipulated, the vise having opposed jaws with means for their clamped engagement with a member therebetween, and including;

at least one horizontally disposed lever arm with a vertical vise support axis at its outer distal end,

means for pivotally receiving one inner end of said at least one lever arm on a vertical axis and attached to the milling machine,

and vise support means comprised of a body rotatably carried by a bearing on the vertical vise supporting axis at the outer distal end of said at least one lever arm and rotatably carrying a member on a horizontal roll axis intersecting the vertical vise support axis and disposed for clamped engagement between the opposed jaws of the vise to support said vise, there being roll positioning means to releasably lock the rotatable roll position of said member on said horizontal axis, thereby rotatably positioning the vise.

5,344,265

SECUREMENT SYSTEM FOR A ROLLABLE MOBILITY AID

David G. Ullman; Katharine M. Hunter-Zaworski; Joseph R. Zaworski; Derald E. Herling, all of Corvallis, and Garrett E. Clark, Salem, all of Oreg., assignors to State of Oregon, acting by and through the state Board of Higher Education on behalf of OSU, Eugene, Oreg.

Continuation of Ser. No. 930,194, Aug. 11, 1992, abandoned.

This application Jul. 22, 1993, Ser. No. 96,056

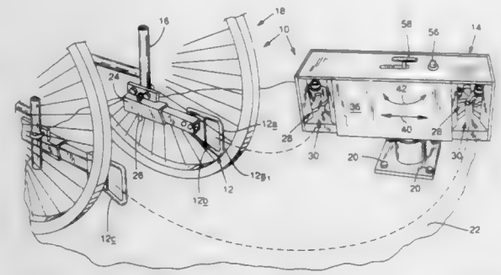
Int. Cl.[5] B60P *7/00*

U.S. Cl. 410—3 **27 Claims**

1. An apparatus having a securement system for a rollable mobility aid with a frame and rollers, which aid is located adjacent surrounding structure, comprising:

a substantially rigid, broad engaging expanse attached to and extending outwardly from such frame, and external of the rollers, with the expanse including an operative region;

upright receiver structure fixedly attached to such surrounding structure in a receiving position, and including a receiving section having a broad vertical region for receiving the operative region, the receiving section further including a selectively actuable engagement/release mechanism for securing the operative region to engage the engaging expanse with the receiving section, with such engagement promoting securement of the aid relative to the surrounding structure to fix the operative region in the receiving section; and



wherein the receiver structure includes means to allow the receiver structure to be selectively rotated about its vertical axis and selectively translated with respect to its receiving position, thus to allow for desired adjustment of the receiver structure to accommodate receipt of the operative region by the securement/release mechanism at various positions depending upon the direction from which said aid is rolled toward the system.

5,344,266

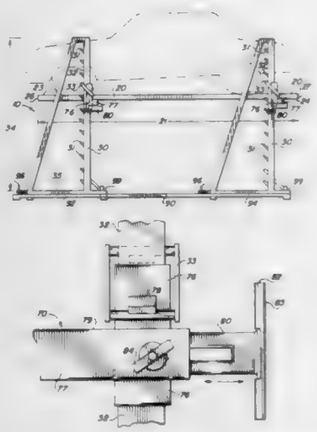
FULLY ADJUSTABLE STORAGE DEVICE FOR LOADING AND TRANSPORTING VEHICLES IN CONTAINERS

Peter W. Kolb, 2040 NW. 96th Ave., Miami, Fla. 33172

Filed Apr. 16, 1993, Ser. No. 48,471

Int. Cl.[5] B60P *3/08*

U.S. Cl. 410—26 **6 Claims**



1. An adjustable storage device for loading and transporting vehicles in a substantially rectangular container having a roof, a floor, and four walls, comprising:

(a) a deck for supporting a vehicle in an elevated position comprising a substantially rectangular planar support capable of securely supporting a vehicle at various angled elevations relative to said floor of said container, said deck having a front end and a rear end;

(b) means for adjustably securing said deck in an elevated position comprising

(i) at least two pairs of substantially vertical legs, one pair

positioned substantially adjacent said front end of said deck and one pair positioned substantially adjacent said rear end of said deck;

(ii) at least two substantially horizontal crossbars, a crosspiece of said crossbars bridging said pairs of legs;

(iii) means for adjustably securing each of said crossbars to each of said pairs of legs in said bridging relationship comprising

(A) a plurality of leg pegs positioned along the length of each of said legs and extending outwardly from each of said legs;

(B) an arm peg positioned on each of a first arm and a second arm, each of said arms perpendicularly abutting said crosspiece of said crossbar, and said arm pegs extending outwardly from said arms; and

(C) a hooking ring member encircling each of said legs and removably engaging one of said plurality of leg pegs on each of said legs, said hooking ring member also removably engaging said arm peg on each of said arms of said crossbar; and

(iv) means for removably fastening said deck to a top surface of each of said crossbars; and

(c) means for stabilizing said storage device within said container.

5,344,267

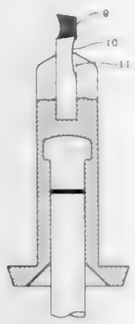
SELF-DRILLING BLIND RIVET

Sven E. J. Stenberg, Uddbergsvägen 33, and Curt G. Nordström, Bergslagsvägen 21, both of S-773 00 Fagersta, Sweden

Continuation of Ser. No. 683,561, Apr. 1, 1991, abandoned, which is a continuation of Ser. No. 457,472, Jan. 2, 1990, abandoned, which is a division of Ser. No. 251,998, Sep. 30, 1988, Pat. No. 4,910,992, which is a continuation of Ser. No. 893,242, Aug. 5, 1986, abandoned. This application Jun. 1, 1993, Ser. No. 69,682

Int. Cl.[5] F16B *13/04*

U.S. Cl. 411—29 **32 Claims**



1. A self-drilling blind rivet comprising:

a longitudinally extending sleeve having a longitudinally extending central hole which opens at a first end of said sleeve;

an upsetting pin axially received in said hole and extending out of said hole through said first end, so as to have an internal portion disposed in said hole, and an external portion disposed out of said hole beyond said first end;

grippable means of non-circular transverse cross-sectional shape provided on one of said sleeve and said pin to form a rotatable member, said grippable means being accessible to a turning tool from externally of said hole, for bodily rotating said rotatable member about the longitudinal axis of said sleeve and said pin; and

a drill bit mounted in a slot provided on said rotatable member so as to protrude axially beyond a second end of said sleeve opposite from said first end, said drill bit being a planar drill bit that is made of a harder material than both said sleeve and said pin, said slot having axially extending side walls and a transverse bottom wall, said bottom wall having a V-shape projection which mates with a V-shaped gap in said drill bit, and opposed, clamping projections provided on the side walls extending transversely into the slot for engaging clamping recesses in the drill bit to secure said drill bit in said slot.

5,344,268

ANCHOR FOR ANCHORING IN A DRILLED HOLE IN CONCRETE VIA A JOINING COMPOSITION

Artur Fischer, Tumlingen, Fed. Rep. of Germany, assignor to fischerwerke Artur Fischer GmbH & Co KG, Tumlingen, Fed. Rep. of Germany

Filed Feb. 5, 1993, Ser. No. 14,387

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1992, 4204214

Int. Cl.[5] F16B *13/06, 39/02*

U.S. Cl. 411—82 **13 Claims**



1. Anchor for anchoring in a drilled hole in concrete in which a joining composition is provided to produce an adhesive bond between a wall of the drilled hole and the anchor when the anchor is inserted in the drilled hole during said anchoring, said anchor comprising a threaded bolt consisting of a straight shank portion and an expander cone adjoining said straight shank portion at one end of said threaded bolt to be inserted in a joining composition provided in a drilled hole in concrete for anchoring, said expander cone having an outer surface and an end face and widening toward said end face; an expandable sleeve arranged on the threaded bolt enclosing the expander cone and provided with means for facilitating expansion of said expandable sleeve by the expander cone, and a plastic covering on the end face and the outer surface of the expander cone and on a part of said straight shank portion adjacent to said expander cone so that the joining composition does not form an adhesive bond between the threaded bolt and the expandable sleeve.

5,344,269

AUTOMATIC RETRIEVAL SYSTEM

Edward J. K. Banks, 1 Fox Close, Wigginton, Tring, Hertfordshire, HP23 6ED, England

Filed Oct. 29, 1992, Ser. No. 968,325

Claims priority, application United Kingdom, Oct. 29, 1991, 9122918.7; Nov. 19, 1991, 9124681.9

Int. Cl.[5] B65G *1/04*

U.S. Cl. 414—273 **24 Claims**

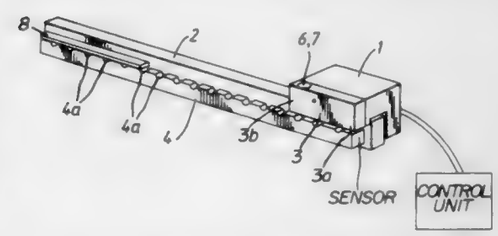
1. Apparatus for retrieving articles from predetermined storage locations and delivering said articles to a delivery point, the articles being provided on hangers having heads, the apparatus comprising:

a row of storage locations, each storage location being adapted to enable one or more of said hangers to be removably held there in a first orientation;

control means comprising a control unit for designating the storage location at which is located one or more of said articles to be retrieved;

means for removing one or more hangers from the designated storage location, the removal means comprising gripping means operable to grip the head(s) of the one or more hangers held at the designated storage location and to be raised whereby to disengage said one or more hangers from the designated storage location and moving means for moving said one or more hangers into a second orientation for transportation, said second orientation being transverse to the first orientation in which hangers are held at storage locations; and

a transporter for transporting the one or more removed hangers from the designated location to the delivery point.



5,344,270

METHOD OF AND SYSTEM FOR LOAD STORAGE AND RETRIEVAL

Lit-Cheong Leung, 43 Abbey Close, Ancastor, Ontario, Canada L9G 4L8

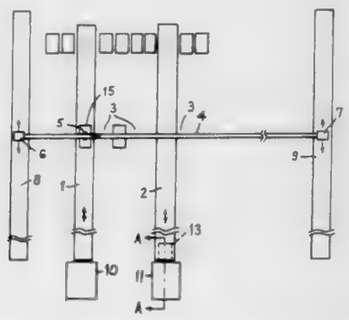
PCT No. PCT/GB90/01466, § 371 Date Apr. 20, 1992, § 102(e) Date Apr. 20, 1992, PCT Pub. No. WO91/04207, PCT Pub. Date Apr. 4, 1991

PCT Filed Sep. 21, 1990, Ser. No. 842,109

Claims priority, application United Kingdom, Sep. 21, 1989, 8921401

Int. Cl.[5] B65G *1/06*

U.S. Cl. 414—278 **16 Claims**



5. A system for storing a load in a multi-storey building and retrieving the load therefrom, the building having a plurality of storeys, with a plurality of storage spaces located thereon, the system comprising a plurality of containers each adapted for storing a load, and conveying belt and pulley means for conveying the containerized load to a vacant one of said storage spaces and subsequently conveying the containerized load from said storage space to a load collecting location for retrieval of the load from the container, wherein the system also includes a lift arrangement for vertically shifting the containerized load to and from the storey having said vacant storage space, and said conveying belt and pulley means comprise, on each of said storeys, a conveyor located at floor level alongside the storage spaces on said storey for conveying said containerized load between said lift arrangement and said vacant storage space and a pulley mechanism installed above said conveyor on said storey for transferring said containerized load between said conveyor and said vacant storage space.

5,344,271

TRAILER DUMPER

Kenneth A. Bratlie, and David J. Miller, both of Portland, Oreg., assignors to Columbia Trailer Co., Inc., Hillsboro, Oreg.

Continuation-in-part of Ser. No. 549,213, Jul. 5, 1990, Pat. No. 5,080,548. This application Jan. 14, 1992, Ser. No. 822,612

The portion of the term of this patent subsequent to Jan. 14, 2009, has been disclaimed.

Int. Cl.[5] B65G *67/30*

U.S. Cl. 414—385 **23 Claims**



4. A portable tipper for dumping the contents from a trailer containing a dumpable material through a back opening of the trailer, the tipper comprising:

an elongated tipper frame having front and back ends, first and second lateral sides, an upper frame surface, and a first and second portion, with the second portion inclined with respect to the first portion at a large obtuse angle, and the first portion engaging a ground surface in substantial parallel relation to the ground surface with the second portion of the tipper frame extending upwardly from the ground surface when the tipper frame is in a dumping position;

a deck positioned over said frame having first and second lateral sides, front and back ends, the deck back end being pivotally attached to the second portion of the tipper frame at the back end of the tipper frame; and

elevating means operatively arranged between the deck and the tipper frame for pivotally raising and lowering the deck front end between a raised position and a lowered position.

5,344,272

MEANS OF TRANSPORT SUCH AS A GARBAGE TRUCK OR SUCH LIKE, PROVIDED WITH A LOADING AND TILTING DEVICE FOR THE HANDLING OF CONTAINERS OR SUCH LIKE

Henry Nuyts, Turnhout, Belgium, assignor to NV Nuyts ORB, Oud-Turnhout, Belgium

Filed Oct. 29, 1991, Ser. No. 783,671

Claims priority, application Netherlands, Oct. 30, 1990, 9002352; Jul. 8, 1991, 9101192

Int. Cl.[5] B65F *3/02*

U.S. Cl. 414—408 **19 Claims**

1. A tilting, lifting and weighing apparatus movably mounted to a truck body, said apparatus comprising:

a container having sidewalls and a pair of attachment surfaces, each of said attachment surfaces being disposed on a respective opposed sidewall;

a weighing and tilting mechanism including

an auxiliary frame,

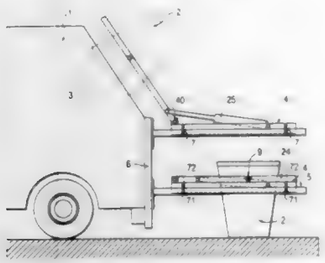
a main frame,

a pair of coupling members each including means for

measuring load applied to said coupling members, each of said coupling members connecting said main frame to said auxiliary frame,

a pair of engaging members each being engageable with a respective one of said attachment surfaces so that said container is supported by said engaging members, said engaging members being supported by said auxiliary frame,

means for tilting said container; and



means structurally connecting said truck body to said weighing and tilting mechanism, for lifting said weighing and tilting mechanism;

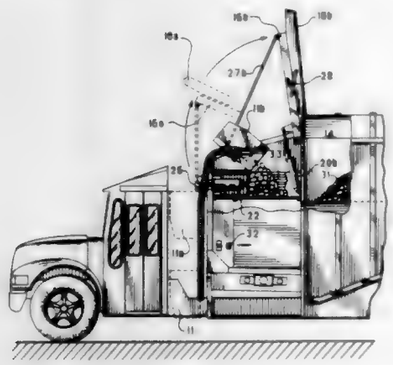
wherein said load applied to said coupling members includes a total of a weight of said auxiliary frame and a weight of said container, and said coupling members connect said main frame to said auxiliary frame at points which lie outside of a vertical plane defined between said engaging members.

5,344,273

DOUBLE-TIER SIDE LOADING REFUSE VEHICLE

Denton G. Radlein, London, Canada, assignor to Shu-Pak Refuse Equipment Inc., Woodstock, Canada

Filed Aug. 10, 1992, Ser. No. 926,622
Int. Cl.[5] B65F *3/04*
U.S. Cl. 414—409 **7 Claims**



1. A refuse vehicle comprising:

a front portion including a cab;

a rear body portion adapted to carry refuse material, said rear body portion having a roof opening for receiving refuse material;

a roof closure door pivotally mounted on said rear body portion for opening and closing the roof opening;

a pair of spaced-apart substantially vertical parallel rails located on said rear body portion having upper portions adjacent the roof opening;

a receptacle disposed between the cab and the rear body portion;

guide wheels interconnecting the receptacle to each of the rails for vertical reciprocal guided travel of the receptacle on the rails from a lowermost loading position to an uppermost unloading position;

a pair of hoist arms pivotally mounted at one end on said rear body portion one on each side of the roof opening within the roof opening thereby closure of the roof closure door substantially conceals the hoist arms from view;

each hoist arm having an opposite distal end; linkage means interconnecting the roof closure door and the hoist arms whereby the roof closure door pivots with the hoist arms;

hoist arm actuating means mounted on said rear body portion and connected to the hoist arms for pivoting said hoist arms for raising and lowering said hoist arms with conjoint opening and closing of the roof closure door; and

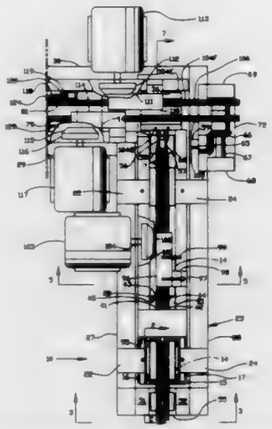
elongated linkage means pivotally secured at one end to the distal end of the hoist arms and at the other end to the receptacle whereby raising of the hoist arms with conjoint opening and closing of the roof closure door raises and lowers the receptacle for dumping of refuse material in the receptacle through the roof opening.

5,344,274

ENVELOPE REMOVAL APPARATUS

Paul R. Everhard, Nicholasville; Alan L. Everhard, Lexington; Frank T. Moran, Lexington, and Gergory J. Omvig, Lexington, all of Ky., assignors to Everhard Automation Controls, Inc., Lexington, Ky.

Filed Nov. 6, 1992, Ser. No. 973,044
Int. Cl.[5] B65B *69/00*
U.S. Cl. 414—412 **30 Claims**



1. An apparatus for removing a sealed envelope in one piece from at least one rectangular shaped container enclosed by the sealed envelope including:

first transport means for transporting at least one rectangular shaped container enclosed by a sealed envelope in a first direction from a first position to a second position;

first cutting means for cutting a first edge of the sealed envelope on a first side of the container during transport of the container by said first transport means from the first position to the second position;

second transport means for transporting the container in a second direction, substantially perpendicular to the first direction, from the second position to a third position;

second cutting means for cutting a second edge of the envelope on a second side of the container substantially perpendicular to the first side of the container during transport of the container by said second transport means from the second position to the third position; third cutting means for cutting a third edge of the envelope on a third side of the container substantially parallel to the second side of the container during transport of the container by said second transport means from the second position to the third position;

each of the first, second, and third cut edges of the envelope and a fourth edge of the envelope on a fourth side of the container and substantially parallel to the first side of the container being in the same plane and at least a portion of the fourth edge remaining attached to the rest of the envelope after cutting is completed so that the envelope remains one piece;

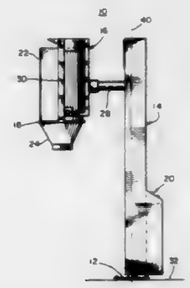
and removal means for removing the cut envelope in one piece from the container after said second and third cutting means have been effective.

5,344,275

METHOD AND APPARATU FOR LIFTING TURNING AND TILTING OF CONTAINERS

Helmut Habicht, 15 Royal Park Ter., Hillsdale, N.J. 07642

Filed Mar. 23, 1993, Ser. No. 35,417
Int. Cl.[5] B65G *65/23*
U.S. Cl. 414—420 **11 Claims**



1. An apparatus for lifting, turning, and tilting a container comprising:

(a) a pedestal assembly including an elongated shaft member, said elongated shaft member being sized for supporting said apparatus in a substantially vertical array;

(b) a column assembly, said column assembly being elongated and tubular, a wall of the column assembly having an elongated aperture formed therethrough, one end of said column assembly being rotatably carried on said elongated shaft, a container support assembly said elongated aperture providing a clearance for said container support assembly, said container support assembly including a bottom portion of sufficient size to receive and support the weight of any container placed thereon;

(c) a means carried on said container support assembly for retaining the container in a placed condition on the container support assembly during lifting, turning and tilting of the container;

(d) a moveable carriage member rotatably carrying said container support assembly; said moveable carriage member being positioned within said column assembly, said carriage member having a plurality of guide rollers rotatably secured thereto;

(e) at least two U-shaped guide channel members, each U-shaped guide channel member being of a predetermined length, each U-shaped guide channel member being attached to opposing walls of the column assembly, said U-shaped guide channel members providing guideways for each of the guide rollers of said carriage member;

(f) a selectively actuated lifting and lowering means for lifting and lowering said carriage member and said container support assembly, said lifting and lowering means being fully enclosed within said column assembly,

(g) a selectively actuated turning means for first turning and then holding said column assembly with respect to the shaft of the pedestal assembly, said turning means being fully enclosed within said column assembly;

(h) a selectively actuated tilting means for tilting said container support assembly with respect to said carriage member; said tilting means being carried interior of said column by said carriage member;

(i) a means for connecting said apparatus to a source of power, said power being supplied to the tilting means by at least one flexible conductor, said flexible conductor allowing full lifting of said tilting means with said carriage member;

(j) a first controlling means for independently controlling said lifting and lowering means;

(k) a second controlling means for independently controlling said turning means; and

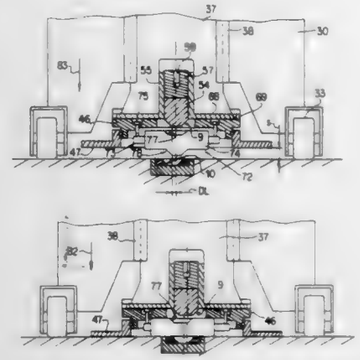
(l) a third controlling means for independently controlling said tilting means.

5,344,276

STATIONARY POSITIONING DEVICE FOR A HANDLING TROLLEY HAVING EXTENDABLE CENTERING FINGER ASSEMBLY

Richard Juan, 20, rue du Pont Blanc, 69360 Saint Symphorien d'Ozon (Rhone), France

PCT No. PCT/FR91/00645, § 371 Date Feb. 24, 1993, § 102(e) Date Feb. 24, 1993, PCT Pub. No. WO92/02396, PCT Pub. Date Feb. 2, 1992
PCT Filed Aug. 2, 1991, Ser. No. 969,203
Claims priority, application France, Aug. 3, 1990, 90 10164
Int. Cl.[5] B65G *35/06*
U.S. Cl. 414—584 **22 Claims**



1. A stationary positioning device for a handling trolley, comprising:

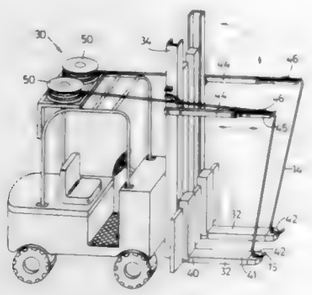
at least one centering finger having a shape having a polygonal horizontal cross-section and a downwardly pointing trapezoidal vertical cross-section and a set of dimensions, wherein a means for connecting the at least one centering finger to the handling trolley rotatably fastens the at least one centering finger, the at least one centering finger having a vertical axis that is positioned coincidently with a longitudinal axis of the handling trolley;

at least one recess located in a ring-shaped structure set into a ground structure, the at least one recess having the same shape and set of dimensions as the at least one centering finger;

means for displacing said at least one centering finger between a transport position above a ground level and a positioning position where the at least one centering finger engages the recess; and

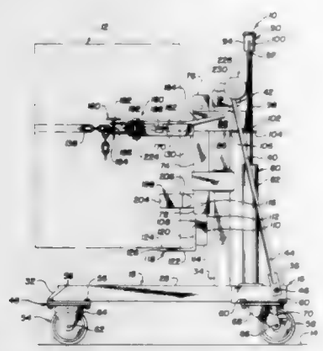
longitudinal and transverse axes intersecting at a reference point located along a theoretical longitudinal path of the handling trolley, wherein the recess is positioned such that a vertical axis of the recess passes through the reference point and the recess has at least one side perpendicular to the theoretical longitudinal path.

5,344,277
STRAPPING EQUIPMENT
Tony Sandland, 1 Wingate Close, Nottingham, NG8 4LB, England
Filed Sep. 3, 1993, Ser. No. 117,253
Int. Cl.[5] B65D *19/38*
U.S. Cl. 414—607 9 Claims



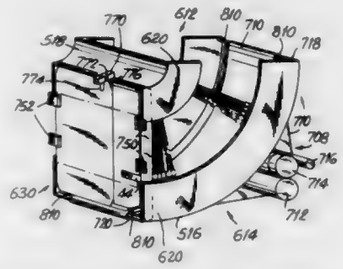
1. Strapping apparatus for applying strapping (**14**) to packages (**10**), said strapping apparatus comprising:
at least one fork (**32**) having a proximal end (**40**) and a distal end (**41**), and having retaining means (**42**) for gripping said strapping at said distal end;
guide mens (**46**) cooperative with said at least one fork (**32**), for feeding said strapping (**14**) therethrough to said retaining means (**42**);
dispensing means (**50**) cooperative with said guide means (**46**) for supplying strapping material (**14**) to said retaining means (**42**) and said guide means (**46**).

5,344,278
APPARATUS FOR RAISING AND MOVING AN OPEN ENDED CONTAINER
Howard Emig, Jr., 2524 Mark Dr., Mesquite, Tex. 75150
Filed Jan. 22, 1993, Ser. No. 7,575
Int. Cl.[5] B66F *9/18*
U.S. Cl. 414—622 17 Claims



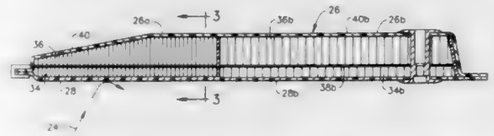
14. Apparatus for raising and moving an open ended container, comprising: a base structure including a base and an elongated support post connected to the base and disposed to extend in a substantially perpendicular direction away from the base; moving means connected to said base structure for rolling the base structure over a substantially level surface; raising means connected to said base structure for raising the open ended container in a substantially vertical manner above the substantially level surface; and container support means connected to said raising means for supporting the container in an upright position while being raised and rolled over the substantially level surface; said raising means including a lifting member, a hydraulic jack for moving the lifting member substantially vertically upwardly of the substantially level surface including a cylinder supporting a quantity of liquid connected to said base structure, a ram disposed within the cylinder for lateral movement away from and toward the cylinder, and a pumping handle for providing pressure to the liquid in the cylinder to move the ram in the lateral movement, and a sleeve member connected to the lifting member and adapted to movably circumscribe a portion of the support post.

5,344,279
MAGAZINE AND PROCESS FOR STACKING CARTONS EMPLOYING SAME
Dean L. Ashbaugh, Phoenix; Daniel J. Heinz, Joppa; Pasquale M. Buzzeo, Westminster, all of Md., and Lawrence W. Caldwell, Hanover, Pa., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 763,720, Sep. 23, 1991, abandoned. This application Dec. 31, 1991, Ser. No. 816,410
Int. Cl.[5] B65G *57/16*
U.S. Cl. 414—788.2 33 Claims



1. A magazine in combination with a plurality of flattened tubular cartons having a localized increase in thickness leading to an imbalanced stack, loaded in said magazine, said magazine comprising a first side wall, a second side wall on the side opposite said first, side wall, front carbon motion restraining means and rear carton motion restraining means limiting the movement of said carton in directions parallel to said sidewalls, said sidewalls extending curvedly from a first carton open end bounded on its periphery by said first and second sidewalls and said front and rear carton motion restraining means to a second carton open end defined by said first and second sidewalls and said front and rear carton restraining means, said curvature extending continuously from said first to said second open end so as to accommodate the unbalanced stack of cartons.

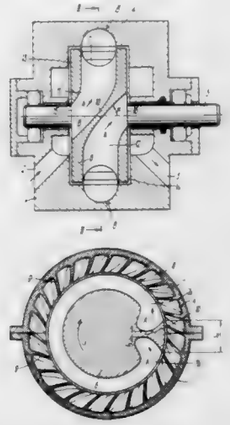
5,344,280
IMPACT RESISTANT FAN CASE LINER
Leslie L. Langenbrunner, Cincinnati; Richard T. Price, Loveland, and Jack W. Baldwin, West Chester, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Filed May 5, 1993, Ser. No. 58,643
Int. Cl.[5] F01D *21/00*
U.S. Cl. 415—9 8 Claims



1. A fan case liner for a gas turbine engine comprising:
an integral facesheet including a plurality of laminates each having structural fibers bonded in a matrix, and a toughened adhesive film disposed between and bonding together adjacent ones of said laminates;

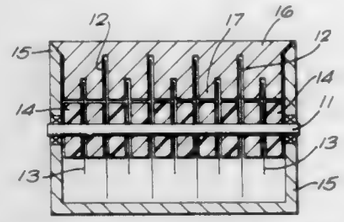
a first structural support core, and another adhesive film disposed between and bonding together said facesheet and said first core;
a second structural support core;
a first septum disposed between said first and second cores;
additional adhesive films disposed between and bonding together said first septum and said first core, and said first septum and said second core; and
wherein said first core has a first compressive strength, and said second core has a second compressive strength less than said first compressive strength.

5,344,281
ROTARY VORTEX MACHINE
Vladimir D. Anokhin, Moscow; Anatoly I. Lepekha, Lobnya; Viktor N. Filippov; Sharifzhan R. Ageev, both of Moscow; Anatoly F. Vinokurov, Fryazino; Jury V. Gusev, Kaliningrad, and Sergei J. Ermakov, Schelkovo, all of Russian Federation, assignors to Osoboe Konstruktorskoe Bjuro Po Konstruirovaniju, Issledovaniju I Vnedreniju Glubinnykh Besshtangovykh Nasosov, Moscow, Russian Federation
PCT No. PCT/SU90/00080, § 371 Date Dec. 2, 1992, § 102(e) Date Dec. 2, 1992, PCT Pub. No. WO91/15680, PCT Pub. Date Oct. 17, 1991
PCT Filed Apr. 3, 1990, Ser. No. 949,642
Int. Cl.[5] F04D *29/28*
U.S. Cl. 415—71 5 Claims



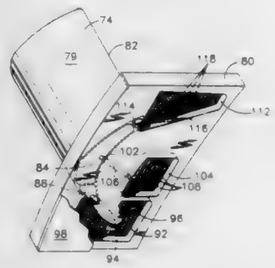
1. A rotary vortex machine comprising a stator (**1**) with an internal annular space (**4**) accommodating vanes (**9**), an inlet passage (**2**) and an outlet passage (**3**) for a service fluid, and a fluid energy converting stage installed in the stator (**1**) on a drive shaft (**5**) and comprising a rotor (**6**) having an external annular space (**7**) combined with the annular space (**4**) of the stator (**1**) and forming, together with said annular space (**4**), a working annular chamber (**8**), and a bridge (**10**) disposed in the annular space (**7**) of the rotor (**6**) and dividing said annular space (**7**) of the rotor into suction and delivery volumes communicating with the inlet passage (**2**) and the outlet passage (**3**) of the stator (**1**), said rotor (**6**) having a curvilinear inlet passage (**11**) and a curvilinear outlet passage (**12**) which connect the suction and delivery volumes of the annular space (**7**) of the rotor (**6**) with the inlet passage (**2**) and the outlet passage (**3**) of the stator (**1**), said curvilinear inlet and outlet passages being arranged on both sides of the bridge (**10**) in such a manner that the flow of the service fluid moves through said curvilinear passages (**11, 12**), essentially, in one and the same direction, the bridge (**10**) in the zone of said curvilinear passages (**11, 12**) having a variable cross section and being positioned at an angle relative to a radial plane passing through said bridge (**10**).

5,344,282
MOLECULAR DRAG TYPE VACUUM PUMP
Nigel P. Schofield, West Sussex, England, assignor to The BOC Group, plc, Windlesham, England
Filed Dec. 3, 1992, Ser. No. 984,787
Claims priority, application United Kingdom, Dec. 4, 1991, 9125850
Int. Cl.[5] F01D *1/36*
U.S. Cl. 415—90 8 Claims



1. A vacuum pump of the molecular drag type comprising a pump body, a cylindrical shaft rotatably mounted within the pump body for rotation about its longitudinal axis, a plurality of individual discs coaxially assembled on said shaft in a spaced apart relationship to define circumferential slots therebetween, each of said discs having a sufficiently small thickness so as to be flexible when static, and a comb-like stator element connected to the pump body so as to be held stationary with regard to the pump body and having projections extending into the circumferential slots.

5,344,283
TURBINE VANE HAVING DEDICATED INNER PLATFORM COOLING
John W. Magowan, Longmeadow, Mass.; Richard J. Pawlaczyk, Newington, Conn.; Annette M. Pighetti, Andover, Conn., and Richard A. Schwarz, Jr., Somers, Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Jan. 21, 1993, Ser. No. 8,959
Int. Cl.[5] F01D *5/14*
U.S. Cl. 415—115 7 Claims



1. A turbine vane for a gas turbine engine disposed about a longitudinal axis and having an axially oriented annular flow path therethrough, the gas turbine engine including a compressor section, a combustor section, a turbine section downstream of the combustor section, and a source of cooling fluid, the turbine section including the turbine vane, wherein the turbine vane includes:
an airfoil portion extending through the flow path, the airfoil portion including a hollow core therein, the core being open at its radially outer end to define a passage for conducting cooling fluid from the source through the airfoil portion;
a platform portion disposed radially inwardly of the airfoil portion and oppositely of the open end of the core, the platform having a radially outer surface defining a flow surface for working fluid within the flow path, the platform including a plurality of pockets and a plurality of

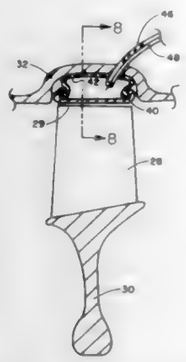
cooling holes, each of the pockets having a cooling passage permitting fluid communication with the core such that cooling fluid is exchanged between the core and the pocket to thereby transfer heat from the platform to the fluid within the pocket, and the cooling holes extending between each of the pockets and the flow surface and defining means to eject cooling fluid over the flow surface of the platform.

5,344,284

ADJUSTABLE CLEARANCE CONTROL FOR ROTOR BLADE TIPS IN A GAS TURBINE ENGINE

John M. Delvaux, Royal Palm Beach, Fla., and William E. Roberts, Jr., Newport Beach, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 29, 1993, Ser. No. 39,605
Int. Cl.[5] F01D *11/08*
U.S. Cl. 415—173.2 10 Claims



1. In a gas turbine engine having rotor blades mounted on a rotor, which blades rotate in a path with blade tips in proximity with a rub strip in an engine housing, the improvement comprising,

a) said rub strip being mounted around the path of said rotor blades,

b) an inflatable gas bladder mounted in said engine housing behind said rub strip, defining a rub strip-bladder assembly, to displace said rub strip radially relative to said blade tips, said bladder being a flexible open tube having a pair of spaced edges, said rub strip being of substantially rigid material having a pair of bent sides to define a channel on the bladder side thereof, said edges of said bladder fitting within said channel and engaging said bent sides so that the backside of said rub strip caps said bladder and defines an inflatable compartment therewith and

c) means for inflating and deflating said gas bladder to radially move said rub strip to follow said blade tips inwardly and outwardly to maintain a relatively close clearance or gap therewith while minimizing rubbing therebetween.

5,344,285

CENTRIFUGAL PUMP WITH MONOLITHIC DIFFUSER AND RETURN VANE CHANNEL RING MEMBER

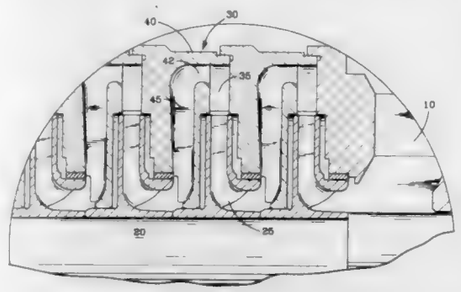
Mark E. O'Sullivan, Phillipsburg, N.J., and Timothy L. Wotring, Emmaus, Pa., assignors to Ingersoll-Dresser Pump Company, Liberty Corner, N.J.

Filed Oct. 4, 1993, Ser. No. 131,345
Int. Cl.[5] F04D *1/08, 29/44*
U.S. Cl. 415—199.2 5 Claims

1. A multistage centrifugal pump comprising:

a discharge member;

a suction member; a plurality of pumping stages between the suction member and the discharge member, each pumping stage comprising an impeller and a monolithic diffuser and return vane channel ring member, the monolithic diffuser and vane channel ring member comprising an annular disk having an axially extending pressure retaining member at its outer periphery and a plurality of diffuser vanes on one side of the annular disk, the diffuser vanes being integral with the axially extending pressure retaining member; and



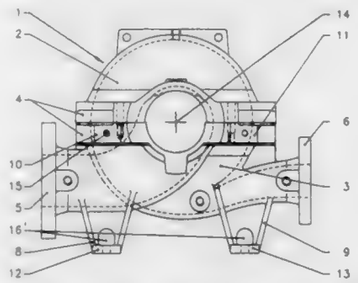
a plurality of tie bolts extending from the discharge member to the suction member, the tie bolts fastening the monolithic diffuser and return vane channel ring members between the suction member and the discharge member whereby the suction member, the discharge member and the plurality of diffuser and return vane channel ring members form a pressure boundary.

5,344,286

CENTRIFUGAL PUMP HOUSING

Horst Schäfer, Rhade, and Günter Beiss, Bremen, both of Fed. Rep. of Germany, assignors to KSB Aktiengesellschaft, Frankenthal/Pfalz, Fed. Rep. of Germany

Filed Aug. 24, 1990, Ser. No. 573,036
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1988, 3806349
Int. Cl.[5] F01D *25/24, 25/28*
U.S. Cl. 415—213.1 9 Claims



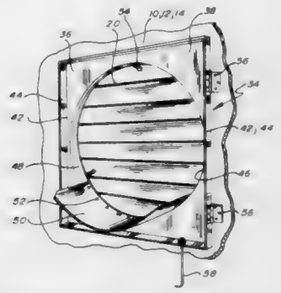
1. A centrifugal pump comprising a housing; and a shaft rotatable in said housing about a predetermined axis, said housing being divided parallel to said axis and including an upper part and a lower part, said parts including flange segments and said lower part further including suction and pressure nozzles and legs serving for installation, said lower part further including facets which serve as abutments upon attachment of additional components and include facets at the respective flange segment and facets at said legs, said facets being located in planes which intersect and are perpendicular to said axis and said legs being disposed opposite one another in the direction of said axis and being provided with a force-transmitting and torque-transmitting connection.

5,344,287

FAN SHROUD ADAPTOR AND ASSEMBLY

Ronald E. Schaefer, 514 Tenth St. North, Sartell, Minn. 56377

Filed May 6, 1993, Ser. No. 58,464
Int. Cl.[5] F04D *29/52*
U.S. Cl. 415—213.1 38 Claims



1. A fan shroud adaptor for use with a fan having a circumferential wall for convertible fan use including air circulation within the building, air intake into the building and air exhaust from the building, comprising:

(a) a frame attachable to a building wall in confronting relationship with a building opening through the wall to the outside; and

(b) an opening in the frame with a flange adjacent the opening adapted to assist in guiding the fan onto the frame adjacent the opening and to support and engagingly hold the circumferential wall of the fan in confronting relationship with the frame opening for air exhaust, intake and circulation.

5,344,288

DEVICE FOR CONTROLLING DISPLACEMENT OF VARIABLE DISPLACEMENT HYDRAULIC PUMP

Yosuke Oda, Kanagawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,392
Int. Cl.[5] F04B *49/08*
U.S. Cl. 417—218 9 Claims



1. In a displacement control device for a variable-displacement hydraulic pump having a displacement control member for controlling a discharge pressure of said pump, and a variable displacement piston for activating the displacement control member when pressure is supplied to a first pressure chamber, said pressure chamber being supplied with discharge pressure over a circuit, the improvement comprising:

a variable restriction valve disposed in said circuit having an opening area controlling flow through the variable restriction valve, and

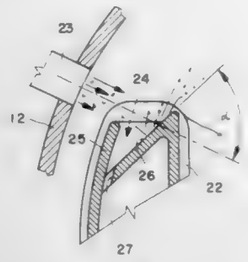
means for decreasing the opening area when the discharge pressure exceeds a predetermined pressure, including a pressure receiving portion for receiving discharge pressure from said circuit and urging the valve in a first direction to decrease said opening area, and a biasing member biasing the variable restriction valve in a second direction to increase said opening area.

5,344,289

DEFLECTION SYSTEM FOR ALIEN PARTICLES IN A REFRIGERATION MOTOR COMPRESSOR

Antonio Fasce, S. Genesio, Italy, assignor to Necchi Compressori S.r.l., Pavia, Italy

Filed Jun. 8, 1993, Ser. No. 73,448
Claims priority, application Italy, Jul. 3, 1992, PV92 A 000007
Int. Cl.[5] F04B *21/00*
U.S. Cl. 417—312 3 Claims



1. A muffler system for a refrigeration motor-compressor comprising an upper and lower case, a body mounted within said lower case, a compressor mounted on said body, a motor operatively connected to said compressor, a muffler mounted on said compressor, a tube having a longitudinal axis fixed to said lower case for conveying refrigerant gas into said cases and a V-shaped groove having asymmetrical sides positioned transversely to the longitudinal axis of said tube and along the muffler, one side of said groove closest to said tube being of lesser depth than said side further away from said tube, said side of said groove further away from said tube having an angle of incidence with the longitudinal axis of said tube such that alien particles suspended in the refrigerant flow over said side of said groove of lesser depth to strike the side of said groove of greater depth and upon striking the side of the groove of greater depth causing said particles to rebound away from said muffler, and said groove defining means for conveying refrigerant gas to said compressor.

5,344,290

METHOD AND DEVICE FOR CONTROLLING A DOUBLE-CYLINDER THICK MATTER PUMP

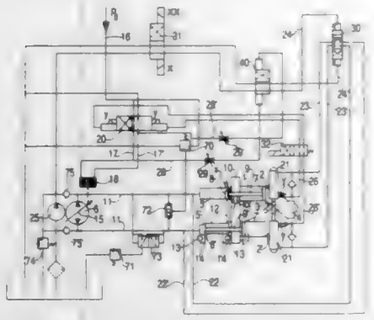
Hartmut Benckert, Leinfelden-Echterdingen, Fed. Rep. of Germany, assignor to Putzmeister-Werk Maschinenfabrik GmbH, Aichtal, Fed. Rep. of Germany

PCT No. PCT/EP89/00805, § 371 Date May 28, 1991, § 102(e) Date May 28, 1991, PCT Pub. No. WO90/06444, PCT Pub. Date Jun. 14, 1990
PCT Filed Jul. 11, 1989, Ser. No. 690,915
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1988, 3840892.9
Int. Cl.[5] F04B *7/02*
U.S. Cl. 417—342 25 Claims

1. A method for controlling a thick matter pump including two feed cylinders, each coupled in fluid communication with a material feed tank and including a drive piston for pumping thick matter through the respective feed cylinder, each drive piston being driven within a respective drive cylinder which are each in turn coupled to a hydraulic reversing pump, the reversing pump driving a respective drive piston through a compression stroke by pumping pressurized fluid to the respective drive cylinder, a hydraulically operable tube switch adapted to be alternately coupled to the feed cylinders to receive the thick matter being pumped from the respective feed cylinder to which it is coupled, and being coupled to a

delivery pipe to direct the flow of thick matter from each feed cylinder into the delivery pipe, comprising the following steps:

actuating the tube switch to be decoupled from one feed cylinder and coupled to the other upon the drive piston of the respective feed cylinder coupled to the tube switch reaching the end of its compression stroke, and upon actuating the tube switch, maintaining the direction of pressurized fluid flow from the reversing pump to maintain the respective drive piston at the end of its compression stroke, thus interrupting the flow of thick matter from the feed cylinders, and then reversing the direction of fluid flow through the reversing pump upon the tube switch being coupled to the other feed cylinder to initiate the compression stroke of the other feed cylinder, wherein the hydraulically operable tube switch is actuated by directing pressurized fluid to the tube switch from a circuit connecting the reversing pump and a drive cylinder, the circuit being free of valves therein.

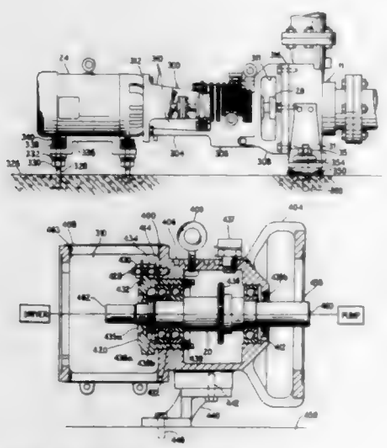


5,344,291

MOTOR PUMP POWER END INTERCONNECT

Richard P. Antkowiak, Rye, N.H., assignor to A. W. Chesterton Company, Stoneham, Mass.

Filed Jul. 15, 1993, Ser. No. 91,978
Int. Cl.[5] F01D 7/00
U.S. Cl. 417—359 16 Claims



1. A pump arrangement comprising:

a centrifugal pump having a pump casing and an impeller mounted on an impeller shaft for rotation within said casing, said impeller shaft protruding out of said casing;

a driver having a drive shaft, said driver mounted with said drive shaft axially aligned with and coupled to said impeller shaft;

a frame mounted at one end to said driver and at an opposite end to said casing and having an enclosed compartment therebetween, said compartment having at least one bearing therein and capable of holding a quantity of oil therein and means for applying said oil to said bearing, said bearing journaling said impeller shaft for rotation within said compartment; and

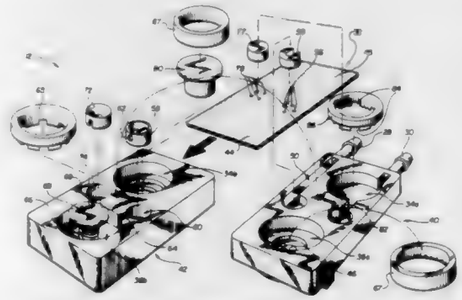
said frame being structurally continuous between said driver and said casing without bolted seams.

5,344,292

FLUID PUMPING SYSTEM AND APPARATUS

Richard Rabenau, Birmingham; Stephen P. Lisak, and Terry B. Kehne, both of Arab, all of Ala., assignors to Ryder International Corporation, Arab, Ala.

Filed Aug. 20, 1992, Ser. No. 932,752
Int. Cl.[5] F04B 43/02
U.S. Cl. 417—413 R 39 Claims



1. A fluid pumping cartridge for particular use in a single surgical procedure in order to deliver and maintain sterile condition of the pumped fluid, comprising: a pumping chamber formed in a cartridge housing adapted for replaceable connection to and disconnection from a pump control structure; and pump means integrally contained in said cartridge housing arranged for pumping sterile fluid from said pumping chamber and adapted for connection to a pump drive structure provided by said pump control structure, in order to pump said sterile fluid through said pumping cartridge flowing entirely isolated from the pump control structure and to ensure that the fluid is maintained sterile during said pumping and a pulsation controlling, accumulator chamber in flow communication with said pump means, said accumulator chamber having a deflectable diaphragm defining one wall thereof; and pulsation control means for selectively enabling said diaphragm to oscillate and absorb fluid flow pulses pumped from said pump means in order to produce selectively continuous flow of said fluid from said cartridge.

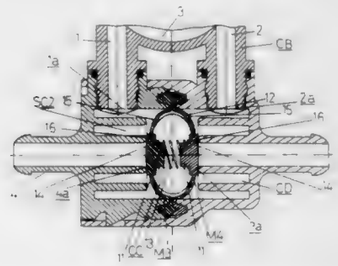
5,344,293

DOUBLE DIAPHRAGM LEAKPROOF SEALING DEVICE FOR ELECTRIC WINDSCREEN WASHER PUMPS

Miguel Mota, Rubi, and José L. Morales, Barcelona, both of Spain, assignors to Transpar Iberica S.A., Rubi, Spain

PCT No. PCT/ES91/00085, § 371 Date Aug. 19, 1992, § 102(e) Date Aug. 19, 1992, PCT Pub. No. WO92/11150, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 11, 1991, Ser. No. 923,904
Claims priority, application Spain, Dec. 21, 1990, 9003268; Sep. 24, 1991, 9102106
Int. Cl.[5] F01D 1/30; G05D 11/00
U.S. Cl. 417—442 5 Claims

1. A double diaphragm leakproof sealing device for electric windshield washer pumps, comprising means forming a pump chamber and a directing chamber arranged at a distance from said pump chamber; means forming inlet passages which communicate said directing chamber with said pump chamber and have inlet passage ports opening independently in said directing chamber; means forming two cleaning liquid discharge passages having discharge passage ports and arranged in said directing chamber so that in correspondence with said inlet passage ports they define an intermediate central chamber; two diaphragms composed of resilient materials and located in said intermediate central chamber, said diaphragms being arranged one near the other so as to define in said directing chamber two half chambers, one of said inlet passage ports and one of said discharge passage ports being located in each of said half chambers so that there is no fluid communication between said half chambers across said diaphragm, each of said diaphragms having one side provided with a convex surface and another side provided with a concave surface, said one sides of said diaphragms provided with said convex surface having axial sealing extensions formed in correspondence with said discharge passage ports which they face and against which they bear when a cleaning liquid is not being pumped from said pumping chamber, said diaphragms being arranged in said intermediate central chamber so that said concave surfaces are opposite to one another and located at relatively short distance from one another, said diaphragms having means for compensating a loss of resilience, said compensating means including



pressure extensions arranged coaxially relative to said coaxial sealing extensions and formed symmetrically with said other sides provided with concave surfaces, said pressure extensions having free ends which are spaced from one another so that when the cleaning liquid is pumped from the pumping chamber in one direction or another direction, resilient deformation or opening stroke of a corresponding one of said diaphragms during opening of an associated one of said discharge passage ports is limited by said pressure extension of another of said diaphragms, and when the pumping of the cleaning liquid is stopped, the resilient deformation or closing stroke of said diaphragm blocking said discharge passage port is reinforced; and auxiliary recovering means for reinforcing said blocking, said auxiliary recovery means including a compression spring arranged between said diaphragms coaxially relative to said axial sealing extensions, said compression spring being permanently compressed and having ends bearing on said one sides of said diaphragms provided with concave surfaces, said compression spring having a working position fixed by said pressure extensions on said concave surfaces, said pressure extensions are fully inserted in said compression spring of said auxiliary recovery means.

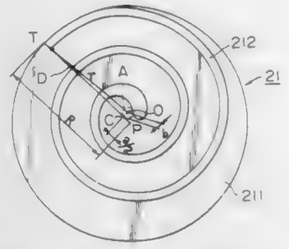
5,344,294

SCROLL TYPE FLUID APPARATUS OF DECREASED SIZE

Takahide Itoh; Takahisa Hirano; Tetsuo Shigeoka, all of Nagoya, and Ryuhei Tanigaki, Aichi, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1993, Ser. No. 83,919
Claims priority, application Japan, Jun. 29, 1992, 4-170647
Int. Cl.[5] F01C 1/04
U.S. Cl. 418—55.2 3 Claims

1. A scroll type fluid apparatus comprising a fixed scroll and orbiting scroll being engaged with each other by spiral wraps on their respective end plates, said orbiting scroll being revolved with respect to said fixed scroll while its rotation is checked by a rotation check mechanism, wherein the center of the end plate of said fixed scroll lies along a line extending from the outermost end of said spiral wrap through the involute unrolled angle position on the circumference of the base circle of the spiral wrap at a distance of one-half the orbiting radius



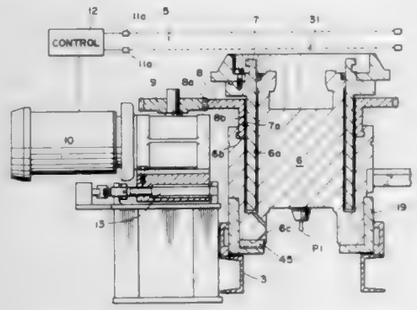
from the involute unrolled angle position in a direction from said involute unrolled angle position extending away from said outermost end of said spiral wrap.

5,344,295

POSTCURE TIRE INFLATOR HAVING RIM CLEARANCE ADJUSTING DEVICE

Etsuro Watanabe; Katsumi Ichikawa, and Yoshimata Maikuma, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Sep. 11, 1992, Ser. No. 943,564
Claims priority, application Japan, Sep. 11, 1991, 3-261198; Jan. 8, 1992, 4-020533; Jun. 29, 1992, 4-196247
Int. Cl.[5] B29C 35/16
U.S. Cl. 425—29 9 Claims



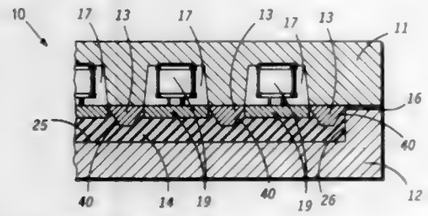
1. A postcure tire inflator including a rotating frame, a first set of separable first and second rims, the first rim being mounted to the rotating frame, means for filling high pressure air in the tire, and a rim clearance adjusting device comprising:

a first screw member mounting said second rim such that said second rim is moved vertically toward or away from said first rim upon rotation of said screw member;

a first sliding device supporting said second rim and said first screw member for reciprocating movement between a first position out of vertical alignment with said first rim and a second position spaced from said first position, said second position being located in vertical alignment with said first rim; and

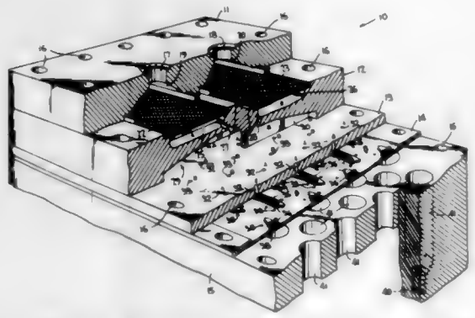
a driving mechanism positioned to engage said screw member so as to rotate said screw member and adjust a vertical clearance of said second rim when said second rim is in said first position.

5,344,296
METHOD AND APPARATUS FOR FORMING A RUNNER IN A MOLD ASSEMBLY
Albert J. Laninga, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 6, 1993, Ser. No. 85,792
Int. Cl.[5] B29C *45/14*
U.S. Cl. 425—121 20 Claims



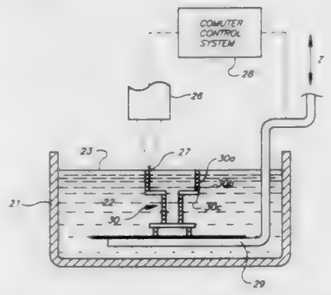
14. A mold assembly, comprising:
a mold having a cavity plate and a sealing plate, the sealing plate having a recess;
a resilient material in the recess of the sealing plate; and
a floating seal, the floating seal movably mounted to the sealing plate.

5,344,297
APPARATUS FOR MAKING PROFILED MULTI-COMPONENT YARNS
William H. Hills, Melbourne Village, Fla., assignor to BASF Corporation, Parsippany, N.J.
Continuation-in-part of Ser. No. 394,259, Aug. 7, 1989, Pat. No. 5,162,074, which is a continuation of Ser. No. 103,594, Oct. 2, 1987, abandoned. This application Jun. 4, 1992, Ser. No. 893,286
Int. Cl.[5] D01D *5/30*
U.S. Cl. 425—131.5 22 Claims



1. A fiber extrusion spin pack assembly for forming synthetic fibers comprising:
supply means for delivering plural mutually separated flowable polymer components under pressure;
in fluid flow communication with said supply means, primary distribution means for delivering the mutually separated components to prescribed locations in said assembly;
a separate spinneret having an array of multiple spinneret orifices for issuing said synthetic fibers from said spin pack assembly in a first direction, each spinneret orifice having an inlet at each upstream end; and
at least a first disposable distributor plate positioned transversely to said first direction and between said primary distribution means and said spinneret, and having multiple distribution flow paths for precisely placing from one to a multitude of component streams of the one or more mutually separated components from said primary distribution means to preselected points at any or all of said inlet holes at said spinneret.

5,344,298
APPARATUS FOR MAKING THREE-DIMENSIONAL OBJECTS BY STEREOLITHOGRAPHY
Charles W. Hull, Arcadia, Calif., assignor to 3D Systems, Inc., Valencia, Calif.
Continuation of Ser. No. 749,125, Aug. 23, 1991, Pat. No. 5,174,943, which is a division of Ser. No. 637,999, Jan. 4, 1991, abandoned, which is a continuation of Ser. No. 493,498, Mar. 14, 1990, abandoned, which is a division of Ser. No. 340,894, Apr. 19, 1989, Pat. No. 4,929,402, which is a continuation of Ser. No. 161,346, Feb. 19, 1988, abandoned, which is a continuation of Ser. No. 792,979, Dec. 9, 1985, abandoned, which is a division of Ser. No. 638,905, Aug. 8, 1984, Pat. No. 4,575,330. This application Oct. 20, 1992, Ser. No. 967,303
The portion of the term of this patent subsequent to Mar. 11, 2003, has been disclaimed.
Int. Cl.[5] B29C *41/02*
U.S. Cl. 425—135 15 Claims

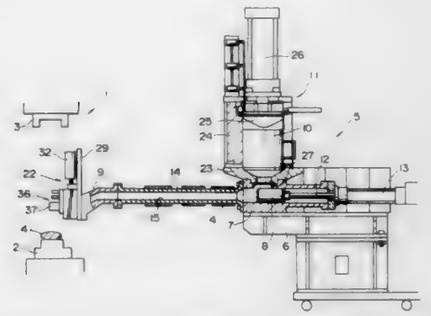


1. A apparatus for producing a three-dimensional object from a medium capable of solidification when subjected to a reactive material on substantially a layer by layer basis, comprising:
means for generating cross-sectional data descriptive of cross-sections of the three-dimensional object to be formed;
means for forming successive layers of medium;
means for selectively solidifying at least portions of said successive layers of medium, including means for selectively dispensing a reactive material onto said portions of the layers of medium to be solidified, wherein a combination including the medium and the reactive material result in solidification of the medium, and wherein the solidified portions of said successive layers of medium form successive layers of the three-dimensional object; and
means for adhering said successive layers of said three-dimensional object together to form said three-dimensional object from a plurality of solidified layers of said medium.

5,344,299
RESIN MATERIAL SUPPLY APPARATUS FOR RESIN PRESS MOLDING MACHINE
Naoki Takeuchi, Kobe, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Filed Apr. 6, 1992, Ser. No. 863,733
Int. Cl.[5] B29C *43/34*, *47/00*
U.S. Cl. 425—142 9 Claims

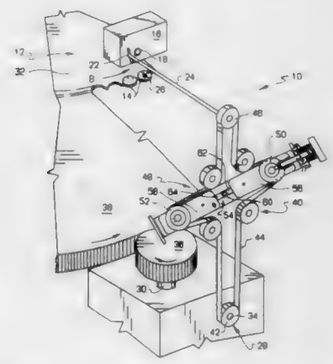
1. A resin material supply apparatus for a resin press molding machine comprising:
a supply cylinder including a piston for extruding resin material toward a metal mold;
a die having an opening for forming the resin material extruded from the supply cylinder;
a cutter device having a cutter cutting the molded resin material by sliding along a front end surface of the die;

a charger for charging resin material into the supply cylinder; and



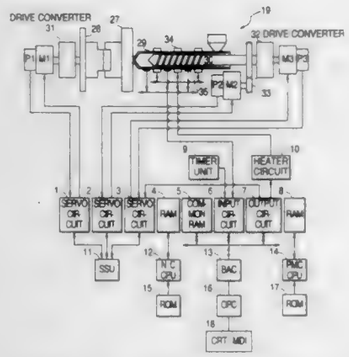
a pressing device external of the supply cylinder for pressing the cutter toward the die when the cutter is at a position that the cutter closes the opening of the die.

5,344,300
TIMING DEVICE FOR A PLASTIC PROCESSING SYSTEM
Michael Shapcott, Hometown, Pa., assignor to Zapata Technologies, Inc., Hazelton, Pa.
Filed Feb. 22, 1993, Ser. No. 21,032
Int. Cl.[5] B29C *47/34*; B65B *3/04*
U.S. Cl. 425—142 22 Claims



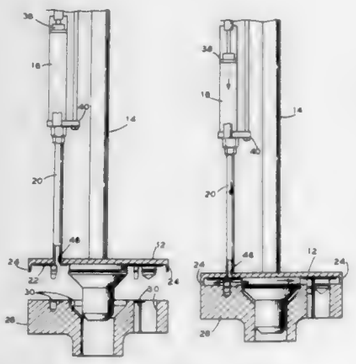
1. An apparatus for dispensing segments of thermoplastic material into a plurality of open topped receptacles comprising:
means for conveying said receptacles at predetermined speeds along a receiving path;
means positioned adjacent said receiving path for extruding a predetermined quantity of thermoplastic material through a discharge passage into a receptacle;
cutting means including a knife positioned adjacent said discharge passage for cutting said thermoplastic material into said predetermined quantity; and
drive means for driving said cutting means and said conveying means, said drive means including first means for driving said conveyor at a predetermined rate, first and second idler pulleys, second means including a belt for driving said cutting means at a constant rate synchronous with said predetermined rate and a drive pulley for driving said belt, timing adjustment means for incrementally altering the angular position of said knife during operation of said apparatus, and means in said timing adjustment means for selectively adjusting the tension of said belt by changing the distance between the first and second idler pulleys.

5,344,301
OPERATING TIME ANALYZING APPARATUS FOR AN INJECTION MOLDING MACHINE
Masao Kamiguchi; Osamu Saito, both Oshino; Kazuo Kubota, Fujiyoshida, and Masanobu Takemoto, Oshino, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan
PCT No. PCT/JP92/00623, § 371 Date Jan. 8, 1993, § 102(e) Date Jan. 8, 1993, PCT Pub. No. WO92/20509, PCT Pub. Date Nov. 26, 1992
PCT Filed May 14, 1992, Ser. No. 961,900
Claims priority, application Japan, May 18, 1991, 1-140582
Int. Cl.[5] B29C *45/76*
U.S. Cl. 425—169 17 Claims



1. An operating time analyzing apparatus for an injection molding machine, comprising:
operating condition detecting means for detecting a plurality of operating conditions of the injection molding machine;
a plurality of timer means each for cumulatively recording elapsed time for an injection molding operation corresponding to one of said plurality of operating conditions detected by said operating condition detecting means; and
data output means for displaying the cumulatively recorded elapsed time corresponding to said operating conditions.

5,344,302
REMOTE IMPRESSION TOOL
Edward M. Beehler, Forest, and William H. Wolf, Lynchburg, both of Va., assignors to B&W Nuclear Service Company, Lynchburg, Va.
Filed Sep. 3, 1993, Ser. No. 115,618
Int. Cl.[5] G21C *17/00*
U.S. Cl. 425—178 4 Claims



1. A remote impression tool, comprising:
a. a support pole;
b. a mold plate attached to said support pole, said mold plate

having side walls that define an enclosure having one open end;

c. an adhesive plate received on said mold plate in the enclosure defined by the side walls on said mold plate;

d. a pneumatic cylinder attached to said support pole, said pneumatic cylinder having a piston extending therefrom and being movable between a first retracted position and a second extended position;

e. an impression material cartridge attached to said pneumatic cylinder and receiving the piston extending from said pneumatic cylinder; and

f. a delivery tube in fluid communication with said cartridge and the enclosure defined by the side walls on said mold plate.

5,344,303

SCREW LINKAGE STRUCTURE FOR USE IN AN INJECTION MOLDING MACHINE

Satoshi Takatsugi, and Susumu Ito, both of Yamanashi, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

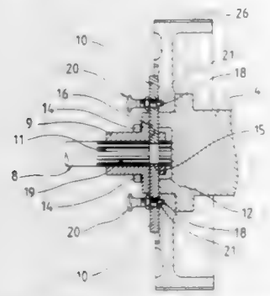
PCT No. PCT/JP92/01361, § 371 Date Jun. 16, 1993, § 102(e) Date Jun. 16, 1993, PCT Pub. No. WO93/08010, PCT Pub. Date Apr. 29, 1993

PCT Filed Oct. 20, 1992, Ser. No. 75,474

Claims priority, application Japan, Oct. 21, 1991, 3-299509

Int. Cl.[5] B29C *45/17*

U.S. Cl. 425—190 **4 Claims**



1. A screw linkage structure in an injection molding machine, comprising:

a screw having at its base a spline portion;

a spline bush receiving said spline portion of said screw;

a screw sleeve having a front surface to which said spline bush is fixed and at least one side; and

a retainer serving to prevent said screw from being disengaged from said spline bush, said retainer having a leading edge; wherein

said spline portion formed on said screw based includes an annular groove,

said spline bush includes a through-hole at a position corresponding to said annular groove of said screw base,

said retainer is inserted into said through-hole of said spline bush until the leading edge of said retainer reaches said annular groove of said screw base,

said retainer is provided with a fastener means for fastening said retainer, whose leading edge is engaged with said annular groove, to one of the at least one side of said screw sleeve,

said fastener means attached to said retainer comprises a plunger, a pin, and a spring for biasing said pin toward the direction in which said pin protrudes from said plunger, and

said screw sleeve includes at the front surface, an engagement holder for receiving said pin at a position corresponding to that when the leading edge of said retainer has reached-said annular groove of said screw base.

5,344,304

MOLD FOR MOLDING OF SUBSTRATE FOR INFORMATION RECORDING MEDIUM

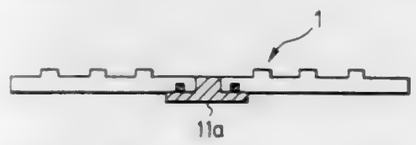
Tomoyuki Tamura, Yokohama; Mizuho Hiraoka, Kawasaki; Hiroyuki Imataki, Kawasaki, and Tetsuya Sato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 622,151, Dec. 3, 1990, Pat. No. 5,174,937. This application Sep. 4, 1992, Ser. No. 941,172

Claims priority, application Japan, Sep. 5, 1987, 62-222816; Sep. 7, 1987, 62-222020; Sep. 7, 1987, 62-222021; Dec. 21, 1987, 62-324322; Dec. 28, 1987, 62-329672; Dec. 28, 1987, 62-329673; Dec. 28, 1987, 62-329674; Dec. 28, 1987, 62-329675; Dec. 28, 1987, 62-329676; Dec. 28, 1987, 62-329677; Dec. 28, 1987, 62-329678

Int. Cl.[5] B29C *33/30*

U.S. Cl. 425—195 **70 Claims**



1. A mold for molding a plurality of substrates for an information recording medium, said mold comprising:

a fixing member;

a plurality of units fixed to said fixing member, each of the units has on its surface a preformat pattern with a surface corresponding to the information recording medium; and

a molding cavity disposed opposite to said units so that said preformat patterns face said molding cavity.

5,344,305

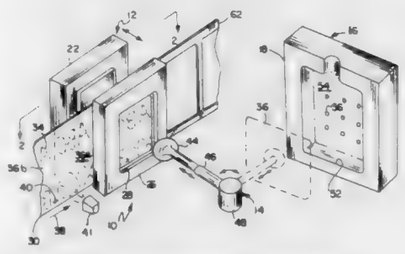
APPARATUS FOR IN-MOLD LABELLING

Barron G. McKillip, Grand Rapids, Mich., assignor to CCL Label, Inc., Grand Rapids, Mich.

Filed Feb. 1, 1993, Ser. No. 11,818

Int. Cl.[5] B29C *49/24*

U.S. Cl. 425—503 **13 Claims**



1. An in-mold labelling apparatus comprising:

a mold having a mold cavity;

a cutting device in proximity to said mold for serially cutting individual labels from a continuous web in response to a molding cycle of said mold;

means for advancing a continuous web of a series of individual labels through said cutting device, whereby individual labels are cut serially from said web;

means for picking an individual cut label directly from said cutting device and placing said individual cut label directly into said mold cavity.

5,344,306

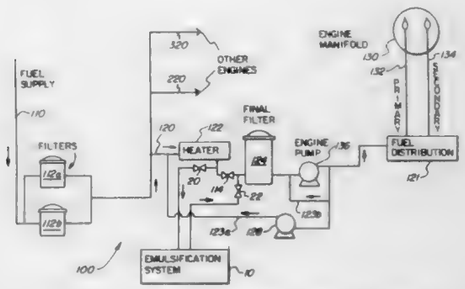
REDUCING NITROGEN OXIDES EMISSIONS BY DUAL FUEL FIRING OF A TURBINE

Donald T. Brown, Kearny, N.J., and Alexander S. Dainoff, Rockville Centre, N.Y., assignors to Nalco Fuel Tech, Naperville, Ill.

Filed Aug. 28, 1991, Ser. No. 751,170

Int. Cl.[5] F23J *7/00*; C10L *1/22, 1/24*

U.S. Cl. 431—4 **14 Claims**



1. A process for reducing nitrogen oxides emissions from a gas turbine, comprising forming an emulsion of water and fuel oil which comprises a water-in-fuel oil emulsion having up to about 92% water by weight or a fuel oil-in-water emulsion having up to about 80% fuel oil by weight, and simultaneously combusting said emulsion and natural gas in a gas turbine.

5,344,307

METHODS AND APPARATUS FOR BURNING FUEL WITH LOW NO_x FORMATION

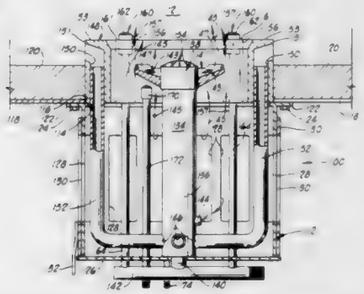
Robert E. Schwartz, Tulsa; Richard T. Waibel, Broken Arrow; Paul M. Rodden, Sand Springs, and Samuel O. Napier, Sapulpa, all of Okla., assignors to Koch Engineering Company, Inc., Wichita, Kans.

Continuation of Ser. No. 921,064, Jul. 29, 1992, Pat. No. 5,269,678, which is a continuation of Ser. No. 836,779, Feb. 13, 1992, Pat. No. 5,154,596, which is a continuation of Ser. No. 578,953, Sep. 7, 1990, Pat. No. 5,098,282. This application Aug. 25, 1993, Ser. No. 111,447

The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.

Int. Cl.[5] F23M *3/00*

U.S. Cl. 431—9 **13 Claims**



1. A method of discharging an at least substantially stoichiometric mixture of fuel and air from a burner into a furnace space wherein said mixture is burned and flue gases having low NO_x content are formed therefrom comprising the steps of:

(a) discharging said air from said burner into said furnace space;

(b) discharging a portion of said fuel in the form of a fuel jet in a passageway in said burner communicated with said furnace space whereby flue gases in said furnace space are drawn into said passageway with said fuel;

(c) discharging said fuel and flue gases from said passageway into said furnace space whereby said fuel and flue gases mix with air and the mixture is burned in a primary reaction zone in said furnace space; and

(d) discharging the remaining portion of said fuel into a secondary reaction zone in said furnace space whereby said fuel mixes with flue gases and air contained in said furnace space and is burned in said secondary reaction zone.

7. An improved burner apparatus for discharging a mixture of fuel and air into a furnace space wherein said mixture is burned and flue gases having low NO_x content are formed therefrom comprising:

a housing having an open end attached to said furnace space;

means for introducing a controlled quantity of air into said housing and into said furnace space attached to said housing;

primary fuel nozzle means disposed within said housing for discharging primary fuel into the open end of said housing and into said furnace space and for drawing cooled flue gases from said furnace space and discharging said flue gases into said open end of said housing and into said furnace space along with said primary fuel, said primary fuel nozzle means including a pressurized fuel inlet for connection to a source of pressurized fuel;

flue gases passageway means disposed in said housing extending from said furnace space into said housing through which said cooled flue gases from within said furnace space are drawn and conducted to said primary fuel nozzle means; and

at least one secondary fuel nozzle means attached to said housing having a pressurized fuel inlet for connection to a source of pressurized fuel for introducing additional fuel into said furnace space which mixes with flue gases and air therein.

5,344,308

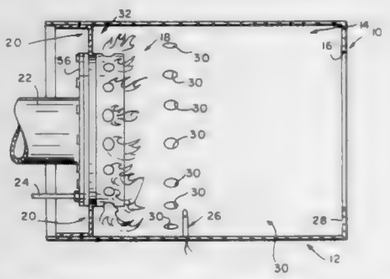
COMBUSTION NOISE DAMPER FOR BURNER

William G. Cummings, III, Muncie, Ind., assignor to Maxon Corporation, Muncie, Ind.

Continuation-in-part of Ser. No. 792,720, Nov. 15, 1991, Pat. No. 5,236,350. This application Apr. 27, 1993, Ser. No. 53,717

Int. Cl.[5] F23D *21/00*

U.S. Cl. 431—114 **3 Claims**



1. A combustor comprising a housing having a generally cylindrical sidewall, a first closed end and a second, open end, a nozzle assembly for mixing combustion supporting materials in appropriate proportions to support combustion and having an annular arrangement of openings in a common plane for discharging a combustible mixture toward said sidewall of said housing, means for mounting the nozzle assembly adjacent the first end, means for igniting the mixed combustion supporting materials, said housing having a single row of combustion noise attenuating openings around the sidewall between the first end and the second end, the plurality of combustion noise attenuating openings consisting of openings substantially equally spaced about said housing and lying generally in a plane perpendicular to a longitudinal extent of the sidewall and downstream of said nozzle, and wherein the largest cross

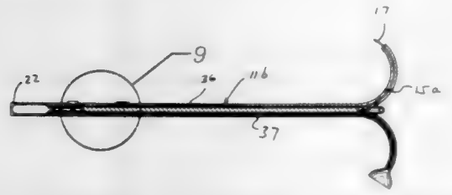
sectional dimensions of each of the openings in said sidewalls being less than about five percent of the largest cross sectional dimension of the second end.

5,344,309

CANDLE LIGHTING AND EXTINGUISHING DEVICE

Stephen G. Phare, 929 Cox St. P.O. Box 448, Quinnesec, Mich. 49876

Filed Jul. 30, 1993, Ser. No. 99,466
Int. Cl.[5] F23Q *25/00*
U.S. Cl. 431—145 **1 Claim**



1. A candle lighting and extinguishing device, comprising,

an elongate handle shaft having a first end spaced from a second end, the first end including a first tubular arm and a second tubular arm fixedly mounted to the first end, with the first tubular arm and the second tubular arm projecting exteriorly and laterally of the handle shaft, the first tubular arm including a wick receiving conduit, with the wick receiving conduit including a fuel impregnated wick slidably mounted therewithin, and

the second tubular arm having a shaft conduit directed coextensively through the second tubular arm, with the handle shaft including a shaft conduit extending coextensively from the first end through the second end in pneumatic communication with the second arm conduit, with the second arm including an outer distal end spaced from the handle shaft first end, with the outer distal end including a hood, with the second arm conduit extending medially through the hood, and

including pneumatic means mounted in adjacency to the second end to direct pressurized air through the shaft conduit and the second arm conduit, and

the pneumatic means includes a gas cylinder receiving cavity directed into the handle shaft at the second end, with an end cap threadedly mounted onto the second end, with the end cap including an end cap socket arranged in facing relationship relative to the gas cylinder within the gas cylinder receiving cavity and the socket, with the gas cylinder receiving cavity arranged in pneumatic communication with the shaft conduit, and

a sealing ring mounted within the gas cylinder receiving cavity, with the gas cylinder having a gas cylinder neck extending medially through the sealing ring in sealing relationship thereto, and an apertured puncture plate having a spike mounted within the shaft conduit, with the spike projecting medially of the sealing ring for reception within the gas cylinder neck, and a valve rod bore orthogonally intersecting the shaft conduit, with the valve rod bore having a valve rod slidably mounted within the valve rod bore, the valve rod including a valve rod port arranged for sliding and for selective communication between the gas cylinder and the shaft conduit, with the valve rod including a valve rod cap extending exteriorly of the handle shaft, wherein the valve rod cap is arranged for projection within the handle shaft to pneumatically communicate the valve rod port with the gas cylinder and the shaft conduit, and

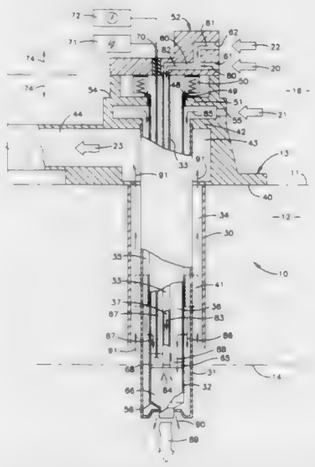
a wick receiving conduit extending through the handle shaft, and the first tubular conduit directed coextensively through the first tubular arm, with the first tubular arm conduit arranged in communication with the wick receiving conduit, with the fuel impregnated wick extending through the first arm conduit and the wick receiving conduit, with a rigid engaging foot engaging the wick, and the handle shaft having a slot directed through a shaft outer wall in communication with the wick receiving conduit, with a slide plate mounted slidingly engaging the shaft outer wall and fixedly mounted to the foot to permit extension and retraction of the wick from the first tubular arm.

5,344,310

BURNER FOR AN INDUSTRIAL FURNACE

Wolfgang Harbeck, Leubsdorf; Theo Woerner, Waiblingen-Neustadt; Karl Weiss, and Rudolf Distl, both of Freiberg, all of Fed. Rep. of Germany, assignors to Aichelin GmbH, Korntal-Muenchingen, Fed. Rep. of Germany

Filed Nov. 20, 1992, Ser. No. 979,585
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1991, 4138434
Int. Cl.[5] F23R *3/04*
U.S. Cl. 431—158 **5 Claims**



1. A burner for an industrial furnace, comprising:

a first burner portion located outside the furnace and having first connector means for feeding a fuel, second connector means for feeding air, and third connector means for electrical energy;

an ignition electrode within said second electrode portion and electrically connected to said third connector means;

a first cylindrical tube extending from said first burner portion to a free end located within the furnace, said free end being tapered radially inward toward the furnace, said first cylindrical tube being operatively connected to said second connector means;

a second cylindrical tube extending within said first cylindrical tube from said first burner portion to a free end, said second cylindrical tube being operatively connected to said first connector means; and

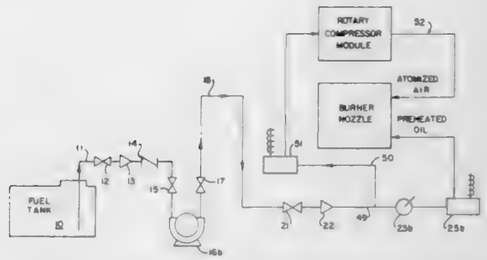
a radial plate mounted adjacent said free end of said second cylindrical tube and within said first cylindrical tube, and having at least one opening to allow the air within said first radial tube to pass thereby, said radial plate and the portion of said first cylindrical tube between its free end and the radial plate defining a combustion chamber, with said electrode mounted upon said plate and within said combustion chamber.

5,344,311

AIR ATOMIZING SYSTEM FOR OIL BURNERS

Robert K. Black, Monroe, Wis., assignor to Universal Foods Corporation, Milwaukee, Wis.

Filed Dec. 15, 1992, Ser. No. 990,443
Int. Cl.[5] F23Q *9/00*
U.S. Cl. 431—278 **5 Claims**



1. An oil burner adapted for burning fuel oil, the oil burner comprising:

A. a rotary air compressor for producing atomizing air, means for lubricating the compressor with a first stream of the fuel oil;

B. means for transferring the first stream of the fuel oil from a fuel oil source to the rotary air compressor; to form an atomizing air and lube oil mist

C. means for transferring the atomizing air from the rotary air and lube oil mist compressor to a burner nozzle for mixture with a second stream of the fuel oil prior to combustion of the resulting mixture of atomizing air, lube oil mist and the second stream of the fuel oil;

D. means for transferring said second stream of the fuel oil from a fuel oil source to the burner nozzle for mixture with the atomizing air, lube oil mist prior to combustion of the resulting mixture; and

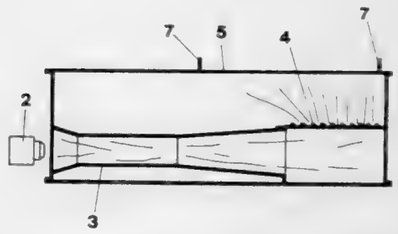
E. means for igniting the mixture of atomizing air and fuel oil.

5,344,312

ATMOSPHERIC GAS BURNERS OF THE HYPERSTOICHIOMETRIC MIXTURE TYPE

Nicco Polidero, Schio, Italy, assignor to Aldo Polidero, Schio, Italy

Filed Apr. 22, 1993, Ser. No. 51,164
Claims priority, application Italy, Apr. 28, 1992, VI92 A 000067
Int. Cl.[5] F23D *3/40*
U.S. Cl. 431—326 **4 Claims**



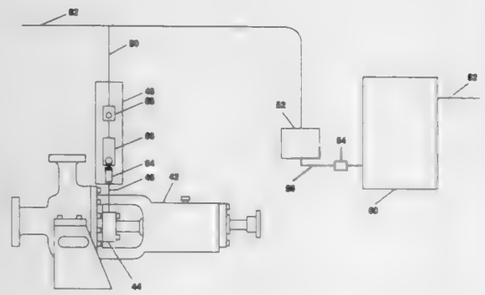
1. An atmospheric gas burner of the hyperstoichiometric type wherein the burner is fed with natural gas at a pressure in the range of 100 to 140 mm of water column, said burner being substantially tubular in shape and the mixture discharged from a series of slots formed in a top surface of said burner, and slots being arranged in one or more continuous and uninterrupted rows arranged parallel to an axis of said burner, wherein the width of the slots is substantially 1 mm so as to provide extremely low resistance to the passage of the comburent air/-combustible gas mixture.

5,344,313

FUGITIVE VOLATILE ORGANIC COMPOUND VAPOR COLLECTION SYSTEM

Cortland W. Johnsen, Jr., Benicia, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Apr. 30, 1993, Ser. No. 55,604
Int. Cl.[5] F23D *14/82*
U.S. Cl. 431—346 **10 Claims**



1. A collection system for controlling fugitive organic compound vapor emissions from a pump comprising:

a. vapor flow means for drawing sufficient air into a seal region of said pump to dilute an organic compound vapor located therein to a concentration below the lower explosion limit of said organic compound vapor, and for withdrawing an air/organic compound vapor mixture from said seal region;

b. a combustion means in fluid communication with said vapor flow means for disposal of said air/organic compound vapor mixture; and

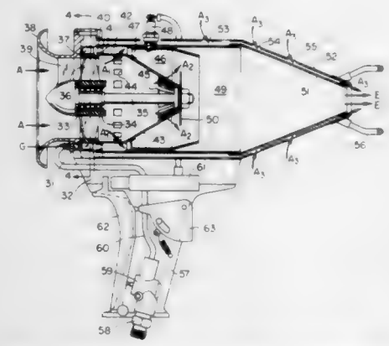
c. a flow control means in fluid communication with both said seal region and said vapor flow means for preventing combustion of said air/organic compound vapor mixture within said collection system.

5,344,314

TURBINE DEVICE FOR HOT AIR GENERATION

Dimiter S. Zagoroff, Cambridge, and Arnold M. Heitmann, Swampscott, both of Mass., assignors to Shrinkfast Marketing, Newport, N.H.

Filed Apr. 9, 1993, Ser. No. 45,822
Int. Cl.[5] F24H *1/00*
U.S. Cl. 432—222 **18 Claims**



1. A gas heating gun having a handle and including:

a source of unheated pressurized gas fuel;

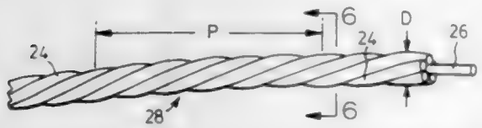
a single prime mover driven only by the expansion energy of the unheated pressurized gas;
means forming an air compressor connected to and driven by the prime mover to compress air;
means forming a combustion chamber located downstream from the prime mover and air compressor
means for mixing the pressurized gas and compressed air and feeding the mixture to said combustion chamber; and
means for igniting said mixture in said combustion chamber.

5,344,315

MULTI-STRAND ORTHODONTIC ARCH WIRES AND METHODS FOR USE THEREOF

G. Herbert Hanson, Hamilton, Canada, assignor to Hamilton Ortho Inc., Hamilton, Canada

Filed Dec. 2, 1993, Ser. No. 160,124
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—20 **17 Claims**



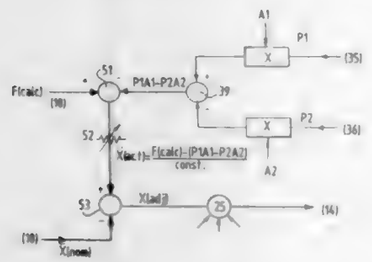
1. An orthodontic arch wire for use in combination with a plurality of orthodontic elements attached to respective teeth in an orthodontic procedure;
the arch wire comprising a plurality of wire strands of superelastic shape recovery metal alloy wrapped helically parallel to one another along the length of the wire;
wherein the ratio P/D of the longitudinal pitch P of the wire to the external diameter D of the wire is between six and twelve.

5,344,316

MOVEMENT SIMULATOR

Jan Hordijk, Hoofddorp, and Gerhard J. Wierda, Lisserbroek, both of Netherlands, assignors to Fokker Aircraft B.V., Schiphol, Netherlands

Filed Oct. 28, 1993, Ser. No. 145,322
Claims priority, application Netherlands, Oct. 30, 1992, 9201896
Int. Cl.[5] G09B *9/00*
U.S. Cl. 434—37 **5 Claims**



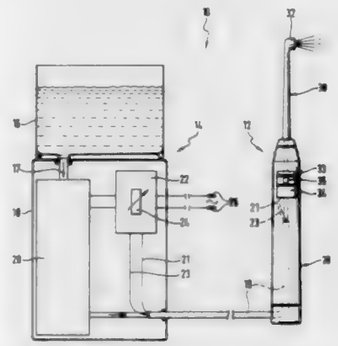
2. A movement simulator, comprising:
at least one support frame;
a subframe movable relative to said support frame;
a variable element having a first end connected to said support frame and a second end connected to said subframe, and a variable length for effecting movement of said subframe relative to said support frame;
a central control assembly electrically connected with said variable element for controlling the length thereof; and
acceleration measuring means attached to said variable element, said acceleration measuring means supplying an acceleration signal representing acceleration of said subframe relative to said support frame to said central control assembly, said acceleration measuring means comprising two pressure transducers for generating pressure signals, multiplying means for multiplying said pressure signals for generating respective force signals, a first subtracting means for subtracting said force signals for generating an effective force signal, a second subtracting means for subtracting said effective force signal from a calculated force signal, and a scaling means for scaling an output from said second subtraction means by a predetermined constant and thereby generating an acceleration signal.

5,344,317

ELECTRICALLY POWERED APPLIANCE FOR ORAL HYGIENE

Lothar Pächer, Mainz; Gustav Gassner, Kelkheim; Gottfried Voigt, Frankfurt am Main, and Peter Hilfinger, Bad Homburg, all of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 6, 1992, Ser. No. 855,703
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1989, 3937875
Int. Cl.[5] A61C *1/10*
U.S. Cl. 433—85 **13 Claims**



1. An oral irrigating appliance with a base unit with a pump unit for delivering a liquid and an electrical control of said pump unit, said appliance comprising a hand-held unit, and a hose and electrical conductors connecting said hand-held unit to said base unit, said hand-held unit including a liquid outlet orifice and an operating means for varying the amount of liquid delivered by said pump unit, wherein said hand-held unit comprises a first switch and a second switch, both for operating said electrical control, wherein said first and second switches are operated by said operating means, wherein said first switch serves to turn said pump unit on and off and said second switch serves to adjust said pump unit to deliver the liquid at a specific predetermined maximum flow rate.

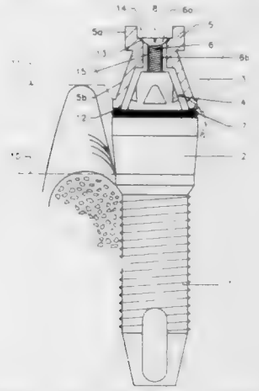
5,344,318

AESTHETIC INTRAMOBILE ELEMENT FOR DENTAL IMPLANTS

Richard S. Wilson; Barry F. Sukoneck, both of 2401 Pennsylvania Ave., Suite 1A8, Philadelphia, Pa. 19130, and Kenneth C. Wenzer, 11538 February Cir., Apt. 402, Silver Spring, Md. 20904

Filed Nov. 30, 1993, Ser. No. 159,319
Int. Cl.[5] A61C *13/28, 13/12, 13/225, 8/00*
U.S. Cl. 433—169 **6 Claims**

1. An intramobile element for dental implants comprising:
a. a prosthesis, an abutment and a fixture,
b. said prosthesis having an assembly and a member and a member cast to said assembly, said assembly having inner walls and including an upper cylindrical head which devolves to a truncated cone, a screw access channel extending from the top of said head to a rounded cradle countersunk at the proximal surface of said channel, a retaining screw having a rounded head fitting precisely in said cradle and a threaded shaft extending downwardly through a non-threaded channel into an abutment screw head of an abutment screw, said abutment screw having a threaded shaft that connects said abutment to said fixture, said truncated cone having a flat bottom surface,
c. a flat, circular, elastic gasket having rounded outer edges and an inner circular opening that fits precisely around



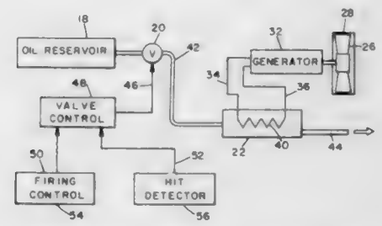
said abutment screw head and through which said threaded shaft of said abutment screw passes, said gasket being 0.75 mm in height and having a modulus of elasticity such that said gasket will compress 0.1 mm in response to a normal occlusal load, said gasket being neatly positioned at the perimeter of said abutment and between said assembly and said abutment,
said retaining screw, and said abutment screw head being spaced from said inner walls of said prosthesis assembly allowing for rotation of said prosthesis under lateral occlusal forces.

5,344,319

SHOOT AND KILL INDICATOR

Walter R. Manzke, Julian, Calif., assignor to Cubic Defense Systems, Inc., San Diego, Calif.

Filed May 10, 1993, Ser. No. 58,211
Int. Cl.[5] B05B *1/24*
U.S. Cl. 434—14 **12 Claims**



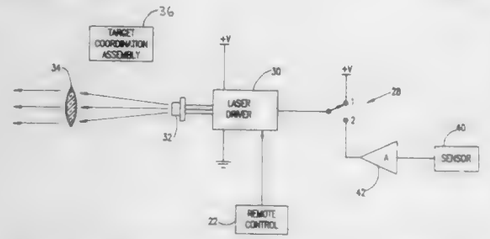
6. In a missile training pod for an aircraft producing a hit detection signal, in combination with a smoke indicator apparatus, comprising:
a rotor disposed at an end of said training pod for rotating in response to wind;
a generator connected to said rotor for producing current in response to rotation of said rotor;
a reservoir for holding a fluid;
a valve having a valve inlet and a valve outlet, said valve inlet connected to said reservoir for receiving said fluid, said valve operating in response to said hit detection signal;
a heater having a heater inlet connected to said valve outlet for receiving said fluid and a heater outlet for producing smoke, said heater having a resistive conductor for heating said fluid in response to said current.

5,344,320

DUAL MODE APPARATUS FOR ASSISTING IN THE AIMING OF A FIREARM

Motti Inbar, and Yosef Haimovich, both of Rishon Lezion, Israel, assignors to International Technologies (Lasers) Ltd., Rishon Lezion, Israel

Filed Mar. 12, 1992, Ser. No. 850,129
Claims priority, application Israel, Mar. 12, 1991, 97533
Int. Cl.[5] F41G *3/00*
U.S. Cl. 434—22 **7 Claims**



1. Dual mode apparatus for assisting in the aiming of a firearm comprising:
laser designating means boresighted with the barrel of the firearm;
means for actuating the laser designating means in a first mode of operation for target designation to illuminate a target while permitting normal operation of the firearm to shoot projectiles and including an operator control switch whose actuation produces a laser output of the laser designating means; and
means for actuating the laser designating means in a second mode of operation for target practice to illuminate a target with a laser beam emission in response to actuation of the trigger of the firearm and incorporating a firing sensor whose output produces a laser beam simulated firing.

5,344,321

Patent Not Issued For This Number

5,344,322

CRAFT ART SYSTEM FOR FORMING THREE-DIMENSIONAL BEAD MATRIX DESIGNS AND METHOD THEREFOR

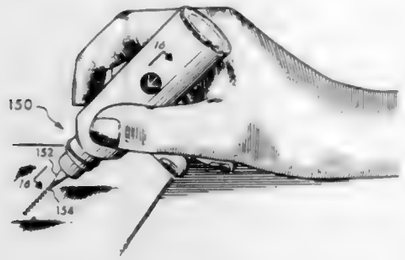
Reed N. Wilcox, Littleton; Richard L. George, Englewood; William K. Thiess, Aurora, all of Colo.; John T. Loftus, Jr., Milton; Timothy F. O'Meara, Somerville, both of Mass., and William H. Lichfield, Corinne, Utah, assignors to The Flagship Group II, Inc., Englewood, Colo.

Continuation-in-part of Ser. No. 887,289, May 22, 1992, Pat. No. 5,209,663. This application Apr. 2, 1993, Ser. No. 43,467
Int. Cl.[5] G09B *11/10*
U.S. Cl. 434—84 **34 Claims**

11. A craft art system for forming a three-dimensional color bead matrix design onto a surface, said craft art system comprising:
a plurality of colored craft paint materials, said craft paint materials exhibiting three-dimensionality when applied to said surface,
said surface carrying a pattern, said pattern having a design, said pattern comprising:
(a) a plurality of closely spaced geometric shapes forming said design,
(b) a plurality of symbols, each of said symbols assigned to represent a different color corresponding to one of said plurality of colored craft paint materials,

(c) each of said plurality of closely spaced geometric shapes associated with one of said symbols,

a plurality of applicators; each of said plurality of applicators holding one of said plurality of colored craft paint materials; each of said plurality of applicators applying said held colored craft paint material onto said surface; said craft paint material providing said three-dimensionality by forming substantially discrete uniform and homogeneous beads overlaying both of said closely spaced geometric shapes and said symbols to form said three-dimensional color bead matrix design; and



wherein (1) said discrete substantially uniform and homogeneous beads visually merge together with sufficient color density to permit visual perception of said design, (2) said craft paint material is sufficiently fluid enough to form a substantially rounded bead that is sufficiently stable so as to preserve said discreetness of beads at a given density range without collapsing and running together with adjacent beads, and (3) said beads applied colored craft paint material after drying strongly adhere to said surface and wherein said applied colored craft paint material after drying strongly adhere to said surface.

5,344,323

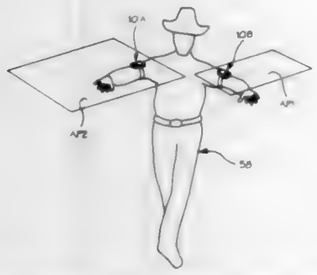
TEACHING RECOGNITION OF BODY MOVEMENT ERRORS IN DANCING

Les Burns, P.O. Box 9042, Charlotte, N.C. 28299

Filed Feb. 16, 1993, Ser. No. 17,854

Int. Cl.[5] A63B *69/00*; **G09B** *9/00, 19/00*

U.S. Cl. 434—250 **14 Claims**



1. A teaching device for indicating in real time the movement of a selected part of a person's body beyond a desired boundary limit during the execution of a sequence of body movements, the device comprising:

means for detecting movement of the selected body part beyond a desired boundary limit, the detecting means including means for emitting first and second signals and means for selectively energizing the signal emitting means to emit said first and second signals, the selectively energizing means being changeable from a non-initiating condition in which it does not energize the signal emitting means to emit said first and second signals to an initiating condition in which it energizes the signal emitting means to emit said first and second signals in response ,respectively, to different degrees of movement of the device beyond a selected angle as measured between a reference axis of the device and an alignment plane in which the device normally is moved during execution of the sequence of body movements;

means, operatively connected to the signal emitting means, for providing a first alarm in response to receipt of a first signal from the signal emitting means indicating encroachment by the selected body part of a nominal misalignment zone in which the reference axis of the device forms an angle with the alignment plane greater than a predetermined nominal angle and less than a predetermined significant angle ,said predetermined significant angle being greater than said predetermined nominal angle; and

means, operatively connected to the signal emitting means, for providing a second alarm in response to receipt of a second signal from the signal emitting means indicating encroachment by the selected body part of a significant misalignment zone in which the reference axis of the device forms an angle with the alignment plane at least equal to the predetermined significant angle, said second alarm being distinguishable from said first alarm.

5,344,324

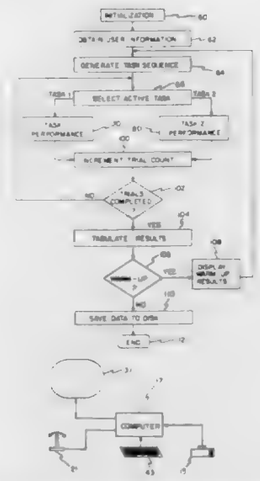
APPARATUS AND METHOD FOR TESTING HUMAN PERFORMANCE

Robert D. O'Donnell, Dayton, Ohio, and Samuel L. Moise, Jr., Los Gatos, Calif., assignors to Nova Scientific Corporation, Tarzana, Calif.

Filed Jul. 15, 1992, Ser. No. 914,772

Int. Cl.[5] G09B *19/00*

U.S. Cl. 434—258 **15 Claims**



9. Apparatus for testing the skill switching ability of a human operator comprising:

a monitor for displaying a graphical presentation to be observed by said human operator,

graphics control means for causing said monitor to display an attention shifting icon and a sequential series of tasks, said series of tasks comprising tasks of a first type requiring said human operator to utilize a cognitive skill and tasks of a second type requiring said human operator to utilize a motor skill,

attention response means for operation by said human operator to generate attention response signals related to a predetermined condition of said attention shifting icon,

cognitive response means operable during the display by said monitor of tasks of said first type to receive cognitive responses from said human operator and generate corresponding cognitive response signals,

motor response means operable during the display by said monitor of tasks of said second type to receive motor responses from said human operator and generate corresponding motor response signals, and

computing means responsive to said attention response signals, said cognitive response signals and said motor response signals for computing a performance score for said human operator.

15. A method of measuring the impairment of a human subject comprising the steps of conducting a performance test of said human subject as a base test, thereafter repeating said performance test, and comparing the results of the repeated performance test against the base test; said performance test comprising the steps of:

(1) presenting a cognitive task to said human subject;

(2) presenting a motor task to said human subject;

(3) forcing said human subject to perform said cognitive task and said motor task sequentially on a pseudorandomly alternating basis.

5,344,325

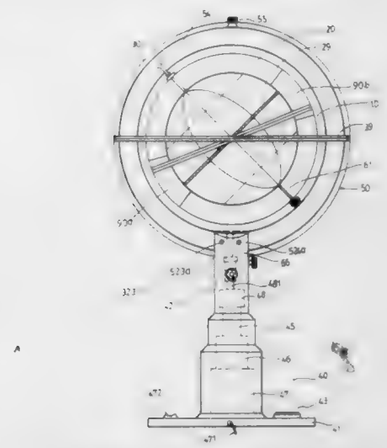
AUTOMATIC TRACKING ASTRONOMICAL GLOBE

Zn-Hu Wang, Suite 1, 11F, 95-8 Chang Ping Road, Sec. 1, Taichung, Taiwan

Filed May 17, 1993, Ser. No. 61,689

Int. Cl.[5] G09B *27/06*

U.S. Cl. 434—288 **12 Claims**



1. An automatic tracking astronomical globe comprising a mount with a base disposed on its bottom portion, an annular frame with an open inner periphery secured to the top portion of said mount in a vertical position, an azimuth circle secured perpendicularly across a diameter of said annular frame in a horizontal position, and a celestial globe with an enclosed, concentric terrestial globe disposed concentrically within said annular frame and said azimuth circle, wherein:

said terrestial globe has lines, lettering, and artwork formed on its surface denoting nations, bodies of water, borders, and other features as found on a conventional earth globe;

said celestial globe is made from a transparent material and has points, lines, lettering, and other features formed on its outer surface denoting stellar constellations and prominent celestial objects;

marking formed around the periphery of said annular frame, on one face thereof, define a latitude scale with units of degrees;

an annular polar axle yoke is rotatably secured within said annular frame in a concentric position;

a polar axle extends through the north and south celestial poles of said celestial globe, and through the north and south poles of said terrestial globe, with one end thereof rotatably secured to a first bearing and the opposite end thereof rotatably secured to a second bearing, said first bearing and said second bearing are secured to said polar axle yoke at diametrically opposed positions, with said first bearing disposed opposite the north celestial pole of said celestial globe and said second bearing disposed opposite the south celestial pole of said celestial globe;

said polar axle is engaged with said celestial globe by a clutch means secured to the region of the north celestial pole of said celestial globe, said clutch means allows manual rotation of said celestial globe;

a concentric sleeve covers a major portion of the length of said polar axle, with one end of said sleeve extending from and securing to the north pole of said terrestial globe, passing through the south pole thereof, the opposite end of said sleeve securing to the rotating block of a friction bearing, said friction bearing being disposed between the south celestial pole of said celestial globe and said second bearing, the fixed block of said friction bearing is disposed to the rear of said rotating block opposite said second bearing and is secured to said polar axle yoke, a knurled rotation knob is secured to the front of said rotating block and protrudes from the open inner periphery of said annular frame enabling manual rotation of said terrestial globe;

a rotation means, including a motor and an output shaft, are disposed within the lower portion of said mount;

said celestial globe is rotated by said rotation means by means of a globe rotation drive mechanism comprising a polar axle gear secured to one end of said polar axle in proximity to said first bearing, a ring gear rotatably secured within said polar axle yoke in a concentric position, a drive gear having a shaft secured thereto rotatably secured to the bottom portion of said annular frame with the shaft of said drive gear extending through the bottom thereof into said mount, and a clutch means disposed within said mount between the shaft of said drive gear and the output shaft of said rotation means;

said clutch means engages the output shaft of said rotation means with the shaft of said drive gear when engaged by a decoupling and raising mechanism, said drive gear being engaged with said ring gear and said ring gear being engaged with said polar axle gear;

a circumferential gear is formed around the outer periphery of said polar axle yoke, a coupler gear rotatably secured within said mount engages said circumferential gear through an opening formed on the bottom portion of said annular frame, a worm gear disposed within said mount is secured to a common shaft with said coupler gear;

a worm, disposed within said mount and secured to a shaft with one end thereof pivotably secured to an inner wall of said mount and the other end extending through a slot formed on the outer wall of said mount to secure to an external latitude adjustment knob, is engaged with said worm gear when pivoted upwards by means of said decoupling and raising mechanism, enabling said polar axle yoke to be rotated about an axis perpendicular with said annular frame by manually rotating said tilt adjustment knob;

said decoupling and raising mechanism disengages said clutch means, between said output shaft and said drive gear shaft, when raising said worm to engage said worm gear, and engages said clutch means when said worm gear is lowered;

a plurality of gear teeth are formed around the equatorial circle of said terrestial globe defining an equatorial gear thereon;

said celestial globe is formed in two halves, in a north celestial hemisphere and a south celestial hemisphere, the circular rims of said north and south celestial hemispheres are parallel with and in proximity to the ecliptic circle of said celestial globe, said north and south celestial hemispheres being separated by a small gap;

a first thin, annular, internally toothed ecliptic gear and a second thin, annular, internally toothed ecliptic gear both

have a diameter nearly equal with that of said celestial globe, said first ecliptic gear and said second ecliptic gear being rotatably secured within said gap between said north and south celestial hemispheres, with said second ecliptic gear being disposed between said first ecliptic gear and said north celestial hemisphere;

a pair of drive boxes are secured to the inner surface of said celestial globe at diametrically opposed positions, each said drive box having a similar solar and lunar drive mechanism disposed within;

each said solar and lunar drive mechanism comprises an epicyclic gear engaged with said equatorial gear, a first set of coupling gears and a second set of coupling gears, a solar drive gear engaged with said first ecliptic gear, and a lunar drive gear engaged with said second ecliptic gear;

said equatorial gear of each said solar and lunar drive mechanism is engaged with a said solar drive gear thereof through said first set of coupling gears, and engaged with said lunar drive gear thereof through said second set of coupling gears;

clockwise rotation of said celestial globe about stationary said terrestial globe causes said first ecliptic gear and said second ecliptic gear to rotate in a counter clockwise direction, said first ecliptic gear completing one revolution for approximately every 366.261 revolutions of said celestial globe and said second ecliptic gear completing one revolution for approximately every 27.398 revolutions of said celestial globe;

a solar marker with a securing arm is disposed over the outer periphery of said first ecliptic gear, said securing arm of said solar marker being slidingly secured within a circumferential first retaining groove formed around the outer peripheral portion of said first ecliptic gear, likewise a lunar marker with a securing arm is disposed over the outer periphery of said second ecliptic gear, said securing arm of said lunar marker being slidingly secured within a circumferential second retaining groove formed around the outer peripheral portion of said second ecliptic gear;

said solar marker and said lunar marker rotate about and in proximity to the circle of the ecliptic of said celestial globe, being carried by the rotation of respective said first ecliptic gear and said second ecliptic gear, said solar marker and said lunar marker can be positioned about the circle of the ecliptic of said celestial globe by manually sliding said solar marker and said lunar marker along respective said first groove and said second groove;

whereby, said celestial globe completes one revolution about said terrestial globe in a clockwise direction relative to the north celestial pole thereof in approximately the period of a sidereal day, said solar marker completes one revolution in a counter clockwise direction about said celestial globe in approximately the period of a sidereal year, and said lunar marker completes one revolution about said celestial globe in a counter clockwise direction approximately in the period of a sidereal month;

with said polar axle yoke rotated to align said polar axle with the latitude mark on said latitude scale corresponding to the latitude of a user's location, said celestial globe manually rotated to a proper initial orientation, and said solar and lunar markers moved to proper respective initial positions, the astronomical globe of the present invention will show the positions of the sun, moon, and celestial objects, represented on said celestial globe, relative to a user's location at the time of observation.

5,344,326

TEACHING METHOD AND SYSTEM

Maxime Ferris, Waterloo, Canada, assignor to Audio-Visual Publishers Inc., Hackensack, N.J.

Filed Jun. 15, 1992, Ser. No. 898,276

Int. Cl.[5] G09B *7/00*

U.S. Cl. 434—336 **8 Claims**

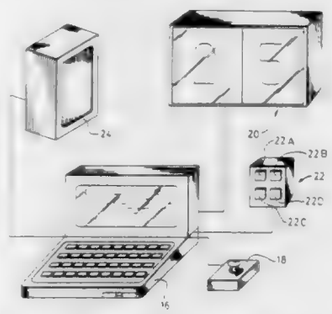
1. A teaching system for improving the ability of a plurality of students to learn and for automatically managing marks and records of the plurality of students to evaluate the performances thereof, said apparatus comprising

a plurality of student remote response units, each of said student response units comprising a single button for generating a positive response and a negative response,

a computer in communication with said plurality of student response units, said computer having a plurality of subfiles comprising at least one corresponding subfile for each of said plurality of students, and capable of compiling responses from said plurality of student response units, generating an affirmative signal corresponding to the number of positive responses received and a negative signal corresponding to the number of negative responses received and storing a mark for each of said plurality of students in said corresponding subfiles,

an instructor input unit in communication with the computer, said instructor input unit comprising an affirmative key for initiating an affirmative response period, a negative key for initiating a negative response period, an opinion key for initiating a first opinion period, for selecting a mark value and for initiating a second opinion period,

a classroom viewing device in communication with the computer and remotely operated by said instructor input unit, said viewing device comprising an affirmative section responsive to said affirmative signal for displaying a visual signal corresponding thereto and responsive to said affirmative key for indicating affirmative as being correct, and a negative section responsive to said negative signal



for displaying a visual signal corresponding thereto and responsive to said negative key for indicating negative as being correct, and

an audio system in communication with the computer, said audio system adapted to generate a first audio signal at the beginning of the response periods and responsive to said computer for generating a second audio signal indicating a majority of responses received as being correct or incorrect and for generating a third audio signal for indicating whether affirmative or negative is a correct responses,

whereby an instructor successively poses objective type questions to said plurality of students while selectively pressing said affirmative key, negative key and opinion key establishing said affirmative response period and said negative response period, said first opinion period, said second opinion period and mark value.

5. A method for improving the ability of a plurality of students to learn and for automatically managing marks and records of the plurality of students to evaluate the performances thereof, said method comprising the steps of:

successively posing objective type questions to said plurality of students, each of whom is provided with a student remote response unit comprising a single button for generating a positive and a negative response, said plurality of student response units in communication with a computer, said computer having a plurality of subfiles comprising at least one corresponding subfile for each of said plurality of students, said computer capable of compiling responses from said plurality of student response units, generating an affirmative signal corresponding to the number of positive responses received and a negative signal corresponding to the number of negative responses received and storing a mark for each of said plurality of students in said corresponding subfiles,

selectively initiating a series of affirmative response periods, or negative response periods or a series of first opinion periods, mark value selections and second opinion periods by using an instructor input unit in communication with said computer, said instructor input unit comprising an affirmative key for initiating the affirmative, response periods, a negative key for initiating the negative response periods, an opinion key for initiating the first opinion periods, for selecting the mark value and for initiating the second opinion periods,

automatically tabulating the positive and negative responses made by the plurality of students and displaying a signal corresponding to the number of positive and negative responses received by the computer,

selectively displaying on a classroom viewing device either an affirmative signal for indicating affirmative as being correct or a negative signal for indicating negative as being correct, said classroom viewing device in communication with the computer and remotely operated by said instructor input unit, said viewing device comprising an affirmative section responsive to said affirmative signal for displaying a visual signal corresponding thereto and responsive to said affirmative key for indicating affirmative as being correct, and a negative section responsive to said negative signal for displaying a visual signal corresponding thereto and responsive to said negative key for indicating negative as being correct,

generating a first audio signal at the beginning of the response periods, a second audio signal for indicating a majority of responses as being correct or incorrect and a third audio signal for indicating whether affirmative or negative is a correct response, and

automatically tabulating and storing within said computer mark values for each of said plurality of students.

5,344,327

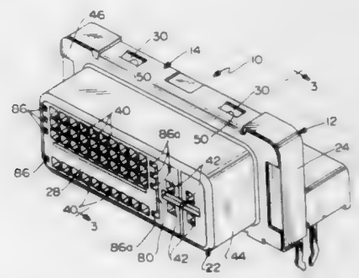
ELECTRICAL CONNECTORS

David L. Brunker, Naperville, and Richard A. Nelson, Glen Ellyn, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jul. 22, 1993, Ser. No. 96,114

Int. Cl.[5] H01R *4/66*

U.S. Cl. 439—108 **10 Claims**



1. In a generally rectangular, shielded electrical connector for mating with another electrical connector along a mating axis, the shielded connector including an elongated dielectric housing having a mating face generally perpendicular to said mating axis, an outer conductive shield member generally surrounding a portion of the housing for mating with the another electrical connector, a first region of the housing having mounted therein a plurality of lower speed data terminals of a first given array for interconnection with a plurality of first terminals of the another connector, and a second region of the housing having mounted therein a plurality of high speed signal terminals of a second given array for interconnection with a plurality of second terminals of the another connector, the first given array of terminals being spaced from the second given array of terminals longitudinally of the housing,

wherein the improvement comprises:

an opening in the dielectric housing between the first and second arrays of terminals to define an air reservoir to reduce the capacitive coupling and crosstalk between the high speed signal terminals and the lower speed data terminals.

5,344,328

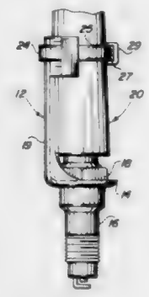
SPARK PLUG KEEPER

Timothy Suggs, 3951 SW. 130 Avenue, Miramar, Fla. 33027

Filed Jun. 28, 1993, Ser. No. 82,400

Int. Cl.[5] H01R *13/533*

U.S. Cl. 439—127 **8 Claims**



1. For maintaining

a) a spark plug with a first end and a second end and a hex nut portion between the ends, the hex nut portion having an annular surface facing the second end,

b) in electrical engagement with an electric boot having a downwardly opening recess sized to telescopically receive the first end of the spark plug,

a keeper, comprising:

a) a ring means sized to slidably receive the spark plug between the annular surface of the spark plug facing said second end of the hex nut and the second end, with the ring means in abutting engagement with the annular hex nut surface facing the second end of said spark plug,

b) upstanding finger means on the ring means, said finger means having a first surface to confront the boot and a second exterior surface, said finger means having an upper terminal end,

c) barb means on the first surface confronting the boot, and

d) tie means to encircle the finger means and the boot and to maintain the finger means and the barb means of the finger means in tight captivating relationship of the boot relative to the spark plug when in electrical engagement one with the other.

5,344,329

PLUG-IN SOCKET WITH BLOCKING MEMBER

Enzo Faller, Wilhelm-Strater-Str. 3, D-4050 Mönchengladbach 2, Fed. Rep. of Germany

Filed Aug. 5, 1992, Ser. No. 926,002

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1991, 9109960; Nov. 22, 1991, 9114540

Int. Cl.[5] H01R *13/44*

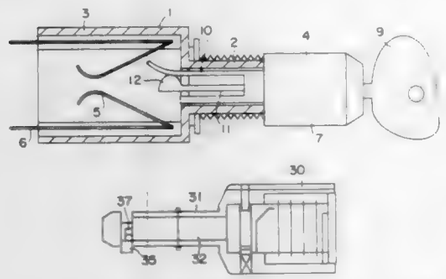
U.S. Cl. 439—133 **3 Claims**

1. A plug-in socket for amplifiers, loudspeakers boxes, and electrical musical instruments, comprising

a socket member with a round inner bore and having an opening therein for receiving an electrical plug,

a housing member located behind said socket member, and being attached to said socket member by a step, said housing member having at least two contact clamps therein,

a blocking member partially insertable into said opening of said socket member, said blocking member including a lock housing, a tubular member extending from said lock housing and passing through said round inner bore of said socket member, said tubular member being closely supported within said round inner bore of said socket member thereby securing a fixed central position of said blocking member within said inner bore of said socket member, a rotatable elongated actuating member extending centrally through said tubular member and having a projecting member at a forward end thereof, said projecting member



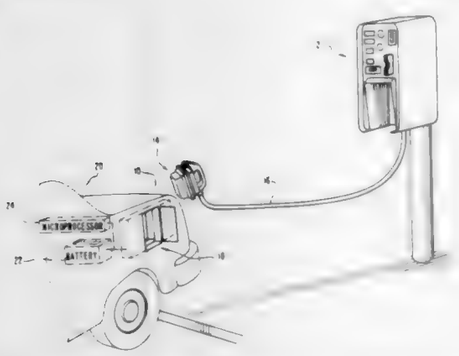
being disposed eccentrically with respect to a longitudinal axis of said elongated actuating member, and a movable pin supported on said tubular member which is engaged by said projecting member, so that when said pin is in a first position, said pin is completely within said tubular member, and when said actuating member is rotated, said pin is moved by said projecting member into a second position wherein said pin is at least partially outside of said tubular member and will engage against said step, thereby preventing removal of said blocking member from said socket member.

5,344,330

ELECTRICAL CONNECTOR ASSEMBLY, ESPECIALLY FOR ELECTRIC VEHICLE

Ernest G. Hoffman, Middlefield, Conn., assignor to Hubbell Incorporated, Orange, Conn.

Filed Jan. 15, 1993, Ser. No. 5,108
Int. Cl.[5] H01R *13/453*
U.S. Cl. 439—138 **60 Claims**



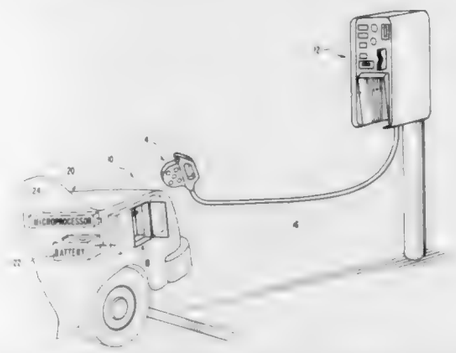
1. An electrical connector assembly, the combination comprising:
- a receptacle having a housing with an inlet cavity;
- first electrical contact means coupled to said receptacle;
- a plug with a housing sized to be received within said inlet cavity;
- second electrical contact means coupled to said plug, one of said first and second contact means being movably coupled to engage the other of said first and second contact means after full insertion of said housing of said plug into said inlet cavity so that said housings of said receptacle and said plug remain stationary;
- first cover means, coupled to said receptacle, for selectively covering said first contact means;
- second cover means, coupled to said plug, for selectively covering said second contact means; and
- uncovering means, coupled to said receptacle, for selectively moving said first and second cover means to uncover said first and second contact means, respectively, to permit electrical coupling of said first contact means with said second contact means, after full insertion of said plug into said inlet cavity of said receptacle, said uncovering means including
  - means for interconnecting said first and second cover means together for movement together after said plug is fully inserted into said inlet cavity.

5,344,331

ELECTRICAL CONNECTOR SYSTEM, ESPECIALLY FOR ELECTRIC VEHICLES

Ernest G. Hoffman, Middlefield, and John C. Anthony, Fairfield, both of Conn., assignors to Hubbell Incorporated, Orange, Conn.

Continuation-in-part of Ser. No. 5,108, Jan. 15, 1993. This application Feb. 1, 1993, Ser. No. 12,124
Int. Cl.[5] H01R *13/453*
U.S. Cl. 439—138 **22 Claims**



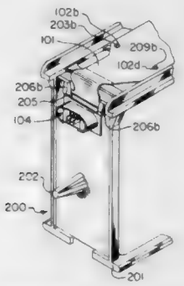
1. An electrical connector system, the combination comprising:
- a receptacle having a first contact housing, a first set of electrical contacts coupled to said first contact housing, and an inlet cavity;
- first shutter means, movably coupled within said inlet cavity of said first contact housing, for selectively covering and exposing said first set of contacts;
- a plug having a second set of electrical contacts and a second contact housing for housing said second set of contacts, one of said first and second sets of electrical contacts being movably coupled relative to said first and second housing for electrically coupling said first and second sets of electrical contacts together after insertion of said plug into said receptacle to a full insertion position;
- second shutter means, movably coupled to said second contact housing, for selectively covering and exposing said second set of contacts; and
- uncovering means, coupled to at least said receptacle, for selectively moving said first and second shutter means to uncover said first and second sets of contacts, respectively, to permit electrical coupling of said first set of contacts with said second set of contacts, upon full insertion of said plug into said receptacle to said full insertion position, said uncovering means including
  - a control member for movably engaging said first and second shutter means to expose said first and second sets of electrical contacts after full insertion of said plug into said receptacle to said full insertion position, and
  - a first sensor coupled to one of said first and second contact housings for sensing said full insertion position of said second contact housing relative to said inlet chamber, said first sensor being operatively coupled to said control member so that said first and second contact housings remain stationary during electrical coupling of said first and second sets of electrical contacts and during uncovering of said first and second sets of contacts.

5,344,332

APPARATUS AND METHOD FOR FLOATABLE ELECTRICAL CONNECTION OF SEMI-RIGIDLY MOUNTED DEVICES

Roger A. Lopez, Louisville; Robert J. Miosek, Berthoud, and Robert Walsh, Boulder, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Jun. 3, 1993, Ser. No. 71,682
Int. Cl.[5] H01R *13/74*
U.S. Cl. 439—248 **11 Claims**



1. Apparatus for enabling the electronic connection between devices semi-rigidly mounted with respect to one another, said apparatus comprising:
- a connector;
- a device for floatably mounting said connector;
- a wall in said device;
- an opening in said wall adapted to receive said connector;
- means for enabling the insertion of said connector into said opening;
- flange means attached to said connector adapted to restrict motion of said connector perpendicular to the plane of said opening in said wall when said connector is inserted in said opening and further adapted to permit said connector to float within the plane of said opening in said wall;
- retaining means for retaining said connector within said opening after the insertion of said connector into said opening while enabling said connector to move within the confines defined by said opening; and
- flexible wiring means electrically connected to said device and to said connector and positioned to provide a spring bias force to position said connector within said opening at a preferred position for mating with other connectors.

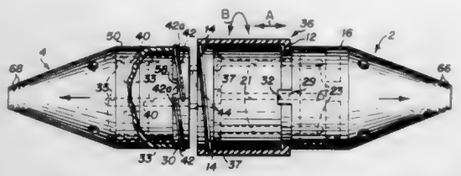
5,344,333

LOCKING APPARATUS FOR ELECTRICAL PLUG CONNECTOR ASSEMBLIES

Philip E. Haag, 523 Keelson Cir., Redwood City, Calif. 94063

Filed Aug. 21, 1992, Ser. No. 933,486
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—320 **7 Claims**

1. A locking apparatus for securing together a male plug end and a female plug end of an electrical connector assembly comprising in operative combination:
- a) a face plate for attachment to a prong end of an insulator body of the male plug end;
- b) a sleeve for enclosing an insulator body of the female plug end, said sleeve including a first sleeve end and a second sleeve end, said second sleeve end being rotatably connected to said female insulator body;
- c) means for limiting said rotational connection of said sleeve with respect to said female insulator body; and wherein said means for limiting said rotational connection includes:
  - i) a notched key member provided to said sleeve second end;
  - ii) a circumferential gap formed within said female insulator body;
  - iii) said gap having at least one transverse stop member for



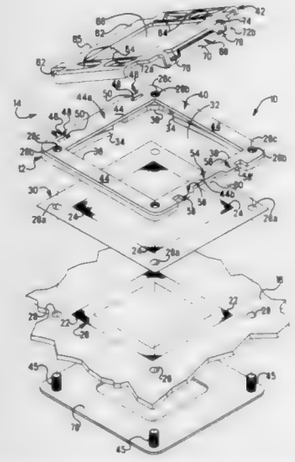
limiting a range of rotational travel of said notched key member within said circumferential gap; and
- d) means for locking engagement of said first sleeve end to said face plate upon twist rotation of said sleeve when said male plug end is connected to said female plug end, and wherein said means for locking engagement comprises:
  - i) a plurality of discontinuous threads provided along a perimeter edge of said face plate; and
  - ii) a plurality of discontinuous grooves provided along an interior surface of said sleeve first end and sized for snug fit receiving engagement of said plurality of discontinuous threads.

5,344,334

HINGED COVER FOR AN ELECTRICAL SOCKET

Michael F. Laub, Etters, and Richard E. Rothenberger, Harrisburg, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 11, 1993, Ser. No. 75,698
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—331 **12 Claims**



1. An electrical socket attachable to a substrate for removably receiving and positioning an electronic package so that contact pads thereupon are connected with respective circuit pads upon the substrate, the electrical socket comprising:
- a contact member having a plurality of contacts for electrically connecting the contact pads to the circuit pads;
- a frame-like housing upon the contact member defining a

well for removably receiving and positioning the electronic package so that the contact pads correspond with the contacts;

a hinged cover having

a top plate fixedly positioned relative to the housing and having interconnected side portions about the well, the top plate including an integrally formed hinge member within one of the side portions, said hinge member comprising a bar formed by creating an aperture in said side portion wherein said bar connects to said top plate at two points and a first latch portion integrally formed within an opposite one of the side portions; and

a cover plate for maintaining the contact pads of the electronic package engaged with the circuit pads of the substrate, the cover plate having an integrally formed hook shaped complementary hinge member receivable about the hinge member for pivotally interlocking the cover plate to the top plate such that the cover plate is movable between an open position, where the electronic package is removable from the well, and a closed position, where the cover plate exerts a force on the electronic package to cause the contact pads to engage the contacts; and a second latch portion integrally formed with the cover plate and disconnectably engageable with the first latch portion of said top plate to maintain the closed position.

5,344,335

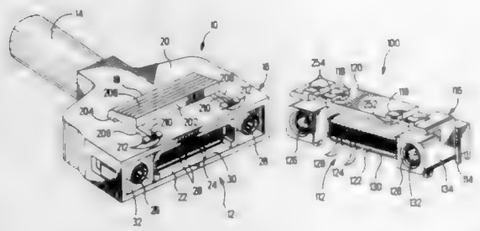
LATCHING SYSTEM FOR ELECTRICAL CONNECTORS

James P. Scholz, Mechanicsburg, and Brent D. Yohn, Newport, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Division of Ser. No. 855,364, Mar. 20, 1992, Pat. No. 5,234,353, which is a continuation-in-part of Ser. No. 841,665, Mar. 3, 1992, abandoned. This application Jun. 22, 1993, Ser. No. 81,036

Int. Cl.[5] H01R *13/627*

U.S. Cl. 439—357 **3 Claims**



1. A system for latching first and second connectors together in mated relationship along a mating axis, comprising:

a latch arm joined at a joint to a side surface of said first connector and extending forwardly therefrom, said latch arm including an outwardly facing actuation surface and further including therebeyond a pair of beams extending forwardly to free ends proximate a mating face of said first connector and substantially spaced apart a selected distance, said latch arm and said beams being spaced from said side surface to define a relief recess therebetween, each said beam free end including a pair of embossments extending laterally from respective sides thereof parallel to said side surface of said first connector, each said embossment including a bearing surface and a rearwardly facing latch surface; and

a pair of latch-receiving slots formed along a corresponding side surface of said second connector proximate said mating face thereof opposed from said free ends of said beams of said latch arm of said first connector, each said latch-receiving slot including an outer wall section parallel to said side surface of said second connector and spaced therefrom, each said outer wall section including a camming surface facing said side surface and including rearwardly facing second latch surface;

at least one of said bearing surfaces and said camming surfaces angled slightly forwardly whereby said latch-receiving slots are adapted to deflect said beams and said latch arm toward said side surface of said first connector during connector mating upon bearing engagement between said bearing surfaces and said camming surfaces, and said substantially spaced apart beams and latch-receiving slots define latches adapted to hold both ends of said first and second connectors assuredly latched,

whereby said first and second connectors are delatchable by said latch arm being deflectable inwardly adjacent the mating interface and forwardly of said joint with said side surface, and access is needed to only a single side of said first and second connectors for latch arm actuation.

5,344,336

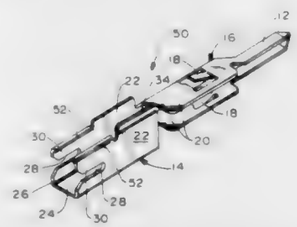
INSULATION DISPLACEMENT ELECTRICAL TERMINAL

Stephen A. Sampson, Downers Grove, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Jun. 4, 1993, Ser. No. 71,551

Int. Cl.[5] H01R *4/24*

U.S. Cl. 439—397 **3 Claims**



1. In an insulation displacement terminal for an insulated electrical wire, including a channel-shaped terminating section of a generally U-shaped cross-section provided by a pair of side walls joined by a base wall, a U-shaped distal end of the terminating section including a conductor-receiving insulation-displacing slot extending into each side wall of the section generally parallel to the base wall thereof, wherein the improvement comprises reinforcing means along free edges of said side walls of the terminating section of the terminal, said reinforcing means extend generally parallel to the slots, and

wherein said reinforcing means comprises elongated flanges projecting from the side walls generally parallel to the base wall.

5,344,337

ELECTRICAL CONNECTOR WITH RUBBER BOOT SEAL

Thomas E. Ritter, Katy, Tex., assignor to Halliburton Logging Services, Houston, Tex.

Continuation of Ser. No. 842,670, Feb. 27, 1992, abandoned. This application Jun. 21, 1993, Ser. No. 79,540

Int. Cl.[5] H01R *13/52, 13/56*

U.S. Cl. 439—447 **6 Claims**

1. For use in a downhole well logging tool, an electrical feedthrough which comprises:

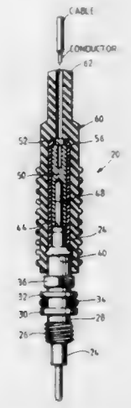
a surrounding rigid body formed of insulative material about a central elongate current carrying metal member having one end extending from said body and constructed for cooperation in a plug and socket connection and having an opposite end adapted to be connected with the proximal end of an electrical cable having a conductor within an insulative cable jacket;

an elongate, conductive metal, cooperative plug and socket electrical connector serially connected between, and fully surrounding said opposite end of said metal member and said proximal end of an electrical cable conductor;

an insulative sleeve fully surrounding said plug and socket electrical connector;

a metal sleeve surrounding said insulative rigid body, said metal sleeve including an enlargement; and

an elongate removable resilient boot on the exterior completely surrounding that portion of the feedthrough exposed to high pressure and high temperature wherein said removable boot has an elongate central axial passage



termination at a first end thereof to enable an electrical cable to be extended therethrough so that said removable resilient boot is completely insulated from contact with said central elongate current carrying metal member, said plug and socket electrical connector and said electrical cable conductor wire, said boot further including a second end which contacts said enlargement wherein said enlargement functions as a shoulder holding said boot on said metal sleeve.

5,344,338

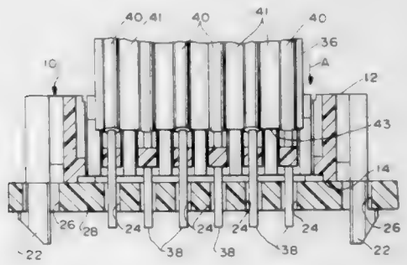
STRAIN RELIEF STRUCTURE FOR CONNECTING FLAT FLEXIBLE CABLE TO A CIRCUIT BOARD

Stephen A. Colleran, Lisle; Robert J. Gugelmeyer, Naperville; Lawrence E. Geib, Bartlett; Kenneth T. Stead, Aurora, all of Ill., and Weng H. Cheong, Kokomo, Ind., assignors to Molex Incorporated, Lisle, Ill.

Continuation of Ser. No. 845,896, Mar. 4, 1992, abandoned. This application Feb. 19, 1993, Ser. No. 20,246

Int. Cl.[5] H01R *13/58;* **H02G** *15/00*

U.S. Cl. 439—465 **9 Claims**



1. In a strain relief structure for connecting conductors of a flat flexible cable directly to conductive areas of a circuit board, the flat flexible cable including an array of parallel conductors, flexible insulation disposed around the conductors and a web of insulation disposed between adjacent conductors, the strain relief structure including a body having a cable receiving aperture extending therethrough, wherein the improvement comprises a plurality of resilient strain relief fingers extending into the cable receiving aperture from each side of said cable receiving aperture each resilient finger arranged for grippingly engaging the web of insulation between a pair of conductors independently of any other finger.

5,344,339

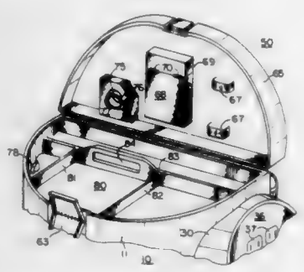
MULTI-PURPOSE RECEPTACLE

Edward P. Cheslock, Lincoln University, Pa., assignor to Lasko Holdings, Inc., West Chester, Pa.

Filed Sep. 9, 1993, Ser. No. 118,307

Int. Cl.[5] H01R *13/73*

U.S. Cl. 439—501 **10 Claims**



1. A multi-purpose portable receptacle that combines a tool caddy, work platform, electrical outlet, light and step stool which comprises

a semi-circular housing open at the top;

a lid hingedly connected to and closing off the housing opening providing selective access thereinto;

said lid having carrying handle means;

lock means to detachably secure said lid to the housing;

light means connected to the housing; and

electrical outlet power means to provide a source of electrical power.

5,344,340

COAXIAL CONNECTOR FOR CONNECTING TWO PRINTED-CIRCUIT BOARDS

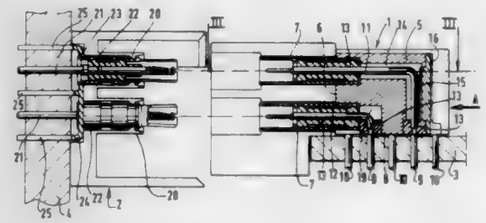
Jacky Bouleau, Villeparisis, France, assignor to Radiall, Rosny-sous-Bois, France

Filed Dec. 15, 1992, Ser. No. 990,419

Claims priority, application France, Dec. 18, 1991, 91 15711

Int. Cl.[5] H01R *17/04*

U.S. Cl. 439—581 **2 Claims**



1. A twin coaxial connector for connecting a first printed circuit board generally perpendicular to a second printed circuit board and including an elbowed coaxial connector element and a straight coaxial connector element,

(A) the elbowed coaxial connector element comprising:

(i) a conducting parallelepipedal body having a bottom face, a front face, and a rear face,

(ii) a plurality of first pins attached to said bottom face for joining said body to the first printed circuit board,

(iii) at least two first coaxial contacts on said front face, each contact having a first peripheral conductor in electrical communication with said body, and a first central conductor,

(iv) at least two elbowed conducting rods passing through said body, connecting said first central conductors to said first pins, and

(B) the straight coaxial connector element comprising:

(i) a ground plate having extensions for insertion into the second printed-circuit board,

(ii) a plurality of second pins attached to the second printed circuit board,

(iii) at least two second coaxial contacts for mating connection with said first coaxial contacts, each of said second coaxial contacts having a second central conductor in electrical contact with a second pin, and a second peripheral conductor,

(iv) said ground plate defining orifices for receiving each of said second peripheral conductors therein,

(v) crimped means formed on said second peripheral conductors to fasten the second peripheral conductors within said orifices to said ground plate.

5,344,341

CONNECTOR HAVING ELECTROMAGNETIC SHIELDING FILM

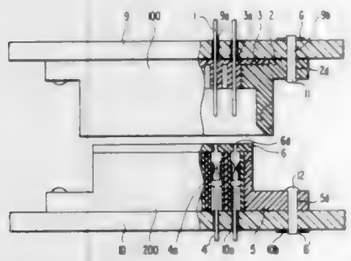
Toshinori Yoshino, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 41,314

Claims priority, application Japan, Mar. 31, 1992, 4-077465

Int. Cl.[5] H01R *13/648*

U.S. Cl. 439—607 **4 Claims**



1. A connector comprising a first connector half which holds first contact pins, and a second connector half which holds second contact pins;

said first connector half comprising:

a first insulation plate including a plurality of parallel projections in which said first contact pins are held, and

a first insulation housing including a plurality of holes for receiving said projections, said first insulation housing being coated with a conductive film on internal and external surfaces thereof; and

said second connector half comprising:

a second insulation plate including a plurality of parallel projections in which said second contact pins are held, and

a second insulation housing including a plurality of holes for receiving said projections of said second insulation plate, said second insulation housing being coated with a conductive film on internal and external surfaces thereof;

said first and second connector halves being coupled with each other to contact said first contact pins with said second contact pins;

wherein said conductive films respectively coated on said first and second insulation housing are each connected to a ground.

5,344,342

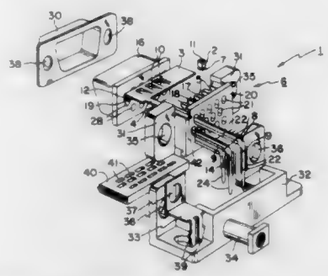
FILTERED VGA CONNECTOR

Francisco R. Briones, Markham, Canada, assignor to Amphenol Corporation, Wallingford, Conn.

Filed Jan. 7, 1993, Ser. No. 1,662

Int. Cl.[5] H01R *13/66*

U.S. Cl. 439—620 **12 Claims**



1. An electrical connector, comprising:

at least two electrical contacts;

an electrically conductive member; and

an electrical component electrically connected between the conductive member and a first of the two electrical contacts,

wherein said conductive member includes a tail electrically connected to a second of the two electrical contacts, and

wherein each of said two electrical contacts is adapted at one end to mate with corresponding contacts on a complementary connector and adapted at a second end to engage a grounding member in an electrical device, said tail being electrically connected to the second contact at a point between said two ends.

5,344,343

SOLDER-BEARING LEAD

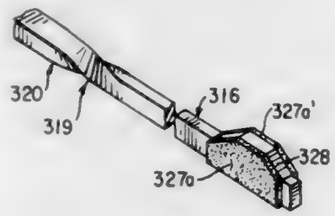
Jack Seidler, Flushing, N.Y., assignor to North American Specialties Corporation, Flushing, N.Y.

PCT No. PCT/US91/02489, § 371 Date Sep. 21, 1992, § 102(e) Date Sep. 21, 1992, PCT Pub. No. WO91/16736, PCT Pub. Date Oct. 31, 1991

Continuation-in-part of Ser. No. 510,004, Apr. 13, 1990, Pat. No. 5,030,144. This PCT application Apr. 11, 1991, Ser. No. 927,415

Int. Cl.[5] H01R *4/02, 9/09*

U.S. Cl. 439—876 **49 Claims**



1. A lead for soldering to a conductive surface comprising:

a elongated body including a first portion adapted to retain solder, a substantially flat terminal portion, and a middle portion disposed between said first portion and said terminal portion,

said first portion including at least one solder mass affixed thereto,

a region of said body being twisted about a longitudinal axis at said middle portion so that said first portion lies in a plane substantially perpendicular to the plane of said terminal portion.

5,344,344

STEERING AND REVERSING SYSTEM FOR A MARINE JET PROPULSION UNIT

Jan-Olov Forsström, Kristinehamn, Sweden, assignor to Kamewa AB, Kristinehamn, Sweden

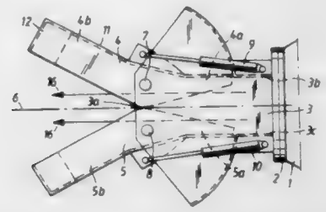
PCT No. PCT/SE91/00718, § 371 Date Jun. 5, 1992, § 102(e) Date Jun. 5, 1992, PCT Pub. No. WO92/07754, PCT Pub. Date May 14, 1992

PCT Filed Oct. 25, 1991, Ser. No. 852,232

Claims priority, application Sweden, Oct. 31, 1990, 9003473-7

Int. Cl.[5] B63H *11/11*

U.S. Cl. 440—41 **8 Claims**



1. A steering and reversing system for a marine jet propulsion unit having at a rear end thereof a stationary jet nozzle (3) which defines a rearwardly extending passage for discharging a water jet rearwardly from the unit,

characterized in that

the steering and reversing system comprises two elongate steering and reversing members (4, 5) which are positioned side by side and individually pivotable in opposite directions about upright axes (7, 8) from a non-deflecting position to either of a first deflecting position and a second deflecting position,

each steering and reversing member (4, 5) comprises a generally upright side panel (11) and a top panel (12) which is generally perpendicular to the side panel and the rear portion of which merges with a downwardly and forwardly curved extension forming a jet reversing scoop,

each steering and reversing member (4, 5) in the non-deflecting position thereof forms a rearwardly directed extension of the nozzle passage and has its jet reversing scoop laterally offset from the region directly behind the nozzle passage,

each steering and reversing member (4, 5) in the first deflecting position thereof has the foremost portion of its side panel (11) positioned relative to the nozzle passage and extending rearwardly and laterally outwardly to deflect a portion of the jet from the nozzle passage laterally outwardly, and

each steering and reversing member (4, 5) in the second deflecting position thereof has its jet reversing scoop at least partly positioned directly behind the nozzle passage to deflect a portion of the jet downwardly and forwardly.

5,344,345

WATER VESSEL PROPULSION APPARATUS

Fumio Nagata, Toyonaka, Japan, assignor to IDC Corporation, Osaka, Japan

Filed Jun. 3, 1993, Ser. No. 70,788

Claims priority, application Japan, Jun. 3, 1992, 4-187295

Int. Cl.[5] B63H *11/00*

U.S. Cl. 440—44 **26 Claims**

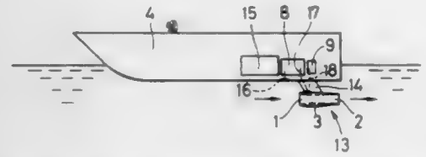
1. In a water vessel hull having a propulsion apparatus for propelling said hull through the water, the improvement wherein said propulsion apparatus comprises:

a duct connected to said hull and depending therefrom at a position to be beneath the water surface, said duct having extending entirely therethrough a rectilinear passage having an inlet and an outlet both to be open to the water;

at least one injection port extending into said passage at a position between said inlet and outlet thereof, said at least one injection port being directed toward said outlet;

a pressurized water port opening into said injection port in a direction toward said outlet;

a compressed air port surrounding said pressurized water port and opening into said injection port in a direction toward said outlet; and



said pressurized water port and said compressed air port being connected respectively to pressurized water and compressed air sources in said hull, thereby to inject through said injection port into said passage a water jet and a surrounding air jet directed toward said outlet.

5,344,346

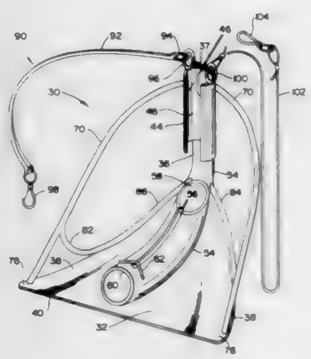
DRIVESHAFT HOUSING ATTACHMENT

Clarence A. Griffin, 11740 Immokalee Rd., Naples, Fla. 33964

Filed Sep. 7, 1993, Ser. No. 117,498

Int. Cl.[5] B63H *5/16*

U.S. Cl. 440—66 **20 Claims**



1. An attachment for a driveshaft housing of a boat propulsion unit for protecting swimming creatures in the water from the housing and associated propeller and for protecting the propeller, while improving the efficiency of the propulsion unit, comprising;

(a) a plate member having an upper end adapted to be positioned forward of a housing and to depend arcuately downwardly and rearwardly to terminate in a trailing lower end, said plate member tapering outwardly along lateral edges from said upper end to said lower end to divert swimmers around and under a housing and propeller, said downward and rearward configuration of said plate member reacting to the passage of water when under way to urge a boat's stern upwardly toward a more efficient operating position,

(b) means connected to said upper end of said plate member having a configuration for receiving a leading edge of an upper portion of a driveshaft housing to maintain said upper end aligned with the driveshaft housing and to reduce vibration,

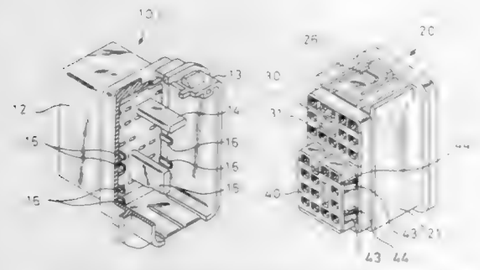
(c) means connected to said lower end of said plate member having a configuration for receiving a skeg at the bottom of a housing to maintain said lower end aligned with the driveshaft housing and to reduce vibration, and

(d) means for releasably securing said upper end of said plate to a driveshaft housing.

5,344,347
CONNECTOR DEVICE

Nori Inoue; Mitsuru Ito; Kiyofumi Ichida, and Nobuyoshi Tanaka, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Sep. 13, 1993, Ser. No. 119,832
Claims priority, application Japan, Sep. 29, 1992, 4-285494
Int. Cl.[5] H01R *13/502*
U.S. Cl. 439—701 **4 Claims**

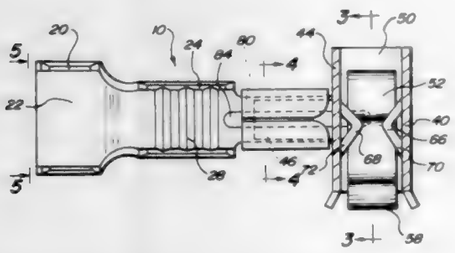


1. A connector device for connecting first terminal group mounted with second terminal group, said connector device comprising:
a first connector housing for mounting said first terminal group therein;
a second connector housing for mounting said second terminal group therein comprising:
an outer housing:
a fixed terminal holder having a plurality of terminals and being arranged within said outer housing so as to be fixed;
a movable terminal holder having a plurality of terminals and being arranged within said outer housing so as to be movable in a direction in which said second connector housing is inserted into said first connector housing;
wherein said movable terminal holder is temporarily locked with a front end thereof being ahead of said fixed terminal holder in the connector housing insertion direction.

5,344,348
ELECTRICAL TERMINAL

Lowell R. Willis, Carsonville; Douglas A. Particka, Snover, and George J. Tilli, Algonac, all of Mich., assignors to Clements Manufacturing Company, Inc., Deckerville, Mich.

Filed Apr. 29, 1993, Ser. No. 54,904
Int. Cl.[5] H01R *11/22*
U.S. Cl. 439—849 **17 Claims**

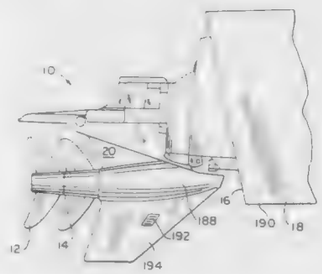


1. A female electrical connector comprising:
a base having a first end, a second end and defining a first longitudinal axis, said base forming a generally closed rectangular receptacle at said first end, said receptacle defining a second longitudinal axis, said second longitudinal axis being generally perpendicular to said first longitudinal axis;
a retention tab integral with said closed rectangular receptacle, said retention tab extending from said closed rectangular receptacle running along said base towards said second end of said base generally parallel to said first longitudinal axis; and
means for securing said retention tab to said base such that the integrity of said closed rectangular receptacle is maintained.

5,344,349
SURFACING MARINE DRIVE WITH CONTOURED SKEG

Gary L. Meisenburg, and Phillip D. Magee, both of Stillwater, Okla., assignors to Brunswick Corporation, Lake Forest, Ill.

Continuation-in-part of Ser. No. 889,495, May 27, 1992, Pat. No. 5,230,644, and Ser. No. 889,530, May 27, 1992, Pat. No. 5,249,995. This application Jun. 25, 1993, Ser. No. 83,702
Int. Cl.[5] B63H *5/10*
U.S. Cl. 440—80 **10 Claims**

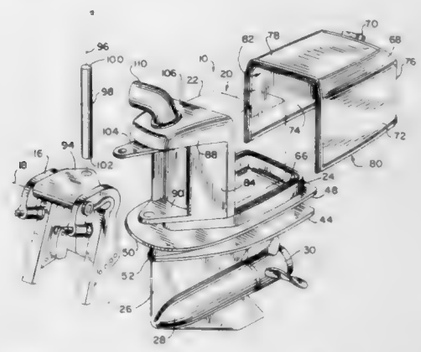


1. A marine drive for propelling a boat comprising:
a housing having upper and lower spaced generally horizontal bores and an intersecting generally vertical bore extending therebetween;
an upper input shaft in said upper horizontal bore;
a downwardly extending driveshaft in said vertical bore and driven by said input shaft;
a pair of lower concentric counter-rotating propeller shafts in said lower horizontal bore and driven by said driveshaft;
a pair of counter-rotating surface operating propellers each mounted to a respective one of said propeller shafts;
said housing comprising a lower generally horizontal torpedo portion around said lower horizontal bore, and a skeg extending downwardly from said torpedo portion, said skeg having a forward leading edge with upper and lower ends, and an aft trailing edge with upper and lower ends, wherein the upper end of said leading edge is spaced forwardly of the lower end of said trailing edge by a horizontal fore to aft distance greater than the horizontal fore to aft length of said torpedo portion, said torpedo portion having a leading edge extending from an upper end downwardly and rearwardly to a lower end, said upper end of said leading edge of said skeg meeting said lower end of said leading edge of said torpedo portion, said leading edge of said skeg extending downwardly and rearwardly from said lower end of said leading edge of said torpedo portion, the horizontal fore to aft distance between said upper end of said leading edge of said torpedo portion and said upper end of said leading edge of said skeg being less than the horizontal fore to aft distance between the aft end of said torpedo portion and said lower end of said trailing edge of said skeg.

5,344,350
COMPACT OUTBOARD MARINE DRIVE

Edwin B. Hatch, West Bend, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 839,320, Feb. 20, 1992, abandoned. This application Jan. 26, 1993, Ser. No. 9,356
Int. Cl.[5] B63H *21/26*
U.S. Cl. 440—78 **5 Claims**

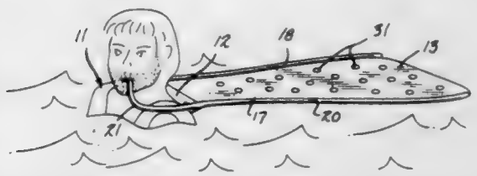


1. A stubby outboard marine drive mountable to the transom of a boat by a transom bracket and tiltable about a horizontal tilt axis between a downwardly tilted normal drive position and an upwardly tilted position having minimal protrusion into the boat, said drive having minimal vertical height in said normal drive position, said drive comprising a powerhead including an internal combustion engine, an adaptor plate directly mounted to said engine, a lower gearcase including a torpedo housing rotatably mounting a propeller, said lower gearcase being directly mounted to said adaptor plate, wherein said lower gearcase has a cavitation plate extending laterally therefrom, and said adaptor plate has an upper surface supporting said engine and a lower surface at the top of said lower gearcase and extending laterally therefrom, said lower surface of said adaptor plate providing a splash plate spaced above said cavitation plate, said upper surface of said adaptor plate being spaced below the top of the transom, said lower surface of said adaptor plate providing said splash plate being spaced slightly above the surface of the water and substantially below the top of the transom, wherein said cavitation plate extends laterally left and right, said lower surface of said adaptor plate providing said splash plate extends laterally left and right beyond said cavitation plate, and said upper surface of said adaptor plate extends laterally left and right beyond said splash plate.

5,344,351
OPAQUE LIFE JACKET CAPE

Samuel M. Danielson, 655 S. 12th St., San Jose, Calif. 95112

Filed Oct. 4, 1993, Ser. No. 130,706
Int. Cl.[5] B63H *21/32*
U.S. Cl. 441—89 **4 Claims**

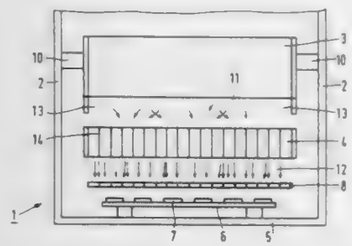


1. An opaque life jacket cape in combination with a buoyant life jacket, wherein the life jacket includes a collar portion and wherein the cape includes a cape flange fixedly mounted to the life jacket collar portion, and a flexible web having a web first end spaced from a web second end and a web first side spaced from a web second side, with the web first end integrally mounted coextensively with the cape flange, and
the web includes a matrix of encapsulated pneumatically sealed buoyancy chambers throughout the flexible web to enhance buoyancy of the web, and
the first side includes a first pneumatic tube coextensive therewith, and the second side includes a second pneumatic tube coextensive therewith, with a first inflation tube in pneumatic communication with the first pneumatic tube, the first inflation tube extending beyond the cape flange, and a second inflation tube in pneumatic communication with the second pneumatic tube, with the second inflation tube extending beyond the cape flange, with the first pneumatic tube and the second pneumatic tube each including a respective one-way valve therewithin.

5,344,352
METHOD OF MANUFACTURING A POINTED ELECTRODE, AND DEVICE FOR USING SAID METHOD

Remko Horne; Cornelius A. Van Den Heuvel, and Gerardus N. A. Van Veen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 24, 1993, Ser. No. 39,610
Claims priority, application European Pat. Off., Apr. 2, 1992, 92200939.4
Int. Cl.[5] H01J *9/02*
U.S. Cl. 445—024 **9 Claims**



1. A method of manufacturing, on a substrate, at least one electrode whose cross-section parallel to a main surface of the substrate is larger at the base than at the top, the method comprising depositing material for forming the electrode on an apertured mask parallel to a main surface of the substrate and on the substrate via the aperture, the material on the mask also growing in a lateral direction within the aperture during deposition, characterized in that the deposition is at least partially carried out by sputtering in a direction substantially perpendicular to the main surface of the substrate.

5,344,353
METHOD FOR MANUFACTURING A CATHODE RAY TUBE USING A FILM LAYER COMPOSITION

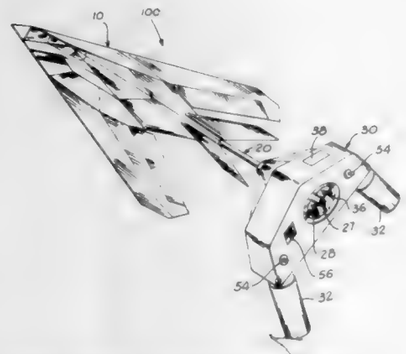
Dong-sik Jang, Kwacheon, and Byeong-yong Lee, Seoul, both of Rep. of Korea, assignors to Samsung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea

Filed Nov. 1, 1991, Ser. No. 786,769
Claims priority, application Rep. of Korea, Nov. 1, 1990, 90-17702; Oct. 25, 1991, 91-18772
Int. Cl.[5] C08J *3/28;* **C08K** *3/18*
U.S. Cl. 445—45 **12 Claims**

1. A method for manufacturing a cathode ray tube comprising the steps of:
(a) spraying on the surface of a phosphor layer of a phosphor coated panel, an organic composition for forming a heat labile film, said organic composition being free of flammable or explosive organic solvents and including an initiator capable of forming a radical or cation when exposed to ultraviolet or electron rays and at least one resin containing at least one functional group selected from the group

consisting of acrylate, vinyl and diazo functional groups to form a heat labile film thereon;
(b) exposing said heat labile film to ultraviolet or electron rays to form a hardened film layer;
(c) forming an aluminum layer on a surface of said hardened film layer to form a screen;
(d) sealing with heat said panel and a funnel to form a bulb with a mount including an electron gun and a stem, wherein the step of sealing to form a bulb decomposes said hardened film layer.

5,344,354
FLIGHT-SIMULATING AIRPLANE TOY
Larry Wiley, 1211 South Jose Dr., Tucson, Ariz. 85713
Filed Apr. 30, 1993, Ser. No. 54,100
Int. Cl.[5] A63H *17/00, 27/00*
U.S. Cl. 446—7 **15 Claims**



1. A flight-simulating airplane toy comprising:
(a) a hand-held grip assembly having gripping means adapted to be held by a child;
(b) a straight shaft rotatably mounted on said grip assembly, such that the shaft is capable of clockwise and counterclockwise rotation, said shaft having a forward-projecting distal portion and a proximal portion contained within said grip assembly;
(c) a model aircraft having a back portion that comprises a longitudinal channel adapted to receive and engage said distal portion of the shaft so as to provide a rigid connection between the aircraft and the shaft; and
(d) means for alternatively rotating said shaft and the aircraft connected thereto clockwise or counterclockwise, wherein said means for alternatively rotating said shaft and the aircraft connected thereto clockwise or counterclockwise comprises a drive gear fitted coaxially with the shaft, said drive gear being engaged by a tangential continuous worm-screw drive connected to a reversible electric motor, and said electric motor being energized by a power source in an electric circuit controlled by switching means operable by a user.

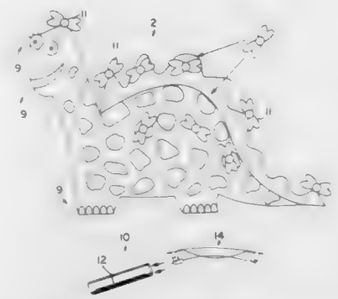
5,344,355
TOY WITH DETACHABLE PACIFIER
Sharyn G. Silverstein, 526 Bedford Park Ave., North York, Ontario, Canada M5M 1K3
Filed Feb. 9, 1994, Ser. No. 193,931
Int. Cl.[5] A63H *3/00*
U.S. Cl. 446—72 **5 Claims**

1. A toy-pacifier combination in the form of a doll or animal capable of being held by an infant or small child comprising:
(a) an extension member attached at one end to the body of the toy and extending outwardly away from said body gradually narrowing to a distal end, said extension member having a front surface and a back surface formed into a hollow cylinder;
(b) a pacifier retaining loop at said distal end of said extension member forming a unitary construction with said extension member;
(c) a retaining means of attachment affixed to the tip of said pacifier retaining loop;
(d) a receiving means of attachment engageable to said retaining means of attachment affixed to the interior of said front surface of said extension member;
(e) a pacifier member having a nipple protrusion on one end and a ring member on the opposite end; and



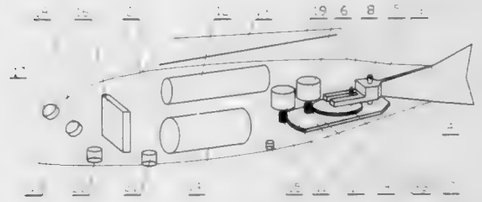
(f) said extension member back surface having a lateral opening allowing access to the interior of said extension member, said lateral opening having two sides lined with mutually engageable means of attachment on opposing parts adapted to engage each other, said extension member back surface additionally having a button-hole positioned below said pacifier retaining loop so that said pacifier retaining loop may be fed through said pacifier ring member and then passed through said button-hole for the purpose of attaching said retaining means of attachment to said receiving means of attachment.

5,344,356
DECORATIVE TOY AND STORAGE UNIT WITH ATTACHABLE HOLDERS
David A. Pizzelli, 81A Washington St., Franklin, Mass. 02038; Paul W. Groome, 413 Beacon Ave., Woonsocket, R.I. 02895, and Charles E. Pizzelli, 37 Forest St., Franklin, Mass. 02038
Filed Mar. 29, 1993, Ser. No. 38,852
Int. Cl.[5] A63H *3/00*
U.S. Cl. 446—73 **3 Claims**



1. A toy comprising:
(a) a three dimensional character figure having a surface, said three dimensional figure constructed and arranged as a plaything,
(b) first attachment means distributed over and covering substantially the entirety of said surface,
(c) personal items,
(d) a plurality of holder means arranged and constructed as a receptacle for said personal items, wherein said held items are visible, and
(e) second attachment means, matingly corresponding with said first attachment means, constructed on said holder means for attaching said holder means, containing said personal items or not, to said surface.

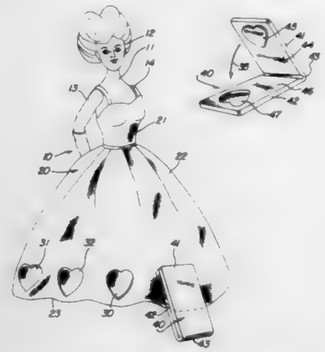
5,344,357
CONTROLLABLE AQUATIC TOY WITH OSCILLATING AND STEERABLE TAIL
Edmund K. Lyczek, 428 Quail Ridge Cir., Spartanburg, S.C. 29303
Filed Oct. 4, 1993, Ser. No. 131,005
Int. Cl.[5] A63H *23/04, 23/00*
U.S. Cl. 446—154 **6 Claims**



1. An aquatic toy constructed of a flexible, watertight body, shaped and decorated to resemble an aquatic animal, having a head, a carcass, and a tail comprising:
a first motor constructed and arranged for driving the tail in an oscillating manner to propel the toy while in water;
a second motor constructed and arranged for swinging the tail off the center line of the toy for the purpose to steer the toy;
a control system constructed and arranged for switching on/off said first and second motors under certain conditions;
an air ballast container constructed for maintaining the toy almost but not completely submerged when the toy is placed in water;
and a rechargeable battery to power said first and second motors and the control system.

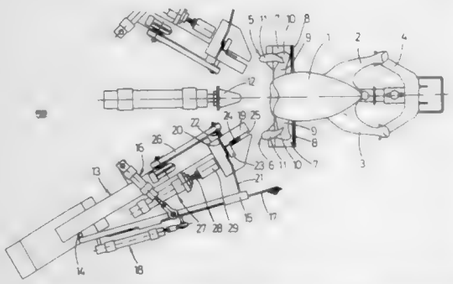
5,344,358
DOLL HAVING EMBOSSIBLE FABRIC AND EMBOSSING TOOL
Ellen E. Jantzen, El Segundo, Calif., assignor to Mattel, Inc., El Segundo, Calif.
Filed Jun. 4, 1993, Ser. No. 71,092
Int. Cl.[5] A63H *3/36*
U.S. Cl. 446—268 **15 Claims**

1. For use in combination with a doll having a body to which clothing or accessories may be secured, apparatus comprising:
an embossible article securable to said body and having a malleable layer and at least one flexible layer commonly joined to form a composite material; and
an embossing tool having mating portions for embossing a predetermined design upon said embossible article,
said embossing tool forming embossed designs upon said embossible article which remain after said embossing tool is removed and said embossible article being capable of



return to original nonembossed condition by manually smoothing out said design.

5,344,359
APPARATUS FOR DRESSING AND SLAUGHTERED BIRD
Albert Kolkman, Oostzaan, Netherlands, assignor to Machinefabriek Meyn B.V., Noordeinde, Netherlands
Filed Jun. 17, 1993, Ser. No. 79,243
Claims priority, application Netherlands, Jun. 30, 1992, 9201168
Int. Cl.[5] A22C *21/00*
U.S. Cl. 452—174 **12 Claims**



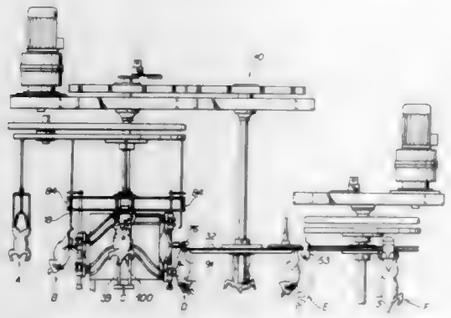
1. An apparatus for dressing a slaughtered bird, particularly the wings of the bird, said apparatus comprising:
a first manipulating device operably configured for positioning and confining the wing tip in a starting position wherein the wing tip extends substantially perpendicular to the plane of the upper arm of the wing;
a second manipulating device operably configured for engaging the wing tip in said starting position and positioning the wing tip into an intermediate position wherein the wing tip extends substantially in the plane of the upper arm of the wing; and
a third manipulating device operably configured for engaging the wing tip in said intermediate position and positioning the wing tip into a final position wherein the wing tip extends underneath the upper arm of the wing.

5,344,360

METHOD AND APPARATUS FOR TRANSFERRING A BIRD FROM ONE CONVEYOR SYSTEM TO ANOTHER

Jacobus E. Hazenbroek, Burg de Zeeuwstraat 52, Numansdrop, Holland, Netherlands

Filed Sep. 22, 1992, Ser. No. 949,400
Int. Cl.[5] A22C 21/00
U.S. Cl. 452—182 10 Claims



1. A method of transferring birds from a first overhead conveyor system to a second overhead conveyor system with the birds conveyed are suspended by their legs in an inverted attitude from shackles of the first and second overhead conveyor systems, the method comprising the steps of:

as the birds are conveyed by the first overhead conveyor system, aligning the birds with a first transfer means,

as the birds become aligned with the first transfer means, moving a lifting plate toward engagement with each bird,

lifting the legs of each bird from its shackle of the first overhead conveyor system by raising the lifting plate including a pair of recesses into engagement with the legs of each bird so that each leg of the bird is received within a recess of the lifting plate,

moving the birds supported by the lifting plates away from the first overhead conveyor system and aligning the recesses of each lifting plate with recesses of an intermediate transfer means,

guiding the legs of each bird from the recesses of each lifting plate into the aligned recesses of the intermediate transfer means, and

transferring each bird from the intermediate transfer means to the second overhead conveyor system.

5,344,361

SUN ROOF VENT

Jan H. Matthias, 1509 N. Beverly Dr., Beverly Hills, Calif. 90210

Filed Jun. 3, 1992, Ser. No. 892,590
Int. Cl.[5] B60J 7/11; B60H 1/26
U.S. Cl. 454—129 3 Claims

1. A portable auxiliary fan unit for a motor vehicle that has a roof with an opening which exposes a passenger compartment of the motor vehicle to the ambient, the motor vehicle further having a pair of channels adjacent to a pair of guide rails in the roof, comprising:

a top panel adapted to be placed into the opening of the roof, said top panel having a tapered scoop portion;

a bottom panel attached to said top panel;

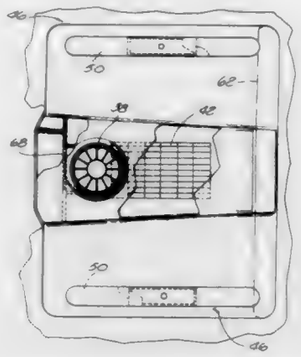
a fan frame enclosed by said top and bottom panels, said fan frame and tapered scoop portion defining a passage that provides fluid communication between the passenger compartment and the ambient;

a fan mounted to said fan frame and in fluid communication with said passage;

at least one photo voltaic cell adjacent to said top panel and coupled to said fan; and,

a pair of support bars attached to said top panel and which support said top panel on the guide rails of the roof;

a pair of levers pivotally connected to said support bars and adapted to move between a retracted position and an



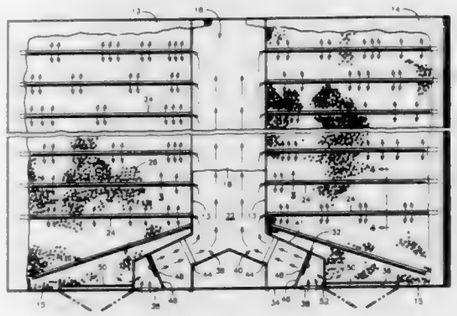
extended position into the channels of the roof, said levers being aligned with the channels by said support bars.

5,344,362

INTERNAL FAN HOUSE FOR CURVET BUILDING

Terrence F. Bagley, Rexburg, Id., assignor to Teton West Construction, Inc., Rexburg, Id.

Filed Dec. 26, 1991, Ser. No. 813,460
Int. Cl.[5] F24F 13/00
U.S. Cl. 454—180 3 Claims



1. A curvet building assembly for storage of potatoes comprising a pair of substantially identical storage buildings positioned in substantially parallel spaced relation, each building comprising a floor, a peripheral wall including a generally planar end wall and a roof structure forming an enclosed space for potatoes arranged in a pile, means in the peripheral wall of each building providing access to the enclosed space, an air plenum extending between said buildings, a plurality of vent pipes in each building communicated with the air plenum and extending therefrom along the building floor and a bottom portion of the potato pile, each vent pipe including a plurality of openings discharging air into the potatoes, a pair of fans and evaporative cells communicated with the air plenum for supplying temperature and humidity controlled air to the air plenum for discharge into the potatoes, a fan house for the fans and evaporative cells forming an extension of the air plenum and receiving the fans and evaporative cells therein, said fan house, fans and evaporative cells being located within the interior of the end wall to substantially eliminate external projections thereon, said floor and peripheral wall of each building defining a rectangular space and the roof structure being of arcuate transverse configuration to define curvet buildings, said air plenum extending along one side wall of each curvet building, said fan house being in communication with and forming an extension of one end of the air plenum, said fan house having two branches with each branch of the

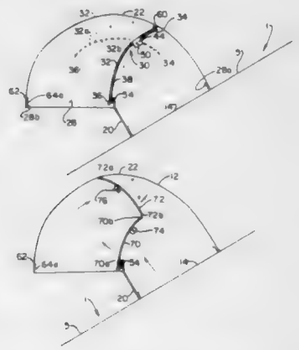
fan house including a fan and evaporative cell oriented inwardly of the respective end wall of the identical buildings, the end wall of each of the buildings including an air inlet supplying fresh air to the branches of the fan house.

5,344,363

ROOF VENT ASSEMBLY FOR GRAIN STORAGE BIN

Eugene B. Pollock, Shelby, Ill., assignor to Grain Systems Incorporated, Assumption, Ill.

Filed Oct. 25, 1991, Ser. No. 782,652
Int. Cl.[5] F24F 7/02
U.S. Cl. 454—182 4 Claims



1. A roof vent for a grain bin comprising,

a housing defining a passageway adapted to communicate air flow between the interior of a grain bin and ambient air;

a flap closure means pivotally mounted within said housing on a horizontal axis above the center of gravity of said flap closure means for substantially blocking solid matter from passing through said passageway when the air pressure differential between the interior of said grain bin and ambient air is insufficient to pivot said flap closure means against the force of gravity acting on said flap closure means;

said flap closure means including a sheet metal flap and a plastic pivot bracket mounted on each lateral side of said flap closure means;

a horizontal rod mounted on said housing extending through said plastic brackets such that said plastic brackets pivot on said rod; and wherein each of said plastic brackets are generally U-shaped having one leg thereof located outward of a respective lateral edge of said flap and having the other leg thereof passing through a respective opening formed in said flap; each of said legs having a horizontal bore through which said rod extends.

5,344,364

CIRCULATION AIR DISTRIBUTION SYSTEM

John J. Michlovic, McMurray, Pa., assignor to United Dominion Industries, Charlotte, N.C.

Filed Dec. 21, 1992, Ser. No. 993,598
Int. Cl.[5] F24F 7/04
U.S. Cl. 454—185 11 Claims

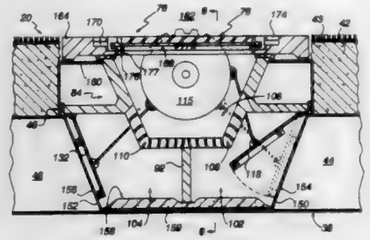
10. In a floor structure having a floor upper surface, a space above said floor upper surface, and comprising a metal subfloor supporting an overlying layer of concrete, the combination comprising:

said metal subfloor including at least one cellular metal flooring unit presenting spaced-apart first and second cells having a trough therebetween, said first and second cells having confronting generally vertical webs, and sets of first and second cell outlet openings uniformly spaced along the length of said first and second cells;

a first source of air supplying said first cell with air at a first temperature;

a second source of air supplying said second cell with air at a second temperature;

control means, one for each said set, for controlling the volume and the temperature of air being discharged from



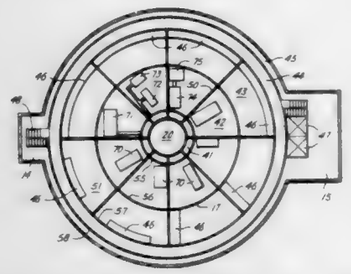
said first and second cell outlet openings to said space above said floor structure, each said control means having control elements substantially flush with and operable from said floor upper surface.

5,344,365

INTEGRATED BUILDING AND CONVEYING STRUCTURE FOR MANUFACTURING UNDER ULTRACLEAN CONDITIONS

Richard G. Scott; Craig R. Shackleton, and Raymond W. Ellis, all of Austin, Tex., assignors to Sematech, Inc., Austin, Tex.

Filed Sep. 14, 1993, Ser. No. 121,621
Int. Cl.[5] B01L 1/04; F24F 7/007
U.S. Cl. 454—187 23 Claims



21. A method of fabricating microelectronic devices on a material under an ultra-clean environment in which processing steps for processing said material are conducted in separate and isolated minienvironments, comprising the steps of:

providing a manufacturing building having a central enclosure enclosed therein to function as a central control area for storing and dispersing of said material upon which said microelectronic devices are fabricated;

providing a plurality of clean rooms disposed concentrically around said central enclosure such that each of said clean rooms provides said isolated minienvironment, such that a break of environmental integrity of one of said clean rooms does not disrupt environmental integrity of other of said clean rooms;

providing ultra-pure air or gas flow in said central enclosure and said clean rooms in order to maintain an ultra-clean minienvironment;

providing an automated material handler coupled to said central enclosure for transporting said material within said central enclosure and between said central enclosure and said clean rooms;

wherein said material is transported and processed in various clean rooms under ultra-pure environment.

5,344,366

VENTILATORS

Arthur Stoney, Halstead; Arthur J. Burt, Ipswich, and Richard Waters, Royston, all of Great Britain, assignors to Titon Hardware Limited, Essex, England

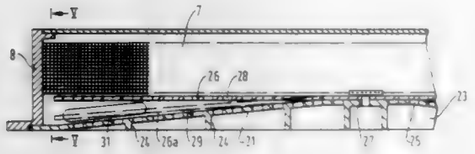
Continuation of Ser. No. 781,344, Oct. 25, 1991, Pat. No. 5,238,449. This application Jul. 21, 1993, Ser. No. 94,726

Claims priority, application United Kingdom, Oct. 25, 1990, 9023310

The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.

Int. Cl.[5] E06B *7/02*

U.S. Cl. 454—213 **7 Claims**



1. A canopy for use with a ventilator slot, the canopy comprising:

an elongated housing having an interior, a bottom wall having an aperture to provide an inlet to the interior of the housing, imperforate front and top walls, a rear aperture to provide an outlet from said interior so as to provide a flow path for air through said interior from said inlet to said outlet, a longitudinal wall extending across said flow path, the longitudinal wall having an upstream side and a downstream side and containing a first set of apertures spaced longitudinally along said longitudinal wall, and at least one resilient baffle strip secured at a point of anchorage proximate an end thereof to the upstream side of said longitudinal wall, said resilient baffle strip extending away from said point of anchorage as a cantilever, the resilient baffle strip having a second set of apertures spaced longitudinally along said baffle strip, the second set of apertures being at least partially out of alignment with the first set of apertures; said longitudinal wall and said baffle strip being configured wherein, in the absence of a differential air pressure between said inlet and said outlet, said baffle strip being biased by its resiliency to a first position where the baffle strip diverges away from said longitudinal wall progressively more from said point of anchorage and, while in the presence of an increasing positive differential air pressure between said inlet and said outlet, said baffle strip moves progressively toward said longitudinal wall to a second position which partially obturates said first set of apertures.

5,344,367

INFEED PLATE FOR AN AXIAL AGRICULTURAL COMBINE

Merle R. Gerber, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed Mar. 31, 1993, Ser. No. 41,074

Int. Cl.[5] A01F *12/10*

U.S. Cl. 460—68 **20 Claims**

1. An axial flow agricultural combine comprising:

a supporting structure;

ground engaging means extending from the supporting structure for transporting the supporting structure across a field;

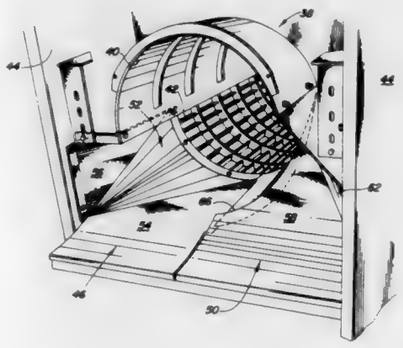
an axial rotor housing having a forward open inlet for receiving harvested crop material, grates through which threshed and separated grain is removed from the housing, and a rear open outlet through which non-grain crop material is removed from the housing;

an axial rotor for threshing and separating a harvested crop, the rotor being housed in the housing;

a feederhouse through which harvested crop material is transported to the housing;

a transverse beater being located between the feederhouse and the housing for directing harvested crop material to the housing;

an inlet transition section located between the beater and the inlet of the housing, the inlet transition section having a



transverse upstream section and a transverse downstream section, the transverse upstream section is provided with an inclined plate that extends from the beater to a conical section directing crop to the rotor, the transverse downstream section having a ramp that is steeper than the inclined plate of the transverse upstream section, the ramp is provided with an upwardly extending rim.

5,344,368

Patent Not Issued For This Number

5,344,369

V-BELT FOR POWER TRANSMISSION

Koji Kitahama; Masahiko Kawashima, and Kyoichi Mishima, all of c/o Mitsuboshi Belting Ltd., P.O. Box 27, Nagata, Kobe, Japan

Filed Aug. 16, 1993, Ser. No. 107,501

Claims priority, application Japan, Aug. 18, 1992, 4-063591[U]

Int. Cl.[5] F16G *3/10*

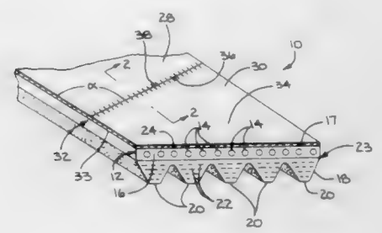
U.S. Cl. 474—253 **20 Claims**

1. A power transmission belt comprising:

a belt body defining a tension section and a compression section and having an inside surface, an outside surface, and laterally spaced side surfaces; and

a canvas layer on at least one of the inside, outside, and side surfaces,

said canvas layer having a first surface abutting to the belt body and a second surface that is exposed with the canvas layer on the belt body,



wherein the canvas layer has ends joined to each other through the use of thread,

there being a first part of said thread that is exposed on the second surface of the canvas layer, said first thread part comprising at least one of a) a twine of natural fibers, and b) multi-filament twine of synthetic fibers.

5,344,370

TRANSMISSION FOR MOTOR VEHICLES

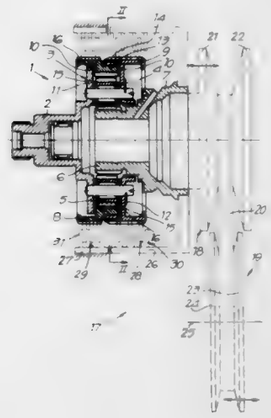
Johan Luyckx, Lennik, Belgium, assignor to Volvo Car Sint-Truiden, Naamloze vennootschap, Sint-Truiden, Belgium

Filed Feb. 18, 1993, Ser. No. 19,280

Claims priority, application Belgium, Feb. 18, 1992, 09200168

Int. Cl.[5] F16H *3/44*

U.S. Cl. 475—319 **10 Claims**



1. Transmission for motor vehicles, more particularly a transmission which is provided with a reversing unit making use of a planetary coupling (**1**), whereby said planetary coupling (**1**) consists of a first shaft (**2**), a planetary support (**3**) mounted on this first shaft (**2**), planet wheels (**4,5**) mounted on this planetary support (**3**), a sun wheel (**6**) co-operating with the planet wheels (**4,5**), a second shaft (**7**) coupled to the sun wheel (**6**) and a ring wheel (**8**) co-operating with the planet wheels (**4,5**), and wherein the planetary support (**3**) and the ring wheel (**8**) of the planetary transmission (**1**) are provide of means which allow that, upon choice, either the ring wheel (**8**) can be locked against rotation or the planetary support (**3**) can be coupled to the sun wheel (**6**), characterized in that at least one bearing (**9**) is provided between the ring wheel (**8**) and the planetary support (**3**) which provides in a radial bearing between the ring wheel (**8**) and the planetary support (**3**), and in that said bearing (**9**) and the planet wheels (**4,5**) are mutually arranged in such a way that they coincide with at least one mutual radial plane, in other words a plane transverse through the axis of rotation of the said first shaft (**2**) and second shaft (**7**).

5,344,371

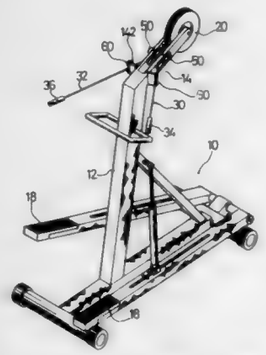
EXERCISER FOR SIMULATING MOUNTAIN CLIMBING AND RUNNING MOVEMENTS

Leao Wang, Taichung Hsien, Taiwan, assignor to Greenmaster Industrial Corp., Taiwan

Filed Oct. 12, 1993, Ser. No. 134,734

Int. Cl.[5] A63B *23/04*

U.S. Cl. 482—53 **6 Claims**



1. An exercise device for simulating mountain climbing and running movement, comprising: a body including a main supporting strut, a bending extension extending from the main supporting strut, and an indentation defined in one end of said bending extension, wherein a rotating wheel with two slide slots is rotatably installed inside said indentation, two transmission ropes, each including a handle at an end thereof, are wrapped around said slide slots of said rotating wheel in opposite directions, the transmission ropes further passing through a guide wheel, positioning wheels, and pulley blocks on said body, said body further including two pedals, whereby a user can tread on the pedals and pull said two transmission ropes at the same time to simulate the movement of mountain climbing.

5,344,372

TREADMILL WITH COLLAPSIBLE HANDRAILS

Michael Hung, 9-16, Nan Kan Hsia, Nan Kan, Lu Chu Hsiang, Tao Yuan County, Taiwan

Filed Nov. 15, 1993, Ser. No. 151,988

Int. Cl.[5] A63B *22/02*

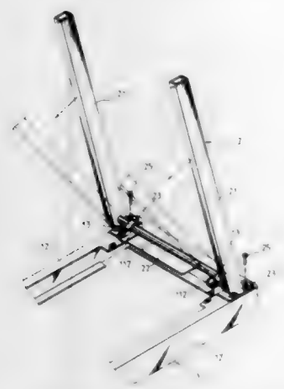
U.S. Cl. 482—54 **5 Claims**

1. A step exercising machine comprising a machine base, a track, two rollers transversely mounted on said machine base to hold said track, a front upright frame and a rear upright frame mounted on said machine base at two opposite ends, a first horizontal handrail and a second horizontal handrail respectively connected between said front and rear upright frames at either side at the top, a bottom board mounted on said machine base below said track, and a control panel

mounted on said first horizontal handrail for controlling the operation of the step exercising machine, wherein:

said machine base comprises a front cross bar, and two parallel side bars having a respective front end perpendicularly connected to said front cross bar at either end by screw bolts, said front cross bar comprising two mounting frames near two opposite ends thereof at the top;

said front upright frame comprises two upright tubes, and a bottom cross bar connected between the upright tubes thereof at the bottom and retained to said mounting frames of said front cross bar of said machine base by first clamping plates, each first clamping plate being bridged over the bottom cross bar of said front upright frame and



having two opposite ends fastened to either mounting frame by screw bolts; and

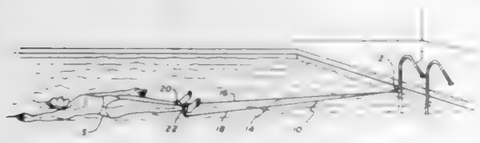
said rear upright frame comprises two upright tubes, and a bottom cross bar connected between the upright tubes thereof at the bottom and retained to said side bars of said machine base at the bottom by second clamping plates, the bottom cross bar of said rear upright frame having two embossed surface portions spaced near two opposite ends thereof onto which said second clamping plates respectively clamp, each second clamping plate being bridged over the bottom cross bar of said rear upright frame and having two opposite ends fastened to either side bar of said machine base by screw bolts.

5,344,373

STATIONARY SWIMMING APPARATUS

Allison K. Greene, 10947 Bloomfield, #118, Studio City, Calif. 91602

Filed Jul. 8, 1992, Ser. No. 910,668
Int. Cl.[5] A63B *31/00*
U.S. Cl. 482—55 **4 Claims**



1. A stationary swimming apparatus comprising:

first and second ankle straps, each of said first and second ankle straps including:

an elongated flexible ankle strap element having a substantially uniform width, said ankle strap element including a first end portion, a central portion and a second end portion, said central portion being longitudinally folded and secured to itself along a transverse seam so as to define an attachment loop;

a first elongated flexible fastening strap element having an associated width generally equal to the width of said ankle strap element, said first fastening strap element including first and second ends with the first end thereof overlying and being fixedly secured to the first end portion of said ankle strap element and the second end thereof extending longitudinally away from said ankle strap element, said first fastening strap element carrying a plurality of hook-type fastening elements that project from one side thereof;

a second elongated flexible fastening strap element having an associated width generally equal to the width of said ankle strap element, said second fastening strap element including a first end fixedly secured to and entirely overlying the second end portion of said ankle strap element and a second end that extends longitudinally away from said ankle strap element, said second fastening strap element carrying a plurality of loop-type fastening elements that project from one side thereof; and

an elongated cushioning element having an associated width that is greater than the width associated with said second fastening strap element, said cushioning element being positioned along a side of said second fastening strap element opposite the side of said second fastening strap element that carries said plurality of loop-type fastening elements, said cushioning element being securely attached to said second fastening strap element with the second end portion of said ankle strap element sandwiched therebetween, said cushioning element including first and second ends that extend longitudinally beyond the first and second ends of said second fastening strap element respectively;

an elastic cord having a first end portion, a central portion and a second end portion, each of said first and second end portions of said elastic cord defining loop that is interengaged with the attachment loop formed in a respective one of said ankle strap elements; and

releasably attachable base strap means to which the central portion of said elastic cord is attached, said base strap means being selectively, releasably attachable to a fixed poolside structure such that, when the stationary swimming apparatus is used in a pool with each of said first and second ankle straps being wrapped about a respective ankle of a user and secured by interengaging the plurality of hook-type fastening elements of said first fastening strap element with the plurality of loop-type fastening elements of said second fastening strap element and said base strap means is releasably attached to a poolside object, the user can practice various swimming strokes without traveling through the water.

5,344,374

VARIABLE RESISTANCE EXERCISING APPARATUS

Jerome R. Telle, 13920 W. Alaska Dr., Lakewood, Colo. 80228

Filed Jun. 2, 1992, Ser. No. 893,200
Int. Cl.[5] A63B *21/06*
U.S. Cl. 482—97 **18 Claims**

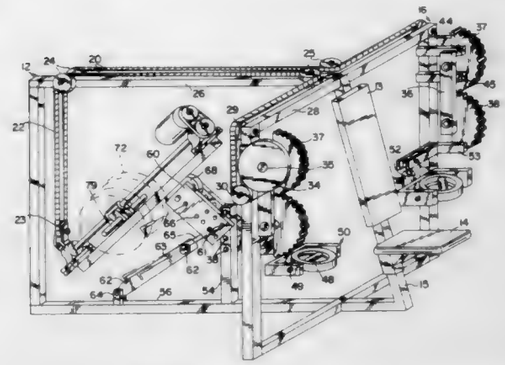
1. In weight lifting apparatus wherein a lift device is engageable by an exerciser and is movable through a predetermined range of movement, the improvement comprising:

a flexible resistance member for applying a selected amount of resistance to movement of said device, said resistance member affixed at one end to said device, a dampener member disposed at an opposite end of said resistance member;

at least one pivotal arm member interposed between said dampener and said resistance member to establish a predetermined level of resistance to movement of said device;

adjusting means between said arm member and said resistance member to vary the level of resistance to movement of said device including a fixed support member, and pivot means for pivotally connecting said arm member to said fixed support member to establish a fulcrum about which said arm member is pivoted in response to movement of said resistance member; and

means for adjustably connecting said arm member to said support member whereby to adjust the length of a moment arm established between said cable and said support member.

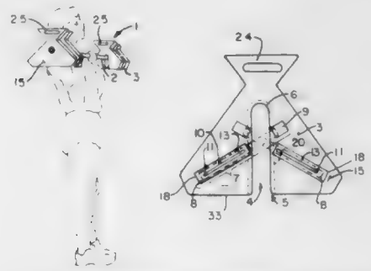


5,344,375

GRAVITY BIASED EXERCISE APPARATUS

Gary L. Cooper, HC-4, Box 62, Pocahontas, Ark. 72455

Filed Jan. 25, 1993, Ser. No. 8,512
Int. Cl.[5] A63B *21/075*
U.S. Cl. 482—106 **13 Claims**



1. In an exercise apparatus including a horizontal bar and weights mounted on said bar, the improvement comprising a plurality of weights each having a flat base surface and each having a bar receiving slot opening through said flat base surface and defined by parallel opposed walls, said walls being perpendicular to said flat base surface and to a broad side surface of said weight, said slot having a closed end intermediate the height of said weight and sufficiently above the center of gravity of said weight that when said bar is at the closed end of said slot the bar is above the center of gravity of said weight, whereby said weight is gravity biased to a position at which said open end of said slot is below said bar, said exercise apparatus including unslotted fixed weights at either end of said horizontal bar and means for securing said fixed weights to said bar.

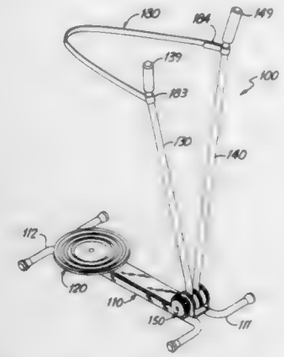
5,344,376

EXERCISE APPARATUS WITH TURNTABLE AND PIVOTING POLES

James R. Bostic, Watertown; John S. Dreibelbis, Shakopee, and Pat J. Novak, St. Paul, all of Minn., assignors to Nordic-Track, Inc., Chaska, Minn.

Filed Aug. 26, 1992, Ser. No. 936,082
Int. Cl.[5] A63B *21/015*
U.S. Cl. 482—118 **6 Claims**

1. An exercise apparatus, comprising a base designed to rest upon a floor surface and extending from a front end to a rear end, a platform mounted to said base, right and left pivot arms extending between pivot ends mounted to said base and distal ends that can be grasped by a person standing on said platform, and a pivot assembly including right and left flanges secured to said base approximate said front end and extending upward from said floor surface, right and left brake pads positioned between said right and left flanges and adjacent respective flanges, with said pivot ends of said right and left pivot arms positioned between said right and left brake pads, and outwardly facing bearing plates on said pivot ends adjacent respective brake pads, and a single central brake pad positioned



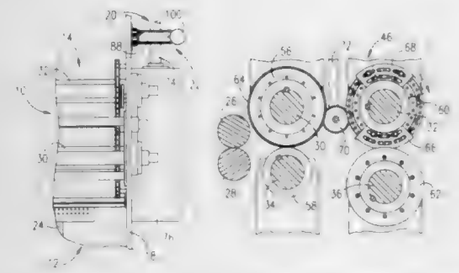
between inwardly facing bearing plates on said pivot ends, wherein said right and left flanges, said right and left brake pads, said pivot ends, and said central brake pad are secured relative to one another by a bolt extending through holes therein and a knob that mates with said bolt, and said pivot ends are rotatable relative to one another and said opposing flanges, subject to frictional resistance provided by said brake pads, whereby three brake pads engage four bearing plates and two flanges.

5,344,377

DRIVE LINE BRAKE ASSEMBLY FOR SCORING/SLOTTING APPARATUS

William R. Meeks, Lawrence, Kans., assignor to Lawrence Paper Company, Lawrence, Kans.

Filed Feb. 17, 1993, Ser. No. 18,859
Int. Cl.[5] B31B *1/14, 1/25*
U.S. Cl. 493—368 **7 Claims**



1. In a multiple-station carton blank processing apparatus including at least one scoring/slotting station having a powered rotatable slotting wheel carrying a pair of knives for performing a slotting operation on a first sheet, a movable drive train for operating the stations of said apparatus in a timed relationship with each other, a selectively usable adjustment means for changing the relative circumferential position of said knives in order to perform a second slotting operation on a second sheet fed into and through the scoring/slotting station, and

a means for preventing alteration of the timed operational relationship of stations of said apparatus, including struc-

ture for selectively engaging said drive train and preventing movement thereof during use of said adjustment means.

5,344,378

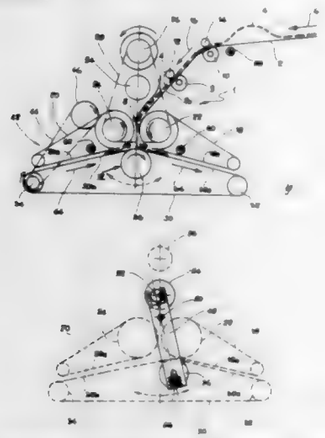
Patent Not Issued For This Number

5,344,379

MACHINE FOR FOLDING SHEETS OF PAPER

Vittorio Garrone, Via Bres 14, 10099 San Mauro Torinese, Italy

Filed Sep. 22, 1993, Ser. No. 125,340
Claims priority, application Italy, Sep. 30, 1992, 92 A 000798
Int. Cl.[5] B65H *45/14*
U.S. Cl. 493—441 **7 Claims**



1. In a machine for folding sheets of paper, particularly for folding large sheets leaving a printer or copier, including first, second and third flexible entrainment means for entraining a sheet to be folded, said first and third entrainment means having respective passes which are substantially parallel to each other and define a first folding channel and said second and third entrainment means having respective passes which are substantially parallel to each other and define a second folding channel, in which said first, second and third entrainment means are actuable alternately in opposite senses so as to supply a said sheet to be folded to said first and to said second folding channels alternately so as to form a fold each time said sheet passes from one of said folding channels to the other of said folding channels, and in which said first and second entrainment means cooperate with a first drive roller and with a second drive roller respectively which together define a feed passage for said sheet to be folded, the improvement comprising a third drive roller which cooperates with said third entrainment means and which is movable between a position in which it is pressed against said first drive roller and which it occupies during the phase of entrainment of said sheet in said first folding channel and a position in which it is pressed against said second drive roller and which it occupies during the phase of entrainment of said sheet in said second folding channel.

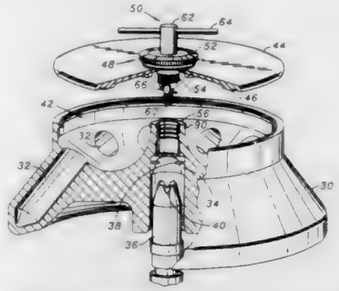
5,344,380

RELEASE HANDLE FOR CENTRIFUGE ROTOR AND LID

Cory Chern, Mountain View, and Harry A. Penhasi, Cupertino, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Sep. 30, 1992, Ser. No. 954,212
Int. Cl.[5] B04B *7/06, 5/02*
U.S. Cl. 494—12 **10 Claims**

1. A centrifuge rotor comprising:
a rotor body defining cavities for receiving samples to be centrifuged;
a lid covering the top of the rotor body;
a lid knob coupled to the center of the lid for securing the lid to the rotor body;
a spindle knob for securing the rotor body to a spindle of a centrifuge, the spindle knob being coaxial and slidable through the lid knob;



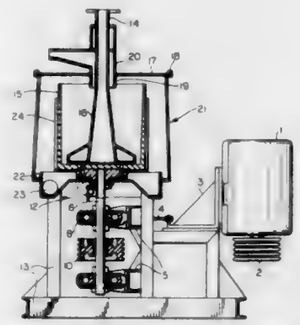
the spindle knob having first engagement means for cooperatively rotating the lid knob only when the spindle knob is rotated in a predetermined direction about an axis; and
the lid knob having second engagement means for cooperatively engaging with said first engagement means to permit the spindle knob to rotate the lid knob when the spindle knob is rotated in said predetermined direction.

5,344,381

EQUIPMENT FOR THE ELIMINATION OF LIGHT PARTICLES, INKS AND AIR FROM A FIBER SUSPENSION FOR THE MANUFACTURE OF PAPER

Luis F. Cabrera y Lopez Caram, Meleleucas No. 173, Lomas de Cuernavaca, Cuernavaca, Morelos, Mexico

Filed Jul. 10, 1992, Ser. No. 911,529
Int. Cl.[5] B04B *11/06*
U.S. Cl. 494—56 **9 Claims**



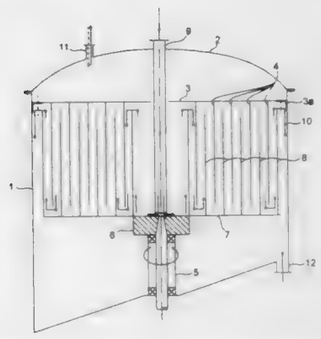
1. An apparatus for purification of a fibrous suspension containing fibers of desired weight, first contaminants which are lighter than the fibers, and second contaminants which are heavier than the fibers, said apparatus comprising:
a) a purifier body having an inner wall;
b) a rotation cup in which the suspension is rotated, said rotation cup comprising an inner surface and an outer surface and being situated within the purifier body such that the inner wall of the purifier body and the outer surface of the rotation cup define a space wherein suspension overflowing the cup is received, said rotation cup further comprising an inner top portion and an inner bottom portion each having a diameter, the inner surface of the rotation cup being conical in shape with the inner surface diverging from said inner bottom portion to said inner top portion such that the diameter of the inner top portion is greater than the diameter of the inner bottom portion;
c) feeding means for feeding the suspension into the inner bottom portion of the rotation cup;
d) motor means for rotating the rotation cup along a vertical axis of rotation such that suspension in the cup can be made to flow in response to centrifugal force;
e) stabilizer means for controlling the flow of suspension within the rotation cup, said motor means being capable of rotating said rotation cup at sufficient speed such that, upon rotation of the cup by said motor means, the suspension flow controlled by the stabilizer means, is caused to flow upward toward the inner top portion of the cup with the fibers and second contaminants concentrated toward the inner surface and with the first contaminants concentrated in an area around the vertical axis of rotation;
f) first collector means for collecting suspension that flows to the inner top portion of the cup and is concentrated in the area around the vertical axis such that the first contaminants are collected by the first collector means whereby only suspension substantially purified of said first contaminants overflows the cup and is received into the space between the inner wall of the purifier body and the outer surface of the cup;
g) accelerator means attached to the outer surface of the rotation cup and rotating with said cup for causing the overflowing suspension to separate into a first portion containing said second contaminants and a second portion containing said fibers, said accelerator means accelerating the first portion toward said inner wall;
h) second collector means situated proximal to said inner wall for collecting said first portion; and
i) third collector means for collecting said second portion containing the fibers.

5,344,382

MULTI-CHAMBER CENTRIFUGE FOR DEGASSING OR GASSING OF LIQUIDS

Rudolf Pelzer, Auf der Pief 37, 5120 Herzogenrath, Fed. Rep. of Germany

Filed Feb. 19, 1993, Ser. No. 20,116
Int. Cl.[5] B04B *7/02*
U.S. Cl. 494—60 **19 Claims**



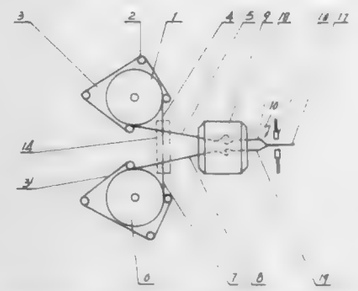
1. A centrifuge for gassing or degassing liquids comprising:
a housing;
a lid fixedly mounted to the housing;
at least one stator fixedly mounted to the lid and depending downwardly therefrom;
a shaft capable of rotation disposed in the housing;
a floor mounted to the shaft end disposed beneath the stator; and
at least one rotor having an inner face and an outer face mounted to the floor and extending upwardly therefrom such that the rotor is disposed adjacent to the stator.

5,344,383

APPARATUS FOR RADIOACTIVE TREATMENT INSIDE THE HUMAN BODY AND THE METHOD USING THE SAME

Wang Liping, 209 Tiyuanbei-binshuixili No. 30, Hexi District, Tianjin, P.R., China

Filed Aug. 14, 1992, Ser. No. 929,222
Claims priority, application China, Aug. 17, 1991, 91105575.4
Int. Cl.[5] A61N *5/00*
U.S. Cl. 600—3 **5 Claims**



1. An apparatus for radioactive treatment inside a human body, wherein, the apparatus comprises:
a cable having front and rear ends, a radioactive source being provided at said front end, and the diameters of said front and rear ends corresponding to those of two front and two rear guide hoses through which the cable passes;
two grooved reels, in which at the periphery of each a single annular groove is formed;
two belts, which are guided by guiding rollers and respectively cover an arc length of the periphery of each grooved reel;
a storing case; a guide hose mechanism, which comprises said two front guide hoses, said two rear guide hoses, and a three-forked connector; an applicator adapted to be inserted in said body; one branch of the connector being connected to a hose portion which is connected to said applicator, the other two branches of the connector respectively connecting with one of the ends of each of the front guide hoses, the other ends of each of the front guide hoses being tangentially arranged to connect with the grooves of the grooved reels, one of the ends of each of the rear guide hoses being tangentially arranged to connect with the grooves of the grooved reels and the other ends being converged in said storing case; a shielding container being arranged between the three-forked connector and the grooved reels, through which the front guide hoses pass; the cable extending along the grooves of the grooved reels and the guide hose mechanism, and a certain length of the cable being stored at the storing case.

5,344,384

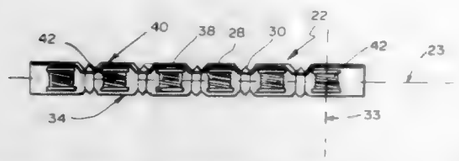
MAGNETOTHERAPY APPARATUS

Alvin Ostrow, and Grigory Grinshpon, both of Englewood, N.J., assignors to Electromagnetic Bracing Systems, Inc., Boca Raton, Fla.

Filed Dec. 11, 1992, Ser. No. 989,336
Int. Cl.[5] A61N *1/00*
U.S. Cl. 600—13 **9 Claims**

1. A magnetotherapy apparatus comprising an applicator wrap, having an outer surface and an inner surface having a plurality of panels hingedly linked and adapted to surround and brace an injured body member adjacent said inner surface, a magnetic coil positioned within each of said panels for simultaneously generating an electromagnetic field in each of said panels, said magnetic coil including a core having a plurality of windings, said windings of each coil being conductively coupled to the windings of alternate successive coils to form at least two respective circuits, whereby current flow through

the windings in one circuit is in a first direction and current flow through the windings in another circuit is in a second direction to provide magnetic fields of opposite polarity in the coils of the respective circuits when energized, wherein a longitudinal axis of the magnetic coil is substantially normal to a transverse axis of the wrap whereby magnetic flux is directionally generated perpendicularly with respect to a target area, further including a transverse substrate of metalized electromagnetic radiation shielding material adjacent to said outer surface of said applicator wrap said applicator wrap being adapted for placement contiguous to the injured body member for providing magnetic flux penetration within the selected target area.



5,344,385

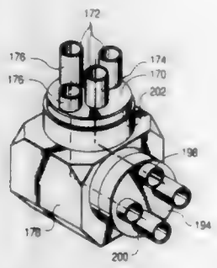
STEP-DOWN SKELETAL MUSCLE ENERGY CONVERSION SYSTEM

Keith E. Buck, Alamo; David J. Farrar, Richmond; Robert J. Harvey, Stanford; Philip Litwak, Novato, and John R. Rueff, Concord, all of Calif., assignors to Thoratec Laboratories Corporation, Berkeley, Calif.

Filed Sep. 30, 1991, Ser. No. 767,789

Int. Cl.[5] A61N *1/362*

U.S. Cl. 600—16 **25 Claims**



1. A dual access port comprising:

a housing having a generally cubical body with a cylindrical recess in one side;

a plurality of housing fluid passages within said housing;

a housing end cap disposed over an upper surface of said housing and having a plurality of housing ports, each of said housing ports communicating with one of said plurality of housing fluid passages, respectively;

a rotatable cylinder disposed within said recess in said housing, said cylinder having an internal planar surface adjacent said recess and an external planar surface generally coplanar with an exterior surface of said housing;

a plurality of first cylinder fluid passages forming an internal passageway within said cylinder such that fluid both enters and exits said cylinder on the side of said external planar surface;

a plurality of second cylinder fluid passages passing through said cylinder;

a cylinder end cap disposed over said external planar surface of said cylinder in said recess, said cylinder end cap having a plurality of cylinder ports, each of said cylinder ports communicating with one of said plurality of first and second cylinder fluid passages, respectively; and

rotation means for rotating said cylinder between at least a first position and a second position;

wherein rotation of said cylinder to said first position places at least one of said cylinder ports in communication with one of said first cylinder fluid passages such that fluid entering said at least one cylinder port exists another of said plurality of cylinder ports; and

wherein rotation of said cylinder to said second position places at least one of said cylinder ports in communication with one of said second cylinder fluid passages, and said one of said second cylinder fluid passages is in communication with one of said housing fluid passages such that fluid entering said at least one cylinder port exits one of said housing ports.

5,344,386

STIMULATION SYSTEM FOR A SKELETAL MUSCLE

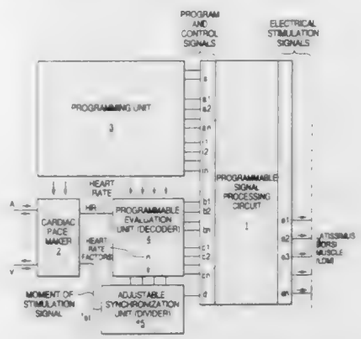
Max Schaldach, Erlangen, Fed. Rep. of Germany, assignor to Biotronik Mess- und Therapiegeräte GmbH & Co., Ingenieurbüro Berlin, Berlin, Fed. Rep. of Germany

Filed Sep. 14, 1992, Ser. No. 943,306

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1991, 4130596

Int. Cl.[5] A61M *1/10*

U.S. Cl. 600—16 **19 Claims**



1. A stimulation system for stimulating a skeletal muscle in the body of a patient having a heart treated with cardiomyoplasty, for use as a supplement to a conventional cardiac pacemaker, the skeletal muscle being surgically prepared from the body of the patient, the stimulation system comprising:

stimulation means for producing output signals to stimulate the skeletal muscle, the stimulation means including an input connected to an output of the cardiac pacemaker and being controlled by the cardiac pacemaker, and

a plurality of implantable electrodes connected to the stimulation means and the skeletal muscle, for selectively delivering output signals from the stimulation means to the skeletal muscle,

wherein the cardiac pacemaker outputs a signal to control the stimulation means output signal intensity to respond to the momentary physical stress and cardiovascular requirement, respectively, of the patient,

wherein at least one heart and/or body sensor is provided to sense the momentary physical stress and cardiovascular requirement of the patient, the at least one sensor having an output connected to an input of the cardiac pacemaker or to the input of the stimulation means, and

wherein the at least one sensor sensing the cardiovascular requirement delivers an autonomous nervous system activity value which is independent of further influential values.

5,344,387

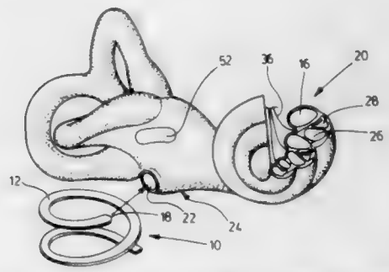
COCHLEAR IMPLANT

Alan J. Lupin, 777 Mountjoy Avenue, Victoria, British Columbia, Canada V8S 4L1

Continuation-in-part of Ser. No. 996,024, Dec. 23, 1992, abandoned. This application Aug. 27, 1993, Ser. No. 112,220

Int. Cl.[5] H04R *25/00*

U.S. Cl. 600—25 **15 Claims**



1. An implant adapted to produce an auditory response in the auditory nerves of a person's ear in response to sound vibrations conducted along the scala tympani of the ear, comprising:

an elongate flexible strip of piezoelectric material dimensioned to be inserted into the scala tympani of the ear in general alignment with the spiral path of the scala tympani, the strip having a pair of opposing faces; and,

a coating of electrically-conductive material formed over one of the faces of the strip.

5,344,388

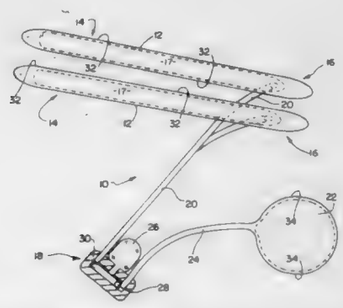
TEXTURED SURFACE PROSTHETIC DEVICE

G. Patrick Maxwell, 4416 Gerald Pl., Nashville, Tenn. 37205; Jack Fisher, 5884 Fredricksburg Dr., Nashville, Tenn. 37215, and Larry Perry, 3333 Country Ridge Dr., Aptioch, Tenn. 37013

Continuation of Ser. No. 893,749, Jun. 5, 1992, abandoned, which is a continuation of Ser. No. 694,429, May 1, 1991, abandoned. This application Nov. 5, 1993, Ser. No. 147,453

Int. Cl.[5] A61F *2/26*

U.S. Cl. 600—40 **11 Claims**



9. A penile prosthesis device for the correction of erectile impotence which is capable of repeated circumferential expansion and contraction, comprising at least one elongate member for implantation into a corpus cavernosum of a penis, said elongate member being constructed substantially of silicone rubber and having an outer surface with texturing means over substantially its entire surface area, said texturing means being formed directly in said outer surface which is left exposed to body tissue to facilitate tissue adherence and tissue ingrowth over substantially the entire implanted elongate member to thereby assure repeated circumferential expansion and contraction by a more expandable compliant and malleable encapsulation with minimal contraction and to thereby prevent at the same time the formation of periprosthetic dead space about the elongate member so as to significantly reduce infection due to cellular trauma and erosion, perforation and uncontrolled movement of the device wherein said texturing in said outer surface has a pore size distribution ranging from approximately 60 microns to approximately 567 microns.

5,344,389

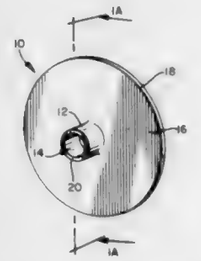
COMBINATION SEAL AND CONSTRICTING DEVICE

Neill B. Walsdorf; Dan K. Crawford, and Perry W. Nadig, all of San Antonio, Tex., assignors to Mission Pharmacal Company, Inc., San Antonio, Tex.

Continuation-in-part of Ser. No. 643,898, Jan. 22, 1991, abandoned. This application May 28, 1992, Ser. No. 890,446

Int. Cl.[5] A61F *5/41*

U.S. Cl. 600—41 **20 Claims**



1. A combination seal and constricting device adapated for use in the external treatment of erectile dysfunction, comprising a substantially cylindrical elastomeric collar having a diameter expandable to accommodate a penis and a radially extending skirt having a forwardly facing, annular, elastomeric seating and sealing surface, a rearwardly facing surface substantially flush with one end of said collar, and a skirt edge, said skirt having a circumference and a radius extending from said collar to said skirt edge, the radius being substantially greater than the unexpanded collar diameter around the entire circumference.

5,344,390

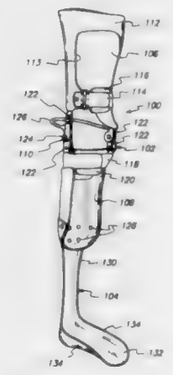
BODY-WORN ORTHOPEDIC DEVICE THAT INCLUDES INDIVIDUAL CONNECTED MODULES

Wallace M. Motloch, Pacifica, Calif., assignor to Motloch & Peterson, Redwood City, Calif.

Filed Sep. 16, 1992, Ser. No. 945,413

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—23 **7 Claims**



1. A body-worn orthopedic device for use by a physically impaired individual to aid in the alignment of bones on either side of a joint, comprising:

a base module for supporting a joint of an individual, the base module including a first shell section for closely contacting and substantially surrounding a portion of the individual's body on one side of the joint, a second shell section for closely contacting and substantially surrounding a portion of the individual's body on an opposite side of the joint, and hinge means connecting the first and second shell sections to one another and for permitting movement of the first and second shell sections relative to one another, said first and second shell sections and said hinge means having a caging effect on the joint; and

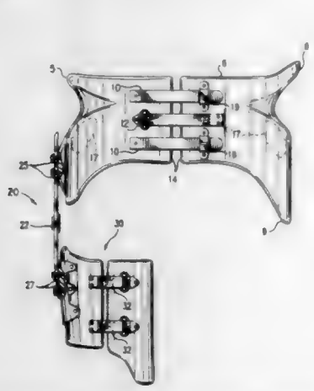
another module connected to said base module, said another module including a third shell section for closely contacting a portion of the individual's body positioned on one side of the joint and distally from the joint, said third shell section being fabricated from a composition that is structurally different from the composition of material from which the first and second shell sections are fabricated; and wherein said first and second shell sections have greater rigidity than the third shell section and the third shell section is more flexible than the first and second shell sections.

5,344,391

HIP ABDUCTION SYSTEM

Michael D. Modglin, Winter Haven, Fla., assignor to National Orthotic Laboratories, Winter Haven, Fla.

Filed Jul. 10, 1992, Ser. No. 911,477
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—24 **3 Claims**



1. A hip abduction system for stabilizing a hip joint, comprising:

a) a substantially rigid pelvic girdle means for adjustably supporting a patient's hips, said pelvic girdle means comprising at least a first substantially rigid hip engaging means for engaging a first hip on one side of a patient's body, and a second substantially rigid hip engaging means for engaging a second hip on the opposite side of the patient's body, said first and second hip engaging means having upper and lower flange portions with the upper and lower flanges of said second hip engaging means being longer than the upper and lower flanges of said first hip engaging means, and said pelvic girdle means further comprising an adjustable fastening means for adjustably fastening said first hip engaging means and said second hip engaging means around a patient;

b) a hip abduction means for supporting a hip joint of a patient, said hip abduction means being mounted to said first hip engaging means; and

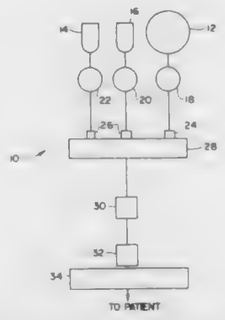
c) a thigh engaging means for engaging a patient's thigh, said thigh engaging means being connected to said hip abduction means.

5,344,392

METHOD AND APPARATUS FOR PREPARATION OF SOLUTIONS FROM CONCENTRATES

Mark Senninger, Chicago; Rodney Kenley; David Witsoe, both Libertyville, all of Ill.; Richard Bucchianeri, Chelmsford, Mass.; Laura Deming, Lunenburg, Mass., and Ben Garcia, West Roxbury, Mass., assignors to Baxter International Inc., Deerfield, Ill.

Filed Sep. 28, 1990, Ser. No. 590,420
Int. Cl.[5] A61M *1/03;* **B01D** *31/00*
U.S. Cl. 604—4 **25 Claims**



1. An apparatus for proportioning solutions from water and at least first and second concentrates comprising,

a. proportioning apparatus having at least first and second inlet ports;

b. means for supplying water to said apparatus;

c. at least one source of said first concentrate in fluid connection with said first inlet port and at least one source of said second concentrate in fluid connection with said second inlet port;

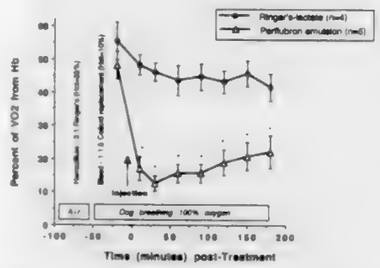
d. means for separately determining which concentrate is supplied to each of said inlet ports and adapting said apparatus to properly compound said solution according to predetermined parameters from said concentrates and said water irrespective of the particular inlet port to which each said concentrate is connected from said respective sources.

5,344,393

USE OF SYNTHETIC OXYGEN CARRIERS TO FACILITATE OXYGEN DELIVERY

Duane J. Roth, La Jolla; Peter E. Keipert, San Diego, both of Calif.; Nicholas S. Faithfull, Normanton by Bottesford, England; Thomas F. Zuck, Cincinnati, Ohio, and Jean G. Riess, Nice, France, assignors to Alliance Pharmaceutical Corp., San Diego, Calif.

Filed Feb. 28, 1992, Ser. No. 843,518
Int. Cl.[5] A61K *47/00*
U.S. Cl. 604—4 **17 Claims**



1. A method for facilitating autologous blood use by a patient facing a loss of blood, comprising the steps of:

removing and storing a portion of the patient's blood;

intravenously administering a biocompatible liquid in sufficient quantity to maintain the patient's blood volume, wherein said liquid comprises an effective oxygen-delivery enhancing amount of a synthetic biocompatible oxygen carrier;

having said patient undergo a loss of blood subsequent to the administration of the biocompatible liquid;

administering breathing gas enriched with a concentrated of 50%–100% oxygen to said patient during said loss of blood; and

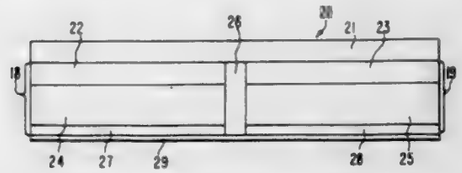
readministering said stored blood to said patient.

5,344,394

IONTOPHORETIC DEVICE INCORPORATING AN ELECTROTRANSPORT ADHESIVE

J. Richard Gyory, Los Altos; Ronald P. Haak, Cupertino; Felix Theeuwes, Los Altos, and Patrick J. Lew, Mountain View, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 741,475, Aug. 6, 1991, Pat. No. 5,240,995, which is a continuation-in-part of Ser. No. 308,716, Feb. 9, 1989, Pat. No. 5,234,992. This application May 27, 1993, Ser. No. 68,500
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 **16 Claims**



1. An electrically powered iontophoretic agent delivery device including a donor electrode assembly, a counter electrode assembly and a source of electrical power adapted to be electrically connect to the donor electrode assembly and the counter electrode assembly, the donor electrode assembly including:

a) an agent reservoir containing an agent, the agent reservoir adapted to be placed in agent transmitting relation with a body surface;

b) a donor electrode adapted to be electrically connected to the source of electrical power, the donor electrode being in electrical contact with the agent reservoir; and

c) a two phase adhesive disposed between the agent reservoir and the body surface for adhering the donor electrode assembly to the body surface, the adhesive comprising an adhesive hydrophobic polymer phase and about 15 to 60 wt. % on a dry weight basis of a hydrophilic polymer phase distributed through the hydrophobic polymer phase, the hydrophilic phase forming upon hydration an interconnecting network of the hydrophilic polymer throughout the matrix, the network providing aqueous pathways for passage of the agent through the matrix.

5,344,395

APPARATUS FOR INTRAVASCULAR CAVITATION OR DELIVERY OF LOW FREQUENCY MECHANICAL ENERGY

Mark J. Whalen, Alexandria, and Lloyd K. Willard, Miltona, both of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Continuation-in-part of Ser. No. 435,280, Nov. 13, 1989, Pat. No. 5,085,662. This application Jan. 24, 1992, Ser. No. 826,959
Int. Cl.[5] A61B *17/22*
U.S. Cl. 604—22 **1 Claim**

1. An apparatus for recanalization of an obstruction in a blood vessel characterized by the presence of undesired material at a site in the blood vessel comprising:

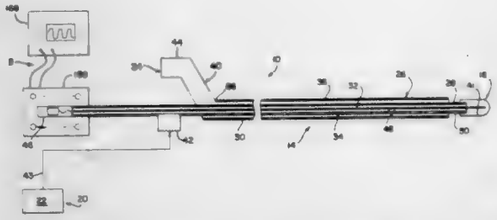
a wire support tube adapted to be positioned intra-vascularly in the patient, said wire support tube having a proximal portion locatable outside the patient's vessel and a distal portion adapted to be positioned in the patient's blood vessel at the site of the obstruction;

a wire located within and extending through said wire support tube, said wire adapted to move axially with respect to said wire support tube;

a tip connected to a distal end of said wire and extending distally from the distal portion of the wire support tube;

a driving apparatus positioned at said proximal portion of the wire support tube and adapted to impart energy to said wire located therein to move said wire in oscillation axially with respect to said support tube;

a second tube located around at least a distal portion of the wire support tube, said second tube adapted to damp



transverse movement of the wire support tube or wire caused by wire oscillations;

a pressurized fluid supply connected to said proximal portion of said wire support tube and adapted to convey pressurized fluid distally in said support tube along said wire to a distal opening of said wire support tube directed at a channel in said tip adapted to redirect the pressurized fluid from said wire support tube distal opening toward a distal opening of said second tube formed by the annular region between said wire support tube and said second tube; and

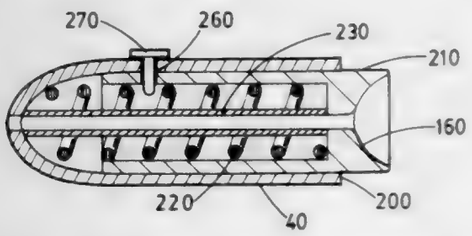
an exhaust port connected to a proximal portion of said second tube and adapted to withdraw effluent from the second tube conveyed from the distal opening thereof.

5,344,396

DEVICE FOR STRETCHING THE FORESKIN OF THE PENIS

Roland T. Clark, Jr., 22052 Islander La., Huntington Beach, Calif. 92646

Filed Aug. 13, 1992, Ser. No. 929,814
Int. Cl.[5] A61F *5/00*
U.S. Cl. 600—38 **5 Claims**



1. A device for stretching a circumcised foreskin of a penis comprising, a tubular body providing an outer surface, an indented portion at one end of the body for accepting the tip of the penis, and a passage within the body interconnecting the indented portion at one end of the body with the other end of the body, so that with the tip of the penis inserted into the indented portion, and the foreskin drawn toward the tip to contact the outer surface for removable attachment thereto the weight of the body exerts a tension force within the foreskin to

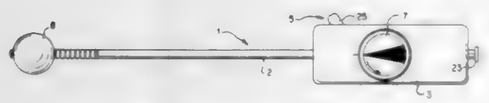
stretch the foreskin, the passage carrying urine from the tip to be discharged at the other end of the body, wherein the body is comprised of an outer portion including the outer surface and an inner portion including the indented portion, the inner portion being slidably, axially engaged within the outer portion, and a spring means enclosed within the inner and outer portions for urging said portions apart in opposed linear translation such that with the foreskin attached to the outer surface, and the tip inserted into the indented portion, said translation places a tension force within the foreskin, said force tending to stretch the foreskin.

5,344,397

CHOLANGIOGRAM CATHETER

Malcolm D. Heaven, Hopewell, N.J., and Hira V. Thapliyal, Mountain View, Calif., assignors to Advanced Surgical, Inc., Princeton, N.J.

Filed Jun. 26, 1992, Ser. No. 903,587
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—95 **29 Claims**



1. A balloon catheter comprising;
a housing;
a catheter tube extending from the housing and having a bendable distal end portion;
an inflatable balloon at a distal end of the catheter tube;
control means for controllably bending the distal end portion of the catheter tube, the control means including an actuator supported by the housing and coupling means connecting the actuator and said distal end portion;
a first lumen extending through the housing, through the catheter body and through the distal end of the catheter body, said first lumen providing a passage through the catheter body for a guidewire or a contrast fluid;
a fluid passage extending between the balloon and the housing, the fluid passageway allowing inflation of the balloon when pressure is applied to a fluid medium in the fluid passageway; and
an inflation device built-in and supported within the housing, the inflation device being in fluid communication with the fluid passageway and having manually operable means supported by the housing to pressurize a fluid medium in the fluid passageway for inflation of the balloon.

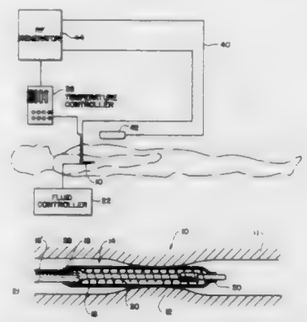
5,344,398

HEATED BALLOON CATHETER

Shinji Hara, Tokyo, Japan, assignor to Japan Crescent, Inc., Japan

Continuation-in-part of Ser. No. 984,490, Dec. 2, 1992, abandoned. This application Feb. 19, 1993, Ser. No. 19,664
Claims priority, application Japan, Feb. 25, 1992, 4-38128; Apr. 22, 1992, 4-103230; Apr. 22, 1992, 4-103231
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **15 Claims**

1. A heated balloon catheter for treatment of constricted zones of body fluid passages by applying heat and pressure to the constricted area comprising:
a catheter and a balloon secured to the distal end of the catheter, said balloon defining an internal volume communicating with at least one longitudinal passage in the catheter,
means for directing pressurized fluid to and from the internal volume of said balloon through said at least one longitudinal passage,
heat sensing means for the fluid in the balloon, electrical conductors connecting the heat sensing means with an external temperature controller,
an internal electrode within the balloon,
an external electrode outside the balloon, said external electrode being in contact with a patient body,



an R.F. generator external to the catheter, and electrical conductors connecting the R.F. generator to the internal and external electrodes to provide capacitive heating of the tissue surrounding said balloon, and
control means for maintaining a temperature in the zone of constriction not greater than a protein denaturation temperature.

5,344,399

DUAL FLEXIBLE INTRODUCER AND CANNULA

James H. DeVries, Grand Rapids, Mich., assignor to DLP, Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 888,517, May 26, 1992, abandoned. This application Mar. 5, 1993, Ser. No. 27,506
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **6 Claims**



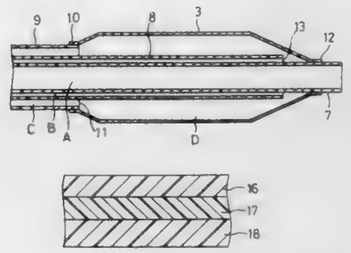
1. An introducer stylet for medical cannulation comprising:
a handle for manipulation by a user,
elongated guide means affixed to and extending from said handle, said guide means being of shape-retaining malleable construction and of uniform construction and geometry throughout its length, and
a tube that is affixed to and extends from said handle closely surrounding said guide means for substantial portion less than the entire length of said guide means for stiffening that portion of said guide means surrounded by said tube and thereby provide a stylet having a stiff portion adjacent to said handle and a malleable shape-retaining portion remote from said handle.

5,344,400

BALLOON CATHETERS CONTAINING MOLDED POLYARYLENESULFIDE MATERIAL

Takashi Kaneko; Toshinobu Ishida, and Akira Mochizuki, all of Ashigarakami, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1993, Ser. No. 46,262
Claims priority, application Japan, Apr. 6, 1992, 4-084172
Int. Cl.[5] A61M *29/02*
U.S. Cl. 604—96 **7 Claims**



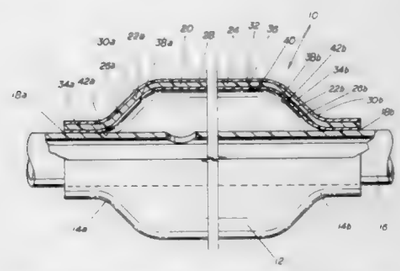
1. In a balloon catheter having an inflatable balloon, the improvement comprising: the balloon produced by molding a polyarylenesulfide or an alloy thereof wherein the polyarylenesulfide is a main constituent.

5,344,401

CATHETER BALLOON FORMED FROM A POLYMERIC COMPOSITE

Herbert R. Radisch, and Dennis M. Vigil, both of San Diego, Calif., assignors to Interventional Technologies Inc., San Diego, Calif.

Division of Ser. No. 811,314, Dec. 20, 1991. This application May 12, 1993, Ser. No. 60,441
Int. Cl.[5] A61M *29/00, 5/32*
U.S. Cl. 604—96 **6 Claims**



1. A method for strengthening a portion of a catheter balloon, comprising the steps of:
providing a catheter balloon made from a first polymer, said balloon having a first region of relatively high tensile strength where said first polymer is biaxially oriented, and having a second region of relatively low tensile strength where said first polymer is not biaxally oriented;
applying a liquid coating of a second polymer to a surface of only said second region, said second polymer having a relatively high tensile strength; and
raising said balloon and said coating to a sufficiently high temperature to form a high tensile strength composite of said first and second polymers.

5,344,402

LOW PROFILE PERFUSION CATHETER

Michael Crocker, Mission Viejo, Calif., assignor to Cardiovascular Dynamics, Inc., Irvine, Calif.

Filed Jun. 30, 1993, Ser. No. 84,820
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **7 Claims**



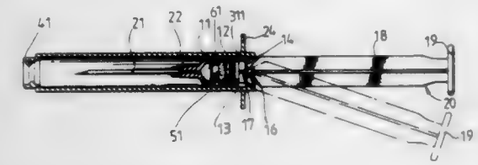
1. A balloon catheter, comprising:
an elongate, flexible, tubular body;
an inflatable balloon on the tubular body, said balloon expandable from a first, reduced diameter to a second, enlarged diameter; and
a perfusion conduit extending through said inflatable balloon, at least a portion of said perfusion conduit expandable from a first reduced diameter to a second enlarged diameter;
wherein said second, enlarged diameter of said perfusion conduit is larger than the first, reduced outer diameter of said deflated balloon.

5,344,403

SIMPLE RETRACTABLE SAFETY SYRINGE

Rahnfong Lee, No. 3, Wen Kang St., Lin 29, Chang Nan Tsun, Yuan Chang Hsiang, Yun Lin Hsien, Taiwan

Filed Jun. 9, 1993, Ser. No. 73,484
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **6 Claims**



1. A retractable safety syringe comprising:
a hollow cylindrical barrel having an open upper end, an open lower end, an inwardly projecting lip at the lower end and a finger flange at the upper end;
a cylindrical needle carrier mounted within said barrel, seated on said lip and retained in place by engagement between an internal circumferential ridge on said lip and a circumferential groove in an outer peripheral wall of said needle carrier, said needle carrier having an extension protruding through the lower end of said barrel and an enlarged extension facing the upper end of said barrel to aid in retaining said carrier in place during use;
a hypodermic needle embedded within said extension of said carrier;
a plunger slidably mounted in said barrel through the upper end and defining a fluid chamber between said carrier and said plunger;
a central bore through said carrier and extension for fluid communication between said needle and said chamber;
a shaft having a longitudinal axis extending from an upper end of said plunger through the upper end of the barrel for depressing the plunger;
a hub extending from a lower end of said plunger adapted to lock into said bore for withdrawing the needle carrier and needle into the barrel;
a rubber seal around said plunger; and
a conical section between the plunger and the shaft defining a sharp notch above said plunger to allow said shaft to be

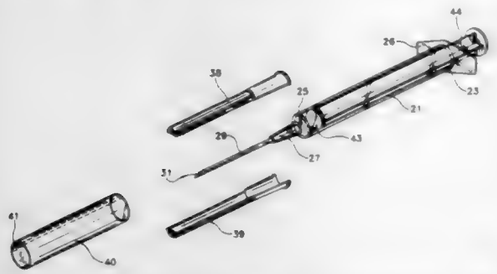
broken off in any angular direction about the longitudinal axis when the needle carrier and needle are withdrawn into the barrel.

5,344,404

SYRINGE ASSEMBLY HAVING A NON-RESUABLE NEEDLE SHIELD

Carl L. Benson, Wyckoff, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 13, 1993, Ser. No. 105,700
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **12 Claims**



1. A syringe assembly having a non-reusable needle shield comprising:

an elongate barrel having a chamber for retaining fluid, said barrel including an open proximal end, a closed distal end and a tip extending from said distal end having a passageway therethrough in fluid communication with said chamber;

a needle cannula extending distally from said tip, said cannula having a lumen therethrough in fluid communication with said passageway;

an elongate hollow needle shield having a longitudinal axis, a distal end and an open proximal end, said shield being positioned on said tip so that said tip extends into said open end of said shield and said shield covers said needle cannula, said needle shield being divided along said longitudinal axis into at least two separate elongate needle shield segments;

frangible means for releasably holding said needle shield segments together and preventing removal of said needle shield from said syringe assembly, wherein disengagement of said frangible means allows said needle shield segments to separate and come apart to expose said needle cannula and after disengagement said needle shield segments no longer by themselves engage said tip to shield said needle cannula.

5,344,405

SINGLE-USE SYRINGE

Donald C. Richards, P.O. Box 685, Walpole, N.H. 03608

Filed Sep. 10, 1993, Ser. No. 118,583
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **19 Claims**

1. A single-use syringe comprising:

a forward assembly including:

a housing,

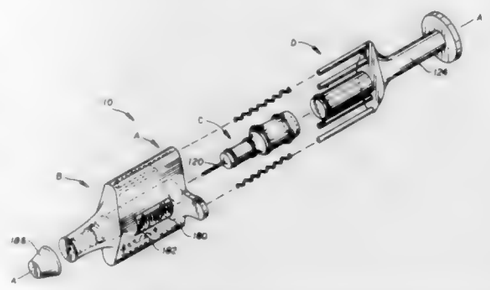
a barrel having a needle disposed at a distal end thereof and having a cylindrical bore passing therethrough; and

means for fixing said barrel within said housing in accordance with a first condition, said barrel and said needle being retractable into said housing in accordance with a second condition,

a plunger having a piston disposed at a distal end thereof, said piston slidably engaging said cylindrical bore passing through said barrel;

means for limiting axial displacement of said plunger relative to said barrel; and

means for retaining said barrel and said needle in a retracted posture within said housing, wherein said retaining means



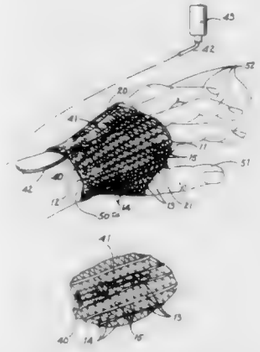
includes a locking member for interlocking said barrel and said housing.

5,344,406

METHOD AND APPARATUS FOR PROTECTIVELY STABILIZING AND SECURING AN INTRAVENOUS DEVICE

James J. Spooner, 16203 E. Glendora Dr., Fountain Hills, Ariz. 85268-3108

Filed Oct. 13, 1993, Ser. No. 135,908
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—179 **11 Claims**



1. A method for protectively stabilizing and securing an intravenous device to a body member of a patient, comprising the steps of:

providing a tubular sleeve made of stretchable fabric encompassing a plurality of tiny spacings and having two open ends;

attaching the intravenous device to the body member;

simultaneously stretching the sleeve fabric while inserting the body member through the sleeve so that the sleeve encircles and is elastically retained on the body member;

enlarging the spacings in the sleeve when the sleeve is stretched over the body member; and

securing the intravenous device between the sleeve fabric and the body member.

5,344,407

SAFETY HOLDER FOR PRE-FILLED DISPOSABLE SYRINGE CARTRIDGE

Dana W. Ryan, 11520 SW. 22nd Ct., Davie, Fla. 33325

Filed May 4, 1993, Ser. No. 57,536
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 **20 Claims**

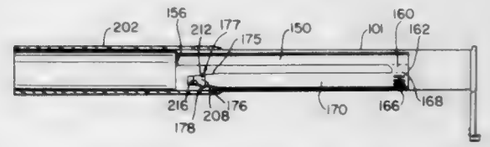
1. A disposable safety holder for a disposable pre-filled medical syringe cartridge having a pre-filled ampoule with a needle hub and an attached needle, said holder comprising:

a) a hollow tube having a proximal end with a proximal opening which receives said syringe, and a distal opening;

b) an interior shoulder adjacent said distal opening, wherein said interior shoulder engages said needle hub;

c) hinge means coupled to a proximal end of said tube;

d) gate means coupled to said hinge means and provided



with locking means, wherein said gate means is movable from a first position where said proximal opening is unobstructed to a second locking position covering said proximal opening, and said gate means has an opening smaller than said proximal opening, whereby said gate means engages said ampoule when said gate means is moved to said second position;

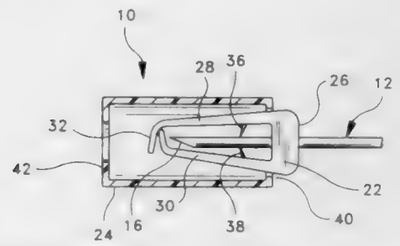
e) safety sleeve means extending from said hollow tube for covering said needle.

5,344,408

BREAK-AWAY SAFETY SHIELD FOR NEEDLE CANNULA

Lawrence Partika, Bridgewater, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 6, 1993, Ser. No. 102,874
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 **17 Claims**



1. A safety shield assembly comprising:

a needle cannula having a proximal end, a distal end and a lumen therethrough;

an inner shield slidably movable along said needle cannula from a proximal position at least partially on said needle cannula where said distal end of said needle cannula is exposed, to a distal position at least partially on said needle cannula where said distal end of said needle cannula is shielded;

locking means for helping to prevent said inner shield from moving distally with respect to said needle cannula when said inner shield is in said distal position on said needle cannula;

an outer shield disposed in surrounding relationship to said inner shield; and

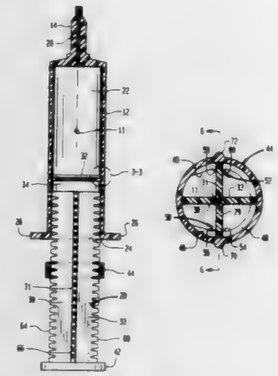
means for selectively disengaging said outer shield from said inner shield in response to a distally directed force of a selected magnitude exerted on said outer shield, said distally directed force being less than a force required to move said inner shield distally off the needle cannula, after said inner shield is in said distal position.

5,344,409

SYRINGE LATCH

James F. Ennis, III, Preston, Conn., and Sylvan L. Johnson, Woodville, Wis., assignors to Genesis Industries Inc., Elmwood, Wis.

Filed Jun. 14, 1993, Ser. No. 75,890
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—210 **6 Claims**



1. A syringe comprising:

a hollow syringe body having a discharge end portion and an open opposite end portion;

a plunger slidable in said syringe body through said open end portions thereof, said plunger having a first end portion located within said syringe body including a seal formed thereon between said plunger and the interior of said syringe body;

a length adjusting member engaged with said plunger outside of said syringe body to variably limit operating travel of said plunger in said syringe body thereby to control the volume of a fluid in the syringe body expelled therefrom upon depression of said plunger into said syringe body;

said length adjusting member comprising a threaded nut having an internally disposed latch means for latching said nut to said plunger at a selective angle of displacement of said nut relative to said plunger;

wherein said threaded nut comprises a one piece collar having an internal thread formed thereof, and said internal latch means comprising at least one pair of latch detents, said latch detents being made of a flexible material, and wherein said plunger includes a piston head and a stem having a plurality of ribs with a set of notches at an outer edge of each rib forming an exterior thread which mates with said internal thread of said collar; and

wherein one of said ribs has a notch minor thread diameter which is larger than a notch uniform minor thread diameter of the other ribs for latching said collar to said plunger.

5,344,410

DEVICE FOR DRAINING THE PLEURAL CAVITY

Yakov G. Kolkin, ul.Schorsa, d.25,kv.35, 340050 Donetsk; Vladimir N. Vecherko, bulvar Pushkina, d. 31, kv. 44, 340055 Donetsk, and Evgeny S. Pershin, ul.Pogodina, d.23, 340011 Donetsk, all of

Filed Nov. 17, 1992, Ser. No. 977,824
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—247 **6 Claims**

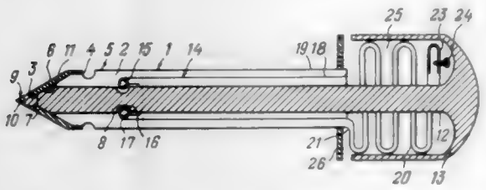
1. A device for draining pleural contents from the pleural cavity comprising:

an outer tube having a hollow interior, a proximal end with perforations and a distal end;

an elastic inner tube, removably disposed within said outer tube and having a proximal end and a distal end connected to said outer tube distal end;

a stylet, removably disposed within said inner tube and having a pointed end, extending outwardly from the proximal end of said outer tube, adapted for guiding the device into the pleural cavity; said proximal end of said inner tube is tightly, elastically connected to said stylet near its pointed end;

a pleural contents receptacle connected to said distal ends of said outer tube and said inner tube and being in communication with the hollow interior of said outer tube;



a retaining collar connected to said outer tube near said distal end for retaining the device in position; and

wherein removal of said stylet everting said inner tube and forming an airtight seal, whereby the pleural contents flowing from the pleural cavity through the perforations and the hollow interior into said pleural contents receptacle.

5,344,411

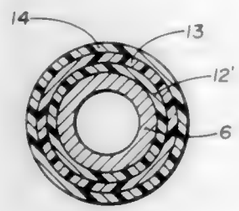
METHOD AND DEVICE FOR INHIBITING HIV, HEPATITIS B AND OTHER VIRUSES AND GERMS WHEN USING A CATHETER IN A MEDICAL ENVIRONMENT

Abraham J. Domb, Efrat, Israel, and Alain H. Shikani, Ruxton, Md., assignors to Leonard Bloom, Towson, Md., a part interest

Continuation-in-part of Ser. No. 998,773, Dec. 22, 1992, which is a continuation of Ser. No. 661,699, Feb. 27, 1991, abandoned. This application Nov. 3, 1993, Ser. No. 147,049

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—265 **7 Claims**



1. An anti-infective coating for a catheter having a surface, the catheter being disposed and maintained within a body of a patient having blood or other body fluids, the anti-infective coating being insoluble in a biological medium and being bound to the surface of the catheter during storage, use and initial disposal thereof, the anti-infective coating comprising a biocompatible, non-hydrogel polymer, said polymer being compatible with and being bound to the surface of the catheter, said polymer being soluble in an organic solvent, and iodine complexed with the coating for programmed rapid release of the iodine from the coating when the catheter is disposed and maintained in the body of the patient and contacts the blood or other body fluids and

further comprising a hydrophilic substance being added to the coating to increase the rate of release of the iodine from the coating,

wherein the hydrophilic substance is a polyethylene glycol.

5,344,412

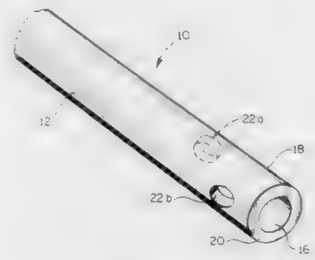
MICROBORE CATHETER WITH SIDE PORT(S)

Amy M. Wendell, Franklin; James R. Gross, Wareham, and James P. Cianci, Walpole, all of Mass., assignors to The Kendall Company, Mansfield, Mass.

Continuation of Ser. No. 804,574, Dec. 10, 1991. This application Mar. 1, 1993, Ser. No. 24,024

Int. Cl.[5] B23K *26/00*; **A61M** *5/00*

U.S. Cl. 604—280 **3 Claims**



1. The method of making a microbore spinal catheter comprising the steps of:

(1) forming a catheter comprising an elongated flexible wall material having opposed distal and proximal ends and having a single lumen extending between the ends and terminating with an opening at its distal end, the catheter having an outer diameter no greater than about 0.022 inch; and

(2) thereafter forming at the distal end proximal to the distal end opening at least one sideport characterized as being spherical and substantially free of any burring or cratering by contacting the catheter wall material with a laser beam selected with respect to the catheter wall material so that:

(a) the radiation emitted by the laser is in a wavelength such that little or no radiation is transmitted through the target catheter wall material; and

(b) the radiation does not emit enough heat to cause the target catheter wall material to melt rather than being vaporized.

5,344,413

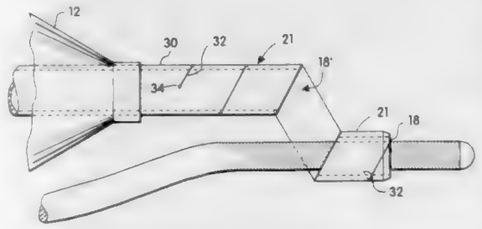
CATHETER HAVING A TIP CONNECTOR FOR RAPID CATHETER EXCHANGES

Robert C. Allman, Wakefield, and Bryan J. White, Lowell, both of Mass., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Continuation of Ser. No. 39,514, Mar. 29, 1993, abandoned, which is a continuation of Ser. No. 723,432, Jun. 28, 1991, abandoned. This application Dec. 27, 1993, Ser. No. 174,759

Int. Cl.[5] A61M *25/00*

U.S. Cl. 604—280 **7 Claims**



1. A cardiovascular catheter comprising:

an elongate flexible shaft having proximal and distal ends, the shaft having a primary lumen adapted to receive a guidewire;

a tubular tip segment at the distal end of the shaft, the tip segment normally being in a first configuration in communication with the primary lumen and having a distal outlet orifice, the tip segment comprising a helically coiled element and having a second configuration in which the tip segment is uncoiled to define a relatively short secondary lumen that is out of communication with the primary lumen, the secondary lumen being adapted to receive a guidewire, whereby the secondary lumen may be coupled to a guidewire while the first lumen remains unobstructed to provide communication between the proximal and distal ends of the catheter while the catheter is in engagement with a guidewire.

5,344,414

MEDICAL CONNECTOR

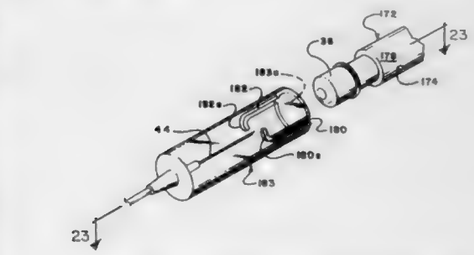
George A. Lopez, Huntington Beach, and Virgil R. Laul, Dana Point, both of Calif., assignors to ICU Medical Inc., San Clemente, Calif.

Continuation of Ser. No. 346,193, Jan. 9, 1987, abandoned, which is a division of Ser. No. 606,679, May 3, 1984, abandoned, which is a continuation-in-part of Ser. No. 543,248, Oct. 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 460,585, Jan. 24, 1983, abandoned. This application Feb. 19, 1993, Ser. No. 20,098

Claims priority, application European Pat. Off., Jan. 19, 1984, 84100561.4; United Kingdom, Jan. 23, 1984, 8669/84

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—283 **22 Claims**



1. A safety connector system for administering a first and a second fluid to a patient, comprising:

a generally Y-shaped piggyback connector having a first influent fluid line on a first influent side thereof for administration of said first fluid and a pierceable septum on a branch port on a second influent side thereof for administration of said second fluid, and Y-shaped piggyback connector having a first locking element thereon and also having an effluent fluid line on an effluent side thereof; and

a safety connected for securing a second influent fluid line to said branch port, said safety connector having a generally tubular body with a piercing element disposed therein, said tubular body adapted to advance over said pierceable septum and thereby cause said piercing element to engage said pierceable septum on said branch port, said safety connector further comprising a second locking element for detachably engaging said first locking element, thereby locking said piercing element and said pierceable septum in fluid communication.

5,344,415

STERILE SYSTEM FOR DRESSING VASCULAR ACCESS SITE

Janet S. DeBusk, and Margaret M. Felice, both of Knoxville, Tenn., assignors to DeRoyal Industries, Inc., Powell, Tenn.

Filed Jun. 15, 1993, Ser. No. 77,565

Int. Cl.[5] A61F *13/00*

U.S. Cl. 604—304 **11 Claims**

1. A system for dressing a tubular access site adjacent the skin of a patient penetrated by an invasive medical device such as a catheter tube, said system comprising:

a container defining a sterile, sealed enclosure therein; and

a preformed, sterilized dressing located within said enclosure, said dressing comprising:

a first sterile dressing component comprising an absorbent pad dimensioned to substantially cover the access site and adapted to absorb fluid from adjacent the access site, said absorbent pad having a first surface for being disposed adjacent the site and a second surface for being disposed facing away from the site, a breathable adhesive-backed web disposed adjacent said second surface of said pad and extending out from a marginal edge of said pad for adhesively securing said pad to the skin around the access site, a barrier film disposed adjacent said second surface of said pad intermediate said pad and said web and adapted to limit entry of moisture and bacteria into said pad from the environment while providing a controlled rate of evaporation of fluids from said pad, a substantially non-adherent covering disposed adjacent said first surface of pad to be placed against the skin to limit adherence of said pad to skin tissue or exudate adjacent the site, and a peel-away cover layer covering at least the portion of said adhesive surface of said web extending out from said pad to provide ready exposure of said adhesive surface of said web by peeling said cover away for attachment of said first dressing component to the skin about the access site, wherein when said first component may be placed over the access site such that a portion of said web will overlay the catheter tube and thereby define a catheter exit location at which the catheter tube is engaged between said web and the skin; and



a second sterile dressing component comprising a breathable web having an adhesive surface and a peel-away cover covering said adhesive surface of said web to provide ready exposure of said adhesive surface by peeling said cover away for attachment of said web of said second sterile dressing component to a desired surface, said web of said second dressing component being dimensioned to provide adhesive securement of a first portion of said web to the skin of the user beneath the catheter tube adjacent the catheter exit location and extending out along opposite directions from the exit location, and to provide adhesive securement of a second portion of said web of said second component to said web of the first dressing component along the marginal edge of said web of said first dressing component adjacent the exit location, wherein the catheter tube may be engaged between said web of said first dressing component and said web of said second dressing component so that undesired lateral and longitudinal movement of the tube may be restricted.

5,344,416

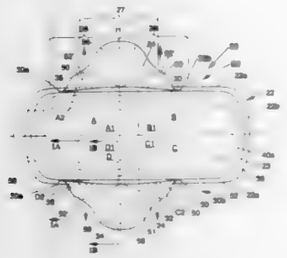
ABSORBENT ARTICLE HAVING INWARDLY-FOLDED PLEATED FLAPS

Kaoru Niihara, Hyogo, Japan, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 832,246, Feb. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 769,607, Oct. 1, 1991, abandoned, and a continuation-in-part of Ser. No. 769,891, Oct. 1, 1991, abandoned. This application Aug. 18, 1993, Ser. No. 109,017

Int. Cl.[5] A61F *13/56*

U.S. Cl. 604—385.1 11 Claims





1. An absorbent article having a body-facing side, a garment side, a principal longitudinal centerline, and a principal transverse centerline, said absorbent article comprising:

a main body portion having two spaced apart longitudinal edges and two spaced apart transverse edges, said main body portion comprising a liquid pervious topsheet, a liquid impervious backsheet joined to said topsheet, and an absorbent core positioned between said topsheet and said backsheet;

a pair of flaps, said flaps having a proximal edge, a distal edge, and a flap transverse centerline, each flap being associated with said main body portion at a juncture and extending laterally outward from a longitudinal edge of said main body portion, said junctures each having a pair of ends, and said absorbent article having two corner regions for each flap, said corner regions being located in the regions of the ends of each juncture, wherein portions of said flaps lie along said flap transverse centerline and portions of said flaps lie in said corner regions, and when said flaps are extended, the portions of said flaps that lie along said flap transverse centerline lie further outward in the transverse direction from the principal longitudinal centerline than the portions of said flaps located in said corner regions, and at least one of said flaps being folded along at least two generally longitudinally-oriented fold lines to form at least one pleat along said juncture, said fold lines comprising at least

a first fold line that is nearest the proximal edge of the flap when said pleat in said flap is unfolded, said first fold line being formed by a part of the flap that is folded inward toward one side of the absorbent article; and

a second fold line spaced farther away from said proximal edge when said pleat in said flap is unfolded, wherein when said pleat is intact said flap is folded back away from said principal longitudinal centerline and the distal edge of the portion of said flap that is located along said flap transverse centerline lies transversely outward from the longitudinal edge of said main body portion; and

a flap pleat restraint located along said flap transverse centerline for restraining said pleat from unfolding in the area of said flap transverse centerline while allowing said pleat to unfold at those locations disposed longitudinally away from said flap transverse centerline.

5,344,417

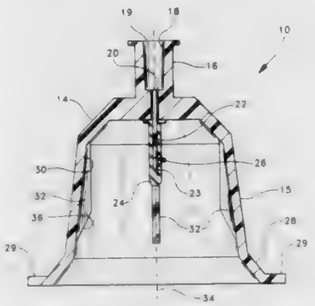
UNIVERSAL FITTING FOR INOCULATION RECEPTACLES

Gilbert A. Wadsworth, Jr., Cockeysville, Md., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 11, 1992, Ser. No. 943,625

Int. Cl.[5] A61B *19/00*

U.S. Cl. 604—414 2 Claims



1. A universal fitting assembly for a receptacle for the introduction or the withdrawal of an inoculum comprising:

a body portion;

a needle extending from said body portion for passing an inoculum into or out of a receptacle;

an annular skirt extending from said body portion and surrounding said needle for positioning over a liquid entry portion of said receptacle, said skirt having an internal surface and a plurality of ribs thereon projecting radially inwardly, said ribs adapted to engage the entry portion of said receptacle for substantially centering the fitting on and securely gripping the fitting to said receptacle during introduction or withdrawal of the inoculum; and

a syringe connected to said needle.

5,344,418

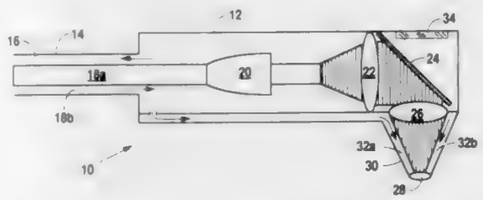
OPTICAL SYSTEM FOR TREATMENT OF VASCULAR LESIONS

Shahriar Ghaffari, 1309 Pond Spring Rd., Bldg. C, Austin, Tex. 78729-7139

Filed Dec. 12, 1991, Ser. No. 807,055

Int. Cl.[5] A61N *5/06*

U.S. Cl. 606—9 8 Claims



1. An optical system for treating vascular lesions, comprising:

irradiating means for irradiating skin with electromagnetic radiation;

monitoring means coupled to said irradiating means for monitoring absorption of said radiation by said skin;

controlling means coupled to said monitoring means and said irradiating means for controlling the operation of said irradiating means to deliver a predetermined dose of radiation to said skin; and

cooling means coupled to said irradiating means for cooling the surface of said skin, said cooling means comprising:

a lens having one side in contact with said skin, wherein said lens is comprised of a material that is transparent to visible light and has a high thermal conductivity; and

means for circulating a cooling gas to contact with said lens on the side not in contact with said skin.

5,344,419

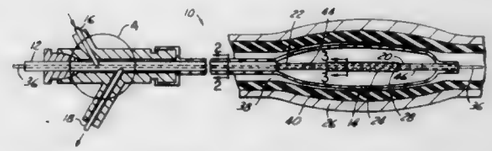
APPARATUS AND METHOD FOR MAKING A DIFFUSING TIP IN A BALLOON CATHETER SYSTEM

James R. Spears, Bloomfield Hills, Mich., assignor to Wayne State University, Detroit, Mich.

Filed Apr. 23, 1993, Ser. No. 52,368

Int. Cl.[5] A61B *17/36*

U.S. Cl. 606—15 21 Claims



1. A method for making a laser balloon catheter having an elongated flexible tube with an inflatable balloon connected to the tube, means for inflating and deflating the balloon, a central channel disposed within the balloon and coupled to the tube, an optical fiber with a diffusing tip at its distal end for delivering laser radiation through the balloon to tissue to be treated, the method comprising the steps of:

etching the distal end of the optical fiber to form an etched portion thereof;

cladding the etched portion with an adhesive translucent medium which secures the optical fiber to the central channel so that the optical fiber is eccentrically positioned in relation to the central channel; and

applying to the medium a coating which surrounds the central channel, the coating having suspended therewithin a plurality of microballoons for diffusing the laser radiation radially from the optical fiber, so that a cylindrical pattern of diffused laser energy is formed about a predetermined axial length of the central channel.

5,344,420

SURGICAL TROCAR

Nabil Hilal, Mission Viejo, and Said S. Hilal, Laguna Niguel, both of Calif., assignors to Applied Medical Resources Corporation, Laguna Hills, Calif.

Continuation of Ser. No. 791,878, Nov. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 654,815, Feb. 13, 1991, abandoned. This application Nov. 12, 1993, Ser. No. 152,242

Int. Cl.[5] A61B *17/32*

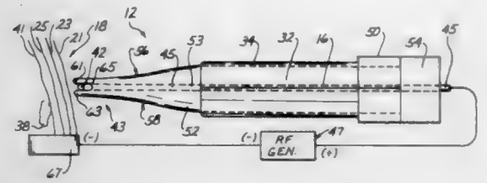
U.S. Cl. 606—28 37 Claims

1. A medical device for providing access across a body wall into a body cavity, comprising:

means for creating a hole through the body wall;

an elongate shaft included in the hole creating means and extending between a tip portion at a distal end of the shaft and a handle portion at a proximate end of the shaft, the shaft having an outer surface;

the tip portion of the shaft defined by a pair of surfaces each intersecting the outer surface of the shaft, the opposing surface intersecting each other generally along a particular line; and



energy conductive means limited generally to the particular line of intersection between the opposing surfaces for cutting the body wall to create the hole into the body cavity.

5,344,421

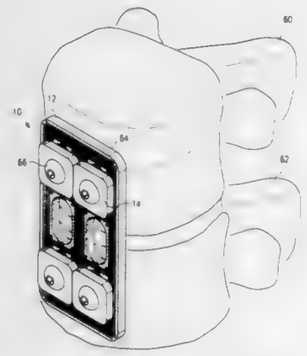
APPARATUS AND METHOD FOR ADJUSTING A BONE PLATE

David F. Crook, Garland, Tex., assignor to AMEI Technologies Inc., Wilmington, Del.

Filed Jul. 16, 1993, Ser. No. 92,801

Int. Cl.[5] A61F *5/00*

U.S. Cl. 606—61 19 Claims



1. An adjustable bone plate assembly, comprising:

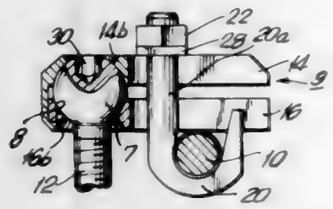
a plate having a first surface for engaging a selected portion of a patient's body, a second surface opposite said first surface, and a plurality of slots extending through said plate;

a plurality of washers, said washers having a first surface;

first means disposed on said second surface of said plate for engaging said washers; and

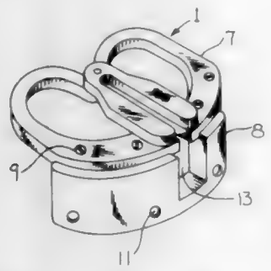
second means disposed on said first surface of said washer for engaging said first means on said plate, wherein said washers are selectively placed on said second surface of said plate over one of said plurality of slots such that said first and second means are operable to prevent both lateral and longitudinal movement of said washer on said plate.

5,344,422
PEDICULAR SCREW CLAMP
Robert Frigg, Davos-Platz, Switzerland, assignor to Synthes (U.S.A.), Paoli, Pa.
Continuation of Ser. No. 614,155, Nov. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 428,907, Oct. 30, 1989, Pat. No. 5,002,542. This application Dec. 10, 1992, Ser. No. 989,872
Claims priority, application European Pat. Off., Aug. 22, 1990, 90116070.5
The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.
Int. Cl.[5] A61F 5/04
U.S. Cl. 606—61 6 Claims



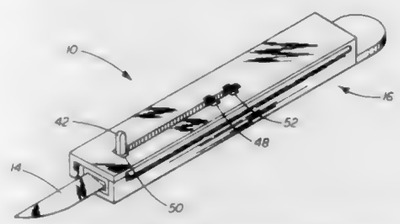
1. A unitary consisting of a device for attaching a single pedicle screw or spinal hook to a single support rod, said pedicle screw or spinal hook and said support rod having longitudinal axes and being positioned in different planes relative to one another so that there is no plane totally encompassing both axes, said screw or hook having an enlarged head, said device having first holding means comprising a socket, adjustable in size, adapted to receive the head of said screw or hook, and said device further having second holding means adapted for holding said support rod, said two holding means being adjustable to vary the inclination of said axes relative to one another and the distance of said axes from one another.

5,344,423
APPARATUS AND METHOD FOR MILLING BONE
Terry L. Dietz, Columbia City, and Richard D. Vanlaningham, Leesburg, both of Ind., assignors to Zimmer, Inc., Warsaw, Ind.
Filed Feb. 6, 1992, Ser. No. 832,098
Int. Cl.[5] A61F 5/04
U.S. Cl. 606—87 5 Claims



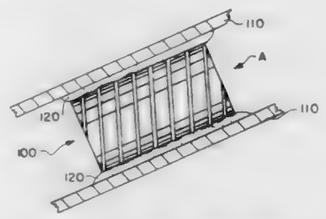
1. An apparatus for producing a planar surface on a portion of a bone using a milling device, the apparatus comprising a template having a planar reference surface and defining a track means for guiding a said milling device in two dimensions, the reference surface and the track means engage said milling device, the track means guides a said milling device in two dimensions to form the planar surface on the bone parallel to the reference surface, the template defines an open interior and the reference surface comprises a pivot arm pivotably attached to the template.

5,344,424
SELECTIVELY RETRACTABLE, DISPOSABLE SURGICAL KNIFE
Philip L. Roberts, 7110 Pitt St., New Orleans, La. 70118, and Mark L. Doerre, 4312 Fieldspoint Pl., Lexington, Ky. 40514
Filed Mar. 12, 1993, Ser. No. 30,758
Int. Cl.[5] A61B 17/32
U.S. Cl. 606—167 15 Claims



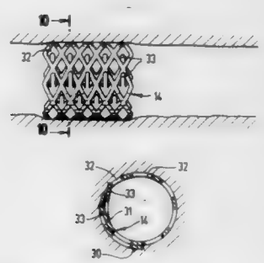
1. A retractable, disposable surgical knife, comprising:
a hollow sheath;
a blade assembly received for sliding movement within said sheath, said blade assembly including a slide block and a knife blade held by said slide block;
means, mounted to said blade assembly and sheath, for selectively securing said blade assembly in a first, retracted position wherein said blade is withdrawn into said sheath and a second, extended position wherein said blade extends from said sheath for use; and
means, mounted to said blade assembly and sheath, for permanently locking said blade assembly in a third, fully retracted position wherein said blade is fully withdrawn within said sheath to prevent inadvertent sticks, said permanent locking means being fully concealed and contained within said sheath so as to prevent inadvertent engagement with an object and possible release from the permanently locked position.

5,344,425
INTRAVASCULAR STENT AND METHOD FOR CONDITIONING THE SURFACES THEREOF
Philip N. Sawyer, Brooklyn, N.Y., assignor to Interface Biomedical Laboratories, Corp., Brooklyn, N.Y.
Continuation-in-part of Ser. No. 583,882, Sep. 20, 1990, Pat. No. 5,108,417. This application Feb. 6, 1992, Ser. No. 832,199
Int. Cl.[5] A61B 17/00
U.S. Cl. 606—198 17 Claims



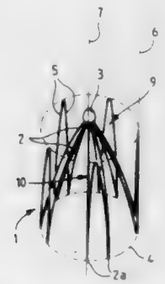
1. A method for preparing a titanium stent by conditioning the surfaces thereof prior to introduction into the body of a subject, which comprises:
forming a stent by cutting or machining a titanium strip to a desired size and configuration;
cleaning the surfaces of the stent to remove dirt and organic material therefrom;
pickling the cleaned stent with an oxidizing acid to provide a substantially uniform oxide layer thereon;
electrochemically polishing the surfaces of the pickled stent;
removing oxides from the surfaces of the stent after the polishing step by treatment with an acidic solution; and
retaining the stent in a substantially oxygen free environment after the oxide-removing step until use thereof.

5,344,426
METHOD AND SYSTEM FOR STENT DELIVERY
Lilip Lau, Cupertino, and William M. Hartigan, Fremont, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.
Division of Ser. No. 900,122, Jun. 18, 1992, Pat. No. 5,242,399, which is a continuation of Ser. No. 735,195, Jul. 24, 1991, Pat. No. 5,158,548, which is a continuation of Ser. No. 514,108, Apr. 25, 1990, abandoned. This application Apr. 15, 1993, Ser. No. 48,375
Int. Cl.[5] A61M 29/00; A61F 2/06, 2/04
U.S. Cl. 606—198 5 Claims



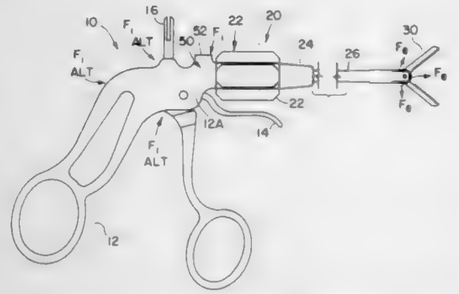
1. An intravascular stent for implanting in a coronary artery, comprising:
a flat sheet of material having a first and a second longitudinal edge, said flat sheet having an open reticulated design including a plurality of apertures;
a plurality of finger-like projections aligned in rows parallel to said first longitudinal edge;
whereby said flat sheet is rolled-up to form an elongated cylindrical structure wherein some of said finger-like projections intersect some of said apertures in an interlocking relationship.

5,344,427
FILTER WITH TRIANGULAR FINGERS
Jean-Philippe Cottenceau, Antony, and Gérard Chevillon, Montrouge, both of France, assignors to Celsa L.G. (Societe Anonyme), Chasseneuil, France
Filed Jul. 13, 1993, Ser. No. 90,959
Claims priority, application France, Aug. 7, 1992, 92 09845
Int. Cl.[5] A61F 2/02
U.S. Cl. 606—200 7 Claims



1. A filter to be placed within a blood vessel to retain blood clots, said filter comprising:
a head;
a plurality of clips, each of said clips including a pair of first and second adjacent resilient fingers, each finger having a first end and a second end, and a hairpin-shaped piece of wire having a first end and a second end;
said second ends of said first and second fingers being connected respectively to said first end and said second end of said hairpin-shaped piece of wire;
said first and second fingers of said plurality of clips being arranged, in the region of the first ends of said first and second fingers, so as to emerge from said head in a substantially conical shape when said filter is inserted within said vessel;
said hairpin-shaped piece of wire extending substantially parallel with a wall of said vessel when said filter is positioned within the vessel, and being directed substantially backwards toward said head; and
wherein said pair of fingers and said hairpin-shaped piece of wire of each of said plurality of clips are formed from a single folded wire, said wire being held locally at said head.

5,344,428
MINIATURE SURGICAL INSTRUMENT
Jerry R. Griffiths, Pembroke, Mass., assignor to Auburn International, Inc., Danvers, Mass.
Continuation-in-part of Ser. No. 43,185, Apr. 6, 1993, and a continuation-in-part of Ser. No. 26,861, Mar. 5, 1993. This application Jun. 28, 1993, Ser. No. 82,559
Int. Cl.[5] A61B 17/28
U.S. Cl. 606—205 1 Claim



1. In a miniature surgical instrument comprising means defining an essentially pistol form instrument with an actuating handle of scissors form, an elongation tubular shaft with a longitudinal axis, the said shaft mounting at its distal end a working tip of opposed elements, at least one of which is pivotable for moving the elements into and out of working engagement, means defining a linear actuating linkage contained within the shaft and connected to said scissors form handle for linear actuation thereby and linked to the pivotable element(s) to actuate the same through linear movements of the linkage, the improvement comprising:
(a) means for rotating the shaft and locking it in positions to provide different secured rotational positions for the tip and comprising means defining an annulus between parts which are movable relative to each other in a rotational sense, and further comprising in said annulus:
(i) plural linear spring and stop subassemblies,
(ii) means defining a rotatable face with notches for receiving the stop members of said subassemblies;
(b) means for admitting cleansing fluid to the annulus, and
(c) passage means leading from the annulus to the shaft to allow passage of cleansing fluid through the shaft around the linkage portion therein and out through an open shaft end near the tip,
(d) means for sealing the instrument against fluid escape through regions other than the tip,
(e) and further comprising seal means to define and limit the said fluid path,
(f) and further comprising an injection port in the handle region and check valve means therefor, and

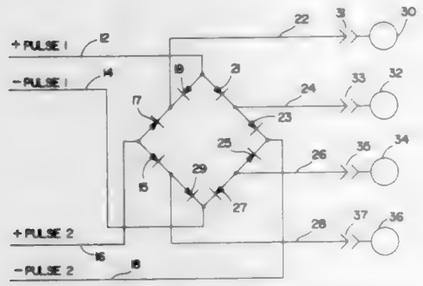
(g) wherein an additional one of said spring-stop assemblies are provided as a back-up spring to a check valve.

5,344,429

PULSE ROUTING APPARATUS FOR CARDIOVERSION AND DEFIBRILLATION

Karel F. A. A. Smits, Oirsheck, Netherlands, assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 20, 1993, Ser. No. 110,041
Int. Cl.[5] A61N *1/39*
U.S. Cl. 607—5 11 Claims



8. Apparatus for cardiac defibrillation, comprising:
a first defibrillation pulse generator, having positive and negative outputs;
a second defibrillation pulse generator, having positive and negative outputs;
first and second electrodes;
a steering circuit coupled to said first and second electrodes and to said first and second pulse generators, said steering circuit comprising switching means rendered conductive by a defibrillation pulse generated by said first pulse generator for connecting said first and second electrodes to said positive and negative outputs of said first pulse generator to define a first set of electrode polarities and rendered conductive by a defibrillation pulse generated by said second pulse generator for connecting said first and second electrodes to said positive and negative outputs of said second pulse generator to define a second set of electrode polarities different from said first set of electrode polarities.

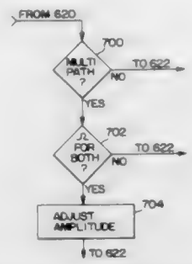
5,344,430

METHOD AND APPARATUS FOR TERMINATION OF VENTRICULAR TACHYCARDIA AND VENTRICULAR FIBRILLATION

Gary L. Berg, Edina; Martin A. Rossing, Ramsey; David K. Peterson, Mounds View, and Robert A. Neumann, Blaine, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 795,211, Nov. 20, 1991, Pat. No. 5,224,475. This application Apr. 8, 1993, Ser. No. 44,516
Int. Cl.[5] A61N *1/39*
U.S. Cl. 607—8 21 Claims

15. Apparatus for cardioverting or defibrillating a heart, comprising:
three or more electrodes located relative to said heart to define at least two pulse pathways;
means for determining the relative impedances along said at least two pulse pathways;
means for deriving the relative electrical energy levels of pulses to be delivered for each of said pathways, as a function of said determined impedances;
means for detecting a tachyarrhythmia; and



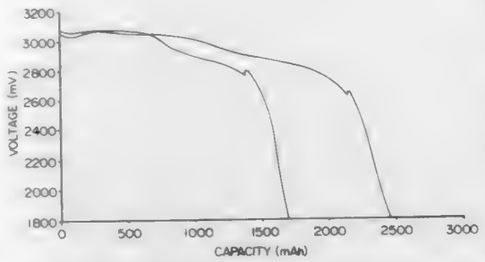
means responsive to detecting said tachyarrhythmia, for delivering pulses along said at least two pathways at said derived energy levels.

5,344,431

METHOD AND APPARATUS FOR DETERMINATION OF END-OF-SERVICE FOR IMPLANTABLE DEVICES

Donald R. Merritt, Brooklyn Center; William G. Howard, St. Paul; Paul M. Skarstad; Douglas J. Weiss, both of Plymouth; Paul B. Wyborny, Coon Rapids; Glenn M. Roline, Anoka; Lucy M. Nichols, Maple Grove, and David L. Thompson, Fridley, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 896,641, Jun. 10, 1992, which is a continuation-in-part of Ser. No. 765,475, Sep. 25, 1991, Pat. No. 5,127,404, which is a continuation of Ser. No. 468,407, Jan. 22, 1990, abandoned. This application Sep. 14, 1992, Ser. No. 944,872
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—29 10 Claims



1. A medical device having battery end-of-service indication comprising:
(a) an implantable housing;
(b) a medical device within said implantable housing,
(c) a cathode-limited electrochemical cell having an active metal anode and a manganese dioxide cathode within the housing;
(d) analog voltage measurement means within the housing for measuring a voltage of the electrochemical cell;
(e) analog-to-digital conversion means within the housing for converting the measured analog voltage into a digital signal; and
(f) telemetry means within the housing for telemetry of the digital signal.

5,344,432

IMPLANTABLE MEDICAL DEVICE AND METHOD FOR THE MANUFACTURE THEREOF

Bruno Slettenmark, Jaerfaella; Hans Strandberg, Sundyberg, and Paul Brand, Boelsta, all of Sweden, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 20, 1992, Ser. No. 932,771
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1991, 4127533
Int. Cl.[5] A61N *5/00*
U.S. Cl. 607—36 2 Claims

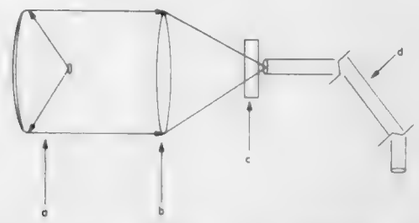
1. An implantable defibrillator comprising:
a welded capsule housing having a sealed interior;
a plurality of electronic components in said housing forming means for generating electrical defibrillation signals for administration to a patient; and
a gas mixture in said interior composed of helium and an inert gas component, said inert gas component being selected from the group consisting of nitrogen, sulfur hexafluoride, carbon dioxide, atmospheric air, oxygen and halogenated hydrocarbons for electrically insulating said electronic components.

5,344,433

APPARATUS FOR THE TREATMENT OF SKIN WOUNDS

Eli Talmore, 15/5 Eliezer Alter Street, Ramat Alon, Haifa, Israel, assignor to Dimotech Ltd. and Eli Talmore, Israel

Filed Nov. 12, 1992, Ser. No. 974,916
Claims priority, application Israel, Nov. 28, 1991, 100181
Int. Cl.[5] A61N *5/06*
U.S. Cl. 607—88 2 Claims



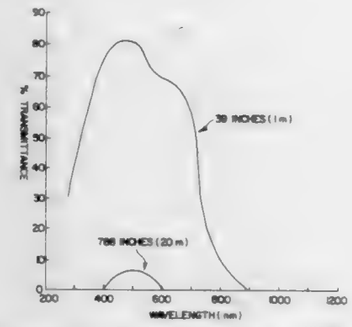
1. An ambulatory apparatus for the treatment of psoriasis skin wounds which comprises:
a lamp possessing a narrow beam light with a high intensity for emitting ultraviolet and infro-red rays to the skin to be treated;
a glass lens which receives the rays, and focuses the beam of the light, said glass leans completely removing residual radiation in the range of 300 to 330 nm;
a black filter for receiving and filtering said focused rays having a transmittance of about 0.5 in the UVA and substantially a zero transmittance from 370 nm up to 750 nm; and
a liquid light guide having a diameter in the range of between 2 to 10 nm for receiving said filtered rays, and directing said filtered rays toward an area to be treated said liquid light guide providing at least 70% transmittance in UVA and substantially zero transmittance above 750 nm.

5,344,434

APPARATUS FOR THE PHOTODYNAMIC THERAPY TREATMENT

Eli T. Talmore, Ramat-Alon, Israel, assignor to Technion Research & Development Foundation, Ltd., Israel

Filed Dec. 21, 1992, Ser. No. 994,619
Claims priority, application Israel, Dec. 29, 1991, 100,545
Int. Cl.[5] A61N *5/00*
U.S. Cl. 607—88 11 Claims



1. An apparatus for an efficient photodynamic therapy treatment which comprises:
a lamp emitting a narrow beam light with half angle divergence up to 10°, said beam possessing an intensity of a least 2 mW/nm with a spectral region in the range of 610–750 nm;
a glass lens to focus the beam of the light;
a red filter interposed between said lamp and a light guide, said red filter providing a spectral region of above 610 nm from said beam of the light, and
said light guide having a diameter in the range of 3 to 12 mm, which provides a minimum irradiance of 50 mW/cm^2.

5,344,435

URETHRAL INSERTED APPLICATOR PROSTATE HYPERTHERMIA

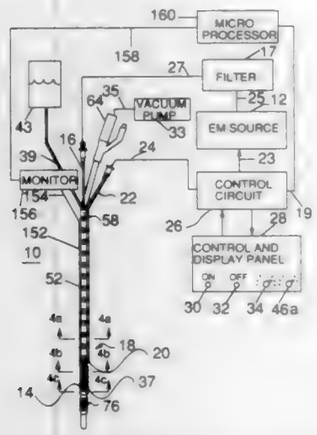
Paul F. Turner; Theron N. Schaefermeyer, both of North Salt Lake; Amer M. Tumeh, Salt Lake City, and Philip A. Terry, Salt Lake County, all of Utah, assignors to BSD Medical Corporation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 225,307, Jul. 28, 1988, Pat. No. 4,967,765. This application Nov. 5, 1990, Ser. No. 609,372
Int. Cl.[5] A61N *5/02*
U.S. Cl. 607—101 20 Claims

1. An energy radiation applicator apparatus for treatment of benign hyperplasia, comprising:
a catheter means for insertion into and through a urethra of a body needing treatment so an end of the catheter means extends into the bladder of the body, said catheter means including a urine drainage passage extending through the catheter means for draining urine from the bladder;
applicator means carried by the catheter means, said applicator means including an applicator and a connector means for connecting the applicator to a source of energy sufficient to elevate the temperature of tissue to be treated to a preselected temperature and for maintaining the preselected temperature during treatment;
fluid receiving means surrounding the applicator so as to be positioned between the applicator and the tissue to be heated;
a cooling fluid inlet passage extending through the catheter means to communicate with the fluid receiving means through a fluid inlet;
a cooling fluid outlet passage opening into the urine drainage passage and communicating with the fluid receiving means through a fluid outlet, both the fluid inlet passage and the urine drainage passage opening from the catheter

means outside the body when the catheter means is inserted into the urethra;

means for supplying cooling fluid to the fluid inlet passage during heating of the tissue; and



positioning means for positioning and maintaining the positioning of the catheter means in the urethra so that the applicator means attached to the catheter means is and remains positioned adjacent to prostate tissue to be treated for as long as desired by the user.

5,344,436

LOCALIZED HEAT TRANSFER DEVICE

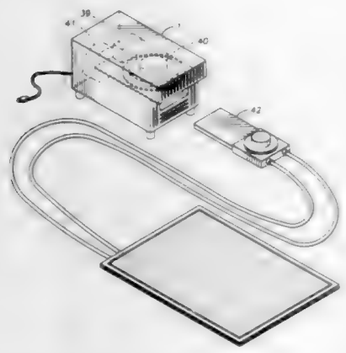
Mark G. Fontenot, New Orleans, La., and Thomas G. Miller, Houston, Tex., assignors to Lake Shore Medical Development Partners, Ltd., Houston, Tex.

Continuation-in-part of Ser. No. 462,495, Jan. 8, 1990, Pat. No. 5,174,285. This application Mar. 16, 1992, Ser. No. 852,431

The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.

Int. Cl.[5] A61F *7/00*

U.S. Cl. 607—104 **38 Claims**



1. A device for effecting heat transfer to or from a selected region of a body, comprising:

(a) a housing having a rotary driver and a heat exchanger operably mounted therein;

(b) an applicator module which includes;

(i) a pad defining a flow passage therein;

(ii) a conduit joined in fluid communicating relationship to the pad so as to enable circulation of a fluid through the flow passage of the pad and the conduit; and

(iii) a cassette joined in fluid communicating relationship to the conduit, the cassette having a heat exchange element, which interfaces with the heat exchanger in such manner as to enable selective transfer of heat to or from the heat exchanger to or from a fluid within the cassette, and an impeller for operably interfacing with the rotary driver in such manner as to pump fluid through the applicator module.

5,344,437

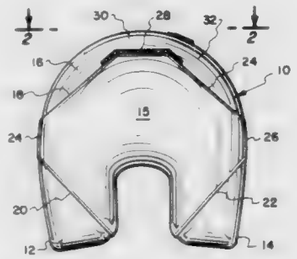
MASSAGING THERAPEUTIC PILLOW WITH REMOVABLE ICE PACK

George R. Pistay, Los Angeles, Calif., assignor to Sub I.P., Inc., Glendale, Calif.

Filed May 10, 1993, Ser. No. 59,409

Int. Cl.[5] A61F *7/00*

U.S. Cl. 607—109 **6 Claims**



1. A therapy pillow for treating headaches comprising;

a U-shaped cushioned pillow fitted with a soft resilient material, said U-shaped cushioned pillow having a head end and a pair of extensions for fitting around the neck of a person undergoing treatment;

pocket means formed on at least one side of said pillow and extending to near the end of said extensions; said pocket means being constructed to receive a removable cooling or heating insert;

said pocket means being constructed to provide intimate contact over a substantial portion of the occupational region of a human head resting on said U-shaped cushioned pillow with said extension fitted around the neck;

said pocket means having an opening at said head end of said U-shaped cushioned pillow for removably inserting said cooling or heating insert;

closure means for closing and securing said pocket means to secure said cooling or heating insert in said pocket means;

a cavity formed in said head end of said U-shaped cushioned pillow;

vibrating means inserted into said cavity in said head end of said U-shaped cushioned pillow;

activating means for activation of said vibration means from outside said U-shaped cushioned pillow for massaging a posterior portion of a head resting on said head end of said U-shaped cushioned pillow with said vibrating means;

whereby said U-shaped cushioned pillow can massage, heat or cool together, or independently for effective treatment of headaches.

5,344,438

CUFF ELECTRODE

Roy L. Testerman, New Hope, and Ralph W. Bierbaum, Coon Rapids, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 16, 1993, Ser. No. 48,591

Int. Cl.[5] A61N *1/05*

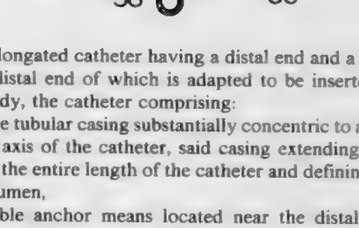
U.S. Cl. 607—118 **17 Claims**

1. An electrode apparatus for mounting on a nerve comprising:

(a) a hollow, semi-cylindrical body of nonconductive material having an open, U-shaped cross section sized in both width and depth to seat the entire diameter of the nerve therewithin with an interior base portion of the U-shaped cross section adapted to fit closely about a selected portion of the circumference of the nerve;

(b) a conductive material mounted on the interior base portion of the body and adapted for contact with the nerve;

(c) a lead wire in electrical contact with the conductive material; and



(d) means for securing the electrode apparatus in contact with the selected portion of the nerve by placing the nerve within the U-shaped cross section of the body and applying to at least one leg of the U-shaped body a biasing force sufficient to retain the nerve within the body base portion without causing the U-shaped cross section to close around the nerve.

5,344,439

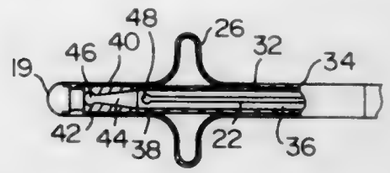
CATHETER WITH RETRACTABLE ANCHOR MECHANISM

Lynn M. Otten, Blaine, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 30, 1992, Ser. No. 969,600

Int. Cl.[5] A61N *1/05*

U.S. Cl. 607—126 **12 Claims**



1. An elongated catheter having a distal end and a proximal end, the distal end of which is adapted to be inserted into a human body, the catheter comprising:

a flexible tubular casing substantially concentric to a longitudinal axis of the catheter, said casing extending substantially the entire length of the catheter and defining at least one lumen,

retractable anchor means located near the distal end for stabilizing the position of the catheter within the body, said anchor means comprising a portion of said flexible tubular casing and being moveable from a first extended position to a second retracted position,

a stylet for insertion in said at least one lumen of the catheter, said stylet having an enlarged tip of predetermined shaped at a distal end, there of and

capture means connected to said anchor means for releasably receiving the enlarged tip of said stylet, such that said anchor means is moved from the first extended position to the second retracted position by inserting said stylet and applying pressure in a distal direction and is moved from the second retracted position to the first extended position by applying pressure in a proximal direction.

5,344,440

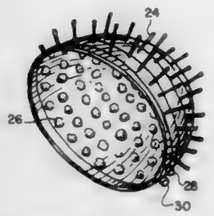
METHOD AND APPARATUS FOR STIMULATING GROWTH AND HEALING OF LIVING TISSUES

Richard L. Stephen, 3717 Wild Bird Cir., Dayton, Ohio 45430

Continuation-in-part of Ser. No. 616,543, Nov. 21, 1990, abandoned. This application Nov. 10, 1992, Ser. No. 974,098

Int. Cl.[5] A61N *1/04, 1/18*

U.S. Cl. 607—139 **16 Claims**



1. Apparatus for electrical stimulation of a human scalp, comprising:

a. an oval shaped hood adapted to fit on a human head to be treated;

b. said hood being provided with a multiplicity of spaced holes for receiving electrode sockets therein;

c. electrode sockets situated in at least some of the spaced holes;

d. probe means associated with and moveable within each socket for adjustably and independently contacting the epidermis of a human head within said hood;

e. a source of low voltage, low frequency power; and

f. electrical connections communicating with said power source and each said probe means.

5,344,441

ANTENNA ARRANGEMENT WITH SUPPLY CABLE FOR MEDICAL APPLICATIONS

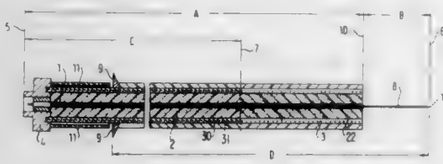
Volker Gronauer, Römerbrunnenweg 38, 8832 Weissenburg, Fed. Rep. of Germany

Continuation of Ser. No. 908,705, Jul. 2, 1992. This application Sep. 27, 1993, Ser. No. 127,109

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1991, 4122050

Int. Cl.[5] A61N *5/02*

U.S. Cl. 607—156 **13 Claims**



1. An antenna arrangement with a supply line in the form of a coaxial cable arrangement suitable for high frequencies, for medical applications requiring heat in hollow parts of a patient's body comprising:

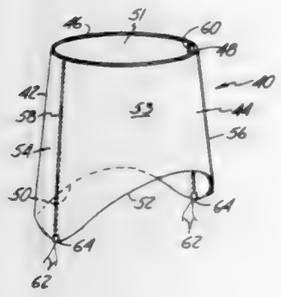
(a) a continuous inner conductor identified by three sections wherein a first section is a distal region relative to a user treating a patient and serves as a transmitting antenna, a second section is a proximal region relative to a user treating a patient, and a third section is an intermediate region located between the distal and proximal regions;

(b) an insulator arranged cylindrically around the inner conductor covering the proximal and intermediate regions but does not extend to the distal region which serves as the transmitting antenna; and

(c) a shielding device applied around the insulator which covers the proximal and intermediate regions, in which the shielding device is selected from the group consisting

of knitted metal wire, wrapped metal wire and metal foil and further wherein the shielding device in the proximal region has gaps interspersed within the shielding device which are filled with a conductive reinforcing material which becomes rigid after application.

5,344,442
CARDIAC VALVE
Radu Deac, Swarthmore, Pa., assignor to Mures Cardiovasular Research, Inc., North Oaks, Minn.
Continuation-in-part of Ser. No. 701,099, May 16, 1991, abandoned. This application May 15, 1992, Ser. No. 884,427
Int. Cl.[5] A61F *2/24, 2/76*
U.S. Cl. 623—2 **18 Claims**

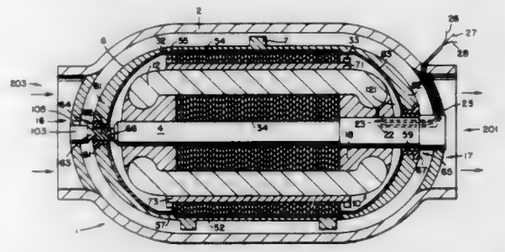


1. A cardiac valve comprising a plurality of flexible membranes, each membrane having edges and first and second ends, strengthening means joining the edges of adjacent ones of said membranes to form an unsupported body, said first ends together forming an oval end of said body, and said second ends forming a plurality of free apical ends of said body, each apical end being integral to the body and having a length to permit direct attachment to papillary muscles of a recipient, said body having a pair of oppositely-disposed flexible flaps integral with and extending from said oval end and between the apical ends and arranged to coapt during systole to close the valve and to separate during diastole to open the valve, said strengthening means extending between each apical end and the oval end to support force between the papillary muscles and the oval end.

5,344,443
HEART PUMP
Rodolfo Palma, Troy, and William H. Miller, Loudonville, both of N.Y., assignors to REM Technologies, Inc., Schenectady, N.Y.
Filed Sep. 17, 1992, Ser. No. 946,381
Int. Cl.[5] A61M *1/10;* **A61N** *1/362*
U.S. Cl. 623—3 **22 Claims**

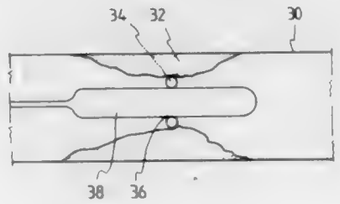
1. A heart pump comprising:

a housing defining a central longitudinal axis therethrough, said housing having an inlet means and outlet means;
a stationary shaft extending axially within the housing;
means for supporting the shaft centrally within the housing;
a stator assembly mounted about the stationary shaft;
a shell assembly rotatable about the stator assembly and stationary shaft, said shell assembly being located between the housing and stator assembly and comprising means for pumping blood through the housing in an area between the housing and shell assembly; and



means for generating a magnetic field using multi-phase current to rotate the shell assembly.

5,344,444
EXPANDABLE RING, CYLINDER OR SLEEVE WHICH CAN BE MADE NON-DEFORMABLE
Hendrik Glastra, Enschede, Netherlands, assignor to Industrial Research B.V., Netherlands
Filed Jul. 2, 1992, Ser. No. 909,051
Claims priority, application Netherlands, Jul. 3, 1991, 9101159
Int. Cl.[5] A61F *2/06*
U.S. Cl. 623—1 **11 Claims**



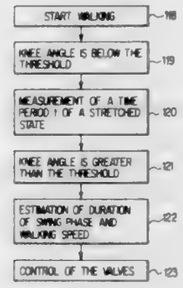
1. A device for locally supporting and strengthening a body vessel, comprising:

a hollow, expandable stent to be positioned in the body vessel, the stent containing curable material; and
a light conducting fiber to be inserted into the body vessel for transmitting radiation from an outside source to the curable material, wherein, when the material is irradiated with a suitable wavelength, curing is started or accelerated and the material is cured, such that the stent retains a desired shape in the body vessel.

5,344,445

Patent Not Issued For This Number

5,344,446
TEACHING PLAYBACK SWING-PHASE CONTROLLED ABOVE-KNEE PROSTHESIS
Seishi Sawamura, Kobe; Sakuya Nakajima, Nishinomiya; Kunio Amemori, Kobe; Hidehisa Oku, Akashi; Akio Nakagawa, Itami; Ichiro Kitayama, Kobe; Hiromu Matsuda, Akashi; Katsuhiko Yoshida, Takasago; Masaru Takeda, Kobe; Toshio Nakane, Akashi; Shiro Horiguchi, Hyogo, and Shigeru Yuki, Nishinomiya, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho and Hyogo-ken Shakaifukushijigyodan, both of Kobe, Japan
Division of Ser. No. 709,290, Jun. 3, 1991, Pat. No. 5,133,774, which is a division of Ser. No. 327,894, Mar. 23, 1989, Pat. No. 5,062,856. This application Apr. 13, 1992, Ser. No. 867,505
Claims priority, application Japan, Mar. 25, 1988, 63-72943; Mar. 25, 1988, 63-72944; Mar. 25, 1988, 63-72945
The portion of the term of this patent subsequent to Nov. 5, 2008, has been disclaimed.
Int. Cl.[5] A61F *2/64, 2/70, 2/74*
U.S. Cl. 623—24 **11 Claims**

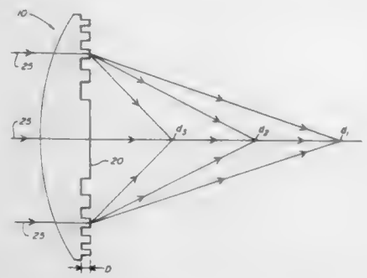


1. A teaching playback swing-phase-controlled above-knee prosthesis adapted for mounting to a thigh of a wearer, comprising:

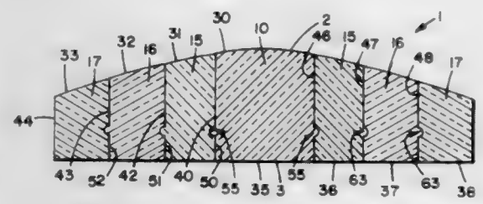
a thigh frame;
a leg frame pivotally joined to the thigh frame via at least one knee joint pin,
a cylinder interconnecting the thigh and leg frames;
phase detecting means for detecting at least one of swing phases and stance phases of walking in a teaching mode and a playback mode;
opening storage means configured to store a plurality of degrees of opening of an air valve of the cylinder set respectively for a plurality of walking speeds in response to the phase detecting means in the teaching mode;
walking speed determining means for determining an actual walking speed during the playback mode on the basis of the lengths of at least one of said swing phases and stance phases detected by the phase detecting means; and
control means responsive to the walking speed determining means for selecting one of the stored degrees of opening of the air valve of the cylinder during the playback mode.

5,344,447
DIFFRACTIVE TRIFOCAL INTRA-OCULAR LENS DESIGN
Gary J. Swanson, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Miss.
Filed Nov. 12, 1992, Ser. No. 975,511
Int. Cl.[5] A61F *2/16;* **G02C** *7/04*
U.S. Cl. 623—6 **4 Claims**

1. An intraocular optical lens comprising a refractive component on an anterior surface of the lens, and a completely transparent diffractive component on a posterior surface of the lens, and a generally anterior-posterior optical axis, the diffractive component having a zero order, a negative first order, and a positive first order, the refractive component combined with the positive first order of the diffractive component adapted to focus the incident light on the lens for near vision, the refractive component adapted to focus the incident light on the lens for mid-range vision, and the refractive component combined with the negative first order of the diffractive component adapted to focus the incident light on the lens for far vision.



5,344,448
MULTI-FOCAL INTRA-OCULAR IMPLANT
Richard T. Schneider, 17 Alachua Highlands, Alachua, Fla. 32615, and Richard H. Keates, 613 Nyes Pl., Laguna Beach, Calif. 92615
Continuation of Ser. No. 833,775, Feb. 11, 1992, abandoned. This application Mar. 9, 1993, Ser. No. 28,630
Int. Cl.[5] A61F *2/16*
U.S. Cl. 623—6 **11 Claims**



1. An intra-ocular lens adapted for use as an artificial lens implant, said intra-ocular lens comprising:

a) a lens body including a first inner lens portion having an outer periphery and a second outer lens portion having an inner periphery defining an aperture for receiving said first inner lens portion, said inner periphery of said second lens portion surrounding said outer periphery of said first lens portion:
i) said first lens portion having an outer lens surface and an inner lens surface, said outer periphery of said first lens being defined by a cylindrical surface, having a height positioned between said outer lens surface and said inner lens surface of said first lens
ii) said second lens portion having an outer lens surface said inner periphery of and an inner lens surface, said second lens portion being defined by a cylindrical surface having a height positioned between said outer lens surface and said inner lens surface of said second lens portion;
b) engagement means including a lateral projection portion and a projection-receiving portion for releasably securing said first lens portion to said second lens portion, said lateral projection portion extending from one of said first lens portion or said second lens portion, said projection receiving portion defined by the other of said first lens portion or said second lens portion, wherein said outer lens surface of said first lens portion is adjacent to said outer lens surface of said second lens portion in non-overlapping relationship, wherein said inner lens surface of said first lens portion is adjacent to said inner lens surface

of said second lens portion in non-overlapping relation, and wherein said cylindrical surface of said first lens portion is immediately adjacent to and facing said cylindrical surface of said second lens portion and wherein the heights of the two cylindrical surfaces are each substantially greater than a maximum dimension of the projection-receiving portion and of the lateral projection portion between the inner and outer lens surfaces of the first and second lens portions; said intraocular lens having first and second optical powers, said first optical power of said lens from said first lens portion and said second optical power of said lens from said second lens portion; and

c) means for substantially non-movably retaining said lens implant within a chamber of a user's eye.

5,344,449

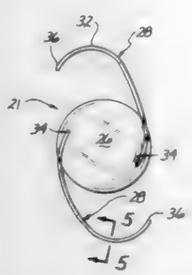
INTRAOCULAR LENSES, FIXATION MEMBER ASSEMBLIES AND METHODS FOR MAKING SAME

F. Richard Christ, Laguna Beach; James E. Francese, Anaheim, and Bernard F. Grisoni, Aliso Viejo, all of Calif., assignors to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 824,556, Jan. 23, 1993, Pat. No. 5,262,097, which is a continuation-in-part of Ser. No. 547,859, Jul. 3, 1990, Pat. No. 5,147,397. This application Jul. 6, 1993, Ser. No. 88,066

Int. Cl.[5] A61F *2/16*

U.S. Cl. 623—6 **20 Claims**



1. A method of producing a fixation member assembly to be bonded to an optic of in an intraocular lens comprising:

exposing a lens bonding region of a fixation member component, which lens bonding region is to be bonded to the optic of the intraocular lens, to a plasma in the presence of at least one material selected from the group consisting of polymeric components, polymerizable components and mixtures thereof at conditions effective to form a polymeric coating located on said lens bonding region, the bondability between said lens bonding region with said polymeric coating located thereon and the optic of the intraocular lens of which it is to be a component is enhanced relative to a substantially identical lens bonding region which is not exposed to any plasma.

5,344,450

REPAIR KIT FOR EXTERNALLY WORN SILICONE BREAST PROSTHESIS

Nancy L. Flanders, P.O. Box 45, Cold River Rd., North Clarendon, Vt. 05759

Continuation of Ser. No. 814,812, Dec. 31, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 51,231

Int. Cl.[5] A61F *2/52*

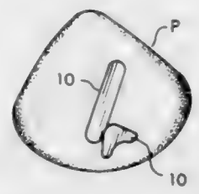
U.S. Cl. 623—7 **6 Claims**

1. A kit for repairing an externally worn breast prosthesis, comprising:

an externally worn breast prosthesis, and;

a plurality of differently configured repair tapes being formed of liquid impermeable material and including an outer surface closely approximating the flesh color, shading and texture of said externally worn breast prosthesis and an inner surface having an adhesive coating providing for the adhesive application of said repair tapes to said externally worn breast prosthesis to effect the repairs thereof, whereby

a user of said externally worn breast prosthesis may make emergency repairs to said externally worn breast prosthesis, thereby substantially concealing the damage to said



externally worn breast prosthesis with said one of said repair tapes substantially blending and conforming with said flesh color, shading and texture of said externally worn breast prosthesis when damage occurs thereto, without resorting to unsightly tapes, the kit being readily transportable by the user.

5,344,451

SYNTHETIC RECONSTRUCTIVE IMPLANT DEVICE

Michael P. Dayton, 14802 Hadleigh Way, Tampa, Fla. 33624

Continuation of Ser. No. 903,502, Jun. 24, 1992, abandoned. This application May 5, 1993, Ser. No. 59,178

Int. Cl.[5] A61F *2/12*

U.S. Cl. 23—8 **3 Claims**

1. A synthetic reconstructive surgical breast implant device suitable for implanting as a breast implant in contact with tissue in a human comprising:

a sealed envelope having a surface exposed for direct contact with said tissue, said envelope having a predetermined shape when filled, said enveloped being formed from an elastic polymer having a microporous structure of a selected pore size;

a biocompatible viscoelastic material filling said envelope in an amount sufficient to provide said predetermined shape, said biocompatible viscoelastic material being a sterile, non-pyrogenic solution selected from the group consisting of salt of chondroitin sulfate, salts of hyaluronate, polysaccharide, hydroxypropylmethylcellulose and mixtures of at least two of this group; and

a bioactive substance admixed in said polymer for elution from said microporous structure of said envelope after implantation and contact of said surface with tissue in a human, and having a concentration and molecular weight selected to achieve a desired equilibrium between said envelope surface and said tissue proximate said envelope upon implant to control said elution of said bioactive substance.

5,344,452

ALLOPLASTIC IMPLANT

Martin Lemperle, Röderbergweg 43, D-6000 Frankfurt 1, Fed. Rep. of Germany

PCT No. PCT/EP89/01508, § 371 Date Aug. 6, 1990, § 102(e) Date Aug. 6, 1990, PCT Pub. No. WO90/06093, PCT Pub. Date Jun. 14, 1990

PCT Filed Dec. 8, 1989, Ser. No. 572,975

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1988, 3841401

Int. Cl.[5] A61F *2/02*

U.S. Cl. 623—11 **15 Claims**

1. In an alloplastic implant including a histocompatible solid, the improvement comprising said solid being in a powder form and composed of loose solid particles, at least substantially entirely all of said particles each having a smooth surface free from corners and edges, wherein said particles are introduced into the body as loose particles and remain as loose particles to form substantially the entire said implant and wherein said solid particles have a diameter such that they cannot be washed away via lymph tracts or other tissue tracts from the implantation site.

5,344,453

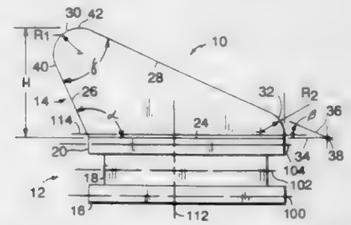
THYROPLASTY IMPLANT

William W. Montgomery, Chestnut Hill, and Stuart K. Montgomery, Needham, both of Mass., assignors to Boston Medical Products, Inc., Waltham, Mass.

Filed May 30, 1991, Ser. No. 707,704

Int. Cl.[5] A61F *2/02, 2/20*

U.S. Cl. 623—11 **5 Claims**



1. A thyroplasty implant for anchoring in a window cut through a thyroid lamina and causing medial displacement of a vocal cord comprising

a tiered base having a bottom tier, a middle tier, and an upper tier, said bottom tier and said upper tier being larger in area than said middle tier so as to facilitate anchoring of said base in a said window that is shaped to receive said middle tier therein and has an area that is less than the areas of said bottom and upper tiers, said middle tier being smaller in thickness along an axis from said bottom tier to said upper tier than its size along a perpendicular axis, said bottom tier, middle tier, and upper tier having respective lengths and widths that are aligned, and

a projecting member extending from said upper tier for causing medial displacement of a vocal cord, said projecting member having a length and width at a portion adjacent said base that are aligned with said lengths and widths of said bottom tier, middle tier, and upper tier,

said base and said projecting member being made of biocompatible material.

5,344,454

CLOSED POROUS CHAMBERS FOR IMPLANTING TISSUE IN A HOST

Robert A Clarke, Libertyville; Robin G. Pauley, Ingleside; Ronald S. Hill, Grayslake; James H. Brauker, Harvard; Shmuel Sternberg, Northbrook, and Daniel R. Boggs, Libertyville, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 735,401, Jul. 24, 1991, abandoned, and Ser. No. 957,742, Oct. 7, 1992, which is a continuation of Ser. No. 737,632, Jul. 30, 1991, abandoned. This application Apr. 1, 1992, Ser. No. 861,952

Int. Cl.[5] A61F *2/02, 2/54, 13/00;* **A61K** *9/22*

U.S. Cl. 623—11 **2 Claims**

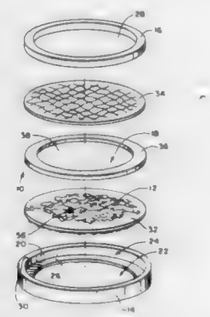
1. A chamber for implanting in host tissue comprising

a first housing member having an interior region,

a first and second wall element, each having a peripheral edge, carried within the interior region of the first housing member,

a sealing element having a body peripherally surrounding an open area, the sealing element being located within the interior region between the first and second wall elements with the sealing element body sandwiched between the peripheral edges of the first and second wall elements and the first and second wall elements jointly overlying the open area of the sealing member to form a chamber for holding implanted cells,

a second housing member that nests within the interior region of the first housing member and bears against the peripheral edges of the wall elements and the sealing element body to created a sealed region that closes the chamber, and



both the first and second wall elements together with the sealed region being sufficiently impermeable to isolate the implanted cells within the chamber from the immune response of the host tissue, at least one of the first and second wall elements being sufficiently permeable to nutrients for transferring the nutrients from host tissue through the at least one element to the implanted cells within the chamber.

5,344,455

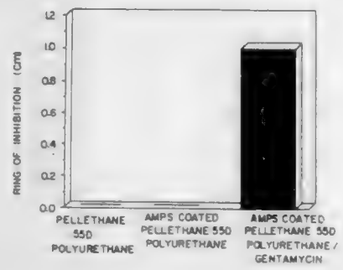
GRAFT POLYMER ARTICLES HAVING BIOACTIVE SURFACES

James R. Keogh, Maplewood; Christopher M. Hobot, Tonka Bay, both of Minn.; John W. Eaton, Troy, N.Y.; Allan H. Jevne, Anoka, and Matthew A. Bergan, Brooklyn Park, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 30, 1992, Ser. No. 969,692

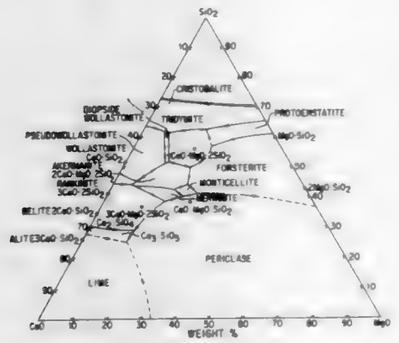
Int. Cl.[5] A61F *2/02*

U.S. Cl. 623—11 **8 Claims**



1. An article for use in contact with blood or blood products, the article including at least one biocompatible polymeric surface for contacting blood or blood products, the polymeric surface having thereon a first layer and a second layer, the first layer comprising a graft co-polymer grafted onto the polymeric surface by co-polymerizing a first vinyl monomer selected from the group consisting of 2-acrylamido-2-methylpropane sulfonic acid, acrylamide, acrylic acid, and 2-hydroxyethyl methacrylate with a second vinyl monomer of N-(3-aminopropyl) methacrylamide hydrochloride which provides the graft co-polymer with pendant primary amine groups, the second layer comprising a bioactive agent selected from the group consisting of antibiotics, antimicrobials, anticoagulants and albumin-binding dyes coupled to the graft co-polymer by coupling to its primary amine groups.

5,344,456
MATERIALS FOR LIVING HARD TISSUE REPLACEMENTS
Tohru Nonami, Ichikawa; Hiroyasu Noma, and Shinya Nakajima, both of Narashino, all of Japan, assignors to TDK Corporation, Tokyo, Japan
Continuation of Ser. No. 533,768, Jun. 6, 1990, abandoned. This application Apr. 21, 1992, Ser. No. 872,950
Claims priority, application Japan, Jun. 6, 1989, 1-142058; Mar. 8, 1990, 2-55126; May 23, 1990, 2-131191
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] A61F *2/28, 2/54;* **C09K** *3/00;* **C04B** *35/00*
U.S. Cl. 623—16 **41 Claims**



1. A material for living hard tissue replacement, prepared by a process comprising the steps of:

coating a substrate with a layer of a ceramic material comprising CaO and SiO_2 in a weight ratio of CaO to SiO_2 of between 1:4 and 6:1, said ceramic material being substantially free from calcium phosphate and being selected from the group consisting of diopside, wollastonite, alite, belite, akermanite, monticellite, forsterite, protoenstatite and tridymite; and

contacting said coated substrate with an aqueous solution containing phosphorus to form a calcium phosphate-based compound.

5,344,457
POROUS SURFACED IMPLANT
Robert M. Pilliar; Douglas A. Deporter, both of Toronto, and Phillip A. Watson, Don Mills, all of Canada, assignors to The University of Toronto Innovations Foundation, Ontario, Canada
Continuation of Ser. No. 649,700, Feb. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 517,517, Apr. 26, 1990, abandoned, which is a continuation of Ser. No. 420,689, Oct. 11, 1989, abandoned, which is a continuation of Ser. No. 138,340, Dec. 28, 1987, abandoned, which is a continuation-in-part of Ser. No. 864,805, May 19, 1986, abandoned. This application Feb. 2, 1993, Ser. No. 12,626
Int. Cl.[5] A61F *2/28;* **A61C** *8/00, 13/10*
U.S. Cl. 623—16 **20 Claims**

1. An implant for insertion into bone through an epithelial and fibrous connective tissue layer and useful to connect a prosthesis thereto, the implant comprising:

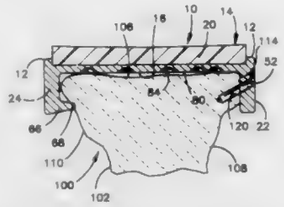
a top portion for supporting a mechanical component to which a prosthesis may be connected; and

a body comprising an upper bone-attachment region tapering at an angle of about 5 degrees to a lower bone-engagement region formed from a material having a porous surface:



wherein said upper bone-attachment region comprises a substantially non-porous surface capable of enhancing bone attachment thereto.

5,344,458
ARTHROPLASTY COMPONENT
Peter M. Bonutti, 1303 W. Evergreen Plz., Effingham, Ill. 62401
Continuation-in-part of Ser. No. 799,560, Nov. 27, 1991. This application Aug. 6, 1992, Ser. No. 926,481
Int. Cl.[5] A61F *2/30, 2/38, 2/28, 2/40*
U.S. Cl. 623—18 **43 Claims**



1. An implant for affixation to a first bone part having an outer end surface and an outer side surface, said implant being engageable by a second part, said implant comprising:

a tray for overlying an end surface of the first bone part, said tray having an outer peripheral portion extending along an outer periphery of said tray,

said tray being generally oval-shaped and having first and second straight non-parallel minor sides, a first curved minor side extending between and interconnecting first ends of said first and second straight minor sides, and a second curved minor side extending between and interconnecting second ends of said first and second straight minor sides,

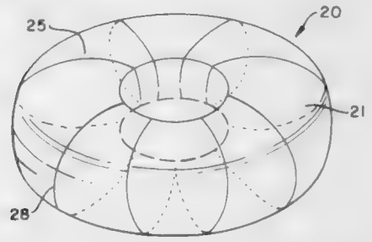
said implant having a first tab extending from said outer peripheral portion of said tray for engaging the outer side surface of the first bone part to block movement of said tray in a first direction along the outer end surface of the first bone part, said first tab being disposed along said first straight minor side of said implant,

said first tab having a major tab portion connected with said outer peripheral portion and extending from said outer peripheral portion in a direction transverse to said tray, said first tab having a hook portion connected with said major tab portion and extending from said major tab portion in a direction transverse to said major tab portion and parallel to said tray at a location spaced from said tray and in facing relationship with said inner major side surface of said tray, said hook portion extending inwardly of said outer peripheral portion of said tray in a direction toward said second straight minor side of said tray,

said implant having a second tab connected with said outer peripheral portion and extending from said outer peripheral portion in a direction transverse to said tray for engaging the outer side surface of the first bone part to block movement of said tray in a second direction along the outer end surface of the first bone part, said second tab being disposed along said second straight minor side of said implant,

said implant having a third tab connected with said outer peripheral portion and extending from said outer peripheral portion in a direction transverse to said tray for engaging the outer side surface of the first bone part to block movement of said tray in a third direction along the outer end surface of the first bone part, said third tab being disposed along said second curved minor side of said implant at a location along the outer peripheral portion of said implant spaced from said first tab and from said second tab.

5,344,459
ARTHROSCOPICALLY IMPLANTABLE PROSTHESIS
Stephen J. Swartz, 603 Harding Rd., Little Silver, N.J. 07739
Continuation of Ser. No. 802,055, Dec. 3, 1991, abandoned. This application Mar. 17, 1993, Ser. No. 32,713
Int. Cl.[5] A61F *2/30*
U.S. Cl. 623—18 **12 Claims**



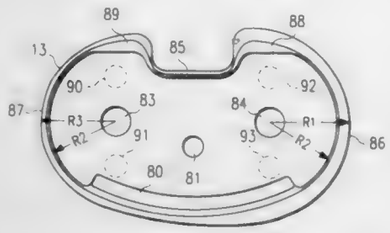
1. An arthroscopically implantable prosthetic device for implantation into an angulating mammalian joint, said device being comprised of a collapsed expandable member, comprising means for the arthroscopic implantation thereof, said collapsed expandable member having valve means, adapted to permit the expansion of said member, by connection of the valve means to filling means, while said member is within said joint, whereby, with said expansion, the collapsed expandable member assumes a configuration of at least one annularly-shaped ring, sized and shaped to fit within said joint, and into direct contact with the joint, without said prosthetic device being attached to the joint, said valve means being fully contained within said joint, when disconnected from the filling means; said member being comprised of a polymeric material which is biocompatible to said joint and which allows said angulating joint to flex without substantial irritation, and wherein said ring has sufficient rigidity and free movement to withstand flexing of the joint.

5,344,460
PROSTHESIS SYSTEM
Sandor Turanyi, Red Rock; Robert Jones, Lockhart, and John D. Webb, Jr., Round Rock, all of Tex., assignors to Encore Orthopedics, Inc., Austin, Tex.
Filed Oct. 30, 1992, Ser. No. 969,129
Int. Cl.[5] A61F *2/38, 2/30, 2/28*
U.S. Cl. 623—20 **15 Claims**

1. A bicondylar baseplate for a prosthesis, said baseplate adapted to couple with an insert, said insert having a medial condyle compartment and a lateral condyle compartment configured to articulate with femoral condyles, said baseplate comprising:

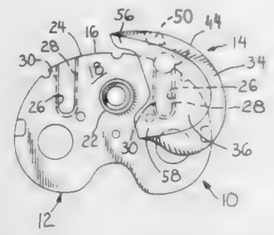
a medial end with a first arcuate outer perimeter having a first radius of curvature;

a lateral end with a second arcuate outer perimeter having a second radius of curvature, said first radius of curvature being greater than said second radius of curvature; and



means adapted for receiving said insert on an upper surface of said baseplate, said means adapted for receiving comprising a recess formed within said baseplate, said recess having arcuate peripheral ledges internally circumscribed on said baseplate, said ledges having equal radii, wherein each compartment of said insert has arcuate outer perimeters of equal radius for positioning in juxtaposition with said arcuate peripheral ledges.

5,344,461
MODULAR IMPLANT PROVISIONAL
Jack W. Phlipot, Warsaw, Ind., assignor to Zimmer, Inc., Warsaw, Ind.
Filed Feb. 12, 1993, Ser. No. 16,915
Int. Cl.[5] A61F *2/38*
U.S. Cl. 623—20 **3 Claims**



1. A provisional tibial component for a knee joint prosthesis having modular augmentation block, the provisional tibial component comprising; a tibial tray having a proximal surface configured for contact with a bearing insert and a distal surface configured for contact with prepared bone surface, the tibial tray including an anterior surface and a posterior surface, a slot being formed in the distal surface extending from the anterior surface to the posterior surface, the slot including angled side walls, a stem portion extending generally transversely away from the distal surface of the tibial tray, the modular augmentation block including a proximal surface configured for contact with the distal surface of the tibial tray, a distal surface configured for contact with a prepared bone, a pair of protrusions extending from the proximal surface of the augmentation block toward the distal surface of the tibial tray and shaped to be slidably engaged within the slot of the tibial tray, the pair of protrusions being spaced apart, the augmentation block further including at least one lateral extension extending along the distal surface of the tibial tray and being configured to contact a prepared surface of an accommodating bone, one of the pair of protrusions constituting means for rotating the augmentation block relative to the tibial tray so that the extension may be positioned posterior to the stem.

5,344,462

GAS PLASMA TREATMENT FOR MODIFICATION OF SURFACE WETTING PROPERTIES

Georgy Z. Paskalov; Svetlana A. Krapivina, and Alexander K. Filippov, all of St. Petersburg, U.S.S.R., assignors to Plasma Plus, Los Angeles, Calif.

Filed Apr. 6, 1992, Ser. No. 864,434
Int. Cl.[5] D06M *10/06, 11/05, 11/34*
U.S. Cl. 8—115.52 **15 Claims**

1. A method of improving the hydrophilic surface properties of polymer films, fabrics of natural and synthetic fibers, flax based fabrics, or cellulose fiber materials comprising: treating said polymer films, fabrics of natural and synthetic fibers, flax based fabrics, or cellulose fiber materials in a low temperature gas plasma comprising an organic gas admixed with water vapor, said water vapor being present at a concentration of between 0.05% and 0.55.

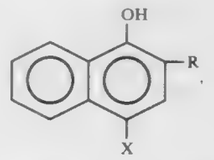
5,344,463

HAIR DYE COMPOSITIONS AND METHODS UTILIZING 2-SUBSTITUTED-1-NAPHTHOL COUPLERS

Alexander Chan, Mineola, N.Y.; Yuh-Guo Pan, Stamford, Conn.; Mu-Ill Lim, Trumbell, Conn., and Richard Demarco, Danbury, Conn., assignors to Clairol, Inc., New York, N.Y.

Filed May 17, 1993, Ser. No. 61,517
Int. Cl.[5] A61K *7/13*
U.S. Cl. 8—408 **14 Claims**

7. In a method for dyeing hair including the steps of activating an oxidation dye precursor, reacting the activated oxidation dye precursor with a coupler to produce a tinctorially effective amount of a hair dye and applying the hair dye to a hair fiber; the improvement which comprises the coupler is a 2-substituted-1-naphthol compound having the formula I



I

or a salt thereof, wherein R is C_1–C_6 alkyl, hydroxy C_1–C_6 alkyl, amino C_1–C_6 alkyl, wherein the amino group is substituted by R^1 and R^2, R^1 and R^2 being independently selected from the group consisting of hydrogen, hydroxy C_1–C_6 alkyl, or R^1 and R^2 taken together with the nitrogen atom to which they are attached forming a 5 or 6 membered saturated ring, or an olefinic group selected from the group consisting of ethylene, propylene and butylene, and X is hydrogen or halogen, whereby said hair fiber is imparted a coloration having increased resistance to shampooing.

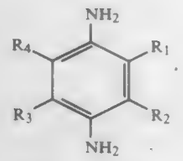
5,344,464

OXIDATION DYE COMPOSITION CONTAINING AT LEAST ONE DOUBLE BASE IN COMBINATION WITH AT LEAST ONE SINGLE BASE AND DYEING PROCESS MAKING USE OF IT

Annie Madrange, Saint-Germain-en-Laye, and Jean Marie Millequant, Saint-Maur, both of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 747,500, Aug. 19, 1991, Pat. No. 5,137,538, which is a continuation of Ser. No. 404,427, Sep. 8, 1989, abandoned. This application Jun. 23, 1992, Ser. No. 903,131
Claims priority, application France, Sep. 8, 1988, 88 11739
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.[5] A01K *7/13*
U.S. Cl. 8—410 **24 Claims**

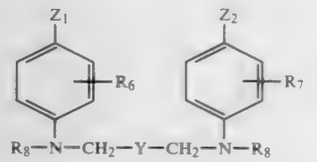
1. Dye composition for dyeing keratinous fibres, comprising:
(a) at least one single base dye precursor selected from the group consisting of para-phenylenediamines of formula (I):



(I)

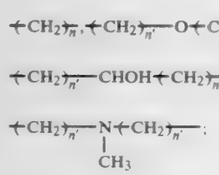
wherein R_1 denotes a halogen atom or a C_1–C_4 alkyl or C_1–C_4 alkoxy radical and R_2, R_3 and R_4, independently of one another, denote a hydrogen atom or a halogen atom or a C_1–C_4 alkyl or C_1–C_4 alkoxy radical, and salts thereof:

(b) at least one double base dye precursor selected from the group consisting of N,N′-diphenylalkylenediamines of the formula (II):



(II)

in which:
Z_1 and Z_2, which are identical or different, denote hydroxyl or NHR_9 groups, in which R_9 denotes a hydrogen atom or an alkyl radical;
R_6 and R_7, which are identical or different, denote hydrogen atoms, halogen atoms or (C_1–C_4) alkyl groups;
R_8 denotes a hydrogen atom, a (C_1–C_4) alkyl, hydroxy (C_2–C_4) alkyl, an aminoalkyl group or an aminoalkyl group in which the amino residue is substituted by a (C_1–C_4) alkyl group; and
Y denotes a radical selected from the group consisting of the following radicals:



in which:
n is an integer between 0 and 8, and
n′ is an integer between 0 and 4, and acid addition salts thereof; and

(c) a suitable carrier, wherein:
the concentration of said single and double base dye precursors is sufficient for dyeing said keratinous fibres;
said single sand double base dye precursors are selected such that the difference between the value of the intensity of the colour on dyed bleached hair (V_B) and the intensity on dyed permanent-waved bleached hair (V_{PB}) is 0 ± 0.5, and value is determined using the Munsell system for specifying color; and
the molar ratio of the single base dye precursors to the double base dye precursors is between 3.5 and 7.

5,344,465

COLORANT MIXTURES CONTAINING AZO COMPOUNDS BASED ON PHENYLOXADIAZOLYLANILINE

Horst Colberg, Ludwigshafen, and Joachim Jesse, Weisenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

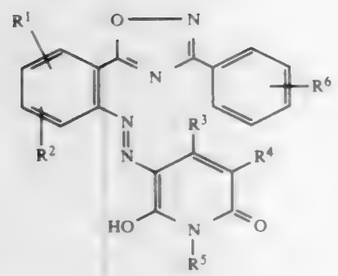
Continuation of Ser. No. 475,205, Feb. 5, 1990, abandoned. This application Mar. 25, 1992, Ser. No. 856,890

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1989, 3906525

Int. Cl.[5] C09B *67/22;* **C09D** *11/02*

U.S. Cl. 8—639 **2 Claims**

1. A colorant mixture containing a pigment of the formula I



(I)

where

R^1 is hydrogen, bromine

R^2 is hydrogen,

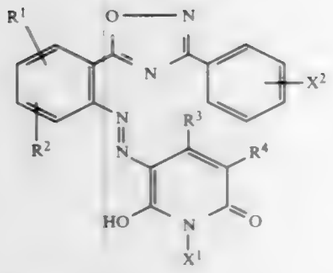
R^3 is methyl,

R^4 is cyano,

R^5 is hydrogen,

R^6 is hydrogen; and

a basic dye of the formula II



(II)

where

R^1, R^2, R^3 and R^4 are each as defined above,

X^1 is

$(CH_2)_3—NH—C_6H_{11}$ or $(CH_2)_3—N(CH_3)_3$ An, $\oplus$ $\ominus$

An $\ominus$ is an anion and

X^2 is hydrogen.

5,344,466

METHOD FOR THE ASSEMBLY OF LEAD-ACID BATTERIES AND ASSOCIATED APPARATUS

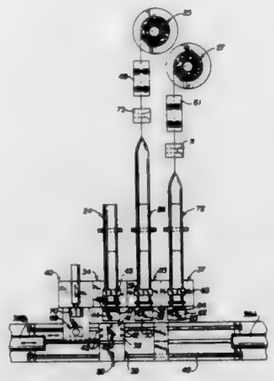
Michael V. Rose, Pittsburgh, and Daniel E. Smith, Erie, both of Pa., assignors to Sealed Energy Systems, Inc., Pittsburgh, Pa.

PCT No. PCT/US91/00195, § 371 Date Jan. 29, 1992, § 102(e) Date Jan. 29, 1992

Continuation-in-part of Ser. No. 546,927, Jul. 2, 1990, Pat. No. 5,025,551, which is a division of Ser. No. 464,104, Jan. 12, 1990, Pat. No. 4,973,335. This PCT application Jan. 9, 1991, Ser. No. 828,907

Int. Cl.[5] H01M *10/12*

U.S. Cl. 29—623.1 **19 Claims**



1. A method of automated manufacture of a leadacid batter cell assembly comprising

providing separators, providing a stack of individual positive battery plates and a stack of individual negative battery plates, providing a cell assembly zone wherein said cell assembly is sequentially established, providing a battery cell container, introducing a first individual positive or negative plate into said assembly zone, introducing a said separator into said cell assembly zone, and positioning said separator in surface-to-surface adjacency with respect to said first plate, introducing a second individual positive or negative plate of a different polarity than the first individual plate into said cell assembly zone, and positioning said second plate generally in surface-to-surface adjacency with respect to said intermediate separator on the opposite side from said first individual plate, automatically inserting said plates and separator into said battery cell container, whereby said assembly may be created by sequential assembly of the individual components without intermediate storage.

5,344,467

ORGANOMETALLIC COMPLEX-ANTIOXIDANT COMBINATIONS, AND CONCENTRATES AND DIESEL FUELS CONTAINING SAME

Nai Z. Huang, Mayfield Hts.; Paul E. Adams, Willoughby Hills; Daniel T. Daly, Shaker Hts.; Scott T. Jolley, Mentor; Frederick W. Koch, Willoughby Hills; Christopher J. Kolp, Euclid; Stephen H. Stoldt, Concord Township, Lake County; Reed H. Walsh, Mentor, and Richard A. Denis, Auburn Township, Cuyahoga County, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed May 13, 1991, Ser. No. 699,423

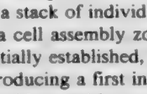
Int. Cl.[5] C10L *1/30*

U.S. Cl. 44—358 **80 Claims**

1. A composition for use in a diesel fuel wherein the diesel fuel is used to operate a diesel engine equipped with an exhaust system particulate trap, said composition comprising:

(A) at least one organometallic complex, said complex being derived from components (i) and (ii),

component (i) comprising at least one organic compound containing a hydrocarbon linkage and at least two functional groups, each of said functional groups being independently =X, —XR, —NR_2, —NO_2, =NR, =NXR, =N-R*—XR,



—N=CR_2, —CN or —N=NR,

wherein

X is O or S,

R is H or hydrocarbyl,

R* is hydrocarbylene or hydrocarbylidene,

a is a number ranging from zero to about 10;

said component (i) being other than β-diketone; and

component (ii) comprising at least one metal reactant, the metal in said metal reactant being capable of forming a complex with component (i), said metal being capable of reducing the ignition temperature of exhaust particles collected in said trap, said metal being other than B, Ti, Zr, Mn, Mo, or a rare-earth metal;

said organometallic complex (A) being other than copper dihydrocarbyl thiophosphate, copper dihydrocarbyl dithiophosphate, copper dithiocarbamate, copper sulphonate, copper phenate or copper acetyl acetonate; and

(B) at least one antioxidant; when component (i) is an aromatic Mannich derived from a hydroxyl- and/or thiol-containing amine, said antioxidant is other than a Schiff base or an oxime.

5,344,468

ORGANIC PHOSPHATES AND THEIR USE AS WEAR INHIBITORS

J. Vincent Hanlon, St. Louis, Mo.; John G. Bostick, Smithton, Ill., and Charles H. Kolich, Baton Rouge, La., assignors to Ethyl Petroleum Additives, Inc., Richmond, Va.

Continuation of Ser. No. 715,674, Jun. 14, 1991, abandoned. This application Sep. 23, 1992, Ser. No. 949,734

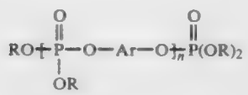
Int. Cl.[5] C10L *1/26*

U.S. Cl. 44—379 **24 Claims**

1. A middle distillate engine fuel composition, which composition comprises a major proportion of a hydrocarbonaceous middle distillate fuel and a minor wear-inhibiting amount of a combination of (i) at least one oil-soluble aryl phosphate of the formula

$(RO)_3PO$

wherein each R is, independently, phenyl or an alkyl-substituted phenyl group; and (ii) at least one oil-soluble aryl pholyphosphate of the formula



wherein each R is, independently, phenyl or an alkyl-substituted phenyl group, Ar is m-phenylene or an alkyl-substituted m-phenylene group, and n is a whole or fractional number from 1 to 4; said combination containing from 2 to 30% by weight of component.

5,344,469

GASOLINE-BLENDED METHANOL FUEL FOR INTERNAL COMBUSTION ENGINES

Kiyohiro Tachiki, Kanagawa, Japan, assignor to Mitsubishi Oil Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1993, Ser. No. 11,545

Claims priority, application Japan, Jan. 31, 1992, 4-040505

Int. Cl.[5] C10L *1/02, 1/04*

U.S. Cl. 44—451 **3 Claims**

1. A fuel for Otto cycle internal combustion engines, which comprises,

a blend of a gasoline (A) and methanol (B) in a ratio of 10:90 to 30:70 by volume, based on the total volume amount of (A) and (B),

said gasoline (A) is obtained by the steps of, (i) selectively hydrotreating a thermally cracked gasoline obtained by thermally cracking petroleum hydrocarbons, (ii) subsequently distilling the thermally cracked gasoline to divide said cracked gasoline into three fractions (1), (2) and (3) which fractions contain hydrocarbons having a carbon number of 5 and less, from 6 to 8, and 9 and more, respectively, and (iii) mixing the two fractions of (1) and (3) either in a ratio which is the same as that in which the two fractions were obtained by the distillation or in a ratio of 50:50 to 90:10 based on the total volume amount of (1) and (3).

5,344,470

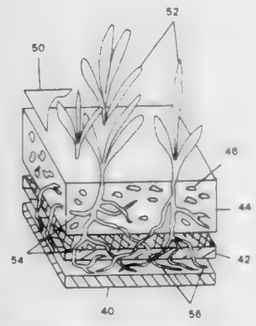
SOD MATS CONSTRUCTED OF STABLE FIBERS AND A DEGRADABLE MATRIX MATERIAL

Charles J. Molnar; Judith R. Molnar, both of 12 Malvern Ct., Wilmington, Del. 19810, and William H. Mitchell, Newark, Del., assignors to Charles J. Molnar and Judith R. Molnar, both of Wilmington, Del.

Filed Jul. 21, 1993, Ser. No. 95,651

Int. Cl.[5] A01C *1/04;* **A01G** *7/00;* **A01B** *79/00*

U.S. Cl. 47—58 **35 Claims**



1. A new plant sod mat comprising:

a) a sod reinforcement wherein said sod reinforcement is comprised of a coherent sheet of stable fibers and degradable or degraded matrix material and;

b) a layer of planting medium on said sod reinforcement and;

c) containing viable plants growing in said planting medium and whose roots penetrate and entangle with said sod reinforcement and thus, form a sod mat.

5,344,471

PLANT ROOT COATINGS

Daniel Tusé, Fremont; Leslie A. Hokama, Mountain View; Carrie R. Foss, Sunnyvale, and Jacqueline A. Tefft, Santa Cruz, all of Calif., assignors to SRI International, Menlo Park, Calif.

Continuation-in-part of Ser. No. 271,550, Nov. 15, 1988. This application Nov. 7, 1989, Ser. No. 432,690
Int. Cl.[5] A01H *5/00*
U.S. Cl. 47—58 14 Claims

1. A method for forming a growth promoting polymer coating on the roots of a plant which method comprises rolling the roots of the plant in a powder of dry hydrophilic non-phytotoxic polymer; removing the roots from the powder, and dipping the powder-coated roots into a aqueous suspension of VAM propagules at a concentration effective to promote infection.

5,344,472

METHOD OF RECYCLING MEDIA FOR USE IN PRESSURIZED DEVICE

William R. Lynn, 38 Prospect St., Dover, N.H. 03820, and Wilfred P. Parent, Northeast Pond Rd., Milton, N.H. 03851

Continuation-in-part of Ser. No. 843,450, Feb. 28, 1992, Pat. No. 5,234,470, which is a continuation-in-part of Ser. No. 757,977, Sep. 12, 1991, Pat. No. 5,256,703. This application Apr. 26, 1993, Ser. No. 53,106
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 17 Claims



1. A method of recycling a used composite blasting media after being propelled through desired blasting equipment, said composite blasting media comprising a plurality of granules which each contain a plurality of discrete particles of an abrasive component physically interconnected with one another by a carrier component, which is a solid at room temperature,

said method comprising the steps of:

collecting the composite blasting media after at least one blasting cycle;

mixing at least one of additional abrasive component and additional carrier component, which is a solid at room temperature, with the collected composite blasting media; and

forming the mixture of composite blasting media into a plurality of granules each containing a plurality of discrete particles of the abrasive component physically interconnected with one another by the carrier component.

5,344,473

APPARATUS FOR THE DEPOSITION OF MELAMINE

Gerald Szölgyenyi, late of Linz, Austria by Andrea Szölgyenyi, legal representative , and Peter Hildebrand, Linz, Austria, assignors to Chemie Linz Gesellschaft m.b.H., Linz, Fed. Rep. of Germany

Filed Mar. 29, 1993, Ser. No. 38,276
Claims priority, application Austria, Mar. 30, 1992, 630/92
Int. Cl.[5] B01D *47/00*
U.S. Cl. 55—223 7 Claims

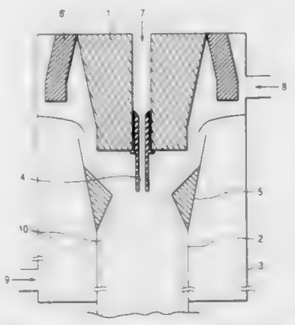
1. A melamine deposition apparatus comprising:

an absorption pipe having an open upper end;

a substantially closed container surrounding said open upper end of said absorption pipe;

a heatable gas feed pipe mounted in said container for feeding melamine-containing reaction gases downwardly into said open upper end of said absorption pipe;

a wash liquid feed pipe opening into a lower portion of said container for feeding wash liquid into said container to a level just above a lip of said open upper end of said absorption pipe, such that the wash liquid fed into said container can flow as a continuous film over said lip and down along an inner wall of said absorption pipe;



an inert gas feed pipe opening into an upper portion of said container for feeding inert gas into said upper portion of said container; and

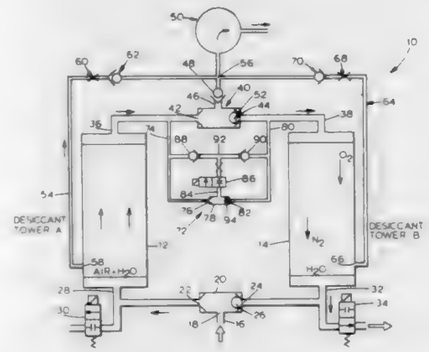
an extension nozzle mounted to and extending downwardly from a lower end of said gas feed pipe and into said open upper end of said absorption pipe.

5,344,474

GAS SEPARATION DEVICE

Robert A. Null, Lakewood, Colo., assignor to Air Dry Corporation of America, Moorpark, Calif.

Filed Apr. 28, 1993, Ser. No. 54,391
Int. Cl.[5] B01D *53/04*
U.S. Cl. 55—344 26 Claims



1. A system for producing an output gas mixture having a desired concentration of oxygen, the desired concentration of oxygen being greater than the concentration of oxygen normally found in air, the system comprising:

oxygen concentration means for receiving inlet air containing oxygen and for producing a first gas by concentrating the oxygen in the inlet air, wherein the first gas has a first concentration of oxygen, wherein the first concentration of oxygen is greater than the desired concentration of oxygen, and wherein the oxygen concentration means has a gas flowing therethrough;

supplying means for supplying a second gas having a second concentration of oxygen, the second concentration of oxygen being less than the first concentration of oxygen, the supplying means being coupled to a coupling point of the oxygen concentration means so as to receive a portion of the gas flowing therethrough such that the second gas is derived from the gas flowing through the oxygen concentration means, the coupling point being selected so that the concentration of oxygen in the gas flowing through the oxygen concentration means at the coupling point is less than the first concentration of oxygen; and,

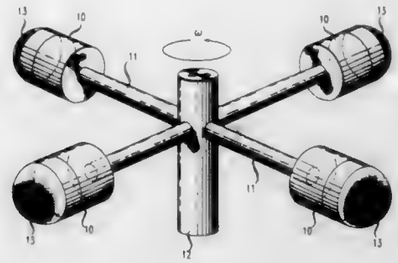
mixing means, coupled to the oxygen concentration means and to the supplying means, for mixing the first and second gases to produce the output gas mixture having the desired concentration of oxygen.

5,344,475

MANUFACTURE OF HIGH PROOF-TEST OPTICAL FIBER USING SOL-GEL

Suhas D. Bhandarkar, Murray Hill, N.J.; Harish C. Chandan, Snellville, Ga.; David W. Johnson, Jr., Bedminster, and John B. MacChesney, Lebanon, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 11, 1993, Ser. No. 29,750
Int. Cl.[5] C03B *37/025*
U.S. Cl. 65—395 8 Claims



1. Process for fabrication of optical fiber in accordance with which fiber is drawn from a preform comprising a sol-gel body, in which the sol-gel body is prepared by gelation of a sol followed by drying to a porous body and finally by sintering, and in which the sol comprises suspension particles of SiO_2 in water, in which suspension particles are primarily of size within the range of from 0.005 μm to 0.2 μm.

CHARACTERIZED in that the sol is further processed to remove contaminant particles on the basis of at least one characteristic selected from the group consisting of density greater than that of such suspension particles and size larger than that of such suspension particles, in which further processing comprises centrifugation, settling, or filtration, and in which further processing results in substantial separation of refractory particles, in which refractory refers to particles which are not assimilated in resulting fiber.

5,344,476

METHOD FOR FORMING AN OPTICAL ELEMENT

Masayuki Tomida, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 813,282, Dec. 20, 1991, abandoned. This application Apr. 26, 1993, Ser. No. 52,280
Claims priority, application Japan, Dec. 21, 1990, 2-412790
Int. Cl.[5] C03B *23/00*
U.S. Cl. 65—102 2 Claims

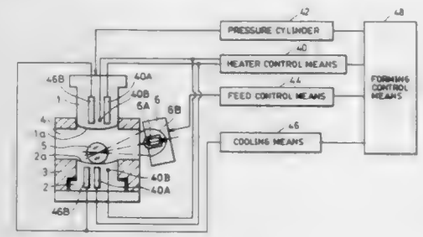
1. A method of forming an aspherical lens, said method comprising the steps of:

providing upper and lower molds, where at least one of said molds has an optical forming surface that is aspherical;

heating said upper and lower molds to a predetermined temperature;

providing a glass blank, which is at a temperature lower than its forming temperature; on said lower mold with a conveying means;

heating the glass blank to its forming temperature by exposing the glass blank to infrared radiation; and



closing said upper and lower molds and pressing the glass blank to form an aspherical lens and gradually reducing the amount of infrared radiation to which the glass blank is exposed in accordance with the start of contact between said upper mold and the glass blank while maintaining the upper and lower molds at the predetermined temperature.

5,344,477

PREALLOYED HIGH-VANADIUM, COLD WORK TOOL STEEL PARTICLES

William Stasko, West Homestead, and Kenneth E. Pinnow, Pittsburgh, both of Pa., assignors to Crucible Materials Corporation, Syracuse, N.Y.

Division of Ser. No. 704,082, May 22, 1991, Pat. No. 5,238,482. This application Mar. 4, 1993, Ser. No. 26,013
Int. Cl.[5] C22C *38/12*
U.S. Cl. 75—255 6 Claims



1. In prealloyed cold work tool steel particles for use in the powder-metallurgy production of tool steel articles, the improvement comprising:

said particles comprise a cold work tool steel alloy having a substantially uniform MC vanadium carbide dispersion of a carbide particle size substantially entirely less than 6 microns and in an amount of 18.5 to 34.0% by volume,

wherein said particles have a grindability index of above 0.7, as defined herein, a Charpy C-notch impact strength above 3 ft-lbs, as defined herein, and a pin abrasion test weight loss of less than 32 milligrams, as defined herein.

5,344,478

VORTEX DISPERSING NOZZLE FOR LIQUEFIED CRYOGENIC INERT GASES USED IN BLANKETING OF MOLTEN METALS EXPOSED TO AMBIENT AIR AND METHOD

Zbigniew Zurecki, Macungie; Kerry R. Berger, and Robert B. Swan, both of Lehighton, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

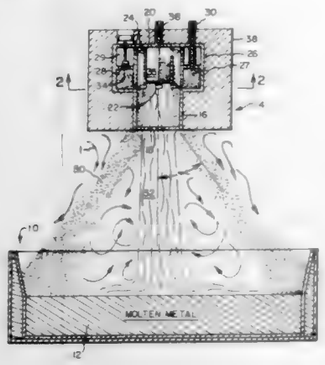
Filed Aug. 2, 1993, Ser. No. 100,866
Int. Cl.[5] C22B *9/00*
U.S. Cl. 75—709 12 Claims

1. An apparatus for introducing blanketing media onto the surface of a molten metal bath comprising in combination:

a central vortex tube having a discharge end and a media receiving end;

a first set of at least two tangential nozzles extending through and disposed equidistant circumferentially around said vortex tube and inwardly of said first end;

a second set of at least two tangential nozzles disposed equidistant extending through and circumferentially around said vortex tube between said first row and said second end of said vortex tube;



a chamber or jacket surrounding said vortex tube, said jacket constructed in fluid tight relationship to said vortex tube and communicating with said first and second rows of nozzles, said jacket divided into two separate fluid reservoirs consisting of a first reservoir communicating with said first set of nozzles and a second reservoir communicating with said second set of nozzles;

means for introducing a liquid media into said first reservoir; and

means to controllably remove vaporized media from said first reservoir into said second reservoir.

5,344,479

UPGRADING COPPER SULPHIDE RESIDUES CONTAINING NICKEL AND ARSENIC

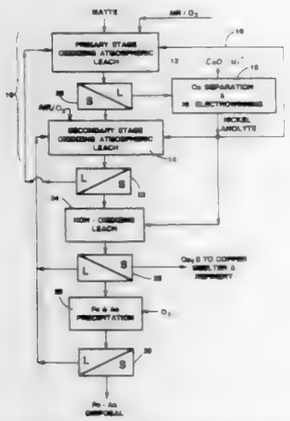
Derek G. E. Kerfoot, and Rein Raudsepp, both of St. Albert, Canada, assignors to Sherritt Gordon Limited, Edmonton, Canada

Filed Mar. 11, 1993, Ser. No. 29,513

Claims priority, application Canada, Mar. 13, 1992, 2063031-1

Int. Cl.[5] C22B *3/44*

U.S. Cl. 75—743 **10 Claims**



1. A process for separating and recovering nickel and copper values from a nickel-copper matte which may contain iron and arsenic which comprises:

leaching granular nickel-copper matte in an acidic solution at a temperature in the range of about 80° to 100° C. under oxidizing conditions at atmospheric pressure with a deficiency of acid to produce a substantially copper-free nickel sulphate solution and a copper-rich sulphide residue also containing a controlled amount of readily acid-soluble copper, leaching the copper-rich sulphide residue in an acidic solution under non-oxidizing conditions under elevated temperature and pressure to produce a final nickel sulphate solution containing an effective amount of soluble copper and an excess of acid to maintain any iron and arsenic in solution while producing a low nickel, copper sulphide product essentially free of iron and arsenic, said product having a Cu:S mass ratio of at least 3:1.

5,344,480

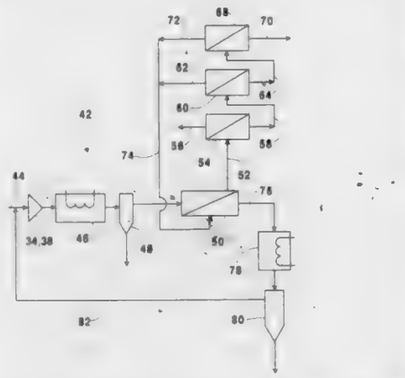
PRESSURIZING WITH AND RECOVERING HELIUM

Thomas R. Schulte, Grand Island; Carl J. Heim, Amherst; Vladimir T. Gorjaczkowski, Williamsville, all of N.Y., and Salvatore Giglia, Norwood, Mass., assignors to Praxair Technology, Inc., Danbury, Conn.

Continuation-in-part of Ser. No. 880,071, May 5, 1992, abandoned. This application Apr. 21, 1993, Ser. No. 49,776

Int. Cl.[5] B01D *53/04, 53/22*

U.S. Cl. 95—52 **13 Claims**



1. A process for purifying a gas stream comprising helium and air constituents, said process comprising:

(a) drying the gas stream in a fluid stream dryer;

(b) separating the dried gas stream in a membrane separator stage into a helium-enriched permeate product stream and a helium-depleted raffinate stream;

(c) recovering helium in said raffinate stream in a membrane stripper stage thereby producing a purge stream; and

(d) purging water from said dryer with said purge stream.

5,344,481

SUSPENSION DEVICE AND RAPPING MECHANISM FOR ELECTRODES IN AN ELECTROSTATIC PRECIPITATOR

Vagn A. Pettersson, Valby, Denmark, assignor to FLS Miljo A/S, Denmark

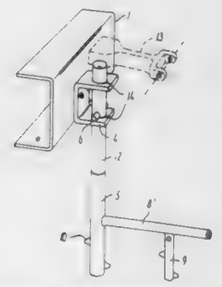
Filed Aug. 26, 1993, Ser. No. 112,690

Claims priority, application Denmark, Aug. 28, 1992, 1077/92

Int. Cl.[5] B03C *3/76*

U.S. Cl. 96—33 **4 Claims**

1. A suspension device and rapping mechanism for vertically mounted electrodes (**5,9**), in a high-voltage supplied electrostatic precipitator, and wherein a conductive suspension device comprises at least two U-shaped or angular carrier beams (**1**) arranged perpendicularly to the precipitator sections or the electrode rows and above and near their upper ends, said carrier beams being suspended in vertical carrier rods (**2**) which at their upper ends are secured in insulators (**3**) in the roof of a precipitator housing, the rapping mechanism comprising means (**13**) mounted on or near the precipitator housing roof in order to produce a vertically acting impact energy towards the upwardly facing ends of the electrodes (**5,9**) thereby rapping or vibrating the latter, and vertical support or frame tubes comprising some of said electrodes (**5**) of each precipitator section being mutually connected by at least one upper and a lower horizontal frame tube (**8',8''**) to form vertical frames for the electrode rows, and the remaining vertically mounted electrodes (**9,9'**) of a precipitator section being arranged between the horizontal frame tubes (**8',8''**), wherein a number of U-shaped support irons (**4**) are secured on the sides of the carrier beams (**1**) facing the electrode rows and mounted



so that the horizontally extending legs of the U in said U-shaped support irons are located vertically above each other, the vertical precipitator support or frame tubes comprising some of said electrodes (**5**) of each precipitator section or electrode row being suspended in said legs, that the upper portion of the vertical support or frame tubes comprising some of said electrodes (**5**) are formed as a solid rod (**12**), vertically movably secured in the individual U-shaped support iron (**4**) and with its upwardly facing end comprising an abutment or an anvil for the impact means (**13**) of the rapping mechanism, and that the U-shaped support irons (**4**) have holes (**14**) in the legs of the U in said U-shaped support irons being arranged vertically above each other for receiving the rod-shaped upper portion (**12**) of the vertical support or frame tubes so that the suspension of the tubes in the support irons are partly vertically resilient and partly torsionally rigid.

5,344,482

USE OF THIADIAZOLES AS BIOCIDES FOR MATERIAL PROTECTION

Horst Landsiedel, Unna, and Dirk Ventur, Bochum, both of Fed. Rep. of Germany, assignors to Witco GmbH, Bergkamen, Fed. Rep. of Germany

Filed Sep. 15, 1993, Ser. No. 122,883

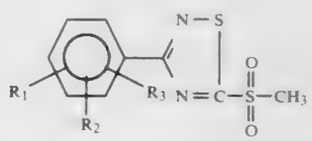
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1992, 4230956

The portion of the term of this patent subsequent to Jul. 26, 2011, has been disclaimed.

Int. Cl.[5] C09D *5/14*

U.S. Cl. 106—18.33 **40 Claims**

1. A wood preservative comprising a wood preserving effective amount of a compound of the formula:



and a wood preservative carrier therefor, wherein

R_1, R_2 and R_3 are independently hydrogen, cyano, halogen, NO_2 or COOR, or alkyl having 1–4 carbon atoms which is unsubstituted or substituted with halogen, carboxy, hydroxy or nitro group, or R_1, R_2 and R_3 are alkoxy having 1–4 carbon atoms; and

R is hydrogen or lower alkyl.

5,344,483

HIGH-DENSITY, LOW-VISCOSITY INK FOR USE IN INK JET PRINTERS

Stephanie S. Hinton, Cookeville, Tenn., assignor to Porelon, Inc., Cookeville, Tenn.

Filed Mar. 30, 1992, Ser. No. 860,098

Int. Cl.[5] C09D *11/02*

U.S. Cl. 106—22 R **20 Claims**

1. An ink composition suitable for ink jet printing consisting essentially of a fatty acid ester base and a diluent, wherein the base consists essentially of a fatty acid which is liquid at room temperature, a polyalkylene glycol, and a dye which has been reacted substantially completely with the fatty acid to form an ester, wherein the ink composition is essentially free of water, and the water resulting from the esterification having been eliminated in order to drive the esterification reaction substantially to completion.

5,344,484

ISOCYANATE BONDED WOOD COMPOSITE AND METHOD OF MANUFACTURING THE SAME

John P. Walsh, St. Charles, Ill., assignor to Masonite Corporation, Chicago, Ill.

Filed Oct. 8, 1992, Ser. No. 957,911

Int. Cl.[5] C08L *1/02;* **B32B** *23/14*

U.S. Cl. 106—201 **15 Claims**

1. A wood composite consisting essentially of a mixture of:

(a) about 95% to about 99% by weight of a wood fiber, wherein the wood fiber includes about 5% to about 15% by weight moisture;

(b) about 1% to about 4% by weight of an organic isocyanate having at least two isocyanate moieties; and

(c) 0% to about 2% by weight wax;

wherein said wood composite has a density of about 0.9 g/cc to about 1.1 g/cc and is essentially free of an added compound having an active hydroxyl moiety which is reactive with said organic isocyanate.

5,344,485

ASPHALTIC CONCRETE PRODUCT AND A METHOD FOR THE FIXATION OF CONTAMINATED SOILS IN THE ASPHALTIC CONCRETE

John L. Glynn, Jr., Southborough, Mass., assignor to American Reclamation Corp., Southborough, Mass.

Continuation-in-part of Ser. No. 726,858, Jul. 8, 1991, Pat. No. 5,173,115, which is a continuation of Ser. No. 496,962, Mar. 20, 1990, abandoned. This application Nov. 19, 1992, Ser. No. 978,868

The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.

Int. Cl.[5] C08L *95/00*

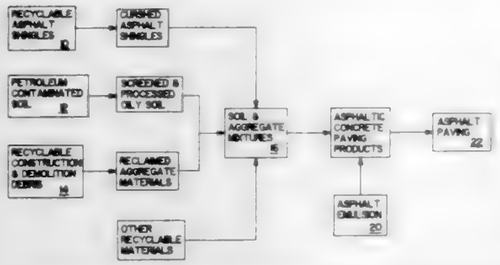
U.S. Cl. 106—281.1 **22 Claims**

1. A method of manufacturing a cold mix asphaltic concrete having hazardous waste fixed therein, said method comprising:

forming an aggregate mixture, said mixture further comprising, asphaltic roof shingles, mineral aggregate, and contaminated soil;

coating said mixture with a cold mix asphalt emulsion to form an asphaltic concrete mixture; and

setting said concrete mixture to fix any hydrocarbons or hazardous materials in the contaminated soil such that the



hydrocarbons or hazardous materials will not leach from said set concrete.

5,344,486

PLATELET-LIKE PIGMENTS

Bernhard Mainz, Darmstadt, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Feb. 5, 1993, Ser. No. 13,840
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1992, 4203501
Int. Cl.[5] C09C *1/34*; **B32B** *33/00, 19/00*
U.S. Cl. 106—415 **13 Claims**

1. A pigment comprising a platelet-shaped substrate which is a metal nitride, having coated on the surface thereof at least one dye, at least one metal oxide or a mixture thereof.

5,344,487

LAYERED COMPOSITE PIGMENTS AND METHOD OF MAKING SAME

Michael Whalen-Shaw, 7041 Zane Trail Rd., Circleville, Ohio 43113

Filed Feb. 12, 1992, Ser. No. 834,468
Int. Cl.[5] C04B *14/10*
U.S. Cl. 106—416 **29 Claims**

1. A composite pigment comprising one or more types of core pigment particles and one or more types of co-pigment particles prepared by mixing core pigment particles with co-pigment particles, the core pigment particles prior to mixing comprising adsorbed on their surface a dispersing agent consisting essentially of a cationic polyelectrolyte dispersant or an anionic polyelectrolyte dispersant and the co-pigment particles prior to mixing comprising adsorbed on their surface of dispersing agent consisting essentially of an anionic polyelectrolyte dispersant or a cationic polyelectrolyte dispersant which is opposite in charge to the dispersant on the core pigment particles and which provides the co-pigment particles with a charge opposite the charge of the core pigment particles, the co-pigment particles in the composite pigment being electrostatically bound to the core pigment particles, the core pigment particles and the co-pigment particles having an average particle size greater than 0.1 micron.

5,344,488

PIGMENTS

Peter Reynders, Griesheim, and Hans D. Brückner, Darmstadt, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP92/01295, § 371 Date Feb. 24, 1993, § 102(e) Date Feb. 24, 1993, PCT Pub. No. WO93/00408, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 10, 1992, Ser. No. 979,860
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1991, 4120747
Int. Cl.[5] C04B *14/00*
U.S. Cl. 106—425 **10 Claims**

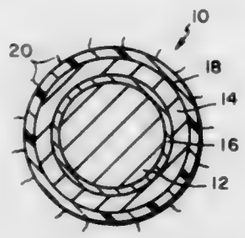
1. Pigments based on plate-like substrates which, optionally, are covered with one or more layers comprising metal oxides or metal oxide mixtures, zinc oxide being deposited on the surface of the substrates with the formation of a discontinuous layer.

5,344,489

SYNTHETIC, MONODISPERSED COLOR PIGMENTS FOR THE COLORATION OF MEDIA SUCH AS PRINTING INKS, AND METHOD AND APPARATUS FOR MAKING SAME

Egon Matijevic; Wan P. Hsu, both of Potsdam, N.Y., and Manfred R. Kuehnle, Waldesruh, P.O. Box 1020, Rte. 103A, New London, N.H. 03257, assignors to Manfred R. Kuehnle, New London, N.H.

Filed Nov. 15, 1991, Ser. No. 792,713
Int. Cl.[5] C09C *1/36*
U.S. Cl. 106—442 **39 Claims**



1. A method of making color pigment adapted for use in a carrier material having a selected refractive index, the method comprising the steps of

precipitating, from a first solution, monodispersed colloidal core particles having substantially uniform size and shape, and a refractive index that substantially matches that of the carrier material,

applying the exact amount of dye material to said core particles from a second solution necessary to achieve a desired color value, and

dispersing the dyed core particles in the carrier material.

5,344,490

PLASTICISED GYPSUM COMPOSITION

Peter P. Roosen, Nanaimo; Gerard H. Koldyk, North Vancouver, and Frank Pap, Richmond, all of Canada, assignors to Accuflex Products, Inc., North Vancouver, Canada

Continuation of Ser. No. 875,181, Apr. 28, 1992, abandoned. This application Aug. 24, 1993, Ser. No. 110,920
Int. Cl.[5] C04B *24/08*
U.S. Cl. 106—778 **38 Claims**

1. A cured composition derived from a mixture comprising the dry components:

(a) a polymerisable icocyanate; and

(b) gypsum and castor oil, the gypsum being present in the range 50% to 90% by weight in component (b), the balance being the castor oil;

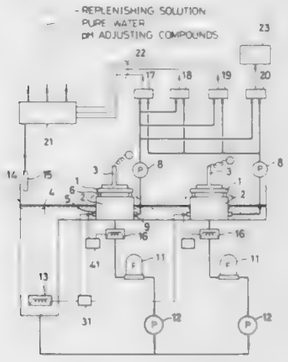
the composition containing isocyanate in the range of about 5% to 20% by weight.

5,344,491

APPARATUS FOR METAL PLATING

Mariko Katou, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jan. 4, 1993, Ser. No. 235
Claims priority, application Japan, Jan. 9, 1992, 4-001995
Int. Cl.[5] B05C *11/00*; **C25D** *17/04*
U.S. Cl. 118—695 **9 Claims**



1. An apparatus for metal plating, comprising:

a multiplicity of substrate supporting members for supporting between electrodes a multiplicity of semiconductor substrates;

said substrate supporting members comprising at least one cylindrical member;

supporting pins for supporting said semiconductor substrates at an upper end of said at least one cylindrical member;

a multiplicity of cathode electrodes, there being one cathode electrode for each semiconductor substrate, above and in contact with an upper surface of said semiconductor substrates and a multiplicity of anode electrodes beneath each of said semiconductor substrate,

a plating bath having therein said substrate supporting members;

solution circulation means for circulating said plating solution past said semiconductor substrates;

said solution circulation means including means for ejecting said plating solution from a bottom of said cylindrical member onto a lower surface of each semiconductor substrate and for enabling said plating solution to overflow from the upper end of said cylindrical member,

thermometers mounted on each of said substrate supporting members for measuring the temperatures of the plating solution near said semiconductor substrates;

solution sampling means mounted on each of said substrate supporting members for sampling plating solution near said semiconductor substrates;

heating means mounted in said plating bath for heating said plating solution;

heating control means for controlling the operation of said heating means in response to the signal measured by said thermometers so as to regulate the temperature of said plating solution within a predetermined range;

solution monitoring means for monitoring said plating solution by testing the samples of said plating solution to determine the concentrations of the components of said plating solution; and

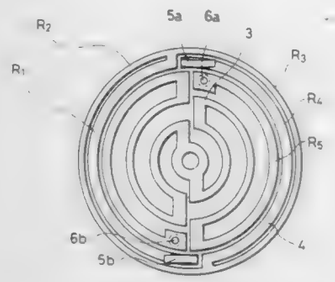
solution replenishment means for replenishing a necessary amount of said components in said plating solution, on a basis of the measurements of said samples by said solution monitoring means.

5,344,492

VAPOR GROWTH APPARATUS FOR SEMICONDUCTOR DEVICES

Mitsuo Sato, Zama; Kiyoshi Yoshikawa, Kawasaki, and Yusuke Sato, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 21, 1993, Ser. No. 89,526
Claims priority, application Japan, Jul. 23, 1992, 4-197101
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—725 **11 Claims**



1. A vapor growth apparatus for semiconductor devices, comprising:

a susceptor which rotates in a water cooled reaction room while holding semiconductor substrates thereon; and

a heater for heating said susceptor;

wherein said heater comprises an inner and a peripheral heater electrically connected in parallel with each other.

5,344,493

CLEANING PROCESS USING MICROWAVE ENERGY AND CENTRIFUGATION IN COMBINATION WITH DENSE FLUIDS

David P. Jackson, 608 Ruberta, Glendale, Calif. 91201

Filed Jul. 20, 1992, Ser. No. 915,321
Int. Cl.[5] B08B *3/12*
U.S. Cl. 134—1 **25 Claims**

1. A process for cleaning a substrate containing at least one contaminant, by placing said contaminated substrate in a centrifuge basket in a cleaning chamber, and by following the steps of:

1) contacting said substrate containing said contaminant with a dense fluid at a pressure equal to or above the critical pressure and below the critical temperature of said dense fluid;

2) continuously centrifuging said substrate in said basket;

3) simultaneously subjecting said contaminant contained in said substrate and dense fluid to a high energy source of microwave energy at a frequency of 2.45 GHz;

4) maintaining contact of said energized contaminant on said substrate for a predetermined period of time above the critical pressure and below critical temperature of said dense fluid, wherein a wide range of solvent environments are created wherein contaminant solubility and transport from said substrate is provided to thereby remove said contaminant from said substrate in one continuous process; and

5) introducing a physical or chemical agent into the dense fluid by injection, solution, or reaction methods and contacting for a predetermined period of time in the dense fluid, in order to cause the precipitation, dissociation, dissolution, or activation of the physical or chemical contaminant in said substrate interstices; and

6) subjecting said substrate to high vacuum (0.0001 Torr) to remove residual contaminants and excess chemical and physical agents.

5,344,494

METHOD FOR CLEANING POROUS AND ROUGHENED SURFACES ON MEDICAL IMPLANTS

James A. Davidson, Germantown, and Ajit K. Mishra, Memphis, both of Tenn., assignors to Smith & Nephew Richards, Inc., Memphis, Tenn.

Filed Jan. 21, 1993, Ser. No. 7,338
Int. Cl.[5] B08B 3/00, 3/12
U.S. Cl. 134—7 15 Claims

1. A method of cleaning a medical implant having a porous-coated or roughened surface, the surface containing loose debris particles and loosely-adherent debris particles, the method comprising:

(a) impacting the porous-coated or roughened surface with particles of soluble solids selected from alkaline metal salts having anions selected from the group consisting of sulfate, phosphate, di-hydrogen phosphate, mono-hydrogen phosphate,borate, nitrate, nitrite, chloride, sulfite, and bisulfite, said soluble solids be of sufficient hardness and density to effectively dislodge and remove debris from the surface said particles propelled by a carrier fluid; and

(b) subjecting the impacted surface to ultrasonic cleaning in the presence of a solvent for the soluble solid to dissolve residual soluble solids left behind on the impacted surface and remove debris particles;

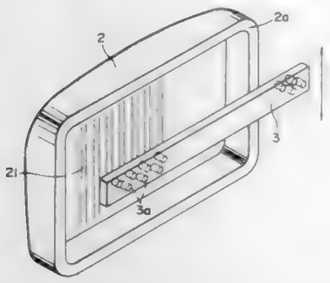
whereby the number and size of residual debris particles on the implant surface is reduced.

5,344,495

PROCESS OF CLEANING A PANEL IN THE MANUFACTURE OF A CATHODE RAY TUBE

Kunihiko Yanai, and Kosaku Suzuki, both of Aichi, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 765,054, Sep. 24, 1991, abandoned. This application Jun. 11, 1993, Ser. No. 75,866
Claims priority, application Japan, Sep. 25, 1990, 2-254781
Int. Cl.[5] B08B 3/02, 3/04, 9/00, 9/093
U.S. Cl. 134—22.1 8 Claims



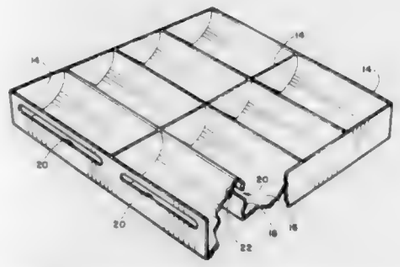
1. A method of cleaning a panel in the manufacture of a cathode ray tube, a cathode ray tube of the type having a plurality of parallel color stripes of a fluorescent face formed on the inner face of the panel, comprising the steps of fixing a panel at a position, and jetting developing liquid by way of a nozzle toward an inner face of the panel while moving said nozzle in a direction corresponding to elongate strip regions allocated on the inner face for stripes of a fluorescent face to be formed on the inner face of the panel, to perform development of the panel.

5,344,496

LIGHTWEIGHT SOLAR CONCENTRATOR CELL ARRAY

Theodore G. Stern, and Mickey Cornwall, both of San Diego, Calif., assignors to General Dynamics Corporation, Space Systems Division, San Diego, Calif.

Filed Nov. 16, 1992, Ser. No. 976,601
Int. Cl.[5] H01L 31/052
U.S. Cl. 136—246 16 Claims



1. A solar concentrator cell element usable in outer space, which comprises:

a longitudinally extending mirror element which is provided with an off-axis cylindric parabolic reflective surface that has a predetermined focal line and which is adapted to receive sunlight and to concentrate such light at the focal line;

a front element which extends upwardly from the lower leading edge of the mirror element, said front element being provided with a longitudinally extending aperture which is sufficiently large to permit light reflected from the mirror to pass through; and

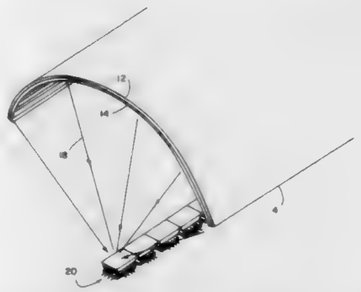
solar cell means adapted to convert sunlight into electricity which is positioned on the backside of the mirror for receiving concentrated light passing through an aperture of the front apertured element of an adjacent solar concentrator cell.

5,344,497

LINE-FOCUS PHOTOVOLTAIC MODULE USING STACKED TANDEM-CELLS

Lewis M. Fraas, 4617 174th Pl. SE., Issaquah, Wash. 98027, and Mark J. O'Neill, 812 Belinda Dr., Keller, Tex. 76248

Filed Apr. 19, 1993, Ser. No. 47,476
Int. Cl.[5] H01L 31/052
U.S. Cl. 136—246 8 Claims



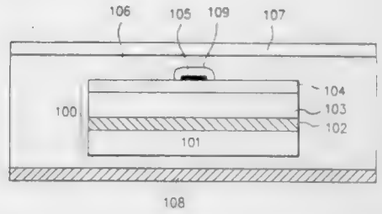
1. A line-focus photovoltaic module comprising an array of arched linear Fresnel lenses each producing a focal line of concentrated solar energy along a center below each lens, said solar energy being captured by a respective continuous line of secondary optical elements, said secondary optical elements having rectangular entrance apertures butted up against each other in a continuous line and said secondary optical elements funneling substantially all captured solar energy down to high efficiency tandem solar cell-stacks.

5,344,498

SOLAR CELL MODULE WITH IMPROVED WEATHERING CHARACTERISTICS

Yuji Inoue, Nagahama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1992, Ser. No. 957,374
Claims priority, application Japan, Oct. 8, 1991, 3-260716
Int. Cl.[5] H01L 31/048
U.S. Cl. 136—251 16 Claims



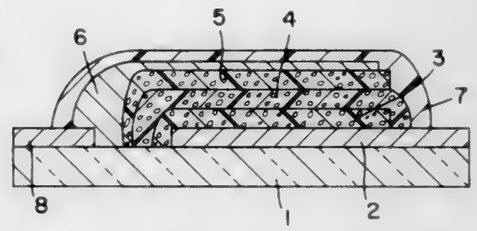
9. In a solar cell module which comprises a plurality of amorphous silicon solar cell elements integrated in series connection and encapsulated by a filler, each of said plurality of amorphous silicon solar cell elements comprising a metal electrode layer, an amorphous silicon semiconductor layer having a pin junction, a transparent and conductive layer, and a grid electrode disposed in this order on a conductive substrate, said solar cell elements being disposed on a base member, the improvement characterized in that said grid electrode of each of said plurality of amorphous silicon solar cell elements has a coating comprising an epoxy resin of 20 g/m^2.day.0.1 mm/40° C.90%RH or less in moisture permeability which is disposed so as to cover the entire exposed exterior of said grid electrode.

5,344,499

ELECTRIC DEVICE OF HYDROGENATED AMORPHOUS SILICON AND METHOD OF MANUFACTURE

Teruhisa Kanbara, Ikeda, and Shigeo Kondo, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 706,886, May 29, 1991, abandoned. This application Nov. 17, 1992, Ser. No. 978,175
Claims priority, application Japan, Jul. 2, 1990, 2-174743; Jul. 2, 1990, 2-174751
Int. Cl.[5] H01L 31/0392, 31/0376, 31/20
U.S. Cl. 136—258 14 Claims



1. An electric device utilizing hydrogenated amorphous silicon and characterized by comprising at least:

a hydrogenated amorphous silicon layer;

a chemically inactive layer which is formed on a surface of said hydrogenated amorphous silicon layer only by immersing said hydrogenated amorphous silicon layer in water and then drying said hydrogenated amorphous silicon layer under light irradiation, and is composed of hydrogenated amorphous silicon and SiO_X and also is 50 to 300 Å in thickness: and

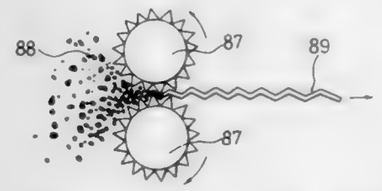
an electrode layer which is formed on said chemically inactive layer by a vacuum deposition method.

5,344,500

THIN-FILM SOLAR CELL

Hajime Sasaki; Hiroaki Morikawa; Kazuhiko Satoh, and Mikio DeGuchi, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 846,793, Mar. 5, 1992, Pat. No. 5,273,911.
This application Sep. 3, 1993, Ser. No. 115,720
Claims priority, application Japan, Mar. 7, 1991, 3-69108; May 10, 1991, 3-135840; May 22, 1991, 3-149965; Dec. 26, 1991, 3-359749; Feb. 7, 1992, 4-56745
Int. Cl.[5] H01L 31/0392, 31/0368, 31/04, 31/18
U.S. Cl. 136—258 6 Claims



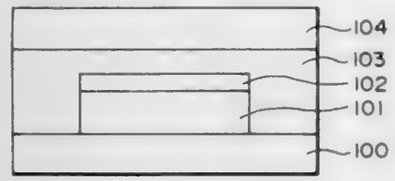
1. A thin-film solar cell including a polycrystalline silicon thin film serving as an active layer and a flaky graphite sheet substrate having a concavo-convex surface on which the polycrystalline silicon thin film is disposed.

5,344,501

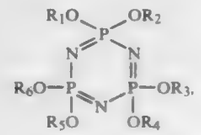
SOLAR CELL

Yuichi Hashimoto, Tokyo, and Hisami Tanaka, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 35,576
Claims priority, application Japan, Mar. 23, 1992, 4-094892
Int. Cl.[5] H01L 31/048
U.S. Cl. 136—259 12 Claims



1. A solar cell, comprising a solar cell unit and a protective layer formed on the solar cell unit, wherein said protective layer comprises a polymer formed by polymerization of a cyclotriphosphazene monomer represented by the following formula (I):



(I)

wherein R_1 to R_6 independently denote an ethylenically unsaturated polymerizable group.

5,344,502

SURFACE HARDENED 300 SERIES STAINLESS STEEL

William C. Mack, Wadsworth; James M. Tanzosh, Silver Lake, and Mark J. Topolski, Canton, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Aug. 16, 1993, Ser. No. 107,394
Int. Cl.[5] C21D *1/06*
U.S. Cl. 148—236 6 Claims

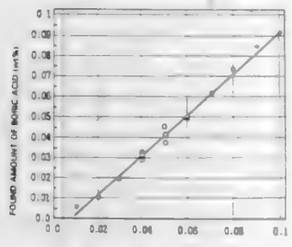
1. A pack carburizing method for surface hardening an austenitic workpiece, comprising the steps of:
positioning the austenitic workpiece in a reaction vessel;
adding a carburizing pack to the reaction vessel; subjecting the reaction vessel, carburizing pack and the austenitic workpiece to a temperature ranging from about 1500° F. to about 2500° F. for a time period ranging from about one (1) hour to about eight (8) hours; and
forming chromium carbides on a surface of the austenitic workpiece to increase its wear resistance.

5,344,503

METHOD OF PREVENTING OXIDATION OF COPPER POWDER

Shizuharu Watanabe, and Shuji Mushimoto, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jan. 13, 1993, Ser. No. 3,637
Claims priority, application Japan, Jan. 13, 1992, 4-3789
Int. Cl.[5] C23C *22/00*
U.S. Cl. 148—248 9 Claims



1. A method of preventing oxidation of copper powder which comprises the steps of:
mixing copper powder, boric acid, and a solvent to form a mixture; and
drying said mixture to evaporate said solvent,
said boric acid being used in such an amount that the amount of boron atoms present in said copper powder after said drying step is from 0.01 to 0.1% by weight based on the weight of said copper powder,
said solvent being selected from the group consisting of ketone solvents, hydrocarbon solvents and aromatic solvents, and being used in such an amount that the boric acid concentration of said mixture is not higher than the saturated concentration of boric acid.

5,344,504

TREATMENT FOR GALVANIZED METAL

Philip D. Deck, Ardsley; Jeffrey I. Melzer, Lansdale, and William L. Harpel, Langhorne, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Jun. 22, 1993, Ser. No. 80,901
Int. Cl.[5] C23C *22/00*
U.S. Cl. 148—243 1 Claim

1. A method of forming a coating on a zinc galvanized metal, said coating having increased resistance to corrosion and having good adherence to a subsequently applied siccative coating in which said zinc galvanized metal is exposed to a coating solution bath comprising from about 0.1 to above 10 grams per liter, based on fluoride, a fluorometallic acid selected from the group consisting of HBF_4, H_2SiF_6, H_2TiF_6, H_2ZrF_6, the ammonium or alkali metal salts thereof; hydrofluoric acid or salts thereof; and mixtures thereof; from about 0.015 to about 6 grams per liter, based on metal content, of a salt of cobalt, copper, iron, manganese, nickel, strontium, zinc, or mixtures thereof; and optionally, from about 0 to about 3.0 grams per liter of a polymer selected from the group consisting of polyacrylic acid, polymethacrylic acid, and C1 to C8 alkanol esters thereof; wherein the pH of the solution is from about 4.0 to about 5.0 wherein the improvement comprises limiting overflow from said coating solution bath such that the concentration of zinc in said coating solution bath ranges from about 1.0 to about 30 grams per liter.

5,344,505

NON-CHROMIUM PASSIVATION METHOD AND COMPOSITION FOR GALVANIZED METAL SURFACES

Jiangbo Ouyang, Bensalem, and William L. Harpel, Langhorne, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Aug. 16, 1993, Ser. No. 107,383
Int. Cl.[5] C23C *22/07*
U.S. Cl. 148—261 6 Claims

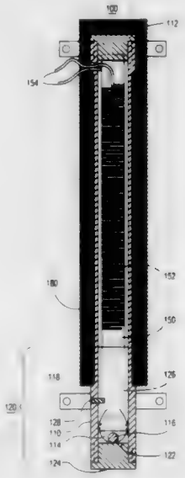
1. A process for passivating a galvanized metal surface comprising contacting the galvanized surface with an aqueous, substantially chromium free, treatment solution consisting essentially of from about 0.5 to 50% phosphoric acid, and from about 0.1 to 5% boric acid.

5,344,506

SHAPE MEMORY METAL ACTUATOR AND CABLE CUTTER

Dominick A. DeAngelis, Newtown Square, Pa., assignor to Martin Marietta Corporation, East Windsor, N.J.

Filed Oct. 23, 1991, Ser. No. 781,461
The portion of the term of this patent subsequent to Oct. 7, 2008, has been disclaimed.
Int. Cl.[5] B21F *11/00*
U.S. Cl. 148—402 22 Claims



1. An arrangement for cutting a workpiece comprising:
a mounting;
a blade and an anvil mounted in movable relationship for moving closer together for cutting a workpiece therebetween, one of said blade and said anvil being affixed to said mounting;
a shape memory alloy member having a predetermined deformation from its undeformed state, said member being affixed at one location thereon to said mounting and at another location thereon to the other of said blade and said anvil; and
means for heating said member to a temperature sufficient for said member to return toward said undeformed state, said return tending to move said blade and said anvil closer together for cutting said workpiece.

5,344,507

WEAR-RESISTANT ALUMINUM ALLOY AND METHOD FOR WORKING THEREOF

Tsuyoshi Masumoto, 3-8-22, Kamisugi, Aoba-ku, Sendai-shi, Miyagi-ken; Akihisa Inoue; Kazuhiko Kita, both of Miyagi, and Hitoshi Yamaguchi, Nagano, all of Japan, assignors to Tsuyoshi Masumoto, Sendai; Yoshida Kogyo KK and Teikoku Piston Ring Co., Ltd., both of Tokyo, all of Japan

Filed Mar. 16, 1992, Ser. No. 851,932
Claims priority, application Japan, Mar. 14, 1991, 3-074678
Int. Cl.[5] C22C *21/00*
U.S. Cl. 148—437 8 Claims



1. A wear-resistant aluminum-alloy, which has a hardness of 340–400 Hv and has a composition expressed by $Al_aSi_bM_cX_dT_e$ (M is at least one element selected from the group consisting of Fe, Co and Ni; X is at least one element selected from the group consisting of Y, Ce, La and Mm (misch metal); T is at least one element selected from the group consisting of Mn, Cr, V, Ti, Mo, Zr, W, Ta and Hf; a=50–85 atomic %, b=10–49 atomic %, c=0.5–10 atomic %, d=0.5–10 atomic %, e=0–10 atomic %, and a+b+c+d+e=100 atomic %), and which has a structure of super-saturated face centered cubic crystals and fine Si precipitates from 0.1 to 10 μm in size and is free from intermetallic compounds.

5,344,508

FLOW FORMING OF ALUMINUM ALLOY PRODUCTS

Paul S. Gilman, Suffern, N.Y., and Anthony Testa, Denville, N.J., assignors to AlliedSignal Inc., Morristown Township, Morris County, N.J.

Filed Oct. 12, 1993, Ser. No. 134,706
Int. Cl.[5] B22F *5/00*; B21D *22/00*
U.S. Cl. 148—514 8 Claims

1. A process for flow forming a rapidly solidified aluminum base alloy consisting essentially of the formula $Al_{bal}Fe_aSi_bX_c$, where X is at least one element selected from the group consisting of Mn, V, Cr, Mo, W, Nb, Ta, "a" ranges from 2 . 0 to 7 . 5 atomic %, "b" ranges from 0.5 to 3.0 atomic %, "c" ranges from 0.05 to 3.5 atomic % and the balance is aluminum plus incidental impurities, the process comprising the steps of:
a. preparing a preform of preselected configuration and wall thickness for either forward or back spinning; and
b. offsetting the beginning of flow forming by leaving undeformed a small section of said preform.

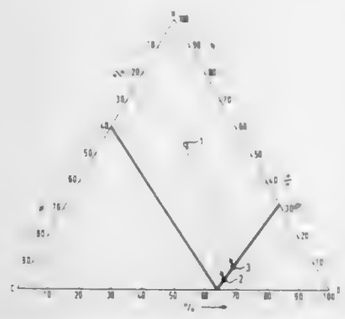
5,344,509

PROCESS FOR PREVENT THE FORMATION OF ADHESIVES WHEN ANNEALING STEEL BAND

Peter Zylla, Krefeld, Fed. Rep. of Germany, assignor to Messer Griesheim GmbH, Fed. Rep. of Germany

Filed Feb. 23, 1993, Ser. No. 20,560
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1992, 4207394
Int. Cl.[5] C21D *11/00*
U.S. Cl. 148—601 2 Claims

1. Process to prevent adhesion during the annealing of steel billets having a low content of carbon in an inert gas atmosphere consisting of 95% to 99% nitrogen and the rest of hydrogen; the process including sequentially heating up, maintaining and cooling off phases, the improvement being in that during the maintaining phase the steel billet is coated in a



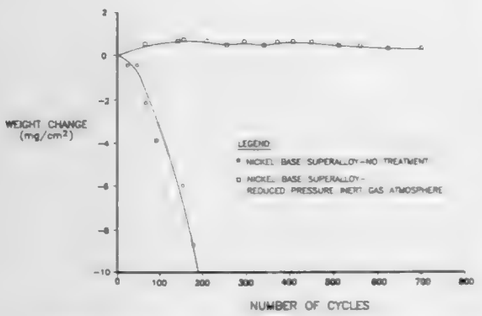
coating step with a thin covering layer by means of oxidation at temperatures above 600° C. [1112° F.], during the coating step 0.2 to 0.3 grams of CO_2 are added to the inert gas per square meter of the surface of annealing material, and completely removing the covering layer through reduction during the cooling off phase at temperatures below 600° C. [1112° F.].

5,344,510

METHOD FOR REMOVING SULFUR FROM SUPERALLOY ARTICLES TO IMPROVE THEIR OXIDATION RESISTANCE

William P. Allen, Portland, and Donald R. Parille, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 14, 1993, Ser. No. 48,407
Int. Cl.[5] C22F *1/10*
U.S. Cl. 148—675 9 Claims



1. A method for removing sulfur from a nickel base superalloy article comprising the step of heating the article in an environment having a reduced pressure of inert gas and a low partial pressure of oxygen, to a temperature at which sulfur diffuses out of the article.

5,344,511

HEAT SHRINKABLE PLASTIC HOSE AND METHOD FOR MANUFACTURING

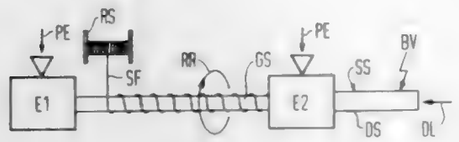
Detlef Graefe, Hagen, and Dieter Sagemuehl, Herdecke, both of Fed. Rep. of Germany, assignors to RXS Schrumpftechnik-Garnturen GmbH, Hagen, Fed. Rep. of Germany

Continuation of Ser. No. 770,248, Oct. 3, 1991, abandoned. This application Aug. 5, 1993, Ser. No. 78,772

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1991, 4100564

Int. Cl.[5] **B32B** *31/26*

U.S. Cl. 156—85 **22 Claims**



1. A method for continuously manufacturing a heat-shrinkable plastic hose having heat-shrinkable threads, said method consisting of the following steps:

continuously extruding a basic hose element of plastic material from a first extruder;

stretching at least one heat-shrinkable thread to form at least one pre-stretched thread;

helically continuously winding said at least one pre-stretched thread onto said basic hose element, thus continuously forming a heat-shrinkable wound basic house element having a shape memory;

continuously extruding a cover hose of plastic material from a second extruder onto said heat-shrinkable sound basic hose element, thus continuously forming a finished shrinkable hose having a radial shrink-factor of 5 through 10; and

cross-linking said shrinkable hose.

5,344,512

MULTILAYER FIBER-MATRIX CERAMIC COMPOSITE MATERIAL AND PROCESS FOR ITS PRODUCTION

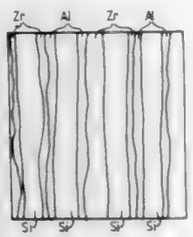
Philippe Colomban, Fresnes; Martine Menet, Elancourt; Emmanuelle Mouchon, Fontenay aux Roses; Gilles Courtemanche, Paris, and Michel Parlier, Voisins le Bretonneux, all of France, assignors to Office National d'Etudes et de Recherches Aerospatiales, Chatillon Sous Bagneux, France

Filed Feb. 4, 1992, Ser. No. 830,904

Claims priority, application France, Feb. 4, 1991, 91 01237

Int. Cl.[5] **C03B** *8/00;* **C03C** *14/00;* **C04B** *35/00*

U.S. Cl. 156—89 **23 Claims**



1. A process for the production of a composite material comprising a glass, vitreous ceramic and/or ceramic matrix reinforced by long ceramic fibers, and comprising the steps of: filling the interstices of a fibrous structure with at least a first precursor in the fluid state and with at least one second precursor in the form of discrete particles; and heat treating the whole to convert the first precursor and the second precursor into a continuous matrix, said process further comprising the steps of forming the fibrous structure by stacking woven or nonwoven long fiber sheets previously filled with the precursors for the preparation of the glass, vitreous ceramic or ceramic matrix by the sol-gel route by hydrolysis and polycondensation using alcoxides or analogous compounds as the starting materials, the first precursor being an interface precursor in the form of a gel rich in water and the particles of the second precursor being a matrix precursor containing only a few percent by mass of water and being able to sinter at a temperature substantially lower than the corresponding final composition, and wherein the fibrous structure is compressed in the direction of stacking, during the heat treatment, in order to achieve a good contact between the particles of the matrix precursor and in order to allow the gel to flow and substantially to fill all of the intersticial spaces of the fibrous structure and the particles, wherein at least one interface precursor leads, during the heat treatment of the stack of filled fiber sheets, to the formation of a molten composition which reacts with one or more adjacent solid compositions, of different chemical formulae, resulting from one or more different interface precursors and/or matrix precursors, in order to form a solid composition at the same temperature.

5,344,513

METHOD OF MANUFACTURING LAMINATED TRANSPARENT SUBSTRATE HAVING BIREFRINGENCE

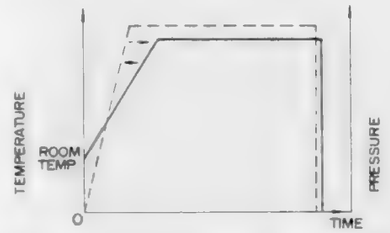
Shunji Takenaka, Yokohama, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 747,024, Aug. 19, 1991, abandoned. This application Jun. 1, 1993, Ser. No. 71,040

Claims priority, application Japan, Aug. 28, 1990, 2-226397

Int. Cl.[5] **B32B** *17/10;* **G02F** *1/133*

U.S. Cl. 156—106 **7 Claims**



1. A method of manufacturing an optical compensator having a negative anisotropy comprising the successive steps of:

(a) sandwiching between a pair of transparent substrates an ionomer resin, to form an optical compensator having a negative anisotropy and sealing it in a reduced pressure atmosphere;

(b) applying heat to and increasing the pressure on said optical compensator;

(c) while maintaining said optical compensator at a high temperature rapidly decreasing the pressure applied to said optical compensator; and thereafter

(d) quenching and rapidly decreasing the temperature of said optical compensator thereby providing negative anisotropy to said optical compensator.

5,344,514

METHOD OF PRODUCING A TOROIDAL ROAD VEHICLE TIRE CARCASS

Karl J. Siegenthaler, Rome, Italy, assignor to Bridgestone Corporation, Tokyo, Japan

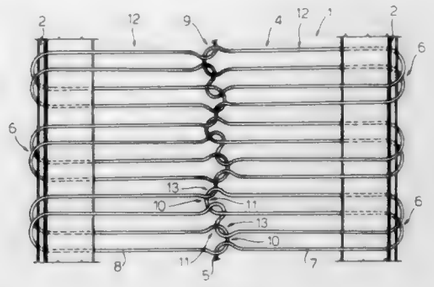
Filed Jul. 13, 1993, Ser. No. 90,867

Claims priority, application Italy, Jul. 21, 1992, 000620 A/92

Int. Cl.[5] **B29D** *30/34*

U.S. Cl. 156—117 **5 Claims**

1. A method of producing a toroidal road vehicle tire carcass comprising two parallel annular beads, and a toroidal reticulated structure connecting the two beads and comprising a number of elongated reinforcing elements located between and extending substantially radially in relation to the beads; said method comprising the steps of forming said elongated reinforcing elements from a single continuous cord wound in such a manner as to form a succession of substantially identical groups of elongated reinforcing elements, wherein each group



is defined by a first and second U-shaped loop having respective open ends and respective closed ends arranged side by side in an alternating manner along an annular interconnection line lying substantially in a plane between the bead planes; and said single continuous cord being wound about a respective one of said beads during formation of the first and second loops, and having the open end engaging the closed end of the other loop.

5,344,515

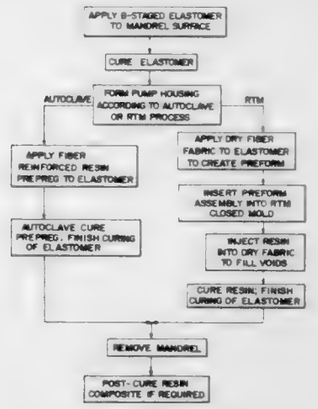
METHOD OF MAKING A PUMP HOUSING

Thomas A. Chenock, Jr., Willoughby, Ohio, assignor to Argo-Tech Corporation, Cleveland, Ohio

Filed Mar. 1, 1993, Ser. No. 24,407

Int. Cl.[5] **B65H** *81/00*

U.S. Cl. 156—171 **10 Claims**



1. A method of forming a lined pump housing, comprising the steps of:

applying a sheet of B-staged elastomeric material onto a mandrel surface to create a continuous lining layer thereon;

subsequently drawing a vacuum over the B-staged elastomeric material;

subsequently heating the B-staged elastomeric material to an appropriate curing temperature to semi-cure the elastomer;

subsequently applying a fiber-reinforced resin layer comprising a prepreg sheet of fiber previously impregnated with resin on the semi-cured elastomer;

simultaneously curing the fiber-reinforced resin layer and completing the cure of the elastomeric layer;

bonding the fiber-reinforced layer to the elastomeric layer; and

removing the mandrel.

5,344,516

METHOD FOR FORMING A SKIN-CONTACTING TOPSHEET OF A DISPOSABLE DIAPER WITH AN ELASTIC OPENING

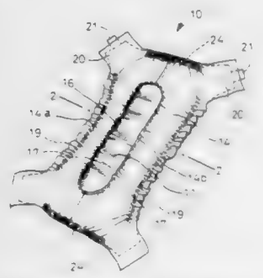
Hiroyuki Tanji; Ichiro Wada; Yoshio Ono, and Hiroyuki Soga, all of Kawanoe, Japan, assignors to Uni-Charm Corporation, Ehime, Japan

Filed Apr. 7, 1993, Ser. No. 44,385

Claims priority, application Japan, Apr. 17, 1992, 4-124284

Int. Cl.[5] **A61F** *13/15;* **B32B** *31/00*

U.S. Cl. 156—164 **2 Claims**



1. The method which comprises the steps of

(A) providing an elongated continuous web (**34**) having a first side edge (**30**) and a second side edge (**31**) as well as an elongated elastic member (**17**) maintained under elongation,

(B) continuously feeding said continuous web (**34**) and said elastic member (**17**) into bonding contact with each other so that the elastic member (**17**) follows an undulating path which alternately curves toward said first side edge (**30**) and then toward said second side edge (**31**) so as to form alternating crests (**17***a*) and relatively wide troughs (**17***b*), to thereby form a first continuous composite web (**44**),

(C) folding said first continuous composite web (**44**) to form a folded over portion along a longitudinal folding line (**33**)

(i) which is located between said first side edge (**30**) and the bottom of said troughs (**17***b*) and

(ii) which passes through said crests (**17***a*),

(D) bonding together said folded over portion so that said first side edge (**30**) is positioned closer to said second side edge (**31**) than is said elongated elastic member (**17**), whereby a second continuous composite web (**54**) is obtained that has said continuous elastic member (**17**) covered by said folded over portion,

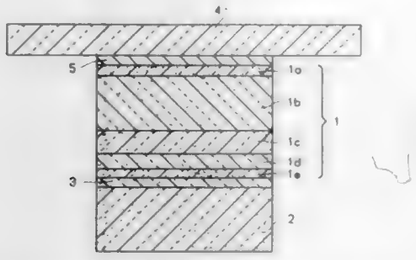
(E) cutting away spaced apart sections of said folded over portion on each side of said crests (**17***a*) to thereby form a third continuous composite web (**64**) containing a series of spaced apart cutouts (**36**),

(F) placing a pair of said third continuous composite webs (**64**) side-by-side with each pair of the associated cutouts (**36**) being opposed to and aligned with each other in a transversely symmetric relationship, laying these third continuous composite webs (**64**) upon a topsheet (**11**) so that the crests (**17***a*) of the pair of said third continuous composite webs (**64**) at least partially overlap each other,

(G) bonding said pair of third continuous composite webs (**64**) resulting from step (F) onto said topsheet (**11**), and

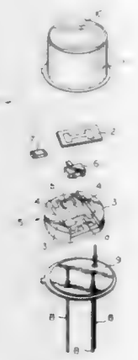
(H) cutting the resulting product transversely along lines that divide the overlapped crest portions (**17***a*) in half.

5,344,517
METHOD FOR LIFT-OFF OF EPITAXIAL LAYERS AND APPLICATIONS THEREOF
Virginia Houlding, Boulder, Colo., assignor to Bandgap Technology Corporation, Broomfield, Colo.
Filed Apr. 22, 1993, Ser. No. 52,004
Int. Cl.[5] C25F *3/00*; B32B *35/00*
U.S. Cl. 156—236 **18 Claims**



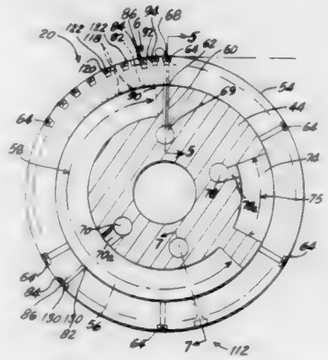
1. A process for selectively freeing an epitaxial film from an electrically conductive single crystal substrate upon which it was grown comprising:
a) placing the film and substrate into an etching solution; and
b) applying an electrochemical potential between the film-/substrate and a counter electrode to oxidize and dissolve a thin etch layer positioned between the film and substrate to thereby separate the film and the substrate from each other.

5,344,518
PYROELECTRIC IR-SENSOR
Satoru Ito, Machida; Michihiro Murata; Norio Fukui, both of Kyoto; Keizou Yamamoto, Osaka; Tetsujiro Sawao, Himi; Satoshi Awata, Takaoka; Yasuo Tada, Kyoto, and Satoru Kawabata, Hikone, all of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan
Division of Ser. No. 879,473, May 7, 1992, Pat. No. 5,270,555, which is a continuation-in-part of Ser. No. 689,715, Apr. 22, 1991, abandoned, which is a continuation of Ser. No. 521,512, May 10, 1990, abandoned. This application Feb. 23, 1993, Ser. No. 21,371
Claims priority, application Japan, May 18, 1989, 1-25568; May 18, 1989, 1-25569
Int. Cl.[5] B29C *45/16*
U.S. Cl. 156—242 **2 Claims**



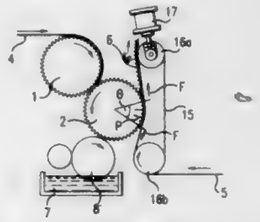
1. A method for forming a pyroelectric sensor comprising:
forming an MID substrate with a first surface and a pair of spaced apart raised mounting projections extending from said first surface by injection molding a catalytic resin portion;
injection molding a non-catalytic resin to overlap said catalytic resin portion;
forming a conductive circuit on said first surface and said projections;
affixing opposite ends of a pyroelectric light receiving element to the conductive circuit on separate ones of said pair of projections, whereby a center portion of said element between said opposite ends is supported spaced from said first surface.

5,344,519
APPARATUS FOR APPLYING LABELS ONTO SMALL CYLINDRICAL ARTICLES HAVING IMPROVED VACUUM AND AIR PRESSURE PORTING FOR LABEL TRANSPORT DRUM
John M. Galchefski, Larksville, Pa., and Ian Westbury, Turlock, Calif., assignors to CMS Gilbreth Packaging Systems, Trevose, Pa.
Continuation-in-part of Ser. No. 906,573, Jun. 30, 1992. This application May 14, 1993, Ser. No. 62,314
Int. Cl.[5] B65C *9/00*
U.S. Cl. 156—456 **23 Claims**



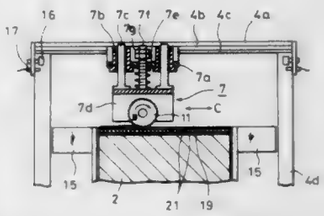
1. An apparatus for applying thin film polymer labels to small cylindrical articles comprising:
a label transport drum having an inner cylindrically configured hub and a cylindrical drum rotatably mounted on said hub,
means for rotating said drum on said hub,
means for supplying a label to the surface of said drum,
means for applying an adhesive onto an area adjacent the leading edge of a label while said label is moving with said drum,
means for applying a solvent onto an area adjacent the trailing edge of the label while said label is moving with said drum,
means for conveying cylindrical articles into tangential spinning engagement with said drum and into rotative engagement with the leading edge of a label at an article wrapping position so as to transfer the label onto the article,
a radially extending, slotted vacuum manifold defining a label retention area and extending circumferentially around a substantial portion of the circumference of said hub, and a radially extending slotted pressure manifold aligned circumferentially after said slotted vacuum manifold at said article wrapping position,
means for drawing a vacuum within said slotted vacuum manifold,
means for pressurizing said slotted pressure manifold, and
valve port means positioned on the inner surface of said drum and communicating with the surface of said drum in an area where a label is positioned for receiving the vacuum draw from said vacuum manifold to retain said label onto the surface of said drum as said label moves through said label retention area, and for receiving pressure from said pressure manifold to blow the leading edge of the label into engagement with an article positioned at the article wrapping position to aid in article wrapping.

5,344,520
SINGLE-FACED CORRUGATED CARDBOARD SHEET MAKING MACHINE HAVING AN ADJUSTABLE PRESSING MEANS
Yukuharu Seki, and Makoto Ando, both of Mihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 13, 1991, Ser. No. 806,362
Claims priority, application Japan, Dec. 25, 1990, 2-405921
Int. Cl.[5] B31F *1/28*
U.S. Cl. 156—472 **12 Claims**



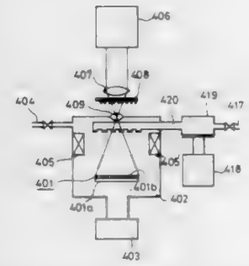
1. A single-faced corrugated cardboard sheet making machine having a pair of corrugating rolls for corrugating a core paper web into a wave shape, and a pasting member for applying paste to corrugation crest portions of the corrugated core paper web; the machine having an endless belt for pressing and sticking a liner to the core paper web applied with paste, and means for adjusting the pressing condition of the endless belt, with improvements comprising; means for cleaning the surface of the endless belt, and the means for adjusting the pressing condition of the endless belt including the belt being trained around the circumference of at least two belt rolls which press the endless belt against the liner on the surface of the corrugating roll, and wherein one of the rolls around which the endless belt is trained is movable to adjust the pressing condition, the movement being substantially in the direction of a line connecting the center of the rolls carrying the endless belt.

5,344,521
COATING FILM SEPARATING DEVICE AND COATING FILM SEPARATION METHOD USING THE DEVICE
Satoshi Ohsaki, Ushiku, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 6, 1992, Ser. No. 863,753
Claims priority, application Japan, Apr. 10, 1991, 3-103520; May 10, 1991, 3-133182
Int. Cl.[5] B32B *31/16, 31/18*
U.S. Cl. 156—584 **29 Claims**



1. A coating film separating device comprising:
substrate holding means for holding a substrate having first and second surfaces, with at least one surface being covered with a coating film;
a roller unit equipped with a roller and means for pressing said roller against an edge portion of a surface of the coating film;
roller unit driving means for moving said roller unit on the edge portion of the surface of the coating film in a widthwise direction of the substrate;
guide means for guiding said roller unit to move along an edge portion of the substrate;
spraying means for spraying pressurized fluid at an interface between the substrate and the coating film at the edge portion of the substrate along which said roller unit moves; and
substrate reversing means for turning the substrate from a first surface-up position to a second surface-up position.

5,344,522
PATTERN FORMING PROCESS AND PROCESS FOR PREPARING SEMICONDUCTOR DEVICE UTILIZING SAID PATTERN FORMING PROCESS
Takayuki Yagi, Machida; Toshiyuki Komatsu, Hiratsuka; Yasue Sato, Kawasaki, and Shinichi Kawate, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 696,024, May 6, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 13,180
Claims priority, application Japan, May 9, 1990, 2-117644; May 10, 1990, 2-118675; Jun. 19, 1990, 2-158687; Jul. 3, 1990, 2-174443; Nov. 16, 1990, 2-308550
Int. Cl.[5] H01L *21/306*; B44C *1/22*; C23F *1/00*
U.S. Cl. 156—628 **49 Claims**



1. A process for forming an etching pattern, comprising the steps of:
selectively irradiating light to a clean surface of a material to be worked by etching, so as to form radicals from a photoradical forming substance in an atmosphere of the substance, the light having a wavelength not longer than the UV-ray absorption end of the photoradical forming substance;
forming a modified portion having etching resistance at a photo-irradiated portion of the surface; and
then subjecting an unmodified portion of the surface of the material to be worked to an etching treatment comprising dry etching using halogen atom radicals, thereby forming an etching pattern corresponding to a pattern formed by said light irradiation.

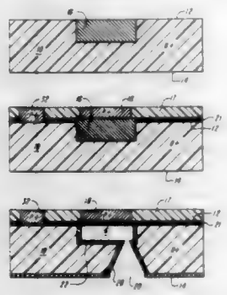
5,344,523
OVERPRESSURE-PROTECTED, POLYSILICON, CAPACITIVE DIFFERENTIAL PRESSURE SENSOR AND METHOD OF MAKING THE SAME
Clifford D. Fung, Mansfield, and Kevin H. L. Chau, Franklin, both of Mass., assignors to The Foxboro Comany, Foxboro, Mass.
Division of Ser. No. 881,707, May 12, 1992. This application Nov. 12, 1993, Ser. No. 150,837
Int. Cl.[5] H01L *21/306*; B44C *1/22*
U.S. Cl. 156—628 **6 Claims**

1. A method for manufacturing a capacitive differential pressure sensing device comprising the steps of,
forming a cavity in the top surface of a single crystal silicon

wafer to a prescribed depth with a floor of generally predetermined area at said prescribed depth, said floor lying parallel to said upper surface,

filling said cavity with a sacrificial spacer material so that the upper surface of the filled cavity forms a smooth continuous surface with the upper surface of said wafer,

depositing on said wafer top surface a layer of polysilicon extending over the filled cavity,



selectively doping a portion of the polysilicon layer overlaying the filled cavity to form a conductive p+ region,

anisotropically etching in the bottom surface of said wafer, parallel to said top surface, an opening creating an open passage to the floor of said filled cavity, the opening in the floor of said cavity being located away from the center of said floor, and

removing said spacer material in said cavity through said passage.

5,344,524

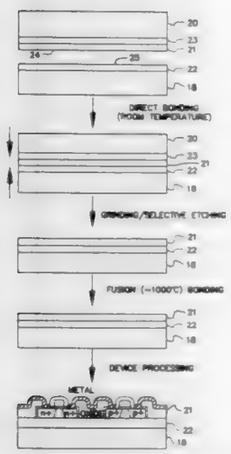
SOI SUBSTRATE FABRICATION

Kalluri R. Sharma, Mesa, Ariz., and Michael S. Liu, Bloomington, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 30, 1993, Ser. No. 85,422

Int. Cl.[5] H01L *21/306*

U.S. Cl. 156—630 **19 Claims**



1. A method for fabricating a silicon-on-insulator substrate, comprising:

forming an etch-stop layer on a silicon device wafer;

forming a device layer on the etch-stop layer;

forming a dielectric layer on a silicon handle wafer;

making exposed surfaces of the dielectric layer and the device layer hydrophilic;

bonding the device layer and the dielectric layer at the exposed surfaces to each other at room temperature;

removing the silicon device wafer; and

removing the etch-stop layer wherein said removing steps are performed at room temperature.

5,344,525

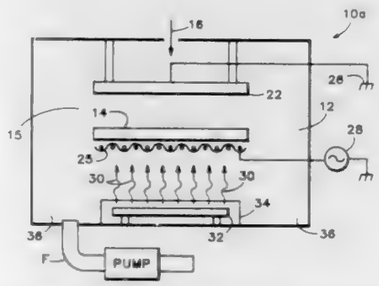
PROCESS FOR ETCHING SEMICONDUCTOR DEVICES

David A. Cathey, Jr., Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 647,263, Jan. 29, 1991, abandoned. This application Dec. 23, 1992, Ser. No. 996,480

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—643 **23 Claims**



1. A process for etching a semiconductor device to form an etched pattern therein, comprising:

providing in a etching area, a semiconductor device having a plurality of layers, at least one of said layers of said semiconductor device comprising a layer formed of a first material which, when chemically reacted with a chemical etchant in gas phase, at a temperature of up to about 200 degrees C., forms nonvolatile by-products from said chemical reaction, the presence of said nonvolatile gaseous by-products inhibiting the etching of the semiconductor device;

elevating the temperature of each said layer of said first material to a level which, upon reaction with said chemical etchant, forms volatile gaseous by-products from said chemical reaction;

anisotropically etching said semiconductor device with said chemical etchant, at said elevated temperature, to form a pattern therein, said etching of said semiconductor device producing said volatile gaseous by-products and said nonvolatile gaseous by-products which does not inhibit the effective etching of said semiconductor device;

removing said gaseous volatile by-products from said etching area; and

providing a foraminous member for supporting said semiconductor device within said etching work area, said foraminous member being unreactive with said semiconductor device and remaining intact at said elevated temperature.

5,344,526

METHOD FOR ETCHING DIAMOND

Yoshiki Nishibayashi, and Shinich; Shikata, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

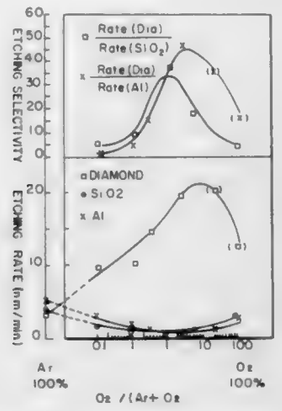
Filed Sep. 16, 1993, Ser. No. 123,061

Int. Cl.[5] H01L *21/306;* **B44C** *1/22*

U.S. Cl. 156—643 **6 Claims**

1. A method for etching a diamond surface comprising steps

of forming a mask on a surface of diamond, and etching the diamond surface with a mixture of oxygen-containing gas and



an inert gas, wherein a concentration of oxygen in terms of O_2 is from 0.01 to 20% based on the whole volume of the mixture.

5,344,527

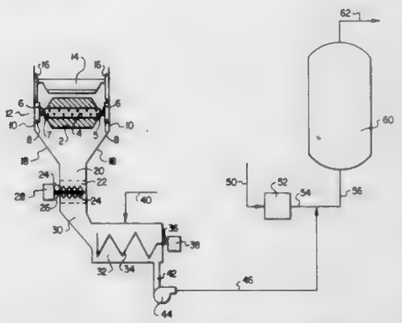
APPARATUS FOR DISPOSAL OF FILTER MEDIA

Anthony Mickas, 2361 North Shore Rd., Bellingham, Wash. 98225

Division of Ser. No. 941,499, Sep. 8, 1992. This application Mar. 4, 1993, Ser. No. 26,346

Int. Cl.[5] C10B *55/00;* **C10G** *7/00*

U.S. Cl. 202—121 **1 Claim**



1. An apparatus for disposing of filter media in the presence of a hydrocarboneous mixing fluid, wherein said filter media is supported upon a media support and comprises a hydrocarboneous contaminant which is deposited upon or entrained by said filter media, said apparatus comprising:

a. a coking vessel operated at coking conditions;

b. a filter media removal device for removing said filter media comprising said hydrocarboneous contaminant from said media support;

c. a size reducer which subjects said filter media removed from said media support to size reduction to form a media staple comprising said hydrocarboneous contaminant;

d. a mixer to mix said media staple with said hydrocarboneous mixing fluid to form a media-hydrocarboneous mixing fluid mixture; and,

e. a feed mean to feed said media-hydrocarboneous fluid mixture to said coking vessel.

5,344,528

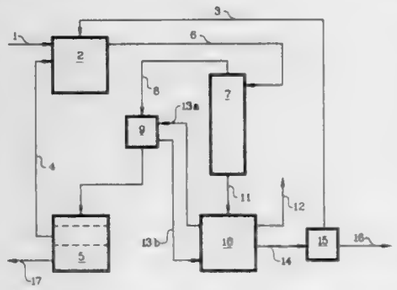
RECOVERY OF PHENOL FROM LOW CONCENTRATIONS WITH SODIUM SULFATE

Thomas H. Bossler, Washington Township, Westmoreland County; Donald Glassman, Mt. Lebanon Township, Allegheny County; Michael C. Grebinoski, West Deer Township, Allegheny County; Howard H. Morgan, Jr., Monroeville Boro, Allegheny County, and Jennifer L. Voss, Bethel Park, all of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Filed Aug. 4, 1993, Ser. No. 102,185

Int. Cl.[5] B01D *3/34;* **C07C** *37/74*

U.S. Cl. 203—14 **7 Claims**



1. Method of removing phenol values from concentrations of about 0.5 weight percent to about 4 weight percent in an aqueous solution comprising conducting a distillation of said aqueous solution in the presence of about 8 weight percent to about 18 weight percent sodium sulfate, condensing vapor from said distillation, collecting the condensate therefrom in water-rich and phenol-rich portions, and recovering phenol values from said phenol-rich portion.

5,344,529

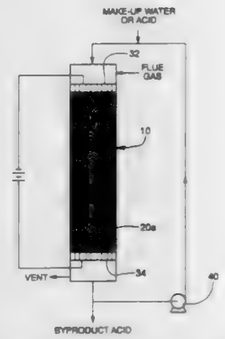
BIPOLAR PROCESS FOR REMOVAL OF SULFUR DIOXIDE FROM WASTE GASES

John E. Stauffer, 6 Pecksland Rd., Greenwich, Conn. 06831

Continuation-in-part of Ser. No. 886,535, May 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 717,222, Jun. 17, 1991, abandoned. This application Jun. 15, 1993, Ser. No. 76,982

Int. Cl.[5] C25B *1/00, 1/02*

U.S. Cl. 204—101 **9 Claims**



1. A process for the mitigation and control of air pollution caused by the emission of sulfur dioxide in effluent vent, flue or exhaust gas, said process comprising the removal of sulfur dioxide from a stream of such effluent vent, flue or exhaust gas by

scrubbing the gas in a column with aqueous sulfuric acid to solubilize and remove sulfur dioxide from the gas, said column containing electrically conductive packing material which serves both as a gas-liquid film contact surface

for scrubbing and as the electrochemically active surface of a bipolar electrode, and two electrical contacts arranged so that the bed of packing material is spaced between the contacts and is in electrical contact with said contacts;

applying an electrical potential across said two contacts in excess of about 0.6 volts in order to effect electrolysis; and

maintaining the concentration of the aqueous sulfuric acid by means of make-up water or acid.

5,344,530

METAL ANODES FOR ELECTROLYTIC ACID SOLUTIONS CONTAINING FLUORIDES OR FLUOROANIONIC COMPLEXES

Oronzio de Nora; Antonio Nidola; Carlo Traini, and Ulderico Nevosi, all of Milan, Italy, assignors to De Nora Permelec S.p.A., Italy

Division of Ser. No. 841,375, Feb. 25, 1992, abandoned. This application Apr. 29, 1993, Ser. No. 55,210

Claims priority, application Italy, Mar. 1, 1991, 91-00055

Int. Cl.[5] C25C *1/00, 1/10, 1/14, 1/18*

U.S. Cl. 204—105 R **8 Claims**

1. In a process for the electrocatalytic recovery of metals from aqueous solutions containing metal ions and fluoride ions or anionic fluorocomplexes, wherein the improvement comprises using as the anode

a) a passivatable metal matrix comprising a nickel-copper alloy containing 5 to 20% by weight of copper, b) an electrocatalytic compound for oxygen evolution and c) at least one other additive.

5,344,531

PREVENTION METHOD OF AQUATIC ATTACHING FOULING ORGANISMS AND ITS APPARATUS

Kiyomi Saito, Abiko, and Morihiko Kuwa, Ageo, both of Japan, assignors to Nakagawa Corrosion Protecting Co., Ltd., Tokyo, Japan

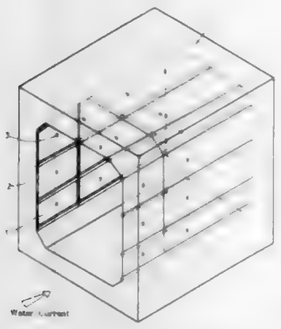
PCT No. PCT/JP92/00937, § 371 Date Mar. 23, 1993, § 102(e) Date Mar. 23, 1993, PCT Pub. No. WO93/02254, PCT Pub. Date Apr. 2, 1993

PCT Filed Jul. 23, 1992, Ser. No. 30,398

Claims priority, application Japan, Jul. 24, 1991, 3-206192; Dec. 12, 1991, 3-350694; Feb. 18, 1992, 4-060942

Int. Cl.[5] C23F *13/00, 15/00*

U.S. Cl. 204—147 **25 Claims**



1. A prevention and control method of aquatic fouling organisms, said fouling organisms having attaching portions, comprising the steps of

a) covering the surface of a submerged structure or an intake facility with a multilayer body in which said multilayer body is composed of a plurality of mutually insulated metallic plates, said plates being made of one member selected from the group consisting of iron, magnesium, aluminum and alloys thereof through an insulating material and a cushion material:

b) using a pair of said metallic plates facing each other as electrodes,

c) composing an electric circuit using said pair of said metallic plates;

d) connecting said electrodes to a DC power supply having a current reversal function;

e) supplying a current with a current density of not more than 500 mA/m^2 between said electrodes either continuously or intermittently at an interval of 10 seconds to 60 minutes; and

f) reversing the polarity of said current at an interval of 10 seconds to 60 minutes so that when one of said metallic plates is the anode, the surface of said metal constituting said metallic plate is dissolved and activated, and attachment of said aquatic fouling organisms is controlled or prevented.

5,344,532

ULTRASONIC ENERGY PRODUCING DEVICE

Adrian A. Joseph, 100 N. Harper Ave., Los Angeles, Calif. 90048

Continuation-in-part of Ser. No. 490,876, Mar. 9, 1990, Pat. No. 5,109,922. This application Dec. 4, 1991, Ser. No. 802,313

Int. Cl.[5] C01B *3/00*

U.S. Cl. 204—157.15 **6 Claims**



6. The process of separating water out of a molecular hydrocarbon chain comprising the single step of:

applying ultrasound to said hydrocarbon chain to reduce the viscosity of said chain, said ultrasound being applied at 20,000 Hz and a minimum of 2,500 watts per hour, said application acting to break the bonds of the molecule to separate the water therefrom.

5,344,533

APPARATUS AND METHOD FOR REMOVING LIQUID FROM LIQUID BEARING MATERIAL

James T. Candor, 5440 Cynthia La., Dayton, Ohio 45429

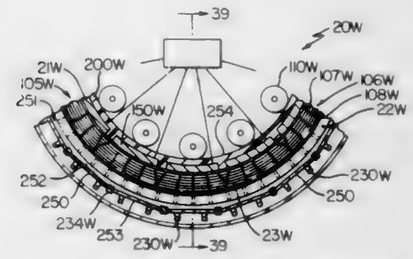
Continuation-in-part of Ser. No. 842,898, Feb. 27, 1992, Pat. No. 5,259,940, which is a continuation-in-part of Ser. No. 731,791, Jul. 17, 1991, Pat. No. 5,160,593, which is a continuation-in-part of Ser. No. 695,603, May 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 575,416, Aug. 29, 1990, Pat. No. 5,114,560, and Ser. No. 502,506, Mar. 30, 1991, Pat. No. 5,019,230, which is a continuation-in-part of Ser. No. 454,718, Dec. 21, 1989, Pat. No. 4,975,166, said Ser. No. 575,416, is a division of Ser. No. 454,718, Dec. 21, 1989, which is a continuation-in-part of Ser. No. 386,579, Jul. 27, 1989, abandoned, which is a continuation-in-part of Ser. No. 284,197, Dec. 14, 1988, Pat. No. 4,877,503, which is a continuation-in-part of Ser. No. 213,709, Jun. 30, 1988, abandoned, which is a continuation-in-part of Ser. No. 189,974, May 4, 1988, abandoned, which is a continuation-in-part of Ser. No. 62,201, Jun. 15, 1987, Pat. No. 4,780,188, which is a continuation-in-part of Ser. No. 32,746, Mar. 3, 1987, Pat. No. 4,767,514. This application Mar. 15, 1993, Ser. No. 31,575

The portion of the term of this patent subsequent to Dec. 4, 2007, has been disclaimed.

Int. Cl.[5] B01D *57/02*

U.S. Cl. 204—180.1 **18 Claims**

7. In a method for removing liquid from liquid bearing material and comprising the steps of providing a pair of electrode means having portions thereof disposed adjacent each other and defining an inlet means to said adjacent portions and an outlet means from said adjacent portions, feeding said liquid bearing material into said inlet means, moving said liquid bearing material from said inlet means to said outlet means so that sections of said material serially move from said inlet means to said outlet means while being disposed between said adjacent portions, vibrating said liquid bearing material between said adjacent portions of said electrode means as said material is moving from said inlet means to said outlet means with vibrating means whereby a vibratory field arrangement is applied to said material, and creating a voltage between said pair of electrode means so as to create an electrostatic field arrangement between said adjacent portions of said pair of electrode means for acting through said material that is disposed therebetween to remove liquid from said material, the improvement wherein the step of vibrating said liquid bearing material comprises the



step of simultaneously providing different vibratory field actions to different sections of said material that are serially disposed between said inlet means so that different intensities of said vibratory field arrangement serially act on each said section of said material as each said section of said material moves from said inlet means to said outlet means with said vibrating means comprising a unit having a plurality of vibratable sections thereof disposed in a serial manner respectively adjacent at least some of said sections of said material between said inlet means and said outlet means and having means generally vibrationally isolating said vibratable sections from each other so that each vibratable section provides its own said different vibratory field action to its respective adjacent said section of said material.

5,344,534

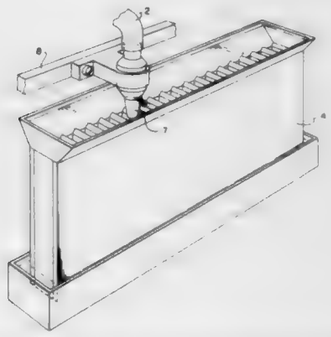
GEL ELECTROPHORESIS MEASUREMENT OF DYNAMIC REACTION PRODUCT BY CONTINUOUS SAMPLING

Robert S. Danziger, 20 W. 64th St., Apt. 15K, New York, N.Y. 10023

Filed Mar. 5, 1993, Ser. No. 27,284

Int. Cl.[5] C25B *7/00*

U.S. Cl. 204—182.8 **6 Claims**



1. A method for continuous electrophoretic measurement of electrophoretically distinct macro-molecules during a kinetic reaction comprising the following steps:

(a) continuously drawing a sample stream from a kinetic reaction mixture involving the time variant interaction of macromolecules during a kinetic reaction time interval of interest;

(b) initiating step (a) not later than the onset of the kinetic time interval of interest and terminating step (a) not earlier than the conclusion of the kinetic reaction time interval of interest;

(c) continuously depositing the sample stream onto the inlet of an electrophoretic gel slab such that the sample stream is initially deposited on the inlet face on one end of the gel slab and that finally, the sample stream is deposited on the inlet face on the opposite end of the gel slab, with the sample stream being deposited on the slab face between the two end points in a continuous manner; and,

(d) applying an electric field across the gel slab at a field intensity sufficient to induce movement of macromolecules into the slab.

5,344,535

DIELECTROPHORETIC CHARACTERIZATION OF MICRO-ORGANISMS AND OTHER PARTICLES

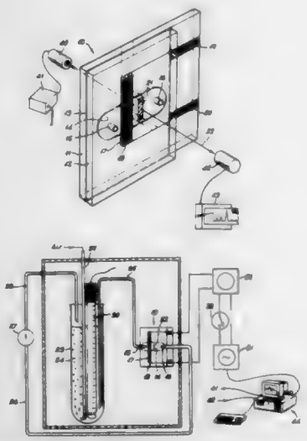
Walter B. Betts, Wilberfoss, and Jeremy J. Hawkes, Fishergate, both of England, assignors to British Technology Group Limited, London, England

Continuation of Ser. No. 730,888, Jul. 22, 1991, abandoned. This application Apr. 27, 1993, Ser. No. 53,326

Claims priority, application United Kingdom, Nov. 27, 1989, 8926781.9

Int. Cl.[5] G01N *27/26, 27/447*

U.S. Cl. 204—183.1 **6 Claims**



1. Apparatus for establishing dielectrophoretic collection rates for particles in a fluid suspension, said apparatus comprising:

a chamber for said fluid suspension, said chamber having an inlet and an outlet;

an electrode system comprising closely spaced interdigitated electrodes for influencing said fluid suspension within said chamber;

means for applying an alternating voltage between said interdigitated electrodes of said electrode system and thereby establishing in said fluid suspension in the immediate vicinity of said electrodes a spatially non-uniform alternating electric field thereby to induce dielectrophoretic collection adjacent said electrodes of electrically polarizable particles suspended in said fluid suspension;

means for producing fluid flow of said fluid suspension through said chamber; and

means for measuring particle concentration at a measuring region within said chamber, said inlet and outlet being so

disposed that fluid suspension flowing through said chamber from said inlet to said outlet flows past said electrode system and immediately thereafter past said measuring region within said chamber.

4. A method of establishing dielectrophoretic collection rates for dielectrically polarizable particles in a fluid suspension, said method comprising the steps of:

causing a fluid suspension to flow in a chamber past an electrode structure;

energizing said electrode structure for a predetermined time interval with an alternating voltage at a preselected frequency and thereby establishing in said flowing fluid suspension a spatially non-uniform alternating electrical field and inducing dielectrophoretic collection, adjacent said electrode structure, of dielectrically polarizable particles suspended in said fluid suspension;

thereafter terminating the energizing of said electrode structure and thereby releasing particles collected adjacent thereto as a localized pulse of increased particle concentration in the flowing fluid suspension; and

measuring said pulse of increased particle concentration at a measuring region located within said chamber and immediately downstream of said electrode structure.

5,344,536

METHOD OF AND APPARATUS FOR PROCESSING A WORKPIECE IN PLASMA

Kazuto Obuchi; Satoshi Oya; Mitsuaki Minato; Akira Uehara; Kazutoshi Fujisawa, and Kazuhisa Takao, all of Kanagawa, Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan

Filed Dec. 2, 1992, Ser. No. 984,518

Claims priority, application Japan, Dec. 3, 1991, 3-347944

Int. Cl.[5] H01L *21/02*

U.S. Cl. 204—192.32 **20 Claims**

1. An apparatus for processing a workpiece in a plasma, comprising:

a reaction chamber adapted to have a reaction gas introduced therein and exhausted therefrom;

microwave generating means for generating and introducing a microwave into said reaction chamber to produce a plasma therein for activating the reaction gas to process a workpiece in said reaction chamber; and

magnetic field generating means for generating a magnetic field in said reaction chamber while creating a region with substantially no flux density in said magnetic field wherein said plasma is uniformly applied to said workpiece.

14. A method of processing a workpiece in a plasma, comprising the steps of:

introducing a reaction gas into a reaction chamber;

introducing a microwave into said reaction chamber to produce a plasma therein for activating the reaction gas;

processing a workpiece supported on a table in said reaction chamber with the activated reaction gas; and

generating a magnetic field in said reaction chamber while creating a region with substantially no flux density in said magnetic field wherein said plasma is uniformly applied to said workpiece.

5,344,537

METHOD FOR CORROSION-PROOFING OF A WATER SYSTEM

Claus Fabricius, Allerod, Denmark, assignor to Guldager Electrolyse A/S, Allerod, Denmark

Filed Mar. 25, 1993, Ser. No. 30,203

Int. Cl.[5] C23F *13/00*

U.S. Cl. 204—147 **2 Claims**

1. A method for corrosion-proofing a water system having a tank through which water flows in whole or in part, the method comprising the steps of:

providing at least two electrodes in the tank, at least one of said electrodes comprising a metal aluminum and serving as a cathode;

connecting the electrodes to an electrolysis power source; and

energizing the electrodes for electrolytically treating the water in the tank and thereby corrosion proofing the tank.

5,344,538

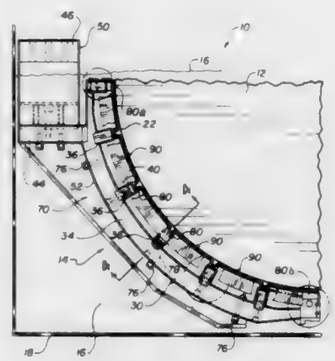
THIN PLATE ANODE

Jamie H. Chamberlain, Concord; Adam G. Bay, Chesterland, and Robert D. DeWitt, Highland Heights, all of Ohio, assignors to Gould Inc., Eastlake, Ohio

Filed Jan. 11, 1993, Ser. No. 2,596

Int. Cl.[5] C25D *17/12, 17/16*

U.S. Cl. 204—212 **15 Claims**



10. An apparatus for electrodepositing metal onto a rotating drum cathode partially immersed in an electrolyte solution, comprising:

a grid dimensioned positioned within said electrolyte solution adjacent said drum cathode, said grid formed of substantially of copper or an alloy thereof,

a protective layer of a non-corrosive conductive metal selected from a group consisting of titanium, columbium, stainless steel, and alloys thereof, covering all surfaces of said copper exposed to said electrolyte solution,

a plurality of rigid, yet flexible preformed plates formed of an electrically conductive metal inert to said electrolyte solution, each of said plates having a radius of curvature slightly larger than the radius of curvature of said drum cathode,

a plurality of conductive mounting locations formed on said grid, said mounting locations aligned on said grid to receive the edges of said plates only and to position said plates side-by-side about the periphery of said drum, each mounting location dimensioned to receive and to position the adjacent edges of adjacent plates, said mounting locations bonded to said copper grid wherein a metallic and electrical bond exists between said mounting locations and said grid, and

means for electrically connecting each edge of a plate to its respective mounting locations wherein current is applied to each of said plates through said grid and conductive mounting locations to the edges thereof.

5,344,539

ELECTROCHEMICAL FINE PROCESSING APPARATUS

Masataka Shinogi; Toshihiko Sakuhara; Masayuki Suda; Fumiharu Iwasaki, and Akito Ando, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,118

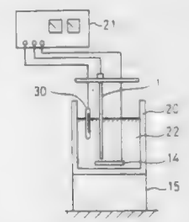
Claims priority, application Japan, Mar. 30, 1992, 4-074734

Int. Cl.[5] C25F *3/02, 7/00*

U.S. Cl. 204—224 M **5 Claims**

1. An electrochemical fine processing apparatus for forming

a film structure on a support comprising: a container adapted to contain an electrolytic solution in which the support is immersed; an addition electrode adapted to be dipped in the electrolytic solution in close proximity to the support for effecting deposition of a substance from the electrolytic solution on the support by electrochemical reaction when a first potential is applied to said addition electrode; a removing electrode



disposed adjacent to said addition electrode for scraping a part of the deposited substance on the support by electrochemical reaction when a second electric potential is applied to said removal electrode, wherein the second electric potential is of opposite polarity to the first electric potential; and potential supplying means for applying the first electric potential to said addition electrode and the second electric potential to said removing electrode, respectively.

5,344,540

ELECTROCHEMICAL CELL WITH DEGASSING DEVICE

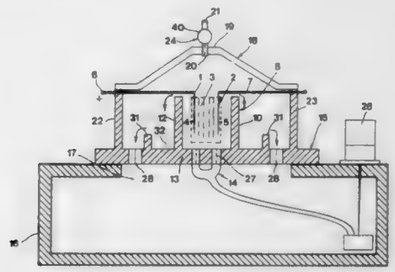
Harri Heinke, Erlensee, and Wolfgang Blatt, Wächtersbach, both of Fed. Rep. of Germany, assignors to Heraeus Elektrochemie GmbH, Hanau, Fed. Rep. of Germany

Filed Jan. 28, 1993, Ser. No. 10,425

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1992, 4202480

Int. Cl.[5] C25B *9/00*

U.S. Cl. 204—232 **9 Claims**



1. An electrochemical cell for electrolytic treatment of an aqueous solution, comprising

a cell housing tub (**8**);

a plurality of plate anode (**1**) and cathode (**2**) electrodes, spaced apart from and parallel to one another in said cell, collectively defining an interchangeable electrode stack (**3**), with adjacent electrodes that have alternating polarity meshing with one another in a comb configuration,

respective first (**6**) and second (**7**) power elements, each serving to provide electrical contact and mechanical retention to all the electrodes having a common polarity, by means of respective power feeders (**4,5**) of solution-resistant material welded laterally to the electrodes,

means (**26, 27, 14, 37**) for circulating a flow of said aqueous solution from bottom to top of the electrodes along their electrode surfaces, and thence to a drain (**28**) leading to a container (**16**),

wherein said cell housing tub (**8**) has an open top and has at least one sidewall (**10, 12**) defining a first overflow lip for degassing said solution during flow thereover;

the cell housing tub is surrounded, at least in the region of the first overflow lip, by a further wall (**31**) lower than said at least one sidewall (**10, 12**) and defining a second overflow lip and a collection container or sump (**32**) between said first overflow lip and said further wall (**31**), thereby forcing flowing solution to cascade over both said first and second overflow lips and assuring complete degassing;

a hood (**18**), extending over both said tub (**8**) and said first (**10, 12**) and second (**31**) overflow lips, contains any gas released during said degassing, and vent means (**20, 21**) are provided for removal of said gas contained by said hood (**18**).

5,344,541

SILVER RECOVERY DEVICE

Gerhard Uffinger, Weinstadt-Grobheppach, Fed. Rep. of Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

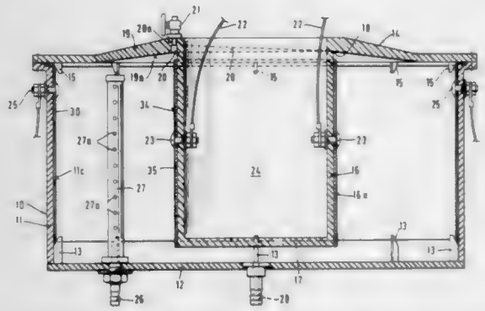
PCT No. PCT/EP92/01732, § 371 Date Apr. 2, 1993, § 102(e) Date Apr. 2, 1993, PCT Pub. No. WO93/03203, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 30, 1992, Ser. No. 39,123

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1991, 4125771

Int. Cl.[5] C25C *7/00*

U.S. Cl. 204—272 **10 Claims**



1. Device for electrolytically recovering silver from a photographic processing fluid, said device comprising a cylindrical electrolysis tank with a removable lid including a ventilation means, a bottom and cylindrical walls having an inner surface surrounding the bottom, said bottom being provided with a fluid supply pipe and a fluid discharge pipe arranged therein, a hollow-cylindrical anode arranged concentrically within the tank, a single-use cathode in the form of a first hollow cylinder which rests against the inner surface of the walls, and electrical connections for the cathode and anode, characterized in that the tank lid forms an integral unit with a second hollow cylinder which extends downwards into the electrolysis tank, said second hollow cylinder having a peripheral surface, and wherein said anode being mounted on said peripheral surface.

5,344,542

MULTIPLE-PROCESSING AND CONTAMINATION-FREE PLASMA ETCHING SYSTEM

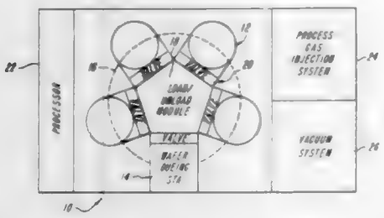
Joseph A. Maher, South Hamilton, Mass.; E. John Vowles, Goffstown; Joseph D. Napoli, Winham, both of N.H.; Arthur W. Zafiropoulo, Manchester, and Mark W. Miller, Burlington, both of Mass., assignors to General Signal Corporation, Stamford, Conn.

Continuation of Ser. No. 456,036, Dec. 22, 1989, abandoned, which is a continuation of Ser. No. 853,775, Apr. 18, 1986, abandoned. This application Dec. 16, 1991, Ser. No. 809,031

The portion of the term of this patent subsequent to Dec. 29, 2004, has been disclaimed.

Int. Cl.[5] **C23C** *14/56*; **H01L** *21/02*

U.S. Cl. 204—298.15 **26 Claims**



1. A multiple-processing and contamination-free substrate processing system both providing single-step as well as multiple-step substrate processing modes in a manner that is free from contamination, comprising:

plural, single-substrate substrate receiving and surface processing vessels, each having an ingress and egress defining port that are arrayed about a predetermined spacial locus in such a way that the several ports thereof are accessible from a single location spaced from the several ports;

a process gas injection system coupled to said plural, single-substrate substrate receiving and surface processing vessels selectively operable to provide substrate surface processing gases that are the same gases in at least two processing vessels during operation in said single-step processing mode and that are different processing gases in at least two processing vessels during operation in one of said multiple-step and said single-step processing modes;

a dual-function substrate queuing station defining a multiple substrate queue spaced with the plural vessels along the same predetermined spacial locus having a substrate access port accessible from said single location, said substrate queuing station both being the source from which all substrates held in the multiple substrate queue are individually released through said access port thereof to said vessels and being the return to which all substrates are individually received through said access port thereof from said vessels;

plural valve means individually coupled to corresponding ones of said plural, single-substrate substrate receiving and surface processing vessel ingress and egress ports and to said substrate queuing station substrate access port;

single-substrate transfer means separate from said valve means disposed at said single location and cooperative with corresponding ones of said plural valve means for moving substrates from and to said substrate access port of said queuing station from and to selected ones of said single-substrate substrate receiving and surface processing vessels through the associated ones of said ingress and egress ports thereof, whereby each said substrate can proceed from or to said queuing station from or to any one of said single-substrate substrate receiving and surface processing vessels via said transfer means further thereby to transfer said substrates between any one of said stations and processing vessels without passing through any other thereof during operation in said single-step processing mode, and for moving substrates between any selected ones of said single-substrate substrate receiving and surface processing vessels through the associated ones of said ingress and egress ports thereof in any selected order during operation in said multiple-step processing mode; and

means coupled to and cooperative with said substrate receiving and surface processing vessels, coupled to and cooperative with said substrate queuing station, and coupled to and cooperative with said single-substrate substrate transfer means for maintaining said plural, single-substrate substrate receiving and processing vessels, said substrate queuing station, and said single-substrate substrate transfer means simultaneously in such a vacuum condition that both prevents contamination of substrates moving from and to said substrate access port of said queuing station from and to any selected ones in any order of said single-substrate substrate receiving and surface processing vessels through the associated ones of the ingress and egress ports thereof during operation in said single-step and multiple-step processing modes and that prevents contamination of wafers moving between any selected ones of said single-substrate substrate receiving and surface processing vessels through the associated ones of said ingress and egress ports thereof during operation in said multiple-step mode.

5,344,543

METHOD OF MANUFACTURING A PLATE OF GELL FOR SEPARATING AND TRANSFERRING MACROMOLECULES BY ELECTROPHORESIS, AND PLATES OF GEL OBTAINED IN THIS WAY

Jean Boquet, Le Perray-en-Yvelines, France, assignor to Bertin & Cie, Plaisir, France

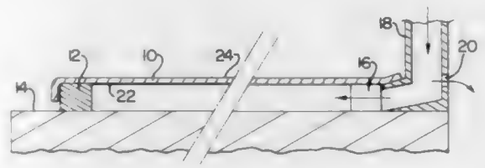
PCT No. PCT/FR92/00142, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO92/14538, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 13, 1992, Ser. No. 937,898

Claims priority, application France, Feb. 14, 1991, 91 01734

Int. Cl.[5] **C25B** *9/00*

U.S. Cl. 204—299 R **8 Claims**



1. A plate of gel for separating and transferring macromolecules by electrophoresis, the plate comprising a layer of gel of constant thickness adhering to a face of a microporous membrane, and being characterized in that the membrane is plane and in that the gel fills the micropores of the membrane without overflowing onto the free face of the membrane opposite from its face covered in gel.

5,344,544

DIAGNOSTIC ELECTRODE FOR EVALUATING CIRCUITRY OF AN ANALYZER

John R. North, Salisbury, United Kingdom; Robert L. Kay, Thousand Oaks, and Jonathan Ivy, Ventura, both of Calif., assignors to Porton Diagnostics, Inc., Westlake Village, Calif.

Filed Jul. 6, 1992, Ser. No. 909,322

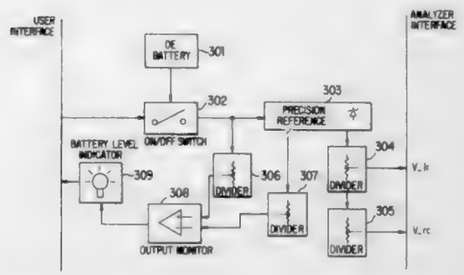
Int. Cl.[5] **G01W** *27/26*

U.S. Cl. 204—401 **27 Claims**

1. An apparatus for testing circuit operation of an analyzer comprising:

a power source;

a reference signal generator, coupled to said power source and generating a reference signal based on said power source; and



an output interface adapted to supply said reference signal to the analyzer.

5,344,545

ELECTROLYTIC SENSOR FOR MEASURING THE CONTENT OF GAS IN A FLUID

Keiji Tsukada, Katsuta; Yuji Miyahara, Hitachi; Yasuhisa Shibata, Oomiya, and Yoshio Watanabe, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 7, 1992, Ser. No. 817,653

Claims priority, application Japan, Jan. 21, 1991, 3-005250

Int. Cl.[5] **G01N** *27/404*

U.S. Cl. 204—415 **16 Claims**



1. A sensor for measuring the content of a gas in a fluid using liquid or gel electrolyte, comprising:

a plurality of layers of impermeable material, said layers being mutually superimposed and fixed together to define a laminated structure; at least one of said layers having at least one first internal recess whereby a first electrolyte cavity is defined within the laminated structure, with a first reservoir region of said first cavity between opposed said layers of the structure; at least one other of the layers having at least one second internal recess formed by a groove that provides a second electrolyte cavity, said groove communicating with said first electrolyte cavity and having a reaction region within said second cavity that is smaller in volume than said first region and that communicates with the first region;

a gas-permeable membrane extending across a window communicating between the reaction region of the electrolyte cavity and an exterior of the sensor;

an electrolyte contained within said first and second cavities;

a sensing electrode, said sensing electrode being incorporated in the laminated structure and having an exposed portion, said exposed portion being in the reaction region and a portion of the electrolyte being held between the gas permeable membrane and the exposed portion of the sensing electrode; and

a further electrode exposed to the first reservoir region.

5,344,546

ELECTRICAL MEASURING CELL FOR DETERMINGING AMMONIA, AMINES, HYDRAZINE AMINES, HYDRAZINE AND HYDRAZINE DERIVATIVES

Herbert Kiesele; Stephan Haupt, both of Lübeck, and Uwe Kühn, Wesenberg, all of Fed. Rep. of Germany, assignors to Dragerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

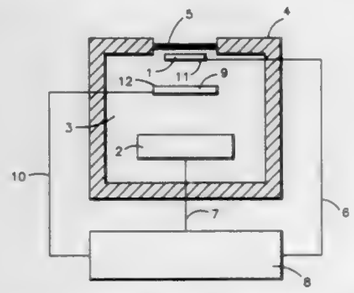
Continuation-in-part of Ser. No. 804,722, Dec. 11, 1991, Pat. No. 5,228,974, which is a continuation-in-part of Ser. No. 507,755, Apr. 12, 1990, Pat. No. 5,076,904. This application Feb. 19, 1993, Ser. No. 19,764

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1989, 3914284; Feb. 20, 1992, 4205157

The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.

Int. Cl.[5] **G01N** *27/404*

U.S. Cl. 204—415 **21 Claims**



1. An electrochemical measuring cell for determining ammonia or hydrazine in a fluid measuring sample present in the ambient, the measuring cell comprising:

a housing having an opening directed toward the sample to be measured and defining an electrolyte chamber;

a soluble electrolyte contained in said chamber;

a membrane mounted on said housing for closing off said chamber to the ambient and being permeable to ammonia and hydrazine;

a measuring electrode and a counter electrode disposed in said chamber so as to be in spaced relationship to each other;

said soluble electrolyte being an aqueous solution of a hygroscopic salt of an alkali metal and an ammonium salt;

said hygroscopic salt having a concentration in said aqueous solution for preventing solidification of said solution down to a temperature in the range of −10° C. to −50° C.; and,

said ammonium salt having a concentration of 10^{-3} to 10^{-1} M.

5,344,547

POLYCRYSTALLINE ION SELECTIVE ELECTRODE

Yuri G. Vlasov, and Yuri E. Ermolenko, both of Chemistry Department, St. Petersburg University, St. Petersburg, 199034,

Filed Feb. 18, 1993, Ser. No. 999,287

Int. Cl.[5] **G01N** *27/21*

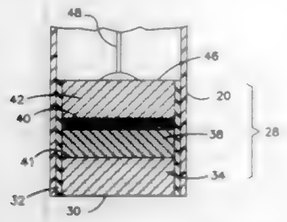
U.S. Cl. 204—419 **25 Claims**

1. A polycrystalline membrane for the detection of an ionic species in solution, said membrane comprising:

a first sensor layer composed of a solid electrolyte composition possessing ionic conductivity;

a second middle layer comprising a mixture of said solid electrolyte composition and an electronic conducting material, whereby said middle layer has a gradient of component concentration such that a greater amount of said electrolyte composition is presented in said middle layer closest said sensor layer than is presented near said

third contacting layer, and a greater amount of said electronic conducting material is presented in said middle layer closest said third contacting layer than is presented near said first contacting layer; and



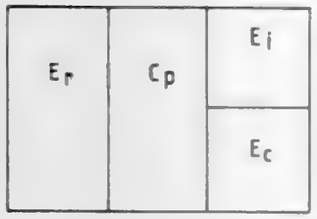
a third electrical contacting layer comprising said electronic conducting material.

5,344,548

SOLID STATE SENSOR DEVICE FOR THE DETERMINATION OF THE CONCENTRATION OF GASES WHICH CAN REACT WITH HYDROGEN

Giulio Alberti, and Roberto Palombari, both of Perugia, Italy, assignors to Eniricerche S.p.A., San Donato Milanese, Italy

Continuation of Ser. No. 810,510, Dec. 19, 1991, abandoned. This application Jun. 3, 1993, Ser. No. 71,364
Claims priority, application Italy, Dec. 21, 1990, 22485 A/90
Int. Cl.[5] G01N *27/407*
U.S. Cl. 204—424 **8 Claims**



1. A solid-state sensor device for determining the concentration of a gas which can react with hydrogen and consisting essentially of:

(a) a protonic conductor having first and second sides;

(b) a first reference electrode in contact with said protonic conductor on the first side thereof, said reference electrode being a metal hydride or metal alloy hydride which provides a constant reference potential; and

(c) a second sensor electrode in contact with said protonic conductor on the second side thereof, said sensor electrode being a composite of (i) a material which catalyzes the reaction of the gas to be determined with hydrogen and, in contact therewith, (ii) a metal hydride or a metal alloy hydride.

5,344,549

OXYGEN PARTIAL PRESSURE SENSOR

Dennis W. Dees, Downers Grove, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 774,922, Oct. 11, 1991, abandoned. This application Feb. 17, 1993, Ser. No. 22,593
Int. Cl.[5] G01N *27/417*
U.S. Cl. 204—425 **18 Claims**

10. An oxygen partial pressure sensor comprising:

a substantially flat solid electrolyte having a first and a second surface;

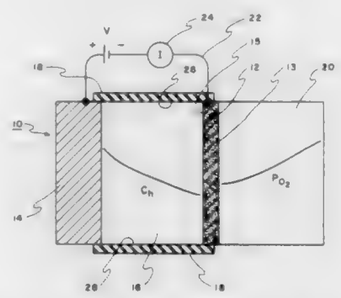
an oxygen permeable porous electrode, acting as a cathode, having an exhaust stream side and an electrolyte side, wherein the electrolyte side of said oxygen permeable porous electrode contacts the first surface of said solid electrolyte;

an oxygen impermeable nonporous electrode, acting as an anode, contacting the second surface of said solid electrolyte;

means for applying a voltage across said electrodes; and

means for sensing a flow of current between said electrodes;

wherein said oxygen permeable porous electrode covers the entire first surface of said solid electrolyte;



wherein said oxygen impermeable nonporous electrode covers the entire second surface of said solid electrolyte; and

wherein said solid electrolyte is thin so as to allow essentially only the first surface of said solid electrolyte to be exposed to an exhaust stream;

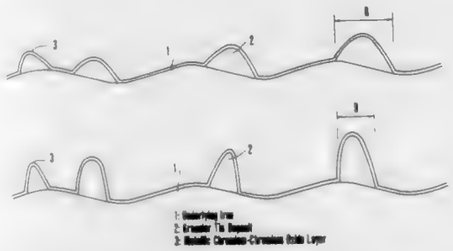
such that a flow of oxygen ions through the solid electrolyte is essentially blocked.

5,344,550

PROCESS FOR PRODUCING SURFACE-TREATED STEEL SHEET SUPERIOR IN WELDABILITY AND PAINT-ADHESION

Yoshihiro Kaneda; Ryoichi Yoshihara, and Ryousuke Wake, all of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 823,362, Jan. 21, 1992, Pat. No. 5,248,405. This application Jun. 8, 1993, Ser. No. 73,665
Claims priority, application Japan, Jan. 24, 1991, 3-7036
Int. Cl.[5] B32B *15/01*
U.S. Cl. 205—50 **3 Claims**



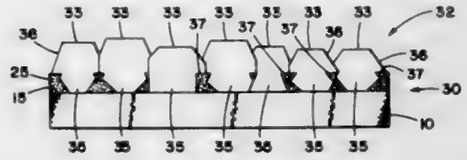
2. A surface-treated steel sheet superior in weldability and paint adhesion produced in accordance with a process comprising the steps of degreasing and acid-pickling a steel sheet surface; tin-plating the steel sheet surface in an acidic tin-plating bath containing a conventional brightener in an amount of from 0,001 to 0.05 g/l so as to deposit flattened granular tin coating having a diameter in a range of from 0.4 to 2.4 μm at a plated area ratio in the range of from 5 to 30%; and subsequently coating the tin-plated steel sheet with metallic chromium in an amount of from 50 to 150 mg/m^{2}and chromium oxide in an amount of from 2 to 40 mg/m^2 in terms of chromium by a conventional chrome plating process, or a conventional chrome plating and chromate treatment process.

5,344,551

DIAMOND COATED PRODUCTS AND METHOD OF PREPARATION

Chung-hsien Tsai, Minneapolis; John C. Nelson, Maplewood; Joachim V. R. Herberlein, North Oaks; Emil Pfender, West St. Paul, and William W. Gerberich, Shorewood, all of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Division of Ser. No. 800,408, Nov. 29, 1991, Pat. No. 5,260,141. This application Sep. 14, 1993, Ser. No. 122,043
Int. Cl.[5] C23C *28/00*
U.S. Cl. 205—110 **11 Claims**



1. A method of preparing a diamond coating; said method including the steps of:

(a) applying a partial diamond coating having an effective amount of void area therein, to a work surface of a substrate;

(b) filling void area in the partial diamond coating with binder; and,

(c) growing further diamond coating over the binder.

5,344,552

PROCESS FOR ELECTROPLATING A METAL STRIP

Isabelle Marolleau, Basse-Ham, and Jean-Denis Girardier, Metz, both of France, assignors to Sollac, Puteaux, France

Filed Sep. 21, 1992, Ser. No. 947,730
Claims priority, application France, Oct. 16, 1991, 91 12770
Int. Cl.[5] C25D *7/06*
U.S. Cl. 205—138 **12 Claims**

6. A process for electroplating a metal strip, wherein the strip is run through a bath of at least one electrolytic cell containing a solution of ions of a metal to be deposited onto the strip and comprising two series of conducting-roller/anode pairs, each said conducting-roller/anode pair comprising an electrically conducting roller, forming a cathode, in contact with said strip and at least one anode placed in a vicinity of each said roller, each said conducting-roller/anode pair being fed with an adjustable electrical current I whose density J at a surface of the metal strip can reach or exceed a limiting diffusion current Jl of the ions, wherein the deposition is carried out in two phases, by adjusting the current I of a first and a second series of said conducting-roller/anode pairs, and wherein, during the first metal-deposition phase, the current I of the first series of said conducting-roller anode pairs is adjusted so that a first average value Jm_1 of a first current density at the surface of the strip satisfies the following relationship:

$$10\%\ Jl \leqq Jm_1 \leqq 40\%\ Jl$$

and, during the second metal-deposition phase, the current I of the second series of said conducting-roller/anode pairs is adjusted so that a second average value Jm_2 of a second current density at the surface of the strip satisfies the following relationship:

$$50\%\ Jl \leqq Jm_2 \leqq 90\%\ Jl.$$

5,344,553

UPGRADING OF A HYDROCARBON FEEDSTOCK UTILIZING A GRADED, MESOPOROUS CATALYST SYSTEM

Stuart S. Shih, Cherry Hill, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Feb. 22, 1993, Ser. No. 20,946
Int. Cl.[5] C10G *65/04*
U.S. Cl. 208—49 **19 Claims**

1. A process for upgrading a hydrocarbon feedstock, said process comprising contacting said hydrocarbon feedstock with a catalyst under hydrogen pressure of at least about 2860 kPa in a first reaction zone, said catalyst comprising at least one Group VIA or Group VIII metal and an inorganic, porous crystalline phase material having, after calcination, an X-ray diffraction pattern with at least one peak at a d-spacing greater than about 18 Angstrom Units with a relative intensity of 100 and a benzene adsorption capacity of greater than 15 grams benzene per 100 grams of said material at 50 torr and 25° C., wherein said material has a pore size in the range of about 40 to about 120 Angstroms; and

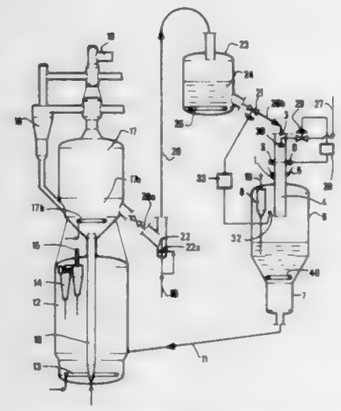
contacting the effluent from said first reaction zone with a catalyst in a second reaction zone said catalyst comprising at least one Group VIA or Group VIII metal and an inorganic, porous crystalline phase material having, after calcination, an X-ray diffraction pattern with at least one peak at a d-spacing greater than about 18 Angstrom Units with a relative intensity of 100 and a benzene adsorption capacity of greater than 15 grams benzene per 100 grams of said material at 50 torr and 25° C., and wherein said material has a pore size in the range of less than about 60 Angstroms.

5,344,554

DOWNFLOW FLUID CATALYTIC CRACKING PROCESS AND APPARATUS

Renaud Pontier, Vienne; Frederic Hoffmann, Paris, and Pierre Galtier, Vienne, all of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Filed Oct. 3, 1991, Ser. No. 770,265
Claims priority, application France, Oct. 3, 1990, 90 12275
Int. Cl.[5] C10G *35/10*
U.S. Cl. 208—164 **10 Claims**



1. A process for fluid catalytic cracking of a hydrocarbon charge in a reaction zone in which the charge and the catalyst circulate in an overall co-current top to bottom manner, comprising a stage of supplying at least partly regenerated catalyst to the upper end of the reaction zone, a stage of introducing and atomizing the charge in an introduction zone located below the catalyst supply zone into the upper part of said reaction zone, a stage of contacting said catalyst and said charge in the upper part of said reaction zone, a stage of circu-

lating the catalyst and the charge in the reaction zone during which the cracking of said charge takes place under appropriate cracking conditions and the catalyst is at least partly deactivated by depositing coke thereon, a stage of separating and stripping the deactivated catalyst from the cracked hydrocarbon charge in a separating zone at the lower end of the reaction zone, a stage of regenerating at least part of the deactivated catalyst in at least one regenerating zone and a stage of recycling at least partly regenerated catalyst in a recycling zone upstream of the upper end of the reaction zone, wherein

a) during the recycling stage, the at least partly regenerated catalyst is sampled from a dense phase,

b) the stage of supplying catalyst to the upper end of the reaction zone takes place in the presence of at least one fluidization gas whereby suspension of catalyst and gas is obtained,

c) the density of said suspension is measured by measuring means upstream of the charge introduction zone and

d) adjustment and regulation is made of the flow rate of the fluidization gas upstream of the charge introduction zone under conditions such that the density of the gas-solid suspension formed in this way is between 80 and 500 kg/m^3 prior to its contacting with the charge.

5,344,555

TREATMENT OF OILS USING REACTION PRODUCTS OF EPOXIDES AND TERTIARY AMINES

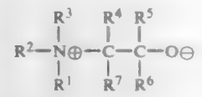
Glenn L. Roof, Sugar Land; Lawrence N. Kremer, The Woodlands, and Robert V. Market, Friendswood, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 780,255, Oct. 21, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 21,655

Int. Cl.[5] C10G *29/20*

U.S. Cl. 208—189 **23 Claims**

1. A method of sweetening sour oils, which comprises reacting hydrogen sulfide contained in said oils with an effective sweetening amount of a dipolar compound to produce organosulfur compounds, said dipolar compound comprising a quaternary ammonium ion of the formula



(a) wherein (i) R^1, R^2 and R^3 are hydrocarbon groups including alkyl, aryl, alkaryl or arylalkyl groups, of up to 24 carbon atoms, and if an alkyl group, may include a cycloalkyl; with the proviso that two of R^1, R^2 and R^3 may be in saturated heterocyclic ring which includes said nitrogen atom and may also include an oxygen atom; and (ii) at least one of R^1, R^2 and R^3 has two or more carbon atoms; and (b) wherein R^4, R^5, R^6 and R^7 independently are hydrogen or a hydrocarbon group of up to six carbon atoms, with the proviso that two of R^4, R^5, R^6 and R^7 may be in a cycloalkane ring.

5,344,556

FILTER MEDIA REWINDING MECHANISM

Scott M. McEwen, Bowling Green; James S. Thomas, Rudolph, and Mark A. Smith, Custer, all of Ohio, assignors to Henry Filters, Inc., Bowling Green, Ohio

Filed Feb. 24, 1993, Ser. No. 21,996

Int. Cl.[5] B01D *33/048, 33/80*

U.S. Cl. 210—91 **8 Claims**

1. An improved filtration apparatus using a filter media to filter contaminants from a dirty liquid, the filtration apparatus comprising:

an upper tank for holding dirty liquid and having an imperforate end wall and a perforate floor, and a lower filtrate compartment beneath the floor for receiving liquid from the upper tank through said perforate floor;

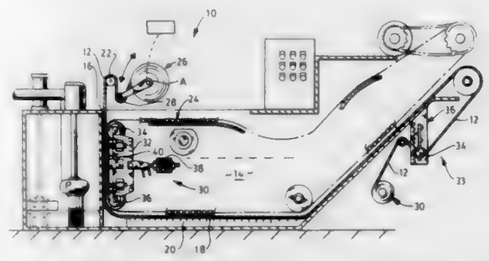
a guide roller over which the filter media is moved downwardly and positioned to guide the filter media along the end wall and along the floor for filtering ut contaminants as the dirty liquid is received from the upper tank into the filtrate compartment;

conveyor means for indexing the filter media to effect emergence of the contaminated filter media from the upper tank and to begin to increase the total length of said contaminated filter media emerging from said upper tank;

a filter media take-up mechanism for taking-up filter media;

control means for starting and stopping the take-up mechanism; and

a rotatable idler roller assembly including an idler roller for



guiding said contaminated filter media and being vertically moveable in a range of motion arranged to take up the increased length of said contaminated filter media and to provide tension to the contaminated filter media as it is indexed from the upper tank by the conveyor means;

said roller assembly actuating said control means to start the take-up mechanism when said idler roller reaches a lower limit of its vertical range of motion and said roller assembly actuating said control means to stop the take-up mechanism when said roller reaches an upper limit of its vertical range of motion.

2. The improvement of claim 1 wherein said control means includes an upper and lower limit switch.

5,344,557

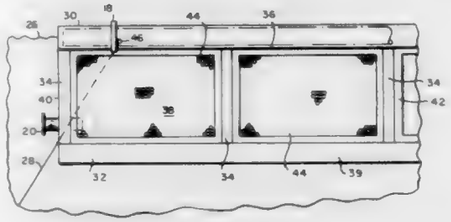
INCUBATOR FOR BIOLOGICAL CLEANING OF FLUIDS

Joseph G. Scanzillo, Scituate, Mass., assignor to Scanzillo Corp., Scituate, Mass.

Filed Oct. 23, 1992, Ser. No. 965,734

Int. Cl.[5] C02F *3/06*

U.S. Cl. 210—94 **9 Claims**



1. An apparatus for cleaning polluted fluids by providing an environment for microorganisms to biologically degrade pollutants, said apparatus comprising:

a housing having one or more sidewalls defining an elongated chamber and two ends, said one or more sidewalls being substantially fluid impermeable and having at least one area which is light transmissive, said area being light transmissive defining a section of the housing for orientation towards sunlight, with the ends of said elongated chamber laterally disposed with respect to each other, said light transmissive area for permitting sunlight to enter said chamber to provide energy for photosynthesis and to provide soar heating of the chamber;

bouyancy means secured to the housing providing bouyancy to float the housing above or below fluids in which said housing is placed, to maintain the area which is light transmissive oriented towards the sunlight when the apparatus is placed in polluted fluids and to maintain said ends of said chamber laterally disposed with respect to each other;

a matrix held within said chamber of said housing to provide a support for microorganisms which are capable of acting on the polluted fluids; and

circulation means in fluid communication with said chamber for propelling growth media and polluted fluids laterally through the said matrix from end to end to provide microorganisms carried on the matrix with growth conditions for acting on polluted fluids,

said housing for placement in a body of polluted fluids with said area which is light transmissive oriented towards sunlight to allow microorganisms held on said matrix to perform a photosynthesis and to provide heat to said chamber, and said circulation means providing a substantially horizontal flow of growth media and polluted fluid to maximize oxygen contact with the microorganisms carried on said matrix and to allow the microorganisms to act on said polluted fluid.

5,344,558

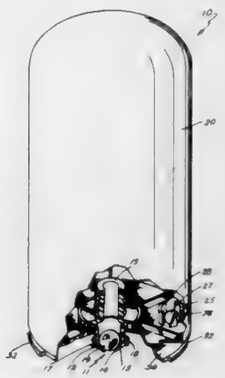
WATER FILTER CARTRIDGE

Dennis J. Kool, Kentwood, Mich., assignor to Amway Corporation, Ada, Mich.

Filed Feb. 16, 1993, Ser. No. 17,773

Int. Cl.[5] B01D *35/153*

U.S. Cl. 210—117 **19 Claims**



1. In a water filter cartridge, the combination comprising:

a substantially cylindrical pressure vessel;

said pressure vessel having a substantially spherical first end and a generally planar second end;

said second end comprising an outlet and an inlet in fluid communication with said pressure vessel:

one of said outlet and said inlet being disposed coaxially with said pressure vessel:

the other of said outlet and said inlet being disposed adjacent thereto;

said outlet further comprising a first bail check valve adapted to block said outlet when said water filter cartridge is not in service;

said inlet further comprising a second ball check valve adapted to allow water to flow in the direction of said first end of said pressure vessel only;

said second end further comprises at least two asymmetrical lugs radially disposed about its periphery and adapted to mate with an apertured deck of a water treatment system to hold said water filter cartridge in place;

said outlet further comprises a generally cylindrical hollow nipple disposed coaxially to said outlet, a major portion thereof extending from said second end and a minor portion thereof extending toward said first end; and

said hollow nipple further comprises an open terminus defining a restricted opening.

5,344,559

FILTER CARTRIDGE

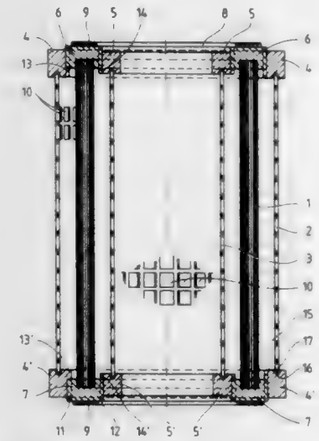
Maarten H. Van Ooijen, Dilsen-Stokkem, Belgium, assignor to Votech Filter GmbH, Heinsberg, Fed. Rep. of Germany

Filed Feb. 5, 1993, Ser. No. 13,931

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1992, 92102025

Int. Cl.[5] B01D *29/11*

U.S. Cl. 210—232 **12 Claims**



1. A filter cartridge comprising:

a hollow cylindrical filter element having two axial ends and being under axial tension

an annular flange at each one of said two axial ends;

at least one supporting cage coaxial with the filter element;

at least one mounting ring between the annular flange at one of said axial ends and the supporting cage for establishing a releasable connection between the mounting ring and the supporting cage; and

tensioning means between the mounting ring and the annular flange for tensioning the filter element, with the mounting ring being supported on the supporting cage.

5,344,560

PROCESS FOR PRODUCING FILTRATION MEMBRANES HAVING AMINO ACIDS THAT ARE CAPABLE OF ADSORBING PROTEINS

Takanobu Sugo, Gunma, and Kyoichi Saito, Tokyo, both of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Continuation of Ser. No. 692,680, Apr. 29, 1991, abandoned. This application Oct. 12, 1993, Ser. No. 135,423

Claims priority, application Japan, May 10, 1990, 2-120351

Int. Cl.[5] B01D *67/00*

U.S. Cl. 210—500.23 **13 Claims**

8. A filtration membrane prepared by a process comprising:

subjecting a porous polymeric substrate made of a homo- or copolymer of an olefin or a halogenated olefin and a polymerizable epoxy group-containing monomer to a graft polymerization reaction to form graft chains on the substrate, said graft polymerization reaction occurring upon exposure to ultraviolet or ionizing radiation, and

immobilizing an amino acid to the graft chains by forming a covalent bond between the epoxy group of the graft chains and the amino group of the amino acid.

5,344,561

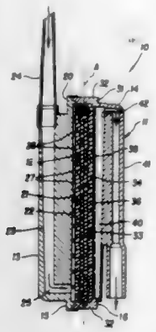
DEVICE FOR DEPLETION OF THE LEUCOCYTE CONTENT OF BLOOD AND BLOOD COMPONENTS

David B. Pall, Roslyn Estates, and Thomas C. Gsell, Glen Cove, both of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Continuation of Ser. No. 719,506, Jun. 24, 1991, Pat. No. 5,229,012, which is a continuation-in-part of Ser. No. 527,717, May 22, 1990, abandoned, which is a continuation-in-part of Ser. No. 349,439, May 9, 1989, abandoned. This application Jun. 7, 1993, Ser. No. 71,990

Int. Cl.[5] B01D *27/02, 39/02*

U.S. Cl. 210—508 24 Claims



1. A device for the depletion of the leukocyte content of a blood product comprising a fibrous leukocyte adsorption/filtration filter having a negative zeta potential and a pore diameter of from about 0.5 to less than about 2 μm and having a CWST of from 53 to about 80 dynes/cm.

5,344,562

BIOLOGICAL DEPHOSPHATIZATION AND (DE)NITRIFICATION

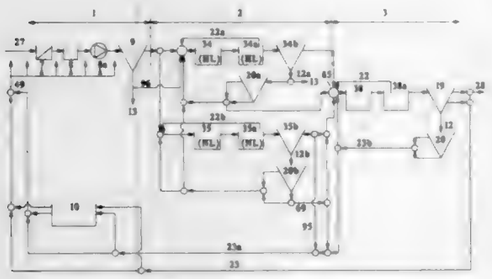
Gunter Lorenz, Am Rehlingsbach 25, W6382 Friedrichsdorf, and Jurgen Lorenz, Mozartweg 11, D-6804 Ilvesheim, both of Fed. Rep. of Germany

Division of Ser. No. 829,463, Jan. 31, 1992, Pat. No. 5,252,214, which is a continuation-in-part of Ser. No. 686,424, Apr. 16, 1991, abandoned, which is a continuation of Ser. No. 399,516, Aug. 28, 1989, abandoned. This application Mar. 3, 1993, Ser. No. 25,946

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1987, 3706405

Int. Cl.[5] C02F *3/12*

U.S. Cl. 210—607 14 Claims



1. An activated sludge process for the reclamation of wastewater, comprising the steps of:

(a) separating incoming wastewater into two parallel streams;

(b) nitrifying one of said parallel streams in a first treatment zone, thereby producing a nitrified effluent;

(c) reducing the BOD in the other parallel stream by treatment in a second parallel treatment zone for BOD removal;

(d) providing sufficient residence time for the waste-water in said two parallel treatment zones to effect sufficient growth of said bacteria;

(e) extracting and disposing of sludge of said second treatment zone from step (c), thereby producing a clarified waste effluent stream; and

(f) reuniting the nitrified effluent of step (b) with the clarified effluent from step (e) for further treatment of the wastewater.

5,344,563

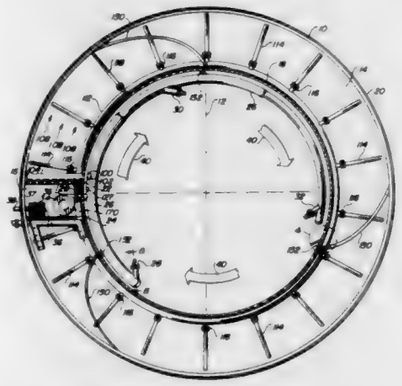
WASTEWATER TREATMENT SYSTEM

Daniel G. Noyes, P.O. Box 800277, Houston, Tex. 77280

Filed Jun. 1, 1993, Ser. No. 68,206

Int. Cl.[5] C02F *3/22*

U.S. Cl. 210—621 24 Claims



17. A method for treatment of wastewater to reduce organic solids contents, reduce biological oxygen demand and separate clarified liquid from sludge, said method comprising the steps of:

mixing wastewater to be treated with previously-aerated wastewater to create a mixed liquor, said previously-aerated wastewater containing organic solids including bacteria, protozoa and other microorganisms;

aerating said mixed liquor;

inducing turbulent flow of said aerated mixed liquor in a first peripheral area of a basin;

providing an area of reduced turbulence of flow in a second central area of said basin to allow settling of organic solids from the aerated mixed liquor;

intermittently removing accumulated organic solids from said second area;

segregating a first flow of aerated mixed liquor;

inducing laminar flow of said first flow in a channel to allow settling of organic solids from said first flow;

removing settled organic solids from said channel; and

utilizing said removed organic solids for mixing with said wastewater to be treated; and

removing clarified liquor from said channel.

5,344,564

METHOD FOR REMOVING EXTRACTION SOLVENT FROM EXTRACTION RESIDUE TRAPPED IN AN OIL-AND-FAT EXTRACTOR

Yuzuru Ohtsuka, Tokyo; Kiyoji Suzuki, and Toru Nakamura, both of Chiba, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo and Toyo Oil Mills Co., Inc., Chiba, both of Japan

Filed Jun. 29, 1993, Ser. No. 83,440

Claims priority, application Japan, Jun. 29, 1992, 4-171162

Int. Cl.[5] B01D *11/04*

U.S. Cl. 210—634 7 Claims

1. In a process for removing an organic extraction solvent from an extraction residue contained in an oil-and-fat extractor, the improvement comprising: contacting said extraction residue with an oil or fat so that said solvent is removed from the extraction residue, and solvent contained in the atmosphere of said extractor is reduced to a level below the minimum ignitable limit.

5,344,565

METHOD OF TREATING A CLOGGED POROUS MEDIUM

Peter J. Degen, Huntington, N.Y.; Tony Alex, Kendall Park, N.J., and Michael R. Gildersleeve, Nesconset, N.Y., assignors to Pall Corporation, East Hills, N.Y.

Filed Jul. 26, 1993, Ser. No. 97,450

Int. Cl.[5] B01D *65/02*

U.S. Cl. 210—636 30 Claims

1. A method of treating a clogged porous medium comprising contacting a porous medium clogged in the course of filtering a protein-containing fluid with an aqueous citrate solution.

5,344,566

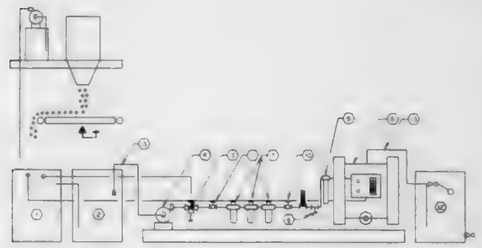
DELEADING WASTEWATER REDUCTION PROCESS

WIlliam F. Clancey, 8 Irving St., Peabody, Mass. 01960

Filed Mar. 17, 1992, Ser. No. 852,564

Int. Cl.[5] B01D *61/02, 61/04, 61/08, 61/12*

U.S. Cl. 210—638 18 Claims



1. A mobile unit for removing chlorine and heavy metals from a waste water stream, comprising:

first means for precipitating a major portion of said heavy metals from said stream including a mixing tank having an inlet for receiving said stream and precipitating chemicals, an overflow outlet, and sludge outlet, and further including a decant tank having an inlet for communicating with said overflow outlet, a decant outlet, and a sludge outlet;

second means for removing said chlorine and remaining heavy metals, including a series of at least two filters, any one upstream of which having a larger pore size, than any one downstream of which; said series having an inlet for communicating with said decant outlet and a filter outlet; and a reverse osmosis unit having and inlet for communicating with said filter outlet, a reject outlet for communicating with said mixing tank inlet and a potable water outlet; and

means for enabling mobile transport of said unit to a source of waste water.

2. A process for removing chlorine and heavy metals from a waste water stream, comprising:

providing a mobile unit for removing chlorine and heavy metals from a waste water stream, which comprises:

first means for precipitating a major portion of said heavy metals from said stream, including a mixing tank having an inlet for receiving said stream and precipitation chemicals, an overflow outlet, and a sludge outlet, and further including a decant tank having an inlet for communicating with said overflow outlet, a decant outlet and a sludge outlet;

second means for removing said chlorine and remaining heavy metals, including a series of at least two filters, any one upstream of which having a larger pore size than any one downstream of which; said series having an inlet for communicating with said decant outlet and a filter outlet; and a reverse osmosis unit having an inlet for communicating with said mixing filter outlet, a reject outlet for communicating with said mixing tank inlet and a potable water outlet; and

means for enabling mobile transport of said unit to a source of waste water;

mobilizing said transporting unit to a source of water which contains chlorine and heavy metals;

feeding a stream of said waste water into said inlet for receiving said stream; and

withdrawing potable water from said potable water inlet.

5,344,567

RECOVERY OF INDIUM BY SOLVENT EXTRACTION USING TRIALKYLPHOSPHINE OXIDES

William A. Rickelton, Niagara Falls, Canada, assignor to Cyanamid Canada Inc., Ontario, Canada

Filed Jun. 29, 1993, Ser. No. 83,240

Int. Cl.[5] B01D *15/04*

U.S. Cl. 210—638 12 Claims

1. A process for the extraction of indium from aqueous acidic liquors, which process comprises:

(a) contacting said indium-containing acid solution with a solvent extractant combination comprising

(i) a dialkyl phosphoric acid and

(ii) a tertiary phosphine oxide selected from 1) a mixture containing at least four different components each of the same general formula $RR'R''PO$ wherein R, R′, R″ are the same or different saturated hydrocarbon radicals of 6 to about 16 carbon atoms, and at least two components of said tertiary phosphine oxide mixture being unsymmetrical tertiary phosphine oxides containing at least one R, R′, R″ group different from the other said groups; 2) a mixture of branched tertiary phosphine oxide compounds selected from those of the formulae:

$R'''R^{IV}{}_2PO$ and

$R^{IV}{}_3PO$

wherein R''' and R^{IV} are selected from saturated hydrocarbon radicals of from about 6 to about 16 carbon atoms and wherein R''' is unbranched and R^{IV} comprises at least two branches per hydrocarbon radical; or a combination of 1) and 2);

(b) separating a resulting dialkyl phosphoric acid-phosphine oxide-indium complex from said acid solution; and

(c) recovering the indium from said complex.

5,344,568

HEMOFILTRATION SYSTEM AND METHOD

Yuli Kitaevich, Milford; Nat Hemasilpin, Fairfield; J. Gabriel Marchevsky, Cincinnati; John J. Bissler, Cincinnati; George Benzing, III, Cincinnati, and Paul T. McEnery, Cincinnati, all of Ohio, assignors to Children's Hospital Medical Center, Cincinnati, Ohio

Continuation of Ser. No. 775,183, Oct. 11, 1991, Pat. No. 5,211,849. This application May 17, 1993, Ser. No. 62,928

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.[5] B01D *61/100*

U.S. Cl. 210—645 11 Claims

6. Hemofiltration method for removal of fluid from the blood of a patient, comprising:

pumping blood from a patient through hemofiltration means and back to the patient;

maintaining a supply of infusate in a first reservoir;

pumping the infusate to the hemofiltration means;

monitoring the weight of the infusate and generating signals correlated thereto;

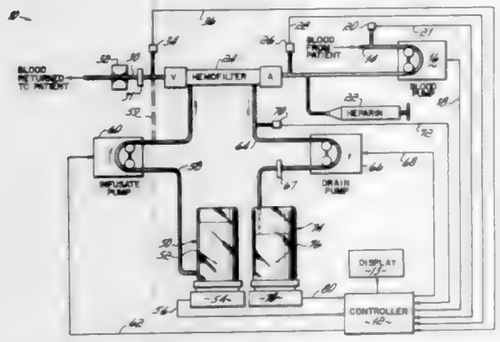
pumping drained fluid from the hemofiltration means into a second reservoir;

monitoring the weight of the drained fluid and generating signals correlated thereto;

controlling the pumping of the blood, infusate and drained fluid by means of a computer programmed to operate the pumps for infusate and drained fluid only when the blood is being pumped, said computer being responsive to the infusate and drained fluid weight signals;

said blood pumping operation being automatically responsive to signals generated by said computer to vary the flow rate of the blood through the hemofiltration means; and

determining, at regular intervals, the weight of infusate in the first reservoir and the weight of drained fluid in the second reservoir, comparing those weights to corresponding predetermined ideal weights and adjusting the rates of pumping the infusate, drained fluid and blood so as to remove a preselected amount of fluid from the blood.



5,344,569

PROCESS FOR RECOVERING THIOCYANATE

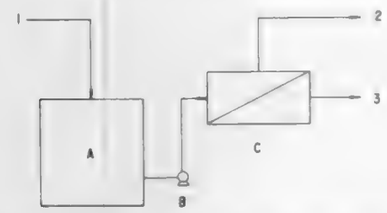
Shiro Kawasaki, and Noriyuki Kohara, both of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Oct. 8, 1993, Ser. No. 133,343

Claims priority, application Japan, Nov. 19, 1992, 4-335513

Int. Cl.[5] B01D *61/00*

U.S. Cl. 210—653 **3 Claims**



1. A process for recovering thiocyanate from a thiocyanate-containing aqueous solution, said process comprising filtering the solution through a polymeric reverse osmosis membrane having a sodium chloride rejection rate of 10% to 70%, whereby a filtrate is obtained which contains essentially all of the thiocyanate from said solution.

5,344,570

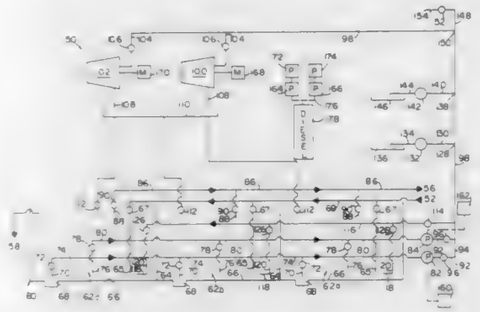
METHOD AND APPARATUS FOR REMOVING SOLIDS FROM A LIQUID

James E. McLachlan, 200 N. Miramichi Dr., Evart, Mich. 49631; Michael G. Domagalski, Grandville, and Bruce I. Gilman, Kentwood, both of Mich., assignors to James E. McLachlan, Evart, Mich.

Filed Jan. 14, 1993, Ser. No. 4,590

Int. Cl.[5] B01D *21/34*

U.S. Cl. 210—709 **45 Claims**



21. A method for removing solids entrained in a solids-containing fluid, comprising:

operating a centrifuge separator at a predetermined speed;

temporarily storing the solids-containing fluid in a first container;

placing said first container in fluid communication with a pump,

pumping the solids-containing fluid into said centrifuge separator;

controlling the volume of said solids-containing fluid pumped to said centrifuge separator in response to an angular moment of force in said centrifuge separator, said centrifuge separator separating the solids from the solids-containing fluid in said centrifuge separator to produce a fluid effluent:

depositing the solids separated from the solids-containing fluid in a second container; and

discharging the fluid effluent from said centrifuge separator to said first container.

22. The method as defined in claim **21**, further including:

agitating the solids-containing fluid temporarily stored in said first container to suspend the solids in the solids-containing fluid prior to pumping the solids-containing fluid to said centrifuge separator; and

decanting the fluid effluent discharged from said centrifuge separator.

23. The method as defined in claim **22**, further including:

flocculating the solids in the solids-containing fluid.

5,344,571

METHOD FOR SEPARATING ISOANALYTES AND MEASURING ANALYTES IN FLUIDS

Philip B. Mendershausen, and Vitauts Jurevics, both of Dallas, Tex., assignors to University of Texas System Board of Regents, Dallas, Tex.

Filed Feb. 18, 1992, Ser. No. 837,208

Int. Cl.[5] B01D *61/00, 21/01*

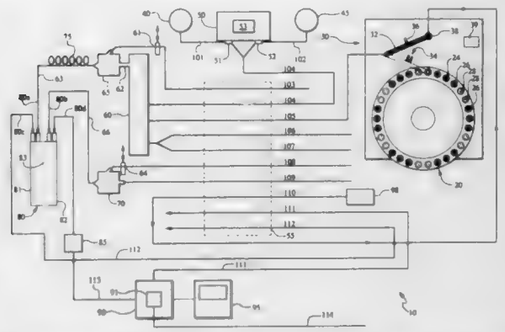
U.S. Cl. 210—723 **1 Claim**

1. Method for filtering components in a fluid sample, comprising the steps of:

directing a mixture comprising a sample and a precipitating reagent through a first chamber of a housing having first and second chambers and a filter therein;

substantially simultaneously directing a color reagent through the second chamber of the housing;

directing a sample across the filter into the second chamber; mixing the filtered sample with the color reagent; and



subsequently directing a wash solution through the first chamber of the housing to remove residual sample therefrom.

5,344,572

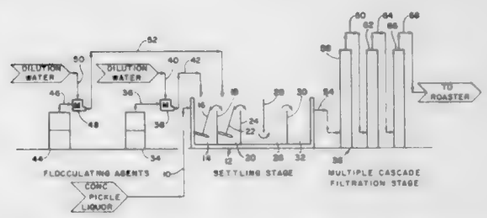
METHOD FOR TREATING WASTE PICKLE LIQUOR

Satish C. Wadhawan, 142 Phillips Pl., Pittsburgh, Pa. 15217

Filed Jul. 10, 1992, Ser. No. 911,530

Int. Cl.[5] C02F *1/52;* **B01D** *21/01*

U.S. Cl. 210—727 **14 Claims**



1. A method for treating waste pickle liquor solution containing silica comprising the steps of:

(a) adding a cationic polymer flocculating agent having an average molecular weight of from about 2,000 to about 10,000 to the pickle liquor solution;

(b) allowing at least some of the silica in the pickle liquor to form floccules containing silica having a diameter of from about 0.5 microns to about 2.0 microns;

(c) adding an anionic polymer flocculating agent having an average molecular weight of from about 1,000 to about 20,000,000 to the pickle liquor solution;

(d) allowing the floccules containing silica formed in step (b) to increase in size to a diameter of from about 25 microns to about 100 microns; and

(e) physically separating floccules formed in step (d) from the pickle liquor solution.

5,344,573

METHOD OF RECOVERY OF PRINTING INK WASTES

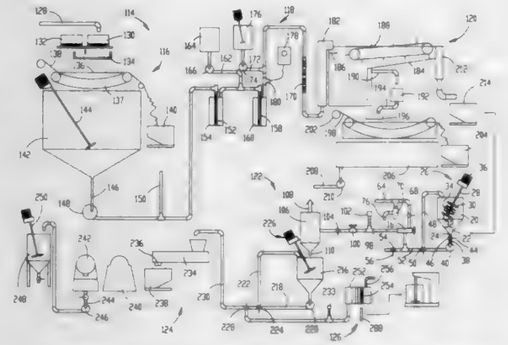
Alan M. Hill, Topeka; Michael D. Cain, and Donald D. Cain, both of Lawrence, all of Kans., assignors to Lawrence Paper Company, Lawrence, Kans.

Continuation-in-part of Ser. No. 899,090, Jun. 15, 1992, Pat. No. 5,200,094, which is a continuation-in-part of Ser. No. 811,183, Dec. 20, 1991, abandoned. This application Mar. 19, 1993, Ser. No. 33,868

The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.

Int. Cl.[5] B01D *1/14;* **B41F** *31/20*

U.S. Cl. 210—768 **17 Claims**



1. A method of recovering printing ink wastes, comprising the steps of:

providing a quantity of dilute printer washup material containing water and a minor amount of residual ink;

directing said washup material into a confined zone while simultaneously passing a stream of steam into said zone;

subjecting said washup material to conditions of elevated temperature and pressure and intense shear by contacting said washup material with said steam in said zone, to thereby create processed residual ink; and

passing said processed residual ink out of said zone.

16. The method of claim **1**, including the step of passing said processed residual ink through a filter press to remove at least a portion of liquid therefrom and to form a filter cake.

17. The method of claim **16**, including the step of subdividing said filter cake and mixing said subdivided filter cake with ink carriers to form a printing ink.

5,344,574

SEPARATION OF OIL FROM TRANSFORMER FILTER CAKE

Frank C. Hume, #10 - 1460 Ingenika, Prince George, British Columbia, Canada V2M 3Z9 , and Alan A. Downie, 116 - 308 Forbes Avenue, N. Vancouver, British Columbia Canada V7M 2E6

Filed May 28, 1993, Ser. No. 69,280

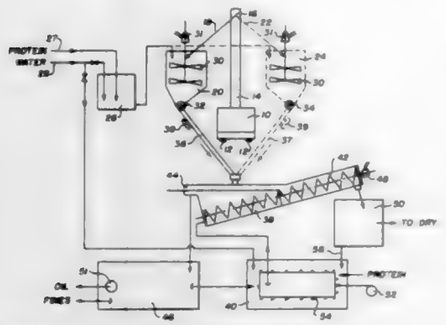
Int. Cl.[5] B01D *41/02*

U.S. Cl. 210—772 **25 Claims**

1. A process for separating oil from filter cake, comprising the steps of:

contact mixing filter cake with protein additives in water, said protein additives being selected from the group consisting of powdered cows milk, soy bean oil, soya bean meal, fish oil, fish meal, rendering plant byproducts, slaughter house byproducts, brewery residues and brewery bottoms, said mixing for a sufficient time for substantially all the oil to be displaced from the filter cake;

flushing displaced oil and filter medium with water in a separating means;



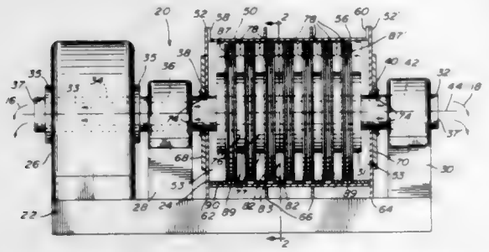
collecting oil from the separating means, and collecting filter medium separately from the oil.

5,344,575

APPARATUS AND METHOD FOR EXTRACTING LIQUID FROM A HUMID MASS

Rodrigue Boulet, Ville Duberger; Adrian Barbulescu, Pierrefonds, and Jean-Paul Charland, Charlesbourg, all of Canada, assignors to Centre de Recherche Industrielle du Quebec, Ste-Foy, Canada

Filed Jan. 29, 1993, Ser. No. 10,851
Int. Cl.[5] B01D *33/21*
U.S. Cl. 210—780 **43 Claims**



39. A method for extracting liquid from a humid mass comprising the steps of:

(a) providing a cylindrical housing having a first and a second end wall and a cylindrical side wall, at least one inlet for admitting said humid mass into said housing, rotor means having at least one pair of rotor side walls joined to a bottom wall defining a channel open at its periphery in at least a portion thereof, at least one of said rotor side walls being provided with perforations, said rotor means having a central shaft for rotation with respect to said housing, at least one of said rotor side walls being moved upon rotation of said central shaft, sad shaft having a conduit extending longitudinally therethrough, said rotor means being provided with at least one draining means comprising at least one of draining conduit being closed at its first extremity and having a first portion in fluid communication with said perforations and a second portion in fluid communication with said shaft conduit at its second extremity, means providing an alternative to seal along the entire length of said extracting channel, including a peripheral wall mounted on an internal surface of said cylindrical wall for substantially closing said extracting channel at its periphery in at least a portion thereof, sealing means mounted on said peripheral wall, said sealing means being in contact with a peripheral portion of said draining means, and housing sealing means for preventing said humid mass from escaping said housing, and at least one discharging outlet being in direct communication with said extracting channel, said peripheral wall extending to said outlet;

(b) admitting said humid mass into said housing through said inlet;

(c) rotating said rotor means about a longitudinal axis of said shaft causing extraction of liquid from humid mass into said channel through perforations in at least one of said pair of rotor side walls;

(d) draining said extracted liquid toward said shaft conduit for withdrawing said liquid; and

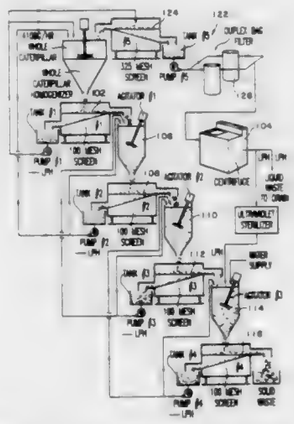
(e) discharging humid mass containing a reduced percentage of liquid thereon through said discharging outlet.

5,344,576

CONTINUOUS PARTICLE SEPARATION PROCESS

Charles Carr, Edgewater; Edward Sybert, Rockville, and Aldis E. Adamson, Columbia, all of Md., assignors to Crop Genetics International Corporation, Columbia, Md.

Continuation of Ser. No. 898,166, Jun. 12, 1992, abandoned, which is a continuation of Ser. No. 774,847, Oct. 11, 1991, abandoned, which is a continuation of Ser. No. 639,276, Jan. 10, 1991, Pat. No. 5,080,807. This application Feb. 25, 1993, Ser. No. 22,848
The portion of the term of this patent subsequent to Jan. 14, 2009, has been disclaimed.
Int. Cl.[5] B01D *37/00, 33/54*
U.S. Cl. 210—805 **16 Claims**



13. A method for the separation of small particles from larger particles in a liquid biological preparation comprising an insect homogenate, said method comprising the steps of:

1) introducing said liquid biological preparation comprising said small particles and said larger particles to a filter means, said filter means capable of retaining said larger particles and passing said small particles;

2) a first collecting step of collecting said small particles which are passed through said filter means;

3) re-introducing at least a portion of said small particles obtained from said collecting step to said filter means; and

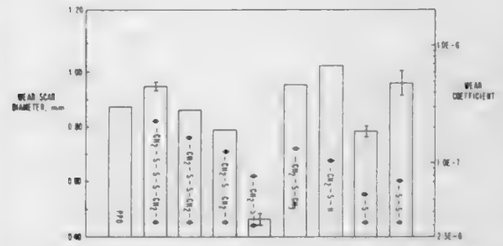
4) a second collecting step of collecting any said smail particles which are passed through said filter means.

5,344,577

METHODS FOR REDUCING WEAR ON SILICON CARBIDE CERAMIC SURFACES

Douglas E. Deckman, Mullica Hill, N.J., and Stephen M. Hsu, Germantown, Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed May 14, 1992, Ser. No. 883,313
Int. Cl.[5] C10M *135/22, 135/28*
U.S. Cl. 252—45 **11 Claims**



1. A method for reducing wear on a silicon carbide ceramic surface, comprising contacting the silicon carbide ceramic surface with a lubricating oil composition including an organic sulfide in an amount sufficient to reduce wear on the silicon carbide ceramic surface, the organic sulfide being of the formula $R^1—S—(S)_n—R^2$ wherein R^1 and R^2 are individually selected from the group consisting of alkyl, aryl, aralkyl and alkaryl groups and hydrogen, but not both of R^1 and R^2 are hydrogen, and n is 0, 1 or 2.

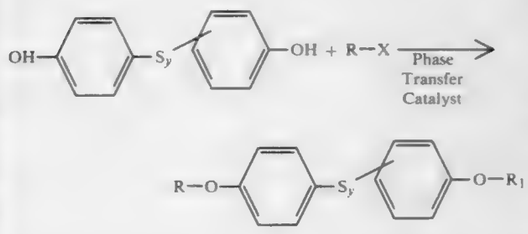
5,344,578

HYDROCARBYL ETHERS OF SULFUR-CONTAINING HYDROXYL DERIVED AROMATICS AS SYNTHETIC LUBRICANT BASE STOCKS

Liwen Wei, Belle Mead; Andrew G. Horodysky, Cherry Hill; Andrew Jeng, Marlton, and Ross A. Kremer, Ringoes, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 18, 1992, Ser. No. 992,671
Int. Cl.[5] C10M *135/00*
U.S. Cl. 252—47.5 **15 Claims**

1. A method of preparing a lubricant composition comprising adding to a lubricant of lubricating viscosity or grease and an effective amount of an additive product of reaction prepared by reacting a hydroxyl-derived aromatic with an alkyl halide in the presence of a phase transfer catalyst as described below;



where R, R_1 are hydrogen or C_1 to C_{30} hydrocarbyl and optionally contain sulfur, nitrogen and/or oxygen; X=Cl, Br, I; R and R_1 can be the same or different, and at least one of R or R_1 must be hydrocarbyl and y=1–3, and wherein the reaction is carried out at temperatures varying from ambient to about 250° C. under pressures varying from ambient to about 1,000 psig or is autogenous for a time sufficient to obtain the desired additive product of reaction and wherein the reaction is carried out in molar ratios of reactants varying from equimolar to more than molar to less than molar thereby obtaining an aromatic additive product containing hydrocarbyl ethers of a sulfur-containing hydroxyl-derived aromatic that imparts to said lubricant improved catalytic thermal/oxidative stabilities, concomitantly with improved antiwear and load-carrying properties.

5,344,579

FRICTION MODIFIER COMPOSITIONS AND THEIR USE

Hiroko Ohtani, Brentwood, and Rolfe J. Hartley, St. Louis, both of Mo., assignors to Ethyl Petroleum Additives, Inc., Richmond, Va.

Filed Aug. 20, 1993, Ser. No. 109,764
Int. Cl.[5] C10M *137/00, 141/06, 139/00*
U.S. Cl. 252—51.50 R **27 Claims**

1. A lubricant additive composition which comprises at least the following components:

a) a hydroxyalkyl aliphatic imidazoline in which the hydroxyalkyl group contains from 2 to about 4 carbon atoms, and in which the aliphatic group is an acyclic hydrocarbyl group containing from about 10 to about 25 carbon atoms; and

b) a di(hydroxyalkyl) aliphatic tertiary amine in which the hydroxyalkyl groups, being the same or different, each contain from 2 to about 4 carbon atoms, and in which the aliphatic group is an acyclic hydrocarbyl group containing from about 10 to about 25 carbon atoms;

said components a) and b) being present in a mol ratio in the range of about 0.005 to about 0.50 mol of a) per mol of b).

5,344,580

OLIGOMERS OF FLUORINATED OLEFINS

Konrad von Werner, Wald/Alz, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Burgkirchen

Filed Dec. 1, 1992, Ser. No. 983,691
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1991, 4139765
Int. Cl.[5] C10M *147/00, 131/00*
U.S. Cl. 252—54 **16 Claims**

1. An oligomer of compounds of the formula

$$X—(CF_2)_a—O_b—(CH_2)_c—CH=CH_2 \quad (1)$$

and co-oligomers of compounds of the formula (1) together with compounds of the formula

$$X—(CX_2)_d—O_b—(CX_2)_c—CX=CX_2 \quad (2)$$

in which X is hydrogen or fluorine, a is a number from 2 to 16, b and c are, independently of one another, 0 or 1, and d is a number from 0 to 6, with a mean degree of oligomerization of 2 to 4.

5,344,581

PROCESS FOR INCREASING THE BLEACHING EFFICIENCY OF AN INORGANIC PERSALT USING AN ACETYLATED MIXTURE OF SORBITAL AND MAMMITOL

Fulvio Burzio, Milan, Italy; Roland Beck, Bruxelles, Belgium; Julio Mentech, Lyons, France, and Myriam Elseviers, Kampenhout, Belgium, assignors to Ausimont S.p.A., Milan, Italy

Filed Jul. 30, 1992, Ser. No. 922,690
Claims priority, application European Pat. Off., Jul. 31, 1991, 91112870.0
Int. Cl.[5] C11D *3/395, 7/18, 7/26;* **D06L** *3/02*
U.S. Cl. 252—95 **4 Claims**

1. Bleaching and/or detergent and/or anti-incrusting compositions comprising a bleaching activating agent and an inorganic persalt wherein the molar ratio between the activating agent and the persalt is 10:90 to 50:50 and the activating agent comprises a mixture of hexa-acetyl sorbitol and hexa-acetyl mannitol in a weight ratio varying between 2.5:1 and 4.0:1.

5,344,582

TRACTION FLUID DERIVED FROM CYCLOPENTADIENE OLIGOMERS

Noboru Umemoto, Kamifukuoka; Takeshi Nomura; Toshiaki Kuribayashi, both of Tsurugashima; Takehisa Sato, Saitama, and Hirotaka Tomizawa, Tokorozawa, all of Japan, assignors to Tonen Corporation, Japan

Filed Jul. 29, 1992, Ser. No. 921,131

Claims priority, application Japan, Jul. 31, 1991, 3-214574

Int. Cl.[5] C10M *105/02, 105/04*

U.S. Cl. 252—9 **3 Claims**

1. A traction fluid comprising a naphthenic ingredient having a weight average molecular weight of lower than 250 but not lower than 200 and obtained by hydrogenating oligomers of cyclopentadiene having a ratio of the number of the norbornenic double bonds to that of the cyclopentenic double bonds in the range of between 0.3 and 0.6.

5,344,583

COMPOSITION FOR REMOVING NAIL ENAMEL FROM ARTIFICIAL NAILS

Ronnie E. Bayless, Plant City, Fla., assignor to Dotolo Research Corp., Largo, Fla.

Filed Aug. 26, 1993, Ser. No. 112,701

Int. Cl.[5] C11D *3/18, 3/20, 1/83, 9/36*

U.S. Cl. 252—171 **3 Claims**

1. A non-aqueous composition for removing nail enamel from artificial nails, the composition comprising the following ingredients in approximate percentage by weight:

Ingredient	Percent by Weight
d-limonene	30–42
Methyl acetate	52–66
cocamide DEA/Dihexyl sodium sulfosuccinate	1/2–8
dimethicone copolyol	0.1–4

5,344,584

CYANATE-REACTIVE COMPOSITIONS

Gabriel Verhelst, Herent; Philip Cornet, Overijse; Benoit F. de Veubeke, Hamme-Mille, and Bleys: Geert, Heverlee, all of Belgium, assignors to Imperial Chemical Industries Plc., London, England

Filed Dec. 18, 1991, Ser. No. 809,810

Claims priority, application United Kingdom, Dec. 27, 1990, 9028096

Int. Cl.[5] B01J *13/00;* **C09K** *3/00*

U.S. Cl. 252—182.27 **9 Claims**

1. An isocyanate-reactive composition comprising:

(1) a first isocyanate-reactive compound having a functionality of from 2 to 4 and an average equivalent weight of from 500 to 5000;

(2) a second isocyanate-reactive compound which is normally immiscible with the first isocyanate-reactive compound and has a functionality of at least 2 and an average equivalent weight of from 30 to 5000;

characterized in that it is further comprises

(3) a stabilizing amount of a surfactant compound comprising a carboxylic acid ester or amide carrying a terminal acid group selected from the group consisting of carboxymethyl, sulphate, sulphonate, phosphate, and phosphonate, provided that the methyl radical of the carboxymethyl group is not directly attached to a carbon atom of an unsubstituted hydrocarbon chain containing two or more carbon atoms.

5,344,585

USE OF 4-FLUOROPYRIMIDINE DERIVATIVES AS COMPONENT FOR FERROELECTRIC LIQUID CRYSTAL MIXTURES

Rainer Wingen, Hattersheim am Main, and Gerhard Illian, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

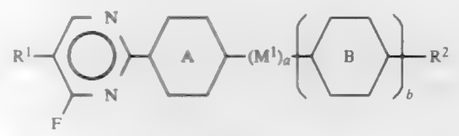
Filed Sep. 12, 1991, Ser. No. 758,633

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1990, 4029165; Sep. 27, 1990, 4030582

Int. Cl.[5] C09K *19/34;* **C07D** *239/02;* **G02F** *1/13*

U.S. Cl. 252—299.61 **7 Claims**

1. A ferroelectric liquid crystal mixture comprising 2 to 20 components and comprising at least one 4-fluoropyrimidine of the formula (I):



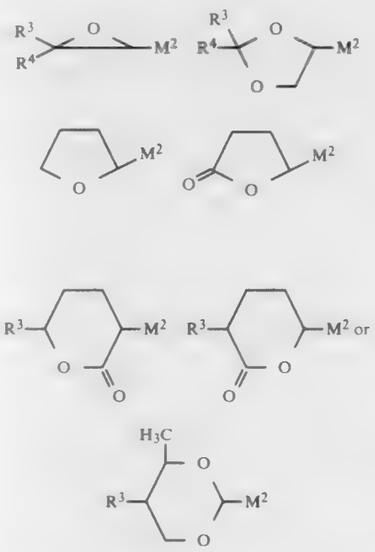
(I)

in which the symbols have the following meaning:

R^1 and R^2 independently of one another are straight-chain or branched alkyl having 1 to 16 carbon atoms, it being possible for one or two non-adjacent $—CH_2—$ groups to be replaced by —O—, —S—, —CO—, —CO—O—, —O—CO—, —CH=CH—, —OC(O)O—, —C≡C—,



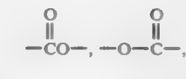
or $—Si(CH_3)_2—$, or are one of the following groups:



R^3 and R^4 independently of one another are H or alkyl having 1 to 16 carbon atoms or alkenyl having 2 to 16 carbon atoms, or R^3 and R^4 together are $—(CH_2)_4—$ or $—(CH_2)_5—$,

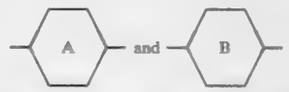
$—M^1—$ is —CO—O, —O—CO—, $—CH_2—O—$, $—O—CH_2—$, —C≡C—, —CH=CH—, $—CH_2—CH_2—$, $—CH_2CH_2CH_2CH_2—$, $—CH_2CH_2CH_2O—$

$—M^2—$ is $CH_2—O—$, $—O—CH_2$,



or a single bond

a and b independently of one another are zero or one, on condition that a is zero if b is zero, and



independently of one another are 1,4-phenylene, 1,4-cyclohexylene, 2,5-pyridinediyl or (1,3,4)thiadiazol-2,5-diyl.

5,344,586

ANTIFERROELECTRIC LIQUID CRYSTAL COMPOUND AND PROCESS FOR PRODUCING THE SAME

Yoshiichi Suzuki; Hiroyuki Mogamiya, both of Tokyo; Koichi Tanaka; Yoshihiro Takagi, both of Kobe, and Katutoshi Hirose, Kobe, all of Japan, assignors to Showa Sheel Sekiyu Kabushiki Kaisha, Tokyo, Japan

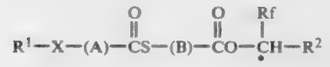
Filed May 20, 1993, Ser. No. 63,687

Claims priority, application Japan, May 21, 1992, 4-154388

Int. Cl.[5] C09K *19/20, 19/12;* **C07C** *323/62, 327/32*

U.S. Cl. 252—299.64 **10 Claims**

1. An antiferroelectric liquid crystal compound represented by the following formula:



wherein R^1 and R^2 are independently selected from C_3–C_{18} alkyl groups, respectively, Rf is a fluorinated lower alkyl group, X is selected from the group consisting of —O—, —COO—, —OCO—, —CO—, and a single bond, (A) and (B) is each independently selected from the group consisting of 1,4-phenylene, biphenylene, and naphthalene group which may be substituted with a halogen atom, and the C having an asterisk indicates an asymmetric carbon atom.

5,344,587

ELECTROOPTICAL LIQUID-CRYSTAL SYSTEM

David Coates, Merley Wimborne; Shirley Marden, Parkstone; Graham Smith, Poole, all of Great Britain; Ulrich Finkenzeller, Plankstadt, Fed. Rep. of Germany; Volker Reiffenrath, Rossdorf, Fed. Rep. of Germany; Reinhard Hittich, Modautal, Fed. Rep. of Germany, and Stefan Wilhelm, Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jun. 3, 1991, Ser. No. 687,852

Claims priority, application United Kingdom, Oct. 2, 1989, 8922168; Fed. Rep. of Germany, Nov. 1, 1989, 3936307; Nov. 1, 1989, 3936308; Dec. 9, 1989, 3940788; Jan. 10, 1990, 4000470; Jan. 10, 1990, 4000471; Jan. 12, 1990, 4000723; Jan. 16, 1990, 4001023; Jan. 19, 1990, 4001539; Jan. 19, 1990, 4001540; Jan. 19, 1990, 4001541; Jan. 22, 1990, 4001683; Jan. 23, 1990, 4001843; Jan. 25, 1990, 4002146; United Kingdom, Jan. 29, 1990, 9001944; Fed. Rep. of Germany, Feb. 20, 1990, 4005236

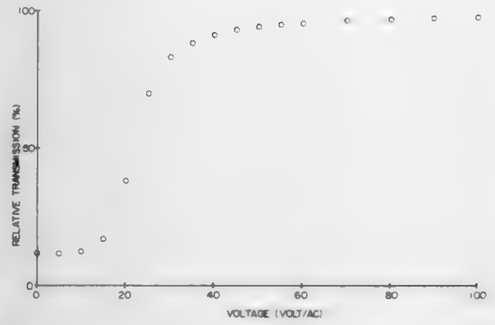
Int. Cl.[5] C09K *19/12, 19/52*

U.S. Cl. 252—299.66 **11 Claims**

1. An electrooptical liquid crystal system which contains a dielectrically positive liquid crystal mixture and a further optically transparent medium between 2 electrodes which are optionally applied to substrate sheets,

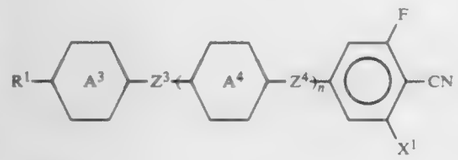
whose liquid crystal molecules in the switched-off state have a random orientation,

in which one of the refractive indices of the liquid crystal mixture essentially agrees with the refractive index of the matrix n_M and/or in which the quotient of the mass of the liquid crystal mixture and of the mass of the optically transparent medium is 1.5 or more,



which, independently of the polarization of the incident light, has an electrically switchable transmission,

wherein the liquid crystal mixture contains one or more compounds of the formula Ia:



Ia

in which



are each independently trans-1-,4-cyclohexylene, 1,4-phenylene, 2- fluoro-1,4-phenylene or 3-fluoro-1,4-phenylene,

X^1 is H or F

R^1 is alkyl having 1–12 C atoms, in which one or 2 non-adjacent CH_2 groups can also be replaced by —O— or —CH=CH—, and n, Z^3 and Z^4 are one of the following combinations:

	No.	n	Z^3	Z^4
	1	0	single bond	—
	2	1	$—CH_2CH_2—$	—
	3	1	$—CH_2CH_2—$	single bond
	4	1	single bond	$—CH_2CH_2—$
or	5	1	single bond	single bond;

with the proviso that only one of A^3 and A^4 is trans-1,4-cyclohexylene.

5,344,588

CERIUM (IV) COMPOUND

Jean-Yves Chane-Ching, Paris, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Continuation of Ser. No. 344,529, Apr. 28, 1989, abandoned, which is a continuation of Ser. No. 876,681, Jun. 20, 1986, abandoned. This application Aug. 21, 1991, Ser. No. 750,750
Claims priority, application France, Jun. 20, 1985, 85 09374
Int. Cl.[5] B01D *13/00;* **C01F** *17/00*
U.S. Cl. 252—313.1 **32 Claims**

1. An aqueously dispersible cerium (IV) material having the general formula (I):

$$Ce\ (M)_x\ (OH)_y\ (NO_3)_z \qquad (I)$$

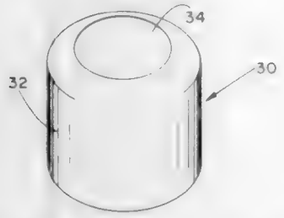
wherein M is an alkali metal or an ammonium radical; x ranges from 0.01 to 0.2; y is a number such that $y=4-z+x$; and z ranges from 0.4 to 0.7.

5,344,589

VAPOR PHASE CORROSION INHIBITOR-DESICCANT MATERIAL

Boris A. Miksic, North Oaks; Joseph M. Foley, Maplewood, and Tsi-Zong Tzou, Woodbury, all of Minn., assignors to Cortec Corporation, St. Paul, Minn.

Division of Ser. No. 929,621, Aug. 13, 1992, which is a continuation-in-part of Ser. No. 905,953, Jun. 29, 1992, Pat. No. 5,209,869, which is a continuation-in-part of Ser. No. 594,357, Sep. 27, 1990, Pat. No. 5,139,700, which is a continuation-in-part of Ser. No. 417,238, Oct. 5, 1989, abandoned, which is a continuation-in-part of Ser. No. 235,120, Aug. 23, 1988, abandoned. This application Oct. 14, 1993, Ser. No. 136,968
Int. Cl.[5] C23F *11/12*
U.S. Cl. 252—392 **4 Claims**



1. A permeable capsule containing a vapor phase corrosion inhibitor-desiccant formulation comprising a vapor phase corrosion inhibitor component and a desiccant component, wherein the corrosion inhibitor component comprises, by weight, from about 22% to about 27% sodium nitrite, from about 4% to about 6% benzotriazole, and from about 65% to about 75% of an anhydrous molybdate selected from the group consisting of sodium molybdate, ammonium dimolybdate, amine molybdates, and mixtures thereof, and wherein the desiccant component comprises a granular silica gel, with said corrosion inhibitor component deposited upon said granular silica gel.

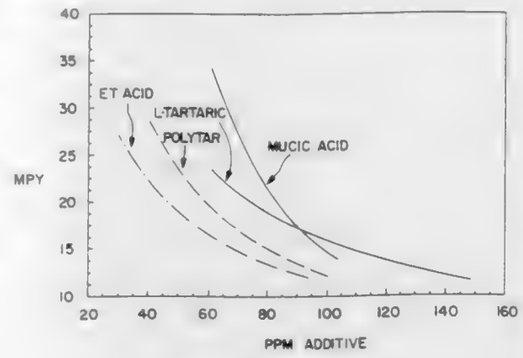
5,344,590

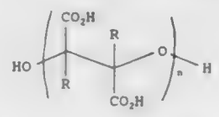
METHOD FOR INHIBITING CORROSION OF METALS USING POLYTARTARIC ACIDS

Charles G. Carter, Silver Spring, Md.; Lai-Duien G. Fan; Joseph C. Fan, both of Lake Zurich, Ill.; Robert P. Kreh, Jessup, and Vladimir Jovancicevic, Columbia, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jan. 6, 1993, Ser. No. 2,356
Int. Cl.[5] C23F *11/12*
U.S. Cl. 252—396 **12 Claims**

1. A method for inhibiting corrosion of metals in contact with an aqueous solution comprising adding to the system a corrosion inhibiting amount of one or more polytartaric acids having the formula:





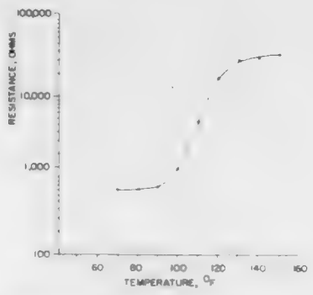
wherein n is less than 4; the average molecular weight of the polytartaric acids corresponds to an average n in the range 1.2 to 3, and wherein each R is independently selected from the group consisting of H and C_1 to C_4 alkyl or a water soluble salt thereof.

5,344,591

SELF-REGULATING LAMINAR HEATING DEVICE AND METHOD OF FORMING SAME

Jack H. Smuckler, 9 Countryside La., Marblehead, Mass. 01945

Division of Ser. No. 824,331, Jan. 23, 1992, Pat. No. 5,206,482, which is a continuation-in-part of Ser. No. 610,795, Nov. 8, 1990, Pat. No. 5,198,639. This application Apr. 1, 1993, Ser. No. 41,814
Int. Cl.[5] H01B *1/00, 1/20*
U.S. Cl. 252—511 **5 Claims**



1. A PTC composition comprising:

a. a continuous, single phase solution comprising (1) greater than 10% by weight of a crystalline polyurethane or polychloroprene polymer having a degree of crystallinity of at least 5%, and (ii) an organic solvent or solvent blend, wherein said polymer remains soluble in said solvent or solvent blend at a temperature in the range of from about 60° F. to about 80° F.; and

b. electrically conductive particulate material dispersed throughout said single phase solution in an amount of from about 20% to about 60% by weight,

wherein said composition when dried has a switching temperature which approximates the crystalline melt temperature of the polymer.

5,344,592

ORGANIC VEHICLE FOR ELECTRONIC COMPOSITION

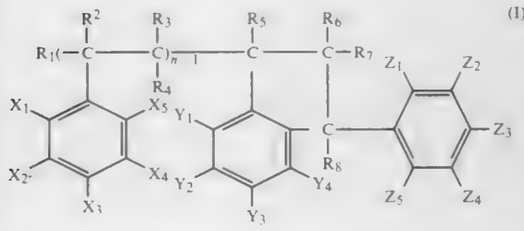
Lech Wilczek, Wilmington, Del., and James W. O'Neil, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 16, 1993, Ser. No. 25,635
Int. Cl.[5] H01B *1/00, 102, 120*
U.S. Cl. 252—512 **17 Claims**

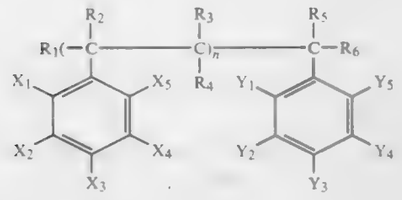
1. An electronic paste composition comprising:

a) inorganic particles and

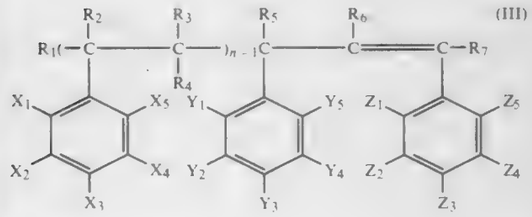
b) a vehicle containing at least one compound having a molecular weight of about 200 to about 500 of the structure,



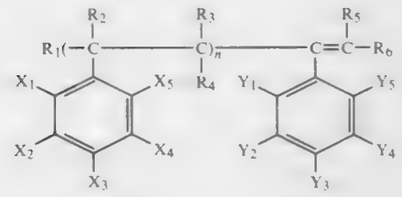
or the structure,



or the structure,



or the structure,



where

R_1 through R_8, are independently selected from the group consisting of hydrogen, phenyl, alkyl containing 1 to 10 carbon atoms, and cycloalkyl containing 5 to 10 carbon atoms, with the proviso that at least one of R_1 and R_2 is different than hydrogen and at least one of R_3 and R_4 is hydrogen;

X_1 through X_5, Y_1 through Y_5, Z_1 through Z_5, are independently selected from the group consisting of hydrogen, phenyl, alkyl, cycloalkyl, acyl, alkoxyl, carboxyl, carboxyl ester, and hydroxyl; and wherein said group each contains 10 or fewer carbon atoms; and n is 1 or 2.

5,344,593

ELECTROCONDUCTIVE ELASTOMER-FORMING COMPOSITION

Hideki Chiba, Hitachi; Hisao Igarashi, Fukushima; Naoshi Yasuda, Komatsu, and Yasuo Matsuki, Oita, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1992, Ser. No. 853,813
Claims priority, application Japan, Mar. 27, 1991, 3-085725
Int. Cl.[5] H01B *1/00, 1/20, 1/22*
U.S. Cl. 252—514 **16 Claims**

1. An electroconductive elastomer-forming composition consisting of (a) 100 parts by weight of a vinyl group-containing polydimethylsiloxane having a standard polystyrene-reduced molecular weight of 10,000–40,000, and up to 5% by weight based on component (a) of another polysiloxane, (b) 5–50 parts by weight of a hydrosilyl group-containing polydimethylsiloxane having a standard polystyrene-reduced molecular weight of 10,000–40,000, and up to 5% by weight based on component (b) of another hydrosilyl group-containing polysiloxane, (c) 30–1,000 parts by weight of electroconductive particles, an inorganic filler other than the electroconductive particles and a curing catalyst.

5,344,594

METHOD FOR THE FABRICATION OF MULTICOLORED BALLS FOR A TWISTING BALL DISPLAY

Nicholas K. Sheridon, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 784,294, Oct. 29, 1991, abandoned. This application Dec. 11, 1992, Ser. No. 989,400
Int. Cl.[5] B01J *13/18, 13/20;* **G02F** *1/15*
U.S. Cl. 264—4.1 **7 Claims**

1. A method of forming multichromal balls, comprising the steps of

providing a plurality of streams of differently colored hardenable liquids flowing in substantially the same direction,

directing the lead ends of the streams towards each other,

forming a single side-by-side multichromal stream as said plurality of streams merge together,

moving said single side-by-side multichromal stream through a fluid medium as one or more free jets, so that their forward ends become unstable and break up into droplets which form into spherical balls, each of said balls comprising layers of differently colored hardenable liquid, and

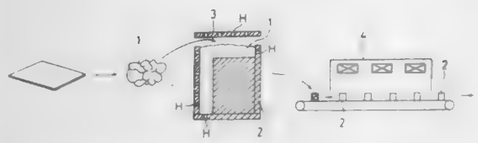
hardening said balls.

5,344,595

METHOD OF PRODUCING A CUSHION FROM WASTE PAPER OR PULP

Shinji Aoki, Osaka; Shigeru Miyawaki, Hyogo; Koichi Yoshida, Hyogo, and Seiichi Yonekawa, Hyogo, all of Japan, assignors to Settsu Corporation, Hyogo, Japan

Filed Mar. 15, 1993, Ser. No. 31,505
Claims priority, application Japan, Mar. 13, 1992, 4-090024; Jun. 23, 1992, 4-189827
Int. Cl.[5] B29C *43/00;* **B32B** *31/00*
U.S. Cl. 264—26 **5 Claims**



1. A method of producing a cushion from waste paper or

pulp comprising the steps of mechanically fluffing waste paper or pulp, adding an adhesive amount of an adhesive to the fluffed paper or pulp to form a mixture and mixing uniformly, casting said mixture in a mold having water drainage small apertures therein, closing an opening of the mold by placing, over said opening, a cover having drainage small apertures therein, heating said mold with the mixture therein by dielectric heating or microwave heating, thereby drying the molded paper cushion to a predetermined water content level, and removing the molded paper cushion from the mold, said apertures in the mold and cover being of sufficient size to permit water to evaporate therethrough, but which do not permit the fluffed paper or pulp to flow through the apertures.

5,344,596

METHOD FOR FLUID COMPRESSION OF INJECTION MOLDED PLASTIC MATERIAL

James W. Hendry, Brooksville, Fla., assignor to ICP Systems, Inc., Madison Heights, Mich.

Continuation-in-part of Ser. No. 855,236, Mar. 23, 1992, abandoned. This application Oct. 15, 1992, Ser. No. 961,615
Int. Cl.[5] B29C *45/34*
U.S. Cl. 264—40.3 37 Claims



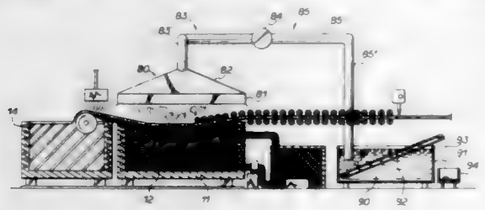
36. In an injection molding process for producing a solid injection molded part having no internal voids and a sink free exterior, the process including introducing a predetermined quantity of molten thermoplastic resin into an article defining cavity formed by a pair of relatively movable mold portions each having a mold surface and clamping the mold portions together with a predetermined clamping force, the improvement comprising introducing gas under pressure into the cavity to pack the resin against one mold surface and force the resin away from the other mold surface to form a solid article and to simultaneously force the mold portions away from one another, and then forcing the mold portions towards one another to compress the gas to a second pressure.

5,344,597

METHOD AND APPARATUS FOR MAKING STEEL SHEETS

Harry J. Robertson, 529 N. State St., Dover, Del. 11901

Continuation-in-part of Ser. No. 878,665, May 4, 1992, abandoned. This application May 4, 1993, Ser. No. 57,646
Int. Cl.[5] B29C *39/14, 39/44;* B22D *11/01*
U.S. Cl. 264—40.6 32 Claims



1. A method of forming a continuous thin sheet of material, comprising the steps of:

(a) heating a first material having a first melting temperature and a first specific gravity to produce a first molten material;

(b) heating a second material having a second melting temperature and a second specific gravity to produce a second molten material, the second melting temperature being less than the first melting temperature, and the second specific gravity being greater than the first specific gravity, the first and second molten materials being immiscible with respect to each other;

(c) containing the second molten material to expose an upper surface thereof;

(d) floating the first molten material onto the upper surface of the second molten material;

(e) maintaining the upper surface of the second molten material at a temperature less than the first melting temperature of the first molten material and greater than the second melting temperature;

(f) allowing the first molten material to solidify while floating on the surface of the second molten material to form a sheet of the first material; and

(g) withdrawing fumes, gases and vapors from the surface of said second molten material by entraining the fumes, gases and vapors in an air flow and passing said air flow into a liquid bath to thereby scrub the air flow of a portion of the fumes, gases and vapors.

7. An apparatus for producing a continuous thin sheet of material, comprising:

first means for heating a first material having a first melting temperature and having a first specific gravity into a first molten material;

second means for heating a second material having a second melting temperature and having a second specific gravity into a second molten material, the second melting temperature being less than the first melting temperature, and the second specific gravity being greater than the first specific gravity, said first and second molten materials being immiscible with respect to each other;

third means for containing the second molten material to expose an upper surface thereof;

fourth means for floating said first molten material onto the upper surface of the second molten material to thereby form the continuous thin sheet; and

exhaust means over the said upper surface of said second molten material for removing the fumes, gases and vapors released therefrom, means to entrain said fumes, gases and vapors in an air flow, and a liquid bath to thereby scrub the air flow of a portion of said fumes, gases and vapors.

5,344,598

Patent Not Issued For This Number

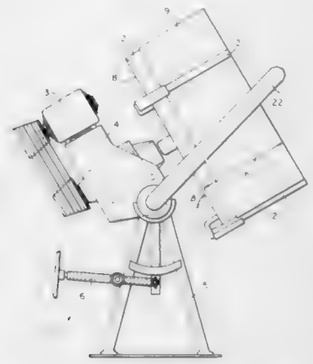
5,344,599

PROCESS FOR PRODUCING SINTERED MAGNESIA

Michael Grill, Siracusa, Italy, and Josef Deutsch, Leoben, Austria, assignors to Vietscher Magnesitwerke-Actien-Gesellschaft, Vienna, Austria

PCT No. PCT/AT91/00096, § 371 Date Mar. 5, 1993, § 102(e) Date Mar. 5, 1993, PCT Pub. No. WO92/04111, PCT Pub. Date Mar. 19, 1992
PCT Filed Aug. 27, 1991, Ser. No. 982,751
Claims priority, application Austria, Sep. 5, 1990, 1815/90
Int. Cl.[5] C04B *35/04*
U.S. Cl. 264—63 13 Claims

1. Process for producing coarse-grained sintered magnesia, starting from pulverant magnesium oxide, converting said magnesium oxide into green compacts and subjecting the green compacts to sinter-firing at high temperature until said sinter-fired green compacts have an apparent density of at least 3.3 g/cm^3, characterised in that the green compacts which are subjected to sinter-firing are formed from an active, reactive pulverant magnesium oxide of a grain size of <0.15 mm and formed by pelletising on a granulating disc at a material throughput of less than 250 kg of MgO/m^2 of disc area and per hour, wherein the pulverant magnesium oxide has a mean residence time on the granulating disc of ½ to 2 hours.

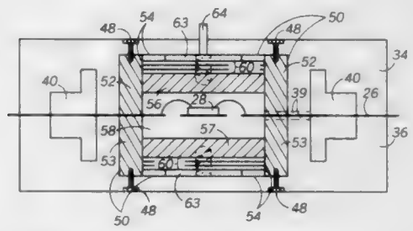


5,344,600

METHOD FOR ENCAPSULATING SEMICONDUCTOR DEVICES WITH PACKAGE BODIES

Michael B. McShane; Alan H. Woosley, and Francis Primeaux, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 733,580, Jul. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 362,644, Jun. 7, 1989, Pat. No. 5,049,526. This application Aug. 21, 1992, Ser. No. 931,459
Int. Cl.[5] B29C *45/10, 45/14*
U.S. Cl. 264—219 2 Claims



1. A method for encapsulating semiconductor devices, each device including a package body, the method comprising the steps of:

providing a mold having at least one mold platen, the mold platen having a first cavity formed therein;

providing a first insert in the first cavity which defines a width and a length of a first package body, the first insert also defining a second cavity;

providing a second insert in the second cavity and within the first insert which defines a thickness of the first package body, the second insert having an adjustable position within the first insert;

providing a lead frame;

attaching a semiconductor die to the lead frame;

inserting the lead frame with the semiconductor die attached thereto into the mold;

filling an encapsulant into the mold including the second cavity in the second insert to form the first package body which encapsulates the semiconductor die, while keeping the first and second inserts stationary;

removing the lead frame, the semiconductor die, and the first package body from the mold; and

adjusting the second insert within the first insert such that the second insert defines a thickness of a second package body which is different than the thickness of the first package body, wherein the second insert is adjusted while the first insert is held stationary;

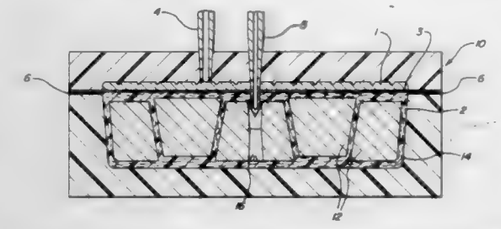
wherein the mold is provided with means to adjust the position of the second insert within the second cavity, and wherein the means to adjust comprises at least one shim within the second cavity.

5,344,601

MOLDING METHOD USING TWO DIFFERENT RESINS AND A MEMBRANE

John Newton, Brackenthwaite House, Black Beck Wood, Stoors Park, Bowness, Cumbria LA23 3IS, United Kingdom

PCT No. PCT/GB90/01014, § 371 Date May 4, 1992, § 102(e) Date May 4, 1992, PCT Pub. No. WO91/00171, PCT Pub. Date Jan. 10, 1991
PCT Filed Jul. 2, 1990, Ser. No. 784,410
Claims priority, application United Kingdom, Jul. 4, 1989, 8915369.6
Int. Cl.[5] B29C *45/16, 45/13*
U.S. Cl. 264—255 17 Claims



1. A method of molding a composite rigid article which comprises providing a mold adapted to receive a first matrix component for molding the article, inserting a flexible membrane in the mold so as to define first and second contiguous volumes separated thereby, said second volume being full of reinforcing fiber, said membrane acts as a boundary between said first and second volumes, injecting a first resinous matrix material on one side of the said membrane into said first volume thereby decreasing the size of the second volume and at a rate to provide a pressure buildup serving to compress the fibers within said second volume, injecting a second resinous matrix material on the other side of the membrane into said second volume and curing the system to form said rigid article, while said pressure buildup is maintained in said second volume.

5,344,602

CONTINUOUS FORMING OF FIBER COMPOSITE MATERIALS

Stephen A. Yencho, Stanford, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Aug. 14, 1992, Ser. No. 930,730
Int. Cl.[5] B29C *53/04*
U.S. Cl. 264—258 14 Claims

1. A process for continuously forming a transverse bend in a workpiece of a fiber-containing composite material, comprising the steps of:

supplying the workpiece of the fiber-containing composite material having fibers embedded within a matrix, the workpiece having a longitudinal direction and a transverse direction defined therefor;

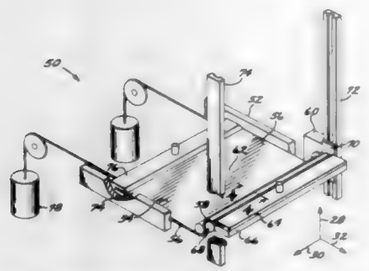
passing the workpiece in the transverse direction through apparatus having a bending roller extending in the longitudinal direction over substantially an entire length of the workpiece and defining a forming zone adjacent to the bending roller, the bending roller permanently bending the composite workpiece by

introducing a net bending deformation into the workpiece,

placing the workpiece into a vacuum forming bag, and

progressively propagating the introduced net bending deformation transversely through the workpiece as the workpiece is moved in the transverse direction, the propagating being accomplished such that the transverse laminar length of the workpiece remains substantially unchanged during the forming process, the workpiece remaining in the vacuum forming bag during the step of progressively propagating; and

applying a tension loading across the entire workpiece in the transverse direction to the forming zone, from outside of the forming zone.



5,344,603

PROCESS FOR THE PRODUCTION OF A COVER UNIT WITH A SEAL FOR VEHICLE ROOFS AND COVER UNIT FOR VEHICLE ROOFS

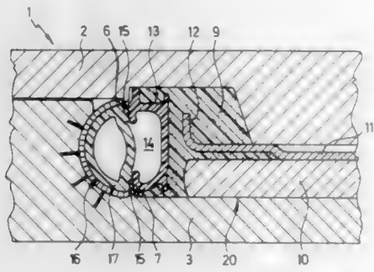
Hans Jardin, Inning, and Harald Strunk, Plettenberg, both of Fed. Rep. of Germany, assignors to Webasto-Schade GmbH, Oberpfaffenhofen, Fed. Rep. of Germany

Filed Feb. 28, 1992, Ser. No. 843,188

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1991, 4106252

Int. Cl.[5] **B29C** *39/10*

U.S. Cl. 264—261 **11 Claims**



1. Process for the production of a cover unit with a peripheral seal for vehicle roofs, comprising the steps of:

A) providing a mold having a mold cavity having adjoining first and second mold spaces which open into each other;

B) placing at least one cover part and a cover support in said mold with an edge area thereof extending into said first mold space;

C) arranging a seal-receiving part, having an outwardly directed seal receptacle in which a resiliently compressible peripheral seal is mountable, in said first mold space at a distance from said cover part and said cover support so as to leave a connection-forming gap in the mold between them and the seal-receiving part, said seal-receiving part being positioned so as to isolate said second mold space from said first mold space and being oriented with said seal receptacle facing into said second mold space;

D) closing the mold and introducing an elastomer into the mold so as to fill the connection-forming gap and connect the cover part and cover support into a unit with the seal-receiving part, the elastomer introduced being made of a softer material than the seal-receiving part and being prevented from entering into said second mold space by said seal-receiving part;

wherein a resiliently compressible peripheral seal is disposed in said second mold space covering the seal receptacle of said seal-receiving part during said step D, and said seal-receiving part being positionally fixed so as not to be displaced during introduction of said elastomer, thereby preventing compression of said compressible peripheral seal by the elastomer being introduced.

5,344,604

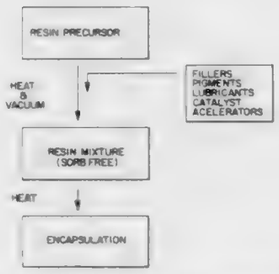
PROCESS FOR FORMING A SUBSTANTIALLY GAS FREE ENCAPSULATION

Walter K. Kusek, 2925 Aran Ct., Oakton, Va. 22124

Continuation of Ser. No. 814,143, Dec. 27, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 46,125

Int. Cl.[5] **B29C** *45/02, 45/14*

U.S. Cl. 264—272.11 **8 Claims**



1. A process for forming an article, comprising the steps of:

heating a resinous precursor semisolid flowable material to a first temperature sufficient to release substantially all sorbed gases and to form a substantially gas free precursor material;

storing said precursor material at room temperature while still retaining said semisolid flowable and gas free state, said material having the ability to maintain said state for up to six months of storage;

forming said semisolid flowable and gas free precursor material into an electrical encapsulation configuration; and

heating the formed material to a cure temperature, said material forming a stable solid electrical encapsulation configuration upon curing.

5,344,605

METHOD OF DEGASSING AND SOLIDIFYING AN ALUMINUM ALLOY POWDER

Toshihiko Kaji; Yoshinobu Takeda; Yuusuke Odani; Kiyoaki Akechi, and Takao Tanji, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

PCT No. PCT/JP92/01527, § 371 Date Sep. 21, 1993, § 102(e) Date Sep. 21, 1993, PCT Pub. No. WO93/09899, PCT Pub. Date May 27, 1993

PCT Filed Nov. 20, 1992, Ser. No. 94,062

Claims priority, application Japan, Nov. 22, 1991, 3-307873; Feb. 4, 1992, 4-047695; Nov. 20, 1992, 4-333901

Int. Cl.[5] **B22F** *1/00, 3/16*

U.S. Cl. 419—31 **10 Claims**



1. A method of degassing an aluminum alloy powder, characterized by preforming an aluminum powder, aluminum alloy powder or aluminum composite alloy powder or mixed powders thereof with non-metallic grains to give a specific electric resistance of at most 0.2Ωcm, subjecting the preform directly to induction heating in an atmosphere at normal pressure, temperature-raising to 400° to 600° C. at a temperature gradient of at least 0.4° C./sec in a temperature range of at least 300° C., and removing heat-decomposable volatile components to obtain a hydrogen content of at most 10 ppm.

4. A method of solidifying a rapidly solidified aluminum alloy powder, characterized by preforming an aluminum powder, aluminum alloy powder or aluminum composite alloy powder or mixed powders thereof with non-metallic grains to give a specific electric resistance of at most 0.2 Ωcm, subjecting the preform directly to induction heating in a stagnant atmosphere at normal pressure, maintaining a temperature-raising gradient of at least 0.4° C./sec at a temperature range of at least 300° C., temperature-raising to 400° to 600° C. corresponding to a temperature of at least 30° C. higher than the vacuum degassing temperature applied to a case of extruding the above described powder, removing heat-decomposable volatile components to obtain a hydrogen content of at most 10 ppm, then directly subjecting a product to hot working and solidifying the product.

5,344,606

FLUID TREATMENT ALLOY CASTING OF CU-SN-NI-ZN

Thomas E. Brimmer, 15259 Debbie Cove, Gulfport, Miss. 39503

Filed May 7, 1993, Ser. No. 59,805

Int. Cl.[5] **C22C** *9/00*

U.S. Cl. 420—473 **3 Claims**

2. A fluid treatment alloy for use as a catalytic surface in a fluid treatment apparatus, comprising

copper in the amount of 52 to 55% by weight;

tin in the amount of 5 to 6% by weight;

Nickel in the amount of 16 to 18% by weight; and

Zinc in the amount of at least 20%;

said alloy containing less than 1% manganese, less than 0.05% aluminum, and less than 0.5% iron, and no added silver, silicon or magnesium.

5,344,607

LEAD-FREE, HIGH TIN, TERNARY SOLDER ALLOY OF TIN, BISMUTH, AND INDIUM

Stephen G. Gonya; James K. Lake, both of Endicott, N.Y.; Randy C. Long, Friendsville, Pa., and Roger N. Wild, Owego, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1993, Ser. No. 78,677

Int. Cl.[5] **C22C** *13/00*

U.S. Cl. 420—562 **1 Claim**

1. A high solidus temperature, high service temperature, high strength ternary solder alloy consisting essentially of about 90 weight percent Sn, about 2 weight percent Bi, and about 8 weight percent In.

5,344,608

ALLOYED METAL FOR HORSESHOES OF RACE HORSE

Young ho Eom, and Tae un Nam, both of Seoul, Rep. of Korea, assignors to Korea Racing Association, Kwachun-City, Rep. of Korea

Filed Jun. 25, 1993, Ser. No. 81,060

Int. Cl.[5] **C22C** *21/06;* **A01L** *1/00*

U.S. Cl. 420—532 **1 Claim**

1. A horseshoe comprising an alloy manufactured by dissolving and mixing Si:0.05–0.10%(WT), Fe:0.05–0.10%(WT), Cu:0.10–0.20%(WT), Mn:0.10–0.20%(WT), Mg:3.00–5.00%, Cr:0.05–0.15%(WT), Zn:0.05–0.10%(WT), and Al:96.6–94.15%(WT) in an electric furnace, wherein said horseshoe does not require solution treatment and annealing heat treatment.

5,344,609

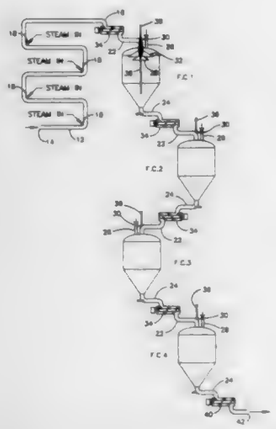
METHOD AND APPARATUS FOR STERILIZATION WITH INCREMENTAL PRESSURE REDUCTION

Marshall Long, 11147 Old Harbour Rd., North Palm Beach, Fla. 33408

Filed Dec. 24, 1992, Ser. No. 996,688

Int. Cl.[5] **A61L** *2/06*

U.S. Cl. 422—26 **14 Claims**



9. A method for sterilizing a water compatible product, comprising the steps of:

passing the product through a conduit;

injecting steam into said conduit while maintaining sufficient pressure within said conduit to cause said steam to change phase from vapor to liquid thereby raising the temperature of the product to a sterilization temperature and raising the pressure of the product to a first pressure;

passing the product through two or more flash chambers in a substantially continuous manner, each said flash chamber being maintained at a successively lower pressure than said first pressure to thereby cause a phase change from liquid to vapor of at least a portion of the steam previously injected, thereby lowering the temperature of the product.

5,344,610

ASPIRATOR PROBE WITH LONG PIVOT ARM TO MINIMIZE TIP FLICK

James D. Shaw, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 3, 1993, Ser. No. 12,681

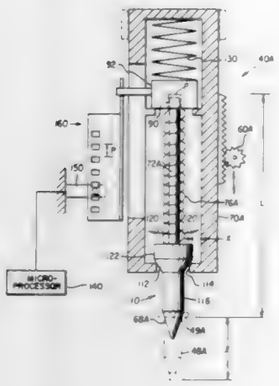
Int. Cl.[5] **B01L** *3/02;* **G01N** *35/06*

U.S. Cl. 422—100 **4 Claims**

1. In an aspirator probe for aspirating and dispensing liquid, said probe comprising a support shaft and a tip-mounting surface connected to said shaft for a disposable tip having a seating surface and a dispensing orifice, said support shaft being disposed generally vertically and including pivotable compliant means for allowing for horizontal displacement of said tip at a liquid-dispensing station, an exterior surface of said tip adjacent to its seating surface acting as a fulcrum for inadvertent tip-pivoting at the sample dispense station, causing a horizontal displacement of the liquid-dispensing orifice of the tip;

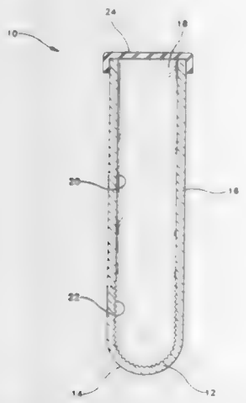
the improvement wherein said compliant means is pivoted vertically along said support shaft at a point from said tip mounting, surface that is at least about five times the

length of said tip from said seating surface to said tip orifice,



whereby the horizontal displacement of said orifice due to said inadvertent pivoting, is minimized.

5,344,611
VACUUM ACTUATED BLOOD COLLECTION ASSEMBLY INCLUDING TUBE OF CLOT-ACCELERATING PLASTIC
Erwin A. Vogler, Newhill; Garry R. Harper, Raleigh, and Jane C. Graper, Durham, all of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Jun. 14, 1993, Ser. No. 75,441
Int. Cl.[5] B01L *11/00*; A61M *1/00*
U.S. Cl. 422—101 **10 Claims**

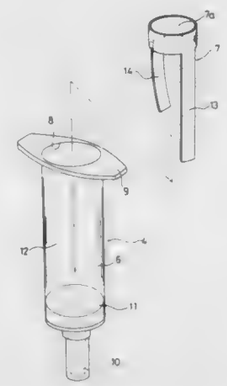


1. A blood collection assembly comprising a plastic blood collection container having a bottom wall and a side wall defining an open end covered by a puncturable septum, said bottom wall, side wall and septum enclosing an evacuated interior volume of said container, an interior wall surface area of said container being treated with a plasma from a process gas, the plasma-treated wall surface having an accelerated rate of blood clotting in said container relative to the rate in an otherwise identical non-plasma-treated container.

5,344,612
Patent Not Issued For This Number

5,344,613
AGITATION STABILIZER IN SOLID-PHASE PEPTIDE SYNTHESIZER
Kiyoshi Nokihara; Rintaro Yamamoto; Makoto Hazama, and Shin Nakamura, all of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan
Filed Jan. 26, 1993, Ser. No. 9,080
Claims priority, application Japan, Jan. 29, 1992, 4-002814[U]
Int. Cl.[5] C08F *2/00*; C07K *5/00*
U.S. Cl. 422—131 **6 Claims**

1. A solid-phase peptide synthesizing apparatus, wherein peptide synthesis is promoted by means of bubbling agitation of reagents and washing solvents bathing an insoluble support matrix which anchors elongating peptide chains yielded through coupling-assembly formation of peptide bonds, comprising:



a reaction vessel having a drainage port, through which inert gas is forcibly introduced into a reaction chamber within said reaction vessel, in order to effect said bubbling agitation, said reaction vessel having further a supply opening, through which said reagents and said washing solvents are supplied into the reaction chamber, said reaction chamber further containing an insoluble support matrix sustained on a filter covering said port; and

a stabilizer removable from said reaction chamber positioned within said reaction chamber, for inhibiting splash of said reagents and washing solvents arising from said bubbling agitation, and further for breaking clumping and coagulative skinning of peptide-bound support matrix, due to flocculation effects abetted by said bubbling agitation during said coupling assembly of peptide chains, and levitated thereby in said reaction chamber;

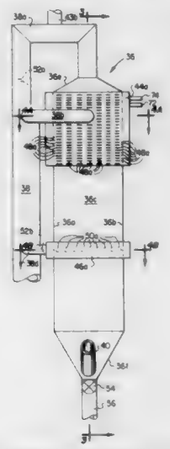
said reaction vessel defining said reaction chamber being substantially cylindrical;

said stabilizer being partially formed as an annulus of diameter so corresponding to said reaction chamber as to allow said stabilizer to be concentrically accommodated within said reaction chamber;

said annulus of said stabilizer being supported by a leg in extension therefrom; and

said annulus also having a baffle leg in extension likewise as but shorter than said support leg, and bent radially inward relative to said annulus, for breaking clumping and coagulative skinning of said peptide-bound support matrix, due to said flocculation effects; wherein said baffle leg further promotes dispersive mixing, of said insoluble support matrix anchoring forming peptide chains with said reagents and washing solvents, during said peptide chain coupling assembly.

5,344,614
REACTOR FOR REDUCING SULFUR OXIDES EMISSIONS IN A COMBUSTION PROCESS
John T. Tang, Easton, Pa., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.
Filed Sep. 11, 1992, Ser. No. 943,650
Int. Cl.[5] B01D *50/00*; F01N *3/08*
U.S. Cl. 422—170 **3 Claims**



1. A reactor for treating a gaseous product, said reactor comprising;

a vessel having two opposed walls;

two plenums respectively associated with said opposed walls for receiving said gaseous product;

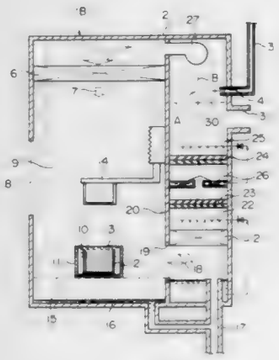
a plurality of louvers extending through each of said opposed walls and respectively aligned with said plenums for introducing said gaseous product into the interior of said vessel;

means for introducing water into an area of said vessel between said opposed walls and their respective louvers to humidify said gaseous product;

two additional plenums respectively associated with said opposed walls for receiving additional gaseous product, said additional plenums being located at a different level of said vessel than said first-mentioned plenums; and a plurality of inlet openings extending through each of said opposed walls and respectively aligned with said additional plenums for introducing said additional gaseous product into the interior of said vessel at a different level than the level of introduction of said first-mentioned gaseous product; and

an additional plenum associated with the roof of said vessel for receiving additional gaseous product and an inlet opening formed through said roof for introducing said latter additional gaseous product from said roof downwardly into said vessel.

5,344,615
WET-PROCESS APPARATUS
Motonori Yanagi; Cozy Ban, and Takaaki Fukumoto, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 844,157, Mar. 2, 1992, abandoned. This application Oct. 14, 1993, Ser. No. 136,050
Claims priority, application Japan, Nov. 7, 1991, 3-291459
Int. Cl.[5] B01D *53/34*, *50/00*
U.S. Cl. 422—170 **13 Claims**



1. A wet-processing apparatus comprising:

a chamber, having:

a working space;

means for wet processing in said working space;

means for supplying nitrogen gas in fluid communication with said chamber;

a nitrogen gas outlet located in a wall of said chamber;

means for cleaning nitrogen gas by removing contaminants mixed therewith located in an area of said chamber downstream of said working space and upstream of said nitrogen gas outlet and having a contaminated gas inlet and a treated gas outlet in fluid communication with said chamber;

means for diverting gas in the chamber located downstream of said treated gas outlet and upstream of said nitrogen gas supplying means, said means for diverting gas having a first position providing egress of treated gas from said chamber through said nitrogen gas outlet while inhibiting fluid communication to other parts of said chamber and a second position permitting fluid communication and recirculation of said treated gas to

other parts of said chamber while preventing egress of said treated gas through said nitrogen gas outlet; and means for circulating nitrogen gas in said chamber.

5,344,616

APPARATUS FOR THE SEPARATION OF UNDESIRABLE CONSTITUENTS FROM A WASTE GAS

Hermann Bruggendick, Hunxe, Fed. Rep. of Germany, assignor to Steag Aktiengessllschaft, Essen, Fed. Rep. of Germany

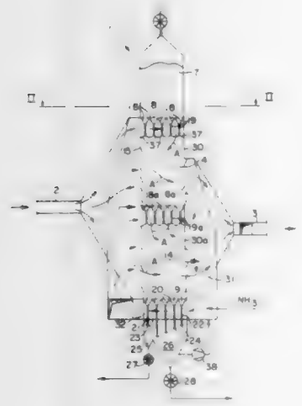
PCT No. PCT/EP89/00810, § 371 Date Jul. 31, 1991, § 102(e) Date Jul. 31, 1991, PCT Pub. No. WO90/07371, PCT Pub. Date Jul. 12, 1990

PCT Filed Jul. 13, 1989, Ser. No. 720,762

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1988, 3844422

Int. Cl.[5] B01D *50/00*

U.S. Cl. 422—171 **7 Claims**



1. Apparatus for the separation of undesirable constituents from a waste gas, comprising means defining a vertical bed of adsorbent having an upper end and a lower end, means for supplying adsorbent to the upper end and for removing adsorbent from the lower end, said supplying means comprising a grid comprised by a plurality of feed hoppers arranged in side-by-side relationship and one behind the other, said feed hoppers having spaces therebetween and being positioned to deliver adsorbent onto an exposed uppermost surface of said bed, and means for supplying waste gas to said spaces between said hoppers and thence to said uppermost surface of said bed to pass downwardly through said uppermost surface and through said bed and thereafter leave said bed, and means for removing waste gas that has passed through said bed.

5,344,617

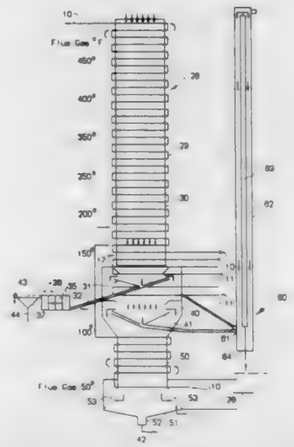
APPARATUS FOR CONVERTING NOXIOUS POLLUTANTS FROM FLUE GAS INTO MERCHANTABLE BY-PRODUCTS

Arthur F. Johnson, 240 Fox Dr., Boulder, Colo. 80303

Division of Ser. No. 888,931, May 26, 1992, Pat. No. 5,230,870. This application Jul. 26, 1993, Ser. No. 97,783

Int. Cl.[5] F01N *3/02;* **B01D** *53/34*

U.S. Cl. 422—172 **17 Claims**



1. A heat exchanger and pollutant removal system for fossil fuel boiler plants, comprising:

a fossil fuel boiler;

an exhaust stack;

heat exchanger means forming a portion of a duct which directs a flue gas stream from said fossil fuel boiler to said exhaust stack and having a flue gas inlet, a flue gas exit, and first fluid delivery means for carrying a first fluid and removing heat from the flue gas;

a source of ammoniacal substance;

means on said heat exchanger means, and in fluid connection with said source of ammoniacal substance, for introducing said ammoniacal substance into said flue gas; and

first means, located below said first fluid delivery means, for collecting and removing a first solution of soot, part of said ammoniacal substance, and SO_3 dissolved in water,

wherein the ammoniacal substance introducing means is located upstream of the collection and recovery means.

5,344,618

CRYSTAL REFINING APPARATUS

Shigeru Saitoh, 169, Dai, Obamamachi, Iwaki-shi, Fukushima, Japan

PCT No. PCT/JP90/01283, § 371 Date May 30, 1991, § 102(e) Date May 30, 1991, PCT Pub. No. WO91/04777, PCT Pub. Date Apr. 18, 1991

PCT Filed Oct. 4, 1990, Ser. No. 687,871

Int. Cl.[5] B01D *9/04*

U.S. Cl. 422—254 **4 Claims**

1. A crystal refining apparatus comprising:

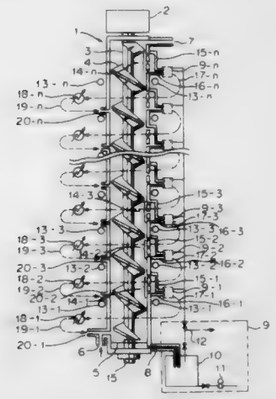
a refining column having twin parallel shafts disposed thereon, each of said shafts having screw blades disposed therearound, said screw blades on one shaft having a pitch opposite to the screw blades on the other shaft and overlapping each other so that when said parallel shafts are rotated in opposite directions, said screws blades provided therearound approach each other and separate from each other in a fashion that they work in cooperation to lift material contained within said purification column without interfering with the movement of each other;

a crude material inlet provided on a side of said refining column and at a position where said screw blades separate from each other;

a refined crystal outlet provided on an upper portion of said refining column;

a secondary separated liquid extraction chamber provided on a side of said refining column opposite to said crude material inlet and at a position where said screw blades approach each other;

a secondary solid-liquid separation plate provided between the secondary separated liquid extraction chamber and the screw blades for introducing separated liquid having a high impurity content into said secondary separated liquid extraction chamber from said refining column, said secondary solid-liquid separation plate having a plurality of



apertures provided therein through which said separated liquid having a high impurity content flows;

a primary separated liquid extraction chamber provided at a bottom portion of said refining column;

a primary solid-liquid separation plate provided above said primary separated liquid extraction chamber for introducing separated liquid having a high impurity content into said primary liquid extraction chamber from said refining column, said primary solid-liquid separation plate having a plurality of apertures provided therein through which said separated liquid having a high impurity content flows; and

a pressure reduction line connected to said separated liquid extraction chambers for reducing the pressure therein and aiding in the removal of the separated liquid having a high impurity content therefrom.

5,344,619

APPARATUS FOR DISSOLVING DRY POLYMER

Keith L. Larwick, and Kevin A. Demarest, both of Jacksonville, Fla., assignors to Betz PaperChem, Inc., Jacksonville, Fla.

Filed Mar. 10, 1993, Ser. No. 29,210

Int. Cl.[5] B01D *11/02;* **C08F** *2/00;* **G05D** *11/02;* **B01F** *15/02*

U.S. Cl. 422—261 **4 Claims**

1. An apparatus for the dissolution of dry polymer into water comprising:

a bin,

an auger tube connected to the bottom of the bin,

a drop tube connected to the auger tube for directing the dry polymer into a vortex chamber,

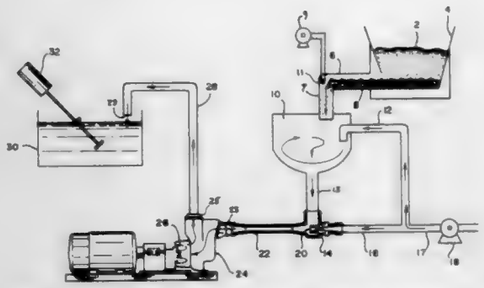
a nozzle disposed within the drop tube for directing compressed air through the drop tube,

the vortex chamber, disposed under the drop tube,

a first conduit sealably connected to the bottom of the vortex chamber,

an eductor sealably connected to the first conduit,

a centrifugal pump sealably connected at its input end to the eductor by a second conduit,



a third conduit sealably connected to the exhaust port of the centrifugal pump, and

a tank disposed at the open end of the third conduit.

5,344,620

PIGMENT PRINTING ON FIBRE MATERIALS

Jürgen Reiners; Herbert Wigger, both of Leverkusen, and Fritz Puchner, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 16, 1992, Ser. No. 821,211

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1991, 4101822

Int. Cl.[5] B05D *5/00*

U.S. Cl. 427—288 **18 Claims**

1. A process for pigment printing on fibre materials in which a pigment is fixed to a fibre material with a binder, wherein said binder is a binder comprising:

A) a basic polyamidoamine and

B) a crosslinking agent which is obtained by reaction of a polyamine with epihalogenohydrin or 1,3-dihalogeno-2-hydroxy-propane, followed by reaction with an inorganic base and further followed by stabilization with an acid selected from the group consisting of inorganic acids, carboxylic acids and mixtures thereof.

5,344,621

AUTOCLAVE FOR TREATING CHARGED MATERIALS

Franz Wosnitza, Aachen, Fed. Rep. of Germany; George Beckmann, Vienna, Austria, and Georg Zimmermann, Aachen, Fed. Rep. of Germany, assignors to Hebel Aktiengesellschaft, Emmering and Sicowa Verfahrenstechnik Fuer Baustoffe GmbH & Co. KG, Aachen, both of Fed. Rep. of Germany

Filed Oct. 20, 1992, Ser. No. 963,984

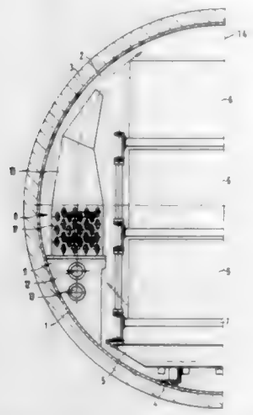
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1991, 4135118

Int. Cl.[5] A61L *2/20, 2/00*

U.S. Cl. 422—298 **4 Claims**

1. In an autoclave for treating charged materials with vapor under pressure, the autoclave having an elongated and hollow substantially cylindrical casing wall oriented along a horizontally aligned axis and defining an inner chamber for receiving said charged materials therein the inner chamber including a curved side region oriented laterally on each side of a vertical center plane thereof and a heating device disposed within the inner chamber, the heating device being connected to a source of heated heat transfer medium to generate the vapor in the inner chamber, and being arranged within at least one of the curved side regions of the inner chamber, the improvement wherein the heating device includes as a sole means for heating at least one flue having a longitudinal axis extending substantially parallel to the vertical center plane and oriented within the at least one of the curved side regions of the inner chamber, a lower portion of the at least one of the curved side regions defining a lower inflow region of said at least one flue, the heating device further including a heat exchanger arranged

within the inner chamber in said lower inflow region of said at least one flue through which heat exchanger flows the heated heat transfer medium so that a free convection flow of the vapor through said at least one flue results, the vapor circulating upwards within said at least one flue substantially in a circumferential direction of the casing wall and then circulating downwards within the inner chamber without means for forcing vapor flow within said inner chamber.

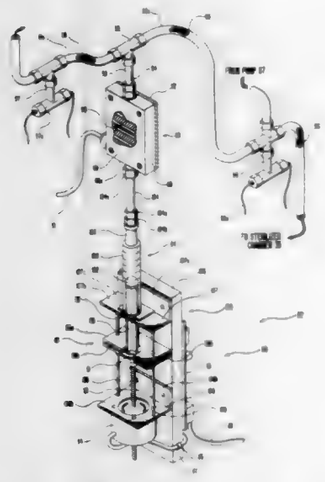


5,344,622

OZONE STERILIZATION SYSTEM VAPOR HUMIDIFICATION COMPONENT WITH DISPOSABLE WATER SOURCE

Chris G. Faddis, West Valley City, and Paul O. Shepherd, South Jordan, both of Utah, assignors to Cyclo₃pss Medical Systems, Inc., Salt Lake City, Utah

Filed Apr. 3, 1993, Ser. No. 26,025
Int. Cl.[5] A61L *2/02, 2/24*
U.S. Cl. 422—306 **10 Claims**



1. A vapor humidification component with a disposable water source in combination with a medical instrument sterilizer with an ozone generator comprising, a humidification chamber that is a block body and is arranged as a component of a medical instrument sterilizer with an ozone generator, which said block body is open therethrough and includes a heater means for vaporizing a volume of water injected through a water inlet line that is then passed out of said block body through a vapor exhaust line for mixing into an ozone-oxygen mixture flow; an ozone-oxygen mixture flow; an outlet line connected to receive said vapor exhaust line and to a sterilization chamber where through said ozone-oxygen mixture flows; a water reservoir means for connection to and for injecting a measured volume of water into said humidification chamber that includes a vessel for containing water and a plunger means for movement in said vessel for urging water therefrom into said water inlet line of said humidification chamber, said vessel and plunger means to be removable for disposal and replacement; means for moving said plunger means into said vessel to pass a controlled volume of water therefrom into said humidification chamber water inlet line; means for sensing temperature and humidity conditions of said ozone-oxygen mixture flow; means for heating said ozone-oxygen mixture flow; and means for controlling said means for heating said ozone-oxygen mixture flow and said plunger means travel for providing a humidification of said ozone-oxygen mixture flow that is within the saturation curve of said ozone-oxygen mixture.

5,344,623

PROCESS FOR THE EXTRACTION OF STRONTIUM FROM ACIDIC SOLUTIONS

E. Philip Horwitz, Naperville, and Mark L. Dietz, Evanston, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 15, 1993, Ser. No. 76,881
Int. Cl.[5] C01F *13/00*
U.S. Cl. 423—2 **11 Claims**

1. A process of recovering strontium values from an aqueous nitric acid feed solution contain this and other fission product values comprising:

contacting the aqueous feed solution containing from about 1 to 6 molar nitric acid with an organic extractant solution consisting of a crown ether in a diluent, the diluent being selected from the group consisting of a neat phase modifier and a paraffinic hydrocarbon having from 10 to 15 carbons containing a phase modifier;

maintaining the contact for a period of time sufficient for the strontium values in the feed solution to be taken up by the extractant; and

separating the extractant from the feed solution, thereby separating the strontium values from the aqueous acid feed solution.

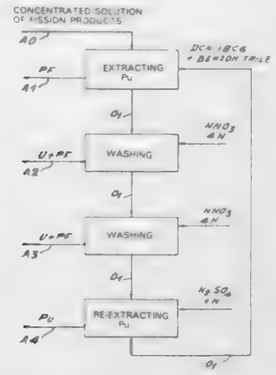
5,344,624

METHOD FOR RECOVERING WITH THE AID OF A CROWN COMPOUND PLUTONIUM (IV) PRESENT IN SOLUTIONS, SUCH AS AQUEOUS EFFLUENTS, CONCENTRATED SOLUTIONS OF FISSION PRODUCTS AND CONCENTRATED SOLUTIONS OF PLUTONIUM

Jacques Foos, Orsay; Marc Lemaire, Villeurbanne; Alain Guy, Pontcarre; Vincent Guyon, Paris; Rodolphe Chomel, Orange; André Delo Ge, Bagnols/Ceze; Pierre Doutreluigne, Bagnols/Ceze, and Henri Le Roy, Equeurdreville, all of France, assignors to Cogema-Compagnie Generale des Matieres Nucleaires, France

Division of Ser. No. 625,550, Dec. 11, 1990, Pat. No. 5,183,645. This application Aug. 25, 1992, Ser. No. 935,038
Claims priority, application France, Dec. 15, 1989, 89 16639
Int. Cl.[5] C22B *60/04;* **B01D** *11/00*
U.S. Cl. 423—6 **10 Claims**

1. Method to recover traces of plutonium (IV) present in an aqueous solution consisting essentially of either a concentrated solution of fission products derived from the first cycle for reprocessing irradiated nuclear fuels, or an aqueous effluent derived from an irradiated nuclear fuel reprocessing installation, wherein the aqueous solution is placed in contact with a solid phase including at least one crown compound so as to retain the plutonium on the solid phase.



5,344,625

PRECIOUS METAL RECOVERY PROCESS FROM SULFIDE ORES

Thomas J. Clough, Santa Monica, Calif., assignor to Ensci, Inc., Pismo Beach, Calif.

Continuation-in-part of Ser. No. 935,577, Aug. 26, 1992, and a continuation-in-part of Ser. No. 751,793, Aug. 29, 1991, and a continuation-in-part of Ser. No. 749,427, Aug. 23, 1991, which is a continuation-in-part of Ser. No. 627,896, Dec. 13, 1990, abandoned, and a continuation-in-part of Ser. No. 358,685, May 30, 1989, abandoned, which is a continuation of Ser. No. 213,884, Jun. 30, 1988, abandoned, which is a continuation-in-part of Ser. No. 5,130, Jan. 20, 1987, Pat. No. 4,765,827, and a continuation-in-part of Ser. No. 25,069, Mar. 12, 1987, Pat. No. 4,801,329. This application Nov. 24, 1992, Ser. No. 981,020
Int. Cl.[5] C22B *11/04, 11/00*
U.S. Cl. 423—22 **19 Claims**

1. A process for recovering at least one first metal selected from the group consisting of gold, silver, the platinum group metals and mixtures thereof from an ore containing at least one metal sulfide material comprising contacting said ore with at least one added plant derived aromatic component selected from the group consisting of lignin and tannin and having ortho-quinone functionality wherein the ortho-quinone functionality is present in the component in the range of from at least about 1 weight percent to about 40 weight percent of the total weight of the plant derived aromatic component and mixtures thereof said plant derived aromatic component being present in an aqueous soluble amount to at least promote the oxidation of at least a portion of said metal sulfide material and at least partially liberate the metal to be recovered from said ore and an additional oxidant being present to provide at least one of the following: (1) form and cycle to an oxidized state said plant derived aromatic component between ortho-quinone and catechol oxidation states and (2) cycle to an oxidized state said plant derived aromatic component between ortho-quinone and catechol oxidation states and recovering said first metal from said ore.

5,344,626

DUAL IMPREGNATED ACTIVATED CARBON

Mary Jo Abler, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 26, 1992, Ser. No. 904,994
Int. Cl.[5] C01B *31/08*
U.S. Cl. 423—210 **17 Claims**

1. A dual-impregnated activated carbon composition capable of removing gaseous contaminants from a fluid, which composition consists essentially of:

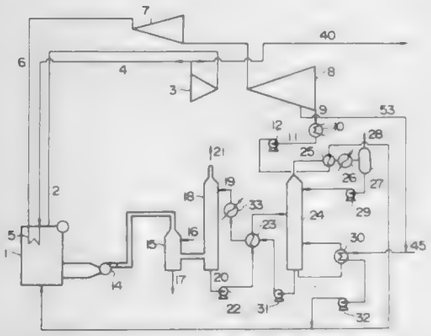
activated carbon impregnated with at least one first metal salt and at least one second metal salt, the at least one first metal salt containing a Group 6–12 metal and the at least one second metal salt being a metal carbonate containing a Group 1 metal, wherein the molar ratio on the activated carbon of the Group 1 metal or metals of the at least one second metal salt to the Group 6–12 metal or metals of the at least one first metal salt is 1 or greater.

5,344,627

PROCESS FOR REMOVING CARBON DIOXIDE FROM COMBUSTION EXHAUST GAS

Masumi Fujii; Taiichiro Suda; Yoshitsugu Hotta; Kenji Kobayashi, all of Osaka; Kunihiko Yoshida; Shigeru Shimojo, both of Amagasaki; Mutsunori Karasaki; Masaki Iijima, both of Tokyo; Touru Seto, and Shigeaki Mitsuoka, both of Hiroshima, all of Japan, assignors to The Kansai Electric Power Co., Inc., Osaka and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of Japan

Filed Jan. 15, 1993, Ser. No. 2,830
Claims priority, application Japan, Jan. 17, 1992, 4-006468
Int. Cl.[5] C01B *31/20*
U.S. Cl. 423—220 **2 Claims**



1. A process for removing carbon dioxide (CO_2) from a combustion exhaust gas of a boiler generating steam conducted to a first high pressure turbine, a second intermediate pressure turbine operating at a pressure lower than said first turbine, and a third low pressure turbine operating at a pressure lower than said second turbine for driving said turbines, comprising:

removing CO_2 in said combustion exhaust gas by absorbing said CO_2 in a CO_2-absorbing liquid;

providing a CO_2-absorbing liquid regeneration column having a reboiler;

conducting said CO_2-absorbing liquid through said absorbing liquid regeneration column for regenerating said CO_2-absorbing liquid;

providing a fourth turbine operatively connected to a first compressor for driving said first compressor thereby;

providing a fifth turbine operatively connected to a second compressor for driving said second compressor thereby;

conducting a part of steam discharged from said first turbine to said fourth and fifth turbines;

driving said fourth and fifth turbines by said part of steam discharged from said first turbine;

driving said first and second compressors by said fourth and fifth turbines, respectively;

conducting said removed CO_2 to said first compressor and compressing said removed CO_2 therein;

conducting said compressed CO_2 from said first compressor to a cooler;

passing a refrigerant through said second compressor and through said cooler for cooling and liquifying said compressed CO_2;

storing said liquified CO_2; and

conducting steam discharged from said first and second compressor turbines to said reboiler as a heating source for said reboiler for regeneration of said CO_2-absorbing liquid.

5,344,628

METHOD FOR INTRODUCING AND METERING A LIQUID TREATMENT MEDIUM IN COMBUSTION PROCESSES

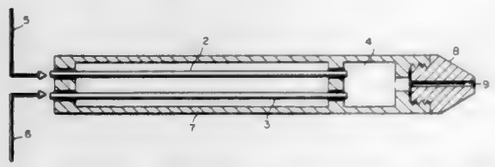
Johannes J. E. Martin, Seeshaupt, Fed. Rep. of Germany, assignor to Martin GmbH fur Umwelt-und Energietechnik, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 601,217, Oct. 19, 1990, abandoned. This application May 13, 1993, Ser. No. 61,370

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1989, 3935401

Int. Cl.[5] B01D *53/34*

U.S. Cl. 423—235 **4 Claims**



1. A method for introducing and metering the liquid treatment medium effective for reducing NO_x into the waste gas flow in combustion processes for reducing the NO_x content of the waste gas flow, comprising the steps of:

(1) pressurizing the liquid treatment medium at a first pressure;

(2) pressurizing a liquid carrier medium at a second pressure;

(3) delivering said liquid treatment medium and said liquid carrier medium in adjustable amounts to a mixing chamber to form a liquid mixture at a third pressure; and,

(4) spraying said liquid mixture into an area having a fourth pressure to contact the waste gas flow and reduce the NO_x content;

wherein said liquid mixture is atomized solely by a single-component nozzle positioned to spray said liquid mixture into the area and said spraying step is effected when said third pressure exceeds said fourth pressure.

5,344,629

REDUCING Z_{20} EMISSIONS

Folke Engstrom, Kotka, Finland, assignor to A. Ahlstrom Corporation, Noormarkku, Finland

Continuation-in-part of Ser. No. 808,461, Jan. 3, 1992. This application Jul. 29, 1992, Ser. No. 921,210

Int. Cl.[5] C01B *21/00*

U.S. Cl. 423—239.1 **21 Claims**

1. A method for reducing the emissions of N_2O in flue gases from the combustion of nitrogen containing fuel in a fluidized bed combustor, which has a combustion stage with a fluidized bed of particles, comprising the steps of continuously:

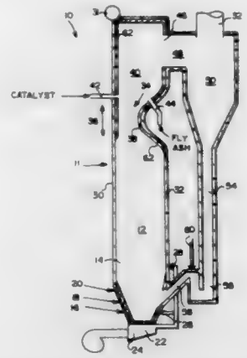
(a) supplying nitrogen containing fuel and an oxygen containing gas for combustion of the fuel into the fluidized bed of the combustor to produce flue gases which contain particles;

(b) maintaining a temperature of about 900°–1000° C. in the combustion stage;

(c) supplying a Ca-based sulfur absorbing sorbent to the fluidized bed for reducing sulfur emissions in the flue gases;

(d) without separate removal of the particles from the flue gases effecting vigorous and intimate mixing of the particles and flue gases by increasing the velocity of the flue gases before leaving the combustion stage, and then decreasing the velocity from the increased level;

(e) introducing an N_2O decomposing catalyst into the flue gases and particles immediately after increasing and decreasing of the velocity thereof;



(f) mixing the N_2O decomposing catalyst with the flue gases and particles to effect decomposition of the N_2O; and

(g) discharging the flue gases with particles and decomposed N_2O therein from the combustor.

5,344,630

DEEP OXIDATION OF HALOGENATED ORGANICS WITH POROUS CARBONACEOUS MATERIALS

William H. Brendley, Jr., Hatboro, Pa.; Gerald Grunewald, Orange, Tex.; Steven Petrosius, and Russell Drago, both of Gainesville, Fla., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jun. 28, 1991, Ser. No. 721,763

Int. Cl.[5] B01J *8/02;* **C01B** *7/01*

U.S. Cl. 423—240 R **35 Claims**

1. A method of completely oxidizing a halogenated organic compound which comprises:

contacting, at a temperature below about 400° C., a carbonaceous catalyst having acidic sites with the halogenated organic compound and an amount of oxygen at least sufficient to achieve complete oxidation of the halogenated hydrocarbon, wherein said temperature is sufficient to achieve complete oxidation of the halogenated hydrocarbon and wherein said catalyst comprises a partially pyrolyzed resin containing macropores, mesopores and micropores.

5,344,631

PROCESS FOR THE SEPARATION OF UNDESIRABLE CONSTITUENTS FROM A WASTE GAS

Hermann Bruggendick, Hunxe, Fed. Rep. of Germany, assignor to Steag Aktiengesellschaft, Essen, Fed. Rep. of Germany

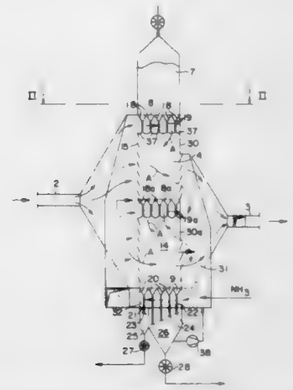
Division of Ser. No. 720,762, Jul. 31, 1991. This application May 19, 1992, Ser. No. 885,592

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1988, 3844422

Int. Cl.[5] B01D *47/00;* **B01J** *8/00;* **C01B** *21/00, 7/00*

U.S. Cl. 423—244.03 **10 Claims**

1. In a process for the separation of constituents including SO_2 from a waste gas by adsorption on a lumpy or granular carbonaceous adsorbent adapted to adsorb said constituents, wherein the waste gas to be treated flows through at least one reaction chamber filled with adsorbent and is conducted through at least one adsorption layer; the improvement comprising introducing the adsorbent into the reaction chamber and discharging the adsorbent therefrom through several separate feed and discharge hoppers in a grid-like distribution, wherein said several separate feed hoppers feed adsorbent to a same said reaction chamber and said several discharge hoppers discharge adsorbent from said same reaction chamber, and guiding the waste gas in part from the side transversely to the adsorption layer and in part vertically through the reaction chamber by introducing the waste gas between said separate



feed hoppers and into the reaction chamber from above to flow downward through an exposed upper surface of said adsorbent in such a way that the adsorbent in all zones of the reaction chamber participates practically uniformly in the adsorption.

5,344,632

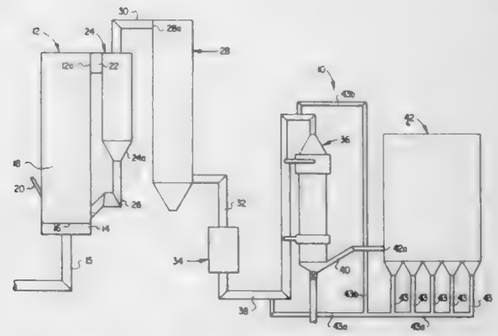
METHOD FOR REDUCING SULFUR OXIDES EMISSIONS IN A COMBUSTION PROCESS

John T.-Y. Tang, Easton, Pa., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Division of Ser. No. 943,650, Sep. 11, 1992. This application Mar. 12, 1993, Ser. No. 30,753

Int. Cl.[5] C01B *17/00*

U.S. Cl. 423—244.07 **6 Claims**



1. A method of combustion comprising the steps of forming a bed of material containing limestone and fuel; introducing air into said bed to fluidize said material so that, upon combustion of said fuel, sulfur oxides are produced a portion of which are adsorbed by said limestone and a portion of which mix with said air, said mixture entraining some of said material; passing said mixture and entrained material from said bed; then separating a portion of said entrained material from said mixture; passing said separated portion of said entrained material back to said bed; then cooling said mixture and the remaining entrained material to reduce their value; then passing said mixture and remaining entrained material into a vessel at a plurality of levels thereof; breaking the stream of mixture and remaining entrained material into a plurality of smaller streams at one of said levels; dispersing water onto said mixture and remaining entrained material at said one level to evaporate and humidify said mixture at said one level, said temperature being such that said water causes a film of alkali solution of calcium hydroxide to be formed on the surface of the limestone in said entrained material, said solution adsorbing the sulfur oxides in said mixture to form calcium sulfate and calcium sulfite precipitation; and separating said mixture from said calcium sulfate and calcium sulfite precipitation.

5,344,633

ALKALI METAL SILICATE COMPOSITION WITH POTASSIUM COMPOUND ADDITIVE

Olle Sörensson, Lindome, and Krister Severinsson, Kungälv, both of Sweden, assignors to Eka Nobel AB, Sweden

Continuation of Ser. No. 679,805, Apr. 3, 1991, abandoned. This application Jun. 14, 1993, Ser. No. 75,926

Claims priority, application Sweden, Nov. 14, 1990, 9003644-3

Int. Cl.[5] C01B *33/32*

U.S. Cl. 423—333 **7 Claims**

1. Solid alkali metal silicate having a molar ratio SiO_2:M_2O from about 1.5 to about 3, in which M is an alkali metal comprising sodium and potassium, the silicate containing from about 1 and up to about 5% by weight of K_2O based on the dry material and the water content being from about 16 to about 25% by weight based on the total weight.

5,344,634

METHOD OF NITRIDING SILICON

James P. Edler, Troy, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 785,909, Nov. 4, 1991, Pat. No. 5,160,719, which is a continuation of Ser. No. 557,194, Jul. 24, 1990, abandoned. This application Nov. 3, 1992, Ser. No. 972,070

Int. Cl.[5] C01B *33/00*

U.S. Cl. 423—344 **22 Claims**

19. A method of nitriding silicon-containing material in powder form, comprising the steps of:

(a) heating the silicon-containing material in powder form in an atmosphere containing at least hydrogen in the temperature range of from about 0° C. to about 1000° C. and

(b) thereafter, nitriding the silicon-containing material in powder form by heating in an atmosphere containing at least nitrogen in the temperature range of from about 1000° C. to about 1450° C.

5,344,635

FILLER FOR HEAT-CONDUCTIVE PLASTICS MATERIALS

Patrice Bujard, Courtepin, and Ileana Cojanu, Pully, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 1, 1993, Ser. No. 11,930

Claims priority, application Switzerland, Feb. 7, 1992, 380/92

Int. Cl.[5] C01B *21/072*

U.S. Cl. 423—412 **9 Claims**

1. A powder mixture of aluminium nitride in the form of sintered agglomerates with fractions of different particle size, which mixture consists essentially of

(1) 80 to 50% by weight of aluminium nitride in the form of sintered agglomerates having a mean particle diameter of 30 to 50 μm, and

(2) 20 to 50% by weight of aluminium nitride in the form of unsintered particles and having a mean particle diameter of 0.1 to 5 μm.

5,344,636

ANTI-MICROORGANISM AGENT AND ANTI-MICROORGANISM RESIN OR RUBBER COMPOSITION

Shigeo Miyata, Takamatsu, Japan, assignor to Kabushiki Kaisha Kaisui Kagaku Kenkyujo, Kagawa, Japan

Filed Nov. 20, 1992, Ser. No. 979,230
Claims priority, application Japan, Nov. 27, 1991, 3-337594; Aug. 24, 1992, 4-247420
Int. Cl.[5] C01F *5/14*; A61K *33/06, 33/34*; C08K *3/22*
U.S. Cl. 423—593 3 Claims

1. An anti-microorganism agent composed of at least one member selected from the group consisting of a composite metal hydroxide which is a solid solution of the formula (1),

$$(M_1^{2+})_{1-x}(M_2^{2+})_x(OH)_2 \quad (1)$$

wherein M_1^{2+} is at least one member selected from the group consisting of Mg^{2+} and Ca^{2+}, M_2^{2+} is at least one member selected from the group consisting of Cu^{2+} and Zn^{2+}, and x is defined by $0.001 \leqq x \leqq 0.4$,

and

a composite metal oxide which is a solid solution of the formula (2),

$$(M_1^{2+})_{1-y}(M_2^{2+})_yO \quad (2)$$

wherein M_1^{2+} is at least one member selected from the group consisting of Mg^{2+} and Ca^{2+}, M_2^{2+} is at least one member selected from the group consisting of Cu^{2+} and Zn^{2+}, and y is defined by $0.001 \leqq y \leqq 0.5$.

5,344,637

USE OF SATURATED, RING-CONTAINING COMPOUNDS AS CLEARING SOLVENTS IN HISTOLOGIC PROCEDURES

Gerald W. Camiener, 26700 Hurlingham Rd., Beachwood, Ohio 44122

Filed Jun. 1, 1993, Ser. No. 69,718
Int. Cl.[5] G01N *1/34*
U.S. Cl. 424—3 11 Claims

1. A method of preparing biological material for microscopic examination, comprising contacting said biological material with a clearing solvent to remove alcohol and/or other dehydrants contained in the biological material or to remove wax contained in the biological material, wherein the clearing solvent consists essentially of from 5% to 100% by weight of a compound or combination of compounds having a higher flashpoint than xylene which is selected from the group consisting of unsubstituted and substituted saturated, organic ring-containing compounds, hydrogenated aromatic petroleum distillates, and combinations thereof.

5,344,638

COMPOSITIONS OF IODOBENZOIC ACID DERIVATIVES FOR VISUALIZATION OF THE GASTROINTESTINAL TRACT

Carl R. Illig, Phoenixville, and Brent D. Douty, Coatesville, both of Pa., assignors to Sterling Winthrop Inc., Malvern, Pa.

Filed Mar. 11, 1993, Ser. No. 31,384
Int. Cl.[5] A61K *49/04*
U.S. Cl. 424—5 6 Claims

1. A compound selected from the group consisting of: 2-octyl 2,3,5-triiodobenzoate, 3,3,4,4,5,5,6,6,7,7,8,8-dodecafluoro-2-octyl 2,3,5-triiodobenzoate and bis (2-hexyl) 2,3,5,6-tetraiodoterephthalate, or a pharmaceutically acceptable salt thereof.

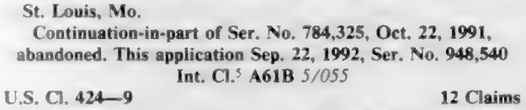
5,344,639

CONTRAST AGENT FOR NMR IMAGING COMPRISING PEPTIDE STRUCTURES

Kwok W. Chiu; Wassif Hussain, and John R. Thornback, all of Uccle, Belgium, assignors to Medgenix Group S.A., Liege, Belgium

Filed Jun. 26, 1991, Ser. No. 719,715
Claims priority, application France, Jun. 26, 1990, 90 08009
Int. Cl.[5] A61B *5/055*; C07C *229/00*
U.S. Cl. 424—9 12 Claims

1. A complex between a chelating agent and a paramagnetic metal cation, having the formula:



I

or a physiologically acceptable salt of this complex, wherein

n and n' are the same or different and are selected from the group consisting of whole numbers of from 1 to 4;

each R_1, R_2, R_4 and R_5 are the same or different and are selected from the group consisting of H, halogen and C_{1-4} alkyl, the C_{1-4} alkyl being optionally substituted by halogen;

R_3 is hydrogen;

$>C(R_6, R_7)$ is $>C=O$;

the three substituents Y are the same or different and represent H or the cation ionic equivalent of a trivalent paramagnetic metal cation or the anionic equivalent of a physiologically acceptable cation derived from an inorganic or organic base, at least two of the substituents Y representing ionic equivalents of cations of paramagnetic metals.

5,344,640

PREPARATION OF APATITE PARTICLES FOR MEDICAL DIAGNOSTIC IMAGING

Edward A. Deutsch; Karen F. Deutsch, both of Maryland Heights; William P. Cacheris, Florissant; William H. Ralston, St. Charles; David H. White, Ballwin; Dennis L. Nosco, Florissant; Robert G. Wolfangel, Ballwin; Janet B. Wilking, Ferguson; Linda Meeh, St. Louis, and Steven R. Woulfe, Ballwin, all of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 784,325, Oct. 22, 1991, abandoned. This application Sep. 22, 1992, Ser. No. 948,540
Int. Cl.[5] A61B *5/055*
U.S. Cl. 424—9 12 Claims

1. A method of preparing an apatite particle for use in magnetic resonance imaging comprising the steps of:

(a) obtaining an apatite particle having a particle size in the range from 5 nm to about 5 μm for use in imaging the liver or spleen;

(b) adsorbing a bifunctional coating agent capable of forming a chelate complex with a paramagnetic metal ion onto the apatite particle surface; and

(c) forming a chelate complex between the bifunctional coating agent adsorbed on the apatite particle surface and the paramagnetic metal ion.

5,344,641

ANTIBACTERIAL ANTIPLAQUE ORAL COMPOSITION

Abdul Gaffar, Princeton; Nuran Nabi, No. Brunswick; John Afflitto, Brookside, all of N.J., and Orum Stringer, Yardley, Pa., assignors to Colgate-Palmolive Co., New York, N.Y.

Division of Ser. No. 754,887, Sep. 6, 1991, Pat. No. 5,192,530, which is a continuation of Ser. No. 398,606, Aug. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 291,712, Dec. 29, 1988, Pat. No. 4,894,220, and Ser. No. 346,258, May 1, 1989, Pat. No. 5,043,154, which is a continuation of Ser. No. 8,901, Jan. 30, 1987, abandoned, said Ser. No. 291,712, is a continuation-in-part of Ser. No. 8,901, Jan. 30, 1987. This application Nov. 25, 1992, Ser. No. 981,723
The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.
Int. Cl.[5] A61K *7/16, 7/18*
U.S. Cl. 424—49 17 Claims

1. An oral composition dentifrice for attaching, adhering or bonding a plaque-inhibiting antibacterial agent to oral tooth and gum surfaces comprising in an orally acceptable vehicle about 5–30% by weight of a siliceous polishing agent, an effective antiplaque amount in the range of about 0.01–5% by weight of a substantially water insoluble non-cationic antibacterial agent, about 0.05–5% by weight of an antibacterial-enhancing agent which contains at least one delivery-enhancing functional group and at least one organic retention-enhancing, which delivery-enhancing group enhances delivery of said antibacterial agent to oral tooth and gum surfaces and said retention-enhancing group enhances attachment, adherence or bonding of said antibacterial agent on oral tooth and gum surfaces, and about 0.5–50% by weight of a solubilizing material for said antibacterial agent in amount sufficient to dissolve said antibacterial agent in saliva and permit delivery of said antibacterial agent to soft oral tissues at or near the gum line.

5,344,642

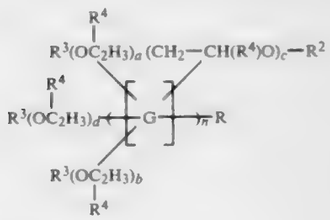
USE OF ALKYLGLYCOSIDE SULFOSUCCINATES FOR THE PRODUCTION OF COSMETIC PREPARATIONS AND CLEANING AGENTS

Mathias Hintz, Schlüchtern-Hohenzell; Hans-Jürgen Köhle, Schüchtern; Christl Möller, Steinau an der Strasse; Thomas Salomon, Bad Soden-Salmunster-Wahlert, and Joachim Weigand, Freigericht, all of Fed. Rep. of Germany, assignors to REWO Chemische Werke GmbH, Steinau an der Strasse, Fed. Rep. of Germany

Division of Ser. No. 861,446, Apr. 1, 1992, Pat. No. 5,246,695. This application Mar. 4, 1993, Ser. No. 27,291
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1991, 4110663
Int. Cl.[5] A61K *7/06, 7/075*
U.S. Cl. 424—70 6 Claims

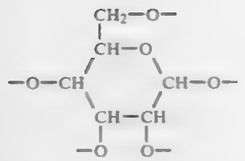
1. An aqueous cosmetic preparation containing

A) 5–20% by weight of at least one of the alkylglycoside sulfosuccinate compounds of the general formula (1)

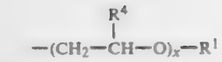


(2)

wherein each G is



wherein R is



wherein R^1 is H or a linear, saturated or unsaturated hydrocarbon radical having 1–18 carbon atoms and x is 0–10 and R is attached at the 1-position;

R^2, and when n is greater than 1 each R^2, is independently a linear, saturated or unsaturated acyl radical having 8–22 carbon atoms;

R^3, and when n is greater than 1 each R^3 is independently H or the radical $[CO—CH(SO_{-3})'CH_2—COO^-]$.mM, provided that R^3 is said radical at least once in each G;

R^4, and when n is greater than 1 each R^4, is independently H or CH_3;

n is 1 to 10;

the sum of (a+b+d) in each unit G is 1–20 and c is 1–5; and

M, and when n is greater than 1 each M, is independently a cation of an alkali metal or an alkaline earth metal, ammonium, or H^+, wherein M equals 2 subdivided by the valence of M; and

wherein, when n is greater than 1, each G is attached to adjacent G groups at the 1,2-; 1,3-; 1,4- or 1,6-positions;

B) 1–5% by weight of at least one thickener;

C) 0–10% by weight of an electrolyte salt;

D) 0–10% by weight of additives selected from the group consisting of thickeners, foam stabilizers, clouding agents, sequestering agents, preservatives, fragrances, colorants, skin cosmetic active substances, vegetable extracts and buffer substances; and

E) 55–94% by weight of water.

5,344,643

SHAMPOO-CONDITIONING COMPOSITION AND METHOD OF MAKING

Dawn M. Thiel, St. Louis Park; James M. Wilmott, Plymouth, and John R. Kaysen, Fridley, all of Minn., assignors to Dowbrands L.P., Indianapolis, Ind.

Continuation of Ser. No. 847,852, Mar. 9, 1992, abandoned, which is a continuation of Ser. No. 633,581, Dec. 21, 1990, abandoned. This application Aug. 27, 1993, Ser. No. 112,638
Int. Cl.[5] A61K *7/075*
U.S. Cl. 424—70 17 Claims

1. A shampoo-conditioning composition, comprising:

A) from about 0.1 to about 10 percent of the composition of an oily, water-insoluble conditioning agent selected from a group consisting of mineral oils; saturated or unsaturated vegetable oils selected from the group consisting of peanut oil, corn oil, coconut oil, and soybean oil; alkyl esters of fatty acids; and polyalkylsiloxanes, polyarylsiloxanes, polyalkylarylsiloxanes, polysiloxane gums, and polyethersiloxane copolymers;

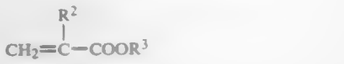
B) from about 5 to about 70 active weight percent of the composition of one or more anionic surfactants selected from the group consisting of alkyl sulfates, alkyl ether sulfates, alkaryl sulphonates, alkyl succinates, alkyl sulphosuccinates, N-alkoyl sarcosinate, alkyl phosphates, and alkyl ether phosphates, wherein the alkyl group contains from 8 to 22 carbons and may be unsaturated;

C) from about 0.1 to about 1.5 weight percent of the compo-

sition of a carboxyvinyl polymer to suspend and stabilize the oily conditioning agent, the carboxyvinylpolymer comprising between about 95 and about 99 weight percent of one or more carboxylic acid monomeric units about 5 to about 1 weight percent of one or more acrylic esters monomeric units, and a small amount of crosslinked monomeric units derived from polyalkenyl polyethers having more than one alkenyl ether group per molecule, the weight percentages of the monomeric units being based upon the total weight of the carboxypolymer, the carboxylic acid monomeric unit being derived from carboxylic acids selected from olefinically unsaturated acids defined as follows:



where R_2 is selected from hydrogen, halogens, cyanogen group $-C\equiv N$, alkyl radicals of 1 to 4 carbon atoms, aryl radicals of 6 to 14 carbon atoms, aralkyl radicals of 7 to 14 carbon atoms, alkaryl radicals 7 to 12, and cycloaliphatic radicals of 4 to 8 carbon atoms; the acrylic ester monomeric units being derived from acrylic esters defined as follows:



where R_2 is defined above in connection with said carboxylic acid and wherein R^3 is selected from alkyl groups of 10 to 30 carbon atoms;

D) from about 0.1 to about 10 weight percent of the composition of a cationic conditioning agent selected from a group consisting of cationic or quaternized polysaccharides or polysaccharide derivates, cationic or quaternized polyamides, cationic or quaternized polymeric derivatives of acrylates, methacrylates, acrylamides, methacrylamides, or copolymers thereof, and tetraalkylammonium salts and butylene/propylene/ethylene oxide derivatives thereof; and

E) from about 30 to about 90 weight percent of the composition of water.

5,344,644

WATER-SOLUBLE COMPOSITION FOR SUSTAINED-RELEASE

Yasutaka Igari, Kobe; Minoru Yamada, and Seiko Ishiguro, both of Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jul. 23, 1992, Ser. No. 919,401
Claims priority, application Japan, Aug. 1, 1991, 3-192874
Int. Cl.[5] A61K *45/05*
U.S. Cl. 424—85.1 **5 Claims**

1. A water-soluble parenteral composition for injection which comprises (a) a water soluble pharmacologically active peptide selected from the group consisting of cytokines or hematopoietic factors, and (b) an alkali metal salt of a sulfate group-containing acidic mucopolysaccharide and/or a desulfated modification of a naturally occurring sulfate group-containing acidic mucopolysaccharide, wherein the weight ratio between (a) and (b) is about 0.001 to about 1:1, and wherein prior to injection, the tonicity and viscosity of the composition are adjusted by the addition of sterile water or sterile saline, to obtain a solution such that the viscosity of the solution is lower than 500 cP and the tonicity of the solution is from one-half to twice as high as that of physiological saline.

5,344,645

IMMUNOGENS DERIVED FROM PATHOGEN-FREE TICK SPECIES OR CELL LINES, AND TICK VACCINES DERIVED THEREFROM

Stephen K. Wikel, Stillwater, Okla., assignor to Center for Innovation and Business Development Foundation, Grand Forks, N. Dak.

Filed Mar. 22, 1991, Ser. No. 673,671
Int. Cl.[5] A61K *39/00;* **C07K** *15/08*
U.S. Cl. 424—265.1 **21 Claims**

1. An immunogen comprising an antigen which is capable of inducing immunity to tick infestation of a host animal, said immunogen comprising:

(a) an immunogen isolated and purified from a pathogen-free Amblyomma tick species or cell line;

(b) said immunogen being isolated and purified from tick cells of a tick digestive tract or from developing tick larva cells and being one which results in a mean death rate of at least 75% of challenged ticks; and

(c) said immunogen being one which does not induce host cutaneous hypersensitivity to tick feeding and one which provides a cross reactive positive immune response involving both antibody and cell mediated immune response for sera and cells of the species to be inoculated.

5,344,646

Patent Not Issued For This Number

5,344,647

STRAIN OF MICROORGANISM HAVING ANTIMICROBIAL ACTIVITY

Stephen Rossall, Derby, England, assignor to Agricultural Genetics Company Limited, Cambridge, United Kingdom

Continuation of Ser. No. 144,174, Jan. 15, 1988, abandoned. This application Dec. 29, 1992, Ser. No. 998,640
Claims priority, application United Kingdom, Jan. 21, 1987, 01234
The portion of the term of this patent subsequent to Oct. 29, 2008, has been disclaimed.
Int. Cl.[5] A61K *35/74;* **C12N** *1/20;* **C12P** *21/02*
U.S. Cl. 424—93.462 **21 Claims**

1. A biologically pure culture of *Bacillus subtilis,* Strain JB 3, a sample of which has been deposited at the National Collections of Industrial Bacteria Ltd. (NCIB) on 22 December 1986 under accession number NCIB 12375, or a mutant thereof having the same antimicrobial activity as the said strain.

5,344,648

CENTRAL NERVOUS SYSTEM ACTIVATOR AND TASTE ENHANCING FOOD ADDITIVE

Masanobu Haga, and Keiji Wada, both of Hokkaido, Japan, assignors to Iatron Laboratories, Inc., Tokyo, Japan

PCT No. PCT/JP91/00965, § 371 Date Apr. 14, 1992, § 102(e) Date Apr. 14, 1992, PCT Pub. No. WO92/03143, PCT Pub. Date Mar. 5, 1992
PCT Filed Jul. 19, 1991, Ser. No. 847,040
Claims priority, application Japan, Aug. 16, 1990, 2-216346
Int. Cl.[5] A61K *35/78, 31/35, 31/34*
U.S. Cl. 424—195.1 **22 Claims**

1. A method for activating the central nervous system of a warm blooded animal comprising administering to said warm blooded animal a central nervous system activating effective amount of body parts of a plant belonging to Rutaceae, or an extraction product selected from the group consisting of a lower alkane insoluble portion thereof, a lower fatty acid ester extract of the lower alkane soluble portion of the lower fatty acid ester extract, a limonin fraction of the lower fatty acid ester-halogenated lower alkane soluble portion, and an obacunone fraction of the lower fatty acid ester-halogenated lower alkane soluble portion.

5,344,649

CAT REPELLANT AND DISPENSER

Jesse Mungia, P.O. Box 695, Gonzales, La. 70707-0695

Filed Aug. 31, 1992, Ser. No. 937,175
Int. Cl.[5] A61K *35/78;* **B67D** *5/00*
U.S. Cl. 424—195.1 **10 Claims**

7. A method for repelling cats from a selected area comprising:

a. placing a dispenser means for dissipating odors from pepper into the atmosphere surrounding said dispenser means to repel cats from the areas surrounding said dispenser means, said dispenser means comprising

i. housing means,

ii. reservoir means located in said housing means for holding and containing solid, particulate pepper,

iii. chamber means located in said housing means adjacent to said reservoir means for receiving said pepper from said reservoir means by gravity flow, said chamber means having slot means therein for releasing odors emanating from said pepper to the atmosphere surrounding said dispenser to repel cats, and

b. vibrating said dispenser to cause said pepper to flow from said reservoir means into said chamber means to release odors from said pepper to the atmosphere surrounding said dispenser means to repel cats.

5,344,650

AQUEOUS COSMETIC COMPOSITION AND PREPARATION METHOD THEREOF

Noriko Otsuka, Koshigaya, and Ichiro Tokimitsu, Tokyo, both of Japan, assignors to Kao Corporation, Tokyo, Japan

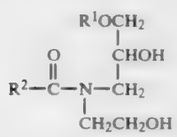
Continuation of Ser. No. 746,989, Aug. 19, 1991, abandoned. This application Feb. 24, 1993, Ser. No. 22,394
Claims priority, application Japan, Aug. 31, 1990, 229877
Int. Cl.[5] A61K *6/00*
U.S. Cl. 424—401 **12 Claims**

1. An oil-in-water cosmetic composition, prepared by:

(A) heating a mixture comprising

(i) an oil selected from the group consisting of liquid paraffin, mineral oil, squalane, petroleum jelly, lower alcohol esters of fatty acids, jojoba oil, whale oil, glycerides of fatty acids, liquid acetate esters of fatty alcohols, aloe, vitamins, and mixtures thereof;

(ii) a fat selected from the group consisting of higher fatty acids, cholesterol, cholesterol fatty acid esters, ceramides and compounds having the following formula (I):



(I)

wherein R^1 is a linear or branched, saturated or unsaturated hydrocarbon group having 10 to 26 carbon atoms, and R^2 is a linear or branched, saturated or unsaturated hydrocarbon group having 9 to 25 carbon atoms, and mixtures thereof, said fat being present in at least 70 w t. % of the total of said oil and said fat;

(iii) an emulsifying agent and

(iv) a portion of from 0.1 to 5% of an aqueous medium selected from the group consisting of water and a combination of water and a water-soluble monohydric alcohol, at a temperature of from 60° C. to 80° C. for a length of time sufficient to provide a uniform solution; and

(B) emulsifying said uniform solution with the balance of said aqueous medium.

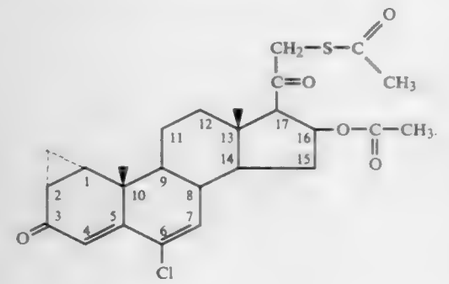
5,344,651

CYPROTERONE ACETATE THIOACETATE

Richard J. Schwen, Cincinnati; Mark R. Sine, Morrow, and Raphael Warren, Amberly Village, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 23, 1993, Ser. No. 96,086
Int. Cl.[5] A61K *7/00*
U.S. Cl. 424—402 **11 Claims**

1. A compound having the structure



5,344,652

ANTICORROSIVE MICROBICIDE

Robert T. Hall, II, Welch; Jo-Ann B. Maltais, Minneapolis, and Louis C. Cosentino, Plymouth, all of Minn., assignors to Minntech Corporation, Minneapolis, Minn.

Filed Dec. 10, 1991, Ser. No. 778,940
Claims priority, application PCT Int'l Appl., Apr. 5, 1990, PCT/US90/01862
Int. Cl.[5] A01N *25/00*
U.S. Cl. 424—405 **24 Claims**

1. A biocide of the peroxide-peracid type having improved anticorrosive properties, said biocide having an additive selected from the group consisting of:

(a) from about 0.005% by weight up to the solubility limit of sodium hydroxide reaction products of an aliphatic alcohol and phosphorous pentoxide;

(b) from about 0.001% by weight up to the solubility limit a mixture of sodium pentakis (2-ethyl hexyl) triohosphate and phosphoric acid, di sodium; and

(c) from about 0.001% by weight up to the solubility limit of potassium perfluoroalkyl sulfonate.

5,344,653

Patent Not Issued For This Number

5,344,654

PROSTHETIC DEVICES HAVING ENHANCED OSTEOGENIC PROPERTIES

David C. Rueger, Hopkinton; Thangavel Kuberasampath; Hermann Oppermann, both of Medway, and Engin Ozkaynak, Milford, all of Mass., assignors to Stryker Corporation, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 841,646, Feb. 21, 1992, Pat. No. 5,266,683, which is a continuation-in-part of Ser. No. 827,052, Jan. 28, 1992, Pat. No. 5,250,302, Ser. No. 579,865, Sep. 7, 1990, Pat. No. 5,108,753, Ser. No. 621,849, Dec. 4, 1990, abandoned, Ser. No. 621,988, Dec. 4, 1990, abandoned, Ser. No. 810,560, Dec. 20, 1991, abandoned, Ser. No. 569,920, Aug. 20, 1990, abandoned, Ser. No. 600,024, Oct. 18, 1990, abandoned, Ser. No. 599,543, Oct. 18, 1990, abandoned, Ser. No. 616,374, Nov. 21, 1990, Pat. No. 5,162,114, and Ser. No. 483,913, Feb. 22, 1990, Pat. No. 5,171,574, said Ser. No. 827,052, is a division of Ser. No. 179,406, Apr. 8, 1988, Pat. No. 4,968,590, said Ser. No. 579,865, is a division of Ser. No. 179,406, Apr. 8, 1988, said Ser. No. 621,849, is a division of Ser. No. 232,630, Aug. 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 179,406, Apr. 8, 1988, said Ser. No. 621,988, is a division of Ser. No. 315,342, Feb. 23, 1989, Pat. No. 5,011,691, which is a continuation-in-part of Ser. No. 232,630, Aug. 15, 1988, said Ser. No. 810,560, is a continuation of Ser. No. 660,162, Feb. 22, 1991, abandoned, which is a continuation of Ser. No. 422,699, Oct. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 315,342, Feb. 23, 1989, said Ser. No. 569,920, is a continuation-in-part of Ser. No. 422,613, Oct. 19, 1989, and Ser. No. 483,913, Feb. 22, 1990, which is a continuation-in-part of Ser. No. 422,613, Oct. 17, 1989, Pat. No. 4,975,526, which is a continuation-in-part of Ser. No. 315,342, Feb. 23, 1989, said Ser. No. 600,024, is a continuation-in-part of Ser. No. 569,920, Aug. 20, 1990, said Ser. No. 599,543. This application Jun. 16, 1992, Ser. No. 901,703

Int. Cl.[5] A61L *27/00;* A61F *2/30;* A61K *35/32*

U.S. Cl. 424—423 33 Claims

1. A method for promoting in vivo osseointegration of an implantable, prosthetic device, the method comprising the steps of:

providing on a surface of the prosthetic device substantially pure osteogenic protein, and

implanting the device in a mammal at a site wherein bone tissue and said surface are maintained at least partially in contact for a time sufficient to permit enhanced bone tissue growth between said tissue and said device; wherein said osteogenic protein is a basic protein comprising a pair of polypeptide chains, one of said polypeptide chains comprising an amino acid sequence sharing greater than 60% identity with the amino acid sequence defined by residues 335 to 431 of Seq. ID No. 1 (OPS) such that said pair of polypeptide chains, when disulfide bonded to produce a dimeric species, has a conformation capable of inducing endochondral bone formation when disposed in a matrix and implanted in a mammal.

5,344,655

EXTERNAL APPLICATION BASE OR AUXILIARY AGENT AND EXTERNAL APPLICATION COMPOSITION FOR HUMAN BEING OR ANIMAL CONTAINING THE SAME

Yasuyuki Sakai, Tokyo; Noriyuki Suzuki, Oita; Tetsuo Kudo, Oita; Kuniomi Marumo, Oita; Toshiyuki Aizawa, Oita; Kunio Imamura, Tokyo; Shuichi Sugita, Tokyo, and Kazuo Kanbayashi, Tokyo, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

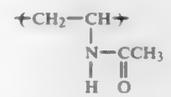
Division of Ser. No. 652,715. This application Mar. 17, 1993, Ser. No. 32,100

Claims priority, application Japan, Mar. 12, 1990, 2-60741; Mar. 12, 1990, 2-62232; Mar. 12, 1990, 2-62233; Mar. 12, 1990, 2-62234

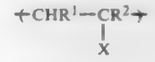
Int. Cl.[5] A61K *9/70*

U.S. Cl. 424—443 3 Claims

1. A base or an auxiliary agent for external application for a human being or animal, comprising a polymer or copolymer of N-vinylacetamide having a structure containing 50 to 100 mole % of the repeating unit represented by the formula (I) and 0 to 50 mole % of at least one kind of the repeating units represented by the formula (II):



(I)



(II)

wherein R^1 represents H, CH_3, C_6H_5, or COOM, wherein M represents H or an alkali metal; R^2 represents H, CH_3, COOM; and X represents COOM; when R^1 and X are COOM, the formula (II) also may have a cyclic acid anhydride structure.

5,344,656

SUBSATURATED TRANSDERMAL THERAPEUTIC SYSTEM HAVING IMPROVED RELEASE CHARACTERISTICS

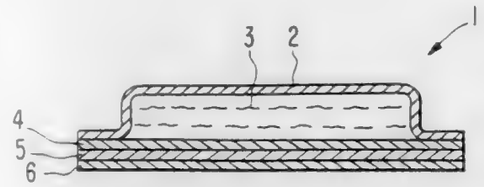
David J. Enscore, Sunnyvale; Patricia S. Campbell, Palo Alto; James L. Osborne, Mountain View; Melinda K. Smart, Sunnyvale, and Su I. Yum, Los Altos, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 284,283, is a continuation-in-part of Ser. No. 906,730, Sep. 12, 1986, Pat. No. 4,908,027. This application Jun. 16, 1993, Ser. No. 78,540

The portion of the term of this patent subsequent to Apr. 2, 2008, has been disclaimed.

Int. Cl.[5] A61F *13/02*

U.S. Cl. 424—448 12 Claims



1. A transdermal active agent delivery device for delivering said agent over a predetermined administration period and utilizing an in-line adhesive comprising, in combination;

a) an active agent capable of causing said adhesive to lose its adhesive properties;

b) an agent reservoir containing said agent dissolved therein at:

i) an initial equilibrated concentration such that the activity is less than 1.0 and at which said adhesive retains adhesive properties; and

ii) at an initial loading sufficient to prevent the activity of said agent in said reservoir from decreasing by more than 50% during said administration period; and

c) in-line adhesive means for maintaining said agent reservoir in agent transmitting relationship to the skin.

5,344,657

MICROBEADS OF DILTIAZEM, A PROCESS FOR THEIR MANUFACTURE AND A SUBSTAINED-RELEASE PHARMACEUTICAL COMPOSITION CONTAINING THEM

Henri Desmolin, Merignac, France, assignor to Elf Sanofi, Paris, France

Continuation of Ser. No. 795,247, Nov. 18, 1991, abandoned, which is a continuation of Ser. No. 336,133, Apr. 11, 1989, abandoned. This application Apr. 5, 1993, Ser. No. 43,592

Claims priority, application France, Apr. 27, 1988, 88 05629

Int. Cl.[5] A61K *9/54*

U.S. Cl. 424—458 18 Claims

1. Sustained-release diltiazem microbeads each of which comprises (a) a core including an inert grain substrate coated with a layer of the active ingredient combined with a binder surrounded by (b) a microporous membrane consisting essentially of a film-forming polymer insoluble in aqueous medium, a plasticizing agent, representing from 10 to 30% by weight of said film-forming agent, and a filling material representing 35 to 75% by weight of said membrane, wherein, as determined in vitro at a pH of between 1.5 and 7, a diltiazem release rate of approximately 10% per hour for at least 6 hours is attained after a latent period of less than one hour.

5,344,658

PROCESS AND COMPOSITION USING ONDANSETRON

David T. Collin, Ware, England, assignor to Glaxo Group Limited, London, England

Continuation of Ser. No. 755,736, Sep. 6, 1991, abandoned, which is a continuation of Ser. No. 544,644, Jun. 27, 1990, abandoned. This application Jan. 19, 1993, Ser. No. 5,736

Claims priority, application United Kingdom, Jun. 28, 1989, 89148043

Int. Cl.[5] A61K *9/14*

U.S. Cl. 424—489 10 Claims

1. A process for reducing the crystal size of ondansetron hydrochloride dihydrate produced by crystallisation from solvent, in which said ondansetron hydrochloride dihydrate is desolvated by drying at elevated temperature and reduced or atmospheric pressure and is then rehydrated, wherein the resulting crystals are suitable for homogeneous distribution in a tablet blend, and wherein 100% of the resulting crystals have a size of less than 250 μm and at least about 80% by weight of the crystals have a size of less than 63 μm.

5,344,659

CHEWING GUM

Yoshie Kurihara; Hiroshige Kohno; Hiromu Sugiyama; Teiyu Shimada; Masako Saito, and Kenji Ikeda, all of Tokyo, Japan, assignors to Yoshie Kurihara and Asahi Denka Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 916,592, Jul. 20, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 127,413

Claims priority, application Japan, Aug. 2, 1991, 3-194516

Int. Cl.[5] A23G *3/30*

U.S. Cl. 426—3 1 Claim

1. A chewing gum containing a coating material which is prepared by coating *Curculigo latifolia* fruits, processed *Curculigo latifolia* fruits or a component containing curculin obtained therefrom with a coating agent at a temperature of 60° C. or below; and wherein the grain size of said coated material is 100 to 200 mesh, the content of said coated material ranges from 0.1 to 70% by weight based on the total amount of the chewing gum, and the content thereof in terms of purified curculin is 0.1 to 1,000 ppm;

said coating agent is selected from the group consisting of reducing maltose syrup, reducing starch decomposition product, lactose, oligo-saccharides, dextrin, branched dextrin, whey protein, vegetable fats and oils, animal fats and oils, gelatin, guar gum, cyclodextrin, chitin, chitosan soluble starch, gum arabic, pectin and microcrystalline cellulose; and

the weight ratio of said *Curculigo latifolia* fruits, processed *Curculigo latifolia* fruits or a component containing curculin obtained therefrom to said coating agent ranges from 0.01 : 99.99 to 95 : 5.

5,344,660

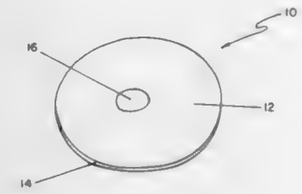
BONE-IN MEAT PRODUCT

Michael F. Stevison, Gallatin; Dave Stevison, Portland, and John P. White, Gallatin, all of Tenn., assignors to Stevison Ham Company, Portland, Tenn.

Division of Ser. No. 22,014, Feb. 24, 1993. This application Jul. 20, 1993, Ser. No. 95,167

Int. Cl.[5] A23L *1/31*

U.S. Cl. 426—104 2 Claims



1. A bone-in ham steak made by a method of making a bone-in ham steak comprising the steps of:

a. separating muscle and fat from a green ham;

b. tumbing and massaging said muscle and fat to form an aggregation of cured muscle and fat from which protein has been extracted;

c. cutting the knee and hip ends from the femur bone of a ham, leaving a bone segment;

d. aligning a plurality of bone segments lengthwise along a skewer, thereby forming a linear bone section.

e. placing in a casing said linear bone section;

f. stuffing said aggregation of cured muscle and fat into said casing around said bone section;

g. drawing said casing to form an approximately cylindrical shaped meat product having a uniform diameter throughout its length with said bone section disposed longitudinally along the approximate center of said shaped meat product;

h. cooking said shaped meat product; and

i. slicing said cooked meat product transversely into a plurality of bone-in ham steaks having a uniform size, shape and weight.

5,344,661

RECYCLABLE MICROWAVEABLE BAG

Abraham H. Mendenhall, Mendham, N.J.; Joseph F. Irace, Frontenac, and Joseph Skudrzyk, Affton, both of Mo., assignors to Elite Ink and Coatings, Ltd., Arthur, Ill.

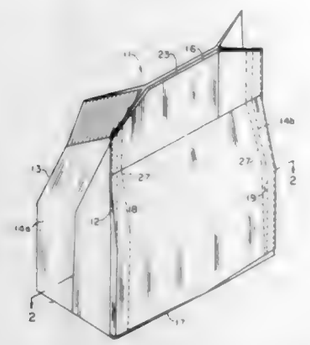
Continuation-in-part of Ser. No. 714,623, Jun. 13, 1991, Pat. No. 5,223,288, which is a continuation-in-part of Ser. No. 703,280, May 20, 1991, Pat. No. 5,211,975. This application May 25, 1993, Ser. No. 66,420

Int. Cl.[5] B65D *81/34*

U.S. Cl. 426—107 2 Claims

1. A microwavable package containing a food product, said package comprising a bag formed of a series of walls including a front, back, and a bottom wall, said entire bag being formed of a single-ply paper, a heat assist accessory applied to and covering the exterior of one of said front and back wall of said bag, said accessory having a top, bottom, and side edges, said accessory being adhered to one of said front and back wall substantially only along two select opposite edges of said accessory defining lines of attachment of said accessory to said package, the remainder of said heat assist accessory being

substantially unconnected with either said front or back wall of said bag, said accessory having a metallized heat susceptor surface sufficient to generate heat and provide heat assist to the contents of the package during microwaving, said accessory being devoid of said metallized heat susceptor surface in the portion of the accessory that defines said lines of attachment, said accessory comprising a single-ply paper, a polymer film having said metallized surface applied thereon and adhered to said single-ply of paper forming said accessory, and a high heat resistant adhesive securing the polymer film to the single-ply forming the accessory, such that upon microwaving of the package containing said food product, the heat resistant adhesive securing the accessory provides dimensional stability to the said film forming the accessory and preventing a delamination and break-up of the accessory and its metallized film when exposed to any microwave energy; said package further including means for separating the metallized heat assist accessory from said bag, said means for separating including either perforations or score lines in said accessory, said perforations or score lines being positioned between the respective lines of attachment and the majority of the accessory that comprises said metallized heat susceptor surface and covers the exterior of one of said front and back walls, such that after microwave heating, the major portion of said accessory can be torn away from said bag along either said perforations or tear lines leaving attached to the bag substantially only the remaining portions of the accessory that define the lines of attachment which remaining portions are devoid of metallized surface such that the paper bag can be readily recycled.

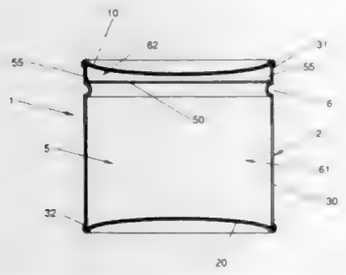


5,344,662

PRESSURIZED PACKAGE CONTAINING A PARTICULATE PRODUCT EMPLOYING A PRODUCT SEPARATOR TO CONTAIN THE PRODUCT DURING OPENING

Michael T. Payne, Wyoming, and Daniel J. Kinne, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 3, 1993, Ser. No. 25,530
Int. Cl.[5] B65D *51/16, 85/00*
U.S. Cl. 426—124 **21 Claims**



1. A package containing a particulate product under pressure, said package exhibiting the ability to automatically release said pressure upon opening while substantially preventing the escape of said particulate material from said package during the opening process, said package comprising:

a) a container having a closed top and a closed bottom interconnected to one another by a body portion to define a substantially gas tight interior compartment containing said particulate product under pressure, said vertical axis of said container running from said top to said bottom, said container further including an inwardly directed bead along substantially the entire perimeter of said body portion, said bead being located at a predetermined distance below said top of said container; and

b) a substantially non-porous product separator disposed within said interior compartment above said bead and adjacent said top of said container, said separator having an outermost perimeter adjacent to the innermost perimeter of said body portion of said package creating a tortuous path around said separator, said separator dividing said interior compartment into a product chamber located below said separator and a product-free chamber located above said separator, said product-free chamber being substantially void of said particulate product, said predetermined distance from said bead to said top of said container being such that any rocking movement of said separator with respect to the vertical axis of said container is substantially prevented to the extent that said particulate material is substantially prevented from migrating around said separator and into said product-free chamber before and during opening, whereby when said top of said container is initially punctured with a can opener the gas in said package escapes through said puncture by going around said bead, through the interface existing between said separator and said body portion of said container and out through the puncture while said particulate product is substantially prevented from escaping from said package during the opening process.

5,344,663

PROCESS FOR PRODUCING A FAT-SUBSTITUTE BAKERY DOUGH AND THE FAT SUBSTITUTE BAKERY PRODUCTS

Anne M. Jewell, East 3408 Garnet, Spokane, Wash. 99207, and Tom Seaman, Palouse, Wash., assignors to Anne M. Jewell, Spokane, Wash.

Filed Jan. 15, 1992, Ser. No. 821,735
Int. Cl.[5] A23L *1/10*
U.S. Cl. 426—549 **18 Claims**

1. A fat substituted shortened type baked cookie made from a dough comprising:

wheat flour;

greater than 8 to less than 62 percent potato flour, all percentages being based on the weight of the wheat flour, as a substitute for fat that would otherwise be present in the shortened type baked cookie, whereby the baked cookie contains from zero to 10 percent fat;

greater than 1.1 to less than 12 percent of a water absorbing binder comprising a protein source high in calcium and phosphate, wherein the weight ratio of potato flour to water absorbing binder is from 0.9 to 41.3;

greater than 7 to less than 60 percent of a binder source selected from the group consisting of eggs, egg components, and egg substitutes;

greater than 11 to less than 93 percent of a fat-like sensory additive comprising an invert-sugar source;

a leavening agent; and

greater than 7 to less than 28 percent of a liquid whereby the baked cookie contains from zero to 15 percent water and has an open crumb grain structure.

5,344,664

LOW-FAT CONFECTIONARY MATERIAL AND PROCESS FOR MAKING SAME

Mark D. Fitch, Stonybrook; Gerard Eckhardt, Bellmore; Wendy A. Anderson, New York, all of N.Y.; Mario A. Anelich, Dumont, N.J.; Barry N. Frake, Northport, N.Y.; Kevin W. Lang, Lloyd Neck, N.Y., and Alfred Mannheimer, Northport, N.Y., assignors to Kraft General Foods, Inc., Northfield, Ill.

Continuation-in-part of Ser. No. 839,525, Feb. 20, 1992, abandoned. This application Aug. 26, 1993, Ser. No. 112,740
Int. Cl.[5] A23G *3/00, 1/00*
U.S. Cl. 426—631 **24 Claims**

1. A low-fat confectionary material containing less than 10% fat comprising a mixture of granulated sugar and granulated or powdered insoluble, non-gummy food material which is stable to normal processing conditions, said confectionary material having a moisture content of about 10% to about 15%, said sugar having a particle size of below 150 microns, said non-gummy food material having a fat content below about 15%, and said sugar to said non-gummy food material having a weight ratio of between about 2:1 and about 4:1; and wherein the ratio of granulated sugar to any liquid sugar in the confectionary material, as formulated, is above 5:1.

5,344,665

PRODUCTION OF FROZEN SURIMI

Tatsuo Kanayama, Takarazuka; Toshitaka Nakashima, Itami; Kunihiko Tomiyasu, Takarazuka, and Toshio Matsuda, Itami, all of Japan, assignors to Ueno Seiyaku Kabushiki Kaisha, Japan

Continuation of Ser. No. 849,345, Mar. 11, 1992, abandoned, which is a division of Ser. No. 688,632, Apr. 19, 1991, Pat. No. 5,137,746, which is a continuation of Ser. No. 559,422, Jul. 26, 1990, abandoned, which is a continuation of Ser. No. 326,423, Mar. 22, 1989, abandoned, which is a continuation of Ser. No. 933,907, Nov. 24, 1986, abandoned. This application Jan. 11, 1993, Ser. No. 2,526
Claims priority, application Japan, Nov. 29, 1985, 60-270180
Int. Cl.[5] A23L *1/325*
U.S. Cl. 426—643 **6 Claims**

1. A method of producing frozen surimi not containing polyphosphates and possessing good coloration and good elasticity in a surimi based product, comprising:

washing minced fish meat;

dehydrating the washed minced fish meat to give a dehydrated minced fish meat;

mixing the dehydrated minced fish meat;

adding at least one compound selected from the group consisting of carbonates and bicarbonates in combination with an organic alkaline salt to the dehydrated minced fish meat during the mixing of said fish meat, so as to adjust the pH value of the fish meat to less than 7.5; and

freezing the resultant fish meat to produce frozen surimi.

5,344,666

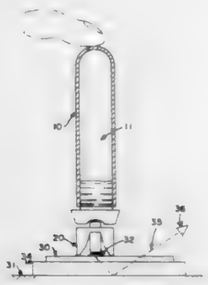
LIQUID DISPENSER

Marshall S. Levine, 96 Drummers La., Wayne, Pa. 19087

Filed Mar. 19, 1992, Ser. No. 849,903
Int. Cl.[5] B05B *7/24*
U.S. Cl. 427—2.11 **57 Claims**

1. A device for dispensing an amount of fluid from a stoppered container to a target surface, comprising:

a dispenser body having a passageway formed therein, one end of said dispenser body including a surface for engaging said stoppered container and another end of said dispenser body including stabilizing supports for engaging said target surface, and said passageway including means for passing through said stoppered container to interior portions of said stoppered container, for accessing the fluid in said stoppered container and for dispensing said fluid from said passageway and to said target surface responsive to forces applied relative to said dispenser body.

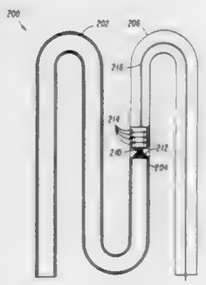


5,344,667

METHOD AND APPARATUS FOR MANUFACTURING SERPENTINE AVIONICS FLUORESCENT TUBES WITH ENHANCED UNIFORMITY OF LUMINANCE AND CHROMATICITY

Thomas A. Seder, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Feb. 23, 1993, Ser. No. 21,375
Int. Cl.[5] B05D *5/06*
U.S. Cl. 427—67 **5 Claims**



1. A method for manufacturing serpentine fluorescent lamps comprising the steps:

providing a serpentine tube having a non-linear portion therein; and,

dragging a hose having spacers disposed thereabout and nozzle which sprays a phosphor coating, through the non-linear portion of the serpentine fluorescent tube, thereby depositing a phosphor coating on the serpentine tube.

5,344,668

APPLYING DISPERSIONS TO SELECTED FUEL CELL ELECTRODE PLATE REGIONS

Richard J. Rempe, West Hartford, and Robert C. Stewart, Jr., West Suffield, both of Conn., assignors to International Fuel Cells Corporation, South Windsor, Conn.

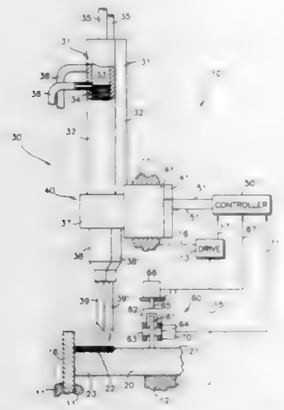
Filed Dec. 26, 1991, Ser. No. 813,470
Int. Cl.[5] B05D *5/12;* **B05C** *11/00*
U.S. Cl. 427—115 **1 Claim**

1. A method of applying a flowable substance to at least one area extending over less than all of a major surface of a plate-shaped fuel cell component, comprising the steps of

supporting the component in such a manner that the major surface thereof extends along a plane and faces in one direction;

effecting such relative movement along the aforementioned plane between the component and a zone situated in the plane that at least the entire one area of the major surface gradually advances through the zone in an advancement direction and path; and

controlledly directing at least one stream of the flowable substance substantially opposite to the one direction toward the zone in such a manner that the stream is in existence only while the zone is completely within the one area, and until the zone has coincided with all of the one area, including controlledly directing the one stream against a main portion of the zone, and controlledly directing at least one auxiliary stream of the flowable substance against another portion of the zone that is contiguous to the main portion, the one and auxiliary streams being in existence only for so long as the main and other portions of the zone, respectively, are juxtaposed with a main and border portion of the one area of the major surface, the auxiliary stream being relatively fine with respect to the one stream to give an accurate contour to the one area, and the one stream exhibiting a volumetric flow rate that is relatively high with respect to that of the auxiliary stream to rapidly deposit the flowable substance within the contour.

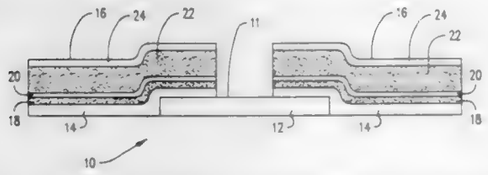


5,344,669

METHOD OF MANUFACTURE FOR AN IMPROVED MAGNETORESISTIVE READ TRANSDUCER

Mao-Min Chen, San Jose, and Ching H. Tsang, Sunnyvale, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 779,221, Oct. 18, 1991, Pat. No. 5,262,914.
This application Sep. 23, 1993, Ser. No. 125,987
Int. Cl.[5] B05D 5/12
U.S. Cl. 427—130 9 Claims



1. A method for making a magnetoresistive read transducer assembly comprising the steps of:

providing a substrate;

depositing a thin magnetoresistive layer of ferromagnetic material on said substrate;

depositing a thin layer of antiferromagnetic material in direct contact with the magnetoresistive layer;

depositing a thin layer of an interdiffusion material in contact with the layer of antiferromagnetic material; and

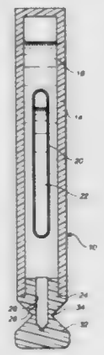
heating said layered structure to form a magnetic interface between said antiferromagnetic material and said magnetoresistive layer whereby said magnetic interface produces an exchange bias field in said magnetoresistive layer.

5,344,670

SYSTEM FOR APPLYING CHEMILUMINESCENT FLUID TO AN OBJECT

Stephen L. Palmer, and William R. Palmer, both of Cameron Park, Calif., assignors to Sierra Innotek, Inc., Cameron Park, Calif.

Filed Jul. 22, 1993, Ser. No. 94,706
Int. Cl.[5] F21K 2/00; B05B 5/00
U.S. Cl. 427—157 11 Claims



1. Apparatus for applying a chemiluminescent fluid to an object, said apparatus comprising, in combination:

reservoir means including a wall and defining an interior for holding a first component of a chemiluminescent fluid, and said reservoir means additionally defining a passageway in communication with said reservoir means interior;

capsule means located within said reservoir means interior for holding a second component of said chemiluminescent fluid, said capsule means being frangible to release said second component of chemiluminescent fluid from said capsule means and bring said second component of chemiluminescent fluid into engagement with said first component of chemiluminescent fluid and allow mixing thereof in said reservoir means interior;

an applicator element mounted in said passageway for receiving chemiluminescent fluid from said reservoir means interior after mixing of said first and second components of chemiluminescent fluid in said reservoir means and for applying the chemiluminescent fluid to an object upon engagement between said applicator element and said object; and

closure means releasably attached to said reservoir means for maintaining said applicator element and said reservoir means interior isolated from the ambient atmosphere, said applicator element comprising a porous writing nib having a distal end for engaging an object to apply chemiluminescent fluid to the said distal end being spaced from said reservoir means wall, said reservoir means additionally comprising an end element connected to the reservoir means wall, said end element defining said passageway, and said closure means comprising a cap integrally connected to said end element by a breakable connector allowing removal of said cap from said end element upon application of outside force to said cap, said breakable connector surrounding said porous writing nib at a location closely adjacent to said writing nib and between said reservoir means wall and said writing nib distal end, and said writing nib being comprised of a porous material chemically inert with respect to the chemiluminescent fluid in said reservoir means interior, the interstices of said porous material allowing flow of said chemiluminescent fluid through said writing nib and said porous material adapted to filter and prevent dispensing of solid material in said chemiluminescent fluid.

9. A method of applying a chemiluminescent fluid to an object having a porous surface, said method comprising the steps of:

maintaining a first component of a chemiluminescent fluid in a confined space;

maintaining a second component of the chemiluminescent fluid in the confined space and isolated from said first component;

changing the shape of said confined space and substantially simultaneously bringing said first and second components into engagement;

mixing said first and second components in said confined space to form a mixed chemiluminescent fluid;

flowing said mixed chemiluminescent fluid through a porous writing nib communicating with said confined space and having a distal end to deliver said mixed chemiluminescent fluid to said distal end;

bringing said distal end of said porous writing nib into engagement with an object;

effecting relative movement between said object and said porous writing nib while maintaining engagement between said porous writing nib and said object to apply said mixed chemiluminescent fluid to said object;

absorbing mixed chemiluminescent fluid applied to said object into said porous surface;

maintaining the writing nib in engagement with mixed chemiluminescent fluid in said confined space while applying mixed chemiluminescent fluid to said object; and

filtering solid matter in said confined space from said mixed chemiluminescent fluid with said porous writing nib.

5,344,671

PROCESS AND DECORATIVE MATERIAL FOR PRODUCING A DECORATIVE SURFACE

Günther Wottrich, Weserstrasse 75, D-2940 Wilhelmshaven, Fed. Rep. of Germany

Filed Dec. 17, 1992, Ser. No. 992,076
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142596; Jan. 31, 1992, 4202779
Int. Cl.[5] B05D 1/36
U.S. Cl. 427—192 13 Claims

1. A process for producing a decorative surface of a structure selected from the group consisting of a roofing member, a wall member, a facade member, a sculpture member, an obelisk member, and a column member, comprising the steps of: applying an application medium comprising copper particles to the structure and oxidizing the copper particles to form a patina.

5,344,672

PROCESS FOR PRODUCING POWDER COATED PLASTIC PRODUCT

Dwight E. Smith, Columbus, Miss., assignor to Sanderson Plumbing Products, Inc., Columbus, Miss.

Filed May 14, 1992, Ser. No. 882,901
Int. Cl.[5] B05D 1/06
U.S. Cl. 427—195 7 Claims

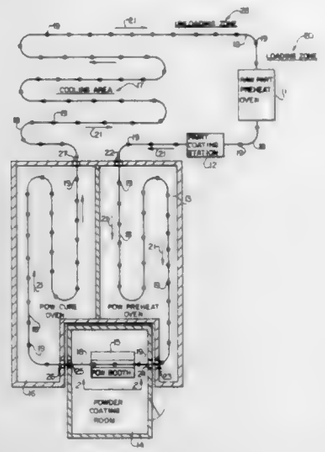
1. A process of coating the surface of a plastic substrate, comprising the steps of:

(a) applying a conductive coating to said substrate surface;

(b) heating said substrate at a temperature and for a time sufficient to cure said conductive coating thereon;

(c) applying a power coating composition over said cured conductive coating on said heated substrate while the substrate surface temperature is above the melt temperature of said powder coated composition and below the temperature needed to cure said powder coated composition; and

(d) additionally heating said powder coated substrate at a temperature and for a time sufficient to cure said powder coating composition; and further comprising an initial step



of preheating said substrate prior to the application of said conductive coating thereto, wherein said substrate surface is heated to a temperature that is below the temperatures needed to cure the subsequently-applied conductive coating and the subsequently-applied powder coating composition, but above ambient temperature.

5,344,673

RESIN PARTICLES METHOD FOR PRODUCTION AND THEIR USES

Yasunari Hotta; Satoshi Maeda; Yozo Yamada, all of Ohtsu; Koji Tanaka; Hiroshi Ono, both of Okayama, and Toshio Uno, Ohtsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 616,060, Nov. 20, 1990, abandoned.
This application Mar. 16, 1993, Ser. No. 32,441
Claims priority, application Japan, Nov. 27, 1989, 1-308193; Jul. 30, 1990, 2-203332
Int. Cl.[5] B05D 3/02
U.S. Cl. 427—195 9 Claims

1. A method for producing resin particles comprising the steps of preparing a micro-dispersion of a condensation polymer containing at least one ionic group and having an average diameter (d) of not more than 1.0 μm in a liquid medium, and allowing said micro-dispersed particles to coalesce by maintaining a uniform amount of ions on the surface of the micro-dispersed particles by adding a compound having counter ions or an electrolyte to produce particles comprising, as the main component, a spherical condensation polymer having an average particle diameter ranging from 0.1 to 100 μm, wherein the condensation polymer is at least 80% by weight of the particles.

5,344,674

COMPOSITION AND METHOD FOR CORROSION INHIBITION UTILIZING AN EPOXY RESIN, AN AMINE CURING AGENT, AN ALCOHOL AND OPTIONALLY A HYDROCARBON DILUENT

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 767,763, Sep. 9, 1991, Pat. No. 5,232,741, which is a continuation-in-part of Ser. No. 657,237, Feb. 19, 1991, Pat. No. 5,079,041, which is a continuation of Ser. No. 430,690, Oct. 31, 1989, Pat. No. 5,045,359, which is a continuation-in-part of Ser. No. 225,662, Jul. 22, 1988, abandoned, which is a continuation of Ser. No. 698,062, Feb. 4, 1985, abandoned, which is a division of Ser. No. 465,077, Feb. 9, 1983, Pat. No. 4,526,813, which is a continuation of Ser. No. 369,293, Apr. 16, 1982, abandoned, which is a continuation-in-part of Ser. No. 181,913, Aug. 27, 1980, abandoned. This application Apr. 7, 1993, Ser. No. 44,316

Int. Cl.[5] B05D *7/22*

U.S. Cl. 427—386 13 Claims

1. A method for treating a metal surface to inhibit corrosion thereof, comprising contacting the metal surface with a composition comprising:

(a) an epoxy resin;

(b) an amine curing agent selected from the group consisting of N-coco-1,3 diaminopropane, tallowamine, octylamine, dodecylamine, hexadecylamine, oleyamine, soyaamine, dicocoamine, dihydrogenated tallowamine, and cocoamine wherein an equivalent ratio of curing agent to epoxy resin of greater than shout 1.5: 1 to about 5:1 exists;

(c) an aromatic hydrocarbon diluent present in at least an amount sufficient to maintain the composition in an essentially fluid state; and

(d) an alcohol selected from the group consisting of methanol, ethanol, 1-propanol, 2-propanol, n-butanol, n-pentanol, n-hexanol, n-heptanol and combinations of any two or more thereof, wherein said alcohol is present in an amount of about 10 to about 60 weight percent of the composition and wherein said composition is contacted with the metal surface for a time sufficient to form a corrosion-inhibiting film thereon.

5,344,675

EMULSION POLYMER BLEND

Barry S. Snyder, Dresher, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 23,658, Feb. 26, 1993, Pat. No. 5,308,890. This application Jan. 27, 1994, Ser. No. 186,961

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—388.4 3 Claims

1. A method of coating a substrate comprising contacting the substrate with an aqueous coating composition containing from about 30 to 100 percent by volume of an emulsion polymer blend wherein the emulsion polymer blend comprises from about 95 to about 40 percent by weight of at least one first latex and from about 5 to about 60 percent by weight of at least one second latex, wherein the first latex is multi-stage comprising from about 95 to about 50 percent by weight of at least one soft stage polymer having a Tg less than 50° C. and from about 5 to about 50 percent by weight of at least one hard stage polymer having a Tg from about 20° C. to about 160° C., wherein the Tg of the soft stage polymer is lower than the Tg of the hard stage polymer, and wherein the second latex does not form a film at ambient temperature.

5,344,676

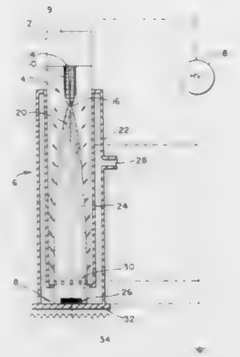
METHOD AND APPARATUS FOR PRODUCING NANODROPS AND NANOPARTICLES AND THIN FILM DEPOSITS THEREFROM

Kyekyoon Kim, and Choon K. Ryu, both of Urbana, Ill., assignors to The Board of Trustees of the University of Illinois, Urbana, Ill.

Filed Oct. 23, 1992, Ser. No. 965,351

Int. Cl.[5] B05D *1/04;* B05B *5/035*

U.S. Cl. 427—468 18 Claims



14. A method for producing nanodrops comprising

a. dissolving at least one base compound in a solvent to produce a liquid precursor,

b. positioning within a hollow tube having an open end and a liquid precursor receiving end a solid electrically conductive needle electrode having a point extending out of said open end, said tube and said needle point having dimension such that surface tension of said liquid precursor prevents flow of said liquid precursor from said open end,

c. feeding said liquid precursor into said liquid precursor receiving end,

d. injecting mutually repulsive charges into said liquid precursor adjacent said open end such that mutually repulsive forces of said charges overcome said surface tension of said liquid precursor to produce a plurality of charged liquid jets which break up into nanodrops, and

e. directing said nanodrops to a target.

5,344,677

PHOTOCHEMICALLY STABLE DEEP ULTRAVIOLET PELLICLES FOR EXCIMER LASERS

Gilbert H. Hong, 12820 Alta Tierra, Los Altos Hills, Calif. 94022

Filed Aug. 27, 1992, Ser. No. 936,758

Int. Cl.[5] A47G *1/12;* G03F *1/00, 9/00*

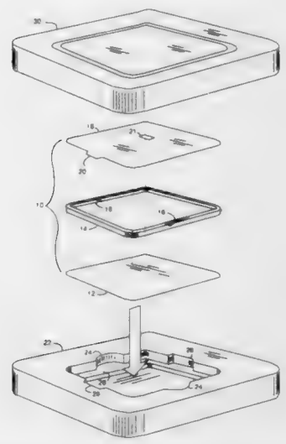
U.S. Cl. 428—14 10 Claims

1. A deep ultraviolet pellicle, comprising:

a perimeter frame having an inside cavity and a first and a second surface that respectively lie in first and second planes which, together with the frame perimeter, completely bound the volume of said inside cavity;

a film membrane attached to said first surface of the frame for sealing out the outside environment from said inside cavity; and

particle trapping vent means including a channel along the length of the frame with holes at opposite ends of said channel, one hole leading from inside of the pellicle to said channel and one from the outside of the pellicle to said channel for relieving air pressure differences and excluding particles in air passing through from entering said inside cavity from the outside environment.



5,344,678

SHAFT SLEEVE MADE OF CERAMICS

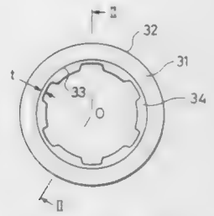
Ken-ichi Kajiwara, and Kikuichi Mori, both of Tokyo, Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Dec. 20, 1991, Ser. No. 811,071

Claims priority, application Japan, Dec. 25, 1990, 2-405851

Int. Cl.[5] B32B *18/00*

U.S. Cl. 428—34.4 12 Claims



1. A shaft sleeve for mounting about a shaft for rotation therewith and for mounting inside an annular bearing for rotation relative thereto, said shaft sleeve comprising:

a ceramic cylindrical body having a cylindrical outer surface and a cylindrical inner surface;

a unitary annular elastic member having a cylindrical outer surface fixedly mounted against said cylindrical inner surface of said ceramic cylindrical body, and an inner surface having a cross-sectional shape corresponding to a cross-sectional shape of an outer periphery of the shaft; and

wherein said elastic member constitutes a means for absorbing shock, for transmitting drive from the shaft to said cylindrical body when said shaft sleeve is mounted on the shaft, and for absorbing differences in dimensional variation between said ceramic cylindrical body and the shaft caused by differences in thermal expansion coefficients thereof when said shaft sleeve is mounted on the shaft.

5,344,679

AMORPHOUS NYLON COPOLYMER AND COPOLYAMIDE FILMS AND BLENDS

Stephen J. Vicik, Darien, Ill., assignor to Viskase Corporation, Chicago, Ill.

Division of Ser. No. 235,258, Aug. 23, 1988, Pat. No. 5,053,259. This application Apr. 16, 1991, Ser. No. 685,950

Int. Cl.[5] B29D *7/01;* C08L *77/00*

U.S. Cl. 428—36.91 12 Claims

1. A thermoplastic, heat shrinkable flexible film, comprising a blend of an amorphous nylon 6I,6T copolymer having no measurable melting point (less than 0.5 calories per gram) or no heat fusion as measured by differential scanning calorimetry, which is present in an amount of from about 10 to about 50 weight percent of said blend, and a copolyamide having a melting point of at least about 145° C. which is selected from the group consisting of nylon 6/12 and nylon 6/66, wherein said film has a shrinkage value in at least one direction of at least 5% at 90° C.

5,344,680

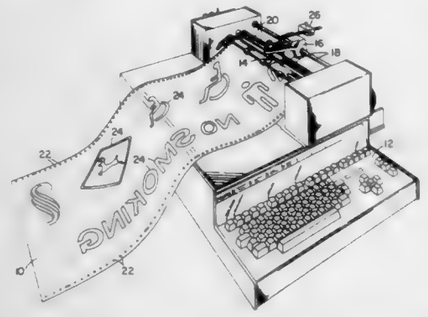
SIGN MAKING WEB WITH TACK KILLING OVERCOAT REMOVABLE BY WASHING AND RELATED METHOD

David J. Logan, Bloomfield, and Leonard G. Rich, W Hartford, both of Conn., assignors to Gerber Scientific Products, Inc., Manchester, Conn.

Filed Oct. 9, 1991, Ser. No. 773,710

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—40 13 Claims



1. A laminated web for use in making signs having cut shapes adhesively attached to a supporting surface, said web comprising:

a base layer of heavy paper sheet material having a first race and an oppositely disposed second face;

a colored flexible plastic layer of sign material in sheet form superimposed on said base layer and having a third face facing said base layer and a fourth face facing away from said base layer, said third face of said sign material being the good or glossy face of said sign material;

a first layer of permanently tacky adhesive interposed between said base layer and said layer of sign material;

said adhesive of said first layer of permanently tacky adhesive more strongly to said second face of said base layer than to said third face of said layer of sign material allowing said layer of sign material to be peeled from said first layer of permanently tacky adhesive with the adhesive of said first layer permanently tacky adhesive in the course of such peeling remaining on said base layer and coming completely free of said third face of said sign material;

a second layer of permanently tacky adhesive superimposed on said fourth face of said sign material with said second layer of permanently tacky adhesive defining an outwardly directed tacky surface facing away from said layer of sign material;

the adhesive of said second layer of permanently tacky adhesive having a more aggressive tack than said adhesive of said first layer of permanently tacky adhesive;

said laminated web having two marginal side edges engagable with an automated sign maker to drive the web in coordinated movement relative to a cutting tool;

a polyvinylalcohol layer formed on the outwardly facing tacky surface of said second layer of permanently tacky adhesive for temporarily deadening the tack of the outwardly disposed tacky surface of said second adhesive layer yet allowing the tacky characteristic of said outwardly directed surface to be regenerated by the application of water capable of dissolving said polyvinylalcohol layer.

5,344,681

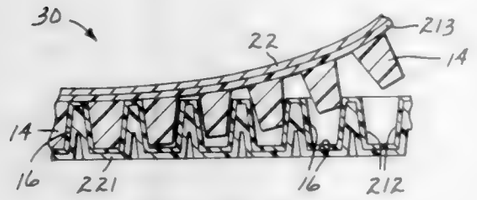
PATTERNED PRESSURE SENSITIVE ADHESIVE TRANSFER TAPE

Clyde D. Calhoun, Stillwater; David C. Koskenmaki, St. Paul, and Mieczyslaw H. Mazurek, Roseville, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 758,744, Sep. 12, 1991, abandoned. This application Oct. 13, 1993, Ser. No. 136,951

Int. Cl.[5] C09J *7/02*

U.S. Cl. 428—42 28 Claims



1. An adhesive transfer tape comprising:

a) a carrier having two oppositely parallel surfaces wherein a first of said surfaces contains a series of recesses therein and the second of said surfaces is smoother than said first surface, and

b) a pressure sensitive adhesive in said recesses to provide segments of said adhesive in said recesses, said segments being surrounded by an area substantially free from said adhesive, so that when said tape is wound upon itself with said first surface contacting said second surface and thereafter unwound, said adhesive transfers from said recesses to said second surface.

5,344,682

OPTICAL RECORDING MEDIUM

Tadahiko Mizukuki, Tokyo; Tadashi Koike, Kamakura; Nobuhisa Kitagawa, and Sumio Hirose, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

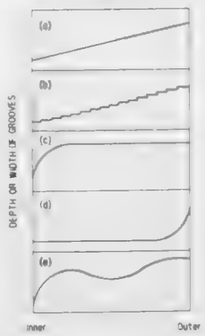
Filed Jun. 12, 1992, Ser. No. 896,862

Claims priority, application Japan, Jun. 14, 1991, 3-142819; Jun. 14, 1991, 3-142858

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—64 10 Claims

1. An optical recording medium of a single plate type comprising a substrate having a groove, a recording layer containing a dye overlying the substrate, a reflective layer overlying the recording layer, and a protective layer overlying the reflective layer, wherein the recording layer is formed by a spin-coating method, and the depth of the groove at the center



portion of the substrate differs by 50–●Å from its depth at the outer periphery of the substrate.

5,344,683

OPTICAL INFORMATION RECORDING MEDIUM WITH PHASE GROOVES IN LAND PORTIONS OF INFORMATION RECORDING AREAS

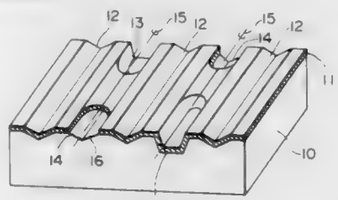
Akihiko Shimizu, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 603,467, Oct. 25, 1990, abandoned. This application Apr. 8, 1993, Ser. No. 44,645

Claims priority, application Japan, Oct. 27, 1989, 1-280420

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—64 1 Claim



1. An optical information recording medium for a land recording method in which information recording pits are formed in a recording layer provided in a land portion between adjacent guide grooves with the application of a laser beam to the recording layer, comprising a substrate and a recording layer formed thereon, said substrate comprising preformed prepits thereon as preformat information in a space along a track center, which includes flag marks, and preformed phase grooves, the decrease in the output of Rf signals generated by said phase grooves being smaller than a half of the amplitude of Rf signals detected by the presence or absence of said prepits.

5,344,684

Patent Not Issued For This Number

5,344,685

PRODUCTION OF COMPOSITE SANDWICH STRUCTURES

George Cassell, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Huntington Beach, Calif.

Filed Mar. 1, 1993, Ser. No. 24,340

Int. Cl.[5] B32B *3/02, 3/00;* **H01Q** *1/42*

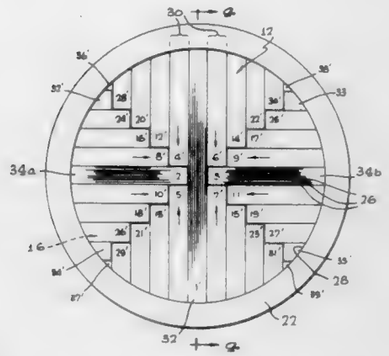
U.S. Cl. 428—66 8 Claims

1. A foam core radome structure in the form of a contoured shell which comprises

inner and outer facings on said shell, each formed of glass fabric impregnated with a resin and

a contoured foam core disposed between said inner and outer facings, said foam core formed of a plurality of foam

mandrel groups, each comprised of a multiplicity of straight relatively stiff narrow foam mandrels, one series of said foam mandrel groups being positioned in side-by-side relation in a substantially transverse direction in said



shell, and another series of said foam mandrel groups being positioned in side-by-side relation in a substantially longitudinal direction in said shell, said foam mandrels being sufficiently narrow in width so as to conform to the contour of the shell.

5,344,686

TENSION STRAINED FIBER STRUCTURE COMPONENT

Horst Heubert, Unterhaching, Fed. Rep. of Germany, assignor to MTU Motoren- Und Turbinen-Union Muenchen GmbH, Fed. Rep. of Germany

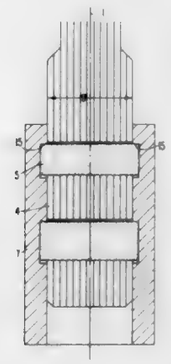
PCT No. PCT/DE90/00979, § 371 Date Aug. 18, 1992, § 102(e) Date Aug. 18, 1992, PCT Pub. No. WO91/08893, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 20, 1990, Ser. No. 861,808

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1989, 3942024

Int. Cl.[5] B32B *1/04*

U.S. Cl. 428—75 21 Claims



1. A tension strained fiber structure component having supporting surfaces which deviate from a tension direction for form-fitting supporting a separate supporting component, constructed of a plurality of fiber strand plates which are aligned in parallel in the tension direction and between which pressure plates are arranged which have sections projecting beyond the cross section of the fiber strand plates which absorbs tensile strain, and which form supporting surfaces, wherein several rows of pressure plates are form-fittingly embedded in the tension direction at a distance behind on another in correspondingly interrupted fiber strand plates or in intermediate matrix layers.

5,344,687

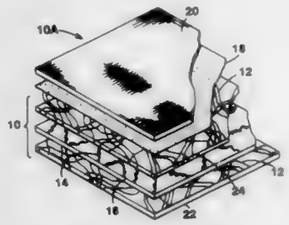
STRUCTURALLY REINFORCED THERMOPLASTIC-FABRIC COMPOSITE CONSTRUCTION MATERIALS THAT ARE MOLDABLE

Martin S. Grimnes, Brunswick, Me., assignor to Brunswick Technologies, Inc., Brunswick, Me.

Filed Sep. 27, 1991, Ser. No. 766,516

Int. Cl.[5] B32B *3/06*

U.S. Cl. 428—102 12 Claims



1. A unitary thermoplastic-fabric flexible web, adapted to be molded under heat and pressure to form an internally reinforced molded article; said web comprising at least on thermoplastic resin layer (**16**), at least one woven fabric layer (**22**) containing reinforcing fibers, and stitching (**26**) extending completely through all of said layers, whereby said layers are bound together to form a flexible web that can be handled as a unit.

5,344,688

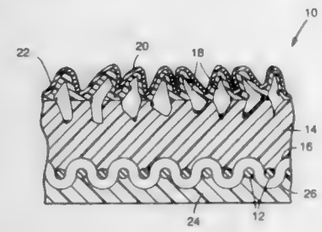
COATED ABRASIVE ARTICLE AND A METHOD OF MAKING SAME

Jeffrey S. Peterson, Hudson, Wis., and Donald L. Oseth, West St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 19, 1992, Ser. No. 932,073

Int. Cl.[5] B05D *3/06;* **B24D** *3/28, 11/00;* **B32B** *5/16;* **C08J** *5/14*

U.S. Cl. 428—102 9 Claims



1. A coated abrasive article comprising a porous backing having a front side and a back side, said front side having directly adhered thereto a make coat comprising a cured radiation curable adhesive, a multiplicity of abrasive grits bonded by said make coat to the front side of said backing, and a size coat overlying said abrasive grits and said made coat, wherein said make coat further comprises a cured latex resin.

5,344,689

CARBON FIBER PREPREG AND CARBON FIBER REINFORCED RESIN COMPOSITE

Shouaki Ide; Akira Shimamoto; Toshiaki Yutori, and Masahiko Uchimura, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

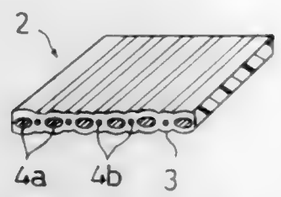
PCT No. PCT/JP92/00676, § 371 Date Apr. 5, 1993, § 102(e) Date Apr. 5, 1993, PCT Pub. No. WO93/03087, PCT Pub. Date Feb. 18, 1993

PCT Filed May 25, 1992, Ser. No. 30,264

Claims priority, application Japan, Aug. 9, 1991, 3-224779

Int. Cl.[5] B32B *5/12*

U.S. Cl. 428—114 12 Claims



1. A carbon fiber prepreg comprising a unit layer consisting of unidirectionally aligned carbon fibers and a matrix resin layer, and Stranded filaments individually formed from a plurality of steel filaments twisted together and having a filament diameter of 100 μm or less, a tensile strength of 300 to 700 kgf/mm^2, and an area reduction at fracture of 20% or more which are incorporated into the unit layer in codirectional relation with the carbon fibers so that the steel fiber content of the prepreg relative to the carbon fibers is 10 vol % or less.

5,344,690

CERAMIC ARTICLES HAVING CHANNELS FOR REGULATING THE PASSAGE OF FLUIDS

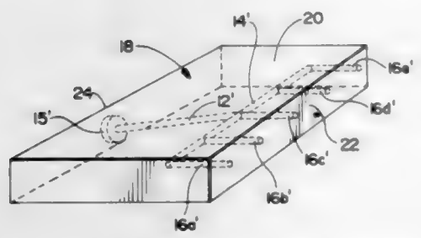
Danny R. White, Elkton, Md., and Michael K. Aghajanian, Newark, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 839,456, Feb. 20, 1992, Pat. No. 5,196,271, which is a continuation of Ser. No. 697,749, May 6, 1991, abandoned, which is a continuation of Ser. No. 308,880, Feb. 9, 1989, abandoned, which is a division of Ser. No. 907,924, Sep. 16, 1986, Pat. No. 4,847,025. This application Mar. 22, 1993, Ser. No. 34,323

The portion of the term of this patent subsequent to Mar. 22, 2011, has been disclaimed.

Int. Cl.[5] C04B *35/65;* F02M *61/16;* B32B *3/24*

U.S. Cl. 428—131 22 Claims



1. An article for regulating and facilitating the passage of a fluid therethrough, said article comprising:

(a) a first ceramic matrix incorporating at least one first filler material, said first ceramic matrix embedding said first filler material and said first ceramic matrix consisting essentially of about 60–99 percent by weight of a first polycrystalline oxidation reaction product consisting of aluminum essentially of a material selected from the group consisting oxide, aluminum nitride, silicon nitride, silicon carbide, silicon boride, silicon oxide, aluminum boride, titanium nitride, zirconium nitride, titanium boride, zirconium boride, tin oxide and aluminum oxynitride, and the remainder of said first ceramic matrix consisting essentially of at least one first metallic constituent and voids; and

(b) at least one channel wherein at least a portion of at least one wall of said at least one channel comprises a lining, said lining comprising a second ceramic matrix, said second ceramic matrix consisting essentially of about 60–99% by weight of a second polycrystalline oxidation reaction product consisting essentially of a material selected from the group consisting of aluminum oxide, aluminum nitride, silicon carbide, silicon boride, aluminum boride, aluminum carbide, titanium nitride, zirconium nitride, titanium boride, zirconium boride, tin oxide and aluminum oxynitride, and the remainder of said second ceramic matrix consisting essentially of at least one second metallic constituent and voids.

5,344,691

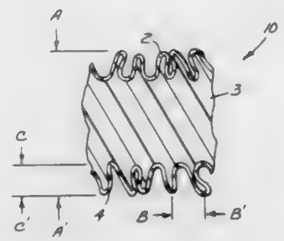
SPATIALLY MODIFIED ELASTIC LAMINATES

Thomas P. Hanschen, St. Paul, Minn.; Dennis L. Krueger, Hudson, Wis., and Gregory P. Karp, Brooklyn Park, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 30, 1990, Ser. No. 502,330

Int. Cl.[5] D06N *7/04*

U.S. Cl. 428—152 56 Claims



1. A multi-layer film laminate comprising at least one nonelastomeric skin film layer and at least one core film layer, the at least one skin film layer and the at least one core film layer together forming at least one preferential activation zone where the film laminate will preferentially elongate when stretched, wherein said at least one core film layer is substantially elastomeric, each of said core and skin layers being substantially coextensive and having relatively constant average thicknesses over both the at least one preferential activation zone and an at least one adjacent non-preferential activation zone such that, for a given skin or core layer, the skin or core layer thickness in one zone will be substantially the same as the same skin or core layer thickness in all zones, said at least one skin film layer and/or at least one core film layer are provided such that when the multi-layer laminate is stretched said at least one preferential activation zone will preferentially elongate and can recover in said preferential activation zone to become an elastic zone, of said multi-layer film laminate, and adjacent multi-layer non-preferential activation zones will not preferentially elongate to provide substantially inelastic zones.

5,344,692

LEATHER-CONTAINING LAMINATE

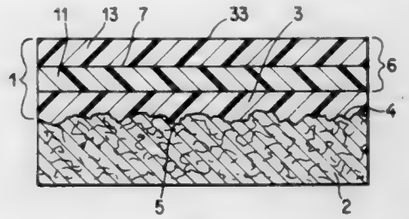
Helmuth Schmoock, Düschener Weg 121, D-2058 Lauenburg-/Elbe, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 2,116, Jan. 4, 1993, abandoned. This application Apr. 8, 1993, Ser. No. 44,990

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1987, 3720776

Int. Cl.[5] B32B *3/00;* C14C *9/00*

U.S. Cl. 428—161 10 Claims



1. A flexible laminate comprising a low-grade or damaged leather substrate having a first side and a second side, at least one of said sides having unevennesses; and a coating adjacent said one side and having a first surface which adheres to said one side and a second surface facing away from said substrate, said coating comprising an outer layer adjacent said second surface and an inner layer disposed between said outer layer and said substrate and at least substantially filling the unevennesses of said one side, said inner layer consisting of a non cross-linked thermoplastic material which is flowable in response to heating and said inner layer having a dry weight of 15–50 g/m^2, said thermoplastic material being applied to the one side of the substrate at a temperature of 110°–130° C. and at a pressure of approximately 30–50 kp/cm^2 in dependency on selected temperature, said outer layer consisting of a plastic material which is solid within the temperature range causing the non cross-linked thermoplastic material of the inner layer to flow.

5,344,693

COMPONENT WITH SPACING MEANS

Bernard Sanders, Mont Clos, Old Beaumont Hill, Jersey, Channel Islands

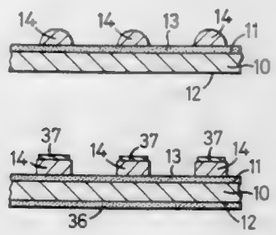
PCT No. PCT/GB91/00411, § 371 Date Sep. 16, 1992, § 102(e) Date Sep. 16, 1992, PCT Pub. No. WO91/13752, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 15, 1991, Ser. No. 927,518

Claims priority, application United Kingdom, Mar. 16, 1990, 9005948.6

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—167 9 Claims



1. A unitary adhesive component for adhering to an object of interest, the adhesive component comprising:

a substrate having an upper surface and a lower surface and;

a plurality of non-interconnecting spacing means extending in a direction outwardly from the upper surface and having a given height dimension, and a distal non-adhesive contactable surface; and

a coating of adhesive applied to the upper surface of the substrate and positioned between the non-interconnecting spacing means, the coating of adhesive having a thickness dimension which is less than the height dimension of the non-interconnecting spacing means, and wherein the upper surface is disposed in spaced relation relative to the object of interest when located adjacent the adhesive component, and wherein the non-interconnecting spacing means in normal use is non-deformable thus substantially inhibiting contact between the upper surface and the object of interest until force is applied to the object interest thereby causing the object of interest to be deflected into contact with the coating of adhesive.

5,344,694

LIQUID DEVELOPER FOR ELECTROSTATIC PHOTOGRAPHY

Seiji Horie; Kenji Sano; Nobuo Suzuki, and Syu Watarai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 19, 1992, Ser. No. 885,353

Claims priority, application Japan, May 28, 1991, 3-150898

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—195 6 Claims

1. A liquid developer useful for developing a latent image having been electrophotographically formed on a printing plate precursor into a toner image during manufacture of a printing plate, said printing plate precursor comprising an electrically conductive substrate having a hydrophilic surface and a layer containing an organic photoconductive compound on said hydrophillic surface, said toner image being fixed, and a non-image area of said layer other than said toner image area being removed by etching with an alkaline etching solution to provide said printing plate said liquid developer comprising resin particles dispersed in a non-aqueous solvent having a volume resistivity of at least 10^9 Ωcm and having a dielectric constant less than 3, said dispersed resin particles being obtained by polymerizing:

(a) at least one monomer selected from the group consisting of methyl methacrylate and ethyl methacrylate soluble in said nonaqueous solvent; and

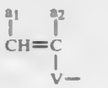
(b) at least one monomer selected from the group consisting of alkyl acrylate wherein the alkyl group has up to 4 carbon atoms and butyl methacrylate, said alkyl acrylate and butyl methacrylate being soluble in said non-aqueous solvent, but being made insolubilized by polymerization;

said monomer (a) and said monomer (b) being polymerized in the presence of a dispersion stabilizing resin, said dispersion stabilizing resin being soluble in said non-aqueous solvent, said dispersion stabilizing resin comprising a graft copolymer formed by polymerizing:

(i) at least one macromonomer having a weight-average molecular weight of 1×10^3 to 4×10^4, said macromonomer having a polymerizable double bond and containing a group represented by the following formula (I) bonded to one terminal of a main polymer chain of said macromonomer, said macromonomer containing at least one moiety represented by the following formula (II) in said main polymer chain of said macromonomer; and

(ii) at least one monomer represented by the following formula (III),

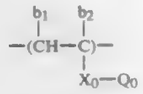
wherein said monomers (a) and (b) are made insoluble by polymerization:



(I)

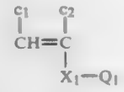
wherein V represents —COO—, —OCO—, —$(CH_2)_k$—OCO—, —$(CH_2)_k$—COO—, —O—, —CONH-

COO—, —CONHNCO—, —SO_2—, —CO—, —$CONZ_1$—, —SO_2NZ_1— or a phenylene group;
Z_1 represents a hydrogen atom or a hydrocarbon group;
k represents an integer of 1 to 3;
a_1 and a_2 may be the same or different and each represents a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group, —COO—Z_2 or —COO—Z_2 bonded through a hydrocarbon group; and
Z_2 represents a hydrogen atom or a hydrocarbon group which may be substituted;



(II)

wherein X_0 represents —COO—, —OCO—, —$(CH_2)_k$—OCO—, —$(CH_2)_k$—COO—, —O—, —CONHCOO—, —COHNCO—, —SO_2, —CO—, —$CONZ_1$—, or —SO_2NZ_1— or a bonding group comprising at least two combinations thereof;
Z1 has the same meaning as in formula (I);
b_1 and b_2 may be the same or different and each has the same meaning as a_1 and a_2 in formula (I);
k represents an integer of 1 to 3; and
Q_0 represents an aliphatic group having 4 to 22 carbon groups;



(III)

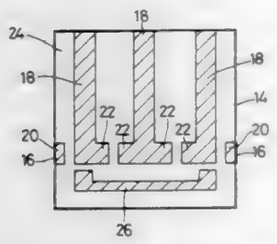
wherein X_1 has the same meaning as V in formula (I);
Q_1 represents a hydrogen atom, an aliphatic group having 1 to 22 carbon atoms or an aromatic group having 6 to 12 carbon atoms; and
c_1 and c_2 may be the same or different and each has the same meaning as a_1 and a_2 in formula (I).

5,344,695

DIELECTRIC FILTER HAVING COUPLING ELECTRODES FOR CONNECTING RESONATOR ELECTRODES, AND METHOD OF ADJUSTING FREQUENCY CHARACTERISTIC OF THE FILTER

Takami Hirai, Aichi, and Shinsuke Yano, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 27, 1992, Ser. No. 858,622
Claims priority, application Japan, Mar. 29, 1991, 3-93092
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 **13 Claims**



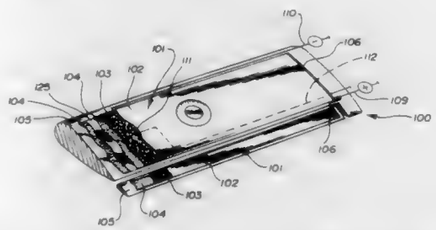
1. A tri-plate type dielectric filter, comprising:
a dielectric substrate;
a plurality of resonator electrodes embedded in said dielectric substrate; and
coupling means for capacitively connecting said resonator electrodes to each other so as to provide capacitors between adjacent resonator electrodes, said coupling means comprising coupling electrodes formed within said dielectric substrate.

5,344,696

ELECTRICALLY CONDUCTIVE LAMINATE FOR TEMPERATURE CONTROL OF AIRCRAFT SURFACE

Otis H. Hastings, and Otis M. Hastings, both of 130 E. Crescent Ave., Mahwah, N.J. 07430

Continuation of Ser. No. 469,288, Jan. 24, 1990, abandoned. This application Mar. 12, 1992, Ser. No. 849,935
Int. Cl.[5] B64D *15/16;* **B32S** *5/00*
U.S. Cl. 428—220 **25 Claims**



1. An improved vehicle component surface portion, integrally bonded, laminate coating with enhanced ice prevention and de-icing capabilities comprising:
(a) an adhesive ply first applied to said vehicle component surface portion in a liquid uncured state;
(b) an electrically conductive, porous, pliable ply, composed of metal coated substrate fibers ranging in diameter from 4 to 100 microns and in length from 0.5" to continuous form, said electrically, conductive ply disposed in said adhesive ply while said adhesive ply is in its liquid uncured state, said conductive ply cut and sufficiently pliable to fit said surface portion in a contiguous, coextending manner therewith when disposed in and upon said adhesive ply, said adhesive ply dispersing between and around the substrate fibers of said porous, electrically conductive ply such that said adhesive ply integrally envelops said electrically conductive ply, whereby said electrically conductive ply is retained in its contiguous and coextending manner by said adhesive ply until said adhesive ply cures;
(c) means adapted to provide electrical energy to said electrically conductive ply, said electrically conductive ply having a surface resistivity in the range between 0.1 ohm and 500 ohms per unit square, whereby the temperature of the improved vehicle component surface portion laminate coating can be changed upon application of said electrical energy; and
(d) an outer ply applied in a liquid state to cover the adhesive and electrically conductive plies in place on said surface portion, said adhesive and outer plies curing in place on said vehicle component surface portion to integrally form said laminate coating of said vehicle component surface portion, said outer ply when cured, providing a waterproof, resistant to abrasion and penetration, and hardened coating, for protecting the underlying, electrically conductive ply from damage.

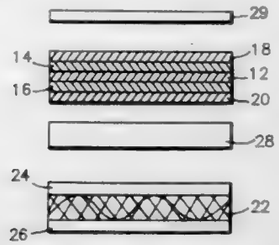
5,344,697

FIRE-RETARDANT BARRIER STRUCTURE

John C. Romanowski, 5 Spring Rd., Londonderry, N.H. 03053

Continuation-in-part of Ser. No. 324,098, Mar. 16, 1989, Pat. No. 4,975,316. This application Nov. 30, 1990, Ser. No. 621,369
The portion of the term of this patent subsequent to Dec. 4, 2007, has been disclaimed.
Int. Cl.[5] B32B *7/00*
U.S. Cl. 428—247 **40 Claims**

1. A fire retardant barrier comprising:
a first film component including a plurality of layers containing a fire retardant material, at least one of said plurality of layers being attached to at least one layer of polymeric material to provide resistance to chemical and biological agents; and



a second component attached to the first component including a polymeric material layer for imparting strength to the fire retardant barrier.

5,344,698

COMPOSITE UNDERGARMENT FABRIC

Moshe Rock, Andover, and Douglas Lumb, Methuen, both of Mass., assignors to Malden Mills Industries, Inc., Lawrence, Mass.

Filed Nov. 24, 1992, Ser. No. 981,321
Int. Cl.[5] B32B *7/00;* **D04B** *1/00;* **A61M** *5/00*
U.S. Cl. 428—253 **18 Claims**

1. A composite textile fabric comprising a first fabric layer of a material selected from the group consisting of polyester, acrylic and nylon which has been rendered hydrophilic in order to quickly transport urine and other body fluids therethrough, a second fabric layer for absorbing said urine and other body fluids comprising at least 5% by weight of a super absorbent fiber, and a breathable barrier layer applied to the second fabric layer having a high moisture vapor transmission rate so that moisture retained by the second layer rapidly evaporates;
wherein the first fabric layer and the second fabric layer are formed integrally and concurrently by knitting a plaited construction.

5,344,699

Patent Not Issued For This Number

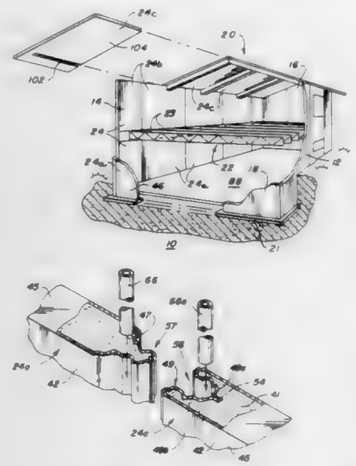
5,344,700

STRUCTURAL PANELS AND JOINT CONNECTOR ARRANGEMENT THEREFOR

James R. McGath, Metamora; John M. Roncone, Westchester, and Thomas J. Bailey, Herrin, all of Ill., assignors to Aliquot, Ltd., Metamora, Ill.

Filed Mar. 27, 1992, Ser. No. 859,133
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—304.4 **4 Claims**

1. In a structural panel including a core of cured foam resin composition having a configuration corresponding substantially to the desired shape of the structural shape of the panel and including front and rear surfaces and first and second side skin sheets integrally secured to front and rear surfaces of said core, at least one of said side skins being made of a cured fiber reinforced resin including a first layer of resin which has reinforcing material to provide increased strength for the sheet, and a second layer of resin on said first layer having a plurality of fibers with portions thereof embedded in said second layer and other portions of the fibers projecting from a surface thereof into and integrally adhering with said foam core, the improvement comprising: first, second and third side skin portions interconnecting said first and second side skin sheets and secured to first, second and third side surfaces of said foam core, defining an enclosure for said foam core having an open end, and an insert member mounted in said open end of said enclosure and secured to said first and second side skin sheets and to at least said first and second side skin portions, whereby said foam core is encapsulated within said enclosure, wherein said insert member is integrally secured to said foam core along substantially the entire length of the open end thereof, and wherein said insert member defines a receptor and a second



one of said panel edges defines a groove and wherein said insert member has a generally U-shaped cross-section.

5,344,701

POROUS SUPPORTS HAVING AZLACTONE-FUNCTIONAL SURFACES

David R. Gagnon, St. Paul; Patrick L. Coleman, Minneapolis; Gary J. Drtina, Woodbury; Christopher S. Lyons, St. Paul; Dean S. Milbrath, West Lakeland Township, Washington County; Jerald K. Rasmussen, May Township, Washington County, and Julie B. Stahl, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 9, 1992, Ser. No. 896,107
Int. Cl.[5] B32B *3/26, 5/14, 27/00*
U.S. Cl. 428—304.4 **31 Claims**

1. A chemically reactive support, comprising: a porous pre-existing support having surfaces and azlactone-functional moieties contacting only the surfaces and modifying reactivity of only such surfaces while retaining useful porosity of the pre-existing support;
wherein said contacting is selected from the group consisting of chemically grafting the azlactone-functional moieties to the surfaces, crosslinking the azlactone-functional moieties in a coating over the surfaces, and forming crosslinked particles of the azlactone-functional moieties in contact with the surfaces.

5,344,702

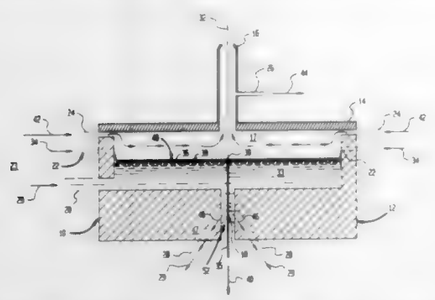
COATED FIBERS

Michael Haubs, Chatham, and Walter Hassinger, Annandale, both of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Continuation-in-part of Ser. No. 582,691, Sep. 14, 1990, Pat. No. 5,156,888. This application Mar. 13, 1992, Ser. No. 850,752
Int. Cl.[5] A61K *9/70;* **A61M** *1/18, 35/00;* **B01D** *39/14, 67/00, 69/08*
U.S. Cl. 428—305.5 **3 Claims**

1. A composite membranous structure comprising in combination a hollow microporous fiber having pores with dimensions of from about 50 to about 500 Angstroms and thereupon,

a thin film polymeric coating uniformly adhered about the circumference of the fiber, wherein said film has a cured thick-



ness of from about 200 to about 2000 Angstroms in thickness and includes a bioerodible polymer.

5,344,703

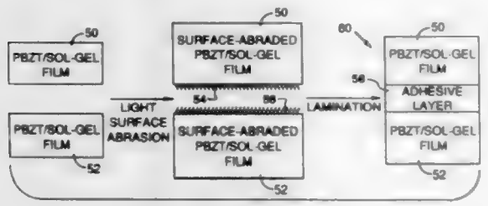
ORDERED POLYMER/SOL-GEL MICROCOMPOSITE LAMINATES WITH PEEK RESIN ADHESIVE

Robert F. Kovar, Wrentham; R. Ross Haghighat, Acton, and Richard W. Lusignea, Brighton, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 722,584, Jun. 25, 1991, abandoned. This application Oct. 13, 1993, Ser. No. 137,897

Int. Cl.[5] B32B *3/26, 27/00, 17/10*

U.S. Cl. 428—312.6 **6 Claims**



1. An ordered polymer/sol-gel glass microcomposite film laminate consisting of at least two layers of said film and a PEEK adhesive layer positioned between the film layers, at least one of said films having a rough surface next to said adhesive layer.

5,344,704

ABRASION-RESISTANT, AESTHETIC SURFACE LAYER LAMINATE

Robin D. O'Dell; Joseph A. Lex, both of Pasadena, and Alice M. Simon, Odenton, all of Md., assignors to Nevamar Corporation, Odenton, Md.

Filed Apr. 7, 1993, Ser. No. 43,906

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—323 **32 Claims**

1. In a decorative laminate meeting NEMA abrasion resistance standards comprising a substrate having a decorative upper layer, and a protective overlayer on top of said decorative layer, the improvement wherein:

said protective overlayer is transparent and consists essentially of a cured thermoset resin formed of pre-cured resin particles and optionally mineral particles of fine particle size having a Moh hardness of at least 7 in a thermoset resin matrix, the index of refraction of said pre-cured resin particles being substantially the same as the index of refraction of said thermoset matrix.

5,344,705

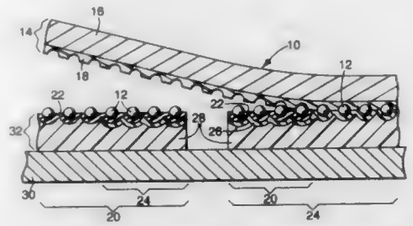
RETROREFLECTIVE TRANSFER SHEET MATERIAL

Ulf N. Olsen, Solbergmoen, Norway, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 5, 1993, Ser. No. 58,155

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—323 **15 Claims**



1. A transfer sheet material for forming retroreflective graphic images on a substrate, the sheet material comprising:

a) a monolayer of transparent microspheres;

b) a color layer printed over the microspheres in a first graphic segment of the sheet material in an imagewise pattern, the color layer comprising a transparent colorant in a transparent resin;

c) a reflective layer printed over the microspheres in a second graphic segment of the sheet material in an imagewise pattern in such a manner that any overlapping areas of the first and second graphic segments are characterized by the color layer being disposed between the microspheres and the reflective layer, the reflective layer comprising reflective flakes in a transparent binder, wherein the microspheres are partially embedded in at least one of the color layer and the reflective layer, the reflective flakes being small enough relative to the microspheres that individual microspheres have the reflective flakes arranged in cup-like fashion about their embedded portions; and

d) a bonding layer printed over the color layer and the reflective layer, the bonding layer being sufficiently thick to embed all exposed surfaces of the color layer and the reflective layer and being adapted for use in securing the sheet material to a substrate.

5,344,706

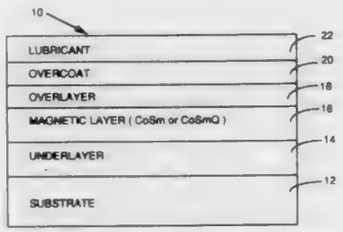
MAGNETIC RECORDING MEDIUM COMPRISING AN UNDERLAYER AND A COBALT SAMARIUM AMORPHOUS MAGNETIC LAYER HAVING A $SMCO_5$ CRYSTALLINE INTERFACE WITH THE UNDERLAYER

David N. Lambeth, Webster, N.Y., and E. M. T. Velu, Pittsburgh, Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Continuation of Ser. No. 769,550, Oct. 1, 1991, abandoned. This application Nov. 12, 1992, Ser. No. 975,132

Int. Cl.[5] G11B *5/00*

U.S. Cl. 428—336 **16 Claims**



1. A thin film media structure having an in plane coercivity of at least 1650 oersteds for longitudinal magnetic recording comprising:

a substrate;

an underlayer in contact with the substrate, the underlayer being comprised of Cr, W or Mo of a predominantly <110> texture; and film comprised of an alloy of Co and Sm forming a fine grain or amorphous magnetic layer disposed on the underlayer and forming a $SmCo_5$ crystalline interface with the underlayer such that the underlayer is between the substrate and the film, the film being less than 50 nm thick.

5,344,707

FILLINGS AND OTHER ASPECTS OF FIBERS

Adrian C. Snyder, Greenville, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 820,141, Jan. 13, 1992, Pat. No. 5,238,612, which is a division of Ser. No. 589,960, Sep. 28, 1990, Pat. No. 5,112,684, which is a continuation-in-part of Ser. No. 508,878, Apr. 12, 1990, Ser. No. 549,818, Jul. 9, 1990, and Ser. No. 549,847, Jul. 9, 1990, said Ser. No. 549,818, and Ser. No. 549,847, each is a continuation-in-part of Ser. No. 290,385, Dec. 27, 1980, Pat. No. 4,940,502, which is a continuation-in-part of Ser. No. 921,644, Oct. 21, 1986, Pat. No. 4,794,038, which is a continuation-in-part of Ser. No. 734,423, May 15, 1985, Pat. No. 4,618,531, and Ser. No. 840,285, Feb. 24, 1992, Pat. No. 5,218,740, which is a continuation-in-part of Ser. No. 508,878, Apr. 12, 1990. This application Jan. 28, 1993, Ser. No. 10,215

Int. Cl.[5] D02G *3/00, 1/00*

U.S. Cl. 428—359 **6 Claims**

1. Improved fiberballs having a random distribution and entanglement of individual fibers within each fiberball and of average diameter about 2 to 20 mm, comprising crimped fibers that are slickened and of length about 10 to about 100 mm, the improvement being characterized in that the fibers consist essentially of about 10 to about 50% by weight of lower denier fibers of lower denier about 0.2 to about 1.5, and complementally about 90 to about 50% of fiberfill of higher denier that is about 2 to about 20, and is at least about 3 times said lower denier, and said fiberfill being mechanically-crimped with significant secondary crimp, in addition to primary crimp, whereby such fibers are entangled in the form of fiberballs.

5,344,708

BULKED RANDOM COPOLYAMIDE YARNS OF NYLON 6 AND NYLON 6,6 HAVING ENHANCED DYEABILITY

William T. Windley, Seaford, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 882,383, May 12, 1992, abandoned. This application Nov. 23, 1993, Ser. No. 156,610

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—364 **2 Claims**

1. A bulked random copolyamide yarn comprising 4 to 20 weight percent repeating units of the structure

$$-(NH-(CH_2)_6-NH)-(\overset{O}{\overset{\|}{C}}-(CH_2)_4-\overset{O}{\overset{\|}{C}})-$$

and 80 to 96 weight percent repeating units of the structure

$$-(NH-(CH_2CH_2CH_2CH_2CH_2\overset{O}{\overset{\|}{C}})-,$$

said yarn before heat-setting having a cold dye rate of at least 1000×10^{-5} sec^{-1}.

5,344,709

SILICON CARBIDE FIBER AND METHOD OF MANUFACTURING THE SAME

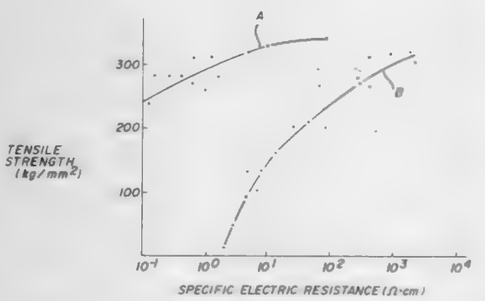
Atsuya Tokutomi, Yokosuka; Hiroshi Ichikawa; Kenji Ushikoshi, both of Yokohama, and Hiroshi Yamauchi, Tokyo, all of Japan, assignors to Nippon Carbon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 622,136, Dec. 5, 1990, abandoned, which is a continuation of Ser. No. 366,706, Jun. 15, 1989, abandoned. This application May 14, 1992, Ser. No. 884,058

Claims priority, application Japan, Jun. 15, 1988, 63-147545

Int. Cl.[5] B32B *9/00;* **D02G** *3/00*

U.S. Cl. 428—368 **2 Claims**



1. A silicon carbide fiber having an amorphous carbon film formed on the surface thereof, said silicon carbide fiber obtained by heating an antimelt-treated polycarbosilane thread at a temperature not exceeding 1000° C. in an atmosphere of inert gas and thereafter heating said thread at a temperature of above 1000° C. and up to 1500° C. in an atmosphere of hydrocarbon gas and inert gas wherein said hydrocarbon gas content is in the range of 0.01 to 50 vol. %, said silicon carbide fiber having a specific electric resistance of 10^{-1}–10^{1} Ω-cm, a tensile strength of 200–350 kg/mm^2 and a tensile modulus of 18–25 t/mm^2.

5,344,710

LOW-DENIER TWO-COMPONENT LOOP YARNS OF HIGH STRENGTH, PRODUCTION THEREOF AND USE THEREOF AS SEWING AND EMBROIDERY YARNS

Ingolf Jacob, Untermeitingen, and Josef Geirhos, Bobingen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesschaft, Fed. Rep. of Germany

Filed Aug. 24, 1993, Ser. No. 111,210

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1992, 4228443

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—370 **14 Claims**

1. A two-component loop yarn composed of core and effect filaments made of synthetic polymers, having a final tenacity of at least 30 cN/tex and a final linear density of less than 200 dtex, and wherein the core and effect filaments each have a total linear density of in each case less than 100 dtex.

5,344,711

ACRYLIC SYNTHETIC FIBER AND PROCESS FOR PREPARATION THEREOF

Hidetoshi Kanzaki, and Naoki Kanamori, both of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 754,228, Aug. 28, 1991, abandoned, which is a continuation of Ser. No. 456,560, Dec. 26, 1989, abandoned. This application Dec. 8, 1992, Ser. No. 989,454

Claims priority, application Japan, Dec. 28, 1988, 63-328891; Feb. 9, 1989, 1-28773; Feb. 16, 1989, 1-35040

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—398 **3 Claims**

1. An acrylic synthetic fiber comprising an acrylic synthetic fiber having in the interior of the fiber vein-like or straw-like

voids extending substantially in parallel to the longitudinal axis of the fiber and having a length of at least 60 μm, wherein a transverse section of the fiber has a multiplicity of openings corresponding to the vein-like or straw-like voids and wherein



said openings have an average diameter of 0.1 to 1.6 μm, in terms of an average diameter of a circumscribed circle of the opening, and the number of the openings in the transverse section of the fiber is at least 100.

5,344,712

ABRASION RESISTANT SILOXANE COATINGS CONTAINING CERIA

John D. Basil, Pittsburgh, and Chia-Cheng Lin, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 29, 1990, Ser. No. 546,484
Int. Cl.[5] B32B *27/36*
U.S. Cl. 428—412 6 Claims

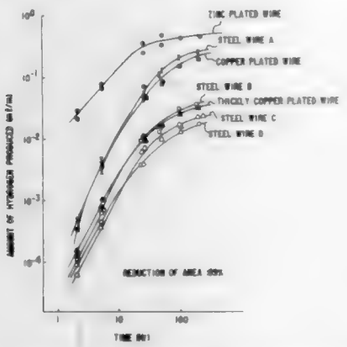
1. An abrasion resistant and ultraviolet radiation resistant coated plastic transparency comprising:
a. a rigid transparent plastic substrate; and
b. a siloxane coating formed from an organoalkoxysilane of the general formula $R_xSi(OR')_{4-x}$ wherein R is selected from the group consisting of alkyl and acrylic-functional groups, R' is selected from the group consisting of methyl, ethyl, propyl and butyl, and x is at least one and less than 4, polyvinylpyrrolidone, cerium oxide and sodium acetate.

5,344,713

METHOD FOR MANUFACTURING STEEL WIRE MATERIAL FOR REINFORCING OPTICAL FIBER

Teruyuki Murai, and Susumu Yamamoto, both of Itami, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

Division of Ser. No. 503,027, Apr. 2, 1990, Pat. No. 5,189,720.
This application Jul. 31, 1992, Ser. No. 922,423
Claims priority, application Japan, Apr. 3, 1989, 1-85177
Int. Cl.[5] C23C *22/73*
U.S. Cl. 428—472.3 9 Claims



1. In the method of making a steel wire coated with a chemical conversion coating used for reinforcing an optical fiber comprising:
immersing said steel wire in a solution of a chemical conversion coating compound;
thereby depositing said chemical conversion coating on said steel wire; and
drawing said coated steel wire to produce a finished coated steel wire product, the improvement, whereby forming a coated steel wire which is less susceptible to reaction with moisture to evolve hydrogen, and is therefore well suited to use as a reinforcement for an optical fiber, which comprises:
drawing said coated wire an amount sufficient to reduce its area at least about 30%; and
depositing enough chemical conversion coating on said steel wire so that, after said drawing, at least about 13 gms/m^2 of said coating remains on said wire.

5,344,714

LLDPE COMPOSITE FILM FREE OF MELT FRACTURE

Tien-Kuei Su, Belle Mead, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 4, 1992, Ser. No. 971,120
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—516 21 Claims

1. A linear low density polyethylene film composite which is formed by coextrusion and which is free of melt fracture, comprising
A) a layer of linear low density polyethylene (LLDPE) blended with polystyrene which layer comprises at least 70 weight percent of the composite wherein the blend comprises 0.5 to 5 weight percent of polystyrene.
B) a second lamina comprising less than 30 weight percent of the composite and containing a resin selected from the group consisting of high density polyethylene, low density polyethylene and admixtures thereof.

5,344,715

HEAT SHRINKABLE FILM AND MULTILAYERED FILM

Taichi Negi; Sumio Itamura, and Satoshi Hirofuji, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Nov. 24, 1992, Ser. No. 980,761
Claims priority, application Japan, Nov. 29, 1991, 3-342440
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—520 7 Claims

1. A heat shrinkable film or multilayered film comprising at least one layer comprising an ethylene-vinyl alcohol copolymer (EVOH) (A)) having an average ethylene content of 20 to 60 mole % and an areal shrinkage when immersed in hot water at 90° C. for 1 minute of at least 10% and having characteristics satisfying the following equation (i):

$$1 \leqq |\{T(1)-T(2)\}-\{t(1)-t(2)\}| \leqq 20 \quad \text{(i)}$$

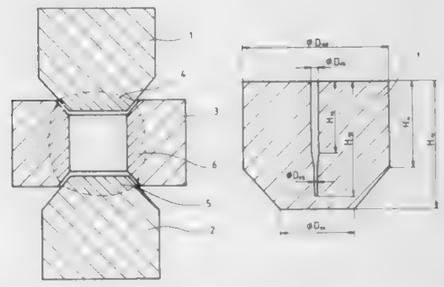
wherein $1 \leqq |t(1)-T(1)| \leqq 20$ in the case of $T(1)=T(2)$ and $t(1)=t(2)$; and
wherein T(1) and T(2) represent peak temperature (°C.) on the highest temperature side and lowest temperature side respectively in differential scanning calorimetry (DSC) measurement of said EVOH (A), and t(1) and t(2) represent peak temperatures on the highest temperature side and lowest temperature side respectively originating from T(1) and T(2), respectively, in DSC measurement of said EVOH (A) after having been treated with an alkaline solvent.

5,344,716

METHOD OF PRODUCING METALLIC SINTER BODIES, AS WELL AS SINTER BODY IN PARTICULAR PRESSING TOOL

Dietrich Borse, Hamburg, Fed. Rep. of Germany, assignor to Firma Ernst Winter & Sohn GmbH & Co., Hamburg, Fed. Rep. of Germany

Filed Aug. 10, 1992, Ser. No. 927,854
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1991, 4126211; Jan. 3, 1992, 4200065
Int. Cl.[5] H01F *3/02*
U.S. Cl. 428—566 14 Claims



1. A method of producing hard alloy sinter bodies which form press tools in form of a plunger and a matrix with regions which are loaded higher and regions which are less loaded during use of the tools, the method comprising the steps of forming a press body; sintering the press body; and providing in the formed press body before said sintering degassing passages located in said less loaded regions and formed as blind openings for degassing the press body during the sintering.

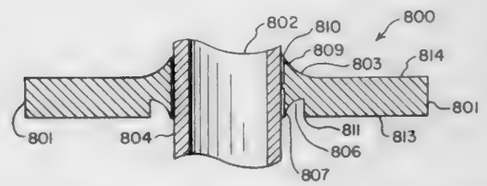
3. A hard alloy sinter body which forms press tools including a plunger and a matrix for a pressing apparatus, the hard alloy sinter body comprising a body part having an outer side and a cross-section region which is less loaded and a cross-section region which is loaded higher during use of the tools, said body part having at least one degassing passage which opens on said outer side in said less loaded cross-section region and is formed as a blind opening for degassing the body part during sintering.

5,344,717

METHOD OF BRAZING AND APPARATUS

Dwight C. Dutton, Jr., Wheat Ridge; Antonio X. Luna, Longmont, and Charles P. Stack, Louisville, all of Colo., assignors to Micro Motion, Incorporated, Boulder, Colo.

Filed Jan. 25, 1993, Ser. No. 9,316
Int. Cl.[5] G01F *1/84;* F16L *55/00;* B23K *1/20, 101/04*
U.S. Cl. 428—598 21 Claims



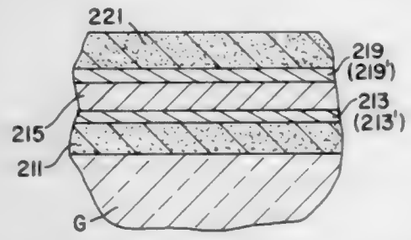
1. A method of bonding a first element to a second element, said method comprising the steps of:
pre-forming fillets wherein a depression is formed in one surface of said first element to define material shaped as a fillet and wherein a protrusion shaped as a fillet is formed opposite said depression defined material on a second surface of said first element;
abutting surfaces of said fillets and a surface of said first element against a surface of said second element; and
bonding said first and second elements together wherein said surfaces of said fillets and said surface of said first element are bonded to said surface of said second element.

5,344,718

HIGH PERFORMANCE, DURABLE, LOW-E GLASS

Klaus W. Hartig, Brighton, and Philip J. Lingle, Lambertville, both of Mich., assignors to Guardian Industries Corp., Northville, Mich.

Filed Apr. 30, 1992, Ser. No. 876,350
Int. Cl.[5] B32B *17/00, 15/04*
U.S. Cl. 428—623 21 Claims



1. A sputter-coated glass article comprising a glass substrate having thereon from the glass outwardly, a layer system comprising:
(a) an undercoat layer of Si_3N_4,
(b) a layer of nickel or nichrome,
(c) a layer of silver,
(d) a layer of nickel or nichrome, and
(e) an overcoat layer of Si_3N_4;
and, when said glass substrate has a thickness of about 2 mm–6 mm, said coated glass has a visible transmittance of at least about 78%, a normal emissivity (E_n) of less than about 0.12 and a hemispherical emissivity (E_h) of less than about 0.16.

5,344,719

WELDING BAND

Horst Bauer, Lengerich, Fed. Rep. of Germany, assignor to Windmoeller & Hoelscher, Lengerich, Fed. Rep. of Germany

Filed Feb. 17, 1993, Ser. No. 18,551
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1992, 4205583
Int. Cl.[5] H05B *3/12;* B29C *65/22;* B32B *15/18, 15/20*
U.S. Cl. 428—675 3 Claims



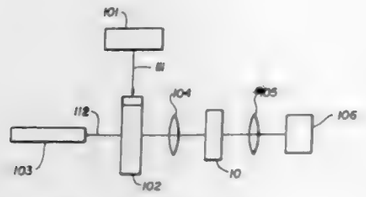
1. A welding band for welding synthetic resin film, said welding band comprising:
a steel band having end parts coated with a copper layer, said copper layer being coated with a metallic protective layer consisting of nickel having a thickness less than a thickness of said copper layer.

5,344,720

BISTABLE MAGNETO-OPTIC SINGLE CRYSTAL FILMS AND METHOD OF PRODUCING SAME UTILIZING CONTROLLED DEFECT INTRODUCTION

Roger F. Belt, and John B. Ings, both of Rockaway Township, Morris County, N.J., assignors to Litton Systems, Inc., Morris Plains, N.J.

Filed Nov. 8, 1991, Ser. No. 789,362
Int. Cl.[5] B32B 9/00
U.S. Cl. 428—692 36 Claims



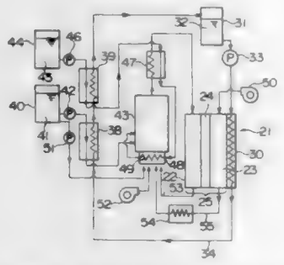
1. A bistable single crystal magneto-optic film of a thickness of about 1 μm to about 4 μm, said film being deposited on a substrate, said film and substrate having a maximum mismatch of about 0.03Å in a compression or about 0.01Å in tension, said film being of preselected coercivity and having induced defects distributed therein, the size of said defects being from about 0.4 μm to about 4.0 μm and the number of said defects per cm^2 being within the range of from about 10 to about 10^6.

5,344,721

SOLID POLYMER ELECTROLYTE FUEL CELL APPARATUS

Atsuo Sonai, Yokohama, and Kenji Murata, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 29, 1993, Ser. No. 38,986
Claims priority, application Japan, Mar. 31, 1992, 4-074813
Int. Cl.[5] H01M 8/18
U.S. Cl. 429—20 17 Claims



1. A solid polymer electrolyte fuel cell apparatus comprising:

a fuel cell stack for producing electricity, said stack including a plurality of unit cells comprising a cathode, an anode and an electrolyte membrane of solid polymer, wherein said electrolyte is held between said anode and cathode; and

cooling means for removing a generated heat during the generation of electricity, said cooling means including means for circulating a coolant in said fuel cell stack;

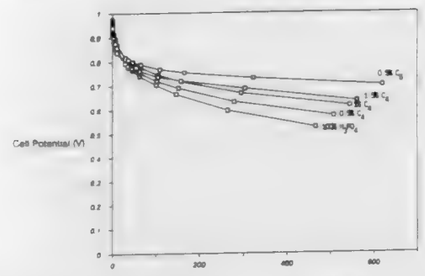
wherein said coolant is a liquid having a boiling point within ±10° C. of a setting temperature for operating said fuel cell stack.

5,344,722

PHOSPHORIC ACID FUEL CELL

Niels J. Bjerrum, Rådhusvej; Xiao Gang, Sankt Hans Gade; Hans A. Hjuler, Dronningvej; Christian Olsen, Plantagevej, and Rolf W. Berg, Frenderupvej, all of Denmark, assignors to Haldor Topsoe A/S, Lyngby, Denmark

Filed Jun. 25, 1992, Ser. No. 903,903
Claims priority, application Denmark, Jun. 28, 1991, 1272/91
Int. Cl.[5] H01M 8/22
U.S. Cl. 429—46 11 Claims



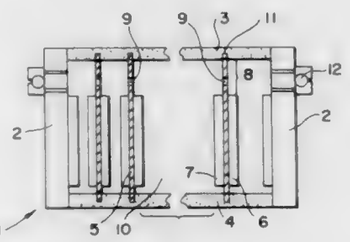
1. A phosphoric acid fuel cell comprising within a housing a gas diffusion cathode utilizing an oxygen-containing oxidant gas, a gas diffusion anode using a hydrogen-containing fuel gas, and an electrolyte comprising phosphoric acid and at least 0.1 percent by weight of an additive selected from the group consisting of salts of nonafluoro-butane-sulphonic acid, salts of perfluoro-hexane-sulphonic acid, perfluorinated trialkyl amines having the general formula $R_1R_2R_3N$ and salts thereof wherein R_1, R_2 and R_3 are independent fluorocarbon groups.

5,344,723

BIPOLAR ELECTRODE FOR BATTERIES

Guy Bronoel, Versailles; Bernard Bugnet, Saint-Genis-Pouilly, and Noelle Tassin, Fontenay-Sous-Bois, all of France, assignors to Sorapec S.A., Fontenay-Sous-Bois, France

Filed Mar. 24, 1993, Ser. No. 36,525
Claims priority, application France, Mar. 26, 1992, 92 03927
Int. Cl.[5] H01M 2/12, 4/70
U.S. Cl. 429—84 27 Claims



15. A battery, comprising:

a plurality of bipolar electrodes, each of said plurality of bipolar electrodes comprising:

a conductive separator comprising a support including at least two portions;

an active material on one of said two portions, and the other of said two portions being free from active material; and

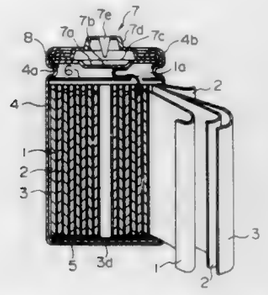
means defining at least one opening in said other of said two portions for permitting ambient gas to pass therethrough and preventing passage of electrolyte between said plurality of bipolar electrodes.

5,344,724

NON-AQUEOUS ELECTROLYTE SECONDARY CELL

Yoshiyuki Ozaki, Neyagawa; Akiyoshi Morita, Takaishi; Junichi Yamaura, Kobe, and Zenichiro Ito, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 6, 1993, Ser. No. 42,794
Claims priority, application Japan, Apr. 10, 1992, 4-090534
Int. Cl.[5] H01M 4/58, 6/14
U.S. Cl. 429—94 9 Claims



1. A non-aqueous electrolyte secondary cell comprising a sheet type positive electrode plate with a lithium-containing metal oxide as a major positive electrode active material, a sheet type negative electrode plate with graphitic particles as a major negative electrode coating agent, a separator and a non-aqueous electrolyte, wherein;

said negative electrode plate is produced by adding to the graphitic particles as a major component a binder to produce a paste, coating the paste on both sides of a metal foil collector, pressing the coated collector to produce a sheet type electrode plate, said coating layer having a porosity of 25% to 40%; and

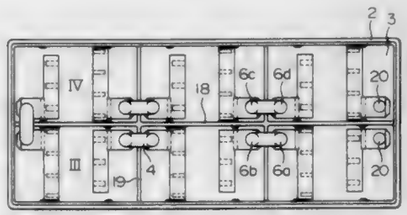
said graphitic particles are produced by heat-treating a pitch in the molten state to produce carbonaceous mesophase particles, extracting and separating the particles as precursor, carbonizing the mesophase particles and then heat-treating the carbonized particles through graphitization at 2500° C. to 2900° C.

5,344,725

SEALED LEAD ACID STORAGE BATTERY

Masayuki Ide; Takashi Nakajima, both of Toyohashi; Yoichi Kikuchi, Tokyo, and Kenji Kobayashi, Toyohashi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 15, 1993, Ser. No. 2,838
Claims priority, application Japan, Jan. 21, 1992, 4-008237
Int. Cl.[5] H01M 6/42, 10/12, 2/02
U.S. Cl. 429—160 4 Claims



1. A sealed lead acid storage battery comprising a monoblock battery container comprising cell chambers arranged in two parallel rows, groups of electrode plates respectively disposed within each of said cell chambers, electrode poles associated with the groups of electrode plates such that electrode poles of different polarity of adjacent ones of the cell chambers are connected by cell connectors which cross over partitions between the adjacent ones of the cell chambers, and a lid for the container, wherein:

(a) said groups of electrode plates in the cell chambers all comprise one shape type of electrode plates provided in such a manner that positive electrode poles and negative electrode poles at upper parts of the groups of electrode plates are arranged at a common side of cell chambers, in each of the rows of cell chambers, near a central partition between both the rows of cell chambers, and output and input terminals at two end cell chambers are arranged at given positions by tabs connected to the positive electrode pole and the negative electrode pole of the groups of electrode plates disposed in said two end cell chambers; and

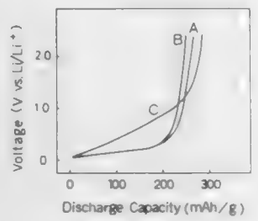
(b) said cell connectors between the cell chambers cooperatively form a U-shaped line near the partition between both the rows of cell chambers.

5,344,726

CARBON ANODE FOR SECONDARY BATTERY

Hideaki Tanaka; Takehito Mitate; Hiroyuki Kitayama, and Kuzuo Yamada, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 898,804, Jun. 12, 1992, abandoned.
This application Jun. 17, 1993, Ser. No. 79,086
Claims priority, application Japan, Jun. 17, 1991, 3-144547
Int. Cl.[5] H01M 4/96
U.S. Cl. 429—209 3 Claims



1. A carbon anode for a secondary battery comprising a core of highly crystalline carbon covered with a layer of amorphous carbon:

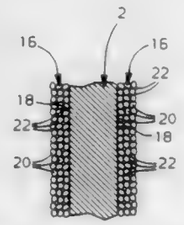
in which the highly crystalline carbon has an interlayer distance in the c-axis direction of from 0.335 to 0.340 nm and a ratio of the peak value at 1360 cm^{-1} to the peak value at 1580 cm^{-1} in argon ion laser Raman spectra is less than 0.4.

5,344,727

BIPOLAR BATTERY ELECTRODE

Clarence A. Meadows, Muncie; James R. Bish, Anderson, and Robert E. Adams, Selma, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 21, 1993, Ser. No. 79,030
Int. Cl.[5] H01M 10/18, 4/56
U.S. Cl. 429—210 8 Claims



1. A pasted bi-polar electrode for a Pb-acid storage battery comprising:

an electrolyte-impervious, lead septum;

a highly porous coating comprising multiple layers of lead particles fused to each other and to at least one face of said septum so as to define a plurality of interconnecting, interstitial pores therebetween, said pores being of sufficient size to receive and retain leady active material paste pressed thereinto;

a first leady active material paste overlaying said coating and impregnating at least a portion of said pores; and

a second leady active material overlaying and adhering to a second face of said septum opposite said one face.

5,344,728

COMPOSITIONALLY AND STRUCTURALLY DISORDERED MULTIPHASE NICKEL HYDROXIDE POSITIVE ELECTRODE FOR ALKALINE RECHARGEABLE ELECTROCHEMICAL CELLS

Stanford R. Ovshinsky, Bloomfield Hills; Michael A. Fetcenko, Rochester Hills; Srinivasan Venkatesan, Southfield, and Arthur Holland, Troy, all of Mich., assignors to Ovonic Battery Company, Inc., Troy, Mich.

Filed Nov. 12, 1992, Ser. No. 975,031

Int. Cl.[5] H01M *4/32, 4/36, 4/48, 4/52, 4/56*

U.S. Cl. 429—223 | **37 Claims**

1. A sealed nickel metal hydride cell comprising a sintered nickel hydroxide electrode lacking cadmium wherein said sealed nickel metal hydride cell has

an energy density ≧560 mAh/cc, and

a cycle life of ≧500 cycles.

5,344,729

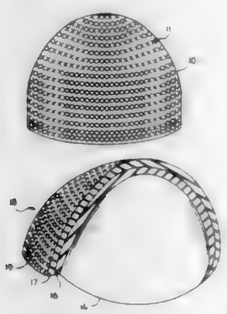
CONFORMAL PHOTOMASK FOR THREE-DIMENSIONAL PRINTED CIRCUIT BOARD TECHNOLOGY

Rickey D. Akins; John Walvoord, and James E. Foreman, all of Orlando, Fla., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Jun. 26, 1992, Ser. No. 904,948

Int. Cl.[5] G03F *9/00*

U.S. Cl. 430—5 | **14 Claims**



1. A method for fabricating a one piece three dimensional reusable conformal photomask for use in forming a predetermined pattern on a substantially nonplanar substrate, comprising:

forming a rigid shell corresponding to the entire shape of the substantially nonplanar substrate;

coating the entire rigid shell with a removable light blocking material;

forming multiple images in the light blocking material by repeated image projection, such that portions of the light blocking material corresponding to the predetermined pattern to be formed on the entire substantially nonplanar substrate are removed through at least one removal process, including the removal processes of ablation and chemical removal; and

applying a light transmissive material to the light blocking material.

5,344,730

METHOD OF RECORDING INFORMATION ON A PHOTOGRAPHIC FILM

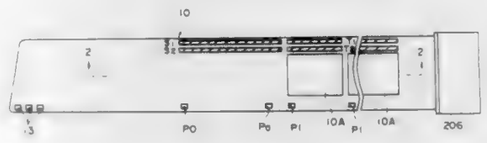
Tatsuji Kitamoto, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 845,055, Mar. 3, 1992, abandoned. This application Jun. 29, 1993, Ser. No. 82,906

Claims priority, application Japan, Mar. 13, 1991, 3-048116

Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—14 | **21 Claims**



1. A photographic film on which an image to be photographed is optically recorded, comprising:

a plurality of image frames; and

a single recording portion provided in association with each one of said image frames for recording image information associated with said image frame, said recording portion including two or more contiguous fields running along a direction in which said photographic film is conveyed so that two or more sections of image information are recorded in said fields, each of said sections of image information consisting of a portion of said image information and provided with at least a corresponding start signal and a corresponding end signal.

5,344,731

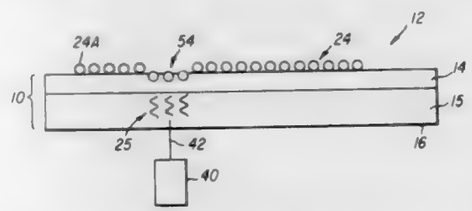
MIGRATION IMAGING SYSTEM

Charles D. Deboer, Rochester; Dennis R. Kamp, Spencerport, and William Mey, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 632,698, Dec. 24, 1990, Pat. No. 5,138,388, which is a continuation-in-part of Ser. No. 621,691, Nov. 30, 1990, abandoned, and Ser. No. 673,509, Nov. 30, 1990, Pat. No. 5,227,265. This application Jul. 23, 1992, Ser. No. 915,683

Int. Cl.[5] G03G *13/048;* **G03C** *5/16*

U.S. Cl. 430—41 | **1 Claim**



1. A method of migration imaging, comprising the steps of:

depositing a layer of thermoplastic particles on a supporting section of an imaging member,

applying heat-inducing energy to the thermoplastic particles to cause them to coalesce and form a thermoplastic imaging surface layer on the supporting section;

cooling the thermoplastic imaging surface layer such that it is impermeable to marking particles;

depositing marking particles on the imaging surface layer;

establishing an electrostatic attraction between the marking particles and the supporting section;

imagewise exposing the imaging member to heat-inducing energy to imagewise transform the imaging surface layer to a state permeable by the marking particles, in the presence of the electrostatic attraction between the marking particles and the supporting section to cause those marking particles contacting the exposed areas of the imaging member to migrate into the imaging surface layer in an imagewise pattern, and

removing the marking particles that did not migrate into the imaging surface layer.

5,344,732

MULTI-COLOR ELECTROPHOTOGRAPHIC IMAGE FORMATION METHOD

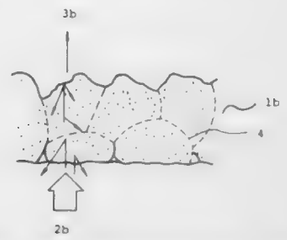
Shunichi Chiba, Kawasaki; Nobuhiro Nakayama, Susono; Yasuo Asahina, Numazu; Yosihisa Okamoto, Fuji, and Kayo Makita, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 672,484, Mar. 20, 1991, abandoned. This application Jun. 30, 1993, Ser. No. 56,826

Claims priority, application Japan, Mar. 22, 1990, 2-69665

Int. Cl.[5] G03G *13/16*

U.S. Cl. 430—42 | **12 Claims**



1. A multi-color electrophotographic image formation method of a digital type for forming multi-color images comprising the steps of developing latent electrostatic images corresponding to yellow, magenta, cyan and black images separated from an original image with a yellow developer, a magenta developer, a cyan developer and a black developer, respectively to form visible yellow, magenta, cyan and black images, and fixing said visible yellow, magenta, cyan and black images to an image receiving member, with the reflection image density (ID_{ref}) and the transmission image density (ID_{tr}) of said fixed black images formed by said black developer being in the relationship of $ID_{ref} \geqq 1.8 \times ID_{tr}$ when the deposition of said black developer is 1.0 mg/cm^2 or less.

5,344,733

ELECTROPHOTOGRAPHIC RECEPTOR

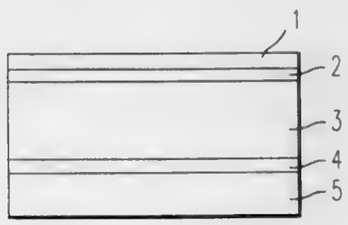
Shinichi Suzuki; Yasuyuki Shigematsu; Takashi Kojima; Hiroe Kizaki, and akira Itsubo, all of Ami, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1992, Ser. No. 971,480

Claims priority, application Japan, Nov. 7, 1991, 3-291321; Apr. 15, 1992, 4-095465

Int. Cl.[5] G03G *5/147, 5/047*

U.S. Cl. 430—58 | **7 Claims**



1. An electrophotographic receptor having an overcoat layer on the surface of a photosensitive layer containing a charge generating substance, said overcoat layer having a thickness of 0.01–10 μm, comprising a fluororesin cured by using a melamine compound or an isocyanate compound as a cross-linking agent, a charge generating substance, and a charge transport substance selected from nitrogen-containing compounds ring in the molecule thereof.

5,344,734

ELECTROPHOTOGRAPHIC RECORDING MATERIAL

Marcel J. Monbaliu, Mortsel; David R. Terrell, Lint, and Stefaan K. De Meutter, Antwerpen, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

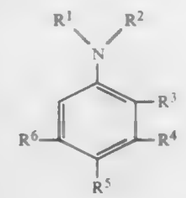
Filed Aug. 26, 1992, Ser. No. 935,293

Claims priority, application European Pat. Off., Sep. 24, 1991, 91202472.6

Int. Cl.[5] G03G *5/047, 5/06*

U.S. Cl. 430—59 | **9 Claims**

1. An electrophotographic recording material which comprises an electrically conductive support having thereon a photoconductive layer, containing at least one aromatic amino compound having positive charge transport capacity (p-CTM compound), characterized in that said compound corresponds to the following general formula (A):



wherein:

each of R^1 and R^2 independently represents an unsubstituted or substituted aryl group, or a heterocyclic group;

each of R^3 and R^5 independently represents hydrogen, an alkyl group, an aralkyl group, halogen or an aryl group;

each of R^4 and R^6 independently represents an aryl or a heterocyclic group including said groups in substituted from.

5,344,735

BISAZO ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR

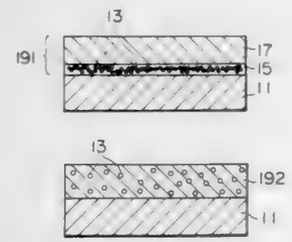
Masaomi Sasaki, Susono; Tomoyuki Shimada, and Mitsuru Hashimoto, both of Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 680,237, Apr. 3, 1991, which is a continuation of Ser. No. 341,111, Apr. 20, 1989, abandoned. This application Aug. 5, 1992, Ser. No. 924,581

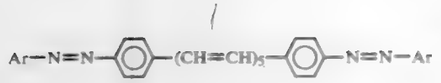
Claims priority, application Japan, Apr. 20, 1988, 63-97933; May 16, 1988, 63-120145

Int. Cl.[5] G03G *5/09, 5/06*

U.S. Cl. 430—83 | **48 Claims**



1. An electrophotographic photoconductor comprising an electroconductive support and a photoconductive layer formed thereon comprising a bisazo pigment having the formula (I) serving as a charge generating material:



(I)

wherein Ar is a residual group of a coupler represented by ArH selected from the group consisting of: an aromatic hydrocarbon compound having a hydroxyl group, a heterocyclic compound having a hydroxyl group, an aromatic hydrocarbon compound having an amino group, a heterocyclic compound having an amino group, an aromatic hydrocarbon compound having a hydroxyl group and an amino group, a heterocyclic compound having a hydroxyl group and an amino group, an aliphatic compound having an enolic ketone group, and an aromatic hydrocarbon compound having an enolic ketone group; and

a charge transporting material.

5,344,736

DISAZO ELECTROPHOTOGRAPHIC PHOTORECEPTOR

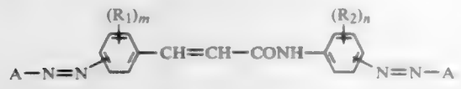
Nakaji Komiyama, Kawaguchi; Hisao Kouno, Funabashi; Kazuhiro Higashide, Kawaguchi; Osamu Suda, Ohmiya, and Masaru Hasegawa, Tokyo, all of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1993, Ser. No. 25,170

Int. Cl.[5] G03G *5/06, 5/09*

U.S. Cl. 430—83 **8 Claims**

1. In an electrophotographic photoreceptor having a photosensitive layer on a conductive substrate, said photosensitive layer comprising a carrier producing substance and a carrier transporting substance, the improvement wherein said carrier producing substance is composed of an azo compound represented by the following general formula (1):



(1)

wherein A means a coupler residuum having phenolic OH radicals, R_1 and R_2 designate, respectively, a radical of an integer of, both, m=0~4, n=0~4, selected from the group consisting of hydrogen, halogen atoms, alkyl group, alkoxy group, and di-substituted amino group.

5,344,737

POLYWAX TONER COMPOSITIONS AND PROCESSES

John S. Berkes, Webster; Bernard Grushkin, Pittsford, and Thomas W. Smith, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 25, 1993, Ser. No. 22,217

Int. Cl.[5] G03G *9/08*

U.S. Cl. 430—110 **24 Claims**

1. A toner composition of resin, pigment, wax, and a component of the formula



wherein n is a number of from about 30 to about 50 and m is a number of from about 3 to about 16.

5,344,738

PROCESS OF MAKING TONER COMPOSITIONS

Grazyna E. Kmiecik-Lawrynowicz, Burlington; Raj D. Patel, Oakville, and Michael A. Hopper, Toronto, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 25, 1993, Ser. No. 83,146

Int. Cl.[5] G03G *9/087*

U.S. Cl. 430—137 **37 Claims**

1. A process for the preparation of toner compositions with a volume median particle size of from about 1 to about 25 microns, which process comprises:

(i) preparing by emulsion polymerization an anionic charged polymeric latex of submicron particle size, and comprised of resin particles and anionic surfactant;

(ii) preparing a dispersion in water, which dispersion is comprised of pigment, an effective amount of cationic flocculant surfactant, and optionally a charge control agent;

(iii) shearing the dispersion (ii) with said polymeric latex thereby causing a flocculation or heterocoagulation of pigment, resin and charge control agent to form a high viscosity gel in which particles of pigment, resin and optional charge control agent are uniformly dispersed;

(iv) stirring the above gel for an effective period of time to form electrostatically bound relatively stable toner size aggregates with narrow particle size distribution; and

(v) heating the electrostatically bound relative stable toner size aggregates at a temperature above the resin glass transition temperature (Tg) thereby providing said toner compositions comprised of resin, pigment and optional charge control agent.

5,344,739

PHOTOSENSITIVE DIAZO RESIN COMPOSITION FOR LITHOGRAPHIC PRINTING UTILIZING A XANTHENE DYE HAVING AN ANION GROUP AS THE COUNTER ION OF THE DIAZONIUM GROUP

Kazunori Kanda, Yao; Osamu Nanba, Takarazuka, and Edward Lam, Hirakata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Nov. 2, 1992, Ser. No. 969,962

Claims priority, application Japan, Nov. 1, 1992, 3-287493

Int. Cl.[5] G03F *7/021*

U.S. Cl. 430—175 **5 Claims**

1. A photosensitive diazo resin-containing photosensitive resin composition for lithographic printing comprising a xanthene dye having an anion group in a molecule as a counter ion of a diazonium group.

5,344,740

POSITIVE-TYPE PHOTOSENSITIVE ELECTRODEPOSITION COATING COMPOSITION CONTAINING QUINONEDIAZIDE RESIN HAVING AN ANION-FORMING GROUP AND A NITROGEN-CONTAINING COMPOUND AND PROCESS FOR PRODUCING CIRCUIT PLATE USING SAME

Naozumi Iwasawa; Junichi Higashi, and Shinsuke Onishi, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Continuation of Ser. No. 552,682, Jul. 11, 1990, abandoned. This application May 4, 1992, Ser. No. 879,101

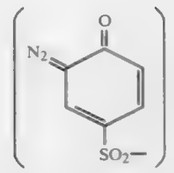
Claims priority, application Japan, Jul. 12, 1989, 1-178042

Int. Cl.[5] G03F *7/023, 7/30*

U.S. Cl. 430—191 **7 Claims**

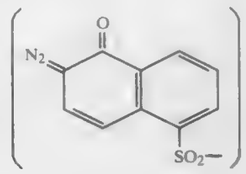
1. A positive-type photosensitive electrodeposition coating composition comprising

(A) a resin component containing in the same molecule at least one photosensitive group and an anion-forming group, the photosensitive group being selected from the group consisting of an ortho-benzoquinonediazidesulfone unit represented by the general formula



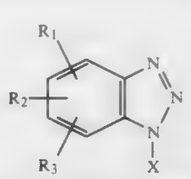
and

an ortho-naphthoquinonediazidesulfone unit represented by the general formula



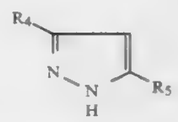
the amount of the photosensitive group in the resin component being 5 to 60% by weight, the content of the anion-forming group being 0.2 to 2.5 mols per Kg of the solid content of the resin, and the resin having a number-average molecular weight of 3,000 to 100,000, and

(B) at least one of the nitrogen-containing compounds represented by the following general formulae (1) to (6):



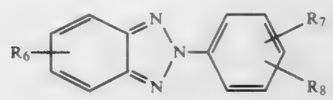
(1)

hydroxyl group, R_1, R_2 and R_3 independently represent a hydrogen atom, a chlorine atom or an alkyl group having 1 to 6 carbon atoms,



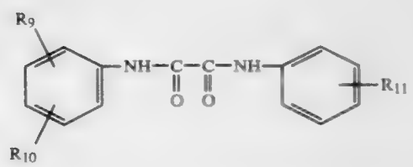
(2)

wherein R_4 and R_5 independently represent a hydrogen atom, or an alkyl group having 1 to 6 carbon atoms,



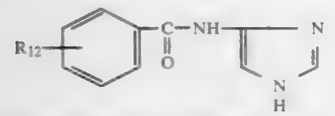
(3)

wherein R_6, R_7 and R_8 independently represent a hydrogen atom, a hydroxyl group or an alkyl group having 1 to 12 carbon atoms,



(4)

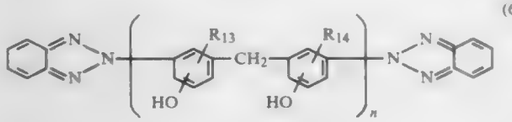
wherein R_9, R_{10} and R_{11} independently represent a hydrogen atom, a hydroxyl group, an alkyl group having 1 to 12 carbon atoms or



(5)

an alkoxy group having 1 to 12 carbon atoms,

wherein R_{12} represents a hydrogen atom, a hydroxyl group, an alkyl group having 1 to 12 carbon atoms or an alkoxy group having 1 to 12 carbon atoms,



(6)

wherein R_{13} and R_{14} independently represent a hydrogen atom or an alkyl group having 1 to 12 carbon atoms and n is an integer of 1 to 3.

7. A process for producing a circuit plate, which comprises

(i) a step of coating the electrodeposition coating composition of claim **1** on a surface of a circuit substrate having an electrically conductive coating to form a positive-type photosensitive coating,

(ii) a step of exposing the positive-type photosensitive coating to light via a pattern mask,

(iii) a step of forming an etching pattern by removing the photosensitive coating in the exposed portion,

(iv) a step of removing the exposed electrically conductive coating by etching, and

(v) removing the photosensitive coating on the circuit pattern.

5,344,741

METHOD FOR PHOTOGRAPHIC DEVELOPMENT

Tamotu Iwata, and Seiichi Sumi, both of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Continuation of Ser. No. 811,621, Dec. 23, 1991, abandoned. This application Nov. 29, 1993, Ser. No. 158,493

Claims priority, application Japan, Dec. 26, 1990, 2-414780

Int. Cl.[5] G03C *5/315*

U.S. Cl. 430—265 **6 Claims**

1. A method for forming a high-contrast negative image which comprises developing an exposed negative type silver halide photographic light-sensitive material with a developer in the presence of a hydrazine derivative wherein said developer contains at least (1) 0.1–0.8 mol/l a developing agent, (2) 20–60 g/l of a hydroquinonemonosulfonate, (3) 0.3 mol/l or more of a sulfite and (4) an amino compound which in the presence of said hydrazine derivative, accelerates enhancement of contrast said amino compound being present in an amount of 0.005–1.0 mol/l and has a pH of 10.5–12.3.

5,344,742

BENZYL-SUBSTITUTED PHOTOACTIVE COMPOUNDS AND PHOTORESIST COMPOSITIONS COMPRISING SAME

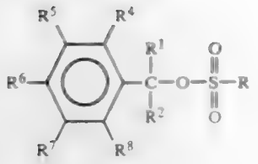
Roger F. Sinta, Woburn; George Barclay, Allston, and Martha M. Rajaratnam, Dedham, all of Mass., assignors to Shipley Company Inc., Marlborough, Mass.

Filed Apr. 21, 1993, Ser. No. 50,920

Int. Cl.[5] G03C *1/492, 1/494, 1/76*

U.S. Cl. 430—270 **28 Claims**

1. A photoresist comprising a resin binder and at least one photoactive compound of the following formula:



wherein R is selected from the group consisting of substituted and unsubstituted alkyl, substituted and unsubstituted alkoxy, substituted and unsubstituted aralkyl, and substituted and unsubstituted aryl;

R^1 and R^2 are each independently selected from the group consisting of hydrogen, halo, cyano, substituted and unsubstituted alkyl, substituted and unsubstituted alkoxy, substituted and unsubstituted alkenyl, substituted and unsubstituted alkynyl, substituted and unsubstituted aralkyl and substituted and unsubstituted aryl;

each R^4, R^5, R^6, R^7 and R^8 is independently selected from the group consisting of hydrogen, halo, hydroxy, cyano, alkanoyl, carboxyl, sulfonyl, substituted and unsubstituted alkyl, substituted and unsubstituted alkenyl, substituted and unsubstituted alkynyl, substituted and unsubstituted aralkyl and substituted and unsubstituted aryl, wherein at least one of R^4, R^5, R^6, R^7 and R^8 is other than hydrogen.

5,344,743

PHOTOSENSITIVE ELASTOMER POLYMER COMPOSITIONS FOR FLEXOGRAPHIC PRINTING PLATES

Arthur L. Berrier, and Rustom S. Kanga, both of Ellicott City, Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 729,976, Jul. 15, 1991, Pat. No. 5,223,375. This application Mar. 1, 1993, Ser. No. 24,565

Int. Cl.[5] G03F *7/032*

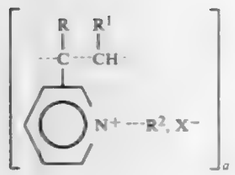
U.S. Cl. 430—325 **8 Claims**

1. Process comprising exposing a flexographic printing plate, said plate comprising a layer of a photosensitive composition, with UV radiation through a negative, thereby providing exposed and nonexposed areas of photopolymer composition on the plate, and developing the plate by removing the non-exposed areas by washing the plate with a wash solvent for the non-exposed photopolymer; characterized in that the photopolymer composition comprises a triblock polymer of the structure ABA or A'BA', where

A is



A' is



B is

X is a leaving group;

R, R^1, and R^3 are independently H or 1–8 carbon alkyl;

R^2 is H, 1–8 carbon alkyl, or aralkyl;

a has a value in the range of about 50–500;

b has a value in the range of about 500–10,000.

5,344,744

PHOTOSENSITIVE RESIN COMPOSITION

Koichi Ueda, Neyagawa; Kazunori Kanda, Yao, and Hidefumi Kusuda, Takatsuki, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Mar. 9, 1992, Ser. No. 848,360

Claims priority, application Japan, Apr. 24, 1991, 3-094125

Int. Cl.[5] G03C *1/73*

U.S. Cl. 430—287 **7 Claims**

1. A photosensitive resin composition comprising:

(A) 25 to 80% by weight of crosslinked polymer particles having a particle size of 0.01 to 5 micron, prepared from an aliphatic conjugated diene monomer, a monofunctional monomer and a polyfunctional monomer,

(B) 10 to 70% by weight of a hydrophobic elastomer having a molecular weight of 5,000 to 1,000,000 and at least one glass transition temperature of 5° C. or less, prepared from at least 30 mol % of a conjugated diene monomer and the balance of other monomers,

(C) 1 to 25% by weight of a hydrophilic polymer having a molecular weight of 1,000 to 1,000,000, prepared by introducing hydrophilic groups into a backbone polymer selected from the group consisting of (1) a polymer obtained from a conjugated diene, (2) a copolymer of a conjugated diene and a monoolefinic unsaturated compound, and (3) a vinyl polymer other than the polymer (1) and the copolymer (2),

(D) 1 to 30% by weight of a basic nitrogen-containing compound,

(E) 1 to 60% by weight of a photopolymerizable ethylenically unsaturated monomer, and

(F) 0.01 to 10% by weight of a photopolymerization initiator; % by weight being based on a total amount of the resin composition.

5,344,745

METHOD FOR THE MANUFACTURE OF SURFACE ACOUSTIC WAVE TRANSDUCER

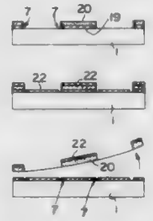
Kazuhiko Yamanouchi, 13, Matsugaoka 37-chome, Sendai-shi, Miyagi 982, Japan

Division of Ser. No. 853,882, Mar. 18, 1992, abandoned, which is a continuation of Ser. No. 476,444, May 31, 1990, abandoned. This application Feb. 11, 1993, Ser. No. 16,716

Claims priority, application Japan, Oct. 16, 1988, 63-260210; Oct. 11, 1989, 1-264717

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—315 **3 Claims**



1. A method for manufacturing a surface acoustic wave transducer in which inter-digital transducer electrode segments themselves, or such segments and a floating electrode or meandering line disposed therebetween, or reflecting strips are closely spaced apart, comprising the steps of:

(a) depositing a metallic film over a required area of the surface of the piezoelectric substrate;

(b) depositing photoresist all over said metallic film;

(c) exposing said photoresist to light at required intervals and developing said photoresist to remove its exposed portions;

(d) etching away said metallic film exposed between the remaining portions of said photoresist;

(e) rendering only marginal edges of the metallic film underlying said remaining photoresist dielectric by oxidation or anodization to prevent short circuiting therebetween;

(f) depositing a metallic film onto the surface of said remaining photoresist and the exposed surface of said piezoelectric substrate;

(g) removing said remaining photoresist and said metallic film deposited thereon; and

(h) setting the width L and the spacing S of each of adjacent interdigital transducer electrodes to satisfy the relationship $S << L$.

5,344,746

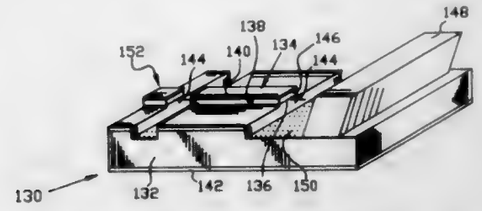
INTEGRATED LIGHT DEFLECTOR AND METHOD OF FABRICATION THEREFOR

Peter Vettiger, and Otto Voegeli, both of Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 820,471, Jan. 14, 1992, abandoned. This application May 14, 1993, Ser. No. 62,128

Int. Cl.[5] G03C *5/00, 5/04*

U.S. Cl. 430—321 **8 Claims**



1. A method for fabricating a light deflector in a large scale laser integration device, the method comprising the steps of:

applying a coating of photo resist material on a substrate;

creating a masked portion and adjacently unmasked portions of said photo resist coating by placing a mask at a selected position on said coating, said mask having a masking edge defining a selected position of a light deflector to be created;

exposing the unmasked portions of said photo resist coating to a collimated light beam at a selected angle of incidence corresponding to a selected canting angle of the light deflector to be created;

removing said mask and developing the photo resist material to produce a cavity corresponding to the masked portion of said photo resist coating and extending from the surface of said photo resist coating to said substrate; and

casting the light deflector to be created by filling said cavity with a deflector material.

5,344,747

PHOTOPOLYMERIZABLE COMPOSITIONS

Shigeru Ohtawa, Yamato; Junichi Onodera, Samukawa, and Kouji Harada, Yamato, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Japan

Division of Ser. No. 622,320, Dec. 6, 1990, Pat. No. 5,147,759, which is a continuation of Ser. No. 332,917, Apr. 4, 1989, abandoned. This application Apr. 20, 1992, Ser. No. 871,142

Claims priority, application Japan, Apr. 15, 1988, 63-91262

Int. Cl.[5] G03F *7/32*

U.S. Cl. 430—325 **7 Claims**

1. A method of forming a pattern, comprising

(a) dissolving or dispersing in an organic solvent a photopolymerizable composition consisting essentially of (i) a linear acrylic copolymer having a weight average molecular weight of 30,000 to 200,000 and a glass transition point of 20°–80° C., (ii) an ethylenically-unsaturated component comprising 10–50 wt. %, based on the total amount of the ethylenically-unsaturated component, of an acrylic ester of the formula $CH_2=C(X)\text{-}COO\text{-}Y\text{-}OCO\text{-}Z\text{-}COOH$, wherein X is selected from the group of hydrogen and methyl, Y is (C_1–C_3)alkylene, and Z is selected from the group consisting of a single bond, (C_1–C_8) alkylene, phenylene, and cyclohexylene, and (iii) a photoinitiator, the weight ratio of the ethylenically-unsaturated component to the acrylic copolymer being 0.1:1 to 1:1;

(b) coating a substrate directly with the resulting solution;

(c) drying the coated substrate to form a resist film;

(d) exposing the dried resist film imagewise to radiation; and

(e) developing the resist film with an aqueous alkaline solution.

5,344,748

MICROPLASTIC STRUCTURE AND METHOD OF MANUFACTURE

Wayne E. Feely, Rydal, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 83,931, Aug. 5, 1987, abandoned, which is a continuation of Ser. No. 818,571, Jan. 13, 1986, abandoned. This application May 16, 1990, Ser. No. 524,683

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—330 **10 Claims**

1. A process of forming a thermally stable microplastic structure from a photosensitive coating on a substrate surface, said microplastic structure having different selected thicknesses along its width and length, which process allows the selective manipulation of the final thickness of the microplastic structure at any point to any of at least two thicknesses in stepped transitions which comprises:

a) depositing a photosensitive coating composition on a surface, said photosensitive coating composition comprising acid-hardening resin consisting essentially of from about 40 to about 99.9 weight percent of a crosslinkable polymer and from about 0.1 to about 60 weight percent of a photoacid generator, wherein said photoacid generator when exposed to an effective amount of actinic radiation produces an amount of acid effective to make said crosslinkable polymer crosslink upon heating to a temperature of from about 70 to about 120 degrees C.; then

b) selectively exposing the layer of photosensitive coating to a controlled transmission of a sufficient amount of actinic radiation to reach different levels in the photosensitive coating deposited on the substrate to selectively manipulate the final thickness of the microplastic structure at different points on the surface of the resist to form a pattern composed of dark and light regions, and at least one region of an intensity between light and dark;

c) controlling the duration of said exposing step so that the areas of the image that align with the light regions receive an amount of radiation effective to generate an effective amount of acid from the surface of the resist to a selected maximum depth in the resist, the areas of the image that align with the dark areas receive an effective amount of

radiation to generate an effective amount of acid from the surface of the resist to a selected minimum depth in the resist and the areas of the image that receive attenuated amounts of radiation receive an effective amount of radiation to generate an effective amount of acid from the surface of the resist to a depth between the selected maximum and minimum depths;

d) heating the resist to a temperature of from about 70 to about 120 degrees C. to crosslink the polymer in those regions that contain an effective amount of acid; and

e) contacting the coating with aqueous solution to remove the uncrosslinked portions of the coating and thereby form the thermally stable microplastic structure on the substrate surface.

5,344,749

FILTER DYES FOR RAPID PROCESSING APPLICATIONS

Eric Kiekens, Kessel-Lo, and Paul Callant, Edegem, both of Belgium, assignors to AGFA-Gevaert, N.R., Mortsel, Belgium

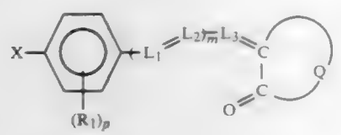
Filed Sep. 10, 1993, Ser. No. 118,738

Claims priority, application European Pat. Off., Sep. 11, 1992, 92202767.7

Int. Cl.[5] G03C *5/26*

U.S. Cl. 430—428 **10 Claims**

1. A photographic material comprising a support and at least one light-sensitive silver halide emulsion layer characterized in that it comprises in a hydrophilic colloid layer at least one filter dye corresponding to the following general formula (I):



(I)

wherein

n represents 0 or 1;

p represents 0, 1 or 2;

Q represents the atoms necessary to form an acidic nucleus

R_1 represents hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted aryl, $COOR_2$,$NHCOR_3$ or $NHSO_2R_4$ with R_2 representing hydrogen or substituted or unsubstituted alkyl, R_3 and R_4 representing substituted or unsubstituted alkyl, or substituted or unsubstituted aryl,

X represents OR_5, SR_5 or NR_6R_7, wherein

R_5 represents H, substituted or unsubstituted alkyl, substituted or unsubstituted aryl and

each of R_6 and R_7 which may be the same or different represents hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted aryl or the necessary atoms, to form a ring together with the N-atom to which they are attached and the C-atom of the phenylene ring in ortho position with respect to said N-atom; $R_6$and R_7 together represent the necessary atoms to form a ring with the N-atom to which they are attached; L_1, L_2, L_3 represent substituted or unsubstituted methine with the proviso that at least one of L_1, L_2 or L_3 must be substituted by $—CONR_8R_9$;

R_8 and R_9 which may be the same or different represent hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted aryl, NH_2, NHR_{10}, $NR_{11}R_{12}$ with R_{10}, R_{11} and R_{12} representing a substituted or unsubstituted alkyl, or a substituted or unsubstituted aryl and wherein at least one of R_1 to R_{12} contains an ionizable group.

5,344,750

COLOR DEVELOPMENT PROCESSING METHOD OF SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL USING A COLOR DEVELOPER WHERE THE COLOR DEVELOPING AGENT CONCENTRATION AND PROCESSING TEMPERATURE ARE A FUNCTION OF BROMIDE ION CONCENTRATION

Hiroshi Fujimoto, and Masato Taniguchi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

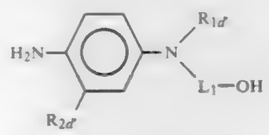
Filed May 11, 1993, Ser. No. 59,262

Claims priority, application Japan, May 12, 1992, 4-145063; May 18, 1992, 4-124842

Int. Cl.[5] G03C *5/00, 5/18, 5/26*

U.S. Cl. 430—434 **7 Claims**

1. A color development process for processing an imagewise exposed silver halide color photographic material comprising a support having thereon at least one light-sensitive silver halide emulsion layer comprising a color coupler and a silver iodobromide emulsion containing silver iodide in an amount of from 2 to 20 mol %, comprising the step of processing the color photographic material in a color developing solution containing a color developing agent and bromide ion for 40 seconds to 90 seconds, wherein the color developing agent is represented by formula (D'):



(D')

where R_{1d}, R_{2d}, each represents an alkyl group having 1 to 4 carbon atoms; and L_1 represents a straight-chain or branched alkylene group having 3 or 4 carbon atoms;

the concentration $\{Br^-\}$ of bromide ion in the color developing solution is from 30 to 60 mmol/l;

the relationship between the concentration $\{R\}$ of the color developing agent in the color developing solution and the concentration $\{Br^-\}$ of bromide ion in the color developing solution and the relationship between the development processing temperature Tem and the concentration $\{Br^-\}$ of bromide ion are maintained to satisfy a Rule defined by the following equations:

(Rule)

$$\{R\}=((0.63\times\{Br^-\})+(14))\pm 16 \text{ (mmol/l)}$$

$$Tem=((0.19\times\{Br^-\})+(39))\pm 5 \text{ (°C.)}$$

where $\{R\}$ is the concentration of color developing agent in units of mmol/l;

$\{Br^-\}$ is the concentration of bromide ion in units of mmol/l; and

Tem is the development processing temperature in °C.

5,344,751

ANTISTATIC COATINGS

Robert L. Carlson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 28, 1993, Ser. No. 69,924

The portion of the term of this patent subsequent to May 28, 2010, has been disclaimed.

Int. Cl.[5] G03C *1/85*

U.S. Cl. 430—527 **19 Claims**

1. A method for providing an antistatic protection layer onto a substrate comprising:

a) preparing a coating composition in an aqueous medium of a colloidal silica, alkali metal metasilicate, and a coupling agent for said colloidal silica, said coating composition containing a colloidal silica to alkali metal metasilicate ration of 0.5/1 to 8.5/1 by weight;

b) applying said composition to said substrate; and

c) drying said composition to form an antistatic protection layer having a thickness of from 25 to 1000 nm.

5,344,752

PLASMA-BASED PLATELET CONCENTRATE PREPARATIONS

Scott Murphy, Ardmore, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Continuation-in-part of Ser. No. 784,695, Oct. 30, 1991, Pat. No. 5,234,808. This application Apr. 7, 1993, Ser. No. 43,574

Int. Cl.[5] A01N *1/02*

U.S. Cl. 435—2 **20 Claims**

1. A human blood, plasma-based platelet concentrate preparation for the storage of platelets consisting essentially of:

(a) platelets;

(b) plasma and anticoagulant, wherein said plasma and anticoagulant are present in an amount of at least 90 percent by weight of the concentrate preparation; and

(b) acetate, wherein said acetate is present in an amount of from about 5 to about 20 mM.

5,344,753

DRY ANALYTICAL ELEMENT AND METHOD FOR THE DETECTION OF AN AMINOPEPTIDASE OR TRANSPEPTIDASE

John C. Mauck, Rochester; Harold C. Warren, III, Rush, and John W. Harder, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 1, 1992, Ser. No. 891,150

Int. Cl.[5] C12Q *1/00, 1/37;* **G01N** *21/00*

U.S. Cl. 435—4 **19 Claims**

1. An analytical element for the determination of an aminopeptidase or transpeptidase comprising, in fluid contact, a plurality of zones,

a first zone being a porous spreading zone, and

a second zone containing an oxidizing compound and a non-diffusible color-forming coupler,

said element containing in a zone other than said second zone, an aromatic substrate which upon reaction with an aminopeptidase or transpeptidase provides a reactant having a primary amino group on a phenyl ring and a hydroxy, amino or substituted amino group in the ortho or para position to said primary amino group, and

said element further containing in one or more of the zones, a buffer which is present in an amount effective to provide a pH of from about 6.5 to about 11 during an assay of a biological fluid for an aminopeptidase or transpeptidase,

said non-diffusible color-forming coupler having the properties of:

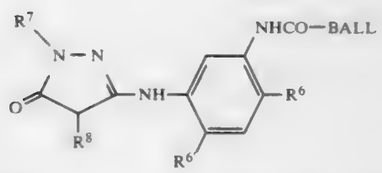
a) being capable of undergoing electrophilic substitution,

b) comprising a ballasting group, BALL, which has a molecular weight of at least about 150,

c) solubility in organic solvents having a molecular weight of at least about 150 and a boiling point of at least about 150° C., and

d) when coupled with the oxidized form of said reactant provided by said aromatic substrate, said coupler will provide a dye having an absorbance in the range of from about 400 to about 800 nm,

and said non-diffusible color-forming coupler having the structure:



(II)

wherein R^6 and $R^{6'}$ are independently hydrogen, halo, $—CONR^9R^{10}$, $—NR^9COR^{10}$, $—SO_2NR^9R^{10}$, alkyl or alkoxy,

R^7 is phenyl or phenyl substituted with halo, alkyl or alkoxy,

R^8 is an organomercapto,

R^9 is hydrogen, alkyl, phenyl or phenyl substituted with halo or alkyl,

R^{10} is hydrogen or BALL, and

BALL is said ballasting group having 8 to 32 carbon atoms, said oxidizing compound in said second zone being a compound which oxidizes said primary amino group of said reactant to render the oxidized form of said reactant suitable for reaction with said color-forming coupler to form a dye.

5,344,754

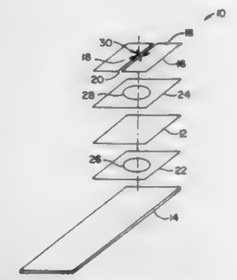
ASSAY TIMED BY ELECTRICAL RESISTANCE CHANGE AND TEST STRIP

Stephen E. Zweig, Los Gatos, Calif., assignor to Avocet Medical, Inc., Los Gatos, Calif.

Filed Jan. 13, 1993, Ser. No. 3,771

Int. Cl.[5] C12Q *1/00;* **G01N** *35/00, 21/00*

U.S. Cl. 435—4 **31 Claims**



1. An assay for determining an analyte in a liquid sample, said assay comprising:

applying a volume of the sample to a target location on a bibulous matrix, wherein the matrix comprises one or more dried reagents which in the presence of the analyte initiate time-dependent production of an optically detectable signal within the matrix;

measuring a change in electrical resistance across the target location which results from the application of liquid sample;

initiating a timing cycle when a lowering of electrical resistance is first measured; and

measuring the production of said optically detectable signal within the matrix at one or more times during the timing cycle.

5,344,755

METHOD FOR DETECTING IMMUNE SYSTEM DYSFUNCTION IN ASYMPTOMATIC, HIV-SCROPOSITIVE INDIVIDUALS

Gene M. Shearer, Bethesda; Ronald E. Gress, Gaithersburg; Mario Clerici, Rockville; Philip J. Lucas, Silver Spring, and Charles S. Via, Ellicott City, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 341,360, Apr. 21, 1990, abandoned. This application Jun. 8, 1990, Ser. No. 535,407

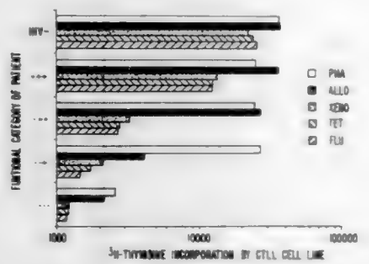
Int. Cl.[5] G01N *33/569*

U.S. Cl. 435—5 **13 Claims**

1. A method for measuring different stages of immune system dysfunction in asymptomatic, HIV-seropositive individuals comprising:

collecting separated human peripheral blood leukocytes

from an individual whose immune system function needs to be measured;
placing a portion of said peripheral blood leukocytes in each of three containers;
exposing the peripheral blood leukocytes in the first container to a first stimulant comprising a recall antigen or a mouse xenogeneic antigen;
exposing the peripheral blood leukocytes in the second container to a second stimulant comprising an alloantigen;
exposing the peripheral blood leukocytes in the third container to a third stimulant comprising a mitogen;
measuring the production of IL-2 by T helper cells in response to each of said three stimulants;
measuring the production of IL-2 by unstimulated peripheral blood leukocytes;
comparing IL-2 production for each of said three stimulants



by the T helper cells of the individual whose immune system function needs to be determined to IL-2 production by said unstimulated peripheral blood leukocytes wherein a failure to generate a statistically greater amount of IL-2 is indicative of a failure to respond to that stimulant;
a failure to respond to recall antigens or mouse xenogeneic antigen but responding to alloantigen and mitogen stimulants demonstrating a first level of immune dysfunction of least severity;
a failure to respond to recall antigens or mouse xenogeneic antigen and alloantigens but responding to mitogen stimulant demonstrating a second level of immune dysfunction of intermediate severity;
a failure to respond to recall antigens or mouse xenogeneic antigen, alloantigens, and mitogens demonstrating a third level of immune dysfunction of the greatest severity.

5,344,756

Patent Not Issued For This Number

5,344,757

PROCESS FOR THE DETECTION OF NUCLEIC ACIDS

Hans-Joachim Höltke, Tutzing; Rudolf Seibl, Penzberg; Gudrun Schmitz, Bernried; Hans R. Schöler, Göttingen; Christoph Kessler, München, and Ralf Mattes, Stuttgart, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

PCT No. PCT/EP89/00026, § 371 Date Jan. 9, 1990, § 102(e) Date Jan. 9, 1990, PCT Pub. No. WO89/06698, PCT Pub. Date Jul. 27, 1989

PCT Filed Jan. 12, 1989, Ser. No. 415,307

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1988, 3800642; Apr. 20, 1988, 3813278

The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.

Int. Cl.[5] C12Q *1/68*

U.S. Cl. 435—6 **35 Claims**

1. Method for detection of a first nucleic acid sequence comprising contacting said sequence with a complementary nucleic acid probe under conditions favoring hybridization between said sequence and said probe, wherein said probe is a second nucleic acid sequence having bound thereto at least one steroid hapten selected from the group consisting of digoxin and digoxigenin, said steroid hapten being bound to said second nucleic acid sequence via a bridge of at least 4 atoms length at a position thereon which does not participate in formation of hydrogen bonds with said first sequence, contacting hybridized probe with a labelled antibody which specifically binds to said steroid hapten, and detecting said labelled antibody to detect said first nucleic acid sequence.

5,344,758

METHODS FOR DETERMINING ANTI-PHOSPHOLIPID AND ANTI-CARDIOLIPIN ANTIBODIES

Steven A. Krilis, Hunter's Hill; Hugh P. McNeill, Jannali, and Colin N. Chesterman, Bellevue Hill, all of Australia, assignors to Yamasa Shoyu Kabushiki Kaisha, Japan

Filed Dec. 6, 1991, Ser. No. 777,521

Claims priority, application Australia, Apr. 6, 1990, PJ9549; Sep. 7, 1990, PK2186

Int. Cl.[5] C07K *15/14;* **G01N** *33/92, 33/543, 33/564*

U.S. Cl. 433—4.1 **20 Claims**

1. A method for determining whether antiphospholipid antibodies are present in a sample from a patient suspected of having an infectious and/or autoimmune disease, comprising:
contacting the sample with a negatively charged phospholipid and with β-2-glycoprotein-I; and
determining whether any antiphospholipid antibodies have bound to the contacted phospholipid and β-2-glycoprotein-I, wherein detection of binding of antiphospholipid antibodies to the phospholipid and β-2-glycoprotein-I, is indicative that antiphospholipid antibodies are present in the sample.

5,344,759

GLYCOLIPIDS FOR SERODIAGNOSIS OF TUBERCULOSIS AND LEPROSY

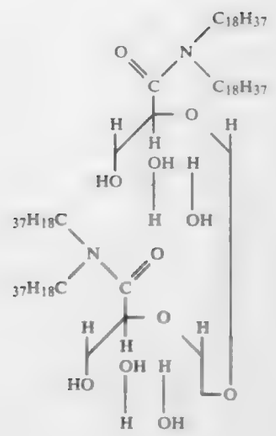
Adalbert Laszlo, and Vera Handzel, both of Nepean, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Health & Welfare, Ottawa, Canada

Filed May 11, 1992, Ser. No. 881,193

Int. Cl.[5] G01N *33/569*

U.S. Cl. 435—7.32 **5 Claims**

1. A method useful for the serodiagnosis of tuberculosis or leprosy in humans or animals suspected of being exposed to a bacterium selected from the group consisting of *Mycobacterium tuberculosis* and *Mycobacterium leprae* comprising:
collecting a blood sample and obtaining serum from said sample;
contacting an antigen immobilized on a solid support with said serum for a time and under conditions sufficient for the specific binding of antibodies present in said serum to said antigen, said antibodies present in said serum as the result of exposure of said human or animal to a bacterium selected from the group consisting of *M. tuberculosis* and *M. leprae;*
contacting said antibodies bound to the immobilized antigen with a detectable compound which specifically binds with said antibodies to form a detectable complex on the solid support; and
detecting the presence of said detectable complex as an indication of the exposure of said human or animal to either *M. tuberculosis* or *M. leprae;*
wherein said antigen is a glycolipid having following formula:



5,344,760

METHOD OF CANCER DETECTION

Jeanne P. Harvey, Pleasanton; Victoria A. Crebbin, Richmond; Roger P. Walker, Benicia; Victor Liu, San Leandro; Susan L. Hammond, Alameda, all of Calif., and Patricia A. McDonald, Durham, N.C., assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.

Continuation-in-part of Ser. No. 709,503, Jun. 3, 1991, abandoned. This application May 27, 1992, Ser. No. 889,718

Int. Cl.[5] G01N *33/538*

U.S. Cl. 435—7.5 **24 Claims**

1. A diagnostic/prognostic method for sguamous cell carcinoma or urinary tract cancer comprising detecting and/or guantitating in a mammalian urine or bladder wash sample a portion of the epidermal growth factor (EGFr) which comprises substantially the EGFr ectodomain and which has a molecular weight in the range of from about 90 kilodaltons (kd) to about 115 kd, wherein an elevated concentration of said portion above the concentration for healthy mammals or for those with benign disease indicates the presence of squamous cell carcinoma or uninary tract cancer.

5,344,761

DEVICE FOR SOLID PHASE BACTERIOLOGICAL TESTING CONTAINING TEST AREAS FORMED BY LINES OF AN ANTIBACTERIAL COMPOSITION

Nathan Citri, Jerusalem, Israel, assignor to Yissum Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Filed Jul. 7, 1992, Ser. No. 909,788

Int. Cl.[5] C12Q *1/02, 1/04;* **C12N** *11/12;* **C12M** *1/20*

U.S. Cl. 435—29 **7 Claims**

1. A solid support for bacterial culture having an absorbent testing surface for solid phase bacteriological testing comprising: a plurality of essentially non-diffusing lines of an essentially water-insoluble antibacterial composition comprising an aniline dye inhibitory to bacteria subdividing said surface into a multiplicity of individual adjacent test areas, said antibacterial composition serving as an effective barrier for preventing interference between adjacent test areas; wherein said testing surface includes a bacterial growth medium or said surface is supported on a solidifying bacterial growth medium.

5,344,762

METHOD FOR THE EARLY DIAGNOSIS OF CANCER

Anait Karapetian, Tel Aviv, Israel, assignor to ERA-Masis, Ltd., Tel Aviv, Israel

Filed Mar. 26, 1993, Ser. No. 38,674

Claims priority, application Israel, Mar. 29, 1992, 101.409

Int. Cl.[5] C12Q *1/06;* **G01N** *33/48*

U.S. Cl. 435—39 **12 Claims**

1. A method for the early diagnosis of cancer in a human, wherein a human feces-derived sample of bacteria selected from the group consisting of *Escherichia coli* and *Streptococcus faecalis*, is subjected to incubation in vitro with a standard culture of cancer cells containing a predetermined number of cancer cells, for a period of time sufficient to enable the extent of interaction between said bacteria and said standard culture of cancer cells to be determined, the number of the interacted and/or non-interacted cancer cells present at the end of the period of time being determined and being utilized for the purpose of said diagnosis based on the calculation of a tumor cell necrosis index (TCNI).

5,344,763

Patent Not Issued For This Number

5,344,764

PROTEIN INHIBITORS OF PHOSPHOLIPASE A_2 PURIFIED FROM INFLAMMATORY SITES AND PRODUCTION PROCESS

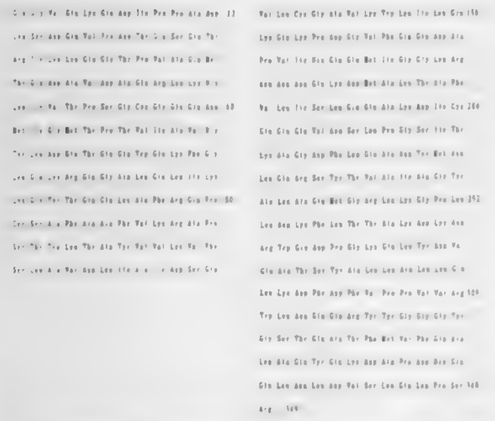
Yorimasa Suwa, Tokyo; Atsushi Imaizumi; Masahiro Okada, both of Hino; Ichiro Kudo; Keizo Inoue, both of Tokyo, and Yoji Suzuki, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 671,803, May 31, 1991, abandoned. This application Apr. 16, 1993, Ser. No. 47,379

Claims priority, application Japan, Aug. 3, 1989, 1-200246; Apr. 5, 1990, 2-89085

Int. Cl.[5] C12P *21/06;* **C12N** *5/00, 15/00;* **C07K** *3/00*

U.S. Cl. 455—69.1 **2 Claims**



1. A process for preparing a phosphilipase A_2-inhibitory protein consisting of the amino acid sequence of FIGS. 3-1 through 3—3 comprising:
(a) obtaining human serum;
(b) incubating said serum at 37° C. for 6 to 10 days;
(c) adding a protease inhibitor to said incubated serum; and
(d) purifying said inhibitory protein from said serum.

5,344,765

DNA ENCODING POLYPEPTIDES WITH ACTIVITY AGAINST GRAM-POSITIVE AND GRAM-NEGATIVE BACTERIA

Jiunu S. Lai; Jar-How Lee, both of Los Angeles, and James E. Callaway, Orinda, all of Calif., assignors to Xoma Corporation, Berkeley, Calif.

Continuation-in-part of Ser. No. 637,199, Jan. 3, 1991, Pat. No. 5,206,154, which is a division of Ser. No. 474,304, Feb. 5, 1990, Pat. No. 5,028,530, which is a continuation of Ser. No. 797,472, Nov. 13, 1985, abandoned, which is a continuation-in-part of Ser. No. 695,309, Jan. 28, 1985, abandoned. This application Jan. 28, 1993, Ser. No. 10,676

Int. Cl.[5] C07K *7/00;* C12N *15/62*

U.S. Cl. 435—69.7 9 Claims

1. A recombinant DNA molecule comprising a genetic sequence coding for a cecropin polypeptide which is extended at the C-terminus thereof by Met-X wherein X is a group which is clearable from methionine by CNBr

5,344,766

PROCESS FOR THE PRODUCTION OF BIOPROTEINS

Ramakrishnam Ramachandran, Allendale, and Arthur I. Shirley, Piscataway, both of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Mar. 26, 1993, Ser. No. 37,943

Int. Cl.[5] C12P *21/04;* C07K *3/00*

U.S. Cl. 435—71.2 18 Claims

1. In a process for producing a protein comprising contacting a hydrocarbon feed stream comprising at least one gaseous hydrocarbon and an oxygen-rich gas in an aqueous medium in a reaction zone in the presence of a microbe capable of converting said gaseous hydrocarbons to protein, thereby producing an aqueous phase containing said protein and a gaseous phase containing unreacted gaseous hydrocarbon, unreacted oxygen and carbon dioxide, said gaseous phase containing sufficient gaseous hydrocarbon to render it nonflammable; and removing protein from said reaction zone; the improvement comprising passing said gaseous phase through a carbon dioxide separator, thereby separating carbon dioxide from said gaseous phase; and recycling at least part of the carbon dioxide:depleted gaseous phase to said reaction zone.

5,344,767

PROCESS FOR PREPARING SULFIDES AND AMINO ACIDS LABELED WITH SULFUR-35

Claude Boullais, Gavdry; Jean-Pierre Noël, Clanche, and Michel Riva, La Fontaine, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 29, 1992, Ser. No. 905,561

Claims priority, application France, Jul. 1, 1991, 91 08174

Int. Cl.[5] C12P *13/04, 13/12*

U.S. Cl. 435—106 17 Claims

1. A method of preparing a high specificity ^{35}S amino acid or derivative thereof, comprising

preparing a reducing mixture comprising hydrochloric acid, hydriodic acid and hypophosphorus acid;

substantially removing any sulfate present in the mixture;

admixing the reducing mixture with a composition comprising a ^{35}S-sulfate to obtain a ^{35}S-sulfide; and

sulfhydrylating an amino acid or derivative thereof with the ^{35}S-sulfide in the presence of a sulfhydrylating enzyme.

5,344,768

PROCESS FOR THE PREPARATION OF PYRROLO-QUINOLINE QUINONE

Teizi Urakami, Niigata, Japan, assignor to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Continuation of Ser. No. 819,572, Jan. 7, 1992, abandoned, which is a continuation of Ser. No. 442,429, Nov. 20, 1989, abandoned, which is a continuation of Ser. No. 852,195, Apr. 15, 1986, abandoned. This application Jul. 14, 1993, Ser. No. 91,884

Claims priority, application Japan, Apr. 24, 1985, 60-88255; Jul. 18, 1985, 60-159238

Int. Cl.[5] C12P *17/18, 17/16;* C12N *1/20*

U.S. Cl. 435—119 6 Claims

1. A process for the preparation of pyrroloquinoline quinone which comprises cultivating in a culture medium containing methanol as a carbon source a bacterial strain selected from the group consisting of:

Methylobacterium organophilum ATCC 29983
Protomonas extorquens JCM 2802
Mycoplana rubra NCIB 10409
Ancylobacter aquaticus ATCC 25396
Microcyclus eburneus ATCC 21373
Microcyclus polymorphum NCIB 10516
Microcyclus methanolica DSM 2666
Hyphomicrobium variable NCIB 10517
Hyphomicrobium vulgare NCIB 9698
Hyphomicrobium methylovorum IFO 14180
Hyphomicrobium sp. DSM 1869
Xanthobacter autotrophicus DSM 432
Xanthobacter flavus NCIB 10071
Thiobacillus novellus NCIB 10456
Methanomonas methylovora ATCC 21852
Methanomonas methylovora subsp. thiaminophila ATCC 21370
Pseudomonas insueta ATCC 21276
Alteromonas thalassomethanolica ATCC 33145
Methylomonas thalassica ATCC 33146
Methylophaga marina NCMB 2244
Methylophaga thalassica NCMB 2162
Methylophaga thalassica NCMB 2163
Achromobacterr methanophila ATCC 21275
Methylobacillus glycogenes ATCC 29475
Methylomonas clara ATCC 31226
Protaminobacter candidus ATCC 21372
Protaminobacter thiaminophagus ATCC 21371
Pseudomonas methanolica ATCC 21704 and
Pseudomonas methylotropha NCIB 10510

and recovering pyrroloquinoline quinone from the culture medium.

5,344,769

MICROBIOLOGICAL PRODUCTION OF POLYESTERS

Bernard Witholt, Paterswolde; Gerrit Eggink, Ede, and Gjalt W. Huisman, Groningen, all of Netherlands, assignors to Rijksuniversiteit te Groningen, Netherlands

PCT No. PCT/NL90/00041, § 371 Date Oct. 24, 1991, § 102(e) Date Oct. 24, 1991, PCT Pub. No. WO90/12104, PCT Pub. Date Oct. 18, 1990

PCT Filed Apr. 3, 1990, Ser. No. 773,891

Claims priority, application Netherlands, Apr. 4, 1989, 8900827

Int. Cl.[5] C12P *7/62, 7/44, 7/42;* C08G *63/06*

U.S. Cl. 435—135 17 Claims

1. A process for producing poly-3-hydroxyalkanoates composed of repeating units having 6–10 carbon atoms comprising selecting bacteria from the *Pseudomonks fluorescens* rRNA branch and culturing said bacteria according to the phylogenetic classification by de Vos and de Ley in Int. J. of Syst. Bacteriol. 33, 1983, 487–509, with the exception of *Pseudomonas oleovorans,* under aerobic conditions in a nutrient medium comprising an excess of a carbon source and a limiting quantity of at least one of the other nutrients essential for growth, said carbon source comprising at least one assimilable acyclic aliphatic oxidated hydrocarbon compound having 6–18 carbon atoms.

5,344,770

BACILLUS SP. FERM BP-3376 AND A METHOD FOR ITS USE TO PRODUCE AN ALKALINE PROTEINASE K-16

Jun Hitomi, Tochigi; Shigehito Adachi, Utsunomiya; Yoshihiro Hakamada; Mikio Takaiwa, both of Tochigi; Tadashi Yoshimatsu; Yōko Watanabe, both of Utsunomiya; Tohru Kobayashi, Tochigi; Shuji Kawai, and Susumu Ito, both of Utsunomiya, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Division of Ser. No. 816,243, Jan. 3, 1992, Pat. No. 5,296,367. This application Oct. 26, 1993, Ser. No. 141,019

Claims priority, application Japan, Jan. 17, 1991, 3-17065; Jan. 17, 1991, 3-17066; Feb. 27, 1991, 3-33116; Feb. 27, 1991, 3-33117

Int. Cl.[5] C12N *9/54, 9/50, 1/20, 1/00*

U.S. Cl. 435—71.2 2 Claims

1. A process for producing alkaline proteinase K-16 comprising:

(i) culturing the microorganism Bacillus sp. FERM BP-3376 in a culture broth; and

(ii) collecting said alkaline proteinase K-16 from the culture broth.

5,344,771

PLANT THIOSTERASES

Huw M. Davies, and Toni A. Voelker, both of Davis, Calif., assignors to Calgene, Inc., Davis, Calif.

Continuation-in-part of Ser. No. 514,030, Apr. 26, 1990, abandoned, and Ser. No. 620,426, Nov. 30, 1990. This application Feb. 27, 1991, Ser. No. 662,007

Int. Cl.[5] C12N *5/14, 15/82*

U.S. Cl. 435—172.3 6 Claims

1. A method of producing C12:0 fatty acids in a Brassica seed cell, said method comprising:

growing a Brassica plant having integrated into its genome a DNA construct, said construct comprising in the 5' to 3' direction of transcription, a transcriptional regulatory region functional in said Brassica seed cell, a translational regulatory region functional in said Brassica seed cell, a plant transit peptide encoding sequence, a DNA sequence encoding an *Umbellularia californica* C12:0 preferring acyl-ACP thioesterase functional in said Brassica seed cell, and a transcriptional termination region functional in said Brassica seed cell.

5,344,772

Patent Not Issued For This Number

5,344,773

HUMAN UTERINE TISSUE PLASMINOGEN ACTIVATOR PRODUCED BY RECOMBINANT DNA

Cha-Mer Wei, Seattle, Wash.; Nancy Hsiung, Wellesley; Vermuri B. Reddy, Framingham, both of Mass.; Jeffrey F. Lemontt, West Newton; William Dackowski, Ashland, both of Mass.; Richard Douglas, Southboro; Edward S. Cole, Mendon, both of Mass.; Richard D. Purcell, Jr., Newton, and David Tai-Yui Lau, Marlboro, both of Mass., assignors to Genzyme Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 656,770, Oct. 1, 1984, abandoned. This application Oct. 1, 1985, Ser. No. 782,686

Int. Cl.[5] C12N *9/64, 15/58;* A61K *37/547*

U.S. Cl. 435—226 21 Claims

1. A recombinant DNA molecule which encodes human tissue plasminogen activator (TPA) and which differs from a naturally occurring DNA molecule encoding naturally occurring human TPA in that, in place of at least one of the Asn codons in the three DNA sequences which encode an Asn-X-(Ser or Thr) signal for N-linked glycosylation in said naturally occurring human TPA corresponding to amino acids 114–116, 181–184, and 445–447 of FIG. 1A–C hereof, there is substituted a Gln codon.

5,344,774

HUMAN INTRACISTERNAL A-TYPE RETROVIRAL PARTICLES ASSOCIATED WITH SJOGREN'S SYNDROME

Robert F. Garry, Jr., New Orleans; Cesar D. Fermin, Mandeville, both of La., and Steve S. Alexander, Jr., Gaithersburg, Md., assignors to The Administrators of the Tulane Educational Fund, New Orleans, La.

Continuation of Ser. No. 526,349, May 21, 1990, abandoned. This application Feb. 23, 1993, Ser. No. 21,180

Int. Cl.[5] C12N *7/02, 5/08, 7/00, 5/00*

U.S. Cl. 435—239 7 Claims

1. A method of preparing a human intracisternal A-type retroviral particle associated with Sjogren's syndrome comprising:

(i) preparing a homogenized tissue extract from lip tissue taken from a person suffering from Sjogren's syndrome;

(ii) adding the extract prepared in step (i) to a culture of RH9 cells;

(iii) culturing the cells exposed to the extract according to step (ii) for a period of about six weeks;

(iv) lysing the cultured cells and preparing a microsomal fraction therefrom;

(v) treating the microsomal fraction with detergent;

(vi) layering the detergent-treated microsomal fraction of step (v) on a 33–68% (w/v) sucrose gradient;

(vii) centrifuging the sucrose gradient at about 100,000 $\overline{g}$ for about 12 hours; and

(viii) collecting the fraction corresponding to a density of about 1.2.

5,344,775

SYNTHESIS OF TAXANES IN CULTURE USING PSEUDOCALLUSCELLS

Richard J. Smith, Atherton, Calif., assignor to Escagenetics Corporation, San Carlos, Calif.

Filed Nov. 15, 1991, Ser. No. 794,711

Int. Cl.[5] C12N *5/00;* C12P *1/00*

U.S. Cl. 435—240.48 19 Claims

1. A method for obtaining pseudocallus cell aggregations from explants of a selected species of Taxus comprising the steps of:

(a) providing fragments of callus tissue induced by culture from Taxus explants containing meristematic tissue physically supported on a support culture medium containing as an auxin, alph-Napthaleneacetic acid (NAA), and as a cytokinin, 6-benzylamino purine (BAP)

(b) culturing said callus tissue fragments in an aqueous cell-suspension growth medium containing said auxin and said cytokinin to produce a suspension of a plurality of clusters of 1–10 cells having limited intercellular adhesion;

(c) plating cells removed from said cell suspension onto a support culture medium containing said auxin and said cytokinin, said medium capable of physically supporting growth of the cells on a surface thereof; and

(d) growing said plated cells on said support culture medium of step (c) to form pseudocallus cells, said pseudocallus cells being a loose, amorphous aggregation of cells lacking differentiated vascular or organ tissues and lacking clearly defined meristematic zones, said cell aggregation having poor intercellular adhesion, extreme friability, and falling apart into numerous individual cells and small cell clusters when mechanically disturbed, said pseudocallus cells showing an initial rate of mass doubling on fresh cell growth medium that is greater than the mass doubling of callus tissue of step (a), and exhibiting the property of producing higher levels of taxanes than that produced by callus tissue of step (a).

5,344,776

DNA ENCODING AN INSECT OCTOPAMINE RECEPTOR

John C. Venter; Claire M. Fraser, and William R. McCombie, all of Silver Spring, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Mar. 28, 1991, Ser. No. 676,174
Int. Cl.[5] C12N *15/12, 15/63*
U.S. Cl. 435—252.3 11 Claims



1. An isolated DNA segment selected from the group consisting of:

(a) a DNA segment encoding an invertebrate octopamine receptor protein comprising the amino acid sequence set forth in Sequence ID NO:2 and

(b) a DNA segment which is capable of hybridizing to the complement of a DNA segment according to (a) under low stringency hybridization conditions and which encodes an invertebrate octopamine receptor protein.

5,344,778

PROCESS FOR ENZYMATIC CLEAVAGE OF C-S BONDS AND PROCESS FOR REDUCING THE SULFUR CONTENT OF SULFUR-CONTAINING ORGANIC CARBONACEOUS MATERIAL

John J. Kilbane, II, Woodstock, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 486,597, Feb. 28, 1990, Pat. No. 5,132,219. This application May 28, 1992, Ser. No. 890,190
The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.
Int. Cl.[5] C07C *1/00;* C10G *32/00;* C12P *11/00;* C12N *9/14*
U.S. Cl. 435—262 22 Claims

1. A process for reducing the sulfur content of sulfur-containing organic carbonaceous material comprising, contacting a sulfur-containing organic carbonaceous material with a sulfur specific enzyme reactant agent selected from the group consisting of at least one microorganism membrane fragment comprising at least one enzyme, at least one extract from said at least one membrane fragment comprising said at least one enzyme, and mixtures of said at least one membrane fragment and said at least one extract, wherein said enzyme is obtained from a microorganism selected from the group consisting of *Rhodococcus rhodochrous,* derivatives of *Rhodococcus rhodochrous, Bacillus sphaericus,* derivatives of *Bacillus sphaericus,* and mixtures thereof, said at least one enzyme having the ability to selectively react with sulfur of sulfur-containing organic carbonaceous material by cleavage of organic C—S bonds, and separating formed sulfur-containing compounds from organic carbonaceous material from which sulfur has been cleaved.

5,344,777

STRUCTURAL GENE OF MEMBRANE-BOUND ALCOHOL DEHYDROGENASE COMPLEX, PLASMID CONTAINING THE SAME AND TRANSFORMED ACETIC ACID BACTERIA

Toshimi Tamaki, Handa; Hiroshi Takemura, Toda; Kenji Tayama, Handa; Masahiro Fukaya, Aichi; Hajime Okumura, Handa, and Yoshiya Kawamura, Kounan, all of Japan, assignors to Nakano Vinegar Co., Ltd., Handa, Japan

Continuation of Ser. No. 658,221, Feb. 20, 1991, abandoned.
This application Dec. 3, 1992, Ser. No. 985,458
Claims priority, application Japan, Feb. 26, 1990, 2-42391; Mar. 26, 1990, 2-73440
Int. Cl.[5] C12N *15/53, 15/31, 15/74, 1/21*
U.S. Cl. 435—252.3 2 Claims

1. A recombinant plasmid comprising

(a) vector pUC 18 having an ampicillin resistant gene derived from *E. Coli,*

(b) a cleaved DNA of pTA 5001 and

(c) a structural gene of membrane-bound alcohol dehydrogenase complex shown by FIG. 1 and having a molecular size of about 7.0 kilo bases comprising a protein having a molecular weight of about 72,000 as determined by SDS polyacrylamide gel electrophoresis, shown by nucleotide sequence SEQ ID NO. 1 and a protein having a molecular weight of about 44,000 as determined by SDS polyacrylamide gel electrophoresis, shown by nucleotide sequence SEQ ID NO. 2, which are derived from *Acetobacter altoacetigenes.*

5,344,779

METHOD FOR PRODUCTION OF STANDARD OXIDE SAMPLE FOR X-RAY FLUORESCENCE SPECTROMETRY

Keiji Kaneko, Tsukuba; Masayuki Hirabayashi, Kashiwa; Hideo Ihara, and Hiroko Kaneko, both of Tsukuba, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 35,211
Claims priority, application Japan, Jun. 26, 1992, 4-192962
Int. Cl.[5] G01N *33/20*
U.S. Cl. 436—19 6 Claims

1. A method for producing a standard oxide sample for use in measuring the content of a known impurity element in an organic compound by X-ray fluorescence analysis, said method comprising the steps of:

a. dissolving said inorganic compound in nitric acid, nitric acid and hydrochloric acid, or nitric acid and hydrofluoric acid to obtain an acid solution thereof;

b. adding said known impurity element to said acid solution in a concentration in the range of from 1 to 2,000 ppm based on the concentration of said inorganic compound to obtain a mixed solution wherein said known impurity has been dissolved in the acid;

c. evaporating said mixed solution to dryness to obtain a dry residue of evaporation; and

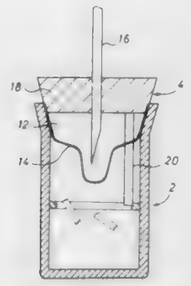
d. heating said dry residue of evaporation up to 600° C. to obtain said standard oxide sample containing said inorganic compound and said impurity.

5,344,780

METHOD FOR DETERMINING INDOLE COMPOUNDS ASSOCIATED WITH BOAR TAINT IN PORK AS WELL AS A SAMPLE CONTAINER TO BE USED IN THE METHOD

Ulf Nonboe, Nyvej 9, DK-1851 Frederiksberg C, Denmark

PCT No. PCT/DK91/00237, § 371 Date Feb. 19, 1993, § 102(e) Date Feb. 19, 1993, PCT Pub. No. WO92/03729, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 20, 1991, Ser. No. 974,590
Claims priority, application Denmark, Aug. 22, 1990, 2008/90
Int. Cl.[5] G01N *33/04, 33/08*
U.S. Cl. 436—21 13 Claims



1. A method for determining indole compounds associated with boar taint in pork wherein the method comprises the steps of:

a) obtaining a sample of a predetermined amount of lard or fat from a carcass of a pig or part thereof,

b) heating the sample to melt fat in the sample,

c) extracting at least a portion of the sample with a polar solvent and

d) determining the contents of one or more indole compounds in the extract.

5,344,781

DETECTION AND PREVENTION OF HYDROCARBON LEAKAGE FROM UNDERGROUND STORAGE TANKS

Nancy E. Kitchen, Rio Rancho, N. Mex.; Edward F. Kitchen, Neshanic Station, N.J., and George H. Kitchen, III, Rio Rancho, N. Mex., assignors to International Lubrication and Fuel Consultants, Albuquerque, N. Mex.

Filed Apr. 17, 1991, Ser. No. 687,460
Int. Cl.[5] G01N *33/24*
U.S. Cl. 436—29 9 Claims

5. A method for on-site or field testing soil for the presence of hydrocarbons, the method comprising the steps of:

a) drilling at least one hole in the ground at a selected location;

b) removing soil from the hole;

c) placing the soil and hexane as a solvent reactable with hydrocarbons in a sealable field container;

d) agitating the sealable field container thereby mixing the soil and the hexane;

e) filtering solids from the mixture of soil and hexane;

f) providing an evaporation dish;

g) evaporating, in said evaporating dish, the extraction fluid to produce a residue containing hydrocarbons, if present in the soil sample; and

h) detecting the presence of hydrocarbons from inspection of filtered extraction fluid.

5,344,782

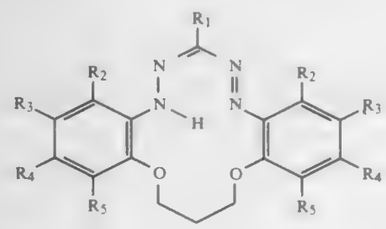
ASSAY METHOD FOR THE DETERMINATION OF LITHIUM WITH NOVEL SUBSTITUTED CROWN DYES

Cheng-I Lin, and Marcel Pirio, both of San Jose, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 718,067, Jun. 20, 1991, Pat. No. 5,207,985, which is a division of Ser. No. 164,025, Mar. 4, 1988, Pat. No. 5,049,666, which is a division of Ser. No. 866,821, May 23, 1986, Pat. No. 4,742,010. This application Mar. 4, 1993, Ser. No. 26,330
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.
Int. Cl.[5] G01N *33/20*
U.S. Cl. 436—79 1 Claim

1. In a method for the determination of lithium in an aqueous body fluid sample having a concentration of sodium which interferes with the accuracy of said method, where said sample is not pretreated for deproteinization, comprising the steps of

(1) combining (a) a measured amount of an aqueous sample suspected of containing lithium and (b) a reagent comprised of a chromogenic ionophore and an aqueous buffer solution of pH of about 8 to about 14 to form an assay medium, wherein said chromogenic ionophore has the formula:



wherein:

R_1 is an electron withdrawing group, selected from the group consisting of $—NO_3$, $—SO_2CF_3$, $—CONX_2$, and $—SO_2NX_2$, where X is independently selected from the group consisting of hydrogen, methyl and ethyl;

R_2 and R_5 are independently selected from the group consisting of hydrogen, methoxy, carboxymethoxy, nitro, chlorine, bromine and fluorine; and

R_3 and R_4 are independently selected from the group consisting of hydrogen and a hydrophilic substituent consisting of from one to twelve atoms other than hydrogen, which atoms are selected from the group consisting of carbon, oxygen, nitrogen, phosphorous, sulfur and halogen; with the proviso that not more than three of R_3 and R_4 are hydrogen; and

(2) measuring the absorbance of said medium, the improvement which comprises the inclusion of sodium ion in said assay medium containing said sample at a concentration at least equal to the sodium ion concentration introduced into said medium from said sample.

5,344,783

PLATELET AGGREGATION INHIBITORS

Robert M. Scarborough, Hayward, and Israel F. Charo, Lafayette, both of Calif., assignors to COR Therapeutics, Inc., South San Francisco, Calif.

Continuation of Ser. No. 685,997, Apr. 12, 1991, abandoned, which is a continuation of Ser. No. 367,509, Jun. 16, 1989, abandoned. This application Jul. 12, 1993, Ser. No. 91,392
Int. Cl.[5] G01N *33/566*
U.S. Cl. 436—501 3 Claims

1. A method for selecting a compound that selectively inhibits platelet aggregation over other cellular activities mediated by integrins, which method comprises:

(a) contacting a sample of said compound with purified GP IIb-IIIa receptor coated onto a solid support in the pres-

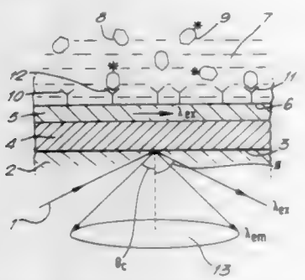
ence of a solution of labeled fibrinogen or von Willebrand Factor under conditions wherein fibrinogen or von Willebrand factor binds to said GP IIb–IIIa;
(b) measuring the binding of fibrinogen or von Willebrand factor to GP IIb–IIIa in comparison to the binding of fibrinogen or von Willebrand factor to GP IIb–IIIa in a control which does not contain said compound by measuring the amount of bound labeled fibrinogen;
(c) determining the inhibition in (b);
(d) contacting a sample of said compound with purified vitronectin receptor coated onto a solid support in the presence of a solution of labeled vitronectin under conditions wherein vitronectin binds to said vitronectin receptor;
(e) measuring the binding of vitronectin to vitronectin receptor in comparison to the binding of vitronectin to vitronectin receptor in a control which does not contain said compound by measuring the amount of bound labeled vitronectin;
(f) determining the inhibition in (e); and
(g) selecting a sample in which the relative inhibition determined in (c) is at east twice that determined in (f).

5,344,784

FLUORESCENT ASSAY AND SENSOR THEREFOR

John W. Attridge, Woking Surrey, United Kingdom, assignor to Applied Research Systems ARS Holding N.V., Netherlands

PCT No. PCT/GB89/01420, § 371 Date May 21, 1991, § 102(e) Date May 21, 1991, PCT Pub. No. WO90/06503, PCT Pub. Date Jun. 14, 1990
PCT Filed Nov. 28, 1989, Ser. No. 689,850
Claims priority, application United Kingdom, Nov. 29, 1988, 8827853
Int. Cl.[5] G01N *33/552*
U.S. Cl. 436—518 **14 Claims**



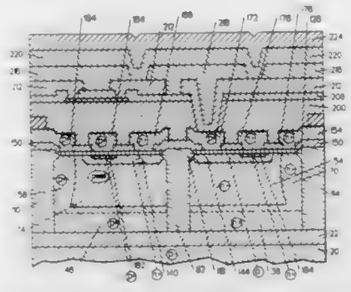
1. A method of assaying for a ligand in a sample which comprises:
(A.) incubating, simultaneously or in any desired sequence,
(i) the sample, and
(ii) a specific binding partner to the ligand,
wherein reagent (ii) is labelled with a fluorophore and is immobilised directly or indirectly on a waveguide surface of an optical structure comprising:
(a) a dielectric substrate transparent at least at wavelengths of radiation involved in the assay;
(b) a thin-film waveguide of dielectric material having a refractive index higher than that of the substrate; and
(c) interposed between (a) and (b), a buffer layer of dielectric material having a refractive index lower than that of the substrate, wherein the buffer layer and the waveguide each are of a thickness such that, when said optical structure is in use, one or more guided modes may be propagated within the waveguide;
(B.) irradiating a surface of the optical structure's substrate with light of an appropriate wavelength at a suitable angle to the normal such that total internal reflection occurs at the interface between the substrate and the buffer layer of said optical structure and whereby an evanescent field associated therewith gives rise to propagation of one or more guided modes in the waveguide of said optical structure, and such that floroescence arising from excitation of bound fluorophore within said evanescent field and which couples back into the substrate leaves the interface between the buffer layer and the substrate at angles to the normal which are less than the critical angle at the interface; and
(C.) determining whether an optical property of floroescence emerging from said optical structure is altered by formation of immunocomplexes on the waveguide, whereby the alteration in optical property of fluorescence is related to the presence of ligand in the sample.

5,344,785

METHOD OF FORMING HIGH SPEED, HIGH VOLTAGE FULLY ISOLATED BIPOLAR TRANSISTORS ON A SOI SUBSTRATE

Rick C. Jerome, Monument; Diane R. Williams, and Kurt D. Humphrey, both of Colorado Springs, all of Colo., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 850,612, Mar. 13, 1992, abandoned, which is a continuation of Ser. No. 673,817, Mar. 22, 1991, abandoned. This application Jun. 3, 1993, Ser. No. 72,653
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **20 Claims**



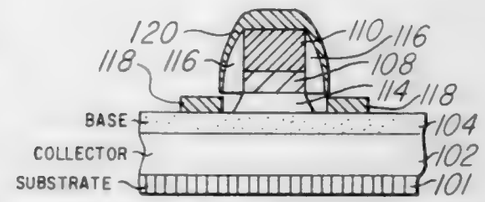
1. A method of forming a complementary first and second transistor in a Silicon On Insulator ("SOI") Integrated Circuit ("IC"), the SOI IC having a substrate, a buried insulating layer superjacent the substrate, and a silicon device layer superjacent the buried insulating layer, the first and the second transistors formed in the silicon device layer such that the first transistor is dielectrically isolated from the second transistor, the method comprising the steps of:
implanting an N doped buried conductor region in the device layer;
implanting a P doped buried conductor region in the device layer;
forming an epitaxial silicon layer superjacent the device layer, said epitaxial layer having a thickness of at least 2 microns, said epitaxial silicon layer having a dopant polarity;
forming an N doped low resistance path between a surface of said epitaxial layer and said implanted N doped buried conductor region, and forming a P doped low resistance path between said surface of said epitaxial layer and said implanted P doped buried conductor region;
forming a well in a portion of said epitaxial layer, said well superjacent at least one of said implanted N doped buried conductor region and said implanted P doped buried conductor region, said well having a doping polarity opposite that of said epitaxial silicon layer;
forming a trench from said surface of said epitaxial layer down to the buried insulating layer, being disposed between said well and a remainder of said epitaxial layer so as to dielectrically isolate said well from said remainder of said epitaxial layer; and
forming the first transistor in said well and the second transistor in said remainder of said epitaxial layer by implanting base regions in said well and in said remainder of said epitaxial layer of opposite polarities, and by forming emitter regions enclosed by said base regions.

5,344,786

METHOD OF FABRICATING SELF-ALIGNED HETEROJUNCTION BIPOLAR TRANSISTORS

Burhan Bayraktaroglu, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 576,540, Aug. 31, 1990, abandoned. This application Sep. 9, 1992, Ser. No. 942,474
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **12 Claims**



1. A method of fabricating a heterojunction bipolar transistor, comprising the steps of:
(a) forming a collector layer over a semi-insulating semiconductor substrate;
(b) forming a base layer over said collector layer;
(c) forming an emitter layer over said base layer;
(d) forming an ohmic emitter contact layer over said emitter layer;
(e) forming an insulator layer over said ohmic emitter contact layer;
(f) removing said insulator layer and said ohmic emitter contact layer from all areas not covering an emitter location;
(g) forming insulator sidewalls abutting vertical surfaces of said insulator layer and said ohmic emitter contact layer, said insulator sidewalls also abutting a portion of a horizontal surface of said emitter layer;
(h) removing said emitter layer from all areas not covered by said insulator layer or by said insulator sidewalls; and
(i) forming an ohmic base contact layer to be horizontally continuous over said insulator layer, said insulator sidewalls and a portion of said base layer, and to be vertically discontinuous between said insulator sidewalls and said portion of said base layer.

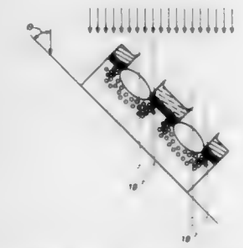
5,344,787

LATID IMPLANTS FOR INCREASING THE EFFECTIVE WIDTH OF TRANSISTOR ELEMENTS IN A SEMICONDUCTOR DEVICE

Samuel J. S. Nagalingam, Los Gatos, Calif.; Yu P. Han, Dallas, and Ravi Jhota, San Antonio, both of Tex., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Sep. 24, 1993, Ser. No. 126,626
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—35 **8 Claims**

1. A method for increasing the effective width of a P-type channel connecting N-type source and drain regions of a transistor element further comprising a gate which transistor element is located on the surface of a P-type substrate and is separated from other transistor elements on the substrate by field oxide and P-type channel-stop implants which method comprises the steps of:
(a) tilting a transistor-free substrate having P-type field stop implants and field oxide regions which substrate contains a silicon nitride layer over all portions of the substrate surface except over the field oxide regions wherein said substrate is tilted at an angle of from greater than 0° to less than 90° relative to the direction of an N-type ion beam;
(b) ion-implanting N-type ion dopant into the tilted substrate;
(c) rotating the substrate while retaining or later reestablishing the tilt and repeating step (b) until all of the substrate has been exposed to ion-implantation;



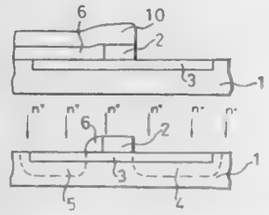
(d) thermally treating the substrate produced in step (c) above so as to activate the dopants; and
(e) completing fabrication of said transistor element on the surface of said substrate
wherein sufficient N-type dopant is implanted into the substrate so that the threshold voltage in the boundary of the P-type channel of said transistor element is reduced.

5,344,788

METHOD OF MAKING FIELD EFFECT TRANSISTOR

Minoru Noda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 881,291, May 11, 1992, Pat. No. 5,296,398, which is a division of Ser. No. 673,339, Mar. 22, 1991, Pat. No. 5,153,683. This application Jun. 10, 1993, Ser. No. 74,564
Claims priority, application Japan, Apr. 19, 1990, 2-104038
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 **1 Claim**



1. A production method of a field effect transistor comprising:
producing a gate electrode on a substrate;
depositing a first insulating film covering said gate electrode and said substrate;
etching said first insulating film to expose said gate electrode;
depositing a second insulating layer comprising a material different from that of said first insulating film on said first insulating film and removing part of said second insulating layer, leaving a second insulating layer only at a first side of said gate electrode and on said gate electrode;
depositing a photoresist layer and patterning said photoresist layer to leave a photoresist film on said first and second insulating films, said photoresist film having an opening at and exposing part of said first insulating film at a second side of said gate electrode on the opposite side of said gate electrode from the first side of said gate electrode and selectively removing said first insulating film at the second side of said gate electrode using said photoresist film as a mask;
removing said photoresist film and said second insulating film;

etching said first insulating film remaining on said substrate to leave a side wall of said first insulating film at the first side of said gate electrode; and

implanting ions using said gate electrode and said side wall of said first insulating film as masks to produce source and drain regions in said substrate.

5,344,789

METHOD OF MANUFACTURING VERTICAL DMOS TRANSISTOR WITH HIGH OFF-BREAKDOWN-VOLTAGE AND LOW ON-RESISTANCE

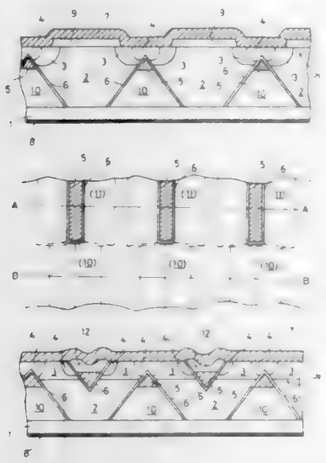
Tomohide Terashima, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 863,758, Apr. 6, 1992, Pat. No. 5,293,056. This application Nov. 23, 1993, Ser. No. 155,801

Claims priority, application Japan, Jun. 17, 1901, 3-144709

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—41 **5 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

(a) etching a first conductivity type first semiconductor layer having a top major surface and a bottom major surface, said etching being initiated from said bottom major surface, thereby at least one first trench being formed;

(b) forming a first insulation layer entirely on the bottom surface of the structure obtained in said step (a);

(c) depositing a first conductive layer on said first insulation layer;

(d) selectively removing said first conductive layer except for a portion within said at least one first trench at the apex portion, thereby a first control electrode being obtained;

(e) lapping said first semiconductor layer from said top major surface to leave a thickness of said first semiconductor layer;

(f) removing said first insulation layer except at a portion covering said first trench;

(g) selectively forming a second conductivity type channel region on said major top surface so that the at least one apex portion of said at least one first trench is contained by said channel region;

(h) selectively forming a first conductivity type first source/drain region in said top surface of said channel region so that the at least one apex portion of said at least one first trench is contained by said first source/drain region;

(i) forming a first electrode, said first electrode being insulated from said first semiconductor layer at said top major surface, said first electrode being in contact with said channel region and said first source/drain region; and

(j) forming a second electrode over the bottom major surface side.

5,344,790

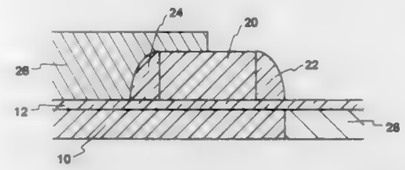
MAKING INTEGRATED CIRCUIT TRANSISTOR HAVING DRAIN JUNCTION OFFSET

Frank R. Bryant, Denton, and Robert L. Hodges, Euless, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Aug. 31, 1993, Ser. No. 114,754

Int. Cl.[5] H01L *21/336*

U.S. Cl. 437—44 **9 Claims**



1. A method for forming an integrated circuit device, comprising the steps of:

forming a gate insulating layer over a conductive layer;

forming a gate electrode over the gate insulating layer;

forming a source sidewall spacer and a drain sidewall spacer alongside opposite vertical edges of the gate electrode;

forming a mask over a drain region in the conductive layer;

implanting a relatively fast-diffusing dopant into a source region in the conductive layer;

removing the mask;

implanting a relatively slow-diffusing dopant into the drain region; and

annealing the conductive layer causing the relatively fast-diffusing dopant and the relatively slow-diffusing dopant to diffuse into the conductive layer, producing a drain junction offset in the integrated circuit device.

5,344,791

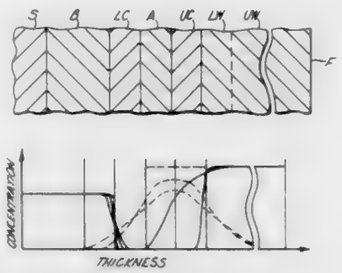
DIFFUSION CONTROL OF P-N JUNCTION LOCATION IN MULTILAYER HETEROSTRUCTURE LIGHT EMITTING DEVICES

Kuo-Hsin Huang, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 726,319, Jul. 5, 1991, Pat. No. 5,164,798. This application Aug. 14, 1992, Ser. No. 928,841

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—126 **6 Claims**



1. A method for forming a light emitting diode on a semiconductor substrate comprising the steps of:

depositing a lower cladding layer on the substrate and doped to have a first conductivity type;

depositing an active layer on the lower cladding layer;

depositing an upper cladding layer on the active layer and doped to have a second conductivity type;

depositing a lower window layer on the upper cladding layer, the lower window layer being doped with a first dopant material to have the second conductivity type;

depositing an upper window layer on the lower window layer, the upper window layer being doped with a second dopant material to have the second conductivity type, the second dopant material being different from the first dopant material; and

wherein the amount of first dopant material is sufficient for maintaining the p-n junction of the light emitting diode on a steep portion of the concentration gradient of the dopant in the lower cladding layer.

5,344,792

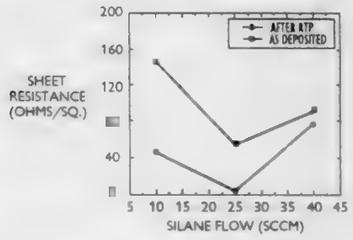
PULSED PLASMA ENHANCED CVD OF METAL SILICIDE CONDUCTIVE FILMS SUCH AS $TISI_2$

Gurtej S. Sandhu, and Trung T. Doan, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Mar. 4, 1993, Ser. No. 26,525

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—200 **14 Claims**



1. In semiconductor manufacture a CVD method for depositing a metal silicide conductive film on a substrate comprising:

placing the substrate in a CVD reaction chamber;

maintaining the reaction chamber under vacuum pressure;

introducing a metal precursor deposition gas and a silicon source gas into the reaction chamber for reaction to deposit the metal silicide conductive film on the substrate wherein said metal precursor gas is selected from the group consisting of an organic or inorganic metal source and said silicon source gas is selected from the group consisting of an organic or inorganic silicon source;

generating a plasma from the gases within the reaction chamber by introducing a plasma forming energy into the reaction chamber;

pulsing the plasma energy to shift the dynamic equilibrium of the plasma for reaction mechanics for depositing the metal silicide conductive film and diffusing reactant by products away from the substrate;

adjusting a pulse power, a pulse duration and a gas chemistry of the metal precursor deposition gas and silicon source gas during deposition to improve deposition reaction mechanics and form the metal silicide film with an as deposited resistivity; and then

annealing the metal silicide conductive film using a rapid thermal anneal to lower the as deposited resistivity.

5,344,793

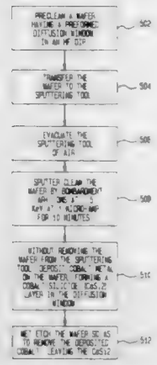
FORMATION OF SILICIDED JUNCTIONS IN DEEP SUB-MICRON MOSFETS BY DEFECT ENHANCED COSI2 FORMATION

Heinrich Zeininger, Obermichelbach; Christoph Zeller, Ottobrunn; Udo Schwalke, Heldenstein; Uwe Doebler, Berlin, all of Fed. Rep. of Germany, and Wilfried Haensch, Charlotte, Vt., assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 5, 1993, Ser. No. 26,944

Int. Cl.[5] H01L *21/283, 21/302*

U.S. Cl. 437—200 **8 Claims**



1. A method of forming silicided junctions in a deep submicron MOSFET, comprising the steps of:

precleaning, in an acid dip, a silicon wafer having an oxide layer disposed thereon and diffusion window open in the oxide layer so as to expose bulk silicon;

after the precleaning, transferring the silicon wafer to a sputtering tool;

in the sputtering tool, sputter cleaning by bombarding the silicon wafer with low energy Ar+ ions, wherein the bombardment with low energy Ar+ ions occurs at about 1.5 KeV at 1 micro-amp, so as to form a damage region in the bulk silicon exposed by the diffusion window, the damage region being of a depth in the range of three to twenty monolayers of the bulk silicon;

after the bombarding, without removing the silicon wafer from the sputtering tool, depositing cobalt metal at room temperature on the silicon wafer so as to form a cobalt silicide layer; and

wherein the cobalt silicide layer is formed during deposition of the cobalt metal without any further annealing step.

5,344,794

METHOD OF MAKING A SEMICONDUCTOR CHIP

David Whitney, San Jose, and Lynn Wiese, Santa Clara, both of Calif., assignors to Siemens Components, Inc., Iselin, N.J.

Division of Ser. No. 40,829, Mar. 31, 1993. This application Sep. 29, 1993, Ser. No. 128,424

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **8 Claims**

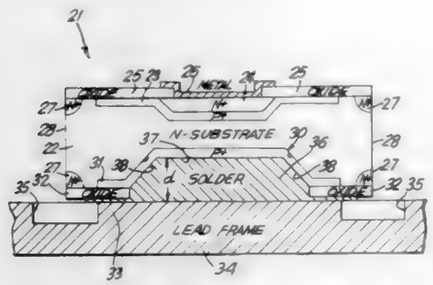
1. A method of fabricating a semiconductor chip comprising:

providing a semiconductor substrate having opposed side edges;

diffusing a layer of doped impurities into a surface of aid substrate between said edges;

forming a pedestal on a surface of a lead frame; and

mounting said substrate on said pedestal with an ohmic contact deposited between said layer and said pedestal



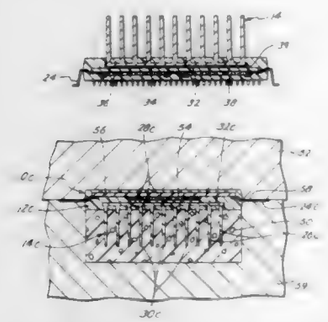
such that said side edges extend beyond said pedestal and are spaced from said lead frame.

5,344,795

METHOD FOR ENCAPSULATING AN INTEGRATED CIRCUIT USING A REMOVABLE HEATSINK SUPPORT BLOCK

Seyed H. Hashemi; Michael A. Olla; Thomas P. Dolbear, and Richard D. Nelson, all of Austin, Tex., assignors to Microelectronics And Computer Technology Corporation, Austin, Tex.

Filed Sep. 22, 1992, Ser. No. 949,189
Int. Cl.[5] H01L *21/56, 21/58, 21/60*
U.S. Cl. 437—214 **32 Claims**



1. A method of making an encapsulated integrated circuit chip having a heat exchanger, comprising,

providing an integrated circuit structure which includes an integrated circuit chip on a substrate, the chip electrically connected to a plurality of leads extending from the substrate;

preforming a removable seal and support block supporting a plurality of spaced thermally conductive heat exchanger elements having first and second ends, said support block engaging and supporting the second ends of the heat exchanger elements while leaving the first ends exposed;

inserting the support block in a mold cavity such that the support block is spaced from the integrated circuit structure and the first ends of the heat exchanger elements are positioned adjacent to the integrated circuit structure;

molding a non-electrically conductive thermosetting or thermoplastic material to form a housing in the mold cavity enclosing the chip and the first ends of the heat exchanger elements while allowing the second ends of the heat exchanger elements to be exposed to the exterior of the housing; and

removing the support block from the second ends of the heat exchanger elements.

5,344,796

METHOD FOR MAKING POLYCRYSTALLINE SILICON THIN FILM

Jong Y. Shin, and Suk B. Ma, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Dec. 30, 1992, Ser. No. 998,665
Claims priority, application Rep. of Korea, Oct. 19, 1992, 19207; Oct. 19, 1992, 19208
Int. Cl.[5] C30B *29/06*
U.S. Cl. 437—233 **6 Claims**

1. A method of making a polycrystalline silicon thin film comprising the steps of:

preparing a glass substrate;

forming a microcrystalline silicon layer as a seed layer over the glass substrate;

forming a hydrogen-containing amorphous silicon layer over the microcrystalline silicon seed layer by chemical vapor deposition at a temperature in the range of 180° C. to 270° C.; and

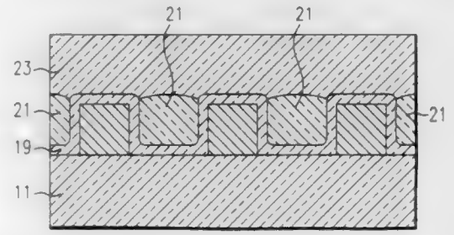
heat treating the hydrogen-containing amorphous silicon layer, to form a polycrystalline silicon thin film.

5,344,797

METHOD OF FORMING INTERLEVEL DIELECTRIC FOR INTEGRATED CIRCUITS

Chien-Shing Pai, Bridgewater, N.J., and Yih-Cheng Shih, Macungie, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 30, 1992, Ser. No. 969,680
Int. Cl.[5] H01L *21/316*
U.S. Cl. 437—238 **4 Claims**



2. A method of semiconductor integrated circuit fabrication comprising:

forming a first silicon dioxide dielectric overlying a substrate in a reactor chamber;

forming a second silicon dioxide dielectric upon said first dielectric, said formation taking place in the same said reactor chamber and utilizing ozone and a precursor gas containing hydrogen;

CHARACTERIZED IN THAT the total chamber pressure of said reactor during formation of said second dielectric is chosen at a sufficiently high value so that the hydrogen content of said second dielectric after formation is less than 10 atomic percent;

etching back said second dielectric in said reactor to expose portions of said first dielectric; and then

forming a third dielectric in said same reaction chamber, said third dielectric covering said second dielectric and the said exposed portions of said first dielectric.

5,344,798

BLUE-COLORED INFRARED AND ULTRAVIOLET RADIATION ABSORBING GLASS AND METHOD OF PRODUCING SAME

Shigeki Morimoto; Tadashi Noguchi; Masakazu Taniguchi, and Yasushi Taguchi, all of Mie, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Aug. 13, 1992, Ser. No. 928,593
Claims priority, application Japan, Aug. 14, 1991, 3-204103
Int. Cl.[5] C03C *3/087*
U.S. Cl. 501—70 **21 Claims**

1. A blue-colored infrared and ultraviolet radiation absorbing glass comprising as essential components, on a weight basis, 68.0–73.0% of SiO_2, 0.1–3.0% of Al_2O_3, 7.0–11.0% of CaO, 2.0–4.2% of MgO, 12.0–16.0% of Na_2O, 0.5–3.0% of K_2O, 0.05–0.18% of SO_3, 0.30–0.90% of total iron expressed as Fe_2O_3, 0.10–0.80% of CeO_2, 0–1.0% of TiO_2, 0–0.5% of ZnO, 0–0.1% of MnO and 0–0.01% of CoO with provisos that the total of said essential components amounts to at least 98.0 wt % of the glass, that the total of SiO_2 and Al_2O_3 is from 69.0 to 74.0%, that the total of CaO and MgO is from 11.0 to 15.0%, that the total of Na_2O and K_2O is from 13.0 to 17.0%, that the total of TiO_2, ZnO, MnO and CoO is not more than 1.2%, that said total iron includes ferrous iron and ferric iron and that the weight ratio of said ferrous iron to said ferric iron, Fe^{2+}/Fe^{3+}, is in the range from 0.80 to 2.50.

5,344,799

FORMABLE CERAMIC COMPOSITIONS AND METHOD OF USE THEREFOR

Shy-Hsien Wu, Horseheads, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 990,321, Dec. 14, 1992, abandoned. This application Oct. 7, 1993, Ser. No. 132,841
Int. Cl.[5] C03C *11/00;* **C04B** *38/00*
U.S. Cl. 501—80 **31 Claims**

1. A plastically deformable mixture capable of being shaped into a body, said mixture comprising

powders, which when fired form predominant phases selected from the group consisting of ceramic, glass-ceramic, glass, and combinations thereof,

0 to an effective amount of burnout agent to obtain the porosity required for efficient filtering,

water,

organic binder comprising components selected from the group consisting of cellulose ethers, cellulose ether derivatives, and combinations thereof,

at least some hydrophilic additive, and

at least some hydrophobic additive,

said hydrophilic and hydrophobic additives being present in amounts effective to increase the wettability and/or lubricity of said mixture.

5,344,800

PLASTIC REFRACTORY COMPOSITIONS HAVING IMPROVED FLOWABILITY

Cheryl L. Jackson, Mexico, and John Y. Liu, Columbia, both of Mo., assignors to A.P. Green Industries, Inc., Mexico, Mo.

Filed Jun. 10, 1993, Ser. No. 75,166
Int. Cl.[5] C04B *35/52*
U.S. Cl. 501—90 **18 Claims**

1. A gunnable plastic refractory composition having a workability index of from about 8% to about 30% and comprising from about 45% to 90% by weight alumina, clay, and at least one of aluminum silicate and silicon carbide, containing by weight, from about 0.05% to about 0.5% of a hydrocolloid selected from the group consisting of a polysaccharide ether and xanthan gum and from about 0.05% to about 1.0% carbon.

5,344,801

HIGH ZIRCONIA FUSED CAST REFRACTORY

Otojiro Kida, and Toshihiro Ishino, both of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed May 28, 1993, Ser. No. 69,692
Claims priority, application Japan, Jun. 26, 1992, 4-193088
Int. Cl.[5] C04B *35/48*
U.S. Cl. 501—105 **3 Claims**

1. A high zirconia fused cast refractory which comprises from 90 to 95% by weight of ZrO_2, from 3.5 to 7% by weight of SiO_2, from 1.2 to 3% by weight of Al_2O_3 and from 0.1 to 0.35% by weight in a total amount of Na_2O and/or K_2O and wherein each of P_2O_5, B_2O_3 and CuO which are contained in the refractory as inevitable impurities, is less than 0.02% by weight.

5,344,802

MGO-SPINEL REFRACTORY MIX AND SHAPES MADE THEREFROM

Richard J. Knauss, Pittsburgh, Pa., assignor to Indresco Inc., Dallas, Tex.

Filed Nov. 15, 1993, Ser. No. 152,900
Int. Cl.[5] C04B *35/04*
U.S. Cl. 501—120 **8 Claims**

1. A refractory mix for forming shaped refractories consisting essentially of 10 to 40% by weight of a magnesia-alumina spinel grain containing at least 28% MgO by weight, 60 to 90% by weight of a fused magnesite grain and up to 10% by weight alumina.

5,344,803

COCATALYST FOR TRANSITION METAL-CONTAINING α-OLEFIN POLYMERIZATION CATALYST

Raghu Menon, West Chester; Albert P. Masino, Hamilton, and Mark K. Reinking, Mason, all of Ohio, assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Filed Jan. 29, 1993, Ser. No. 11,046
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—116 **10 Claims**

1. In a catalyst system for (co)polymerizing at least one α-olefin under olefin polymerization conditions consisting essentially of:

(i) a supported magnesium/titanium-containing solid catalyst component prepared by the steps of:

(a) pretreating a silica support to remove surface hydroxyl groups;

(b) contacting said pretreated silica support with a hydrocarbon soluble magnesium-containing compound selected from the group consisting of hydrocarbyloxy magnesium halides having the formula ROMgX where R is a C_1 to C_{12} hydrocarbyl, and X is a halogen; dihydrocarbyl magnesium; alkylmagnesium halides, magnesium aluminum complexes having the formula $(MgRR')_m(A1R_34'')_n$ where R, R', R'' are the same or different and are alkyl groups and the ratio of m/n is from about 0.5 to about 10, and mixtures thereof;

(c) optionally, drying the contacted product of step (b) to form a solid product;

(d) optionally, contacting said solid product of step (c) with at least one modifying compound selected from the group consisting of silicon halides, boron halides, aluminum halides, alkyl silicon halides, and mixtures thereof; and

(e) contacting said product of step (b) or (d) with at least one titanium-containing compound having the formula $TiX_n(OR')_q$ wherein R' is aryl, alkyl, cycloalkyl, aralkyl, alkylsilyl or mixtures thereof; X is halogen; p and q range from 0 to 4, with the proviso that the sum of p and q is 3 or 4;

the improvement comprising an alkylaluminum first cocatalyst component, and at least one halosilane second cocata-

lyst component having the formula $R_a^2SiX_b^2$ wherein X^2 is halogen, R^2 is hydrogen, alkoxy, aryloxy, silyloxy, alkyl, aryl or cycloalkyl; a is 0 or an integer from 1 to 3; and b is an integer from 1 to 4, with the proviso that the sum of a and b is 4.

5,344,804

POLYMERIZATION OF CYCLOOLEFINS AND CATALYTIC SYSTEM SUITABLE FOR USE THEREIN

Willem Sjardijn, and Josepha M. E. Seelen-Kruijssen, both of Amsterdam, Netherlands, assignors to Shell Research Limited, United Kingdom

Filed Jul. 21, 1992, Ser. No. 915,600

Claims priority, application United Kingdom, Aug. 16, 1991, 9117744.4

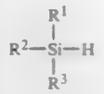
Int. Cl.[5] B01J *31/00*

U.S. Cl. 502—158 | **9 Claims**

1. A catalyst system for the polymerization of cyclic olefins, comprising:

(1) a tungsten compound obtained by combining a tungsten halide and/or a tungsten oxyhalide with a phenol compound substituted with an alkyl group at the positions ortho with respect to the hydroxyl group;

(2) one or more silane compounds having the formula



(I)

wherein R^1, R^2 and R^3 represent hydrogen, halogen or an alkoxy group having from 2 to 8 carbon atoms, and wherein at most one of R^1, R^2 and R^3 represent hydrogen or halogen, the compound of formula I being substantially free of organo-tin compounds; and

(3) a boron halide, selected from the group consisting of boron tribromide, boron trifluoride etherate, boron trifluoride ethylamine and boron trifluoride butyrate.

5,344,805

PLATINUM AND TIN-CONTAINING CATALYST AND USE THEREOF IN ALKANE DEHYDROGENATION

Gyanesh P. Khare, and Randall A. Porter, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 3, 1993, Ser. No. 55,343

Int. Cl.[5] B01J *23/06, 23/42*

U.S. Cl. 502—329 | **13 Claims**

1. In a process for preparing a dehydrogenation catalyst comprising the step of impregnating a support comprising zinc aluminate with platinum and tin from an impregnation solution, the improvement which comprises contacting the support with an impregnation solution which has been formed by combining a first solution consisting essentially of water, a platinum compound and oxalic acid and a second solution consisting essentially of water, a tin compound and an inorganic acid.

5,344,806

PROCESS FOR PRODUCING MONOALKENYL AROMATIC HYDROCARBON COMPOUND

Norio Fushimi; Kenji Inamasa, and Makoto Takagawa, all of Tsukuba, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 11,216

Claims priority, application Japan, Mar. 3, 1992, 4-045508

Int. Cl.[5] C07C *2/72*

U.S. Cl. 585—452 | **21 Claims**

1. A process for producing a monoalkenyl aromatic hydrocarbon compound which comprises alkenylating a side chain of an aromatic hydrocarbon compound having at least one hydrogen atom bonded at α-position of the side chain with a conjugated diene having 4 or 5 carbon atoms in the presence of a catalyst comprising the mixture obtained by heat treating metallic sodium together with a mixture of an alkaline earth metal oxide and a potassium compound selected from the group consisting of potassium hydroxide, potassium carbonate and potassium hydrogen carbonate in an inert gas atmosphere.

5,344,807

HEAT TRANSFER SHEETS

Masayuki Nakamura, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 614,266, Nov. 19, 1990, Pat. No. 5,252,530, which is a continuation of Ser. No. 404,408, Sep. 8, 1989, Pat. No. 4,990,484. This application Jul. 8, 1993, Ser. No. 86,871

Claims priority, application Japan, Sep. 12, 1988, 63-226426

The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.

Int. Cl.[5] B41M *5/035, 5/38*

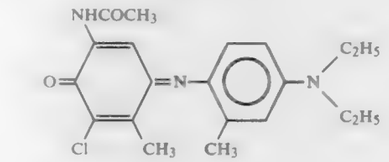
U.S. Cl. 503—227 | **7 Claims**

1. A heat transfer sheet comprising:

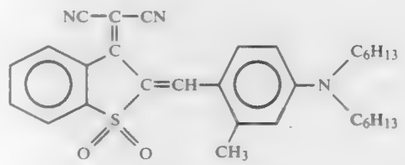
a base sheet; and

a dye carrier layer formed on one side of said base sheet,

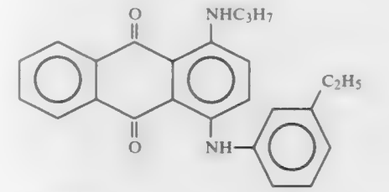
said dye carrier layer comprising a binder and a mixture of the dye expressed by the following formula (I) and at least one sublimable dye selected from the group consisting of the following formulae 1 to 15:



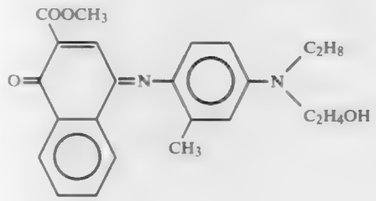
(I)



(1)

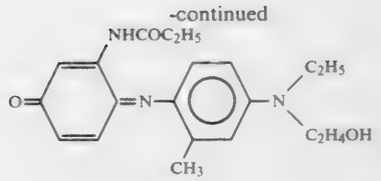


(2)

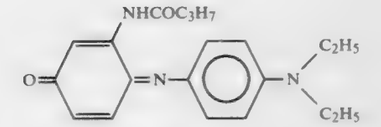


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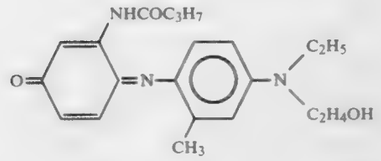
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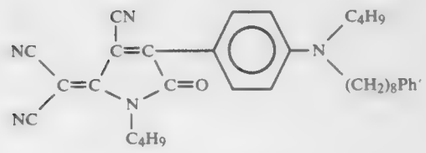
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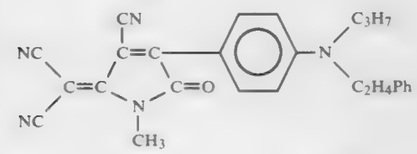
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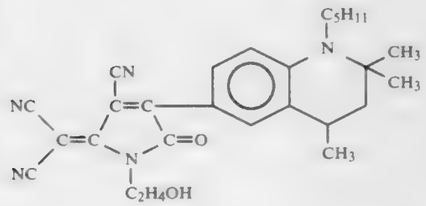
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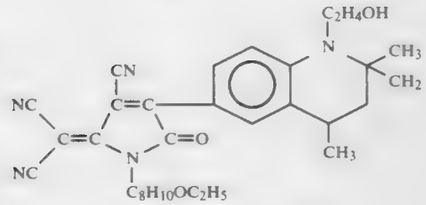
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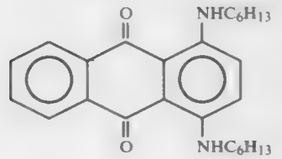
(8)



(9)

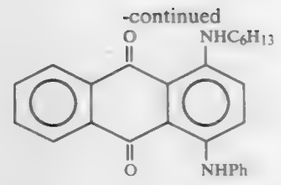


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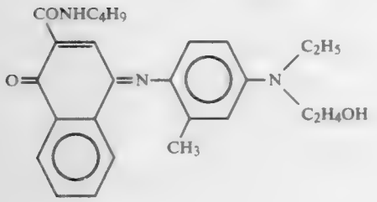


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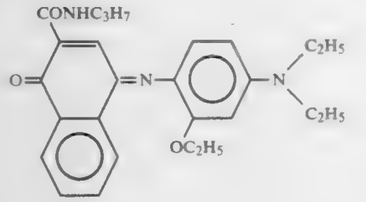
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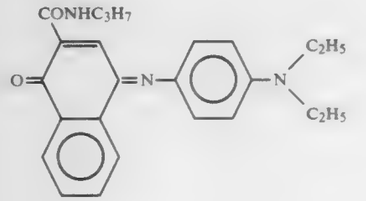
(12)



(13)



(14)



(15)

5,344,808

INTERMEDIATE TRANSFER MEDIUM AND PROCESS FOR PRODUCING IMAGE-RECORDED ARTICLE MAKING USE OF THE SAME

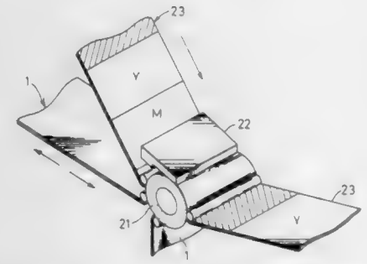
Niro Watanabe; Tatsuya Morimitsu; Kazuhisa Hoshino; Akihiko Kobayashi; Kiyoshi Horie; Naoaki Shindo; Yoshiaki Tada, and Takashi Sato, all of Tokyo, Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1993, Ser. No. 111,468

Claims priority, application Japan, Sep. 9, 1992, 4-240632; Dec. 21, 1992, 4-340150; Mar. 19, 1993, 5-060408

Int. Cl.[5] B41M *5/035, 5/38;* **G02B** *5/32*

U.S. Cl. 503—227 **15 Claims**



12. A process for producing an image-recorded article, comprising the steps of;

forming on an image-receiving adhesive layer of an intermediate transfer medium a multi-level image pattern formed of a sublimation ink and a binary image pattern formed of

a coloring heat-melting ink and feasible for optical machine reading, by means of a thermal head by the use of a transfer ribbon alternately repeatedly provided with heat-sublimation ink layers and coloring heat-melting ink layers; said intermediate transfer medium comprising a heat-resistant base sheet and provided thereon i) a release layer and ii) an image-receiving adhesive layer comprised of a thermoplastic resin having a glass transition point of from 50° C. to 150° C. and a filler added to the thermoplastic resin and selected from an inorganic filler having a melting point of 200° C. or above and an organic filler having a softening point or decomposition point of 200° C. or above; and

thermally transferring to a transfer substrate the image-receiving adhesive layer on which each image pattern has been formed, together with said release layer.

5,344,809

SYNERGISTIC HERBICIDAL COMPOSITION COMPRISING TRIAZINE HERBICIDES AND AMIDOSULFURON

Toshihiro Hirata, and Shin-ichiro Ogawa, both of Sodegaura, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

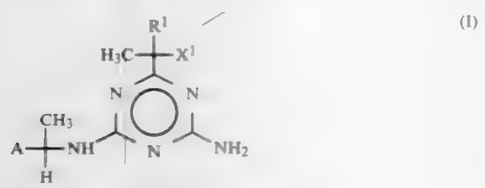
Filed Jun. 1, 1993, Ser. No. 70,550

Claims priority, application Japan, Jun. 8, 1992, 4-171530

Int. Cl.[5] A01N *43/68*

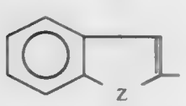
U.S. Cl. 504—134 10 Claims

1. A herbicidal composition comprising, as active ingredients, a triazine compound of a formula (I):



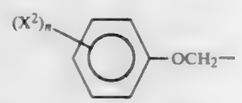
(I)

where A represents a group of a formula (a):



(a)

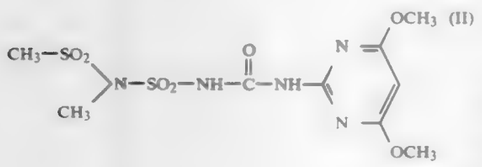
where Z represents an oxygen atom or a sulfur atom, or represents a group of a formula (b):



(b)

where X^2 represents a methyl group or a fluorine atom; and n represents an integer of from 0 to 2;

R^1 represents a hydrogen atom or a methyl group; and X^1 represents a fluorine atom or a chlorine atom; and a sulfonylurea herbicide of a formula (II):



(II)

wherein the weight ratio of said triazine compound to the sulfonylurea herbicide is 100/1 to 1/10 by weight.

5,344,810

HERBICIDAL COMPOSITIONS AND METHODS OF COMBATING WEEDS

Toshihiro Hirata, Sodegaura; Izumi Kobayashi, Tokyo; Nobuyuki Kikkawa, Sodegaura, and Tetsuo Takematsu, Utsunomiya, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

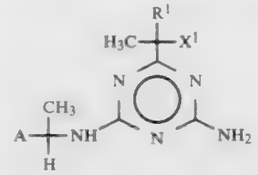
Continuation of Ser. No. 730,208, Jul. 15, 1991, abandoned. This application Mar. 11, 1993, Ser. No. 31,016

Claims priority, application Japan, Aug. 1, 1990, 2-202481

Int. Cl.[5] A01N *37/10, 43/12, 43/42, 43/68*

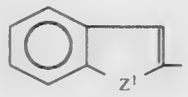
U.S. Cl. 504—135 30 Claims

1. A herbicidal composition for combatting weeds selected from the group consisting of Abution theophrasti, ipomea Pureurea, Galium aparine L. and Viola arvensis comprising as active ingredients a herbicidally effective amount of a triazine compound represented by general formula (I):

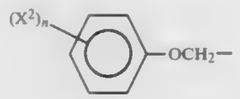


[I]

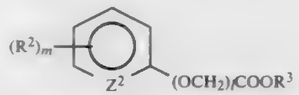
wherein A represents



wherein Z^1 represents oxygen atom or sulfur atom, or



wherein X^2 represents methyl group or fluorine atom and n represents 0 or an integer of 1 or 2; R^1 represents hydrogen atom or methyl group; and X^1 represents fluorine atom or chlorine atom and a herbicidally effective amount of a compound represented by general formula (II):



[II]

wherein Z^2 represents a nitrogen atom or CH, R^2 represents a fluorine atom, a chlorine atom, methyl group, methoxy group or amino group, R^3 represents a hydrogen atom, methyl group, NH_4, an alkali metal or $NH(CH_3)_2$, m represents an integer of 1 to 4 and l represents 0 or 1.

5,344,811

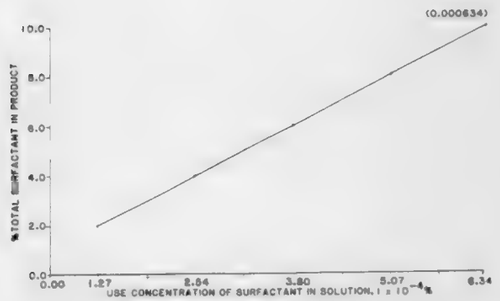
METHOD FOR DISPENSING COMPOSITIONS IN AN AQUEOUS SYSTEM

Charles J. Bunczk, Norristown, and Peter A. Burke, Downingtown, both of Pa., assignors to Kiwi Brands Inc, Douglassville, Pa.

Continuation of Ser. No. 744,323, Aug. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 426,793, Oct. 26, 1989, Pat. No. 5,049,299. This application Apr. 15, 1993, Ser. No. 47,780

Int. Cl.[5] A01N *25/30, 25/00;* **C05G** *3/02*

U.S. Cl. 504—192 5 Claims



1. In a method for spraying a composition on crops, the improvement which comprises introducing a water soluble composition selected from the group consisting of pesticide, herbicide and fertilizer and at least one nonionic or anionic surfactant into the aqueous medium so that the resulting surfactant concentration in the aqueous medium is less than the critical micelle concentration of the surfactant or surfactant mixture and the composition is solubilized.

5,344,812

HERBICIDAL 2-[(4-HETEROCYCLIC-PHENOXYMETHYL)PHENOXY]-ALKANOATES

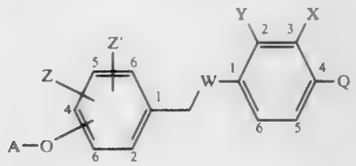
George Theodoridis, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 935,601, Aug. 26, 1992, Pat. No. 5,262,390. This application Aug. 17, 1993, Ser. No. 107,560

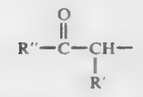
Int. Cl.[5] A01N *43/54;* **C07D** *239/10*

U.S. Cl. 504—243 12 Claims

1. A herbicidal compound of the formula



in which



1-methyl-6-trifluoromethyl-2,4-pyrimidinedione-3-yl;

R is hydrogen, M, lower alkyl, cycloalkyl, lower alkenyl or lower alkynyl, each optionally substituted with one or more chlorine or fluorine, or $—[CHR^7—(CH_2)_mO]_nR^8$,

R′ is hydrogen or methyl;

R″ is —OR or amino, phenylamino, lower alkylamino, lower alkenylamino, lower alkoxyamino, cyano, or lower alkyl-, lower haloalkyl-, or phenylsulfonylamino of the formula $—N(\text{lower alkyl})SO_2R^9$ or $—NHSO_2R^9$;

R^7 is H or CH_3;

R^8 is lower alkyl;

R^9 is lower alkyl, lower haloalkyl, or phenyl;

X is hydrogen, methyl, fluorine, or chlorine;

Y is hydrogen;

W is oxygen or sulfur;

Z is hydrogen, fluorine, chlorine, bromine, lower alkyl, or methoxy;

Z′ is hydrogen, fluorine, or chlorine;

m is 0 to 2, and n is 1 to 6;

M is sodium, potassium or ammonium; and

the group AO— may be in the 2, 3, or 4-position of the phenyl ring.

5,344,813

HYDROXYPYRIDONECARBOXAMIDES, THEIR MANUFACTURE AND USE AS HERBICIDES

Hans Theobald, Limburgerhof; Wolfgang von Deyn, Neustadt; Christoph Nuebling, Hassloch; Helmut Walter, Obrigheim; Uwe Kardorff, Mannheim; Karl-Otto Westphalen, Speyer, all of Fed. Rep. of Germany; Thomas Kappe, Graz, Austria, and Matthias Gerber, Mutterstadt, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

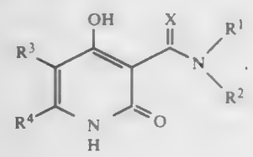
Filed Nov. 25, 1992, Ser. No. 981,361

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1991, 4138819

Int. Cl.[5] A01N *43/40;* **C07D** *213/56*

U.S. Cl. 504—244 8 Claims

1. A hydroxypyridonecarboxamide of the formula I,



(I)

where:

X is oxygen or sulfur;

R^1, R^2 independently of each other are hydrogen, straight-chain or branched C_1–C_{25}-alkyl, C_3–C_{25}-alkenyl, C_3–C_{25}-alkynyl, C_3–C_8-cycloalkyl, C_3–C_8-cycloalkyl-C_1–C_{17}-alkyl or C_1–C_{25}-alkoxy, the organic radicals being optionally substituted by halogen, cyano, C_1–C_5-alkylcarbonyl, C_1–C_5-alkoxycarbonyl, C_1–C_6-alkoxy, C_1–C_6-haloalkoxy, C_1–C_6-alkylthio, or C_1–C_6-haloalkylthio;

R^3 is hydrogen, C_1–C_6-alkyl, C_1–C_6-haloalkyl, C_1–C_6-alkoxy, C_1–C_6-haloalkoxy, C_1–C_6-alkylthio, C_1–C_6-haloalkylthio, halogen or nitro;

R^4 is C_1–C_{10}-alkyl, C_2–C_{10}-alkenyl, C_2–C_{10}-alkynyl, C_3–C_{10}-cycloalkyl, C_1–C_{10}-alkoxy, C_1–C_{10}-alkylthio, phenyl, the said radicals being optionally substituted by halogen, C_1–C_3-alkyl, C_1–C_3-haloalkyl, C_1–C_3-alkoxy, C_1–C_3-haloalkoxy, C_1–C_3-haloalkylthio or phenyl optionally substituted by a member selected from the group consisting of halogen, C_1–C_3-alkyl, C_1–C_3-haloalkyl, C_1–C_3-haloalkoxy and C_1–C_3-alkoxyl;

and environmentally acceptable salts thereof, with the exception of 6-methyl-4-hydroxypyrid-2-one-3-carboxamide and 6-methyl-4-hydroxypyrid-2-one-3-carboxylic acid-tert-butylamide.

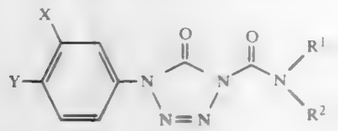
5,344,814

HERBIDICAL 1-(3,4-DISUBSTITUTED PHENYL) TETRAZOLINONES

Toshio Goto; Hidenori Hayakawa, both of Tochigi; Yukiyoshi Watanabe, Saitama, and Akihiko Yanagi, Tochigi, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

Filed May 26, 1993, Ser. No. 67,316
Claims priority, application Japan, May 28, 1992, 4-160083
Int. Cl.[5] A01N *43/713;* C07D *257/04*
U.S. Cl. 504—261 9 Claims

1. A 1-(3,4-disubstituted phenyl)tetrazolinone of the formula



(I)

wherein

X represents halogen,

Y represents trifluoromethoxy or trifluoromethylthio,

R^1 represents propyl, isopropyl or allyl, and

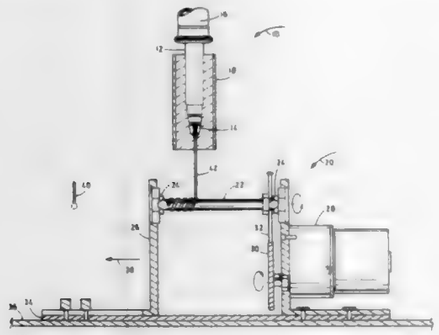
R^2 represents propyl, isopropyl or allyl.

5,344,815

FABRICATION OF HIGH T_C SUPERCONDUCTING HELICAL RESONATOR COILS

Sophia R. Su, Weston; Margaret O'Connor, Worcester, and Scott Butler, N. Oxford, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation-in-part of Ser. No. 797,874, Nov. 26, 1991, which is a continuation-in-part of Ser. No. 745,819, Aug. 16, 1991. This application Apr. 29, 1992, Ser. No. 875,905
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[5] H01L *39/12*
U.S. Cl. 505—1 18 Claims



1. A method for producing a superconducting copper oxide based helical resonator coil comprising the steps of:

mixing a copper oxide based superconductor as a powder and a binder as a melt at a solids loading of about 45–65% by volume to form a homogeneous extrudable powder/-binder mixture, wherein said binder consists essentially of an ester wax with no more than about 0.25 weight percent extrusion-aiding additives, and said ester wax has the general formula RCOOR′ with said R and said R′ each being independently selected from the group consisting of long chain hydrocarbon groups of at least 6 carbons, and said ester wax has a melting point of about 40°–100° C. and a viscosity of about 94–2000 centipoise at its melting point;

extruding said binder/powder mixture to form an as-extruded wire about 800 μm to about 2 mm in diameter;

simultaneously with said extruding step, wrapping said as-extruded wire around a cylindrical mandrel to form an extruded helical coil;

removing said extruded coil from said mandrel;

heating said extruded coil, while said extruded coil is embedded in a setter powder, in an oxidizing atmosphere at a heating rate of up to about 2° C./min to a binder removal temperature of about 450°–650° C., and holding said extruded coil in said oxidizing atmosphere at said binder removal temperature for a time sufficient to remove said binder from said extruded coil and to form a green coil having a density of at least 50% of theoretical density, wherein said setter powder is selected to avoid contamination of said green coil;

heating said green coil in said oxidizing atmosphere at a heating rate of up to about 3° C./min to about the incongruent melting temperature of said superconductor, and holding said green coil in said oxidizing atmosphere at about said incongruent melting temperature for a time just sufficient to begin partial melting of at least one component in said superconductor; and

cooling said partially melted coil in said oxidizing atmosphere at a rate below about 4° C./min to a consolidation temperature of about 940°–969° C., and holding said coil in said oxidizing atmosphere at said consolidation temperature for a time sufficient to consolidate said coil to a density of at least 90% of theoretical density and sufficient to achieve an average grain length of at least about 0.3 mm and grain alignment along the length of said wire;

cooling said densified coil in said oxidizing atmosphere at a rate below about 2° C./min to a cooled temperature at or below about 550° C.; and

holding said cooled coil at an annealing temperature of about 450°–550° C. in an atmosphere of flowing oxygen for a time sufficient to convert the crystal structure of said cooled coil to at least 50 v/o high T_c phase superconducting perovskite crystal;

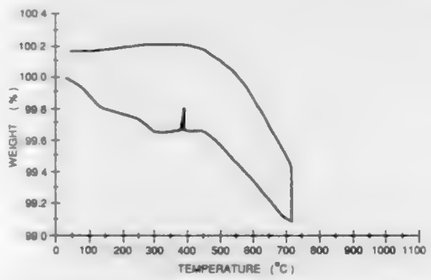
wherein said extruded helical coil produced by said extruding and wrapping steps is of a geometry selected to produce, after subsequent densification, a helical resonator coil about 3–17 mm in inner diameter, of a total length n λ/2, wherein n is an integer and λ is the operating wavelength of said helical resonator coil.

5,344,816

STABLE HIGH OXIDATION STATE SUPERCONDUCTING OXIDES

Ricardo C. Pastor, Manhattan Beach; Antonio C. Pastor, deceased, late of Manhattan Beach by Ricardo C. Pastor, executor ; Luisa E. Gorre, deceased, late of Camarillo by M. Efren Gore, administrator , and Keith C. Fuller, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 781,445, Oct. 23, 1991, abandoned. This application Feb. 24, 1993, Ser. No. 23,749
Int. Cl.[5] C01F *11/02;* C01G *3/02;* H01L *39/24*
U.S. Cl. 505—490 9 Claims



1. A process for increasing the superconducting transition temperature and narrowing the ΔT-transition in a high critical temperature (T_c) superconducting oxide comprising:

(a) heating a superconducting oxide selected from the group consisting of $YBa_2Cu_3O_{7-x}$, $Bi_4Ca_3Sr_3Cu_4O_{16+x}$, and La_2CuO_4, wherein x is the variation in oxygen stoichiometry, to a temperature ranging from about 850° C. to below the melting point of said oxide; and

(b) treating said oxide with a flowing gas reactive mixture consisting of oxygen and iodine at said temperature to increase the oxidation state of said oxide to a higher oxidation state and avoid absorption of iodine by said oxide, said gas reactive mixture comprising about 1 to 5 mm of Hg of iodine and the balance oxygen in a total atmosphere of about one atm.

5,344,817

DOWNHOLE DRILLING SPOTTING FLUID COMPOSITION AND METHOD

James R. Hayes, and Gale J. Campbell, both of Lafayette, La., assignors to Turbo-Chem International, Inc., Lafayette, La.

Division of Ser. No. 657,113, Feb. 19, 1991, Pat. No. 5,127,475, which is a division of Ser. No. 532,261, Jun. 1, 1990, Pat. No. 5,002,672. This application Mar. 10, 1992, Ser. No. 848,161
The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.
Int. Cl.[5] C09K *7/02*
U.S. Cl. 507—128 9 Claims

1. A method for lubricating a downhole well drilling operation comprising the steps of:

(a) mixing a spotting fluid concentrate composition comprising water soluble glycerophosphoric acid ester prepared as the reaction product of glycerin and phosphoric acid, an optional viscosifying agent and an optional sealing agent with drilling mud; and

(b) circulating said mud mixture through the well.

5,344,818

WELL TREATING COMPOSITION

Najib H. Zaid, Sterling, Kans., assignor to Jacam Chemical Partners, Ltd., Sterling, Kans.

Filed Oct. 20, 1993, Ser. No. 139,285
Int. Cl.[5] C09K *7/02*
U.S. Cl. 507—131 16 Claims

1. A downhole oil well treating composition for treating wells characterized by the presence of downhole iron, said composition comprising a first ingredient selected from the group consisting of sodium and potassium ferrocyanide and mixtures thereof and a second ingredient selected from the group consisting of the trisodium salt of nitrilotriacetic acid and alkali metal citrates and mixtures thereof.

5,344,819

PHARMACEUTICAL COMPOSITIONS FOR USE IN TREATING INFLAMMATION

Geoffrey L. Hammond, Lambeth, Canada, assignor to Allelix Biopharmaceuticals Inc., Mississauga, Canada

Continuation-in-part of Ser. No. 664,114, Mar. 4, 1991, Pat. No. 5,086,039, which is a division of Ser. No. 204,356, Jun. 9, 1988, Pat. No. 4,997,814, and a continuation-in-part of Ser. No. 653,736, Feb. 11, 1991, abandoned, which is a continuation of Ser. No. 204,400, Jun. 9, 1988, abandoned. This application Feb. 3, 1992, Ser. No. 829,954
The portion of the term of this patent subsequent to Mar. 5, 2008, has been disclaimed.
Int. Cl.[5] A61K *37/04*
U.S. Cl. 514—8 18 Claims

1. A pharmaceutical composition useful in treating inflammation in a mammal, said composition comprising CBG, an anti-inflammatory agent having an affinity constant for CBG between 0.1 and 10 nM at about 4° C. and physiological pH, and a pharmaceutically acceptable carrier, wherein said CBG is recombinant human CBG.

5,344,820

INFECTION PROTECTANT

Shunichi Dosako, Urawa; Hiroko Kusano, Tokorozawa; Eiki Deya, Sayama, and Tadashi Idota, Kawagoe, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Sapporo, Japan

Continuation of Ser. No. 604,333, Oct. 26, 1990, Pat. No. 5,147,853, which is a continuation of Ser. No. 191,252, May 6, 1988, abandoned. This application May 7, 1992, Ser. No. 879,421
Claims priority, application Japan, May 15, 1987, 62-118612
Int. Cl.[5] A61K *37/16*
U.S. Cl. 514—8 2 Claims

1. A method for protection against gastrointestinal bacteria, Epstein-Barr and influenza viruses that comprises administering an effective amount of an isolated and purified sialic acid-conjugated peptide to a patient in need thereof, wherein the sialic acid-conjugated peptide is a glycomacropeptide obtained by reacting rennet or pesin with κ-casein, cow milk, reconstituted milk or casein at pH 5.5–5.6.

5,344,821

PHEROMONOSTATIC PEPTIDE USED TO DISRUPT MATING OF THE CORN EARWORM, HELICOVERPA ZEA

Timothy G. Kingan, Catonsville, and Ashok K. Raina, Beltsville, both of Md., assignors to The United States of America, as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 28, 1993, Ser. No. 68,038
Int. Cl.[5] A61K *37/02;* C07K *7/10*
U.S. Cl. 514—12 3 Claims

1. An isolated polypeptide comprising the amino acid sequence:

(SEQ ID No:1)

X—ILE—ILE—ASN—ASN—Y—ASP—TYR—HIS—ASP—
ASP—HIS—HIS—GLY—ASP—GLN—PRO—
THR—LEU—LEU—LEU—
ARG—SER—GLN—PRO—GLU—ARG—MET—ARG—
PRO—LEU—
LEU—LEU—ALA—ARG—ASP—ALA—PHE—GLY—
GLY—GLU
CYS—PRO—PRO—SER—SER—PHE—HIS—LYS—LEU—LYS
S
S
ASN—TRP—CYS—HIS—ILE—VAL—NH_2,

where X is pyro-GLU and Y is a mixture of ASN and ASP, and effective analogs and derivatives thereof.

5,344,822

METHODS USEFUL IN ENDOTOXIN PROPHYLAXIS AND THERAPY

Daniel M. Levine, New York; Thomas S. Parker, Brooklyn, both of N.Y., and Albert L. Rubin, Englewood, N.J., assignors to The Rogosin Institute, New York, N.Y.

Filed Aug. 12, 1992, Ser. No. 928,930
Int. Cl.[5] A61K *37/02;* C07K *7/08*
U.S. Cl. 514—13 7 Claims

1. Method for alleviating endotoxin caused toxicity in a subject comprising administering to a subject in need thereof an amount of (i) a peptide consisting of the amino acid sequence set forth in SEQ ID NO; 1 and (ii) a phosphatidylcholine, wherein (i) and (ii) are present in the form of an HDL like

particle with which said endotoxin associates, in an amount sufficient to alleviate said toxicity.

5,344,823

ANTITUMOR ANTIBIOTIC BMY-41219

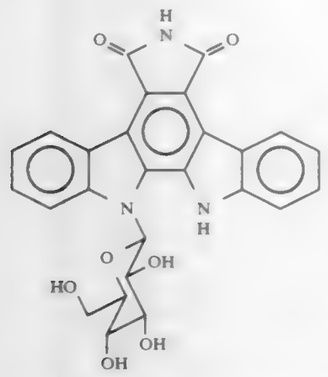
Kin S. Lam, Cheshire, Conn.; Leonard A. McDonald, Salt Lake City, Utah; Jacqueline Mattei, Branford, Conn.; Salvatore Forenza, and James A. Matson, both of Cheshire, Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation of Ser. No. 764,114, Sep. 23, 1991, abandoned, which is a continuation of Ser. No. 489,431, Mar. 6, 1990, abandoned. This application Feb. 6, 1992, Ser. No. 830,969

Int. Cl.[5] **A61K** *31/00*

U.S. Cl. 514—43 **3 Claims**

1. A process for producing the compound of the formula:



or a pharmaceutically acceptable acid addition salt thereof, which comprises cultivating a rebeccamycin-producing strain of *Saccharothrix aerocolonigenes* in an aqueous nutrient medium in the presence of tryptophan, until a substantial amount of said compound is produced by said organism in said culture medium and recovering said compound from the culture medium in a substantially pure form.

3. A method for therapeutically treating a mammalian host affected by a tumor sensitive to P388 leukemia which comprises administering to said host an effective tumor-inhibiting amount of the compound as defined in claim **1**.

5,344,824

METHOD FOR REDUCING INSULIN SECRETION

Kazuhiro Ohkuma; Shigeru Wakabayashi, both of Sanda; Yoshimi Mochizuki, Itami, and Mitsuko Satouchi, Takarazuka, all of Japan, assignors to Matsutani Chemical Industries Co., Ltd., Hyogo, Japan

Continuation of Ser. No. 803,760, Dec. 5, 1991, abandoned, which is a continuation of Ser. No. 656,534, Feb. 19, 1991, abandoned. This application Aug. 27, 1992, Ser. No. 933,909

Claims priority, application Japan, Feb. 2, 1990, 2-40384

Int. Cl.[5] **A61K** *31/70*

U.S. Cl. 514—58 **11 Claims**

1. A method for reducing insulin secretion without negatively affecting/influencing blood glucose levels in an animal which comprises the steps of:

(a) providing a pyrodextrin hydrolysate which is obtained by heating starch in the presence of a mineral acid and in the presence of water in an amount of not more than about 5% based on the weight of the starch to prepare pyrodextrin, hydrolyzing the pyrodextrin with alpha-amylase and refining the hydrolyzed pyrodextrin; and

(b) orally administering an effective amount of the pyro-dextrin hydrolysate to the animal.

5,344,825

METHANEDIPHOSPHONIC ACID FORMULATIONS WITH ION EXCHANGERS

Satish C. Khanna, Bottmingen, and Jonathan Green, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corp., Ardsley, N.Y.

Filed Apr. 14, 1993, Ser. No. 48,395

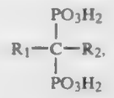
Claims priority, application Switzerland, Apr. 15, 1992, 1247/92-5

Int. Cl.[5] **A61K** *31/66, 9/50, 9/16*

U.S. Cl. 514—108 **13 Claims**

1. A pharmaceutical composition for the oral administration of methanediphosphonic acid derivatives, comprising

a) a methanediphosphonic acid derivative of formula:



(I)

wherein one of R_1 and R_2 is hydrogen or hydroxy and the other is amino-C_{1-4}alkyl, C_{2-6}alkyleneamino-C_{1-4}alkyl, N-mono- or N,N-di-C_{1-8}alkylamino-C_{2-4}alkyl, C_{5-7}cycloalkylamino, heteroaryl-C_{1-4}alkyl or N-C_{1-4}alkyl-N-phenylthio-C_{1-4}alkylamino-C_{1-4}alkyl, or a pharmaceutically acceptable salt thereof,

b) a cationic macroporous ion exchange resin based on a styrene/divinylbenzene copolymer having an exchangeable phosphonic acid methylaminomethyl group in the form of the cation-exchangeable mono- or di-sodium salt in an amount which enhances the abosorption of a), and,

c) pharmaceutically acceptable excipients.

5,344,826

TRICYCLE STEROID ANALOGS

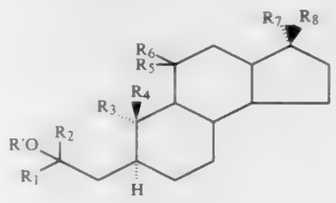
Douglas F. Covey, Ballwin; Yuefei Hu, and Charles F. Zorumski, both of St. Louis, all of Mo., assignors to Washington University, St. Louis, Mo.

Division of Ser. No. 4,768, Jan. 14, 1993, Pat. No. 5,292,906, which is a division of Ser. No. 811,208, Dec. 20, 1991, Pat. No. 5,206,415. This application Oct. 15, 1993, Ser. No. 136,150

Int. Cl.[5] **A01N** *45/00, 37/00*

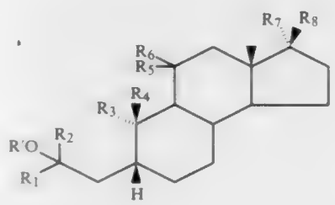
U.S. Cl. 514—167 **6 Claims**

1. The method of enhancing GABA-induced chloride currents at the GABA receptor/chloride ionophore complex comprising administering to a warm blooded mammal an effective amount of a compound of the following structural formula:



(I)

or



(II)

wherein

R_1=H or C_1–C_4 alkyl or fluoroalkyl;
R_2=H or C_1–C_4 alkyl or fluoroalkyl, in which R_1 and R_2 can be the same or different;
R_3=H or CH_3;
R_4=H or CH_3, in which R_3 and R_4 can be the same or different;
R_5=H;
R_6=H;
R_5,R_6=═O(carbonyl);
R_7=H;
R_8=a hydrogen bond accepting group;
R_7,R_8=═O(carbonyl); and
R′=H or an ester group.

5,344,827

STEROID SULPHATAS INHIBITORS

Michael J. Reed, London, United Kingdom, assignor to Imperial College of Science, Technology and Medicine, London, United Kingdom

Continuation of Ser. No. 779,067, Oct. 18, 1991, Pat. No. 5,281,587. This application Oct. 26, 1993, Ser. No. 143,071

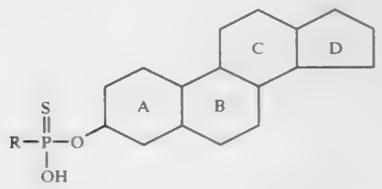
Claims priority, application United Kingdom, Feb. 21, 1990, 9003939

The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.

Int. Cl.[5] **C07J** *51/00;* **A61K** *31/56*

U.S. Cl. 514—169 **6 Claims**

1. A pharmaceutical preparation comprising in admixture a steroid sulphatase inhibitor and a parenterally administrable carrier wherein the steroid sulphatase inhibitor comprises an effective amount of a steroid-3-thiophosphonate of the formula



where R=alkyl, and the ring system ABCD represents a substituted or umsubstituted saturated or unsaturated steroid nucleus, or a pharmaceutically acceptable salt thereof.

5,344,828

PIPERAZINEALKANOIC ACID AND A PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Hiroyuki Sawanishi, Kanazawa; Yasuo Ito, Katsuyama; Hideo Kato, Fukui; Eiichi Koshinaka, Katsuyama; Nobuo Ogawa, Katsuyama, and Kouji Morikawa, Katsuyama, all of Japan, assignors to Hokuriku Pharmaceutical Co., Ltd., Katsuyama, Japan

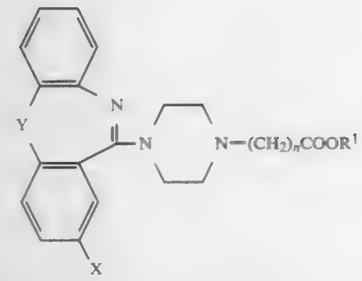
Filed Mar. 1, 1991, Ser. No. 663,154

Claims priority, application Japan, Mar. 5, 1990, 2-51897; Mar. 5, 1990, 2-51898; Aug. 29, 1990, 2-225256

Int. Cl.[5] **A61K** *31/55;* **C07D** *403/04, 413/04, 417/04*

U.S. Cl. 514—211 **10 Claims**

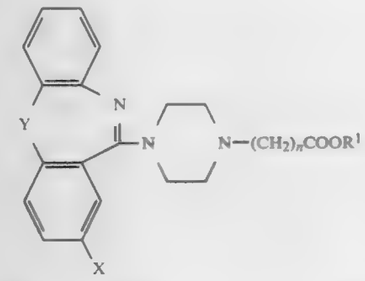
1. A polycyclic compound represented by the following formula:



wherein R^1 represents a hydrogen atom; n represents an integer of from 1 to 5; X represents a hydrogen atom or a halogen atom; and Y represents an oxygen atom or a sulfur atom;

or a pharmacologically acceptable salt thereof.

2. A polycyclic compound represented by the following formula:



wherein R^1 represents a hydrogen atom; n represents an integer of from 1 to 5; X represents a hydrogen atom or a halogen atom; and Y represents a methylene group;

or a pharmacologically acceptable salt thereof.

5,344,829

USE OF OB-101 TO TREAT INFLAMMATION

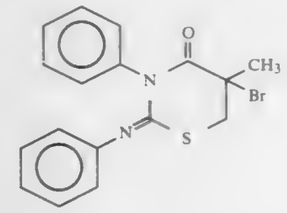
George C. Y. Chiou, College Station, Tex., assignor to The Texas A&M University System, College Station, Tex.

Continuation-in-part of Ser. No. 801,891, Dec. 3, 1991, Pat. No. 5,194,434. This application Aug. 6, 1993, Ser. No. 103,255

Int. Cl.[5] **A61K** *31/535*

U.S. Cl. 514—227.2 **5 Claims**

1. A method for the treatment and prevention of inflammation in an animal subject which method comprises administering to said subject an inflammation-controlling effective amount of a pharmaceutical composition comprising a pharmaceutically acceptable vehicle in admixture with a compound having the formula



5,344,830

N,N-DIACYLPIPERAZINE TACHYKININ ANTAGONISTS

Sander G. Mills, Woodbridge; Richard J. Budhu, Monmouth Junction; Conrad P. Dorn, Plainfield; William J. Greenlee, Teaneck; Malcolm MacCoss, Freehold, and Mu T. Wu, Clark, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 10, 1992, Ser. No. 988,514

Int. Cl.[5] **A61K** *31/495;* **C07D** *241/04, 401/12, 413/12*

U.S. Cl. 514—235.8 **4 Claims**

1. A compound which is selected from the group consisting of:

1) 4-(N,N-di-n-pentylcarbamoyl)-1-(N,N -diphenyl-carbamoyl)-N-[3-(4-morpholinyl)propyl]-2-piperazinecarboxamide;

2) 4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenyl-carbamoyl)-N-[2-(4-morpholinyl)ethyl]-2-piperazinecarboxamide;

3) 4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenyl-carbamoyl)-N-[2-(1-piperidinyl)ethyl]-2-piperazinecarboxamide;

4) 4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenyl-carbamoyl)-N-[2-(acetamido)ethyl]-2-piperazinecarboxamide;

5) 4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenyl-carbamoyl)-N-[2-(N'-benzyl-N'-methylamino)-ethyl]-N-methyl-2-piperazinecarboxamide;

6) 4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenyl-carbamoyl)-N-[3-(benzyloxycarbonyl)propyl]-N-methyl-2-piperazinecarboxamide;

7) 4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenyl-carbamoyl)-N-[2-[(N'-(3,5-dimethylphenyl)-methyl-(N'-methyl)amino]ethyl]-N-methyl-2-piperazinecarboxamide;

8) 4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenyl-carbamoyl)-N-[2-[(N'-[3,5-di-(trifluoro-methyl)phenyl]methyl)-(N'-methyl)amino]ethyl]-N-methyl-2-piperazinecarboxamide;

9) 4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenyl-carbamoyl)-N-[2-[(N'-(2-methoxyphenyl)-methyl)-(N'-methyl) amino]ethyl]-N-methyl-2-piperazinecarboxamide;

10) 4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenyl-carbamoyl)-N-[2-(N'-[(1,1-dimethyl)ethoxy-carbonyl]-(N'-methyl)aminoethyl]-N-methyl-2-piperazinecarboxamide;

11) (S)-2-(2-(N-(2-methoxybenzyl)amino)ethylaminocarbonyl)-4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenylcarbamoyl)-piperazine;

12) 2-(2-(N-methyl-N-(2-methoxybenzyl)amino)-ethylaminocarbonyl)-4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenyl-carbamoyl)piperazine;

13) (S)-2-(2-(1-piperidinyl)ethylaminocarbonyl)-1-[N-(3-chlorophenyl)-N-phenylcarbamoyl]-4-(N,N-di-n-pentylcarbamoyl)piperazine;

14) (S)-2-(2-(1-piperidinyl)ethylaminocarbonyl)-4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenyl-carbamoyl)piperazine;

15) (S)-2-(2-(N,N-bis(2-methoxybenzyl)amino)-ethylaminocarbonyl)-1-(N,N-diphenylcarbamoyl)-4-(N,N-di-n-pentylcarbamoyl)piperazine;

16) (S)-4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenyl-carbamoyl)-2-(2-(4-morpholinyl)ethylaminocarbonyl)-piperazine;

17) (S)-2-(2-(N-benzyl-N-methylamino)-N-(methyl)ethylaminocarbonyl)-4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenylcarbamoyl)piperazine;

18) (S)-1-(N-(3-chlorophenyl)-N-phenylcarbamoyl)-2-(2-(N-methyl-N(2-methoxybenzyl)amino)-ethylaminocarbonyl)-4-(N,N-di-n-pentylcarbamoyl)piperazine;

19(S)-1-(N-(3,5-dimethylphenyl)-N-phenylcarbamoyl)-2-(2-(N-methyl-N-(2-methoxybenzyl)-amino)ethylaminocarbonyl)-4-(N,N-di-n-pentyl-carbamoyl)piperazine;

20) (S)-1-(N-(3,5-dichlorophenyl)-N-phenylcarbamoyl)-2-(2-(N-methyl-N-(2-methoxybenzyl)-amino)ethylaminocarbonyl)-4-(N,N-di-n-pentyl-carbamoyl)piperazine;

21) (S)-4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenyl-carbamoyl)-2-(2-N-(benzyloxycarbonylmethyl)amino)-ethylaminocarbonyl)piperazine;

22) (S)-4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenyl-carbamoyl)-2-(2-N-(benzyloxycarbonylmethyl)-N-methylamino)ethylaminocarbonyl)piperazine;

or a pharmaceutically acceptable salt thereof.

2. A compound which is selected from the group consisting of:

1) 2-[2-((N-[2-(N'-benzyl -N'-methyl)aminoethyl])-N -methyl-)aminoethyl]-4-(N,N-di-n-pentyl-carbamoyl)-1-(N,N-diphenylcarbamoyl)-piperazine;

2) 2-[2-(N,N-dibenzylamino)ethyl]-4-(N,N-di-n-pentyl-carbamoyl)-1-(N,N-diphenylcarbamoyl)-piperazine;

3) 2-[2-(N -[2-phenylethyl]amino)ethyl]-4-(N,N -di-n-pentyl-carbamoyl)-1-(N,N-diphenyl-carbamoyl)piperazine;

4) 2-[2-(N-benzylamino)ethyl]-4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenylcarbamoyl)-piperazine;

5) 2-[2-(N -[4-phenylbutyl]amino)ethyl]-4-(N,N-di-n-pentyl-carbamoyl)-1-(N,N-diphenyl-carbamoyl)piperazine;

6) 4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenyl-carbamoyl)-2-(2-(3-phenylpropylamino)ethyl)-piperazine;

7) 4-(N,N-di-n-pentylcarbamoyl)-1-(N,N-diphenyl-carbamoyl)-2-(2-(2-(2-methoxyphenyl)ethylamino)ethyl)piperazine;

8) 2-(2-(2-(3,5-di-methylphenyl)ethylamino)ethyl)-4-(N,N -di-n-pentylcarbamoyl)-1-(N,N-di-phenylcarbamoyl)piperazine;

or a pharmaceutically acceptable salt thereof.

5,344,831

DIAZABICYCLO DERIVATIVES

Hiroaki Satoh, Saitama; Haruhiko Kikuchi, Tsurugashima; Kazuhiko Yamada, Sayama; Ruta Fukutomi, Kawagoe; Masashi Suzuki, Saitama; Koichiro Hagihara, Miyoshimachi; Toru Hayakawa; Takeo Arai, both of Kawagoe, and Setsuko Mino, Fujimi, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

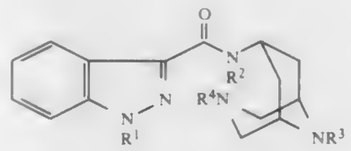
Filed Jan. 28, 1993, Ser. No. 10,145

Claims priority, application Japan, Jan. 31, 1992, 4-016172

Int. Cl.[5] **C07D** *247/02, 487/08;* **A61K** *31/495*

U.S. Cl. 514—249 **5 Claims**

1. A compound of formula (I) or a pharmaceutically acceptable salt thereof:



wherein

R^1 is hydrogen, C_1–C_{10} alkyl, (C_3–C_{10})alkenyl, (C_3–C_6)alkynyl, cyclo(C_3–C_7)alkyl, cyclo(C_3**14** C_6)alkyl(C_1–C_4)alkyl, (C_1–C_6) alkoxy(C_2–C_6)alkyl, oxo(C_3–C_6)alkyl, (C_1–C_6)alkoxycarbonyl (C_1–C_4)alkyl, (C_1–C_4)alkyl, (C_1–C_6)alkoxycarbonyl, alkanoyl, benzoyl, di(C_1–C_6)alkylamino(C_2–C_6)alkyl, hydroxy(C_2–C_6)alkyl, halo(C_2–C_6)alkyl, cyano(C_1–C_4)alkyl, piperidinyl, pyrrolidinyl, aryl, heteroaryl(C_1–C_4)alkyl wherein the heteroaryl moiety is a 5–6 membered ring having 1–3 nitrogen atoms in the ring optionally fused with a benzene ring or aryl(C_1–C_4)alkyl, the aryl group and the aryl moiety being optionally substituted by C_1–C_6 alkoxy, nitro, C_1–C_6 alkyl, amino or halo;

R^2 is hydrogen or C_1–C_{10} alkyl;

R^3 and R^4 may be the same or different and each is hydrogen, C_1–C_{10} alkyl, C_2–C_{10} alkenyl, alkanoyl, benzoyl, (C_1–C_6)alkoxy(C_2–C_6) alkyl or aryl(C_1–C_6)alkyl wherein the aryl moiety is optionally substituted by C_1–C_6 alkoxy, nitro, C_1–C_4 alkyl, amino or halo;

with the proviso that when R^2 is hydrogen and both R^3 and R^4 are C_1–C_{10} alkyl, R^1 does not represent hydrogen, C_1–C_{10} alkyl, aralkyl or dimethylamino(C_2–C_6)alkyl.

5,344,832

METHOD FOR THE LONG TERM REDUCTION OF BODY FAT STORES, INSULIN RESISTANCE, HYPERINSULINEMIA AND HYPERGLYCEMIA IN VERTEBRATES

Anthony H. Cincotta, Andover, Mass., and Albert H. Meier, Baton Rouge, La., assignors to The Board of Supervisors of Louisiana University and Agricultural and Mechanical College, Baton Rouge, La. and Ergo Science Incorporated, Charlestown, Mass.

Continuation-in-part of Ser. No. 463,327, Jan. 10, 1990, abandoned. This application Jun. 24, 1991, Ser. No. 719,745

Int. Cl.[5] **A61K** *31/44, 31/495*

U.S. Cl. 514—288 **24 Claims**

1. A method for modifying and regulating at least one of the lipid and glucose metabolism in a vertebrate animal or human subject in need of such treatment comprising:

administering a dopamine agonist to said subject on a times daily basis at a first predetermined time of day in a first dosage amount sufficient to reduce the hormonal prolactin level in the blood of said subject; and additionally

administering a prolactin stimulator to said subject on a time daily basis at a second predetermined time of day in a second dosage amount sufficient to increase hormonal prolactin level in the blood of said subject;

continuing said administrations for periods of time sufficient to modify and reset on a long-term basis the subject's daily prolactin cycle to cause it to mimic the low level and peak of the daily prolactin cycle of a lean healthy member of the same species, thereby achieving in said subject at least one of the following modifications in lipid and glucose metabolism: decrease in insulin resistance, reduction in fat stores, suppression of hyperinsulinemia and reduction of hyperglycemia.

5,344,833

OXEPANE ISOMERS OF RAPAMYCIN USEFUL AS IMMUNOSUPPRESSIVE AGENTS

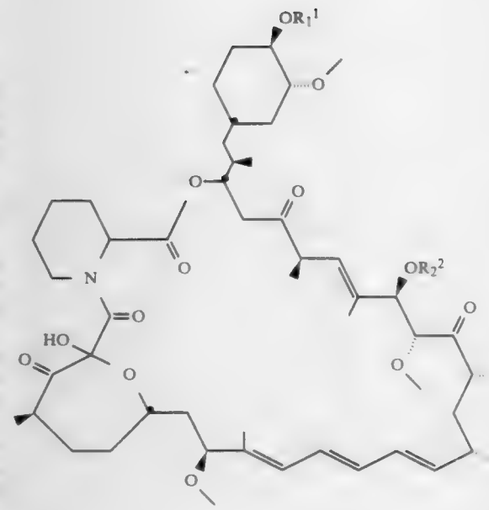
Philip F. Hughes, Chapel Hill, N.C., assignor to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 822,171, Jan. 16, 1992, Pat. No. 5,221,740. This application Mar. 18, 1993, Ser. No. 32,910

Int. Cl.[5] **A61K** *31/44*

U.S. Cl. 514—291 **2 Claims**

1. A method of treating transplantation rejection, and host vs. graft disease, in a mammal by administering an effective amount of a compound of formula (I)



(I)

wherein R^1 and R^2 are selected from the group consisting of hydrogen, acyl, sulfonyl or alkyl or a pharmaceutically acceptable salt thereof.

5,344,834

FUNCTIONALIZED VINYL AZOLES AND METHODS OF USE

Peter Strehlke; Rolf Bohlmann; Martin Schneider; Yukishige Nishino, and Hans-Peter Muhn-Seipoldy, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

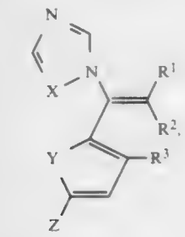
Filed Dec. 9, 1991, Ser. No. 802,639

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1990, 4039559

Int. Cl.[5] **A61K** *31/41;* **C07D** *233/61, 249/08, 405/06, 409/06, 401/06*

U.S. Cl. 514—317 **30 Claims**

1. A pharmaceutical preparation comprising an effective amount of a vinyl azole of formula I



(I)

wherein

X is N or CH,

Y is S or CH=CH,

Z is cyano, and one of R^1 or R^2 is carboxyl unsterified or esterified with $C_{1\text{-}10}$ straightchain, branched-chain or cyclic O-alkyl; or with O-aryl, wherein aryl is phenyl or naphthyl, unsubstituted or substituted by 1–3 $C_{1\text{-}4}$-alkyl or halogen; or with an O-aralkyl, wherein aryl and alkyl have the indicated meanings, carboxylic acid amide, wherein the carboxyl has the above-indicated meaning; unsubstituted or substituted with 1–2 same or different $C_{1\text{-}10}$ straight-chain or branched-chain alkyl; or $C_{6\text{-}10}$ aryl, unsubstituted or substituted by 1–3 C1–4 alkyl or halogen; and the amide N can also be part of a 5-8mem-

bered heterocyclic ring, containing no additional heteroatom or an additional ring heteroatom N, O or S, and the additional N is unsubstituted or substituted by R^6, wherein R^6 is H or C_{1-6} straight-chain or branched-chain alkyl, aldehyde, alkylketone —CO—R^7, wherein R^7 iS a straight-chain or branched-chain C_{1-10} alkyl or C_{3-12} cycloalkyl, arylketone —CO—R^8, wherein R^8 is phenyl, naphthyl or heteroaryl, unsubstituted or substituted 1–3 times by C_{1-4} alkyl, halogen, hydroxy or C_{1-4} alkoxy, sulfonamide, unsubstituted or substituted by R^6, or cyano;

and the respective other R^1 or R^2 is hydrogen, C_{1-4} lower-alkyl or cycloalkyl, unsubstituted or substituted aryl, aralkyl, unesterified or esterified carboxyl, unsubstituted or substituted carboxylic acid amide, aldehyde, alkylketone or arylketone or cyano, each as defined above;

R^1 and R^2 together with the carbon atom on which they are bound form a 5-, 6- or 7-membered ring, which further contains a ketone, ester, lactone, lactam or imide, wherein at least one carbonyl is conjugated with a vinyl double bond; and

R^3 is hydrogen; or

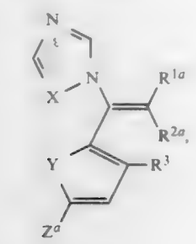
R^3 together with R^2 are

—O—C═O or —N—C═O, unsubstituted or substituted on the N,

wherein

the carbonyl is conjugated with a vinyl double bond, and a pharmaceutically acceptable excipient, wherein the preparation is in a unit dosage form for oral administration, is sterile for parenteral administration, or is a cream or ointment for topical administration.

28. A vinyl azole of formula 1a



(1a)

wherein

X is N or CH,

Y is S or CH═CH,

Z^a is cyano and

R^{1a} or R^{2a} is carboxyl unesterified or esterified with C straightchain or branched-chain or cyclic 0-alkyl; or with O-aryl, wherein aryl is phenyl or naphthyl, unsubstituted or substituted 1–3 times by C_{1-4}-alkyl or halogen; or with O-aralkyl, wherein aryl and alkyl have the indicated meanings, carboxylic acid amide, wherein the carboxyl has the above-indicated meaning unsubstituted or substituted 1–2 times by same or different C_{1-10} straight-chain or branched-chain alkyl; or C_{6-10} aryl unsubstituted or substituted 1–3 times by C_{1-4} alkyl or halogen, and the amide N is optionally can be part of a 5–8membered heterocyclic ring, containing no additional heteroatom or an additional ring heteroatom N, O or S, and the additional N is unsubstituted or substituted by R^6, wherein R^6 is H or C_{1-6} straight-chain or branched-chain alkyl, aidehyde, arylketone -CO-R^8, wherein R^a is phenyl, naphthyl or heteroaryl, unsubstituted or substituted 1–3 times by C_{1-4} alkyl, halogen, hydroxy or C_{1-4} alkoxy, sulfonamide, unsubstituted or substituted by R^6, or cyano and the respective other R^{7M} or R^{2a} is hydrogen, lower-alkyl or cycloalkyl, unsubstituted or substituted aryl, aralkyl, unesterified or esterified carboxyl, unsubstituted or substituted carboxylic acid amide, aldehyde, arylketone or cyano, each as defined above,

with the proviso that R^{7M} and R^{2a} are not simultaneously hydrogen and arylketone,

R^{2a} and R^{2a} together with the carbon on which they are bound form a 5-, 6- or 7-membered ring, which further contains a ketone, ester, lactone, lactam or imide, wherein at least one carbonyl is conjugated with a vinyl double bond; and

R^3 [means]is hydrogen; or

R^3 together with R^{2a} are —OC —O—N—C ═or unsubstituted or substituted on the N, wherein the carbonyl group is conjugated with a vinyl double bond.

5,344,835

PIPERIDINE AND PYRROLIDINE DERIVATIVES

David Alker, Birchington, and Peter E. Cross, Canterbury, both of United Kingdom, assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/EP90/02039, § 371 Date Jul. 2, 1992, § 102(e) Date Jul. 2, 1992, PCT Pub. No. WO91/10650, PCT Pub. Date Jul. 25, 1991

PCT Filed Nov. 28, 1990, Ser. No. 890,595

Claims priority, application United Kingdom, Jan. 6, 1990, 9000301.3

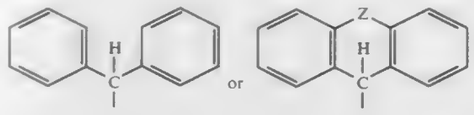
Int. Cl.[5] **A61K** *31/445, 31/44;* **C07D** *211/12, 409/12*

U.S. Cl. 514—317 **8 Claims**

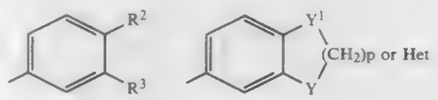
1. A compound of the formula:

$$R^1—O(CH_2)_mA(CH_2)_nXR \quad (I)$$

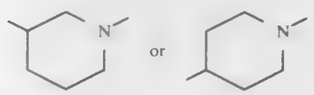
or a pharmaceutically acceptable salt thereof, wherein R^1 is a group of the formula:



where Z is $—(CH_2)_2—$, —CH═CH—, $—CH_2—S—$ or —CH-2—O—; R is a group of the formula:



and A is a group of formula:



in which

the N atom is attached to the group (CH_2)n;

m is 1 or 2;

n is an integer of from 1 to 4;

p is 1, 2 or 3;

R^2 and R^3 are each independently hydrogen, C_1–C_4 alkyl, hydroxy-(C_1–C_4 alkyl), hydroxy, C_1–C_4 alkoxy, halo, trifluoromethyl, nitro, cyano, sulphamoyl, —CO(C_1–C_4 alkyl), —OCO(C_1–C_4 alkyl), carboxy, —CO_2(C_1–C_4 alkyl), $—(CH_2)_qCONR^4R^5$, $—(CH_2)_qNR^6R^7$ or —NH-SO_2NH_2 in which R^4 and R^5 are each independently H or C_1–C_4 alkyl, q is 0, 1 or 2, and either R^6 and R^7 are each independently H or C_1–C_4 alkyl or R^6 is hydrogen and R^7 is —SO_2(C_1–C_4 alkyl), —CO(C_1–C_4 alkyl) or —CONH(-C_1–C_4 alkyl);

X is a direct link, O or S;

Y and Y^1 are each independently O or CH_2; and

Het is pyridyl or thienyl.

5,344,836

FUSED BENZENEOXYACETIC ACID DERIVATIVES

Nobuyuki Hamanaka; Kanji Takahashi, and Hidekado Tokumoto, all of Osaka, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

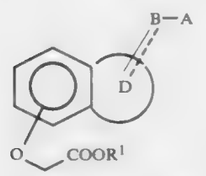
Filed Nov. 5, 1992, Ser. No. 971,581

Claims priority, application Japan, Nov. 11, 1991, 3-322612; Jul. 3, 1992, 4-220246

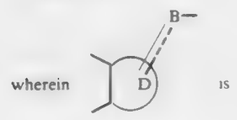
Int. Cl.[5] **A61K** *31/44;* **C07D** *213/02*

U.S. Cl. 514—332 **18 Claims**

1. A fused benzeneoxyacetic acid derivative of the formula (1):

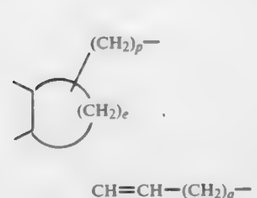


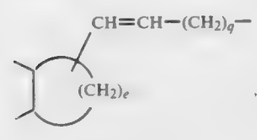
(I)

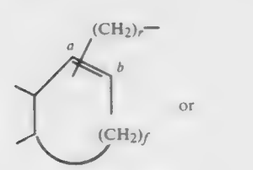


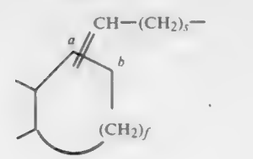
wherein

is









A is —COW;

W is

(i) $—NR^2R^3$,

(ii) $—NR^4—OR^5$,

(iii) $—NR^4—NR^2R^3$ or

(iv) $—NR^4—N═Cr^2R^3$;

R^1 is a hydrogen atom or C_{1-4} alkyl;

R^2 and R^3 each, independently, is

(i) a hydrogen atom

(ii) phenyl,

(iii) benzoylphenyl,

(iv) a 4–7 membered, unsaturated monocyclic hetero ring containing one nitrogen atom as a hetero atom or

(v) C_{1-4} alkyl substituted by (1) 1 to 3 of phenyl or (2) one phenyl and one 4–7 membered, unsaturated monocyclic hetero ring containing one nitrogen atom as a hetero atom;

R^4 is a hydrogen atom, C_{1-6} alkyl or phenyl;

R^5 is

(i) phenyl,

(ii) a 4–7 membered, unsaturated monocyclic hetero ring containing one nitrogen atom as hetero atom or

(iii) C_{1-4} alkyl substituted by (1) 1 to 3 of phenyl or (2) one phenyl and one 4–7 membered, unsaturated monocyclic hetero ring containing one nitrogen atom as a hetero atom;

the said phenyl and hetero rings may be also substituted by C_{1-4} alkyl, C_{1-4} alkoxy, a halogen atom, nitro or trihalomethyl, when R^2, R^3, R^4 or R^5 is phenyl or the group containing phenyl, or when R^2, R^3 or R^5 is said hetero ring or the group containing the hetero ring;

e is 3–5;

f is 1–3;

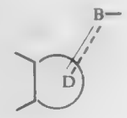
p is 0–4;

q is 0–2;

r is 0–4;

s is 0–3;

with the proviso that, when



(i)

is the formula (iii) or (iv), $—(CH_2)_r$ or $=CH—(CH_2)_s$ in the side chain is bonded to the carbon atom at the position a or b in the ring;

or non-toxic salts thereof or non-toxic acid addition salts thereof.

5,344,837

PLATELET AGGREGATION INHIBITORS

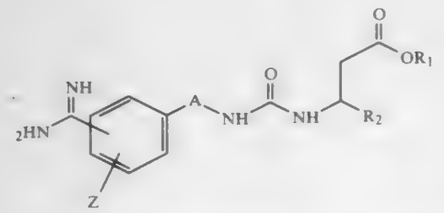
Foe S. Tjoeng, Manchester, Mo., and Jeffery A. Zablocki, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill. and Monsanto Company, St. Louis, Mo.

Division of Ser. No. 908,128, Jul. 2, 1992, Pat. No. 5,272,162. This application Sep. 23, 1993, Ser. No. 126,817

Int. Cl.[5] **A01N** *43/40, 37/12*

U.S. Cl. 514—344 **2 Claims**

1. A method of treating a mammal to inhibit platelet aggregation comprising administering a therapeutically effective amount of a compound of the formula



(iv)

or a pharmaceutically acceptable salt thereof wherein Z is selected from the group consisting of H, halogen, hydroxy, alkoxy of from one to six carbon atoms and alkyl of from one to six carbon atoms;

wherein A is selected from the group consisting of alkyl of one to six carbon atoms, alkenyl of two to six carbon atoms and alkynyl of two to six carbon atoms;

wherein R_1 is selected from the group consisting of H, alkyl of from one to six carbon atoms, aralkyl and alkanoyloxyalkyl; and

wherein R_2 is selected from the group consisting of H, alkyl

of from one to six carbon atoms, alkenyl of from two to six carbon atoms, alkynyl of from two to six carbon atoms, aryl and heteroaryl wherein the heteroatom is nitrogen optionally substituted by a radical selected from the group consisting of halogen, alkyl of one to six carbon atoms, alkoxy of one to six carbon atoms, carboxyl derivatives, nitro, cyano, azido, ureido, ureylene, alkoxycarbonyloxy, hydroxyl, alkylamino, alkoxycarbonyl, trialkylsilyl, alkoximino, alkylsulfonyl, phenylsulfonyl and amino.

5,344,838

STERILANT COMPOSITION

Stanley L. Wachman, Cherry Hill, and Sidney Karlan, Nutley, both of N.J., assignors to Cetylite Industries, Inc., Pennsauken, N.J.

Continuation of Ser. No. 866,010, Apr. 9, 1992, abandoned, which is a continuation of Ser. No. 758,400, Aug. 27, 1991, Pat. No. 5,124,359, which is a continuation-in-part of Ser. No. 210,626, Jun. 23, 1988, Pat. No. 4,923,899, which is a continuation-in-part of Ser. No. 139,166, Dec. 22, 1987, abandoned, which is a continuation of Ser. No. 906,557, Sep. 8, 1986, abandoned, which is a continuation of Ser. No. 776,479, Sep. 16, 1985, abandoned, which is a continuation-in-part of Ser. No. 692,776, Jan. 18, 1985, abandoned. This application Dec. 8, 1993, Ser. No. 164,002

Int. Cl.[5] A01N *33/12, 43/06, 43/08, 43/40*

U.S. Cl. 514—358 **13 Claims**

1. A biocidal, aqueous, composition for killing bacteria, spores, fungi, and viruses on nonabsorbent surface comprising:

a) two quaternary ammonium compounds, each in the amount of from about 0.05 to 3 percent by weight, one of said two quaternary ammonium compounds is a heterocyclic quaternary ammonium compound, and the other of said quaternary ammonium compounds is an aliphatic quaternary ammonium compound having an aromatic and an alkyl moiety or having a long chain aliphatic and a lower alkyl moiety;

b) one heterocyclic dialdehyde containing up to 6 carbon atoms in the amount of from about 0.5 to about 7 percent by weight; and

c) at least one aliphatic hydroxyl compound having from 1 to 8 carbon atoms in the amount from 0.1 to about 3 percent by weight; all weight percents being in the final use dilution.

5,344,839

SULFONAMIDES AS ANTIFUNGAL AGENTS

Javier Bartroli; Manuel Anguita; Jordi Belloc; Elena Carceller, and Carmen Almansa, all of Barcelona, Spain, assignors to J. Uriach & Cia. S.A., Barcelona, Spain

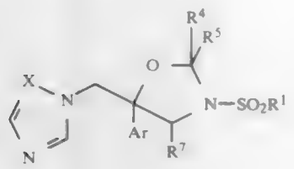
Division of Ser. No. 945,589, Sep. 16, 1992, which is a continuation-in-part of Ser. No. 772,838, Oct. 8, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 2,898

Claims priority, application Spain, Oct. 8, 1990, 9002712

Int. Cl.[5] A01N *43/76;* **A61K** *31/42;* **C07D** *413/14, 413/06*

U.S. Cl. 514—374 **11 Claims**

1. A compound of formula Ia:



Ia

in which:

X is N or CH;

R^1 is C_1–C_6 alkyl, C_1–C_4 haloalkyl, C_3–C_6 cycloalkyl, phenyl-C_1–C_4-alkyl, a phenyl-C_1–C_4-alkyl group where the phenyl ring carries a substituent selected from the group consisting of (a) as specified below, phenyl, naphthyl, a phenyl ring substituted with one or more members of group (a), quinolyl, or isoquinolyl,;

R_4 is hydrogen, C_1–C_6 alkyl, or (1H-1,2,4-triazol-1-yl)methyl;

R^5 is hydrogen, C_1–C_6 alkyl, phenyl or a phenyl group substituted with a member of group (a)

R^7 is hydrogen or C_1–C_6 alkyl;

Ar is phenyl or a phenyl ring substituted with one or more halogen or trifluoromethyl groups;

wherein group (a) consists of: C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, halogen, CF_3, NO_2, CN, OH, OCH_2Ph, CH_2OH, NHAc, a group of formula $—CH_2—OCO—R^6$, a group of formula $—CO—R^6$, a group of formula $—COO—\ R^6$, a group of formula $—SO_2R^6$, NH_2, NHR^6, or $NR^6{}_2$;

R^6 is C_1–C_4 alkyl;

Z is 0, 1 or 2; or an acid-addition salt thereof.

5,344,840

4-SUBSTITUTED IMIDAZOLE DERIVATIVES USEFUL IN PERIOPERATIVE CARE

Mervyn Maze, Portola Valley, Calif., and Mika Scheinin, Naantali, Finland, assignors to Orion-Yhtyma OY, Turku, Finland

Continuation of Ser. No. 884,288, May 15, 1992, abandoned, which is a continuation of Ser. No. 790,116, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 606,272, Oct. 31, 1990, abandoned, which is a division of Ser. No. 313,832, Feb. 23, 1989, abandoned. This application Jan. 13, 1993, Ser. No. 3,681

Claims priority, application United Kingdom, Feb. 29, 1988, 8804683

Int. Cl.[5] A61K *31/415*

U.S. Cl. 514—396 **8 Claims**

1. A method of perioperative treatment of mammals to reduce the responses of the autonomic nervous system to stressful stimuli during an operation by administering to said mammal in whom such reduction is desired an effective amount of dextro 4-[1-(2,3-dimethylpheny)-ethyl] -1H-imidazole or a non-toxic pharmaceutically acceptable salt thereof substantially in the absence of the laevo form of said compound.

5,344,841

BIS-(HYDROXYLAKYLAMINO)-ANTHRAQUINONE INHIBITORS OF PROTEIN KINASE C

Jack B. Jiang, Chapel Hill, and Mary G. Johnson, Carrboro, both of N.C., assignors to Sphinx Pharmaceuticals Corporation, Durham, N.C.

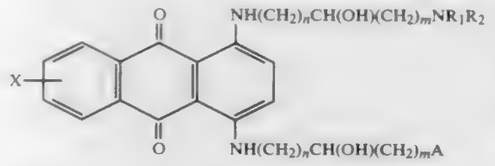
PCT No. PCT/US91/08026, § 371 Date Jun. 8, 1992, § 102(e) Date Jun. 8, 1992, PCT Pub. No. WO92/07557, PCT Pub. Date May 14, 1992

Continuation-in-part of Ser. No. 609,252, Nov. 5, 1990, Pat. No. 5,204,370, which is a continuation-in-part of Ser. No. 609,179, Nov. 2, 1990, abandoned. This PCT application Oct. 30, 1991, Ser. No. 859,514

Int. Cl.[5] A01N *47/10, 43/16*

U.S. Cl. 514—459 **21 Claims**

1. A method of inhibiting protein kinase C which comprises contacting protein kinase C with an inhibitory amount of a substituted anthraquinone having the formula



wherein R_1 and R_2 are independently H, C_1–C_{10} alkyl, aryl, arylalkyl, or alkylaryl; n and m are independently 1, 2, or 3; A is Halogen, OH, alkoxy, $OCO(NR_3R_4)$, $S—C(NH_2)═NR_5$, or

when m=1, A represents the attachment of the oxygen atom from the adjacent hydroxyl group to form an oxirane ring; R_3, R_4, and R_5 are independently H, alkyl, or aryl; X is H, OH, NR_6R_7, Cl, Br, I, F, alkyl, aryl, alkoxy, aryloxy, $COOR_8$, or $CONR_9R_{10}$; and R_6, R_7, R_8, R_9, and R_{10} are independently H, lower alkyl, or aryl.

5,344,842

THIOSEMICARBAZONE DERIVATIVES

Martin Missbach, Rheinfelden, Switzerland, assignor to Ciba-Geigy Corportion, Ardsley, N.Y.

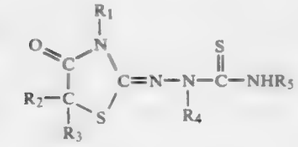
Filed May 24, 1993, Ser. No. 66,815

Claims priority, application Switzerland, Jun. 3, 1992, 1778/92; Jun. 3, 1992, 1779/92; Oct. 6, 1992, 3114/92

Int. Cl.[5] A61K *31/425;* **C07D** *277/50*

U.S. Cl. 514—342 **9 Claims**

1. A compound of formula I



(I)

wherein

R_1 is lower alkyl, lower alk-2-en-1-yl or lower alk-2-yn-1-yl,

R_2 and R_3 independently of one another are hydrogen or lower alkyl, or R_2 and R_3 together are lower alkylidene,

R_4 is hydrogen, lower alkyl, lower alkoxy, aryl, aryl-lower alkyl or the group $—C(═O)—R_6$ wherein R_6 is lower alkyl, aryl, heteroaryl, aryloxy, aryl-lower alkoxy or lower alk-2-en-1-yloxy,

R_5 is aryl, aryl-lower alkyl, unsaturated or saturated heterocyclyl-lower alkyl, lower alkoxycarbonyl-lower alkyl or the group $—C(═O)—R_7$ wherein R_7 is lower alkyl, aryl, aryl-lower alkyl, aryl-lower alkenyl, heteroaryl, aryloxy, aryl-lower alkoxy or lower alk-2-en-1-yloxy, or a salt thereof.

5,344,843

CAT-1 INHIBITORS, PHARMACEUTICAL COMPOSITIONS AND METHODS OF USE

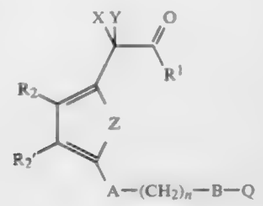
Robert W. Guthrie, Saddle Brook; John G. Mullin, Jr., Hawthorne, both of N.J.; David F. Kachensky, Milford, Pa.; Richard W. Kierstead, North Caldwell, N.J.; Jefferson W. Tilley, North Caldwell, N.J.; Guy P. Heathers, Morristown, N.J.; Alan J. Higgins, Upper Montclair, N.J., and Ronald A. LeMahieu, North Caldwell, N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 698,014, May 9, 1991, abandoned. This application Mar. 13, 1992, Ser. No. 850,620

Int. Cl.[5] A61K *31/19, 31/38;* **C07C** *65/40;* **C07D** *333/32*

U.S. Cl. 514—473 **38 Claims**

1. A compound of the formula



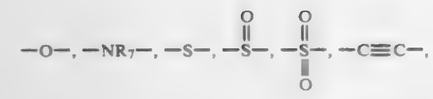
I

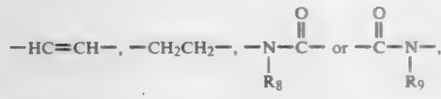
wherein

R_1 hydroxy;

R_2 and R_2', independently, are hydrogen, alkyl, aryl, alkoxy, hydroxy, halogen, alkanoyl, aroyl or nitro;

A is a bond,

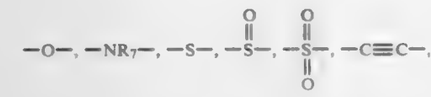


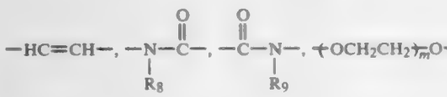


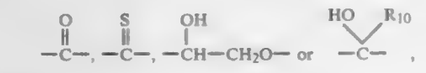
wherein

R_7 is hydrogen, lower alkyl or acyl and R_8 and R_9 are, independently, hydrogen or lower alkyl;

B is a bond;



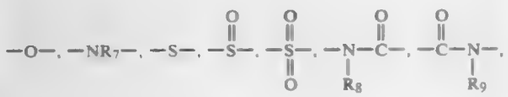




wherein

m is an integer from 1 to 4 and R_7, R_8, R_9 are as described above and R_{10} is hydrogen;

n is an integer from 1 to 6, with the proviso that when A and B are, independently, a bond,



then

n is an integer from 2 to 6;

Z is —S—, $—CR_2═CR_2—$;

X and Y taken together are O═, or when one of X or Y is amino the other is hydrogen;

Q is phenyl, cyclohexyl, cyclooctyl, pyridinyl, adamantyl, 1,'-biphenyl, anthracenyl, phenanthrenyl, naphthalenyl, 5,6,7,8-tetrahydro-1-naphthalenyl, 5,6,7,8-tetrahydro-2-naphthalenyl, 1,2,3,4-tetrahydro-1-naphthalenyl, 1,2,3,4-tetrahydro-2-naphthalenyl, quinolyl, isoquinolyl, which radical can be substituted by one or more of the following groups, lower alkyl, alkoxy, acyloxy, halogen, acyloxyalkyl, alkoxyalkyl, aryloxyalkoxy, hytdroxy, hydroxyalkyl, hydroxyalkoxy, phenyl, trihaloalkyl, sulfamoyl, carboxycarbonyl or alkoxaylyl; or

when a basic or acidic group is present, its pharmaceutically acceptable salt, and, when appropriate, its enantiometer, racemate, diastereomer or mixture thereof or geometric isomer or mixture thereof, or a pharmaceutically acceptable salt thereof.

5,344,844

SALT EXCRETION PROMOTING COMPOSITION

Kazuoki Ishihara, Sagamihara, Japan, assignor to Kabushiki Kaisya Advance, Japan

Continuation of Ser. No. 688,559, Jun. 25, 1991, abandoned. This application Dec. 30, 1992, Ser. No. 999,552
Claims priority, application Japan, Jan. 9, 1990, 2-1003
Int. Cl.[5] A01N *37/12, 43/04;* A61K *9/14*
U.S. Cl. 514—540 7 Claims

1. A method for promoting the excretion of sodium ion contained in the cavity of the digestive tract of a human, which comprises administering to a human a dietary composition comprising (i) 10 parts by weight of agar and (ii) 1 to 15 parts by weight of at least one polysaccharide selected from the group consisting of sodium alginate, λ-and κ-carrageenan and xanthane gum in an amount effective to promote said excretion of sodium ion.

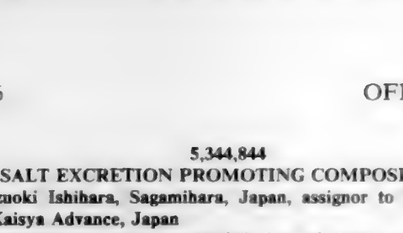
5,344,845

COMPOUND AND USE OF THE SAME AS MEDICINE

Akihide Koda, Gifu; Koji Waragai, Ibaraki; Yutaka Ono, Ibaraki; Hideyuki Ozawa, Ibaraki; Hideki Kawamura, Ibaraki; Masao Maruno, Ibaraki, and Takeshi Wakamatsu, Ibaraki, all of Japan, assignors to Tsumura & Co., Tokyo, Japan

PCT No. PCT/JP92/00451, § 371 Date Dec. 4, 1992, § 102(e) Date Dec. 4, 1992, PCT Pub. No. WO92/18463, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 10, 1992, Ser. No. 938,170
Claims priority, application Japan, Apr. 10, 1991, 3-103558; Feb. 27, 1992, 4-75678
Int. Cl.[5] A61K *31/165, 31/495;* C07C *103/82;* C07D *213/75*
U.S. Cl. 514—614 7 Claims

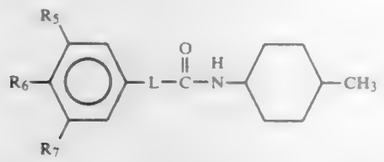
1. A compound represented by formula (I) shown below or a pharmaceutically acceptable salt thereof:



(I)

where L represents —(CH=CH)$_k$— or —(CH$_2$)k—; j represents an integer of 1 to 6; k represents an integer of 0 to 5; and R_1, R_2, R_3 and R_4 are either identical or different, and each represents a hydrogen atom, an amino group, an acylamino group, a dialkylamino group in which each alkyl moiety has 1 to 5 carbon atoms, a halogen atom, a hydroxyl group, an acetoxy group, an alkoxy group having 1 to 3 carbon atoms, a trifluoromethyl group, a nitro group, tetrahydropyranyloxy group, or a benzyloxy group.

2. A compound represented by formula II shown below, or a pharmaceutically .acceptable salt thereof:



(II)

where L represents —(CH=CH)$_k$— or —(CH$_2$)k—; each k represents an integer of 1 to 5; R_5, R_6 and R_7 are either identical or different, and each represents a hydrogen atom, a hydroxyl group, an acetoxy group, an amino acid ester group in which the amino moiety may be protected by a protective group, an alkoxy group having 1 to 3 carbon atoms, or —O—(CH$_2$)j—Y$_1$; j represents an integer of 1 to 6; and Y1 is a halogen atom, an amino group, an amino group substituted with 1 or 2 thioethanol groups, an amino group substituted with 1 or 2 allyl groups, a monoalkylamino group having 1 to 10 carbon atoms, a dialylamino group in which each alkyl moiety has 1 to 10 carbon atoms, an imidazole group substituted with 1 to 3 substituent groups, a benzimidazole group substituted with 1 to 3 substituent groups, a diazole group, a triazole group, a tetrazole group, a piperidine group, a piperidinopiperidine group, an isonipecotic acid group or an ester thereof with an alkyl group having 1 to 5 carbon atoms, a thiazolidine group, a pyrrolidine group, a morpholine group, a 4-methylpiperazine group, a carboxyl group, a carboxylic acid alkylester group in which the alkyl moiety has 1 to 5 carbon atoms or a carboxamide group.

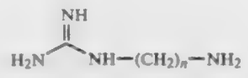
5,344,846

COMPOSITIONS AND METHODS FOR INHIBITING DEOXYHYPUSINE SYNTHASE AND THE GROWTH OF CELLS

Judit Jakus, Silver Spring; Myung H. Park, Potomac; Edith C. Wolff, Bethesda, and John E. Folk, Derwood, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Dec. 30, 1992, Ser. No. 998,231
Int. Cl.[5] C07C *279/04;* A61K *31/155*
U.S. Cl. 514—634 5 Claims

1. A method for inhibiting the growth of mammalian cells, said method comprising administering a deoxyhypusine synthase inhibitor to the mammalian cells, wherein the deoxyhypusine synthase inhibitor is a compound having the general formula:



wherein n is an integer from four to nine.

5,344,847

USE OF KETONE, ALCOHOL AND SCHIFF BASE-CONTAINING COMPOSITIONS FOR REPELLING BLOOD FEEDING ARTHROPODS AND APPARATUS FOR DETERMINING REPELLENCY AND ATTRACTANCY OF SEMIOCHEMICALS AGAINST AND FOR BLOOD FEEDING ARTHROPODS

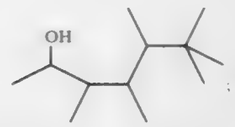
Richard A. Wilson, Westfield; Braja D. Mookherjee, Holmdel, both of N.J.; Jerry F. Butler, Gainesville, Fla., and Eleanor Fox, New York, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y. and The University of Florida, Gainesville, Fla.

Division of Ser. No. 982,374, Nov. 25, 1992, Pat. No. 5,281,621, which is a continuation of Ser. No. 789,695, Nov. 8, 1991, abandoned, which is a division of Ser. No. 643,206, Jan. 18, 1991, Pat. No. 5,126,369. This application Aug. 5, 1993, Ser. No. 102,305
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] A01N *35/02, 31/02*
U.S. Cl. 514—675 1 Claim

1. A process for repelling insects selected from the group consisting of house flies and mosquitoes from a three dimensional space inhabitable by said insects in the proximity of a user of soap comprising the steps of:

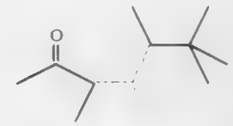
(i) forming an insect repelling soap consisting essentially of a soap base and in intimate contact therewith a house fly or mosquito repellent quantity and concentration of at least one house fly or mosquito repellent composition of matter selected from the group consisting of:

(a) a composition of matter consisting essentially of a compound defined according to the structure:



; and

(b) a composition of matter which is a mixture consisting essentially of compounds defined according to the generic structure:



wherein in each of the compounds of the mixture one of the dashed lines represents a carbon-cardon double bond and each of the other of the dashed lines represents a carbon-carbon single bond; and

(ii) applying the thus-formed mosquito or house fly repellent soap to a user in a sufficient quantity to repel mosquitoes and house flies from said three dimensional space inhabitable by said insects in the proximity of said user.

5,344,848

PROCESS AND APPARATUS FOR THE PRODUCTION OF METHANOL FROM CONDENSED CARBONACEOUS MATERIAL

Meyer Steinberg, 15 Alderfield La., Melville, N.Y. 11747, and Yuanji Dong, 125 Terry Rd., Port Jefferson Station, N.Y. 11776

Filed May 27, 1993, Ser. No. 68,400
Int. Cl.[5] C07L *27/06*
U.S. Cl. 518—704 11 Claims

1. An intergrated recycle process for the production of methanol from a condensed carbonaceous feedstock selected from the group consisting of coal, biomass, wood, agricultural products and municipal solid wastes comprising:

a) hydrogasifying said feedstock in a hydrogasification reactor with a recycled hydrogen rich gas stream to produce a process gas stream rich in methane;

b) steam pyrolyzing said process gas stream in a second stage steam pyrolysis reactor in the presence of a catalyst to produce a synthesis gas containing mainly carbon monoxide and hydrogen with small amounts of carbon dioxide;

c) reacting said carbon monoxide and hydrogen synthesis gas in a third stage methanol synthesis reactor in the presence of a catalyst to form a product gas stream containing methanol;

d) removing said methanol from said product gas stream leaving product gas stream rich in hydrogen; and

e) recycling said hydrogen rich product gas stream to supply the hydrogen needs for the above hydrogasifying step.

5,344,849

CATALYTIC PROCESS FOR THE PRODUCTION OF HYDROCARBONS

Conrad Ayasse, Calgary, Canada, assignor to Canada Chemical Corporation, Calgary, Canada

Continuation-in-part of Ser. No. 795,153, Nov. 20, 1991, abandoned, which is a continuation of Ser. No. 606,755, Oct. 31, 1990, abandoned. This application Oct. 27, 1992, Ser. No. 966,953
Int. Cl.[5] C07L *1/04*
U.S. Cl. 518—713 13 Claims

1. A catalytic process for the production of a hydrocarbon mixture having a higher percentage of paraffinic and olefinic hydrocarbons than aromatic hydrocarbons, comprising:

providing a gas mixture of hydrogen and carbon monoxide having a molar ratio of hydrogen to carbon monoxide which is greater than about 1.9;

reacting the gas mixture at elevated pressure and temperature in contact with a trifunctional catalyst mixture consisting essentially of a first Fischer-Tropsch catalyst having catalytic activity for converting hydrogen and carbon monoxide reactants into hydrocarbons, a second catalyst having catalytic activity for the conversion of methanol into hydrocarbons, and a third catalyst having catalytic activity for the water-gas shift reaction and the methanol synthesis reaction;

to produce a hydrocarbon mixture boiling in the gasoline and diesel range, said trifunctional catalyst having a relative proportion of said first catalyst to said second and third catalysts effective to provide said hydrocarbon mixture having a higher percentage of paraffinic and olefinic hydrocarbons than aromatic hydrocarbons.

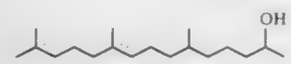
5,344,850

TOPICAL COMPOSITION FOR PREVENTING OR TREATING ACNE VULGARIS

Hamako Hata, 3-1, Urashibata-cho, Wakabayashi-ku, Sendai-shi, Miyagi; Kenya Ishida, and Toshiya Sato, both of c/o Takasago International Corporation, Central Research Laboratory, 36-31, Kamata 5-chome, Ohta-ku, Tokyo, all of Japan

Filed Jun. 28, 1993, Ser. No. 82,855
Claims priority, application Japan, Jun. 29, 1992, 4-171163
Int. Cl.[5] A61K *31/045*
U.S. Cl. 514—739 6 Claims

1. A topical composition for treating or preventing acne vulgaris which comprises therein, as an active ingredient, in an amount effective to inhibit the growth of *Propionibacterium acnes*, at least one saturated or unsaturated chain alcohol having 18 carbon atoms represented by formula (1):



(1)

wherein a dotted line represents either the presence or the absence of a double bond, and at least one carrier or diluent acceptable for topical application.

5,344,851

PROCESS FOR RECOVERING BINDER COMPONENTS FROM LACQUER SLUDGE

Wieland Hovestadt, Krefeld; Jochen Brück, Cologne, and Volker Schneider, Wachtendonk, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 28, 1993, Ser. No. 54,931
Claims priority, application Fed. Rep. of Germany, May 6, 1992, 4214943
The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.
Int. Cl.[5] C08G *18/14*
U.S. Cl. 521—49 8 Claims

1. A process for recovering and recycling the organic binder components accumulating as overspray during the spraying of a solvent-containing, two-component polyurethane lacquer or a solvent-containing, moisture-curing, one-component polyurethane lacquer which comprises

i) washing the overspray out of the exhaust air of a coating plant with the aid of an aqueous medium which a) contains in dissolved or dispersed form a compound that exhibits greater reactivity towards isocyanate groups than either water or the isocyanate-reactive groups present in a two-

component polyurethane lacquer, and b) may contain an emulsifier,

ii) isolating the chemically modified overspray formed in step (i) in the form of lacquer sludge by treatment with a coagulating agent, which may be present in said aqueous medium,

iii) mixing the lacquer sludge, containing fully reacted lacquer constituents, coagulating agents and water, optionally after a portion of the water is removed, with an organic solvent and

iv) separating the organic phase accumulating in step iii) from the aqueous phase and insoluble constituents which may be present and recovering the solution of the modified binder components dissolved in the organic phase.

5,344,852

UNSATURATED POLYESTER-POLYURETHANE HYBRID RESIN FOAM COMPOSITIONS

Gary T. Brooks, Naperville; Harold R. Edwards, Jr., Geneva; Kathy J. Thrash, St. Charles; Donald E. Rubis, Aurora, and David P. Sinclair, Winfield, all of Ill., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 892,765, Jun. 3, 1992, abandoned, which is a continuation of Ser. No. 821,704, Jan. 16, 1992, abandoned. This application Feb. 24, 1993, Ser. No. 21,716

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—99 **32 Claims**

1. A water blown, thermosetting, unsaturated polyesterpolyurethane hybrid foam resin composition formed by contacting:

(a) an A side composition comprising a polyfunctional isocyanate compound and a free radical initiator; and

(b) a B side composition comprising a mixture of:

(i) an ethylenically unsaturated monomer having dissolved therein about 30–90 weight percent of a polyester polyol having at least one ethylenically unsaturated group per molecule which has predominantly hydroxyl end groups;

(ii) an amine compound having two or more primary or secondary amine groups in an amount effective to react with the A side composition to form a first urea phase comprising small urea domains finely dispersed within a second polyester-polyurethane hybrid phase; and

(iii) about 25 to about 150 equivalents water based on 100 equivalents of active hydrogen in the B side, not including active hydrogen from water;

said composition having a ratio of active NCO groups of the isocyanate to active NH groups of the amine compound of between about 10:1 and about 50:1, and an isocyanate index, NCO:(NH+OH+COOH+HOH), of between about 0.5 and about 2.0.

5,344,853

STORABLE POLYOL MIXTURES CONTAINING MOLD RELEASE AGENTS

Ulrich Knipp, Bergisch Gladbach Nittum; Wulf von Bonin, Odenthal, and Alfred Neuhaus, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 12, 1993, Ser. No. 90,390

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1992, 4223597

Int. Cl.[5] C08G *18/00*

U.S. Cl. 521—128 **8 Claims**

1. A stable composition made up of

a) from about 55 to about 95% by weight, based on total weight of the composition of a polyol mixture made up of

(1) from about 30 to about 70% by weight, based on total weight of polyol mixture, of a polyol having an OH value of more than 700 and

(2) from about 30 to about 70% by weight, based on total weight of polyol mixture, of a polyol having an OH value of 700 or less than 700,

and

b) from about 5 to about 45% by weight, based on total weight of the composition, of a mixture of mold release agents made up of

(1) from about 60 to about 95% by weight, based on total weight of the release agent mixture, of a salt-like release agent and

(2) from about 5 to about 40% by weight, based on total weight of the release agent mixture, of a non-salt-like release agent containing an amide NH or urethane NH function,

and optionally,

c) an auxiliary agent.

5,344,854

FRICTION MATERIAL FOR BRAKE

Kazuyuki Ohya, and Norio Sayama, both of Tokyo, Japan, assignors to Mitsubishi Gas Company, Inc., Tokyo, Japan

Filed Feb. 5, 1993, Ser. No. 16,142

Claims priority, application Japan, Feb. 7, 1992, 4-022827

Int. Cl.[5] C08J *5/14*

U.S. Cl. 523—149 **12 Claims**

1. A friction material for a brake obtained by a process which comprises

preparing (I) a composition for a friction material from (A) a binder composition comprising 95–5 parts by weight of a cyanate ester resin and 5–95 parts by weight of a polycyclic aromatic pitch, (B) a fibrous reinforcing substrate material consisting mainly of one or more materials selected from the group consisting of steel fiber, steel fiber having an Fe_3O_4 film formed on the surface thereof, copper fiber, copper alloy fiber, copper fiber having a CuO film formed on the surface thereof, carbon fiber produced at a final calcination temperature of 1100° C. or lower, rock wool, and ceramic fiber, and (C) a friction and wear regulator consisting mainly of one or more agents selected form the group consisting of barium sulfate, carbon graphite, calcium carbonate, molybdenum sulfite, calcium fluoride, and cured resin dust

thermoforming the composition (I) by hot-pressing to cure the binder composition (A), and

heat-treating the cured product at a temperature of 270°–800° C. to cyclize or semi-carbonize the binder composition (A).

5,344,855

FLAME-RETARDANT AND ITS COMPOSITION

Noriaki Narita; Masuo Iwata; Kouji Inoue; Hideo Sato, all of Yokohamashi, and Ryoji Takahashi, Tokyoto, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jul. 2, 1993, Ser. No. 85,035

Claims priority, application Japan, Jul. 8, 1992, 4-204426

Int. Cl.[5] C08K *5/3492*

U.S. Cl. 523—179 **5 Claims**

4. A flame-retardant resin composition having a flame-retardant composed of

(A) a reaction product of cyanuric chloride with a diamine and

(B) ammonium polyphosphate or polyphosphoric acid amide,

the ratio by weight of (A) to (B) being 0.15 to 1,

blended with a thermoplastic resin, in a quantity of 1 to 50% by weight based upon the weight of the composition.

5,344,856

WATER-EMULSIFIABLE EPOXY RESIN COMPOSITION

Dieter H. Klein, Rheinmuenster, Fed. Rep. of Germany, assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 809,718, Dec. 17, 1991, abandoned. This application May 17, 1993, Ser. No. 63,253

Claims priority, application United Kingdom, Dec. 17, 1990, 9027291

Int. Cl.[5] C08K *3/20;* **C08L** *63/02*

U.S. Cl. 523—403 **16 Claims**

1. A water emulsifiable epoxy resin composition comprising:

A) the reaction product of

i) from about 40 to about 95 parts by weight of one or more polyepoxides;

ii) from about 0 to about 15 parts by weight of one or more polyaromatic hydroxy containing compounds;

iii) from about 0 to about 10 parts by weight of one or more chain terminators which comprises a monofunctional compound containing an active hydrogen containing moiety reactive with an epoxy moiety;

iv) from about 5 to about 25 parts by weight of one or more nominally difunctional C_{12-36} fatty acids or dimers of unsaturated fatty acids; wherein the total amount of parts i), ii), iii) and iv) is 100 and the reaction product has terminal epoxy moieties;

B) a sufficient amount of a surfactant to form a stable emulsion of the reaction product (A) in water wherein the surfactant comprises an alkyl aryloxy poly(propyleneoxy) poly(ethyleneoxy) ethanol, a C_{12-36} hydrocarbyloxy poly(propyleneoxy) poly(ethyleneoxy) ethanol or a hydrocarbylcarbonyloxy poly(prolyleneoxy) poly(ethyleneoxy) ethanol.

5,344,857

CURING AGENT-FREE WATER BASED COATING COMPOSITION

Mituo Umezawa; Masashi Nakamura, and Hirosi Kubota, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1992, Ser. No. 911,933

Claims priority, application Japan, Jul. 19, 1991, 3-203465

Int. Cl.[5] C08K *3/20;* **C09D** *167/00*

U.S. Cl. 523—409 **6 Claims**

1. A curing catalyst-free water based coating composition obtained by dissolving or dispersing

50 to 80 % by weight, as a solid content, of a water-soluble polyester resin prepared by polycondensing a carboxylic acid component containlng 10 to 60 mol % of polycarboxylic acid having 3 to 4 carboxyl groups per molecule and 40 to 90 mol % of a dicarboxylic acid and 1.1 to 2.0 mol %, per mole of the carboxylic acid component, of a glycol component, to obtain a polyester resin having a free carboxyl group and a weight average molecular weight of 1,000 to 15,000, and dissolving the polyester resin in water in the presence of a base,

5 to 20% by weight, as a solid content, of a water based bisphenol epoxy resin, and

15 to 45% by weight, as a solid content, of an alkyletherified amino resin,

in an aqueous medium.

5,344,858

COATING FROM PHOSPHATED EPOXY AND COOH-VINYL ADDITION RESINS

Terence J. Hart, Allison Park; Ellor J. Van Buskirk, Pittsburgh, and Thomas R. Hockswender, Allison Park, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 939,026, Sep. 1, 1992, abandoned, which is a continuation of Ser. No. 663,756, Mar. 1, 1991, abandoned, which is a continuation of Ser. No. 271,473, Nov. 15, 1988, abandoned, which is a continuation of Ser. No. 873,025, Jun. 11, 1986, abandoned, which is a continuation of Ser. No. 649,090, Sep. 10, 1984, abandoned. This application May 28, 1993, Ser. No. 68,264

Int. Cl.[5] C08K *3/20;* **C08L** *63/02, 33/02*

U.S. Cl. 523—411 **16 Claims**

1. A coating composition comprising as a film-former:

(A) up to about 40 percent by weight of crosslinking agent based other than the vinyl addition resin on film-former resin content;

(B) the remainder of the film former comprising a blend of:

(i) from about 67 to 95 percent by weight based on resin solids of the blend of an ungelled phosphated epoxy which is derived from reacting a 1,2-epoxy group of a polyepoxide resin and a phosphoric acid in a ratio of 0.1 to 1 mole of a phosphoric acid per equivalent of the epoxy group; and

(ii) from about 5 to 33 percent by weight based on resin solids of the blend of a vinyl addition resin which is derived from copolymerizing ethylenically unsaturated monomers, at least one of which is a carboxyl group-containing monomer, which has an acid value of from 20 to 350.

5,344,859

WATER-DILUTABLE BINDER MIXTURES BASED ON ALKYD RESINS AND POLY-N-ACYL ALKYLENEIMINES

Ulrich Eicken, Duesseldorf; Brigitte Hase, Erkrath; Manfred Gorzinski, Duesseldorf; Wolfgang Gress, Wuppertal, and Norbert Stork, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP90/02216, § 371 Date Aug. 7, 1992, § 102(e) Date Aug. 7, 1992, PCT Pub. No. WO91/09918, PCT Pub. Date Jul. 11, 1991

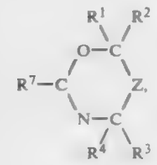
PCT Filed Dec. 17, 1990, Ser. No. 866,161

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1989, 3943112

Int. Cl.[5] C09D *167/08, 179/02*

U.S. Cl. 523—501 **19 Claims**

1. Water-dilutable binder mixtures that are suitable for oxidatively drying paints, said binder mixtures comprising alkyd resins in which polyethylene glycol is incorporated and of which the residual acid groups have been at least partly neutralized by addition of bases, wherein the improvement comprises the presence in the binder mixtures of poly-N-acyl alkyleneimines prepared by cationic polymerization of at least two chemically distinct types of monomers corresponding to general formula I:



(I)

in which

Z is a direct bond or the group

where R^5 and R^6 may be the same or different and represent H or alkyl containing up to 2 carbon atoms,

R^1 to R^4 may be the same or different and represent H, or an aromatic radical or aliphatic radical, each containing up to 8 carbon atoms, and

$R^7$is an aromatic or aliphatic radical, attached by carbon, containing up to 21 carbon atoms,

wherein from 5 to 50% by weight of the monomers corresponding to general formula I have an aromatic radical as R^7, from 25 to 95% by weight of the monomers corresponding to general formula I have an olefinically unsaturated radical as R^7, and not more than 25% by weight of the monomers corresponding to general formula I have a saturated alkyl group as R^7.

5,344,860

BETA CRYSTALLINE MODIFICATION OF 2,2',2''-NITRILO[TRIETHYL-TRIS-(3,3',5,5'-TETRA-TERT-BUTYL-1,1'-BIPHENYL-2,2'-DIYL) PHOSPHITE]

Stephen D. Pastor, Danbury, Conn., and Sai P. Shum, Pleasantville, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 983,181, Nov. 30, 1992. This application Nov. 12, 1993, Ser. No. 152,110

The portion of the term of this patent subsequent to Jul. 5, 2011, has been disclaimed.

Int. Cl.[5] C07F *9/6574;* **C08K** *5/527*

U.S. Cl. 524—119 **11 Claims**

5. A composition stabilized against thermal, oxidative and actinic induced degradation which comprises

(a) an organic material subject to thermal, oxidative and actinic induced degradation, and

(b) an effective stabilizing amount of the beta, triclinic crystalline form of 2,2',2''-nitrilo[triethyl-tris-(3,3',5,5'-tetra-tert-butyl-1,1'-biphenyl-2,2'-diyl)phosphite], characterized by melting in the range of 200°–207° C. and by an X-ray diffraction pattern exhibiting lines of very high intensity at 8.4 and 17; lines of high intensity at 9.9, 10.6, 11.4, 17.5, 19.1, 20.2; lines of medium intensity at 4.6, 4.9, 7.1, 12.7, 13.2, 13.6, 15.3, 15.8, 16.4, 16.7, 18.4, 19.7, 21.7, 23.4; and lines of weak intensity at 7.8, 8.8, 9.4, 12, 14.1, 14.6, 21, 22.3, 22.8, 23.9, 24.7, 25.3, 25.5, 26.4, 27, 27.7, 28.4 and a relative absolute configuration of the three stereo axes of the dibenzo[d,f][1,3,2]dioxaphosphepin rings of R*,R*,S*.

5,344,861

CHLOROSULFONATED POLYETHYLENE POLYMER COMPOSITION

Hideyoshi Nakamura, and Katsumi Sando, both of Yamaguchi, Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Continuation of Ser. No. 568,155, Aug. 16, 1990, abandoned. This application Apr. 2, 1993, Ser. No. 41,894

Claims priority, application Japan, Aug. 16, 1989, 1-210050

Int. Cl.[5] C08K *5/17*

U.S. Cl. 524—254 **5 Claims**

1. A chlorosulfonated polyethylene polymer composition comprising a chlorosulfonated polyethylene polymer and the following components (a) to (d), (a) from 0.1 to 20 parts by weight of a metal salt of an organic acid, (b) from 0.1 to 10 parts by weight of a phenylamine, phenylenediamine, or phenylamine and phenylenediamine, (c) from 1 to 30 parts by weight of an acid acceptor, and (d) from 0.1 to 10 parts by weight of a vulcanizing agent, per 100 parts by weight of the chlorosulfonated polyethylene polymer.

5,344,862

THERMOPLASTIC COMPOSITIONS AND NONWOVEN WEBS PREPARED THEREFROM

Ronald S. Nohr, Roswell, and John G. MacDonald, Decatur, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

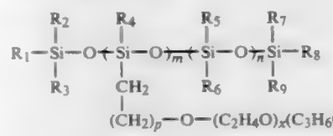
Filed Oct. 25, 1991, Ser. No. 783,438

Int. Cl.[5] C08K *5/54*

U.S. Cl. 524—269 **9 Claims**

1. A melt-extrudable thermoplastic composition which comprises a thermoplastic polyolefin and an additive system comprising a first component and a second component, in which:

(A) said first component is a polysiloxane polyether having the general formula,



in which:

(1) R_1–R_9 are independently selected monovalent C_1–C_3 alkyl groups;

(2) R_{10} is hydrogen or a monovalent C_1–C_3 alkyl group;

(3) m represents an integer of from 1 to about 100;

(4) n represents an integer of from 0 to about 100;

(5) the sum of m and n is in the range of from 1 to about 100;

(6) p represents an integer of from 0 to about 5;

(7) x represents an integer of from 1 to about 25;

(8) y represents an integer of from 0 to about 25;

(9) the ratio of x to y is equal to or greater than 2;

(10) said first component has a weight-average molecular weight of from about 350 to about 18,000; and

(11) said first component is present in an amount of from about 0.1 to about 3 percent by weight, based on the amount of thermoplastic polyolefin; and

(B) said second component is a hydrophobic fumed silica, in which the weight ratio of said first component to said second component is in the range of from about 20 to about 300.

5,344,863

VISCOSITY INDEX IMPROVER

Kouzou Sakai, Oumihachiman; Shigeyuki Yoshida, and Makoto Dakurige, both of Kyoto, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Jun. 11, 1992, Ser. No. 897,036

Claims priority, application Japan, Jul. 5, 1991, 3-192578

Int. Cl.[5] C08K *5/09*

U.S. Cl. 524—291 **19 Claims**

1. A polymer dispersion comprising:

(a) a polyolefin having a weight average molecular weight of 10,000 to 500,000;

(b) a dispersant comprising a reaction product of an ethylenically unsaturated dicarboxylic acid-added polyolefin with a carboxylic acid-reactive compound selected from the group consisting of an amine, a ketimine compound, an alcohol and an isocyanate compound, said reaction product having an amide linkage, an imide linkage or an ester linkage, and

(c) a phenolic derivative selected from the group consisting of an alkyl salicylate, phenol having one alkyl group of 1 to 20 carbon atoms and phenol having two alkyl groups of 1 to 20 carbon atoms.

5,344,864

POLYVINYL CHLORIDE THERMOPLASTIC ELASTOMER COMPOSITION

Yuichiro Kushida; Shoichi Tamegai, and Akio Hirohashi, all of Shibukawa, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 379,267, Jul. 13, 1989, abandoned. This application Dec. 12, 1990, Ser. No. 625,686

Claims priority, application Japan, Jul. 15, 1988, 63-174889

Int. Cl.[5] C08K *3/26*

U.S. Cl. 524—426 **8 Claims**

1. A thermoplastic elastomer composition obtained by a process consisting essentially of simultaneously kneading and curing at a temperature from 140°–220° C. a mixture comprising 100 parts by weight of vinyl chloride resin, from 20–300 parts by weight of a powdery and partially pre-crosslinked copolymer of butadiene and acrylonitrile, from 25–200 parts by weight of a plasticizer, from 10–200 parts by weight of a filler and curing agent for the rubber which cures at a temperature ranging from 140°–220° C., said composition being meltable by a roll set at a temperature of 190° C.

5,344,865

AQUEOUS POLYMER DISPERSIONS

Heinrich Grubert, Heidelberg, and Rolf Dersch, Neustadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 733,853, Jul. 22, 1991, abandoned. This application Sep. 14, 1992, Ser. No. 944,722

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1990, 4024154

Int. Cl.[5] C08J *3/18*

U.S. Cl. 524—433 **8 Claims**

1. An aqueous polymer dispersion obtained by polymerizing a monomer mixture which contains from 10 to 100% by weight of vinyl chloride, in the presence of from 0.5 to 6% by weight, based on the monomer mixture, of exclusively anionic, non-anionic surfactants or a mixture thereof, by radical emulsion polymerization in aqueous medium, and adjusting the pH of the aqueous phase of the resulting aqueous polymer dispersion to from 5 to 10 by addition of $Ca(OH)_2$, wherein said addition may occur before, during or after the emulsion polymerization.

5,344,866

FIRE RESISTANT COMPOSITES

Walter L. Hall, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed May 21, 1993, Ser. No. 66,354

Int. Cl.[5] C08K *3/34*

U.S. Cl. 524—450 **10 Claims**

1. A flame resistant thermoplastic composite, consisting essentially of:

a) a thermoplastic matrix material present at a level of from 40 to 75% by weight based on the total weight of the composite;

b) reinforcing glass fibers having lengths of between 0.10 inch and 1.0 inch, said fibers being present at a level of from 20 to 50% by weight based on the total weight of said composite, and

c) a heat-expandable material selected from the group consisting of perlite particulates and vermiculite particulates, said heat-expandable material being present at a level of from 5 to 30% by weight based on the total weight of the composite.

5,344,867

VINYLIDENE CHLORIDE EMULSION INTERPOLYMER COMPOSITION

Tamela A. Morgan, Olmsted Township, Cuyahoga County; Gary L. Julian, Parma, and Vic Stanislawczyk, North Ridgeville, all of Ohio, assignors to The BFGoodrich Company, Akron, Ohio

Filed Jun. 14, 1993, Ser. No. 76,323

Int. Cl.[5] C08F *2/16*

U.S. Cl. 524—460 **10 Claims**

1. A latex composition capable of forming stable films which have excellent protective properties, good chemical resistance, and/or permeability to gases and water vapor, comprising particles suspended in an aqueous solution, said particles comprising an interpolymer of

a) an acrylic latex seed particle, and

b) vinylidene chloride polymer comprising

i) vinylidene chloride,

ii) one or more alkyl acrylates having from 1 to 18 carbon atoms in the alkyl group and/or one or more alkyl methacrylates having 1 to 18 carbon atoms in the alkyl group,

iii) one ore more aliphatic alpha-beta-unsaturated carboxylic acids, and

iv) a copolymerizable surface active agent, which is an ethylenically unsaturated sulfonate,

the proportion of vinylidene chloride being 65 to 90 parts by weight, the portion of said alkyl acrylates and/or methacrylates being from 2 to 30 parts by weight, the portion of said carboxylic acids being from 0.1 to 10 parts by weight, and the portion of said copolymerizable surface active agent being from 0.1 to 5.0 parts by weight, all based upon parts per hundred weight of monomer.

5,344,868

POLYGLUTARIMIDE/GLASS FIBER COMBINATIONS

Michael P. Hallden-Abberton, Maple Glen; William J. Work, Huntington Valley; Mark A. Abramowicz, Fairless Hills, and Phuong N. Duong, Upper Darby, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 23, 1993, Ser. No. 36,121

Int. Cl.[5] C08K *3/40*

U.S. Cl. 524—494 **14 Claims**

1. A blend comprising:

a. From about 80 to about 99.5 parts, based on total polymer content, of a polyglutarimide;

b. From about 0.5 to about 20 parts, based on total polymer content, of a phenoxy resin;

c. From about 10 to about 50 parts, based on the total weight of all components of the blend, of an inorganic fiber or particulate with functional surface groups.

5,344,869

THERMOPLASTIC MOLDING MATERIAL

Stefan Seelert, Frankenthal; Peter Klaerner, Battenberg; Andreas Jung, Mannheim; Hans Hoenl, Obersuelzen, and Bertram Ostermayer, Roedersheim-Gronau, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 25, 1992, Ser. No. 981,543

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1991, 4139627

Int. Cl.[5] C08L *25/10, 53/02*

U.S. Cl. 524—505 **12 Claims**

1. A thermoplastic molding material containing, based in each case on the sum of components A, B and C,

A: from 10 to 90% by weight of a polymer A composed of styrene or substituted styrene,

B: from 10 to 90% by weight of a polyolefin B and

C: from 5 to 40% by weight of a star block copolymer C containing not less than 50% by weight of a styrene and prepared by anionic polymerization of styrene and butadi-

ene or isoprene, coupling and subsequent selective hydrogenation, whereby only the double bonds originating from the monomer building blocks of butadiene and/or isoprene are saturated, and not the styrene component, so that more than 50% of the double bonds originally present are saturated.

5,344,870

SIALIC ACID GLYCOSIDES, ANTIGENS, IMMUNOADSORBENTS, AND METHODS FOR THEIR PREPARATION

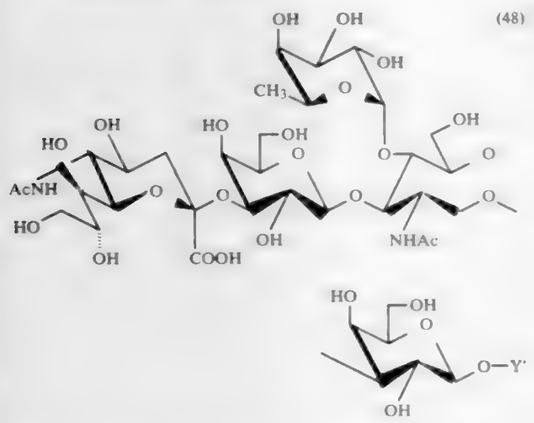
Robert M. Ratcliffe, and Andre P. Venot, both of Edmonton, Canada, assignors to Alberta Research Council, Edmonton, Canada

Continuation of Ser. No. 278,106, Nov. 30, 1988, abandoned, which is a continuation-in-part of Ser. No. 127,905, Dec. 2, 1987, Pat. No. 5,079,353. This application Mar. 17, 1992, Ser. No. 852,893

Int. Cl.[5] C07H *15/06, 1/00*

U.S. Cl. 525—54.2 **13 Claims**

1. A compound of the formula 48



(48)

which can also be represented by the formula

α-L-Fuc(1-4) (48)
|
α-Sialyl(2-3)β-D-Gal(1-3)β-D-GlcNAc(1-3)β-D-Gal—OY'

wherein and Y' is selected from the group consisting of H, lower alkyl of from 1 to 6 carbon atoms, a linking arm of the formula —X—CO—L wherein X is a hydrocarbylene of from 3 to 19 carbon atoms in which 1 to 3 nonadjacent CH_2 groups may optionally be replaced by NR, S, or O where R is hydrogen or alkyl of from 1 to 6 carbon atoms and L is a leaving group or can be converted to a leaving group, and a moiety comprising a chromatographic support selected from the group consisting of aminated supports derivatized from silica gel, organosiloxane derivatives, derivatized polyacrylamide, controlled pore glass, agarose, and derivatized alumina.

5,344,871

METHOD OF MAKING BINDER FROM NATURALLY OCCURRING AGRICULTURAL PRODUCTS

Delmar C. Timm; Ayodeji Ayorinde, both of Lincoln, and Harold E. Egger, Hickman, all of Nebr., assignors to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Division of Ser. No. 659,453, Feb. 21, 1991, Pat. No. 5,153,242, which is a continuation of Ser. No. 511,833, Apr. 13, 1990, abandoned, which is a continuation of Ser. No. 173,921, Mar. 28, 1988, abandoned, which is a continuation of Ser. No. 144,663, Jan. 12, 1988, abandoned, which is a continuation of Ser. No. 712,518, Mar. 18, 1985, abandoned. This application Sep. 29, 1992, Ser. No. 954,740

Int. Cl.[5] D01B *1/08;* **C05F** *11/08;* **B02C** *7/18*

U.S. Cl. 525—54.3 **3 Claims**

1. A method of making a binder comprising the steps of:
obtaining a naturally occurring agricultural product containing plant protein not processed to remove carbohydrates so that carbohydrates are at least 5 percent of the protein;
grinding the material to a mesh of at least 18;
storing the material so as to not be exposed excessively to elevate conditions that cause reaction; and
adding a compound containing a group that reacts with an amide group of the plant protein to increase the polymerization of protein.

5,344,872

INK COMPOSITIONS CONTAINING CERTAIN METHACRYLATES

Theo J. Debord; Nelson Z. Escano, and Louis A. Wilkin, all of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Feb. 19, 1993, Ser. No. 19,514

Int. Cl.[5] C08L *67/00, 77/00, 67/02;* **C08F** *20/00*

U.S. Cl. 524—513 **44 Claims**

1. An ink composition comprising:
(A) about 60 to about 95 weight % of an aqueous dispersion comprising:
(1) a polyester (E) consisting essentially of repeat units from about 5 to about 40% by weight of a linear, water-dissipatable polymer having carbonyloxy linking groups in the linear molecular structure wherein up to 80% of the linking groups may be carbonylamido linking groups, the polymer having an inherent viscosity of at least about 0.1 measured in a 60/40 parts by weight solution of phenol/tetrachloroethane at 25° C. and at a concentration of about 0.25 gram of polymer in 100 ml of the solvent, the polymer containing substantially equimolar proportions of acid equivalents (100 mole percent) to hydroxy and amino equivalents (100 mole percent), the polymer comprising the reaction products of (a), (b), (c) and (d) from the following components or ester forming or esteramide forming derivatives thereof:
(a) at least one difunctional aromatic, saturated aliphatic or saturated alicyclic dicarboxylic acid;
(b) from about 4 to about 25 mole percent, based on a total of all acid and hydroxyl equivalents being equal to 200 mole percent, of at least one difunctional sulfomonomer containing at least one metal sulfonate group attached to aromatic nucleus wherein the functional groups are hydroxy or carboxyl;
(c) at least one difunctional reactant selected from a glycol or a mixture of a glycol and diamine having two —NRH groups, the glycol containing two —CH_2—OH groups; and
(d), from none to at least one difunctional reactant selected from a hydroxycarboxylic acid having one —CR_2—OH, an aminocarboxylic acid having one —NRH group, an amino-alcohol having one —CR_2—OH group and one —NRH or mixtures thereof,

wherein each R is an H atom or an alkyl group of 1 to 4 carbon atoms; and
(2) about 95 to about 60% by weight of a polymer (F) having repeat units from
(a) about 20 to about 80% by weight of a polymer comprising repeat units from styrene or one or more derivatives of styrene;
(b) about 15 to about 50% by weight of hydroxyalkyl (meth) acrylate; and
(c) about 0 to about 60% by weight of alkyl (meth)acrylate, said aqueous dispersion containing about 95 to about 60% by weight of said polymer (F) and about 5 to about 40% by weight of said polyester (E), both said percentages being based on the combined weight of polyester (E) and polymer (F); and
(B) about 5 to 40% by weight of a copolymer (G) consisting of
(1) about 10 to 65 weight percent of polyester (E), based on the weight of B(1) or polyester (E) plus (B)(2) plus (B)(3);
(2) an acrylic polymer in an amount of about 15 to 30 percent, based on the total weight of components (B)(1) and (B)(2), said acrylic polymer being compatible with the water-dissipatable polyester at a maximum acrylic polymer concentration of about 60/40 weight percent of the total acrylic/polyester polymer solids, and
(3) a water-dissipatable vinyl polymer in an amount of about 20 to 60 weight percent, based on the weight of (B)(1) plus (B)(2) plus (B)(3), said vinyl polymer being compatible with the water-dissipatable polyester at a maximum vinyl polymer concentration of about 60/40 weight percent of the total vinyl/polyester polymer solids, or
(C) about 5.0 to about 25.0 weight % of a hydantoin-formaldehyde resin.

5,344,873

BINDER COMPOSITION AND ITS USE FOR THE PRODUCTION OF A COATING OR SEALING COMPOSITION

Harald Blum, Wachtendonk, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 8, 1992, Ser. No. 958,210

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1991, 4134064

Int. Cl.[5] C08J *3/00;* **C08K** *3/20;* **C08L** *75/00*

U.S. Cl. 524—591 **20 Claims**

1. An aqueous binder composition comprising
A) an aqueous solution or dispersion of a water-dilutable organic polyol component comprising
A1) at least one water-dilutable polyester resin containing sulfonate and hydroxyl groups and having a molecular weight (M_n) of 500 to 50,000, an OH number of 20 to 240 mg KOH/g, a content of sulfonate groups ($-SO_3^-$) of 4 to 70 milliequivalents per 100 g of polyester resin and a content of carboxylate groups ($-COO^-$) of 0 to 40 milliequivalents per 100 g of polyester resin and
A2) optionally a reactive thinner containing at least one water-soluble monohydric or polyhydric alcohol which has a molecular weight (M_n) below 500 and which is non-distillable at normal pressure or has a boiling point of at least 150° C., and
B) a polyisocyanate component which is emulsified in the aqueous solution or dispersion A), has a viscosity at 23° C. of 50 to 10,000 mPa.s and contains at least one organic polyisocyanate,
wherein components A) and B) are present at an NCO:OH equivalent ratio of 0.5:1 to 5:1.

5,344,874

PROCESS FOR PRODUCING A CONDENSED RESIN DISPERSION

Takao Doi, Yokohama; Noriko Itaya, Tokyo; Masami Yamashita, and Nobuaki Kunii, both of Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 413,584, Sep. 28, 1989, Pat. No. 5,030,685. This application Jul. 8, 1991, Ser. No. 726,763

Claims priority, application Japan, Sep. 28, 1988, 63-240740; Sep. 28, 1988, 63-240741

The portion of the term of this patent subsequent to Jul. 9, 2008, has been disclaimed.

Int. Cl.[5] C08J *3/07*

U.S. Cl. 524—593 **13 Claims**

1. A process for producing a condensed resin dispersion, which comprises subjecting an aldehyde and a compound having two sites reactive with the aldehyde, or their precondensate, to a condensation reaction in a dispersion medium consisting essentially of water and/or an organic solvent, to precipitate a condensed aldehyde resin as fine condensed resin particles with a particle size of from 0.01 to 5 μm in said dispersion medium, then adding an active hydrogen-containing compound having at least two active hydrogen-containing groups reactive with isocyanate groups, and then removing the water and/or organic solvent by vaporization.

5,344,875

WEAR-RESISTANT POLYOXYMETHYLENE RESIN COMPOSITION AND METHOD FOR MAKING SAME

Masahiko Niino, Kurashiki, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 616,916, Nov. 21, 1990, abandoned. This application Mar. 1, 1993, Ser. No. 26,190

Claims priority, application Japan, Nov. 28, 1989, 1-306611

Int. Cl.[5] C08L *23/04, 59/00, 75/04*

U.S. Cl. 525—64 **14 Claims**

1. A wear resistant polyoxymethylene resin composition which comprises
(A) 65–98.8% by weight based on the total weight of the composition of a polyoxymethylene resin,
(B) 0.2–5% by weight based on the total weight of the composition of a trifunctional isocyanate compound,
(C) 0.5–20% by weight based on the total weight of the composition of a graft olefin polymer which is obtained by grafting onto an olefin polymer containing 30% by weight or more of ethylene, a copolymer comprising a monomer having a functional group containing an active hydrogen and a comonomer, and
(D) 0.2–10% by weight based on the total weight of the composition of polyethylene.

5,344,876

MOLDING COMPOUNDS HAVING IMPROVED FIRE BEHAVIOR

Karl-Erwin Piejko, Bergisch-Gladbach; Hans-Eberhard Braese, and Christian Lindner, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 801,425, Dec. 2, 1991, abandoned. This application Dec. 29, 1992, Ser. No. 999,451

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1990, 4093861

Int. Cl.[5] C08L *33/08, 51/04, 55/02, 27/18*

U.S. Cl. 525—71 **6 Claims**

1. A molding compound which consists of:
A. an acrylate polymer prepared from at least one C_{1-8} alkyl acrylate and optionally up to 50% by weight of monomers selected from the group consisting of C_{1-4} alkyl methacrylates, styrene, or acrylonitrile in the presence of a polyfunctional vinyl or allyl crosslinking comonomer, which acrylate polymer is particulate and is at least partially crosslinked and is not grafted,

B. from 1 to 5% by weight of tetrafluoroethylene polymers, based on weight of molding compound, the tetrafluoroethylene polymers having a fluorine content of 65 to 76% by weight, said molding compound optionally additionally containing

C. a graft rubber selected from acrylate-based graft rubber and/or ABS graft rubber,

D. a styrene/acrylonitrile resin, and/or

E. lubricants, antioxidants, antistatic agents, colorants and flameproofing agents.

5,344,877

MOLDING MATERIAL FROM A PARTICULATE GRAFT POLYMER

Wolfgang Fischer, Ludwigshafen; Norbert Guentherberg, Speyer; Norbert Niessner, Friedelsheim; Karl Ruppmich, Ludwigshafen, and Friedrich Seitz, Friedelsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 14, 1993, Ser. No. 60,976

Claims priority, application Fed. Rep. of Germany, May 19, 1992, 4216549

Int. Cl.[5] C08L *51/04*

U.S. Cl. 525—83 **2 Claims**

1. A molding material consisting essentially of

(i) from 1-50% by weight of a particulate graft polymer of

A: a grafting base (A) based on

A1: an acrylate rubber having a glass transition temperature below 0° C. the acrylate rubber consisting of

A11: from 75 to 99.8% by weight of at least one alkyl acrylate (A11) where the alkyl radical is of 1 to 8 carbon atoms

A12: from 0.1 to 5% by weight of at least one polyfunctional crosslinking monomer (A12) which contains at least two ethylene double bonds and is not conjugated in the 1,3-position, and

A13: from 0.1 to 20% by weight of at least one monomer (A13) which is ethylenically unsaturated and contains a tertiary amino group in the molecule, or based on

A2: a diene rubber (A2) having a glass transition temperature below 0° C. wherein the diene rubber is obtained from conjugated diene monomers, the diene rubber consisting of

A21: at least 50% by weight of one or more dienes (A21),

A22: up to 50% by weight of at least one copolymerizable ethylenically unsaturated monomer (A22), and

A23: from 0.1 to 15% by weight of at least one monomer (A23) which is ethylenically unsaturated and contains a tertiary amine group in the molecule, and

B: a graft (B) of

B1: from 40 to 89.9% by weight of at least one vinylaromatic monomer (B1),

B2: from 10 to 49.9% by weight of at least one polar copolymerizable ethylenically unsaturated monomer (B2),

B3: from 0.1 to 20% by weight of at least one monomer (B3) which is ethylenically unsaturated and contains carboxyl or sulfo groups, and (ii) from 50 to 90% by weight of at least one matrix polymer obtained from ethylenically unsaturated monomers, which polymer has a glass transition temperature of more than 25° C.

5,344,878

HIGHLY TRANSPARENT TOUGH POLYMER BLENDS

Michael Colella, Plantsville, Conn., and Brian Marcoulier, Fitchburg, Mass., assignors to Novacor Chemicals (International) S.A., Fribourg, Switzerland

Filed Mar. 3, 1993, Ser. No. 25,606

Int. Cl.[5] C08L *51/04, 25/14*

U.S. Cl. 525—84 **5 Claims**

1. A polymer blend consisting essentially of:

(1) 97 to 99 weight % of a copolymer consisting essentially of:

(a) from 70 to 90 weight % of one or more monomers selected from the group consisting of styrene, alpha-methyl styrene, p-methyl styrene, and t-butyl styrene; and

(b) from 30 to 10 weight % of one or monomers selected from the group consisting of methyl methacrylate, ethyl methacrylate, methyl acrylate, and butyl acrylate; and

(2) from 3 to 1 weight % of an impact modified polymer consisting essentially of:

(a) from 4 to 15 weight % of a rubbery polymer selected from the group consisting of:

(i) co- and homo-polymers of C_{4-6} conjugated diolefins; and

(ii) copolymers comprising:

(A) from 60 to 80 weight % of one or more C_{4-6} conjugated diolefins; and

(B) from 40 to 20 weight % of one or more monomers selected from the group consisting of styrene, alpha-methyl styrene, p-methyl styrene, and t-butyl styrene,

to which has been grafted at least a portion of:

(b) from 85 to 96 weight % of a polymer prepared by polymerizing a monomer mixture comprising:

(b) from 85 to 96 % of a polymer prepared by polymerizing a monomer mixture comprising:

(i) from 100 to 70 weight % one or more monomers selected from the group consisting of styrene, alpha-methyl styrene, p-methyl styrene, and t-butyl styrene; and

(ii) from 0 to 30 weight % of one or more monomers selected from the group consisting of methyl methacrylate, ethyl methacrylate, methyl acrylate, and butyl acrylate.

5,344,879

CURABLE COMPOSITION FOR PAINT

Masaharu Inoue, Kobe; Yoshihiko Okimura, Takasago; Hirotoshi Kawaguchi, and Hisao Furukawa, both of Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 15, 1993, Ser. No. 5,130

Claims priority, application Japan, Jan. 17, 1992, 4-006794; Jun. 16, 1992, 4-156705

Int. Cl.[5] C09D *143/04*

U.S. Cl. 525—100 **5 Claims**

1. A curable composition for paint comprising

(A) 10 to 99 parts by weight of a vinyl polymer having a number average molecular weight of not less than 2,000 and at least one silicon atom to which a hydrolyzable group is bonded at an end of the main chain and/or in a side chain thereof, in one molecule, wherein the main chain comprises at least 60% by weight vinyl monomer units;

(B) 1 to 90 parts by weight of a compound containing a carbonate group which is at least one of

(i) a compound containing a hydrolyzable silyl group, the compound having at least one carbonate group in one molecule and at least one silicon atom to which a hydrolyzable group is bonded, in one molecule, and

(ii) a carbonate polyol compound having at least one carbonate group and at least two hydroxyl groups in one molecule; and

(C) 0.001 to 10 parts by weight of a curing catalyst on the basis of 100 parts by weight of the components (A) and (B) in total.

5,344,880

THERMOSETTING COMPOSITION

Toshiro Nambu; Hirotoshi Kawaguchi; Hisao Furukawa, and Yasushi Kato, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 505,394, Apr. 6, 1990, abandoned. This application Jan. 29, 1993, Ser. No. 13,186

Claims priority, application Japan, Apr. 6, 1989, 1-87733

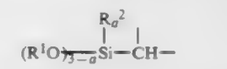
Int. Cl.[5] C08L *83/06, 83/10*

U.S. Cl. 525—100 **14 Claims**

1. A composition comprising a blend of components (A), (B) and (C), wherein

(A) is a hydroxyl group-containing acrylic resin which does not contain an alkoxysilyl group,

(B) is an acrylic copolymer containing an alkoxysilyl group having the formula (I):



(I)

wherein R^1 is an alkyl group having 1 to 10 carbon atoms, R^2 is a hydrogen atom, an alkyl group, an aryl group or an aralkyl group, and a is 0, 1 or 2,

(C) is a polyorganosiloxane bearing one or more reactive groups selected from the group consisting of a silano group, an alkoxysilyl group, an alcoholic hydroxyl group, a glycidyl group, an amino group, a mercapto group a carboxyl group, an amide group, a vinyl group, an acryloyloxy group and a methacryloyloxy group and further comprising

(D) a curing catalyst.

5,344,881

RUBBER COMPOSITIONS AND VULCANIZED RUBBER COMPOSITIONS

Keisaku Yamamoto; Yoshio Tanimoto; Masahiro Fukuyama, and Noriyasu Yasuda, all of Chiba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 962,540, Oct. 19, 1992, abandoned. This application Jun. 17, 1993, Ser. No. 77,456

Claims priority, application Japan, Nov. 21, 1991, 3-306162; Jul. 13, 1992, 4-184997

Int. Cl.[5] C08L *23/08, 63/02, 71/03, 33/08, 33/10, 33/14*

U.S. Cl. 525—112 **21 Claims**

1. A rubber composition comprising 30 to 95 parts by weight of the following component (a) and 70 to 5 parts by weight of the following component (B) and 1 to 10 parts by weight of the following component (C) per 100 parts by weight of the total amount of the components (A) and (B), wherein component (A) and component (B) total 100 parts by weight:

component (A) is (1) an ethylene-acrylate or ethylenemethacrylate copolymer rubber, (2) ethylene-acrylate-unsaturated glycidyl ester copolymer rubber or ethylene-methacrylate-unsaturated glycidyl ester copolymer, or (3)ethylene-acrylate-unsaturated glycidyl ether or ethylene-methacrylate-unsaturated glycidyl ether copolymer, wherein the amount ratio in moles of ethylene and acrylate or methacrylate in (1), (2) and (3) is in the range from 50:50 to 85:15;

component (B) is an epichlorohydrin rubber which is vulcanizable with an organic peroxide and has unsaturated carbon-carbon double bonds as a vulcanizable group in the amount of 1 to 15 mole % in the rubber; and

component (C) is an epoxy resin obtained by condensation reaction of bisphenol A and epichlorohydrin, said epoxy resin having a weight-average molecular weight in the range of 100 to 15,000 and an epoxy equivalent weight in the range of 100 to 10,000 containing an epoxy ring.

5,344,882

POLYACETAL BLENDS

Edmund A. Flexman, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 548,682, Jun. 22, 1990, abandoned. This application Jan. 27, 1993, Ser. No. 12,776

Int. Cl.[5] C08L *59/00, 67/00, 75/00, 77/06*

U.S. Cl. 525—131 **14 Claims**

1. A blend consisting essentially of

(a) 50–80 weight percent of a polyacetal polymer,

(b) 10–20 weight percent of a thermoplastic polyurethane, and

(c) 10–30 weight percent of at least one thermoplastic crystalline polymer selected from the group consisting of nylon 612, nylon 6, polypropylene, and polyalkylene terephthalates containing at least one ethylene copolymer,

wherein the above weight percents are based upon the total of components (a), (b), and (c) only.

5,344,883

POLYMERIC POWDER COATING COMPOSITIONS COMPRISING LOW MOLECULAR WEIGHT COPOLYMER OR TERPOLYMER SALTS OF α-OLEFINS AND α,β-ETHYLENICALLY UNSATURATED CARBOXYLIC ACIDS

Donald F. Loar, Summit, N.J., and Patrick A. Verle, Leefdaal, Belgium, assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Oct. 5, 1992, Ser. No. 956,711

Int. Cl.[5] C08L *67/06*

U.S. Cl. 525—170 **21 Claims**

1. A polymeric powder coating composition which comprises:

(a) a cross-linkable unsaturated polyester resin and

(b) a salt of copolymer or terpolymer derived from an α-olefin and an α,β-ethylenically unsaturated carboxylic acid.

5,344,884

POLYETHYLENE BLENDS

Elizabeth A. Benham, and Max P. McDaniel, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 8, 1992, Ser. No. 963,294

Int. Cl.[5] C08L *23/08, 23/06, 31/04*

U.S. Cl. 525—222 **23 Claims**

1. A blended polymer composition that comprises:

(a) from about 10 weight percent to about 40 weight percent of an ethylene-vinyl acetate copolymer resin, wherein said resin is produced by the high pressure, free radical, polymerization process, and wherein said resin has a density from about 0.92 to about 0.945 grams per cubic centimeter, and wherein said resin has a melt index less than 6 grams per 10 minutes;

(b) from about 5 weight percent to about 25 weight percent of a branched ethylene homopolymer resin, wherein said resin is produced by the high pressure, free radical, polymerization process, and wherein said resin has a density from about 0.91 to about 0.93 grams per cubic centimeter, and wherein said resin has a melt index from about 0.1 to about 1 gram per 10 minutes; and

(c) from about 55 weight percent to about 85 weight percent of a linear ethylene copolymer resin, wherein said resin is produced by the low pressure, chromium catalyzed, slurry polymerization process, and wherein said resin has a density from about 0.91 to about 0.94 grams per cubic centimeter, and wherein said resin has a melt index less than 0.3 grams per 10 minutes, and wherein said resin has a shear ratio greater than about 70, and wherein said resin has a heterogeneity index greater than 15;

wherein said weight percents are based on the weight of said polymer composition.

5,344,885

PREPARATION OF PROPYLENE-ETHYLENE COPOLYMERS

Meinolf Kersting, Bad Durkheim; Juergen Kerth, Carlsberg; Klaus-Dieter Hungenberg, Birkenau; Patrik Mueller, Kaiserslautern, and Peter Koelle, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 25, 1993, Ser. No. 22,086

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1992, 4206369

Int. Cl.[5] C08F *4/76, 210/02, 210/06*

U.S. Cl. 525—245 4 Claims

1. A process for preparing a propylene-ethylene copolymer using a Ziegler-Natta catalyst system that contains a titanium-containing solid component and an aluminum compound as co-catalyst wherein the titanium-containing solid component is preactivated by reaction with the co-catalyst followed by deactivation of the preactivated catalyst system by reaction with carbon dioxide further followed by reactivation of the catalyst system by addition of the co-catalyst for effecting polymerization from the gaseous phase in an agitated fixed bed.

2. A propylene-ethylene copolymer obtained by a process as claimed in claim 1.

3. A method of using a propylene-ethylene copolymer as claimed in claim 2 for producing fibers, films and moldings.

4. Fibers, films and moldings produced from a propylene-ethylene copolymer as claimed in claim 2 as essential component.

5,344,886

PROCESS FOR MAKING GRAFT PROPYLENE POLYMERS

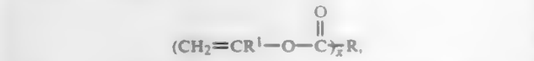
Biau-Hung Chang, Cincinnati; Leslie Wild, Wyoming, and James A. Hinnenkamp, Cincinnati, all of Ohio, assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Filed May 14, 1993, Ser. No. 62,892

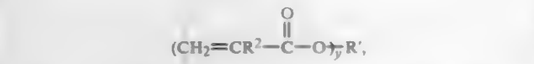
Int. Cl.[5] C08F *255/02*

U.S. Cl. 525—285 40 Claims

1. A process for making a graft propylene copolymer comprising contacting a propylene polymer, said propylene polymer selected from the group consisting of propylene homopolymers and propylene copolymers, with at least one polymerizable, ethylenically unsaturated carboxylic acid or acid derivative in the presence of a coagent, said coagent, present in a concentration of between about 0.01% and about 30% by weight, based on the weight of the propylene polymer, selected from the group consisting of a first compound having the structural formula



where R is a hydrocarbyl or a radical containing at least one atom of oxygen, sulfur, nitrogen, phosphorus or silicon; R^1 is hydrogen or C_1–C_{12} alkyl or aryl; and x is an integer of 1 to 4, and a second compound having the structural formula



where R′ is a hydrocarbyl or a radical containing at least one atom of oxygen, sulfur, nitrogen, phosphorus or silicon; R^2 is hydrogen or C_1–C_{12} alkyl or aryl; and y is an integer of 2 to 4, and a free radical generating compound, said process conducted at a temperature above both the melting point of said propylene polymer and the decomposition temperature of said free radical generating compound.

5,344,887

STAR POLYMERS OF DIENES, VINYLARENES AND ALKYL METHACRYLATES AS MODIIED VISCOSITY INDEX IMPROVERS

Robert J. Sutherland, and Dean A. DuBois, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 21, 1992, Ser. No. 993,740

Int. Cl.[5] C08F *297/02, 8/32, 220/10*

U.S. Cl. 525—299 7 Claims

1. A polymer comprising:

an average per molecule of at least 10 first arms consisting of completely hydrogenated isoprene or styrene and completely hydrogenated isoprene, the first arms having a peak molecular weight from 10,000 to 100,000, wherein at least 5% of the polymerized isoprene is produced by 1,4-polymerization;

an average per molecule of at least 10 second arms consisting of polymerized t-butylmethacrylate, the second arms having a peak molecular weight from 1,000 to 10,000, wherein the first arms are longer than the second arms, the number of first arms is greater than or equal to the number of second arms, and at least 80% of the polymerized t-butylmethacrylate units have been converted to amide or imide groups; and

one central core per molecule, the core comprising a polymerized divinylbenzene, wherein the central cores connect the first and second arms in a star configuration and the central core is no more than 10% of the polymer molecular weight.

5,344,888

PROCESS FOR MAKING GRAFT PROPYLENE POLYMERS

Leslie Wild, Wyoming; James A. Hinnenkamp; Biau-Hung Chang, both of Cincinnati, and Webster W. Kiang, West Chester, all of Ohio, assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Filed May 14, 1993, Ser. No. 62,893

Int. Cl.[5] C08F *255/02*

U.S. Cl. 525—301 34 Claims

1. A continuous melt process for making a graft copropylene copolymer comprising contacting a propylene polymer selected from the group consisting of homopolymers of propylene and an α-olefin, wherein said α-olefin comonomer contains 2 to 12 carbon atoms and is present in a concentration of between about 0.5% and about 40%, said percentages being by weight, based on the total weight of the copolymer, and propylene copolymers with at least one polymerizable, ethylenically unsaturated carboxylic acid or acid derivative in the presence of a coagent having the structural formula $(CH_2{=}CR^1{-}CR^2{-}R^3)_x R$, where R^1, R^2 and R^3 are the same or different and are hydrogen, hydrocarbyl, halogen or a heterocyclic radical; x is an integer of 2 to 4; and R is a radical containing at least one atom of oxygen, sulfur, nitrogen, phosphorus or silicon having a valence equal to the value of x, said coagent present in a concentration in the range of between about 0.01% and about 30% by weight, based on the weight of the propylene polymer, and a free radical generating compound, said process conducted at a temperature above both the melting point of said propylene polymer and the decomposition temperature of said free radical generating compound.

5,344,889

POLYSTYRENE ADHERING HEAT-SEALABLE PLASTIC FILM

Werner Siol, Darmstadt-Eberstadt, and Ulrich Terbrack, Reinheim, both of Fed. Rep. of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

Filed Dec. 17, 1992, Ser. No. 992,098

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142692

Int. Cl.[5] C08F *255/06, 263/04, 265/06, 279/02, 283/12;* B32B *27/08, 1/08*

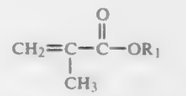
U.S. Cl. 525—309 5 Claims

1. A heat-sealable plastic film PF, with at least a two-stage structure and a thickness ranging up to 400 μm, suitable for tightly sealing plastic containers comprising:

a) a high molecular weight or crosslinked polymer P with a molecular weight Mw in excess of 50,000 and a glass transition point Tg of less than 10° C.; and

b) a copolymer CP with a glass transition point Tg above 20° C. comprising

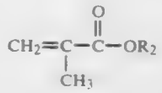
α) 20 to 80% by weight of at least one monomer of Formula I



(I)

wherein R_1 stands for methyl or ethyl;

β) 80 to 20% by weight of at least one monomer of Formula II



(II)

wherein R_2 stands for an $C_{4\text{-}18}$ alkyl residue or a $C_{4\text{-}12}$ cycloalkyl residue that is different from cyclopentyl or cyclohexyl; and

γ) 0 to 10% by weight of a monomer that can be copolymerized with monomers formula I and formula II but is different from them and that is not a cyclohexyl methacrylate, with the provision that the components α), β), γ) always total 100% by weight; and

wherein at least 2% by weight of copolymer CP is covalently bound to polymer P.

5,344,890

ROOM-TEMPERATURE CURABLE EPOXY RESIN COMPOSITION

Tadafumi Miyazono, Mino; Koji Tabuchi, Hiroshima, and Takegawa Masahiro, Suita, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Nov. 12, 1992, Ser. No. 975,255

Claims priority, application Japan, Nov. 13, 1991, 3-326597

The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.

Int. Cl.[5] C08F *30/08*

U.S. Cl. 525—326.5 14 Claims

1. A room-temperature curable epoxy resin composition comprising:

(a) a resin component containing a polyepoxide function and an alkoxysilyl function, and

(b) a catalytically effective amount of an amine, amide or urea salt of a superacid.

5,344,891

BIODEGRADABLE POLYMERS

Nariyoshi Kawabata, Osaka; Mutsumi Kohsaka, Moriyama, and Teruya Kurooka, Fujiidera, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 726,223, Jul. 5, 1991, abandoned. This application Jan. 8, 1993, Ser. No. 1,775

Claims priority, application Japan, Jul. 7, 1990, 2-178516

Int. Cl.[5] C08F *8/40*

U.S. Cl. 525—327.1 5 Claims

1. In a biodegradable polymer composed predominantly of acrylonitrile monomers, the improvement wherein the backbone of said biodegradable polymer comprises 1–5 mole %, based on the total moles of monomer in said biodegradable polymer, of a second monomer comprising a vinyl group substituted with one member selected from the group consisting of N-alkylpyridinium groups, N-arylpyridinium groups and N-arylalkylpyridinium groups.

5,344,892

POLYESTER COMPOSITIONS WITH IMPROVED CRYSTALLIZATION RATE

Kavilipalayam M. Natarajan, North Brunswick, and Shilain D. Wu, Robbinsville, both of N.J., assignors to Enichem S.p.A., Milan, Italy

Filed Jul. 2, 1993, Ser. No. 85,043

Int. Cl.[5] C08L *71/12, 67/02*

U.S. Cl. 525—397 14 Claims

1. A molding composition comprising a thermoplastic polyester and an alkali metal salt of PPE, as a nucleating agent.

5,344,893

EPOXY/AMINO POWDER RESIN ADHESIVE FOR PRINTED CIRCUIT BOARD

Motoo Asai, and Chie Onishi, both of Gifu, Japan, assignors to Ibiden Co., Ltd., Gifu, Japan

Filed Jul. 17, 1992, Ser. No. 913,935

Claims priority, application Japan, Jul. 23, 1991, 3-205618

Int. Cl.[5] C09J *161/24, 161/28, 163/02, 163/04*

U.S. Cl. 525—398 11 Claims

1. An adhesive for a printed circuit board comprising:

an uncured heat-resistant resin matrix which is insoluble in an acid or an oxidizing agent when cured; and

a cured fine powder of heat-resistant resin soluble in an acid or an oxidizing agent, said cured fine powder of heat-resistant resin comprising an amino resin dispersed in said uncured heat-resistant resin matrix.

5,344,894

POLYIMIDE OLIGOMERS AND BLENDS

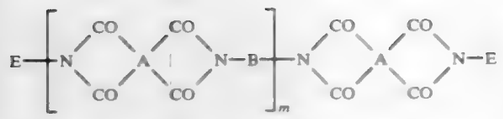
Hyman R. Lubowitz, Rolling Hills Estates, Calif., and Clyde H. Sheppard, Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 568,911, Aug. 13, 1990, abandoned, which is a continuation of Ser. No. 46,376, May 4, 1987, abandoned, which is a continuation-in-part of Ser. No. 715,801, Mar. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 536,264, Sep. 27, 1983, abandoned, said Ser. No. 46,376, is a continuation-in-part of Ser. No. 810,818, Dec. 17, 1987, abandoned. This application Nov. 23, 1992, Ser. No. 980,109

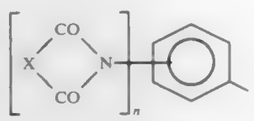
Int. Cl.[5] C08F *283/04*

U.S. Cl. 525—422 31 Claims

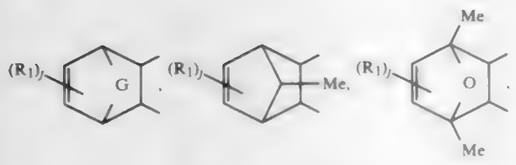
1. A blend comprising a mixture of a polyimide oligomer and a comparable, noncrosslinking polymer, the oligomer having the formula:

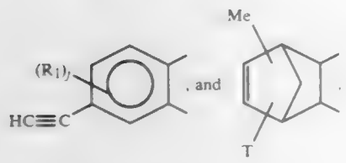


wherein E is the residue of an amine end cap selected from the group consisting of:



wherein X is:





A is the residue of a dianhydride;
B is the residue of a diamine;
n=1 or 2;
R_1=alkyl, alkoxy, aryl, aryloxy, or halogen;
j=0, 1 or 2;
Me=methyl;
G=—SO_2—, —CH_2—, —S—, or —O—;
T=methallyl or allyl and
m is an integer selected so that the oligomer possesses thermoplastic properties and has a formula weight of between about 5,000 and about 40,000.

5,344,895

POLYAMIDEIMIDE COMPOSITION WITH IMPROVED PROCESSABILITY

Xiaoyun Lai; Dafang Zhao, both of Brown Deer, Wis., and Francis Lai, Middleton, Mass., assignors to University of Massachusetts Lowell, Lowell, Mass.

Filed Apr. 1, 1993, Ser. No. 42,235
Int. Cl.[5] C08L *67/04, 79/08*
U.S. Cl. 525—425 **9 Claims**

1. A polymer composition comprising a polyamideimide polymer and a liquid crystalline polymer, wherein the liquid crystalline polymer is in an amount which significantly decreases the melt viscosity of the polyamideimide polymer while not significantly decreasing the mechanical properties of the polyamideimide polymer.

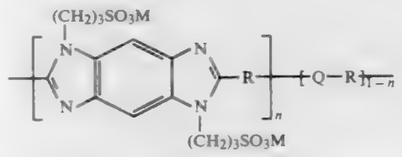
5,344,896

WATER SOLUBLE RIGID-ROD POLYMERS

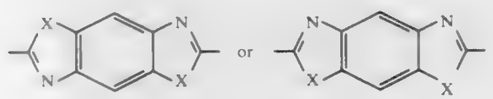
Thuy D. Dang, Dayton, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Wright-Patterson Air Force Base, Ohio

Division of Ser. No. 30,523, Mar. 12, 1993, Pat. No. 5,312,876.
This application Feb. 7, 1994, Ser. No. 192,901
Int. Cl.[5] C08G *73/18*
U.S. Cl. 525—435 **4 Claims**

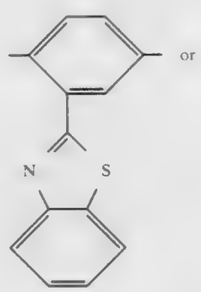
1. A water-soluble rigid-rod aromatic heterocyclic polymer having repeating units of the formula:

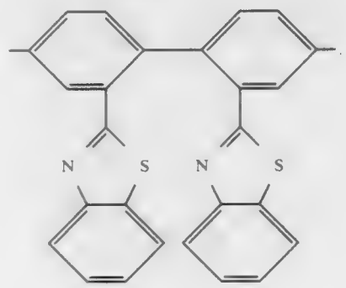


wherein n has a value of 0.05 to 1.00, M is an alkali metal, Q is a benzobisazole of the formula



wherein X is —S— or —O—, and R is:





5,344,897

LIQUID COATING AGENT BASED ON TRANSESTERIFIED, MODIFIED EPOXY RESINS AND BLOCKED POLYAMINES

Gerhard Brindoepke, Sulzbach; Uwe Kubillus, Wiesbaden, and Helmut Plum, Taunusstein, all of Fed. Rep. of Germany, assignors to Hoechst AG, Fed. Rep. of Germany

Continuation of Ser. No. 777,677, Oct. 15, 1991, abandoned.
This application Oct. 29, 1993, Ser. No. 146,573
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1990, 40327565
Int. Cl.[5] C08G *59/14, 59/16*
U.S. Cl. 525—526 **12 Claims**

1. Liquid coating composition comprising
1) a reaction product of a polyepoxide and a reactant selected from water or an amine or a hydroxycarboxylic acid, said reaction product containing less than 0.2% of epoxide groups, which reaction produce is subsequently esterified or transesterified with acetoacetic acid and
2) a polyamine in the form of its corresponding aldimine or ketimine.

5,344,898

ORIENTED COMPOSITIONS DERIVED FROM NITRO GROUP TERMINATED MESOGENIC EPOXY RESIN ADDUCTS

Robert E. Hefner, Jr., and Jimmy D. Earls, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 982,804, Nov. 30, 1992, Pat. No. 5,298,575.
This application Nov. 18, 1993, Ser. No. 154,805
Int. Cl.[5] C08G *59/14, 59/50, 75/32*
U.S. Cl. 525—526 **10 Claims**

1. An oriented, curable composition comprising (1) at least one compound having an average of more than one vicinal epoxide group per molecule; and (2) a curing quantity of at least one amine group terminated adduct containing one or more mesogenic moieties per molecule, which adduct results from the reaction of (A) one or more compounds containing an average of more than one vicinal epoxide gorup per molecule and (B) one or more compounds containing one or more nitro or nitroso groups and one hydrogen atom per molecule which is reactive with an epoxide group thereby forming an adduct essentially free of epoxy groups and containing nitro or nitroso groups followed by (C) reaction of a part or all of the backbone aliphatic hydroxyl groups contained therein, wherein said reaction is an etherification of the hydroxyl group, an esterification of the hydroxyl group, conversion of the hydroxyl group to a halogen, a urethanation of the hydroxyl group or an oxidation of the hydroxyl group to the ketone carbonyl group which is optionally reduced to provide the alkane. and (D) reduction of the nitro or nitroso groups contained therein to amine groups; with the proviso that at least one or more mesogenic moieties per molecular are present in either component (A) or (B) or in both (A) and (B) wherein components (A) and (B) are employed in amounts which provide a ratio of equivalents of hydrogen reactive with an epoxide group, excluding secondary hydroxyl groups formed by epoxide ring opening reaction to form the adduct, per equivalent of epoxide reacted of from about 1:1 to about 100:1.

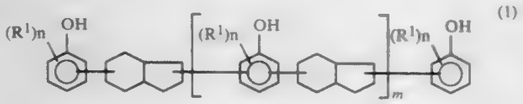
5,344,899

PHENOLIC RESIN, METHOD FOR PRODUCING THE RESIN AND EPOXY RESIN COMPOSITION FOR ENCAPSULATION

Masami Enomoto; Susumu Kubota; Fumiaki Oshimi; Hitoshi Yuasa, and Yutaka Otsuki, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Division of Ser. No. 856,553, Mar. 24, 1992, abandoned. This application Feb. 16, 1993, Ser. No. 18,081
Claims priority, application Japan, Mar. 29, 1991, 3-066919
Int. Cl.[5] C08F *283/00*
U.S. Cl. 525—534 **11 Claims**

1. An epoxy resin composition for encapsulation comprising:
(a) a curable epoxy resin,
(b) a phenolic resin of the formula (1)



(1)

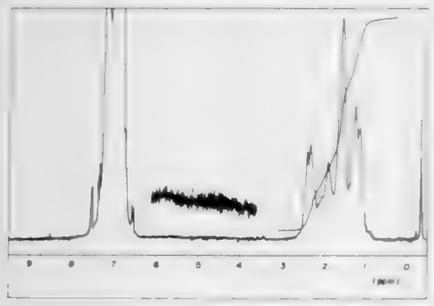
wherein R^1 denotes a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, m denotes an integer of from 0 to 10 and n denotes 0, 1 or 2,
(c) a curing promotor, and
(d) an inorganic filler.

5,344,900

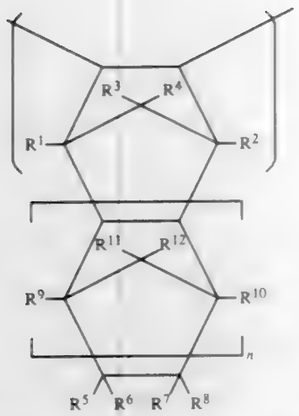
PROCESS FOR PRODUCING A NORBORNENE POLYMER

Hiroshi Maezawa; Junichi Matsumoto, both of Sodegaura; Hideki Aiura, Tokyo, and Satoshi Asahi, Sodegaura, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Division of Ser. No. 664,372, Mar. 4, 1991, abandoned. This application Apr. 30, 1993, Ser. No. 56,587
Claims priority, application Japan, Mar. 6, 1990, 2-52639; Nov. 29, 1990, 2-325854
Int. Cl.[5] C08F *4/42, 4/80, 132/00*
U.S. Cl. 526—160 **21 Claims**

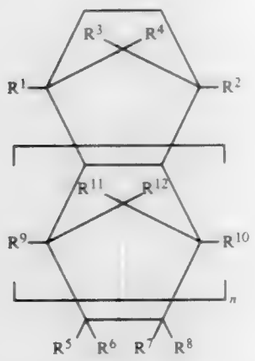


1. A process for producing a norbornene polymer consisting essentially of a repeating unit of formula (I):



wherein R^1 to R^{12} are the same or different and are independently a hydrogen atom, a hydrocarbon group having 1 to 20 carbon atoms, or a substituent containing a halogen atom, an oxygen atom or a nitrogen atom; R^5 and R^7 may combine together to form a ring; and n is an integer of 0 or more, and having a weight average molecular weight of 1×10^5 to 1×10^7 as determined by gel permeation chromatography, which process comprises polymerizing a norbornene monomer of the formula (II):

(II)



wherein R^1 to R^{12} are the same or different and are independently a hydrogen atom, a hydrocarbon group having 1 to 20 carbon atoms, or a substituent containing a halogen atom, an oxygen atom or a nitrogen atom; R^5 and R^7 may combine together to form a ring; and n is an integer of 0 or more, in the presence of a catalyst comprising a transition metal compound component containing a transition metal selected from the group consisting of manganese, nickel and palladium, and an aluminoxane component.

5,344,901

PROCESS FOR PREPARING ACRYLIC POLYMERS IN SUSPENSION

Pasquale Relvini, Milan, and Nicola Anfossi, Varese, both of Italy, assignors to Atochem Industriale S.r.l., Milan, Italy

Continuation of Ser. No. 19,814, Feb. 19, 1993, abandoned, which is a continuation of Ser. No. 701,903, May 17, 1991, abandoned. This application Sep. 15, 1993, Ser. No. 120,870

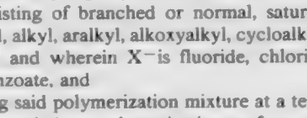
Claims priority, application Italy, May 18, 1990, 20379 A/90

Int. Cl.[5] C08F *2/00, 12/30*

U.S. Cl. 526—201 **3 Claims**

1. A process for preparing acrylic polymers comprising aqueous-suspension polymerization carried out in the presence of 0.05–1% by weight, calculated on the suspension, of a stabilizer consisting of a polymer prepared by polymerizing: 60–100% by weight of a salt of a sulphoacrylamide of formula:

(I)



where R_1 represents a hydrogen atom or a $-CH_3$ group, R_2 and R_3, like or different from each other, represent a hydrogen atom or an alkyl C_1–C_4 radical and M represent an alkaline or alkaline-earth metal; and 0–40% by weight of at least an acrylic monomer.

5,344,902

POLYMERIZATION WITH INITIATOR AND QUATERNARY AMMONIUM SALT

H. James Harwood, Stow; Daniel H. Jones, Akron, both of Ohio; Andrew W. Talkington, Encino, Calif., and Stephen D. Goodrich, Akron, Ohio, assignors to Occidental Research Corporation, Los Angeles, Calif.

Continuation of Ser. No. 716,938, Jun. 18, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 982,835

Int. Cl.[5] C08F *4/34, 216/36, 220/10, 216/12*

U.S. Cl. 526—217 **9 Claims**

1. A polymerization process comprising the steps of:

preparing a mercaptan free polymerization mixture consisting essentially of:

about 1000 mole units of a liquid partially polymerized compound made up of at least one monomer type having a polymerizable double bond,

from about 0.1 to about 100 mole units of an initiator miscible with said polymerization mixture and selected from the group consisting of organic peroxides, hydroperoxides and peresters, and

from about 0.01 to about 100 mole units of a quaternary ammonium salt misible with said polymerization mixture and of the formula

$$[(R_1, R_2, R_3, R_4)N^+]X^-$$

wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of branched or normal, saturated or unsaturated, alkyl, aralkyl, alkoxyalkyl, cycloalkyl and hydroxyalkyl and wherein X^- is fluoride, chloride, bromide or bibenzoate, and

reacting said polymerization mixture at a temperature sufficient to induce polymerization to form a polymer from said liquid partially polymerized compound.

5,344,903

WATER- AND OIL-REPELLENT FLUORO(METH)ACRYLATE COPOLYMERS

Kimberly G. Raiford; Edward J. Greenwood, and Robert H. Dettre, all of Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 14, 1993, Ser. No. 48,350

Int. Cl.[5] C08F *20/24*

U.S. Cl. 526—245 **4 Claims**

1. A copolymer the polymer units of which consist essentially of

a) 50–80 weight. % of perfiuoroalkylethyl (meth)acrylates,

b) 10–40 weight. % of a C_2–C_{20} alkyl (meth)acrylate,

c) 10–40 weight. % of vinylidene chloride,

d) 0–2 weight. % of N-methylol-acrylamide,

e) 0–2 weight. % of 2-hydroxyethyl methacrylate and

f) 0–5 weight. % of 2-hydroxyethyl methacrylate/ethylene oxide adduct;

said perfluoroalkyl-ethyl (meth)acrylates being in the form of mixtures of monomers having the formula:

$$CF_3CF_2(CF_2)_kCH_2CH_2OC(O)C(R)=CH_2$$

wherein R=H or CH_3, and k is 4,6,8,10 and 12 having a distribution consisting essentially of:

25–70 weight % of monomers wherein k=4 or less

20–40 weight % of monomers wherein k=6

5–25 weight % of monomers wherein k=8

0–15 weight % of monomers wherein k=10 or greater.

5,344,904

VINYLIDENE FLUORIDE POLYMER AND METHOD OF MAKING SAME

Hideki Wakamori; Fujio Suzuki, and Katsuo Horie, all of Iwaki, Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 923,487, Aug. 3, 1992, Pat. No. 5,283,302. This application Aug. 25, 1993, Ser. No. 111,541

Claims priority, application Japan, Aug. 1, 1991, 3-216265

Int. Cl.[5] C08F *14/22*

U.S. Cl. 526—254 **2 Claims**

1. A vinylidene fluoride polymer comprising the monomer unit content of 99.5–96 wt. % of vinylidene fluoride and the monomer unit content of 0.5–4 wt. % of monomers selected from hexafluoropropylene and/or tetrafluoroethylene, and having a logarithmic viscosity of 0.9–1.3 dl/g, a molecular-weight distribution, as expressed by the ratio (Mw/Mn) of weight-average molecular weight and number-average molecular weight, 2.2–2.8, a crystalline melting point of 163°–176° C. and a spherulite size of 1–30 μm.

5,344,905

DIORGANOPOLYSILOXANE AND METHOD FOR THE PREPARATION THEREOF

Yoshitsugu Morita, Ichihara, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

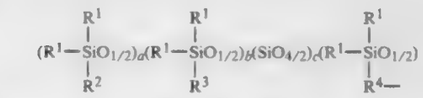
Filed Aug. 4, 1993, Ser. No. 102,025

Claims priority, application Japan, Aug. 5, 1992, 4-229290

Int. Cl.[5] C08G *77/08*

U.S. Cl. 528—15 **17 Claims**

1. A diorganosiloxane polymer terminated at each molecular end with an epoxy group-containing organopolysiloxane residue of the following general formula



wherein R^1 is a monovalent hydrocarbon group free of alkenyl groups, R^2 is selected from the group consisting of hydrogen and a monovalent hydrocarbon group free of alkenyl groups, R^3 is a monovalent group selected from the group consisting of an epoxy group-containing organic group and an alkoxysilylalkyl group, with the proviso that at least one R^3 group is an epoxy group-containing organic group, R^4 is a divalent hydrocarbon group, a is zero or a positive number, b is a positive number, c is a positive number, a/c is a number in the range of zero to 4, b/c is a positive number in the range of 0.05 to 4, and (a+b)/c is a positive number in the range of 0.2 to 4.

5,344,906

PROCESS FOR PRODUCING ORGANOSILOXANES

Stephen Westall, Wales, United Kingdom, assignor to Dow Corning Limited, Tokyo, Japan

Filed Aug. 16, 1993, Ser. No. 107,093

Claims priority, application United Kingdom, Sep. 5, 1992, 92181841

Int. Cl.[5] C08G *77/08*

U.S. Cl. 528—13 **7 Claims**

1. A process for the production of an organosilicon condensation product which comprises contacting (A) at least one organosilicon compound having in the molecule at least one silanol group, and silicon-bonded organic substituents wherein the silicon-bonded organic substituents are selected from monovalent hydrocarbon groups having from 1 to 14 carbon atoms or monovalent substituted hydrocarbon groups having from 1 to 10 carbon atoms in which the substituents of the monovalent substituted hydrocarbon groups are selected from amino, halogen, mercapto, hydroxyl, amido or ester, with (B) a quaternary ammonium compound selected from quaternary ammonium phosphates, quaternary ammonium borates, quaternary ammonium carbonates or quaternary ammonium silicates.

5,344,907

PEROXIDE-SUBSTITUTED POLYSILAZANES

Joanne M. Schwark, 316 Park La., Wilmington, Del. 19804

Continuation-in-part of Ser. No. 772,394, Oct. 7, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 17,888

Int. Cl.[5] C08K *3/34*

U.S. Cl. 524—443 **21 Claims**

1. An uncrosslinked polysilazane comprising silyl peroxide groups having the formula ≡SiOOR wherein R is selected from the group consisting of H, substituted or unsubstituted 1–10 carbon alkyl, 2–10 carbon alkenyl, 2–10 carbon alkynyl, aryl, a carboxylic acid and a silyl group.

5,344,908

PROCESS FOR THE MANUFACTURE OF POLYCARBONATE-OLIGOMERS WITHOUT SOLVENT

Niles R. Rosenquist, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed May 4, 1993, Ser. No. 58,070

Int. Cl.[5] C08G *77/04*

U.S. Cl. 528—29 **24 Claims**

1. A method for making a polycarbonate polysiloxane block co-polymer comprising melt reacting a polycarbonate resin having an intrinsic viscosity ranging from about 0.4 to about 1.6 dl/g in methylene chloride at 25° C. and bisphenol-A in the presence of a basic catalyst and in the absence of both a solvent and phosgene to produce a hydroxyaryl terminated polycarbonate oligomer having an average of about 2 to about 50 chemically combined carbonate units, wherein the mole ratio of bisphenol-A to polycarbonate is in the range of about 1:50 to about 5:10 and reacting the hydroxyaryl terminated polycarbonate oligomer and a chlorine terminated polyorganosiloxane under substantially anhydrous conditions in an organic solvent and in the presence of an acid acceptor.

5,344,909

LATENT CATALYZED PHENOLIC RESOLE RESIN COMPOSITION

David A. Hutchings, Tucker; Ted M. McVay, Stone Mountain, and Richard F. Pennock, Decatur, all of Ga., assignors to Georgia-Pacific Resins, Inc., Atlanta, Ga.

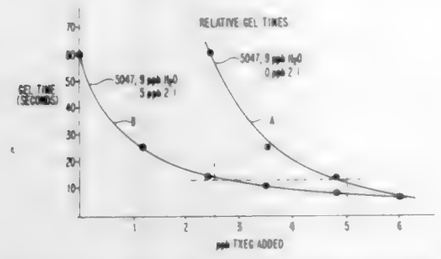
Division of Ser. No. 903,228, Jun. 25, 1992, Pat. No. 5,243,015. This application Jun. 3, 1993, Ser. No. 70,780

Int. Cl.[5] C08G *8/04, 14/00;* **C08L** *61/00*

U.S. Cl. 528—129 **13 Claims**

1. A filament winding resin composition comprising a thermosetting phenolic resole resin composition containing a latent catalyst in an amount adequate to cure said resole resin, upon application of heat, at a rate comparable to a rate of cure obtained with said resole resin using a conventional strong acid

under comparable cure conditions, said latent catalyst comprising a salt of an amine selected from a primary amine, a secondary amine, and mixtures thereof, and a strong acid and water in an amount of 5 to 20%.



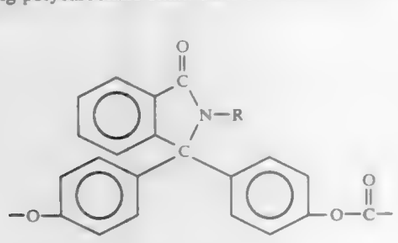
5,344,910

HEAT-RESISTANT POLYCARBONATE RESINS CONTAINING 2-ALKYL-3,3-BIS(P-HYDROXYPHENYL)PHTHALIMIDE

Paul D. Sybert, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Mar. 23, 1993, Ser. No. 35,843
Int. Cl.[5] C08G *64/00*
U.S. Cl. 528—201 8 Claims

1. A synthetic polymeric resin containing recurring or repeating polycarbonate chain units of the formula:


(I)

wherein R represents an alkyl having 1 to 12 carbon atoms.

5,344,911

PROCESS FOR PRODUCING POLYOXYMETHYLENE COPOLYMER HAVING REDUCED AMOUNT OF UNSTABLE TERMINAL GROUPS

Kaoru Yamamoto; Nagayoshi Maeda; Makoto Kamiya; Toshiro Murao, all of Shizuoka, Japan; Gerhard Reuschel, Bibliss-Nordheim, and Dietrich Fleischer, Darmstadt, both of Fed. Rep. of Germany, assignors to Polyplastics Co., Ltd., Japan and Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 5, 1993, Ser. No. 26,130
Claims priority, application Japan, Mar. 6, 1992, 4-049476; Mar. 9, 1992, 4-050597
Int. Cl.[5] C08G *4/00, 6/00*
U.S. Cl. 528—241 22 Claims

1. In a process for producing a polyoxymethylene copolymer by copolymerizing, in a copolymerization reaction system, trioxane with a cyclic ether or a cyclic formal in the presence of a catalyst consisting essentially of boron trifluoride or a coordination compound thereof, the improvement comprising:

(a) conducting copolymerization while adjusting (1) the total content of impurities in the copolymerization reaction system to 1×10^{-2} mole percent or less based on the total monomer amount, and (2) the content of the catalyst in the copolymerization reaction system to between 1×10^{-3} to 1×10^{-2} mole percent based on the total monomer amount, to obtain a reaction mixture which includes crude polyoxymethylene copolymer; and then

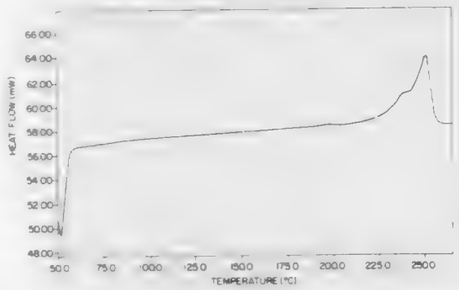
(b) deactivating the catalyst by quenching the reaction mixture to a temperature of 45° C. or less within 30 seconds after completion of the copolymerization according to step (a).

5,344,912

ELEVATED TEMPERATURE DIMENSIONALLY STABLE POLYESTER WITH LOW GAS PERMEABILITY

Edward J. Dalgewicz, III, Millstone, and Richard A. Freundlich, Plainsboro, both of N.J., assignors to Therma-Plate Corporation, South Plainfield, N.J.

Filed Apr. 3, 1992, Ser. No. 863,204
Int. Cl.[5] C08G *63/16*
U.S. Cl. 528—308.1 31 Claims



1. A non-oriented thermoplastic polyethylene terephthalate homopolymer, with an intrinsic viscosity of from about 0.65 to about 1.2;

said polyethylene terephthalate providing a gas barrier having an oxygen permeability of from about 0.2 to about 4.9 cc-mil/100 in^2-24 hrs-atm at 23° C. and at 100% relative humidity inside and 60% relative humidity outside; and,

having an enthalpy of recrystallization from about 0 to about −2.1 calories per gram as determined by differential scanning calorimetry at a heating rate of about 20° C. to about 25° C. per minute.

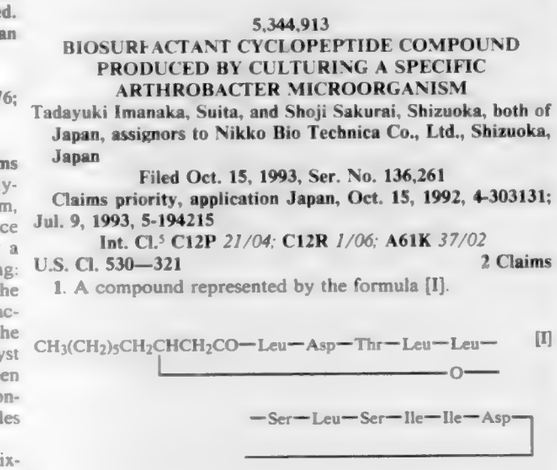
5,344,913

BIOSURFACTANT CYCLOPEPTIDE COMPOUND PRODUCED BY CULTURING A SPECIFIC ARTHROBACTER MICROORGANISM

Tadayuki Imanaka, Suita, and Shoji Sakurai, Shizuoka, both of Japan, assignors to Nikko Bio Technica Co., Ltd., Shizuoka, Japan

Filed Oct. 15, 1993, Ser. No. 136,261
Claims priority, application Japan, Oct. 15, 1992, 4-303131; Jul. 9, 1993, 5-194215
Int. Cl.[5] C12P *21/04;* C12R *1/06;* A61K *37/02*
U.S. Cl. 530—321 2 Claims

1. A compound represented by the formula [I].

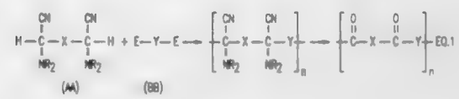

[I]

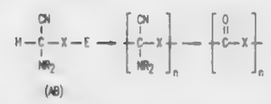
5,344,914

COMMERCIALLY VALUABLE POLYMERIC KETONES AND METHOD OF PREPARING SAME

Harry W. Gibson, Blacksburg, Va., and Ashish Pandya, Natick, Mass., assignors to The Center for Innovative Technology*, Herndon, Va.

Filed Oct. 5, 1992, Ser. No. 956,743
Int. Cl.[5] C08G *69/10*
U.S. Cl. 528—328 6 Claims


(AA) (BB) EQ.1


(AB) EQ.2

1. A method of preparing polymers having ketone functionality, comprising the steps of:

forming a dianion from a first monomer having at least one aminonitrile constituent, wherein the amino moiety of the aminonitrile constituent is a secondary amine;

condensing said dianion with a difunctional electrophile to produce a polyaminonitrile; and

acid catalyzing aminonitrile constituents in said polyaminonitrile to produce a polymer having ketone functionality.

5,344,915

PROTEINS AND THE PREPARATION THEREOF

Hans-Georg LeMaire, Dirmstein; Heinz Hillen, Hassloch, both of Fed. Rep. of Germany; Achim Moeller, Winchester, Mass.; Lothar Daum, Otterstadt, Fed. Rep. of Germany; Thomas Doerper, Bissersheim, Fed. Rep. of Germany, and Thomas Subkowski, Mutterstadt, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

PCT No. PCT/EP90/00719, § 371 Date Sep. 26, 1991, § 102(e) Date Sep. 26, 1991, PCT Pub. No. WO90/13575, PCT Pub. Date Nov. 15, 1990
PCT Filed May 4, 1990, Ser. No. 768,443
Claims priority, application Fed. Rep. of Germany, May 9, 1989, 3915072; Jul. 5, 1989, 3922089
Int. Cl.[5] C07K *15/06*
U.S. Cl. 530—350 3 Claims

1. A purified and isolated TNFα-binding protein which has a molecular weight of about 42,000 daltons and has at the N terminus the amino acid sequence

Xaa Thr Pro Tyr Ala Pro Glu Pro Gly Set Thr Cys Arg Leu Arg Glu

where Xaa is hydrogen, a phenylalanine residue (Phe) or the amino acid sequences Ala Phe, Val Ala Phe, Gln Val Ala Phe, Ala Gln Val Ala Phe, Pro Ala Gln Val Ala Phe or Leu Pro Ala Gln Val Ala Phe.

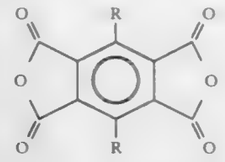
5,344,916

NEGATIVE BIREFRINGENT POLYIMIDE FILMS

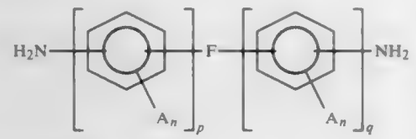
Frank W. Harris, and Stephen Z. D. Cheng, both of Akron, Ohio, assignors to The University of Akron, Akron, Ohio

Continuation-in-part of Ser. No. 51,068, Apr. 21, 1993. This application Jun. 4, 1993, Ser. No. 72,137
Int. Cl.[5] C08G *73/10, 69/26;* C09K *19/00;* G02F *1/133*
U.S. Cl. 528—353 26 Claims

1. A non-stretched homopolymer polyimide film, soluble in the imide form, for use in negative birefringence layers in liquid crystal displays, the film having a negative birefringence of 0.001 to 0.2, the film having been prepared from solutions of soluble polyimides of the type having an aromatic dianhydride of general formula (I):


(I)

and an aromatic diamine of formula (III)


(III)

wherein each

R is a substituent selected independently from the group consisting of H, halogen, phenyl, substituted phenyl, alkyl and substituted alkyl of from 1 to 20 carbons;

F is selected from the group consisting of a covalent bond, a CH_2 group, a $C(CH_3)_2$ group, a $C(CX_3)_2$ group wherein X is a halogen, a CO group, an O atom, a S atom, a SO_2 group, a $Si(R)_2$ group wherein R is as defined previously, and a N(R) group wherein R is as defined previously;

A is selected from the group consisting of hydrogen, halogen, alkyl, substituted alkyl, nitro, cyano, thioalkyl, alkoxy, substituted alkoxy, aryl and substituted aryl, aliphatic and aromatic ester, and combinations thereof from 1 to 20 carbons;

n is an integer from 0 to 4; and

p and q are integers from 1 to 3 and when p and q are greater than 1, the linking group between benzyl or substituted benzyl groups is F; and

wherein the negative birefringence of the film is determined by control of the degree of in-plane orientation of the polyimide by the selection of R, F and A, and the values of n, p and q, which affects the polyimide backbone chain rigidity and linearity, the higher the rigidity and linearity of the polyimide backbone, the larger the value of the negative birefringence of the polyimide film.

5,344,917

PROCESS FOR PRODUCING REGENERATED COLLAGEN FIBER

Mitsuru Furukawa; Masahiko Takada; Shoichi Murata, and Atsushi Sasayama, all of Hyogo, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 28, 1992, Ser. No. 997,487
Claims priority, application Japan, Dec. 26, 1991, 3-344838
Int. Cl.[5] D01C *3/00;* A61K *9/06;* C08H *1/06;* C09H *1/04*
U.S. Cl. 530—356 5 Claims

1. A process for producing regenerated collagen fiber from solubilized collagen comprising adjusting a degree of swelling of solubilized collagen to 100 to 300% and then crosslinking the resulting solubilized collagen with an aqueous solution of a metallic salt.

5,344,918

PROCESS FOR THE MANUFACTURE OF A HIGH-PURITY ACTIVATED FACTOR VII CONCENTRATE ESSENTIALLY FREE OF VITAMIN K-DEPENDENT FACTORS AND FACTORS VIIIC AND VIIICAG

Bernard Dazey; Mohamed Hamsany, and Sylvia Enfedaque-Morer, all of Bordeaux, France, assignors to Association d'Aquitaine Pour le Developpement de la Transfusion Sanguine et des Recherches Hematologiques, Bordeaux, France

Filed Dec. 10, 1992, Ser. No. 988,776

Claims priority, application France, Dec. 16, 1991, 91 15601

Int. Cl.[5] A61K *35/16, 35/14, 39/00*

U.S. Cl. 530—381 23 Claims

1. A process for the manufacture of a high purity concentrate containing activated factor VIIa, comprising:

a) providing a plasma containing factor VII and free of cyroprecipitate;

b) directly activating the factor VII in the plasma without the addition of exogenous proteins and without the precipitation of lipoproteins, to obtain a plasma free of cryoprecipitate containing an increased amount of activated factor VIIa, said activating comprising contacting said plasma with an amount of pulverulent dextran sulfate, insoluble in said plasma, sufficient to activate said factor VII without precipitation of lipoproteins; and

c) purifying said plasma containing activated factor VIIa and non-activated factor VII by chromatography with an ion exchange resin.

5,344,919

INTEGRIN FROM HUMAN EPITHELIAL CELLS

Vito Quaranta, La Jolla, Calif., and Shama Kajiji, Mystic, Conn., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation of Ser. No. 293,384, Jan. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 16,552, Feb. 19, 1987, abandoned. This application Feb. 4, 1993, Ser. No. 14,090

Int. Cl.[5] C07K *15/14*

U.S. Cl. 530—395 1 Claim

1. An isolated human heterodimeric protein complex of 400 kd by SDS PAGE or 500 kd by gel filtration which immunoreacts with Mab HB 9318 and that consists essentially of:

a) a first glycopeptide characterized by having apparent molecular weight in SDS-PAGE under reducing conditions of about 205 kd and under non-reducing conditions of about 190 kd, and glycosidase susceptibility to treatment with endo F and neuraminidase but not endo H, said first glycopeptide including the amino acid residue sequence N-R-C-K-K-A-P-V-K-S-C-T-E-C-V;

b) a second glycopeptide characterized by having apparent molecular weight in SDS-PAGE under reducing conditions of about 125 kd and under non-reducing conditions of about 150 kd, and glycosidase susceptibility to treatment with endo F, endo H and neuraminidase, said second glycopeptide including the amino acid residue sequence F-N-L-D-T-R-E-D-N-V-I-R-K-Y-G-D-P-G-S-L-F; and the deglycosylated and partially deglycosylated forms of said complex.

5,344,920

METHOD OF SEPARATING GLYCOSYLATED AND NON-GLYCOSYLATED PROLACTIN BY ION EXCHANGE CHROMATOGRAPHY

Albert E. Price, Marlborough, Mass., assignor to Genzyme Corporation, Cambridge, Mass.

Filed May 4, 1993, Ser. No. 57,587

Int. Cl.[5] A23J *1/00;* **A61K** *37/24*

U.S. Cl. 530—416 21 Claims

1. A method for separating glycosylated prolactin from non-glycosylated prolactin comprising:

a. equilibrating a solution containing glycosylated and non-glycosylated prolactin with an equilibrating solution containing at least one lower alcohol and/or lower glycol;

b. adding the equilibrated prolactin solution onto a chromatographic column containing a cationic or anionic packing for the ion exchange separation of glycosylated and non-glycosylated prolactin;

c. eluting the glycosylated prolactin from the chromatographic column with a sufficient quantity of a first eluting solution comprising:

i. at least one lower alcohol and/or lower glycol in concentration less than 50% per total volume; and

ii. at least one salt, wherein the salt concentration, lower alcohol and/or lower glycol concentration and pH are appropriate for the eluting of glycosylated prolactin being substantially free of non-glycosylated prolactin; and

d. eluting the non-glycosylated prolactin from the chromatographic column with a sufficient quantity of a second eluting solution comprising:

i. at least one lower alcohol and/or lower glycol in concentration less than 50% per total volume; and

ii. at least one salt,

wherein the salt concentration, lower alcohol and/or lower glycol concentration and pH are appropriate for the eluting of non-glycosylated prolactin being substantially free of glycosylated prolactin.

5,344,921

METHOD FOR MANUFACTURING LIGNIN FOR CARBON FIBER SPINNING

Kenichi Sudo, and Kazumasa Shimizu, all of Ibaraki, Japan, assignors to Forestry and Forest Products Research Institute, Ministry of Agriculture, Forestry and Fisheries, Ibaraki, Japan

Continuation of Ser. No. 952,475, Sep. 28, 1992, abandoned, which is a continuation of Ser. No. 836,734, Feb. 19, 1992, abandoned, which is a continuation of Ser. No. 361,860, Jun. 6, 1989, abandoned. This application Sep. 1, 1993, Ser. No. 114,233

Claims priority, application Japan, Jun. 6, 1988, 63-138747

Int. Cl.[5] C07G *1/00;* **C08L** *97/00*

U.S. Cl. 530—502 4 Claims

1. A method for manufacturing a lignin for carbon fiber spinning, which comprises

a first step of phenolating lignin from wood by heatinq the lignin and phenolic solvent at the boiling point of the solvent to produce phenolated lignin, wherein said first step is conducted at atmospheric pressure without removing unreacted phenol during phenolation, and further

a second step of heat treating the resultant reaction mixture in a non-oxidizing atmosphere under reduced pressure at a temperature and time sufficient for (a) polycondensation of the phenolated lignin, (b) removing unreacted phenol and (c) increasing the viscosity of the reaction mixture, wherein the heat treatment is conducted at a temperature ranging from 180° to 300° C. for 30 minutes to 6 hours under subatmospheric pressure.

5,344,922

4-HYDROXYQUINALDIC ACID DERIVATIVES

Alfred C. Nichols, Texas City, and K. Lemone Yielding, Galveston, both of Tex., assignors to Board of Regents, University of Texas

Continuation of Ser. No. 645,900, Jan. 25, 1991, abandoned, which is a continuation of Ser. No. 439,652, Nov. 20, 1989, Pat. No. 5,028,707. This application Aug. 28, 1992, Ser. No. 938,546

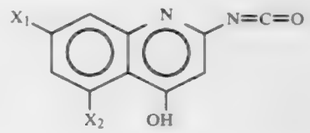
The portion of the term of this patent subsequent to Jul. 2, 2008, has been disclaimed.

Int. Cl.[5] C07D *215/22*

U.S. Cl. 546—153 11 Claims



9. A compound according to the formula:



wherein X_1 and X_2 are different and are selected from the group consisting of halogen and hydrogen.

5,344,923

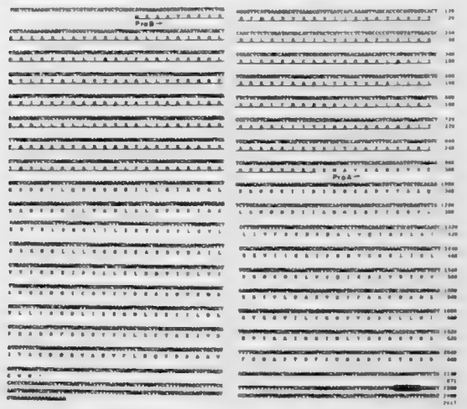
NUCLEOTIDE SEQUENCE ENCODING FOR BIFUNCTIONAL ENZYME FOR PROLINE PRODUCTION

Desh P. S. Verma, Powell; Chien-an A. Hu, Columbus, both of Ohio, and Ashton J. Delauney, St. Thomas, Barbados, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed Sep. 29, 1992, Ser. No. 953,695

Int. Cl.[5] C07H *17/00;* **C12N** *15/00*

U.S. Cl. 536—23.2 2 Claims



1. An isolated DNA molecule having the sequence of SEQ ID NO.: 1.

5,344,924

SOLVENT-FREE SYNTHESIS OF ETHEREALLY SUBSTITUTED BLOCKED MONOSACCHARIDES AND THE SELECTIVE HYDROLYSIS THEREOF

Sudershan K. Arora, Lansdale, Pa., assignor to Greenwich Pharmaceuticals, Incorporated, Ft. Washington, Pa.

Continuation of Ser. No. 658,311, Feb. 20, 1991, abandoned. This application Apr. 6, 1993, Ser. No. 44,085

Int. Cl.[5] C07H *1/00*

U.S. Cl. 536—124 18 Claims

1. A solvent-free method for synthesizing 1,2:5,6-di-O-isopropylidene-3-O-3'-(N',N'-dimethylamino-n-propyl)-α,D-glucofuranose comprising the steps of:

forming, in the absence of solvent, a single mixture containing 1,2:5,6-di-O-isopropylidene-α,D-glucofuranose, a halodimethylaminopropane, and an anhydrous alkali base;

heating said mixture to a temperature sufficient to allow said mixture to react;

maintaining said mixture at a temperature of at least about 110° C. for a time sufficient to form 1,2:5,6-di-O-isopropylidene-3-O-3'-(N',N'-dimethylamino-n-propyl)-α,D-glucofuranose and drive off any water produced;

removing any unreacted halodimethylaminopropane from said mixture; and

recovering said 1,2:5,6-di-O-isopropylidene-3-O-3'-(N',N'-dimethylanmino-n-propyl)-α,D-glucofuranose.

5,344,925

IMIDAZOLIDYL MACROLIDES HAVING IMMUNOSUPPRESSIVE ACTIVITY

Mark Goulet, Westfield; Peter J. Sinclair, Highland Park; Frederick Wong, Glen Ridge, and Matthew J. Wyvratt, Mountainside, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 921,181, Aug. 4, 1992, Pat. No. 5,247,076, which is a continuation-in-part of Ser. No. 756,633, Sep. 9, 1991, abandoned. This application Sep. 20, 1993, Ser. No. 124,137

Int. Cl.[5] C07D *491/16;* **A61K** *31/395*

U.S. Cl. 540—456 7 Claims

1. A compound which is selected from the group consisting of:

17-ethyl-1,14-dihydroxy-12-[2'-(4''-(4'''-(meta-phenoxy-tert-butyl acetate)-2'''-imidazolylmethyloxy)-3''-methoxycyclohexyl)-1'-methyl-vinyl]-23,25-dimethoxy-13,19,21,27-tetramethyl-11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene-2,3,10,16-tetraone;

17-ethyl-1,14-dihydroxy-12-[2'-(4''-(4'''-(meta-phenoxyacetic acid)-2'''-imidazolylmethyloxy)-3''-methoxycyclohexyl)-1'-methylvinyl]-23,25-dimethoxy-13,19,21,27-tetramethyl-11,28-dioxa-4azatricyclo[22.3.1.0^{4,9}]octacos-18-ene-2,3,10,16-tetraone;

17-ethyl-1-hydroxy-14-(N,N-dimethylaminoacetoxy)-12-[2'-(4''-(4'''-(3'''',5''''-dimethoxyphenyl)-2'''-imidazolylmethyloxy)-3''-methoxycyclohexyl)-1'-methylvinyl]-23,25-dimethoxy-13,19,21,27-tetramethyl-11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene-2,3,10,16-tetraone;

17-ethyl-1-hydroxy-14-(3''''-(N,N-diethylamino)-propanoyloxy)-12-[2'-(4''-(4'''-(3'''',5''''-dimethoxyphenyl)-2'''-imidazolylmethyloxy)-3''-methoxycyclohexyl)-1'-methylvinyl]-23,25-dimethoxy-13,19,21,27-tetra-methyl-11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene-2,3,10,16-tetraone;

17-ethyl-1-hydroxy-14-(3''''-aminopropanoyloxy)-12-[2'-(4''-(4'''-(3'''',5''''-dimethoxyphenyl) -2'''-imidazolylmethyloxy)-3''-methoxycyclohexyl)-1'-methylvinyl]-23,25-dimethoxy-13,19,2 1,27-tetramethyl-11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene-2,3,10,16-tetraone;

17-ethyl-1-hydroxy-14-(2''''',6'''''-diaminohexanoyloxy)-12-[2'-(4''-(4'''-(3'''',5''''-dimethoxyphenyl)-2'''-imidazolylmethyloxy)-3''-methoxycyclohexyl)-1'-methylvinyl]-23,25-dimethoxy-13,19,21,27-tetramethyl-11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene-2,3,10,16-tetraone;

or a pharmaceutically acceptable salt thereof.

5,344,926

PROCESS FOR PRODUCING STAUROSPORINE DERIVATIVES

Chikara Murakata, Hachioji; Toshimitsu Takiguchi, Gotenba; Shigeo Katsumata, Mishima; Akira Mihara, Machida; Keiichi Takahashi, Susono; Hiromitsu Saito, Mishima; Shiro Akinaga, Shizuoka; Masami Okabe, Mishima, and Yutaka Saito, Machida, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1993, Ser. No. 79,560

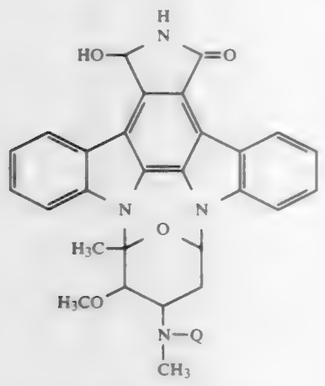
Claims priority, application Japan, Jun. 22, 1992, 4-162813; Jun. 22, 1992, 4-162814

Int. Cl.[5] C07D *498/22*

U.S. Cl. 540—545 **4 Claims**

1. A process for producing a staurosporine derivative represented by Formula (I):

(I)



wherein:

Q represents hydrogen or —X—$(CH_2)_m$—Y—$(CH_2)_n$—Z wherein:

X represents a single bond or —CO—

Y represents a single bond or —CH(OH)—

Z represents hydroxy, O C O N R^1 R^2, in which each of R^1 and R^2 independently represents hydrogen or lower alkyl, or R^1 and R^2, combined together with the nitrogen atom adjacent thereto, form a heterocyclic group selected from the group consisting of pyrrolidinyl, imidazolidinyl, pyrazolidinyl, piperidino, morpholino, piperazinyl, N-methylpiperizinyl, indolinyl and isoindolinyl,

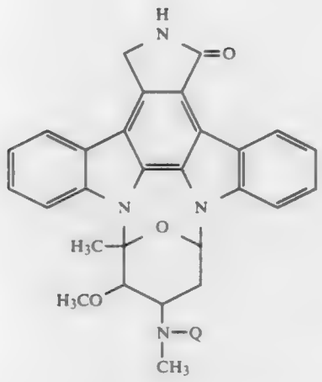
carboxyl,

N R^3 and R^4, in which each of R^3 and R^4 independently represents hydrogen or lower alkyl, or R^3 and R^4, combined together with the nitrogen atom adjacent thereto, form a heterocyclic group selected from the group consisting of pyrrolidinyl, imidazolidinyl, pyrazolidinyl, piperidino, morpholino, piperazinyl, N-methylpiperizinyl, indolinyl and isoindolinyl, or, aryl which is optionally substituted with 1 to 3 substituents independently selected from the group consisting of lower alkyl, lower alkoxy, amino, halogen and nitro,

each of m and n independently represents an integer from 0 to 6,

or a pharmaceutically acceptable salt thereof, which comprises oxidizing a compound represented by the formula (II)

(II)



wherein Q has the same meaning as previously defined, with dimethylsulfoxide (DMSO) and an aqueous alkaline solution.

5,344,927

TETRAHYDROBENZIMIDAZOLE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Mitsuaki Ohta; Tokuo Koide; Takeshi Suzuki; Akira Matsuhisa, all of Ibaraki; Keiji Miyata, Tokyo; Junya Ohmori, Ibaraki, and Isao Yanagisawa, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 713,890, Jun. 12, 1991, abandoned, which is a continuation of Ser. No. 567,949, Aug. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 470,950, Jan. 26, 1990, abandoned. This application Mar. 30, 1993, Ser. No. 39,633

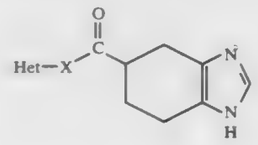
Claims priority, application Japan, Feb. 2, 1989, 1-25397; Feb. 28, 1989, 1-48897; Oct. 20, 1989, 1-273444; Dec. 28, 1989, 1-342939

Int. Cl.[5] A61K *31/505, 31/47;* **C07D** *235/04, 239/42, 401/00*

U.S. Cl. 544—31 **32 Claims**

1. A tetrahydrobenzimidazole derivative represented by formula (I):

(I)



wherein Het represents a member selected from the group consisting of pyrollidine, piperidine, piperazine, morpholine, pyrrole, furan, thiophene, imidazole, oxazole, thiazole, pyrazole, isoxazole, isothiazole, triazole, thiadiazole, oxadiazole, pyridine, pyridazine, pyrimidine, pyrazine, 4H-cyclopentathiazole, indole, isoindole, 2,3-dihydroindole (indoline), isoindoline, hydroxyindole, indazole, indolizine, benzothiophene, benzofuran, benzothiazole, benzimidazole, benzoxazole, 4,5,6,7-tetrahydrobenzothiophene, 2,3-dihydrobenzimidazol-2-one, quinoline, isoquinoline, 1,2,3,4-tetrahydroquinoline, 1,2,3,4-tetrahydroisoquinoline, 1,4-benzoxazine, phenothiazine, carbazole and β-carboline, and wherein Het may be substituted with 1 to 3 substituents selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl, cycloalkyl-lower alkyl, aralkyl, lower alkoxy, nitro, hydroxyl, lower alkoxycarbonyl, and halo; and X represents a single bond or —NH— which is bonded to the carbon atom or nitrogen atom of the heterocyclic ring of said Het, or a pharmaceutically acceptable salt thereof.

5,344,928

PHENOTHIAZINE DERIVATIVES, THEIR PRODUCTION AND USE

Hirotomo Masuya, Kawabe; Hiroshi Shimadzu, Settsu; Toshio Miyawaki, Nishinomiya, and Marvin A. Motsenbocker, Amagasaki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 14, 1992, Ser. No. 868,100

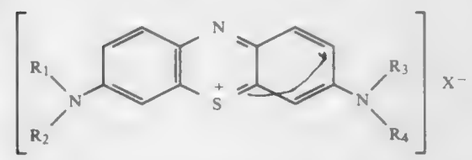
Claims priority, application Japan, Apr. 26, 1991, 3-096930

Int. Cl.[5] C07D *279/28*

U.S. Cl. 544—37 **10 Claims**

1. A phenothiazine derivative of the formula (I):

(I)



wherein R_1, R_2, R_3 and R_4 are the same or different and are respectively a $C_{1\text{-}6}$ alkyl group, at least one of which has as a substituent a group which can react with amino group, thiol group or carboxyl group, and X' is a counter ion of the phenazathionium.

5,344,929

PREPARATION OF CARBONIC ANHYDRASE INHIBITORS

William D. Dean, Arlington; Paul W. Zinke; Steven J. Sproull, both of Fort Worth; Michael E. Deason, Burleson; Raymond E. Conrow, and Anura P. Dantanarayana, both of Fort Worth, all of Tex., assignors to Alcon Laboratories, Inc., Ft. Worth, Tex.

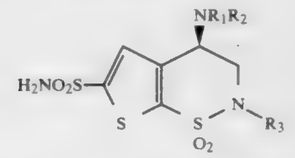
Filed Feb. 18, 1993, Ser. No. 19,012

Int. Cl.[5] C07D *513/12, 333/48*

U.S. Cl. 544—48 **21 Claims**

1. A process for synthesis of compounds of formula

I



wherein: R_1 and R_2 are both chosen from H or $C_{1\text{-}4}$ alkyl; R_3=$C_{1\text{-}6}$ alkyl; or $CH_2(CH_2)_nOR_4$ where R_4=CH_3 or $(CH_2)_nCH_3$ and n=1–4; or $(CH_2)_nAr$ where Ar=unsubstituted phenyl, 3-methoxyphenyl, or 4methoxyphenyl and n=1 or 2 which comprises:

a. displacing the C(2)-chloro of 3-acetyl-2,5-dichlorothiophene with benzyl mercaptide to form 3-acetyl-5-chloro-2-(benzylthio)thiophene.

b. converting the compound formed in Step a to 3-acetyl-5-chloro-2-thiophenesulfonamide by first reacting the compound formed in Step a with chlorine to form 3-acetyl-5-chloro-2-thiophenesulfenyl chloride, followed by reaction with ammonia to form 3-acetyl-5-chloro-2-thiophenesulfenyl and oxidation to 3-acetyl-5-chloro-2-thiophenesulfonamide;

c. brominating the compound from Step b to provide 3-bromoacetyl-5-chloro-2-thiophenesulfonamide;

d. reducing the compound of Step c with an asymetric reducing agent and then treating it with aqueous base to form (S)-3,4-dihydro-6-chloro-4-hydroxy-2H-thieno[3,2-e]-1,2-thiazine-1,1-dioxide;

e. selectively alkylating the compound of Step d using a metal carbonate in dimethyl sulfoxide to provide (S)-3,4-dihydro-6-chloro-4-hydroxy-2-substituted-2H-thieno[3,2-e]-1,2-thiazine-1,1-dioxide;

f. forming (S)-3,4-dihydro-4-hydroxy-2-substituted-2H-thieno[3,2-e]-1,2-thiazine-6-sulfonamide-1,1-dioxide from the compound of Step e by first reacting with an alkyl lithium, then reacting the resulting anion with sulfur dioxide to form a lithium sulfinate, and then reacting the lithium sulfinate with hydroxylamine-O-sulfonic acid;

g. protecting the C(6)-sulfonamide of Step f, with trimethyl orthoacetate, activating the C(4)-hydroxyl and displacing it with an amine.

5,344,930

FLUORINE AND PHOSPHOROUS-CONTAINING AMPHIPHILIC MOLECULES WITH SURFACTANT PROPERTIES

Jean G. Riess, Falicon; Francois Jeanneaux, Nice; Marie-Pierre Krafft, Nice; Catherine Santaella, Nice, and Pierre Vierling, Falicon, all of France, assignors to Alliance Pharmaceutical Corp., San Diego, Calif.

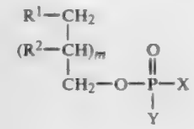
Continuation of Ser. No. 542,227, Jun. 22, 1990, abandoned. This application Nov. 8, 1993, Ser. No. 149,008

Int. Cl.[5] C07F *9/6533, 9/24, 9/10, 9/59, 9/572, 9/568, 9/564, 9/14*

U.S. Cl. 544—84 **13 Claims**

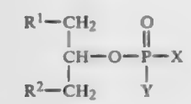
1. A compound of the general formula:

(Ia)



or

(Ib)



wherein:

m is 0 or 1;

R^1 represents:

$R_F(CH_2)_a$—$(CH{=}CH)_b$—$(CH_2)_c$—$(CH{=}CH)_d$—$(CH_2)_e$—A—;

R_F—$(CH_2)_f$—$OCH_2CH(CH_2OH)CH_2$—A—;

R_F—$(CH_2)_g$—$OCH_2CH(CH_2OH)$—A—;

wherein —A— represents —O—, —C(O)O—, —$R^6(R^7)$-N^+—, (wherein each of R^6 and R^7 represents C_1–C_4 alkyl or hydroxyethyl), —$(CH_2)_n$—, wherein n=0 or 1, or

—C(O)N(R^9)—$(CH_2)_q$—B, wherein q is an integer from 0 to 12,

B represents —O— or —C(O)—, and R^9 is hydrogen or R^6, and wherein the sum of a+c+e is from 0 to 11, the sum b+d is from 0 to 12 and each of f and g is from 1 to 12;

R_F—$(CH_2$—CH_2—$O)_h$—;

R_F—$(CH(CH_3)CH_2O)_h$—; or

R_F—$(CH_2$—CH_2—$S)_h$—,

wherein h is from 1 to 12; and

wherein R_F represents a fluorine -containing moiety having one of the following structures:

(a) $F(CF_2)_i$—, wherein i is from 2 to 12,

(b) $(CF_3)_2CF(CF_3)_j$—, wherein j is from 0 to 8,

(c) $R_F1(CF_2CF(CF_3))_k$—, wherein k is from 1 to 4 , and R_F1 represents CF_3—, C_2F_5— or $(CF_3)_2CF$—,

(d) R_F2 (R_F3)CFO $(CF_2CF_2)_l$—, wherein l is from 1 to 6 and wherein each of R_F2 and R_F3 independently represents CF_3—, C_2F_5—, n—C_3F_7— or $CF_3CF_2CF(CF_3)$— or R_F2 and R_F3 taken together represent —$(CF_2)_4$— or —$(CF_2)_5$—, provided that in

compounds of the general formula Ia, when m=0, R^1 is $R_F(CH_2)_a$—(CH=CH)$_b$—$(CH_2)_c$—(CH=CH)$_d$—(CH-2)$_e$—A—, wherein —A— is —$(CH_2)_n$— and n=0, each of R_F2 and R_F3 represents CF_3—, and l is 1, then the sum of b+d must be 1 or more; or

(e) one of the structures (a) to (d) in which one or more of the fluorine atoms are replaced by one or more hydrogen or bromine atoms and/or at least two chlorine atoms in a proportion such that at least 50% of the atoms bonded to the carbon skeleton of R_F are fluorine atoms, and wherein R_F contains at least 4 fluorine atoms,

R^2 represents R^1, hydrogen or a group OR,

wherein R represents a saturated or unsaturated C_1–C_{20} alkyl or C_4–C_{20} acyl; and

when m is 1, R^1 and R^2 may exchange their positions; and

each of X and Y independently represent:

hydroxyl;

—$OCH_2CH(OH)CH_2OH$;

—$O(CH_2CH_2O)_nR^3$,

wherein n is an integer from 1 to 5; and

R^3 represents a hydrogen atom or C_1–C_4 alkyl group;

—NR^4R^5 or $N^+R^4R^5R^8$,

wherein each of R^4, R^5 and R^8 independently represents a hydrogen atom; a C_1–C_4 alkyl group;

—$CH_2CH_2O(CH_2CH_2O)_sR^3$, wherein s represents an integer of from 1 to 5, or R^4 and R^5 when taken together represent —$(CH_2)_q$ wherein q is an integer of from 2 to 5, or when with the nitrogen atom R^4 and R^5 form a morpholino group;

—$O(CH_2)_pZ$ wherein Z represents a 2-aminoacetic acid group, —NR^4R^5 or —$N^+R^4R^5R^8$ where R^8 is as defined for R^4 and R^5 above and p is an integer of from 1 to 5;

with the proviso that X and Y do not both represent hydroxyl; further provided for compounds of the general formula Ia, that when m=0 or 1, R^2 is H, and R^1 is $R_F(CH_2)_a$—(CH=CH)$_b$—$(CH_2)_c$—(CH=CH)$_d$—A—, in which A is CH_2 or O; or, when m=0 and R^1 is R_F—CH-2—CH_2—O)$_h$, one of X and Y is not $CH_2CH(OH)CH_2OH$ when the other is OH or an ionized form derived from OH.

5,344,931

SALTS OF TRIAZINIC COMPOUNDS WITH PHOSPHORUS OXYACIDS, AND USE OF SAID COMPOUNDS IN SELF-EXTINGUISHING POLYMERIC COMPOSITIONS

Roberto Cipolli, Novara; Enrico Masarati, Castelnuovo Valtidone; Roberto Oriani, Milan; Mario Pirozzi, San Donato Milanese, and Gilberto Nucida, San Giuliano Milanese, all of Italy, assignors to Ministero Dell'Universita' E Della Ricerca Scientifica E Technologica, Rome, Italy

Filed Oct. 6, 1992, Ser. No. 956,994

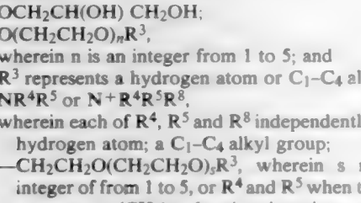
Claims priority, application Italy, Oct. 11, 1991, MI91-A002705

Int. Cl.[5] **C07D** *251/02*

U.S. Cl. 544—195 | **2 Claims**

1. Salts of triazinic compounds with phosphorus oxyacids, having the general formula (I):

(I)



wherein:

R is H or

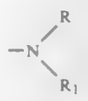
—[—C_pH_{2p}—]—O—R_4

in which p is an integer comprised within the range of from 2 to 8; and

R_4 is H; (C_1–C_8)-alkyl; (C_2–C_8)-alkenyl; —[—C_qH_{2q}—]—O—R_5,

in which q is an integer comprised within the range of from 1 to 4; and

R_5 is H or (C_1–C_4)-alkyl; (C_6–C_{12})-cycloalkyl or alkylcycloalkyl; R_1 is (C_1–C_4)-alkyl or R; or the moiety:



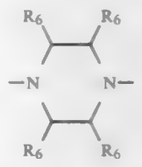
is replaced by a heterocyclic radical bonded to the triazinic ring through the nitrogen atom; wherein said heterocyclic radical is selected from the group consisting of aziridine, pyrrolidine, piperidine, and piperazine radicals;

n is an integer comprised within the range of from 2 to 50;

m is a numeral smaller than, or equal to, n;

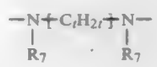
z is a divalent or polyvalent radical falling within the scope of one of following formulae:

(II)

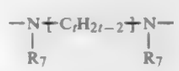


wherein the —R_6 radicals, which may be the same, or different from each other, are hydrogen or (C_1–C_4)-alkyl;

(III)

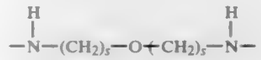


(IV)

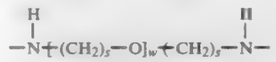


wherein t is an integer comprised within the range of from 2 to 14; R_7 is hydrogen, (C_1–C_4)-alkyl, (C_2–C_6)-alkenyl, (C_1–C_4)-hydroxyalkyl;

(V)

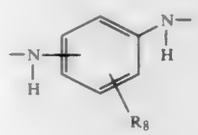


(VI)



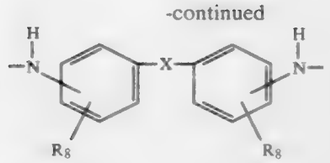
wherein s is an integer comprised within the range of from 2 to 5 and w is an integer comprised within the range of from 1 to 3;

(VII)



-continued

(VIII)

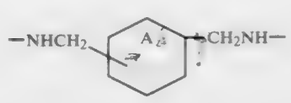


wherein:

X is a direct —C—C—; O; S; S—S; SO; SO_2; NH; $NHSO_2$; NHCO; N=N; CH_2 bond;

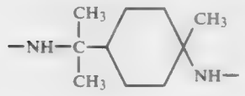
R_8 is hydrogen; hydroxy; (C_1–C_4)-alkyl; (C_1–C_4)-alkoxy;

(IX)

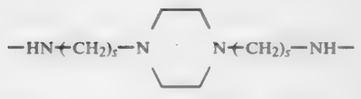


wherein "A" can be a saturated or unsaturated cycle;

(X)

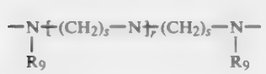


(XI)



wherein s has the above defined meaning;

(XII)



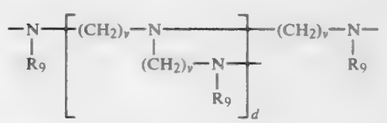
wherein;

R_9 is hydrogen or (C_1–C_4)-alkyl;

r is an integer comprised within the range of from 1 to 5;

the indexes s, which are the same, or may be different from each other, have the above defined meaning;

(XIII)



wherein:

R_9 has the above defined meaning;

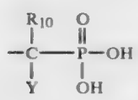
v is an integer comprised within the range of from 2 to 4;

d is either 1 or 2;

R_2 is H; OH; —O—(C_1–C_8)-alkyl; —O—(C_6–C_{12})-aryl, possibly substituted with a (C_1–C_8)-alkyl; (C_7–C_{16})-aralkyl; (C_1–C_4)-alkyl possibly substituted with a carboxy group; (C_6–C_{12})-aryl;

R_3 is H; OH; —O—(C_1–C_8)-alkyl; —O—(C_6–C_{12})-aryl, (C_1–C_4)-alkyl; (C_6–C_{12})-aryl;

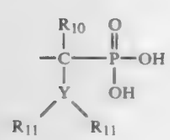
R_3 furthermore is:



wherein:

R_{10} is hydrogen or (C_1–C_{12})-alkyl;

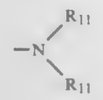
Y is OH or R_{10};



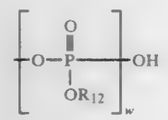
wherein:

R_{10} has the same meaning as defined hereinabove and R_{11} radicals, which are the same, or may be different from each other, are hydrogen or (C_1–C_4)-alkyl;

or the moiety:



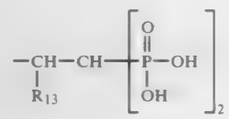
is replaced by a heterocyclic radical bonded to the carbon atom through the nitrogen atom wherein said heterocyclic radical is selected from the group consisting of azirdine, pyrrolidine, piperidine, or piperazine radicals;



wherein:

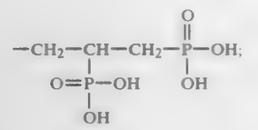
R_{12} is hydrogen or (C_1–C_8)-alkyl; and

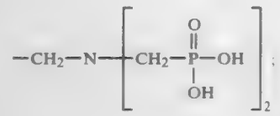
w has the same meaning as defined hereinabove;

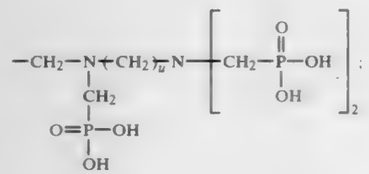


wherein:

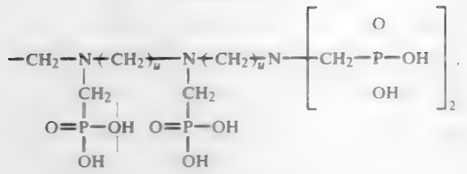
R_{13} is hydrogen or hydroxy;



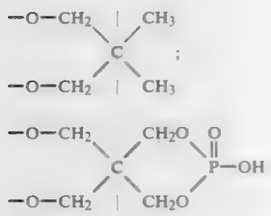




-continued



wherein:
u has the same meaning as defined above:
or
R_2 and R_3, taken together, may constitute a cyclic structure having the formula:



5,344,932

N-(PYRROLO(2,3-D)PYRIMIDIN-3-YLACYL)-GLUTAMIC ACID DERIVATIVES

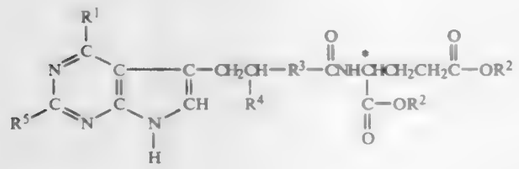
Edward C. Taylor, Princeton, N.J., assignor to Trustees of Princeton University, Princeton, N.J.

Continuation of Ser. No. 448,742, Dec. 11, 1989, abandoned, and Ser. No. 479,655, Feb. 8, 1990, abandoned. This application Mar. 22, 1991, Ser. No. 674,541

Int. Cl.[5] C07D *487/04;* **A61K** *31/505*

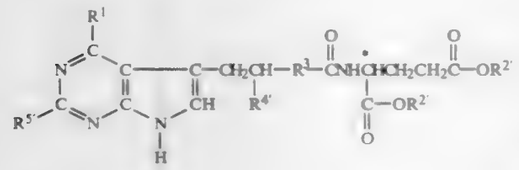
U.S. Cl. 544—280 **7 Claims**

1. A compound of the formula:



in which:
R^1 is —OH or —NH_2;
R^2 is hydrogen or a pharmaceutically acceptable cation:
R^3 is 1,4-phenylene unsubstituted or substituted with chloro, fluoro, methyl, methoxy, or trifluoromethyl;
R^4 is hydrogen, or methyl;
R^5 is amino; and
the configuration about the carbon atom designated * is S.

7. A compound of the formula:



in which:
R^1 is —OH or —NH_2;
$R^{2'}$ is hydrogen, a pharmaceutically acceptable cation, or a carboxy protecting group:
R^3 is 1,4-phenylene unsubstituted or substituted with chloro, fluoro, methyl, methoxy, or trifluoromethyl;
$R^{4'}$ is hydrogen, or methyl;
$R^{5'}$ is amino or amino substituted with an amino protecting group; and
the configuration about the carbon atom designated * is S.

5,344,933

PYRROLE RING-OR CONDENSED PYRROLE RING-CONTAINING AZOMETHINE DYE

Hisashi Mikoshiba; Katsuyoshi Yamakawa; Kozo Sato, and Koushin Matsuoka, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

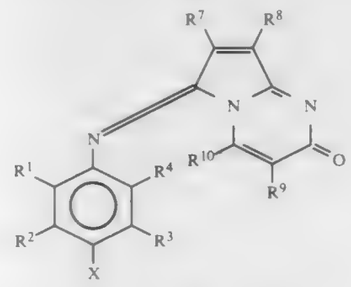
Filed Sep. 10, 1992, Ser. No. 942,835

Claims priority, application Japan, Sep. 11, 1991, 3-258739; Oct. 16, 1991, 3-294784

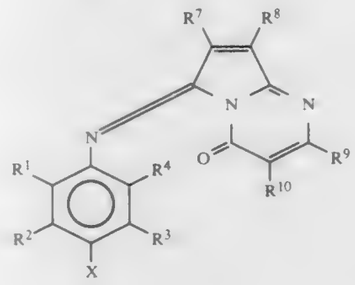
Int. Cl.[5] C07D *471/04;* **C09B** *55/00;* **B41M** *5/00. 5/30;* **G03C** *7/30*

U.S. Cl. 544—282 **11 Claims**

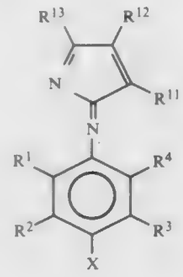
1. An azomethine dye represented by the formula (I), (II) or (III):



(I)

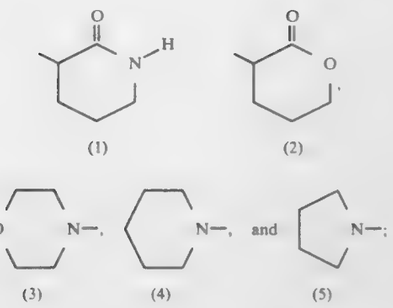


(II)



(III)

wherein R^1, R^2, R^3 and R^4 each independently represents hydrogen or nonmetallic atom; X represents —OH or —NR^5R^6; R^5 and R^6 each independently represents hydrogen, alkyl, aryl or heterocyclic, wherein the heterocyclic is selected from the group consisting of



(1) (2) (3) (4) (5)

and R^7, R^8, R^9, R^{10}, R^{11}, R^{12} and R^{13} each independently represents hydrogen or nonmetallic atom.

5,344,934

PREPARATION OF URETHANE AND CARONATE PRODUCTS

William D. McGhee, Bridgeton; Dennis P. Riley, Ballwin; John J. Talley, St. Louis, and Barry L. Parnas, University City, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 692,857, Apr. 29, 1991, Pat. No. 5,223,638. This application Nov. 16, 1992, Ser. No. 976,633

Int. Cl.[5] C07D *211/08*

U.S. Cl. 546—245 **12 Claims**

1. A process for preparing urethanes comprising:
(a) bringing CO_2 and an amine represented by the formula R_2R_3NH, wherein R_2 and R_3 together with the nitrogen form a saturated 5 to 9 membered ring radical, into reactive contact in the presence of a strongly basic nitrogenous compound selected from amidine and guanidine bases to form the corresponding ammonium carbamate salt, and
(b) reacting, in a polar aprotic solvent, said salt with a primary or secondary hydrocarbyl halide wherein the hydrocarbyl Group is selected from the group consisting of alkyl, alkenyl, cycloalkyl, cycloalkenyl, aralkyl and aralkenyl group.

5,344,935

ALKYL ESTERS OF 5-HETEROCYCLIC-PYRIDINE-2,3-DICARBOXYLIC ACIDS AND METHODS FOR THE PREPARATION THEREOF

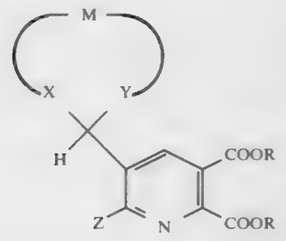
John M. Finn, Mercerville, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 714,548, Jun. 11, 1991, Pat. No. 5,239,070, which is a division of Ser. No. 457,607, Dec. 27, 1989, Pat. No. 5,026,859. This application May 27, 1993, Ser. No. 68,363

Int. Cl.[5] C07D *213/26, 213/46, 215/14*

U.S. Cl. 546—250 **1 Claim**

1. A method for the preparation of a compound having the formula I structure

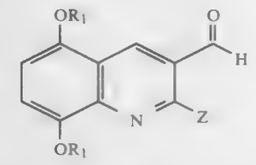


(I)

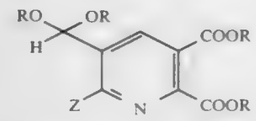
wherein

R is C_1–C_6 alkyl;
X and Y are each independently oxygen, sulfur or NR_4;
R_4 is hydrogen, C_1–C_6 alkyl optionally substituted with C_1–C_4 alkoxy or 1–3 halogens, SO_2R_5, COR_5, CO_2R_5 or $CONR_5R_5$;
R_5 is hydrogen, C_1–C_6 alkyl optionally substituted with 1–3 halogens, or C_2–C_6 alkenyl;
M is C_2–C_5 alkylene optionally substituted with 1 or 2 C_1–C_4 alkyl groups, C_1–C_4 alkoxy, halogen, CO_2R_6 or oxo, and optionally interrupted by one oxygen or one sulfur C_2 alkenylene optionally substituted with 1 or 2 C_1–C_4 alkyl groups or CO_2R_6, C_3 alkenylene optionally substituted with 1 or 2 C_1–C_4 alkyl groups or CO_2R_6 or oxo, methyleneamino, optionally substituted with C_1–C_4 alkyl or CO_2R_6 , or a single bond, with the proviso that both X and Y are NR_4, provided that the ring formed by M, X and Y and the carbon to which they are attached is no more than 8 atoms and provided that when the substituents on M are either alkoxy or halogen the substituted carbon is not bound to X or Y;
R_6 is hydrogen, methyl or ethyl;
Z is hydrogen., halogen, C_1–C_6alkoxy, or C_1–C_6 alkyl optionally substituted with C_1–C_4 alkoxy or halogen

which comprises reacting a compound having the structure



wherein R_1 is C_1–C_4 alkyl, with at least 2 molar equivalents of a tri(C_1–C_4)alkylorthoformate in the presence of a C_1–C_4 alkyl alcohol, ozone and a catalytic amount of an acid to yield a di(C_1–C_4)alkyl acetal pyridinedicarboxylate having the structure



wherein R is C_1–C_4 alkyl and reacting said di(C_1–C_4)alkyl acetal with at least one molar equivalent of an agent having the structure

HX—M—YH

wherein X, M and Y are as described above in the presence of an acid and a solvent to give the formula I 5-heterocyclic-pyridine2,3-dicarboxylate compound.

5,344,936

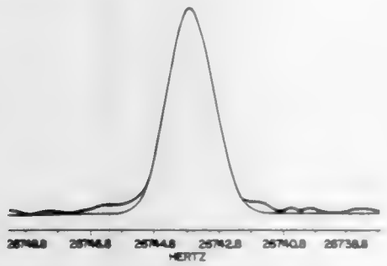
CHALCOGEN-BASED CHIRAL REAGENTS FOR NUCLEAR MAGNETIC RESONANCE DETECTION OF STEREOCHEMICAL ASSIGNMENTS AND ENANTIOMERIC RATIOS

Louis A. Skills, III, Los Alamos, N. Mex.; R. Bruce Dunlap, Columbia, and Jerome D. Odom, Ridgeway, both of S.C., assignors to University of South Carolina, Columbia, S.C.

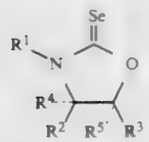
Continuation of Ser. No. 592,281, Oct. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 418,129, Oct. 6, 1989, Pat. No. 5,122,472. This application Mar. 5, 1993, Ser. No. 27,552

Int. Cl.[5] C07D *263/16*

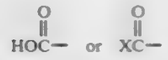
U.S. Cl. 548—229 **7 Claims**



1. An optically pure chiral compound of the formula



wherein R^1 is H,



and X is a halogen,

R^2 is an alkyl group of up to 10 carbon atoms;

R^3 is an aryl group of up to 12 carbon atoms in the ring system;

R^4 and R^5 are selected from hydrogen, alkyl group of up to 10 carbon atoms and aryl groups of up to 12 carbon atoms in the ring system, or the enantiomer thereof, with the proviso the R^2 and R^4 are not the same.

5,344,937

ALKYL SUBSTITUTED NITROIMIDAZOLE ACETIC ACIDS

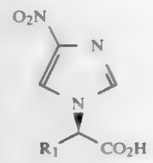
Charles J. Barnett, Indianapolis, and Thomas M. Wilson, Speedway, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 20, 1993, Ser. No. 49,915

Int. Cl.[5] C07D *233/91*

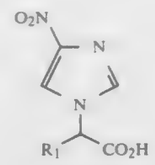
U.S. Cl. 548—330.1 **4 Claims**

1. A method of preparing the compounds of the formula,



wherein the configuration is substantially the (R) enantiomer, and R_1 is C_4–C_9 straight chain alkyl, C_4–C_9 straight chain trifluoroalkyl, C_4–C_9 straight chain alkenyl, or C_4–C_9 straight chain trifluoroalkenyl; or a (−)-cinchonidine salt thereof, comprising:

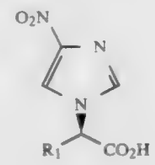
(a) reacting a racemic mixture of the compound of the formula



wherein R_1 is C_4–C_9 straight chain alkyl, C_4–C_9 straight chain trifluoroalkyl, C_4–C_9 straight chain alkenyl, or C_4–C_9 straight chain trifluoroalkenyl; with (−)-cinchonidine in an alcoholic solvent in the presence or absence of C_1–C_4 alkyl amine to produce a crystalline salt;

(b) isolating the crystalline salt; and

(c) optionally converting the crystalline salt to the free acid thereby producing a substantially pure (R) enantiomer of the formula:



wherein R_1 is C_4–C_9 straight chain alkyl, C_4–C_9 straight chain trifluoroalkyl, C_4–C_9 straight chain alkenyl, or C_4–C_9 straight chain trifluoroalkenyl.

5,344,938

INDOLE 3-CARBOXYLIC ACID DERIVATIVES

Masaji Kasai, Kanagawa; Hitoshi Arai; Hiroshi Nishikawa, both of Shizuoka; Takehiro Ogasa; Masahiko Kinugawa, both of Osaka, and Shinji Tomioka, Wakayama, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

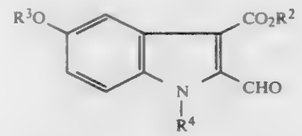
Filed Apr. 1, 1993, Ser. No. 41,180

Claims priority, application Japan, Apr. 7, 1992, 4-85276

Int. Cl.[5] C07D *209/42*

U.S. Cl. 548—492 **2 Claims**

1. A compound represented by formula (I):



(I)

wherein R^2 is a lower alkyl group, R^3 is a lower alkyl group and R^4 is a lower alkyl group.

5,344,939

PROCESS FOR FORMING A FLUOROMETHYL KETONE

James T. Palmer, San Ramon, Calif., assignor to Prototek, Inc., Dublin, Calif.

Division of Ser. No. 744,922, Aug. 14, 1991, Pat. No. 5,210,272, which is a division of Ser. No. 481,995, Feb. 16, 1990, Pat. No. 5,101,068. This application Mar. 11, 1993, Ser. No. 29,894

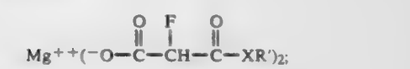
Int. Cl.[5] C07S *207/16;* **C07C** *67/30, 327/26*

U.S. Cl. 548—531 **4 Claims**

1. A method for forming a beta-keto-alpha-fluoroester of a carboxylic acid which comprises the steps of

a. converting the carboxylic acid to give the corresponding imidazolide, and

b. reacting the imidazolide with a magnesium fluoromalonate of the formula



wherein

X is —O— or —S—, and

R′ is a hydrogenatively cleavable group.

5,344,940

INTERMEDIATES FOR INDIVIDUAL STEREOISOMERS OF 7-[3-(AMINOALKYL)-1-PYRROLIDINYL]-QUINOLONES AND NAPHTHYRIDONES

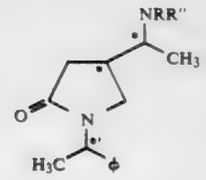
John M. Domagala, Canton; John S. Kiely, Ann Arbor, and Mel C. Schroeder, Dexter, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 966,651, Oct. 26, 1992, Pat. No. 5,258,528, which is a division of Ser. No. 731,825, Jul. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 621,201, Nov. 30, 1990, abandoned. This application Jun. 28, 1993, Ser. No. 84,044

Int. Cl.[5] C07D *207/12*

U.S. Cl. 548—540 **8 Claims**

1. An individual stereoisomer of the formula



wherein

* and *′ denote asymmetric carbon atoms;

R is hydrogen or alkyl of 1–3 carbon atoms; and

R″ is hydrogen, alkyl of 1–3 carbon atoms, acetyl, trifluoroacetyl or t-butyloxycarbonyl.

5,344,941

WATER SOLUBLE SALTS OF THIONAPHTHENE-2-CARBOXYLIC ACID

Carlos M. Samour, 254 Ocean Ave., Newport, R.I. 02840; Stefanos Daskalakis, 116 Early St., Harrison, N.J. 07960, and James R. Marshall, 7 B Old Colony Dr., Westford, Mass. 01886

Continuation of Ser. No. 739,779, Jul. 31, 1991, abandoned, which is a continuation of Ser. No. 86,848, Aug. 19, 1987, abandoned, which is a continuation-in-part of Ser. No. 903,385, Sep. 3, 1986, abandoned. This application Dec. 9, 1992, Ser. No. 987,993

Int. Cl.[5] C07D *333/56*

U.S. Cl. 549—57 **3 Claims**

1. A water-soluble compound selected from the group consisting of the lysine and arginine salts of thionapthene-2-carboxylic acid (TNCA).

5,344,942

REAGENTS FOR RACMATE RESOLUTION

Christian Noe, Frankfurt am Main, and Günter Gmeiner, Baden, both of Fed. Rep. of Germany, assignors to Chemie Linz Gesellschaft m.b.H., Austria

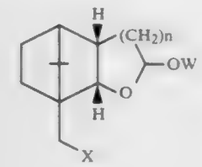
Filed Apr. 1, 1993, Ser. No. 41,185

Claims priority, application Austria, Apr. 13, 1992, 769/92

Int. Cl.[5] C07D *307/93, 311/94*

U.S. Cl. 549—386 **2 Claims**

1. An (R) or (S) enantiomer of the formula

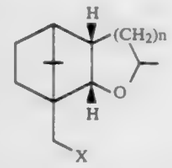


I

in which

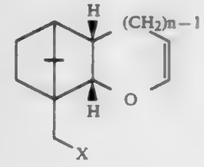
n is 1 or 2 ,

W is hydrogen, alkyl, cycloalkyl or the radical



Ia

and, in the case where W is hydrogen, their anhydro compounds of the formula



II

in which n is as defined above, which are characterized in that X is halogen, SO_3H, SO_2Cl or $SO_2NR_1R_2$ where R_1 and R_2 are, independently of one another, hydrogen, substituted or unsubstituted, branched or unbranched alkyl, substituted or unsubstituted aryl or heteroaryl, or R_1 and R_2 form, together with the nitrogen, a substituted or unsubstituted heterocycle.

5,344,943

LONG-CHAIN KETENE DIMERS

Nils Brolund, Duren, Fed. Rep. of Germany, assignor to Akzo Nobel N.V., Netherlands

Filed Dec. 29, 1992, Ser. No. 998,810

Claims priority, application European Pat. Off., Dec. 30, 1991, 91203425.3

Int. Cl.[5] C07D *305/12*

U.S. Cl. 549—329 **11 Claims**

1. A process for the preparation of long-chain ketene dimers which comprises reacting carboxylic acid chlorides of the formula:

RCH_2COCl

wherein R is a saturated or unsaturated hydrocarbon group having 6–30 carbon atoms, with triethyl amine to obtain a

amine hydrochloride-containing reaction mixture containing ketene dimer, and treating said mixture with dilute aqueous hydrochloric acid or an aqueous solution of triethyl amine hydrochloride and hydrochloride acid to separate out the ketene dimer product, wherein the process is characterized in that said acid chloride is fed, in the absence of an organic solvent into said triethyl amine under intensive mixing at a rate of not more than 3 moles/hour per mole of triethyl amine, and mixing, feed rate and heat exchange are controlled such that the viscosity of the mixture is maintained at less than about 250 mPa.s, measured at 60° C. (rate of shear higher than 100 1/sec) and the molar ratio of the total amount of carboxylic acid chloride fed into the triethyl amine is 1:1.025 to 1:2.

5,344,944

CIRCULATION-ACTIVE DIOXYALKYLENEARYL-DIHYDROPYRIDINES

Gerhard Franckowiak, Wuppertal; Albrecht Marhold, Leverkusen; Martin Bechem; Rainer Gross, both of Wuppertal; Michael Kayser; Matthias Schramm, both of Leverkusen, and Günther Thomas, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

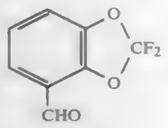
Continuation-in-part of Ser. No. 814,213, Dec. 19, 1991, abandoned, which is a continuation of Ser. No. 644,857, Jan. 22, 1991, abandoned, which is a continuation of Ser. No. 431,942, Nov. 6, 1989, abandoned, which is a division of Ser. No. 190,748, May 5, 1988, Pat. No. 4,886,816. This application Sep. 3, 1993, Ser. No. 116,414

Claims priority, application Fed. Rep. of Germany, May 19, 1987, 3716652

Int. Cl.[5] C07D *317/62*

U.S. Cl. 549—436 **1 Claim**

1. The 2,2-difluoro-4-formyl-1,3-benzodioxole of the formula



5,344,945

PROCESS FOR THE PRODUCTION OF EPICHLOROHYDRIN

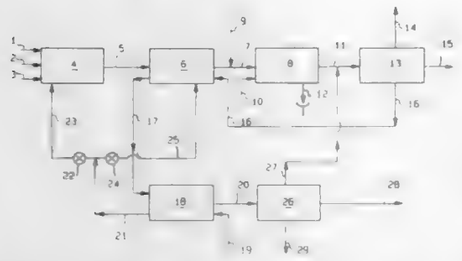
Frans Grunchard, Overijse, Belgium, assignor to Solvay (Société Anonyme), Brussels, Belgium

Filed Mar. 12, 1993, Ser. No. 30,559

Claims priority, application Belgium, Mar. 17, 1992, 09200259

Int. Cl.[5] C07C *29/86, 31/34;* **C07D** *301/26, 303/08*

U.S. Cl. 549—521 **6 Claims**



1. A process for the production of epichlorohydrin starting from alyl chloride, to form a crude aqueous solution of dichloropropanols,

a purification stage of the crude aqueous solution of dichloropropanols to remove chlorinated organic impurities by extraction by means of a recycled organic extraction solvent which is rich in 1,2,3-trichloropropane, said organic extraction solvent recycled from a distillation stage recovering and purifying 1,2,3-trichloropropane by-products produced during said pypochlorination stage in order to form a purified aqueous solution of dichloropropanols, and

a dehydrochlorination stage of the purified solution of dichloropropanols to produce epichlorohydrin.

5,344,946

PROCESS FOR THE PREPARATION OF VICINAL DIOLS AND/OR EPOXIDES

Siegfried Warwel; Mark R. Klaas, both of Aachen, and Michael Sojka, Gelnhausen, all of Fed. Rep. of Germany, assignors to Solvay Interox GmbH, Hollriegelskreith, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 864,496, Apr. 7, 1992, abandoned. This application May 20, 1993, Ser. No. 65,461

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1991, 4111506

Int. Cl.[5] C07D *301/12, 303/04;* **C07C** *27/16, 31/20*

U.S. Cl. 549—531 **24 Claims**

1. Process for the preparation of vicinal diols and/or epoxides by the oxidation of olefinically-unsaturated compounds with the use of an inorganic heptavalent rhenium compound as catalyst and of hydrogen peroxide as oxidation agent, wherein the reaction is carried out under atmospheric conditions and a pH of legs than 3 in a solvent selected from the group consisting of phosphoric acid esters and saturated ethers with a boiling point above 50° C., wherein said group does not include epoxides.

5,344,947

OPTICALLY ACTIVE DERIVATIVES OF GLYCIDOL

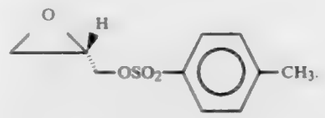
Karl B. Sharpless, Brookline, and Janice M Klunder, Somerville, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 628,197, Dec. 17, 1990, abandoned, which is a continuation of Ser. No. 349,847, May 10, 1989, abandoned, which is a division of Ser. No. 913,936, Oct. 1, 1986, Pat. No. 4,946,974. This application Jan. 15, 1993, Ser. No. 5,938

Int. Cl.[5] C07D *303/34*

U.S. Cl. 549—556 **6 Claims**

1. A compound of the formula



having an enantiomeric purity of at least about 90% e.e.

5,344,948

SINGLE-SOURCE MOLECULAR ORGANIC CHEMICAL VAPOR DEPOSITION AGENTS AND USE

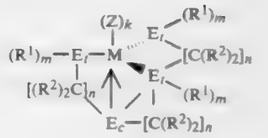
John G. Verkade, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation-in-part of Ser. No. 841,589, Feb. 25, 1992, abandoned. This application Jul. 10, 1992, Ser. No. 911,923

Int. Cl.[5] C07F *7/00, 7/02, 9/02, 5/00*

U.S. Cl. 556—51 **19 Claims**

1. A compound of the formula



wherein:

(a) M is selected from the group consisting of a lanthanide, an actinide, a Group IIIA metal, a Group IIIA metalloid, a Group IVA metal, a Group IVA metalloid, a Group VA metal, a Group VA metalloid, a Group IIIB metal, a Group IVB metal, a Group VB metal, a Group VIB metal, a Group VIIB metal, and a Group VIIIB metal;

(b) k=0–1;

(c) Z is a nitrogen-bound, silicon-bound, or sulfur-bound ligand;

(d) E_c and each E_l are independently selected from the group consisting of N, P, and As;

(e) m=1;

(f) each R^1 is independently selected from the group consisting of hydrogen, (C_2–C_{20})alkyl, (C_2–C_{20})alkenyl, (C_2–C_{20})alkynyl, (C_6–C_{18})aryl, (C_7–C_{20})aralkyl, a (C_5–C_{18})heterocycle, and triorganosilyl;

(g) n=1–4; and

(h) each R^2 is independently selected from the group consisting of hydrogen, (C_1–C_{20})alkyl, (C_2–C_{20})alkenyl, (C_2–C_{20})alkynyl, (C_6–C_{18})aryl, (C_7–C_{20})aralkyl, and a (C_5–C_{18})heterocycle.

5,344,949

METHOD FOR THE SYNTHESIS OF SURFACE-ACTIVE ANION-CATION COMPLEXES

Götz Koerner, Essen; Klaus-Dieter Klein, Mülheim a.d. Ruhr, and Dietmar Schaefer, Hattingen, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

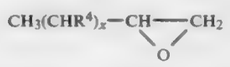
Filed Jul. 14, 1993, Ser. No. 92,303

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1992, 42241367

Int. Cl.[5] C07F *7/08, 7/10*

U.S. Cl. 556—413 **7 Claims**

1. A method for the synthesis of surface active anion-cation complexes comprising the steps of reacting an organic or organosilicon compound having at least one epoxide group, wherein said organic compound is of the general formula



Wherein R^4 is a hydrogen or alkyl group with 2 to 6 carbon atronis and X is a number from 2 to 14, or the organic compound is an epoxide of an unsaturated fatty acid or its ester,

with a quaternary ammonium hydrogen sulfide of the general formula

$$HN^+(R^1)_3SO_3H \qquad I$$

wherein

R^1within a molecule is the same or different and can be

(1) an alkyl or hydroxyalkyl group with 1 to 18 carbon atoms;

(2) a phenyl group; or

(3) a group of the formula $C_nH_{2n+1}COHN—(CH_2)_m—$, in which n can be a number from 7 to 17 and m is 2 or 3;

in the presence of a polar solvent in such amount that the molar ratio of the epoxide group to $HN^+(R^1)_3SO_3H$ is about 2:1.

5,344,950

PROCESS FOR THE PREPARATION OF VINYLCHLOROSILANES

Willy Hange, Wittlingen; Helmut Dietsche, and Claus-Dietrich Seiler, both of Rheinfelden, all of Fed. Rep. of Germany, assignors to Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Division of Ser. No. 642,250, Jan. 4, 1991, abandoned. This application Jan. 25, 1993, Ser. No. 7,415

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1990, 4001820

The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.

Int. Cl.[5] C07F *7/14*

U.S. Cl. 556—478 **1 Claim**

1. In a process for the continuous reaction of vinyl chloride with a chlorosilane to produce a vinylchlorosilane, the improvement which comprises performing the reaction in a vertically arranged reactor comprising a heatable reaction tube having an internal diameter d_1, a tubular displacement body having an external diameter d_2 mounted coaxially within said reaction tube and extending along the entire length of said reaction tube, the ratio of diameter d_2 to diameter d_1 being greater than 0.8.

5,344,951

PRODUCTION OF ALKYL PHOSPHITES

Abbas Kadkhodayan, Collinsville, Ill., assignor to Ethyl Petroleum Additives, Inc., Richmond, Va.

Filed Mar. 16, 1993, Ser. No. 31,838

Int. Cl.[5] C07F *9/142*

U.S. Cl. 558—110 **20 Claims**

1. A method for producing diesters of phosphorous acid comprising:

a) charging phosphorous acid solution and solvent to a reaction vessel, wherein the phosphorous acid contains about 20 up to about 35 wt. % water;

b) feeding from about 2.0 to about 4.0 moles of monohydric alcohol per mole of phosphorous acid to the reaction vessel containing phosphorous acid solution and solvent while maintaining a reaction mass temperature within the range of from about 130° to about 138° C. and while removing water from the reaction mass essentially as it is formed; and

c) subsequently, separating alcohol and solvent from the dihydrocarbyl phosphite formed in step (b).

5,344,952

FLUOROKETONE ENZYME INHIBITORS

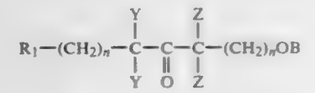
Patrick D. Mize, Durham, and James P. O'Connell, Chapel Hill, both of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 282,816, Dec. 12, 1988, abandoned, which is a division of Ser. No. 932,951, Nov. 20, 1986, Pat. No. 4,835,099. This application Mar. 22, 1993, Ser. No. 34,959

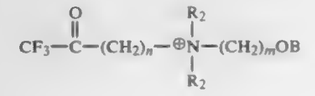
Int. Cl.[5] C07F *9/09, 9/12;* **C07H** *15/04, 15/203*

U.S. Cl. 558—169 **3 Claims**

1. A blocked enzyme inhibitor selected from the group of fluoroketones consisting of the general formulas I, II, III and IV

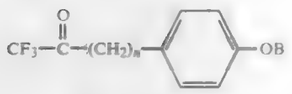


I

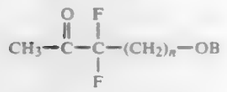


II

-continued

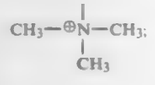


III



IV

wherein R_1 is t-butyl or



R_2 is lower alkyl of 1–6 carbon atoms, Y and Z are independently H or F wherein at least one of Y and Z is F; m is 2 to 3; n is 1–3l and B is an enzymatically hydrolysable group selected from the group consisting of a glycosyl group hydrolysable by a glycosidase, an acyl group of 2–4 carbon atoms hydrolysable by an esterase and a phosphoric acid, ester or salt thereof of the structure



hydrolysable by alkaline phosphatase.

5,344,953

FLUOROBENZENE DERIVATIVES

Kenji Hirai; Tomoyuki Yano; Mitsuo Yamashita; Emiko Ejiri; Tomoko Tateno, and Kiyomi Aizawa, all of Kanagawa, Japan, assignors to Sagami Chemical Research Center and Kaken Pharmaceutical Co., Ltd., Tokyo, Japan

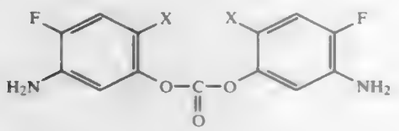
Division of Ser. No. 823,454, Jan. 21, 1992, Pat. No. 5,281,742. This application Nov. 3, 1993, Ser. No. 145,209

Claims priority, application Japan, Jan. 22, 1991, 3-44589; Jan. 22, 1991, 3-44590

Int. Cl.[5] C07C *69/96*

U.S. Cl. 558—272 **2 Claims**

1. A compound of the formula (11)



(11)

where X represents a halogen atom.

5,344,954

PROCESS FOR THE PREPARATION OF DIARYL CARBONATES

Norbert Schön; Hans-Josef Buysch, both of Krefeld; Paul Wagner, Düsseldorf, and Reinhard Langer, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 6, 1993, Ser. No. 103,936

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1992, 4226756

Int. Cl.[5] C07C *69/96*

U.S. Cl. 558—274 **20 Claims**

1. A process for the preparation of a diaryl carbonate of the formula

$$Ar^1—O—CO—O—Ar^1$$

in which

Ar^1 denotes unsubstituted phenyl or naphthyl or mono-substituted to trisubstituted phenyl, the substituents being identical or different and belonging to the group comprising C_1–C_4-alkyl, C_1–C_4-alkoxy and halogen,

by transesterification of 1 mol of an aromatic hydroxyl compound of the formula

$$Ar^1—OH$$

in which Ar^1 has the meaning mentioned, with 0.1 to 10 mol of a dialkyl carbonate of the formula

$$R^1—O—CO—O—R^1$$

in which

R^1 denotes straight-chain or branched C_1–C_6-alkyl, cyclopentyl or cyclohexyl,

in the presence of a transesterification catalyst known per se in column apparatuses known from transesterifications, wherein the transesterification reaction is carried out in two columns connected one after the other in such a way that

a) in the first column, the aromatic hydroxyl compound is conducted in the liquid state from head to bottom and the dialkyl carbonate is conducted in the gaseous state against this liquid stream, the temperature being kept in the range from 100° to 300° C. and the pressure being kept in the range from 0.5 to 20 bar, and the dialkyl carbonate containing a portion from 0 to 5% by weight of the underlying alcohol, based on the overall weight of dialkyl carbonate and alcohol, that

b) at the head of the first column, the alcohol underlying the dialkyl carbonate and liberated in the transesterification is withdrawn in the gaseous state and at the bottom of the first column, a partly reacted transesterification product essentially composed of alkyl aryl carbonate is withdrawn in the liquid state, that

c) the bottom stream of the first column is fed into the central part of a second column, the temperature of which is kept in the range from 60° to 320° C. and the pressure of which is kept in the range from 0.05 to 10 bar, depending on the boiling point of the bottom stream fed in from the first column, a temperature gradient being applied to this second column in such a way that the alkyl aryl carbonate contained in the bottom stream fed in can escape from the central part of the second column essentially neither to the head nor to the bottom and that

d) at the head of the second column, a mixture of dialkyl carbonate, the underlying alcohol and excess aromatic hydroxyl compound and at the bottom of the second column, diaryl carbonate, which can contain alkyl aryl carbonate and aromatic hydroxyl compound, are withdrawn.

5,344,955

PREPARATION OF 1-AMINO-CYAN-AMIDO-2,2-DICYANOETHYLENE, SODIUM SALT

Ward H. Oliver, Baton Rouge, La., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 19,521, Feb. 19, 1993, abandoned. This application Jul. 26, 1993, Ser. No. 97,098

Int. Cl.[5] C07C *253/30*

U.S. Cl. 558—375 **15 Claims**

1. A process for the preparation of 1-amino-1-cyanamido-2,2-dicyanoethylene, sodium salt which comprises reacting malononitrile with sodium dicyanamide at an elevated temperature and in the presence of an aprotic, dipolar solvent.

5,344,956

FLUOROACRYLATE MONOMERS AND POLYMERS, PROCESSES FOR PREPARING THE SAME AND THEIR USE

Kathy Allewaert, Heverlee; Dirk Coppens, Antwerpen, and Francecka Fieuws, Brugge, all of Belgium, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 871,654, Apr. 21, 1992, Pat. No. 5,216,097. This application Feb. 9, 1993, Ser. No. 16,160

Int. Cl.[5] C07C *271/10, 271/24, 271/28*

U.S. Cl. 560—26 **6 Claims**

1. Fluoroacrylate monomers obtained by the reaction of

a) diisocyanates with a perfluoro compound or an epichlorhydrinadduct thereof, said perfluoro compound having a terminal hydroxyl, thiol, primary or secondary amino group, attached to the perfluoroalkyl group directly via an alkylene bridge or indirectly via an alkylene bridge and a sulphonamido, carbonamide, ether, thioether, sulphonyl or carboxylic ester group between the perfluoroalkyl and the alkylene group, and

b) (meth)acrylic esters of a three hydroxyl group-containing compound.

5,344,957

SUBSTITUTED β-AMINO ACID DERIVATIVES USEFUL AS PLATELET AGGREGATION INHIBITORS

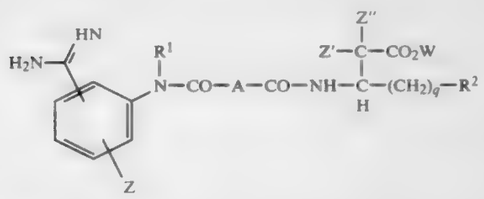
Philippe R. Bovy; Joseph G. Rico; Thomas E. Rogers, all of Ballwin; Foe S. Tjoeng, Manchester, all of Mo., and Jeffery A. Zablocki, Skokie, Ill., assignors to G.D. Searle & Co., Chicago, Ill. and Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 866,933, Apr. 10, 1992, Pat. No. 5,239,113, which is a continuation-in-part of Ser. No. 777,811, Oct. 15, 1991, abandoned. This application Oct. 6, 1992, Ser. No. 953,601

Int. Cl.[5] C07C *229/34, 229/42*

U.S. Cl. 560—35 **18 Claims**

1. A substituted β amino acid derivative or a pharmaceutically acceptable salt, or prodrug thereof having the formula:



wherein

R^1 is selected from the group consisting of hydrogen, lower alkyl radicals, lower alkenyl radicals, aromatic hydrocarbon radicals, alicyclic hydrocarbon radicals, benzyl radicals, phenethyl radicals, wherein said radicals are optionally substituted with halogen, lower alkoxy, hydroxy and lower alkyl;

R^2 is selected from the group consisting of lower alkenyl radicals and lower alkynyl radicals wherein said radicals are optionally substituted with hydroxy, lower alkoxy, lower alkyl, halogen, nitro, cyano, azido, ureido, ureylene, carboxyl or carbonyl derivatives, trifluoromethyl, acyloxy, alkylthio, arylthio, alkylsulfenyl, arylsulfenyl, alkylsulfonyl, arylsulfonyl, amino, alkylamino, trialkylsilyl, aminosulfonyl, dialkylamino, alkanoylamino, aroylamino, phenyl, naphthyl,lower alkynyl which are optionally substituted with one or more of the following: halogen, nitro, lower alkoxy, lower alkyl, trialkylsilyl, azide and phenyl;

A is selected from the group consisting of lower alkyl radicals, lower alkenyl radicals, lower alkynyl radicals, and alicyclic radicals, wherein said radicals are optionally substituted with hydroxyl, lower alkoxy, lower alkyl, halogen, alkoxycarbonylalkyl, amino, alkylamino, dialkylamino, acylamino, alkylthio, sulfonyl, and aromatic hydrocarbons which are optionally substituted with halogen, nitro, lower alkoxy and lower alkyl;

W is selected from the group consisting of hydrogen, lower alkyl radicals, lower alkenyl radicals, lower alkyny radicals, alicyclic hydrocarbon radicals and aromatic hydrocarbon radicals, wherein said radicals are optionally substituted with hydroxyl, lower alkoxy, lower alkyl, halogen, nitro, amino, acyloxy, and phenyl and naphthyl which may be optionally substituted with halogen, nitro, lower alkoxy, and lower alkyl;

Z, Z',Z'' are independently selected from the group consisting of hydrogen, lower alkyl radicals, halogen, alkoxy, cyano, sulfonyl, carboxyl, alkoxycarbonyl, and hydroxyl radicals;

q is an integer from 0 to about 6.

5,344,958

INSECTICIDAL N'-SUBSTITUTED-N,N'-DIACYLHYDRAZINES

Zev Lidert, Doylestown, and Dat P. Le, North Wales, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 23, 1992, Ser. No. 984,189

Int. Cl.[5] C07C *69/78, 65/21*

U.S. Cl. 560—64 **2 Claims**

1. A process for producing 3-methoxy-2-(substituted)-benzoic acid or ester of 3-methoxy-2-(substituted)-benzoic acid comprising admixing at a temperature of from about 25 degrees Centigrade to about 75 degrees Centigrade

(a) a con, position comprising

(i) a 3-amino-2-(substituted)-benzoic acid or its respective ester and

(ii) methanol or a mixture of methanol and water under acidic conditions; and

(b) an effective amount of an inorganic acid; and

(c) sodium nitrite.

5,344,959

TETRAHYDRONAPHTHYL AND CYCLOPROPYL SUBSTITUTED 1,3-BUTADIENES HAVING RETINOID-LIKE ACTIVITY

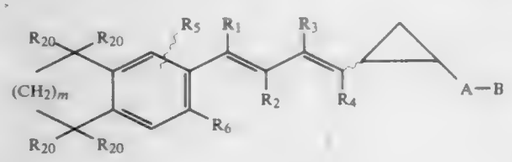
Roshantha A. Chandraratna, Mission Viejo, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed May 18, 1993, Ser. No. 63,540

Int. Cl.[5] C07C *69/76, 63/36*

U.S. Cl. 560—100 **25 Claims**

1. A compound of the formula:



wherein
m is 1–4;
R_1–R_4 independently are hydrogen, lower alkyl of 1 to 6 carbons, Cl, Br, or I;
R_5 is hydrogen, lower alkyl of 1 to 6 carbons, Cl, Br, I, lower alkoxy or lower thioalkoxy of 1–6 carbons;
R_6 is hydrogen, lower alkyl, Cl, Br, I, OR_{11}, SR_{11}, $OCOR_{11}$, $SCOR_{11}$, NH2, NHR_{11}, $N(R_{11})_2$, $NHCOR_{11}$ OR NR_{11}—COR_{11};
R_{20} is independently hydrogen or lower alkyl;
A is $(CH_2)_n$ where n is 0–5, lower branched chain alkyl having 3–6 carbons, cycloalkyl having 3–6 carbons, alkenyl having 2–6 carbons and 1 or 2 double bonds, alkynyl having 2–6 carbons and 1 or 2 triple bonds;
B is hydrogen, COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $CONR_9R_{10}$, —CH_2OH, CH_2OR_{11}, CH_2OCOR_{11}, CHO, $CH(OR_{12})_2$, $CHOR_{13}O$, —COR_7, $CR_7(OR_{12})_2$, or $CR_7OR_{13}O$, where R_7 is an alkyl, cycloalkyl or alkenyl group containing 1 to 5 carbons, R_8 is an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5–10 carbons, or phenyl or lower aklylphenyl, R_{11} is lower alkyl, phenyl or lower alkylphenyl, R_{12} is lower alkyl, and R_{13} is divalent alkyl radical of 2–5 carbons.

5,344,960

CATALYST FOR CARBONYLATING NAPHTHALENE MONO- AND DISULFONATES AND PROCESS USING SAID CATALYST

Giuseppe Cometti, Verbania-Pallanza; Annick Du Vosel, Caltignaga; Franco Francalanci, and Roberto Santi, both of Novara, all of Italy, assignors to Enichem S.p.A., Milan, Italy

Filed Dec. 6, 1993, Ser. No. 163,114

Claims priority, application Italy, Dec. 11, 1992, MI 92 A/002818

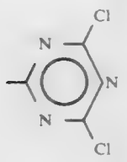
Int. Cl.[5] **C07C** *69/76;* **B01J** *31/00*

U.S. Cl. 560—100 **14 Claims**

1. Catalyst for naphthalene mono- and disulfonates carbonylation having the formula (II):

$$Z—Co(CO)_4 \qquad (II)$$

in which Z stands for the 2,5-dichloro-l,3,5-triazinyl radical:



5,344,961

CARBONYLATION PROCESS

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 974,442, Nov. 12, 1992, abandoned. This application May 27, 1993, Ser. No. 70,001

Claims priority, application European Pat. Off., Nov. 21, 1991, 91203065.7

Int. Cl.[5] **C07C** *69/76, 51/10*

U.S. Cl. 560—103 **11 Claims**

1. In the process of carbonylating an aryl halide by contacting the aryl halide under carbonylation conditions with carbon monoxide and a hydrogen-containing co-reactant in the presence of a base and a catalyst system formed from a source of palladium and a phosphine ligand, the improvement of using as the phosphine ligand a bidentate phosphine ligand wherein at least one monovalent phosphorus substituent is aromatic substituted on a ring carbon atom by an electron-withdrawing group.

5,344,962

INTERMEDIATES IN THE SYNTHESIS OF AN OPTICALLY ACTIVE CYCLOBUTANE NUCLEOSIDE

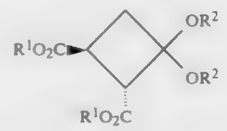
Saleem Ahmad, Plainsboro, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 692,752, Apr. 29, 1991, Pat. No. 5,233,076, which is a continuation-in-part of Ser. No. 528,626, May 24, 1990, abandoned. This application May 10, 1993, Ser. No. 58,088

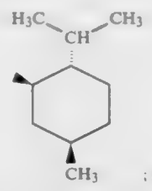
Int. Cl.[5] **C07C** *69/74*

U.S. Cl. 560—123 **4 Claims**

1. A compound of the formula



wherein the absolute stereochemistry at the cyclobutane is (1S, 2R) and
R^1 is



; and

R^2 is lower alkyl of 1 to 5 carbons or both R^2 groups are joined by an alkylene group of 2 or 3 carbons.

5,344,963

PROCESS FOR THE PRODUCTION OF SUBSTITUTED VINYLBENZENES

Aleksander Warm, Visperterminen, and David Laffan, Visp, both of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

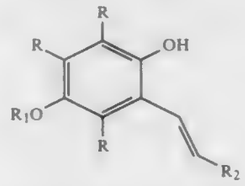
Division of Ser. No. 964,056, Oct. 21, 1992. This application Apr. 8, 1993, Ser. No. 44,166

Claims priority, application Switzerland, Oct. 23, 1991, 3101/91

Int. Cl.[5] **C07C** *69/00*

U.S. Cl. 560—130 **4 Claims**

1. A substituted vinylbenzene of formula:



I

wherein R is a lower alkyl group having 1 to 4 C atoms, R_1 is hydrogen or an acetyl group and R_2 is hydrogen, a lower alkyl group having 1 to 4 C atoms or a benzyl group, provided that when R is a methyl group, R_1 R_2 are not hydrogen.

5,344,964

METHOD FOR PREPARING ESTER END-CAPPED POLYALKYLENE ETHER

Shiao-Jung Chu, Hsinchu; Fu-Chen Liu, Nan-Tou Shiann; Ching-Tang Lin, Hsinchu; Wen-Fa Lin, Hsinchu; Kuei-Chih Wang, Hsinchu, and Sheng-Te Yang, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Nov. 24, 1993, Ser. No. 157,957

Int. Cl.[5] **C07C** *67/24;* **C08G** *59/68*

U.S. Cl. 560—240 **15 Claims**

1. A method for preparing ester end-capped polyalkylene ether, comprising the following steps:
a) providing a cyclic ether having 3 to 6 carbon atoms;
b) oligomerically polymerizing said cyclic ether, at a temperature of 10°–80° C. and a pressure of 0–10 atm in the presence of a solid acid of a mixed oxide of group III and group IV elements serving as a catalyst and a mixture of acid and acid anhydride serving as molecular weight modifier, wherein said group III and group IV element have a Ho index of +3.0 to −10.0; and
c) separating the resulting ester end-capped polyalkylene ether from the catalyst.

5,344,965

PREPARATION OF A NOVEL DIISOCYANATE FROM NORBORNADIENE

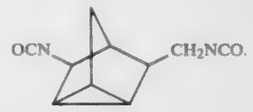
Vazken A. Alexanian, Darien, Conn., and Laurence J. Nummy, Newburgh, N.Y., assignors to Cytec Technology Corp., Wilmington, Del.

Continuation of Ser. No. 303,412, Jan. 30, 1989, abandoned, which is a continuation of Ser. No. 926,071, Nov. 3, 1986, abandoned. This application Aug. 20, 1993, Ser. No. 110,044

Int. Cl.[5] **C07C** *249/00*

U.S. Cl. 560—354 **1 Claim**

1. A diisocyanate compound of the formula:



5,344,966

HYDROGENATION OF PHENYLPHOSPHONIC ACID

Michael Yelland, Rossendale, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 607,790, Oct. 26, 1990, abandoned, which is a continuation of Ser. No. 281,488, Dec. 8, 1988, abandoned. This application Nov. 5, 1992, Ser. No. 118,501

Claims priority, application United Kingdom, Dec. 16, 1987, 8729341

Int. Cl.[5] **C07F** *9/38*

U.S. Cl. 562—8 **11 Claims**

1. A process for producing a cycloalkyl phosphonic acid which comprises hydrogenating a phenyl phosphonic acid optionally substituted with an amino-group or at least one alkyl group containing from 1 to 6 carbon atoms in the presence of a liquid medium in which the phosphonic acid reaction product is soluble under the reaction conditions and which is not reactive with the phosphonic acid and a heterogeneous catalyst which is a Group VIII metal on carbon.

5,344,967

TREATMENT OF ORGANIC SULFONIC ACID

Eric R. Schnur, Mentor, and David L. Westfall, North Olmsted, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jun. 28, 1991, Ser. No. 723,144

Int. Cl.[5] **C07C** *193/24*

U.S. Cl. 562—94 **35 Claims**

1. In the process of treating an organic sulfonic acid the steps comprising; contacting the organic sulfonic acid with at least 0.3 weight part of an unsaturated hydrocarbon per 100 weight parts of the organic sulfonic acid to obtain a mixture, wherein the unsaturated hydrocarbon has a number average molecular weight between about 600 and 3,000 wherein the organic sulfonic acid is neutralized and contacted with a filter aid.

5,344,968

METHOD FOR PRODUCING O-ALKOXYBENZOIC ACID

Suchart Lilitkarntakul; Shukichi Nabekawa; Masao Takada, all of Tokyo, and Katsuyuki Ogura, Narashino, all of Japan, assignors to Nippon Chemical Industrial Co., Ltd., Tokyo, Japan

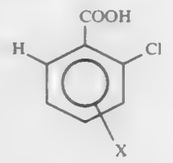
Filed Jun. 23, 1992, Ser. No. 902,820

Claims priority, application Japan, Jun. 27, 1991, 3-185476; Apr. 10, 1992, 4-118163

Int. Cl.[5] **C07C** *65/00*

U.S. Cl. 562—474 **11 Claims**

1. A method for producing o-alkoxybenzoic acid, comprising reacting o-chlorobenzoic acid represented by the following general formula



(wherein X is at a meta- or para position and represents hydrogen or halogen) with a lower alcohol in the presence of a copper salt and a lower alkylamine as a catalyst, wherein the reagent ratios of the copper salt, loweralkylamine and lower alcohol per 1 mol of o-dichlorobenzoic acid are in the range of 0.1–0.5 mol, 1–20 mol and 10–150 mol, respectively.

5,344,969

PROCESS FOR PURIFICATION OF NAPHTHALENEDICARBOXYLIC ACID

Hiroshi Iwane; Takahiro Sugawara, and Miwa Shirasaki, all of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 983,411

Claims priority, application Japan, Dec. 3, 1991, 3-319426; Apr. 22, 1992, 4-102833

Int. Cl.[5] **C07C** *51/43*

U.S. Cl. 562—486 **16 Claims**

1. A process for producing a naphthalenedicarboxylic acid which comprises dissolving a crude naphthalenedicarboxylic acid in a mixed solvent comprising an amine compound and an alcohol and conducting crystallization, said crude naphthalenedicarboxylic acid being one obtained by the oxidation of a di-substituted naphthalene, wherein the proportion of the amine compound to the alcohol in the mixed solvent is in the range of from 1:99 to 99:1 by weight, and wherein the mixed solvent is used in an amount from 0.5 to 100 times by weight the amount of the crude naphthalenedicarboxylic acid.

5,344,970

HYDROGENATION OF AROMATIC-SUBSTITUTED OLEFINS USING ORGANOMETALLIC CATALYST

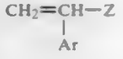
Charles H. Kolich, Baton Rouge, La., assignor to Albemarle Corporation, Richmond, Va.

Continuation of Ser. No. 57,380, May 6, 1993, abandoned, which is a continuation of Ser. No. 989,433, Dec. 11, 1992, abandoned, which is a division of Ser. No. 787,101, Nov. 4, 1991, Pat. No. 5,210,243, which is a continuation-in-part of Ser. No. 624,571, Dec. 10, 1990, abandoned. This application Dec. 22, 1993, Ser. No. 173,795

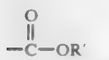
Int. Cl.[5] C07C *53/134*

U.S. Cl. 562—496 **4 Claims**

1. A process for the enantioselective hydrogenation of an aromatic-substituted olefin of the formula

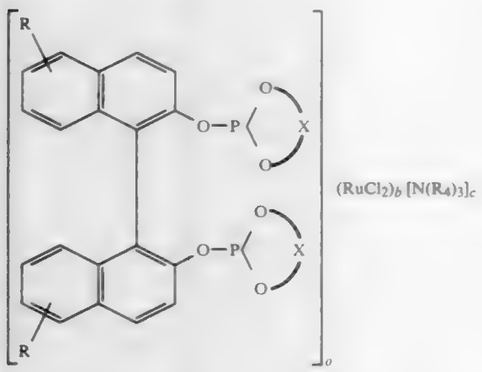


where Z is

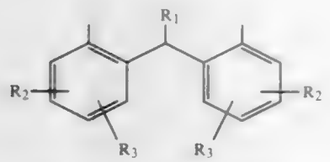


where R′ is hydrogen or C_1 to C_6 linear or branched alkyl, —CN, C(NH)OR″ where R″ is C_1 to C_6 linear or branched alkyl, or —C(O)NH_2; and Ar is phenyl or naphthyl unsubstituted or substituted with C_1 to C_6 linear or branched alkyl, C_1 to C_6 linear or branched alkoxy, halo, or carboxylic acid or C_1 to C_6 linear or branched alkyl ester thereof, which comprises contacting said aromatic-substituted olefin with a catalytically effective amount of a ruthenium phosphite complex of the formula

IV



wherein a is from 1 to 3, b is 1 or 2, c is from 0 to 3; R is hydrogen, alkyl, aryl, halo, amino, acetylamino, or sulfo; and X is



where R_1, R_2 and R_3 are the same or different and are hydrogen or C_1 to C_6 linear or branched alkyl; and R_4 taken together with the nitrogen atom is a straight or branched chain alkyl of 1 to 20 carbon atoms; in the presence of gaseous hydrogen for a time and at a temperature sufficient to effect enantiomonic reduction of at least a portion of the double bond of said olefin.

5,344,971

PROCESS FOR DEODORIZING A MERCAPTO ACID BY EXTRACTING MALODOROUS COMPOUND THEREFROM WITH A SUPERCRITICAL FLUID

Michel Dedieu, Maisons Laffitte; Hervé Burgaud, Dammartin En Goele; Eric Lapoirie, Villemomble; Veronique Gurfein, Le Plessis Robinson, and Gérard Malle, Villiers-Sur-Morin, all of France, assignors to L'Oreal, Paris, France

Filed Apr. 12, 1993, Ser. No. 45,095

Claims priority, application France, Oct. 15, 1992, 92 12344

Int. Cl.[5] C07C *53/00, 55/02, 323/52*

U.S. Cl. 562—512 **17 Claims**

1. A process for deodorizing a mercapto acid by extraction of a greater part of malodorous decomposition products contained therein, said process comprising (a) treating said mercapto acid in the presence of at least one polar solvent for said mercapto acid with a supercritical extraction fluid having a critical temperature ranging from 0° to 135° C. and a critical pressure ranging from 10^6 to 10^7 Pascals, said mercapto acid having the formula

(I)

wherein

A represents

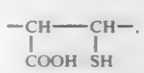
(i) $-(CH_2)_n-$ wherein n is an integer ranging from 1 to 4,

(ii)



wherein R represents linear or branched C_1–C_3 alkyl, or

(iii)



and

(b) lowering the extraction pressure whereby said malodorous decomposition products are removed with said extraction fluid.

5,344,972

PROCESS FOR PRODUCING ACETIC ACID

Tomiya Isshiki, Tokyo; Yasuhiko Kijima, Matsudo, and Takayuki Watanabe, Funabashi, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 211,741, Dec. 1, 1980, abandoned. This application Jul. 20, 1982, Ser. No. 400,106

Claims priority, application Japan, Dec. 13, 1979, 54-161934

Int. Cl.[5] C07C *51/12*

U.S. Cl. 562—517 **14 Claims**

1. A process for producing acetic acid which comprises contacting methyl formate with a catalyst system consisting essentially of at least one catalytic ingredient selected from the group consisting of metallic palladium, a palladium compound and a mixture thereof, a primary promoter comprising a halide compound having a concentration of 10^{-6} to 15 M/l in terms of halogen atom and a secondary promoter comprising an organic trivalent phosphorus compound in the presence of carbon monoxide having a partial pressure of 3 to 250 atm and in the presence of at least one solvent selected from the group consisting of acetic acid and methyl acetate at a temperature of from 100° to 250° C.

5,344,973

PROCESS FOR PREPARATION OF LITHIUM N-METHYLAMINO BUTYRATE

Makoto Wakabayashi; Minoru Senga, and Yoshinari Koyama, all of Chiba, Japan, assignors to Idemitsu Petrochemical Company Limited, Tokyo, Japan

Filed Jul. 8, 1993, Ser. No. 87,262

Claims priority, application Japan, Jul. 10, 1992, 4-183717

Int. Cl.[5] C07C *205/00*

U.S. Cl. 562—553 **12 Claims**

1. A process for preparing lithium N-methylaminobutyrate comprising reacting N-methyl-2-pyrrolidone with a hydroxide of an alkali metal other than lithium in an aprotic organic solvent, reacting the resulting reaction product mixture with lithium chloride after removing water therefrom and removing the alkali metal chloride formed as a by-product.

5,344,974

PROCESS FOR THE PREPARATION OF N-ACYL DERIVATIVES OF 5-AMINOLEVULINIC ACID, AS WELL AS THE HYDROCHLORIDE OF THE FREE ACID

Gerand Descotes, Lyon; Louis Cottier, Caluire; Laurent Eymard, Malisssard, all of France, and Knut M. Rapp, Offstein, Fed. Rep. of Germany, assignors to Sudzucker Aktiengesellschaft Mannheim/Ochensfurt, Mannheim, Fed. Rep. of Germany

Filed Aug. 24, 1993, Ser. No. 111,067

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1992, 4228084

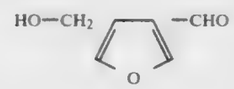
Int. Cl.[5] C07C *229/00*

U.S. Cl. 562—567 **11 Claims**

1. Process for the preparation of an N-acyl derivative of 5-aminolevulinic acid (ALA) of formula I

(I)

in which R is methyl, ethyl, propyl, isopropyl, butyl, phenyl, benzyl, furyl or furfuryl, comprising reacting 5-hydroxymethyl furfural (HMF) of formula II

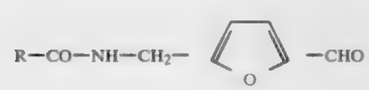


(II)

with a nitrile of formula III

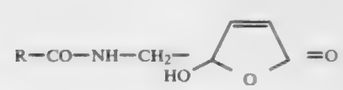
(III)

in which R has the above meaning, in the presence of an acid catalyst to an N-acyl-5-amino-methyl furfural of formula IV



(IV)

in which R has the above meaning, and converting said N-acyl-5-aminomethyl-furfural by photooxidation into an N-acyl-5-aminomethyl-5-hydroxydihydro-2,5-furan-2-one of formula V



(V)

in which R has the above meaning, and reducing said furanone into the N-acyl levulinic acid of formula I.

5,344,975

PROCESS FOR PRODUCTION OF LOWER ALKANOIC ACIDS

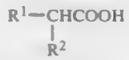
Andrew G. Zeiler, South Haven, Mich., assignor to Wyckoff Chemical Company, Inc., South Haven, Mich.

Filed Sep. 3, 1993, Ser. No. 116,363

Int. Cl.[5] C07B *53/00;* **C07C** *53/08*

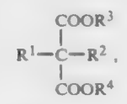
U.S. Cl. 562—606 **28 Claims**

1. A process for production of alkanoic acids of the formula



wherein R^1 is an alkyl group containing from about 2 to 10 carbon atoms, or a branched alkyl, cycloalkyl or aryl group containing from about 3 to 10 carbon atoms and R^2 is H or an alkyl group containing from about 1to 10 carbon atoms, or a branched alkyl, cycloalkyl or aryl group containing from about 3 to 10 carbon atoms, the process comprising:

heating a reaction mixture comprising (1) a substituted malonic ester of the formula



wherein R^1 and R^2 represent alkyl, branched alkyl, aryl or cycloalkyl groups as described above, and R^3 and R^4 represent lower alkyl groups, (2) water, and (3) an acid catalyst to a temperature sufficient to hydrolyze and decarboxylate the ester, said acid catalyst being at least partially soluble in the ester at temperatures above about 100° C. and being selected from the group consisting of arylsulfonic acids, alkylsulfonic acids and mixtures thereof, said water being limited to an amount insufficient for complete extraction of the acid catalyst from the ester to the water;

removing substantially all of the alcohol and carbon dioxide generated by the hydrolysis and decarboxylation from the reaction mixture including alkanoic acid and the catalyst by maintaining the reaction mixture at said temperature for a period of time sufficient to drive the hydrolysis reaction substantially to completion; and

separating the catalyst from the alkanoic acid.

5,344,976

PROCESS FOR REMOVING IODIDE COMPOUNDS FROM CARBOXYLIC ACIDS AND CARBOXYLIC ACID ANHYDRIDES

Michael D. Jones, North Humberside; Derrick J. Watson, East Yorkshire, and Bruce L. Williams, North Humberside, all of England, assignors to BP Chemicald Limited and The British Petroleum Company P.L.C., both of London, United Kingdom

Continuation of Ser. No. 959,149, Oct. 9, 1992, abandoned. This application Jun. 3, 1993, Ser. No. 72,365

Claims priority, application United Kingdom, Oct. 18, 1991, 9122168

Int. Cl.[5] C07C *51/47, 51/573, 53/08*

U.S. Cl. 562—608 **9 Claims**

1. A process for removing iodide compounds from a liquid composition comprising a carboxylic acid having 2 to 6 carbon atoms or an anhydride thereof, and metal ion contaminants, which process comprises contacting said liquid composition with a metal-exchanged ion exchange resin having strong acid cation exchange sites at least 1% of which are occupied by at least one metal selected from the group consisting of silver, mercury, palladium and rhodium wherein prior to contacting with said metal-exchanged resin, said liquid composition is contacted with a cation exchanger in the acid form to remove at least a portion of said metal ion contaminants.

5,344,977

PROCESS FOR THE PREPARATION OF 2,3-DIBROMOPROPIONYL CHLORIDE

Alfons Arquint, and Peter Leupin, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 699,543, May 14, 1991, abandoned. This application Jan. 22, 1993, Ser. No. 8,056

Claims priority, application Switzerland, May 17, 1990, 1666/90-0

Int. Cl.[5] C07C *53/19, 53/42, 53/50*

U.S. Cl. 562—864 **3 Claims**

1. A process for the preparation of 2,3-dibromopropionyl chloride, in one reactor without isolation of intermediate compounds, which consists essentially of the following sequence of steps:

a) brominating acrylic acid with liquid bromine in the temperature range from 20° to 70° C.,

b) adding iron powder or an iron salt selected from the group consisting of iron(III) chloride, iron(II) chloride, iron(II) iodide, iron(II) nitrate, iron(III) bromide, iron(II) oxide, iron(III) oxide, iron(II) hydroxide, iron(III) hydroxide and iron(II) sulfate to the resultant melt,

c) chlorinating the dibromopropionic acid obtained to 2,3-dibromopropionyl chloride by adding 5 to 25% excess thionyl chloride thereto uniformly over a period of 3 to 10 hours in the temperature range from 55° to 75° C., substantially in the absence of a solvent, and

d) removing the volatile components.

5,344,978

N-ACETONYL-SUBSTITUTED-NAPHTHYL-AMIDES

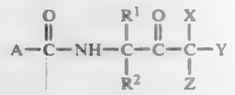
Ashok K. Sharma, Horsham, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 403,212, Sep. 5, 1989, Pat. No. 5,196,046, which is a division of Ser. No. 634,917, Jul. 26, 1984, Pat. No. 4,863,940. This application Dec. 21, 1992, Ser. No. 994,247

Int. Cl.[5] C09K *19/34*

U.S. Cl. 564—123 **1 Claim**

1. A compound of the structure



wherein A is naphthyl which may be substituted with up to three substituents independently selected from halo, trifluoromethyl, fluorosulfonyl, methyl, ethyl, methoxy or phenyl group;

x is chloro, bromo, iodo, fluoro, cyano, thiocyano, isothiocyano, methylsulfonyloxy, thio(C_1–C_2)alkyl, (C_1–C_2)alkoxy, carbamoyl, dithiocarbomoyl, hydroxy, azido, (C_1–C_4)alkylcarbonyloxy, phenylcarbonyloxy, trifluoromethylcarbonyloxy, phenoxy, phenylthio, imidazolyl or triazolyl group, when X is a phenylcarbonyloxy, phenoxy or phenylthio substituent, the phenyl moiety may be substituted with up to one substituent selected from chloro, fluoro, bromo, iodo or methyl group;

Y and Z are each independently hydrogen, bromo, chloro, iodo, fluoro, cyano, thiocyano, isothiocyano, methylsulfonyloxy, thio (C_1–C_4) alkyl, (C_1–C_2) alkoxy, carbonoxyl, hydroxy, azidon thio(C_1–C_4)alkylcarbonyloxy group and either Y or Z may be imidazolyl or triazolyl group; and Y or Z may be imidazolyl or triazolyl group; and

R^1 and R^2 are each independently selected from a hydrogen atom and (C_1–C_6)alkyl group.

5,344,979

PROCESS FOR PREPARING COLOR-STABILIZED ACETAMINOPHEN

Edward G. Zey, and George A. Blay, both of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Apr. 29, 1993, Ser. No. 54,733

Int. Cl.[5] C07C *231/24*

U.S. Cl. 564—216 **21 Claims**

1. A method of purifying a crude N-acetyl-para-aminophenol (APAP) containing color bodies or their precursors comprising forming a wet, crude APAP, and subsequently drying said crude APAP in the presence of a sufficient amount of an acetylating agent for a sufficient period of time to convert said color bodies or their precursors to substantially non-color bodies.

5,344,980

PROCESS FOR THE PREPARATION OF 1,3,5-TRIS(4'-HYDROXYARYL)BENZENE

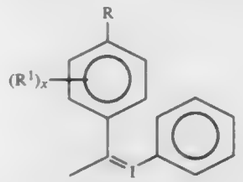
Mohammad Aslam, Corpus Christi, Tex., and William Basinger, Decatur, Ga., assignors to Hoechst Celanese Corp., Somerville, N.J.

Division of Ser. No. 68,460, May 27, 1993. This application Nov. 23, 1993, Ser. No. 157,486

Int. Cl.[5] C07C *11/02*

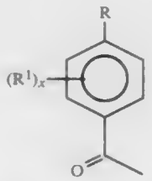
U.S. Cl. 564—269 **7 Claims**

1. A process for preparing a compound of the formula (III)



(III)

wherein R is hydroxy, R^1 is hydrogen, C_1–C_{12} alkyl, C_3–C_6 cycloalkyl, phenyl, halogen, nitro, or alkyl or aromatic sulfonyl, x is an integer from 1 to 4, and when x is greater than 1 each R^1 thereof can be the same or different, said process comprising reacting a substituted 4-hydroxyacetophenone of the formula (II)



(II)

wherein R, R^1 and x are as defined above, at about 80°–160°0 C. for about 2–24 hours, and wherein compound II is present in at least three molar ratio quantities, with a substituted or unsubstituted aniline derivative, said substituents being selected from the group consisting of derivative being present in a molar ratio range of about a C_1–C_6 alkyl, C_1–C_6 alkoxy and halo groups, said aniline derivative being present in a molar ratio range of about 1:1 to about 10: 1 with respect to compound II.

5,344,981

FLUORINATED MONOMERS USEFUL FOR PREPARING FLUORINATED POLYQUINOLINE POLYMERS

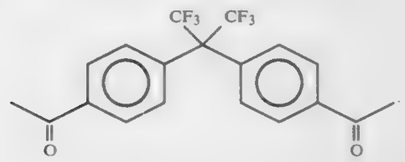
Neil H. Hendricks, Brea, Calif., assignor to Maxdem Incorporated, San Dimas, Calif.

Division of Ser. No. 744,539, Aug. 13, 1991, Pat. No. 5,247,050, which is a continuation-in-part of Ser. No. 568,059, Aug. 16, 1990, abandoned. This application Jul. 28, 1993, Ser. No. 98,197

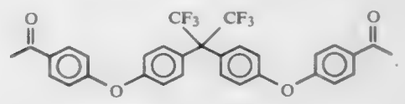
Int. Cl.[5] C07C *225/22, 49/76, 49/784, 49/84*

U.S. Cl. 564—328 **6 Claims**

1. A monomer suitable for use in preparing fluorinated polyquinolines, the monomer having the formula:



4. A monomer suitable for use in preparing fluorinated polyquinoline polymers, the monomer having the formula:



5,344,982

DIAMINES AND POLYIMIDES CONTAINING PENDENT ETHYNYL GROUPS

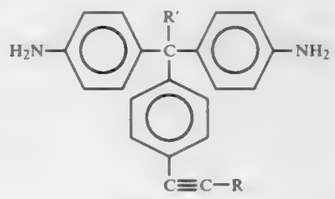
Paul M. Hergenrother, Yorktown, and Brian J. Jensen, Williamsburg, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 2, 1993, Ser. No. 45,345

Int. Cl.[5] C07C *211/54, 211/56*

U.S. Cl. 564—330 **4 Claims**

1. A diamine having a pendent ethynyl or substituted ethynyl group and having the following structural formula:



wherein R is a member selected from the group consisting of hydrogen, alkyl, and phenyl, and R' is a member selected from the group consisting of CH_3 and CF_3.

5,344,983

SELECTIVE PREPARATION OF LINEAR PENTANE-1,5-DIAMINES IN INCREASED YIELDS

Tom Witzel; Eberhard Fuchs, both of Ludwigshafen; Franz Merger, Frankenthal, and Claus-Ulrich Priester, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

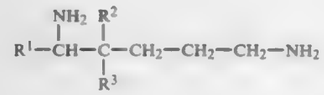
Filed Aug. 26, 1992, Ser. No. 936,084

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1991, 4129350

Int. Cl.[5] C07C *209/00*

U.S. Cl. 564—396 **7 Claims**

1. A process for the selective preparation in increased yields of open-chain pentane-1,5-diamines of the formula I



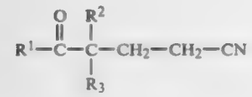
(I)

where

R^1 is C_1- to C_{20}-alkyl, which is unsubstituted or substituted by one to four heterocyclic radicals or by C_2- to C_8-carbalkoxy, carboxyl, C_1- to C_8-alkylamino or hydroxyl, or is C_2- to C_{20}-alkenyl, C_3- to C_{20}-cycloalkyl, C_4- to C_{20}-cycloalkylalkyl, C_4- to C_{20}-alkylcycloaikyl, C_2- to C_{20}-alkoxyalkyl, C_2- to C_8-alkoxycarbonyl, C_1- to C_{20}-haloalkyl, aryl, C_7- to C_{20}-aralkyl or C_7- to C_{20}-alkylaryl, and

R^2 and R^3, independently of one another, are hydrogen, C_1- to C_{20}-alkyl, which is unsubstituted or substituted by one to four heterocyclic radicals or by C_2- to C_8-carbalkoxy, carboxyl, C_1- to C_8- alkylamino or hydroxyl, or are C_4- to C_{20}-alkenyl, C_3- to C_{20}-cycloalkylalkyl, C_2- to C_{20}-alkoxyalkyl, C_2- to C_8-alkoxycarbonyl, C_1- to C_{20}-haloalkyl, aryl, C_7- to C_{20}-aralkyl or C_7- to C_{20}-alkylaryl, or together are a C_4- to C_7-alkylene chain which is unsubstituted or substituted by one to five C_1- to C_4-alkyl groups,

from γ-cyanoketones of the formula II



(II)

where R^1, R^2 and R^3 are as defined above, which comprises the steps of:

a) reacting the cyanoketones of the formula II with excess ammonia in a first reaction space on an acidic heterogeneous catalyst selected from the group consisting of the oxides of aluminum, silicon, titanium and zirconium or their corresponding halogen-doped oxides, aluminum phosphates and aluminum silicates at from 20° to 150° C. and at from 15 to 500 bar; and

b) hydrogenating the resultant reaction products using hydrogen in a second reaction space in the presence of excess ammonia on cobalt-, nickel-, ruthenium-, palladium- or other noble metal-containing catalysts, with or without basic components, unsupported or on basic or neutral supports, at from 50° to 180° C. and at from 30 to 500 bar, the two steps being carried out in two spatially separate reaction spaces.

5,344,984

METHOD FOR PREPARING "TWIN-TAILED" POLYOXYALKYLENE TERTIARY AMINES

John F. Knifton, and Carter G. Naylor, both of Austin, Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Continuation-in-part of Ser. No. 469,865, Jan. 24, 1990, abandoned. This application Apr. 8, 1993, Ser. No. 45,284

Int. Cl.[5] C07C *209/14*

U.S. Cl. 564—399 2 Claims

1. A method for the synthesis of polyoxyalkylene tertiary amines having two moles of alkoxylated alkylphenol bonded to each tertiary nitrogen function which comprises:

alkylating a mole of methylamine with two moles of alkoxylated alkylphenol over a catalyst consisting essentially of;

5 to 70% nickel;

1 to 20% copper;

0.1 to 10% chromium; and

0.1 to 10% molybdenum on an alumina support, at a temperature of 150° C. to 300° C. and a pressure of 100 to 5000 psi.

5,344,985

ALDEHYDE INTERMEDIATES FOR THE PREPARATION OF PYRENYLAMINE DERIVATIVES HAVING UNSATURATED BOND

Chiaki Tanaka, Shizuoka; Masaomi Sasaki, Susono; Tamotsu Aruga, Mishima; Tomoyuki Shimada, Shizuoka, and Hiroshi Adachi, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 996,080

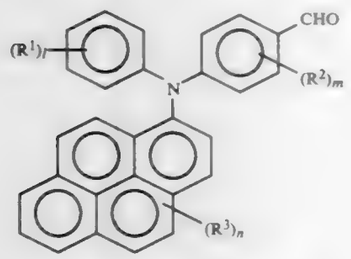
Claims priority, application Japan, Dec. 28, 1991, 3-360363; Apr. 15, 1992, 4-121326; Jun. 8, 1992, 4-173818; Jul. 17, 1992, 4-213528; Jul. 17, 1992, 4-213529

Int. Cl.[5] C07C *223/06*

U.S. Cl. 564—426 9 Claims

1. An aldehyde compound of formula (I):

(I)



wherein R^1 and R^2 each represent hydrogen, a halogen atom, nitro group, cyano group, a dialkylamino group, a substituted or unsubstituted alkyl group having 1 to 10 carbon atoms, a substituted or unsubstituted alkoxy group having 1 to 10 carbon atoms, or a substituted or unsubstituted phenyl group; R^3 represents hydrogen or substituted or unsubstituted alkyl group having 1 to 10 carbon atoms, l is an integer of 1 to 5; m is an integer of 1 to 4; n is an integer of 1 to 3; and when l, m or n is 2 or more, R^1, R^2 and R^3 may be the same or different.

5,344,986

AMINO PHENOXY COMPOUNDS AND PROCESS FOR THEIR PREPARATION

Jakob Oren, Bialik; Joshua Hermolin, Ramat-Hasharon; David Feldman; Michael Zviely, both of Haifa; Dov Zamir, Ha-Sharon, and Hugo Keselman, Karmiel, all of Israel, assignors to Bromine Compounds, Ltd., Beer-Sheva, Israel

Filed Mar. 7, 1991, Ser. No. 665,908

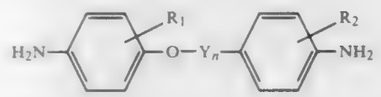
Claims priority, application Israel, Mar. 8, 1990, 93685; Feb. 20, 1991, 97301

Int. Cl.[5] C07C *217/90*

U.S. Cl. 564—430 2 Claims

1. A compound of the formula:

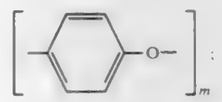
(I)

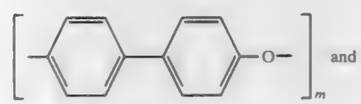


wherein:

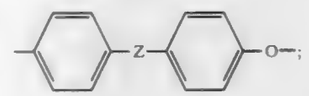
n=0 or 1;

R_1 and R_2 are C_1 to C_3 alkyl groups and R_2 is also H when n=0; and Y is selected from the group





and



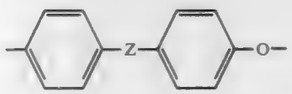
wherein:

m=1–6

Z=



CH_2 or $C(CH_3)_2$; with the proviso that Z is not $C(CH_3)_2$ when Y is



and R_1 and R_2 are each 3-methyl, and with the further proviso that when n=0 and R_2 is hydrogen, R_1 cannot be 2-methyl, 2-ethyl, 2-isopropyl or 3-methyl.

5,344,987

PROCESS FOR PREPARING DIPHENYLAMINES

Otto Immel; Gerhard Darsow, and Hans-Josef Buysch, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

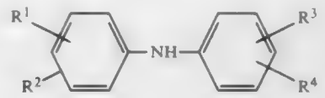
Filed Jul. 16, 1993, Ser. No. 92,735

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1992, 4224366

Int. Cl.[5] C07C *209/24, 209/72*

U.S. Cl. 564—735 20 Claims

1. A process for preparing a diphenylamine of the formula



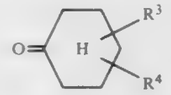
in which

R^1, R^2, R^3 and R^4 denote, independently of one another, hydrogen, C_1–C_4-alkyl or C_1–C_4-alkoxy,

wherein an aniline of the formula



is reacted with a cyclohexanone of the formula



which may be present mixed with recycled reaction products, in the formulae the radicals R^1 to R^4 having the above meaning and aniline and cyclohexanone being present in a molar ratio of 1:4–6:1 over a supported catalyst containing 0.05–5% by weight, based on the total weight of the catalyst, of one or more metals having a dehydrogenating action, in the gaseous phase at 200°–450° C. and at 0.1–20 bar, and the metal(s) is/are selected from the group consisting of Ru, Pd, Os, Ir, Pt, Fe, Co, Ni, Re, Mn, Ce, Cu, Ag and Cr.

5,344,988

HYDROFORMYLATION PROCESS USING NOVEL PHOSPHINE-RHODIUM CATALYST SYSTEM

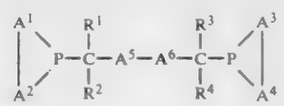
Thomas J. Devon; Gerald W. Phillips; Thomas A. Puckette; Jerome L. Stavinoha, and Jeffrey J. Vanderbilt, all of Longview, Tex., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 69,478, Jun. 1, 1993, abandoned. This application Feb. 22, 1994, Ser. No. 200,023

Int. Cl.[5] C07C *45/50*

U.S. Cl. 568—454 7 Claims

1. A process for preparing an aldehyde which comprises contacting an olefin, hydrogen and carbon monoxide with a solution of a catalyst system comprising rhodium and a phosphine compound having the general formula



wherein:

each of A^1, A^2, A^3 and A^4 is an arylene radical wherein (i) each phosphorus atom P is bonded to a ring carbon atom of A^1 and A^2 and to a ring carbon atom of A^3 and A^4, (ii) A^1 and A^2, and A^3 and A^4 are bonded to each other by ring carbon atoms and (iii) each of the residues



constitutes a 5-membered ring;

each of A^5 and A^6 is an arylene radical wherein A^5 and A^6 are bonded to each other and to residues R^1—C—R^2 and R^3—C—R^4 by ring carbon atoms and R^1—C—R^2 and R^3—C—R^4 are connected to each other through a chain of 4 carbon atoms; and

R^1, R^2, R^3 and R^4 each represents hydrogen or a hydrocarbyl radical containing up to about 8 carbon atoms; and wherein the mole ratio of (1):(2) is at least 1:1.

5,344,989

ZEOLITE ZK-5 CATALYST FOR CONVERSION OF METHANOL AND AMMONIA TO MONOMETHYLAMINE AND DIMETHYLAMINE

David R. Corbin, West Chester, Pa., and Stephan Schwarz, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 15, 1993, Ser. No. 77,578

Int. Cl.[5] C07C *209/16*

U.S. Cl. 564—479 7 Claims

1. An improved process for producing dimethylamine and monomethylamine comprising:

contacting methanol and/or dimethylether and ammonia, in amounts sufficient to provide a carbon/nitrogen ratio from about 0.2 to about 1.5 and at a reaction temperature from about 250° C. to about 450° C., in the presence of a catalytic amount of an acidic zeolite H—ZK-5;

wherein the improvement comprises using an acidic zeolite H—ZK-5 which has been obtained by ion exchange of K,Sr—ZK-5.

5,344,990

PROCESS FOR THE PREPARATION OF A RENIN INHIBITING COMPOUND

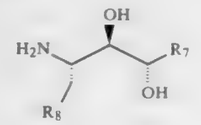
William R. Baker, Libertyville, Ill., and Stephen L. Condon, Kenosha, Wis., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 15,873, Feb. 10, 1993, Pat. No. 5,275,950, which is a continuation of Ser. No. 777,887, Oct. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 716,028, Jun. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 683,663, Apr. 15, 1991, which is a continuation-in-part of Ser. No. 564,925, Aug. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 522,349, May 11, 1990, abandoned. This application Oct. 5, 1993, Ser. No. 131,837

Int. Cl.[5] C07C *209/00, 317/00*

U.S. Cl. 564—487 9 Claims

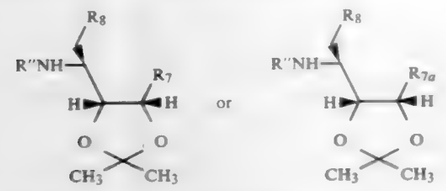
1. A process for the preparation of a substantially pure compound of the formula:



wherein R_7 is loweralkyl having 2 to 7 carbon atoms and R_8 is loweralkyl, C_3–C_7 cycloalkyl or aryl wherein aryl is phenyl, naphthyl, tetrahydronaphthyl or indanyl wherein the aryl group is unsubstituted or substituted with one, two or three substituents independently selected from loweralkyl, haloalkyl, alkoxy, thioalkoxy, amino, alkylamino, dialkylamino,

hydroxy, halo, mercapto, nitro, carboxaldehyde, carboxy, alkoxycarbonyl and carboxamide; or an acid addition salt thereof, comprising:

(a) hydrogenating a compound of the formula:



or

wherein R_7 is loweralkyl having 2 to 7 carbon atoms, R_{7a} is $-CH{=}C(R_{7a1})(R_{7a2})$ wherein R_{7a1} and R_{7a2} are independently selected from hydrogen and loweralkyl, R_8 is loweralkyl, C_3–C_7 cycloalkyl or aryl as defined above and R'' is benzyl, substituted benzyl wherein the phenyl ring of the benzyl group is substituted with one, two or three substituents independently selected from loweralkyl, haloalkyl, alkoxy, thioalkoxy, amino, alkylamino, dialkylamino, hydroxy, halo, mercapto, nitro, carboxaldehyde, carboxy, alkoxycarbonyl and carboxamide; or $(R''')_2N-$ wherein R''' is loweralkyl and

(b) removing the acetonide protecting group.

5,344,991

1,2 DIARYLCYCLOPENTENYL COMPOUNDS FOR THE TREATMENT OF INFLAMMATION

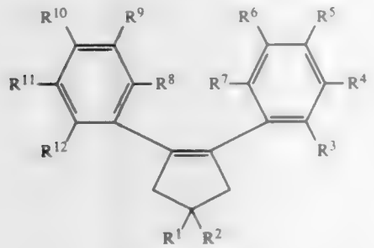
David B. Reitz, and Jinglin Li, both of Chesterfield, Mo., assignors to G.D. Searle & Co., Chicago, Ill.

Filed Oct. 29, 1993, Ser. No. 146,359

Int. Cl.[5] C07C *317/14, 311/15;* **A61K** *31/10, 31/18*

U.S. Cl. 568—34 **31 Claims**

1. A compound of Formula II



II

wherein each of R^1 and R^2 is independently selected from alkyl, hydrido, hydroxyalkyl, halo, haloalkyl, alkylcarboxyl and carboxyl; wherein R^5 is alkylsulfonyl or sulfamyl; and wherein each of R^3, R^4, and R^6 through R^{12} is independently selected from hydrido, halo, alkyl, alkylthio, cyano, haloalkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, alkylsulfonyl and sulfamyl; or a pharmaceutically suitable salt thereof.

5,344,992

PROCESS FOR THE PREPARATION OF LINEAR 1,3-DIKETONES

Rolf Drewes, Lindenfels; Hans-Helmut Friedrich, Lautertal; Hans-Ludwig Mehner, Lampertheim; Bernd Braun, Lautertal, and Walter Wecht, Rimbach, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

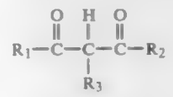
Continuation of Ser. No. 860,297, Mar. 27, 1992, abandoned, which is a continuation of Ser. No. 690,021, Apr. 23, 1991, abandoned. This application May 11, 1993, Ser. No. 60,461

Claims priority, application Switzerland, Apr. 26, 1990, 1424/90-9

Int. Cl.[5] C07C *45/45*

U.S. Cl. 568—314 **9 Claims**

1. A process for the preparation of a linear 1,3-diketone of formula I



(I)

wherein

R_1 and R_2 are each independently of the other C_1–C_{20}alkyl, phenyl or phenyl which is substituted by halogen, hydroxy, NO_2, C_1–C_4alkyl and/or C_1–C_4alkoxy, or are C_7–C_9phenylalkyl or a radical of formula II



(II)

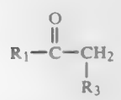
wherein

A is C_1–C_{12}alkylene, phenylene or phenylene which is substituted by halogen, hydroxy, NO_2, C_1–C_4alkyl and/or C_1–C_4alkoxy, or is C_1–C_{12}alkylene which is substituted by hydroxy, halogen and/or alkoxy,

X is oxygen or sulfur, and

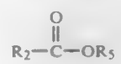
R_4 is hydrogen, C_1–C_{18}alkyl, phenyl or phenyl which is substituted by halogen, hydroxy, C_1–C_4alkyl, NO_2 and/or C_1–C_4alkoxy, or is C_7–C_9phenylalkyl, and

R_3 is hydrogen, C_1–C_{20}alkyl, phenyl or phenyl which is substituted by halogen, hydroxy, C_1–C_4alkyl, NO_2 and/or C_1–C_4alkoxy, or is C_7–C_9phenylalkyl, by a Claisen condensation of a ketone of formula III



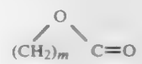
(III)

with an ester of formula IV



(IV)

wherein R_5 is C_1–C_5alkyl, phenyl or phenyl which is substituted by halogen, C_1–C_4alkyl or hydroxy; or, when R_2 in formula I is $-(CH_2)_mOH$, also with a cyclic ester of formula V



(V)

in which m is 2 to 10, **in the presence of a** C_1–C_5alcoholate of an alkali metal or alkaline earth metal as base, which process comprises

carrying out the reaction in a mixture of dimethyl sulfoxide and at least one organic solvent which is inert under the reaction conditions which inert solvent is selected from the group consisting of dioxane, tetrahydrofuran, diethylene glycol dimethyl ether, methyl tert-butyl ether, toluene and N-methylpyrrolidone and in which process the Claisen condensation reaction is carried out in the temperature range from −20° to +70° C.

5,344,993

PROCESS OR MAKING 3-HYDROXYALDEHYDES

Lynn H. Slaugh, Houston, and Juan P. Arhancet, Katy, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 1, 1993, Ser. No. 130,258

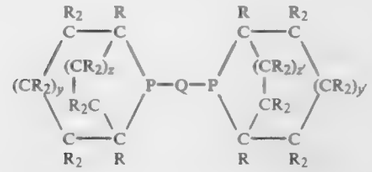
Int. Cl.[5] C07C *45/50, 45/57*

U.S. Cl. 568—454 **21 Claims**

1. A process for making a 3-hydroxyaldehyde which comprises intimately contacting

(a) a 1,2-epoxide having more than 2 carbon numbers,

(b) ditertiary phosphine-modified cobalt carbonyl catalyst, said phosphine being of the formula



where Q represents hydrocarbylene of up to 30 carbon atoms; y and z represent zero or positive integers whose sum is from 0 to 7; y' and z', independent of the values of y and z, represent zero or positive integers whose sum is from 0 to 7; and R independently represents hydrogen and hydrocarbyl of from 1 to 30 carbon atoms,

(c) carbon monoxide, and

(d) hydrogen, the molar ratio of carbon monoxide to hydrogen being from about 4:1 to about 1:6,

in liquid-phase solution in an inert reaction solvent, at a temperature of from about 30° C. to about 150° C. and a pressure of from about 50 psi to about 10,000 psi.

5,344,994

PROCESS FOR THE PREPARATION OF CONIFERYL ALDEHYDE

Wolf-Rainer Abraham, Hillerse, and Hans-Adolf Arfmann, Braunschweig, both of Fed. Rep. of Germany, assignors to Haarmann & Reimer GmbH, Holzminden, Fed. Rep. of Germany

Filed Jun. 11, 1993, Ser. No. 76,296

Claims priority, application Fed. Rep. of Germany, Jun. 17, 1992, 4219770

Int. Cl.[5] C07C *45/00*

U.S. Cl. 568—449 **6 Claims**

1. A process for preparing coniferyl aldehyde which comprises:

combining 0.1 to 20 g/l of culture broth of eugenol with a fungus or its constituents wherein the fungus is selected from the group consisting of Ascomycetes, Fungi imperfecti, and Phycomycetes;

fermenting the mixture optionally in the presence of a carbon source, and

separating the coniferyl aldehyde from the fermentation mixture.

5,344,995

PREPARATION OF CYCLIC ACETALS OF 3-FORMYL-2-BUTENYLTRIPHENYLPHOSPHONIUM CHLORIDE

Wolfgang Krause, Mannheim; Joachim Paust, Neuhofen; Walter Dobler, Heidelberg, and Hagen Jaedicke, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

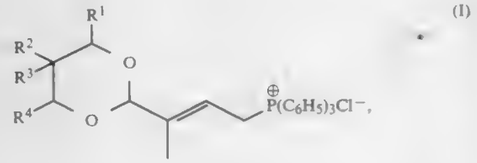
Filed Jul. 6, 1993, Ser. No. 85,903

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1992, 4223061; Jul. 31, 1992, 4225322

Int. Cl.[5] C07C *43/305, 43/313*

U.S. Cl. 568—591 **6 Claims**

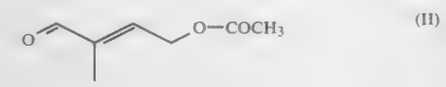
1. An improved process for preparing cyclic acetals of 3-formyl-2-butenyltriphenylphosphonium chloride of the formula I



(I)

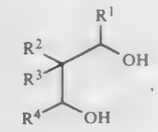
where R^1, R^2, R^3 and R^4 are each H or CH_3, comprising

a) acetalizing 3-formyl-2-butenyl acetate of the formula II



(II)

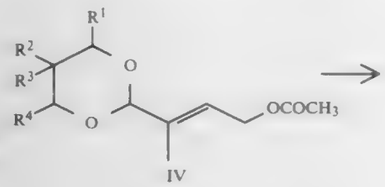
with 1,3-diols of the formula III



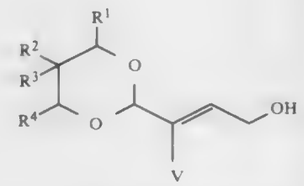
(III)

where R^1, R^2, R^3 and R^4 have the abovementioned meanings,

b) converting the resulting acetoxy acetals of the formula IV into the corresponding hydroxy acetals of the formula V



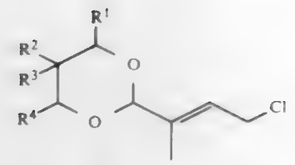
IV



V

by treating the acetoxy acetal with aqueous sodium hydroxide or potassium hydroxide solution,

c) subjecting the resulting hydroxy acetals of the formula V to Vilsmeier chlorination to form the 4-chloro acetals of the formula VI



(VI)

and

d) reacting the 4-chloro acetals of the formula VI with triphenylphosphine,

wherein steps a) to c) are carried out in an aliphatic or cycloaliphatic hydrocarbon or mixture of hydrocarbons with 6–8 carbons, and step d) is carried out in an alkanol with 1–3 carbons, in an aliphatic or cycloaliphatic hydrocarbon with 6–8 carbons, a mixture of an alkanol with 1–3 carbons and an aliphatic or cycloaliphatic hydrocarbon with 6–8 carbons, or in a mixture of hydrocarbons with 6–8 carbons.

5,344,996

CATALYST REMOVAL FROM ALCOHOL ALKOXYLATES USING ACID CLAYS

Edward C. Nieh, and Michael Cuscurida, both of Austin, Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Continuation-in-part of Ser. No. 778,545, Oct. 18, 1991, abandoned. This application Oct. 1, 1992, Ser. No. 955,214

Int. Cl.[5] C07C *43/11, 41/00*

U.S. Cl. 568—621 9 Claims

1. A process for removing residual basic alkaline earth catalysts from alcohol alkoxylate products made from alcohols having up to 18 carbon atoms containing the same, comprising the steps of:

wetting an acid clay with water to saturate and coat the surface of the clay;

contacting an alcohol alkoxylate product made from alcohols having up to 18 carbon atoms containing at least one basic alkaline earth catalyst with the wet acid clay; and

recovering a purged alcohol alkoxylate product made from alcohols having up to 18 carbon atoms.

5,344,997

ALKYLATION OF AROMATICS USING A FLUORIDED SILICA-ALUMINA CATALYST

Joseph A. Kocal, Gurnee, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 816,341, Dec. 23, 1991, Pat. No. 5,196,574. This application Dec. 14, 1992, Ser. No. 989,858

The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.

Int. Cl.[5] C07C *39/12, 37/00, 2/64, 15/107, 41/00, 2/66, 2/70, 2/68*

U.S. Cl. 568—628 11 Claims

1. A process of alkylating an alkylatable aromatic compound with an alkylating agent comprising reading in the liquid phase the alkylatable aromatic compound with the alkylating agent under alkylating conditions in the presence of an alkylation catalyst comprising a fluorided silica-alumina containing from about 1 to about 6 weight percent fluorine.

5,344,998

PREPARATION OF BIS(FLUOROMETHY)ETHER AND DIFLUOROMETHANE

John S. Martin; Thomas A. Ryan, both of Cheshire, and Rachel A. Spooncer, Manley, all of England, assignors to Imperial Chemical Industries PLC, London, United Kingdom

Continuation of Ser. No. 974,710, Nov. 12, 1992, abandoned. This application Nov. 4, 1993, Ser. No. 145,668

Claims priority, application United Kingdom, Nov. 13, 1991, 9124087

Int. Cl.[5] C07L *41/01, 17/00*

U.S. Cl. 568—683 9 Claims

1. A process for the production of bis(fluoromethyl) ether which comprises reacting formaldehyde with hydrogen fluoride in a distillation column operated at a temperature in the reaction section of from about 50° C. to about 80° C. to produce bis(fluoromethyl) ether and water and withdrawing from the column a vapour in which the mole ratio of bis(-fluoromethyl) ether to water is greater than 1.

8. A process for the production of difluoromethane which comprises reacting formaldehyde with hydrogen fluoride in a distillation column as defined in claim 1 or 2 and heating the bis(fluoromethyl) ether withdrawn from the column in the vapour phase at a temperature of from 200° C. to 450° C. in the presence of a catalyst selected from the group consisting of nickel, chromium, aluminum and iron or an alloy of at least one of these metals or an oxide, fluoride or oxyfluoride thereof.

5,344,999

1,3-BIS(4-HYDROXYPHENYL)-1,3-DIALKYLCYCLOHEXANES AND POLYCARBONATES PREPARED THEREFROM

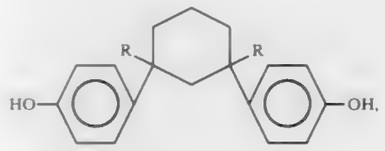
John C. Schmidhauser, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 989,309, Dec. 11, 1992, Pat. No. 5,281,688. This application Oct. 1, 1993, Ser. No. 130,500

Int. Cl.[5] C07C *39/17*

U.S. Cl. 568—721 4 Claims

1. A 1,3-bis(4-hydroxyphenyl)-1,3-dialkylcyclohexane of the formula



wherein R is a C_{1-4} primary alkyl radical.

5,345,000

PROCESS FOR THE PRODUCTION OF CRYSTALLINE ADDUCT OF BISPHENOL A AND PHENOL AND APPARATUS THEREFOR

Nobuo Moriya, Yokohama; Keiji Shimoda, Machida; Sachio Asaoka; Takao Kameda, both of Yokohama; Kouji Sakashita, Tokyo; Tetsuo Maejima, Kiyose; Makoto Yasui, Yokohama; Hiroaki Nishijima, Ebina; Nobuhiro Onda, Hachioji, and Takeshi Kouzaki, Yokohama, all of Japan, assignors to Chiyoda Corporation, Yokohama, Japan

Continuation of Ser. No. 890,103, May 29, 1992, abandoned. This application Mar. 3, 1993, Ser. No. 26,126

Claims priority, application Japan, Jul. 10, 1991, 3-169557; Oct. 11, 1991, 3-292211; Oct. 25, 1991, 3-306520; Oct. 25, 1991, 3-306521; Oct. 25, 1991, 3-306524; Oct. 30, 1991, 3-311989

Int. Cl.[5] C07C *39/16*

U.S. Cl. 568—722 20 Claims

1. A process for the production of a crystalline adduct of bisphenol A and phenol, comprising the steps of:

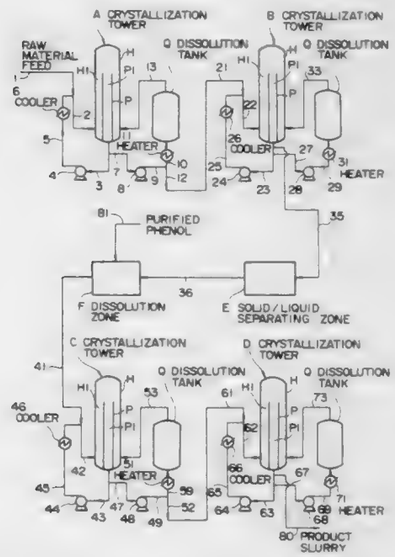
providing two or more, first to n-th crystallization zones connected in series and each having an outer tubular housing and an inner tubular member defining therein an inner passage and coaxially disposed within said outer tubular housing to define an outer passage therebetween, said inner passage being in fluid communication with said outer passage only at an upper portion of said inner passage;

crystallizing an adduct of bisphenol A and phenol in each of said first to n-th crystallization zones at a temperature of 45°–70° to form a slurry;

discharging the slurry from the bottom of the inner passage of each of said first to n-th crystallization zones;

cooling a portion of the slurry discharged from each of said two or more crystallization zones and recycling the cooled slurry to the corresponding crystallization zone so that the slurry in each of said first to n-th crystallization zones is cooled such that the temperature of the slurry in one crystallization zone is lower than that in the adjacent crystallization zone located upstream of said one crystallization zone;

heating another portion of the slurry discharged from said n-th crystallization zone to dissolve fine crystals contained



therein and recycling said heated slurry to said n-th crystallization zone;

admixing a solution of bisphenol A dissolved in phenol with said cooled slurry to be recycled to said first crystallization zone, feeding the resulting admixture to a lower portion of the outer passage of the first crystallization zone and passing same to the inner passage to effect the crystallization of the adduct of bisphenol A and phenol;

mixing part of the slurry discharged from each of said first to (n−1)th crystallization zones with the cooled slurry to be recycled to that crystallization zone located immediately downstream thereof, feeding the resulting mixture to a lower portion of the outer passage of that crystallization zone and passing same to the inner passage of that crystallization zone to effect the crystallization of the adduct of bisphenol A and phenol; and

recovering a further portion of the slurry discharged from said n-th crystallization zone,

each of said heated slurry, said admixture and said mixture being fed to the outer passage of the corresponding crystallization zone such that the slurry in said outer passage forms a vortex flow.

5,345,001

AQUEOUS RESOL SOLUTIONS AND PREPARATION THEREOF

Stephan Schroter, Iserlohn-Letmathe; Achim Hansen, Iserlohn; Arno Gardziella, Witten, and Peter Adolphs, Menden-Hallingen, all of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft AG, Fed. Rep. of Germany

Filed Aug. 23, 1993, Ser. No. 110,574

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1992, 4231039

Int. Cl.[5] C07C *39/12, 37/20*

U.S. Cl. 568—727 12 Claims

1. An aqueous resol solutions produced by an alkaline condensation of a phenolic compound with an aldehyde in a molar ratio of 1:1.5 to 2.5 with an alkali metal content of 1 to 5.0% by weight of the reaction solution, neutralizing the solution after the end of condensation at least partially with an aromatic hydroxy carboxylic acid at a temperature not greater than 50° C. and then concentrating the reaction mixture.

5,345,002

ETHYLENE ALPHA-OLEFIN COPOLYMER SUBSTITUTED HYDROXY AROMATIC COMPOUNDS

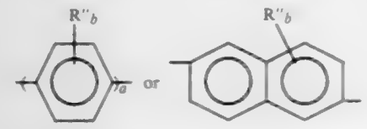
Won R. Song, Short Hills; Robert D. Lundberg, Bridgewater; Antonio Gutierrez, Mercerville, and Robert A. Kleist, Bayonne, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 788,907, Nov. 7, 1991, abandoned, which is a division of Ser. No. 473,625, Feb. 1, 1990, which is a continuation-in-part of Ser. No. 226,604, Aug. 1, 1988, Pat. No. 5,017,299. This application Oct. 9, 1992, Ser. No. 959,021

Int. Cl.[5] C07C *37/14*

U.S. Cl. 568—793 19 Claims

1. An alkylated hydroxy aromatic compound product having improved viscosity properties, formed by the alkylation of (i) at least one hydroxy aromatic compound having the formula H-Ar-$(OH)_c$, wherein Ar is



a is 1 or 2; R″ is a halogen radical; b is an integer from 0 to 2; and c is an integer from 1 to 2; with (ii) at least one ethylene alpha-olefin polymer of 300 to 20,000 number average molecular weight, wherein at least 30% of said polymer's chains contain terminal ethenylidene unsaturation.

5,345,003

METHOD FOR PREPARING 2,3-DICHLORO-1-PROPANOL AND 3-CHLORO-1-PROPANOL

Hiroyoshi Watanabe, and Fumie Hayakawa, both of Takaishi, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed May 18, 1993, Ser. No. 62,755

Claims priority, application Japan, Jul. 13, 1992, 4-184910; Dec. 18, 1992, 4-338584

Int. Cl.[5] C07C *29/00, 37/00, 31/34*

U.S. Cl. 204—157.9 11 Claims

1. A method for preparing 2,3-dichloro-1-propanol and 3-chloro-1-propanol, which comprises the steps of:

reacting 1,2-dichloroethane with methanol, containing no more than 0.1 percent by weight water, in a molar ratio in the range of 0.001 to 100 by exposure to white light of wavelength ranging from ultraviolet light to visible light or monochromatic light at a temperature ranging from −30° to 140° C. in the presence of at lest one metal compound catalyst selected from the group consisting of euro-

pium compounds, samarium compounds and ytterbium compounds or powdered Eu, Sm or Yb metal, the amount of compound or metal catalyst ranging from 0.01 to 2000 milligrams in terms of the metal atom content of the catalyst per one liter of the liquid phase of the reaction system.

5,345,004

PROCESS FOR THE PREPARATION OF 1,3-BUTYLENE GLYCOL

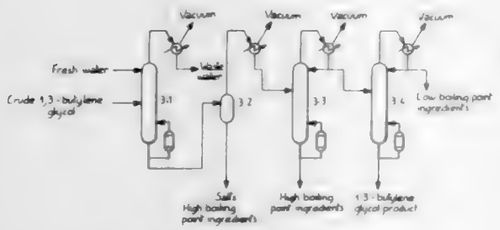
Kazuhisa Nishiguchi, Ohtake, Japan, assignor to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Dec. 8, 1993, Ser. No. 163,308

Claims priority, application Japan, Mar. 24, 1993, 5-065186; Jun. 24, 1993, 5-153856; Nov. 1, 1993, 5-273829

Int. Cl.[5] C07C *29/141*

U.S. Cl. 568—865 **12 Claims**



1. A process for the preparation of 1,3-butylene glycol by steps (a), (b) and (c);

(a) aldol condensation step of acetaldehyde in the presence of an alkali catalyst to obtain a crude reaction solution primarily containing aldoxane, acetaldehyde, water and small amounts of croton aldehyde;

(b) thermal decomposition step of aldoxane to obtain paraldol while distilling off a distillate containing acetaldehyde, water and small amounts of croton aldehyde from the crude reaction solution;

(c) hydrogenation step of paraldol to obtain 1,3-butylene glycol in the presence of a catalyst;

characterized in that a refined acetaldehyde not containing a substantial amount of croton aldehyde is recirculated to step (a) after removal of croton aldehyde from the distillate in step (b).

5,345,005

HYDROGENATION CATALYST, PROCESS FOR PREPARING AND PROCESS OF USING SAID CATALYST

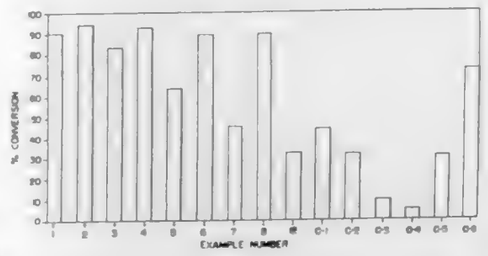
Deepak S. Thakur; Brian L. Roberts, both of Solon; Thomas J. Sullivan, Strongsville, and Anita L. Vichek, Mentor, all of Ohio, assignors to Engelhard Corporation, Iselin, N.J.

Division of Ser. No. 680,100, Apr. 2, 1991, Pat. No. 5,155,086, which is a continuation-in-part of Ser. No. 422,624, Oct. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 405,983, Sep. 12, 1989, abandoned. This application Sep. 18, 1992, Ser. No. 930,123

Int. Cl.[5] C07C *29/149, 31/125*

U.S. Cl. 568—885 **19 Claims**

1. In a process for hydrogenating aldehydes, ketones, carboxylic acids and carboxylic acid esters to alcohols comprising contacting the aldehyde, ketones, acid or ester with hydrogen and a catalyst under catalytic hydrogenation conditions, the improvement comprising using a catalyst in powdered form comprising a major amount of the oxides of copper and zinc, and a minor amount of aluminum oxide wherein the pore volume of the pores in said catalyst having a diameter of between about 120 and about 1000 A is at least about 40% of the total pore volume.



5,345,006

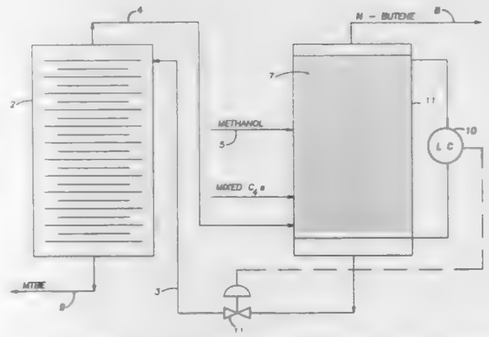
METHOD AND APPARATUS FOR OPERATING A CATALYTIC DISTILLATION PROCESS

Lawrence A. Smith, Jr., P.O. Box 34687, Houston, Tex. 77034

Division of Ser. No. 689,981, Apr. 8, 1991, Pat. No. 5,120,403, which is a division of Ser. No. 328,487, Mar. 23, 1989, abandoned. This application Feb. 24, 1992, Ser. No. 840,267

Int. Cl.[5] C07C *29/04, 31/12*

U.S. Cl. 568—899 **7 Claims**



1. A method for the production of tertiary butyl alcohol comprising the steps of:

(a) concurrently feeding a first stream comprising C_4 hydrocarbon containing isobutylene and a second stream containing water to a distillation column reactor in a feed zone, said distillation column reactor having an upper reaction distillation zone containing a fixed bed acidic catalytic distillation packing and a lower distillation zone:

(b) concurrently in said distillation column reactor;

(1) contacting said first and second streams with said acidic catalytic distillation packing in said reaction distillation zone thereby catalytically reacting said isobutylene with said water to form a reaction mixture containing tertiary butyl alcohol, unreacted isobutylene and water and

(2) fractionating said reaction mixture in both said zones while maintaining a froth level in said reaction distillation zone, said froth level being characterized as an increased density of the material in the reaction distillation zone compared to a distillation carried out in the absence of said froth level,

(c) withdrawing said tertiary butyl alcohol from said distillation column reactor as bottoms; and

(d) withdrawing unreacted C_4 hydrocarbons and water from said distillation column as overheads.

5,345,007

PROCESS FOR THE PREPARATION OF OCTADIENOLS

Eric Monflier, Lille; Paul Bourdauducq, Chaponost, and Jean-Luc Couturier, Lyons, all of France, assignors to Elf Atochem S.A., Puteaux, France

Filed Nov. 5, 1993, Ser. No. 148,257

Claims priority, application France, Nov. 6, 1992, 92 13392; Mar. 4, 1993, 93 02524

Int. Cl.[5] C07C *29/03, 33/02*

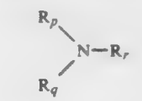
U.S. Cl. 568—909.5 **16 Claims**

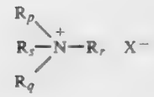
1. A process for the preparation of an octa-2,7-dien-1-ol comprising hydrodimerizing 1,3-butadiene with water in the presence of:

a transition metal in the metal form or in the form of a compound of the said metal;

a water-soluble tertiary or quarternary phosphorus-containing compound; and

at least one nitrogen-containing compound, selected from the group consisting of a tertiary amine and a quaternary ammonium salt of formula (I) or (II):


(I)


(II)

in which R_p, R_q and R_s are identical or different and each is a methyl or ethyl group; R_r is an alkyl group containing from 6 to 22 carbon atoms; X is a counter-anion selected from the group consisting of:

HCO_3^-, CO_3^{2-}, HSO_3^-, SO_3^{2-}, SiO_3^{2-}, PO_4^{3-}, HPO_3^{2-}, AsO_4^{3-}, SO_4^{2-}, HSO_4^-, RSO_3^-, RCO_2^-, and OH^-,

wherein R is an alkyl group; said reaction being carried out in the presence of carbon dioxide.

5,345,008

DECOMPOSITION OF ORGANIC HYDROPEROXIDES WITH NITRATED PORPHYRIN COMPLEXES

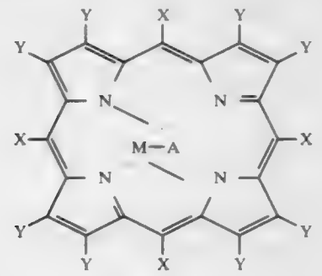
James E. Lyons, Wallingford, and Paul E. Ellis, Jr., Downingtown, both of Pa., assignors to Sun Company, Inc. (R&M), Philadelphia, Pa.

Filed Jun. 9, 1993, Ser. No. 73,840

Int. Cl.[5] C07C *29/48, 31/00, 33/00*

U.S. Cl. 568—909.8 **34 Claims**

1. A process for the decomposition of organic hydroperoxide which comprises contacting said hydroperoxide with a catalyst comprising:



wherein M is selected from the group consisting of Fe, Mn, Co, Cu, Ru and Cr; at least one X is nitro and the remaining X are selected from the group consisting of hydrogen, nitro fluorine, chlorine, bromine, hydrocarbon and halocarbon or combinations thereof; Y is selected from the group consisting of hydrocarbon, halocarbon, fluorine, chlorine, bromine and hydrogen or combinations thereof; and A is anion or is absent.

5,345,009

CONJOINT PRODUCTION OF DITERTIARY BUTYL PEROXIDE AND TERTIARY BUTYL ALCOHOL FROM TERTIARY BUTYL HYDROPEROXIDE

John R. Sanderson, Leander, and John F. Knifton, Austin, both of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Nov. 12, 1993, Ser. No. 150,913

Int. Cl.[5] C07C *29/132, 31/12*

U.S. Cl. 568—909.8 **3 Claims**

1. In a method wherein a tertiary butyl hydroperoxide charge stock comprising a solution of tertiary butyl hydroperoxide in tertiary butyl alcohol is brought into contact with a catalytically effective amount of a hydroperoxide decomposition catalyst in a hydroperoxide decomposition reaction zone in liquid phase to conjointly convert said tertiary butyl hydroperoxide to decomposition products, principally tertiary butyl alcohol, and ditertiary butyl peroxide, the improvement which comprises:

a) using, as said hydroperoxide decomposition catalyst, palladium supported on pelleted carbon and

b) recovering tertiary butyl alcohol and ditertiary butyl peroxide from the products of said hydroperoxide decomposition reaction.

5,345,010

CHROMIA ON METAL OXIDE FOR THE OXIDATION OF ALKANE TO ALCOHOL

James E. Lyons, Wallingford; Vincent A. Durante, West Chester, both of Pa., and Darrell W. Walker, Visalia, Calif., assignors to Sun Company, Inc. (R&M), Philadelphia, Pa.

Continuation-in-part of Ser. No. 905,952, Jun. 29, 1992, Pat. No. 5,220,080. This application Jun. 15, 1993, Ser. No. 76,990

The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.

Int. Cl.[5] C07C *29/50, 31/04*

U.S. Cl. 568—910 **13 Claims**

1. A method for the direct conversion of light alkane to alcohol comprising separately contacting a regenerable oxidizing reagent with (1) light alkane and (2) oxidant, said reagent comprising a surface oxide chromate in which chromium is chemically bound to oxygen of a metal oxide support surface.

5,345,011

NEW MANGANESE CATALYST FOR LIGHT ALKANE OXIDATION

Vincent A. Durante, West Chester; James E. Lyons, Wallingford, both of Pa.; Darrell W. Walker, Visalia, Calif., and Bonita K. Marcus, Radnor, Pa., assignors to Sun Company, Inc. (R&M), Philadelphia, Pa.

Filed Sep. 20, 1993, Ser. No. 124,087

Int. Cl.[5] C07C *27/00, 29/50, 31/04, 31/08*

U.S. Cl. 568—910 **9 Claims**

1. A method for the direct oxidation of light alkanes comprising contacting said light alkane, in the presence of an oxidant, with catalyst comprising manganese and a crystalline aluminophosphate structural framework, wherein at least a portion of said manganese is incorporated in said structural framework.

5,345,012

PROCESS FOR THE PREPARATION OF DINITROTOLUENE

Thomas Schieb, Rösrath; Gerhard Wiechers; Rudolf Sundermann, both of Leverkusen, and Uwe Zarnack, Brunsbüttel, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 3, 1993, Ser. No. 147,654

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1992, 4309140; Mar. 22, 1993, 4309140

Int. Cl.[5] C07C *205/06*

U.S. Cl. 568—934 5 Claims

1. A single stage, continuous process for the production of isomeric mixtures of dinitrotoluene comprising

a) reacting

(1) toluene with

(2) a nitrating acid composed of

(i) from about 80 to about 100% by weight of an inorganic component made up of

A) from about 60 to about 90% by weight of sulfuric acid,

B) from about 1 to about 20% by weight of nitric acid, and

C) at least 5% by weight of water, and

(ii) from about 0 to about 20% by weight of an organic component containing

A) from about 70 to about 100% by weight of dinitrotoluene isomers, and

B) from about 0 to about 30% by weight of by-products

under adiabatic conditions and in amounts such that the molar ratio of nitric acid to toluene is maintained at a level of at least 2:1,

b) continuously removing reaction mixture from the reactor at a temperature of at least 120° C.,

c) separating the reaction mixture removed in b)into an upper product phase and a lower acid phase,

d) working up the product phase separated in c) to recover dinitrotoluene,

e) removing at least 10% of water present in the acid phase separated in c) by flash evaporation,

f) adding from about 50 to about 100% by weight of nitric acid to the acid phase from e) and

g) returning the acid phase of f) to a).

5,345,013

SAFE HANDLING OF TETRAFLUOROETHYLENE

David J. Van Bramer, Belpre, Ohio; Mark B. Shiflett, Newark, and Akimichi Yokozeki, Wilmington, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 10, 1993, Ser. No. 74,635

Int. Cl.[5] C07C *17/42, 21/185*

U.S. Cl. 570—102 17 Claims

1. A container of liquid mixture consisting essentially of tetrafluoroethylene and carbon dioxide under pressure.

5,345,014

PROCESS FOR PREPARING PENTAFLUOROETHANE BY DISMUTATION OF TETRAFLUOROCHLOROETHANE

Paolo Cuzzato, Treviso, Italy, assignor to Ausimont S.p.A., Milan, Italy

Filed May 11, 1993, Ser. No. 60,222

Claims priority, application Italy, May 13, 1992, MI 92 A 001136

Int. Cl.[5] C07C *19/08*

U.S. Cl. 570—163 5 Claims

1. A process for preparing pentafluoroethane, which consists essentially of contacting tetrafluorochloroethane in the gas phase with a catalyst consisting of chrome oxide (Cr_2O_3) at temperatures ranging from 150° to 330° C.

5,345,015

PROCESS FOR PRODUCING 1,1,2-TETRAFLUOROETHANE

Hiromoto Ohno; Makoto Miyamura, both of Kanagawa; Tatsuharu Arai, Tokyo; Kazuo Muramaki, and Toshio Ohi, both of Kanagawa, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Jul. 13, 1993, Ser. No. 90,314

Claims priority, application Japan, Aug. 5, 1992, 4-209187

Int. Cl.[5] C07C *17/08*

U.S. Cl. 570—164 4 Claims

1. A process for producing 1,1,1,2-tetrafluoroethane through reaction of trichloroethylene with HF, which comprises:

reacting trichloroethylene with HF in a first reactor to form 1,1,1-trifluoro-2-chloroethane,

reacting 1,1,1-trifluoro-2-chloroethane with HF in a second reactor to form 1,1,1,2-tetrafluoroethane,

introducing the products from the first and second reactors into a first distillation column either separately or as a mixture thereof,

recovering HCl as a distillate from the top of the first distillation column, and

introducing the remainder into a second distillation column to obtain 1,1,1,2-tetrafluoroethane.

5,345,016

MANUFACTURE OF 1,1,1,2-TETRAFLUOROETHANE

Leo E. Manzer, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 824,712, Jan. 17, 1992, Pat. No. 5,185,482, which is a continuation of Ser. No. 563,667, Aug. 3, 1990, abandoned, which is a continuation of Ser. No. 305,697, Feb. 3, 1989, abandoned. This application Feb. 4, 1993, Ser. No. 12,847

The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.

Int. Cl.[5] C07C *17/08, 17.20, 19/02*

U.S. Cl. 570—168 20 Claims

1. A process for the manufacture of 1,1,1,2-tetrafluoroethane wherein HF is reacted with trichloroethylene in a reaction zone in the presence of a catalyst composition at elevated temperature to form a product mixture comprising 1,1,1,2-tetrafluoroethylene, 2-chloro-1,1,1-trifluoroethane and optionally, other organic by-products, and wherein 1,1,1,2-tetrafluoroethane is recovered from the product mixture, characterized by:

passing HF over the catalyst composition at a temperature from about 200° C. to 450° C.;

recycling a portion of the product mixture including the 2-chloro-1,1,1,-trifluoroethane therein to the reaction zone;

adding to reaction zone additional trichloroethylene in a molar amount at least equal to the molar amount of 1,1,1,2-tetrafluoroethane recovered from the mixture and additional HF in a molar amount from 3 to 30 times the molar amount of additional trichloroethylene;

conducting the reaction of the trichloroethylene with HF and the reaction of 2-chloro-1,1,1-trifluoroethane with HF at a temperature and at a contact time and in the presence of a catalyst composition selected to form a product mixture comprising 1,1,1,2-tetrafluoroethane and 2-chloro-1,1,1-trifluoroethane, and having less than about 10 percent by weight of said other organic by-products; and

recovering 1,1,1,2-tetrafluoroethane from the product mixture as the major product of the process;

said catalyst composition comprising at least one metal selected from the group consisting of trivalent chromium, Group VIII, Group IIIB, Group IB and metals having an atomic number from 58 to 71.

5,345,017

PROCESS FOR REDUCING THE FLUORINE CONTENT OF HALOCARBONS

V. N. Mallikarjuna Rao, and Steven H. Swearingen, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 986,811, Dec. 8, 1992, abandoned. This application Nov. 5, 1993, Ser. No. 148,032

Int. Cl.[5] C07C *17/34, 19/08*

U.S. Cl. 570—227 20 Claims

1. A method for reducing the fluorine content of an acyclic saturated compound of the formula $C_nF_aX_b$ wherein each X is independently selected from the group consisting of chlorine and bromine, wherein n is 1 to 4, a is 2 to 10, b is 0 to 8, and a+b equals 2n+2, and wherein the acyclic saturated compound has at least one carbon with at least two fluorine substituents, comprising the step of:

reacting said acyclic saturated compound with HCl in the vapor phase at a temperature in the range of from about 250° C. to 550° C. in the presence of a catalyst, the mole ratio of HCl to said acyclic saturated compound being at least about 2:1.

5,345,018

METHOD FOR PREPARING 1-CHLORO-1-IODOETHANE

Philip L. Bak, Amherst; Gregory P. Bidinger, Akron; Ross J. Cozens, Strongsville, and Paul R. Klich, Lyndhurst, all of Ohio, assignors to The Geon Company

Filed Mar. 22, 1993, Ser. No. 35,017

Int. Cl.[5] C07C *17/08*

U.S. Cl. 570—249 1 Claim

1. A process for preparing 1-chloro-1-iodoethane comprising combining substantially anhydrous hydrogen iodide and vinyl chloride monomer in the presence of from 0.1 to 2 mole % molecular iodine catalyst at a temperature of from about −75° C. to 100° C.

5,345,019

METHOD OF HYDROCRACKING PARAFFINS EMANATING FROM THE FISCHER-TROPSCH PROCESS USING CATALYSTS BASED ON H-Y ZEOLITE

Pierre-Henri Bigeard, Vienne; Alain Billon, Le Vesinet; Pierre Dufresne, Valence, and Samuel Mignard, Chatou, all of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Filed May 21, 1992, Ser. No. 886,225

Claims priority, application France, May 21, 1991, 91 06141

Int. Cl.[5] C07C *5/00, 5/42*

U.S. Cl. 585—264 18 Claims

1. A method of hydrocracking a charge emanating from the Fisher-Tropsch process, said charge comprising unsaturated and oxygenated hydrocarbon molecules, said method comprising:

(a) reacting hydrogen with the charge in contact with a first catalyst in a first reaction zone, the first catalyst comprising at least one matrix consisting essentially of alumina and at least one first hydro-dehydrogenation component to remove unsaturated and oxygenated hydrocarbon molecules from the charge;

(b) contacting the resultant effluent from the first reaction zone with a second catalyst in a second reaction zone, the second catalyst comprising:

20 to 97% by weight of at least one matrix;

3 to 80% by weight of at least one Y zeolite in hydrogen form,

said Y zeolite having a SiO_2:Al_2O_3 molar ratio of over 4.5:1, a sodium content of less than 1% by weight determined on a zeolite calcined at 1100° C., an a_0 crystal parameter of the elemental mesh of less than 24.70×10^{-10} m; and a specific surface area determined by the BET method of over 400 $m^2.g^{-1}$;

and at least one second hydro-dehydrogenation component, to produce a hydrocracked product.

5,345,020

METHOD FOR MAKING DIAMONDOID LUBRICANT BASE STOCK BY ALKYLATION WITH AN OLEFIN IN THE PRESENCE OF A LEWIS ACID

Dong-Ming Shen, Langhorne, Pa., and Margaret M. Wu, Skillman, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 3, 1993, Ser. No. 70,823

Int. Cl.[5] C07C *13/28*

U.S. Cl. 585—352 11 Claims

1. A method for selectively alkylating a diamondoid compound comprising reacting at least one α-olefin containing at least six carbon atoms with at least one diamondoid compound in the presence of an acid catalyst selected from the group consisting of AlX_3 and BX_3 wherein X is a halogen, in the absence of added proton-donating catalyst promoter.

5,345,021

CATALYTIC REACTIONS USING ZEOLITES

John L. Casci, Redcar; Ivan J. S. Lake, Nunthorpe, and Timothy R. Maberly, Eaglescliffe, all of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 714,715, Jun. 13, 1991, Pat. No. 5,178,748, which is a division of Ser. No. 453,305, Dec. 22, 1989, Pat. No. 5,041,402. This application Jan. 11, 1993, Ser. No. 2,800

Claims priority, application United Kingdom, Dec. 22, 1988, 8829923.5

Int. Cl.[5] C07C *2/66, 2/70*

U.S. Cl. 585—467 2 Claims

1. In a process for alkylation or dealkylation of aromatic hydrocarbons in the presence or absence of hydrogen employing a catalyst, the improvement wherein the catalyst employed is one comprising a zeolite designated NU-87, said zeolite having a composition expressed on an anhydrous basis (in terms of mole ratios of oxide) by the formula

100 XO_2: equal to or less than 10 Y_2O_3: equal to or less than 20 $R_{2/n}O$

wherein R is at least partly hydrogen, X is silicon and/or germanium, Y is one or more of aluminum, iron, gallium, boron, titanium, vanadium, zirconium, molybdenum, arsenic, antimony, chromium and manganese and having an X-ray diffraction pattern including the lines shown in Table 2.

5,345,022

SATURATE MINIMIZATION IN NORMAL ALPHA OLEFINS

Loren W. Hedrich, Kingwood; Alfred N. Kresge, Humble, and Roger C. Williamson, Kingwood, all of Tex., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 870,536, Apr. 17, 1992, abandoned. This application May 12, 1992, Ser. No. 881,905

Int. Cl.[5] C07C *2/26*

U.S. Cl. 585—522 11 Claims

1. In a process for producing normal alpha olefins by contacting a trialkyl aluminum compound and ethylene under alpha olefin formation conditions, thereby producing a mixture comprising normal alpha olefins and tri(higher)alkyl aluminum compounds, and hydrolyzing said mixture, the improvement comprising contacting said mixture of normal alpha olefins and tri(higher)alkyl aluminum compounds, prior to hydrolysis, with ethylene and a nickel-containing transalkylation catalyst under transalkylation conditions, said transalkylation catalyst being used in an amount sufficient to have between about 10 and about 200 parts per billion by weight of nickel present, based on total weight, and under conditions sufficient to cause transalkylation but insufficient to cause isomerization of said

normal alpha olefins, wherein said normal alpha olefins contain essentially no Group VIII metal after hydrolysis.

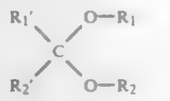
5,345,023

PROCESS FOR THE PRODUCTION OF LIGHT ALPHA OLEFINS BY OLIGOMERIZATION OF ETHYLENE

Yves Chauvin, Le Pecq; Dominique Commereuc, Meudon; Francois Hugues, Vernaison; Helene Olivier, Rueil Malmaison, and Lucien Saussine, Croissy sur Seine, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Jul. 9, 1993, Ser. No. 88,508
Claims priority, application France, Jul. 9, 1992, 92 08658
Int. Cl.[5] C07C *2/02*
U.S. Cl. 585—527 10 Claims

1. A process for the conversion of ethylene into light alpha olefins, which comprises contacting ethylene with a catalyst under effective oligomerization conditions, wherein said catalyst is obtained by mixing a zirconium compound of the formula $ZrX_xY_yO_z$, in which X is a chlorine or bromine atom, Y is a radical selected from the group consisting of RO—, $(R)_2N$— and RCOO— groups, in which R is a hydrocarbyl radical having 1 to 30 carbon atoms, x and y are 0 or an integer of 1 to 4 and z is 0 or 0.5, the sum $x+y+2z$ being equal to 4, with an organic acetal or ketal compound of formula



in which R'_1 and R'_2 are independently a hydrogen atom or a hydrocarbyl radical having 1 to 30 carbon atoms and R_1 and R_2 are independently hydrocarbyl radicals having 1 to 30 carbon atoms, and

with an aluminum compound of the formula AlR''_nX_{3-n} in which R'' is a hydrocarbyl radical having 1 to 6 carbon atoms, X is a chlorine or bromine atom and n is a number of from 1 to 2 inclusive,

such that the molar ratio of the acetal or ketal compound to the zirconium compound is approximately 0.1:1 to 5:1 and the molar ratio of the aluminum compound to the zirconium compound is approximately 1:1 to 100:1.

5,345,024

ALPHA-OLEFIN POLYMERS

Curtis R. Scharf, Wickliffe, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 139,392, Dec. 29, 1987, Pat. No. 4,968,853. This application Aug. 6, 1990, Ser. No. 563,477
Int. Cl.[5] C07C *2/22*
U.S. Cl. 585—532 29 Claims

1. A process for preparing a liquid alpha-olefin polymer comprising contacting at least one alpha-olefin with a catalyst system comprising a tertiary organo halide and a Lewis acid catalyst under polymerization conditions thereby obtaining the alpha-olefin polymer wherein the alpha-olefin polymer has a polymodal distribution with peak molecular weight maximums at 2,000 to 5,000 and at 50,000 to 75,000 wherein the organo is hydrocarbyl.

5,345,025

SEPARATION PROCESS FOR THE PRODUCT STREAMS RESULTING FROM THE DEHYDROGENATION OF HYDROCARBONS

Michael J. Mitariten, Peekskill, N.Y., and Norman H. Scott, Arlington Heights, Ill., assignors to UOP, Des Plaines, Ill.

Filed Dec. 21, 1992, Ser. No. 992,321
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] C07C *5/327, 5/333*
U.S. Cl. 585—655 13 Claims

1. A process for the dehydrogenation of a dehydrogenatable hydrocarbon which process comprises:

(a) contacting said dehydrogenatable hydrocarbon with a dehydrogenation catalyst in a dehydrogenation zone at dehydrogenation conditions to produce a hydrocarbon effluent stream comprising dehydrogenated hydrocarbons, unconverted dehydrogenatable hydrocarbons and hydrogen;

(b) compressing said hydrogen effluent stream comprising dehydrogenated hydrocarbons, unconverted dehydrogenatable hydrocarbons and hydrogen to produce a compressed stream;

(c) cooling said compressed stream to a temperature less than about 150° F. (65° C.);

(d) introducing the resulting compressed, cooled stream produced in step (c) into a vapor-liquid separator;

(e) withdrawing from said vapor-liquid separator a liquid stream comprising at least a portion of said dehydrogenated hydrocarbons and said unconverted dehydrogenatable hydrocarbon contained in said hydrocarbon effluent stream;

(f) withdrawing from said vapor-liquid separator a hydrogen-rich gaseous stream comprising at least a portion of said dehydrogenated hydrocarbons and unconverted dehydrogenatable hydrocarbons;

(g) passing said hydrogen-rich gaseous stream from step (f) to a first adsorber bed containing adsorbent having a adsorptive capacity for hydrocarbons at effective adsorption conditions;

(h) withdrawing a hydrogen-rich gaseous stream having a reduced concentration of hydrocarbons from said first absorber bed;

(i) withdrawing a stream rich in hydrocarbons from a second adsorber bed containing adsorbent having adsorptive capacity for hydrocarbons which bed has become loaded with hydrocarbons and is undergoing desorption;

(j) cooling said stream rich in hydrocarbons from step (i) to a temperatures less than about 100° F. (38° C.);

(k) introducing the resulting cooled stream produced in step (j) into a vapor-liquid separator to produce a vapor stream comprising hydrogen and a liquid stream comprising dehydrogenated hydrocarbon;

(l) recycling said vapor stream comprising hydrogen recovered in step (k) to step (b); and

(m) recovering a hydrocarbon stream comprising a hydrogenated hydrocarbon.

5,345,026

RING OPENING PROCESS

Clarence D. Chang, Princeton, N.J.; José G. Santiesteban, and David L. Stern, both of Yardley, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Jul. 22, 1993, Ser. No. 95,882
Int. Cl.[5] C07C *5/27*
U.S. Cl. 585—700 15 Claims

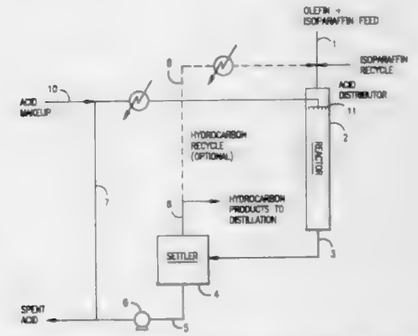
1. A process for the conversion of a cyclic hydrocarbon to a noncyclic paraffin hydrocarbon, said process comprising contacting said cyclic hydrocarbon with a catalyst under sufficient ring opening conditions, said catalyst comprising (i) a hydrogenation/dehydrogenation component and (ii) an acidic solid component comprising a Group IVB metal oxide modified with an oxyanion of a Group VIB metal.

5,345,027

ALKYLATION PROCESS USING CO-CURRENT DOWNFLOW REACTOR WITH A CONTINUOUS HYDROCARBON PHASE

Jonathan E. Child, Sewell; Kenneth J. Del Rossi, Woodbury, both of N.J.; Albin Huss, Jr., Chadds Ford, Pa.; Frederick J. Krambeck, Cherry Hill; Thomas R. Melli, Sewell, both of N.J., and Sergei Yurchak, Media, Pa., assignors to Mobile Oil Corp., Fairfax, Va.

Filed Aug. 21, 1992, Ser. No. 933,163
Int. Cl.[5] C07C *2/56, 2/58*
U.S. Cl. 585—720 13 Claims



1. A continuous alkylation process for alkylating an isoparaffin with an olefin under alkylation conditions in a downflow reactor comprising uniformly dispersing downwardly a catalyst complex comprising BF_3:H_3PO_4 into a continuous hydrocarbon phase comprising a mixture of said isoparaffin and said olefin.

5,345,028

SOLID ACID ALKYLATION USING A SULFATED MIXED OXIDE OF TITANIUM/NICKEL

Saeed Alerasool, Huntington, W. Va., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Mar. 10, 1993, Ser. No. 28,882
Int. Cl.[5] C07C *2/58*
U.S. Cl. 585—730 9 Claims

1. In a method for catalyzing formation of an alkylate from a feed comprising an olefin and a branched alkane, the improvement comprising using as catalyst an acid catalyst comprising a sulfated mixed oxide of titanium and nickel, wherein the percent by weight of titanium is at least 80%; of nickel is in the range 1–4%; and of sulfur in the range 1–10% under appropriate reaction conditions that substantially preclude a temperature treatment of said acid catalyst in excess of about 450° C.

5,345,029

DETERMINING FRACTIONS OF PETROLEUM FUELS BY SUPERCRITICAL FLUID CHROMATOGRAPHY

Adam J. Schubert, Placentia, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 22, 1992, Ser. No. 949,198
Int. Cl.[5] C07C *7/12;* C10G *25/00*
U.S. Cl. 585—825 8 Claims

6. A method for separating and recovering plural fractions of a hydrocarbon fuel, said fractions comprising saturate, aromatic, and polar components of said petroleum fuel, said method comprising the steps of:

passing a sample of said fuel onto a packed column to separate said sample into said fractions on said column;

passing a quantity of a solvent through said column at a first supercritical condition of said solvent to extract one of said fractions from said column;

passing said solvent with said extracted fraction through a restrictor means to reduce the pressure of said solvent and said extracted fraction to allow said solvent to vaporize without vaporizing said extracted fraction;

collecting said extracted fraction in liquid form while permitting said solvent vapor to escape from said extracted fraction;

providing said solvent at a second supercritical condition and passing said solvent through said column at said second supercritical condition to extract another of said fractions from said column; and

providing said solvent at a third supercritical condition and passing said solvent through said column at said third supercritical condition to extract still another of said fractions from said column.

5,345,030

INHIBITING POPCORN POLYMER FORMATION WITH SULFUR-CONTAINING COMPOUNDS

Hsiang-ning Sun, Houston; John J. Cikut, Kingwood; Roque V. Martir, and Jos P. Wristers, both of Houston, all of Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 647,356, Jan. 29, 1991, Pat. No. 5,196,619. This application Mar. 11, 1993, Ser. No. 29,859
Int. Cl.[5] C07C *7/20*
U.S. Cl. 585—2 17 Claims

1. A method for treating organic material to prevent the formation of popcorn polymer growth, comprising treatment of said organic material with at least one mercaptan, said treatment comprising addition of said at least one mercaptan to said organic material, said addition being selected from the group consisting of continuous addition and intermittent addition.

5,345,031

REDUCTION OF AROMATIC HALIDE CONTENT

Jeffrey Schwartz, and Yumin Liu, both of Princeton, N.J., assignors to The Trustees of Princeton University, Princeton, N.J.

Continuation-in-part of Ser. No. 869,743, Apr. 16, 1992, abandoned. This application Oct. 14, 1993, Ser. No. 136,660
Int. Cl.[5] C07C *1/26*
U.S. Cl. 588—206 10 Claims

1. In the process of reducing halide content in halogenated aromatic hydrocarbons by reduction in the presence of a reagent comprising (i) at least one complex of a transition metal of group 4 or 5 with a multidentate or unidentate organic or inorganic ligand and (ii) a reducing agent, the improvement which comprises conducting the reduction in the presence of an aliphatic or aromatic amine and an inert organic solvent.

5,345,032

USE OF METAL CHELATE COMPLEXES IN DEHALOGENATION

Trevor S. Marks, and Andrew Maule, both of Wiltshire, England, assignors to The Public Health Laboratory Service Board, London, England

Continuation of Ser. No. 634,874, Jan. 8, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 47,837
Claims priority, application United Kingdom, May 9, 1988, 8810944.2; May 9, 1989, 8905423.3
Int. Cl.[5] C07C *17/24, 9/04;* A62D *3/00*
U.S. Cl. 588—207 23 Claims

1. A method for dehalogenation of a halogenated organic compound suspended, dispersed or dissolved in an aqueous medium, said method comprising the step of causing the halogenated compound to react with a reducing agent in the presence of a complex of a corrin containing a metal centered ring system of the formula:

pollutant or industrial waste and the dehalogenated reaction is carried out between ambient temperature and 80° C.

5,345,033

METHOD FOR THE NEUTRALIZATION OF HAZARDOUS MATERIALS

William J. McLaughlin, Claremont, Calif., assignor to Toxco, Inc., Claremont, Calif.

Filed Dec. 23, 1992, Ser. No. 995,802
Int. Cl.[5] B09B *1/00*
U.S. Cl. 588—249 **17 Claims**

1. A method for neutralizing a hazardous material, comprising the steps of:

cooling said hazardous material to substantially below room temperature; and

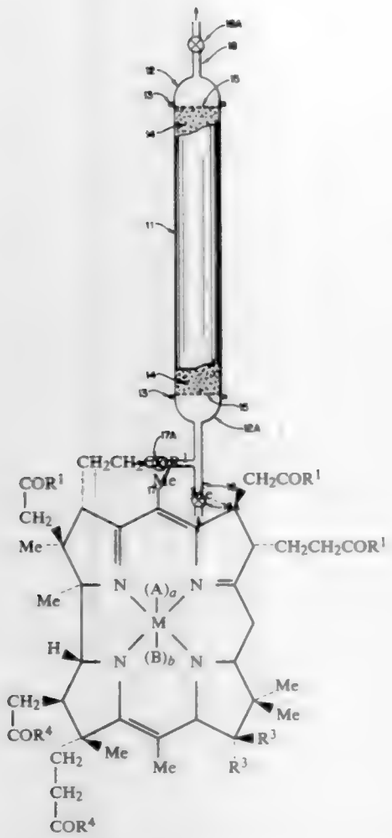
reacting said cooled material with one or more reagents selected to yield non-hazardous or less hazardous products.

5,345,034

CONTAINMENT OF SUBSURFACE CONTAMINANTS

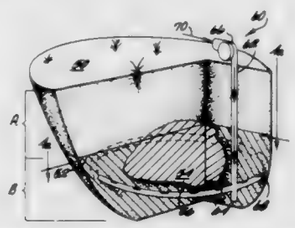
John C. Corey, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 3, 1993, Ser. No. 12,864
Int. Cl.[5] B09B *3/00;* **E02D** *3/00*
U.S. Cl. 588—249 **19 Claims**



where M is cobalt, nickel, molybdenum, iron or magnesium; A and B are coordinating ligands which may be the same or different; a and b are each 0 or 1; R^1 is selected from the group consisting of NH_2 and OH; R^2 is selected from the group consisting of H, CH_2CH_2COOH and $CH_2CH_2CONH_2$; R^3 is selected from the group consisting of H, CH_2CH_2COOH and $CH_2CH_2CONH_2$; and R^4 is selected from the group consisting of $NHCH_2CH(OH)CH_3$, OH and NH_2,

wherein the halogenated compound suspended, dispersed or dissolved in the aqueous medium is an environmental



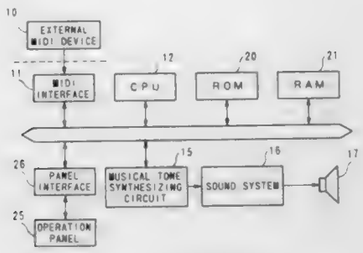
1. A method for reducing the flow of groundwater into a region of soil from adjacent soil below the surface of the earth, said method comprising the step of injecting a fluid into said adjacent soil at a pressure sufficient to reduce the hydraulic conductivity of said adjacent soil so that groundwater flow through said adjacent soil is substantially reduced, said fluid percolating to the surface through said adjacent soil thereby forming a curtain of low hydraulic conductivity adjacent to and outside said region, said curtain substantially reducing groundwater flow from said adjacent soil into said region.

5,345,035

MUSICAL TONE GENERATING APPARATUS

Hideo Yamada, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Jul. 8, 1993, Ser. No. 89,091
Claims priority, application Japan, Jul. 10, 1992, 4-184185; Jul. 10, 1992, 4-184186
Int. Cl.[5] G10H *1/06*
U.S. Cl. 84—622 **6 Claims**



(FIRST EMBODIMENT)

3. A musical tone generating apparatus comprising:

a plurality of channel means each containing one musical tone creating portion and two or more buffers, each of said buffers being capable of storing tone-color data designating one tone color, while said musical tone creating portion creates a musical tone signal having a tone color corresponding to said tone-color data stored in one of said buffers;

a control means for classifying all of said buffers into two or more groups among said plurality of channel means in accordance with a buffer-grouping procedure so that in each channel means, a buffer belonging to one group is given a first priority and selected prior to another buffer belonging to another group when being allocated with said tone-color data;

tone-color data storing means for storing a plurality of tone-color data in advance, of which number is larger than a number of said buffers provided in said plurality of channel means; and

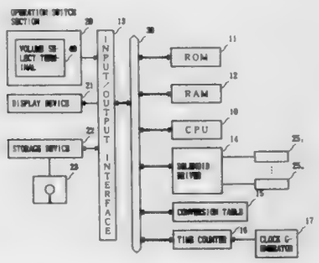
a tone-color allocating means for allocating said tone-color data to said buffers in accordance with a tone-color-allocation order which is determined responsive to characteristics of a tune to be performed, so that said tone-color data allocated to said buffers are classified into two or more groups in a manner similar to said buffer-grouping procedure employed for said buffers.

5,345,036

VOLUME CONTROL APPARATUS FOR AN AUTOMATIC PLAYER PIANO

Tetsusai Kondo, Shizuoka, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

Filed Oct. 8, 1992, Ser. No. 958,569
Claims priority, application Japan, Dec. 25, 1991, 3-356422
Int. Cl.[5] G10F *1/02;* **G10G** *3/04;* **G10H** *1/46*
U.S. Cl. 84—633 **6 Claims**



1. In an apparatus for automatically playing a piano, said apparatus having storage means for storing play information, which includes key depression force information, said apparatus sequentially reading said play information from said storage means and and activating operation terminals, the improvement comprising circuitry for altering the volume at which the piano is played and for expanding or decreasing the dynamic range through which the volume may altered, said circuitry comprising:

volume designating means (**40**) for designating a volume at which the piano is to be played;

generating means (**15**) for generating volume control information in agreement with a volume designated by said volume designating means, said generating means comprising a single conversion table having a constant table and a coefficient table that contain a first factor (C) and a second factor (K), respectively, for each level of volume control information, said constant table providing said first factor (C) by which the key depression force information (V) is to be altered for establishing the volume at which the piano is to be played, said coefficient table providing said second factor (K) by which the key depression force information (V) is to be altered for establishing the dynamic volume range at which the piano is to be played;

calculation means for performing a mathematical operation employing said key depression force information (V) and said first and second factors (K,C) generated by said generating means, to obtain new key depression force information (v); and

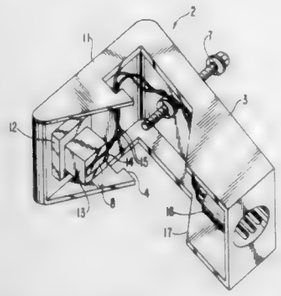
control means (**14**) for activating said operation terminals based on said new key depression force information provided by said calculating means.

5,345,037

ACOUSTIC DRUM TRANSMITTER AND A HOLDER THEREFOR

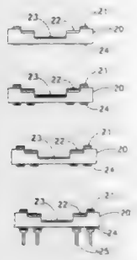
Hans Nordelius, Stockholm, Sweden, assignor to Clavia Digital Musical Instruments AB, Sweden

Continuation of Ser. No. 820,775, Jan. 15, 1992, abandoned. This application May 3, 1993, Ser. No. 58,038
Claims priority, application Sweden, Nov. 15, 1991, 9103383; Nov. 15, 1991, 9103384
Int. Cl.[5] G10H *3/14*
U.S. Cl. 84—730 **22 Claims**



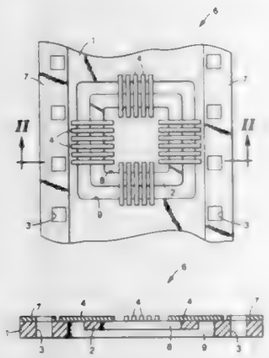
1. A transmitter for obtaining an electrical signal from an acoustic drum, said transmitter comprising a vibration sensitive device resting on the drumhead of said acoustic drum from which wave motions are to be detected, wherein said vibration sensitive device has a substantially oblong shape and wherein the longitudinal axis of said vibration sensitive device is aligned to be generally perpendicular to a wavefront of said wave motions originating from a particular direction on said drumhead.

5,345,038
MULTI-LAYER CERAMIC PACKAGES
Nobuaki Miyauchi, and Takatoshi Irie, both of San Diego, Calif., assignors to Kyocera America, Inc., San Diego, Calif.
Filed Jul. 29, 1991, Ser. No. 739,599
Int. Cl.[5] H01L *23/02*
U.S. Cl. 174—52.4 9 Claims



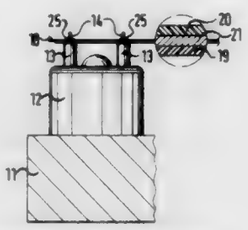
1. A multi-layer ceramic package having a ceramic substrate, metallic wire bonding areas, die attach area, and external bonding pads, including:
(a) an intermediate metal layer covering the wire bonding areas, die attach area, and external bonding pads;
(b) an outer metal layer covering the intermediate metal layer on the wire bonding areas, die attach area, and external bonding pads; and
(c) contact pins coupled to the outer metal layer covering the intermediate metal layer on the external bonding pads on the ceramic substrate.

5,345,039
FILM CARRIER
Hideo Yamazaki, Kisarazu, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 6, 1992, Ser. No. 926,348
Int. Cl.[5] H01L *23/02*
U.S. Cl. 174—52.4 6 Claims



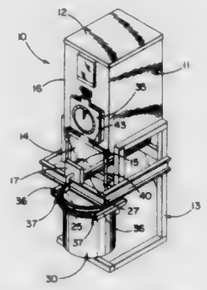
1. A film carrier comprising a dielectric film having opposite surfaces spaced a given thickness and having at least one opening formed therein, a support ring made of a dielectric film material and arranged inside of said opening and spaced from the inner periphery of said opening, said support ring having opposite surfaces spaced a given thickness less than said thickness between said surfaces of said dielectric film, and metallic lead wires on one surface of said dielectric film and support ring joining the support ring and the dielectric film, wherein a metallic ground layer is secured to the surface of said support ring opposite to the surface on which said metallic lead wires are placed.

5,345,040
DEVICE INCLUDING A CONDUCTOR TRUCK FOIL
Horst Stade, Blaichach, and Helmut Deringer, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Division of Ser. No. 788,383, Nov. 6, 1991. This application Oct. 28, 1992, Ser. No. 967,498
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1990, 4041507
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—260 2 Claims



1. An electrical device (**10**) comprising:
at least one electrical component (**12**), said electrical component (**12**) includes a plurality of aligned electrically conductive contact pins (**14**) extending therefrom,
a conductor track foil (**18**), said conductor track foil includes a lower insulator layer (**19**), an upper insulator layer (**20**) and a conductor layer (**21**) sandwiched between said lower and upper layers, said upper layer including aligned soldering lands (**23**) that extend to said conductive layer,
said bottom insulator layer and said conductive track (**18**) are pierced by said electrically conductive contact pins (**14**) in the area of said soldering lands (**23**) so that an electrical contact connection is formed between the electrically conductive contact pins (**14**) and the conductive layer in a gap-free manner and said electrically conductive contact pins are soldered to said conductive layer in the area of said soldering lands.

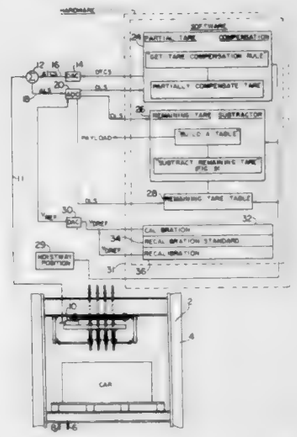
5,345,041
APPARATUS FOR DISPENSING AND WEIGHING GRANULAR MATERIAL
Scott J. Swanson, 725 John St., Pecatonica, Ill. 61063
Filed Apr. 26, 1993, Ser. No. 51,696
Int. Cl.[5] G01G *13/18, 19/00*
U.S. Cl. 177—105 7 Claims



1. Apparatus for dispensing and weighing granular material, said apparatus comprising a hopper for holding a quantity of said material, said hopper having a bottom portion with a rotatable auger and with a downwardly opening dispensing port whereby, upon rotation of said auger, material in said hopper is conveyed toward said dispensing port, means for selectively opening and closing said dispensing port, material conveyed toward said dispensing port by said auger being discharged downwardly through said port upon reaching said

port when said port is open, a container, means releasably supporting said container beneath said dispensing port whereby material discharged through said port falls into said container, a weighing scale supported by said hopper, and means connected between said scale and said supporting means and operable to cause said scale to indicate the weight of material in said container.

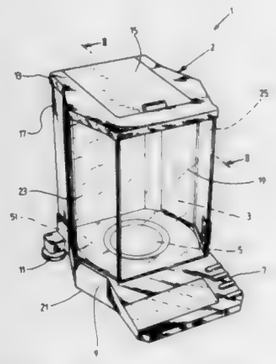
5,345,042
ELEVATOR HITCH LOAD WEIGHING TARE COMPENSATION
Eric K. Jamieson, Farmington, Conn., assignor to Otis Elevator Company, Farmington, Conn.
Filed May 29, 1992, Ser. No. 891,491
Int. Cl.[5] G01G *13/14;* B66B *3/00*
U.S. Cl. 177—165 9 Claims



1. A method of moving an elevator car, comprising the steps:
a) providing an analog load signal indicative of weight on a car hitch;
b) providing an analog tare compensation signal;
c) providing a compensated analog load signal in response to a difference between said analog tare compensation signal and said analog load signal;
d) converting said compensated analog load signal into a digital load signal;
e) providing a digital stored load signal in response to said digital load signal;
f) providing a payload signal in response to a difference between said digital stored load signal and said digital load signal; and
g) moving an elevator car in response to said payload signal.

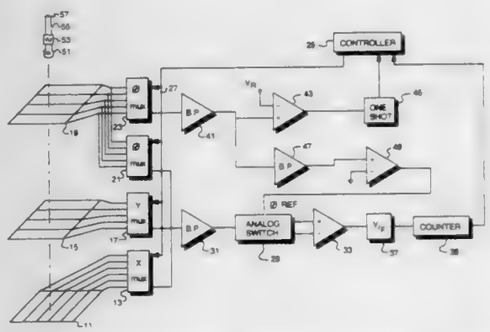
5,345,043
WEIGHING SCALE HAVING A REMOVABLE TOP WALL
Paul Luechinger, Uster, and Eduard Fringeli, Bubikon, both of Switzerland, assignors to Mettler-Toledo AG, Greifensee, Switzerland
Filed Feb. 23, 1993, Ser. No. 22,158
Claims priority, application Switzerland, May 19, 1992, 1595/92-6
Int. Cl.[5] G01G *21/28;* E05C *1/00;* A47F *3/00;* A47B *47/00*
U.S. Cl. 177—180 10 Claims

1. Weighing apparatus, comprising:
(a) a horizontal base (**9**);
(b) a plurality of generally rectangular vertical walls including a front wall (**19**), a rear wall (**17**), and a pair of side (**23**,**25**) walls cooperating with said base to define an open-topped weighing chamber (**3**) for receiving a movable weighing pan (**5**), said vertical walls each having an upper edge portion and a lower edge portion, the lower edge portion of said rear wall being rigidly secured to said base, and the lower edge portions of said front wall and said side walls being removably connected with said base;
(c) means including a horizontal top wall (**13**) removably mounted on the upper edge portions of said front wall, said side walls, and said rear wall to close the top of said chamber; and
(d) fastening means (**43**, **149**, **243**) for removably connecting said top wall with said rear wall and for simultaneously



maintaining said top wall in engagement with said front wall and said side walls, and for maintaining said front wall and said side walls in engagement with said base;
(e) at least one of said vertical side walls being connected with said base and with said top wall for horizontal movement between closed and open positions, respectively, relative to said rear wall and said front wall, thereby to afford lateral access to said chamber.

5,345,044
CORDLESS DIGITIZER USING ELECTROMAGNETIC LOCATING SIGNALS
Waldo L. Landmeier, Phoenix, Ariz., assignor to CalComp, Inc., Anaheim, Calif.
Filed Apr. 29, 1991, Ser. No. 875,841
Int. Cl.[5] G08C *21/00*
U.S. Cl. 178—19 21 Claims



1. A graphic digitizer for digitizing locations of a freely movable pointer relative to a base unit, said digitizer comprising:
coil means carried by said pointer;
a first grid of spaced conductors located in said base unit, said first grid comprising an x group of spaced conductors and a y group of spaced conductors said x group, said first grid defining surface on said base unit;
a plurality of phase conductors located in said base unit, said phase conductors being formed as overlapping, elongated

loops that collectively span all locations of the work surface defined by said first grid conductors;

means for inductively coupling a phase reference signal between said coil means and one of said phase conductors;

means for inductively coupling locating signals between said coil means and selected conductors of said first grid; and

detecting means responsive to said inductively coupled locating signals and said inductively coupled phase reference signals for determining the location of said pointer relative to the work surface defined by said first grid.

5,345,045

ACOUSTIC LENS

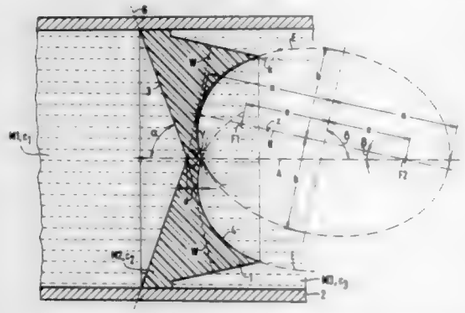
Arnim Rohwedder, Fuerth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 23, 1993, Ser. No. 125,211

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1992, 4236255

Int. Cl.[5] G01K *11/00*

U.S. Cl. 181—176 **14 Claims**



1. An acoustic lens for transforming a planar acoustic wave traveling in an acoustic propagation medium into a spherical segment-shaped acoustic wave traveling in an acoustic propagation medium, and vice versa, said acoustic lens comprising:

a biconcave lens body having a center axis and being rotationally symmetric relative to said center axis, said lens body consisting of lens material having a sound propagation speed therein which is greater than the sound propagation speed of the medium in which said planar acoustic wave travels and which is greater than the sound propagation speed of the medium in which said spherical segment-shaped acoustic wave travels;

said lens body having a lens surface adjacent said medium in which said planar acoustic wave travels produced by rotation of a section of a straight line intersecting said center axis of said lens body at an angle;

said lens body having a lens surface adjacent said medium in which said spherical segment-shaped wave travels produced by rotation of a section of an ellipse, said ellipse having major and minor half-axes intersecting said center axis of said lens body at respective angles; and

said angle between said straight line and said center axis of said lens body, and said angle between said major half-axis of said ellipse and said center axis of said lens body, being selected for causing a planar or spherical segment-shaped wave entering into said lens body to propagate in said lens body as a conical wave having an aperture angle equal to twice said angle at which said minor half-axis of said ellipse intersects said center axis of said lens body.

5,345,046

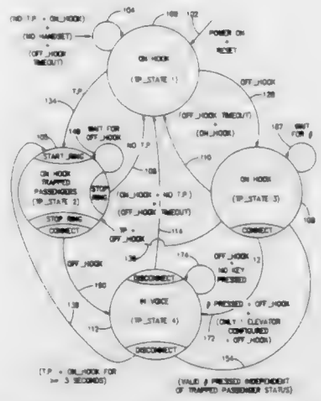
VOICE COMMUNICATION FOR ELEVATOR

Richard F. Rynaski, Middlefield, and Craig Bogli, Canton, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 902,780, Jun. 23, 1992, abandoned, which is a continuation of Ser. No. 734,403, Jul. 21, 1991, abandoned. This application May 3, 1993, Ser. No. 54,341

Int. Cl.[5] B66B *3/00;* **G08B** *21/00*

U.S. Cl. 187—105 **2 Claims**



1. Apparatus for ringing a telephone in a building having at least one elevator with a trapped passenger, comprising:

control means (**18**), responsive to a trapped passenger signal (**30, 32, 34**) indicative of a trapped passenger in the elevator car, for providing a communications initiating signal (**60**);

a ring voltage source (**64**), responsive to the initiating signal, for providing a ring voltage signal;

a switch (**62**), responsive to the initiating signal, for providing the ring voltage signal for annunciating the telephone;

a hook switch detector (**66**), responsive to a handset switch indicative of the telephone handset being picked up or the telephone being otherwise answered, for providing an off-hook signal; and

an analog switch (**54**), responsive to the off-hook signal, for providing a voice communication signal path between the telephone and the car.

5,345,047

JOINING SEGMENTS OF THE SECONDARY IN A LINEAR MOTOR DRIVEN ELEVATOR APPARATUS

Toshiaki Ishii; Masamoto Mizuno, and Kazuhiko Sugita, all of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,710

Claims priority, application Japan, Mar. 23, 1992, 4-064345

Int. Cl.[5] B66B *1/06;* **H02K** *41/00*

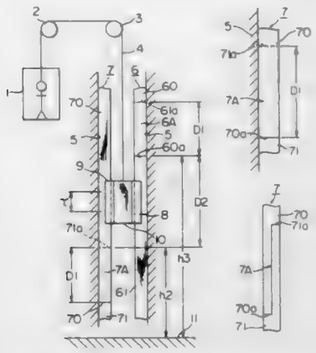
U.S. Cl. 187—112 **4 Claims**

1. A linear motor driven elevator apparatus comprising:

a secondary conductor disposed in an elevator passage, said secondary conductor having a plurality of secondary conductor members, each secondary conductor member including a notched portion disposed at a first end, the secondary conductor members being connected in series so that respective notched portions are abutted; and

a linear inductor motor having primary windings loaded on a balance weight and respectively disposed near said secondary conductors;

wherein the notched portion of each of said secondary conductor members is notched to about half of the thickness of each of the secondary conductor members and the notched portion of each of the secondary conductor members has a length (D_1) which is greater than the pole pitch



(τ) of said primary windings of said linear induction motor.

5,345,048

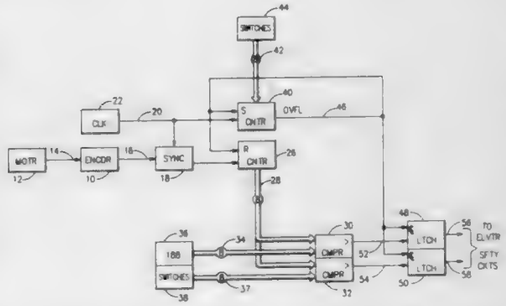
ELEVATOR SPEED CHECK USING CONSTANT RATIOMETRIC COMPARISON

James P. Towey, Jr., Bristol, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 919,315, Jul. 27, 1992, abandoned. This application Sep. 24, 1993, Ser. No. 126,446

Int. Cl.[5] B66B *5/06*

U.S. Cl. 187—116 **8 Claims**



1. A safety speed checking apparatus for use with elevators of the type having a motor which drives a sheave that is roped to the elevator car to provide upward and downward motion thereto, comprising:

an encoder which, when said apparatus is installed for checking the speed of an elevator, is connected to the motor thereof to provide a given number of pulses for each rotation of said motor;

a resettable counter disposed to count said pulses emanating from said encoder and providing a digital output signal indicative of the number of pulses counted since being reset;

a comparator for comparing said digital output signal with a digital reference signal indicative of a predetermined fixed number invariant for all elevator installations in which said apparatus may be used which represents a number of pulses to be received corresponding to the safe speed of the elevator for which the apparatus performs the safety speed check, said comparator providing an output signal in the event that said digital number exceeds said predetermined number; and

timing circuitry for providing a timing signal demarcating a predetermined period of time, the extent of said predetermined period of time being variably established for the particular elevator installation in which said apparatus is used so that said predetermined fixed invariant number of pulses emanating from said encoder within said predetermined period of time is indicative of exceeding said safe speed for said particular elevator.

5,345,049

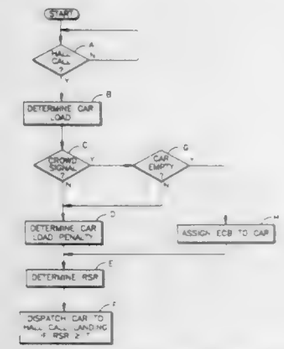
ELEVATOR SYSTEM HAVING IMPROVED CROWD SERVICE BASED ON EMPTY CAR ASSIGNMENT

Zuhair S. Bahjat, Farmington, and V. Sarma Pulleia, North Granby, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 799,506, Nov. 27, 1991, abandoned. This application Oct. 8, 1993, Ser. No. 134,517

Int. Cl.[5] B66B *1/18, 1/20*

U.S. Cl. 187—127 **4 Claims**



1. A method of controlling the dispatching of elevator cars, comprising the steps of:

receiving a hall call from a floor landing;

determining a current passenger load of an elevator car and generating a current passenger load signal;

determining if a crowd signal is generated for the floor landing;

if it is determined that a crowd signal is generated for the floor landing

determining, by comparing the current passenger load signal with a threshold, if the elevator car is EMPTY;

if it is determined that the elevator car is EMPTY, generating an EMPTY car signal;

assigning an EMPTY Car Bonus of fixed value to the EMPTY elevator car responsive to the EMPTY car signal;

determining a penalty value corresponding to the current passenger load signal;

employing the EMPTY Car Bonus of fixed value and the penalty value in determining a Relative System Response signal for the EMPTY elevator car, the Relative System Response signal being a function of a plurality of bonuses and penalties; and then dispatching the EMPTY elevator car to the floor landing responsive to the Relative System Response signal if the car is EMPTY and if the crowd signal is generated.

5,345,050

SWITCH ACTUATING ASSEMBLY

Matthew G. Branch, Peoria, and Chris E. Willey, Washington, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jun. 1, 1993, Ser. No. 69,330

Int. Cl.[5] H01H *3/12*

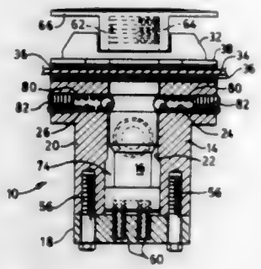
U.S. Cl. 200—341 **13 Claims**

1. An assembly for supporting and actuating a ball and roller type limit switch, comprising:

a housing having a body portion, said body portion defining a first axial throughbore and first and second radial bores

extending into said axial throughbore, and a neck portion extending outwardly of said body portion;

a plunger having first and second end portions, a middle portion, and an actuating portion, said middle portion defining a detent mechanism and said second end portion defining a first cavity, said plunger being adapted to fit within said throughbore;



an end cap defining a second cavity;

means for releasably securing said end cap to said housing; and

said body portion of said housing defining a third radial bore, said third radial bore being adapted to receive and support said limit switch.

5,345,051

PUSH-BUTTON SWITCH

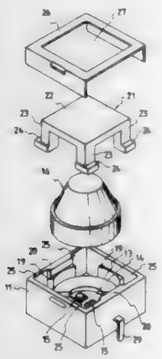
Teruhisa Miike, Iwaki, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1992, Ser. No. 918,735

Claims priority, application Japan, Mar. 12, 1991, 3-021260[U]

Int. Cl.[5] H01H *13/70*

U.S. Cl. 200—345 **5 Claims**



1. A push-button switch, comprising:

an insulating case having an inner bottom face and a plurality of walls extending from the inner bottom face, the plurality of walls defining an opening and a plurality of corner portions and a cover mounted over said opening, said cover having a peripheral flange defining an aperture;

a pair of fixed contacts provided on the inner bottom face;

a movable contact disposed in said insulating case for movement toward and away from said fixed contacts; and

a stem disposed on said insulating case for operating said movable contact, said movable contact being resiliently biased away from said fixed contact such that, when said stem is depressed, said movable contact is pressed into contact with said fixed contacts to put said push-button switch into an on-state;

said stem having a flat plate extending through said aperture and a plurality of legs, each leg having a protruded portion at an end thereof which defines an abutment surface, said flat plate of said stem being placed on said movable contact while said abutment surfaces of said protruded portions of said stem are abuttingly engaged with the peripheral flange of said cover to position said protruded portions within said insulating case;

said insulating case having formed at each of said corner portions thereof a guide hole extending from the inner bottom face to the case opening in which one said protruded portions of said stem are slidably received such that said protruded portions slide within said guide holes between the inner bottom face and the open end upon depression or returning of the stem.

5,345,052

TOOL MAKING

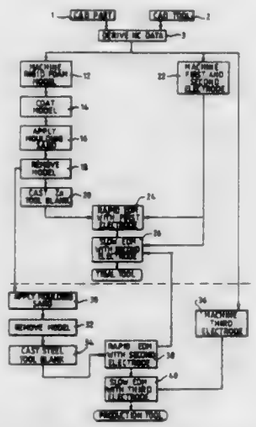
Kevin J. Puddephatt, Nr. Olney, England, assignor to Nissan European Technology Centre Limited, Tyne & Wear, United Kingdom

Filed Dec. 10, 1992, Ser. No. 988,681

Claims priority, application United Kingdom, Dec. 12, 1991, 9126457.2; Dec. 12, 1991, 9126458.0

Int. Cl.[5] B23H *1/00, 9/12*

U.S. Cl. 219—69.17 **30 Claims**



30. A method of making a forming tool having an operative surface of a predetermined shape, comprising the sequential steps of:

(a) subjecting a tool blank to comparatively rapid EDM using a first electrode, said first electrode having a shape that is complementary to said predetermined shape, said electrode being spaced from the tool blank by a first EDM gap, thereby producing a tool having a coarse surface whose shape approximates said predetermined shape; and

(b) subjecting said tool to comparatively slow EDM using a second electrode, said second electrode having a shape that is complementary to said predetermined shape, said second electrode being spaced from said tool by a second EDM gap, said second EDM gap being smaller than said first EDM gap, thereby producing from said coarse surface an operative surface whose shape is complementary to that of the second electrode.

5,345,053

METHOD AND APPARATUS FOR SUPPLYING POWER FOR ELECTRIC DISCHARGE MACHINING

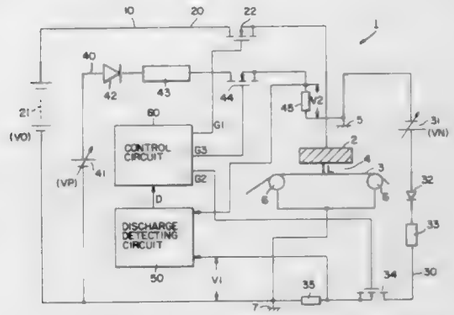
Yuji Kaneko, Sakai; Shinji Ito, and Toru Saito, both of Kaga, all of Japan, assignors to Sodick Co., Ltd., Yokohama, Japan

Filed Aug. 25, 1993, Ser. No. 111,491

Claims priority, application Japan, Aug. 25, 1992, 4-267776

Int. Cl.[5] B23H *1/02*

U.S. Cl. 219—69.18 **23 Claims**



9. A power supply for an electroerosion machine for machining a workpiece using a tool electrode, said tool electrode being spaced from said workpiece across a machining gap, said power supply comprising:

a discharge detector for detecting initiation of a discharge across said machine gap and for thereupon generating a detection signal;

a main power circuit, responsive to said detection signal, for repeatedly applying a main machining pulse of a first polarity across said cross said machining gap;

an auxiliary power circuit for applying an auxiliary voltage pulse of a second polarity opposite to said first polarity across said machining gap prior to initiation of said main machining pulse;

means for controlling said auxiliary voltage pulse whereby, for a pre-determined percentage of said main machining pulses, an auxiliary voltage pulse is applied across said machining gap prior to said main machining pulses, said pre-determined percentage being less than 100%.

5,345,054

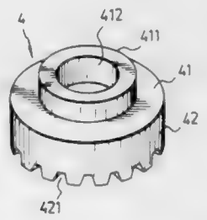
ARC SHIELD FOR USE IN PROJECTION WELDING

Chun-Tang Li, Kaohsiung Hsien, Taiwan, assignor to Chun Yu Works & Co., Ltd., Taiwan

Filed Apr. 23, 1993, Ser. No. 51,680

Int. Cl.[5] B23K *9/20*

U.S. Cl. 219—98 **2 Claims**



1. An arc shield for use in projection welding a lower end of a metal stud to an upper surface of a metal plate, said stud having a head and a stem connected securely to a central portion of a lower surface of said head, said arc shield comprising:

an annular horizontal top wall defining a hole therein, and

an annular vertical side wall having an annular top end connected securely to an outer peripheral portion of said top wall, and an annular bottom end including twelve trapezoidal notches, said notches being defined by an upper side of approximately 4.8 mm in length, a lower side of approximately 3.0 mm in length and having height of approximately 3.3 mm, said annular side wall defining a chamber therein,

said hole of said top wall having a size slightly greater than a diameter of said stem of said stud so as to allow for extension of said stem of said stud into said chamber through said hole of said top wall, whereby, when said projection welding is being performed, electric arc is enclosed within said arc shield, while surplus gas and molten metal produced in said chamber flow from said arc shield through said notches of said annular side wall.

5,345,055

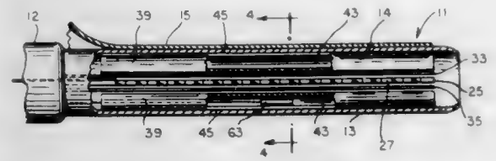
FAST HEATING CURLING IRON AND CONTROL CIRCUIT THEREFOR

Kit L. T. Leung, Northpoint, Hong Kong, assignor to Conair Corporation, Stamford, Conn.

Filed Jul. 14, 1993, Ser. No. 91,919

Int. Cl.[5] H05B *1/02, 3/00;* **A45D** *1/00*

U.S. Cl. 219—225 **10 Claims**



1. A rapidly heating curling iron including

a handle, a hollow barrel secured to said handle, said barrel having an inner surface and an inner diameter,

a heating element positioned within said barrel, said heating element being an electrical insulating board wound with electrical wire,

a pair of heat transmission members, one on each side of said heating element, electrical insulation between said heating element and said heat transmission members,

said heat transmission members being shaped and dimensioned such that they fit between said electrical insulation and said inner surface of said barrel and press against a substantial portion of said inner surface,

a temperature sensor positioned to sense the temperature of said barrel, and control means operatively associated with said temperature sensor to control said heating element.

5,345,056

PLASMA BASED SOLDERING BY INDIRECT HEATING

John K. Frei, Mesa, and Russell T. Fiorenzo, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 12, 1991, Ser. No. 805,746

Int. Cl.[5] B23K *9/00*

U.S. Cl. 219—121.59 **24 Claims**

1. A method of soldering by conduction of heat from a plasma, comprising the steps of:

depositing a plurality of solder bumps on a first surface;

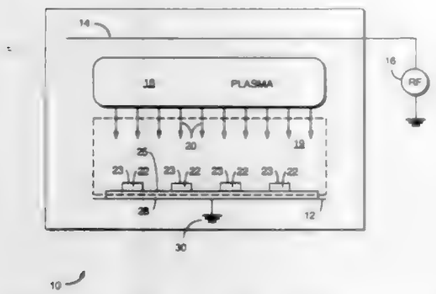
preparing a plurality of solder pad locations on a second surface;

putting the first and the second surfaces in contact with one another, such that each one of the plurality of solder bumps contacts a corresponding one of the plurality of solder pad locations on the second surface, at least one of the plurality of solder bumps and corresponding ones of the plurality of solder pad locations being shielded from direct contact with the plasma;

placing the first surface including solder bumps and the second surface including solder pad locations in a chamber;

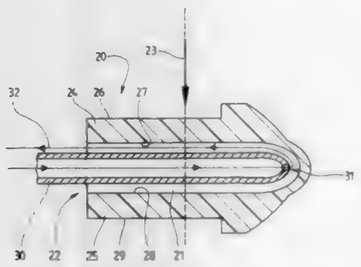
evacuating the chamber to a low pressure;

providing the plasma gas within the chamber;
exciting the plasma gas to provide a plasma;
heating the first and the second surfaces with the plasma;
heating the plurality of solder bumps and the plurality of solder pad locations by heat conduction from the first and the second surfaces; and



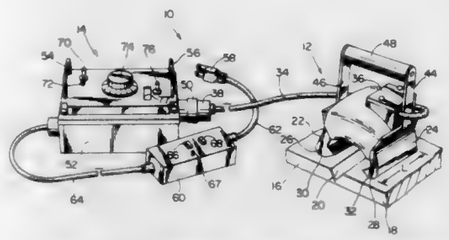
reflowing the plurality of solder bumps on the first surface onto the plurality of solder pad locations on the second surface to form a plurality of solder bonds between the first and the second surfaces.

5,345,057
METHOD OF CUTTING AN APERTURE IN A DEVICE BY MEANS OF A LASER BEAM
Fritz Muller, Lake Zurich, Ill., assignor to Lasag AG, Thun, Switzerland
Filed Mar. 25, 1993, Ser. No. 37,187
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.71 **7 Claims**



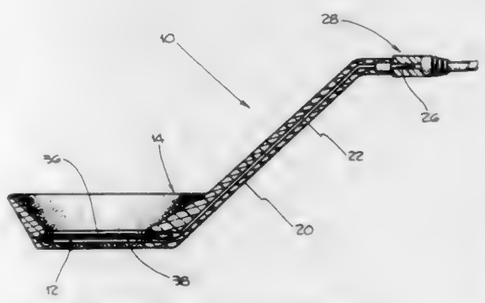
1. A method of cutting an aperture in a device by means of a laser beam, said device comprising a first surface, a bore extending partially through said device and defining a second surface opposed to said first surface, and a third surface separated from said second surface along the path of said laser beam, said bore having an open end and a closed end, and said method comprising the steps of:
inserting one end of an open-ended tube into the open end of said bore,
causing said laser beam to be incident upon said first surface so as to cut through from said first surface to said second surface, and
causing a fluid to flow along the interior of said tube and between the exterior to said tube and said second and third surfaces so as to prevent damage to said third surface when said laser beam has cut through from said first surface to said second surface.

5,345,058
MAGNETIC FIELD NEGATING SYSTEM FOR WELDMENTS
Robert B. Jones, Windsor; John C. Reinke, Jr., Smithfield; Clarence E. Snyder, Jr., and Harley D. Huebner, both of Newport News, all of Va., assignors to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.
Filed Aug. 5, 1992, Ser. No. 925,955
Int. Cl.[5] B23K *9/08*
U.S. Cl. 219—123 **20 Claims**



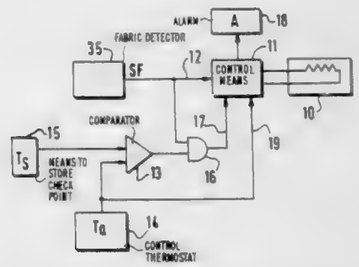
1. A system for temporarily, during welding operations, negating remnant magnetic fields that exist in the area of the weld joint formed between two workpieces to be welded together without demagnetizing said workpieces, comprising:
an electromagnet comprising a core and a coil wound on said core;
a control means electrically connected to said electromagnet for providing DC current to said coil to provide a temporary negating magnetic field during welding;
said electromagnet core including at least a first foot and a second foot that each form a pole piece of said electromagnet;
said first foot having at least a primary surface for coupling magnetic flux to a first one of said workpieces along a substantial surface area on a first side of said weld joint, and said second foot having at least a primary surface for coupling magnetic flux to a second one of said workpieces along a substantial surface area on a second side of said weld joint, and wherein said first foot primary surface and said second foot primary surface each extend substantially the length of said electromagnet, whereby said negating magnetic field is maximized in the area of said weld joint.

5,345,059
TEMPERATURE SELF-REGULATING, ELECTRICALLY-HEATED SPOON
Shih-Hsien Wen, No. 2 Alley 62, Lane 205 Sec. 6 Chunghwa Road, Hsinchu City, Taiwan
Filed Aug. 2, 1993, Ser. No. 101,542
Int. Cl.[5] H05B *1/02, 3/14, 1/00;* **A47J** *43/28*
U.S. Cl. 219—227 **16 Claims**



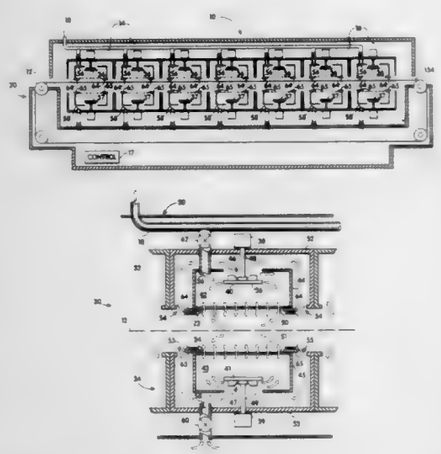
1. An electrically-heated spoon comprising:
a generally flat electrical heating device forming a flat bottom of a bowl of a spoon, said heating device comprising a positive temperature coefficient resistor assembly, said assembly including a positive temperature coefficient flat resistor plate, a pair of insulating plates between which said flat resistor plate is sandwiched, and heat conductive casing members encasing said insulating plates, said casing members having at least one casing member opening;
a sidewall mounted to a periphery of said heating device and forming a bowl sidewall of the bowl;
a handle attached to said sidewall and forming a spoon handle of the spoon, said handle having a remote handle end; and
conductive wiring electrically connected to said flat resistor plate, passing out said at least one casing member opening, through said handle and out said remote handle end for connection to an external power source.

5,345,060
IRON COMPRISING A TYPE-OF-FABRIC DETECTOR
Jean-Pierre Hazan, Sucy En Brie; Rémy Polaert, Villecresnes, and Jean-Louis Nagel, Limeil Brevannes, all of France, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 13, 1992, Ser. No. 912,923
Claims priority, application France, Jul. 19, 1991, 91 09131
Int. Cl.[5] D06F *75/26;* **G01N** *27/00*
U.S. Cl. 219—250 **23 Claims**



1. An iron comprising a heating element, heating-control means for the heating element and a control thermostat characterized in that the iron comprises:
a fabric detector for detecting a type of fabric to be ironed, said fabric selector being selected from the group consisting of electrostatic and optical fabric detectors, said fabric detector being adapted to supply a signal (SF) to distinguish a delicate fabric (SF=1) from a non-delicate fabric (SF=0),
means for storing a maximum temperature limit (T_s) corresponding to delicate fabrics, and
comparison means for comparing the maximum temperature limit (T_s) with a temperature (T_a) programmed by means of the thermostat,
when said signal (SF) indicates a non-delicate fabric (SF=0), the detector activating a control means to provide heating to the temperature (T_a), and,
when said signal (SF) indicates a delicate fabric (SF=1), the detector validating the comparison means to act upon the control means either so as to activate an alarm when the programmed temperature is at least equal to the maximum temperature limit ($T_a \geqq T_s$) and to inactivate the heating element or to allow heating only to a temperature not greater than the maximum temperature limit (T_s), or so as to enable heating to the programmed temperature (T_a) where the programmed temperature (T_s) is below the maximum temperature limit ($T_a < T_s$).

5,345,061
CONVECTION/INFRARED SOLDER REFLOW APPARATUS UTILIZING CONTROLLED GAS FLOW
Albert Chanasyk, Hampton Falls, N.H.; Walter J. Hall, Waltham, Mass.; J. Robert Maxwell, Londonderry, N.H.; Russell G. Shaw, Contoocook, N.H.; Roy J. Palhof, Somersworth, N.H., and Phillip D. Bourgelais, Newmarket, N.H., assignors to Vitronics Corporation, Newmarket, N.H.
Filed Sep. 15, 1992, Ser. No. 945,232
Int. Cl.[5] B23K *1/00*
U.S. Cl. 219—388 **16 Claims**



1. Apparatus for heating of a product load, said apparatus comprising:
a conveyor for transporting the product load in a first direction;
a plurality of zones disposed adjacent one another and aligned in sequence in said first direction along said conveyor, each of said zones comprising:
at least one cell disposed in spaced, confronting relation with said conveyor;
a gas circulation mechanism disposed in said cell for drawing gas into said cell on a low pressure side of said gas circulation mechanism and expelling gas from said cell on a high pressure side of said gas circulation mechanism;
a heater for heating gas expelled from said cell toward said conveyor;
a first port for introducing into said zone unheated gas from a source outside of said zone, said first port including apparatus for regulating the volume of gas passing through said first port; and
a second port for exhausting to a location externally of said zone heated gas from within said zone, said second port including apparatus for regulating the volume of gas passing through said second port.

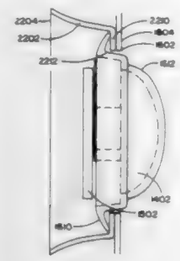
5,345,062
APPARATUS FOR SUPPORTING ASIAN WOKS ON MODERN KITCHEN RANGES
Inge Maudal, 604 Lassen La., Costa Mesa, Calif. 92626
Filed Oct. 26, 1992, Ser. No. 966,271
Int. Cl.[5] F23D *11/00*
U.S. Cl. 219—432 **1 Claim**

1. A support assembly providing for secure placement of a round-bottomed cooking vessel on an electric kitchen range, the assembly comprising:
a range top having a heater opening;
a support stand placed on the range top substantially over the heater opening, the stand having a base with a base center hole substantially equal to the heater opening, the

stand having a base flange extending horizontally outward from the base center hole to a base perimeter, the stand further having a substantially upright outer side substantially at the base perimeter and adapted to receive the round-bottomed cooking vessel;

a drip pan having a recessed well extending into the heater opening and a horizontal outer flange extending out over the range top, the recessed well forming a substantially vertical recessed wall inside the outer flange extending through both the base center hole and the heater opening; and

an electric heater assembly adapted to seat in the drip pan;



whereby, upon sequential placement of first the stand on the range top over the heater openings, next the drip pan inside the stand with the recessed wall extending through both the base center hole and the heater opening and with the outer flange resting on the base flange, and finally the electric heater assembly in the drip pan, the weight of the combined drip pan and electric heater assembly acting against the base flange will hold the stand down against the range top while the recessed wall penetrating both the base center hole and the heater opening will lock the stand to the range top in a horizontal direction.

5,345,063

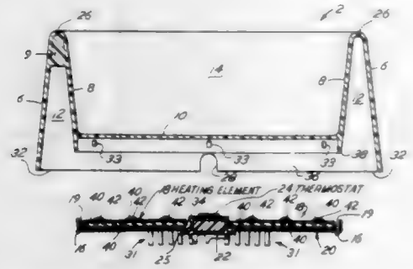
NESTABLE STACKABLE HEATED BOWL WITH REMOVABLE THERMOSTATICALLY CONTROLLED ELECTRIC HEATING ELEMENT

Thomas K. Reusche, Wayne; Donald W. Reusche, St. Charles; Donald B. Owen, Villa Park, and Frank A. Hassell, Geneva, all of Ill., assignors to Allied Precision Industries, Inc., Geneva, Ill.

Continuation-in-part of Ser. No. 565,469, Aug. 10, 1990, Pat. No. 5,140,134. This application Aug. 11, 1992, Ser. No. 929,885

Int. Cl.[5] H05B *1/02, 3/00;* **A01K** *5/01;* **A47J** *31/00*

U.S. Cl. 219—441 **11 Claims**



1. A nestable heatable bowl comprising an outer wall and a bottom wall connected to one another, the inner wall and bottom wall defining an open top cavity for holding material, the bottom wall being spaced upwardly from the plane of the bottom edge of the outer wall, said bottom edge of the outer wall defining an open bottom of the bowl, the inner wall and outer wall tapering toward a joinder defining an upper bowl edge and said inner and outer walls cooperating to define an open annular space communicating with said open bottom which is adapted to receive the upper bowl edge, inner wall and outer wall of a second like bowl in an interengaging stacked and nested relationship, a removable upwardly convex bottom base, a thermostatic control means centrally located on an upper side of the removable convex bottom base and in a temperature-sensing relationship with the bottom of the bowl for regulating the temperature of the bowl, a heating element on the upper side of the removable convex bottom base around the thermostatic control means and electrically connected to the thermostatic control means, and cooperating means on the removable convex bottom base and inner wall detachably securing the removable convex bottom base to the bowl whereby the heating element and thermostatic control means are in heat transfer relationship with the underside of the bottom wall of the open top cavity.

5,345,064

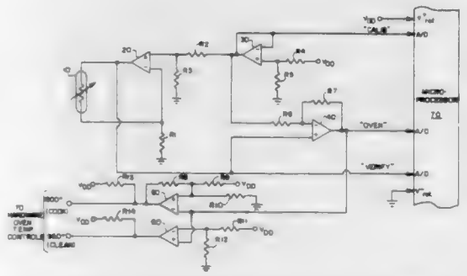
TEMPERATURE PROBE CONDITIONER CIRCUIT

Gary L. Hesse, Buffalo Grove, Ill., assignor to Appliance Control Technology, Inc., Addison, Ill.

Filed Sep. 8, 1992, Ser. No. 941,703

Int. Cl.[5] H05B *1/02*

U.S. Cl. 219—505 **8 Claims**



1. A temperature probe conditioner circuit connected between a temperature sensitive probe comprising a variable resistor operated to different resistance values in response to the presence different temperatures and a signal processor comprising a microprocessor connected to a source of reference voltage and including analog to digital inputs connected to receive a calibrate signal, to receive a verify signal and to receive an oven signal, said conditioner comprising:

a first operational amplifier connected to said source of reference voltage, and including output circuit connections to said signal processor, to a second operational amplifier and to a third operational amplifier;

said first operational amplifier operated to generate said calibrate signal;

said second operational amplifier including circuit output connections to said probe, to said signal processor and to said third operational amplifier, said second operational amplifier operated in response to said calibrate signal to generate said verify signal;

said third operational amplifier including an output circuit connection to said signal processor, operated in response to said calibrate signal and said verify signal to generate said oven signal.

5,345,065

INDUCTOR WITH VARIABLE ACTIVE LENGTH

Friedhelm Reinke; Jürgen Leisner, and Waldemar Gezarzick, all of Remscheid, Fed. Rep. of Germany, assignors to AEG-Elotherm GmbH, Remschied-Hasten, Fed. Rep. of Germany

Filed Aug. 6, 1993, Ser. No. 103,891

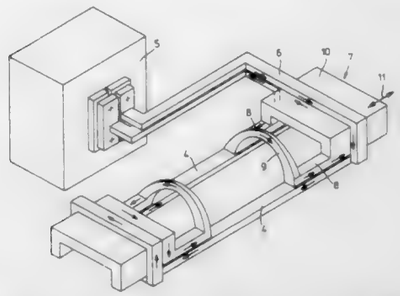
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1992, 4229117; Sep. 16, 1992, 4230897

Int. Cl.[5] H05B *6/40*

U.S. Cl. 219—672 **2 Claims**

1. An inductor having two parallel main heating conductors

which are interconnected at one of their ends via a bridge-shaped branch and are connected at their other end to a transformer, the connections also forming a bridge-shaped conductor branch, characterized in that disposed at least at one end of the parallel main heating conductors (**4**) is a separate auxiliary inductor (**7**) which is mounted displaceably in relation thereto and has two auxiliary conductor portions (**8**) parallel with the



main heating conductors (**4**) and inductively coupled only thereto which are collectively interconnected at one of their axial ends via a bridge-shaped conductor branch (**9**) determining the end of the heating zone and at the other end via a tunnel-shaped return conductor (**10**) which over the whole displacement length is disposed beneath the bridge-shaped branch (**6**) of the main heating conductors (**4**) and is inductively coupled thereto.

5,345,066

DEVICE FOR HEATING SUBSTANCES UNDER THE DEVELOPMENT OF HIGH PRESSURES IN A MICROWAVE FIELD

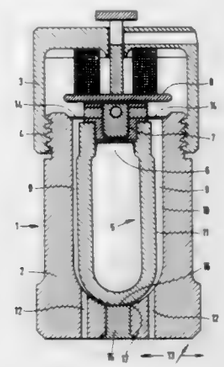
Günter Knapp, Sorgerweg 16, A-8047 Graz, and Franz Panholzer, Korosistr. 147, A-8010 Graz, both of Austria

Filed Mar. 17, 1992, Ser. No. 852,528

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1991, 4108766

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—686 **6 Claims**



1. A device for heating substances under the development of high pressures in a microwave field, comprising

a pressure-resistant cylindrically shaped outer container comprising a pot-like vessel and having an opening, an outer cap detachably connected to said pot-like vessel via an outer/inner engaging connection so as to open or close said pot-like vessel,

a cylindrically shaped inner container disposed in an inner portion of said pot-like vessel, said inner container comprising a front-face opening, a cover for said front-face opening, and sealing means for closing the inner container tightly,

a pressing plunger structured and arranged to act upon the outside of the cover to seal said inner container, said pressing plunger being elastically braced against said outer container, wherein those parts of the device lying in the microwave field comprise a material transparent to microwaves,

an interspace located between an inner jacket surface of said outer container and an outer jacket surface of said inner container, said interspace containing a cooling media,

said outer container further comprising connecting channels running from an outer surface of said outer container to said interspace, said connecting channels adapted to allow said cooling media to flow between said interspace and a space outside said device.

5,345,067

COOKING MENU SELECTING DEVICE OF A HEATING APPARATUS

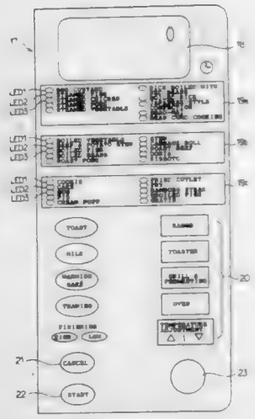
Nobuaki Ohta, Anjo, and Takamichi Sujaku, Nagoya, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 12, 1993, Ser. No. 17,503

Claims priority, application Japan, Feb. 24, 1992, 4-036058; Apr. 28, 1992, 4-109698

Int. Cl.[5] H05B *6/68*

U.S. Cl. 219—720 **8 Claims**



1. A heating apparatus comprising:

a) menu display means for displaying a plurality of cooking menus divided into a plurality of groups, each group including a plurality of cooking menus;

b) a menu selecting dial connected to the menu display means so that when rotatively moved in one of two directions, one of the cooking menu groups displayed on the menu display means is selected and so that when rotatively moved in the other direction, one cooking menu is selected from the selected cooking menu group;

c) heating means for heating food to be cooked; and

d) heating control means connected to the heating means and the menu selecting dial for controlling the heating means so that a heating operation is automatically executed in accordance with the cooking menu selected by rotative movement of the menu selecting dial.

5,345,068

COOKING OVEN WITH ROTATABLE AND HORIZONTALLY MOVABLE TURNTABLE

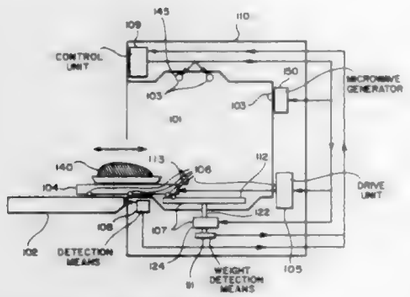
Hideaki Hatano, Kashiwa; Hiroichiro Watanabe, Ushiku; Akio Hotta, Kashiwa, and Motohiro Kuroki, Isukuba, all of Japan, assignors to Hitachi Hometec, Ltd., Chiba, Japan

Filed Apr. 20, 1993, Ser. No. 49,438

Claims priority, application Japan, Apr. 20, 1992, 4-99498; Apr. 20, 1992, 4-99499; Mar. 9, 1993, 5-47033

Int. Cl.[5] H05B *6/68*

U.S. Cl. 219—722 9 Claims



1. A cooking oven comprising:

a heating chamber having an opening through which an object to be cooked is taken in and out;

heating energy generating means operatively associated with said heating chamber for heating said object in said heating chamber;

a door fixed to a side of said opening of said heating chamber so as to be freely opened and shut;

a door open/close detector operatively associated with said door for detecting an open/close state of said door;

a rotary table which is rotatable and disposed on a bottom portion of said heating chamber;

a driver means connected to said rotary table for rotationally driving said rotary table;

a turntable attached on and rotatable with said rotary table and movable in a predetermined horizontal direction;

means, operatively associated with said driver means, for signalling when said rotary table is at a predetermined rotational position;

means operatively associated with said turntable for moving said turntable into and out of said heating chamber;

means operatively associated with said moving means for producing an instruction signal for stating the operation of said moving means; and

a controller for controlling said driver means to stop said rotary table at said predetermined rotational position in response to a signal from said signalling means, and for controlling said moving means to move said turntable out of said heating chamber under the condition where said door open/close detector detects that said door is opened, according to said instruction signal from said producing means.

5,345,069

MICROWAVABLE FROZEN IMPACT-RESISTANT HERMETICALLY SEALED FOOD PACKAGE

Paul E. Grindrod, Madison, Wis., assignor to Oscar Mayer Foods Corporation, Madison, Wis.

Filed Sep. 17, 1991, Ser. No. 761,153

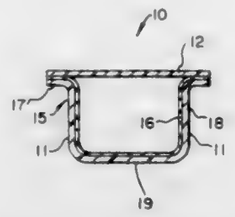
Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—730 30 Claims

1. A freezable and microwavable easy-to-open food package capable of containing a rapidly perishable food product that is visually assessable to the consumer prior to opening said package comprising:

a food product compartment capable of withstanding impact at low temperatures and capable of resisting deformation when microwaved, and which includes a peelable oxygen barrier film having an oxygen permeability of no greater than about 1 cc of oxygen per 100 square inches per atmosphere at room temperature, and

a flexible lidding film hermetically and peelably sealed to said food product compartment, said lidding film capable



of withstanding normal impact at low temperatures, capable of substantially preventing the transmission of oxygen and moisture, and capable of being heated while sealed to said food product compartment in a microwave oven without deformation.

5,345,070

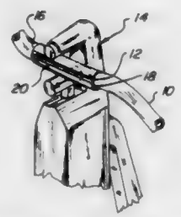
RADIO FREQUENCY TUBING SEALER

Dennis J. Hlavinka, Golden; Frank Corbin, III, Littleton, and Robert L. White, Kittridge, all of Colo., assignors to COBE Laboratories, Inc., Lakewood, Colo.

Continuation-in-part of Ser. No. 952,951, Sep. 25, 1992, abandoned. This application Feb. 23, 1993, Ser. No. 21,507

Int. Cl.[5] H05B *6/62*

U.S. Cl. 219—769 34 Claims



1. In a radio frequency tubing sealer adapted to dividing and sealing of a fluid conveying tube by radio frequency dielectric heating and having two jaws for contacting and compressing the fluid conveying tube while applying the radio frequency dielectric heating to the tube during a sealing operation, an improvement comprising:

at least one selectively engageable insulator sleeve adapted to being engaged on a jaw of the tubing sealer in a relationship with the fluid conveying tube to be sealed intermediate the jaw and the fluid conveying tube and having a wall with a wall thickness which insulates the fluid conveying tube from the jaw to cause the tubing sealer to divide and seal the fluid conveying tube and create a thin, easily tearable, web when the selectively engageable insulator is engaged and to divide and seal the fluid conveying tube and create a thick web when the selectively engageable insulator sleeve is disengaged.

5,345,071

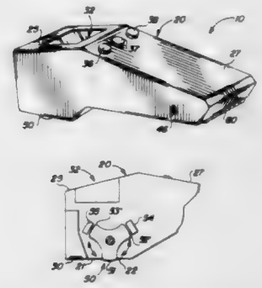
SHOPPER'S PURCHASE MONITORING DEVICE

Charles Dumont, P.O. Box 1409, Old Parham Road., St. John's Antigua

Continuation-in-part of Ser. No. 903,716, Jun. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 873,770, Apr. 27, 1992, abandoned. This application Mar. 25, 1993, Ser. No. 36,970

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—383 18 Claims



1. To be used by a shopper in a self-service store having items including bar codes thereon to identify the item and a price thereof, a purchase monitoring device comprising:

a portable handset,

said handset including an exterior casing having a distal front face, a distal rear face, a proximal front face, and a proximal rear face,

data storage means within said handset structured and disposed to store pricing and identification data corresponding individual bar codes,

a bar code scanner disposed in said distal front face of said casing so as to scan the bar code on a selected item upon passage of said distal front face of said handset thereover,

purchase designation means in said distal front face of said casing structured and disposed to selectively designate the select item over which said distal front face of said handset is passed as a purchase item sought to be purchased,

non-purchase designation means in said distal front face of said casing structured and disposed to selectively designate one of said purchase items, upon passage of said distal front face of said handset thereover, as a non-purchase item which is not to be purchased,

display means disposed in said distal rear face of said casing and being structured and disposed to display pricing and identification information thereon,

purchase memory means structured and disposed to store the pricing and identification data of each of said purchase items selected by the shopper,

a plurality of buttons in said proximal rear face of said casing of said handset,

said buttons including a price check button structured and disposed to be pushed during passage of said distal front face of said handset over the bar code of the selected item such that the pricing and identification data corresponding the selected item will be retrieved from said data storage means and briefly displayed on said display means, thereby enabling the shopper to verify the price and identity of the selected item,

said buttons further including a purchase button, said purchase button being structured and disposed to be pushed during passage of said distal front face of said handset over the bar code of the selected item such that said purchase designation means will designate the select item as one of said purchase items and such that the pricing and identification data corresponding the selected item will be retrieved from said data storage means for brief display on said display means and entry into said purchase memory means,

said buttons also including a return button, said return button being structured and disposed to be pushed during passage of said distal front face of said handset over the bar code a select one of said purchase items such that said non-purchase designation means will designate said purchase items as one of said non-purchase items and such that the pricing and identification data corresponding said purchase item will be retrieved from said data storage means for matched removal of the pricing and identification data from said purchase memory means,

said purchase memory means being further structured and disposed to add the price of all of said purchase items entered therein so as to provide a total purchase amount to be displayed on said display means,

said handset further including a numeric key pad disposed in said front proximal face of said casing,

said numeric key pad being structured and disposed to enable entry by the shopper of a budget amount corresponding a maximum amount of money to be spent by the shopper at the store, said budget amount being stored in said purchase memory means and displayed on said display means,

a power source in said handset,

a two-way data transmission connector in said proximal front face of said casing, said connector being structured and disposed to enable updated pricing and identification data to be transmitted from a central store computer to said data storage means within said handset, and being structured and disposed to enable pricing and identification data corresponding said purchase items to be transmitted from said purchase memory means to a data reception register at a checkout station of the store where an itemized receipt of said purchase items is printed,

a purchase confirmation station at said checkout station of said store, said purchase confirmation station being structured and disposed to enable an employee of the store to quickly verify that all items represented by the shopper as purchase items are in fact purchase items,

an opening in said proximal front face of said casing adjacent said bar code scanner, and

said handset further including a three headed roller, said roller including a first face, a second face, and a third face, only one of said faces being disposed at one time through said opening in said proximal front face of said casing adjacent said bar code scanner, said exposed one of said faces being disposed for rolling passage over the bar code of the selected item upon passage of said proximal front face of said casing, and accordingly, said bar code scanner, over the bar code of the selected item.

5,345,072

FOCUS DETECTION DEVICE FOR READING INFORMATION FROM AN OPTICAL RECORDING MEDIUM

Hideki Hayashi, Katano; Shinichi Tanaka, Kyoto; Sadao Mizuno, Ibaraki; Noboru Ito, Hirakata, and Yoshiaki Komma, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 23, 1992, Ser. No. 997,293

Claims priority, application Japan, Dec. 24, 1991, 3-340629; Aug. 24, 1992, 4-223776

Int. Cl.[5] G01J *1/20*; G11B *7/00*

U.S. Cl. 250—201.5 12 Claims

1. A focus detection device for reading and writing an information on and from an optical recording medium having a recording track formed thereon, said device comprising:

a first light emission means for emitting a first light beams in a first direction toward said optical disk;

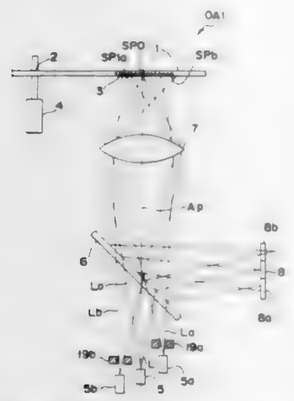
a converging means provided between said optical recording medium and said first emission means for converging said first beam to make a first spot focused on said recording track;

a second light emission means provided on a first side of said first light emission means for emitting a second light beam such that said emitted second light beam is focused by said

converging means beyond said optical recording medium to make a second spot having a first predetermined diameter around said recording track;

a first light restriction means provided in a path of said second emitted light beam adjacent said second light emission means for restricting the amount of said second emitted light beam passing there through;

a third light emission means provided on a second side of said first light emission means for emitting a third light beam such that said emitted third light beam is focused by said converging means above said optical recording medium to make a third spot having a second predetermined diameter around said recording track, said first and second sides being opposite to each other, said second predetermined diameter being vertically same as said first predetermined diameter when said first spot being in focus on said recording track, said second and third spots being located on opposite sides of said first spot;



a second light restriction means provided in a path of said third emitted light beam adjacent said third light emission means for restricting the amount of said second emitted light beam passing there through;

a beam guide means for guiding said first, second and third light beams reflected from said optical recording medium in a second direction;

a first photodetection means inserted in a path of said guided first light beam for receiving said guided first light beam to produce an information signal representing information recorded on said recording track;

a second photodetection means inserted in a path of said guided second light beam for receiving said guided second light beam and producing a first focus signal; and

a third photodetection means inserted in a path of said guided third light beam for receiving said guided third light beam and producing a second focus signal.

5,345,073

VERY HIGH SPEED OPTICAL RECEIVER WITH A CASCADABLE DIFFERENTIAL ACTION FEEDBACK DRIVER

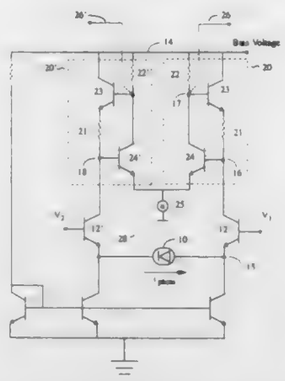
Gee-Kung Chang, Holmdel, N.J., and Ting P. Liu, Albany, Calif., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Apr. 12, 1993, Ser. No. 45,961
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 A **11 Claims**

1. A high speed optical receiver circuit including a differential amplifier circuit, said differential amplifier circuit having a structure comprising a first and second current path connected between two DC biasing sources, each of said current paths including an input transistor, a load resistor, and a second transistor connected in series, each of said input and second transistors having an emitter, a base, and a collector, said circuit comprising:

a photodiode connected between said emitters of said input transistor with the bases of said input transistors biased at different levels,

a pair of shunt-shunt feedback gain circuits each comprising a second resistor and a third transistor connected in series and each associated with one of said current paths, each of said third transistors having an emitter, a base, and a



collector, the base of each of said second transistors being connected to said second resistor and the collector of said third transistor of the associated shunt-shunt feedback gain stage, and the base of each third transistor being connected to said load resistor and the collector of said input transistor of the associated one of said current paths; and

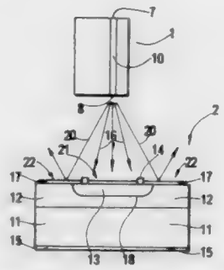
an output node connected to said base of at least one of said second transistors.

5,345,074

SEMICONDUCTOR LIGHT SOURCE

Ichiro Tonai, and Yoshiki Kuhara, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 787,954, Nov. 5, 1991, Pat. No. 5,214,276. This application Mar. 22, 1993, Ser. No. 35,215
Claims priority, application Japan, Nov. 13, 1990, 2-308094
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214.1 **18 Claims**



1. A semiconductor light source comprising:

a laser diode for emitting light beams from a front end and from a rear end,

a photodiode for monitoring light beams emitted from the rear end of the laser diode,

a header for supporting the laser diode and the photodiode, and

leads fitted to the header for supplying driving currents to the laser diode and for extracting photocurrents from the photodiode,

wherein the photodiode has a substrate with two surfaces,

epitaxial layers grown on a surface of the substrate, a pn-junction produced at a center of the epitaxial layers, an electrode formed on the epitaxial layers above the pn-junction, another electrode deposited on the other surface of the substrate, a light receiving region defined by the pn-junction, and a peripheral non-receiving region outside the pn-junction,

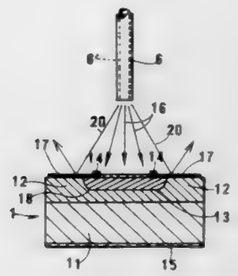
wherein the photodiode has a dielectric layer on the non-receiving region for reflecting or absorbing light beams irradiating thereon.

5,345,075

SEMICONDUCTOR PHOTODETECTOR WITH DIELECTRIC SHIELDING

Ichiro Tonai, and Yoshiki Kuhara, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 787,954, Nov. 5, 1991, Pat. No. 5,214,276. This application Mar. 9, 1993, Ser. No. 28,123
Claims priority, application Japan, Nov. 13, 1990, 2-308094
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.24 **9 Claims**



1. A semiconductor photodetector comprising:

a photodiode chip having a substrate, epitaxial semiconductor layers grown on the substrate, a pn-junction formed in a central part of the epitaxial semiconductor layers, an annular electrode formed on the pn-junction and another electrode formed on the substrate for detecting light signals transmitted in an optical fiber,

a header on which the photodiode chip is mounted,

a cylindrical receptacle welded to the header,

leads piercing the header and being connected to the electrodes of the photodiode chip for sending currents, and

a ferrule holding an end of an optical fiber for transmitting light signals, the ferrule being inserted and fixed in the receptacle,

wherein light beams emitted from the optical fiber directly reach the photodiode chip without passing through a lens and a dielectric layer is formed outside the annular electrode on the photodiode chip for preventing light beams from reaching the epitaxial semiconductor layers by reflecting or absorbing the light beams.

5,345,076

OPTICALLY TRIMMED SENSOR FOR REDUCING INFLUENCE OF DIFFERENTIAL NODE LOSSES

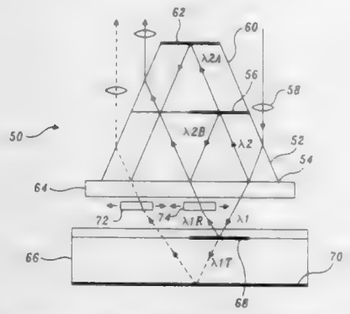
Mahesh C. Reddy, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 6, 1991, Ser. No. 788,521
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—231.13 **27 Claims**

1. A sensor for transmitting an optical beam as part of the production of an output indicative of a parameter said sensor is exposed to, said sensor comprising:

transmission means for defining at least a first and a second optical transmission path for the optical beam within said sensor, said first and second optical transmission paths exposing the optical beam to differential losses that may influence the output of said sensor; and

optical filter means, positionable in any of the first and the second optical transmission paths defined by said transmission means, for altering the optical characteristics of the



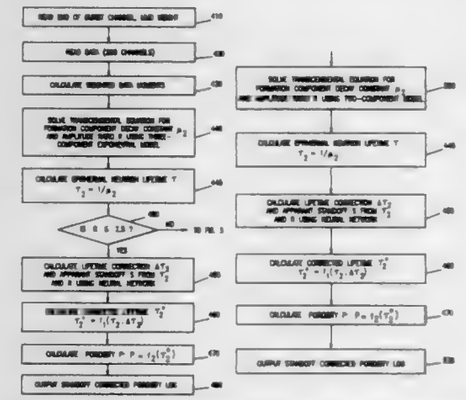
optical transmission path in which the optical filter means is positioned to reduce the influence that the differential losses might have on the output of said sensor.

5,345,077

METHOD AND APPARATUS FOR PRODUCING A POROSITY LOG OF A SUBSURFACE FORMATION CORRECTED FOR DETECTOR STANDOFF

L. Scott Allen, Dallas; Frank P. Leland, Arlington; W. D. Lyle, Jr., Grapevine, and David C. Stromswold, Addison, all of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 24, 1991, Ser. No. 734,835
The portion of the term of this patent subsequent to Apr. 5, 2011, has been disclaimed.
Int. Cl.[5] G01V *5/10*
U.S. Cl. 250—264 **18 Claims**



1. Apparatus for converting die-away signals representing the die-away of nuclear radiation in a subsurface formation surrounding a borehole into a log representing porosity versus depth within said formation corrected for the effect of detector standoff from the borehole wall, comprising:

a) a borehole logging tool,

b) means for traversing said logging tool along said borehole,

c) a pulsed source of fast neutrons within said logging tool for irradiating the formation surrounding a borehole with fast neutrons,

d) at least one directionally sensitive radiation detector assembly having a neutron detector for measuring the die-away of secondary radiation produced by the fast neutrons which return to the borehole from the irradiated formation,

e) means for positioning said radiation detector assembly so

that said radiation detector assembly contacts the surface of the borehole wall and is oriented to position the neutron detector to maximize directional sensitivity of the neutron detector to the die-away of secondary radiation from the formation at the point of contact of the radiation detector assembly with the borehole wall and to minimize directional sensitivity to the die-away of secondary radiation from the borehole fluid,

f) means for producing intensity signals representative of the die-away of secondary radiation measured by said detector as said logging tool traverses said borehole,

g) means for producing an initial formation decay constant from at least formation and background components of said intensity signals,

h) means for producing a ratio of the borehole amplitude to formation amplitude components of said intensity signals,

i) means for determining an epithermal neutron lifetime from said initial formation decay constant,

j) a trained neural network to determine an epithermal neutron lifetime correction and apparent standoff from said epithermal neutron lifetime and said amplitude ratio,

k) means for producing a standoff corrected epithermal neutron lifetime in accordance with a function of said epithermal neutron lifetime and said epithermal neutron lifetime correction to correct for any standoff from the borehole wall encountered by said detector as said logging tool traverses said borehole, and

l) means for generating a log of porosity versus depth within said formation corrected for detector standoff from the borehole wall as a function of said standoff corrected epithermal neutron lifetime derived from measurements in borehole models at known porosities and conditions of detector standoff from the borehole wall.

5,345,078

MASS SPECTROMETRY METHOD USING NOTCH FILTER

Paul E. Kelley, San Jose, Calif., assignor to Teledyne MEC, Mountain View, Calif.

Continuation of Ser. No. 920,953, Jul. 27, 1993, abandoned, which is a continuation of Ser. No. 662,217, Feb. 28, 1991, Pat. No. 5,134,286. This application Jul. 12, 1993, Ser. No. 90,474

Int. Cl.[5] H01J *49/42*

U.S. Cl. 250—282 **1 Claim**



1. A mass spectrometry method, including the steps of:

(a) establishing a three-dimensional trapping field capable of storing parent ions and daughter ions having mass-to-charge ratio within a selected range within a three-dimensional trap volume bounded by a set of electrodes;

(b) applying a filtered noise signal to at least one of the electrodes to resonate out of the trap volume unwanted ions having mass-to-charge ratio within a second selected range.

5,345,079

APPARATUS AND METHOD FOR LIQUID SAMPLE INTRODUCTION

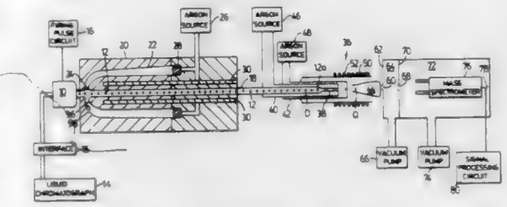
John B. French, Oakville, and Bernard Etkin, North York, both of Canada, assignors to MDS Health Group Limited, Etobicoke, Canada

Filed Sep. 17, 1992, Ser. No. 946,118

Claims priority, application Canada, Mar. 10, 1992, 2062629

Int. Cl.[5] B01D *59/44;* **H01J** *49/00*

U.S. Cl. 250—288 **58 Claims**



53. Apparatus for analyzing solids dissolved in a liquid solution, comprising:

(a) tube means,

(b) means for introducing a stream of carrier gas into said tube means for said carrier gas to fill said tube means and to flow laminarly in said tube means, said stream having a central portion and an outer portion both flowing in the same direction at substantially the same speed as a single stream,

(c) droplet means for producing droplets from said liquid solution,

(d) means coupling said droplet means to said tube means for introducing said droplets into said central portion of said stream for said droplets to be conveyed in said central portion,

(e) means for heating said droplets and said carrier gas in said tube means,

(f) said tube means being sufficiently long for substantially all of the water in said droplets to evaporate into said carrier gas and to disperse therein, leaving substantially dried particles of said solids,

(g) torch means connected to said tube means for receiving said inner and outer portions of said carrier gas stream and said dried particles, and means for producing a plasma in said torch means to vaporize said particles for analysis,

(h) said tube means being of inner diameter substantially larger than said central portion, for allowing water vapor removed from said particles to disperse away from said particles into said outer portion of said stream, to reduce the concentration of water vapor in the immediate vicinity of said particles.

5,345,080

METHOD OF OBSERVING ELECTRON MICROSCOPIC IMAGES AND AN APPARATUS FOR CARRYING OUT OF THE SAME

Yusuke Yajima, Kokubunji; Masakazu Ichikawa, Tokyo, and Hiroyuki Shinada, Chofu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 13, 1992, Ser. No. 960,503

Claims priority, application Japan, Oct. 15, 1991, 3-266075

Int. Cl.[5] H01J *37/295*

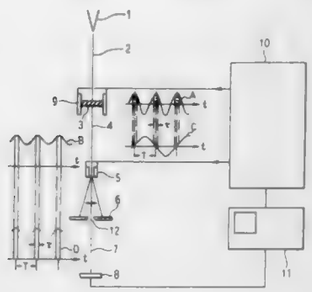
U.S. Cl. 250—311 **34 Claims**

1. In an electron microscopic image observing method, wherein an electron beam is emitted so that the electron beam will pass through a specimen or through a region surrounding the specimen, and thereafter detected to form an electron microscopic image of the specimen,

the improvement comprising the steps of:

deflecting the electron beam after having transmitted through the specimen so that the deflection of the electron beam varies with time; and

selectively allowing the electron beam having transmitted through the specimen to pass intermittently through an aperture only when the deflection of the electron beam



transmitted through the specimen is within a predetermined range of deflection;

wherein the electron beam is detected to form a time-resolved electron microscopic image after having transmitted through the specimen and passed intermittently through the aperture.

5,345,081

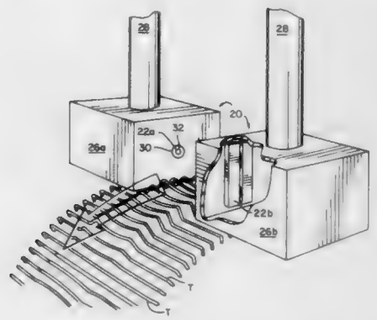
PIT DETECTOR AND METHOD

John E. Rogers, Raleigh, N.C., assignor to Penetect, Inc., Raleigh, N.C.

Filed Sep. 10, 1992, Ser. No. 942,953

Int. Cl.[5] G01N *33/02, 21/35*

U.S. Cl. 250—338.1 **15 Claims**



1. An apparatus for detecting the presence of a pit within a stone fruit passing through an inspection zone and comprising:

a) a point source light emitting means positioned on one side of the inspection zone and adapted to transmit a single light beam from one side of the inspection zone across the inspection zone to the opposite side of the inspection zone;

b) means for generating a signal that is proportional to the intensity of the light transmitted through the fruit as the fruit passes through the inspection zone positioned on the opposite side of the inspection zone; and

c) means for collimating said light beam positioned on the opposite side of said inspection zone, proximate said means for generating a signal;

whereby as the fruit passes through the inspection zone and is illuminated by the light source and the intensity of the light transmitted through the fruit is received by the means for generating a signal, a two dimensional analyzable bit map representative of the cross-sectional density is produced.

5,345,082

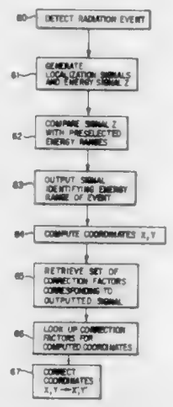
SCINTILLATION CAMERA UTILIZING ENERGY DEPENDENT LINEARITY CORRECTION

John C. Engdahl, Columbia, Md., and Michel Pierfitte, Buc, France, assignors to Sopha Medical Systems, Inc., Columbia, Md.

Filed Mar. 22, 1993, Ser. No. 35,088

Int. Cl.[5] G01T *1/164*

U.S. Cl. 250—363.07 **6 Claims**



1. A method for correcting spatial coordinates of detected radiation events computed by a scintillation camera, comprising the steps of:

determining the energy range of a detected radiation event;

selecting a set of predetermined spatial coordinate correction factors as a function of the determined energy range of said detected event;

retrieving correction factors from the selected set of predetermined spatial coordinate correction factors as a function of said computed spatial coordinates; and

correcting said computed spatial coordinates with the retrieved correction factors.

5,345,083

X-RAY DETECTOR COMPRISING AN IMPROVED ENTRANCE WINDOW

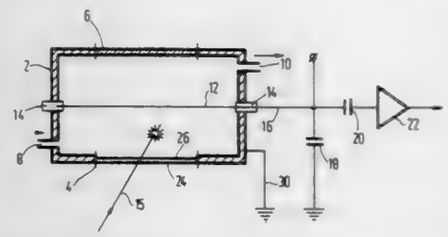
Johannes J. De Koning, Almelo, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 22, 1993, Ser. No. 20,500

Claims priority, application European Pat. Off., Feb. 21, 1992, 92200505.3

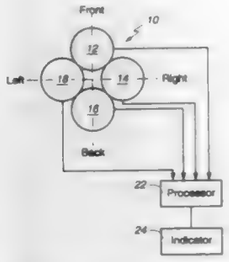
Int. Cl.[5] G01T *1/185*

U.S. Cl. 250—379 **15 Claims**



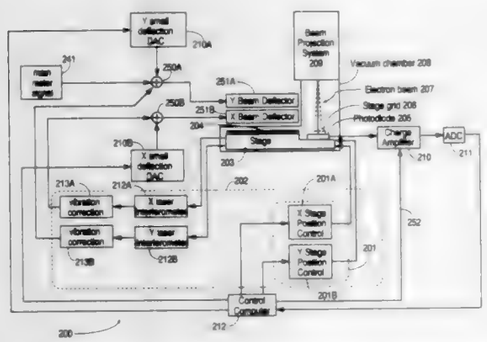
1. An X-ray detector for analysis of elements having an atomic number lower than 6, comprising a gas-filled ionization chamber which is closed by a radiation entrance window having an electrically conductive material deposited on an inner side of the window in the form of a layer, which material is selected from the group consisting of Ir(77), Pt(78), and Au(79), or a mixture thereof.

5,345,084
DIRECTIONAL FAST-NEUTRON DETECTOR
Roger C. Byrd, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Mar. 29, 1993, Ser. No. 38,320
Int. Cl.[5] G01T 3/06
U.S. Cl. 250—390.12 4 Claims



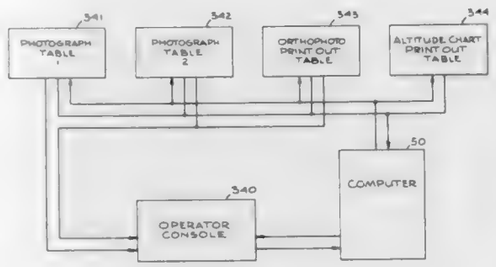
1. A radiation detector assembly effective for determining the direction of a fast neutron radiation source from said assembly, consisting essentially of:
four omnidirectional fast neutron detectors arranged in a close-packed paired relationship with front-back and left-right symmetry to form a segmented symmetric detector; and
processor means for arithmetically combining incident radiation counts from said plurality of detectors to output a signal functionally related to a direction of a source for said radiation.

5,345,085
METHOD AND STRUCTURE FOR ELECTRONICALLY MEASURING BEAM PARAMETERS
Richard W. Prior, Fremont, Calif., assignor to ETEC Systems, Inc., Hayward, Calif.
Filed Mar. 26, 1993, Ser. No. 37,964
Int. Cl.[5] H01J 37/304
U.S. Cl. 250—491.1 38 Claims



1. A method of electronically measuring parameters of a beam in a raster scan system comprising the steps of:
(a) choosing a predetermined pixel of the raster scan to be calibrated;
(b) moving a grid adjacent said pixel
(c) strobing said beam;
(d) incrementally moving said beam toward a first axis of said grid;
(e) integrating the signal resulting from said beam as said beam moves toward said first axis; and
(f) repeating steps (c) through (e) until a predetermined value of said signal is reached, thereby indicating said beam has crossed said first axis.

5,345,086
AUTOMATIC MAP COMPILATION SYSTEM
Sidney Bertram, Woodland Hills, Calif., assignor to Eaton Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 240,638, Nov. 28, 1962. This application Oct. 24, 1963, Ser. No. 318,538
Int. Cl.[5] G01C 11/12
U.S. Cl. 250—558 45 Claims

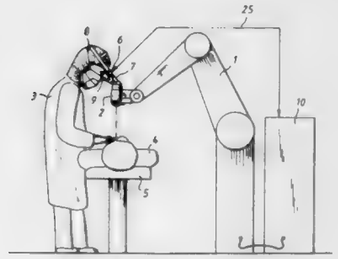


1. An automatic map compilation system, for deriving information from a pair of stereoscopic photographs by scanning portions thereof which represent homologous imagery comprising:
first means for scanning at least portions of a pair of stereoscopic photographs and developing video signals in accordance therewith;
second means including computing means, operable in a sequence of cycles of operation, for estimating for successive cycles of operation, on the basis of at least photogrammetric data related to said pair of photographs, the portions of said photographs which represent homologous imagery and controlling said first means to synchronously scan said portions; and
third means responsive to said video signals for comparing said video signals therein and producing error signals which represent the degree of error in said second means in estimating said portions of said photographs as representing homologous imagery said second means including means responsive to said error signals for updating the estimate of the locations of portions of said photographs, which represent homologous imagery, adjacent the scanned portions.

5,345,087
OPTICAL GUIDE SYSTEM FOR SPATIALLY POSITIONING A SURGICAL MICROSCOPE
Joachim Luber, Essingen-Forst; Werner Müller, Ötisheim; Martin Pelzer, Heidenheim, and Anette Reiss, Heidenheim, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany
Filed Feb. 1, 1993, Ser. No. 11,515
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1992, 4202505
Int. Cl.[5] G01N 21/86
U.S. Cl. 250—561 16 Claims

1. A guide system for spatially positioning a surgical microscope in correspondence to movements of the head of an operator for which a desired position relative to the surgical microscope is defined, the guide system comprising:

motorized positioning support means for holding and moving the surgical microscope in six degrees of freedom;
transmitter means mounted on one of the head of said operator and said surgical microscope in a defined position relative thereto for transmitting at least two separate transmitting beams defining respective beam paths;
receiver means mounted on the other one of the head of said operator and said surgical microscope in a defined position relative thereto for receiving said transmitting beams;
said receiver means including means providing a position-resolving registration of at least three separate incident points and means for emitting output signals indicative of a relative movement between said transmitter mean and said receiver means in said six degrees of freedom; and,
evaluation means for evaluating said output signals of said receiver means to reconstruct the movement of the head of said operator in said six degrees of freedom relative to

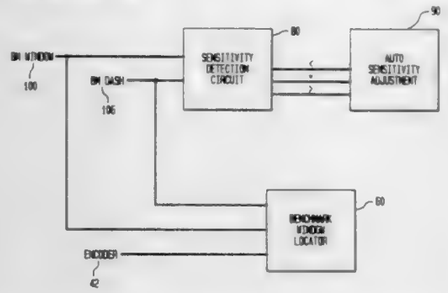


said defined desired position and form control signals indicative of said movement and for transmitting said control signals to said motorized positioning support means thereby actuating said support means to cause said surgical microscope to track the movement of the head of said operator into said defined desired position in six degrees of freedom.

5,345,088
Patent Not Issued For This Number

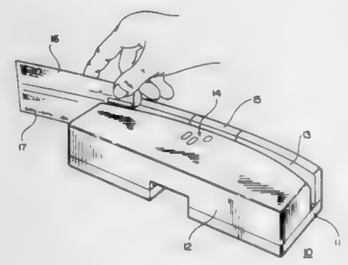
5,345,089
SYSTEM AND METHOD FOR OPTICAL SCANNER SENSITIVITY ADJUSTMENT
John L. Lorenzo, Southbury, and Hans C. Mol, Wilton, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Dec. 24, 1992, Ser. No. 996,801
Int. Cl.[5] G06K 7/10
U.S. Cl. 250—566 9 Claims

1. An optical scanning system, comprising:
an optical scanner;
means for generating a reference pulse;
means for comparing a benchmark pulse scanned by said scanner to said reference pulse, said comparing means providing an indicating signal of one of a less than, a greater than and an equal to signals as a result of said comparison; and



means for adjusting sensitivity of said scanner based on said indicating signal.

5,345,090
MANUAL CHECK READER APPARATUS WITH OPTICAL IMAGING
Stanley J. Hludzinski, Auburn, Calif., assignor to Verifone, Inc., Redwood City, Calif.
Filed Mar. 8, 1993, Ser. No. 27,344
Int. Cl.[5] G06K 7/10
U.S. Cl. 250—566 12 Claims



1. Optical reader apparatus for reading data on a data carrier and comprising:
housing means defining a data carrier slot having an optical data window at a prearranged position within said data carrier slot;
optical reading means mounted within said housing for reading data scanned past said optical data window;
a door assembly mounted in a hinged relation to said housing means opposite said optical read window and having closed and open positions and permitting access to said optical data window in said open position, said door assembly carrying a resilient pressure spring having a for-

ward surface defining a portion of a data carrier slot opposite said optical data window in said closed position of said door assembly, and said resilient pressure spring urging a data carrier passing through said data carrier slot into optical reading contact with said optical data window.

5,345,091

BARCODE IDENTIFICATION SYSTEM

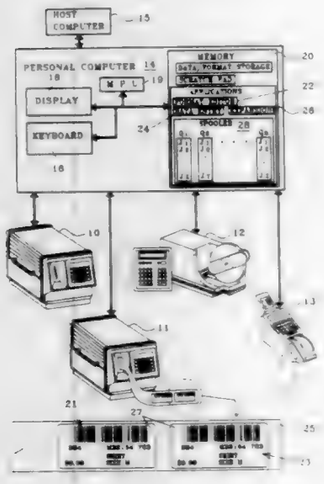
Gina M. Craig, 2334 Mardell Dr., Dayton, Ohio 45459; Dale E. Lamprecht, Jr., 3265 Green Turtle Dr., Dayton, Ohio 45414; Debra A. Stellwag, 528 Heather Dr., Apt. 2, Dayton, Ohio 45405, and Thomas R. Wagner, 6298 Greenbriar Dr., Fairfield, Ohio 45014

Continuation of Ser. No. 783,770, Oct. 28, 1991, Pat. No. 5,227,643. This application Apr. 8, 1993, Ser. No. 44,817

The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.

Int. Cl.[5] G06K *7/10*

U.S. Cl. 250—566 **10 Claims**



1. A method of limiting the operation of a barcode identification system including at least one barcode printer for printing on a web of record members, and a processor for controlling a plurality of operations of said system, said system having an associated system key with a unique identification associated therewith comprising:

operating said processing means in accordance with a plurality of software modules, said processing means operating in accordance with at least one of said modules to generate barcode identification information for said barcode printer;

prior to the operation of at least one of said software modules, determining whether said one software module includes a key identification that matches said system key identification; and

limiting the operation of said one software module if said determining means determines that said software module does not include a key that matches said system key identification.

5,345,092

LIGHT EMITTING DIODE INCLUDING ACTIVE LAYER HAVING FIRST AND SECOND ACTIVE REGIONS

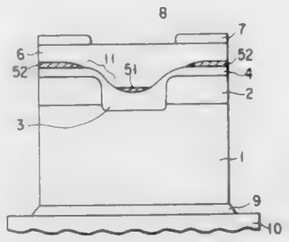
Haruki Kurihara, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 821,052, Jan. 16, 1992, abandoned. This application Oct. 7, 1993, Ser. No. 133,281

Claims priority, application Japan, Jan. 18, 1991, 3-004567

Int. Cl.[5] H01L *33/00*

U.S. Cl. 257—13 **11 Claims**



1. A light emitting diode comprising:

a semiconductor substrate of a first conductivity type;

a current blocking layer of a second conductivity type provided on said semiconductor substrate;

a recessed portion formed in said current blocking layer so as to extend to said semiconductor substrate;

a first cladding layer of said first conductivity type including a first cladding region buried in said recessed portion, a second cladding region provided on said current blocking layer, and a constricted region located at a peripheral portion of and surrounding said recessed portion;

an active layer of said first conductivity type including a first active region, provided on said first cladding region, substantially operating as a light emitting region, and a second active region provided on said second cladding region, said second active region being separated outward from said first active region by said constricted region;

a second cladding layer of said second conductivity type provided over said active layer so as to cover said first cladding layer;

an ohmic contact layer provided on said second cladding layer; and

a window provided in said ohmic contact layer.

5,345,093

GRADED BANDGAP SEMICONDUCTOR DEVICE FOR REAL-TIME IMAGING

Veerendra K. Mathur, Beltsville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

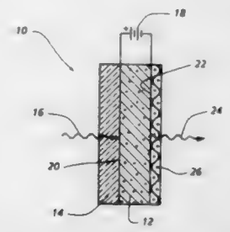
Filed Apr. 15, 1991, Ser. No. 687,603

Int. Cl.[5] H01L *31/12, 31/16*

U.S. Cl. 257—80 **8 Claims**

1. In a device having a graded bandgap semiconductor body with absorbing and emission locations thereon, said semiconductor body being formed from two semiconductor materials components alloyed with each other as a function of positional spacing between the radiation absorbing and emission locations for shift in wavelength of incident radiation at the absorbing location and electrical bias means connected to the semiconductor body at said absorbing and emission locations for applying a positive voltage potential to the absorbing location to

effect said radiation wavelength shift in response to radiative electron-hole recombination, said two semiconductor material components having different bandgaps respectively established at the radiation absorbing and emission locations on the semiconductor body, one of the different bandgaps established at the radiation absorbing location being relatively narrow to



limit absorption thereat to the incident radiation within an infrared wavelength region, the radiation emitted from the emission location embodying imaging energy and

phosphor means coupled to the semiconductor body at the emission location for producing visible imaging radiation in response to the radiation emitted from the emission location.

5,345,094

LIGHT TRIGGERED TRIAC DEVICE AND METHOD OF DRIVING THE SAME

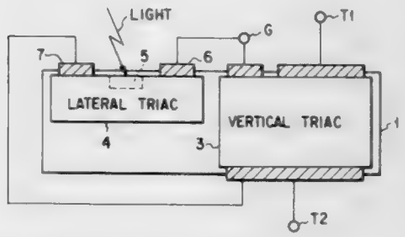
Yasunori Usui, Yokohama, and Shinjiro Yano, Himeji, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 6, 1993, Ser. No. 86,300

Claims priority, application Japan, Jul. 6, 1992, 4-178157

Int. Cl.[5] H01L *29/74*

U.S. Cl. 257—113 **7 Claims**



1. A semiconductor device comprising:

a semiconductor substrate;

an output Triode AC switch provided in said substrate, said output Triode AC switch having a gate, a first terminal and a second terminal, and having a vertical structure; and

an input/driving Triode AC switch provided in said substrate and having a light-receiving portion, a third terminal connected to said gate of said output Triode AC switch and a fourth terminal connected to said first terminal of said output Triode AC switch.

5,345,095

SELF ARC-EXTINGUISHING THYRISTOR AND METHOD OF MANUFACTURING THE SAME

Kazuhiko Niwayama, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 2, 1993, Ser. No. 12,464

Claims priority, application Japan, May 6, 1992, 4-113594

Int. Cl.[5] H01L *29/74, 31/111*

U.S. Cl. 257—138 **17 Claims**

1. A self arc-extinguishing thyristor comprising:

(a) a body including:

(a-1) a first conductivity type first semiconductor layer;

(a-2) a second conductivity type second semiconductor layer formed on said first semiconductor layer;

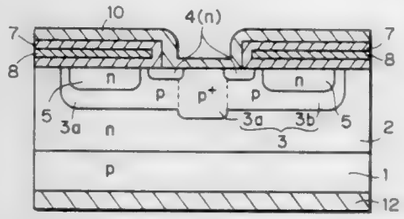
(a-3) a first conductivity type third semiconductor layer selectively formed in a top surface of said second semiconductor layer;

(a-4) a second conductivity type fourth semiconductor layer selectively formed in a top surface of said third semiconductor layer; and

(a-5) a second conductivity type fifth semiconductor layer selectively formed spaced from said fourth semiconductor layer in said top surface of said third semiconductor layer so that a bottom surface of said fifth semiconductor layer is farther from said second semiconductor layer than a bottom surface of said fourth semiconductor layer;

(b) an insulation film disposed on a top surface of said body at least from said fourth to said fifth semiconductor layers;

(c) a control electrode disposed in said insulation film so as to be in a faced relation with said third semiconductor layer;



(d) a first electrode disposed in electrical connection with said third and fifth semiconductor layers; and

(e) a second electrode disposed in electrical connection with said first semiconductor layer;

wherein said fifth semiconductor layer intercepts said top surface of said body in a ring shape and said third semiconductor layer consists of:

(a-3-1) a relatively heavily doped first portion which is surrounded by said fifth semiconductor layer at said top surface of said body; and

(a-3-2) a relatively lightly doped second portion surrounding said first portion, said second portion together with said first portion completely occupying said third semiconductor layer; and

wherein said fourth semiconductor layer is formed in a top surface of said second portion; and

said fifth semiconductor layer is formed in a top surface of said first portion and said top surface of said second portion at a boundary therebetween.

5,345,096

TURN-OFF HIGH-POWER SEMICONDUCTOR COMPONENT WITH LOW INDUCTIVE HOUSING

Horst Grüning, Wettingen, Switzerland, assignor to ABB Research Ltd., Zurich, Switzerland

Filed Jul. 30, 1993, Ser. No. 99,310

Claims priority, application Fed. Rep. of Germany, Aug. 15, 1992, 4227063

Int. Cl.[5] H01L *23/42, 23/44, 29/74*

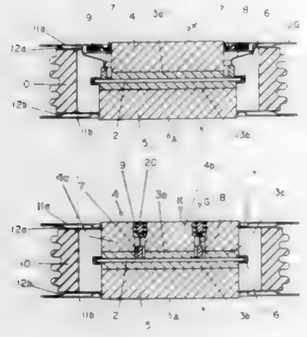
U.S. Cl. 257—182 **11 Claims**

1. A turn-off high-power semiconductor component in the form of a GTO, comprising:

a disk-shaped semiconductor substrate which is disposed concentrically in an annular insulating housing between a disk-shaped cathode contact on a cathode-contact side, to which pressure can be applied, and a disk-shaped anode contact on an anode-contact side, to which pressure can also be applied, and which is contacted on the cathode-contact side by a gate contact, the cathode and anode contacts being connected to the insulating housing via a first lid and second lid respectively, an outwardly hermeti-

cally sealed component being formed, and the gate contact being capable of being fed with a gate current via a gate lead brought to the outside, wherein

(a) the gate contact and the gate lead are of annular design, the gate lead being brought out of the component between the cathode contact and the insulating housing, the gate lead being electrically insulated from the cathode contact by a single insulator;



(b) the gate contact surrounds the cathode contact concentrically at a distance;

(c) the gate lead connects the gate contact directly to the first lid; and

(d) the first lid is electrically insulated form the cathode contact by an interposed insulating ring which concentrically surrounds the cathode contact.

5,345,097

HETEROJUNCTION BIPOLAR TRANSISTOR INCLUDING COLLECTOR REGION OF INP AND METHOD OF FABRICATING THE SAME

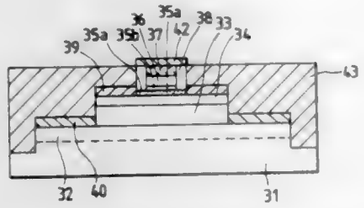
Atsushi Nakagawa, Kawanishi, Japan, assignor to Matsushita Electric Industrial, Co., Ltd., Osaka, Japan

Filed Sep. 23, 1992, Ser. No. 948,551

Claims priority, application Japan, Mar. 2, 1992, 4-044403

Int. Cl.[5] H01L *29/161, 29/205, 225*

U.S. Cl. 257—198 **5 Claims**



1. A heterojunction bipolar transistor comprising:

a collector region made of first-conduction-type InP; and

a base region connected to the collector region and made of second-conduction-type $In_x(Ga_yAl_{1-y})_{1-x}As$ where the letters "x" and "y" denote predetermined atomic fractions, wherein the atomic fraction "x" is in the range of 0.52 to 0.53 and the atomic fraction "y" is in the range of 0.35 to 0.72,

further including a semi-insulating substrate of InP, a subcollector region of first conduction type $In_xGa_{1-x}As$ on said substrate, and wherein said collector region is situated on said subcollector region.

5,345,098

MASTER SLICE INTEGRATED CIRCUIT DEVICE

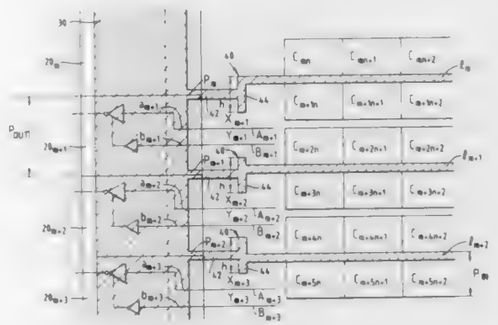
Yasuhisa Hirabayashi; Takashi Sakuda; Kazuhiko Okawa, all of Nagano, and Yasuhiro Oguchi, Suwa, all of Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 580,061, Sep. 10, 1990, Pat. No. 5,153,698. This application May 5, 1992, Ser. No. 878,527

Claims priority, application Japan, Sep. 8, 1989, 1-233326; Jun. 25, 1990, 2-166115

Int. Cl.[5] H01L *27/10, 27/15*

U.S. Cl. 257—207 **10 Claims**



1. In a master slice integrated circuit device comprising an array of internal cells having contact members, an array of external cells having contact members and formed outwardly from the internal cell array, a plurality of power lines formed on the internal array region, means for delivering power to the power lines, and a plurality of signal lines for electrically interconnecting selected contact members of the internal and external cells, the improvement comprising intermediate power line connection means conductively connecting each said power line to said means for delivering power, said intermediate connection means comprising, for each said power line, a power branch-off member disposed at a given position on said means for delivering power and extending substantially in the direction of its respective power line, and a connection allowance member intersecting, and connected to, said power branch-off member and having a predetermined length, so that said connection allowance members for all of said power lines all have substantially the same length, said connection allowance member for each said power line being conductively connected between its associated power branch-off member and the respective power line, and said connection allowance member being connected to only one power line.

5,345,099

SEMICONDUCTOR DEVICE

Takahiro Yamada, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 4, 1993, Ser. No. 56,627

Claims priority, application Japan, Oct. 6, 1992, 4-267665

Int. Cl.[5] H01L *29/78, 27/14, 31/00*

U.S. Cl. 257—250 **7 Claims**

1. A charge transfer device comprising:

a semiconductor substrate;

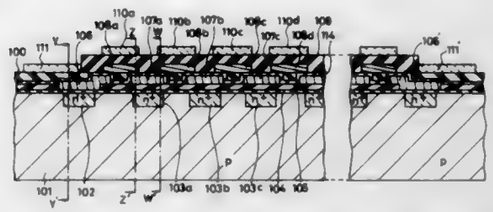
a first insulation film formed on said semiconductor substrate;

a plurality of first semiconductor regions provided on said first insulation film;

a tunneling second insulation film provided on said first semiconductor region;

a plurality of second semiconductor regions formed on said tunneling insulation film, said tunneling insulation film spacially isolating said first semiconductor regions from said second semiconductor regions;

a plurality of first control electrodes provided under respective ones of said first semiconductor regions for controlling a potential of said first semiconductor regions; and



a plurality of second control electrodes provided above respective ones of said second semiconductor regions for controlling a potential of said second semiconductor regions.

5,345,100

SEMICONDUCTOR RECTIFIER HAVING HIGH BREAKDOWN VOLTAGE AND HIGH SPEED OPERATION

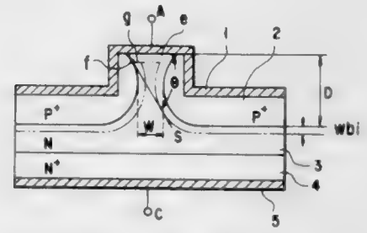
Takashi Kan; Masaru Wakatabe; Mitsugu Tanaka; Shinji Kunori, and Akira Sugiyama, all of Saitama, Japan, assignors to Shindengen Electric Manufacturing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 857,999, Mar. 26, 1992, abandoned. This application Sep. 13, 1993, Ser. No. 119,561

Claims priority, application Japan, Mar. 29, 1991, 3-133737; Mar. 29, 1991, 3-133738

Int. Cl.[5] H01L *29/78, 23/00*

U.S. Cl. 257—475 **19 Claims**



1. A semiconductor rectifier comprising:

a first semiconductor layer of a first conductivity type having a main surface;

a second semiconductor layer of a second conductivity type formed in said first semiconductor layer to define a plurality of portions of said first semiconductor layer exposed to said main surface, each of said plurality of portions of said first semiconductor layer being surrounded by opposed portions of said second semiconductor layer and forming a p-n junction with each of said opposed portions of said second semiconductor layer below said main surface;

a metal electrode provided over a surface of said second semiconductor layer including said plurality of portions of said first semiconductor layer, said metal electrode forming a contact surface with each of said plurality of portions of said first semiconductor layer; and

a relation between a depth D and a width W being given by $D>0.5W$ where said depth D is a distance between said contact surface and a bottom of said second semiconductor layer, and said width W being a shortest distance between said opposed portions of said second semiconductor layer below said contact surface.

5,345,101

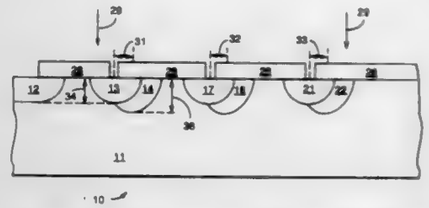
HIGH VOLTAGE SEMICONDUCTOR STRUCTURE AND METHOD

Shang-Hui Tu, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 28, 1993, Ser. No. 82,643

Int. Cl.[5] H01L *29/40, 29/06*

U.S. Cl. 257—495 **9 Claims**



1. A high voltage semiconductor structure including in combination:

a semiconductor substrate of a first conductivity type;

a first region disposed at a first surface of said semiconductor substrate to provide a main rectifying junction;

a second region of a second conductivity type formed at said first surface of said semiconductor substrate and surrounding said first region, said second region forming a p-n junction between said second region and said semiconductor substrate having a maximum depth below said first surface; and

a third region of said second conductivity type formed at said first surface of said semiconductor substrate, said third region having reduced conductivity compared to said second region, said third region in contact with a first side of said second region, said third region forming a p-n junction between said third region and said semiconductor substrate having a maximum depth below said first surface greater than said maximum depth of said p-n junction between said second region and said semiconductor substrate.

5,345,102

BIPOLAR TRANSISTOR HAVING COLLECTOR ELECTRODE PENETRATING EMITTER AND BASE REGIONS

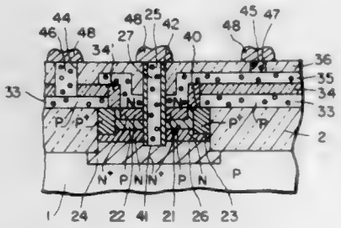
Naoya Matsumoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 22,621

Claims priority, application Japan, Feb. 28, 1992, 4-042702

Int. Cl.[5] H01L *27/082, 29/40, 29/70*

U.S. Cl. 257—588 **12 Claims**



1. A bipolar transistor comprising:

a semiconductor substrate;

a buried collector region formed in said semiconductor substrate;

a collector region formed on said buried collector region;

an intrinsic base region formed on said collector region;

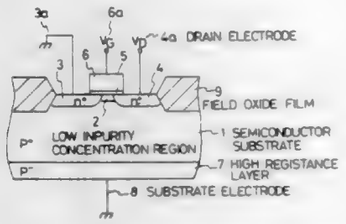
a graft base region formed to surround said intrinsic base

region and having an impurity concentration higher than said intrinsic base region;
an emitter region formed in said intrinsic base region;
a trench formed to penetrate into said emitter region and to reach said buried collector region through said intrinsic base region and said collector region; and
a collector electrode filling said trench with an electrical isolation from said intrinsic base region and said emitter region, said collector electrode being in contact with said buried collector region.

5,345,103
GATE CONTROLLED AVALANCHE BIPOLAR TRANSISTOR

Kenji Aoki, Tokyo, Japan, assignor to Seiko Instruments Inc., Tokyo, Japan

Continuation of Ser. No. 668,497, May 13, 1991, abandoned. This application Sep. 29, 1992, Ser. No. 953,308
Claims priority, application Japan, Jul. 18, 1989, 1-186683
Int. Cl.[5] H01L *29/74, 29/784, 29/90*
U.S. Cl. 257—589 **8 Claims**



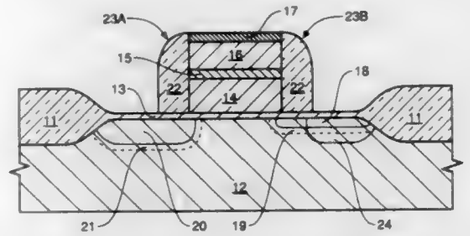
1. A semiconductor device comprising: a semiconductor substrate of a first conductivity type, said substrate having a surface and containing a channel region formed in the surface of said substrate, said substrate having a first impurity concentration equal to or greater than $1\times10^{18}\,cm^{-3}$ and said channel region having a second impurity concentration which is lower than said first impurity concentration; source and drain regions of a second conductivity type different from the first conductivity type, with said channel region and said substrate being disposed between said source and drain regions, and said source and drain regions being in contact with said substrate; a gate insulating film formed on said channel region; a gate electrode formed on said gate insulating film; a grounded substrate electrode; and a resistance layer formed between said substrate and said substrate electrode so as to be electrically in series with said substrate and said substrate electrode, wherein said device is constructed such that when selected potentials are applied to said source and drain regions and to said gate electrode to place said device into operation, said substrate defines a path for current flow between said source and drain regions, carriers are injected from said source region into said substrate, an impact ionization phenomenon occurs in said substrate at a location in the vicinity of said drain region in order to trigger injection of carriers from said source region into said substrate, and carriers injected from said drain region accumulate in said substrate, due to the presence of said resistance layer, so as to increase the potential of said substrate.

5,345,104
FLASH MEMORY CELL HAVING ANTIMONY DRAIN FOR REDUCED DRAIN VOLTAGE DURING PROGRAMMING

Kirk D. Prall, and Wayne I. Kinney, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 883,495, May 15, 1992, abandoned. This application Jul. 8, 1993, Ser. No. 89,382
Int. Cl.[5] H01L *29/167, 29/68*
U.S. Cl. 257—607 **8 Claims**

1. An improved flash memory cell of the type having a single field effect transistor, the channel of which is controlled by a floating gate insulated from the channel by a silicon dioxide gate dielectric layer, charge on the floating gate begin controlled by a control gate which is superjacent thereto by effecting hot electron injection into the floating gate through the gate dielectric layer from the drain region of said transistor during a write operation, and electron tunneling from the floating gate through the gate dielectric layer to the source of

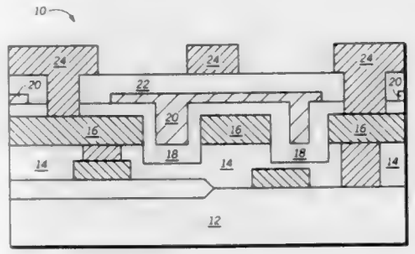


said transistor during an erase operation, said improvement comprising the use of only antimony as an N-type dopant in a portion of the drain region which is contiguous with the channel region, the antimony-doped portion of the drain region being partially surrounded by a boron doped region, which extends at least partially into the channel region, and the use of at least one N-type dopant having a higher diffusivity than antimony in the entire source region.

5,345,105
STRUCTURE FOR SHIELDING CONDUCTORS

Shih-Wei Sun; Yasunobu Kosa, and John R. Yeargain, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 829,837, Feb. 3, 1992, Pat. No. 5,262,353. This application Aug. 2, 1993, Ser. No. 103,362
Int. Cl.[5] H01L *23/34, 25/04*
U.S. Cl. 257—659 **18 Claims**

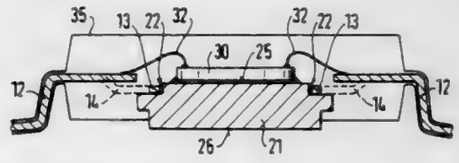


1. A structure for shielding comprising:
a substrate;
a first dielectric layer overlying the substrate;
a plurality of electrically isolated conductive regions having sidewalls, the plurality of electrically isolated conductive regions overlying the first dielectric layer;
trenches within the first dielectric layer, the trenches formed both laterally between and below the electrically isolated conductive regions;
a second dielectric layer conformally overlying the electrically isolated conductive regions, the sidewalls of the electrically isolated conductive regions, and the trenches of the first dielectric layer to establish recessed regions from the trenches, the recessed regions separate the electrically isolated conductive regions; and
a shielding conductive layer overlying the second dielectric layer including within the recessed regions, the shielding conductive layer reducing capacitive coupling between two or more electrically isolated conductive regions within the plurality of electrically isolated conductive regions by applying a constant voltage potential to the shielding conductive layer.

5,345,106
ELECTRONIC CIRCUIT COMPONENT WITH HEAT SINK MOUNTED ON A LEAD FRAME

Anton Doering, Pliezhausen, and Ludger Olbrich, Reutlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 930,474, Aug. 13, 1992, Pat. No. 5,202,288, which is a continuation of Ser. No. 709,654, Jun. 3, 1991. This application Jan. 29, 1993, Ser. No. 11,215
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1990, 4017697
Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—675 **4 Claims**

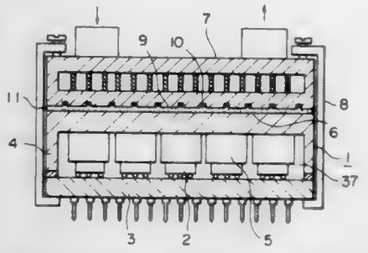


1. An electronic circuit component comprising:
a lead frame (**11**) of sheet metal having a planar top portion and having, integral therewith, a flat mounting plate (**13**) which has an aperture (**20**) therein, said aperture being of a contour similar to that of said mounting plate and being of a size such that said mounting plate forms a peripheral planar strip frame (**13'**) surrounding said aperture, said strip frame being supported in said lead frame by sheet metal strips (**14**) of said sheet metal of said lead frame, said sheet metal strips (**14**) integrally joining said strip frame to said lead frame such that said strip frame defines a plane parallel to said planar top portion of said lead frame,
a heat conducting body (**21**), seated in said aperture and having a top surface (**25**) parallel to said plane of said strip frame and parallel to said planar top portion of said lead frame;
said lead frame having lead connecting portions (**41**) extending along said top portion thereof, said lead connecting portions terminating adjacent to said strip frame;
said sheet metal strips (**14**) being integrally joined to locations of said lead frame which do not have said lead connecting portions thereon (**41**); and
at least one semiconductor chip (**30**) affixed to the top surface of said heat conducting body (**21**) for positioning said at least one semiconductor chip relative to said lead frame, and for passage of heat from said at least one semiconductor chip to said heat conducting body;
said at least one semiconductor chip being connected to said lead connecting portions by bonding wires (**32**) having respective ends bonded to respective lead connecting portions of said lead frame; and
said at least one semiconductor chip, said bonding wires, a portion of said lead connecting portions of said lead frame and a portion of said heat conducting body being embedded in and encapsulated by molded electrically non-conducting material.

5,345,107
COOLING APPARATUS FOR ELECTRONIC DEVICE

Takahiro Daikoku, Ushiku; Nobuo Kawasaki, Ibaraki; Noriyuki Ashiwake, Tsuchiura; Keizou Kawamura, Ibaraki; Shizuo Zushi; Mitsuo Miyamoto, both of Hadano, and Atsushi Morihara, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 588,074, Sep. 25, 1990, abandoned. This application Feb. 20, 1992, Ser. No. 839,071
Claims priority, application Japan, Sep. 25, 1989, 1-246314
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] F28F *7/00;* **H05K** *7/20;* **H01L** *23/00*
U.S. Cl. 257—717 **45 Claims**

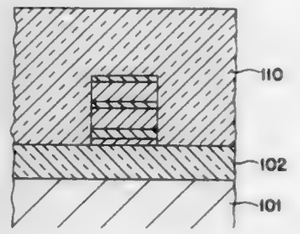


1. A cooling apparatus for an electronic device, comprising:
an electronic device;
a cooling solid body for eliminating heat produced by said electronic device;
a highly viscous fluid layer containing thermal conductive powder having a high thermal conductivity sandwiched between a heat transfer surface of said electronic device and a heat transfer surface of said cooling solid body;
pressurizing means for forcing said cooling solid body into close contact with said electronic device; and
multiple grooves which are formed on one of the heat transfer surface of said electronic device and the heat transfer surface of said cooling solid body and which are communicated with space surrounding one of said electronic device and said cooling solid body having the heat transfer surface, said pressurizing means comprising an elastic member for pressing said cooling solid body on said electronic device and for pressing the highly viscous fluid layer constantly to keep the fluid layer as a thin layer.

5,345,108
SEMICONDUCTOR DEVICE HAVING MULTI-LAYER ELECTRODE WIRING

Takamaro Kikkawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

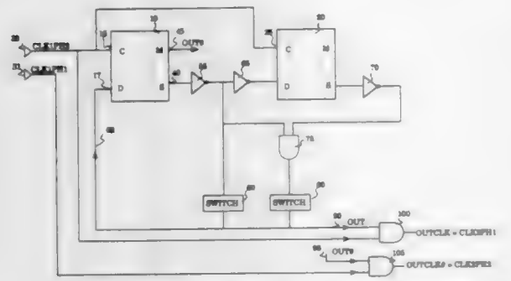
Filed Feb. 25, 1992, Ser. No. 840,925
Claims priority, application Japan, Feb. 26, 1991, 5-3931
Int. Cl.[5] H01L *23/48, 29/46, 29/54, 29/62*
U.S. Cl. 257—751 **4 Claims**



3. A semiconductor device including an electrode wiring formed selectively on an insulating film on a.silicon chip, said

electrode wiring comprising a titanium film formed on said insulating film, a first titanium nitride film formed on said titanium film, a first aluminum-silicon-copper alloy film formed on said first titanium nitride film, a second titanium nitride film formed on said first aluminum-silicon-copper alloy film, a second aluminum-silicon-copper alloy film formed on said second titanium nitride film and a third titanium nitride film formed on said second aluminum-silicon-copper alloy.

5,345,109
PROGRAMMABLE CLOCK CIRCUIT
Anup S. Mehta, Folsom, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Filed Mar. 30, 1993, Ser. No. 39,951
Int. Cl.[5] H03K *3/72*
U.S. Cl. 307—271 **47 Claims**



1. A programmable circuit for generating lower frequency clock signals from a higher first frequency clock signal, said circuit comprising:

a first logic gate having a data input and clock input, the gate generating an output corresponding to the input on a first edge of the clock input signal, said first frequency clock signal input to the clock input of the first logic gate;

a first inverter coupled to receive as input an output of the first logic gate and generating a first inverted output;

a second inverter which receives as data input the first inverted output of the first inverter and generates a second inverted output;

a second logic gate having a data input and ock input, the gate generating an output corresponding to the input on a first edge of the clock input signal, said second logic gate receiving as data input the second inverted output of the second inverter, said first frequency clock signal input to the clock input;

a third inverter coupled to receive the output of the second logic gate and generates a third inverted output;

a logical AND gate to logically AND the first inverted output of the first inverter and the third inverted output of the third inverter;

a first switch coupled to receive the first inverted output of the first inverter, said first switch, when in an enabled state, generating as output a second frequency clock signal slower than the first frequency clock signal;

a second switch coupled to receive the output of the logical AND gate, said second switch, when in an enabled state, generating as output a third frequency clock signal slower than the first frequency clock signal.

5,345,110
LOW-POWER FUSE DETECT AND LATCH CIRCUIT
Steve G. Renfro, and Gary R. Gilliam, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.
Filed Apr. 13, 1993, Ser. No. 46,541
Int. Cl.[5] H03K *19/007*
U.S. Cl. 307—272.3 **20 Claims**

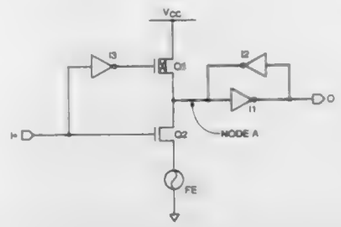
1. A low-power circuit for detecting and latching the state of a fusible link, said circuit comprising:

an input node;

an output node;

a fuse element which, at the time of circuit manufacture, provides a closed connection, but which can be selectively severed to provide an open connection;

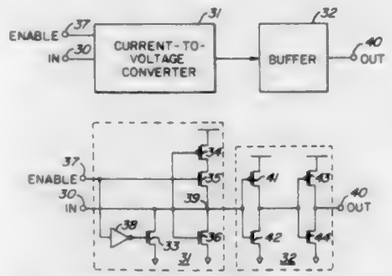
first and second transistors responsive to a digital input



signal on said input node, said second transistor having a greater drive value than said first transistor;

a fuse detect node which is coupled to said output node via a latch circuit, to power supply voltage through said first transistor, and to ground through said second transistor and said fuse element, respectively, when said fuse element is in an unsevered state.

5,345,111
HIGH-SPEED CURRENT SENSE AMPLIFIER
Vincent L. Fong, Fremont, Calif., assignor to Hyundai Electronics America, San Jose, Calif.
Filed Aug. 19, 1992, Ser. No. 932,427
Int. Cl.[5] G01R *19/00;* **H03K** *5/153*
U.S. Cl. 307—350 **12 Claims**



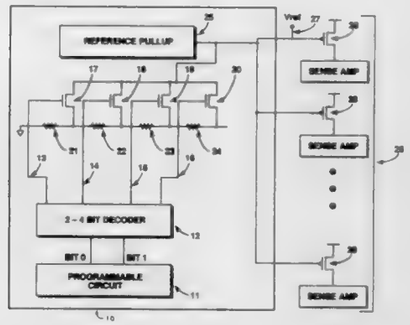
1. A sense amplifier connected between first and second power supplies and having an input terminal and an output terminal, said sense amplifier comprising

first and second functional diode means connected in series between said first and second power supplies, said input terminal connected to a node in series between said first and second functional diode means, said first and second functional diode means each comprising a MOS transistor having a drain connected to a gate; and

a first inverter having an input node connected to said series node and an output node connected to said output terminal, said first inverter responsive to a voltage at said input node being set into one of two logic states;

whereby a current at said input terminal determines a logic state at said output terminal.

5,345,112
INTEGRATED CIRCUIT WITH PROGRAMMABLE SPEED/POWER ADJUSTMENT
Hagop A. Nazarian, San Jose, and S. Barbar Raza, Sunnyvale, both of Calif., assignors to Cypress Semiconductor Corporation, San Jose, Calif.
Filed Sep. 14, 1992, Ser. No. 945,705
Int. Cl.[5] H03K *19/003;* **H03F** *3/45*
U.S. Cl. 307—443 **2 Claims**



1. A programmable logic device having an array of logic devices and a plurality of sense amplifiers with adjustable speed-power characteristics, comprising:

a programmable logic device having a plurality of sense amplifiers, each included in a current path which draws a predetermined amount of current;

a plurality of impedance elements connectable to said integrated circuit in a manner to control current flow in said current path;

a plurality of electrically erasable programmable read-only memories each coupled to one of said plurality of impedance elements, whereby each of the impedance elements can be connected or disconnected by setting its electrically erasable programmable read-only memory, thereby adjusting the operating speed and the power consumption of the programmable logic device by varying the total impedance of the plurality of impedance elements so as to adjust the current through the sense amplifiers according to the speed/power requirements of the integrated circuit.

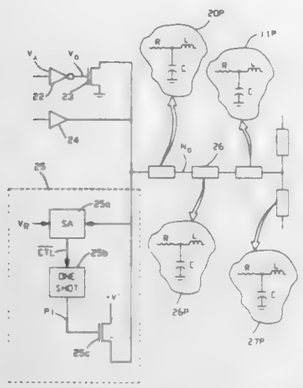
5,345,113
CONTROL MODULE FOR REDUCING RINGING IN DIGITAL SIGNALS ON A TRANSMISSION LINE
LuVerne R. Peterson, San Diego, Calif., assignor to Unisys Corporation, Blue Bell, Pa.
Filed May 19, 1993, Ser. No. 64,511
Int. Cl.[5] H03K *17/16*
U.S. Cl. 307—475 **13 Claims**

1. An electronic control module that reduces ringing in a digital voltage signal on a transmission line which has multiple transmitters, receivers, and parasitic inductors and capacitors coupled thereto; said module comprising:

a sensing circuit having an input coupled to said transmission line, which senses when said digital voltage signal on said transmission line changes from a first voltage range to a second voltage range, and generates a control signal to indicate same;

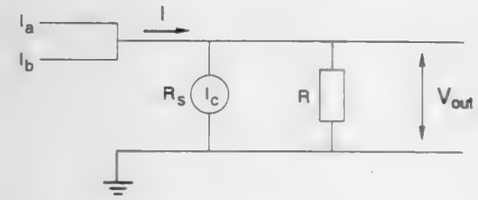
a pulse generating circuit, having an input which receives said control signal and in response thereto generates a single pulse; and,

a switching circuit, having an input which receives said pulse and an output connected to said transmission line,



which couples a supply voltage in said second voltage range to said transmission line while said pulse occurs.

5,345,114
SUPERCONDUCTOR LOGIC AND SWITCHING CIRCUITS
Qiyuan Ma, and Walter N. Hardy, both of The University of British Columbia Office of Research Services and Industry Liaison, 2194 Health Sciences Mall, Room 331 - I.R.C. Building, Vancouver, British Columbia, Canada V6T 1W5
Filed Oct. 15, 1992, Ser. No. 961,342
Int. Cl.[5] H03K *19/195, 17/92*
U.S. Cl. 307—476 **17 Claims**



1. A logic inverter gate comprising:

(a) an input current source I;

(b) a superconductor resistor electrically connected to said current source, said superconductor resistor having a critical current I_c, having a resistance of 0 ohms when $I<I_c$ and having a resistance of R_s ohms when $I \geq I_c$;

(c) a first non-superconductor resistor electrically connected in series with said superconductor resistor, said first non-superconductor resistor having a resistance of r ohms and developing an output voltage V_{out} in response to current flow through said first non-superconductor resistor;

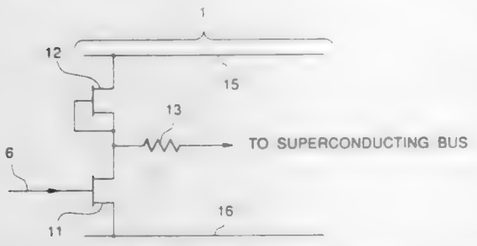
(d) a second non-superconductor resistor electrically connected in parallel across said series-connected resistors, said second non-superconductor resistor having a resistance of R ohms;

wherein:

(e) $r << R << R_s$; and,

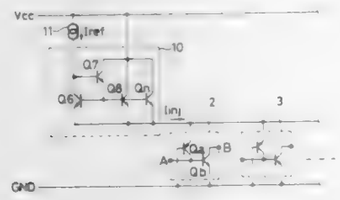
(f) $I<I_c$ represents a first binary logical input signal to said gate, $I \geq I_c$ represents a second binary logical input signal to said gate, $V_{out} \approx I \cdot r$ represents a first binary logical output signal of said gate, and $V_{out} \approx I \cdot R \cdot r/R_s$ represents a second binary logical output signal of said gate.

5,345,115
SUPERCONDUCTING INPUT INTERFACE CIRCUIT FOR SUPERCONDUCTING CIRCUIT
Hitoki Tokuda, and Michitomo Iiyama, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Apr. 28, 1993, Ser. No. 53,207
Claims priority, application Japan, Apr. 28, 1992, 4-136016
Int. Cl.[5] H03K *19/017*
U.S. Cl. 505—193 **7 Claims**



1. A superconducting interface circuit converting a signal sent from a normal conducting circuit into a small voltage swing signal suitable for a superconducting circuit including a superconducting field effect device having a superconducting channel of an extremely thin oxide superconductor thin film, a superconducting source region and a superconducting drain region of oxide superconductor thin films positioned at the both ends of the superconducting channel, and a gate electrode on the superconducting channel through a gate insulator so as to control superconducting current flowing through the superconducting channel by a voltage applied to the gate electrode, the gate electrode being connected to a signal line which transmits a voltage signal from the normal conducting circuit.

5,345,116
IIL CIRCUIT AND INTEGRATED CIRCUIT HAVING THE SAME
Norio Fujii, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan
Filed Jul. 6, 1993, Ser. No. 86,202
Int. Cl.[5] H03K *19/091*
U.S. Cl. 307—477 **3 Claims**

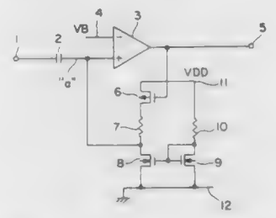


1. In an ILL circuit that amplifies a predetermined constant current to produce an injector current which is then supplied to a plurality of IIL gates, the improvement including a current mirror circuit that receives said constant current as an incoming input signal and which inverts and amplifies said constant current to produce an outgoing inverted current, said current mirror circuit adding said incoming constant current to said inverted current and supplying the sum of those currents as said injector current,

wherein said current mirror circuit has the injectors of said respective IIL gates connected at a common junction downstream of said current mirror circuit, and

wherein said current mirror circuit includes an NPN transistor on the input side that receives said constant current at the collector and a plurality of NPN transistors on the output side that are connected in parallel, said transistors on the output side having their collectors connected to a power line whereas their emitters are connected at a common junction to the emitter of said transistor on the input side, said emitters connected at the common junction being connected to said injectors.

5,345,117
SYNCHRONOUS SEPARATING CIRCUIT
Katsuo Tomotsune, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Sep. 11, 1992, Ser. No. 943,481
Claims priority, application Japan, Sep. 13, 1991, 3-234244
Int. Cl.[5] G06G *7/12;* **H03K** *5/153*
U.S. Cl. 307—494 **6 Claims**



1. A synchronous separating circuit comprising:

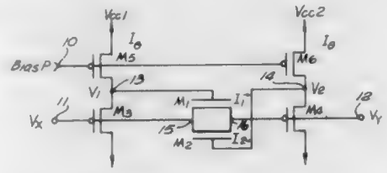
a comparator having an inverting input maintained at a bias voltage, a non-inverting input and an output;

a capacitor having an electrode connected to said non-inverting input;

first means for providing substantially a constant current to said non-invertinginput when said output of the comparator is in a low level;

second means for discharging from said non-inverting input at substantially a constant rate at least when said output of said comparator is in a high level wherein said second means includes a current mirror circuit.

5,345,118
PRECISION MOS RESISTOR
Bert White, and Mehrdad Negahban-Hagh, both of Irvine, Calif., assignors to Silicon Systems, Inc., Tustin, Calif.
Continuation of Ser. No. 581,722, Sep. 11, 1990, abandoned. This application Apr. 23, 1992, Ser. No. 873,948
Int. Cl.[5] H03K *3/353*
U.S. Cl. 307—501 **47 Claims**



1. A circuit comprising:

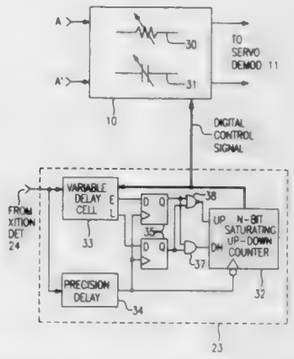
a resistive element having a first terminal and a second terminal, said resistive element further having a first impedance terminal and a second impedance terminal between which an impedance exists, said resistive element comprising a first and second transistor of a first conductivity type, and wherein a source of said first transistor is coupled to a source of said second transistor and a drain of said first transistor is coupled to a drain of said second transistor;

a first biasing means coupled to said first terminal of said resistive element;

a second biasing means coupled to said second terminal of said resistive element;

said first and second biasing means for linearly controlling said impedance of said resistive element.

5,345,119
CONTINUOUS-TIME FILTER TUNING WITH A DELAY-LOCKED-LOOP IN MASS STORAGE SYSTEMS OR THE LIKE
John M. Khoury, New Providence, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 16, 1992, Ser. No. 943,336
Int. Cl.[5] H03K *5/00;* **G11B** *5/596*
U.S. Cl. 307—521 **6 Claims**



1. A tunable filter having a characteristic frequency substantially determined by a combination of capacitance and resistance, the amount of the combination being determined by a control signal;

CHARACTERIZED BY:

a reference network, responsive to a first signal, for asserting a reference signal at a time after assertion of the first signal;

a variable delay cell, for asserting first and second delayed signals after the assertion of the first signal, the amount of delay being proportional to the combination of capacitance and resistance determined by the control signal, and the delay of the second delayed signal being proportionally greater than the delay of the first delayed signal; and

a comparator for comparing the first and second delayed signals to the reference signal to generate the control signal;

wherein the comparator adjusts the control signal such that the reference signal occurs after the assertion of the first delayed signal and before the assertion of the second delayed signal, and the control signal remains substantially constant between assertions of the first signal.

5,345,120
SWING LIMITING CIRCUIT FOR BICMOS SENSE AMPLIFIERS
Gregory F. Taylor, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.
Filed Jan. 21, 1993, Ser. No. 7,253
Int. Cl.[5] G01R *19/00*
U.S. Cl. 307—530 **5 Claims**

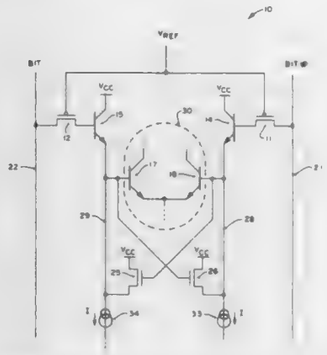
1. A circuit for limiting the voltage swing appearing across the inputs of a BiCMOS sense amplifier, said sense amplifier including a pair of emitter coupled bipolar transistors coupled to respective bit lines of a memory, said circuit comprising:

first and second bipolar transistors each having their collectors coupled to a first supply potential, and their emitters coupled to the respective bases of said pair of bipolar transistors and also to respective current sources;

a first PMOS device coupling the base of said first bipolar transistor to one of said bit lines;

a second PMOS device coupling the base of said second bipolar transistor to the other of said bit lines, the gates of said first and second PMOS devices being coupled to a reference potential below said first supply potential so as to limit the voltage drop at the bases of said first and second bipolar transistors;

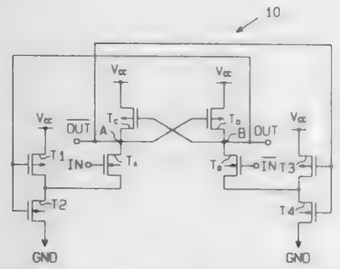
a first NMOS device having its drain coupled to said first supply potential, its source coupled to the emitter of said first bipolar transistor, and its gate coupled to the emitter of said second bipolar transistor;



a second NMOS device having its drain coupled to said first supply potential, its source coupled to the emitter of said second bipolar transistor, and its gate coupled to the emitter of said first bipolar transistor;

said first and second NMOS devices being configured as source followers so as to keep the voltage at the bases of said pair of bipolar transistors from dropping below a predetermined potential.

5,345,121
DIFFERENTIAL AMPLIFICATION CIRCUIT
Eisaku Itoh, Kasugai, Japan, assignor to Fujitsu Limited, Kawasaki and Fukitsu VLSI Limited, Kasugai, both of Japan
Filed Mar. 1, 1993, Ser. No. 24,291
Claims priority, application Japan, Feb. 27, 1992, 4-416900
Int. Cl.[5] H03K *3/26, 5/22*
U.S. Cl. 307—530 **12 Claims**



1. A differential amplification circuit comprising:

a first N-channel MOS transistors having a source terminal, a drain terminal for outputting a first output signal, and a gate for receiving a first input signal;

a second N-channel MOS transistor having a source terminal, a drain terminal for outputting a second output signal complementary to said first output signal, and a gate terminal for receiving a second input signal complementary to said first input signal;

first switch means for connecting said source terminal of said first N-channel MOS transistor to a common potential point, in response to said second output signal; and

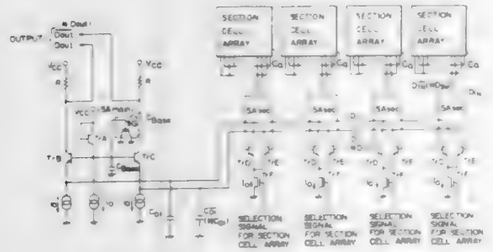
second switch means for connecting said source terminal of said second N-channel MOS transistor to said common potential point, in response to said first output signal.

5,345,122

CASCADE SENSE AMPLIFIER FOR READING OUT DATA STORED IN SEMICONDUCTOR MEMORY DEVICE

Hiroshi Takamoto, Tokyo; Takenori Nakamura, Yokohama, and Kenichi Nakamura, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 22, 1993, Ser. No. 51,305
Claims priority, application Japan, Apr. 23, 1992, 4-104799
Int. Cl.[5] H03F *3/45;* H03K *5/22*
U.S. Cl. 307—530 7 Claims



1. A cascade sense amplifier, comprising

a plurality of section separated sense amplifiers, each of which opposes to each of section cell array, and which senses data stored in corresponding section cell array;

a cascade wiring portion for commonly connecting a plurality of output ends of said plurality of section separated sense amplifier;

a main sense amplifier having a bipolar transistor as a data input end and for amplifying each output from each of said section separated sense amplifiers through said cascade wiring portion; and

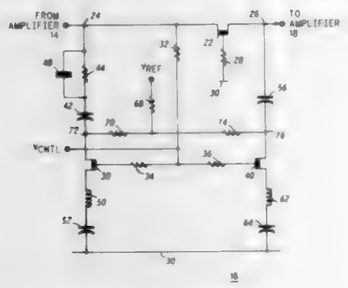
a capacitance regulation element for regulating a capacitance of a base potential of said bipolar transistor constituting the data input end of said main sense amplifier.

5,345,123

ATTENUATOR CIRCUIT OPERATING WITH SINGLE POINT CONTROL

Joseph Staudinger, Gilbert; John M. Golio; William B. Beckwith, both of Chandler, all of Ariz., and Jean B. Verdier, Tournefeuille, France, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 7, 1993, Ser. No. 87,245
Int. Cl.[5] H03H *11/00*
U.S. Cl. 307—552 20 Claims



1. An attenuator circuit, comprising:

a first transistor having a gate, a drain and a source, said drain receiving an input signal, said gate being coupled to a power supply conductor;

a second transistor having a gate, a drain and a source, said gate receiving a control voltage, said drain receiving a reference voltage;

first means coupled between said drain of said first transistor and said drain of said second transistor for providing DC isolation;

second means coupled between said source of said second transistor and said power supply conductor for providing DC isolation;

a third transistor having a gate, a drain and a source, said gate receiving said control voltage, said drain receiving said reference voltage;

third means coupled between said source of said first transistor and said drain of said third transistor for providing DC isolation; and

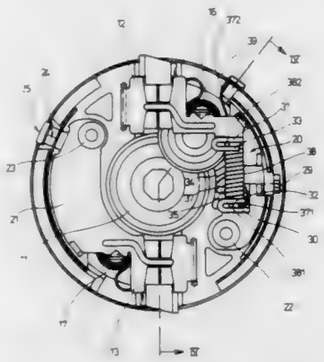
fourth means coupled between said source of said third transistor and said power supply conductor for providing DC isolation.

5,345,124

CONNECTING COVER FOR ELECTRIC FUEL PUMP

Harald Lang, Markgroeningen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 8, 1993, Ser. No. 1,813
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1992, 9200625
Int. Cl.[5] H02K *5/24, 11/00, 5/12, 13/06*
U.S. Cl. 310—51 6 Claims



1. A connecting cover for a pump housing of an electric fuel pump, which pump housing accommodates a direct current motor, comprising a cover body having a cover axis and brush guides arranged radially with respect to said cover axis and provided for guiding commutator brushes; connecting plugs projecting from the outer side of said cover body; connecting lances which connect said connecting plugs electrically with said brushes; screening means for screening spark interferences of the commutator brushes, said screening means including at least one capacitor provided with two connecting wires; said cover body having a bottom with axially projecting ribs which form a pocket for receiving said capacitor, said capacitor being located near said brush guides, said brush guides being formed from electrically conductive material, said at least one capacitor having a first connecting wire connected directly with one of said brush guides and a second connecting wire for contacting the pump housing or a pole pipe of the direct current motor and extending outwardly on a periphery of said body.

5,345,125

MINIATURE, MODULAR, PLUG-IN ROTATING SWITCH

Bernard A. Raad, Burbank, Calif., assignor to EEMCO/DATRON, Inc., Los Angeles, Calif.

Filed Aug. 14, 1992, Ser. No. 930,711
Int. Cl.[5] H02K *11/00, 47/04*
U.S. Cl. 310—68 A 11 Claims

1. A device operable either as a generator or as an induction motor or both as a generator and as an induction motor comprising:

a hollow rotor shaft,

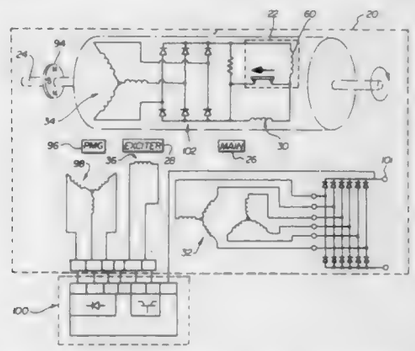
said hollow rotor shaft permitting fluid to pass therethrough,

said hollow rotor shaft having a central axis extending therethrough;

an exciter having a rotating exciter armature and a stationary exciter field exterior to said hollow rotor shaft;

a main generator having a rotating main generator field and a main generator armature exterior to said hollow rotor shaft;

a rectifier assembly coupled between the rotating exciter armature and the rotating main generator field; and



a switch operatively coupled to said main generator field positioned inside said hollow rotor shaft along said central axis for selectively disabling the rotating main generator field;

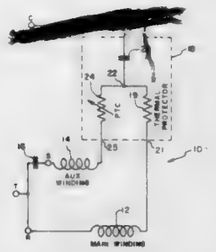
said switch including a housing, an opening in said housing to allow fluid to flow into said housing, and a first solenoid actuator positioned within said housing for activating the switch to disable said main generator field and a second solenoid actuator positioned in said housing for activating the switch to disable said main generator field.

5,345,126

POSITIVE TEMPERATURE COEFFICIENT START WINDING PROTECTION

Ricky L. Bunch, Tecumesh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Continuation of Ser. No. 856,507, Mar. 24, 1992, abandoned. This application Oct. 29, 1993, Ser. No. 146,435
Int. Cl.[5] H02K *11/00;* H02H *7/08*
U.S. Cl. 310—68 C 9 Claims



1. An over-current protection device for a permanent split capacitor (PSC) motor having an auxiliary winding and a main winding, the auxiliary winding and the main winding connected in parallel, and a run capacitor connected in series with the auxiliary winding, the protection device comprising:

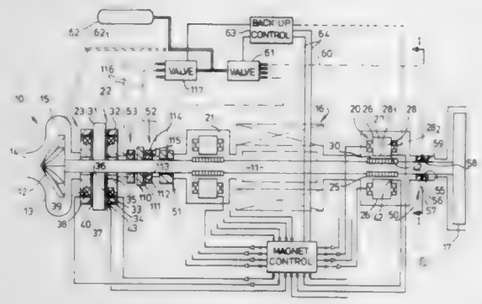
a positive temperature coefficient (PTC) element connected in series with the auxiliary winding and in parallel with the main winding, said PTC element having an anomaly temperature that allows start-up current and normal operation current to flow through the auxiliary winding, but which substantially interrupts the current flow in the auxiliary winding when an over-current or fault current condition occurs by an increase in resistance due to a concurrent rise in temperature to effectively open-circuit the auxiliary winding from the current flow.

5,345,127

MAGNETIC BEARING BACK-UP

Nigel H. New, Harrow, United Kingdom, assignor to The Glacier Metal Company Limited, Middlesex, England

Filed Jul. 14, 1993, Ser. No. 91,184
Claims priority, application United Kingdom, Jul. 23, 1992, 9215620
Int. Cl.[5] H02K *7/09;* F16C *21/00*
U.S. Cl. 310—90.5 15 Claims



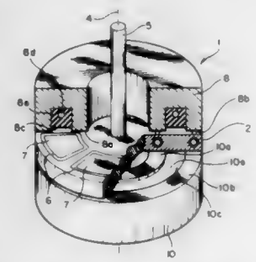
1. A magnetic bearing arrangement for a rotatable shaft including a magnetic bearing and back-up bearing means, the back-up bearing means comprising a hydrostatic bearing including adjacently disposed rotatable and stationary running surfaces spaced from each other to define a support gap when the shaft is within a predetermined range of operational shaft positions within said magnetic bearing, a source of pressurised fluid and back-up control means responsive to a detected inability of the magnetic bearing to support said shaft within said predetermined range of operational shaft positions providing fluid to the support gap to form therein a film at such hydrostatic pressure as to support said shaft within said predetermined range of operational shaft positions.

5,345,128

MAGNETIC BEARING WITH CLOSED LOOPS WHICH MOVE IN AC ELECTROMAGNET FIELD AND/OR WHICH INCLUDE CAPACITORS

Joseph F. Pinkerton, Austin; David B. Clifton, Leander, and Scott R. Little, Austin, all of Tex., assignors to Magnetic Bearing Techologies, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 950,607, Sep. 25, 1992, abandoned, and a continuation-in-part of Ser. No. 996,192, Dec. 23, 1992, Pat. No. 5,302,874. This application Jul. 23, 1993, Ser. No. 95,377
Int. Cl.[5] H02K *7/09*
U.S. Cl. 310—90.5 41 Claims



1. A magnetic bearing system, comprising,

an electromagnet which has a first pole, a second pole, and electrical windings,

a power supply for causing an electrical current to flow through said electrical windings to create magnetic flux which simultaneously flows in opposite directions at said first and second poles so that said first and second poles have opposite polarities,

an object which includes closed loops of electrically conductive material, said closed loops being unconnected electrically to any electrical power supply,

said object and said electromagnet being relatively movable so that said loops travel along a prescribed path relative to said electromagnet,

each of said loops forming a boundary of a loop interior area, each of said loops being positioned where its interior area is simultaneously exposed to magnetic flux associated with both of said poles so that an electrical current will be induced in said loop whenever the flux associated with said first pole passing through its interior area is unequal to the flux associated with the second pole passing through its interior area,

said power supply providing alternating current to said electromagnet so that the magnetic polarities of said first and second poles change periodically, said power supply operating at a frequency at which said magnetic flux associated with said poles interacts with said electrical currents induced in the loops to exert forces on the loops in directions which are lateral with respect to said path, tending to move any loop which deviates from said path toward said prescribed path in a lateral direction.

5,345,129

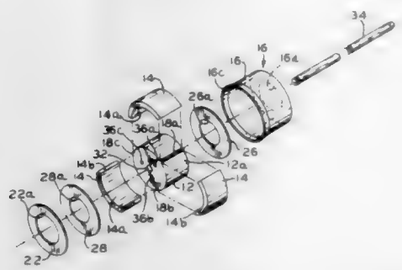
PERMANENT MAGNET ROTOR AND METHOD AND APPARATUS FOR MAKING SAME

David T. Molnar, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 863,900, Apr. 6, 1992. This application Feb. 16, 1993, Ser. No. 17,533

Int. Cl.[5] H02K *21/12*

U.S. Cl. 310—156 **22 Claims**



1. A permanent magnet rotor for use in an electric motor, said rotor comprising, in combination, a core, a plurality of magnetizable elements disposed about a generally fixed diameter cylindrical outer peripheral surface of said core, said magnetizable elements being arcuate in transverse cross-section and having arcuate outer surfaces lying in a common cylindrical envelope, and an outer cup-shaped relatively thin-walled metallic shell having an annular wall terminating at one end in a substantially closed end wall and having a peripheral edge defining an opposite open end, said core and magnetizable elements being disposed within said shell, said annular wall having an inner diameter to create an interference fit with said magnetizable elements when said core and elements are inserted into said shell, and an end plate within said open end of said shell opposite corresponding ends of said core and magnetizable elements, said peripheral edge of said shell being formed to overlie said end plate and retain said core and magnetizable elements in encapsulated relation within said shell.

5,345,130

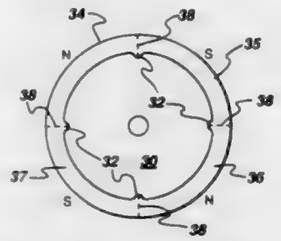
MODABLE PERMANENT MAGNET ROTOR FOR OPTIMIZED FIELD SHAPING

Gerald B. Kliman, Schenectady, N.Y., and Eike Richter, Cincinnati, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 28, 1993, Ser. No. 53,275

Int. Cl.[5] H02K *21/12*

U.S. Cl. 310—156 **3 Claims**



1. A permanent magnet rotor, comprising:

a rotor core with permanent magnet material disposed thereon to form a plurality of magnetic poles, said rotor core having a plurality of uniformly distributed cut-outs formed along the periphery thereof, said cut-outs having a shape which is determined to provide a substantially trapezoidal flux distribution that is substantially flat over approximately a central 120° of each respective 180° half-cycle thereof.

5,345,131

ELECTRIC MOTOR WITH COMBINED PERMANENT AND ELECTROMAGNETS

Vilmos Török, Carl Milles väg 7, 181 34 Lidingö , Sweden

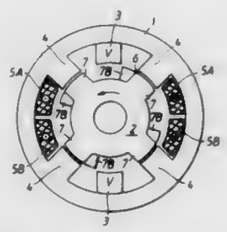
PCT No. PCT/SE91/00909, § 371 Date Jun. 28, 1993, § 102(e) Date Jun. 28, 1993, PCT Pub. No. WO92/12567, PCT Pub. Date Jul. 23, 1992

PCT Filed Dec. 27, 1991, Ser. No. 81,297

Claims priority, application Sweden, Dec. 28, 1990, 9004168-2

Int. Cl.[5] H02K *37/02*

U.S. Cl. 310—181 **20 Claims**



1. An electric motor comprising a first motor part and a second motor part (**1**, **2**) which are rotatable relative to one another and each of which has a ferromagnetic core and which are separated by an air gap (**6**) lying between the ferromagnetic cores, wherein the ferromagnetic core of said first motor part (**1**) has provided on the surface thereof which faces the air gap (**6**) a plurality of salient magnetic poles which are disposed sequentially and in spaced relationship in the direction of rotation, and of which some are ferromagnetic (**4**) and some are permanent-magnetic (**3**) and all of which are magnetically connected to a magnetizing winding (**5A**, **5B**) for simultaneous magnetization of both the ferromagnetic (**4**) and the permanent-magnetic (**3**) poles, wherein the ferromagnetic core of the said other motor part (**2**) is provided on the surface thereof facing the air gap (**6**) and opposite the magnetic poles (**3**, **4**) on the core of the first part (**1**) with a row of salient ferromagnetic reluctance poles (**7**) which extend in said direction of rotation and which have a constant pole pitch and are spaced-apart equidistantly, wherein each such reluctance pole (**7**) over a portion thereof has a width in the direction of rotation which corresponds essentially to half said pole pitch and over the remaining portion thereof is smaller such that each reluctance pole (**7**) has a part (**7B**) which projects in a predetermined direction common to all reluctance poles (**7**), wherein the ferromagnetic and permanent-magnetic poles (**3**, **4**) on the core the first motor part (**1**) have a width in the direction of rotation which corresponds essentially to the width of the narrow part of the reluctance poles (**7**) and are so positioned that during relative rotation of the two motor parts (**1**, **2**), all ferromagnetic poles (**4**) will be located simultaneously opposite their respective reluctance poles (**7**) on the second motor part (**2**) and, similarly, such that all permanent-magnetic poles (**3**) will be simultaneously located opposite their respective reluctance poles (**7**), wherein the number of permanent-magnetic poles (**3**) is smaller than the number of reluctance poles (**7**) on the core of the second motor part (**2**), such that no permanent-magnetic poles (**3**) are present in some of those positions which would be occupied by such permanent-magnetic poles if a number of permanent-magnetic poles (**3**) equal to the number of reluctance poles (**7**) of the core of the second motor part (**2**) were distributed uniformly.

5,345,132

VEHICULAR ALTERNATING CURRENT DYNAMO

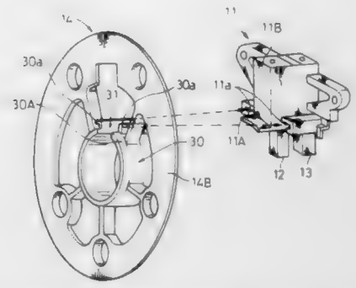
Susumu Sasaki; Hisashi Wada; Takashi Oguri; Susumu Terumoto, and Akihiro Saito, all of Hitachi, Japan, assignors to Hitachi Automotive Engineering, Tokyo and Hitachi, Ltd. and Co., Ltd., Ibaraki, both of Japan

Filed Jun. 23, 1993, Ser. No. 79,829

Claims priority, application Japan, Jun. 23, 1992, 4-164957

Int. Cl.[5] H02K *13/00*

U.S. Cl. 310—239 **7 Claims**



1. A vehicular alternating current dynamo comprising a rotor fixedly mounted to a rotary shaft driven by a vehicular engine and having a rotor coil wound around said rotor, a cooling fan fixed to a side of said rotor, a slip ring assembly fixedly fitted over said rotary shaft to position near said rotor coil and comprised of a slip ring and an end flange, a brush holder accommodating a brush held in slide contact with said slip ring, a tubular cover disposed to surround said slip ring and formed in its peripheral wall with an opening to which said brush holder is inserted, a rear bracket for supporting said rotary shaft, a rectifier disposed inwardly of said rear bracket, and a fan guide positioned to face said cooling fan and said end flange from a side opposite to said rotor and fixed to said rear bracket through said rectifier, said tubular cover and said fan guide being molded integrally with each other, the opening of said tubular cover and said brush holder having respective fitting portions in a form of a projection and a recess which are parallel to an axial direction and engageable with each other, wherein:

said fitting portions of the opening of said tubular cover and said brush holder have axially abutting portions through which said brush holder is pressed against and fixed to said rear bracket by virtue of a pressing force produced when said fan guide integral with said tubular cover is fixed to said rear bracket.

5,345,133

ELECTRIC MOTOR

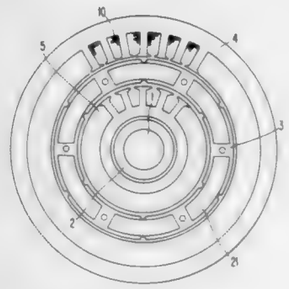
Akiyoshi Satake, Niwa, Japan, assignor to Okuma Corporation, Aichi, Japan

Filed Jun. 3, 1993, Ser. No. 70,754

Claims priority, application Japan, Jun. 10, 1992, 4-176135

Int. Cl.[5] H02K *1/22*

U.S. Cl. 310—266 **3 Claims**



1. An electric motor comprising:

a rotational shaft which rotates about a rotational axis thereof;

a cylindrical rotor including a plurality of permanent magnets embedded within a high permeability material, said plurality of permanent magnets spaced apart and juxtaposed along a circumference of said cylindrical rotor with said high permeability material;

a coupling member made of a non-high permeability material which couples said rotational shaft to said cylindrical rotor such that the rotational axis of said rotational shaft coincides with a rotational axis of said cylindrical rotor;

an outer cylindrical stator, formed of said high permeability material, which is coaxial said cylindrical rotor and has an inner peripheral surface confronting an outer peripheral surface of said cylindrical rotor, said outer cylindrical stator including a plurality of spaced apart outer stator teeth protruding radially inward towards said cylindrical rotor and extending lengthwise from one end of said outer cylindrical stator to another end of said outer cylindrical stator, said plurality of spaced apart outer stator teeth being spaced from said outer peripheral surface of said cylindrical rotor and defining grooves therebetween which are spaced apart and juxtaposed along said inner peripheral surface of said outer cylindrical stator, wherein a total number of said plurality of spaced apart outer stator teeth exceeds a total number of said plurality of permanent magnets;

an inner cylindrical stator, formed of said high permeability material, which is coaxial with said cylindrical rotor and has an outer peripheral surface confronting an inner peripheral surface of said cylindrical rotor, said inner cylindrical stator including a plurality of spaced apart inner stator teeth protruding radially outward towards said cylindrical rotor and extending lengthwise from one end of said inner cylindrical stator to another end of said inner cylindrical stator, said plurality of spaced apart inner stator teeth being spaced from said inner peripheral surface of said cylindrical rotor and defining grooves therebetween which are spaced apart and juxtaposed along said outer peripheral surface of said inner cylindrical stator;

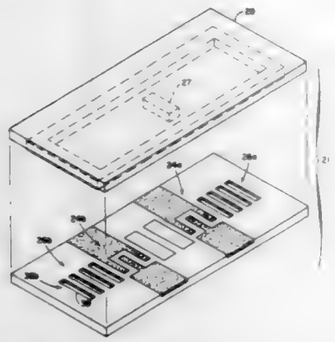
a plurality of windings respectively extending lengthwise along and within said grooves defined by said inner stator teeth and outer stator teeth.

5,345,134

SAW DEVICE AND METHOD OF MANUFACTURE

James A. Greer, Andover, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jun. 29, 1988, Ser. No. 221,495
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—313 D 12 Claims



1. A SAW device comprising:

a substrate comprising a piezoelectric material which supports surface wave propagation, said material comprising a piezoelectric ceramic having the chemical formula: $A_xB_{1-x}O$ where O is oxygen, A and B are metals, and x is the compositional ratio of A to O; and

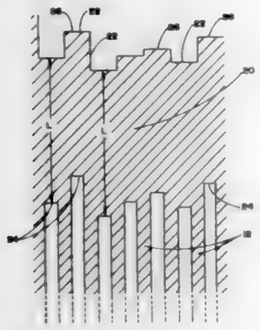
transducer means disposed on said substrate comprised of a conductive metal doped with a predetermined concentration of at least one of A and B.

5,345,135

INTERDIGITAL TRANSDUCER FOR USE IN A SURFACE ACOUSTIC WAVE FILTER

Robert C. Peach, Cambridge, Canada, assignor to Com Dev Ltd., Cambridge, Canada

Filed Jan. 26, 1993, Ser. No. 10,072
Claims priority, application Canada, May 25, 1992, 2069370
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—313 B 8 Claims



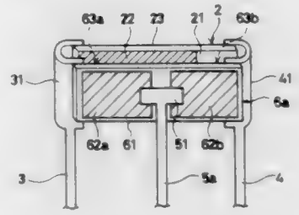
1. An interdigital transducer for use in a surface acoustic wave filter, said transducer comprising a thin film of metal pattern on a piezoelectric substrate, said pattern being shaped so that the transducer has two busbars with a plurality of electrodes extending between the busbars, the electrodes being parallel to one another, each electrode having a break, the transducer being connected within the filter so that when voltage is applied across the busbars, electric fields between the electrodes generate surface acoustic waves, each busbar having an inner edge and an outer edge, the inner edge extending between each of the electrodes, said outer edge having outermost portions, all outermost portions being parallel to said inner edge, said inner and outer edges having a non-linear shape in the form of a pattern and being shaped relative to one another to reduce the effect of internally reflected surface waves said pattern being repeated throughout said filter.

5,345,136

COMPOSITE TYPE PIEZOELECTRIC COMPONENT

Ryoji Takagi; Makoto Miyaders; Takashi Yamamoto, and Ryuhei Yoshida, all of Kyota, Japan, assignors to Murata Manufacturing Co. Ltd., Japan

Continuation of Ser. No. 672,469, Mar. 18, 1991, abandoned.
This application May 21, 1993, Ser. No. 66,321
Int. Cl.[5] H01L *41/00*
U.S. Cl. 310—320 17 Claims



1. A composite type piezoelectric component comprising:

a piezoelectric device having a piezoelectric substrate and electrodes formed on both major surfaces of said piezoelectric substrate;

first and second terminals having top ends which receive edge sections of said piezoelectric device therein, said first and second terminals being electrically connected individually to said electrodes on said piezoelectric device and being attached to said piezoelectric device;

a capacitor having a dielectric substrate, a first pair of divided electrodes being formed on one major surface of said dielectric substrate, a second pair of divided electrodes being formed on the other major surface of said dielectric substrate, said first and second pairs of divided electrodes forming therebetween two capacitor elements having identical capacitance, said first pair of electrodes being individually connected electrically to said first and second terminals, said capacitor being attached to said first and second terminals with a clearance left between said capacitor and said piezoelectric device; and

a third terminal substantially equidistance from said first and second terminals, said third terminal having a first connector piece and a second connector piece individually connected electrically to said divided electrodes of said second pair.

5,345,137

TWO-DIMENSIONALLY DRIVING ULTRASONIC MOTOR

Tomoki Funakubo, and Katsuhiro Wakabayashi, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

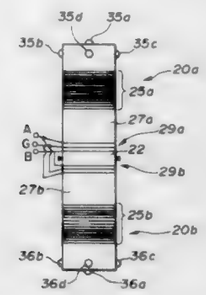
Filed Apr. 8, 1992, Ser. No. 865,345
Claims priority, application Japan, Apr. 8, 1991, 3-101772; Nov. 19, 1991, 3-330155; Dec. 20, 1991, 3-354941
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 20 Claims

1. A two-dimensional driving ultrasonic motor characterized by comprising:

a first electro-mechanical energy converting device having opposing surfaces and being uniformly polarized in a given direction and having electrodes substantially covering both opposing surfaces;

a second electro-mechanical energy converting device laminated to said first electro-mechanical energy converting device, having opposing surfaces and being uniformly polarized in a given direction and having an electrode substantially covering one of said opposing surfaces and a divided electrode arranged on the other surface, said divided electrode having electrode portions being separated from one another along a first dividing line;

a third electro-mechanical energy converting device having opposing surfaces and being laminated to one of said first and second electro-mechanical energy converting devices, and being uniformly polarized in a given direction and having an electrode substantially covering one of said opposing surfaces and a divided electrode arranged on another one of the opposing surfaces, said divided elec-



trode comprising electrode portions being separated along a second dividing line, said second and third devices being aligned so that said first and second dividing lines intersect substantially at right angles;

a friction member fixed to an end of said laminated electro-mechanical energy converting devices;

means for pressing a driven member against said friction member under a predetermined pressure; and

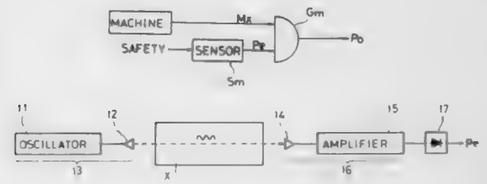
means for applying operating signals to said first, second and third devices including means for controlling amplitude and phase of the operating signals to obtain a desired two-dimensional output.

5,345,138

METHOD AND APPARATUS FOR ASSURING SAFE WORK

Masao Mukaidono, Tokyo; Noboru Sugimoto, Koganei, and Koichi Futsuhara, Urawa, all of Japan, assignors to The Nippon Signal Co., Ltd., Tokyo, Japan

Filed Mar. 14, 1991, Ser. No. 669,563
Claims priority, application Japan, Jul. 16, 1990, 2-185214
Int. Cl.[5] H01H *47/24*
U.S. Cl. 307—326 9 Claims



1. A safe work assuring method for assuring safety of a worker in work space where the worker works in cooperation with a machine, comprising steps of:

detecting a safe status of the worker by receiving an AC input signal at a high level;

detecting a dangerous status of the worker by receiving the AC input signal at a low level including zero;

generating an output signal at a logical value of 1, indicative of the safe status and corresponding to a high energy status, upon reception of the AC input signal at the high level;

generating said output signal at a logical value of 0, indicative of the dangerous status and corresponding to a low energy status, upon reception of the AC input signal at the low level including zero;

detecting the safe and dangerous status of the worker by using a sensor in which a sensor output signal is extinguished when the sensor fails, and a logical value of 0 is indicated, irrespective of the level of the AC input signal received thereby;

performing a logical product calculation of the sensor output signal, wherein a logical value of 1 is indicative of a safe status of the sensor, and a work enable signal of a logical value of 1 on a machine side, by using a logical product element having a logical output signal which cannot erroneously come to a logical value of 1; and

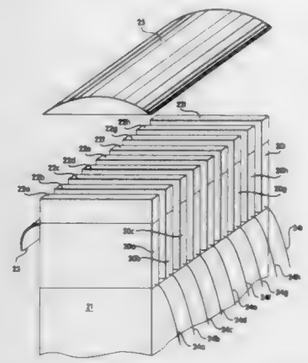
generating a work executing energy for the work space on the machine side on the basis of the logical product calculation.

5,345,139

ELECTROSTRICTIVE ULTRASONIC PROBE HAVING EXPANDED OPERATING TEMPERATURE RANGE

Turuvekere R. Gururaja, North Andover, Mass.; Joseph Fielding, State College, Pa.; Thomas R. Shrout, State College, Pa., and Sei-Joo Jang, State Collete, Pa., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 27, 1993, Ser. No. 113,450
Int. Cl.[5] H01L *41/87*; C04B *35/46*
U.S. Cl. 310—358 12 Claims



1. In an ultrasonic probe having an electrostrictive transducer for transmitting and receiving ultrasonic energy, and having electrical contacts attached to the transducer for connection to a source that selectively applies an electric field to the transducer, the improvement comprising:

the transducer being fabricated from a material comprising a solid solution of lead magnesium niobate PMN and lead titanate PT and being doped with lanthanum La according to the formula:

$$Pb_{1-(3/2)y}La_y\square_{y/2}[(Mg_{1/3}Nb_{2/3})_{1-x}Ti_x]O_3 \quad (I)$$

wherein x and y are on the order of

$10 \leqq x \leqq 30$ mole %

$0.5 \leqq y \leqq 3$ mole %.

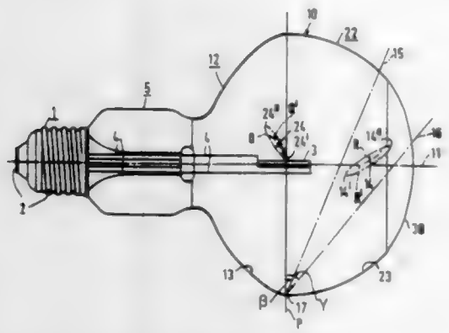
and $\square$ represents a vacancy at the Pb site, wherein the transducer provides an expanded operating temperature range.

5,345,140

ELECTRIC LAMP ARRANGEMENT WITH REFLECTOR

Petrus A. J. Holten, Nevers Cédex, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 6, 1992, Ser. No. 926,580
Claims priority, application European Pat. Off., Aug. 9, 1991, 91202043.5; Sep. 19, 1991, 91202417.1
Int. Cl.[5] H01J *5/16*; **F21V** *7/00*
U.S. Cl. 313—113 **14 Claims**



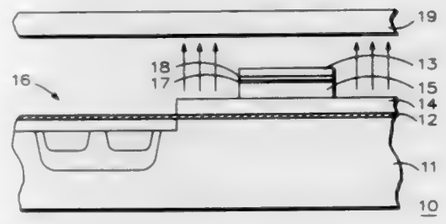
1. An electric lamp arrangement comprising:
a. a lamp cap (1) provided with contacts (2);
b. a rotationally symmetrical reflector (10) having an axis of symmetry (11) and a largest diameter (d) in a plane (P) transverse to the axis of symmetry, said reflector including:
(1) a first internally concave, mirroring wall portion (12) behind the plane (P) which in axial cross-sections at a first side of the axis (11) is curved substantially according to a circular arc (13) having a center of curvature (14) in front of the plane (P), which first wall portion is situated adjacent the lamp cap (1); and
(2) a second internally concave, mirroring wall portion (22) in front of the plane (P) which in axial cross-sections at the first side of the axis (11) is substantially curved according to a circular arc (23) having a center of curvature (24) behind the plane (P) , at the other side of the axis;
c. a light-transmissive window (30) which is intersected by the axis (11); and
d. an electric light source (3) arranged in the reflector (10) in the vicinity of the axis (11) and of the plane (P) and connected to current conductors (4) which extend to the contacts (2) of the lamp cap (1),
characterized in that:
the first mirroring wall portion (12) in every axial cross-section at the first side of the axis (11) is curved substantially according to a circular arc having its center of curvature (14) situated in a region which lies predominately at the other side of the axis and which is bounded by lines (15, 16) which enclose an angle β and an angle γ of 23° and 39°, respectively, with the plane (P) and which intersect the plane (P) in the point (17) where the first mirroring wall portion (12) intersects the plane (P) at the first side of the axis;
the second mirroring wall portion (22) has a center of curvature (24) which is situated in a region having the shape of an ellipse (Q) whose major axis has a first end (24') in the plane (P) at a distance of 0.02 d from the axis of symmetry (11) and a second end (24'') at a distance of 0.07 d from the plane (P) and 0.13 d from the axis of symmetry, which ellipse has a major axis which is 6.8 times the length of the ellipse minor axis; and
the light-transmissive window (30) has a largest diameter smaller than 0.8 d.

5,345,141

SINGLE SUBSTRATE, VACUUM FLUORESCENT DISPLAY

Curtis D. Moyer, Phoenix; John Song, Tempe, and James E. Jaskie, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 29, 1993, Ser. No. 45,407
Int. Cl.[5] H01J *1/62*
U.S. Cl. 313—495 **18 Claims**



1. A single substrate, vacuum fluorescent display comprising:
a supporting substrate;
a first layer of electrically conductive material positioned on the substrate;
a light emitting layer including phosphor positioned on the first layer;
a layer of dielectric material selectively positioned on the light emitting layer and a second layer of electrically conductive material positioned on the layer of dielectric material, the second layer of electrically conductive material being electrically insulated from the first layer of electrically conductive material; and
an electron emitting layer of low work function material positioned on the second layer of electrically conductive material, the layer of dielectric material, the second layer of electrically conductive material and the electron emitting layer being patterned so as to be positioned on a centrally located portion of the light emitting layer with portions of the light emitting layer extending outwardly therefrom and substantially surrounding the electron emitting layer, and the electron emitting layer being further positioned so that emitted electrons strike the portions of the light emitting layer extending outwardly from the dielectric layer.

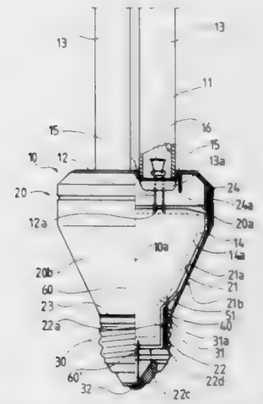
5,345,142

SINGLE-ENDED LOW-PRESSURE DISCHARGE LAMP

Leon F. Chamberlain, Mentor, Ohio; Miklos Hargitai, Budapest, Hungary; Ferenc Lantos, Budapest, Hungary; Jozsef Tokes, Budapest, Hungary, and Istvan Wursching, Budapest, Hungary, assignors to General Electric Company, Schenectady, N.Y. and Tungsram Co., Ltd., Budapest, Hungary

Filed Oct. 22, 1992, Ser. No. 965,101
Int. Cl.[5] H01J *7/44*
U.S. Cl. 315—58 **6 Claims**

1. A single-ended low-pressure discharge lamp comprising: at least one discharge tube sealed in a gas-tight manner and provided with electrodes at its ends; a housing provided with a threaded base suitable for connecting the lamp to a lamp-holder; ballast circuit means for operating the discharge tube and being disposed within said housing; said housing is provided with an upper part, a connecting part and a hollow supporting part, said supporting part being disposed between said upper and said connecting parts; said ends of said discharge tube are placed side by side and are fixed in said upper part of said housing; said threaded base is mounted on said connecting part of said housing and is constructed of a central portion and a sleeve portion electrically insulated from each other; at least one electrode lead connected with a corresponding at least one of said electrodes which is connected to said central portion of said threaded base through at least one circuit component associated with said ballast circuit means and through a first lead-in wire; a second lead-in wire is connected from said ballast circuit means to the sleeve of the threaded base in an electrical current conducting manner, and characterized in that said housing is provided with a bore starting at the inner surface of said hollow supporting part and extending to a junction line of the outer surface of said supporting part and a joining surface associated with said connecting



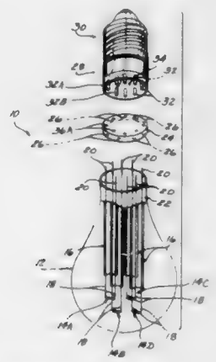
part; said bore having an outlet opening placed at least partly between said joining surface of said connecting part and an upper flange portion of said sleeve portion of said threaded base; and, a guiding surface disposed on said inner surface of said supporting part adjacent to an inlet opening of said bore, said guiding surface being a substantially bow-shaped elongated bossage protruding from said inner surface of said supporting part and at least partly surrounding said inlet opening of said bore.

5,345,143

LIGHT BULB WITH PROGRAM DISC

Charles T. Little, 20810 Avon La., Southfield, Mich. 48075

Filed Aug. 31, 1992, Ser. No. 937,139
Int. Cl.[5] H01J *7/44*
U.S. Cl. 315—64 **8 Claims**



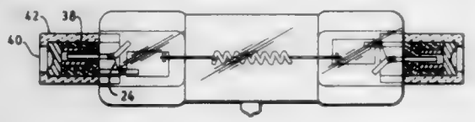
1. A light bulb comprising:
a base having a socket section configured to be received in a socket be connected to a source of electrical power, said socket section having portions establishing electrical contact with said socket;
a pair of power output contact elements on said base, said pair of power output contact elements electrically connected to respective portions of said socket section;
a bulb defining a sealed cavity and having at least one filament mounted therein, a pair of wire leads connected to said filament and extending through an endwall of said bulb;
power input contact elements extending through said bulb endwall, said power input contact elements connected to a respective one of said wire leads;
a program disc constructed of electrically insulating material interposed between said base and said bulb, said program disc having two opposite sides, each side adjacent a respective one of said base and said bulb end wall, and each side of said program disc having a separate set of contacts, each set of contacts matrable with each power output and input contact elements of said base and bulb respectively by a pin and socket connection; and
interconnection means carried by said program disc electrically interconnecting each contact on said one side of said program disc with a respective contact on said other side of said program disc, said interconnection means creating a different electrical connection between said base contact elements and said bulb contact elements in different rotated positions of said program disc.

5,345,144

LAMP WITH INTERNALLY PRESSED FUSE

Christopher E. Mahonski, Winchester, and Raymond T. Fleming, Lexington, both of Ky., assignors to GTE Products Corporation, Danvers, Mass.

Filed Aug. 14, 1992, Ser. No. 930,055
Int. Cl.[5] H01J *7/44*
U.S. Cl. 315—71 **5 Claims**



1. A lamp with an internally pressed fuse comprising:
a) an envelope having an internal surface defining an enclosed volume, and a first press seal; and
b) a filament structure having a filament positioned in the enclosed volume, an inner lead extending from a first end of the filament into the first press seal electrically coupled in series to a fuse pressed in the first press seal, the fuse being electrically coupled in series to a final lead extending from the first press seal to the exterior of the lamp, the filament being further connected through a second filament end to the exterior of the lamp for electrical connection.

5,345,145

METHOD AND APPARATUS FOR GENERATING HIGHLY DENSE UNIFORM PLASMA IN A HIGH FREQUENCY ELECTRIC FIELD

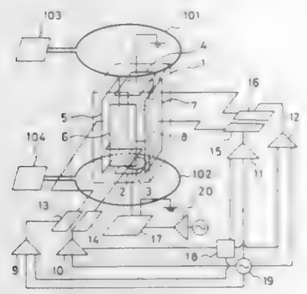
Kenji Harafuji; Mitsuhiro Ohkuni; Tokuhiko Tamaki; Masafumi Kubota, all of Osaka, and Noboru Nomura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 30, 1993, Ser. No. 39,911
Claims priority, application Japan, Mar. 31, 1992, 4-077785
Int. Cl.[5] H01J *7/24*
U.S. Cl. 315—111.41 **22 Claims**

1. A plasma generating method comprising:
a first step of disposing three of more lateral electrodes at lateral sides of a plasma generating part in a vacuum chamber;
a second step of respectively applying, to said lateral electrodes, high frequency electric powers of which frequencies are the same as one another and of which phases are different from one another, thereby to excite, in said

plasma generating part, a high frequency rotating electric field to cause electrons under translational motions in said plasma generating part to present rotating motions with translational movement component; and

a third step of applying, to said plasma generating part, a magnetic field substantially at a right angle to the working



plane of said high frequency rotating electric field, thereby to convert said translational movement of said electrons under rotating motions in said plasma generating part into revolving movement by which said electrons revolve in said plasma generating part;

said electrons in said plasma generating part being confined therein.

5,345,146

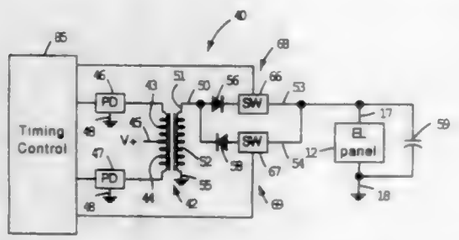
DRIVE CIRCUIT FOR ELECTROLUMINESCENT PANELS AND THE LIKE

Steven E. Koenck; Roger L. Wolf, both of Cedar Rapids, and Daniel E. Alt, Marion, all of Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 776,059, Oct. 11, 1991, abandoned. This application Dec. 11, 1992, Ser. No. 989,198

Int. Cl.[5] G09G *3/10*

U.S. Cl. 315—169.3 **22 Claims**



1. An electroluminescent panel having first and second terminals and a drive circuit for applying AC voltages at a power cycle frequency across the terminals of the panel, wherein the improvement comprises:

an inductor coupled in series with the panel;

first pulsing means coupled through the inductor to the panel for generating in the inductor a series of high frequency positive current pulses and for applying the positive pulses to the first terminal of the panel to ramp up a voltage across the terminals of the panel to a predetermined positive voltage level on the first terminal with respect to the second terminal;

second pulsing means coupled through the inductor to the panel for generating in the inductor a series of high frequency negative current pulses and for applying the negative pulses to the first terminal of the panel to ramp down a voltage across the terminals of the panel to a predetermined negative voltage level on the first terminal with respect to the second terminal; and

timing control means coupled to the fist and second pulsing means for activating the first pulsing means during a first pulsing period and the second pulsing means during a second pulsing period succeeding the first pulsing period during a first power cycle, and then repeating the activation of the first and second pulsing means during respective, successive first and second pulsing periods of subsequent power cycles, and for providing periods between successive first and second pulsing periods within which periods both the first and the second pulsing means remain idle and a voltage reversal on the panel is initiated.

5,345,147

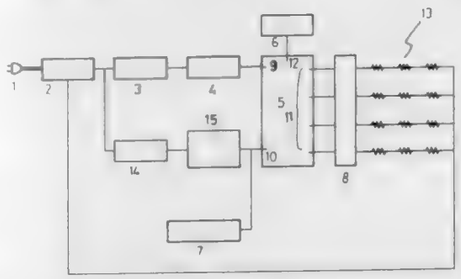
STAGED SELECTION TYPE CHRISTMAS LIGHT CONTROLLER CIRCUIT

Wei-Kuo Wu, No. 6, Industrial E. 2nd Rd., Science-based Industrial Park, Hsin-chu, Taiwan

Filed Feb. 17, 1993, Ser. No. 18,566

Int. Cl.[5] H05B *37/00*

U.S. Cl. 315—185 S **4 Claims**



1. A staged selection type Christmas light controller circuit, comprising:

an integrated circuit controller having at least a power input pin, a trigger signal input pin, and a plurality of output pins, said integrated controller selectively changing which of said plurality of output pins are energized responsive to a trigger signal coupled to said trigger signal input pin;

power supply means coupled to said integrated circuit for supplying regulated DC voltage thereto, said power supply means including (1) a rectifier circuit having an input coupled to an AC source, (2) a current-limiter having an input coupled to an output of said rectifier circuit, and (3) a voltage regulator circuit having an input coupled to an output of said current-limiter and an output coupled to said input pin of said integrated circuit controller;

trigger signal generating means coupled between said power supply means and said trigger signal input pin for generating said trigger signal responsive to said rectifier circuit being disconnected from said AC source followed by reconnection thereto within a predetermined time period; and,

a driver circuit having a plurality of inputs respectively coupled to said plurality of output pins of said integrated circuit controller, said driver circuit having a plurality of output terminals, each of said plurality of output terminals of said driver circuit being coupled to one end of a respective string of Christmas lights, each said string of Christmas lights having an opposing end coupled to said power supply means.

5,345,148

DC-AC CONVERTER FOR IGNITING AND SUPPLYING A GAS DISCHARGE LAMP

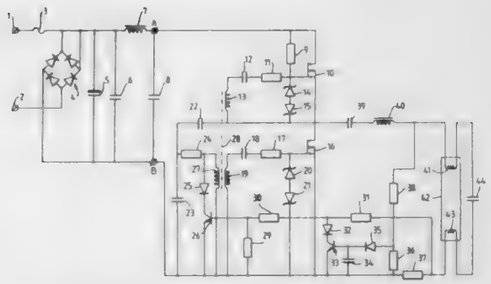
Xiaming Zeng, and Che L. Chia, both of Singapore, Singapore, assignors to Singapore Institute of Standards and Industrial Research, Singapore

Filed Feb. 17, 1993, Ser. No. 18,952

Claims priority, application United Kingdom, Feb. 18, 1992, 9203391

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—209 R **12 Claims**



1. A DC-AC converter for igniting and supplying a gas discharge lamp comprises first and second input terminals for connection to a source of DC voltage; a transformer having a primary winding, a first secondary winding a second secondary winding; first, second, third and fourth controlled semiconductor switching elements each having a first electrode, a second electrode and a control electrode; a captive voltage divider having a first and a second capacitor; first means for connecting the first and second semiconductor switching elements in a first series circuit across said first and second input terminals; second means for connecting a first end of a load circuit to a junction point between the first and second semiconductor switching elements and further connecting a second end of the load circuit to the second input terminal via a current sensor resistor, the load circuit comprising a third capacitor, an induction coil and a gas discharge lamp; third means for connecting a first end of the capacitive voltage divider to a junction point between the first and second semiconductor switching elements and for connecting a second end of the capacitive voltage divider to the second input terminal; fourth means for connecting the second capacitor in a parallel circuit with the primary winding via a first resistor; fifth means for connecting a first diode and the third semiconductor switching element across the primary winding; sixth means for connecting the current sensor resistor to a first resistive voltage divider comprising a second and a third resistor via a fourth resistor, and for connecting the control electrode of the third semiconductor switching element to a junction point between the second and third resistor; seventh means for connecting a second resistive voltage divider comprising a fifth and a sixth resistor across the lamp; and eighth means for connecting the first electrode of the fourth semiconductor switching element to one end of the first resistive divider via a second diode and connecting the source electrode of the fourth semiconductor element to the other end of the first resistive voltage divider, and further connecting the control electrode of the fourth switching element to a junction point between the fifth and sixth resistors, of the second resistive voltage divider via a third diode of a voltage rectifier, the voltage rectifier comprising the third diode and a fourth capacitor.

5,345,149

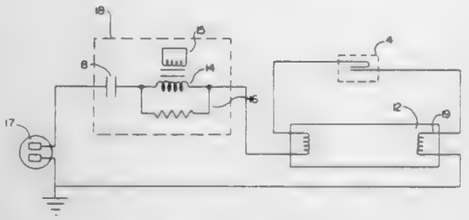
LIGHTING SYSTEM WITH FLUORESCENT AND INCANDESCENT LAMPS

Byung I. Ham, 2672 Monterey Pl., Fullerton, Calif. 92633

Continuation-in-part of Ser. No. 661,862, Feb. 27, 1991, Pat. No. 5,179,323. This application Jun. 26, 1992, Ser. No. 904,708

Int. Cl.[5] H05B *37/00*

U.S. Cl. 315—244 **4 Claims**



1. A lighting system using a 120 volt AC power source and including within a single enclosure a low wattage fluorescent lamp and a low wattage incandescent lamp, said lighting system comprising:

a) ballast means coupled between said fluorescent lamp and said AC power source;

b) a resistor and capacitor pair directly connected in parallel and between said AC power source and one contact of said incandescent lamp, said resistor and capacitor pair adapted to reduce the voltage of said AC power source by approximately 20%, a second contact of said incandescent lamp being coupled to said AC power source, wherein one contact of said flourescent lamp is coupled to said one contact of said incandescent lamp.

5,345,150

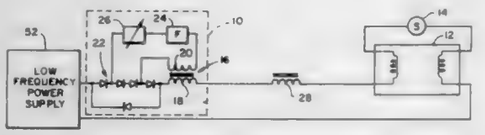
REGULATING LIGHT INTENSITY BY MEANS OF MAGNETIC CORE WITH MULTIPLE WINDINGS

George E. Biegel, Framingham, Mass., assignor to Stocker & Yale, Inc., Beverly, Mass.

Filed Mar. 26, 1992, Ser. No. 857,781

Int. Cl.[5] H05B *41/391*

U.S. Cl. 315—280 **30 Claims**



1. A method of retro-fitting a light intensity regulation device to an assembly comprising a lamp and a power supply, comprising steps for:

providing a light intensity regulation device, comprising:

a core of magnetic material,

a first electrical circuit means comprising a primary inductor wrapped around at least a first portion of said core of magnetic material, and

a second electrical circuit means comprising a secondary inductor wrapped around at least a second portion of said core of magnetic material,

said first electrical circuit means being designed for electrical connection to a lamp,

said primary inductor being arranged in said first electrical circuit means in a manner such that a variation in the inductance of said primary inductor will cause a corresponding variation in the intensity of light emitted by said lamp while said lamp is connected to said first electrical circuit means.

said second electrical circuit means comprising a control device means for varying, at will, electrical current

passing through said secondary inductor to cause a variation in the inductance of said primary inductor, thereby causing a change in the intensity of light emitted by said lamp, and

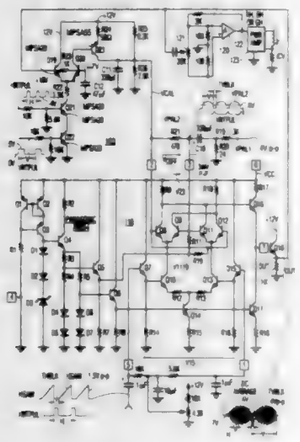
retro-fitting said light intensity regulation device to an assembly comprising said lamp and a power supply that produces electrical current of a frequency suitable for said lamp, in a manner such that said first electrical circuit means comprising said primary inductor is electrically connected to said lamp and to at least one output terminal of said power supply.

5,345,151

AUTOMATIC CALIBRATION IN A WAVEFORM GENERATOR FOR DEFLECTION

John B. George, Carmel, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Sep. 3, 1993, Ser. No. 115,602
Int. Cl.[5] H01J *29/51*
U.S. Cl. 315—368.23 **8 Claims**



1. A video display deflection apparatus, comprising:

a source of a modulation signal at a frequency that is related to a vertical deflection frequency;

a source of a second signal at a frequency that is related to a horizontal deflection frequency;

a modulator responsive to said modulation and second signals for generating an output signal at a frequency that is related to said horizontal deflection frequency, modulated in accordance with said modulation signal;

an amplifier responsive to said output signal and coupled to a winding for generating a magnetic field that corrects for a beam landing error in a cathode ray tube; and

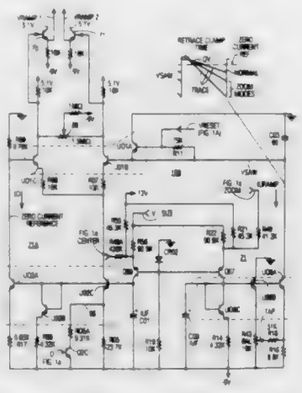
means responsive to said output signal for sampling said output signal, during a predetermined portion of a period of said modulation signal, remote from a peak amplitude of said output signal to generate an adjustment signal that is coupled to an input of said modulator to reduce an amplitude of said output signal in a negative feedback manner.

5,345,152

VERTICAL DEFLECTION S-CORRECTION WITH PICTURE HEIGHT COMPENSATION

James A. Wilber, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jul. 14, 1993, Ser. No. 91,932
Int. Cl.[5] H01J *29/56*
U.S. Cl. 315—371 **5 Claims**



1. A video deflection apparatus, comprising:

a cathode ray tube;

a vertical deflection winding mounted on a neck of said cathode ray tube;

a vertical deflection amplifier responsive to a sawtooth signal for generating a vertical deflection current in said vertical deflection winding to vary a vertical position of an electron beam on a screen of said cathode ray tube;

a sawtooth signal generator responsive to an adjustable picture size control signal for generating said sawtooth signal having an amplitude that is controlled in accordance with said control signal; and

a nonlinear element having a first input terminal that is responsive to said sawtooth signal and an output terminal that is coupled to said deflection amplifier for controlling said deflection current to produce a variation of a ratio between said deflection current and said sawtooth signal for providing S-correction, such that an adjustment of said control signal produces a change in an amplitude of a signal, derived from said sawtooth signal and developed in said first input terminal, that tends to vary said ratio in a first direction, said nonlinear element having a second input terminal that is responsive to said control signal for varying said ratio in an opposite direction in a manner to compensate for said change in said amplitude.

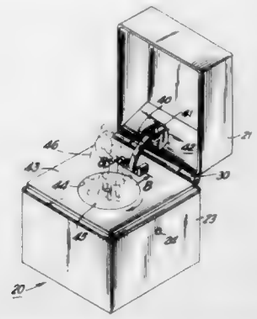
5,345,153

ORNAMENTAL CLOSURE

Michael Vaught, Oscaleta Rd., S. Salem, N.Y. 10590

Filed Mar. 15, 1993, Ser. No. 31,266
Int. Cl.[5] F16M *11/00;* **A47G** *35/00*
U.S. Cl. 318—4 **16 Claims**

1. An ornamental closure comprising a container portion, a cover, means mounting said cover for movement from a closed position covering at least a portion of said container portion to an open position exposing said portion of said container portion, an upstanding three-dimensional scene stored in a first position within said container portion, means mounting said scene for movement from said first position to a second position, exposed for viewing, when said cover is in said open position, means for moving said cover to said open position to open said closure and expose said scene to view, means for moving said scene from said stored first position to said exposed second position and means for animating said scene, said



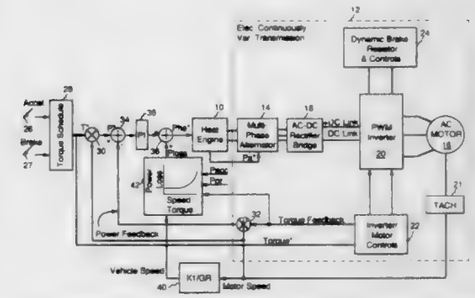
animating means including means for pivoting said scene about a vertical axis.

5,345,154

ELECTRIC CONTINUOUSLY VARIABLE TRANSMISSION AND CONTROLS FOR OPERATION OF A HEAT ENGINE IN A CLOSED-LOOP POWER-CONTROL MODE

Robert D. King, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 26, 1993, Ser. No. 23,537
Int. Cl.[5] H02P *7/67*
U.S. Cl. 318—49 **27 Claims**



1. An electric continuously variable drive system, comprising:

an ac motor;

input means for receiving an operator command, said operator command being converted to a torque command for determining the torque output of said motor;

an alternator for supplying electrical power to said ac motor via a rectifier and an inverter, said alternator being controlled by an alternator power command and operating in a closed-loop power mode within a normal operating range for said alternator;

a heat engine for driving said alternator, said heat engine operating in a closed-loop power mode;

heat engine control means for electronically controlling said heat engine via an injector duty cycle command or a throttle position command;

torque feedback means for measuring actual torque produced by said ac motor;

motor speed feedback means for measuring motor speed;

heat engine speed feedback means for measuring heat engine speed;

means for deriving a motor power command from said torque command and said motor speed;

means for deriving a heat engine power command from said motor power command;

heat engine power computation means for computing actual heat engine power from said heat engine speed and said injector duty cycle command or said throttle position command;

comparison means for comparing said heat engine power command to the actual heat engine power and generating a difference signal therefrom; and

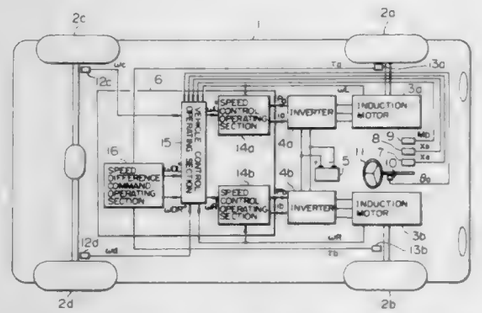
heat engine operating point command means for receiving said heat engine power command, said difference signal and said heat engine speed and providing an operating point signal to said heat engine control means to control said heat engine in order to minimize fuel usage and emissions thereby.

5,345,155

CONTROL SYSTEM FOR ELECTRIC VEHICLE

Ryoso Masaki; Yuusuke Takamoto, both of Hitachi; Sanshiro Obara, Ibaraki; Hirohisa Yamamura, Hitachiota, and Hiroyuki Yamada, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Automotive Engineering Co., Ltd., Katsuta, both of Japan

Filed Mar. 25, 1992, Ser. No. 857,335
Claims priority, application Japan, Mar. 25, 1991, 3-059957
Int. Cl.[5] H02J *7/24;* **H02P** *5/28*
U.S. Cl. 318—138 **7 Claims**



1. A control system for an electric vehicle, comprising:

at least two electric motors for independently driving left and right wheels of the vehicle;

power supply means for supplying power to said motors;

means for detecting command entered by a driver of the vehicle and driving operational amount provided for said vehicle;

means for detecting output torques of said two motors;

means for calculating a motor speed difference command signal for making said two output torques consistent with each other;

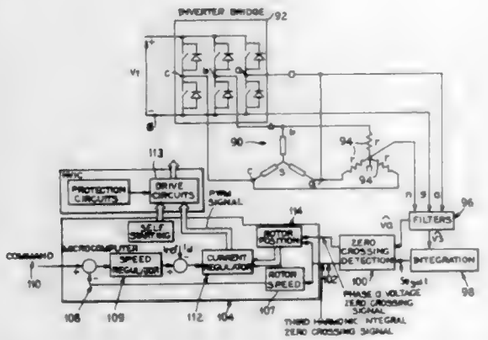
means for calculating a vehicle speed command signal for said vehicle on the basis of detected command and said driving operational amount;

means for calculating motor speed command signals for respective of said motors on the basis of calculated motor speed difference command signal and said vehicle speed command signal;

means for detecting actual speeds of said two motors; and

control means for voltage controlling supply power from said power supply means to said motors so that the detected actual speeds of said motors become consistent with said motor speed commands for respective motors.

5,345,156
CONTROL FOR HIGH SPEED OPERATION OF BRUSHLESS PERMANENT MAGNET MOTOR
Julio Cesar Moreira, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Dec. 30, 1993, Ser. No. 176,121
Int. Cl.[5] H02P *00/00*
U.S. Cl. 318—254 **14 Claims**



1. A method for controlling a brushless permanent magnet motor having stator windings connected in a star configuration which provides a stator neutral node and in which windings are induced back EMF fundamental and third harmonic components, and a rotor which rotates relative to the stator windings, the motor being driven by an inverter having electrical nodes, comprising the steps of:

extracting a first signal in which the third harmonic component is dominant;

filtering the first signal to generate a second signal which substantially contains only the third harmonic component;

integrating the second signal to provide a third signal comprising the time integral of the second signal;

communicating the third signal to a controller which controls operation of the inverter;

at preselected intervals of operation of the motor, deliberately precluding application of current signals to one of the stator windings of the motor, sensing a voltage of the respective stator winding and generating a fourth signal with information about the back EMF experienced by the respective stator winding; and

communicating the fourth signal to the controller.

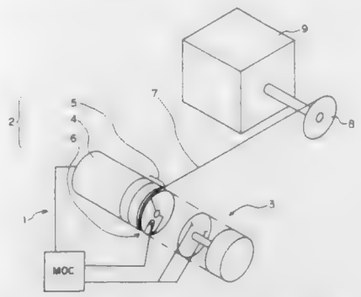
5,345,157
ACTUATOR FOR AN ACCELERATOR FOR ENGINE CONTROL VALVE CONTROL AND THE LIKE
Kazuhiro Suzuki, Nishinomiya; Masatoshi Miki; Toshio Kuwabara, both of Kobe, and Morihiko Matsubara, Hyogo, all of Japan, assignors to Nippon Cable System, Inc., Takarazuka and Shin Caterpillar Mitsubishi Ltd., Tokyo, both of Japan
Filed Jan. 6, 1993, Ser. No. 1,294
Int. Cl.[5] F02D *9/00*
U.S. Cl. 318—280 **6 Claims**

1. An actuator for accelerator comprising:

(a) a casing;

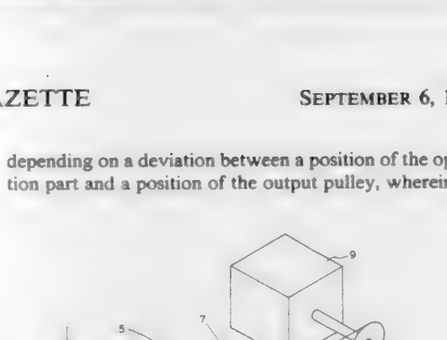
(b) a driving part comprising a reversibly revolvable motor disposed in the casing, a speed reducer for reducing revolution of the motor, and an output pulley, connected to the speed reducer, for winding up or letting out a control cable; and

(c) a control part comprising an operation part, and a control mechanism for controlling the revolution of the motor depending on a deviation between a position of the operation part and a position of the output pulley, wherein the



driving part and the control part are integrally coaxially connected to each other.

5,345,158
ELECTRICAL DISTRIBUTION EQUIPMENT WITH TORQUE ESTIMATING CAPABILITY
Gerald B. Kliman, Schenectady, N.Y.; Kamakshi Srinivasan, Cambridge, Mass.; Rik W. DeDoncker, Schenectady, and David E. Ritscher, Troy, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Oct. 2, 1992, Ser. No. 955,808
Int. Cl.[5] H02K *17/32*
U.S. Cl. 318—434 **21 Claims**



1. A circuit breaker for use in a system driven by a motor, comprising:

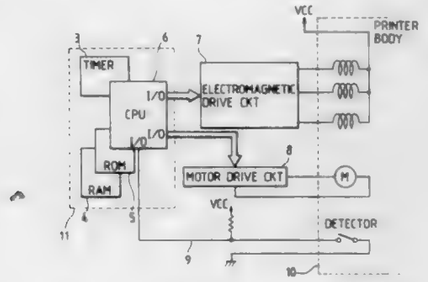
current sensing means for measuring current in each respective phase of the motor;

voltage sensing means for measuring voltage across each respective phase of the motor;

actuating means for controlling contacts operatively connected within each respective phase of the motor, said actuating means operating said contacts in response to indication of one of an overcurrent condition by the current sensing means and an undervoltage condition by the voltage sensing means, respectively; and

computer means for receiving the measured current in each respective phase and the measured voltage across each respective phase from said current sensing means and said voltage sensing means, respectively, and for controlling said actuating means in response thereto, said computer means further comprising torque estimating means for estimating torque output of the motor from the measured current in each respective phase and the measured voltage across each respective phase.

5,345,159
METHOD OF CONTROLLING PRINTER
Makoto Hanamura, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan
Filed Aug. 6, 1992, Ser. No. 925,212
Claims priority, application Japan, Aug. 9, 1991, 3-200799
Int. Cl.[5] G05B *5/00*
U.S. Cl. 318—447 **2 Claims**



2. A printer for performing print and sheet-forward operations using a dc motor as drive source, said printer comprising:

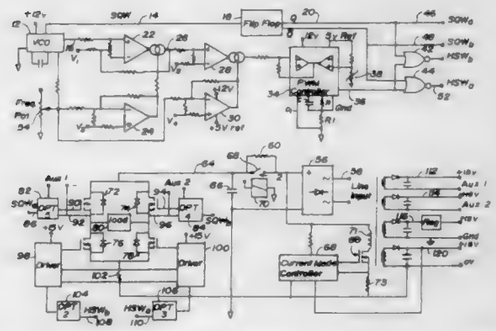
means for setting a predetermined prohibition period of time during which print and sheet-forward operations are prohibited, said predetermined prohibition period of time corresponding to a period of time until said motor arrives at a predetermined speed after said motor is energized;

means for measuring a motor power turn-off period of time commencing when said motor is turned off and ending when said motor is again energized;

means for comparing said motor power turn-off period of time with a predtermined value; and

means for immediately effecting said print and sheet-forward operations if said motor power turn-off period of time is less than or equal to said predetermined value, and inhibiting said print and sheet-formed operations until said prohibition period has elapsed if said motor power turn-off period of time exceeds said predetermined value.

5,345,160
VARIABLE FREQUENCY CONTROL SYSTEM FOR SINGLE PHASE INDUCTION MOTORS
Henri Corniere, 1611 W. 62nd Ave., Vancouver, B.C., Canada V6P 2G1
Filed Jun. 2, 1993, Ser. No. 70,747
Int. Cl.[5] H02P *5/28*
U.S. Cl. 318—811 **13 Claims**



1. A variable frequency controller for an induction motor, comprising:

(a) a variable frequency source of periodic electrical signals;

(b) means for generating an approximate sinusoidal signal from an output of said variable frequency source of signals;

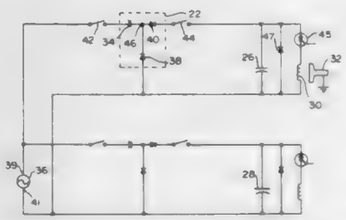
(c) means for producing pulse width modulated signals modulated by said sinusoidal signal:

(d) means for separating the modulated sinusoidal signal into two trains of half waves with the half waves in one train 180 degrees out of phase with those in the other train;

(e) an inverter bridge couplable to the coil of an induction motor and connected across a DC voltage; and

(f) means for driving said inverter bridge with said modulated sinusoidal half waves so as to produce a substantially sinusoidal output current through said motor.

5,345,161
POWER SUPPLY SYSTEM FOR AN ELECTROMAGNETIC RIVETING APPARATUS
Peter B. Zieve, Seattle, Wash., assignor to Electroimpact, Inc., Mukilteo, Wash.
Filed Apr. 10, 1992, Ser. No. 866,843
Int. Cl.[5] H02M *3/18*
U.S. Cl. 320—1 **45 Claims**



1. A voltage charging circuit apparatus for charging a first plurality of capacitors which are connected together to form a first capacitor bank, comprising:

a first AC capacitor having one side thereof connected to one end of a power source; and

a first diode circuit comprising a first diode connected between the other side of the AC capacitor and the other end of the power source and a first element having a diode function connected between said other side of the AC capacitor and one end of the first capacitor bank, wherein the other end of the power source is connected to the other end of the first capacitor bank, the first AC capacitor and the first diode circuit defining a first charging doubler module, wherein the first charging doubler module in operation facilitates charging of the capacitor bank to a selected charge voltage and acts as a voltage doubler relative to the power source.

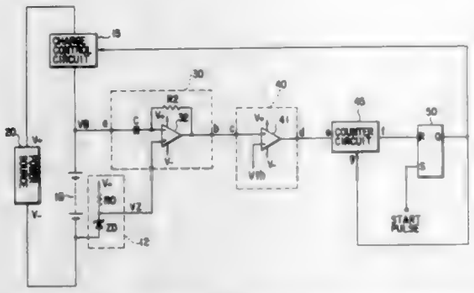
5,345,162
CHARGING CIRCUIT OF SECONDARY BATTERY
Nobuo Shiojima, Tokyo, Japan, assignor to Toshiba Battery Co., Ltd., Tokyo, Japan
Filed Sep. 17, 1992, Ser. No. 945,951
Claims priority, application Japan, Sep. 19, 1991, 3-239778
Int. Cl.[5] H02J *7/10*
U.S. Cl. 320—21 **21 Claims**

1. A charging circuit of a secondary battery which charges the secondary battery having first and second terminals, comprising:

reference voltage generating means for generating a reference voltage, which is a difference between a potential of said first terminal and a potential of said second terminal thereof;

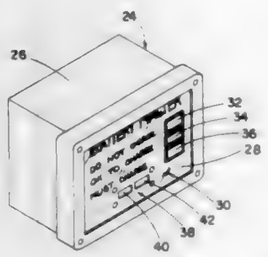
minute voltage change extracting means for extracting minute changes having components of a frequency higher than a predetermined level of a voltage output from said secondary battery during a process of charging said secondary battery, and generating output signals;

shaping means for shaping the output signals from said minute voltage change extracting means into pulse signals;
counting means for counting the pulse signals output from said shaping means; and
charge control means for controlling the process of charging said secondary battery when the count of the pulse signals obtained by said counting means reaches a predetermined value; wherein



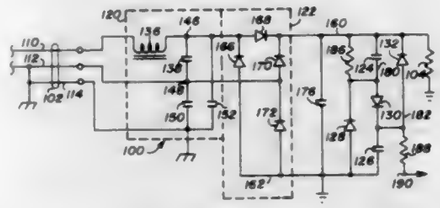
said minute voltage change extracting means has two input terminals, one receiving the reference voltage generated from said reference voltage generating means and the other receiving the potential of the second terminal of said secondary battery, said minute voltage change extracting means extracting minute voltage changes which appear in a last stage of the process of charging said secondary battery and have frequency components higher than a change in a terminal voltage corresponding to an amount of charge.

5,345,163
BATTERY MONITORING SYSTEM
Gerard P. Gibbons, and Lyle V. Tabler, both of Calgary, Canada, assignors to Battery Master Inc., Calgary, Canada
Filed Mar. 9, 1992, Ser. No. 848,534
Claims priority, application Canada, Jun. 5, 1991, 2043959
Int. Cl.[5] G08B *21/00*
U.S. Cl. 320—48 **19 Claims**



1. A method of monitoring the charge on an electric storage battery having two terminals with a voltage across the terminals, said method comprising:
monitoring the voltage across the terminals of the battery;
producing a Do Not Charge signal whenever the monitored voltage exceeds a first predetermined voltage;
maintaining the Do Not Charge signal until the monitored voltage falls below the first predetermined voltage for a period longer than a first predetermined period, then eliminating the Do Not Charge signal and producing an OK To Charge signal; and
maintaining the OK To Charge signal until the monitored voltage falls below a second predetermined voltage less than the first predetermined voltage for a period longer than a second predetermined period, then eliminating the OK To Charge signal and producing a Must Charge signal.

5,345,164
POWER FACTOR CORRECTED DC POWER SUPPLY
Ronald A. Lesea, Redwood City, Calif., assignor to Metcal, Inc., Menlo Park, Calif.
Filed Apr. 27, 1993, Ser. No. 53,147
Int. Cl.[5] G05F *1/70, 3/00, 5/00*
U.S. Cl. 323—208 **11 Claims**

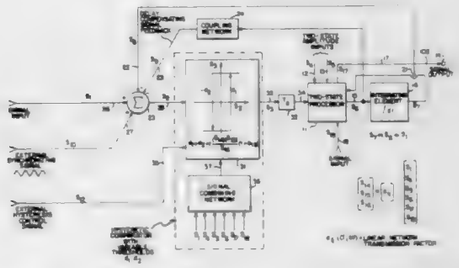


1. A power factor corrected DC power supply (**100** or **200**) comprising in combination:
an AC power-line input (**102**);
a power factor correcting network (**120**) including a capacitor (**138**) and a first inductor (**136** or **240**) connected in series with said capacitor across the AC power-line input (**102**) and said inductor in series with the power-line input;
a full-wave rectifier means having a pair of inputs connected across said capacitor (**138**) and a first and a second output;
a first filter capacitor (**124**) having a first end and a second end with said first end connected to said first output of said full-wave rectifier means (**122**);
a second filter capacitor (**126**) having a first end and a second end with said second end connected to said second output of said full-wave rectifier means (**122**);
a first current steering diode (**130**) connected in series with said first and said second filter capacitors (**124** and **126**) between said first and said second outputs of the full-wave rectifier means (**122**) and having an anode connected to said first filter capacitor (**124**) second end and a cathode connected to said second filter (**126**) capacitor first end;
a second current steering diode (**128**) connected in parallel with the series combination of said first current steering diode (**130**) and said second filter capacitor (**126**) and having a cathode connected to said first filter capacitor (**124**) second end and an anode connected to said full-wave rectifier means (**122**) second output;
a third current steering diode (**132**) connected in parallel with the series combination of said first filter capacitor (**124**) and second filter capacitor (**126**) and said first current steering diode (**130**) and having a cathode and an anode with said cathode connected to said full-wave rectifier means (**122**) first output and said anode connected to said second filter capacitor (**126**) first end; and
a DC load (**104**) connected between said first and said second outputs of the full-wave rectifier means (**122**).

5,345,165
FREQUENCY-STABILIZED TWO-STATE MODULATION USING HYSTERESIS CONTROL
Thomas A. Froeschle, Southborough, Mass., assignor to Bose Corporation, Framingham, Mass.
Continuation of Ser. No. 104,558, Sep. 30, 1987, abandoned, which is a continuation of Ser. No. 667,830, Nov. 2, 1984, abandoned. This application Aug. 15, 1990, Ser. No. 568,532
Int. Cl.[5] G05F *1/59*
U.S. Cl. 323—284 **2 Claims**

1. An amplifier comprising,
a two-state modulation system having an input terminal for receiving a signal to be amplified, an output terminal,

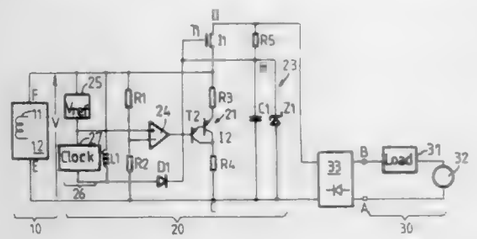
closed loop means comprising apparatus for intercoupling said input terminal and said output terminal and having a two-state power processor for providing first and second signal amplitudes to said output terminal at a switching frequency corresponding to that of a driving signal provided by hysteretic means for providing said driving signal in response to a switching signal provided by first means for combining and related to the signal on said input terminal combined with a feedback signal coupled from said two-state power processor, said hysteretic means being characterized by a hysteresis loop representing the relationship between the input and output of said hysteretic means,
hysteretic comparator means including said hysteretic means having first and second variable threshold levels d_1 and d_2 for switching in response to said switching signal,
a source of a hysteresis control signal,



means for coupling said source of a hysteresis control signal to said hysteretic means to establish said first and second variable threshold levels and control said hysteresis loop to maintain said switching frequency substantially constant in the presence of variations in the ratio of time the output signal is said first amplitude relative to time said output signal is said second amplitude which ratio is representative of the signal on said input terminal,
an averaging circuit having an input coupled to said output terminal and a signal output for providing as an output signal the signal on said input terminal amplified,
a source of a dither signal for dithering the frequency of said switching signal,
and means for coupling said dither signal to said hysteretic means as at least a component of said hysteresis control signal.

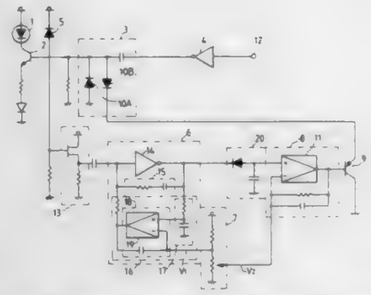
5,345,166
REGULATED VOLTAGE TWO-WIRE DETECTOR
Didier Leonard, Hiersac, and Pierre Charrier, Chardonchamps, both of France, assignors to Telemecanioue, France
PCT No. PCT/FR91/00814, § 371 Date Jun. 18, 1992, § 102(e) Date Jun. 18, 1992, PCT Pub. No. WO92/07426, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 17, 1991, Ser. No. 861,853
Claims priority, application France, Oct. 18, 1990, 90 12883
Int. Cl.[5] G05F *3/16;* **H03K** *17/30*
U.S. Cl. 323—324 **6 Claims**

1. A regulated voltage two-wire detector comprising:
a load circuit comprising a load in series with a voltage source and two terminals;
a voltage regulator and switching device comprising a first and a second variable gain amplifier-switch connected in series in a switching branch having a junction point and two ends which are respectively connected to the two terminals of the load circuit, said first amplifier-switch having a first state in which it is turned off and a second state in which it provides a parallel type voltage regulation, and said second amplifier-switch having a first state in which it is turned on and a second state in which it provides a series type voltage regulation;
a sensor associated with an electronic processor circuit having two terminals respectively connected to one of said two ends and to said junction point of said switching branch, and supplied with a regulated voltage by said voltage regulator and switching device, said electronic processor circuit controlling said first and second variable gain amplifier-switches so that:
when the sensor is in a first state said first amplifier-switch is



in its second state and said second amplifier-switch is in its first state, and
when said sensor is in a second state said first amplifier-switch is in its first state and said second amplifier-switch is in its second state; and
means for keeping said second amplifier-switch in its second state when said sensor is in its first state.

5,345,167
AUTOMATICALLY ADJUSTING DRIVE CIRCUIT FOR LIGHT EMITTING DIODE
Kazuo Hasegawa, Furukawa, and Shin Sugifune, Sendai, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed May 3, 1993, Ser. No. 56,109
Claims priority, application Japan, May 26, 1992, 4-133763
Int. Cl.[5] G05F *1/56;* **G05B** *24/02*
U.S. Cl. 323—349 **10 Claims**



2. A light emitting diode driving circuit for supplying a driving pulse from a drive power source to a light emitting diode to thereby cause the light emitting diode to emit light intermittently, the driving circuit comprising:
a clamping circuit connected between said drive power source and said light emitting diode, said clamping circuit including a diode having an anode connected to the drive power source and a cathode;
a photodiode disposed in the vicinity of said light emitting diode for detecting the optical output power of said light emitting diode and for generating a detected output signal;
an AC amplifier having a DC operating point stabilized by means of a DC feedback circuit for AC, the AC amplifier amplifying the detected output signal from said photodiode;
a shaping circuit for shaping the output amplified signal from said AC amplifier;
a comparison circuit for comparing the output shaped signal from said shaping circuit and a reference voltage, and for generating an output signal determined by a difference

between the detected output signal and the reference voltage; and

a transistor having an emitter connected to the cathode of the diode, a base connected to receive the output signal from the comparison circuit, and a collector connected to ground;

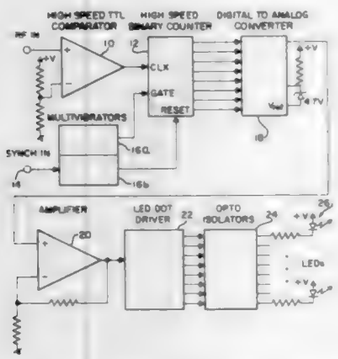
wherein a clamping voltage of said clamping circuit is controlled by the output signal of said comparison circuit by adjusting a resistance of the transistor in response to the output signal of said comparison circuit such that the optical output power of said light emitting diode is kept constant.

5,345,168

BURST-BY-BURST LASER FREQUENCY MONITOR

Carlos Esproles, Pasadena, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 1, 1993, Ser. No. 23,252
Int. Cl.[5] G01R *23/02*
U.S. Cl. 324—76.48 **2 Claims**



1. A burst-by-burst RF frequency jitter monitoring device comprising,

a binary counter having clock, reset and gate input terminals,

a voltage comparator coupling an RF signal to said clock input of said binary counter,

a multivibrator timing means having a synchronizing trigger input electronically connected to first reset said binary counter and then enable gate input terminals of said binary counter such that said binary counter is reset clear of any previous count and then enabled to count cycles of said RF signal from said voltage comparator for a fixed unit of time,

a digital-to-analog converter connected to said binary counter to provide an analog output signal proportional to a binary count stored in said counter after said fixed unit of time following a trigger input,

a linear array of light-emitting diodes,

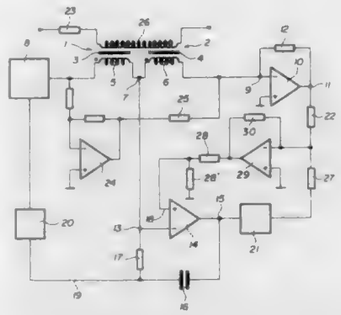
a light-emitting diode bar/dot driver responsive to said analog output for turning on said diodes in sequence from one end of said array to the other as said output voltage increases from a predetermined minimum to a predetermined maximum in a display mode selected from a moving dot mode and a bar length mode, whereby visual display of a rapidly moving dot position or bar length provides a visual indication of frequency jitter.

5,345,169

CURRENT MEASURING DEVICE

Marcel Etter, Troinex, Switzerland, assignor to Liaisons Electroniques-Mecaniques LEM S.A., Plan-les-Ouates, Switzerland

Continuation of Ser. No. 834,447, Feb. 12, 1992, abandoned. This application May 24, 1993, Ser. No. 67,483
Claims priority, application Switzerland, Feb. 15, 1991, 481/91
Int. Cl.[5] G01R *19/00*
U.S. Cl. 324—117 R **3 Claims**



1. A current measuring device comprising first and second current transformers having each a magnetic core, a primary conductor or winding and a secondary winding coupled with said magnetic core, said primary windings or conductors being connected to carry a current to be measured, said secondary windings of said first and second transformers having an equal number of turns and being connected in series with each other and arranged so that the currents induced in said secondary windings by the current to be measured flow in the same direction, a current generator having an output connected to said secondary winding of said first current transformer for feeding to the same a current comprising a magnetizing current component capable of driving the corresponding core alternately into opposite states of saturation, a device for controlling said generator by the said magnetizing current component, current measuring means connected to said secondary winding of said second current transformer for measuring the current flowing in said secondary winding, compensating means comprising an operational amplifier a first input of which is connected to a common connection point of said series-connected secondary windings, a biasing potential being applied to a second input of said amplifier by coupling said second input through a negative feed-back loop including the series connection of a low-pass filter and an inverter with the output of said amplifier, the output of said amplifier being further coupled with said first input thereof through a series connection of a condenser and a resistor, so as to maintain the potential of said common connection point substantially constant with respect to variations of said magnetizing current component.

5,345,170

WAFER PROBE STATION HAVING INTEGRATED GUARDING, KELVIN CONNECTION AND SHIELDING SYSTEMS

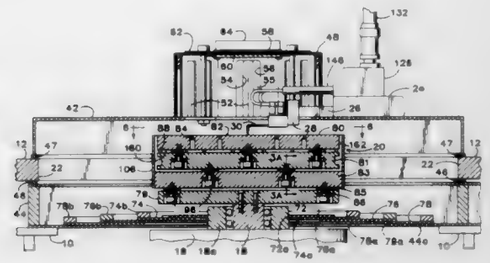
Randy J. Schwindt, Portland, Oreg.; Warren K. Harwood; Paul A. Tervo, both of Vancouver, Wash.; Kenneth R. Smith; Richard H. Warner, both of Portland, Oreg., and Peter D. Andrews, Tigard, Oreg., assignors to Cascade Microtech, Inc., Portland, Oreg.

Filed Jun. 11, 1992, Ser. No. 896,853
Int. Cl.[5] G01R *31/02, 1/073*
U.S. Cl. 324—754 **7 Claims**

1. A probe station comprising:

(a) a holder for holding an electrical probe;

(b) a chuck assembly having at least respective electrically conductive upper and lower chuck assembly elements electrically isolated from each other and positioned one atop the other at different distances from said holder, said upper chuck assembly element having an upper surface for supporting a test device for probing by said electrical probe, a lower surface opposite said upper surface and a peripheral surface extending between said upper and lower surfaces;



(c) an electrically conductive outer enclosure surrounding said chuck assembly; and

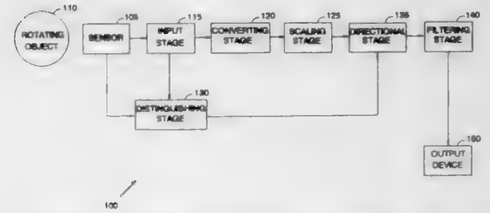
(d) a conductive member electrically connected to said lower chuck assembly element and interposed in spaced relation between said outer enclosure and at least a major portion of at least one of said upper surface and said peripheral surface of said upper chuck assembly element.

5,345,171

APPARATUS INCLUDING A SELECTIVELY CONNECTABLE ISOLATION TRANSFORMER FOR DETERMINING THE SPEED AND DIRECTION OF A ROTATING OBJECT

Jeffrey J. Simmons, Peoria, and W. John Love, Dunlap, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jan. 11, 1993, Ser. No. 2,558
Int. Cl.[5] G01P *3/481, 3/489*
U.S. Cl. 324—166 **9 Claims**



1. An apparatus for determining the rotational speed and direction of a rotating object, wherein the apparatus has a circuit ground and power, the apparatus further comprising:

a sensor having a sensor ground and being adapted to detect the speed and direction of the rotating object and responsively produce an input frequency signal having a frequency proportional to the rotational speed of the rotating object and a direction signal having a voltage value indicative of the rotational direction of the rotating object;

a common terminal;

a transformer adapted to receive the input frequency signal and electrically isolate the sensor ground from the circuit ground;

double-pole, double-throw switch means coupling the input frequency signal through said transformer to said common terminal in a first position of said switch means, and, bypassing said transformer, connecting said sensor ground to circuit ground, and coupling said input frequency signal directly to said common terminal in a second position of said switch means;

means for receiving said input frequency signal from said common terminal, and responsively producing a conditioned frequency signal having a pulsed waveform wherein each pulse is defined by a rising edge and a falling edge;

distinguishing means for receiving said conditioned frequency and direction signals, determining the voltage value of a portion of said direction signal that coincides with the falling edge of said conditioned frequency signal, and responsively producing a control signal having a voltage level responsive to the determined voltage value of said direction signal;

converting means for receiving said conditioned frequency signal and responsively producing an output signal having a DC voltage proportional to the frequency of said conditioned frequency signal;

directional means for receiving the control signal and the output signal, and changing the polarity of the output signal in response to the voltage level of said control signal; and

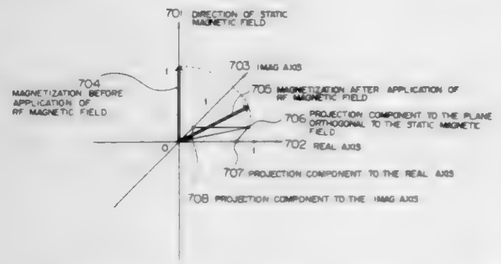
an output device adapted to receive the polarized output signal, and responsively store the magnitude and polarity of the output signal for subsequent analysis.

5,345,172

DOUBLE-SLICE IMAGING METHOD IN NMR IMAGING APPARATUS

Jun'ichi Taguchi, Sagamihara, and Koichi Sano, Yokohama, both of Japan, assignors to Hitachi, Ltd. and Hitachi Medical Corp., both of Tokyo, Japan

Filed Jun. 4, 1992, Ser. No. 894,352
Claims priority, application Japan, Jun. 5, 1991, 3-134023
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **6 Claims**



1. A double-slice imaging method in a nuclear magnetic resonance (NMR) imaging apparatus for obtaining images of slices of an object lying in a space where a static magnetic field is applied, said method comprising the steps of:

selectively exciting magnetizations in a slice of said object by applying a first RF magnetic field pulse amplitude-modulated by a first waveform to said object in the presence of a gradient magnetic field, cosine Fourier components of said first waveform being dominant in comparison with sine Fourier components;

collecting first echo signals of magnetizations excited by said first RF magnetic field pulse;

selectively exciting magnetizations in said slice by applying a second RF magnetic field pulse amplitude-modulated by a second waveform to said object in a presence of said gradient magnetic field, sine Fourier components of said second waveform being dominant in comparison with cosine Fourier components so that a slice profile of magnetizations excited by said second RF magnetic field pulse forms two separate peaks at positions of a first sub-slice of said slice and a second sub-slice of said slice, respectively;

collecting second echo signals of magnetizations excited by said second RF magnetic field pulse;

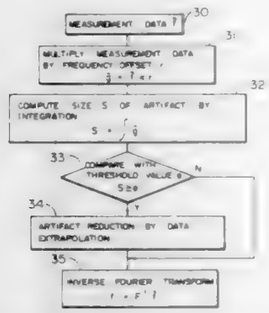
reconstructing a first image corresponding to said first sub-slice from data of said first and second echo signals; and reconstructing a second image corresponding to said second sub-slice from said data of said first and second echo signals.

5,345,173

DATA PROCESSING METHOD TO REDUCE TRUNCATION ARTIFACTS IN NUCLEAR MAGNETIC RESONANCE APPARATUS

Yoshitaka Bito, Kokubunji; Kensuke Sekihara, Musashimurayama, and Ryuichi Suzuki, Kokubunji, all of Japan, assignors to Hitachi, Ltd. and Hitachi Medical Corp., both of Tokyo, Japan

Filed Jul. 31, 1992, Ser. No. 922,473
Claims priority, application Japan, Aug. 2, 1991, 3-193890
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **26 Claims**



1. A data processing method for use in an inspection apparatus including magnetic field generation means for generating each of a static magnetic field, a gradient magnetic field and a radio frequency (RF) magnetic field, signal detection means for detecting nuclear magnetic resonance (NMR) signals from an inspection object, a computer for computing detection signals from said signal detection means and output means for outputting the computation result of said computer, for obtaining an image by effecting inverse Fourier transform of a measurement signal row representing data of spatial frequency space, comprising:

a first step of computing an evaluation value representing the magnitude of ringing which occurs because a measured spatial frequency domain is limited in said spatial frequency space;

a second step of comparing whether or not the evaluation value obtained by said first step is greater than a predetermined threshold value; and

a third step of extrapolating signals into spatial frequency domains which are located outside of said measured spatial frequency domain by the use of coefficients computed from the signals of said measured spatial frequency domain only when said evaluation value is greater than said predetermined threshold value at said second step.

5,345,174

SLICE-SELECTIVE POLARIZATION TRANSFER FOR LOCALIZED SOLID-STATE NMR SPECTROSCOPY

Rainer Kimmich, Ulm, Fed. Rep. of Germany; Dan Demco, Cluy-Napoca, Romania, and Siegfried Hafner, St. Ingbert-Rohrbach, Fed. Rep. of Germany, assignors to Bruker Analytische Messtechnik, Fed. Rep. of Germany

Filed Sep. 14, 1992, Ser. No. 944,847
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1991, 4130662
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—309 **5 Claims**

1. A method for volume-selective nuclear magnetic resonance (NMR) spectroscopy or NMR-imaging comprising the steps of,

a) locating a sample within a homogeneous static magnetic field B_0, said sample containing a first and second nuclear species,

b) applying a magnetic field gradient to the sample and,



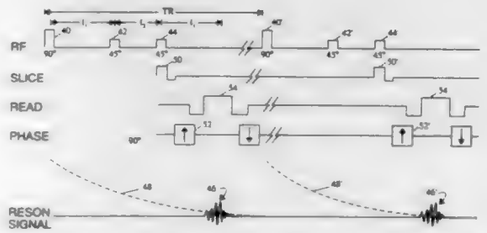
c) irradiating a contact-RF-Pulse into the sample within a time interval during which the magnetic field gradient is applied, whereby a spin order transfer (SOT) from the first to the second nuclear species located in a slice transverse to a gradient direction of the magnetic field gradient is effected.

5,345,175

DIPOLAR WEIGHTED MR IMAGING IN-VIVO

Larry Kasuboski, Solon, and Rao P. Gullapalli, Richmond Heights, both of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Filed Mar. 16, 1993, Ser. No. 33,201
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **12 Claims**



1. A method of directly imaging dipoles of a coupled dipolar and Zeeman spin system, the method comprising:

(a) positioning a region of a subject which includes dipolar and Zeeman spin systems in an examination region;

(b) performing a first RF conditioning pulse sequence which causes the excitation of resonance in the dipolar and Zeeman spin systems such that a first dipolar spin system resonance signal component and a first Zeeman spin system resonance signal component are generated which are substantially 90° out of phase in a first direction of phase rotation;

(c) applying a magnetic field gradient sequence for phase and frequency encoding the first dipolar and Zeeman magnetic resonance signal components;

(d) applying a second RF conditioning pulse sequence which excites second dipolar and Zeeman spin system magnetic resonance components which are 90° out of phase in a second direction of phase rotation, the second direction being opposite to the first direction such that the second Zeeman spin system resonance signal component is substantially 180° out of phase with the first Zeeman spin system resonance signal component;

(e) applying the magnetic field gradient sequence for phase and frequency encoding the second dipolar and Zeeman spin system magnetic resonance signal components;

(f) combining the first and second dipolar and Zeeman spin system magnetic resonance signal components such that the first and second dipolar spin system magnetic resonance signal components combine and the first and second Zeeman spin system magnetic resonance signal components tend to cancel;

(g) repeating steps (a)–(f) with a plurality of different phase encodings to create a plurality of dipolar component weighted resonance signals;

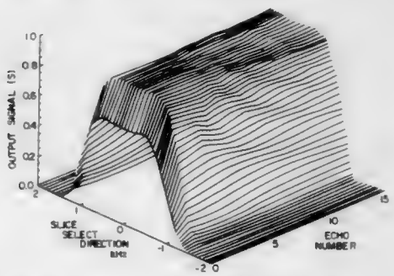
(h) reconstructing the dipolar component weighted resonance signals into an image representation.

5,345,176

STABILIZED FAST SPIN ECHO NMR PULSE SEQUENCE WITH IMPROVED SLICE SELECTION

Patrick L. LeRoux, Gif/Yvette, France, and Richard S. Hinks, Waukesha, Wis., assignors to General Electric Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 920,952, Jul. 28, 1992, Pat. No. 5,315,249. This application Jul. 15, 1993, Ser. No. 92,172
Int. Cl.[5] G01R *33/48*
U.S. Cl. 324—309 **3 Claims**



1. An NMR system, the combination comprising:

means for generating a polarizing magnetic field;

excitation means for generating an RF excitation magnetic field which produces transverse magnetization in spins subjected to the polarizing magnetic field;

receiver means for sensing an NMR signal produced by the transverse magnetization and producing digitized samples of the NMR signal;

first gradient means for generating a first magnetic field gradient to phase encode the NMR signal;

second gradient means for generating a second magnetic field gradient to frequency encode the NMR signal; and

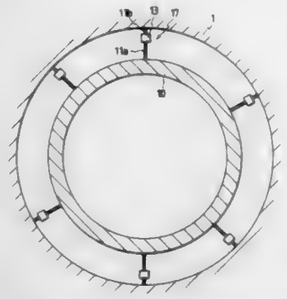
pulse control means coupled to the excitation means, first gradient means, second gradient means, and receiver means, said pulse control means being operable to conduct a fast spin echo pulse sequence in which a series of NMR echo signals are produced in response to a corresponding series of RF refocusing pulses produced by said excitation means, and in which a set of NMR echo signals following the first NMR echo signal in said series of NMR echo signals are stabilized to have a substantially similar amplitude (S) by altering the flip angle produced by RF refocusing pulses in said series, and the flip angle (θ) produced by the first RF refocusing pulse in said series is set to substantially the same flip angle (θ) as that of the second RF refocusing pulse in said series.

5,345,177

MAGNETIC RESONANCE IMAGING APPARATUS HAVING VIBRATION DAMPING MEANS ON GRADIENT COIL

Taichi Sato, Ishioka; Yoshiharu Mohri, Ibaraki; Kihachiro Tanaka, Ushiku; Takao Honmei; Masayuki Otsuka, both of Katsuta, and Masashi Wada, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1993, Ser. No. 32,665
Claims priority, application Japan, Mar. 18, 1992, 4-61855
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—318 **10 Claims**



1. A magnetic resonance imaging apparatus comprising:

a magnet for generating a static magnetic field in a measurement space in which a body to be examined is to be placed;

a gradient coil assembly for generating a gradient magnetic field in the measurement space;

support means for supporting the gradient coil assembly; and

vibration damping means disposed between the gradient coil assembly and the support means for damping vibrations from the gradient coil assembly, the vibration damping means including

a container having a first flexible part,

granular material disposed in the container, and

a first supporting member provided on the first flexible part and connected to one of the gradient coil assembly and the support means.

5,345,178

METHOD FOR SETTING THE CURRENT THROUGH SHIM COILS AND GRADIENT COILS IN A NUCLEAR MAGNETIC RESONANCE APPARATUS

Atsutaka Manabe, Roettenbach, Fed. Rep. of Germany; Shigefumi Kakimoto, Kamagawa, and Yasushiro Wada, Atsugi, both of Japan, assignors to Siemens Aktiengesellschaft and Siemens-Asahi Medical Technologies Ltd., both of Munich, Fed. Rep. of Germany

Filed Apr. 19, 1993, Ser. No. 47,307
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1992, 4213050; Jun. 9, 1992, 4218902
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—320 **28 Claims**

1. A method for shimming a basic magnetic field in an examination space of a nuclear magnetic resonance apparatus, said basic magnetic field being mathematically representable in the form of spherical, harmonic functions whereby shim coils are arranged in the nuclear magnetic resonance apparatus which are fashioned such that each shim coil essentially influences one coefficient of these functions, said method comprising the steps of:

(a) generating a gradient echo sequence in said examination space including a radio-frequency pulse and a bipolar gradient pulse in a given direction to excite nuclear spins in said examination space and thereby obtaining a nuclear magnetic resonance signal;

(b) Fourier-transforming said nuclear magnetic resonance signal to obtain a phase curve of the nuclear spins in said given direction;

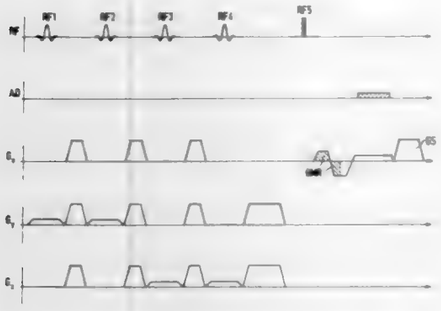
(c) repeating steps (a) and (b) with a bipolar gradient pulse in each repetition in a different direction to obtain a plurality of phase curves respectively associated with said different directions;
(d) analyzing said phase curves with a curve fit method to obtain a polynomial having coefficients of the ith order;
(e) calculating coefficients of said spherical, harmonic functions of the ith order describing the distribution of said basic magnetic field from said polynomial coefficients of the ith order, said coefficients of the spherical, harmonic functions of the ith order representing inhomogeneities in said basic magnetic field; and
(f) supplying currents to a shim coil associated to the respective coefficients of said spherical, harmonic functions of the ith order for correcting said inhomogeneities.

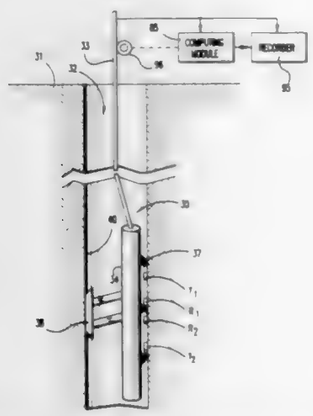
5,345,179

LOGGING EARTH FORMATIONS WITH ELECTROMAGNETIC ENERGY TO DETERMINE CONDUCTIVITY AND PERMITTIVITY

Tarek M. Habashy, Danbury; M. Reza Taherian, Ridgefield, both of Conn.; Alain Dumont, Tokyo, Japan, and Jeffrey A. Beren, Westport, Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Mar. 9, 1992, Ser. No. 848,621
Int. Cl.[5] G01V *3/30*
U.S. Cl. 324—338 **31 Claims**





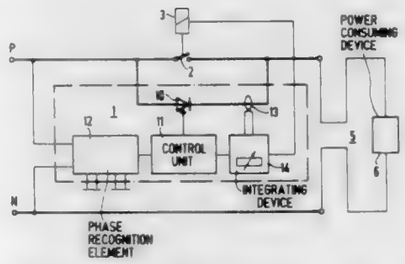
18. Apparatus for determining properties of formations surrounding an earth borehole having a standoff layer, comprising:
a logging device movable through the borehole, said logging device having transmitting and receiving antennas;
a) means for deriving first measured signal values for electromagnetic energy transmitted into the formations and received from the formations by said device, said electromagnetic energy having a magnetic dipole characteristic with a first magnetic dipole direction;
b) means for deriving second measured signal values from further electromagnetic energy transmitted into the formations and received from the formations by said device, said further electromagnetic energy having a magnetic dipole characteristic with a second magnetic dipole direction that is different than said first magnetic dipole direction;
c) means for establishing selected model values of standoff layer permittivity, standoff layer conductivity, formation permittivity, and formation conductivity;
d) means for computing first model signal values based on a model of electromagnetic energy, having a magnetic dipole characteristic with said first magnetic dipole direction, propagating in a model medium that includes a standoff layer having said model values of standoff layer permittivity and standoff layer conductivity and formations having said model values of formation permittivity and formation conductivity;
e) means for computing second model signal values based on a model of electromagnetic energy, having a magnetic dipole characteristic with said second magnetic dipole direction, propagating in a model medium that includes standoff layer having said model values of standoff layer permittivity and standoff layer conductivity and formations having said model values of formation permittivity and formation conductivity;
f) means for computing an error from the difference between the first model signal values and the first measured signal values and the difference between the second model signal values and the second measured signal values;
g) means for modifying the model values selected by said selecting means;
h) means for iteratively operating the means (d) through (g) until a predetermined criterion of said error is met; and
i) means for outputting the model values of standoff layer permittivity, standoff layer conductivity, formation permittivity, and formation conductivity.

5,345,180

METHOD AND ARRANGEMENT FOR DETECTING SHORT-CIRCUITS IN CIRCUIT BRANCHES OF ELECTRICAL POWER SYSTEM NETWORKS

Reinhard Maier, Herzogenaurach, and Walter Roethlingshoefer, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 30, 1993, Ser. No. 40,335
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1992, 4210614
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—537 **15 Claims**



1. A method for detecting short-circuits in circuit branches of an electrical power system network comprising steps of:
a) generating a voltage pulse of short duration from system voltage;
b) applying said voltage pulse generated in step (a) to a circuit branch to be tested;

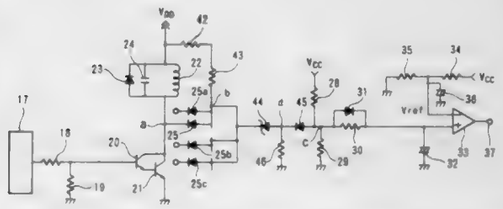
c) measuring current resulting from said voltage pulse in the branch to be tested;
d) supplying the current measured in step (c) to an evaluation circuit; and
e) comparing said measurement to a setpoint-value.

5,345,181

CIRCUIT FOR A DETECTING STATE OF CONDUCTION OF CURRENT THROUGH A SOLENOID

Rokurota Mantani; Yasutoshi Kaneko, and Takashi Tamaki, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Jul. 16, 1992, Ser. No. 914,785
Claims priority, application Japan, Jul. 19, 1991, 3-179995; Nov. 29, 1991, 3-317060
Int. Cl.[5] G01R *31/06, 31/02*
U.S. Cl. 324—546 **2 Claims**



1. A circuit for detecting abnormal conduction of current conducted through a solenoid comprising;
a first means for receiving a charge and discharging a charge, said first means being at least one of charged and discharged in response to said current conduction by said solenoid, said solenoid conducting said current in response to a pulse width modulation signal;
detecting means for comparing the electric potential of said first means with a predetermined electric potential to detect said abnormal conduction of current in said solenoid;
second means for at least one of charging and discharging said first means when a voltage greater than a predetermined amount is applied to said solenoid; and
preventing means for preventing at least one of the charge and discharge of said first means when a power supply voltage applied to said solenoid is turned off.

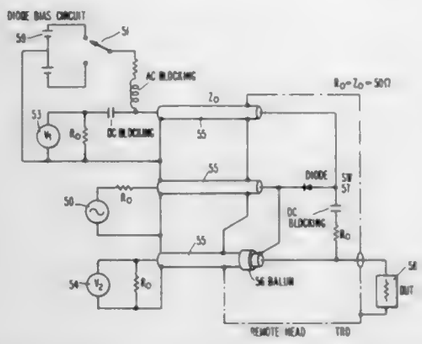
5,345,182

IMPEDANCE METER CAPABLE OF PERFORMING MEASUREMENTS AT HIGH PRECISION OVER WIDE IMPEDANCE AND FREQUENCY RANGES

Hideki Wakamatsu, Kobeshi, Japan, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 23, 1992, Ser. No. 965,795
Claims priority, application Japan, Oct. 31, 1991, 3-313898
Int. Cl.[5] G01R *27/08, 27/16*
U.S. Cl. 324—649 **19 Claims**

1. An impedance meter, comprising:
(a) a signal source comprising means for exciting a device under test (DUT);
(b) a first measuring instrument for measuring a first voltage indicative of a voltage drop across said DUT;
(c) a second measuring instrument for measuring a second voltage indicative of a current through said DUT; and
(d) switching means for switching the interconnection of said signal source and said first and second measuring instruments between an ideal open type circuit and an ideal short circuit type circuit in response to a DUT impedance determined on the basis on said first and second voltages, said ideal open and ideal short circuit type circuits being pre-defined circuit configurations;



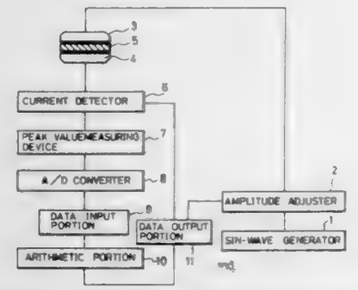
wherein the DUT impedance is a function of at least said first and second voltages.

5,345,183

DIELECTRIC CONSTANT-MEASURING APPARATUS

Masafumi Take, Tokyo, Japan, assignor to Seiko Instruments Inc., Tokyo, Japan

Filed May 11, 1993, Ser. No. 59,392
Claims priority, application Japan, May 11, 1992, 4-117782
Int. Cl.[5] G01R *27/26*
U.S. Cl. 324—663 **2 Claims**



1. A dielectric constant-measuring apparatus comprising: a sinusoidal wave generator which generates a sinusoidal wave output voltage of a given amplitude; an amplitude adjuster connected to said generator to derive from the sinusoidal wave output voltage generated by said generator an adjusted sinusoidal wave voltage having an amplitude determined by a reference signal; a voltage electrode and a current electrode disposed parallel to said voltage electrode and defining with said voltage electrode a sample holding space in which a sample is held between said electrodes; means connected for applying the adjusted sinusoidal wave voltage to said voltage electrode in order to produce a current flow through a sample in said sample holding space and through said current electrode; a current detector connected for receiving the current flowing through said current electrode and for producing a signal voltage having an amplitude proportional to the amplitude of the current flowing through said current electrode for a current range determined by a control signal supplied to said current detector; a peak value measuring device connected to said current detector for producing an indication of the peak value of the signal voltage amplitude; an A/D converter connected to said peak value measuring device for converting the indication produced by said peak value measuring device into digital peak value signal; a data input unit connected to said A/D converter for reading the digital peak value signal from said A/D converter; an arithmetic unit connected to said data input unit for calculating a reference signal value which will

cause the adjusted sinusoidal wave voltage to have an amplitude that will cause the peak value of the signal voltage amplitude produced by said current detector to be between selected upper and lower limits, and for calculating a selected range for the current received by said current detector; and a data output unit connected to said arithmetic unit for producing a first signal having the reference signal value calculated by said arithmetic unit and delivering the first signal to said amplitude adjuster as the reference signal, and for producing a second signal representing the selected range calculated by said arithmetic unit and supplying the second signal to said current detector as the control signal.

5,345,184

HUMIDITY DETECTION CIRCUIT FOR ELECTRONIC HEAT COOKING APPARATUS

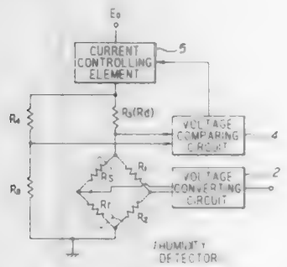
Yuuzi Andoh, Yamato-koriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 14, 1992, Ser. No. 990,241

Claims priority, application Japan, Dec. 16, 1991, 3-351714; Dec. 16, 1991, 3-351715

Int. Cl.[5] G01N *27/04*

U.S. Cl. 324—720 **6 Claims**



1. A humidity detection circuit comprising:

a bridge circuit composed of a first resistance series of at least two temperature sensing elements connected in series, one of which is hermetically sealed and the other of which is exposed to the atmosphere, and a second resistance series of at least two resistances;

a power supply operatively connected to said temperature sensing elements for activating said temperature sensing elements;

a voltage converting circuit for converting a ratio of the resistance of said temperature sensing elements into a voltage;

a current limiting resistance, having two ends, for limiting current flowing through said bridge circuit, connected in series at one end to said bridge circuit;

a current controlling element, disposed between the second end of said current limiting resistance and said power supply;

a third resistance series formed of a plurality of resistances connected to each other, one end of said third resistance series being connected to a junction between said current controlling element and said current limiting resistance and the other end of said third resistance series being grounded so as to be in parallel with current limiting resistance and said bridge circuit, the resistance value of said plurality of resistances being determined in accordance with the ratio of said current limiting resistance to the combined resistance of said bridge circuit in operation; and

a voltage comparing circuit having a first connection between said plurality of resistances and a second connection between said current limiting resistance and said bridge circuit each of said connections being separate;

wherein the output of said voltage comparing circuit is inputted to said current controlling element.

5,345,185

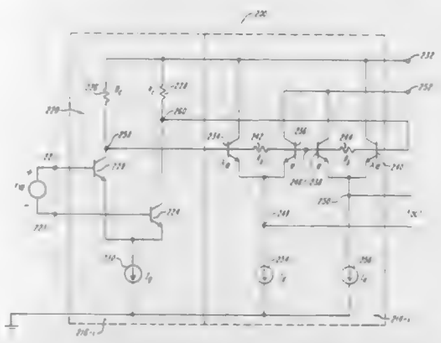
LOGARITHMIC AMPLIFIER GAIN STAGE

Barrie Gilbert, Portland, Oreg., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Apr. 14, 1992, Ser. No. 868,490

Int. Cl.[5] G06G *7/24*

U.S. Cl. 328—145 **22 Claims**



1. A logarithmic amplifier gain stage for supplying, in response to an instantaneous input signal, an output signal representing a portion of a corresponding logarithmic value of the input signal, comprising:

a transistor amplifier having an input that receives the input signal and an intermediate output that supplies an intermediate output signal; and

a full-wave detector having an input coupled to the intermediate output of the transistor amplifier that receives the intermediate output signal and an output that supplies the output signal, the detector including a rectifier comprising rectifying transistors having different effective emitter areas for demodulating a signal applied to the input of the full-wave detector, wherein each rectifying transistor has a base and all bases of the rectifying transistors are coupled together by a single bias line.

5,345,186

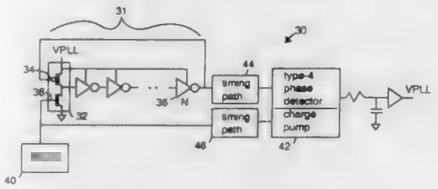
RETRIGGERED OSCILLATOR FOR JITTER-FREE PHASE LOCKED LOOP FREQUENCY SYNTHESIS

Gary J. Lesmeister, Hayward, Calif., assignor to Credence Systems Corporation, Fremont, Calif.

Filed Jan. 19, 1993, Ser. No. 5,651

Int. Cl.[5] H03K *5/26;* **H03L** *7/087*

U.S. Cl. 328—155 **7 Claims**



1. A frequency synthesis timebase, comprising:

a ring oscillator for generating a first frequency signal and including a plurality of consecutive stages and a plurality of corresponding output taps each tap for providing a phase shift from each succeeding tap;

a reference oscillator for generating a second frequency signal;

gating means inserted between a pair of said consecutive stages in the ring oscillator for periodically retriggering the ring oscillator in response to said second frequency signal; and

phase lock loop (PLL) means for inputting and synchronizing said first frequency signal and said second frequency signal by controlling the resonant frequency of the ring oscillator.

5,345,187

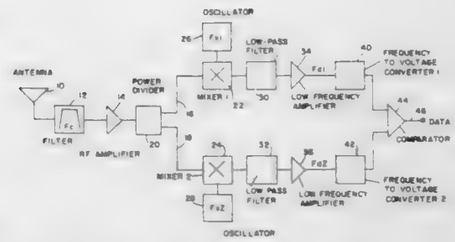
DUAL FREQUENCY DEMODULATION APPARATUS FOR FREQUENCY SHIFT KEYED (FSK) DATA SIGNALS AND FM SIGNALS AND METHOD THEREFOR

Ronald F. McGuire, Rt. 1 Box 34, Rixeyville, Va. 22737

Filed Sep. 11, 1992, Ser. No. 943,689

Int. Cl.[5] H03D *3/00*

U.S. Cl. 329—302 **20 Claims**



1. An apparatus for frequency demodulation of frequency shift keyed (FSK) data signals, comprising an antenna for receiving the signals, a carrier frequency filter centered on a carrier frequency means connected to the antenna for filtering the signals received from the antenna, an amplifier-connected to the filter for amplifying the signals received from the filter and a power divider connected to the amplifier for dividing the amplified signals into first and second respective plural divided outputs, first and second mixers connected to the divider for respectively receiving each of the first and second divided outputs, first and second local oscillators respectively connected to each of the mixers, said first and second mixers each having a respective one of said first and second local oscillators connected thereto, the local oscillators providing signals having different frequencies to the respective mixers for multiplication with the first and second divided outputs whereby first and second multiplied outputs are produced, first and second multiplied output filters and amplifiers respectively connected to each of the oscillators for respectively receiving, filtering and amplifying the first and second multiplied outputs, and first and second frequency-to-voltage converters respectively connected to each of the output filters and amplifiers for converting the filtered and amplified multiplied output frequencies to digital data, and a digital output reader connected to the converters for comparing the digital data output of the first and second converters.

5,345,188

SIGMA-DELTA DIGITAL FM DEMODULATOR

Jeffrey R. Owen, Portland, Oreg., assignor to Seiko Telecommunication Systems, Inc., Beaverton, Oreg.

Filed Jul. 14, 1993, Ser. No. 92,381

Int. Cl.[5] H03D *3/18*

U.S. Cl. 329—323 **18 Claims**

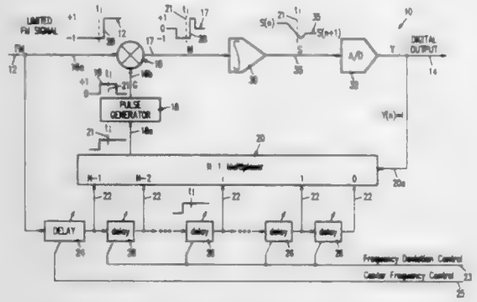
11. A device producing a representation of frequency of a signal, the device comprising:

means receiving a frequency signal and indicating times of occurrence of given chosen conditions in said frequency signal, the relative time of occurrence among said given chosen conditions representing frequency of said frequency signal;

means generating anticipated times of occurrence for said given chosen conditions;

means comparing an indication of time of occurrence for said given chosen condition with the associated anticipated time of occurrence and producing a representation of error in the anticipated time of occurrence relative to the indicated time of occurrence; and

means collecting from said comparing means said representation of error and incorporating said errors into an accumulated error, said generating means selecting each anticipated time of occurrence as a function of said accumulated error.



5,345,189

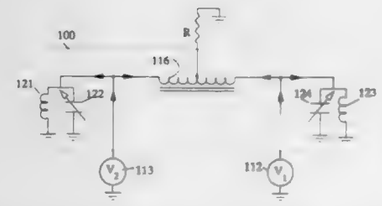
VECTORIAL SIGNAL COMBINER FOR GENERATING AN AMPLITUDE MODULATED CARRIER BY ADDING TWO PHASE MODULATED CONSTANT ENVELOPE CARRIERS

Thomas Hornak, Portola Valley, and William J. McFarland, Mountain View, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 20, 1993, Ser. No. 124,123

Int. Cl.[5] H03F *9/00, 3/00;* **H03D** *5/00, 13/00*

U.S. Cl. 330—207 A **6 Claims**



1. A combiner for combining first and second signals having the same frequency but a time varying relative phase shift, to generate a signal proportional to the sum or difference of said first and second signals, said combiner comprising:

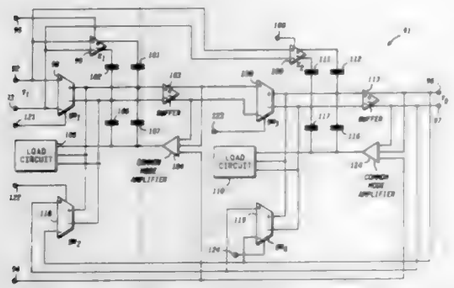
first and second inputs for receiving said first and second signals, respectively;

means for receiving a phase shift signal indicative of the value of said variable relative phase shift;

combining means, connected to said first and second inputs, for generating a signal related to the vectorial sum or difference of said first and second signals;

first and second reactive circuit elements, responsive to said phase shift signal, the reactance of each of said circuit elements being a function of said relative phase shift, said first reactive circuit element being connected to said first input and said second reactive circuit element being connected to said second input, wherein, for each value of said relative phase shift, the impedances of said first and second reactive circuit elements cause the current entering each of said first and second inputs to be in phase with the potential on each of said first and second inputs, respectively.

5,345,190
MODULAR LOW VOLTAGE FILTER WITH COMMON MODE FEEDBACK
Scott A. Kaylor, Gilbert, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 2, 1993, Ser. No. 100,830
Int. Cl.[5] H03F 3/45
U.S. Cl. 330—258 20 Claims



1. A modular filter with common mode feedback, the modular filter responsive to an applied input differential signal for providing a filtered output differential signal, the modular filter comprising:
a load circuit having a first terminal and a second terminal for summing signals applied thereto, said load circuit providing variable loads at said first and second terminals responsive to a control signal;
a first transconductor having a first transconductance which is responsive to the input differential signal for providing a differential signal to said first and second terminals of said load circuit;
an amplifier having a first predetermined gain and being capacitively coupled to said first and second terminals of said load circuit, said amplifier being responsive to the applied input differential signal for providing a differential signal to said first and second terminals of said load circuit;
a common mode amplifier capacitively coupled to said first and second terminals of said load circuit for providing common mode feedback, said common mode amplifier being responsive to the filtered output differential signal and a common mode reference voltage, said common mode amplifier providing said control signal for varying loading at said first and second terminals of said load circuit; and
a second transconductor having a second transconductance responsive to the filtered output differential signal and providing a differential signal to said first and second terminals of said load circuit.

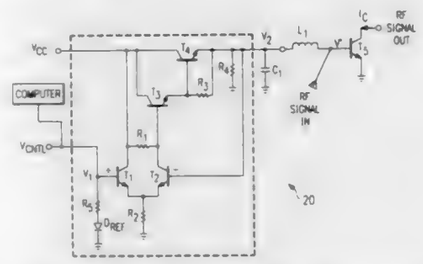
5,345,191
BROAD-BAND AMPLIFIER
Naojiro Tanaka, Kanagawa, Japan, assignor to Leader Electronics Corp., Kanagawa, Japan
Filed Jul. 30, 1993, Ser. No. 99,569
Claims priority, application Japan, Jul. 31, 1992, 4-205244
Int. Cl.[5] H03F 1/30, 3/16
U.S. Cl. 330—277 4 Claims

1. A broad-band amplifier comprising:
a source follower field-effect transistor which is connected to an input terminal,
a constant current source which is connected to a source side of the field-effect transistor to provide a constant source current,
a voltage variable resistance element which varies a value of resistance in accordance with a control voltage to be applied, an output terminal and an input terminal thereof being connected to the constant current source and a source of the field-effect transistor respectively,
an output side transistor to which a voltage signal of the output terminal of the voltage variable resistance element is supplied, and
a voltage control means which applies an error between an output detection voltage of the output side transistor and



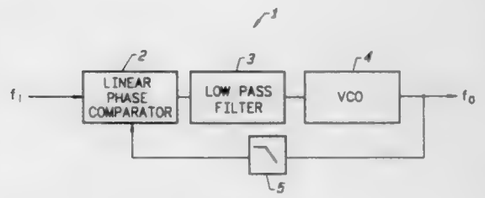
an input detection voltage of the input terminal as a control voltage on the voltage variable resistance element, whereby the input detection voltage and output detection voltage are controlled to be almost the same.

5,345,192
VOLTAGE CONTROLLED INTEGRATED CIRCUIT FOR BIASING AN RF DEVICE
Ronald P. Green, Carlsbad, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Filed Jan. 29, 1993, Ser. No. 11,392
Int. Cl.[5] H03F 1/30
U.S. Cl. 330—289 11 Claims



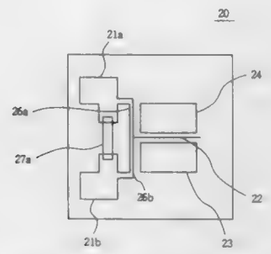
1. A single package integrated circuit device for biasing a quasi-linear bipolar device having a class of operation, comprising:
a reference device for monitoring temperature changes of the quasi-linear bipolar device and for monitoring any corresponding deviations of a base-emitter voltage of the quasi-linear bipolar device from a predetermined base-emitter voltage level;
a feedback loop for maintaining the predetermined base-emitter voltage level of the quasi-linear bipolar device comprising a differential transistor pair, having a first transistor and a second transistor wherein a emitter of the first transistor and an emitter of the second transistor are connected, and a Darlington transistor pair, having a third transistor and a fourth transistor, with a base of the third transistor connected to a collector of the second transistor, a base of the fourth transistor connected to an emitter of the third transistor, and a collector of the third transistor connected to a collector of the fourth transistor, wherein the Darlington transistor pair provide a low impedance current source required to maintain the predetermined base-emitter voltage level of the quasi-linear bipolar device;
a voltage control input, for selectively electronically adjusting the predetermined base-emitter voltage level of the quasi-linear bipolar device thus changing the class of operation of the quasi-linear bipolar device, connected to a base of the first transistor.

5,345,193
PHASE LOCKED LOOP WITH LOOP GAIN STABILIZATION CIRCUIT
Donald A. Bradley, Morgan Hill, Calif., assignor to Wiltron Company, Morgan Hill, Calif.
Filed Jul. 28, 1993, Ser. No. 98,519
Int. Cl.[5] H03L 7/08, 7/093
U.S. Cl. 331—16 42 Claims



1. A phase locked loop comprising:
a source of a first signal having a predetermined range of frequencies;
a source of a second signal;
a linear phase detector responsive to said first signal and said second signal for comparing the relative phase of said first signal and said second signal; and
a loop gain stabilization circuit means coupled between said source of said first signal and said linear phase detector for reducing the magnitude of variations in the loop gain of said phase locked loop over said predetermined range of frequencies of said first signal source.

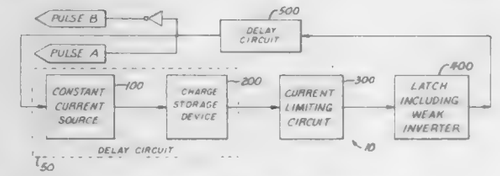
5,345,194
FET HAVING TWO GATE BONDING PADS FOR USE IN HIGH FREQUENCY OSCILLATOR
Isamu Nagasako, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jul. 14, 1992, Ser. No. 914,209
Claims priority, application Japan, Jul. 23, 1991, 3-181480
Int. Cl.[5] H03B 5/18; H04B 1/26
U.S. Cl. 331—99 19 Claims



1. A field effect transistor comprising a source, a source bonding pad connected to said source, a drain, a drain bonding pad connected to said drain, a gate, a plurality of gate bonding pads connected to said gate, one end of said gate being connected to two gate bonding pads, and a resistor interconnected between said two gate bonding pads.

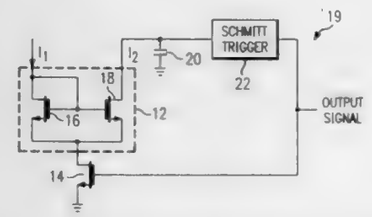
6. A high frequency signal oscillator comprising:
a field effect transistor including a source, a source bonding pad connected to said source, a drain, a drain bonding pad connected to said drain, a gate, and two gate bonding pads each connected to the ends, respectively, of said gate;
bias means for supplying bias voltages, respectively, to each electrode of said field effect transistor from power supply;
a dielectric resonator connected through a coupling line to one of said gate bonding pads;
an output terminal of high frequency signal connected to the other of said gate bonding pads;
a capacitive reactance connected to said source bonding pad; and
grounding means for said high frequency signal for grounding said drain bonding pad.

5,345,195
LOW POWER V_{CC} AND TEMPERATURE INDEPENDENT OSCILLATOR
Michael V. Cordoba, and Kim C. Hardee, both of Colorado Springs, Colo., assignors to United Memories, Inc., Colorado Springs, Colo. and Nippon Steel Semiconductor Corp., Chiba, Japan
Filed Oct. 22, 1992, Ser. No. 964,761
Int. Cl.[5] H03K 3/354, 3/03
U.S. Cl. 331—111 40 Claims



1. A low power oscillator circuit comprising:
a first delay circuit including a constant current source which is substantially independent of variations in a supply voltage Vcc and temperature and a charge storage device coupled to the constant current source to establish a period of oscillator determined by the current generated in the constant current source;
a latch coupled to the first delay circuit to provide a stable output;
a second delay circuit coupled to receive the output from said latch and provide an oscillating output pulse signal; and
an electrical connection from the second delay circuit to said first delay circuit.

5,345,196
METHOD AND APPARATUS FOR CURRENT AND VOLTAGE CONTROL OF AN OSCILLATOR
Shivaling S. Mahant-Shetti Richardson and John W. Fattaruso, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jul. 7, 1993, Ser. No. 88,993
Int. Cl.[5] H03K 3/354
U.S. Cl. 331—111 20 Claims



14. A method of generating an oscillating signal, comprising the steps of:
generating a mirrored current based on a control current;
charging and discharging a capacitor based on the direction of the mirrored current;

outputting a first voltage level when the capacitor charges to a first voltage threshold and outputting a second voltage level when the capacitor discharges to a second voltage threshold; and

changing the direction of the mirrored current based on the outputting of the first and second voltage levels.

18. A bi-directional current source, comprising:

a current mirror operable to receive a control current and generate an output current; and

a switch coupled to said current mirror and operable to change the direction of said output current, such that said output current flows in a first direction when said switch is open and said output current flows opposite said first direction when said switch is closed.

5,345,197

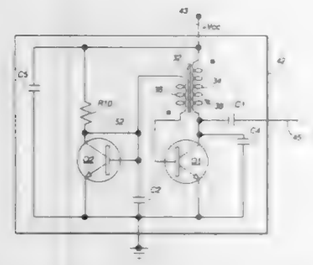
BATTERY POWERED MAGNETIC PEN HAVING OSCILLATOR WITH IMPROVED EFFICIENCY AND LOW POWER CONSUMPTION

Salvatore R. Riggio, Jr., Boca Raton, Fla., assignor to International Business Machines, Armonk, N.Y.

Filed Jan. 11, 1993, Ser. No. 3,083

Int. Cl.[5] H03B *5/12*

U.S. Cl. 331—117 R **7 Claims**



1. A battery powered magnetic pen comprising:

a power source comprising battery for providing DC power to operate said pen, said battery having one terminal connected to ground;

and an oscillator connected between a second terminal of said battery and said ground, said oscillator comprising

a first transistor having a first base, a first collector, and a first emitter, said first emitter being connected directly to ground,

a transformer having a primary winding connected in series between said battery and having said first collector, said transformer further having a secondary winding connected to said first base and forming a feedback loop from said collector through said transformer to said first collector, said feedback loop providing zero loop phase shift and a loop gain of one,

capacitor means connected to said primary winding and said first emitter and having a capacitance related to the inductance of said primary winding to establish resonant conditions and cause said oscillator to oscillate,

a second transistor having a second base, a second collector, and a second emitter, said second emitter being connected to ground,

conductor means connected to said second base, said second collector, and said secondary winding for creating a common point of equal DC potential, and

a resistor connected in series between said battery and said conductor means for providing a DC bias to said common point, said resistor having a resistance setting base-to-emitter voltages and amount of current flowing through said first and second collectors, of said first and second transistors.

5,345,198

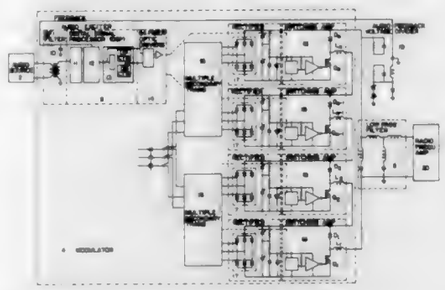
POWER SUPPLY MODULATOR CIRCUIT FOR TRANSMITTER

Herbert P. Jacobson, Elkhart, Ind., assignor to Crown International, Inc., Elkhart, Ind.

Filed Jun. 10, 1993, Ser. No. 75,230

Int. Cl.[5] H03C *1/36;* **H03F** *3/217*

U.S. Cl. 332—152 **20 Claims**



1. A transmitter comprising:

a plurality of switchable voltage sources, each being switchable to supply an output voltage;

a pluraiity of diodes, each of said diodes being connected across a corresponding one of said voltage sources, each said diode being connected in series to form a series connection having output terminals;

a plurality of inductance means for apportioning the input inductance of said series connection equally among said voltage sources, said plurality of inductance means being operably coupled between adjacent ones of said diodes within said series connection;

control means for receiving a modulated voltage signal and for switching said voltage sources according to the temporary value of the amplitude of the modulated voltage signal; and means for producing an RF signal based on the voltage apparent at said output terminals.

5,345,199

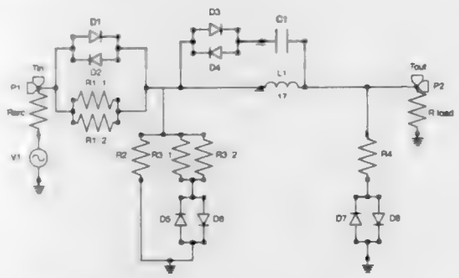
NON-REFLECTIVE LIMITER

Chance M. Glenn, Sr., Columbia; Roger Kaul, Olney; David Sumner, Adelphi, and Kisha N. Gwyn, Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 12, 1993, Ser. No. 105,270

Int. Cl.[5] H01P *1/22*

U.S. Cl. 333—17.2 **6 Claims**



1. A passive limiting device comprising:

an input port,

a first end of a first resistance connected to said input port,

an inductance element connected between the second end of said first resistance and an output port,

a second resistance connected between the second end of said first resistance and a ground reference,

a third resistance connected in series with a first pair of diodes connected anode to cathode in parallel, said third resistance in series with said first pair of diodes being connected between said output port and said ground reference,

a fourth resistance in series with a second pair of diodes connected anode to cathode in parallel, said fourth resistance and said second pair of diodes being connected in parallel across said second resistance,

a third pair of diodes connected anode to cathode in parallel, said third pair of diodes being connected in series with a capacitance, and wherein said third pair of diodes in series with said capacitance is connected in parallel with said inductance,

a fourth pair of diodes connected anode to cathode in parallel, said fourth pair of diodes being connected in parallel with said first resistance, wherein

when said first, second, third, and fourth pairs of diodes are open circuited, said passive limiting device comprises a low-loss T-network attenuator circuit, and when said first, second, third, and fourth pairs of diodes are conducting, said passive limiting device comprises a high-loss π-network attenuator circuit.

5,345,200

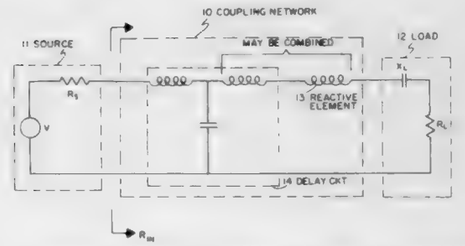
COUPLING NETWORK

Robert H. Reif, Groton, Mass., assignor to GTE Government Systems Corporation, Waltham, Mass.

Filed Aug. 26, 1993, Ser. No. 68,557

Int. Cl.[5] H03H *7/38*

U.S. Cl. 333—32 **4 Claims**



1. A coupling network for coupling a signal at a frequency from a voltage source to a load, said voltage source having a source resistance, said load having a load resistance and a load reactance, the ratio of said load reactance to said load resistance greater than 100, said coupling network comprising:

a reactive element arranged in series with said load to resonate with said load reactance at said frequency; and

a delay circuit between said reactive element and said source, having a delay equivalent to a quarter wave length transmission line at said frequency and having a characteristic impedance equal to the square root of the product of the values of said load resistance and the source required load resistance, said source required load resistance defined as the resistance seen looking into the input of the coupling network.

5,345,201

SAW DEVICE AND METHOD OF MANUFACTURE

James A. Greer, Andover, and Thomas E. Parker, Framingham, both of Mass., assignors to Raytheon Company, Lexington, Mass.

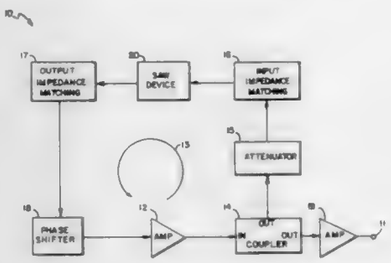
Filed Jun. 29, 1988, Ser. No. 221,499

Int. Cl.[5] H03H *9/205;* **H01L** *41/04*

U.S. Cl. 333—193 **32 Claims**

1. A surface wave device, comprising:

means for providing first and second opposing surfaces in direct strain transfer relationship, with each surface supporting surface wave propagation; and



transducer means for coupling to each of said pair of mechanically coupled surface wave propagation surfaces.

5,345,202

DIELECTRIC FILTER COMPRISING A PLURALITY OF COAXIAL RESONATORS OF DIFFERENT LENGTHS ALL HAVING THE SAME RESONANT FREQUENCY

Yasumi Kobayashi; Kousuke Takeuchi; Kachio Ikeda; Kenichi Shibata, all of Osaka, and Kazuhiko Kuroki, Kyoto, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

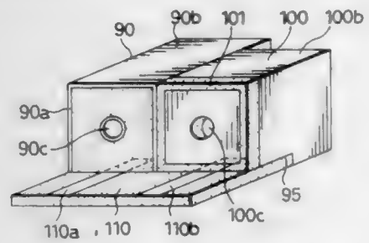
Division of Ser. No. 853,049, Mar. 18, 1992, Pat. No. 5,293,141.

This application Sep. 22, 1993, Ser. No. 124,481

Claims priority, application Japan, Mar. 25, 1991, 3-060393; Apr. 2, 1991, 3-070074; Apr. 9, 1991, 3-076302

Int. Cl.[5] H01P *1/205*

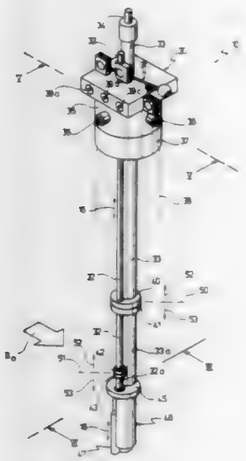
U.S. Cl. 333—206 **2 Claims**



1. In an improved dielectric filter comprising a plurality of coaxial resonators each having an outer peripheral conductor and an inner peripheral conductor formed by coating an outer peripheral surface and an inner peripheral surface of a first dielectric member with a conductive member and having one end face short-circuited, the improvement comprising:

at least one of said plurality of coaxial resonators has a length different from those of the other coaxial resonators, and has the same resonance frequency as those of said other coaxial resonators produced by a resonance frequency correcting capacitance forming portion connected to both the inner peripheral conductor and the outer peripheral conductor.

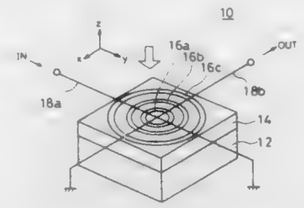
5,345,203
RESONATOR ARRANGEMENT FOR ELECTRON SPIN RESONANCE SPECTROSCOPY
Ekkehard Gentsch, Rolandplatz, and Dieter Schmalbein, Marxzell-Burbach, both of Fed. Rep. of Germany, assignors to Bruker Analytische Messtechnik GmbH, Silberstreifen, Fed. Rep. of Germany
Filed Jul. 31, 1992, Ser. No. 923,731
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1991, 4125655
Int. Cl.[5] H01P *7/00*
U.S. Cl. 333—219 **11 Claims**



1. A resonator for electron spin resonance spectroscopy, comprising:
annular dielectric resonance means having an axis and generating a microwave electromagnetic field having field lines extending essentially parallel to said axis within said annular dielectric resonance means and being closed around said annular dielectric resonance means;
coupling means comprising a coupling loop for coupling microwave energy to and from said annular dielectric resonance means;
cylindrical shielding means surrounding said annular dielectric resonance means and rigidly connected to said coupling loop; and
means for displacing said shielding means with said coupling loop rigidly connected thereto along a direction parallel to said axis.

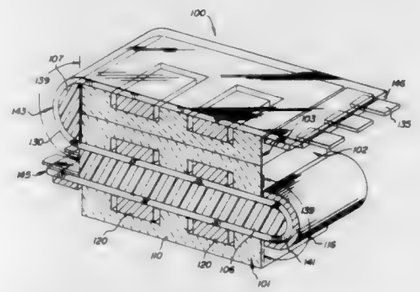
5,345,204
MAGNETOSTATIC WAVE RESONATOR HAVING AT LEAST ONE RING CONDUCTOR
Takekazu Okada; Satoru Shinmura, and Fumio Kanaya, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan
Filed Feb. 5, 1993, Ser. No. 14,433
Claims priority, application Japan, Feb. 12, 1992, 4-59463
Int. Cl.[5] H01P *1/215*
U.S. Cl. 333—219.2 **7 Claims**

1. A magnetostatic wave resonator comprising:
a ferrimagnetic base;
at least one ring conductor formed on one main surface of said ferrimagnetic base; and
at least two transducers that intersect one another on said one main surface of said ferrimagnetic base and coupled magnetically to said ferrimagnetic base for exciting a magnetostatic wave in said ferrimagnetic base having a main mode and a higher mode standing wave, and for



receiving said magnetostatic wave, whereby said higher mode standing wave has an anti-node;
said ring conductor being positioned at said anti-node.

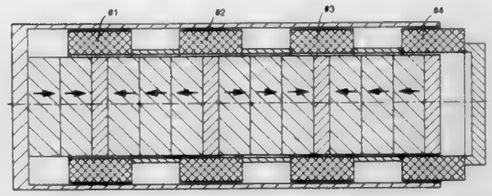
5,345,205
COMPACT HIGH DENSITY INTERCONNECTED MICROWAVE SYSTEM
William P. Kornrumpf, Albany, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Apr. 5, 1990, Ser. No. 504,753
Int. Cl.[5] H01P *3/08;* **H05K** *1/00*
U.S. Cl. 333—246 **26 Claims**



1. A microwave system comprising:
a plurality of distinct microwave electronic modules with respective electrical contacts thereon;
a flexible high density interconnect structure interconnecting said microwave electronic modules, said flexible high density interconnect structure including a dielectric layer having a side which is bonded to at least two of said microwave electronic modules and including flexible conductors on an opposite side of said dielectric layer supported by said dielectric layer and ohmically connected to said respective electrical contacts of said microwave electronic modules through via holes in said dielectric layer;
said microwave electronic modules being disposed in a multi-tier stack by having said flexible high density interconnect structure being bent between adjacent tiers.

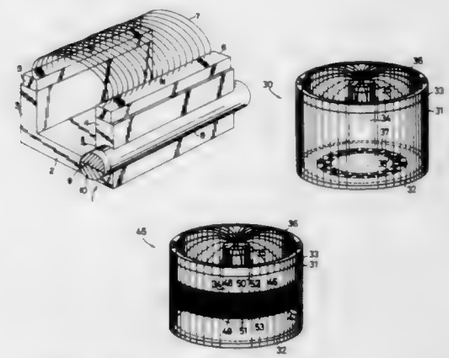
5,345,206
MOVING COIL ACTUATOR UTILIZING FLUX-FOCUSED INTERLEAVED MAGNETIC CIRCUIT
Anthony C. Morcos, Oceanside, Calif., assignor to Bei Electronics, Inc., San Francisco, Calif.
Continuation of Ser. No. 980,754, Nov. 24, 1992, abandoned. This application Jun. 10, 1993, Ser. No. 75,345
Int. Cl.[5] H01F *7/08;* **H02K** *41/00*
U.S. Cl. 335—222 **34 Claims**

22. A moving coil actuator comprising:
a shell having a closed end and an open end;
a core disposed within the shell to define an air gap therebetween, the core including a plurality of sets of axially-magnetized permanent magnets separated from one another by ferro-magnetic pole pieces and having alternating directions of magnetization, the sets of magnets including an innermost magnet set disposed in proximity to the closed end of the shell and an outermost magnet set disposed in proximity to the open end of the shell, the outermost magnet set having a ferro-magnetic pole piece disposed between said outermost magnet set and the open end of the shell; and



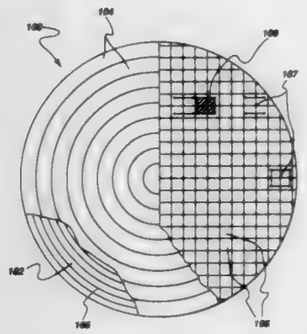
a coil assembly movably disposed within the air gap, the coil assembly including a coil carrier disposed within the air gap and a plurality of coil windings formed on the coil carrier in axial correspondence to the plurality of sets of magnets, being wound to have alternating polarities such that adjacent coil windings are wound in series opposition, and connectable to an electrical power supply.

5,345,207
MAGNET CONFIGURATION WITH PERMANENT MAGNETS
Thomas Gebele, Freigericht, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany
Continuation of Ser. No. 802,301, Dec. 4, 1991. This application Dec. 24, 1992, Ser. No. 997,110
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1991, 4102102
Int. Cl.[5] C23C *14/00;* **H01F** *3/00*
U.S. Cl. 335—298 **14 Claims**



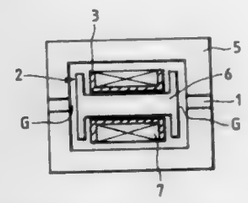
1. A magnet configuration comprising:
at least two permanent magnets (**5**, **6**; **33**, **35**) having a distance from each other;
a stationary yoke (**2**, **3**, **4**; **31**, **32**, **34**) connecting first opposite poles of said at least two permanent magnets (**5**, **6**; **33**, **35**), whereas second poles of said magnets (**5**, **6**; **33**, **35**) having different polarity are bridged by magnetic field lines through a fluid; and
at least one rotatable body (**8**, **12**; **37**, **38**) being arranged in a region of said stationary yoke (**2**, **3**, **4**; **31**, **32**, **34**) and being rotatable in said yoke without linear movement with respect to said yoke, said rotatable body (**8**, **12**; **37**, **38**) comprising at least two spatially separated solid materials with different magnetic properties, said properties differing in dependence upon an angle of an index rotating around a central axis of the rotatable body.

5,345,208
POLE FACE DESIGN FOR A C-SHAPED SUPERCONDUCTING MAGNET
Bizhan Dorri, Clifton Park; Evangelos T. Laskaris, Schenectady; Gary Bedrosian, Delmar, all of N.Y., and Bu-Xin Xu, Florence, S.C., assignors to General Electric Company, Schenectady, N.Y.
Filed May 26, 1993, Ser. No. 67,183
Int. Cl.[5] G01V *3/00;* **G01R** *33/20*
U.S. Cl. 335—301 **4 Claims**



1. A C-shaped superconducting magnet wherein said magnet is comprised of:
a superconducting coil means;
a ferromagnetic core means operatively connected to said coil means, and
first and second pole pieces operatively connected to said core means and which are located at a predetermined distance away from each other to provide a gap between said first and second pole pieces such that said first and second pole pieces are each further comprised of a passive shim means located adjacent to said first and second pole pieces, wherein said passive shim means is further comprised of a ring means including a number greater than two of circumferentially-abutting concentric continuous rings of different thicknesses generally covering the face area of its associated pole piece, and wherein said passive shim means is further comprised of shimming trays attached to said rings and passive shims disposed on top of said rings on said shimming trays.

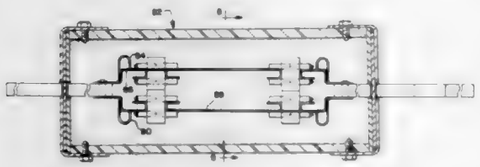
5,345,209
ADJUSTMENT SYSTEM FOR A COIL DEVICE
Yutaka Saitoh; Shinichiro Ito, and Yukiharu Kinoshita, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan
Filed Jul. 30, 1992, Ser. No. 922,693
Int. Cl.[5] H01F *21/02, 27/26*
U.S. Cl. 336—83 **6 Claims**



1. An adjustment system for a coil device, comprising:
an outside magnetic substance;

an inside magnetic substance arranged within said outside magnetic substance so as to form gaps between said inside magnetic substance and said outside magnetic substance;
a bobbin mounted on said inside magnetic substance, said bobbin having flanges;
a coil mounted on said bobbin;
first and second openings in said outside magnetic substance, said openings being aligned with said gaps;
third and fourth openings in said outside magnetic substance, said third and fourth openings being adjacent to said first and second openings and being aligned with said flanges of said bobbin; and
an elongate adjustment tool having a cross section sufficient to permit it to pass through either of said first and second openings in order to make contact with said inside magnetic substance in order to adjust the size of said gaps, and permitting it to pass through either of said third and fourth openings in order to make contact with said bobbin, whereby the position of said bobbin may be adjusted to adjust the inductance of said coil device.

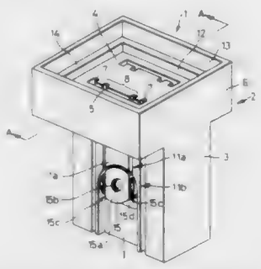
5,345,210
TIME DELAY FUSE
Robert G. Swensen, Mt. Prospect, and Joseph W. Kowalik, Skokie, both of Ill., assignors to Littelfuse, Inc., Des Plaines, Ill.
Filed Jul. 19, 1993, Ser. No. 94,376
Int. Cl.[5] H01H *85/04*
U.S. Cl. 337—163 **16 Claims**



1. A subassembly component for mounting within the housing of a time delay fuse, said subassembly component for mounting between the axial ends of said fuse, said subassembly component comprising:
a. a rigid meltable fusible element having a pair of ends and said rigid meltable fusible element melting upon exposure to a current overload for a given period of time; and
b. a body of resilient, compressible insulating material spaced apart from conductive terminals of said fuse, said body having a passageway through which a portion of said rigid meltable fusible element extends, and said passageway being defined by surrounding walls, said walls collapsing upon the melting of said rigid meltable fusible element due to the resiliency of said body of material.

5,345,211
CONNECTION BOX FOR FUSIBLE LINKS AND TERMINAL NUT
Kenji Muramatsu; Mitsuhiko Totsuka, and Toshiharu Kudo, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Jul. 19, 1993, Ser. No. 92,904
Claims priority, application Japan, Jul. 20, 1992, 4-056183[U]; Apr. 16, 1993, 5-112406
Int. Cl.[5] H01H *85/02*
U.S. Cl. 337—186 **3 Claims**

1. A connector for accommodating first and second fusible links of different sizes, said fusible links including a housing portion having a fuse therein and a pair of feet extending from the housing portion, each said feet including at least one alignment rib, said connector comprising:
a housing including a peripheral wall and a bottom surface, said bottom surface having a pair of opposing slots each having at least a pair of rib-receiving slots for receiving the alignment ribs of said first and second fusible links respectively, said peripheral wall having at least one stepwise recess which, in cooperation with said bottom surface, define first and second abutting portions against



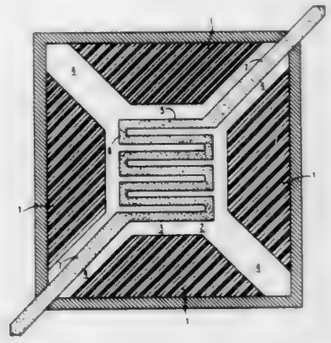
which said first and second fusible links respectively abut when individually accommodated in said housing; and
a wall member extending from said housing, said wall member having a pair of terminal nuts for individually securing said fusible links with a bolt.

5,345,212
POWER SURGE RESISTOR WITH PALLADIUM AND SILVER COMPOSITION
Orville W. Brown, Lansdale, Pa., assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.
Filed Jul. 7, 1993, Ser. No. 88,452
Int. Cl.[5] H01C *7/10*
U.S. Cl. 338—20 **7 Claims**

1. A surge resistor device comprising a printed linear serpentine pattern of resistor paste, fired and fused on a substrate, said device exhibiting a resistance ranging from 0.1 to 20 ohms/-square, wherein the resistor paste comprises in combination (a) about 38–60 parts of palladium and silver, (b) 6–20 parts of glass frit, (c) 1–20 parts of dopant, (d) 2–6 parts of binder and 18–25 parts of vehicle, wherein the dopant component includes at least 1 part tungsten, to total 100 parts by weight of the paste.

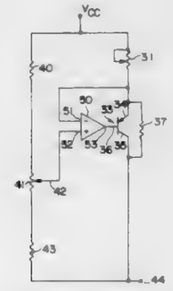
5,345,213
TEMPERATURE-CONTROLLED, MICROMACHINED ARRAYS FOR CHEMICAL SENSOR FABRICATION AND OPERATION
Stephen Semancik, Mt. Airy; Richard E. Cavicchi, Washington Grove; Michael Gaitan, Gaithersburg, and John S. Suehle, Westminister, all of Md., assignors to The United States of America, as represented by the Secretary of Commerce, Washington, D.C.
Filed Oct. 26, 1992, Ser. No. 965,949
Int. Cl.[5] H01C *7/00, 1/012*
U.S. Cl. 338—34 **28 Claims**

1. A temperature-controlled sensor element which comprises:
a support substrate;
a microbridge structure formed on said support substrate;
a heating element formed on said microbridge structure so as to be thermally isolated from said support substrate;
a conductive heat distribution plate formed above said heating element for evenly distributing heat from said heating element and;



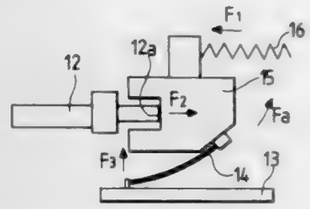
a layer of chemical active material formed above said conductive heat distribution plate.

5,345,214
VARIABLE RANGE POSITION INDICATOR
Tsz Y. (Barry) Tsui, Kwai Chung, Hong Kong, assignor to STD Electronic International Ltd., Kwai Chung, Hong Kong
Filed Jun. 17, 1993, Ser. No. 77,542
Int. Cl.[5] H01C *10/16;* **G06F** *3/033*
U.S. Cl. 338—128 **10 Claims**



1. A position indicator for producing a variable maximum, variable resistance for supplying a variable signal to a computer indicating the degree of displacement of a controlled element along an axis comprising:
a variable resistor having a variable resistance and first and second terminals;
a variable displacement displaceable element coupled to the variable resistor for varying the resistance of the variable resistor in response to the degree of displacement of the displaceable element along an axis;
a first fixed resistance resistor and a transistor having first, second, and control terminals, the first fixed resistor being connected to the first and second terminals of the transistor, the transistor being connected in series with the variable resistor at the second terminal of the variable resistor and the first terminal of the transistor as a first series circuit;
a second fixed resistance resistor, a potentiometer having a fixed resistance and a variable position contact movable along and electrically connected to the fixed resistance of the potentiometer, and a third fixed resistance resistor, the second fixed resistor, potentiometer, and third fixed resistor being connected in series as a second series circuit, the first and second series circuits being electrically connected together (i) at the first terminal of the variable resistor and at the second fixed resistor and (ii) at the second terminal of the transistor and the third fixed resistor, i.e., in parallel, the connection of the third fixed resistor and the second terminal of the transistor being an output terminal of the indicator; and
an amplifier having a first inverting input terminal and a second non-inverting input terminal and an output terminal, the first inverting input terminal and the second non-inverting input terminal of the amplifier being connected to the second terminal of the variable resistor and the variable position contact of the potentiometer, respectively, the output terminal of the amplifier being connected to the control terminal of the transistor whereby the maximum resistance at the output terminal of the indicator is controlled by the variable position contact of the potentiometer.

5,345,215
VARIABLE RESISTOR DEVICE WITH REDUCED SLIDER VIBRATION
Hirofumi Okumura, and Kanji Ishibara, both of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Jan. 26, 1993, Ser. No. 8,961
Claims priority, application Japan, Feb. 3, 1992, 4-17772
Int. Cl.[5] H01C *10/38*
U.S. Cl. 338—176 **6 Claims**



1. A variable resistor device comprising:
a casing defining an elongated guide groove having a wall;
a shaft defining an axis, the shaft being housed in the casing such that the shaft is movable in a direction defined by the axis;
a substrate fixedly provided within the casing;
a slider contained in the housing and having a projection slidably received in the guide groove, the slider abutting an end of the shaft such that the slider is pivotable relative to the shaft;
a brush fixedly connected to the slider which slidably contacts the substrate; and
a return spring disposed in the casing, the return spring connected to the slider such that a spring force exerted by the return spring on the slider biases the slider against the shaft,
wherein the guide groove is parallel to and located away from the axis of the shaft such that the slider is pivoted by the spring force about the end of the shaft, thereby pressing the projection against the wall of the guide groove.

5,345,216
METHOD AND APPARATUS FOR QUALIFYING DATA PEAKS
Kiran Chopra; David C. Geminden, both of Longmont, and Debra C. Mahoney, Boulder, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.
Filed Feb. 26, 1993, Ser. No. 23,671
Int. Cl.[5] G11B *5/02;* **G06F** *11/08*
U.S. Cl. 340—146.2 **28 Claims**

1. A system for eliminating invalid peaks from a received signal stream containing valid data peaks, said system comprising:
means for receiving said signal stream with each of said peaks being represented as a binary number whose magni-

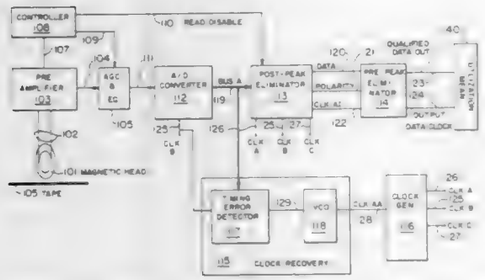
tude specifies the amplitude of the peak represented by said binary number;

a post peak eliminator for eliminating invalid post peaks received subsequent to a valid data peak in said signal stream with each of said invalid post peaks being of a lesser amplitude than said valid data peak and being of the same polarity as said valid data peak, said post peak eliminator comprising;

digital hold register means for storing a digital value representing the amplitude of a received peak,

means for comparing a digital value representing the amplitude of each subsequently received peak with the digital value of a previously received peak currently stored in said hold register means,

means for outputting a data pulse representing a subsequently received peak if the digital value of said subsequently received peak is greater than the digital value of the peak currently stored in said hold register means and for updating said hold register means with the digital value of said subsequently received peak,



means for maintaining the digital value for a peak currently in said hold register means while inhibiting the outputting of a data pulse in response the reception of a subsequent peak of a lessor digital value than the digital value of the peak currently in said hold register means; and

means for outputting a clock pulse and a polarity signal concurrent with the outputting of each data pulse with said polarity signal specifying the polarity of the peak represented by each outputted data pulse;

said system further including a pre-peak eliminator for receiving each data pulse and clock pulse and said polarity signals outputted by said post peak eliminator;

means in said pre-peak eliminator operable in response to said reception of said outputted data pulses and said clock pulses and said polarity signals to eliminate the received data pulses representing invalid pre-peaks and for applying a data pulse representing each valid peak to a utilization means.

5,345,217

METHOD OF DETECTING A DEFLATED TIRE ON A VEHICLE

Frederick V. Prottey, Walsall, Great Britain, assignor to Sumitomo Rubber Industries, Ltd., Hyogo

Filed Apr. 30, 1992, Ser. No. 876,437

Claims priority, application United Kingdom, May 2, 1991, 9109466

Int. Cl.[5] B60C *23/00*

U.S. Cl. 340—442 **14 Claims**

1. A method of detecting a partially deflated tire on a vehicle having four tires each mounted on a wheel, each wheel having a signal generator for producing a series of digital signals or pulses spaced apart by equal increments from angular rotation of the respective tire and wheel assembly, the steps comprising:

calculating vehicle speed from one of the series of signals or pulses produced by the signal generator for a reference tire selected from among the four tires;

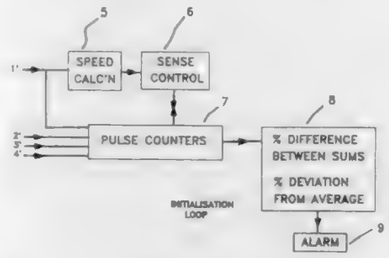
selecting an appropriate interval for deflation detection from the calculated vehicle speed;

measuring a speed of rotation signal for each of the four wheels during said interval;

storing the measured speeds;

repeating the measuring step for at least three consecutive successive equal intervals and storing the results of each repetition;

averaging the stored speeds to produce an average speed signal for each wheel;



processing the four signals in a processing unit which subtracts the sum of the signals from one pair of diagonally opposite wheels from the sum of the signals from the other pair of diagonally opposite wheels;

sensing when the magnitude of the result of said processing steps is in the range of between 0.05% and 0.6% of the mean of the two sums; and

when the mean of the sums in within the prescribed range, operating a warning device to indicate that a tire is partially or completely deflated.

5,345,218

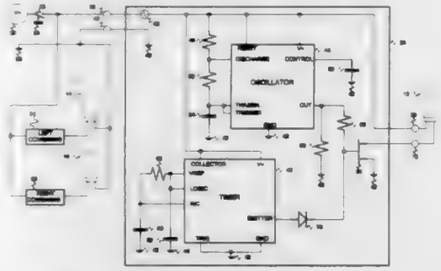
FLASHING BRAKE LIGHT SYSTEM

Daniel S. Woods, 462 S. Gilbert, Apt. 605, Mesa, Ariz. 85204, and Robert Stargiotti, 21104 Hazelbrook Dr., Cupertino, Calif. 95014

Filed Aug. 31, 1992, Ser. No. 937,461

Int. Cl.[5] B60Q *1/44*

U.S. Cl. 340—479 **7 Claims**



1. An apparatus for indicating the braking status of a vehicle upon the activation of an input signal, said apparatus comprising:

a semiconductor oscillator circuit having a power terminal adapted to be energized by said input signal and being configured to generate an oscillation signal alternatively exhibiting activated and inactivated states so long as said oscillator circuit is energized;

a semiconductor timer circuit having a power terminal adapted to be energized by said input signal, being configured to generate a delay signal which becomes activated a predetermined duration after said activation of said input signal, and being configured so that, when said input signal is inactivated prior to expiration of said predetermined duration and then reactivated, said delay signal becomes activated a remaining duration after said reactivation, said remaining duration being less than said predetermined duration; and

a semiconductor switch coupled to said oscillator circuit and to said timer circuit, said switch being configured to switch on when any one of said oscillation and delay signals is activated.

5,345,219

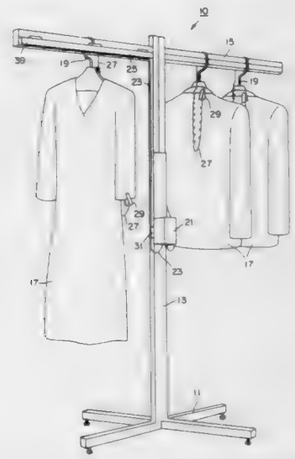
ANTI-THEFT ALARM FOR DISPLAYED GARMENTS

Robert Rogers, Ontario, Canada, assignor to Protex International Corp., Bohemia, N.Y.

Filed Jun. 12, 1992, Ser. No. 897,401

Int. Cl.[5] G08B *13/14*

U.S. Cl. 340—568 **19 Claims**



1. A security system for protecting merchandise hanging from a display fixture, comprising:

a plurality of alarm signal generation means, at least one signal generation means connected to each item of merchandise to be secured and operative to provide an alarm signal in response to a security breach;

a plurality of electrically-conducting cables connected to the alarm signal generation means;

a common cable connector means, located substantially coterminously with a structural member of the display fixture which supports the hanging merchandise, for connection with the plurality of cables; and

an alarm, including an alarm cable for electrically connecting the alarm to the common cable connector means, to complete an alarm circuit for each item of merchandise hanging from the display fixture, whereby the alarm is activated in response to the alarm signal.

5,345,220

ELECTRONIC SECURITY CLIP DEVICE

David R. Wachsman, Dix Hills, N.Y., assignor to Protex International Corp., Bohemia, N.Y.

Filed Jun. 12, 1992, Ser. No. 897,707

Int. Cl.[5] G08B *13/14*

U.S. Cl. 340—568 **23 Claims**

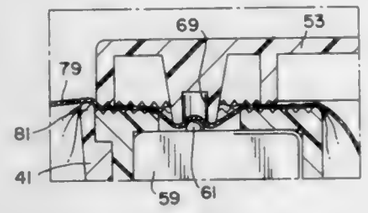
1. An electric security clip device for use with electronic security systems, comprising:

cable and alarm means for transmitting an alarm signal to an electronic security system; and

clip means including a pair of opposing jaws pivotally mounted so as to normally be in a closed position; said clip means positioning said cable and alarm means in operable relationship to said jaws;

said cable and alarm means including switch means for activating said alarm means upon placement of an object between said jaws, whereby removal of said object causes said switch to trigger said cable and alarm means to transmit said alarm signal;

wherein said clip means comprises a clip base having an upwardly facing cam surface and a support ridge, a lower jaw mounted on said clip base and having a support-ridge-engaging shoulder for positioning said lower jaw in said clip base, said lower jaw including a lower jaw face and a chamber means for positioning said cable and alarm means



in operable relationship to said lower jaw face, an upper jaw pivotally mounted on said clip base and having a downwardly facing cam surface for mutual engagement with said clip base, said upper jaw having an upper jaw face aligned to engage said lower jaw face, and biasing means for positioning said upper and lower jaws in a normally closed position wherein said upper jaw face engages said lower jaw face, said upwardly facing cam surface and said downwardly facing cam surface being aligned to permit separation of said upper jaw and lower jaw upon pressure to overcome said biasing means.

5,345,221

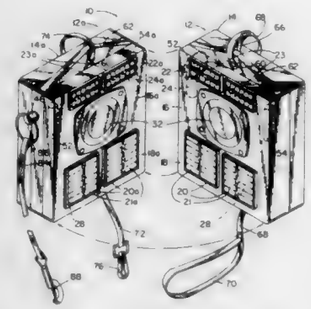
ARM ALARM SYSTEM

John M. Pons, 2404 Cochran Rd., Panama City Beach, Fla. 32408, and John J. O'Farrell, Tallahassee, Fla., assignors to John Michael Pons, Panama City, Fla.

Filed Jun. 2, 1992, Ser. No. 892,340

Int. Cl.[5] G08B *13/14*

U.S. Cl. 340—571 **14 Claims**



1. An alarm system for protecting a person and a valuable item from a thief comprising in combination:

a personal module and an item module, the modules being identical and each module having an exterior face with each exterior face having a plurality of recesses for respectively receiving a plurality of couplers, each coupler being made from a magnetic material and adapted to effect a mated, direct physical contact relationship between the modules, each module further having a casing constructed of a rigid non-magnetic material;

an electrical circuit within each casing having a transducer and a power source and an alarm switch means therebetween, the alarm switch means being adapted to close thereby connecting the transducer and the power source

to activate the transducer upon separation of the modules, and further being adapted to disconnect the transducer and the power source and deactivate the transducer upon the mating of the modules;

a lanyard having a first end adapted for attachment to the personal module and a second end adapted for attachment to the person;

a leash having a first end adapted for attachment to the item module and a second end adapted for attachment to the valuable, item; and

each module further having a normally closed jack switch for closing the circuit between the transducer and the power source when said switch is closed, whereby the system is placed in an armed state.

5,345,222

DETECTION APPARATUS FOR SECURITY SYSTEMS

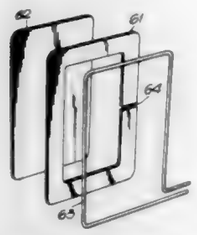
Dafydd G. Davies, Cambridge, United Kingdom, and Leif Asbrink, Vingåker, Sweden, assignors to Esselte Meto International Produktions GmbH, Hirschorn am Neckar, Fed. Rep. of Germany

Filed Dec. 26, 1991, Ser. No. 768,327

Claims priority, application United Kingdom, Feb. 28, 1990, 9004431.4

Int. Cl.[5] G08B *13/24*

U.S. Cl. 340—572 | **35 Claims**



1. An electronic article surveillance system comprising:

a. a drive coil which produces an AC magnetic interrogation field; and

b. a core wound detection coil provided on one side with at least one element of a screening material, which detection coil detects an AC magnetic response field generated by a magnetically active tag or marker which is subjected to said interrogation field when said tag or marker comes into proximity with said detection coil.

5,345,223

SNOW SENSOR

Robert D. Rutkiewicz, Minneapolis, Minn., assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 4, 1992, Ser. No. 940,482

Int. Cl.[5] G08B *19/02*

U.S. Cl. 340—581 | **7 Claims**

1. A snow sensor apparatus and circuit for sensing the presence of snow on a snow sensing surface, comprising:

a housing member having a wall whose surface forms the snow sensing surface;

a single heating element coupled to the wall for heating the snow sensing surface;

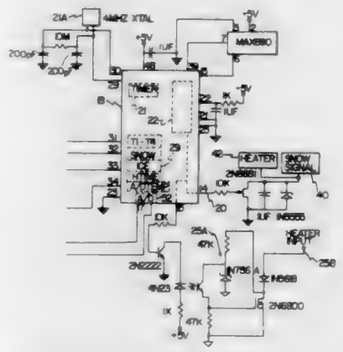
a single temperature sensor for detecting the temperature of the snow sensing surface and providing a temperature sensor signal;

controller means coupled to the heating element and temperature sensor for repeatedly activating the heating element and monitoring the temperature sensor signal in respective cycles, each as a function of time;

logic means for processing a temperature sensor signal and providing an output signal indicative of the presence of snow on the snow sensing surface, as a function of the cycles controlled by the controller means;

an electrical connector attached to the housing member for conducting the output signal therethrough; and

a region on the wall having less thickness with respect to the snow sensing surface than the remainder of the wall and



being in thermal contact with the temperature sensor and the heating element, wherein the reduced thickness region is formed by providing a circular recess on the sensing surface, and wherein the heating element comprises a metallic foil heating element disposed within the recess.

5,345,224

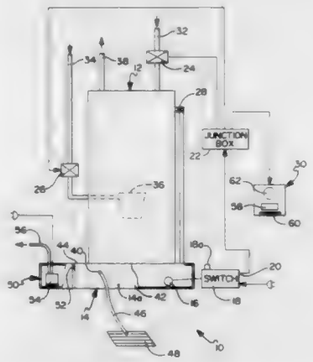
LEAK DETECTION AND MANAGEMENT APPARATUS INCLUDING A PROGRAMMABLE MESSAGE DEVICE FOR A HOT WATER HEATER

Jimmy D. Brown, 8621 Hartwell, Detroit, Mich. 48228

Filed Apr. 24, 1992, Ser. No. 874,300

Int. Cl.[5] G08B *21/00*; **340** *603, 604, 605, 616, 618, 623, 624, 625, 691*; **200** *61.04, 84 R*; **137** *551, 558*; **73** *40, 305, 307, 317, 319*

U.S. Cl. 340—605 | **8 Claims**



1. An apparatus for detecting and managing water leaks in a hot water heater, said apparatus comprising:

pan means for collecting water leaking from said hot water heater, said pan means being disposed generally concentrically underneath said hot water heater and circumscribing substantially the entire periphery of said water heater;

float means disposed within said pan means and responsive to a water level in said pan means for providing a mechanical signal when said water level in said pan means rises to a predetermined level;

first electrical switch means responsive to said mechanical signal generated by said float means for providing an electrical shut-off signal when said float means rises to a predetermined level within said pan means;

a first electrically controlled valve disposed in a cold water supply line of said water heater responsive to said electrical shut-off signal for controllably interrupting the flow of cold water into said hot water heater in response to said electrical shut-off signal;

a second electrically controlled valve disposed in a gas supply line for said water heater for interrupting a flow of gas to said water heater in response to said electrical shut-off signal;

means for providing a programmable audio message in response to said electrical shut-off signal to thereby notify an occupant of a dwelling where said hot water heater is disposed that a water leak has occurred;

said pan means including an overflow aperture located near an upper end thereof;

a conduit coupled to said overflow aperture leading to a drain, said overflow aperture and said conduit enabling a portion of leaking water within said pan means to be drained therefrom to help prevent an overflow of said pan means;

a secondary overflow reservoir;

a secondary overflow aperture in communication with said secondary overflow reservoir, said secondary overflow reservoir being operable to receive an overflow of water collected within said pan means; and

pump means disposed within said secondary overflow reservoir and responsive to the collection of a predetermined amount of water in said secondary overflow reservoir for pumping water collected within said secondary overflow reservoir to a drain.

5,345,225

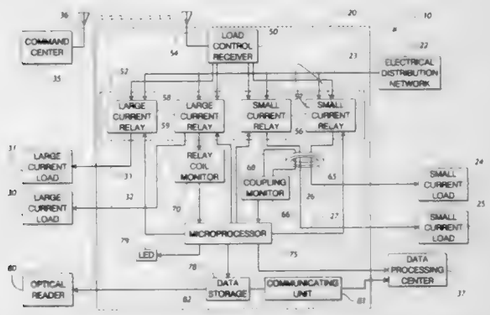
TAMPER DETECTION SYSTEM FOR LOAD MANAGEMENT DEVICE

Glenn A. Davis, Lilburn, Ga., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Oct. 30, 1992, Ser. No. 969,123

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—635 | **35 Claims**



1. An apparatus for monitoring the connection status of a load control device, comprising:

monitoring means for detecting whether a current is passing via said load control device to a load; and

signal means responsive to said monitoring means for generating a warning signal when no current is detected by said monitoring means for a first predetermined period of time.

5,345,226

ENVIRONMENTAL CONTROL SYSTEM FOR THE HANDICAPPED

Richard F. Rice, Jr., Huntsville; David M. Kelly, Madison, and Daryl L. Smith, Moulton, all of Ala., assignors to Rice-Kelly Research and Engineering, Inc., Huntsville, Ala.

Division of Ser. No. 263,439, Oct. 27, 1988, Pat. No. 5,016,003. This application Jun. 20, 1990, Ser. No. 540,780

Int. Cl.[5] H02B *15/00*

U.S. Cl. 340—825.19 | **5 Claims**

1. An environmental control system of the type adapted for connection to plural devices to control said devices, said system including:

a user-operable control interface generating at least one control signal in response to user operation thereof;

an audio source which generates at least audio prompts in response to control signals provided thereto; and

a digital processor operatively coupled to said user-operable control and coupled to provide said control signals to said audio source, said digital processor being preprogrammed to perform the following functions:

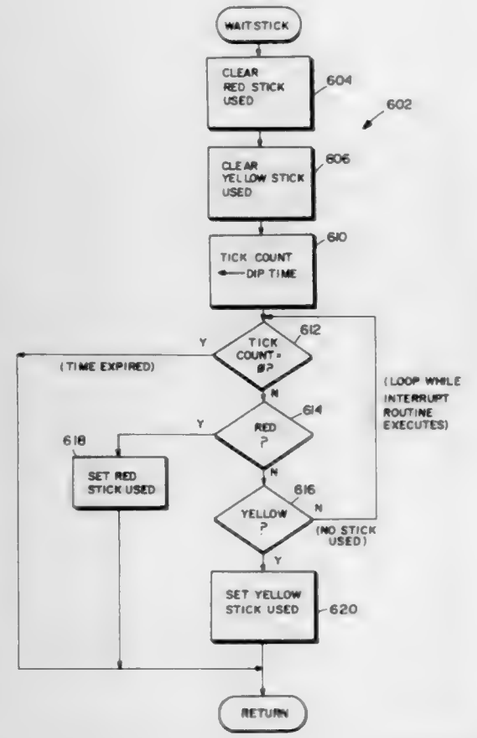
initially present a first sequence of control options R_1–R_N to said user by controlling said audio source to provide, in a sequence, audio prompts corresponding to said first sequence of options,

selecting one of said options R_J within said first sequence of options in response to generation of said control signal by said user-operable control interface in substantial synchronism with the time the audio prompt corresponding to said one option R_J is presented to said user,

selectively controlling at least one of said plural devices corresponding to said selected option R_J in response to generation of a further control signal by said user-operable control interface, and

subsequently presenting at least some of said first sequence of plural options R_1–R_N to said user by controlling said audio source to provide, in time sequence, audio prompts corresponding to said options R_1–R_N, including the steps of:

waiting a time delay before presenting a first of said plural options, said delay having a sufficient duration to permit said person to operate said user-operable control interface during said delay, and selecting said first option in response to receipt of said user interface control signal during said delay.



5,345,227

PAGER WITH MASK FOR DATABASE UPDATE

Anthony C. Fascenda, Pacifica, and Daniel L. Gregg, San Francisco, both of Calif., assignors to Newspager Corporation of America, South San Francisco, Calif.

Continuation of Ser. No. 737,812, Jul. 29, 1991, Pat. No. 5,241,305, which is a continuation of Ser. No. 494,896, May 13, 1990, abandoned, which is a continuation of Ser. No. 193,011, May 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 50,826, May 15, 1987, Pat. No. 4,845,491. This application Jun. 11, 1993, Ser. No. 76,303

The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.

Int. Cl.[5] G08B *5/22*

U.S. Cl. 340—825.22 7 Claims



1. A method for disseminating modifications to a database stored in a plurality of receivers, comprising the steps of:

transmitting a mask code and mask data;

storing in said receivers a mask indicating positions in said database where said mask data is to be written;

examining a received message to detect said mask code; and

writing, in response to said mask code, said mask data at said positions indicated by said mask.

5,345,228

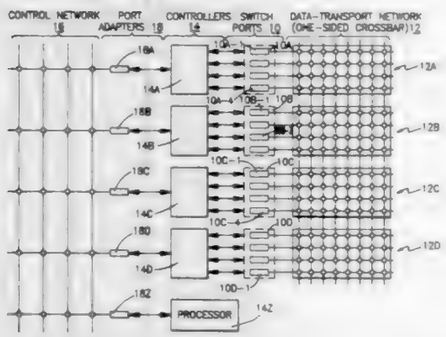
VERY LARGE SCALE MODULAR SWITCH

Peter A. Franaszek, Katonah, and Christos J. Georgiou, White Plains, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1991, Ser. No. 785,730

Int. Cl.[5] H04Q *1/00*

U.S. Cl. 340—825.79 10 Claims



1. A one-sided crosspoint switch for making simultaneous electrical interconnections among a plurality of ports in response to interconnection requests, comprising:

a plurality of ports partitioned into N groups of ports;

a plurality of N controllers, each of said controllers servicing a distinct one of said groups of ports by responding to interconnection requests therefrom;

a plurality of internal busses partitioned into N groups of internal busses, a distinct one of said groups of internal busses being assigned for use by each of said controllers;

a plurality of crosspoint switching elements, a distinct one of said crosspoint switching elements connecting each one of said ports with each one of said internal busses for making a selective electrical interconnection between said connected one port and said connected one internal bus;

means for each of said controllers to control a distinct group of said crosspoint switching elements, said distinct group of crosspoint switching elements controlled by said each controller being all of said crosspoint switching elements that are connected to a port in said group of ports serviced by said each controller; and

a communication system interconnecting said controllers;

a first one of said controllers responding to a request for interconnection of a first one of said ports serviced by said first controller with a second one of said ports serviced by a second one of said controllers by sending a message over said communication system to said second controller,

whereby said controllers can simultaneously process and implement a plurality of interconnection requests.

5,345,229

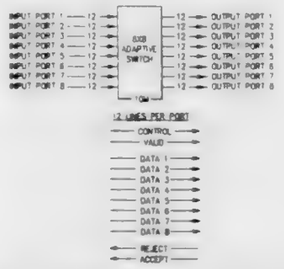
ADAPTIVE SWITCHING APPARATUS FOR MULTI-STAGE NETWORKS

Howard T. Olnowich, Endwell, N.Y.; Jehoshua Bruck, Palo Alto, Calif.; Marc Snir, Briarcliff Manor, N.Y., and Eli Upfal, Palo Alto, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 17, 1992, Ser. No. 947,023

Int. Cl.[5] H04Q *1/00*

U.S. Cl. 340—825.8 13 Claims



1. A bufferless adaptive switching apparatus for a multi-stage bufferless switching network, the network comprising:

a plurality of said adaptive switching apparatuses cascaded into stages, each said adaptive switching apparatus including a plurality of switch inputs and switch outputs, each of the switch outputs of each said adaptive switching apparatus coupled to a switch input of another one of said adaptive switching apparatuses, the switch outputs of last stage switch apparatuses comprising network output ports and the switch inputs of first stage switch apparatuses comprising network input ports; and

a node connected between each of the network output ports and each of the network input ports, the switching network establishing direct connections between any of the network input ports and network output ports, based on data connection requests received at the network input ports, for transmitting data between any of the nodes, said switching network establishing said direct connections simultaneously and asynchronously in relation to a plurality of data connection requests received separately at a plurality of the network input ports;

said switching apparatuses each comprising adaptive selection means for selecting for each data connection request one switch output from a set of switch outputs to establish a direct connection between a network input port connected to a sending node and an available network output port connected to a receiving node, said set of switch outputs comprising a plurality of alternate connections between the network input port connected to the sending node and the network output port connected to the receiving node.

5,345,230

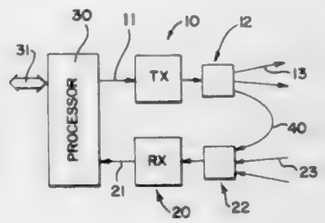
METHOD AND APPARATUS FOR OPTICAL TRANSCEIVER TESTING

Charles L. Jackson, and Douglas A. Ochsner, both of Newton, Iowa, assignors to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Apr. 13, 1992, Ser. No. 867,414

Int. Cl.[5] H04Q *1/20*

U.S. Cl. 340—825.16 20 Claims



1. An apparatus having a communication system which allows the apparatus to communicate with a portable data probe, the communication system comprising:

a programmable controller;

an optical emitter coupled to the programmable controller; and

an optical detector coupled to the programmable controller,

the programmable controller capable of running a communication mode routine for controlling the optical emitter and detector to communicate with the data probe wherein the detector detects an interrogation signal emitted by the data probe and the emitter transmits an answer signal in response to the interrogation signal received by the detector from the portable probe, the communication mode routine that the controller is capable of running is further characterized as a routine that includes a test mode subroutine capable of controlling the optical emitter end detector to communicate with one another wherein the emitter transmits a test signal having one or more known characteristics and the detector detects at least a portion of the test signal transmitted by the emitter and the test signal transmitted by the optical emitter is compared with the test signal detected by the optical detector.

5,345,231

CONTACTLESS INDUCTIVE DATA-TRANSMISSION SYSTEM

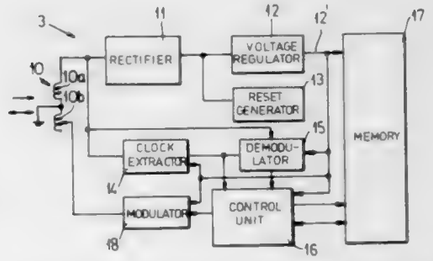
Roland Koo, and Gerald Holweg, both of Graz, Austria, assignors to Mikron Gesellschaft fur Integrierte Mikroelectronik mbH, Graz, Austria

Filed Aug. 23, 1991, Ser. No. 748,942

Claims priority, application Austria, Aug. 23, 1990, 1737/90

Int. Cl.[5] G08C *19/02*

U.S. Cl. 340—870.31 12 Claims



1. A contactless inductive data-transmission system, comprising:

at least one sending-and-receiving station including:

means for generating a given high-frequency signal which defines a clock rate,

modulating means connected to said means for generating for imparting information-carrying pulse width modulation with short even blanking intervals to said given high-frequency signal, thereby forming a pulse width modulated high-frequency signal,

a source of clock signals for extracting a system clock from said given high-frequency signal,

an inductor receiving said pulse width modulated high-frequency signal for inductively transmitting same and for receiving an information-carrying load-modulated high-frequency signal which is modulated by a modulating signal derived from said pulse width modulated high-frequency signal, said load modulation characterizing one logical value of a set of binary values "0" and "1" by a load modulation of the pulse width modulated high-frequency signal and the other logical value of said set being characterized by leaving the pulse width modulated high frequency signal unchanged, and

a demodulator connected to said inductor for demodulating said load-modulated high-frequency signal and deriving received information therefrom; and

at least one transponder energized by electrical power only inductively transmitted from said sending-and-receiving station in the form of said pulse width modulated high-frequency signal and including:

an inductive antenna coupled for wireless inductive signal transfer with said inductor upon said transponder being within a communication range of said station, a rectifier connected to said inductive antenna for recovering from said pulse width modulated high-frequency signal received by said inductive antenna from said inductor of said station, an energy signal electrically energizing said transponder, a clock extractor connected to said inductive antenna for recovering from said pulse width modulated high-frequency signal received by said inductive antenna from said inductor of said sending-and-receiving station, a system clock at said transponder synchronizing same with said sending-and-receiving station, a data storage connected to said inductive antenna for recovering data from said pulse width modulated high-frequency signal received by said inductive antenna from said inductor of said sending-and-receiving station, and for storing the recovered data represented by pulse width modulation, and

means connected with said inductive antenna for load modulation of the pulse width modulated high-frequency signal by the modulating signal derived from the pulse width modulated high-frequency signal received by the inductive antenna for producing the information-carrying load-modulated high-frequency signal transmitted to said inductor.

5,345,232

TRAFFIC LIGHT CONTROL MEANS FOR EMERGENCY-TYPE VEHICLES

Michael T. Robertson, 112 F Farrington Dr., Raleigh, N.C. 27615

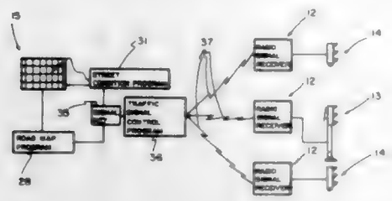
Filed Nov. 19, 1992, Ser. No. 978,997

Int. Cl.[5] G08G *1/07*

U.S. Cl. 340—906 12 Claims

1. A traffic control for emergency-type vehicle comprising: means for selectively plotting a route from the location of the vehicle to a pre-determined destination; a street condition program operatively connected to said means for plotting said route whereby the route plotted will automatically be either accepted or rejected by said street condition program; once a selected route is accepted by said street condition program,

means for automatically signalling emergency warning means at intersections along said accepted route whereby said emergency-type vehicle can reach its said predetermined destination without undue delay.

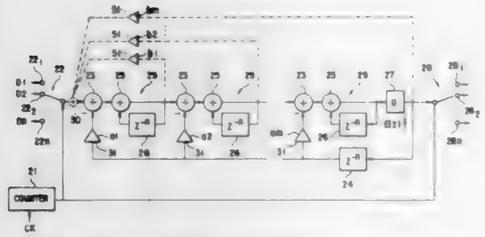


5,345,233

DIGITAL Σ-Δ MODULATOR

Mitsuru Nagata; Koichiro Sato, both of Yokohama, and Tsunetaka Matsuo, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1993, Ser. No. 40,035
Claims priority, application Japan, Mar. 30, 1992, 4-073874
Int. Cl.[5] H03M *7/36*
U.S. Cl. 341—76 **18 Claims**



1. A digital Σ-Δ modulator comprising:
input means for sequentially receiving a digital signal of one channel from digital signals of n (n is an integer of not less than 2) channels in response to a clock signal, the digital signal having k (k is an integer of not less than 3) bits;
subtracting means, connected to said input means, for subtracting a feedback signal from the digital signal of one channel input from said input means;
integrating means, connected to said subtracting means, for integrating a signal output from said subtracting means;
quantizing means, connected to said integrating means, for quantizing a signal output from said integrating means into a quantized value j (j is an integer falling within a range of $1<j<2^K$) and generating an output signal;
delay means, connected to said quantizing means, for delaying the output signal from said quantizing means by n clocks and generating the feedback signal; and
output means, connected to said quantizing means, for assigning the signal output from said quantizing means to n channels in accordance with the given order of the signals input by said input means, and outputting the signal.

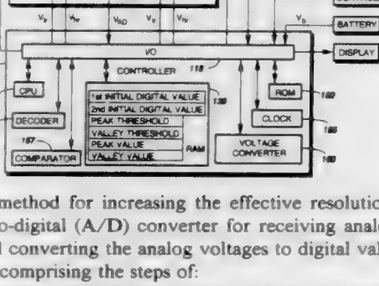
5,345,234

METHOD AND APPARATUS FOR COMBINING A FLASH ANALOG TO DIGITAL CONVERTER WITH DIGITAL TO ANALOG FUNCTIONS

Brett Stewart, and Miki Moyal, both of Austin, Tex., assignors to Advanced Micro Devices Inc., Sunnyvale, Calif.

Filed Aug. 31, 1993, Ser. No. 114,335
Int. Cl.[5] H03M *1/02, 1/36*
U.S. Cl. 341—108 **20 Claims**

1. A converter circuit comprising:
a plurality of comparators;
an analog input channel for receiving an analog signal and routing said analog signal to first inputs of said comparators;
a voltage divider network providing a plurality of different voltage references to second inputs of said comparators, outputs of said comparators thereby forming a digital representation of an amplitude of said analog signal;



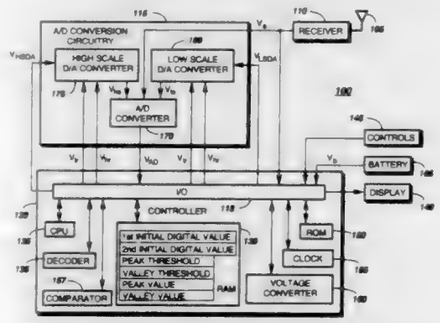
a plurality of switches, each of said switches being connected between one of said second inputs of said comparators and an analog output, said analog output providing an analog representation of digital inputs;
a switch controller controlling each of said switches to connect said one of said second inputs of said comparators to said analog output in response to a logic condition of said digital inputs.

5,345,235

SCALED REFERENCE ANALOG-TO-DIGITAL CONVERSION CIRCUITRY AND METHOD OF OPERATION

Mark H. Babcock, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 12, 1993, Ser. No. 44,683
Int. Cl.[5] H03M *1/18*
U.S. Cl. 341—139 **15 Claims**



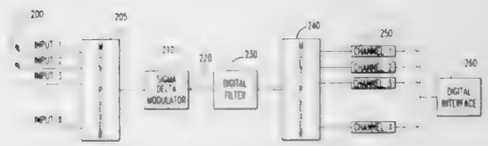
1. A method for increasing the effective resolution of an analog-to-digital (A/D) converter for receiving analog voltages and converting the analog voltages to digital values, the method comprising the steps of:
(a) providing high and low analog reference voltages to the A/D converter;
(b) receiving the digital values from the A/D converter for an amount of time;
(c) comparing a higher value of the digital values received during the amount of time to a peak threshold value stored in memory;
(d) comparing a lowest value of the digital values received during the amount of time to a valley threshold value stored in the memory;
(e) replacing the high analog reference voltage with a voltage representative of the peak threshold value when the highest value of the digital values is less than the peak threshold value; and
(f) replacing the low analog reference voltage with a voltage representative of the valley threshold value when the lowest value of the digital values is greater than the valley threshold value.

5,345,236

IMPROVED SIGMA-DELTA TYPE ANALOG-TO-DIGITAL CONVERTER AND METHOD

John Sramek, Jr., San Ramon, Calif., assignor to Harris Corporation, Melbourne, Fla.

Filed Dec. 21, 1992, Ser. No. 993,585
Int. Cl.[5] H03M *1/12*
U.S. Cl. 341—144 **10 Claims**



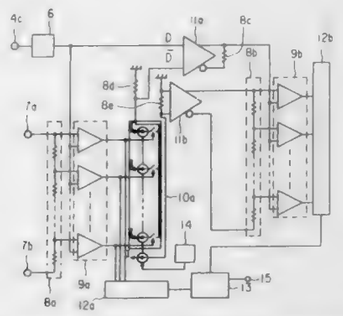
1. A multiplexed sigma-delta analog-to-digital converter, comprising:
(a) a sigma delta modulator with a modulator input and a modulator output;
(b) an input multiplexer coupled between N signal inputs and said modulator input;
(c) a digital filter coupled to said modulator output, said digital filter having a passband frequency of at least N times Fb, where Fb is a bandwidth for signals at said N signal inputs;
(d) an output multiplexer coupled between said digital filter and N output filters; and
(e) wherein said input and output multiplexers correlate said N output filters to said N signal inputs, and each one of said N output filters filters out a line frequency, Fline, where the frequency Fline is greater than Fb but less than N times Fb.

5,345,237

DIFFERENTIAL AMPLIFIER AND TWO-STEP PARALLEL A/D CONVERTER

Hiroyuki Kouno; Takahiro Miki, and Toshio Kumamoto, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1993, Ser. No. 77,932
Claims priority, application Japan, Jul. 1, 1992, 4-174282
Int. Cl.[5] H03M *1/14, 1/34, 1/36;* **H03F** *3/45*
U.S. Cl. 341—156 **12 Claims**



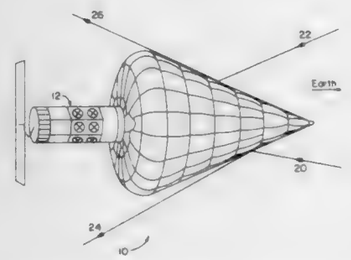
1. A two-step parallel A/D converter converting the analog signal into a digital signal separated into specified high-order digits and remaining low-order digits, comprising:
a coarse A/D converting unit receiving an analog signal for performing A/D conversion of said specified high-order digits;
a first differential amplifier having first and second input terminals and first and second output terminals and receiving said analog signal in said first input terminal for outputting a fine A/D conversion analog signal from one of said first and second output terminals;
a second differential amplifier having first and second input terminals and first and second output terminals for outputting a fine A/D conversion reference voltage from said first and second output terminals;
a fine A/D converting unit having a plurality of resistances connected in series between said first and second output terminals of said second differential amplifier and comparing voltage developed by said plurality of resistances with said fine A/D conversion analog signal output from said first differential amplifier for performing A/D conversion of said remaining low-order digits; and
first resistance means connected between said first and second output terminals of said first differential amplifier.

5,345,238

SATELLITE SIGNATURE SUPPRESSION SHIELD

Morton T. Eldridge, Madison; Karl H. McKechnie, and Richard M. Hefley, both of Huntsville, all of Ala., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 492,847, Mar. 13, 1990, abandoned. This application Mar. 14, 1990, Ser. No. 494,278
Int. Cl.[5] H01Q *15/16, 17/00*
U.S. Cl. 342—3 **22 Claims**



1. An inflatable satellite signature suppression shield comprising:
(a) an inflatable balloon enclosure wherein an outer surface thereof predominantly reflects radiation, so as to reflect radiation away from any ground or air based sensor;
(b) inflation means located within said enclosure for inflating said enclosure; and
(c) hardening means located within said enclosure for rigidizing the walls of said enclosure after inflation.

5,345,239

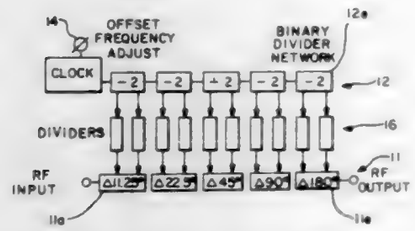
HIGH SPEED SERRODYNE DIGITAL FREQUENCY TRANSLATOR

Asad M. Madni, Los Angeles, and Lawrence Wan, Fountain Valley, both of Calif., assignors to Systron Donner Corporation, Concord, Calif.

Continuation of Ser. No. 797,149, Nov. 12, 1985, abandoned. This application Jun. 16, 1988, Ser. No. 219,825
Int. Cl.[5] G01S *7/36*
U.S. Cl. 342—14 **8 Claims**

1. Serrodyne phase-shifter apparatus for receiving radar or other microwave signals and phase shifting or frequency translating them comprising:
a solid-state variable phase shifter including a plurality of series coupled cells for inserting various and different phase-shifts into said received microwave signals by binary inputs to selected cells, each of said cells providing at

least two expected phase shifts, one of which may be zero degrees, so that driving said binary inputs with an incrementally increasing binary number will cause step increases in expected phase shift of the series combination of the cells; each of said cells including switching means responsive to a said binary input for causing such cell to have one of said two expected phase-shifts, swid switching means including a plurality of three terminal gallium arsenide field effect transistors (GaAs FET) having no d.c. bias and a gate input which is driven by said binary input and source and drain terminals, said switching



means including a first pair of said FETs, having a common gate input for providing one of said two expected phase shifts by forming a conductive path for said signals between said source and drain terminals and a second pair of said FETs, having a common gate input for providing another of said two expected phase shifts by forming a conductive path for said signals between said source and drain terminals;

multi-bit counter means having a number of binary outputs corresponding to said binary inputs of said plurality of cells for providing said binary number;

and means for digitally driving said counter means.

5,345,240

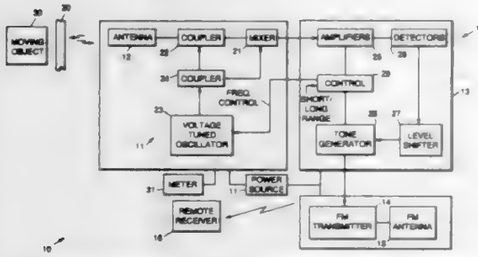
HANDHELD OBSTACLE PENETRATING MOTION DETECTING RADAR

Lawrence M. Frazier, West Covina, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Aug. 4, 1993, Ser. No. 102,161

Int. Cl.[5] G01S *13/56*

U.S. Cl. 342—28 **7 Claims**



1. A motion detecting radar system that is adapted to detect motion of a moving object, said system comprising:

a frequency tunable continuous wave transmitter comprising a voltage tuned oscillator, an antenna, and a mixer coupled to the voltage tuned oscillator and the antenna;

a receiver coupled to the continuous wave transmitter that comprises a signal processor that includes amplifiers adapted to receive output signals from the mixer, detectors coupled to the amplifiers for, a level shifter coupled to the detector for level shifting the detected signal, and a tone generator coupled to the level shifter for generating an audible tone whose frequency is a function of the relative motion of moving objects detected by the system;

an FM transmitter comprising an FM antenna coupled to the receiver for transmitting the audible tone indicative of the motion of a moving object; and

an FM receiver adapted to receive the audible tone produced by the FM transmitter and reproduce the tone to indicate the presence of moving objects detected by the system.

5,345,241

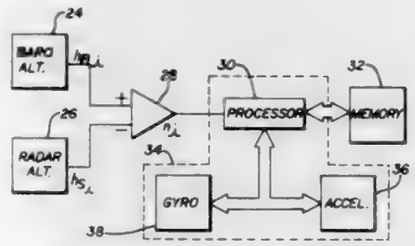
SELF-CONTAINED METHOD FOR CORRECTION OF AN INERTIAL SYSTEM OVER A BODY OF WATER

James R. Huddle, Chatsworth, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 7, 1992, Ser. No. 986,333

Int. Cl.[5] G01C *21/08;* **G06G** *7/78*

U.S. Cl. 342—63 **8 Claims**



1. An on-board method for the correction of the inertial system of an aircraft as it proceeds on a course over a region of a body of water comprising the steps of:

a) continuously determining the location of a point horizontally along said course by means of said aircraft's inertial navigation system; and

b) measuring the vertical distance of said aircraft, at said point, above an ellipsoidal model of a geoid that includes said region; and

c) measuring the vertical distance of said aircraft, at said point, above the surface of said body of water; then

d) computing the difference between the values measured in steps b and c to determine the measured undulation of said geoid at said point; then

e) comparing said measured undulation of said geoid with the undulation of said geoid at said point as determined by gravitational surveys; then

f) repeating steps a through e; then

g) determining a position correction by correlating said measured undulation values with values pre-determined by said survey; and then

h) adjusting at least one of the aircraft's inertial navigation system variable computations by means of said position correction.

5,345,242

CLUTTER REJECTION USING CONNECTIVITY

Gregory A. Roberts, Costa Mesa; Lawrence D. Voelz, and Robert C. Gardemal, Jr., both of Irvine, all of Calif., assignors to Loral Aerospace Corp., New York, N.Y.

Filed Sep. 27, 1990, Ser. No. 588,776

Int. Cl.[5] G01S *13/53*

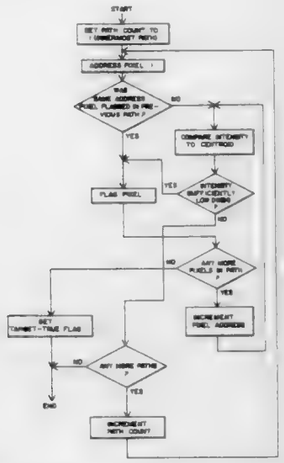
U.S. Cl. 342—159 **8 Claims**

1. A method of clutter rejection in digitized images, comprising the steps of:

a) locating the centroid pixel of a potential target object in an image;

b) establishing around said centroid pixel at least one closed path of pixels;

c) comparing the intensity of the individual pixels of said path to the intensity of said centroid pixel; and



d) providing an identification of said potential target object as true if all of said individual pixels have a predetermined intensity relationship to said centroid pixel.

5,345,243

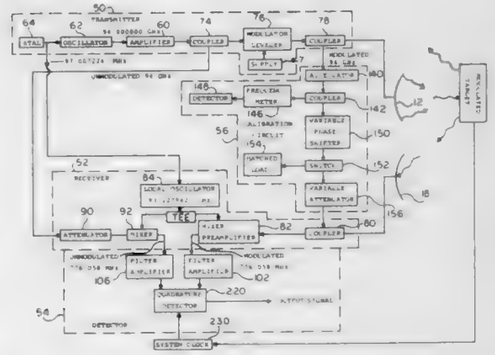
CONTINUOUS-WAVE REFLECTION TRANSMISSOMETER WITH TARGET DISCRIMINATION USING MODULATED TARGETS

Curt A. Levis, Columbus, Ohio, assignor to The Ohio State University Research Foundation, Columbus, Ohio

Continuation of Ser. No. 441,233, Nov. 22, 1989, abandoned, which is a continuation of Ser. No. 310,250, Feb. 13, 1989, abandoned, which is a continuation of Ser. No. 41,458, Apr. 23, 1987, abandoned. This application Apr. 19, 1993, Ser. No. 49,630

Int. Cl.[5] G01S *7/10*

U.S. Cl. 342—173 **18 Claims**



1. A method for measuring the attenuation of electromagnetic radiation along a transmission path through a propagation medium under conditions of unknown attenuation, said method comprising:

(a) positioning an antenna, a transmitter and a receiver at one end of the transmission path many wavelengths long;

(b) positioning an electromagnetic energy reflector at the other end of the transmission path;

(c) radiating continuously a periodic, continuous electromagnetic wave from the antenna toward said reflector;

(d) periodically modulating the reflection properties of the electromagnetic energy reflector to thereby modulate the incident periodic, electromagnetic waves;

(e) receiving the wave reflected from the reflector;

(f) detecting a signal which is monotonically related to the power of the received modulated reflected wave;

(g) performing steps (a) through (f) under conditions of know attenuation; and

(h) comparing the signals detected in step (f) under conditions of unknown attenuation and step (g) under conditions of known attenuation to determine the relative attenuation.

5,345,244

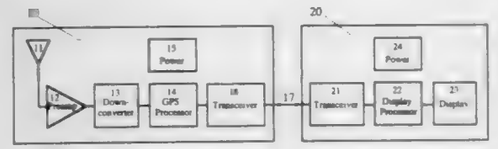
CORDLESS SPS SMART ANTENNA DEVICE

David R. Gildea, Menlo Park, and Charles Trimble, Los Altos Hills, both of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Jan. 12, 1993, Ser. No. 3,135

Int. Cl.[5] G01S *5/02;* **H04B** *7/15, 1/38*

U.S. Cl. 342—357 **34 Claims**



1. Apparatus for determination of the location of an observer or the time of observation by use of a Satellite Positioning System (SPS), the apparatus comprising:

an antenna module, having a diameter in any plane parallel to a selected plane no greater than 13 cm and having a height measured perpendicular to the selected plane no greater than 10 cm, the module comprising:

an SPS antenna positioned to receive SPS signals from one or more SPS satellites, where each satellite issues a distinct SPS signal, and to issue an antenna output signal;

a frequency downconverter to receive the antenna output signal and to issue this signal as an output signal at a selected lower frequency;

an SPS signal processor to receive the downconverter output signal, to process this signal to determine at least one of the present location of the SPS antenna or the present time of observation of a satellite by the antenna, and to issue information on the present location or the present time of observation as an output signal;

a transmitter to transmit the output signal from the SPS signal processor to a selected receiver; and

a first power supply, positioned to supply operating power to at least one of the SPS antenna, the downconverter, the SPS signal processor and the transmitter;

a display module, having a diameter in any plane parallel to a second selected plane no greater than 13 cm and having a height measured perpendicular to the second selected plane no greater than 10 cm, the module comprising:

a receiver positioned to receive the SPS signal processor output signal from the transmitter, where the receiver issues any signal it receives from the transmitter as a receiver output signal;

a display processor to receive the receiver output signal, to process this signal for display of information contained in the signal received, and to issue the processed signal as an output signal;

display means for receiving the display processor output signal and visually or audibly displaying at least one of the present location of the SPS antenna and the present time of observation by the antenna; and

a second power supply, positioned to supply operating

power to at least one of the receiver, the display processor and the display means; and

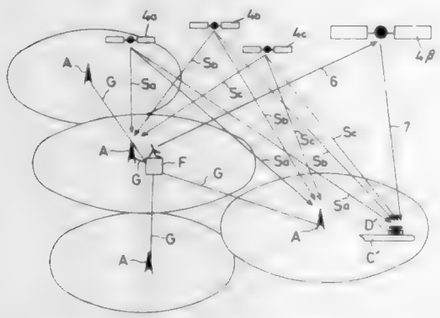
a wireless link connecting the transmitter and the receiver, where the antenna module and the display module are spaced apart by a distance that is no more than approximately 300 meters.

5,345,245

DIFFERENTIAL DATA SIGNAL TRANSMISSION TECHNIQUE

Hiroyasu Ishikawa, Tokyo; Hideo Kobayashi, Fujimi, and Toshio Mizuno, Sayama, all of Japan, assignors to Kokusai Denshin Denwa Company, Limited, Tokyo, Japan

Filed Jun. 24, 1993, Ser. No. 82,006
Claims priority, application Japan, Jul. 1, 1992, 4-174275
Int. Cl.[5] G01S *05/02*
U.S. Cl. 342—357 **3 Claims**



1. A differential data signal transmission technique, said technique having exclusive properties comprising:

the use of a differential ranging system where spread spectrum signals (SS signals) are multiplied at the same frequency, transmission rate, and modulation method used by GPS satellites, but with different codes from those used by said GPS satellites, said SS signals being used to transmit the correcting factor for the improvement of ranging accuracy from an earth station on the ground to a mobile station on the ground carrying a GPS receiver via a geostationary orbit satellite or a low earth orbit satellite;

wherein said differential ranging system entails, as part of a GPS satellite ranging system employing more than one GPS satellite:

installing a GPS receiver at a fixed reference station with a known position;

transmitting the correcting factor from the fixed reference station to a mobile station carrying a GPS receiver in the service area, said correcting factor being the difference between the measured range from a GPS satellite to the fixed reference station and the true range from the GPS satellite to the fixed reference station, which is calculated from the orbit information of the GPS satellite and the true position of the fixed reference station; and

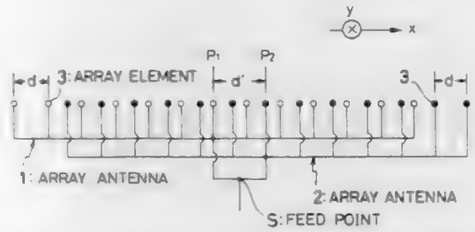
the mobile station carrying a GPS receiver deleting the propagational range error included in the distance between the GPS satellite and itself that it had measured beforehand from the correcting factor received from the fixed reference station, and performing a ranging operation.

5,345,246

ANTENNA DEVICE HAVING LOW SIDE-LOBE CHARACTERISTICS

Toshihiro Sezai, Tokyo, Japan, assignor to National Space Development Agency of Japan, Tokyo, Japan

Filed Jul. 19, 1993, Ser. No. 95,571
Claims priority, application Japan, Aug. 11, 1992, 4-234108
Int. Cl.[5] H01Q *3/22, 3/24*
U.S. Cl. 342—368 **6 Claims**



1. An antenna device having low side-lobe characteristics, comprising:

a first array antenna having a center and a radiation pattern which has a first side lobe point at a first angle;

a second array antenna which is substantially identical to said first array antenna, said second array antenna having a center and a radiation pattern which has a first side lobe point at a first angle;

said first array antenna and said second array antenna each being oriented in a same direction so as to form a combined antenna pattern having a side lobe during operation, and said center of said first array antenna being spaced apart from said center of said second array antenna by a specified center-to-center distance, such that said first array antenna and said second array antenna together have an array factor which has a first zero point at a predetermined angle; wherein said specified center-to-center distance having a magnitude which causes said angle of said first zero point of said array factor to equal said angle of said first side lobe point of said radiation pattern of each of said first and second array antennas; and

means for electrically connecting said first and second array antennas in phase,

whereby a side lobe level of said side lobe of said combined antenna pattern is reduced.

5,345,247

FIVE-WAY ANTENNA SYSTEM

Alfredo Aldama, Miami, Fla., and Ralph W. Crudo, Regal Park, N.Y., assignors to Algira Primo Inc., Brooklyn, N.Y.

Filed Nov. 13, 1992, Ser. No. 976,155
Int. Cl.[5] H01Q *9/04*
U.S. Cl. 343—791 **21 Claims**

1. A three-way antenna system, comprising:

a first, elongated antenna having an outer surface, for sending and receiving telephone signals with an electromagnetic frequency of 824 to 894 MHz;

an insulator covering the outer surface of the first antenna;

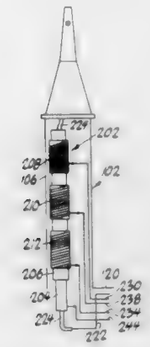
a second antenna and a third antenna selected from the group consisting of:

a radio antenna wrapped around a portion of the insulator for receiving signals with an electromagnetic frequency of 540 to 1600 kHz and 88 to 108 MHz;

a television antenna wrapped around a portion of the insulator for receiving signals with an electromagnetic frequency of 30 to 300 MHz; and

a marine antenna wrapped around a portion of the insulator for receiving signals with an electromagnetic frequency of 3 to 10 MHz; and

means for transmitting the electromagnetic signals received by the first, second and third antennas between the first, second and third antennas and first, second and third receivers corresponding to the first, second and third antennas, respectively.

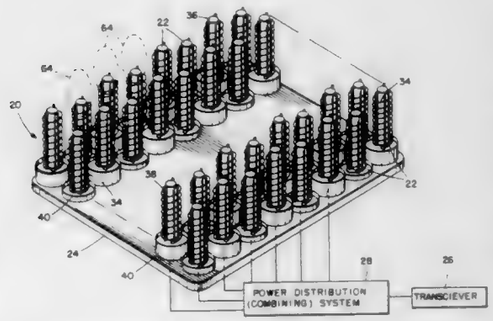


5,345,248

STAGGERED HELICAL ARRAY ANTENNA

Yeong M. Hwang, Los Altos Hills; Vito J. Jakstys, Penn Valley; Chun C. Lee, Los Altos, and Francis J. Kilburg, Mountain View, all of Calif., assignors to Space Systems/Loral, Inc., Palo Alto, Calif.

Filed Jul. 22, 1992, Ser. No. 918,451
Int. Cl.[5] H01Q *1/36*
U.S. Cl. 343—895 **16 Claims**



1. An array antenna comprising:

a mounting base;

a plurality of helical radiators disposed in an array and extending forward of said mounting base, each of said radiators having a feed connection point located at a distance from said mounting base, each of said radiators comprising a radiating element disposed about an axis extending forward of said base, said radiators being arranged in said array with their respective axes spaced apart from each other; and

means connected between said mounting base and individual ones of said radiators for staggering the distances of said feed connection points of said radiators from said mounting base, said staggering reducing mutual coupling among said radiators;

wherein said feed connection points of alternate ones of said radiators in said array are staggered in location relative to said feed connection points of other ones of said radiators in said array; and

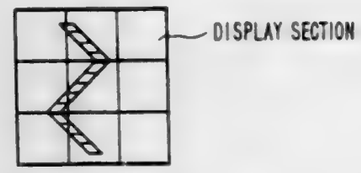
the distance of staggering is equal approximately to a spacing between turns of a helix in any one of said radiators.

5,345,249

PICTURE DISPLAY DEVICE

Anthony M. M. Biemans, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 939,277, Sep. 2, 1992, abandoned. This application Sep. 2, 1993, Ser. No. 115,729
Claims priority, application European Pat. Off., Sep. 3, 1991, 91202247.2
Int. Cl.[5] G09G *5/12*
U.S. Cl. 345—1 **8 Claims**



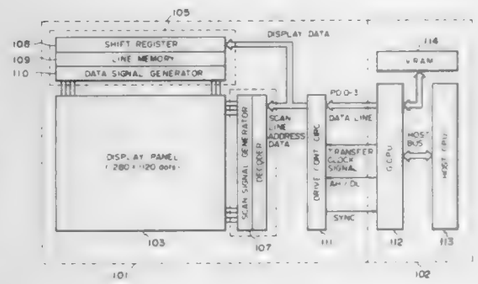
1. A picture display system comprising picture memory means having read control means, and a plurality of adjacent display apparatuses for displaying, respectively, adjacent sections of a picture stored in said picture memory means, each display apparatus having a separate scanning device, characterized in that said read control means include means for reading first sections of said picture from said picture memory means in a first direction and adjacent sections of said picture from said picture memory means in an opposite direction, while said picture display system further comprises means for controlling said separate scanning devices to scan display apparatuses arranged for displaying said first sections in said first direction and to scan display apparatuses arranged for displaying said adjacent sections in said opposite direction.

5,345,250

DATA PROCESSING SYSTEM AND APPARATUS AND DISPLAY SYSTEM WITH IMAGE INFORMATION MEMORY CONTROL

Hiroshi Inoue, Yokohama; Atsushi Mizutome, Fujisawa, and Aiko Enomoto, Zama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 410,731, Sep. 21, 1989, abandoned. This application Mar. 1, 1993, Ser. No. 26,175
Claims priority, application Japan, Sep. 29, 1988, 63-246089; Sep. 30, 1988, 63-246307; Sep. 30, 1988, 63-246308; Oct. 6, 1988, 63-252992; Oct. 11, 1988, 63-256324; Oct. 12, 1988, 63-258185
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—100 **10 Claims**



1. A data processing apparatus, comprising:

first means for controlling an image information storage memory so that a received image information is stored in the image information storage memory as scanning line address information and display information, the scanning line address information designating scanning lines of a

display device which accesses different areas in the image information storage memory;

second means for controlling the image information storage memory so that the scanning line address information and the display information stored in different areas are serially transferred to drive control means in the display device;

third means for controlling the image information storage memory so that the scanning line address information which is transferred to the drive control means in the display device accesses the designated scanning lines only; and

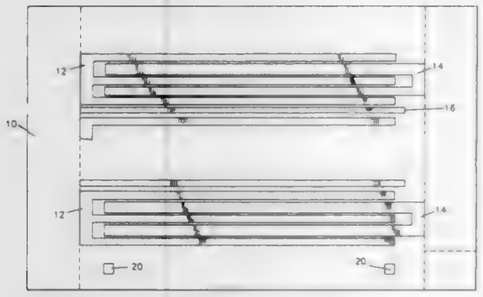
fourth means for controlling the storage memory so that a partial rewriting, which scans only scanning lines of the display device corresponding to a rewriting area formed by a partial rewriting of image information stored in the image information storage memory, is executed in a non-interlace scanning and when the rewriting area does not exist, image information rewriting is executed in an interlace scanning.

5,345,251

ELECTROPHORETIC DISPLAY PANEL WITH INTERLEAVED CATHODE AND ANODE

Frank J. DiSanto, North Hills, and Denis A. Krusos, Lloyd Harbor, both of N.Y., assignors to Copytele, Inc., Huntington Station, N.Y.

Filed Jan. 11, 1993, Ser. No. 2,623
Int. Cl.[5] G09G *3/34*
U.S. Cl. 345—107 **28 Claims**



1. An electrophoretic display, comprising:

a housing having at least one generally transparent faceplate, said housing capable of retaining a plurality of electrophoretic particles suspended in a solution;

a plurality of generally parallel cathode lines disposed on said faceplate;

a plurality of anode lines interpositioned between said cathode lines on said faceplate, wherein said anode lines lay generally parallel to said cathode lines;

a plurality of grid lines disposed in an orientation generally perpendicular to said cathode lines and said anode lines, whereby the flow of said electrophoretic particles between said cathode lines and said anode lines is controlled by selectively applying electrical potentials to said cathode lines, anode lines and grid lines.

5,345,252

HIGH SPEED CURSOR GENERATION APPARATUS

Marc Hannah, Mountain View, Calif., assignor to Silicon Graphics, Inc., Mountain View, Calif.

Filed Jul. 19, 1991, Ser. No. 732,793
Int. Cl.[5] G09G *5/08*
U.S. Cl. 345—162 **16 Claims**

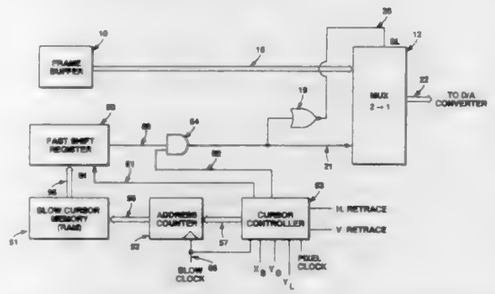
1. In a computer controlled display system having a raster scanned display device, an apparatus for generating a cursor for display on said display device, said apparatus comprising:

a first memory means for storing the entire cursor, said cursor comprising a plurality of portions of raster scanned lines representing attributes of said cursor, said raster scanned lines further comprising bit values;

an input register being communicatively coupled to said first memory means;

control means for addressing said first memory means to obtain one of said plurality of portions of raster scanned lines and for loading said one of said plurality of portions of raster scanned lines into said input register;

a first multiplexing means, data inputs of said first multiplexing means coupled to said input register;



a second multiplexing means coupled to said first multiplexing means;

a means for controlling said first multiplexing means and said second multiplexing means, said means for controlling being coupled to said first and said second multiplexing means;

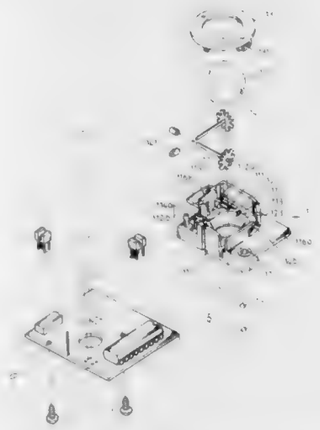
an output register being coupled to said second multiplexing means to receive said bit values of said one of said plurality of portions of raster scanned lines, said means for controlling providing signals to route said bit values from said input register to said output register.

5,345,253

TRACK BALL BASE STRUCTURE

Douglas Chang, Chung Ho, Taiwan, assignor to Behavior Tech Computer Corp., Taipei, Taiwan

Filed Jan. 21, 1994, Ser. No. 184,215
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—167 **2 Claims**



1. A track ball base structure comprising a single-piece body having:

a housing to receive a ball and an encoder wheel therein being composed of a plurality of standing plates in the top of said body with extruding portions in the upper end of which to get secure connection to a cover; a central circular recess with an opening bottom to hold said ball therein; a plurality of ball bearing holes evenly distributed around the upper rim of the circular panel in said housing with an inner rectangular plate inside the uppermost of each said hole for admitting ball bearings therein and at the same time holding them in place; two strip slots and the corresponding pairs of locking means working together in order to hold said encoder wheel wherein the holding condition can be enhanced due to a lateral gravity force from said ball if sitting in said central circular recess; two locking holes in platforms outer to said housing through which said single-piece body can be screwed up onto an integrated circuit plate by a bolt; a bracket-shaped fixture in the bottom of said single-piece body being provided to substantially engage with a block on which a photoemitter and a photodetector are located in pair.

5,345,254

INK JET PRINTING PROCESS

Raymond W. Wong; Marcel P. Breton, both of Mississauga; Melvin D. Croucher, Oakville; James M. Duff, Mississauga; T. Edward Petroff, Agincourt; William Riske, Burlington, and Kerstin M. Henseleit, Toronto, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed May 16, 1991, Ser. No. 700,969
Int. Cl.[5] G01D *9/00*
U.S. Cl. 347—100 **18 Claims**

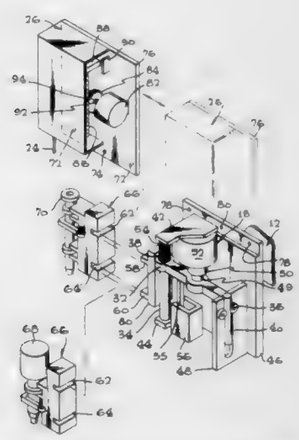
1. An ink jet printing process for an ink jet printing system which supplies an informational signal pulse, comprising the steps of providing an ink composition comprising a suspension of wax particles having a melting temperature less than about 150° C., and having an average particle diameter of about 0.01 micrometer to about 2 micrometers in a water phase and a colorant, said water phase present in an amount 50 to 99% by weight and jetting said ink composition onto a substrate in response to said informational signal pulse.

5,345,255

ACTUATOR MECHANISM FOR A PLOTTER CARRIAGE

Patrick Nguyen, Walnut, and Brian C. Preston, Placentia, all of Calif., assignors to CalComp Inc., Anaheim, Calif.

Filed Feb. 14, 1992, Ser. No. 834,970
Int. Cl.[5] G01D *15/16;* **B43L** *13/00*
U.S. Cl. 346—139 R **9 Claims**



1. An actuator mechanism for a plotter carriage for use with a pen holder in a pen plotter mode or a lead holer in a pencil plotter mode comprising:

coupling means for selectives engaging a support means for supporting said a pen holder or a support means for supporting said lead holder;

driving means for driving said coupling means toward and away from a drawing media surface; and

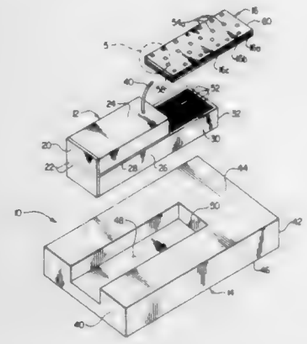
interlock means for coupling said driving said pencil actuator mechanism and coupling means to a pencil actuator mechanism moving a lead carried by said lead holder when said plotter carriage is in said pencil plotter mode.

5,345,256

HIGH DENSITY INTERCONNECT APPARATUS FOR AN INK JET PRINTHEAD

James L. Stortz, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Feb. 19, 1993, Ser. No. 20,050
Int. Cl.[5] G01D *15/16*
U.S. Cl. 347—20 **8 Claims**



1. Ink jet printhead apparatus removably connectable to an electronic driver operative to output piezoelectric driving signals through a spaced series of electrically conductive exterior side surface areas disposed thereon, said ink jet printhead apparatus comprising:

a mounting plate member having top and bottom side surfaces, front end edge surface and rear end edge surface opposite side edge surfaces extending between said front nd edge surface and said rear end edge surface, and an elongated top side surface groove disposed between said opposite side edge surfaces and longitudinally extending rearwardly from said front end edge surface to a rear end location spaced forwardly of said rear end edge surface;

an ink jet printhead having a body received in said groove and secured to said mounting plate member, said body having a front-to-rear length and further having:

a front end section with a spaced series of ink discharge orifices extending rearwardly therethrough, said front end section being adjacent said front end edge surface of said mounting plate member,

a spaced, parallel series of internal sidewall sections extending rearwardly through a longitudinally intermediate portion of said body from said front end section and laterally bounding a spaced series of internal ink receiving channels interdigitated with said sidewall sections and opening outwardly through said discharge orifices, an opposing pair of said sidewall sections being piezoelectrically deflectable toward one another to constrict a channel which the opposing pair of said sidewall sections laterally bound to thereby force ink received in said channel outwardly through one of said ink discharge orifices,

a rear end portion extending rearwardly beyond said longitudinally intermediate portion of said body, toward the rear end of said groove, and having an upper side surface essentially flush with said top side of said mounting plate member, and

a mutually spaced first array of electrically conductive

areas, formed on said upper side surface and operatively connected to said internal sidewall sections, through which piezoelectric driving signals are transmitted to said internal sidewall sections, said first array of electrically conductive areas having a first spacing density; and

a multi-tiered printed circuit board secured to said top side of said mounting plate member and having:

a bottom side surface having a first portion positioned against said upper side surface of said printhead body, and a second portion extending along and positioned against said top side of said mounting plate member, and a top side surface,

a mutually spaced second array of electrically conductive areas formed on said first portion of said bottom side surface of said printed circuit board, said second array of electrically conductive areas being in registery with and fixedly and conductively secured to, said first array of electrically conductive areas,

a mutually spaced third array of electrically conductive areas formed on said top side surface of said printed circuit board, said third array of electrically conductive areas having a second spacing density less than said first spacing density, and

a mutually spaced series of electrically conductive cross-over circuit paths formed within an interior of said printed circuit board and operatively interconnecting said second and said third array of electrically conductive areas,

said mounting plate member being movable toward and away from the electronic driver in a manner respectively engaging said third array of electrically conductive areas with said electrically conductive exterior surface areas on the electronic driver and disengaging said third array of electrically conductive areas from said electrically conductive exterior surface areas on the electronic driver.

5,345,257

BOX BODY CONSTRUCTION OF A DIGITAL IMAGE FORMING APPARATUS

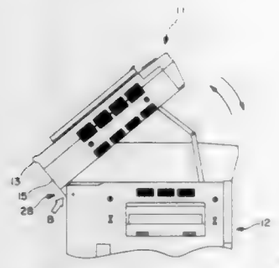
Hiroyuki Deguchi, Osaka, and Hirotoshi Tagawa, Kyoto, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 4, 1992, Ser. No. 846,124

Claims priority, application Japan, Mar. 8, 1991, 3-043083; Mar. 8, 1991, 3-043084

Int. Cl.[5] **G01D** *15/00*

U.S. Cl. 346—145 **6 Claims**



1. A box body construction of a digital image forming apparatus divided into an upper box body and a lower box body and having a vibration source installed at least in either one of the upper box body or the lower box body, said box body construction further comprising an elastic member provided between the upper box body and the lower box body, said elastic member supporting the upper box body on the lower box body and the elastic member is fixed to either one of the upper box body or the lower box body and is disengagingly fixed to an other one of either the lower box body or the upper box body, whereby transmission of vibration from said vibration source to the other one of either said upper or lower box bodies is prevented.

5,345,258

A VIDEOPHONE HAVING AN AUTOMATIC ANSWERING CAPABILITY

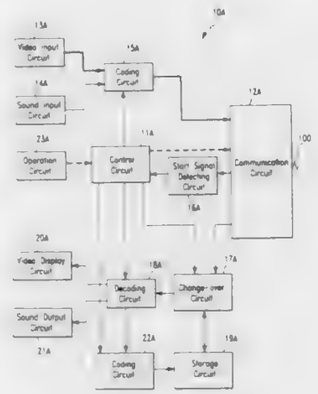
Atsushi Matsubara, Ogaki; Yoshinori Saito, Konan; Seiji Kato, and Yoshinobu Yamakita, both of Hashima, all of Japan, assignors to Sanyo Electric Co., Inc., Osaka, Japan

Filed May 4, 1993, Ser. No. 57,261

Claims priority, application Japan, May 8, 1992, 4-116072; Mar. 10, 1993, 5-49335

Int. Cl.[5] **H04M** *11/00;* **H04N** *7/12*

U.S. Cl. 348—14 **10 Claims**



1. A videophone comprising:

communicating means, connected to a communication line, for transmitting and receiving difference encoded sound signals and video signals onto or from said line;

storage start commanding means for generating a storage start command, an occurrence of said storage start command temporally defining when storage of the video signals is to start;

video signal processing means, connected to said communication means, for continuously decoding, until the command occurs, the video signals and sound signals received through the communicating means in order to form decoded video and sound signals, respectively, and, in response to said command, encoding the decoded video signals to generate one frame of the encoded video signals; and

storing means, operative in response to an occurrence of said storage start command, for storing the one frame of video signals encoded by the video signal processing means and thereafter storing difference encoded video signals received through the communicating means.

5,345,259

CONTOUR EMPHASIS CIRCUIT

Kiyoshige Shibazaki, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Oct. 1, 1992, Ser. No. 955,253

Claims priority, application Japan, Oct. 8, 1991, 3-289230

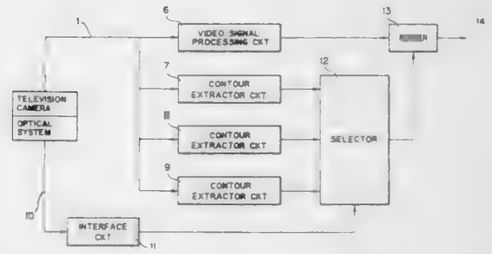
Int. Cl.[5] **H04N** *7/18, 5/208*

U.S. Cl. 348—26 **3 Claims**

1. A contour emphasis circuit for receiving a video signal from a television camera picking up an image formed through a variable magnification factor optical system, comprising:

a plurality of contour extractors having different frequency characteristics for generating respective contour emphasis signals in accordance with the video signal;

a selector for selecting one of said plurality of contour extractors in accordance with a magnification factor to which said optical system is set; and



an adder for adding one of said respective contour emphasis signals from said one contour extractor selected by said selector to the video signal.

5,345,260

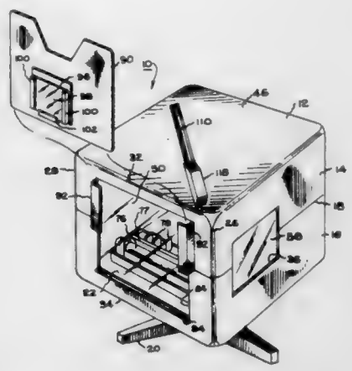
VIDEO TRANSFER DEVICE

Salvatore C. Petralia, Sayreville, N.J., assignor to Recoton Corporation, Long Island City, N.Y.

Continuation of Ser. No. 809,690, Dec. 16, 1991, abandoned. This application Dec. 10, 1993, Ser. No. 166,262

Int. Cl.[5] **H04N** *5/253*

U.S. Cl. 348—98 **15 Claims**



1. Apparatus for transferring images on motion picture film, prints and transparencies to video signals recorded on a video record medium which apparatus comprises a box having a plurality of openings, first and second ones of said openings being along a first axis and another of said openings being along a second axis transverse to said first axis, a first mirror mounted in said box for reciprocal movement between first and second positions along a linear path which is inclined to both said first and second axes for reflecting, when in said first position, images projected from said motion picture film or transparencies through said third opening to said first opening adjacent to which and outside said box a video camera which provides the video signals can be disposed, a lamp in said box disposed between said path and said second opening for illumination of a region outside of said box through said second opening when activated, said first mirror being moveable to said second position out of blocking relationship of an image reflected along said first axis from a print disposed outside said box adjacent to said second opening in said region through said first opening to the video camera when it is disposed outside said box adjacent to said first opening, a second mirror reciprocally movable with said first mirror along said path between said first and second positions, said second mirror facing said second opening when in said first position and being inclined with respect to said first axis to reflect and concentrate light from said lamp through said second opening to project directly an image on a transparency disposed adjacent said second opening to the video camera when it is disposed outside said box in the path of said image from said transparency, whereby obviating the need for an external slide projector to provide back lighting of said transparency.

5,345,261

Patent Not Issued For This Number

5,345,262

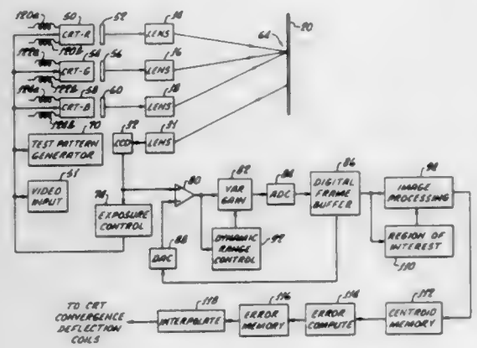
AUTOMATIC CONVERGENCE SYSTEM FOR COLOR VIDEO PROJECTOR

Eugene M. Yee, Carlsbad; Beverly E. Sutherland, San Diego; John J. Lyon, San Marcos; Tiemen T. Spits, Oceanside, all of Calif., and Richard M. Filia, Portland, Oreg., assignors to Hughes-JVC Technology Corporation, Carlsbad, Calif.

Filed Jul. 31, 1992, Ser. No. 923,195

Int. Cl.[5] **H04N** *17/04, 17/02, 9/31*

U.S. Cl. 348—177 **21 Claims**



13. A method for detecting relative positioning error comprising the steps of:

projecting first and second identical patterns on a screen, each said pattern comprising an array of mutually discrete test pattern units wherein each of said test pattern units comprises an area of light that varies smoothly in intensity across said area,

locating the centroid of each pattern unit, and

comparing locations of each centroid of a unit of said first pattern with the centroid of a corresponding unit of said second pattern to develop signals indicative of relative positions of said patterns.

5,345,263

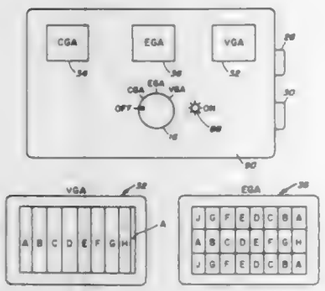
COMPUTER COLOR MONITOR TESTING METHOD AND PORTABLE TESTING APPARATUS

Charles M. Miller, 10620 Branham Fields Rd., Duluth, Ga. 30136

Filed Jul. 26, 1993, Ser. No. 97,122

Int. Cl.[5] H04N *17/02*

U.S. Cl. 348—182 **20 Claims**



1. A computer color monitor portable testing apparatus, comprising:

(a) control means for producing timing and control signals to generate a selected one of a plurality of color patterns on a color monitor under test being selected from a group consisting of a video graphics array (VGA) monitor, a color graphics adapter (CGA) monitor and an enhanced graphics adapter (EGA) monitor;

(b) connector means for connecting with said selected one of said VGA, CGA and EGA color monitors to be tested; and

(c) selector means for connecting the control means with the connector means and being actuatable for selecting one of a plurality of different operational modes corresponding to said VGA, CGA and EGA color monitors for producing said timing and control signals to generate said selected one of said plurality of color patterns for testing said selected one of said VGA, CGA and EGA color monitors.

5,345,264

VIDEO SIGNAL PROCESSING CIRCUIT FOR A VIDEO CAMERA USING A LUMINANCE SIGNAL

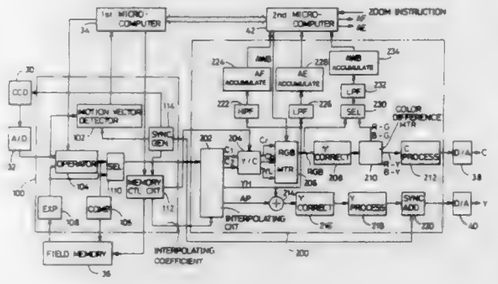
Haruhiko Murata, Osaka; Yukio Mori, Kyoto; Akihiro Maenaka, Osaka; Masao Takuma, Osaka; Kiyotada Kawakami, Osaka; Toru Asaeda, Nara; Toshiyuki Okino, Osaka; Toshiya Iinuma, Osaka; Akio Kobayashi, Osaka, and Toshinobu Haruki, Osaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Feb. 24, 1993, Ser. No. 21,590

Claims priority, application Japan, Feb. 27, 1992, 4-41205; Feb. 28, 1992, 4-43198; Mar. 2, 1992, 4-44690; Apr. 6, 1992, 4-83964

Int. Cl.[5] H04N *9/68, 9/73*

U.S. Cl. 348—235 **9 Claims**



1. A video signal processing circuit for a video camera, comprising:

Y/C separating means for separating a video signal obtained by AD conversion of an output from an image pickup device to a luminance signal and a color signal for outputting; and

auto focus accumulating means for accumulating, at a prescribed period, high frequency component of the luminance signal outputted from said Y/C separating means before gamma correction, for outputting the result as an auto focus reference signal for automatic focus adjustment.

5,345,265

GAMMA CORRECTION CIRCUIT FOR A VIDEO CAMERA

Seong-hoon Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Dec. 29, 1993, Ser. No. 174,811

Claims priority, application Rep. of Korea, Dec. 31, 1992, 92-28465

Int. Cl.[5] H04N *9/69*

U.S. Cl. 348—254 **1 Claim**

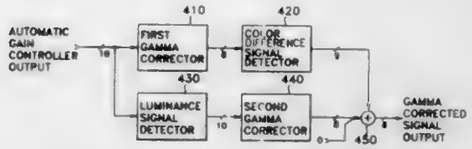
1. A gamma correction circuit for use in a video camera including a complementary-filter-type charge coupled device (CCD) and a correlation double sampling device receiving a signal produced from the CCD and producing a color line sequence signal, comprising:

a luminance signal detector for detecting the luminance signal from said color line sequence signal;

a first gamma-corrector for performing gamma-correction to the detected luminance signal from said luminance signal detector;

a second gamma-corrector for gamma-correcting said color line sequence signal;

a color difference signal detector for detecting the color difference signal from the color line sequence signal



which is gamma-corrected by the second gamma-corrector; and

a mixer for mixing the gamma-corrected luminance signal which is gamma-corrected by said first gamma-corrector with the gamma-corrected color difference signal which is detected by said color difference signal detector.

5,345,266

MATRIX ARRAY IMAGE SENSOR CHIP

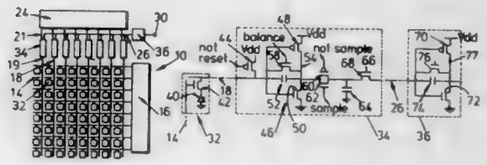
Peter B. Denyer, Edinburgh, Scotland, assignor to VLSI Vision Limited, Edinburgh, Scotland

Filed Apr. 23, 1992, Ser. No. 842,107

Claims priority, application United Kingdom, Oct. 23, 1989, 8921538; Apr. 26, 1990, 9009332

Int. Cl.[5] H04N *3/14*

U.S. Cl. 348—300 **20 Claims**



1. An integrated circuit for use as an image array sensor and providing an output signal to an off-circuit read device, said integrated circuit comprising,

a two-dimensional matrix array of sensing cells having a plurality of cell columns and a plurality of cell rows, each sensing cell having a photodiode and a transistor for reading from and writing to the photodiode,

horizontal scan means coupled to each cell in the array for scanning each cell row of the array of sensing cells,

vertical scan means coupled to each cell in the array for scanning each cell column of said array of sensing cells,

a plurality of analogue switch means each connected between at least one of said cell columns and the horizontal scan means for receiving image data from said cells, each of said analogue switch means being also connected by a common conductor to an output amplifier forming the output of the integrated circuit, each of said plurality of analogue switch means includes voltage storage means and first charge sensing amplifier means which provides a preliminary detection of charge created on each cell in response to radiation impinging thereon by converting the detected charge to a voltage using a first charge integrating circuit and capacitively storing the voltage in said voltage storage means, in the form of a charge corresponding to the cell charge, and that said output amplifier comprises a second charge sensing amplifier means which is selectively coupled to said voltage storage means of said analogue switch means, for providing an output signal to the off-circuit read device, said output signal being a voltage proportional to the charge in said voltage storage means.

5,345,267

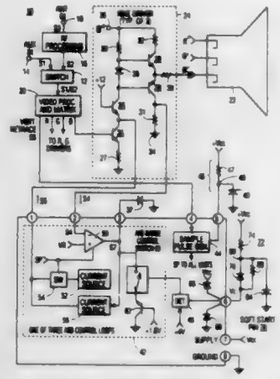
AKB APPARATUS WITH HOT START FLASH PREVENTION

Andrew K. Flickner, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Aug. 31, 1993, Ser. No. 114,867

Int. Cl.[5] H04N *5/68*

U.S. Cl. 348—379 **4 Claims**



1. AKB apparatus, for use with a kinescope driver amplifier, comprising:

an AKB control loop formed in an integrated circuit and including a first pin for connection to a current sensing resistor in said kinescope driver amplifier, having a second pin for supplying an AKB correction current to said kinescope driver amplifier and having a third pin for connection to a loop integration capacitor external to said integrated circuit;

an AKB range control switch formed in said integrated circuit and coupled to a point in said control loop for controlling the maximum value of said AKB correction current;

a threshold detector formed in said integrated circuit for controlling said range control switch, said detector having an input coupled to a fourth pin of said integrated circuit; and

a soft start timing network, connected to said fourth pin and external to said integrated circuit, and including an RC network and a diode for coupling said network to said fourth pin of said integrated circuit.

5,345,268

STANDARD SCREEN IMAGE AND WIDE SCREEN IMAGE SELECTIVE RECEIVING AND ENCODING APPARATUS

Toyohiko Matsuta, Katano; Masakazu Nishino, Kashiwara, and Shigeru Awamoto, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 2, 1992, Ser. No. 969,964

Claims priority, application Japan, Nov. 5, 1991, 3-288335

Int. Cl.[5] H04N *7/12, 7/133, 7/137*

U.S. Cl. 348—384 **22 Claims**

15. A video signal encoding apparatus for selectively receiving and encoding either an image A or an image B each constituted by successive frames, the image B having a greater number of pixels than a number of pixels of the image A, comprising:

first and second input terminals for inputting therethrough the image A and the image B, respectively;

dividing means for dividing each frame of the image B into

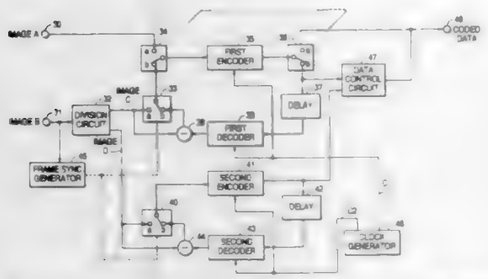
an image C which is a part of the image B having a same number of pixels as a number of pixels of the image A and an image D which is the remaining part of the image B;

first switch means operable when the image B is received for alternately passing therethrough the image C in a first frame of each two successive frames of the image B from said dividing means and a first interframe difference image between the image C in the first frame and the image C in a second frame of each two successive frames of the image B;

second switch means for selectively passing therethrough the image A inputted through said first input terminal when the image A is received and an output image from said first switch when the image B is received;

first encoding means coupled to said second switch means for encoding each successive frame of the image A to obtain image A intraframe coded data when the image A is received and for encoding, when the image B is received, the image C in the first frame of each two successive frames of the image B to obtain image C intraframe coded data and said first interframe difference image to obtain image C interframe coded data;

third switch means having a first output terminal connected to an output terminal of said apparatus and a second output terminal for selectively outputting the image A intraframe coded data from said encoding means to said first output terminal and the image C intraframe coded data and the image C interframe coded data to said second output terminal;



first decoding means for decoding the image C intraframe coded data from the second output terminal of said third switch means to obtain a decoded image C in the first frame of each two successive frames of the image B;

first subtracting means for calculating a difference between the image C in the second frame of each two successive frames of the image B from said dividing means and said decoded image C from said first decoding means to obtain said first interframe difference image;

fourth switch means operable when the image B is received for alternately passing therethrough the image D in a first frame of each two successive frames of the image B from said dividing means and a second interframe difference image between the image D in the first frame and the image D in the second frame of each two successive frames of the image B;

second encoding means coupled to said fourth switch means and operable when image B is received for encoding the image D in the first frame of each two successive frames of the image B to obtain image D intraframe coded data and said second interframe difference image to obtain image D interframe coded data;

second decoding means for decoding the image D intraframe coded data from the second encoding means to obtain a decoded image D in the first frame of each two successive frames of the image B;

second subtracting means for calculating a difference between the image D in the second frame of each two successive frames of the image B from said dividing means and said decoded image D from said second decoding means to obtain said second interframe difference image; and

data control means coupled to the second output terminal of said third switch means for controlling a sequence of the image C intraframe coded data, the image B interframe coded data, the image D intraframe coded data and the image D interframe coded data to obtain image B coded data such that a data quantity of the image B coded data is constant in each two successive frames of the image B.

5,345,269

ADAPTIVE PREDICTION ENCODING DEVICE WHICH CAN EFFECTIVELY REFRESH AN ENCODED SIGNAL WITH AN ENCODING EFFICIENCY KEPT HIGH

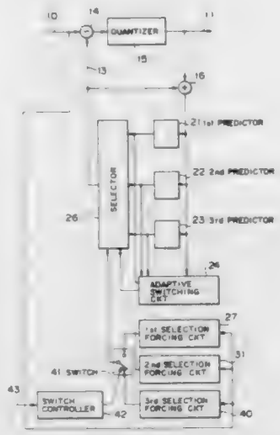
Noboru Kawayachi, Tokyo, and Toru Shibuya, Miyagi, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 17, 1993, Ser. No. 123,064

Claims priority, application Japan, Sep. 17, 1992, 4-247030

Int. Cl.[5] H04N *7/13*

U.S. Cl. 348—412 **6 Claims**



1. An encoding device for encoding a digital picture signal into an encoded signal, said digital picture signal comprising first through M-th frames, where M represents a plural number, each frame comprising first and second fields, each field comprising a plurality of scanning lines, said device including:

a predictive encoder responsive to said digital picture signal and a prediction picture signal for predictively encoding said digital picture signal into said encoded signal by using said prediction picture signal; a local decoder responsive to said encoded signal and said prediction picture signal for locally decoding said encoded signal into a local decoded signal; a first predictor responsive to said local decoded signal for producing a first prediction signal by delaying said local decoded signal by a first delay equal to a first time duration of two successive scanning lines of said digital picture signal; a second predictor responsive to said local decoded signal for producing a second prediction signal by delaying said local decoded signal by a second delay equal to a second time duration of said first field of said digital picture signal; a third predictor responsive to said local decoded signal for producing a third prediction signal by delaying said local decoded signal by a third delay less than a third time duration of one scanning line of said digital picture signal; a comparator for comparing said first through said third prediction signals with said local decoded signal to produce a control signal; and a selector responsive to said control signal for selecting one of said first through said third prediction signals as said prediction picture signal, said device comprising:

a first selection forcing circuit connected to said selector and responsive to said digital picture signal for forcing said selector to select said third prediction signal as said prediction picture signal irrespective of said control signal at first timing of fixed scanning lines which periodically appear at a period of (2N+1) scanning lines in each field of said first through said M-th frames of said digital picture signal, where N represents a natural number; and

a second selection forcing circuit connected to said selector and responsive to said digital picture signal for forcing said selector to select said third prediction signal as said prediction picture signal irrespective of said control signal at second timing of additional scanning lines which precede said fixed scanning lines by (m−1) scanning lines in each field of an m-th frame of said digital picture signal, where m consecutively varies from 2 to (2N+1) which is equal to M.

5,345,270

MANAGING LETTERBOX SIGNALS WITH LOGOS AND CLOSED CAPTIONS

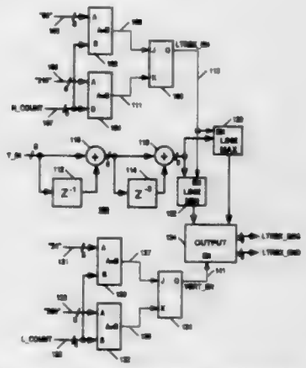
Timothy W. Saeger; Greg A. Kranawetter, both of Indianapolis, and Nathaniel H. Ersoz, Brownsburg, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 817,236, Jan. 6, 1992, Pat. No. 5,249,049. This application May 19, 1993, Ser. No. 63,480

Claims priority, application United Kingdom, Jun. 1, 1990, 9012326.6

Int. Cl.[5] H04N *7/04, 7/08, 5/278*

U.S. Cl. 348—435 **20 Claims**



1. A video display control system, comprising:

a video display means having a wide format display ratio;

a letterbox processor for determining when a picture represented by a video signal has a letterbox format;

first means for restricting operation of said letterbox processor to a vertical range of horizontal lines in each field of said video signal; and,

second means for restricting operation of said letterbox processor to a horizontal range of video data in each of said horizontal lines.

5,345,271

APPARATUS FOR SEPARATING VERTICAL SYNCHRONIZING SIGNAL COMPONENTS FROM IMAGE SIGNALS IN VIDEO CASSETTE RECORDER

Woo C. Shin, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jan. 15, 1993, Ser. No. 5,053

Claims priority, application Rep. of Korea, Jan. 18, 1992, 666/1992

Int. Cl.[5] H04N *5/08*

U.S. Cl. 348—525 **9 Claims**

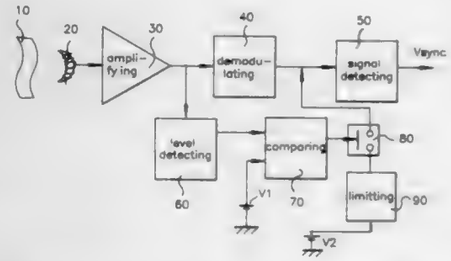
1. An apparatus for separating vertical synchronizing signal components from a composite image signal played back from a tape in a video cassette recorder, comprising;

amplifying means for frequency modulating and amplifying the composite image signal;

demodulating means for demodulating an output signal from the amplifying means, to generate a composite image signal with an original frequency;

level detecting means for detecting a level of the output signal from the amplifying means;

comparing means for comparing an output signal from the level detecting means with a predetermined reference value;



switching means operable according to an output signal from the comparing means;

limiting means for limiting an output signal from the demodulating means to a predetermined limit value upon operation of the switching means; and

vertical synchronizing signal detecting means for detecting vertical synchronizing signal components from the output signal from the demodulating means.

5,345,272

DELAY MATCHING FOR VIDEO DATA DURING EXPANSION AND COMPRESSION

Nathaniel H. Ersoz, Brownsburg; Timothy W. Saeger, Indianapolis; James H. Doty, II, Indianapolis, and Greg A. Kranawetter, Indianapolis, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

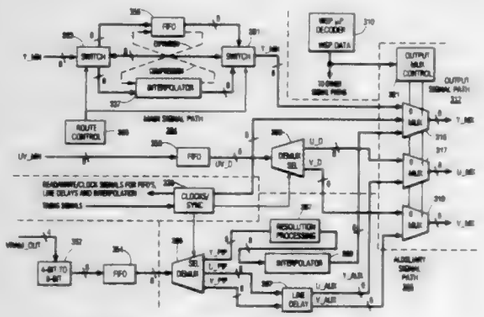
PCT No. PCT/US91/03813, § 371 Date Nov. 3, 1992, § 102(e) Date Nov. 3, 1992

PCT Filed May 30, 1991, Ser. No. 940,878

Claims priority, application United Kingdom, Jun. 1, 1990, 9012326

Int. Cl.[5] H04N *9/64, 7/04, 11/06*

U.S. Cl. 348—561 **10 Claims**



1. A video processing system, comprising:

means for compressing and expanding video luminance data, including a first line memory;

a second line memory for processing video chrominance data; control means for generating respective timing signals for writing data into said first line memory and said second line memory and for reading data from said first line memory and said second line memory; and,

a timing delay circuit for said control means, having video compression and expansion modes of operation, wherein during said compression mode reading of said second line

memory is delayed relative to reading of said first line memory and during said expansion mode writing of said first line memory is delayed relative to writing of said second line memory.

5,345,273

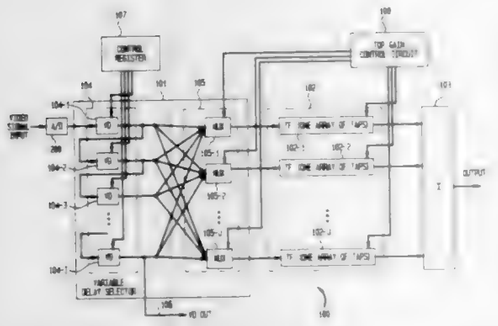
GHOST CANCELLER WITH VARIABLE DELAY SELECTOR

Cheng-Yun Sun, Taichung, Taiwan, assignor to Industrial Technology Research Institute, Taiwan

Filed Mar. 19, 1993, Ser. No. 33,774

Int. Cl.[5] H04N *5/21*

U.S. Cl. 348—607 **13 Claims**



1. A ghost canceling circuit comprising:

I daisy chained variable delay elements, where I is an integer ≧1, including a first variable delay element which receives an inputted video signal,

J multiplexers, where J is an integer ≧1, each of said J multiplexers having at least one input connected to an output of each of said variable delays,

J transversal filter elements, each transversal filter element connected to the output of a corresponding multiplexer, and

an adder for adding together the signals outputted by each of said transversal filter elements.

5,345,274

GHOST CANCELING CIRCUIT PROMPTLY RESPONSIVE TO CHANNEL CHANGE

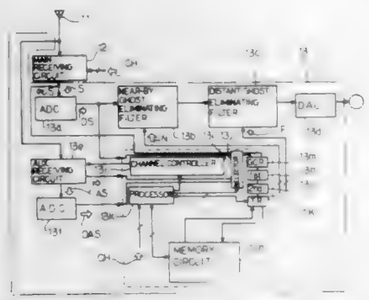
Mitsuhiro Matsunaga, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 21, 1994, Ser. No. 183,833

Claims priority, application Japan, Jan. 25, 1993, 5-009641

Int. Cl.[5] H04N *5/213*

U.S. Cl. 348—614 **5 Claims**



1. A ghost canceling circuit associated with a main receiving circuit for eliminating a ghost image from a video image on a screen, said main receiving circuit being tuned in one of channels assigned to one of broadcasting signals supplied from an antenna for producing a main analog video signal, each of said broadcasting signals containing a ghost canceling reference component, said ghost canceling circuit entering through a transition period into a stable period when said main receiving circuit is tuned in another channel, and comprising:

a) a main analog-to-digital converting circuit for converting said main analog video signal to a main digital video signal;

b) a ghost component canceling means coupled with said main analog-to-digital converting circuit, and responsive to a weighted coefficient signal indicative of weighted coefficients for canceling ghost components indicative of said ghost image from said main digital video signal;

c) a digital-to-analog converting circuit coupled with said ghost component canceling means, and converting said main digital video signal without said ghost components into an analog video signal without ghost components;

d) an auxiliary receiving circuit electrically coupled with said antenna, and sequentially tuned in others of said channels respectively assigned to others of said broadcasting signals for producing an auxiliary analog video signal from one of said others of said broadcasting signals;

e) an auxiliary analog-to-digital converting circuit coupled with said auxiliary receiving circuit, and converting said auxiliary analog video signal into an auxiliary digital video signal; and

f) a controlling circuit having

f-1) a channel controller sequentially selecting said others of said channels for said auxiliary receiving circuit, and tuning said auxiliary receiving circuit with a presently selected channel,

f-2) a coefficient producing means for producing said weighted coefficients from a combination of said main analog video signal, said main digital video signal and a standard ghost canceling reference component without an influence of reflected waves of each broadcasting signal or from a combination of said auxiliary analog video signal, said auxiliary digital video signal and said standard ghost canceling reference component,

f-3) a memory circuit for storing a plurality sets of weighted coefficients for said others of said broadcasting signals, each of said plurality sets of weighted coefficients being produced from said combination of said auxiliary analog video signal, said auxiliary digital video signal and said standard ghost canceling reference component, and

f-4) a transfer circuit having a first port for transferring said weighted coefficients produced from said combination of said auxiliary analog video signal, said auxiliary digital video signal and said standard ghost canceling reference component from said coefficient producing means to said memory circuit, and a second port for continuously supplying said weighted coefficient signal indicative of said weighted coefficients produced from said combination of said main analog video signal, said main digital video signal and said standard ghost canceling reference component to said ghost component canceling means, said transfer circuit temporally supplying one of said plurality sets of weighted coefficients read out from said memory circuit from said second port to said ghost component canceling means in said transition period after said main receiving circuit is tuned with another channel.

5,345,275

COLOR TEMPERATURE SELECTION CIRCUITRY HAVING COLOR MATRIX CORRECTION

Jeffery B. Lendaro, Noblesville, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Feb. 4, 1993, Ser. No. 15,241

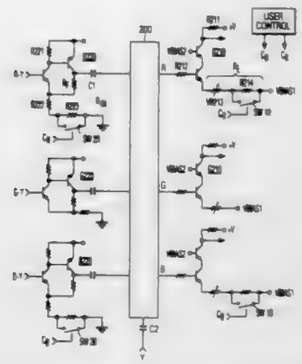
Int. Cl.[5] H04N *9/64*

U.S. Cl. 348—656 **4 Claims**

1. In a color television system, apparatus comprising:

means for altering the gain of one of a red color signal amplifier and a blue color signal amplifier to affect the temperature of a white area displayed on a display screen; and

means for controlling the gain of a respective one of an



R—Y color difference amplifier and a B—Y color difference amplifier concurrently and in the opposite sense to the alternation of the gain of said one of said red color signal amplifier and said blue color signal amplifier.

5,345,276

SPECTRUM DISTRIBUTION LUMINANCE/COLOR SIGNAL SEPARATING DEVICE

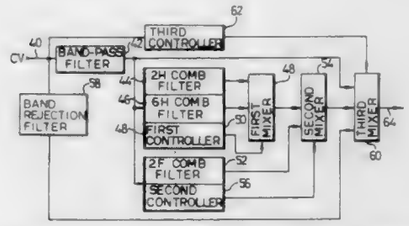
Sung H. Hong, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 24, 1992, Ser. No. 980,663

Claims priority, application Rep. of Korea, Nov. 26, 1991, 91-21339

Int. Cl.[5] H04N *9/78*

U.S. Cl. 348—663 **3 Claims**



1. A luminance/color signal separating device comprising:

a means for receiving a composite video signal;

a band-pass filter means for detecting a composite video signal existing in a predetermined frequency band having a centered chrominance subcarrier frequency from said composite video signal;

a band-rejection filter means for removing a composite video signal existing in a predetermined frequency band having a centered chrominance subcarrier frequency from said composite video signal;

a first line comb filter means for separating a luminance signal and a color signal from an output signal of said band-pass filter means by a correlation between three lines;

a second line comb filter means for separating a luminance signal and a color signal from an output signal of said band-pass filter means by a correlation between five lines;

a frame comb filter means for separating a luminance signal and a color signal from an output signal of said band-pass filter means by a correlation between frames;

a vertical variation detecting means for detecting a variation component of picture in a vertical axis from an output signal of said band-pass filter means;

a temporal variation detecting means for detecting a variation component of picture in a temporal axis from an output signal of said band-pass filter means;

a horizontal variation detecting means for detecting a variation of picture in a horizontal axis from said composite video signal;

a first mixing means for mixing color signals separated by said first and second line comb filter means, and said frame comb filter means, and an output signal of said band-pass filter means, according to detected results of said horizontal, vertical and temporal variation detecting means; and

a second mixing means for mixing luminance signals separated by said first and second line comb filter means and said frame comb filter means, and an output signal of said band-rejection filter means, according to detected results of said vertical, temporal variation detecting means;

wherein said first mixing means further,

A) selects an output signal of said band-pass filter means, when a variation of picture does not exist in a horizontal direction;

B) selects a color signal separated in said frame comb filter, when a variation of picture exists in a horizontal direction and does not exist in a temporal axis;

C) selects a color signal separated by said first line comb filter, when a variation of picture exists in horizontal and temporal axes, and does not exist in a vertical axis; and

D) selects a color signal separated by said second line comb filter, when a variation of picture exists in horizontal, temporal, and vertical axes.

5,345,277

METHOD OF AND CIRCUIT ARRANGEMENT FOR CONTRAST CORRECTION IN WHICH A CORRECTION SIGNAL DERIVED FROM THE LUMINANCE SIGNAL IS ADDED TO EACH COLOR SIGNAL

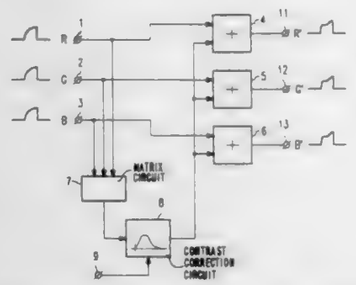
Jaap E. Blankevoort, Eindhoven; Johannes H. J. M. Van Rooy, Den Bosch, and Hubertus C. Voet, Breda, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 26, 1993, Ser. No. 8,930

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1992, 4203092

Int. Cl.[5] H04N *5/57, 9/64*

U.S. Cl. 348—679 **7 Claims**



1. A method of contrast correction of color television signals, said color television signals having a blanking interval, characterized in that said method comprises the steps:

deriving a luminance signal (Y) from said color television signals, the luminance signal having a black level and a white level, along with the blanking interval;

deriving a correction signal from the luminance signal (Y), said correction signal having a maximum value in proximity of the black level in the luminance signal, said correction signal becoming zero in the blanking interval and in proximity of the white level in the luminance signal; and

adding said correction signal to each color signal of said color television signals.

5,345,278

CONTRAST AND BRIGHTNESS CONTROL FOR TELEVISION RECEIVER WITH TELETEXT

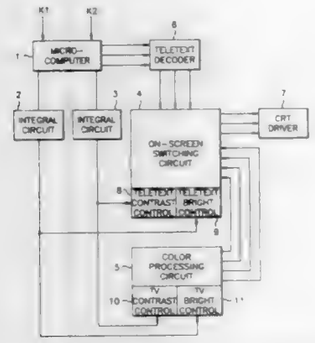
Byeong-Yong Choi, Kyungki-do, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 1, 1992, Ser. No. 937,741

Claims priority, application Rep. of Korea, Sep. 16, 1991, 1991-16127

Int. Cl.[5] H04N *5/235, 5/57*

U.S. Cl. 348—686 **5 Claims**



1. A contrast and brightness control for television receiver with teletext, comprising:

first means for generating first and second pulse width modulation pulses according to one of a contrast and a brightness control key-input;

second means for integrating said first pulse width modulation pulses so as to generate a first direct current voltage;

third means for integrating said second pulse width modulation pulses so as to generate a second direct current voltage;

fourth means for controlling the brightness and contrast of a television picture by changing the level of a reference direct current of a television picture signal according to the level of said second direct current voltage, and by changing the magnitude of said television picture signal according to the level of said first direct current voltage; and

fifth means for controlling the brightness and contrast of a teletext picture by changing the level of a reference direct current of a teletext picture signal according to the level of said second direct current voltage, and by changing the magnitude of said teletext picture signal according to the level of said first direct current voltage, whereby the television signal and the teletext signal with controlled brightness and contrast are being selectively switched to a drive circuit for a visual display on a cathode ray tube.

5,345,279

IMAGE SIGNAL PROCESSING APPARATUS WITH ANALOG TO DIGITAL IMAGE CONVERSION

Kan Takaiwa, Hachioji, and Eiji Ohara, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1991, Ser. No. 748,889

Claims priority, application Japan, Aug. 30, 1990, 2-229675; Jun. 25, 1991, 3-153149

Int. Cl.[5] H04N *5/18*

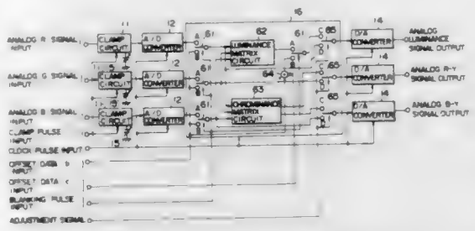
U.S. Cl. 348—689 **15 Claims**

1. An image signal processing apparatus for processing an image signal, comprising:

(a) clamping means for clamping an input analog image signal to a desired clamp level;

(b) analog/digital converting means for converting said analog image signal clamped by said clamping means into a digital image signal; and

(c) digital signal processing means including offset means for offsetting a level of a blanking period of said digital color image signal output from said analog/digital converting means to a first level, for adjusting a black level of said analog color image signal by adjusting the clamp level of said clamping means using the digital image signal output from said offset means and converting said first level of



the blanking period of said digital image signal converted by said analog/digital converting means from the analog image signal clamped by said clamping means whose level has been adjusted by the black adjustment, to a second level.

5,345,280

DIGITAL CONVERGENCE CORRECTION SYSTEM AND METHOD FOR PREPARING CORRECTION DATA

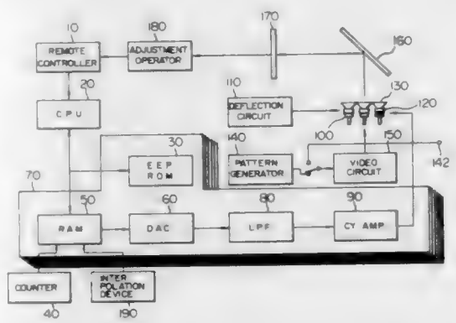
Yuichiro Kimura; Yasuji Noguchi, both of Yokohama, and Kuninori Matsumi, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,701

Claims priority, application Japan, Feb. 26, 1992, 4-039015

Int. Cl.[5] H04N *9/28*

U.S. Cl. 348—745 **43 Claims**



1. A digital convergence correction system used for convergence correction on a screen of a display unit including at least a cathode ray tube, comprising:

first memory means for storing convergence correction data for a plurality convergence adjusting points selected at predetermined intervals on the screen;

interpolating operation means for preparing correction data for a plurality of correction points between adjacent adjusting points by an interpolating operation from the correction data read from the first memory means;

second memory means for storing the correction data for the adjusting points and the correction data obtained by the interpolating operation;

means for generating a memory address associated with each position on the screen in synchronism with the scanning line and reading correction data associated with each screen position from the second memory means in accordance with the memory address; and

means for converting said correction data read into an analog signal and driving a convergence yoke of the cathode ray tube,

wherein the interpolating operation is a combination of one-dimensional interpolating operations for horizontal and vertical directions on the screen, each of a plurality of sets of adjacent adjusting points on a section subjected to the interpolating operation in each of horizontal and vertical directions on the screen defines a sub-section, and wherein each one-dimensional interpolating operation sets an interpolating function for determining correction data for a plurality of correction points in each sub-section in such a manner that:

values of interpolating functions for two adjacent sub-sections sandwiching an adjusting point are equal to each other at said adjusting point, and

values of at least the first order derivatives of the interpolating functions for the two adjacent subsections sandwiching the adjusting point are also equal to each other at said adjusting point.

5,345,281

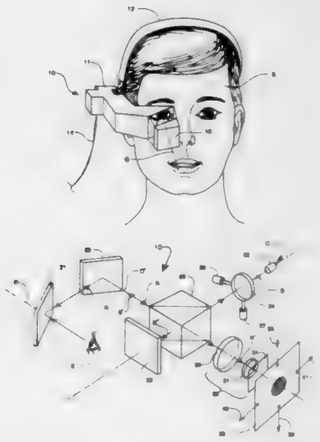
EYE TRACKING SYSTEM AND METHOD

John Taboada, 12530 Elm Country, San Antonio, Tex. 78230, and William Robinson, 12324 Starcrest #105, San Antonio, Tex. 78216

Filed Dec. 17, 1992, Ser. No. 992,182

Int. Cl.[5] A61B *3/14*

U.S. Cl. 351—210 **18 Claims**



1. A system for measuring the angular gaze position of the human eye, comprising:

(a) a source of infrared light;

(b) first optical means for directing a light beam from said source along a first optical axis into an eye of a subject;

(c) dichroic beamsplitter means disposed along said first optical axis for simultaneously directing said light beam into said eye and transmitting into said eye visual images along a viewing axis of said eye;

(d) second optical means for directing a reflected beam from said eye along a second optical axis and for forming an image of the pupil and surrounding iris and sclera of said eye, said image comprising a bright spot defining said pupil surrounded by a dark region defining said iris and sclera; and

(e) two-dimensional light position sensing means disposed along said second optical axis for detecting the position of said dark spot relative to said second optical axis and for providing a signal corresponding to the position of said pupil relative to said first optical axis.

5,345,282

FOLDABLE OPTICAL APPARATUS

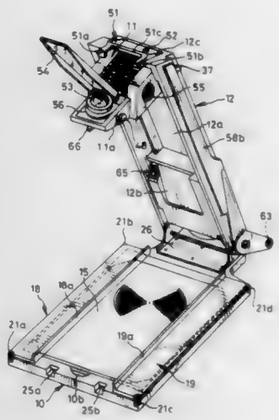
Seimei Ushiro, and Bunsuke Emura, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 23, 1993, Ser. No. 45,232

Claims priority, application Japan, Mar. 23, 1992, 4-065268

Int. Cl.[5] G03B *21/14*

U.S. Cl. 353—119 **31 Claims**



1. A foldable optical apparatus comprising:

a base table having a stage adapted to receive original material;

an image forming head for forming an image of said original material on said stage, said image forming head including at least an optical system;

support means having first and second end portions, said first end portion being mounted on said base table for vertical swinging movement between an erected position and a folded position in which said support means overlies said stage, said image forming head being vertically swingably mounted on said second end portion; and

a locking structure for fixing said support means in said folded position, including:

a locking member swingably mounted on said second end portion of said support means in spaced relation to said image forming head;

a retaining claw formed at an end of said locking member;

a receiving portion formed on said base table for engagement with said retaining claw; and

release means for releasing said engagement between said retaining claw and said receiving portion.

5,345,283

LENS BARREL

Kazuhiro Satoh, Sagamihara; Minoru Hara, Hachioji, and Eiji Otsuka, Minowa, all of Japan, assignors to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Dec. 30, 1992, Ser. No. 998,825

Claims priority, application Japan, Jan. 7, 1992, 4-001031

Int. Cl.[5] G03B *17/24*

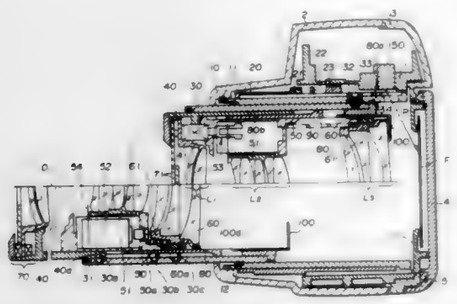
U.S. Cl. 354—106 **24 Claims**

14. A camera having a projecting function, comprising:

a photographing optical system movable between a photographing position and a non-photographing position;

optical frame means for separating a photographing optical path of said photographing optical system and an outside of said optical path from each other and having, at a portion thereof, a transparent bore for communicating said optical path and an outside of said optical path with each other, said optical frame means having an opening and closing element for opening and closing said bore wherein, under the photographing position of said photo-

graphing optical system, said opening and closing element opens said transparent bore, while, under the non-photographing position of said photographing optical system, said opening and closing element closes said transparent bore; and



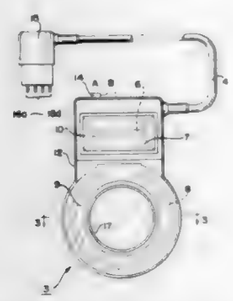
data projecting means arranged on an outer side of the photographing optical path of said optical frame means, for projecting information through said bore when said bore is open.

5,345,284

ELECTRONIC FLASH UNIT WITH TWO INTEGRATED FLASH HEADS

Yuzo Tsuruta, 2-23-9 Asamino, Midori-Ku, Yokohama, 227, Japan

Continuation of Ser. No. 656,561, Feb. 15, 1991, abandoned.
This application Apr. 28, 1992, Ser. No. 877,257
Claims priority, application Japan, Feb. 16, 1990, 2-13716[U]
Int. Cl.[5] G03B *15/03*
U.S. Cl. 354—132 **11 Claims**



1. A flash unit for a camera of the type having a lens, comprising:

a support member;

means for releasably connecting the support member to the camera;

a first flash means;

a second flash means mounted to said first flash means;

means for mounting said first flash means to said support member such that the angular position of the second flash means relative to the camera can be changed without removing the flash unit from the camera;

a first trigger circuit having a low voltage input and a high voltage output for triggering the first flash means;.

a second trigger circuit having a low voltage input and a high voltage output for triggering the second flash means and

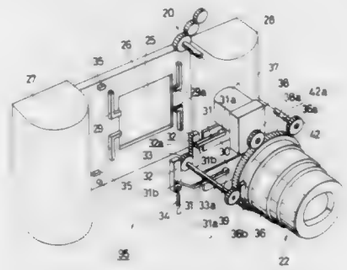
means in circuit with the low voltage side of both said first and second trigger circuits for selecting which of the trigger circuits respond to the camera flash output signal whereby operation of the camera simultaneously operates the selected first or second flash means.

5,345,285

VIEW FINDER AND CAMERA HAVING SAME

Sachio Hasushita, Tokyo; Toshiaki Ueda, Urawa, and Masahiro Hayakawa, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 672,901, Mar. 21, 1991, abandoned.
This application Jul. 28, 1993, Ser. No. 97,927
Claims priority, application Japan, Mar. 22, 1990, 2-73126; Jun. 22, 1990, 2-164481
Int. Cl.[5] G03B *17/02*
U.S. Cl. 354—159 **30 Claims**



1. A camera having a view finder comprising:

a field frame varying mechanism comprising means for varying a ratio in length between the longitudinal and lateral sides of a finder field frame of said view finder by changing a dimension of one of said longitudinal and lateral sides of said field frame while the other dimension of said field frame remains unchanged;

an aperture varying mechanism for varying a physical size of an aperture for exposure of a film, in accordance with the ratio in length between the longitudinal and lateral sides of said finder field frame, said aperture varying mechanism comprising a pair of light intercepting plates which are linearly movable, with respect to the camera, in a plane parallel to a plane of the film to vary said physical size of said aperture; wherein said field varying mechanism, by selectively blocking predetermined portions of said finder frame, selectively determines a normal field of view which represents a normal photographing range and a panoramic field of view which has a contracted lateral side length compared with the normal field of view and represents a panoramic photographic range; and

means mechanically associating said field frame varying mechanism and said aperture varying mechanism with each other so that said finder field of said view finder and said physical size of said aperture vary to correspond to one another.

5,345,286

METHOD AND APPARATUS FOR CONTROLLING FILM DRIVE

Wayne Stiehler, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

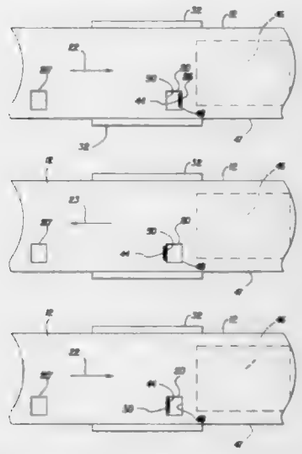
Filed May 11, 1993, Ser. No. 62,525
Int. Cl.[5] G03B *1/18*
U.S. Cl. 354—173.1 **11 Claims**

1. A method of controlling the movement of a photographic filmstrip having indicia for defining an exposure frame in a camera, each said indicia comprising a leading edge and a trailing edge, the method comprising the steps of:

moving the filmstrip at a relatively high velocity in a forward film direction until the leading edge of an exposure frame indicia passes a predetermined location;

moving the filmstrip at a reduced velocity in the forward film direction until a trailing edge of said indicia passes by the predetermined location;

moving the filmstrip at a reduced velocity in a reverse film direction until the trailing edge of said indicia again passes the predetermined location; and



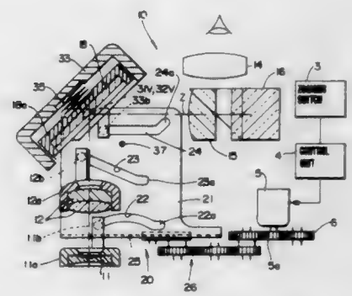
halting the filmstrip in response to the trailing edge of said indicia passing the predetermined location.

5,345,287

APPARATUS FOR CORRECTING PARALLAX AND/OR DIOPTER OF CAMERA

Ichiro Taguchi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 836,418, Feb. 18, 1992, abandoned.
This application Sep. 24, 1993, Ser. No. 126,015
Claims priority, application Japan, Feb. 19, 1991, 3-006974; Feb. 19, 1991, 3-006975
Int. Cl.[5] G03B *13/14*
U.S. Cl. 354—221 **29 Claims**



1. A parallax and/or diopter correcting apparatus in a camera having a photographing optical system separate from a finder optical system, comprising:

a motor for driving said photographing optical system;

a finder optical system driving mechanism for moving a lens assembly of the finder optical system, said finder optical system driving mechanism including a cam mechanism for moving said lens assembly, said cam mechanism comprising a cam plate driven for movement from said motor;

a reflecting mirror provided in the finder optical system to change a direction of an optical axis thereof; and

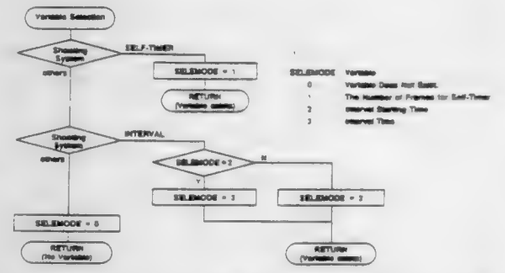
a reflecting mirror driving mechanism, including said cam mechanism, for at least rotating said reflecting mirror in a first rotational direction, to move the optical axis of the finder optical system towards an optical axis of the photographing optical system, or for rotating said reflecting mirror in a second rotational direction perpendicular to the first rotational direction.

5,345,288

ELECTRONICALLY CONTROLLED CAMERA WITH AUTOMATIC RELEASE MODE AND INTERVAL TIME SETTING

Takeo Kobayashi, Tokyo; Yasushi Tabata, Ichikawa; Norio Numako, Nogi, and Katsutoshi Nagai, Kawaguchi, all of Japan, assignors to Asahi Kogaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 655,303, Feb. 14, 1991, Pat. No. 5,181,060. This application Jul. 2, 1992, Ser. No. 908,293
Claims priority, application Japan, Feb. 14, 1990, 2-32981
The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.
Int. Cl.[5] G03B *9/64*
U.S. Cl. 354—238.1 **8 Claims**



2. A camera system including a control unit for controlling a camera capable of operating in an automatic release mode in which a plurality of shootings are automatically executed, said control unit comprising:

means for setting the number of shootings to be executed by said camera while in said automatic release mode;

means for initiating said automatic release mode; and

means for automatically setting a first interval of time, between actuation of said initiating means and a first shooting, in accordance with a fixed predetermined value, and a second interval of time, between each successive shooting, in accordance with a variable predetermined value, whereby said automatic setting means sets said second interval of time to vary in accordance with the set number of shootings to be executed.

5,345,289

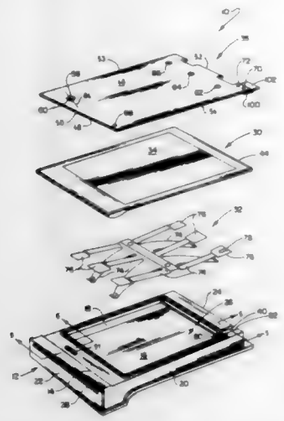
FILM CASSETTE DARK SLIDE INCORPORATING A PROJECTION FOR RESTRAINING IMPACT-GENERATED MOVEMENT

Irving S. Lippert, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 8, 1993, Ser. No. 118,420
Int. Cl.[5] G03B *17/26*
U.S. Cl. 354—283 **22 Claims**

1. A slide mounting in a film cassette at a location between the exposure opening in a forward wall of the cassette and a film unit within the cassette, said slide comprising a planar opaque sheet of a length and width greater than the length and width of the exposure opening said slide having a leading edge a trailing edge two parallel side edges, an upper surface and a lower surface, a truncated ridge on said upper surface of said slide with said ridge rising from said upper slide surface to a continuously increasing height in a direction toward said leading edge and terminating in a planar surface, said planar surface extending generally perpendicular to said side edges, wherein said ridge has an axis perpendicular to said planar surface said ridge being struck from the material of said slide to project above said upper slide surface in a smooth curve, with said ridge projecting in directions both parallel with and per-

pendicular to said axis, and wherein said dark slide includes a slit extending through said slide and transversely of said axis,



said planar surface being located intermediate said leading slide edge and said slit.

5,345,290

LENS POSITION CONTROLLER WITH LENS MOVEMENT DIRECTION DETECTION

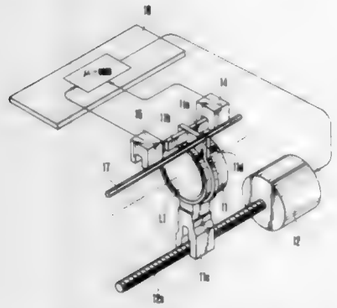
Takashi Watanabe, Tokyo, and Naoya Kaneda, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1992, Ser. No. 997,073

Claims priority, application Japan, Jan. 7, 1992, 4-000809; Nov. 30, 1992, 4-345549

Int. Cl.[5] G03B *13/36, 7/09*

U.S. Cl. 354—400 **24 Claims**



1. An optical apparatus arranged to move a lens by using a stepping motor as a driving source, comprising:

a detection mechanism for detecting a plurality of reference positions of said lens, respectively;

a control circuit which moves said lens toward a reference position selected from said plurality of reference positions and causes said detection mechanism to detect said selected reference position of said lens, said control circuit also determining a moving direction of said lens, and

position detecting means for finding an absolute position of said lens on the basis of the number of driving steps of said stepping motor relative to said selected reference position.

5,345,291

COMPACT FOCUS DETECTING DEVICE

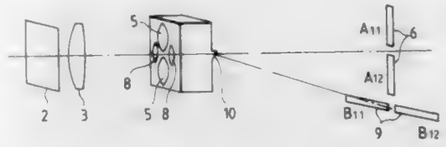
Hisashi Goto, Musashino, and Tsuyoshi Yaji, Kawagoe, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 995,811

Claims priority, application Japan, Dec. 27, 1991, 3-346744; Jan. 21, 1992, 4-008481

Int. Cl.[5] G03B *13/36*

U.S. Cl. 354—406 **8 Claims**



1. A focus detecting device comprising:

a photographic lens system having at least one image surface;

a plurality of focus detecting optical systems each having photoelectric converter means for receiving a pair of light bundles having passed through different regions of said photographic lens system, said photoelectric means having light receiving surfaces for receiving said light bundles,

said focus detecting optical systems each being operable to detect a phase difference between two light bundles comprising a respective pair of light bundles as a function of light intensity distributions on said light receiving surfaces;

said light bundles being spatially separated from one another on said light receiving surfaces, and at least partially overlapping one another on said at least one image surface of said photographic lens system;

wherein an imaginary line extending between the light receiving surfaces of the photoelectric means of one of said focus detecting optical systems does not intersect with another imaginary line extending between said light receiving surfaces of the photoelectric converter means of another of said focus detecting optical systems.

5,345,292

ILLUMINATION DEVICE FOR PROJECTION EXPOSURE APPARATUS

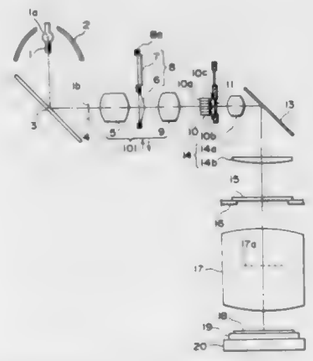
Takahisa Shiozawa, Kawasaki; Masato Muraki, Inagi; Hiroyuki Ishii, Yokohama, and Shigeru Hayata, Kodaira, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 40,991

Claims priority, application Japan, Mar. 31, 1992, 4-108632

Int. Cl.[5] G03B *27/54, 27/42*

U.S. Cl. 355—67 **60 Claims**



1. An illumination device, comprising:

secondary light source forming means having a deflecting member with a conical light deflecting surface for transforming received light into substantially ring-like light, said secondary light source forming means forming a ring-like secondary light source by using the ring-like light; and

an optical system for projecting divergent lights from portions of the secondary light source obliquely onto a surface to be illuminated so that the projected lights are superposed one upon another on the surface.

5,345,293

FEEDER OF CONTINUOUS DOCUMENTS FOR A COPY MACHINE

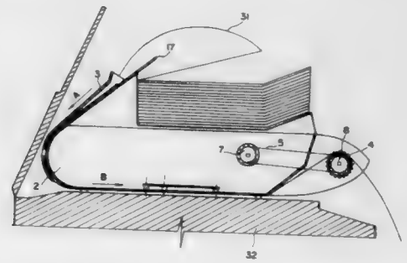
In K. Baek, Yongsan Gu; Jae J. Kim, Songpa Gu, and Jin Y. An, Dobong Gu, all of Rep. of Korea, assignors to Sindo Ricoh Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 757,689, Sep. 11, 1991, abandoned. This application Oct. 6, 1993, Ser. No. 132,442

Claims priority, application Rep. of Korea, Sep. 28, 1990, 1990-15566

Int. Cl.[5] G03B *27/62;* **G03G** *21/00;* **B41F** *1/28*

U.S. Cl. 355—75 **3 Claims**



1. A feeder of continuous documents for use on a platen of a copy machine comprising:

an upper frame having a top side, a bottom side and two ends, one of said ends having a vertical support wall, the other of said ends having an inclined support wall, said upper frame providing a stable platform for placement of said continuous documents;

a cover formed at said one end of said upper frame, said cover having an upper end, said upper end having an extension which has a plurality of longitudinally extending protrusions at the area being in contact with the travelling documents;

a motor having a drive shaft;

a lower frame defining a path for travelling the documents, said lower frame is mounted to said bottom side of said upper frame, said lower frame having two sides, each of said sides having an extension extending beyond said other end of the upper frame and functioning to rotatably mount said drive shaft;

a tractor fixedly mounted to said drive shaft to be driven by the drive force of the motor, said tractor being circular in shape in order to increase the concentration of forces drawing the documents;

motor driving means for controlling a rotation rate and a rotation range of the motor; and

sensing means located between said two sides of said lower frame for sensing a scanner operation of said copy machine and for supplying a sensed signal to said motor driving means, wherein said sensed signal is used in informing a driving time of the motor to said driving means.

5,345,294

PROCESS CARTRIDGE AND IMAGE FORMING APPARATUS USING SAME

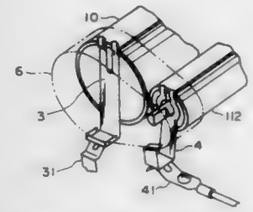
Yoshiya Nomura, Tokyo; Tadayuki Tsuda; Isao Ikemoto, both of Kawasaki; Kazushi Watanabe, Yokohama; Kazuhiko Ishiwata; Makoto Tanaka, both of Tokyo; Kanji Yano, Kawasaki, and Shinichi Sasaki, Fujisawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 727,126, Jul. 9, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 48,962

Claims priority, application Japan, Jul. 13, 1990, 2-184094

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—200 **32 Claims**



1. A process cartridge detachably mountable to a main assembly of an image forming apparatus, comprising:

a plurality of process means including at least one electrically conductive cylindrical member having an open end, wherein an electrically conductive portion is exposed at a substantially circular longitudinal end of the open end;

supporting means for supporting as a unit said plurality of process means; and

an electrode, in said supporting means, comprising a first portion electrically contactable to the main assembly and a second portion press-contacted to said longitudinal end of said electrically conductive cylindrical member.

5,345,295

POSITIONING MEMBER FOR A SEPARATION ELECTRODE MOUNTED ON A CLAMSHELL-TYPE COPIER

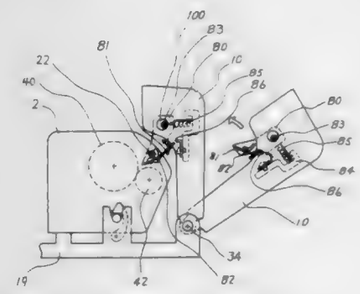
Minoru Takano; Akihiro Komuro, and Mitsuru Yamazaki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 10, 1993, Ser. No. 103,782

Claims priority, application Japan, Sep. 28, 1992, 4-257920

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—200 **30 Claims**



1. An image forming apparatus comprising:

a feeding path for feeding a sheet on which an image is to be formed;

an endless latent image carrier;

image forming means for forming a toner image on the latent image carrier;

transfer means for transferring the toner image on the latent

image carrier onto the sheet that is conveyed in the feeding path;

separation means for supplying electric charges of an opposite polarity to that of electric charges on a back of the sheet to the back of the sheet in the feeding path at a position downstream of the transfer means, thereby separating the sheet from the latent image carrier;

an openable and closable frame on which at least the separation means is movably provided and which is to be opened to free the feeding path;

a positioning member for positioning the separation means by engagement with the separation means when the frame is closed; and

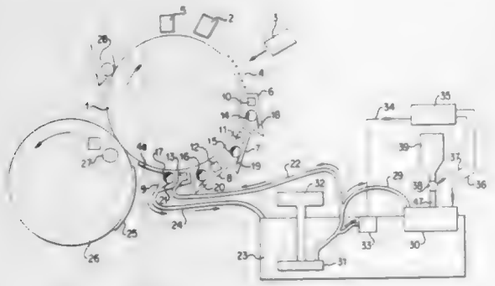
a main body frame on which at least the latent image carrier, the transfer means, and the positioning member are provided so that the positioning member is provided on the main body at a predetermined distance from the latent image carrier.

5,345,296

METHODS AND DEVICES FOR DISPERSION OF HIGH SOLIDS TONER

Anders J. Wellings, Newark, Del., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 25, 1991, Ser. No. 796,989
Int. Cl.[5] G03G *15/10*
U.S. Cl. 355—256 **41 Claims**



1. An image forming device comprising:

a) latent image means for creating a latent image;

b) developer means for developing said latent image;

c) transfer means for transferring said developed latent image onto a predetermined image medium;

d) developer supplying means for recirculating a working developer solution through said developer means;

e) replenishing means for supplying concentrated developed solution to said developer supplying means; and

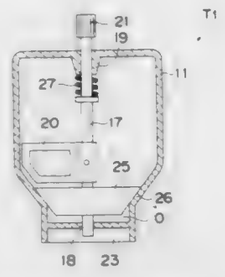
f) dispersion means for dispersing said concentrated developer solution from said replenishing means into said working developer solution of said developer supplying means, said dispersion means comprising a rotatable member, means for rotating said rotatable member, and a stationary member located adjacent to said rotatable member a shear force on said concentrated developer solution to disperse said concentrated developer solution into said developer solution, wherein said shear force reduces a particle size of said concentrated developer solution to about 1–2 μm

5,345,297

DEVELOPING APPARATUS

Noboru Katakabe, Uji, and Masanori Yoshikawa, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 8, 1993, Ser. No. 28,541
Claims priority, application Japan, Mar. 9, 1992, 4-050278
Int. Cl.[5] G03G *15/08*
U.S. Cl. 355—260 **10 Claims**



1. A developing apparatus comprising:

a toner container including a container main body having a first end with a toner discharge opening formed therethrough, and a cap member rotatably mounted to said first end of said container main body, said cap member having a wall portion which is in sliding contact with said first end of said container main body, and said wall portion having an opening formed therethrough which is selectively alignable with said toner discharge opening of said first end of said container main body to selectively open and close said toner discharge opening;

a toner hopper including a replenishing port with a cylindrical wall formed thereabout and adapted to releasably engage said toner container;

a first rotary shaft rotatably mounted to said toner container, said first rotary shaft extending through said wall portion of said cap member and through said first end of said container main body of said toner container;

a stirring member mounted to said first rotary shaft and disposed within said container main body;

a second rotary shaft rotatably mounted to and disposed in said toner hopper and being coaxial with said cylindrical wall formed about said replenishing port;

a drive member fixed to said second rotary shaft and adapted to be operably coupled to a rotary drive source;

an agitator mounted to said second rotary shaft and disposed in said toner hopper;

engaging means for engaging said container main body in said cylindrical wall such that said container main body is rotatable relative to said cylindrical wall and so that said container main body is prevented from being pulled out of said cylindrical wall;

cap member coupling means for coupling said cap member to said cylindrical wall such that said cap member is fixed against rotation relative to said cylindrical wall;

shaft coupling means for coupling said first rotary shaft to said second rotary shaft, such that said first rotary shaft is rotated together with rotation of said second rotary shaft, upon said container main body being engaged in said cylindrical wall by said engaging means; and

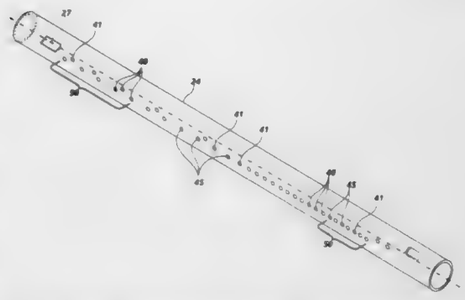
wherein said cap member coupling means, said engaging means and said wall portion of said cap member together constitute an automatic means for automatically opening said toner discharge opening and causing toner in said container main body to fall from said container main body into said toner hopper when said toner container is disposed so that said toner discharge opening is directed downwardly and when said container main body is moved from a disengaged position to an engaged position in which it is engaged in said cylindrical wall by said engaging means such that said container main body is prevented from being pulled out of said cylindrical wall, and for automatically maintaining said toner discharge opening closed to prevent the toner in said container main body from falling out of said container main body through said toner discharge opening when said container main body is not in said engaged position in said cylindrical wall.

5,345,298

MAGNETIC BRUSH DEVELOPMENT APPARATUS FOR TONER ADD/MIX DISPENSER

Richard W. Corrigan, Jr., Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 20, 1993, Ser. No. 139,960
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—260 **22 Claims**



1. A developer dispensing assembly for dispensing developer to an electrostatographic development apparatus comprising a developer dispensing tube, a toner supply means at a first end of said tube, developer supply means adjacent said toner supply means, transport means to transport toner and developer from said first end of said tube to the opposite end of said tube, said developer dispensing tube having an array of developer dispensing apertures arranged in a geometric pattern having a spatial relationship with respect to each other to dispense toner enriched developer through said apertures to said development apparatus at a substantially uniform dispensing profile as said developer and toner are transported from said first end of said tube to said opposite end of said tube for varied feed rates of developer and toner to said dispensing tube.

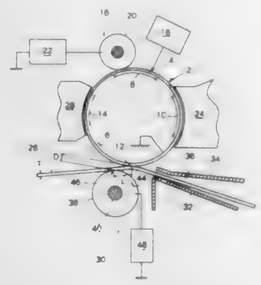
5,345,299

IMAGE-FORMING MACHINE WITH TONER IMAGE TRANSFER MEANS HAVING A CHARGE SUPPLY ZONE AND A TRANSFER ZONE

Masahiro Hashizume; Hiroshi Kimura; Hiroshi Ishida; Masanobu Maeshima; Koichi Yasuda; Shigeki Hayashi; Hiroshi Kubota; Osamu Yoshimura; Susumu Taniguchi, all of Osaka, and Yasuo Hatate, Kagoshima, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Sep. 14, 1993, Ser. No. 120,454
Claims priority, application Japan, Oct. 22, 1992, 4-284122
Int. Cl.[5] G03G *15/16*
U.S. Cl. 355—274 **9 Claims**

1. An image-forming machine comprising an image forming member to be conveyed through a conveying passage which comprises a latent electrostatic image forming zone, a developing zone, and a transfer zone in this sequence, latent electrostatic image forming means for forming a latent electrostatic image on the surface of the image forming member in the latent electrostatic image forming zone, developing means for developing the latent electrostatic image on the surface of the image forming member to a toner image in the developing zone, transfer material conveying means for conveying a transfer material through the transfer zone, and toner image transfer means for transferring the toner image on the surface of the image forming member onto the surface of the transfer material in the transfer zone, the toner image transfer means including a charge supply member disposed opposite to the image forming member at a greater distance than the thickness of the transfer material, the transfer material being brought into contact with the charge supply member in a charge supply zone to receive a charge, and the surface of the transfer material being brought into contact with the surface of the image



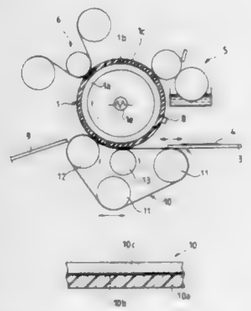
forming member in the transfer zone to transfer the toner image on the surface of the image forming member onto the surface of the transfer material; wherein the charge supply zone is positioned downstream of the transfer zone as viewed in the direction of conveyance of the transfer material.

5,345,300

FIXING UNIT HAVING AN ENDLESS BELT INCLUDING A BASE LAYER AND A COMPOSITE MATERIAL

Yasuhiro Uehara; Yasuhiro Kusumoto, both of Kanagawa; Hiroshi Kato, and Hiroyasu Kikukawa, both of Okayama, all of Japan, assignors to Fuji Xerox Co., Ltd. and Japan Gore-Tex Inc., both of Tokyo, Japan

Filed Feb. 9, 1993, Ser. No. 28,704
Claims priority, application Japan, Feb. 10, 1992, 4-056503
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **14 Claims**



1. A fixing unit for fixing a toner image onto a recording sheet, the fixing unit comprising:

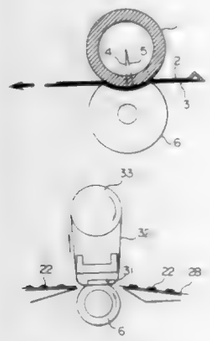
a fixing roll and an endless belt in press contact with the fixing roll in a nip area so that when the recording sheet bearing the toner image not yet fixed passes between the fixing roll and the endless belt, said fixing unit fixes the toner image onto the recording sheet in the nip area;

wherein said endless belt is a film-like belt consisting essentially of a base film and a covering layer layered on said base film, said covering layer being made of a composite material containing porous material and elastomer.

5,345,301
IMAGE FIXING DEVICE AND ELECTROPHOTOGRAPHIC APPARATUS INCORPORATED WITH SUCH DEVICE

Toshiya Satoh, Hitachi; Tsuneaki Kawanishi, Naka; Ryuuichi Shimizu, Hitachiota; Akira Shimada, and Katsumi Kumada, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 29, 1991, Ser. No. 737,331
Claims priority, application Japan, Aug. 6, 1990, 2-208864
Int. Cl.[5] G03G *15/20, 21/00*
U.S. Cl. 355—290 **10 Claims**



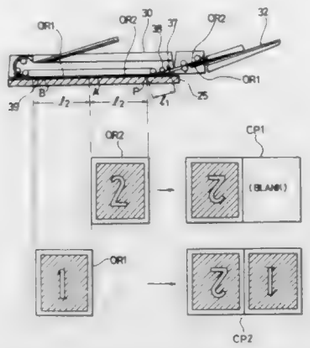
1. An electrophotographic image fixing device for fixing an unfixed toner image formed on a substrate by passing said substrate between two pressing means disposed in opposition to each other, wherein one of the pressing means which is arranged to press the substrate from a side opposite from a toner-applied side has a surface layer of an elastic material, said surface layer of elastic material being given a pressing force that causes its deformation by 0.1–1.5% in terms of thickness of said layer and wherein the pressing force between the two pressing means is adjusted to be 0.3–1 kg/cm^2, said deformation is not more than 1.5% in terms of thickness of said layer and the pressing force is not more than 1 kg/cm^2.

5,345,302
IMAGE FORMING APPARATUS FOR FORMING TWO IMAGES ON ONE SIDE OF ONE SHEET

Wataru Hamakawa, Toyokawn, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 836,813, Feb. 19, 1992, which is a continuation of Ser. No. 705,029, May 21, 1991, Pat. No. 5,124,758, which is a continuation of Ser. No. 561,068, Aug. 1, 1990, Pat. No. 5,077,577, which is a continuation of Ser. No. 421,408, Oct. 13, 1989, Pat. No. 4,958,198, which is a continuation of Ser. No. 328,062, Mar. 23, 1989, Pat. No. 4,914,472, which is a continuation of Ser. No. 184,662, Apr. 21, 1988, Pat. No. 4,831,413, which is a division of Ser. No. 95,954, Sep. 14, 1987, Pat. No. 4,771,319. This application Dec. 15, 1992, Ser. No. 990,462
Claims priority, application Japan, Sep. 18, 1986, 61-217954
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—311 **2 Claims**

1. An image forming apparatus comprising:
means for sequentially providing images of plural pages;
sheet feeding means for feeding a sheet;
means for reducing the image according to an automatically determined magnification so that the image is half the sheet size; and
image forming means for forming said reduced image of an odd-numbered page on a half area of one surface of the sheet fed by said sheet feeding means and said reduced image of an even-numbered page on the other half area of

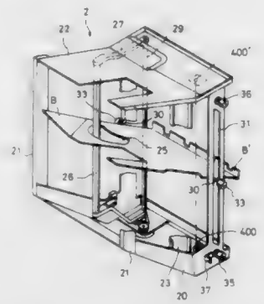


the same surface of the sheet fed by said sheet feeding means.

5,345,303
SHEET SORTER HAVING ALIGNING MEMBER

Masakazu Hiroi, Yokohama, and Naho Wakao, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1991, Ser. No. 762,463
Claims priority, application Japan, Sep. 29, 1990, 2-262289
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—323 **12 Claims**

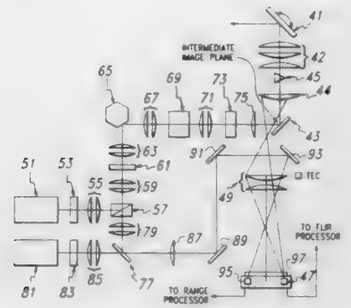


1. A sheet sorter comprising:
a plurality of bins for receiving sorted sheets;
sheet discharging means for discharging sheets to said bins;
shifting means for selectively raising or lowering said plurality of bins in order to selectively align an opening of one of said plurality of bins with said sheet discharging means;
a first aligning member for regulating a side portion of a sheet discharged into said one bin; and
a second aligning member for bringing said side portion of the discharged sheet into contact with said first aligning member by pushing against an opposing side portion of the sheet;
where said sheet sorter further comprises:
control means for variably controlling said second aligning member so as to start alignment of a discharged sheet at one timing after receiving the discharged sheet during a first sorting mode wherein the shifting means raises a bin receiving the discharged sheet after receiving the discharged sheet, and at a second timing after receiving the discharged sheet during a second sorting mode wherein the shifting means lower a bin receiving the discharged sheet after receiving the discharged sheet.

5,345,304
INTEGRATED LADAR/FLIR SENSOR

John E. Allen, Lucas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 17, 1992, Ser. No. 991,782
Int. Cl.[5] G01C *3/08;* **G01J** *1/20, 5/00*
U.S. Cl. 356—5 **18 Claims**

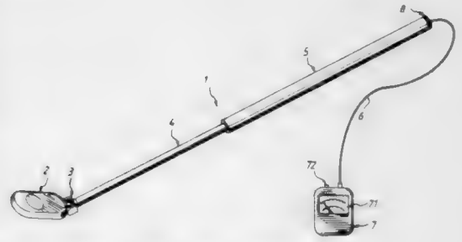


1. A method of locating a target using a LADAR/FLIR system comprising the steps of:
(a) providing a FLIR system and a LADAR system;
(b) commencing continuous scanning of a field of view through a field of regard using said FLIR system with the detector array of said FLIR system placed at one edge of said field of regard to provide outputs from said detector array indicative of the field of view scanned;
(c) analyzing the outputs of said detector array indicative of said field of view scanned for potential targets meeting predetermined criteria;
(d) commencing operation of and providing direction of a laser beam from a LADAR system to a detected potential target in said field of view in response to detection of a potential target from said field of regard and during said scanning of said field of regard by said FLIR system; and
(e) analyzing the reflections of said laser beam to classify the potential target.

5,345,305
AQUARIUM LIGHT METER

Chi-Der Chen, No. 1-4, Lane 147, Hsia-Men ST., Taipei, Taiwan

Filed Apr. 22, 1993, Ser. No. 51,158
Int. Cl.[5] G01J *1/42*
U.S. Cl. 356—221 **7 Claims**

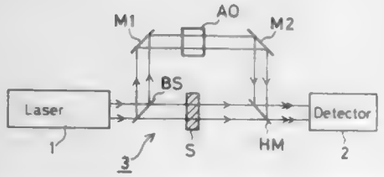


1. An aquarium light meter comprising:
a light sensing device having a housing, a base cover, a transparent lens, and a light sensor; said housing having one end with a pair of lugs thereat, said housing having an upper wall provided with a circular opening, said transparent lens being fitted within said opening, said light sensor being adhered onto an interior surface of said base cover, said base cover being connected to said housing to seal said light sensing device;
a pivotal means including a guide tube, having a pair of lugs at one end, said guide tube being provided with a hole;
a telescopic tube assembly including an inner tube and an exterior tube;
a tube cover having a central hole fitted over a front end of said exterior tube;
a controller having a two-step light meter, a two-step switch, and a housing; and
a signal wire having one end connected to said light sensor and passing through said housing of said light sensing device, said pivotal means, said telescopic tube assembly, and said tube cover, an opposite end of said signal wire being connected to said controller;
said light sensor being axially aligned with said lens, an appropriate amount of waterproof adhesive material being applied within said housing of said light sensing device, at a juncture between said lens and said base cover, and at a portion of said housing through which said signal wire passes; a distance between said lugs of said housing measured from outside being approximately equal to a distance between said lugs of said pivotal means measured from inside, a center portion of an outer surface of each housing lug having a recess, a center portion of an inner surface of each lug of said pivot means including a protrusion which pivotally engages in a respective said recess; said guide tube of said pivotal means being fitted snugly into the hole in said inner tube, said inner tube being fitted into the hole of said exterior tube in a slidable manner, said inner tube being provided with two grooves symmetrically arranged at a periphery thereof which terminate at a short distance from a front end of said inner tube; two guide ribs symmetrically arranged at an inner surface of a remote end of said exterior tube so that as said inner and exterior tubes are assembled, the guide ribs guide said inner tube to slide linearly without rotation, and cooperate with said grooves to achieve a positioning effect.

5,345,306
METHOD AND APPARATUS FOR MEASURING SPECTRAL ABSORPTION IN AN OPAQUE SPECIMEN AND METHOD AND APPARATUS FOR MEASURING THE MICROSCOPIC ABSORPTION DISTRIBUTION

Tsutomu Ichimura, Dai 2 Green Haitsu-Zuiho 301, 1-1-20, Mukaiyama, Taihaku-ku, Sendai-shi, Miyagi 982, and Fumio Inaba, Sendai, both of Japan, assignors to Research Development Corporation of Japan, Tokyo and Tsutomu Ichimura, Sendai, both of Japan

Filed May 22, 1991, Ser. No. 704,142
Claims priority, application Japan, May 22, 1990, 2-133066; May 22, 1990, 2-133067
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—346 **6 Claims**



1. An apparatus for measuring spectral absorption in an opaque specimen, comprising:
a monochromatic light source capable of varying the wavelength of light emitted therefrom;
means for dividing the light from said light source into two light beams;
means for changing the optical path length at a predetermined speed, said optical path length changing means being provided in the optical path of one of said two light beams;
a scattering specimen means disposed in the optical path of the other light beam for absorbing a portion of said other light beam passing therethrough from a first side of said

specimen means to an opposite side before emerging from said opposite side of said specimen means, said emerging light comprising a beam of parallel rays;

means for combining together highly directional light emerging from said optical path length changing means and said beam of parallel rays (rectilinear component) emerging from said specimen means in a specific direction and projecting the resulting composite light in the same direction; and

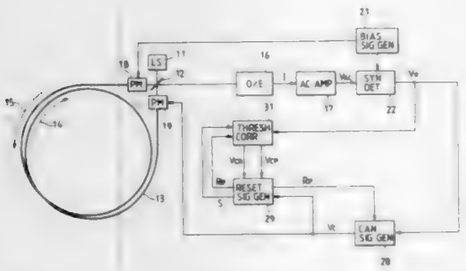
means for converting the composite light from said beam combining means into an electric signal and detecting the intensity of only an AC component of a frequency corresponding to the optical path length changing speed so as to measure the Spectral absorption of said specimen means.

5,345,307

LINEAR PHASE RAMP TYPE FIBER OPTIC GYRO HAVING RAMP RESET AND RESET CONNECTION SIGNALS

Motohiro Ishigami, Tokyo, Japan, assignor to Japan Aviation Electronics Industry Limited, Tokyo, Japan

Filed Feb. 25, 1992, Ser. No. 840,833
Claims priority, application Japan, Feb. 27, 1991, 3-033168
Int. Cl.[5] G01C *19/72*
U.S. Cl. 356—350 **5 Claims**



1. A linear phase ramp type fiber optic gyro comprising:

a light source;

a beam splitter for splitting a light beam from said light source into two light beams;

a looped optical transmission line into which said two light beams from said beam splitter are introduced as clockwise and counterclockwise light beams;

interference means for causing said clockwise and counterclockwise light beams emitted from said optical transmission line to interfere with each other;

photoelectric transducer means responsive to interference light from said interference means for outputting an electric signal corresponding to the intensity of said interference light;

first and second optical phase modulators interposed respectively between opposite ends of said optical transmission line and said beam splitter, said first and second optical phase modulators being electrically controlled to shift the phase of light;

a biasing signal generator for generating a biasing signal in the form of a rectangular waveform having a period that is two times as long as the light propagation time τ through said optical transmission line and a 50% duty ratio, said biasing signal being applied to said first optical phase modulator for alternately producing phase differences of $+\pi/2$ rad and $-\pi/2$ rad at intervals of the time τ between said clockwise and counterclockwise light beams in said interference means;

an AC amplifier for amplifying the AC component of the output of said photoelectric transducer means;

synchronous detector means for synchronously detecting the output of said AC amplifier in accordance with said biasing signal;

phase cancel signal generating means for generating, based on the output of said synchronous detector means, a sawtooth phase cancel ramp signal having a slope which cancels a Sagnac phase differences between said clockwise and counterclockwise light beams produced by an angular velocity inputted to said optical transmission line, said phase cancel ramp signal being applied to said second optical phase modulator;

reset signal generating means for generating a reset signal which resets said phase cancel ramp signal at the time when said phase cancel ramp signal has reached a predetermined positive or negative threshold voltage, said reset signal generating means also generating a reset sign signal that represents whether said phase cancel ramp signal has reached said positive threshold voltage or said negative threshold voltage at that time;

means for detecting the polarity of a pulse which is output from said synchronous detector means at the time when said phase cancel ramp signal is reset;

up-down control means for outputting a count-up or count-down command depending upon the detected polarity of said pulse and said reset sign signal;

an up-down counter responsive to said command for counting said reset signal up or down;

a D/A converter for converting the count value of said up-down counter to an analog signal and for outputting said analog signal as a correcting value; and

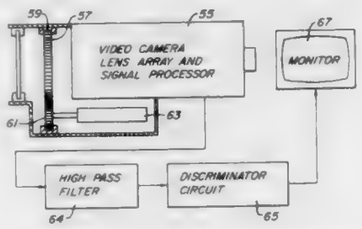
correcting means for correcting said positive and negative threshold voltages based on said correcting value so that the absolute values thereof two increase or decrease at the same time.

5,345,308

OBJECT DISCRIMINATOR

Boyd B. Bushman, Lewisville, Tex., assignor to Lockheed Corporation, Fort Worth, Tex.

Continuation-in-part of Ser. No. 851,281, Feb. 7, 1992, Pat. No. 5,264,916. This application Sep. 17, 1992, Ser. No. 947,281
The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.
Int. Cl.[5] G01J *4/00*
U.S. Cl. 356—364 **17 Claims**



1. An apparatus for detecting selected objects, comprising in combination:

video camera means having an image path for receiving reflected light from objects at which the video camera means is pointed and for providing electrical signals for electronically displaying the objects viewed;

a polarizer mounted to the video camera means in the image path for for alternately polarizing light received from objects and transmitted through the video camera means to produce alternating contrasts in intensity in rapid sequence of the light being polarized; and

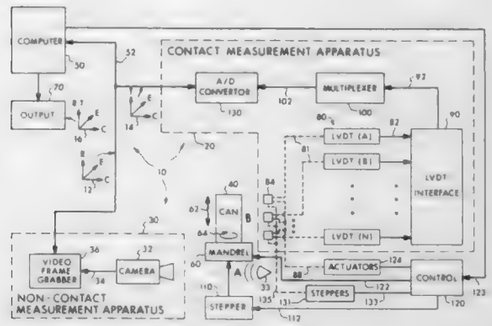
frequency filter means for filtering electrical signals produced by the video camera means below a selected frequency which is selected to substantially reduce the display of background objects viewed which reflect light that does not differ when passing through the rotating polarizer, and for passing electrical signals produced by the video camera means above the selected frequency.

5,345,309

PRECISION THREE DIMENSIONAL PROFILING AND MEASUREMENT SYSTEM FOR CYLINDRICAL CONTAINERS

Ronald D. Wertz, Boulder; H. Kent Minet, Littleton; Stephen M. Horacek, Louisville, and Brett A. Nickerson, Northglenn, all of Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Oct. 10, 1991, Ser. No. 774,199
Int. Cl.[5] G01N *21/90*
U.S. Cl. 356—372 **43 Claims**



1. A system for generating a solid model of the sidewall of a container, said system comprising:

means for selectively holding said container, said holding means selectively placing said container in first and second locations, said holding means selectively rotating said container in said first and second positions,

means operative when said container is rotated in said first position by said holding means for producing a three dimensional sidewall surface profile of said container, said producing means measuring the surface radius at a predetermined number of sample locations around the circumference of said container and at a predetermined number of locations along the elevation of said container without contacting said sidewall,

means operative on said container when said container is rotated in said second position by said holding means for generating a three dimensional sidewall thickness map of said container, said generating means measuring sidewall thickness a predetermined number of times around the circumference of said container at a plurality of positions along said elevation of said container by contacting said sidewall,

means connected to said holding means, said producing means and said generating means, for controlling the operation of said holding means, said producing means and said generating means, said controlling means including:

means connected to said producing means and said generating means for correlating said sidewall surface profile and said sidewall thickness map, said means for correlating outputting said solid model of said sidewall.

5,345,310

IDENTIFYING AND COMPENSATING FOR SLIP-PLANE DISLOCATIONS IN PHOTOLITHOGRAPHIC MASK ALIGNMENT

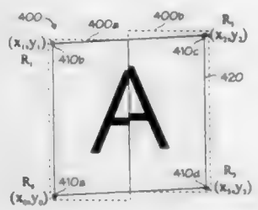
Michael D. Rostoker, San Jose; Nicholas F. Pasch, Pacifica, and Joe Zelayeta, Saratoga, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jun. 15, 1993, Ser. No. 78,878
Int. Cl.[5] G01B *11/26*
U.S. Cl. 356—401 **10 Claims**

1. A mask alignment marking arrangement for detecting slip plane dislocation on a rectangular die, comprising:

a predetermined <1-0-0> crystal lattice orientation of a single-crystal silicon wafer;

a rectangular die site defined on the wafer, said rectangular die site having four corners and four sides defining an enclosed rectangular die area and oriented such that the



sides of the die site are substantially aligned with slip planes of the <1-0-0> crystal lattice orientation; and

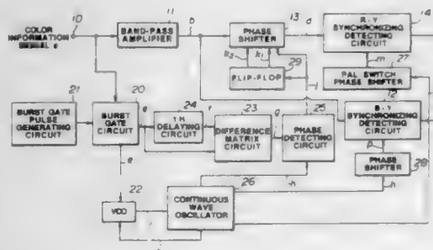
a plurality of mask alignment marks disposed on the wafer, four of the alignment marks disposed in close proximity to a respective one of the four corners of the die site.

5,345,311

PAL SYSTEM CHROMINANCE SIGNAL PROCESSING CIRCUIT WITH IMPROVED S/N

Takeshi Adach, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 22, 1993, Ser. No. 35,234
Claims priority, application Japan, Mar. 27, 1992, 71447
Int. Cl.[5] H04N *9/65, 9/64*
U.S. Cl. 358—24 **2 Claims**



1. A PAL system chrominance signal process circuit comprising:

an input terminal inputting a color information signal including a carrier chrominance signal and color burst signal which are likely to be phase distorted;

a burst gate means for taking the color burst signal out of the color information signal input into said input terminal;

means for delaying said color burst signal from said burst gate means by one horizontal period;

a difference signal producing means for inputting the color burst signal from said burst gate means and the color burst signal delayed by said delaying means and outputting a difference signal representing an error from the reference phase of said color burst signal;

means for generating a continuous wave signal synchronized with said color burst signal;

means for correcting the phase of the carrier chrominance signal input into said input terminal by utilizing the difference signal from said difference signal producing means;

a first detecting means for detecting a first carrier chrominance component signal from said correcting means by utilizing said continuous wave signal; and

a second detecting means for detecting a second carrier chrominance component signal from said input terminal by utilizing said continuous wave signal.

5,345,312

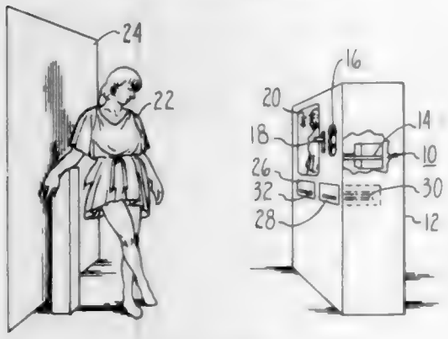
Patent Not Issued For This Number

5,345,313

IMAGE EDITING SYSTEM FOR TAKING A BACKGROUND AND INSERTING PART OF AN IMAGE THEREIN

Arthur M. Blank, San Diego, Calif., assignor to Imageware Software, Inc, San Diego, Calif.

Filed Feb. 25, 1992, Ser. No. 844,299
Int. Cl.[5] H04N *9/74, 5/262*
U.S. Cl. 348—598 35 Claims
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 14 Pages)



31. An image combiner, comprising:

a processor for receiving a signal representative of a first digital image, the signal including an object component representative of an object, the object being bordered by an edge having a first hue, the signal also including a background component representative of a background having a second hue, wherein the processor includes means for separating the background from the object by determining the location of the edge of the object and then removing all portions of the first digital image which are outside the edge from all the portions of the first digital image which are inside the edge, wherein the first digital image has a periphery, and the processor further comprises:

means for determining the difference between the hue of a portion of the periphery and a predetermined hue;

means for comparing the difference to a predetermined difference;

wherein when the difference exceeds the predetermined difference, the processor identifies the location of the portion of the periphery as the location of a portion of the object, and then compares the hue of other portions of the periphery with the predetermined hue;

wherein when the difference is less than the predetermined difference, the processor compares the hue of inwardly succeeding portions, relative to the periphery, of the first digital image with the predetermined hue until the difference between a portion of the first digital image and the predetermined hue exceeds the predetermined difference; and

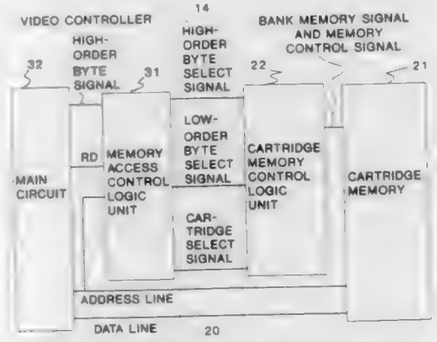
wherein the background includes a plurality of two-dimensional boxes, each box having a plurality of dots therein, the processor having an image of the background stored in memory, the stored image corresponding to the first digital image, wherein the processor compares the hue of at least some of the first video image with the hue of the corresponding portions of the image of the background stored in memory to determine the location of the edge of the object, thereby mapping the entire edge of the object.

5,345,314

LASER BEAM PRINTING SYSTEM UTILIZING A PLURALITY OF CARTRIDGES

Seo Ho-Il, Kyung Ki-Do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Inchon-Kunm, Rep. of Korea

Filed Nov. 27, 1991, Ser. No. 799,293
Claims priority, application Rep. of Korea, Nov. 30, 1990, 90-19632
Int. Cl.[5] H04N *1/21;* G01D *15/14;* G06F *15/00;* B41J *21/17*
U.S. Cl. 358—296 13 Claims



1. A laser beam printer system having a Hangle, Chinese character and alphabetical character printing function, comprising:

a video controller card including main means for providing addresses and data, cartridge connecting means connected to said main means for connecting cartridges to said video controller card;

an alphabetical character emulation software cartridge and an alphabetical character font cartridge both connected in parallel with each other to said cartridge connecting means; and

another cartridge connected to said video controller card by said cartridge connecting means and in parallel with said alphabetical character emulation software cartridge and said alphabetical character font cartridge, including a cartridge memory for storing specific font data and emulation data, said another cartridge also including cartridge memory control logic means for controlling data in said another cartridge memory;

said video controller card also including memory access control logic means connected to said main means, for accessing a plurality of external memories in said another cartridge, said alphabetical character emulation software cartridge, and said alphabetical character font cartridge, said memory access control logic means also being connected to another an additional cartridge connecting means for connecting additional cartridges to said video controller card.

5,345,315

METHOD AND SYSTEM FOR IMPROVED TONE AND COLOR REPRODUCTION OF ELECTRONIC IMAGE ON HARD COPY USING A CLOSED LOOP CONTROL

Hanoch Shalit, Roslyn Heights, N.Y., assignor to Imatec, Ltd., Roslyn, N.Y.

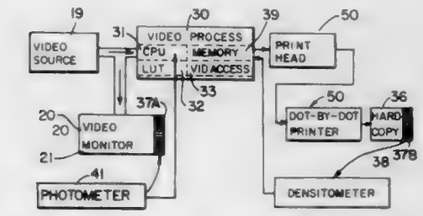
Continuation-in-part of Ser. No. 544,232, Jun. 26, 1990, Pat. No. 5,115,229, which is a continuation-in-part of Ser. No. 275,218, Nov. 23, 1988, Pat. No. 4,939,581. This application Mar. 20, 1992, Ser. No. 855,619
The portion of the term of this patent subsequent to Jul. 3, 2007, has been disclaimed.
Int. Cl.[5] H04N *1/23, 1/40, 1/46*
U.S. Cl. 358—406 24 Claims

15. A system for producing a series of hard copies which are accurate tone reproductions of the color video images on a video monitor without affecting the video monitor images, including:

a color printing system means to print a color image having a plurality of colors on a dot-by-dot basis; means for forming a test image on said hard copy; the hard copy test image having predetermined color content; electronic means to vary the colors printed by said printing system on a dot-by-dot basis;

photoelectric densitometer means for sensing the color differences on the hard copy test image after it has been printed to produce a set of densitometer differences values;

a color video monitor having a monitor video screen, means for forming a color content video test pattern on the monitor screen;



electronic means for sensing the color intensities of the colors in the test pattern on the monitor screen and for providing a set of monitor screen color values;

computer means connected to said densitometer means, said computer means including means for entering the set of densitometer difference values and the set of monitor screen color values into said computer; memory means for storing the photometer means sensed values, calculation means for comparing said densitometer color values with the set of electronic means difference values stored in computer memory to produce a set of correction values and correction generating means for generating a correction value for the colors printed by said printing system, said generating means being connected to said electronic control means for altering the printing density on a dot-by-dot basis according to said correction values.

5,345,316

IMAGE DATA ENCODING/DECODING APPARATUS FOR CONCURRENT PROCESSING OF MULTIPLE IMAGE DATA STREAMS

Tohru Ozaki, Suginami; Hitoshi Horie, Ageo, and Hideyuki Shirai, Ichikawa, all of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Japan

Filed Nov. 17, 1992, Ser. No. 978,083
Claims priority, application Japan, Nov. 18, 1991, 3-301568
Int. Cl.[5] H04N *1/41, 1/40*
U.S. Cl. 358—426 15 Claims

1. An image data encoding/decoding apparatus comprising:

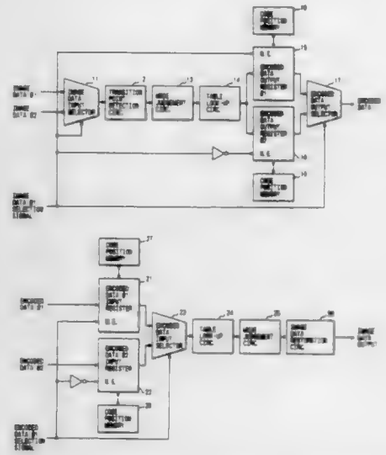
first selector means for respectively selecting image data from different streams of input image data, said image data being selected in fixed amounts of image data lines;

detection means for detecting transition points in said image data selected by said first selector means;

encoding means for encoding said image data in accordance with transition points detected in said image data to derive encoded data for each of the different streams of input image data;

memory means for receiving said encoded data derived by said encoding means for each of the different streams of input image data, said memory means alternately storing and reading out encoded data of each of said different streams of input image data in amounts comprising a fixed number of bits;

a plurality of position storage means respectively corresponding to said streams of input image data, wherein each of said position storage means, when a final portion of a line of encoded data from a corresponding one of said different streams of input image data does not include said fixed number of bits, derives and stores a value representing a position of a final bit of said final portion within said memory means, and controls said memory means to store



said final portion until encoding of a succeeding line of said corresponding input image data stream begins;

second selector means for selecting and outputting said encoded data from said memory means; and

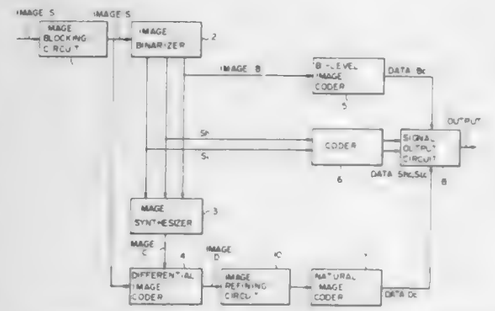
selector control means for controlling respective operations of said first and second selector means.

5,345,317

HIGH EFFICIENCY CODING METHOD FOR STILL NATURAL IMAGES MINGLED WITH BI-LEVEL IMAGES

Satoshi Katsuno, and Toshiaki Endoh, both of Tokyo, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1992, Ser. No. 983,670
Claims priority, application Japan, Dec. 19, 1991, 3-353952; Jul. 3, 1992, 4-200500
Int. Cl.[5] H04N *1/415*
U.S. Cl. 358—429 3 Claims



1. A bi-level image mingled still image coding method comprising

dividing an original still color image or grayscale image into a plurality of pixel blocks (n×m pixels), pixels of each block being detected as a bi-level image area or a pixel block containing a bi-level image area, each pixel said detected block being rendered into a bi-level form by the use of a threshold value (Sa) to produce as a bi-level coded

output, said pixel blocks other than those in which a difference between a maximum pixel value and a minimum pixel value is substantially zero being detected as said bi-level image blocks or pixel blocks containing a bi-level image portion;

replacing such coded pixel value of each pixel block of said original image by a specified calculated value based on said each pixel value to produce a calculated value coded output obtained by coding said replaced calculated value, a mean value (Sh) of said pixel values in said each pixel block or a mean value (Sl) of said pixel value in said each pixel block being used as said calculated value depending on whether said pixel values in said each pixel block are greater or smaller than said threshold value (Sa);

producing a difference between said coded pixel value of each pixel block of said original image and said calculated value coded output as a natural coded output; and

obtaining a combined output by synthesizing said bi-level coded output, said calculated value coded output and said natural image coded output as the coded output of said original still color image or grayscale image.

5,345,318

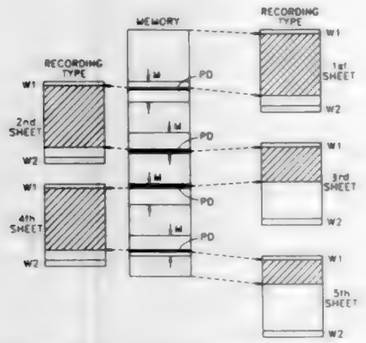
METHOD FOR RECORDING RECEIVED PICTURE DATA IN A FACSIMILE DEVICE

Seok-hwan Seo, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 24, 1992, Ser. No. 981,139

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—449 **20 Claims**



1. A facsimile data recording method for recording received picture data on separate sheets of paper in a facsimile apparatus, said method comprising the steps of:

setting a portion of said received picture data as a divisible region during reception of said received picture data and not during transmission regardless of relative lengths of sheets of paper used at a receiving station and a transmitting station, said divisible region being a region that a form feeding operation is permissible;

setting a line within said divisible region having a minimum number of black pixels as a page division line; and

recording said received picture data including white data corresponding to a leading end margin and a trailing end margin and performing said form feeding operation immediately after said page division line is detected.

5,345,319

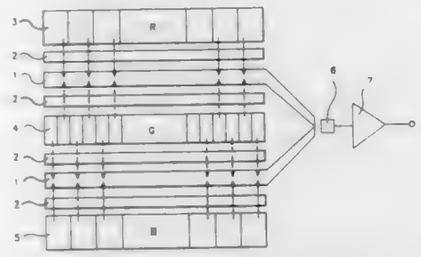
LINEAR COLOR CHARGE COUPLED DEVICE FOR IMAGE SENSOR AND METHOD OF DRIVING THE SAME

Young J. Yu, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Rep. of Korea

Filed Nov. 19, 1993, Ser. No. 155,456

Int. Cl.[5] H04N *1/04*

U.S. Cl. 358—483 **6 Claims**



6. A method of driving a linear color CCD for an image sensor which comprises photodiode array means for performing a photoelectric conversion operation to produce signal charges corresponding to red-, green and blue color signals, said photodiode array means having a first photodiode array for producing the signal charges corresponding to the green color signal, a second photodiode array disposed over said first photodiode array for producing the signal charges corresponding to the red color signal and a third photodiode array disposed under said first photodiode array for producing the signal charges corresponding to the blue color signal, horizontal CCD analog shift register means for shifting the signal charges from said photodiode array means horizontally and shift gate means for shifting the signal charges from said photodiode array means to said horizontal CCD analog shift register means upon being turned on, comprising the steps of:

extracting the signal charges from said second and third photodiode arrays and then the signal charges from said first photodiode array or extracting the signal charges from said first photodiode array and then the signal charges from said second and third photodiode arrays.

5,345,320

COLOR IMAGE DATA PROCESSING APPARATUS COMPRISING MONOCHROME PIXEL DETECTOR

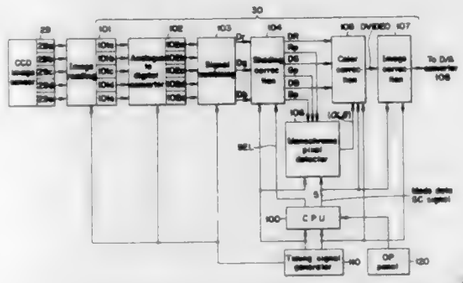
Yoshihiko Hirota, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 26, 1991, Ser. No. 797,932

Claims priority, application Japan, Nov. 29, 1990, 2-335843; Nov. 29, 1990, 2-335844

Int. Cl.[5] H04N *1/46;* **G03F** *3/08*

U.S. Cl. 358—518 **11 Claims**



1. A color image data processing apparatus for processing three color image data of three primary colors for representing a specified pixel, comprising:

generation means in response to one color image data preselected among said three color image data for generating threshold data for representing upper and lower limits of respective ranges in which two color image data other than said preselected one color image data are to be present when said specified pixel is a monochrome pixel of white, black or half-tone black; and

judgement means for comparing said other two color image data with said threshold data generated by said generation means, and judging that said specified pixel is said monochrome pixel when both of said other two color image data are respectively fallen in said respective ranges from said upper limit to said lower limit.

5,345,321

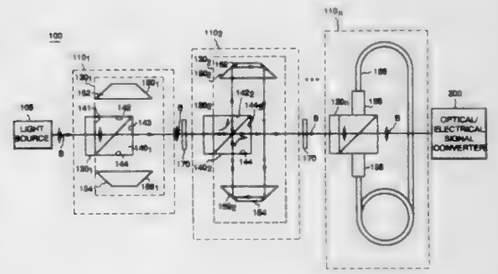
COMPACT POLARIZATION DEPENDENT OPTICAL SWITCHING UNITS

Michael C. DeJule, Clifton Park, N.Y.; Thomas L. Credelle, Los Gatos, Calif.; Nabeel A. Riza, Clifton Park, and Donald E. Castleberry, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 21, 1992, Ser. No. 994,012

Int. Cl.[5] G02F *1/1335;* **H01Q** *3/22*

U.S. Cl. 359—42 **24 Claims**



1. An optical signal control system comprising:

a spatial light modulator (SLM); and

a delay assembly optically coupled to said SLM to comprise an optical switching unit, said delay assembly comprising a single polarizing beamsplitter (PBS) coupled to a delay path apparatus;

said PBS being disposed to direct an incident light beam between a direct path and a delay path in said optical switching unit in dependence on the linear polarization of the incident light beam, said PBS comprising a cube polarizing beam splitter having a first axis disposed perpendicular to a first pair of opposing faces of the cube and a second axis disposed perpendicular to a second pair of opposing faces of said cube:

said first pair of opposing faces comprising a switching unit input face disposed to receive light beams passing along said first axis that are incident on said PBS and a switching unit output face disposed opposite the input face;

said second pair of opposing faces including respectively a delay path entry face and a delay path exit face;

said delay path apparatus being optically coupled to said PBS such that light beams having the predetermined linear polarization to be deflected in said PBS towards said delay path pass from said delay path entry face into said delay path apparatus and pass from said delay path apparatus into said PBS via said delay path exit face; and

said PBS being further disposed such that light beams having the selected linear polarization to pass along said delay path are further deflected after entering said PBS to pass from said switching unit output face along said first axis.

5,345,322

COMPLEMENTARY COLOR LIQUID CRYSTAL DISPLAY

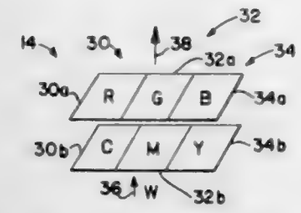
James L. Fergason, Atherton, Calif., assignor to Manchester R&D Limited Partnership, Pepper Pike, Ohio

Continuation of Ser. No. 957,650, Oct. 7, 1992, abandoned, which is a continuation of Ser. No. 884,241, May 11, 1992, abandoned, which is a continuation of Ser. No. 799,761, Nov. 27, 1991, abandoned, which is a continuation of Ser. No. 576,602, Aug. 31, 1990, abandoned, which is a continuation of Ser. No. 456,060, Dec. 21, 1989, Pat. No. 4,953,953, which is a continuation of Ser. No. 358,574, May 26, 1989, abandoned, which is a continuation of Ser. No. 942,517, Dec. 16, 1986, Pat. No. 4,834,508, which is a continuation-in-part of Ser. No. 707,486, Mar. 1, 1985, abandoned. This application May 3, 1993, Ser. No. 57,182

The portion of the term of this patent subsequent to May 30, 2006, has been disclaimed.

Int. Cl.[5] G02F *1/133*

U.S. Cl. 359—53 **41 Claims**



1. A liquid crystal color device, comprising at least one pel means for affecting light incident thereon to produce output light,

said at least one pel means including at least two color subsets, one subset including a first color and the complement thereof, and the other including a second color and the complement thereof, with said subsets being arranged in optical additive relation, and

wherein each of said subsets comprises one or more volumes of liquid crystal material in a containment medium, and said containment medium comprises surface means for effecting a structural alignment of said liquid crystal material due to surface interaction with said surface means to obtain selectively substantial filtering or non-filtering of said incident light as a function of a prescribed input.

5,345,323

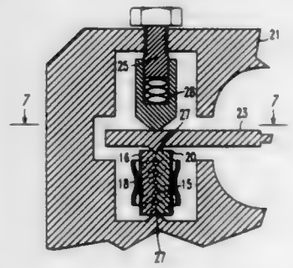
TECHNIQUES FOR POLISHING OPTICAL FIBER ENDS

Nagesh R. Basavanhally, Trenton; Richard Borutta, both of Trenton, N.J., and Edward W. Jekkal, Yardley, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 2, 1993, Ser. No. 108,523

Int. Cl.[5] G02B *6/26;* **B65H** *69/02;* **B24B** *1/00*

U.S. Cl. 385—59 **12 Claims**



1. A method for polishing ends of an array of optical fibers to make them suitable for interconnection with another array comprising the steps of:

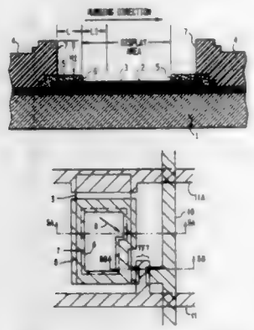
forming a plurality of corresponding V-grooves in first and second support members;
supporting portions of each optical fiber of the array within opposite V-grooves of the first and second support members, and bonding the first and second support members together to form a bonded support member;
said bonded support member defining first and second grooves on opposite surfaces thereof extending in the same direction as said parallel V-grooves;
holding said bonded support member such that optical fibers supported therein are perpendicular to a surface of a polishing wheel; and
rotating the polishing wheel and contacting ends of the optical fiber to the polishing wheel to polish them to a common plane;
wherein the improvement comprises the steps of:
forming in a holder member a first opening including a first projection;
forming in the holder member a cantilever spring member having therein a second projection;
inserting the bonded support member into the first opening such that the first projection engages the first groove and the second projection engages the second groove; and
thereafter locking the bonded support member within the first opening to permit polishing of the optical fiber.

5,345,324

ACTIVE MATRIX LIQUID CRYSTAL DISPLAY DEVICE HAVING TWO LIGHT SHIELDING LAYERS

Toshihiko Koseki, Yokohama; Tetsuya Fukunaga, Gifu; Hideo Takano, Atsugi, and Hidemine Yamanaka, Yamato, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 19, 1993, Ser. No. 49,784
Claims priority, application Japan, Apr. 22, 1992, 4-103144
Int. Cl.[5] G02F *1/136, 1/133*
U.S. Cl. 359—67 **8 Claims**



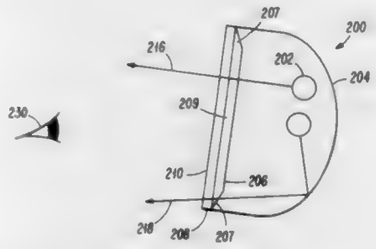
1. In a liquid crystal display device including a first transparent insulating substrate having a common electrode formed thereon, a second transparent insulating substrate having gate lines formed in a first direction, data lines formed in a second direction so as to intersect said gate lines, liquid crystal display cells each formed at a crosspoint of said gate and data lines, said cell having a thin film transistor and a display electrode; and a light shielding layer having an aperture for exposing a display area of each display electrode; liquid crystal material retained between said first and second substrates, and a liquid crystal orientating layer on at least one of said substrates the improvement comprising:
said light shielding layer at an edge of said aperture being located in an up stream direction with respect to a rubbing direction of said orientating layer of said substrate, comprising a thin light shielding layer formed at a periphery of said display electrode for defining an edge of said aperture, and a thick light shielding layer having an edge positioned on said thin light shielding layer.

5,345,325

SCULPTURED LIGHT DIFFUSER FOR ENHANCING BRIGHTNESS AND UNIFORMITY OF LIQUID CRYSTAL DISPLAYS

Todd Twachtmann, Marion, Iowa, assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Mar. 31, 1993, Ser. No. 40,941
Int. Cl.[5] G02F *1/1335*
U.S. Cl. 359—69 **4 Claims**



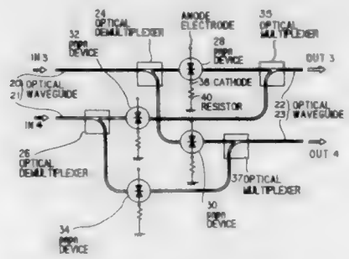
1. A visual display device comprising:
a visible light source;
means for reflecting a portion of said visible light in a direction toward a viewer;
means for filtering said visible light, disposed between said light source and the viewer, so that, said visible light can be transformed into a visual image having predetermined visual characteristics; and,
means for diffusing said light incident on said means for filtering, said means for diffusing being interposed between said means for filtering and said light source, and said means for diffusing further having a first thickness at a predetermined first area, a second thickness at a predetermined second area;
whereby, a visual display device, with enhanced overall light brightness, is provided by reducing the attenuation of light caused by the diffuser, at said first area is achieved without a reduction in the overall average light intensity across the display device.

5,345,326

OPTICAL MATRIX SWITCH

Soichiro Araki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 28, 1992, Ser. No. 967,849
Claims priority, application Japan, Oct. 28, 1991, 3-281413
Int. Cl.[5] H04B *10/20;* **H04J** *14/02*
U.S. Cl. 359—117 **5 Claims**



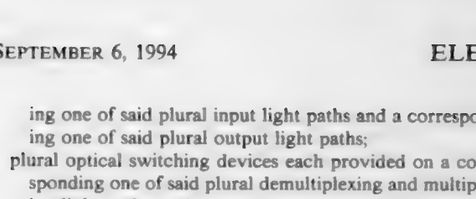
1. An optical matrix switch, comprising:
plural input light paths, to which one or more input light signals are supplied;
plural output light paths, from which one or more output light signals are supplied to a following stage;
a plural demultiplexing and multiplexing light paths, each of aid plural demultiplexing and multiplexing light paths being coupled by a lattice pattern between a corresponding one of said plural input light paths and a corresponding one of said plural output light paths;
plural optical switching devices each provided on a corresponding one of said plural demultiplexing and multiplexing light paths; and
means for controlling said plural optical switching devices to be selectively turned on and off;
wherein one or more optical switching devices which are selectively turned on among said plural optical switching devices emit light signals to be supplied to one or more output light paths of said plural output light paths by receiving and amplifying one or more light signals from one or more input light paths of said plural input light paths, whereby the optical switching devices amplify only light signals having wavelengths assigned thereto; and
one or more optical switching devices which are selectively turned off among said plural optical switching devices emit no light signal by receiving and absorbing one or more light signals from one or more input light paths of said plural input light paths.

5,345,327

DIGITAL INFRARED COMMUNICATIONS SYSTEM WITH EDGE DETECTION

Joseph P. Savicki, Clinton, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 29, 1993, Ser. No. 37,861
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—172 **31 Claims**



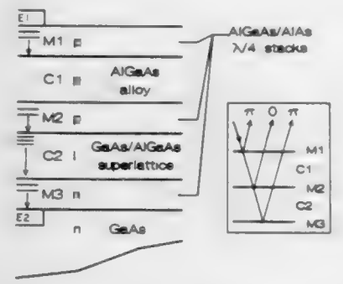
8. A digital infrared communications system comprising
a transmitter for emitting a digital infrared signal representing digital data and
a receiver including
infrared collector means responsive to infrared radiation including the digital infrared signal and noise which has a larger magnitude than the digital infrared signal and a slow rate of change relative to the digital infrared signal's rise time, the infrared collector means providing an input signal having a digital signal portion and a noise portion,
digital signal detection means coupled to the infrared collector means for deriving a signal indicating the digital data from the input signal; and
digital data deriving means coupled to the digital signal detection means for deriving the digital data from the signal indicating the digital data,
the digital infrared communications system being characterized in that:
the digital signal detection means includes means for detecting edges of the digital signal portion in the input signal and outputting an edge signal indicating the direction of each detected edge as the signal indicating the digital data.

5,345,328

TANDEM RESONATOR REFLECTANCE MODULATOR

Ian J. Fritz, and Joel R. Wendt, both of Albuquerque, N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.

Filed Aug. 12, 1992, Ser. No. 929,273
Int. Cl.[5] G02F *1/21*
U.S. Cl. 359—248 **16 Claims**



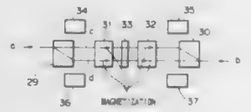
1. A wide band optical modulator comprising:
a substrate;
tandem Fabry-Perot resonators epitaxially grown on said substrate, comprising:
three mirrors, M1, M2, and M3, each mirror having a high reflectance zone centered at a Bragg wavelength λ_B, M3 being adjacent said substrate; and
two cavities, C1 and C2, spaced from each other by M2 in a stack grown on M3, M1 being on top of said stack, the absorption of C2 being changed relative to the absorption of C1 by an applied electric field,
wherein light reflecting from M1 and M3 is in phase and light reflecting from M2 is out of phase with light from M1 and M3.

5,345,329

POLARIZATION-INDEPENDENT OPTICAL ISOLATOR

Kazushi Shirai; Toshihiko Takano; Norio Takeda, and Mitsuzo Arii, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed May 18, 1993, Ser. No. 62,552
Claims priority, application Japan, Jun. 19, 1992, 4-161181
Int. Cl.[5] G02B *5/30, 27/28;* **G02F** *1/09*
U.S. Cl. 359—282 **6 Claims**





1. An optical isolator comprising:
first and second birefringent plates,
one of the first and second birefringent plates separating two light components whose planes of polarization are perpendicular to each other to make the two light components spatially separate between separate optical paths, and
another of the first and second birefringent plates thereafter combining the two separate light components;
a polarizer disposed between the first and second birefrin-

gent plates and having a predetermined polarized-light transmitting angle;

a first Faraday rotator disposed between the first birefringent plate and the polarizer and having a first Faraday rotation angle of approximately 45 degrees,

the first Faraday rotator functioning in a forward direction so that it rotates respective polarization planes of the two light components emitted from the first birefringent plate by approximately 45 degrees in directions opposite to each other so as to cause the polarization planes of the two light components emitted from the first birefringent plate to be parallel to the predetermined polarized-light transmitting angle of the polarizer, wherein the two light components emitted from the first birefringent plate may pass through the polarizer;

a second Faraday rotator disposed between the second birefringent plate and the polarizer and having a second Faraday rotation angle of approximately 45 degrees,

the second Faraday rotator functioning in a reverse direction so that it rotates respective polarization planes of the two light components emitted from the second birefringent plate by approximately 45 degrees in directions opposite to each other so as to cause the polarization planes of the two light components emitted from the second birefringent plate to be perpendicular to the predetermined polarized-light transmitting angle of the polarizer, wherein the two light components emitted from the second birefringent plate do not pass through the polarizer; and

magnetic field means for applying an external magnetic field to the two separate optical paths in the two Faraday rotators to magnetize respective regions near the two optical paths in each of the Faraday rotators in opposite magnetization directions to each other.

5,345,330

SINGLE CRYSTAL OF 3-(2-FURYL)METHACRYLIC ACID ANHYDRIDE

Hidenori Okamoto; Norihiro Tanaka, both of Tsukuba, and Keisuke Sasaki, Tokyo, all of Japan, assignors to Tokuyama Corporation, Tokuyama, Japan

Filed Aug. 14, 1992, Ser. No. 929,413

Claims priority, application Japan, Apr. 20, 1992, 4-099531

Int. Cl.[5] H03F *7/00*

U.S. Cl. 359—326 **7 Claims**

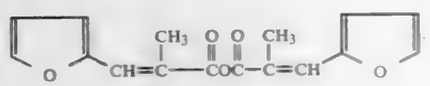
1. A single crystal of 3-(2-furyl)methacrylic acid anhydride,

(a) which has an absorption edge in a region of light having a wavelength of not more than 450 nm

(b) which exhibits non-linear optical activity,

(c) which has a single crystal structure having a size of which the largest side is at least 1 mm long, and

(d) which consists of 3-(2-furyl)methacrylic acid anhydride of the following formula (I)



(I)

5,345,331

TECHNIQUE FOR REDUCING POLARIZATION DEPENDENT GAIN IN AN AMPLIFIED OPTICAL TRANSMISSION SYSTEM

Neal S. Bergano, Lincroft; Vincent J. Mazurczyk, Manalapan, and John L. Zyskind, Shrewsbury, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

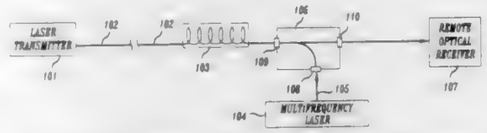
Filed Apr. 13, 1993, Ser. No. 46,536

Int. Cl.[5] H04B *10/02*

U.S. Cl. 359—341 **13 Claims**

1. A method for reducing the effects of polarization dependent gain within an optical transmission system employing a doped fiber amplifier, comprising the steps of:

generating an optical pump signal, via passive polarization scrambling of a polarized optical signal, having a degree of linear polarization below that which would induce said



doped fiber amplifier to exhibit a detrimental polarization dependent gain in response to the application of a polarized optical pump signal;

exciting said doped fiber amplifier with said generated optical pump signal to induce a polarization-equalized gain characteristic.

5,345,332

FIBER AMPLIFIER CASCADE FOR MULTIWAVELENGTH LIGHTWAVE COMMUNICATIONS SYSTEM

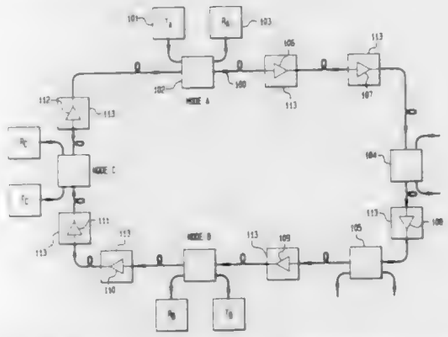
Valeria L. daSilva, Tinton Falls; Lars E. Eskildsen, Atlantic Highlands; Evan L. Goldstein, Princeton, and Yaron Silberberg, West Windsor Township, Mercer County, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed May 3, 1993, Ser. No. 56,098

The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.

Int. Cl.[5] H01S *3/30*

U.S. Cl. 359—341 **15 Claims**



1. A multiwavelength lightwave communications system comprising:

an optical transmission medium;

an optical transmitter for transmitting plural signal channels at a plurality of wavelengths onto said optical transmission medium;

an optical receiver for receiving plural signal channels at at least some of said plurality of wavelengths from said optical transmission medium;

a cascade of fiber amplifiers, said cascade connected along said optical transmission medium between said optical transmitter and said optical receiver, each fiber amplifier in the cascade amplifying the transmitted plural signal channels at least some of said plurality of wavelengths, said cascade of fiber amplifiers being a cascade of inhomogeneously broadened fiber amplifiers operated in gain saturation.

5,345,333

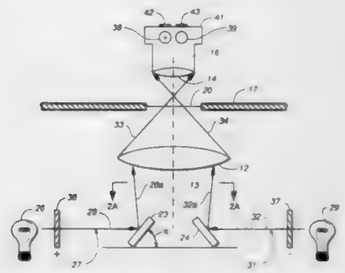
ILLUMINATION SYSTEM AND METHOD FOR A HIGH DEFINITION LIGHT MICROSCOPE

Gary Greenberg, Los Angeles, Calif., assignor to Unimat (USA) Corporation, Los Angeles, Calif.

Filed Apr. 19, 1991, Ser. No. 688,170

Int. Cl.[5] G02B *21/06*

U.S. Cl. 359—389 **64 Claims**



3. An illumination system for a transmitted light microscope including a condenser lens means having an optical axis and objective lens means having an optical axis, comprising in combination:

light beam source means for providing a light beam along a source beam path that is non-coincident with the optical axis of the condenser lens means; and

beam path shift means disposed off the optical axis of the condenser lens means in said source beam path, said beam path shift means operable to shift the path of said source means light beam and redirect it along an incident path that passes through the condenser lens means, and an exit path from the condenser lens means that passes through the objective lens means, wherein the path between the condenser lens means and the objective lens means is oblique to the optical axis of the objective lens means.

5,345,334

MECHANICAL CONTROL UNIT FOR A SURGICAL MICROSCOPE CONNECTED TO A STAND

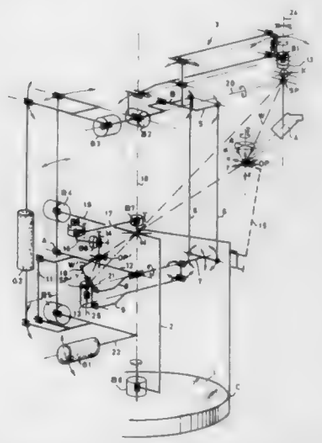
Rudolf Heller, Zürich, Switzerland, assignor to Carl-Zeiss-Stiftung, Heidenheim

Filed Oct. 5, 1992, Ser. No. 956,413

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1991, 4133241

Int. Cl.[5] G02B *7/24*

U.S. Cl. 359—393 **6 Claims**



1. A mechanical control unit for a surgical microscope having a center of gravity (SP), the surgical microscope being connected to a supporting stand mountable on a floor and being movable in space about a surgery point (OP) which is viewed through the surgical microscope in a viewing direction W, the supporting stand defining horizontal and vertical rotational axes, the mechanical control unit defining a geometric projection point (SP′) of said center of gravity (SP) and a geometric projection point (OP′) of said surgery point (OP), the mechanical control unit comprising:

adaptation connecting means provided on said supporting stand for connecting said mechanical control unit thereto;

articulated linkage lever means for transmitting the movement of said center of gravity (SP) to said geometric projection point (SP′) so as to cause the movement of said geometric projection point (SP′) to follow said center of gravity (SP);

linkage means for adjusting said viewing direction W and the distance between said points (SP′) and OP′);

targeting means for facilitating an adjustment of said mechanical control unit;

blocking means for blocking the movement of said surgical microscope;

said mechanical control unit being arranged with respect to said supporting stand so as to cause:

a first connecting line between said surgery point (OP) and said projection point (OP′) to define an intersect point (M) with said vertical and horizontal rotational axes of said supporting stand;

a second connecting line between said center of gravity (SP) and said geometric projection point (SP′) to pass through said intersect point (M);

said surgery point (OP), said intersect point (M) and said center of gravity (SP) conjointly defining a first imaginary triangle; and, said geometric projection point (OP′), said geometric projection point (SP′) and aid intersect point (M) conjointly defining a second imaginary triangle; and,

said first and second triangles to be geometrically similar to each other with each two corresponding sides of said triangles conjointly defining a length ratio determining the transfer of movement of said center of gravity (SP) to said geometric projection point (SP′) thereof.

5,345,335

OPTICALLY BUTTED ELECTRO-OPTICAL COMPONENTS

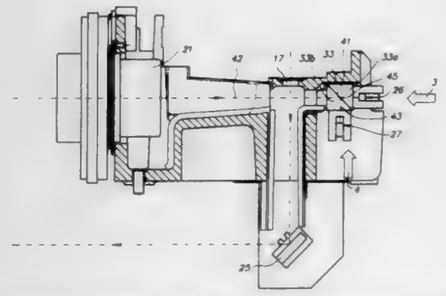
Dirk Costrop, Duffel; Frank Trouillard, Lint, and Patrick Pandelaers, Brussel, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Mar. 30, 1993, Ser. No. 40,000

Claims priority, application European Pat. Off., Apr. 22, 1992, 92201132.5

Int. Cl.[5] H04N *1/028, 1/18*

U.S. Cl. 359—618 **15 Claims**



1. An imaging device which comprises lens means for focusing a first focal plane onto a second focal plane along an optical path, optical path dividing means located between the lens means and one of said focal planes for dividing the optical path into at least two optical subpaths leading to corresponding

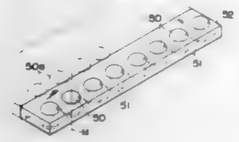
subfocal planes, at least one electro-optical component arranged in each of said subfocal planes, and fixing means for fixing the spatial position of each of said electro-optical components so that said components are correctly aligned relative to the subfocal plane at which it is arranged, in combination, the improvement wherein each of said electro-optical components has at least one pair of lateral surface thereon, and said fixing means comprises an elongated glass member (**33**) with a mounting surface for each of said components at each of said subfocal planes, and for each said component at least pair of mounting legs each with a base surface (**63**) and a supporting surface (**58, 59**) extending in true rectangular relation to such base surface, each of the base surfaces being adhesively bonded to a mounting surface of said glass member and the supporting surfaces of each pair of mounting legs being adhesively bonded to the pair of lateral surfaces on a corresponding electro-optical component.

5,345,336

MICRO ASPHERICAL LENS AND FABRICATING METHOD THEREFOR AND OPTICAL DEVICE

Shigeru Aoyama, Takatsuki; Tsukasa Yamashita, Nara, and Shiro Ogata, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Division of Ser. No. 434,029, Nov. 9, 1989, Pat. No. 5,148,322. This application Jun. 16, 1992, Ser. No. 899,374
Int. Cl.[5] G02B *27/44, 13/18*
U.S. Cl. 359—628 **14 Claims**





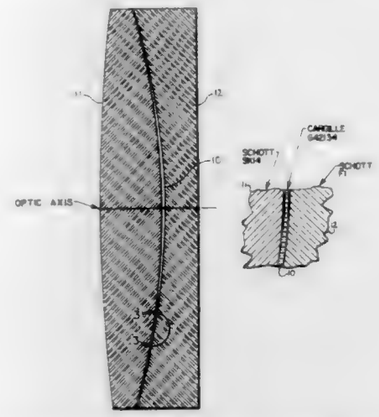
1. An imaging device comprising:
a transparent substrate having opposite surfaces;
a plurality of micro aspherical lenses, each of said micro aspherical lenses disposed upon a surface of said transparent substrate;
said micro aspherical lenses arranged such that the optical axis of each of said micro aspherical lenses disposed on one of said opposite surfaces coincides with the optical axis of a respective micro aspherical lens disposed on the other of said opposite surfaces;
said plurality of micro aspherical lenses provided in a plurality of rows on each of said opposite surfaces; and
said plurality of micro aspherical lenses further provided in a zig-zag pattern on each of said opposite surfaces.

5,345,337

VISCOUS SUPERCOOLED LIQUID LENS ELEMENTS HAVING ABNORMAL DISPERSION

Robert D. Sigler, Cupertino, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Jan. 28, 1993, Ser. No. 10,048
Int. Cl.[5] G02B *3/12, 1/06*
U.S. Cl. 359—665 **13 Claims**



1. An optical system comprising a first rigid refractive element, a second rigid refractive element, and a liquid refractive element, said first and second rigid refractive elements and said liquid refractive element coacting with each other to provide a correction for chromatic aberration in said optical system, said liquid refractive element consisting essentially of a liquid that becomes supercooled at temperatures below its transition temperature for solidification, said liquid refractive element being substantially transparent to electromagnetic radiation at visible wavelengths throughout an operational temperature range of about 25° C.±20° C., said first and second rigid refractive elements being of substantially normal dispersion, said liquid being of substantially abnormal dispersion.

10. An optical system comprising a first rigid refractive element, a second rigid refractive element, and a liquid refractive element, said first and second rigid refractive elements and said liquid refractive element coacting with each other to provide a correction for chromatic aberration in said optical system, said liquid refractive element consisting essentially of a viscous liquid that is substantially transparent to electromagnetic radiation at visible wavelengths throughout an operational temperature range of about 25° C.±20° C., said liquid having a viscosity greater than 50 centistokes at 25° C.

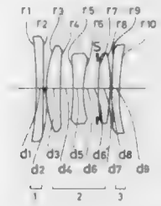
5,345,338

ZOOM LENS SYSTEM FOR USE IN A COPYING APPARATUS

Toshihiko Ueda, Toyokawa, Japan, and Sanae Watanebe, Storrs, Conn., assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 26, 1993, Ser. No. 37,284
Claims priority, application Japan, Mar. 30, 1992, 4-102368; Apr. 23, 1992, 4-129408; Apr. 23, 1992, 4-129409
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—679 **6 Claims**

1. A zoom lens system for use in a copying apparatus, comprising from the object side:
a first lens unit of a negative power including a first lens element of a negative power strongly concave to the object side;
a second lens unit of a positive power including a second lens element which is a positive meniscus lens element convex to the object side, a third lens element which is a bi-concave lens element whose object side surface has a larger radius of curvature and a fourth lens element which is a bi-convex lens element, said second lens unit being overall positive and a distance between said second and third lens elements slightly varying; and



a third-lens unit of a negative power including a fifth lens element which is a negative meniscus lens element concave to the image side,
wherein the following conditions are fulfilled:

$$0.4 < \frac{F2}{F} < 0.6$$

$$0.95 < \frac{F1}{F3} < 1.35$$

where F represents a focal length of the entire lens system at a magnification of $-1\times$ **F1** represents a focal length of the first lens unit at a magnification of $-1\times$, F2 represents a focal length of the second lens unit at a magnification of $-1\times$ and F3 represents a focal length of the third lens unit at a magnification of $-1\times$, and wherein zooming is performed while a conjugate distance is kept constant by moving the entire lens system along the optical axis while:
varying a distance between the first and second lens units and a distance between the second and third lens units so that the following conditions are fulfilled:

$\Delta d2 < \Delta d8$ when $|\beta| > 1$

$\Delta d2 > \Delta d8$ when $|\beta| < 1$

where Δd2 represents a variation amount of the distance between the first and second lens units during zooming, Δd8 represents a variation amount of the distance between the second and third lens units during zooming and β represents a magnification; and
varying, at least either at a magnification larger than unity or at a magnification smaller than unity, a distance between the second and third lens elements of the second lens unit so that the following conditions are fulfilled:

$d4 < d4'$ when $|\beta| > 1$

$d4 > d4'$ when $|\beta| < 1$

where d**4** represents the distance between the second and third lens elements at unity magnification and d**4'** represents the distance between the second and third lens elements at a magnification other than unity.

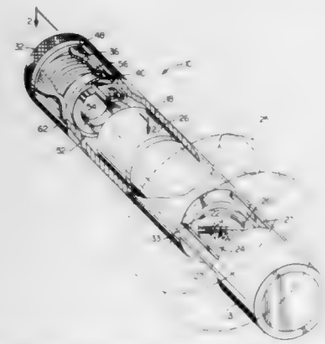
5,345,339

MOTORIZED MIRROR ASSEMBLY

Alan S. Knieriem, Syracuse, and Richard A. Tamburrino, Auburn, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Jan. 29, 1993, Ser. No. 11,165
Int. Cl.[5] G02B *23/00, 7/00*
U.S. Cl. 359—872 **7 Claims**

1. A motorized mirror assembly attachable to the distal end of a borescope insertion tube for rotating a mirror about the axis thereof to provide a side viewing capability, comprising:
a housing having an access port at one end;
a motor/gearbox disposed in said housing having a shaft, a first electrical terminal and a second electrical terminal, said access port allowing access to said shaft;
a side-viewing mirror that is detachably mounted on said shaft for rotation therewith;
a battery enclosure and a battery removably disposed therein;
a ring retainer connected to said housing;
switch means for completing an electrical circuit between said battery and said motor/gearbox, said switch means alternating between a power-on state and a power-off state, said switch means comprising:
an external ring having a first end portion that surrounds a portion of said ring retainer, a second end, and inwardly projecting studs;
a contact ring disposed in said ring retainer and rotatable about an axis thereof, said contact ring having slots formed therein that are engaged by said inwardly pro-



jecting studs of said external ring to urge said contact ring into rotation therewith to make and break electrical contact with said first electrical terminal of said motor/-gearbox, said ring retainer having openings therethrough that allow said external ring to advance thereover, said battery enclosure being connected to said second end of said external ring and having an access means to allow installation and removal of said battery; and
electrical contact means connected to said switch means, comprising a compression spring, mounted in electrical contact with a terminal of said battery and said second electrical terminal of said motor/gearbox, urging said motor/gearbox against said housing, and urging said battery against said battery enclosure to establish secure electrical continuity therebetween;
whereby said battery can be removed and a replacement battery installed without disturbing said contact ring and without affecting said states of said switch means.

5,345,340

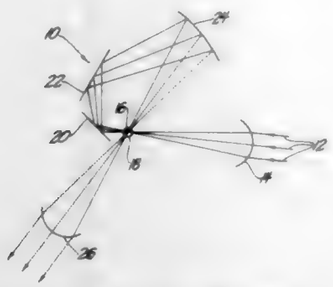
PLURAL PASS VISION SYSTEM

Robert V. Goedert, Oakland County, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 20, 1993, Ser. No. 64,322
Int. Cl.[5] G02B *5/22*
U.S. Cl. 359—885 **12 Claims**

1. An optical system for selectively passing light below a given fluence while blocking light above the given fluence, the system comprising:
a NLASM;
a first focal zone within the NLASM;
a first receiving means for concentrating within the first focal zone parallel light rays entering the system;
a second focal zone within the NLSAM;

repassing means for redirecting and refocussing light rays leaving the first focal zone into the second focal zone;
a second receiving means optically downstream of the repassing means for receiving exiting light rays that have passed through the second focal zone, the second receiving means placing the exiting light rays in mutual parallel relation.

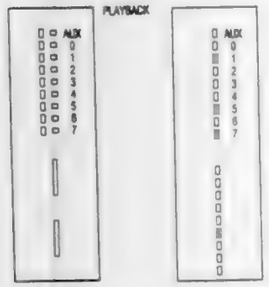


5,345,341

METHOD OF MANUFACTURING A REPLICATED MAGNETIC REPRODUCING MEDIUM, SUCH AS A MAGNETIC-TAPE CASSETTE PROVIDED WITH A MUSIC RECORDING, AND MAGNETIC REPLICATION HEAD AND REPLICATION ARRANGEMENT FOR USE IN THE METHOD

Jozef M. Durland, Leusden, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 929,067, Aug. 12, 1992, abandoned.
This application Nov. 1, 1993, Ser. No. 146,467
Claims priority, application European Pat. Off., Mar. 19, 1992, 92200799.2
Int. Cl.[5] G11B *5/86, 5/265, 5/29*
U.S. Cl. 360—15 **6 Claims**



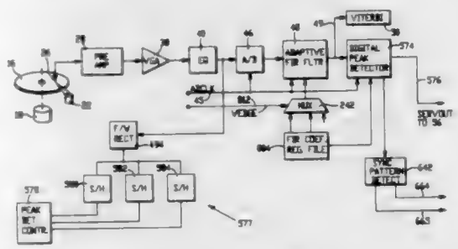
1. A method of manufacturing a replicated magnetic reproduction medium, such as a magnetic-tape cassette provided with a music recording, said reproduction medium comprising a magnetic tape having a plurality of tracks extending parallel to one another in a longitudinal direction of the magnetic tape at specified spacings within certain limits from one another, said reproduction medium serving for the reproduction of the replicated signal by means of a magnetic reproducing head having a plurality of transducing gaps situated at specified spacings within certain limits from one another with a specified normal tape tension within certain limits, said method comprising the steps:
transporting the tape during the replication over a head face of a magnetic replication head also having a plurality of transducing gaps with a certain spacing from one another,
characterized in that said method further comprises the steps:
increasing the tension exerted on the tape in comparison with the normal tension; and
reducing the spacings between the centers of the transducing gaps of the replication head to be smaller than those of a reproducing head.

5,345,342

DISK DRIVE USING PRML SYNCHRONOUS SAMPLING DATA DETECTION AND ASYCHRONOUS DETECTION OF EMBEDDED SECTOR SERVO

William L. Abbott, Portola Valley; Hung C. Nguyen, and Kenneth E. Johnson, both of San Jose, all of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Division of Ser. No. 937,064, Aug. 27, 1992. This application Feb. 4, 1994, Ser. No. 192,146
Int. Cl.[5] G11B *5/09, 5/596*
U.S. Cl. 360—48 **11 Claims**



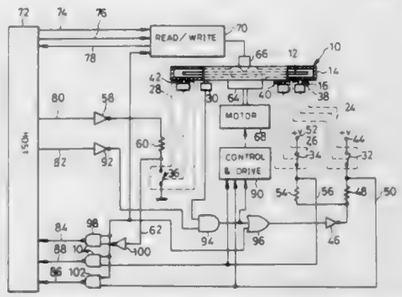
1. A partial response, maximum likelihood data channel for a disk drive including a rotating data storage disk, a data transducer head positionable relative to selected ones of a multiplicity of concentric data tracks formed on the data storage surface by a head position actuator structure operating within a head position servo loop wherein the concentric data tracks are periodically interrupted by a plurality of servo interruptions per rotation when servo sectors recorded with head position information at a servo data rate asynchronous with the code data rate for the tracks are read by the head, the channel comprising:
quantization means for quantizing user data samples of user data read from a said track at a quantization rate related to said code data rate and for quantizing samples of said head position information during each servo interruption at a quantization rate related to said servo data rate,
adaptive digital FIR filter means downstream of said quantization means for filtering said user data samples in accordance with characteristics adaptively developed for a said head and track having recorded user data from which said samples have been obtained and for filtering quantized servo samples and for filtering said servo information samples during each said servo interruption,
servo coefficient control means for loading in real time said digital FIR filter with coefficients for servo information recorded in said servo sectors during the period of each servo interruption,
Viterbi detector means downstream of said adaptive digital FIR filter means for maximum likelihood decoding of said filtered digital data samples, and
servo detector means for detecting said head position information from said quantized and filtered servo information samples and for providing the detected head position information to the head position servo loop.

5,345,343

POWER SAVING SYSTEM FOR FILE PROTECT AND DISK CAPACITY SENSORS IN ROTATING DISK DATA STORAGE APPARATUS

Tohru Miura, Chofu, and Hiroshi Tsuyuguchi, Tokyo, both of Japan, assignors to Teac Corp., Tokyo, Japan

Filed Apr. 19, 1993, Ser. No. 49,562
Claims priority, application Japan, Apr. 20, 1992, 4-126801
Int. Cl.[5] G11B *15/04, 15/18*
U.S. Cl. 360—60 **12 Claims**



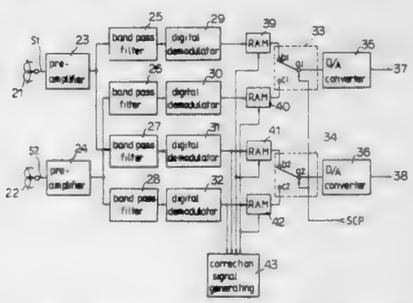
1. In an apparatus for data transfer with a replaceable disk cartridge under the control of a host system, the disk cartridge having a data storage disk rotatably housed in a protective envelope with a file protect mark indicative of whether the disk is protected or unprotected against writing, a power saving system comprising:
(a) file protect sensor means for electrically sensing whether the disk cartridge is protected or unprotected against writing;
(b) input means for inputting from the host system a drive select signal having a first state for holding the apparatus in operation, and a second state for holding the apparatus out of operation; and
(c) power saving means connected between the file protect sensor means and the input means for holding the file protect sensor means electrically energized when the drive select signal is in the first state, and unenergized when the drive select signal is in the second state.

5,345,344

SYSTEM AND METHOD FOR REMOVING NOISE WHEN SWITCHING BETWEEN HEADS IN A DIGITAL VIDEO CASSETTE RECORDER

Ja T. Kim, Seoul, Rep. of Korea, assignor to Goldstar Company, Limited, Seoul, Rep. of Korea

Filed May 8, 1992, Ser. No. 879,901
Claims priority, application Rep. of Korea, May 14, 1991, 6852/1991
Int. Cl.[5] G11B *15/14, 20/20*
U.S. Cl. 360—64 **5 Claims**



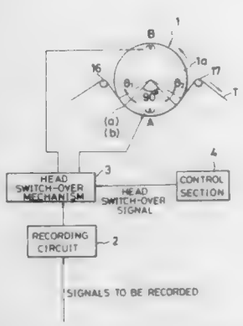
1. An audio playback system for a video cassette recording comprising:
a plurality of audio heads arranged on a drum and adapted to play back alternately audio signals recorded on a cassette tape according to a rotation of the drum;
amplifying means for amplifying respective audio signals played back by the audio heads;
filtering means for filtering amplified audio signals to separate each audio signal into audio signals corresponding to first and second stereo channels, respectively;
digital demodulating means for digitally demodulating the audio signals corresponding to the first and second stereo channels;
correction signal generating means for detecting a phase difference between the demodulated digital audio signals and generating a correction signal for correcting the phase difference;
memory means for storing the demodulated digital audio signals temporarily, correcting an error caused by the phase difference according to the correction signal from the correction signal generating means and then outputting error corrected digital audio signals; and
switching means for switching digital audio signals from the memory means to combine them into continuous digital audio signals each corresponding to each stereo channel, respectively.

5,345,345

ROTARY HEAD TYPE MAGNETIC RECORDING/REPRODUCING UNIT

Tatsumaro Yamashita, and Seiichi Nagai, both of Shibata, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 655,511, Feb. 12, 1991, abandoned.
This application Jul. 19, 1993, Ser. No. 94,655
Claims priority, application Japan, Mar. 6, 1990, 2-54673
Int. Cl.[5] G11B *15/14*
U.S. Cl. 360—64 **12 Claims**



1. A rotary head type magnetic recording/reproducing unit for reading from or writing to a magnetic tape, the magnetic tape having first and second parallel edges, the magnetic tape including an elongated data storage area arranged ion a diagonal direction with respect to the first and second parallel edges, the data storage area having first and second ends which define a length of the data storage area measured in the diagonal direction, said unit comprising:
a drum for receiving in close contact the magnetic tape on its periphery such that the magnetic tape is wrapped on a contact portion of the periphery of the drum, and
a pair of magnetic heads arranged on said drum for running slantly on the magnetic tape for recording to or reproducing from the data storage area,
wherein a span of the contact portion of the drum's periphery and the magnetic tape is greater than the length of the data storage area of the magnetic tape, whereby the magnetic head initially contacts the tape at a first point between the first edge of the magnetic tape and the first end of the data storage area, travels along the length of the data storage area to the second end, and is separated from the magnetic tape at a second point located between the

second end of the data storage area and the second edge of the magnetic tape, and

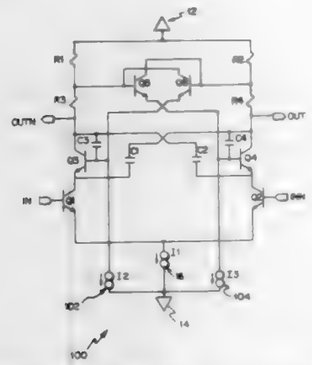
wherein the distance between the first point and the first end of the data storage area is sufficient to allow distortion to settle, the distortion being caused by the initial contact between the magnetic head and the tape, the distance also being sufficient to perform a switching operation, after the distortion has settled, whereby the magnetic head is connected to recording/reproducing circuitry.

5,345,346

POSITIVE FEEDBACK LOW INPUT CAPACITANCE DIFFERENTIAL AMPLIFIER

Craig M. Brannon, Maplewood, and Tuan V. Ngo, Eden Prairie, both of Minn., assignors to VTC Inc., Bloomington, Minn.

Filed Mar. 30, 1993, Ser. No. 39,859
Int. Cl.[5] G11B *5/02*; H03F *3/45, 3/04, 3/68*
U.S. Cl. 360—67 **17 Claims**



9. A read differential preamplifier for use in reading data in a magnetic storage system, the read differential preamplifier comprising:

first and second voltage supply terminals;

a first current source coupled to the second voltage supply terminal; a first input stage transistor having a first electrode, a second electrode coupled to the first current source, and a control electrode which acts as a first input to the differential preamplifier, wherein the first and second electrodes are connected in series and form a portion of a first current path;

a second input stage transistor having a first electrode, a second electrode coupled to the first current source, and a control electrode which acts as a second input to the differential preamplifier, wherein the first and second electrodes are connected in series and form a portion of a second current path;

a first output stage transistor having a first electrode coupled to the first voltage supply terminal through a first resistor, the first electrode acting as a first differential preamplifier output, a second electrode coupled to the first electrode of the first input stage transistor, and a control electrode for receiving a first positive feedback signal, the first positive feedback signal controlling the input capacitance of the first input stage transistor, wherein the first and second electrodes of the first output stage transistor are connected in series with the first and second electrodes of the first input stage transistor and with the first resistor to form a portion of the first current path;

a second output stage transistor having a first electrode coupled to the first voltage supply terminal through a second resistor, the first electrode acting as a second differential preamplifier output, a second electrode coupled to the first electrode of the second input stage transistor, and a control electrode for receiving a second positive feedback signal, the second positive feedback signal controlling the input capacitance of the second input stage transistor, wherein the first and second electrodes of the second output stage transistor are connected in series with the first and second electrodes of the second input stage transistor and with the second resistor to form a portion of the second current path;

first control means coupled to the control electrode of the first output stage transistor for providing the first positive feedback signal as a function of a first input signal at the first input to the differential preamplifier to control the input capacitance of the first input stage transistor so that the differential preamplifier maximum read data rate increases; and

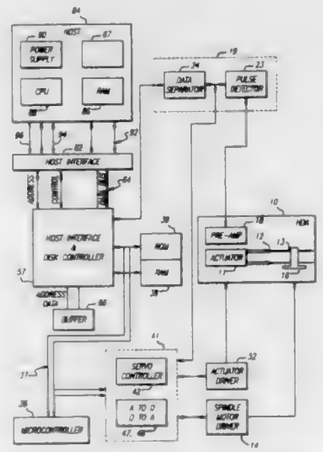
second control means coupled to the control electrode of the second output stage transistor for providing the second positive feedback signal as a function of a second input signal at the second input to the differential preamplifier to control the input capacitance of the second input stage transistor so that the differential preamplifier maximum read data rate increases.

5,345,347

DISK DRIVE WITH REDUCED POWER MODES

Donn A. Hopkins, Irvine; Kenneth D. Donner, Laguna Niguel; Marc B. Goldstone, Irvine; Dung T. Nguyen, Fountain Valley; Rudolf Wiegand, Fremont, and David E. McKinley, San Jose, all of Calif., assignors to Western Digital Corporation, Irvine, Calif.

Filed Feb. 18, 1992, Ser. No. 836,775
Int. Cl.[5] G11B *19/00*
U.S. Cl. 360—71 **27 Claims**



1. In a rotating disk data storage device, adapted for use with a host computer, said data storage device having:

one or more rotatable data storage disks each having a plurality of concentric data tracks on one or more disk surfaces thereof;

a spindle for rotatably supporting said data storage disks;

a spindle motor for rotationally driving said spindle;

an actuator for supporting one or more read/write transducer heads adjacent said one or more disk surfaces;

an actuator motor for moving said actuator and read/write transducer heads to radial data tracks on said disk surfaces;

a microcontroller for controlling and monitoring the data storage device functions, said microcontroller including a read only memory having a number of control programs written therein and a random access memory for temporary data storage;

read channel circuitry for receiving and amplifying data and servo signals read from the disk surfaces by said read/-write transducer heads;

servo system controller circuitry for employing servo information read from said disk surfaces to control said actuator motor to position said read/write heads over desired data tracks in response to host commands;

spindle motor driver and control circuitry for driving said spindle motor so as to rotate said data disks at a desired rotational velocity; and

host interface/disk controller circuitry for receiving host commands and data to be written on said disk surfaces from said host computer and for converting said data to a format suited for writing onto said disk surfaces and for providing data read from said disk surfaces to said host computer in response to host read commands;

the method for controlling said disk drive so as to reduce the power consumption thereof, comprising the steps of:

initiating a timer function after completion of execution of a host computer read/write command, said timer function having a timeout after a predetermined period of time;

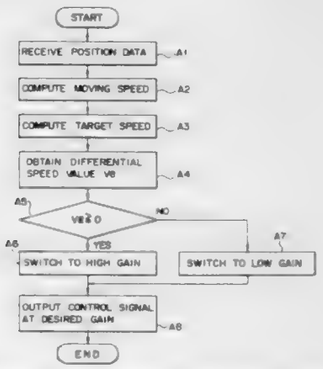
after completion of said predetermined period without receipt of a host read/write command, wholly or partially disabling said read channel circuitry, servo controller circuitry, and actuator motor and placing said host interface/disk controller circuitry in a low power mode capable of receiving all host commands from said host computer.

5,345,348

CONTROLLING THE MOVING SPEED OF A MAGNETIC HEAD BY VARYING THE GAIN IN RESPONSE TO THE SIGN OF THE ERROR SIGNAL

Hiroshi Suzuki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 28, 1991, Ser. No. 723,439
Claims priority, application Japan, Jun. 29, 1990, 2-173079
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—78.07 **2 Claims**



1. A magnetic recording and reproducing apparatus comprising:

a recording medium including servo data;

head means for reading out the servo data from the recording medium;

moving means for moving the head means over the recording medium;

detecting means for detecting moving positions of the head means in accordance with the read out servo data;

first acquiring means for acquiring a moving speed value in accordance with the detected moving positions;

second acquiring means for acquiring a target speed value corresponding to a distance between a target position and the detected moving position;

subtracting means for subtracting the moving speed value from the target speed value to obtain a difference speed value;

determining means for determining a gain responsive to the sign of the difference speed value, the gain having a first value when the difference speed value is positive and a second value when the difference speed value is negative, the first value being greater than the second value; and

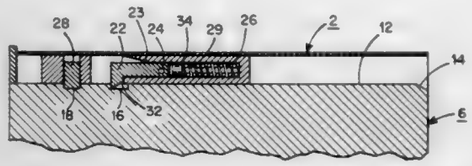
control means for controlling the moving means to have a moving speed affected by the determined gain.

5,345,349

MAGAZINE LATCHING AND EJECTION MECHANISM FOR A CASSETTE AUTOLOADER

Michel A. Pierrat, Boulder, Colo., assignor to Encynova Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 727,647, Jul. 9, 1991, Pat. No. 5,184,260, which is a continuation-in-part of Ser. No. 555,576, Jul. 19, 1990, abandoned, and a continuation-in-part of Ser. No. 679,910, Apr. 3, 1991, abandoned. This application Jul. 2, 1992, Ser. No. 909,061
Int. Cl.[5] G11B *23/04, 15/68*
U.S. Cl. 360—92 **8 Claims**



1. In an autoloader having a removable magazine for holding a plurality of cassettes, the combination comprising

a movable pawl mounted on said autoloader and rotatably movable between an engagement position wherein said pawl engages said magazine. and a release position wherein said pawl is released from said magazine,

receiving means forming part of the magazine for engaging said pawl when in said engagement position,

means responsive to insertion of said magazine into said autoloader for moving said pawl into said engagement position and for moving said pawl in linear concert with said magazine in a direction generally parallel with the direction of movement of said magazine,

energy storage means coupled to said pawl and responsive to said movement of said magazine for storing energy when said magazine is inserted into said autoloader,

means for locking said magazine in said autoloader,

means for releasing said magazine from said autoloader including

means for releasing said lock thereby to release said energy and cause said pawl to move in the direction of movement of said magazine, to cause partial ejection of said magazine.

5,345,350

DUAL-PURPOSE PICKER FOR AUTOMATED MULTIMEDIA LIBRARY

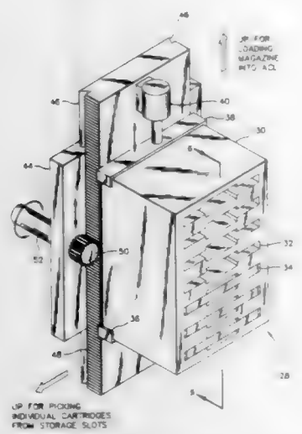
John F. Ellis; Michael D. Osborn, and Daniel J. Winarski, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1992, Ser. No. 976,160
Int. Cl.[5] G11B *15/68*
U.S. Cl. 360—92 **21 Claims**

1. In an automated data storage library having a plurality of Data Storage Media cartridges each located in a storage bin and having one or more internal Peripheral Data Storage Devices for reading from and writing to said cartridges and having at least one dual-purpose robotic picker for transporting one or more said cartridges between said storage bins and said internal storage devices, a machine-implemented method for transporting said cartridges comprising the unordered steps of:

(a) loading a first plurality of said cartridges into a detachable Data Storage Media Magazine;

(b) grasping said detachable magazine;
(c) moving said detachable magazine to a first destination location;
(d) unloading at least one of said first plurality of cartridges from a position in said detachable magazine into a slot at said first destination location;



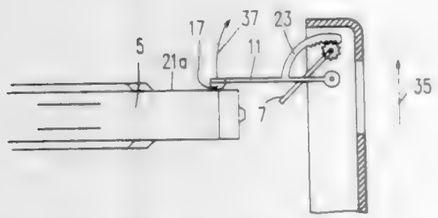
(e) moving said detachable magazine to a second destination location; and
(f) unloading at least one of said first plurality of cartridges into a slot at said second destination location.

5,345,351

PIVOTING DEVICE FOR A COVER OF THE CASSETTE HOLDER OF A MAGNETIC-TAPE CASSETTE APPARATUS

Martin Krohn, Wetzlar, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 3, 1992, Ser. No. 940,115
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1991, 4129945
Int. Cl.[5] G11B *15/675*
U.S. Cl. 360—96.5 **3 Claims**



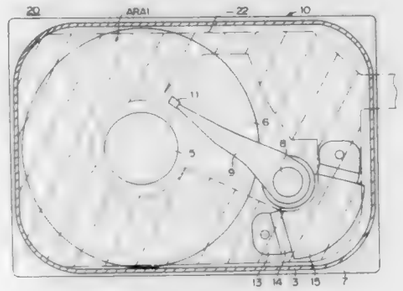
1. A pivoting device used to close a cover of an insertion opening of a cassette holder of a magnetic-tape-cassette apparatus, said cover being pivoted into an open position by a magnetic-tape cassette during insertion thereof, in order to expose the insertion opening, after which said cover returns into its closed position, said cover also being pivoted into the open position by the magnetic-tape cassette during the outward movement thereof until the removal of the magnetic-tape cassette from the cassette holder, the cover being securely to a pivoting spindle by one of its long edges, said cassette holder being lowered into a play position with the magnetic-tape cassette inserted, wherein the improvement comprises:
a sensing lever pivotable about a sensing-lever spindle whose axis is parallel to the axis of the pivoting spindle, said sensing lever being positioned within the interior of the cassette apparatus,
said sensing lever being arranged to sense the upper main wall of the magnetic-tape cassette with a sensing element which said sensing lever carries,
said sensing lever carrying a toothed rack between the sensing-layer spindle and the sensing element such that said toothed rack is in mesh with a toothed wheel carried by the pivoting spindle, said toothed rack and said toothed wheel transferring motion from said cover to said sensing element when said cover is in contact with said cassette and from said sensing element to said cover when said sensing element is in contact with said cassette.

5,345,352

REDUCED-HEIGHT DISC DRIVE THAT POSITIONS CIRCUITRY BETWEEN THE INTERIOR SURFACE OF THE DRIVE AND THE SURFACE OF THE DISC

Katsuhiro Nakano, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 837,062, Feb. 18, 1992, abandoned. This application Aug. 24, 1993, Ser. No. 111,283
Claims priority, application Japan, Feb. 22, 1991, 3-050519
Int. Cl.[5] G11B *5/012*
U.S. Cl. 360—97.01 **14 Claims**



1. A reduced height disc drive comprising:
a tightly closed box;
a disc record medium disposed entirely within the box;
a motor and disc hub assembly disposed entirely within the box for rotating the disc record medium, wherein the dimensions of the motor and disc hub assembly and the disc record medium are chosen relative to the interior dimensions of the box such that a mounting space is created between an interior top surface of the box and the disc record medium;
a circuit board contained within the box and mounted to an interior surface of the box so that the circuit board projects into the mounting space; and
a circuit mounted on the circuit board for controlling an operation of the disc drive.

5,345,353

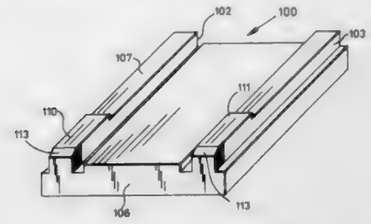
STEP PROJECTION AIR BEARING SLIDER WITH IMPROVED STICTION PERFORMANCE AND WEAR RESISTANCE

Matthias C. Krantz, San Jose; Vlad J. Novotny, Cupertino; Timothy C. O'Sullivan, San Jose, and Andrew C. Tam, Saratoga, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 21, 1992, Ser. No. 948,182
Int. Cl.[5] G11B *5/60*
U.S. Cl. 360—103 **6 Claims**

1. A reduced-stiction slider assembly, comprising:
a slider body with a slider leading edge and a slider trailing edge;
a pivot pint on the slider boy;
a plurality of air bearing surfaces on the slider body, which extend between the slider leading edge and the slider trailing edge; and,

a projection on at least one of the air bearing surfaces, the projection extending outwardly from the at least one air bearing surface, the projection having a height h with respect to the at least one air bearing surface and being located on the at least one air bearing surface between the slider leading edge and the pivot point;
the projection including:



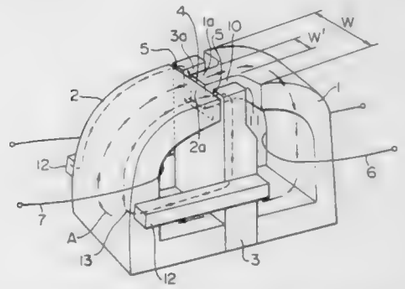
a front edge facing toward the slider leading edge and a rear edge facing toward the slider trailing edge;
a step transition from the rear edge to the at least one air bearing surface; and
a tapered transition tapering in height from the front edge to the slider leading edge.

5,345,354

MAGNETIC READ/WRITE HEAD HAVING A REDUCED THICKNESS CLOSURE CORE

Tomio Ito; Hideyuki Miyazaki, both of Kofu; Hideyuki Moriya, and Kazuhito Wakabayashi, both of Yamanashi, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Division of Ser. No. 720,699, Jun. 25, 1991, Pat. No. 5,229,904, which is a division of Ser. No. 487,304, Mar. 2, 1990, Pat. No. 5,057,957. This application Apr. 12, 1993, Ser. No. 45,109
Claims priority, application Japan, Mar. 3, 1989, 1-51500; May 5, 1989, 1-127257
Int. Cl.[5] G11B *5/17, 5/265, 5/187*
U.S. Cl. 360—121 **2 Claims**



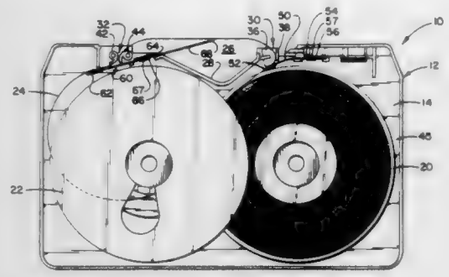
1. A magnetic head comprising a closure core having a recessed portion at the center tip end thereof, a first and second C-shaped core provided on both sides of said closure core, said first C-shaped core having a projection at the center tip end thereof in a manner to be inserted into said recessed portion, magnetic gaps formed respectively between said closure core and said second C-shaped core and between said projection of said first C-shaped core tip end and second C-shaped core, and a first coil and a second coil wound on said first and second C-shaped cores respectively, wherein the magnetic head is further provided with an electrical short circuit of said closure core including an ON/OFF switch to selectively close said short circuit.

5,345,355

SLACK LIMITING TAB FOR A MAGNETIC TAPE CASSETTE

Vincent P. Teuber, Hastings, and Qing Cai, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 23, 1991, Ser. No. 781,732
Int. Cl.[5] G11B *23/02*
U.S. Cl. 242—343.1 **13 Claims**



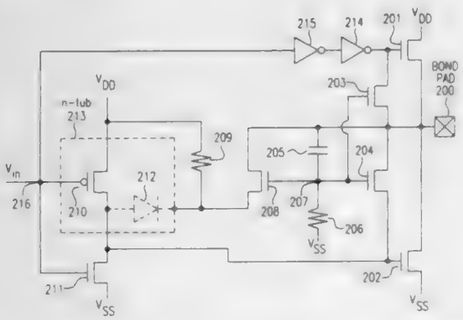
1. A magnetic recording tape cassette comprising:
(a) a housing having an access area;
(b) two reels, rotatably mounted within said housing;
(c) a length of magnetic tape having opposite end portions wound around each of said reels and a portion extending therebetween;
(d) a tape guiding surface for guiding said tape portion in extension between said reels across said access area, and along a predefined path between at least one of said reels and said access area;
(e) at least one slack limiting tab having a contact end portion and a mounting region; said slack limiting tab comprising a flexible, resilient polymeric material having a glass transition temperature of greater than about 140° C.; and
(f) mounting means in said housing for mounting said slack limiting tab in said housing such that said mounting region engages said mounting means, and said contact end portion is biased against said tape to press said tape against said tape guiding surface.

5,345,356

ESD PROTECTION OF OUTPUT BUFFERS

Juergen Pianka, Bethlehem, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 5, 1992, Ser. No. 893,997
Int. Cl.[5] H02H *9/04*
U.S. Cl. 361—56 **10 Claims**



1. An integrated circuit having an output transistor having a controlled electrode connected to an output conductor, and protective means for supplying a voltage to the control electrode of said output transistor for causing said output transistor to conduct during an electrostatic discharge event;

and further having a pre-driver circuit for supplying an information signal to said output transistor, wherein said pre-driver circuit includes at least one transistor having a drain region of a given conductivity type formed in a doped semiconductor tub region of the opposite conductivity type, thereby forming a diode;

characterized in that said integrated circuit further comprises means for increasing the voltage on said tube during an ESD event sufficiently so that said diode does not conduct, whereby clamping of said voltage supplied to said control electrode is avoided.

5,345,357

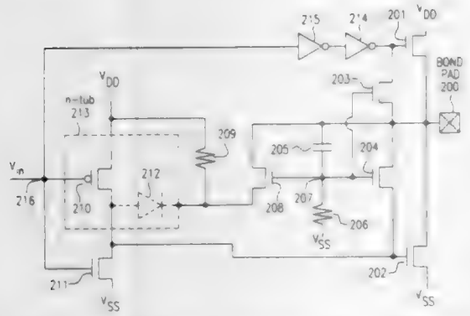
ESD PROTECTION OF OUTPUT BUFFERS

Juergen Pianka, Bethlehem, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 5, 1992, Ser. No. 894,405

Int. Cl.[5] H02H *9/04*

U.S. Cl. 361—56 **17 Claims**



1. An integrated circuit comprising an output transistor having: a first controlled electrode coupled to a power supply conductor, a second controlled electrode coupled to an output conductor, and a control electrode coupled to receive an information signal;

characterized in that said integrated circuit further comprises a protective device having: a first controlled electrode coupled to said output conductor, a second controlled electrode coupled to the control electrode of said output transistor, and a control electrode coupled to said output conductor so as to cause said output transistor to conduct during an electrostatic discharge;

wherein said protective device is a field effect transistor, and further comprising a capacitor connected between said output conductor and the gate of said protective transistor; and still further comprising a resistor connected between the gate of said protective transistor and a power supply conductor, so that said protective transistor does not conduct in the absence of an electrostatic discharge event.

5,345,358

METHOD FOR EVALUATING OPERABILITY OF FILTER COMPONENTS IN POWER CONVERSION SYSTEM

Ajith K. Kumar, Erie, Pa., assignor to General Electric Company, Erie, Pa.

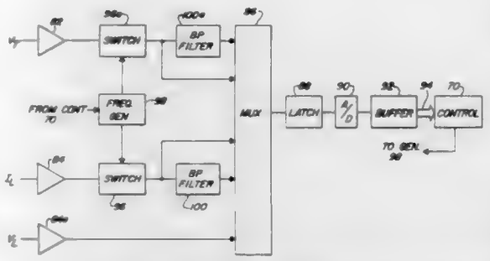
Division of Ser. No. 666,832, Mar. 8, 1991, Pat. No. 5,245,294. This application Apr. 9, 1993, Ser. No. 22,254

Int. Cl.[5] H02H *3/46*

U.S. Cl. 361—78 **1 Claim**

1. A method for verifying operation of a frequency monitoring system in an electric propulsion system for a transit vehicle receiving power from a wayside conductor, the monitoring system including a detector for providing signals representative of the frequency of alternating current power introduced to the wayside conductor by the propulsion system, at least one band-pass filter for extracting from the detector signals selected signals within the pass-band of the filter, apparatus for determining the presence of such selected signals and for disabling the propulsion upon determination of such presence, the method including the steps of:

periodically interrupting the signals from the detector to the band-pass filter;



injecting signals of the selected frequency into the band-pass filter and verifying detection of the presence of the injected signals at the determining apparatus; and

coordinating the injecting step with the apparatus to inhibit disabling the propulsion system if such detection occurs and immediately disabling the propulsion system if the injected signal is not detected by the apparatus.

5,345,359

PROCESS FOR THE REDUCTION OF THE SWITCH-ON SURGE IN CURRENT DURING THE OPERATION OF AN INDUCTIVE LOAD

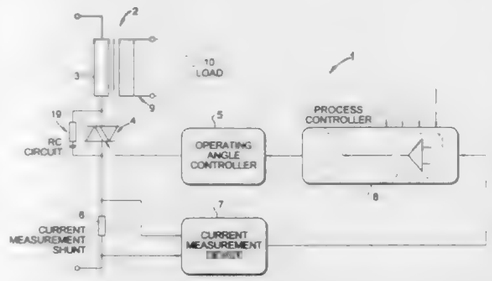
Michael Konstanzer, Freiburg, Fed. Rep. of Germany, assignor to Fraunhofer-Gesellschaft zur Förderung der angewandten, München, Fed. Rep. of Germany

Filed Nov. 16, 1992, Ser. No. 977,245

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142644

Int. Cl.[5] H01H *47/00*

U.S. Cl. 361—152 **12 Claims**



1. A process for the reduction of switch-on surges in current in the operation of an inductive load provided with a magnetizable core at an alternating current mains, in particular a transformer, with at least temporarily a phase operating angle being provided and a switch-off of said load being provided in the zero passage of the driving mains alternating voltage, with a switch-off-reset impulse being applied to said inductive load following switch-off thereof from the alternating current mains, characterized in that said switch-off-reset impulse (**13**) is provided within the voltage halfwave following the switch-off moment in time or a subsequent voltage halfwave in-phase thereto for a predetermined period of time within one of said halfwaves and that said switch-off-reset impulse is dimensioned with regard to its voltage-time area in dependence on the amplitude or the voltage time area of the overshoot-voltage impulse (**16**) occurring following switching-off and is set proportionately larger, the smaller said overshoot voltage impulse is.

5,345,360

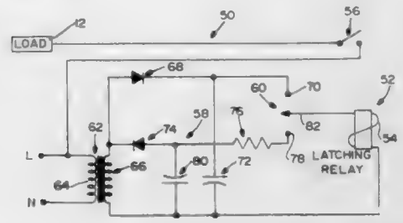
SWITCHED RECEPTACLE CIRCUIT

Burke J. Crane, Lombard, Ill., assignor to Molex Incorporated, Lisle, Ill.

Continuation-in-part of Ser. No. 837,845, Feb. 18, 1992, Pat. No. 5,281,859. This application Jul. 16, 1992, Ser. No. 914,964

Int. Cl.[5] H01H *47/04*

U.S. Cl. 361—160 **19 Claims**



1. A control circuit controlling switching of a latching relay having a relay coil and an electrical contact switched by said relay coil, said relay coil being latched when connected to a positive polarity voltage source and unlatched when connected to a negative polarity voltage source, comprising:

a power source developing a voltage at a select potential;

a first switch circuit selectively operated to be in a neutral state or an actuated state, said first switch circuit conducting electricity when it is operated to be in the actuated state and not conducting electricity when it is operated to be in the neutral state;

a second switch circuit selectively operated to be in a neutral state or an actuated state, said first switch circuit conducting electricity when it is operated to be in the actuated state and not conducting electricity when it is operated to be in the neutral state;

circuit means for connecting said first and second switch circuits between said power source and said relay coil so that when said first switch circuit is in the actuated state it conducts electricity to apply said potential of said power source to said relay coil at positive polarity to latch the relay coil, and when said second switch circuit is in the actuated state it conducts electricity to apply said potential of said power source to said relay coil at negative polarity to unlatch the relay coil; and

current limit means electrically connected to said second switch circuit for limiting current conducted to unlatch said relay coil.

5,345,361

SHORTED TRIMMABLE COMPOSITE MULTILAYER CAPACITOR AND METHOD

Delmont L. Billotte, Madisonburg; Joel B. deNeuf, State College, and Bruce E. Helms, Warrior's Mark, all of Pa., assignors to Murata Erie North America, Inc., Smyrna, Ga.

Continuation-in-part of Ser. No. 934,798, Aug. 24, 1992. This application Jun. 11, 1993, Ser. No. 75,732

Int. Cl.[5] H01G *4/10*

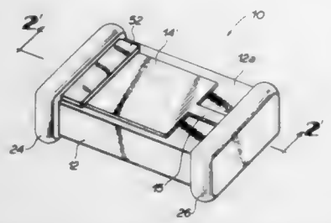
U.S. Cl. 361—313 **21 Claims**

1. A trimmable composite multilayer capacitor which is shorted, but which can be easily and efficiently unshorted and functionally trimmed while in a circuit, comprising:

a capacitor body defined by plurality of interleaved first and second electrodes spaced apart by dielectric material;

a trimmable outermost electrode on said capacitor body capable of depletion by trimming for particularly selecting a capacitance associated with said capacitor;

first and second terminations at respective first and second ends of said capacitor body, said first termination being connected to said first electrodes and to said trimmable outermost electrode, said second termination being connected to said second electrodes; and



an interconnect bar connecting said outermost electrode and said second termination so that said first and second terminations are shorted, said bar capable of depletion by trimming.

5,345,362

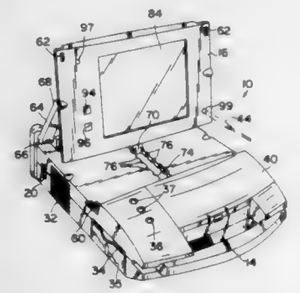
PORTABLE COMPUTER APPARATUS WITH ARTICULATING DISPLAY PANEL

Thomas J. Winkler, Isanti, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 29, 1993, Ser. No. 55,072

Int. Cl.[5] H05K *7/16*; **G06F** *1/16*

U.S. Cl. 361—681 **8 Claims**



1. A portable computer apparatus, comprising:

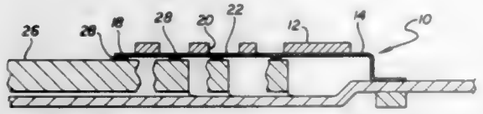
a main housing having an upper surface and containing computer circuitry;

a display screen having side edges and upper and lower edges;

a link arm coupled between said main housing and said display screen, said link arm pivotally coupled at one end thereof to said main housing and pivotally coupled at a second end thereof to said display screen, at a location spaced from said lower edge to enable said screen assembly to articulate relative to said housing;

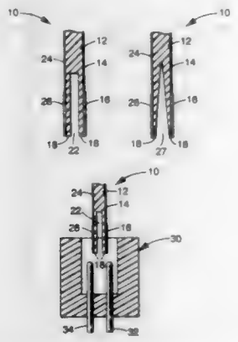
an engagement mechanism disposed between said display screen and said housing cooperating to stably maintain said screen at any of a plurality of viewing angles, said housing provided with a support channel located centrally on said upper surface of said housing, said engagement mechanism comprising a support member extending from a central location on said lower edge of said display screen, engageable with said support channel.

5,345,363
METHOD AND APPARATUS OF COUPLING A DIE TO A LEAD FRAME WITH A TAPE AUTOMATED BONDED TAPE THAT HAS OPENINGS WHICH EXPOSE PORTIONS OF THE TAPE LEADS
Bidyut Bhattacharyya, and Koushik Banerjee, both of Chandler, Ariz., assignors to Intel Corporation, Santa Clara, Calif.
Filed Apr. 7, 1993, Ser. No. 44,286
Int. Cl.[5] H05K *1/00*
U.S. Cl. 361—749 **7 Claims**



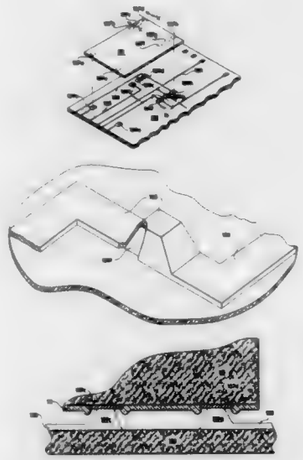
1. A type automated bonded tape that couples an integrated circuit to a lead frame of an integrated circuit package, comprising:
a tape having a layer of dielectric which supports a plurality of tape leads that couple a plurality of pads of a die with a plurality of leads of a lead frame, said layer of dielectric having a center opening defined by four sides, said tape further having four groups of contact openings each group being adjacent to a side of said center opening and which expose contact portions of said tape leads, each group having at least two adjacent contact openings.

5,345,364
EDGE-CONNECTING PRINTED CIRCUIT BOARD
Rolf W. Biernath, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 18, 1993, Ser. No. 109,213
Int. Cl.[5] H05K *1/00*
U.S. Cl. 361—749 **12 Claims**



1. A printed circuit board comprising:
a printed circuit board capable of resilient deformation and having first and second outer major surfaces and a contact edge; and
a plurality of electrically conductive traces provided on at least one of the major surfaces leading to a plurality of electrically conductive contact pads at the contact edge of the board;
wherein the first and second major surfaces define a gap therebetween at the contact edge, wherein the gap permits resilient deformation of the board so that a force is created upon deformation which will bias the major surfaces toward their undeformed position.

5,345,365
INTERCONNECTION SYSTEM FOR HIGH PERFORMANCE ELECTRONIC HYBRIDS
Terry O. Herndon, Carlisle, and Jack I. Raffel, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed May 5, 1992, Ser. No. 878,495
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—760 **9 Claims**

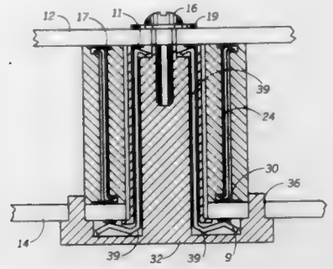


1. A system for electrically interconnecting a plurality of electrical contacts disposed on a surface of a plurality of miniature electronic components, said system comprising:
a substrate for receiving said at least one miniature electronic component;
a plurality of raised elements disposed on said substrate, including a plurality of raised elements positioned for corresponding engagement with said plurality of electrical contacts of each said component; and
conductive wiring disposed on said substrate and further extending over said plurality of raised elements positioned for corresponding engagement with said plurality of electrical contacts; and
means for applying a force between said at least one component and said plurality of raised elements to urge said electrical contacts into intimate engagement with said conductive wiring extending over said plurality of raised elements and thus to establish and maintain electrical connections there between, including
a pressure plate for receiving a force from said means for applying a force and
means disposed in engagement with said plurality of components for causing a force received by said pressure plate to be evenly distributed across said plurality of components.

5,345,366
SUBSTRATE TO SUBSTRATE STANDOFF ASSEMBLY
Chee F. Cheng; Chiou C. You, and Kai L. Tong, all of Singapore, Singapore, assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 21, 1993, Ser. No. 64,479
Int. Cl.[5] H01R *23/68*
U.S. Cl. 361—785 **20 Claims**

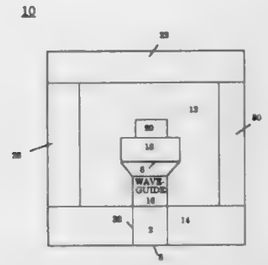
1. A substrate to substrate interconnect and standoff assembly, comprising:
means for electronically coupling a bottom of a first substrate to the bottom of a second substrate;
means for electronically coupling a top of the first substrate to the bottom of the second substrate;

means for standing-off the first substrate from the second substrate; and



means for retaining the first substrate to the second substrate.

5,345,367
THIN FORM FACTOR COMPUTER CARD
Michael E. Pierce, Orangeville; John A. Horn, Davis, and Duncan D. MacGregor, Shingle Springs, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed Sep. 22, 1992, Ser. No. 948,689
Int. Cl.[5] G08B *5/22*
U.S. Cl. 362—32 **20 Claims**



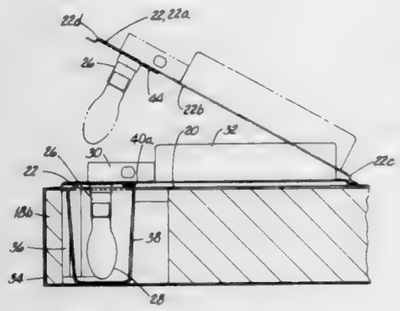
1. In a computer cartridge having a small opaque display area, said display area containing a hole, and an indicator, said indicator indicating whether a first or second status exists, said indicator comprising:
a light source having a first state where substantially no light is emitted from said light source and a second state where a first intensity level of light is emitted from said light source;
means for controlling said light source, coupled to said light source, said means for controlling said light source placing said light source in said first state to indicate said first status and placing said light source in said second state to indicate said second status;
an optical waveguide means, coupled between said light source and said small display area, said optical waveguide means projecting through said hole and transmitting said light emitted from said light source to said small display area, when said small display area is viewed and said first state exists, said optical waveguide means not transmitting light and appearing to be opaque.

5,345,368
HAND MOUNTED ILLUMINATING DEVICE
Thomas L. Huff, 1601 E. I St., McCook, Nebr. 69001
Filed Aug. 12, 1993, Ser. No. 105,170
Int. Cl.[5] F21L *15/08*
U.S. Cl. 362—103 **13 Claims**

1. A hand mounted illuminating device, comprising:
covering means for placing on a user's hand including an upper portion for overlaying the back of the hand, a first fastening material mounted to said upper portion;
a flashlight having a generally cylindrical housing, a second fastening material attached to said housing being engageable with said first fastening material so as to secure said flashlight to said covering means; and
a strap mounted to said upper portion of said covering means, said strap having a central portion, a second fastening material mounted to said strap for selectively engaging said first fastening material, and a first fastening material attached to said central portion for selectively engaging a portion of said second fastening material attached to said housing.



5,345,369
OPTICAL SYSTEM FOR LAMP-MOUNTING ELONGATE ROOF FIXTURE
Alan Ruud, Racine, and Eric Haugaard, Kenosha, both of Wis., assignors to Ruud Lighting, Inc., Racine, Wis.
Filed Nov. 25, 1992, Ser. No. 981,605
Int. Cl.[5] F21S *1/02*
U.S. Cl. 362—145 **19 Claims**



16. In a lamp-mounting elongate roof fixture of the type including an elongate support having a roof-contact portion and an upper portion parallel to and spaced from the roof, a beam over and along the support in position suspended above the roof, and a light source under the beam, the improvement comprising:
an elongate mounting plate having a top and bottom and proximal and distal ends, the mounting plate extending along the support parallel to the upper portion thereof and pivotably attached at its proximal end to the support; and
a lamp socket mounted to the bottom of the mounting plate adjacent to the distal end of the mounting plate and supporting a lamp therebelow oriented along an axis substantially perpendicular to the mounting plate;
whereby improved roof illumination is provided by light from below the beam and relamping service is facilitated.

5,345,370

LAMP OR FLASHLIGHT HAVING A MULTI-FEATURE ROTATING SWITCHING ASSEMBLY

Donald W. Murray, and Michael C. Story, both of Arlington, Tex., assignors to Satelight Technologies, Inc., Cleburne, Tex.

Filed Dec. 8, 1992, Ser. No. 986,989
Int. Cl.[5] F21L *7/00*
U.S. Cl. 362—205 **14 Claims**



1. A flashlight comprising:
a barrel size to accommodate at least one battery, having a distal and proximal end, and having a tongue extending from a portion of said proximal end of said barrel, said tongue having an inner surface and an outer surface, said inner surface having a first groove;
a head assembly adapted to rotatably engage said proximal end of said barrel so that said head assembly is rotatable relative to said barrel without axial movement of said head assembly relative to said barrel; and
a switching assembly secured to said head assembly and disposed adjacent said proximal end of said barrel and comprising an insulator having a distal face and a proximal face, and an electrical conductor, at least a portion of said conductor being disposed within said insulator, and said insulator having at least one aperture disposed in said proximal face for receiving a light bulb so that said bulb contacts said conductor;
said insulator having a recess in said distal face for receiving said tongue and permitting rotation of said tongue relative to each insulator when said barrel is rotated relative to said switching assembly, said recess has an inner face and an outer face;
said tongue and said conductor being disposed so that rotation of said switching assembly relative to said barrel enables positioning of said tongue of said barrel in a first position in which said tongue is in contact with said conductor and a second position in which said tongue is removed from contact with said conductor; and
said conductor having a first portion that is exposed to said recess so that rotation of said barrel relative to said switching assembly enables rotation of said tongue between said first position in which said tongue is in contact with said first portion of said conductor and said second position in which said tongue is removed from contact with said first portion of said conductor within said recess of said insulator;
wherein, said conductor extends within said recess so that said conductor biases said tongue toward said outer face of said recess and said conductor nestingly engages said first groove when said tongue is placed in contact with said conductor.

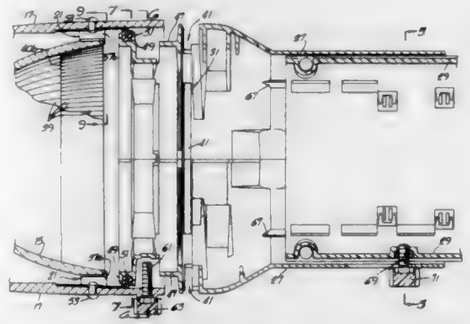
5,345,371

LIGHTING FIXTURE

David W. Cunningham, 8442 Hollywood Blvd., Los Angeles, Calif. 99069, and Gregory F. Esakoff, 9131 Santiago Dr., Huntington Beach, Calif. 92646

Filed Nov. 5, 1992, Ser. No. 972,141
Int. Cl.[5] F21V *7/00*
U.S. Cl. 362—297 **4 Claims**

1. A lighting fixture for use in combination with a lamp having a plurality of elongated filaments with longitudinal axes arranged substantially uniformly around a central longitudinal axis, the combination imaging a beam of light at a distant location, the lighting fixture comprising:
a concave, substantially ellipsoidal reflector having a base at one end and a mouth at the other end, wherein the reflector is substantially circumferentially symmetrical about a longitudinal axis, wherein the reflector has two focal regions, including a first focal region located near the reflector's base and a second focal region located beyond the reflector's mouth, and wherein the reflector has a reflective surface configured to be dichroic, having a substantially higher reflectance at visible wavelengths than at infrared wavelengths;
a rear housing for supporting the reflector;
means for supporting the lamp adjacent the base of the concave reflector, with the lamp's central longitudinal axis substantially coincident with the reflector's longitudinal axes and with the lamp's filaments substantially coincident with the first focal region, such that light emitted by the lamp is reflected by the reflector toward the second focal region;
a gate aperture located substantially at the second focal region of the reflector;



a lens having a predetermined focal length and positioned beyond the gate aperture by a distance corresponding generally to its focal length, such that the lens images the light passing through the gate aperture at a distant location;
wherein the concave reflector includes a plurality of facets arranged substantially uniformly around its circumference, each facet being substantially flat circumferentially, but curved radially;
a generally cylindrical front barrel having a longitudinal axis;
means for securing the front barrel to the rear housing with the longitudinal axis of the front barrel substantially coincident with the longitudinal axis of the reflector; and
one or more shutters and a pattern slidably received in the front barrel, substantially at the gate aperture, and selectively slidable into the path of light passing therethrough;
wherein the means for securing the front barrel is configured to allow the front barrel to be selectively rotatable relative to the rear housing, about the barrel, such that the shutter can intercept a selected portion of the light passing therethrough.

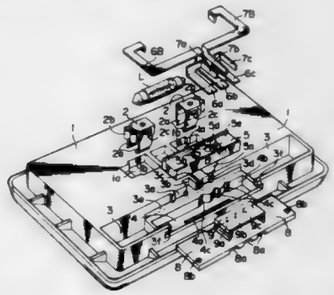
5,345,372

SWITCHABLE LIGHT FIXTURE

Tsunesuke Takano, and Kouichi Sinzawa, both of Tokyo, Japan, assignors to Kabushiki Kaisha T AN T, Tokyo, Japan

Filed Feb. 1, 1993, Ser. No. 12,131
Claims priority, application Japan, Feb. 10, 1992, 4-057533; Jun. 29, 1992, 4-194810
Int. Cl.[5] F21V *23/04;* **B60Q** *3/00;* **H01H** *9/00*
U.S. Cl. 362—394 **7 Claims**

1. A switchable light fixture comprising:
an insulting plate having a front side and a back side, said insulating plate defining an interior cavity opening towards said back side and a central hole extending between said interior cavity and said front side;
said insulating plate having a lateral edge which defines a plurality of recessed surfaces;
an opposed pair of lamp sockets supported by said insulating plate for holding a lamp therebetween;
a sliding piece positioned within said defined cavity of said insulating base for articulated movements with respect to said lateral edge of said insulating plate, said sliding piece including (1) a knob provided on a lower surface of said sliding piece which extends through said central hole, and (2) a movable contact provided on an upper surface of said sliding piece;
a plurality of stationary parallel contacts each of which is positioned in a respective one of said recessed surfaces so as to be disposed in opposition to, and capable of making contact with, said movable contact, at least two of said stationary contacts constituting a lateral pair of stationary contacts, and at least one of said stationary contacts constituting a middle stationary contact;



a pair of lateral plugs each formed by an outwardly bent terminal end portion of a respective one of said of lateral stationary contacts and positioned in a respective pair of said recessed surfaces so as to be disposed over said lateral pair of stationary contacts; and
a middle plug positioned between said pair of lateral plugs; wherein
said middle stationary contact and said middle plug each includes a connector strip which is connected to a respective one of said lamp sockets; and wherein
said fixture further includes a switch cover forming an upper extent of said cavity for positionally holding said stationary contacts;
said switch cover includes a plug cover which defines a plurality of plug-holes through which said middle pair of plugs and said middle plug are inserted so as to provide a protective cover over said lateral pair of plugs and said middle plug; whereby
a lamp held by said opposed pair of lamp sockets on said insulating plate may be turned on and off by means of a switch connected to said sockets in dependence upon a position of said movable contact relative to said stationary contacts.

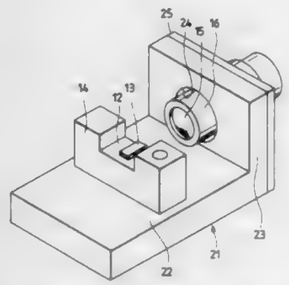
5,345,373

LENS HOLDING BLOCK ENABLING ACCURATE LENS POSITIONING

Kazuhiro Tanida, Kanagawa, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 14, 1993, Ser. No. 61,006
Claims priority, application Japan, May 18, 1992, 4-124513
Int. Cl.[5] F21V *7/00*
U.S. Cl. 362—455 **12 Claims**

1. A lens holding block on which a light-emitting element and a lens-barrel containing a lens for focusing a light beam emitted from the light-emitting element are to be mounted, comprising:
a flat portion having a flat top surface on which the light-emitting element is to be mounted;
a vertical portion being perpendicular to the flat top surface and integral with the flat portion and having the opening into which the lens-barrel is to be inserted, for holding the lens-barrel so that optical axes of the light-emitting element and the lens coincide with each other; and



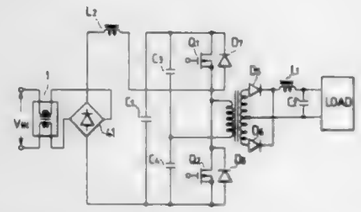
a metal plate made of a metal having good welding performance, having an opening, and fixed to the vertical portion on a side opposite to a side where the light-emitting element is to be provided so that the openings of the metal plate and the vertical portion conform to each other.

5,345,374

POWER SOURCE FOR SUPPLYING DC VOLTAGE BY CONVERTING AC VOLTAGE FROM AC SOURCE

Masayoshi Sato, and Kenichi Onda, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 21, 1993, Ser. No. 64,642
Claims priority, application Japan, May 27, 1992, 4-158840
Int. Cl.[5] H02M *3/335, 7/538*
U.S. Cl. 363—24 **10 Claims**



9. A power source comprising:
an input rectifier for rectifying an AC input voltage and supplying an input DC voltage across a first rectifier terminal and a second rectifier terminal,
a transformer having a primary coil with a first primary terminal and a second primary terminal, and a secondary coil which outputs an output AC voltage,
a first switching element having a first element terminal connected to said first primary terminal,
a second switching element having a first element terminal connected to said first primary terminal,
a capacitor having a first capacitor terminal connected to a second element terminal of said first switching element, and a second capacitor terminal connected to a second element terminal of said second switching element,
a first diode having a first diode terminal connected to said first primary terminal, and a second diode terminal connected to said second element terminal of said first switching element,
a second diode having a first diode terminal connected to said second element terminal of said second switching element, and a second diode terminal connected to said first primary terminal,

a dividing capacitance comprising a series connection of a first dividing capacitor and a second dividing capacitor, a first capacitance terminal of said dividing capacitance being connected to said second element terminal of said first switching element, a second capacitance terminal of said dividing capacitance being connected to said second element terminal of said second switching element, and a common capacitance terminal between said first dividing capacitor and said second dividing capacitor being connected to said second primary terminal,

a choke coil having a first coil terminal connected to said first rectifier terminal, and a second coil terminal connected to said first primary terminal,

a connection between said second rectifier terminal and said second element terminal of said second switching element, and

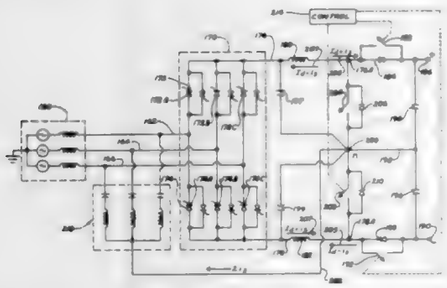
an output rectifier for rectifying said output AC voltage from said secondary coil, for supplying an output DC voltage.

5,345,375

SYSTEM AND METHOD FOR REDUCING HARMONIC CURRENTS BY CURRENT INJECTION

Ned Mohan, St. Paul, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Dec. 16, 1991, Ser. No. 807,717
Int. Cl.[5] H02M *1/12*
U.S. Cl. 363—40 24 Claims



1. A harmonic reducing system for reducing harmonic currents generated from power conversion means connected between a multiphase alternating current power system having a base fundamental frequency and a direct current power system having terminals carrying a direct current, said harmonic reducing system comprising:

current modulating means connected between said direct current power system and said power conversion means, said current modulating means being connected to receive current from the power conversion means and modulating a first and second superimposed sinusoidal currents with the direct current at a selected harmonic frequency of the fundamental frequency, with an amplitude proportional to the direct current; and

means connected to the current modulating means for combining said first and second superimposed currents to form a sinusoidal injection current at the selected harmonic frequency, said injection current having an amplitude substantially equal to twice the amplitude of each sinusoidal current; and

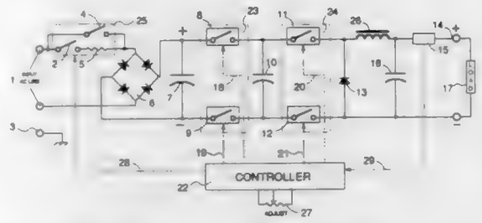
coupling means connected between said means for combining and said multiphase alternating current power system for injecting a portion of said injection current through said coupling means into each phase of the multiphase alternating current power system.

5,345,376

SWITCHING POWER SUPPLY WITH ELECTRONIC ISOLATION

Farhad Nourbakhsh, Watertown, S. Dak., assignor to Tescom Corporation, Elk River, Minn.

Filed Feb. 19, 1993, Ser. No. 20,289
Int. Cl.[5] H02M *3/07*
U.S. Cl. 363—62 12 Claims



10. A transformerless switching power supply for converting an alternating current supply voltage to a regulated direct current load voltage, comprising:

a) a rectifier for converting said alternating current supply voltage to a first direct current voltage; and a first storage capacitor connected to said rectifier for storing said first direct current voltage;

b) a first switching circuit connected to receive said first direct current voltage, and having a first control input for selectively turning said first switching circuit on and off, and having an output;

c) a second storage capacitor connected to the output of said first switching circuit;

d) a second switching circuit connected to said second storage capacitor, and having a second control input for selectively turning said second switching circuit on and off, and having an output;

e) a load connected to the output of said second switching circuit;

f) a controller circuit having means for generating non-coincident first and second timing signals, said first timing signals being connected to said first control input to turn said first switching circuit on only during a time interval when said second switching circuit is turned off, and said second timing signals being connected to said second control input to turn said second switching circuit on only during a time interval when said first switching circuit is turned off; and

g) feedback means coupled to said load and connected to said controller circuit, and wherein said controller circuit further comprises means for manually presetting desired load power characteristics, and means for receiving signals from said feedback means and adjusting said second timing signals to deliver said desired load power characteristics to said load in response to said signals received from said feedback means.

5,345,377

HARMONIC CONTROLLER FOR AN ACTIVE POWER LINE CONDITIONER

Charles W. Edwards, Monroeville, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

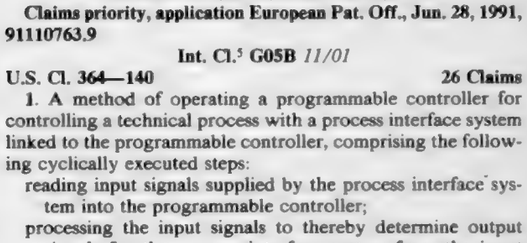
Filed Oct. 30, 1992, Ser. No. 968,847
Int. Cl.[5] H02M *1/12*; **G05F** *1/70*
U.S. Cl. 363—71 12 Claims

1. An apparatus to construct a sinusoidal output signal corresponding to a plurality of selected harmonics of a sinusoidal input signal, said apparatus comprising:

means for dividing said sinusoidal input signal into a plurality of direct component signals corresponding to said plurality of selected harmonics and a plurality of quadrature component signals corresponding to said selected harmonics;

first means for controlling said plurality of direct component signals by applying a gain factor to said plurality of direct component signals and by adding an accumulating functional term, corresponding to a running sum of error terms for said sinusoidal input signal, to said plurality of direct component signals to produce a plurality of accumulated direct component signals with amplitudes corresponding to the magnitudes of said selected harmonic components;

second means for controlling said plurality of quadrature component signals by applying a gain factor to said plurality of quadrature component signals and by adding an accumulating functional term, corresponding to a running sum of error terms of said sinusoidal input signal, to said plurality of quadrature component signals to produce a plurality of accumulated quadrature component signals



with amplitudes corresponding to the magnitude of said selected harmonic components;

first means for multiplying said accumulated direct component signals by said plurality of selected harmonic components of a cosine reference signal to provide a plurality of amplified direct component signals with phase values corresponding to said plurality of selected harmonics of said input signal;

second means for multiplying said accumulated quadrature component signals by said plurality of predetermined harmonic components of a sine reference signal to provide a plurality of amplified quadrature component signals with phase values corresponding to said plurality of selected harmonics of said input signal; and

means for adding said amplified direct component signals and said amplified quadrature component signals to form said output signal corresponding to said plurality of selected harmonics of said sinusoidal input signal.

5,345,378

METHOD AND APPARATUS FOR OPERATING A PROGRAMMABLE CONTROLLER FOR CONTROLLING A TECHNICAL PROCESS

Georg Lang, Sulzbach-Rosenberg; Georg Trummer, Vilseck; Edgar Sigwart, Amberg; Werner Fraas, Amberg; Andrea Misler, Amberg, and Gerhard Reinert, Schwandorf, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

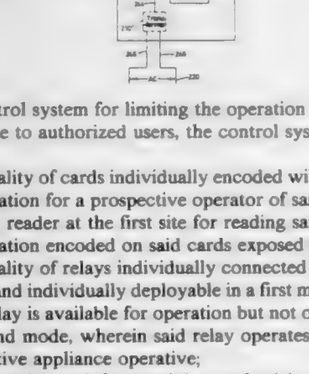
Filed Jun. 29, 1992, Ser. No. 905,807
Claims priority, application European Pat. Off., Jun. 28, 1991, 91110763.9
Int. Cl.[5] G05B *11/01*
U.S. Cl. 364—140 26 Claims

1. A method of operating a programmable controller for controlling a technical process with a process interface system linked to the programmable controller, comprising the following cyclically executed steps:

reading input signals supplied by the process interface system into the programmable controller;

processing the input signals to thereby determine output signals for the process interface system from the input signals; and

outputting the output signals to the process interface system, wherein the processing of the input signals of one cycle takes place, at least in part, simultaneously with the outputting of the output signals of the preceding cycle and with the reading in of the input signals of the subsequent cycle, and



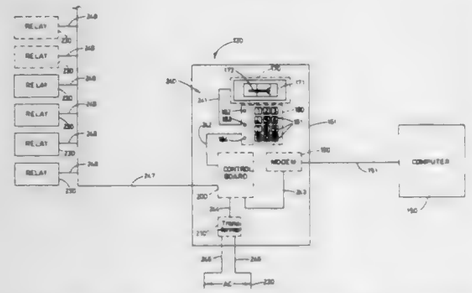
wherein the outputting of the output signals of the preceding cycle takes place at a different time than the inputting of the input signals of the subsequent cycle.

5,345,379

SYSTEM FOR CONTROLLING ACCESS TO SUBSYSTEMS

James H. Brous, 10196 E. Bullard Ave., Clovis, Calif. 93612, and Eugene S. Carlson, 764 N. Fine, Fresno, Calif. 93727

Filed Jun. 17, 1991, Ser. No. 716,410
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—146 16 Claims



1. A control system for limiting the operation of appliances at a first site to authorized users, the control system comprising:

A. a plurality of cards individually encoded with identifying information for a prospective operator of said appliances;

B. a card reader at the first site for reading said identifying information encoded on said cards exposed thereto;

C. a plurality of relays individually connected to said appliances and individually deployable in a first mode, wherein said relay is available for operation but not operative, and a second mode, wherein said relay operates to render its respective appliance operative;

D. a control board for receiving authorizing information indicating those perspective operators authorized to use the appliances, for interpreting said identifying information read by said card reader relative to said authorizing information to determine whether or not the prospective operator identified by said identifying information is authorized to operate the appliances and, if so, to place one of said relays in the second mode;

E. a computer, located at a second site remote from said first site, for receiving said authorizing information identifying prospective operators who are authorized to use said

appliances and transmitting said authorizing information to said control board at the first site; and

F. communication means linking the computer, the card reader, the control board, and the relays for supplying said authorizing information to the control board from the computer, for supplying said identifying information read by the card reader to the control board for determination of whether or not the prospective operator identified by said identifying information is authorized to operate the appliances and for placing one of said relays in the second mode upon the control board determining that said prospective operator is authorized to operate the appliances whereby said appliances are discriminately made available for operation only by authorized prospective operators.

5,345,380

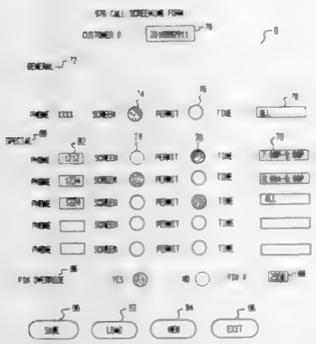
SYSTEM AND PROCESSES SPECIFYING CUSTOMIZED CUSTOMER TELECOMMUNICATION SERVICES USING A GRAPHICAL INTERFACE

David L. Babson, III, Somerset, and Thomas C. Ely, Bridgewater, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Continuation of Ser. No. 629,373, Dec. 18, 1990, abandoned. This application Jan. 27, 1993, Ser. No. 10,520

Int. Cl.[5] H04M *3/42*

U.S. Cl. 364—400 **8 Claims**



1. A method of designing a procedure to direct a telecommunication network to provide requested services to an individual customer of the network, the method comprising the steps, executed by a data processor, of:

presenting the customer with a plurality of types of nodes, the nodes indicating the determinations and actions allowable for the procedure;

receiving from the customer indications of desired nodes;

receiving from the customer indications of desired relationships between the desired nodes;

receiving from the customer values for parameters to be used with the desired nodes;

construction of a graphical representation of the desired nodes, the customer values, and the indicated relationships among the nodes which depicts a customized telecommunications service;

creating a customized call processing information record from said graphical representation of said nodes, said customer values, and said indicated relationships with said record having three levels of representation, said levels comprising a display level, a data structure level, and a binary code level, with said binary code level representation comprising binary code for real time execution by a call processing process;

storing said customized call processing information record for recall and real time execution by said call processing process when the customer's customized service is requested;

recalling said stored customized call processing information record when a customer's customized service is requested;

executing in real time said executable level of said customized call processing information record in order to effect said customized telecommunication service.

5,345,381

SPIRAL SCAN COMPUTER TOMOGRAPHY APPARATUS

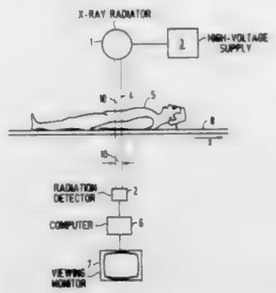
Heinrich Wallschlaeger, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 21, 1992, Ser. No. 964,381

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1991, 4137031

Int. Cl.[5] G06F *15/42*

U.S. Cl. 364—413.14 **4 Claims**



1. A computer tomography apparatus comprising:

means for conducting a spiral scan of an examination subject by directing radiation having an incident intensity at said subject and obtaining relative intensity signals representing relative intensity values for radiation passing through said subject;

means for generating data representing an image of said examination subject, said image conforming to parallel slices of said examination subject, by spiral interpolation of said relative intensity values performed directly on said relative intensity signals; and

means for constructing said image of said examination subject from said data.

5,345,382

CALIBRATION METHOD FOR A RELATIVE HEADING SENSOR

Wei-Wen Kao, Fremont, Calif., assignor to Zexel Corporation, Tokyo, Japan

Filed May 15, 1992, Ser. No. 883,859

Int. Cl.[5] G01C *17/38*

U.S. Cl. 364—424.01 **14 Claims**

12. A method of calibrating a direction sensor, said direction sensor having a relative heading sensor and a geomagnetic sensor, said geomagnetic sensor producing a first output signal proportional to the geomagnetic field in an X-direction and a second output signal proportional to the geomagnetic field in a Y-direction, said X and Y directions being perpendicular, the method comprising the steps of:

rotating said sensors through an angle of at least 360°;

reading said geomagnetic sensor at each of a plurality of points about said angle;

reading said relative heading sensor at each of said points;

finding a first maximum and a first minimum heading in said first output signal;

finding a second maximum and a second minimum heading in said second output signal;

calculating a first difference between a first relative heading reading at a point corresponding to said first maximum

and a second relative heading reading at a point corresponding to said first minimum;

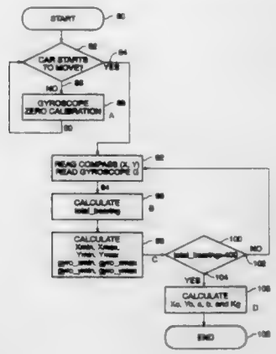
dividing said first difference by 180° to obtain a first relative heading conversion constant;

locating the center of a measurement curve of said geomagnetic sensor relative to a predetermined origin, said measurement curve being defined by said second output signal as a function of said first output signal when the geomagnetic sensor is rotated about 360°, said center being at the point (X_0, Y_0) wherein

$$X_0=(X_{max}+Y_{min})/2$$

$$Y_0=(Y_{max}+Y_{min})/2$$

and wherein X_0 is the first output signal at the center, Y_0 is the second output signal at the center, X_{max} is the first



maximum, X_{min} is the first minimum, Y_{max} is second maximum and Y_{min} the second minimum;

determining a first and a second radius of said measurement curve, said first and second radii being defined as

$$a=(X_{max}-Y_{min})/2$$

$$b=(Y_{max}-Y_{min})/2$$

wherein a is the first radius and b is the second radius;

calibrating said relative heading sensor, using said first relative heading conversion constant with a third relative heading reading from said relative heading sensor to generate a calibrated relative heading; and

employing said center of said measurement curve and said first and second radii with said first and second output signals to generate a calibrated absolute heading.

5,345,383

METHOD AND APPARATUS FOR SELECTIVELY MONITORING INPUT

Ricky D. Vance, Washington, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 945,461, Sep. 16, 1992, abandoned. This application Nov. 10, 1993, Ser. No. 150,347

Int. Cl.[5] G01M *15/00;* **G06F** *15/20*

U.S. Cl. 364—424.03 **9 Claims**

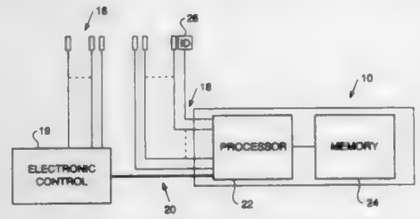
1. An apparatus for selectively receiving data from one of a plurality of sources, comprising:

a plurality of sensor means for producing sensor signals in response to sensed parameters;

instrument means for receiving a first group of one or more of said sensor signals via a wire harness;

control means for receiving a second group of one or more of said sensor signals and responsively delivering said second group to said instrument means via a communication link; and

processing means for determining whether one of said plurality of sensor signals is being delivered via said wire harness or said communication link and for responsively



monitoring one of said wire harness and communication link.

5,345,384

METHOD OF AND APPARATUS FOR INTERROGATING VEHICLE CONTROL DEVICE DATA

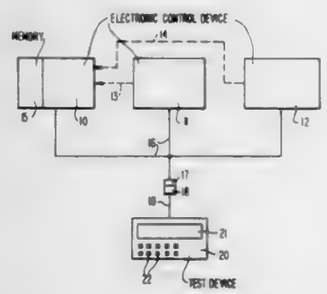
Bernd Przybyla, Schwieberdingen, and Reinhard Palesch, Eberdingen-Hochdorf, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 634,229, Jan. 3, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 39,555

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1989, 3626097

Int. Cl.[5] G06F *15/74;* **G01M** *15/00*

U.S. Cl. 364—424.04 **16 Claims**



1. An electronic control device for effecting central control functions of a vehicle and connected to control devices in said vehicle by communication line means having a diagnostic connection, said electronic control device comprising a non-volatile memory containing information items including the number and type of all of said control devices in the vehicle and addresses of all of said control devices, said non-volatile memory being able to be externally interrogated.

5,345,385

METHOD FOR DETECTING DRIVING SITUATION WITH RESPECT TO VEHICLE YAW BEHAVIOR

Adam Zomotor, Waiblingen; Walter Klinkner, Stuttgart; Erich Schindler, Unterweissach; Frank-Werner Mohn, Esslingen, and Thomas Wohland, Stuttgart, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jul. 1, 1992, Ser. No. 907,109

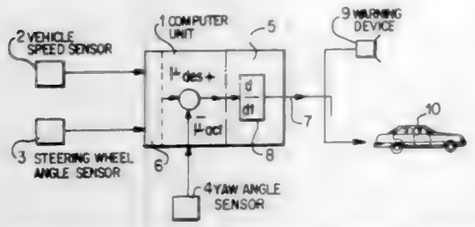
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1991, 4123234

Int. Cl.[5] B62D *6/00*

U.S. Cl. 364—424.05 **12 Claims**

1. A method for detecting an undesired yaw behavior of a vehicle, which behavior produces instability, comprising the steps of forming a desired value of the vehicle yaw angle rate μ_{des} in a computer unit from values measured by sensors on the vehicle, supplying to the computer unit at least one sensor signal to form an actual value of the vehicle yaw angle rate μ_{act}, determining in the computer unit any difference between

the desired value of the yaw angle rate μ_{des} and the actual value of the yaw angle rate μ_{act}, by subtracting the actual value of the yaw angle rate μ_{act} from the desired value of the yaw angle rate μ_{des}, forming a time derivative of the difference in the computer unit, and generating at least one output signal in the computer unit, said at least one output signal representing the detected undesired yaw behavior of the vehicle and is used to permit intervention in a control system of the vehicle to one



of increase understeering handling and to reduce oversteering handling, wherein a first part of said at least one output signal is generated in the computer unit as a function of the difference, said first part being representative of understeering or oversteering handling of the vehicle, and a second part of the output signal is generated in the computer unit as a function of the time derivative of the difference, said second part being representative of an instability increase or decrease in the handling of the vehicle.

5,345,386

AIRCRAFT ENGINE MANAGEMENT SYSTEM

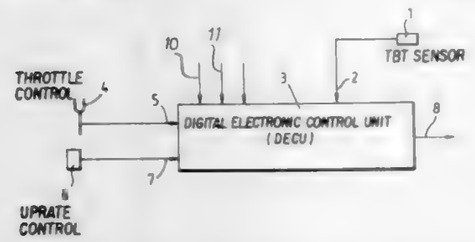
Stuart I. Mullen, and Leslie R. Summerfield, both of Bristol, England, assignors to Rolls Royce Plc., Bristol, England

Filed Dec. 8, 1992, Ser. No. 986,743

Claims priority, application United Kingdom, Dec. 17, 1991, 9126778

Int. Cl.[5] **G06F** *15/48;* **G06G** *7/70*

U.S. Cl. 364—431.02 **9 Claims**



1. An aircraft jet engine management system comprising a digital electronic control unit (DECU) having a pilot demand input; an input from a critical engine parameter sensor; one or more additional pilot-independent inputs; an output for controlling fuel supply to the engine; a memory and a microprocessor, the DECU being programmed with a sensed parameter limitation program to respond to the pilot demand input to control fuel supply to the engine and thus adjust power subject to the sensed parameter not exceeding a reference value which has a normal datum level, wherein there is an over-ride facility responsive to one or more of the said additional pilot-independent inputs to invoke (a) over-ride and (b) resumption of the parameter limitation program subject to special circumstances represented by the additional inputs, at least the resumption (b) of the parameter limitation program being independent of the pilot.

5,345,387

Patent Not Issued For This Number

5,345,388

NAVIGATION SYSTEM UTILIZING LOCUS DATA COMPRESSION

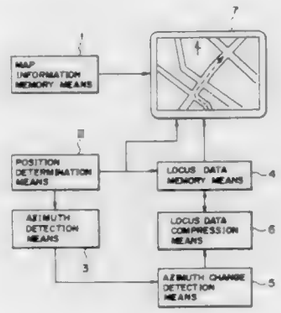
Takashi Kashiwazaki, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 30, 1992, Ser. No. 922,142

Claims priority, application Japan, Aug. 6, 1991, 3-196498; Aug. 29, 1991, 3-218934; Aug. 29, 1991, 3-218936

Int. Cl.[5] **G06F** *15/50*

U.S. Cl. 364—449 **11 Claims**



1. A navigation system comprising:

map information memory means for storing map information to be displayed;

position determination means for determining a present position of a moving body in which the navigation system is mounted to generate present position data;

azimuth detection means for detecting a traveling azimuth of the moving body;

locus data memory means for storing, as locus data which indicate a locus where said moving body has travelled in the past, the present position data at fixed periods or every movement of a fixed distance;

azimuth change detection means adapted for monitoring a traveling azimuth detected by said azimuth detection means to judge a change in the traveling azimuth, and detecting as an azimuth changed position, the present position data when the traveling azimuth is changed;

locus data compression means for compressing the locus data stored in said locus data memory means by selecting and leaving only locus data inside a predetermined range before and after the azimuth changed position and by erasing locus data outside said predetermined range; and

display means adapted to obtain map information corresponding to the present position data from said map information memory means to display that map information and a present position, and to display the locus in the displayed map information by specifying a travel path to the azimuth changed position and a travel path from the azimuth changed position in the displayed map information according to the azimuth changed position and the travelling azimuth reproduced from the locus data stored in said locus data memory means.

5,345,389

ELECTRONIC CONTROLLER FOR A GLASSWARE FORMING MACHINE

Rick Calvin, Bella Vista, Ark.; Anthony R. Clark, Farmland, Ind.; Will Salley, Bentonville, Ark.; Chuck Bruce, Rogers, Ark., and David Johnson, Bentonville, Ark., assignors to VHC, Ltd., West Palm Beach, Fla.

Filed Apr. 21, 1992, Ser. No. 871,765

Int. Cl.[5] **G06F** *15/46;* **C03B** *9/40*

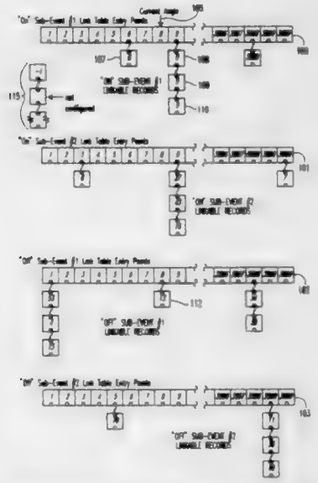
U.S. Cl. 364—473 **9 Claims**

1. A method of controlling at least one individual section of a glassware forming machine, the individual section receiving gobs of molten glass and having a plurality of mechanical devices operable in timed relationship with respect to one another to form the gobs into glassware articles, wherein the mechanical devices are each cyclically actuated by a respective device controller at respective relative times during a cycle of operation of the individual section, the method comprising the steps of:

providing a list of locations in a computer memory corresponding to a list of sequential times during one cycle of operation of the individual section;

providing a number of groups of digitally linked memory storage locations, wherein a unique vale is stored in each storage location, the unique value identifying one of the mechanical devices of the individual section;

digitally linking each of the number of groups to a respective location in the list of locations, the respective location corresponding to an event time in the individual section



cycle at which each of the devices identified by the linked storage locations of the respective group is to change state between an "on" or active state and an "off" or inactive state;

sequentially addressing each location in the list of storage locations at fixed time increments of the individual section cycle;

determining whether a group of linked storage locations is linked to the addressed location in the list of storage locations; and

if a group is detected in the prior step, reading the unique value of each linked storage location of the group and providing a signal to a device controller corresponding to the mechanical device identified by the respective unique value to change the state of the mechanical device.

5,345,390

CONTROL GRAPHICS SYSTEM FOR GEAR SHAPING MACHINES

Lawrence E. Greenip, Jr.; Gregory H. Chase, both of Chester, and Clarence M. Nichols, Springfield, all of Vt., assignors to Fellows Corporation, Springfield, Vt.

Continuation of Ser. No. 578,421, Sep. 4, 1990, abandoned. This application Mar. 15, 1993, Ser. No. 32,415

Int. Cl.[5] **G06F** *15/46;* **G05B** *23/02*

U.S. Cl. 364—474.17 **58 Claims**

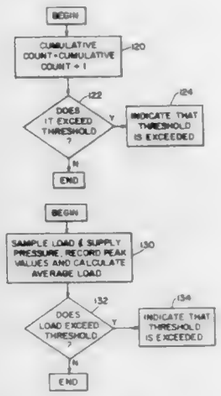
MICROFICHE APPENDIX INCLUDED

(80 Microfiche, 1 Pages)

1. A monitoring system for monitoring use of a gear shaper apparatus having a cutting tool rotatable about a spindle axis and reciprocable along said spindle axis, said monitoring system comprising:

a) a sensor for measuring an amount of load applied by the cutting tool of the gear shaper apparatus during each of a plurality of workpiece cutting operations in which a plurality of workpieces are cut with the cutting tool;

b) a memory for storing measurements of load applied by the cutting tool as obtained by the sensor over time during each cutting operation of the gear shaper apparatus for the plurality of workpieces; and



c) a processor for processing the measurements of load obtained by the sensor and held in the memory to accumulate historical information regarding use of the cutting tool, said accumulated historical information being based on load measurements obtained during the plurality of cutting operations.

5,345,391

METHOD AND APPARATUS FOR PRODUCTION OF HIGH RESOLUTION THREE-DIMENSIONAL OBJECTS BY STEREOLITHOGRAPHY

Charles W. Hull, Santa Clarita; Stuart T. Spence, S. Pasadena; David J. Albert, Aptos; Dennis R. Smalley, Baldwin Park; Richard A. Harlow, Marina Del Rey; Phil Stinebaugh, Sunnyvale; Harry L. Tarnoff, Van Nuys; Hop D. Nguyen, Little Rock; Charles W. Lewis, Van Nuys; Tom J. Vorgitch, Simi Valley, and David Z. Remba, Studio City, all of Calif., assignors to 3D Systems, Inc., Valencia, Calif.

Continuation of Ser. No. 331,644, Mar. 31, 1989, Pat. No. 5,184,307, which is a continuation of Ser. No. 269,801, Nov. 8, 1988, abandoned, which is a continuation-in-part of Ser. No. 182,830, Apr. 18, 1988, Pat. No. 5,059,359. This application Mar. 31, 1992, Ser. No. 861,210

Int. Cl.[5] **G06F** *15/46;* **B29C** *35/08, 67/00*

U.S. Cl. 364—474.24 **18 Claims**

1. A system for producing a three-dimensional object on a cross-section by cross-section basis, comprising:

means for specifying data descriptive of the object;

means for specifying at least one variable building parameter for use in controlling the building of object cross-sections wherein said at least one variable building parameter sets the spacing and directional information of data descriptive of an interior portion of at least one object cross-section;

means for deriving data descriptive of said object cross-sections from said data descriptive of the object including means for deriving data descriptive of the border of said at least one cross-section and then deriving data descriptive of the interior of said at least one object cross-section utilizing said specified at least one variable building parameter and said data descriptive of said border;

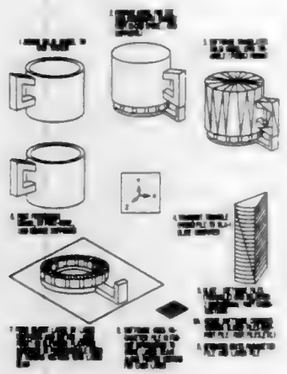
means for providing synergistic stimulation;

a container for containing at least in part, material capable of selective physical transformation upon exposure to the synergistic stimulation;

means for successively providing layers of said material;

means for selectively exposing said layers of said material to

said synergistic stimulation in accordance with said data descriptive of said object cross-sections to form successive object cross-sections; and



control means for obtaining said data descriptive of object cross-sections from said deriving means, and for utilizing said data to control said means for successively providing said layers and said means for selectively exposing said layers, to produce said three-dimensional object.

5,345,392

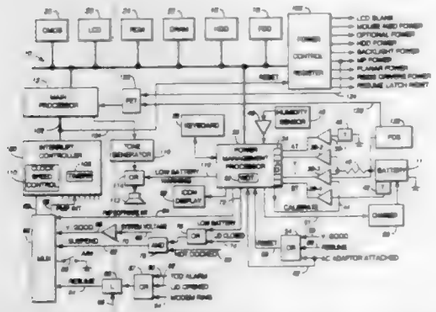
BATTERY CHARGE MONITOR FOR A PERSONAL COMPUTER

Toshitsugu Mito, Kanagawa, Japan; Leopoldo L. Suarez, Bota Raton, Fla.; Shaun Astarabadi, Irvine, and Marcus G. Calescibetta, Mission Viejo, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 25, 1991, Ser. No. 647,120

Int. Cl.[5] G06F *15/20;* **H02J** *7/04*

U.S. Cl. 364—483 **5 Claims**



1. In a battery operated portable computer comprising a rechargeable nickel cadmium battery for powering said computer; a power distribution system connected to said battery for distributing power from said battery to components of said computer; first memory means for storing programs; a plurality of input/output devices for inputting and outputting information into and from said computer; and a main processor connected to said first memory means for executing said programs, said main processor being connected to said input/output devices and to said power distribution system for controlling operation thereof; the improvement comprising:

monitoring means connected to said battery for monitoring battery voltage, battery current, and battery temperature and generating output signals V, I, and BT indicative thereof;

second memory means for storing a plurality of discharge tables of empirical data defining non-linear discharge characteristics of said nickel cadmium battery, said tables defining battery voltages versus discharge times for a plurality of different discharge currents and a plurality of different battery temperatures, each table being for a different battery temperature and divided into a plurality of charge zones representing different level of charge of said battery, said charge zones including a fully charged battery zone, at least one partially discharged zone, and a fully discharged zone;

a charge indicator mounted on said computer in a position conspicuous for continuous viewing by a user and having a plurality of selectively highlightable panels corresponding in number to one less than said plurality of charge zones;

and power management means connected to said monitoring means and to said charge indicator for selectively highlighting said panels in accordance with present charge status of said battery, said power management means comprising a power management processor programmed to

periodically sample said outputs V, I, and BT from said monitor,

access a predetermined one of said tables in accordance with said BT,

select a discharge current curve from said predetermined one of said tables, in accordance with said I,

determine a present charge zone from the discharge current curve selected in the preceding step in accordance with said V,

and selectively illuminate said panels in accordance with said present charge zone.

5,345,393

LOGIC CIRCUIT GENERATOR

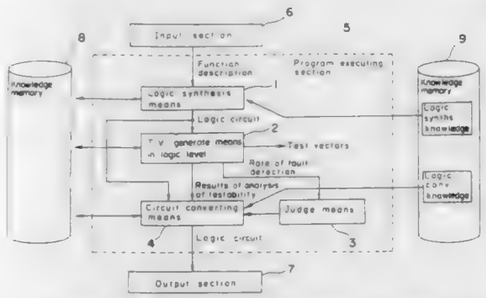
Masahiko Ueda, Kashiwara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 22, 1991, Ser. No. 748,651

Claims priority, application Japan, Aug. 22, 1990, 2-222080

Int. Cl.[5] G06F *15/60, 11/00*

U.S. Cl. 364—489 **6 Claims**



1. A logic circuit generator for automatically generating a logic circuit from a given functional description, comprising:

logic synthesizing means for synthesizing a logic circuit that implements functions specified by said functional description;

logic-level test vector generating a test vector for use in a fault detection by analyzing the logic circuit synthesized by said logic synthesizing means, and further for outputting a fault detection rate and results of a testability analysis regarding the generated test vector;

judging means for deciding whether or not said fault detection rate outputted from said logic-level test vector generating means is greater than a predefined value; and

circuit converting means for, when it is judged as a result of a decision made by said judging means that said fault detection rate is lower than the predefined value logic circuit synthesized by said logic synthesizing means according to said results of the testability analysis outputted from said logic-level test vector generating means so as to eliminate difficult-to-test portions of said logic circuit and redundancies thereof, and to satisfy given design restrictions, wherein said circuit converting means performs the following functions:

(i) inserting a test circuit into a portion of said logic circuit according to said results of the testability analysis outputted from said logic-level test vector generating means;

(ii) optimizing said logic circuit by eliminating redundancy in said logic circuit as a result of said test circuit insertion; and

(iii) adjusting said logic circuit by converting said logic circuit obtained from said optimizing step so as to satisfy said given design restrictions when it is determined that said logic circuit obtained from said optimizing step does not satisfy said given design restrictions.

5,345,394

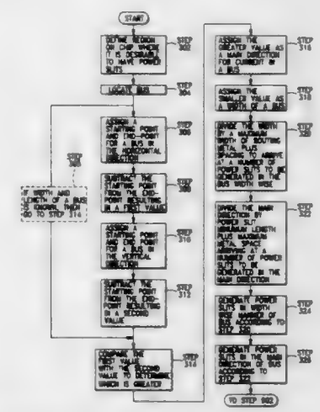
METHOD FOR GENERATING POWER SLITS

Chong M. Lin, Sunnyvale; Tatao Chuang, San Jose; Tran Long, San Jose, and Hy Hoang, San Jose, all of Calif., assignors to S-MOS Systems, Inc., San Jose, Calif.

Filed Feb. 10, 1992, Ser. No. 833,419

Int. Cl.[5] G06F *15/60*

U.S. Cl. 364—491 **13 Claims**



13. An apparatus having a plurality of buses, comprising: a first bus that intersects a second bus within the same conductive layer to form a cross area, said first bus having first power slits and first pointer lines extending from said first power slits through said cross area and said second bus having second power slits and second pointer lines extending from said second power slits through said cross area, wherein said cross area is void of power slits, said cross area comprising holes located at intersection points where the first pointer lines and the second pointer lines intersect.

5,345,395

SPECIMEN PROCESSING AND ANALYZING SYSTEMS AND METHODS USING PHOTOMETRY

Christopher D. Griner, Sacramento, Calif., assignor to Baxter Diagnostics Inc., Deerfield, Ill.

Filed Oct. 31, 1991, Ser. No. 785,800

Int. Cl.[5] G01N *35/04*

U.S. Cl. 364—497 **5 Claims**

1. A system for taking a photometric reading of a sample comprising

a photometer including

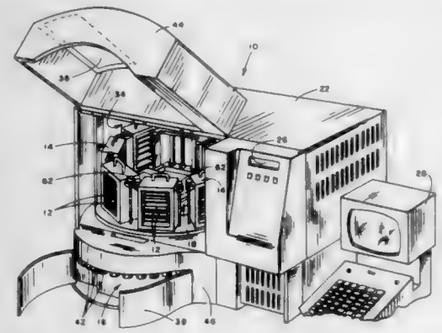
a light emitter, and

a light detector facing the emitter in a spaced apart relationship to establish an optical channel between the emitter and the detector,

a platform including a preformed pocket having an interior region that transmits light emitted by the photometer, the area outside the interior region being substantially opaque to the light emitted by the photometer,

a tray having a well for receiving a specimen for analysis, the well including a light transmissive material and shaped to nest within the pocket with the center of the well generally aligned along the center of the light transmissive region of the pocket, and

control means being operable in a calibration mode for moving the platform within the photometer to bring the light transmissive region of the pocket into the optical channel and there measuring an initial light intensity; for moving the platform in one direction until the measured light intensity falls below a threshold value, indicating one edge of the interface between the light transmissive interior region and the opaque outside area; for recording this position of the platform as a first edge of the light transmissive region; for moving the platform in the opposite



direction until the measured light intensity again falls below the threshold value, indicating the opposite edge of the interface; for recording this position of the platform as a second edge of the light transmissive region; for averaging said positions of the first and second edges to compute a position for the center of the light transmissive region; and for recording said computed position of the center of the light transmissive region, and

the control means being further operable in a command mode for moving the platform outside the photometer to receive the specimen tray and for moving the tray carrying platform within the photometer to bring the light transmissive region of the pocket into the optical channel so that light transmitted between the emitter and detector passes through the specimen in the tray well, when operated in the command mode, the control means including means for reading the recorded center position of the light transmissive region and for moving the platform directly into this position in response to a control command.

5,345,396

PROTOCOL MACHINE WITH PORTIONS OF THE PROTOCOL HANDLING FUNCTIONS BEING INCORPORATED INTO AN APPLICATION PROGRAM

Masahiro Yamaguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 479,468, Feb. 13, 1990, abandoned. This application Dec. 10, 1992, Ser. No. 999,531

Claims priority, application Japan, Feb. 13, 1989, 1-33449

Int. Cl.[5] G06F *5/00, 13/00*

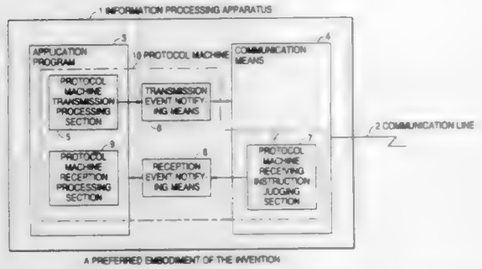
U.S. Cl. 395—500 **3 Claims**

1. A protocol machine in an information processing apparatus having a communication section for processing data transmission to and reception from another information processing apparatus linked by at least one communication line and at least one application program executed by said information process-

ing apparatus for processing transactions with said another information processing apparatus comprising:

a protocol machine transmission processing section implemented by said information processing apparatus, which is implemented by execution of said application program, said protocol machine transmission processing section including means for receiving data to be transmitted, means for judging based on a predetermined protocol and said data, whether said data should be transmitted to said another information processing apparatus, means for converting, based on a judgment to transmit, said data to be transmitted into control data based on said predetermined protocol, and means for outputting an actuating signal when said control data is ready to be transmitted to said another information processing apparatus;

transmission event notifying section receiving said actuating signal and notifying said communication section, when a need arises in the protocol machine transmission process-



A PREFERRED EMBODIMENT OF THE INVENTION

ing section to transmit data to said another information processing apparatus;

a protocol machine receiving instruction judging section, which is part of said communication section receiving other control data from said another information processing apparatus, analyzing said other control data in accordance with said predetermined protocol and determining whether there are data to be supplied to said application program;

reception event notifying section notifying said application program, when the protocol machine receiving instruction judging section judges that data to be supplied to said application program has been generated; and

a protocol machine reception processing section implemented by said information processing apparatus, built into said application program, for supplying data received from said another information processing apparatus to said application program in compliance with a data reception request from said application program.

5,345,397

OPTIMAL COMPOSITE CURING SYSTEM AND METHOD

Paul I. Handel, Medford, N.J.; Matthew J. Patterson, Bloomfield, Conn.; Daniel Guerin, Wilmington, Del.; Nicholas C. Strauss, West Chester, Pa.; Steven B. Helton, Mill Creek, Wash.; Thomas M. Barrett, Wilmington, Del.; Lisa K. Koelewyn, Lafayette Hill, and James D. Waterman, Drexel Hill, both of Pa., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 25, 1991, Ser. No. 796,933

Int. Cl.[5] B29C *35/02*

U.S. Cl. 364—503 **19 Claims**

1. A method for controlling the curing process of a part formed of fiber-reinforced thermosetting resin composite material in an autoclave with the aid of a digital computer, comprising the steps of:

placing a part of composite material in an autoclave and initiating a curing process of the part;

repetitively measuring the temperature of the autoclave during the curing process;

repetitively measuring the temperature of the part during the curing process;

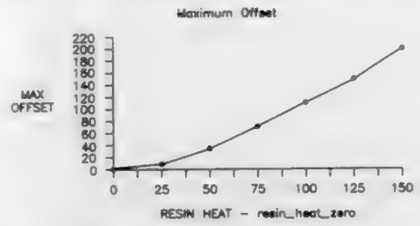
repetitively measuring the time elapsed during the curing process;

increasing the autoclave temperature;

providing the computer with autoclave temperature, part temperature, elapsed time, and properties of the resin

repetitively calculating in the computer at frequent intervals during the curing process lag time before the temperature of the part being cured rises to a predetermined temperature lower than a temperature where resin reaction produces heat;

repetitively calculating in the computer at frequent intervals during the curing process the degree of cure;



repetitively determining in the computer at frequent intervals during the curing process the time rate of change of the degree of cure;

repetitively calculating resin heat in the computer at frequent intervals during the curing process after the part temperature exceeds the predetermined temperature;

repetitively determining the maximum offset in the computer at frequent intervals;

determining optimal autoclave temperature from current degree of cure and current maximum offset; and

changing current autoclave temperature to the current optimal autoclave temperature.

5,345,398

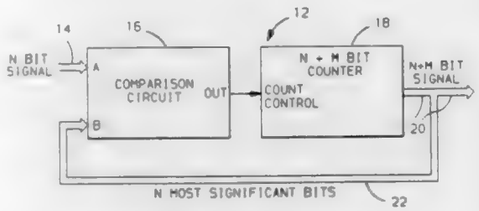
GAUGE GLIDER

Raymond Lippmann, Ann Arbor; James E. Nelson, Waterford; Michael J. Schnars, Clarkston; James R. Chintyan, Davison, and Mark C. Hansen, Ann Arbor, all of Mich., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Sep. 11, 1992, Ser. No. 943,964

Int. Cl.[5] G01F *23/36*

U.S. Cl. 364—509 **18 Claims**



1. A circuit apparatus comprising:

means for receiving an N bit input signal;

means for comparing the N bit input signal with an output signal, the output signal having N+M bits of which there are at least N most significant bits, wherein the comparison compares the N bit input signal with the N most significant bits of the output signal and provides a control output in response to the comparison;

means for counting, which increments or decrements an N+M bit count output in response to the control output of the comparing means, and for providing the N+M bit count output on an output bus, said bus having resolution

greater than N bits, as the N+M bit output signal, wherein the N+M bit output signal has an apparent resolution improvement of 2^M over the N bit input signal.

5,345,399

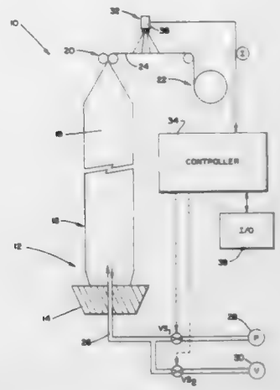
SYSTEM AND METHOD FOR MONITORING AND CONTROLLING THE WIDTH OF A PRODUCT

Steven L. Collins, Yardley, Pa., assignor to Union Camp Corporation, Princeton, N.J.

Filed Jul. 6, 1992, Ser. No. 909,554

Int. Cl.[5] G01B *11/02*

U.S. Cl. 364—563 **13 Claims**



1. A lay flat width control system for monitoring and controlling the width of an extruded polymeric product, comprising:

an extrusion die for forming a polymeric substance supplied to said extrusion die under pressure into a tubular product defining an interior space;

pressure control means associated with said extrusion die for controlling gas pressure within the interior space, thereby controlling expansion of the tubular product after the tubular product is formed by said extrusion die;

a roller for flattening the tubular product into a lay flat product having a width defined by first and second edges of said lay flat product, and

means for monitoring and controlling the width of said lay flat product, said monitoring and controlling means comprising:

a sensor for monitoring the width of said lay flat product, said sensor comprising a plurality of sensing elements of a type which can measure an analog value of a property that can be associated with a presence or an absence of said lay flat product; and

a controller in communication with said sensor for adjusting the interior space of the tubular product in response to information which is provided to said controller from said sensor; thereby permitting said system to control the width of the lay flat product to a higher degree of accuracy with a given number of sensing elements than was heretofore possible.

5,345,400

METHOD OF CALIBRATING MECHANICAL PRESSURE GAUGES

Ronald D. Bissell, Orange, and Nicholas E. Ortyl, III, Middletown, both of Conn., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 570,913, Aug. 22, 1990, Pat. No. 5,067,100. This application Nov. 15, 1991, Ser. No. 792,370

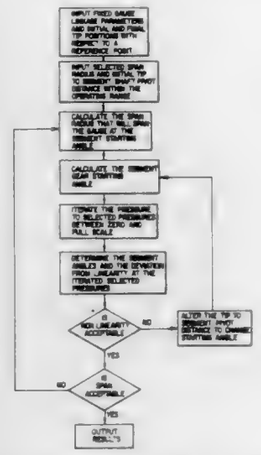
Int. Cl.[5] G01L *7/04;* **G06F** *15/46*

U.S. Cl. 364—571.01 **38 Claims**

1. Method of calibrating pressure gauges having a gauge linkage comprising a pressure responsive element with a tip that moves proportionate to applied pressure, a segment gear pivoted in a movement on a pivot axis, with a gear portion drivingly engaging a pinion gear, shaft and pointer and having a gain producing lever arm adjustably connected at a span radius distance to one end of a link having its other end unrigidly linked to the tip, the movement being adjustable to alter the tip to segment gear pivot axis distance and angular position, the method comprising:

accurately measuring with respect to a reference position, the initial tip position at zero gauge pressure and final tip position at full gauge pressure;

selecting a nominal tip to segment pivot axis distance that will produce segment gear movement within the operating range for tip movement between initial and final positions;



determining the span radius that will move the segment gear through an arc equivalent to rotation of the pointer pinion gear between zero and full scale in response to tip movement from initial to final position;

determining the segment gear angle at the initial tip position using the measured initial and final tip positions and the geometry of the gauge linkage as a basis for calculating angular change of the segment gear at other tip positions;

incrementing the tip to segment pivot axis distance at an intermediate tip position most representative of gauge linkage non-linearity and calculating the non-linearity at incremented distances until an incremental distance is found which produces a desired low amount of non-linearity; and

setting the determined span radius and incremented tip to segment pivot axis distance found, to produce a calibrated gauge movement with the desired amount of linearity.

5,345,401

LOGIC CIRCUIT SIMULATOR FOR VERIFYING CIRCUIT OPERATIONS HAVING MOS TRANSISTORS

Takahiro Tani, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 958,165

Claims priority, application Japan, Apr. 27, 1992, 4-107439

Int. Cl.[5] G06F *15/60*

U.S. Cl. 364—578 **16 Claims**

1. A logic simulator for verifying a circuit operation of a logic circuit including MOS transistors, said logic simulator comprising:

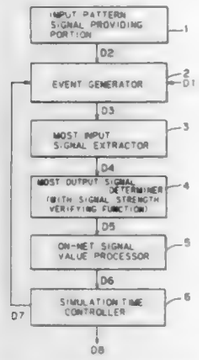
circuit connection data providing means for providing a circuit connection data specifying circuit connections in said logic circuit;

input pattern signal providing means for applying an input pattern signal to an input portion of said logic circuit;

event generating means for generating a signal value change (an event) at input and output portions of elements of said logic circuit in said circuit connection data as a function of said input pattern signal to output a circuit connection data with event generation;

MOS transistor input signal extracting means for extracting an MOS transistor having input and control terminals at which the event is generated as a function of said circuit connection data with event generation to output said MOS transistor as an event generation MOS transistor (an event generation MOST);

MOS transistor output signal strength determining means for detecting said event generation MOST which is turned



on as a function of a conductivity type of said event generation MOST and a control signal value given from said control terminal to determine an output signal strength which is a drive capability of an output signal given from an output terminal when said event generation MOST is turned on as a function of an input signal value; and

wiring signal value determining means for detecting an MOST output wiring connected to said output terminal of said event generation MOST and comparing a signal strength of said output signal determined on said output signal strength with a signal strength of another signal to be applied to said MOST output wiring where said MOST output wiring is in a signal competing condition to determine a signal value of said MOST output wiring.

5,345,402

VEHICLE CRASH SIMULATOR SYSTEM FOR TESTING CRASH SENSORS

Tony Gioutsos, Brighton, and Michael A. Piskie, Bloomfield Hills, both of Mich., assignors to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.

Continuation-in-part of Ser. No. 841,381, Feb. 25, 1992, Pat. No. 5,251,161. This application Jun. 4, 1993, Ser. No. 71,785

Int. Cl.[5] G06G *7/48;* **B60Q** *11/00;* **B60R** *21/00*

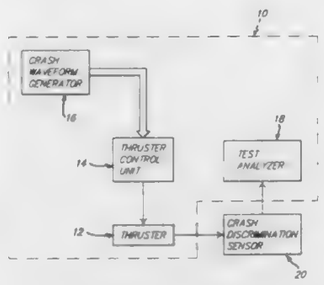
U.S. Cl. 364—578 **4 Claims**

1. A system for simulating vehicle crashes to test the reliability of a vehicle crash sensor comprising:

means for generating a plurality of model crash waveforms by generating a plurality of statistical variations on an actual crash waveform;

means for physically applying said plurality of model crash waveforms to said vehicle crash sensor, said sensor providing an output responsive to each applied model crash waveform; and

means for analyzing said sensor output relative to each respective one of said plurality of applied model crash waveforms, said analyzing means providing an output



indicative of the operational reliability of said crash sensor.

5,345,403

INFORMATION PROCESSING APPARATUS AND PRINTER USED FOR THE SAME

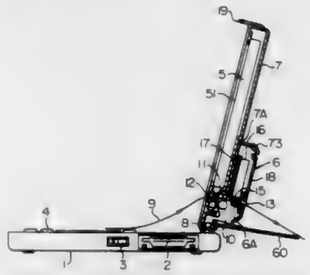
Hiroshi Ogawa, Hitachi, and Kouichi Saito, Kitaibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,598

Claims priority, application Japan, Mar. 11, 1992, 4-052219

Int. Cl.[5] G06F *1/00*

U.S. Cl. 364—708.1 **3 Claims**



1. An information processing apparatus comprising:

a base case;

a processor, accommodated in said base case, for processing text and graphic data;

a liquid crystal display panel fitted pivotally in a shut/open fashion in a rear portion of said base case;

a display screen, included in said liquid crystal display panel, for displaying characters and figures based on data provided by said processor; and

a printer for printing characters and figures based on data provided by said processor and displayed on said display panel, said printer being detachably attached to a back portion of said liquid crystal display panel, with a circuit for communicating print data between said processor and said printer when said printer is attached, and an opening being formed in said liquid crystal display panel so as to allow a sheet of print paper to be fed into said printer.

5,345,404

Patent Not Issued For This Number

5,345,405

CIRCUIT FOR DETECTING THE POSITION OF AN EXTREME "1" BIT IN A BINARY NUMBER

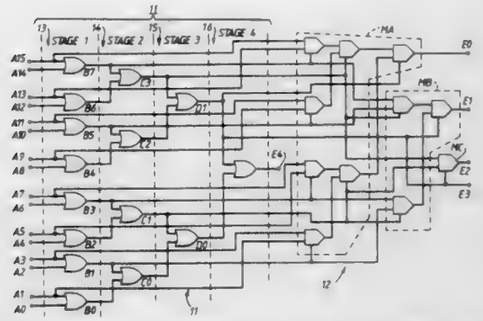
Brendan Walsh; Richard Simpson, both of Bedford; Laura Dudbridge, Oxford; David Collins, and Philip Moyse, both of Bedford, all of England, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 18, 1992, Ser. No. 978,005

Claims priority, application United Kingdom, Nov. 19, 1991, 9124539.9

Int. Cl.[5] G06F *7/00*

U.S. Cl. 364—715.1 **9 Claims**



1. Apparatus for detecting the "1" bit of an input binary number of n-bits having an extreme position in that number and for producing an output representing that position, the apparatus including a binary tree of two-input OR-gate means having m stages, where $2^m \geqq n$, with or without the final stage of the tree containing a single OR-gate means, and having a first stage with up to 2^{m-1} OR-gate means to the inputs of which the bits of the input number are respectively applied, and a multiplexer circuit having m-2 multiplexer trees selectively responsive to inputs to and outputs from the stages of the binary tree to produce respective output bits which in combination with an output from the penultimate stage of the binary tree form a binary number representing the position of the extreme "1" bit in the input number.

5,345,406

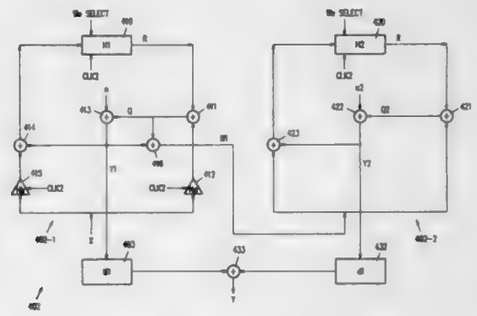
BANDPASS SIGMA DELTA CONVERTER SUITABLE FOR MULTIPLE PROTOCOLS

Tim A. Williams, Danville, Calif., assignor to Wireless Access, Inc., San Jose, Calif.

Filed Aug. 25, 1992, Ser. No. 935,018

Int. Cl.[5] G06F *15/31*

U.S. Cl. 364—724.01 **16 Claims**



1. A bandpass sigma delta converter comprising: an input port for receiving an input signal comprising a plurality of aliased copies of a desired information signal;

a first stage having an inherent quantization noise, comprising:

an input port coupled to said input port of said bandpass sigma delta converter in order to receive said input signal;

an output port;

a first filter network having an input port coupled to said input port of said first stage and an output port coupled to said output port of said first stage for providing a desired selectivity to said input signal in order to cause said converter to provide on said output port of said first stage a first intermediate output signal comprising a selected one of said aliased copies of said desired information signal;

a second filter network coupled to said input port of said first stage and to receive said intermediate output signal for providing a component of said first intermediate output signal comprising a shaped value of said inherent quantization noise of said first stage; and

a noise output terminal for providing a noise output signal comprising said inherent quantization noise of said first stage;

a second stage having an inherent quantization noise, comprising:

an input port coupled to said noise output port of said first stage;

an output port; and

a filter network having an input port coupled to said input port of said second stage and an output port coupled to said output port of said second stage, and providing on said output port of said second stage a second intermediate output signal comprising a first component comprising said inherent quantization noise of said first stage and a second component comprising a shaped value of said inherent quantization noise of said second stage; and

a third stage comprising:

a first input port coupled to said output port of said first stage;

a second input port coupled to said output port of said second stage; and

an output port for providing a final output signal comprising a first component of said selected one of said plurality of aliased copies of said information signal with a desired selectivity to reject adjacent channel signals, and a second component of said shaped inherent quantization noise of said second stage.

5,345,407

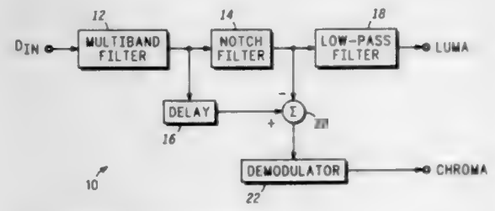
DIGITAL MULTIBAND FILTER AND METHOD THEREOF

David A. Hostetler, Rolling Hills Estates, Calif., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 23, 1993, Ser. No. 109,892

Int. Cl.[5] H04N *9/78*

U.S. Cl. 364—724.01 **20 Claims**



1. A digital filter, comprising:

a multiband filter having an input receiving a digital input signal and having an output for providing an output signal having a low-pass response at a first predetermined frequency and a band-pass response between second and third predetermined frequencies;

a notch filter having an input receiving said output signal of

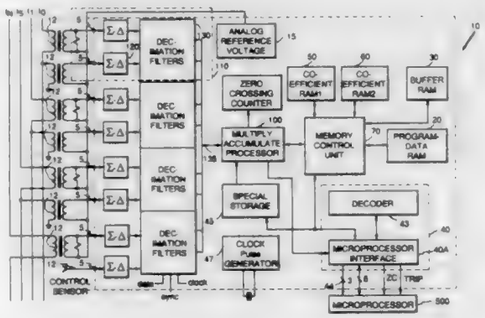
said multiband filter for rejecting said band-pass response while passing said low-pass response at said first predetermined frequency to an output;
a first delay circuit having an input coupled to said output of said multiband filter for providing a delayed multiband signal at an output; and
circuit means coupled for subtracting said low-pass response provided by said notch filter from said delayed multiband signal to isolate said band-pass response.

5,345,408
INVERSE DISCRETE COSINE TRANSFORM PROCESSOR
Christopher L. Hoogenboom, La Jolla, Calif., assignor to GI Corporation, Hatboro, Pa.
Filed Apr. 19, 1993, Ser. No. 46,382
Int. Cl.[5] G06F *15/332*
U.S. Cl. 364—725 **21 Claims**



1. An inverse discrete cosine transform (IDCT) processor for use in recovering pixel data from blocks of DCT coefficients, said blocks each containing N arrays of N coefficients, said IDCT processor comprising:
input means for receiving DCT coefficients at said IDCT processor;
first means for successively processing each of the N arrays in a block of DCT coefficients, said first processing means being disposed at said IDCT processor and including:
means responsive to a clock cycle for forming an address by combining at least two bits from each of the N coefficients contained in an array being processed, wherein a first stream of successive addresses is produced during successive clock cycles;
means responsive to said first stream of addresses for outputting successive partial dot products between each of said N coefficients contained in said array being processed and a DCT kernel matrix; and
means for accumulating and combining said successive partial dot products to form a complete dot product for each of the N coefficients of said array being processed, said complete dot products for all N arrays of said block defining an N×N matrix of dot product elements corresponding to the N×N coefficients contained in said block;
means for transposing said N×N matrix of dot product elements to provide a transposed matrix having N arrays of N elements;
second means for successively processing each of the N arrays of dot product elements in said transposed matrix, said second processing means being disposed at said IDCT processor and including:
means responsive to a clock cycle for forming an address by combining at least two bits from each of the N elements contained in an array of said transposed matrix being processed, wherein a second stream of successive addresses is produced during successive clock cycles;
means responsive to said second stream of addresses for outputting successive partial dot products between each of said N elements contained in said array of the transposed matrix being processed and said DCT kernel matrix; and
means for accumulating and combining said successive partial dot products for each element of the array of the transposed matrix being processed to form a complete dot product for each element, said complete dot products for all N arrays of said transposed matrix defining a block of N×N inverse transform elements corresponding to the N×N coefficients contained in said block of DCT coefficients; and
output means for outputting pixel data corresponding to said inverse transform elements from said IDCT processor.

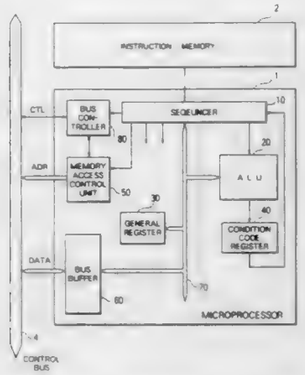
5,345,409
PROGRAMMABLE DIGITAL SIGNAL PROCESSOR SYSTEM FOR PROCESSING ELECTRICAL POWER SIGNALS
Donald T. McGrath, Scotia; Joseph E. Krisciunas, Clifton Park, both of N.Y.; Steven L. Garverick, University Heights, Ohio, and Philippe Jacob, New York, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Mar. 25, 1993, Ser. No. 36,743
Int. Cl.[5] G06F *7/00;* **G01R** *19/00*
U.S. Cl. 364—736 **27 Claims**



1. A system for processing at least one externally derived electrical power signal, said signal being substantially continuous, substantially alternating, and having a primary frequency, said system comprising:
a multiply-accumulate processor having three input ports, an output port, and a processor control signal port, said multiply-accumulate processor performing, in response to predetermined processor control signals, predetermined arithmetic operations on digital input signals substantially derived from said at least one substantially continuous electrical signal and arriving at a substantially predetermined rate;
a first memory unit for storing a plurality of processor control signals;
a second and third memory unit, each for storing a separate plurality of processor digital input signals; and
a memory control unit which, in response to externally derived memory unit control signals, respectively couples said first memory unit to said processor control signal port, and the first processor input port to one of said second and third memory units for each successive cycle of the primary frequency so that the digital input signals derived from the substantially continuous electrical signal and provided to one of the three processor input ports are continually processed by said processor for a predetermined number of successive cycles of the primary frequency.

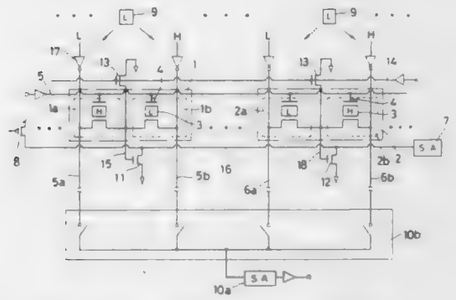
5,345,410
ARITHMETIC-LOGIC UNIT WITH MODULO ADDITION/SUBSTRACTION FUNCTION AND MICROPROCESSOR USING THE SAME
Tatsuya Yokoyama, and Tetsuhiko Hirata, both of Machida, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 29, 1992, Ser. No. 890,712
Claims priority, application Japan, May 30, 1991, 3-127187
Int. Cl.[5] G06F *7/72*
U.S. Cl. 364—746 **23 Claims**

1. A microprocessor for executing an arithmetic-logic operation in response to each one of various types of instructions of a program, comprising:
first operation means for executing arithmetic operations in response to general instructions other than modulo instructions; and



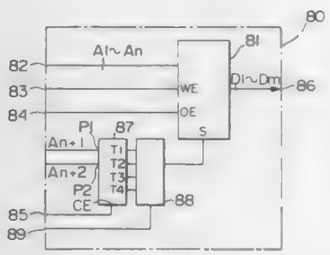
second operation means responsive to a modulo comparison instruction, for executing an arithmetic-logic operation of determining whether numeric data B cyclically changing within a predetermined range satisfies a predetermined condition with respect to boundary A and C, each having a modulo value.

5,345,411
CONTENT ADDRESSABLE MEMORY FOR HIGH SPEED RETRIEVAL OPERATION WITHOUT INTERFERENCE BETWEEN MEMORY CELLS
Masato Yoneda, Tokyo, Japan, assignor to Kawasaki Steel Corporation, Hyogo, Japan
Filed Nov. 30, 1992, Ser. No. 982,901
Claims priority, application Japan, Dec. 18, 1991, 3-334964
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—49 **8 Claims**



1. A semiconductor integrated circuit comprising:
a plurality of retrieval memory word cells arranged in a matrix array to form a plurality of rows of cells and a plurality of columns of cells;
a plurality of control word lines, each control word line associated with a corresponding row of cells;
a plurality of match lines, each match line associated with at least one corresponding row of cells;
a plurality of first data lines, each match line associated with at least one corresponding row of cells;
a plurality of first data lines, each first data line associated with a corresponding column of cells;
a plurality of second data lines, each second data line associated with the corresponding column of cells;
a plurality of sense amplifiers for detecting an electrical potential of a match line, each sense amplifier connected to a corresponding match line;
a plurality of first potential setting means for setting a potential of the match line to a first potential, each first potential setting means connected to the corresponding match line;
a plurality of common source electrode lines, each common source electrode line associated with the corresponding column of cells, which is in the at least one corresponding row of cells;
a plurality of first potential fixing means for adjusting the potential of the match line to a second potential, each first potential fixing means connected to the corresponding match line with a corresponding common source electrode line as a control input; and
a plurality of second potential fixing means for adjusting the potential of a common electrode line to a third potential, each second potential fixing means connected to the corresponding common source electrode line;
wherein each retrieval memory word cell comprises:
a first memory unit providing a first circuit path between the corresponding common source electrode line and the corresponding first data line; and
a second memory unit providing a second circuit path between the corresponding common source electrode line and the corresponding second data line; and
wherein the corresponding control word line controls the first and second memory units of each cell of the corresponding row during a data retrieval operation to establish one of the first and the second circuit paths between the corresponding common source electrode line and one of the corresponding first and second data lines, and to controlling each of the corresponding first potential fixing means to regulate the potential of the corresponding match line.

5,345,412
MEMORY IC AND MEMORY DEVICE CAPABLE OF EXPANSION OF STORAGE CAPACITY
Syuuichi Shiratsuchi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 17, 1992, Ser. No. 914,313
Claims priority, application Japan, Jul. 19, 1991, 3-179699; Oct. 29, 1991, 3-283191
Int. Cl.[5] G11C *5/06*
U.S. Cl. 365—63 **16 Claims**

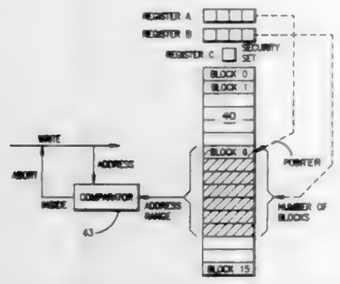


1. A memory IC comprising:
a memory element having a chip select signal input terminal;
a decoder having a plurality of input and output terminals, one of the output terminals being connected to the chip select signal input terminal of the memory element, for decoding a portion of an address signal applied to said input terminals to output, as a result of the decoding, a chip select signal at one of the plurality of output terminals: and
selecting means connected to the plurality of output terminals of said decoder for selecting, in response to an external signal, one of the output terminals of said decoder and connecting the selected output terminal to the chip select signal input terminal of said memory element.

5,345,413
DEFAULT FUSE CONDITION FOR MEMORY DEVICE AFTER FINAL TEST

Richard J. Fisher, Phoenix, and Samuel E. Alexander, Gilbert, both of Ariz., assignors to Microchip Technology Incorporated, Chandler, Ariz.

Filed Apr. 1, 1993, Ser. No. 41,069
Int. Cl.[5] G11C *17/00*
U.S. Cl. 365—96 **7 Claims**



1. Test apparatus for a programmable semiconductor memory device, comprising:

a programmable semiconductor memory device including a memory array,

selection means providing at least one configurable option for the memory array,

configuration fuse means adapted to be programmed to a first state to prevent alteration of a selected configurable option and to a second state to permit alteration of the selected configurable option, and

lockout fuse means adapted to be programmed to a first state to prevent the configuration fuse means from being programmed from one of said first and second states of the configuration fuse means to the other and to restrict the configuration fuse means to one-time programming thereafter, and said lockout fuse means adapted to be programmed to a second state to permit the configuration fuse means to be programmed repeatedly to one or the other of said first and second states of the configuration fuse means; and

test means for overriding the lockout fuse means to permit testing of the configuration fuse means and to thereafter bring the lockout fuse means and the configuration fuse means to a default condition in which the lockout fuse means assumes its first state to restrict the configuration fuse means to one-time programming thereafter.

5,345,414
SEMICONDUCTOR MEMORY DEVICE HAVING FERROELECTRIC FILM

Takashi Nakamura, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jan. 15, 1993, Ser. No. 5,070
Claims priority, application Japan, Jan. 27, 1992, 4-012177; Jan. 27, 1992, 4-012178
Int. Cl.[5] G11C *11/22*
U.S. Cl. 365—145 **61 Claims**

1. A nonvolatile semiconductor memory device comprising:

a memory cell, including

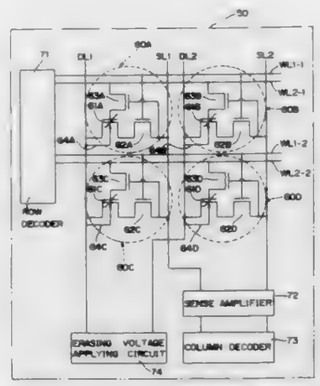
a storing field effect transistor having a ferroelectric gate film formed on a semiconductor substrate, and a gate electrode formed on the ferroelectric gate,

a reading transistor connected in series to said storing field effect transistor and

a writing and erasing transistor connected to the gate electrode of said storing field effect transistor;

writing means for writing data to be written into said memory cell by making said writing and erasing transistor conductive and applying a writing voltage corresponding to the data to be written to the gate electrode of said storing field effect transistor through said writing and erasing transistor so as to invert a direction of a polarization of said ferroelectric gate film or retain the polarization in an initial direction in accordance with the data to be written;

reading means for reading from said memory cell data to be read, said reading means reading the data to be read by



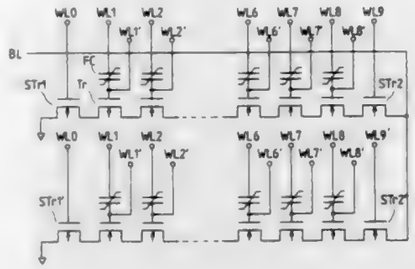
making said reading transistor conductive and checking whether a series circuit of said storing field effect transistor and said reading transistor is conductive or not; and

erasing means for erasing from said memory cell data to be erased, said erasing means erasing the data to be erased by applying an erasing electric field to said ferroelectric gate film to turn the polarization to a specified direction.

5,345,415
NONVOLATILE SEMICONDUCTOR MEMORY UTILIZING A FERROELECTRIC FILM

Hironobu Nakao, and Takashi Nakamura, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Division of Ser. No. 973,074, Nov. 6, 1992. This application Nov. 9, 1993, Ser. No. 149,068
Claims priority, application Japan, Nov. 8, 1991, 3-321045; Nov. 11, 1991, 3-323930
Int. Cl.[5] G11C *11/22, 11/40*
U.S. Cl. 365—145 **5 Claims**



1. A nonvolatile semiconductor memory comprising:

two memory cells formed adjacent each other on a semiconductor layer, each of the two memory cells comprising:

two selection transistors;

a plurality of memory transistors formed between the two selection transistors such that the two selection transistors and the memory transistors are connected in series, and that a source/drain diffusion layer is shared by adjacent ones of the selection transistors and the memory transistors; and

a plurality of ferroelectric capacitors each comprising a first electrode, a ferroelectric film and a second electrode, and each formed so as to correspond to one of the memory transistors such that the first electrode is connected to a gate electrode of the corresponding memory transistor;

a first word line connected to gate electrodes of two of the selection transistors located at ends of an area in which the two memory cells are formed;

a plurality of second word lines connected to respective connecting points of the gate electrodes of the memory transistors and the first electrodes of the ferroelectric capacitors;

a plurality of third word lines connected to the respective second electrodes of the ferroelectric capacitors;

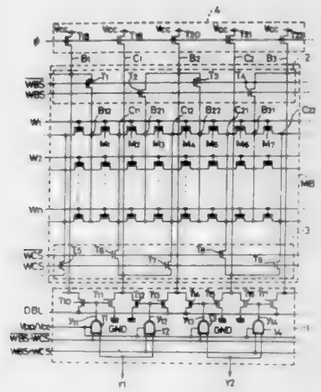
two fourth word lines connected to respective gate electrodes of two of the selection transistors adjacent to each other; and

a bit line connected to a drain diffusion layer shared by the two adjacent selection transistors.

5,345,416
HIGH DENSITY NONVOLATILE MEMORY AND DECODER OF THE SAME

Akira Nakagawara, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 12, 1992, Ser. No. 928,442
Claims priority, application Japan, Aug. 29, 1991, 3-218425
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—185 **17 Claims**



1. A non-volatile memory device comprising:

a plurality of non-volatile read/write memory cells (M) arranged in a matrix configuration (WB) and including floating gate type MIS transistors to be programmed to a high threshold voltage or to a low threshold voltage in accordance with programmed data to be written;

a plurality of word lines (W_1 to W_n) used in common in each row of said memory cells (M) and functioning as gates of said MIS transistors;

a row selection means having outputs connected to said word lines to select one of said word lines (W_1 to Wn) and to modify voltage levels of said word lines (W_l to W_n) for selectively programming said memory cells;

a plurality of sub-bit lines (**B12, B21, B22, B31**) arranged substantially orthogonally to said word lines (W_1 to W_n), wherein said sub-bit lines (**B12, B21, B22, B31**) function as one of the sources or the drains of said MIS transistors and are used in common by one of adjacent columns of said memory cells (M), and are formed as diffusion regions by introducing impurities of an opposite conductivity type into a substrate surface;

a plurality of sub-column lines (**C11, C12, C21, C22**) arranged between said sub-bit lines (**B12, B21, B22, B31**), wherein said sub-column lines (**C11, C12, C21, C22**) are used in common by the other of adjacent sub-columns of said memory cells (M) and function as the other of said sources or drains of said MIS transistors of columns of said memory cells (M), and are formed as diffusion regions by introducing impurities of an opposite conductivity type into a substrate surface;

characterized in that:

first selection means (1) is arranged for selecting groups each consisting of a plurality of said sub-bit lines (**B12, B21, B22, B31**) and a plurality of said sub-column lines (**C11, C12, C21, C22**);

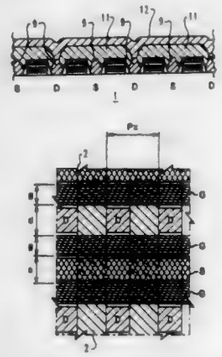
second selection means (2) is arranged for selecting said sub-bit lines (**B12, B21, B22, B31**) in each group and to connect said sub-bit lines (**B12, B21, B22, B31**) to main-bit lines (**B1, B2, B3**); and

third selection means (3) is arranged for selecting said sub-column lines (**C11, C12, C21, C22**) in each group and to connect said sub-column lines (**C11, C12, C21, C22**) to main-column lines (**C1, C2**).

5,345,417
EPROM DEVICE WITH METALLIC SOURCE CONNECTIONS AND FABRICATION THEREOF

Pier L. Crotti, Landriano, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Division of Ser. No. 632,101, Dec. 20, 1990, Pat. No. 5,210,046. This application Feb. 11, 1993, Ser. No. 16,741
Claims priority, application Italy, Dec. 22, 1989, 83651 A/89
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—185 **7 Claims**



1. An integrated EPROM device comprising an array of unitary memory cells arranged in rows and columns, each cell having a gate structure comprising a floating gate and a control gate, insulated therefrom and superimposed over the floating gate, between a source area or source region and a drain area or drain region of a semiconductor substrate, the control gate of the cells of each row being connected in common through a respective gate line, each common drain of two adjacent cells belonging to the same column being connected through a contact to a drain line connecting in common the drains of all the cells of the column, means for connecting in common the source of all the cells disposed on the same row, a field dielectric structure separating the cells disposed along the same row, wherein

said field dielectric structure is in the form of continuous parallel strips that extend uninterrupted for the whole column length of said array;

said means for connecting the source of all the cells disposed along the same row are in the form of continuous parallel strips of a conductive material, running in a row-wise direction, between two of said gate lines and laying over, and in contact with, said source areas of the semiconductor substrate and over said parallel uninterrupted strips of field dielectric at intersections therewith.

5,345,418

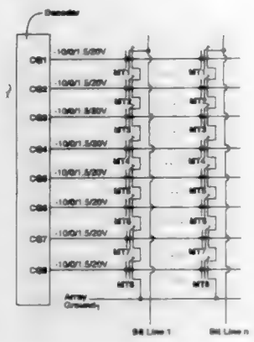
SINGLE TRANSISTOR EEPROM ARCHITECTURE

Nagesh Challa, Sunnyvale, Calif., assignor to Nexcom Technology, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 973,809, Nov. 9, 1992, which is a continuation-in-part of Ser. No. 645,507, Jan. 24, 1991, Pat. No. 5,197,027. This application Nov. 12, 1993, Ser. No. 151,597

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—185 **18 Claims**



1. A programmable erasable memory comprising:

a bit line;

a reference voltage point;

a plurality of memory cells, each having first and second current terminals and a control terminal for controlling current through the first and second current terminals, and further having a conduction threshold settable in accordance with a first potential difference across the control terminal and the first current terminal thereof, the memory cells being serially connected by the first and second current terminals thereof to form a string having at least a first memory cell and a last memory cell, the first current terminal of the first memory cell in the string being directly connected to the bit line, and the second current terminal of the last memory cell in the string being connected to the reference voltage point; and

a decoder having a plurality of outputs respectively connected to the control terminals of the memory cells and operatively responsive to a memory address during a conduction threshold set mode for applying a first voltage to the control terminal of at least a first addressed one of the memory cells in the string and a second voltage to the control terminals of a first subset of memory cells comprising any of the memory cells in the string intervening between the addressed memory cell and the bit line, the second voltage being such as to support conduction in the memory cells of the first subset, and the first voltage being such, relative to a third voltage on the bit line, as to support setting the conduction threshold in the first addressed memory cell.

5,345,419

FIFO WITH WORD LINE MATCH CIRCUITS FOR FLAG GENERATION

Larry R. Fenstermaker, Nazareth, Pa., and Kevin J. O'Connor, Lebonon, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 10, 1993, Ser. No. 15,769

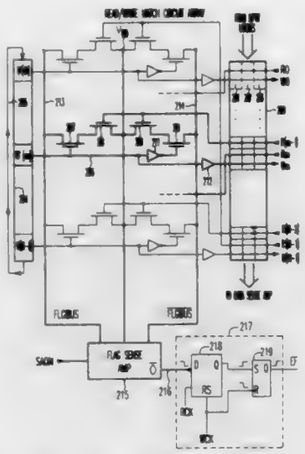
Int. Cl.[5] G11C *8/00*

U.S. Cl. 365—189.04 **13 Claims**

1. A circuit including a first in, first out memory comprising an array of memory cells arranged in rows that are accessed by word lines that are activated by a read pointer generator when performing a read operation, and by a write pointer generator when performing a write operation,

and further comprising means for generating at least one flag indicating the amount of data written into the memory that has not been read out,

Characterized in that said means comprises a multiplicity of match circuits each associated with a corresponding row and connected to a given one of the read or write pointer



generators, and also connected to the word line in the corresponding row that is activated by the other one of the read or write pointer generators, wherein said match circuits each determine whether a pointer generated by one of the pointer generators has advanced to a given word line.

5,345,420

SEMICONDUCTOR MEMORY DEVICE

Hirofumi Yasuda, and Akira Uematsu, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 767,965, Sep. 30, 1991, Pat. No. 5,260,899, which is a continuation of Ser. No. 527,670, May 21, 1990, abandoned, which is a continuation of Ser. No. 119,766, Nov. 12, 1987, abandoned, which is a continuation-in-part of Ser. No. 114,311, Oct. 27, 1989, abandoned. This application May 25, 1993, Ser. No. 67,318

Claims priority, application Japan, Oct. 27, 1986, 61-164538; Nov. 14, 1986, 61-271408; Jun. 22, 1987, 62-154841; Jun. 30, 1987, 62-163497

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—189.01 **9 Claims**

1. A semiconductor memory device for reading data from a selected memory cell where the memory cells are arranged in an array and first bit lines and word lines coupled to the memory cells are arranged in a matrix, the word lines selecting the selected cell, the semiconductor memory device comprising:

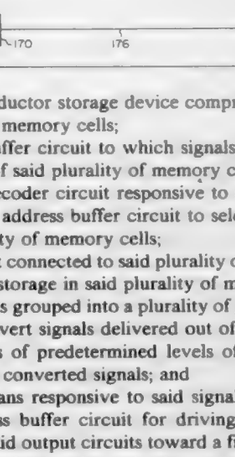
a first bit line coupled to a group of memory cells for carrying the current passing through the selected memory cell;

first amplification means coupled to the first bit line for amplifying the current on the first bit line;

a second bit line coupled to the first bit line through the first amplification means for carrying the amplified current;

second amplification means coupled to the second bit line for further amplifying the current on the second bit line;

a third bit line coupled to the second bit line through the second amplification means for carrying the further amplified current; and



sensing means coupled to the third bit line for sensing the current on the third bit line, whereby the current passing through the selected memory cell is detected.

5,345,421

HIGH SPEED, LOW NOISE SEMICONDUCTOR STORAGE DEVICE

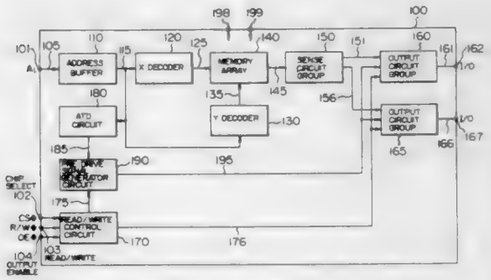
Masahiro Iwamura; Tatsumi Yamauchi, both of Hitachi; Makoto Saeki, Koganei, and Hideaki Uchida, Takasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 29, 1992, Ser. No. 905,745

Claims priority, application Japan, Jun. 28, 1991, 3-158057

Int. Cl.[5] H03K *19/00*

U.S. Cl. 365—189.05 **26 Claims**



1. A semiconductor storage device comprising:

a plurality of memory cells;

an address buffer circuit to which signals representative of addresses of said plurality of memory cells are inputted;

an address decoder circuit responsive to a signal delivered out of said address buffer circuit to select at least one of said plurality of memory cells;

a sense circuit connected to said plurality of memory cells to sense data storage in said plurality of memory cells;

output circuits grouped into a plurality of groups and operative to convert signals delivered out of said sense circuit into signals of predetermined levels of potential and to deliver the converted signals; and

pre-drive means responsive to said signal delivered out of said address buffer circuit for driving a predetermined group of said output circuits toward a first level of potential and another predetermined group of said output circuits toward a second level of potential in advance of delivery of output signals from said sense circuit.

5,345,422

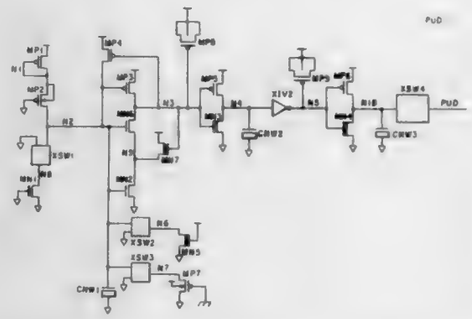
POWER UP DETECTION CIRCUIT

Donald J. Redwine, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 892,388, May 27, 1992, abandoned, which is a continuation of Ser. No. 560,934, Jul. 31, 1990, abandoned. This application May 6, 1993, Ser. No. 57,589

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—189.09 **9 Claims**



1. A power up detection circuit for a device formed on a semiconductor substrate, comprising:

a CMOS inverter formed of a P-channel transistor, an N-channel transistor, an input and an output, the P-channel transistor biased by a voltage that is coupled to the input; and

a first and a second N-channel transistor, the first N-channel transistor connected between the N-channel transistor of the CMOS inverter and ground, the second N-channel transistor connected between the first N-channel transistor and a source of the voltage, and the gate of the second N-channel transistor connected to the output of the CMOS inverter for initially applying to the N-channel transistor of the CMOS inverter during power up a potential for keeping the N-channel transistor turned off, thereby preventing the output of the CMOS inverter from being discharge through the N-channel transistor.

5,345,423

PARALLEL TEST CIRCUIT OF A SEMICONDUCTOR MEMORY DEVICE

Hwa-Soo Koh; Seung-Han Ahn, and Ho-Ki Kim, all Seoul, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-Do, Rep. of Korea

Filed Feb. 22, 1993, Ser. No. 20,363

Claims priority, application Rep. of Korea, Feb. 21, 1992, 92-2646

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—201 **4 Claims**

1. A parallel test circuit of a memory device comprising:

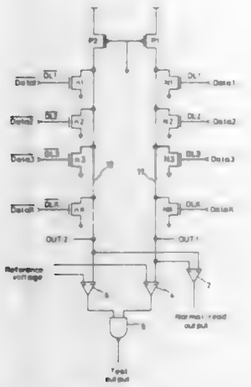
a plurality of data lines into which a predetermined number of data selected to test from the memory cells are input;

a plurality of other data lines into which complementary data of said predetermined number of selected data are input;

a plurality of MOS transistors, with each MOS transistor having gate into which one of said predetermined number of selected data is input after passing through one of corresponding the data lines and having a drain which is connected to an input/output line;

a plurality of other MOS transistors, with each MOS transistor having a gate into which one of said complementary data of said predetermined number of selected data is input after passing through one of the corresponding other

data lines and having a drain which is connected to another input/output line;
two load transistors for pre-charging each of the above two input/output lines;
a sense amplifier for sensing and amplifying the voltage level difference between said two input/output lines to generate the normal reading output signals;



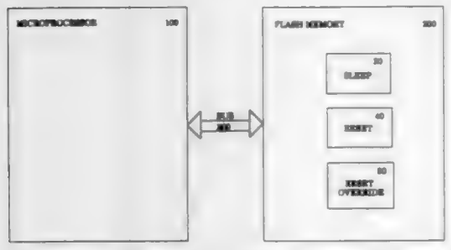
two other sense amplifiers for sensing and amplifying the voltage level difference between each voltage of said two input/output lines and the reference voltage; and
a logic gate for generating the final test output signals by comparing output signals of said two other sense amplifiers used to sense the voltage level difference between the reference voltage and the voltage of said input/output lines.

5,345,424

POWER-UP RESET OVERRIDE ARCHITECTURE AND CIRCUIT FOR FLASH MEMORY

Marc Landgraf, Folsom, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jun. 30, 1993, Ser. No. 85,640
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—227 **28 Claims**



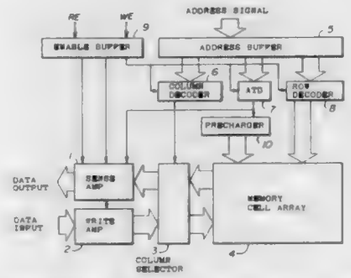
1. In a system comprising a microprocessor coupled to a flash memory by a system bus, a reset circuit comprising:
a reset signal generation circuit for generating a reset signal when power is applied to the flash memory, the reset signal causing the flash memory to enter a predetermined reset state;
a sleep signal generation circuit coupled to the reset signal generation circuit, the sleep signal generation circuit generating a sleep signal, the sleep signal causing the reset signal generation circuit to enter an energy saving sleep mode when the flash memory is placed in the sleep mode, the reset signal causing the sleep signal generation circuit to reset and suppress generation of the sleep signal; and
a reset override signal generation circuit coupled to the reset signal generation circuit, the reset override signal generated during power-up, the reset override signal forcing the reset signal generation circuit to generate the reset signal during power-up even if the reset signal generation circuit is receiving the sleep signal, the reset signal override circuit drawing substantially no power when the flash memory is placed in the sleep mode.

5,345,425

SEMICONDUCTOR MEMORY DEVICE

Junichi Shikatani, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP91/01578, § 371 Date Aug. 6, 1992, § 102(e) Date Aug. 6, 1992, PCT Pub. No. WO92/09085, PCT Pub. Date May 29, 1992
PCT Filed Nov. 19, 1991, Ser. No. 852,638
Claims priority, application Japan, Nov. 20, 1990, 2-314613
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—230.01 **7 Claims**



1. A semiconductor memory device having a write mode and a read mode, comprising:
a memory part;
first and second write bit lines coupled to said memory part and used exclusively when writing information into said memory part;
first and second read bit lines coupled to said memory part and used exclusively when reading information, held in said memory part, from said memory part; and
a short-circuiting circuit coupled to said first and second read bit lines and operative in the write mode of the semiconductor memory device for short-circuiting the first and second read bit lines and thereby setting the first and second read bit lines to a common potential in the write mode of the semiconductor memory device.

5,345,426

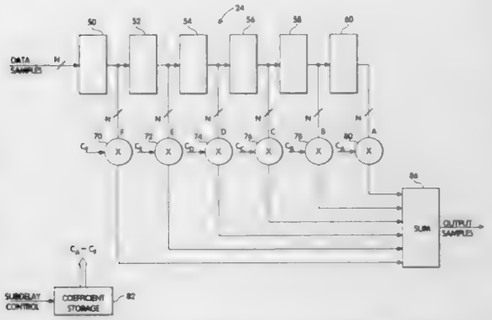
DELAY INTERPOLATOR FOR DIGITAL PHASED ARRAY ULTRASOUND BEAMFORMERS

David Lipschutz, Lexington, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 12, 1993, Ser. No. 60,789
Int. Cl.[5] G01S *7/52*
U.S. Cl. 367—103 **13 Claims**

9. An ultrasound beamformer for processing received signals from an array of ultrasound transducer elements, comprising:
a plurality of processing channels, one coupled to each transducer element of the array, each processing channel comprising:
digitizing means for converting the received signal to digital samples at a predetermined sampling rate f, and
delay means for delaying said digital samples by predetermined delays to provide delayed digital samples, said delay means comprising a delay interpolator including an FIR digital filter having programmable means responsive to delay control information representative of filter coefficients for delaying the digital samples by different delays that are quantized in increments less than the sampling period 1/f, wherein one or more of said filter coefficients are of the form $\frac{1}{4}^m$ where m is an integer, and wherein said FIR digital filter comprises

means for multiplying consecutive ones of said digital samples by respective ones of said filter coefficients by shifting the bits of said digital samples by m bit positions in response to said delay control information, to provide intermediate samples, said FIR digital filter further comprising summing means for summing said intermediate samples to provide said delayed digital samples;



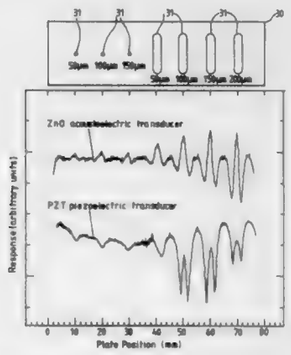
summing means for summing said delayed digital samples to form output samples that are representative of a received beam; and
control means for supplying said delay control information to said delay means in each of said processing channels.

5,345,427

ULTRASONIC TRANSDUCER

Yoshihiko Ishida, Nagoya; Yuji Asai, Chita, and Makoto Tani, Inazawa, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 26, 1993, Ser. No. 37,457
Claims priority, application United Kingdom, Mar. 31, 1992, 9206943.4
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—140 **20 Claims**



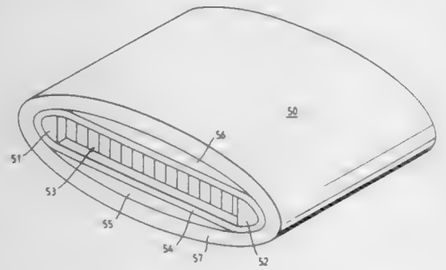
1. An acoustoelectric ultrasonic wave sensing element comprising a zinc oxide single crystal in which ultrasonic waves are transduced into electric voltage accompanied by phonon-charge carrier interaction.

5,345,428

FLEXTENSIONAL TRANSDUCERS

Douglas B. Arnold; George Bromfield, both of Dorset, and John C. Gardner, Cheshire, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

PCT No. PCT/GB87/00189, § 371 Date Sep. 16, 1992, § 102(e) Date Sep. 16, 1992, PCT Pub. No. WO87/05773, PCT Pub. Date Sep. 24, 1987
PCT Filed Mar. 17, 1987, Ser. No. 276,443
Claims priority, application United Kingdom, Mar. 19, 1986, 8606743; Mar. 19, 1986, 8606744; Mar. 19, 1986, 8606746; Mar. 19, 1986, 8606747
Int. Cl.[5] H04R *1/44*
U.S. Cl. 367—165 **29 Claims**



1. An elliptical shell flextensional sonar transducer of the kind comprising:
a hollow flexural shell of elliptical cross-section;
a pair of spaced shell inserts;
at least one stack (**12**) of piezo-electric elements (**13**) interspaced by electrically conducting plates (**14**), said at least one stack being in coplanar parallel spaced arrangement between said pair of spaced shell inserts (**15**), said stacks and inserts being disposed in the plane including a major axis of said hollow flexural shell (**11**) with outer surfaces of the inserts in contact with the opposed inner surfaces of the shell and so shaped as to support the elliptical shape of the shell; and
a pair of resilient rectangular supports (**35**, **36**, **55**, **56**) in spaced relationship, each support being in retaining contact with the two inserts and with one face making contact over its entire surface area with the adjacent inner surface of the shell.

5,345,429

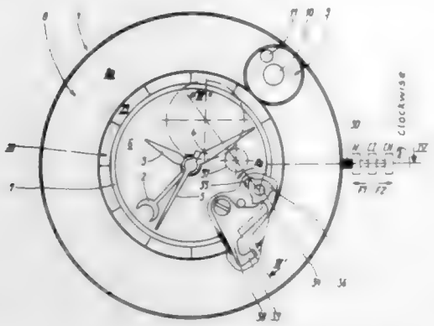
ASTRONOMIC TIMEPIECE HAVING A VISIBLE ELEMENT SIMULATING THE DISPLACEMENT OF A STAR

Jean-Philippe Rebeaud, Cressier, Switzerland, assignor to ETA SA Fabriques d'Ebauches, Grenchen, Switzerland

Filed May 8, 1990, Ser. No. 521,691
Claims priority, application Switzerland, May 8, 1989, 01720/89
Int. Cl.[5] G04B *19/26*
U.S. Cl. 368—15 **11 Claims**

1. An astronomical timepiece including a temporal reference with a mechanical output having a driving wheel set and a display arrangement including at least one visible element simulating the displacement of a star, wherein the display arrangement comprises a planetary gear train, comprising a satellite bearer having a crown gear, said crown gear being driven by the driving wheel set, a ring, a driving wheel, and a satellite mounted for rotation on the satellite bearer and connected to said driving wheel, said driving wheel directly or indirectly meshing with said ring, said ring being fixed in normal operation, the timepiece further including a correction arrangement, said correction arrangement including a control

stem positionable in a correction position, the rotation of said control stem when in said correction position in one sense



driving the driving wheel set and in the other sense driving said ring.

5,345,430

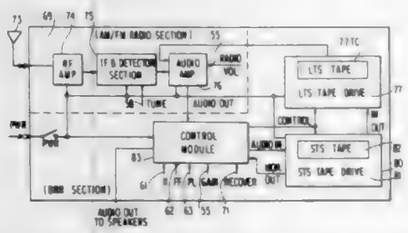
RECOVERY RECORDER SYSTEM, PARTICULARLY COMMERCIAL RADIO/TV BROADCAST RECOVERY RECORDER SYSTEM

Gordon Moe, 1600 Russell Rd., Alexandria, Va. 22301

Continuation-in-part of Ser. No. 320,637, Mar. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 231,575, Aug. 12, 1988, abandoned. This application Jul. 29, 1992, Ser. No. 921,183

Int. Cl.[5] H04H 9/00; G11B 5/00

U.S. Cl. 369—7 11 Claims



1. A device for recording the last 3–15 minutes of an audio source:

1) means for continually monitoring said audio source,

2) a plurality of short term memory media,

3) means for continually recording said minutes of said source on one of said short term storage memory media, said plurality of short term storage memory media,

4) long term storage media, and

5) means for terminating recording on one of said short term storage memory media and transferring the contents thereof to said long term storage media upon command, said means for terminating including means for recording a marker signal in said short term memory means, and control logic means for sensing said marker signal and terminating transfer of said contents to said long term storage media.

5,345,431

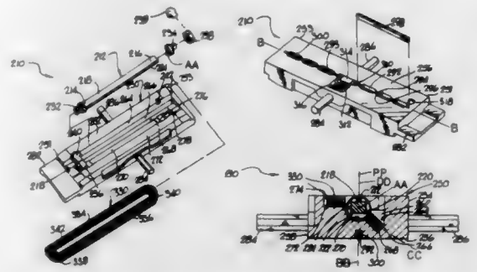
WRITE AND ERASE ASSEMBLY FOR MAGNETO-OPTIC DRIVE APPARATUS

Thomas C. Oliver; David P. Jones, Bellvue; Leslie G. Christie, Greeley; Mark E. Wanger, Fort Collins; Thomas E. Berg, Fort Collins, and Melvin C. Crane, Fort Collins, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 14, 1992, Ser. No. 945,281

Int. Cl.[5] G11B 13/04

U.S. Cl. 369—13 13 Claims



1. A write-erase magnet assembly for a data storage device comprising:

permanent magnet means having a longitudinal axis and having a first longitudinally extending face portion with a first polarity and a second longitudinally extending face portion with a second polarity opposite said first polarity for alternately producing write and erase magnetic bias fields on an adjacently positioned data storage medium;

magnet support means for rotatably supporting said permanent magnet means about said longitudinal axis thereof;

passive magnetic detent means fixedly positioned relative to said longitudinal axis of said permanent magnet means for passively, magnetically producing a biasing torque on said permanent magnet means tending to orient the closer of said first and second face portions of said permanent magnet means in adjacent relationship with said detent means said permanent magnet means comprising a first biased position, associated with a writing operation, with said first face portion positioned adjacent said magnetic detent means and a second biased position, associated with an erasing operation, with said second face portion positioned adjacent said magnetic detent means;

electromagnet means disposed proximate said permanent magnet means for applying a magnetic torque thereto for flippingly reorienting said permanent magnet means between said first and second biased positions; and

said electromagnet means being energized only during flipping operations occurring between said writing and erasing operations.

5,345,432

OPTICAL HEAD

Akihiro Kasahara, Kawasaki; Hideo Yamasaki; Takashi Yoshizawa, both of Yokohama, and Sou Ishika, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 785,265, Oct. 30, 1991, abandoned. This application Sep. 23, 1993, Ser. No. 125,143

Claims priority, application Japan, Oct. 31, 1990, 2-293861

Int. Cl.[5] G11B 7/00; H01J 5/02

U.S. Cl. 369—44.15 4 Claims

1. An optical head for reproducing recorded data in an optical recording medium by directing light to the medium and detecting light reflected by the medium, said optical head comprising:

emitting means for emitting light;

detecting means for detecting light reflected by said medium;

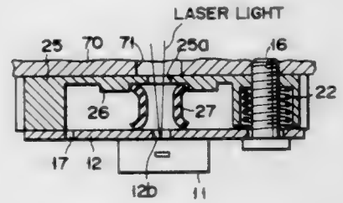
optical means for directing emitted light from said emitting means to said medium, and for directing light reflected by said medium to said detecting means;

a base member for integrally fixing said emitting means and said optical means;

a mount member for mounting said detecting means, said mount member having a hinge portion in a first end portion thereof and a supporting section for said detecting means provided in a second end portion thereof;

a fixing member supported by said base member for fixing said first end portion of said mount member to swing said second end portion of said mount member including said supporting section about said hinge portion, said fixing member having a hole for passing reflected light along a path between said medium and said detecting means;

a cylindrical packing member comprising a cylindrical elastic member, said cylindrical packing member having first



and second end portion shaving diameters and a central portion having a diameter smaller than the diameters of the first and second end portions, the first end portion being pressed against the fixing member and the second end portion being pressed against the mount member to surround a portion of the path, which portion extends between the fixing member and the mount member and thereby extends from said hole to said detecting means;

urging means for urging said second end portion of said mount member along a direction affecting a position of the detecting means in the path; and

adjusting means for adjusting the position of said detecting means in the path by moving said second end portion of said mount member against an urging force applied by said urging means in a direction to compass the cylindrical packing member.

5,345,433

OPTICAL DISC RECORDING APPARATUS AND OPTICAL DISC REPRODUCING APPARATUS

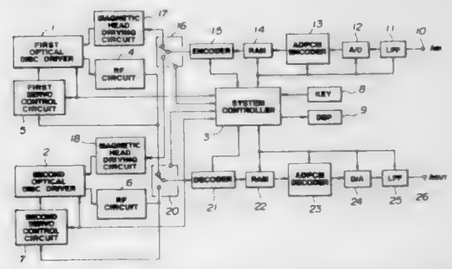
Norio Ohga, Tokyo, and Katsuaki Tsurushima, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 4, 1992, Ser. No. 877,855

Claims priority, application Japan, May 9, 1991, 3-132113

Int. Cl.[5] G11B 7/00

U.S. Cl. 369—54 19 Claims



1. A disc recording apparatus for recording input data on a series of disc-shaped recording medium, comprising:

memory means in which continuously inputted input data are sequentially written and from which the input data are read out as recording data at a transfer rate faster than the transfer rate at which the input data are written therein,

recording means for recording the recording data read from the memory means on a first disc-shaped recording medium and then a second disc-shaped recording medium, each of the first disc shaped recording medium and the second disc-shaped recording medium being rotationally driven at a predetermined velocity,

recording controlling means for effecting readout control of the memory means so that, when the data volume of the input data stored in the memory means exceeds a first predetermined volume, the recording data f the first predetermined volume is read out continuously from the memory means so that a writing space in excess of a second predetermined volume is maintained at all times in the memory means, the recording controlling means also effecting recording position control so that the recording data of the first predetermined volume read out in a burst-like manner from the memory means by the readout control of the memory means are continuously recorded on a recording track on the first disc-shaped recording medium and then on a recording track on said second disc-shaped recording medium, and

linking controlling means for capturing control of a recording system of the second disc-shaped recording medium during a time interval between when data are last recorded on the first disc-shaped recording medium and data are next read from the memory means so that data are continuously recorded on the first disc-shaped recording medium and on the second disc-shaped recording medium.

5,345,434

METHOD AND APPARATUS FOR CORRECTING EDGE INTERVAL OF RECORD SIGNAL IN AN OPTICAL RECORD/READ-OUT APPARATUS

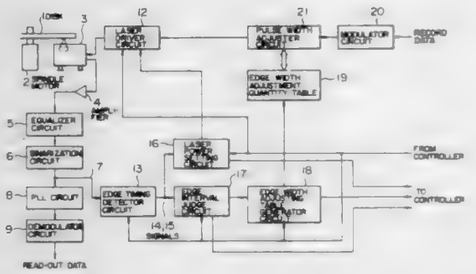
Hiroshi Ide, Kodaira, and Takeshi Maeda, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 720,706, Jun. 25, 1991, abandoned. This application Nov. 1, 1993, Ser. No. 144,608

Claims priority, application Japan, Jun. 29, 1990, 2-170052

Int. Cl.[5] G11B 7/00

U.S. Cl. 369—124 18 Claims



1. A record signal correcting method for use in an optical recording/read-out apparatus wherein record signals are recorded that have a mark length bound by opposite edges and having an edge width extending therebetween, comprising the steps of:

(a) recording N times, where N is an integer, a sequential record pattern B or record signals including a plurality of patterns A each having an n edge width, where n is an integer, and respectively being recorded in various combinations of said n edge widths;

(b) reading out said pattern B as a signal thus recorded;

(c) classifying the read-out signal into one of said patterns A and obtaining, for each edge position of each said pattern A, a shift quantity associated with said edge position

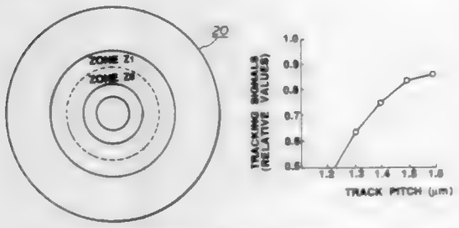
relative to an edge position indicating an ideal edge recording position thereof;
(d) generating and storing a table containing relationships between said shift quantities and said patterns A;
(e) collating, for a data recording operation, a record signal of said data being recorded and having a pattern of the n edge widths with the patterns stored in said table to obtain a match; and
(f) independently correcting head and tail edge shifts for each of said patterns A by a corresponding one of said shift quantities retrieved from said table responsive to the match resulting from said collating.

5,345,435

OPTICAL DISC AND METHOD FOR RECORDING ON OPTICAL DISC

Yoshimori Yamasaki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,815
Claims priority, application Japan, Aug. 30, 1991, 3-244784; Aug. 30, 1991, 3-244785; Aug. 30, 1991, 3-244786
Int. Cl.[5] G11B *13/00, 7/007*
U.S. Cl. 369—275.3 **9 Claims**



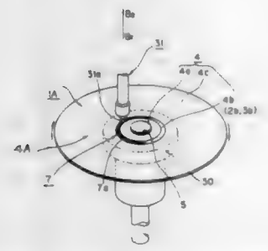
1. An optical disc having formed thereon plural tracks for recording information data and comprising:
a recording region subdivided into plural recording zones each having 2^n tracks, n being an integer natural number, with each track in a given recording zone having a same recording capacity which is different from a recording capacity of tracks in different recording zones, and wherein a line recording density within the recording zones is approximately equal.

5,345,436

RECORDING MEDIUM OF FLAT SURFACE WITH RESIN FILLED RING GROVE

Yuichi Higuchi, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Jan. 25, 1993, Ser. No. 8,535
Claims priority, application Japan, Jan. 28, 1992, 37217
Int. Cl.[5] G11B *7/26, 11/16*
U.S. Cl. 369—282 **8 Claims**



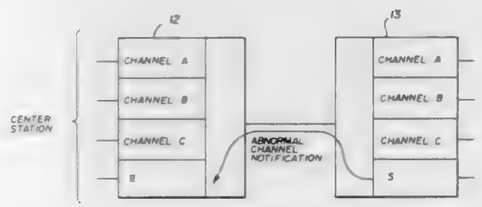
1. A manufacturing method of a disc including the steps of attaching a stamper having a center hole and an information signal surface to a metal mold by causing an inner peripheral portion of the center hole and the outer peripheral portion of the stamper to engage with a first collar of a first retainer and with a second collar of a second retainer provided in the metal mold respectively, molding a disc substrate having a generally flat surface including a replica corresponding to the information signal surface by the stamper and a groove formed as an inverted replica by a shape of the first collar by injecting transparent resin into the metal mold, and forming a center through hole at a center of the disc substrate by hole forming means provided in the metal mold, said groove dividing concentrically with said center through hole the generally flat surface of said disk substrate into inner and outer surfaces comprising the steps of:
forming a protecting layer on the reflecting layer;
filling resin into the groove in such a manner that a top flat surface of the resin becomes approximately the same level as that of the inner and outer surfaces for causing said inner and outer surfaces to be bridged and flush with one another; and
printing each label on the inner and outer surfaces without being interrupted by the groove.

5,345,437

SYSTEM FOR CONTROLLING FREQUENCY MULTIPLEXING MODEMS

Tohru Ogawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 7, 1993, Ser. No. 59,052
Claims priority, application Japan, May 12, 1992, 4-118815
Int. Cl.[5] H04J *1/14;* **H04B** *1/38*
U.S. Cl. 370—13 **10 Claims**



1. A frequency multiplexing control system comprising:
a first modem unit connected to a transmission line;
a second modem unit connected to said transmission line, the first and second modem units communicating with each other via a plurality of primary channels;
a secondary channel provided between the first and second modem units, the secondary channel having a frequency band lower than frequency bands of the primary channels;
a plurality of first means, respectively provided in the first and second modem units, for detecting an abnormal primary channel and sending to the second and first modem units information concerning the abnormal primary channel via the secondary channel; and
a plurality of second means, respectively provided in the first and second modem units, for disabling the abnormal primary channel in response to said information and for sending a training signal for recovering the abnormal primary channel to the transmission line, via the secondary channel.

5,345,438

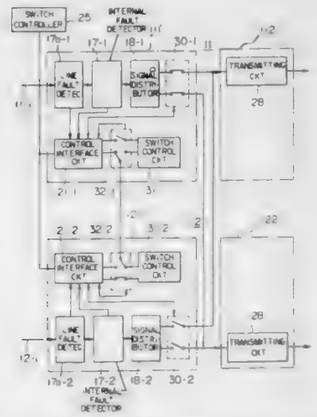
TRANSMISSION DEVICE CAPABLE OF READILY CONTROLLING ACTIVE AND BACKUP SECTIONS

Hirokazu Ozaki, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 21, 1992, Ser. No. 934,018
Claims priority, application Japan, Aug. 22, 1991, 3-211174
Int. Cl.[5] H04J *1/16*
U.S. Cl. 370—16 **3 Claims**

1. A transmission device located between first and second input lines for first and second input signals, respectively, and first and second output lines for first and second output signals, respectively,

said transmission device comprising first and second sections which are selectively operable as an active section and a backup section,
said first section comprising a first primary package stage connected to said first input line and a second primary package stage connected to said first output line while said second section comprises a first subsidiary package stage connected to said second input line and a second subsidiary package stage connected to said second output line,
(A) said first primary package stage comprising:
(a) a primary signal distributing circuit connected to said first input line for distributing said first input signal so as to produce first and second primary input signals each of which is identical with said first input signal; and
(b) a first switch circuit which has first and second primary switch input terminals and first and second primary switch output terminals and which is supplied through said first and second primary switch input terminals with said first and second primary input signals, respectively, for selectively sending said first and second primary input signals to said first and second primary switch output terminals, respectively;
(B) said first subsidiary package stage comprising:
(a) a subsidiary signal distributing circuit connected to said second input line for distributing said second input signal so as to produce first and second subsidiary input signals each of which is identical with said second input signal; and
(b) a second switch circuit which has first and second subsidiary switch input terminals and first and second subsidiary switch output terminals and which is supplied through said first and second subsidiary switch input terminals with said first and second subsidiary input signals, respectively, for selectively sending said first and second subsidiary input signals to said first and second subsidiary switch output terminals, respectively;
(C) said transmission device further comprising:
connection means between said first primary and said first subsidiary package stages and between said second primary and said second subsidiary package stages for connecting said first primary switch output terminal and said first subsidiary switch output terminal to the second primary package stage in common, and for connecting said second primary switch output terminal and said second subsidiary switch output terminal to the second subsidiary package stage in common;
(D) said second primary package stage comprising:
a transmitting circuit connected by said connection means to both said first primary and said first subsidiary switch output terminals for transmitting the first primary input and the first subsidiary input signals, selectively sent through the first and the second switch circuits, to said first output line; and
(E) said second subsidiary package stage comprising:
a transmitting circuit connected by said connection means to both said second primary and said second subsidiary switch output terminals for transmitting the second primary input and the second subsidiary input signals, selectively sent through the first and the second switch circuits, to said second output line,
wherein each of said first primary and said first subsidiary package stages further comprises:
a fault detector for detecting a fault in each of said first primary and said first subsidiary package stages; and
control means coupled to each of said first and said second switch circuits and said fault detector for controlling each of said first and said second switch circuits to selectively send a selected set of said primary and said subsidiary input signals to a selected set of said primary and said subsidiary switch output terminals when said fault is detected by said fault detector.

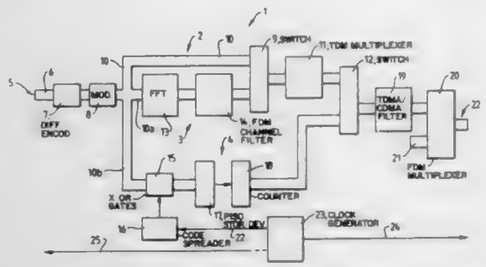


5,345,439

MULTI PURPOSE DIGITAL SIGNAL REGENERATIVE PROCESSING APPARATUS

Paul C. Marston, Hertfordshire, Great Britain, assignor to British Aerospace Space Systems Limited, Stevenage, England

Filed Apr. 23, 1993, Ser. No. 51,733
Claims priority, application United Kingdom, Apr. 25, 1992, 9209027
Int. Cl.[5] H04J *13/00*
U.S. Cl. 370—18 **8 Claims**



1. A multi purpose digital signal regenerative processing apparatus, comprising:
three modulation sub-systems in parallel, each selectively selectable to enable a plurality of users to access, independently of one another, a sub-band of a frequency band in individually selectable access modes and modulation formats, a first of which modulation sub-systems is configured for access and operation in TDM (Time Division Multiplex) format, a second of which modulation sub-systems is configured for access and operation in FDM (Frequency Division Multiplex) or OFDM (Orthogonal Frequency Division Multiplex) format, and a third of which modulation sub-systems is configured for access and operation in CDM (Code Division Multiplex) format.

5,345,440

RECEPTION OF ORTHOGONAL FREQUENCY DIVISION MULTIPLEXED SIGNALS

Jeffrey J. Gledhill, Chandlers Ford; Santosh V. Anikhindi, Southampton, and Peter A. Avon, Peterfield, all of England, assignors to National Transcommunications Limited, Winchester, England

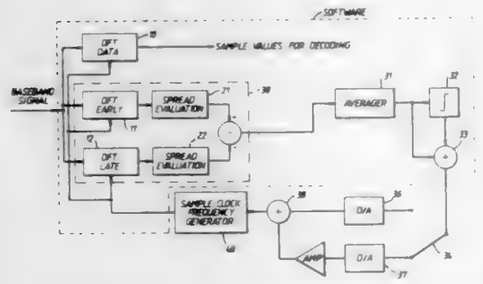
PCT No. PCT/GB91/01571, § 371 Date Jan. 7, 1993, § 102(e) Date Jan. 7, 1993, PCT Pub. No. WO92/05646, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 13, 1991, Ser. No. 934,653

Claims priority, application United Kingdom, Sep. 14, 1990, 9020170

Int. Cl.[5] H04J *1/00, 11/00*

U.S. Cl. 370—19 **17 Claims**



1. Apparatus for receiving a signal comprising a plurality of orthogonal frequency division multiplexed (OFDM) carriers, each carrier being modulated by a signal capable of taking any of a set of allowed values corresponding to allowed states of at least one of phase and amplitude for the carrier, a set of signal values modulating the plurality of OFDM carriers during a time period T representing a block of data samples, the apparatus comprising:

means for demodulating the OFDM carriers so as to produce a set of complex samples representing the values of the signals modulating the carriers during a particular time period T;

means for estimating the location in a complex plane of reference axes constituting, for each OFDM carrier, a frame of reference against which are defined the allowed values modulating that OFDM carrier;

means for assigning an allowed modulating value to each complex sample of the set by reference to the corresponding estimated reference axes so as to produce a set of allowed values; and

means for converting the set of allowed values to a recovered data stream.

5,345,441

HIERARCHICAL PATH HUNT FOR MULTIRATE CONNECTIONS

Marianne F. Paker, West Chicago; Robert L. Pawelski, Lisle; William A. Payne, III, Glen Ellyn, and Gaylord W. Richards, Lisle, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 20, 1992, Ser. No. 964,224

Int. Cl.[5] H04J *14/08;* **H04Q** *11/04;* **H04L** *12/52*

U.S. Cl. 370—54 **63 Claims**

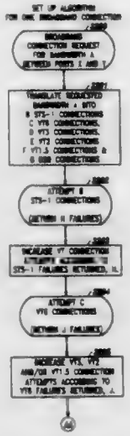
1. A method of providing a switched connection of a given bandwidth as a collection of a plurality of connections of smaller bandwidth through a switching network providing connections having a hierarchy of data rates comprising at least a high rate and a lower rate, said method comprising the steps of:

dividing said given bandwidth into at least one first connection having said high rate;

dividing any remainder of said given bandwidth into at least one second connection having said lower rate;

attempting to provide said at least one first connection having said high rate to satisfy some of said given bandwidth;

selectively failing to provide at least one said attempted first connection;



in response to failing to provide at least one said attempted first connection, dividing the bandwidth of any said failed attempted first connection into a plurality of third connections having said lower rate; and

providing said third connections and any said second connections having said lower rate to satisfy other of said given bandwidth.

5,345,442

MULTI-HIGHWAY SYSTEM OF DIGITAL EXCHANGE AND DIGITAL EXCHANGE HAVING THE MULTI-HIGHWAY SYSTEM

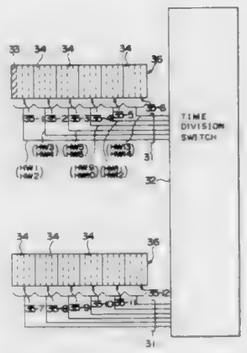
Kazuhiro Sato, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 2, 1992, Ser. No. 939,314

Claims priority, application Japan, Sep. 4, 1991, 3-223922

Int. Cl.[5] H04L *12/00, 12/48;* **H04Q** *11/04*

U.S. Cl. 370—58.3 **14 Claims**



1. A multi-highway system in a digital exchange comprising:

time division switch means for exchanging time slots on N highways where N is an integer; and

a plurality of card slot groups respectively including a plurality of card slots, cards accommodating a plurality of lines being inserted into said card slots,

said N highways connecting said time division switch means and said plurality of card slot groups to each other,

at least one of the card slot groups being assigned M highways out of said N highways where M is an integer satisfying $2 \leqq M < N$,

wherein said cards respectively comprise selecting means for selecting one of the M highways to be used.

5,345,443

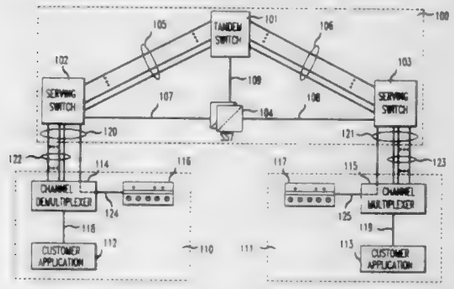
NETWORK-BASED DIGITAL BANDWIDTH-ON-DEMAND

William J. D'Ambrogio, Oceanport; Wayne D. Phillips, Randolph, and Barry S. Seip, New Providence, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 30, 1992, Ser. No. 876,556

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—60 **6 Claims**



1. In a digital telecommunication network switching system including:

a first serving switch;

a tandem switch;

a second serving switch;

a first memory containing stored logical listings corresponding to a group of paths, having substantially identical electrical delays, over which digital channel connections linking said first serving switch and said tandem switch may be effected, said stored logical listings being indexed within said first memory according to the electrical delay of each corresponding path; and

a second memory containing stored logical listings corresponding to paths, having substantially identical electrical delays, over which digital channel connections linking said tandem switch and said second serving switch may be effected, said stored logical listings being indexed within said first memory according to the electrical delay of each corresponding path;

a method of effecting on-demand, multiple digital channel connections between a first network subscriber and a second network subscriber, comprising the steps of:

establishing a digital channel connection between said first network subscriber and said second network subscriber via said first serving switch, said tandem switch, and said second serving switch, in response to each of a plurality of sequential requests from said first network subscriber to initiate a digital channel connection to said second network subscriber, such that a plurality of digital channel connections that traverse paths corresponding to logical listings stored in said first memory which are indexed as having substantially identical electrical delays, are established between said first serving switch and said tandem switch, and a plurality of digital channel connections that traverse paths corresponding to logical listings stored in said second memory which are indexed as having substantially identical electrical delays are established between said tandem switch and said second serving switch.

5,345,444

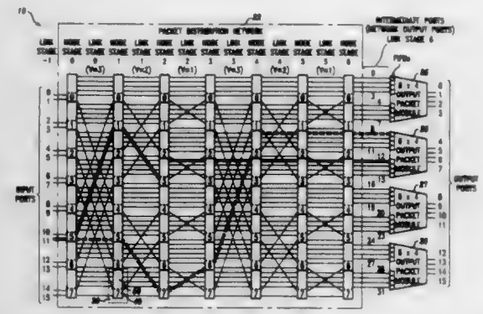
CHUTED, GROWABLE PACKET SWITCHING ARRANGEMENT

Thomas J. Cloonan, Downers Grove, and Gaylord W. Richards, Lisle, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 30, 1992, Ser. No. 954,104

Int. Cl.[5] H04L *12/56;* **H04J** *14/08*

U.S. Cl. 370—60 **13 Claims**



1. A packet switching arrangement having L input ports, M intermediate ports and N output ports, where L, M and N are positive integers greater than two, said arrangement comprising

a distribution network for switching packets from said L input ports to said M intermediate ports without storing full received packets, and

N/n output packet switching modules, where n, the number of outputs from each output packet switching module, and N/n are positive integers with $N > n > 1$, packets arriving at said L input ports during a given time slot being delivered by said distribution network to said output packet switching modules during a single time slot;

each of said modules comprising

output means for switching packets from a distinct group of m of said intermediate ports to a distinct group of n of said output ports, where m is a positive integer with $m > n$, and

means within said output means for storing full received packets;

said distribution network comprising

S stages of nodes, none of which nodes includes means for storing full received packets, with each node of at least the first $(S-1)$ of said node stages comprising an $X \times Y$ switching means, where S, X and Y are positive integers with $S > 3$, $X > 1$ and $Y > 1$, and

$(S-1)$ link stages interconnecting successive ones of said S node stages, with each link stage comprising chute links and switch links,

wherein the $X \times Y$ switching means of each node of the interior $(S-2)$ of said S node stages receives packets on X switch links and selectively transmits packets on Y switch links,

wherein said each node of said interior $(S-2)$ node stages further comprises

a plurality of chute connection means, each comprising an FET-SEED circuit, and each connected to only one chute link of the preceding link stage and to only one chute link of the following link stage, for transmitting a packet, being received from said preceding stage chute link, onto said following stage chute link, and

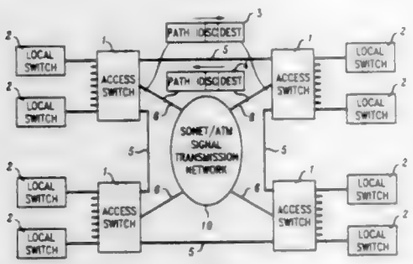
means for transferring a packet, being received on a switch link by the $X \times Y$ switching means of said each node of said interior $(S-2)$ node stages, to any selected one of said plurality of chute connection means for transmission on the following stage chute link.

5,345,445

ESTABLISHING TELECOMMUNICATIONS CALLS IN A BROADBAND NETWORK

Thomas L. Hiller, Glen Ellyn; James J. Phelan, Downers Grove, and Meyer J. Zola, Oak Park, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 6, 1992, Ser. No. 972,788
Int. Cl.[5] H04L *12/50*
U.S. Cl. 370—60.1 **14 Claims**



14. A method of establishing a call connection through a telecommunications network, comprising:

provisioning a constant bit rate (CBR) packetized permanent virtual circuit (PVC) between an ingress node of the network and an egress node of the network; and

responsive to receiving a request to establish a communication channel between said ingress node and said egress node, assigning a call to an available byte position of each packet of said CBR PVC;

thereafter, extracting signals from a communication channel and inserting said extracted signals into said assigned byte position of said CBR PVC;

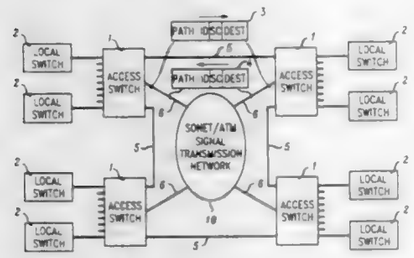
wherein each byte position of a payload of each packet transmitted over communication channels carrying signals from a plurality of pulse code modulated (PCM) signal streams.

5,345,446

ESTABLISHING TELECOMMUNICATIONS CALL PATHS IN BROADBAND COMMUNICATION NETWORKS

Thomas L. Hiller, Glen Ellyn; James J. Phelan, Downers Grove, and Meyer J. Zola, Oak Park, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 6, 1992, Ser. No. 972,789
Int. Cl.[5] H04L *12/50*
U.S. Cl. 370—60.1 **40 Claims**



1. A telecommunications network comprising:

a plurality of access switches;

a signal transmission network;

ones of said access switches being interconnected by said signal transmission network;

said access switches comprising means for converting a plurality of synchronous pulse code modulation (PCM) signals to a plurality of asynchronous transfer mode (ATM) signals;

wherein each of said plurality of ATM signals comprise composite cells for periodically transmitting PCM data for a plurality of telecommunications calls on a plurality of PCM signal streams over a common virtual circuit connecting two access switches;

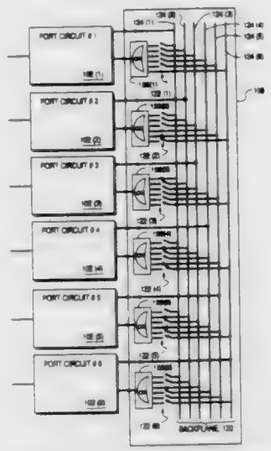
said signal transmission network comprising a plurality of common broadband platform (CBP) ATM crossconnect switches for interconnecting links, said links for transmitting ATM signals to access switches and to other CBP switches.

5,345,447

SWITCHING HUB WHICH IMPLEMENTS A VIRTUAL BUS FOR INTERCONNECTING STATIONS ON A CSMA NETWORK

Chris R. Noel, Cambridge, Mass., assignor to Bytex Corporation, Westborough, Mass.

Filed Feb. 5, 1993, Ser. No. 14,212
Int. Cl.[5] H04L *12/46, 12/66*
U.S. Cl. 370—67 **15 Claims**



1. An apparatus for interconnecting a plurality of network segments each of which operates in accordance with a bus protocol specifying collision detection and propagation operations, said apparatus comprising:

a switching mechanism including a backplane having P signal paths and including P switch ports each with an input and an output, the input of each switch port connected to a different one of said P signal paths, said switching mechanism electrically connecting at each switch port a selectable one or more of said P signal paths to the output for that switch port, and wherein each of said P signal paths carries a single signal;

a plurality of port circuits each connected to a different one of the ports of said switching mechanism, each port circuit having an output connected to the input of the port to which it is connected and each having an input connected to the output of the port to which it is connected, wherein each port circuit comprises:

an interface to which one of said plurality of segments is connected and through which that port circuit receives a data signal from and transmits a data signal to the attached segment;

an auto-partition state machine connected to the interface for that port circuit receiving the data signal from the segment connected to that port circuit's interface and generating therefrom a single output signal on the output line of that port circuit, said auto-partition state machine performing partitioning functions for that port circuit's segment; and

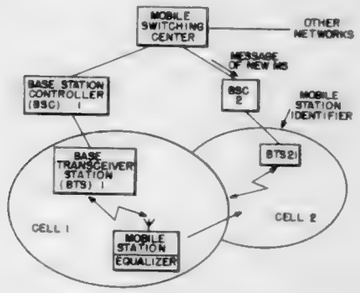
a control state machine receiving a signal over the input for that port circuit and using that signal to implement the collision detection and propagation operations of said bus protocol for the segment connected to that port circuit.

5,345,448

PROCEDURE FOR THE HANDOVER OF A RADIO CONNECTION

Ilkka Keskitalo, Halikko, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Apr. 26, 1993, Ser. No. 52,779
Claims priority, application Finland, Apr. 27, 1992, 921882
Int. Cl.[5] H04B *7/212*
U.S. Cl. 370—95.3 **9 Claims**



1. A procedure for the handover of a radio connection to a mobile radio station from a first base station to a second base station in a Time Division Multiple Access (TDMA) cellular radio communications network having a controller coupled to the first base station and to the second base station, the procedure comprising:

transmitting from the controller to the second base station identification information regarding the mobile station, the identification information including frequency channel information enabling tuning of the second base station to a channel in which the mobile station shall transmit:

transmitting from the controller, through the first base station, a handover command to the mobile station that does not include information describing timing characteristics of the second base station; and

in response to the mobile station establishing communication with the second base station, correcting with a channel equalizer for any deviation in signal timing caused by a change in timing during handover.

5,345,449

CLOCK GENERATION

Keith Buckingham, Redland, and Robert J. Simpson, Tockington, both of United Kingdom, assignors to Inmos Limited, Bristol, United Kingdom

Continuation of Ser. No. 542,320, Jun. 22, 1990, Pat. No. 5,243,597. This application Feb. 25, 1993, Ser. No. 23,201
Claims priority, application United Kingdom, Jul. 7, 1989, 8915583
Int. Cl.[5] H04J *3/00*
U.S. Cl. 370—100.1 **15 Claims**

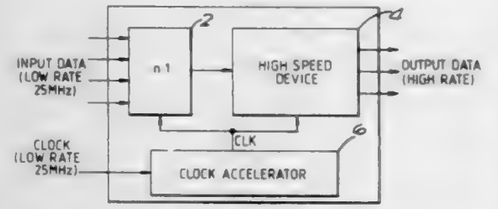
1. An integrated circuit comprising:

a terminal connected to receive a first clock signal at a first rate, said first clock signal comprising a plurality of clock edges;

a multiplexor connected to receive a plurality of incoming data streams in parallel at said first rate under the control of said first clock signal, the multiplexor being controllable by a high rate clock signal to output that data serially at a second, higher rate;

a processing device coupled to receive data output from the multiplexor at the higher rate and controllable by said high rate clock signal to process that data; and

clock generation circuitry connected to receive said first clock signal at said first rate and operable to produce therefrom said high rate clock signal to be supplied to the processing device and to the multiplexor, wherein said clock generation circuitry is operable to produce, on



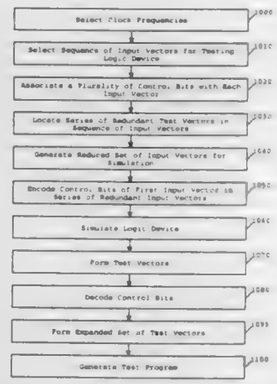
receipt of each clock edge of the first clock signal, a predetermined number of clock edges to constitute said high rate clock signal whereby said high rate clock signal is synchronized with said first clock signal, said predetermined number being controllable to control a multiplication factor by which the high rate clock signal exceeds the first clock signal.

5,345,450

METHOD OF COMPRESSING AND DECOMPRESSING SIMULATION DATA FOR GENERATING A TEST PROGRAM FOR TESTING A LOGIC DEVICE

Beng I. Saw; Marcus V. Tai, and Dai M. Le, all of San Jose, Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Mar. 26, 1993, Ser. No. 38,740
Int. Cl.[5] G06F *11/00;* **G01R** *31/28*
U.S. Cl. 371—27 **7 Claims**



1. A method of reducing the simulation time and data storage requirements for a computer simulation of a logic device having a plurality of inputs and outputs, comprising the steps of:

selecting an initial operating frequency for a logic device tester, said initial operating frequency having a corresponding period;

selecting a sequence of input vectors to be applied to said plurality of inputs by said logic device tester for testing said logic device, wherein each input vector is to be applied for a finite duration equal to said period corresponding to said initial operating frequency, before a next input vector in said sequence is applied;

associating a plurality of control bits with each of said sequence of input vectors;

locating a series of redundant input vectors among said sequence of input vectors, wherein each input vector in

said series is expected to generate an identical output vector on said plurality of outputs of said logic device;

forming a subset to be provided to said computer simulation, of said sequence of input vectors by eliminating from said sequence of input vectors all but a first input vector of said located series of redundant input vectors;

encoding a plurality of control bits associated with said first input vector of said located series;

providing said computer simulation with said formed subset of input vectors along with the plurality of control bits associated with each input vector in said subset;

causing said computer simulation to generate a set of simulated output vectors in response to said provided subset of input vectors; and

forming a set of test vectors, wherein each test vector comprises an input vector from said formed subset of input vectors, a simulated output vector generated by said computer simulation in response to said input vector, and a plurality of control bits associated with said input vector.

5,345,451

CYCLIC REDUNDANCY CHECK OPERATING METHOD AND A HEAD ERROR CHECKER SYNCHRONIZING UNIT IN AN ASYNCHRONOUS TRANSFER MODE SWITCHING PROCESS

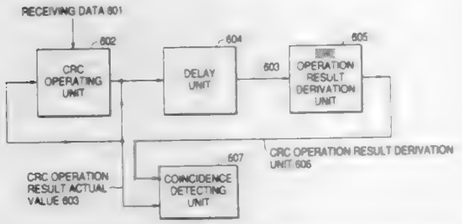
Shiro Uriu, and Shuji Yoshimura, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 10, 1992, Ser. No. 848,170

Claims priority, application Japan, Mar. 13, 1991, 3-048406

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—42 **6 Claims**



2. A head error checker (HEC) synchronizing unit used in an asynchronous transfer mode (ATM) switching process for detecting errors in a header part of a cell having a CRC code and performing a cell synchronizing operation in the asynchronous transfer mode switching process, said HEC synchronizing unit comprising:

CRC operating means for performing a cyclic redundancy check operation in which received data of said cell inputted in a byte unit is divided by a predetermined generated polynomial, for outputting a corresponding CRC operation result actual value as a remainder, and for inputting into said operating means as an initial value said outputted CRC operation result actual value outputted in a previous said cyclic redundancy check operation,

delay means for delaying said outputted operation result actual value by an amount of time taken for a header part of said received data to be inputted,

CRC operation result deriving means for receiving as an initial value said delayed CRC operation result actual value outputted by said delay mean[illegible] for generating a value as a CRC operation result [illegible]eration value as if it were obtained as a result of a CRC operation performed for all the received data of the [illegible]eader part based on said received initial value, and

coincidence detecting means f[illegible] comparing a CRC operation result actual value outputted by said CRC operating means with a CRC operation result derivation value generated by said CRC operation result deriving means, and for detecting an input timing of said received data, having no errors and having a header part provided with a CRC code of said data length, as coincident timing of both values.

5,345,452

ADAPTIVE EQUALIZER FOR REMOVING NONLINEAR DISTORTIONS FROM DIGITAL SIGNALS

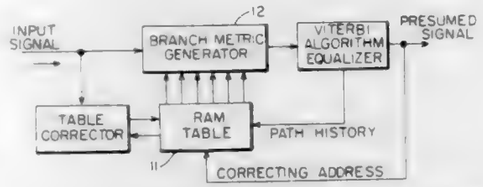
Hitosi Matui, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 29, 1992, Ser. No. 890,267

Claims priority, application Japan, May 29, 1991, 3-125759

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—43 **5 Claims**



1. An adaptive equalizer for equalizing an M-level (M being an integer greater than or equal to 2) input digital signal in which a nonlinear distortion exists due to intersymbol interference to cause an impulse response to extend over n data symbols (n being an integer greater or equal to 1), said equalizer comprising:

an error calculator for producing a plurality of error signals each being representative of a difference between the input signal and one of M^m (m being an integer greater than or equal to 1 and smaller than or equal to n) presumed value signals corresponding to said input signal;

a Viterbi algorithm equalizer for equalizing a symbol sequence having a length of n symbols by using said plurality of error signals as branch metrics and according to a Viterbi algorithm to thereby output an equalized presumed symbol associated with said input signal, while outputting a path history having a length of n-m symbols of a Viterbi transition diagram as an equalization address signal;

an address signal selector for sequentially outputting addresses of said PF^n presumed value signals consisting of said equalization address signal and a transition symbol sequence having a length of m symbols; and

a presumed value table for sequentially receiving said addresses of said M^m presumed value signals from said address signal selector to in turn sequentially feed said M^m presumed value signals corresponding to said addresses to said error calculator.

5,345,453

CIRCUIT ARRANGEMENT FOR SAMPLING A BINARY SIGNAL

Ludwig Bayer, and Michael Behrens, both of Nuremberg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 24, 1992, Ser. No. 980,816

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1991, 4139340

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—68.1 **13 Claims**

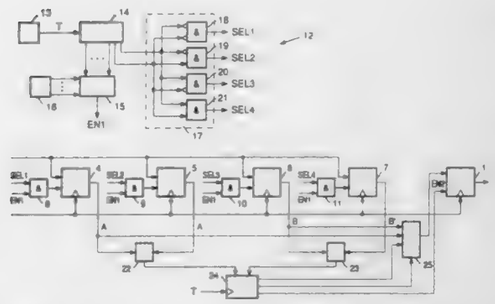
1. A circuit for sampling a binary signal and producing an output signal representative of a particular sample of the binary signal, wherein the sampling circuit comprises:

storage means to store successive samples of the binary signal, the samples being acquired in a time interval shorter than a time period between two successive transitions of the binary signal;

test means coupled to the storage means for testing a first plurality of successive samples, supplied by the storage means, for being functionally identical to one another; and

producing the output signal being representative of any of the first plurality of the successive samples upon detecting the identity;

upon detecting the absence of identity among the first plurality of successive samples:



said test means testing a further plurality of the successive samples, supplied by the storage means, for being functionally identical to one another; and

producing the output signal being representative of any of the further plurality of the successive samples upon detecting the identity among the further plurality;

upon detecting absence of identity among the further plurality of successive samples, producing the output signal being representative of a predetermined substitute.

5,345,454

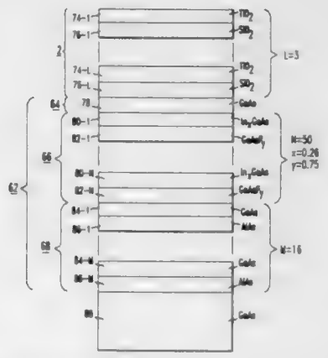
ANTIRESONANT FABRY-PEROT P-I-N MODULATOR

Ursula Keller, Highlands, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 788,641, Nov. 6, 1991, Pat. No. 5,237,577. This application Jan. 27, 1993, Ser. No. 10,029

Int. Cl.[5] H01S *3/098*

U.S. Cl. 372—12 **10 Claims**



1. Optical apparatus comprising:

first and second reflective elements being spaced apart to form a Fabry-Perot etalon therebetween, the Fabry-Perot etalon being characterized by a plurality of optical frequencies each frequency corresponding to a resonant condition; and

semiconductor material having a nonlinear optical absorption that can be varied with an applied voltage substantially at a predetermined optical frequency and being positioned between the first and second reflective elements, the predetermined optical frequency being between any two adjacent optical frequencies in the plurality of optical frequencies so that the predetermined optical frequency occurs substantially at an optical frequency corresponding to an anti-resonant condition for the Fabry-Perot etalon, the semiconductor material comprising a p-i-n modulator having a p-doped region, an intrinsic region, and an n-doped region, the intrinsic region being disposed between the p-doped and n-doped regions.

5,345,455

OPTICAL WAVELENGTH CONVERTER CONTROL METHOD AND DEVICE

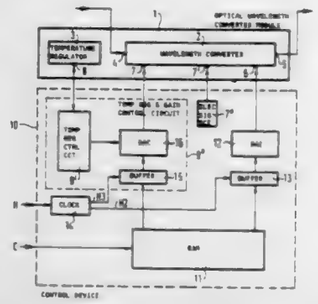
Jean-Michel Gabriagues, Le Val Saint-Germain; Jean-Claude Jacquinot, Le Kremlin-Bicetre; Guy Le Roy, Lannion, and Jean-Baptiste Jacob, Perros-Guirec, all of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Aug. 28, 1992, Ser. No. 937,499

Claims priority, application France, Aug. 30, 1991, 91 10789

Int. Cl.[5] H01S *3/10*

U.S. Cl. 372—20 **5 Claims**



1. Method of controlling an optical wavelength converter according to a required output wavelength, said wavelength converter having an optical signal input to which is applied an input optical signal whose wavelength is to be converted, an optical signal output at which appears an output optical signal whose wavelength is the required wavelength, and at least one control electrode to which is applied a respective analog electrical control signal to control the wavelength of the output optical signal, said method comprising:

a calibration phase comprising the steps:

establishing a mathematical relationship between the magnitude of said electrical control signal and the wavelength of said output optical signal, and

storing said mathematical relationship in an addressable digital storage means as respective values of said control signal each associated with a different value of said wavelength; and

an operative phase comprising the steps:

using a digital signal corresponding to the required output wavelength to address said storage means and obtain an associated digital signal corresponding to an associated said control signal, and

converting the thus-obtained associated digital signal into said analog control signal, for application to said control electrode.

5,345,456

SPATIALLY ADDRESSABLE SURFACE EMISSION SUM FREQUENCY DEVICE

Hongxing Dai, Gloucester; Siegfried Janz, Ottawa; Michel M. Dion, Gloucester, and Richard Normandin, Ottawa, all of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Mar. 11, 1993, Ser. No. 29,584

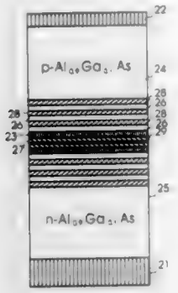
Int. Cl.[5] H01S *3/10*

U.S. Cl. 372—22 **20 Claims**

1. A monolithic integrated circuit for generating an output

optical signal in any of a plurality of directions in space comprising:

controllable coherent light injection means for generating a coherent signal, the frequency of the coherent signal being adjustable in dependence upon the magnitude of a controlling parameter; and



non-linear waveguide means for generating the output optical signal in response to an other optical signal and to the coherent signal contra-propagating within the waveguide, the direction of the output optical signal being dependent upon the frequency difference between the coherent signal and the other optical signal.

5,345,457

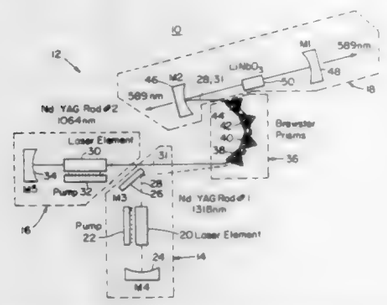
DUAL WAVELENGTH LASER SYSTEM WITH INTRACAVITY SUM FREQUENCY MIXING

Henry H. Zenzie, Chelmsford, and Peter F. Moulton, Concord, both of Mass., assignors to Schwartz Electro-Optics, Inc., Concord, Mass.

Continuation of Ser. No. 12,520, Feb. 2, 1993, abandoned. This application Oct. 15, 1993, Ser. No. 137,947

Int. Cl.[5] H01S *3/10*

U.S. Cl. 372—22 **18 Claims**



1. A dual-wavelength laser system with intracavity, sum-frequency mixing comprising:

a bifurcated resonant cavity having a first arm, a second arm and a common arm;

a first laser element located in said first arm for producing a first laser beam of a first wavelength;

a second laser element located in said second arm for producing a second input laser beam of a second wavelength;

a nonlinear-mixing element in said common arm; and

a beam combining device for combining said first and second beams and submitting them to said nonlinear-mixing element for producing an output laser beam of a third wavelength whose energy is the sum of the energy of the input laser beams.

5,345,458

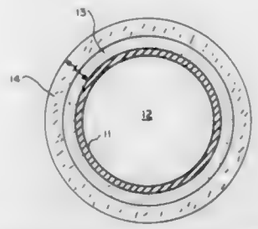
MULTIPLE DENSITY LAYERED INSULATOR

Terry W. Alger, Tracy, Calif., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Sep. 25, 1986, Ser. No. 915,201

Int. Cl.[5] H01S *3/04*

U.S. Cl. 372—34 **5 Claims**



1. In a metal vapor laser comprising a housing for the laser discharge chamber, the improvement comprising insulation materials annularly surrounding the exterior of said housing, said materials comprising an inner layer contiguous to said housing of a first insulating material, and an outer layer contiguous to said inner layer comprising a second insulating material, said first insulating material selected from the group consisting of aluminum powder and zirconia, and said second insulating material selected from the group consisting of aluminum fiber and metal foil, respectively, wherein the respective thicknesses of each of said layers are such that when the temperature of said housing is 1600° C., the maximum temperature within said layers is no greater than 1600° C.

5,345,459

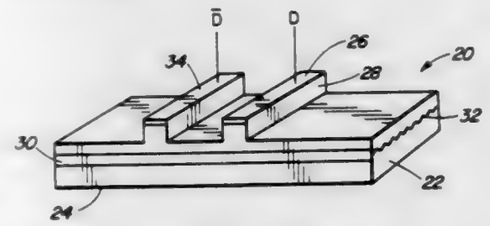
METHOD OF REDUCING THE THERMALLY-INDUCED SHIFT IN THE EMISSION WAVELENGTH OF LASER DIODES

Bruce A. Richardson, Nepean; Douglas J. S. Beckett; Jozef Finak, both of Kanata; Robert A. Bruce, Stittsville, and David M. Adams, Gloucester, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 9, 1993, Ser. No. 118,273

Int. Cl.[5] H01S *3/04*

U.S. Cl. 372—34 **13 Claims**



1. A method of reducing thermally-induced shift in the emission wavelength of a laser diode in which the wavelength shift is caused by a temperature change in the diode due to a signal modulation current, the laser diode having a first contact for receiving said signal modulation current; the method comprises providing a compensating modulation current to a second contact in juxtaposition to said first contact, said compensating modulation current being out of phase with said signal modulation current, and having an amplitude such that temperature variations due to changes in the signal modulating current are substantially neutralized by the power dissipated in said diode due to said compensating modular ion current.

5,345,460

SEMICONDUCTOR LASER DEVICE WITH WINDOW REGIONS

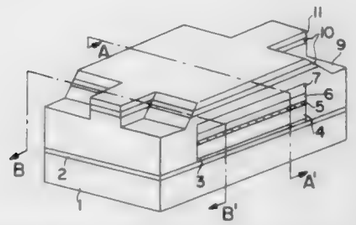
Haruhisa Takiguchi, Nara; Seiki Yano, Yamatokoriyama; Kazuhiko Inoguchi, Nara; Hiroaki Kudo, Nara; Chitose Nakanishi, Nara; Toshiyuki Okumura, Tenri, and Satoshi Sugahara, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 4, 1992, Ser. No. 939,901

Claims priority, application Japan, Sep. 6, 1991, 3-227378

Int. Cl.[5] H01S *3/18, 3/08*

U.S. Cl. 372—43 **6 Claims**



1. A semiconductor laser device with window regions, in which a double hetero structure including cladding layers and an active layer sandwiched by the cladding layers is formed on a semiconductor substrate, the double hetero structure is buried in burying layers with a bandgap larger than that of the active layer, and the burying layers form window regions situated at both end facets of the double hetero structure, wherein the window regions have a waveguide structure including a plurality of semiconductor layers with different bandgaps, wherein the plurality of semiconductor layers in the window regions comprise a window region waveguide layer and window region cladding layers which are provided above and below the window region wave guide layer and which have a bandgap larger than that of the window region waveguide layer, and further wherein the window region waveguide layer is provided so that the position and size thereof correspond to those of the active layer, and a waveguide mode of the active layer and that of the window region waveguide layer match with each other.

5,345,461

SEMICONDUCTOR LASER HIGH OPTICAL GAIN QUANTUM WELL

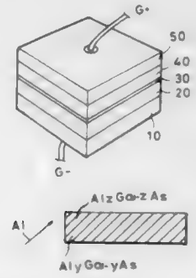
Do Y. Ahn, Kyungki, and Tae K. You, Seoul, both of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 13, 1992, Ser. No. 974,058

Claims priority, application Rep. of Korea, Dec. 30, 1991, 25538/1991

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—45 **18 Claims**



1. A semiconductor laser comprising:

a first compound semiconductor layer of a first conductivity type as a substrate;

a second compound semiconductor layer of the first conductivity type as a first clad layer disposed over the first compound semiconductor layer;

a third compound semiconductor layer of a non-conductive type as an active layer disposed over the second compound semiconductor layer, the third compound semiconductor layer having asymmetric quantum wells;

a fourth compound semiconductor layer of a second conductivity type as a second clad layer disposed over the third compound semiconductor layer; and

a fifth compound semiconductor layer of the second conductivity type as a cap layer disposed over the fourth compound semiconductor layer.

5,345,462

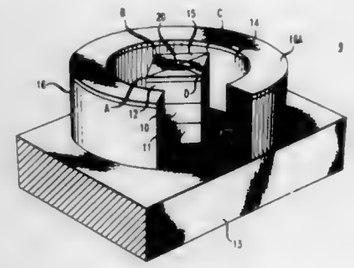
SEMICONDUCTOR SURFACE EMITTING LASER HAVING ENHANCED POLARIZATION CONTROL AND TRANSVERSE MODE SELECTIVITY

Kent D. Choquette, Albuquerque, N. Mex., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 29, 1993, Ser. No. 37,867

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—45 **6 Claims**



1. In a semiconductor vertical cavity laser of the type comprising a transversely configured active region longitudinally sandwiched between a pair of reflecting layers, said active region having a transverse cross section with a center, the improvement wherein said transversely configured active region has a major dimension constituting the longest line segment in said region passing through said center and a minor dimension constituting the longest line segment perpendicular to said major dimension in said region, said major dimension exceeding said minor dimension by a factor of 1.2 or more.

5,345,463

SEMICONDUCTOR LASER WITH IMPROVED OSCILLATION WAVELENGTH REPRODUCIBILITY

Masaya Mannoh, Hirakata, and Kiyoshi Ohnaka, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 13, 1993, Ser. No. 45,423

Claims priority, application Japan, Apr. 14, 1992, 4-094239

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—45 **2 Claims**

1. A semiconductor laser having a double hetero structure, comprising:

a GaAs substrate;

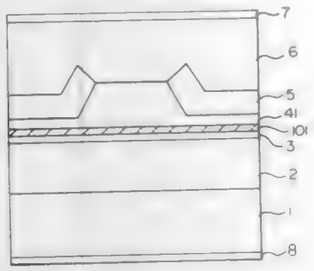
a first lattice-adjusted $(Al_XGa_{1-X})InP$ clad layer formed on the substrate;

an $(Al_YGa_{1-Y})InP$ active layer formed on the first lattice-adjusted clad layer with $(0 \leqq Y < X \leqq 1)$;

a second lattice-adjusted $(Al_XGa_{1-X})InP$ clad layer formed on the active layer; and

a low-doped $(Al_ZGa_{1-Z})InP$ layer interposed between the

active layer and at least one of the clad layers with $0 \leq Y < Z \leq 1$, a carrier concentration in the low-doped



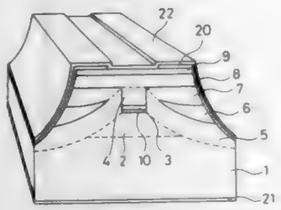
layer being less than a carrier concentration in either of the first and second clad layers.

5,345,464

SEMICONDUCTOR LASER

Akira Takemoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1993, Ser. No. 124,018
Claims priority, application Japan, Dec. 21, 1992, 4-356621
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 **23 Claims**



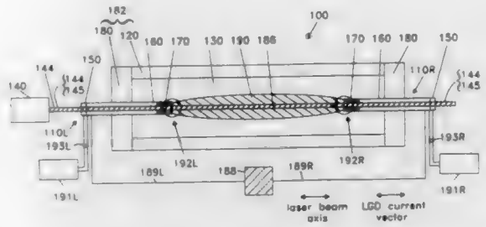
1. A semiconductor laser comprising:
a semiconductor substrate of a first conductivity type;
a double heterojunction structure comprising a lower cladding layer of the first conductivity type disposed on the semiconductor substrate and having a first energy band gap, a band gap discontinuity reduction layer of the first conductivity type having a thickness from five to forty nanometers disposed on the lower cladding layer and having a second energy band gap, an undoped active layer disposed on the band gap discontinuity reduction layer and having a third energy band gap smaller than the first energy band gap, the second energy band gap being intermediate the first and third energy band gaps, and an upper cladding layer of a second conductivity type, opposite the first conductivity type, disposed on the active layer and having a fourth energy band gap larger than the third energy band gap, the double heterojunction structure having a ridge shape;
a current confinement structure disposed on opposite sides of the double heterojunction structure for confining current flow to the double heterojunction structure; and
first and second electrodes electrically contacting the semiconductor substrate and the upper cladding layer, respectively.

5,345,465

APPARATUS AND METHOD FOR GUIDING AN ELECTRIC DISCHARGE

John T. Bahns, Iowa City, Iowa, assignor to The University of Iowa Research Foundation, Iowa City, Iowa

Filed Aug. 10, 1992, Ser. No. 926,294
Int. Cl.[5] H01S *3/094, 3/097;* **H01J** *7/24*
U.S. Cl. 372—76 **20 Claims**



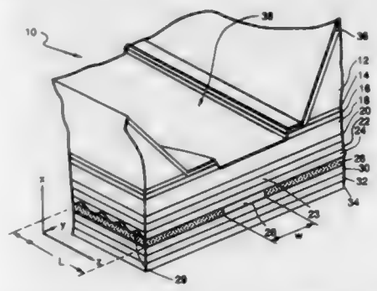
1. A device for generating and guiding an electric discharge, comprising:
first and second electrodes;
a material positioned between said first electrode and said second electrode, said material having at least two excited electronic states of different energies neither of which is a ground state;
means for applying photons having an energy equal to a difference in energy between said two excited electronic states, said photons filling a region of said material between said first and second electrodes; and
means for applying a voltage across said first and second electrodes, whereby said electric discharge is generated and follows an ionized path in said region.

5,345,466

CURVED GRATING SURFACE EMITTING DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER

Steven H. Macomber, Bethel, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 12, 1992, Ser. No. 974,775
Int. Cl.[5] H01S *3/08, 3/18*
U.S. Cl. 372—96 **25 Claims**



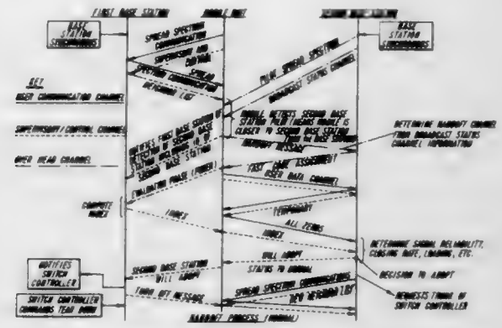
1. An improved broad area surface emitting distributed feedback semiconductor laser diode device having a structure of dielectric, metal, and semiconductor material layers, including a positively doped semiconductor cladding layer having a grating etched into its surface, said grating having a plurality of grating grooves, said improvement comprising: a curved pattern incorporated into said grating for producing a predominantly single-lobed lateral mode far-field output intensity profile at relatively high power.

5,345,467

CDMA CELLULAR HAND-OFF APPARATUS AND METHOD

Gary R. Lomp, Centerport, N.Y.; Gilbert La Vean, Reston, Va., and Donald L. Schilling, Sands Point, N.Y., assignors to InterDigital Technology Corp., Wilmington, Del.

Continuation-in-part of Ser. No. 727,617, Jul. 10, 1991, Pat. No. 5,179,571. This application Oct. 8, 1992, Ser. No. 957,943
The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 **50 Claims**



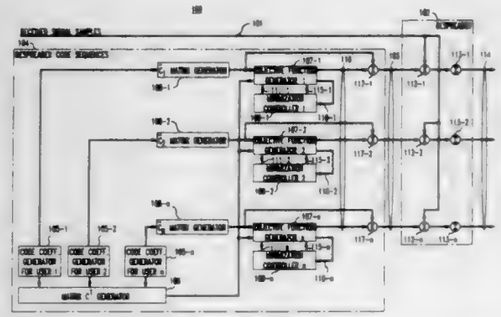
1. An apparatus for controlling hand-off of radio devices moving from one cell toward an adjacent cell of a spread-spectrum code-division-multiple-access communications system (spread-spectrum-CDMA-communications system), each adjacent cell having its own generic-chip-code signal embedded in a spread-spectrum-communications signal, comprising:
a first base station for transmitting a first spread-spectrum-communications signal having a first generic-chip-code signal and message data spread-spectrum processed with a message-chip-code signal, embedded therein;
a second base station for transmitting a second spread-spectrum communications signal having a second generic-chip-code signal embedded therein;
a radio device including,
a cellular antenna;
a first matched filter coupled to said cellular antenna and having a first impulse response matched to the first generic-chip-code signal;
a first detector coupled to said first matched filter for detecting the first generic-chip-code signal embedded in the first spread-spectrum-communications signal communicated from said first-base station and outputting a first detected signal;
a second matched filter coupled to said cellular antenna and having a second impulse response matched to the second generic-chip-code signal;
a second detector coupled to said second matched filter for detecting the second generic-chip-code signal embedded in the second spread-spectrum-communications signal communicated from said second base-station and outputting a second detected signal;
a comparator coupled to said first detector and to said second detector for generating a relative time comparison signal by comparing time of detecting the second detected signal with time of detecting the first detected signal;
a receiver-message-chip-code generator for generating a replica of the message-chip-code signal;
a message mixer coupled to said receiver-message-chip-code generator and said cellular antenna, responsive to the replica of the message-chip-code signal, for despreading one of the first spread-spectrum-communications signal and the second spread-spectrum-communications signal as a modulated-data signal;
a message-bandpass filter coupled to said message mixer for filtering the modulated-data signal;
a message detector for demodulating the modulated-data signal as received data;
a synchronization circuit coupled to said comparator and responsive to the relative time comparison signal being greater than a threshold, for synchronizing said receiver-message-chip-code generator to the first generic-chip-code signal for receiving the first spread-spectrum-communications signal from said first base station, and responsive to the relative time comparison signal being less than the threshold, for synchronizing said receiver-message-chip-code generator to the second generic-chip-code signal for receiving the second spread-spectrum-communications signal from said second base station; and
a control unit coupled to said first base station and said second base station and to a plurality of other base stations for switching the message data spread-spectrum processed with the message-chip-code signal, embedded in the first spread-spectrum-communications signal transmitted from said first-base station, to the second spread-spectrum-communications signal transmitted from said second base station.

5,345,468

DESPREADING TECHNIQUE FOR CDMA SYSTEMS

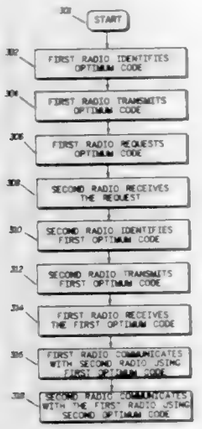
Qi Bi, Morris Plains, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 16, 1992, Ser. No. 991,841
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 **16 Claims**



1. Apparatus for use in a CDMA system which transmits a coded user signal for each of a plurality of users, each transmitted user signal being formed by processing that user's symbol with an associated sequence of code coefficients, and wherein a received signal includes a composite of all coded user signals, said apparatus comprising
means for receiving samples of said received signal in a predetermined time interval; and
means responsive to said received signal samples for forming an estimate of a user symbol in said time interval, said forming means including means for multiplying said received signal samples and a derived sequence of code coefficients, said derived sequence being a function of a correlation of the code coefficient sequence associated with said user and those code coefficient sequences associated with the other users.

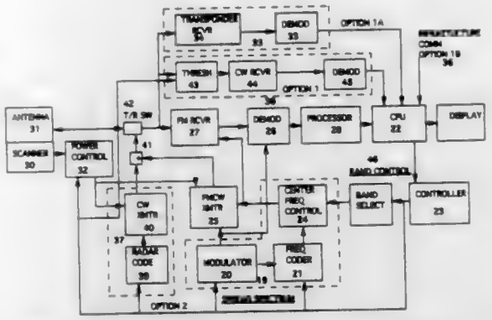
5,345,469
COMMUNICATION DEVICE WITH CODE SEQUENCE SELECTION SYSTEM
Tracy L. Fulghum, Sunrise, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 1, 1993, Ser. No. 11,581
Int. Cl.[5] H04L *9/00, 27/10*
U.S. Cl. 375—1 **20 Claims**



1. A Code Division Multiple Access (CDMA) communication system for reuse of available spreading codes, the system having a control spreading code and comprising:
a first communication device for transmitting a first signal spread by the control spreading code, the first signal includes a request for a first spreading code;
a second communication device, including:
a receiver for receiving the first signal;
means for identifying the first spreading code determined to be optimum for the reception of signals by the second communication device; and
a transmitter for transmitting the identity of the first spreading code to the first communication device;
whereby the first communication device communicates with the second communication device using the first spreading code.

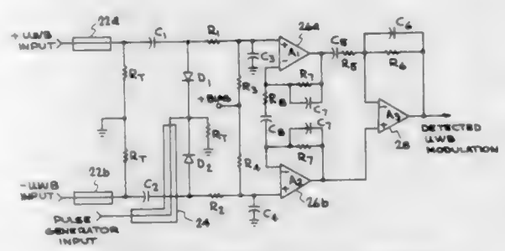
5,345,470
METHODS OF MINIMIZING THE INTERFERENCE BETWEEN MANY MULTIPLE FMCW RADARS
Richard O. Alexander, 2279 Van Ness Ave., San Francisco, Calif. 94109
Filed Mar. 31, 1993, Ser. No. 40,794
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 **12 Claims**

1. An apparatus to generate and receive spread spectrum FMCW waveforms comprising:
means for generating a first code and a second code independent from said first code;
a frequency modulator having a first output signal with a modulation slope that changes according to said first code provided from said means for generating;
a demodulator having a demodulator function to demodulate a received signal from an FMCW receiver, said demodulator function following said modulation slope of said first output signal received from said frequency modulator; and
a frequency coder which controls a center frequency of an FMCW transmitter and a center frequency of said FMCW receiver according to said second code received from said means for generating, wherein said center frequency of



said FMCW receiver duplicates said center frequency of said FMCW transmitter.

5,345,471
ULTRA-WIDEBAND RECEIVER
Thomas E. McEwan, Livermore, Calif., assignor to The Regents of the University of California, Oakland, Calif.
Filed Apr. 12, 1993, Ser. No. 44,745
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 **20 Claims**

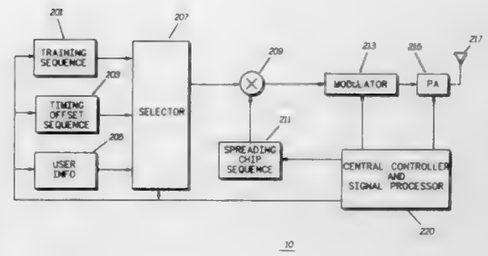


1. An ultra-wideband (UWB) receiver, comprising:
a differencing amplifier having a pair of inputs;
an input channel connected to one input of the amplifier;
a second input channel connected to the other input of the amplifier;
strobing means connected to both input channels to simultaneously strobe both channels.

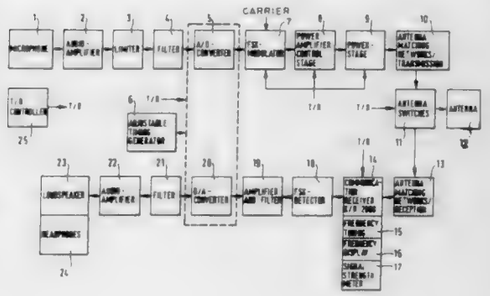
5,345,472
METHOD AND APPARATUS FOR RECEIVING AND DECODING COMMUNICATION SIGNALS IN A CDMA RECEIVER
Edward K. B. Lee, Sunrise, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 2, 1993, Ser. No. 100,237
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 **11 Claims**

1. In a code division multiple access (CDMA) receiver which utilizes adaptive equalization for minimizing the error between a received DS-SS signal and a reference signal; a method for decoding the received signal comprising the steps of:
a) receiving a DS-SS communication signal including a desired DS-SS signal, wherein said desired DS-SS signal comprises binary bits coded with a spreading chip sequence;
b) sampling during a bit interval said received DS-SS communication signal to produce received samples, said received samples being correlated with each other;

c) de-correlating the received samples by employing an orthogonal transformation algorithm to provide de-correlated elements corresponding to said received samples; and
d) minimizing the error based on the de-correlated elements.

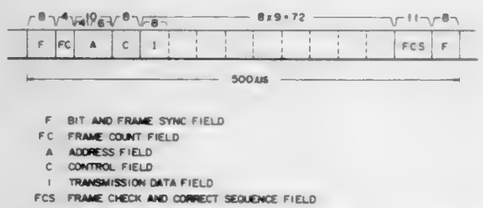


5,345,473
APPARATUS FOR PROVIDING TWO-WAY COMMUNICATION IN UNDERGROUND FACILITIES
Antti Berg, Kiiminki, Finland, assignor to Outokumpu Oy, Helsinki, Finland
Continuation of Ser. No. 879,062, Apr. 30, 1992, abandoned, which is a continuation of Ser. No. 126,592, Nov. 30, 1987, abandoned. This application Sep. 17, 1993, Ser. No. 123,691
Claims priority, application Finland, Jan. 22, 1987, 870286
Int. Cl.[5] H04B *13/02, 1/44*
U.S. Cl. 375—6 **12 Claims**



1. A receiver apparatus for receiving information in an underground facility comprising:
an antenna means for receiving a digitally frequency shift keyed modulated electromagnetic carrier signal at a frequency in the range 0.1–2 MHz and having a sequence of high modulation frequency time intervals and low modulation frequency time intervals and generating a received signal;
a selective receiver means for receiving the received signal from the antenna means and selecting predetermined frequency components of the received signal and rejecting other frequency components of the received signal so as to produce a first IF signal having the digitally modulation of the digitally electromagnetic carrier signal, said selective receiver means including a frequency tuning means for tuning the selective receiver means, a frequency display means for providing a display of frequency to which the selective receiver means is tuned, and a signal strength meter for providing a display of strength of the received signal;
a frequency shift keying detector for demodulating the first IF signal and producing a digital signal as a series of 1's and 0's according to the respective high modulation frequency time intervals and low modulation frequency time intervals of the first IF signal;
a digital-to-analog converter for converting the digital signal to analog form according to a predetermined decoding algorithm and producing an analog electrical signal; and
an audio generator for receiving the analog electrical signal and producing an acoustic signal representative of the analog electrical signal.

5,345,474
TEMPORARY ADDRESS SYSTEM IN A RADIO COMMUNICATION SYSTEM
Toshiya Hoshikawa, Sendai, Japan, assignor to Small Power Communication Systems Research Laboratories Co., Ltd., Sendai, Japan
Continuation of Ser. No. 771,186, Oct. 4, 1991, abandoned. This application Sep. 24, 1993, Ser. No. 126,010
Claims priority, application Japan, Oct. 4, 1990, 2-265014
Int. Cl.[5] H04B *1/38;* **H04L** *5/16*
U.S. Cl. 375—7 **9 Claims**



F BIT AND FRAME SYNC FIELD
FC FRAME COUNT FIELD
A ADDRESS FIELD
C CONTROL FIELD
I TRANSMISSION DATA FIELD
FCS FRAME CHECK AND CORRECT SEQUENCE FIELD

1. A temporary address system in a radio communication system comprising:
frame for transmitting the stored digital code data by radio of one of a frequency out of a frequency group, said frame means including a bit and frame sync field, frame count field, address field, control field, transmission data field, and frame check and correct sequence field;
a radio base station forming an area to/from which said digital code data stored in said frame can be transmitted/-received; and
at least one portable radio terminal device for conducting transmission and reception of a signal with respect to said radio base station in said area;
wherein said radio base station registers a temporary address for a terminal device every time a radio link is set upon either transmission request from a terminal device, or reception request from the radio base station, and erase the temporary address after completion of communications, and
a temporary identification data is assigned to an address field of said frame, and the temporary identification data is repeatedly set to the radio terminal device with which the radio link is formed.

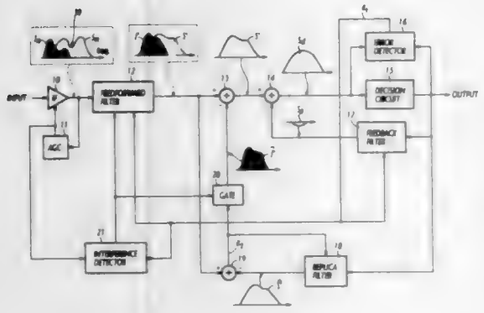
5,345,475
Patent Not Issued For This Number

5,345,476

INTERFERENCE CANCELLER WITH FEEDFORWARD TRANSVERSAL FILTER HAVING SWITCHED TAP-GAIN COEFFICIENTS

Ichiro Tsujimoto, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Apr. 9, 1993, Ser. No. 45,555
Claims priority, application Japan, Apr. 9, 1992, 4-089061
Int. Cl.[5] H03H *7/30, 7/40;* **H03K** *5/159*
U.S. Cl. 375—14 **4 Claims**



1. An interference canceller comprising:

means for detecting an interference signal transmitted from an undersired source for generating a gate control signal when the interference signal is detected;

a feedforward equalizer for operating on a signal received by an antenna and producing an equalized feedforward output signal, said feedforward equalizer comprising (N−1) delay-line elements connected in series to define N delay-line taps for producing successively delayed versions of said received signal at said N delay-line taps, N multipliers for operating on the delayed signals at said delay-line taps, N correlators responsive to a first error control signal for modifying signals at said delay-line taps for respectively supplying tap-gain signals to said multipliers, summing means for combining outputs from said N multipliers into said equalized feedforward output signal, and means for nullifying the outputs of (N−1) ones of said N multipliers in response to said gate control signal;

a decision circuit for deriving a decision output signal from an equalized desired signal;

a first feedback equalizer for operating on decision output signals from said decision circuit in accordance with said first error control signal;

a second feedback equalizer for nonlinearly filtering decision output signals from said decision circuit in accordance with a second error control signal for generating an estimate of a desired component of said equalized feedforward output signal;

a first combiner for combining outputs from said second feedback equalizer and said feedforward equalizer and producing and supplying an estimate of an undesired component of said equalized feedforward output signal to said second feedback equalizer as said second error control signal;

a second combiner for combining outputs from said first combiner, said feedforward equalizer and said first feedback equalizer and generating said equalized desired signal for said decision circuit;

means responsive to a difference between the outputs of said second combiner and said decision circuit for generating said first error control signal for said feedforward equalizer and said first feedback equalizer; and

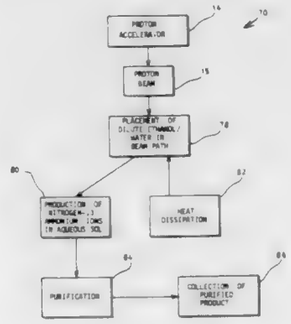
gate means for establishing a connection between the output of said first combiner and an input of said second combiner in response to the presence of said gate control signal and clearing said connection in response to the absence of said gate control signal.

5,345,477

DEVICE AND PROCESS FOR THE PRODUCTION OF NITROGEN-13 AMMONIUM IONS USING A HIGH PRESSURE TARGET CONTAINING A DILUTE SOLUTION OF ETHANOL IN WATER

Bruce W. Wieland, El Cerrito; Gerald T. Bida, Rodeo; George O. Hendry, Napa, and Henry C. Padgett, Walnut Creek, all of Calif., assignors to CTI Cyclotron Systems, Inc., Knoxville, Tenn.

Filed Jun. 19, 1991, Ser. No. 717,268
Int. Cl.[5] G21G *1/10*
U.S. Cl. 376—195 **7 Claims**



1. A process for the production of nitrogen-13 ammonium ions in an aqueous solution, which comprises:

positioning a target material within a target chamber, said target material consisting essentially of a dilute solution of solute in natural water, said solute selected from the group consisting of ethanol and acetic acid, said target material having a solute:water ratio of about 1:5000;

irradiating said target material within said target chamber with a beam of protons to produce nitrogen-13 atoms by a reaction of said protons with oxygen-16 within said target material, said nitrogen-13 atoms producing nitrogen-13 ammonium ions within said target material in the presence of said solute;

removing heat from said target chamber during said irradiation of said target material with said protons;

flowing said target material, after said irradiation by said protons, from said target chamber with additional target material to separation means to remove said nitrogen-13 ammonium ions from nitrogen-13 oxides in said irradiated target material; and

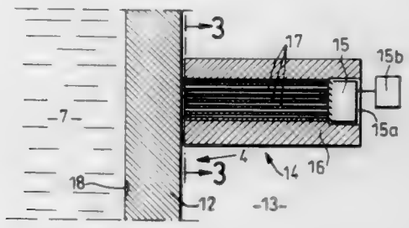
collecting said nitrogen-13 ammonium ions.

5,345,478

METHOD AND DEVICE FOR NON-DESTRUCTIVE EXAMINATION OF A WALL OF A TANK CONTAINING A RADIOACTIVE LIQUID

Daniel Maire, Saint Didier Au Mont D'or; Georges Moreau, Viriat, and Jacques Archer, Chatenay-Malabry, all of France, assignors to Framatome, Courbevoie, France

Filed Jan. 15, 1993, Ser. No. 5,067
Claims priority, application France, Jan. 16, 1992, 92 00402
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—249 **6 Claims**



1. Method for non-destructive examination of a wall of a vessel of an operating nuclear reactor containing a cooling fluid of the reactor comprising liquid sodium in which at least a part of the sodium is activated in the operating reactor and constitutes at least one radioactive element emitting gamma radiation distributed substantially uniformly in the cooling liquid of the reactor, said method comprising the steps of:

(a) shutting down the nuclear reactor; and

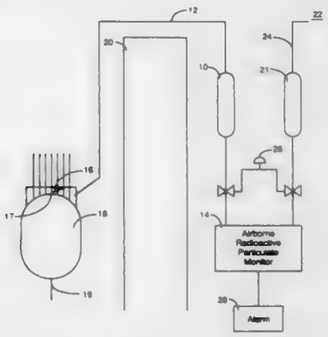
(b) counting the number of photons of the gamma radiation emitted by at least one radioactive sodium element through at least a part of the wall of the vessel.

5,345,479

SENSITIVITY ENHANCEMENT FOR AIRBORNE RADIOACTIVITY MONITORING SYSTEM TO DETECT REACTOR COOLANT LEAKS

Kingsley F. Graham, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 17, 1993, Ser. No. 32,579
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—250 **14 Claims**



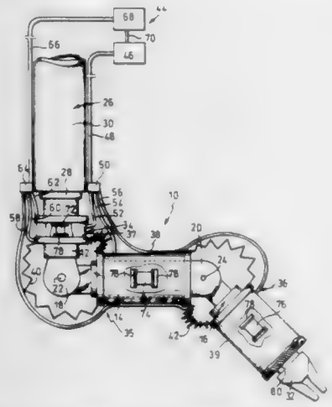
8. In a nuclear reactor radioactivity monitoring system having a sampling line for sampling radioactive gases leaking from a reactor, the improvement comprising a first delay tank in said sampling line downstream from said reactor for holding said radioactive gases for a residence time sufficient to enable said radioactive gases to decay to airborne radionuclide particulates susceptible to activity measurement, and further including an in-line airborne radioactive particulate monitor downstream from said first delay tank.

5,345,480

COOLING DEVICE WHICH CAN BE FITTED ONTO A REMOTE MANIPULATION ARM AND ITS UTILIZATION FOR AN OPERATION IN A HOSTILE MEDIUM AT A HIGH TEMPERATURE

Emmanuel de Magny, Lyons, France, assignor to Framatome, Courbevoie, France

Filed Sep. 28, 1992, Ser. No. 951,793
Claims priority, application France, Sep. 30, 1991, 91 11999
Int. Cl.[5] G21C *9/00*
U.S. Cl. 376—291 **21 Claims**



1. Device for cooling, by circulation of a coolant gas, a jointed manipulation arm (**10**) comprising rigid sections (**12**, **14**, **16**) connected by joints, each section comprising a rigid tubular structure defining an external wall of said section, said device including a rigid vessel (**37**, **38**, **39**) fixedly mounted around the external wall of a rigid section, and connected to a high-pressure coolant gas source (**50**), said vessel (**37**, **38**, **39**) comprising a high-pressure chamber (**92**) and a low-pressure chamber (**94**) connected together by pressure-reduction means (**102**) for said gas, said high-pressure chamber (**92**) having an intake opening (**98**) for high-pressure gas and said low-pressure chamber (**94**) having a discharge opening (**100**) for low-pressure gas outside said low-pressure chamber, said high-pressure and low-pressure chambers (**92**, **94**) being substantially annular and coaxial so as to define an internal chamber (**92**) surrounding said external wall of said rigid section (**12**, **14**, **16**) and an external chamber (**94**) surrounding the internal chamber (**92**).

5,345,481

NUCLEAR REACTOR PLANT WITH CONTAINMENT DEPRESSURIZATION

William J. Oosterkamp, Oosterbeek, Netherlands, assignor to General Elecric Company, San Jose, Calif.

Filed Oct. 19, 1992, Ser. No. 963,227
Int. Cl.[5] G21C *9/00*
U.S. Cl. 376—293 **15 Claims**

1. A reactor plant comprising:

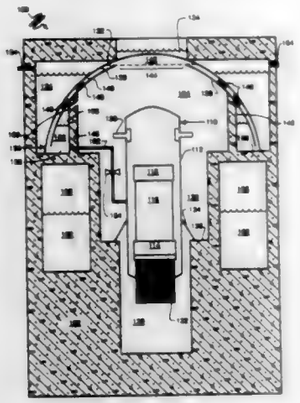
a reactor including a reactor pressure vessel and its internals;

a containment having an interior in which said reactor is located, said containment isolating said reactor from an exterior environment, said containment comprising a thermally conductive wall;

a heat sink located in said exterior environment and in contact with said thermally conductive wall, said thermally conductive wall forming an interface between said containment interior and said heat sink;

baffle means arranged inside said containment interior and spaced from said thermally conductive wall to form a channel therebetween, the top of said baffle means being disposed below a predetermined upper volume of said containment interior, said top of said baffle means and an

opposing portion of said thermally conductive wall forming an inlet through which fluids in said predetermined upper volume can enter said channel, said baffle means



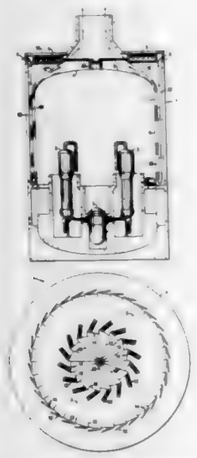
being configured to confine said fluids to a generally downward flow path away from said predetermined upper volume.

5,345,482

PASSIVE CONTAINMENT COOLING WATER DISTRIBUTION DEVICE

Lawrence E. Conway, Hookstown, and Susan V. Fanto, Plum Borough, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 6, 1993, Ser. No. 57,383
Int. Cl.[5] G21C *15/18, 13/00*
U.S. Cl. 376—299 **14 Claims**



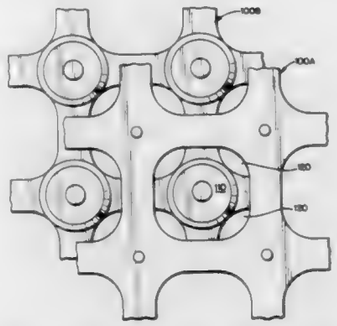
1. Apparatus for distributing cooling water comprising:
(a) a downwardly sloping surface;
(b) a source of cooling water disposed above the sloping surface;
(c) a plurality of guide elements secured to said surface and extending radially outwardly and downwardly from the source of cooling water,
(e) a plurality of weir boxes arranged in a tier, each said weir box secured to said surface and extending between a first and second adjacent guide element, each said weir box comprising:
(1) a collection arm having one end thereof secured to said first guide element and the other end thereof spaced from said second guide element,
(2) a face plate spaced below said collection arm and having one end thereof secured to said second guide element and the other end thereof spaced from said first guide element,
(3) a plurality of spaced, substantially parallel, cross plates extending from the said face plate toward the said collection arm, and having one or more weir notches formed therein,
(4) one or more spaced weir notches formed in said face plate between each adjacent cross plate.

5,345,483

LOWER TIE PLATE STRAINERS HAVING DOUBLE PLATE WITH OFFSET HOLES FOR BOILING WATER REACTORS

Eric B. Johansson, Wrightsville Beach; Kevin L. Ledford; Jaime A. Zuloaga, Jr., both of Wilmington, all of N.C., and David W. Danielson, Aptos, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Dec. 2, 1993, Ser. No. 160,721
Int. Cl.[5] G21C *3/30, 15/00*
U.S. Cl. 376—313 **12 Claims**



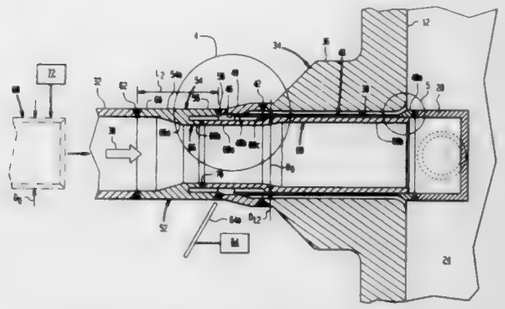
1. In a boiling water reactor fuel bundle, a debris catching grid construction for placement within the flow volume defined by the lower tie plate assembly between the inlet nozzle and upper fuel rod supporting grid comprising:
a pair of plates, each having a substantially rectangular array of holes and bosses, said holes defined by peripheral webbing with said peripheral webbing supporting said bosses, said plates arranged in confronting relationship such that the bosses of each plate project toward the confronting plate;
said holes having a first dimension from two adjacent sides of said plate and having a second and differing dimension from two remaining sides of said plate for centering said webbing supported bosses of one of said plates with said webbing surrounded holes of the other of said plates;
ridge means on at least two of said sides of each plate for confronting portions of said other plate for maintaining said plates at said bosses and webbing in spaced apart relation when said plates are confronted; and
means for supporting said plates in the flow plenum of a lower tie plate whereby said plates define a debris restraining interface having a continuous of flow passages with low pressure drop.

5,345,484

FEEDWATER NOZZLE AND METHOD OF REPAIR

Gerald A. Deaver, and Siamak Bourbour, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed May 3, 1993, Ser. No. 56,083
Int. Cl.[5] G21C *15/00*
U.S. Cl. 376—407 **8 Claims**



1. A method of repairing a nozzle of a vessel comprising:
a nozzle barrel integral with said vessel and having a first bore;
a tubular safe end joined at a proximal end to a distal end of said barrel by a first weld, and joined at a distal end to a proximal end of an inlet pipe at a second weld, said safe end having a second bore disposed in flow communication with said inlet pipe; and
a first thermal sleeve disposed inside said first bore, and having a proximal end extending into said vessel, and having a distal end disposed in an interference fit with said second bore;
said repair method being effective for reducing leakage between said first and second bores at said interference fit of said first thermal sleeve with said safe end and comprising the steps of:
removing an end portion of said inlet pipe and said second weld at said safe end; and
installing a replacement extension for said removed portion between said inlet pipe and said safe end, said extension comprising:
a tubular body having a first fork at a proximal end joined to said safe end distal end by a replacement weld, and having a distal end joined to said inlet pipe at a third weld;
a second fork disposed concentrically inside said first fork and having a proximal end joined integrally with an intermediate portion of said tubular body, and having a distal end extending away from said inlet pipe; and
a second thermal sleeve disposed inside said first thermal sleeve, and having a proximal end joined to said second fork distal end, and having a distal end portion disposed in sealing cooperation with said first thermal sleeve for sealing flow therebetween to said interference fit between said first thermal sleeve and said safe end.

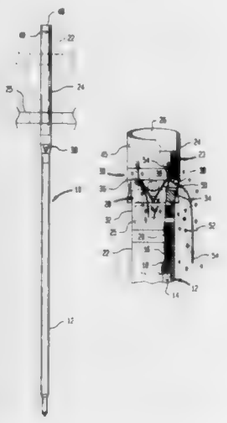
5,345,485

COOLANT VENT FUEL ROD FOR A LIGHT WATER REACTOR

John F. Patterson, and George C. Cooke, both of Richland, Wash., assignors to Siemens Power Corporation, Richland, Wash.

Filed Mar. 13, 1992, Ser. No. 850,532
Int. Cl.[5] G21C *3/322*
U.S. Cl. 376—435 **16 Claims**

2. A nuclear fuel rod for a light water reactor comprising:
(a) a part length fuel rod portion;
(b) a tube having at least one wall member defining an enclosed flow path therethrough and further defining a discharge opening, the tube being disposed above the part length fuel rod portion;
(c) a transition connector disposed between the part length fuel rod portion and the tube, the transition connector being mounted axially and coupled to a lower end of the tube, the transition connector having a first outer perimeter substantially equal to and coupled axially to an outer perimeter of the part length fuel rod portion, and wherein the transition connector further having a second outer perimeter;
the transition connector adapted to have an outer wall defining at least two inlet openings that are substantially



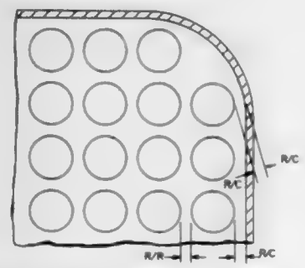
aligned so that one is above the other and a hollow portion for a two phase fluid to enter the at least two inlet openings and pass through the transition connector and into the enclosed flow path in the tube;
the transition connector further including at least two substantially V-shaped surface members extending from the outer wall of the transition connector for diverting at least a portion of liquid contained in the two phase fluid from the inlet openings, and wherein a first surface member of the at least two surface members being located so that portions thereof are located below a first inlet opening and a second surface member being located so that portions thereof are located below a second inlet opening.

5,345,486

FUEL BUNDLE WITH IMPROVED RESISTANCE TO BULGE AND IMPROVED CRITICAL POWER PERFORMANCE

Anthony P. Reese, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Jan. 25, 1993, Ser. No. 8,441
Int. Cl.[5] G21C *3/32*
U.S. Cl. 376—443 **10 Claims**



1. In a fuel bundle having,

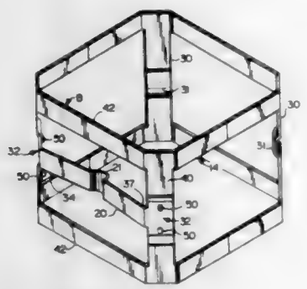
a lower tie plate for support of an upstanding array of fuel rods and admitting an inflow of moderating water coolant;
an array of upstanding fuel rods having a matrix density of 9-by-9 or greater, said array having the corner rods missing so that the upper row, the lower row, the right hand column and the left hand column have a number of rods two less than the density of said array;
an upper tie plate for supporting at least some of said fuel rods of said array in said upright vertical position;
a plurality of spacers at preselected elevations, each spacer surrounding at its elevation each said fuel rod to maintain said fuel rods in spaced apart relation without abrading contact between said fuel rods; and,
a fuel bundle channel extending from the vicinity of said lower tie plate to the vicinity of said upper tie plate, said channel having rounded corners of increased radius of curvature, wherein said radius of curvature exceeds the pitch of said fuel rods, and further wherein spacing between rods within the array is substantially equal to spacing between outermost rods of the array and the channel.

5,345,487

SPACER CAPTURE METHOD FOR RECTILINEAR SECTIONED WATER RODS

Eric B. Johansson, Wrightsville Beach, N.C., assignor to General Electric Company, San Jose, Calif.

Filed May 3, 1993, Ser. No. 55,479
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—444 **4 Claims**



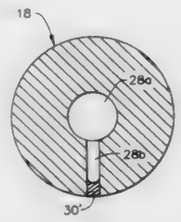
1. In a fuel bundle having:
upper and lower tie plates;
a plurality of upstanding fuel rods supported between said tie plates;
at least one central large water rod extending at least partially between said tie plates; and,
a plurality of spacers mounted about said large central water rod;
means for keying said spacers to said large central water rod comprising in combination:
a groove configured within said large central water rod at an elevation on said water rod to permit said spacer to key to said water rod;
an inner band fastened to said spacer and surrounding said water rod, said inner band having stop means engaging said water rod;
an over center spring fastened to said band, said over center spring having a first over center biased position away from said water rod and a second over center biased position in contact with said water rod; and,
said spring and groove configured for cooperative mating engagement to maintain said spacer at said inner band affixed to said water rod by engagement of said spring with said groove.

5,345,488

NUCLEAR FUEL ROD HAVING CONCAVE WELD ACROSS PRESSURIZATION HOLE IN END PLUG

Johnny R. Skipper, Leland; Robert A. Haughton, Wilmington; Ralph J. Reda, Wilmington, and Michael T. Kiernan, Wilmington, all of N.C., assignors to General Electric Company, San Jose, Calif.

Filed Jul. 12, 1993, Ser. No. 88,950
Int. Cl.[5] G21C *3/10*
U.S. Cl. 376—451 **4 Claims**



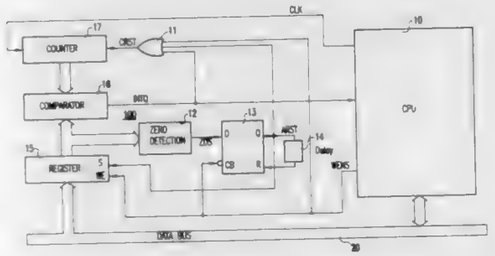
1. A nuclear fuel rod comprising a plenum space filled with gas and an end plug having a pressurization hole sealed by weld material, wherein said weld material has a concave interior surface formed across said pressurization hole.

5,345,489

TIMER CIRCUIT HAVING COMPARATOR COMPARING CONTENTS OF COUNTER AND REGISTER

Minoru Saitoh, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 11, 1993, Ser. No. 75,103
Claims priority, application Japan, Jun. 16, 1992, 156607
Int. Cl.[5] H03K *21/40*
U.S. Cl. 377—39 **8 Claims**



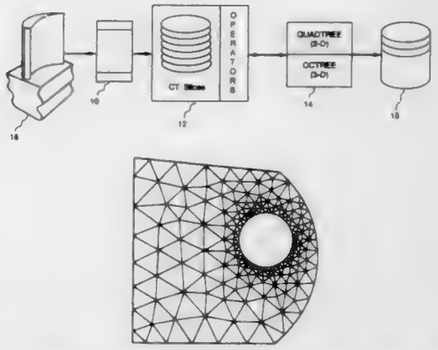
1. A timer circuit comprising a counter counting a clock signal, a register temporarily storing data, a comparator comparing a count value of said counter with data stored in said register and producing a coincident signal when the count value of said counter is coincident with the data stored in the register, detection means for detecting data stored in sid register and producing a detection signal when said register is written with data indicative of value that is equal to a initial value of said counter, and changing means responsive to said detection signal for changing a value of the data stored in said register to another value that is different from said initial value of said counter.

5,345,490

METHOD AND APPARATUS FOR CONVERTING COMPUTED TOMOGRAPHY (CT) DATA INTO FINITE ELEMENT MODELS

Peter M. Finnigan; William E. Lorensen, both of Ballston Lake, and Alan F. Hathaway, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 28, 1991, Ser. No. 722,989
Int. Cl.[5] G01N *23/083;* **G06F** *15/31*
U.S. Cl. 378—4 **7 Claims**



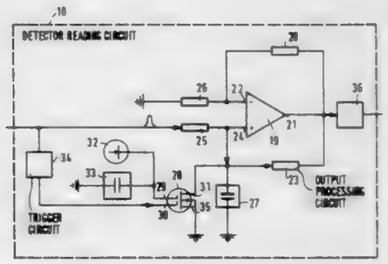
5. A system for converting geometrical data into a finite element model comprising:
means for producing multiple slices of geometrical data of the object;
means for generating a discrete solid model from said multiple slices of geometrical data; and
means for automatically generating a finite element mesh from said discrete solid model.

5,345,491

X-RAY ANALYSIS APPARATUS AND DETECTOR READING CIRCUIT MEANS SUITABLE FOR APPLICATION IN SUCH AN X-RAY ANALYSIS APPARATUS

Hendrick J. J. Bolk, and Georges C. P. Zieltjens, both of Almelo, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 26, 1993, Ser. No. 53,943
Claims priority, application European Pat. Off., Apr. 28, 1992, 92201177.0
Int. Cl.[5] A61B *6/00*
U.S. Cl. 378—70 **13 Claims**



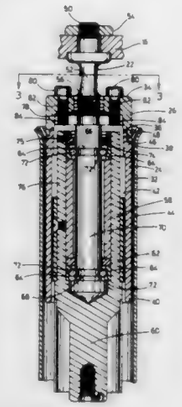
1. An x-ray analysis apparatus comprising an x-ray source, a sample holder, and an x-ray detector with detector reading circuit means which comprises:
resetable integration means comprising a high-bandwidth amplifying means having an input port coupled to one end of a parallel combination of an integration capacitor and controllable means for discharging the integration capacitor; and
circuit means for supplying a control signal for activating said discharging means, said circuit means including high-frequency decoupling means for shielding the integration capacitor from an unwanted high-frequency component in said control signal.

5,345,492

ROTATING ANODE X-RAY TUBE

John D. Weaver, Sr., Barrington; Thomas J. Muchowicz, Elk Grove Village; Arkady Kantor, Buffalo Grove, and George L. Awad, Schaumburg, all of Ill., assignors to Eureka X-Ray Tube Corp., Arlington Heights, Ill.

Filed Jan. 4, 1993, Ser. No. 177
Int. Cl.[5] H01J *35/10*
U.S. Cl. 375—125 **9 Claims**



1. An x-ray tube comprising:
(a) a rotatable anode;
(b) a cylindrical stem oriented along an axis and having a first end and an axially opposed second end, the first end supporting the rotatable anode for rotation about the axis; and
(c) a rotor having a cylindrical sleeve portion and a head portion, the sleeve portion being formed of a first material and having a first end, a second end which axially opposes the first end, a hollow interior defined by an inside diametral dimension, and an outside boundary defined by an outside diametral dimension, and wherein the head portion is formed of a second material and the second end of the rotatable stem is attached to the head portion, and further wherein the head portion overlaps the first end of the sleeve portion by fitting about the outside diametral dimension of the head portion to form a joint, and the first material has a thermal expansion coefficient greater than that of the second material such that the head portion expands less than the sleeve portion upon heating and thereby maintaining the integrity of the joint.

5,345,493

X-RAY TUBE WITH A REDUCED WORKING DISTANCE

Johannes D'Achard Van Enschut, and Lourens Valkonet, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 25, 1993, Ser. No. 8,114
Claims priority, application European Pat. Off., Jan. 27, 1992, 92200205.0
Int. Cl.[5] H01J *35/30*
U.S. Cl. 378—137 **9 Claims**

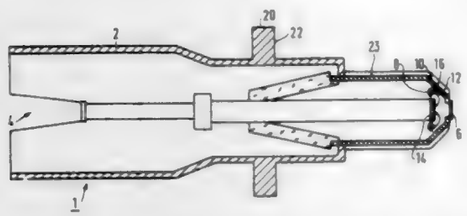
1. An x-ray tube comprising
a) an annular cathode (**10**) concentric with an axis of the tube and defining a cathode diameter;
b) an anode (**14**) for emitting x-rays, the anode being concentric with said annular cathode and contained within a

diameter about said axis which diameter is smaller than the cathode diameter; and

c) an envelope including:

i) an exit window (**6**), concentric with said axis, for receiving x-radiation emitted by said anode; and

ii) a conical member (**16**), concentric with said axis, said conical member having a wide end and a narrow end,



the wide end having a diameter larger than the cathode diameter, the narrow end supporting said exit window, said conical member acting as an electron-optical electrode which helps determine an electron path between said cathode and said anode, whereby no additional electrode is needed in a cathode-anode space of the tube and whereby a distance between a surface of the anode and a surface of an object to be irradiated is minimized.

5,345,494

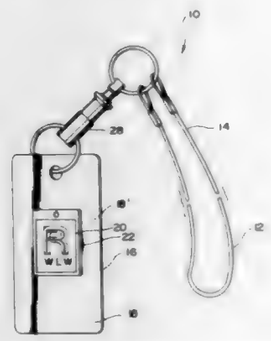
SUPPORT ASSEMBLY FOR RADIOLOGY OR X-RAY MARKERS

Walter L. Willey, 8444 Eastwood Ave., Youngstown, Fla. 32466

Filed Jun. 28, 1993, Ser. No. 82,543

Int. Cl.[5] H05G *1/28*

U.S. Cl. 378—162 **9 Claims**



1. A support assembly for radiology markers, said assembly comprising:

a flexible cord forming a loop;

a support element defining first and second surfaces, said support element connected to said cord;

a first radiology marker element;

a first adhesive attached to said first marker element removably attaching said first marker element to said first surface;

a second radiology marker element;

a second adhesive attached to said second marker element removably attaching said second marker element to said second surface;

at least a portion of said first surface and at least a portion of said first marker element are of a first predetermined color; and

at least a portion of said second surface and at least a portion of said second marker element are of a second predetermined color, whereby said loop is positioned around a user's neck to provide quick and easy access to said marker elements.

5,345,495

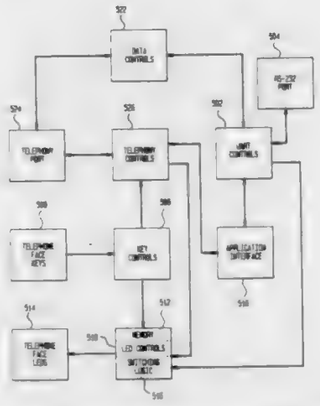
DATA DIAGNOSTICS WITH LEDS ON THE FACE OF A TELEPHONE

David C. Black; Tave P. Dunn; Elie A. Jreij, all of Austin; Gary R. Key, Round Rock; William E. Levene, and Timothy L. Wilson, both of Austin, all of Tex., assignors to ROLM Company, Santa Clara, Calif.

Filed Aug. 28, 1992, Ser. No. 936,969

Int. Cl.[5] H04M *1/24*

U.S. Cl. 379—29 **12 Claims**



1. A telephone, comprising: a telephone face having a keypad and a plurality of indicators; telephony line interface means for connecting the telephone to a telephony line; a data communications port; and, control means, coupled to the keypad and the indicators, for causing the telephone to be placed in any of a normal mode, in which the status of signals on the telephony line is indicated by at least some of the indicators, and a diagnostic mode, in which the status of signals on the data communications port is indicated by at least some of the indicators, the control means being operable in response to a command from a user.

5,345,496

REMOTE LINE TEST FACILITY

Robert K. P. Galpin, Knutsford, United Kingdom, assignor to GPT Limited, England

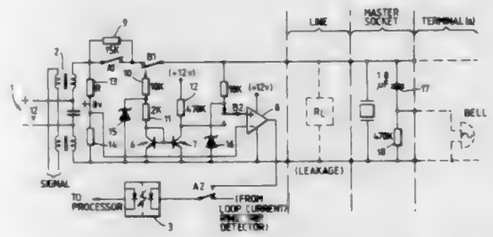
Continuation of Ser. No. 840,873, Feb. 25, 1992, abandoned.

This application Oct. 19, 1993, Ser. No. 139,335

Claims priority, application United Kingdom, Feb. 27, 1991, 9104133

Int. Cl.[5] H04M *1/24;* **H04B** *3/46*

U.S. Cl. 379—29 **4 Claims**



1. A circuit for testing one subscriber line of a pair-gain telephone system, the subscriber line including an end-of-call indication relay to insert an end-of-call resistance connectable

in the subscriber line, an opto-coupler for loop current and ring-trip detection and having a line voltage applied thereon, the circuit comprising a voltage source to provide from the line voltage an output voltage isolated from other subscriber lines, the circuit further comprising;

a voltage comparator having a pair of inputs and an output;

two resistances serially connected to provide a fraction of the line voltage for use as a reference voltage to one of the inputs to the comparator; and

test means for testing leakage resistance on the line, comprising additional contact means on said end-of-call indication relay to connect the output of the comparator to the optical coupler in the test mode thereby enabling the said processor to process the comparator output signal, any leakage resistance forming a potential divider with the end-of-call resistance to which the other of the inputs to the comparator is connected, thereby enabling the comparator to compare the fraction of the normal line voltage generated by the leakage resistance in series with the end-of-call indication resistance with the reference voltage and to generate an output test signal indicative of the leakage resistance being above or below a predetermined value.

5,345,497

VOICE MESSAGING

Michael D. Amoroso, San Jose, and Bruce A. Prentice, Los Gatos, both of Calif., assignors to Voice-Tel Enterprises, Inc., Los Gatos, Calif.

Continuation of Ser. No. 806,684, Dec. 13, 1991, abandoned, which is a division of Ser. No. 314,536, Feb. 22, 1989, Pat. No. 5,163,080. This application Oct. 6, 1992, Ser. No. 958,584

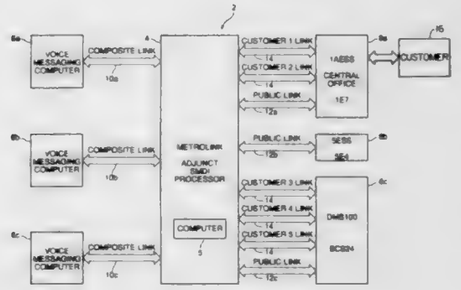
The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.

Int. Cl.[5] H04M *3/10, 3/50*

U.S. Cl. 379—33 **7 Claims**

MICROFICHE APPENDIX INCLUDED

(1 Microfiche, 46 Pages)



1. A method of providing voice messaging service to a single user comprising the steps of:

a) providing a central voice messaging system having a central message processor;

b) providing a plurality of simplified message desk interface ("SMDI") voice messaging computers having connections to said central processor, each of said voice messaging computers having a plurality of mailboxes;

c) providing a plurality of central office facilities having connections to said central message processor, each of said central office facilities being coupled to a plurality of telephone lines and associated with said SMDI voice messaging computers;

d) providing a single link between said single user and said central voice messaging system; and

e) providing at least one voice messaging service to said single user from each of said voice messaging computers indirectly through said single link to said voice messaging system.

5,345,498

MOBILE COMMUNICATIONS SYSTEMS AND INTERCONNECTIONS STRATEGIES FOR USE BETWEEN DIFFERENT NETWORKS AND DIFFERENT TARIFFS OF SUCH SYSTEMS

Roy Mauger, Enfield, United Kingdom, assignor to Northern Telecom Limited, Montreal, Canada

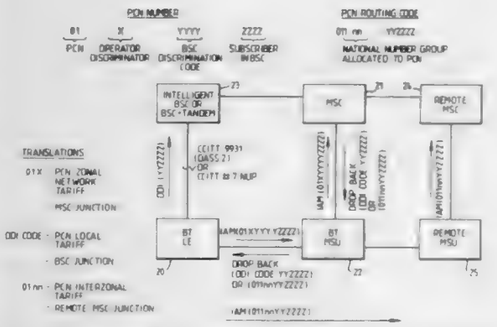
Continuation of Ser. No. 717,315, Jun. 18, 1991, abandoned.

This application Mar. 12, 1993, Ser. No. 29,992

Claims priority, application United Kingdom, Jun. 18, 1990, 9013596.3

Int. Cl.[5] H04M *11/00, 15/00;* **H04J** *4/00;* **H04Q** *7/00*

U.S. Cl. 379—58 **5 Claims**



1. A communications system including a communications network having mobile subscribers whose locations are variable, the communications network including means having knowledge as to the location of each of the mobile subscribers, and the communications network including a plurality of series connected mobile-services switching centres; and a PSTN (Public Switched Telephone Network) fixed network including a plurality of series connected first switching units, each of which PSTN fixed network first switching units is interconnected with a respective mobile services switching centre of the communications network via a respective interconnect whereby the PSTN fixed network and the communication network are interconnected at multiple interconnect points, wherein calls are set up between the said networks either by said mobile subscribers or by subscribers to the PSTN fixed network and multiple tariffs are applicable, the tariff employed for any particular call being determined by the location of the mobile subscriber involved in the call and being distance related, the same tariff being employed irrespective of the call set-up subscriber, and wherein for a call set-up to a mobile subscriber by a subscriber to the PSTN fixed network, the location of the mobile subscriber involved in said call is determined from the communication network's knowledge means and the one of said multiple tariffs corresponding to the location of the mobile subscriber involved in said call employed.

5,345,499

METHOD FOR INCREASING TWO TIER MACROCELL/MICROCELL SUBSCRIBER CAPACITY IN A CELLULAR SYSTEM

Mathilde Benveniste, South Orange, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 23, 1992, Ser. No. 855,403

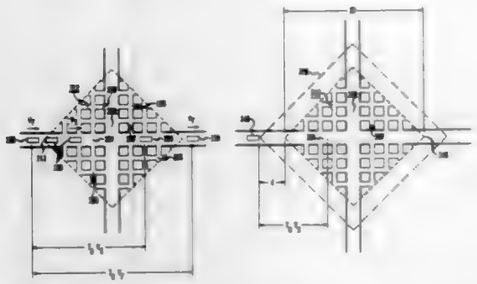
Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—59 **9 Claims**

1. A method for increasing traffic capacity in a wireless radiotelephone system having two tier cellular coverage of service areas including a macrocell including microcell station sites each of which have defined coverage areas within which service is extended to mobile subscriber (MS) radiotelephones; comprising the steps of:

transmitting from a microcell station a broadcast signal for engaging a MS radiotelephone in an idle mode;

the MS radiotelephone responding to the broadcast signal at a specified threshold level at a distance "d" in advance of its entry into the coverage area of the microcell and initiating timing of an offset duration that expires at a time substantially coincident with entry of a MS radiotelephone with an expectant speed below a cutoff speed v_F into the coverage area;



setting the cutoff speed v_F for MS radiotelephones so that at this speed the MS radiotelephone enters the leaves the coverage area upon or before expiration of the offset duration;

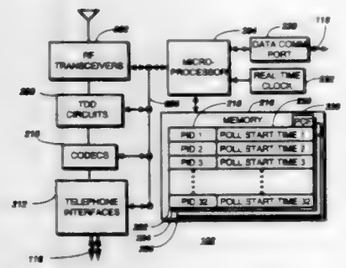
denying call setup service with the microcell to all MS radiotelephones with an expectant speed equal to or greater than the cutoff speed v_F.

5,345,500

METHOD AND APPARATUS FOR COMPLETING INBOUND CALLS IN A WIRELESS COMMUNICATION SYSTEM

Robert L. Breeden, Boca Raton, and Thomas V. D'Amico, both of Boca Raton, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 13, 1992, Ser. No. 912,423
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—63 **17 Claims**



15. A fixed communication unit for completing a plurality of inbound calls for a plurality of portable communication units in a wireless communication system comprising a plurality of portable communication units and a plurality of fixed communication units, the fixed communication unit for providing wireless communications over a limited coverage area and for providing coupling to a telephone system and operating on a plurality of wireless transmission channels for carrying call set-up signaling in a first mode and user communications in a second mode, the wireless communication system further comprising a call processor for routing calls, the fixed communication unit comprising apparatus for completing the plurality of inbound calls for the plurality of portable communication units, the apparatus comprising:

a microprocessor for controlling the fixed communication unit and for generating more than one sequence of periodic call set-up polls in response to the plurality of inbound calls;

data communication ports coupled to the microprocessor for communicating with the call processor for receiving inbound call information and responding with routing instructions therefor;

a real-time clock coupled to the microprocessor and having a time value for controlling polling duration; and

a memory coupled to the microprocessor for storing values corresponding to each of a plurality of possible polling time slots, the values comprising inbound call information received from the call processor and determined within the fixed communication unit, the inbound call information comprising:

a plurality of portable communication unit identification codes for uniquely identifying each of a plurality of portable communication units receiving inbound calls; and

a corresponding plurality of poll start time values comprising the time value of the real-time clock at the start of the sequence of periodic call set-up polls of each of the plurality of portable communication units having inbound calls for timing the duration of each of the sequences of periodic call set-up polls;

wherein the apparatus further comprises:

a transceiver coupled to the microprocessor for generating the more than one sequence of periodic call set-up polls on at least one of the plurality of wireless transmission channels for the plurality of portable communication units having inbound calls, and for monitoring periodically the at least one of the plurality of wireless transmission channels for a reply from one of the plurality of portable communication units polled; and

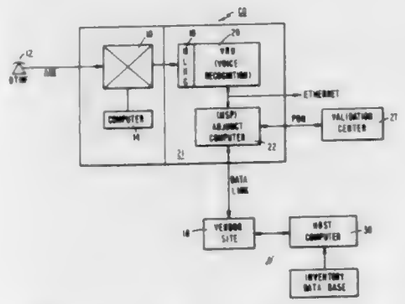
a wireless call processing element coupled to the transceiver for establishing a wireless transmission link with a replying portable communication unit on the at least one of the plurality of wireless transmission channels for handling an inbound call.

5,345,501

TELEPHONE CENTRAL OFFICE BASED METHOD OF AND SYSTEM FOR PROCESSING CUSTOMER ORDERS

Norris N. Shelton, Chantilly, Va., assignor to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed Jul. 15, 1991, Ser. No. 729,762
Int. Cl.[5] H04M *1/64, 11/00*
U.S. Cl. 379—89 **40 Claims**



1. Telephone central office switch based telecommunications system for forwarding customer requests to vendor sites and processing orders, comprising:

voice message system (VMS) platform means including a voice response unit (VRU) at a central office of a telephone network, said VMS platform means including first data storage means for storing and for sending, to the telephone of a customer, an audible instruction message followed by audible response messages in response to customer prompts entered by telephone;

a host computer storing product or service inventory information at a corresponding vendor site;

an adjunct computer associated with said VMS platform means for controlling said VRU, said adjunct computer coupled to said telephone network at said central office and in communication with said host computer;

switch means controlled by a central office computer and serving a plurality of lines for creating connections between said VMS platform means and customer telephone lines, a data link interconnecting said adjunct computer and vendor sites; and

means for downloading, from said host computer to said adjunct computer, information on customer identification and vendor inventory, and for uploading, from said adjunct computer to said host computer, information to create and activate an order;

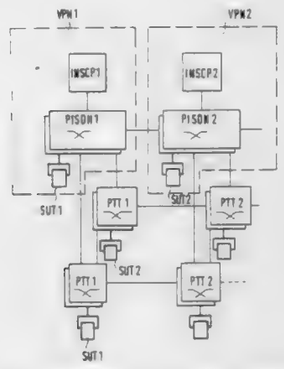
wherein said adjunct computer is further programmed to control said VRU to send to the customer an "inventory depleted" message if remaining inventory is reduced to a predetermined target inventory and the host computer does not make available additional inventory.

5,345,502

ESTABLISHMENT OF CONNECTIONS BETWEEN TERMINALS FOR MOBILE SUBSCRIBERS OF AN INTERCONNECTED NETWORK

Karl Rothenhöfer, Leonberg, Fed. Rep. of Germany, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Jun. 11, 1992, Ser. No. 897,371
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1991, 4119672
Int. Cl.[5] H04M *3/42*
U.S. Cl. 379—207 **9 Claims**



1. A method of establishing a connection between two terminals (SUT1, SIFt2) for mobile subscribers of an interconnected plurality of virtual private integrated services networks (VPN1, VPN2) and public networks (PTT1, PTT2), the virtual private networks (VPN1, VPN2) containing exchanges (NISDN1, NISDN2) with associated service control points (INSCP1, INSCP2) of an intelligent network, comprising the following steps:

entering dialing information into a first terminal, said dialing information containing a network discriminating digit identifying the virtual private network of a desired subscriber;

setting up a data path to a service control point (INSCP1) of the virtual private network (VPN1) for transmitting the dialing information if the first terminal is connected to the virtual private network (VPN1), or

setting up a data path via an internetwork signaling transfer point to the service control point (INSCP1) of the virtual private network for transmitting the dialing information if the first terminal is not connected to the virtual private network (VPN1);

determining the current location of the desired subscriber by means of the service control point (INSCP1) using a visiting location register or a home location register;

determining a path to the desired subscriber with associated dialing information;

transmitting the determined dialing information over the data path to the first terminal (SUT1), and

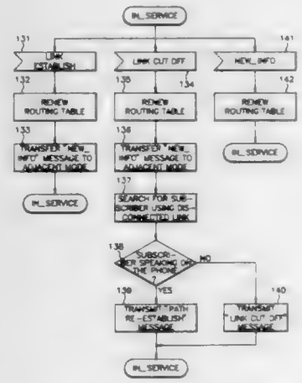
selecting the received dialing information by means of the first terminal.

5,345,503

METHOD FOR MANAGING AND RE-CONNECTING A SPEECH PATH LINK IN A SWITCHING NETWORK

Seong-Geun Lee, Kyungki-do, Rep. of Korea, assignor to Sam-Sung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 17, 1992, Ser. No. 899,889
Claims priority, application Rep. of Korea, Dec. 24, 1991, 1991-24124
Int. Cl.[5] H04M *3/08, 3/12*
U.S. Cl. 379—221 **17 Claims**



1. A method for managing a speech path link in a switching system, comprising the steps of:

renewing a routing table and transferring a new information message to an adjacent node when a link establish message is received;

renewing the routing table , transferring said new information message to the adjacent node and using said routing table to search for a communicating subscriber using a disconnected link when a link cut-off message is received; and

transmitting a path re-establish message to a call processor when said subscriber is speaking on a telephone, and transmitting the link cut-off message to said subscriber when said subscriber is not speaking on the telephone.

5,345,504

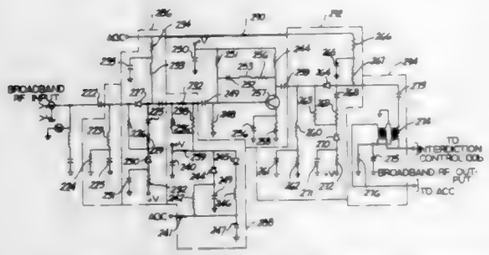
DIFFERENTIAL COMPENSATION CONTROL FOR OFF-PREMISES CATV SYSTEM

Lamar E. West, Jr., Maysville, Ga., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

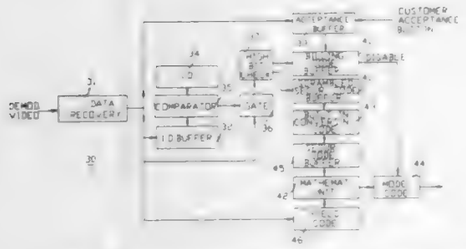
Continuation-in-part of Ser. No. 446,603, Dec. 6, 1989, Pat. No. 5,208,854, which is a continuation-in-part of Ser. No. 166,302, Mar. 10, 1988, Pat. No. 4,912,760, and a continuation-in-part of Ser. No. 279,619, Dec. 5, 1988, Pat. No. 5,014,309. This application Nov. 28, 1990, Ser. No. 619,370
Int. Cl.[5] H04N *7/167*
U.S. Cl. 380—7 **10 Claims**

10. An automatic compensation apparatus for use in an interdiction cable television system which automatically corrects the amplitude distortions as a function of frequency and the power level of a broadband television signal transmitted to a subscriber through a cable, the automatic compensation apparatus comprising:

a variable impedance circuit responsive to a first control input signal for adjusting the amplitude of the broadband television signal as a function of frequency;
a variable gain device responsive to a second control input signal for adjusting the power level of the broadband television signal to match a reference power level;
a first bandpass filter for receiving the broadband television signal from the output of variable gain device and for outputting a first filtered portion thereof;
a first level detector for detecting the power level of the first filtered portion of the broadband television signal;
a second bandpass filter for receiving the broadband television signal from the output of the variable impedance circuit and for outputting a second filtered portion thereof;
a second level detector for detecting the power level of the second filtered portion of the broadband television signal;
an error amplifier for outputting said first input signal to said variable impedance circuit representative of the difference in power levels between said first detected power level and said second detected power level; and
an error amplifier for outputting said second control input signal to said variable gain device representative of the difference in power level between said first detected power level and a reference power level.

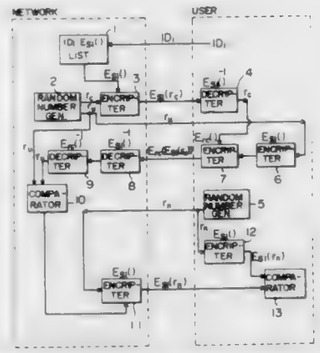


5,345,505
CODING SYSTEM FOR A DATA SIGNAL
H. George Pires, 47H Valley Rd., Hampton, N.J. 08827
Continuation-in-part of Ser. No. 664,107, Mar. 4, 1991, Pat. No. 5,204,900. This application Mar. 5, 1993, Ser. No. 27,130
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] H04N *7/167*
U.S. Cl. 380—20 **25 Claims**



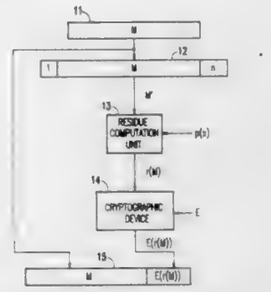
1. A system for supplying data contained in a data signal from a sending station exclusively to a preselected one of a plurality of receiving stations, the system comprising:
a scrambling system for distorting the data signal in accordance with a selected one of a plurality of distortion modes to produce a distorted data signal, said scrambling system having an input coupled to the sending station for receiving the data signal;
identification encoder means coupled to said scrambling system for encoding said distorted data signal with identification information which identifies the preselected one of the receiving stations;
security code encoder means coupled to said scrambling system for encoding said distorted data signal with security code information having a predetermined relationship with respect to said identification information on said distorted data signal;
field code encoder means coupled to said scrambling system for encoding said distorted data signal with field code information having a predetermined relationship with respect to said security code information on said distorted data signal; and
a plurality of decoder means, each coupled to a respectively associated one of the receiving stations and having associated therewith a respective identification code and a conversion code, each of said decoder means being provided with security code acceptance means responsive to said identification information for accepting said security code information.

5,345,506
MUTUAL AUTHENTICATION/CIPHER KEY DISTRIBUTION SYSTEM
Hideki Tsubakiyama, Ohmiya; Masayoshi Oohashi, Kounosu, and Keiichiro Koga, Kamifukuoka, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 2, 1993, Ser. No. 70,730
Claims priority, application Japan, Jun. 11, 1992, 4-175912
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—23 **4 Claims**



1. A mutual authentication/cipher key distribution system, wherein a combination network and all users belonging thereto have devices for implementing a common key cryptosystem,
an identifier of a user i represented by ID_i is made public in the network,
an authentication key of a user i represented by S_i is known only to the network and the user i,
the identifiers and authentication keys of all the users are stored in a database of the network, and a prover decrypts an encrypted random number sent thereto from a verifier and uses the decrypted random number to encrypt a random number for authorization, sent from the verifier, and sends the encrypted random number back to the verifier, thereby making impossible a chosen plaintext attack on the encryption algorithm used.

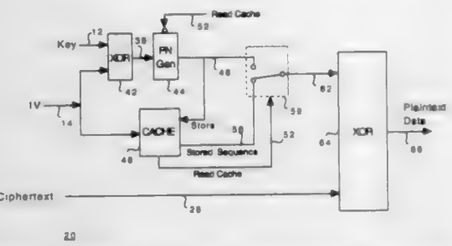
5,345,507
SECURE MESSAGE AUTHENTICATION FOR BINARY ADDITIVE STREAM CIPHER SYSTEMS
Amir Herzberg, Bronx; Hugo M. Krawczyk, Riverdale, both of N.Y.; Shay Kutten, Rockaway, N.J., and Yishay Mansour, Tel-Avi, Israel, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 8, 1993, Ser. No. 118,080
Int. Cl.[5] H04L *9/28*
U.S. Cl. 380—28 **14 Claims**



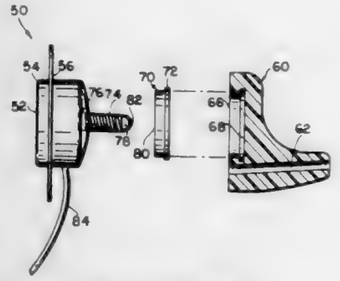
1. In a communication system, a method of verifying the authenticity of a message transmitted from a sender to a receiver comprising the steps of:
(a) secretly exchanging between the sender and receiver an encryption key and an irreducible polynomial p(x) of degree n;
(b) for each message M to be transmitted by the sender, appending a leading non-zero string and n tail bits to the message M to generate an augmented message M′ that corresponds to a polynomial having coefficients corresponding to bits of the message M;
(c) computing a polynomial residue r resulting from the division of the polynomial corresponding to the augmented message M′ generated in step (b) by the polynomial p(x) exchanged in step (a);
(d) encrypting the residue computed in step (c) using the encryption key exchanged in step (a);
(e) transmitting the message M and the encrypted residue generated in step (d);
(f) decrypting by the receiver the transmitted encrypted residue at the time of reception using the encryption key exchanged in step (a);
(g) concatenating the decrypted residue in step (f) with a received message m and appending a non-zero leading string to generate an augmented received message m′;
(h) computing a residue r of a division between a polynomial represented by the augmented message m′ and the polynomial p(x) exchanged in step (a); and
(i) accepting the received message m as authentic only if the residue computed in step (h) is a predetermined value.

5,345,508
METHOD AND APPARATUS FOR VARIABLE-OVERHEAD CACHED ENCRYPTION
Kerry E. Lynn, Redwood City; Jonathan M. Zweig, Cupertino, and Richard W. Mincher, San Jose, all of Calif., assignors to Apple Computer, Inc., One Infinite Loop, Calif.
Filed Aug. 23, 1993, Ser. No. 110,402
Int. Cl.[5] H04L *9/22*
U.S. Cl. 380—46 **27 Claims**

22. An encryption system comprising:
transmitter means for encrypting plaintext data into ciphertext, the transmitter means further comprising:
selectively controlled first memory storage means for storing a first pseudorandom sequence, wherein the selective control of the first memory storage means enables reuse of the first pseudorandom sequence, and
encoding means for combining the first pseudorandom sequence with the plaintext data to produce the ciphertext; and
receiver means for receiving the ciphertext from the transmitter means and decrypting the ciphertext to the original plaintext, the receiving means further comprising second storage means for storing a second pseudorandom sequence, wherein the second pseudorandom sequence is used in combination with the ciphertext to produce the plaintext and wherein the second pseudorandom sequence may be retrieved from the second storage means and used for producing the plaintext each time the selective control of the first memory storage means enables reuse of the first pseudorandom sequence in the transmitter means.



5,345,509
TRANSDUCER WITH EAR CANAL PICKUP
Alan Hofer, Wantagh, N.Y., and Peter Untersander, Ecoteaux, Switzerland, assignors to Stanton Magnetics, Inc., Plainview, N.Y.
Filed Aug. 4, 1992, Ser. No. 924,893
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—68.6 **12 Claims**



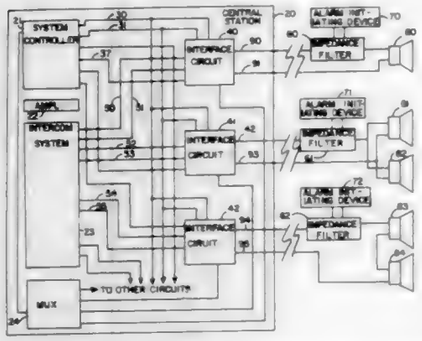
1. A transducer assembly comprising:
a bi-directional transducer;
ear mold means constructed and arranged to fit into a person's ear, said ear mold means cooperating with said bi-directional transducer to propagate sound waves between said bi-directional transducer and said ear, said ear mold means further including bypass path means for defining a path for ambient sounds bypassing said bi-directional transducer; and
coupling means for coupling said bi-directional transducer to said ear mold means.

5,345,510
INTEGRATED SPEAKER SUPERVISION AND ALARM SYSTEM
Dilip Singhi, Glenview, and Kamlesh V. Patel, Streamwood, both of Ill., assignors to Rauland-Borg Corporation, Skokie, Ill.
Filed Jul. 13, 1992, Ser. No. 912,825
Int. Cl.[5] H04B *3/00*
U.S. Cl. 381—77 **17 Claims**

1. A supervision circuit for monitoring the path integrity in an audio system, in which the audio system is of the type

having a central switching location driving at least one speaker via a wire pair connecting the central switching location to the speaker, the supervision circuit comprising, in combination:

a source at the central switching location for injecting a distinctive signal onto the wire pair which drives the speaker, such that the signal passes through the speaker without disconnecting the wire pair and speaker from the audio system;



a detector at the central switching location for responding to the signal on the same wire pair and evaluating the path integrity based on the condition of the signal; and

a controller responsive to the status of the integrity of the connected wire pair and the speaker for indicating the nature of the signal detected.

5,345,511

DIGITAL SIGNAL ATTENUATION CIRCUIT FOR A COMPACT DISC-INTERACTIVE PLAYER

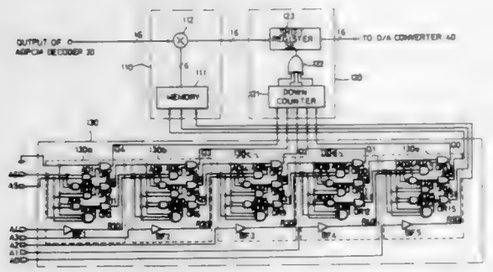
Sung H. Kim, and Byung S. You, both of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Feb. 24, 1993, Ser. No. 22,730

Claims priority, application Rep. of Korea, Feb. 24, 1992, 92-2785

Int. Cl.[5] H03G *3/00*

U.S. Cl. 381—104 **5 Claims**



1. A digital signal attenuation circuit for a compact disc-interactive player, comprising:

a 1/6 divider for dividing by **6** an attenuation control signal inputted from a controller and outputting a quotient signal and a remainder signal as a result;

a first attenuator for attenuating a digital audio signal which is decoded from an adaptive differential pulse code modulation audio data signal obtained from a compact disc by −1 dB within the range of 0 to −5 dB in accordance with said remainder signal from said 1/6 divider; and

a second attenuator for attenuating an output signal of said first attenuator by −6 dB within the range of 0 to −96 dB in accordance with said quotient signal from said 1/6 divider;

wherein said 1/6 divider comprises first to fifth dividing sections, each of said dividing sections having the same construction with one another and dividing by **6** a 4-bit input signal; and

wherein one bit of "0" level and 3 higher bits of said attenuation control signal from said controller are inputted to said first dividing section, 3-bit remainder signals from said first to fourth dividing sections and 4 lower bits of said attenuation control signal are respectively inputted to said second to fifth dividing sections in due order, a 3-bit remainder signal from said fifth dividing section is inputted to said first attenuator, and a 5-bit quotient signal from said first to fifth dividing sections is inputted to said second attenuator.

5,345,512

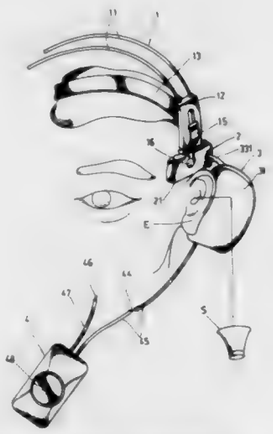
SOUND-WAVE COLLECTOR

Tien-Chu Lee, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (10477), Taiwan

Filed Jun. 30, 1993, Ser. No. 83,471

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—183 **8 Claims**



1. A sound-wave collector comprising:

a headframe secured to a pair of retainer means disposed on two opposite side portions of a wearer's head adjacent to the wearer's two ears; and

a pair of reflector means each said reflector means universally pivotally secured to each said retainer means and generally positioned behind each wearer's ear, each said reflector means having a reflecting area extrapolatively diverging outwardly sidewardly from a contour of each wearer's ear to be operatively oriented about each said retainer means for adjusting a deflecting angle of each said reflector means from each said wearer's ear for efficiently reflecting incoming sound waves of multiple frequency ranges into the wearer's ear;

each said reflector means operatively biased for adjusting its reflecting angle by an adjusting means which includes a driving pulley, and a follower pulley operatively driven by said driving pulley for rotating said reflector means for adjusting its deflecting angles through at least a wire;

said headframe **1** including: an overhead bracket having two base members **12** disposed on two opposite end portions of the overhead bracket **11**, a fastener belt **13** fastened on a wearer's head H having two ends of the belt **13** respectively secured to the two base members **12**, and a pair of head coupling members **16** each said coupling member **16** secured to the base member **12** and pivotally secured to each retainer means **2** adjacent to the wearer's ear E;

said fastener belt **13** having its each end portion secured to a slide member **14** adjustably slidably held on each said base member **12**, and each said slide member **14** including a stem **141** protruding outwardly through a slot **121** notched in the base member **12** to be connected with a push button **15** slidably held on an upper surface of the base member **12**, and having a lateral extension **142** transversely formed on the slide member to be engageable with a plurality of teeth **122** longitudinally formed on a bottom surface of the base member **12** for a slidable engagement between the slide member **14** and the base member **12** for adjusting the tightness of the belt **13** worn on the wearer's head H by depressing D and moving the push button **15** on the base member **12**; and

each said retainer means **2** including: a holding plate **21** contacting a side portion of the wearer's head adjacent to the wearer's ear E, a first socket **22** recessed in an upper portion of the holding plate **21** for universally coupling the head coupling member **16** in the first socket **22**, a second socket **23** recessed in a rear portion of the holding plate **21** for universally coupling a reflector coupling member **332** of each said reflector means **3**, and a locking member **24** for locking the reflector coupling member **332** in the second socket **23** once an orientation of the reflector means **3** on the retainer means **2** is set.

5,345,513

METHOD AND APPARATUS FOR PROCESSING IMAGE CORRESPONDING TO RADIOGRAPHIC PATTERN

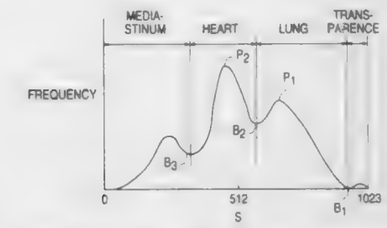
Siro Takeda; Fumihiro Namiki; Takahiro Haraki; Hideyuki Hirano; Kenji Ishiwata, all of Kawasaki; Shigehiko Katsuragawa, Tonami, all of Japan, and Katsumi Abe, Clarendon Hills, Ill., assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 24, 1992, Ser. No. 856,993

Claims priority, application Japan, Mar. 30, 1991, 3-093152

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—6 **23 Claims**



1. A method for processing an image corresponding to a radiographic pattern, said image being formed of a plurality of pixels each having a value corresponding to density, said method comprising the steps of:

(a) obtaining the image corresponding to the radiographic pattern so that values of pixels forming said image are stored in a memory;

(b) dividing the image into a plurality of image regions based on the values of the pixels forming said image, each image region including pixels each of which has a value falling within a predetermined range, and

said step (b) comprising the steps of:

(b-**1**) making a histogram of values of pixels included in said image,

(b-**2**) smoothing a curve representing the histogram made by said step (b-**1**), and

(b-**3**) determining said plurality of image regions based on peaks and valleys of a smoothed curve obtained by said step (b-**2**); and

(c) applying an image processing to said plurality of image regions of said image, processing conditions used for said plurality of image regions in said image processing differing from each other.

5,345,514

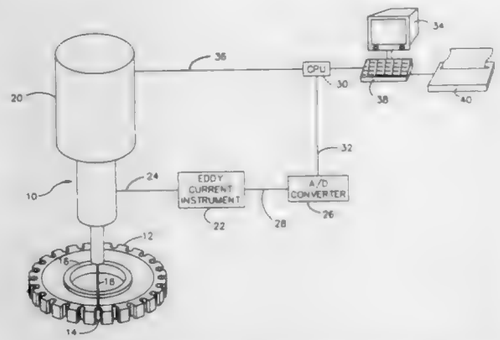
METHOD FOR INSPECTING COMPONENTS HAVING COMPLEX GEOMETRIC SHAPES

Yaghoub Mahdavieh, West Chester, Ohio, and Kristina H. V. Hedengren, Schenectady, N.Y., assignors to General Electric Company, Cincinnati, Ohio

Filed Sep. 16, 1991, Ser. No. 772,761

Int. Cl.[5] G06K *9/00*; **G01R** *33/00*

U.S. Cl. 382—8 **34 Claims**



1. A method for inspecting a component having a plurality of similarly shaped structural portions, comprising the steps of:

(a) scanning a surface of at least one of the similarly shaped structural portions with an eddy current probe means to induce eddy currents in the component;

(b) generating a two-dimensional image of the at least one portion from eddy current signals received during scanning, the image including a multiplicity of pixels arranged in a two-dimensional matrix array and each pixel having a gray scale intensity responsive to the eddy current induced in the component at a component location corresponding to a position of the pixel in the two-dimensional matrix array;

(c) preprocessing the image to substantially reduce any signals caused by geometrical characteristics and background noise common to all of the similarly shaped structural portions;

(d) identifying any suspected defect regions in the two-dimensional image from corresponding regions in the preprocessed image of step (c);

(e) determining a defect signal from the gray scale intensities for each suspected defect regions in the two-dimensional image; and

(f) rejecting the component if any defect signal exceeds a predetermined reference value, wherein step (c) comprises the steps of:

(c1) repeating steps (a) and (b) to generate a two-dimensional image for a second and third similarly shaped structural portion;

(c2) selecting a test portion and an associated test image, a first reference portion and an associated first reference image, and a second reference portion and an associated second reference image from the three similarly shaped portions;

(c3) taking a difference between the first reference image and the test image to provide a first resulting image by taking a difference between the gray scale intensity of each pixel of the first reference image and the gray scale intensity of a corresponding pixel of the test image;

(c4) taking a difference between the second reference image and the test image to provide a second resulting image by taking a difference between gray scale intensities of corresponding pixels of each image;

(c5) converting each of the first and second reference images from a gray scale image to respective first and second binary images; and

(c6) combining the first and second binary images by a logic

AND operation to provide a preprocessed composite binary image.

5,345,515

METHOD AND APPARATUS FOR INSPECTING THE CLEANLINESS OF TOP SLIBERS

Noriyuki Nishi, Osaka; Tadashi Muto, Yamatokoriyama, and Shinichi Takayama, Suzuka, all of Japan, assignors to Kanebo Ltd., Tokyo, Japan

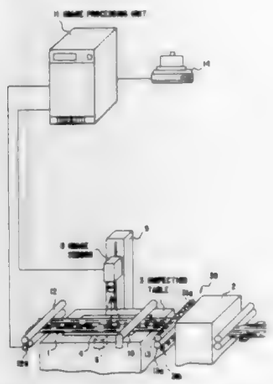
PCT No. PCT/JP91/00709, § 371 Date Mar. 18, 1992, § 102(e) Date Mar. 18, 1992, PCT Pub. No. WO91/19035, PCT Pub. Date Dec. 12, 1991

PCT Filed May 28, 1991, Ser. No. 820,686

Claims priority, application Japan, May 28, 1990, 2-139097

Int. Cl.[5] G06K *9/00; G01N 21/89*

U.S. Cl. 382—8 **4 Claims**



2. A method of inspecting the cleanliness of top sliber comprising the sequential steps of:

(a) generating an image signal by receiving an image of a top sliber with an image sensor;

(b) based on said image signal, computing: (i) a roundness discernment of a defect on the top sliber, (ii) a slenderness discernment of the defect, (iii) a gradation discernment of the defect, and (iv) a dispersion discernment of the defect;

(c) classifying the defect into the categories of pillwise defects and vegetal defects mixed in said top sliber based on each of said roundness discernment, slenderness discernment, gradation discernment, and dispersion discernment of step (b).

5,345,516

APPARATUS AND METHOD FOR PARSING A CHEMICAL STRING

Steven K. Boyer, Springfield, Pa.; Richard G. Casey, Morgan Hill, Calif.; Alex M. Miller, Aptos, Calif.; Bernadette Oudot, Palo Alto, Calif., and Karl S. Zilles, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 19, 1991, Ser. No. 689,004

Int. Cl.[5] G06K *9/00*

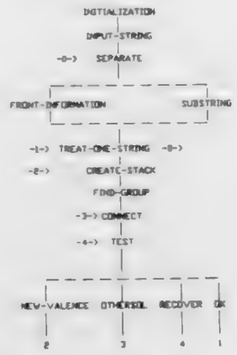
U.S. Cl. 382—10 **19 Claims**

1. In a data processing system including a digital processing unit, a data input, and a memory, a system for generating a list of atoms and bond connections therebetween from an input string of character identification codes corresponding to a chemical structure, comprising:

separation means for receiving an input string of the character identification codes, parsing said input string to evaluate each character identification code thereof, and taking responsive action based on a value of each character identification code for separating the input character codes to generate a first output of character codes representing molecular front information and a second output of remaining character codes;

treat string means for receiving as input the remaining character codes output by said separation means and dividing said remaining character codes into elementary substrings for separate processing;

create stack means for receiving as input the elementary character substrings from said treat string means, parsing said elementary character substrings to evaluate each character identification code thereof, and taking responsive action based on a value of each character identification code for generating a stack of elementary substring character codes representing atoms and their associated valences;



find group means for receiving as input the stack of elementary substring atoms and valences output by said create stack means, and the front information output by said separation means, and modifying said stack to order said elementary substring atoms in a connection sequence, adjusting said valences to reflect bond connections with other atoms, and adding a group structure identifier to each of said elementary substring atoms corresponding to the front information; and

connect means for receiving as input said modified stack from said find group means and generating a connectivity table of said elementary substring atoms and their connectivity.

5,345,517

IMAGE REDUCTION APPARATUS

Akihiro Katayama, Kawasaki; Mitsuru Maeda, Yokohama; Yasuji Hirabayashi, Tokyo, and Tadashi Yoshida, Ichikawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 501,155, Mar. 29, 1990. This application Jun. 8, 1992, Ser. No. 895,241

Claims priority, application Japan, Apr. 10, 1989, 1-90073; Apr. 10, 1989, 1-90074; Apr. 10, 1989, 1-90075; Apr. 10, 1989, 1-90080

Int. Cl.[5] G06K *9/40, 9/42*

U.S. Cl. 382—54 **37 Claims**

1. An image reduction apparatus comprising:

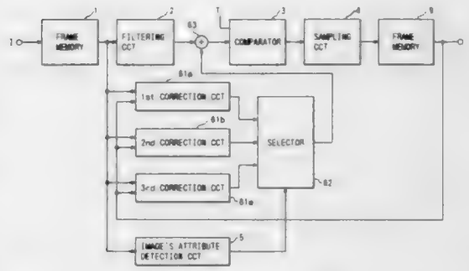
input means for inputting image data representing an image; and

processing means for executing a reduction process on the image data input by the input means and outputting reduced image data,

wherein said processing means further comprises:

detection means for detecting first and second attributes of the image represented by the image data input by said input means;

correction means for correcting the reduction process on the basis of a first attribute detected by said detection means; and



correction means for correcting the reduction process on the basis of a second attribute detected by said detection means.

5,345,518

PATTERN GENERATOR

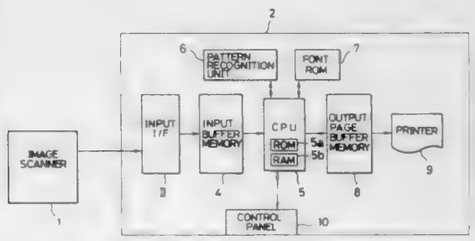
Yutaka Murakami, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 758,210, Sep. 12, 1991, abandoned, which is a continuation of Ser. No. 368,099, Jun. 19, 1989, abandoned, which is a continuation of Ser. No. 38,711, Apr. 15, 1987, abandoned. This application Dec. 20, 1993, Ser. No. 169,757

Claims priority, application Japan, Apr. 24, 1986, 61-93303; Apr. 25, 1986, 61-94866

Int. Cl.[5] G06K *9/36*

U.S. Cl. 382—56 **9 Claims**



1. A pattern generator comprising:

input means for receiving a character pattern of a first dot density, the character pattern existing at a designated area;

conversion means for converting the character pattern of the first dot density received by said input means into a character pattern of a second dot density;

means for setting character code data corresponding to the character pattern of the second dot density converted by said conversion means; and

means for storing the character pattern of the second dot density converted by said conversion means in correspondence with the character code data set by said setting means.

5,345,519

TEMPERATURE-COMPENSATED FIBER OPTIC EXTERNAL CAVITY STRAIN SENSORS AND AN INTENSITY-BASED FIBER OPTIC SENSOR SYSTEM

Zhuo J. Lu, Pierrefonds, Canada, assignor to Canadian Marconi Company, Montreal, Canada

Filed Sep. 14, 1993, Ser. No. 120,353

Int. Cl.[5] G02B *6/02;* **H01J** *5/16*

U.S. Cl. 385—12 **16 Claims**

1. A temperature compensated fiber optic sensor for measuring strain in a host structure, comprising:

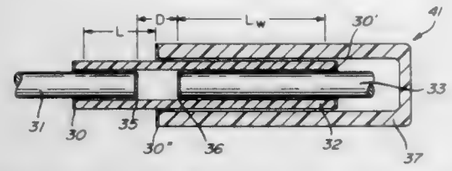
an elongated optical fiber having a first flat end comprising a reflecting surface;

an elongated wire having a first flat end comprising a reflecting surface;

a connecting sleeve for connecting said optical fiber with said elongated wire such that said first end of said optical fiber is in spaced, facing and parallel relationship with said first end of said elongated wire to define a gap D between said ends, said connecting sleeve being bonded to said host structure;

said optical fiber being bonded to said connecting sleeve at an optical fiber bonding point spaced from said first end of said optical fiber;

said elongated wire being bonded to said connecting sleeve at an elongated wire bonding point spaced from said first end of said elongated wire;



said optical fiber bonding point being spaced from said elongated wire bonding point by a distance L comprising the sensor length;

said elongated wire bonding point being spaced from said first end of said elongated wire by a distance L_W comprising the wire length of said sensor;

the material of said wire being selected such that:

$$C_{host}L = C_{wire}L_W$$

wherein:

C_{host}=thermal expansion coefficient of said host structure; and

C_{wire}=thermal expansion coefficient of said elongated wire.

5,345,520

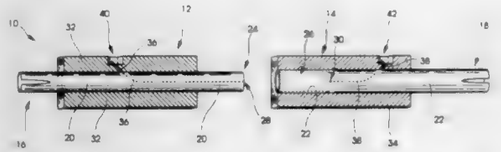
ELECTRICAL CONNECTOR WITH AN OPTICAL FIBER CONNECTION DETECTOR

Mark E. Grile, 2710 Redbud La., Anderson, Ind. 46011

Filed Jul. 28, 1993, Ser. No. 98,193

Int. Cl.[5] G02B *6/00, 6/36*

U.S. Cl. 385—15 **3 Claims**



1. An electrical connector utilizing an optical fiber to detect a fitted electrical contact comprising:

a male connector element having a first end, a second end, and a male electrical conduit disposed therebetween;

a female connector element having a first end, a second end, and a female electrical conduit disposed therebetween;

receptors at the first ends of said male and female connector elements in electrical contact with said male and female electrical conduits

a male member at the second end of said male connector element in electrical communication with said male electrical conduit and a female member at the second end of said female connector element in electrical communication with said female electrical conduit, said male and female members being correspondingly sized to be matingly received together and defining a fitted electrical

contact between said male and female members when the distal most end portion of the male member is abutted against the proximal most end portion of the female member;

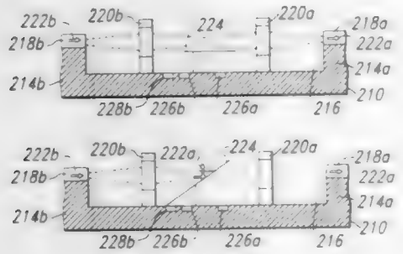
a first optical fiber embedded within said male connector element having a first end that exits said male connector element between the first and second ends thereof and a second end that exits said male member at its distal most end portion, and a second optical fiber embedded within said female connector element having a first end that exits said female connector element between the first and second ends thereof and a second end that exits said female member at its proximal most end portion, whereby the second ends of said first and second optical fibers are aligned and abutted together when said male and female members are in fitted electrical contact and a light signal will pass between the second ends of said first and second optical fibers.

5,345,521

ARCHITECTURE FOR OPTICAL SWITCH

T. Gus McDonald, and R. Mark Boysel, both of Plano, Tex., assignors to Texas Instrument Incorporated, Dallas, Tex.

Filed Jul. 12, 1993, Ser. No. 90,862
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—19 **8 Claims**



1. An optical switching device, comprising:

a. a substrate;

b. at least one switching element, each said element comprising:

i. at least one addressing electrode on said substrate;

ii. at least one support post adjacent said at least one addressing electrode, wherein each said support post has a hinge;

iii. at least one landing electrode, said landing electrodes arranged adjacent said at least one addressing electrode on the opposite side of said addressing electrode from said at least one support post;

iv. a movable member suspended from said hinge attached to said at least one support post, such that when said addressing electrode is activate, said movable member moves towards said addressing electrode and a portion of said movable member comes into contact with said landing electrode;

c. elevated areas on said substrate on either side of said switching element;

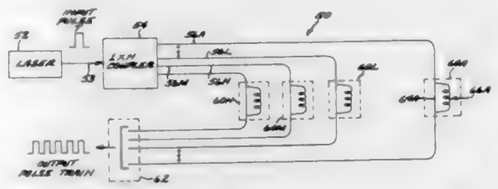
d. at least one sending fiber and at least one receiving fiber, wherein each said sending fibers are arrange collinear and opposite each said receiving fiber on said elevated areas on opposite sides of such switching elements, wherein when said switching element is activated, the non-deflecting side of said switching element blocks transmission of light from said sending fiber to said receiving fiber.

5,345,522

REDUCED NOISE FIBER OPTIC TOWED ARRAY AND METHOD OF USING SAME

Victor Vali, Laguna Hills; David B. Chang, Tustin, and I-Fu Shih, Los Alamitos, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 2, 1992, Ser. No. 939,237
Int. Cl.[5] G02B *6/28;* **G01B** *9/02;* **H01J** *5/16;* **G01V** *1/38*
U.S. Cl. 385—24 **8 Claims**



1. A fiber optic towed sensor array, comprising:

a plurality of fiber optic sensor circuits arranged in parallel, each including a sensor and a separate optical fiber for conducting light to said sensor;

laser means for generating light to be injected into said respective optical fibers; and

processing means for processing outputs from the respective sensor circuits, wherein the contributions of particular sensors may be readily isolated by said processing means and crosstalk between sensors is virtually eliminated through the use of said separate optical fibers for each sensor;

wherein said sensor circuits are arranged such that the optical distance between adjacent sensors is on the order of 5 to 10 meters, and said laser source comprises a pulsed laser having a pulsed length of less than 50 nanoseconds.

5. A method for reducing turbulence and acceleration noise in a towed sensor cable array towed behind a towing vessel moving at a vessel velocity, comprising paying out said cable array from said vessel at a velocity about equal and opposite to said vessel velocity;

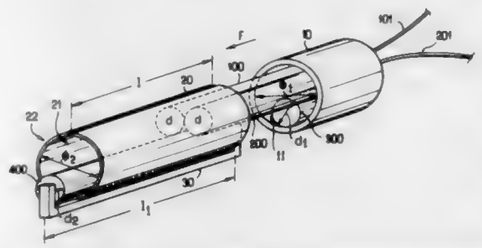
wherein said cable array has a nominal diameter of one centimeter, and the cable array is paid out from said vehicle at a rate so that the velocity of the cable array through water is no greater than 15 centimeters per second.

5,345,523

TWO PATH CONNECTION SYSTEM FOR MONOMODE OPTICAL FIBERS

Daniel Boscher, and Jean-Charles Brault, both of Trebeurden, France, assignors to France Telecom, Paris, France

Filed Jun. 11, 1993, Ser. No. 75,867
Claims priority, application France, Jun. 12, 1992, 92 07093
Int. Cl.[5] G02B *6/38*
U.S. Cl. 385—64 **20 Claims**



1. A two-path connection system for connecting monomode optical fibers comprising:

a first cylindrical envelope including a first internal precision chamber;

two ferrules engaged in said first internal precision chamber,

each for receiving a monomode optical fiber to be connected;

a stationary cylindrical spacer engaged in said first internal precision chamber and being suitable for securing the two ferrules and precentering them inside the first internal precision chamber;

a second cylindrical envelope including a second internal precision chamber in which the two ferrules are engaged; and

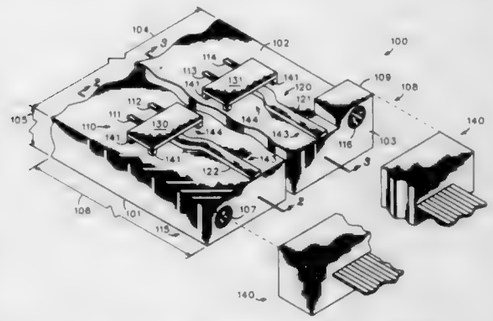
a floating cylindrical spacer mounted in said second internal precision chamber, and suitable for securing the two ferrules, while still allowing them to be aligned.

5,345,524

OPTOELECTRONIC TRANSCEIVER SUB-MODULE AND METHOD FOR MAKING

Michael S. Lebby, Apache Junction; Christopher K. Y. Chun, Mesa, and Shun-Meen Kuo, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 20, 1993, Ser. No. 63,826
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—88 **11 Claims**



1. An optoelectronic transceiver module comprising:

a molded base with a refractive index ranging from 1.4 to 1.7 having a first surface and an edge surface with an alignment ferrule positioned in the edge surface;

a plurality of electrical tracings disposed on the first surface on the molded base;

a core region with a refractive index ranging from 1.4 to 1.7 formed from an organic optical media having a first end and a second end, wherein the refractive index of the core region is at least 0.1 greater than that of the molded base, the core region positioned on the first surface of the molded base, the first end of the core region beginning at the edge surface of the molded base and the core region extending on the first surface of the molded base; and

a photonic device mounted on the surface of the molded base with the second end of the core region operably coupled to the photonic device, and the photonic device electrically coupled to one of the plurality of electrical tracings.

5,345,525

UTILITY OPTICAL FIBER CABLE

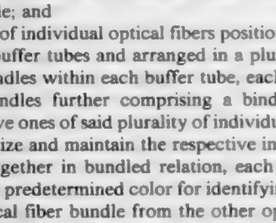
James R. Holman; Terry D. Mathis, both of Lilburn, and Parry A. Moss, Stone Mountain, all of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 28, 1992, Ser. No. 826,740
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—104 **16 Claims**

1. An optical fiber cable, which comprises:

a core comprising a plurality of longitudinally extending bundles of optical fiber, each bundle comprising a plurality of optical fibers which are held together by a binder system which is associated with and wrapped about each plurality of optical fibers;

a jacket which encloses said core, which is comprised of a plastic material and which has an outer peripheral surface which is the outer surface of said cable; and



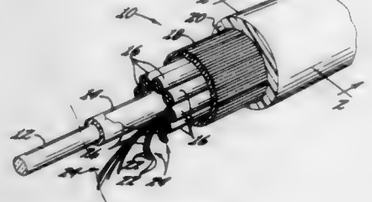
a strength member system comprising yarn-like material having a lay and being disposed between optical fibers and an inner surface of said jacket with a portion of said strength member system engaging an inner surface of said jacket.

5,345,526

FIBER OPTIC CABLE HAVING BUFFER TUBES WITH OPTICAL FIBER BUNDLES THEREIN AND METHOD FOR MAKING SAME

Douglas J. Blew, Hickory, N.C., assignor to Comm/Scope, Hickory, N.C.

Filed Feb. 11, 1993, Ser. No. 16,772
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—112 **35 Claims**



1. A fiber optic cable comprising:

a lengthwise extending central member;

a plurality of generally lengthwise extending buffer tubes positioned around said central member, each of said buffer tubes having a predetermined color for identifying each individual buffer tube from the other buffer tubes within said cable; and

a plurality of individual optical fibers positioned within each of said buffer tubes and arranged in a plurality of optical fiber bundles within each buffer tube, each of said optical fiber bundles further comprising a binder surrounding respective ones of said plurality of individual optical fibers to organize and maintain the respective individual optical fibers together in bundled relation, each of said binders having a predetermined color for identifying each individual optical fiber bundle from the other optical fiber bundles within a respective buffer tube, each of said individual optical fibers having a predetermined color for identifying each individual optical fiber from other optical fibers within a respective optical fiber bundle;

whereby three levels of color coding are provided to enhance identification of individual optical fibers from the other optical fibers within said cable.

29. A method for making an optical fiber cable comprising the steps of:

positioning a plurality of buffer tubes around a lengthwise extending central member with each of the buffer tubes including an identifying indicia associated therewith for

identifying each individual buffer tube from the other buffer tubes; and

arranging a plurality of individual optical fibers into a plurality of optical fiber bundles within each of the buffer tubes and securing a binder around each of the optical fiber bundles for identifying each individual optical fiber bundle from the other bundles in a respective buffer tube for organizing and maintaining respective individual optical fibers together in bundled relation, each of the binders having respective identifying indicia associated therewith, and each optical fiber having a predetermined color for identifying each individual optical fiber from the other optical fibers within a respective optical fiber bundle; and

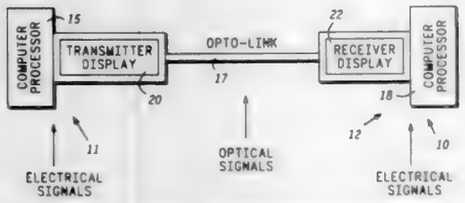
wherein three levels of identification coding are provided to enhance identification of individual optical fibers within the cable.

5,345,527

INTELLIGENT OPTO-BUS WITH DISPLAY

Michael S. Lebby, Apache Junction, and Karen E. Jachimowicz, Goodyear, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 3, 1993, Ser. No. 115,835
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—114 **16 Claims**



11. An intelligent opto-bus including a first optical/electrical connector with a display comprising:

a base having a well and a plurality of grooves extending from the well to a first outer edge of the base, the base further having alignment guides associated with the grooves at the first outer edge, and the base further having external electrical connections with first ends exposed and positioned in the well and second ends extending outwardly beyond a second outer edge of the base;

an array of photonic components, each having an optical port, positioned in the well of the base with the optical ports each aligned with a separate groove, the array further having electrical terminals associated therewith and coupled to the exposed first ends of the external electrical connections of the base;

the plurality of grooves in the base being filled with a plastic material to form optical waveguides from the optical ports of the array to the first outer edge of the base;

a plurality of optical fibers each having a first end, molded into a package with a side formed to removably mate with the first outer edge of the base, and the package further including alignment guides designed to mate with the alignment guides associated with the grooves at the first outer edge so as to axially align the plurality of optical fibers, one each, with the plurality of grooves in the base;

a semiconductor chip positioned in the well and including electronics coupled to the electrical terminals of the array of photonics components and to the external electrical connections of the base, the electronics including circuitry for sensing the operation of the array of photonics components and the status of optical signals supplied to the optical ports of the array of photonic components; and

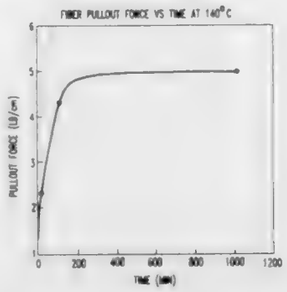
a display positioned in the well and coupled to the electronics of the semiconductor chip, the display providing a visual indication of the operation of the array of photonics components and the status of optical signals supplied to the optical ports of the array of photonic components.

5,345,528

METHOD FOR ENHANCING THE PULLOUT STRENGTH OF POLYMER-COATED OPTICAL FIBER

Howard Edan Katz, Summit; Valerie J. Kuck, Upper Montclair, and Marcia L. Schilling, Basking Ridge, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 28, 1993, Ser. No. 98,972
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—123 **6 Claims**



1. A method for enhancing the pullout strength of polymer-coated optical fiber comprising the steps of:

providing a cured, polymer-coated optical fiber; and

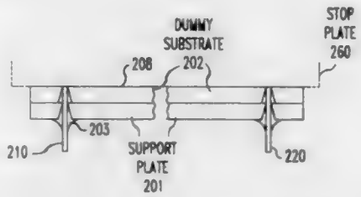
heating said fiber at a temperature in the range 100° C. to 300° C. for a time sufficient to increase the pullout strength by at least 25%.

5,345,529

METHOD FOR ASSEMBLY OF AN OPTICAL FIBER CONNECTIVE DEVICE

Theodore Sizer, II, Little Silver, and James A. Walker, Howell, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 6, 1993, Ser. No. 88,687
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—147 **14 Claims**



1. A method of mounting one or more fibers to a planar substrate, comprising the steps of

inserting said fibers through aligned holes of a support plate and a dummy substrate, a thickness of said dummy substrate having a predetermined ratio to a thickness of said planar substrate,

shortening the length of said fibers to a first surface of said dummy substrate,

mounting said fibers to said support plate,

removing said support plate with mounted fibers from said dummy substrate,

inserting said fibers into aligned holes of said planar substrate, and

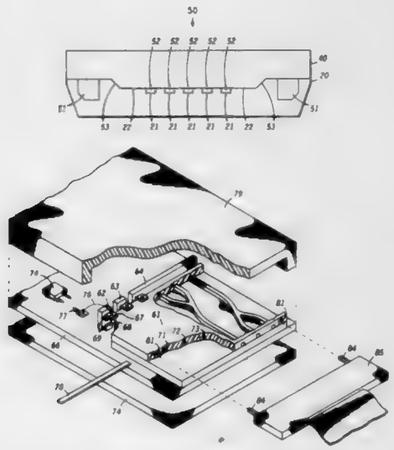
attaching said support plate to said planar substrate.

5,345,530

MOLDED WAVEGUIDE AND METHOD FOR MAKING SAME

Michael S. Lebby; Shun-Meen Kuo, both of Chandler; Davis H. Hartman, Phoenix, and Christopher K. Y. Chun, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 889,335, May 28, 1992, Pat. No. 5,265,184. This application Aug. 6, 1993, Ser. No. 103,497
Int. Cl.[5] G02B *6/42*
U.S. Cl. 385—88 **14 Claims**



1. A method for fabricating an optical electronic module comprising:

providing an interconnect board having standard electronic components, output leads, and at least one interface pad, the at least one interface pad connects the standard electronic components and the output leads interactively;

attaching a molded split waveguide to the interconnect board, the molded split waveguide comprising a channel that splits into at least two channels, an alignment guide, and a optical component having an active area and an output pad, the channel and the at least two channels and the alignment guide are molded therein and the optical component is mounted onto the molded split waveguide aligning the active area of the optical component to the channel; thereby enabling the optical component to respond to an optical signal traveling through the molded split waveguide; and

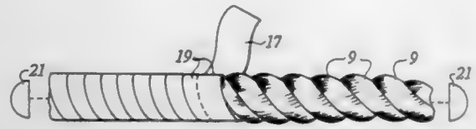
connecting the interface pad of the interconnect board with the output pad of the split waveguide, thereby interconnecting the standard electronic components to the optical component.

5,345,531

OPTICAL FIBER LIGHTING APPARATUS AND METHOD

John S. Keplinger, Stockton, Calif.; Nilesh P. Kacheria, Bombay, India; George Awai, Danville, and David R. Borck, Redwood City, both of Calif., assignors to Fiberstars, Inc., Fremont, Calif.

Filed Feb. 26, 1993, Ser. No. 24,185
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—102 **16 Claims**



1. An optical lighting apparatus comprising:

a set of a plurality of optical fibers, each fiber including a core of material that is transparent to radiation in a selected waveband, and including a layer of cladding material surrounding the core;

said set of a plurality of optical fibers being wound in contiguous relationship substantially as a spiral along the length thereof to form a cable, and being adapted to receive light flux at at least one end thereof for laterally emitting light flux received thereby substantially along the length thereof from said end;

a sheath of light-transmissive material disposed about the cable to retain the set of optical fibers in the contiguous relationship; and

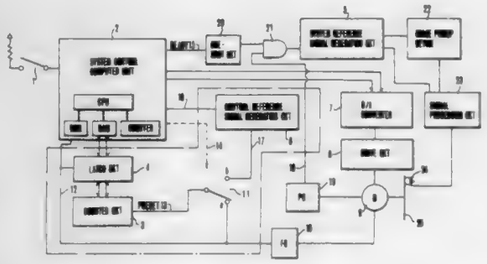
an outer layer of light-transmissive material disposed to enclose the cable and sheath over the length thereof.

5,345,532

ROTATION DRIVE DEVICE

Nobuo Fukushima, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 9,416, Jan. 27, 1993, which is a continuation of Ser. No. 846,968, Mar. 6, 1992, which is a continuation of Ser. No. 532,100, Jun. 1, 1990, which is a continuation of Ser. No. 51,041, May 15, 1987, Pat. No. 4,933,985. This application Sep. 14, 1993, Ser. No. 121,223
Claims priority, application Japan, May 21, 1986, 61-114922; May 21, 1986, 61-114923; May 21, 1986, 61-114924; May 21, 1986, 61-114925; May 21, 1986, 61-114926; May 21, 1986, 61-114927
Int. Cl.[5] H02P *5/00*
U.S. Cl. 388—813 **15 Claims**



1. A recording apparatus, comprising:

(A) a motor for driving a disc-shaped recording medium;

(B) a pulse generating circuit for generating a plurality of pulse signals corresponding to the revolutional speed of said disc-shaped recording medium;

(C) a reference signal generating circuit for generating a reference signal pulse having a predetermined frequency;

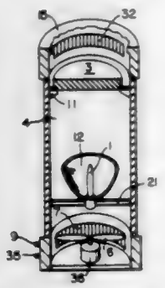
(D) speed control means for measuring an interval between said pulse signals output from said pulse generating circuit to detect the revolutional speed of said medium and for controlling said speed to a constant speed;
(E) detecting means for detecting the speed of said medium to cause said speed to become a predetermined value under the operation of said speed control means;
F) phase control means for controlling said motor so that a phase difference between said reference signal and said pulse signals becomes a predetermined value according to said detecting means; and
G) recording means for enabling recording on said medium when the phase difference between said pulse signals and said reference signal becomes the predetermined value under the action of said phase control means.

5,345,533

PHOTOEMISSION RADIANT HEATER

Sidney A. Tarrant, Ballston Spa, N.Y., and Donald L. Reid, Hendersonville, Tenn., assignors to United Optics Technology, Inc., Schenectady, N.Y.

Continuation-in-part of Ser. No. 627,741, Dec. 14, 1990, abandoned. This application Dec. 20, 1991, Ser. No. 811,693
Int. Cl.[5] H02J *17/00*
U.S. Cl. 392—356 **15 Claims**



1. A photo emission radiant heater comprising:
an elongate and cylindrical reflective chamber having an interior reflective surface;
means for generating photons within the reflective chamber wherein photons are reflected off the interior reflective surface of said reflective chamber;
a black body means having a portion thereof located in a position to absorb radiant energy generated by the reflection of photons off the reflective surface of said reflective chamber; and
means for blowing air over the black body means wherein heat is transferred from the black body means to the air.

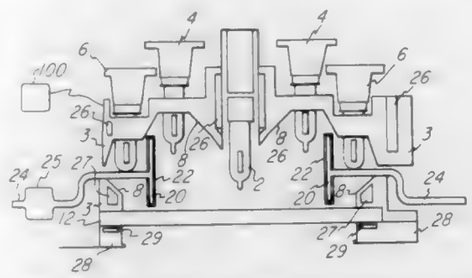
5,345,534

SEMICONDUCTOR WAFER HEATER WITH INFRARED LAMP MODULE WITH LIGHT BLOCKING MEANS

Habib N. Najm, Dallas; Steve S. Huang, Richardson; Cecil J. Davis, Greenville, and Robert T. Matthews, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 29, 1993, Ser. No. 39,720
Int. Cl.[5] H01L *21/20*
U.S. Cl. 392—422 **10 Claims**

1. A semiconductor wafer lamp heater comprising:
a source of light which includes a plurality of light bulbs, said bulbs being positioned so as to lie in and define substantially concentric first and second cylinders; and
a cylindrical baffle, said cylindrical baffle lying in and defining a third cylinder substantially concentric with said first and second cylinders, said third cylinder including a radius less than said first cylinder and greater than said second cylinder.

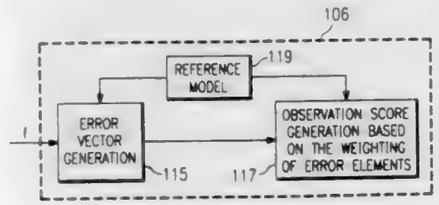


5,345,535

SPEECH ANALYSIS METHOD AND APPARATUS

George R. Doddington, 910 St. Lukes Dr., Richardson, Tex. 75080

Continuation of Ser. No. 916,796, Jul. 17, 1992, abandoned, which is a continuation of Ser. No. 505,085, Apr. 4, 1990, abandoned. This application Jul. 14, 1993, Ser. No. 92,654
Int. Cl.[5] G01L *7/08, 9/18*
U.S. Cl. 395—2.45 **11 Claims**



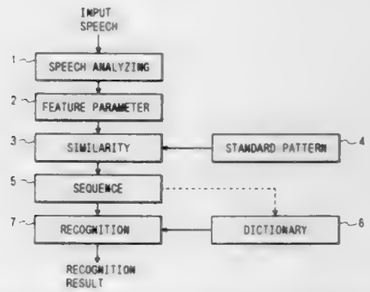
1. A method of speech analysis comprising:
receiving a speech signal;
converting the speech signal into a converted signal for processing by a processor and memory system;
generating a feature vector from said converted signal, said feature vector having a plurality of feature vector elements;
providing a reference model comprising a plurality of states, each of said states comprising an associated means vector and covariance matrix;
generating an error vector having a plurality of error elements, each of said error elements corresponding to one of said feature vector elements;
weighting each of said error elements by a respective weight factor raised by an exponent, each respective weight factor comprising a factor proportional to a relative variance of each of said feature vector elements;
generating an observation score based on said feature vector, said weighted error elements, and said reference model states; and
based on a series of said observation scores, determining the probability that received speech signals correspond to a particular series of said reference model states.

5,345,536

METHOD OF SPEECH RECOGNITION

Masakatsu Hoshimi, Sagamihara; Maki Miyata, Tokyo; Shoji Hiraoka, Kawasaki, and Katsuyuki Niyada, Sagamihara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 17, 1991, Ser. No. 808,692
Claims priority, application Japan, Dec. 21, 1990, 2-404866; Jan. 25, 1991, 3-7477; Mar. 22, 1991, 3-58796; Jul. 11, 1991, 3-170908; Sep. 13, 1991, 3-234388
Int. Cl.[5] G10L *5/06*
U.S. Cl. 395—2.52 **35 Claims**



1. A method of speech recognition, comprising the steps of:
generating "m" feature parameters every frame from reference speech which is spoken by at least one speaker and which represents recognition-object words, where "m" denotes a preset integer;
previously generating "n" types of standard patterns of a set of preset phonemes on the basis of speech data of a plurality of speakers, where "n" denotes a preset integer;
executing a matching between the feature parameters of the reference speech and each of the standard patterns, and generating a vector of "n" reference similarities between the feature parameters of the reference speech and each of the standard patterns every frame;
generating temporal sequences of the reference similarity vectors of respective frames, the reference similarity vector sequences corresponding to the recognition-object words respectively;
previously registering the reference similarity vector sequences as dictionary similarity vector sequences;
analyzing input speech to be recognized, and generating "m" feature parameters from the input speech;
executing a matching between the feature parameters of the input speech and the standard patterns, and generating a vector of "n" input-speech similarities between the feature parameters of the input speech and the standard patterns every frame;
generating a temporal sequence of the input-speech similarity vectors of respective frames;
collating the input-speech similarity vector sequence with the dictionary similarity-vector sequences; and
recognizing the input speech based on a result of the collating step.

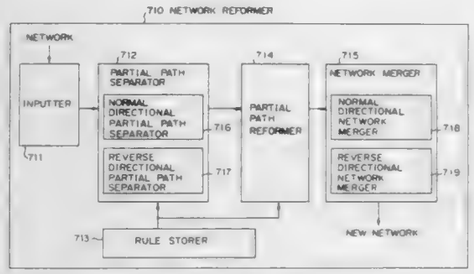
5,345,537

NETWORK REFORMER AND CREATOR

Hiroshi Tanaka, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 19, 1991, Ser. No. 810,068
Claims priority, application Japan, Dec. 19, 1990, 2-412079
Int. Cl.[5] G10L *9/02*
U.S. Cl. 395—2.64 **13 Claims**

1. A network reforming apparatus for automatically reforming a network connecting basic units of data using at least one predetermined rewriting rule, comprising:
an inputting means for inputting the network;
a rule storing means for storing the at least one predetermined rewriting rule;
a partial path separating means for splitting a partial path in the network matching a source of rewriting defined by the at least one predetermined rewriting rule stored in said rule storing means, into split partial paths equivalent to the network input by said inputting means; and
a partial path reforming means for reforming a split partial path of the network using the at least one predetermined rewriting rule stored in said rule storing means,



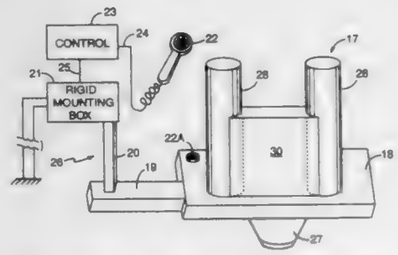
said partial path separating means including
a normal directional partial path separating means for sequentially separating partial paths from a head end node of the network, and
a reverse directional partial path separating means for sequentially separating partial paths from a tail end node of the network.

5,345,538

VOICE ACTIVATED CONTROL APPARATUS

Krishna Narayannan, 423 N. St. Clair, Pittsburgh, Pa. 15206; Marc D. Liang, 6801 Linden La., Pittsburgh, Pa. 15206, and John L. Kurtz, 983 Centennial Dr., Indiana, Pa. 15701

Filed Jan. 27, 1992, Ser. No. 826,339
Int. Cl.[5] G10L *9/00*
U.S. Cl. 395—2.84 **17 Claims**



1. A voice activated control apparatus for control of at least one variable of a system, comprising:
drive means responsive to electrical signals for creating controlled changes of the at least one variable;
sound detection means for converting acoustic energy into audio-electrical signals;
control means including:
word recognition means for recognizing commands from said audio-electrical signals and for generating corresponding identified electrical signals;
means for generating operating electrical signals corresponding to said identified electrical signals;
output signal generator means, responsive to said operating electrical signals for delivering actuating electrical signals to said drive means;
means for measuring the value of the at least one variable;
memory means for recording the value of the at least one

variable at an identified instant in response to a command applied to said sound detection means indicating that the value at the identified instant should be recorded, said memory means also recording a value identifying command applied to said sound detection means and corresponding to the value of the at least one variable at the said identified instant; and

means for restoring the at least one variable to the value of the at least one variable at said identified instant upon application of said value identifying command to said sound detection means.

5,345,539

RADAR APPARATUS USING NEURAL NETWORK FOR AZIMUTH AND ELEVATION DETECTION

Andrew R. Webb, Worcestershire, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

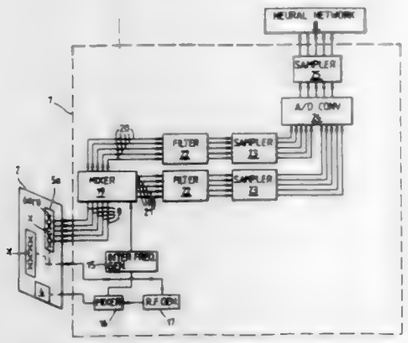
PCT No. PCT/GB91/01894, § 371 Date Jan. 12, 1993, § 102(e) Date Jan. 12, 1993, PCT Pub. No. WO92/08149, PCT Pub. Date May 14, 1992

PCT Filed Oct. 30, 1991, Ser. No. 961,711

Claims priority, application United Kingdom, Nov. 2, 1990, 9023909.6

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—22 **7 Claims**



7. Radar apparatus for determination of the location of a point source comprising:

a two dimensional array of independent radar receiving sensor elements, each element for providing an output,

signal processing means for providing image information in the form of data vectors corresponding to and dependent on each array element, and

an adaptive feed forward artificial neural network for calculating a position vector from a single pass of the image information, said network comprising an input layer of nodes containing one node for each sensor in the array, a hidden layer of nodes and an output layer of two nodes, one of said two nodes in said output layer for providing data relating to azimuth and the other of said two nodes for providing information relating to elevation, with a constant output node included in each of said input layer and said hidden layer.

5,345,540

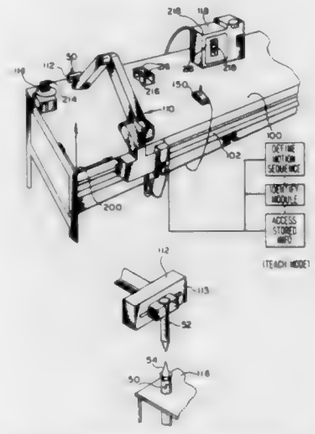
METHODS FOR AUTOMATICALLY PROGRAMMING SPATIAL INFORMATION IN ROBOTIC SYSTEMS

Arthur Schleifer, Palo Alto; Joseph C. Roark, Los Altos, both of Calif.; John S. Poole, Landenberg, Pa.; Gary B. Gordon, Saratoga, Calif.; Gilbert Segal, Hockessin, and Philip B. Fuhrman, Wilmington, both of Del., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 12, 1991, Ser. No. 728,926

Int. Cl.[5] G05B *19/00*

U.S. Cl. 395—86 **19 Claims**



1. A method for programming a mechanical manipulator to perform coordinated motions between one or more modules comprised of one or more pieces of equipment with which the manipulator will interact, the method comprising:

defining an origin point;

defining one or more frame points associated with each of said modules relative to the origin point by moving the manipulator until it is in registration with a fixture portion of a module that identifies a frame point;

entering information identifying each of said modules;

accessing stored information describing pre-programmed manipulator motions related to each of the modules; and

defining a sequence of motions between the origin point and each of the frame points associated with said modules and using the stored information accessed to execute a predefined series of motions related to said module;

detecting contract between the mechanical manipulator and an obstruction, and when contact is detected;

relaxing the mechanical manipulator; and

defining the relaxed position as a final destination.

5,345,541

METHOD AND APPARATUS FOR APPROXIMATING A VALUE BETWEEN TWO ENDPOINT VALUES IN A THREE-DIMENSIONAL IMAGE RENDERING DEVICE

Michael Kelley, San Mateo; Stephanie Winner, Santa Clara, and Lee Mighdoll, Palo Alto, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Dec. 20, 1991, Ser. No. 811,829

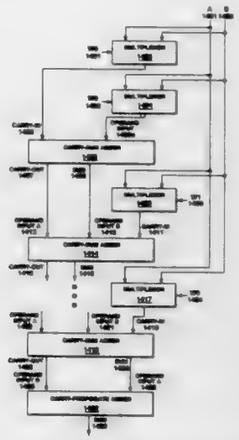
Int. Cl.[5] G06F *15/72, 15/353*

U.S. Cl. 395—126 **10 Claims**

9. In a graphics accelerator for generating pixel shading values for the display of 3-D graphical images, a circuit for calculating an interpolated value X based on extreme values A and B and interpolation weight W, wherein said interpolated value X corresponds to a pixel shading value, said interpolation weight W having bit locations O–N, said circuit comprising:

a) N+2 multiplexors, each of said N+2 multiplexors coupled to a first input having extreme parameter value A and a second input having extreme parameter value B, each of said N+2 multiplexors further coupled to receive a bit of said interpolation weight W, said bit of interpolation weight W providing a selector input;

b) of said N+1 carry save adders, where N of said of said N+1 carry save adders have inputs coupled to an output of a corresponding one of said of said N+2 multiplexors and to a carry output and a sum of a preceding one of said



of said N+1 carry save adders, and 1 of said of said N+1 carry save adders is coupled to said outputs of two of said of said N+2 multiplexors; and

c) a carry propagate adder, said carry propagate adder coupled to the carry-out output and a sum output of one of said N+1 carry save adders to generate said interpolated value X.

5,345,542

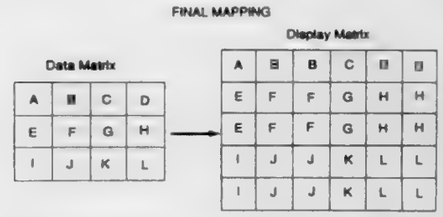
PROPORTIONAL REPLICATION MAPPING SYSTEM

Curtis C. Wye, Long Valley, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 722,076, Jun. 27, 1991, abandoned. This application Oct. 15, 1993, Ser. No. 136,398

Int. Cl.[5] G06F *15/66*

U.S. Cl. 395—128 **2 Claims**



1. A method for forming a visual image on a display device, comprising an array of picture elements, the method comprising the steps of:

a) performing physical measurements at an array of points in a two-dimensional space, each of said measurements leading to a corresponding acquired value;

b) storing the acquired values as an input matrix embodied in a digital data storage device, wherein the input matrix consists of plural rows and columns of matrix elements along X- and Y-axes and has X and Y edges;

c) mapping image information from the input matrix to a display matrix embodied in a digital data storage device, wherein the display matrix consists of plural rows and columns of matrix elements along X and Y axes and has X and Y edges; and

d) activating each picture element to the display device according to a corresponding matrix element of the display matrix, wherein the mapping step comprises the step of:

(e) computing an X-dimension ratio of the number of display matrix columns to the number of input matrix columns;

(f) computing a Y-dimension ratio of the number of display matrix rows to the number of input matrix rows;

(g) computing an X-replication vector consisting of the number of elements in each input matrix column;

(h) computing a Y-replication vector consisting of the number of elements in each input matrix row;

(i) populating each element in each said X- and Y-replication vector by:

(j) multiplying each said element's relative position within said vector by said dimension ratio for that vector, thereby to create a proportional mapping of said X- and Y-data matrix edges to said X- and Y-display matrix edges; and

(k) recalculating each said element in both said replication vectors by:

(l) subtracting its value from the value of the element in the following position along said vector, to create a replication count for each said element; and

(m) copying each element of the input matrix into a number of columns of the display matrix equal to the replication count at the corresponding position in the X-replication vector; and

(n) copying each element of the input matrix into a number of rows of the display matrix equal to the replication count at the corresponding position in the Y-replication vector.

5,345,543

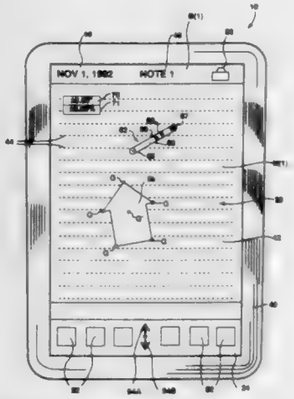
METHOD FOR MANIPULATING OBJECTS ON A COMPUTER DISPLAY

Stephen P. Capps, and Ernest H. Beernink, both of San Carlos, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Nov. 16, 1992, Ser. No. 977,145

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—137 **17 Claims**



1. A method for manipulating an object on a display of a computer system comprising the steps of:

selecting said object on said computer display;

directing a pointing means towards a portion of a manipulating tool displayed on said computer display, where said portion is spaced apart from a desired center of rotation;

using the pointing means to rotate the spaced apart portion of the manipulating tool about the center of rotation; and

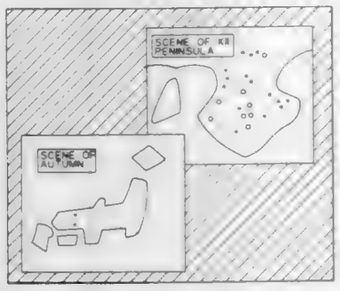
having the computer system manipulate the selected object by an amount that is a function an angular distance that the spaced apart portion of the manipulating tool is rotated about the center of rotation.

5,345,544

DATA BASE SYSTEM

Keisuke Iwasaki, Yamato-Koriyama; Masaki Takakura, Higashi-Osaka, and Yasusuke Asayama, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 29, 1991, Ser. No. 693,223
Claims priority, application Japan, Apr. 28, 1990, 2-113910
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—140 17 Claims



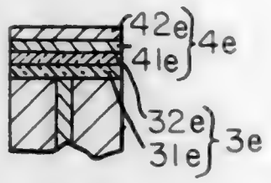
1. A data base system comprising:
means for generating a chart pattern in accordance with chart data applied thereto;
means for managing a plurality of indicators which symbolize particular functions, and attribute information associated with the indicators;
means for generating indicator patterns representative of the indicators in accordance with the attribute information associated with the respective indicators, said attribute information being managed by said indicator management means;
means having a screen, for displaying the chart pattern generated by said chart generation means and the indicator patterns generated by said indicator pattern generation means, on the screen as a retrieval chart;
means for designating a desired area on the retrieval chart displayed on the screen of said display means;
means for extracting a plurality of indicators included in the area designated by said designation means, by retrieving the attribute information associated with the indicators included in the designated area managed by said indicator management means; and
means for processing together the indicators extracted by said extraction means.

5,345,545

OPTICAL FIBER DEVICE

Takafumi Uemiya, and Naota Uenishi, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 3, 1993, Ser. No. 115,687
Claims priority, application Japan, Sep. 3, 1993, 4-236132
Int. Cl.[5] G02B *6/02*; G02F *1/37*
U.S. Cl. 385—141 7 Claims



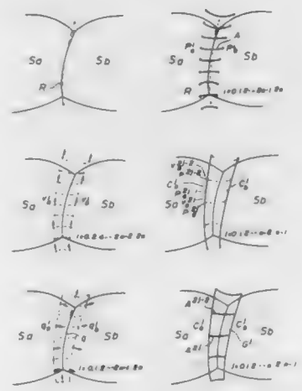
1. An optical fiber device comprising an optical fiber comprising a core made of an organic crystal and a cladding made of glass, said device generating second harmonics of a laser light that has been launched into said core, said device further comprising a buffer layer on at least one end faces of said optical fiber, and a water barrier layer on the surface of said buffer layer, said buffer layer being such that said organic crystal of said core is not dissolved therein.

5,345,546

METHOD AND APPARATUS FOR GENERATING FILLET SURFACE BETWEEN TWO SURFACES

Tsuyoshi Harada, Kawasaki, and Kouichi Konno, Tokorozawa, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 19, 1991, Ser. No. 809,450
Claims priority, application Japan, Dec. 20, 1990, 2-413222
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—142 22 Claims



1. A method for generating a fillet surface which smoothly connects two surfaces to each other, using a three-dimensional (3D) computer-aided design (CAD) system, the method comprising the steps of:
inputting information designating a spine curve near a boundary between the two surfaces;
using a shape modification part of the 3D CAD system, placing a predetermined curve on a normal plane of the spine curve at an arbitrary point on the spine curve so that the predetermined curve is in contact with the two surfaces;
using the shape modification part of the 3D CAD system, sliding the predetermined curve, while in contact with the two surfaces, in order to generate trajectories of two tangent points between the predetermined curve and the two surfaces, the fillet surface being defined by a trajectory of the predetermined curve and the trajectories of the two tangent points; and
using the shape modification part of the 3D CAD system, generating a parametric surface which approximately and parametrically represents the fillet surface, by using the trajectories of the two tangent points and the predetermined curve.

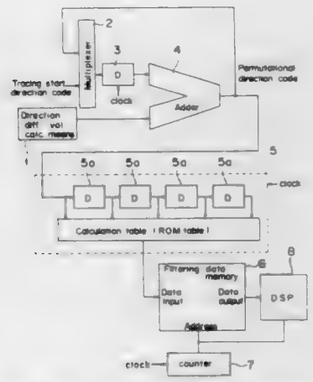
5,345,547

CONTOUR LINE CHARACTERISTIC POINT DETECTING APPARATUS

Takashi Anezaki, Hirakata, and Kinji Horikami, Suita, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 23, 1992, Ser. No. 902,373
Claims priority, application Japan, Jun. 27, 1991, 3-156616
Int. Cl.[5] G06F *15/16*
U.S. Cl. 395—143 2 Claims

1. A contour line characteristic point detecting apparatus for processing direction codes of first, second and third contour line tracing points, said apparatus comprising:
means for obtaining a directional difference value which is a difference between the direction code of the second contour line tracing point and the direction code of the third contour line tracing point which is adjacent to the second contour line tracing point,
means for obtaining a permutational direction code by adding said directional difference value to the direction code of the first contour line tracing point,
means for obtaining a resultant permutational direction code by adding a subsequent directional difference value calculated with respect to a subsequent contour line tracing point and a previous contour line tracing point, to the permutational direction code,
a delay register means for delaying the permutational direction code successively obtained, by a desired number of stages, and
a calculation table for receiving data from respective stages of the delay register means as address data, and for using said address data to detect at least one of a linear component and a corner.

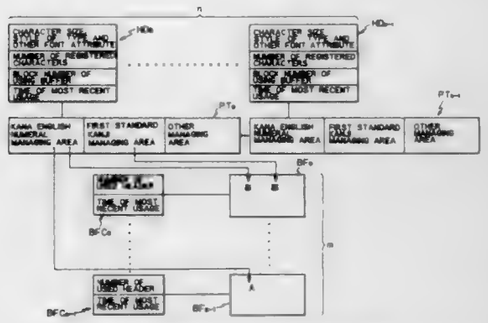


5,345,548

CHARACTER DISPLAY APPARATUS FOR DISPLAYING MULTIPLE-FONT CHARACTERS WITH HIGH SPEED

Tatsuya Nomura, Tenri; Yumi Yamauchi, Nara; Kenji Mameda, Kashihara; Shigeru Yoshida, Katsuragi, and Noboru Kubo, Yamato-Koriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 20, 1991, Ser. No. 702,805
Claims priority, application Japan, May 22, 1990, 2-131753
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—150 5 Claims



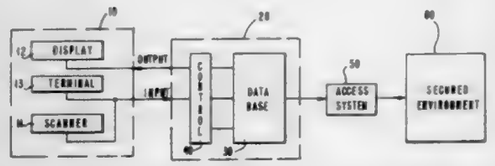
1. A character display apparatus, comprising:
an attribute management means for storing an attribute of each of a plurality of used fonts, including a respective plurality of font headers, each storing said attribute of each respective used font;
a raster image storage means for storing a raster image of said each used font;
an image position management means for storing a storage position of each raster image in said raster image storage means in correspondence with each attribute stored in said attribute management means, including
a corresponding plurality of pointer tables each connected to a corresponding one of said font headers, a portion of each of said pointer tables being assigned to store said storage positions of raster images of predetermined characters for high frequency usage, while another portion is assigned to store said storage positions of raster images of characters for low frequency usage so that said storage positions of raster images of characters for high frequency usage may be accessed first;
a judgment means for judging whether a raster image of a character to be displayed is stored in said raster image storage means or not, by referring to said attribute management means and said image position management means;
a supplying means for supplying said raster image storage means with a raster image of a character to be displayed in case of said image of said character is not stored in said raster image storage means; and
a display means for displaying an image of said character according to said raster image stored in said raster image storage means, in case that said raster image is stored therein.

5,345,549

MULTIMEDIA BASED SECURITY SYSTEMS

Arthur Appel, Yorktown Heights, and Michael A. O'Connor, Mahopac, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1992, Ser. No. 968,769
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—154 9 Claims



1. A computer-utilizing security system for obtaining access to a secured environment, comprising:
storage means for storing data in cue sets comprising multimedia data and a multiplicity of structured information data having a relationship to said multimedia data that is peculiar to the knowledge of a person authorized to access the secured environment;
multimedia means for presenting representations of the multimedia data along with a portion of the multiplicity of structured information data of a cue set to an individual seeking access to the secured environment to stimulate identification reactions based on said individual's peculiar knowledge of the relationship of the multiplicity of structured information data to the multimedia data presented;
stimulating means for prompting said individual to produce an input in response to the presentation of said portion of the structured information data and the multimedia data of the cue set, which input is in keeping with the identification reaction of said individual stimulated thereby;
input means, responsive to the input, for producing an input signal indicative of the identification reaction of said individual stimulated by said presented information and said multimedia data;
control means for comparing the input signal with a signal

preselected to be in keeping with the identification reaction to be stimulated in said at least one person by the portion of the cue set presented, and for producing an indicator signal in response to a proper correspondence between the input signal and the preselected signal; and

access means, responsive to the indicator signal, for opening access to the secured environment;

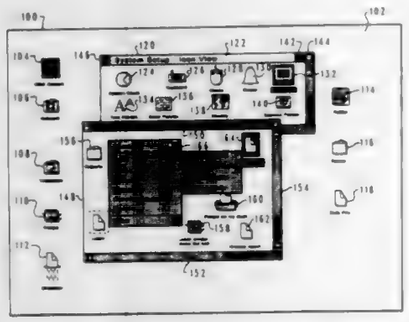
wherein said multimedia means comprises means for producing a display and wherein said multimedia data representation comprises an image on said display and the presentation of said portion of the multiplicity of structured information data elicits a response from said individual regarding the contents of the image.

5,345,550

USER-MODIFIABLE POPUP MENUS FOR OBJECT ORIENTED BEHAVIOR

Marc A. Bloomfield, Lighthouse Point, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1992, Ser. No. 996,983
Int. Cl.[5] G06F *3/03*
U.S. Cl. 395—156 **7 Claims**



1. A method of generating menus of actions for objects depicted in a graphical user interface for a data processing system comprises the steps of:

interrogating extended attributes for an object and for parent objects to the object for actions and action suppression markers, which were placed as extended attributes by applications;

with interrogation of the extended attributes for the object or a parent object, adding actions to an interim list listed in the extended attributes and removing actions from the interim list identified by suppression markers by any application;

after interrogation of any extended attributes for the object added by an application, determining if any user defined actions and suppression markers are present in extended attributes for the object;

if the result of the determining step is affirmative, adding the user defined actions to the interim list and removing actions matched by the suppression markers from the interim list;

editing the extended attributes by:

prompting user selection of one of a plurality of editing functions including creation of a new action, change of an existing action and removal of an existing action for an object;

responsive to user selection of the step of creating a new action further prompting a user to select the action and to name the action;

storing the new action to the extended attributes for the object; responsive to user selection of the step of changing an existing action, allowing the user to select a new name for the existing action and further determining if the existing action is user created;

responsive to determination that an existing action is user created, allowing the user to change the existing action;

responsive to user selection of removal of an existing action, determining if the existing action was user defined;

if the existing action is user defined, removing the action from the extended attributes for the object;

if the existing action is not user defined, adding a suppression marker for the action to the extended attributes for the object;

storing a changed action over an existing action in the extended attributes if the existing attribute was user created;

if the existing action was not user created, storing a marker in the extended attributes for an object so that the changed name is recovered at the time of request for the popup menu; and

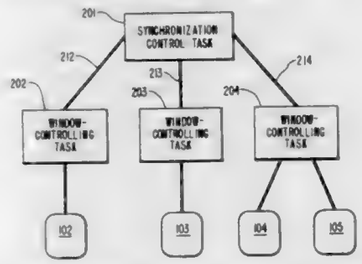
displaying the interim list as a menu.

5,345,551

METHOD AND SYSTEM FOR SYNCHRONIZATION OF SIMULTANEOUS DISPLAYS OF RELATED DATA SOURCES

Monte F. Shelley, Orem, and James S. Rosenvall, Provo, both of Utah, assignors to Brigham Young University, Provo, Utah

Filed Nov. 9, 1992, Ser. No. 973,780
Int. Cl.[5] G06F *3/14, 9/46, 15/40*
U.S. Cl. 395—157 **23 Claims**
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 27 Pages)



19. A process capable of being executed on a digital computer for synchronizing the presentation of information from a first source and a different second source on a digital computer display, each of the information being presented having sections and at least one section of the information from said second source corresponding to a section of the information from said first source, comprising:

a first window-controlling task recognizing a change in viewing position in a first display window to a new section,

said first window-controlling task sending a first message to a synchronization control task indicating said change in viewing position in said first display window,

said synchronization control task sending a second message to a second window-controlling task in response to said first message received by said synchronization control task, and

said second window-controlling task positioning at least one display window associated with said second window-controlling task to a section corresponding to said new section.

5,345,552

CONTROL FOR COMPUTER WINDOWING DISPLAY

James C. Brown, Mequon, Wis., assignor to Marquette Electronics, Inc., Milwaukee, Wis.

Filed Nov. 12, 1992, Ser. No. 975,436
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—157 **29 Claims**

1. A windowing control for a video display having raster means and raster scanning means for performing a raster scan

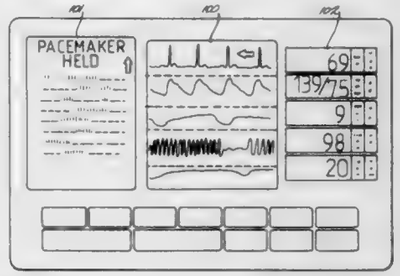
and for displaying data in at least one window in said raster means, the window being defined by window transitions on said raster means, said windowing control including:

programmed control means,

first memory means for storing data to be displayed in said at least one window defined on the raster means,

second memory means for storing addresses in the raster means of said window transitions and the data stored in the first memory means to be displayed in said at least one window,

said control means including memory control means for



comparing the position of the raster scan to the next window transition stored in the second memory means and for initiating the transfer of data from said first memory means to the raster means when the raster scanning means reaches the next window transition,

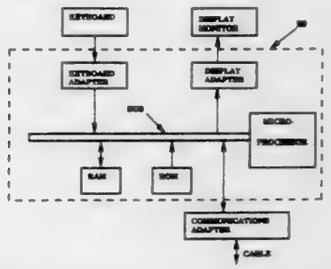
said control means being programmed to load data to be displayed into said first memory means and to write new addresses into said second memory means after the transfer of data from said first memory means to said raster means whereby the position of the data within said at least one window has the appearance of horizontal or vertical displacement.

5,345,553

METHOD AND APPARATUS FOR CONSTRUCTING EDIT MASK ENTRY FIELDS WITH MULTIPLE NONPROGRAMMABLE TERMINALS ATTACHED TO A WORKSTATION CONTROLLER

Leah J. H. Busboom, Oronoco; Stephen T. Eagen, and Harvey G. Kiel, both of Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 9, 1991, Ser. No. 639,508
The portion of the term at this patent subsequent to Jul. 7, 2009, has been disclaimed.
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—161 **6 Claims**



1. In a system comprising a host processor connected to a plurality of workstations through an intermediary workstation controller, wherein each of the workstations has at least a keyboard and display screen, the improvement in display screen panel presentation comprising:

a) host processor means for constructing a display panel data stream having entry field identifiers and edit mask character separators arranged in predetermined positions in said entry field identifiers;

b) means for transmitting said data stream to said workstation controller;

c) workstation controller means for retaining said entry field identifiers and said edit mask character separator positions, and further means for constructing a display panel image including edit mask characters for transmission to a predetermined workstation;

d) means for transmitting said display panel image from said workstation controller to said workstation, and means for transmitting signals from said workstation keyboard to said workstation controller; and

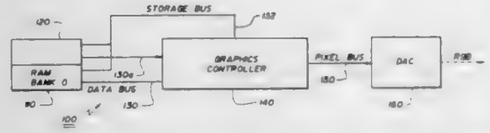
e) workstation controller means for receiving said signals from said workstation keyboard and means for reconstructing said display panel image in response to said received signals, said reconstructed display panel image having unchanged edit mask characters regardless of the otherwise reconstructed display panel image.

5,345,554

VISUAL FRAME BUFFER ARCHITECTURE

Louis A. Lippincott, Roebling, N.J., and Serge Rutman, Boulder Creek, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 870,564, Apr. 17, 1992. This application Jun. 19, 1992, Ser. No. 901,434
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—162 **9 Claims**



1. An apparatus for integrating a graphics subsystem display buffer with a video subsystem display buffer comprising:

(A) first storage means for storing a first bit plane of graphics data in a first format;

(B) a graphics controller coupled to said first storage means by a data bus and a storage bus;

(C) a second storage means for storing a second bit plane of video data in a second format different from said first format, said second storage means being coupled to said graphics controller by a data bus and a storage bus;

(D) means employing chroma keying for forming a merged pixel stream from said graphics data stored on said first storage means and said video data stored on said second storage means, wherein said graphics data and said video data represent images stored at different spatial resolutions;

(E) means for generating data transfer addresses of the same type for each of said storage means contemporaneously; and

(F) means, coupled to said graphics controller, for generating an analog signal representative of said merged pixel stream.

5,345,555

IMAGE PROCESSOR MEMORY FOR EXPEDITING MEMORY OPERATIONS

John R. Providenza, Beaverton, and Lee Boekelheide, Tigard, both of Oreg., assignors to Network Computing Devices, Inc., Mountain View, Calif.

Continuation of Ser. No. 617,359, Nov. 23, 1990, abandoned. This application Jun. 14, 1993, Ser. No. 77,705
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—164 **7 Claims**

1. A graphics memory system for effecting an algebraic logic operation between an operand of a given memory cell in said

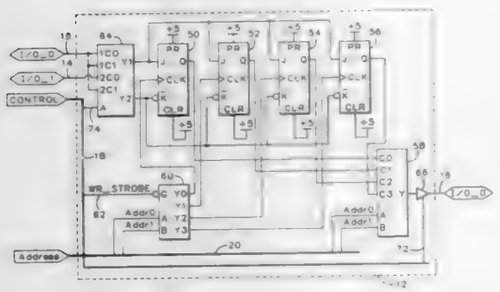
graphics memory system and at least one other operand and leaving the results thereof in the given memory cell with no more than one write to the given memory cell and without having to extract the operand therefrom, said graphics memory system comprising:

a memory cell array for storing binary data, cells of said memory cell array having memory cell modification means for receiving control instructions and performing logic operations according to the control instructions within memory cells of said memory cell array,

data storage selection means for addressing cells in said memory cell array,

raster opcode decode means for decoding a given raster opcode and at least said one other operand and generating a control output accordingly, said raster opcode specifying said algebraic logic operation to be effected as required for implementing a predetermined raster operation, and said control output being representative of the control instruction required if any for effecting said algebraic logic operation between the one other operand and the operand of the given memory cell as addressed by said data storage selection means so that the logic operation performed within the given memory cell is operative for modifying the operand therein so as to leave the results of said algebraic logic operation with the given memory cell, and

means for writing the control output of said raster opcode decode means as the control instruction to the memory cell modification means of the given memory cell when the operational effect of said algebraic logic operation is dependent upon the operand of the given memory cell.



5,345,556

ROUTER CHIP WITH QUAD-CROSSBAR AND HYPERBAR PERSONALITIES

John Zapisek, Cupertino, Calif., assignor to MasPar Computer Corporation, Sunnyvale, Calif.

Division of Ser. No. 461,551, Jan. 5, 1990. This application Apr. 30, 1991, Ser. No. 693,846

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—200 **14 Claims**

1. A router circuit having a plurality of router circuit input terminals and a plurality of router circuit output terminals, said router circuit having the ability to either connect one of said plurality of router circuit input terminals to one of a plurality of output channels in a hyperbar mode, where each output channel includes a group of said router circuit output terminals, or connect one of said plurality of router circuit input terminals to a specific one of said router circuit output terminals in a crossbar mode, said router circuit comprising:

a plurality of sections, each section being coupled to a different group of said router circuit input terminals, each section comprising a plurality of routing address bit decoders and a plurality of connecting means, each of said routing address bit decoders and each of said connecting means being coupled to respective ones of said router circuit input terminals coupled to that section,

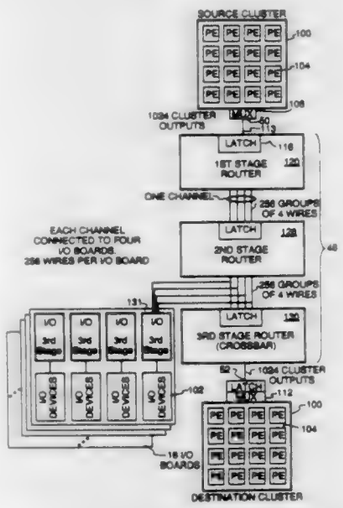
each of said routing address bit decoders being coupled to said respective ones of said router circuit input terminals for decoding routing address bits applied to said router circuit input terminals and outputting at a control output terminal enabling/disabling control signals for controlling an associated one of said connecting means to connect a respective one of said router circuit input terminals to one of said router circuit output terminals,

each of said connecting means in said router circuit comprising a plurality of grant circuits for connecting a data input line, a data input line being coupled to each of said router circuit input terminals, to one of said router circuit output terminals of said router circuit, a group of grant circuits being connected within each output channel,

said grant circuits having grant request terminals coupled to said control output terminal of an associated one of said decoders,

said grant circuits in said router circuit being arranged in rows and columns, each row being associated with one of said router circuit input terminals, each column being associated with a single router circuit output terminal, each of said sections having at least one end row which is adjacent to an end row in an adjacent section,

each of said grant circuits having an enable/disable input terminal and an enable/disable output terminal,



each of said grant circuits within a same section and in a same column having an enable/disable input terminal coupled to an enable/disable output terminal of a grant circuit in an adjacent row within said same section, except for grant circuits in said end row of a section adjacent to another section; and

hyperbar mode/crossbar mode switching means connected between adjacent ones of said sections of said router circuit for coupling enable/disable input terminals of grant circuits in said end row of an associated section to either enable/disable output terminals of said end row of grant circuits in an adjacent section, for achieving a hyperbar mode, or to fixed logic levels, for achieving a crossbar mode,

wherein in said hyperbar mode a single router circuit input terminal is connectable by said connecting means to any of said router circuit output terminals within an output channel designated by said routing address bits, and wherein in said crossbar mode a single router circuit input terminal is connectable by said connecting means to only a specific one of said router circuit output terminals within said output channel designated by said routing address bits.

5,345,557

DIGITAL COMPUTER WITH OPTICALLY INTERCONNECTED MULTIPROCESSOR ARRANGEMENT

Hans-Joachim Wendt, Sachsenbergstrasse 13a, DE-2150 Buxtehude, Fed. Rep. of Germany

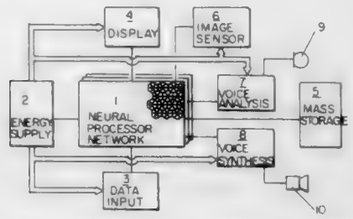
PCT No. PCT/EP89/01162, § 371 Date Sep. 19, 1991, § 102(e) Date Sep. 19, 1991, PCT Pub. No. WO90/04835, PCT Pub. Date May 3, 1990

PCT Filed Oct. 4, 1989, Ser. No. 773,940

Claims priority, application European Pat. Off., Oct. 19, 1988, 3835601.5

Int. Cl.[5] G06F *13/00, 1/26*

U.S. Cl. 395—200 **7 Claims**



1. Digital computer having a plurality of processors, the processors being connected by means of optical waveguides for the transmission of signals, said optical waveguides being connected to form an optical waveguide network, each node of the optical waveguide network being assigned at least one processor chip which is coupled to the node via an optical emitter and an optical receiver in such a way that an information exchange between the processor chip assigned to the node and the optical waveguide network is performed via the respective optical node, each said processor chip being electromagnetically shielded on all sides, each said processor chip being supplied the energy required for operation via photocells arranged outside the metallic shielding, as light energy via a light guide layer in such a way that, in energy consumption and communication, there is no direct electrical connection between the energy sources and the processor chips on the one hand and the optical waveguide network and the processor chips on the other hand.

5,345,558

TOPOLOGY INDEPENDENT BROADCAST OF CELLS IN AN ATM NETWORK OR THE LIKE

Ayal Opher, Mountain View; Dilip Chatwani, and Rajan Subramanian, both of Newark, all of Calif., assignors to SynOptics Communications, Inc., Santa Clara, Calif.

Filed Nov. 23, 1992, Ser. No. 980,253

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—200 **39 Claims**

1. A method for broadcast of cells in a network implementing Asynchronous Transfer Mode comprising the steps of:

(a) a first station on said network formatting a cell for broadcast, said step of formatting said cell comprising the steps of:

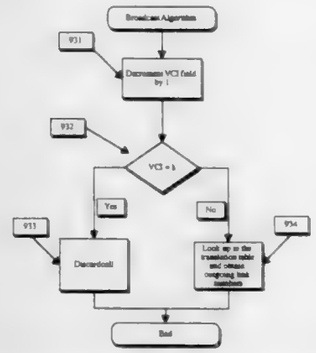
i) assembling a header area comprising a first area and a second area, said first area being set to a predetermined value to indicate said cell is a broadcast cell, said second area being set to contain expiration information;

ii) assembling a third area having therein user information;

(b) said first station transmitting said cell onto said network;

(c) said cell being received by a fast switch;

(d) said first switch determining if said fast area is set to said first predetermined value; and, if said fast switch is so set;



(e) said fast switch accessing said second area to determine if said cell should be forwarded.

5,345,559

BUS INTERFACE CIRCUIT FOR CONTROLLING DATA TRANSFER

Makoto Okazaki; Yuji Shibata; Hisamitsu Tanihira, all of Kawasaki, and Yoshiaki Wakimura, Akishima, all of Japan, assignors to Fujitsu Limited, Kawasaki and Nippon Telegraph and Telephone Corporation, Tokyo, both of Japan

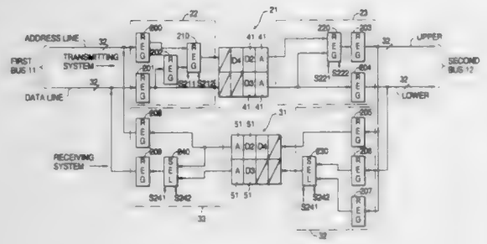
PCT No. PCT/JP90/01539, § 371 Date Jul. 29, 1991, § 102(e) Date Jul. 29, 1991

PCT Filed Nov. 28, 1990, Ser. No. 730,809

Claims priority, application Japan, Nov. 30, 1989, 1-309023

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—250 **4 Claims**



1. A bus interface circuit, comprising:

a first bus having N bits in width, where N is a natural number;

a second bus;

transmitting means comprising:

a transmitting buffer having at least m sub-buffers where m is a natural number, each of the m sub-buffers having N bits in width;

first input distributing means, connected to the transmitting buffer, for receiving information including data and addresses from the first bus and inputting the information to the transmitting buffer, and

first output distributing means, connected to the transmitting buffer, for receiving the information from the transmitting buffer and outputting the information to the second bus;

receiving means comprising:

a receiving buffer;

second input distributing means, connected to the receiving buffer, for receiving the information from the second bus and inputting the information to the receiving buffer, and

second output distributing means, connected to the receiving buffer, for receiving the information from the receiving buffer and outputting the information to the first bus;

the first input distributing means receiving the information from the first bus and inputting sequentially the information to the m sub-buffers;

the first output distributing means, having at least first and second states, wherein each of the first and second states is selected by control signals indicative of the second bus having mN bits in width;

the first state comprising the second bus having mN bits in width, wherein m is equal to 1.0, and the first output distributing means sequentially extracting the information from the m transmitting buffers and sequentially transmitting the information to the second bus; and

the second state comprising the second bus having mN bits in width, wherein m is not equal to 1.0, and the first output distributing means simultaneously extracting the information from the m sub-buffers and simultaneously transmitting the information to the second bus.

5,345,560

PREFETCH BUFFER AND INFORMATION PROCESSING SYSTEM USING THE SAME

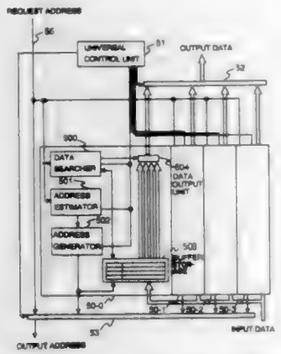
Shuuichi Miura, 313 Izumigamoriryo, 20-1, Mizukicho 2-chome; Kenichi Kurosawa, 22-2, Mikanoharacho 2-chome; Tetsuaki Nakamikawa, 17-1-402, Moriyamacho 3-chome, and Kenji Hirose, 17-11-205, Hidakacho 5-chome, all of Hitachi-shi, Ibaraki-ken, Japan

Filed Jul. 30, 1992, Ser. No. 921,742

Claims priority, application Japan, Jul. 30, 1991, 3-190240

Int. Cl.[5] G06F *12/02*

U.S. Cl. 395—250 **13 Claims**



1. A data prefetch buffer adapted for use between a cache memory and a main memory in a computer system having a CPU, said data prefetch buffer comprising:

a data buffer storage unit having at least one entry for storing prefetched data and an address tag, the address tag to be used for searching data stored in said data buffer storage unit;

means for receiving a request address from the CPU;

a data searcher for searching, from the data stored in said data buffer storage unit, for data having an address the same as the request address;

an address estimator for estimating an address of data to be prefetched from the main memory, based on the request address and on the history of addresses of data prefetched in the past from the main memory, said address estimator including means for subtracting the request address and an address immediately previously requested by the CPU, and means for using the result of the subtracting to estimate the address of the data to be prefetched from the main memory; and

an address generator for generating an address of data to be prefetched from the main memory according to the address estimated by said address estimator.

5,345,561

DISK DRIVE CONTROL SYSTEM USING A DISK CONTROLLER

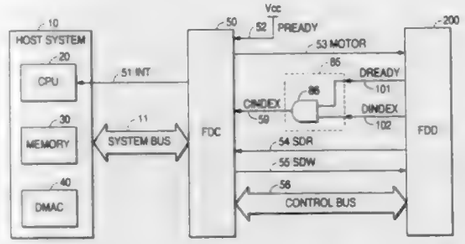
Taiji Kato, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 12, 1990, Ser. No. 464,016

Claims priority, application Japan, Jan. 12, 1989, 1-6109

Int. Cl.[5] G06F *13/12*

U.S. Cl. 395—275 **9 Claims**



1. A disk drive control system in which a disk controller is connected between a host processor system and a disk drive in order to control data transmission to or from a portion of a disk, said disk drive producing a ready signal and an index pulse signal, said ready signal taking an active level when said disk drive is in an access-enable state and an inactive level when said disk drive is not in an access-enable state and said index pulse signal being produced each time a starting point of a track is detected, said disk drive control system comprising:

means for supplying a pseudo-ready signal, held at said active level, to said disk controller irrespective of said ready signal produced by said disk drive, said disk controller responsive to said pseudo-ready signal to provide an indication to said host processor system that said disk drive is in said access-enable state, said host processor system being responsive to said indication, to issue a data read/write command to said disk controller, said disk controller responding to said data read/write command from said host processor system and initiating an operation for said data read/write command; and

gate means supplied with said ready signal and said index pulse signal from said disk drive for transferring said index pulse signal to said disk controller in response to said active level of said ready signal, and said disk controller counting said index pulse signal transferred from said gate means and generating an error signal to said host processor system if said disk controller receives a predetermined number of index pulse signals before said portion of said disk is located by said disk drive controller.

5,345,562

DATA BUS ARBITRATION FOR SPLIT TRANSACTION COMPUTER BUS

Chang-Lung Chen, Hsing-Chu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu

Filed Feb. 12, 1992, Ser. No. 836,060

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—275 **4 Claims**

1. A method for arbitrating read and write transactions in a computer system comprising a command bus, a data bus, and a plurality of processors in communication with said command and data buses, comprising the steps of:

a) said processor performing red command steps to issue a read command, said read command steps comprising:

1) taking control of the command bus; and

2) issuing the read command on the command bus;

b) said processor performing write transaction steps to perform a write transaction, said write transaction steps comprising

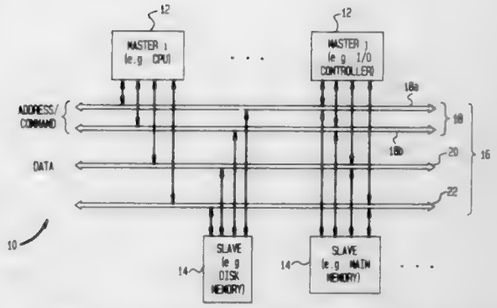
1) taking control of the command bus;

1) sampling a first signal which when in an active state indicates that the data bus is occupied and a second signal which when in an active state indicates that a response to a read command is waiting for access to the data bus;

3) if both the first and second signals are not in active steps, issuing a write command on the command bus, then releasing the command bus to go on to a next command bus arbitration, and issuing write data on the data bus;

4) if one of the first and second signals is in the active state and the other is not, holding the command bus and activating a third signal which indicates that write data is waiting for access to the data bus, and after the first signal makes a transition from the active state to a non-active state de-activating the third signal, issuing the write command on the command bus, releasing the command us to go on to a next command bus arbitration, and issuing the write data on the data bus;

5) if both the first and second signals are in active states, holding the command bus, activating said third signal, and, after the first signal makes two transitions form the active to the non-active state, deactivating said third signal, issuing the write command on the command bus, releasing the command bus to go on to a next command bus arbitration, and issuing the write data on the data bus; and



c) said processor performing response steps to provide an ordered split response to a read command wherein said response is first in a first-request-first-response queue of ordered split read responses, said response steps comprising,

1) activating said second signal;

2) sampling said first and third signals;

3) if both the first and third signals are in non-active states, deactivating the second signal and issuing response data on the data bus,

4) if one of the first and third signals, but not both is in an active state, waiting until the first signal makes a transition from the active to the non-active state, then deactivating said second signal and issuing the response data on the data bus, and

5) if both the first and third signals are in the active state, waiting until the first signal makes two transitions from the active state to the non-active state, and then deactivating said second signal and issuing data on the data bus.

5,345,563

INPUT/OUTPUT INTERFACE FOR DATA IN PARALLEL PROCESSORS

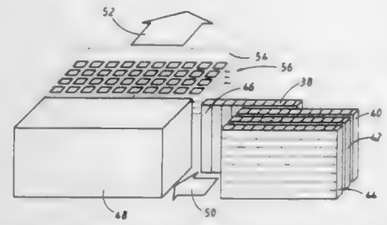
Christoph Uihlein; Michael Häusing, both of Überlingen, and Andreas J. Pühler, Ludwigshafen, all of Fed. Rep. of Germany, assignors to Bodenseewert Geratetechnik GmbH, Bodensee, Fed. Rep. of Germany

Filed Feb. 19, 1992, Ser. No. 838,099

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1991, 4105193

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—275 **12 Claims**



1. An interface for converting bit-parallel and word-serial data patterns into bit-serial and word-parallel data patterns or vice versa, comprising:

a three-dimensionally organized data memory, each address in said data memory having three components, each component representative of one of each of the three dimensions of the memory;

means for receiving a preset number of successive sets of parallel bits of data to be stored in memory, the successive sets to be arranged in memory in a preset two dimensional pattern;

output means for outputting a preset number of successive sets of parallel bits of stored data;

control means for storing received data in the memory wherein each parallely received bit of data in a set is assigned a memory address having two of the address components the same from bit-to-bit and one of the address components different from bit-to-bit, and for reading data from the memory and supplying it to the output means in the form of successive sets of parallel bits of data wherein each set of parallel bits of data read from the memory has two address components the same from bit-to-bit and one address component different from bit-to-bit, but the address component that is different from bit to bit for the parallel data read from memory is different from the adress component that is different from bit-to-bit in the received data as it was stored in memory.

5,345,564

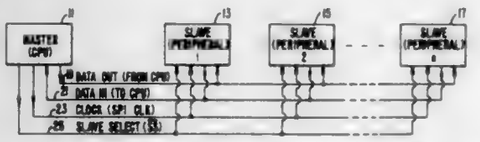
SERIAL COMMUNICATION PERIPHERAL INTEGRATED ELECTRONIC CIRCUIT THAT RECOGNIZES ITS UNIQUE ADDRESS BEFORE THE ENTIRE CIRCUIT IS ENABLED

Bradley D. Jensen, San Jose, Calif., and Ed Morson, Maple, Canada, assignors to Zilog, Inc., Campbell, Calif.

Filed Mar. 31, 1992, Ser. No. 861,298

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—275 **3 Claims**



1. In a computer system having a central processing unit ("CPU") connected in parallel with at least two peripheral

units that contain unique identification codes and have internal processors, a method of activating a selected one of said at least two peripheral units to operate with the CPU, comprising the steps of:

causing the CPU to transmit one of the unique identification codes to all of said at least two peripheral units,

comparing in a hardware circuit of each of said at least two peripheral units its unique identification code with the identification code being transmitted by the CPU, said comparing step occurring without activating the internal processors in any of said at least two peripheral units,

selecting one of said at least two processing units wherein its unique identification code matches the transmitted identification code, and

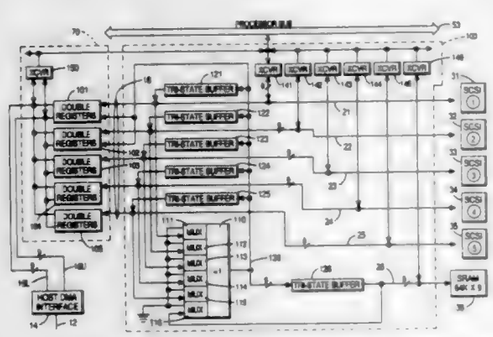
activating the internal processor within the selected one of said at least two processing units by supplying a clock signal to the internal processor of the selected peripheral processing unit without activating the internal processor in any other of said at least two peripheral units.

5,345,565

MULTIPLE CONFIGURATION DATA PATH ARCHITECTURE FOR A DISK ARRAY CONTROLLER

Mahmoud K. Jibbe; Craig C. McCombs, and Kenneth J. Thompson, all of Wichita, Kans., assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 13, 1991, Ser. No. 668,660
Int. Cl.[5] G06F *11/10*
U.S. Cl. 395—325 **10 Claims**



1. Apparatus for coupling a host with an array of disk drives, said apparatus comprising:

a host bus;

a plurality of array busses;

means for connecting said host bus with a first group of selected array busses; said means comprising:

a plurality of registers corresponding to said plurality of array busses, each one of said plurality of registers being connected to said host bus for receiving data therefrom; and

a plurality of bus drivers corresponding to said plurality of registers, each one of said plurality of bus drivers being connected between its corresponding register and the array bus corresponding thereto and having an enable input connected to receive a control signal, each one of said plurality of bus drivers being responsive to said control signal to provide the contents of its corresponding register to the array bus corresponding thereto;

a parity generation circuit having an input and an output;

means for connecting a second group of selected array busses to the input of said parity generation circuit; and

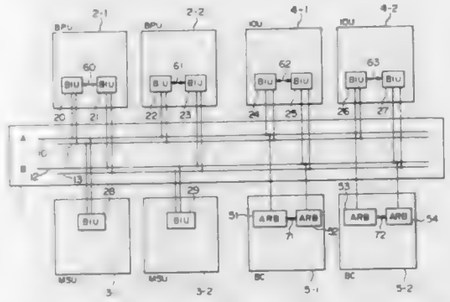
means for connecting the output of said parity generation circuit to a third group of selected array busses.

5,345,566

METHOD AND APPARATUS FOR CONTROLLING DUAL BUS SYSTEM

Masayuki Tanji; Yoshihiro Miyazaki; Hiroaki Fukumaru; Syoji Yamaguchi; Koji Masui, and Hisao Ogawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 24, 1992, Ser. No. 825,063
Claims priority, application Japan, Jan. 25, 1991, 3-007522
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 **7 Claims**



1. The dual bus control method having a dual bus system, a plurality of electronic circuits, each having a dual bus interface, connected to both buses of said dual bus system, and bus controllers, each of said bus controllers being connected to both of said buses and being interconnected by interactive paths, each of said bus controllers providing a bus use allowance signal through an arbiter thereof to one of said plurality of electronic circuits having issued a bus use request signal through a request line thereto, said dual bus control method comprising the steps of:

providing said bus use allowance signal to said one electronic circuit for allowing occupation of both buses of said dual bus system if said bus occupation request signals for both buses of said dual bus system originate from said one selected electronic circuit and said bus use allowance signals, via said arbiter, from said bus controllers coincide with one another;

determined completion of data transfer by said bus controllers at said dual by system if data transfer is completed at both buses; and

when an intermittent fault occurs on one of said buses of said dual bus system and a retry operation is to be executed, a retry operation executing on the other of said buses.

5,345,567

SYSTEM AND METHOD FOR MODIFYING PROGRAM STATUS WORD SYSTEM MASK, SYSTEM ACCESS KEY, AND ADDRESS SPACE CODE WITH OVERLAP ENABLED

Clifford O. Hayden, Jamaica Plain, Mass.; David R. Snyder, Poughkeepsie, N.Y.; Susan B. Stillman, Poughkeepsie, N.Y., and Charles F. Webb, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 10, 1991, Ser. No. 712,285
Int. Cl.[5] G06F *9/312*
U.S. Cl. 395—375 **21 Claims**

1. In a computer system having at least one processor configured to overlap the processing of a plurality of instructions, including a program status word having a system mask, access key, and address space code, a subsystem in the at least one processor for modifying a program status word with overlap instruction processing enabled, the subsystem comprising:

decoder means or detecting a program status word modification instruction, wherein said program status word modification instruction is configured to modify an existing program status word;

execution means, coupled to said decoder mans, for executing said detected program status word modification instruction with overlap instruction processing enabled, said execution means comprising:

an execution unit configured to execute said program status word modification instruction to generate a new program status word,

queue means, coupled to said execution unit, for storing an unarchitected program status word, said unarchitected program status word being said new program status word generated by said execution unit,

register means, coupled to said execution unit and to said queue means, for storing an architected program status word, said architected program status word being said existing program status word in he subsystem,

first transfer means, coupled to said execution unit and to said queue means, for transferring said unarchitected program status word from said execution unit into said queue means,

second transfer means, coupled to said queue means and to said register means, for transferring said unarchitected program status word from said queue means to said register means in response to said execution unit completely executing said program status word modification instruction, and

discard means, for discarding said unarchitected program status word from said queue means in response to said execution unit incompletely executing said program status word modification instruction; and

completion detection means, coupled to said decoder means and said execution means, for determining when said execution of said program status word modification instruction is completed,

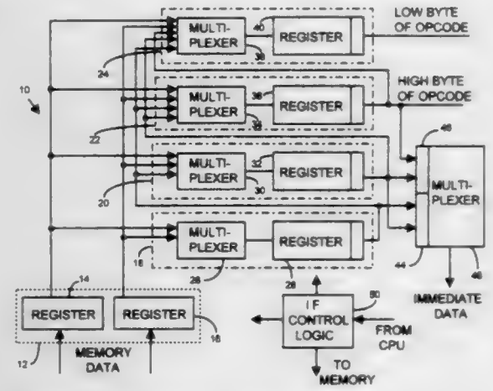
wherein said second transfer means transfers said unarchitected program status code from said queue means to said register means in response to said completion detection means determining said execution unit has completed said execution of said program status word modification instruction.

5,345,568

INSTRUCTION FETCH CIRCUIT WHICH ALLOWS FOR INDEPENDENT DECODING AND EXECUTION OF INSTRUCTIONS

Morris E. Jones, Jr., Saratoga, Calif., assignor to Chips and Technologies, Inc.

Filed Sep. 19, 1991, Ser. No. 762,629
Int. Cl.[5] G06F *9/06, 9/28*
U.S. Cl. 395—375 **1 Claim**



1. An instruction fetch circuit including:

first shift register means for storing a digital word having first and second bytes, said first shift register means providing first and second outputs of said first and second bytes respectively;

first multiplexer means for selecting and storing either of said first and second outputs of said first shift register means and providing a first intermediate output corresponding thereto the first multiplexer means including;

second multiplexer means for selecting and storing either of said first or second outputs of said first shift register means or said first intermediate output and providing a second intermediate output corresponding thereto;

third multiplexer means for selecting and storing either of said first or second outputs of said first register means or said first intermediate output or said second intermediate output and providing a third intermediate output corresponding thereto;

fourth multiplexer means for selecting and storing either of said first or second outputs of said first register means or said first intermediate output or said second intermediate output or said third intermediate output and providing a fourth intermediate output corresponding thereto, said first, second, third, fourth multiplexer means each include a multiplexer connected to a shift register;

output multiplexer means for selectively outputting either said first and second intermediate outputs or said second and third intermediate outputs, said output multiplexer means including a second and third shift register connected to a multiplexer; and

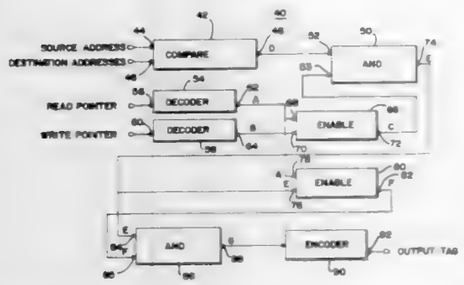
instruction fetch control means for selectively activating said first shift register means and said first, second, third, fourth and output multiplexer means, and for allowing the first and second bytes of a data word to be shifted separately and allowing for a loading of a first instruction with a fetch of a next instruction.

5,345,569

APPARATUS AND METHOD FOR RESOLVING DEPENDENCIES AMONG A PLURALITY OF INSTRUCTIONS WITHIN A STORAGE DEVICE

Thang M. Tran, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 20, 1991, Ser. No. 764,155
Int. Cl.[5] G06F *9/06*
U.S. Cl. 395—375 | **12 Claims**



1. An apparatus for resolving dependencies among a plurality of instructions within a storage device, said storage device having a plurality of memory cells and sequentially storing said plurality of instructions in selected memory cells of said plurality of memory cells, said storage device having a read pointer indicating a next-empty memory cell of said plurality of memory cells, and a write pointer indicating an earliest-stored instruction of said plurality of instructions; each of said plurality of instructions effecting operational combination of a plurality of operands to determine a result, each of said plurality of operands being identified by a source indicator, said result being identified by a destination indicator; the apparatus generating an output signal, said output signal identifying the most-recently stored instruction of said plurality of instructions having said destination indicator matching a respective said source indicator of a next-to-be-dispatched instruction, the apparatus comprising:

a compare-hit means for comparing said source indicators with said destination indicators; said compare-hit means generating a compare-hit signal upon each concurrence of said respective source indicator in said next-to-be-dispatched instruction with said destination indicator of an earlier-stored instruction of said plurality of instructions;

a first enable means responsive to said read pointer and to said write pointer for generating a first enable signal for a first packet of instructions of said plurality of instructions, said first packet of instructions being defined by said read pointer and said write pointer;

a first comparing means for generating a hit-enable signal for each concurrence of said compare-hit signal and said first enable signal;

a second enable means responsive to said read pointer and to said hit-enable signal for generating a second enable signal for a second packet of instructions of said plurality of instructions, said second packet of instructions being defined by said read pointer and said hit-enable signal; and

a second comparing means for generating said output signal for each concurrence of said second enable signal and said hit-enable signal.

5,345,570

MICROPROGRAM CONTROL CIRCUIT

Yoshifumi Azekawa, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1992, Ser. No. 862,010
Claims priority, application Japan, Apr. 2, 1991, 3-096449
Int. Cl.[5] G06F *9/30*
U.S. Cl. 395—375 | **6 Claims**

1. A microprogram control circuit for a microprocessor which implements the function of an instruction in accordance with microinstructions, where said control circuit comprises:

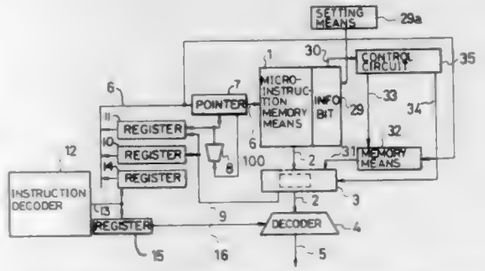
an instruction decoder for receiving an instruction and generating an entry micro address code when said instruction is decoded, said entry micro address determined by an op code in said instruction;

microinstruction memory means for storing a plurality of microinstructions at storage locations accessed by micro address codes,

information bit storage means for storing a unique valid or invalid information bit at storage locations accessed by each micro address code, each unique information bit for indicating whether a microinstruction stored at a storage location accessed by a micro address code is valid or invalid,

expansion microinstruction memory means for storing a plurality of expansion microinstruction at storage locations accessed by a portion of each micro address code,

a micro pointer, coupled to selectively receive said entry micro address code from said decoder or micro address



codes based on accessed microinstructions or expanded microinstructions, for providing said entry micro address code to said microinstruction memory and a portion of said entry micro address code to said expansion microinstruction memory when said instruction is decoded,

selection means, coupled to said information bit storage means, said microinstruction memory means, and said expansion microinstruction memory means, for providing an entry microinstruction from a storage location in said microinstruction memory means accessed by said entry micro address code if a valid information bit is accessed by said entry micro address code and for providing an entry expanded microinstruction from a storage location in said expanded microinstruction memory means accessed by said portion of said entry micro address code if an invalid information bit is accessed by said entry micro address code, wherein

the function of said microinstruction designated by said entry micro address code is changed to the function of said expansion microinstruction in accordance with said invalid information bit.

5,345,571

SYSTEM FOR CONTROLLING BRANCH HISTORY TABLE

Tsuyoshi Morisada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

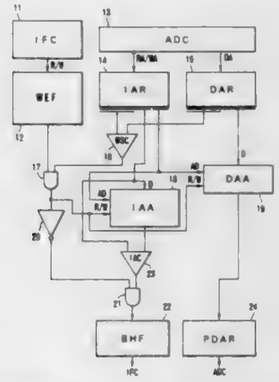
Continuation of Ser. No. 558,456, Jul. 27, 1990, abandoned. This application Aug. 5, 1993, Ser. No. 102,501
Claims priority, application Japan, Jul. 28, 1989, 1-194292
Int. Cl.[5] G06F *9/32*
U.S. Cl. 395—375 | **6 Claims**

1. A system for controlling a branch history table in a data processing apparatus which has a memory for storing a branch instruction address and a branch destination address, corresponding to the branch instruction in a one-to-one correspondence, as said branch history table and which employs a virtual storage scheme, comprising:

a first register for storing the branch instruction address, said branch instruction address including a virtual space number which will be stored in said branch history table;

a second register for storing the branch destination address corresponding to said branch instruction address stored in said first register, said branch destination address including a branch virtual space number, which will be stored in said branch history table;

comparing means, connected to said first and second registers, for comparing the virtual space number stored in said



first register and the branch virtual space number stored in said second register and outputting a compare signal to indicate a coincidence; and

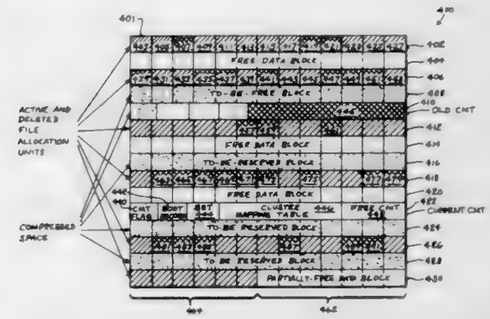
control means, receiving said compare signal, for enabling storage of said branch instruction address stored in said first register and said branch destination address stored in said second register in said branch history table in said memory when a coincidence is established as a result of comparison by said comparing means.

5,345,572

DISK EMULATION FOR A NON-VOLATILE SEMICONDUCTOR MEMORY UTILIZING CLUSTER MAPPING TABLE

Gerald S. Holzhammer, Aloha, Oreg., and Kurt B. Robinson, Newcastle, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 31, 1990, Ser. No. 635,988
Int. Cl.[5] G06F *12/00, 15/413*
U.S. Cl. 395—400 | **22 Claims**



1. A non-volatile semiconductor memory system that can emulate a disk storage device comprising at least one allocation unit, each allocation unit comprising at least one sector, said non-volatile semiconductor memory system comprising non-volatile semiconductor memory comprising a plurality of blocks, wherein said memory is erased in blocks, each of said blocks comprising a plurality of sectors, said system comprising:

(A) an active block for storing first data;

(B) a reserve block for storing second data, wherein the second data is a copy of the first data, wherein the copy is made during a clean-up operation prior to an erasure of the active block;

(C) a cluster mapping table for mapping a logical address of an allocation unit of a disk storage device to a physical address of a sector within the non-volatile semiconductor memory, said cluster mapping table comprising:

(1) at least one logical address field corresponding to a logical address of an allocation unit on a disk storage device emulated,

(2) a first corresponding physical address field of a sector within the non-volatile semiconductor memory,

(3) a next logical address field comprising a null value if the first corresponding physical address is clean such that valid data is located in the non-volatile semiconductor memory at that first physical address, said next logical address comprising a logical address value pointing to a logical address and corresponding physical address in the cluster mapping table if said first physical address is dirty such that invalid data is located at the first physical address, and

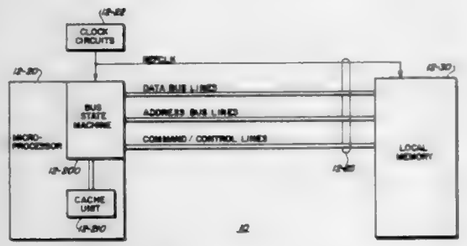
said cluster mapping table being updated during a clean-up operation to change the null value of the next logical address field to point to an available next logical address and to update the corresponding physical address to the next logical address to identify the physical address of the data copied into the reserve block in the non-volatile semiconductor memory.

5,345,573

HIGH SPEED BURST READ ADDRESS GENERATION WITH HIGH SPEED TRANSFER

Raymond D. Bowden, III, Tewksbury, and Chester M. Nibby, Jr., Beverly, both of Mass., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed Oct. 4, 1991, Ser. No. 771,702
Int. Cl.[5] G11C *11/408, 11/409;* **G06F** *12/00*
U.S. Cl. 395—400 | **10 Claims**



1. A system comprising:

a synchronous bus having address, command and data sections and operating according to a predetermined bus protocol;

a unit coupled to said bus for generating commands for reading and writing memory, one of said commands specifying a burst operation in which any one of a plurality of predetermined sequences of addresses having a different initial address is supplied to said bus by said unit during a plurality of successive memory read cycles of operation; and

a memory tightly coupled to said unit through said synchronous bus, said memory comprising:

a pair of dynamic random access memories (DRAMs) coupled to said bus, said DRAMs being organized for storing data words having even and odd addresses for enabling read out of a plurality of words during each memory read cycle of operation, each of said DRAMs having an identical width, the sum of the widths being no more than twice as wide as said data section of said

bus and each DRAM including first and second data output circuits for receiving said plurality of data words read out during a predetermined number of successive memory read cycles of operation, said first and second data output circuits including a plurality of transparent latch circuits and tristate buffer driver circuits respectively;

an address register for storing said initial address of each of said plurality of predetermined address sequences; and,

address sequence control circuit means coupled to said DRAMs, said address sequence control circuit means including:

first logic circuit means coupled to said address register, said first logic circuit means for selectively generating an output control signal for modifying the state of a first predetermined address bit signal of an initial address supplied to said DRAMs during a predetermined one of said number of said successive cycles of operation for generating all of said addresses for a first number of said plurality of predetermined address sequences; and,

second logic circuit means coupled to said address section of said bus and to said plurality of said transparent latch circuits and said tristate buffer driver circuits of said first and second output data circuits respectively, of each of said DRAMs, said second logic circuit means including means for storing an indication of the state of a second predetermined address bit signal of said initial address of said one of said predetermined address sequences and means for selectively enabling different ones of said first and second data output circuits of said each of said DRAMs as a function of said state of said indication of said state of said second address bit signal stored by said means for storing during said predetermined number of said successive cycles of operation for transferring data read out to said output data circuits during a plurality of bus cycles in an order corresponding to said addresses of a second number of said plurality of address sequences and which enables immediate transfer of pairs of said data words through said tristate buffer driver circuits.

5,345,574

MEMORY CARD HAVING CONTROLLER PROVIDING ADJUSTABLE REFRESH TO A PLURALITY OF DRAMS

Noriaki Sakurada; Fujikazu Sugimoto, and Ichiro Kobayashi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed May 15, 1991, Ser. No. 708,730

Claims priority, application Japan, May 15, 1990, 2-124753; May 16, 1990, 2-126143; May 23, 1990, 2-133223; May 29, 1990, 2-138974; Apr. 12, 1991, 3-80169

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—425 6 Claims

1. A memory card comprising:

means for generating a reference clock having a predetermined reference clock period;

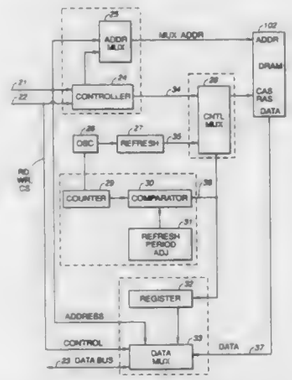
a dynamic random access memory;

refresh generation means for automatically initiating periodic refresh operations of said dynamic random access memory at a predetermined frequency independent of any externally applied refresh requests, the automatic initiation commencing each integer number "n" of the predetermined reference clock period;

means for generating dynamic random access memory row-address-strobe-before-column-address-strobe timing signals and multiplexed addresses in response to address and control signals indicating data transfer requests from an external central processing unit, wherein the means for generating dynamic random access memory row-address-strobe-before-column-address-strobe timing and multiplexed addresses comprises a first multiplexer for generating the multiplexed addresses;

means for selecting the integer number "n" such that the predetermined frequency of the dynamic random access memory refresh operations by said refresh generation means is adjustable,

wherein the refresh generation means comprises a counter for counting a number of pulses of the reference clock, a comparison means for comparing the counted number of



pulses to the integer number "n" received from the means for selecting, and a second multiplexer for switching said dynamic random access memory between row-address-strobe-before-column-address-strobe timing and column-address-strobe-before-row-address-strobe timing when the count of the pulses counted by said counter is equal to the number "n"; and

status indication means for indicating to the external central process unit when said refresh generation means is refreshing said dynamic random access memory.

5,345,575

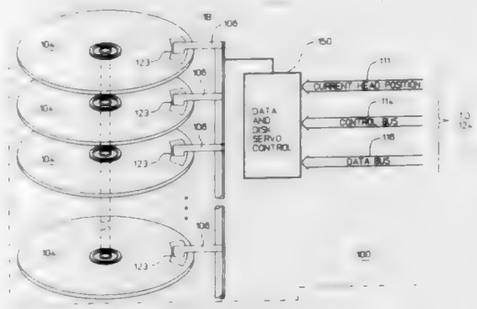
WRITE OPTIMIZED DISK STORAGE DEVICE

Robert M. English, and Alexander A. Stepanov, both of Palo Alto, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 26, 1991, Ser. No. 767,109

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—425 12 Claims



1. An apparatus for storing data comprising:

a storage medium characterized by column groupings of data storage locations, within any one of the column groupings all locations being accessible in similar amounts of time;

means for assigning a respective label grouping address to identify each of the column groupings;

means, responsive to a request to store a packet of data, for selecting one of the label grouping addressees; and

means for recording the data at a location within a column grouping identified by the selected address.

5,345,576

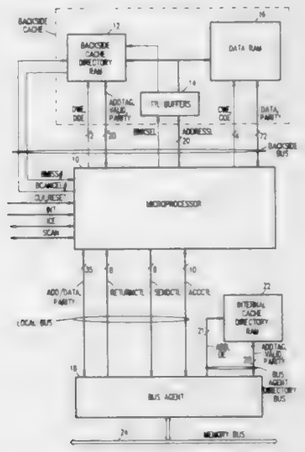
MICROPROCESSOR SIMULTANEOUSLY ISSUES AN ACCESS TO AN EXTERNAL CACHE OVER AN EXTERNAL CACHE BUS AND TO AN INTERNAL CACHE, CANCELS THE EXTERNAL CACHE ACCESS ON AN INTERNAL CACHE HIT, AND REISSUES THE ACCESS OVER A MAIN MEMORY BUS ON AN EXTERNAL CACHE MISS

Phillip G. Lee, Aloha; Eileen Riggs, Hillsboro; Gurbir Singh, Portland, and Randy Steck, Aloha, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 31, 1991, Ser. No. 816,603

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—425 3 Claims



1. A data processing system comprising:

a microprocessor fabricated on an integrated circuit chip;

a main memory bus;

a local bus connected to said microprocessor;

a backside cache external to said integrated circuit chip, said backside cache including a directory RAM having cache address tag bits stored therein;

a backside bus connected to said microprocessor and to said backside cache,

said backside bus including backside bus cache address tag signals and backside bus cache directory state bits for determining a state encoding of a set in said directory RAM;

a bus agent connected to said local bus and to said main memory bus;

said backside bus further including a Bmis# signal;

said directory RAM including means for comparing said cache address tag signals on said backside bus with said cache address tag bits stored in said directory RAM and for asserting said Bmis# signal upon a condition that said cache address tag bits stored in said directory RAM do not match said backside bus cache address tag signals; and,

means in said microprocessor responsive to said Bmis# signal for issuing an address to said bus agent over said local bus.

5,345,577

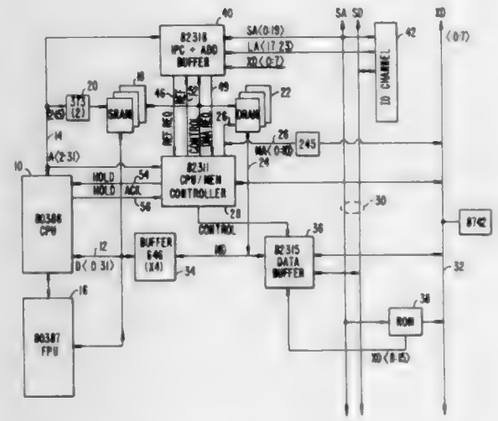
DRAM REFRESH CONTROLLER WITH IMPROVED BUS ARBITRATION SCHEME

Tzoyao Chan, Saratoga, and Milton Cheung, Fremont, both of Calif., assignors to Chips & Technologies, Inc., San Jose, Calif.

Division of Ser. No. 420,851, Oct. 13, 1989, abandoned. This application Nov. 24, 1992, Ser. No. 981,329

Int. Cl.[5] G06F *13/28*

U.S. Cl. 395—425 1 Claim



1. In a computer system having a central processing unit (CPU), a dynamic random access memory (DRAM), first control means for controlling a direct memory access (DMA) cycle, second control means for controlling a local DRAM access, third control means for controlling an advanced technology (AT) bus access, and a bus network interconnecting said CPU, DRAM, first, second and third control means, an apparatus for refreshing said DRAM comprising:

hidden refresh latch means, having an input coupled to said bus network, for storing a signal indicating a hidden refresh mode;

timing means for periodically generating a refresh request signal at an output;

arbitration means, having a first input coupled to said timing means output and a second input coupled to an output of said latch means, for providing a hidden refresh enable signal only in said hidden refresh mode and when there is no memory access by said AT, DRAM and DMA control means, said arbitration means further including:

counting means for arbitrating between a simultaneous DMA request and refresh request, said counting means providing a sequential count to enable one of said refresh and said DMA request when a corresponding count is reached; and

enabling means coupled to an output of said counting means for providing said refresh enable signal only when said enabling means receives a not busy signal from said DMA and said DRAM control means;

refresh counter means, coupled to said arbitration means and responsive to said hidden refresh enable signal, for providing a refresh end signal after a predetermined count sufficient for a refresh of said DRAM; and

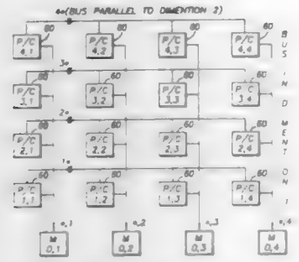
means, coupled to said AT, DRAM and DMA control means, for disabling said AT, DRAM and DMA control means in response to said hidden refresh enable signal, and for re-enabling said AT, DRAM and DMA control means in response to said refresh end signal.

5,345,578

COMPETITIVE SNOOPY CACHING FOR LARGE-SCALE MULTIPROCESSORS

Mark S. Manasse, San Mateo County, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 375,199, Jun. 30, 1989, abandoned.
This application Mar. 19, 1993, Ser. No. 34,178
Int. Cl.[5] G06F *15/16*
U.S. Cl. 395—425 **6 Claims**



1. A multiprocessor computer system including cache memories for processor access to data storage, comprising:

m-dimensional buses, each bus bearing an identifying index, each said identifying index being a bus m-tuple containing an ordered list of integers of which exactly one integer is zero;

a plurality of units bearing m index numbers for identification, each said m index numbers forming a unit m-tuple containing an ordered list of integers all of which integers are non-zero,

each said unit including a processor and associated cache memory for storing data, each said processor being able to assert read and write requests for data stored in any said cache memory in any said unit; and

a plurality of gateway means, each said gateway means;

(i) coupled to an intersection of said m-dimensional buses for facilitating retrieval of data stored in a said associated cache memory upon request of a said processor associated with a said gateway means and said cache in a said unit, said m-dimensional buses meeting at said intersection being those buses whose said bus m-tuple is identical to said unit m-tuple after replacing an integer in the said unit m-tuple with integer zero,

(ii) including queuing means for synchronizing requests from said processors,

(iii) including coupling means for enabling each said processor to be coupled simultaneously to each other said processor in said system providing that processors so coupled are associated with gateway means coupled to a same said m-dimensional bus,

(iv) including means for governing read and write requests from a said processor, said means for governing performing the following functions in cooperation with a said processor in a said unit asserting a request:

(a) if requested data is within said unit asserting a request, the request is deemed satisfied,

(b) if requested data is not within said unit asserting a request, said unit asserting a request is selectively coupled by said gateway means to all other said units bearing at least one index identical to an index of said requesting unit,

(c) if step (b) results in said unit asserting a request being coupled by a said gateway to a said unit whose associated said cache memory includes the requested data, the request is deemed satisfied,

(d) the requested data is added to said associated cache of said unit asserting a request upon the request satisfaction, and

(e) if step (b) does not result in said unit asserting a request initially being coupled by a said gateway means to a said unit whose associated said cache memory includes the requested data, at least one said unit selectively coupled in step (b) re-asserts said request upon behalf of said unit asserting said request initially whereupon steps (b), (c), (d) and (e) are repeated until the request so re-asserted is deemed satisfied, and

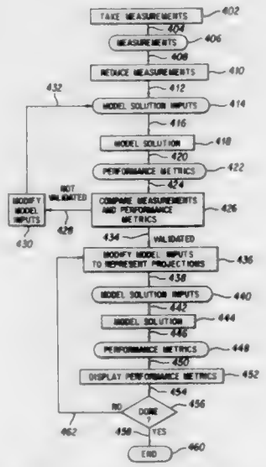
(f) the requested data is added to said associated caches of said units re-asserting the request in accordance with step (e) and to said associated cache of said unit asserting the request initially upon the request satisfaction.

5,345,579

APPROXIMATE MVA SOLUTION SYSTEM AND METHOD FOR USER CLASSES WITH A KNOWN THROUGHPUT RATE

Gary Hynes, Sacramento, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 1, 1990, Ser. No. 591,980
Int. Cl.[5] G06F *15/31*
U.S. Cl. 395—500 **12 Claims**



1. A computer-based, analytic modeling system for predicting the manner in which a computer system will operate under future conditions and loads, said computer-based modeling system comprising:

(1) first means for entering information, wherein said information represents an analytic model of the computer system, and wherein said model comprises fixed class workloads and non-fixed class workloads;

(2) second means for solving said model to generate performance metrics, said performance metrics representing indicia for predicting the manner in which the computer system will operate under future conditions and loads; and

(3) third means for displaying said information and said performance metrics; said second means comprising

fourth means for setting first queue lengths to initial values representing estimates of average queue lengths at service stations as seen by outside observers, the service stations representing elements in the computer system,

fifth means for initializing populations of said fixed class workloads to predetermined values,

sixth means for setting second queue lengths to estimates of queue lengths at the service stations as seen by arriving customers,

seventh means for calculating response times for said fixed and non-fixed class workloads Using said second queue lengths,

eighth means for summing said response times for said fixed and non-fixed class workloads,

ninth means for calculating new population values for said fixed class workloads using said response times sums for said fixed class workloads,

tenth means for calculating throughputs for said non-fixed class workloads using said response times sums for said non-fixed class workloads,

eleventh means for calculating new values for said first queue lengths using said response times sums for said fixed and non-fixed class workloads, and

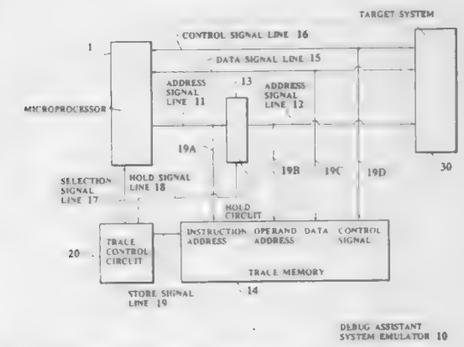
twelfth means for testing for convergence of said first queue lengths by comparing said new first queue length values with said initial first queue length values, said performance metrics being accurate measures of how the computer system will operate under future conditions and loads once said convergence occurs.

5,345,580

MICROPROCESSOR DEVICE AND EMULATOR DEVICE THEREOF

Kiichiro Tamaru, Tokyo, and Yoko Ookita, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 29, 1991, Ser. No. 798,720
Claims priority, application Japan, Nov. 29, 1990, 2-325739; Nov. 27, 1991, 3-311219
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—500 **14 Claims**



12. An emulator device comprising:

a microprocessor device including,

an address generation section for generating an address for memory access operation,

the address generator section generating an operand address,

an execution program count (PC) register for indicating an execution PC to be executed in an arithmetic device,

a multiplexer for multiplexing either an output signal transferred from the address generation section or an output signal transferred from the execution PC register according to a selection signal provided from a source external to the microprocessor, and

an address bus for outputting the output signal from the address generation section and the output signal from the execution PC register to outside of the microprocessor based on control by the multiplexer,

wherein the microprocessor outputs the output signal transferred from the address generation section when the selection signal in a disable state; and

outputs alternately the output signal from the address generation section and the output signal from the execution PC register by multiplexing them to the address bus when the selection signal is in an enable state;

hold means for temporarily storing the output signal transferred through the address bus in the microprocessor device; and

trace information store means for storing the output signal transferred from the address generation section and the execution PC register through the address bus as trace information during a real-time trace operation,

wherein the operation of the hold means is controlled by a hold signal indicating a timing to store the hold information, and the operation of the trace store means is controlled by a store signal indicating a timing to store the trace information,

the hold means holds the output signal and outputs the output signal when the selection signal is in the enable state and the hold signal changes to the disable state, the hold means withholds the output signal when the hold signal changes to the enable state, and

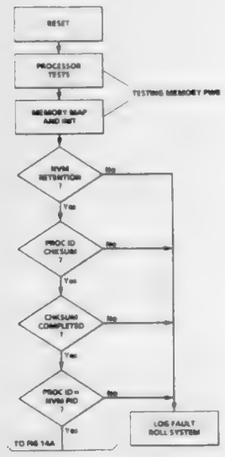
the trace information store means stores the execution instruction address as the output signal transferred from the microprocessor device through the address bus when the selection signal and the store signal are in the disable state.

5,345,581

PROCESS FOR REPLACING STORAGE MEDIA IN ELECTRONIC PRINTING SYSTEMS

Christopher Comparetta, Pittsford; Ronald A. Ippolito, Rochester; Kitty Sathi, Pittsford; Jack T. Latone, Rochester; Colleen R. Enzien, Penfield, and Mark A. Smith, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1991, Ser. No. 678,925
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **5 Claims**



1. A process for ensuring memory integrity in an electronic printing system in which said memory comprises N disks with files stored on each of said N disks, the N disks being arranged in a preset disk order in the event one or more of said disks is unavailable or replaced, each disk having a bad page table identifying defective disk pages and an allocation table identifying the current location of said files on each of said N disks, comprising the steps of:

a) providing a permanent processor identifier for said system;

b) storing copies of said processor identifier on each of said disks to identify the disks that belong with said system;

c) storing disk location data on each of said disks identifying the physical location of each disk in said memory;

d) in response to a command to boot said system, determining whether any one of said disks is defective or replaced, said determining step including:

1) comparing the system processor identifier stored on each of said disks with said system processor identifier, and

2) comparing the physical location of said disks in said memory with said disk location data stored on said disks;

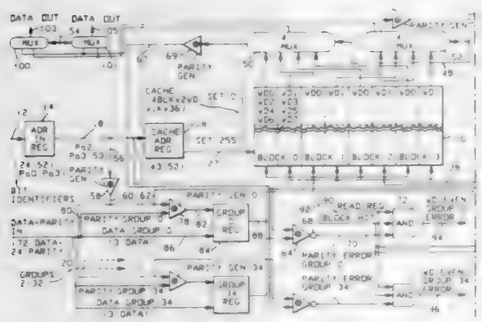
e) where the system processor identifier or the disk location for one of said disks does not match with said system processor identifier or said disk location data:
1) building a list or said files stored on said disks,
2) sorting said files in said list in accordance with the location of said files on said disks,
3) building a temporary file allocation table with said list,
4) allocating new locations to said files on said disks in said temporary allocation table,
5) marking one of said disks as a source disk,
6) moving said files on said source disk to the new locations allocated for said files in said temporary allocation table on said other disks,
7) updating the allocation tables respectively associated with said other disks from said temporary allocation table,
8) copying files from said other disk to said source disk,
9) updating the allocation table associated with said source disk, and
10) erasing said temporary allocation table.

5,345,582

FAILURE DETECTION FOR INSTRUCTION PROCESSOR ASSOCIATIVE CACHE MEMORIES

Kenichi Tsuchiya, New Brighton, Minn., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 20, 1991, Ser. No. 811,123
Int. Cl.[5] G06F *11/10*
U.S. Cl. 395—575 **2 Claims**



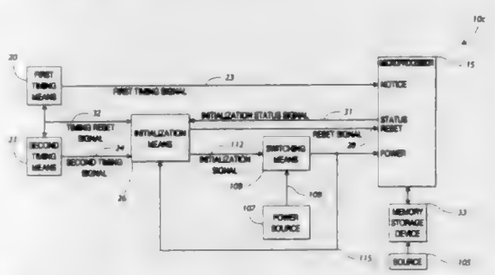
2. A failure detection system for detecting failures in a cache memory which stores multiple bit input data words in location in a plurality of blocks that are specified by memory address bits, and which is operatively associated with a tag memory which stores a portion of said memory address bits of said data words that are currently retained in said cache memory, comprising:
control means coupled to said tag memory and to said cache memory for controlling the reading of bits from, and the writing of bits into, said cache memory in accordance with bits stored in said tag memory,
(a) first means coupled to said cache memory for generating upon writing into said cache memory at least one address parity bit selected from at least one of the block address bit groups and one of the tag address bit groups that are associated with each address that is selected,
(b) second means coupled to said control means for generating at least one data parity bit from said multiple bit input data words for each group of data bits that are stored in each of said blocks,
(c) third means for combining said parity bits from each of group of data bits with the parity bit that is derived from the address bits that are associated with the same group of data bits,
(d) fourth means for storing said combined parity bits in the blocks that are associated with the groups of data word bits from which said parity bits were derived,
(e) fifth means for storing said data bits along with the associated combined parity bits,
(f) sixth means for determining if said tag address bit represents a block stored in said cache memory,
(g) seventh means for generating, upon reading from said cache memory, said at least one address parity bit for each set of cache and tag address bits for each selected address to provide corresponding address parity bits,
(h) eighth means for comparing each read-out group of data bits and associated stored combined parity bits with the associated one of said address parity bits that were generated upon read out of the associated store group of data bits and the corresponding combined parity bit from said cache memory, and
(i) ninth means for receiving said corresponding address parity bits and said corresponding combined parity bit and for generating an indication of a parity error when one occurs in any of said groups of data bits only if said tag address bits are determined by said sixth means to represent a block stored in said cache memory.

5,345,583

METHOD AND APPARATUS FOR MOMENTARILY INTERRUPTING POWER TO A MICROPROCESSOR TO CLEAR A FAULT STATE

Glenn A. Davis, Lilburn, Ga., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 882,560, May 13, 1992. This application Apr. 5, 1993, Ser. No. 43,440
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **116 Claims**



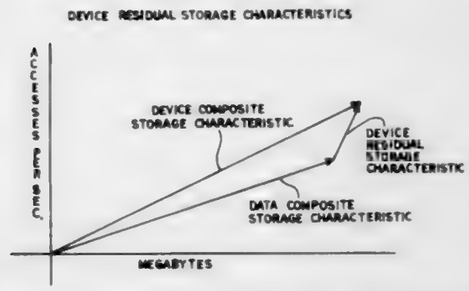
112. An apparatus for initializing a data processing system, regardless of the operating state of said data processing system, comprising:
notice means for applying a warning signal upon expiration of a first time interval to said data processing system to provide notice of initialization to said data processing system;
means for generating an initialization status signal subsequent to said warning signal to indicate the state of initialization readiness of said data processing system;
switching means for momentarily interrupting electrical power by a power source to said data processing system; and
interrupt means for applying an interrupt signal in response to said initialization status signal or upon expiration of a second time interval to cause said switching means to momentarily interrupt said electrical power and thereby reset said data processing system regardless of the operating state of said data processing system,
wherein said notice means and said interrupt means are reset when said switching means operates to restore said electrical power to said data processing system.

5,345,584

SYSTEM FOR MANAGING DATA STORAGE BASED ON VECTOR-SUMMED SIZE-FREQUENCY VECTORS FOR DATA SETS, DEVICES, AND RESIDUAL STORAGE ON DEVICES

Reed A. Hill, San Jose, Calif., assignor to Laclead Enterprises, Ogden, Utah

Filed Mar. 11, 1991, Ser. No. 667,222
Int. Cl.[5] G06F *15/40, 12/02, 13/00*
U.S. Cl. 395—600 **3 Claims**



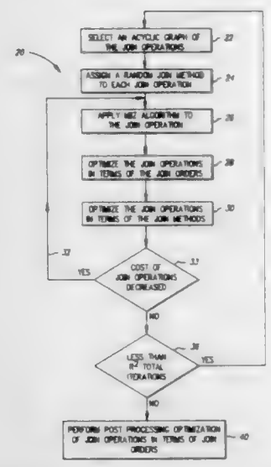
1. A method for managing the allocation of data sets among storage devices of a computing apparatus in such a manner that system degradation will be minimized and the storage devices will be utilized with maximum efficiency by placement of each of the data sets on a storage device whose uncommitted storage volume and access capability most nearly meets the requirement of that particular data set and by further placing data sets in such a way that access activity to the data sets will be distributed substantially uniformly across all the storage devices, said method comprising
calculating a data storage factor of each data set, wherein the data storage factor is the vector sum, in a cartesian coordinate system, of the number of accesses per unit time to the particular data set and the volume of data in that data set;
monitoring and recording data set access activity as a function of time;
calculating a machine storage factor of each storage device, wherein the machine storage factor is the vector sum, in a cartesian coordinate system, of the total storage capacity of the particular storage device and the number of accesses the particular device can sustain per second;
calculating a residual storage factor of each storage device, wherein residual storage factor is indicative of the available or uncommitted storage capacity of the particular device, with the residual storage factor being the vector difference, in a cartesian coordinate system, of the machine
storage factor of the particular device and the vector sum, in a cartesian coordinate system, of the data storage factors of the data sets stored on that particular storage device;
allocating the data set to a storage device that has sufficient available space and whose residual storage factor most nearly matches and exceeds the data storage factor of the data set being allocated;
dividing each operational day of said computing apparatus into a predetermined number of time periods;
determining the time period during the previous operational day that the storage devices as a group were least utilized;
using the time period determined in the preceding step to move data sets among the storage devices so as to balance the residual storage factors of all the storage devices as a group for each of the time periods, starting with the time period of maximum use of the storage devices and proceeding progressively to the time period of minimum use of the storage devices.

5,345,585

METHOD FOR OPTIMIZING PROCESSING OF JOIN QUERIES BY DETERMINING OPTIMAL PROCESSING ORDER AND ASSIGNING OPTIMAL JOIN METHODS TO EACH OF THE JOIN OPERATIONS

Balakrishna R. Iyer, Mt. View, and Arun N. Swami, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 2, 1991, Ser. No. 801,306
Int. Cl.[5] G06F *15/40, 15/419*
U.S. Cl. 395—600 **15 Claims**



1. In a relational database computer system including a data processor, a stored database and a plurality of database relations, wherein one or more of said relations are retrieved by the processor by means of query commands performing a plurality of join operations on said relations, a method for optimizing processing of said join operations, comprising the steps of:
(a) assigning a join method at random to each of said join operations to produce a current join method assignment scheme;
(b) identifying an optimal join order for said join operations given said current join method assignment scheme;
(c) assigning a current join order scheme in response to said identified optimal join order;
(d) identifying an optimal join method to be used for each said join operation given said current join order scheme;
(e) assigning said current join method assignment scheme in response to said identified optimal join methods; and
(f) repeating steps (b) through (e) until there is no change produced to said current join order scheme and said current join method assignment scheme.

5,345,586

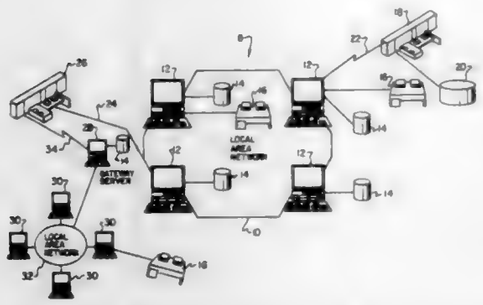
METHOD AND SYSTEM FOR MANIPULATION OF DISTRIBUTED HETEROGENEOUS DATA IN A DATA PROCESSING SYSTEM

Annette M. Hamala; William A. Maron, both of League City, Tex., and Rhoda A. Reyburn, Allison Park, Pa., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 25, 1992, Ser. No. 934,975
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—650 **10 Claims**

1. A method for enhanced manipulation of distributed heterogeneous data in a data processing system having a plurality of diverse data sources therein, said method comprising the steps of:
establishing a global data directory which includes:

an attribute table listing desired attributes for a plurality of data entities within said data processing system;
a domain table listing domain information for each of said desired attributes for said plurality of data entities within said data processing system;
a route table listing each of said plurality of diverse data sources within said data processing system; and
a cross-reference table listing a cross-reference between logical names within a logical data model and said plurality of diverse data sources;



accessing said distributed heterogeneous data within said data processing system utilizing said cross-reference table and said route table; and
converting said accessed distributed heterogeneous data into a consistent format having desired attributes utilizing said attribute table and said domain table, wherein a consistent interface into said distributed heterogeneous data is provided.

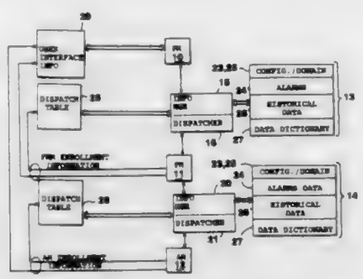
5,345,587

EXTENSIBLE ENTITY MANAGEMENT SYSTEM INCLUDING A DISPATCHING KERNEL AND MODULES WHICH INDEPENDENTLY INTERPRET AND EXECUTE COMMANDS

Leonard G. Fehskens, Westboro; Colin Strutt, Westford; Steven K. Wong, Chelmsford; Jill F. Callander, Hudson; Peter H. Burgess, Salisbury, all of Mass.; Kathy J. Nelson, Nashua, N.H.; Matthew J. Guertin, Westford, Mass.; Mark W. Sylor, Nashua, N.H.; Kenneth W. Chapman, Nashua, N.H.; Robert C. Schuchard, Ashburnham, Mass.; Stanley I. Goldfarb, Hudson, Mass.; Dennis O. Rogers, Leominster, Mass.; Linsey B. O'Brien, Wellesley, Mass.; Philip J. Trasatti, Brookline, N.H.; Benjamin M. England, Haverhill, Mass.; James L. Lemmon, Jr., Leominster, Mass.; Richard L. Rosenbaum, Pepperell, Mass.; Ruth E. J. Kohls, Acton, Mass.; David L. Aronson, Boston, Mass.; Robert R. N. Ross, Mansfield, Mass.; Danny L. Smith, Haverhill, Mass.; William C. Adams, Jr., Topsfield, Mass.; G. Paul Koning, Brookline, N.H.; Sheryl F. Namoglu, Mount Vernon, N.H.; Mark J. Seger, Harvard, Mass.; Timothy M. Dixon, Woodcote Reading, United Kingdom, and Jeffrey R. Harrow, Amherst, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 244,114, Sep. 13, 1988, abandoned, Ser. No. 244,495, Sep. 13, 1988, abandoned, Ser. No. 244,503, Sep. 13, 1988, abandoned, Ser. No. 244,506, Sep. 13, 1988, abandoned, Ser. No. 244,691, Sep. 13, 1988, abandoned, Ser. No. 244,730, Sep. 13, 1988, abandoned, Ser. No. 244,742, Sep. 13, 1988, abandoned, Ser. No. 244,834, Sep. 13, 1988, abandoned, Ser. No. 244,845, Sep. 13, 1988, abandoned, Ser. No. 244,850, Sep. 13, 1988, abandoned, Ser. No. 244,851, Sep. 13, 1988, abandoned, and Ser. No. 244,919, Sep. 13, 1988, abandoned. This application Sep. 7, 1989, Ser. No. 402,391
Int. Cl.[5] G06F *9/00, 15/40*
U.S. Cl. 395—650 **16 Claims**

1. A system for controlling and carrying out management functions over an assemblage of entities, wherein said entities interface within said assemblage for control of primary information handling functions and said entities further interface with said system to permit the carrying out of said management functions, comprising:
stored management modules adapted to carry out said management functions by independently interpreting and executing selected management-related commands,
a kernel comprising a table of dispatch pointers for directing said commands to the respective modules in which they are to be interpreted and executed,
an enroller for enrolling new management modules into said system by adding further pointers to said table, and



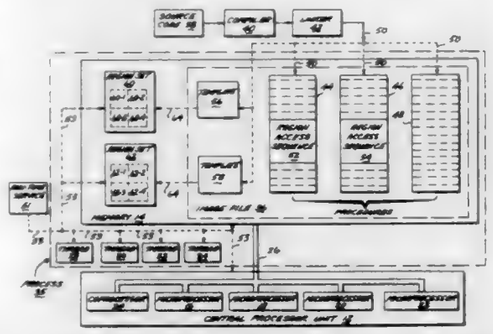
stored management specification information listing, in compliance with a universal specification language having a common syntax for representing the attributes and operations of any arbitrary manageable entity, the attributes which relate to the entities' functioning and control said the management functions of said entities, wherein
said management specification information comprises polling information in predetermined fields of said common syntax, said polling information including fields for specifying a default rate and a maximum polling rate at which the values of attributes should be requested from said entities.

5,345,588

THREAD PRIVATE MEMORY STORAGE OF MULTI-THREAD DIGITAL DATA PROCESSORS USING ACCESS DESCRIPTORS FOR UNIQUELY IDENTIFYING COPIES OF DATA CREATED ON AN AS-NEEDED BASIS

Stephen R. Greenwood, Merrimack, N.H.; R. Kim Peterson, Seattle, and Benn L. Schreiber, Issaquah, both of Wash., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 404,788, Sep. 8, 1989, abandoned. This application Sep. 17, 1992, Ser. No. 947,881
Int. Cl.[5] G06F *12/06, 9/30*
U.S. Cl. 395—650 **42 Claims**



1. A thread private storage method performed in a digital data processing system of the type wherein one or more processing units and an addressable system memory are interconnected and are controlled by one or more sets of program instructions for compiling, linking, loading and executing a multi-threading process having multiple threads of execution which invoke and execute procedures that require one or more sets of initialization data, said thread private storage method comprising:
controlling the processing units and addressable system memory with the one or more sets of program instructions during the operation of said system for compiling, linking and loading said multi-threading process to perform the following steps for each thread of said multiple threads of execution:
(a) establishing and storing in system memory a template for each said set of initialization data, each said template being associated with a different set of initialization data, each said template including data identical to its associated set of initialization data;
(b) establishing for each said template an associated descriptor for use in subsequent creation of a copy of said initialization data that is private to each said thread that executes one or more procedures that require the initialization data associated with said template, said descriptor uniquely identifying the template with which it is associated and including information that allows the processing units to locate said template uniquely identified by said descriptor in said system memory at the time of said subsequent creation of said copy of said initialization data;
(c) establishing a sequence of coded instructions for locating said template uniquely identified by said descriptor;
(d) including said sequence of coded instructions in said one or more set of program instructions for controlling said processing units and said addressable system memory; and,
controlling the processing units and system memory with the one or more sets of program instructions during execution of said procedure executed by each said thread to perform the steps of:
(a) creating said copy of said initialization data that is private to each said thread by copying into system memory a copy of the set of initialization data required by the procedure, said step of creating said copy being performed at the first point of execution at which said initialization data is required for further execution of said procedure, said copying into system memory being effected by accessing system memory by means of said descriptor that uniquely identifies the template associated with said required set of initialization data to locate the template associated with said required set of initialization data and by copying said initialization data of said template to an available previously unspecified system memory address.

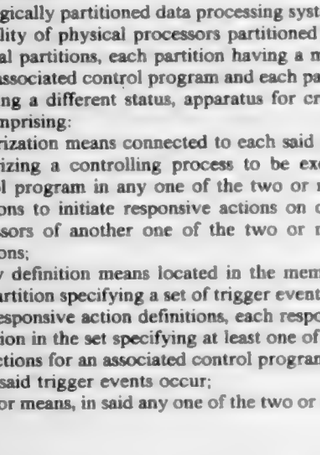
5,345,589

CENTRALIZED MONITORING OF ACTIVITY IN A DISTRIBUTED PROCESSING SYSTEM

Rodman King, Fremont; Carl Strickland, Saratoga; Gerald A. Smith, Belmont; Elaine Hamada, San Jose, and Charles H. Jolissaint, Sunnyvale, all of Calif., assignors to Rolm Company, Santa Clara, Calif.

Continuation of Ser. No. 514,986, Apr. 26, 1990, abandoned. This application Feb. 2, 1993, Ser. No. 12,976
Int. Cl.[5] G06F *13/00, 11/30*
U.S. Cl. 395—650 **12 Claims**

1. Method for centralized monitoring and responding to activity in a distributed processing system by a monitor wherein users, referred to as initiator user, interact with portions of the distributed processing system which are referred to as initiator processors, in order to interact with other users, referred to as target users and wherein the target users interact with portions of the distributed processing system which are referred to as target processors, the method comprising the steps of:
one of the target processors generating information which can be used to determine relative time sequences of events within predetermined classes of events, which information comprises information which identifies the one of the target processors;
the one of the target processors transmitting the information to one of the initiator processors;
the one of the initiator processors appending the information to an activity status message pertaining to one of the predetermined classes of events at the one of the initiator processors;



the one of the initiator processors transmitting the information with the activity status message to the monitor;
the monitor receiving and storing activity status messages and information from initiator processors; and
the monitor analyzing the activity messages and information to determine relative time sequences of events within predetermined classes of events and responding to the activity messages in sequences in accordance with the relative time sequences.

5,345,590

METHOD AND APPARATUS FOR CROSS-PARTITION CONTROL IN A PARTITIONED PROCESS ENVIRONMENT

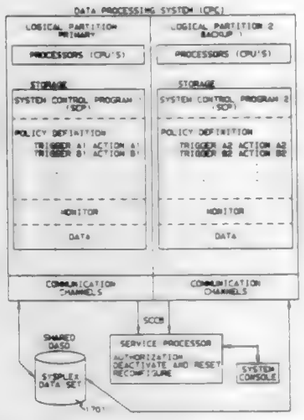
Donald F. Ault, Hyde Park; David B. Petersen, Wappingers Falls, both of N.Y.; Ian G. Redding, Winchester, United Kingdom, and Stephen J. Schmandt, Tokyo, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 576,344, Aug. 31, 1990, abandoned. This application Sep. 1, 1993, Ser. No. 115,913
Int. Cl.[5] G06F *9/00, 15/16*
U.S. Cl. 395—650 **8 Claims**

1. In a logically partitioned data processing system comprising a plurality of physical processors partitioned into two or more logical partitions, each partition having a memory containing an associated control program and each partition capable of having a different status, apparatus for cross-partition control comprising:
a) authorization means connected to each said partition for authorizing a controlling process to be executed by a control program in any one of the two or more logical partitions to initiate responsive actions on one or more processors of another one of the two or more logical partitions;
b) policy definition means located in the memory of each said partition specifying a set of trigger events and associated responsive action definitions, each responsive action definition in the set specifying at least one of said responsive actions for an associated control program to perform when said trigger events occur;
c) monitor means, in said any one of the two or more logical

partitions, for monitoring the status of others of the two or more logical partitions to detect the trigger event in one of said others of the two or more logical partitions;

d) service processor means connected to said partitions for initiating said responsive action to reconfigure said memory and processors of one of said another one of said two or more logical partitions, and to cause said control program in said any one of the two or more logical partitions to execute said controlling process to direct actions in the reconfigured memory and processors; and



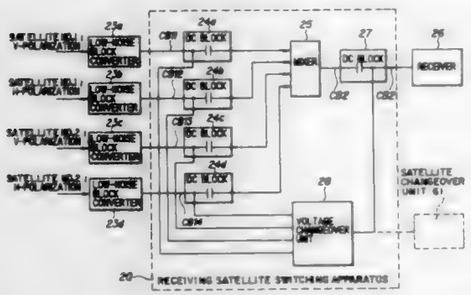
e) communication means located in each said partition for communicating a request from said controlling process in said any one of the two or more logical partitions to said service processor means to initiate said responsive action when the monitor means has so detected said trigger event, and the authorization means has so authorized execution of said controlling process to initiate a responsive action specified by said trigger even in said policy definition means.

5,345,591

RECEIVING SATELLITE SWITCHING APPARATUS

Takayoshi Tsurumaki, and Fumiaki Ogata, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 30, 1992, Ser. No. 906,682
Claims priority, application Japan, Jul. 10, 1991, 3-169764
Int. Cl.[5] H04B *1/06*
U.S. Cl. 455—3.2 **8 Claims**



1. A receiving satellite switching apparatus for a satellite communication receiving station in which polarized signals sent from a satellite are received by a multibeam antenna and one of the polarized signals is led to a receiver, said apparatus comprising:

low-noise block converters for converting polarized signals, received from the satellite by the multibeam antenna, into respective prescribed intermediate-frequency signals;

connection means, operatively connected to each output terminal of said low-noise block converters via first coaxial cables and an input terminal of said receiver via a second coaxial cable, for connecting the intermediate-frequency signal from said low-noise block converters to said receiver;

a voltage changeover unit for selecting one of the polarized signals, and applying a DC feed voltage which is outputted from said receiver via the second coaxial cable to one of the first coaxial cables connected to whichever one of said low-noise block converters corresponds to the polarized signal selected;

first DC voltage blocking units, provided between said low-noise block converters and said connection means, for blocking DC feed voltages applied to said connection means via the first coaxial cables; and

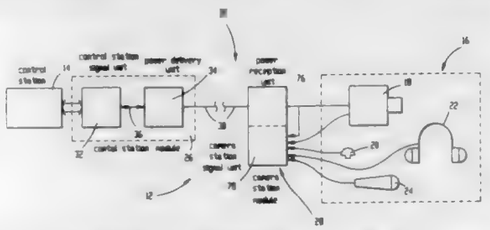
a second DC voltage blocking unit, provided between said connection means and said receiver, for blocking DC feed voltages applied to said connection means via the second coaxial cable.

5,345,592

SIGNAL TRANSFER AND POWER DELIVERY SYSTEM FOR A TELEVISION CAMERA STATION

Charles D. Woodmas, Lyndon, Kans., assignor to Concept W Systems, Inc., Emporia, Kans.

Filed Apr. 8, 1992, Ser. No. 866,664
Int. Cl.[5] H04B *3/54*
U.S. Cl. 455—3.3 **31 Claims**



1. An apparatus for transferring video, audio or control signals between a control station and a remote station and for providing operating power to the remote station over a pair of conductors, said apparatus comprising:

control station signal means including means for coupling with the control station and with the conductors for transferring signals therebetween;

remote station means including means for coupling with the remote station and with the conductors for transferring signals therebetween; and

power delivery means, including means for coupling with the conductors, for delivering power from a source thereof to the conductors,

said remote station means including power reception means for receiving said power from the conductors and for delivering said power to the remote station, and for sensing the status of said power at said remote station means, for producing a power status signal representative of said status, and for transferring said status signal to the conductors,

said power delivery means including means for receiving said status signal and for controlling the delivery of said power in accordance therewith;

said power status signal being representative of a D.C. voltage received at said remote station means as delivered by said power delivery means.

5,345,593

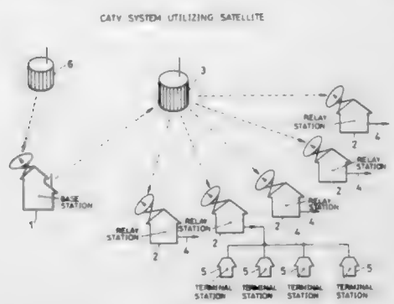
Patent Not Issued For This Number

5,345,594

INFORMATION TRANSMISSION SYSTEM RETRANSMITTING INFORMATION SIGNALS ACCORDING TO RETRANSMISSION SCHEDULE

Youichirou Tsuda, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 3, 1991, Ser. No. 801,924
Claims priority, application Japan, Jan. 31, 1991, 3-011084
Int. Cl.[5] H04B *7/14*
U.S. Cl. 455—18 **20 Claims**



1. An information transmission system comprising:

a base station for supplying an information signal carrying video information;

at least a relay station for receiving and retransmitting said information signal to a plurality of terminal stations; said base station having means for producing said information signal, means for producing schedule data for retransmission, means for combining said information signal and said schedule data for retransmission into a composite signal, and a transmitter for transmitting said composite signal, and said relay station having a receiver for receiving the composite signal, extracting means for extracting said schedule data for retransmission from said composite signal, a memory for storing said schedule data for retransmission, recording medium playing means for recording said information signal contained in said composite signal into a rewritable recording medium and retrieving said information signal from said recording medium according to said schedule data for retransmission for outputting a reproduced information signal, and retransmitting means for retransmitting said reproduced information signal to said terminal stations, wherein video pickup information for designating at least one video frame, transmitted in a compressed form, to be picked up at each relay station is transmitted from said base station and stored in said memory at each relay station, and said receiver of each relay station is operated to pickup said at least one video frame transmitted from the base station for a time period defined by said video pickup information retrieved from said memory and store a picked-up video frame in said rewritable recording medium, and subsequently said at least one video frame which has been stored in said rewritable recording medium is retrieved and retransmitted as expanded reproduced information signal in accordance with the retransmission schedule data stored in said memory.

5,345,595

APPARATUS AND METHOD FOR DETECTING FRAUDULENT TELECOMMUNICATION ACTIVITY

Eric A. Johnson, Longmont; Michael D. Liss, Nederland, both of Colo., and Flemming B. Jensen, Sandy, Utah, assignors to Coral Systems, Inc., Longmont, Colo.

Filed Nov. 12, 1992, Ser. No. 975,512
Int. Cl.[5] H04Q *7/00*
U.S. Cl. 455—33.1 **14 Claims**

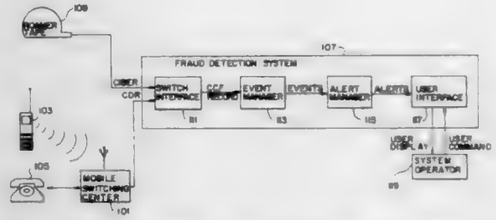
1. An apparatus for detecting potentially fraudulent telecommunication activity, comprising:

a digital computer;

interface means, operating within said digital computer, for receiving a call information record for each call involving a particular subscriber;

pattern means, operating within said digital computer, for using a plurality of said call information record for said particular subscriber to identify a subscriber-specific pattern of historical call usage and relative to which deviations from said historical call usage can be detected that may be indicative of fraudulent call activity;

comparison means, operating within said digital computer, for comparing the particular subscriber's current call usage with information relating to said subscriber-specific pattern of historical call usage to identify potentially fraudulent call activity; and



output means, operating within said digital computer, for outputting an indication of a potentially fraudulent call activity based upon a result of the comparison performed by said comparison means;

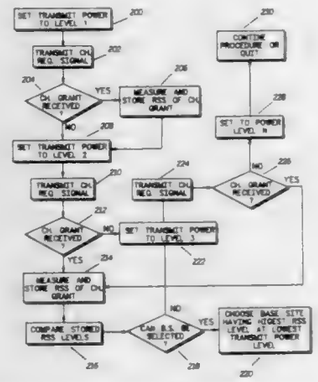
wherein said information relating to said subscriber-specific pattern of historical call usage includes a subscriber-specific five-day moving average call velocity threshold and said comparison means compares the particular subscriber's current five day moving average call velocity usage with said subscriber-specific five-day moving average call velocity threshold.

5,345,596

METHOD AND APPARATUS FOR ESTABLISHING A COMMUNICATION LINK

Michael J. Buchenhorner, Coral Gables; Mohammad M. Ghomeshi, Ft. Lauderdale, and Steven C. Shapiro, Lake Worth, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 720,545, Jun. 25, 1991, abandoned.
This application May 26, 1993, Ser. No. 68,274
Int. Cl.[5] H04Q *7/02;* **H04B** *7/00, 1/04*
U.S. Cl. 455—33.1 **5 Claims**



1. In a communication system having a plurality of base sites coupled to a telephone network for independently allocating a communication channel for use by a communication unit in

response to a channel request signal transmitted from the communication unit in an attempt to gain allocation of the communication channel to communicate via the telephone network, and wherein a particular base site is an optimum base site in the sense that it is closer to the communication unit transmitting the channel request signal, a method facilitating the allocation of a communication channel from the particular base site comprising the communication unit steps of:

(a) transmitting a first channel request signal at a first power level;

(b) receiving a first channel grant signal from a first base site of the plurality of base sites having a first signal strength level;

(c) measuring and storing a first value representing the first signal strength level;

(d) transmitting a second channel request signal at a second power level that is greater than the first power level;

(e) receiving a second channel grant signal having a second signal strength level from a second base site of the plurality of base sites;

(f) measuring and storing a second value representing the second signal strength level;

(g) comparing the first value representing the first signal strength level with the second value representing the second signal strength level to determine which of the channel grant signals has a greater signal strength; and

(h) selecting the particular base site based on the stored values representing the signal strength levels of the first and second base sites and on the first and second power levels.

5,345,597

CALL SET-UP IN A RADIO COMMUNICATION SYSTEM WITH DYNAMIC CHANNEL ALLOCATION

Leo Strawczynski; Howard M. Sandler, both of Ottawa; Gregory L. Plett, North Gower, and David G. Steer, Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 658,623, Feb. 21, 1991, abandoned. This application Mar. 30, 1993, Ser. No. 40,395

Claims priority, application Canada, Oct. 17, 1990, 2027826

The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.

Int. Cl.[5] H04Q *7/00;* **H04B** *7/26*

U.S. Cl. 455—34.1 **8 Claims**



1. In a radio communication system having a number of base stations, each communicating with a plurality of subscriber terminals over separate traffic channels and each base station having access to each of said plurality of traffic channels, a method of selecting a traffic channel for completing call set-up of incoming and outgoing calls between a base station, a subscriber terminal and the Public Switched Telephone Network (PSTN), comprising the steps of:

receiving, at said base station, an incoming call attempt from a subscriber or from the PSTN;

scanning, at said base station, said plurality of traffic channels for the presence of radio power levels above a first specified threshold;

measuring the power level of a scanned traffic channel;

selecting from the scanned traffic channels, traffic channels with radio power levels below said first specified threshold;

storing a list of selected traffic channels;

sending to the subscriber terminal, along a signalling channel linking the base station and the subscriber terminal, the list of selected traffic channels;

receiving the list at the subscriber terminal;

scanning the traffic channels on the list;

measuring the power level on each scanned traffic channel on said list;

selecting from the scanned traffic channels of the list, traffic channels with radio power levels below a second specified threshold;

storing the traffic channel selection at said subscriber terminal;

sending, to the base station, along the signalling channel, the subscriber terminal's traffic channel selection, which provides an indication of the subscriber terminal's preferred traffic channel and redundant traffic channel to be selected if the preferred traffic channel becomes unusable;

receiving the traffic channel selection at said base station;

switching the base station and the subscriber terminal to the preferred traffic channel; and

proceeding with call connection.

5,345,598

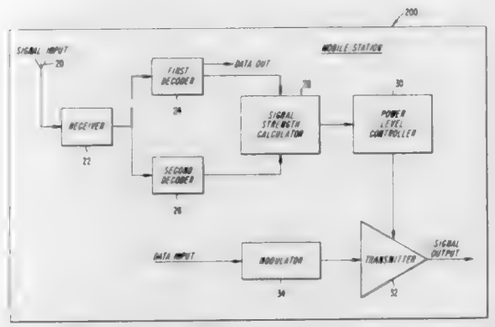
DUPLEX POWER CONTROL SYSTEM IN A COMMUNICATIONS NETWORK

Paul W. Dent, Stehag, Sweden, assignor to Ericsson-GE Mobile Communications Holding, Inc., Paramus, N.J.

Filed Apr. 10, 1992, Ser. No. 866,554

Int. Cl.[5] H04B *7/26*

U.S. Cl. 455—54.1 **33 Claims**



1. In a communications system including at least one base station and a plurality of mobiles for communicating with said at least one base station, a power regulation system, comprising:

each mobile including:

mobile receiving means for receiving a composite signal formed from signals transmitted from said base station to all of said plurality of mobiles, each transmitted signal intended for one of said mobiles, and for determining corresponding signal strength values for each received signal in said composite signal and,

means, connected to said mobile receiving means, for computing from said signal strength values a desired mobile transmitter power level, and

said base station including:

base station receiving means for receiving signals transmitted from said plurality of mobiles and for measuring their corresponding signal strength values, and

means for modifying power levels of signal transmissions to said mobiles based on said measured signal strength values so that each of said mobile receiving means receives its intended signal with substantially equal signal quality and said base station receiving means receives said mobile transmitted signals with substantially equal signal quality.

5,345,599

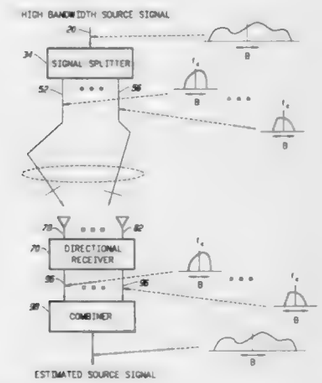
INCREASING CAPACITY IN WIRELESS BROADCAST SYSTEMS USING DISTRIBUTED TRANSMISSION/DIRECTIONAL RECEPTION (DTDR)

Arogyaswami J. Paulraj, Palo Alto, and Thomas Kailath, Stanford, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Feb. 21, 1992, Ser. No. 839,624

Int. Cl.[5] H04B *7/06*

U.S. Cl. 455—49.1 **4 Claims**



3. Apparatus for transmitting an information signal and for receiving said information signal in a frequency channel having a bandwidth less than the bandwidth of said information signal, said apparatus comprising:

means for splitting said information signal into a plurality of information sub-signals, each sub-signal having a bandwidth no greater than said bandwidth of said frequency channel,

transmitting means for transmitting in said frequency channel each of said sub-signals to a receiver, said transmitting means including a plurality of physically dispersed transmitters each transmitting one of said sub-signals,

receiving means for receiving and processing said information sub-signals wherein said information sub-signals are retrieved, and

means for combining said information sub-signals to reconstruct said information signal.

5,345,600

METHOD AND APPARATUS FOR SELECTIVELY-ENABLED DIVERSITY SIGNALING IN A RADIO COMMUNICATIONS SYSTEM

Allen L. Davidson, Crystal Lake, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

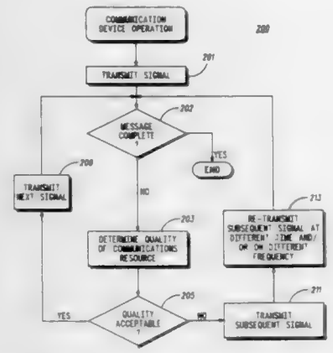
Filed Aug. 31, 1993, Ser. No. 114,526

Int. Cl.[5] H04B *1/10*

U.S. Cl. 455—50.1 **17 Claims**

1. In a radio communications system, a method for exchanging a message between a plurality of communication devices using a communications resource, the method comprising the steps of:

A) transmitting, from a first of the plurality of communication devices a first portion of the message on a first frequency within the communications resource;



B) determining the quality of the communications resource; and

C) when the quality of the communications resource is unfavorable, transmitting a second portion of the message on the first frequency and on a second frequency.

5,345,601

HARMONIC-FREQUENCY COMMUNICATION SYSTEM WITH IMPROVED DIVERSITY SCHEME

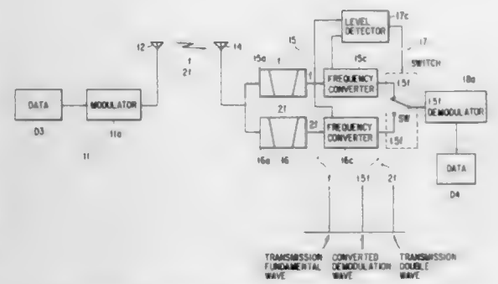
Tasuku Takagi, and Zenichirou Nagasawa, both of Sendai, Japan, assignors to Small Power Communication Systems Research Laboratories Co., Ltd., Sendai, Japan

Filed May 20, 1992, Ser. No. 885,983

Claims priority, application Japan, Aug. 7, 1991, 3-197840

Int. Cl.[5] H04B *7/08, 7/12*

U.S. Cl. 455—59 **10 Claims**



1. A harmonic-frequency communication system, comprising:

a transmitting section including:

modulation means for modulating a carrier serving as a fundamental frequency wave with data to be transmitted, to generate a modulated output including at least the fundamental frequency wave and a double frequency wave included in harmonic frequency waves of the fundamental frequency; and

transmitting antenna means for radiating electromagnetic waves into the air, the electromagnetic waves including the fundamental frequency wave and the double frequency wave included in the modulated output generated by the modulations means; and

a receiving section including:

receiving antenna means for receiving the electromagnetic waves including the fundamental frequency wave

and the double frequency wave radiated from said transmitting antenna means;

diversity means for processing the fundamental frequency wave and the double frequency wave included in the electromagnetic waves received by said receiving antenna means,

said diversity means including:

an oscillator for oscillating a local oscillation signal having a frequency f_{Lo} when the fundamental frequency wave and the double frequency wave have frequencies f_1 and f_2, respectively; and

a mixer for mixing the fundamental frequency wave and the double frequency wave with the local oscillation signal to output a synthesized signal of mixed signals respectively having frequencies f_1+f_{LO} and f_2-f_{LO}, where the frequency f_{LO} is set to satisfy condition $f_1+f_{LO}=f_2-f_{LO}$, and demodulation means for demodulating the synthesized signal output from said diversity means, thereby outputting data which is the same as the data to be transmitted.

5,345,602

RECEIVER WITH MULTIPLE ANTENNAS

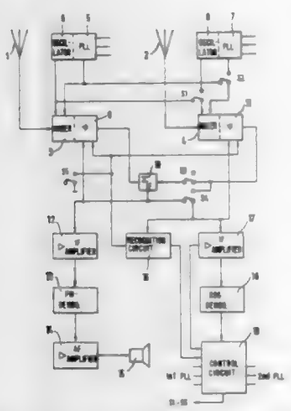
Kurt Wiedemann, Hildesheim, and Heiko Brüshaber, Salzgitter, both of Fed. Rep. of Germany, assignors to Blaupunkt Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Aug. 26, 1992, Ser. No. 935,848

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1991, 4129830

Int. Cl.[5] H04B *1/06, 7/02*

U.S. Cl. 455—137 **4 Claims**



1. A VHF radio receiver adapted for mobile use, having:

first (**1**) and second (**2**) antenna input lines;

first (**6**) and second (**8**) oscillators;

a plurality of configuration switches (**S1–S5**) for selectively applying respective output signals of said oscillators (**6,8**) to other portions of said receiver;

first (**3**) and second (**4**) mixers coupled respectively to said first and second input lines (**1, 2**) for mixing, in a first configuration of said switches, respective antenna signals with a signal generated: by said first oscillator (**6**); and

means (**10**), coupled to respective outputs of said mixers, for adding resulting mixed signals, with controllable phase position, to form a summation signal,

further comprising,

a Radio Data System demodulator (**18**) coupled to an output of one (**4**) of said mixers;

memory means for storing alternate frequencies of a plurality of different transmitters carrying an identical program;

control circuit means (**19**), connected to control inputs of said configuration switches (**S1–S5**), for momentarily setting said switches to a second configuration in which

an output signal of said second mixer (**4**) is fed to an evaluation circuit (**16, 17, 18, 19**), said evaluation circuit including a multipath reception recognition circuit (**16**) having an input connected to outputs of said first (**3**) and second (**4**) mixers, and having an output connected to an input of said control circuit means; and

an oscillator input of said second mixer (**4**) is connected to an output of said Second oscillator (**8**) which tunes said second mixer to one of said alternate frequencies, in order to evaluate quality of reception at said alternate frequency,

said control circuit means (**19**), upon return to said first switch configuration, monitoring quality of reception and triggering switchover to an alternate frequency whenever quality of reception at a current frequency drops below a predetermined level.

5,345,603

RECEIVER ARRANGEMENT FORMED BY A PLURALITY OF RECEIVE BRANCHES

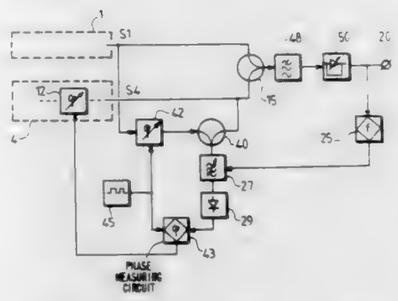
Jean Laffont, Bois D'Arcy, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1991, Ser. No. 790,940

Claims priority, application France, Nov. 13, 1990, 9014037

Int. Cl.[5] H04B *7/08*

U.S. Cl. 455—139 **4 Claims**



1. A receiver arrangement comprising at least first and second receive branches for receiving a wave whose frequency spectrum is practically constant in a predetermined frequency band, a phase shifting circuit inserted in the second receive branch, the first receive branch having a constant phase shift, a first combining circuit connected to outputs of the first and second receive branches for producing a first combined signal by combining the waves at the outputs of the first and second receive branches, a phase modulator connected to the output of the first receive branch; a second combining circuit connected to outputs of the phase modulator and the second receive branch for producing a second combined signal by combining the waves at the outputs of the phase modulator and the second branch, an oscillation circuit connected to the phase modulator for adjusting a phase shift introduced by the phase modulator, a frequency discriminator coupled to an output of the first combining circuit for analyzing said first combined signal, an adjustable selective circuit coupled to the frequency discriminator and an output of the second combining circuit for obtaining a frequency band of the second combined signal as a function of an output signal of said discriminator, an envelope detector connected to an output of the selective circuit, and a phase measuring circuit connected to outputs of the oscillation circuit and the envelope detector and to a control input of said phase shifting circuit for measuring a phase difference between signals at the outputs of the oscillation circuit and the envelope detector and for adjusting the phase shifting circuit as a function of the measured phase difference.

5,345,604

FM VEHICLE RADIO WITH MODULAR PHASE SHIFTERS

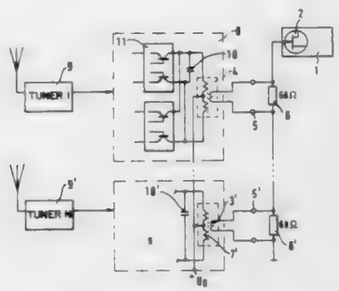
Kurt Wiedemann, Hildesheim, Fed. Rep. of Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Feb. 26, 1992, Ser. No. 842,889

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1991, 4108933

Int. Cl.[5] H04B *17/02*

U.S. Cl. 455—139 **5 Claims**



4. A mobile diversity radio receiver, comprising:

an amplifier (**1**) having a signal input path;

a field effect transistor (**2**) connected in said signal input path of said amplifier;

a plurality of resistors (**6, 6'**) connected in series between ground and a base terminal of said field effect transistor (**2**);

a respective two-wire plug connection terminal (**5, 5'**) bridging each of said plurality of resistors (**6, 6'**); and

a respective phase-matching signal input module (**8**) engageable with each of said plug connection terminals (**5, 5'**),

each module (**8**) having

an input stage (**9, 9'**) adapted for connection to an antenna;

at least one current source (**11**) having an input connected to an output of said input stage (**9, 9'**); and

a bandpass filter (**7, 10**) having input lines connected to said at least one current source (**11**) and output lines furnishing output signals of said module at said plug connection terminals,

whereby at least one module (**8**) can be disengaged from said receiver while said receiver continues to operate.

5,345,605

INDIVIDUAL SELECTIVE-CALLING RECEIVER WITH REDUCED NUMBER OF SWITCHES

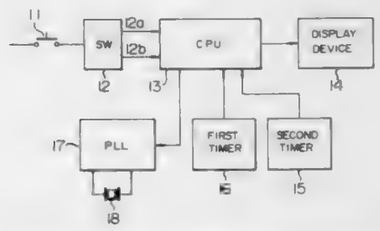
Takamasa Motegi, Kawasaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 19, 1992, Ser. No. 853,654

Claims priority, application Japan, Apr. 2, 1991, 3-095012

Int. Cl.[5] H04B *1/16*

U.S. Cl. 455—181.1 **5 Claims**



1. An individual selective-calling receiver comprising:

a central processing unit (CPU);

a switch for being selectively placed operator;

a switch state judging circuit, connected between said CPU and said switch, for judging a state of said switch and supplying a state signal, indicative of the state of said switch, to said CPU;

said CPU, responsive to receipt of said state signal, outputting an ON-state signal when said state signal indicates that said switch is in said ON-state;

a first timer, connected to receive said ON-state signal, for generating a first output signal in response to said ON-state signal being generated for a time period longer than a first predetermined time period; and

a receiving-frequency selection circuit, connected to said CPU, for selecting one of a plurality of receiving frequencies at which said individual selective-calling receiver is to operate,

said CPU, in response to said first output signal of the first timer, operating (i) to begin a frequency selection operation for selecting said one of said receiving frequencies, and (ii) after selection of said one of said receiving frequencies, to supply frequency selection information specifying said one of said receiving frequencies to said receiving-frequency selection circuit.

5,345,606

RDS RADIO RECEIVER WITH USER-DEFINABLE-REGION FILTERING

Ralf Duckeck, and Peter Bre,uml/a/ gas, both of Hildesheim, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

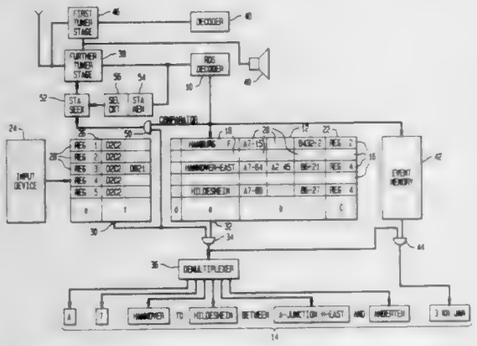
PCT No. PCT/DE90/00250, § 371 Date Oct. 28, 1991, § 102(e) Date Oct. 28, 1991, PCT Pub. No. WO90/13882, PCT Pub. Date Nov. 15, 1990

PCT Filed Mar. 28, 1990, Ser. No. 775,939

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1989, 3914104

Int. Cl.[5] H04B *4/06*

U.S. Cl. 455—186.1 **6 Claims**



1. A radio receiver, having

a tuner stage (**38**) having an output,

a decoder (**10**), having an input connected to said output of said tuner stage (**38**), and decoding digitally-encoded, received traffic news bulletins, and program identification (PI) codes in accordance with the Radio Data System (RDS),

a first memory device (**12**) having an input connected to the output of said decoder, and storing route-specific features, namely geographic region identifiers (**22**) and at least one of:

place names (**a, 18**),

junction identifiers (**20**),

route identifiers, and

route segment identifiers (**b**);

a second memory device (**26**) storing, in each of a plurality of respective memory locations (**28**), a geographic region identifier and a Program Identification (PI) code, including data uniquely identifying each radio transmitter;

means (**36**, **14**), connected to an output (**32**) of said first memory device (**12**), for indicating, to a user, information from said memory device which is relevant to said received traffic news;

wherein

input means (**24**), connected to an input of said second memory device, are provided for defining at least one geographic region about which the user desires to receive traffic news bulletins;

the geographic region identifiers stored in said first and second memory devices (**12**, **26**) correspond to each other,

a comparator (**50**) receives and compares an output signal from said RDS decoder)**10**) with an output signal from said second memory device (**26**), and triggers a station-seeking stage (**52**) whenever respective PI codes in said output signals do not match; and

logic means (**34**), having respective inputs connected to respective outputs (**32**, **30**) of said first and second memory devices (**26**, **12**), selectively actuate said indicating mans (**36**, **14**) whenever a PI code of a received traffic news bulletin matches a PI code of a geographic region (**28**) stored in said second memory device (**26**).

5,345,607

RDS RADIO RECEIVER WITH PROGRAM TYPE MODE

Helmut Liman, Nordstemmen, and Wiedhold Warnecke, Hildesheim, both of Fed. Rep. of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Jan. 17, 1992, Ser. No. 822,305

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1991, 4103779

Int. Cl.[5] **H04B** *1/16*

U.S. Cl. 455—186.1 **6 Claims**

1. A Radio Data System (RDS) receiver having

a tuning and station finding stage (**3**, **19**);

a high-frequency (HF) stage (**2**), controlled by said tuning stage and adapted for connection to an antenna (**1**);

an intermediate frequency (IF) stage (**4**) connected to an output of said high-frequency stage (**2**);

an RDS decoder (**8**) having an input, connected to the output of said IF stage (**4**) and a pair of outputs furnishing, respectively, a Program Identification (PI) output signal and a Program TYpe (PTY) output signal;

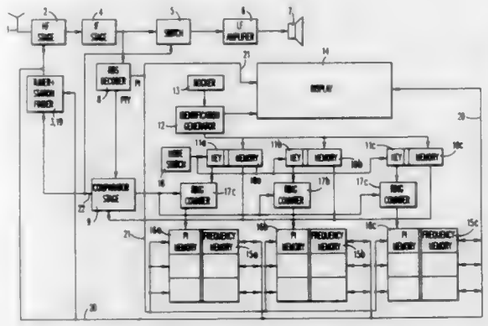
a display (**14**) connected to said outputs of said RDS decoder;

a plurality of station keys (**11***a*, **11***b*, **11***c*) and a respective key memory (**10***a*, **10***b*, **10***c*) associated with each key;

a comparator stage (**9**) having inputs connected respectively to the PTY output of the RDS decoder (**8**) and to outputs of said key memories (**10***a*, **10***b*, **10***c*) in order to determine whether a match exists between said PTY output signal and any key memory output, and having a control output (**22**) connected to an input of said tuning and station finding stage (**3**, **19**);

wherein, in accordance with the invention,

a mode switch (**18**), having an output connected to said station keys (**11**) and their associated memories (**10**), is provided for transforming function of said station keys among a plurality of different modes, including a PTY mode;



a rocker switch (**13**), having an output connected to said station key memories, is provided for stepping among selections within a particular one of said different modes;

an identification generator (**12**), having an input connected to said output of said rocker switch and an output connected to an input of said display (**14**), is provided for displaying a current selection, made via said rocker switch;

and, whenever, said PTY mode is selected via said mode switch (**18**), pressing one of said station keys (**11**) within a present amount of time after actuation of the rocker switch (**13**) causes storage of said current selection in the station key memory (**10**) associated with the station key which was pressed.

DESIGN PATENTS

GRANTED SEP. 6, 1994

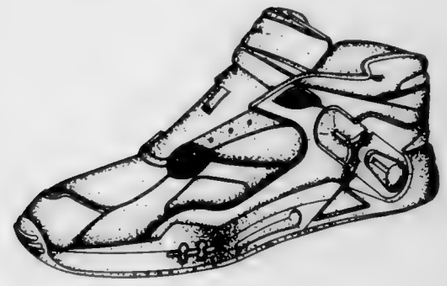
ERRATA

For CLASS	See PATENT NO.
024-110	D 343,379

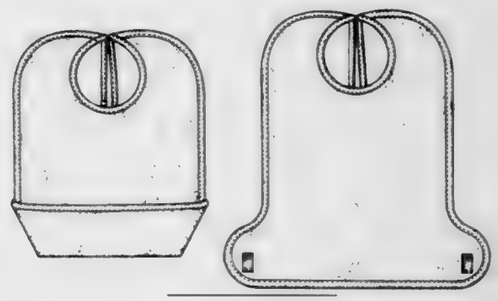
DESIGNS

SEPTEMBER 6, 1994

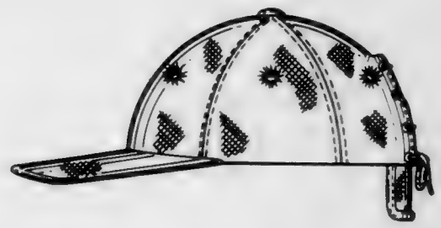
350,219
SPORTS SHOE
Jean P. Vitrac, Paris, France, assignor to Kukje Corporation, Kim-Hae, Rep. of Korea
Filed Sep. 22, 1992, Ser. No. 948,783
Claims priority, application Rep. of Korea, May 15, 1992, 1992-7940
Term of patent 14 years
U.S. Cl. D2—920



350,220
BIB
Elaine Lindy, Newton, Mass., assignor to Playskool Baby, Inc., Pawtucket, R.I.
Filed Apr. 29, 1992, Ser. No. 875,400
Term of patent 14 years
U.S. Cl. D2—864



350,221
HAT
Steven Van Doren, Corona, Calif., assignor to Vans, Inc., Orange, Calif.
Filed Dec. 18, 1992, Ser. No. 2,793
Term of patent 14 years
U.S. Cl. D2—866



350,222
SPORTS SHOE
Yoshiaki Hase, Irvine, Calif., assignor to Asics Corporation, Hyogo, Japan
Filed May 27, 1993, Ser. No. 8,848
Claims priority, application Japan, Dec. 3, 1992, 4-35761
Term of patent 14 years
U.S. Cl. D2—902



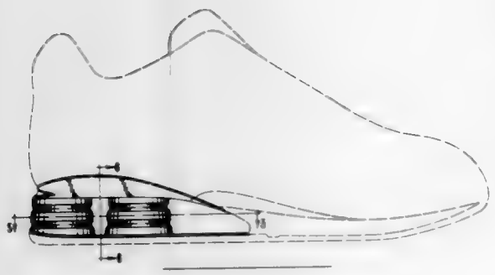
350,223
TENNIS SHOE SANDAL
J. Bart Buckner, 4707 Everhart Rd., #205, Corpus Christi, Tex. 78411
Filed Jun. 22, 1992, Ser. No. 901,906
The portion of the term of this patent subsequent to Aug. 30, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D2—916



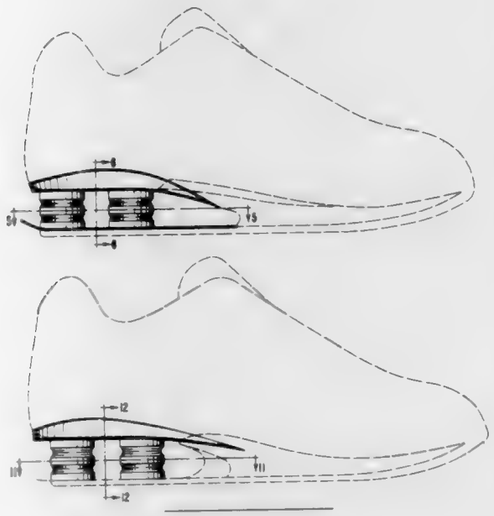
350,224
TENNIS SHOE SANDAL
J. Bart Buckner, 4707 Everhart Rd., #205, Corpus Christi, Tex. 78411
Filed Jun. 22, 1992, Ser. No. 901,908
The portion of the term of this patent subsequent to Aug. 30, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D2—916



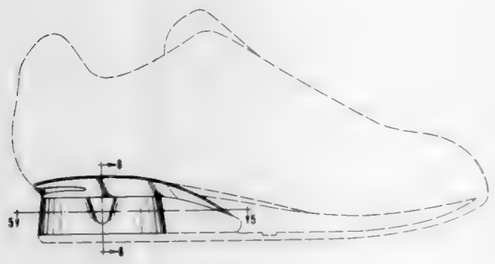
350,225
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Division of Ser. No. 786,931, Nov. 1, 1991, Pat. No. D. 344,399. This application Jan. 19, 1994, Ser. No. 17,640
Term of patent 14 years
U.S. Cl. D2—964



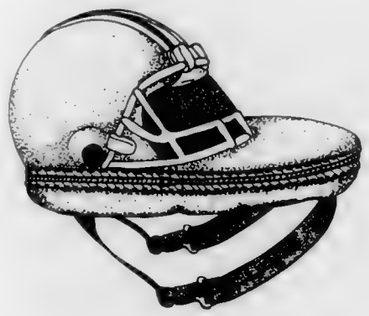
350,227
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Division of Ser. No. 786,887, Nov. 1, 1991, Pat. No. Des. 344,400. This application Jan. 19, 1994, Ser. No. 17,644
Term of patent 14 years
U.S. Cl. D2—964



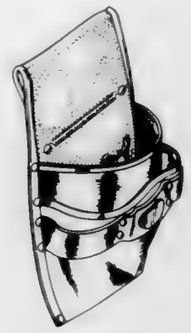
350,226
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Division of Ser. No. 786,934, Nov. 1, 1991, Pat. No. Des. 344,622. This application Jan. 19, 1994, Ser. No. 17,643
Term of patent 14 years
U.S. Cl. D2—964



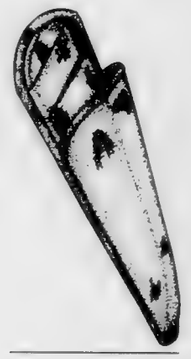
350,228
BACKPACK
Ernest J. Poire, Laconia, N.H., assignor to Cormier Corporation, Laconia, N.H.
Filed Sep. 14, 1992, Ser. No. 948,773
Term of patent 14 years
U.S. Cl. D3—217



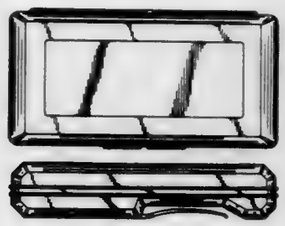
350,229
TOOL POUCH
Michael Dancyger, 811 W. 58th St., Los Angeles, Calif. 90037
Filed Mar. 27, 1991, Ser. No. 676,724
Term of patent 14 years
U.S. Cl. D3—228



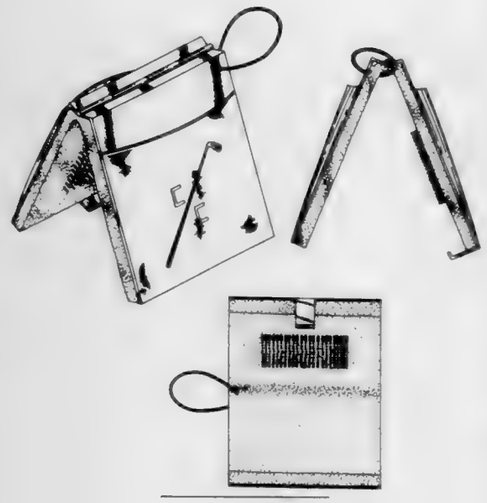
350,230
CURLING IRON COVER
Cathleen S. O'Brien, 2101 W. Alice Ave., Phoenix, Ariz. 85021
Filed Sep. 21, 1992, Ser. No. 950,035
Term of patent 14 years
U.S. Cl. D3—205



350,231
HINGED DART CASE WITH CLIP
Paul T. Giegerich, Laverock, Pa., assignor to Dart Mart, Inc., Willow Grove, Pa.
Filed May 27, 1993, Ser. No. 8,828
Term of patent 14 years
U.S. Cl. D3—254



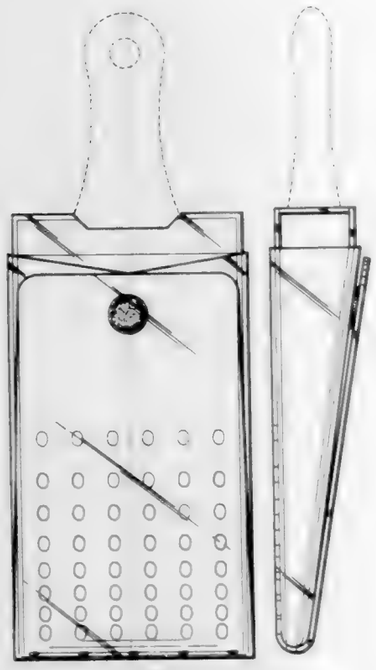
350,232
COMBINED BRUSH AND SPONGE FOR CLEANING GOLF CLUBS
Mark Stangarone, and Robert Fee, both of 134 Mallette St., Thornton, Ill. 60476
Filed Oct. 23, 1991, Ser. No. 781,293
Term of patent 14 years
U.S. Cl. D4—116



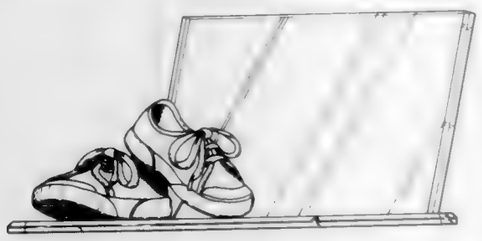
350,233
BROOM CAP
David B. Joyner, Winterville, N.C., assignor to Empire Brushes, Inc., Greenville, N.C.
Filed Jun. 14, 1993, Ser. No. 9,386
Term of patent 14 years
U.S. Cl. D4—199



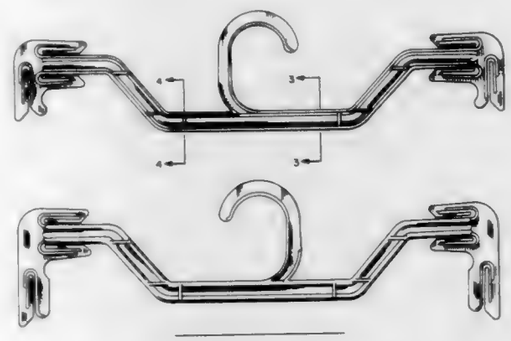
350,234
PAINTBRUSH PROTECTOR
Nicholas F. Losoie, 1120 McArthur, #1405, Carrollton, Tex. 75007
Filed Dec. 27, 1991, Ser. No. 814,913
Term of patent 14 years
U.S. Cl. D4—199



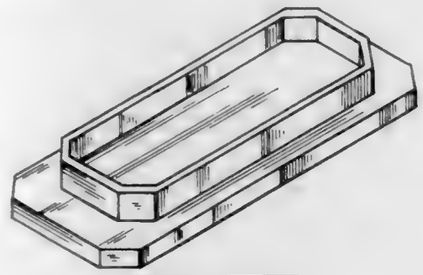
350,235
"BABY SHOE PICTURE FRAME"
Sharon Smith, 3566 Palladian Cir., Deerfield Beach, Fla. 33442
Filed May 7, 1993, Ser. No. 8,116
Term of patent 14 years
U.S. Cl. D6—303



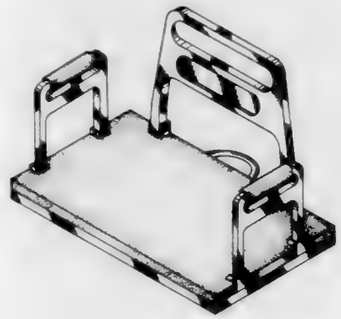
350,236
GARMENT HANGER WITH VERTICAL CLIPS
Stanley Gouldson, Northport, and Roland Harmer, Centereach, both of N.Y., assignors to Spotless Plastics Pty. Ltd., Australia
Filed Apr. 16, 1992, Ser. No. 870,696
Term of patent 14 years
U.S. Cl. D6—326



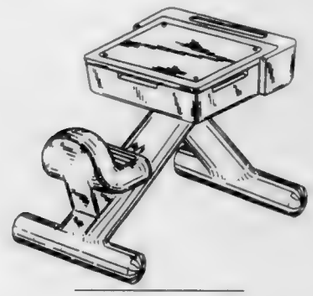
350,237
MULTIPLE USE ACTIVITY PAD
Ray G. Kelly, St. Louis County, Mo., assignor to Angeles Group, Inc., Pacific, Mo.
Filed Feb. 6, 1991, Ser. No. 651,508
Term of patent 14 years
U.S. Cl. D6—333



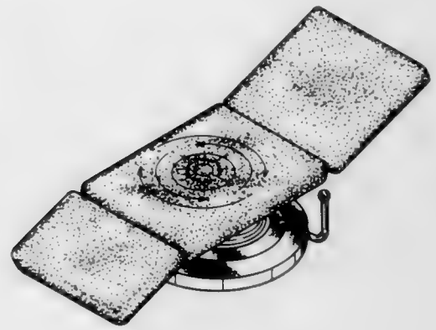
350,238
COOLER CHAIR
Robert Ward, 19 Chapel Street, Cobourg, Ontario, Canada K9A 1J1
Filed May 31, 1991, Ser. No. 708,633
Term of patent 14 years
U.S. Cl. D6—335



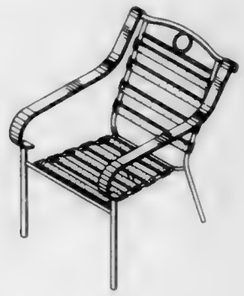
350,239
DESK
Elaine G. Swanger, St. Joseph, Mich., assignor to Today's Kids, Inc., Booneville, Ark.
Filed Jan. 21, 1992, Ser. No. 823,482
Term of patent 14 years
U.S. Cl. D6—338



350,240
LOUNGE CHAIR
Jeff L. Carstarphen, 4104 Bloomfield Dr., Macon, Ga. 31206
Filed Nov. 6, 1992, Ser. No. 1,210
Term of patent 14 years
U.S. Cl. D6—361



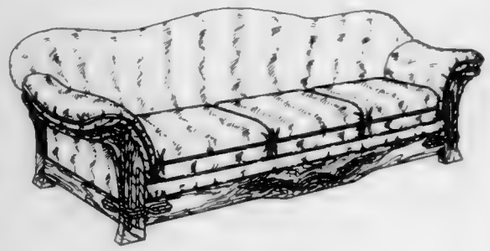
350,241
LAWN CHAIR
Terence E. Gibbs, Grandview, N.Y., assignor to Shin Yeh Enterprise Co., Ltd., Taiwan
Filed Feb. 25, 1993, Ser. No. 5,186
Term of patent 14 years
U.S. Cl. D6—370



350,242
CHAIR
Hartmut Lohmeyer, Flemingstr. 94a, DE-8000 Munchen 81, Fed. Rep. of Germany
Filed Sep. 4, 1991, Ser. No. 754,713
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1991, M 91 01 790.4
Term of patent 14 years
U.S. Cl. D6—372



350,243
SOFA
Kevin O. Patrick, Tupelo, Miss., assignor to Mohasco Upholstered Furniture Corporation, Fairfax, Va.
Filed Sep. 30, 1992, Ser. No. 954,373
Term of patent 14 years
U.S. Cl. D6—381



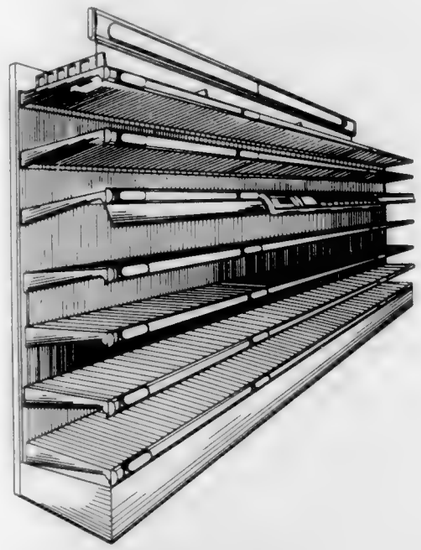
350,244
TABLE
Gerald M. Black, High Point, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed Mar. 18, 1992, Ser. No. 853,326
Term of patent 14 years
U.S. Cl. D6—445



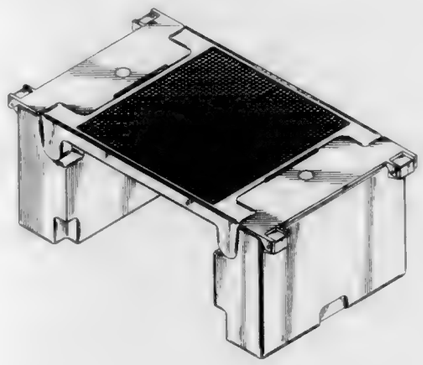
350,245
CURVED GLASS MERCHANDIZER
Michael A. Branz, and Ronald D. Upton, both of Spartanburg, S.C., assignors to Specialty Equipment Companies, Inc., Berkeley, Ill.
Filed Jan. 7, 1993, Ser. No. 3,468
Term of patent 14 years
U.S. Cl. D6—472



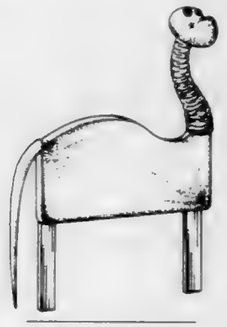
350,246
DISPLAY SYSTEM FOR SELECTING HAIR DYE SHADES
John Louise, New York, N.Y., and Thomas Rushing, Denville, N.J., assignors to Bristol-Myers Squibb Company, New York, N.Y.
Filed Feb. 11, 1993, Ser. No. 4,717
Term of patent 14 years
U.S. Cl. D6—479



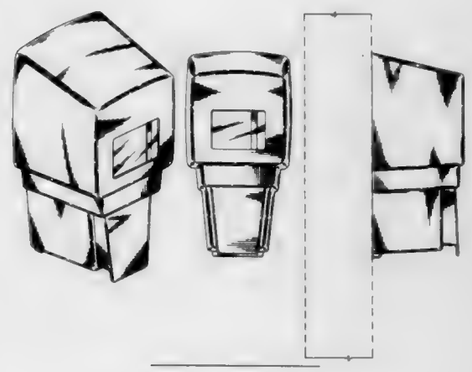
350,247
COMBINATION STORAGE CONTAINER AND PLAY TABLE FOR INTERLOCKING BUILDING BLOCKS
Brian S. Buske, 2500 Central Pkwy., Ste. P., Houston, Tex. 77092
Filed Feb. 7, 1992, Ser. No. 831,398
Term of patent 14 years
U.S. Cl. D6—484



350,248
BED HEADBOARD
Samuel E. Story, 442 Sprucewood, San Antonio, Tex. 78216
Filed May 26, 1993, Ser. No. 8,800
Term of patent 14 years
U.S. Cl. D6—506



350,249
DISPENSER
Joseph W. Rhodenbaugh, Cincinnati, Ohio, assignor to Kutol Products Company, Madeira, Ohio
Filed Nov. 1, 1993, Ser. No. 14,866
Term of patent 14 years
U.S. Cl. D6—545



350,250
SINGLE LOOP CURTAIN ROD SET
William L. Tacchella, Sturgis, Mich., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Jan. 24, 1992, Ser. No. 824,826
Term of patent 14 years
U.S. Cl. D6—578



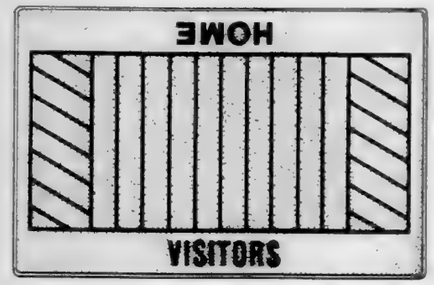
350,251
SINGLE SWAG CURTAIN ROD SET
William L. Tacchella, Sturgis, Mich., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Jan. 24, 1992, Ser. No. 825,703
Term of patent 14 years
U.S. Cl. D6—575



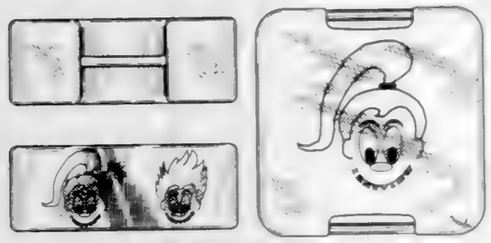
350,252
DOUBLE SWAG CURTAIN ROD SET
William L. Tacchella, Sturgis, Mich., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Jan. 24, 1992, Ser. No. 825,723
Term of patent 14 years
U.S. Cl. D6—575



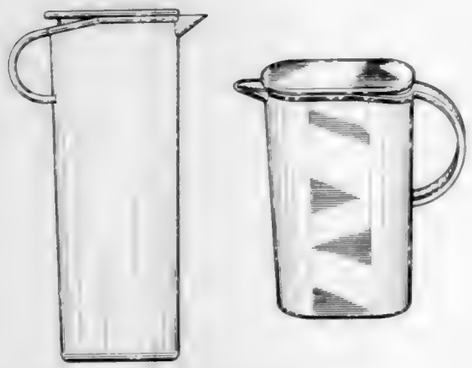
350,253
FLOOR MAT
Robert J. Livingstone, 23046 Ithaca, and Daniel K. Griffin, 23111 Rosewood, both of Oak Park, Mich. 48237
Filed Jun. 7, 1991, Ser. No. 711,748
Term of patent 14 years
U.S. Cl. D6—583



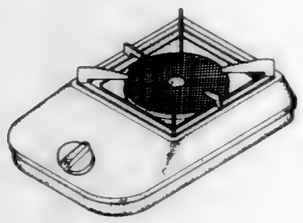
350,254
PORTABLE SEAT CUSHION WITH HANDLES FOR PLACEMENT ON TOP OF A MOVIE THEATER SEAT
Susan C. Alvarez; Hope M. Ramirez, both of 16776 Valley Blvd. F, Fontana, Calif. 92335; Teresa Hoffman, 6711 Catalina Dr., Riverside, Calif. 92504, and Ismael Alvarez, 16776 Valley Blvd. F, Fontana, Calif. 92335
Filed Jan. 22, 1993, Ser. No. 3,986
Term of patent 14 years
U.S. Cl. D6—601



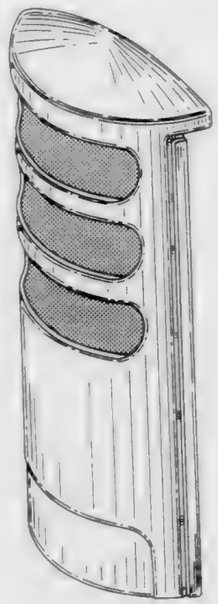
350,255
PITCHER WITH ROCKING SEAL
Robert H. C. M. Daenen, Essene, Belgium, and Stig Lillelund, Gentofte, Denmark, assignors to Dart Industries Inc., Deerfield, Ill.
Filed Dec. 23, 1992, Ser. No. 2,924
Term of patent 14 years
U.S. Cl. D7—317



350,256
GAS STOVE
Ching-Wen Wang, 4 Fl., No. 5, Lane 124; Der-Yu Rd., Pin-Jen City, Ta Yuan Hsien, Taiwan, Taiwan
Filed Sep. 4, 1992, Ser. No. 940,717
Term of patent 14 years
U.S. Cl. D7—367



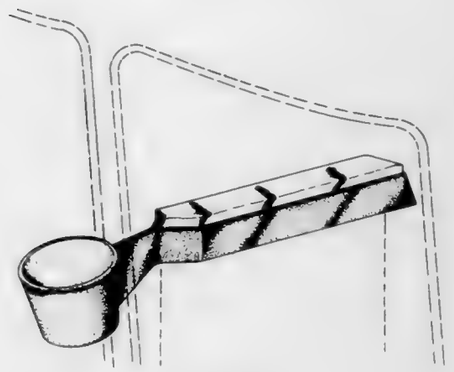
350,257
FILTER FOR AN ELECTRIC KETTLE
Jacob Breur, Peize, Netherlands, and Michael G. Melis, London, United Kingdom, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 3, 1992, Ser. No. 1,094
Claims priority, application United Kingdom, Aug. 13, 1992, 2.024.991
Term of patent 14 years
U.S. Cl. D7—400



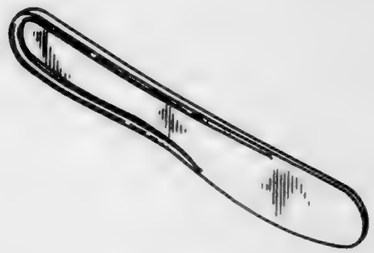
350,258
MOLD FOR A FROZEN FOOD CONFECTION
Paul Straubinger, 20-49 32nd St., Long Island City, N.Y. 11105
Filed Jul. 6, 1992, Ser. No. 914,097
Term of patent 14 years
U.S. Cl. D7—601



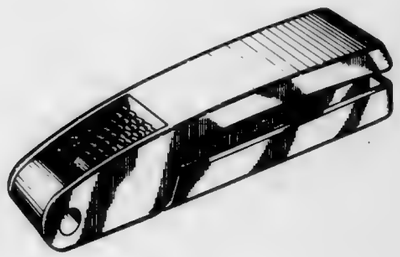
350,259
REAR CUP HOLDER ARMREST
John P. Ayotte, Eagan, Minn., assignor to MTS Northwest Sound, Inc., Minneapolis, Minn.
Filed Oct. 14, 1992, Ser. No. 481
Term of patent 14 years
U.S. Cl. D7—620



350,260
PLASTIC KNIFE
Edmund A. Weaver, Racine, Wis., assignor to Kraft General Foods, Inc., Northfield, Ill.
Filed Sep. 3, 1992, Ser. No. 939,636
Term of patent 14 years
U.S. Cl. D7—649



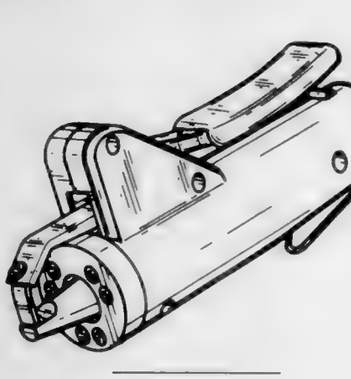
350,261
SELF-CLEANING GARLIC PRESS
Reinhard Ahner, A-2391 Kaltenleutgeben, StefanieGasse 50, Austria
Filed May 28, 1993, Ser. No. 8,788
Term of patent 14 years
U.S. Cl. D7—666



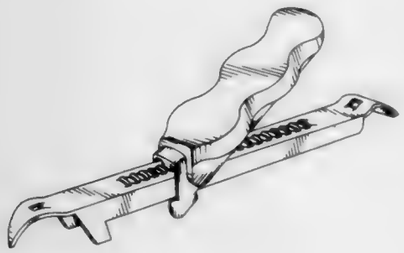
350,262
NON-CONDUCTING LIGHT BULB SOCKET REMOVER
Kevin R. Fallon, 21 Georgia Tavern Rd., Farmingdale, N.J. 07727
Filed May 27, 1993, Ser. No. 8,830
Term of patent 14 years
U.S. Cl. D8—14



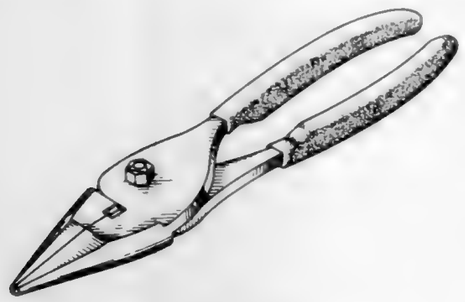
350,263
PLASTIC WELDER
Ichiro Maruyama, Osaka, Japan, assignor to Fuji Impulse Co., Ltd., Osaka, Japan
Filed May 28, 1993, Ser. No. 8,743
Term of patent 14 years
U.S. Cl. D8—30



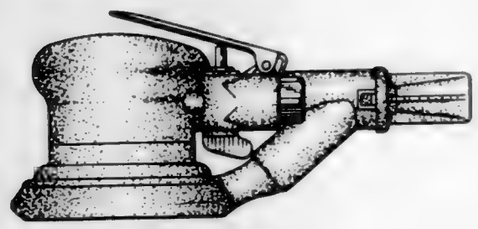
350,264
CAN-JAR OPENER
John H. Friend, 10200 Arno Rd., Galt, Calif. 95632
Filed Nov. 19, 1992, Ser. No. 1,658
Term of patent 14 years
U.S. Cl. D8—43



350,265
NEEDLE NOSE PLIERS
Kirk E. Mellits, Racine, and Robert H. Junkel, Kenosha, both of Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.
Filed Nov. 30, 1992, Ser. No. 2,013
Term of patent 14 years
U.S. Cl. D8—52



350,266
RANDOM ORBITAL SANDER
Paul W. Huber, Lancaster, and David G. Heckmiller, Jr., Orchard Park, both of N.Y., assignors to Dynabrade, Inc., Clarence, N.Y.
Division of Ser. No. 126, Oct. 6, 1992. This application Nov. 15, 1993, Ser. No. 15,344
Term of patent 14 years
U.S. Cl. D8—62



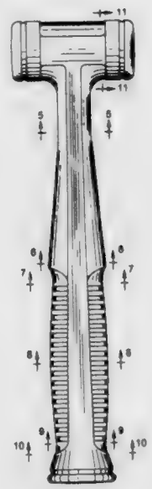
350,267
CORDLESS DRIVER DRILL
Katsumi Tozawa, Toyohashi, Japan, assignor to Makita Corporation, Anjo, Japan
Filed Jul. 6, 1993, Ser. No. 10,392
Claims priority, application Japan, Jan. 7, 1993, 5-252
Term of patent 14 years
U.S. Cl. D8—68



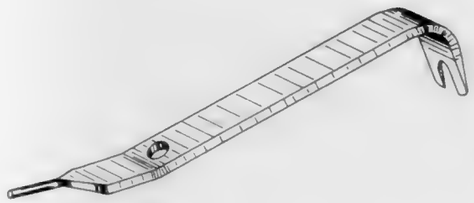
350,268
PROTECTIVE CAP FOR POWER TOOL COUPLINGS
Alan R. Grimm, Box 172, Dundee, Iowa 52038
Filed May 21, 1993, Ser. No. 8,572
Term of patent 14 years
U.S. Cl. D8—70



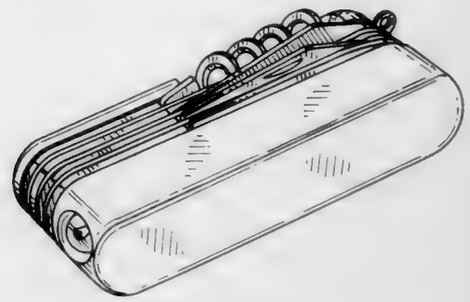
350,269
HAMMER
Ronald O. Majors, Kenosha, and Joseph R. Hoepfl, Greenfield, both of Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.
Filed Jan. 12, 1993, Ser. No. 3,001
Term of patent 14 years
U.S. Cl. D8—77



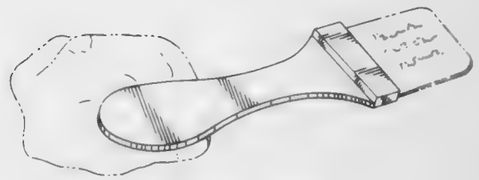
350,270
HINGE PIN REMOVER
William I. Jensen, Sheridan, Mont., assignor to Manufacturing Technologies, Inc., Sheridan, Mont.
Filed Jan. 8, 1993, Ser. No. 3,471
Term of patent 14 years
U.S. Cl. D8—89



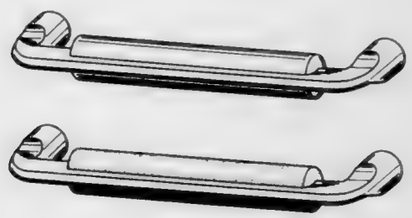
350,271
COMBINED KNIFE AND FLASHLIGHT
Bruce R. Landy, 3840 N. 51st Ave., Hollywood, Fla. 33021, and Bradford Landy, 280 Southwest 56 Ter. #111, Margate, Fla. 33068
Filed Apr. 22, 1992, Ser. No. 873,087
Term of patent 14 years
U.S. Cl. D8—99



350,272
CARD HOLDER
Harry A. Kahn, deceased, late of West Palm Beach, and by Lillian Kahn, executrix, 111 Lake Helen Dr., West Palm Beach, both of Fla. 33411
Filed Oct. 15, 1992, Ser. No. 496
Term of patent 14 years
U.S. Cl. D8—107



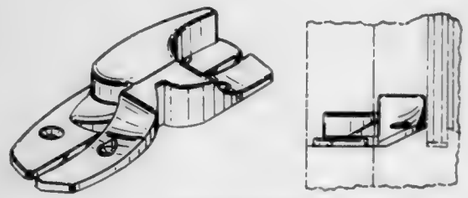
350,273
CABINET PULL
Franz W. Jans, Roedermark, Fed. Rep. of Germany, assignor to Jado Bathroom and Hardware Manufacturing Corp., Camarillo, Calif.
Filed May 21, 1993, Ser. No. 8,648
Term of patent 14 years
U.S. Cl. D8—317



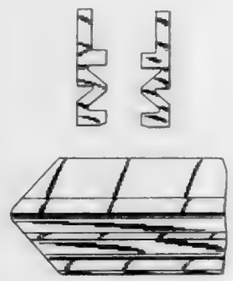
350,274
ANTI-THEFT STEERING-WHEEL RESTRICTOR
Franklin W. Baker, 1502½ N. LaBrea, Inglewood, Calif. 90302
Filed Jun. 21, 1993, Ser. No. 9,685
Term of patent 14 years
U.S. Cl. D8—331



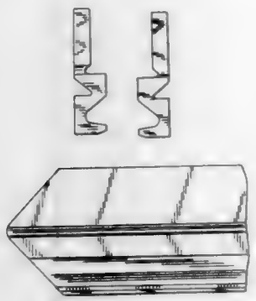
350,275
SASH LOCK
Carl J. Olsen, Hudson, Wis., and William L. Zemke, Forest Lake, Minn., assignors to Andersen Corporation, Bayport, Minn.
Filed Feb. 4, 1993, Ser. No. 4,389
Term of patent 14 years
U.S. Cl. D8—338



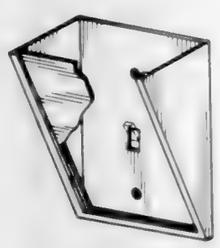
350,276
PORTION OF A KEY BLADE BLANK
Anthony J. Hoffman, Plantsville, Conn., and Robert E. Kearns, San Francisco, Calif., assignors to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,291
Term of patent 14 years
U.S. Cl. D8—347



350,277
PORTION OF A KEY BLADE BLANK
Anthony J. Hoffman, Plantsville, Conn., and Robert E. Kearns, San Francisco, Calif., assignors to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,512
Term of patent 14 years
U.S. Cl. D8—347



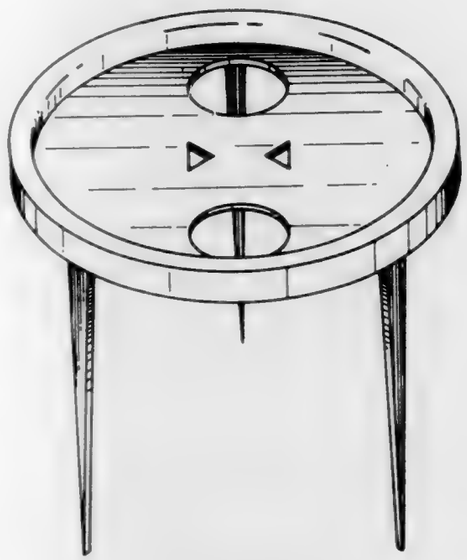
350,278
ELECTRICAL SWITCH GUARD
Thelma J. Figueroa, 109 Petrossi Dr., Rochester, N.Y. 14621
Filed Jan. 22, 1993, Ser. No. 3,987
Term of patent 14 years
U.S. Cl. D8—353



350,279
SHOWER CURTAIN RING
Richard S. Tate, 7476 Mitchell Dr., Rohnert Park, Calif. 94928
Filed Jan. 29, 1992, Ser. No. 828,484
Term of patent 14 years
U.S. Cl. D8—373



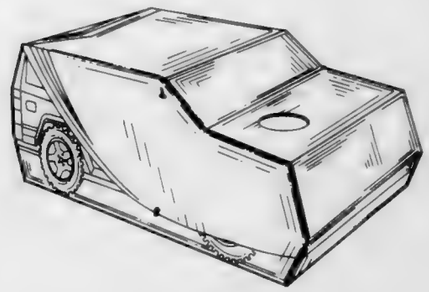
350,280
CARPET PROTECTING FURNITURE SUPPORT
Guy Philpott, and Scott Shaw, both of 103 El Oriente, Apt. 6, San Clemente, Calif. 92672
Filed Jan. 27, 1993, Ser. No. 4,093
Term of patent 14 years
U.S. Cl. D8—374



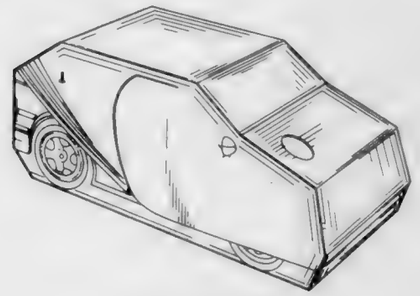
350,281
DISPENSER
Matthew Coe, Cedar Grove, N.J., assignor to PharmaDesign, Inc., Warren, N.J.
Filed Oct. 28, 1991, Ser. No. 783,092
Term of patent 14 years
U.S. Cl. D9—300



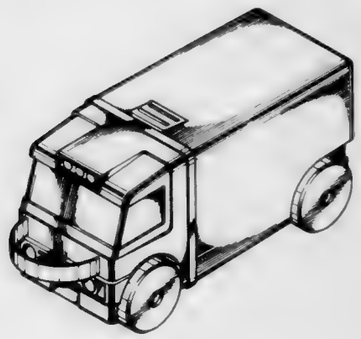
350,282
VEHICLE COVER BOX
Henri Lenterman, Culver City, Calif., assignor to Intromarketing, Inc., Woodland Hills, Calif.
Filed Apr. 28, 1993, Ser. No. 7,692
Term of patent 14 years
U.S. Cl. D9—308



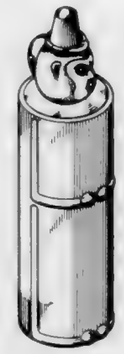
350,283
CAR COVER BOX
Henri Lenterman, Culver City, Calif., assignor to Intromarketing, Inc., Woodland Hill, Calif.
Filed May 28, 1993, Ser. No. 8,840
Term of patent 14 years
U.S. Cl. D9—308



350,284
CARRYING CONTAINER
Sun J. Ran, Taipei Hsien, Taiwan, assignor to Youfu Kou Chao Industrial Co., Ltd., Taipei Hsien, Taiwan
Filed Jun. 8, 1993, Ser. No. 9,209
Term of patent 14 years
U.S. Cl. D9—/308



350,285
DETERGENT CONTAINER
Wuen J. Lo, No. 6 Chuangwei Rd., Chungho Village, Pitou Hsiang, Changhua Hsien, Taiwan
Filed Mar. 5, 1993, Ser. No. 5,555
Term of patent 14 years
U.S. Cl. D9—310



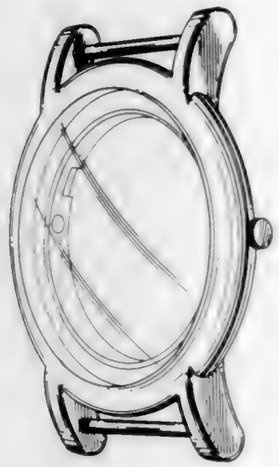
350,286
CRENELLATED FILAMENT PACKAGE
Arthur P. Corella, 8166 Vanscoy Ave., North Hollywood, Calif. 91602
Filed Oct. 5, 1992, Ser. No. 21
Term of patent 14 years
U.S. Cl. D9—337



350,287
SPRAY NOZZLE ATTACHMENT FOR A PRESSURIZED AEROSOL CAN
Shinya Kobayashi, Tokyo, Japan, and Tan S. Cheng, Kuala Lumpur, Malaysia, assignors to Tiram Kimia Sendirian Berhad, Malaysia
Filed Aug. 26, 1992, Ser. No. 935,376
Term of patent 14 years
U.S. Cl. D9—434



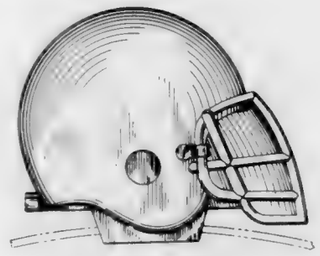
350,288
WATCH CASE
Barbara Giardiello, Naples, Italy, assignor to Lucien Rochat SA, Bienne, Switzerland
Filed Mar. 10, 1992, Ser. No. 849,135
Claims priority, application Hague, Sep. 11, 1991, DMA/001586
Term of patent 14 years
U.S. Cl. D10—30



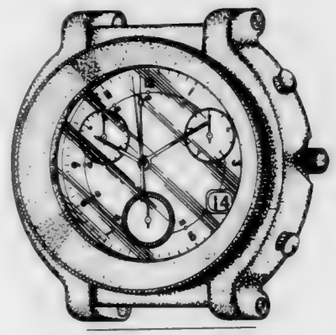
350,289
ELECTROSTATIC DISCHARGE WRIST BAND
Thomas G. Frazier, Waterside Industrial Park, Box B113, R.D. 2, New Hope, Pa. 18938
Filed Jun. 19, 1992, Ser. No. 902,282
Term of patent 14 years
U.S. Cl. D10—32



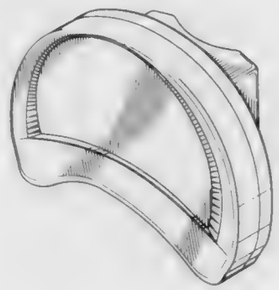
350,290
FOOTBALL HELMET WATCH
William M. Hersch, 725 E. Wahner Pl., Bayside, Wis. 53217
Filed Apr. 6, 1992, Ser. No. 865,590
Term of patent 14 years
U.S. Cl. D10—33



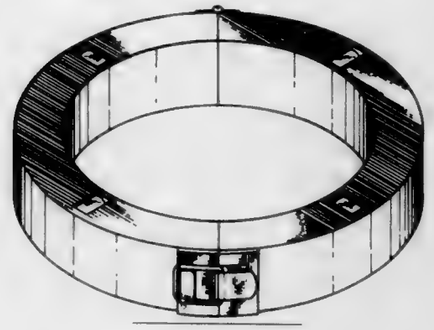
350,291
WATCH
Eddy Burgener, Moutier, Switzerland, assignor to Vuarnet Watches S.A., Collonge-Bellerive, Switzerland
Filed Mar. 19, 1992, Ser. No. 854,953
Claims priority, application Hague, Sep. 25, 1991, DM/020742
Term of patent 14 years
U.S. Cl. D10—39



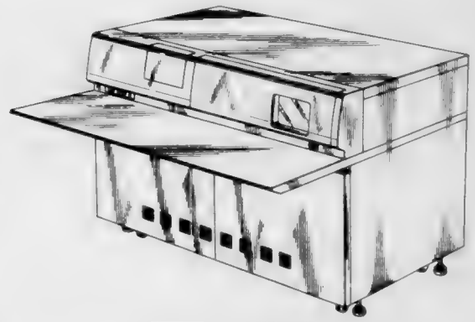
350,292
SCOREBOARD
Kelly Taylor, 91 W. 1100 North, Layton, Utah 84041, and Barry D. Mower, 3310 E. Twin Peaks Dr., Layton, Utah 84040
Filed Jul. 30, 1993, Ser. No. 11,291
Term of patent 14 years
U.S. Cl. D10—46.1



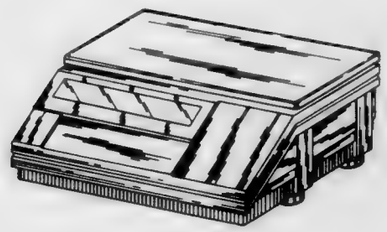
350,293
POLE LEVEL INDICATOR
Tony Vincent, 941 Arroyo Dr., Barstow, Calif. 92311
Filed Apr. 2, 1993, Ser. No. 6,610
Term of patent 14 years
U.S. Cl. D10—69



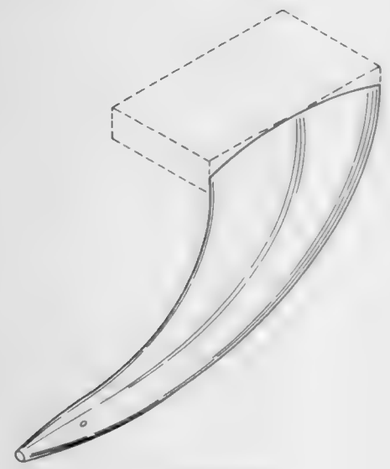
350,294
CONTROL UNIT FOR AN ULTRASONIC FLAW DETECTOR
Hiroaki Nakashima, Tokyo; Toshiyuki Utsuki, Tachikawa; Toshihiko Wada, Musashimurayama; Yukio Arima, Tsukuba, and Tohru Miyata, Tsuchiura, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan
Filed Apr. 28, 1993, Ser. No. 7,632
Claims priority, application Japan, Oct. 28, 1992, 4-31525
Term of patent 14 years
U.S. Cl. D10—75



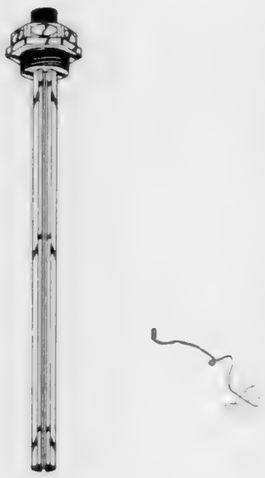
350,295
WEIGHING SCALE
Paul A. Reeder, Columbus, Ohio, assignor to Mettler-Toledo, Inc., Worthington, Ohio
Filed Jun. 10, 1993, Ser. No. 9,309
Term of patent 14 years
U.S. Cl. D10—91



350,296
PITOT AIR DATA SENSOR
Michael T. Peterson, and Jeffrey M. Setterholm, both of Lakeville, Minn., assignors to Rosemount Aserospace, Inc., Akron, Ohio
Continuation of Ser. No. 7,021, Apr. 9, 1993, abandoned, which is a continuation of Ser. No. 917,535, Jul. 21, 1992, abandoned, which is a continuation of Ser. No. 551,101, Jun. 29, 1990, abandoned. This application Nov. 10, 1993, Ser. No. 16,715
Term of patent 14 years
U.S. Cl. D10—96



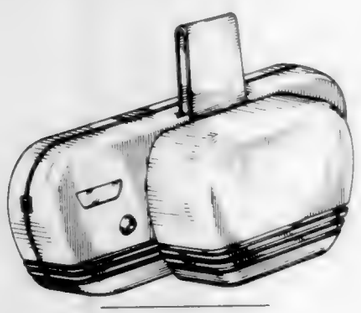
350,297
FLUID SENSOR MOUNTING TRACK
Thomas P. Weisel, Costa Mesa, Calif., assignor to Flowline Inc. Seal Beach, Calif.
Filed Oct. 2, 1992, Ser. No. 153
Term of patent 14 years
U.S. Cl. D10—103



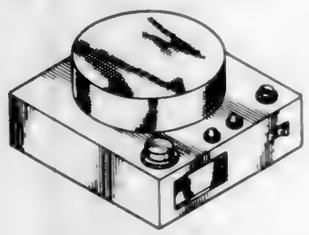
350,298
SIGNAL TRANSMITTER FOR INDICATING THE ARRIVAL OF MAIL
Neal Horton, 18 Lawrence Rd., Hyde Park, N.Y. 12538
Filed Sep. 8, 1992, Ser. No. 941,634
Term of patent 14 years
U.S. Cl. D10—104



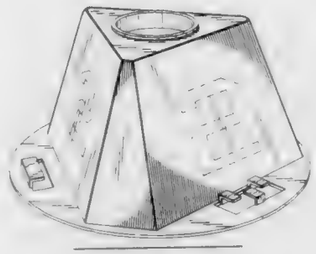
350,299
AUTOMOBILE WINDOW SECURITY ALARM
Russell Fuller, Huntington Beach, Calif., assignor to Coyote Enterprises, Inc., Anaheim, Calif.
Filed Dec. 28, 1993, Ser. No. 16,837
Term of patent 14 years
U.S. Cl. D10—106



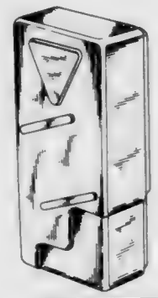
350,300
COMBINED GAS AND CARBON MONOXIDE SENSOR ALARM
Harry F. Browning, and Debra K. Browning, both of 1338 SE. Buckingham Ter., Port St. Lucie, Fla. 34952
Filed Mar. 14, 1994, Ser. No. 19,844
Term of patent 14 years
U.S. Cl. D10—106



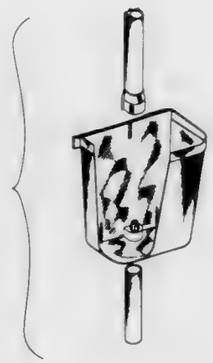
350,301
FREIGHT LOCATOR CONE
Patrick McInally, Corona Del Mar, and Randall M. Gardner, Huntington Beach, both of Calif., assignors to Freight Flag, inc., Huntington Beach, Calif.
Filed Sep. 30, 1993, Ser. No. 13,704
Term of patent 14 years
U.S. Cl. D10—109



350,302
REMOTE ACTUATED CHIME
Curtis L. Dawson, Oxnard, Calif., assignor to With Design In Mind, Chatsworth, Calif.
Filed Mar. 5, 1993, Ser. No. 5,575
Term of patent 14 years
U.S. Cl. D10—118



350,303
PLANT HOLDER AND DRAIN ASSEMBLY
Wladyslaw A. J. P. Holgar, Melbourne, Australia, assignor to Holgar & Holgar Pty. Ltd., Melbourne, Australia
Continuation-in-part of Ser. No. 470,552, Jan. 26, 1990, abandoned. This application Dec. 28, 1992, Ser. No. 3,040
Claims priority, application Australia, Jul. 28, 1989, 2413/89
Term of patent 14 years
U.S. Cl. D11—143



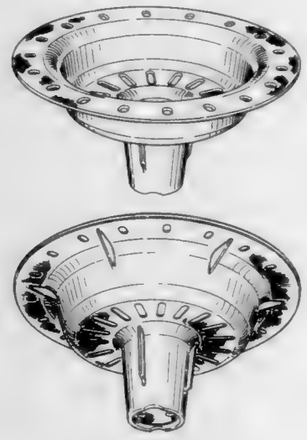
350,304
FIGURE
Norwood D. Oliver, Mantoloking, N.J., and Karen Wenzel-Murphy, Yardley, Pa., assignors to Kinney Shoe Corporation, New York, N.Y.
Filed Nov. 17, 1992, Ser. No. 1,575
Term of patent 14 years
U.S. Cl. D11—160



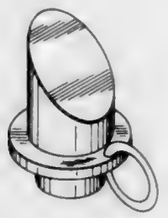
350,305
FIGURE
Norwood D. Oliver, Mantoloking, N.J., and Karen Wenzel-Murphy, Yardley, Pa., assignors to Kinney Shoe Corporation, New York, N.Y.
Filed Nov. 17, 1992, Ser. No. 1,581
Term of patent 14 years
U.S. Cl. D11—160



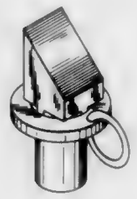
350,306
PLANTER PLATE
Arthur R. Carlson, East Malvern, Australia, assignor to The Decor Corporation Pty. Ltd., Victoria, Australia
Filed Aug. 5, 1992, Ser. No. 926,213
Claims priority, application Australia, Jul. 29, 1992, 2007/92
Term of patent 14 years
U.S. Cl. D11—164



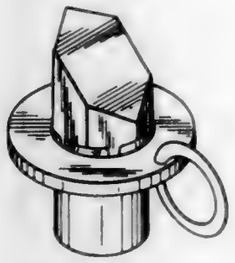
350,307
FLAG STAFF FINIAL
Tucker Willis, and James Cinquemani, Jr., both of Dallas, Tex., assignors to Chaenomeles, Inc., a Texas Corporation, Dallas, Tex.
Filed Apr. 6, 1993, Ser. No. 6,756
Term of patent 14 years
U.S. Cl. D11—181



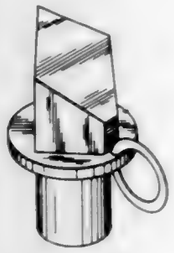
350,308
FLAG STAFF FINIAL
Tucker Willis, and James Cinquemani, Jr., both of Dallas, Tex., assignors to Chaenomeles, Inc., Dallas, Tex.
Filed Apr. 6, 1993, Ser. No. 6,758
Term of patent 14 years
U.S. Cl. D11—181



350,309
FLAG STAFF FINIAL
Tucker Willis, and James Cinquemani, Jr., both of Dallas, Tex., assignors to Chaenomeles, Inc., Dallas, Tex.
Filed Apr. 6, 1993, Ser. No. 6,762
Term of patent 14 years
U.S. Cl. D11—181



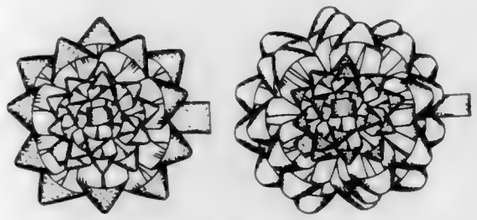
350,310
FLAG STAFF FINIAL
Tucker Willis, and James Cinquemani, Jr., both of Dallas, Tex., assignors to Chaenomeles, Inc., Dallas, Tex.
Filed Apr. 6, 1993, Ser. No. 6,763
Term of patent 14 years
U.S. Cl. D11—181



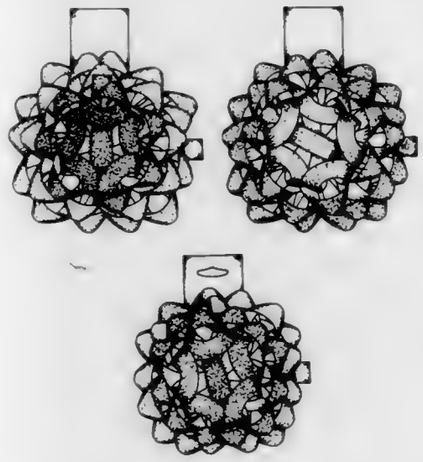
350,311
FLAG STAFF MOUNTING BASE
Tucker Willis, and James Cinquemani, Jr., both of Dallas, Tex., assignors to Chaenomeles, Inc., Dallas, Tex.
Filed Apr. 6, 1993, Ser. No. 6,764
Term of patent 14 years
U.S. Cl. D11—182



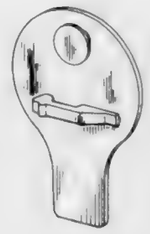
350,312
BOW WITHIN A BOW
Howard Edwards, 337 Farmers La., Lebanon, Mo. 65536
Filed Oct. 9, 1992, Ser. No. 352
Term of patent 14 years
U.S. Cl. D11—184



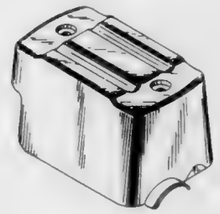
350,313
MULTICOLORED BOW
Howard Edwards, 337 Farmers La., Lebanon, Mo. 65536
Filed Oct. 9, 1992, Ser. No. 353
Term of patent 14 years
U.S. Cl. D11—184



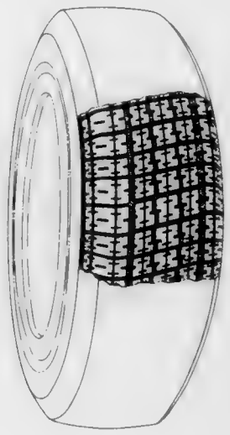
350,314
RETAINER FOR FASTENING BALLOON STRING TO CLOTHING
Kay Schweitzer, 1700 E Avenue NW., Cedar Rapids, Iowa 52405
Filed Mar. 26, 1993, Ser. No. 6,388
Term of patent 14 years
U.S. Cl. D8—200



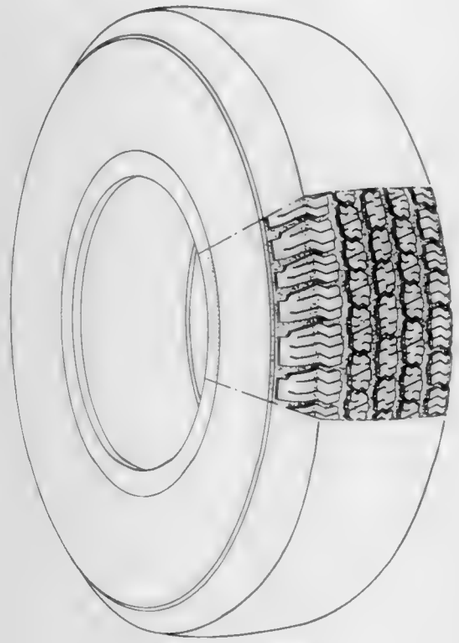
350,315
COVER FOR A MASTER CYLINDER COVER
Tom Rudd, Hudson, Wis., and Alwin J. Stahel, St. Paul, Minn., assignors to KuryAkyn Holdings, Inc., Somerset, Wis.
Filed May 3, 1993, Ser. No. 7,783
Term of patent 14 years
U.S. Cl. D12—126



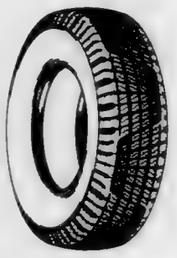
350,316
TIRE TREAD
David J. Sulkowski, Guilford, Conn., assignor to Pirelli Armstrong Tire Corporation, New Haven, Conn.
Filed Aug. 14, 1992, Ser. No. 929,567
Term of patent 14 years
U.S. Cl. D12—147



350,317
TIRE
Bruno Evraert, Taylors, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Dec. 7, 1992, Ser. No. 2,431
Term of patent 14 years
U.S. Cl. D12—147



350,318
AUTOMOBILE TIRE
Hiroaki Kajita, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Feb. 5, 1993, Ser. No. 4,445
Claims priority, application Japan, Aug. 24, 1992, 4-25065
Term of patent 14 years
U.S. Cl. D12—147



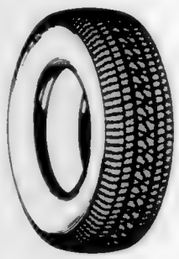
350,319
TIRE TREAD
William E. Egan, Tallmadge, Ohio; Paul B. Maxwell, Mamer, Luxembourg, and Sean D. Montag, Westerville, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 24, 1993, Ser. No. 5,162
Term of patent 14 years
U.S. Cl. D12—147



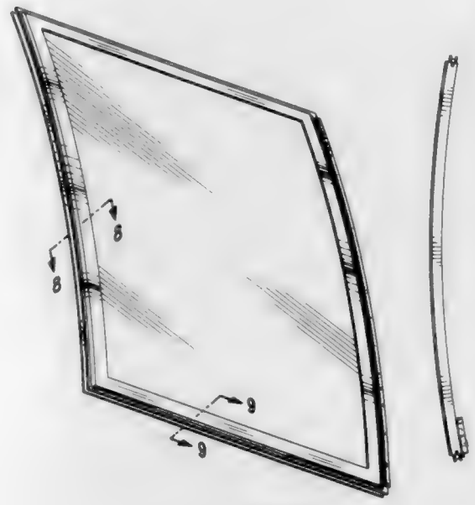
350,320
AUTOMOBILE TIRE
Toshiaki Suzuki, Ashiya, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Mar. 11, 1993, Ser. No. 5,800
Claims priority, application Japan, Sep. 18, 1992, 4-27558
Term of patent 14 years
U.S. Cl. D12—147



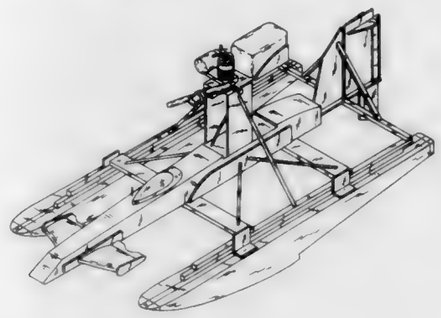
350,321
AUTOMOBILE TIRE
Sonoko Sugimoto, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Mar. 22, 1993, Ser. No. 6,159
Claims priority, application Japan, Sep. 24, 1992, 4-28154
Term of patent 14 years
U.S. Cl. D12—147



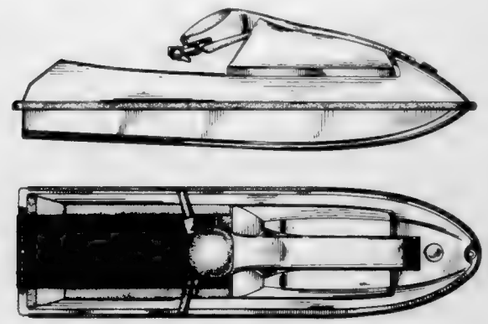
350,322
WINDOW PROTECTOR ASSEMBLY
Dale E. Carson, Murrieta, and Jerry L. Farrar, Banning, both of Calif., assignors to D/T Carson Enterprises, Inc., Murrieta, Calif.
Filed May 14, 1992, Ser. No. 883,408
Term of patent 14 years
U.S. Cl. D12—183



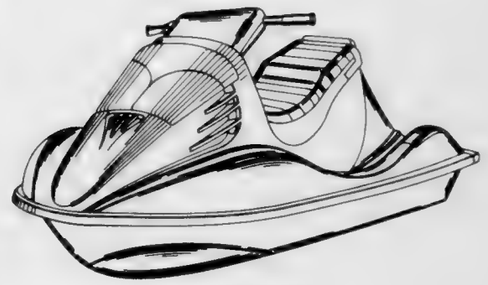
350,323
REMOTELY-CONTROLLED POWER BOAT
Joseph L. Stracuzzi, 355D Bolivar St., Canton, Mass. 02021
Filed Mar. 18, 1993, Ser. No. 6,204
Term of patent 14 years
U.S. Cl. D12—300



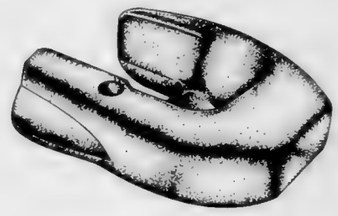
350,324
JET SKI
Edward W. Miller, 20022 Daniel La., Orange, Calif. 92669
Filed May 24, 1993, Ser. No. 8,660
Term of patent 14 years
U.S. Cl. D12—307



350,325
PERSONAL WATERCRAFT WITH SEAT
Albert Mardikian, Corona Del Mar, Calif., assignor to Mardikian 1991 Irrevocable Trust, Corona Del Mar, Calif.
Filed May 27, 1993, Ser. No. 8,806
Term of patent 14 years
U.S. Cl. D12—307



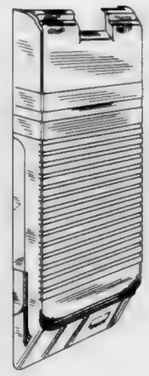
350,326
PERSONAL FLOTATION DEVICE
John Grifflin, 3737 E. Kent Dr., Phoenix, Ariz. 85044
Continuation-in-part of Ser. No. 840,981, Feb. 25, 1992, abandoned. This application Nov. 9, 1993, Ser. No. 15,135
Term of patent 14 years
U.S. Cl. D12—316



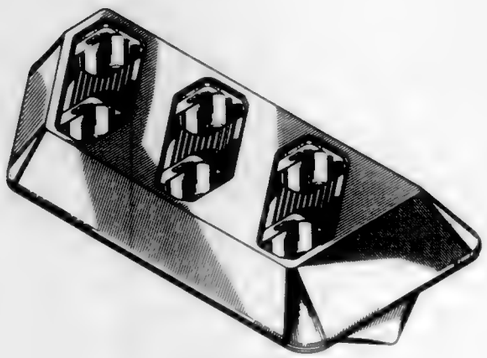
350,327
RECREATIONAL BOAT STERN
James M. Douglass, Palmetto, Fla., assignor to Outboard Marine Corporation, Del.
Filed Feb. 12, 1993, Ser. No. 4,759
Term of patent 14 years
U.S. Cl. D12—318



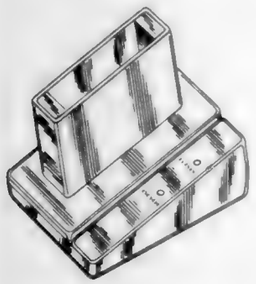
350,328
CELLULAR TELEPHONE BATTERY
Jon K. Alexandres; Gary J. Downs, and William R. Peterson, all of Mason City, Iowa, assignors to Alexander Manufacturing Company, Mason City, Iowa
Filed Feb. 11, 1992, Ser. No. 833,897
Term of patent 14 years
U.S. Cl. D13—103



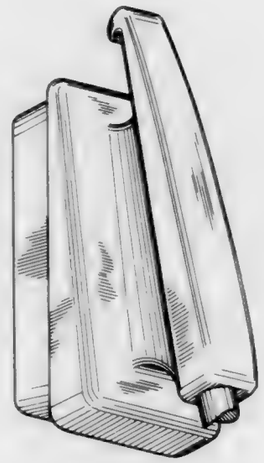
350,329
MULTI-UNIT BATTERY CHARGER FOR PORTABLE RADIO BATTERIES
Phillip E. Lindeman, Roselle, Ill., and David M. Meyers, Margate, Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 2, 1992, Ser. No. 843,093
Term of patent 14 years
U.S. Cl. D13—107



350,330
PERSONAL BATTERY CHARGER
William R. Peterson, Mason City, Iowa, assignor to Alexander Manufacturing Co., Mason City, Iowa
Filed Apr. 14, 1993, Ser. No. 7,010
Term of patent 14 years
U.S. Cl. D13—107



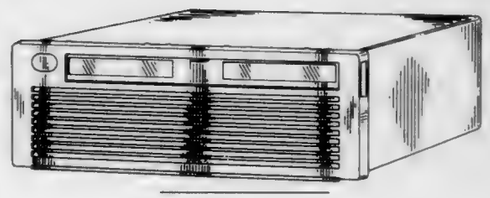
350,331
DEAD FRONT ELECTRICAL CONNECTOR FOR RECHARGING ELECTRIC VEHICLES
Ernest G. Hoffman, Middlefield, and Jerome E. Zimmermann, Southington, both of Conn., assignors to Hubbell Incorporated, Orange, Conn.
Filed Feb. 3, 1993, Ser. No. 5,495
Term of patent 14 years
U.S. Cl. D13—133



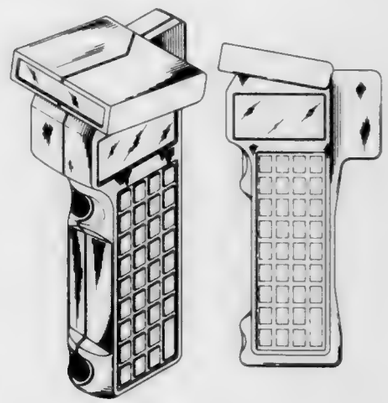
350,332
DEAD FRONT ELECTRICAL CONNECTOR FOR CHARGING ELECTRIC CARS
Ernest G. Hoffman, Middlefield, Conn., assignor to Hubbell Incorporated, Orange, Conn.
Filed Apr. 30, 1993, Ser. No. 7,891
Term of patent 14 years
U.S. Cl. D13—133



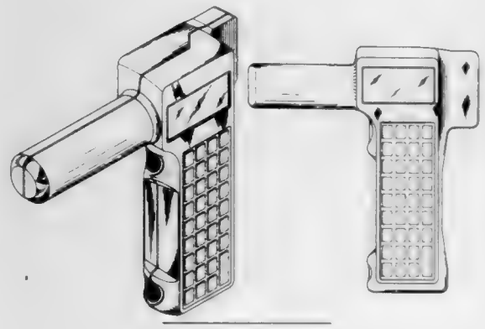
350,333
RACK MOUNTED DATA STORAGE UNIT FOR A DATA PROCESSING SYSTEM
Michael H. Sharp, Winchester, United Kingdom, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 17, 1992, Ser. No. 824,478
Claims priority, application United Kingdom, Jul. 18, 1991, 2016106
Term of patent 14 years
U.S. Cl. D14—100



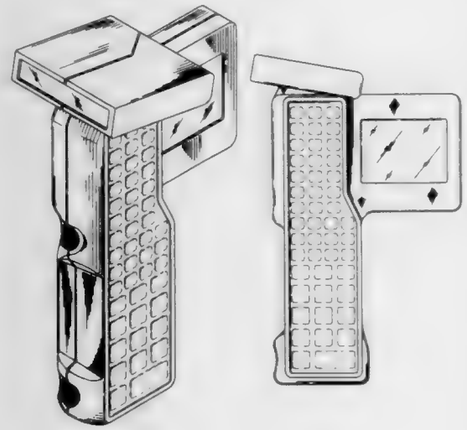
350,334
GRIP HELD DATA ENTRY COMPUTER HAVING AN AUTOMATIC IDENTIFICATION READER
Rajendra Kumar, and John W. Morrison, II, both of Akron, Ohio, assignors to Khyber Technologies Corporation, Fairlawn, Ohio
Filed Oct. 21, 1992, Ser. No. 688
Term of patent 14 years
U.S. Cl. D14—100



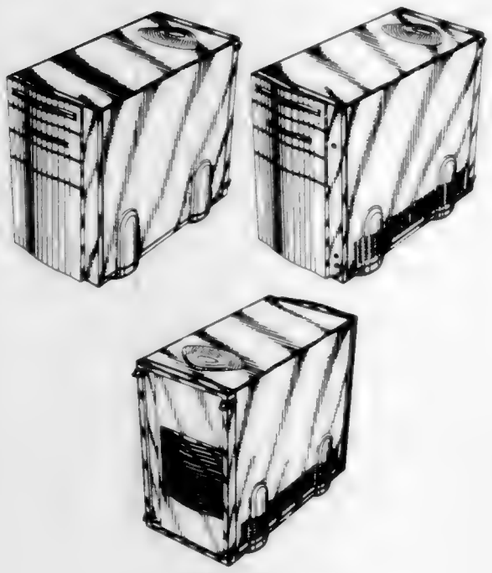
350,335
GRIP HELD DATA ENTRY COMPUTER HAVING AN AUTOMATIC IDENTIFICATION READER
Rajendra Kumar, and John W. Morrison, II, both of Akron, Ohio, assignors to Khyber Technologies Corporation, Fairlawn, Ohio
Filed Oct. 21, 1992, Ser. No. 690
Term of patent 14 years
U.S. Cl. D14—100



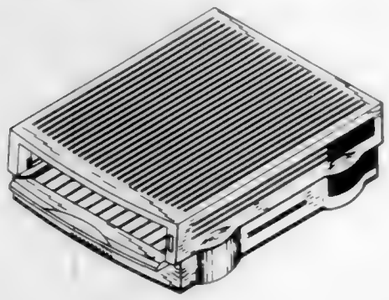
350,336
GRIP HELD DATA ENTRY COMPUTER HAVING AN AUTOMATIC IDENTIFICATION READER AND MODIFIED DISPLAY
Rajendra Kumar, and John W. Morrison, II, both of Akron, Ohio, assignors to Khyber Technologies Corporation, Fairlawn, Ohio
Filed Nov. 24, 1992, Ser. No. 1,810
Term of patent 14 years
U.S. Cl. D14—100



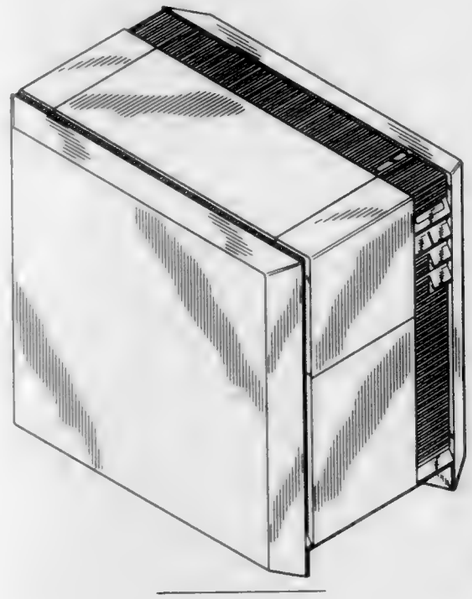
350,337
ENCLOSURE FOR A COMPUTER
Raymond W. Riley, San Jose; Wayne H. Miller, Mountain View, and Kenneth D. Wood, Woodside, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Feb. 8, 1993, Ser. No. 4,563
Term of patent 14 years
U.S. Cl. D14—102



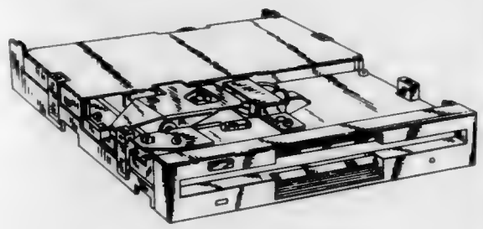
350,338
DOCKING STATION FOR RECEIVING A PORTABLE COMPUTER
Jay Meschter, Menlo Park; Tim Parsey; David W. Laituri, both of Palo Alto, and Lawrence Lam, Cupertino, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Oct. 14, 1992, Ser. No. 413
Term of patent 14 years
U.S. Cl. D14—107



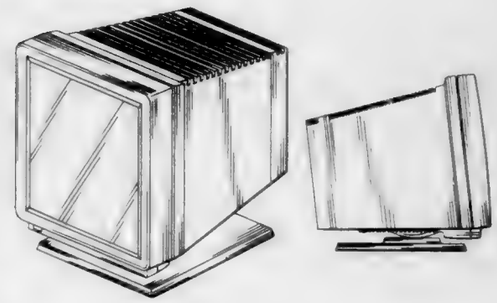
350,339
CLIENT SERVER UNIT FOR USE WITH A COMPUTER NETWORK
Thomas D. Carroll, San Jose; Fred J. Berkowitz, Los Gatos; Eric M. Monsef, San Jose, and David R. Hargis, Cupertino, all of Calif., assignors to Hal Computer Systems, Inc., Campbell, Calif.
Filed Apr. 28, 1993, Ser. No. 7,628
Term of patent 14 years
U.S. Cl. D14—107



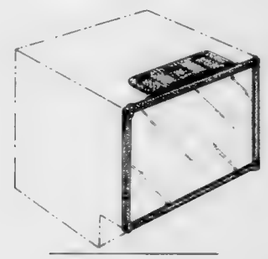
350,340
DISC DRIVE
Hiroyuki Inayama, Tokyo, and Takao Akiba, Omiya, both of Japan, assignors to Teac Corporation, Tokyo, Japan
Filed Sep. 4, 1991, Ser. No. 754,728
Claims priority, application Japan, Mar. 5, 1991, 3-5917
The portion of the term of this patent subsequent to Aug. 3, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—109



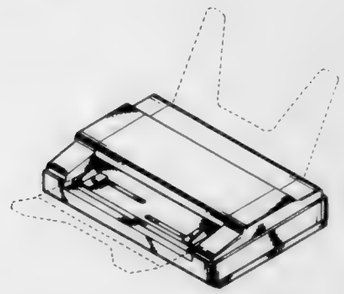
350,341
DISPLAY MONITOR
Christian C. Landry, Harvard, Mass., assignor to Digital Equipment Corp., Maynard, Mass.
Filed Mar. 16, 1993, Ser. No. 6,094
Term of patent 14 years
U.S. Cl. D14—113



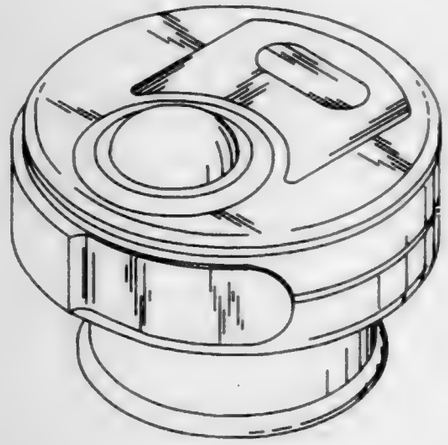
350,342
COMBINED OPTICAL VIEWING ENHANCER AND SUPPORT FOR A COMPUTER MONITOR
Arthur Sack, Staatsburg, N.Y., assignor to Less Gauss, Inc., Rhinebeck, N.Y.
Filed Mar. 31, 1992, Ser. No. 862,288
Term of patent 14 years
U.S. Cl. D14—114



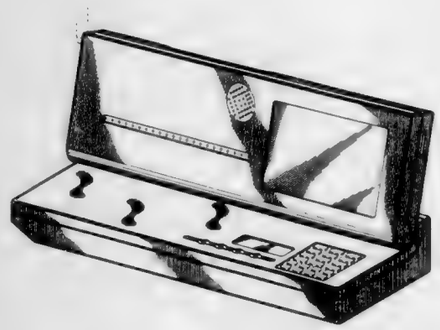
350,343
IMAGE PROCESSING MACHINE FOR INPUTTING RECORDING MEDIUM INTO A PERSONAL COMPUTER
Hidemi Saito; Eiji Nakazawa, and Kenichi Yui, all of Minamikoma, Japan, assignors to Nisca Corporation, Yamanashi, Japan
Filed Aug. 12, 1992, Ser. No. 928,192
Claims priority, application Japan, Feb. 22, 1992, 4-4673
Term of patent 14 years
U.S. Cl. D14—114



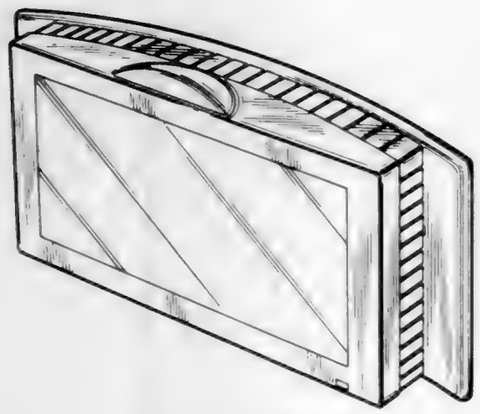
350,344
COMPUTER POINTING DEVICE
Kazuo Nakada, Sagamihara, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 13, 1993, Ser. No. 6,998
Claims priority, application Japan, Oct. 13, 1992, 4-29843
Term of patent 14 years
U.S. Cl. D14—114



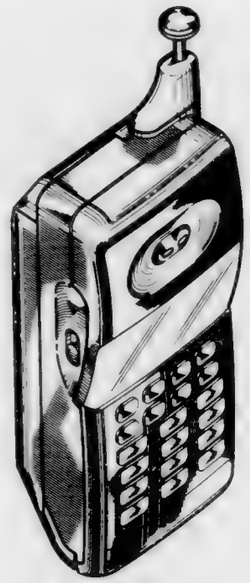
350,345
PERSONAL VIDEO COMMUNICATOR
Phillip E. Lindeman; Dominic Errichiello, both of Roselle, and Frank J. Cerny, Jr., North Riverside, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 2, 1992, Ser. No. 844,411
Term of patent 14 years
U.S. Cl. D14—125



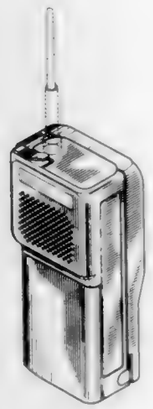
350,346
TELEVISION RECEIVER
Hirofumi Takemasa, Osaka; Eiichiro Naito, Hyogo; Hiroyuki Maeno, Osaka; Tadakazu Narikawa, Kanagawa, and Junichi Yamada, Saitama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 15, 1993, Ser. No. 15,313
Claims priority, application Japan, May 17, 1993, 5-14321
Term of patent 14 years
U.S. Cl. D14—126



350,348
PORTABLE TELEPHONE
Daniel L. Williams, Vernon Hills; Terrance N. Taylor, Barrington, and Paul J. Kudrna, Streamwood, all of Ill., assignors to Motorola Inc., Schaumburg, Ill.
Filed Mar. 23, 1993, Ser. No. 6,090
Term of patent 14 years
U.S. Cl. D14—138



350,347
PORTABLE RADIO TWO-WAY COMMUNICATIONS DEVICE
James L. Tracy, Margate, Fla., and Phillip E. Lindeman, Roselle, Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 31, 1992, Ser. No. 936,539
Term of patent 14 years
U.S. Cl. D14—137



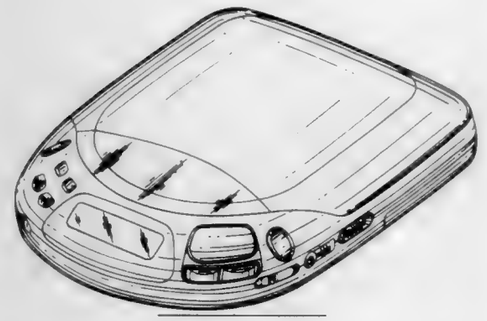
350,349
PORTABLE TELEPHONE
Daniel L. Williams, Vernon Hills, and Terrance N. Taylor, Barrington, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.
Filed Mar. 24, 1993, Ser. No. 6,112
Term of patent 14 years
U.S. Cl. D14—138



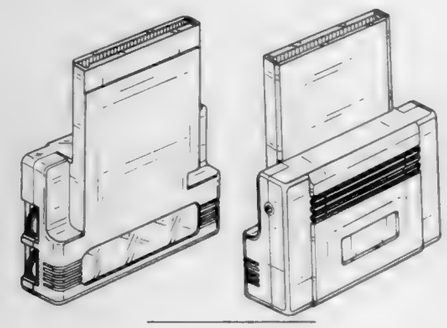
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PORTABLE TELEPHONE
ALbert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 27, 1993, Ser. No. 7,610
Term of patent 14 years
U.S. Cl. D14—138



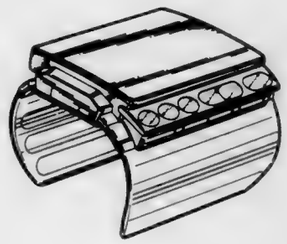
350,352
DIGITAL AUDIO DISC PLAYER
Takahiro Tsuge, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 26, 1993, Ser. No. 12,251
Claims priority, application Japan, Feb. 26, 1993, 5-5701
Term of patent 14 years
U.S. Cl. D14—156



350,353
RADIO CARTRIDGE FOR PORTABLE VIDEO GAME MACHINE
Don Schulman, Winter Garden, Fla., assignor to Beeshu Inc., Winter Garden, Fla.
Filed May 20, 1993, Ser. No. 8,612
Term of patent 14 years
U.S. Cl. D14—188



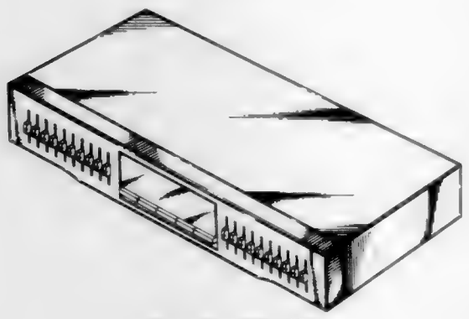
350,351
MINI-DISK PLAYER
Koji Nakamura, Narashino, Japan, assignor to Aiwa Co., Ltd., Tokyo, Japan
Filed Oct. 15, 1992, Ser. No. 472
Claims priority, application Japan, May 25, 1992, 4-15154
Term of patent 14 years
U.S. Cl. D14—156



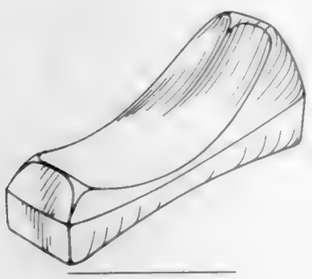
350,354
HEADPHONE
Mitsuhiro Nakamura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 15, 1992, Ser. No. 2,645
Claims priority, application Japan, Jun. 16, 1992, 4-17786
Term of patent 14 years
U.S. Cl. D14—205



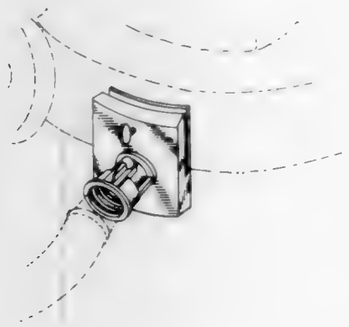
350,355
GRAPHIC EQUALIZER
Masafumi Ito, Tokyo; Minoru Sube, Hachioji, and Haruki Takita, Tokyo, all of Japan, assignors to TEAC Corporation, Japan
Filed Aug. 5, 1992, Ser. No. 925,475
Claims priority, application Japan, Feb. 14, 1992, 4-4073
Term of patent 14 years
U.S. Cl. D14—217



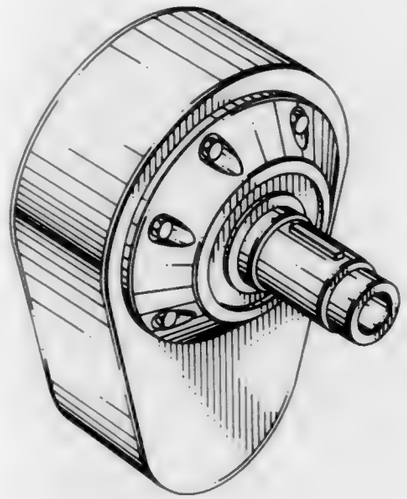
350,356
SHOULDER REST FOR A TELEPHONE
Donald M. Wood, Mesa, Ariz., assignor to Dynatec International, Inc., Salt Lake City, Utah
Filed May 7, 1993, Ser. No. 8,074
Term of patent 14 years
U.S. Cl. D14—253



350,357
LAWN MOWER CLEANING ATTACHMENT
Yarmouth Maine, 501 Ledge Rd., Yarmouth, Me. 04096
Filed Mar. 5, 1992, Ser. No. 845,437
Term of patent 14 years
U.S. Cl. D15—17



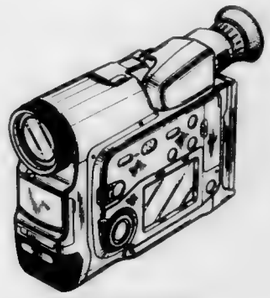
350,358
AIR BOAT TRANSMISSION HOUSING
Bruce Kaye, Inverness, Fla., assignor to K-Way Engineering, Inc., Cocoa, Fla.
Filed Apr. 16, 1993, Ser. No. 7,296
Term of patent 14 years
U.S. Cl. D15—149



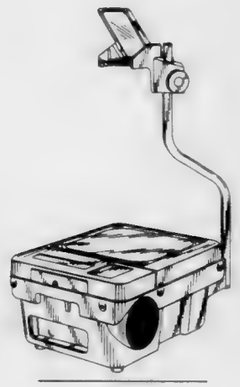
350,359
CLIP FOR CLIP-ON SUNGLASSES
Sidney F. Friedman, Oceanside, N.Y., assignor to Opsales/Lensservice, Inc., Island Park, N.Y.
Filed May 4, 1992, Ser. No. 878,884
Term of patent 14 years
U.S. Cl. D16—334



350,360
VIDEO CAMERA WITH VIDEO TAPE RECORDER
Yuzuru Masuda, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 10, 1993, Ser. No. 5,739
Claims priority, application Japan, Sep. 10, 1992, 4-26995
Term of patent 14 years
U.S. Cl. D16—202



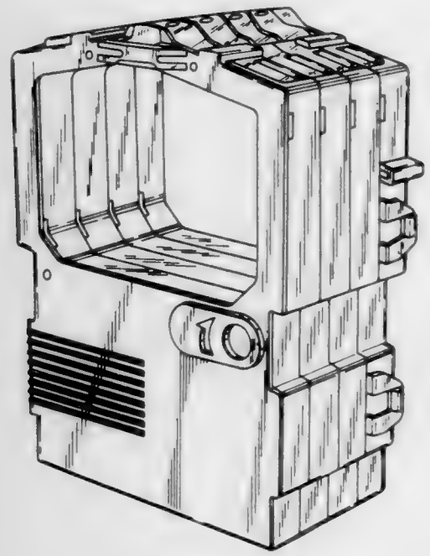
350,361
OVERHEAD PROJECTOR
Fumio Hasegawa, Nagoya, Japan, assignor to Elmo Company, Japan
Filed May 6, 1992, Ser. No. 879,223
Claims priority, application Japan, Jan. 8, 1992, 4-172
Term of patent 14 years
U.S. Cl. D16—232



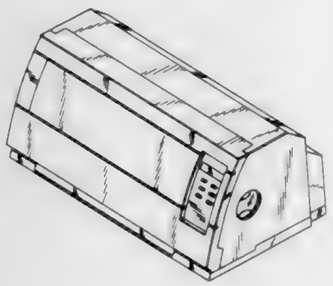
350,362
MUSICAL DRUM RIM
Junji Fujii, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan
Filed Oct. 30, 1991, Ser. No. 784,823
Claims priority, application Japan, May 8, 1991, 13170
Term of patent 14 years
U.S. Cl. D17—22



350,363
INK RIBBON CARTRIDGE
Masaaki Iwamoto, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jun. 11, 1992, Ser. No. 896,962
Claims priority, application Japan, Apr. 3, 1992, 09715/1992
Term of patent 14 years
U.S. Cl. D18—12



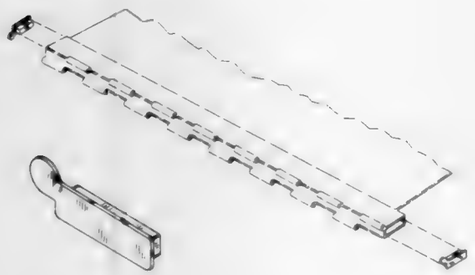
350,364
PRINTER FOR COMPUTER
Tsunemi Kawashima, and Akihiko Matsuo, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan
Filed Jun. 3, 1993, Ser. No. 9,093
Claims priority, application Japan, Mar. 23, 1993, 58201/93
Term of patent 14 years
U.S. Cl. D18—50



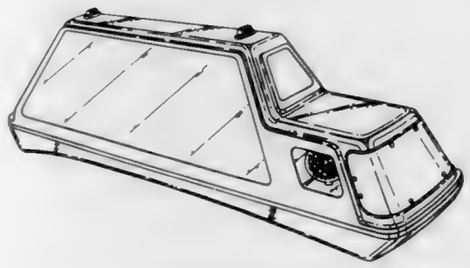
350,365
BINDER WITH DISPLAY POCKETS
Linda A. Kelley, Dayton, and Mark J. Davis, Centerville, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio
Filed Dec. 7, 1992, Ser. No. 2,249
Term of patent 14 years
U.S. Cl. D19—27



350,366
END CAP FOR DISPLAY BOOK SPINE
Peter Kantor, Flushing, N.Y., assignor to Thomson-Leeds Company, Inc., New York, N.Y.
Filed Jun. 21, 1993, Ser. No. 9,737
Term of patent 14 years
U.S. Cl. D19—32



350,367
ILLUMINATED SIGN
Leonard W. McKelvey, Nerang, Australia, assignor to AD-A-CAB International Pty Ltd, Australia
Filed Jul. 15, 1993, Ser. No. 10,674
Claims priority, application New Zealand, Feb. 11, 1993, 24992
Term of patent 14 years
U.S. Cl. D20—10



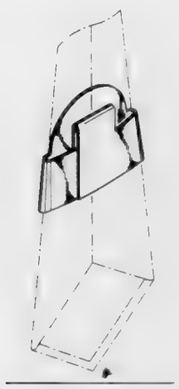
350,368
FLOOR SIGN
Donald E. Steinwachs, Williamsville; Scott A. Wardour, Grand Island; Karen A. Budzinski, East Amherst; Michael G. Tato, Kenmore, and Clarice H. Otminski, Lancaster, all of N.Y., assignors to Emed Co., Inc., Buffalo, N.Y.
Filed Aug. 30, 1993, Ser. No. 12,287
Term of patent 14 years
U.S. Cl. D20—10



350,369
ADVERTISING DISPLAY SIGN
Brian Shafley, Columbus, Ohio, assignor to Pease Industries, Inc., Fairfield, Ohio
Filed Nov. 5, 1993, Ser. No. 15,080
Term of patent 14 years
U.S. Cl. D20—10



350,370
NECKTIE LABEL
Randall R. Lockard, Coppell, Tex., assignor to TBAC Investment Trust, Arlington, Tex.
Filed Jan. 11, 1993, Ser. No. 3,513
Term of patent 14 years
U.S. Cl. D20—22



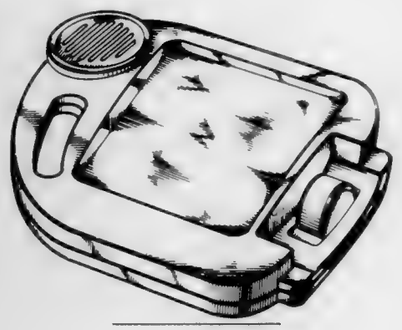
350,371
COMBINED GIFT TAG AND TREE ORNAMENT
Michelle V. Rayle, 4650 Sandy Camp Rd., High Point, N.C. 27265
Filed Jul. 19, 1993, Ser. No. 10,820
Term of patent 14 years
U.S. Cl. D20—22



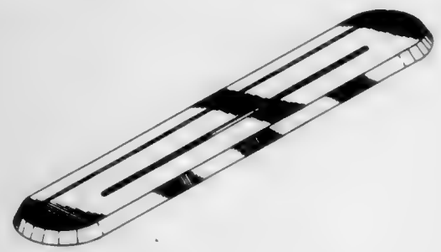
350,372
SET OF BIDDING CARDS FOR THE CARD GAME OF BRIDGE
Per Jannersten, Krylbo, Sweden, assignor to Jannersten Forlag AB, Avesta, Sweden
Filed Aug. 12, 1991, Ser. No. 743,601
Term of patent 14 years
U.S. Cl. D21—45



350,373
HOUSING FOR AN ELECTRONIC INSTRUCTIONAL GAME APPARATUS
Chi K. W. Chow, Shatin; Frederick L. T. Tsang, Sai Ying Pun, and Chung P. C. Lau, West Point, all of Hong Kong, assignors to Vtech Industries, Inc., Wheeling, Ill.
Filed Dec. 29, 1992, Ser. No. 3,060
Term of patent 14 years
U.S. Cl. D21—48



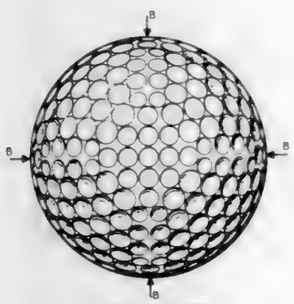
350,374
PLAYING CARD HOLDER
Edward Comeau, RR #1, Ayr Ontario, CN N0B 1E0, Canada
Filed Jun. 3, 1992, Ser. No. 892,014
Term of patent 14 years
U.S. Cl. D21—54



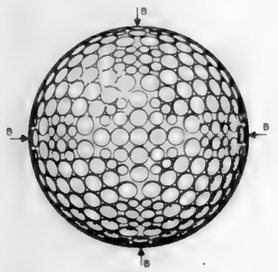
350,375
CAT DOLL
George Kennedy, Granada Hills, Calif., assignor to Fact Games, Ltd., San Jose, Calif.
Filed Dec. 16, 1992, Ser. No. 2,566
Term of patent 14 years
U.S. Cl. D21—163



350,376
GOLF BALL
Richard R. Sanchez, Peoria, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Dec. 28, 1992, Ser. No. 3,090
Term of patent 14 years
U.S. Cl. D21—205



350,377
GOLF BALL
Richard R. Sanchez, Peoria, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Jul. 26, 1993, Ser. No. 11,101
Term of patent 14 years
U.S. Cl. D21—205



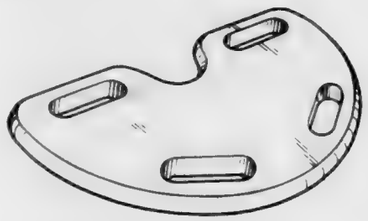
350,378
CONNECTING PIECE FOR THE HANDLE AND SHAFT OF A RACKET
Michael E. Curtis, Wakefield, Great Britain, assignor to Dunlop Limited, London, England
Filed Jan. 29, 1993, Ser. No. 4,255
Term of patent 14 years
U.S. Cl. D21—221



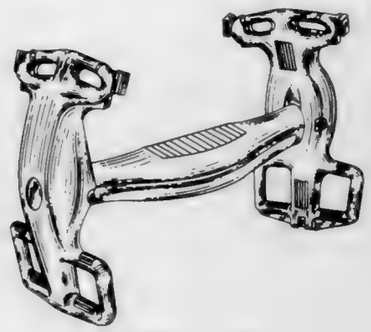
350,379
FOREHEAD ENGAGING SWIMMING SNORKEL
Kris W. Kirchner, 2810 David Dr., Bloomington, Ind. 47401
Filed Aug. 23, 1993, Ser. No. 12,114
Term of patent 14 years
U.S. Cl. D24—110.5



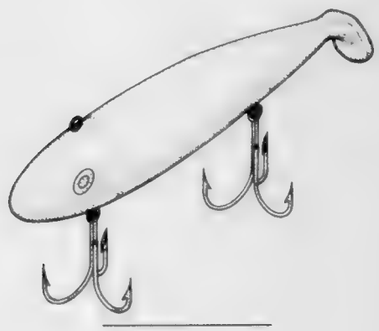
350,380
KICK BOARD FLOTATION DEVICE
Dianne D. Rothhammer, 1431 Pomeroy Rd., Arroyo Grande, Calif. 93420
Filed Aug. 27, 1993, Ser. No. 12,224
Term of patent 14 years
U.S. Cl. D21—237



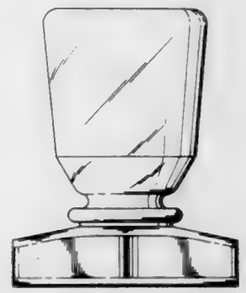
350,381
CHILDREN'S SWING
Russell J. Coddington, Jr., Everett, and Charles L. Voytko, Johnstown, both of Pa., assignors to Hedstrom Corporation, Bedford, Pa.
Filed Nov. 19, 1992, Ser. No. 1,659
Term of patent 14 years
U.S. Cl. D21—246



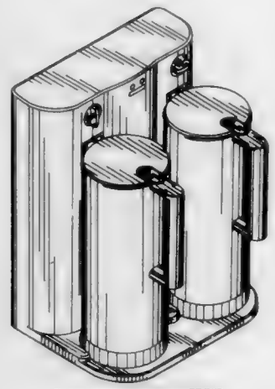
350,382
FISHING LURE
William T. Mann, Eufaula, Ala., assignor to Fish World, Inc., Eufaula, Ala.
Filed Jun. 18, 1992, Ser. No. 900,336
Term of patent 14 years
U.S. Cl. D22—133



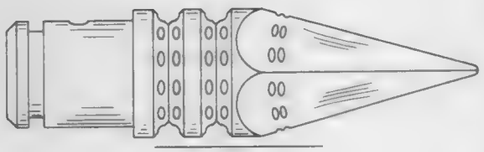
350,383
FERTILIZING MATERIAL CONTAINER FOR LAWN AND GARDEN
William S. Taylor, 16014 Rustic Sands, Houston, Tex. 77084
Filed Oct. 16, 1992, Ser. No. 504
Term of patent 14 years
U.S. Cl. D23—207



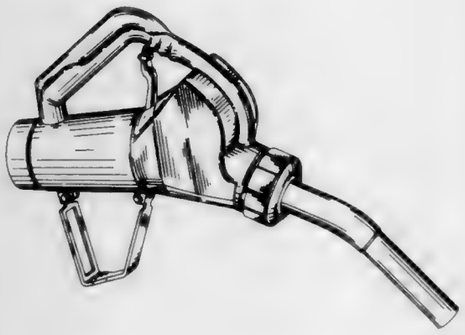
350,384
PURIFIED WATER DISPENSER
Laurence W. Bassett, Westminster, Calif.; Robert A. Slovak, Incline Village, Nev., and David R. Spears, Laguna Niguel, Calif., assignors to Water Factory Systems, Irvine, Calif.
Filed Mar. 14, 1990, Ser. No. 493,856
The portion of the term of this patent subsequent to Apr. 6, 1994, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—207



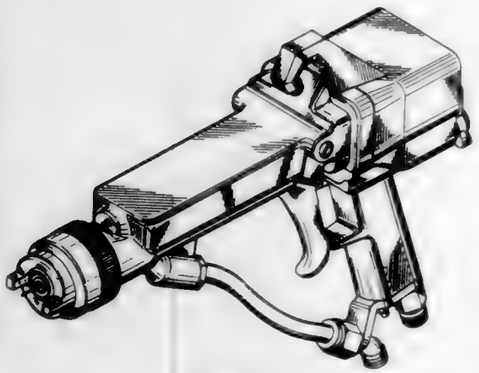
350,385
NOZZLE FOR A FIRE FIGHTING TOOL
Wallace F. Mitchell, Mettawa, Ill., assignor to Continental Precision Products, Inc., Barrington, Ill.
Filed Oct. 15, 1993, Ser. No. 14,228
Term of patent 14 years
U.S. Cl. D23—213



350,386
FUEL DISPENSING NOZZLE
Kenneth W. Dotson, and Stewart MacHarmon, both of Raleigh, N.C., assignors to Emco Wheaton, Inc., Cary, N.C.
Filed Oct. 19, 1992, Ser. No. 1,149
Term of patent 14 years
U.S. Cl. D23—223



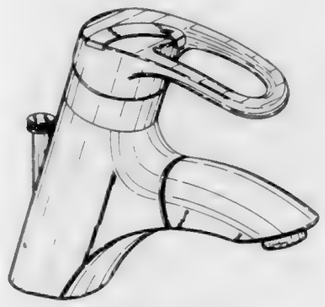
350,387
ELECTROSTATIC SPRAY GUN
Ann C. Feitel, Minneapolis; Stanley G. Karwoski, Oakdale; Robert J. Lind, Robinsdale; Thomas M. Grimm, Robinsdale, all of Minn.
Filed Sep. 26, 1991, Ser. No. 766,709
The portion of the term of this patent subsequent to Dec. 18, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—226



350,388
FAUCET
Adolf Gottwald, Iserlohn, Fed. Rep. of Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Fed. Rep. of Germany
Filed May 13, 1992, Ser. No. 882,630
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1991, M9108292.7
Term of patent 14 years
U.S. Cl. D23—238



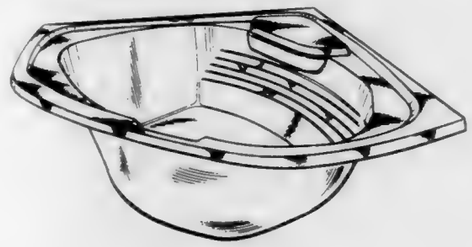
350,389
FAUCET
Adolf Gottwald, Iserlohn, Fed. Rep. of Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Fed. Rep. of Germany
Filed May 13, 1992, Ser. No. 882,637
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1991, M9108292.7
Term of patent 14 years
U.S. Cl. D23—238



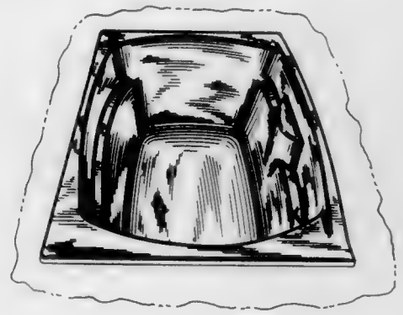
350,390
SPOUT
John E. Bollenbacher, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 14, 1993, Ser. No. 3,783
Term of patent 14 years
U.S. Cl. D23—255



350,391
BATH TUB
Alexander M. Gardiner, Toronto, Canada, assignor to MRL Inc., Toronto, Canada
Filed Jun. 12, 1992, Ser. No. 897,558
Claims priority, application Canada, Apr. 21, 1992, 2104922
Term of patent 14 years
U.S. Cl. D23—277



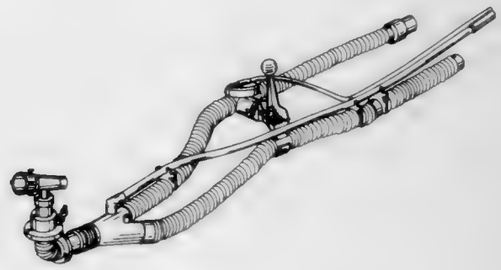
350,392
TUB FOR BATHING
Herbert V. Kohler, Jr., Kohler, Wis.; Pierre H. Paulin; Francois Kergoet, both of Paris, France, and Michel Chalard, Villemomble, France, assignors to Jacob Delafon, Paris, France
Division of Ser. No. 789,479, Nov. 8, 1991, abandoned. This application Nov. 6, 1992, Ser. No. 973,587
Term of patent 14 years
U.S. Cl. D23—277



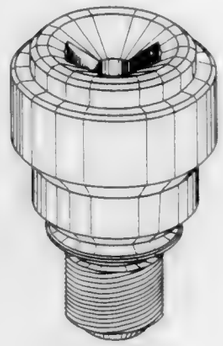
350,393
LOW PROFILE GASTROSTOMY CATHETER
Laurence A. Potter, Flemington, N.J., assignor to Teleflex, Inc., Plymouth Meeting, Pa.
Filed Dec. 8, 1992, Ser. No. 2,351
Term of patent 14 years
U.S. Cl. D24—108



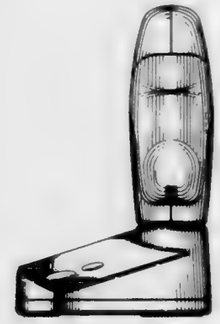
350,394
VENTILATOR CIRCUIT
Duane D. Kazal, Valencia, Calif., assignor to Baxter International Inc., Deerfield, Ill.
Filed Mar. 16, 1992, Ser. No. 851,357
Term of patent 14 years
U.S. Cl. D24—164



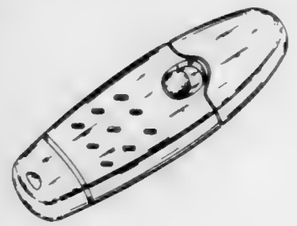
350,395
CONNECTOR COUPLING FOR A HEARING AID
Bo Håkansson, Spentvedsgatan 7, S-416 80 Göteborgs, Sweden
Division of Ser. No. 497,577, Mar. 22, 1990, abandoned. This application Jul. 2, 1992, Ser. No. 908,217
Term of patent 14 years
U.S. Cl. D24—173



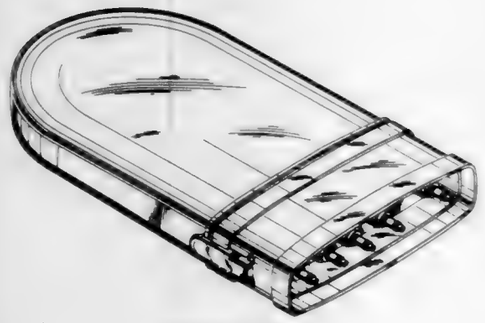
350,396
HAND-HELD VIBRATOR
Howard Wollman, and Matt J. Wollman, both of North Hollywood, Calif., assignors to Hwe, Inc., North Hollywood, Calif.
Filed Apr. 23, 1992, Ser. No. 872,662
Term of patent 14 years
U.S. Cl. D24—214



350,397
COMBINED WET AND DRY MASSAGER
Robert Bruno, Avon, and Tim C. Repp, New Hartford, both of Conn., assignors to Pollenex Corporation
Filed Jun. 17, 1992, Ser. No. 900,691
Term of patent 14 years
U.S. Cl. D24—214



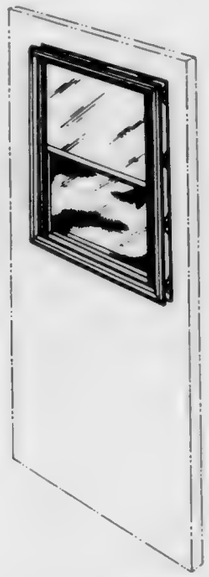
350,398
CATHETER STERILIZING CASSETTE
James L. Campbell, and Thomas D. Dent, both of Plymouth, Minn., assignors to Minntech Corporation, Minneapolis, Minn.
Filed Jan. 28, 1993, Ser. No. 4,161
Term of patent 14 years
U.S. Cl. D24—217



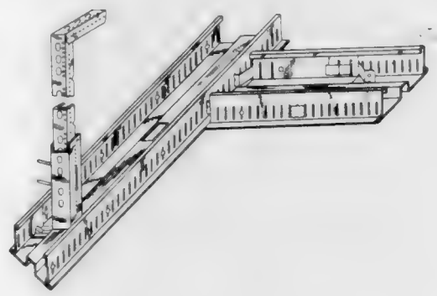
350,399
HUNTING BLIND
George Bodrie, 4882 N 9 Mile Rd., Pinconning, Mich. 48650
Filed Aug. 20, 1992, Ser. No. 932,057
Term of patent 14 years
U.S. Cl. D25—16



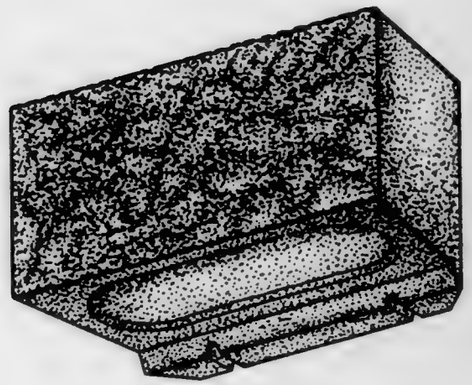
350,400
DOOR LIGHT
David A. De Block, and Albert J. Neilly, both of Holland, Mich., assignors to ODL, Incorporated, Zeeland, Mich.
Filed Sep. 13, 1991, Ser. No. 759,084
Term of patent 14 years
U.S. Cl. D25—52



350,401
COMBINED T-BAR AND SUSPENSION BRACKET FOR A CEILING GRID
Gerardus P. Kok, Tiel, Netherlands, assignor to NordProfil B.V., Netherlands
Filed Oct. 8, 1991, Ser. No. 773,082
Claims priority, application Int'l Pat. Institute, Apr. 9, 1991, DM/019328
Term of patent 14 years
U.S. Cl. D25—58



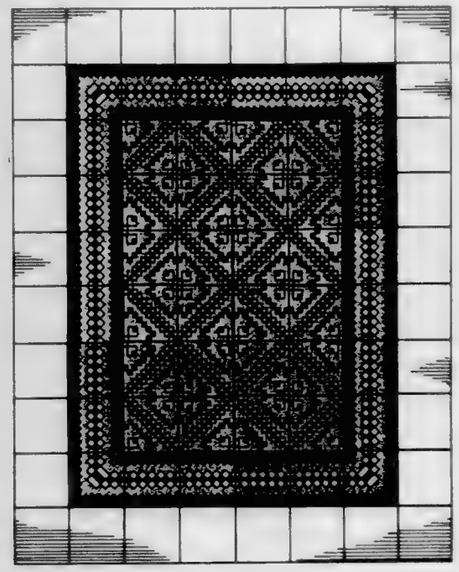
350,402
RETAINING WALL BLOCK
Gary Pribyl, Cedar Rapids; Kevin Ireland, Ely, and William Harrington, Bettendorf, all of Iowa, assignors to King's Materials, Inc., Cedar Rapids, Iowa
Filed Apr. 15, 1993, Ser. No. 7,230
Term of patent 14 years
U.S. Cl. D25—118



350,403
MOLDING
Jeffrey R. Watters, Rowlett, Tex., assignor to Oceanic Systems, Inc., Dallas, Tex.
Filed Oct. 2, 1992, Ser. No. 123
The portion of the term of this patent subsequent to Oct. 20, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—136



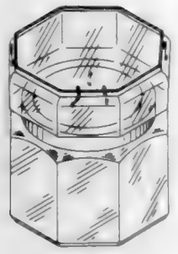
350,404
A CERAMIC TILE UNIT FOR A FLOOR OR A WALL
Jose Benavent Adrian, Nules, Spain, assignor to Gres De Nules, S.A. - Gresnul, Nules, Spain
Filed Apr. 17, 1991, Ser. No. 686,533
Claims priority, application Spain, Oct. 18, 1990, 21.183
Term of patent 14 years
U.S. Cl. D25—138



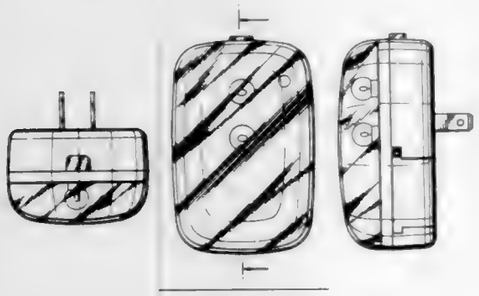
350,405
BASE BOARD
Norman B. Crossley, 89 Carnegie Pl., Ancaster, Canada L9G 4T9
Filed Jul. 3, 1991, Ser. No. 725,247
Term of patent 14 years
U.S. Cl. D25—164



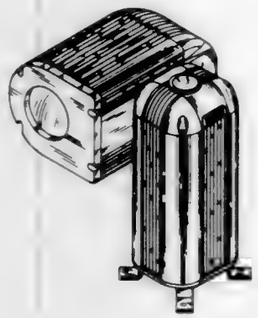
350,406
COMBINED CANDLE AND CANDLEHOLDER THEREFOR
Clarence L. Gereau, Oshkosh, Wis., assignor to Blended Waxes, Inc., Oshkosh, Wis.
Filed Dec. 13, 1993, Ser. No. 16,303
Term of patent 14 years
U.S. Cl. D26—9



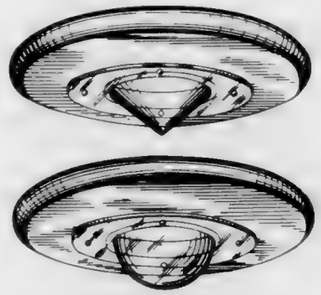
350,407
RECHARGEABLE EMERGENCY NIGHT LIGHT
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Oct. 27, 1992, Ser. No. 835
Claims priority, application United Kingdom, Jun. 1, 1992, 2023220
Term of patent 14 years
U.S. Cl. D26—26



350,408
EXTERIOR ARCHITECTURAL LUMINAIRE
J. Edward Leigh, Plano, and David M. Planka, Dallas, both of Tex., assignors to Vari-Lite, Inc., Dallas, Tex.
Filed Oct. 4, 1993, Ser. No. 13,843
Term of patent 14 years
U.S. Cl. D26—68



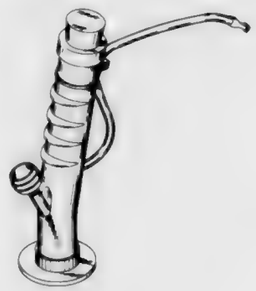
350,409
LIGHTING FIXTURE MOUNTABLE ON AN OVERHEAD SUPPORT
Dennis E. Johnson, Grafton, and Scott P. Malmsten, West Bend, both of Wis., assignors to SPI Lighting, Inc., Mequon, Wis.
Division of Ser. No. 468, Oct. 15, 1992. This application Feb. 18, 1994, Ser. No. 18,984
Term of patent 14 years
U.S. Cl. D26—86



350,410
PHOTOGRAPHIC LIGHT BOOM
Glenn D. Gehlhar, Eagan, Minn., assignor to Spectron Design, Inc., Red Wing, Minn.
Filed Sep. 2, 1992, Ser. No. 939,730
Term of patent 14 years
U.S. Cl. D26—140



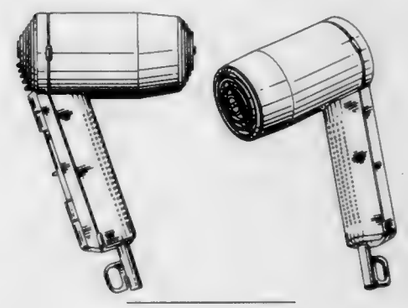
350,411
TOBACCO HOOKAH
Randolph A. Heine, Pinellas Park, Fla., assignor to New Tradition Pipe Company, Pinellas Park, Fla.
Filed Dec. 16, 1993, Ser. No. 16,489
Term of patent 14 years
U.S. Cl. D27—162



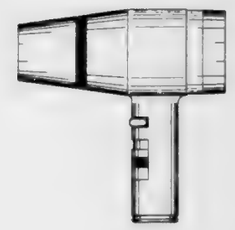
350,412
HAIR DRYER
Lindsey J. J. Walker, Flat 1, 21 Woodstock Road, London NW11, England
Filed Nov. 13, 1990, Ser. No. 611,865
Claims priority, application United Kingdom, May 31, 1990, 2007232
The portion of the term of this patent subsequent to Feb. 9, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D28—13



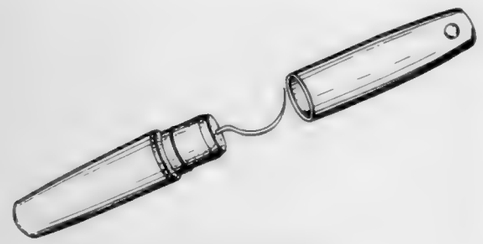
350,413
HAIR DRYER
Rolf Feil, Günzburg, Fed. Rep. of Germany, assignor to Bosch Siemens Hausgeräte GmbH, Munich, Fed. Rep. of Germany
Filed Aug. 5, 1991, Ser. No. 740,490
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1991, M9100916.2
Term of patent 14 years
U.S. Cl. D28—13



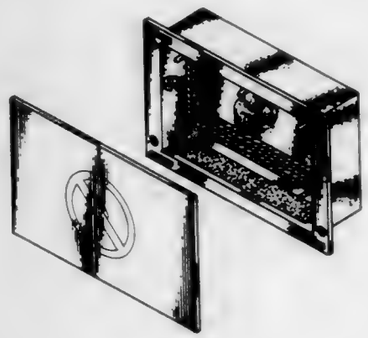
350,414
HAIR DRYER
Leandro P. Rizzuto, Jr., Stamford, Conn., assignor to Conair Corporation, Stamford, Conn.
Filed Jun. 5, 1992, Ser. No. 893,691
Term of patent 14 years
U.S. Cl. D28—13



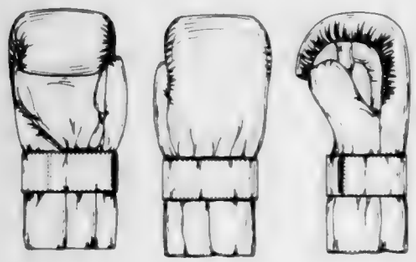
350,415
COMBINED DENTAL PICK AND STORAGE CASE
Eugene C. Wagner, c/o Dental Concepts, 9 N. Goodwin Ave., Elmsford, N.Y. 10523
Filed Oct. 26, 1992, Ser. No. 809
Term of patent 14 years
U.S. Cl. D28—64



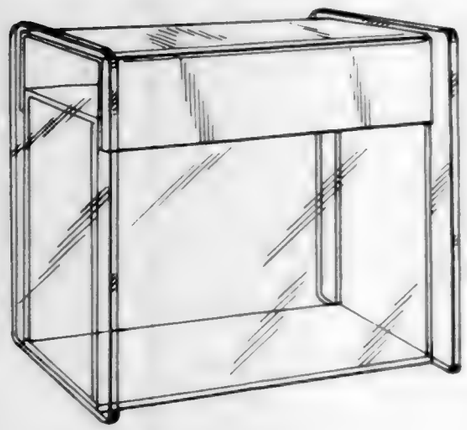
350,416
FIRE ESCAPE KIT FOR BUILDING EMERGENCIES
Dennis Doiron, 8646 115-A St., Delta, B. C., Canada V4C-5R9
Filed Oct. 29, 1992, Ser. No. 943
Term of patent 14 years
U.S. Cl. D29—124



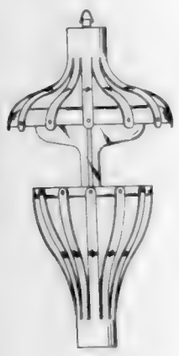
350,417
HAND PROTECTION GLOVE FOR COMPETITIVE SPORTSMAN
Georg I. Brückner, Hohenzollerndamm 177, 1000 Berlin 31, Fed. Rep. of Germany
Filed May 18, 1992, Ser. No. 885,388
Term of patent 14 years
U.S. Cl. D29—116



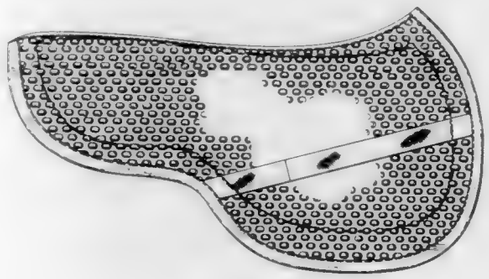
350,418
CONTAINER FOR USE AS AN AQUARIUM, TERRARIUM OR VIVARIUM
R. Michael Ross, Garland, Tex., assignor to Great Western Trading Co., Inc., Plano, Tex.
Filed Aug. 26, 1993, Ser. No. 12,249
Term of patent 14 years
U.S. Cl. D30—101



350,419
BIRD FEEDER
Armand E. Long, 812 Cedarwood, Friendswood, Tex. 77546
Filed Nov. 16, 1992, Ser. No. 1,479
Term of patent 14 years
U.S. Cl. D30—124

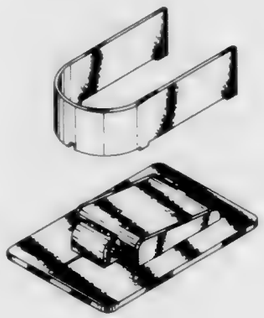


350,420
SADDLE PAD
Douglas J. Cudney, and Karen E. Breitbach, both of Orangeville, Canada, assignors to Tipperary Sport Products, Inc., Orangeville, Canada
Filed May 4, 1993, Ser. No. 7,850
Term of patent 14 years
U.S. Cl. D30—135

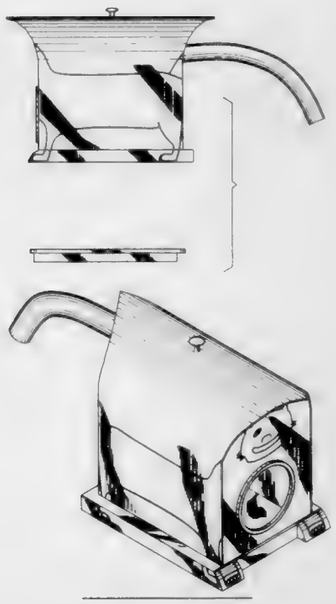




350,421
ANIMAL EXERCISING TREADMILL
Mark W. Brubaker, R.R. 1 Box 478, Decatur, Ill. 62526
Filed Mar. 24, 1993, Ser. No. 6,333
Term of patent 14 years
U.S. Cl. D30—160



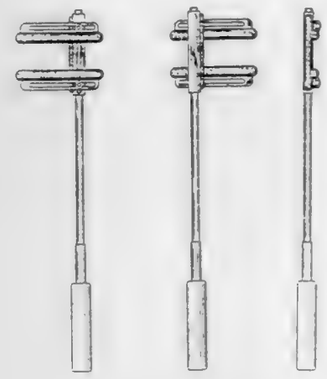
350,422
POWER VENTED LITTER BOX
Carl A. Foster, Sr., 2 N. Blueberry La., Rochester, N.H. 03867
Filed Aug. 5, 1992, Ser. No. 924,664
Term of patent 14 years
U.S. Cl. D30—161



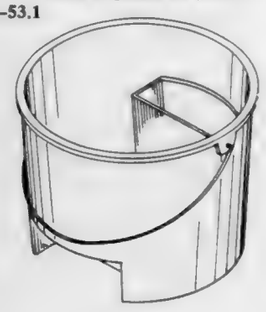
350,423
LAUNDRY BASKET
Charles W. Craft, Jr., Apple Creek, and John L. Hradisky, Medina, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Sep. 10, 1991, Ser. No. 757,117
Term of patent 14 years
U.S. Cl. D32—37



350,424
CEILING FAN CLEANER
Bobby J. Elliott, Rte. 2, Box 202, Clinton, Tenn. 37716
Filed Dec. 31, 1992, Ser. No. 3,239
Term of patent 14 years
U.S. Cl. D32—40



350,425
PAINTER'S BUCKET
Thomas Walker, 23342 Earlmist Dr., Spring, Tex. 77373
Filed Apr. 8, 1993, Ser. No. 7,053
Term of patent 14 years
U.S. Cl. D32—53.1



350,426
GOLF CART
Gordon Liao, and Alex Cheng, both of Taipei, Taiwan, assignors to Unique Products & Design Co., Ltd., Tainen Hasien, Taiwan
Filed Jun. 1, 1993, Ser. No. 9,063
Term of patent 14 years
U.S. Cl. D34—15



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TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF SEPTEMBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

: *See*—
Kasahara, Akihiro; Yamasaki, Hideo; Yoshizawa, Takashi; and Ishika, Sou, 5,345,432, Cl. 369-44.150.
Kim, Ja T., 5,345,344, Cl. 360-64.000.
Shimizu, Akihiko, 5,344,683, Cl. 428-64.000.

A. Ahlstrom Corporation: *See*—
Engstrom, Folke, 5,344,629, Cl. 423-239.100.

A.C.X. Trading, Inc.: *See*—
Gombos, John M.; and Leashno, Moshe, 5,343,670, Cl. 53-399.000.

A.P. Green Industries, Inc.: *See*—
Jackson, Cheryl L.; and Liu, John Y., 5,344,800, Cl. 501-90.000.

A. W. Chesterton Company: *See*—
Antkowiak, Richard P., 5,344,291, Cl. 417-359.000.

AB A. Svensson & Co.: *See*—
Hannerstig, Christer, 5,343,925, Cl. 160-348.000.

ABB Research Ltd.: *See*—
Gruning, Horst, 5,345,096, Cl. 257-182.000.

Abbott Laboratories: *See*—
Baker, William R.; and Condon, Stephen L., 5,344,990, Cl. 564-487.000.

Abbott, William L.; Nguyen, Hung C.; and Johnson, Kenneth E., to Quantum Corporation. Disk drive using PRML synchronous sampling data detection and asychronous detection of embedded sector servo. 5,345,342, Cl. 360-48.000.

Abe, Katsumi: *See*—
Takeda, Siro; Namiki, Fumihiro; Haraki, Takahiro; Hirano, Hideyuki; Ishiwata, Kenji; Katsuragawa, Shigehiko; and Abe, Katsumi, 5,345,513, Cl. 382-6.000.

Abe, Yoshiharu: *See*—
Fujimoto, Sachito; Oketani, Toshikazu; and Abe, Yoshiharu, 5,343,700, Cl. 60-276.000.

Abler, Mary Jo, to Minnesota Mining and Manufacturing Company. Dual impregnated activated carbon. 5,344,626, Cl. 423-210.000.

Abraham, John, to Gas Research Institute. Dual radius rotor for premixed-charge rotary engine combustion. 5,343,838, Cl. 123-218.000.

Abraham, Leslie R.; and Kniefel, John H., to Wenger Corporation. Portable podium and performance platform system. 5,343,817, Cl. 108-97.000.

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Abramowicz, Mark A.: *See*—
Hallden-Abberton, Michael P.; Work, William J.; Abramowicz, Mark A.; and Duong, Phuong N., 5,344,868, Cl. 524-494.000.

Accuflex Products, Inc.: *See*—
Roosen, Peter P.; Koldyk, Gerard H.; and Pap, Frank, 5,344,490, Cl. 106-778.000.

Accuride International Inc.: *See*—
Kovarik, Franz; and Ongley, James, 5,344,228, Cl. 312-334.900.

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Kringel, George; Frichette, Robert S.; and Richardson, James E., 5,344,250, Cl. 403-228.000.

Adach, Takeshi, to Kabushiki Kaisha Toshiba. Pal system chrominance signal processing circuit with improved s/n. 5,345,311, Cl. 358-24.000.

Adachi, Hiroshi: *See*—
Tanaka, Chiaki; Sasaki, Masaomi; Aruga, Tamotsu; Shimada, Tomoyuki; and Adachi, Hiroshi, 5,344,985, Cl. 564-426.000.

Adachi, Shigehito: *See*—
Hitomi, Jun; Adachi, Shigehito; Hakamada, Yoshihiro; Takaiwa, Mikio; Yoshimatsu, Tadashi; Watanabe, Yoko; Kobayashi, Tohru; Kawai, Shuji; and Ito, Susumu, 5,344,770, Cl. 435-71.200.

Adamietz, Lon A.: *See*—
Ramler, David J.; and Adamietz, Lon A., 5,344,202, Cl. 294-64.100.

Adams, David M.: *See*—
Richardson, Bruce A.; Beckett, Douglas J. S.; Finak, Jozef; Bruce, Robert A.; and Adams, David M., 5,345,459, Cl. 372-34.000.

Adams, Paul E.: *See*—
Huang, Nai Z.; Adams, Paul E.; Daly, Daniel T.; Jolley, Scott T.; Koch, Frederick W.; Kolp, Christopher J.; Stoldt, Stephen H.; Walsh, Reed H.; and Denis, Richard A., 5,344,467, Cl. 44-358.000.

Adams, Robert E.: *See*—
Meadows, Clarence A.; Bish, James R.; and Adams, Robert E., 5,344,727, Cl. 429-210.000.

Adams, William C., Jr.: *See*—
Fehskens, Leonard G.; Strutt, Colin; Wong, Steven K.; Callander, Jill F.; Burgess, Peter H.; Nelson, Kathy J.; Guertin, Matthew J.; Sylor, Mark W.; Chapman, Kenneth W.; Schuchard, Robert C.; Goldfarb, Stanley I.; Rogers, Dennis O.; O'Brien, Linsey B.; Trasatti, Philip J.; England, Benjamin M.; Lemmon, James L., Jr.; Rosenbaum, Richard L.; Kohls, Ruth E. J.; Aronson, David L.; Ross, Robert R. N.; Smith, Danny L.; Adams, William C., Jr.; Koning, G. Paul; Namoglu, Sheryl F.; Seger, Mark J.; Dixon, Timothy M.; and Harrow, Jeffrey R., 5,345,587, Cl. 395-650.000.

Adamson, Aldis E.: *See*—
Carr, Charles; Sybert, Edward; and Adamson, Aldis E., 5,344,576, Cl. 210-805.000.

Adat, Riyaz; Mar, Kevin; Pirie, Craig; and Poupore, Tim. Adjustable backrest. 5,344,211, Cl. 297-230.140.

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Garry, Robert F., Jr.; Fermin, Cesar D.; and Alexander, Steve S., Jr., 5,344,774, Cl. 435-239.000.

Adolf Hottinger Maschinenbau GmbH: *See*—
Landua, Werner; and Pichler, Werner, 5,343,929, Cl. 164-262.000.

Adolphs, Peter: *See*—
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DiBernardo, Dinah K.; Osborn, Kenneth L.; and Fricker, Ruth M., 5,344,011, Cl. 206-364.000.
Lau, Lilip; and Hartigan, William M., 5,344,426, Cl. 606-198.000.

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Dinh, Khanh, 5,343,632, Cl. 34-507.000.

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Afflitto, John: *See*—
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Ageev, Sharifzhan R.: *See*—
Anokhin, Vladimir D.; Lepekha, Anatoly I.; Filippov, Viktor N.; Ageev, Sharifzhan R.; Vinokurov, Anatoly F.; Gusev, Jury V.; and Ermakov, Sergei J., 5,344,281, Cl. 415-71.000.

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Kaneko, Keiji; Hirabayashi, Masayuki; Ihara, Hideo; and Kaneko, Hiroko, 5,344,779, Cl. 436-19.000.

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Kiekens, Eric; and Callant, Paul, 5,344,749, Cl. 430-428.000.

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Costrop, Dirk; Trouillard, Frank; and Pandelaers, Patrick, 5,345,335, Cl. 359-618.000.
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Nguyen, Lam T., 5,343,635, Cl. 34-164.000.

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Harbeck, Wolfgang; Woerner, Theo; Weiss, Karl; and Distl, Rudolf, 5,344,310, Cl. 431-158.000.

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Null, Robert A., 5,344,474, Cl. 55-344.000.

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Shirai, Eiji, 5,343,833, Cl. 123-90.160.

Aiura, Hideki: *See—*
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Aizawa, Kiyomi: *See—*
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Aizawa, Toshiyuki: *See—*
Sakai, Yasuyuki; Suzuki, Noriyuki; Kudo, Tetsuo; Marumo, Kuniomi; Aizawa, Toshiyuki; Imamura, Kunio; Sugita, Shuichi; and Kanbayashi, Kazuo, 5,344,655, Cl. 424-443.000.

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Ohtsuka, Yuzuru; Suzuki, Kiyoji; and Nakamura, Toru, 5,344,564, Cl. 210-634.000.

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Kaji, Toshihiko; Takeda, Yoshinobu; Odani, Yuusuke; Akechi, Kiyoaki; and Tanji, Takao, 5,344,605, Cl. 419-31.000.

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Akinaga, Shiro: *See—*
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Stanescu, Liana V.; Fischer, Timothy J.; Leese, Kristin L.; and Leonhardt, Kenneth J., 5,344,036, Cl. 215-251.000.

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Kolich, Charles H., 5,344,970, Cl. 562-496.000.

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Angele, Boris. Storage for data media, particularly compact discs (CDS). 5,344,028, Cl. 211-40.000.

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Roof, Glenn L.; Kremer, Lawrence N.; and Market, Robert V., 5,344,555, Cl. 208-189.000.
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Barringer, Curtis N., Jr.: *See—*
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Riches, David; and Feathers, Leonard J., 5,343,975, Cl. 182-3.000.
Bartley, Gary L.; and Hopper, Christopher J., to Stryker Corporation. Housing and drive mechanism for screw lift of hospital bed. 5,343,581, Cl. 5-611.000.
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Bartsch, Georg; Rasch, Ulf; and Spiekermann, Michael, to Sudhaus Schloss - Und Beschlagtechnik Gmbh & Co. Suitcase or similar container with wheel brake. 5,343,988, Cl. 190-18.00A.
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Colberg, Horst; and Jesse, Joachim, 5,344,465, Cl. 8-639.000.
Fischer, Wolfgang; Guentherberg, Norbert; Niessner, Norbert; Ruppmich, Karl; and Seitz, Friedrich, 5,344,877, Cl. 525-83.000.
Grubert, Heinrich; and Dersch, Rolf, 5,344,865, Cl. 524-433.000.
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Krause, Wolfgang; Paust, Joachim; Dobler, Walter; and Jaedicke, Hagen, 5,344,995, Cl. 568-591.000.
LeMaire, Hans-Georg; Hillen, Heinz; Moeller, Achim; Daum, Lothar; Doerper, Thomas; and Subkowski, Thomas, 5,344,915, Cl. 530-350.000.
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Theobald, Hans; von Deyn, Wolfgang; Nuebling, Christoph; Walter, Helmut; Kardorff, Uwe; Westphalen, Karl-Otto; Kappe, Thomas; and Gerber, Matthias, 5,344,813, Cl. 504-244.000.
Witzel, Tom; Fuchs, Eberhard; Merger, Franz; and Priester, Claus-Ulrich, 5,344,983, Cl. 564-396.000.
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Toral, Jose; Lutz, Gottfried; Thiele, Hartmut; Liepold, August; and Brandstetter, Hermann, 5,344,014, Cl. 206-394.000.
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Basil, John D.; and Lin, Chia-Cheng, to PPG Industries, Inc. Abrasion resistant siloxane coatings containing ceria. 5,344,712, Cl. 428-412.000.
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Bauer, Robert G.: *See—*
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Baumoel, Joseph. Method and apparatus for leak detection and pipeline temperature modelling method and apparatus. 5,343,737, Cl. 73-40.50R.
Baversten, Bengt I.; and Petersson, Rolf, to Combustion Engineering, Inc. Nuclear reactor pressure vessel and head flange polisher. 5,343,584, Cl. 15-97.100.
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Clarke, Robert A; Pauley, Robin G.; Hill, Ronald S.; Brauker, James H.; Sternberg, Shmuel; and Boggs, Daniel R., 5,344,454, Cl. 623-11.000.
Grant, David C. H., 5,343,885, Cl. 134-105.000.
Senninger, Mark; Kenley, Rodney; Witsoe, David; Bucchianeri, Richard; Deming, Laura; and Garcia, Ben, 5,344,392, Cl. 604-4.000.
Baxter Int'l Inc.: *See—*
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Bay, Adam G.: *See—*
Chamberlain, Jamie H.; Bay, Adam G.; and DeWitt, Robert D., 5,344,538, Cl. 204-212.000.
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Blum, Harald, 5,344,873, Cl. 524-591.000.
Franckowiak, Gerhard; Marhold, Albrecht; Bechem, Martin; Gross, Rainer; Kayser, Michael; Schramm, Matthias; and Thomas, Gunther, 5,344,944, Cl. 549-436.000.
Hovestadt, Wieland; Bruck, Jochen; and Schneider, Volker, 5,344,851, Cl. 521-49.000.
Immel, Otto; Darsow, Gerhard; and Buysch, Hans-Josef, 5,344,987, Cl. 564-735.000.
Knipp, Ulrich; von Bonin, Wulf; and Neuhaus, Alfred, 5,344,853, Cl. 521-128.000.
Piejko, Karl-Erwin; Braese, Hans-Eberhard; and Lindner, Christian, 5,344,876, Cl. 525-71.000.
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Schieb, Thomas; Wiechers, Gerhard; Sundermann, Rudolf; and Zarnack, Uwe, 5,345,012, Cl. 568-934.000.
Schon, Norbert; Buysch, Hans-Josef; Wagner, Paul; and Langer, Reinhard, 5,344,954, Cl. 558-274.000.
Bayer, Ludwig; and Behrens, Michael, to U.S. Philips Corporation. Circuit arrangement for sampling a binary signal. 5,345,453, Cl. 371-68.100.
Bayerische Motorenwerke AG: *See—*
Roll, Georg; Ohm, Heinz F.; and Hauser, Berthold, 5,344,220, Cl. 303-9.640.
Baylesa, Ronnie E., to Dotolo Research Corp. Composition for removing nail enamel from artificial nails. 5,344,583, Cl. 252-171.000.
Baylor, Avery L. Hair style protecting head rest. 5,343,582, Cl. 5-639.000.
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Baziuk, Morris. Safety winch. 5,344,121, Cl. 254-358.000.
Beanland, Brian, to Guinness Brewing Worldwide Limited. Method and apparatus for placing an insert in a container. 5,343,673, Cl. 53-470.000.
Beatenbough, Paul K.; Meekins, Kris J.; and Stohl, Clark E., to Long Manufacturing Ltd. Spiral ripple circumferential flow heat exchanger. 5,343,936, Cl. 165-41.000.
Beaty, Kenneth L.: *See—*
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Beck, Roland: *See—*
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Beckett, Douglas J. S.: *See—*
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Beckman Instruments, Inc.: *See—*
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Becton, Dickinson and Company: *See—*
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Mize, Patrick D.; and O'3 Connell, James P., 5,344,952, Cl. 558-169.000.
Partika, Lawrence, 5,344,408, Cl. 604-192.000.
Vogler, Erwin A.; Harper, Garry R.; and Graper, Jane C., 5,344,611, Cl. 422-101.000.
Wadsworth, Gilbert A., Jr., 5,344,417, Cl. 604-414.000.

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Beeler, Dwight E.; Bailey, Perry S.; and Bailey, Joseph Z. Fifth wheel slide stop. 5,344,173, Cl. 280-438.100.

Beenler, Edward M.; and Wolf, William H., to B&W Nuclear Service Company. Remote impression tool. 5,344,302, Cl. 425-178.000.

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Behavior Tech Computer Corp.: *See—*
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Behrens, Michael: *See—*
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Bei Electronics, Inc.: *See—*
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Bell, Benjamin H.: *See—*
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daSilva, Valeria L.; Eskildsen, Lars E.; Goldstein, Evan L.; and Silberberg, Yaron, 5,345,332, Cl. 359-341.000

Bell-Fruit Manufacturing Company Limited: *See—*
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Belt, Roger F.; and Ings, John B., to Litton Systems, Inc. Bistable magneto-optic single crystal films and method of producing same utilizing controlled defect introduction. 5,344,720, Cl. 428-692.000

Benckert, Hartmut, to Putzmeister-Werk Maschinenfabrik GmbH. Method and device for controlling a double-cylinder thick matter pump. 5,344,290, Cl. 417-342.000.

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Benham, Elizabeth A.; and McDaniel, Max P., to Phillips Petroleum Company. Polyethylene blends. 5,344,884, Cl. 525-222.000

Benson, Carl L., to Becton, Dickinson and Company. Syringe assembly having a non-resuable needle shield. 5,344,404, Cl. 604-110.000.

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Beren, Jeffrey A.: *See—*
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Berg, Gary L.; Rossing, Martin A.; Peterson, David K.; and Neumann, Robert A., to Medtronic, Inc. Method and apparatus for termination of ventricular tachycardia and ventricular fibrillation. 5,344,430, Cl. 607-8.000.

Berg, Rolf W.: *See—*
Bjerrum, Niels J.; Gang, Xiao; Hjuler, Hans A.; Olsen, Christian; and Berg, Rolf W., 5,344,722, Cl. 429-46.000.

Berg, Thomas E.: *See—*
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Bergan, Matthew A.: *See—*
Keogh, James R.; Hobot, Christopher M.; Eaton, John W.; Jevne, Allan H.; and Bergan, Matthew A., 5,344,455, Cl. 623-11.000.

Bergano, Neal S.; Mazurczyk, Vincent J.; and Zyskind, John L., to AT&T Bell Laboratories. Technique for reducing polarization dependent gain in an amplified optical transmission system. 5,345,331, Cl. 359-341.000

Berger, Kerry R.: *See—*
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Berkes, John S.; Grushkin, Bernard; and Smith, Thomas W., to Xerox Corporation. Polywax toner compositions and processes. 5,344,737, Cl. 430-110.000.

Berni, Bruno. Clothing, in particular for cooks. 5,343,565, Cl. 2-79.000.

Berrier, Arthur L.; and Kanga, Rustom S., to W. R. Grace & Co.-Conn. Photosensitive elastomer polymer compositions for flexographic printing plates. 5,344,743, Cl. 430-325.000.

Berscheidt, Kevin T.: *See—*
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Bertin & Cie: *See—*
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Bertram, Sidney, to Eaton Corporation. Automatic map compilation system. 5,345,086, Cl. 250-558.000.

Beswick, Frank, to West Company, Incorporated, The. Bottle washer with multiple size carrier. 5,343,886, Cl. 134-131.000.

Betts, Walter B.; and Hawkes, Jeremy J., to British Technology Group Limited. Dielectrophoretic characterization of micro-organisms and other particles. 5,344,535, Cl. 204-183.100.

Betz, Dieter; Nuebel, Karl-Heinz; Almendro, Jose Luis; Garcia, Fernando; and Ramirez, Eduardo, to Robert Bosch GmbH. Method for manufacturing coils. 5,343,614, Cl. 29-605.000.

Betz Laboratories, Inc.: *See—*
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Boquet, Jean, to Bertin & Cie. Method of manufacturing a plate of gell for separating and transferring macromolecules by electrophoresis, and plates of gel obtained in this way. 5,344,543, Cl. 204-299.00R.

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British Petroleum Company P.L.C., The: *See—*
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British Technology Group Limited: *See—*
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Brown, Jimmy D. Leak detection and management apparatus including a programmable message device for a hot water heater. 5,345,224, Cl. 340-605.000.
Brown, Orville W., to National Starch and Chemical Investment Holding Corporation. Power surge resistor with palladium and silver composition. 5,345,212, Cl. 338-20.000.
Brown, Roy L., to Ortho-Flex Saddle Co., Inc. Racing saddle. 5,343,674, Cl. 54-44.100.
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Butte, Patrick. Movable washstand with articulated upper tray. 5,343,574, Cl. 4-516.000.
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Byrd, Roger C., to United States of America, Energy. Directional fast-neutron detector. 5,345,084, Cl. 250-390.120.
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Cain, Donald D.: *See—*
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Calhoun, Clyde D.; Koskenmaki, David C.; and Mazurek, Mieczyslaw H., to Minnesota Mining and Manufacturing Company. Patterned pressure sensitive adhesive transfer tape. 5,344,681, Cl. 428-42.000.
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Calnen, Charles R. Ignition locking device. 5,343,721, Cl. 70-18.000.

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Akasaka, Hitoshi; Kojima, Tomoko; Daimon, Yuji; and Saito, Hiroaki, 5,344,070, Cl. 236-49.300.

Calvert, George D.: *See—*
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Camiener, Gerald W. Use of saturated, ring-containing compounds as clearing solvents in histologic procedures. 5,344,637, Cl. 424-3.000.

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Canada, Her Majesty the Queen in right of, as represented by the Minister of Health & Welfare: *See—*
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Canadian Marconi Company: *See—*
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Candor, James T. Apparatus and method for removing liquid from liquid bearing material. 5,344,533, Cl. 204-180.100.

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Hashimoto, Yuichi; and Tanaka, Hisami, 5,344,501, Cl. 136-259.000
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Murakami, Yutaka, 5,345,518, Cl. 382-56.000.
Nomura, Yoshiya; Tsuda, Tadayuki; Ikemoto, Isao; Watanabe, Kazushi; Ishiwata, Kazuhiko; Tanaka, Makoto; Yano, Kanji; and Sasaki, Shinichi, 5,345,294, Cl. 355-200.000
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Cariello, Dominic A.: *See—*
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Carlin, Ira W.; and Fischtein, Morris, to Pro-Index Corp. Cardholder and carrying case therefor. 5,344,015, Cl. 206-449.000.

Carlson, Eugene S.: *See—*
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Carlson, Robert L., to Minnesota Mining and Manufacturing Company. Antistatic coatings. 5,344,751, Cl. 430-527.000.

Carmody, Christopher J.; and Rea, Christopher J., to AES Engineering Limited. Mechanical seals. 5,344,164, Cl. 277-81.00R.

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Carrier Corporation: *See—*
Cook, Warren A., 5,344,263, Cl. 409-233.000.

Carriglitto, Francis T.: *See—*
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Carter, Charles G.; Fan, Lai-Duien G.; Fan, Joseph C.; Kreh, Robert P.; and Jovancicevic, Vladimir, to W. R. Grace & Co.-Conn. Method for inhibiting corrosion of metals using polytartaric acids. 5,344,590, Cl. 252-396.000.

Cartwright, Floyd. Portable bathing unit. 5,343,575, Cl. 4-547.000.

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Casci, John L.; Lake, Ivan J. S.; and Maberly, Timothy R., to Imperial Chemical Industries PLC. Catalytic reactions using zeolites. 5,345,021, Cl. 585-467.000.

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Casey, Richard G.: *See—*
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Kyrtsos, Christos T., 5,343,994, Cl. 192-85.00R.
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Vance, Ricky D., 5,345,383, Cl. 364-424.030.
Ward, Lloyd A.; and Bock, Allyn P., 5,343,837, Cl. 123-193.500.

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Cathey, David A., Jr., to Micron Technology, Inc. Process for etching semiconductor devices. 5,344,525, Cl. 156-643.000

Caveza, Martin J., to Mattel, Inc. Toy beverage mixer and dispenser. 5,344,234, Cl. 366-192.000

Cavicchi, Richard E.: *See—*
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CCL Label, Inc.: *See—*
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Celaflor GmbH: *See—*
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Wikel, Stephen K., 5,344,645, Cl. 424-265.100.

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Challa, Nagesh, to Nexcom Technology, Inc. Single transistor EEPROM architecture. 5,345,418, Cl. 365-185.000.

Challoner, Audrey; and Swick, Michael. Carrier case for recreational boards. 5,344,056, Cl. 224-151.000.

Chamberlain, Jamie H.; Bay, Adam G.; and DeWitt, Robert D., to Gould Inc. Thin plate anode. 5,344,538, Cl. 204-212.000.

Chamberlain, Leon F.; Hargitai, Miklos; Lantos, Ferenc; Tokes, Jozsef; and Wursching, Istvan, to General Electric Company; and Tungsram Co., Ltd. Single-ended low-pressure discharge lamp. 5,345,142, Cl. 315-58.000.

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Chan, Tzoyao; and Cheung, Milton, to Chips & Technologies, Inc. Dram refresh controller with improved bus arbitration scheme. 5,345,577, Cl. 395-425.000.

Chanasyk, Albert; Hall, Walter J.; Maxwell, J. Robert; Shaw, Russell G.; Palhof, Roy J.; and Bourgelais, Phillip D., to Vitronics Corporation. Convection/infrared solder reflow apparatus utilizing controlled gas flow. 5,345,061, Cl. 219-388.000.

Chandan, Harish C.: *See—*
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Chandraratna, Roshantha A., to Allergan, Inc. Tetrahydronaphthyl and cyclopropyl substituted 1,3-butadienes having retinoid-like activity. 5,344,959, Cl. 560-100.000.

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Chang, Clarence D.; Santiesteban, Jose G.; and Stern, David L., to Mobil Oil Corp. Ring opening process. 5,345,026, Cl. 585-700.000.

Chang, David B.: *See—*
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Chang, John D.: *See—*
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Charo, Israel F.: *See—*
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Chase, Gregory H.: *See—*
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Chase, Marjorie L., to Superior Diapering Products Ltd. Protective device. 5,343,875, Cl. 128-846.000.

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Descotes, Gerand; Cottier, Louis; Eymard, Laurent; and Rapp, Knut M., 5,344,974, Cl. 562-567.000.
Courtemanche, Gilles: *See*—
Colomban, Philippe; Menet, Martine; Mouchon, Emmanuelle; Courtemanche, Gilles; and Parlier, Michel, 5,344,512, Cl. 156-89.000.
Couturier, Jean-Luc: *See*—
Monflier, Eric; Bourdauducq, Paul; and Couturier, Jean-Luc, 5,345,007, Cl. 568-909.500.
Covey, Douglas F.; Hu, Yuefei; and Zorumski, Charles F., to Washington University. Tricycle steroid analogs. 5,344,826, Cl. 514-167.000.
Covington, Michael J.; and Hale, George H., to Case Corporation. Method and system for mounting and supporting row units on an agricultural implement. 5,343,677, Cl. 56-10.20F.
Cowan, Kenneth M.; and Hale, Arthur H., to Shell Oil Company. Anchor plug for open hole test tools. 5,343,947, Cl. 166-250.000.
Cowan, Kenneth M.; and Hale, Arthur H., to Shell Oil Company. Drilling and cementing slim hole wells. 5,343,951, Cl. 166-293.000.
Cowan, Kenneth M.; and Hale, Arthur H., to Shell Oil Company. Cement plug for well abandonment. 5,343,952, Cl. 166-295.000

Cowan, Kenneth M.: *See—*
Hale, Arthur H.; and Cowan, Kenneth M., 5,343,950, Cl. 166-293.000.

Cox, Chester: *See—*
Gryc, William S.; and Cox, Chester, 5,343,905, Cl. 141-59.000

Cox, Patricia A.; and Miller, David K., to Whirlpool Corporation. Egg container assembly. 5,344,023, Cl. 206-508.000.

Cozens, Ross J.: *See—*
Bak, Philip L.; Bidinger, Gregory P.; Cozens, Ross J.; and Klich, Paul R., 5,345,018, Cl. 570-249.000

Craig, Franklin J.: *See—*
Weder, Donald E.; and Craig, Franklin J., 5,344,016, Cl. 206-451.000

Craig, Gina M.; Lamprecht, Dale E., Jr.; Stellwag, Debra A.; and Wagner, Thomas R. Barcode identification system. 5,345,091, Cl 250-566.000.

Crainich, Lawrence. Ratchet assembly for medical instrument. 5,344,061, Cl. 227-182.000.

Cram, Jeffrey R.: *See—*
Bittman, Barry B.; and Cram, Jeffrey R., 5,343,871, Cl. 128-732.000.

Crane, Burke J., to Molex Incorporated. Switched receptacle circuit. 5,345,360, Cl. 361-160.000

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Oliver, Thomas C.; Jones, David P.; Christie, Leslie G.; Wanger, Mark E.; Berg, Thomas E.; and Crane, Melvin C., 5,345,431, Cl 369-13.000.

Crawford, Dan K.: *See—*
Walsdorf, Neill B.; Crawford, Dan K.; and Nadig, Perry W., 5,344,389, Cl. 600-41.000.

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Dyer, Arthur J.; Crawford, Tommie L.; Beaty, Kenneth L.; Morgan, Charles E.; Mooneyham, Garry D.; Monneyham, Alton L.; and Watts, Charlie F., 5,344,010, Cl. 206-317.000.

Creative Technology, Inc.: *See—*
Crosby, Kennith D.; Tuten, William J.; and Luckeneder, Walter, 5,344,042, Cl. 221-2.000

Crebbin, Victoria A.: *See—*
Harvey, Jeanne P.; Crebbin, Victoria A.; Walker, Roger P.; Liu, Victor; Hammond, Susan L.; and McDonald, Patricia A., 5,344,760, Cl. 435-7.500

Credelle, Thomas L.: *See—*
DeJule, Michael C.; Credelle, Thomas L.; Riza, Nabeel A.; and Castleberry, Donald E., 5,345,321, Cl. 359-42.000.

Credence Systems Corporation: *See—*
Lesmeister, Gary J., 5,345,186, Cl. 328-155.000.

Crocker, Michael, to Cardiovascular Dynamics, Inc. Low profile perfusion catheter. 5,344,402, Cl. 604-96.000.

Crook, David F., to AMEI Technologies Inc. Apparatus and method for adjusting a bone plate. 5,344,421, Cl. 606-61.000.

Crop Genetics International Corporation: *See—*
Carr, Charles; Sybert, Edward; and Adamson, Aldis E., 5,344,576, Cl. 210-805.000.

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Cross, Peter E.: *See—*
Alker, David; and Cross, Peter E., 5,344,835, Cl. 514-317.000

Crotti, Pier L., to SGS-Thomson Microelectronics S.r.l. EPROM device with metallic source connections and fabrication thereof. 5,345,417, Cl. 365-185.000

Croucher, Melvin D.: *See—*
Wong, Raymond W.; Breton, Marcel P.; Croucher, Melvin D.; Duff, James M.; Petroff, T. Edward; Riske, William; and Henseleit, Kerstin M., 5,345,254, Cl. 347-100.000.

Crowley, H. W., to Roll Systems, Inc. Method for incorporation of post-production operations to a web output from an image transfer device. 5,344,057, Cl. 226-2.000.

Crowley, H. W.; and Wales, R. Langdon, deceased (by Wales, Ruth, executrix), to Roll Systems, Inc. Roll support and feed apparatus. 5,344,089, Cl. 242-417.000

Crown International, Inc.: *See—*
Jacobson, Herbert P., 5,345,198, Cl. 332-152.000.

Crucible Materials Corporation: *See—*
Stasko, William; and Pinnow, Kenneth E., 5,344,477, Cl. 75-255.000

Crudo, Ralph W.: *See—*
Aldama, Alfredo; and Crudo, Ralph W., 5,345,247, Cl. 343-791.000

Crum, Gerald W.: *See—*
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Crystal Technology, Inc.: *See—*
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CSIR: *See—*
Adrian, Christian A.; Speth, Robert; and Angus, William G., 5,344,219, Cl. 301-64.100.

CTI Cyclotron Systems, Inc.: *See—*
Wieland, Bruce W.; Bida, Gerald T.; Hendry, George O.; and Padgett, Henry C., 5,345,477, Cl. 376-195.000.

Cubic Defense Systems, Inc.: *See—*
Manzke, Walter R., 5,344,319, Cl. 434-14.000.

Cuddeford, Gary D.: *See—*
Julian, John C.; Cuddeford, Gary D.; and Stanley, Kenneth J., 5,343,791, Cl. 83-865.000

Cummings, William G., III, to Maxon Corporation. Combustion noise damper for burner. 5,344,308, Cl. 431-114.000.

Cummins Engine Company, Inc.: *See—*
McDaniel, John R.; Rabe, Paul R.; Stang, John H.; Griffen, Peter J.; Stasell, Mark W.; Londt, Edward E.; and Wilson, Barrie L., 5,343,780, Cl. 477-108.000.

Cunningham, David W.; and Esakoff, Gregory F. Lighting fixture. 5,345,371, Cl. 362-297.000.

Curry, John R. Gantry crane collision avoidance device. 5,343,739, Cl 212-151.000

Cusanelli, Dominic S.; and Bradel, Jeffrey A., to United States of America, Navy. Floating platform tow post. 5,343,742, Cl 73-145.000

Cuscurida, Michael: *See—*
Nieh, Edward C.; and Cuscurida, Michael, 5,344,996, Cl. 568-621.000.

Cusson, Robert. Transformer heat generating assembly. 5,343,851, Cl. 126-4.000

Cuzzato, Paolo, to Ausimont S.p.A. Process for preparing pentafluoroethane by dismutation of tetrafluorochloroethane. 5,345,014, Cl. 570-163.000

Cyanamid Canada Inc.: *See—*
Rickelton, William A., 5,344,567, Cl. 210-638.000.

Cyclean, Inc.: *See—*
Nath, Robert H.; Wiley, John; Erickson, Robert; Hutchison, Carl R.; and Miles, Mike, 5,344,229, Cl. 366-25.000.

Cyclopss Medical Systems, Inc.: *See—*
Faddis, Chris G.; and Shepherd, Paul O., 5,344,622, Cl. 422-306.000.

Cymara, Hermann K. Leaf baler. 5,343,679, Cl. 56-16.600.

Cypress Semiconductor Corporation: *See—*
Nazarian, Hagop A.; and Raza, S. Barbar, 5,345,112, Cl 307-443.000

Cytec Technology Corp.: *See—*
Alexanian, Vazken A.; and Nummy, Laurence J., 5,344,965, Cl 560-354.000

D. Swarovski & Co.: *See—*
Poll, Martin, 5,343,718, Cl. 63-26.000.

D'Achard Van Enschut, Johannes; and Valkonet, Lourens, to U.S. Philips Corporation. X-ray tube with a reduced working distance. 5,345,493, Cl. 378-137.000.

Dackowski, William: *See—*
Wei, Cha-Mer; Hsiung, Nancy; Reddy, Vermuri B.; Lemontt, Jeffrey F.; Dackowski, William; Douglas, Richard; Cole, Edward S.; Purcell, Richard D., Jr.; and Lau, David Tai-Yui, 5,344,773, Cl. 435-226.000.

Dada Corp.: *See—*
Park, Boo-Yl, 5,344,003, Cl. 206-8.000.

Dahlbacka, Bruce B., to Milsco Manufacturing Company. Backrest recliner mechanism. 5,344,215, Cl. 297-375.000.

Dai, Hongxing; Janz, Siegfried; Dion, Michel M.; and Normandin, Richard, to National Research Council of Canada. Spatially addressable surface emission sum frequency device. 5,345,456, Cl. 372-22.000

Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Nakamura, Masayuki, 5,344,807, Cl. 503-227.000.

Daicel Chemical Industries, Ltd.: *See—*
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Daido Tokushuko Kabushiki Kaisha: *See—*
Yagi, Yutaka; and Ishijima, Keizo, 5,343,930, Cl. 164-295.000.

Daigle, Odee P.; and Gyongyosi, Laszlo, to Ingersoll-Rand Company. Double rod cylinder feed system. 5,343,962, Cl. 173-147.000.

Daikin Industries, Ltd.: *See—*
Sata, Ken-ichi, 5,343,707, Cl. 62-6.000.

Daikoku, Takahiro; Kawasaki, Nobuo; Ashiwake, Noriyuki; Kawamura, Keizou; Zushi, Shizuo; Miyamoto, Mitsuo; and Morihara, Atsushi, to Hitachi, Ltd. Cooling apparatus for electronic device. 5,345,107, Cl. 257-717.000

Dailey, Carol A. Ostomy pouch drying container. 5,343,634, Cl 34-104.000

Daimon, Yuji: *See—*
Akasaka, Hitoshi; Kojima, Tomoko; Daimon, Yuji; and Saito, Hiroaki, 5,344,070, Cl. 236-49.300.

Dainichiseika Color & Chemicals Mfg. Co., Ltd.: *See—*
Komiyama, Nakaji; Kouno, Hisao; Higashide, Kazuhiro; Suda, Osamu; and Hasegawa, Masaru, 5,344,736, Cl. 430-83.000.

Dainoff, Alexander S.: *See—*
Brown, Donald T.; and Dainoff, Alexander S., 5,344,306, Cl. 431-4.000.

Dakurige, Makoto: *See—*
Sakai, Kouzou; Yoshida, Shigeyuki; and Dakurige, Makoto, 5,344,863, Cl. 524-291.000.

Dalgewicz, Edward J., III; and Freundlich, Richard A., to Therma-Plate Corporation. Elevated temperature dimensionally stable polyester with low gas permeability. 5,344,912, Cl. 528-308.100.

Daly, Daniel T.: *See—*
Huang, Nai Z.; Adams, Paul E.; Daly, Daniel T.; Jolley, Scott T.; Koch, Frederick W.; Kolp, Christopher J.; Stoldt, Stephen H.; Walsh, Reed H.; and Denis, Richard A., 5,344,467, Cl. 44-358.000.

D'Ambrogio, William J.; Phillips, Wayne D.; and Seip, Barry S., to AT&T Bell Laboratories. Network-based digital bandwidth-on-demand. 5,345,443, Cl. 370-60.000.

D'Amico, Thomas V.: *See—*
Breeden, Robert L.; and D'Amico, Thomas V., 5,345,500, Cl. 379-63.000

Danaher, Thomas C. Self-erecting portable fabric structure. 5,343,887, Cl. 135-104.000.

Dang, Thuy D.; and Arnold, Fred E., to United States of America, Air Force. Water soluble rigid-rod polymers. 5,344,896, Cl. 525-435.000.

Danieli & C. Officine Meccaniche SpA: *See—*
Striuli, Mirco; Borlina, Fabio; and Ruzza, Wogler, 5,343,931, Cl. 164-418.000.

Danielson, David W.: *See—*
Johansson, Eric B.; Ledford, Kevin L.; Zuloaga, Jaime A., Jr.; and Danielson, David W., 5,345,483, Cl. 376-313.000.

Danielson, Samuel M. Opaque life jacket cape. 5,344,351, Cl. 441-89.000.

Dannawi, Marwan; and Prott, Thierry, to Sicma Aero Seat, Societe Industrielle et Commerciale de Materiel Aeronautique. Energy-absorbing device, structure forming a mounting for an aircraft seat having such a device, and seat having such a structure. 5,344,210, Cl. 297-216.200.

Dannenberg, Todd D.; Jorsch, Thomas C.; Swart, Peter W.; and Panzer, Larry H., to Kohler Co. Combined bathing seat and back rest member. 5,343,576, Cl. 4-590.000.

Dantanarayana, Anura P.: *See—*
Dean, William D.; Zinke, Paul W.; Sproull, Steven J.; Deason, Michael E.; Conrow, Raymond E.; and Dantanarayana, Anura P., 5,344,929, Cl. 544-48.000.

Danziger, Robert S. Gel electrophoresis measurement of dynamic reaction product by continuous sampling. 5,344,534, Cl. 204-182.800.

Darcey, Donald: *See—*
Girouard, Gerald D., Sr.; Girouard, Gerald D., Jr.; and Darcey, Donald, 5,343,606, Cl. 29-33.00K.

Darsow, Gerhard: *See—*
Immel, Otto; Darsow, Gerhard; and Buysch, Hans-Josef, 5,344,987, Cl. 564-735.000.

daSilva, Valeria L.; Eskildsen, Lars E.; Goldstein, Evan L.; and Silberberg, Yaron, to Bell Communications Research, Inc. Fiber amplifier cascade for multiwavelength lightwave communications system. 5,345,332, Cl. 359-341.000.

Daskalakis, Stefanos: *See—*
Samour, Carlos M.; Daskalakis, Stefanos; and Marshall, James R., 5,344,941, Cl. 549-57.000.

Daum, Lothar: *See—*
LeMaire, Hans-Georg; Hillen, Heinz; Moeller, Achim; Daum, Lothar; Doerper, Thomas; and Subkowski, Thomas, 5,344,915, Cl. 530-350.000.

Davenport, Robert A., to Impact Products, Inc. Lobby dust pan. 5,343,589, Cl. 15-257.400.

Davidson, Allen L., to Motorola, Inc. Method and apparatus for selectively-enabled diversity signaling in a radio communications system. 5,345,600, Cl. 455-50.100.

Davidson, James A.; and Mishra, Ajit K., to Smith & Nephew Richards, Inc. Method for cleaning porous and roughened surfaces on medical implants. 5,344,494, Cl. 134-7.000.

Davidson Textron Inc.: *See—*
Cooke, Robert L., II, 5,344,185, Cl. 280-731.000.
Hersman, Marie J.; and Salsibury, Wayne C., 5,344,183, Cl. 280-728.00B.

Davies, Dafydd G.; and Asbrink, Leif, to Esselte Meto International Produktions GmbH. Detection apparatus for security systems. 5,345,222, Cl. 340-572.000.

Davies, Huw M.; and Voelker, Toni A., to Calgene, Inc. Plant thioesterases. 5,344,771, Cl. 435-172.300.

Davis, Cecil J.: *See—*
Najm, Habib N.; Huang, Steve S.; Davis, Cecil J.; and Matthews, Robert T., 5,345,534, Cl. 392-422.000.

Davis, Glenn A., to Scientific-Atlanta, Inc. Tamper detection system for load management device. 5,345,225, Cl. 340-635.000.

Davis, Glenn A., to Scientific-Atlanta, Inc. Method and apparatus for momentarily interrupting power to a microprocessor to clear a fault state. 5,345,583, Cl. 395-575.000.

Dayton, Michael P. Synthetic reconstructive implant device. 5,344,451, Cl. 23-8.000.

Dazey, Bernard; Hamsany, Mohamed; and Enfedaque-Morer, Sylvia, to Association d'Aquitaine Pour le Developpement de la Transfusion Sanguine et des Recherches Hematologiques. Process for the manufacture of a high-purity activated factor VII concentrate essentially free of vitamin K-dependent factors and factors VIIIC and VIIICAg. 5,344,918, Cl. 530-381.000.

De Nora Permelec S.p.A.: *See—*
de Nora, Oronzio; Nidola, Antonio; Traini, Carlo; and Nevosi, Ulderico, 5,344,530, Cl. 204-105.00R.

Deac, Radu, to Mures Cardiovasular Research, Inc. Cardiac valve. 5,344,442, Cl. 623-2.000.

Dean, William D.; Zinke, Paul W.; Sproull, Steven J.; Deason, Michael E.; Conrow, Raymond E.; and Dantanarayana, Anura P., to Alcon Laboratories, Inc. Preparation of carbonic anhydrase inhibitors. 5,344,929, Cl. 544-48.000.

DeAngelis, Dominick A., to Martin Marietta Corporation. Shape memory metal actuator and cable cutter. 5,344,506, Cl. 148-402.000.

Deason, Michael E.: *See—*
Dean, William D.; Zinke, Paul W.; Sproull, Steven J.; Deason, Michael E.; Conrow, Raymond E.; and Dantanarayana, Anura P., 5,344,929, Cl. 544-48.000.

Deaver, Gerald A.; and Bourbour, Siamak, to General Electric Company. Feedwater nozzle and method of repair. 5,345,484, Cl. 376-407.000.

DeBlasio, James A.; Brookman, Donald L.; Draucker, James B.; Evers, Donald H.; Hansen, Charles D.; Moore, Pamela D.; Newsome, Reginald W.; and Rech, William J., to Philip Morris Incorporated. Packaging for articles such as cigarettes. 5,344,008, Cl. 206-256.000.

Deboer, Charles D.; Kamp, Dennis R.; and Mey, William, to Eastman Kodak Company. Migration imaging system. 5,344,731, Cl. 430-41.000.

Debord, Theo J.; Escano, Nelson Z.; and Wilkin, Louis A., to Eastman Chemical Company. Ink compositions containing certain methacrylates. 5,344,872, Cl. 524-513.000.

DeBusk, Janet S.; and Felice, Margaret M., to DeRoyal Industries, Inc. Sterile system for dressing vascular access site. 5,344,415, Cl. 604-304.000.

DeCarlo, Joseph P.: *See—*
Mattar, Wade M.; Thompson, Duane T.; DeCarlo, Joseph P.; Hussain, Yousif; and Chitty, Gordon W., 5,343,764, Cl. 73-861.380.

Deck, Philip D.; Melzer, Jeffrey I.; and Harpel, William L., to Betz Laboratories, Inc. Treatment for galvanized metal. 5,344,504, Cl. 148-243.000.

Decker, James D.: *See—*
Spriggs, John R.; Decker, James D.; Copeland, James L.; and Larson, Spencer B., 5,344,074, Cl. 239-10.000.

Deckman, Douglas E.; and Hsu, Stephen M., to United States of America, Commerce. Methods for reducing wear on silicon carbide ceramic surfaces. 5,344,577, Cl. 252-45.000.

Dedieu, Michel; Burgaud, Herve; Lapoirie, Eric; Gurfein, Veronique; and Malle, Gerard, to L'Oreal. Process for deodorizing a mercapto acid by extracting malodorous compound therefrom with a supercritical fluid. 5,344,971, Cl. 562-512.000.

DeDoncker, Rik W.: *See—*
Kliman, Gerald B.; Srinivasan, Kamakshi; DeDoncker, Rik W.; and Ritscher, David E., 5,345,158, Cl. 318-434.000.

Deere & Company: *See—*
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Gerber, Merle R., 5,344,367, Cl. 460-68.000
Reichen, Ronald L.; Diebold, David H.; Smith, Larry N.; O'Brien, Stephen E.; and Phillips, David L., 5,343,680, Cl. 56-249.000

Dees, Dennis W., to United States of America, Energy. Oxygen partial pressure sensor. 5,344,549, Cl. 204-425.000.

Deflecto Corp.: *See—*
Meyer, Stephen T., 5,344,004, Cl. 206-45.250.

Degen, Peter J.; Alex, Tony; and Gildersleeve, Michael R., to Pall Corporation. Method of treating a clogged porous medium. 5,344,565, Cl. 210-636.000.

Degroote, Richard: *See—*
Gazecimeon, George; Kamisis, Nancy; and Degroote, Richard, 5,343,825, Cl. 116-173.000.

Deguchi, Hiroyuki; and Tagawa, Hirotoshi, to Mita Industrial Co., Ltd. Box body construction of a digital image forming apparatus. 5,345,257, Cl. 346-145.000.

DeGuchi, Mikio: *See—*
Sasaki, Hajime; Morikawa, Hiroaki; Satoh, Kazuhiko; and DeGuchi, Mikio, 5,344,500, Cl. 136-258.000.

de Jong, Gerard, to Falcon Equipment Limited. Cutter blade for a rotary cutter. 5,343,681, Cl. 56-255.000.

DeJule, Michael C.; Credelle, Thomas L.; Riza, Nabeel A.; and Castleberry, Donald E., to General Electric Company. Compact polarization dependent optical switching units. 5,345,321, Cl. 359-42.000.

De Koning, Johannes J., to U.S. Philips Corporation. X-ray detector comprising an improved entrance window. 5,345,083, Cl. 250-379.000.

Delauney, Ashton J.: *See—*
Verma, Desh P. S.; Hu, Chien-an A.; and Delauney, Ashton J., 5,344,923, Cl. 536-23.200.

Delco Electronics Corporation: *See—*
Hamren, Glen C., 5,343,843, Cl. 123-425.000.
Lippmann, Raymond; Nelson, James E.; Schnars, Michael J.; Chintyan, James R.; and Hansen, Mark C., 5,345,398, Cl. 364-509.000.

Delo Ge, Andre : *See—*
Foos, Jacques; Lemaire, Marc; Guy, Alain; Guyon, Vincent; Chomel, Rodolphe; Delo Ge, Andre ; Doutreluigne, Pierre; and Le Roy, Henri, 5,344,624, Cl. 423-6.000.

Del Rossi, Kenneth J.: *See—*
Child, Jonathan E.; Del Rossi, Kenneth J.; Huss, Albin, Jr.; Krambeck, Frederick J.; Melli, Thomas R.; and Yurchak, Sergei, 5,345,027, Cl. 585-720.000.

Del Serra, David; and Doty, Lawrence E., to Baker Hughes Incorporated. Submersible pump line protector. 5,343,942, Cl. 166-66.400.

Deluhery, James G.: *See—*
Wiener, Scott A.; and Deluhery, James G., 5,343,863, Cl. 128-660.010.

Delvaux, John M.; and Roberts, William E., Jr., to United States of America, Air Force. Adjustable clearance control for rotor blade tips in a gas turbine engine. 5,344,284, Cl. 415-173.200.

de Magny, Emmanuel, to Framatome. Cooling device which can be fitted onto a remote manipulation arm and its utilization for an operation in a hostile medium at a high temperature. 5,345,480, Cl. 376-291.000.

Demarco, Richard: *See—*
Chan, Alexander; Pan, Yuh-Guo; Lim, Mu-Ill; and Demarco, Richard, 5,344,463, Cl. 8-408.000.

Demarest, Kevin A.: *See—*
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Demco, Dan: *See—*
Kimmich, Rainer; Demco, Dan; and Hafner, Siegfried, 5,345,174, Cl. 324-309.000.

De Meutter, Stefaan K.: *See—*
Monbaliu, Marcel J.; Terrell, David R.; and De Meutter, Stefaan K., 5,344,734, Cl. 430-59.000.

Deming, Laura: *See—*
Senninger, Mark; Kenley, Rodney; Witsoe, David; Bucchianeri, Richard; Deming, Laura; and Garcia, Ben, 5,344,392, Cl. 604-4.000.

deNeuf, Joel B.: *See—*
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Denis, Richard A.: *See—*
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Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Kushida, Yuichiro; Tamegai, Shoichi; and Hirohashi, Akio, 5,344,864, Cl. 524-426.000.

de Nora, Oronzio; Nidola, Antonio; Traini, Carlo; and Nevosi, Ulderico, to De Nora Permelec S.p.A. Metal anodes for electrolytic acid solutions containing fluorides or fluoroanionic complexes. 5,344,530, Cl. 204-105.00R.

Dent, Paul W., to Ericsson-GE Mobile Communications Holding, Inc. Duplex power control system in a communications network. 5,345,598, Cl. 455-54.100.

Denyer, Peter B., to VLSI Vision Limited. Matrix array image sensor chip. 5,345,266, Cl. 348-300.000.

Depinet, Paul E.; and Detterman, Don E., to R. R. Donnelley & Sons Company. Method and apparatus for turning a block of signatures. 5,343,998, Cl. 198-415.000.

Deporter, Douglas A.: *See—*
Pilliar, Robert M.; Deporter, Douglas A.; and Watson, Phillip A., 5,344,457, Cl. 623-16.000.

Deringer, Helmut: *See—*
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DeRoyal Industries, Inc.: *See—*
DeBusk, Janet S.; and Felice, Margaret M., 5,344,415, Cl. 604-304.000.

Dersch, Rolf: *See—*
Grubert, Heinrich; and Dersch, Rolf, 5,344,865, Cl. 524-433.000.

Desarmaux, Pierre: *See—*
Lancon, Bruno; Desarmaux, Pierre; and Merino, Jean-Francois, 5,344,180, Cl. 280-625.000.

Descotes, Gerand; Cottier, Louis; Eymard, Laurent; and Rapp, Knut M., to Sudzucker Aktiengesellschaft Mannheim/Ochensfurt. Process for the preparation of N-acyl derivatives of 5-aminolevulinic acid, as well as the hydrochloride of the free acid. 5,344,974, Cl. 562-567.000.

Desmolin, Henri, to Elf Sanofi. Microbeads of diltiazem, a process for their manufacture and a substained-release pharmaceutical composition containing them. 5,344,657, Cl. 424-458.000.

DeStefano, Joel: *See—*
Homer, Peter K.; Parenti, Robert V.; DeStefano, Joel; Chen, Wensen; Talley, Eric; and Close, John E., 5,344,104, Cl. 244-158.00R.

Detterman, Don E.: *See—*
Depinet, Paul E.; and Detterman, Don E., 5,343,998, Cl 198-415.000.

Dettre, Robert H.: *See—*
Raiford, Kimberly G.; Greenwood, Edward J.; and Dettre, Robert H., 5,344,903, Cl. 526-245.000.

Deutch, Todd D. Sump protector. 5,343,890, Cl. 137-363.000.

Deutsch, Edward A.; Deutsch, Karen F.; Cacheris, William P.; Ralston, William H.; White, David H.; Nosco, Dennis L.; Wolfangel, Robert G.; Wilking, Janet B.; Meeh, Linda; and Woulfe, Steven R., to Mallinckrodt Medical, Inc. Preparation of apatite particles for medical diagnostic imaging. 5,344,640, Cl. 424-9.000

Deutsch, Josef: *See—*
Grill, Michael; and Deutsch, Josef, 5,344,599, Cl. 264-63.000.

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Devaux, Michel: *See—*
Vuillermoz, Jean-Claude; Perrin, Nicolas; and Devaux, Michel, 5,344,122, Cl. 266-79.000.

de Veubeke, Benoit F.: *See—*
Verhelst, Gabriel; Cornet, Philip; de Veubeke, Benoit F.; and Bleys: Geert, 5,344,584, Cl. 252-182.270.

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Wood, Mark W.; and Steurer, Brian M., 5,343,777, Cl. 74-598.000.

Devon, Thomas J.; Phillips, Gerald W.; Puckette, Thomas A.; Stavinoha, Jerome L.; and Vanderbilt, Jeffrey J., to Eastman Chemical Company. Hydroformylation process using novel phosphine-rhodium catalyst system. 5,344,988, Cl. 568-454.000

DeVries, James H., to DLP, Inc. Dual flexible introducer and cannula. 5,344,399, Cl. 604-96.000.

DeWitt, Robert D.: *See—*
Chamberlain, Jamie H.; Bay, Adam G.; and DeWitt, Robert D., 5,344,538, Cl. 204-212.000.

Deya, Eiki: *See—*
Dosako, Shunichi; Kusano, Hiroko; Deya, Eiki; and Idota, Tadashi, 5,344,820, Cl. 514-8.000.

DiBernardo, Dinah K.; Osborn, Kenneth L.; and Fricker, Ruth M., to Advanced Cardiovascular Systems, Inc. Packaging system for an elongated flexible product. 5,344,011, Cl. 206-364.000.

Dibro Limited: *See—*
Dickinson, Thomas E., 5,343,815, Cl. 108-56.300.

Dickerhoff, Scott D.; Kappel, Thomas F.; and Virag, Robert A., to Mallinckrodt Medical, Inc. Warming blanket having multiple inlets. 5,343,579, Cl. 5-421.000.

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Reichen, Ronald L.; Diebold, David H.; Smith, Larry N.; O'Brien, Stephen E.; and Phillips, David L., 5,343,680, Cl. 56-249.000.

Diebolt International, Inc.: *See—*
Cotter, Jonathan P., 5,344,125, Cl. 267-64.280.

Dietrich, William J., Sr.: *See—*
Kromminga, Gaylen; Dietrich, William J., Sr.; and Knobloch, Dean, 5,343,958, Cl. 172-680.000.

Dietsche, Helmut: *See—*
Hange, Willy; Dietsche, Helmut; and Seiler, Claus-Dietrich, 5,344,950, Cl. 556-478.000.

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Horwitz, E. Philip; and Dietz, Mark L., 5,344,623, Cl. 423-2.000.

Dietz, Terry L.; and Vanlaningham, Richard D., to Zimmer, Inc. Apparatus and method for milling bone. 5,344,423, Cl. 606-87.000.

Digital Equipment Corporation: *See—*
Fehskens, Leonard G.; Strutt, Colin; Wong, Steven K.; Callander, Jill F.; Burgess, Peter H.; Nelson, Kathy J.; Guertin, Matthew J.; Sylor, Mark W.; Chapman, Kenneth W.; Schuchard, Robert C.; Goldfarb, Stanley I.; Rogers, Dennis O.; O'Brien, Linsey B.; Trasatti, Philip J.; England, Benjamin M.; Lemmon, James L., Jr.; Rosenbaum, Richard L.; Kohls, Ruth E. J.; Aronson, David L.; Ross, Robert R. N.; Smith, Danny L.; Adams, William C., Jr.; Koning, G. Paul; Namoglu, Sheryl F.; Seger, Mark J.; Dixon, Timothy M.; and Harrow, Jeffrey R., 5,345,587, Cl. 395-650.000.
Greenwood, Stephen R.; Peterson, R. Kim; and Schreiber, Benn L., 5,345,588, Cl. 395-650.000.
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Digital Image Systems: *See—*
LeBrun, Thomas Q.; Cage, Kerry; and Arnold, Dennis D., 5,344,132, Cl. 271-35.000.

Dimension Industries, Inc.: *See—*
Ramler, David J.; and Adamietz, Lon A., 5,344,202, Cl. 294-64.100.

Dimotech Ltd.: *See—*
Talmore, Eli, 5,344,433, Cl. 607-88.000.

Dinh, Khanh, to Advanced Dryer Systems, Inc. Closed-loop drying process and system. 5,343,632, Cl. 34-507.000.

Dion, Michel M.: *See—*
Dai, Hongxing; Janz, Siegfried; Dion, Michel M.; and Normandin, Richard, 5,345,456, Cl. 372-22.000.

DiSanto, Frank J.; and Krusos, Denis A., to Copytele, Inc. Electrophoretic display panel with interleaved cathode and anode. 5,345,251, Cl. 345-107.000

Distl, Rudolf: *See—*
Harbeck, Wolfgang; Woerner, Theo; Weiss, Karl; and Distl, Rudolf, 5,344,310, Cl. 431-158.000.

Divall, John E.; and Perigo, John A., to Odin Development Ltd. Dosing system. 5,344,052, Cl. 222-135.000.

Dixon, Timothy M.: *See—*
Fehskens, Leonard G.; Strutt, Colin; Wong, Steven K.; Callander, Jill F.; Burgess, Peter H.; Nelson, Kathy J.; Guertin, Matthew J.; Sylor, Mark W.; Chapman, Kenneth W.; Schuchard, Robert C.; Goldfarb, Stanley I.; Rogers, Dennis O.; O'Brien, Linsey B.; Trasatti, Philip J.; England, Benjamin M.; Lemmon, James L., Jr.; Rosenbaum, Richard L.; Kohls, Ruth E. J.; Aronson, David L.; Ross, Robert R. N.; Smith, Danny L.; Adams, William C., Jr.; Koning, G. Paul; Namoglu, Sheryl F.; Seger, Mark J.; Dixon, Timothy M.; and Harrow, Jeffrey R., 5,345,587, Cl. 395-650.000.

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DMI, Inc.: *See—*
Kromminga, Gaylen; Dietrich, William J., Sr.; and Knobloch, Dean, 5,343,958, Cl. 172-680.000.

Doan, Trung T.: *See—*
Sandhu, Gurtej S.; and Doan, Trung T., 5,344,792, Cl. 437-200.000.

Dobbertin, Michael T.: *See—*
Jantsch, Gregory R.; Shifley, James D.; Dobbertin, Michael T.; Wituszynski, Theophilus C.; Mortellaro, Larry J.; and Mitchell, Henry P., Jr., 5,344,133, Cl. 271-94.000.

Dobler, Walter: *See—*
Krause, Wolfgang; Paust, Joachim; Dobler, Walter; and Jaedicke, Hagen, 5,344,995, Cl. 568-591.000.

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Cook, Bobby A., 5,343,583, Cl. 14-71.300.

Dr. Johannes Heidenhain GmbH: *See—*
Jackson, Charles L.; and Ochsner, Douglas A., 5,345,230, Cl. 340-825.160.

Doddington, George R. Speech analysis method and apparatus. 5 345,535, Cl. 395-2.450.

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Doell, Andreas: *See—*
Thiel, Rudolf; Doell, Andreas; and Halasy-Wimmer, Georg, 5,343,985, Cl. 188-72.500.

Doering, Anton; and Olbrich, Ludger, to Robert Bosch GmbH. Electronic circuit component with heat sink mounted on a lead frame. 5,345,106, Cl. 257-675.000.

Doerper, Thomas: *See—*
LeMaire, Hans-Georg; Hillen, Heinz; Moeller, Achim; Daum, Lothar; Doerper, Thomas; and Subkowski, Thomas, 5,344,915, Cl. 530-350.000.

Doerre, Mark L.: *See—*
Roberts, Philip L.; and Doerre, Mark L., 5,344,424, Cl. 606-167.000.

Doi, Takao; Itaya, Noriko; Yamashita, Masami; and Kunii, Nobuaki, to Asahi Glass Company Ltd. Process for producing a condensed resin dispersion. 5,344,874, Cl. 524-593.000.

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Domagala, John M.; Kiely, John S.; and Schroeder, Mel C., to Warner-Lambert Company. Intermediates for individual stereoisomers of 7-[3-(aminoalkyl)-1-pyrrolidinyl]-quinolones and naphthyridones. 5,344,940, Cl. 548-540.000.

Domagalski, Michael G.: *See—*
McLachlan, James E.; Domagalski, Michael G.; and Gilman, Bruce I., 5,344,570, Cl. 210-709.000.

Domb, Abraham J.; and Shikani, Alain H., to Bloom, Leonard, a part interest. Method and device for inhibiting HIV, hepatitis B and other viruses and germs when using a catheter in a medical environment. 5,344,411, Cl. 604-265.000.

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Doni, Fabrizio: *See—*
Succi, Marco; Solcia, Carolina; Doni, Fabrizio; and Coppola, Antonio, 5,343,735, Cl. 73-29.010.

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Hopkins, Donn A.; Donner, Kenneth D.; Goldstone, Marc B.; Nguyen, Dung T.; Wiegand, Rudolf; and McKinley, David E., 5,345,347, Cl. 360-71.000.

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Dorri, Bizhan; Laskaris, Evangelos T.; Bedrosian, Gary; and Xy, Bu-Xin, to General Electric Company. Pole face design for a C-shaped superconducting magnet. 5,345,208, Cl. 335-301.000.

Dosako, Shunichi; Kusano, Hiroko; Deya, Eiki; and Idota, Tadashi, to Snow Brand Milk Products Co., Ltd. Infection protectant. 5,344,820, Cl. 514-8.000.

Dotolo Research Corp.: *See—*
Bayless, Ronnie E., 5,344,583, Cl. 252-171.000.

Dotty, James H., II: *See—*
Ersoz, Nathaniel H.; Saeger, Timothy W.; Dotty, James H., II; and Kranawetter, Greg A., 5,345,272, Cl. 348-561.000.

Doty, Lawrence E.: *See—*
Del Serra, David; and Doty, Lawrence E., 5,343,942, Cl. 166-66.400.

Douglas, Richard: *See—*
Wei, Cha-Mer; Hsiung, Nancy; Reddy, Vermuri B.; Lemontt, Jeffrey F.; Dackowski, William; Douglas, Richard; Cole, Edward S.; Purcell, Richard D., Jr.; and Lau, David Tai-Yui, 5,344,773, Cl. 435-226.000.

Douta, Hisayo; Kinugawa, Masumi; and Suzuki, Atsushi, to Nippondenso Co., Ltd. Air-fuel ratio control system for internal combustion engine. 5,343,701, Cl. 60-276.000.

Doutreluigne, Pierre: *See—*
Foos, Jacques; Lemaire, Marc; Guy, Alain; Guyon, Vincent; Chomel, Rodolphe; Delo Ge, Andre ; Doutreluigne, Pierre; and Le Roy, Henri, 5,344,624, Cl. 423-6.000.

Douty, Brent D.: *See—*
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Dow Chemical Company, The: *See—*
Hefner, Robert E., Jr.; and Earls, Jimmy D., 5,344,898, Cl. 525-526.000.
Klein, Dieter H., 5,344,856, Cl. 523-403.000.

Dow Corning Limited: *See—*
Westall, Stephen, 5,344,906, Cl. 528-13.000.

Dow Corning Toray Silicone Co., Ltd.: *See—*
Morita, Yoshitsugu, 5,344,905, Cl. 528-15.000.

Dowbrands L.P.: *See—*
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Downie, Alan A.: *See—*
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Dragerwerk Aktiengesellschaft: *See—*
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Drago, Russell: *See—*
Brendley, William H., Jr.; Grunewald, Gerald; Petrosius, Steven; and Drago, Russell, 5,344,630, Cl. 423-240.00R.

Drandarevski, Christo: *See—*
Itzel, Hanshelmut; Zierenberg, Bernd; Drandarevski, Christo; and Heupt, Wilfried, 5,343,653, Cl. 47-1.500.

Draucker, James B.: *See—*
DeBlasio, James A.; Brookman, Donald L.; Draucker, James B.; Evers, Donald H.; Hansen, Charles D.; Moore, Pamela D.; Newsome, Reginald W.; and Rech, William J., 5,344,008, Cl. 206-256.000.

Dreibelbis, John S.: *See—*
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Drent, Eit, to Shell Oil Company. Carbonylation process. 5,344,961, Cl. 560-103.000.

Dresser Industries, Inc.: *See—*
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Drewes, Rolf; Friedrich, Hans-Helmut; Mehner, Hans-Ludwig; Braun, Bernd; and Wecht, Walter, to Ciba-Geigy Corporation. Process for the preparation of linear 1,3-diketones. 5,344,992, Cl. 568-314.000.

Drtina, Gary J.: *See—*
Gagnon, David R.; Coleman, Patrick L.; Drtina, Gary J.; Lyons, Christopher S.; Milbrath, Dean S.; Rasmussen, Jerald K.; and Stahl, Julie B., 5,344,701, Cl. 428-304.400.

Dubach, Fredi: *See—*
Rock, Erich; and Dubach, Fredi, 5,344,227, Cl. 312-334.600.

DuBois, Dean A.: *See—*
Sutherland, Robert J.; and DuBois, Dean A., 5,344,887, Cl. 525-299.000.

Duchek, Richard J.; and Strauss, Paul, to Zenith Electronics Corporation. Method and apparatus for direct contact printing screens on CRT faceplates. 5,343,803, Cl. 101-35.000.

Duckeck, Ralf; and Bre, Peter, ml/a/ gas, to Robert Bosch GmbH. RDS radio receiver with user-definable-region filtering. 5,345,606, Cl. 455-186.100.

Dudbridge, Laura: *See—*
Walsh, Brendan; Simpson, Richard; Dudbridge, Laura; Collins, David; and Moyse, Philip, 5,345,405, Cl. 364-715.100.

Duddey, James E.; and Cady, John M., to Goodyear Tire & Rubber Company, The. Non-pneumatic spare tire. 5,343,916, Cl. 152-5.000.

Duff, James M.: *See—*
Wong, Raymond W.; Breton, Marcel P.; Croucher, Melvin D.; Duff, James M.; Petroff, T. Edward; Riske, William; and Henseleit, Kerstin M., 5,345,254, Cl. 347-100.000.

Dufresne, Pierre: *See—*
Bigeard, Pierre-Henri; Billon, Alain; Dufresne, Pierre; and Mignard, Samuel, 5,345,019, Cl. 585-264.000.

Dumont, Alain: *See—*
Habashy, Tarek M.; Taherian, M. Reza; Dumont, Alain; and Beren, Jeffrey A., 5,345,179, Cl. 324-338.000.

Dumont, Charles. Shopper's purchase monitoring device. 5,345,071, Cl. 235-383.000.

Dunlap, R. Bruce: *See—*
Skills, Louis A., III; Dunlap, R. Bruce; and Odom, Jerome D., 5,344,936, Cl. 548-229.000.

Dunn, Tave P.: *See—*
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Duong, Phuong N.: *See—*
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Du Pont de Nemours, E. I., and Company: *See—*
Corbin, David R.; and Schwarz, Stephan, 5,344,989, Cl 564-479.000.
Flexman, Edmund A., 5,344,882, Cl. 525-131.000.
Manzer, Leo E., 5,345,016, Cl. 570-168.000
Raiford, Kimberly G.; Greenwood, Edward J.; and Dettre, Robert H., 5,344,903, Cl. 526-245.000.
Rao, V. N. Mallikarjuna; and Swearingen, Steven H., 5,345,017, Cl. 570-227.000.
Snyder, Adrian C., 5,344,707, Cl. 428-359.000.
Van Bramer, David J.; Shiflett, Mark B.; and Yokozeki, Akimichi, 5,345,013, Cl. 570-102.000.
Wilczek, Lech; and O'Neil, James W., 5,344,592, Cl. 252-512.000.
Windley, William T., 5,344,708, Cl. 428-364.000.

Durante, Vincent A.; Lyons, James E.; Walker, Darrell W.; and Marcus, Bonita K., to Sun Company, Inc. (R&M). New manganese catalyst for light alkane oxidation. 5,345,011, Cl. 568-910.000

Durante, Vincent A.: *See—*
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Durland, Jozef M., to U.S. Philips Corporation. Method of manufacturing a replicated magnetic reproducing medium, such as a magnetic-tape cassette provided with a music recording, and magnetic replication head and replication arrangement for use in the method. 5,345,341, Cl. 360-15.000.

Durr, Helmut: *See—*
Hildebrand, Gerhard; Seidel, Gunther; Heintke, Hans-Eberhard; Ramspeck, Klaus; Eichhorn, Reinhold; Durr, Helmut; Franke, Wolfgang; Braun, Gebhard; Ohle, Manfred; and Ullmann, Roland, 5,343,621, Cl. 30-43.920.

Dutton, Dwight C., Jr.; Luna, Antonio X.; and Stack, Charles P., to Micro Motion, Incorporated. Method of brazing and apparatus. 5,344,717, Cl. 428-598.000.

Du Vosel, Annick: *See—*
Cometti, Giuseppe; Du Vosel, Annick; Francalanci, Franco; and Santi, Roberto, 5,344,960, Cl. 560-100.000.

Dyer, Arthur J.; Crawford, Tommie L.; Beaty, Kenneth L.; Morgan, Charles E.; Mooneyham, Garry D.; Monneyham, Alton L.; and Watts, Charlie F., to Metal Products Company. Hand gun case with lock and block. 5,344,010, Cl. 206-317.000.

E. R. Squibb & Sons, Inc.: *See—*
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Eagan, Chris S. Musical adaptor for baby nursing bottles. 5,344,034, Cl. 215-11.100.
Eagen, Stephen T.: *See—*
Busboom, Leah J. H.; Eagen, Stephen T.; and Kiel, Harvey G., 5,345,553, Cl. 395-161.000.
Eagle Precision Technologies Inc.: *See—*
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Eastern Company, The: *See—*
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Mauck, John C.; Warren, Harold C., III; and Harder, John W., 5,344,753, Cl. 435-4.000.
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Stiehler, Wayne, 5,345,286, Cl. 354-173.100.
Uffinger, Gerhard, 5,344,541, Cl. 204-272.000.
Easton, David J.; and Pickett, Terence D., to Deere & Company. Control lever assembly. 5,343,775, Cl. 74-532.000.
Eaton Corporation: *See—*
Bertram, Sidney, 5,345,086, Cl. 250-558.000.
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Eaton, John W.: *See—*
Keogh, James R.; Hobot, Christopher M.; Eaton, John W.; Jevne, Allan H.; and Bergan, Matthew A., 5,344,455, Cl. 623-11.000.
Ebara Corporation: *See—*
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Ebbeson, Bengt E. O., to Aktiebolaget Electrolux. Refrigerator with intermittently working sorption refrigerating apparatus. 5,343,717, Cl. 62-481.000.
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Eckhardt, Gerard: *See—*
Fitch, Mark D.; Eckhardt, Gerard; Anderson, Wendy A.; Anelich, Mario A.; Frake, Barry N.; Lang, Kevin W.; and Mannheimer, Alfred, 5,344,664, Cl. 426-631.000.
Ecolab Inc.: *See—*
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ECRM Trust: *See—*
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Eduard Wille GmbH Co.: *See—*
Neuhaus, Klaus, 5,343,784, Cl. 81-55.000.
Edwards, Charles W., to Electric Power Research Institute, Inc. Harmonic controller for an active power line conditioner. 5,345,377, Cl. 363-71.000.
Edwards, David A. Bottle holder accessory for an inline rollerskate 5,344,055, Cl. 224-42.45R.
Edwards, Harold R., Jr.: *See—*
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EEMCO/DATRON, Inc.: *See—*
Raad, Bernard A., 5,345,125, Cl. 310-68.00A.
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Egger, Harold E.: *See—*
Timm, Delmar C.; Ayorinde, Ayodeji; and Egger, Harold E., 5,344,871, Cl. 525-54.300.
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Ehrhart, Peter: *See—*
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Eicken, Ulrich; Hase, Brigitte; Gorzinski, Manfred; Gress, Wolfgang; and Stork, Norbert, to Henkel Kommanditgesellschaft auf Aktien. Water-dilutable binder mixtures based on alkyd resins and poly-n-acyl alkyleneimines. 5,344,859, Cl. 523-501.000.
Ejiri, Emiko: *See—*
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Eka Nobel AB: *See—*
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Electroglas, Inc.: *See—*
Roch, Jaques L., 5,344,238, Cl. 384-49.000.
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Electromagnetic Bracing Systems, Inc.: *See—*
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Elf Atochem S.A.: *See—*
Monflier, Eric; Bourdauducq, Paul; and Couturier, Jean-Luc, 5,345,007, Cl. 568-909.500.
Elf Sanofi: *See—*
Desmolin, Henri, 5,344,657, Cl. 424-458.000.
Elfanbaum, Shlomo. Child/parent play ladder. 5,343,980, Cl. 182-199.000.
Eli Lilly and Company: *See—*
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Elite Ink and Coatings, Ltd.: *See—*
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Holt, William J.; and Boyd, Kenneth R., 5,343,785, Cl. 81-57.380.
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Natarajan, Kavilipalayam M.; and Wu, Shilain D., 5,344,892, Cl. 525-397.000.
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Clough, Thomas J., 5,344,625, Cl. 423-22.000.
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Comparetta, Christopher; Ippolito, Ronald A.; Sathi, Kitty; Latone, Jack T.; Enzien, Colleen R.; and Smith, Mark A., 5,345,581, Cl. 395-575.000.
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Cunningham, David W.; and Esakoff, Gregory F., 5,345,371, Cl. 362-297.000.
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Schoon, Jurgen; Volk, Heinrich; Hoch, Ulf; and Schneider, Peter, 5,344,248, Cl. 400-693.000.
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Rebeaud, Jean-Philippe, 5,345,429, Cl. 368-15.000.
ETEC Systems, Inc.: *See—*
Prior, Richard W., 5,345,085, Cl. 250-491.100.
Ethicon, Inc.: *See—*
Kettner, Ralf; and Brunken, Dieter, 5,344,005, Cl. 206-63.300.
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Hanlon, J. Vincent; Bostick, John G.; and Kolich, Charles H., 5,344,468, Cl. 44-379.000.
Kadkhodayan, Abbas, 5,344,951, Cl. 558-110.000.
Ohtani, Hiroko; and Hartley, Rolfe J., 5,344,579, Cl. 252-51.50R.
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Weaver, John D., Sr.; Muchowicz, Thomas J.; Kantor, Arkady; and Awad, George L., 5,345,492, Cl. 375-125.000.
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Song, Won R.; Lundberg, Robert D.; Gutierrez, Antonio; and Kleist, Robert A., 5,345,002, Cl. 568-793.000.
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FAB TEC Manufacturing Ltd.: *See—*
Scarrow, Dennis A., 5,343,995, Cl. 198-311.000.
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Roll, Georg; Ohm, Heinz F.; and Hauser, Berthold, 5,344,220, Cl. 303-9.640.
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Roth, Duane J.; Keipert, Peter E.; Faithfull, Nicholas S.; Zuck, Thomas F.; and Riess, Jean G., 5,344,393, Cl. 604-4.000.
Falco, Robert N.; and Williams, Colin, to Cabot Corporation. Handle grip cover and process for making same. 5,343,776, Cl. 74-558.000.
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de Jong, Gerard, 5,343,681, Cl. 56-255.000.
Faller, Enzo. Plug-in socket with blocking member. 5,344,329, Cl. 439-133.000.
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Kamiguchi, Masao; Saito, Osamu; Kubota, Kazuo; and Takemoto, Masanobu, 5,344,301, Cl. 425-169.000.
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Farb, Norman E., to Printronix, Inc. Printer hammerbank with low reluctance magnetics. 5,344,242, Cl. 400-124.200.
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FasTest Inc.: *See—*
Meisinger, Stanlee W.; and Medved, Mark D., 5,343,798, Cl. 92-130.00A.

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Horvath, Atila J.; Schmodde, Hermann; and Fecker, Josef, 5,343,983, Cl. 188-65.100.

Feeley, Jennifer S.; Fu, James C.; Larkin, Matthew P.; and Simone, Dianne O., to Engelhard Corporation. Catalytic combustion system including a separator body. 5,343,706, Cl. 60-723.000.

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Fehskens, Leonard G.; Strutt, Colin; Wong, Steven K.; Callander, Jill F.; Burgess, Peter H.; Nelson, Kathy J.; Guertin, Matthew J.; Sylor, Mark W.; Chapman, Kenneth W.; Schuchard, Robert C.; Goldfarb, Stanley I.; Rogers, Dennis O.; O'Brien, Linsey B.; Trasatti, Philip J.; England, Benjamin M.; Lemmon, James L., Jr.; Rosenbaum, Richard L.; Kohls, Ruth E. J.; Aronson, David L.; Ross, Robert R. N.; Smith, Danny L.; Adams, William C., Jr.; Koning, G. Paul; Namoglu, Sheryl F.; Seger, Mark J.; Dixon, Timothy M.; and Harrow, Jeffrey R., to Digital Equipment Corporation. Extensible entity management system including a dispatching kernel and modules which independently interpret and execute commands. 5,345,587, Cl. 395-650.000.

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Felger, Martin: *See—*
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Fellows Corporation: *See—*
Greenip, Lawrence E., Jr.; Chase, Gregory H.; and Nichols, Clarence M., 5,345,390, Cl. 364-474.170

Fenstermaker, Larry R.; and O'Connor, Kevin J., to AT&T Bell Laboratories. Fifo with word line match circuits for flag generation 5,345,419, Cl. 365-189.040.

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Ferguson, John H., Sr. Fiberglass recycling system. 5,343,630, Cl. 34-379.000.

Ferguson, Steve. Storage device for golf carts. 5,344,020, Cl. 224-274.000.

Fermin, Cesar D.: *See—*
Garry, Robert F., Jr.; Fermin, Cesar D.; and Alexander, Steve S., Jr., 5,344,774, Cl. 435-239.000.

Ferris, Maxime, to Audio-Visual Publishers Inc. Teaching method and system. 5,344,326, Cl. 434-336.000.

Fetcenko, Michael A.: *See—*
Ovshinsky, Stanford R.; Fetcenko, Michael A.; Venkatesan, Srinivasan; and Holland, Arthur, 5,344,728, Cl. 429-223.000.

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Keplinger, John S.; Kacheria, Nilesh P.; Awai, George; and Borck, David R., 5,345,531, Cl. 385-102.000.

Ficken, Leonard A., to Unidynamics Corporation. Moisture reduction system for an automatic vending machine. 5,344,050, Cl. 222-129.400.

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Fieuws, Francecka: *See—*
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Filia, Richard M.: *See—*
Yee, Eugene M.; Sutherland, Beverly E.; Lyon, John J.; Spits, Tiemen T.; and Filia, Richard M., 5,345,262, Cl. 348-177.000

Filippov, Alexander K.: *See—*
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Filippov, Viktor N.: *See—*
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Findley, Mary L. Mop construction including detachable fabric cleaning element. 5,343,587, Cl. 15-228.000.

Fink, Anton, to MicroCentric Corporation. Jaw assembly for chucks. 5,344,166, Cl. 279-123.000.

Finkenzeller, Ulrich: *See—*
Coates, David; Marden, Shirley; Smith, Graham; Finkenzeller, Ulrich; Reiffenrath, Volker; Hittich, Reinhard; and Wilhelm, Stefan, 5,344,587, Cl. 252-299.660.

Finn, John M., to American Cyanamid Company. Alkyl esters of 5-heterocyclic-pyridine-2,3-dicarboxylic acids and methods for the preparation thereof. 5,344,935, Cl. 546-250.000.

Finnigan, Peter M.; Lorensen, William E.; and Hathaway, Alan F., to General Electric Company. Method and apparatus for converting computed tomography (CT) data into finite element models. 5,345,490, Cl. 378-4.000.

Fiorenzo, Russell T.: *See—*
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Fischer, Artur, to fischerwerke Artur Fischer GmbH & Co KG. Anchor for anchoring in a drilled hole in concrete via a joining composition. 5,344,268, Cl. 411-82.000.

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Fischer, Wolfgang; Guentherberg, Norbert; Niessner, Norbert; Ruppmich, Karl; and Seitz, Friedrich, to BASF Aktiengesellschaft. Molding material from a particulate graft polymer. 5,344,877, Cl. 525-83.000.

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Fischtein, Morris: *See—*
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Fisher, Jack: *See—*
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Fisher, Richard J.; and Alexander, Samuel E., to Microchip Technology Incorporated. Default fuse condition for memory device after final test. 5,345,413, Cl. 365-96.000.

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Wilcox, Reed N.; George, Richard L.; Thiess, William K.; Loftus, John T., Jr.; O'Meara, Timothy F.; and Lichfield, William H., 5,344,322, Cl. 434-84.000.

Flanders, Nancy L. Repair kit for externally worn silicone breast prosthesis. 5,344,450, Cl. 623-7.000.

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Yamamoto, Kaoru; Maeda, Nagayoshi; Kamiya, Makoto; Murao, Toshiro; Reuschel, Gerhard; and Fleischer, Dietrich, 5,344,911, Cl. 528-241.000.

Fleming, Raymond T.: *See—*
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Fleming, Ward. Pliable pin strip. 5,343,644, Cl. 40-446.000.

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Flickner, Andrew K., to Thomson Consumer Electronics, Inc. AKB apparatus with hot start flash prevention. 5,345,267, Cl. 348-379.000.

Flik, Gottfried: *See—*
Trah, Hans-Peter; and Flik, Gottfried, 5,344,117, Cl. 251-11.000.

Florida Atlantic University Research Corp.: *See—*
Shankar, Ravi, 5,343,867, Cl. 128-668.000.

Floyd, Richard S. Removable cover for boats and other objects. 5,343,824, Cl. 114-361.000.

FLS Miljo A/S: *See—*
Pettersson, Vagn A., 5,344,481, Cl. 96-33.000.

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Ament, Myron, 5,343,572, Cl. 4-356.000.

FM Mattsson AB: *See—*
Axelsson, Bo E. K.; and Krang, Henry E., 5,344,067, Cl. 236-12.200.

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Fokker Aircraft B.V.: *See—*
Hordijk, Jan; and Wierda, Gerhard J., 5,344,316, Cl. 434-37.000.

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Foley, Peter M.: *See—*
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Folk, John E.: *See—*
Jakus, Judit; Park, Myung H.; Wolff, Edith C.; and Folk, John E., 5,344,846, Cl. 514-634.000.

Fond, Olivier, to Nestec S.A. Devices for use with espresso machines. 5,343,799, Cl. 99-295.000

Fong, Vincent L., to Hyundai Electronics America. High-speed current sense amplifier. 5,345,111, Cl. 307-350.000.

Fontaine, Jean F. L., to Goodyear Tire & Rubber Company, The. Tread for a pneumatic tire with differing tread stiffness regions. 5,343,918, Cl. 152-209.00R.

Fontenot, Mark G.; and Miller, Thomas G., to Lake Shore Medical Development Partners, Ltd. Localized heat transfer device. 5,344,436, Cl. 607-104.000.

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Kuhrt, Darwin H., 5,343,790, Cl. 83-395.000.

Foos, Jacques; Lemaire, Marc; Guy, Alain; Guyon, Vincent; Chomel, Rodolphe; Delo Ge, Andre ; Doutreluigne, Pierre; and Le Roy, Henri, to Cogema-Compagnie Generale des Matieres Nucleaires. Method for recovering with the aid of a crown compound plutonium (IV) present in solutions, such as aqueous effluents, concentrated solutions of fission products and concentrated solutions of plutonium. 5,344,624, Cl. 423-6.000.

Foote, Dean: *See—*
Wenzel, Kenneth H.; and Foote, Dean, 5,343,966, Cl. 175-74.000.

Ford Motor Company: *See—*
Gryc, William S.; and Cox, Chester, 5,343,905, Cl. 141-59.000.
Haddad, Charles J.; and Maliszewski, Robert L., 5,343,666, Cl. 52-648.100.
Peterson, Francis C.; and Parekh, Bipin, 5,344,112, Cl. 248-313.000.
Premiski, Vladimir; Wehren, Wilhalm; Silk, Mark; and Biedermann, Sieghart, 5,343,991, Cl. 192-45.000.

Foreman, James E.: *See—*
Akins, Rickey D.; Walvoord, John; and Foreman, James E., 5,344,729, Cl. 430-5.000.

Forenza, Salvatore: *See—*
Lam, Kin S.; McDonald, Leonard A.; Mattei, Jacqueline; Forenza, Salvatore; and Matson, James A., 5,344,823, Cl. 514-43.000.

Forestry and Forest Products Research Institute, Ministry of Agriculture, Forestry and Fisheries: *See—*
Sudo, Kenichi; and Shimizu, Kazumasa, 5,344,921, Cl. 530-502.000.

Formall, Inc.: *See—*
Rose, Henry H., 5,344,021, Cl. 206-505.000.

Forsstrom, Jan-Olov, to Kamewa AB. Steering and reversing system for a marine jet propulsion unit. 5,344,344, Cl. 440-41.000.

Forsvarets Forskningsanstalt: *See—*
Wennberg, Lennart; Sarholm, Lena; Svensson, Egon; Erikson, Jan; and Holmlin, Ralf, 5,343,809, Cl. 102-401.000.

Foss, Carrie R.: *See—*
Tuse, Daniel; Hokama, Leslie A.; Foss, Carrie R.; and Tefft, Jacqueline A., 5,344,471, Cl. 47-58.000.

Foster, Donald D.; Nelson, Philip L.; and Laffey, Martin S., to Contico International, Inc. Trigger sprayer having a two-piece housing construction. 5,344,053, Cl. 222-383.000.

Foster Wheeler Energy Corporation: *See—*
Tang, John T., 5,344,614, Cl. 422-170.000.
Tang, John T.-Y., 5,344,632, Cl. 423-244.070.

Fox, Eleanor: *See—*
Wilson, Richard A.; Mookherjee, Braja D.; Butler, Jerry F.; and Fox, Eleanor, 5,344,847, Cl. 514-675.000.

Foxboro Comany, The: *See—*
Fung, Clifford D.; and Chau, Kevin H. L., 5,344,523, Cl. 156-628.000.

Foxboro Company, The: *See—*
Mattar, Wade M.; Thompson, Duane T.; DeCarlo, Joseph P.; Hussain, Yousif; and Chitty, Gordon W., 5,343,764, Cl. 73-861.380.

Fraas, Lewis M.; and O'Neill, Mark J. Line-focus photovoltaic module using stacked tandem-cells. 5,344,497, Cl. 136-246.000.

Fraas, Werner: *See—*
Lang, Georg; Trummer, Georg; Sigwart, Edgar; Fraas, Werner; Misler, Andrea; and Reinert, Gerhard, 5,345,378, Cl. 364-140.000.

Frake, Barry N.: *See—*
Fitch, Mark D.; Eckhardt, Gerard; Anderson, Wendy A.; Anelich, Mario A.; Frake, Barry N.; Lang, Kevin W.; and Mannheimer, Alfred, 5,344,664, Cl. 426-631.000.

Framatome: *See—*
de Magny, Emmanuel, 5,345,480, Cl. 376-291.000.
Maire, Daniel; Moreau, Georges; and Archer, Jacques, 5,345,478, Cl. 376-249.000.

Franaszek, Peter A.; and Georgiou, Christos J., to International Business Machines Corporation. Very large scale modular switch. 5,345,228, Cl. 340-825.790.

Francalanci, Franco: *See—*
Cometti, Giuseppe; Du Vosel, Annick; Francalanci, Franco; and Santi, Roberto, 5,344,960, Cl. 560-100.000.

France Telecom: *See—*
Boscher, Daniel; and Brault, Jean-Charles, 5,345,523, Cl. 385-64.000.

Francese, James E.: *See—*
Christ, F. Richard; Francese, James E.; and Grisoni, Bernard F., 5,344,449, Cl. 623-6.000.

Franckowiak, Gerhard; Marhold, Albrecht; Bechem, Martin; Gross, Rainer; Kayser, Michael; Schramm, Matthias; and Thomas, Gunther, to Bayer Aktiengesellschaft. Circulation-active dioxyalkylenearyldihydropyridines. 5,344,944, Cl. 549-436.000.

Francois, Roland C., to Aerospatiale Societe Nationale Industrielle. Safeguard system of a speed increasing/reducing mechanical assembly, especially of the helicopter "gear box" type, in case of lubricating oil loss. 5,344,101, Cl. 244-17.110.

Franke, Wolfgang: *See—*
Hildebrand, Gerhard; Seidel, Gunther; Heintke, Hans-Eberhard; Ramspeck, Klaus; Eichhorn, Reinhold; Durr, Helmut; Franke, Wolfgang; Braun, Gebhard; Ohle, Manfred; and Ullmann, Roland, 5,343,621, Cl. 30-43.920.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft M.B.H.: *See—*
Theurer, Josef, 5,343,810, Cl. 104-12.000.

Fraser, Claire M.: *See—*
Venter, John C.; Fraser, Claire M.; and McCombie, William R., 5,344,776, Cl. 435-252.300.

Fraunhofer-Gesellschaft zur Forderung der angewandten: *See—*
Konstanzer, Michael, 5,345,359, Cl. 361-152.000.

Frazier, Lawrence M., to Hughes Missile Systems Company. Handheld obstacle penetrating motion detecting radar. 5,345,240, Cl. 342-28.000.

Fredriksson, Lars-Berno, to IRO AB. Method and apparatus for threading-up yarn in a pulsating manner. 5,343,898, Cl. 139-450.000.

Fredriksson, Lars-Berno: *See—*
Jacobsson, Kurt A. G.; and Fredriksson, Lars-Berno, 5,343,899, Cl. 139-452.000.

Freeman, Richard B.; and Greve, Bruce N., to Budd Company, The. Composite fuel tank. 5,344,038, Cl. 220-453.000.

Frei, Bernhard, to TRW Repa GmbH. Safety belt retractor with a belt pretensioner device acting on the belt drum. 5,344,095, Cl. 242-374.000.

Frei, Bernhard; Hirzel, Uwe; Rohrle, Martin; and Honl, Wolf-Dieter, to TRW Repa GmbH. Safety belt restraining system for vehicles 5,344,096, Cl. 242-379.000.

Frei, John K.; and Fiorenzo, Russell T., to Motorola, Inc. Plasma based soldering by indirect heating. 5,345,056, Cl. 219-121.590

French, John B.; and Etkin, Bernard, to MDS Health Group Limited Apparatus and method for liquid sample introduction. 5,345,079, Cl. 250-288.000.

Frens, Lance L.: *See—*
Athey, Roderick E.; Spencer, Elliot; and Frens, Lance L., 5,343,705, Cl. 60-646.000.

Freundlich, Richard A.: *See—*
Dalgewicz, Edward J., III; and Freundlich, Richard A., 5,344,912, Cl. 528-308.100.

Frichette, Robert S.: *See—*
Kringel, George; Frichette, Robert S.; and Richardson, James E., 5,344,250, Cl. 403-228.000.

Fricke, Andreas; and Kurtzer, Siegfried, to Heidelberger Druckmaschinen AG. Swivellable pre-gripper of a sheet-fed printing press and method of operation thereof. 5,343,806, Cl. 101-408.000

Fricker, Ruth M.: *See—*
DiBernardo, Dinah K.; Osborn, Kenneth L.; and Fricker, Ruth M., 5,344,011, Cl. 206-364.000.

Friedrich, Hans-Helmut: *See—*
Drewes, Rolf; Friedrich, Hans-Helmut; Mehner, Hans-Ludwig; Braun, Bernd; and Wecht, Walter, 5,344,992, Cl. 568-314.000.

Friesen, Henry, to Deere & Company. Rotary mower having modified "delta wing" shape. 5,343,683, Cl. 56-320.100.

Frigg, Robert, to Synthes (U.S.A.). Pedicular screw clamp. 5,344,422, Cl. 606-61.000.

Fringeli, Eduard: *See—*
Luechinger, Paul; and Fringeli, Eduard, 5,345,043, Cl. 177-180.000.

Frisbee, Claude M.; and Werner, Ronald H., to Case Corporation Dozer blade, face plate, and edge plate arrangement. 5,343,959, Cl. 172-701.300.

Frisch, Herbert; and Wirtl, Johannes, to Hoerbiger Ventilwerke Aktiengesellschaft. Piezo valve. 5,343,894, Cl. 137-625.650

Fritschi Ag. Apparatebau: *See—*
Fritschi, Andreas; and Fritschi, Christian, 5,344,179, Cl. 280-618.000.

Fritschi, Andreas; and Fritschi, Christian, to Fritschi Ag. Apparatebau. Adjustable length binding system for snowboards having independently variable heel and toe spans. 5,344,179, Cl. 280-618.000.

Fritschi, Christian: *See—*
Fritschi, Andreas; and Fritschi, Christian, 5,344,179, Cl. 280-618.000.

Fritz, Alan H.; Cedoz, Roger T.; and Miller, Mark D., to Ransburg Corporation. Nozzle assembly for HVLP spray gun. 5,344,078, Cl 239-296.000.

Fritz, Ian J.; and Wendt, Joel R., to Sandia Corporation. Tandem resonator reflectance modulator. 5,345,328, Cl. 359-248.000.

Froeschke, Reinhard, to Santrade Ltd. Device for producing granulate. 5,344,087, Cl. 241-91.000.

Froeschle, Thomas A., to Bose Corporation. Frequency-stabilized two-state modulation using hysteresis control. 5,345,165, Cl. 323-284.000.

FSSL Limited: *See—*
Bosley, Kevin J., 5,343,891, Cl. 137-614.040.

Fu, James C.: *See—*
Feeley, Jennifer S.; Fu, James C.; Larkin, Matthew P.; and Simone, Dianne O., 5,343,706, Cl. 60-723.000.

Fuchs, Eberhard: *See—*
Witzel, Tom; Fuchs, Eberhard; Merger, Franz; and Priester, Claus-Ulrich, 5,344,983, Cl. 564-396.000.

Fuhrman, Philip B.: *See—*
Schleifer, Arthur; Roark, Joseph C.; Poole, John S.; Gordon, Gary B.; Segal, Gilbert; and Fuhrman, Philip B., 5,345,540, Cl. 395-86.000.

Fuji Electric Co., Ltd.: *See—*
Nakamura, Kimihiro; Yuhara, Tadanori; Takano, Toshiyuki; and Yao, Hironobu, 5,343,756, Cl. 73-718.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Nakadate, Masaaki; and Obukata, Masahiro, 5,344,102, Cl. 244-35.00R.

Fuji Koki Manufacturing Co., Ltd.: *See—*
Tate, Kikuo, 5,343,757, Cl. 73-724.000.

Fuji Photo Film Co., Ltd.: *See—*
Fujimoto, Hiroshi; and Taniguchi, Masato, 5,344,750, Cl. 430-434.000.
Horie, Seiji; Sano, Kenji; Suzuki, Nobuo; and Watarai, Syu, 5,344,694, Cl. 428-195.000.
Kitamoto, Tatsuji, 5,344,730, Cl. 430-14.000.
Mikoshiba, Hisashi; Yamakawa, Katsuyoshi; Sato, Kozo; and Matsuoka, Koushin, 5,344,933, Cl. 544-282.000.
Ushiro, Seimei; and Emura, Bunsuke, 5,345,282, Cl. 353-119.000.
Fuji Photo Optical Co., Ltd.: *See—*
Komi, Shuji, 5,343,853, Cl. 128-4.000.
Fuji Xerox Co., Ltd.: *See—*
Uehara, Yasuhiro; Kusumoto, Yasuhiro; Kato, Hiroshi; and Kikukawa, Hiroyasu, 5,345,300, Cl. 355-285.000.
Fujii, Masumi; Suda, Taiichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Touru; and Mitsuoka, Shigeaki, to Kansai Electric Power Co., Inc., The; and Mitsubishi Jukogyo Kabushiki Kaisha. Process for removing carbon dioxide from combustion exhaust gas. 5,344,627, Cl. 423-220.000.
Fujii, Norio, to Rohm Co., Ltd. IIL circuit and integrated circuit having the same. 5,345,116, Cl. 307-477.000.
Fujii, Takashi: *See—*
Saeki, Shirou; Hirose, Akira; Fujii, Takashi; and Sano, Motoya, 5,344,134, Cl. 271-122.000.
Fujimoto, Hiroshi; and Taniguchi, Masato, to Fuji Photo Film Co., Ltd. Color development processing method of silver halide color photographic material using a color developer where the color developing agent concentration and processing temperature are a function of bromide ion concentration. 5,344,750, Cl. 430-434.000.
Fujimoto, Sachito; Oketani, Toshikazu; and Abe, Yoshiharu, to Honda Giken Kogyo Kabushiki Kaisha. Air-fuel ratio control system for internal combustion engines. 5,343,700, Cl. 60-276.000.
Fujisawa, Kazutoshi: *See—*
Obuchi, Kazuto; Oya, Satoshi; Minato, Mitsuaki; Uehara, Akira; Fujisawa, Kazutoshi; and Takao, Kazuhisa, 5,344,536, Cl 204-192.320.
Fujitsu Limited: *See—*
Itoh, Eisaku, 5,345,121, Cl. 307-530.000.
Ogawa, Tohru, 5,345,437, Cl. 370-13.000.
Okazaki, Makoto; Shibata, Yuji; Tanihira, Hisamitsu; and Wakimura, Yoshiaki, 5,345,559, Cl. 395-250.000.
Sato, Kazuhiro, 5,345,442, Cl. 370-58.300.
Shikatani, Junichi, 5,345,425, Cl. 365-230.010.
Sono, Michio; Kubota, Akihiro; Kasai, Junichi; Yoshimoto, Masanori; and Masaki, Keiichi, 5,343,615, Cl. 29-827.000.
Sugiyama, Yuichi, 5,343,864, Cl. 128-661.010.
Takano, Minoru; Komuro, Akihiro; and Yamazaki, Mitsuru, 5,345,295, Cl. 355-200.000.
Takeda, Siro; Namiki, Fumihiro; Haraki, Takahiro; Hirano, Hideyuki; Ishiwata, Kenji; Katsuragawa, Shigehiko; and Abe, Katsumi, 5,345,513, Cl. 382-6.000
Tanaka, Hiroshi, 5,345,537, Cl. 395-2.640.
Tsurumaki, Takayoshi; and Ogata, Fumiaki, 5,345,591, Cl. 455-3.200.
Uriu, Shiro; and Yoshimura, Shuji, 5,345,451, Cl. 371-42.000.
Fujiwara, Hiroshi, to Hitachi, Ltd.; and Hitachi Automotive Engineering. Drive mechanism of engine ignition system. 5,343,836, Cl. 123-146.50A.
Fukada, Syuzo: *See—*
Tanahashi, Mitsuhiko; Inoue, Masafumi; Fukada, Syuzo; Ota, Chikayoshi; and Kimoto, Senji, 5,343,913, Cl. 144-380.000.
Fukahori, Kenichi; Iima, Shin; Sato, Shuji; Shimoha, Masaki; Ito, Hideki; and Narita, Mutsuko, to Sony Corporation. Printer and ink ribbon cartridge having color block detection means. 5,344,244, Cl. 400-249.000.
Fukaya, Masahiro: *See—*
Tamaki, Toshimi; Takemura, Hiroshi; Tayama, Kenji; Fukaya, Masahiro; Okumura, Hajime; and Kawamura, Yoshiya, 5,344,777, Cl. 435-252.300
Fukitsu VLSI Limited: *See—*
Itoh, Eisaku, 5,345,121, Cl. 307-530.000.
Fukui, Norio: *See—*
Ito, Satoru; Murata, Michihiro; Fukui, Norio; Yamamoto, Keizou; Sawao, Tetsujiro; Awata, Satoshi; Tada, Yasuo; and Kawabata, Satoru, 5,344,518, Cl. 156-242.000.
Fukui, Wataru, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for internal combustion engine. 5,343,842, Cl. 123-414.000
Fukui, Wataru; Iwata, Toshio; and Ohsawa, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Apparatus and method for detecting misfiring in an internal combustion engine. 5,343,844, Cl. 123-481.000.
Fukumaru, Hiroaki: *See—*
Tanji, Masayuki; Miyazaki, Yoshihiro; Fukumaru, Hiroaki; Yamaguchi, Syoji; Masui, Koji; and Ogawa, Hisao, 5,345,566, Cl. 395-325.000.
Fukumoto, Takaaki: *See—*
Yanagi, Motonori; Ban, Cozy; and Fukumoto, Takaaki, 5,344,615, Cl. 422-170.000.
Fukunaga, Tetsuya: *See—*
Koseki, Toshihiko; Fukunaga, Tetsuya; Takano, Hideo; and Yamanaka, Hidemine, 5,345,324, Cl. 359-67.000.
Fukushima, Kiyoyuki: *See—*
Suzuki, Shigeru; Kobara, Motonori; Hisatomi, Yasuhiro; Yamaguchi, Yoshinori; Yonetani, Hiroshi; Fukushima, Kiyoyuki; Sakamoto, Yoshimasa; Yagami, Toru; and Kamei, Toshihide, 5,344,260, Cl. 408-168.000.
Fukushima, Nobuo, to Canon Kabushiki Kaisha. Rotation drive device. 5,345,532, Cl. 388-813.000.
Fukutomi, Ruta: *See—*
Satoh, Hiroaki; Kikuchi, Haruhiko; Yamada, Kazuhiko; Fukutomi, Ruta; Suzuki, Masashi; Hagihara, Koichiro; Hayakawa, Toru; Arai, Takeo; and Mino, Setsuko, 5,344,831, Cl. 514-249.000.
Fukuyama, Masahiro: *See—*
Yamamoto, Keisaku; Tanimoto, Yoshio; Fukuyama, Masahiro; and Yasuda, Noriyasu, 5,344,881, Cl. 525-112.000.
Fulghum, Tracy L., to Motorola, Inc. Communication device with code sequence selection system. 5,345,469, Cl. 375-1.000.
Fuller, Keith C.: *See—*
Pastor, Ricardo C.; Pastor, Antonio C., deceased; Gorre, Luisa E., deceased; and Fuller, Keith C., 5,344,816, Cl. 505-490.000
Funahashi, Yoshiki: *See—*
Ide, Akiyoshi; Goto, Katsuhiro; Ishioka, Yutaka; Funahashi, Yoshiki; Kato, Rentaro; Matsui, Tetsu; Kanda, Ryouji; Muramatsu, Atsushi; and Ishiba, Keiichi, 5,344,129, Cl. 267-140.140.
Funakubo, Tomoki; and Wakabayashi, Katsuhiro, to Olympus Optical Co., Ltd. Two-dimensionally driving ultrasonic motor. 5,345,137, Cl. 310-323.000.
Fung, Clifford D.; and Chau, Kevin H. L., to Foxboro Comany, The. Overpressure-protected, polysilicon, capacitive differential pressure sensor and method of making the same. 5,344,523, Cl. 156-628.000.
Furon Company: *See—*
Skaggs, Steven, 5,343,738, Cl. 73-40.50R.
Furstenberg, John L., to Envirex Inc. Vaporless liquid containment system. 5,343,908, Cl. 141-114.000.
Furukawa, Hisao: *See—*
Inoue, Masaharu; Okimura, Yoshihiko; Kawaguchi, Hirotoshi; and Furukawa, Hisao, 5,344,879, Cl. 525-100.000.
Nambu, Toshiro; Kawaguchi, Hirotoshi; Furukawa, Hisao; and Kato, Yasushi, 5,344,880, Cl. 525-100.000.
Furukawa, Mitsuru; Takada, Masahiko; Murata, Shoichi; and Sasayama, Atsushi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for producing regenerated collagen fiber. 5,344,917, Cl. 530-356.000
Furuta, Shigeo: *See—*
Hanano, Takashi; and Furuta, Shigeo, 5,344,123, Cl. 266-207.000.
Furuya, Youichi: *See—*
Kozuka, Hajime; Furuya, Youichi; Yoda, Takahiro; Kitamura, Kazuo; and Ijima, Terutsugu, 5,344,196, Cl. 285-149.000.
Fushimi, Norio; Inamasa, Kenji; and Takagawa, Makoto, to Mitsubishi Gas Chemical Company, Inc. Process for producing monoalkenyl aromatic hydrocarbon compound. 5,344,806, Cl. 585-452.000.
Futsuhara, Koichi: *See—*
Mukaidono, Masao; Sugimoto, Noboru; and Futsuhara, Koichi, 5,345,138, Cl. 307-326.000.
G.D. Searle & Co.: *See—*
Bovy, Philippe R.; Rico, Joseph G.; Rogers, Thomas E.; Tjoeng, Foe S.; and Zablocki, Jeffery A., 5,344,957, Cl. 560-35.000.
Reitz, David B.; and Li, Jinglin, 5,344,991, Cl. 568-34.000.
Tjoeng, Foe S.; and Zablocki, Jeffery A., 5,344,837, Cl. 514-344.000.
G.E.W. (EC) Limited: *See—*
Rae, Malcolm C., 5,343,629, Cl. 34-278.000.
Gabriagues, Jean-Michel; Jacquinot, Jean-Claude; Le Roy, Guy; and Jacob, Jean-Baptiste, to Alcatel N.V. Optical wavelength converter control method and device. 5,345,455, Cl. 372-20.000.
Gaffar, Abdul; Nabi, Nuran; Afflitto, John; and Stringer, Orum, to Colgate-Palmolive Co. Antibacterial antiplaque oral composition. 5,344,641, Cl. 424-49.000.
Gagnon, David R.; Coleman, Patrick L.; Drtina, Gary J.; Lyons, Christopher S.; Milbrath, Dean S.; Rasmussen, Jerald K.; and Stahl, Julie B., to Minnesota Mining and Manufacturing Company. Porous supports having azlactone-functional surfaces. 5,344,701, Cl. 428-304.400.
Gaitan, Michael: *See—*
Semancik, Stephen; Cavicchi, Richard E.; Gaitan, Michael; and Suehle, John S., 5,345,213, Cl. 338-34.000.
Galchefski, John M.; and Westbury, Ian, to CMS Gilbreth Packaging Systems. Apparatus for applying labels onto small cylindrical articles having improved vacuum and air pressure porting for label transport drum. 5,344,519, Cl. 156-456.000.
Gallant, Stuart L.; Caron, Paul R.; Palmer, Walter E.; and Lubocki, David J., to Quinton Instrument Company. Recorder unit for ambulatory ECG monitoring system. 5,343,870, Cl. 128-711.000.
Galloway Company: *See—*
Galloway, Edwin J., 5,343,900, Cl. 141-1.000.
Galloway, Edwin J., to Galloway Company. Needle bundle driver and methods. 5,343,900, Cl. 141-1.000.
Galpin, Robert K. P., to GPT Limited. Remote line test facility. 5,345,496, Cl. 379-29.000.
Galtier, Pierre: *See—*
Pontier, Renaud; Hoffmann, Frederic; and Galtier, Pierre, 5,344,554, Cl. 208-164.000.
Gambro AB: *See—*
Jonsson, Lennart; and Knutsson, Stefan, 5,344,231, Cl. 366-137.000.
Gang, Xiao: *See—*
Bjerrum, Niels J.; Gang, Xiao; Hjuler, Hans A.; Olsen, Christian; and Berg, Rolf W., 5,344,722, Cl. 429-46.000.
Gantzert, Bob. Anchoring device for a water heater. 5,344,111, Cl. 248-274.000.

Garcia, Ben: *See—*
Senninger, Mark; Kenley, Rodney; Witsoe, David; Bucchianeri, Richard; Deming, Laura; and Garcia, Ben, 5,344,392, Cl. 604-4.000.
Garcia, Fernando: *See—*
Betz, Dieter; Nuebel, Karl-Heinz; Almendro, Jose Luis; Garcia, Fernando; and Ramirez, Eduardo, 5,343,614, Cl. 29-605.000.
Gardemal, Robert C., Jr.: *See—*
Roberts, Gregory A.; Voelz, Lawrence D.; and Gardemal, Robert C., Jr., 5,345,242, Cl. 342-159.000.
Gardineer, Bayard; and Vilkomerson, David, to Echocath. Apparatus and method for locating an interventional medical device with a ultrasound color imaging system. 5,343,865, Cl. 128-662.050.
Gardner, John C.: *See—*
Arnold, Douglas B.; Bromfield, George; and Gardner, John C., 5,345,428, Cl. 367-165.000.
Gardziella, Arno: *See—*
Schroter, Stephan; Hansen, Achim; Gardziella, Arno; and Adolphs, Peter, 5,345,001, Cl. 568-727.000.
Garford Pty Ltd: *See—*
Hedrick, Neville A., 5,344,256, Cl. 405-259.100.
Garforth-Bles, Timothy. Wheeled vehicle for carriage of children convertible between jogging and bicycle trailer configurations. 5,344,171, Cl. 280-415.100.
Garr, Keith E.: *See—*
Kintz, Lawrence J.; Okey, David W.; Leicht, Joseph F.; Carriglitto, Francis T.; O'Hare, Colum; Garr, Keith E.; and Clark, Valerie, 5,343,613, Cl. 29-596.000.
Garrone, Vittorio. Machine for folding sheets of paper. 5,344,379, Cl. 493-441.000.
Garry, Robert F., Jr.; Fermin, Cesar D.; and Alexander, Steve S., Jr., to Administrators of the Tulane Educational Fund, The. Human intracisternal A-type retroviral particles associated with sjogren's syndrome. 5,344,774, Cl. 435-239.000.
Garverick, Steven L.: *See—*
McGrath, Donald T.; Krisciunas, Joseph E.; Garverick, Steven L.; and Jacob, Philippe; L., 5,345,409, Cl. 364-736.000.
Gas Research Institute: *See—*
Abraham, John, 5,343,838, Cl. 123-218.000.
Gassner, Gustav: *See—*
Pacher, Lothar; Gassner, Gustav; Voigt, Gottfried; and Hilfinger, Peter, 5,344,317, Cl. 433-85.000.
Gaudet, Peter W.; and Olsen, Donald A., to Helix Technology Corporation. Electronically controlled cryopump. 5,343,708, Cl. 62-55.500.
Gaz de France: *See—*
Ingrain, Dominique; Bose, Tapan; and Saint-Arnaud, Jean-Marie, 5,343,758, Cl. 73-861.020.
Gazecimeon, George; Kamisis, Nancy; and Degroote, Richard, to Gazecimeon, George; and Kamisis, Nancy. Portable safety flag. 5,343,825, Cl. 116-173.000.
Gebele, Thomas, to Leybold Aktiengesellschaft. Magnet configuration with permanent magnets. 5,345,207, Cl. 335-298.000.
Geib, Lawrence E.: *See—*
Colleran, Stephen A.; Gugelmeyer, Robert J.; Geib, Lawrence E.; Stead, Kenneth T.; and Cheong, Weng H., 5,344,338, Cl. 439-465.000.
Geirhos, Josef: *See—*
Jacob, Ingolf; and Geirhos, Josef, 5,344,710, Cl. 428-370.000.
Geminden, David C.: *See—*
Chopra, Kiran; Geminden, David C.; and Mahoney, Debra C., 5,345,216, Cl. 340-146.200.
General Dynamics Corporation, Space Systems Division: *See—*
Stern, Theodore G.; and Cornwall, Mickey, 5,344,496, Cl 136-246.000.
General Elecric Company: *See—*
Oosterkamp, William J., 5,345,481, Cl. 376-293.000.
General Electric Company: *See—*
Bashyam, Manohar, 5,343,750, Cl. 73-635.000.
Chamberlain, Leon F.; Hargitai, Miklos; Lantos, Ferenc; Tokes, Jozsef; and Wursching, Istvan, 5,345,142, Cl. 315-58.000.
Coffinberry, George A., 5,343,691, Cl. 60-39.060.
Deaver, Gerald A.; and Bourbour, Siamak, 5,345,484, Cl. 376-407.000.
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Hall, Walter L., 5,344,866, Cl. 524-450.000.
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Johnson, Kenneth L.; Corsmeier, Donald M.; Weaver, William L.; and Lewis, Eric H., 5,343,697, Cl. 60-226.300.
King, Robert D., 5,345,154, Cl. 318-49.000.
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Kliman, Gerald B.; Srinivasan, Kamakshi; DeDoncker, Rik W.; and Ritscher, David E., 5,345,158, Cl. 318-434.000
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LeRoux, Patrick L.; and Hinks, Richard S., 5,345,176, Cl. 324-309.000.
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Parimore, Thomas N., Jr.; and Pauley, Gerald A., 5,344,195, Cl. 285-91.000.
Reese, Anthony P., 5,345,486, Cl. 376-443.000.
Rosenquist, Niles R., 5,344,908, Cl. 528-29.000.
Scarlata, Steven P.; and Missana, Adrian, 5,344,160, Cl. 277-3.000.
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Maher, Joseph A.; Vowles, E. John; Napoli, Joseph D.; Zafiropoulo, Arthur W.; and Miller, Mark W., 5,344,542, Cl. 204-298.150.
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Price, Albert E., 5,344,920, Cl. 530-416.000.
Wei, Cha-Mer; Hsiung, Nancy; Reddy, Vermuri B.; Lemontt, Jeffrey F.; Dackowski, William; Douglas, Richard; Cole, Edward S.; Purcell, Richard D., Jr.; and Lau, David Tai-Yui, 5,344,773, Cl. 435-226.000.
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George, John B., to Thomson Consumer Electronics, Inc. Automatic calibration in a waveform generator for deflection. 5,345,151, Cl. 315-368.230.
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Georgia-Pacific Resins, Inc.: *See—*
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Ghomeshi, Mohammed M.: *See—*
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Hoogenboom, Christopher L., 5,345,408, Cl. 364-725.000.
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Henderson, Tom; and Gibbs, Wayne, 5,343,884, Cl. 137-77.000
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Giglia, Salvatore: *See—*
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Bossler, Thomas H.; Glassman, Donald; Grebinoski, Michael C.; Morgan, Howard H., Jr.; and Voss, Jennifer L., 5,344,528, Cl. 203-14.000.
Glastra, Hendrik, to Industrial Research B.V. Expandable ring, cylinder or sleeve which can be made non-deformable. 5,344,444, Cl. 623-1.000.
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Collin, David T., 5,344,658, Cl. 424-489.000.
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Gledhill, Jeffrey J.; Anikhindi, Santosh V.; and Avon, Peter A., to National Transcommunications Limited. Reception of orthogonal frequency division multiplexed signals. 5,345,440, Cl. 370-19.000.
Glenn, Chance M., Sr.; Kaul, Roger; Sumner, David; and Gwyn, Kisha N., to United States of America, Army. Non-reflective limiter. 5,345,199, Cl. 333-17.200.
Glowka, David A., to United States of America, Energy. Downhole material injector for lost circulation control. 5,343,968, Cl. 175-231.000.
Glynn, James K., to Glynn, James Kevin. Apparatus for determining the deviation in the level of liquid in a vessel. 5,343,732, Cl. 73-3.000.
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Glynn, John L., Jr., to American Reclamation Corp. Asphaltic concrete product and a method for the fixation of contaminated soils in the asphaltic concrete. 5,344,485, Cl. 106-281.100.
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Hong, Sung H., 5,345,276, Cl. 348-663.000.
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Goldfarb, Stanley I.: *See—*
Fehskens, Leonard G.; Strutt, Colin; Wong, Steven K.; Callander, Jill F.; Burgess, Peter H.; Nelson, Kathy J.; Guertin, Matthew J.; Sylor, Mark W.; Chapman, Kenneth W.; Schuchard, Robert C.; Goldfarb, Stanley I.; Rogers, Dennis O.; O'Brien, Linsey B.; Trasatti, Philip J.; England, Benjamin M.; Lemmon, James L., Jr.; Rosenbaum, Richard L.; Kohls, Ruth E. J.; Aronson, David L.; Ross, Robert R. N.; Smith, Danny L.; Adams, William C., Jr.; Koning, G. Paul; Namoglu, Sheryl F.; Seger, Mark J.; Dixon, Timothy M.; and Harrow, Jeffrey R., 5,345,587, Cl. 395-650.000.
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Kim, Sung H.; and You, Byung S., 5,345,511, Cl. 381-104.000.
Shin, Woo C., 5,345,271, Cl. 348-525.000.
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daSilva, Valeria L.; Eskildsen, Lars E.; Goldstein, Evan L.; and Silberberg, Yaron, 5,345,332, Cl. 359-341.000.
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Gombos, John M.; and Leashno, Moshe, to A.C.X. Trading, Inc. Method of forming selected size and weight bales of hay into a selected size and weight non-palletized unit. 5,343,670, Cl. 53-399.000.
Gonya, Stephen G.; Lake, James K.; Long, Randy C.; and Wild, Roger N., to International Business Machines Corporation. Lead-free, high tin, ternary solder alloy of tin, bismuth, and indium. 5,344,607, Cl. 420-562.000.
Gonzalez, Alfredo I. Shutter anchorage system. 5,343,668, Cl. 52-712.000.
Goodman, Jack. Liquid transfer device. 5,343,909, Cl. 141-242.000.
Goodrich, Stephen D.: *See—*
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Duddey, James E.; and Cady, John M., 5,343,916, Cl. 152-5.000.
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Pastor, Ricardo C.; Pastor, Antonio C., deceased; Gorre, Luisa E., deceased; and Fuller, Keith C., 5,344,816, Cl. 505-490.000.
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Goto, Toshio; Hayakawa, Hidenori; Watanabe, Yukiyoshi; and Yanagi, Akihiko, to Nihon Bayer Agrochem K.K. Herbidical 1-(3,4-disubstituted phenyl) tetrazolinones. 5,344,814, Cl. 504-261.000.
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Gould Inc.: *See—*
Chamberlain, Jamie H.; Bay, Adam G.; and DeWitt, Robert D., 5,344,538, Cl. 204-212.000.
Goulds Pumps, Incorporated: *See—*
Roll, Daniel R.; and Wilson, George, 5,344,163, Cl. 277-67.000.
Goulet, Mark; Sinclair, Peter J.; Wong, Frederick; and Wyvratt, Matthew J., to Merck & Co., Inc. Imidazolidyl macrolides having immunosuppressive activity. 5,344,925, Cl. 540-456.000.
Gowan, William A., to Precision Storage, Inc. Temperature controller and method for facilitating the storage of wine and like perishables. 5,343,712, Cl. 62-126.000.
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Lawrence, Frederick J., 5,344,131, Cl. 270-53.000.
Graefe, Detlef; and Sagemuehl, Dieter, to RXS Schrumpftechnik-Garnturen GmbH. Heat shrinkable plastic hose and method for manufacturing. 5,344,511, Cl. 156-85.000.
Graham Corporation: *See—*
Athey, Roderick E.; Spencer, Elliot; and Frens, Lance L., 5,343,705, Cl. 60-646.000.
Graham, Kingsley F., to Westinghouse Electric Corporation. Sensitivity enhancement for airborne radioactivity monitoring system to detect reactor coolant leaks. 5,345,479, Cl. 376-250.000.

Grain Systems Incorporated: *See—*
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Grant, David C. H., to Baxter International Inc. Vacuum air lock for a closed perimeter solvent conservation system. 5,343,885, Cl. 134-105.000.
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Gravener, Roy; Aranyi, Ernie; and Zvenyatsky, Boris, to United States Surgical Corporation. Surgical fastener apparatus. 5,344,060, Cl. 227-180.000.
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Green, David T.; Bolanos, Henry; Sienkiewicz, Henry R.; and Leahy, Patrick, to United States Surgical Corporation. Surgical apparatus and anvil delivery system therefor. 5,344,059, Cl. 227-179.000.
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Green, Ronald P., to SGS-Thomson Microelectronics, Inc. Voltage controlled integrated circuit for biasing an RF device. 5,345,192, Cl. 330-289.000.
Greenberg, Gary, to Unimat (USA) Corporation. Illumination system and method for a high definition light microscope. 5,345,333, Cl. 359-389.000.
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Greenip, Lawrence E., Jr.; Chase, Gregory H.; and Nichols, Clarence M., to Fellows Corporation. Control graphics system for gear shaping machines. 5,345,390, Cl. 364-474.170.
Greenlee, William J.: *See—*
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Greenwich Pharmaceuticals, Incorporated: *See—*
Arora, Sudershan K., 5,344,924, Cl. 536-124.000.
Greenwood, Edward J.: *See—*
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Greenwood, Stephen R.; Peterson, R. Kim; and Schreiber, Benn L., to Digital Equipment Corporation. Thread private memory storage of multi-thread digital data processors using access descriptors for uniquely identifying copies of data created on an as-needed basis. 5,345,588, Cl. 395-650.000.
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Griffin & Company: *See—*
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Grile, Mark E. Electrical connector with an optical fiber connection detector. 5,345,520, Cl. 385-15.000.
Grill, Michael; and Deutsch, Josef, to Vietscher Magnesitwerke-Actien-Gesellschaft. Process for producing sintered magnesia. 5,344,599, Cl. 264-63.000.
Grimm, Federick L., to Michelin Recherche et Technique S.A. Tire lifting apparatus. 5,344,207, Cl. 294-103.100.
Grimnes, Martin S., to Brunswick Technologies, Inc. Structurally reinforced thermoplastic-fabric composite construction materials that are moldable. 5,344,687, Cl. 428-102.000.
Grindrod, Paul E., to Oscar Mayer Foods Corporation. Microwavable frozen impact-resistant hermetically sealed food package. 5,345,069, Cl. 219-730.000.
Griner, Christopher D., to Baxter Diagnostics Inc. Specimen processing and analyzing systems and methods using photometry. 5,345,395, Cl. 364-497.000.
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Gross, James R.: *See—*
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Gross, Timothy D., to Micron Technology, Inc. Thermal control of concentric tube liquid source gas lines. 5,343,937, Cl. 165-70.000.
Grubert, Heinrich; and Dersch, Rolf, to BASF Aktiengesellschaft. Aqueous polymer dispersions. 5,344,865, Cl. 524-433.000.
Grunchard, Frans, to Solvay (Societe Anonyme). Process for the production of epichlorohydrin. 5,344,945, Cl. 549-521.000.
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Grunewald, Gerald: *See—*
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Su, Sophia R.; O'Connor, Margaret; and Butler, Scott, 5,344,815, Cl. 505-1.000.
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Mahonski, Christopher E.; and Fleming, Raymond T., 5,345,144, Cl. 315-71.000.
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Fehskens, Leonard G.; Strutt, Colin; Wong, Steven K.; Callander, Jill F.; Burgess, Peter H.; Nelson, Kathy J.; Guertin, Matthew J.; Sylor, Mark W.; Chapman, Kenneth W.; Schuchard, Robert C.; Goldfarb, Stanley I.; Rogers, Dennis O.; O'Brien, Linsey B.; Trasatti, Philip J.; England, Benjamin M.; Lemmon, James L., Jr.; Rosenbaum, Richard L.; Kohls, Ruth E. J.; Aronson, David L.; Ross, Robert R. N.; Smith, Danny L.; Adams, William C., Jr.; Koning, G. Paul; Namoglu, Sheryl F.; Seger, Mark J.; Dixon, Timothy M.; and Harrow, Jeffrey R., 5,345,587, Cl. 395-650.000.
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Haag, Philip E. Locking apparatus for electrical plug connector assemblies. 5,344,333, Cl. 439-320.000.
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Habicht, Helmut. Method and apparatu for lifting turning and tilting of containers. 5,344,275, Cl. 414-420.000.
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Haessig, David L., to Staefa Control System, Inc. Dynamically controlled environmental control system. 5,344,068, Cl. 236-47.000.
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Bracken, Frank D., 5,343,648, Cl. 40-638.000.
Haghighat, R. Ross: *See—*
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Hagihara, Koichiro: *See—*
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Hale, Arthur H.; and Cowan, Kenneth M., to Shell Oil Company Drilling and cementing extended reach boreholes. 5,343,950, Cl 166-293.000.
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Cowan, Kenneth M.; and Hale, Arthur H., 5,343,947, Cl. 166-250.000.
Cowan, Kenneth M.; and Hale, Arthur H., 5,343,951, Cl. 166-293.000.
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Hall, Robert T., II; Maltais, Jo-Ann B.; and Cosentino, Louis C., to Minntech Corporation. Anticorrosive microbicide. 5,344,652, Cl. 424-405.000.
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Lee, William R., 5,344,107, Cl. 248-60.000.
Hall, Walter J.: *See—*
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Hall, Walter L., to General Electric Company. Fire resistant composites. 5,344,866, Cl. 524-450.000.
Hallden-Abberton, Michael P.; Work, William J.; Abramowicz, Mark A.; and Duong, Phuong N., to Rohm and Haas Company. Polyglutarimide/glass fiber combinations. 5,344,868, Cl. 524-494.000.
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Bohlen, J. Tad; Smith, Donald R.; and Berscheidt, Kevin T., 5,343,954, Cl. 166-382.000.
Patel, Dhirajlal C.; and Grigsby, Tommy F., 5,343,953, Cl. 166-312.000.
Ross, Colby M.; Patel, Dhirajlal C.; and LaBruyere, Timothy F., 5,343,949, Cl. 166-278.000.
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Ritter, Thomas E., 5,344,337, Cl. 439-447.000.
Ham, Arthur E. Vehicle repair measuring device. 5,343,628, Cl. 33-608.000.
Ham, Byung I. Lighting system with fluorescent and incandescent lamps. 5,345,149, Cl. 315-244.000.
Hamada, Elaine: *See—*
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Hamaguchi, Susumu: *See—*
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Hamala, Annette M.; Maron, William A.; and Reyburn, Rhoda A., to International Business Machines Corporation. Method and system for manipulation of distributed heterogeneous data in a data processing system. 5,345,586, Cl. 395-650.000.
Hamanaka, Nobuyuki; Takahashi, Kanji; and Tokumoto, Hidekado, to Ono Pharmaceutical Co., Ltd. Fused benzeneoxyacetic acid derivatives. 5,344,836, Cl. 514-332.000.
Hamilton Ortho Inc.: *See—*
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Hamilton, Paul U.: *See—*
Fitzgibbon, Thomas F.; and Hamilton, Paul U., 5,344,103, Cl. 244-75.00R
Hammond, Geoffrey L., to Allelix Biopharmaceuticals Inc. Pharmaceutical compositions for use in treating inflammation. 5,344,819, Cl. 514-8.000.
Hammond, Susan L.: *See—*
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Hamren, Glen C., to Delco Electronics Corporation. Knock control for high speed engine including a knock burst envelope follower. 5,343,843, Cl. 123-425.000.
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Han, Yu P.: *See—*
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Hanada, Masamichi: *See—*
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Hanamura, Makoto, to Seiko Epson Corporation. Method of controlling printer. 5,345,159, Cl. 318-447.000.
Hanano Corporation: *See—*
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Handke, Patrick M.: *See—*
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Hange, Willy; Dietsche, Helmut; and Seiler, Claus-Dietrich, to Huls Aktiengesellschaft. Process for the preparation of vinylchlorosilanes. 5,344,950, Cl. 556-478.000.

Hanlon, J. Vincent; Bostick, John G.; and Kolich, Charles H., to Ethyl Petroleum Additives, Inc. Organic phosphates and their use as wear inhibitors. 5,344,468, Cl. 44-379.000.
Hannah, Marc, to Silicon Graphics, Inc. High speed cursor generation apparatus. 5,345,252, Cl. 345-162.000.
Hannerstig, Christer, to AB A. Svensson & Co. Device for draping curtains. 5,343,925, Cl. 160-348.000.
Hanschen, Thomas P.; Krueger, Dennis L.; and Karp, Gregory P., to Minnesota Mining and Manufacturing Company. Spatially modified elastic laminates. 5,344,691, Cl. 428-152.000.
Hansen, Achim: *See—*
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Hansen, Charles D.: *See—*
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Hansen, Mark C.: *See—*
Lippmann, Raymond; Nelson, James E.; Schnars, Michael J.; Chintyan, James R.; and Hansen, Mark C., 5,345,398, Cl. 364-509.000.
Hanson, G. Herbert, to Hamilton Ortho Inc. Multi-strand orthodontic arch wires and methods for use thereof. 5,344,315, Cl. 433-20.000.
Hanzawa, Suguru: *See—*
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Hara, Minoru: *See—*
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Hara, Shinji, to Japan Crescent, Inc. Heated balloon catheter. 5,344,398, Cl. 604-96.000.
Harada, Hiroyuki: *See—*
Tajima, Akio; Harada, Hiroyuki; Shimizu, Harukazu; Inoue, Haruo; Kougo, Takashi; Oda, Hajime; Nakagawa, Tadashi; and Hayakawa, Tsuyoshi, 5,344,245, Cl. 400-320.000.
Harada, Kouji: *See—*
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Harada, Tsuyoshi; and Konno, Kouichi, to Ricoh Company, Ltd. Method and apparatus for generating fillet surface between two surfaces. 5,345,546, Cl. 395-142.000
Harafuji, Kenji; Ohkuni, Mitsuhiro; Tamaki, Tokuhiko; Kubota, Masafumi; and Nomura, Noboru, to Matsushita Electric Industrial Co., Ltd. Method and apparatus for generating highly dense uniform plasma in a high frequency electric field. 5,345,145, Cl. 315-111.410.
Haraki, Takahiro: *See—*
Takeda, Siro; Namiki, Fumihiro; Haraki, Takahiro; Hirano, Hideyuki; Ishiwata, Kenji; Katsuragawa, Shigehiko; and Abe, Katsumi, 5,345,513, Cl. 382-6.000
Harbeck, Wolfgang; Woerner, Theo; Weiss, Karl; and Distl, Rudolf, to Aichelin GmbH. Burner for an industrial furnace. 5,344,310, Cl. 431-158.000.
Hardee, Kim C.: *See—*
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Hargitai, Miklos: *See—*
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Harlow, Richard A.: *See—*
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,345,391, Cl. 364-474.240.
Harman, James P., Jr.: *See—*
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Harnett, Sean O.: *See—*
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Harpel, William L.: *See—*
Deck, Philip D.; Melzer, Jeffrey I.; and Harpel, William L., 5,344,504, Cl. 148-243.000.
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Harper, Garry R.: *See—*
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Harris Corporation: *See—*
Sramek, John, Jr., 5,345,236, Cl. 341-144.000
Harris, Frank W.; and Cheng, Stephen Z. D., to University of Akron, The. Negative birefringent polyimide films. 5,344,916, Cl. 528-353.000.
Harris, Jeffrey L.: *See—*
Weingarten, Jean S.; Williamson, M. Jane; and Harris, Jeffrey L., 5,343,945, Cl. 166-105.500.
Harris, William W.: *See—*
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Harrow, Jeffrey R.: *See—*
Fehskens, Leonard G.; Strutt, Colin; Wong, Steven K.; Callander, Jill F.; Burgess, Peter H.; Nelson, Kathy J.; Guertin, Matthew J.; Sylor, Mark W.; Chapman, Kenneth W.; Schuchard, Robert C.; Goldfarb, Stanley I.; Rogers, Dennis O.; O'Brien, Linsey B.; Trasatti, Philip J.; England, Benjamin M.; Lemmon, James L., Jr.; Rosenbaum, Richard L.; Kohls, Ruth E. J.; Aronson, David L.; Ross, Robert R. N.; Smith, Danny L.; Adams, William C., Jr.; Koning, G. Paul; Namoglu, Sheryl F.; Seger, Mark J.; Dixon, Timothy M.; and Harrow, Jeffrey R., 5,345,587, Cl. 395-650.000.
Hart, Terence J.; Van Buskirk, Ellor J.; and Hockswender, Thomas R., to PPG Industries, Inc. Coating from phosphated epoxy and COOH-vinyl addition resins. 5,344,858, Cl. 523-411.000
Hartig, Klaus W.; and Lingle, Philip J., to Guardian Industries Corp. High performance, durable, low-E glass. 5,344,718, Cl. 428-623.000.
Hartigan, William M.: *See—*
Lau, Lilip; and Hartigan, William M., 5,344,426, Cl. 606-198.000.
Hartley, Rolfe J.: *See—*
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Hartman, Davis H.: *See—*
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Haruda, Osamu; Imamura, Shin; Hanzawa, Suguru; Amada, Nobuo; Kunii, Kazuo; Kobayashi, Hidetaka; Yano, Shinichi; and Nishiyama, Muneo, to Okamoto Industries, Inc. Method of making an anti-skid apparatus for an automobile tire. 5,343,610, Cl. 29-525.100.
Haruki, Toshinobu: *See—*
Murata, Haruhiko; Mori, Yukio; Maenaka, Akihiro; Takuma, Masao; Kawakami, Kiyotada; Asaeda, Toru; Okino, Toshiyuki; Iinuma, Toshiya; Kobayashi, Akio; and Haruki, Toshinobu, 5,345,264, Cl. 348-235.000
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Harvey, Jeanne P.; Crebbin, Victoria A.; Walker, Roger P.; Liu, Victor; Hammond, Susan L.; and McDonald, Patricia A., to Ciba Corning Diagnostics Corp. Method of cancer detection. 5,344,760, Cl. 435-7.500.
Harvey, Robert J.: *See—*
Buck, Keith E.; Farrar, David J.; Harvey, Robert J.; Litwak, Philip; and Rueff, John R., 5,344,385, Cl. 600-16.000.
Harwood, H. James; Jones, Daniel H.; Talkington, Andrew W.; and Goodrich, Stephen D., to Occidental Research Corporation. Polymerization with initiator and quaternary ammonium salt. 5,344,902, Cl. 526-217.000.
Harwood, Warren K.: *See—*
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Komiyama, Nakaji; Kouno, Hisao; Higashide, Kazuhiro; Suda, Osamu; and Hasegawa, Masaru, 5,344,736, Cl. 430-83.000.
Hashemi, Seyed H.; Olla, Michael A.; Dolbear, Thomas P.; and Nelson, Richard D., to Microelectronics And Computer Technology Corporation. Method for encapsulating an integrated circuit using a removable heatsink support block. 5,344,795, Cl. 437-214.000.
Hashimoto, Mitsuru: *See—*
Sasaki, Masaomi; Shimada, Tomoyuki; and Hashimoto, Mitsuru, 5,344,735, Cl. 430-83.000.
Hashimoto, Yuichi; and Tanaka, Hisami, to Canon Kabushiki Kaisha. Solar cell. 5,344,501, Cl. 136-259.000.
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, to Mita Industrial Co., Ltd. Image-forming machine with toner image transfer means having a charge supply zone and a transfer zone. 5,345,299, Cl. 355-274.000.
Hassell, Frank A.: *See—*
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Hassinger, Walter: *See—*
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Hastings, Otis H.; and Hastings, Otis M. Electrically conductive laminate for temperature control of aircraft surface. 5,344,696, Cl. 428-220.000.
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Hasushita, Sachio; Ueda, Toshiaki; and Hayakawa, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. View finder and camera having same. 5,345,285, Cl. 354-159.000.
Hata, Hamako; Ishida, Kenya; and Sato, Toshiya. Topical composition for preventing or treating acne vulgaris. 5,344,850, Cl. 514-739.000.
Hatagishi, Yuji; and Taguchi, Naoto, to Yazaki Corporation. Connectors with lever. 5,344,194, Cl. 285-26.000.
Hatano, Hideaki; Watanabe, Hiroichiro; Hotta, Akio; and Kuroki, Motohiro, to Hitachi Hometec, Ltd. Cooking oven with rotatable and horizontally movable turntable. 5,345,068, Cl. 219-722.000.
Hatate, Yasuo: *See—*
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, 5,345,299, Cl. 355-274.000
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Hauser, Berthold: *See*—
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Hayakawa, Fumie: *See*—
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Hazan, Jean-Pierre; Polaert, Remy; and Nagel, Jean-Louis, to U.S. Philips Corporation. Iron comprising a type-of-fabric detector. 5,345,060, Cl. 219-250.000.
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Heath, Kevin R., to Boston Scientific Corporation. Tubular medical endoprostheses. 5,344,445, Cl. 623-1.000
Heath, Richard W., to Tolco, Incorporated. Pipe surge restrainer for use with pipe hanger. 5,344,108, Cl. 248-62.000.
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Heinke, Harri; and Blatt, Wolfgang, to Heraeus Elektrochemie GmbH. Electrochemical cell with degassing device. 5,344,540, Cl. 204-232.000
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Helldorfer, Reinhard; Leuteritz, Jurgen; Gramann, Matthias; and Topfer, Bernhard, to Temic Telefunken microelectronic GmbH; and Mercedes-Benz Aktiengesellschaft. Method for controlling a braking operation including determining brake coefficient forces. 5,344,222, Cl. 303-100.000.
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Runkel, Walter, 5,344,124, Cl. 267-64.150.
Henderson, Tom; and Gibbs, Wayne. Self-closing gate valve system and external self-closing actuator mechanism therefor. 5,343,884, Cl. 137-77.000.
Hendricks, Neil H., to Maxdem Incorporated. Fluorinated monomers useful for preparing fluorinated polyquinoline polymers. 5,344,981, Cl. 564-328.000
Hendry, George O.: *See*—
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Hergenrother, Paul M.; and Jensen, Brian J., to United States of America, National Aeronautics and Space Administration. Diamines and polyimides containing pendent ethynyl groups. 5,344,982, Cl. 564-330.000.
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Herman, Richard. Produce stand. 5,344,033, Cl. 211-150.000.
Herman, Wesley K. Disposable tonometer cover with fluorescein dye. 5,343,861, Cl. 128-652.000.
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Herndon, Terry C.; and Raffel, Jack I., to Massachusetts Institute of Technology. Interconnection system for high performance electronic hybrids. 5,345,365, Cl. 361-760.000.
Hersman, Marie J.; and Salsibury, Wayne C., to Davidson Textron Inc. Multi-layer air bag cover with filled reinforced vinyl. 5,344,183, Cl. 280-728.00B.
Herzberg, Amir; Krawczyk, Hugo M.; Kutten, Shay; and Mansour, Yishay, to International Business Machines Corporation. Secure message authentication for binary additive stream cipher systems. 5,345,507, Cl. 380-28.000.
Hesse, Gary L., to Appliance Control Technology, Inc. Temperature probe conditioner circuit. 5,345,064, Cl. 219-505.000.
Hesseltine, Dennis R. Method and means for measuring squareness of plate structures. 5,343,627, Cl. 33-535.000.
Hesthamar, Tore; Althoff, Fredrik; Larsson, Thomas; and Veenhuizen, Bram, to SKF Nova AB. Sensor system. 5,343,759, Cl. 73-761.000.
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Heubert, Horst, to MTU Motoren- Und Turbinen-Union Muenchen GmbH. Tension strained fiber structure component. 5,344,686, Cl. 428-75.000
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Gururaja, Turuvekere R.; Fielding, Joseph; Shrout, Thomas R.; and Jang, Sei-Joo, 5,345,139, Cl. 310-358.000.
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Oliver, Thomas C.; Jones, David P.; Christie, Leslie G.; Wanger, Mark E.; Berg, Thomas E.; and Crane, Melvin C., 5,345,431, Cl. 369-13.000
Pross, Gerhard; and Schlueter, Malte, 5,343,869, Cl. 128-700.000.
Schleifer, Arthur; Roark, Joseph C.; Poole, John S.; Gordon, Gary B.; Segal, Gilbert; and Fuhrman, Philip B., 5,345,540, Cl. 395-86.000.
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Higuchi, Yuichi, to Victor Company of Japan, Ltd. Recording medium of flat surface with resin filled ring grove. 5,345,436, Cl. 369-282.000.
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Hildebrand, Gerhard; Seidel, Gunther; Heintke, Hans-Eberhard; Ramspeck, Klaus; Eichhorn, Reinhold; Durr, Helmut; Franke, Wolfgang; Braun, Gebhard; Ohle, Manfred; and Ullmann, Roland, to Braun Aktiengesellschaft. Shaving apparatus. 5,343,621, Cl. 30-43.920.
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Hill, Alan M.; Cain, Michael D.; and Cain, Donald D., to Lawrence Paper Company. Method of recovery of printing ink wastes. 5,344,573, Cl. 210-768.000.
Hill, Reed A., to Laclead Enterprises. System for managing data storage based on vector-summed size-frequency vectors for data sets, devices, and residual storage on devices. 5,345,584, Cl. 395-600.000.
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Hinton, Stephanie S., to Porelon, Inc. High-density, low-viscosity ink for use in ink jet printers. 5,344,483, Cl. 106-22.00R.
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Hirai, Takami; and Yano, Shinsuke, to NGK Insulators, Ltd. Dielectric filter having coupling electrodes for connecting resonator electrodes, and method of adjusting frequency characteristic of the filter. 5,344,695, Cl. 428-209.000.
Hirano, Hideyuki: *See*—
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Minowa, Toshimichi; and Ohyama, Yoshishige, 5,343,781, Cl. 477-107.000.
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Taguchi, Jun'ichi; and Sano, Koichi, 5,345,172, Cl. 324-309.000.
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Tsukada, Keiji; Miyahara, Yuji; Shibata, Yasuhisa; and Watanabe, Yoshio, 5,344,545, Cl. 204-415.000
Yajima, Yusuke; Ichikawa, Masakazu; and Shinada, Hiroyuki, 5,345,080, Cl. 250-311.000.
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Hitachi, Ltd. and Co., Ltd.: *See—*
Sasaki, Susumu; Wada, Hisashi; Oguri, Takashi; Terumoto, Susumu; and Saito, Akihiro, 5,345,132, Cl. 310-239.000.
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Bjerrum, Niels J.; Gang, Xiao; Hjuler, Hans A.; Olsen, Christian; and Berg, Rolf W., 5,344,722, Cl. 429-46.000.
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Lin, Chong M.; Chuang, Tatao; Long, Tran; and Hoang, Hy, 5,345,394, Cl. 364-491.000.
Hobot, Christopher M.: *See—*
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Hoch, Ulf: *See—*
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Hoechst AG: *See—*
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Hoechst Aktiengesellschaft: *See—*
Born, Norbert; and Oberhausen, Wolfgang, 5,344,013, Cl. 206-391.000.
von Werner, Konrad, 5,344,580, Cl. 252-54.000.
Wingen, Rainer; and Illian, Gerhard, 5,344,585, Cl. 252-299.610.
Yamamoto, Kaoru; Maeda, Nagayoshi; Kamiya, Makoto; Murao, Toshiro; Reuschel, Gerhard; and Fleischer, Dietrich, 5,344,911, Cl. 528-241.000.
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Haubs, Michael; and Hassinger, Walter, 5,344,702, Cl. 428-305.500.
Zey, Edward G.; and Blay, George A., 5,344,979, Cl. 564-216.000.
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Hoerbiger Ventilwerke Aktiengesellschaft: *See—*
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Hofer, Alan; and Untersander, Peter, to Stanton Magnetics, Inc. Transducer with ear canal pickup. 5,345,509, Cl. 381-68.600
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Nazerian, Greg; Bailey, Ronald; and Hoffa, Jack L., 5,343,605, Cl. 29-33.00M.
Hoffman, Ernest G., to Hubbell Incorporated. Electrical connector assembly, especially for electric vehicle. 5,344,330, Cl. 439-138.000.
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Hoffman, Julius E. Process and apparatus for retaining and dispensing a coiled article. 5,344,094, Cl. 242-395.000.
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Guthrie, Robert W.; Mullin, John G., Jr.; Kachensky, David F.; Kierstead, Richard W.; Tilley, Jefferson W.; Heathers, Guy P.; Higgins, Alan J.; and LeMahieu, Ronald A., 5,344,843, Cl. 514-473.000.
Hoffman, Robert E. System for maintaining alignment of roll-up blind slats. 5,343,924, Cl. 160-235.000.
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Hofseth, Olav. Vacuum drainage system. 5,344,085, Cl. 241-46.020.
Hogan, James V.; and Matheson, Stephen J., to Irvin Industries Canada Ltd.; and Namtec Corporation. Distribution valve. 5,343,893, Cl. 137-624.130.
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Hokoana, Abel K., Jr. Apparatus for the engagement and suspension of a bag above the ground for the suspendable storage of items within the bag. 5,344,109, Cl. 248-100.000.
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Holland, Arthur: *See—*
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Holman, James R.; Mathis, Terry D.; and Moss, Parry A., to AT&T Bell Laboratories. Utility optical fiber cable. 5,345,525, Cl. 385-104.000
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Holt, William J.; and Boyd, Kenneth R., to Emerson Electric Co. Ultrasonic bolting control apparatus. 5,343,785, Cl. 81-57.380.
Holten, Petrus A. J., to U.S. Philips Corporation. Electric lamp arrangement with reflector. 5,345,140, Cl. 313-113.000.
Holtke, Hans-Joachim; Seibl, Rudolf; Schmitz, Gudrun; Scholer, Hans R.; Kessler, Christoph; and Mattes, Ralf, to Boehringer Mannheim GmbH. Process for the detection of nucleic acids. 5,344,757, Cl. 435-6.000.
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Fujimoto, Sachito; Oketani, Toshikazu; and Abe, Yoshiharu, 5,343,700, Cl. 60-276.000.
Hatayama, Tadatomo; and Takeuchi, Tatsuya, 5,344,262, Cl. 409-307.000.
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Honeywell Inc.: *See—*
Sharma, Kalluri R.; and Liu, Michael S., 5,344,524, Cl. 156-630.000.
Hong, Gilbert H. Photochemically stable deep ultraviolet pellicles for excimer lasers. 5,344,677, Cl. 428-14.000.
Hong, Sung H., to Gold Star Co., Ltd. Spectrum distribution luminance/color signal separating device. 5,345,276, Cl. 348-663.000.
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Hoogenboom, Christopher L., to GI Corporation. Inverse discrete cosine transform processor. 5,345,408, Cl. 364-725.000.
Hopkins, Donn A.; Donner, Kenneth D.; Goldstone, Marc B.; Nguyen, Dung T.; Wiegand, Rudolf; and McKinley, David E., to Western Digital Corporation. Disk drive with reduced power modes. 5,345,347, Cl. 360-71.000.
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Hopper, Michael A.: *See—*
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Hordijk, Jan; and Wierda, Gerhard J., to Fokker Aircraft B.V. Movement simulator. 5,344,316, Cl. 434-37.000.
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Horie, Seiji; Sano, Kenji; Suzuki, Nobuo; and Watarai, Syu, to Fuji Photo Film Co., Ltd. Liquid developer for electrostatic photography. 5,344,694, Cl. 428-195.000.
Horiguchi, Shiro: *See—*
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Pierce, Michael E.; Horn, John A.; and MacGregor, Duncan D., 5,345,367, Cl. 362-32.000.
Hornak, Thomas; and McFarland, William J., to Hewlett-Packard Company. Vectorial signal combiner for generating an amplitude modulated carrier by adding two phase modulated constant envelope carriers. 5,345,189, Cl. 330-207.00A.
Horne, Remko; Van Den Heuvel, Cornelius A.; and Van Veen, Gerardus N. A., to U.S. Philips Corporation. Method of manufacturing a pointed electrode, and device for using said method. 5,344,352, Cl. 445-024.000.
Horodysky, Andrew G.: *See—*
Wei, Liwen; Horodysky, Andrew G.; Jeng, Andrew; and Kremer, Ross A., 5,344,578, Cl. 252-47.500.
Horvath, Atila J.; Schmodde, Hermann; and Fecker, Josef, to Memminger-IRO GmbH. Thread brake. 5,343,983, Cl. 188-65.100.
Horwitz, E. Philip; and Dietz, Mark L., to United States of America, Energy. Process for the extraction of strontium from acidic solutions. 5,344,623, Cl. 423-2.000.
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Hoshino, Kazuhisa: *See—*
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Hoshino, Tatsuyuki: *See—*
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Hostetler, David A., to Motorola, Inc. Digital multiband filter and method thereof. 5,345,407, Cl. 364-724.010.
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Hatano, Hideaki; Watanabe, Hiroichiro; Hotta, Akio; and Kuroki, Motohiro, 5,345,068, Cl. 219-722.000.
Hotta, Yasunari; Maeda, Satoshi; Yamada, Yozo; Tanaka, Koji; Ono, Hiroshi; and Uno, Toshio, to Toyo Boseki Kabushiki Kaisha. Resin particles method for production and their uses. 5,344,673, Cl. 427-195.000.
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Houghton, Paul W.; and Bloom, Kenneth R., to Primate Products Primate amusement and environmental enrichment device. 5,343,828, Cl. 119-51.030.
Houlding, Virginia, to Bandgap Technology Corporation. Method for lift-off of epitaxial layers and applications thereof. 5,344,517, Cl. 156-236.000.
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Howa Machinery, Ltd.: *See—*
Sasaki, Kenji; and Kato, Shinji, 5,343,689, Cl. 57-315.000.
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Howard, William G.: *See—*
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Hoyt, David G.: *See—*
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Hu, Chien-an A.: *See—*
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Hu, Paul Y.; Lyman, David R.; and Walston, D. Kenneth, to International Business Machines Corporation. Reduced wear cable carrier and pads. 5,343,989, Cl. 191-12.00R.
Hu, Yuefei: *See—*
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Huang, Jung-Feng. Hook and loop fastened projectile and target device. 5,344,155, Cl. 273-346.000.
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Huang, Nai Z.; Adams, Paul E.; Daly, Daniel T.; Jolley, Scott T.; Koch, Frederick W.; Kolp, Christopher J.; Stoldt, Stephen H.; Walsh, Reed H.; and Denis, Richard A., to Lubrizol Corporation, The. Organometallic complex-antioxidant combinations, and concentrates and diesel fuels containing same. 5,344,467, Cl. 44-358.000.
Huang, Steve S.: *See—*
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Hubbell Incorporated: *See—*
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Huddle, James R., to Litton Systems, Inc. Self-contained method for correction of an inertial system over a body of water. 5,345,241, Cl 342-63.000.
Huff, Thomas L. Hand mounted illuminating device. 5,345,368, Cl 362-103.000.

Hughes Aircraft Company: *See*—
Blaha, John G., 5,343,823, Cl. 114-338.000
Macomber, Steven H., 5,345,466, Cl. 372-96.000.
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Vali, Victor; Chang, David B.; and Shih, I-Fu, 5,345,522, Cl. 385-24.000.
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Hughes Missile Systems Company: *See*—
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Hughes, Philip F., to American Home Products Corporation. Oxepane isomers of rapamycin useful as immunosuppressive agents. 5,344,833, Cl. 514-291.000.
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Hung, Michael. Treadmill with collapsible handrails. 5,344,372, Cl. 482-54.000.
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Loos, Herbert; Erhardt, Manfred; and Reichert, Gerhard, 5,343,656, Cl. 451-540.000.
Husain, Mo. Emergency transfer of oil from a ruptured ship's tank to a receiving vessel or container, particularly during the maintenance of an underpressure in the tank. 5,343,822, Cl. 114-74.00R.
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Hutchings, David A.; McVay, Ted M.; and Pennock, Richard F., to Georgia-Pacific Resins, Inc. Latent catalyzed phenolic resole resin composition. 5,344,909, Cl. 528-129.000.
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Hwang, Yeong M.; Jakstys, Vito J.; Lee, Chun C.; and Kilburg, Francis J., to Space Systems/Loral, Inc. Staggered helical array antenna. 5,345,248, Cl. 343-895.000.
Hydril Company: *See*—
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Hyundai Electronics Industries Co., Ltd.: *See*—
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Iannone, Sam. Foot care kit. 5,343,882, Cl. 132-294.000
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Inoue, Nori; Ito, Mitsuru; Ichida, Kiyofumi; and Tanaka, Nobuyoshi, 5,344,347, Cl. 439-701.000.
Ichikawa, Hiroshi: *See*—
Tokutomi, Atsuya; Ichikawa, Hiroshi; Ushikoshi, Kenji; and Yamauchi, Hiroshi, 5,344,709, Cl. 428-368.000.
Ichikawa, Katsumi: *See*—
Watanabe, Etsuro; Ichikawa, Katsumi; and Maikuma, Yoshimata, 5,344,295, Cl. 425-29.000
Ichikawa, Kiyotaka, to Makita Corporation. Power transmission mechanism of power-driven rotary tools. 5,343,961, Cl. 173-48.000.
Ichikawa, Masakazu: *See*—
Yajima, Yusuke; Ichikawa, Masakazu; and Shinada, Hiroyuki, 5,345,080, Cl. 250-311.000.
Ichimura, Tsutomu; and Inaba, Fumio, to Research Development Corporation of Japan; and Ichimura, Tsutomu. Method and apparatus for measuring spectral absorption in an opaque specimen and method and apparatus for measuring the microscopic absorption distribution. 5,345,306, Cl. 356-346.000.
ICP Systems, Inc.: *See*—
Hendry, James W., 5,344,596, Cl. 264-40.300.
ICU Medical Inc.: *See*—
Lopez, George A.; and Laul, Virgil R., 5,344,414, Cl. 604-283.000.
IDC Corporation: *See*—
Nagata, Fumio, 5,344,345, Cl. 440-44.000.
Ide, Akiyoshi; Goto, Katsuhiro; Ishioka, Yutaka; Funahashi, Yoshiki; Kato, Rentaro; Matsui, Tetsu; Kanda, Ryouji; Muramatsu, Atsushi; and Ishiba, Keiichi, to Tokai Rubber Industries, Ltd. Elastic mount having fluid chamber partially defined by oscillating plate actuated by moving coil in annular gap between two yokes connected to permanent magnet. 5,344,129, Cl. 267-140.140.
Ide, Hiroshi; and Maeda, Takeshi, to Hitachi, Ltd. Method and apparatus for correcting edge interval of record signal in an optical record/-read-out apparatus. 5,345,434, Cl. 369-124.000.
Ide, Masayuki; Nakajima, Takashi; Kikuchi, Yoichi; and Kobayashi, Kenji, to Matsushita Electric Industrial Co., Ltd. Sealed lead acid storage battery. 5,344,725, Cl. 429-160.000.
Ide, Shouaki; Shimamoto, Akira; Yutori, Toshiaki; and Uchimura, Masahiko, to Kabushiki Kaisha Kobe Seiko Sho. Carbon fiber prepreg and carbon fiber reinforced resin composite. 5,344,689, Cl. 428-114.000.
Idemitsu Kosan Company Limited: *See*—
Hirata, Toshihiro; and Ogawa, Shin-ichiro, 5,344,809, Cl. 504-134.000.
Hirata, Toshihiro; Kobayashi, Izumi; Kikkawa, Nobuyuki; and Takematsu, Tetsuo, 5,344,810, Cl. 504-135.000.
Maezawa, Hiroshi; Matsumoto, Junichi; Aiura, Hideki; and Asahi, Satoshi, 5,344,900, Cl. 526-160.000.
Idemitsu Petrochemical Company Limited: *See*—
Wakabayashi, Makoto; Senga, Minoru; and Koyama, Yoshinari, 5,344,973, Cl. 562-553.000.
IDOD Trust, The: *See*—
Krengel, Theodore H.; Borzym, John J.; and Willetts, Charles A., 5,344,062, Cl. 228-147.000.
Idota, Tadashi: *See*—
Dosako, Shunichi; Kusano, Hiroko; Deya, Eiki; and Idota, Tadashi, 5,344,820, Cl. 514-8.000.
Igarashi, Hisao: *See*—
Chiba, Hideki; Igarashi, Hisao; Yasuda, Naoshi; and Matsuki, Yasuo, 5,344,593, Cl. 252-514.000.
Igari, Yasutaka; Yamada, Minoru; and Ishiguro, Seiko, to Takeda Chemical Industries, Ltd. Water-soluble composition for sustained-release. 5,344,644, Cl. 424-85.100.
Ihara, Hideo: *See*—
Kaneko, Keiji; Hirabayashi, Masayuki; Ihara, Hideo; and Kaneko, Hiroko, 5,344,779, Cl. 436-19.000.
Iida, Yoshihiro; Nakazawa, Masaaki; Kishi, Takahiro; and Okazaki, Tsugio, to Olympus Optical Co., Ltd. Endoscope pipeline controlling apparatus and endoscope system. 5,343,855, Cl. 128-6.000.
Iijima, Masaki: *See*—
Fujii, Masumi; Suda, Taiichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Touru; and Mitsuoka, Shigeaki, 5,344,627, Cl. 423-220.000.
Iima, Shin: *See*—
Fukahori, Kenichi; Iima, Shin; Sato, Shuji; Shimoha, Masaki; Ito, Hideki; and Narita, Mutsuko, 5,344,244, Cl. 400-249.000.
Iinuma, Toshiya: *See*—
Murata, Haruhiko; Mori, Yukio; Maenaka, Akihiro; Takuma, Masao; Kawakami, Kiyotada; Asaeda, Toru; Okino, Toshiyuki; Iinuma, Toshiya; Kobayashi, Akio; and Haruki, Toshinobu, 5,345,264, Cl. 348-235.000.
Iiyama, Michitomo: *See*—
Tokuda, Hitoki; and Iiyama, Michitomo, 5,345,115, Cl. 505-193.000.

Iizuka, Naonori, to Jatco Corporation. Control system for lock-up torque converter for automatic transmissions. 5,343,990, Cl. 192-3.310.
Iizuka, Nobuyuki: *See*—
Komatsu, Yasutaka; Kuroda, Michio; Ootawara, Yasuhiko; Iizuka, Nobuyuki; Sato, Isao; Taniguchi, Masayuki; and Hayashi, Noriyuki, 5,343,693, Cl. 60-39.230.
Ijima, Terutsugu: *See*—
Kozuka, Hajime; Furuya, Youichi; Yoda, Takahiro; Kitamura, Kazuo; and Ijima, Terutsugu, 5,344,196, Cl. 285-149.000.
Ikeda, Kachio: *See*—
Kobayashi, Yasumi; Takeuchi, Kousuke; Ikeda, Kachio; Shibata, Kenichi; and Kuroki, Kazuhiko, 5,345,202, Cl. 333-206.000.
Ikeda, Kenji: *See*—
Kurihara, Yoshie; Kohno, Hiroshige; Sugiyama, Hiromu; Shimada, Teiyu; Saito, Masako; and Ikeda, Kenji, 5,344,659, Cl. 426-3.000.
Ikemoto, Isao: *See*—
Nomura, Yoshiya; Tsuda, Tadayuki; Ikemoto, Isao; Watanabe, Kazushi; Ishiwata, Kazuhiko; Tanaka, Makoto; Yano, Kanji; and Sasaki, Shinichi, 5,345,294, Cl. 355-200.000.
Illian, Gerhard: *See*—
Wingen, Rainer; and Illian, Gerhard, 5,344,585, Cl. 252-299.610.
Illig, Carl R.; and Douty, Brent D., to Sterling Winthrop Inc. Compositions of iodobenzoic acid derivatives for visualization of the gastrointestinal tract. 5,344,638, Cl. 424-5.000.
Imageware Software, Inc: *See*—
Blank, Arthur M., 5,345,313, Cl. 348-598.000.
Imaizumi, Atsushi: *See*—
Suwa, Yorimasa; Imaizumi, Atsushi; Okada, Masahiro; Kudo, Ichiro; Inoue, Keizo; and Suzuki, Yoji, 5,344,764, Cl. 455-69.100.
Imamura, Kunio: *See*—
Sakai, Yasuyuki; Suzuki, Noriyuki; Kudo, Tetsuo; Marumo, Kuniomi; Aizawa, Toshiyuki; Imamura, Kunio; Sugita, Shuichi; and Kanbayashi, Kazuo, 5,344,655, Cl. 424-443.000.
Imamura, Shin: *See*—
Haruda, Osamu; Imamura, Shin; Hanzawa, Suguru; Amada, Nobuo; Kunii, Kazuo; Kobayashi, Hidetaka; Yano, Shinichi; and Nishiyama, Muneo, 5,343,610, Cl. 29-525.100.
Imanaka, Tadayuki; and Sakurai, Shoii, to Nikko Bio Technica Co., Ltd. Biosurfactant cyclopeptide compound produced by culturing a specific Arthrobacter microorganism. 5,344,913, Cl. 530-321.000.
Imataki, Hiroyuki: *See*—
Tamura, Tomoyuki; Hiraoka, Mizuho; Imataki, Hiroyuki; and Sato, Tetsuya, 5,344,304, Cl. 425-195.000.
Imatec, Ltd.: *See*—
Shalit, Hanoch, 5,345,315, Cl. 358-406.000.
IMI Cornelius Inc.: *See*—
Swanson, Craig; Ramon, Henry E., III; and Taylor, Ty C., 5,343,716, Cl. 62-389.000.
Immel, Otto; Darsow, Gerhard; and Buysch, Hans-Josef, to Bayer Aktiengesellschaft. Process for preparing diphenylamines. 5,344,987, Cl. 564-735.000.
Imoto, Yasuo; Iriguchi, Akira; Sakaida, Atsuo; Chikaoka, Yasuji; and Ninomiya, Akira, to Brother Kogyo Kabushiki Kaisha. Printer having a vibrating platen. 5,344,246, Cl. 400-552.000.
Impact Products, Inc.: *See*—
Davenport, Robert A., 5,343,589, Cl. 15-257.400.
Imperial Chemical Industries PLC: *See*—
Casci, John L.; Lake, Ivan J. S.; and Maberly, Timothy R., 5,345,021, Cl. 585-467.000.
Martin, John S.; Ryan, Thomas A.; and Spooncer, Rachel A., 5,344,998, Cl. 568-683.000.
Verhelst, Gabriel; Cornet, Philip; de Veubeke, Benoit F.; and Bleys: Geert, 5,344,584, Cl. 252-182.270.
Yelland, Michael, 5,344,966, Cl. 562-8.000.
Imperial College of Science, Technology and Medicine: *See*—
Reed, Michael J., 5,344,827, Cl. 514-169.000.
Ina Walalager Schaeffler KG: *See*—
Stark, Johann; and Ritter, Joachim, 5,343,992, Cl. 192-45.100.
Inaba, Fumio: *See*—
Ichimura, Tsutomu; and Inaba, Fumio, 5,345,306, Cl. 356-346.000.
Inamasa, Kenji: *See*—
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Inbar, Motti; and Haimovich, Yosef, to International Technologies (Lasers) Ltd. Dual mode apparatus for assisting in the aiming of a firearm. 5,344,320, Cl. 434-22.000.
Indresco Inc.: *See*—
Knauss, Richard J., 5,344,802, Cl. 501-120.000.
Industrial Research B.V.: *See*—
Glastra, Hendrik, 5,344,444, Cl. 623-1.000.
Industrial Technology Research Institute: *See*—
Chen, Chang-Lung, 5,345,562, Cl. 395-275.000.
Chu, Shiao-Jung; Liu, Fu-Chen; Lin, Ching-Tang; Lin, Wen-Fa; Wang, Kuei-Chih; and Yang, Sheng-Te, 5,344,964, Cl. 560-240.000.
Sun, Cheng-Yun, 5,345,273, Cl. 348-607.000.
Ingersoll-Dresser Pump Company: *See*—
O'Sullivan, Mark E.; and Wotring, Timothy L., 5,344,285, Cl. 415-199.200.
Ingersoll-Rand Company: *See*—
Daigle, Odee P.; and Gyongyosi, Laszlo, 5,343,962, Cl. 173-147.000.
Ingrain, Dominique; Bose, Tapan; and Saint-Arnaud, Jean-Marie, to Gaz de France; and Universite du Quebec aTrois Rivieres. Method and apparatus for measuring gas flow. 5,343,758, Cl. 73-861.020.
Ings, John B.: *See*—
Belt, Roger F.; and Ings, John B., 5,344,720, Cl. 428-692.000.
Inmos Limited: *See*—
Buckingham, Keith; and Simpson, Robert J., 5,345,449, Cl. 370-100.100.
Inoguchi, Kazuhiko: *See*—
Takiguchi, Haruhisa; Yano, Seiki; Inoguchi, Kazuhiko; Kudo, Hiroaki; Nakanishi, Chitose; Okumura, Toshiyuki; and Sugahara, Satoshi, 5,345,460, Cl. 372-43.000.
Inoue, Akihisa: *See*—
Masumoto, Tsuyoshi; Inoue, Akihisa; Kita, Kazuhiko; and Yamaguchi, Hitoshi, 5,344,507, Cl. 148-437.000.
Inoue, Haruo: *See*—
Tajima, Akio; Harada, Hiroyuki; Shimizu, Harukazu; Inoue, Haruo; Kougo, Takashi; Oda, Hajime; Nakagawa, Tadashi; and Hayakawa, Tsuyoshi, 5,344,245, Cl. 400-320.000.
Inoue, Hiroshi; Mizutome, Atsushi; and Enomoto, Aiko, to Canon Kabushiki Kaisha. Data processing system and apparatus and display system with image information memory control. 5,345,250, Cl. 345-100.000.
Inoue, Keizo: *See*—
Suwa, Yorimasa; Imaizumi, Atsushi; Okada, Masahiro; Kudo, Ichiro; Inoue, Keizo; and Suzuki, Yoji, 5,344,764, Cl. 455-69.100.
Inoue, Kouji: *See*—
Narita, Noriaki; Iwata, Masuo; Inoue, Kouji; Sato, Hideo; and Takahashi, Ryoji, 5,344,855, Cl. 523-179.000.
Inoue, Masafumi: *See*—
Tanahashi, Mitsuhiko; Inoue, Masafumi; Fukada, Syuzo; Ota, Chikayoshi; and Kimoto, Senji, 5,343,913, Cl. 144-380.000.
Inoue, Masaharu; Okimura, Yoshihiko; Kawaguchi, Hirotoshi; and Furukawa, Hisao, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Curable composition for paint. 5,344,879, Cl. 525-100.000.
Inoue, Nori; Ito, Mitsuru; Ichida, Kiyofumi; and Tanaka, Nobuyoshi, to Sumitomo Wiring Systems, Ltd. Connector device. 5,344,347, Cl. 439-701.000.
Inoue, Yuji, to Canon Kabushiki Kaisha. Solar cell module with improved weathering characteristics. 5,344,498, Cl. 136-251.000.
Insta-Foam Products, Inc.: *See*—
Brown, Daniel P., 5,344,051, Cl. 222-135.000.
Institut Francais Du Petrole: *See*—
Bigeard, Pierre-Henri; Billon, Alain; Dufresne, Pierre; and Mignard, Samuel, 5,345,019, Cl. 585-264.000.
Chauvin, Yves; Commereuc, Dominique; Hugues, Francois; Olivier, Helene; and Saussine, Lucien, 5,345,023, Cl. 585-527.000.
Pontier, Renaud; Hoffmann, Frederic; and Galtier, Pierre, 5,344,554, Cl. 208-164.000.
Institute of Gas Technology: *See*—
Kilbane, John J., II, 5,344,778, Cl. 435-262.000.
Intel Corporation: *See*—
Bhattacharyya, Bidyut; and Banerjee, Koushik, 5,345,363, Cl. 361-749.000.
Holzhammer, Gerald S.; and Robinson, Kurt B., 5,345,572, Cl. 395-400.000.
Landgraf, Marc, 5,345,424, Cl. 365-227.000.
Lee, Phillip G.; Riggs, Eileen; Singh, Gurbir; and Steck, Randy, 5,345,576, Cl. 395-425.000.
Lippincott, Louis A.; and Rutman, Serge, 5,345,554, Cl. 395-162.000.
Mehta, Anup S., 5,345,109, Cl. 307-271.000.
Pierce, Michael E.; Horn, John A.; and MacGregor, Duncan D., 5,345,367, Cl. 362-32.000.
Taylor, Gregory F., 5,345,120, Cl. 307-530.000.
InterDigital Technology Corp.: *See*—
Lomp, Gary R.; La Vean, Gilbert; and Schilling, Donald L., 5,345,467, Cl. 375-1.000.
Interface Biomedical Laboratories, Corp.: *See*—
Sawyer, Philip N., 5,344,425, Cl. 606-198.000.
International Business Machines: *See*—
Riggio, Salvatore R., Jr, Salvatore R., 5,345,197, Cl. 331-117.00R.
International Business Machines Corporation: *See*—
Appel, Arthur; and O'Connor, Michael A., 5,345,549, Cl. 395-154.000.
Ault, Donald F.; Petersen, David B.; Redding, Ian G.; and Schmandt, Stephen J., 5,345,590, Cl. 395-650.000.
Bloomfield, Marc A., 5,345,550, Cl. 395-156.000.
Boyer, Steven K.; Casey, Richard G.; Miller, Alex M.; Oudot, Bernadette; and Zilles, Karl S., 5,345,516, Cl. 382-10.000.
Busboom, Leah J. H.; Eagen, Stephen T.; and Kiel, Harvey G., 5,345,553, Cl. 395-161.000.
Chen, Mao-Min; and Tsang, Ching H., 5,344,669, Cl. 427-130.000.
Ellis, John F.; Osborn, Michael D.; and Winarski, Daniel J., 5,345,350, Cl. 360-92.000.
Franaszek, Peter A.; and Georgiou, Christos J., 5,345,228, Cl. 340-825.790.
Gonya, Stephen G.; Lake, James K.; Long, Randy C.; and Wild, Roger N., 5,344,607, Cl. 420-562.000.
Hamala, Annette M.; Maron, William A.; and Reyburn, Rhoda A., 5,345,586, Cl. 395-650.000.
Hayden, Clifford O.; Snyder, David R.; Stillman, Susan B.; and Webb, Charles F., 5,345,567, Cl. 395-375.000
Herzberg, Amir; Krawczyk, Hugo M.; Kutten, Shay; and Mansour, Yishay, 5,345,507, Cl. 380-28.000.
Hu, Paul Y.; Lyman, David R.; and Walston, D. Kenneth, 5,343,989, Cl. 191-12.00R.
Iyer, Balakrishna R.; and Swami, Arun N., 5,345,585, Cl. 395-600.000.

Koseki, Toshihiko; Fukunaga, Tetsuya; Takano, Hideo; and Yamanaka, Hidemine, 5,345,324, Cl. 359-67.000
Krantz, Matthias C.; Novotny, Vlad J.; O'Sullivan, Timothy C.; and Tam, Andrew C., 5,345,353, Cl. 360-103.000.
Mito, Toshitsugu; Suarez, Leopoldo L.; Astarabadi, Shaun; and Calescibetta, Marcus G., 5,345,392, Cl. 364-483.000.
Olnowich, Howard T.; Bruck, Jehoshua; Snir, Marc; and Upfal, Eli, 5,345,229, Cl. 340-825.800.
Sawa, Tsutomu; Takenoshita, Hiroyuki; Shibata, Kohei; and Komatsu, Hirohide, 5,344,243, Cl. 400-124.320.
Vettiger, Peter; and Voegeli, Otto, 5,344,746, Cl. 430-321.000.

International Flavors & Fragrances Inc.: *See—*
Wilson, Richard A.; Mookherjee, Braja D.; Butler, Jerry F.; and Fox, Eleanor, 5,344,847, Cl. 514-675.000.

International Fuel Cells Corporation: *See—*
Rempe, Richard J.; and Stewart, Robert C., Jr., 5,344,668, Cl. 427-115.000.

International Lubrication and Fuel Consultants: *See—*
Kitchen, Nancy E.; Kitchen, Edward F.; and Kitchen, George H., III, 5,344,781, Cl. 436-29.000.

International Technologies (Lasers) Ltd.: *See—*
Inbar, Motti; and Haimovich, Yosef, 5,344,320, Cl. 434-22.000.

Interventional Technologies Inc.: *See—*
Radisch, Herbert R.; and Vigil, Dennis M., 5,344,401, Cl. 604-96.000.

Iowa State University Research Foundation, Inc.: *See—*
Verkade, John G., 5,344,948, Cl. 556-51.000.

Ippolito, Ronald A.: *See—*
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Irace, Joseph F.: *See—*
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Iraschko, Johann: *See—*
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Irie, Takatoshi: *See—*
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Iriguchi, Akira: *See—*
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IRO AB: *See—*
Fredriksson, Lars-Berno, 5,343,898, Cl. 139-450.000.
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Irvin Industries Canada Ltd.: *See—*
Hogan, James V.; and Matheson, Stephen J., 5,343,893, Cl. 137-624.130.

Ishiba, Keiichi: *See—*
Ide, Akiyoshi; Goto, Katsuhiro; Ishioka, Yutaka; Funahashi, Yoshiki; Kato, Rentaro; Matsui, Tetsu; Kanda, Ryouji; Muramatsu, Atsushi; and Ishiba, Keiichi, 5,344,129, Cl. 267-140.140.

Ishibara, Kanji: *See—*
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Ishida, Hiroshi: *See—*
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, 5,345,299, Cl. 355-274.000.

Ishida, Kenya: *See—*
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Ishida, Takeshi, to Kawasaki Jukogyo Kabushiki Kaisha. Train of articulated vehicles. 5,343,812, Cl. 105-4.300

Ishida, Toshinobu: *See—*
Kaneko, Takashi; Ishida, Toshinobu; and Mochizuki, Akira, 5,344,400, Cl. 604-96.000.

Ishida, Yoshihiko; Asai, Yuji; and Tani, Makoto, to NGK Insulators, Ltd. Ultrasonic transducer. 5,345,427, Cl. 367-140.000

Ishigami, Motohiro, to Japan Aviation Electronics Industry Limited. Linear phase ramp type fiber optic gyro having ramp reset and reset connection signals. 5,345,307, Cl. 356-350.000.

Ishiguro, Seiko: *See—*
Igari, Yasutaka; Yamada, Minoru; and Ishiguro, Seiko, 5,344,644, Cl. 424-85.100.

Ishihara, Kazuoki, to Kabushiki Kaisya Advance. Salt excretion promoting composition. 5,344,844, Cl. 514-540.000.

Ishii, Hiroyuki: *See—*
Shiozawa, Takahisa; Muraki, Masato; Ishii, Hiroyuki; and Hayata, Shigeru, 5,345,292, Cl. 355-67.000.

Ishii, Toshiaki; Mizuno, Masamoto; and Sugita, Kazuhiko, to Mitsubishi Denki Kabushiki Kaisha. Joining segments of the secondary in a linear motor driven elevator apparatus. 5,345,047, Cl. 187-112.000.

Ishijima, Keizo: *See—*
Yagi, Yutaka; and Ishijima, Keizo, 5,343,930, Cl. 164-295.000.

Ishika, Sou: *See—*
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Ishikawa Gasket Co., Ltd.: *See—*
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Ishikawa, Hiroyasu; Kobayashi, Hideo; and Mizuno, Toshio, to Kokusai Denshin Denwa Company, Limited. Differential data signal transmission technique. 5,345,245, Cl. 342-357.000.

Ishino, Toshihiro: *See—*
Kida, Otojiro; and Ishino, Toshihiro, 5,344,801, Cl. 501-105.000.

Ishioka, Yutaka: *See—*
Ide, Akiyoshi; Goto, Katsuhiro; Ishioka, Yutaka; Funahashi, Yoshiki; Kato, Rentaro; Matsui, Tetsu; Kanda, Ryouji; Muramatsu, Atsushi; and Ishiba, Keiichi, 5,344,129, Cl. 267-140.140.

Ishiwata, Kazuhiko: *See—*
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Ishiyama, Tatsuro, to Bridgestone Corporation. Vibration isolation apparatus. 5,344,126, Cl. 267-140.120.

Isobe, Atsushi; Sato, Taichi; Takeda, Takayuki; and Ookawa, Katutoshi, to Japan Cash Machine Co., Ltd. Currency stacker resistible against unauthorized extraction of currency therefrom. 5,344,135, Cl. 271-180.000.

Isshiki, Tomiya; Kijima, Yasuhiko; and Watanabe, Takayuki, to Mitsubishi Gas Chemical Company, Inc. Process for producing acetic acid. 5,344,972, Cl. 562-517.000.

Isuzu Motors Limited: *See—*
Tanaka, Koji; and Shima, Takashi, 5,344,189, Cl. 280-840.000.

Itamura, Sumio: *See—*
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Itaya, Noriko: *See—*
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Itex Enterprises, Inc.: *See—*
Toor, Irfan A., 5,344,255, Cl. 405-128.000.

Ito, Hideki: *See—*
Fukahori, Kenichi; Iima, Shin; Sato, Shuji; Shimoha, Masaki; Ito, Hideki; and Narita, Mutsuko, 5,344,244, Cl. 400-249.000.

Ito, Masahiro: *See—*
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Ito, Mitsuru: *See—*
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Ito, Noboru: *See—*
Hayashi, Hideki; Tanaka, Shinichi; Mizuno, Sadao; Ito, Noboru; and Komma, Yoshiaki, 5,345,072, Cl. 250-201.500.

Ito, Satoru; Murata, Michihiro; Fukui, Norio; Yamamoto, Keizou; Sawao, Tetsujiro; Awata, Satoshi; Tada, Yasuo; and Kawabata, Satoru, to Murata Manufacturing Co., Ltd. Pyroelectric IR-sensor. 5,344,518, Cl. 156-242.000.

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Ito, Shinji: *See—*
Kaneko, Yuji; Ito, Shinji; and Saito, Toru, 5,345,053, Cl. 219-69.180.

Ito, Susumu: *See—*
Hitomi, Jun; Adachi, Shigehito; Hakamada, Yoshihiro; Takaiwa, Mikio; Yoshimatsu, Tadashi; Watanabe, Yoko; Kobayashi, Tohru; Kawai, Shuji; and Ito, Susumu, 5,344,770, Cl. 435-71.200.
Takatsugi, Satoshi; and Ito, Susumu, 5,344,303, Cl. 425-190.000.

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Ito, Tosikazu: *See—*
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Ito, Yasuo: *See—*
Sawanishi, Hiroyuki; Ito, Yasuo; Kato, Hideo; Koshinaka, Eiichi; Ogawa, Nobuo; and Morikawa, Kouji, 5,344,828, Cl. 514-211.000.

Ito, Zenichiro: *See—*
Ozaki, Yoshiyuki; Morita, Akiyoshi; Yamaura, Junichi; and Ito, Zenichiro, 5,344,724, Cl. 429-94.000.

Itoh, Eisaku, to Fujitsu Limited; and Fujitsu VLSI Limited. Differential amplification circuit. 5,345,121, Cl. 307-530.000.

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ITT Corporation: *See—*
Rees, Richard W. A., 5,344,114, Cl. 248-430.000.

Itzel, Hanshelmut; Zierenberg, Bernd; Drandarevski, Christo; and Heupt, Wilfried, to Celaflor GmbH. Device for transcuticular application of active substance to plants. 5,343,653, Cl. 47-1.500.

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Ivy, Jonathan: *See—*
North, John R.; Kay, Robert L.; and Ivy, Jonathan, 5,344,544, Cl. 204-401.000.

Iwamura, Masahiro; Yamauchi, Tatsumi; Saeki, Makoto; and Uchida, Hideaki, to Hitachi, Ltd. High speed, low noise semiconductor storage device. 5,345,421, Cl. 365-189.050.

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Schiel, Christian, 5,343,801, Cl. 100-47.000.

J. R. Simplot Co.: *See—*
Barger, William E., 5,344,233, Cl. 366-165.000.

J. Uriach & Cia. S.A.: *See—*
Bartroli, Javier; Anguita, Manuel; Belloc, Jordi; Carceller, Elena; and Almansa, Carmen, 5,344,839, Cl. 514-374.000.

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Zaid, Najib H., 5,344,818, Cl. 507-131.000.

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Gabriagues, Jean-Michel; Jacquinot, Jean-Claude; Le Roy, Guy; and Jacob, Jean-Baptiste, 5,345,455, Cl. 372-20.000.

Jacob, Philippe; L.: *See—*
McGrath, Donald T.; Krisciunas, Joseph E.; Garverick, Steven L.; and Jacob, Philippe; L., 5,345,409, Cl. 364-736.000.

Jacobs, Lloyd E.: *See—*
Turriff, David E.; Johnson, JoAnn L.; Jacobs, Lloyd E.; and Melberg, Nils K., 5,343,771, Cl. 73-864.440.

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Jaedicke, Hagen: *See—*
Krause, Wolfgang; Paust, Joachim; Dobler, Walter; and Jaedicke, Hagen, 5,344,995, Cl. 568-591.000.

Jaikaran, Allan. Vertical lift aircraft. 5,344,100, Cl. 244-12.200.

Jakstys, Vito J.: *See—*
Hwang, Yeong M.; Jakstys, Vito J.; Lee, Chun C.; and Kilburg, Francis J., 5,345,248, Cl. 343-895.000.

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Jamieson, Eric K., to Otis Elevator Company. Elevator hitch load weighing tare compensation. 5,345,042, Cl. 177-165.000.

Jamzadeh, Fereydoon, to General Motors Corporation. Anti-flare method using offgoing slip speed and rate of change of slip-speed to determine pressure compensation for incoming clutch. 5,343,782, Cl. 477-156.000.

Jan Sports Products Corp.: *See—*
Wu, Chao-I, 5,344,139, Cl. 273-73.00G.

Jang, Dong-sik; and Lee, Byeong-yong, to Samsung Electron Devices Co., Ltd. Method for manufacturing a cathode ray tube using a film layer composition. 5,344,353, Cl. 445-45.000.

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Jang, Shuh Y. Transmission gear box for miniature motor. 5,343,774, Cl. 74-421.00A.

Jantsch, Gregory R.; Shifley, James D.; Dobbertin, Michael T.; Wituszynski, Theophilus C.; Mortellaro, Larry J.; and Mitchell, Henry P., Jr., to Eastman Kodak Company. Vacuum belt feeder having a positive air pressure separator and method of using a vacuum belt feeder. 5,344,133, Cl. 271-94.000.

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Japan Atomic Energy Research Institute: *See—*
Sugo, Takanobu; and Saito, Kyoichi, 5,344,560, Cl. 210-500.230.

Japan Aviation Electronics Industry Limited: *See—*
Ishigami, Motohiro, 5,345,307, Cl. 356-350.000.

Japan Cash Machine Co., Ltd.: *See—*
Isobe, Atsushi; Sato, Taichi; Takeda, Takayuki; and Ookawa, Katutoshi, 5,344,135, Cl. 271-180.000.

Japan Crescent, Inc.: *See—*
Hara, Shinji, 5,344,398, Cl. 604-96.000.

Japan Electronic Control Systems Co., Ltd.: *See—*
Tomisawa, Naoki, 5,343,745, Cl. 73-204.180.

Japan Exlan Company Limited: *See—*
Kawasaki, Shiro; and Kohara, Noriyuki, 5,344,569, Cl. 210-653.000.

Japan Gore-Tex Inc.: *See—*
Uehara, Yasuhiro; Kusumoto, Yasuhiro; Kato, Hiroshi; and Kikukawa, Hiroyasu, 5,345,300, Cl. 355-285.000.

Japan Powder Metallurgy Co. Ltd.: *See—*
Kamiya, Haruo; and Shiokawa, Chiaki, 5,344,118, Cl. 251-129.150.

Japan Synthetic Rubber Co., Ltd.: *See—*
Chiba, Hideki; Igarashi, Hisao; Yasuda, Naoshi; and Matsuki, Yasuo, 5,344,593, Cl. 252-514.000.

Jardin, Hans; and Strunk, Harald, to Webasto-Schade GmbH. Process for the production of a cover unit with a seal for vehicle roofs and cover unit for vehicle roofs. 5,344,603, Cl. 264-261.000.

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Jasper, Thomas: *See—*
Miller, J. Clayton; and Jasper, Thomas, 5,343,723, Cl. 70-303.00A.

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Jeng, Andrew: *See—*
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Jensen, Brian J.: *See—*
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Jerome, Rick C.; Williams, Diane R.; and Humphrey, Kurt D., to United Technologies Corporation. Method of forming high speed, high voltage fully isolated bipolar transistors on a SOI substrate. 5,344,785, Cl. 437-31.000.

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Sugawara, Ryuta; and Akimoto, Satoshi, 5,344,223, Cl. 303-103.000.
Jin, Yoshiharu: *See*—
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Johansson, Eric B.; Ledford, Kevin L.; Zuloaga, Jaime A., Jr.; and Danielson, David W., to General Electric Company. Lower tie plate strainers having double plate with offset holes for boiling water reactors. 5,345,483, Cl. 376-313.000.
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Johnsen, Cortland W., Jr., to Chevron Research and Technology Company. Fugitive volatile organic compound vapor collection system. 5,344,313, Cl. 431-346.000.
Johnson, Arthur F. Apparatus for converting noxious pollutants from flue gas into merchantable by-products. 5,344,617, Cl. 422-172.000.
Johnson, David: *See*—
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Johnson, JoAnn L.: *See*—
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Jolissaint, Charles H.: *See*—
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Jolley, Scott T.: *See*—
Huang, Nai Z.; Adams, Paul E.; Daly, Daniel T.; Jolley, Scott T.; Koch, Frederick W.; Kolp, Christopher J.; Stoldt, Stephen H.; Walsh, Reed H.; and Denis, Richard A., 5,344,467, Cl. 44-358.000.
Jones, Daniel H.: *See*—
Harwood, H. James; Jones, Daniel H.; Talkington, Andrew W.; and Goodrich, Stephen D., 5,344,902, Cl. 526-217.000
Jones, David P.: *See*—
Oliver, Thomas C.; Jones, David P.; Christie, Leslie G.; Wanger, Mark E.; Berg, Thomas E.; and Crane, Melvin C., 5,345,431, Cl. 369-13.000.
Jones, Kevin R.: *See*—
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Joseph, Adrian A. Ultrasonic energy producing device. 5,344,532, Cl. 204-157.150.
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Juan, Richard. Stationary positioning device for a handling trolley having extendable centering finger assembly. 5,344,276, Cl. 414-584.000.
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Rock, Erich; and Dubach, Fredi, 5,344,227, Cl. 312-334.600.
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Sawa, Tsutomu; Takenoshita, Hiroyuki; Shibata, Kohei; and Komatsu, Hirohide, 5,344,243, Cl. 400-124.320.
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Ide, Shouaki; Shimamoto, Akira; Yutori, Toshiaki; and Uchimura, Masahiko, 5,344,689, Cl. 428-114.000.
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Kasahara, Akihiro; Yamasaki, Hideo; Yoshizawa, Takashi; and Ishika, Sou, 5,345,432, Cl. 369-44.150.
Kurihara, Haruki, 5,345,092, Cl. 257-13.000.
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Kajiwara, Ken-ichi; and Mori, Kikuichi, to Ebara Corporation. Shaft sleeve made of ceramics. 5,344,678, Cl. 428-34.400.

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Hirai, Kenji; Yano, Tomoyuki; Yamashita, Mitsuo; Ejiri, Emiko; Tateno, Tomoko; and Aizawa, Kiyomi, 5,344,953, Cl. 558-272.000.
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Kamimura, Toshio, to Teijin Seiko Co., Ltd. Control apparatus of control surface of aircraft. 5,343,703, Cl. 60-403.000.
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Kamitsu Seisakusho Ltd.: *See*—
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Kamiya, Haruo; and Shiokawa, Chiaki, to Unisia Jecs Corp; and Japan Powder Metallurgy Co. Ltd. Solenoid valve. 5,344,118, Cl. 251-129.150.
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Kanda, Kazunori; Nanba, Osamu; and Lam, Edward, to Nippon Paint Co., Ltd. Photosensitive diazo resin composition for lithographic printing utilizing a xanthene dye having an anion group as the counter ion of the diazonium group. 5,344,739, Cl. 430-175.000.
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Kanzaki, Hidetoshi; and Kanamori, Naoki, to Asahi Kasei Kogyo Kabushiki Kaisha. Acrylic synthetic fiber and process for preparation thereof. 5,344,711, Cl. 428-398.000
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Hitomi, Jun; Adachi, Shigehito; Hakamada, Yoshihiro; Takaiwa, Mikio; Yoshimatsu, Tadashi; Watanabe, Yoko; Kobayashi, Tohru; Kawai, Shuji; and Ito, Susumu, 5,344,770, Cl. 435-71.200.
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Kasahara, Akihiro; Yamasaki, Hideo; Yoshizawa, Takashi; and Ishika, Sou, to Kabushiki Kaisha Toshiba; and. Optical head. 5,345,432, Cl. 369-44.150.
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Kashiwazaki, Takashi, to Pioneer Electronic Corporation. Navigation system utilizing locus data compression. 5,345,388, Cl. 364-449.000
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Katakabe, Noboru; and Yoshikawa, Masanori, to Matsushita Electric Industrial Co., Ltd. Developing apparatus. 5,345,297, Cl. 355-260.000

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Kato, Hideo: *See—*
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Katsuno, Satoshi; and Endoh, Toshiaki, to Kokusai Denshin Denwa Kabushiki Kaisha. High efficiency coding method for still natural images mingled with bi-level images. 5,345,317, Cl. 358-429.000.

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Katz, Howard Edan; Kuck, Valerie J.; and Schilling, Marcia L., to AT&T Bell Laboratories. Method for enhancing the pullout strength of polymer-coated optical fiber. 5,345,528, Cl. 385-123.000.

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Kawasi, Yuichi; Shibayama, Katsutoshi; Murano, Tetsuya; Hamaguchi, Susumu; and Suko, Tomoo, to Tsubakimoto Chain Co. Conveyor chain with protective covers. 5,344,001, Cl. 198-779.000.

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Keller, Daniel N., to Hi-Fold Door Corporation. Automatic jamb latch mechanism for overhead bifold door. 5,343,923, Cl. 160-207.000.

Keller, Ursula, to AT&T Bell Laboratories. Antiresonant Fabry-Perot p-i-n modulator. 5,345,454, Cl. 372-12.000.

Kelley, Michael; Winner, Stephanie; and Mighdoll, Lee, to Apple Computer, Inc. Method and apparatus for approximating a value between two endpoint values in a three-dimensional image rendering device. 5,345,541, Cl. 395-126.000.

Kelley, Paul E., to Teledyne MEC. Mass spectrometry method using notch filter. 5,345,078, Cl. 250-282.000.

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Keogh, James R.; Hobot, Christopher M.; Eaton, John W.; Jevne, Allan H.; and Bergan, Matthew A., to Medtronic, Inc. Graft polymer articles having bioactive surfaces. 5,344,455, Cl. 623-11.000.

Keplinger, John S.; Kacheria, Nilesh P.; Awai, George; and Borck, David R., to Fiberstars, Inc. Optical fiber lighting apparatus and method. 5,345,531, Cl. 385-102.000.

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Kernon, John D.; and Knight, Mark J., to Rolls-Royce plc. Sealing ring for gas turbine engines. 5,344,162, Cl. 277-25.000.

Kersting, Meinolf; Kerth, Juergen; Hungenberg, Klaus-Dieter; Mueller, Patrik; and Koelle, Peter, to BASF Aktiengesellschaft. Preparation of propylene-ethylene copolymers. 5,344,885, Cl. 525-245.000.

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Kettenhofen, Robert, to Summersea International, Inc. Hinge-zipper multi-entry sleeping bag. 5,343,578, Cl. 5-413.000.

Kettner, Ralf; and Brunken, Dieter, to Ethicon, Inc. Package with suture material for surgical purposes. 5,344,005, Cl. 206-63.300.

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Khanna, Satish C.; and Green, Jonathan, to Ciba-Geigy Corp. Methanediphosphonic acid formulations with ion exchangers. 5,344,825, Cl. 514-108.000.

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Kiczek, Edward F.; Klee, David J.; McAfee, Kevin S.; and Howells, Roger A., to Air Products and Chemicals, Inc. Spiral freezer. 5,343,714, Cl. 62-381.000.

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Kiel, Harvey G.: *See—*
Busboom, Leah J. H.; Eagen, Stephen T.; and Kiel, Harvey G., 5,345,553, Cl. 395-161.000.

Kiely, John S.: *See—*
Domagala, John M.; Kiely, John S.; and Schroeder, Mel C., 5,344,940, Cl. 548-540.000.

Kiernan, Michael T.: *See—*
Skipper, Johnny R.; Haughton, Robert A.; Reda, Ralph J.; and Kiernan, Michael T., 5,345,488, Cl. 376-451.000.

Kierstead, Richard W.: *See—*
Guthrie, Robert W.; Mullin, John G., Jr.; Kachensky, David F.; Kierstead, Richard W.; Tilley, Jefferson W.; Heathers, Guy P.; Higgins, Alan J.; and LeMahieu, Ronald A., 5,344,843, Cl. 514-473.000.

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Kijima, Yasuhiko: *See—*
Isshiki, Tomiya; Kijima, Yasuhiko; and Watanabe, Takayuki, 5,344,972, Cl. 562-517.000.

Kikkawa, Nobuyuki: *See—*
Hirata, Toshihiro; Kobayashi, Izumi; Kikkawa, Nobuyuki; and Takematsu, Tetsuo, 5,344,810, Cl. 504-135.000.

Kikkawa, Takamaro, to NEC Corporation. Semiconductor device having multi-layer electrode wiring. 5,345,108, Cl. 257-751.000.

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Satoh, Hiroaki; Kikuchi, Haruhiko; Yamada, Kazuhiko; Fukutomi, Ruta; Suzuki, Masashi; Hagihara, Koichiro; Hayakawa, Toru; Arai, Takeo; and Mino, Setsuko, 5,344,831, Cl. 514-249.000.

Kikuchi, Yoichi: *See—*
Ide, Masayuki; Nakajima, Takashi; Kikuchi, Yoichi; and Kobayashi, Kenji, 5,344,725, Cl. 429-160.000.

Kikukawa, Hiroyasu: *See—*
Uehara, Yasuhiro; Kusumoto, Yasuhiro; Kato, Hiroshi; and Kikukawa, Hiroyasu, 5,345,300, Cl. 355-285.000.

Kikut, Aksi, to Puritan-Bennett Corporation. Passenger oxygen mask having internal flow confirmation balloon. 5,343,859, Cl. 128-205.130.

Kilbane, John J., II, to Institute of Gas Technology. Process for enzymatic cleavage of C-S bonds and process for reducing the sulfur content of sulfur-containing organic carbonaceous material. 5,344,778, Cl. 435-262.000.

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Hwang, Yeong M.; Jakstys, Vito J.; Lee, Chun C.; and Kilburg, Francis J., 5,345,248, Cl. 343-895.000.

Kilgore, Bruce J.; McMahon, Thomas; Tawney, John C.; and Valiant, Gordon, to Nike, Inc. Shoe with an improved midsole. 5,343,639, Cl. 36-29.000.

Kim, Ho-Ki: *See—*
Koh, Hwa-Soo; Ahn, Seung-Han; and Kim, Ho-Ki, 5,345,423, Cl. 365-201.000.

Kim, Ja T., to Goldstar Company, Limited; and. System and method for removing noise when switching between heads in a digital video cassette recorder. 5,345,344, Cl. 360-64.000.

Kim, Jae J.: *See—*
Baek, In K.; Kim, Jae J.; and An, Jin Y., 5,345,293, Cl. 355-75.000.

Kim, Kyekyoon; and Ryu, Choon K., to University of Illinois, The Board of Trustees of the. Method and apparatus for producing nanodrops and nanoparticles and thin film deposits therefrom. 5,344,676, Cl. 427-468.000.

Kim, Seong-hoon, to Samsung Electronics Co., Ltd. Gamma correction circuit for a video camera. 5,345,265, Cl. 348-254.000.

Kim, Sung H.; and You, Byung S., to Goldstar Co., Ltd. Digital signal attenuation circuit for a compact disc-interactive player. 5,345,511, Cl. 381-104.000.

Kimberly-Clark Corporation: *See—*
Nohr, Ronald S.; and MacDonald, John G., 5,344,862, Cl. 524-269.000.

Kimmich, Rainer; Demco, Dan; and Hafner, Siegfried, to Bruker Analytische Messtechnik. Slice-selective polarization transfer for localized solid-state NMR spectroscopy. 5,345,174, Cl. 324-309.000.

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Tanahashi, Mitsuhiko; Inoue, Masafumi; Fukada, Syuzo; Ota, Chikayoshi; and Kimoto, Senji, 5,343,913, Cl. 144-380.000.

Kimura, Hiroshi: *See—*
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, 5,345,299, Cl. 355-274.000.

Kimura, Yuichiro; Noguchi, Yasuji; and Matsumi, Kuninori, to Hitachi, Ltd. Digital convergence correction system and method for preparing correction data. 5,345,280, Cl. 348-745.000.

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Nishihara, Takeshi; Kin, Keiyu; and Shiraishi, Shuji, 5,343,741, Cl. 73-146.200.

King, Michael G.; and Jusick, Michael R. Heat resistive sleeve assembly. 5,343,895, Cl. 138-149.000.

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King, Rodman; Strickland, Carl; Smith, Gerald A.; Hamada, Elaine; and Jolissaint, Charles H., to Rolm Company. Centralized monitoring of activity in a distributed processing system. 5,345,589, Cl. 395-650.000.

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Kingery, Barry J.: *See—*
Romero, Daniel; Kubinski, Ronald J.; Benham, Durward S., Jr.; Koerner, Michael S.; Goldberg, Scott J.; and Kingery, Barry J., 5,343,778, Cl. 74-661.000.

Kinne, Daniel J.: *See—*
Payne, Michael T.; and Kinne, Daniel J., 5,344,662, Cl. 426-124.000.

Kinney, Wayne I.: *See—*
Prall, Kirk D.; and Kinney, Wayne I., 5,345,104, Cl. 257-607.000.

Kinoshita, Yukiharu: *See—*
Saitoh, Yutaka; Ito, Shinichiro; and Kinoshita, Yukiharu, 5,345,209, Cl. 336-83.000.

Kintz, Lawrence J.; Okey, David W.; Leicht, Joseph F.; Carriglitto, Francis T.; O'Hare, Colum; Garr, Keith E.; and Clark, Valerie, to Sundstrand Corporation. Method of installing thermal protection for an electric motor stator. 5,343,613, Cl. 29-596.000.

Kinugawa, Masahiko: *See—*
Kasai, Masaji; Arai, Hitoshi; Nishikawa, Hiroshi; Ogasa, Takehiro; Kinugawa, Masahiko; and Tomioka, Shinji, 5,344,938, Cl. 548-492.000.

Kinugawa, Masumi: *See—*
Douta, Hisayo; Kinugawa, Masumi; and Suzuki, Atsushi, 5,343,701, Cl. 60-276.000.

Kirby, James L.: *See—*
Williams, Tabb H.; Augustine, Robert B., III; and Kirby, James L., 5,343,932, Cl. 164-449.100.

Kirkbir, Fikret: *See—*
Wang, Shiho; Kirkbir, Fikret; Raychaudhuri, Satyabrata; and Sarkar, Arnab, 5,343,633, Cl. 34-92.000.

Kirkland, Kevin M.: *See—*
Cordova, David S.; and Kirkland, Kevin M., 5,343,796, Cl. 89-36.020.

Kishi, Takahiro: *See—*
Iida, Yoshihiro; Nakazawa, Masaaki; Kishi, Takahiro; and Okazaki, Tsugio, 5,343,855, Cl. 128-6.000.

Kita, Kazuhiko: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; Kita, Kazuhiko; and Yamaguchi, Hitoshi, 5,344,507, Cl. 148-437.000.

Kitaevich, Yuli; Hemasilpin, Nat; Marchevsky, J. Gabriel; Bissler, John J.; Benzing, George, III; and McEnery, Paul T., to Children's Hospital Medical Center. Hemofiltration system and method. 5,344,568, Cl. 210-645.000.

Kitagawa Industries Co., Ltd.: *See—*
Matsui, Kazuhiro, 5,344,080, Cl. 239-449.000.

Kitagawa, Nobuhisa: *See—*
Mizukuki, Tadahiko; Koike, Tadashi; Kitagawa, Nobuhisa; and Hirose, Sumio, 5,344,682, Cl. 428-64.000.

Kitahama, Koji; Kawashima, Masahiko; and Mishima, Kyoichi. V-belt for power transmission. 5,344,369, Cl. 474-253.000.

Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Method of recording information on a photographic film. 5,344,730, Cl. 430-14.000.

Kitamura, Kazuo: *See—*
Kozuka, Hajime; Furuya, Youichi; Yoda, Takahiro; Kitamura, Kazuo; and Ijima, Terutsugu, 5,344,196, Cl. 285-149.000.

Kitayama, Azuyasu: *See—*
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Kitayama, Hiroyuki: *See—*
Tanaka, Hideaki; Mitate, Takehito; Kitayama, Hiroyuki; and Yamada, Kuzuo, 5,344,726, Cl. 429-209.000.
Kitayama, Ichiro: *See—*
Sawamura, Seishi; Nakajima, Sakuya; Amemori, Kunio; Oku, Hidehisa; Nakagawa, Akio; Kitayama, Ichiro; Matsuda, Hiromu; Yoshida, Katsuhiko; Takeda, Masaru; Nakane, Toshio; Horiguchi, Shiro; and Yuki, Shigeru, 5,344,446, Cl. 623-24.000.
Kitchen, Edward F.: *See—*
Kitchen, Nancy E.; Kitchen, Edward F.; and Kitchen, George H., III, 5,344,781, Cl. 436-29.000.
Kitchen, George H., III: *See—*
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Kitchen, Nancy E.; Kitchen, Edward F.; and Kitchen, George H., III, to International Lubrication and Fuel Consultants. Detection and prevention of hydrocarbon leakage from underground storage tanks. 5,344,781, Cl. 436-29.000.
Kiwi Brands Inc: *See—*
Bunczk, Charles J.; and Burke, Peter A., 5,344,811, Cl. 504-192.000.
Kizaki, Hiroe: *See—*
Suzuki, Shinichi; Shigematsu, Yasuyuki; Kojima, Takashi; Kizaki, Hiroe; and Itsubo, akira, 5,344,733, Cl. 430-58.000.
Klaas, Mark R.: *See—*
Warwel, Siegfried; Klaas, Mark R.; and Sojka, Michael, 5,344,946, Cl. 549-531.000.
Klaerner, Peter: *See—*
Seelert, Stefan; Klaerner, Peter; Jung, Andreas; Hoenl, Hans; and Ostermayer, Bertram, 5,344,869, Cl. 524-505.000.
Klee, David J.: *See—*
Kiczek, Edward F.; Klee, David J.; McAfee, Kevin S.; and Howells, Roger A., 5,343,714, Cl. 62-381.000.
Klein, Dieter H., to Dow Chemical Company, The. Water-emulsifiable epoxy resin composition. 5,344,856, Cl. 523-403.000.
Klein, Klaus-Dieter: *See—*
Koerner, Gotz; Klein, Klaus-Dieter; and Schaefer, Dietmar, 5,344,949, Cl. 556-413.000.
Kleist, Robert A.: *See—*
Song, Won R.; Lundberg, Robert D.; Gutierrez, Antonio; and Kleist, Robert A., 5,345,002, Cl. 568-793.000
Klich, Paul R.: *See—*
Bak, Philip L.; Bidinger, Gregory P.; Cozens, Ross J.; and Klich, Paul R., 5,345,018, Cl. 570-249.000.
Kliman, Gerald B.; and Richter, Eike, to General Electric Company. Modable permanent magnet rotor for optimized field shaping. 5,345,130, Cl. 310-156.000.
Kliman, Gerald B.; Srinivasan, Kamakshi; DeDoncker, Rik W.; and Ritscher, David E., to General Electric Company. Electrical distribution equipment with torque estimating capability. 5,345,158, Cl. 318-434.000
Klinkner, Walter: *See—*
Zomotor, Adam; Klinkner, Walter; Schindler, Erich; Mohn, Frank-Werner; and Wohland, Thomas, 5,345,385, Cl. 364-424.050.
Klunder, Janice M: *See—*
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Kmiecik-Lawrynowicz, Grazyna E.; Patel, Raj D.; and Hopper, Michael A., to Xerox Corporation. Process of making toner compositions. 5,344,738, Cl. 430-137.000.
Knapp, Gunter; and Panholzer, Franz. Device for heating substances under the development of high pressures in a microwave field. 5,345,066, Cl. 219-686.000.
Knauss, Richard J., to Indresco Inc. MgO-spinel refractory mix and shapes made therefrom. 5,344,802, Cl. 501-120.000.
Kniefel, John H.: *See—*
Abraham, Leslie R.; and Kniefel, John H., 5,343,817, Cl. 108-97.000.
Knieriem, Alan S.; and Tamburrino, Richard A., to Welch Allyn, Inc. Motorized mirror assembly. 5,345,339, Cl. 359-872.000.
Knifton, John F.; and Naylor, Carter G., to Texaco Chemical Company. Method for preparing "twin-tailed" polyoxyalkylene tertiary amines. 5,344,984, Cl. 564-399.000.
Knifton, John F.: *See—*
Sanderson, John R.; and Knifton, John F., 5,345,009, Cl. 568-909.800.
Knight, Mark J.: *See—*
Kernon, John D.; and Knight, Mark J., 5,344,162, Cl. 277-25.000.
Knipp, Ulrich; von Bonin, Wulf; and Neuhaus, Alfred, to Bayer Aktiengesellschaft. Storable polyol mixtures containing mold release agents. 5,344,853, Cl. 521-128.000.
Knobbe, Alan J.: *See—*
Haller, Curtis B.; Knobbe, Alan J.; and Crum, Gerald W., 5,344,082, Cl. 239-697.000.
Knobloch, Dean: *See—*
Kromminga, Gaylen; Dietrich, William J., Sr.; and Knobloch, Dean, 5,343,958, Cl. 172-680.000.
Knorr-Bremse AG: *See—*
Bieker, Dieter; Iraschko, Johann; and Stein, Werner, 5,343,984, Cl. 188-71.900.
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Kobara, Motonori: *See—*
Suzuki, Shigeru; Kobara, Motonori; Hisatomi, Yasuhiro; Yamaguchi, Yoshinori; Yonetani, Hiroshi; Fukushima, Kiyoyuki; Sakamoto, Yoshimasa; Yagami, Toru; and Kamei, Toshihide, 5,344,260, Cl. 408-168.000.
Kobayashi, Akihiko: *See—*
Watanabe, Niro; Morimitsu, Tatsuya; Hoshino, Kazuhisa; Kobayashi, Akihiko; Horie, Kiyoshi; Shindo, Naoaki; Tada, Yoshiaki; and Sato, Takashi, 5,344,808, Cl. 503-227.000.
Kobayashi, Akio: *See—*
Murata, Haruhiko; Mori, Yukio; Maenaka, Akihiro; Takuma, Masao; Kawakami, Kiyotada; Asaeda, Toru; Okino, Toshiyuki; Iinuma, Toshiya; Kobayashi, Akio; and Haruki, Toshinobu, 5,345,264, Cl. 348-235.000.
Kobayashi, Hideo: *See—*
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Kobayashi, Hidetaka: *See—*
Haruda, Osamu; Imamura, Shin; Hanzawa, Suguru; Amada, Nobuo; Kunii, Kazuo; Kobayashi, Hidetaka; Yano, Shinichi; and Nishiyama, Muneo, 5,343,610, Cl. 29-525.100.
Kobayashi, Ichiro: *See—*
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Kobayashi, Izumi: *See—*
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Kobayashi, Kenji: *See—*
Fujii, Masumi; Suda, Taiichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Touru; and Mitsuoka, Shigeaki, 5,344,627, Cl. 423-220.000.
Ide, Masayuki; Nakajima, Takashi; Kikuchi, Yoichi; and Kobayashi, Kenji, 5,344,725, Cl. 429-160.000.
Kobayashi, Takeo; Tabata, Yasushi; Numako, Norio; and Nagai, Katsutoshi, to Asahi Kogaku Kabushiki Kaisha. Electronically controlled camera with automatic release mode and interval time setting. 5,345,288, Cl. 354-238.100.
Kobayashi, Tohru: *See—*
Hitomi, Jun; Adachi, Shigehito; Hakamada, Yoshihiro; Takaiwa, Mikio; Yoshimatsu, Tadashi; Watanabe, Yoko; Kobayashi, Tohru; Kawai, Shuji; and Ito, Susumu, 5,344,770, Cl. 435-71.200.
Kobayashi, Toshiaki; Okazaki, Koji; Ueyama, Masaki; and Toki, Susumu, to Honda Giken Kogyo Kabushiki Kaisha. Self-expanding mount. 5,344,128, Cl. 267-140.140.
Kobayashi, Yasumi; Takeuchi, Kousuke; Ikeda, Kachio; Shibata, Kenichi; and Kuroki, Kazuhiko, to Sanyo Electric Co., Ltd. Dielectric filter comprising a plurality of coaxial resonators of different lengths all having the same resonant frequency. 5,345,202, Cl. 333-206.000.
Kocal, Joseph A., to UOP. Alkylation of aromatics using a fluorided silica-alumina catalyst. 5,344,997, Cl. 568-628.000.
Koch Engineering Company, Inc.: *See—*
Schwartz, Robert E.; Waibel, Richard T.; Rodden, Paul M.; and Napier, Samuel O., 5,344,307, Cl. 431-9.000.
Koch, Frederick W.: *See—*
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Koch, Walter L.: *See—*
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Koda, Akihide; Waragai, Koji; Ono, Yutaka; Ozawa, Hideyuki; Kawamura, Hideki; Maruno, Masao; and Wakamatsu, Takeshi, to Tsumura & Co. Compound and use of the same as medicine. 5,344,845, Cl. 514-614.000.
Koelewyn, Lisa K.: *See—*
Handel, Paul I.; Patterson, Matthew J.; Guerin, Daniel; Strauss, Nicholas C.; Helton, Steven B.; Barrett, Thomas M.; Koelewyn, Lisa K.; and Waterman, James D., 5,345,397, Cl. 364-503.000.
Koelle, Peter: *See—*
Kersting, Meinolf; Kerth, Juergen; Hungenberg, Klaus-Dieter; Mueller, Patrik; and Koelle, Peter, 5,344,885, Cl. 525-245.000.
Koenck, Steven E.; Wolf, Roger L.; and Alt, Daniel E., to Norand Corporation. Drive circuit for electroluminescent panels and the like. 5,345,146, Cl. 315-169.300.
Koerner, Gotz; Klein, Klaus-Dieter; and Schaefer, Dietmar, to Th. Goldschmidt AG. Method for the synthesis of surface-active anioncation complexes. 5,344,949, Cl. 556-413.000.
Koerner, Michael S.: *See—*
Romero, Daniel; Kubinski, Ronald J.; Benham, Durward S., Jr.; Koerner, Michael S.; Goldberg, Scott J.; and Kingery, Barry J., 5,343,778, Cl. 74-661.000.
Koga, Keiichiro: *See—*
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Kogure, Tomohiko: *See—*
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Koh, Hwa-Soo; Ahn, Seung-Han; and Kim, Ho-Ki, to Hyundai Electronics Industries Co., Ltd. Parallel test circuit of a semiconductor memory device. 5,345,423, Cl. 365-201.000.
Kohama, Tokio: *See—*
Hattori, Isao; Nomura, Yurio; Nomura, Shigeo; and Kohama, Tokio, 5,343,841, Cl. 123-403.000.
Kohara, Noriyuki: *See—*
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Kohle, Hans-Jurgen: *See—*
Hintz, Mathias; Kohle, Hans-Jurgen; Moller, Christl; Salomon, Thomas; and Weigand, Joachim, 5,344,642, Cl. 424-70.000.
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Kohler, Marcel. Cryopump. 5,343,709, Cl. 62-55.500.
Kohls, Ruth E. J.: *See—*
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Kohno, Hiroshige: *See—*
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Kohsaka, Mutsumi: *See—*
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Koide, Tokuo: *See—*
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Koike, Tadashi: *See—*
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Kojima, Takashi: *See—*
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Kojima, Tomoko: *See—*
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Kokusai Denshin Denwa Company, Limited: *See—*
Ishikawa, Hiroyasu; Kobayashi, Hideo; and Mizuno, Toshio, 5,345,245, Cl. 342-357.000.
Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Katsuno, Satoshi; and Endoh, Toshiaki, 5,345,317, Cl. 358-429.000.
Tsubakiyama, Hideki; Oohashi, Masayoshi; and Koga, Keiichiro, 5,345,506, Cl. 380-23.000.
Kolb, Peter W. Fully adjustable storage device for loading and transporting vehicles in containers. 5,344,266, Cl. 410-26.000.
Koldyk, Gerard H.: *See—*
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Kolich, Charles H., to Albemarle Corporation. Hydrogenation of aromatic-substituted olefins using organometallic catalyst. 5,344,970, Cl. 562-496.000.
Kolich, Charles H.: *See—*
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Kolkin, Yakov G.; Vecherko, Vladimir N.; and Pershin, Evgeny S. Device for draining the pleural cavity. 5,344,410, Cl. 604-247.000.
Kolkman, Albert, to Machinefabriek Meyn B.V. Apparatus for dressing and slaughtered bird. 5,344,359, Cl. 452-174.000.
Kolp, Christopher J.: *See—*
Huang, Nai Z.; Adams, Paul E.; Daly, Daniel T.; Jolley, Scott T.; Koch, Frederick W.; Kolp, Christopher J.; Stoldt, Stephen H.; Walsh, Reed H.; and Denis, Richard A., 5,344,467, Cl. 44-358.000.
Komatsu, Hirohide: *See—*
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Komatsu, Toshiyuki: *See—*
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Komatsu, Yasutaka; Kuroda, Michio; Ootawara, Yasuhiko; Iizuka, Nobuyuki; Sato, Isao; Taniguchi, Masayuki; and Hayashi, Noriyuki, to Hitachi, Ltd. Combustor and method of operating the same. 5,343,693, Cl. 60-39.230.
Komi, Shuji, to Fuji Photo Optical Co., Ltd. Side-looking type electronic endoscope which allows manipulating tool to be inserted thereinto. 5,343,853, Cl. 128-4.000.
Komiyama, Nakaji; Kouno, Hisao; Higashide, Kazuhiro; Suda, Osamu; and Hasegawa, Masaru, to Dainichiseika Color & Chemicals Mfg. Co., Ltd. Disazo electrophotographic photoreceptor. 5,344,736, Cl. 430-83.000.
Komma, Yoshiaki: *See—*
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Komori, Yutaka, to Taito Corporation. Method for improving the accuracy of a baseball pitching machine. 5,344,137, Cl. 273-26.00D.
Komuro, Akihiro: *See—*
Takano, Minoru; Komuro, Akihiro; and Yamazaki, Mitsuru, 5,345,295, Cl. 355-200.000.
Kondo, Shigeo: *See—*
Kanbara, Teruhisa; and Kondo, Shigeo, 5,344,499, Cl. 136-258.000.
Kondo, Tetsusai, to Kabushiki Kaisha Kawai Gakki Seisakusho. Volume control apparatus for an automatic player piano. 5,345,036, Cl. 84-633.000.
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Fehskens, Leonard G.; Strutt, Colin; Wong, Steven K.; Callander, Jill F.; Burgess, Peter H.; Nelson, Kathy J.; Guertin, Matthew J.; Sylor, Mark W.; Chapman, Kenneth W.; Schuchard, Robert C.; Goldfarb, Stanley I.; Rogers, Dennis O.; O'Brien, Linsey B.; Trasatti, Philip J.; England, Benjamin M.; Lemmon, James L., Jr.; Rosenbaum, Richard L.; Kohls, Ruth E. J.; Aronson, David L.; Ross, Robert R. N.; Smith, Danny L.; Adams, William C., Jr.; Koning, G. Paul; Namoglu, Sheryl F.; Seger, Mark J.; Dixon, Timothy M.; and Harrow, Jeffrey R., 5,345,587, Cl. 395-650.000.
Konno, Kouichi: *See—*
Harada, Tsuyoshi; and Konno, Kouichi, 5,345,546, Cl. 395-142.000.
Kono, Yoichiro: *See—*
Miyajima, Kiyoshi; Oikawa, Hiroshi; Kono, Yoichiro; Kumagai, Yasuaki; Nakayama, Shinji; Nakagawa, Hiroshi; and Nakashima, Masayoshi, 5,343,702, Cl. 60-285.000.
Konstanzer, Michael, to Fraunhofer-Gesellschaft zur Forderung der angewandten. Process for the reduction of the switch-on surge in current during the operation of an inductive load. 5,345,359, Cl. 361-152.000.
Koo, Roland; and Holweg, Gerald, to Mikron Gesellschaft fur Integrierte Mikroelectronik mbH. Contactless inductive data-transmission system. 5,345,231, Cl. 340-870.310.
Kool, Dennis J., to Amway Corporation. Water filter cartridge. 5,344,558, Cl. 210-117.000.
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Eom, Young ho; and Nam, Tae un, 5,344,608, Cl. 420-532.000.
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Kornrumpf, William P., to General Electric Company. Compact high density interconnected microwave system. 5,345,205, Cl. 333-246.000.
Kosa, Yasunobu: *See—*
Sun, Shih-Wei; Kosa, Yasunobu; and Yeargain, John R., 5,345,105, Cl. 257-659.000.
Koseki, Toshihiko; Fukunaga, Tetsuya; Takano, Hideo; and Yamanaka, Hidemine, to International Business Machines Corporation. Active matrix liquid crystal display device having two light shielding layers. 5,345,324, Cl. 359-67.000.
Koshinaka, Eiichi: *See—*
Sawanishi, Hiroyuki; Ito, Yasuo; Kato, Hideo; Koshinaka, Eiichi; Ogawa, Nobuo; and Morikawa, Kouji, 5,344,828, Cl. 514-211.000.
Koskenmaki, David C.: *See—*
Calhoun, Clyde D.; Koskenmaki, David C.; and Mazurek, Mieczyslaw H., 5,344,681, Cl. 428-42.000.
Kougo, Takashi: *See—*
Tajima, Akio; Harada, Hiroyuki; Shimizu, Harukazu; Inoue, Haruo; Kougo, Takashi; Oda, Hajime; Nakagawa, Tadashi; and Hayakawa, Tsuyoshi, 5,344,245, Cl. 400-320.000.
Kouno, Hiroyuki; Miki, Takahiro; and Kumamoto, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Differential amplifier and two-step parallel A/D converter. 5,345,237, Cl. 341-156.000.
Kouno, Hisao: *See—*
Komiyama, Nakaji; Kouno, Hisao; Higashide, Kazuhiro; Suda, Osamu; and Hasegawa, Masaru, 5,344,736, Cl. 430-83.000.
Kouzaki, Takeshi: *See—*
Moriya, Nobuo; Shimoda, Keiji; Asaoka, Sachio; Kameda, Takao; Sakashita, Kouji; Maejima, Tetsuo; Yasui, Makoto; Nishijima, Hiroaki; Onda, Nobuhiro; and Kouzaki, Takeshi, 5,345,000, Cl. 568-722.000.
Kovar, Robert F.; Haghighat, R. Ross; and Lusignea, Richard W., to United States of America, Air Force. Ordered polymer/sol-gel microcomposite laminates with peek resin adhesive. 5,344,703, Cl. 428-312.600.
Kovarik, Franz; and Ongley, James, to Accuride International Inc. Thin offset drawer slide with progression roller. 5,344,228, Cl. 312-334.900.
Kowalczyk, James E.; and Loomans, Bernard A., to APV Chemical Machinery Inc. High horsepower hydraulically driven continuous mixing and processing system. 5,344,230, Cl. 366-100.000.
Kowalik, Joseph W.: *See—*
Swensen, Robert G.; and Kowalik, Joseph W., 5,345,210, Cl. 337-163.000.
Koyama, Yoshinari: *See—*
Wakabayashi, Makoto; Senga, Minoru; and Koyama, Yoshinari, 5,344,973, Cl. 562-553.000.
Koyanagi, Toshiro, to Takata Corporation. Restraining protective seat for infants. 5,344,213, Cl. 297-256.130.
Kozuka, Hajime; Furuya, Youichi; Yoda, Takahiro; Kitamura, Kazuo; and Ijima, Terutsugu, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Meiji Gomu Kasei. Metallic hose joint. 5,344,196, Cl. 285-149.000.
Krafft, Marie-Pierre: *See—*
Riess, Jean G.; Jeanneaux, Francois; Krafft, Marie-Pierre; Santaella, Catherine; and Vierling, Pierre, 5,344,930, Cl. 544-84.000.
Kraft General Foods, Inc.: *See—*
Fitch, Mark D.; Eckhardt, Gerard; Anderson, Wendy A.; Anelich, Mario A.; Frake, Barry N.; Lang, Kevin W.; and Mannheimer, Alfred, 5,344,664, Cl. 426-631.000.
Krambeck, Frederick J.: *See—*
Child, Jonathan E.; Del Rossi, Kenneth J.; Huss, Albin, Jr.; Krambeck, Frederick J.; Melli, Thomas R.; and Yurchak, Sergei, 5,345,027, Cl. 585-720.000.
Kranawetter, Greg A.: *See—*
Ersoz, Nathaniel H.; Saeger, Timothy W.; Dotty, James H., II; and Kranawetter, Greg A., 5,345,272, Cl. 348-561.000.
Saeger, Timothy W.; Kranawetter, Greg A.; and Ersoz, Nathaniel H., 5,345,270, Cl. 348-435.000.

Krang, Henry E.: *See*—
Axelsson, Bo E. K.; and Krang, Henry E., 5,344,067, Cl. 236-12.200.
Krantz, Matthias C.; Novotny, Vlad J.; O'Sullivan, Timothy C.; and Tam, Andrew C., to International Business Machines Corporation. Step projection air bearing slider with improved stiction performance and wear resistance. 5,345,353, Cl. 360-103.000.
Krapivina, Svetlana A.: *See*—
Paskalov, Georgy Z.; Krapivina, Svetlana A.; and Filippov, Alexander K., 5,344,462, Cl. 8-115.520.
Krause, Wolfgang; Paust, Joachim; Dobler, Walter; and Jaedicke, Hagen, to BASF Aktiengesellschaft. Preparation of cyclic acetals of 3-formyl-2-butenyltriphenylphosphonium chloride. 5,344,995, Cl. 568-591.000.
Krawczyk, Hugo M.: *See*—
Herzberg, Amir; Krawczyk, Hugo M.; Kutten, Shay; and Mansour, Yishay, 5,345,507, Cl. 380-28.000
Kreh, Robert P.: *See*—
Carter, Charles G.; Fan, Lai-Duien G.; Fan, Joseph C.; Kreh, Robert P.; and Jovancicevic, Vladimir, 5,344,590, Cl. 252-396.000.
Kreis, Gundolf; and Timm, Heinrich, to Audi A.G. Spring strut mounting assembly of a vehicle body. 5,344,187, Cl. 280-788.000.
Kremer, Lawrence N.: *See*—
Roof, Glenn L.; Kremer, Lawrence N.; and Market, Robert V., 5,344,555, Cl. 208-189.000.
Kremer, Ross A.: *See*—
Wei, Liwen; Horodysky, Andrew G.; Jeng, Andrew; and Kremer, Ross A., 5,344,578, Cl. 252-47.500.
Krengel, Theodore H.; Borzym, John J.; and Willetts, Charles A., to IDOD Trust, The. Method of forming seamed metal tube. 5,344,062, Cl. 228-147.000.
Kresge, Alfred N.: *See*—
Hedrich, Loren W.; Kresge, Alfred N.; and Williamson, Roger C., 5,345,022, Cl. 585-522.000.
Krilis, Steven A.; McNeill, Hugh P.; and Chesterman, Colin N., to Yamasa Shoyu Kabushiki Kaisha. Methods for determining anti-phospholipid and anti-cardiolipin antibodies. 5,344,758, Cl. 433-4.100.
Kringel, George; Frichette, Robert S.; and Richardson, James E., to ActMedia, Inc. Advertising display mounting device. 5,344,250, Cl. 403-228.000.
Krisciunas, Joseph E.: *See*—
McGrath, Donald T.; Krisciunas, Joseph E.; Garverick, Steven L.; and Jacob, Philippe; L., 5,345,409, Cl. 364-736.000.
Krohn, Martin, to U.S. Philips Corporation. Pivoting device for a cover of the cassette holder of a magnetic-tape cassette apparatus. 5,345,351, Cl. 360-96.500.
Kromminga, Gaylen; Dietrich, William J., Sr.; and Knobloch, Dean, to DMI, Inc. Agricultural fertilizer applicator including self-leveling wagon hitch. 5,343,958, Cl. 172-680.000.
Krueger, Dennis L.: *See*—
Hanschen, Thomas P.; Krueger, Dennis L.; and Karp, Gregory P., 5,344,691, Cl. 428-152.000.
Kruger, Volker; and Panzke, Rolf, to Baker Hughes Incorporated. Apparatus for optional straight or directional drilling underground formations. 5,343,967, Cl. 175-75.000
Krusos, Denis A.: *See*—
DiSanto, Frank J.; and Krusos, Denis A., 5,345,251, Cl. 345-107.000.
KSB Aktiengesellschaft: *See*—
Schafer, Horst; and Beiss, Gunter, 5,344,286, Cl. 415-213.100.
Kuberasampath, Thangavel: *See*—
Rueger, David C.; Kuberasampath, Thangavel; Oppermann, Hermann; and Ozkaynak, Engin, 5,344,654, Cl. 424-423.000.
Kubillus, Uwe: *See*—
Brindoepke, Gerhard; Kubillus, Uwe; and Plum, Helmut, 5,344,897, Cl. 525-526.000.
Kubinski, Ronald J.: *See*—
Romero, Daniel; Kubinski, Ronald J.; Benham, Durward S., Jr.; Koerner, Michael S.; Goldberg, Scott J.; and Kingery, Barry J., 5,343,778, Cl. 74-661.000.
Kubo, Noboru: *See*—
Nomura, Tatsuya; Yamauchi, Yumi; Mameda, Kenji; Yoshida, Shigeru; and Kubo, Noboru, 5,345,548, Cl. 395-150.000.
Kubota, Akihiro: *See*—
Sono, Michio; Kubota, Akihiro; Kasai, Junichi; Yoshimoto, Masanori; and Masaki, Keiichi, 5,343,615, Cl. 29-827.000.
Kubota, Hiroshi: *See*—
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, 5,345,299, Cl. 355-274.000.
Kubota, Hirosi: *See*—
Umezawa, Mituo; Nakamura, Masashi; and Kubota, Hirosi, 5,344,857, Cl. 523-409.000.
Kubota, Kazuo: *See*—
Kamiguchi, Masao; Saito, Osamu; Kubota, Kazuo; and Takemoto, Masanobu, 5,344,301, Cl. 425-169.000.
Kubota, Masafumi: *See*—
Harafuji, Kenji; Ohkuni, Mitsuhiro; Tamaki, Tokuhiko; Kubota, Masafumi; and Nomura, Noboru, 5,345,145, Cl. 315-111.410.
Kubota, Susumu: *See*—
Enomoto, Masami; Kubota, Susumu; Oshimi, Fumiaki; Yuasa, Hitoshi; and Otsuki, Yutaka, 5,344,899, Cl. 525-534.000.
Kuck, Valerie J.: *See*—
Katz, Howard Edan; Kuck, Valerie J.; and Schilling, Marcia L., 5,345,528, Cl. 385-123.000.
Kudo, Hiroaki: *See*—
Takiguchi, Haruhisa; Yano, Seiki; Inoguchi, Kazuhiko; Kudo, Hiroaki; Nakanishi, Chitose; Okumura, Toshiyuki; and Sugahara, Satoshi, 5,345,460, Cl. 372-43.000.
Kudo, Ichiro: *See*—
Suwa, Yorimasa; Imaizumi, Atsushi; Okada, Masahiro; Kudo, Ichiro; Inoue, Keizo; and Suzuki, Yoji, 5,344,764, Cl. 455-69.100.
Kudo, Tetsuo: *See*—
Sakai, Yasuyuki; Suzuki, Noriyuki; Kudo, Tetsuo; Marumo, Kuniomi; Aizawa, Toshiyuki; Imamura, Kunio; Sugita, Shuichi; and Kanbayashi, Kazuo, 5,344,655, Cl. 424-443.000.
Kudo, Toshiharu: *See*—
Muramatsu, Kenji; Totsuka, Mitsuhiko; and Kudo, Toshiharu, 5,345,211, Cl. 337-186.000.
Kuehnle, Manfred R.: *See*—
Matijevic, Egon; Hsu, Wan P.; and Kuehnle, Manfred R., 5,344,489, Cl. 106-442.000.
Kuhara, Yoshiki: *See*—
Tonai, Ichiro; and Kuhara, Yoshiki, 5,345,074, Cl. 250-214.100.
Tonai, Ichiro; and Kuhara, Yoshiki, 5,345,075, Cl. 250-227.240.
Kuhn, Uwe: *See*—
Kiesele, Herbert; Haupt, Stephan; and Kuhn, Uwe, 5,344,546, Cl. 204-415.000.
Kuhrt, Darwin H., to Food Service Products Company. Method and apparatus for slicing articles of food and the like. 5,343,790, Cl. 83-395.000.
Kull, Gene F., Jr.: *See*—
Schroemges, Cyril R.; and Kull, Gene F., Jr., 5,343,981, Cl. 182-231.000.
Kumada, Katsumi: *See*—
Satoh, Toshiya; Kawanishi, Tsuneaki; Shimizu, Ryuuichi; Shimada, Akira; and Kumada, Katsumi, 5,345,301, Cl. 355-290.000.
Kumagai, Yasuaki: *See*—
Miyajima, Kiyoshi; Oikawa, Hiroshi; Kono, Yoichiro; Kumagai, Yasuaki; Nakayama, Shinji; Nakagawa, Hiroshi; and Nakashima, Masayoshi, 5,343,702, Cl. 60-285.000.
Kumamoto, Toshio: *See*—
Kouno, Hiroyuki; Miki, Takahiro; and Kumamoto, Toshio, 5,345,237, Cl. 341-156.000.
Kumar, Ajith K., to General Electric Company. Method for evaluating operability of filter components in power conversion system. 5,345,358, Cl. 361-78.000.
Kunii, Kazuo: *See*—
Haruda, Osamu; Imamura, Shin; Hanzawa, Suguru; Amada, Nobuo; Kunii, Kazuo; Kobayashi, Hidetaka; Yano, Shinichi; and Nishiyama, Muneo, 5,343,610, Cl. 29-525.100.
Kunii, Nobuaki: *See*—
Doi, Takao; Itaya, Noriko; Yamashita, Masami; and Kunii, Nobuaki, 5,344,874, Cl. 524-593.000.
Kunori, Shinji: *See*—
Kan, Takashi; Wakatabe, Masaru; Tanaka, Mitsugu; Kunori, Shinji; and Sugiyama, Akira, 5,345,100, Cl. 257-475.000.
Kuo, Shun-Meen: *See*—
Lebby, Michael S.; Chun, Christopher K. Y.; and Kuo, Shun-Meen, 5,345,524, Cl. 385-88.000.
Lebby, Michael S.; Kuo, Shun-Meen; Hartman, Davis H.; and Chun, Christopher K. Y., 5,345,530, Cl. 385-88.000.
Kuraishi, Isao: *See*—
Nakamura, Kenji; and Kuraishi, Isao, 5,344,007, Cl. 206-205.000.
Kuraray Co., Ltd.: *See*—
Negi, Taichi; Itamura, Sumio; and Hirofuji, Satoshi, 5,344,715, Cl. 428-520.000.
Kureha Chemical Industry Co., Ltd.: *See*—
Wakamori, Hideki; Suzuki, Fujio; and Horie, Katsuo, 5,344,904, Cl. 526-254.000.
Kuribayashi, Toshiaki: *See*—
Umemoto, Noboru; Nomura, Takeshi; Kuribayashi, Toshiaki; Sato, Takehisa; and Tomizawa, Hirotaka, 5,344,582, Cl. 252-9.000.
Kurihara, Haruki, to Kabushiki Kaisha Toshiba. Light emitting diode including active layer having first and second active regions. 5,345,092, Cl. 257-13.000.
Kurihara, Yoshie; Kohno, Hiroshige; Sugiyama, Hiromu; Shimada, Teiyu; Saito, Masako; and Ikeda, Kenji, to Yoshie Kurihara; and Asahi Denka Kogyo Kabushiki Kaisha. Chewing gum. 5,344,659, Cl. 426-3.000.
Kuroda, Michio: *See*—
Komatsu, Yasutaka; Kuroda, Michio; Ootawara, Yasuhiko; Iizuka, Nobuyuki; Sato, Isao; Taniguchi, Masayuki; and Hayashi, Noriyuki, 5,343,693, Cl. 60-39.230.
Kuroda Seiko Co., Ltd.: *See*—
Suzuki, Shigeru; Kobara, Motonori; Hisatomi, Yasuhiro; Yamaguchi, Yoshinori; Yonetani, Hiroshi; Fukushima, Kiyoyuki; Sakamoto, Yoshimasa; Yagami, Toru; and Kamei, Toshihide, 5,344,260, Cl. 408-168.000.
Kuroki, Kazuhiko: *See*—
Kobayashi, Yasumi; Takeuchi, Kousuke; Ikeda, Kachio; Shibata, Kenichi; and Kuroki, Kazuhiko, 5,345,202, Cl. 333-206.000.
Kuroki, Motohiro: *See*—
Hatano, Hideaki; Watanabe, Hiroichiro; Hotta, Akio; and Kuroki, Motohiro, 5,345,068, Cl. 219-722.000.
Kurooka, Teruya: *See*—
Kawabata, Nariyoshi; Kohsaka, Mutsumi; and Kurooka, Teruya, 5,344,891, Cl. 525-327.100.

Kurosawa, Kenichi: *See*—
Miura, Shuuichi; Kurosawa, Kenichi; Nakamikawa, Tetsuaki; and Hirose, Kenji, 5,345,560, Cl. 395-250.000.
Kurscheidt, Regina; Felger, Martin; and Beech. Michael P., to Hewlett-Packard Company. Method and apparatus for detecting artifacts in a blood pressure measuring system. 5,343,868, Cl. 128-673.000.
Kurtz, John L.: *See*—
Narayannan, Krishna; Liang, Marc D.; and Kurtz, John L., 5,345,538, Cl. 395-2.840.
Kurtzer, Siegfried: *See*—
Fricke, Andreas; and Kurtzer, Siegfried, 5,343,806, Cl. 101-408.000.
Kusano, Hiroko: *See*—
Dosako, Shunichi; Kusano, Hiroko; Deya. Eiki; and Idota, Tadashi, 5,344,820, Cl. 514-8.000.
Kusek, Walter K. Process for forming a substantially gas free encapsulation. 5,344,604, Cl. 264-272.110.
Kushida, Yuichiro; Tamegai, Shoichi; and Hirohashi, Akio, to Denki Kagaku Kogyo Kabushiki Kaisha. Polyvinyl chloride thermoplastic elastomer composition. 5,344,864, Cl. 524-426.000.
Kusner, John D., to Ken-Tool. Tire iron for tubeless truck tires. 5,343,921, Cl. 157-1.300.
Kusuda, Hidefumi: *See*—
Ueda, Koichi; Kanda, Kazunori; and Kusuda, Hidefumi, 5,344,744, Cl. 430-287.000.
Kusumoto, Yasuhiro: *See*—
Uehara, Yasuhiro; Kusumoto, Yasuhiro; Kato, Hiroshi; and Kikukawa, Hiroyasu, 5,345,300, Cl. 355-285.000.
Kutten, Shay: *See*—
Herzberg, Amir; Krawczyk, Hugo M.; Kutten, Shay; and Mansour, Yishay, 5,345,507, Cl. 380-28.000.
Kuwa, Morihiko: *See*—
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Kuwabara, Toshio: *See*—
Suzuki, Kazuhiro; Miki, Masatoshi; Kuwabara, Toshio; and Matsubara, Morihiko, 5,345,157, Cl. 318-280.000.
Kyocera America, Inc.: *See*—
Miyauchi, Nobuaki; and Irie, Takatoshi, 5,345,038, Cl. 174-52.400.
Kyowa Hakko Kogyo Co., Ltd.: *See*—
Kasai, Masaji; Arai, Hitoshi; Nishikawa, Hiroshi; Ogasa, Takehiro; Kinugawa, Masahiko; and Tomioka, Shinji, 5,344,938, Cl. 548-492.000.
Murakata, Chikara; Takiguchi, Toshimitsu; Katsumata, Shigeo; Mihara, Akira; Takahashi, Keiichi; Saito, Hiromitsu; Akinaga, Shiro; Okabe, Masami; and Saito, Yutaka, 5,344,926, Cl. 540-545.000.
Kyrtsos, Christos T., to Caterpillar Inc. End of fill detector for a hydraulic clutch. 5,343,994, Cl. 192-85.00R.
L&S Bearing Co.: *See*—
Wells, David E., 5,344,241, Cl. 384-607.000.
LaBruyere, Timothy F.: *See*—
Ross, Colby M.; Patel, Dhirajlal C.; and LaBruyere, Timothy F., 5,343,949, Cl. 166-278.000.
Laclead Enterprises: *See*—
Hill, Reed A., 5,345,584, Cl. 395-600.000.
Lacorazza, David: *See*—
Legassie, Charles P.; Litchfield, Paul E.; Lacorazza, David; and Foley, Peter M., 5,343,638, Cl. 36-29.000.
Laffan, David: *See*—
Warm, Aleksander; and Laffan, David, 5,344,963, Cl. 560-130.000.
Laffey, Martin S.: *See*—
Foster, Donald D.; Nelson, Philip L.; and Laffey, Martin S., 5,344,053, Cl. 222-383.000.
Laffont, Jean, to U.S. Philips Corporation. Receiver arrangement formed by a plurality of receive branches. 5,345,603, Cl. 455-139.000.
Lager, Goran; and Eriksson, Nils. Method and a fixture system for positioning and fixing details for assembly. 5,343,611, Cl. 29-559.000.
Lai, Francis: *See*—
Lai, Xiaoyun; Zhao, Dafang; and Lai, Francis, 5,344,895, Cl. 525-425.000.
Lai, Jiunu S.; Lee, Jar-How; and Callaway, James E., to Xoma Corporation. DNA encoding polypeptides with activity against gram-positive and gram-negative bacteria. 5,344,765, Cl. 435-69.700.
Lai, Xiaoyun; Zhao, Dafang; and Lai, Francis, to University of Massachusetts Lowell. Polyamideimide composition with improved processability. 5,344,895, Cl. 525-425.000.
L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Vuillermoz, Jean-Claude; Perrin, Nicolas; and Devaux, Michel, 5,344,122, Cl. 266-79.000.
Lake, Ivan J. S.: *See*—
Casci, John L.; Lake, Ivan J. S.; and Maberly, Timothy R., 5,345,021, Cl. 585-467.000.
Lake, James K.: *See*—
Gonya, Stephen G.; Lake, James K.; Long, Randy C.; and Wild, Roger N., 5,344,607, Cl. 420-562.000.
Lake Shore Medical Development Partners, Ltd.: *See*—
Fontenot, Mark G.; and Miller, Thomas G., 5,344,436, Cl. 607-104.000.
Laloren, Inc.: *See*—
Kaplan, Mark, 5,344,027, Cl. 211-1.000.
Lam, Edward: *See*—
Kanda, Kazunori; Nanba, Osamu; and Lam, Edward, 5,344,739, Cl. 430-175.000.
Lam, Kin S.; McDonald, Leonard A.; Mattei, Jacqueline; Forenza, Salvatore; and Matson, James A., to Bristol-Myers Squibb Company. Antitumor antibiotic BMY-41219. 5,344,823, Cl. 514-43.000.
Lamb-Weston, Inc.: *See*—
Julian, John C.; Cuddeford, Gary D.; and Stanley, Kenneth J., 5,343,791, Cl. 83-865.000.
Lambeth, David N.; and Velu, E. M. T., to Carnegie Mellon University. Magnetic recording medium comprising an underlayer and a cobalt samarium amorphous magnetic layer having a $SmCo_5$ crystalline interface with the underlayer. 5,344,706, Cl. 428-336.000.
Lamprecht, Dale E., Jr.: *See*—
Craig, Gina M.; Lamprecht, Dale E., Jr.; Stellwag, Debra A.; and Wagner, Thomas R., 5,345,091, Cl. 250-566.000.
Lancon, Bruno; Desarmaux, Pierre; and Merino, Jean-Francois, to Salomon S.A. Safety ski binding. 5,344,180, Cl. 280-625.000.
Land, George W.: *See*—
Shackelford, Michael W.; Bauer, Robert G.; and Land, George W., 5,343,631, Cl. 34-370.000.
Landgraf, Marc, to Intel Corporation. Power-up reset override architecture and circuit for flash memory. 5,345,424, Cl. 365-227.000.
Landmark, Jason R.: *See*—
Jarecki, James J.; and Landmark, Jason R., 5,344,031, Cl. 211-59.100.
Landmeier, Waldo L., to CalComp, Inc. Cordless digitizer using electromagnetic locating signals. 5,345,044, Cl. 178-19.000.
Landsiedel, Horst; and Ventur, Dirk, to Witco GmbH. Use of thiadiazoles as biocides for material protection. 5,344,482, Cl. 106-18.330.
Landua, Werner; and Pichler, Werner, to Adolf Hottinger Maschinenbau GmbH. Apparatus for deburring foundry cores and similar workpieces. 5,343,929, Cl. 164-262.000.
Lanerd, Lawrence L.: *See*—
Tam, Jimmy W. S.; Lanerd, Lawrence L.; Lubenow, Albert W.; and McCutcheon, Tera D., 5,344,120, Cl. 251-214.000.
Lang, Gary D., to Liquid Carbonic Corporation. Helical conveyor freezer. 5,343,715, Cl. 62-381.000.
Lang, Georg; Trummer, Georg; Sigwart, Edgar; Fraas, Werner; Misler, Andrea; and Reinert, Gerhard, to Siemens Aktiengesellschaft. Method and apparatus for operating a programmable controller for controlling a technical process. 5,345,378, Cl. 364-140.000.
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Mattiuzzo, Mario; and Condini, Alessandro, 5,343,640, Cl. 36-121.000.
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Lanker, Willi. Lightweight electric vehicle. 5,343,973, Cl. 180-211.000.
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White, Danny R.; and Aghajanian, Michael K., 5,344,690, Cl. 428-131.000.
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Muller, Fritz, 5,345,057, Cl. 219-121.710.
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Cheslock, Edward P., 5,344,339, Cl. 439-501.000.
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Latone, Jack T.: *See—*
Comparetta, Christopher; Ippolito, Ronald A.; Sathi, Kitty; Latone, Jack T.; Enzien, Colleen R.; and Smith, Mark A., 5,345,581, Cl. 395-575.000.

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Wei, Cha-Mer; Hsiung, Nancy; Reddy, Vermuri B.; Lemontt, Jeffrey F.; Dackowski, William; Douglas, Richard; Cole, Edward S.; Purcell, Richard D., Jr.; and Lau, David Tai-Yui, 5,344,773, Cl. 435-226.000.

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Lopez, George A.; and Laul, Virgil R., 5,344,414, Cl. 604-283.000.

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Lawrence, Frederick J., to Gradco (Japan) Ltd. Stapling sorter with rotating sheet jogger. 5,344,131, Cl. 270-53.000.

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Hill, Alan M.; Cain, Michael D.; and Cain, Donald D., 5,344,573, Cl. 210-768.000.
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Saw, Beng L; Tai, Marcus V.; and Le, Dai M., 5,345,450, Cl. 371-27.000.

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Lidert, Zev; and Le, Dat P., 5,344,958, Cl. 560-64.000.

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Tanaka, Naojiro, 5,345,191, Cl. 330-277.000.

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Gombos, John M.; and Leashno, Moshe, 5,343,670, Cl. 53-399.000.

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Jang, Dong-sik; and Lee, Byeong-yong, 5,344,353, Cl. 445-45.000.

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Hwang, Yeong M.; Jakstys, Vito J.; Lee, Chun C.; and Kilburg, Francis J., 5,345,248, Cl. 343-895.000

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Schroder, Ernst; and Lee, Henry J., 5,343,896, Cl. 139-383.00A.

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Leese, Kristin L.: *See—*
Stanescu, Liana V.; Fischer, Timothy J.; Leese, Kristin L.; and Leonhardt, Kenneth J., 5,344,036, Cl. 215-251.000.

Legassie, Charles P.; Litchfield, Paul E.; Lacorazza, David; and Foley, Peter M., to Reebok International Ltd. Upper for an athletic shoe and method for manufacturing the same. 5,343,638, Cl. 36-29.000.

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Leicht, Joseph F.: *See—*
Kintz, Lawrence J.; Okey, David W.; Leicht, Joseph F.; Carriglitto, Francis T.; O'Hare, Colum; Garr, Keith E.; and Clark, Valerie, 5,343,613, Cl. 29-596.000.

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Reinke, Friedhelm; Leisner, Jurgen; and Gezarzick, Waldemar, 5,345,065, Cl. 219-672.000.

Leland, Frank P.: *See—*
Allen, L. Scott; Leland, Frank P.; Lyle, W. D., Jr.; and Stromswold, David C., 5,345,077, Cl. 250-264.000.

Leland Stanford Junior University, The Board of Trustees of the: *See—*
Paulraj, Arogyaswami J.; and Kailath, Thomas, 5,345,599, Cl. 455-49.100.
Yencho, Stephen A., 5,344,602, Cl. 264-258.000.

LeMahieu, Ronald A.: *See—*
Guthrie, Robert W.; Mullin, John G., Jr.; Kachensky, David F.; Kierstead, Richard W.; Tilley, Jefferson W.; Heathers, Guy P.; Higgins, Alan J.; and LeMahieu, Ronald A., 5,344,843, Cl. 514-473.000

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Foos, Jacques; Lemaire, Marc; Guy, Alain; Guyon, Vincent; Chomel, Rodolphe; Delo Ge, Andre ; Doutreluigne, Pierre; and Le Roy, Henri, 5,344,624, Cl. 423-6.000.

Lemmon, James L., Jr.: *See—*
Fehskens, Leonard G.; Strutt, Colin; Wong, Steven K.; Callander, Jill F.; Burgess, Peter H.; Nelson, Kathy J.; Guertin, Matthew J.; Sylor, Mark W.; Chapman, Kenneth W.; Schuchard, Robert C.; Goldfarb, Stanley I.; Rogers, Dennis O.; O'Brien, Linsey B.; Trasatti, Philip J.; England, Benjamin M.; Lemmon, James L., Jr.; Rosenbaum, Richard L.; Kohls, Ruth E. J.; Aronson, David L.; Ross, Robert R. N.; Smith, Danny L.; Adams, William C., Jr.; Koning, G. Paul; Namoglu, Sheryl F.; Seger, Mark J.; Dixon, Timothy M.; and Harrow, Jeffrey R., 5,345,587, Cl. 395-650.000.

Lemontt, Jeffrey F.: *See—*
Wei, Cha-Mer; Hsiung, Nancy; Reddy, Vermuri B.; Lemontt, Jeffrey F.; Dackowski, William; Douglas, Richard; Cole, Edward S.; Purcell, Richard D., Jr.; and Lau, David Tai-Yui, 5,344,773, Cl. 435-226.000.

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Lepekha, Anatoly I.: *See—*
Anokhin, Vladimir D.; Lepekha, Anatoly I.; Filippov, Viktor N.; Ageev, Sharifzhan R.; Vinokurov, Anatoly F.; Gusev, Jury V.; and Ermakov, Sergei J., 5,344,281, Cl. 415-71.000.

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Le Roy, Guy: *See—*
Gabriagues, Jean-Michel; Jacquinot, Jean-Claude; Le Roy, Guy; and Jacob, Jean-Baptiste, 5,345,455, Cl. 372-20.000.

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Gilbert, Sylvain, 5,343,960, Cl. 172-823.000.

Lesar, Nick J., to Weiler & Company, Inc. Hard material collecting system for a meat grinder. 5,344,086, Cl. 241-82.600.

Lesea, Ronald A., to Metcal, Inc. Power factor corrected DC power supply. 5,345,164, Cl. 323-208.000.

Lesmeister, Gary J., to Credence Systems Corporation. Retriggered oscillator for jitter-free phase locked loop frequency synthesis. 5,345,186, Cl. 328-155.000.

Leung, Kit L. T., to Conair Corporation. Fast heating curling iron and control circuit therefor. 5,345,055, Cl. 219-225.000.

Leung, Lit-Cheong. Method of and system for load storage and retrieval. 5,344,270, Cl. 414-278.000.

Leupin, Peter: *See—*
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Helldorfer, Reinhard; Leuteritz, Jurgen; Gramann, Matthias; and Topfer, Bernhard, 5,344,222, Cl. 303-100.000.

Levene, William E.: *See—*
Black, David C.; Dunn, Tave P.; Jreij, Elie A.; Key, Gary R.; Levene, William E.; and Wilson, Timothy L., 5,345,495, Cl. 379-29.000.

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Ashbaugh, Dean L.; Heinz, Daniel J.; Buzzeo, Pasquale M.; and Caldwell, Lawrence W., 5,344,279, Cl. 414-788.200.

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McLaughlin, Richard S., 5,344,217, Cl. 297-423.250.

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Levine, Daniel M.; Parker, Thomas S.; and Rubin, Albert L., to Rogosin Institute, The. Methods useful in endotoxin prophylaxis and therapy. 5,344,822, Cl. 514-13.000.

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Levis, Curt A., to Ohio State University Research Foundation, The. Continuous-wave reflection transmissometer with target discrimination using modulated targets. 5,345,243, Cl. 342-173.000.

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Lewis, Charles W.: *See—*
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,345,391, Cl. 364-474.240.

Lewis, Eric H.: *See—*
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Lex, Joseph A.: *See—*
O'Dell, Robin D.; Lex, Joseph A.; and Simon, Alice M., 5,344,704, Cl. 428-323.000.

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Gebele, Thomas, 5,345,207, Cl. 335-298.000.

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Li, Jinglin: *See—*
Reitz, David B.; and Li, Jinglin, 5,344,991, Cl. 568-34.000.

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Etter, Marcel, 5,345,169, Cl. 324-117.00R.

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Liao, Tsun-Chi, to Hwa Shin Musical Instrument Co., Ltd. Beater amplitude adjustment device for the base drum pedal mechanism of a base drum. 5,343,792, Cl. 84-422.100.

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Wilcox, Reed N.; George, Richard L.; Thiess, William K.; Loftus, John T., Jr.; O'Meara, Timothy F.; and Lichfield, William H., 5,344,322, Cl. 434-84.000.

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Lim, Mu-Ill: *See—*
Chan, Alexander; Pan, Yuh-Guo; Lim, Mu-Ill; and Demarco, Richard, 5,344,463, Cl. 8-408.000.

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Solheim, John A.; and Lim, Nip T., 5,343,566, Cl. 2-169.000.

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Lin, Cheng-I; and Pirio, Marcel, to Syntex (U.S.A.) Inc. Assay method for the determination of lithium with novel substituted crown dyes. 5,344,782, Cl. 436-79.000.

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Basil, John D.; and Lin, Chia-Cheng, 5,344,712, Cl. 428-412.000.

Lin, Ching-Tang: *See—*
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Lin, Wen-Fa: *See—*
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Lindlar, Horst-Dieter: *See—*
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Lindner, Christian: *See—*
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Lingle, Philip J.: *See—*
Hartig, Klaus W.; and Lingle, Philip J., 5,344,718, Cl. 428-623.000.

Liping, Wang. Apparatus for radioactive treatment inside the human body and the method using the same. 5,344,383, Cl. 600-3.000.

Lippert, Irving S., to Polaroid Corporation. Film cassette dark slide incorporating a projection for restraining impact-generated movement. 5,345,289, Cl. 354-283.000.

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Lippmann, Raymond; Nelson, James E.; Schnars, Michael J.; Chintyan, James R.; and Hansen, Mark C., to Delco Electronics Corporation. Gauge glider. 5,345,398, Cl. 364-509.000.

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Lang, Gary D., 5,343,715, Cl. 62-381.000.

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Favre, Bernard, 5,344,037, Cl. 220-264.000.

Lisak, Stephen P.: *See—*
Rabenau, Richard; Lisak, Stephen P.; and Kehne, Terry B., 5,344,292, Cl. 417-413.00R.

Liss, Michael D.: *See—*
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Litchfield, Paul E.: *See—*
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Swensen, Robert G.; and Kowalik, Joseph W., 5,345,210, Cl. 337-163.000.

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Pinkerton, Joseph F.; Clifton, David B.; and Little, Scott R., 5,345,128, Cl. 310-90.500.

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Belt, Roger F.; and Ings, John B., 5,344,720, Cl. 428-692.000.
Huddle, James R., 5,345,241, Cl. 342-63.000.

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Buck, Keith E.; Farrar, David J.; Harvey, Robert J.; Litwak, Philip; and Rueff, John R., 5,344,385, Cl. 600-16.000.

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Liu, John Y.: *See—*
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Liu, Michael S.: *See—*
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Liu, Victor: *See—*
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Liu, Yumin: *See—*
Schwartz, Jeffrey; and Liu, Yumin, 5,345,031, Cl. 588-206.000.

Liu, Yunzhao. Safe driver seat unit in a motor vehicle. 5,344,204, Cl. 296-68.100.

Loar, Donald F.; and Verle, Patrick A., to AlliedSignal Inc. Polymeric powder coating compositions comprising low molecular weight copolymer or terpolymer salts of α-olefins and α,β-ethylenically unsaturated carboxylic acids. 5,344,883, Cl. 525-170.000.

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Loeffler, Mark A.: *See—*
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Wilcox, Reed N.; George, Richard L.; Thiess, William K.; Loftus, John T., Jr.; O'Meara, Timothy F.; and Lichfield, William H., 5,344,322, Cl. 434-84.000.

Logan, David J.; and Rich, Leonard G., to Gerber Scientific Products, Inc. Sign making web with tack killing overcoat removable by washing and related method. 5,344,680, Cl. 428-40.000.

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Cetinkaya, Ismail B.; and Lomas, David A., 5,343,939, Cl. 165-104.180.

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Beatenbough, Paul K.; Meekins, Kris J.; and Stohl, Clark E., 5,343,936, Cl. 165-41.000.

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Warm, Aleksander; and Laffan, David, 5,344,963, Cl. 560-130.000.

Lookingbill, Leonard L. Device for preventing horse wind sucking. 5,343,829, Cl. 119-821.000.

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Roberts, Gregory A.; Voelz, Lawrence D.; and Gardemal, Robert C., Jr., 5,345,242, Cl. 342-159.000.

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Madrange, Annie; and Millequant, Jean Marie, 5,344,464, Cl. 8-410.000.

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Finnigan, Peter M.; Lorensen, William E.; and Hathaway, Alan F., 5,345,490, Cl. 378-4.000.

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Bien, Alfred A.; and Loughlin, Jerry F., Jr., 5,344,208, Cl. 296-187.000.

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Simmons, Jeffrey J.; and Love, W. John, 5,345,171, Cl. 324-166.000.

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Rostoker, Michael D.; Pasch, Nicholas F.; and Zelayeta, Joe, 5,345,310, Cl. 356-401.000

Lu Goo Co., Ltd.: *See*—
Chen, Liu, 5,343,588, Cl. 15-256.500.

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Tam, Jimmy W. S.; Lanerd, Lawrence L.; Lubenow, Albert W.; and McCutcheon, Tera D., 5,344,120, Cl. 251-214.000.

Luber, Joachim; Muller, Werner; Pelzer, Martin; and Reiss, Anette, to Carl-Zeiss-Stiftung. Optical guide system for spatially positioning a surgical microscope. 5,345,087, Cl. 250-561.000.

Lubocki, David J.: *See*—
Gallant, Stuart L.; Caron, Paul R.; Palmer, Walter E.; and Lubocki, David J., 5,343,870, Cl. 128-711.000.

Lubowitz, Hyman R.; and Sheppard, Clyde H., to Boeing Company, The. Polyimide oligomers and blends. 5,344,894, Cl. 525-422.000.

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Hayden, Al P.; Hayden, Patrick L.; and Miller, Chuck, 5,344,044, Cl. 222-1.000.
Huang, Nai Z.; Adams, Paul E.; Daly, Daniel T.; Jolley, Scott T.; Koch, Frederick W.; Kolp, Christopher J.; Stoldt, Stephen H.; Walsh, Reed H.; and Denis, Richard A., 5,344,467, Cl. 44-358.000.
Scharf, Curtis R., 5,345,024, Cl. 585-532.000.
Schnur, Eric R.; and Westfall, David L., 5,344,967, Cl. 562-94.000.

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Varzescu, Victor, 5,343,987, Cl. 188-79.630.

Lucas, Philip J.: *See*—
Shearer, Gene M.; Gress, Ronald E.; Clerici, Mario; Lucas, Philip J.; and Via, Charles S., 5,344,755, Cl. 435-5.000.

Lucassen, Guenter: *See*—
Pinto, Akiva; Lucassen, Guenter; and Scholbrock, Manfred, 5,343,597, Cl. 19-205.000.

Luckeneder, Walter: *See*—
Crosby, Kennith D.; Tuten, William J.; and Luckeneder, Walter, 5,344,042, Cl. 221-2.000.

Luechinger, Paul; and Fringeli, Eduard, to Mettler-Toledo AG. Weighing scale having a removable top wall. 5,345,043, Cl. 177-180.000.

Lumb, Douglas: *See*—
Rock, Moshe; and Lumb, Douglas, 5,344,698, Cl. 428-253.000.

Luna, Antonio X.: *See*—
Dutton, Dwight C., Jr.; Luna, Antonio X.; and Stack, Charles P., 5,344,717, Cl. 428-598.000.

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Wiener, Scott A.; and Deluhery, James G., 5,343,863, Cl. 128-660.010.

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Song, Won R.; Lundberg, Robert D.; Gutierrez, Antonio; and Kleist, Robert A., 5,345,002, Cl. 568-793.000.

Lupin, Alan J. Cochlear implant. 5,344,387, Cl. 600-25.000.

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Kovar, Robert F.; Haghighat, R. Ross; and Lusignea, Richard W., 5,344,703, Cl. 428-312.600.

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Toral, Jose; Lutz, Gottfried; Thiele, Hartmut; Liepold, August; and Brandstetter, Hermann, 5,344,014, Cl. 206-394.000.

Luyckx, Johan, to Volvo Car Sint-Truiden, Naamloze vennootschap. Transmission for motor vehicles. 5,344,370, Cl. 475-319.000.

Lyczek, Edmund K. Controllable aquatic toy with oscillating and steerable tail. 5,344,357, Cl. 446-154.000.

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Allen, L. Scott; Leland, Frank P.; Lyle, W. D., Jr.; and Stromswold, David C., 5,345,077, Cl. 250-264.000.

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Hu, Paul Y.; Lyman, David R.; and Walston, D. Kenneth, 5,343,989, Cl. 191-12.00R.

Lynn, Kerry E.; Zweig, Jonathan M.; and Mincher, Richard W., to Apple Computer, Inc. Method and apparatus for variable-overhead cached encryption. 5,345,508, Cl. 380-46.000.

Lynn, William R.; and Parent, Wilfred P. Method of recycling media for use in pressurized device. 5,344,472, Cl. 51-293.000.

Lyon, John J.: *See*—
Yee, Eugene M.; Sutherland, Beverly E.; Lyon, John J.; Spits, Tiemen T.; and Filia, Richard M., 5,345,262, Cl. 348-177.000.

Lyons, Christopher S.: *See*—
Gagnon, David R.; Coleman, Patrick L.; Drtina, Gary J.; Lyons, Christopher S.; Milbrath, Dean S.; Rasmussen, Jerald K.; and Stahl, Julie B., 5,344,701, Cl. 428-304.400.

Lyons, James E.; and Ellis, Paul E., Jr., to Sun Company, Inc. (R&M). Decomposition of organic hydroperoxides with nitrated porphyrin complexes. 5,345,008, Cl. 568-909.800.

Lyons, James E.; Durante, Vincent A.; and Walker, Darrell W., to Sun Company, Inc. (R&M). Chromia on metal oxide for the oxidation of alkane to alcohol. 5,345,010, Cl. 568-910.000.

Lyons, James E.: *See*—
Durante, Vincent A.; Lyons, James E.; Walker, Darrell W.; and Marcus, Bonita K., 5,345,011, Cl. 568-910.000.

Ma, Qiyuan; and Hardy, Walter N. Superconductor logic and switching circuits. 5,345,114, Cl. 307-476.000.

Ma, Suk B.: *See*—
Shin, Jong Y.; and Ma, Suk B., 5,344,796, Cl. 437-233.000.

Maberly, Timothy R.: *See*—
Casci, John L.; Lake, Ivan J. S.; and Maberly, Timothy R., 5,345,021, Cl. 585-467.000.

MacChesney, John B.: *See*—
Bhandarkar, Suhas D.; Chandan, Harish C.; Johnson, David W., Jr.; and MacChesney, John B., 5,344,475, Cl. 65-395.000.

MacCoss, Malcolm: *See*—
Mills, Sander G.; Budhu, Richard J.; Dorn, Conrad P.; Greenlee, William J.; MacCoss, Malcolm; and Wu, Mu T., 5,344,830, Cl. 514-235.800.

MacDonald, Florence C. Vinyl or plastic dispensing tube for pastes, creams, or gels. 5,344,049, Cl. 222-107.000.

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Nohr, Ronald S.; and MacDonald, John G., 5,344,862, Cl. 524-269.000.

MacDonald, Robert D. Method of forming an identification band. 5,343,608, Cl. 29-450.000.

MacGregor, Duncan D.: *See*—
Pierce, Michael E.; Horn, John A.; and MacGregor, Duncan D., 5,345,367, Cl. 362-32.000.

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Kolkman, Albert, 5,344,359, Cl. 452-174.000.

Mack, William C.; Tanzosh, James M.; and Topolski, Mark J., to Babcock & Wilcox Company, The. Surface hardened 300 series stainless steel. 5,344,502, Cl. 148-236.000.

Macomber, Steven H., to Hughes Aircraft Company. Curved grating surface emitting distributed feedback semiconductor laser. 5,345,466, Cl. 372-96.000.

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Macy, David F., to New SD, Inc. Single ended tuning fork inertial sensor and method. 5,343,749, Cl. 73-505.000.

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Maeda, Mitsuru: *See*—
Katayama, Akihiro; Maeda, Mitsuru; Hirabayashi, Yasuji; and Yoshida, Tadashi, 5,345,517, Cl. 382-54.000.

Maeda, Nagayoshi: *See*—
Yamamoto, Kaoru; Maeda, Nagayoshi; Kamiya, Makoto; Murao, Toshiro; Reuschel, Gerhard; and Fleischer, Dietrich, 5,344,911, Cl. 528-241.000.

Maeda, Satoshi: *See*—
Hotta, Yasunari; Maeda, Satoshi; Yamada, Yozo; Tanaka, Koji; Ono, Hiroshi; and Uno, Toshio, 5,344,673, Cl. 427-195.000.

Maeda, Takeshi: *See*—
Ide, Hiroshi; and Maeda, Takeshi, 5,345,434, Cl. 369-124.000.

Maejima, Tetsuo: *See*—
Moriya, Nobuo; Shimoda, Keiji; Asaoka, Sachio; Kameda, Takao; Sakashita, Kouji; Maejima, Tetsuo; Yasui, Makoto; Nishijima, Hiroaki; Onda, Nobuhiro; and Kouzaki, Takeshi, 5,345,000, Cl. 568-722.000.

Maenaka, Akihiro: *See*—
Murata, Haruhiko; Mori, Yukio; Maenaka, Akihiro; Takuma, Masao; Kawakami, Kiyotada; Asaeda, Toru; Okino, Toshiyuki; Iinuma, Toshiya; Kobayashi, Akio; and Haruki, Toshinobu, 5,345,264, Cl. 348-235.000.

Maerkedahl, Henning. Method and device for successively feeding of components to a mounting apparatus. 5,343,997, Cl. 198-392.000.

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Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, 5,345,299, Cl. 355-274.000.

Maezawa, Hiroshi; Matsumoto, Junichi; Aiura, Hideki; and Asahi, Satoshi, to Idemitsu Kosan Company Limited. Process for producing a norbornene polymer. 5,344,900, Cl. 526-160.000.

Magee, Phillip D.: *See*—
Meisenburg, Gary L.; and Magee, Phillip D., 5,344,349, Cl. 440-80.000.

Magnet-Motor Gesellschaft fur Magnetmotorischetechnik mbH: *See*—
Heidelberg, Gotz; Grundl, Andreas; and Ehrhart, Peter, 5,343,971, Cl. 180-65.400.

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Pinkerton, Joseph F.; Clifton, David B.; and Little, Scott R., 5,345,128, Cl. 310-90.500.

Magnusson, Emanuela F. Picture frame assembly. 5,343,642, Cl. 40-152.100.

Magowan, John W.; Pawlaczyk, Richard J.; Pighetti, Annette M.; and Schwarz, Richard A., Jr., to United Technologies Corporation. Turbine vane having dedicated inner platform cooling. 5,344,283, Cl. 415-115.000.

Magrath Company, The: *See*—
Springer, Marlin G.; Magrath, Joseph M.; and Wilson, Kenneth D., 5,344,075, Cl. 239-70.000.

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Maher, Joseph A.; Vowles, E. John; Napoli, Joseph D.; Zafiropoulo, Arthur W.; and Miller, Mark W., to General Signal Corporation. Multiple-processing and contamination-free plasma etching system. 5,344,542, Cl. 204-298.150.

Mahoney, Debra C.: *See*—
Chopra, Kiran; Geminden, David C.; and Mahoney, Debra C., 5,345,216, Cl. 340-146.200.

Mahonski, Christopher E.; and Fleming, Raymond T., to GTE Products Corporation. Lamp with internally pressed fuse. 5,345,144, Cl. 315-71.000.

Maier, Reinhard; and Roethlingshoefer, Walter, to Siemens Aktiengesellschaft. Method and arrangement for detecting short-circuits in circuit branches of electrical power system networks. 5,345,180, Cl. 324-537.000.

Maikuma, Yoshimata: *See*—
Watanabe, Etsuro; Ichikawa, Katsumi; and Maikuma, Yoshimata, 5,344,295, Cl. 425-29.000.

Mainz, Bernhard, to Merck Patent Gesellschaft mit beschrankter Haftung. Platelet-like pigments. 5,344,486, Cl. 106-415.000.

Maire, Daniel; Moreau, Georges; and Archer, Jacques, to Framatome. Method and device for non-destructive examination of a wall of a tank containing a radioactive liquid. 5,345,478, Cl. 376-249.000.

Makita Corporation: *See*—
Ichikawa, Kiyotaka, 5,343,961, Cl. 173-48.000.

Makita, Kayo: *See*—
Chiba, Shunichi; Nakayama, Nobuhiro; Asahina, Yasuo; Okamoto, Yoshisa; and Makita, Kayo, 5,344,732, Cl. 430-42.000.

Maldanis, Algert J.; Koch, Walter L.; Giegerich, David K.; and Sloss, Andris C., to C-Power Companies, Inc. Universal pull-out drawer for vending machine. 5,344,046, Cl. 222-2.000.

Malden Mills Industries, Inc.: *See*—
Rock, Moshe; and Lumb, Douglas, 5,344,698, Cl. 428-253.000.

Maliszewski, Robert L.: *See*—
Haddad, Charles J.; and Maliszewski, Robert L., 5,343,666, Cl. 52-648.100.

Malle, Gerard: *See*—
Dedieu, Michel; Burgaud, Herve; Lapoirie, Eric; Gurfein, Veronique; and Malle, Gerard, 5,344,971, Cl. 562-512.000.

Mallinckrodt Medical, Inc.: *See*—
Deutsch, Edward A.; Deutsch, Karen F.; Cacheris, William P.; Ralston, William H.; White, David H.; Nosco, Dennis L.; Wolfangel, Robert G.; Wilking, Janet B.; Meeh, Linda; and Woulfe, Steven R., 5,344,640, Cl. 424-9.000.

Dickerhoff, Scott D.; Kappel, Thomas F.; and Virag, Robert A., 5,343,579, Cl. 5-421.000.

Maltais, Jo-Ann B.: *See*—
Hall, Robert T., II; Maltais, Jo-Ann B.; and Cosentino, Louis C., 5,344,652, Cl. 424-405.000.

Mameda, Kenji: *See*—
Nomura, Tatsuya; Yamauchi, Yumi; Mameda, Kenji; Yoshida, Shigeru; and Kubo, Noboru, 5,345,548, Cl. 395-150.000

Man Roland Druckmaschinen AG: *See*—
Hackelborger, Gerhard; and Sondergeld, Werner, 5,343,807, Cl. 101-415.100.

Manabe, Atsutaka; Kakimoto, Shigefumi; and Wada, Yasushiro, to Siemens Aktiengesellschaft; and Siemens-Asahi Medical Technologies Ltd. Method for setting the current through shim coils and gradient coils in a nuclear magnetic resonance apparatus. 5,345,178, Cl. 324-320.000.

Manasse, Mark S., to Digital Equipment Corporation. Competitive snoopy caching for large-scale multiprocessors. 5,345,578, Cl. 395-425.000.

Manchester R&D Limited Partnership: *See*—
Fergason, James L., 5,345,322, Cl. 359-53.000.

Manera, David A., to Comar Inc. Child resistant closure. 5,344,035, Cl. 215-219.000.

Mannesmann Aktiengesellschaft: *See*—
Reth, Erich, 5,343,726, Cl. 72-225.000.

Mannesmann Kienlze GmbH: *See*—
Plankenhorn, Horst, 5,343,602, Cl. 29-25.410.

Mannheimer, Alfred: *See*—
Fitch, Mark D.; Eckhardt, Gerard; Anderson, Wendy A.; Anelich, Mario A.; Frake. Barry N.; Lang, Kevin W.; and Mannheimer, Alfred, 5,344,664, Cl. 426-631.000.

Mannoh, Masaya; and Ohnaka, Kiyoshi, to Matsushita Electric Industrial Co., Ltd. Semiconductor laser with improved oscillation wavelength reproducibility. 5,345,463, Cl. 372-45.000.

Manova Products Inc.: *See*—
Mayne, Richard C.; Gray, Laurence; and Whyte, Richard, 5,344,115, Cl. 248-514.000.

Mansour, Yishay: *See*—
Herzberg, Amir; Krawczyk, Hugo M.; Kutten, Shay; and Mansour, Yishay, 5,345,507, Cl. 380-28.000.

Mantani, Rokurota; Kaneko, Yasutoshi; and Tamaki, Takashi, to Yamaha Corporation. Circuit for a detecting state of conduction of current through a solenoid. 5,345,181, Cl. 324-546.000.

Manzer, Leo E., to Du Pont de Nemours, E. I., and Company. Manufacture of 1,1,1,2-tetrafluoroethane. 5,345,016, Cl. 570-168.000

Manzke, Walter R., to Cubic Defense Systems, Inc. Shoot and kill indicator. 5,344,319, Cl. 434-14.000.

Mar, Kevin: *See*—
Adat, Riyaz; Mar, Kevin; Pirie, Craig; and Poupore, Tim, 5,344,211, Cl. 297-230 140.

Marchevsky, J. Gabriel: *See*—
Kitaevich, Yuli; Hemasilpin, Nat; Marchevsky, J. Gabriel; Bissler, John J.; Benzing, George, III; and McEnery, Paul T., 5,344,568, Cl. 210-645.000.

Marcoulier, Brian: *See*—
Colella, Michael; and Marcoulier, Brian, 5,344,878, Cl. 525-84.000.

Marcus, Bonita K.: *See*—
Durante, Vincent A.; Lyons, James E.; Walker, Darrell W.; and Marcus, Bonita K., 5,345,011, Cl. 568-910.000.

Marden, Shirley: *See*—
Coates, David; Marden, Shirley; Smith, Graham; Finkenzeller, Ulrich; Reiffenrath, Volker; Hittich, Reinhard; and Wilhelm, Stefan, 5,344,587, Cl. 252-299.660.

Marhold, Albrecht: *See*—
Franckowiak, Gerhard; Marhold, Albrecht; Bechem, Martin; Gross, Rainer; Kayser, Michael; Schramm, Matthias; and Thomas, Gunther, 5,344,944, Cl. 549-436.000.

Marion, John L., to Combustion Engineering, Inc. Advanced overfire air system for NO_x control. 5,343,820, Cl. 110-264.000.

Market, Robert V.: *See*—
Roof, Glenn L.; Kremer, Lawrence N.; and Market, Robert V., 5,344,555, Cl. 208-189.000.

Marks, Trevor S.; and Maule, Andrew, to Public Health Laboratory Service Board, The. Use of metal chelate complexes in dehalogenation. 5,345,032, Cl. 588-207.000.

Marolleau, Isabelle; and Girardier, Jean-Denis, to Sollac. Process for electroplating a metal strip. 5,344,552, Cl. 205-138.000.

Maron, William A.: *See*—
Hamala, Annette M.; Maron, William A.; and Reyburn, Rhoda A., 5,345,586, Cl. 395-650.000.

Marple, Virgil A.; and Miller, Nicholas C., to MSP Corporation. Low particle loss cascade impactor. 5,343,767, Cl. 73-863.220.

Marquette Electronics, Inc.: *See*—
Brown, James C., 5,345,552, Cl. 395-157.000.

Marshall, James R.: *See*—
Samour, Carlos M.; Daskalakis, Stefanos; and Marshall, James R., 5,344,941, Cl. 549-57.000.

Marston, Paul C., to British Aerospace Space Systems Limited. Multi purpose digital signal regenerative processing apparatus. 5,345,439, Cl. 370-18.000.

Martin GmbH fur Umwelt-und Energietechnik: *See*—
Martin, Johannes J. E., 5,344,628, Cl. 423-235.000.

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Martin, John S.; Ryan, Thomas A.; and Spooncer, Rachel A., to Imperial Chemical Industries PLC. Preparation of bis(fluoromethyl)ether and difluoromethane. 5,344,998, Cl. 568-683.000.

Martin Marietta Corporation: *See*—
Akins, Rickey D.; Walvoord, John; and Foreman, James E., 5,344,729, Cl. 430-5.000.
DeAngelis, Dominick A., 5,344,506, Cl. 148-402.000.

Martir, Roque V.: *See*—
Sun, Hsiang-ning; Cikut, John J.; Martir, Roque V.; and Wristers, Jos P., 5,345,030, Cl. 585-2.000.

Marumo, Kuniomi: *See*—
Sakai, Yasuyuki; Suzuki, Noriyuki; Kudo, Tetsuo; Marumo, Kuniomi; Aizawa, Toshiyuki; Imamura, Kunio; Sugita, Shuichi; and Kanbayashi, Kazuo, 5,344,655, Cl. 424-443.000.

Maruno, Masao: *See*—
Koda, Akihide; Waragai, Koji; Ono, Yutaka; Ozawa, Hideyuki; Kawamura, Hideki; Maruno, Masao; and Wakamatsu, Takeshi, 5,344,845, Cl. 514-614.000.

Masahiro, Takegawa: *See*—
Miyazono, Tadafumi; Tabuchi, Koji; and Masahiro, Takegawa, 5,344,890, Cl. 525-326.500.

Masaki, Keiichi: *See*—
Sono, Michio; Kubota, Akihiro; Kasai, Junichi; Yoshimoto, Masanori; and Masaki, Keiichi, 5,343,615, Cl. 29-827.000.

Masaki, Ryoso; Takamoto, Yuusuke; Obara, Sanshiro; Yamamura, Hirohisa; and Yamada, Hiroyuki, to Hitachi, Ltd.; and Hitachi Automotive Engineering Co., Ltd. Control system for electric vehicle. 5,345,155, Cl. 318-138.000.

Masarati, Enrico: *See*—
Cipolli, Roberto; Masarati, Enrico; Oriani, Roberto; Pirozzi, Mario; and Nucida, Gilberto, 5,344,931, Cl. 544-195.000.

Masino, Albert P.: *See*—
Menon, Raghu; Masino, Albert P.; and Reinking, Mark K., 5,344,803, Cl. 502-116.000.

Masonite Corporation: *See*—
Walsh, John P., 5,344,484, Cl. 106-201.000.

MasPar Computer Corporation: *See*—
Zapisek, John, 5,345,556, Cl. 395-200.000.

Massachusetts Institute of Technology: *See*—
Herndon, Terry C.; and Raffel, Jack I., 5,345,365, Cl. 361-760.000.
Sharpless, Karl B.; and Klunder, Janice M, 5,344,947, Cl. 549-556.000.
Swanson, Gary J., 5,344,447, Cl. 623-6.000.

Master Industries, Inc.: *See*—
Seifert, Arthur P., 5,344,249, Cl. 403-3.000.

Masui, Koji: *See*—
Tanji, Masayuki; Miyazaki, Yoshihiro; Fukumaru, Hiroaki; Yamaguchi, Syoji; Masui, Koji; and Ogawa, Hisao, 5,345,566, Cl. 395-325.000.

Masumoto, Tsuyoshi; Inoue, Akihisa; Kita, Kazuhiko; and Yamaguchi, Hitoshi, to Masumoto, Tsuyoshi; Yoshida Kogyo KK; and Teikoku Piston Ring Co., Ltd. Wear-resistant aluminum alloy and method for working thereof. 5,344,507, Cl. 148-437.000.

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Masuzawa Chemical Sales Co., Ltd.: *See*—
Miyakawa, Naohisa; Masuzawa, Minoru; and Kato, Katsuhisa, 5,343,655, Cl. 49-441.000.

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Miyakawa, Naohisa; Masuzawa, Minoru; and Kato, Katsuhisa, 5,343,655, Cl. 49-441.000.

Matheson, Stephen J.: *See*—
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Murakata, Chikara; Takiguchi, Toshimitsu; Katsumata, Shigeo; Mihara, Akira; Takahashi, Keiichi; Saito, Hiromitsu; Akinaga, Shiro; Okabe, Masami; and Saito, Yutaka, 5,344,926, Cl. 540-545.000.

Miike, Teruhisa, to Alps Electric Co., Ltd. Push-button switch. 5,345,051, Cl. 200-345.000.

Miki, Masatoshi: *See—*
Suzuki, Kazuhiro; Miki, Masatoshi; Kuwabara, Toshio; and Matsubara, Morihiko, 5,345,157, Cl. 318-280.000.

Miki, Takahiro: *See—*
Kouno, Hiroyuki; Miki, Takahiro; and Kumamoto, Toshio, 5,345,237, Cl. 341-156.000.

Mikohn, Inc.: *See—*
Canon, Joseph W., 5,344,144, Cl. 273-138.00A.

Mikoshiba, Hisashi; Yamakawa, Katsuyoshi; Sato, Kozo; and Matsuoka, Koushin, to Fuji Photo Film Co., Ltd. Pyrrole ring-or condensed pyrrole ring-containing azomethine dye. 5,344,933, Cl. 544-282.000.

Mikron Gesellschaft fur Integrierte Mikroelectronik mbH: *See—*
Koo, Roland; and Holweg, Gerald, 5,345,231, Cl. 340-870.310.

Miksic, Boris A.; Foley, Joseph M.; and Tzou, Tsi-Zong, to Cortec Corporation. Vapor phase corrosion inhibitor-desiccant material. 5,344,589, Cl. 252-392.000.

Milbrath, Dean S.: *See—*
Gagnon, David R.; Coleman, Patrick L.; Drtina, Gary J.; Lyons, Christopher S.; Milbrath, Dean S.; Rasmussen, Jerald K.; and Stahl, Julie B., 5,344,701, Cl. 428-304.400.

Miles, Mike: *See—*
Nath, Robert H.; Wiley, John; Erickson, Robert; Hutchison, Carl R.; and Miles, Mike, 5,344,229, Cl. 366-25.000.

Millequant, Jean Marie: *See—*
Madrange, Annie; and Millequant, Jean Marie, 5,344,464, Cl. 8-410.000.

Miller, Alex M.: *See—*
Boyer, Steven K.; Casey, Richard G.; Miller, Alex M.; Oudot, Bernadette; and Zilles, Karl S., 5,345,516, Cl. 382-10.000.

Miller, Charles J. Golf putter. 5,344,149, Cl. 273-167.00B.

Miller, Charles M. Computer color monitor testing method and portable testing apparatus. 5,345,263, Cl. 348-182.000.

Miller, Chuck: *See—*
Hayden, Al P.; Hayden, Patrick L.; and Miller, Chuck, 5,344,044, Cl. 222-1.000.

Miller, David J.: *See—*
Bratlie, Kenneth A.; and Miller, David J., 5,344,271, Cl. 414-385.000.

Miller, David K.: *See—*
Cox, Patricia A.; and Miller, David K., 5,344,023, Cl. 206-508.000.

Miller, J. Clayton; and Jasper, Thomas, to Lockmasters, Inc. Combination lock. 5,343,723, Cl. 70-303.00A.

Miller, Mark D.: *See—*
Fritz, Alan H.; Cedoz, Roger T.; and Miller, Mark D., 5,344,078, Cl. 239-296.000.

Miller, Mark W.: *See—*
Maher, Joseph A.; Vowles, E. John; Napoli, Joseph D.; Zafiropoulo, Arthur W.; and Miller, Mark W., 5,344,542, Cl. 204-298.150.

Miller, Nicholas C.: *See—*
Marple, Virgil A.; and Miller, Nicholas C., 5,343,767, Cl. 73-863.220.

Miller, Thomas G.: *See—*
Fontenot, Mark G.; and Miller, Thomas G., 5,344,436, Cl. 607-104.000.

Miller, William H.: *See—*
Palma, Rodolfo; and Miller, William H., 5,344,443, Cl. 623-3.000.

Mills, Sander G.; Budhu, Richard J.; Dorn, Conrad P.; Greenlee, William J.; MacCoss, Malcolm; and Wu, Mu T., to Merck & Co., Inc. N,N-diacylpiperazine tachykinin antagonists. 5,344,830, Cl. 514-235.800.

Milsco Manufacturing Company: *See—*
Dahlbacka, Bruce B., 5,344,215, Cl. 297-375.000.

Mims, Mark W.; and Zweng, Frederick J., to Chrysler Corporation. Vehicle seat belt anchor arrangement. 5,344,188, Cl. 280-808.000.

Min, Mao C. Grease pump. 5,343,982, Cl. 184-28.000.

Minato, Mitsuaki: *See—*
Obuchi, Kazuto; Oya, Satoshi; Minato, Mitsuaki; Uehara, Akira; Fujisawa, Kazutoshi; and Takao, Kazuhisa, 5,344,536, Cl. 204-192.320.

Mincher, Richard W.: *See—*
Lynn, Kerry E.; Zweig, Jonathan M.; and Mincher, Richard W., 5,345,508, Cl. 380-46.000.

Mindscope Incorporated: *See—*
Bittman, Barry B.; and Cram, Jeffrey R., 5,343,871, Cl. 128-732.000.

Minet, H. Kent: *See—*
Wertz, Ronald D.; Minet, H. Kent; Horacek, Stephen M.; and Nickerson, Brett A., 5,345,309, Cl. 356-372.000.

Ministero Dell'Universita' E Della Ricerca Scientifica E Technologica: *See—*
Cipolli, Roberto; Masarati, Enrico; Oriani, Roberto; Pirozzi, Mario; and Nucida, Gilberto, 5,344,931, Cl. 544-195.000.

Minnesota Mining and Manufacturing Company: *See—*
Abler, Mary Jo, 5,344,626, Cl. 423-210.000.
Allewaert, Kathy; Coppens, Dirk; and Fieuws, Francecka, 5,344,956, Cl. 560-26.000
Biernath, Rolf W., 5,345,364, Cl. 361-749.000.
Calhoun, Clyde D.; Koskenmaki, David C.; and Mazurek, Mieczyslaw H., 5,344,681, Cl. 428-42.000.
Carlson, Robert L., 5,344,751, Cl. 430-527.000.
Gagnon, David R.; Coleman, Patrick L.; Drtina, Gary J.; Lyons, Christopher S.; Milbrath, Dean S.; Rasmussen, Jerald K.; and Stahl, Julie B., 5,344,701, Cl. 428-304.400.
Hanschen, Thomas P.; Krueger, Dennis L.; and Karp, Gregory P., 5,344,691, Cl. 428-152.000.
Olsen, Ulf N., 5,344,705, Cl. 428-323.000.
Peterson, Jeffrey S.; and Oseth, Donald L., 5,344,688, Cl. 428-102.000.
Rouser, Forrest J.; Chang, John D.; and Reeves, Mark E., 5,344,177, Cl. 280-610.000.
Teuber, Vincent P.; and Cai, Qing, 5,345,355, Cl. 242-343.100.
Yamazaki, Hideo, 5,345,039, Cl. 174-52.400.

Minntech Corporation: *See—*
Hall, Robert T., II; Maltais, Jo-Ann B.; and Cosentino, Louis C., 5,344,652, Cl. 424-405.000.

Mino, Setsuko: *See—*
Satoh, Hiroaki; Kikuchi, Haruhiko; Yamada, Kazuhiko; Fukutomi, Ruta; Suzuki, Masashi; Hagihara, Koichiro; Hayakawa, Toru; Arai, Takeo; and Mino, Setsuko, 5,344,831, Cl. 514-249.000.

Minolta Camera Kabushiki Kaisha: *See—*
Hamakawa, Wataru, 5,345,302, Cl. 355-311.000.
Hirota, Yoshihiko, 5,345,320, Cl. 358-518.000.
Ueda, Toshihiko; and Watanebe, Sanae, 5,345,338, Cl. 359-679.000.

Minowa, Toshimichi; and Ohyama, Yoshishige, to Hitachi, Ltd. Method and apparatus for controlling driving power of motor vehicle. 5,343,781, Cl. 477-107.000.

Miosek, Robert J.: *See—*
Lopez, Roger A.; Miosek, Robert J.; and Walsh, Robert, 5,344,332, Cl. 439-248.000.

Mishima, Kyoichi: *See—*
Kitahama, Koji; Kawashima, Masahiko; and Mishima, Kyoichi, 5,344,369, Cl. 474-253.000.

Mishra, Ajit K.: *See—*
Davidson, James A.; and Mishra, Ajit K., 5,344,494, Cl. 134-7.000.

Misler, Andrea: *See—*
Lang, Georg; Trummer, Georg; Sigwart, Edgar; Fraas, Werner; Misler, Andrea; and Reinert, Gerhard, 5,345,378, Cl. 364-140.000.

Missana, Adrian: *See—*
Scarlata, Steven P.; and Missana, Adrian, 5,344,160, Cl. 277-3.000.

Missbach, Martin, to Ciba-Geigy Corportion. Thiosemicarbazone derivatives. 5,344,842, Cl. 514-342.000.

Mission Pharmacal Company, Inc.: *See—*
Walsdorf, Neill B.; Crawford, Dan K.; and Nadig, Perry W., 5,344,389, Cl. 600-41.000.

Mita Industrial Co., Ltd.: *See—*
Deguchi, Hiroyuki; and Tagawa, Hirotoshi, 5,345,257, Cl. 346-145.000.
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, 5,345,299, Cl. 355-274.000.

Mitariten, Michael J.; and Scott, Norman H., to UOP. Separation process for the product streams resulting from the dehydrogenation of hydrocarbons. 5,345,025, Cl. 585-655.000.

Mitate, Takehito: *See—*
Tanaka, Hideaki; Mitate, Takehito; Kitayama, Hiroyuki; and Yamada, Kuzuo, 5,344,726, Cl. 429-209.000.

Mitchell, Henry P., Jr.: *See—*
Jantsch, Gregory R.; Shifley, James D.; Dobbertin, Michael T.; Wituszynski, Theophilus C.; Mortellaro, Larry J.; and Mitchell, Henry P., Jr., 5,344,133, Cl. 271-94.000.

Mitchell, William H.: *See—*
Molnar, Charles J.; Molnar, Judith R.; and Mitchell, William H., 5,344,470, Cl. 47-58.000.

Mito, Toshitsugu; Suarez, Leopoldo L.; Astarabadi, Shaun; and Calescibetta, Marcus G., to International Business Machines Corporation. Battery charge monitor for a personal computer. 5,345,392, Cl. 364-483.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Azekawa, Yoshifumi, 5,345,570, Cl. 395-375.000.
Fukui, Wataru, 5,343,842, Cl. 123-414.000.
Fukui, Wataru; Iwata, Toshio; and Ohsawa, Toshio, 5,343,844, Cl. 123-481.000.
Ishii, Toshiaki; Mizuno, Masamoto; and Sugita, Kazuhiko, 5,345,047, Cl. 187-112.000.
Kouno, Hiroyuki; Miki, Takahiro; and Kumamoto, Toshio, 5,345,237, Cl. 341-156.000.
Niwayama, Kazuhiko, 5,345,095, Cl. 257-138.000.
Noda, Minoru, 5,344,788, Cl. 437-41.000.
Sasaki, Hajime; Morikawa, Hiroaki; Satoh, Kazuhiko; and DeGuchi, Mikio, 5,344,500, Cl. 136-258.000.
Shiratsuchi, Syuuichi, 5,345,412, Cl. 365-63.000.
Takemoto, Akira, 5,345,464, Cl. 372-46.000.
Tani, Takahiro, 5,345,401, Cl. 364-578.000.
Terashima, Tomohide, 5,344,789, Cl. 437-41.000.
Wataya, Seiji; Nishimura, Yukinobu; and Taniguchi, Nobutake, 5,343,840, Cl. 123-399.000.
Yanagi, Motonori; Ban, Cozy; and Fukumoto, Takaaki, 5,344,615, Cl. 422-170.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Fushimi, Norio; Inamasa, Kenji; and Takagawa, Makoto, 5,344,806, Cl. 585-452.000.
Isshiki, Tomiya; Kijima, Yasuhiko; and Watanabe, Takayuki, 5,344,972, Cl. 562-517.000.
Shirai, Kazushi; Takano, Toshihiko; Takeda, Norio; and Arii, Mitsuzo, 5,345,329, Cl. 359-282.000.
Urakami, Teizi, 5,344,768, Cl. 435-119.000.

Mitsubishi Gas Company, Inc.: *See—*
Ohya, Kazuyuki; and Sayama, Norio, 5,344,854, Cl. 523-149.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Kozuka, Hajime; Furuya, Youichi; Yoda, Takahiro; Kitamura, Kazuo; and Ijima, Terutsugu, 5,344,196, Cl. 285-149.000.

Mitsubishi Jidosha Kokyo Kabushiki Kaisha: *See—*
Miyajima, Kiyoshi; Oikawa, Hiroshi; Kono, Yoichiro; Kumagai, Yasuaki; Nakayama, Shinji; Nakagawa, Hiroshi; and Nakashima, Masayoshi, 5,343,702, Cl. 60-285.000.

Mitsubishi Jukogyo Kabushiki Kaisa: *See—*
Miyajima, Kiyoshi; Oikawa, Hiroshi; Kono, Yoichiro; Kumagai, Yasuaki; Nakayama, Shinji; Nakagawa, Hiroshi; and Nakashima, Masayoshi, 5,343,702, Cl. 60-285.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Fujii, Masumi; Suda, Taiichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Touru; and Mitsuoka, Shigeaki, 5,344,627, Cl. 423-220.000.
Itoh, Takahide; Hirano, Takahisa; Shigeoka, Tetsuo; and Tanigaki, Ryuhei, 5,344,294, Cl. 418-55.200.
Sakatani, Yoshiaki; Yamamoto, Tetsuya; Nishiyama, Shigeru; and Jin, Yoshiharu, 5,343,897, Cl. 139-384.00R.
Seki, Yukuharu; and Ando, Makoto, 5,344,520, Cl. 156-472.000.

Mitsubishi Oil Co., Ltd.: *See—*
Tachiki, Kiyohiro, 5,344,469, Cl. 44-451.000.

Mitsubishi Paper Mills Limited: *See—*
Iwata, Tamotu; and Sumi, Seiichi, 5,344,741, Cl. 430-265.000.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Iwane, Hiroshi; Sugawara, Takahiro; and Shirasaki, Miwa, 5,344,969, Cl. 562-486.000.
Suzuki, Shinichi; Shigematsu, Yasuyuki; Kojima, Takashi; Kizaki, Hiroe; and Itsubo, akira, 5,344,733, Cl. 430-58.000.

Mitsubishi Rayon Co., Ltd.: *See—*
Kawabata, Nariyoshi; Kohsaka, Mutsumi; and Kurooka, Teruya, 5,344,891, Cl. 525-327.100.

Mitsui Toatsu Chemicals, Inc.: *See—*
Mizukuki, Tadahiko; Koike, Tadashi; Kitagawa, Nobuhisa; and Hirose, Sumio, 5,344,682, Cl. 428-64.000.
Watanabe, Hiroyoshi; and Hayakawa, Fumie, 5,345,003, Cl. 204-157.900.

Mitsuoka, Shigeaki: *See—*
Fujii, Masumi; Suda, Taiichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Touru; and Mitsuoka, Shigeaki, 5,344,627, Cl. 423-220.000.

Miura, Hiroshi: *See—*
Suzuki, Kaoru; Ando, Tadahiro; Naka, Hiroshi; Sawada, Mitsutoshi; Ohata, Tomonori; Miura, Hiroshi; Nakabayashi, Masayoshi; and Ando, Eiiti, 5,344,130, Cl. 270-53.000.

Miura, Shuuichi; Kurosawa, Kenichi; Nakamikawa, Tetsuaki; and Hirose, Kenji. Prefetch buffer and information processing system using the same. 5,345,560, Cl. 395-250.000.

Miura, Tohru; and Tsuyuguchi, Hiroshi, to Teac Corp. Power saving system for file protect and disk capacity sensors in rotating disk data storage apparatus. 5,345,343, Cl. 360-60.000.

Miyadera, Makoto: *See—*
Takagi, Ryoji; Miyadera, Makoto; Yamamoto, Takashi; and Yoshida, Ryuhei, 5,345,136, Cl. 310-320.000.

Miyahara, Yuji: *See—*
Tsukada, Keiji; Miyahara, Yuji; Shibata, Yasuhisa; and Watanabe, Yoshio, 5,344,545, Cl. 204-415.000.

Miyajima, Kiyoshi; Oikawa, Hiroshi; Kono, Yoichiro; Kumagai, Yasuaki; Nakayama, Shinji; Nakagawa, Hiroshi; and Nakashima, Masayoshi, to Mitsubishi Jidosha Kokyo Kabushiki Kaisha; and Mitsubishi Jukogyo Kabushiki Kaisa. Zeolite converter for diesel engine. 5,343,702, Cl. 60-285.000.

Miyakawa, Naohisa; Masuzawa, Minoru; and Kato, Katsuhisa, to Tokiwa Chemical Industries Co., Ltd.; Masuzawa Chemical Sales Co., Ltd.; and System Technical Co., Ltd. Weather strip for the window glass of an automobile. 5,343,655, Cl. 49-441.000.

Miyamoto, Mitsuo: *See—*
Daikoku, Takahiro; Kawasaki, Nobuo; Ashiwake, Noriyuki; Kawamura, Keizou; Zushi, Shizuo; Miyamoto, Mitsuo; and Morihara, Atsushi, 5,345,107, Cl. 257-717.000.

Miyamura, Makoto: *See—*
Ohno, Hiromoto; Miyamura, Makoto; Arai, Tatsuharu; Muramaki, Kazuo; and Ohi, Toshio, 5,345,015, Cl. 570-164.000.

Miyano, Soichiro, to NEC Corporation. Semiconductor accelerometer. 5,343,731, Cl. 73-1.00D.

Miyaoh, Yoshio; and Okano, Takashi, to Ishikawa Gasket Co., Ltd. Metal gasket having fluid hole sealing device with different spring constant. 5,344,165, Cl. 277-235.00B.

Miyata, Keiji: *See—*
Ohta, Mitsuaki; Koide, Tokuo; Suzuki, Takeshi; Matsuhisa, Akira; Miyata, Keiji; Ohmori, Junya; and Yanagisawa, Isao, 5,344,927, Cl. 544-31.000.

Miyata, Maki: *See—*
Hoshimi, Masakatsu; Miyata, Maki; Hiraoka, Shoji; and Niyada, Katsuyuki, 5,345,536, Cl. 395-2.520.

Miyata, Shigeo, to Kabushiki Kaisha Kaisui Kagaku Kenkyujo. Anti-microorganism agent and anti-microorganism resin or rubber composition. 5,344,636, Cl. 423-593.000.

Miyauchi, Nobuaki; and Irie, Takatoshi, to Kyocera America, Inc. Multi-layer ceramic packages. 5,345,038, Cl. 174-52.400.

Miyawaki, Shigeru: *See—*
Aoki, Shinji; Miyawaki, Shigeru; Yoshida, Koichi; and Yonekawa, Seiichi, 5,344,595, Cl. 264-26.000.

Miyawaki, Toshio: *See—*
Masuya, Hirotomo; Shimadzu, Hiroshi; Miyawaki, Toshio; and Motsenbocker, Marvin A., 5,344,928, Cl. 544-37.000.

Miyazaki, Hideyuki: *See—*
Ito, Tomio; Miyazaki, Hideyuki; Moriya, Hideyuki; and Wakabayashi, Kazuhito, 5,345,354, Cl. 360-121.000.

Miyazaki, Yoshihiro: *See—*
Tanji, Masayuki; Miyazaki, Yoshihiro; Fukumaru, Hiroaki; Yamaguchi, Syoji; Masui, Koji; and Ogawa, Hisao, 5,345,566, Cl. 395-325.000.

Miyazono, Tadafumi; Tabuchi, Koji; and Masahiro, Takegawa, to Nippon Paint Co., Ltd. Room-temperature curable epoxy resin composition. 5,344,890, Cl. 525-326.500.

Mize, Patrick D.; and O'3 Connell, James P., to Becton, Dickinson and Company. Fluoroketone enzyme inhibitors. 5,344,952, Cl. 558-169.000.

Mizukuki, Tadahiko; Koike, Tadashi; Kitagawa, Nobuhisa; and Hirose, Sumio, to Mitsui Toatsu Chemicals, Inc. Optical recording medium. 5,344,682, Cl. 428-64.000.

Mizuno, Masamoto: *See—*
Ishii, Toshiaki; Mizuno, Masamoto; and Sugita, Kazuhiko, 5,345,047, Cl. 187-112.000.

Mizuno, Sadao: *See—*
Hayashi, Hideki; Tanaka, Shinichi; Mizuno, Sadao; Ito, Noboru; and Komma, Yoshiaki, 5,345,072, Cl. 250-201.500.

Mizuno, Toshio: *See—*
Ishikawa, Hiroyasu; Kobayashi, Hideo; and Mizuno, Toshio, 5,345,245, Cl. 342-357.000.

Mizutome, Atsushi: *See—*
Inoue, Hiroshi; Mizutome, Atsushi; and Enomoto, Aiko, 5,345,250, Cl. 345-100.000.

Mobil Oil Corporation: *See—*
Allen, L. Scott; Leland, Frank P.; Lyle, W. D., Jr.; and Stromswold, David C., 5,345,077, Cl. 250-264.000
Chang, Clarence D.; Santiesteban, Jose G.; and Stern, David L., 5,345,026, Cl. 585-700.000.
Shen, Dong-Ming; and Wu, Margaret M., 5,345,020, Cl. 585-352.000.
Shih, Stuart S., 5,344,553, Cl. 208-49.000.
Shu, Paul, 5,343,948, Cl. 166-276.000.
Su, Tien-Kuei, 5,344,714, Cl. 428-516.000.
Wei, Liwen; Horodysky, Andrew G.; Jeng, Andrew; and Kremer, Ross A., 5,344,578, Cl. 252-47.500.

Mobile Oil Corp.: *See—*
Child, Jonathan E.; Del Rossi, Kenneth J.; Huss, Albin, Jr.; Krambeck, Frederick J.; Melli, Thomas R.; and Yurchak, Sergei, 5,345,027, Cl. 585-720.000.

Mochizuki, Akira: *See—*
Kaneko, Takashi; Ishida, Toshinobu; and Mochizuki, Akira, 5,344,400, Cl. 604-96.000.

Mochizuki, Yoshimi: *See—*
Ohkuma, Kazuhiro; Wakabayashi, Shigeru; Mochizuki, Yoshimi; and Satouchi, Mitsuko, 5,344,824, Cl. 514-58.000.

Modglin, Michael D., to National Orthotic Laboratories. Hip abduction system. 5,344,391, Cl. 602-24.000.

Moe, Gordon. Recovery recorder system, particularly commercial radio/TV broadcast recovery recorder system. 5,345,430, Cl. 369-7.000.

Moeller, Achim: *See—*
LeMaire, Hans-Georg; Hillen, Heinz; Moeller, Achim; Daum, Lothar; Doerper, Thomas; and Subkowski, Thomas, 5,344,915, Cl. 530-350.000.

Mogamiya, Hiroyuki: *See—*
Suzuki, Yoshiichi; Mogamiya, Hiroyuki; Tanaka, Koichi; Takagi, Yoshihiro; and Hirose, Katutoshi, 5,344,586, Cl. 252-299.640.

Mohan, Ned, to University of Minnesota, Regents of the. System and method for reducing harmonic currents by current injection. 5,345,375, Cl. 363-40.000.

Mohn, Frank-Werner: *See—*
Zomotor, Adam; Klinkner, Walter; Schindler, Erich; Mohn, Frank-Werner; and Wohland, Thomas, 5,345,385, Cl. 364-424.050.

Mohri, Yoshiharu: *See—*
Sato, Taichi; Mohri, Yoshiharu; Tanaka, Kihachiro; Honmei, Takao; Otsuka, Masayuki; and Wada, Masashi, 5,345,177, Cl. 324-318.000.

Moise, Samuel L., Jr.: *See—*
O'Donnell, Robert D.; and Moise, Samuel L., Jr., 5,344,324, Cl. 434-258.000.

Mol, Hans C.: *See—*
Lorenzo, John L.; and Mol, Hans C., 5,345,089, Cl. 250-566.000.

Molex Incorporated: *See—*
Brunker, David L.; and Nelson, Richard A., 5,344,327, Cl. 439-108.000.
Colleran, Stephen A.; Gugelmeyer, Robert J.; Geib, Lawrence E.; Stead, Kenneth T.; and Cheong, Weng H., 5,344,338, Cl. 439-465.000.
Crane, Burke J., 5,345,360, Cl. 361-160.000.
Sampson, Stephen A., 5,344,336, Cl. 439-397.000.

Molison, Robert E., to Elsner Engineering Works, Inc. Apparatus for winding stiffened coreless rolls and method. 5,344,091, Cl. 242-527.100.

Moller, Christl: *See—*
Hintz, Mathias; Kohle, Hans-Jurgen; Moller, Christl; Salomon, Thomas; and Weigand, Joachim, 5,344,642, Cl. 424-70.000.

Mollmann, Daniel E.: *See—*
Stallone, Michael J.; and Mollmann, Daniel E., 5,344,239, Cl. 384-99.000.

Molnar, Charles J.; Molnar, Judith R.; and Mitchell, William H., to Molnar, Charles J.; and Molnar, Judith R. Sod mats constructed of stable fibers and a degradable matrix material. 5,344,470, Cl. 47-58.000.

Molnar, David T., to General Electric Company. Permanent magnet rotor and method and apparatus for making same. 5,345,129, Cl. 310-156.000

Molnar, Judith R.: *See—*
Molnar, Charles J.; Molnar, Judith R.; and Mitchell, William H., 5,344,470, Cl. 47-58.000.

Molyneux, Godfrey M. O. Rail anchorage arrangement with adjustable eccentric cam. 5,344,072, Cl. 238-341.000.

Monbaliu, Marcel J.; Terrell, David R.; and De Meutter, Stefaan K., to AGFA-Gevaert, N.V. Electrophotographic recording material. 5,344,734, Cl. 430-59.000.

Monflier, Eric; Bourdauducq, Paul; and Couturier, Jean-Luc, to Elf Atochem S.A. Process for the preparation of octadienols. 5,345,007, Cl. 568-909.500.

Monneyham, Alton L.: *See—*
Dyer, Arthur J.; Crawford, Tommie L.; Beaty, Kenneth L.; Morgan, Charles E.; Mooneyham, Garry D.; Monneyham, Alton L.; and Watts, Charlie F., 5,344,010, Cl. 206-317.000.

Monsanto Company: *See—*
Bovy, Philippe R.; Rico, Joseph G.; Rogers, Thomas E.; Tjoeng, Foe S.; and Zablocki, Jeffery A., 5,344,957, Cl. 560-35.000.
McGhee, William D.; Riley, Dennis P.; Talley, John J.; and Parnas, Barry L., 5,344,934, Cl. 546-245.000.
Tjoeng, Foe S.; and Zablocki, Jeffery A., 5,344,837, Cl. 514-344.000.

Montgomery, Stuart K.: *See—*
Montgomery, William W.; and Montgomery, Stuart K., 5,344,453, Cl. 623-11.000.

Montgomery, William W.; and Montgomery, Stuart K., to Boston Medical Products, Inc. Thyroplasty implant. 5,344,453, Cl. 623-11.000.

Mookherjee, Braja D.: *See—*
Wilson, Richard A.; Mookherjee, Braja D.; Butler, Jerry F.; and Fox, Eleanor, 5,344,847, Cl. 514-675.000.

Mooneyham, Garry D.: *See—*
Dyer, Arthur J.; Crawford, Tommie L.; Beaty, Kenneth L.; Morgan, Charles E.; Mooneyham, Garry D.; Monneyham, Alton L.; and Watts, Charlie F., 5,344,010, Cl. 206-317.000.

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Bulka, Tricia, 5,343,647, Cl. 40-630.000.

Moore, Pamela D.: *See—*
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Morales, Jose L.: *See—*
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Moran, Charles E. C. Reversible containers. 5,344,065, Cl. 229-103.000.

Moran, Frank T.: *See—*
Everhard, Paul R.; Everhard, Alan L.; Moran, Frank T.; and Omvig, Gergory J., 5,344,274, Cl. 414-412.000.

Morcos, Anthony C., to Bei Electronics, Inc. Moving coil actuator utilizing flux-focused interleaved magnetic circuit. 5,345,206, Cl. 335-222.000.

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Maire, Daniel; Moreau, Georges; and Archer, Jacques, 5,345,478, Cl. 376-249.000.

Moreira, Julio Cesar, to Whirlpool Corporation. Control for high speed operation of brushless permanent magnet motor. 5,345,156, Cl. 318-254.000.

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Morgan, Howard H., Jr.: *See—*
Bossler, Thomas H.; Glassman, Donald; Grebinoski, Michael C.; Morgan, Howard H., Jr.; and Voss, Jennifer L., 5,344,528, Cl. 203-14.000.

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Suzuki, Shigeru; Kobara, Motonori; Hisatomi, Yasuhiro; Yamaguchi, Yoshinori; Yonetani, Hiroshi; Fukushima, Kiyoyuki; Sakamoto, Yoshimasa; Yagami, Toru; and Kamei, Toshihide, 5,344,260, Cl. 408-168.000.

Mori, Yukio: *See—*
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Morihara, Atsushi: *See—*
Daikoku, Takahiro; Kawasaki, Nobuo; Ashiwake, Noriyuki; Kawamura, Keizou; Zushi, Shizuo; Miyamoto, Mitsuo; and Morihara, Atsushi, 5,345,107, Cl. 257-717.000.

Morikawa, Hiroaki: *See—*
Sasaki, Hajime; Morikawa, Hiroaki; Satoh, Kazuhiko; and DeGuchi, Mikio, 5,344,500, Cl. 136-258.000.

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Morimitsu, Tatsuya: *See—*
Watanabe, Niro; Morimitsu, Tatsuya; Hoshino, Kazuhisa; Kobayashi, Akihiko; Horie, Kiyoshi; Shindo, Naoaki; Tada, Yoshiaki; and Sato, Takashi, 5,344,808, Cl. 503-227.000.

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Morisada, Tsuyoshi, to NEC Corporation. System for controlling branch history table. 5,345,571, Cl. 395-375.000.

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Morita, Yoshitsugu, to Dow Corning Toray Silicone Co., Ltd. Diorganopolysiloxane and method for the preparation thereof. 5,344,905, Cl. 528-15.000.

Morita, Youzo: *See—*
Seidoh, Akinori; Morita, Youzo; and Matsuhisa, Hiroaki, 5,343,770, Cl. 73-864.220.

Moriya, Hideyuki: *See—*
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Moriya, Nobuo; Shimoda, Keiji; Asaoka, Sachio; Kameda, Takao; Sakashita, Kouji; Maejima, Tetsuo; Yasui, Makoto; Nishijima, Hiroaki; Onda, Nobuhiro; and Kouzaki, Takeshi, to Chiyoda Corporation. Process for the production of crystalline adduct of bisphenol A and phenol and apparatus therefor. 5,345,000 Cl. 568-722.000.

Morrill, Charles D., to Hydril Company. High pressure packer for a drop-in check valve. 5,343,946, Cl. 155-148.000.

Morson, Ed: *See—*
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Mortellaro, Larry J.: *See—*
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Morton International, Inc.: *See—*
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Moseley, David L.: *See—*
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Moss, Parry A.: *See—*
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Mota, Miguel; and Morales, Jose L., to Transpar Iberica S.A. Double diaphragm leakproof sealing device for electric windscreen washer pumps. 5,344,293, Cl. 417-442.000

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Motloch & Peterson: *See—*
Motloch, Wallace M., 5,344,390, Cl. 602-23.000.

Motloch, Wallace M., to Motloch & Peterson. Body-worn orthopedic device that includes individual connected modules. 5,344,390, Cl. 602-23.000.

Motorola, Inc.: *See—*
Babcock, Mark H., 5,345,235, Cl. 341-139.000.
Breeden, Robert L.; and D'Amico, Thomas V., 5,345,500, Cl. 379-63.000.
Buchenhorner, Michael J.; Ghomeshi, Mohammed M.; and Shapiro, Steven C., 5,345,596, Cl. 455-33.100.
Cheng, Chee F.; You, Chiou C.; and Tong, Kai L., 5,345,366, Cl. 361-785.000.
Davidson, Allen L., 5,345,600, Cl. 455-50.100.
Frei, John K.; and Fiorenzo, Russell T., 5,345,056, Cl. 219-121.590.
Fulghum, Tracy L., 5,345,469, Cl. 375-1.000.
Hostetler, David A., 5,345,407, Cl. 364-724.010.
Kaylor, Scott A., 5,345,190, Cl. 330-258.000.
Laninga, Albert J., 5,344,296, Cl 425-121.000.
Lebby, Michael S.; Chun, Christopher K. Y.; and Kuo, Shun-Meen, 5,345,524, Cl. 385-88.000.
Lebby, Michael S.; and Jachimowicz, Karen E., 5,345,527, Cl. 385-114.000.
Lebby, Michael S.; Kuo, Shun-Meen; Hartman, Davis H.; and Chun, Christopher K. Y., 5,345,530, Cl. 385-88.000.
Lee, Edward K. B., 5,345,472, Cl. 375-1.000.
McShane, Michael B.; Woosley, Alan H.; and Primeaux, Francis, 5,344,600, Cl. 264-219.000.
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Staudinger, Joseph; Golio, John M.; Beckwith, William B.; and Verdier, Jean B., 5,345,123, Cl. 307-552.000.
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Mouchon, Emmanuelle: *See—*
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Moulding, Thomas S.; and Ellis, Donald G., to Moulding, Thomas S. Dispenser especially adapted for dispensing medication units. 5,344,043, Cl. 221-71.000.

Moulton, Peter F.: *See—*
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Moyal, Miki: *See—*
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Moyer, Curtis D.; Song, John; and Jaskie, James E., to Motorola, Inc Single substrate, vacuum fluorescent display. 5,345,141, Cl 313-495.000.

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Mozgowiec, Mark D.; Keasey, Kai L.; and Beringhause, Steven, to Texas Instruments Incorporated. Accelerometer with strain isolated sensor. 5,343,748, Cl. 73-497.000.

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MTU Motoren- Und Turbinen-Union: *See—*
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MTU Motoren- Und Turbinen-Union Muenchen GmbH: *See—*
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Muchowicz, Thomas J.: *See—*
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Mueller, Patrik: *See—*
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Mukaidono, Masao; Sugimoto, Noboru; and Futsuhara, Koichi, to Nippon Signal Co., Ltd., The. Method and apparatus for assuring safe work. 5,345,138, Cl. 307-326.000.

Mullen, Stuart I.; and Summerfield, Leslie R., to Rolls Royce Plc. Aircraft engine management system. 5,345,386, Cl. 364-431.020.

Muller, Fritz, to Lasag AG. Method of cutting an aperture in a device by means of a laser beam. 5,345,057, Cl. 219-121.710

Muller, Hans-Jurgen; and Sprenger, Wilfried, to Deutsche Airbus GmbH. Opposing passenger-infant seat system. 5,344,212, Cl. 297-245.000.

Muller, Werner: *See—*
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Mullin, John G., Jr.: *See—*
Guthrie, Robert W.; Mullin, John G., Jr.; Kachensky, David F.; Kierstead, Richard W.; Tilley, Jefferson W.; Heathers, Guy P.; Higgins, Alan J.; and LeMahieu, Ronald A., 5,344,843, Cl. 514-473.000.

Mungia, Jesse. Cat repellant and dispenser. 5,344,649, Cl. 424-195.100.

Murai, Teruyuki; and Yamamoto, Susumu, to Sumitomo Electric Industries Ltd. Method for manufacturing steel wire material for reinforcing optical fiber. 5,344,713, Cl. 428-472.300.

Murakami, Yutaka, to Canon Kabushiki Kaisha. Pattern generator. 5,345,518, Cl. 382-56.000.

Murakata, Chikara; Takiguchi, Toshimitsu; Katsumata, Shigeo; Mihara, Akira; Takahashi, Keiichi; Saito, Hiromitsu; Akinaga, Shiro; Okabe, Masami; and Saito, Yutaka, to Kyowa Hakko Kogyo Co., Ltd. Process for producing staurosporine derivatives. 5,344,926, Cl. 540-545.000.

Muraki, Masato: *See—*
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Muramaki, Kazuo: *See—*
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Muramatsu, Kenji; Totsuka, Mitsuhiko; and Kudo, Toshiharu, to Yazaki Corporation. Connection box for fusible links and terminal nut. 5,345,211, Cl. 337-186.000.
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Murata Erie North America, Inc.: *See*—
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Murata, Haruhiko; Mori, Yukio; Maenaka, Akihiro; Takuma, Masao; Kawakami, Kiyotada; Asaeda, Toru; Okino, Toshiyuki; Iinuma, Toshiya; Kobayashi, Akio; and Haruki, Toshinobu, to Sanyo Electric Co., Ltd. Video signal processing circuit for a video camera using a luminance signal. 5,345,264, Cl. 348-235.000.
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Murata Kikai Kabushiki Kaisha: *See*—
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Ito, Satoru; Murata, Michihiro; Fukui, Norio; Yamamoto, Keizou; Sawao, Tetsujiro; Awata, Satoshi; Tada, Yasuo; and Kawabata, Satoru, 5,344,518, Cl. 156-242.000.
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Murayama, Ronald K. Sonic dental device and method. 5,343,883, Cl 132-322.000.
Mures Cardiovasular Research, Inc.: *See*—
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Murphy, Scott, to Thomas Jefferson University. Plasma-based platelet concentrate preparations. 5,344,752, Cl. 435-2.000
Murray, Donald W.; and Story, Michael C., to Satelight Technologies, Inc. Lamp or flashlight having a multi-feature rotating switching assembly. 5,345,370, Cl. 362-205.000.
Murray, Jerome L., to Murray United Development Corporation Combination rotary internal combustion engine and ducted fan. 5,343,832, Cl. 123-44.00B.
Murray United Development Corporation: *See*—
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Myneni, Ganapatic R., to Southeastern Universities Research Association. High sensitivity leak detection method and apparatus. 5,343,740, Cl. 73-40.700.
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Nagai, Katsutoshi: *See*—
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Nagai, Seiichi: *See*—
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Nagalingam, Samuel J. S.; Han, Yu P.; and Jhota, Ravi, to VLSI Technology, Inc. Latid implants for increasing the effective width of transistor elements in a semiconductor device. 5,344,787, Cl. 437-35.000.
Nagasako, Isamu, to NEC Corporation. FET having two gate bonding pads for use in high frequency oscillator. 5,345,194, Cl. 331-99.000.
Nagasawa, Zenichirou: *See*—
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Nagata, Fumio, to IDC Corporation. Water vessel propulsion apparatus. 5,344,345, Cl. 440-44.000.
Nagata, Hiroshi, to Sumitomo Heavy Industries, Ltd. Method for measuring gears and system for machining and measuring gears. 5,343,626, Cl. 33-501.140.
Nagata, Mitsuru; Sato, Koichiro; and Matsuo, Tsunetaka, to Kabushiki Kaisha Toshiba. Digital Σ-Δ modulator. 5,345,233, Cl. 341-76.000.
Nagel, Jean-Louis: *See*—
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Najm, Habib N.; Huang, Steve S.; Davis, Cecil J.; and Matthews, Robert T., to Texas Instruments Incorporated. Semiconductor wafer heater with infrared lamp module with light blocking means. 5,345,534, Cl. 392-422.000.
Naka, Hiroshi: *See*—
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Nakabayashi, Masayoshi: *See*—
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Nakae, Koichi: *See*—
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Nakagawa, Atsushi, to Matsushita Electric Industrial, Co., Ltd. Heterojunction bipolar transistor including collector region of InP and method of fabricating the same. 5,345,097, Cl. 257-198.000.
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Nakagawa, Mitsuhiko; and Nakajima, Shiro, to Sumitomo Electric Industries, Ltd. Abrasion testing method. 5,343,733, Cl. 73-7.000.
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Nakagawara, Akira, to Sony Corporation. High density nonvolatile memory and decoder of the same. 5,345,416, Cl. 365-185.000.
Nakai, Shoji; and Iami, ShuicBiro, to Kamitsu Seisakusho Ltd. Turret type yarn winder. 5,344,090, Cl. 242-18.00A.
Nakajima, Sakuya: *See*—
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Nakajima, Shinya: *See*—
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Nakajima, Shiro: *See*—
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Nakamikawa, Tetsuaki: *See*—
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Nakamori, Toshinori; and Sonomura, Minoru, to Shima Seiki Mfg., Ltd. Method of transferring loops integrated with a flat knitting machine. 5,343,719, Cl. 66-75.100.
Nakamura, Hideyoshi; and Sando, Katsumi, to Tosoh Corporation. Chlorosulfonated polyethylene polymer composition. 5,344,861, Cl. 524-254.000
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Nakamura, Kenji; and Kuraishi, Isao, to Kennak U.S.A., Inc. Resealable package comprising a container and wet absorbent sheet material with interposed liquid barrier layer. 5,344,007, Cl. 206-205.000.
Nakamura, Kimihiro; Yuhara, Tadanori; Takano, Toshiyuki; and Yao, Hironobu, to Fuji Electric Co., Ltd. Electrostatic capacity type differential pressure detector. 5,343,756, Cl. 73-718.000.
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Nakamura, Masayuki, to Dai Nippon Insatsu Kabushiki Kaisha. Heat transfer sheets. 5,344,807, Cl. 503-227.000.
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Nakamura, Takashi, to Rohm Co., Ltd. Semiconductor memory device having ferroelectric film. 5,345,414, Cl. 365-145.000.
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Nakamura, Takenori: *See*—
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Nakanishi, Chitose: *See*—
Takiguchi, Haruhisa; Yano, Seiki; Inoguchi, Kazuhiko; Kudo, Hiroaki; Nakanishi, Chitose; Okumura, Toshiyuki; and Sugahara, Satoshi, 5,345,460, Cl. 372-43.000.
Nakano, Katsuhiro, to Sony Corporation. Reduced-height disc drive that positions circuitry between the interior surface of the drive and the surface of the disc. 5,345,352, Cl. 360-97.010.
Nakano Vinegar Co., Ltd.: *See*—
Tamaki, Toshimi; Takemura, Hiroshi; Tayama, Kenji; Fukaya, Masahiro; Okumura, Hajime; and Kawamura, Yoshiya, 5,344,777, Cl. 435-252.300.
Nakao, Hironobu; and Nakamura, Takashi, to Rohm Co., Ltd. Nonvolatile semiconductor memory utilizing a ferroelectric film. 5,345,415, Cl. 365-145.000.
Nakashima, Masayoshi: *See*—
Miyajima, Kiyoshi; Oikawa, Hiroshi; Kono, Yoichiro; Kumagai, Yasuaki; Nakayama, Shinji; Nakagawa, Hiroshi; and Nakashima, Masayoshi, 5,343,702, Cl. 60-285.000.
Nakashima, Toshitaka: *See*—
Kanayama, Tatsuo; Nakashima, Toshitaka; Tomiyasu, Kunihiko; and Matsuda, Toshio, 5,344,665, Cl. 426-643.000.
Nakayama, Nobuhiro: *See*—
Chiba, Shunichi; Nakayama, Nobuhiro; Asahina, Yasuo; Okamoto, Yosihisa; and Makita, Kayo, 5,344,732, Cl. 430-42.000.
Nakayama, Shinji: *See*—
Miyajima, Kiyoshi; Oikawa, Hiroshi; Kono, Yoichiro; Kumagai, Yasuaki; Nakayama, Shinji; Nakagawa, Hiroshi; and Nakashima, Masayoshi, 5,343,702, Cl. 60-285.000.
Nakazawa, Masaaki: *See*—
Iida, Yoshihiro; Nakazawa, Masaaki; Kishi, Takahiro; and Okazaki, Tsugio, 5,343,855, Cl. 128-6.000.
Nalco Fuel Tech: *See*—
Brown, Donald T.; and Dainoff, Alexander S., 5,344,306, Cl. 431-4.000.
Nam, Tae un: *See*—
Eom, Young ho; and Nam, Tae un, 5,344,608, Cl. 420-532.000.
Nambu, Toshiro; Kawaguchi, Hirotoshi; Furukawa, Hisao; and Kato, Yasushi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Thermosetting composition. 5,344,880, Cl. 525-100.000.
Namiki, Fumihiro: *See*—
Takeda, Siro; Namiki, Fumihiro; Haraki, Takahiro; Hirano, Hideyuki; Ishiwata, Kenji; Katsuragawa, Shigehiko; and Abe, Katsumi, 5,345,513, Cl. 382-6.000.
Namoglu, Sheryl F.: *See*—
Fehskens, Leonard G.; Strutt, Colin; Wong, Steven K.; Callander, Jill F.; Burgess, Peter H.; Nelson, Kathy J.; Guertin, Matthew J.; Sylor, Mark W.; Chapman, Kenneth W.; Schuchard, Robert C.; Goldfarb, Stanley I.; Rogers, Dennis O.; O'Brien, Linsey B.; Trasatti, Philip J.; England, Benjamin M.; Lemmon, James L., Jr.; Rosenbaum, Richard L.; Kohls, Ruth E. J.; Aronson, David L.; Ross, Robert R. N.; Smith, Danny L.; Adams, William C., Jr.; Koning, G. Paul; Namoglu, Sheryl F.; Seger, Mark J.; Dixon, Timothy M.; and Harrow, Jeffrey R., 5,345,587, Cl. 395-650.000.
Namtec Corporation: *See*—
Hogan, James V.; and Matheson, Stephen J., 5,343,893, Cl. 137-624.130.
Nanba, Osamu: *See*—
Kanda, Kazunori; Nanba, Osamu; and Lam, Edward, 5,344,739, Cl. 430-175.000.
Napier, Samuel O.: *See*—
Schwartz, Robert E.; Waibel, Richard T.; Rodden, Paul M.; and Napier, Samuel O., 5,344,307, Cl. 431-9.000.
Napoli, Joseph D.: *See*—
Maher, Joseph A.; Vowles, E. John; Napoli, Joseph D.; Zafiropoulo, Arthur W.; and Miller, Mark W., 5,344,542, Cl. 204-298.150.
Narayannan, Krishna; Liang, Marc D.; and Kurtz, John L. Voice activated control apparatus. 5,345,538, Cl. 395-2.840.
Narikiyo, Hidetoshi, to Kabushiki Kaisha Toshiba. Air conditioning apparatus for distributing primarily-conditioned air to rooms. 5,344,069, Cl. 236-49.300.
Narita, Mutsuko: *See*—
Fukahori, Kenichi; Iima, Shin; Sato, Shuji; Shimoha, Masaki; Ito, Hideki; and Narita, Mutsuko, 5,344,244, Cl. 400-249.000.
Narita, Noriaki; Iwata, Masuo; Inoue, Kouji; Sato, Hideo; and Takahashi, Ryoji, to Chisso Corporation. Flame-retardant and its composition. 5,344,855, Cl. 523-179.000.
Natarajan, Kavilipalayam M.; and Wu, Shilain D., to Enichem S.p.A. Polyester compositions with improved crystallization rate. 5,344,892, Cl. 525-397.000.
Nath, Robert H.; Wiley, John; Erickson, Robert; Hutchison, Carl R.; and Miles, Mike, to Cyclean, Inc. Angle and velocity adjustment of a hot mix asphalt drum when output gas temperatures are uneven. 5,344,229, Cl. 366-25.000.
National Orthotic Laboratories: *See*—
Modglin, Michael D., 5,344,391, Cl. 602-24.000.
National Research Council of Canada: *See*—
Dai, Hongxing; Janz, Siegfried; Dion, Michel M.; and Normandin, Richard, 5,345,456, Cl. 372-22.000.
National Space Development Agency of Japan: *See*—
Sezai, Toshihiro, 5,345,246, Cl. 342-368.000.
National Starch and Chemical Investment Holding Corporation: *See*—
Brown, Orville W., 5,345,212, Cl. 338-20.000.
National Transcommunications Limited: *See*—
Gledhill, Jeffrey J.; Anikhindi, Santosh V.; and Avon, Peter A., 5,345,440, Cl. 370-19.000.
Naylor, Carter G.: *See*—
Knifton, John F.; and Naylor, Carter G., 5,344,984, Cl. 564-399.000.
Nazarian, Hagop A.; and Raza, S. Barbar, to Cypress Semiconductor Corporation. Integrated circuit with programmable speed/power adjustment. 5,345,112, Cl. 307-443.000.
Nazerian, Greg; Bailey, Ronald; and Hoffa, Jack L., to Eubanks Engineering Company. Wire marking, cutting and stripping apparatus and method. 5,343,605, Cl. 29-33.00M.
NCR Corporation: *See*—
Jibbe, Mahmoud K.; McCombs, Craig C.; and Thompson, Kenneth J., 5,345,565, Cl. 395-325.000.
NEC Corporation: *See*—
Araki, Soichiro, 5,345,326, Cl. 359-117.000.
Kato, Taiji, 5,345,561, Cl. 395-275.000.
Katou, Mariko, 5,344,491, Cl. 118-695.000.
Kawayachi, Noboru; and Shibuya, Toru, 5,345,269, Cl. 348-412.000.
Kikkawa, Takamaro, 5,345,108, Cl. 257-751.000.
Matsumoto, Naoya, 5,345,102, Cl. 257-588.000.
Matsunaga, Mitsuhiro, 5,345,274, Cl. 348-614.000.
Matui, Hitosi, 5,345,452, Cl. 371-43.000
Miyano, Soichiro, 5,343,731, Cl. 73-1.00D.
Morisada, Tsuyoshi, 5,345,571, Cl. 395-375.000.
Nagasako, Isamu, 5,345,194, Cl. 331-99.000.
Ozaki, Hirokazu, 5,345,438, Cl. 370-16.000
Saitoh, Minoru, 5,345,489, Cl. 377-39.000.
Tomotsune, Katsuo, 5,345,117, Cl. 307-494.000
Tsujimoto, Ichiro, 5,345,476, Cl. 375-14.000.
Yamaguchi, Masahiro, 5,345,396, Cl. 395-500.000.
Yoshino, Toshinori, 5,344,341, Cl. 439-607.000.
Necchi Compressori S.r.l.: *See*—
Fasce, Antonio, 5,344,289, Cl. 417-312.000.
Negahban-Hagh, Mehrdad: *See*—
White, Bert; and Negahban-Hagh, Mehrdad, 5,345,118, Cl. 307-501.000.
Negi, Taichi; Itamura, Sumio; and Hirofuji, Satoshi, to Kuraray Co., Ltd. Heat shrinkable film and multilayered film. 5,344,715, Cl. 428-520.000.
Nelms, George E.; and Eumurian, Charles, to AutoMed, Inc. Specimen tube transfer carrier. 5,344,612, Cl. 422-104.000.
Nelson, Charles L.; Steffler, Michael W.; and Tyler, Douglas L., Sr., to Stryker Corporation. Bone cement mixing and loading apparatus 5,344,232, Cl. 366-139.000.
Nelson, Jack R. Auto glass moulding and dam. 5,343,662, Cl. 52-208.000.
Nelson, James E.: *See*—
Lippmann, Raymond; Nelson, James E.; Schnars, Michael J.; Chintyan, James R.; and Hansen, Mark C., 5,345,398, Cl. 364-509.000.
Nelson, John C.: *See*—
Tsai, Chung-hsien; Nelson, John C.; Herberlein, Joachim V. R.; Pfender, Emil; and Gerberich, William W., 5,344,551, Cl. 205-110.000.
Nelson, Kathy J.: *See*—
Fehskens, Leonard G.; Strutt, Colin; Wong, Steven K.; Callander, Jill F.; Burgess, Peter H.; Nelson, Kathy J.; Guertin, Matthew J.; Sylor, Mark W.; Chapman, Kenneth W.; Schuchard, Robert C.; Goldfarb, Stanley I.; Rogers, Dennis O.; O'Brien, Linsey B.; Trasatti, Philip J.; England, Benjamin M.; Lemmon, James L., Jr.; Rosenbaum, Richard L.; Kohls, Ruth E. J.; Aronson, David L.; Ross, Robert R. N.; Smith, Danny L.; Adams, William C., Jr.; Koning, G. Paul; Namoglu, Sheryl F.; Seger, Mark J.; Dixon, Timothy M.; and Harrow, Jeffrey R., 5,345,587, Cl. 395-650.000.
Nelson, Philip L.: *See*—
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Nelson, Richard A.: *See*—
Brunker, David L.; and Nelson, Richard A., 5,344,327, Cl. 439-108.000.
Nelson, Richard D.: *See*—
Hashemi, Seyed H.; Olla, Michael A.; Dolbear, Thomas P.; and Nelson, Richard D., 5,344,795, Cl. 437-214.000.
Nestec S.A.: *See*—
Cathenaut, Philip I.; and Wendelin, Friedrich, 5,343,710, Cl. 62-71.000.
Fond, Olivier, 5,343,799, Cl. 99-295.000.
Network Computing Devices, Inc.: *See*—
Providenza, John R.; and Boekelheide, Lee, 5,345,555, Cl. 395-164.000.
Neuhaus, Alfred: *See*—
Knipp, Ulrich; von Bonin, Wulf; and Neuhaus, Alfred, 5,344,853, Cl. 521-128.000.
Neuhaus, Klaus, to Eduard Wille GmbH Co. Rotary tool. 5,343,784, Cl 81-55.000.

Neumann, Robert A.: *See—*
Berg, Gary L.; Rossing, Martin A.; Peterson, David K.; and Neumann, Robert A., 5,344,430, Cl. 607-8.000.
Nevamar Corporation: *See—*
O'Dell, Robin D.; Lex, Joseph A.; and Simon, Alice M., 5,344,704, Cl. 428-323.000.
Nevosi, Ulderico: *See—*
de Nora, Oronzio; Nidola, Antonio; Traini, Carlo; and Nevosi, Ulderico, 5,344,530, Cl. 204-105.00R.
New, John W.: *See—*
Birch, Desmond A.; and New, John W., 5,343,848, Cl. 123-557.000.
New, Nigel H., to Glacier Metal Company Limited, The. Magnetic bearing back-up. 5,345,127, Cl. 310-90.500.
New SD, Inc.: *See—*
Macy, David F., 5,343,749, Cl. 73-505.000.
New York State Electric & Gas Corporation: *See—*
VanAmburg, Roy R., 5,343,978, Cl. 182-128.000
Newport News Shipbuilding and Dry Dock Company: *See—*
Jones, Robert B.; Reinke, John C., Jr.; and Snyder, Clarence E., Jr., 5,345,058, Cl. 219-123.000
Newsome, Reginald W.: *See—*
DeBlasio, James A.; Brookman, Donald L.; Draucker, James B.; Evers, Donald H.; Hansen, Charles D.; Moore, Pamela D.; Newsome, Reginald W.; and Rech, William J., 5,344,008, Cl 206-256.000.
Newsome, Willie D. Insulated security car cover. 5,343,915, Cl. 150-166.000.
Newspager Corporation of America: *See—*
Fascenda, Anthony C.; and Gregg, Daniel L., 5,345,227, Cl. 340-825.220.
Newton, John. Molding method using two different resins and a membrane. 5,344,601, Cl. 264-255.000.
Nexcom Technology, Inc.: *See—*
Challa, Nagesh, 5,345,418, Cl. 365-185.000.
NGK Insulators, Ltd.: *See—*
Hirai, Takami; and Yano, Shinsuke, 5,344,695, Cl. 428-209.000
Ishida, Yoshihiko; Asai, Yuji; and Tani, Makoto, 5,345,427, Cl 367-140.000.
Ngo, Tuan V.: *See—*
Brannon, Craig M.; and Ngo, Tuan V., 5,345,346, Cl. 360-67.000
Nguyen, Angela P.: *See—*
Picha, George J.; Secrest, Dean J.; and Nguyen, Angela P., 5,343,874, Cl. 128-780.000.
Nguyen, Dung T.: *See—*
Hopkins, Donn A.; Donner, Kenneth D.; Goldstone, Marc B.; Nguyen, Dung T.; Wiegand, Rudolf; and McKinley, David E., 5,345,347, Cl. 360-71.000.
Nguyen, Hop D.: *See—*
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Nguyen, Hung C.: *See—*
Abbott, William L.; Nguyen, Hung C.; and Johnson, Kenneth E., 5,345,342, Cl. 360-48.000
Nguyen, Lam T., to Aggregates Equipment, Inc. Increased capacity disc dryer. 5,343,635, Cl. 34-164.000.
Nguyen, Patrick; and Preston, Brian C., to CalComp Inc. Actuator mechanism for a plotter carriage. 5,345,255, Cl. 346-139.00R
Nibby, Chester M., Jr.: *See—*
Bowden, Raymond D., III; and Nibby, Chester M., Jr., 5,345,573, Cl. 395-400.000
Nichols, Alfred C.; and Yielding, K. Lemone, to Board of Regents, University of Texas. 4-hydroxyquinaldic acid derivatives. 5,344,922, Cl. 546-153.000
Nichols, Clarence M.: *See—*
Greenip, Lawrence E., Jr.; Chase, Gregory H.; and Nichols, Clarence M., 5,345,390, Cl. 364-474.170.
Nichols, Lucy M.: *See—*
Merritt, Donald R.; Howard, William G.; Skarstad, Paul M.; Weiss, Douglas J.; Wyborny, Paul B.; Roline, Glenn M.; Nichols, Lucy M.; and Thompson, David L., 5,344,431, Cl. 607-29.000.
Nickerson, Brett A.: *See—*
Wertz, Ronald D.; Minet, H. Kent; Horacek, Stephen M.; and Nickerson, Brett A., 5,345,309, Cl. 356-372.000
Nidola, Antonio: *See—*
de Nora, Oronzio; Nidola, Antonio; Traini, Carlo; and Nevosi, Ulderico, 5,344,530, Cl. 204-105.00R
Nieh, Edward C.; and Cuscurida, Michael, to Texaco Chemical Company. Catalyst removal from alcohol alkoxylates using acid clays 5,344,996, Cl. 568-621.000.
Nielsen, John C.; Loeffler, Mark A.; and Cariello, Dominic A., to Racine Federated Inc. Flow indicator impeller module. 5,343,763, Cl. 73-861.580.
Niessner, Norbert: *See—*
Fischer, Wolfgang; Guentherberg, Norbert; Niessner, Norbert; Ruppmich, Karl; and Seitz, Friedrich, 5,344,877, Cl. 525-83.000
Nihon Bayer Agrochem K.K.: *See—*
Goto, Toshio; Hayakawa, Hidenori; Watanabe, Yukiyoshi; and Yanagi, Akihiko, 5,344,814, Cl. 504-261.000.
Niihara, Kaoru; and Osborn, Thomas W., III, to Procter & Gamble Company, The. Absorbent article having inwardly-folded pleated flaps. 5,344,416, Cl. 604-385.100
Niino, Masahiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Wear-resistant polyoxymethylene resin composition and method for making same. 5,344,875, Cl. 525-64.000.
Nike, Inc.: *See—*
Kilgore, Bruce J.; McMahon, Thomas; Tawney, John C.; and Valiant, Gordon, 5,343,639, Cl. 36-29.000.
Nikko Bio Technica Co., Ltd.: *See—*
Imanaka, Tadayuki; and Sakurai, Shoii, 5,344,913, Cl. 530-321.000.
Nikolaus, Heinrich; and Paton, Robert, to Zahnradfabrik Friedrichshafen AG. Arrangement and process for operating a fail safe braking system in a continuously variable driving unit of a motor vehicle. 5,343,779, Cl. 74-733.100.
Nikon Corporation: *See—*
Shibazaki, Kiyoshige, 5,345,259, Cl. 348-26.000.
Ninomiya, Akira: *See—*
Imoto, Yasuo; Iriguchi, Akira; Sakaida, Atsuo; Chikaoka, Yasuji; and Ninomiya, Akira, 5,344,246, Cl. 400-552.000.
Nippon Cable System, Inc.: *See—*
Suzuki, Kazuhiro; Miki, Masatoshi; Kuwabara, Toshio; and Matsubara, Morihiko, 5,345,157, Cl. 318-280.000.
Nippon Carbon Co., Ltd.: *See—*
Tokutomi, Atsuya; Ichikawa, Hiroshi; Ushikoshi, Kenji; and Yamauchi, Hiroshi, 5,344,709, Cl. 428-368.000.
Nippon Chemical Industrial Co., Ltd.: *See—*
Lilitkarntakul, Suchart; Nabekawa, Shukichi; Takada, Masao; and Ogura, Katsuyuki, 5,344,968, Cl. 562-474.000.
Nippon Oil Co., Ltd.: *See—*
Enomoto, Masami; Kubota, Susumu; Oshimi, Fumiaki; Yuasa, Hitoshi; and Otsuki, Yutaka, 5,344,899, Cl. 525-534.000.
Nippon Paint Co., Ltd.: *See—*
Kanda, Kazunori; Nanba, Osamu; and Lam, Edward, 5,344,739, Cl. 430-175.000.
Miyazono, Tadafumi; Tabuchi, Koji; and Masahiro, Takegawa, 5,344,890, Cl. 525-326.500.
Ueda, Koichi; Kanda, Kazunori; and Kusuda, Hidefumi, 5,344,744, Cl. 430-287.000.
Nippon Signal Co., Ltd., The: *See—*
Mukaidono, Masao; Sugimoto, Noboru; and Futsuhara, Koichi, 5,345,138, Cl. 307-326.000.
Nippon Steel Corporation: *See—*
Kaneda, Yoshihiro; Yoshihara, Ryoichi; and Wake, Ryousuke, 5,344,550, Cl. 205-50.000.
Nippon Steel Semiconductor Corp.: *See—*
Cordoba, Michael V.; and Hardee, Kim C., 5,345,195, Cl. 331-111.000.
Nippon Telegraph and Telephone Corporation: *See—*
Okazaki, Makoto; Shibata, Yuji; Tanihira, Hisamitsu; and Wakimura, Yoshiaki, 5,345,559, Cl. 395-250.000.
Nippon Thompson Co., Ltd.: *See—*
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Nippondenso Co., Ltd.: *See—*
Douta, Hisayo; Kinugawa, Masumi; and Suzuki, Atsushi, 5,343,701, Cl. 60-276.000.
Hattori, Isao; Nomura, Yurio; Nomura, Shigeo; and Kohama, Tokio, 5,343,841, Cl. 123-403.000.
Nishi, Noriyuki; Muto, Tadashi; and Takayama, Shinichi, to Kanebo Ltd. Method and apparatus for inspecting the cleanliness of top slibers. 5,345,515, Cl. 382-8.000.
Nishibayashi, Yoshiki; and Shikata, Itami, to Sumitomo Electric Industries, Ltd. Method for etching diamond. 5,344,526, Cl. 156-643.000.
Nishiguchi, Kazuhisa, to Daicel Chemical Industries, Ltd. Process for the preparation of 1,3-butylene glycol. 5,345,004, Cl. 568-865.000.
Nishihara, Takeshi; Kin, Keiyu; and Shiraishi, Shuji, to Honda Giken Kogyo Kabushiki Kaisha. System for determining pneumatic tire pressure for motor vehicle by comparing actual to adequate wheel rotational speed. 5,343,741, Cl. 73-146.200.
Nishijima, Hiroaki: *See—*
Moriya, Nobuo; Shimoda, Keiji; Asaoka, Sachio; Kameda, Takao; Sakashita, Kouji; Maejima, Tetsuo; Yasui, Makoto; Nishijima, Hiroaki; Onda, Nobuhiro; and Kouzaki, Takeshi, 5,345,000, Cl. 568-722.000.
Nishikawa, Hiroshi: *See—*
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Nishimura, Shouichi: *See—*
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Nishimura, Yukinobu: *See—*
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Nishino, Masakazu: *See—*
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Nishino, Yukishige: *See—*
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Nishiyama, Muneo: *See—*
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Nishiyama, Shigeru: *See—*
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Nissan European Technology Centre Limited: *See—*
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Nissan Motor Co., Ltd.: *See—*
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Nisshin Flour Milling Co., Ltd.: *See—*
Satoh, Hiroaki; Kikuchi, Haruhiko; Yamada, Kazuhiko; Fukutomi, Ruta; Suzuki, Masashi; Hagihara, Koichiro; Hayakawa, Toru; Arai, Takeo; and Mino, Setsuko, 5,344,831, Cl. 514-249.000.
Nitto Kohki Co., Ltd.: *See—*
Saito, Shunichi, 5,343,892, Cl. 137-614.040.
Niwayama, Kazuhiko, to Mitsubishi Denki Kabushiki Kaisha. Self arc-extinguishing thyristor and method of manufacturing the same. 5,345,095, Cl. 257-138.000.
Niyada, Katsuyuki: *See—*
Hoshimi, Masakatsu; Miyata, Maki; Hiraoka, Shoji; and Niyada, Katsuyuki, 5,345,536, Cl. 395-2.520.
Noda, Minoru, to Mitsubishi Denki Kabushiki Kaisha. Method of making field effect transistor. 5,344,788, Cl. 437-41.000.
Noe, Christian; and Gmeiner, Gunter, to Chemie Linz Gesellschaft m.b.H. Reagents for racmate resolution. 5,344,942, Cl. 549-386.000.
Noel, Chris R., to Bytex Corporation. Switching hub which implements a virtual bus for interconnecting stations on a CSMA network. 5,345,447, Cl. 370-67.000.
Noel, Jean-Pierre: *See—*
Boullais, Claude; Noel, Jean-Pierre; and Riva, Michel, 5,344,767, Cl. 435-106.000.
Noguchi, Tadashi: *See—*
Morimoto, Shigeki; Noguchi, Tadashi; Taniguchi, Masakazu; and Taguchi, Yasushi, 5,344,798, Cl. 501-70.000.
Noguchi, Yasuji: *See—*
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Nohr, Ronald S.; and MacDonald, John G., to Kimberly-Clark Corporation. Thermoplastic compositions and nonwoven webs prepared therefrom. 5,344,862, Cl. 524-269.000.
Nokia Mobile Phones Ltd.: *See—*
Keskitalo, Ilkka, 5,345,448, Cl. 370-95.300.
Nokihara, Kiyoshi; Yamamoto, Rintaro; Hazama, Makoto; and Nakamura, Shin, to Shimadzu Corporation. Agitation stabilizer in solid-phase peptide synthesizer. 5,344,613, Cl. 422-131.000.
Noma, Hiroyasu: *See—*
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Nomura, Noboru: *See—*
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Nomura, Shigeo: *See—*
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Nomura, Takeshi: *See—*
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Nomura, Tatsuya; Yamauchi, Yumi; Mameda, Kenji; Yoshida, Shigeru; and Kubo, Noboru, to Sharp Kabushiki Kaisha. Character display apparatus for displaying multiple-font characters with high speed 5,345,548, Cl. 395-150.000.
Nomura, Yoshiya; Tsuda, Tadayuki; Ikemoto, Isao; Watanabe, Kazushi; Ishiwata, Kazuhiko; Tanaka, Makoto; Yano, Kanji; and Sasaki, Shinichi, to Canon Kabushiki Kaisha. Process cartridge and image forming apparatus using same. 5,345,294, Cl. 355-200.000.
Nomura, Yurio: *See—*
Hattori, Isao; Nomura, Yurio; Nomura, Shigeo; and Kohama, Tokio, 5,343,841, Cl. 123-403.000.
Nonami, Tohru; Noma, Hiroyasu; and Nakajima, Shinya, to TDK Corporation. Materials for living hard tissue replacements. 5,344,456, Cl. 623-16.000.
Nonboe, Ulf. Method for determining indole compounds associated with boar taint in pork as well as a sample container to be used in the method. 5,344,780, Cl. 436-21.000.
Norand Corporation: *See—*
Koenck, Steven E.; Wolf, Roger L.; and Alt, Daniel E., 5,345,146, Cl. 315-169.300.
Laser, Vadim, 5,345,088, Cl. 250-566.000.
Nordelius, Hans, to Clavia Digital Musical Instruments AB. Acoustic drum transmitter and a holder therefor. 5,345,037, Cl. 84-730.000.
NordicTrack, Inc.: *See—*
Bostic, James R.; Dreibelbis, John S.; and Novak, Pat J., 5,344,376, Cl. 482-118.000.
Nordson Corporation: *See—*
Haller, Curtis B.; Knobbe, Alan J.; and Crum, Gerald W., 5,344,082, Cl. 239-697.000.
Waryu, Joseph C.; Loparo, Thomas A.; McMillan, Guy H.; Novotny, Mark W.; and Buckler, Jeffrey M., 5,344,073, Cl. 239-1.000.
Nordstrom, Curt G.: *See—*
Stenberg, Sven E. J.; and Nordstrom, Curt G., 5,344,267, Cl. 411-29.000.
Normandin, Richard: *See—*
Dai, Hongxing; Janz, Siegfried; Dion, Michel M.; and Normandin, Richard, 5,345,456, Cl. 372-22.000.
Norris, Jimmy D.; and Hibdon, Orville C. Portable oil-drilling waste recovery system. 5,343,943, Cl. 166-81.000.
North American Specialties Corporation: *See—*
Seidler, Jack, 5,344,343, Cl. 439-876.000.
North, John R.; Kay, Robert L.; and Ivy, Jonathan, to Porton Diagnostics, Inc. Diagnostic electrode for evaluating circuitry of an analyzer. 5,344,544, Cl. 204-401.000.
Northern Telecom Limited: *See—*
Mauger, Roy, 5,345,498, Cl. 379-58.000.
Richardson, Bruce A.; Beckett, Douglas J. S.; Finak, Jozef; Bruce, Robert A.; and Adams, David M., 5,345,459, Cl. 372-34.000.
Strawczynski, Leo; Sandler, Howard M.; Plett, Gregory L.; and Steer, David G., 5,345,597, Cl. 455-34.100.
Norton, Louis, to Vermeer Manufacturing Company. Motion sensing safety interlock. 5,343,675, Cl. 56-10.20R.
Nosco, Dennis L.: *See—*
Deutsch, Edward A.; Deutsch, Karen F.; Cacheris, William P.; Ralston, William H.; White, David H.; Nosco, Dennis L.; Wolfangel, Robert G.; Wilking, Janet B.; Meeh, Linda; and Woulfe, Steven R., 5,344,640, Cl. 424-9.000.
Nourbakhsh, Farhad, to Tescom Corporation. Switching power supply with electronic isolation. 5,345,376, Cl. 363-62.000.
Nova Scientific Corporation: *See—*
O'Donnell, Robert D.; and Moise, Samuel L., Jr., 5,344,324, Cl. 434-258.000.
Novacor Chemicals (International) S.A.: *See—*
Colella, Michael; and Marcoulier, Brian, 5,344,878, Cl. 525-84.000.
Novak, Pat J.: *See—*
Bostic, James R.; Dreibelbis, John S.; and Novak, Pat J., 5,344,376, Cl. 482-118.000.
Novotny, Mark W.: *See—*
Waryu, Joseph C.; Loparo, Thomas A.; McMillan, Guy H.; Novotny, Mark W.; and Buckler, Jeffrey M., 5,344,073, Cl. 239-1.000.
Novotny, Vlad J.: *See—*
Krantz, Matthias C.; Novotny, Vlad J.; O'Sullivan, Timothy C.; and Tam, Andrew C., 5,345,353, Cl. 360-103.000.
Noyes, Daniel G. Wastewater treatment system. 5,344,563, Cl. 210-621.000.
Nucida, Gilberto: *See—*
Cipolli, Roberto; Masarati, Enrico; Oriani, Roberto; Pirozzi, Mario; and Nucida, Gilberto, 5,344,931, Cl. 544-195.000.
Nuebel, Karl-Heinz: *See—*
Betz, Dieter; Nuebel, Karl-Heinz; Almendro, Jose Luis; Garcia, Fernando; and Ramirez, Eduardo, 5,343,614, Cl. 29-605.000.
Nuebling, Christoph: *See—*
Theobald, Hans; von Deyn, Wolfgang; Nuebling, Christoph; Walter, Helmut; Kardorff, Uwe; Westphalen, Karl-Otto; Kappe, Thomas; and Gerber, Matthias, 5,344,813, Cl. 504-244.000.
Null, Robert A., to Air Dry Corporation of America. Gas separation device. 5,344,474, Cl. 55-344.000.
Numako, Norio: *See—*
Kobayashi, Takeo; Tabata, Yasushi; Numako, Norio; and Nagai, Katsutoshi, 5,345,288, Cl. 354-238.100.
Nummy, Laurence J.: *See—*
Alexanian, Vazken A.; and Nummy, Laurence J., 5,344,965, Cl. 560-354.000.
Nuno, Alfredo: *See—*
Rose, Eric P.; Karten, Stuart; and Nuno, Alfredo, 5,343,573, Cl. 4-449.000.
Nuschak, Gianni, to Comau S.p.A. Device for quick change of piece-supporting pallets in an assembling machine. 5,343,996, Cl. 198-345.300.
Nutter, Dale E. Adjustable garment hanger. 5,344,054, Cl. 223-94.000.
Nuyts, Henry, to NV Nuyts ORB. Means of transport such as a garbage truck or such like, provided with a loading and tilting device for the handling of containers or such like. 5,344,272, Cl. 414-408.000.
NV Nuyts ORB: *See—*
Nuyts, Henry, 5,344,272, Cl. 414-408.000.
Obara, Sanshiro: *See—*
Masaki, Ryoso; Takamoto, Yuusuke; Obara, Sanshiro; Yamamura, Hirohisa; and Yamada, Hiroyuki, 5,345,155, Cl. 318-138.000.
Oberhausen, Wolfgang: *See—*
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O'Brien, Linsey B.: *See—*
Fehskens, Leonard G.; Strutt, Colin; Wong, Steven K.; Callander, Jill F.; Burgess, Peter H.; Nelson, Kathy J.; Guertin, Matthew J.; Sylor, Mark W.; Chapman, Kenneth W.; Schuchard, Robert C.; Goldfarb, Stanley I.; Rogers, Dennis O.; O'Brien, Linsey B.; Trasatti, Philip J.; England, Benjamin M.; Lemmon, James L., Jr.; Rosenbaum, Richard L.; Kohls, Ruth E. J.; Aronson, David L.; Ross, Robert R. N.; Smith, Danny L.; Adams, William C., Jr.; Koning, G. Paul; Namoglu, Sheryl F.; Seger, Mark J.; Dixon, Timothy M.; and Harrow, Jeffrey R., 5,345,587, Cl. 395-650.000.
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Obuchi, Kazuto; Oya, Satoshi; Minato, Mitsuaki; Uehara, Akira; Fujisawa, Kazutoshi; and Takao, Kazuhisa, to Tokyo Ohka Kogyo Co., Ltd. Method of and apparatus for processing a workpiece in plasma. 5,344,536, Cl. 204-192.320.
Obukata, Masahiro: *See—*
Nakadate, Masaaki; and Obukata, Masahiro, 5,344,102, Cl. 244-35.00R.
Occidental Research Corporation: *See—*
Harwood, H. James; Jones, Daniel H.; Talkington, Andrew W.; and Goodrich, Stephen D., 5,344,902, Cl. 526-217.000.
Ochiai, Akira; Yuasa, Akihiko; and Otaka, Shigeki, to Toshiba Kikai Kabushiki Kaisha. Cylinder device. 5,343,797, Cl. 92-85.00A
Ochoa, Adam A. Bicycle seat assembly. 5,344,170, Cl. 280-283.000.
Ochsner, Douglas A.: *See—*
Jackson, Charles L.; and Ochsner, Douglas A., 5,345,230, Cl. 340-825.160.

O'Connor, Kevin J.: *See—*
Fenstermaker, Larry R.; and O'Connor, Kevin J., 5,345,419, Cl. 365-189.040.
O'Connor, Margaret: *See—*
Su, Sophia R.; O'Connor, Margaret; and Butler, Scott, 5,344,815, Cl. 505-1.000.
O'Connor, Michael A.: *See—*
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Oda, Hajime: *See—*
Tajima, Akio; Harada, Hiroyuki; Shimizu, Harukazu; Inoue, Haruo; Kougo, Takashi; Oda, Hajime; Nakagawa, Tadashi; and Hayakawa, Tsuyoshi, 5,344,245, Cl. 400-320.000.
Oda, Yosuke, to Kabushiki Kaisha Komatsu Seisakusho. Device for controlling displacement of variable displacement hydraulic pump. 5,344,288, Cl. 417-218.000.
Odani, Yuusuke: *See—*
Kaji, Toshihiko; Takeda, Yoshinobu; Odani, Yuusuke; Akechi, Kiyoaki; and Tanji, Takao, 5,344,605, Cl. 419-31.000.
O'Dell, Robin D.; Lee, Joseph A.; and Simon, Alice M., to Nevamar Corporation. Abrasion-resistant, aesthetic surface layer laminate. 5,344,704, Cl. 428-323.000.
Odin Development Ltd.: *See—*
Divall, John E.; and Perigo, John A., 5,344,052, Cl. 222-135.000.
Odom, Jerome D.: *See—*
Skills, Louis A., III; Dunlap, R. Bruce; and Odom, Jerome D., 5,344,936, Cl. 548-229.000.
O'Donnell, Robert D.; and Moise, Samuel L., Jr., to Nova Scientific Corporation. Apparatus and method for testing human performance 5,344,324, Cl. 434-258.000.
O'Farrell, John J.: *See—*
Pons, John M.; and O'Farrell, John J., 5,345,221, Cl. 340-571.000.
Office National d'Etudes et de Recherches Aerospatiales: *See—*
Colomban, Philippe; Menet, Martine; Mouchon, Emmanuelle; Courtemanche, Gilles; and Parlier, Michel, 5,344,512, Cl. 156-89.000.
Offin, A. Dean. Multi-function tool for truck operators. 5,344,201, Cl 294-24.000.
Ogasa, Takehiro: *See—*
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Ogata, Fumiaki: *See—*
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Ogata, Shiro: *See—*
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Ogawa, Hiroshi; and Saito, Kouichi, to Hitachi, Ltd. Information processing apparatus and printer used for the same. 5,345,403, Cl. 364-708.100.
Ogawa, Hisao: *See—*
Tanji, Masayuki; Miyazaki, Yoshihiro; Fukumaru, Hiroaki; Yamaguchi, Syoji; Masui, Koji; and Ogawa, Hisao, 5,345,566, Cl. 395-325.000.
Ogawa, Ken; and Oshima, Yoshikazu, to Honda Giken Kogyo Kabushiki Kaisha. Control system for internal combustion engines 5,343,846, Cl. 123-520.000.
Ogawa, Nobuo: *See—*
Sawanishi, Hiroyuki; Ito, Yasuo; Kato, Hideo; Koshinaka, Eiichi; Ogawa, Nobuo; and Morikawa, Kouji, 5,344,828, Cl. 514-211.000.
Ogawa, Shin-ichiro: *See—*
Hirata, Toshihiro; and Ogawa, Shin-ichiro, 5,344,809, Cl. 504-134.000.
Ogawa, Tohru, to Fujitsu Limited. System for controlling frequency multiplexing modems. 5,345,437, Cl. 370-13.000
Oghia, Ann T.: *See—*
Oghia, Anne T.; and Oghia, Hady G., 5,344,029, Cl. 211-41.000
Oghia, Anne T.; and Oghia, Hady G., to Oghia, Ann T. Dishwasher holddown rack. 5,344,029, Cl. 211-41.000.
Oghia, Hady G.: *See—*
Oghia, Anne T.; and Oghia, Hady G., 5,344,029, Cl. 211-41.000.
Oguchi, Yasuhiro: *See—*
Hirabayashi, Yasuhisa; Sakuda, Takashi; Okawa, Kazuhiko; and Oguchi, Yasuhiro, 5,345,098, Cl. 257-207.000
Ogura, Katsuyuki: *See—*
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Oguri, Takashi: *See—*
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Ohara, Eiji: *See—*
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Kintz, Lawrence J.; Okey, David W.; Leicht, Joseph F.; Carriglitto, Francis T.; O'Hare, Colum; Garr, Keith E.; and Clark, Valerie, 5,343,613, Cl. 29-596.000.
Ohata, Tomonori: *See—*
Suzuki, Kaoru; Ando, Tadahiro; Naka, Hiroshi; Sawada, Mitsutoshi; Ohata, Tomonori; Miura, Hiroshi; Nakabayashi, Masayoshi; and Ando, Eiiti, 5,344,130, Cl. 270-53.000.
Ohga, Norio; and Tsurushima, Katsuaki, to Sony Corporation. Optical disc recording apparatus and optical disc reproducing apparatus. 5,345,433, Cl. 369-54.000.
Ohi, Toshio: *See—*
Ohno, Hiromoto; Miyamura, Makoto; Arai, Tatsuharu; Muramaki, Kazuo; and Ohi, Toshio, 5,345,015, Cl. 570-164.000.
Ohio State University Research Foundation, The: *See—*
Levis, Curt A., 5,345,243, Cl. 342-173.000.
Verma, Desh P. S.; Hu, Chien-an A.; and Delauney, Ashton J., 5,344,923, Cl. 536-23.200.
Ohkuma, Kazuhiro; Wakabayashi, Shigeru; Mochizuki, Yoshimi; and Satouchi, Mitsuko, to Matsutani Chemical Industries Co., Ltd. Method for reducing insulin secretion. 5,344,824, Cl. 514-58.000.
Ohkuni, Mitsuhiro: *See—*
Harafuji, Kenji; Ohkuni, Mitsuhiro; Tamaki, Tokuhiko; Kubota, Masafumi; and Nomura, Noboru, 5,345,145, Cl. 315-111.410.
Ohle, Manfred: *See—*
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Ohlin, John R., Jr., to Venture Tape Corporation. Method and apparatus for masking removable optical lens markings during lens grinding. 5,343,657, Cl. 451-29.000.
Ohm, Heinz F.: *See—*
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Ohmori, Junya: *See—*
Ohta, Mitsuaki; Koide, Tokuo; Suzuki, Takeshi; Matsuhisa, Akira; Miyata, Keiji; Ohmori, Junya; and Yanagisawa, Isao, 5,344,927, Cl. 544-31.000.
Ohnaka, Kiyoshi: *See—*
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Ohno, Hiromoto; Miyamura, Makoto; Arai, Tatsuharu; Muramaki, Kazuo; and Ohi, Toshio, to Showa Denko K.K. Process for producing 1,1,2-tetrafluoroethane. 5,345,015, Cl. 570-164.000.
Ohsaki, Satoshi, to Canon Kabushiki Kaisha. Coating film separating device and coating film separation method using the device. 5,344,521, Cl. 156-584.000.
Ohsawa, Toshio: *See—*
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Ohta, Mitsuaki; Koide, Tokuo; Suzuki, Takeshi; Matsuhisa, Akira; Miyata, Keiji; Ohmori, Junya; and Yanagisawa, Isao, to Yamanouchi Pharmaceutical Co., Ltd. Tetrahydrobenzimidazole derivatives and pharmaceutical compositions containing same. 5,344,927, Cl. 544-31.000.
Ohta, Nobuaki; and Sujaku, Takamichi, to Kabushiki Kaisha Toshiba. Cooking menu selecting device of a heating apparatus. 5,345,067, Cl. 219-720.000.
Ohtani, Hiroko; and Hartley, Rolfe J., to Ethyl Petroleum Additives, Inc. Friction modifier compositions and their use. 5,344,579, Cl. 252-51.50R
Ohtawa, Shigeru; Onodera, Junichi; and Harada, Kouji, to Tokyo Ohka Kogyo Co., Ltd. Photopolymerizable compositions. 5,344,747, Cl. 430-325.000.
Ohtsuka, Yuzuru; Suzuki, Kiyoji; and Nakamura, Toru, to Ajinomoto Co., Inc.; and Toyo Oil Mills Co., Inc. Method for removing extraction solvent from extraction residue trapped in an oil-and-fat extractor. 5,344,564, Cl. 210-634.000.
Ohya, Kazuyuki; and Sayama, Norio, to Mitsubishi Gas Company, Inc. Friction material for brake. 5,344,854, Cl. 523-149.000.
Ohyama, Yoshishige: *See—*
Minowa, Toshimichi; and Ohyama, Yoshishige, 5,343,781, Cl. 477-107.000.
Oikawa, Hiroshi: *See—*
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Okabe, Masami: *See—*
Murakata, Chikara; Takiguchi, Toshimitsu; Katsumata, Shigeo; Mihara, Akira; Takahashi, Keiichi; Saito, Hiromitsu; Akinaga, Shiro; Okabe, Masami; and Saito, Yutaka, 5,344,926, Cl. 540-545.000.
Okabe, Shinya; Shimode, Shinichi; Sato, Ryouji; Hanada, Masamichi; Senshu, Takao; Terada, Hirokiyo; Izushi, Minetoshi; Takenaka, Hiroshi; and Ito, Masahiro, to Hitachi, Ltd. Active noise control apparatus for three-dimensional space. 5,343,713, Cl. 62-296.000.
Okada, Kazuhiro. Detector for force, acceleration or magnetism with respect to components in multi-dimensional directions. 5,343,765, Cl. 73-862.043.
Okada, Masahiro: *See—*
Suwa, Yorimasa; Imaizumi, Atsushi; Okada, Masahiro; Kudo, Ichiro; Inoue, Keizo; and Suzuki, Yoji, 5,344,764, Cl. 455-69.100.
Okada, Takekazu; Shinmura, Satoru; and Kanaya, Fumio, to Murata Manufacturing Co., Ltd. Magnetostatic wave resonator having at least one ring conductor. 5,345,204, Cl. 333-219.200.
Okamoto, Hidenori; Tanaka, Norihiro; and Sasaki, Keisuke, to Tokuyama Corporation. Single crystal of 3-(2-furyl)methacrylic acid anhydride. 5,345,330, Cl. 359-326.000.
Okamoto Industries, Inc.: *See—*
Haruda, Osamu; Imamura, Shin; Hanzawa, Suguru; Amada, Nobuo; Kunii, Kazuo; Kobayashi, Hidetaka; Yano, Shinichi; and Nishiyama, Muneo, 5,343,610, Cl. 29-525.100.
Okamoto, Yoshisa: *See—*
Chiba, Shunichi; Nakayama, Nobuhiro; Asahina, Yasuo; Okamoto, Yoshisa; and Makita, Kayo, 5,344,732, Cl. 430-42.000.
Okano, Takashi: *See—*
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Okawa, Kazuhiko: *See—*
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Okazaki, Koji: *See—*
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Okazaki, Makoto; Shibata, Yuji; Tanihira, Hisamitsu; and Wakimura, Yoshiaki, to Fujitsu Limited; and Nippon Telegraph and Telephone Corporation. Bus interface circuit for controlling data transfer. 5,345,559, Cl. 395-250.000.
Okazaki, Tsugio: *See—*
Iida, Yoshihiro; Nakazawa, Masaaki; Kishi, Takahiro; and Okazaki, Tsugio, 5,343,855, Cl. 128-6.000.
Oketani, Toshikazu: *See—*
Fujimoto, Sachito; Oketani, Toshikazu; and Abe, Yoshiharu, 5,343,700, Cl. 60-276.000.
Okey, David W.: *See—*
Kintz, Lawrence J.; Okey, David W.; Leicht, Joseph F.; Carriglitto, Francis T.; O'Hare, Colum; Garr, Keith E.; and Clark, Valerie, 5,343,613, Cl. 29-596.000.
Okihara, Masakazu; and Kogure, Tomohiko, to Yokohama Rubber Co., Ltd., The. Pneumatic radial tire for passenger car with defined tread depths. 5,343,917, Cl. 152-209.00R.
Okimura, Yoshihiko: *See—*
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Okino, Toshiyuki: *See—*
Murata, Haruhiko; Mori, Yukio; Maenaka, Akihiro; Takuma, Masao; Kawakami, Kiyotada; Asaeda, Toru; Okino, Toshiyuki; Iinuma, Toshiya; Kobayashi, Akio; and Haruki, Toshinobu, 5,345,264, Cl. 348-235.000.
Oku, Hidehisa: *See—*
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Okuma Corporation: *See—*
Satake, Akiyoshi, 5,345,133, Cl. 310-266.000.
Takagi, Nobuyuki, 5,343,604, Cl. 29-27.00C.
Okumura, Hajime: *See—*
Tamaki, Toshimi; Takemura, Hiroshi; Tayama, Kenji; Fukaya, Masahiro; Okumura, Hajime; and Kawamura, Yoshiya, 5,344,777, Cl. 435-252.300.
Okumura, Hirofumi; and Ishibara, Kanji, to Alps Electric Co., Ltd. Variable resistor device with reduced slider vibration. 5,345,215, Cl. 338-176.000.
Okumura, Toshiyuki: *See—*
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Okuyama, Yasuo; and Sakamoto, Nobuo, to Murata Kikai Kabushiki Kaisha. Winder-to-double twister connecting system. 5,343,687, Cl. 57-278.000.
Olbrich, Ludger: *See—*
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Olin Corporation: *See—*
Cheskis, Harvey P.; Watson, W.Gary; Coombs, Jeffrey S.; and Chesney, Peter F., 5,343,926, Cl. 164-46.000.
Olive Corporation: *See—*
Yoshioka, Mashayuki, 5,344,200, Cl. 294-1.500.
Oliver, Thomas C.; Jones, David P.; Christie, Leslie G.; Wanger, Mark E.; Berg, Thomas E.; and Crane, Melvin C., to Hewlett-Packard Company. Write and erase assembly for magneto-optic drive apparatus. 5,345,431, Cl. 369-13.000.
Oliver, Ward H., to Ciba-Geigy Corporation. Preparation of 1-amino-cyan-amido-2,2-dicyanoethylene, sodium salt. 5,344,955, Cl. 558-375.000.
Olivier, Helene: *See—*
Chauvin, Yves; Commereuc, Dominique; Hugues, Francois; Olivier, Helene; and Saussine, Lucien, 5,345,023, Cl. 585-527.000.
Olla, Michael A.: *See—*
Hashemi, Seyed H.; Olla, Michael A.; Dolbear, Thomas P.; and Nelson, Richard D., 5,344,795, Cl. 437-214.000.
Olnowich, Howard T.; Bruck, Jehoshua; Snir, Marc; and Upfal, Eli, to International Business Machines Corporation. Adaptive switching apparatus for multi-stage networks. 5,345,229, Cl. 340-825.800.
Olsen, Christian: *See—*
Bjerrum, Niels J.; Gang, Xiao; Hjuler, Hans A.; Olsen, Christian; and Berg, Rolf W., 5,344,722, Cl. 429-46.000.
Olsen, Donald A.: *See—*
Gaudet, Peter W.; and Olsen, Donald A., 5,343,708, Cl. 62-55.500.
Olsen, Ulf N., to Minnesota Mining and Manufacturing Company. Retroreflective transfer sheet material. 5,344,705, Cl. 428-323.000.
Olson, Alan S.; and Przekwas, Robert W., to Polaris Industries, L.P. Snowmobile ski. 5,344,168, Cl. 280-28.000.
Olsson, Alvar: *See—*
Lovenbrant, Jan; and Olsson, Alvar, 5,343,805, Cl. 101-366.000.
Olympus Optical Co., Ltd.: *See—*
Funakubo, Tomoki; and Wakabayashi, Katsuhiro, 5,345,137, Cl. 310-323.000.
Goto, Hisashi; and Yaji, Tsuyoshi, 5,345,291, Cl. 354-406.000.
Iida, Yoshihiro; Nakazawa, Masaaki; Kishi, Takahiro; and Okazaki, Tsugio, 5,343,855, Cl. 128-6.000.
Satoh, Kazuhiro; Hara, Minoru; and Otsuka, Eiji, 5,345,283, Cl. 354-106.000.
O'Meara, Timothy F.: *See—*
Wilcox, Reed N.; George, Richard L.; Thiess, William K.; Loftus, John T., Jr.; O'Meara, Timothy F.; and Lichfield, William H., 5,344,322, Cl. 434-84.000.
Omron Tateisi Electronics Co.: *See—*
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Omvig, Gergory J.: *See—*
Everhard, Paul R.; Everhard, Alan L.; Moran, Frank T.; and Omvig, Gergory J., 5,344,274, Cl. 414-412.000.
Onda, Kenichi: *See—*
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Onda, Nobuhiro: *See—*
Moriya, Nobuo; Shimoda, Keiji; Asaoka, Sachio; Kameda, Takao; Sakashita, Kouji; Maejima, Tetsuo; Yasui, Makoto; Nishijima, Hiroaki; Onda, Nobuhiro; and Kouzaki, Takeshi, 5,345,000, Cl. 568-722.000.
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O'Neill, Mark J.: *See—*
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Onishi, Shinsuke: *See—*
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Ono, Hiroshi: *See—*
Hotta, Yasunari; Maeda, Satoshi; Yamada, Yozo; Tanaka, Koji; Ono, Hiroshi; and Uno, Toshio, 5,344,673, Cl. 427-195.000.
Ono Pharmaceutical Co., Ltd.: *See—*
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Ono, Yoshio: *See—*
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Ono, Yutaka: *See—*
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Onodera, Junichi: *See—*
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Oohashi, Masayoshi: *See—*
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Ookawa, Katutoshi: *See—*
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Ookita, Yoko: *See—*
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Oosterkamp, William J., to General Elecric Company. Nuclear reactor plant with containment depressurization. 5,345,481, Cl. 376-293.000
Ootawara, Yasuhiko: *See—*
Komatsu, Yasutaka; Kuroda, Michio; Ootawara, Yasuhiko; Iizuka, Nobuyuki; Sato, Isao; Taniguchi, Masayuki; and Hayashi, Noriyuki, 5,343,693, Cl. 60-39.230.
Opher, Ayal; Chatwani, Dilip; and Subramanian, Rajan, to SynOptics Communications, Inc. Topology independent broadcast of cells in an ATM network or the like. 5,345,558, Cl. 395-200.000.
Oppermann, Hermann: *See—*
Rueger, David C.; Kuberasampath, Thangavel; Oppermann, Hermann; and Ozkaynak, Engin, 5,344,654, Cl. 424-423.000.
Oren, Jakob; Hermolin, Joshua; Feldman, David; Zviely, Michael; Zamir, Dov; and Keselman, Hugo, to Bromine Compounds, Ltd. Amino phenoxy compounds and process for their preparation. 5,344,986, Cl. 564-430.000.
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Cipolli, Roberto; Masarati, Enrico; Oriani, Roberto; Pirozzi, Mario; and Nucida, Gilberto, 5,344,931, Cl. 544-195.000.
Orion-Yhtyma OY: *See—*
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O'Rourke, Michael J.: *See—*
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Brown, Roy L., 5,343,674, Cl. 54-44.100.
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Osaka, Hisao, to Kabushiki Kaisha Komatsu Seisakusho Panel bender. 5,343,727, Cl. 72-306.000.
Osborn, Kenneth L.: *See—*
DiBernardo, Dinah K.; Osborn, Kenneth L.; and Fricker, Ruth M., 5,344,011, Cl. 206-364.000.
Osborn, Michael D.: *See—*
Ellis, John F.; Osborn, Michael D.; and Winarski, Daniel J., 5,345,350, Cl. 360-92.000.
Osborn, Thomas W., III: *See—*
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Osborne, James L.: *See—*
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Oscar Mayer Foods Corporation: *See—*
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Oseth, Donald L.: *See—*
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Oshima, Yoshikazu: *See—*
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Anokhin, Vladimir D.; Lepekha, Anatoly I.; Filippov, Viktor N.; Ageev, Sharifzhan R.; Vinokurov, Anatoly F.; Gusev, Jury V.; and Ermakov, Sergei J., 5,344,281, Cl. 415-71.000.
Osprey Metals Limited: *See—*
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Ostermayer, Bertram: *See—*
Seelert, Stefan; Klaerner, Peter; Jung, Andreas; Hoenl, Hans; and Ostermayer, Bertram, 5,344,869, Cl. 524-505.000.
Ostrobrod, Meyer. Safety device. 5,343,976, Cl. 182-4.000
Ostrow, Alvin; and Grinshpon, Grigory, to Electromagnetic Bracing Systems, Inc. Magnetotherapy apparatus. 5,344,384, Cl. 600-13.000
O'Sullivan, Mark E.; and Wotring, Timothy L., to Ingersoll-Dresser Pump Company. Centrifugal pump with monolithic diffuser and return vane channel ring member. 5,344,285, Cl. 415-199.200.
O'Sullivan, Timothy C.: *See—*
Krantz, Matthias C.; Novotny, Vlad J.; O'Sullivan, Timothy C.; and Tam, Andrew C., 5,345,353, Cl. 360-103.000.
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Otaka, Shigeki: *See—*
Ochiai, Akira; Yuasa, Akihiko; and Otaka, Shigeki, 5,343,797, Cl. 92-85.00A.
Otis Elevator Company: *See—*
Bahjat, Zuhair S.; and Pullela, V. Sarma, 5,345,049, Cl. 187-127.000.
Jamieson, Eric K., 5,345,042, Cl. 177-165.000.
Rynaski, Richard F.; and Bogli, Craig, 5,345,046, Cl. 187-105.000.
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Otsuka, Eiji: *See—*
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Otsuka, Masayuki: *See—*
Sato, Taichi; Mohri, Yoshiharu; Tanaka, Kihachiro; Honmei, Takao; Otsuka, Masayuki; and Wada, Masashi, 5,345,177, Cl. 324-318.000.
Otsuka, Noriko; and Tokimitsu, Ichiro, to Kao Corporation. Aqueous cosmetic composition and preparation method thereof. 5,344,650, Cl. 424-401.000.
Otsuki, Yutaka: *See—*
Enomoto, Masami; Kubota, Susumu; Oshimi, Fumiaki; Yuasa, Hitoshi; and Otsuki, Yutaka, 5,344,899, Cl. 525-534.000.
Otten, Lynn M., to Medtronic, Inc. Catheter with retractable anchor mechanism. 5,344,439, Cl. 607-126.000
Oudot, Bernadette: *See—*
Boyer, Steven K.; Casey, Richard G.; Miller, Alex M.; Oudot, Bernadette; and Zilles, Karl S., 5,345,516, Cl. 382-10.000.
Outokumpu Oy: *See—*
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Ouyang, Jiangbo; and Harpel, William L., to Betz Laboratories, Inc Non-chromium passivation method and composition for galvanized metal surfaces. 5,344,505, Cl. 148-261.000.
Ovonic Battery Company, Inc.: *See—*
Ovshinsky, Stanford R.; Fetcenko, Michael A.; Venkatesan, Srinivasan; and Holland, Arthur, 5,344,728, Cl. 429-223.000.
Ovshinsky, Stanford R.; Fetcenko, Michael A.; Venkatesan, Srinivasan; and Holland, Arthur, to Ovonic Battery Company, Inc. Compositionally and structurally disordered multiphase nickel hydroxide positive electrode for alkaline rechargeable electrochemical cells. 5,344,728, Cl. 429-223.000.
Owen, Donald B.: *See—*
Reusche, Thomas K.; Reusche, Donald W.; Owen, Donald B.; and Hassell, Frank A., 5,345,063, Cl. 219-441.000
Owen, Jeffrey R., to Seiko Telecommunication Systems, Inc. Sigma-delta digital FM demodulator. 5,345,188, Cl. 329-323.000.
Owens, Steven C.: *See—*
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Obuchi, Kazuto; Oya, Satoshi; Minato, Mitsuaki; Uehara, Akira; Fujisawa, Kazutoshi; and Takao, Kazuhisa, 5,344,536, Cl. 204-192.320.
Ozaki, Hirokazu, to NEC Corporation. Transmission device capable of readily controlling active and backup sections. 5,345,438, Cl. 370-16.000.
Ozaki, Tohru; Horie, Hitoshi; and Shirai, Hideyuki, to Matsushita Graphic Communication Systems, Inc. Image data encoding/decoding apparatus for concurrent processing of multiple image data streams. 5,345,316, Cl. 358-426.000.
Ozaki, Yoshiyuki; Morita, Akiyoshi; Yamaura, Junichi; and Ito, Zenichiro, to Matsushita Electric Industrial Co., Ltd. Non-aqueous electrolyte secondary cell. 5,344,724, Cl. 429-94.000.
Ozawa, Hideyuki: *See—*
Koda, Akihide; Waragai, Koji; Ono, Yutaka; Ozawa, Hideyuki; Kawamura, Hideki; Maruno, Masao; and Wakamatsu, Takeshi, 5,344,845, Cl. 514-614.000.
Ozkaynak, Engin: *See—*
Rueger, David C.; Kuberasampath, Thangavel; Oppermann, Hermann; and Ozkaynak, Engin, 5,344,654, Cl. 424-423.000.
O'3 Connell, James P.: *See—*
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Pacer Industries, Inc.: *See—*
Chasteen, Ronald E.; Harnett, Sean O.; and Cornelison, Terry L., 5,343,847, Cl. 123-527.000.
Pacher, Lothar; Gassner, Gustav; Voigt, Gottfried; and Hilfinger, Peter, to Braun Aktiengesellschaft. Electrically powered appliance for oral hygiene. 5,344,317, Cl. 433-85.000.
Padgett, Henry C.: *See—*
Wieland, Bruce W.; Bida, Gerald T.; Hendry, George O.; and Padgett, Henry C., 5,345,477, Cl. 376-195.000.
Page, James H., to Rexworks, Inc. Materials grinder. 5,344,088, Cl. 241-282.000.
Pai, Chien-Shing; and Shih, Yih-Cheng, to AT&T Bell Laboratories. Method of forming interlevel dielectric for integrated circuits. 5,344,797, Cl. 437-238.000.
Paisley, Gary V.: *See—*
Richter, Simon J.; and Paisley, Gary V., 5,344,045, Cl. 222-1.000.
Paker, Marianne F.; Pawelski, Robert L.; Payne, William A., III; and Richards, Gaylord W., to AT&T Bell Laboratories. Hierarchical path hunt for multirate connections. 5,345,441, Cl. 370-54.000.
Palesch, Reinhard: *See—*
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Palhof, Roy J.: *See—*
Chanasyk, Albert; Hall, Walter J.; Maxwell, J. Robert; Shaw, Russell G.; Palhof, Roy J.; and Bourgelais, Phillip D., 5,345,061, Cl. 219-388.000.
Pall Corporation: *See—*
Degen, Peter J.; Alex, Tony; and Gildersleeve, Michael R., 5,344,565, Cl. 210-636.000.
Pall, David B.; and Gsell, Thomas C., 5,344,561, Cl. 210-508.000.
Pall, David B.; and Gsell, Thomas C., to Pall Corporation. Device for depletion of the leucocyte content of blood and blood components. 5,344,561, Cl. 210-508.000.
Palma, Rodolfo; and Miller, William H., to REM Technologies, Inc. Heart pump. 5,344,443, Cl. 623-3.000.
Palmer, James T., to Prototek, Inc. Process for forming a fluoromethyl ketone. 5,344,939, Cl. 548-531.000.
Palmer, Stephen L.; and Palmer, William R., to Sierra Innotek, Inc. System for applying chemiluminescent fluid to an object. 5,344,670, Cl. 427-157.000
Palmer, Walter E.: *See—*
Gallant, Stuart L.; Caron, Paul R.; Palmer, Walter E.; and Lubocki, David J., 5,343,870, Cl. 128-711.000.
Palmer, William R.: *See—*
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Palmersten, Michael J., to Ramp R & D. Cabana panels having adjustable-strength interlocking means. 5,343,665, Cl. 52-588.100.
Palombari, Roberto: *See—*
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Pan, Yuh-Guo: *See—*
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Pandelaers, Patrick: *See—*
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Pandya, Ashish: *See—*
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Panholzer, Franz: *See—*
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Panzer, Larry H.: *See—*
Dannenberg, Todd D.; Jorsch, Thomas C.; Swart, Peter W.; and Panzer, Larry H., 5,343,576, Cl. 4-590.000.
Panzke, Rolf: *See—*
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Pap, Frank: *See—*
Roosen, Peter P.; Koldyk, Gerard H.; and Pap, Frank, 5,344,490, Cl. 106-778.000.
Papadopoulos, Demetrios G., to SGB Holdings Limited. Shoring system: a connector for a shorting system. 5,344,258, Cl. 405-282.000.
Paquin, Alexander Z.; and Paquin, Marjorie. Supporting, watering and fertilizing structure for plants. 5,343,654, Cl. 47-48.500.
Paquin, Marjorie: *See—*
Paquin, Alexander Z.; and Paquin, Marjorie, 5,343,654, Cl. 47-48.500.
Parekh, Bipin: *See—*
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Parent, Wilfred P.: *See—*
Lynn, William R.; and Parent, Wilfred P., 5,344,472, Cl. 51-293.000.
Parenti, Robert V.: *See—*
Homer, Peter K.; Parenti, Robert V.; DeStefano, Joel; Chen, Wensen; Talley, Eric; and Close, John E., 5,344,104, Cl. 244-158.00R.
Parille, Donald R.: *See—*
Allen, William P.; and Parille, Donald R., 5,344,510, Cl. 148-675.000.

Parimore, Thomas N., Jr.; and Pauley, Gerald A., to General Electric Company. Biased fluid coupling. 5,344,195, Cl. 285-91.000.
Parise, Carl, to Thermax. Hot water vacuum extraction machine with submicron size particle. 5,343,592, Cl. 15-353.000.
Park, Boo-Yl, to Dada Corp. Packaging pad preventing wrinkles of caps with eyeshades. 5,344,003, Cl. 206-8.000.
Park, Joon B., to University of Iowa Research Foundation. Orthopedic implant and method. 5,343,877, Cl. 128-898.000.
Park, Myung H.: *See—*
Jakus, Judit; Park, Myung H.; Wolff, Edith C.; and Folk, John E., 5,344,846, Cl. 514-634.000.
Parker, Thomas E.: *See—*
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Parker, Thomas S.: *See—*
Levine, Daniel M.; Parker, Thomas S.; and Rubin, Albert L., 5,344,822, Cl. 514-13.000.
Parlier, Michel: *See—*
Colomban, Philippe; Menet, Martine; Mouchon, Emmanuelle; Courtemanche, Gilles; and Parlier, Michel, 5,344,512, Cl. 156-89.000.
Parnas, Barry L.: *See—*
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Particka, Douglas A.: *See—*
Willis, Lowell R.; Particka, Douglas A.; and Tilli, George J., 5,344,348, Cl. 439-849.000.
Partika, Lawrence, to Becton, Dickinson and Company. Break-away safety shield for needle cannula. 5,344,408, Cl. 604-192.000.
Parviainen, Seppo: *See—*
Rajala, Kari; and Parviainen, Seppo, 5,344,259, Cl. 408-46.000.
Pascal, Claude W.: *See—*
Pascal, Noel B.; Mazeaud, Georges; and Pascal, Claude W., 5,343,695, Cl. 60-225.000.
Pascal, Noel B.; Mazeaud, Georges; and Pascal, Claude W., to Societe Nationale d'Etude Et de Construction de Moteurs d'Aviation "SNECMA". Combined jet engine provided with means for switching between two operating states. 5,343,695, Cl. 60-225.000.
Pasch, Nicholas F.: *See—*
Rostoker, Michael D.; Pasch, Nicholas F.; and Zelayeta, Joe, 5,345,310, Cl. 356-401.000.
Paskalov, Georgy Z.; Krapivina, Svetlana A.; and Filippov, Alexander K., to Plasma Plus. Gas plasma treatment for modification of surface wetting properties. 5,344,462, Cl. 8-115.520.
Pastor, Antonio C., deceased: *See—*
Pastor, Ricardo C.; Pastor, Antonio C., deceased; Gorre, Luisa E., deceased; and Fuller, Keith C., 5,344,816, Cl. 505-490.000.
Pastor, Ricardo C.; Pastor, Antonio C., deceased (by Pastor, Ricardo C., executor); Gorre, Luisa E., deceased (by Gore, M. Efren, administrator); and Fuller, Keith C., to Hughes Aircraft Company. Stable high oxidation state superconducting oxides. 5,344,816, Cl. 505-490.000.
Pastor, Ricardo C., executor: *See—*
Pastor, Ricardo C.; Pastor, Antonio C., deceased; Gorre, Luisa E., deceased; and Fuller, Keith C., 5,344,816, Cl. 505-490.000.
Pastor, Stephen D.; and Shum, Sai P., to Ciba-Geigy Corporation. Beta crystalline modification of 2,2',2''-nitrilo[triethyl-tris-(3,3',5,5'-tetra-tert-butyl-1,1'-biphenyl-2,2'-diyl) phosphite]. 5,344,860, Cl. 524-119.000.
Patel, Dhirajlal C.; and Grigsby, Tommy F., to Halliburton Company. Through-tubing recirculating tool assembly for well completions. 5,343,953, Cl. 166-312.000.
Patel, Dhirajlal C.: *See—*
Ross, Colby M.; Patel, Dhirajlal C.; and LaBruyere, Timothy F., 5,343,949, Cl. 166-278.000.
Patel, Kamlesh V.: *See—*
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Patel, Raj D.: *See—*
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Paton, Robert: *See—*
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Patterson, John F.; and Cooke, George C., to Siemens Power Corporation. Coolant vent fuel rod for a light water reactor. 5,345,485, Cl. 376-435.000.
Patterson, Matthew J.: *See—*
Handel, Paul I.; Patterson, Matthew J.; Guerin, Daniel; Strauss, Nicholas C.; Helton, Steven B.; Barrett, Thomas M.; Koelewyn, Lisa K.; and Waterman, James D., 5,345,397, Cl. 364-503.000.
Pattie, Michael. Automatically tuned musical instrument. 5,343,793, Cl. 84-454.000.
Pauley, Gerald A.: *See—*
Parimore, Thomas N., Jr.; and Pauley, Gerald A., 5,344,195, Cl. 285-91.000.
Pauley, Robin G.: *See—*
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Paulraj, Arogyaswami J.; and Kailath, Thomas, to Leland Stanford Junior University, The Board of Trustees of the. Increasing capacity in wireless broadcast systems using distributed transmission/directional reception (DTDR). 5,345,599, Cl. 455-49.100.
Paust, Joachim: *See—*
Krause, Wolfgang; Paust, Joachim; Dobler, Walter; and Jaedicke, Hagen, 5,344,995, Cl. 568-591.000.
Pawelski, Robert L.: *See—*
Paker, Marianne F.; Pawelski, Robert L.; Payne, William A., III; and Richards, Gaylord W., 5,345,441, Cl. 370-54.000.
Pawlaczyk, Richard J.: *See—*
Magowan, John W.; Pawlaczyk, Richard J.; Pighetti, Annette M.; and Schwarz, Richard A., Jr., 5,344,283, Cl. 415-115.000.
Payne, Michael T.; and Kinne, Daniel J., to Procter & Gamble Company, The. Pressurized package containing a particulate product employing a product separator to contain the product during opening. 5,344,662, Cl. 426-124.000.
Payne, William A., III: *See—*
Paker, Marianne F.; Pawelski, Robert L.; Payne, William A., III; and Richards, Gaylord W., 5,345,441, Cl. 370-54.000.
Peach, Robert C., to Com Dev Ltd. Interdigital transducer for use in a surface acoustic wave filter. 5,345,135, Cl. 310-313.00B.
Peden, Frank G. Form brace. 5,343,667, Cl. 52-699.000.
Peifer, Frederick. Expansion tank airation device. 5,344,071, Cl. 237-81.000.
Pelzer, Martin: *See—*
Luber, Joachim; Muller, Werner; Pelzer, Martin; and Reiss, Anette, 5,345,087, Cl. 250-561.000.
Pelzer, Rudolf. Multi-chamber centrifuge for degassing or gassing of liquids. 5,344,382, Cl. 494-60.000.
Penetect, Inc.: *See—*
Rogers, John E., 5,345,081, Cl. 250-338.100.
Penhasi, Harry A.: *See—*
Chern, Cory; and Penhasi, Harry A., 5,344,380, Cl. 494-12.000.
Pennock, Richard F.: *See—*
Hutchings, David A.; McVay, Ted M.; and Pennock, Richard F., 5,344,909, Cl. 528-129.000.
Perego, Luciano, to Tapematic U.S.A., Inc. Method and apparatus for supplying tape loading machines with reels of tape. 5,344,092, Cl. 242-538.000.
Perigo, John A.: *See—*
Divall, John E.; and Perigo, John A., 5,344,052, Cl. 222-135.000.
Perrin, Nicolas: *See—*
Vuillermoz, Jean-Claude; Perrin, Nicolas; and Devaux, Michel, 5,344,122, Cl. 266-79.000.
Perry, Larry: *See—*
Maxwell, G. Patrick; Fisher, Jack; and Perry, Larry, 5,344,388, Cl. 600-40.000.
Pershin, Evgeny S.: *See—*
Kolkin, Yakov G.; Vecherko, Vladimir N.; and Pershin, Evgeny S., 5,344,410, Cl. 604-247.000.
Petersen, David B.: *See—*
Ault, Donald F.; Petersen, David B.; Redding, Ian G.; and Schmandt, Stephen J., 5,345,590, Cl. 395-650.000.
Peterson, David K.: *See—*
Berg, Gary L.; Rossing, Martin A.; Peterson, David K.; and Neumann, Robert A., 5,344,430, Cl. 607-8.000.
Peterson, Francis C.; and Parekh, Bipin, to Ford Motor Company. Canister bracket. 5,344,112, Cl. 248-313.000.
Peterson, Jeffrey S.; and Oseth, Donald L., to Minnesota Mining and Manufacturing Company. Coated abrasive article and a method of making same. 5,344,688, Cl. 428-102.000.
Peterson, LuVerne R., to Unisys Corporation. Control module for reducing ringing in digital signals on a transmission line. 5,345,113, Cl. 307-475.000.
Peterson, R. Kim: *See—*
Greenwood, Stephen R ; Peterson, R. Kim; and Schreiber, Benn L., 5,345.588, Cl. 395-650.000.
Petersson, Rolf: *See—*
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Petralia, Salvatore C., to Recoton Corporation. Video transfer device. 5,345,260, Cl. 348-98.000.
Petri, Hector D. Grommet strip. 5,343,669, Cl. 52-716.800.
Petroff, T. Edward: *See—*
Wong, Raymond W.; Breton, Marcel P.; Croucher, Melvin D.; Duff, James M.; Petroff, T. Edward; Riske, William; and Henseleit, Kerstin M., 5,345,254, Cl. 347-100.000.
Petrosius, Steven: *See—*
Brendley, William H., Jr.; Grunewald, Gerald; Petrosius, Steven; and Drago, Russell, 5,344,630, Cl. 423-240.00R.
Petrovich, Melinda L. Commode float toy training device. 5,343,577, Cl. 4-661.000.
Petrovich, Paul A. Spiral recoil absorber. 5,343,649, Cl. 42-1.060.
Pettersson, Vagn A., to FLS Miljo A/S. Suspension device and rapping mechanism for electrodes in an electrostatic precipitator. 5,344,481, Cl. 96-33.000.
Peykar, Alexander. Worn look carpet weave. 5,343,600, Cl. 28-143.000.
Pfender, Emil: *See—*
Tsai, Chung-hsien; Nelson, John C.; Herberlein, Joachim V. R.; Pfender, Emil; and Gerberich, William W., 5,344,551, Cl 205-110.000.
Pfizer Inc.: *See—*
Alker, David; and Cross, Peter E., 5,344,835, Cl. 514-317.000.
Phare, Stephen G. Candle lighting and extinguishing device. 5,344,309, Cl. 431-145.000.
Phelan, James J.: *See—*
Hiller, Thomas L.; Phelan, James J.; and Zola, Meyer J., 5,345,445, Cl. 370-60 100.
Hiller, Thomas L.; Phelan, James J.; and Zola, Meyer J., 5,345,446, Cl. 370-60.100.
Philip Morris Incorporated: *See—*
DeBlasio, James A.; Brookman, Donald L.; Draucker, James B.; Evers, Donald H.; Hansen, Charles D.; Moore, Pamela D.;

Newsome, Reginald W.; and Rech, William J., 5,344,008, Cl. 206-256.000.

Phillips, David L.: *See—*
Reichen, Ronald L.; Diebold, David H.; Smith, Larry N.; O'Brien, Stephen E.; and Phillips, David L., 5,343,680, Cl. 56-249.000.

Phillips, George K. Visual validation mark for bank checks and other security documents. 5,344,192, Cl. 283-91.000.

Phillips, Gerald W.: *See—*
Devon, Thomas J.; Phillips, Gerald W.; Puckette, Thomas A.; Stavinoha, Jerome L.; and Vanderbilt, Jeffrey J., 5,344,988, Cl. 568-454.000.

Phillips Petroleum Company: *See—*
Benham, Elizabeth A.; and McDaniel, Max P., 5,344,884, Cl. 525-222.000.
Khare, Gyanesh P.; and Porter, Randall A., 5,344,805, Cl. 502-329.000.
Wu, Yulin, 5,344,674, Cl. 427-386.000.

Phillips, Wayne D.: *See—*
D'Ambrogio, William J.; Phillips, Wayne D.; and Seip, Barry S., 5,345,443, Cl. 370-60.000.

Phlipot, Jack W., to Zimmer, Inc. Modular implant provisional. 5,344,461, Cl. 623-20.000.

Pianka, Juergen, to AT&T Bell Laboratories. ESD protection of output buffers. 5,345,356, Cl. 361-56.000.

Pianka, Juergen, to AT&T Bell Laboratories. ESD protection of output buffers. 5,345,357, Cl. 361-56.000.

Picha, George J.; Secrest, Dean J.; and Nguyen, Angela P., to Applied Medical Technology, Inc. Tract measuring device. 5,343,874, Cl. 128-780.000.

Pichler, Werner: *See—*
Landua, Werner; and Pichler, Werner, 5,343,929, Cl. 164-262.000.

Pichler, Wilhelm. Sleeping mask and neck rest. 5,343,561, Cl. 2-15.000.

Picker International, Inc.: *See—*
Kasuboski, Larry; and Gullapalli, Rao P., 5,345,175, Cl. 324-309.000.

Pickett, Terence D.: *See—*
Easton, David J.; and Pickett, Terence D., 5,343,775, Cl. 74-532.000.

Piejko, Karl-Erwin; Braese, Hans-Eberhard; and Lindner, Christian, to Bayer Aktiengesellschaft. Molding compounds having improved fire behavior. 5,344,876, Cl. 525-71.000.

Pierce, Michael E.; Horn, John A.; and MacGregor, Duncan D., to Intel Corporation. Thin form factor computer card. 5,345,367, Cl. 362-32.000.

Pierfitte, Michel: *See—*
Engdahl, John C.; and Pierfitte, Michel, 5,345,082, Cl. 250-363.070.

Pierrat, Michel A., to Encynova Inc. Magazine latching and ejection mechanism for a cassette autoloader. 5,345,349, Cl. 360-92.000.

Pighetti, Annette M.: *See—*
Magowan, John W.; Pawlaczyk, Richard J.; Pighetti, Annette M.; and Schwarz, Richard A., Jr., 5,344,283, Cl. 415-115.000.

Pigott, Brandon L.: *See—*
Pigott, Maurice J.; Pigott, Brandon L.; Pigott, Peter S.; and Pigott, Schuyler F., 5,343,814, Cl. 108-56.100

Pigott, Maurice J.; Pigott, Brandon L.; Pigott, Peter S.; and Pigott, Schuyler F. Plastic pallet assembly. 5,343,814, Cl. 108-56.100.

Pigott, Peter S.: *See—*
Pigott, Maurice J.; Pigott, Brandon L.; Pigott, Peter S.; and Pigott, Schuyler F., 5,343,814, Cl. 108-56.100.

Pigott, Schuyler F.: *See—*
Pigott, Maurice J.; Pigott, Brandon L.; Pigott, Peter S.; and Pigott, Schuyler F., 5,343,814, Cl. 108-56.100.

Pilliar, Robert M.; Deporter, Douglas A.; and Watson, Phillip A., to University of Toronto Innovations Foundation, The. Porous surfaced implant. 5,344,457, Cl. 623-16.000.

Pinkerton, Joseph F.; Clifton, David B.; and Little, Scott R., to Magnetic Bearing Techologies, Inc. Magnetic bearing with closed loops which move in AC electromagnet field and/or which include capacitors. 5,345,128, Cl. 310-90.500.

Pinnow, Kenneth E.: *See—*
Stasko, William; and Pinnow, Kenneth E., 5,344,477, Cl. 75-255.000.

Pinto, Akiva; Lucassen, Guenter; and Scholbrock, Manfred, to Hergeth Hollingsworth GmbH. Method and device for opening and cleaning fiber material. 5,343,597, Cl. 19-205.000

Pioch, Michel, to Cepede, A French Societe Anonyme of Zone Industrielle De Saint-Laurent. Machine for machining parts from long profiles or bars. 5,343,603, Cl. 29-27.00C.

Pioneer Electronic Corporation: *See—*
Kashiwazaki, Takashi, 5,345,388, Cl. 364-449.000.
Tsuda, Youichirou, 5,345,594, Cl. 455-18.000.

Piper Industries of Texas, Inc.: *See—*
Stahl, Edward L., 5,344,022, Cl. 206-507.000.

Pires, H. George. Coding system for a data signal. 5,345,505, Cl. 380-20.000.

Pirie, Craig: *See—*
Adat, Riyaz; Mar, Kevin; Pirie, Craig; and Poupore, Tim, 5,344,211, Cl. 297-230.140.

Pirio, Marcel: *See—*
Lin, Cheng-I; and Pirio, Marcel, 5,344,782, Cl. 436-79.000.

Pirozzi, Mario: *See—*
Cipolli, Roberto; Masarati, Enrico; Oriani, Roberto; Pirozzi, Mario; and Nucida, Gilberto, 5,344,931, Cl. 544-195.000.

Piskie, Michael A.: *See—*
Gioutsos, Tony; and Piskie, Michael A., 5,345,402, Cl. 364-578.000.

Pistay, George R., to Sub I.P., Inc. Massaging therapeutic pillow with removable ice pack. 5,344,437, Cl. 607-109.000.

Pitman-Moore, Inc.: *See—*
Severin, Jane E., 5,344,018, Cl. 206-469.000.

Pitney Bowes Inc.: *See—*
Lorenzo, John L.; and Mol, Hans C., 5,345,089, Cl. 250-566.000.

Pittman, William C.; and Terrill, Susan D., to United States of America, Army. Missile beamrider guidance using polarization-agile beams. 5,344,099, Cl. 244-3.130.

Pizzelli, Charles E.: *See—*
Pizzelli, David A.; Groome, Paul W.; and Pizzelli, Charles E., 5,344,356, Cl. 446-73.000.

Pizzelli, David A.; Groome, Paul W.; and Pizzelli, Charles E. Decorative toy and storage unit with attachable holders. 5,344,356, Cl. 446-73.000.

Plankenhorn, Horst, to Mannesmann Kienlze GmbH. Process for separating acceleration sensors constructed as differential capacitors. 5,343,602, Cl. 29-25.410.

Plasma Plus: *See—*
Paskalov, Georgy Z.; Krapivina, Svetlana A.; and Filippov, Alexander K., 5,344,462, Cl. 8-115.520.

Plett, Gregory L.: *See—*
Strawczynski, Leo; Sandler, Howard M.; Plett, Gregory L.; and Steer, David G., 5,345,597, Cl. 455-34.100.

Plum, Helmut: *See—*
Brindoepke, Gerhard; Kubillus, Uwe; and Plum, Helmut, 5,344,897, Cl. 525-526.000.

Podalsky, David J.: *See—*
Karlyn, William M.; Podalsky, David J.; and Wiseley, Thomas D., 5,343,804, Cl. 101-39.000.

Polaert, Remy: *See—*
Hazan, Jean-Pierre; Polaert, Remy; and Nagel, Jean-Louis, 5,345,060, Cl. 219-250.000.

Polaris Industries, L.P.: *See—*
Olson, Alan S.; and Przekwas, Robert W., 5,344,168, Cl. 280-28.000.

Polaroid Corporation: *See—*
Lippert, Irving S., 5,345,289, Cl. 354-283.000.

Polidero, Aldo: *See—*
Polidero, Nicco, 5,344,312, Cl. 431-326.000.

Polidero, Nicco, to Polidero, Aldo. Atmospheric gas burners of the hyperstoichiometric mixture type. 5,344,312, Cl. 431-326.000.

Poll, Martin, to D. Swarovski & Co. Chain link for gems, and oramental chain comprising such links, and a method for producing said chain. 5,343,718, Cl. 63-26.000.

Pollock, Eugene B., to Grain Systems Incorporated. Roof vent assembly for grain storage bin. 5,344,363, Cl. 454-182.000.

Polyplastics Co., Ltd.: *See—*
Yamamoto, Kaoru; Maeda, Nagayoshi; Kamiya, Makoto; Murao, Toshiro; Reuschel, Gerhard; and Fleischer, Dietrich, 5,344,911, Cl. 528-241.000.

Pons, John M.; and O'Farrell, John J., to Pons, John Michael. Arm alarm system. 5,345,221, Cl. 340-571.000.

Pons, John Michael: *See—*
Pons, John M.; and O'Farrell, John J., 5,345,221, Cl. 340-571.000.

Pontier, Renaud; Hoffmann, Frederic; and Galtier, Pierre, to Institut Francais Du Petrole. Downflow fluid catalytic cracking process and apparatus. 5,344,554, Cl. 208-164.000.

Poole, John S.: *See—*
Schleifer, Arthur; Roark, Joseph C.; Poole, John S.; Gordon, Gary B.; Segal, Gilbert; and Fuhrman, Philip B., 5,345,540, Cl. 395-86.000.

Porelon, Inc.: *See—*
Hinton, Stephanie S., 5,344,483, Cl. 106-22.00R.

Porter, Lane; and Thayer, Edward B., to United Technologies Corporation. Hexagonal cluster nozzle for a rocket engine. 5,343,698, Cl. 60-271.000.

Porter, Randall A.: *See—*
Khare, Gyanesh P.; and Porter, Randall A., 5,344,805, Cl. 502-329.000.

Porton Diagnostics, Inc.: *See—*
North, John R.; Kay, Robert L.; and Ivy, Jonathan, 5,344,544, Cl. 204-401.000.

Poulsen, Lawrence L.; and Ziegler, Daniel M., to Research Development Foundation. Video densitometer with determination of color composition. 5,345,261, Cl. 348-135.000.

Poupore, Tim: *See—*
Adat, Riyaz; Mar, Kevin; Pirie, Craig; and Poupore, Tim, 5,344,211, Cl. 297-230.140.

Powell, David L. Multiple panel closure for open top of bed of pickup truck. 5,344,159, Cl. 296-100.000.

PPG Industries, Inc.: *See—*
Basil, John D.; and Lin, Chia-Cheng, 5,344,712, Cl. 428-412.000.
Hart, Terence J.; Van Buskirk, Ellor J.; and Hockswender, Thomas R., 5,344,858, Cl. 523-411.000.

Prall, Kirk D.; and Kinney, Wayne I., to Micron Technology, Inc. Flash memory cell having antimony drain for reduced drain voltage during programming. 5,345,104, Cl. 257-607.000.

Praxair Technology, Inc.: *See—*
Schulte, Thomas R.; Heim, Carl J.; Gorjaczkowski, Vladimir T.; and Giglia, Salvatore, 5,344,480, Cl. 95-52.000.

Precision Storage, Inc.: *See—*
Gowan, William A., 5,343,712, Cl. 62-126.000.

Premiski, Vladimir; Wehren, Wilhalm; Silk, Mark; and Biedermann, Sieghart, to Ford Motor Company. Roller element overrunning clutch. 5,343,991, Cl. 192-45.000.

Prentice, Bruce A.: *See—*
Amoroso, Michael D.; and Prentice, Bruce A., 5,345,497, Cl. 379-33.000.

Preston, Brian C.: *See—*
Nguyen, Patrick; and Preston, Brian C., 5,345,255, Cl. 346-139.00R.

Price, Albert E., to Genzyme Corporation. Method of separating glycosylated and non-glycosylated prolactin by ion exchange chromatography. 5,344,920, Cl. 530-416.000.

Price, Richard T.: *See—*
Langenbrunner, Leslie L.; Price, Richard T.; and Baldwin, Jack W., 5,344,280, Cl. 415-9.000.

Priester, Claus-Ulrich: *See—*
Witzel, Tom; Fuchs, Eberhard; Merger, Franz; and Priester, Claus-Ulrich, 5,344,983, Cl. 564-396.000.

Primate Products: *See—*
Houghton, Paul W.; and Bloom, Kenneth R., 5,343,828, Cl. 119-51.030.

Primeaux, Francis: *See—*
McShane, Michael B.; Woosley, Alan H.; and Primeaux, Francis, 5,344,600, Cl. 264-219.000.

Princeton University, The Trustees of: *See—*
Schwartz, Jeffrey; and Liu, Yumin, 5,345,031, Cl. 588-206.000.
Taylor, Edward C., 5,344,932, Cl. 544-280.000.

Printronix, Inc.: *See—*
Farb, Norman E., 5,344,242, Cl. 400-124.200.

Prior, Richard W., to ETEC Systems, Inc. Method and structure for electronically measuring beam parameters. 5,345,085, Cl. 250-491.100.

Pro-Index Corp.: *See—*
Carlin, Ira W.; and Fischtein, Morris, 5,344,015, Cl. 206-449.000.

Procter & Gamble Company, The: *See—*
Niihara, Kaoru; and Osborn, Thomas W., III, 5,344,416, Cl. 604-385.100.
Payne, Michael T.; and Kinne, Daniel J., 5,344,562, Cl. 426-124.000.
Schwen, Richard J.; Sine, Mark R.; and Warren, Raphael, 5,344,651, Cl. 424-402.000.

Proctor, Alfred E. Complete body passive exercise machine. 5,343,856, Cl. 601-35.000.

Pross, Gerhard; and Schlueter, Malte, to Hewlett Packard Company. Method and system for monitoring vital signs. 5,343,869, Cl. 128-700.000.

Protex International Corp.: *See—*
Rogers, Robert, 5,345,219, Cl. 340-568.000.
Wachsman, David R., 5,345,220, Cl. 340-568.000.

Prototek, Inc.: *See—*
Palmer, James T., 5,344,939, Cl. 548-531.000.

Prott, Thierry: *See—*
Dannawi, Marwan; and Prott, Thierry, 5,344,210, Cl. 297-216.200.

Prottey, Frederick V., to Sumitomo Rubber Industries, Ltd. Method of detecting a deflated tire on a vehicle. 5,345,217, Cl. 340-442.000.

Providenza, John R.; and Boekelheide, Lee, to Network Computing Devices, Inc. Image processor memory for expediting memory operations. 5,345,555, Cl. 395-164.000.

Pryor, Jeffery W.: *See—*
Pryor, John W.; Pryor, Jeffery W.; and Ratcliff, Jack W., 5,344,169, Cl. 280-79.300.

Pryor, John W.; Pryor, Jeffery W.; and Ratcliff, Jack W., to Pryor Products. Multi-pole support stand. 5,344,169, Cl. 280-79.300.

Pryor Products: *See—*
Pryor, John W.; Pryor, Jeffery W.; and Ratcliff, Jack W., 5,344,169, Cl. 280-79.300.

Przekwas, Robert W.: *See—*
Olson, Alan S.; and Przekwas, Robert W., 5,344,168, Cl. 280-28.000.

Przybyla, Bernd; and Palesch, Reinhard, to Robert Bosch GmbH. Method of and apparatus for interrogating vehicle control device data. 5,345,384, Cl. 364-424.040.

Public Health Laboratory Service Board, The: *See—*
Marks, Trevor S.; and Maule, Andrew, 5,345,032, Cl. 588-207.000.

Puchner, Fritz: *See—*
Reiners, Jurgen; Wigger, Herbert; and Puchner, Fritz, 5,344,620, Cl. 427-288.000.

Puckette, Thomas A.: *See—*
Devon, Thomas J.; Phillips, Gerald W.; Puckette, Thomas A.; Stavinoha, Jerome L.; and Vanderbilt, Jeffrey J., 5,344,988, Cl. 568-454.000.

Puddephatt, Kevin J., to Nissan European Technology Centre Limited. Tool making. 5,345,052, Cl. 219-69.170.

Puhler, Andreas J.: *See—*
Uihlein, Christoph; Hausing, Michael; and Puhler, Andreas J., 5,345,563, Cl. 395-275.000.

Pullela, V. Sarma: *See—*
Bahjat, Zuhair S.; and Pullela, V. Sarma, 5,345,049, Cl. 187-127.000.

Puncochar, James C. Adjustable hold down clip. 5,343,682, Cl. 56-305.000.

Purcel, David E.: *See—*
Brown, David E.; and Purcel, David E., 5,343,826, Cl. 116-275.000.

Purcell, Richard D., Jr.: *See—*
Wei, Cha-Mer; Hsiung, Nancy; Reddy, Vermuri B.; Lemontt, Jeffrey F.; Dackowski, William; Douglas, Richard; Cole, Edward S.; Purcell, Richard D., Jr.; and Lau, David Tai-Yui, 5,344,773, Cl. 435-226.000.

Puritan-Bennett Corporation: *See—*
Kikut, Aksi, 5,343,859, Cl. 128-205.130.

Putzmeister-Werk Maschinenfabrik GmbH: *See—*
Benckert, Hartmut, 5,344,290, Cl. 417-342.000.

Quality Manufacturing Incorporated: *See—*
Huber, Mortimer J., 5,343,645, Cl. 40-505.000.

Quantum Chemical Corporation: *See—*
Chang, Biau-Hung; Wild, Leslie; and Hinnenkamp, James A., 5,344,886, Cl. 525-285.000.
Menon, Raghu; Masino, Albert P.; and Reinking, Mark K., 5,344,803, Cl. 502-116.000.
Wild, Leslie; Hinnenkamp, James A.; Chang, Biau-Hung; and Kiang, Webster W., 5,344,888, Cl. 525-301.000.

Quantum Corporation: *See—*
Abbott, William L.; Nguyen, Hung C.; and Johnson, Kenneth E., 5,345,342, Cl. 360-48.000.

Quaranta, Vito; and Kajiji, Shama, to Scripps Research Institute, The. Integrin from human epithelial cells. 5,344,919, Cl. 530-395.000.

Quickie Manufacturing Corporation: *See—*
Vosbikian, Peter S., 5,343,586, Cl. 15-121.000.

Quinton Instrument Company: *See—*
Gallant, Stuart L.; Caron, Paul R.; Palmer, Walter E.; and Lubocki, David J., 5,343,870, Cl. 128-711.000.

R & B, Inc.: *See—*
Rogers, William C.; and Lawson, William R., 5,343,986, Cl. 188-73.450.

R. J. Reynolds Tobacco Company: *See—*
Teague, Richard A., 5,343,879, Cl. 131-297.000.

R. R. Donnelley & Sons Company: *See—*
Depinet, Paul E.; and Detterman, Don E., 5,343,998, Cl. 198-415.000.

Raad, Bernard A., to EEMCO/DATRON, Inc. Miniature, modular, plug-in rotating switch. 5,345,125, Cl. 310-68.00A.

Rabe, Paul R.: *See—*
McDaniel, John R.; Rabe, Paul R.; Stang, John H.; Griffen, Peter J.; Stasell, Mark W.; Londt, Edward E.; and Wilson, Barrie L., 5,343,780, Cl. 477-108.000.

Rabek, Jan W. An electrically powered motor vehicle. 5,343,974, Cl. 180-216.000.

Rabenau, Richard; Lisak, Stephen P.; and Kehne, Terry B., to Ryder International Corporation. Fluid pumping system and apparatus. 5,344,292, Cl. 417-413.00R.

Racine Federated Inc.: *See—*
Nielsen, John C.; Loeffler, Mark A.; and Cariello, Dominic A., 5,343,763, Cl. 73-861.580.

Radabaugh, Kurtis R., to Lindsay Manufacturing, Inc. Low voltage central vacuum control handle with an air flow sensor. 5,343,590, Cl. 15-319.000.

Radiall: *See—*
Bouleau, Jacky, 5,344,340, Cl. 439-581.000.

Radisch, Herbert R.; and Vigil, Dennis M., to Interventional Technologies Inc. Catheter balloon formed from a polymeric composite. 5,344,401, Cl. 604-96.000.

Radlein, Denton G., to Shu-Pak Refuse Equipment Inc. Double-tier side loading refuse vehicle. 5,344,273, Cl. 414-409.000.

Rae, Malcolm C., to G.E.W. (EC) Limited. UV dryers. 5,343,629, Cl. 34-278.000.

Raffel, Jack I.: *See—*
Herndon, Terry C.; and Raffel, Jack I., 5,345,365, Cl. 361-760.000.

Raiford, Kimberly G.; Greenwood, Edward J.; and Dettre, Robert H., to Du Pont de Nemours, E. I., and Company. Water- and oil-repellent fluoro(meth)acrylate copolymers. 5,344,903, Cl. 526-245.000.

Raina, Ashok K.: *See—*
Kingan, Timothy G.; and Raina, Ashok K., 5,344,821, Cl 514-12.000.

Rajala, Kari; and Parviainen, Seppo, to Valmet Paper Machinery Inc. Method and device for drilling of holes into a mantle of a cylinder in a paper machine. 5,344,259, Cl. 408-46.000.

Rajaratnam, Martha M.: *See—*
Sinta, Roger F.; Barclay, George; and Rajaratnam, Martha M., 5,344,742, Cl. 430-270.000.

Ralston, William H.: *See—*
Deutsch, Edward A.; Deutsch, Karen F.; Cacheris, William P.; Ralston, William H.; White, David H.; Nosco, Dennis L.; Wolfangel, Robert G.; Wilking, Janet B.; Meeh, Linda; and Woulfe, Steven R., 5,344,640, Cl. 424-9.000.

Ramachandran, Ramakrishnam; and Shirley, Arthur I., to BOC Group, Inc., The. Process for the production of bioproteins. 5,344,766, Cl. 435-71.200.

Ramioulle, Frederic, to Solvay Automotive, Inc. Internal gas removal system for fuel tank and method of making thereof. 5,343,902, Cl. 141-7.000.

Ramirez, Eduardo: *See—*
Betz, Dieter; Nuebel, Karl-Heinz; Almendro, Jose Luis; Garcia, Fernando; and Ramirez, Eduardo, 5,343,614, Cl. 29-605.000.

Ramler, David J.; and Adamietz, Lon A., to Dimension Industries, Inc. End effectors with individually positionable vacuum cups. 5,344,202, Cl. 294-64.100.

Ramon, Henry E., III: *See—*
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Ramp R & D: *See—*
Palmersten, Michael J., 5,343,665, Cl. 52-588.100.

Ramsdell, Wayne W. Gun holder for vehicles. 5,344,032, Cl. 211-64.000.

Ramspeck, Klaus: *See—*
Hildebrand, Gerhard; Seidel, Gunther; Heintke, Hans-Eberhard; Ramspeck, Klaus; Eichhorn, Reinhold; Durr, Helmut; Franke, Wolfgang; Braun, Gebhard; Ohle, Manfred; and Ullmann, Roland, 5,343,621, Cl. 30-43.920.

Rankl, Gerald; and Haubenwallner, Gerhard, to Rankl, Gerald. Slatted curtain for roller blinds. 5,343,922, Cl. 160-133.000.
Ransburg Corporation: *See—*
Fritz, Alan H.; Cedoz, Roger T.; and Miller, Mark D., 5,344,078, Cl. 239-296.000.
Ransomes, Inc.: *See—*
Stuart, Thomas G., 5,343,678, Cl. 56-11.300.
Rao, V. N. Mallikarjuna; and Swearingen, Steven H., to Du Pont de Nemours, E. I., and Company. Process for reducing the fluorine content of halocarbons. 5,345,017, Cl. 570-227.000.
Rapp, Knut M.: *See—*
Descotes, Gerand; Cottier, Louis; Eymard, Laurent; and Rapp, Knut M., 5,344,974, Cl. 562-567.000.
Rasch, Ulf: *See—*
Bartsch, Georg; Rasch, Ulf; and Spiekermann, Michael, 5,343,988, Cl. 190-18.00A
Rasmussen, Jerald K.: *See—*
Gagnon, David R.; Coleman, Patrick L.; Drtina, Gary J.; Lyons, Christopher S.; Milbrath, Dean S.; Rasmussen, Jerald K.; and Stahl, Julie B., 5,344,701, Cl. 428-304.400.
Ratcliff, Jack W.: *See—*
Pryor, John W.; Pryor, Jeffery W.; and Ratcliff, Jack W., 5,344,169, Cl. 280-79.300.
Ratcliffe, Robert M.; and Venot, Andre P., to Alberta Research Council. Sialic acid glycosides, antigens, immunoadsorbents, and methods for their preparation. 5,344,870, Cl. 525-54.200.
Raudsepp, Rein: *See—*
Kerfoot, Derek G. E.; and Raudsepp, Rein, 5,344,479, Cl. 75-743.000.
Rauland-Borg Corporation: *See—*
Singhi, Dilip; and Patel, Kamlesh V., 5,345,510, Cl. 381-77.000.
Raybon, Michael L. Apparatus for treating oil and gas wells. 5,343,941, Cl. 166-53.000.
Raychaudhuri, Satyabrata: *See—*
Wang, Shibo; Kirkbir, Fikret; Raychaudhuri, Satyabrata; and Sarkar, Arnab, 5,343,633, Cl. 34-92.000
Raytheon Company: *See—*
Greer, James A., 5,345,134, Cl. 310-313.00D
Greer, James A.; and Parker, Thomas E., 5,345,201, Cl. 333-193.000.
Raza, S. Barbar: *See—*
Nazarian, Hagop A.; and Raza, S. Barbar, 5,345,112, Cl. 307-443.000.
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Sasaki, Masaomi; Shimada, Tomoyuki; and Hashimoto, Mitsuru, 5,344,735, Cl. 430-83.000.
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Robertson, Harry J. Method and apparatus for making steel sheets. 5,344,597, Cl. 264-40.600.
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Berg, Gary L.; Rossing, Martin A.; Peterson, David K.; and Neumann, Robert A., 5,344,430, Cl. 607-8.000.

Rostoker, Michael D.; Pasch, Nicholas F.; and Zelayeta, Joe, to LSI Logic Corporation. Identifying and compensating for slip-plane dislocations in photolithographic mask alignment. 5,345,310, Cl. 356-401.000.

Roth, Duane J.; Keipert, Peter E.; Faithfull, Nicholas S.; Zuck, Thomas F.; and Riess, Jean G., to Alliance Pharmaceutical Corp. Use of synthetic oxygen carriers to facilitate oxygen delivery. 5,344,393, Cl. 604-4.000.

Rothenberger, Richard E.: *See—*
Laub, Michael F.; and Rothenberger, Richard E., 5,344,334, Cl. 439-331.000.

Rothenhofer, Karl, to Alcatel N.V. Establishment of connections between terminals for mobile subscribers of an interconnected network. 5,345,502, Cl. 379-207.000.

Rothers, Dave E.: *See—*
Bouldin, Brett W.; Owens, Steven C.; Rothers, Dave E.; and Jones, Kevin R., 5,343,963, Cl. 175-27.000.

Rouser, Forrest J.; Chang, John D.; and Reeves, Mark E., to Minnesota Mining and Manufacturing Company. Ski base and running surface. 5,344,177, Cl. 280-610.000.

Rouzaud, Dominique, to Messier-Bugatti. Safety locking device having a tilting hook. 5,344,197, Cl. 292-5.000.

Rowell, Charles: *See—*
Cole, Eugene H.; and Rowell, Charles, 5,343,623, Cl. 30-304.000.

Rubbermaid Office Products Group, Inc.: *See—*
Evenson, Mel, 5,344,030, Cl. 211-55.000.

Rubin, Albert L.: *See—*
Levine, Daniel M.; Parker, Thomas S.; and Rubin, Albert L., 5,344,822, Cl. 514-13.000.

Rubis, Donald E.: *See—*
Brooks, Gary T.; Edwards, Harold R., Jr.; Thrash, Kathy J.; Rubis, Donald E.; and Sinclair, David P., 5,344,852, Cl. 521-99.000.

Rueff, John R.: *See—*
Buck, Keith E.; Farrar, David J.; Harvey, Robert J.; Litwak, Philip; and Rueff, John R., 5,344,385, Cl. 600-16.000.

Rueger, David C.; Kuberasampath, Thangavel; Oppermann, Hermann; and Ozkaynak, Engin, to Stryker Corporation. Prosthetic devices having enhanced osteogenic properties. 5,344,654, Cl. 424-423.000.

Runkel, Walter, to Hemscheidt Fahrwerktechnik GmbH & Co. KG. Suspension system. 5,344,124, Cl. 267-64.150.

Ruppmich, Karl: *See—*
Fischer, Wolfgang; Guentherberg, Norbert; Niessner, Norbert; Ruppmich, Karl; and Seitz, Friedrich, 5,344,877, Cl. 525-83.000.

Rutgerswerke Aktiengesellschaft AG: *See—*
Schroter, Stephan; Hansen, Achim; Gardziella, Arno; and Adolphs, Peter, 5,345,001, Cl. 568-727.000

Rutkiewicz, Robert D., to B. F. Goodrich Company, The. Snow sensor. 5,345,223, Cl. 340-581.000.

Rutman, Serge: *See—*
Lippincott, Louis A.; and Rutman, Serge, 5,345,554, Cl. 395-162.000.

Ruud, Alan; and Haugaard, Eric, to Ruud Lighting, Inc. Optical system for lamp-mounting elongate roof fixture. 5,345,369, Cl. 362-145.000.

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Ruud, Alan; and Haugaard, Eric, 5,345,369, Cl. 362-145.000.

Ruzza, Wogler: *See—*
Striuli, Mirco; Borlina, Fabio; and Ruzza, Wogler, 5,343,931, Cl. 164-418.000.

RXS Schrumpftechnik-Garnturen GmbH: *See—*
Graefe, Detlef; and Sagemuehl, Dieter, 5,344,511, Cl. 156-85.000.

Ryan, Dana W. Safety holder for pre-filled disposable syringe cartridge. 5,344,407, Cl. 604-192.000.

Ryan. Thomas A.: *See—*
Martin, John S.; Ryan, Thomas A.; and Spooncer, Rachel A., 5,344,998, Cl. 568-683.000.

Ryder International Corporation: *See—*
Rabenau, Richard; Lisak, Stephen P.; and Kehne, Terry B., 5,344,292, Cl. 417-413.00R.

Rynaski, Richard F.; and Bogli, Craig, to Otis Elevator Company Voice communication for elevator. 5,345,046, Cl. 187-105.000.

Ryszanek, Richard R.: *See—*
Andrews, F. Keith; and Ryszanek, Richard R., 5,344,084, Cl. 239-751.000.

Ryu, Choon K.: *See—*
Kim, Kyekyoon; and Ryu, Choon K., 5,344,676, Cl. 427-468.000.

S-MOS Systems, Inc.: *See—*
Lin, Chong M.; Chuang, Tatao; Long, Tran; and Hoang, Hy, 5,345,394, Cl. 364-491.000.

SA Martin: *See—*
Capdeboscq, Bernard, 5,344,136, Cl. 271-189.000.

Sabine, James R., to Eagle Precision Technologies Inc. Tube bending apparatus and method. 5,343,725, Cl. 72-155.000.

Sabol, Albert. Added footwear to increase stride. 5,343,636, Cl. 36-78.000.

Sacchetti, Cesare. Adjustable manhole cover. 5,344,253, Cl. 404-26.000.

Saeger, Timothy W.; Kranawetter, Greg A.; and Ersoz, Nathaniel H., to Thomson Consumer Electronics, Inc. Managing letterbox signals with logos and closed captions. 5,345,270, Cl. 348-435.000.

Saeger, Timothy W.: *See—*
Ersoz, Nathaniel H.; Saeger, Timothy W.; Dotty, James H., II; and Kranawetter, Greg A., 5,345,272, Cl. 348-561.000.

Saeki, Makoto: *See—*
Iwamura, Masahiro; Yamauchi, Tatsumi; Saeki, Makoto; and Uchida, Hideaki, 5,345,421, Cl. 365-189.050.

Saeki, Shirou; Hirose, Akira; Fujii, Takashi; and Sano, Motoya, to Ricoh Company, Ltd. Automatic document feeder for an image forming apparatus. 5,344,134, Cl. 271-122.000.

SAES Getter S.p.A.: *See—*
Succi, Marco; Solcia, Carolina; Doni, Fabrizio; and Coppola, Antonio, 5,343,735, Cl. 73-29.010.

Sagami Chemical Research Center: *See—*
Hirai, Kenji; Yano, Tomoyuki; Yamashita, Mitsuo; Ejiri, Emiko; Tateno, Tomoko; and Aizawa, Kiyomi, 5,344,953, Cl. 558-272.000.

Sagemuehl, Dieter: *See—*
Graefe, Detlef; and Sagemuehl, Dieter, 5,344,511, Cl. 156-85.000.

Saint-Arnaud, Jean-Marie: *See—*
Ingrain, Dominique; Bose, Tapan; and Saint-Arnaud, Jean-Marie, 5,343,758, Cl. 73-861.020.

Saito, Akihiro: *See—*
Sasaki, Susumu; Wada, Hisashi; Oguri, Takashi; Terumoto, Susumu; and Saito, Akihiro, 5,345,132, Cl. 310-239.000.

Saito, Hiroaki: *See—*
Akasaka, Hitoshi; Kojima, Tomoko; Daimon, Yuji; and Saito, Hiroaki, 5,344,070, Cl. 236-49.300.

Saito, Hiromitsu: *See—*
Murakata, Chikara; Takiguchi, Toshimitsu; Katsumata, Shigeo; Mihara, Akira; Takahashi, Keiichi; Saito, Hiromitsu; Akinaga, Shiro; Okabe, Masami; and Saito, Yutaka, 5,344,926, Cl. 540-545.000.

Saito, Kiyomi; and Kuwa, Morihiko, to Nakagawa Corrosion Protecting Co., Ltd. Prevention method of aquatic attaching fouling organisms and its apparatus. 5,344,531, Cl. 204-147.000.

Saito, Kouichi: *See—*
Ogawa, Hiroshi; and Saito, Kouichi, 5,345,403, Cl. 364-708.100.

Saito, Kyoichi: *See—*
Sugo, Takanobu; and Saito, Kyoichi, 5,344,560, Cl. 210-500.230.

Saito, Masako: *See—*
Kurihara, Yoshie; Kohno, Hiroshige; Sugiyama, Hiromu; Shimada, Teiyu; Saito, Masako; and Ikeda, Kenji, 5,344,659, Cl. 426-3.000.

Saito, Osamu: *See—*
Kamiguchi, Masao; Saito, Osamu; Kubota, Kazuo; and Takemoto, Masanobu, 5,344,301, Cl. 425-169.000.

Saito, Shunichi, to Nitto Kohki Co., Ltd. Pipe coupling. 5,343,892, Cl. 137-614.040.

Saito, Tadao: *See—*
Tasaki, Takaharu; and Saito, Tadao, 5,344,079, Cl. 239-498.000.

Saito, Toru: *See—*
Kaneko, Yuji; Ito, Shinji; and Saito, Toru, 5,345,053, Cl. 219-69.180.

Saito, Yoshinori: *See—*
Matsubara, Atsushi; Saito, Yoshinori; Kato, Seiji; and Yamakita, Yoshinobu, 5,345,258, Cl. 348-14.000.

Saito, Yutaka: *See—*
Murakata, Chikara; Takiguchi, Toshimitsu; Katsumata, Shigeo; Mihara, Akira; Takahashi, Keiichi; Saito, Hiromitsu; Akinaga, Shiro; Okabe, Masami; and Saito, Yutaka, 5,344,926, Cl. 540-545.000.

Saitoh, Minoru, to NEC Corporation. Timer circuit having comparator comparing contents of counter and register. 5,345,489, Cl. 377-39.000.

Saitoh, Shigeru. Crystal refining apparatus. 5,344,618, Cl. 422-254.000.

Saitoh, Yutaka; Ito, Shinichiro; and Kinoshita, Yukiharu, to TDK Corporation. Adjustment system for a coil device. 5,345,209, Cl. 336-83.000.

Sakai, Kouzou; Yoshida, Shigeyuki; and Dakurige, Makoto, to Sanyo Chemical Industries, Ltd. Viscosity index improver. 5,344,863, Cl. 524-291.000.

Sakai, Yasuyuki; Suzuki, Noriyuki; Kudo, Tetsuo; Marumo, Kuniomi; Aizawa, Toshiyuki; Imamura, Kunio; Sugita, Shuichi; and Kanbayashi, Kazuo, to Showa Denko K.K. External application base or auxiliary agent and external application composition for human being or animal containing the same. 5,344,655, Cl. 424-443.000

Sakaida, Atsuo: *See—*
Imoto, Yasuo; Iriguchi, Akira; Sakaida, Atsuo; Chikaoka, Yasuji; and Ninomiya, Akira, 5,344,246, Cl. 400-552.000.

Sakamoto, Nobuo: *See—*
Okuyama, Yasuo; and Sakamoto, Nobuo, 5,343,687, Cl. 57-278.000.

Sakamoto, Yoshimasa: *See—*
Suzuki, Shigeru; Kobara, Motonori; Hisatomi, Yasuhiro; Yamaguchi, Yoshinori; Yonetani, Hiroshi; Fukushima, Kiyoyuki; Sakamoto, Yoshimasa; Yagami, Toru; and Kamei, Toshihide, 5,344,260, Cl. 408-168.000.

Sakashita, Kouji: *See—*
Moriya, Nobuo; Shimoda, Keiji; Asaoka, Sachio; Kameda, Takao; Sakashita, Kouji; Maejima, Tetsuo; Yasui, Makoto; Nishijima, Hiroaki; Onda, Nobuhiro; and Kouzaki, Takeshi, 5,345,000, Cl. 568-722.000.

Sakatani, Yoshiaki; Yamamoto, Tetsuya; Nishiyama, Shigeru; and Jin, Yoshiharu, to Mitsubishi Jukogyo Kabushiki Kaisha; and Shikishima Boseki Kabushiki Kaisha. Profiled cross-section three dimensional woven fabric. 5,343,897, Cl. 139-384.00R.

Sakuda, Takashi: *See—*
Hirabayashi, Yasuhisa; Sakuda, Takashi; Okawa, Kazuhiko; and Oguchi, Yasuhiro, 5,345,098, Cl. 257-207.000.

Sakuhara, Toshihiko: *See—*
Shinogi, Masataka; Sakuhara, Toshihiko; Suda, Masayuki; Iwasaki, Fumiharu; and Ando, Akito, 5,344,539, Cl. 204-224.00M.

Sakurada, Noriaki; Sugimoto, Fujikazu; and Kobayashi, Ichiro, to Seiko Epson Corporation. Memory card having controller providing adjustable refresh to a plurality of DRAMs. 5,345,574, Cl. 395-425.000.

Sakuragi, Shoji; Sawada, Akihiro; and Ueno, Hideo, to Brother Kogyo Kabushiki Kaisha. Printing device. 5,344,247, Cl. 400-582.000.

Sakurai, Shoii: *See—*
Imanaka, Tadayuki; and Sakurai, Shoii, 5,344,913, Cl. 530-321.000.

Salley, Will: *See—*
Calvin, Rick; Clark, Anthony R.; Salley, Will; Bruce, Chuck; and Johnson, David, 5,345,389, Cl. 364-473.000.

Salomon S.A.: *See—*
Lancon, Bruno; Desarmaux, Pierre; and Merino, Jean-Francois, 5,344,180, Cl. 280-625.000.

Salomon, Thomas: *See—*
Hintz, Mathias; Kohle, Hans-Jurgen; Moller, Christl; Salomon, Thomas; and Weigand, Joachim, 5,344,642, Cl. 424-70.000.

Salsibury, Wayne C.: *See—*
Hersman, Marie J.; and Salsibury, Wayne C., 5,344,183, Cl. 280-728.00B.

Samour, Carlos M.; Daskalakis, Stefanos; and Marshall, James R. Water soluble salts of thionaphthene-2-carboxylic acid. 5,344,941, Cl. 549-57.000.

Sampson, Stephen A., to Molex Incorporated. Insulation displacement electrical terminal. 5,344,336, Cl. 439-397.000.

Samsung Electron Devices Co., Ltd.: *See—*
Jang, Dong-sik; and Lee, Byeong-yong, 5,344,353, Cl. 445-45.000.

SamSung Electronics Co., Ltd.: *See—*
Choi, Byeong-Yong, 5,345,278, Cl. 348-686.000.
Choi, Jin K., 5,343,746, Cl. 73-335.050.
Kim, Seong-hoon, 5,345,265, Cl. 348-254.000.
Lee, Seong-Geun, 5,345,503, Cl. 379-221.000.
Seo, Seok-hwan, 5,345,318, Cl. 358-449.000.
Shin, Jong Y.; and Ma, Suk B., 5,344,796, Cl. 437-233.000.

Sanders, Bernard. Component with spacing means. 5,344,693, Cl. 428-167.000.

Sanders, Mark H.: *See—*
Scarberry, Eugene N.; Handke, Patrick M.; and Sanders, Mark H., 5,343,878, Cl. 128-898.000.

Sanders, Teun J. H. L. Trailer coupling with friction damper. 5,344,174, Cl. 280-504.000.

Sanderson, John R.; and Knifton, John F., to Texaco Chemical Company. Conjoint production of ditertiary butyl peroxide and tertiary butyl alcohol from tertiary butyl hydroperoxide. 5,345,009, Cl. 568-909.800.

Sanderson Plumbing Products, Inc.: *See—*
Smith, Dwight E., 5,344,672, Cl. 427-195.000.

Sandgren, Jan, to EG&G Sealol, Inc. Spring for centering two annular bodies relative to each other. 5,344,161, Cl. 277-12.000.

Sandhu, Gurtej S.; and Doan, Trung T., to Micron Technology, Inc. Pulsed plasma enhanced CVD of metal silicide conductive films such as $TiSi_2$. 5,344,792, Cl. 437-200.000.

Sandia Corporation: *See—*
Fritz, Ian J.; and Wendt, Joel R., 5,345,328, Cl. 359-248.000.

Sandland, Tony. Strapping equipment. 5,344,277, Cl. 414-607.000.

Sandler, Howard M.: *See—*
Strawczynski, Leo; Sandler, Howard M.; Plett, Gregory L.; and Steer, David G., 5,345,597, Cl. 455-34.100.

Sando, Katsumi: *See—*
Nakamura, Hideyoshi; and Sando, Katsumi, 5,344,861, Cl. 524-254.000.

Sano, Kenji: *See—*
Horie, Seiji; Sano, Kenji; Suzuki, Nobuo; and Watarai, Syu, 5,344,694, Cl. 428-195.000.

Sano, Koichi: *See—*
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Sano, Motoya: *See—*
Saeki, Shirou; Hirose, Akira; Fujii, Takashi; and Sano, Motoya, 5,344,134, Cl. 271-122.000.

Santaella, Catherine: *See—*
Riess, Jean G.; Jeanneaux, Francois; Krafft, Marie-Pierre; Santaella, Catherine; and Vierling, Pierre, 5,344,930, Cl. 544-84.000.

Santi, Roberto: *See—*
Cometti, Giuseppe; Du Vosel, Annick; Francalanci, Franco; and Santi, Roberto, 5,344,960, Cl. 560-100.000.

Santiesteban, Jose G.: *See—*
Chang, Clarence D.; Santiesteban, Jose G.; and Stern, David L., 5,345,026, Cl. 585-700.000.

Santrade Ltd.: *See—*
Froeschke, Reinhard, 5,344,087, Cl. 241-91.000.

Sanyo Chemical Industries, Ltd.: *See—*
Sakai, Kouzou; Yoshida, Shigeyuki; and Dakurige, Makoto, 5,344,863, Cl. 524-291.000.

Sanyo Electric Co., Inc.: *See—*
Matsubara, Atsushi; Saito, Yoshinori; Kato, Seiji; and Yamakita, Yoshinobu, 5,345,258, Cl. 348-14.000.

Sanyo Electric Co., Ltd.: *See—*
Kobayashi, Yasumi; Takeuchi, Kousuke; Ikeda, Kachio; Shibata, Kenichi; and Kuroki, Kazuhiko, 5,345,202, Cl. 333-206.000.

Murata, Haruhiko; Mori, Yukio; Maenaka, Akihiro; Takuma, Masao; Kawakami, Kiyotada; Asaeda, Toru; Okino, Toshiyuki; Iinuma, Toshiya; Kobayashi, Akio; and Haruki, Toshinobu, 5,345,264, Cl. 348-235.000.
Sato, Tetsuo, 5,345,475, Cl. 375-8.000.

Sarholm, Lena: *See*—
Wennberg, Lennart; Sarholm, Lena; Svensson, Egon; Erikson, Jan; and Holmlin, Ralf, 5,343,809, Cl. 102-401.000.

Sarkar, Arnab: *See*—
Wang, Shiho; Kirkbir, Fikret; Raychaudhuri, Satyabrata; and Sarkar, Arnab, 5,343,633, Cl. 34-92.000.

Sartain, Gene, to Blaw-Knox Construction Equipment Corporation. Pivoting screed edger. 5,344,254, Cl. 404-104.000.

Sasaki, Hajime; Morikawa, Hiroaki; Satoh, Kazuhiko; and DeGuchi, Mikio, to Mitsubishi Denki Kabushiki Kaisha. Thin-film solar cell 5,344,500, Cl. 136-258.000.

Sasaki, Keisuke: *See*—
Okamoto, Hidenori; Tanaka, Norihiro; and Sasaki, Keisuke, 5,345,330, Cl. 359-326.000.

Sasaki, Kenji; and Kato, Shinji, to Howa Machinery, Ltd. Method and apparatus for synchronously piecing roving for a continuous feeding thereof to a ring spinning frame. 5,343,689, Cl. 57-315.000.

Sasaki, Masaomi; Shimada, Tomoyuki; and Hashimoto, Mitsuru, to Ricoh Company, Ltd. Bisazo electrophotographic photoconductor. 5,344,735, Cl. 430-83.000.

Sasaki, Masaomi: *See*—
Tanaka, Chiaki; Sasaki, Masaomi; Aruga, Tamotsu; Shimada, Tomoyuki; and Adachi, Hiroshi, 5,344,985, Cl. 564-426.000.

Sasaki, Shinichi: *See*—
Nomura, Yoshiya; Tsuda, Tadayuki; Ikemoto, Isao; Watanabe, Kazushi; Ishiwata, Kazuhiko; Tanaka, Makoto; Yano, Kanji; and Sasaki, Shinichi, 5,345,294, Cl. 355-200.000.

Sasaki, Susumu; Wada, Hisashi; Oguri, Takashi; Terumoto, Susumu; and Saito, Akihiro, to Hitachi Automotive Engineering; and Hitachi, Ltd. and Co., Ltd. Vehicular alternating current dynamo. 5,345,132, Cl. 310-239.000.

Sasayama, Atsushi: *See*—
Furukawa, Mitsuru; Takada, Masahiko; Murata, Shoichi; and Sasayama, Atsushi, 5,344,917, Cl. 530-356.000.

Sata, Ken-ichi, to Daikin Industries, Ltd. Methods and apparatus for removing cyclic noise from the output signal of a magnetic sensor 5,343,707, Cl. 62-6.000.

Satake, Akiyoshi, to Okuma Corporation. Electric motor. 5,345,133, Cl 310-266.000.

Satelight Technologies, Inc.: *See*—
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Sathi, Kitty: *See*—
Comparetta, Christopher; Ippolito, Ronald A.; Sathi, Kitty; Latone, Jack T.; Enzien, Colleen R.; and Smith, Mark A., 5,345,581, Cl. 395-575.000.

Sato, Hideo: *See*—
Narita, Noriaki; Iwata, Masuo; Inoue, Kouji; Sato, Hideo; and Takahashi, Ryoji, 5,344,855, Cl. 523-179.000.

Sato, Isao: *See*—
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Sato, Kazuhiro, to Fujitsu Limited. Multi-highway system of digital exchange and digital exchange having the multi-highway system. 5,345,442, Cl. 370-58.300.

Sato, Koichiro: *See*—
Nagata, Mitsuru; Sato, Koichiro; and Matsuo, Tsunetaka, 5,345,233, Cl. 341-76.000.

Sato, Kozo: *See*—
Mikoshiba, Hisashi; Yamakawa, Katsuyoshi; Sato, Kozo; and Matsuoka, Koushin, 5,344,933, Cl. 544-282.000.

Sato, Masayoshi; and Onda, Kenichi, to Hitachi, Ltd. Power source for supplying DC voltage by converting AC voltage from AC source. 5,345,374, Cl. 363-24.000.

Sato, Mitsuo; Yoshikawa, Kiyoshi; and Sato, Yuusuke, to Kabushiki Kaisha Toshiba. Vapor growth apparatus for semiconductor devices. 5,344,492, Cl. 118-725.000.

Sato, Ryouji: *See*—
Okabe, Shinya; Shimode, Shinichi; Sato, Ryouji; Hanada, Masamichi; Senshu, Takao; Terada, Hirokiyo; Izushi, Minetoshi; Takenaka, Hiroshi; and Ito, Masahiro, 5,343,713, Cl. 62-296.000.

Sato, Shuji: *See*—
Fukahori, Kenichi; Iima, Shin; Sato, Shuji; Shimoha, Masaki; Ito, Hideki; and Narita, Mutsuko, 5,344,244, Cl. 400-249.000

Sato, Taichi; Mohri, Yoshiharu; Tanaka, Kihachiro; Honmei, Takao; Otsuka, Masayuki; and Wada, Masashi, to Hitachi, Ltd. Magnetic resonance imaging apparatus having vibration damping means on gradient coil. 5,345,177, Cl. 324-318.000.

Sato, Taichi: *See*—
Isobe, Atsushi; Sato, Taichi; Takeda, Takayuki; and Ookawa, Katutoshi, 5,344,135, Cl. 271-180.000.

Sato, Takashi: *See*—
Watanabe, Niro; Morimitsu, Tatsuya; Hoshino, Kazuhisa; Kobayashi, Akihiko; Horie, Kiyoshi; Shindo, Naoaki; Tada, Yoshiaki; and Sato, Takashi, 5,344,808, Cl. 503-227.000.

Sato, Takehisa: *See*—
Umemoto, Noboru; Nomura, Takeshi; Kuribayashi, Toshiaki; Sato, Takehisa; and Tomizawa, Hirotaka, 5,344,582, Cl. 252-9.000.

Sato, Tetsuo, to Sanyo Electric Co., Ltd. Modem device. 5,345,475, Cl. 375-8.000.

Sato, Tetsuya: *See*—
Tamura, Tomoyuki; Hiraoka, Mizuho; Imataki, Hiroyuki; and Sato, Tetsuya, 5,344,304, Cl. 425-195.000.

Sato, Toshiya: *See*—
Hata, Hamako; Ishida, Kenya; and Sato, Toshiya, 5,344,850, Cl. 514-739.000.

Sato, Yasue: *See*—
Yagi, Takayuki; Komatsu, Toshiyuki; Sato, Yasue; and Kawate, Shinichi, 5,344,522, Cl. 156-628.000.

Sato, Yuusuke: *See*—
Sato, Mitsuo; Yoshikawa, Kiyoshi; and Sato, Yuusuke, 5,344,492, Cl. 118-725.000.

Satoh, Hiroaki; Kikuchi, Haruhiko; Yamada, Kazuhiko; Fukutomi, Ruta; Suzuki, Masashi; Hagihara, Koichiro; Hayakawa, Toru; Arai, Takeo; and Mino, Setsuko, to Nisshin Flour Milling Co., Ltd. Diazabicyclo derivatives. 5,344,831, Cl. 514-249.000.

Satoh, Kazuhiko: *See*—
Sasaki, Hajime; Morikawa, Hiroaki; Satoh, Kazuhiko; and DeGuchi, Mikio, 5,344,500, Cl. 136-258.000.

Satoh, Kazuhiro; Hara, Minoru; and Otsuka, Eiji, to Olympus Optical Co. Ltd. Lens barrel. 5,345,283, Cl. 354-106.000.

Satoh, Toshiya; Kawanishi, Tsuneaki; Shimizu, Ryuuichi; Shimada, Akira; and Kumada, Katsumi, to Hitachi, Ltd. Image fixing device and electrophotographic apparatus incorporated with such device. 5,345,301, Cl. 355-290.000.

Satouchi, Mitsuko: *See*—
Ohkuma, Kazuhiro; Wakabayashi, Shigeru; Mochizuki, Yoshimi; and Satouchi, Mitsuko, 5,344,824, Cl. 514-58.000.

Saunders, William T., to Weirton Steel Corporation. Fabricating one-piece can bodies with controlled side wall elongation. 5,343,729, Cl. 72-349.000.

Saussine, Lucien: *See*—
Chauvin, Yves; Commereuc, Dominique; Hugues, Francois; Olivier, Helene; and Saussine, Lucien, 5,345,023, Cl. 585-527.000.

Savicki, Joseph P., to AT&T Bell Laboratories. Digital infrared communications system with edge detection. 5,345,327, Cl. 359-172.000.

Saw, Beng I.; Tai, Marcus V.; and Le, Dai M., to VLSI Technology, Inc. Method of compressing and decompressing simulation data for generating a test program for testing a logic device. 5,345,450, Cl. 371-27.000.

Sawa, Tsutomu; Takenoshita, Hiroyuki; Shibata, Kohei; and Komatsu, Hirohide, to International Business Machines Corporation; and K.R.D. Corporation. Head wire and manufacturing process thereof. 5,344,243, Cl. 400-124.320.

Sawada, Akihiro: *See*—
Sakuragi, Shoji; Sawada, Akihiro; and Ueno, Hideo, 5,344,247, Cl. 400-582.000.

Sawada, Mitsutoshi: *See*—
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Scharf, Curtis R., to Lubrizol Corporation, The. Alpha-olefin polymers. 5,345,024, Cl. 585-532.000.

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Schiel, Christian, to J.M. Voith GmbH. Multi-roll calender with adjustable linear force. 5,343,801, Cl. 100-47.000.

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Seifert, Arthur P., to Master Industries, Inc. Door rod lock link 5,344,249, Cl. 403-3.000.
Seiko Epson Corporation: *See—*
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Shinogi, Masataka; Sakuhara, Toshihiko; Suda, Masayuki; Iwasaki, Fumiharu; and Ando, Akito, 5,344,539, Cl. 204-224.00M.
Take, Masafumi, 5,345,183, Cl. 324-663.000.
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Severinsky, Alex J. Hybrid electric vehicle. 5,343,970, Cl. 180-65.200.
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Sjardijn, Willem; and Seelen-Kruijssen, Josepha M. E., 5,344,804, Cl. 502-158.000.
Shelley, Monte F.; and Rosenvall, James S., to Brigham Young University. Method and system for synchronization of simultaneous displays of related data sources. 5,345,551, Cl. 395-157.000.
Shelton, Norris N., to Bell Atlantic Network Services, Inc. Telephone central office based method of and system for processing customer orders. 5,345,501, Cl. 379-89.000.
Shen, Dong-Ming; and Wu, Margaret M., to Mobil Oil Corporation. Method for making diamondoid lubricant base stock by alkylation with an olefin in the presence of a Lewis acid. 5,345,020, Cl. 585-352.000.
Shepherd, Paul O.: *See—*
Faddis, Chris G.; and Shepherd, Paul O., 5,344,622, Cl. 422-306.000.
Sheppard, Clyde H.: *See—*
Lubowitz, Hyman R.; and Sheppard, Clyde H., 5,344,894, Cl. 525-422.000.
Sheridon, Nicholas K., to Xerox Corporation. Method for the fabrication of multicolored balls for a twisting ball display. 5,344,594, Cl. 264-4.100.
Sherritt Gordon Limited: *See—*
Kerfoot, Derek G. E.; and Raudsepp, Rein, 5,344,479, Cl. 75-743.000.
Sherwood Medical Company: *See—*
Schneider, James; and Kee, Kok-Hiong, 5,343,857, Cl. 128-202.270.
Shibata, Kenichi: *See—*
Kobayashi, Yasumi; Takeuchi, Kousuke; Ikeda, Kachio; Shibata, Kenichi; and Kuroki, Kazuhiko, 5,345,202, Cl. 333-206.000.
Shibata, Kohei: *See—*
Sawa, Tsutomu; Takenoshita, Hiroyuki; Shibata, Kohei; and Komatsu, Hirohide, 5,344,243, Cl. 400-124.320.
Shibata, Yasuhisa: *See—*
Tsukada, Keiji; Miyahara, Yuji; Shibata, Yasuhisa; and Watanabe, Yoshio, 5,344,545, Cl. 204-415.000.
Shibata, Yuji: *See—*
Okazaki, Makoto; Shibata, Yuji; Tanihira, Hisamitsu; and Wakimura, Yoshiaki, 5,345,559, Cl. 395-250.000.
Shibayama, Katsutoshi: *See—*
Kawaai, Yuichi; Shibayama, Katsutoshi; Murano, Tetsuya; Hamaguchi, Susumu; and Suko, Tomoo, 5,344,001, Cl. 198-779.000.
Shibazaki, Kiyoshige, to Nikon Corporation. Contour emphasis circuit. 5,345,259, Cl. 348-26.000.
Shibuya, Toru: *See—*
Kawayachi, Noboru; and Shibuya, Toru, 5,345,269, Cl. 348-412.000.
Shiflett, Mark B.: *See—*
Van Bramer, David J.; Shiflett, Mark B.; and Yokozeki, Akimichi, 5,345,013, Cl. 570-102.000.
Shifley, James D.: *See—*
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Shigematsu, Yasuyuki: *See—*
Suzuki, Shinichi; Shigematsu, Yasuyuki; Kojima, Takashi; Kizaki, Hiroe; and Itsubo, akira, 5,344,733, Cl. 430-58.000.
Shigeoka, Tetsuo: *See—*
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Shih, I-Fu: *See—*
Vali, Victor; Chang, David B.; and Shih, I-Fu, 5,345,522, Cl. 385-24.000.
Shih Kong, Inc.: *See—*
Chen, Ching-Shih, 5,344,047, Cl. 222-63.000.
Shih, Stuart S., to Mobil Oil Corporation. Upgrading of a hydrocarbon feedstock utilizing a graded, mesoporous catalyst system. 5,344,553, Cl. 208-49.000.
Shih, Yih-Cheng: *See—*
Pai, Chien-Shing; and Shih, Yih-Cheng, 5,344,797, Cl. 437-238.000.
Shikani, Alain H.: *See—*
Domb, Abraham J.; and Shikani, Alain H., 5,344,411, Cl. 604-265.000.
Shikata, Itami: *See—*
Nishibayashi, Yoshiki; and Shikata, Itami, 5,344,526, Cl. 156-643.000.
Shikatani, Junichi, to Fujitsu Limited. Semiconductor memory device. 5,345,425, Cl. 365-230.010.
Shikishima Boseki Kabushiki Kaisha: *See—*
Sakatani, Yoshiaki; Yamamoto, Tetsuya; Nishiyama, Shigeru; and Jin, Yoshiharu, 5,343,897, Cl. 139-384.00R.
Shima Seiki Mfg., Ltd.: *See—*
Nakamori, Toshinori; and Sonomura, Minoru, 5,343,719, Cl. 66-75.100.
Shima, Takashi: *See—*
Tanaka, Koji; and Shima, Takashi, 5,344,189, Cl. 280-840.000.
Shimada, Akira: *See—*
Satoh, Toshiya; Kawanishi, Tsuneaki; Shimizu, Ryuuichi; Shimada, Akira; and Kumada, Katsumi, 5,345,301, Cl. 355-290.000.
Shimada, Mikinari, to Matsushita Electric Industrial Co., Ltd. Offset printing method and offset printing machine for the same. 5,343,802, Cl. 101-35.000.
Shimada, Teiyu: *See—*
Kurihara, Yoshie; Kohno, Hiroshige; Sugiyama, Hiromu; Shimada, Teiyu; Saito, Masako; and Ikeda, Kenji, 5,344,659, Cl. 426-3.000.
Shimada, Tomoyuki: *See—*
Sasaki, Masaomi; Shimada, Tomoyuki; and Hashimoto, Mitsuru, 5,344,735, Cl. 430-83.000.
Tanaka, Chiaki; Sasaki, Masaomi; Aruga, Tamotsu; Shimada, Tomoyuki; and Adachi, Hiroshi, 5,344,985, Cl. 564-426.000.
Shimadzu Corporation: *See—*
Nokihara, Kiyoshi; Yamamoto, Rintaro; Hazama, Makoto; and Nakamura, Shin, 5,344,613, Cl. 422-131.000.
Seidoh, Akinori; Morita, Youzo; and Matsuhisa, Hiroaki, 5,343,770, Cl. 73-864.220.
Shimadzu, Hiroshi: *See—*
Masuya, Hirotomo; Shimadzu, Hiroshi; Miyawaki, Toshio; and Motsenbocker, Marvin A., 5,344,928, Cl. 544-37.000.
Shimamoto, Akira: *See—*
Ide, Shouaki; Shimamoto, Akira; Yutori, Toshiaki; and Uchimura, Masahiko, 5,344,689, Cl. 428-114.000.
Shimizu, Akihiko, to Ricoh Company, Ltd.; and. Optical information recording medium with phase grooves in land portions of information recording areas. 5,344,683, Cl. 428-64.000.
Shimizu, Harukazu: *See—*
Tajima, Akio; Harada, Hiroyuki; Shimizu, Harukazu; Inoue, Haruo; Kougo, Takashi; Oda, Hajime; Nakagawa, Tadashi; and Hayakawa, Tsuyoshi, 5,344,245, Cl. 400-320.000.
Shimizu, Kazumasa: *See—*
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Shimizu, Ryuuichi: *See—*
Satoh, Toshiya; Kawanishi, Tsuneaki; Shimizu, Ryuuichi; Shimada, Akira; and Kumada, Katsumi, 5,345,301, Cl. 355-290.000.
Shimoda, Keiji: *See—*
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Shimode, Shinichi: *See—*
Okabe, Shinya; Shimode, Shinichi; Sato, Ryouji; Hanada, Masamichi; Senshu, Takao; Terada, Hirokiyo; Izushi, Minetoshi; Takenaka, Hiroshi; and Ito, Masahiro, 5,343,713, Cl. 62-296.000.
Shimoha, Masaki: *See—*
Fukahori, Kenichi; Iima, Shin; Sato, Shuji; Shimoha, Masaki; Ito, Hideki; and Narita, Mutsuko, 5,344,244, Cl. 400-249.000.
Shimojo, Shigeru: *See—*
Fujii, Masumi; Suda, Taiichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Touru; and Mitsuoka, Shigeaki, 5,344,627, Cl. 423-220.000.
Shin Caterpillar Mitsubishi Ltd.: *See—*
Suzuki, Kazuhiro; Miki, Masatoshi; Kuwabara, Toshio; and Matsubara, Morihiko, 5,345,157, Cl. 318-280.000.
Shin, Jong Y.; and Ma, Suk B., to Samsung Electronics Co., Ltd. Method for making polycrystalline silicon thin film. 5,344,796, Cl. 437-233.000.
Shin, Woo C., to Goldstar Co., Ltd. Apparatus for separating vertical synchronizing signal components from image signals in video cassette recorder. 5,345,271, Cl. 348-525.000.
Shinada, Hiroyuki: *See—*
Yajima, Yusuke; Ichikawa, Masakazu; and Shinada, Hiroyuki, 5,345,080, Cl. 250-311.000.
Shindengen Electric Manufacturing Co., Ltd.: *See—*
Kan, Takashi; Wakatabe, Masaru; Tanaka, Mitsugu; Kunori, Shinji; and Sugiyama, Akira, 5,345,100, Cl. 257-475.000.
Shindo, Naoaki: *See—*
Watanabe, Niro; Morimitsu, Tatsuya; Hoshino, Kazuhisa; Kobayashi, Akihiko; Horie, Kiyoshi; Shindo, Naoaki; Tada, Yoshiaki; and Sato, Takashi, 5,344,808, Cl. 503-227.000.
Shinmura, Satoru: *See—*
Okada, Takekazu; Shinmura, Satoru; and Kanaya, Fumio, 5,345,204, Cl. 333-219.200.
Shinogi, Masataka; Sakuhara, Toshihiko; Suda, Masayuki; Iwasaki, Fumiharu; and Ando, Akito, to Seiko Instruments Inc. Electrochemical fine processing apparatus. 5,344,539, Cl. 204-224.00M.
Shiojima, Nobuo, to Toshiba Battery Co., Ltd. Charging circuit of secondary battery. 5,345,162, Cl. 320-21.000.
Shiokawa, Chiaki: *See—*
Kamiya, Haruo; and Shiokawa, Chiaki, 5,344,118, Cl. 251-129.150.
Shiozawa, Takahisa; Muraki, Masato; Ishii, Hiroyuki; and Hayata, Shigeru, to Canon Kabushiki Kaisha. Illumination device for projection exposure apparatus. 5,345,292, Cl. 355-67.000.
Shipley Company Inc.: *See—*
Sinta, Roger F.; Barclay, George; and Rajaratnam, Martha M., 5,344,742, Cl. 430-270.000.
Shirai, Eiji, to Aisin Seiki Kabushiki Kaisha. Valve gear device for internal combustion engines. 5,343,833, Cl. 123-90.160.
Shirai, Hideyuki: *See—*
Ozaki, Tohru; Horie, Hitoshi; and Shirai, Hideyuki, 5,345,316, Cl. 358-426.000.

Shirai, Kazushi; Takano, Toshihiko; Takeda, Norio; and Arii, Mitsuzo, to Mitsubishi Gas Chemical Company, Inc. Polarization-independent optical isolator. 5,345,329, Cl. 359-282.000.
Shiraishi, Shuji: *See*—
Nishihara, Takeshi; Kin, Keiyu; and Shiraishi, Shuji, 5,343,741, Cl. 73-146.200.
Shirasaki, Miwa: *See*—
Iwane, Hiroshi; Sugawara, Takahiro; and Shirasaki, Miwa, 5,344,969, Cl. 562-486.000.
Shiratsuchi, Syuuichi, to Mitsubishi Denki Kabushiki Kaisha. Memory IC and memory device capable of expansion of storage capacity. 5,345,412, Cl. 365-63.000.
Shirley, Arthur I.: *See*—
Ramachandran, Ramakrishnam; and Shirley, Arthur I., 5,344,766, Cl. 435-71.200.
Showa Denko K.K.: *See*—
Ohno, Hiromoto; Miyamura, Makoto; Arai, Tatsuharu; Muramaki, Kazuo; and Ohi, Toshio, 5,345,015, Cl. 570-164.000.
Sakai, Yasuyuki; Suzuki, Noriyuki; Kudo, Tetsuo; Marumo, Kuniomi; Aizawa, Toshiyuki; Imamura, Kunio; Sugita, Shuichi; and Kanbayashi, Kazuo, 5,344,655, Cl. 424-443.000.
Showa Sheel Sekiyu Kabushiki Kaisha: *See*—
Suzuki, Yoshiichi; Mogamiya, Hiroyuki; Tanaka, Koichi; Takagi, Yoshihiro; and Hirose, Katutoshi, 5,344,586, Cl. 252-299.640.
Shrinkfast Marketing: *See*—
Zagoroff, Dimiter S.; and Heitmann, Arnold M., 5,344,314, Cl. 432-222.000.
Shrout, Thomas R.: *See*—
Gururaja, Turuvekere R.; Fielding, Joseph; Shrout, Thomas R.; and Jang, Sei-Joo, 5,345,139, Cl. 310-358.000.
Shu-Pak Refuse Equipment Inc.: *See*—
Radlein, Denton G., 5,344,273, Cl. 414-409.000.
Shu, Paul, to Mobil Oil Corporation. Sand control agent and process. 5,343,948, Cl. 166-276.000.
Shum, Sai P.: *See*—
Pastor, Stephen D.; and Shum, Sai P., 5,344,860, Cl. 524-119.000.
Sicma Aero Seat, Societe Industrielle et Commerciale de Materiel Aeronautique: *See*—
Dannawi, Marwan; and Prott, Thierry, 5,344,210, Cl. 297-216.200.
Sicowa Verfahrenstechnik Fuer Baustoffe GmbH & Co. KG: *See*—
Wosnitza, Franz; Beckmann, George; and Zimmermann, Georg, 5,344,621, Cl. 422-298.000.
Sideris, Xen N. Revolving bookcase. 5,343,816, Cl. 108-94.000.
Siegenthaler, Karl J., to Bridgestone Corporation. Method of producing a toroidal road vehicle tire carcass. 5,344,514, Cl. 156-117.000.
Siemens Aktiengesellschaft: *See*—
Jurek, Gilles, 5,344,113, Cl. 248-316.700.
Lang, Georg; Trummer, Georg; Sigwart, Edgar; Fraas, Werner; Misler, Andrea; and Reinert, Gerhard, 5,345,378, Cl. 364-140.000.
Lehna, Heinz, 5,343,773, Cl. 74-89.000.
Maier, Reinhard; and Roethlingshoefer, Walter, 5,345,180, Cl 324-537.000.
Manabe, Atsutaka; Kakimoto, Shigefumi; and Wada, Yasushiro, 5,345,178, Cl. 324-320.000.
Rohwedder, Arnim, 5,345,045, Cl. 181-176.000.
Slettenmark, Bruno; Strandberg, Hans; and Brand, Paul, 5,344,432, Cl. 607-36.000.
Wallschlaeger, Heinrich, 5,345,381, Cl. 364-413.140.
Zeininger, Heinrich; Zeller, Christoph; Schwalke, Udo; Doebler, Uwe; and Haensch, Wilfried, 5,344,793, Cl. 437-200.000.
Siemens-Asahi Medical Technologies Ltd.: *See*—
Manabe, Atsutaka; Kakimoto, Shigefumi; and Wada, Yasushiro, 5,345,178, Cl. 324-320.000.
Siemens Automotive L.P.: *See*—
Wakeman, Russell J., 5,344,081, Cl. 239-585 400.
Siemens Components, Inc.: *See*—
Whitney, David; and Wiese, Lynn, 5,344,794, Cl. 437-209.000.
Siemens Power Corporation: *See*—
Patterson, John F.; and Cooke, George C., 5,345,485, Cl. 376-435.000.
Sienkiewicz, Henry R.: *See*—
Green, David T.; Bolanos, Henry; Sienkiewicz, Henry R.; and Leahy, Patrick, 5,344,059, Cl. 227-179.000.
Sierra Innotek, Inc.: *See*—
Palmer, Stephen L.; and Palmer, William R., 5,344,670, Cl. 427-157.000.
Sigler, Robert D., to Lockheed Missiles & Space Company, Inc. Viscous supercooled liquid lens elements having abnormal dispersion 5,345,337, Cl. 359-665.000.
Sigwart, Edgar: *See*—
Lang, Georg; Trummer, Georg; Sigwart, Edgar; Fraas, Werner; Misler, Andrea; and Reinert, Gerhard, 5,345,378, Cl 364-140.000.
Silberberg, Yaron: *See*—
daSilva, Valeria L.; Eskildsen, Lars E.; Goldstein, Evan L.; and Silberberg, Yaron, 5,345,332, Cl. 359-341.000
Siler, John R., III. Rake attachment. 5,343,684, Cl. 56-400.080.
Silicon Graphics, Inc.: *See*—
Hannah, Marc, 5,345,252, Cl. 345-162.000.
Silicon Systems, Inc.: *See*—
White, Bert; and Negahban-Hagh, Mehrdad, 5,345,118, Cl. 307-501.000.
Silk, Mark: *See*—
Premiski, Vladimir; Wehren, Wilhalm; Silk, Mark; and Biedermann, Sieghart, 5,343,991, Cl. 192-45.000.
Silverstein, Sharyn G. Toy with detachable pacifier. 5,344,355, Cl. 446-72.000.
Simmons, Jeffrey J.; and Love, W. John, to Caterpillar Inc. Apparatus including a selectively connectable isolation transformer for determining the speed and direction of a rotating object. 5,345,171, Cl. 324-166.000.
Simon, Alice M.: *See*—
O'Dell, Robin D.; Lex, Joseph A.; and Simon, Alice M., 5,344,704, Cl. 428-323.000.
Simone, Dianne O.: *See*—
Feeley, Jennifer S.; Fu, James C.; Larkin, Matthew P.; and Simone, Dianne O., 5,343,706, Cl. 60-723.000.
Simpson, Richard: *See*—
Walsh, Brendan; Simpson, Richard; Dudbridge, Laura; Collins, David; and Moyse, Philip, 5,345,405, Cl. 364-715.100.
Simpson, Robert J.: *See*—
Buckingham, Keith; and Simpson, Robert J., 5,345,449, Cl. 370-100.100
Simuttis, Arnold: *See*—
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Sinclair, David P.: *See*—
Brooks, Gary T.; Edwards, Harold R., Jr.; Thrash, Kathy J.; Rubis, Donald E.; and Sinclair, David P., 5,344,852, Cl. 521-99.000.
Sinclair, Peter J.: *See*—
Goulet, Mark; Sinclair, Peter J.; Wong, Frederick; and Wyvratt, Matthew-J., 5,344,925, Cl. 540-456.000.
Sindo Ricoh Co., Ltd.: *See*—
Baek, In K.; Kim, Jae J.; and An, Jin Y., 5,345,293, Cl. 355-75.000.
Sine, Mark R.: *See*—
Schwen, Richard J.; Sine, Mark R.; and Warren, Raphael, 5,344,651, Cl. 424-402.000.
Singapore Institute of Standards and Industrial Research: *See*—
Zeng, Xiaming; and Chia, Che L., 5,345,148, Cl. 315-209.00R.
Singh, Gurbir: *See*—
Lee, Phillip G.; Riggs, Eileen; Singh, Gurbir; and Steck, Randy, 5,345,576, Cl. 395-425.000.
Singhi, Dilip; and Patel, Kamlesh V., to Rauland-Borg Corporation. Integrated speaker supervision and alarm system. 5,345,510, Cl. 381-77.000.
Sinta, Roger F.; Barclay, George; and Rajaratnam, Martha M., to Shipley Company Inc. Benzyl-substituted photoactive compounds and photoresist compositions comprising same. 5,344,742, Cl. 430-270.000.
Sinzawa, Kouichi: *See*—
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Siol, Werner; and Terbrack, Ulrich, to Rohm GmbH Chemische Fabrik. Polystyrene adhering heat-sealable plastic film. 5,344,889, Cl. 525-309.000.
Sipes, William J.: *See*—
Bergerson, Lee D.; Stonich, Ivan L.; and Sipes, William J., 5,344,186, Cl. 280-741.000.
Sizer, Theodore, II; and Walker, James A., to AT&T Bell Laboratories. Method for assembly of an optical fiber connective device. 5,345,529, Cl. 385-147.000.
Sjardijn, Willem; and Seelen-Kruijssen, Josepha M. E., to Shell Research Limited. Polymerization of cycloolefins and catalytic system suitable for use therein. 5,344,804, Cl. 502-158.000.
Skaggs, Steven, to Furon Company. Double walled containment fuel transfer hose. 5,343,738, Cl. 73-40.50R.
Skarstad, Paul M.: *See*—
Merritt, Donald R.; Howard, William G.; Skarstad, Paul M.; Weiss, Douglas J.; Wyborny, Paul B.; Roline, Glenn M.; Nichols, Lucy M.; and Thompson, David L., 5,344,431, Cl. 607-29.000.
SKF Nova AB: *See*—
Hesthamar, Tore; Althoff, Fredrik; Larsson, Thomas; and Veenhuizen, Bram, 5,343,759, Cl. 73-761.000.
Skills, Louis A., III; Dunlap, R. Bruce; and Odom, Jerome D., to University of South Carolina. Chalcogen-based chiral reagents for nuclear magnetic resonance detection of stereochemical assignments and enantiomeric ratios. 5,344,936, Cl. 548-229.000.
Skipper, Johnny R.; Haughton, Robert A.; Reda, Ralph J.; and Kiernan, Michael T., to General Electric Company. Nuclear fuel rod having concave weld across pressurization hole in end plug. 5,345,488, Cl. 376-451.000.
Skudrzyk, Joseph: *See*—
Mendenhall, Abraham H.; Irace, Joseph F.; and Skudrzyk, Joseph, 5,344,661, Cl. 426-107.000.
Slater, David R. No-tow-lunette eye locking device which prevents pentel hook connection. 5,343,720, Cl. 70-14.000.
Slaugh, Lynn H.; and Arhancet, Juan P., to Shell Oil Company. Process or making 3-hydroxyaldehydes. 5,344,993, Cl. 568-454.000.
Slettenmark, Bruno; Strandberg, Hans; and Brand, Paul, to Siemens Aktiengesellschaft. Implantable medical device and method for the manufacture thereof. 5,344,432, Cl. 607-36.000.
Sloss, Andris C.: *See*—
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Small Power Communication Systems Research Laboratories Co., Ltd.: *See*—
Hoshikawa, Toshiya, 5,345,474, Cl. 375-7.000.
Takagi, Tasuku; and Nagasawa, Zenichirou, 5,345,601, Cl. 455-59.000.
Smalley, Dennis R.: *See*—
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,345,391, Cl. 364-474.240.
Smart, Melinda K.: *See*—
Enscore, David J.; Campbell, Patricia S.; Osborne, James L.; Smart, Melinda K.; and Yum, Su I., 5,344,656, Cl. 424-448.000.
Smith, Daniel E.: *See*—
Rose, Michael V.; and Smith, Daniel E., 5,344,466, Cl. 29-623.100.
Smith, Danny L.: *See*—
Fehskens, Leonard G.; Strutt, Colin; Wong, Steven K.; Callander, Jill F.; Burgess, Peter H.; Nelson, Kathy J.; Guertin, Matthew J.; Sylor, Mark W.; Chapman, Kenneth W.; Schuchard, Robert C.; Goldfarb, Stanley I.; Rogers, Dennis O.; O'Brien, Linsey B.; Trasatti, Philip J.; England, Benjamin M.; Lemmon, James L., Jr.; Rosenbaum, Richard L.; Kohls, Ruth E. J.; Aronson, David L.; Ross, Robert R. N.; Smith, Danny L.; Adams, William C., Jr.; Koning, G. Paul; Namoglu, Sheryl F.; Seger, Mark J.; Dixon, Timothy M.; and Harrow, Jeffrey R., 5,345,587, Cl. 395-650.000.
Smith, Daryl L.: *See*—
Rice, Richard F., Jr.; Kelly, David M.; and Smith, Daryl L., 5,345,226, Cl. 340-825.190.
Smith, Donald R.: *See*—
Bohlen, J. Tad; Smith, Donald R.; and Berscheidt, Kevin T., 5,343,954, Cl. 166-382.000.
Smith, Dwight E., to Sanderson Plumbing Products, Inc. Process for producing powder coated plastic product. 5,344,672, Cl. 427-195.000.
Smith, Gerald A.: *See*—
King, Rodman; Strickland, Carl; Smith, Gerald A.; Hamada, Elaine; and Jolissaint, Charles H., 5,345,589, Cl. 395-650.000.
Smith, Graham: *See*—
Coates, David; Marden, Shirley; Smith, Graham; Finkenzeller, Ulrich; Reiffenrath, Volker; Hittich, Reinhard; and Wilhelm, Stefan, 5,344,587, Cl. 252-299.660.
Smith, James D. Putter. 5,344,141, Cl. 273-80.200.
Smith, Kenneth R.: *See*—
Schwindt, Randy J.; Harwood, Warren K.; Tervo, Paul A.; Smith, Kenneth R.; Warner, Richard H.; and Andrews, Peter D., 5,345,170, Cl. 324-754.000.
Smith, Larry N.: *See*—
Reichen, Ronald L.; Diebold, David H.; Smith, Larry N.; O'Brien, Stephen E.; and Phillips, David L., 5,343,680, Cl. 56-249.000.
Smith, Lawrence A., Jr. Method and apparatus for operating a catalytic distillation process. 5,345,006, Cl. 568-899.000.
Smith, Mark A.: *See*—
Comparetta, Christopher; Ippolito, Ronald A.; Sathi, Kitty; Latone, Jack T.; Enzien, Colleen R.; and Smith, Mark A., 5,345,581, Cl. 395-575.000.
McEwen, Scott M.; Thomas, James S.; and Smith, Mark A., 5,344,556, Cl. 210-91.000.
Smith & Nephew Richards, Inc.: *See*—
Davidson, James A.; and Mishra, Ajit K., 5,344,494, Cl. 134-7.000.
Smith, Richard J., to Escagenetics Corporation. Synthesis of taxanes in culture using pseudocalluscells. 5,344,775, Cl. 435-240.480.
Smith, Robert: *See*—
McCarthy, Rex; and Smith, Robert, 5,343,818, Cl. 128-633.000.
Smith, Thomas W.: *See*—
Berkes, John S.; Grushkin, Bernard; and Smith, Thomas W., 5,344,737, Cl. 430-110.000.
Smits, Karel F. A. A., to Medtronic, Inc. Pulse routing apparatus for cardioversion and defibrillation. 5,344,429, Cl. 607-5.000.
Smuckler, Jack H. Self-regulating laminar heating device and method of forming same. 5,344,591, Cl. 252-511.000.
Snap-on Incorporated: *See*—
Wridt, Gerald A., 5,343,786, Cl. 81-438.000.
Snir, Marc: *See*—
Olnowich, Howard T.; Bruck, Jehoshua; Snir, Marc; and Upfal, Eli, 5,345,229, Cl. 340-825.800.
Snow Brand Milk Products Co., Ltd.: *See*—
Dosako, Shunichi; Kusano, Hiroko; Deya, Eiki; and Idota, Tadashi, 5,344,820, Cl. 514-8.000.
Snyder, Adrian C., to Du Pont de Nemours, E. I., and Company. Fillings and other aspects of fibers. 5,344,707, Cl. 428-359.000.
Snyder, Barry S., to Rohm and Haas Company. Emulsion polymer blend. 5,344,675, Cl. 427-388.400.
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Hayden, Clifford O.; Snyder, David R.; Stillman, Susan B.; and Webb, Charles F., 5,345,567, Cl. 395-375.000.
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Boutin, Guy, 5,343,753, Cl. 73-701.000.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A." : *See*—
Lardellier, Alain M. J., 5,343,619, Cl. 29-889.700.
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Pascal, Noel B.; Mazeaud, Georges; and Pascal, Claude W., 5,343,695, Cl. 60-225.000.
Sodick Co., Ltd.: *See*—
Kaneko, Yuji; Ito, Shinji; and Saito, Toru, 5,345,053, Cl. 219-69.180.
Soffa, Franz, to Hoerbiger & Co. Synchronizing device for transmission assemblies and having friction-coupled assemblies. 5,343,993, Cl. 192-53.00F.
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Tanji, Hiroyuki; Wada, Ichiro; Ono, Yoshio; and Soga, Hiroyuki, 5,344,516, Cl. 156-164.000.
Sojka, Michael: *See*—
Warwel, Siegfried; Klaas, Mark R.; and Sojka, Michael, 5,344,946, Cl. 549-531.000.
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Succi, Marco; Solcia, Carolina; Doni, Fabrizio; and Coppola, Antonio, 5,343,735, Cl. 73-29.010.
Solheim, John A.; and Lim, Nip T., to Karsten Manufacturing Corporation. Method of making golfer's protective mitten. 5,343,566, Cl. 2-169.000.
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Marolleau, Isabelle; and Girardier, Jean-Denis, 5,344,552, Cl. 205-138.000.
Solvay Automotive, Inc.: *See*—
Ramioulle, Frederic, 5,343,902, Cl. 141-7.000.
Solvay Interox GmbH: *See*—
Warwel, Siegfried; Klaas, Mark R.; and Sojka, Michael, 5,344,946, Cl. 549-531.000.
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Grunchard, Frans, 5,344,945, Cl. 549-521.000.
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Hackelborger, Gerhard; and Sondergeld, Werner, 5,343,807, Cl. 101-415.100.
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Moyer, Curtis D.; Song, John; and Jaskie, James E., 5,345,141, Cl. 313-495.000.
Song, Won R.; Lundberg, Robert D.; Gutierrez, Antonio; and Kleist, Robert A., to Exxon Chemical Patents Inc. Ethylene alpha-olefin copolymer substituted hydroxy aromatic compounds. 5,345,002, Cl. 568-793.000.
Sono, Michio; Kubota, Akihiro; Kasai, Junichi; Yoshimoto, Masanori; and Masaki, Keiichi, to Fujitsu Limited. Semiconductor device and a process for making same having improved leads. 5,343,615, Cl. 29-827.000.
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Nakamori, Toshinori; and Sonomura, Minoru, 5,343,719, Cl. 66-75.100.
Sony Corporation: *See*—
Fukahori, Kenichi; Iima, Shin; Sato, Shuji; Shimoha, Masaki; Ito, Hideki; and Narita, Mutsuko, 5,344,244, Cl. 400-249.000.
Nakagawara, Akira, 5,345,416, Cl. 365-185.000.
Nakano, Katsuhiro, 5,345,352, Cl. 360-97.010.
Ohga, Norio; and Tsurushima, Katsuaki, 5,345,433, Cl. 369-54.000.
Yamasaki, Yoshimori, 5,345,435, Cl. 369-275.300.
Yanai, Kunihiko; and Suzuki, Kosaku, 5,344,495, Cl. 134-22.100.
Sopha Medical Systems, Inc.: *See*—
Engdahl, John C.; and Pierfitte, Michel, 5,345,082, Cl. 250-363.070.
Sorapec S.A.: *See*—
Bronoel, Guy; Bugnet, Bernard; and Tassin, Noelle, 5,344,723, Cl. 429-84.000.
Sorensson, Olle; and Severinsson, Krister, to Eka Nobel AB. Alkali metal silicate composition with potassium compound additive. 5,344,633, Cl. 423-333.000.
Sornes, Tor, to Trioving a.s. Lock arrangement employing mechanically acting code card and key card. 5,343,724, Cl. 70-340.000.
Sourlis, Tom. Mortar and debris collection device and system. 5,343,661, Cl. 52-169.500.
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Myneni, Ganapatic R., 5,343,740, Cl. 73-40.700.
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Southwire Company: *See*—
Wilson, Thomas N., 5,343,934, Cl. 164-476.000.
SP/Sheffer Incorporated: *See*—
Richardson, William F., 5,343,789, Cl. 82-163.000.
Space Systems/Loral, Inc.: *See*—
Hwang, Yeong M.; Jakstys, Vito J.; Lee, Chun C.; and Kilburg, Francis J., 5,345,248, Cl. 343-895.000.
Spears, James R., to Wayne State University. Apparatus and method for making a diffusing tip in a balloon catheter system. 5,344,419, Cl. 606-15.000.
Speer, William W. Receiver hitch mechanism for eliminating movement in trailer hitch receivers. 5,344,175, Cl. 280-506.000.
Spego, Inc.: *See*—
Goforth, Henry E., 5,343,788, Cl. 82-127.000.
Spence, Stuart T.: *See*—
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,345,391, Cl. 364-474.240.
Spencer, Elliot: *See*—
Athey, Roderick E.; Spencer, Elliot; and Frens, Lance L., 5,343,705, Cl. 60-646.000.
Speth, Robert: *See*—
Adrian, Christian A.; Speth, Robert; and Angus, William G., 5,344,219, Cl. 301-64.100.
Sphinx Pharmaceuticals Corporation: *See*—
Jiang, Jack B.; and Johnson, Mary G., 5,344,841, Cl. 514-459.000.
Spiekermann, Michael: *See*—
Bartsch, Georg; Rasch, Ulf; and Spiekermann, Michael, 5,343,988, Cl. 190-18.00A.

Spindelfabrik Suussen, Schurr, Stahlecker & Grill GmbH: *See*—
Burgermeister, Horst, 5,343,685, Cl. 57-136.000.

Spits, Tiemen T.: *See*—
Yee, Eugene M.; Sutherland, Beverly E.; Lyon, John J.; Spits, Tiemen T.; and Filia, Richard M., 5,345,262, Cl. 348-177.000.

Spooncer, Rachel A.: *See*—
Martin, John S.; Ryan, Thomas A.; and Spooncer, Rachel A., 5,344,998, Cl. 568-683.000.

Spooner, James J. Method and apparatus for protectively stabilizing and securing an intravenous device. 5,344,406, Cl. 604-179.000.

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Muller, Hans-Jurgen; and Sprenger, Wilfried, 5,344,212, Cl. 297-245.000.

Spriggs, John R.; Decker, James D.; Copeland, James L.; and Larson, Spencer B., to Ecolab Inc. Dispensing apparatus having a removable variable proportioning and metering device. 5,344,074, Cl. 239-10.000.

Springer, Martin G.; Magrath, Joseph M.; and Wilson, Kenneth D., to Magrath Company, The. Liquid dispenser with release actuable trigger switch. 5,344,075, Cl. 239-70.000.

Sproull, Steven J.: *See*—
Dean, William D.; Zinke, Paul W.; Sproull, Steven J.; Deason, Michael E.; Conrow, Raymond E.; and Dantanarayana, Anura P., 5,344,929, Cl. 544-48.000.

Sramek, John, Jr., to Harris Corporation. Improved sigma-delta type analog-to-digital converter and method. 5,345,236, Cl. 341-144.000.

SRI International: *See*—
Tuse, Daniel; Hokama, Leslie A.; Foss, Carrie R.; and Tefft, Jacqueline A., 5,344,471, Cl. 47-58.000.

Srinivasan, Kamakshi: *See*—
Kliman, Gerald B.; Srinivasan, Kamakshi; DeDoncker, Rik W.; and Ritscher, David E., 5,345,158, Cl. 318-434.000.

Stack, Charles P.: *See*—
Dutton, Dwight C., Jr.; Luna, Antonio X.; and Stack, Charles P., 5,344,717, Cl. 428-598.000.

Stade, Horst; and Deringer, Helmut, to Robert Bosch GmbH. Device including a conductor truck foil. 5,345,040, Cl. 174-260.000.

Staefa Control System, Inc.: *See*—
Haessig, David L., 5,344,068, Cl. 236-47.000.

Stahl, Edward L., to Piper Industries of Texas, Inc. Stackable and nestable multi-level bread tray. 5,344,022, Cl. 206-507.000.

Stahl, Julie B.: *See*—
Gagnon, David R.; Coleman, Patrick L.; Drtina, Gary J.; Lyons, Christopher S.; Milbrath, Dean S.; Rasmussen, Jerald K.; and Stahl, Julie B., 5,344,701, Cl. 428-304.400.

Stallone, Michael J.; and Mollmann, Daniel E., to General Electric Company. Squeeze film bearing damper with annular end plenums. 5,344,239, Cl. 384-99.000.

Stanescu, Liana V.; Fischer, Timothy J.; Leese, Kristin L.; and Leonhardt, Kenneth J., to Akzo N.V. Container system. 5,344,036, Cl. 215-251.000.

Stang, John H.: *See*—
McDaniel, John R.; Rabe, Paul R.; Stang, John H.; Griffen, Peter J.; Stasell, Mark W.; Londt, Edward E.; and Wilson, Barrie L., 5,343,780, Cl. 477-108.000.

Stanislawczyk, Vic: *See*—
Morgan, Tamela A.; Julian, Gary L.; and Stanislawczyk, Vic, 5,344,867, Cl. 524-460.000.

Stanley Electric Co., Ltd.: *See*—
Takenaka, Shunji, 5,344,513, Cl. 156-106.000.

Stanley, Kenneth J.: *See*—
Julian, John C.; Cuddeford, Gary D.; and Stanley, Kenneth J., 5,343,791, Cl. 83-865.000.

Stanton Magnetics, Inc.: *See*—
Hofer, Alan; and Untersander, Peter, 5,345,509, Cl. 381-68.600.

Stargiotti, Robert: *See*—
Woods, Daniel S.; and Stargiotti, Robert, 5,345,218, Cl 340-479.000

Stark, Johann; and Ritter, Joachim, to Ina Walalager Schaeffler KG Switchable freewheel with locking elements. 5,343,992, Cl. 192-45.100.

Stasell, Mark W.: *See*—
McDaniel, John R.; Rabe, Paul R.; Stang, John H.; Griffen, Peter J.; Stasell, Mark W.; Londt, Edward E.; and Wilson, Barrie L., 5,343,780, Cl. 477-108.000

Stasko, William; and Pinnow, Kenneth E., to Crucible Materials Corporation. Prealloyed high-vanadium, cold work tool steel particles 5,344,477, Cl. 75-255.000.

State of Oregon, acting by and through the state Board of Higher Education on behalf of OSU: *See*—
Ullman, David G.; Hunter-Zaworski, Katharine M.; Zaworski, Joseph R.; Herling, Derald E.; and Clark, Garrett E., 5,344,265, Cl. 410-3.000.

Staudinger, Joseph; Golio, John M.; Beckwith, William B.; and Verdier, Jean B., to Motorola, Inc. Attenuator circuit operating with single point control. 5,345,123, Cl. 307-552.000.

Stauffer, John E. Bipolar process for removal of sulfur dioxide from waste gases. 5,344,529, Cl. 204-101.000.

Stavinoha, Jerome L.: *See*—
Devon, Thomas J.; Phillips, Gerald W.; Puckette, Thomas A.; Stavinoha, Jerome L.; and Vanderbilt, Jeffrey J., 5,344,988, Cl. 568-454.000.

STD Electronic International Ltd.: *See*—
Tsui, Tsz Y. (Barry), 5,345,214, Cl. 338-128.000.

Stead, Kenneth T.: *See*—
Colleran, Stephen A.; Gugelmeyer, Robert J.; Geib, Lawrence E.; Stead, Kenneth T.; and Cheong, Weng H., 5,344,338, Cl. 439-465.000.

Steag Aktiengesellschaft: *See*—
Bruggendick, Hermann, 5,344,631, Cl. 423-244.030.

Steag Aktiengesslischaft: *See*—
Bruggendick, Hermann, 5,344,616, Cl. 422-171.000

Steagall, Paul H., III: *See*—
Booth, Hubert J.; Steagall, Paul H., III; and Wright, Michael W., 5,344,026, Cl. 209-580.000.

Steck, Randy: *See*—
Lee, Phillip G.; Riggs, Eileen; Singh, Gurbir; and Steck, Randy, 5,345,576, Cl. 395-425.000.

Steer, David G.: *See*—
Strawczynski, Leo; Sandler, Howard M.; Plett, Gregory L.; and Steer, David G., 5,345,597, Cl. 455-34.100.

Steer, Michael. Rapid fire ball gun. 5,343,849, Cl. 124-72.000.

Steer, Michael. Double shot projectile launcher. 5,343,850, Cl. 124-64.000.

Steffler, Michael W.: *See*—
Nelson, Charles L.; Steffler, Michael W.; and Tyler, Douglas L., Sr., 5,344,232, Cl. 366-139.000.

Stein, Werner: *See*—
Bieker, Dieter; Iraschko, Johann; and Stein, Werner, 5,343,984, Cl. 188-71.900.

Steinberg, Meyer; and Dong, Yuanji. Process and apparatus for the production of methanol from condensed carbonaceous material. 5,344,848, Cl. 518-704.000.

Steinhauser, Ulrich, to Hatebur Umformmaschinen AG. Turning device for an automatic cross-transfer press. 5,343,730, Cl. 72-405.000.

Stellwag, Debra A.: *See*—
Craig, Gina M.; Lamprecht, Dale E., Jr.; Stellwag, Debra A.; and Wagner, Thomas R., 5,345,091, Cl. 250-566.000.

Stelzer, Ceil. Automatic syphon system. 5,343,888, Cl. 137-135.000.

Stenberg, Sven E. J.; and Nordstrom, Curt G. Self-drilling blind rivet. 5,344,267, Cl. 411-29.000.

Stepanov, Alexander A.: *See*—
English, Robert M.; and Stepanov, Alexander A., 5,345,575, Cl. 395-425.000.

Stephen, Richard L. Method and apparatus for stimulating growth and healing of living tissues. 5,344,440, Cl. 607-139.000.

Sterling Winthrop Inc.: *See*—
Illig, Carl R.; and Douty, Brent D., 5,344,638, Cl. 424-5.000.

Stern, David L.: *See*—
Chang, Clarence D.; Santiesteban, Jose G.; and Stern, David L., 5,345,026, Cl. 585-700.000.

Stern, Theodore G.; and Cornwall, Mickey, to General Dynamics Corporation, Space Systems Division. Lightweight solar concentrator cell array. 5,344,496, Cl. 136-246.000.

Sternberg, Shmuel: *See*—
Clarke, Robert A; Pauley, Robin G.; Hill, Ronald S.; Brauker, James H.; Sternberg, Shmuel; and Boggs, Daniel R., 5,344,454, Cl. 623-11.000.

Steurer, Brian M.: *See*—
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Stevison, Dave: *See*—
Stevison, Michael F.; Stevison, Dave; and White, John P., 5,344,660, Cl. 426-104.000.

Stevison Ham Company: *See*—
Stevison, Michael F.; Stevison, Dave; and White, John P., 5,344,660, Cl. 426-104.000.

Stevison, Michael F.; Stevison, Dave; and White, John P., to Stevison Ham Company. Bone-in meat product. 5,344,660, Cl. 426-104.000.

Stewart, Brett; and Moyal, Miki, to Advanced Micro Devices Inc. Method and apparatus for combining a flash analog to digital converter with digital to analog functions. 5,345,234, Cl. 341-108.000.

Stewart, Robert C., Jr.: *See*—
Rempe, Richard J.; and Stewart, Robert C., Jr., 5,344,668, Cl. 427-115.000

Stiehler, Wayne, to Eastman Kodak Company. Method and apparatus for controlling film drive. 5,345,286, Cl. 354-173.100.

Stillman, Susan B.: *See*—
Hayden, Clifford O.; Snyder, David R.; Stillman, Susan B.; and Webb, Charles F., 5,345,567, Cl. 395-375.000.

Stinebaugh, Phil: *See*—
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,345,391, Cl. 364-474.240.

Stocker & Yale, Inc.: *See*—
Biegel, George E., 5,345,150, Cl. 315-280.000.

Stohl, Clark E.: *See*—
Beatenbough, Paul K.; Meekins, Kris J.; and Stohl, Clark E., 5,343,936, Cl. 165-41.000.

Stokes, Bennie J.: *See*—
Stokes, Dyrell K.; and Stokes, Bennie J., 5,344,064, Cl. 228-264.000.

Stokes, Dyrell K.; and Stokes, Bennie J. Method for unsoldering heat exchanger end tank from core header plate. 5,344,064, Cl. 228-264.000.

Stoldt, Stephen H.: *See*—
Huang, Nai Z.; Adams, Paul E.; Daly, Daniel T.; Jolley, Scott T.; Koch, Frederick W.; Kolp, Christopher J.; Stoldt, Stephen H.; Walsh, Reed H.; and Denis, Richard A., 5,344,467, Cl. 44-358.000.

Stone, John R., to Hi-Stat Manufacturing Co., Inc. Pressure transducer. 5,343,754, Cl. 73-707.000.

Stoney, Arthur; Burt, Arthur J.; and Waters, Richard, to Titon Hardware Limited. Ventilators. 5,344,366, Cl. 454-213.000.

Stonich, Ivan L.: *See*—
Bergerson, Lee D.; Stonich, Ivan L.; and Sipes, William J., 5,344,186, Cl. 280-741.000.

Storage Technology Corporation: *See*—
Chopra, Kiran; Geminden, David C.; and Mahoney, Debra C., 5,345,216, Cl. 340-146.200.
Lopez, Roger A.; Miosek, Robert J.; and Walsh, Robert, 5,344,332, Cl. 439-248.000.

Stork, Norbert: *See*—
Eicken, Ulrich; Hase, Brigitte; Gorzinski, Manfred; Gress, Wolfgang; and Stork, Norbert, 5,344,859, Cl. 523-501.000.

Stortz, James L., to Compaq Computer Corporation. High density interconnect apparatus for an ink jet printhead. 5,345,256, Cl. 347-20.000.

Story, Carl E.: *See*—
Cady, Byron C.; Story, Carl E.; and Guerra, David A., III, 5,343,736, Cl. 73-40.000.

Story, Michael C.: *See*—
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Strandberg, Hans: *See*—
Slettenmark, Bruno; Strandberg, Hans; and Brand, Paul, 5,344,432, Cl. 607-36.000.

Strauss, Nicholas C.: *See*—
Handel, Paul I.; Patterson, Matthew J.; Guerin, Daniel; Strauss, Nicholas C.; Helton, Steven B.; Barrett, Thomas M.; Koelewyn, Lisa K.; and Waterman, James D., 5,345,397, Cl. 364-503.000.

Strauss, Paul: *See*—
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Strawczynski, Leo; Sandler, Howard M.; Plett, Gregory L.; and Steer, David G., to Northern Telecom Limited. Improved call set-up in a radio communication system with dynamic channel allocation. 5,345,597, Cl. 455-34.100.

Strehlke, Peter; Bohlmann, Rolf; Schneider, Martin; Nishino, Yukishige; and Muhn-Seipoldy, Hans-Peter, to Schering Aktiengesellschaft. Functionalized vinyl azoles and methods of use. 5,344 834, Cl. 514-317.000.

Strickland, Carl: *See*—
King, Rodman; Strickland, Carl; Smith, Gerald A.; Hamada, Elaine; and Jolissaint, Charles H., 5,345,589, Cl. 395-650.000.

Stringer, Orum: *See*—
Gaffar, Abdul; Nabi, Nuran; Afflitto, John; and Stringer, Orum, 5,344,641, Cl. 424-49.000.

Striuli, Mirco; Borlina, Fabio; and Ruzza, Wogler, to Danieli & C. Officine Meccaniche SpA. Crystallizer, or inner portion, of a mold for the continuous curved casting of thin slabs. 5,343,931, Cl. 164-418.000.

Stromswold, David C.: *See*—
Allen, L. Scott; Leland, Frank P.; Lyle, W. D., Jr.; and Stromswold, David C., 5,345,077, Cl. 250-264.000.

Strouth, John E. Ski sled. 5,344,167, Cl. 280-14.100.

Strunk, Harald: *See*—
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Strutt, Colin: *See*—
Fehskens, Leonard G.; Strutt, Colin; Wong, Steven K.; Callander, Jill F.; Burgess, Peter H.; Nelson, Kathy J.; Guertin, Matthew J.; Sylor, Mark W.; Chapman, Kenneth W.; Schuchard, Robert C.; Goldfarb, Stanley I.; Rogers, Dennis O.; O'Brien, Linsey B.; Trasatti, Philip J.; England, Benjamin M.; Lemmon, James L., Jr.; Rosenbaum, Richard L.; Kohls, Ruth E. J.; Aronson, David L.; Ross, Robert R. N.; Smith, Danny L.; Adams, William C., Jr.; Koning, G. Paul; Namoglu, Sheryl F.; Seger, Mark J.; Dixon, Timothy M.; and Harrow, Jeffrey R., 5,345,587, Cl. 395-650.000.

Stryker Corporation: *See*—
Bartley, Gary L.; and Hopper, Christopher J., 5,343,581, Cl. 5-611.000.
Nelson, Charles L.; Steffler, Michael W.; and Tyler, Douglas L., Sr., 5,344,232, Cl. 366-139.000.
Rueger, David C.; Kuberasampath, Thangavel; Oppermann, Hermann; and Ozkaynak, Engin, 5,344,654, Cl. 424-423.000.

Stuart, Thomas G., to Ransomes, Inc. Lawn mower control device. 5,343,678, Cl. 56-11.300.

Su, Sophia R.; O'Connor, Margaret; and Butler, Scott, to GTE Laboratories Incorporated. Fabrication of high T_C superconducting helical resonator coils. 5,344,815, Cl. 505-1.000.

Su, Tien-Kuei, to Mobil Oil Corporation. LLDPE composite film free of melt fracture. 5,344,714, Cl. 428-516.000.

Suarez, Leopoldo L.: *See*—
Mito, Toshitsugu; Suarez, Leopoldo L.; Astarabadi, Shaun; and Calescibetta, Marcus G., 5,345,392, Cl. 364-483.000.

Sub I.P., Inc.: *See*—
Pistay, George R., 5,344,437, Cl. 607-109.000.

Subkowski, Thomas: *See*—
LeMaire, Hans-Georg; Hillen, Heinz; Moeller, Achim; Daum, Lothar; Doerper, Thomas; and Subkowski, Thomas, 5,344,915, Cl. 530-350.000.

Subramanian, Rajan: *See*—
Opher, Ayal; Chatwani, Dilip; and Subramanian, Rajan, 5,345,558, Cl. 395-200.000.

Succi, Marco; Solcia, Carolina; Doni, Fabrizio; and Coppola, Antonio, to SAES Getter S.p.A. Apparatus for accurately measuring the water content of gases. 5,343,735, Cl. 73-29.010.

Suda, Masayuki: *See*—
Shinogi, Masataka; Sakuhara, Toshihiko; Suda, Masayuki; Iwasaki, Fumiharu; and Ando, Akito, 5,344,539, Cl. 204-224.00M.

Suda, Osamu: *See*—
Komiyama, Nakaji; Kouno, Hisao; Higashide, Kazuhiro; Suda, Osamu; and Hasegawa, Masaru, 5,344,736, Cl. 430-83.000.

Suda, Taiichiro: *See*—
Fujii, Masumi; Suda, Taiichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Touru; and Mitsuoka, Shigeaki, 5,344,627, Cl. 423-220.000.

Sudhaus Schloss - Und Beschlagtechnik Gmbh & Co.: *See*—
Bartsch, Georg; Rasch, Ulf; and Spiekermann, Michael, 5,343,988, Cl. 190-18.00A.

Sudo, Kenichi; and Shimizu, Kazumasa, to Forestry and Forest Products Research Institute, Ministry of Agriculture, Forestry and Fisheries. Method for manufacturing lignin for carbon fiber spinning. 5,344,921, Cl. 530-502.000.

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Suehle, John S.: *See*—
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Sugahara, Satoshi: *See*—
Takiguchi, Haruhisa; Yano, Seiki; Inoguchi, Kazuhiko; Kudo, Hiroaki; Nakanishi, Chitose; Okumura, Toshiyuki; and Sugahara, Satoshi, 5,345,460, Cl. 372-43.000.

Sugawara, Ryuta; and Akimoto, Satoshi, to Jidosha Kiki Co., Ltd. Anti-skid brake control method. 5,344,223, Cl. 303-103.000.

Sugawara, Takahiro: *See*—
Iwane, Hiroshi; Sugawara, Takahiro; and Shirasaki, Miwa, 5,344,969, Cl. 562-486.000.

Suggs, Timothy. Spark plug keeper. 5,344,328, Cl. 439-127.000.

Sugifune, Shin: *See*—
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Sugimoto, Fujikazu: *See*—
Sakurada, Noriaki; Sugimoto, Fujikazu; and Kobayashi, Ichiro, 5,345,574, Cl. 395-425.000.

Sugimoto, Noboru: *See*—
Mukaidono, Masao; Sugimoto, Noboru; and Futsuhara, Koichi, 5,345,138, Cl. 307-326.000.

Sugita, Kazuhiko: *See*—
Ishii, Toshiaki; Mizuno, Masamoto; and Sugita, Kazuhiko, 5,345,047, Cl. 187-112.000.

Sugita, Shuichi: *See*—
Sakai, Yasuyuki; Suzuki, Noriyuki; Kudo, Tetsuo; Marumo, Kuniomi; Aizawa, Toshiyuki; Imamura, Kunio; Sugita, Shuichi; and Kanbayashi, Kazuo, 5,344,655, Cl. 424-443.000.

Sugiyama, Akira: *See*—
Kan, Takashi; Wakatabe, Masaru; Tanaka, Mitsugu; Kunori, Shinji; and Sugiyama, Akira, 5,345,100, Cl. 257-475.000.

Sugiyama, Hiromu: *See*—
Kurihara, Yoshie; Kohno, Hiroshige; Sugiyama, Hiromu; Shimada, Teiyu; Saito, Masako; and Ikeda, Kenji, 5,344,659, Cl. 426-3.000.

Sugiyama, Yuichi, to Fujitsu Limited. Ultrasonic diagnostic apparatus. 5,343,864, Cl. 128-661.010.

Sugo, Takanobu; and Saito, Kyoichi, to Japan Atomic Energy Research Institute. Process for producing filtration membranes having amino acids that are capable of adsorbing proteins. 5,344,560, Cl. 210-500.230.

Sujaku, Takamichi: *See*—
Ohta, Nobuaki; and Sujaku, Takamichi, 5,345,067, Cl. 219-720.000.

Suko, Tomoo: *See*—
Kawaai, Yuichi; Shibayama, Katsutoshi; Murano, Tetsuya; Hamaguchi, Susumu; and Suko, Tomoo, 5,344,001, Cl. 198-779.000.

Sukoneck, Barry F.: *See*—
Wilson, Richard S.; Sukoneck, Barry F.; and Wenzer, Kenneth C., 5,344,318, Cl. 433-169.000.

Sullivan, Thomas J.: *See*—
Thakur, Deepak S.; Roberts, Brian L.; Sullivan, Thomas J.; and Vichek, Anita L., 5,345,005, Cl. 568-885.000.

Sultan, Michel F.; Kenty, Joseph L.; and O'Rourke, Michael J., to General Motors Corporation. Gas concentration and flow rate sensor. 5,343,760, Cl. 73-861.040.

Sumi, Seiichi: *See*—
Iwata, Tamotu; and Sumi, Seiichi, 5,344,741, Cl. 430-265.000.

Sumitani, Shigeto, to Kabushiki Kaisha Toshiba. Multiple type air conditioning apparatus. 5,343,935, Cl. 165-22.000.

Sumitomo Chemical Company, Limited: *See*—
Yamamoto, Keisaku; Tanimoto, Yoshio; Fukuyama, Masahiro; and Yasuda, Noriyasu. 5,344,881, Cl. 525-112.000.

Sumitomo Electric Industries, Ltd.: *See*—
Kaji, Toshihiko; Takeda, Yoshinobu; Odani, Yuusuke; Akechi, Kiyoaki; and Tanji, Takao, 5,344,605, Cl. 419-31.000.
Murai, Teruyuki; and Yamamoto, Susumu, 5,344,713, Cl. 428-472.300.
Nakagawa, Mitsuhiko; and Nakajima, Shiro, 5,343,733, Cl. 73-7.000.
Nishibayashi, Yoshiki; and Shikata, Itami, 5,344,526, Cl. 156-643.000.
Tanida, Kazuhiro, 5,345,373, Cl. 362-455.000.
Tokuda, Hitoki; and Iiyama, Michitomo, 5,345,115, Cl. 505-193.000.
Tonai, Ichiro; and Kuhara, Yoshiki, 5,345,074, Cl. 250-214.100.
Tonai, Ichiro; and Kuhara, Yoshiki, 5,345,075, Cl. 250-227.240.

Uemiya, Takafumi; and Uenishi, Naota, 5,345,545, Cl. 385-141.000.

Sumitomo Heavy Industries, Ltd.: *See—*
Nagata, Hiroshi, 5,343,626, Cl. 33-501.140.

Sumitomo Rubber Industries, Ltd.: *See—*
Prottey, Frederick V., 5,345,217, Cl. 340-442.000.
Wako, Iwamura, 5,343,914, Cl. 152-209.00R.
Yoshida, Masanao, 5,343,919, Cl. 152-209.00R.

Sumitomo Wiring Systems, Ltd.: *See—*
Inoue, Nori; Ito, Mitsuru; Ichida, Kiyofumi; and Tanaka, Nobuyoshi, 5,344,347, Cl. 439-701.000.

Summerfield, Leslie R.: *See—*
Mullen, Stuart I.; and Summerfield, Leslie R., 5,345,386, Cl. 364-431.020.

Summersea International, Inc.: *See—*
Kettenhofen, Robert, 5,343,578, Cl. 5-413.000.

Sumner, David: *See—*
Glenn, Chance M., Sr.; Kaul, Roger; Sumner, David; and Gwyn, Kisha N., 5,345,199, Cl. 333-17.200.

Sun, Cheng-Yun, to Industrial Technology Research Institute. Ghost canceller with variable delay selector. 5,345,273, Cl. 348-607.000.

Sun Company, Inc. (R&M): *See—*
Durante, Vincent A.; Lyons, James E.; Walker, Darrell W.; and Marcus, Bonita K., 5,345,011, Cl. 568-910.000.
Lyons, James E.; and Ellis, Paul E., Jr., 5,345,008, Cl. 568-909.800
Lyons, James E.; Durante, Vincent A.; and Walker, Darrell W., 5,345,010, Cl. 568-910.000.

Sun, Donald J. C.: *See—*
Anderson, Donald A., 5,344,140, Cl. 273-78.000.

Sun, Hsiang-ning; Cikut, John J.; Martir, Roque V.; and Wristers, Jos P., to Exxon Chemical Patents Inc. Inhibiting popcorn polymer formation with sulfur-containing compounds. 5,345,030, Cl. 585-2.000.

Sun, Shih-Wei; Kosa, Yasunobu; and Yeargain, John R., to Motorola, Inc. Structure for shielding conductors. 5,345,105, Cl. 257-659.000.

Sundermann, Rudolf: *See—*
Schieb, Thomas; Wiechers, Gerhard; Sundermann, Rudolf; and Zarnack, Uwe, 5,345,012, Cl. 568-934.000.

Sundstrand Corporation: *See—*
Kintz, Lawrence J.; Okey, David W.; Leicht, Joseph F.; Carrighitto, Francis T.; O'Hare, Colum; Garr, Keith E.; and Clark, Valerie, 5,343,613, Cl. 29-596.000.
Shekleton, Jack R.; and Rodgers, Colin, 5,343,690, Cl. 60-39.020.

Suominen, Kersti H. Sofa or armchair with adjustable sitting depth. 5,344,216, Cl. 297-383.000.

Suovaniemi, Osmo; and Ekholm, Pertti, to Biohit Oy. Procedure for filling and emptying a pipette, and pipette. 5,343,769, Cl. 73-864.180.

Superior Diapering Products Ltd.: *See—*
Chase, Marjorie L., 5,343,875, Cl. 128-846.000.

Sutherland, Beverly E.: *See—*
Yee, Eugene M.; Sutherland, Beverly E.; Lyon, John J.; Spits, Tiemen T.; and Filia, Richard M., 5,345,262, Cl. 348-177.000

Sutherland, Robert J.; and DuBois, Dean A., to Shell Oil Company Star polymers of dienes, vinylarenes and alkyl methacrylates as modified viscosity index improvers. 5,344,887, Cl. 525-299.000.

Suwa, Yorimasa; Imaizumi, Atsushi; Okada, Masahiro; Kudo, Ichiro; Inoue, Keizo; and Suzuki, Yoji, to Teijin Limited. Protein inhibitors of phospholipase A_2 purified from inflammatory sites and production process. 5,344,764, Cl. 455-69.100.

Suyak, James E.: *See—*
Chubb, Arthur B.; and Suyak, James E., 5,343,728, Cl. 72-319.000.

Suzuki, Atsushi: *See—*
Douta, Hisayo; Kinugawa, Masumi; and Suzuki, Atsushi, 5,343,701, Cl. 60-276.000.

Suzuki, Fujio: *See—*
Wakamori, Hideki; Suzuki, Fujio; and Horie, Katsuo, 5,344,904, Cl. 526-254.000.

Suzuki, Hiroshi, to Kabushiki Kaisha Toshiba. Controlling the moving speed of a magnetic head by varying the gain in response to the sign of the error signal. 5,345,348, Cl. 360-78.070.

Suzuki, Kaoru; Ando, Tadahiro; Naka, Hiroshi; Sawada, Mitsutoshi; Ohata, Tomonori; Miura, Hiroshi; Nakabayashi, Masayoshi; and Ando, Eiiti, to Sharp Kabushiki Kaisha. Device for further processing after copying. 5,344,130, Cl. 270-53.000.

Suzuki, Kazuhiro; Miki, Masatoshi; Kuwabara, Toshio; and Matsubara, Morihiko, to Nippon Cable System, Inc.; and Shin Caterpillar Mitsubishi Ltd. Actuator for an accelerator for engine control valve control and the like. 5,345,157, Cl. 318-280.000.

Suzuki, Kiyoji: *See—*
Ohtsuka, Yuzuru; Suzuki, Kiyoji; and Nakamura, Toru, 5,344,564, Cl. 210-634.000.

Suzuki, Kosaku: *See—*
Yanai, Kunihiko; and Suzuki, Kosaku, 5,344,495, Cl. 134-22.100.

Suzuki, Masashi: *See—*
Satoh, Hiroaki; Kikuchi, Haruhiko; Yamada, Kazuhiko; Fukutomi, Ruta; Suzuki, Masashi; Hagihara, Koichiro; Hayakawa, Toru; Arai, Takeo; and Mino, Setsuko, 5,344,831, Cl. 514-249.000.

Suzuki, Nobuo: *See—*
Horie, Seiji; Sano, Kenji; Suzuki, Nobuo; and Watarai, Syu, 5,344,694, Cl. 428-195.000.

Suzuki, Noriyuki: *See—*
Sakai, Yasuyuki; Suzuki, Noriyuki; Kudo, Tetsuo; Marumo, Kunitomi; Aizawa, Toshiyuki; Imamura, Kunio; Sugita, Shuichi; and Kanbayashi, Kazuo, 5,344,655, Cl. 424-443.000

Suzuki, Ryuichi: *See—*
Bito, Yoshitaka; Sekihara, Kensuke; and Suzuki, Ryuichi, 5,345,173, Cl. 324-309.000.

Suzuki, Shigeru; Kobara, Motonori; Hisatomi, Yasuhiro; Yamaguchi, Yoshinori; Yonetani, Hiroshi; Fukushima, Kiyoyuki; Sakamoto, Yoshimasa; Yagami, Toru; and Kamei, Toshihide, to Kuroda Seiko Co., Ltd.; and Mori Seiki Co., Ltd. Main spindle apparatus of machine tool. 5,344,260, Cl. 408-168.000.

Suzuki, Shinichi; Shigematsu, Yasuyuki; Kojima, Takashi; Kizaki, Hiroe; and Itsubo, akira, to Mitsubishi Petrochemical Co., Ltd. Electrophotographic receptor. 5,344,733, Cl. 430-58.000.

Suzuki, Takeshi: *See—*
Ohta, Mitsuaki; Koide, Tokuo; Suzuki, Takeshi; Matsuhisa, Akira; Miyata, Keiji; Ohmori, Junya; and Yanagisawa, Isao, 5,344,927, Cl. 544-31.000.

Suzuki, Yoji: *See—*
Suwa, Yorimasa; Imaizumi, Atsushi; Okada, Masahiro; Kudo, Ichiro; Inoue, Keizo; and Suzuki, Yoji, 5,344,764, Cl. 455-69.100.

Suzuki, Yoshiichi; Mogamiya, Hiroyuki; Tanaka, Koichi; Takagi, Yoshihiro; and Hirose, Katutoshi, to Showa Sheel Sekiyu Kabushiki Kaisha. Antiferroelectric liquid crystal compound and process for producing the same. 5,344,586, Cl. 252-299.640.

Svensson, Egon: *See—*
Wennberg, Lennart; Sarholm, Lena; Svensson, Egon; Erikson, Jan; and Holmlin, Ralf, 5,343,809, Cl. 102-401.000.

Swami, Arun N.: *See—*
Iyer, Balakrishna R.; and Swami, Arun N., 5,345,585, Cl. 395-600.000.

Swan, Richard E. Extended rigid frame receiver sleeve. 5,343,650, Cl. 42-100.000.

Swan, Robert B.: *See—*
Zurecki, Zbigniew; Berger, Kerry R.; and Swan, Robert B., 5,344,478, Cl. 75-709.000.

Swanson, Craig; Ramon, Henry E., III; and Taylor, Ty C., to IMI Cornelius Inc. Beverage dispenser with improved cold plate. 5,343,716, Cl. 62-389.000.

Swanson, Gary J., to Massachusetts Institute of Technology. Diffractive trifocal intra-ocular lens design. 5,344,447, Cl. 623-6.000.

Swanson, Scott J. Apparatus for dispensing and weighing granular material. 5,345,041, Cl. 177-105.000.

Swart, Peter W.: *See—*
Dannenberg, Todd D.; Jorsch, Thomas C.; Swart, Peter W.; and Panzer, Larry H., 5,343,576, Cl. 4-590.000.

Swartz, Stephen J. Arthroscopically implantable prosthesis. 5,344,459, Cl. 623-18.000.

Swearingen, Steven H.: *See—*
Rao, V. N. Mallikarjuna; and Swearingen, Steven H., 5,345,017, Cl. 570-227.000.

Swensen, Robert G.; and Kowalik, Joseph W., to Littelfuse, Inc. Time delay fuse. 5,345,210, Cl. 337-163.000.

Swick, Michael: *See—*
Challoner, Audrey; and Swick, Michael, 5,344,056, Cl. 224-151.000.

Sybert, Edward: *See—*
Carr, Charles; Sybert, Edward; and Adamson, Aldis E., 5,344,576, Cl. 210-805.000.

Sybert, Paul D., to General Electric Company. Heat-resistant polycarbonate resins containing 2-alkyl-3,3-bis(p-hydroxyphenyl)phthalimide. 5,344,910, Cl. 528-201.000.

Sylor, Mark W.: *See—*
Fehskens, Leonard G.; Strutt, Colin; Wong, Steven K.; Callander, Jill F.; Burgess, Peter H.; Nelson, Kathy J.; Guertin, Matthew J.; Sylor, Mark W.; Chapman, Kenneth W.; Schuchard, Robert C.; Goldfarb, Stanley I.; Rogers, Dennis O.; O'Brien, Linsey B.; Trasatti, Philip J.; England, Benjamin M.; Lemmon, James L., Jr.; Rosenbaum, Richard L.; Kohls, Ruth E. J.; Aronson, David L.; Ross, Robert R. N.; Smith, Danny L.; Adams, William C., Jr.; Koning, G. Paul; Namoglu, Sheryl F.; Seger, Mark J.; Dixon, Timothy M.; and Harrow, Jeffrey R., 5,345,587, Cl. 395-650.000.

Symons, Daniel A., to American Airlines, Inc. Measurement tool. 5,343,624, Cl. 33-810.000.

SynOptics Communications, Inc.: *See—*
Opher, Ayal; Chatwani, Dilip; and Subramanian, Rajan, 5,345,558, Cl. 395-200.000.

Syntex (U.S.A.) Inc.: *See—*
Lin, Cheng-I; and Pirio, Marcel, 5,344,782, Cl. 436-79.000.

Synthes (U.S.A.): *See—*
Frigg, Robert, 5,344,422, Cl. 606-61.000.

System Technical Co., Ltd.: *See—*
Miyakawa, Naohisa; Masuzawa, Minoru; and Kato, Katsuhisa, 5,343,655, Cl. 49-441.000.

Systems Chemistry, Inc.: *See—*
Cady, Byron C.; Story, Carl E.; and Guerra, David A., III, 5,343,736, Cl. 73-40.000.

Systron Donner Corporation: *See—*
Madni, Asad M.; and Wan, Lawrence, 5,345,239, Cl. 342-14.000.

Szolgyenyi, Gerald; and Hildebrand, Peter, to Chemie Linz Gesellschaft m.b.H. Apparatus for the deposition of melamine. 5,344,473, Cl. 55-223.000.

Tabata, Yasushi: *See—*
Kobayashi, Takeo; Tabata, Yasushi; Numako, Norio; and Nagai, Katsutoshi, 5,345,288, Cl. 354-238.100.

Tabler, Lyle V.: *See—*
Gibbons, Gerard P.; and Tabler, Lyle V., 5,345,163, Cl. 320-48.000.

Taboada, John; and Robinson, William. Eye tracking system and method. 5,345,281, Cl. 351-210.000.

Tabuchi, Koji: *See—*
Miyazono, Tadafumi; Tabuchi, Koji; and Masahiro, Takegawa, 5,344,890, Cl. 525-326.500.

Tachiki, Kiyohiro, to Mitsubishi Oil Co., Ltd. Gasoline-blended methanol fuel for internal combustion engines. 5,344,469, Cl. 44-451.000.

Tada, Yasuo: *See—*
Ito, Satoru; Murata, Michihiro; Fukui, Norio; Yamamoto, Keizou; Sawao, Tetsujiro; Awata, Satoshi; Tada, Yasuo; and Kawabata, Satoru, 5,344,518, Cl. 156-242.000.

Tada, Yoshiaki: *See—*
Watanabe, Niro; Morimitsu, Tatsuya; Hoshino, Kazuhisa; Kobayashi, Akihiko; Horie, Kiyoshi; Shindo, Naoaki; Tada, Yoshiaki; and Sato, Takashi, 5,344,808, Cl. 503-227.000.

Tagawa, Hirotoshi: *See—*
Deguchi, Hiroyuki; and Tagawa, Hirotoshi, 5,345,257, Cl. 346-145.000.

Taguchi, Ichiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Apparatus for correcting parallax and/or diopter of camera. 5,345,287, Cl. 354-221.000.

Taguchi, Jun'ichi; and Sano, Koichi, to Hitachi, Ltd.; and Hitachi Medical Corp. Double-slice imaging method in NMR imaging apparatus. 5,345,172, Cl. 324-309.000.

Taguchi, Naoto: *See—*
Hatagishi, Yuji; and Taguchi, Naoto, 5,344,194, Cl. 285-26.000.

Taguchi, Yasushi: *See—*
Morimoto, Shigeki; Noguchi, Tadashi; Taniguchi, Masakazu; and Taguchi, Yasushi, 5,344,798, Cl. 501-70.000.

Taherian, M. Reza: *See—*
Habashy, Tarek M.; Taherian, M. Reza; Dumont, Alain; and Beren, Jeffrey A., 5,345,179, Cl. 324-338.000.

Tai, Marcus V.: *See—*
Saw, Beng I.; Tai, Marcus V.; and Le, Dai M., 5,345,450, Cl. 371-27.000.

Taito Corporation: *See—*
Komori, Yutaka, 5,344,137, Cl. 273-26.00D.

Tajima, Akio; Harada, Hiroyuki; Shimizu, Harukazu; Inoue, Haruo; Kougo, Takashi; Oda, Hajime; Nakagawa, Tadashi; and Hayakawa, Tsuyoshi, to Seikosha Co., Ltd. Serial printer. 5,344,245, Cl. 400-320.000.

Takada, Masahiko: *See—*
Furukawa, Mitsuru; Takada, Masahiko; Murata, Shoichi; and Sasayama, Atsushi, 5,344,917, Cl. 530-356.000.

Takada, Masao: *See—*
Lilitkarntakul, Suchart; Nabekawa, Shukichi; Takada, Masao; and Ogura, Katsuyuki, 5,344,968, Cl. 562-474.000.

Takagawa, Makoto: *See—*
Fushimi, Norio; Inamasa, Kenji; and Takagawa, Makoto, 5,344,806, Cl. 585-452.000.

Takagi, Nobuyuki, to Okuma Corporation. Combined working machine. 5,343,604, Cl. 29-27.00C.

Takagi, Ryoji; Miyadera, Makoto; Yamamoto, Takashi; and Yoshida, Ryuhei, to Murata Manufacturing Co. Ltd. Composite type piezoelectric component. 5,345,136, Cl. 310-320.000.

Takagi, Tasuku; and Nagasawa, Zenichirou, to Small Power Communication Systems Research Laboratories Co., Ltd. Harmonic-frequency communication system with improved diversity scheme. 5,345,601, Cl. 455-59.000.

Takagi, Yoshihiro: *See—*
Suzuki, Yoshiichi; Mogamiya, Hiroyuki; Tanaka, Koichi; Takagi, Yoshihiro; and Hirose, Katutoshi, 5,344,586, Cl. 252-299.640.

Takahashi, Kanji: *See—*
Hamanaka, Nobuyuki; Takahashi, Kanji; and Tokumoto, Hidekado, 5,344,836, Cl. 514-332.000.

Takahashi, Keiichi: *See—*
Murakata, Chikara; Takiguchi, Toshimitsu; Katsumata, Shigeo; Mihara, Akira; Takahashi, Keiichi; Saito, Hiromitsu; Akinaga, Shiro; Okabe, Masami; and Saito, Yutaka, 5,344,926, Cl. 540-545.000.

Takahashi, Ryoji: *See—*
Narita, Noriaki; Iwata, Masuo; Inoue, Kouji; Sato, Hideo; and Takahashi, Ryoji, 5,344,855, Cl. 523-179.000.

Takaiwa, Kan; and Ohara, Eiji, to Canon Kabushiki Kaisha. Image signal processing apparatus with analog to digital image conversion. 5,345,279, Cl. 348-689.000.

Takaiwa, Mikio: *See—*
Hitomi, Jun; Adachi, Shigehito; Hakamada, Yoshihiro; Takaiwa, Mikio; Yoshimatsu, Tadashi; Watanabe, Yoko; Kobayashi, Tohru; Kawai, Shuji; and Ito, Susumu, 5,344,770, Cl. 435-71.200.

Takakura, Masaki: *See—*
Iwasaki, Keisuke; Takakura, Masaki; and Asayama, Yasusuke, 5,345,544, Cl. 395-140.000.

Takamoto, Hiroshi; Nakamura, Takenori; and Nakamura, Kenichi, to Kabushiki Kaisha Toshiba. Cascade sense amplifier for reading out data stored in semiconductor memory device. 5,345,122, Cl. 307-530.000.

Takamoto, Yuusuke: *See—*
Masaki, Ryoso; Takamoto, Yuusuke; Obara, Sanshiro; Yamamura, Hirohisa; and Yamada, Hiroyuki, 5,345,155, Cl. 318-138.000.

Takano, Hideo: *See—*
Koseki, Toshihiko; Fukunaga, Tetsuya; Takano, Hideo; and Yamanaka, Hidemine, 5,345,324, Cl. 359-67.000.

Takano, Minoru; Komuro, Akihiro; and Yamazaki, Mitsuru, to Fujitsu Limited. Positioning member for a separation electrode mounted on a clamshell-type copier. 5,345,295, Cl. 355-200.000.

Takano, Toshihiko: *See—*
Shirai, Kazushi; Takano, Toshihiko; Takeda, Norio; and Arii, Mitsuzo, 5,345,329, Cl. 359-282.000.

Takano, Toshiyuki: *See—*
Nakamura, Kimihiro; Yuhara, Tadanori; Takano, Toshiyuki; and Yao, Hironobu, 5,343,756, Cl. 73-718.000.

Takano, Tsunesuke; and Sinzawa, Kouichi, to Kabushiki Kaisha T AN T. Switchable light fixture. 5,345,372, Cl. 362-394.000.

Takao, Kazuhisa: *See—*
Obuchi, Kazuto; Oya, Satoshi; Minato, Mitsuaki; Uehara, Akira; Fujisawa, Kazutoshi; and Takao, Kazuhisa, 5,344,536, Cl. 204-192.320.

Takata Corporation: *See—*
Koyanagi, Toshiro, 5,344,213, Cl. 297-256.130.

Takatsugi, Satoshi; and Ito, Susumu, to Fanuc Ltd. Screw linkage structure for use in an injection molding machine. 5,344,303, Cl. 425-190.000.

Takayama, Shinichi: *See—*
Nishi, Noriyuki; Muto, Tadashi; and Takayama, Shinichi, 5,345,515, Cl. 382-8.000.

Take, Masafumi, to Seiko Instruments Inc. Dielectric constant-measuring apparatus. 5,345,183, Cl. 324-663.000.

Takeda Chemical Industries, Ltd.: *See—*
Igari, Yasutaka; Yamada, Minoru; and Ishiguro, Seiko, 5,344,644, Cl. 424-85.100.
Masuya, Hirotomo; Shimadzu, Hiroshi; Miyawaki, Toshio; and Motsenbocker, Marvin A., 5,344,928, Cl. 544-37.000.

Takeda, Masaru: *See—*
Sawamura, Seishi; Nakajima, Sakuya; Amemori, Kunio; Oku, Hidehisa; Nakagawa, Akio; Kitayama, Ichiro; Matsuda, Hiromu; Yoshida, Katsuhiko; Takeda, Masaru; Nakane, Toshio; Horiguchi, Shiro; and Yuki, Shigeru, 5,344,446, Cl. 623-24.000.

Takeda, Norio: *See—*
Shirai, Kazushi; Takano, Toshihiko; Takeda, Norio; and Arii, Mitsuzo, 5,345,329, Cl. 359-282.000.

Takeda, Siro; Namiki, Fumihiro; Haraki, Takahiro; Hirano, Hideyuki; Ishiwata, Kenji; Katsuragawa, Shigehiko; and Abe, Katsumi, to Fujitsu Limited. Method and apparatus for processing image corresponding to radiographic pattern. 5,345,513, Cl. 382-6.000.

Takeda, Takayuki: *See—*
Isobe, Atsushi; Sato, Taichi; Takeda, Takayuki; and Ookawa, Katutoshi, 5,344,135, Cl. 271-180.000.

Takeda, Yoshinobu: *See—*
Kaji, Toshihiko; Takeda, Yoshinobu; Odani, Yuusuke; Akechi, Kiyoaki; and Tanji, Takao, 5,344,605, Cl. 419-31.000.

Takei, Seiji; and Kitayama, Azuyasu, to Nippon Thompson Co., Ltd. Linear motion rolling contact guide unit having opposite roller and ball contacts. 5,344,237, Cl. 384-45.000.

Takematsu, Tetsuo: *See—*
Hirata, Toshihiro; Kobayashi, Izumi; Kikkawa, Nobuyuki; and Takematsu, Tetsuo, 5,344,810, Cl. 504-135.000.

Takemoto, Akira, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor laser. 5,345,464, Cl. 372-46.000.

Takemoto, Masanobu: *See—*
Kamiguchi, Masao; Saito, Osamu; Kubota, Kazuo; and Takemoto, Masanobu, 5,344,301, Cl. 425-169.000.

Takemura, Hiroshi: *See—*
Tamaki, Toshimi; Takemura, Hiroshi; Tayama, Kenji; Fukaya, Masahiro; Okumura, Hajime; and Kawamura, Yoshiya, 5,344,777, Cl. 435-252.300.

Takenaka, Hiroshi: *See—*
Okabe, Shinya; Shimode, Shinichi; Sato, Ryouji; Hanada, Masamichi; Senshu, Takao; Terada, Hirokiyo; Izushi, Minetoshi; Takenaka, Hiroshi; and Ito, Masahiro, 5,343,713, Cl. 62-296.000.

Takenaka, Shunji, to Stanley Electric Co., Ltd. Method of manufacturing laminated transparent substrate having birefringence. 5,344,513, Cl. 156-106.000.

Takenoshita, Hiroyuki: *See—*
Sawa, Tsutomu; Takenoshita, Hiroyuki; Shibata, Kohei; and Komatsu, Hirohide, 5,344,243, Cl. 400-124.320.

Takeuchi, Kousuke: *See—*
Kobayashi, Yasumi; Takeuchi, Kousuke; Ikeda, Kachio; Shibata, Kenichi; and Kuroki, Kazuhiko, 5,345,202, Cl. 333-206.000.

Takeuchi, Naoki, to Kabushiki Kaisha Kobe Seiko Sho. Resin material supply apparatus for resin press molding machine. 5,344,299, Cl. 425-142.000.

Takeuchi, Tatsuya: *See—*
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Harwood, H. James; Jones, Daniel H.; Talkington, Andrew W.; and Goodrich, Stephen D., 5,344,902, Cl. 526-217.000.

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Tanaka, Naojiro, to Leader Electronics Corp. Broad-band amplifier 5,345,191, Cl. 330-277.000.

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Perego, Luciano, 5,344,092, Cl. 242-538.000.

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Nonami, Tohru; Noma, Hiroyasu; and Nakajima, Shinya, 5,344,456, Cl. 623-16.000.
Saitoh, Yutaka; Ito, Shinichiro; and Kinoshita, Yukiharu, 5,345,209, Cl. 336-83.000.

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Okabe, Shinya; Shimode, Shinichi; Sato, Ryouji; Hanada, Masamichi; Senshu, Takao; Terada, Hirokiyo; Izushi, Minetoshi; Takenaka, Hiroshi; and Ito, Masahiro, 5,343,713, Cl. 62-296.000.

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Schwindt, Randy J.; Harwood, Warren K.; Tervo, Paul A.; Smith, Kenneth R.; Warner, Richard H.; and Andrews, Peter D., 5,345,170, Cl. 324-754.000.

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Teton West Construction, Inc.: *See—*
Bagley, Terrence F., 5,344,362, Cl. 454-180.000.

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Nieh, Edward C.; and Cuscurida, Michael, 5,344,996, Cl. 568-621.000.
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Mozgowiec, Mark D.; Keasey, Kai L.; and Beringhause, Steven, 5,343,748, Cl. 73-497.000.
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Walsh, Brendan; Simpson, Richard; Dudbridge, Laura; Collins, David; and Moyse, Philip, 5,345,405, Cl. 364-715.100.

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Flickner, Andrew K., 5,345,267, Cl. 348-379.000.
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Lendaro, Jeffery B., 5,345,275, Cl. 348-656.000.
Saeger, Timothy W.; Kranawetter, Greg A.; and Ersoz, Nathaniel H., 5,345,270, Cl. 348-435.000.
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Stoney, Arthur; Burt, Arthur J.; and Waters, Richard, 5,344,366, Cl. 454-213.000.
Tjoeng, Foe S.; and Zablocki, Jeffery A., to G. D. Searle & Co.; and Monsanto Company. Platelet aggregation inhibitors. 5,344,837, Cl. 514-344.000.
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Toborg, Steven M.; and Schonewald, Roger W., to General Electric Company. Turbine nozzle support. 5,343,694, Cl. 60-39.310.
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Yada, Yukihiko; and Ito, Tosikazu, 5,344,205, Cl. 296-93.000.
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Ide, Akiyoshi; Goto, Katsuhiro; Ishioka, Yutaka; Funahashi, Yoshiki; Kato, Rentaro; Matsui, Tetsu; Kanda, Ryouji; Muramatsu, Atsushi; and Ishiba, Keiichi, 5,344,129, Cl. 267-140.140.
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Toki, Susumu: *See—*
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Tokimitsu, Ichiro: *See—*
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Tokiwa Chemical Industries Co., Ltd.: *See—*
Miyakawa, Naohisa; Masuzawa, Minoru; and Kato, Katsuhisa, 5,343,655, Cl. 49-441.000.
Tokuda, Hitoki; and Iiyama, Michitomo, to Sumitomo Electric Industries, Ltd. Superconducting input interface circuit for superconducting circuit. 5,345,115, Cl. 505-193.000.
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Hamanaka, Nobuyuki; Takahashi, Kanji; and Tokumoto, Hidekado, 5,344,836, Cl. 514-332.000.
Tokutomi, Atsuya; Ichikawa, Hiroshi; Ushikoshi, Kenji; and Yamauchi, Hiroshi, to Nippon Carbon Co., Ltd. Silicon carbide fiber and method of manufacturing the same. 5,344,709, Cl. 428-368.000
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Okamoto, Hidenori; Tanaka, Norihiro; and Sasaki, Keisuke, 5,345,330, Cl. 359-326.000.
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Obuchi, Kazuto; Oya, Satoshi; Minato, Mitsuaki; Uehara, Akira; Fujisawa, Kazutoshi; and Takao, Kazuhisa, 5,344,536, Cl. 204-192.320.
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Tolco, Incorporated: *See—*
Heath, Richard W., 5,344,108, Cl. 248-62.000.
Tollenaere, Donald J. Aerodynamically-stabilized collapsible personnel and cargo basket for helicopters. 5,344,203, Cl. 294-68.100.
Tomida, Masayuki, to Canon Kabushiki Kaisha. Method for forming an optical element. 5,344,476, Cl. 65-102.000.
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Kasai, Masaji; Arai, Hitoshi; Nishikawa, Hiroshi; Ogasa, Takehiro; Kinugawa, Masahiko; and Tomioka, Shinji, 5,344,938, Cl. 548-492.000.
Tomisawa, Naoki, to Japan Electronic Control Systems Co., Ltd Apparatus and method for detecting intake air quantity for internal combustion engine. 5,343,745, Cl. 73-204.180.
Tomiyasu, Kunihiko: *See—*
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Umemoto, Noboru; Nomura, Takeshi; Kuribayashi, Toshiaki; Sato, Takehisa; and Tomizawa, Hirotaka, 5,344,582, Cl. 252-9.000.
Tong, Kai L.: *See—*
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Toor, Irfan A., to Itex Enterprises, Inc. Oil, water and sand separator. 5,344,255, Cl. 405-128.000.
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Toral, Jose; Lutz, Gottfried; Thiele, Hartmut; Liepold, August; and Brandstetter, Hermann, to BASF Magnetics GmbH. Reusable multipack for stacked wound rolls. 5,344,014, Cl. 206-394.000.
Torok, Vilmos. Electric motor with combined permanent and electromagnets. 5,345,131, Cl. 310-181.000.
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Shiojima, Nobuo, 5,345,162, Cl. 320-21.000.
Toshiba Kikai Kabushiki Kaisha: *See—*
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Totsuka, Mitsuhiko: *See—*
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Tour & Andersson AB: *See—*
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Towey, James P., Jr., to Otis Elevator Company. Elevator speed check using constant ratiometric comparison. 5,345,048, Cl. 187-116.000.
Toxco, Inc.: *See—*
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Toyo Boseki Kabushiki Kaisha: *See—*
Hotta, Yasunari; Maeda, Satoshi; Yamada, Yozo; Tanaka, Koji; Ono, Hiroshi; and Uno, Toshio, 5,344,673, Cl. 427-195.000.
Toyo Ink Manufacturing Co., Ltd.: *See—*
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Trah, Hans-Peter; and Flik, Gottfried, to Robert Bosch GmbH. Microactuator. 5,344,117, Cl. 251-11.000.
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Fehskens, Leonard G.; Strutt, Colin; Wong, Steven K.; Callander, Jill F.; Burgess, Peter H.; Nelson, Kathy J.; Guertin, Matthew J.; Sylor, Mark W.; Chapman, Kenneth W.; Schuchard, Robert C.; Goldfarb, Stanley I.; Rogers, Dennis O.; O'Brien, Linsey B.; Trasatti, Philip J.; England, Benjamin M.; Lemmon, James L., Jr.; Rosenbaum, Richard L.; Kohls, Ruth E. J.; Aronson, David L.; Ross, Robert R. N.; Smith, Danny L.; Adams, William C., Jr.; Koning, G. Paul; Namoglu, Sheryl F.; Seger, Mark J.; Dixon, Timothy M.; and Harrow, Jeffrey R., 5,345,587, Cl. 395-650.000.
Trent, B. C. Gliding-style rocking chair. 5,344,214, Cl. 297-270.000.
Trimble, Alan M. Ski binding block. 5,344,176, Cl. 280-602.000.
Trimble, Charles: *See—*
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Trimble Navigation Limited: *See—*
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TRW Repa GmbH: *See—*
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Frei, Bernhard; Hirzel, Uwe; Rohrle, Martin; and Honl, Wolf-Dieter, 5,344,096, Cl. 242-379.000.
TRW Vehicle Safety Systems Inc.: *See—*
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Keeler, Laurence H.; Resh, Robert E.; and Richards, Susan A., 5,344,184, Cl. 280-730.00R.
Tsai, Chung-hsien; Nelson, John C.; Herberlein, Joachim V. R.; Pfender, Emil; and Gerberich, William W., to University of Minnesota, Regents of the. Diamond coated products and method of preparation. 5,344,551, Cl. 205-110.000.
Tsang, Ching H.: *See—*
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Tseng, Hsien-Chang. Sewing machine having an accessory box. 5,343,821, Cl. 112-258.000.
TSI Incorporated: *See—*
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Kawaai, Yuichi; Shibayama, Katsutoshi; Murano, Tetsuya; Hamaguchi, Susumu; and Suko, Tomoo, 5,344,001, Cl. 198-779.000.
Tsubakiyama, Hideki; Oohashi, Masayoshi; and Koga, Keiichiro, to Kokusai Denshin Denwa Kabushiki Kaisha. Mutual authentication/-cipher key distribution system. 5,345,506, Cl. 380-23.000.
Tsuchiya, Kenichi, to Unisys Corporation. Failure detection for instruction processor associative cache memories. 5,345,582, Cl. 395-575.000.
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Nomura, Yoshiya; Tsuda, Tadayuki; Ikemoto, Isao; Watanabe, Kazushi; Ishiwata, Kazuhiko; Tanaka, Makoto; Yano, Kanji; and Sasaki, Shinichi, 5,345,294, Cl. 355-200.000.
Tsuda, Youichirou, to Pioneer Electronic Corporation. Information transmission system retransmitting information signals according to retransmission schedule. 5,345,594, Cl. 455-18.000.
Tsui, Tsz Y. (Barry), to STD Electronic International Ltd. Variable range position indicator. 5,345,214, Cl. 338-128.000.
Tsujimoto, Ichiro, to NEC Corporation. Interference canceller with feedforward transversal filter having switched tap-gain coefficients. 5,345,476, Cl. 375-14.000.
Tsukada, Keiji; Miyahara, Yuji; Shibata, Yasuhisa; and Watanabe, Yoshio, to Hitachi, Ltd. Electrolytic sensor for measuring the content of gas in a fluid. 5,344,545, Cl. 204-415.000.
Tsumura & Co.: *See—*
Koda, Akihide; Waragai, Koji; Ono, Yutaka; Ozawa, Hideyuki; Kawamura, Hideki; Maruno, Masao; and Wakamatsu, Takeshi, 5,344,845, Cl. 514-614.000.
Tsurumaki, Takayoshi; and Ogata, Fumiaki, to Fujitsu Limited. Receiving satellite switching apparatus. 5,345,591, Cl. 455-3.200.
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Tsuruta, Yuzo. Electronic flash unit with two integrated flash heads. 5,345,284, Cl. 354-132.000.
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Tu, Shang-Hui, to Motorola, Inc. High voltage semiconductor structure and method. 5,345,101, Cl. 257-495.000.
Tumeh, Amer M.: *See—*
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Tungsram Co., Ltd.: *See—*
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Turanyi, Sandor; Jones, Robert; and Webb, John D., Jr., to Encore Orthopedics, Inc. Prosthesis system. 5,344,460, Cl. 623-20.000.
Turbo-Chem International, Inc.: *See—*
Hayes, James R.; and Campbell, Gale J., 5,344,817, Cl. 507-128.000.
Turner, Paul F.; Schaefermeyer, Theron N.; Tumeh, Amer M.; and Terry, Philip A., to BSD Medical Corporation. Urethral inserted applicator prostate hyperthermia. 5,344,435, Cl. 607-101.000.
Turriff, David E.; Johnson, JoAnn L.; Jacobs, Lloyd E.; and Melberg, Nils K., to En Chem, Inc. Tool for sampling soil containing volatile organic compound. 5,343,771, Cl. 73-864.440.
Tuse, Daniel; Hokama, Leslie A.; Foss, Carrie R.; and Tefft, Jacqueline A., to SRI International. Plant root coatings. 5,344,471, Cl. 47-58.000.
Tuten, William J.: *See—*
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Uchida, Hideaki: *See—*
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Ueda, Koichi; Kanda, Kazunori; and Kusuda, Hidefumi, to Nippon Paint Co., Ltd. Photosensitive resin composition. 5,344,744, Cl. 430-287.000.
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Ueda, Toshiaki: *See—*
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Ueda, Toshihiko; and Watanebe, Sanae, to Minolta Camera Kabushiki Kaisha. Zoom lens system for use in a copying apparatus. 5,345,338, Cl. 359-679.000.
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Uihlein, Christoph; Hausing, Michael; and Puhler, Andreas J., to Bodenseewert Geratetechnik GmbH. Input/output interface for data in parallel processors. 5,345,563, Cl. 395-275.000
Ullman, David G.; Hunter-Zaworski, Katharine M.; Zaworski, Joseph R.; Herling, Derald E.; and Clark, Garrett E., to State of Oregon, acting by and through the state Board of Higher Education on behalf of OSU. Securement system for a rollable mobility aid. 5,344,265, Cl. 410-3.000.
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Umemoto, Noboru; Nomura, Takeshi; Kuribayashi, Toshiaki; Sato, Takehisa; and Tomizawa, Hirotaka, to Tonen Corporation. Traction fluid derived from cyclopentadiene oligomers. 5,344,582, Cl. 252-9.000.
Umezawa, Mituo; Nakamura, Masashi; and Kubota, Hirosi, to Toyo Ink Manufacturing Co., Ltd. Curing agent-free water based coating composition. 5,344,857, Cl. 523-409.000.
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Byrd, Roger C., 5,345,084, Cl. 250-390.120.
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Wadhawan, Satish C. Method for treating waste pickle liquor. 5,344,572, Cl. 210-727.000.

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Walsh, Brendan; Simpson, Richard; Dudbridge, Laura; Collins, David; and Moyse, Philip, to Texas Instruments Incorporated. Circuit for detecting the position of an extreme "1" bit in a binary number. 5,345,405, Cl. 364-715.100.

Walsh, John P., to Masonite Corporation. Isocyanate bonded wood composite and method of manufacturing the same. 5,344,484, Cl. 106-201.000.

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Harbeck, Wolfgang; Woerner, Theo; Weiss, Karl; and Distl, Rudolf, 5,344,310, Cl. 431-158.000.
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Zomotor, Adam; Klinkner, Walter; Schindler, Erich; Mohn, Frank-Werner; and Wohland, Thomas, 5,345,385, Cl. 364-424.050.
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Scarborough, Robert M.; Wolf, David L.; and Charo, Israel F., 5,344,783, Cl. 436-501.000.
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Koenck, Steven E.; Wolf, Roger L.; and Alt, Daniel E., 5,345,146, Cl. 315-169.300.
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Beenler, Edward M.; and Wolf, William H., 5,344,302, Cl. 425-178.000.
Wolfangel, Robert G.: *See—*
Deutsch, Edward A.; Deutsch, Karen F.; Cacheris, William P.; Ralston, William H.; White, David H.; Nosco, Dennis L.; Wolfangel, Robert G.; Wilking, Janet B.; Meeh, Linda; and Woulfe, Steven R., 5,344,640, Cl. 424-9.000.
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Jakus, Judit; Park, Myung H.; Wolff, Edith C.; and Folk, John E., 5,344,846, Cl. 514-634.000.
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Goulet, Mark; Sinclair, Peter J.; Wong, Frederick; and Wyvratt, Matthew J., 5,344,925, Cl. 540-456.000.
Wong, Raymond W.; Breton, Marcel P.; Croucher, Melvin D.; Duff, James M.; Petroff, T. Edward; Riske, William; and Henseleit, Kerstin M., to Xerox Corporation. Ink jet printing process. 5,345,254, Cl. 347-100.000.
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Woodmas, Charles D., to Concept W Systems, Inc. Signal transfer and power delivery system for a television camera station. 5,345,592, Cl. 455-3.300.
Woods, Daniel S.; and Stargiotti, Robert. Flashing brake light system. 5,345,218, Cl. 340-479.000.
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McShane, Michael B.; Woosley, Alan H.; and Primeaux, Francis, 5,344,600, Cl. 264-219.000.
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Hallden-Abberton, Michael P.; Work, William J.; Abramowicz, Mark A.; and Duong, Phuong N., 5,344,868, Cl. 524-494.000.
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O'Sullivan, Mark E.; and Wotring, Timothy L., 5,344,285, Cl. 415-199.200.
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Wright, Raymond L.; and Clark, Carl A., to Eastern Company, The. Mine roof expansion anchor and bail element. 5,344,257, Cl. 405-259.400.
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Sun, Hsiang-ning; Cikut, John J.; Martir, Roque V.; and Wristers, Jos P., 5,345,030, Cl. 585-2.000.
Wu, Chao-I, to Jan Sports Products Corp. Racket shaft mounting device. 5,344,139, Cl. 273-73.00G.
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Wu, Otto. Seasoning can structure. 5,343,800, Cl. 99-494.000.
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Wu, Wei-Kuo. Staged selection type Christmas light controller circuit. 5,345,147, Cl. 315-185.00S.
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Chamberlain, Leon F.; Hargitai, Miklos; Lantos, Ferenc; Tokes, Jozsef; and Wursching, Istvan, 5,345,142, Cl. 315-58.000.
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Merritt, Donald R.; Howard, William G.; Skarstad, Paul M.; Weiss, Douglas J.; Wyborny, Paul B.; Roline, Glenn M.; Nichols, Lucy M.; and Thompson, David L., 5,344,431, Cl. 607-29.000.
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Zeiler, Andrew G., 5,344,975, Cl. 562-606.000.
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Berkes, John S.; Grushkin, Bernard; and Smith, Thomas W., 5,344,737, Cl. 430-110.000.
Comparetta, Christopher; Ippolito, Ronald A.; Sathi, Kitty; Latone, Jack T.; Enzien, Colleen R.; and Smith, Mark A., 5,345,581, Cl. 395-575.000.
Corrigan, Richard W., Jr., 5,345,298, Cl. 355-260.000.
Kmiecik-Lawrynowicz, Grazyna E.; Patel, Raj D.; and Hopper, Michael A., 5,344,738, Cl. 430-137.000.
Sheridon, Nicholas K., 5,344,594, Cl. 264-4.100.
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Xoma Corporation: *See—*
Lai, Jiunu S.; Lee, Jar-How; and Callaway, James E., 5,344,765, Cl. 435-69.700.
Xy, Bu-Xin: *See—*
Dorri, Bizhan; Laskaris, Evangelos T.; Bedrosian, Gary; and Xy, Bu-Xin, 5,345,208, Cl. 335-301.000.
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Suzuki, Shigeru; Kobara, Motonori; Hisatomi, Yasuhiro; Yamaguchi, Yoshinori; Yonetani, Hiroshi; Fukushima, Kiyoyuki; Sakamoto, Yoshimasa; Yagami, Toru; and Kamei, Toshihide, 5,344,260, Cl. 408-168.000.
Yagawa, Hiroshi: *See—*
Tanaka, Hiromi; and Yagawa, Hiroshi, 5,343,617, Cl. 29-705.000.
Yagi, Takayuki; Komatsu, Toshiyuki; Sato, Yasue; and Kawate, Shinichi, to Canon Kabushiki Kaisha. Pattern forming process and process for preparing semiconductor device utilizing said pattern forming process. 5,344,522, Cl. 156-628.000.
Yagi, Yutaka; and Ishijima, Keizo, to Daido Tokushuko Kabushiki Kaisha. Centrifugal casting system having a carrier of elongated materials. 5,343,930, Cl. 164-295.000.
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Yajima, Yusuke; Ichikawa, Masakazu; and Shinada, Hiroyuki, to Hitachi, Ltd. Method of observing electron microscopic images and an apparatus for carrying out of the same. 5,345,080, Cl. 250-311.000.
Yamada, Hideo, to Yamaha Corporation. Musical tone generating apparatus. 5,345,035, Cl. 84-622.000.

Yamada, Hiroyuki: *See—*
Masaki, Ryoso; Takamoto, Yuusuke; Obara, Sanshiro; Yamamura, Hirohisa; and Yamada, Hiroyuki, 5,345,155, Cl. 318-138.000.

Yamada, Kazuhiko: *See—*
Satoh, Hiroaki; Kikuchi, Haruhiko; Yamada, Kazuhiko; Fukutomi, Ruta; Suzuki, Masashi; Hagihara, Koichiro; Hayakawa, Toru; Arai, Takeo; and Mino, Setsuko, 5,344,831, Cl. 514-249.000.

Yamada, Kuzuo: *See—*
Tanaka, Hideaki; Mitate, Takehito; Kitayama, Hiroyuki; and Yamada, Kuzuo, 5,344,726, Cl. 429-209.000.

Yamada, Minoru: *See—*
Igari, Yasutaka; Yamada, Minoru; and Ishiguro, Seiko, 5,344,644, Cl. 424-85.100.

Yamada, Takahiro, to Matsushita Electric Industrial Co., Ltd. Semiconductor device. 5,345,099, Cl. 257-250.000.

Yamada, Yozo: *See—*
Hotta, Yasunari; Maeda, Satoshi; Yamada, Yozo; Tanaka, Koji; Ono, Hiroshi; and Uno, Toshio, 5,344,673, Cl. 427-195.000.

Yamaguchi, Hitoshi: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; Kita, Kazuhiko; and Yamaguchi, Hitoshi, 5,344,507, Cl. 148-437.000.

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Yamaguchi, Syoji: *See—*
Tanji, Masayuki; Miyazaki, Yoshihiro; Fukumaru, Hiroaki; Yamaguchi, Syoji; Masui, Koji; and Ogawa, Hisao, 5,345,566, Cl. 395-325.000.

Yamaguchi, Yoshinori: *See—*
Suzuki, Shigeru; Kobara, Motonori; Hisatomi, Yasuhiro; Yamaguchi, Yoshinori; Yonetani, Hiroshi; Fukushima, Kiyoyuki; Sakamoto, Yoshimasa; Yagami, Toru; and Kamei, Toshihide, 5,344,260, Cl. 408-168.000.

Yamaha Corporation: *See—*
Mantani, Rokurota; Kaneko, Yasutoshi; and Tamaki, Takashi, 5,345,181, Cl. 324-546.000.
Yamada, Hideo, 5,345,035, Cl. 84-622.000.

Yamakawa, Katsuyoshi: *See—*
Mikoshiba, Hisashi; Yamakawa, Katsuyoshi; Sato, Kozo; and Matsuoka, Koushin, 5,344,933, Cl. 544-282.000.

Yamakita, Yoshinobu: *See—*
Matsubara, Atsushi; Saito, Yoshinori; Kato, Seiji; and Yamakita, Yoshinobu, 5,345,258, Cl. 348-14.000.

Yamamoto, Kaoru; Maeda, Nagayoshi; Kamiya, Makoto; Murao, Toshiro; Reuschel, Gerhard; and Fleischer, Dietrich, to Polyplastics Co., Ltd.; and Hoechst Aktiengesellschaft. Process for producing polyoxymethylene copolymer having reduced amount of unstable terminal groups. 5,344,911, Cl. 528-241.000.

Yamamoto, Keisaku; Tanimoto, Yoshio; Fukuyama, Masahiro; and Yasuda, Noriyasu, to Sumitomo Chemical Company, Limited. Rubber compositions and vulcanized rubber compositions. 5,344,881, Cl. 525-112.000.

Yamamoto, Keizou: *See—*
Ito, Satoru; Murata, Michihiro; Fukui, Norio; Yamamoto, Keizou; Sawao, Tetsujiro; Awata, Satoshi; Tada, Yasuo; and Kawabata, Satoru, 5,344,518, Cl. 156-242.000.

Yamamoto, Rintaro: *See—*
Nokihara, Kiyoshi; Yamamoto, Rintaro; Hazama, Makoto; and Nakamura, Shin, 5,344,613, Cl. 422-131.000.

Yamamoto, Susumu: *See—*
Murai, Teruyuki; and Yamamoto, Susumu, 5,344,713, Cl. 428-472.300.

Yamamoto, Takashi: *See—*
Takagi, Ryoji; Miyadera, Makoto; Yamamoto, Takashi; and Yoshida, Ryuhei, 5,345,136, Cl. 310-320.000.

Yamamoto, Tetsuya: *See—*
Sakatani, Yoshiaki; Yamamoto, Tetsuya; Nishiyama, Shigeru; and Jin, Yoshiharu, 5,343,897, Cl. 139-384.00R.

Yamamura, Hirohisa: *See—*
Masaki, Ryoso; Takamoto, Yuusuke; Obara, Sanshiro; Yamamura, Hirohisa; and Yamada, Hiroyuki, 5,345,155, Cl. 318-138.000.

Yamanaka, Hidemine: *See—*
Koseki, Toshihiko; Fukunaga, Tetsuya; Takano, Hideo; and Yamanaka, Hidemine, 5,345,324, Cl. 359-67.000.

Yamanouchi, Kazuhiko. Method for the manufacture of surface acoustic wave transducer. 5,344,745, Cl. 430-315.000.

Yamanouchi Pharmaceutical Co., Ltd.: *See—*
Ohta, Mitsuaki; Koide, Tokuo; Suzuki, Takeshi; Matsuhisa, Akira; Miyata, Keiji; Ohmori, Junya; and Yanagisawa, Isao, 5,344,927, Cl. 544-31.000.

Yamasa Shoyu Kabushiki Kaisha: *See—*
Krilis, Steven A.; McNeill, Hugh P.; and Chesterman, Colin N., 5,344,758, Cl. 433-4.100.

Yamasaki, Hideo: *See—*
Kasahara, Akihiro; Yamasaki, Hideo; Yoshizawa, Takashi; and Ishika, Sou, 5,345,432, Cl. 369-44.150.

Yamasaki, Yoshimori, to Sony Corporation. Optical disc and method for recording on optical disc. 5,345,435, Cl. 369-275.300.

Yamashita, Masami: *See—*
Doi, Takao; Itaya, Noriko; Yamashita, Masami; and Kunii, Nobuaki, 5,344,874, Cl. 524-593.000.

Yamashita, Mitsuo: *See—*
Hirai, Kenji; Yano, Tomoyuki; Yamashita, Mitsuo; Ejiri, Emiko; Tateno, Tomoko; and Aizawa, Kiyomi, 5,344,953, Cl. 558-272.000.

Yamashita, Tatsumaro; and Nagai, Seiichi, to Alps Electric Co., Ltd. Rotary head type magnetic recording/reproducing unit. 5,345,345, Cl. 360-64.000.

Yamashita, Tsukasa: *See—*
Aoyama, Shigeru; Yamashita, Tsukasa; and Ogata, Shiro, 5,345,336, Cl. 359-628.000.

Yamauchi, Hiroshi: *See—*
Tokutomi, Atsuya; Ichikawa, Hiroshi; Ushikoshi, Kenji; and Yamauchi, Hiroshi, 5,344,709, Cl. 428-368.000.

Yamauchi, Tatsumi: *See—*
Iwamura, Masahiro; Yamauchi, Tatsumi; Saeki, Makoto; and Uchida, Hideaki, 5,345,421, Cl. 365-189.050.

Yamauchi, Yumi: *See—*
Nomura, Tatsuya; Yamauchi, Yumi; Mameda, Kenji; Yoshida, Shigeru; and Kubo, Noboru, 5,345,548, Cl. 395-150.000.

Yamaura, Junichi: *See—*
Ozaki, Yoshiyuki; Morita, Akiyoshi; Yamaura, Junichi; and Ito, Zenichiro, 5,344,724, Cl. 429-94.000.

Yamazaki, Hideo, to Minnesota Mining and Manufacturing Company. Film carrier. 5,345,039, Cl. 174-52.400.

Yamazaki, Mitsuru: *See—*
Takano, Minoru; Komuro, Akihiro; and Yamazaki, Mitsuru, 5,345,295, Cl. 355-200.000.

Yanagi, Akihiko: *See—*
Goto, Toshio; Hayakawa, Hidenori; Watanabe, Yukiyoshi; and Yanagi, Akihiko, 5,344,814, Cl. 504-261.000.

Yanagi, Motonori; Ban, Cozy; and Fukumoto, Takaaki, to Mitsubishi Denki Kabushiki Kaisha. Wet-process apparatus. 5,344,615, Cl. 422-170.000.

Yanagisawa, Isao: *See—*
Ohta, Mitsuaki; Koide, Tokuo; Suzuki, Takeshi; Matsuhisa, Akira; Miyata, Keiji; Ohmori, Junya; and Yanagisawa, Isao, 5,344,927, Cl. 544-31.000.

Yanai, Kunihiko; and Suzuki, Kosaku, to Sony Corporation. Process of cleaning a panel in the manufacture of a cathode ray tube. 5,344,495, Cl. 134-22.100.

Yang, Sheng-Te: *See—*
Chu, Shiao-Jung; Liu, Fu-Chen; Lin, Ching-Tang; Lin, Wen-Fa; Wang, Kuei-Chih; and Yang, Sheng-Te, 5,344,964, Cl. 560-240.000.

Yano, Kanji: *See—*
Nomura, Yoshiya; Tsuda, Tadayuki; Ikemoto, Isao; Watanabe, Kazushi; Ishiwata, Kazuhiko; Tanaka, Makoto; Yano, Kanji; and Sasaki, Shinichi, 5,345,294, Cl. 355-200.000.

Yano, Seiki: *See—*
Takiguchi, Haruhisa; Yano, Seiki; Inoguchi, Kazuhiko; Kudo, Hiroaki; Nakanishi, Chitose; Okumura, Toshiyuki; and Sugahara, Satoshi, 5,345,460, Cl. 372-43.000.

Yano, Shinichi: *See—*
Haruda, Osamu; Imamura, Shin; Hanzawa, Suguru; Amada, Nobuo; Kunii, Kazuo; Kobayashi, Hidetaka; Yano, Shinichi; and Nishiyama, Muneo, 5,343,610, Cl. 29-525.100.

Yano, Shinjiro: *See—*
Usui, Yasunori; and Yano, Shinjiro, 5,345,094, Cl. 257-113.000.

Yano, Shinsuke: *See—*
Hirai, Takami; and Yano, Shinsuke, 5,344,695, Cl. 428-209.000.

Yano, Tomoyuki: *See—*
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Yao, Hironobu: *See—*
Nakamura, Kimihiro; Yuhara, Tadanori; Takano, Toshiyuki; and Yao, Hironobu, 5,343,756, Cl. 73-718.000.

Yarwood, Richard J.: *See—*
Kearney, Patrick; Thompson, Andrew R.; and Yarwood, Richard J., 5,343,672, Cl. 53-440.000.

Yasuda, Hirofumi; and Uematsu, Akira, to Seiko Epson Corporation. Semiconductor memory device. 5,345,420, Cl. 365-189.010.

Yasuda, Koichi: *See—*
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, 'Susumu; and Hatate, Yasuo, 5,345,299, Cl. 355-274.000.

Yasuda, Naoshi: *See—*
Chiba, Hideki; Igarashi, Hisao; Yasuda, Naoshi; and Matsuki, Yasuo, 5,344,593, Cl. 252-514.000.

Yasuda, Noriyasu: *See—*
Yamamoto, Keisaku; Tanimoto, Yoshio; Fukuyama, Masahiro; and Yasuda, Noriyasu, 5,344,881, Cl. 525-112.000.

Yasui, Makoto: *See—*
Moriya, Nobuo; Shimoda, Keiji; Asaoka, Sachio; Kameda, Takao; Sakashita, Kouji; Maejima, Tetsuo; Yasui, Makoto; Nishijima, Hiroaki; Onda, Nobuhiro; and Kouzaki, Takeshi, 5,345,000, Cl. 568-722.000.

Yasuno, Yoshiki, to Nissan Motor Co., Ltd. System and method for controlling braking force for automotive vehicle. 5,344,224, Cl. 303-111.000.

Yazaki Corporation: *See—*
Hatagishi, Yuji; and Taguchi, Naoto, 5,344,194, Cl. 285-26.000.
Muramatsu, Kenji; Totsuka, Mitsuhiko; and Kudo, Toshiharu, 5,345,211, Cl. 337-186.000.
Wang, Shibo; Kirkbir, Fikret; Raychaudhuri, Satyabrata; and Sarkar, Arnab, 5,343,633, Cl. 34-92.000.

Yeargain, John R.: *See—*
Sun, Shih-Wei; Kosa, Yasunobu; and Yeargain, John R., 5,345,105, Cl. 257-659.000.

Yee, Eugene M.; Sutherland, Beverly E.; Lyon, John J.; Spits, Tiemen T.; and Filia, Richard M., to Hughes-JVC Technology Corporation. Automatic convergence system for color video projector. 5,345,262, Cl. 348-177.000.

Yelland, Michael, to Imperial Chemical Industries PLC. Hydrogenation of phenylphosphonic acid. 5,344,966, Cl. 562-8.000.

Yencho, Stephen A., to Leland Stanford Junior University, The Board of Trustees of the. Continuous forming of fiber composite materials. 5,344,602, Cl. 264-258.000.

Yielding, K. Lemone: *See—*
Nichols, Alfred C.; and Yielding, K. Lemone, 5,344,922, Cl. 546-153.000.

Yissum Research Development Company of the Hebrew University of Jerusalem: *See—*
Citri, Nathan, 5,344,761, Cl. 435-29.000.

YMOS Aktiengesellschaft Industrieprodukte: *See—*
Winkler, Herbert, 5,344,116, Cl. 248-677.000.

Yoda, Takahiro: *See—*
Kozuka, Hajime; Furuya, Youichi; Yoda, Takahiro; Kitamura, Kazuo; and Ijima, Terutsugu, 5,344,196, Cl. 285-149.000.

Yohn, Brent D.: *See—*
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Yokohama Rubber Co., Ltd., The: *See—*
Okihara, Masakazu; and Kogure, Tomohiko, 5,343,917, Cl. 152-209.00R.

Yokoyama, Tatsuya; and Hirata, Tetsuhiko, to Hitachi, Ltd. Arithmetic-logic unit with modulo addition/substraction function and microprocessor using the same. 5,345,410, Cl. 364-746.000.

Yokozeki, Akimichi: *See—*
Van Bramer, David J.; Shiflett, Mark B.; and Yokozeki, Akimichi, 5,345,013, Cl. 570-102.000.

Yoneda, Masato, to Kawasaki Steel Corporation. A content addressable memory for high speed retrieval operation without interference between memory cells. 5,345,411, Cl. 365-49.000.

Yonekawa, Seiichi: *See—*
Aoki, Shinji; Miyawaki, Shigeru; Yoshida, Koichi; and Yonekawa, Seiichi, 5,344,595, Cl. 264-26.000.

Yonetani, Hiroshi: *See—*
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Yoshida, Katsuhiko: *See—*
Sawamura, Seishi; Nakajima, Sakuya; Amemori, Kunio; Oku, Hidehisa; Nakagawa, Akio; Kitayama, Ichiro; Matsuda, Hiromu; Yoshida, Katsuhiko; Takeda, Masaru; Nakane, Toshio; Horiguchi, Shiro; and Yuki, Shigeru, 5,344,446, Cl. 623-24.000.

Yoshida Kogyo KK: *See—*
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Yoshida, Koichi: *See—*
Aoki, Shinji; Miyawaki, Shigeru; Yoshida, Koichi; and Yonekawa, Seiichi, 5,344,595, Cl. 264-26.000.

Yoshida, Koji; and Nishimura, Shouichi, to Kabushiki Kaisha N-Tech. Feeding apparatus. 5,343,999, Cl. 198-468.110.

Yoshida, Kunihiko: *See—*
Fujii, Masumi; Suda, Taiichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Karasaki, Mutsunori; Iijima, Masaki; Seto, Touru; and Mitsuoka, Shigeaki, 5,344,627, Cl. 423-220.000.

Yoshida, Masanao, to Sumitomo Rubber Industries, Ltd. Pneumatic radial tire with specified belt curvature. 5,343,919, Cl. 152-209.00R.

Yoshida, Ryuhei: *See—*
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Yoshida, Shigeru: *See—*
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Yoshida, Shigeyuki: *See—*
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Yoshida, Tadashi: *See—*
Katayama, Akihiro; Maeda, Mitsuru; Hirabayashi, Yasuji; and Yoshida, Tadashi, 5,345,517, Cl. 382-54.000.

Yoshie Kurihara: *See—*
Kurihara, Yoshie; Kohno, Hiroshige; Sugiyama, Hiromu; Shimada, Teiyu; Saito, Masako; and Ikeda, Kenji, 5,344,659, Cl. 426-3.000.

Yoshihara, Ryoichi: *See—*
Kaneda, Yoshihiro; Yoshihara, Ryoichi; and Wake, Ryousuke, 5,344,550, Cl. 205-50.000.

Yoshikawa, Kiyoshi: *See—*
Sato, Mitsuo; Yoshikawa, Kiyoshi; and Sato, Yuusuke, 5,344,492, Cl. 118-725.000.

Yoshikawa, Masanori: *See—*
Katakabe, Noboru; and Yoshikawa, Masanori, 5,345,297, Cl. 355-260.000.

Yoshimatsu, Tadashi: *See—*
Hitomi, Jun; Adachi, Shigehito; Hakamada, Yoshihiro; Takaiwa, Mikio; Yoshimatsu, Tadashi; Watanabe, Yoko; Kobayashi, Tohru; Kawai, Shuji; and Ito, Susumu, 5,344,770, Cl. 435-71.200.

Yoshimoto, Masanori: *See—*
Sono, Michio; Kubota, Akihiro; Kasai, Junichi; Yoshimoto, Masanori; and Masaki, Keiichi, 5,343,615, Cl. 29-827.000.

Yoshimura, Osamu: *See—*
Hashizume, Masahiro; Kimura, Hiroshi; Ishida, Hiroshi; Maeshima, Masanobu; Yasuda, Koichi; Hayashi, Shigeki; Kubota, Hiroshi; Yoshimura, Osamu; Taniguchi, Susumu; and Hatate, Yasuo, 5,345,299, Cl. 355-274.000.

Yoshimura, Shuji: *See—*
Uriu, Shiro; and Yoshimura, Shuji, 5,345,451, Cl. 371-42.000.

Yoshino Kogyosho Co., Ltd.: *See—*
Tasaki, Takaharu; and Saito, Tadao, 5,344,079, Cl. 239-498.000.

Yoshino, Toshinori, to NEC Corporation. Connector having electromagnetic shielding film. 5,344,341, Cl. 439-607.000.

Yoshioka, Mashayuki, to Olive Corporation. Implement for disposing of dung of a pet animal. 5,344,200, Cl. 294-1.500.

Yoshizawa, Takashi: *See—*
Kasahara, Akihiro; Yamasaki, Hideo; Yoshizawa, Takashi; and Ishika, Sou, 5,345,432, Cl. 369-44.150.

You, Byung S.: *See—*
Kim, Sung H.; and You, Byung S., 5,345,511, Cl. 381-104.000.

You, Chiou C.: *See—*
Cheng, Chee F.; You, Chiou C.; and Tong, Kai L., 5,345,366, Cl. 361-785.000.

You, Tae K.: *See—*
Ahn, Do Y.; and You, Tae K., 5,345,461, Cl. 372-45.000.

Youhanaie, Mark, to Hughes Aircraft Company. Relative guidance using the global positioning system. 5,344,105, Cl. 244-3.140.

Yu, Young J., to Goldstar Electron Co., Ltd. Linear color charge coupled device for image sensor and method of driving the same. 5,345,319, Cl. 358-483.000.

Yuasa, Akihiko: *See—*
Ochiai, Akira; Yuasa, Akihiko; and Otaka, Shigeki, 5,343,797, Cl. 92-85.00A.

Yuasa, Hitoshi: *See—*
Enomoto, Masami; Kubota, Susumu; Oshimi, Fumiaki; Yuasa, Hitoshi; and Otsuki, Yutaka, 5,344,899, Cl. 525-534.000.

Yuhara, Tadanori: *See—*
Nakamura, Kimihiro; Yuhara, Tadanori; Takano, Toshiyuki; and Yao, Hironobu, 5,343,756, Cl. 73-718.000.

Yuki, Shigeru: *See—*
Sawamura, Seishi; Nakajima, Sakuya; Amemori, Kunio; Oku, Hidehisa; Nakagawa, Akio; Kitayama, Ichiro; Matsuda, Hiromu; Yoshida, Katsuhiko; Takeda, Masaru; Nakane, Toshio; Horiguchi, Shiro; and Yuki, Shigeru, 5,344,446, Cl. 623-24.000.

Yule, Lance. Marble run game. 5,344,143, Cl. 273-118.00R.

Yum, Su I.: *See—*
Enscore, David J.; Campbell, Patricia S.; Osborne, James L.; Smart, Melinda K.; and Yum, Su I., 5,344,656, Cl. 424-448.000.

Yurchak, Sergei: *See—*
Child, Jonathan E.; Del Rossi, Kenneth J.; Huss, Albin, Jr.; Krambeck, Frederick J.; Melli, Thomas R.; and Yurchak, Sergei, 5,345,027, Cl. 585-720.000.

Yutori, Toshiaki: *See—*
Ide, Shouaki; Shimamoto, Akira; Yutori, Toshiaki; and Uchimura, Masahiko, 5,344,689, Cl. 428-114.000.

Zablocki, Jeffery A.: *See—*
Bovy, Philippe R.; Rico, Joseph G.; Rogers, Thomas E.; Tjoeng, Foe S.; and Zablocki, Jeffery A., 5,344,957, Cl. 560-35.000.
Tjoeng, Foe S.; and Zablocki, Jeffery A., 5,344,837, Cl. 514-344.000.

Zafiropoulo, Arthur W.: *See—*
Maher, Joseph A.; Vowles, E. John; Napoli, Joseph D.; Zafiropoulo, Arthur W.; and Miller, Mark W., 5,344,542, Cl. 204-298.150.

Zagoroff, Dimiter S.; and Heitmann, Arnold M., to Shrinkfast Marketing. Turbine device for hot air generation. 5,344,314, Cl. 432-222.000.

Zahnradfabrik Friedrichshafen AG: *See—*
Nikolaus, Heinrich; and Paton, Robert, 5,343,779, Cl. 74-733.100.

Zaid, Najib H., to Jacam Chemical Partners, Ltd. Well treating composition. 5,344,818, Cl. 507-131.000.

Zaleski, Joseph D. Snow guard. 5,343,659, Cl. 52-24.000.

Zamir, Dov: *See—*
Oren, Jakob; Hermolin, Joshua; Feldman, David; Zviely, Michael; Zamir, Dov; and Keselman, Hugo, 5,344,986, Cl. 564-430.000.

Zapata Technologies, Inc.: *See—*
Shapcott, Michael, 5,344,300, Cl. 425-142.000.

Zapisek, John, to MasPar Computer Corporation. Router chip with quad-crossbar and hyperbar personalities. 5,345,556, Cl. 395-200.000.

Zarnack, Uwe: *See—*
Schieb, Thomas; Wiechers, Gerhard; Sundermann, Rudolf; and Zarnack, Uwe, 5,345,012, Cl. 568-934.000.

Zaworski, Joseph R.: *See—*
Ullman, David G.; Hunter-Zaworski, Katharine M.; Zaworski, Joseph R.; Herling, Derald E.; and Clark, Garrett E., 5,344,265, Cl. 410-3.000.

Zebco Corporation: *See—*
Roberts, Dennis E., 5,344,098, Cl. 242-261.000.

Zeiler, Andrew G., to Wyckoff Chemical Company, Inc. Process for production of lower alkanoic acids. 5,344,975, Cl. 562-606.000.

Zeininger, Heinrich; Zeller, Christoph; Schwalke, Udo; Doebler, Uwe; and Haensch, Wilfried, to Siemens Aktiengesellschaft. Formation of silicided junctions in deep sub-micron MOSFETs by defect enhanced CoSi2 formation. 5,344,793, Cl. 437-200.000.

Zelayeta, Joe: *See—*
Rostoker, Michael D.; Pasch, Nicholas F.; and Zelayeta, Joe, 5,345,310, Cl. 356-401.000.

Zeller, Christoph: *See—*
Zeininger, Heinrich; Zeller, Christoph; Schwalke, Udo; Doebler, Uwe; and Haensch, Wilfried, 5,344,793, Cl. 437-200.000.

Zeng, Xiaming; and Chia, Che L., to Singapore Institute of Standards and Industrial Research. DC-AC converter for igniting and supplying a gas discharge lamp. 5,345,148, Cl. 315-209.00R.
Zenith Electronics Corporation: *See*—
Duchek, Richard J.; and Strauss, Paul, 5,343,803, Cl. 101-35.000.
Zenzie, Henry H.; and Moulton, Peter F., to Schwartz Electro-Optics, Inc. Dual wavelength laser system with intracavity sum frequency mixing. 5,345,457, Cl. 372-22.000.
Zexel Corporation: *See*—
Kao, Wei-Wen, 5,345,382, Cl. 364-424.010.
Zey, Edward G.; and Blay, George A., to Hoechst Celanese Corporation. Process for preparing color-stabilized acetaminophen. 5,344,979, Cl. 564-216.000.
Zhao, Dafang: *See*—
Lai, Xiaoyun; Zhao, Dafang; and Lai, Francis, 5,344,895, Cl. 525-425.000.
Ziegler, Daniel M.: *See*—
Poulsen, Lawrence L.; and Ziegler, Daniel M., 5,345,261, Cl. 348-135.000.
Zieltjens, Georges C. P.: *See*—
Bolk, Hendrick J. J.; and Zieltjens, Georges C. P., 5,345,491, Cl. 378-70.000.
Ziemba, Richard T.; and Hoyt, David G., to General Electric Co. Settable electronic fuzing system for cannon ammunition. 5,343,795, Cl. 89-6.500.
Zierenberg, Bernd: *See*—
Itzel, Hanshelmut; Zierenberg, Bernd; Drandarevski, Christo; and Heupt, Wilfried, 5,343,653, Cl. 47-1.500.
Zieve, Peter B., to Electroimpact, Inc. Power supply system for an electromagnetic riveting apparatus. 5,345,161, Cl. 320-1.000.
Zilles, Karl S.: *See*—
Boyer, Steven K.; Casey, Richard G.; Miller, Alex M.; Oudot, Bernadette; and Zilles, Karl S., 5,345,516, Cl. 382-10.000.
Zilog, Inc.: *See*—
Jensen, Bradley D.; and Morson, Ed, 5,345,564, Cl. 395-275.000.
Zimmer, Inc.: *See*—
Dietz, Terry L.; and Vanlaningham, Richard D., 5,344,423, Cl. 606-87.000.
Phlipot, Jack W., 5,344,461, Cl. 623-20.000.
Zimmermann, Georg: *See*—
Wosnitza, Franz; Beckmann, George; and Zimmermann, Georg, 5,344,621, Cl. 422-298.000.
Zinke, Paul W.: *See*—
Dean, William D.; Zinke, Paul W.; Sproull, Steven J.; Deason, Michael E.; Conrow, Raymond E.; and Dantanarayana, Anura P., 5,344,929, Cl. 544-48.000.
Zola, Meyer J.: *See*—
Hiller, Thomas L.; Phelan, James J.; and Zola, Meyer J., 5,345,445, Cl. 370-60.100.
Hiller, Thomas L.; Phelan, James J.; and Zola, Meyer J., 5,345,446, Cl. 370-60.100.
Zomotor, Adam; Klinkner, Walter; Schindler, Erich; Mohn, Frank-Werner; and Wohland, Thomas, to Mercedes-Benz AG. Method for detecting driving situation with respect to vehicle yaw behavior. 5,345,385, Cl. 364-424.050.
Zorumski, Charles F.: *See*—
Covey, Douglas F.; Hu, Yuefei; and Zorumski, Charles F., 5,344,826, Cl. 514-167.000.
Zuck, Thomas F.: *See*—
Roth, Duane J.; Keipert, Peter E.; Faithfull, Nicholas S.; Zuck, Thomas F.; and Riess, Jean G., 5,344,393, Cl. 604-4.000.
Zuloaga, Jaime A., Jr.: *See*—
Johansson, Eric B.; Ledford, Kevin L.; Zuloaga, Jaime A., Jr.; and Danielson, David W., 5,345,483, Cl. 376-313.000.
Zumbiel, Michael W. Simulated baseball cap. 5,343,567, Cl. 2-195.100.
Zurecki, Zbigniew; Berger, Kerry R.; and Swan, Robert B., to Air Products and Chemicals, Inc. Vortex dispersing nozzle for liquefied cryogenic inert gases used in blanketing of molten metals exposed to ambient air and method. 5,344,478, Cl. 75-709.000.
Zushi, Shizuo: *See*—
Daikoku, Takahiro; Kawasaki, Nobuo; Ashiwake, Noriyuki; Kawamura, Keizou; Zushi, Shizuo; Miyamoto, Mitsuo; and Morihara, Atsushi, 5,345,107, Cl. 257-717.000.
Zvenyatsky, Boris: *See*—
Gravener, Roy; Aranyi, Ernie; and Zvenyatsky, Boris, 5,344,060, Cl. 227-180.000.
Zviely, Michael: *See*—
Oren, Jakob; Hermolin, Joshua; Feldman, David; Zviely, Michael; Zamir, Dov; and Keselman, Hugo, 5,344,986, Cl. 564-430.000.
Zweig, Jonathan M.: *See*—
Lynn, Kerry E.; Zweig, Jonathan M.; and Mincher, Richard W., 5,345,508, Cl. 380-46.000.
Zweig, Stephen E., to Avocet Medical, Inc. Assay timed by electrical resistance change and test strip. 5,344,754, Cl. 435-4.000.
Zweng, Frederick J.: *See*—
Mims, Mark W.; and Zweng, Frederick J., 5,344,188, Cl. 280-808.000.
Zylla, Peter, to Messer Griesheim GmbH. Process for prevent the formation of adhesives when annealing steel band. 5,344,509, Cl. 148-601.000.
Zyskind, John L.: *See*—
Bergano, Neal S.; Mazurczyk, Vincent J.; and Zyskind, John L., 5,345,331, Cl. 359-341.000.
3D Systems, Inc.: *See*—
Hull, Charles W., 5,344,298, Cl. 425-135.000.
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,345,391, Cl. 364-474.240.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF SEPTEMBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Endoh, Sohmei: *See*—
Yamamoto, Masanobu; and Endoh, Sohmei, Re. 34,719, Cl. 369-119.000.
Flynn, Charles J.: *See*—
Sanders, Robert E.; Flynn, Charles J.; and Vertreese, John L., Re. 34,717, Cl. 315-186.000.
Gudenau, Ronald A.; and Tamasiunas, Charles, to Lucas Hartridge, Inc. Multifunction fluid charging device. Re. 34,715, Cl. 141-59.000.
Hallmark Cards Inc.: *See*—
Sanders, Robert E.; Flynn, Charles J.; and Vertreese, John L., Re. 34,717, Cl. 315-186.000.
Imaginative Research Associates, Inc.: *See*—
Vishnupad, Mohan; and Ramirez, Jose, Re. 34,716, Cl. 524-601.000.
Komastu, Makoto: *See*—
Uchida, Minoru; Komastu, Makoto; and Nakagawa, Kazuyuki, Re. 34,722, Cl. 514-312.000.
Lucas Hartridge, Inc.: *See*—
Gudenau, Ronald A.; and Tamasiunas, Charles, Re. 34,715, Cl. 141-59.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Tobita, Youichi, Re. 34,718, Cl. 365-201.000.
Nakagawa, Kazuyuki: *See*—
Uchida, Minoru; Komastu, Makoto; and Nakagawa, Kazuyuki, Re. 34,722, Cl. 514-312.000.
Otsuka Pharmaceutical Co., Ltd.: *See*—
Uchida, Minoru; Komastu, Makoto; and Nakagawa, Kazuyuki, Re. 34,722, Cl. 514-312.000.
Ramirez, Jose: *See*—
Vishnupad, Mohan; and Ramirez, Jose, Re. 34,716, Cl. 524-601.000.
Sanders, Robert E.; Flynn, Charles J.; and Vertreese, John L., to Hallmark Cards Inc. Light string ornament circuitry. Re. 34,717, Cl. 315-186.000.
Sony Corporation: *See*—
Yamamoto, Masanobu; and Endoh, Sohmei, Re. 34,719, Cl. 369-119.000.
Tamasiunas, Charles: *See*—
Gudenau, Ronald A.; and Tamasiunas, Charles, Re. 34,715, Cl. 141-59.000.
Thompson, Gary J. Manifold form assembly. Re. 34,721, Cl. 462-18.000.
Tobita, Youichi, to Mitsubishi Denki Kabushiki Kaisha. DRAM with reduced-test-time-mode. Re. 34,718, Cl. 365-201.000.
Tresness, Andrew F.: *See*—
Zelenz, Martin L., Re. 34,720, Cl. 380-7.000.
Uchida, Minoru; Komastu, Makoto; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Quinoline amino acid derivatives of carbostyril compounds. Re. 34,722, Cl. 514-312.000.
Vertreese, John L.: *See*—
Sanders, Robert E.; Flynn, Charles J.; and Vertreese, John L., Re. 34,717, Cl. 315-186.000.
Vishnupad, Mohan; and Ramirez, Jose, to Imaginative Research Associates, Inc. Aqueous dispersions of polyester and polyester-amides cross-linked with metallic ions and casts made therefrom. Re. 34,716, Cl. 524-601.000.
Yamamoto, Masanobu; and Endoh, Sohmei, to Sony Corporation. Optical recording apparatus for forming grooves and pits in an optically recordable disc. Re. 34,719, Cl. 369-119.000.
Zelenz, Martin L., to Tresness, Andrew F. Television signal enhancement and scrambling system. Re. 34,720, Cl. 380-7.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Basic Line Industries Inc.: *See*—
Licari, Yaffa, B1 5,191,985, Cl. 211-188.000.
CAE-Link Corporation: *See*—
Darnell, Ralph D.; and Douglas, Claude C., B1 5,043,736, Cl. 342-357.000.
Darnell, Ralph D.; and Douglas, Claude C., to CAE-Link Corporation. Cellular position location system. B1 5,043,736, 9-6-94, Cl. 342-357.000.
Douglas, Claude C.: *See*—
Darnell, Ralph D.; and Douglas, Claude C., B1 5,043,736, Cl. 342-357.000.
Foster, David W., to Soft Vac, Inc. Portable appliance cover. B1 4,947,506, 9-6-94, Cl. 15-247.000.
Grau, Ulrich; and Pohler, Wolfgang, to Hoechst Aktiengesellschaft. Device for the administration of medicament suspensions. B1 4,850,966, 9-6-94, Cl. 604-82.000.
Hoechst Aktiengesellschaft: *See*—
Grau, Ulrich; and Pohler, Wolfgang, B1 4,850,966, Cl. 604-82.000.
Licari, Yaffa, to Basic Line Industries Inc. Modular support and display unit. B1 5,191,985, 9-6-94, Cl. 211-188.000.
Pfizer Inc.: *See*—
Scappaticci, Karen A., B1 5,011,841, Cl. 514-253.000.
Pohler, Wolfgang: *See*—
Grau, Ulrich; and Pohler, Wolfgang, B1 4,850,966, Cl. 604-82.000.
Scappaticci, Karen A., to Pfizer Inc. Treatment of depression. B1 5,011,841, 9-6-94, Cl. 514-253.000.
Soft Vac, Inc.: *See*—
Foster, David W., B1 4,947,506, Cl. 15-247.000.

LIST OF DESIGN PATENTEES

AD-A-CAB International Pty Ltd: *See*—
McKelvey, Leonard W., 350,367, Cl. D20-10.000.
Ahner, Reinhard. Self-cleaning garlic press. 350,261, 9-6-94, Cl. D7-666.000.
Aiwa Co., Ltd.: *See*—
Nakamura, Koji, 350,351, Cl. D14-156.000.
Akiba, Takao: *See*—
Inayama, Hiroyuki; and Akiba, Takao, 350,340, Cl. D14-109.000.
Alexander Manufacturing Company: *See*—
Alexandres, Jon K.; Downs, Gary J.; and Peterson, William R., 350,328, Cl. D13-103.000.
Peterson, William R., 350,330, Cl. D13-107.000.
Alexandres, Jon K.; Downs, Gary J.; and Peterson, William R., to Alexander Manufacturing Company. Cellular telephone battery. 350,328, 9-6-94, Cl. D13-103.000.
Alvarez, Ismael: *See*—
Alvarez, Susan C.; Ramirez, Hope M.; Hoffman, Teresa; and Alvarez, Ismael, 350,254, Cl. D6-601.000.
Alvarez, Susan C.; Ramirez, Hope M.; Hoffman, Teresa; and Alvarez, Ismael. Portable seat cushion with handles for placement on top of a movie theater seat. 350,254, 9-6-94, Cl. D6-601.000.
Andersen Corporation: *See*—
Olsen, Carl J.; and Zemke, William L., 350,275, Cl. D8-338.000.

Angeles Group, Inc.: *See—*
Kelly, Ray G., 350,237, Cl. D6-333.000.
Apple Computer, Inc.: *See—*
Meschter, Jay; Parsey, Tim; Laituri, David W.; and Lam, Lawrence, 350,338, Cl. D14-107.000.
Riley, Raymond W.; Miller, Wayne H.; and Wood, Kenneth D., 350,337, Cl. D14-102.000
Arima, Yukio: *See—*
Nakashima, Hiroaki; Utsuki, Toshiyuki; Wada, Toshihiko; Arima, Yukio; and Miyata, Tohru, 350,294, Cl. D10-75.000.
Asics Corporation: *See—*
Hase, Yoshiaki, 350,222, Cl. D2-902.000.
Ayotte, John P., to MTS Northwest Sound, Inc. Rear cup holder armrest. 350,259, 9-6-94, Cl. D7-620.000.
Baker, Franklin W. Anti-theft steering-wheel restrictor. 350,274, 9-6-94, Cl. D8-331.000.
Bassett, Laurence W.; Slovak, Robert A.; and Spears, David R., to Water Factory Systems. Purified water dispenser. 350,384, 9-6-94, Cl. D23-207.000.
Baxter International Inc.: *See—*
Kazal, Duane D., 350,394, Cl. D24-164.000.
Beeshu Inc.: *See—*
Schulman, Don, 350,353, Cl. D14-188.000.
Benavent Adrian, Jose, to Gres De Nules, S.A. - Gresnul. A ceramic tile unit for a floor or a wall. 350,404, 9-6-94, Cl. D25-138.000.
Berkowitz, Fred J.: *See—*
Carroll, Thomas D.; Berkowitz, Fred J.; Monsef, Eric M.; and Hargis, David R., 350,339, Cl. D14-107.000.
Black, Gerald M., to Lexington Furniture Industries, Inc. Table. 350,244, 9-6-94, Cl. D6-445.000.
Blended Waxes, Inc.: *See—*
Gereau, Clarence L., 350,406, Cl. D26-9.000.
Bodrie, George. Hunting blind. 350,399, 9-6-94, Cl. D25-16.000.
Bollenbacher, John E., to Kohler Co. Spout. 350,390, 9-6-94, Cl. D23-255.000.
Bosch Siemens Hausgerate GmbH: *See—*
Feil, Rolf, 350,413, Cl. D28-13.000.
Branz, Michael A.; and Upton, Ronald D., to Specialty Equipment Companies, Inc. Curved glass merchandizer. 350,245, 9-6-94, Cl. D6-472.000.
Breitbach, Karen E.. *See—*
Cudney, Douglas J.; and Breitbach, Karen E., 350,420, Cl. D30-135.000.
Breur, Jacob; and Melis, Michael G., to U.S. Philips Corporation. Filter for an electric kettle. 350,257, 9-6-94, Cl. D7-400.000.
Bristol-Myers Squibb Company: *See—*
Louise, John; and Rushing, Thomas, 350,246, Cl. D6-479.000.
Browning, Debra K.: *See—*
Browning, Harry F.; and Browning, Debra K., 350,300, Cl. D10-106.000.
Browning, Harry F.; and Browning, Debra K. Combined gas and carbon monoxide sensor alarm. 350,300, 9-6-94, Cl. D10-106.000.
Brubaker, Mark W. Animal exercising treadmill. 350,421, 9-6-94, Cl. D30-160.000.
Bruckner, Georg I. Hand protection glove for competitive sportsman. 350,417, 9-6-94, Cl. D29-116.000.
Bruno, Robert; and Repp, Tim C., to Pollenex Corporation. Combined wet and dry massager. 350,397, 9-6-94, Cl. D24-214.000.
Buckner, J. Bart. Tennis shoe sandal. 350,223, 9-6-94, Cl. D2-916.000.
Buckner, J. Bart. Tennis shoe sandal. 350,224, 9-6-94, Cl. D2-916.000.
Budzinski, Karen A.: *See—*
Steinwachs, Donald E.; Wardour, Scott A.; Budzinski, Karen A.; Tato, Michael G.; and Otminski, Clarice H., 350,368, Cl. D20-10.000.
Burgener, Eddy, to Vuarnet Watches S.A. Watch. 350,291, 9-6-94, Cl. D10-39.000.
Buske, Brian S. Combination storage container and play table for interlocking building blocks. 350,247, 9-6-94, Cl. D6-484.000.
Campbell, James L.; and Dent, Thomas D., to Minntech Corporation. Catheter sterilizing cassette. 350,398, 9-6-94, Cl. D24-217.000.
Canon Kabushiki Kaisha: *See—*
Masuda, Yuzuru, 350,360, Cl. D16-202.000.
Carlson, Arthur R., to Decor Corporation Pty. Ltd., The. Planter plate. 350,306, 9-6-94, Cl. D11-164.000.
Carroll, Thomas D.; Berkowitz, Fred J.; Monsef, Eric M.; and Hargis, David R., to Hal Computer Systems, Inc. Client server unit for use with a computer network. 350,339, 9-6-94, Cl. D14-107.000.
Carson, Dale E.; and Farrar, Jerry L., to D/T Carson Enterprises, Inc. Window protector assembly. 350,322, 9-6-94, Cl. D12-183.000.
Carstarphen, Jeff L. Lounge chair. 350,240, 9-6-94, Cl. D6-361.000.
Cerny, Frank J., Jr.: *See—*
Lindeman, Phillip E.; Errichiello, Dominic; and Cerny, Frank J., Jr., 350,345, Cl. D14-125.000.
Chaenomeles, Inc.: *See—*
Willis, Tucker; and Cinquemani, James, Jr., 350,308, Cl. D11-181.000.
Willis, Tucker; and Cinquemani, James, Jr., 350,309, Cl. D11-181.000.
Willis, Tucker; and Cinquemani, James, Jr., 350,310, Cl. D11-181.000.
Willis, Tucker; and Cinquemani, James, Jr., 350,311, Cl. D11-182.000.
Chaenomeles, Inc., a Texas Corporation: *See—*
Willis, Tucker; and Cinquemani, James, Jr., 350,307, Cl. D11-181.000.
Chalard, Michel: *See—*
Kohler, Herbert V., Jr.; Paulin, Pierre H.; Kergoet, Francois; and Chalard, Michel, 350,392, Cl. D23-277.000.
Cheng, Alex: *See—*
Liao, Gordon; and Cheng, Alex, 350,426, Cl. D34-15.000.
Cheng, Tan S.: *See—*
Kobayashi, Shinya; and Cheng, Tan S., 350,287, Cl. D9-434.000.
Chow, Chi K. W.; Tsang, Frederick L. T.; and Lau, Chung P. C., to Vtech Industries, Inc. Housing for an electronic instructional game apparatus. 350,373, 9-6-94, Cl. D21-48.000.
Cinquemani, James, Jr.: *See—*
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Willis, Tucker; and Cinquemani, James, Jr., 350,309, Cl. D11-181.000.
Willis, Tucker; and Cinquemani, James, Jr., 350,310, Cl. D11-181.000.
Willis, Tucker; and Cinquemani, James, Jr., 350,311, Cl. D11-182.000.
Coddington, Russell J., Jr.; and Voytko, Charles L., to Hedstrom Corporation. Children's swing. 350,381, 9-6-94, Cl. D21-246.000.
Coe, Matthew, to PharmaDesign, Inc. Dispenser. 350,281, 9-6-94, Cl. D9-300.000.
Comeau, Edward. Playing card holder. 350,374, 9-6-94, Cl. D21-54.000.
Conair Corporation: *See—*
Rizzuto, Leandro P., Jr., 350,414, Cl. D28-13.000.
Continental Precision Products, Inc.: *See—*
Mitchell, Wallace F., 350,385, Cl. D23-213.000.
Cooper Industries, Inc.: *See—*
Tacchella, William L., 350,250, Cl. D6-578.000.
Tacchella, William L., 350,251, Cl. D6-575.000.
Tacchella, William L., 350,252, Cl. D6-575.000.
Corbin Russwin, Inc.: *See—*
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Hoffman, Anthony J.; and Kearns, Robert E., 350,277, Cl. D8-347.000.
Corella, Arthur P. Crenellated filament package. 350,286, 9-6-94, Cl. D9-337.000.
Cormier Corporation: *See—*
Poure, Ernest J., 350,228, Cl. D3-217.000.
Coyote Enterprises, Inc.: *See—*
Fuller, Russell, 350,299, Cl. D10-106.000.
Craft, Charles W., Jr.; and Hradisky, John L., to Rubbermaid Incorporated. Laundry basket. 350,423, 9-6-94, Cl. D32-37.000.
Crossley, Norman B. Base board. 350,405, 9-6-94, Cl. D25-164.000.
Cudney, Douglas J.; and Breitbach, Karen E., to Tipperary Sport Products, Inc. Saddle pad. 350,420, 9-6-94, Cl. D30-135.000.
Curtis, Michael E., to Dunlop Limited. Connecting piece for the handle and shaft of a racket. 350,378, 9-6-94, Cl. D21-221.000.
D/T Carson Enterprises, Inc.: *See—*
Carson, Dale E.; and Farrar, Jerry L., 350,322, Cl. D12-183.000.
Daenen, Robert H. C. M.; and Lillelund, Stig, to Dart Industries Inc. Pitcher with rocking seal. 350,255, 9-6-94, Cl. D7-317.000.
Dancyger, Michael. Tool pouch. 350,229, 9-6-94, Cl. D3-228.000.
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Daenen, Robert H. C. M.; and Lillelund, Stig, 350,255, Cl. D7-317.000.
Dart Mart, Inc.: *See—*
Giegerich, Paul T., 350,231, Cl. D3-254.000.
Davis, Mark J.: *See—*
Kelley, Linda A.; and Davis, Mark J., 350,365, Cl. D19-27.000.
Dawson, Curtis L., to With Design In Mind. Remote actuated chime. 350,302, 9-6-94, Cl. D10-118.000.
De Block, David A.; and Neilly, Albert J., to ODL, Incorporated. Door light. 350,400, 9-6-94, Cl. D25-52.000.
Decor Corporation Pty. Ltd., The: *See—*
Carlson, Arthur R., 350,306, Cl. D11-164.000.
Dent, Thomas D.: *See—*
Campbell, James L.; and Dent, Thomas D., 350,398, Cl. D24-217.000.
Digital Equipment Corp.: *See—*
Landry, Christian C., 350,341, Cl. D14-113.000.
Doiron, Dennis. Fire escape kit for building emergencies. 350,416, 9-6-94, Cl. D29-124.000.
Dotson, Kenneth W.; and MacHarmon, Stewart, to Emco Wheaton, Inc. Fuel dispensing nozzle. 350,386, 9-6-94, Cl. D23-223.000.
Douglass, James M., to Outboard Marine Corporation. Recreational boat stern. 350,327, 9-6-94, Cl. D12-318.000.
Downs, Gary J.: *See—*
Alexandres, Jon K.; Downs, Gary J.; and Peterson, William R., 350,328, Cl. D13-103.000.
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Dynatec International, Inc.: *See—*
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Edwards, Howard. Bow within a bow. 350,312, 9-6-94, Cl. D11-184.000.
Edwards, Howard. Multicolored bow. 350,313, 9-6-94, Cl. D11-184.000.

Egan, William E.; Maxwell, Paul B.; and Montag, Sean D., to Goodyear Tire & Rubber Company, The. Tire tread. 350,319, 9-6-94, Cl. D12-147.000.
Elliott, Bobby J. Ceiling fan cleaner. 350,424, 9-6-94, Cl. D32-40.000.
Elmo Company: *See—*
Hasegawa, Fumio, 350,361, Cl. D16-232.000.
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Lindeman, Phillip E.; Errichiello, Dominic; and Cerny, Frank J., Jr., 350,345, Cl. D14-125.000.
Evraert, Bruno, to Michelin Recherche et Technique S.A. Tire. 350,317, 9-6-94, Cl. D12-147.000.
Fact Games, Ltd.: *See—*
Kennedy, George, 350,375, Cl. D21-163.000.
Fallon, Kevin R. Non-conducting light bulb socket remover. 350,262, 9-6-94, Cl. D8-14.000.
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Fee, Robert: *See—*
Stangarone, Mark; and Fee, Robert, 350,232, Cl. D4-116.000.
Feil, Rolf, to Bosch Siemens Hausgerate GmbH. Hair dryer. 350,413, 9-6-94, Cl. D28-13.000.
Feitel, Ann C.; and Karwoski, Stanley G., to Graco, Inc. Electrostatic spray gun. 350,387, 9-6-94, Cl. D23-226.000.
Figueroa, Thelma J. Electrical switch guard. 350,278, 9-6-94, Cl. D8-353.000.
Fish World, Inc.: *See—*
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Foster, Carl A., Sr. Power vented litter box. 350,422, 9-6-94, Cl. D30-161.000.
Frazier, Thomas G. Electrostatic discharge wrist band. 350,289, 9-6-94, Cl. D10-32.000.
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Gottwald, Adolf, 350,389, Cl. D23-238.000.
Friend, John H. Can-jar opener. 350,264, 9-6-94, Cl. D8-43.000.
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Fujii, Junji, to Yamaha Corporation. Musical drum rim. 350,362, 9-6-94, Cl. D17-22.000.
Fuller, Russell, to Coyote Enterprises, Inc. Automobile window security alarm. 350,299, 9-6-94, Cl. D10-106.000.
Gardiner, Alexander M., to MRL Inc. Bath tub. 350,391, 9-6-94, Cl. D23-277.000.
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Gehlhar, Glenn D., to Spectron Design, Inc. Photographic light boom. 350,410, 9-6-94, Cl. D26-140.000.
Gereau, Clarence L., to Blended Waxes, Inc. Combined candle and candleholder therefor. 350,406, 9-6-94, Cl. D26-9.000.
Giardiello, Barbara, to Lucien Rochat SA. Watch case. 350,288, 9-6-94, Cl. D10-30.000.
Gibbs, Terence E., to Shin Yeh Enterprise Co., Ltd. Lawn chair. 350,241, 9-6-94, Cl. D6-370.000.
Giegerich, Paul T., to Dart Mart, Inc. Hinged dart case with clip. 350,231, 9-6-94, Cl. D3-254.000.
Goodyear Tire & Rubber Company, The: *See—*
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Gottwald, Adolf, to Friedrich Grohe Aktiengesellschaft. Faucet. 350,388, 9-6-94, Cl. D23-238.000.
Gottwald, Adolf, to Friedrich Grohe Aktiengesellschaft. Faucet. 350,389, 9-6-94, Cl. D23-238.000.
Gouldson, Stanley; and Harmer, Roland, to Spotless Plastics Pty. Ltd. Garment hanger with vertical clips. 350,236, 9-6-94, Cl. D6-326.000.
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Grifflin, John. Personal flotation device. 350,326, 9-6-94, Cl. D12-316.000.
Grimm, Alan R. Protective cap for power tool couplings. 350,268, 9-6-94, Cl. D8-70.000.
Hakansson, Bo. Connector coupling for a hearing aid. 350,395, 9-6-94, Cl. D24-173.000.
Hal Computer Systems, Inc.: *See—*
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Hargis, David R.: *See—*
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Hase, Yoshiaki, to Asics Corporation. Sports shoe. 350,222, 9-6-94, Cl. D2-902.000.
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Heine, Randolph A., to New Tradition Pipe Company. Tobacco hookah. 350,411, 9-6-94, Cl. D27-162.000.
Hersch, William M. Football helmet watch. 350,290, 9-6-94, Cl. D10-33.000.
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Hoffman, Anthony J.; and Kearns, Robert E., to Corbin Russwin, Inc. Portion of a key blade blank. 350,277, 9-6-94, Cl. D8-347.000.
Hoffman, Ernest G.; and Zimmermann, Jerome E., to Hubbell Incorporated. Dead front electrical connector for recharging electric vehicles. 350,331, 9-6-94, Cl. D13-133.000.
Hoffman, Ernest G., to Hubbell Incorporated. Dead front electrical connector for charging electric cars. 350,332, 9-6-94, Cl. D13-133.000.
Hoffman, Teresa: *See—*
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Holgar, Wladyslaw A. J. P., 350,303, Cl. D11-143.000.
Holgar, Wladyslaw A. J. P., to Holgar & Holgar Pty. Ltd. Plant holder and drain assembly. 350,303, 9-6-94, Cl. D11-143.000.
Horton, Neal. Signal transmitter for indicating the arrival of mail. 350,298, 9-6-94, Cl. D10-104.000.
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Hoffman, Ernest G., 350,332, Cl. D13-133.000.
Huber, Paul W.; and Heckmiller, David G., Jr., to Dynabrade, Inc. Random orbital sander. 350,266, 9-6-94, Cl. D8-62.000.
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Lenterman, Henri, 350,283, Cl. D9-308.000.
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Ito, Masafumi; Sube, Minoru; and Takita, Haruki, to TEAC Corporation. Graphic equalizer. 350,355, 9-6-94, Cl. D14-217.000.
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Jannersten, Per, to Jannersten Forlag AB. Set of bidding cards for the card game of bridge. 350,372, 9-6-94, Cl. D21-45.000.
Jans, Franz W., to Jado Bathroom and Hardware Manufacturing Corp. Cabinet pull. 350,273, 9-6-94, Cl. D8-317.000.
Jensen, William I., to Manufacturing Technologies, Inc. Hinge pin remover. 350,270, 9-6-94, Cl. D8-89.000.
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Johnson, Dennis E.; and Malmsten, Scott P., to SPI Lighting, Inc. Lighting fixture mountable on an overhead support. 350,409, 9-6-94, Cl. D26-86.000.

Joyner, David B., to Empire Brushes, Inc. Broom cap. 350,233, 9-6-94, Cl. D4-199.000.

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K-Way Engineering, Inc.: *See—*
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Kahn, Harry A., deceased; and by Kahn, Lillian, executrix. Card holder. 350,272, 9-6-94, Cl. D8-107.000.

Kahn, Lillian, executrix: *See—*
Kahn, Harry A., deceased; and Kahn, Lillian, executrix, 350,272, Cl. D8-107.000.

Kajita, Hiroaki, to Sumitomo Rubber Industries, Ltd. Automobile tire. 350,318, 9-6-94, Cl. D12-147.000.

Kantor, Peter, to Thomson-Leeds Company, Inc. End cap for display book spine. 350,366, 9-6-94, Cl. D19-32.000.

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Sanchez, Richard R., 350,377, Cl. D21-205.000.

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Kawashima, Tsunemi; and Matsuo, Akihiko, to Seikosha Co., Ltd. Printer for computer. 350,364, 9-6-94, Cl. D18-50.000.

Kaye, Bruce, to K-Way Engineering, Inc. Air boat transmission housing. 350,358, 9-6-94, Cl. D15-149.000.

Kazal, Duane D., to Baxter International Inc. Ventilator circuit. 350,394, 9-6-94, Cl. D24-164.000.

Kearns, Robert E.: *See—*
Hoffman, Anthony J.; and Kearns, Robert E., 350,276, Cl. D8-347.000.
Hoffman, Anthony J.; and Kearns, Robert E., 350,277, Cl. D8-347.000.

Kelley, Linda A.; and Davis, Mark J., to Mead Corporation, The. Binder with display pockets. 350,365, 9-6-94, Cl. D19-27.000.

Kelly, Ray G., to Angeles Group, Inc. Multiple use activity pad. 350,237, 9-6-94, Cl. D6-333.000.

Kennedy, George, to Fact Games, Ltd. Cat doll. 350,375, 9-6-94, Cl. D21-163.000.

Kergoet, Francois: *See—*
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Khyber Technologies Corporation: *See—*
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Kumar, Rajendra; and Morrison, John W., II, 350,335, Cl. D14-100.000.
Kumar, Rajendra; and Morrison, John W., II, 350,336, Cl. D14-100.000.

Kilgore, Bruce J., to Nike, Inc. Heel insert for a shoe sole. 350,225, 9-6-94, Cl. D2-964.000.

Kilgore, Bruce J., to Nike, Inc. Heel insert for a shoe sole. 350,226, 9-6-94, Cl. D2-964.000.

Kilgore, Bruce J., to Nike, Inc. Heel insert for a shoe sole. 350,227, 9-6-94, Cl. D2-964.000.

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Oliver, Norwood D.; and Wenzel-Murphy, Karen, 350,305, Cl. D11-160.000.

Kirchner, Kris W. Forehead engaging swimming snorkel. 350,379, 9-6-94, Cl. D24-110.500.

Kobayashi, Shinya; and Cheng, Tan S., to Tiram Kimia Sendirian Berhad. Spray nozzle attachment for a pressurized aerosol can. 350,287, 9-6-94, Cl. D9-434.000.

Kohler Co.: *See—*
Bollenbacher, John E., 350,390, Cl. D23-255.000.

Kohler, Herbert V., Jr.; Paulin, Pierre H.; Kergoet, Francois; and Chalard, Michel, to Jacob Delafon. Tub for bathing. 350,392, 9-6-94, Cl. D23-277.000.

Kok, Gerardus P., to NordProfil B.V. Combined T-bar and suspension bracket for a ceiling grid. 350,401, 9-6-94, Cl. D25-58.000.

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Kumar, Rajendra; and Morrison, John W., II, to Khyber Technologies Corporation. Grip held data entry computer having an automatic identification reader. 350,334, 9-6-94, Cl. D14-100.000.

Kumar, Rajendra; and Morrison, John W., II, to Khyber Technologies Corporation. Grip held data entry computer having an automatic identification reader. 350,335, 9-6-94, Cl. D14-100.000.

Kumar, Rajendra; and Morrison, John W., II, to Khyber Technologies Corporation. Grip held data entry computer having an automatic identification reader and modified display. 350,336, 9-6-94, Cl. D14-100.000.

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Landry, Christian C., to Digital Equipment Corp. Display monitor. 350,341, 9-6-94, Cl. D14-113.000.

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Landy, Bruce R.; and Landy, Bradford. Combined knife and flashlight. 350,271, 9-6-94, Cl. D8-99.000.

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Leigh, J. Edward; and Planka, David M., to Vari-Lite, Inc. Exterior architectural luminaire. 350,408, 9-6-94, Cl. D26-68.000.

Lenterman, Henri, to Intromarketing, Inc. Vehicle cover box. 350,282, 9-6-94, Cl. D9-308.000.

Lenterman, Henri, to Intromarketing, Inc. Car cover box. 350,283, 9-6-94, Cl. D9-308.000.

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Liao, Gordon; and Cheng, Alex, to Unique Products & Design Co., Ltd. Golf cart. 350,426, 9-6-94, Cl. D34-15.000.

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Lindeman, Phillip E.; and Meyers, David M., to Motorola, Inc. Multi-unit battery charger for portable radio batteries. 350,329, 9-6-94, Cl. D13-107.000.

Lindeman, Phillip E.; Errichiello, Dominic; and Cerny, Frank J., Jr., to Motorola, Inc. Personal video communicator. 350,345, 9-6-94, Cl. D14-125.000.

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Lindy, Elaine, to Playskool Baby, Inc. Bib. 350,220, 9-6-94, Cl. D2-864.000.

Livingstone, Robert J.; and Griffin, Daniel K. Floor mat. 350,253, 9-6-94, Cl. D6-583.000.

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Lockard, Randall R., to TBAC Investment Trust. Necktie label. 350,370, 9-6-94, Cl. D20-22.000.

Lohmeyer, Hartmut. Chair. 350,242, 9-6-94, Cl. D6-372.000.

Long, Armand E. Bird feeder. 350,419, 9-6-94, Cl. D30-124.000.

Losole, Nicholas F. Paintbrush protector. 350,234, 9-6-94, Cl. D4-199.000.

Louise, John; and Rushing, Thomas, to Bristol-Myers Squibb Company. Display system for selecting hair dye shades. 350,246, 9-6-94, Cl. D6-479.000.

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Maine, Yarmouth. Lawn mower cleaning attachment. 350,357, 9-6-94, Cl. D15-17.000.

Majors, Ronald O.; and Hoepfl, Joseph R., to Snap-on Tools Corporation. Hammer. 350,269, 9-6-94, Cl. D8-77.000.

Makita Corporation: *See—*
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Oliver, Norwood D.; and Wenzel-Murphy, Karen, to Kinney Shoe Corporation. Figure. 350,305, 9-6-94, Cl. D11-160.000.

Olsen, Carl J.; and Zemke, William L., to Andersen Corporation. Sash lock. 350,275, 9-6-94, Cl. D8-338.000.

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Rayle, Michelle V. Combined gift tag and tree ornament. 350,371, 9-6-94, Cl. D20-22.000.

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Sanchez, Richard R., to Karsten Manufacturing Corporation. Golf ball. 350,377, 9-6-94, Cl. D21-205.000.
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Suzuki, Toshiaki, to Sumitomo Rubber Industries, Ltd. Automobile tire. 350,320, 9-6-94, Cl. D12-147.000.
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Tacchella, William L., to Cooper Industries, Inc Single swag curtain rod set. 350,251, 9-6-94, Cl. D6-575.000.
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Saito, Hidemi; Nakazawa, Eiji; and Yui, Kenichi, 350,343, Cl. D14-114.000.
Zemke, William L.: *See*—
Olsen, Carl J.; and Zemke, William L., 350,275, Cl. D8-338.000.
Zimmermann, Jerome E.: *See*—
Hoffman, Ernest G.; and Zimmermann, Jerome E., 350,331, Cl. D13-133.000.

LIST OF PLANT PATENTEES

Bear Creek Gardens, Inc.: *See*—
Kordes, Wilhelm, 8,878, Cl. 1.000.
Chrysanthemum Breeders Association, N.V.: *See*—
Van der Jagt, Martinus, 8,884, Cl. 82.200.
Danziger, Gabriel, to Florfis AG. Petunia plant named Cas 1. 8,879, 9-6-94, Cl. 68.100.
Danziger, Garbriel, to Floris AG. Petunia plant named Cas 3. 8,880, 9-6-94, Cl. 68.100.
Florfis AG: *See*—
Danziger, Gabriel, 8,879, Cl. 68.100.
Floris AG: *See*—
Danziger, Garbriel, 8,880, Cl. 68.100.
Klemm, Siegfried, to Klemm & Sohn. Geranium named Kelfeli. 8,885, 9-6-94, Cl. 87.120.
Klemm, Siegfried, to Klemm & Sohn. Geranium named Kleugudo. 8,886, 9-6-94, Cl. 87.120.
Klemm & Sohn: *See*—
Klemm, Siegfried, 8,885, Cl. 87.120.
Klemm, Siegfried, 8,886, Cl. 87.120.
Kordes, Wilhelm, to Bear Creek Gardens, Inc. Shrub rose plant named Korades. 8,878, 9-6-94, Cl. 1.000.
Van Staaveren, B. V.: *See*—
van Andel, Jacob, 8,883, Cl. 70.200.
Van Staaveren, B.V.: *See*—
van Andel, Jacob, 8,881, Cl. 70.200.
van Andel, Jacob, 8,882, Cl. 70.200.
van Andel, Jacob, to Van Staaveren, B.V. Mini-spray carnation plant named 'Stagilac'. 8,881, 9-6-94, Cl. 70.200.
van Andel, Jacob, to Van Staaveren, B.V. Mini-spray carnation plant named 'Stragiros'. 8,882, 9-6-94, Cl. 70.200.
van Andel, Jacob, to Van Staaveren, B. V. Mini-spray carnation plant named 'Stagibord'. 8,883, 9-6-94, Cl. 70.200.
Van der Jagt, Martinus, to Chrysanthemum Breeders Association, N.V. Chrysanthemum named Yellow Reagan. 8,884, 9-6-94, Cl. 82.200.

LIST OF STATUTORY INVENTION REGISTRATIONS

APPLICANTS TO WHOM

STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE 6TH DAY OF SEPTEMBER, 1994

Barditch, Irving F.: *See*—
Schabdach, Paul G.; and Barditch, Irving F., H1355, Cl. 340-825.740.
Batesville Casket Company, Inc.: *See*—
Linville, John E.; and Maier, Donald R., H1348, Cl. 27-5.000.
Bundy, Mark L.; Robbins, Frederick W.; and Sturla, Lawrence E., to United States of America, Army. Combustible metallic propellant charge igniter. H1352, 9-6-94, Cl. 102-202.000.
Clark, James B.: *See*—
Ferrando, William A.; and Clark, James B., H1358, Cl. 427-217.000.
Desmond, Anthony T.; and Russell, William J., to United States of America, Army. Sealant applicator and method of sealant application for ammunition. H1350, 9-6-94, Cl. 86-17.000.
Ferrando, William A.; and Clark, James B., to United States of America, Navy. Diamond/silver composites. H1358, 9-6-94, Cl. 427-217.000.
Grau, John C.: *See*—
Malejko, Gregory; and Grau, John C., H1353, Cl. 102-439.000.
Kelley, Malcolm E., to United States of America, Air Force. Bushing removal tool. H1349, 9-6-94, Cl. 29-259.000.
Leinhos, Henry A.: *See*—
Ng, Kam W.; and Leinhos, Henry A., H1357, Cl. 381-71.000.
Linville, John E.; and Maier, Donald R., to Batesville Casket Company, Inc. Combustible bed for casket. H1348, 9-6-94, Cl. 27-5.000.
Maier, Donald R.: *See*—
Linville, John E.; and Maier, Donald R., H1348, Cl. 27-5.000.
Malejko, Gregory; and Grau, John C., to United States of America, Army. Velocity enhancing projectile sabot. H1353, 9-6-94, Cl. 102-439.000.
Martinez, Otto R., to United States of America, Air Force. Optical data transducer. H1354, 9-6-94, Cl. 250-352.000.
McCormick, Howard C.; and Onuffer, David M., to United States of America, Air Force. Bomb sensor system. H1356, 9-6-94, Cl. 364-423.000.
Ng, Kam W.; and Leinhos, Henry A., to United States of America, Navy. Active sound cancellation system for time-varying signals. H1357, 9-6-94, Cl. 381-71.000.
Onuffer, David M.: *See*—
McCormick, Howard C.; and Onuffer, David M., H1356, Cl. 364-423.000.
Robbins, Frederick W.: *See*—
Bundy, Mark L.; Robbins, Frederick W.; and Sturla, Lawrence E., H1352, Cl. 102-202.000.
Russell, William J.: *See*—
Desmond, Anthony T.; and Russell, William J., H1350, Cl. 86-17.000.
Schabdach, Paul G.; and Barditch, Irving F., to United States of America, Army. Remote voice-controlled system of unmanned smoke generator devices. H1355, 9-6-94, Cl. 340-825.740.
Sturla, Lawrence E.: *See*—
Bundy, Mark L.; Robbins, Frederick W.; and Sturla, Lawrence E., H1352, Cl. 102-202.000.
United States of America
Air Force: *See*—
Kelley, Malcolm E., H1349, Cl. 29-259.000.
Martinez, Otto R., H1354, Cl. 250-352.000.
McCormick, Howard C.; and Onuffer, David M., H1356, Cl. 364-423.000.
Army: *See*—
Bundy, Mark L.; Robbins, Frederick W.; and Sturla, Lawrence E., H1352, Cl. 102-202.000.
Desmond, Anthony T.; and Russell, William J., H1350, Cl. 86-17.000.
Malejko, Gregory; and Grau, John C., H1353, Cl. 102-439.000.
Schabdach, Paul G.; and Barditch, Irving F., H1355, Cl. 340-825.740.
Navy: *See*—
Ferrando, William A.; and Clark, James B., H1358, Cl. 427-217.000.
Ng, Kam W.; and Leinhos, Henry A., H1357, Cl. 381-71.000.

CLASSIFICATION OF PATENTS

ISSUED SEPTEMBER 6, 1994

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
15 5,343,561
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127 5,343,788
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242 5,343,909

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134 R 5,343,911
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CLASS 152
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396 5,343,920

CLASS 155
148 5,343,946

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CLASS 168

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CLASS 172

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CLASS 173

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147 5,343,962

CLASS 174

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CLASS 175

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61 5,343,964
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180 5,345,043

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CLASS 181

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CLASS 184

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CLASS 187

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116 5,345,048
127 5,345,049

CLASS 188

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CLASS 190

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CLASS 191

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CLASS 192

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85 R 5,343,994

CLASS 198

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CLASS 202

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CLASS 203

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CLASS 206

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CLASS 209

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188 B1 5,191,985

CLASS 212

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CLASS 215

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157 5,344,063
264 5,344,064

CLASS 229

103 5,344,065
231 5,344,066

CLASS 235

383 5,345,071

CLASS 236

12.2 5,344,067
47 5,344,068
49.3 5,344,069
5,344,070

CLASS 237

81 5,344,071

CLASS 238

341 5,344,072

CLASS 239

1 5,344,073
10 5,344,074
70 5,344,075
120 5,344,076
126 5,344,077
296 5,344,078
449 5,344,080
498 5,344,079
585.4 5,344,081
697 5,344,082
737 5,344,083
751 5,344,084

CLASS 241

46.02 5,344,085
82.6 5,344,086
91 5,344,087
282 5,344,088

CLASS 242

18 A 5,344,090
261 5,344,098
343.1 5,345,355
356.7 5,344,097
374 5,344,095
379 5,344,096
395 5,344,094
407 5,344,093
417 5,344,089
527.1 5,344,091
538 5,344,092

CLASS 244

3.13 5,344,099
3.14 5,344,105
12.2 5,344,100
17.11 5,344,101
35 R 5,344,102
75 R 5,344,103
158 R 5,344,104

CLASS 248

56 5,344,106
60 5,344,107
62 5,344,108
100 5,344,109
229 5,344,110
274 5,344,111
313 5,344,112
316.7 5,344,113
430 5,344,114
514 5,344,115
677 5,344,116

CLASS 250

201.5 5,345,072
214 A 5,345,073
214.1 5,345,074
227.24 5,345,075
231.13 5,345,076
264 5,345,077
282 5,345,078
288 5,345,079
311 5,345,080
338.1 5,345,081
363.07 5,345,082
379 5,345,083
390.12 5,345,084
491.1 5,345,085
558 5,345,086
561 5,345,087
566 5,345,088
5,345,089
5,345,090
5,345,091

CLASS 251

11 5,344,117
129.15 5,344,118
149.1 5,344,119
214 5,344,120

CLASS 252

9 5,344,582
45 5,344,577
47.5 5,344,578
51.50 R 5,344,579
54 5,344,580
95 5,344,581
171 5,344,583
182.27 5,344,584
299.61 5,344,585
299.64 5,344,586
299.66 5,344,587
313.1 5,344,588
392 5,344,589
396 5,344,590
511 5,344,591
512 5,344,592
514 5,344,593

CLASS 254

358 5,344,121

CLASS 257

13 5,345,092
80 5,345,093
113 5,345,094
138 5,345,095
182 5,345,096
198 5,345,097
207 5,345,098
250 5,345,099
475 5,345,100
495 5,345,101
588 5,345,102
589 5,345,103
607 5,345,104
659 5,345,105
675 5,345,106
717 5,345,107
751 5,345,108

CLASS 264

4.1 5,344,594
26 5,344,595
40.3 5,344,596
40.6 5,344,597
63 5,344,599
219 5,344,600
255 5,344,601
258 5,344,602
261 5,344,603
272.11 5,344,604

CLASS 266

79 5,344,122
207 5,344,123

CLASS 267

64.15 5,344,124
64.28 5,344,125
140.12 5,344,126
140.13 5,344,127
140.14 5,344,128
5,344,129

CLASS 270

53 5,344,130
5,344,131

CLASS 271

35 5,344,132
94 5,344,133
122 5,344,134
180 5,344,135
189 5,344,136

CLASS 273

26 D 5,344,137
29 A 5,344,138
73 G 5,344,139
78 5,344,140
80.2 5,344,141
85 F 5,344,142
118 R 5,344,143
138 A 5,344,144
5,344,145
5,344,199
5,344,146
149 R 5,344,147
153 S 5,344,148
156 5,344,149
167 B 5,344,150
167 H 5,344,151
171 5,344,152
189 R 5,344,153
271 5,344,154
287 5,344,155
346 5,344,156
355 5,344,157
411 5,344,158
419 5,344,159

CLASS 277

3 5,344,160
12 5,344,161
25 5,344,162
67 5,344,163
81 R 5,344,164
235 B 5,344,165

CLASS 279

123 5,344,166

CLASS 280

14.1 5,344,167
28 5,344,168
79.3 5,344,169
283 5,344,170
415.1 5,344,171
5,344,172
438.1 5,344,173
504 5,344,174
506 5,344,175
602 5,344,176
610 5,344,177
617 5,344,178
618 5,344,179
625 5,344,180
728 A 5,344,182
728 B 5,344,183
730 R 5,344,184
731 5,344,185
741 5,344,186
788 5,344,187
808 5,344,188
840 5,344,189

CLASS 283

71 5,344,190
72 5,344,191
91 5,344,192

CLASS 285

8 5,344,193
26 5,344,194
91 5,344,195
149 5,344,196

CLASS 292

5 5,344,197
340 5,344,198

CLASS 294

1.5 5,344,200
24 5,344,201
64.1 5,344,202
68.1 5,344,203
103.1 5,344,207

CLASS 296

68.1 5,344,204
93 5,344,205
97.8 5,344,206
100 5,344,159
187 5,344,208
223 5,344,209

CLASS 297

216.2 5,344,210
230.14 5,344,211
245 5,344,212
256.13 5,344,213
270 5,344,214
375 5,344,215
383 5,344,216
423.25 5,344,217

CLASS 300

2 5,344,218

CLASS 301

64.1 5,344,219

CLASS 303

9.64 5,344,220
89 5,344,221
100 5,344,222
103 5,344,223
111 5,344,224

CLASS 307

271 5,345,109
272.3 5,345,110
326 5,345,138
350 5,345,111
443 5,345,112
475 5,345,113
476 5,345,114
477 5,345,116
494 5,345,117
501 5,345,118
521 5,345,119
530 5,345,120
5,345,121
5,345,122
552 5,345,123

CLASS 310

51 5,345,124
68 A 5,345,125
68 C 5,345,126
90.5 5,345,127
5,345,128
156 5,345,129
5,345,130

181 5,345,131
239 5,345,132
266 5,345,133
313 B 5,345,135
313 D 5,345,134
320 5,345,136
323 5,345,137
358 5,345,139

CLASS 312

34.4 5,344,225
334.47 5,344,226
334.6 5,344,227
334.9 5,344,228

CLASS 313

113 5,345,140
495 5,345,141

CLASS 315

58 5,345,142
64 5,345,143
71 5,345,144
111.41 5,345,145
169.3 5,345,146
185 S 5,345,147
186 Re.34,717
209 R 5,345,148
244 5,345,149
280 5,345,150
368.23 5,345,151
371 5,345,152

CLASS 318

4 5,345,153
49 5,345,154
138 5,345,155
254 5,345,156
280 5,345,157
434 5,345,158
447 5,345,159
811 5,345,160

CLASS 320

1 5,345,161
21 5,345,162
48 5,345,163

CLASS 323

208 5,345,164
284 5,345,165
324 5,345,166
349 5,345,167

CLASS 324

76.48 5,345,168
117 R 5,345,169
166 5,345,171
309 5,345,172
5,345,173
5,345,174
5,345,175
5,345,176
318 5,345,177
320 5,345,178
338 5,345,179
537 5,345,180
546 5,345,181
649 5,345,182
663 5,345,183
720 5,345,184
754 5,345,170

CLASS 328

145 5,345,185
155 5,345,186

CLASS 329

302 5,345,187
323 5,345,188

CLASS 330

207 A 5,345,189
258 5,345,190
277 5,345,191
289 5,345,192

CLASS 331

16 5,345,193
99 5,345,194
111 5,345,195
5,345,196
117 R 5,345,197

CLASS 332

152 5,345,198

CLASS 333

17.2 5,345,199
32 5,345,200
193 5,345,201
206 5,345,202
219 5,345,203
219.2 5,345,204
246 5,345,205

CLASS 335

222 5,345,206
298 5,345,207
301 5,345,208

CLASS 336

83 5,345,209

CLASS 337

163 5,345,210
186 5,345,211

CLASS 338

20 5,345,212
34 5,345,213
128 5,345,214
176 5,345,215

CLASS 340

146.2 5,345,216
442 5,345,217
479 5,345,218
568 5,345,219
5,345,220
571 5,345,221
572 5,345,222
581 5,345,223
605 5,345,224
635 5,345,225
825.16 5,345,230
825.19 5,345,226
825.22 5,345,227
825.79 5,345,228
825.8 5,345,229
870.31 5,345,231
906 5,345,232

CLASS 341

76 5,345,233
108 5,345,234
139 5,345,235
144 5,345,236
156 5,345,237

CLASS 342

3 5,345,238
14 5,345,239
28 5,345,240
63 5,345,241
159 5,345,242
173 5,345,243
357 5,345,244
5,345,245
B1 5,043,736
368 5,345,246

CLASS 343

791 5,345,247
895 5,345,248

CLASS 345

1 5,345,249
100 5,345,250
107 5,345,251
162 5,345,252
167 5,345,253

CLASS 346

139 R 5,345,255
145 5,345,257

CLASS 347

20 5,345,256
100 5,345,254

CLASS 348

14 5,345,258
26 5,345,259
98 5,345,260
135 5,345,261
177 5,345,262
182 5,345,263
235 5,345,264
254 5,345,265
300 5,345,266
379 5,345,267
384 5,345,268
412 5,345,269
435 5,345,270
525 5,345,271
561 5,345,272
598 5,345,313
607 5,345,273
614 5,345,274
656 5,345,275
663 5,345,276
679 5,345,277
686 5,345,278
689 5,345,279
745 5,345,280

CLASS 351

210 5,345,281

CLASS 353

119 5,345,282

CLASS 354

106 5,345,283
132 5,345,284
159 5,345,285
173.1 5,345,286
221 5,345,287
238.1 5,345,288
283 5,345,289
400 5,345,290
406 5,345,291

CLASS 355

67 5,345,292
75 5,345,293
200 5,345,294
5,345,295
256 5,345,296
260 5,345,297
5,345,298
274 5,345,299
285 5,345,300
290 5,345,301
311 5,345,302
323 5,345,303

CLASS 356

5 5,345,304
221 5,345,305
346 5,345,306
350 5,345,307
364 5,345,308
372 5,345,309
401 5,345,310

CLASS 358

24 5,345,311
296 5,345,314
406 5,345,315
426 5,345,316
429 5,345,317
449 5,345,318
483 5,345,319
518 5,345,320

CLASS 359

42 5,345,321
53 5,345,322
67 5,345,324
69 5,345,325
117 5,345,326
172 5,345,327
248 5,345,328
282 5,345,329
326 5,345,330
341 5,345,331
5,345,332
389 5,345,333
393 5,345,334
618 5,345,335
628 5,345,336
665 5,345,337
679 5,345,338
872 5,345,339
885 5,345,340

CLASS 360

15 5,345,341
48 5,345,342
60 5,345,343
64 5,345,344
5,345,345
67 5,345,346
71 5,345,347
78.07 5,345,348
92 5,345,349
5,345,350
96.5 5,345,351
97.01 5,345,352
103 5,345,353
121 5,345,354

CLASS 361

56 5,345,356
5,345,357
78 5,345,358
152 5,345,359
160 5,345,360
313 5,345,361
681 5,345,362
749 5,345,363
5,345,364
760 5,345,365
785 5,345,366

CLASS 362

32 5,345,367
103 5,345,368
145 5,345,369
205 5,345,370
297 5,345,371
394 5,345,372
455 5,345,373

CLASS 363

24 5,345,374
40 5,345,375
62 5,345,376
71 5,345,377

CLASS 364

140 5,345,378
146 5,345,379
400 5,345,380
413.14 5,345,381
424.01 5,345,382
424.03 5,345,383
424.04 5,345,384
424.05 5,345,385
431.02 5,345,386
449 5,345,388
473 5,345,389
474.17 5,345,390
474.24 5,345,391
483 5,345,392
489 5,345,393
491 5,345,394
497 5,345,395
503 5,345,397
509 5,345,398
563 5,345,399
571.01 5,345,400
578 5,345,401
5,345,402
708.1 5,345,403
715.1 5,345,405
724.01 5,345,406
5,345,407
725 5,345,408
736 5,345,409
746 5,345,410

CLASS 365

49 5,345,411
63 5,345,412
96 5,345,413
145 5,345,414
5,345,415
185 5,345,416
5,345,417
5,345,418
189.01 5,345,420
189.04 5,345,419
189.05 5,345,421
189.09 5,345,422
201 Re.34,718
5,345,423
227 5,345,424
230.01 5,345,425

CLASS 366

25 5,344,229
100 5,344,230
137 5,344,231
139 5,344,232
165 5,344,233
192 5,344,234
270 5,344,235

CLASS 367

103 5,345,426
140 5,345,427
165 5,345,428

CLASS 368

15 5,345,429

CLASS 369

7 5,345,430
13 5,345,431
44.15 5,345,432
54 5,345,433
119 Re.34,719
124 5,345,434
275.3 5,345,435
282 5,345,436

CLASS 370

13 5,345,437
16 5,345,438
18 5,345,439
19 5,345,440
54 5,345,441
58.3 5,345,442
60 5,345,443
5,345,444
60.1 5,345,445
5,345,446
67 5,345,447
95.3 5,345,448
100.1 5,345,449

CLASS 371

27 5,345,450
42 5,345,451
43 5,345,452
68.1 5,345,453

CLASS 372

12 5,345,454
20 5,345,455
22 5,345,456
5,345,457
34 5,345,458
5,345,459
43 5,345,460
45 5,345,461
5,345,462
5,345,463
46 5,345,464
76 5,345,465
96 5,345,466

CLASS 374

5 5,344,236

CLASS 375

1 5,345,467
5,345,468
5,345,469
5,345,470
5,345,471
5,345,472
6 5,345,473
7 5,345,474
8 5,345,475
14 5,345,476
125 5,345,492

CLASS 376

195 5,345,477
249 5,345,478
250 5,345,479
291 5,345,480
293 5,345,481
299 5,345,482
313 5,345,483
407 5,345,484
435 5,345,485
443 5,345,486
444 5,345,487
451 5,345,488

CLASS 377

39 5,345,489

CLASS 378

4 5,345,490
70 5,345,491
137 5,345,493
162 5,345,494

CLASS 379

29 5,345,495
5,345,496
33 5,345,497
58 5,345,498
59 5,345,499
63 5,345,500
89 5,345,501
207 5,345,502
221 5,345,503

CLASS 380

7 Re.34,720
5,345,504
20 5,345,505
23 5,345,506
28 5,345,507
46 5,345,508

CLASS 381

68.6 5,345,509
77 5,345,510
104 5,345,511
183 5,345,512

CLASS 382

6 5,345,513
8 5,345,514
5,345,515
[illegible] 5,345,516
54 5,345,517
56 5,345,518

CLASS 384

45 5,344,237
49 5,344,238
[illegible] 5,344,239
569 5,344,240
607 5,344,241

CLASS 385

12 5,345,519
15 5,345,520
19 5,345,521
24 5,345,522
59 5,345,323
64 5,345,523
88 5,345,524
5,345,530
102 5,345,531
104 5,345,525
112 5,345,526
114 5,345,527
123 5,345,528
141 5,345,545
147 5,345,529

CLASS 388

813 5,345,532

CLASS 392

356 5,345,533
422 5,345,534

CLASS 395

2.45 5,345,535
2.52 5,345,536
2.64 5,345,537
2.84 5,345,538
22 5,345,539
86 5,345,540
126 5,345,541
128 5,345,542
137 5,345,543
140 5,345,544
142 5,345,546
143 5,345,547
150 5,345,548
154 5,345,549
156 5,345,550
157 5,345,551
5,345,552
161 5,345,553
162 5,345,554
164 5,345,555
200 5,345,556
5,345,557
250 5,345,559
5,345,560
275 5,345,561
5,345,562
5,345,563
5,345,564
325 5,345,565
5,345,566
375 5,345,567
5,345,568
5,345,569
5,345,570
400 5,345,572
425 5,345,574
5,345,575
5,345,576
5,345,577
5,345,578
500 5,345,396
5,345,579
5,345,580
575 5,345,581
5,345,582
600 5,345,584
5,345,585
650 5,345,586
5,345,587
5,345,588
5,345,589
5,345,590

CLASS 400

124.2 5,344,242
124.32 5,344,243
249 5,344,244
320 5,344,245
552 5,344,245
582 5,344,247
693 5,344,248

CLASS 403

3 5,344,249
228 5,344,250
297 5,344,251
358 5,344,252

CLASS 404

26 5,344,253
104 5,344,254

CLASS 405

128 5,344,255
259.1 5,344,256
259.4 5,344,257
282 5,344,258

CLASS 408

46 5,344,259
168 5,344,260

CLASS 409

132 5,344,261
233 5,344,263
235 5,344,264
307 5,344,262

CLASS 410

[illegible] 5,344,265
26 5,344,266

CLASS 411

29 5,344,267
82 5,344,268

CLASS 414

273 5,344,269
278 5,344,270
385 5,344,271
408 5,344,272
409 5,344,273
412 5,344,274
420 5,344,275

584 5,344,276
607 5,344,277
622 5,344,278
788.2 5,344,279

CLASS 415

9 5,344,280
71 5,344,281
90 5,344,282
115 5,344,283
173.2 5,344,284
199.2 5,344,285
213.1 5,344,286
5,344,287

CLASS 417

218 5,344,288
312 5,344,289
342 5,344,290
359 5,344,291
413 R 5,344,292
442 5,344,293

CLASS 418

55.2 5,344,294

CLASS 419

31 5,344,605

CLASS 420

473 5,344,606
532 5,344,608
562 5,344,607

CLASS 422

26 5,344,609
100 5,344,610
101 5,344,611
104 5,344,612
131 5,344,613
170 5,344,614
5,344,615
171 5,344,616
172 5,344,617
254 5,344,618
261 5,344,619
298 5,344,621
306 5,344,622

CLASS 423

2 5,344,623
6 5,344,624
22 5,344,625
210 5,344,626
220 5,344,627
235 5,344,628
239.1 5,344,629
240 R 5,344,630
244.03 5,344,631
244.07 5,344,632
333 5,344,633
344 5,344,634
412 5,344,635
593 5,344,636

CLASS 424

3 5,344,637
5 5,344,638
9 5,344,639
5,344,640
49 5,344,641
70 5,344,642
5,344,643
85.1 5,344,644
93.462 5,344,647
195.1 5,344,648
5,344,649
265.1 5,344,645
401 5,344,650
402 5,344,651
405 5,344,652
423 5,344,654
443 5,344,655
448 5,344,656
458 5,344,657
489 5,344,658

CLASS 425

29 5,344,295
121 5,344,296
131.5 5,344,297
135 5,344,298
142 5,344,299
5,344,300
169 5,344,301
178 5,344,302
190 5,344,303
195 5,344,304
503 5,344,305

CLASS 426

3 5,344,659
104 5,344,660
107 5,344,661
124 5,344,662
549 5,344,663
631 5,344,664
643 5,344,665

CLASS 427

2.11 5,344,666
67 5,344,667
115 5,344,668
130 5,344,669
157 5,344,670
192 5,344,671
195 5,344,672
5,344,673
288 5,344,620
386 5,344,674
388.4 5,344,675
468 5,344,676

CLASS 428

14 5,344,677
34.4 5,344,678
36.91 5,344,679
40 5,344,680
42 5,344,681
64 5,344,682
5,344,683
66 5,344,685
75 5,344,686
102 5,344,687
5,344,688
114 5,344,689
131 5,344,690
152 5,344,691
161 5,344,692
167 5,344,693
195 5,344,694
209 5,344,695
220 5,344,696
247 5,344,697
253 5,344,698
304.4 5,344,700
5,344,701
305.5 5,344,702
312.6 5,344,703
323 5,344,704
5,344,705
336 5,344,706
359 5,344,707
364 5,344,708
368 5,344,709
370 5,344,710
398 5,344,711
412 5,344,712
472.3 5,344,713
516 5,344,714
520 5,344,715
566 5,344,716
598 5,344,717
623 5,344,718
675 5,344,719
692 5,344,720

CLASS 429

20 5,344,721
46 5,344,722
84 5,344,723
94 5,344,724
160 5,344,725
209 5,344,726
210 5,344,727
223 5,344,728

CLASS 430

[illegible] 5,344,729
14 5,344,730
41 5,344,731
42 5,344,732
58 5,344,733
59 5,344,734
83 5,344,735
5,344,736
110 5,344,737
137 5,344,738
175 5,344,739
191 5,344,740
265 5,344,741
270 5,344,742
287 5,344,744
315 5,344,745
321 5,344,746
325 5,344,743
5,344,747
330 5,344,748
428 5,344,749
434 5,344,750
527 5,344,751

CLASS 431

4 5,344,306
[illegible] 5,344,307
114 5,344,308
145 5,344,309
158 5,344,310
278 5,344,311
326 5,344,312
346 5,344,313

CLASS 432

222 5,344,314

CLASS 433

4.1 5,344,758
20 5,344,315
85 5,344,317
169 5,344,318

CLASS 434

14 5,344,319
22 5,344,320
37 5,344,316
84 5,344,322
250 5,344,323
258 5,344,324
288 5,344,325
336 5,344,326

CLASS 435

2 5,344,752
4 5,344,753
5,344,754
5 5,344,755
6 5,344,757
7.32 5,344,759
7.5 5,344,760
29 5,344,761
39 5,344,762
69.7 5,344,765
71.2 5,344,766
5,344,770
106 5,344,767
119 5,344,768
135 5,344,769
172.3 5,344,771
226 5,344,773
239 5,344,774
240.48 5,344,775
252.3 5,344,776
5,344,777
262 5,344,778

CLASS 436

19 5,344,779
21 5,344,780
29 5,344,781
79 5,344,782
501 5,344,783
518 5,344,784

CLASS 437

31 5,344,785
5,344,786
35 5,344,787
41 5,344,788
5,344,789
44 5,344,790
126 5,344,791
200 5,344,792
5,344,793
209 5,344,794
214 5,344,795
233 5,344,796
238 5,344,797

CLASS 439

108 5,344,327
127 5,344,328
133 5,344,329
138 5,344,330
5,344,331
248 5,344,332
320 5,344,333
331 5,344,334
357 5,344,335
397 5,344,336
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465 5,344,338
501 5,344,339
581 5,344,340
607 5,344,341
620 5,344,342
701 5,344,347
849 5,344,348
876 5,344,343

CLASS 440

41 5,344,344
44 5,344,345
66 5,344,346
78 5,344,350
80 5,344,349

CLASS 441

89 5,344,351

CLASS 445

45 5,344,353
024 5,344,352

CLASS 446

7 5,344,354
72 5,344,355
73 5,344,356
154 5,344,357
268 5,344,358

CLASS 451

29 5,343,657
540 5,343,656

CLASS 452

174 5,344,359
182 5,344,360

CLASS 454

129 5,344,361
180 5,344,362
182 5,344,363
185 5,344,364
187 5,344,365
213 5,344,366

CLASS 455

3.2 5,345,591
3.3 5,345,592
18 5,345,594
33.1 5,345,595
5,345,596
34.1 5,345,597
49.1 5,345,599
50.1 5,345,600
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59 5,345,601
69.1 5,344,764
137 5,345,602
139 5,345,603
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181.1 5,345,605
186.1 5,345,606
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CLASS 460

68 5,344,367

CLASS 462

6 5,344,368
18 Re.34,721

CLASS 474

253 5,344,369

CLASS 475

319 5,344,370

CLASS 477

107 5,343,781
108 5,343,780
131 5,343,783
156 5,343,782

CLASS 482

53 5,344,371
54 5,344,372
55 5,344,373
97 5,344,374
106 5,344,375
118 5,344,376

CLASS 493

368 5,344,377
441 5,344,379

CLASS 494

12 5,344,380
56 5,344,381
60 5,344,382

CLASS 501

70 5,344,798
80 5,344,799
90 5,344,800
105 5,344,801
120 5,344,802

CLASS 502

116 5,344,803
158 5,344,804
329 5,344,805

CLASS 503

227 5,344,807
5,344,808

CLASS 504

134 5,344,809
135 5,344,810
192 5,344,811
243 5,344,812
244 5,344,813
261 5,344,814

CLASS 505

1 5,344,815
193 5,345,115
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CLASS 507

128 5,344,817
131 5,344,818

CLASS 514

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739 5,344,850

CLASS 518

704 5,344,848
713 5,344,849

CLASS 521

49 5,344,851
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128 5,344,853

CLASS 523

149 5,344,854
179 5,344,855
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CLASS 524

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269 5,344,862
291 5,344,863
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494 5,344,868
505 5,344,869
513 5,344,872
591 5,344,873
593 5,344,874
601 Re.34,716

CLASS 525

54.2 5,344,870
54.3 5,344,871
64 5,344,875
71 5,344,876
83 5,344,877
84 5,344,878
100 5,344,879
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112 5,344,881
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299 5,344,887
301 5,344,888
309 5,344,889
326.5 5,344,890
327.1 5,344,891
397 5,344,892
398 5,344,893
422 5,344,894
425 5,344,895
435 5,344,896
526 5,344,897
5,344,898
534 5,344,899

CLASS 526

160 5,344,900
201 5,344,901
217 5,344,902
245 5,344,903
254 5,344,904

CLASS 528

13 5,344,906
15 5,344,905
29 5,344,908
129 5,344,909
201 5,344,910
241 5,344,911
308.1 5,344,912
328 5,344,914
353 5,344,916

CLASS 530

321 5,344,913
350 5,344,915
356 5,344,917
381 5,344,918
395 5,344,919
416 5,344,920
502 5,344,921

CLASS 536

23.2 5,344,923
124 5,344,924

CLASS 540

456 5,344,925
545 5,344,926

CLASS 544

31 5,344,927
37 5,344,928
48 5,344,929
84 5,344,930
195 5,344,931
280 5,344,932
282 5,344,933

CLASS 546

153 5,344,922
245 5,344,934
250 5,344,935

CLASS 548

229 5,344,936
330.1 5,344,937
492 5,344,938
531 5,344,939
540 5,344,940

CLASS 549

57 5,344,941
329 5,344,943
386 5,344,942
436 5,344,944
521 5,344,945
531 5,344,946
556 5,344,947

CLASS 556

51 5,344,948
413 5,344,949
478 5,344,950

CLASS 558

110 5,344,951
169 5,344,952
272 5,344,953
274 5,344,954
375 5,344,955

CLASS 560

26 5,344,956
35 5,344,957
64 5,344,958
100 5,344,959
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103 5,344,961
123 5,344,962
130 5,344,963
240 5,344,964
354 5,344,965

CLASS 562

8 5,344,966
94 5,344,967
474 5,344,968
486 5,344,969
496 5,344,970
512 5,344,971
517 5,344,972
553 5,344,973
567 5,344,974
606 5,344,975
608 5,344,976
864 5,344,977

CLASS 564

123 5,344,978
216 5,344,979
269 5,344,980
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430 5,344,986
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487 5,344,990
735 5,344,987

CLASS 568

34 5,344,991
314 5,344,992
449 5,344,994
454 5,344,988
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591 5,344,995
621 5,344,996

628 5,344,997
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934 5,345,012

CLASS 570

102 5,345,013
163 5,345,014
164 5,345,015
168 5,345,016
227 5,345,017
249 5,345,018

CLASS 585

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825 5,345,029

CLASS 588

206 5,345,031
207 5,345,032
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CLASS 600

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38 5,344,396
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41 5,344,389

CLASS 601

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CLASS 602

23 5,344,390
24 5,344,391

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192 5,344,407
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265 5,344,411
280 5,344,412
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283 5,344,414
304 5,344,415
385.1 5,344,416
414 5,344,417

CLASS 606

9 5,344,418
15 5,344,419
28 5,344,420
61 5,344,421
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87 5,344,423
167 5,344,424
198 5,344,425
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CLASS 607

5 5,344,429
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156 5,344,441

CLASS 623

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866 350,221
902 350,222
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372 350,242
381 350,243
445 350,244
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479 350,246
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545 350,249
575 350,251
350,252
578 350,250
583 350,253
601 350,254
D7— 317 350,255
367 350,256
400 350,257
601 350,258
620 350,259
649 350,260
666 350,261
D8— 14 350,262
30 350,263
43 350,264
52 350,265
62 350,266
68 350,267
70 350,268
77 350,269
89 350,270
99 350,271
107 350,272
200 350,314
317 350,273
331 350,274
338 350,275
347 350,276
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353 350,278
373 350,279
374 350,280
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308 350,282
350,283
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310 350,285
337 350,286
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104 350,298
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109 350,301
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164 350,306
181 350,307
350,308
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183 350,322
300 350,323
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133 350,331
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113 350,341
114 350,342
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156 350,351
188 350,353
205 350,354
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138 350,404
164 350,405
D26— [illegible] 350,406
26 350,407
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86 350,409
140 350,410
D27— 162 350,411
D28— 13 350,412
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D29— 116 350,417
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D32— 37 350,423
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02 : 5,343,945
04 : 5,343,566
5,343,608
5,343,628
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25 on Sept. 14, 1993.

International fees were changed effective on May 1, 1993, due to a changes in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992 and were announced in the *Official Gazette* at 1141 O.G. 68 on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars) effective Oct. 1, 1993 is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation)	230.00

U.S. National Stage Fees	Small Entity	Regular
Basic National Fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3,7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on September 10, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,046,191 through 5,048,120
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on September 8, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,692,387 through 4,692,945
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on September 6, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,402,091 through 4,403,352
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, and 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amount of the surcharges for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED July 6, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 34,071	07/706,024	09/22/92
(4,938,289)	(07/274,192)	(07/03/90)
Re. 34,469	07/615,037	12/07/93
(4,938,571)	(07/207,496)	(07/03/90)
4,337,541	06/223,935	07/06/82
4,337,572	06/236,212	07/06/82
4,337,586	06/247,493	07/06/82
4,337,610	06/231,762	07/06/82
4,337,625	06/239,256	07/06/82
4,337,627	06/271,546	07/06/82
4,337,653	06/258,510	07/06/82
4,337,679	06/243,908	07/06/82
4,337,684	06/236,768	07/06/82
4,337,719	06/254,807	07/06/82
4,337,770	06/252,360	07/06/82
4,337,863	06/229,851	07/06/82
4,337,929	06/217,769	07/06/82
4,337,956	06/221,425	07/06/82
4,338,009	06/271,151	07/06/82
4,338,015	06/240,014	07/06/82
4,338,021	06/232,086	07/06/82
4,338,087	06/224,624	07/06/82
4,338,110	06/251,589	07/06/82
4,338,112	06/245,302	07/06/82
4,338,113	06/245,418	07/06/82
4,338,117	06/227,015	07/06/82
4,338,135	06/251,053	07/06/82
4,338,144	06/223,963	07/06/82
4,338,153	06/243,944	07/06/82
4,338,158	06/274,591	07/06/82
4,338,161	06/249,157	07/06/82
4,338,178	06/223,993	07/06/82
4,338,189	06/246,684	07/06/82
4,338,213	06/253,327	07/06/82
4,338,221	06/233,416	07/06/82
4,338,227	06/257,112	07/06/82
4,338,245	06/292,118	07/06/82
4,338,246	06/295,163	07/06/82
4,338,252	06/238,370	07/06/82
4,338,253	06/277,569	07/06/82
4,338,255	06/238,136	07/06/82
4,338,261	06/247,416	07/06/82
4,338,280	06/250,438	07/06/82
4,338,288	06/231,077	07/06/82
4,338,310	06/225,567	07/06/82
4,338,312	06/262,093	07/06/82
4,338,315	06/265,480	07/06/82
4,338,329	06/255,574	07/06/82
4,338,345	06/229,707	07/06/82
4,338,352	06/236,835	07/06/82
4,338,355	06/265,437	07/06/82
4,338,362	06/231,138	07/06/82
4,338,364	06/237,525	07/06/82
4,338,365	06/221,757	07/06/82
4,338,368	06/217,336	07/06/82
4,338,371	06/219,681	07/06/82
4,338,385	06/271,088	07/06/82
4,338,393	06/231,202	07/06/82
4,338,412	06/276,559	07/06/82

Patent Number	Serial Number	Issue Date
4,338,422	06/278,289	07/06/82
4,338,435	06/268,944	07/06/82
4,338,461	06/245,437	07/06/82
4,338,471	06/217,116	07/06/82
4,338,472	06/227,000	07/06/82
4,338,480	06/221,100	07/06/82
4,338,483	06/219,653	07/06/82
4,338,487	06/236,063	07/06/82
4,338,496	06/265,144	07/06/82
4,338,525	06/222,457	07/06/82
4,338,609	06/216,168	07/06/82
4,338,613	06/218,392	07/06/82
4,338,624	06/222,476	07/06/82
4,338,630	06/216,451	07/06/82
4,597,110	06/672,997	07/01/86
4,597,115	06/463,842	07/01/86
4,597,118	06/615,567	07/01/86
4,597,122	06/741,750	07/01/86
4,597,123	06/742,976	07/01/86
4,597,126	06/732,925	07/01/86
4,597,127	06/685,347	07/01/86
4,597,128	06/493,344	07/01/86
4,597,132	06/613,960	07/01/86
4,597,140	06/521,139	07/01/86
4,597,146	06/575,003	07/01/86
4,597,155	06/528,554	07/01/86
4,597,156	06/537,956	07/01/86
4,597,157	06/587,023	07/01/86
4,597,171	06/641,676	07/01/86
4,597,173	06/622,370	07/01/86
4,597,175	06/689,906	07/01/86
4,597,176	06/571,998	07/01/86
4,597,177	06/567,704	07/01/86
4,597,180	06/635,965	07/01/86
4,597,183	06/469,592	07/01/86
4,597,184	06/644,374	07/01/86
4,597,185	06/708,802	07/01/86
4,597,192	06/671,966	07/01/86
4,597,194	06/669,685	07/01/86
4,597,198	06/579,185	07/01/86
4,597,200	06/666,219	07/01/86
4,597,202	06/673,679	07/01/86
4,597,204	06/741,624	07/01/86
4,597,207	06/628,428	07/01/86
4,597,210	06/603,090	07/01/86
4,597,213	06/682,944	07/01/86
4,597,216	06/629,835	07/01/86
4,597,224	06/576,211	07/01/86
4,597,225	06/750,547	07/01/86
4,597,226	06/691,212	07/01/86
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4,597,269	06/652,589	07/01/86
4,597,271	06/701,784	07/01/86
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4,597,354	06/626,558	07/01/86
4,597,355	06/655,251	07/01/86
4,597,356	06/699,410	07/01/86
4,597,357	06/669,993	07/01/86
4,597,358	06/579,156	07/01/86
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4,597,369	06/380,891	07/01/86
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4,597,375	06/697,479	07/01/86
4,597,376	06/682,108	07/01/86
4,597,380	06/613,338	07/01/86
4,597,382	06/590,432	07/01/86
4,597,389	06/705,410	07/01/86
4,597,391	06/780,445	07/01/86
4,597,394	06/575,807	07/01/86
4,597,396	06/462,262	07/01/86
4,597,400	06/601,028	07/01/86
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4,597,402	06/651,929	07/01/86
4,597,406	06/598,750	07/01/86
4,597,412	06/693,690	07/01/86
4,597,420	06/699,210	07/01/86
4,597,424	06/718,809	07/01/86
4,597,426	06/554,922	07/01/86
4,597,427	06/601,694	07/01/86
4,597,434	06/652,271	07/01/86
4,597,444	06/653,103	07/01/86
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4,597,451	06/647,566	07/01/86
4,597,452	06/731,007	07/01/86
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4,597,467	06/553,338	07/01/86
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4,597,483	06/445,027	07/01/86
4,597,488	06/449,454	07/01/86
4,597,489	06/679,900	07/01/86
4,597,501	06/659,547	07/01/86
4,597,503	06/683,916	07/01/86
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4,597,567	06/665,319	07/01/86
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4,597,582	06/741,870	07/01/86
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4,597,633	06/697,516	07/01/86
4,597,639	06/607,981	07/01/86
4,597,646	06/556,934	07/01/86
4,597,647	06/632,537	07/01/86
4,597,648	06/481,286	07/01/86
4,597,653	06/707,934	07/01/86
4,597,654	06/707,933	07/01/86
4,597,664	06/615,595	07/01/86
4,597,665	06/610,101	07/01/86
4,597,666	06/601,516	07/01/86
4,597,668	06/488,706	07/01/86
4,597,675	06/481,539	07/01/86
4,597,676	06/605,447	07/01/86
4,597,679	06/783,423	07/01/86
4,597,687	06/499,791	07/01/86
4,597,691	06/433,015	07/01/86
4,597,692	06/630,262	07/01/86
4,597,697	06/612,380	07/01/86
4,597,707	06/642,032	07/01/86
4,597,710	06/675,958	07/01/86
4,597,711	06/569,859	07/01/86
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4,597,763	06/589,538	07/01/86
4,597,770	06/686,115	07/01/86
4,597,771	06/595,948	07/01/86
4,597,775	06/602,309	07/01/86
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4,597,791	06/669,434	07/01/86
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4,597,803	06/742,839	07/01/86
4,597,806	06/751,102	07/01/86
4,597,807	06/670,706	07/01/86
4,597,813	06/652,964	07/01/86
4,597,816	06/772,231	07/01/86
4,597,818	06/694,205	07/01/86
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4,938,975	07/241,035	07/03/90
4,938,982	07/067,436	07/03/90
4,938,987	07/401,103	07/03/90
4,938,988	07/264,192	07/03/90
4,938,990	07/322,287	07/03/90
4,938,993	07/330,041	07/03/90
4,938,995	07/352,676	07/03/90

Patent Number	Serial Number	Issue Date
4,938,998	06/898,307	07/03/90
4,939,004	07/426,674	07/03/90
4,939,015	07/237,124	07/03/90
4,939,017	07/189,151	07/03/90
4,939,022	07/328,991	07/03/90
4,939,025	07/305,320	07/03/90
4,939,031	07/223,978	07/03/90
4,939,033	07/118,428	07/03/90
4,939,050	07/269,449	07/03/90
4,939,052	07/289,394	07/03/90
4,939,062	07/257,881	07/03/90
4,939,065	07/217,498	07/03/90
4,939,068	07/278,366	07/03/90
4,939,086	06/737,432	07/03/90
4,939,112	07/254,048	07/03/90
4,939,125	07/089,442	07/03/90
4,939,129	07/321,422	07/03/90
4,939,133	06/782,763	07/03/90
4,939,139	07/385,040	07/03/90
4,939,144	07/260,680	07/03/90
4,939,145	07/298,716	07/03/90
4,939,147	07/388,383	07/03/90
4,939,148	07/008,198	07/03/90
4,939,150	07/283,950	07/03/90
4,939,155	07/384,347	07/03/90
4,939,156	07/219,200	07/03/90
4,939,157	07/292,439	07/03/90
4,939,159	07/320,664	07/03/90
4,939,161	07/351,677	07/03/90
4,939,162	07/315,197	07/03/90
4,939,165	07/317,105	07/03/90
4,939,171	07/269,941	07/03/90
4,939,173	07/284,146	07/03/90
4,939,181	07/436,750	07/03/90
4,939,193	07/254,363	07/03/90
4,939,199	07/286,519	07/03/90
4,939,201	07/255,028	07/03/90
4,939,202	07/165,980	07/03/90
4,939,211	07/317,507	07/03/90
4,939,215	07/327,761	07/03/90
4,939,216	07/378,841	07/03/90
4,939,222	07/242,907	07/03/90
4,939,224	07/146,463	07/03/90
4,939,226	07/266,561	07/03/90
4,939,238	07/211,214	07/03/90
4,939,246	07/309,150	07/03/90
4,939,252	07/340,648	07/03/90
4,939,253	06/515,727	07/03/90
4,939,256	07/275,363	07/03/90
4,939,261	07/098,755	07/03/90
4,939,262	07/320,132	07/03/90
4,939,268	07/360,987	07/03/90
4,939,269	07/285,632	07/03/90
4,939,276	07/270,604	07/03/90
4,939,292	06/782,779	07/03/90
4,939,293	06/910,560	07/03/90
4,939,296	07/338,401	07/03/90
4,939,302	07/227,338	07/03/90
4,939,306	07/338,210	07/03/90
4,939,307	07/313,918	07/03/90
4,939,313	07/432,100	07/03/90
4,939,325	07/345,448	07/03/90
4,939,329	07/355,287	07/03/90
4,939,330	07/159,594	07/03/90
4,939,331	07/295,603	07/03/90
4,939,335	07/357,315	07/03/90
4,939,336	07/253,064	07/03/90
4,939,337	07/240,313	07/03/90
4,939,342	07/183,286	07/03/90
4,939,345	07/326,737	07/03/90
4,939,348	07/374,333	07/03/90
4,939,359	07/208,057	07/03/90
4,939,370	07/266,382	07/03/90
4,939,373	06/883,007	07/03/90
4,939,380	07/346,952	07/03/90
4,939,382	07/340,805	07/03/90
4,939,387	07/190,658	07/03/90
4,939,388	06/732,652	07/03/90
4,939,399	07/241,911	07/03/90
4,939,401	07/380,570	07/03/90
4,939,409	07/290,168	07/03/90
4,939,410	07/249,742	07/03/90
4,939,422	07/262,344	07/03/90
4,939,432	07/206,425	07/03/90
4,939,433	07/378,159	07/03/90
4,939,434	07/357,811	07/03/90
4,939,439	07/239,080	07/03/90
4,939,441	07/427,821	07/03/90
4,939,443	07/295,633	07/03/90
4,939,448	07/260,727	07/03/90
4,939,452	07/317,287	07/03/90
4,939,457	07/346,654	07/03/90
4,939,458	07/153,208	07/03/90
4,939,467	07/379,883	07/03/90
4,939,494	07/342,216	07/03/90
4,939,501	07/408,282	07/03/90
4,939,503	07/337,209	07/03/90
4,939,504	07/413,130	07/03/90
4,939,508	07/264,646	07/03/90
4,939,514	07/286,128	07/03/90
4,939,523	07/195,978	07/03/90
4,939,525	07/177,917	07/03/90
4,939,528	07/288,555	07/03/90
4,939,536	07/222,577	07/03/90
4,939,538	07/289,032	07/03/90
4,939,540	07/319,207	07/03/90
4,939,541	07/336,237	07/03/90
4,939,548	07/329,975	07/03/90
4,939,552	07/238,821	07/03/90
4,939,557	07/311,903	07/03/90
4,939,586	07/210,437	07/03/90
4,939,590	07/236,647	07/03/90
4,939,602	07/061,054	07/03/90
4,939,615	07/299,570	07/03/90
4,939,618	07/405,578	07/03/90
4,939,621	07/350,299	07/03/90
4,939,629	07/361,186	07/03/90
4,939,635	07/231,838	07/03/90
4,939,638	07/159,250	07/03/90
4,939,646	07/192,586	07/03/90
4,939,649	07/226,353	07/03/90
4,939,661	07/243,317	07/03/90
4,939,663	07/177,325	07/03/90
4,939,682	07/219,276	07/03/90
4,939,687	07/265,734	07/03/90
4,939,689	07/037,384	07/03/90
4,939,701	07/230,335	07/03/90
4,939,703	07/382,076	07/03/90
4,939,706	07/391,027	07/03/90
4,939,716	07/319,362	07/03/90
4,939,740	07/203,487	07/03/90
4,939,742	07/329,710	07/03/90
4,939,778	07/218,961	07/03/90
4,939,779	07/354,113	07/03/90
4,939,780	07/187,264	07/03/90
4,939,781	07/270,533	07/03/90
4,939,783	07/303,640	07/03/90

Erratum

In the list of patents which expired on March 6, 1994, due to failure to pay maintenance fees, in the O.G. of May 17, 1994, the following patent should not have appeared:

Patent Number	Serial Number	Issue Date	Filing Date
Re. 34,407	07/843,950	03/06/90	02/21/92

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE
(35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,459,135	06/419,867	07/10/84	09/20/82	06/16/94
4,465,947	06/513,174	08/14/84	07/13/83	01/04/94
4,504,320	06/535,479	03/12/85	09/26/83	06/21/94
4,525,168	05/574,323	06/25/85	01/27/84	06/03/94
4,544,518	06/574,100	10/01/85	12/21/83	06/27/94
4,562,853	06/260,358	01/07/86	05/04/81	06/13/94
4,570,642	06/535,318	02/18/86	09/23/83	07/20/94
4,579,131	06/748,752	04/01/86	06/26/85	07/20/94
4,758,232	07/094,337	07/19/88	09/08/87	06/17/94
4,819,372	07/212,103	04/11/89	06/21/88	06/16/94
4,830,371	07/030,366	05/16/89	03/26/87	07/20/94
4,833,897	06/369,239	05/30/89	04/16/82	06/09/94
4,834,990	07/137,200	05/30/89	12/23/87	07/20/94
4,841,899	07/175,300	06/27/89	03/30/88	07/20/94
4,848,317	07/241,860	07/18/89	09/01/88	07/20/94
4,887,668	06/927,512	12/19/89	11/06/86	06/28/94
4,895,193	07/257,845	01/23/90	10/14/88	06/30/94
4,896,818	07/271,959	01/30/90	09/21/88	06/16/94
4,905,993	07/336,912	03/06/90	04/12/89	07/20/94
4,915,530	07/214,952	04/10/90	07/05/88	06/13/94
4,917,105	07/199,472	04/17/90	05/27/88	07/20/94
4,919,014	07/355,284	04/24/90	05/22/90	06/27/94
4,919,449	07/275,875	04/24/90	11/25/88	06/16/94
4,919,812	07/250,441	04/24/90	09/28/88	06/30/94
4,919,965	07/273,980	04/24/90	11/21/88	07/20/94

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,278,055, Re. S.N. 08/270,867, July 5, 1994, Cl. 435/156, BIOCATALYTIC PRODUCTION OF PHENOLIC RESINS WITH RAMPED PEROXIDE ADDITION, William L. Cyrus, Jr., et. al., Owner of Record: *The Mead Corp., Dayton, Ohio,* Attorney or Agent: J. Daniel Lykins, Ex. Gp.: 1804

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

5,035,994, Reexam. No. 90/003,401, Apr. 15, 1994, Cl. 435/002, HUMAN STEM CELLS AND MONOCLONAL ANTIBODIES, Curt I. Civin, et. al., Owner of Record: *The Johns Hopkins University, Baltimore, Md.,* Attorney or Agent: Banner, Birch, McKie & Beckett, Washington, D.C., Ex. Gp.: 1815, Requester: Owner.

5,141,928, Reexam. No. 90/003,390, Apr. 5, 1994, Cl. 514/554, OPTHALMIC MEDICATION, Lawrence Golman, Owner of Record: *Brujo, Inc., Austin, Tex.,* Attorney or Agent: Cooper & Dunham, New York, N.Y., Ex. Gp.: 1205, Requester: James Dean Johnson, Jones & Askew, Atlanta, Ga.

5,250,659, Reexam. No. 90/003,391, Apr. 8, 1994, Cl. 528/494, USE OF 1,3 DIOXACYCLOPENTATE AS A SOLVENT FOR POLYESTER RESINS, Linwood E. Bradford, et. al., Owner of Record: *National Starch and Chemical Investment Holding Corp., Wilmington, Del.,* Attorney or Agent: Jane E. Gennaro, c/o National Starch & Chemical Co., Bridgewater, N.J., Ex. Gp.: 1503, Requester: Gerald K. White, c/o Morton International, Chicago., Ill.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JULY 18, 1994
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
93,771	71/067,369	10/14/1913
93,782	71/071,390	10/14/1913
306,954	71/338,042	10/10/1933
306,961	71/338,242	10/10/1933
306,966	71/338,309	10/10/1933
306,967	71/338,310	10/10/1933
306,994	71/332,187	10/10/1933
306,997	71/332,426	10/10/1933
307,034	71/322,206	10/10/1933
307,061	71/337,897	10/10/1933
580,884	71/512,521	10/13/1953

Reg. Number	Serial Number	Reg. Date	969,951	72/435,199	10/09/1973
			969,953	72/438,010	10/09/1973
580,891	71/584,146	10/13/1953	969,956	72/440,835	10/09/1973
580,898	71/599,409	10/13/1953	969,957	72/440,836	10/09/1973
580,903	71/606,175	10/13/1953	969,958	72/441,115	10/09/1973
580,907	71/608,913	10/13/1953	969,959	72/381,793	10/09/1973
580,909	71/609,712	10/13/1953	969,967	72/425,620	10/09/1973
580,915	71/612,938	10/13/1953	969,968	72/399,775	10/09/1973
580,916	71/613,562	10/13/1953	969,969	72/417,765	10/09/1973
580,918	71/613,841	10/13/1953	969,972	72/424,252	10/09/1973
580,921	71/615,829	10/13/1953	969,974	72/424,876	10/09/1973
580,925	71/616,766	10/13/1953	969,975	72/429,217	10/09/1973
580,931	71/620,565	10/13/1953	969,976	72/428,300	10/09/1973
580,932	71/620,569	10/13/1953	969,977	72/428,301	10/09/1973
580,933	71/620,570	10/13/1953	969,978	72/428,303	10/09/1973
580,934	71/620,574	10/13/1953	969,985	72/438,877	10/09/1973
580,939	71/620,845	10/13/1953	969,987	72/439,245	10/09/1973
580,954	71/626,899	10/13/1953	969,992	72/419,416	10/09/1973
580,956	71/627,659	10/13/1953	969,994	72/427,412	10/09/1973
580,960	71/628,010	10/13/1953	969,996	72/428,150	10/09/1973
580,962	71/628,363	10/13/1953	970,001	72/434,056	10/09/1973
580,965	71/628,987	10/13/1953	970,002	72/434,418	10/09/1973
580,966	71/629,161	10/13/1953	970,003	72/434,552	10/09/1973
580,974	71/630,735	10/13/1953	970,004	72/434,816	10/09/1973
580,977	71/630,877	10/13/1953	970,005	72/434,876	10/09/1973
580,992	71/634,205	10/13/1953	970,006	72/434,877	10/09/1973
580,994	71/634,632	10/13/1953	970,007	72/434,926	10/09/1973
580,995	71/634,796	10/13/1953	970,008	72/434,938	10/09/1973
580,997	71/635,020	10/13/1953	970,009	72/435,059	10/09/1973
580,998	71/635,148	10/13/1953	970,011	72/406,916	10/09/1973
581,000	71/635,350	10/13/1953	970,012	72/413,727	10/09/1973
581,020	71/637,392	10/13/1953	970,015	72/450,709	10/09/1973
581,025	71/638,304	10/13/1953	970,018	72/394,837	10/09/1973
581,028	71/638,454	10/13/1953	970,020	72/407,581	10/09/1973
581,029	71/638,505	10/13/1953	970,021	72/410,987	10/09/1973
581,037	71/639,201	10/13/1953	970,026	72/447,920	10/09/1973
581,051	71/639,623	10/13/1953	970,034	72/379,033	10/09/1973
581,058	71/639,782	10/13/1953	970,035	72/405,909	10/09/1973
581,060	71/639,925	10/13/1953	970,040	72/414,341	10/09/1973
581,075	71/640,750	10/13/1953	970,045	72/433,744	10/09/1973
581,081	71/640,991	10/13/1953	970,049	72/458,373	10/09/1973
581,084	71/641,134	10/13/1953	970,052	72/396,839	10/09/1973
581,106	71/643,150	10/13/1953	970,060	72/406,263	10/09/1973
581,112	71/643,491	10/13/1953	970,063	72/410,248	10/09/1973
581,114	71/643,565	10/13/1953	970,064	72/410,897	10/09/1973
581,116	71/644,340	10/13/1953	970,068	72/423,533	10/09/1973
581,124	71/596,705	10/13/1953	970,069	72/423,568	10/09/1973
581,131	71/636,162	10/13/1953	970,070	72/424,162	10/09/1973
581,137	71/638,903	10/13/1953	970,071	72/424,439	10/09/1973
581,140	71/645,759	10/13/1953	970,076	72/434,607	10/09/1973
583,857	71/634,535	12/22/1953	970,077	72/434,908	10/09/1973
945,217	72/382,607	10/17/1972	970,078	72/435,013	10/09/1973
969,870	72/391,353	10/09/1973	970,079	72/398,131	10/09/1973
969,875	72/435,709	10/09/1973	970,082	72/412,515	10/09/1973
969,877	72/439,809	10/09/1973	970,088	72/430,516	10/09/1973
969,879	72/444,734	10/09/1973	970,094	72/435,491	10/09/1973
969,881	72/445,244	10/09/1973	970,096	72/436,051	10/09/1973
969,882	72/445,408	10/09/1973	970,099	72/436,629	10/09/1973
969,885	72/412,857	10/09/1973	970,100	72/437,809	10/09/1973
969,892	72/440,894	10/09/1973	970,108	72/438,963	10/09/1973
969,893	72/441,459	10/09/1973	970,109	72/439,235	10/09/1973
969,894	72/441,460	10/09/1973	970,110	72/439,294	10/09/1973
969,895	72/441,462	10/09/1973	970,111	72/439,295	10/09/1973
969,902	72/415,829	10/09/1973	970,114	72/439,842	10/09/1973
969,905	72/428,210	10/09/1973	970,115	72/439,881	10/09/1973
969,908	72/348,696	10/09/1973	970,117	72/440,238	10/09/1973
969,911	72/396,455	10/09/1973	970,119	72/440,240	10/09/1973
969,914	72/427,780	10/09/1973	970,120	72/440,246	10/09/1973
969,915	72/425,622	10/09/1973	970,121	72/440,284	10/09/1973
969,916	72/427,783	10/09/1973	970,133	72/443,146	10/09/1973
969,917	72/429,417	10/09/1973	970,136	72/443,527	10/09/1973
969,921	72/439,037	10/09/1973	970,138	72/444,745	10/09/1973
969,922	72/342,616	10/09/1973	970,139	72/397,951	10/09/1973
969,929	72/407,482	10/09/1973	970,140	72/403,866	10/09/1973
969,930	72/412,160	10/09/1973	970,142	72/403,926	10/09/1973
969,931	72/414,595	10/09/1973	970,145	72/419,686	10/09/1973
969,935	72/419,139	10/09/1973	970,152	72/433,226	10/09/1973
969,949	72/434,637	10/09/1973	970,154	72/433,757	10/09/1973
969,950	72/434,695	10/09/1973	970,155	72/438,729	10/09/1973

Reg. Number	Serial Number	Reg. Date
970,156	72/439,250	10/09/1973
970,157	72/425,744	10/09/1973
970,158	72/435,477	10/09/1973
970,159	72/362,500	10/09/1973
970,160	72/377,244	10/09/1973
970,161	72/391,589	10/09/1973
970,166	72/410,528	10/09/1973
970,168	72/415,279	10/09/1973
970,170	72/423,474	10/09/1973
970,172	72/430,741	10/09/1973
970,175	72/443,147	10/09/1973
970,178	72/437,350	10/09/1973
970,180	72/416,397	10/09/1973
970,181	72/390,892	10/09/1973
970,182	72/403,772	10/09/1973
970,186	72/426,466	10/09/1973
970,189	72/440,944	10/09/1973
970,191	72/384,978	10/09/1973
970,195	72/433,072	10/09/1973
970,196	72/434,966	10/09/1973
970,201	72/369,494	10/09/1973
970,214	72/441,354	10/09/1973
970,215	72/442,307	10/09/1973
970,218	72/395,006	10/09/1973
970,220	72/414,155	10/09/1973
970,224	72/439,914	10/09/1973
970,228	72/411,530	10/09/1973
970,231	72/416,108	10/09/1973
970,232	72/420,694	10/09/1973
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970,236	72/427,471	10/09/1973
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Notice For Registered Patent Attorneys and Agents

The United States Patent and Trademark Office (PTO) has been informed of the following:

1. A CONSENT DECREE entered in the United States District Court for the Western District of Pennsylvania in *Federal Trade Commission v. American Idea Management Corporation (AIM)*, a corporation; *Technology Licensing Consultants Incorporated (TLCI)*, a corporation; *Anita French*, individually and as an officer of the corporations; and *Lowell L. French*, individually and as an officer of the corporations, Civil Action No. 91-1500;

2. A CONSENT DECREE entered in the United States District Court for the District of Massachusetts in *Federal Trade Commission v. American Idea Management Corporation (AIM)*, a corporation; *Idea Management And Patent Assistance Corporation (IMPAC)*, a corporation; and *Suzanne Kameese*, individually and as an officer of the corporations, Civil Action No. 91-12353K; and

3. A CONSENT DECREE entered in the United States District Court for the Western District of Pennsylvania in *Federal Trade Commission v. Invention Submission Corporation (ISC)*, a corporation; *Western Invention Submission Corporation (WISC)*, a corporation; *Intromark Incorporated (Intromark)*, a corporation; *Technosystems Consolidated Corporation (TCC)*, a corporation, and *Martin S. Berger*, individually and as an officer of the corporations, Civil Action No. 93-616.

The Consent Decrees settle charges and prohibit the corporations and individuals, their successors, assignees, transferees, agents, employees, representatives and all persons acting or claiming to act on their behalf from future misrepresentations of the nature, quality and success claims of invention promotion services sold to inventors.

The Consent Decrees do not constitute an admission of a violation of the law.

A copy of the Consent Decrees is available at the Office of Enrollment and Discipline to facilitate compliance with 37 CFR § 10.23(c)(17) by registered patent attorneys and agents who have or in the future represent before the PTO in a patent case either (1) an inventor referred to the registered patent attorney or agent by AIM, IMPAC, TLCI, ISC, WISC, Intromark, TCC, Anita French, Lowell L. French, Suzanne Kameese, or Martin S. Berger, their successors, assignees, transferees, agents, employees, representatives and all persons acting or claiming to act on their behalf; or (2) a joint venture comprising an inventor and AIM, IMPAC, TLCI, ISC, WISC, Intromark, TCC, Anita French, Lowell L. French, Suzanne Kameese, or Martin S. Berger, their successors, assignees, transferees, agents, employees, representatives and all persons acting or claiming to act on their behalf.

August 17, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following list contains the names of persons who successfully passed the registration examination that was held April 13, 1994. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before October 28, 1994.

Bai, Ari M., 13251 Whitechurch, Germantown, Md. 20874
Treangen, John B., 3006 Gibson St., Midland, Mich. 48640

August 17, 1994 HARRY I. MOATZ, *Acting Director*
Office of Enrollment and Discipline

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before October 28, 1994.

Bartis, Anthony, 5400 N. 20th St., Arlington, Va. 22205
Dunn, Drew A., 169 Portsmouth St., #47, Concord, N.H. 03301
Gabilan, MarySusan H., 1515 Jeff. Davis Hwy., #709, Arlington, Va. 22202
LaViola, Frank A., Jr., 299 Marsh Rd., Erin, N.Y. 14838
Pelto, Rex E., 9750 Water Oak Dr., Fairfax, Va. 22031

August 17, 1994 HARRY I. MOATZ, *Acting Director*
Office of Enrollment and Discipline

Patents Available For License or Sale

07/977,112 DUAL CONCENTRIC POSITIVELY INFINITELY VARIABLE ROTARY MOTION TRANSMISSION
Contact: Don Smith
c/o General Delivery
Kilauea, Hi. 96754

08/172,714 COMBINATION FOOD AND BEVERAGE THERMOS
Contact: Charles E. Robinson
2642 Monticello Dr.
Houston, Tex. 77045-3710
Telephone: (713) 434-5083

08/197,272 THIRD HAND CLIP ON CIGARETTE HOLDER FOR CANS AND BOTTLES
Contact: John C. Macintosh
7301 Pomelo Dr.
West Hills, Calif. 91307
Telephone: (818) 999-0382

4,619,049 CENTERING DEVICE AND METHOD
Contact: Frederick L. Bergert
Nies, Kurz, Bergert & Tamburro
2121 Crystal Dr., Suite 706
Arlington, Va. 22202
Telephone: (703) 521-6590

5,290,327 DEVICE AND ALLOTHERMIC PROCESS FOR PRODUCING A BURNABLE GAS FROM REFUSE OR FROM REFUSE TOGETHER WITH COAL
Contact: Gottfried Roessle
Dipl.-Ing. Gottfried Roessle VWI
Geisnangstrasse 3
D-71640 Ludwigsburg Germany
Telephone: 49-7141-871303

5,134,339 EDUCATIONAL MEDICAL MANNEQUIN
Contact: Marivel Aponte
1104 McKinnon Ave.
Oviedo, Fla. 32765
Telephone: (407) 366-5351

5,320,066 PEST REPELLENT TREATED WITH WHITE CEDAR OIL
Contact: Lori Gunter
General Delivery
Shining Tree, Ont., Canada P0M 2X0

5,322,493 LEG MUSCLE CONDITIONING DEVICE
Contact: Frederick L. Bergert
Nies, Kurz, Bergert & Tamburro
2121 Crystal Dr., Suite 706
Arlington, Va. 22202
Telephone: (703) 521-6590

5,323,990 LEAF RAMP AND BAG HOLDER DEVICE
Contact: Molly D. McKay
Catalano, Zingerman & McKay
810 South Cincinnati, Suite 200
Tulsa, Ok. 74119

5,332,062 SIMPLIFIED SCAFFOLD LADDER
Contact: Paul Revere
P.O. Box 55
Huntington Station, N.Y. 11746
Telephone: (516) 351-6045

Re. 32,513 METHOD FOR DISPENSING AT A VISIBLY DETECTABLE RATE, CONTINUOUSLY OR DISCONTINUOUSLY, FOR DISCRETE PERIODS OF TIME AT A STEADY RATE, A VOLATILE COMPOSITION OF MATTER FROM A CONTAINER INTO THE ATMOSPHERE AS WELL AS THE CONTAINER USED IN THE METHOD
Contact: Arthur L. Liberman
International Flavors &
Fragrances Inc.-Law Department
521 West 57th Street, 10th Floor
New York, N.Y. 10019
Telephone: (212) 765-5500
Fax: (212) 708-7132

Erratum

In the notice of Certificate of Correction appearing at 1151 OG 93, delete Patent No. 5,107,903 the number was erroneously mentioned and should be deleted.

Erratum

In the notice of Certificate of Correction appearing at 1156 OG 92, delete Patent No. 5,159,900, the number was erroneously mentioned and should be deleted.

Certificates of Correction September 13, 1994

B1 4,893,375
D. 343,250
D. 346,385
D. 347,316
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Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
August 1-5, 1994

Date Issued	Type of Case*	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
8-2	EX	74/156,317	Deutsche Star GmbH	2(e)(1)	Refusal Affirmed		"LINEAR SET" [rolling element bearings, especially rolling element bearings for linear motion, pillow blocks; pillow block units consisting of housing and rolling element bearings, especially for linear motion, rolling element bearings designed as bearing units, especially such units for linear motion]		No
8-2	EX	74/171,952	Frasea, Inc	2(d), 2(e)(1)	Refusal Affirmed [on Section 2(e)(1) ground only]		"PANINO'S" [restaurant services featuring prepared sandwiches, soups, salads, pizzas and pastas]	"PANINO" [cheese]	No
8-2	EX (R) EX (R)	74/170,058 74/170,059	Reuven Dessler	2(e)(1)	Request for Reconsideration Denied [Refusal Affirmed]		"IT'S A DOLLAR" and "JUST ONE DOLLAR" [retail variety store services]		No
8-2	OPP	84,978	Lee Addison Corp v California Blues, Inc. et. al.	2(d)	Opposition Sustained	"SAN FRANCISCO BLUES" [children's clothing]	"CALIFORNIA BLUES" [T-shirts, tank tops, sweatshirts, shorts and beach cover-ups]		No
8-2	EX	74/256,447	Victorian Dairy Industry Authority	2(d)	Refusal Affirmed		"BIG M" (and design) [packaged flavored milk]	"BIG M" (and design) [Wisconsin cheese]	No

(*EX - EX PARTE APPEAL, OPP - OPPOSITION; C - CANCELLATION, CU - CONCURRENT USE; (R) - REQ FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
8-2	EX	74/260,351	Blanche Neige Enterprise Co., Ltd	2(d)	Refusal Affirmed (as to all three cited registrations)		snowflake design, with the Chinese characters for the term "SNOW WHITE" directly beneath the design, and the English words "SNOW WHITE" reiterated below the Chinese characters [cold water detergents for hair and body cleansing, mouthwashes, personal deodorants; hair bleaches, air fresheners, soaps for personal use, perfumes, colognes, dusting powder, shampoos, shaving creams, sun tan creams, disinfectants for domestic and personal use, sanitary napkins, fungicides for personal use, etc.]	"SNOW WHITE" (stylized lettering) [two registrations one for shampoo cream, vanishing cream face powder, bleachi.,e cream, and hair dressing, and one for make-up cream, hair dressing, bleaching cream, pressing oil, dry perfume, vanishing cream, face powder, deodorant cream], and snowflake design, with Chinese characters and the English word "SNOWFLAKE" [absorbent gauze, lap sponges, gauze sponges, absorbent cotton wool and gauze bandages]	No
8-2	EX EX	74/277,561 74/277,566	Motorola, Inc	2(e)(1)	Refusal Affirmed in both cases (but refusals will be set aside if applicant submits a disclaimer of the word "ENTERPRISES")		"INFO ENTERPRISES" [computer hardware, computer software, and transceiver equipment for use in the field of radio frequency and wireline information retrieval and communications (in class 9), and training and instruction manuals for use with the above recited goods (in class 16)]		No

(1)EX = EX PARTE APPEAL, OPP = OPPOSITION, C = CANCELLATION, CU = CONCURRENT USE, (R) = REQ FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
8-2	EX	74/271,230	Sprint Communications L.P.	Section 6 disclaimer requirement (of the words "MEETING CHANNEL")	Refusal Reversed		"SPRINT MEETING CHANNEL" [videoconferencing services]		No
8-2	OPP	84,957	Charles Chips, Inc. v. Petillo	2(d) [family of marks]	Opposition Sustained	"CHARLES" "CHARLES CHIPS," "CHARLES COOKIES" et. al [snack food and baked goods products, including potato chips, candy, and cookies]	"CHEESECAKE CHARLIES" [cakes and pies sold wholesale]		No
8-2	EX	74/229,275	Computerized Resources, Inc.	2(e)(1)	Refusal Affirmed		"OIL PATCH DIRECTORY" [advertising the goods and services of vendors and suppliers to the oil and gas industry, by means of computer diskettes provided to oil companies, contractors, pipeline companies, etc.]		No
8-3	EX	74/131,213	Mortgages-4-Less Inc.	2(e)(1)	Refusal Affirmed		"MORTGAGES-4-LESS" [mortgage lending services]		No
8-3	EX	74/193,775	Jinwoong, Inc.	2(d)	Refusal Reversed		"TRAIL MASTER" (and design) [backpacks, fanny packs, book bags, tote bags, etc.]	"TRAIL MASTER" [jackets, coats, and snowsuits]	No

(1)EX = EX PARTE APPEAL, OPP = OPPOSITION, C = CANCELLATION, CU = CONCURRENT USE, (R) = REQ FOR RECONSIDERATION

Date Issued	Type of Case*	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
8/5	EX	74/299,038	J. B. Goodhouse, Inc.	2(d)	Refusal Affirmed		"ADJUST-A-SHELF" [locker accessories, namely, plastic pre-assembled legless shelf units having generally transverse shelving structures, used within lockers, marketed as a back-to-school product"]	"ADJUSTO-SHELF" [a storage shelf adjustable in size]	No

(I)EX = EX PARTE APPEAL, OPP = OPPOSITION, C = CANCELLATION, CU = CONCURRENT USE, (R) = REQ. FOR RECONSIDERATION

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	Milwaukee Public Library	(414) 286-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	09/20/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	07/15/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	11/30/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	09/27/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/06/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—JOSEPH J. ROLLA, JR., Director	308-1782	10/07/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	02/08/93
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PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	08/22/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/04/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	01/27/93
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	11/24/92
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	08/30/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	08/09/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	09/16/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	03/26/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	08/05/93

*A communication from the examiner should have been received in most applications filed prior to this date

Expiration of Patents: The patents within the range of numbers indicated below expire during August 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents.....Numbers 4,038,697 to 4,045,823 inclusive
Plant Patents.....4,086 to 4,096

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of July 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/16/94	05/23/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/08/94	01/21/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/94	03/04/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/94	02/14/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/02/94	03/09/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/94	05/02/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/07/94	04/19/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings– Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/22/94	04/28/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/24/94	04/01/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/14/94	05/16/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/94	03/16/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/10/94	04/20/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/23/94	03/03/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	03/01/94	—0—
Renewals (All Classes)	03/24/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
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REEXAMINATIONS

SEPTEMBER 13, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,064,112 (2382nd)
PROCESS FOR THE CONTINUOUS PRODUCTION OF HIGH MOLECULAR WEIGHT POLYETHYLENE TEREPHTHALATE

Hans J. Rothe, Maintal; Helmut Heinze, Frankfurt; Brian D. Whitehead, Friedrichsdorf, and Gunther Priepke, Nidderau, all of Fed. Rep. of Germany, assignors to Davy McKee Aktiengesellschaft, Frankfort, Fed. Rep. of Germany

Reexamination Request No. 90/003,223, Oct. 15, 1993.
Reexamination Certificate for Patent No. 4,064,112, issued Dec. 20, 1977, Ser. No. 677,503, Apr. 15, 1976.
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1975, 2559290
Int. Cl.[5] C08G *63/80*
U.S. Cl. 528—272

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

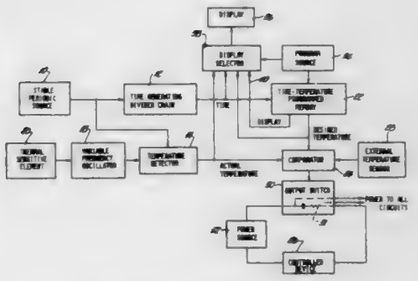
The patentability of claims **1–12** and **13** is confirmed.

1. A process for the continuous production of high molecular weight polyethylene terephthalate by polycondensation in the solid phase from a dried, granulated polyethylene terephthalate, having an intrinsic viscosity of at least 0.15, which comprises crystallizing the granulate to a density of at least 1.390 g/cm^3 under forced motion at a temperature of 220° C. to 260° C. under an inert gas atmosphere, passing the crystallized granulate at a constant or reduced temperature to a continuous fixed bed reactor, and, continuously polycondensing the crystallized granulate in said reactor while in contact with an inert gas stream at a temperature equivalent to, or lower than, the crystallization temperature.

B2 4,314,665 (2383rd)
ELECTRONIC THERMOSTAT

Michael R. Levine, Ann Arbor, Mich., assignor to Honeywell Inc., Del.

Reexamination Request No. 90/002,244, Dec. 17, 1990.
Reexamination Certificate for Patent No. 4,314,665, issued Feb. 9, 1982, Ser. No. 116,064, Jan. 28, 1980.
Int. Cl.[5] F23N *5/20*
U.S. Cl. 236—46 R



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **9**, **16**, **19**, **20** and **22–27** is confirmed.

Claims **1–5**, **7**, **8**, **10** and **12–14** were previously cancelled.

Claims **6**, **11**, **15** and **17** are cancelled.

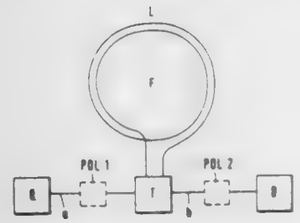
Claims **18** and **21** are determined to be patentable as amended.

[18. A thermostat as in claim **15**, in which:
(a) said first electrical signals is a temperature-sensitive periodic analog electrical signal having a frequency that varies as a function of the ambient temperature;
(b) said periodically varying electrical signal having a frequency independent of the ambient temperature on the device is a constant-frequency analog electrical signal; and
(c) said means for generating a digital electrical signal which varies as a function of ambient temperature comprises frequency-comparison means for comparing a count of the frequency of said temperature-sensitive periodic analog electrical signal with a count of the frequency of said constant-frequency analog electrical signal.**]**

B1 4,529,313 (2384th)
RING INTERFEROMETER

Klaus Petermann, and Peter Russer, both of Ulm, Fed. Rep. of Germany, assignors to Telefunken Systemtechnik GmbH, Ulm, Fed. Rep. of Germany

Reexamination Request No. 90/003,257, Nov. 15, 1993.
Reexamination Certificate for Patent No. 4,529,313, issued Jul. 16, 1985, Ser. No. 333,816, Dec. 23, 1981.
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049033
Int. Cl.[5] G01B *9/02;* **G01C** *19/64*
U.S. Cl. 356—350

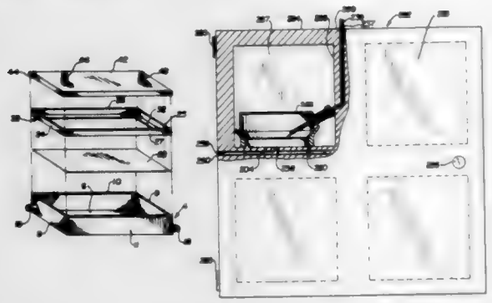


AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8** is confirmed.

1. A ring interferometer comprising a light source, an optical beam splitting device for receiving light from the light source and splitting the light into two beams of light, a light path encircling an area at least once and having ends connected to said beam splitting device with each end receiving one of the two beams of light, and a photodetector connected to the beam splitting device for detecting light coming from the light path and beam splitting device, with the light which is emitted by the light source and coupled through the optical beam splitting device to both ends of the light path passing through the light path in opposite directions, the light being then reunited in the beam splitting device and thereby brought into interference, and then being directed to the photodetector where it is detected, the light source being chosen to produce light having a coherence time τ_c which is substantially shorter than the propagation time τ_L of the light through the light path between the opposite ends of the light path, and the coherence time τ_c of the light source being substantially shorter than the propagation time difference τ_L of two natural waves of the light path.

B1 4,839,292 (2385th)
CELL CULTURE FLASK UTILIZING MEMBRANE BARRIER
Joseph G. Cremonese, 227 Maple Dr., Greensburg, Pa. 15601
Reexamination Request No. 90/003,134, Jul. 15, 1993.
Reexamination Certificate for Patent No. 4,839,292, issued Jun. 13, 1989, Ser. No. 95,759, Sep. 11, 1987.
Int. Cl.[5] **C12M** *1/04*
U.S. Cl. 435—313

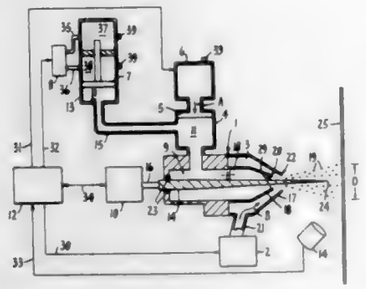


AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–28** is confirmed.

1. A cell culture flask comprising a hollow housing, a gas permeable and liquid impervious membrane disposed within said housing and dividing said housing into a first chamber and a second chamber, retaining means for removably securing said gas permeable membrane within said housing and forming a liquid-tight seal between said first chamber and said second chamber, a gas inlet into said housing and communicating with said first chamber for supplying gas thereto, and a media inlet into said housing and communicating with said second chamber for supplying cell growth media thereto.

B1 4,839,666 (2386th)
ALL SURFACE IMAGE FORMING SYSTEM
William Jayne, P.O. Box 142, San Gregorio, Calif. 94074
Reexamination Request No. 90/003,173, Aug. 25, 1993.
Reexamination Certificate for Patent No. 4,839,666, issued Jun. 13, 1989, Ser. No. 118,405, Nov. 9, 1987.
Int. Cl.[5] **B41J** *2/11*
U.S. Cl. 346—75



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2–5** and **7–11** is confirmed.

Claims **1** and **6** are cancelled.

2. The system of claim **1**, also including: a deposition medium modulator connected to the reservoir and to the control means, for releasing a controlled volume of deposition medium from the reservoir to the spray head in response to at least one control signal from the control means.

B1 4,886,061 (2387th)
ARYL-SUBSTITUTED NAPHTHYRIDINE AND PYRIDOPYRAZINE DERIVATIVES
David J. Blythin, North Caldwell, and Ho-Jane Shue, Pine Brook, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.
Reexamination Request No. 90/003,221, Oct. 15, 1993.
Reexamination Certificate for Patent No. 4,886,061, issued Sep. 12, 1989, Ser. No. 193,330, May 12, 1988.
Division of Ser. No. 946,118, Dec. 23, 1986, Pat. No. 4,760,073, which is a continuation-in-part of Ser. No. 851,068, Apr. 11, 1986, abandoned
Int. Cl.[5] **A61K** *31/38, 31/395;* **C07D** *253/06, 471/04*
U.S. Cl. 514—250

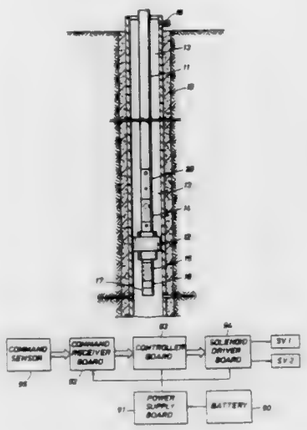
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **3** to **8** is confirmed.

Claims **1**, **2** and **9** are cancelled.

3. A method of treating an allergic reaction in a mammal comprising administering a compound of formula I as defined in claim **1** in an amount effective to treat an allergic reaction.

B1 4,915,168 (2388th)
MULTIPLE WELL TOOL CONTROL SYSTEMS IN A MULTI-VALVE WELL TESTING SYSTEM
James M. Upchurch, Sugarland, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.
Reexamination Request No. 90/003,022, Apr. 12, 1993.
Reexamination Certificate for Patent No. 4,915,168, issued Apr. 10, 1990, Ser. No. 295,614, Jan. 10, 1989.
Continuation-in-part of Ser. No. 243,565, Sep. 12, 1988, Pat. No. 4,856,595, which is a division of Ser. No. 198,968, May 26, 1988, Pat. No. 4,796,699
Int. Cl.[5] **E21B** *34/10, 49/08*
U.S. Cl. 166—250



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **28–64** are cancelled.

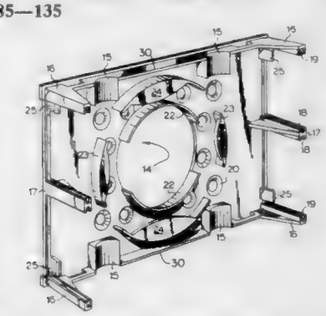
Claims **1–3**, **5–8**, **10–15** and **22** are determined to be patentable as amended.

Claims **4**, **9**, **16–21** and **23–27**, dependent on an amended claim, are determined to be patentable.

New claims **65–95** are added and determined to be patentable.

15. A system adapted to be disposed in a *fluid filled* borehole for operating one or more *mechanical* apparatus, comprising:
one or more control systems connected rspectively to said one or more *mechanical* apparatus; and
controller means, connected to said one or more control systems and responsive to an input stimulus *imparted to the borehole fluid*, for storing information and for generating an output signal in accordance with said input stimulus and at least a part of said information stored in said controller means,
said output signal from said controller means energizing said one or more control systems, said one or more control systems operating said one or more *mechanical* apparatus.

B1 4,976,510 (2389th)
COMMUNICATION OUTLET
Dan I. Davila, Hickory; John A. Midkiff, Charlotte, both of N.C., and Dulip Ekanayake, Watauga, Tex., assignors to Siecor Corporation, Hickory, N.C.
Reexamination Request No. 90/003,170, Aug. 16, 1993.
Reexamination Certificate for Patent No. 4,976,510, issued Dec. 11, 1990, Ser. No. 438,849, Nov. 20, 1989.
Int. Cl.[5] **G02B** *6/26*
U.S. Cl. 385—135



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5** is confirmed.

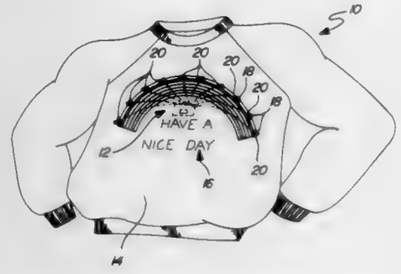
New claims **6–9** are added and determined to be patentable.

6. An outlet comprising:
(a) a backplate having first and second sides, the backplate having an opening therein for receiving a cable and a set of endwalls mounted to the first side;
(b) a first set of sidewalls mounted to the first side of the backplate, the first set of sidewalls ringed about the opening and having a minimum inner radius equal to or greater than three centimeters;
(c) a second set of sidewalls mounted to the first side of the backplate ringed about the first set of sidewalls and spaced apart from the endwalls; and,
(d) mounting means for mounting the backplate flush to an exterior surface.

B1 5,065,258(2390)

Patent Not Issued For This Number

B1 5,113,325 (2391st)
LIGHT ASSEMBLY KIT FOR ILLUMINATING AN ARTICLE OF CLOTHING
Kenneth D. Eisenbraun, Birmingham, Mich., assignor to Eisenbraun Reiss Inc., Troy, Mich.
Reexamination Request No. 90/002,804, Jul. 29, 1992.
Reexamination Certificate for Patent No. 5,113,325, issued May 12, 1992, Ser. No. 739,299, Aug. 1, 1991.
Int. Cl.[5] **F21L** *15/08*
U.S. Cl. 362—103



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–12** are cancelled.

[1. A light illuminating kit for use with an article of clothing having a plurality of apertures formed therein by a user of said kit, said apertures forming a pattern preselected by said user, said kit comprising:
a plurality of light emitting elements constructed to protrude through respective apertures in said article of clothing;
a plurality of securement elements for securing said light elements to said article of clothing;
a central electronic control unit for controlling the actuation of each of said light elements;
a plurality of flexible wire pairs, each of a predetermined length and each independently wiring only one of said light elements to said central electronic control unit such that said one light element may be moved independently of one of any other of said plurality of light elements such that said any one light element is interchangeably insertable through any one of said plurality of apertures to illuminate said user preselected pattern when said plurality of light elements is actuated.**]**

B1 5,117,107 (2392nd)
MASS SPECTROMETER
Michael Guilhaus, Randwick, and John H. Dawson, Potts Point, both of Australia, assignors to Unisearch Limited, Kensington, Australia
Reexamination Request No. 90/003,061, May 19, 1993.
Reexamination Certificate for Patent No. 5,117,107, issued May 26, 1992, Ser. No. 477,921, Dec. 23, 1988.
Claims priority, application Australia, Dec. 24, 1987, PI-6079
Int. Cl.[5] **B01D** *59/44;* **H01J** *49/00*
U.S. Cl. 250—287

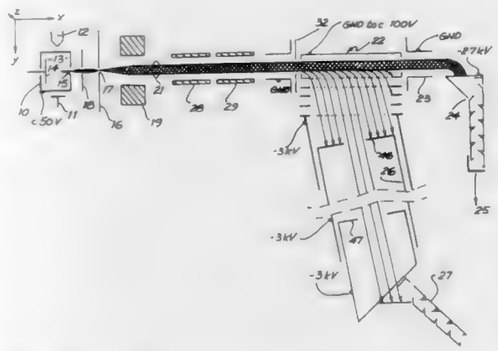
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–3** and **5** are determined to be patentable as amended.

Claim **4** dependent on an amended claim, is determined to be patentable.

New claims **6–10** are added and determined to be patentable.

1. A time-of-flight mass spectrometer comprising a source of ions, beam forming means [to produce a substantially continuous parallel beam of the ions generated by said source] *arranged to form the ions into a beam in which beam the ions have a first velocity component in the direction of the beam and substantially no velocity component orthogonal to the direction of the beam,* an ion accelerator arranged to apply an acceleration to the ions of said beam [to remove a packet of ions from the beam and accelerate the packet towards a target], the acceleration being orthogonally directed relative to the direction of [said continuous] *the* beam,*to remove a packet of ions from the beam by imparting to the packet a second velocity component orthogonal to the direction of the beam such that the packet obtains a resultant velocity directed substantially at a detector, the resultant velocity being a vector sum of the first velocity component and the second velocity component,* and means to measure the times of arrival of the ions subjected to said orthogonally directed acceleration, at [a detector] *the detector, the detector being* located at a predetermined distance from the accelerator, the accelerator comprising at least two parallel planar electrodes disposed about the path of said beam to define a first-stage acceleration chamber, at least one of the electrodes being a grid, and a voltage source connected between said electrodes such that when no voltage is applied the electrodes define a field free region and when a voltage is suddenly applied between the electrodes an electric field will be generated and ions located between said electrodes will be accelerated orthogonally to the direction of the beam[, the beam forming



means being arranged such that the absolute values of magnitude of velocities of ions in the orthogonal direction are minimized].

REISSUES

SEPTEMBER 13, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,723

KNITTING METHOD FOR FORMING INTEGRALLY FORMED JOINS FOR THREE DIMENSION FABRIC

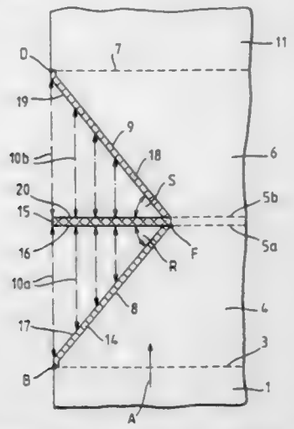
Frank Robinson, and Gerald F. Day, both of Breaston, United Kingdom, assignors to General Motors Corporation, Detroit, Mich.

Original No. 5,038,585, dated Aug. 13, 1991, Ser. No. 412,139, Sep. 25, 1989. Application for reissue Jun. 29, 1993, Ser. No. 84,490

Claims priority, application United Kingdom, Sep. 27, 1988, 8822639.4

Int. Cl.[5] **D04B** *1/22*

U.S. Cl. 66—170 **19 Claims**



1. In a method of knitting, on a knitting machine having independently operable needles disposed in at least two needle beds, an article having a mainly double jersey structure comprising two areas having respective edges joined together on the machine, during the knitting of the article, so that wales on opposite sides of a join between said edges are inclined to one another, the improvement comprising knitting a single jersey edging along at least part of a length of, and integrally with, each of said edges, each of said edgings being knitted on two needles in each course of knitting which forms said at least part of the length of each of said edges, and joining adjacent edges of said edgings, during the knitting of the article, to form the join between said areas of the article.

Re. 34,724

DEVELOPING APPARATUS FOR ELECTROSTATIC IMAGE

Nagao Hosono, Hachioji; Koichi Kinoshita, Narashino, and Toru Takahashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Original No. 4,458,627, dated Jul. 10, 1984, Ser. No. 340,299, Jan. 18, 1982. Division of Ser. No. 267,771, May 28, 1981, Pat. No. 4,386,577, which is a continuation of Ser. No. 938,494, Aug. 31, 1978, abandoned. Application for reissue Jul. 25, 1990, Ser. No. 557,115

Claims priority, application Japan, Sep. 10, 1977, 52-109240; Sep. 10, 1977, 52-109241

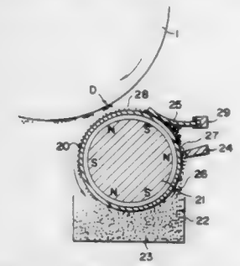
Int. Cl.[5] **G03G** *15/09*

U.S. Cl. 118—657 **20 Claims**

31. A developing apparatus for developing with a powder developer, comprising:

a movable developer supporting member provided in facing relationship with a image carrying means in a developing station for developing a latent image carried on the image carrying means, said supporting member being separated from the image carrying means by a predetermined distance;

means for supplying powder developer to said supporting member; and



an elastic developer limiting member having a free end upstream of the developing station, with respect to the direction of movement of the developer, which is maintained in predetermined pressure contact with said developer supporting member at a position between said developer supply means and the developing station to regulate a thickness of a layer of the developer particles supplied by said supplying means, wherein said limiting member includes an elastic plate having a surface including a contact portion which is in surface press-contact with said developer supporting member counter-directionally with respect to a movement direction of the developer supporting member, and an extension surface portion which extends toward the downstream direction from the contact portion and which is faced to said developer supporting member, wherein said plate and said developer supporting member cooperate to form a nip, in the contact portion, through which the developer particles are passed so that the thickness of the developer layer is regulated, and wherein the elastic plate has an end portion in the developer particles.

Re. 34,725

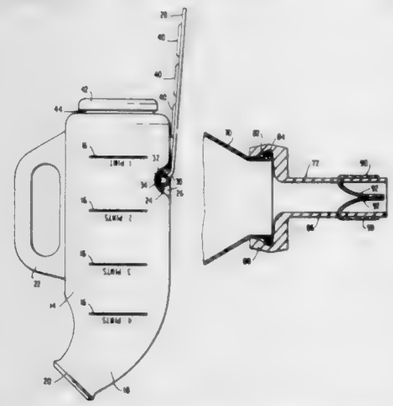
CALF FEEDER BOTTLE FOR DRY FEED *AND NIPPLE USED THEREWITH*

Joe T. Braden, Sulphur Springs, Tex., assignor to Braden Industries, Pickton, Tex.

Original No. 5,010,847, dated Apr. 30, 1991, Ser. No. 439,956, Nov. 21, 1989. Application for reissue Apr. 29, 1993, Ser. No. 53,700

Int. Cl.[5] **A01K** *5/00*

U.S. Cl. 119—18 **11 Claims**



7. A calf feeder bottle for dry feed comprising a bottle having a curved neck portion at one end thereof curved toward one side of said bottle and nipple means detachably connected to said neck

portion, said nipple means comprising a base portion adapted to be secured to said neck portion, a hollow tubular portion connected to said base portion and a pair of flat flaps disposed within said hollow tubular portion in angled opposition to each other and engaging each other along a diameter of said hollow tubular portion.

Re. 34,726

FERROELECTRIC LIQUID CRYSTAL COMPOSITIONS CONTAINING CHIRAL HALOALKOXY TAIL UNITS

Michael Wand; William N. Thurmes, and David Walba, all of Boulder, Colo., assignors to Displaytech, Inc., Boulder, Colo.

Original No. 5,130,048, dated Jul. 14, 1992, Ser. No. 556,656, Jul. 20, 1990. Continuation-in-part of Ser. No. 164,233, Mar. 4, 1988, Pat. No. 5,051,506. Application for reissue Apr. 29, 1993, Ser. No. 55,661

Int. Cl.[5] **C09K** *19/52;* **C07D** *239/02, 213/28;* **C07C** *69/76*

U.S. Cl. 252—299.01 **11 Claims**

1. A chiral nonracemic compound of the formula:

$$R_1—AR—O—CH_2—C^*HX—C^*HY—CH_2—O—R_2$$

wherein

* denotes a chiral carbon,

X and Y are halogens selected from the group of chlorine and fluorine, the **[**—O—CH_2—C*HX—C—HY—CH_2—O—**]** —O—CH_2—C*HX—C*HY—CH_2—O— segment comprises the chiral proximal segment of the chiral tails, said proximal segment being selected from the enantiomers 2R,3R-dihalo and 2S,3S-dihalo,

R_1 is an achiral alkyl, alkyl sulfide, alkyl ether, alkenyl, alkenyl sulfide, alkenyl ether, alkoxy, alkoxy sulfide, or alkoxy ether group of two to sixteen carbons,

Ar is an achiral FLC core selected from the group consisting of phenylbenzoates, phenylpyrimidines, biphenyl, phenylpyridines, biphenylbenzoates, diphenylpyrimidines, diphenylpyridines, terphenyls, phenyldiazenes, diphenyldiazenes, and diphenylthiadiazoles, and the chiral proximal segment and R_1 para-substituted with respect to each other on outer rings of said core, and R_2 is a distal segment of the chiral tail comprising one to ten carbon atoms and is selected from the group consisting of alkdehyde, alkyl acyl, alkyl, alkenyl, alkenyl acyl, alkyl halide, alkenyl halide, alkyl epoxide, and alkenyl epoxide.

Re. 34,727

LOW-SHRINKAGE POLYESTER FILM AND PREPARATION THEREOF

Shigeo Utsumi, Yamato; Kichinojo Tomitaka, Yokohama; Tomoyuki Kotani, Machida, and Masumi Koizumi, Kawasaki, all of Japan, assignors to Diafoil Company, Ltd., Tokyo, Japan

Original No. 5,093,064, dated Mar. 3, 1992, Ser. No. 536,115, Jun. 11, 1990. Application for reissue Nov. 3, 1992, Ser. No. 970,845

Claims priority, application Japan, Jun. 13, 1989, 1-150162; Jun. 22, 1989, 1-159956

Int. Cl.[5] **B29C** *55/12;* **C08G** *63/02*

U.S. Cl. 264—210.7 **5 Claims**

1. A biaxially oriented **[**polyester**]** *polyethylene terephthalate* film simultaneously satisfying the following formulas (I) to (III):

$$|S_{180}-S_{120}| \leqq 54 \quad (I)$$

$$T_s^{MD} \geqq 100 \quad (II)$$

$$Q_{120} \leqq 0.7 \quad (III)$$

Wherein S_{180} is shrinking stress (g/mm^2) of the film in the machine direction at 180° C., S_{120} is shrinking stress (g/mm^2) of the film in the machine direction at 120° C., T_s^{MD} is shrinkage initiation temperature (°C.) of the film in the machine direction, and Q_{120} is shrinkage (%) of the film in the machine direction after 5 hours' treatment at 120° C.

4. A process for producing a biaxially oriented **[**polyester**]** *polyethylene terephthalate* film simultaneously satisfying the following formulas (I) to (III):

$$|S_{180}-S_{120}| \leqq 54 \quad (I)$$

$$T_s^{MD} \geqq 100 \quad (II)$$

$$Q_{120} \leqq 0.7 \quad (III)$$

wherein S_{180} is shrinking stress (g/mm^2) of the film in the machine direction at 180° C., S_{120} is shrinking stress (g/mm^2) of the film in the machine direction at 120° C., T_s^{MD} is shrinkage initiation temperature (°C.) of the film in the machine direction, and Q_{120} is shrinkage (%) of the film in the machine direction after 5 hours' treatment at 120° C., which comprises the steps:

extruding a polyester at a temperature from 270° to 300° C. into an amorphous sheet,

stretching the sheet in the machine direction by a stretch ratio from 2.5 to 4.5 times at a temperature from 80° to 120° C.,

stretching the film in the transverse direction by a stretch ratio from 3.3 to 4.5 times at a temperature from 80° to 140° C.,

heat-setting the film at a temperature form 225° to 260° C. for from 1 sec to 10 min while permitting the film to relax in the transverse direction by a factor from 1 to 15% in a heat-setting zone,

further permitting the film to relax in the machine direction or the transverse direction or both directions by a factor from 0.01 to 10% in a cooling zone at a temperature not exceeding 180° C., and

winding up the biaxially oriented film thus heat-set.

Re. 34,728

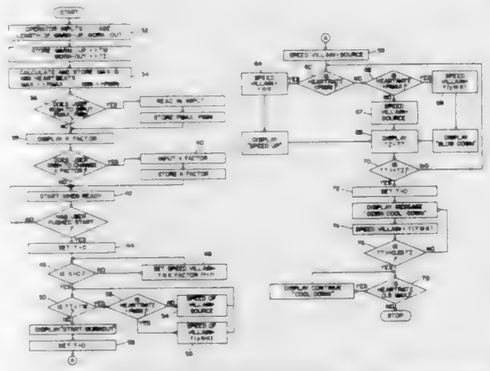
VIDEO GAME DIFFICULTY LEVEL ADJUSTER DEPENDENT UPON PLAYER'S AEROBIC ACTIVITY LEVEL DURING EXERCISE

Justin Hall-Tipping, Rowayton, Conn., assignor to Heartbeat Corp., Stamford, Conn.

Original No. 5,001,632, dated Mar. 19, 1991, Ser. No. 455,651, Dec. 22, 1989. Continuation-in-part of Ser. No. 453,448, Dec. 20, 1988, abandoned. Application for reissue Nov. 24, 1992, Ser. No. 980,685

Int. Cl.[5] **G06F** *15/44;* **A61B** *5/04;* **A63B** *69/16, 26/00*

U.S. Cl. 364—413.04 **67 Claims**



34. A combination exercise device and game apparatus, comprising:

a) an exercise device for aerobic activity;

b) means for sensing the output level of said exercise device, and for outputting an output level signal having a characteristic indicative of said output level;

c) means for sensing the heart rate of a user, and for outputting a heart rate signal having a characteristic indicative of said heart rate;

d) a video game including display means for displaying said video game; and

e) regulating means including:

i 1) means for adjusting the difficulty of the play of said video game according to said heart rate signal; and

2) means for adjusting the difficulty of the play of said video game according to said output level signal.

Re. 34,729

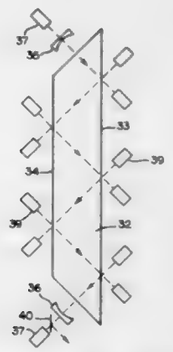
METHOD AND APPARATUS FOR EFFICIENT OPERATION OF AN OPTICALLY PUMPED LASER

Donald L. Sipes, Jr., Lisle, Ill., assignor to California Institute of Technology, Pasadena, Calif.

Original No. 4,710,940, dated Dec. 1, 1987, Ser. No. 782,711, Oct. 1, 1985. Application for reissue Nov. 12, 1991, Ser. No. 791,891

Int. Cl.[5] **H01S** *3/093*

U.S. Cl. 372—75 **29 Claims**



1. **[**An optically**]** *A Laser diode* pumped *single mode* laser comprising an optical resonator cavity, a laser medium in said resonator cavity, said laser medium having an optical axis and two ends, one end at each of two opposite sides of said medium intersected by said optical axis, an array of laser diodes positioned for pumping said laser medium in the direction of the axis of said resonator cavity, *said laser diode array being a source of light of poor spatial and spectral qualities* and means for causing **[**the pump**]** distribution *of the light* from **[**said**]** *the* array of laser diodes to be concentrated inside **[**the**]** *a* lasing mode volume of said medium *at an imput pump power of at least* 100 milliwatts. **60**

* * * * *

The questions raised in reexamination request No. 90/002,473, filed Oct. 10, 1991, have been considered and the results thereof are reflected in this reissue patent which constitutes the reexamination certificate required by 35 U.S.C. 307 as provided in 37 CFR 1,570(e).

Re. 34,730

POLYURETHANE RESINS IN WATER-DILUTABLE BASECOATS HAVING LOW FLASH AND QUICK-DRYING CHARACTERISTICS

Timothy Salatin, Farmington Hills; Thomas C. Balch, West Bloomfield; Michael C. Knight, Center Line; Michael D. Shesterkin, Farmington Hills, all of Mich.; John S. Van Antwerp, St. Sauveur, Canada; Paul E. Lamberty, Romeo, Mich., and Robert A. Aamodt, Grand Prairie, Tex., assignors to BASF Corporation, Inmont Division, Clifton, N.J.

Original No. 4,791,168, dated Dec. 13, 1988, Ser. No. 38,385, Apr. 15, 1987. Continuation of Ser. No. 379,244, Jul. 12, 1989. Application for reissue Apr. 8, 1993, Ser. No. 43,968

Int. Cl.[5] **B05D** *1/36*

U.S. Cl. 427—407.1 **89 Claims**

56. A basecoat composition for deposition onto metal or plastic comprising:

(a) about 20 to 80% weight percent based on the final solids content of said basecoat composition of an anionic polyurethane resin comprised of the reaction product of:

(i) a polyester component comprised of the reaction product of a carboxylic acid component with an alcohol having at least two hydroxyl groups wherein said carboxylic acid component is comprised of at least about 50% by weight of at least one long-chain carboxylic acid having between 18 and 60 carbon atoms and at most about 50% of at least one short-chain dicarboxylic acid;

(ii) a multifunctional compound having at least one active hydrogen and at least one carboxylic acid functionality;

(iii) a compound having at least 2 active hydrogen groups selected from the group consisting of hydroxyl, sulfhydryl, primary amine and secondary amine, one of said primary amines accounting for one active hydrogen and

(v) a polyisocyanate;

(b) about 5 to about 50% by weight of an aminoplast cross-linking resin;

(c) 5 to about 35 weight percent of a branched chain polyester resin comprised of the reaction product of:

(i) a polyester component comprised of the reaction product of:

(1) a carboxylic acid component comprised of at least 50% by weight of at least one long chain carboxylic acid containing compound having between 18 and 60 carbons and not more than 50% by weight of at least one short-chain dicarboxylic acid, and

(2) an alcohol component having an average functionality of at least 2; and

(ii) 2 to 25% by weight of a polyfunctional carboxylic acid or acid anhydride, said polyfunctional carboxylic acid or acid anhydride having at least 3 carboxylic acid groups; and

(d) about 2 to 75 weight percent of pigment-containing grind resin comprising:

(i) about 6 to about 60% by weight of said pigment-containing grind resin of a pigment;

(ii) about 20 to about 75% by weight of said pigment-containing grind resin of a polyurethane resin produced by the reaction product of:

(1) a polyester resin component produced by the reaction of a carboxylic acid component comprised of at least 50% by weight of a long-chain carboxylic acid having between 18 and 60 carbon atoms, and at most about 50% of a short-chain dicarboxylic acid, and an alcohol having at least 2 hydroxyl groups; and

(2) a mixture of a multifunctional compound having at least 1 active hydrogen and at least one carboxylic acid functionality, and at least one compound having at least two active hydrogen groups, and a polyisocyanate, said at least one carboxylic acid functionality being neutralized with amine; and

(iii) about 20% to about 60% by weight of said pigment-containing grind resin of an aminoplast cross-linking agent.

PLANT PATENTS

GRANTED SEPTEMBER 13, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,887

GARDENIA JASMINOIDES VAR. STAR BRIGHT

Allyn A. Cook, 109 SW. 101 Ct., Gainesville, Fla. 32607, assignor to Allyn A. Cook, Gainesville, Fla.

Filed Nov. 8, 1993, Ser. No. 130,139

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—67.6 **1 Claim**

1. A new and novel Gardenia plant (*Gardenia jasminoides*) as described and illustrated, named 'Star Bright'.

8,888

PETUNIA PLANT NAMED CAS 56

Gabriel Danziger, Post Beit Dagan, Israel, assignor to Florfis AG, Binningen, Switzerland

Filed Dec. 7, 1993, Ser. No. 162,695

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of petunia plant named Cas 56, as illustrated and described.

8,889

PETUNIA PLANT NAMED CAS 57

Gabriel Danziger, Post Beit Dagan, Israel, assignor to FLORFIS AG, Binningen, Switzerland

Filed Dec. 7, 1993, Ser. No. 162,464

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of petunia plant named Cas 57, as illustrated and described.

8,890

CARNATION PLANT NAMED ADELA

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Jul. 30, 1993, Ser. No. 99,660

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—70.3 **1 Claim**

1. A new and distinct carnation plant named Adela, as described and illustrated.

8,891

CARNATION PLANT NAMED MARIA CAMILA

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Chualar, Calif.

Filed May 18, 1993, Ser. No. 63,072

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—71.1 **1 Claim**

1. A new and distinct carnation plant named Maria Camila, as described and illustrated.

8,892

CHRYSANTHEMUM PLANT NAMED PEACHY LYNN

Leon Glicenstein, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 29, 1993, Ser. No. 142,940

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct Chrysanthemum plant named Peachy Lynn, as described and illustrated.

8,893

IMPATIENS PLANT NAMED MINUET

Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Dec. 9, 1993, Ser. No. 163,766

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of Impatiens plant named Minuet, as illustrated and described.

8,894

GERANIUM NAMED KLEGAL

Siegfried Klemm, Stuttgart, Fed. Rep. of Germany, assignor to Klemm & Sohn, Stuttgart-Muhlhausen, Fed. Rep. of Germany

Filed Dec. 23, 1993, Ser. No. 173,410

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct geranium cultivar substantially as herein shown and described, particularly distinguished by its compact and bushy growth and its short cluster stem carrying a large white cluster of florets above strong dark green foliage.

8,895

FICUS ELASTICA PLANT NAMED SYLVIE

Rene G. M. A. Denis, Destelbergen, Belgium, assignor to Denis-Plants B.V.B.A., Beervelde, Belgium

Filed Sep. 14, 1993, Ser. No. 120,444

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—88.9 **1 Claim**

1. A new and distinct cultivar of *Ficus elastica* named Sylvie, as illustrated and described.

8,896

BUFFALOGRASS PLANT CALLED 'HILITE' 15

Lin L. Wu, Davis, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Oct. 25, 1993, Ser. No. 143,317

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—90 **1 Claim**

1. I claim the new and distinct variety of buffalograss plant illustrated and described and having the characteristics above enumerated.

8,897

BUFFALOGRASS PLANT CALLED 'HILITE' 25

Lin L. Wu, Davis, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Oct. 25, 1993, Ser. No. 143,418

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—90 **1 Claim**

1. I claim the new and distinct variety of buffalograss plant illustrated and described and having the characteristics above enumerated.

8,898

CHRYSANTHEMUM PLANT NAMED SOFT LYNN

Leon Glicenstein, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 29, 1993, Ser. No. 143,154

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct Chrysanthemum plant named Soft Lynn, as described and illustrated.

PATENTS

GRANTED SEP. 13, 1994

ERRATA

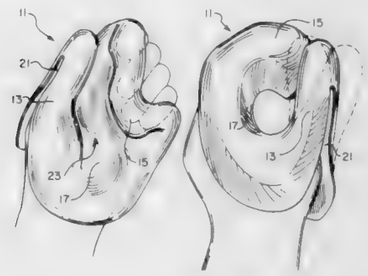
For CLASS	See PATENT NO.
166-370	5,345,655
033-308	5,345,685
451-351	5,345,724
451-390	5,345,725
451-450	5,345,726
056-255	5,345,788
477-113	5,345,841
477-120	5,345,842
477-098	5,345,843
473-032	5,346,209
383-005	5,346,301
446-091	5,346,418
452-160	5,346,435
606-185	5,346,459
602-027	5,346,465
623-006	5,346,507
117-097	5,346,581
562-035	5,347,045
562-460	5,347,047
562-501	5,347,048
800-002	5,347,075
800-205	5,347,076
505-231	5,347,085
084-605	5,347,087
505-191	5,347,183
369-033	5,347,207
333-081	5,347,239
345-143	5,347,266
347-009	5,347,300
351-044	5,347,323
358-479	5,347,396
242-341	5,347,411
376-446	5,347,560
379-058	5,347,562
375-039	5,347,569
378-098	5,323,570
378-105	5,323,571
359-465	5,323,644

PATENTS

GRANTED SEPTEMBER 13, 1994

GENERAL AND MECHANICAL

5,345,608
UTILITY GLOVE
Peggy J. Mergens, P.O. Box 76, Bromfield, Colo. 80026, and Walter J. McGrew, 17522 State Hwy. 8, Morrison, Colo. 80465
Filed Jul. 21, 1993, Ser. No. 94,270
Int. Cl.[5] A41D *13/00, 19/00*
U.S. Cl. 2—16 **11 Claims**



1. A glove for use when one eats thorny shellfish, said glove having an open back and a molded, semi-rigid, pliable construction, substantially the size and shape of a closed fist, and said glove comprising:

a first, thumb-receiving portion, a second, fingers-receiving portion spaced in opposition from said first portion, and a central, palm-covering portion adjoining said first and second portions and having a shape substantially contouring a partially closed palm;

wherein said thumb-receiving portion comprises a generally cylindrical thumb-shaped projection having an end comprising a socket for receiving a tip of the thumb of a hand, and said thumb-receiving portion includes first and second opposing protective walls extending rearwardly from said socket;

said fingers-receiving portion having an inwardly curved semi-cylindrical shape for receiving therein tips of the fingers and protecting the fingers, said fingers-receiving portion having a first, index finger side, and an opposite, pinkie finger side;

a protective side wall for covering the thumb-and-index finger side of the hand, and extending from the first protective wall of said thumb-receiving portion to the index finger side of said fingers-receiving portion; and

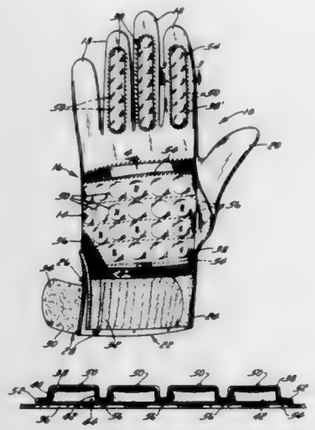
said glove having a prehensile configuration and the spacing between said first and second portions defining a gap for receiving an article, said glove being resiliently deformable to close and open said gap.

5,345,609
PROTECTIVE GLOVE HAVING CLOSED AND ISOLATED FLUID FILLED CELLS
John J. Fabry, Green Bay, Wis., and Koo Y. Kahng, Seoul, Rep. of Korea, assignors to Fabry Glove and Mitten Company, Green Bay, Wis.
Filed Sep. 29, 1992, Ser. No. 953,685
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—20 **9 Claims**

1. A glove for protecting the back of a hand from abrasion and impact, the glove comprising:

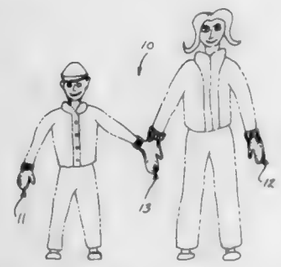
a flexible glove body having a front portion for covering a palm of a hand, a back portion for overlying a back of a hand and a wrist cuff defining a wrist opening for receiving a hand, the back portion including a first panel and a second panel, and means for joining the first panel and the second panel together to form at least one pocket on the back portion; and

an array of hollow, sealed, shock-absorbing cells disposed in the pocket, each cell comprising a thin, flexible peripheral wall and an open interior space, which interior space is substantially filled with a fluid so that each cell deforms upon impact of an object against the cell and cushions the



hand of the wearer from the impact, and each cell is closed and isolated from the other cells, such that rupture of one cell does not affect the shock absorbing characteristics of the other cells.

5,345,610
MITTEN SET
Judy A. Belanger, 20 Grove St., Springvale, Me. 04083
Filed Apr. 26, 1993, Ser. No. 51,771
Int. Cl.[5] A41D *19/00*
U.S. Cl. 2—158 **3 Claims**



1. A mitten set, comprising,

a first glove member of a first sizing defining a first volume within the first glove member.

and

a second glove member having a second sizing defining a second volume within the second glove member,

and

a third glove member having a third sizing defining a third volume within the third glove member, wherein the second volume is greater than said first volume and said third volume is greater than said second volume,

and

the first glove member includes a first glove body, the second glove member having a second glove body, and the third glove member having a third glove body, the third glove body including a third glove body finger extending

into the third glove body to a first side of the third glove body, and a third glove body entrance opening directed into the third glove body, wherein the third glove body entrance opening is positioned in adjacency to the third glove body finger, and the third glove body further including a second entrance opening directed into the third glove body in adjacency to the third glove body entrance opening, wherein the second entrance opening is positioned to a second side of said third glove body in an opposed orientation relative to said third glove body finger,

and

the third glove body includes a tether reel positioned within the third glove body between the third globe body finger and the third glove body second entrance opening, and the tether reel having a tether extending therefrom, the tether directed through the third glove body second entrance opening and terminating in a resilient wrist ring, wherein the wrist ring is positioned exteriorly of the third glove body.

5,345,611

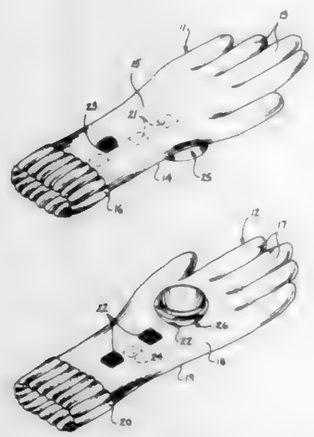
SNOWBALL GLOVES

Robert D. Smith, Jr., 5630 W. 64th St., Chicago, Ill. 60638-5520

Filed Oct. 20, 1993, Ser. No. 138,733

Int. Cl.[5] A41D *19/00*

U.S. Cl. 2—160 **3 Claims**



1. Snowball gloves, comprising,

a first glove member and a second glove member, the first glove member including a first glove palm wall, the second glove member having a second glove palm wall, with the first glove further including a first glove rear wall spaced from the first glove palm wall, and the second glove member having a second glove rear wall spaced from the second glove palm wall,

and

a row of first glove first hook and loop fastener patches extending along the first glove palm wall, the second glove palm wall having a further row of second glove first hook and loop fastener patches,

and

a first semi-spherical cup member having a first cup hook and loop fastener patch arranged for selective securement to one of the first glove first hook and loop fastener patches, and a second semi-spherical cup member having a second cup hook and loop fastener patch arranged for securement to one of the second glove first hook and loop fastener patches, and

the first semi-spherical cup member includes a first cup annular wall, the second semi-spherical cup member having a second cup annular flange arranged for abutment with the first cup annular wall, and the first semi-spherical cup member further including a first cup annular flange, and the second semi-spherical cup member including a second cup annular wall, with the second cup annular wall arranged for abutment with the first cup annular flange when the first semi-spherical cup member is arranged in inter-fitting complementary relationship with the second semi-spherical cup member.

5,345,612

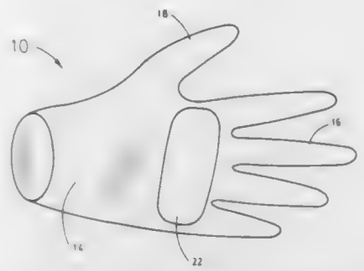
SURGICAL GLOVE

Daniel T. Stein, 2415 Buckeye St., Newport Beach, Calif. 92660

Continuation of Ser. No. 823,261, Jan. 21, 1992, abandoned. This application Mar. 22, 1993, Ser. No. 35,504

Int. Cl.[5] A41D *13/10*

U.S. Cl. 2—168 **1 Claim**



1. In a surgical glove composed of a thin flexible material of generally uniform thickness, the improvement comprising five reinforcing pads respectively formed only from a thickened portion of said flexible material along volar sides of distal ends of the glove thumb and glove fingers, said reinforcing pads positioned to cover substantially only the distal phalangeal finger and thumb pulps distal to the distal flexion creases of digits of a hand inserted into said glove; and a reinforcing band formed from a thickened portion of said flexible material extending along a dorsal portion of the glove for covering substantially only the metacarpal-phalangeal joints.

5,345,613

WOMEN'S STOCKING AND SUPPORT

Alma M. Jones, RR1 Alliston, Ontario, Canada L0M 1A0

Filed Feb. 5, 1993, Ser. No. 14,107

Int. Cl.[5] A41F *11/00, 13/00*

U.S. Cl. 2—240 **7 Claims**



1. A women's stocking and support, comprising:

a pair of full length stockings made of a stretchable material, each stocking having only a single fastening means disposed only at a single point along its upper edge for attaching to another fastener; and

a belt for support and for encircling a wearer's torso, said belt having only two fasteners, one fastener on each respective hip area, each belt fastener is detachable, attached to said single a corresponding fastening means of said stocking, allowing the stocking to be stretched full length between the foot and the inner crotch and between the inner crotch and the outside hip area of the wearer said stocking thereby being held firmly and comfortably with a single attachment point disposed at the hip area of the wearer.

5,345,614

VEHICLE HELMET

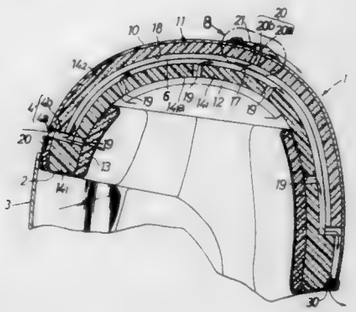
Haruo Tanaka, Ichikawa, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1993, Ser. No. 15,847

Claims priority, application Japan, May 20, 1992, 4-127388; Dec. 7, 1992, 4-327034

Int. Cl.[5] A42B *3/02*

U.S. Cl. 2—425 **9 Claims**



9. A vehicle helmet comprising:

a cap body comprised of a shell and

a shock absorbing liner fitted in the shell;

a longitudinal air duct which extends in the shock absorbing liner of the cap body, such that the interior of the cap body can be ventilated through the air duct, wherein

at least a portion of said shock absorbing liner is divided into an outer layer facing an inner surface of the shell, and an inner layer superposed on the inner surface of the outer layer, at least one of said inner and outer layers having a recessed groove provided in an opposed surface thereof to define the air duct,

said inner layer having a vent hole communicating with said air duct and opened to the interior of the cap body, and

said cap body is provided at a front portion thereof with an inlet port for introducing the air into said air duct, and is also provided at a top portion and a rear portion of the cap body with first and second outlet ports, respectively, for drawing the inside-air out of said air duct.

5,345,615

WIDE VIEWFIELD UNDERWATER MASK

Gianni Garofalo, Genova, Italy, assignor to HTM Sport S.p.A., Genova, Italy

Filed Jul. 9, 1993, Ser. No. 89,865

Int. Cl.[5] A61F *9/02*

U.S. Cl. 2—430 **5 Claims**

1. A wide viewfield underwater mask comprising:

a main body with a resilient member conforming to the diver's face at the eyes and nose area and with a symmetry mid-axis at the nose;

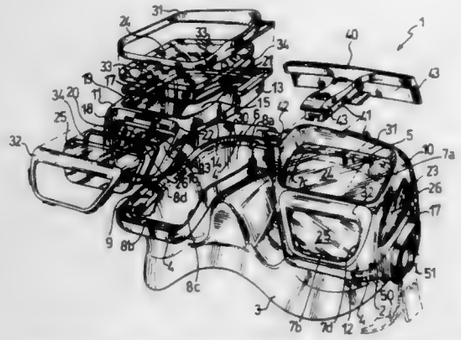
a base frame connected to said resilient member and provided with an opening at each of the diver's eyes, said openings being bound by an upper edge, a lower edge, and inner and outer side edges which define a symmetrical contour about said symmetry mid-axis and lying in a substantially perpendicular plane to the diver's sight axis;

a transparent eye-plate holding half-frame for each of said openings provided with an edge defining a contour fitting within that of the corresponding opening of the base frame;

a first connection means for securing each half-frame tightly on the base frame at its associated opening;

first and second openings on each half-frame bound by respective contour edges;

said first opening lying in a substantially perpendicular plane



to said sight axis, and said second opening lying in a plane forming an angle greater than 90° and less than 180°, with that of the first opening and extending toward the lower edge of the corresponding opening of the base frame;

first and second transparent plates respectively fitting within said first and second openings of each half-frame; and

a second connection means for securing said first and second transparent plates tightly in their respective first and second openings of each half-frame.

5,345,616

PAIR OF GOGGLES WITH PAD ELEMENTS AT THE ENDS OF THE TEMPLES OR AT THE NOSE PIECE

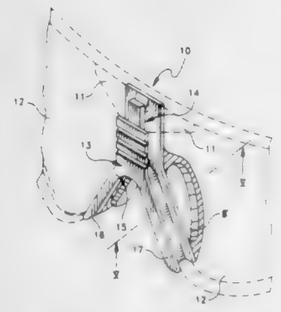
Klaus Wiedner, Fürth/Bay, Fed. Rep. of Germany, assignor to Uvex Safety, LLC, Smithfield, R.I.

Continuation of Ser. No. 910,642, Jul. 8, 1992, abandoned. This application Jul. 22, 1993, Ser. No. 96,057

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1991, 9110752; Feb. 15, 1992, 9201984

Int. Cl.[5] A61F *9/02;* **G02C** *5/12, 5/16*

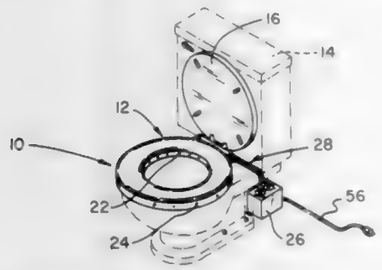
U.S. Cl. 2—446 **15 Claims**



6. A pair of goggles comprising a pair of temples and a frame including a pair of opposed, inwardly facing nose pieces, said nose pieces each comprising a pad element frame made from a substantially rigid plastic material and a pad element made of a relatively soft resilient plastic material received in the pad element frame thereof, each pad element having a bubble-like convex inner side facing inwardly toward the head of a wearer for resiliently contacting the nose bridge of the wearer each pad element having a perimeter and being solely supported

around the perimeter thereof by the respective pad element frame thereof, each pad element also having a concave outer side facing outwardly away from the nose of the wearer and defining an unobstructed hollow open area to permit outward flexing of each pad element in a direction away from the nose of the wearer.

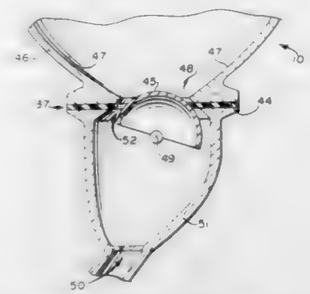
5,345,617
TOILET SEAT AIR FRESHENER
James F. Jahner; Gust A. Jahner, and Frank E. Jahner, all of 2442 Pioneer Way E, Tacoma, Wash. 98404
Filed Nov. 12, 1993, Ser. No. 151,000
Int. Cl.[5] A47K *13/30*
U.S. Cl. 4—217 **7 Claims**



1. A new toilet seat air freshener comprising:
a toilet seat having an inner periphery, defining an opening through said seat for deposition of waste matter, and an outer periphery, said inner and outer peripheries bounding an upper seating surface and an opposed lower surface, said seat having an intake port and an exhaust port extending interiorly therearound, said intake port being concentrically positioned with respect to said exhaust port, said intake port having a plurality of intake apertures positioned around said inner periphery of said seat, and said exhaust port having a plurality of exhaust apertures positioned around said outer periphery of said seat;
and,
an air treatment means in fluid communication with said ports for drawing air into said intake port through said intake apertures, to said air treatment means for treating said air to remove odors therefrom, and subsequently routing said treated air to said exhaust port for passage to the area surrounding said seat via said exhaust apertures.

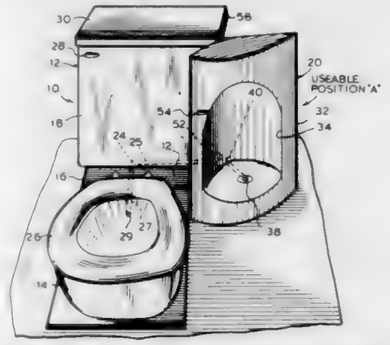
5,345,618
VACUUM TOILET SYSTEM
James Sigler; Richard W. Sprang; Edward McKiernan, and Ronald J. Bailey, all of Big Prairie, Ohio, assignors to Sealand Technology, Inc., Big Prairie, Ohio
Division of Ser. No. 293,497, Jan. 4, 1989, abandoned, which is a division of Ser. No. 101,788, Sep. 28, 1987, Pat. No. 4,819,279. This application Sep. 19, 1991, Ser. No. 762,344
Int. Cl.[5] E03D *11/10*
U.S. Cl. 4—321 **8 Claims**

1. A vacuum toilet comprising:
a bowl having a downwardly extending wall portion sloping inwardly to a drain portion defining a drain opening and bottom surface surrounding said drain opening;
valve means operative to selectively open and close said drain opening and including a movable valve element;
valve orifice means disposed on the opposite side of said valve means from said bowl, and support means funnelling down to said orifice means;
said movable valve element cooperating with a stationary valve seat and said seat and element positioned so that upon movement of said valve an initial passageway is provided for providing flow of waste material from said bowl past said valve element to said orifice means; and
means for operatively connecting said orifice means to a vacuum source;



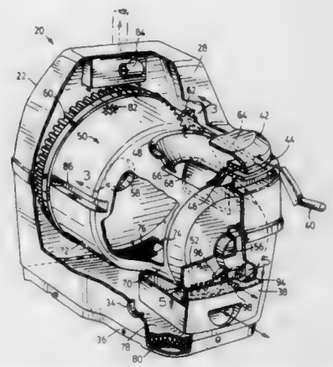
said orifice means positioned with respect said valve means and said drain opening so that said initial passageway is disposed directly above said orifice means in substantially vertical alignment therewith.

5,345,619
COMBINATION TOILET AND SWIVEL URINAL
Richard Harrington, One Glazer La., Levittown, N.Y. 11756
Filed Sep. 9, 1993, Ser. No. 118,521
Int. Cl.[5] E03D *13/00*
U.S. Cl. 4—341 **4 Claims**



1. A combination toilet and swivel urinal comprising:
a) a toilet having a bowl with a tank on the back of said toilet, a seat hinged to said bowl, a toilet flush handle on the front of said tank for operating a flush mechanism in said tank, a lid on top of said tank for covering the flush mechanism in said tank, said tank of said toilet having an upper side overhang portion;
b) a urinal hinged on a swivel to the side of said tank, said urinal being fluidly connected between said tank and said bowl of said toilet so that said urinal can swing out from the side of said tank to a useable position and can swing back out of the way to a stored position, said urinal further including a stall having a front basin aperture therein, flush pipe in the top of said front basin aperture of said stall, said flush pipe fluidly connected to said water feeder tube, a drain in the bottom of said front basin aperture of said stall, and a drain tube fluidly connecting said drain to said through said waste tube to said bowl; said stall of said urinal having an upper side offset portion; and
c) means in said tank for feeding water to said urinal, said water feeding means including a water feeder tube in said tank fluidly connecting to the top of said urinal;
d) means in said bowl for carrying urine mixed with the water from said urinal into said bowl, said urine and water carrying means including a waste tube fluidly connecting the bottom of said urinal to said bowl; and
e) an upper hollow hinge pin extending between said upper side overhang portion of said tank and said upper side offset portion of said stall, said upper hollow hinge pin being fluidly connected between said water feeder tube in said tank and said flush pipe in said stall.

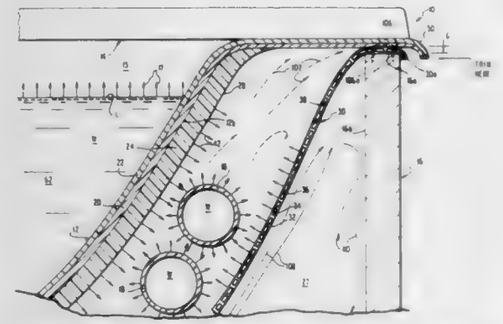
5,345,620
COMPOSTING TOILET
Henric Sundberg, 5035 N. Service Rd., Unit C9, Burlington, Ontario, Canada L7L 5V2
Filed Mar. 26, 1993, Ser. No. 37,756
Int. Cl.[5] A47K *11/02*
U.S. Cl. 4—449 **7 Claims**



1. In a composting toilet comprising a housing having a seat disposed about an opening communicating with an aeration drum for receiving human waste matter and rotatably mounted for rotation about a longitudinal axis thereof oriented horizontally inside the housing; air inlet and air outlet means in the housing for venting the toilet; and a removable receptacle adapted to receive decomposed solid waste matter from the aeration drum for periodic removal from the toilet, the improvement in which the aeration drum has a narrow front end with waste access means for receiving and discharging waste therefrom, and a wide rear end extending radially outwardly from said front end, liquid discharge means being disposed in said wide rear end in fluid communication with the housing and gas outlet means being disposed opposite said liquid discharge means, the gas outlet means and the said waste access means lying on the same side of said longitudinal axis so that any gases entering the aeration drum and formed therein will collect in said wide rear end of the drum and be vented through said gas outlet means, said configuration of the aeration drum providing increased capacity at the rear of the toilet and thereby allowing the seat disposed at the front of the toilet to be lowered for convenient access by a user.

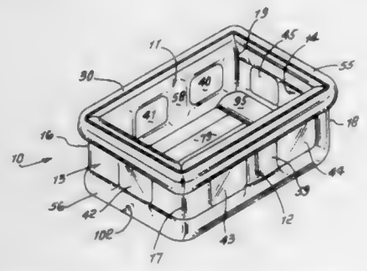
5,345,621
METHOD OF INSULATING A SPA USING A FLEXIBLE INSULATION BLANKET
David R. Livingston, Williamsport, Pa., assignor to Plastic Development Corporation - PDC, Williamsport, Pa.
Filed May 18, 1993, Ser. No. 62,225
Int. Cl.[5] E03C *1/02*
U.S. Cl. 4—541.1 **12 Claims**

1. Method of thermally insulating a spa, said spa comprising:
a generally U-shaped, upwardly open spa shell having a bottom an exterior, an interior, and an integral rim about a periphery thereof;
wood skirt panels adapted to fit up under said integral rim of the spa shell; and
plumbing connections on said exterior of said spa shell including warm water circulating tubing projecting outwardly of an exterior surface of the spa shell, said method comprising:
preparing an insulation blanket having orthogonal dimensions sized larger than orthogonal dimensions of said spa shell and having a heat reflective metal foil on one side thereof;
placing said spa shell on top of said insulation blanket with said metal foil heat reflective surface of said blanket facing the exterior of said spa shell;
installing said wood skirt panels about the exterior of said spa shell with a periphery of said insulation blanket sandwiched between an underside of said spa rim and a top edge of the wood skirt panels and retaining said insulation blanket in a loose bag like fashion around the spa shell;



forming openings locally in the insulation blanket in a vicinity of said tubings to allow said tubing to pass through said blanket openings and sealing the blanket about the tubing, with the tubing passing through said blanket openings to create a dead air space of significant magnitude between the spa shell and the blanket to prevent convection air currents created along the exterior of the spa shell and across the tubing containing warm water from escaping to the atmosphere outside of the dead air space, thereby significantly reducing heat loss by convection, with the blanket heat reflective metal foil facing the spa shell reflecting radiant heat back towards the spa shell and reducing loss of radiant heat to the outside of the spa.

5,345,622
METHOD OF FABRICATING INFLATABLE BATHING TUB AND ASSOCIATED SUPPORT APPARATUS
Clifford Plone, 1619 W. Coventry Pl., Palmdale, Calif. 93551
Filed Feb. 8, 1993, Ser. No. 14,693
Int. Cl.[5] A47K *3/06*
U.S. Cl. 4—588 **2 Claims**



1. An inflatable tub, comprising, in combination:
a) plastic sheets forming tub upright side walls and end walls, and corners between said walls,
b) the sheets at each wall including inner and outer sheets bonded together at certain bond locations and spaced from one another at other locations by inflation gas pressure, whereby each wall defines upright inner and outer

sides with substantially uniform maximum spacing between said inner and outer sides over the wall extent between contiguous corners, and panels in said walls, at which the sheets are bonded together,

c) and the tub having a bottom wall defined by bottom plastic sheet means connected to lowermost extents of said side and end walls and said corners,

d) said inner and outer sheets of each wall merging at an upper rim which extends lengthwise, and said certain bond locations are spaced below said rim so that the walls are inflated immediately below the rim and lengthwise continuously along and below said rim to form an upper tube extending over said panels, and also merging said inner and outer sheets of each wall at vertical locations to form inflated vertical legs at said corners, all of said inflated legs extending above and below the levels of said panels, to communicate with said upper tube, to provide self-supporting tub walls, effective when water is filled into the tub, said legs at said corners separated by said panels, the walls also inflated lengthwise continuously at and along the bottoms thereof to form a lower, continuous tube, which is everywhere spaced below the levels of said panels, and which communicates with all of said legs,

e) the inner and outer sheets locally bonded together at tub corners to form narrow, vertically elongated, non-inflated, stabilizing, vertical bond regions at and medially of said inflated legs, whereby inflated corner legs extend downwardly at one leg from said tube and then separate into two legs at the levels of successive panels at said sides and ends of the tub, said two legs merging below said vertical bond region to form a single inflated leg that communicates with said lower tube,

f) said sheets at each corner includes inner and outer sheets bonded together at certain bond locations and spaced from one another at other locations by inflation air pressure, and including locating said certain bond locations at the corners to be spaced below the levels of upper rims defined by said side and end walls, said rims merging at said corners,

g) the side and end walls and corners being inflated along the entire wall lengths and at said corners at upper locations immediately below said rims whereby all of said bond locations are located below the levels of said upper locations,

h) providing a mattress engaged against said bottom wall, the mattress formed to comprise upper and lower plastic sheets bonded together at certain bond locations, and vertically spaced from one another at other locations by inflating gas pressure to provide cushioning, the mattress having a periphery that is fitted between the tub bottom wall and lowermost inflated extents of the tub side and end walls,

i) the mattress defining an upwardly bulging pillow, and upwardly bulging lengthwise elongated zones extending away from the pillow, and bonds between said pillow and said elongated bulging zones, and also between said bulging zones,

j) providing support rods extending along the tub walls and supported by said tub walls,

k) and providing a reinforcement rod structure externally of said walls, and including diagonally extending rods connected to horizontally extending rods, to form a truss structure and including means for connecting said reinforcement rod structure to said walls.

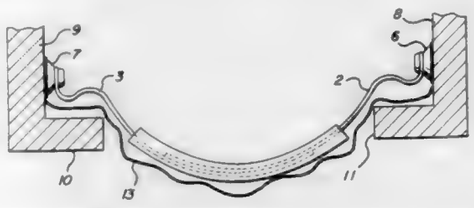
5,345,623

SHOWER CURTAIN DEFLECTOR

Timothy C. Dearman, P.O. Box 1210, Alvin, Tex. 77512

Filed Nov. 16, 1993, Ser. No. 153,368
Int. Cl.[5] A47K *3/22*
U.S. Cl. 4—608 **14 Claims**

1. A deflector for use in bowing a shower curtain outwardly of a shower stall having two opposed, spaced apart walls and an access opening therebetween, said deflector comprising a pair of side-by-side elongate flexible and resilient rods accommodated within an elongate flexible and resilient tube, one of said rods having a free end extending beyond one end of said tube and the other of said rods having a free end extending beyond the opposite end of said tube, the combined lengths of



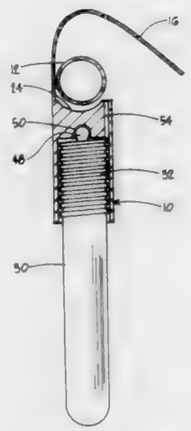
said rods being greater than the spacing between the walls of said stall thereby enabling the free ends of said rods to bear against said walls and said deflector to bow outwardly of said stall through said opening, said rods and said tube being formed of materials which, when bowed, resist sliding movement of said rods relative to one another.

5,345,624

ADJUSTABLE SHOWER CURTAIN POSITIONING ARM

Thomas G. Brown, III, 1801 Francisco, Berkeley, Calif. 94703, assignor to Thomas G. Brown, III, Berkeley, Calif.

Filed Mar. 15, 1993, Ser. No. 31,273
Int. Cl.[5] A47K *3/22*
U.S. Cl. 4—610 **4 Claims**



1. An adjustable shower curtain positioning device for use with a shower curtain rod, including;

a body member having first and second opposed ends, a curved face at said first end of said body member for receiving a curved portion of the curtain rod, a flexible strap having a proximal end extending integrally from said first end of said body member and including a distal end;

a channel formed in said body member, said channel having a first end opening disposed adjacent to said curved face, said channel being dimensioned to receive said distal end of said flexible strap in freely translating fashion;

a bore extending into said second end of said body member in a transverse relation to said curved face, said bore communicating with a second end opening of said channel, said bore including an inner end wall having a socket receptacle formed therein;

a handle member, including a shaft having integrally formed exterior threads adjacent to one end, said one end being dimensioned to be received in said bore, said one end including a distal end wall having a member adapted to engage said socket receptacle in said bore in freely rotatable fashion to secure said shaft in said bore;

said distal end of said flexible strap including a plurality of notches formed therein in serially adjacent, parallel disposition, said notches adapted to be engaged by said exterior threads of said handle;

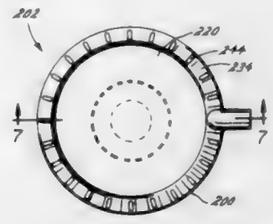
said strap having sufficient length to circumscribe the shower curtain rod and extend into said channel to engage said threaded portion with said notches and permit tightening and loosening of said strap about said rod by rotation of said handle to clamp the shower curtain rod against said curved face.

5,345,625

BATH/SHOWER WATER RECYCLING SYSTEM

Jeffrey P. Diemand, 1630 S. Michigan Ave., Chicago, Ill. 60616

Continuation of Ser. No. 877,090, May 1, 1992, abandoned. This application Jul. 1, 1993, Ser. No. 86,193
Int. Cl.[5] A47K *4/00*
U.S. Cl. 4—665 **10 Claims**



1. A waste water recovery system for recycling water used for bathing in a shower/bath device having a floor with a drain opening therein, said water to be subsequently used with a tank type toilet, said system comprising in combination:

a storage tank including suction pump means for drawing shower/bath water into the storage tank;

valve operated means for timely operation of the pump means when water in the storage tank is below a first level and shutting off of the pump means when the water is above the first level;

supply means for directing water from the storage tank to said toilet tank;

means for collecting said shower/bath water, said means being adapted to be attached to a top surface of the floor, said means including a central opening such that said means surrounds and is spaced apart from the floor drain opening, said means having a inlet for shower/bath water and an outlet for outletting said shower/bath water to a means for directing said shower/bath water via the suction pump means for pumping shower/bath water to the storage tank;

whereby said central opening will allow access of said, shower/bath water, which flows over said means for collecting, to flow into said drain opening.

5,345,626

FUTON FRAME

John H. Newton, West Hartford, Vt., assignor to Nordic Engineering, Inc., West Hartford, Vt.

Filed Apr. 28, 1993, Ser. No. 54,897
Int. Cl.[5] A47C *17/17*
U.S. Cl. 5—37.1 **25 Claims**

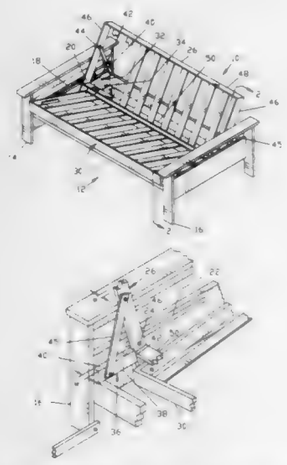
1. An improved frame for a futon having a base with a first base end having a guide slot and a second base end having a guide slot, a seat, and a back having guide posts which engage the first guide slot and the second guide slot, the back being pivotably attached to the seat, the back moving from an upright position to a horizontal position comprising:

a first backstop attached to the first base end;

a second backstop attached to the second base end;

said first backstop and said second backstop having,

upper support surfaces which are substantially parallel to the guide slots, said upper support surfaces engaging the back when in its horizontal position, and



upright support surfaces which engage the back when in its upright position; and

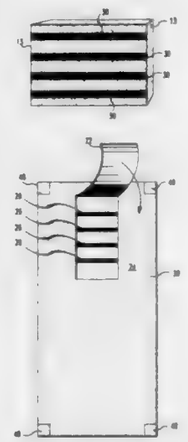
a pair of rear linkages pivotably mounted to the back and pivotably mounted with respect to the first base end and the second base end.

5,345,627

TOWEL WITH RELEASABLY ATTACHED PILLOW

Mary P. Cammarata, 1104 Main St., Belmar, N.J. 07719

Filed Nov. 15, 1993, Ser. No. 151,963
Int. Cl.[5] A47G *9/06, 9/00*
U.S. Cl. 5—419 **7 Claims**



1. A towel and pillow combination, adapted to support a human user, comprising a towel having a first releasably adhesive securing means proximate one end thereof, a user adjustable flap, substantially smaller in size than said towel, to expose and/or cover said releasably adhesive securing means, and a pillow having a second releasably adhesive securing means adapted to releasably fasten the pillow to the first releasably adhesive securing means on the towel, when said first releas-

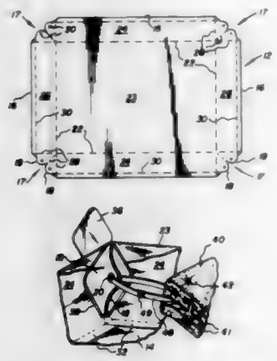
ably adhesive securing means is left exposed by said user-adjustable flap.

5,345,628

WATERBED MATTRESS WITH TETHERED WAVE MOTION-INHIBITING INSERTS

Donald W. Keefer, Pasadena, Md., assignor to Classic Corporation, Jessup, Md.

Filed Mar. 16, 1993, Ser. No. 32,008
Int. Cl.[5] A47C *27/08*
U.S. Cl. 5—450 **15 Claims**



1. A waterbed mattress comprising, in combination:
at least one sheet of film material having integral marginal panels and sheet portions between adjacent said marginal panels configured to provide at least one flap having a tether aperture, said marginal panels being folded to provide sides of a mattress shell defining a water-tight chamber, and said sheet portions being folded inwardly to project said flaps into the chamber;
an insert disposed in the chamber to inhibit wave motion within the chamber; and
tethers looped through said tether apertures of said flaps and connected with said insert to retain said insert in position within the chamber.

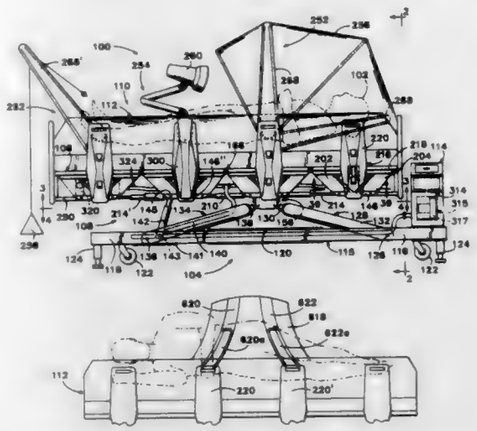
5,345,629

PATIENT SUPPORT SYSTEM

Robert Ferrand, Burlingame, Calif., assignor to American Life Support Technology, Redwood City, Calif.

Division of Ser. No. 641,697, Jan. 16, 1991, which is a division of Ser. No. 51,842, Apr. 20, 1990, Pat. No. 5,023,967, which is a continuation of Ser. No. 172,264, Mar. 23, 1988, abandoned.
This application Apr. 8, 1992, Ser. No. 865,335
Int. Cl.[5] A61G *7/06*
U.S. Cl. 5—453 **31 Claims**

4. A bed comprising:
a mattress for supporting a person lying thereon, said mattress comprising a plurality of sets of inflatable bladders, a first set comprising at least one bladder and being associated with a first body part supportable substantially by said first set when the bladders in said first set are maintained at a first pressure and supportable substantially by adjacent sets when the bladders in the set are maintained at a second pressure substantially less than the pressure in the bladders of the adjacent sets;
means for supporting said mattress above a floor;
means for applying fluid to said bladders at said first and second pressures; and
control means for controlling the application of said pressures selectively at said first and second pressures for first and second periods of time, respectively, such that said first body part is alternately supported substantially directly on said first set of bladders and supported substantially indirectly by adjacent body parts supported on other sets of bladders;
wherein said mattress has opposing lateral edges; said bed further comprising restraining cushion means extending above said mattress and between said lateral edges of said



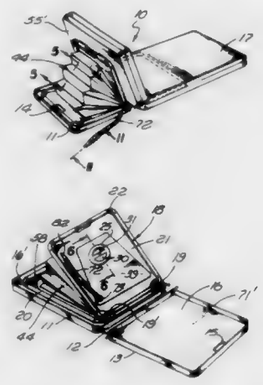
mattress for restraining a patient supported on said mattress; and means for anchoring said restraining cushion means relative to said mattress; said mattress and restraining cushion means forming an opening therebetween sized to receive a person supported on said mattress for restraining the person on said mattress.

5,345,630

QUICK INFLATABLE AIR MATTRESS

Jack Healy, 11333 Moorpark St., #128, Toluca Lake, Calif. 91602

Filed Jul. 15, 1993, Ser. No. 92,006
Int. Cl.[5] A47C *27/08*
U.S. Cl. 5—454 **11 Claims**



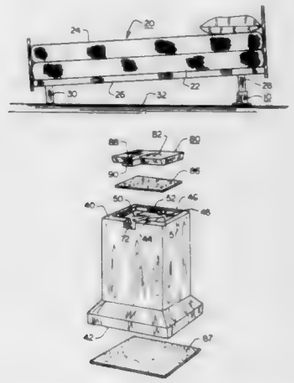
11. A quick inflatable apparatus comprising:
an inflatable device having an opening leading therein for inflating the same;
a platform having a first section secured to said device and a second section movably secured to said first section; and
a bellows apparatus mounted between said first and second sections and actuable to deliver air into said device when said first section is moved with respect to said second section, said bellows apparatus having an opening in fluid communication with the opening leading into said inflatable device; and
selectable air expelling means associated with said bellows apparatus and one of said sections for selectively expelling air out of said inflatable device, through said bellows apparatus and into the atmosphere when said first section is moved with respect to said second section.

5,345,631

BED ELEVATOR BLOCK

Paul Saperstein, and Thomas C. Laughon, Sr., both of Greensboro, N.C., assignors to Craft-Tex/Phase IV, Inc., High Point, N.C.

Filed May 5, 1993, Ser. No. 58,161
Int. Cl.[5] A47C *21/00, 31/00*
U.S. Cl. 5—509.1 **12 Claims**



1. An elevator block, for use in raising one end of a conventional bed supported by a plurality of legs resting on a horizontal bed supporting surface, comprising:
(a) a top end adapted to support a corresponding leg of the bed and having a substantially planar surface;
(b) a bottom end adapted to rest on said bed support surface and having a substantially planar surface;
(c) said top end having a front edge and a rear edge, with the rear edge defined to be proximately located nearest the uppermost portion of the raised end of said conventional bed; said planar surface of the top end being non-parallel to the planar surface of bottom end; said planar surface of the top end being an inclined plane such that the height from the bottom end to the front edge is less than the height from the bottom end to the rear edge
and wherein the top end further comprises:
(d) a cavity comprising a base;
(e) an opening in said front edge;
(f) an insert which is sized so that it may be removably mated within said cavity;
(g) said insert having a protrusion which fits within said opening of said front edge to allow the insert to be grasped and removed from the cavity.

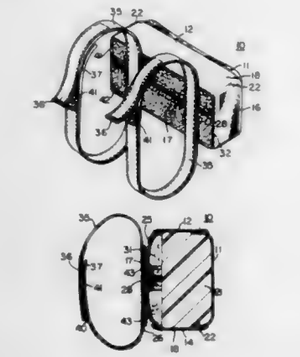
5,345,632

UNDERFRAME FOR MEDICAL EXAMINATION TABLE

Rene Langenaeken, Saint Georges sur Meuse, and Claude Martin, Trooz, both of Belgium, assignors to General Electric CGR S.A., Issy les Moulineaux, France

Filed Apr. 17, 1992, Ser. No. 869,963
Claims priority, application France, Apr. 18, 1991, 91 04815
Int. Cl.[5] A61G *7/005, 7/012, 13/04, 13/06*
U.S. Cl. 5—601 **20 Claims**

1. A medical examination table comprising:
A. a pedestal;
B. an underframe for supporting a patient bearing plate;
C. a rocker having first and second opposed end portions pivotally connected to said underframe and to said pedestal, respectively;
D. a first double acting actuator for pivoting said rocker with respect to said pedestal; and



E. a second double acting actuator for pivoting said underframe with respect to said rocker.

5,345,633

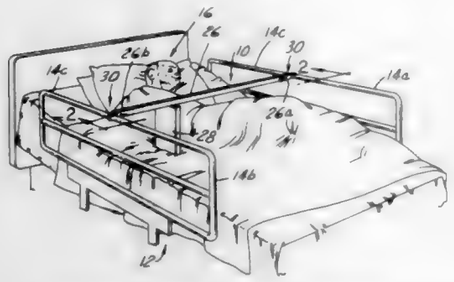
CUSHION WITH INTERNAL STORAGE POUCH

Robert Harnish, 52 S. Hilltop Dr., Churchville, Pa. 18966

Filed Apr. 13, 1993, Ser. No. 47,256
Int. Cl.[5] A47C *16/00*
U.S. Cl. 5—639 **4 Claims**

1. A cushion for supporting the neck of a person which can be detachably fastened to the seat back of an automotive or other vehicle which comprises
a body portion
said body portion having a front panel, a bottom panel, side panels, a top panel, a rear panel assembly,
said front panel is contoured to fit the neck of a user and to direct his eyes and head forward,
said body portion is filled with a resilient support material,
a pair of straps having first thistle cloth means thereon,
thistle cloth means carried by said cushion rear panel assembly for engagement with said strap first thistle cloth means,
said straps each having selectively engagable complimentary strips of thistle cloth on their ends,
said rear panel assembly has an upper panel and a lower panel,
said upper and said lower panels are detachably joined by a zipper,
whereby selectively accessible internal pouch means are provided.

5,345,634
APPARATUS FOR TREATING AND PREVENTING DEVELOPMENT OF BED SORES
Edward W. Sokol, Warren, Mich., assignor to Rosalie M. Anderson, Mt. Clemens, Mich.
Filed Jul. 9, 1993, Ser. No. 89,040
Int. Cl.[5] A47C *21/00*
U.S. Cl. 5—658 **3 Claims**



1. An apparatus for treating bed sore conditions of a patient confined to a hospital bed, wherein the hospital bed has a mattress, wherein further the hospital bed has a side rail elevated above the mattress at each side thereof for the purpose of preventing a patient from accidentally rolling out of the bed, said apparatus comprising:

an elongate member composed of a rigid material, said elongate member being straight along its entire length, said elongate member having a first end and an opposite second end, wherein each of said first and second ends directly engage, respectively, with the side rails of the hospital bed to thereby locate the elongate member above the mattress of the bed at an elevation defined by the elevation of the side rails, wherein the engagement of the elongate member with the side rails at least prevents said elongate member from moving vertically away from the mattress of the hospital bed, said elongate member having an underside facing toward the mattress of the hospital bed; and

at least one depression member having a top end and an opposite bottom end, said top end of said depression member being abuttingly engaged at a selected location of said underside of said elongate member, said depression member being structured so that said bottom end thereof depresses the mattress of the hospital bed when the top end thereof is abuttingly engaged with said underside of said elongate member.

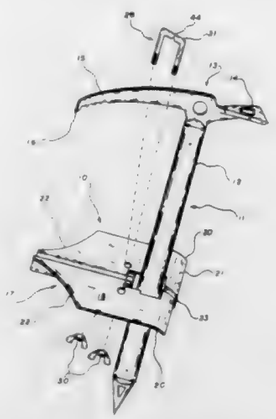
5,345,635
ICE AXE SHOVEL ATTACHMENT
Richey Morgan, 13653 Bandix Rd. SE., Olalla, Wash. 98359
Filed Sep. 7, 1993, Ser. No. 116,575
Int. Cl.[5] A01B *1/20*
U.S. Cl. 7—116 **5 Claims**

1. A shovel blade attachment for an ice axe having a handle shaft elongated upon a center axis and a head affixed thereto, said head having an adze extremity and opposed pick extremity curved toward said shaft and having a flat configuration coplanar with the shaft axis, said attachment comprising:

a) a shovel blade of monolithic construction having upper and lower surfaces, opposed side edges, a rear edge, and a front edge, a straight trough-like groove downwardly recessed from said upper surface and extending between said front and rear edges in parallel disposition to said side edges and midway therebetween, said groove being centered upon a plane of symmetry of said blade and configured to receive said pick extremity, a shaft-receiving hole centered upon said groove adjacent said rear edge,

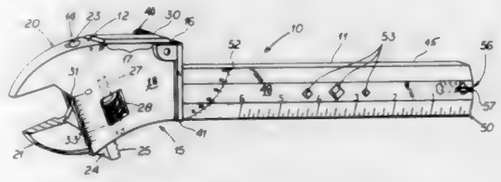
and at least, one pair of mounting apertures in equidistant opposition about said groove upon a locus orthogonal to said groove, said blade being downwardly bent between said front and rear edges, and

b) securement means adapted to be positioned above said



upper surface in straddling relationship with said groove while penetrating said blade and adapted to exert upward force upon said lower surface in a manner to force said groove into secure engagement with the head of said axe.

5,345,636
MULTI-TOOL ADJUSTABLE WRENCH
Danny E. Lamons, 706 River Canyon Rd., Chattanooga, Tenn. 37405
Filed Jan. 28, 1993, Ser. No. 10,580
Int. Cl.[5] B25F *1/00*
U.S. Cl. 7—139 **10 Claims**



1. A wrench comprising:

(a) a wrench head having a fixed first jaw, a crown and a base wherein said wrench head is provided with a first major surface with an inch measuring scale for indicating the distance between the first and second jaws, and said wrench head is provided with an opposed second major surface with a metric measuring scale for indicating the distance between the first and second jaws;

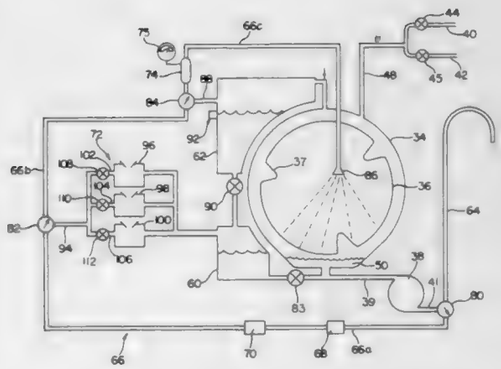
(b) a second jaw slideably mounted in the wrench head wherein said second jaw is provided with a first major surface with an auxiliary Vernier scale to allow more accurate reading of the distance between the first and second jaws, and said second jaw is provided with an opposed second major surface with an auxiliary Vernier scale to allow more accurate reading of the distance between the first and second jaws;

(c) an adjusting means for varying the distance between said first jaw and said second jaw;

(d) a hammer face positioned between the crown and the base of the wrench head; and

(e) a handle with a proximate end mounted to the base of the wrench head, and an opposite distal end.

5,345,637
HIGH PERFORMANCE WASHING SYSTEM FOR A HORIZONTAL AXIS WASHER
Jim J. Pastryk, Weesaw Township, Berrien County; Devinder Singh, St. Joseph Township, Berrien County, and Tracy M. Smart, Lincoln Township, Berrien County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Apr. 27, 1993, Ser. No. 52,600
Int. Cl.[5] D06F *21/04, 39/02, 39/08*
U.S. Cl. 8—158 **42 Claims**



1. An apparatus for laundering fabric items comprising: a wash tub for receiving a wash liquid;

a rotatable wash basket having a peripheral wall disposed within said wash tub, said fabric items being disposed in said wash basket;

means for introducing an adequate quantity of wash liquid to said wash tub for saturating said fabric items;

means for extracting said wash liquid from said fabric items;

means for mixing a predetermined amount of detergent with a portion of said extracted wash liquid for forming a wash liquor; and

means for rotating said wash basket at a speed to effect more than one gravity centrifugal force on said fabric items such that said fabric items are retained against said peripheral wall for a first period of time while continuously passing said wash liquor through said fabric items.

20. A method of laundering fabric items in a washing apparatus including a perforate rotatable wash basket disposed within a wash tub, said wash basket having a peripheral wall defining a wash zone, means for rotating said wash basket about a horizontal axis, said method comprising the steps:

introducing said fabric items into said wash basket;

introducing wash liquid into said wash tub for saturating said fabric items with said wash liquid;

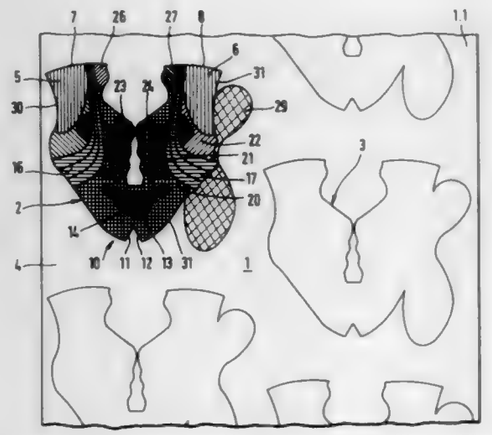
extracting said wash liquid from said fabric items;

mixing a predetermined amount of detergent with a determined portion of said extracted wash liquid for forming a wash liquor;

rotating said wash basket at a speed to effect more than one gravity centrifugal force on said fabric items such that said fabric items are retained against said peripheral wall for a first period of time; and

continuously passing said concentrated wash liquor through said fabric items.

5,345,638
PROCESS FOR PRODUCING A SHOE-SHAPED PART FROM A WEB OF MATERIAL AND RESULTING SHOE-SHAPED PART
Mamoru Nishida, Taichung, Taiwan, assignor to Tretorn AB, Helsingborg, Sweden
Continuation of Ser. No. 899,690, Jun. 17, 1992, abandoned.
This application Jun. 23, 1993, Ser. No. 80,071
Claims priority, application Japan, Jun. 17, 1991, 4119911
Int. Cl.[5] A43D *8/00*
U.S. Cl. 12—146 C **20 Claims**



1. Process for the production of a plurality of shoe shaped parts using a web of material having a plurality of patterns in the form of a layout of a shoe upper thereon, comprising the following process steps:

producing a web of material having an overall construction and having at least portions of patterns thereon which are in the form of layouts of a shoe upper and a sole part, wherein in each layout the shoe upper is directly associated with a sole part by the sole part being attached to the layout in a position of the shoe upper corresponding to an intended location of the sole part relative to the shoe upper in a finished shoe, wherein the layouts of the shoe upper and sole parts are produced by modifying the overall construction of the web of material in the locations of the layouts relative to that in portions thereof where the layouts of the shoe upper and the sole parts are not provided, using one of a different weaving and knitting type for the layouts of the shoe upper than is used for producing the sole parts, said weaving and knitting types being matched to differing requirements for materials of the shoe upper and sole part of a shoe in relation to properties thereof including at least one of the properties of absorptivity, air permeability, softness, extensibility, wear resistance and appearance;

cutting out the layouts from the web of material in a manner leaving the layouts of the shoe upper at least partially connected to the sole parts directly associated therewith as a cut-out unit; and

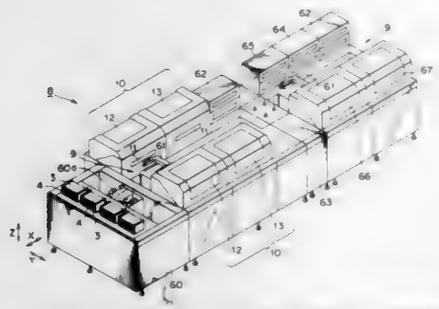
first stitching parts of the layout of the cut-out unit on provided seams to form an upper of the shoe shaped part, and then fastening the associated sole part of the cut-out unit to an outside edge area of the associated layout by one of stitching and basting.

5,345,639

DEVICE AND METHOD FOR SCRUBBING AND CLEANING SUBSTRATE

Kouichi Tanoue; Shinzi Kitamura; Noriyuki Anai; Takami Satoh; Takayuki Tomoeda; Tatsuya Iwasaki, and Kengo Mizosaki, all of Kumamoto, Japan, assignors to Tokyo Electron Limited, Tokyo and Tokyo Electron Kyushu Limited, Tosu, both of Japan

Filed May 28, 1993, Ser. No. 69,106
Claims priority, application Japan, May 28, 1992, 4-137160; Oct. 26, 1992, 4-287292
Int. Cl.[5] A46B *13/04*
U.S. Cl. 15—88.2 9 Claims



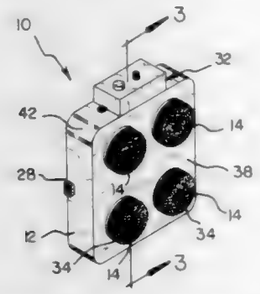
1. A substrate scrubbing and cleaning device, comprising:
means having upper and lower brush members for scrubbing both surfaces of a substrate, respectively;
means for rotating the upper and lower brush members, respectively;
means for supplying cleaning solution to the upper and lower brush members, respectively;
means having a pair of belt-driven holding arms, for carrying the substrate between the upper and lower brush members and for reciprocating the substrate relative to the upper and lower brush members in a substrate carrying direction. the substrate being held by said holding arms; and
means for controlling the operation of the substrate carrying means.

5,345,640

MOTORIZED BACK SCRUBBER

Mary A. Goss, 2756 Westberry Dr., Santa Rosa, Calif. 95403

Filed Jul. 28, 1993, Ser. No. 98,041
Int. Cl.[5] A46B *13/04*; A47K *7/04*
U.S. Cl. 15—88.2 6 Claims



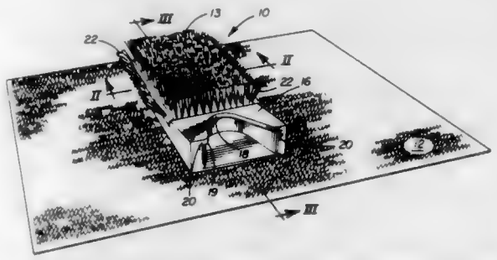
1. A motorized back scrubber comprising:
a case having a front plate spaced from a rear plate and a sidewall connected to a perimeter of both the front plate and the rear plate;
a mounting means for securing said case to a vertical surface;
a motor contained within said case, said motor being mechanically coupled to a motor gear;
at least one brush axle rotatably supported by said case and extending through at least one aperture in said front plate, said at least one bush axle being mechanically coupled to a brush gear in mesh with said motor gear;
a brush coupled to an end of said at least one brush axle and rotatable threrewith;
a soap dispenser means for selectively dispensing soap through said brush;
and,
a brush support assembly means for movably supporting said brush on said end of said at least one brush axle.

5,345,641

PORTABLE FOOTWEAR CLEANER

Noel E. Webster, 4811 Alhambra Ave., Martinez, Calif. 94553

Filed Nov. 30, 1992, Ser. No. 974,254
Int. Cl.[5] A47L *23/26*
U.S. Cl. 15—105 9 Claims



1. A portable footwear cleaning and removing device which comprises:
a base member large enough for an adult human being to stand on with both feet;
an elongated brush member affixed to said base member, said brush member having bristles affixed thereto;
footwear remover means at one end of the brush member; and
wherein the body of said elongated brush member defines a longitudinal axis and is flat on top with bevelled top edge faces along the longitudinal axis of said brush member with said bristles being mounted on said top and said bevelled top edge faces.

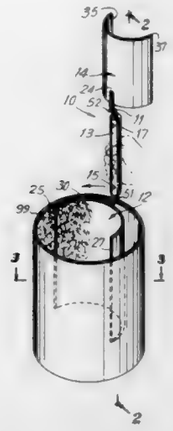
5,345,642

DUAL SIZED C-SHAPED SCRAPER FOR CYLINDRICAL CONTAINERS

John Faldetta, 415 E. 54th St., Apt. 2E, New York, N.Y. 10022

Filed Dec. 6, 1993, Ser. No. 163,045
Int. Cl.[5] A47L *13/08*
U.S. Cl. 15—105 18 Claims

1. A new and improved hand tool for removing the contents of and for scraping clean a cylindrical container for adhesive materials, said tool comprising:
an elongated handle;
a large blade member having a substantially semicylindrical curvature connected to one end of an angulated rod and extending generally longitudinally therefrom and from the elongated handle;
a small blade member having a substantially semicylindrical curvature connected to a second end of said angulated rod and extending generally longitudinally therefrom and from the elongated handle; and



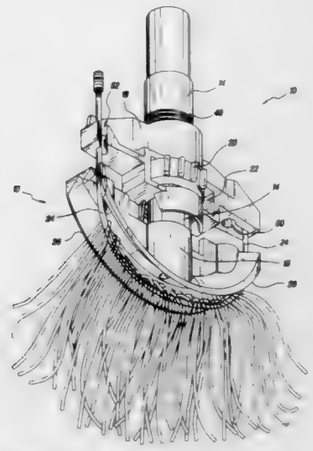
an angulated rod whose opposite ends are attached to a back surface of each said blade member and which is attached to said elongated handle.

5,345,643

WET MOP HOLDER

Erwin Tomm, 3320 W. 130th St., Cleveland, Ohio 44111

Continuation of Ser. No. 823,759, Jan. 22, 1992, abandoned. This application Feb. 18, 1993, Ser. No. 20,277
Int. Cl.[5] A47L *13/255*
U.S. Cl. 15—147.1 14 Claims



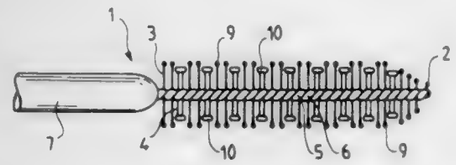
1. A mop holder comprising:
a) a shaft and a mop holding head, said shaft connected at an end to said mop holding head, said head including a rearward end surface and a rounded forward end with a mop securing groove disposed therein, said rounded forward end corresponding substantially to an arcuate portion of a circle that is convex with respect to said rearward end surface and having a width in the plane of said circle, and which forward end terminates proximal to said rearward end surface at two points at opposite ends of said arcuate portion such that the length of any straight perimetral side surface between said rearward end surface and the respective end points of said rounded forward end is substantially less than the width of said forward end so as to minimize the occurrence of straight perimetral side surfaces on said head;
b) a tightening member movably disposed on said shaft in a spaced relation to said head, said tightening member further comprising means for adjusting its position along said shaft;
c) a flexible strap connectable to said tightening member and adapted to traverse said forward end of said mop holding head, said strap having opposed ends and a middle portion therebetween, said ends being connectable with said tightening member such that said middle portion is receivable in said mop-securing groove, wherein said tightening member, when moved away from said head by said adjusting means, operates to tension said strap to grip a mop between said mop securing groove and said strap, said mop being tensioned against said forward end substantially along the entire arcuate portion of said forward end so as to substantially obscure said forward end.

5,345,644

BRUSH INTENDED FOR THE APPLICATION OF A COSMETIC PRODUCT, IN PARTICULAR TO THE EYELASHES OR THE HAIR

Jean-Louis Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Mar. 25, 1993, Ser. No. 36,856
Claims priority, application France, Apr. 27, 1992, 92 05146
Int. Cl.[5] A46B *3/18*
U.S. Cl. 15—160 8 Claims



1. Brush intended for the application of a cosmetic product, comprising a plurality of bristles transversely implanted in an elongated core formed by turns of a twisted metal wire, said bristles being wedged between said turns, said bristles comprising bristles selected from at least two groups, namely a first group including bristles of relatively small cross-section, lieing in a circle having a diameter of between 6 and 13 hundredths of a millimeter, and a second group of bristles of larger cross-section lieing in a circle having a diameter larger than 13 hundredths of a millimeter and generally smaller than 30 hundredths of a millimeter, said bristles of each group extending in a radial direction relative to said core, the bristles of small cross-section having a greater length in the radial direction than the bristles of large cross-section, over at least part of the brush, characterised in that the bristles of small cross-section are made of a thermoplastic having a higher melting point than the melting point of a thermoplastic elastomer from which the bristles of large cross-section are made, the melting point of a thermoplastic of the bristles of small section being of the order of 230° to 280° C., while the melting point of the thermoplastic elastomer of the bristles of larger cross-section is of the order of 150° to 230° C.

5,345,645

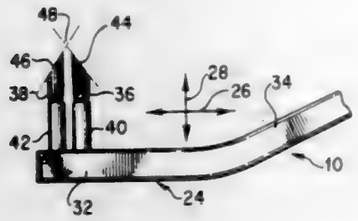
SUBGINGIVAL TOOTHBRUSH

Lawrence R. Page, 10361 Sixpence Cir., Columbia, Md. 21044

Filed Mar. 23, 1992, Ser. No. 855,584
Int. Cl.[5] A46B *9/04*
U.S. Cl. 15—167.1 11 Claims

1. A subgingival toothbrush comprising:
(a) a handle member extending in a longitudinal direction, said handle member having a gripping section and a base section forming a substantially planar upper surface;

(b) only first and second longitudinally aligned bristle tufts fixedly secured to said base section of said handle member, each of said first and second tufts extending in a substantially normal direction with respect to said substantially planar upper surface and having a predetermined length approximately 16.0 mm above said base section upper surface, each first and second tuft having a substantially linearly inclined upper surface envelope forming an envelope apex therebetween for subgingival penetration by said first and second tufts; and,



(c) a first and second bristle encapsulation means for respectively supporting said first and second tufts, said first and second bristle encapsulation means being normally directed to said base section upper surface and fixedly secured to said base section for continuously surrounding said first and second tufts throughout a predetermined length above said base section.

5,345,646

HANDBRUSH FOR CLEANING PROTHESES, PARTICULARLY TOOTH PROSTHESES

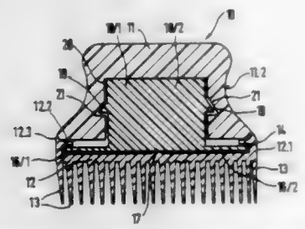
Emil Rothweiler, Hechingen, Fed. Rep. of Germany, assignor to Gebr. Rothweiler GmbH & Co. KG, Hechingen, Fed. Rep. of Germany

Filed May 26, 1993, Ser. No. 67,224

Claims priority, application Fed. Rep. of Germany, May 26, 1992, 9207075[U]

Int. Cl.[5] A46B *9/04*

U.S. Cl. 15—167.1 **9 Claims**



1. A handbrush for cleaning a prosthesis, comprising a bristle support provided with a plurality of bristles projecting from a first surface thereof; a hand gripping part connected to said bristle support; said bristle support, said bristles and said hand gripping part being recyclable as a whole and composed of sterilizable and food-stuff suitable synthetic plastic materials; said bristles being integrally formed with said bristle support; an arresting coupling part which releasably connects said bristle support with said hand gripping part, said arresting coupling part having a plate-shaped end which is subdivided into two plate halves turnable relative to one another about a notch formed in said arresting coupling part and provided with projecting coupling web halves which are located on opposite sides of said notch and abut one another when said plate halves are in alignment with one another, said coupling web halves cooperate to form a coupling web, said hand gripping part having an opening in which said coupling web is engageable and said two plate halves further having portions thereof which are adapted to engage a groove formed in a second surface of said bristle support which is opposite said first surface.

5,345,647

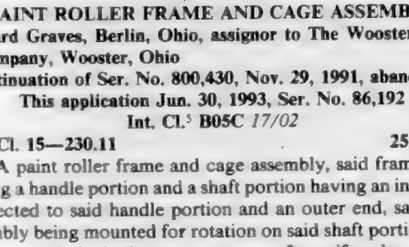
TOOTHBRUSH

Hung-Hsi Liu, 808 Muddy Branch Rd., Gaithersburg, Md. 20878

Filed Jul. 12, 1993, Ser. No. 89,184

Int. Cl.[5] A46B *9/04, 5/00*

U.S. Cl. 15—207.2 **11 Claims**



1. A toothbrush for cleaning teeth and gums, comprising:

an elongated handle portion having a first free end and a second end with a predetermined length extending longitudinally in a first direction between said first and second ends of said handle portion, a predetermined width extending in a second direction substantially perpendicular to said first direction, and a predetermined thickness extending in a third direction substantially perpendicular to said first and second directions;

a substantially flat connecting portion having a first end and a second end with said first end of said connecting portion being integrally coupled to said second end of said handle portion, and having a predetermined longitudinal length extending at least approximately one inch in said first direction, a predetermined thickness extending at least approximately no greater than one-sixteenth of an inch in said second direction and a predetermined width extending at least approximately one-half inch in said third direction, said thickness of said connecting portion being less than said width of said handle portion, and said width of said connecting portion greater than said thickness of said handle portion; and

a head portion having a first end and a second free end with said first end of said head portion being integrally coupled to second end of said connecting portion, said head portion having bristles extending outwardly generally in said third direction from said head portion so that said predetermined width of said connecting portion extends substantially in the same direction as said bristles of said head portion.

5,345,648

PAINT ROLLER FRAME AND CAGE ASSEMBLY

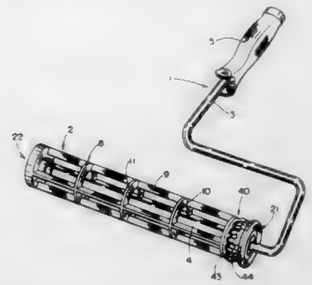
Howard Graves, Berlin, Ohio, assignor to The Wooster Brush Company, Wooster, Ohio

Continuation of Ser. No. 800,430, Nov. 29, 1991, abandoned. This application Jun. 30, 1993, Ser. No. 86,192

Int. Cl.[5] B05C *17/02*

U.S. Cl. 15—230.11 **25 Claims**

1. A paint roller frame and cage assembly, said frame comprising a handle portion and a shaft portion having an inner end connected to said handle portion and an outer end, said cage assembly being mounted for rotation on said shaft portion, said cage assembly including support means for uniformly supporting a roller cover thereon, said cage assembly having an inboard end adjacent said inner end of said shaft portion and an outboard end adjacent said outer end of said shaft portion, retaining spring means adjacent said inboard end of said cage assembly for frictionally retaining a roller cover on said support means, said retaining spring means including spring finger means engageable with an inner diameter of the roller cover for frictionally retaining the roller cover on said cage assembly, an annular flange at said inboard end of said cage assembly, said flange having an outer diameter less than the outer diameter of said support means, said retaining spring means



being supported on said flange, and inboard end cap means attached to said cage assembly, said inboard end cap means including first annular sleeve means telescopingly received over said flange for trapping said retaining spring means on said flange.

5,345,649

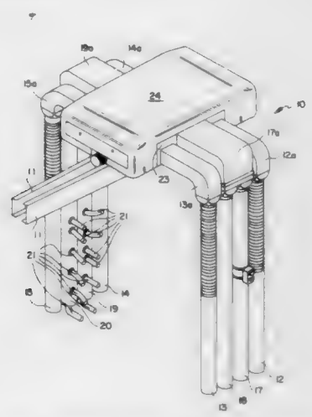
FAN BRAKE FOR TEXTILE CLEANING MACHINE

William T. Whitlow, 4233 Waterbury Dr., Charlotte, N.C. 28209

Filed Apr. 21, 1993, Ser. No. 51,080

Int. Cl.[5] B08B *5/04*

U.S. Cl. 15—312.1 **5 Claims**



1. In a traveling, rail-mounted overhead cleaner for cleaning textile processing machines and adjacent floor areas, including a cleaner chassis, drive means for moving the cleaner along the rail, fan means for generating an air flow, conduit means cooperating with said fan means for applying the air flow to areas to be cleaned, a waste canister cooperating with said conduit means for receiving and retaining accumulated waste therein, an unloading station for unloading waste accumulated by the cleaner, and electrical circuit means for controlling the movement of the traveling cleaner around its cleaning circuit and to and from the unloading station, the improvement which comprises brake means for applying an external braking force to said fan means for bringing the fan means to a stop at a rapid rate whereby unloading of the accumulated waste from the cleaner to the unloading station can begin.

5,345,650

VACUUM CLEANERS

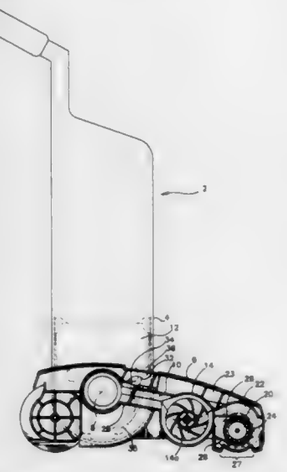
David W. Downham, Flitwick, and Andrew G. Hoyte, Hatfield, both of United Kingdom, assignors to Electrolux Limited, United Kingdom

Filed Mar. 30, 1993, Ser. No. 39,835

Claims priority, application United Kingdom, Apr. 2, 1992, 9207291

Int. Cl.[5] A47L *5/28*

U.S. Cl. 15—331 **12 Claims**



1. A vacuum cleaner comprising a main body, a first portion angularly displaced with respect to the main body and including a suction opening adjacent a beating means, an electric fan, a housing for the electric fan, a turbine, an air duct having a first aperture connecting the duct to the housing of the electric fan and a second aperture connecting the duct to the turbine, whereby exhaust air from the fan is directed throughout the duct to the turbine, a driving connection between the turbine and the beating means, a valve disposed in the duct and means for operating the valve to redirect air away from the turbine when said angle of displacement between the main body and the first portion falls within a predetermined range.

5,345,651

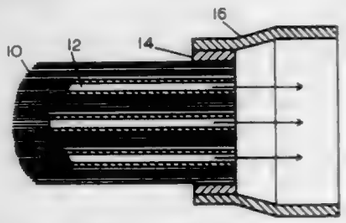
NOZZLE BRUSH ATTACHMENT FOR VACUUM CLEANERS

Jeffrey J. Roberts, 205 SW. Linden St., Ankeny, Iowa 50021

Filed May 13, 1993, Ser. No. 60,801

Int. Cl.[5] A47L *9/06*

U.S. Cl. 15—397 **5 Claims**



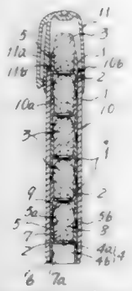
1. A nozzle assembly for attachment to a vacuum source, said vacuum source which creates a suction flow of air through vacuum openings, said nozzle assembly providing for the scouring and removal of dirt from tight, hard-to-reach places, said nozzle assembly comprising:

(a) a spaced array of open-ended tubes, said tubes parallel to one another axially, said tubes in flow communication with said vacuum source so as to provide suction;

(b) a brush element formed by a plurality of bristle members, said bristle members filling the space between said tubes;

(c) means for holding said bristles and tubes in a fixed relationship; and
(d) means for flow connecting said nozzle assembly to said vacuum source.

5,345,652
REFILL ERASER
Cheng-Hwa Chuang, Taipei, Taiwan, assignor to Pioneer Industrial Co., Taipei, Taiwan
Filed Jan. 14, 1994, Ser. No. 182,759
Int. Cl.[5] B43L 19/00
U.S. Cl. 15—425 1 Claim



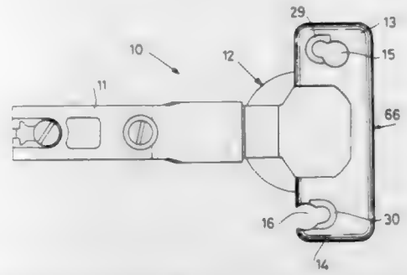
1. A refill eraser comprising at least one refill member, said refill member including a holding barrel provided with a partition portion formed within a longitudinally central portion thereof and a plurality of rotation-preventive ridges spacedly formed on an inner peripheral surface thereof in a circumferential direction and extending longitudinally, and an eraser body having a cylindrical rear end portion and a tapered generally frustro-conical front end portion integrally formed with said rear end portion through a cylindrical intermediate portion, said eraser body being press-fitted into and held within a front portion of said holding barrel with said rear end portion and said intermediate portion engaged with said ridges and with a rear end of said eraser body abutted against said partition portion, a plurality of said refill members being refillably fitted into and held within an elongated tubular shaft as such that said holding barrels are respectively in abutment relation to front and rear ends of corresponding refill members, a front end of said eraser body of that refill member which is located on a foremost end being protruded from a front end of said elongated tubular shaft.

5,345,653

Patent Not Issued For This Number

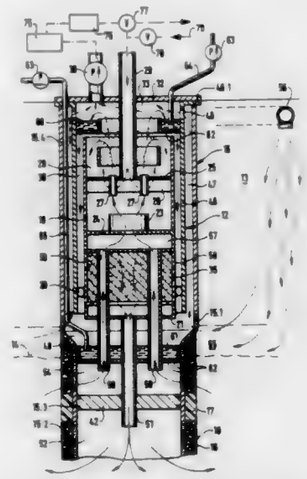
5,345,654
QUICK-COUPLING WING TYPE HINGE AND BASE
Franco Ferrari, Localitá Deviscio, 22053 Lecco, Italy, and Carlo Migli, Lecco, Italy, assignors to Franco Ferrari, Lecco, Italy
Filed Dec. 21, 1992, Ser. No. 993,423
Int. Cl.[5] E05D 11/00, 7/12, 5/00
U.S. Cl. 16—251 16 Claims

1. In a hinge for furniture doors having a cup (12) which is disposed to be flush-mounted in a recess (18) formed in the surface of a door (17), close to one edge thereof, the cup (12) being secured, by means of articulated arms (62), to a wing (11) connecting it to a base (34) secured to a piece of furniture, the cup (12) having thereon lateral protrusions (13, 14) which overlie said surface of the door and which are provided with slots (15, 16) each having an enlarged first portion for permitting insertion of the head (21, 22) of a pin element (19, 20) and a second, narrower portion for receiving a reduced diameter shank portion of a pin element (19, 20) the head (21, 22) of each of said elements (19, 20) being larger in diameter than the width of said second portion of a respective slot, the head (21, 22) of each of said elements being secured to and spaced from the surface of the door (17) on either side of said recess (18) in the door, the cup (12) being coaxially rotatable in the recess (18) from a released position in which it fits into the recess (18) with the heads (21, 22) of the elements registering with the enlarged portions of the slots (15, 16), to an operative or locked position with the wing (11) disposed generally perpendicular to the edge of the door (17), and with the narrower portions of



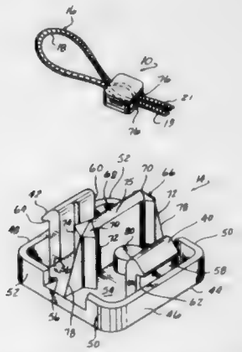
the slots (15, 16) receiving therein the reduced diameter shank portion of the respective pin element (19, 20), and wherein the improvement comprises a cover (65) secured over said cup and said lateral protrusions and having engaging means for engaging the cover to the cup (12), the cover (65) having thereon interfering means positioned to interfere with at least one pin element of said elements (19, 20) for preventing rotation of the cup (12) from its operative position to its released position.

5,345,655
METHOD OF AND ARRANGEMENT FOR OBTAINING LIQUIDS AND/OR GASES FROM GROUND OR ROCK LAYERS
Bruno Bernhardt, Reutlingen, Fed. Rep. of Germany, assignor to IEG Industrie-Engineering GmbH, Reutlingen, Fed. Rep. of Germany
Filed Feb. 5, 1993, Ser. No. 305,034
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1992, 4204990
Int. Cl.[5] E21B 43/00
U.S. Cl. 166—370 28 Claims



1. A method of obtaining liquids and/or gases contained in ground or rock formations, contaminants or useful substances, especially oils, comprising the steps of arranging at least one shaft provided with a casing having vertically spaced permeable and impermeable wall regions in a corresponding region;
forming a negative pressure in the shaft provided with the casing having the vertically spaced permeable and impermeable wall regions, and thereby producing a circulation of an available or introduced liquid from ground or rock formations through a first permeable wall region into the shaft, further in an axial direction of the shaft and then through a second permeable wall region back into the ground or rock formations;
aspirating gases entrained in the circulation of liquid by a negative pressure device of the shaft and/or from a liquid separated in the shaft such as for example oil by means of liquid probes through a filter or another separator outwardly; and
providing a second such shaft which are arranged near the first mentioned shaft so that the circulations of liquid in the shafts touch or intersect one another.

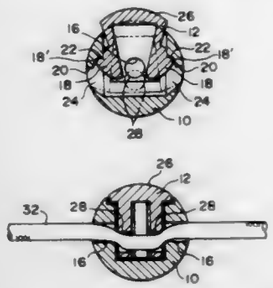
5,345,656
ELASTIC CORD LOCK
Richard C. Merritt, Barrie, Canada, assignor to Polytech Netting Industries, Inc., St. Catharines, Canada
Continuation of Ser. No. 842,453, Feb. 27, 1992, Pat. No. 5,208,950. This application Feb. 26, 1993, Ser. No. 23,894
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] F16G 11/00
U.S. Cl. 24—115 H 5 Claims



1. An elastic cord lock for securing two sections of cord and preventing slippage therebetween, the cord lock comprising:
two body portions each having sections which, joined together, define non-linear tortuous paths for each of the cord sections, the non-linear tortuous path being sized such that the cords must be stretched to be positioned within such tortuous paths;
an interior surface disposed on one of the body portion sections;
a cylindrically-shaped projection extending outwardly from the interior surface for confining the cord sections; and
means for securing the body portions to each other to lock the cords in position.

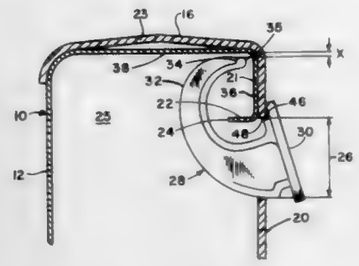
5,345,657
CORD STOPPER
Hideki Shimizu, Toyonaka, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Aug. 16, 1993, Ser. No. 107,280
Claims priority, application Japan, Aug. 12, 1992, 4-062313
Int. Cl.[5] F16G 11/00
U.S. Cl. 24—115 G 2 Claims

1. A cord stopper for fastening a cord thereto, the cord stopper comprising a socket having a pair of opposed through holes formed therethrough, a plug having a passage formed therethrough, the plug reciprocally movable within the socket between a pulled-out position where the through holes and the passage are in alignment with each other for threading of the cord therethrough and a depressed position where the cord is clamped between the edges of the through holes and the passage and means for locking the plug in the depressed position within the socket, the plug including a head and a stud mounted beneath the head, the passage being a through aperture formed through the stud; the socket having a pair of opposed through openings formed through the opposed sides thereof and disposed normal to the opposed through holes, the



socket further having a pair of steps formed on its inner side and disposed above the through openings, said plug-locking means comprising a pair of resilient arms also mounted beneath the head beside the stud, the resilient arms having its distal end projecting sideways beyond the stud for locking engagement with the through openings, the distal ends of the resilient arms coming into snapping engagement with the stops when the plug assumes the pulled-out position.

5,345,658
FASTENER FOR TRUCK BED LINER
John W. Kennedy, Spring Grove, Pa., assignor to York Products, Inc., Hanover, Pa.
Continuation of Ser. No. 874,757, Apr. 27, 1992, abandoned, which is a division of Ser. No. 793,626, Nov. 18, 1991, Pat. No. 5,150,940. This application Jun. 28, 1993, Ser. No. 82,825
Int. Cl.[5] A44B 17/00; F16B 5/00
U.S. Cl. 24—297 10 Claims



1. A one piece fastener,
said fastener having a body member,
said body member having an extending section with a free end and a base section opposite said free end,
said extending section being deflectable within the elastic limit of the material of said extending section,
said extending section taking the form of a "C" having one end terminating into said base section and its opposite end terminating into said free end,
said base section having an inside pivot surface at its side closest to said free end of said extending section, and
said base section having an inside recess located at its side furtherest away from said free end of said extending section generally opposite said pivot surface, said inside recess taking the form of a notch projecting inwardly towards the center of said body member for forming a wedging surface, said wedging surface and said free end of

the extending section cooperating to clamp the clip for preventing movement thereof.

5,345,659

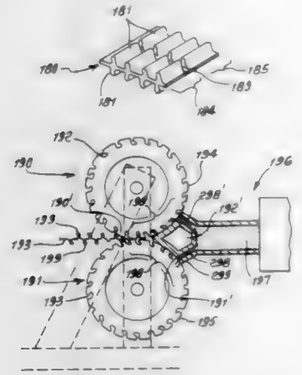
CONNECTOR APPARATUS WITH NESTING RIDGES

Robert M. Allan, 1631 Colgate Cir., La Jolla, Calif. 92037

Continuation-in-part of Ser. No. 787,424, Nov. 12, 1991, Pat. No. 5,179,767, which is a continuation-in-part of Ser. No. 553,258, Jul. 16, 1990, Pat. No. 5,088,162. This application Jan. 15, 1993, Ser. No. 5,331

Int. Cl.[5] **A44B** *13/00*

U.S. Cl. 24—442 **32 Claims**



1. Connector means connectible to inverted ridge means, comprising:

a) a plurality of parallel ridges spaced apart and configured so that inverted ridge means are nestable between and gripped by certain of said parallel ridges,

b) said parallel ridges having height, lateral widths, mid-sections, and outer terminus portions, and characterized in that said certain parallel ridges lateral widths are sufficient that said parallel ridges grip said inverted ridge means nested and aligned therewith,

c) and including means associated with said connector means to confirm complete, adjusted interlock of said inverted ridge means with said parallel ridges in response to said nesting,

d) and including an object to which said connector means is connected.

5,345,660

METHOD OF MANUFACTURING A MAGAZINE OF PREDETERMINED NUMBER OF CARTRIDGES

William J. Howard, P.O. Box 573, Wilson, N.C. 27893

Filed Mar. 9, 1993, Ser. No. 28,147

Int. Cl.[5] **B21K** *21/04*; **B23P** *15/22*; **F41A** *9/62*; **B29C** *45/36*

U.S. Cl. 29—1.3 **5 Claims**

1. A process for making a magazine for holding a specific, predetermined number of cartridges which number is fewer than about sixteen; and for reliably feeding these cartridges to the chamber of a bolt-equipped firearm; said magazine having the external appearance of a standard magazine holding at least about twenty rounds; said magazine comprising:

A. a shell comprising a closable bottom; an open top; and juxtaposed side walls, wherein the internal surfaces of the juxtaposed side walls are substantially parallel and spaced from each other by a given distance; one of said side walls carrying a projection such that the distance from the projection to the next adjacent internal surface is less than the given distance thereby defining a reduced distance; and

B. a follower within the shell; wherein the width of the follower is less than the given distance between the internal surfaces of the juxtaposed side walls but is greater than the reduced distance from the projection to the next adjacent internal surface; and

C. a base plate removably attached to the bottom of the shell; and

D. a spring compressed against the base plate and biasing the follower toward the open top; and

E. projection means for inhibiting downward movement of the follower thereby inhibiting the feeding to the magazine of any cartridge after the magazine contains said predetermined number of cartridges; and

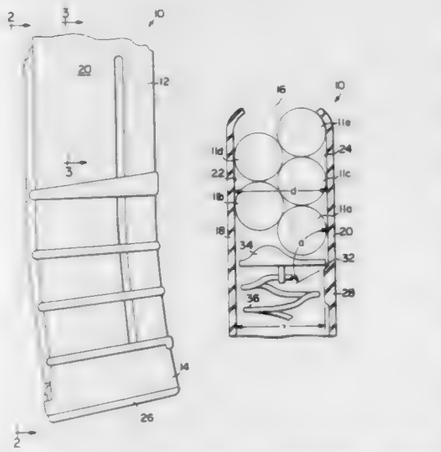
F. means for preventing feeding of any cartridge from the magazine to the chamber of the firearm if the magazine contains a quantity of cartridges greater than the predetermined number; and

said process comprising the steps of:

I. providing:

A. first and second mating mold halves which when mated form a cavity, the inside surfaces of which correspond to the outside surfaces of the shell; and

B. a core adapted to fit within the cavity and having a recess adapted to receive any one of a plurality of inserts wherein the outside surface of the core corresponds to the inside surface of the shell; and



C. a plurality of inserts having a projection-producing depression a distance from the open top of the magazine equal to that occupied by the given number of cartridges: each of said inserts adapted to fit into the insert-receiving recess; and

II. selecting an insert from among those provided; and

III. securing that insert in the recess in the core; and

IV. mating the first mold half to the second mold half; and

V. injecting a melted organic thermoplastic molding composition into the cavity thereby forming a hot casting; and

VI. cooling the hot casting to a temperature at which the hot casting is resiliently flexible; and

VII. opening the mold by separating the first half from the second half leaving the hot casting attached to the core; and

VIII. stripping the hot casting from the core; and then

IX. cooling the hot casing to room temperature whereupon the hot casting becomes a magazine shell; and

X. inserting into the magazine shell, the follower above the projection formed by the insert; and

XI. inserting into the shell below the follower a spring which upwardly biases the follower; and

XII. attaching a removable base plate to hold the spring in place; and thereby producing the magazine.

5,345,661

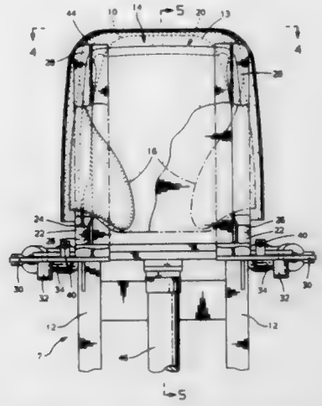
SEAT SKINNING AND METHOD

Donald J. Hotton, Rochester Hills, and Sherry A. Broad, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 3, 1993, Ser. No. 56,269

Int. Cl.[5] **B68G** *7/00*

U.S. Cl. 29—91.1 **1 Claim**



1. A method of skinning a flexible membrane cover on a polymeric foam vehicle seat body having lumbar sections comprising:

supporting the seat body underneath the seat body on a first support surface;

supporting the seat body on a first vertical side of the seat body along a vertical second support surface;

compressing the seat body against the second support surface by moving first and second wings which are pivotally mounted with respect to the second support surface, compressing the lumbar sections of the seat body over themselves to a point to allow a flexible membrane cover to be placed over the seat body, the second support surface and the wings; and

ejecting the seat body upward, allowing the seat body to then fill up the flexible membrane cover.

5,345,662

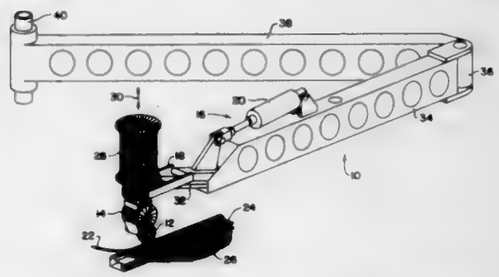
APPARATUS FOR INSERTING A SPLINE INTO A FRAME GROOVE

Louis Gosselin, St-Nicolas, and Normand Robichaud, Québec, both of Canada, assignors to Langis Lambert, St-Apollinaire, Canada

Filed Mar. 8, 1993, Ser. No. 27,804

Int. Cl.[5] **B23P** *19/02*

U.S. Cl. 29—235 **7 Claims**



1. An apparatus for inserting a spline into a frame groove, said apparatus comprising:

a manually movable support operatively securable to a fixed structure and having a free end movable in a plane substantially parallel to a frame supporting table surface;

an end element operatively secured to said free end, at least a part of said end element being manually rotatable about an axis substantially normal to said surface;

a spline inserting wheel mounted on said rotatable part for engagement with the frame groove over the spline, said wheel being rotatable about an axis substantially parallel to said surface;

means for applying a force urging said wheel into said frame groove; and

a motor mechanically connected to said wheel for driving said wheel to rotate while said wheel is in said frame groove, said wheel being rotated for inserting the spline in said frame groove.

5,345,663

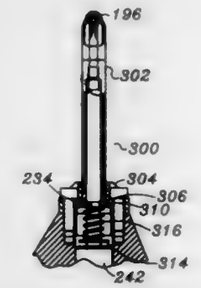
SAFETY CABLE TOOL

Michael G. Scruggs, Orlando, Fla., assignor to Daniels Manufacturing Corporation, Orlando, Fla.

Continuation-in-part of Ser. No. 945,095, Sep. 5, 1992, which is a continuation-in-part of Ser. No. 831,186, Feb. 5, 1992, Pat. No. 5,230,129. This application Aug. 20, 1993, Ser. No. 110,051

Int. Cl.[5] **B23P** *19/00*

U.S. Cl. 29—282 **10 Claims**



1. A tool for tensioning safety cable to a predetermined tension limit comprising:

an elongated nosepiece extending from an end of the tool, a distal end of said nosepiece having an aperture for passing the safety cable therethrough generally transverse to an elongate direction of said nosepiece, said nosepiece further having a passageway extending from a proximal end of said nosepiece in said elongate direction to an intersection with said aperture;

a plunger mounted in said passageway in said nosepiece for reciprocating motion therein, said plunger having at least a portion thereof extending outwardly from said proximal end of said nosepiece;

retaining means attached adjacent an end of said at least a portion of said plunger extending outwardly of said nosepiece;

spring means positioned about said at least a portion of said plunger, said spring means being generally compressed between said proximal end of said nosepiece and said retaining means for urging said plunger in a direction away from said aperture;

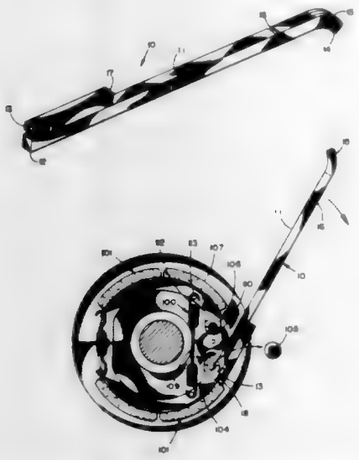
cap means fixed to the tool for retaining said nosepiece thereto, said nosepiece being slidably retained to said tool and rotatable about said elongate direction for aligning said aperture at selected angular directions transverse to said elongate direction.

5,345,664

METHOD FOR CHANGING BRAKE SPRINGS AND SHOES

Garald C. McMahon, and Kevin M. McMahon, both of 17 W 114 91st St., Hinsdale, Ill. 60521

Filed May 14, 1993, Ser. No. 61,011
Int. Cl.[5] B23P *6/00, 19/04, 15/18*
U.S. Cl. 29—402.08 **1 Claim**



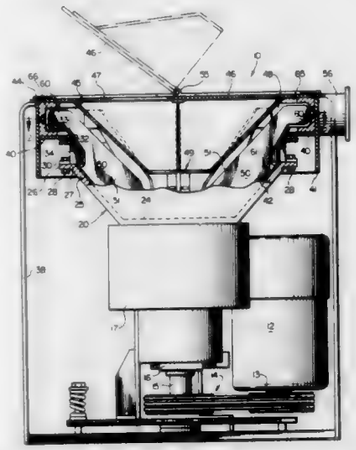
1. A method for changing brake springs and shoes comprising:
(a) removing a brake hub;
(b) grasping an installation tool for installing and removing brake springs and brake shoes, said installation tool comprising:
an elongated lever member having a longitudinal length, a substantially constant width transverse to said longitudinal length, and an upper surface;
a first terminal end of said elongated lever member comprising a bifurcated gripping member that includes a single lower tine and a single upper tine;
said single slot having a distal end coinciding with said first terminal end;
each of said lower tine and said upper tine terminating at the distal end of said single slot; and
a second terminal end of said elongated lever member comprising a bifurcated grasping member; and placing the first terminal end of said installation tool on a lip of a lower brake shoe;
(c) rotating the installation tool clockwise causing the lower brake shoe to rotate outwardly from a contracted position to an extended position;
(d) removing a lower cam roller;
(e) placing the first terminal end of the installation tool having the bifurcated gripping member on a lip of an upper brake shoe;
(f) rotating the installation tool counterclockwise causing the upper brake shoe to rotate outwardly from a contracted position to an extended position;
(g) removing an upper cam roller;
(h) placing the second end of the installation tool having a bifurcated grasping member around a brake spring shaft of a brake spring;
(i) placing an upper edge of a brake cam into a cam lifting and restraining notch on the elongated lever;
(j) using a point of contact of the upper edge of the brake cam and the cam lifting and restraining notch as a fulcrum and rotating the installation tool clockwise;
(k) removing a first, then a second, brake spring restraining hook on the brake spring from a first, then a second, brake spring restraining member, respectively;
(l) removing the lower brake shoe and the upper brake shoe;
(m) installing the lower brake shoe and the upper brake shoe;
(n) installing a first brake spring restraining hook on the brake spring to a first brake spring restraining member;
(o) placing the second end of the installation tool having a bifurcated grasping member around the brake spring shaft of the brake spring;
(p) using a point of contact of the upper edge of the brake cam and the cam lifting and restraining notch as a fulcrum and rotating the installation tool clockwise;
(q) installing a second brake spring restraining hook on the brake spring to a second brake spring restraining member;
(r) placing the first terminal end of said installation tool on a lip of a lower brake shoe;
(s) rotating the installation tool clockwise causing the lower brake shoe to rotate outwardly from a contracted position to an extended position;
(t) installing a lower cam roller;
(u) placing the first terminal end of the installation tool having the bifurcated gripping member on a lip of an upper brake shoe;
(v) rotating the installation tool counterclockwise causing the upper brake shoe to rotate outwardly from a contracted position to an extended position; and
(w) installing an upper cam roller.

5,345,665

REPLACEABLE WRAP FOR SCROLL HOUSING IN CENTRIFUGAL SEPARATOR

William D. Nemedi, Vicksburg, Mich., assignor to Inter-Source Recovery Systems, Inc., Kalamazoo, Mich.

Division of Ser. No. 831,168, Feb. 5, 1992, Pat. No. 5,252,208. This application Jul. 6, 1993, Ser. No. 88,225
Int. Cl.[5] B04B *1/04*
U.S. Cl. 29—402.15 **5 Claims**



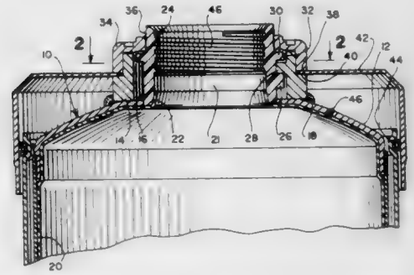
1. The method of repairing a worn wall surface in the discharge housing of a centrifugal separator device comprising: a separator bowl having a plurality of spaced blade assemblies disposed therein;
a discharge housing disposed above said bowl and adapted to receive chips exiting from said bowl; said chips adapted to travel through said discharge housing;
said spaced blade assemblies including a blade having at least a portion thereof which is adapted to rotate in said discharge housing;
means for rotating said blade assemblies whereby said blade portions rotate in said discharge housing to cause chips in said housing to travel through said discharge housing;
said discharge housing comprising a wall and having at least one exit opening therein through which chips exit; and,
said method comprising the steps of:
(a) compressing an elongated wrap having two sides and inserting the compressed wrap through an opening in the separator;
(b) passing said wrap over the outer edges of said blade portions located in said discharge housing;
(c) permitting said wrap to seat against said discharge housing wall contiguous to said blade portions; and,
(d) releasably securing said wrap to said wall to expose one side of said wrap to discharge materials adapted to pass through said discharge housing.

5,345,666

METHOD OF SEALING A TANK HAVING A FLEXIBLE SHEET LINER THEREIN

Ronald M. Matyja, Wheeling, Ill., assignor to Culligan International Company, Northbrook, Ill.

Division of Ser. No. 949,907, Sep. 23, 1992, abandoned, which is a division of Ser. No. 895,215, Jun. 8, 1992, Pat. No. 5,174,466, which is a continuation of Ser. No. 691,564, Apr. 25, 1991, abandoned. This application Aug. 12, 1993, Ser. No. 106,125
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—451 **3 Claims**



1. The method of sealing a tank having a wall defining a first opening, and a flexible sheet liner abutting the interior surface of the wall and defining a second opening that is aligned with the first opening of said tank wall, with a first collar attached to the tank and surrounding the first opening, and a second collar surrounding the second opening and attached to the flexible sheet liner, with a portion of the second collar being surrounded by the first collar in retained-together relation, said method comprising;
removing air between said tank wall and said flexible sheet liner to cause the flexible sheet liner to enter into intimate contact with the tank wall, with said air removal taking place between the first collar and the second collar; and then inserting a seal between said first and second collars to prevent passage of air between the tank wall and the flexible sheet liner.

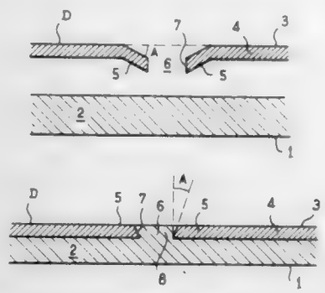
5,345,667

PROCESS FOR MODIFYING THE CHARACTERISTICS OF A METAL SURFACE

Michel Coppier, Rumilly, France, assignor to Seb S.A., Selongey, France

Filed Jul. 15, 1993, Ser. No. 91,882
Claims priority, application France, Jul. 24, 1992, 92 09160
Int. Cl.[5] B21K *25/00*
U.S. Cl. 29—505 **15 Claims**

1. A process for modifying a flat metal surface by application to said surface of a perforated metal sheet of another metal, said process comprising the following steps:
shaping said perforated sheet so that each perforation has a lip and a lip end on one side of said sheet;
applying said one side of said sheet thus shaped to said surface, with said lips of said perforations being directed towards said surface; and
die stamping said shaped sheet onto said surface such that the lip ends penetrate the surface and the lips become straightened to form a planar perforated sheet engaged with said surface, and wherein, during said straightening,



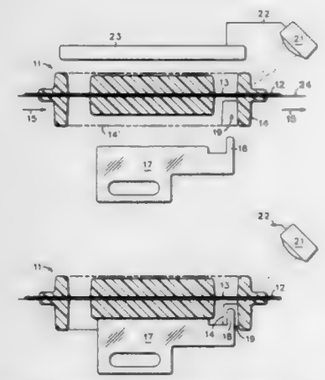
material from said surface is forced into the perforations, thereby anchoring said sheet to said surface.

5,345,668

METHOD FOR DETECTING MIS-ORIENTATION OF SEMICONDUCTOR PACKAGES

Cliff J. Scribner, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 24, 1992, Ser. No. 996,746
Int. Cl.[5] H01L *21/02;* **B65G** *47/74*
U.S. Cl. 29—593 **11 Claims**



1. A method for detecting mis-orientation of a semiconductor package comprising the steps of:
providing the semiconductor package, wherein the semiconductor package has a lower surface and a cavity extending a first distance into the semiconductor package from the lower surface, and the semiconductor package is positioned in a travel path of a packaging process apparatus;
providing an orientation support plate having a protrusion on an upper surface, wherein the protrusion is for mating with the cavity in the semiconductor package;
positioning the semiconductor package so that the upper surface of the orientation support plate faces the lower surface of the semiconductor package; and
moving the orientation support plate towards the semiconductor package, wherein the protrusion mates with the cavity and extends into the cavity at most a distance equal to the first distance when the semiconductor package is properly oriented, and the protrusion contacts the semiconductor package and moves a portion of the semiconductor package out of the travel path when the semiconductor package is mis-oriented.

5,345,669

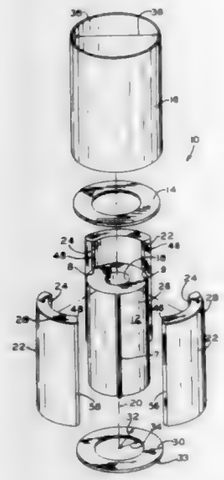
METHOD OF MAKING A PERMANENT MAGNET ROTOR

Robert V. Zigler, and William H. Stark, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 932,260, Aug. 19, 1992, Pat. No. 5,237,737, which is a division of Ser. No. 474,436, Feb. 2, 1990, Pat. No. 5,175,461, which is a continuation-in-part of Ser. No. 459,633, Jan. 2, 1990, Pat. No. 5,040,286, which is a continuation-in-part of Ser. No. 203,942, Jun. 19, 1988, abandoned. This application Aug. 12, 1993, Ser. No. 105,325

Int. Cl.[5] H02K *15/02*

U.S. Cl. 29—598 5 Claims



1. A method of manufacturing a permanent magnet rotor for an electronically commutated motor comprising the steps of:

forming a substantially cylindrical rotor core having an axis of rotation;

positioning a plurality of magnetic elements on the outer cylindrical surface portion of said rotor core, each magnetic element having an inner surface with a radius of curvature substantially equal to the radius of curvature of said cylindrical surface portion;

positioning an outer shell around said magnetic elements;

forming at least one end plate of generally annular shape having an aperture which is larger than the transverse cross section of said rotor core;

chamfering the periphery of said end plate generally toward the axis of the end plate;

sliding said end plate over an end of said rotor core; and

bending an end of said outer shell over said end plate to an angle substantially less than 90 degrees toward said axis of rotation to grip said end plate.

5,345,670

METHOD OF MAKING A SURFACE-MOUNT POWER MAGNETIC DEVICE

Lennart D. Pitzele, Rockwall, and Matthew A. Wilkowski, Mesquite, both of Tex., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 11, 1992, Ser. No. 989,394

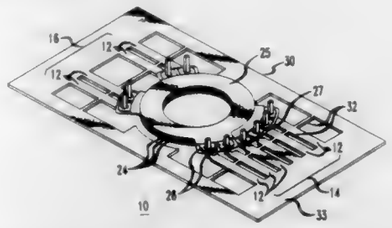
Int. Cl.[5] H01F *41/10*

U.S. Cl. 29—606 5 Claims

1. A method of manufacturing a magnetic device for attachment to a substrate, comprising the steps of:

placing at least one generally planar sheet winding, having a pair of spaced-apart terminations, onto a lead frame stock such that each termination receives an upwardly rising portion of a separate lead integral with the lead frame stock so as to make an electrical connection with the winding termination;

encapsulating each sheet winding termination and the upwardly rising portion of each lead with a mass of insulative material;



attaching a ferromagnetic core about a portion of each sheet winding completely separating each lead from the lead frame stock; and

forming each lead for attachment to a substrate.

5,345,671

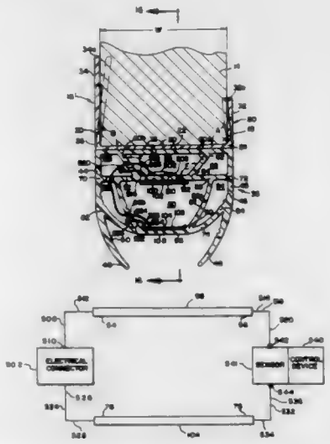
PROCESS OF MAKING A SENSING EDGE WITH A FAILSAFE SENSOR

Bearge D. Miller, Concordville, Pa., assignor to Miller Edge, Inc., Concordville, Pa.

Division of Ser. No. 941,502, Sep. 8, 1992, Pat. No. 5,262,603, which is a continuation-in-part of Ser. No. 881,930, May 12, 1992, Pat. No. 5,225,640. This application May 13, 1993, Ser. No. 61,934

Int. Cl.[5] H01H *11/00*

U.S. Cl. 29—622 8 Claims



1. A method for assembling a sensing edge for controlling movement of a door moving in a first direction by actuation of a device upon force being applied to the sensing edge, the device comprising a sensing means for sensing a particular electrical characteristic of an electrical circuit connectable to the sensing means, comprising the steps of:

providing a partially assembled sensing edge comprising:

an elongated base member for being secured to the door;

a generally flexible elongated sheath secured to the base member and elongated sheath secured to the base member and having an elongated hollow cavity formed therein;

a first flexible electrically conductive contact, having first and second ends, positioned within the cavity; and

a second flexible electrically conductive contact, having first and second ends, positioned within the cavity spaced from and generally opposite the first contact, the second ends of the first and second contacts being electrically connectable to the sensing means of the device, such that when external pressure is applied to the sheath, a portion of the second contact flexes toward the first contact and engages a portion of the first contact to actuate the device;

selecting from a group of electrical components an electrical connector for providing an electrical circuit connected to the sensing means of the device with the particular electrical characteristic sensed by the sensing means of the device;

securing the selected electrical connector within the sheath; and

electrically connecting the selected electrical connector to the first ends of the first and second contacts, such that when the second ends of the first and second contacts are electrically connected to the sensing means of the device, an electrical circuit is completed comprising the sensing means, the first contact, the electrical connector and the second contact, such that current generated by the device sequentially flows through the sensing means, the first contact, the electrical connector, the second contact, and back to the sensing means when electrical continuity exists throughout the electrical circuit to thereby allow the sensing means to disable the device when electrical continuity does not exist throughout the electrical circuit.

5,345,672

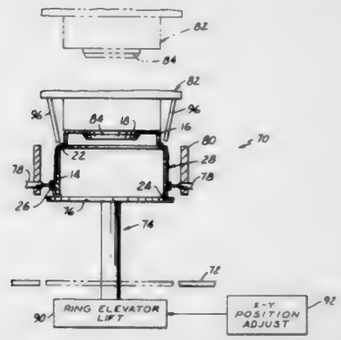
BRAKE DRUM MANUFACTURE

Richard C. Ball; Elvin E. Tuttle, both of Lansing, and David W. Kratzer, La Salle, all of Mich., assignors to Motor Wheel Corporation, Lansing, Mich.

Continuation of Ser. No. 901,816, Jun. 22, 1992, which is a division of Ser. No. 764,729, Sep. 24, 1991, Pat. No. 5,138,757, which is a continuation of Ser. No. 324,650, Mar. 17, 1989, abandoned. This application Sep. 23, 1993, Ser. No. 125,673

Int. Cl.[5] B23P *19/04;* B23Q *17/20*

U.S. Cl. 29—715 18 Claims



1. Apparatus for manufacture of a vehicle brake drum having a drum back with at least one mounting opening for mounting the drum to rotate about an axis defined by said at least one mounting opening, and a cast metal drum ring affixed to said drum back with a radially inwardly oriented braking surface finish machined on a cylinder of revolution substantially coaxial with said at least one mounting opening and a radially outwardly oriented non-braking peripheral unmachined surface, said apparatus comprising:

means for measuring radial runout of said radially outwardly oriented non-braking unmachined peripheral surface, including means for determining magnitude and orientation of the first harmonic of such radial runout of said outwardly oriented non-braking peripheral unmachined surface while said drum ring is stationary, and

means for locating said at least one mounting opening in said drum back at a position substantially to cancel said first harmonic of radial runout of said outwardly oriented non-braking peripheral unmachined surface so as to improve as-manufactured weight balance of a finished drum with respect to said axis and having said braking surface finish machined by orienting on said at least one mounting opening to thereby reduce radial thickness variation of said drum ring between said unmachined and finish machined surfaces around said axis.

5,345,673

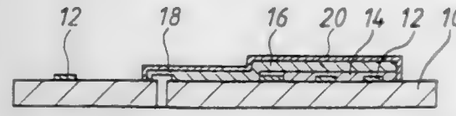
METHOD OF MANUFACTURING A PRINTED WIRING BOARD

Yoshitaka Saitoh, 8-34, Nishikahei 2-chome, Adachi-ku, Tokyo, Japan

Continuation of Ser. No. 73,608, Jun. 7, 1993, abandoned, which is a continuation of Ser. No. 982,146, Nov. 25, 1992, abandoned, which is a continuation of Ser. No. 896,729, Jun. 9, 1992, abandoned, which is a continuation of Ser. No. 784,688, Oct. 30, 1991, abandoned, which is a continuation of Ser. No. 379,435, Jul. 12, 1989, abandoned. This application Dec. 8, 1993, Ser. No. 163,569

Int. Cl.[5] H05K *3/02*

U.S. Cl. 29—846 6 Claims



1. A method of manufacturing a printed wiring board which comprises the steps of forming a printed circuit on a substrate, coating an insulating layer on at least a part of the printed circuit, and coating a shield layer on at least a part of the insulating layer by applying a pattern of halftone dots.

5,345,674

HEAT EXCHANGER

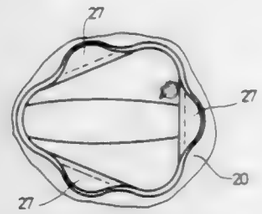
Wolfgang Knecht, Filderstadt: Roland Strähle, Unterensingen, and Gerhard Weiss, Nürtingen-Zizishausen, all of Fed. Rep. of Germany, assignors to Längerer & Reich GmbH & Co., Filderstadt, Fed. Rep. of Germany

Filed Apr. 2, 1993, Ser. No. 42,162

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1992, 4212717

Int. Cl.[5] B23P *15/26*

U.S. Cl. 29—890.044 10 Claims



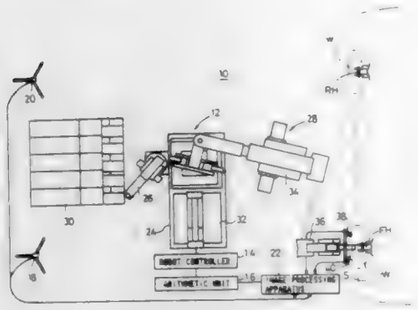
1. A method of manufacturing a heat exchanger, comprising the steps of forming a heat exchanger network provided with a plurality of tubes having tube ends; arranging at least one base plate to be associated with said tubes; providing triangular openings in said base plate; deforming only the tube ends to a respective triangular contour; inserting the triangular tube ends of the tubes into the triangular openings of the base plate and expanding the tube ends against edges of the triangular openings thus forming a tight and fast connection between the tube ends and the tubes and the header plate.

5,345,675

METHOD OF MOUNTING WHEEL TO VEHICLE

Yasurou Yamanaka; Junichi Yamanaga; Akira Morizono; Akira Miyazaki, and Noriyuki Unose, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,260
Claims priority, application Japan, Feb. 13, 1992, 4-026642; Feb. 13, 1992, 4-026646
Int. Cl.[5] G05B *19/417*; B62D *65/00*
U.S. Cl. 29—894.3 4 Claims



1. A method of mounting a wheel, by a wheel mounting robot, to a vehicle conveyed along an assembly line, comprising the steps of:

obtaining an image of a wheel hub by first imaging means disposed on one side of said conveyed vehicle;

calculating approximate coordinates of the center of said wheel hub based on the image obtained by said first imaging means;

locating second imaging means mounted on said wheel mounting robot so that respective said second imaging means are located in front of said wheel hub and symmetrically with respect to the center of said wheel hub, according to said approximate coordinates of the center of said wheel hub;

calculating revised coordinates of the center of the wheel hub and a rotational displacement from a standard rotational position of the wheel hub, based on said images obtained by said second imaging means; and

mounting the wheel to said wheel hub by said wheel mounting robot based on the revised coordinates of the center and rotational position of said wheel hub.

5,345,676

METHOD FOR PRODUCING A FULL FACE FABRICATED VEHICLE WHEEL

Walter L. Ashley, Jr., Detroit, Mich., assignor to Hayes Wheels International, Inc., Romulus, Mich.

Continuation-in-part of Ser. No. 54,373, Apr. 28, 1993, Pat. No. 5,295,304. This application Oct. 27, 1993, Ser. No. 144,164
Int. Cl.[5] B21K *1/28*
U.S. Cl. 29—894.323 4 Claims

1. A method for producing a full face fabricated wheel comprising the steps of:

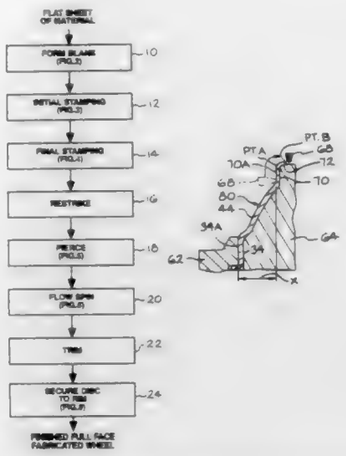
(a) providing a generally circular rim defining an axis and including a generally axially extending well and a pair of opposed ends, one of the ends including an inboard tire bead seat retaining flange and an inboard tire bead seat, and the other end including an outboard tire bead seat;

(b) providing a generally circular disc blank including an inner annular portion defining a wheel mounting surface;

(c) stamping the disc blank to form an intermediate annular portion having a predetermined contour and an outer annular portion;

(d) flow spinning the outer annular portion of the disc to form an outboard tire bead seat retaining flange of the full face wheel;

(e) positioning the outboard tire bead seat retaining flange of the disc adjacent the outboard tire bead seat of the rim; and



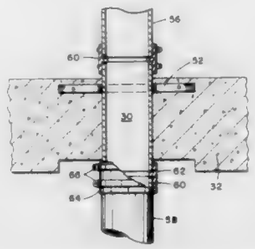
(f) securing the rim and disc together to produce the full face fabricated wheel.

5,345,677

METHOD OF CONNECTING SECTIONS OF METAL CONDUITS

George W. Cook, Sr., South Daytona, Fla., assignor to Bellemead Development Corporation, Daytona Beach Shores, Fla.

Filed Dec. 14, 1992, Ser. No. 990,074
Int. Cl.[5] B23Q *3/00*
U.S. Cl. 29—897.3 3 Claims



1. A method for connecting sections of metal conduits extending on opposite sides of a concrete floor in a multi-story building, the floor being formed by pouring concrete over a form, the method comprising the steps of:

positioning a first section of metal conduit on form with a first open end against the form and a second open end extending at least about one inch above a desired height of concrete to be poured over the form;

installing a removable ring about the first open end of the first conduit section abutting the form for creating an open space circumscribing said first end after pouring of the concrete;

positioning a relatively rigid cover over said second end of the conduit section, the cover having an aperture extending therethrough;

inserting a releasable fastener through the aperture in the cover and into the form;

tightening the fastener to compress and hold the conduit section in a fixed position on the form;

pouring the concrete onto the form and hardening the concrete in situ about the first conduit section;

removing the fastener and form to expose the first end of the conduit section;

removing the ring from about the first end of the first conduit section to expose a selected extent of the first end; and

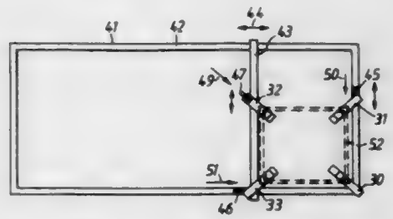
coupling second and third sections of metal conduit to respective first and second exposed ends of the first section of conduit.

5,345,678

METHOD OF ASSEMBLING WINDOW AND GLASS-DOOR CASEMENTS

Stellan Rönnlund, Sollentuna, Sweden, assignor to Termofrost AB, Kista, Sweden

Filed Dec. 18, 1992, Ser. No. 993,725
Claims priority, application Sweden, Dec. 20, 1991, 9103812-5
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—847.312 8 Claims



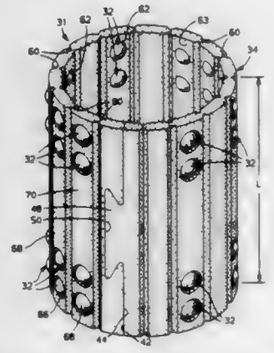
1. A method of assembling window and glass-door casements, such as casements of the kind which comprise four aluminium profiled sections, made from aluminium assembled to form a rectangular frame, each section is shaped with a U-shaped channel along the profiled section, the four profiled sections being joined together at each of the four corners where the sections meet, the ends of the profiled sections being cut obliquely so as to form mitered corners where they join, and wherein one or more glass panes are later fitted to the frame; the method comprising: providing for each of the profiled sections within the bottom of the U-shaped channel with a slot of essentially flat rectangular cross-section which is essentially closed in cross-section; providing for each corner of the casement frame a flat right-angled fastener device having two legs whose cross-sectional shape corresponds generally to the cross-sectional shape of said slot; shaping the inner edges of each leg of each fastener device with at least one notch; inserting the legs of said fastener device individually into a slot of respective adjacent profiled sections; moving said adjacent profiled sections into abutment with one another over the inserted fastener legs to form a preassembled rectangular casement frame; fitting each of the four corners of the preassembled frame into a press tool means having at least one tool which include a fixed part having two abutment sides which form a right angle with one another, and a movable part having a second set of two abutment sides which form essentially a right angle with one another; further steps of said method comprising: making, on said second set of two abutment sides, projections which correspond to said notches; said second set of right angled abutment sides being parallel with the first-mentioned set of two abutment sides; the movable part of a tool being constructed so that it is movable towards and away from the associated fixed part of the tool in response to a relative force applied between said fixed and movable parts; when fitting said casement frame in said press tool means, placing a corner of the preassembled casement frame between spaced apart fixed and movable parts of a respective associated tool; forcing the movable part of said associated tool towards the fixed part of said tool in a direction which extends at an angle of 45 to the longitudinal axes of the associated two corner-forming profiled sections, with the inner walls of the two associated corner forming profiled sections located between the inner edges of the legs of the inserted fastener device and the second set of angled abutment sides of the movable part of the associated tool; and forcing the projections on the sides of the movable part of the associated tool to engage and deform said inner walls at the inside of the corners of the preassembled profiled section to an extent such that said wall will essentially be deformed and brought into conformity and locked with the notches in the edges of the legs of the associated fastener device.

5,345,679

METHOD OF MAKING PLASTIC BALL SLEEVE ASSEMBLY

Brady J. Lennon, Freeland; Howard D. Beauch, Frankenmuth, and Russell L. Herlache, Saginaw, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 12, 1993, Ser. No. 105,245
Int. Cl.[5] B21D *53/10*
U.S. Cl. 29—898.055 4 Claims



1. A method of making a ball sleeve assembly including a tubular plastic sleeve and a plurality of hard metal spheres comprising the steps of:

forming from a plastic characterized by being permanently deformable by application of compressive force thereto a sleeve blank defining a flat plane and having a thickness dimension less than the diameter of said spheres,

cold forming a plurality of ball sockets in said sleeve blank by applying compressive force to said sleeve blank perpendicular to said flat plane,

cold forming a plurality of integral parallel living hinges on said sleeve blank by applying compressive force to said sleeve blank perpendicular to said flat plane,

inserting each of said spheres in a respective one of said ball sockets,

cold forming said sleeve blank by applying compressive force thereto perpendicular to said flat plane to define an integral retaining means operative to prevent dislodgement of said spheres from said ball sockets while exposing a pair of surface segments of each of said spheres on opposite sides of said sleeve blank, and

forming a tubular sleeve by flexing said sleeve blank at said living hinges.

5,345,680

SHAVING AID FOR WET RAZOR

William E. Vreeland, Shelton, and Robert Qubick, Bridgeport, both of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 832,207, Feb. 6, 1992, abandoned. This application Oct. 13, 1993, Ser. No. 136,714
Int. Cl.[5] B26B *19/40*
U.S. Cl. 30—41 29 Claims

1. A shaving aid for use with a wet razor:

(a) said shaving aid comprising about 15%–40% of a water-insoluble matrix wherein:

(i) about 30%–70% of said water-insoluble matrix comprises a polystyrene compound;

(ii) about 25%–70% of said water-insoluble matrix comprises a polypropylene compound; and

(b) said shaving aid further comprises at least 50% of at least one water-soluble active ingredient.

5,345,681

TOOL FOR STRIPPING A CONDUCTOR

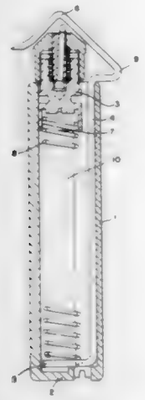
Hans Undin, Akersberga, Sweden, assignor to Weidmuller Interface GmbH & Co., Detmold, Fed. Rep. of Germany

Filed Jan. 29, 1993, Ser. No. 10,835

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1992, 4204141

Int. Cl.[5] H02G *1/12*

U.S. Cl. 30—90.7 **44 Claims**



1. A tool for stripping a conductor comprising:

a handle element;

a cutter piece supported on a first end of said handle element, said cutter piece having a tip in the form of a blade, the blade being movable around a rotation axis at a predetermined distance therefrom;

an opposing bearing arranged on the handle element for holding the conductor; and

a supporting body supported on the first end of the handle element, said supporting body being rotatably mounted about the rotation axis for rotation during stripping of a conductor, wherein said cutter piece is positioned within said supporting body with its longitudinal axis inclined with respect to the rotation axis, wherein an end of the cutter piece opposing the tip includes radial attachments for engaging an inner wall of the supporting body.

5,345,682

TUBE CUTTER

Miles J. Dubinsky, Carol Stream; Rinart Joseph, Chicago; Gust A. Saros, Rockford, and Richard Locsmondy, Belvidere, all of Ill., assignors to The Pullman Company, Lebanon, N.J.

Filed Jun. 17, 1993, Ser. No. 78,583

Int. Cl.[5] B23D *21/06*

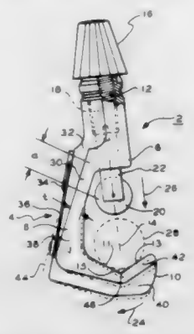
U.S. Cl. 30—102 **23 Claims**

1. A tube cutter comprising:

a frame including an arm means, an anvil means and a drive support, said anvil means and drive support extending from said arm means in spaced juxtaposed relation;

cutter means secured to one of said anvil means and drive support for cutting a tube supported on said anvil means in response to an axial force on the supported tube; and

drive means secured to said drive-support for applying said axial force on said supported tube and for urging the cutter means against said tube to cut the tube, at least one of said anvil means and arm means being sufficiently resilient such that the anvil means in response to said axial force applied thereto resiliently displaces from a normal quiescent position to a displaced position creating stored energy in the frame such that said cutter means penetrates said tube in response to said axial force, said axial force being sufficiently high in value such that the stored energy continues to cause the cutter means to cut said tube as the cutter means penetrates the tube about the tube periphery as the tube is rotated, said anvil means gradually returning



to its normal position in response to the release of said stored energy as said tube is rotated and cut, said arm means having a thickness sufficiently thin such that the arm means bends transversely relative to the direction of the axial force in response to said axial force and the anvil means displaces transversely relative to the axial direction of said force in response to said bending of said arm means.

5,345,683

ROTARY CUTTER FOR MOWING MACHINE

Takahiro Kanou, 15172-2, Kaminoho-mura, Mugi-gun, Gifu-ken 501-36, Japan

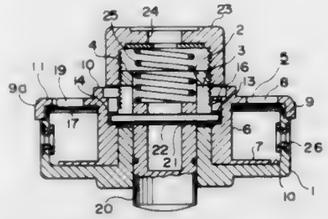
PCT No. PCT/JP92/00021, § 371 Date Sep. 10, 1992, § 102(e) Date Sep. 10, 1992, PCT Pub. No. WO92/11748, PCT Pub. Date Jul. 23, 1992

PCT Filed Jan. 14, 1992, Ser. No. 930,410

Claims priority, application Japan, Jan. 14, 1991, 3-021181[U]; Nov. 29, 1991, 3-106684[U]

Int. Cl.[5] B26B *27/00*

U.S. Cl. 30—276 **2 Claims**



1. A rotary cutter for a mowing machine, comprising:

a bearing;

a reel, which is supported on said bearing to be rotatable about said bearing, and on which a cord cutter is wound;

a housing for receiving the reel to be relatively rotatable, and having a pair of through holes which oppose with each other and through which both end portions of the cord cutter are outwardly extended;

means for limiting said bearing and said reel to allow said reel to rotate in only one direction and upon rotation of said bearing, rotating said reel;

means for canceling limitation by said limiting means and rotating said reel in a reverse direction with respect to said bearing when said bearing is moved in an axial direction thereof with respect to said reel; and

a through hole formed in the reel having a pair of openings, through which the intermediate portion of the cord cutter passes so that the cord cutter is held by the reel at the intermediate portion, a line passing the paired openings being shifted from a line of a diameter of the reel.

5,345,684

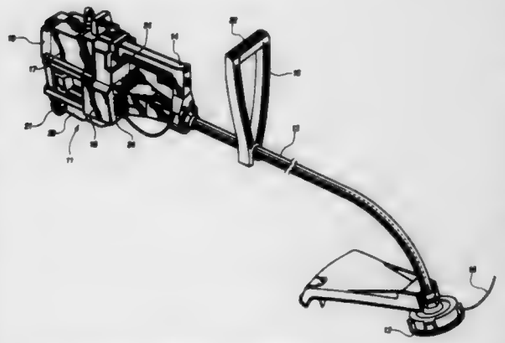
FLEXIBLE LINE TRIMMER HAVING AN ANTI-VIBRATION HANDLE

Michael W. Shoup; David C. Allis, and Paul A. Warfel, all of Shreveport, La., assignors to WCI Outdoor Products, Inc., Cleveland, Ohio

Filed Jan. 25, 1993, Ser. No. 7,491

Int. Cl.[5] B26B *7/00*; F16M *13/04*

U.S. Cl. 30—276 **4 Claims**



1. A flexible line trimmer comprising:

an internal combustion engine disposed within a power source housing;

a rotary trimmer head;

a drive shaft housing having disposed therein for rotation a drive shaft, the drive shaft having a first end operatively coupled to the internal combustion engine and an oppositely disposed end operatively coupled to spin the trimmer head; and

a generally L-shaped vibration dampening support handle having a first end resiliently coupled to the drive shaft housing, and having a second end resiliently coupled to the power source housing.

5,345,685

STRATA MOVEMENT INDICATOR

Alan S. Bloor, Stafford, England, assignor to Coal Industry (Patents) Limited, London, England

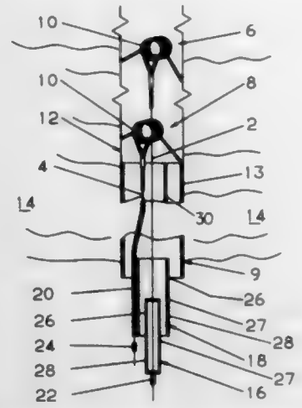
Filed Jun. 24, 1993, Ser. No. 80,511

Claims priority, application United Kingdom, Jul. 15, 1992, 9215082

Int. Cl.[5] E21B *47/00*; G01B *5/30*

U.S. Cl. 33—308 **8 Claims**

1. A strata movement indicator for use in association with a borehole formed in strata, the indicator including at least two flexible elongate suspension members, anchors for anchoring the suspension members at spaced apart locations in use within the borehole formed, a guide through which the members pass, the guide being fixable in use within the borehole, and a cylindrical indicator element held on each suspension member and movable in relation to the guide and to one another in the



manner of a piston, the movement of each element being indicative of strata movement.

5,345,686

CUTTING ARRANGEMENT FOR A MOTOR-DRIVEN CHAIN SAW

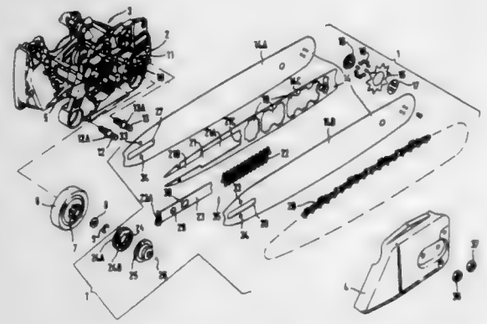
Helmut Zimmermann, Kernen i. R., Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Jun. 18, 1993, Ser. No. 77,772

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1992, 4219956

Int. Cl.[5] B23D *57/02*; B27B *17/14*

U.S. Cl. 30—386 **35 Claims**



1. A cutting arrangement for a motor-driven chain saw having a drive shaft, the cutting arrangement comprising:

a preassembled component to be fastened to the chain saw;

at least one attachment bolt for connecting said preassembled component to said chain saw; and,

the preassembled component including:

a saw chain;

a sprocket drive wheel for connecting said saw chain to said drive shaft when said preassembled component is mounted on said chain saw;

a guide bar having an outer periphery and having a guide groove formed thereon for guiding said saw chain along said outer periphery;

said guide bar having a forward end and having nose means at said forward end for guiding the saw chain as said saw chain moves around said guide bar;

said guide bar having a rearward end facing away from said forward nose means and having at least one slot formed

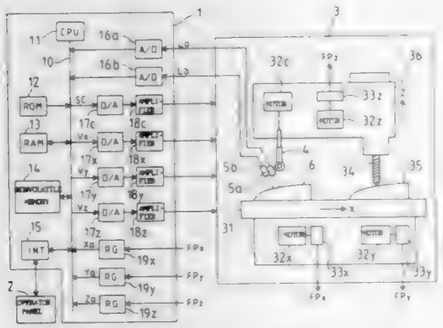
therein for receiving said attachment bolt when said preassembled component is mounted on said chain saw;
said sprocket drive wheel being disposed adjacent said rearward end and near to said one slot;
resilient biasing means for developing a resilient biasing force between said guide bar and said sprocket wheel which acts in a direction to hold said sprocket wheel away from said guide bar to impart a tension force to said saw chain thereby holding said guide bar, said sprocket drive wheel and said saw chain together under tension without said preassembled component being mounted on said chain saw; and,
said tensioning device being mounted in said guide bar so as to constitute a part thereof.

5,345,687

NONCONTACT TRACING CONTROL DEVICE

Hitoshi Matsuura, Hachioji, and Eiji Matsumoto, Yamanashi, both of Japan, assignors to Fanuc, Ltd., Yamanashi, Japan

PCT No. PCT/JP91/01002, § 371 Date Mar. 25, 1992, § 102(e) Date Mar. 25, 1992, PCT Pub. No. WO92/01534, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 25, 1991, Ser. No. 842,345
Claims priority, application Japan, Jul. 25, 1990, 2-196797
Int. Cl.[5] G01B *11/24*
U.S. Cl. 33—503 **6 Claims**



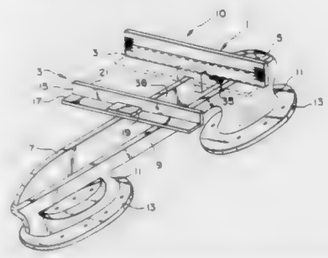
1. A noncontact tracing control device comprising:
a first detector arranged to be rotatable around a rotary axis and movable relative to a model, in a direction parallel to said rotary axis, having a measurement axis extending obliquely with respect to said rotary axis, for measuring a distance therefrom to a point on a surface of the model in a noncontact fashion;
a second detector arranged to be movable together with said first detector and having a measurement axis extending obliquely with respect to the rotary axis and shifted from the measurement axis of said first detector in a direction perpendicular to said rotary axis, for measuring a distance therefrom to another point on the surface of the model in a noncontact fashion;
selecting means for selecting three measured distance values from among four measured distance values measured at four different points on an upper surface of the model which include first two values and second two values measured successively by said first and second detectors, respectively, at predetermined time intervals, while said first and second detectors are moved relative to the model;
calculating means for calculating a normal vector of the surface of said model based on the three measured distance values, selected by the selecting means and for calculating an angular position of a projection of the normal vector on a plane perpendicular to said rotary axis; and
positioning means for positioning said first and second detectors at the angular position thus calculated.

5,345,688

METHOD AND DEVICE FOR MEASURING SQUARENESS OF ICE SKATE BLADES

Robert H. Allen, 155 Bechard Ave., LaSalle, Ontario, Canada N9J 1W4

Filed May 26, 1993, Ser. No. 66,842
Int. Cl.[5] G01B *5/24*
U.S. Cl. 33—535 **13 Claims**



1. An ice skate blade squareness measuring device comprising:
a) a frame, said frame having a plurality of squareness indicia on a face thereof, said frame including means for removably mounting said frame onto a portion of said ice skate blade such that said squareness indicia are perpendicular to a side of said ice skate blade; and
b) means removably mountable to a skate blade edge of said ice skate blade for indicating squareness of said blade edge in conjunction with said squareness indicia.

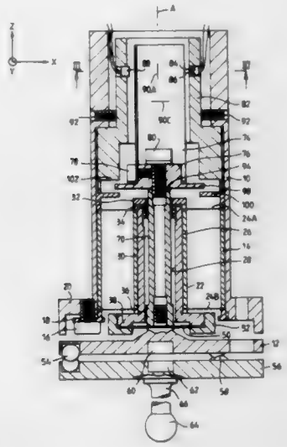
5,345,689

MEASURING PROBE

David R. McMurtry, Wotton-Under-Edge; David A. Wright, Edinburgh, and Stephen E. Lummes, Stroud, all of United Kingdom, assignors to Renishaw Metrology Limited, Gloucestershire, United Kingdom

PCT No. PCT/GB92/00932, § 371 Date Feb. 25, 1993, § 102(e) Date Feb. 25, 1993, PCT Pub. No. WO92/21932, PCT Pub. Date Dec. 10, 1992
PCT Filed May 22, 1992, Ser. No. 977,437
Claims priority, application United Kingdom, May 25, 1991, 9111382.9
Int. Cl.[5] G01B *11/00, 5/00*
U.S. Cl. 33—559 **13 Claims**

1. A measuring probe for use on a coordinate positioning apparatus, the probe comprising: a fixed structure by which the probe may be supported on a movable arm of the machine, and a stylus retaining member for retaining a workpiece-contacting stylus supported relative to the fixed structure by a suspension mechanism permitting at least two dimensional movement of the retaining member relative to the fixed structure, the probe further comprising transducer means for measuring displacement of the stylus retaining member in three perpendicular directions relative to the fixed structure, the transducer means comprising:
three light sources for generating three beams of light extending in three different directions;
three photodetectors retained on the fixed structure, each photodetector lying in register with one of the light beams;
a shutter coupled to the stylus retaining member for movement relative to the fixed structure which corresponds to movement of the stylus retaining member relative to the fixed structure, said shutter located in the path of each of said three light beams and including three apertures each of which permits the passage of a fraction of one of said light beams onto the surface of the corresponding photodetector;
each of said three photodetectors emitting at least one signal which is indicative of the displacement in a given direction of the position of incidence of said fraction of said respective light beam on said detector; wherein:



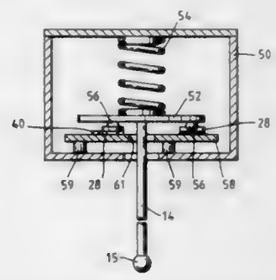
said three apertures are provided by three mutually perpendicular slits each of which a) extends in a direction transverse to said given direction and b) defines a direction of movement of said retaining member to which the corresponding photodetector is insensitive.

5,345,690

CONTACT PROBES

David R. McMurtry, Wotton-Under-Edge; Gillies D. Pitt, Hewelsfield; Peter G. Lloyd, Bristol, and David Wilson, Stonehouse, all of United Kingdom, assignors to Renishaw Metrology Limited, Gloucestershire, United Kingdom

PCT No. PCT/GB92/00330, § 371 Date Oct. 7, 1992, § 102(e) Date Oct. 7, 1992, PCT Pub. No. WO92/14987, PCT Pub. Date Sep. 3, 1992
Continuation-in-part of Ser. No. 768,433, Sep. 26, 1991, abandoned. This PCT application Feb. 24, 1992, Ser. No. 930,700
Claims priority, application United Kingdom, Feb. 23, 1990, 9004117
Int. Cl.[5] G01B *5/03*
U.S. Cl. 33—561 **16 Claims**



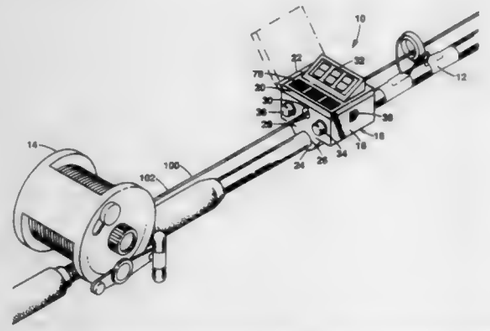
1. A contact probe for use on position determining apparatus, comprising:
a relatively fixed member for attachment to the apparatus;
a relatively movable member for carrying a workpiece-contacting stylus;
mutually engageable support elements on the fixed member and the movable member respectively, for supporting the movable member on the fixed member;
bias means for biasing said engageable elements into engagement, the movable member being deflectable against the action of the bias means;
a sensing element for providing an output signal when the stylus is in contact with a workpiece; and
an integrated circuit within the probe, at least one of said support elements being integrated onto the integrated circuit.

5,345,691

OPTICAL FISHING LINE METER

David C. Falk, 6808 Greystone Dr., Raleigh, N.C. 27615, and Warren J. Jasper, 127 Donna Pl., Cary, both of N.C. 27513

Filed Oct. 22, 1992, Ser. No. 965,065
The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.
Int. Cl.[5] G01B *11/02*
U.S. Cl. 33—707 **10 Claims**



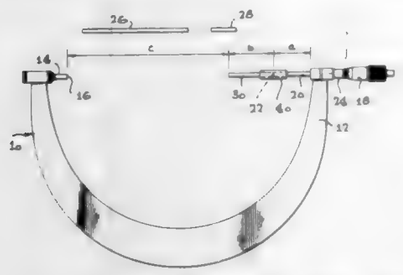
1. A fishing line measuring system for a fishing rod, comprising:
(a) a casing;
(b) a reel mounted within the casing;
(c) means for mounting the casing on the fishing rod;
(d) a fishing line wound on the reel and extending through an opening in the casing, said line having a plurality of elongated marks spaced at predetermined increments from one another;
(e) first and second sensors mounted within the casing for detecting the elongated marks on the line and producing detection signals as the line passes through the casing, wherein the spacing between the first and second sensors is such that elongated marks are detected by both sensors simultaneously as the line passes by said sensors;
(f) a comparator circuit operatively connected to the first and second sensors for processing the detection signals from the first and second sensors and producing an "up" signal when the marks on the line pass from the first sensor to the second sensor, and a "down" signal when the marks on the line pass from the second sensor to the first sensor;
(g) a counter circuit responsive to the "up" and "down" signals from the comparator circuit for maintaining a count indicative of the length of the line; and
(h) display means operatively connected to the counter circuit for displaying the length of the line.

5,345,692

ACCESSORIES FOR OUTSIDE MICROMETERS AND CALIPERS

Rafail N. Babitchenko, 10537 Dempsey Ave., Granada Hills, Calif. 91344

Filed Dec. 28, 1992, Ser. No. 997,328
Int. Cl.[5] G01B 5/02
U.S. Cl. 33—828 28 Claims



1. An accessory for outside micrometer calipers, comprising:
a measuring standard having first and second spaced faces, said first and second spaced faces being spaced from each other a known distance, said measuring standard having a uniform external surface in a direction at right angles to said spaced faces; and
a sleeve, said sleeve having a surface sized to engage upon said external surface of said measuring standard so that said measuring standard is slidable with respect to said sleeve in a direction at a right angle to said faces so that said measuring standard can engage against a measuring surface of a micrometer or caliper by sliding of said measuring standard in said sleeve to reduce the measuring gap by a distance equal to the length of the measuring standard and position the measuring gap that distance away from the measuring surface whereby said measuring standard can be inserted in said sleeve at the location where the measurement is to be made without adjustment so that accurate adjustments can be made at remote locations away from measuring references.

5,345,693

METHOD FOR DRYING, ESPECIALLY WASTE MATERIAL, SUCH AS SHRIMP OR CRAYFISH SHELL, FISH OFFAL, ETC.

René Skjold, Roslev, Denmark, assignor to Nutec ApS, Roslev, Denmark

PCT No. PCT/DK90/00137, § 371 Date Dec. 3, 1992, § 102(e) Date Dec. 3, 1992, PCT Pub. No. WO91/19144, PCT Pub. Date Dec. 12, 1991
PCT Filed Jun. 6, 1990, Ser. No. 956,021
Int. Cl.[5] F26B 7/00
U.S. Cl. 34—395 4 Claims

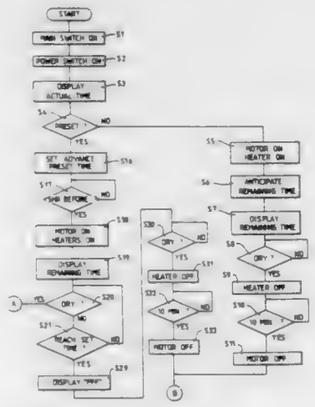
1. A method for drying moist starting material lumps, having a water content of up to 85%, comprising:
a) introducing the material into a swirl drying chamber in which it is accelerated in an air current composed of a multitude of turbulent air currents of sufficiently high air velocity, so that water is evaporated and the material lumps continuously collide with each other, and disintegrate into smaller pieces to expose new surfaces of rupture until a final product is obtained having a particle size of 10–500 μm and a maximum residual water content below 10%;
b) passing air into the drying chamber to form the multitude of currents, which air has a temperature of between about 350° and 450° C., the choice of the exact temperature depending at least partly on inlet temperature of the starting material and at least partly on disintegration rate of material, said air being introduced in an amount adjusted according to the amount of starting material introduced per time unit, so that free water in the material immediately escapes from the exposed surfaces of rupture by evaporation, said evaporation contributing to the cooling of the final product, thereby protecting and preserving the aroma and flavor components as well as the proteins and vitamins; and
c) retaining the material in the drying chamber by exerting a counter-pressure to regulate the air throughput until the predetermined particle size and water content of the product have been established.

5,345,694

DRYING MACHINE

Kinya Hayashi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jul. 8, 1993, Ser. No. 87,406
Claims priority, application Japan, Jul. 29, 1992, 4-202288
Int. Cl.[5] F26B 19/00
U.S. Cl. 34—550 7 Claims



1. A drying machine, comprising:
a) a drum having a drying chamber, for containing clothes to be dried;
b) means for heating air supplied to the chamber during a drying operation;
c) means for determining a degree of dryness of the clothes in the drying chamber;
d) display means for indicating a status of the drying operation, including an indication that the drying operation is not completed;
e) preset means for setting in advance a time when the drying operation is to be completed; and
f) control means, responsive to the dryness determining means, for determining the drying operation being completed based on the determination of the dryness determining means, and when the drying operation is not completed at the time set by the preset means, for controlling the heating means to supply heat and for controlling the display means to display an indication other than a time as the indication that the drying operation is not completed.

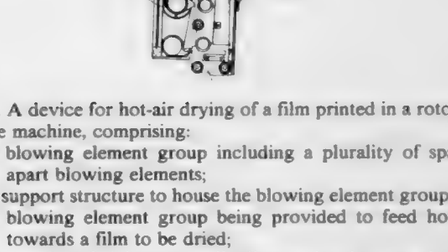
5,345,695

METHOD AND APPARATUS FOR DRYING WOOD

Auston B. Graham, Granite Falls, N.C., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Dec. 21, 1992, Ser. No. 993,644
Int. Cl.[5] F26B 19/00
U.S. Cl. 34—94 4 Claims

1. A stack of wood pieces to be dried comprising:
(a) a stack of wood pieces with spacing between horizontally spaced layers of wood pieces; and
(b) the improvement comprising:
(1) the spacing being provided by means of channel-shaped, non-moisture absorbing material separate from the wood pieces formed in an inverted U shape with a horizontal base and two parallel sides perpendicular to



said base with the top and bottom of the U contacting the wood pieces, said open end of the U shape being the bottom of the U shape.

5,345,696

DEVICE FOR HOT-AIR DRYING OF A FILM PRINTED IN A ROTOGRAVURE MACHINE

Giannino Bosoni, Piacenza, Italy, assignor to Schiavi Cesare Costruzioni Meccanichi S.p.A., Milan, Italy

Filed Oct. 14, 1992, Ser. No. 960,919
Claims priority, application Italy, Oct. 18, 1991, PR91A000048
Int. Cl.[5] F26B 13/00
U.S. Cl. 34—638 9 Claims

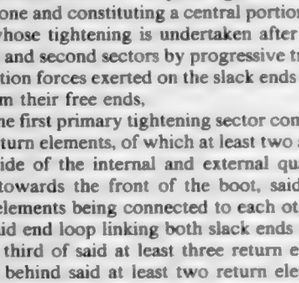
1. A device for hot-air drying of a film printed in a rotogravure machine, comprising:
a blowing element group including a plurality of spaced apart blowing elements;
a support structure to house the blowing element group, the blowing element group being provided to feed hot air towards a film to be dried;
a plurality of pinions mutually distanced and arranged along a predetermined course, the plurality of pinions being positioned to accommodate the introduction of the film; and
a plurality of idler running and supporting rollers mutually distanced and arranged along a predetermined course to support the film and propel the film along the course;
wherein the blowing element group is fixed and further includes two lateral uprights positioned at opposite ends of the plurality of blowing elements into which hot air is introduced, which hot air flows from above downwards towards the film in the plurality of blowing elements, each of the blowing elements of the plurality of blowing elements being mutually-distanced from each other a distance sufficient to permit the passage of a hand.

5,345,697

BOOT TIGHTENED BY A FLEXIBLE LINK

Jacques Quellais, Saint-Jorioz, France, assignor to Salomon S.A., Metz-Tessy, France

Filed Apr. 27, 1993, Ser. No. 52,726
Claims priority, application France, Nov. 6, 1992, 92 13569
Int. Cl.[5] A43B 11/00; A43C 5/00
U.S. Cl. 36—50.1 15 Claims



1. A boot comprising:
an external sole, an upper mounted on said sole, said upper being open towards the front to enable passage of the foot and comprising an internal quarter and an external quarter connected to each other by a closure system, said closure system comprising a flexible link, said flexible link extending along a predetermined alternating path, a series of return elements located in a fixed manner on either side of said quarters, in the vicinity of respective edges of said quarters located across from each other and defining a lacing zone, such that when a traction force is exerted on each of the two free ends of the slack ends of the flexible link, the quarters are tightened via return elements to bring said return elements closer to one another and consequently to ensure an internal foot retention, wherein the lacing zone comprises three tightening sectors, said tightening sectors comprising:
a first primary tightening sector directed towards the front of the boot, corresponding substantially to the journal zone of the metatarsal bones of the foot and constituting a lower portion of the lacing zone directly biased by one of the slack ends of the flexible link when traction is exerted thereon from its free end,
a second primary tightening sector directed towards the rear of the boot, corresponding substantially to the flexion fold zone of the foot and constituting an upper portion of the lacing zone directly biased by the other slack end of the flexible link when traction is exerted thereon, the slack ends exerting simultaneous traction on said first and second primary tightening sectors, from their free ends and
a third secondary tightening sector located between the first and second sectors corresponding substantially to the instep zone and constituting a central portion of the lacing zone, whose tightening is undertaken after tightening of the first and second sectors by progressive transmission of the traction forces exerted on the slack ends of the flexible link from their free ends,
wherein the first primary tightening sector comprises at least three return elements, of which at least two are located on either side of the internal and external quarters and directed towards the front of the boot, said at least two return elements being connected to each other by an end loop, said end loop linking both slack ends of the flexible links, a third of said at least three return elements being located behind said at least two return elements and directed towards the rear of the foot with respect to said at least two return elements, said one of the slack ends passing on said third of said at least three return elements and

extending directly therefrom to one of said free ends having said traction force exerted thereon.

5,345,698

ALPINE SKI BOOT

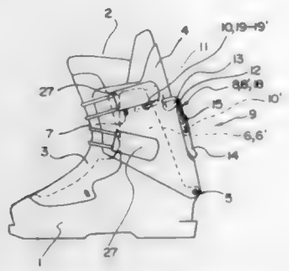
Phillipe Billet, St. Priest en Jarez, and Jean Paris, Sevrier, both of France, assignors to Salomon S.A., Annecy Cedex, France

Continuation of Ser. No. 5,298, Jan. 19, 1993, abandoned. This application Jan. 5, 1994, Ser. No. 177,715

Claims priority, application France, Jan. 16, 1992, 92 00563

Int. Cl.[5] A43B *5/4*

U.S. Cl. 36—117 **16 Claims**



1. A ski boot comprising a sole, an opening, and a shell base having a heel portion and an overlying upper, the upper comprising a front portion and a rear portion journalled with respect to said shell base about a transverse journal axis on said heel portion to enable pivoting of said rear portion of the upper towards the rear at the opening of the boot, wherein the rear portion of the upper is connected to the front portion by tightening and closure means, said tightening and closure means being connected between said front portion and said rear portion, two lateral wings integrally connected to said shell base and extending upwardly; linkage means connecting respective said lateral wings to the rear portion of the upper; a traction element for connection to said linkage means being located at the rear portion of the upper, whereby said linkage means and traction element allow said rear portion to freely pivot in a direction from the rear to the front of said boot

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5,345,699

SKI BOOT OF VARIABLE VOLUME WITH OVERLAPPING FLAPS

Denis Gallon, Feltre, Italy, assignor to Lange International S.A., Fribourg, Switzerland

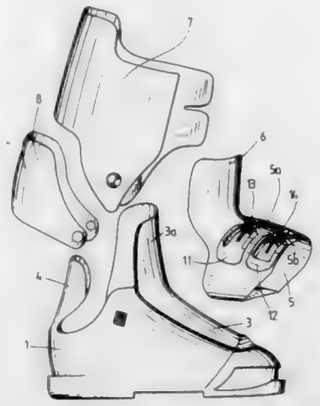
Filed Jun. 16, 1993, Ser. No. 78,437

Claims priority, application Switzerland, Jul. 9, 1992, 2 170/92-1

Int. Cl.[5] A43B *5/04*

U.S. Cl. 36—119 **10 Claims**

1. A ski boot made of plastic material comprising a shell of variable volume (1) surrounding the foot and the heel and having first and second longitudinal flaps (2, 3) which overlap on at least one part of the foot but only said second flap extending at the same time on and at least in part above the instep in the region of the lower leg, an auxiliary attached piece interacting with said second flap to cover the instep, a shaft in the form of a collar (7) attached to the shell and means for clamping the shell and the collar, wherein said second flap (3) of the shell extending above the instep is of the interior of the boot and wherein said auxiliary attached piece (6) is integral with a



covering piece (5; 20) which envelopes the metatarso-phalangeal zone, said covering piece including tightening means.

5,345,700

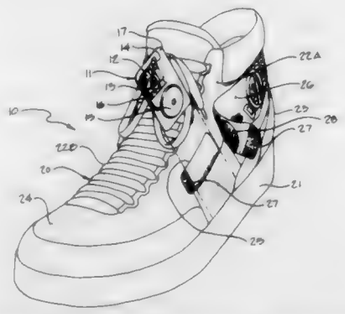
ATHLETIC SHOE WITH REPLACEABLE UNITARY ASSEMBLY FOR GENERATING AND BROADCASTING AN AUDIBLE SIGNAL

Vincent E. Norment, Baltimore, Md., assignor to Leonard Bloom, Towson, Md., a part interest

Continuation of Ser. No. 828,564, Jan. 31, 1992, abandoned. This application Jul. 19, 1993, Ser. No. 93,976

Int. Cl.[5] A43B *23/00*

U.S. Cl. 36—139 **7 Claims**



1. An athletic shoe with a replaceable interchangeable unitary assembly for generating and broadcasting an audio signal, comprising an athletic shoe having a pocket formed therein, the pocket having an opening, a self-contained interchangeable unitary circuit board inserted through the opening and into the pocket, the self-contained interchangeable unitary circuit board having a microchip, on/off switch, battery and speaker integrally mounted thereon, such that the self-contained interchangeable unitary circuit board may be readily removed and replaced, a flap carried by the shoe and covering the opening in the pocket, and the flap having a conspicuously-displayed button means thereon overlaying the switch on the self-contained interchangeable unitary circuit board, such that the button means may be pressed to close the on/off switch to generate and broadcast an audio signal, regardless of whether the shoe is being fastened or unfastened, and at the discretion of the wearer.

5,345,701

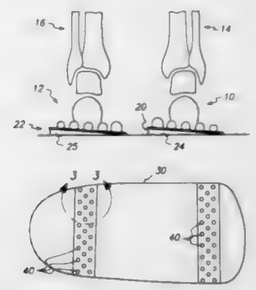
ADJUSTABLE ORTHOTIC

Leland R. Smith, 363 Dolphin Isle, Foster City, Calif. 94404

Continuation of Ser. No. 804,423, Dec. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 692,316, Apr. 26, 1991, abandoned. This application Jul. 21, 1993, Ser. No. 95,355

Int. Cl.[5] A61F *5/00*

U.S. Cl. 36—144 **14 Claims**



1. An orthopedic corrective appliance kit for the feet comprising:

at least one footbed portion selectable by foot size for the right or the left foot and conforming substantially to right or left soles of the selected size, the at least one footbed portion formed from a material substantially non-deformable with respect to a ground surface;

a plurality of selectable wedge means defining different angles;

first attachment means beneath a rearfoot area of the at least one footbed portion for attaching at least one of the plurality of selectable wedge means; and

second attachment means beneath a forefoot area of the at least one footbed portion for attaching at least one of the plurality of selectable wedge means, each of the plurality of selectable wedge means including mating connection means for interchangeably attaching to one of the first or second attachment means of the at least one footbed portion, the plurality of selectable wedge means enabling forefoot and rearfoot alignment of the feet while standing and walking to correct valgus and varus foot abnormalities.

5,345,702

REMOVABLE PIPE ARCH FOR DRAGLINE BUCKETS

James T. Hughes, Mt. Vernon, Ohio, assignor to Indresco Inc., Dallas, Tex.

Filed Aug. 11, 1992, Ser. No. 928,279

Int. Cl.[5] E02F *3/00*

U.S. Cl. 37—399 **6 Claims**

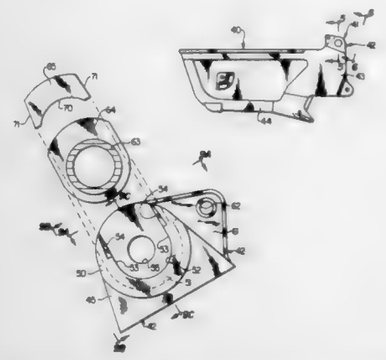
1. A dragline bucket having a back wall, opposite side walls, a bottom and an open front, further comprising:

(a) saddle bracket on each of said opposite side walls positioned toward said open front and spaced above said bottom for removably connecting a tubular member between said side walls;

(b) a tubular member comprising a straight pipe extending between said saddle brackets removably connected with said opposite side walls along a line spaced from said bottom;

(c) a collar on each of opposite ends of said tubular member engageable with and removably securing said tubular member with said saddle brackets on said opposite side walls; and

(d) each said saddle bracket includes an internal channel portion providing a semi-annular pocket for said collar on said said pipe and a wedge member engageable with each



said channel portion for locking said pipe in said channel portion and said collar in said pocket.

5,345,703

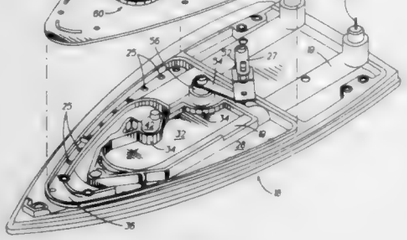
STEAM IRON SEAL WITH TANGENTIAL FLOW FOR SURGE

Richard I. Farrington, Seymour, Conn., and David Jalbert, Coventry, R.I., assignors to Black & Decker, Inc., Newark, Del.

Filed Oct. 6, 1993, Ser. No. 132,416

Int. Cl.[5] D06F *75/18, 75/22, 75/26*

U.S. Cl. 38—77.5 **8 Claims**



1. An electric iron comprising:

a soleplate having a top surface and a bottom surface;

a soleplate cover connected to the top surface of the soleplate including first and second fluid flow openings;

a housing connected to the soleplate cover;

said soleplate and soleplate cover including first means forming a steam chamber and second means forming a surge chamber;

a water tank located in the housing and having a first flow control water inlet and at least a pair of water outlets;

valve means controlling the flow of water from said water tank to said steam chamber through said first flow opening in said soleplate cover;

second flow control means for controlling the flow of water from the water tank to the surge chamber through said second flow opening in said soleplate cover;

seal means overlying said first and second flow openings including a first portion in sealing engagement with the first flow opening and a second portion in sealing engagement with the second flow opening, said second portion including a first leg extending through the second flow

opening below a lower surface of the cover and having means defining a nozzle for directing water from said water tank into said surge chamber in a tangential flow path relative to the lower surface of the cover; and

temperature sensing means in heat transfer relation with the soleplate and mounted in relatively close proximity to said surge chamber for regulating the temperature of the soleplate, said nozzle directing the water flowing through said second flow opening towards said temperature sensing element.

5,345,704

STEAM IRON WITH REMOVABLE CALCIFICATION RECEPTACLE

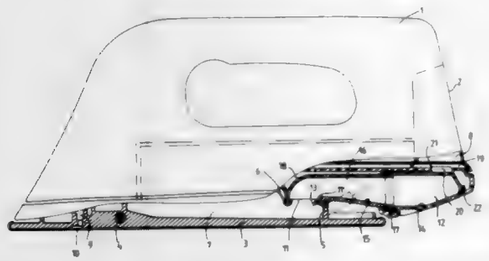
Gerard L. H. Guillot, Radon, and Jean-Paul A. Bouleau, Champfleur, both of France, assignors to Moulinex (Societe Anonyme), Bagnolet, France

Filed May 17, 1993, Ser. No. 62,184

Claims priority, application France, May 15, 1992, 92 05930

Int. Cl.[5] D06F *75/18*

U.S. Cl. 38—77.83 **10 Claims**



1. In an electric steam iron comprising a casing (1) whose rear provides a heel (2) and a sole (3) heated by an electric resistance (4), said iron being capable of occupying two positions, either an ironing position in which the iron rests on the sole (3), or a rest position in which the iron rests on the heel (2), said sole (3) having a partition (5) forming with a closure plate (6) a vaporization chamber (7) which is supplied with water from a reservoir (8), said vaporization chamber (7) communicating with a steam distribution chamber (9) having outwardly opening steam distribution openings (10) and having a de-scaling opening (11) opening into a rear portion of the iron and closed by removably mounted closure means; the improvement wherein said closure means comprises a removable receptacle (12) for collecting calcified deposit communicating by a weir (13) with said vaporization chamber (7), whereby calcified deposit present in the vaporization chamber (7) falls into the receptacle (12) when the iron occupies said rest position.

5,345,705

LIGHTWEIGHT, THREE-DIMENSIONAL SIGN

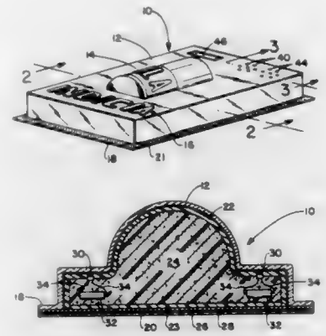
Gary L. Lawrence, 8036 Bricker Rd., NW., Massillon, Ohio 44646

Continuation of Ser. No. 886,522, May 20, 1992, abandoned. This application Aug. 2, 1993, Ser. No. 101,332

Int. Cl.[5] G09F *19/00*

U.S. Cl. 40—616 **20 Claims**

1. A sign comprising a rigid plastic display sheet having a desired three-dimensional, contoured display surface formed thereon, the display sheet being secured to a planar plastic backing and together with the planar plastic backing defining a space therebetween a rigid foamed plastic at least partially occupying the space between the planar plastic backing and the display sheet, the rigid foamed plastic having sufficient rigidity to provide support and dimensional stability for the contoured display surface of the display sheet, and matter contained within the space between the display sheet and the backing, said matter having a display surface, a portion of the



display sheet being transparent to allow viewing of said display surface of said matter contained within the sign.

5,345,706

FIREARM SUPPORT

Michael G. Brown, The Woodlands, Tex., assignor to Huntech, Inc., Houston, Tex.

Filed Jun. 25, 1993, Ser. No. 82,981

Int. Cl.[5] F41A *23/06*

U.S. Cl. 42—94 **12 Claims**



1. A firearm support for a firearm having a sling post with a sling-mounting bore therethrough, said firearm support comprising:

a base defining a support surface for said firearm;

at least one support leg extending from said base;

a body extending from said base and having a bore therethrough;

a first gripping arm for grippingly engaging said sling post; and

pulling means carried by said body and extending through said bore in said body for pulling said gripping arm and said sling post into said bore to thereby urge said firearm into engagement with said support surface.

5,345,707

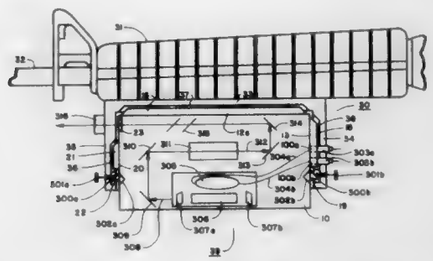
INTERCHANGEABLE LASER CAVITY CARTRIDGE

David A. Randall, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 31, 1993, Ser. No. 40,961

Int. Cl.[5] F41G *1/35*

U.S. Cl. 42—103 **2 Claims**



1. A laser cartridge assembly adapted for interchanging a plurality of laser cavity cartridges, each operational at a different lazing frequency, the assembly comprising:

a receptacle including interconnected top, front, back, and parallel enclosure surfaces, defining a laser cartridge enclosure, the receptacle coupled substantially underneath a weapon for releasable holding a laser cavity cartridge within the cartridge receptacle enclosure, the receptacle further including an aperture through one surface of said cartridge receptacle for projecting a laser beam therethrough, and an electrical contact means on one of an inside receptacle enclosure surface;

slot means in each of said cartridge receptacle surfaces for respectively mating with cartridge alignment means;

a cartridge of the plurality of laser cavity cartridges with interconnecting top, bottom, front, back, and parallel surfaces, with inner surfaces thereof defining a laser cavity within the cartridge, the cartridge further including an aperture within one surface of said interconnecting surfaces thereof which allows projection of a laser beam therethrough when properly aligned with the aperture of the laser cartridge receptacle, with said laser cavity containing a lazing means designed to operate at a specific lazing frequency, further including electrical contact means which project through and outward of said cartridge for mating with the electrical contact means in the laser receptacle;

an alignment means on outside said top, front, back, and parallel surfaces of said cartridge, corresponding to a respective slot means for releasable coupling to the slot means, whereby when the cartridge is releasable held within the cartridge receptacle, optical alignment is achieved between the respective apertures such that activation of the laser cavity through electrical connection between the respective electrical contact means allow projection of the laser beam through the cartridge and the cartridge receptacle to a target.

5,345,708

FISHING POLE SUPPORT

Maynard L. Loyd, 2510 Robinson St., Colorado Springs, Colo. 80904

Filed Feb. 22, 1993, Ser. No. 20,546

Int. Cl.[5] A01K *97/10*

U.S. Cl. 43—21.2 **2 Claims**

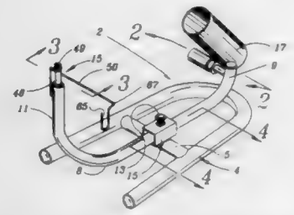
1. An ice fishing support assembly for a fishing rod which carries a fishing line comprising,

a flat "A" shaped planar base member having a cross bar, and adapted to be placed directly on the ice,

a U-shaped bracket attached to said cross bar carrying spaced apart rod holding means and rod latching means where the rod holding means includes,

a rotatable and handle receiving tubular member and spring means biasing the tubular member into a rotated angular position with respect to the plane of the base member, and

where the rod latching means includes a pivotal lever arm which may be selectively positioned over a portion of the



fishing rod to retain the rod in a loaded position against the rotating force of the spring means, and

line retaining means integral with the latching means and integral with the pivotal lever arm to retain a stretch of the fishing rod line in a position to create a rotating force moment on the latching means when tension is created in the fishing line.

5,345,709

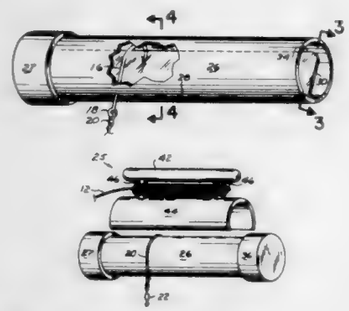
TROTLINE AND FISHHOOK HOLDER

Jimmie R. Cummings; Martha F. Cummings, both of P.O. Box 54; Ervin J. Mallonee, and Christene L. Mallonee, both of 1702 N. Post Rd., all of Chandler, Okla. 74834

Filed Dec. 28, 1993, Ser. No. 174,082

Int. Cl.[5] A01K *97/00*

U.S. Cl. 43—57.3 **8 Claims**



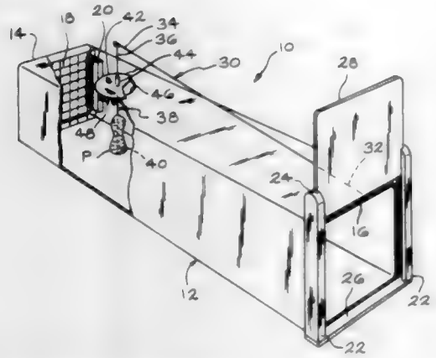
1. A trotline holder, comprising:

an elongated sleeve having one end closed and having a substantially coextensive wall slot;

a coextensive diametrically disposed wall within said sleeve having one longitudinally extending edge integral with the wall of the sleeve adjacent the slot and having its opposite longitudinally extending edge surface terminating in close spaced relation with respect to the the inner wall surface of the sleeve for supporting the hook end portion of a plurality of fishhooks in juxtaposed relation with the shank portion of each fishhook projecting outwardly through the sleeve slot; and,

handle means transversely frictionally gripping a major portion of the sleeve periphery opposite the slot for preventing unauthorized separation of the fishhooks from the sleeve.

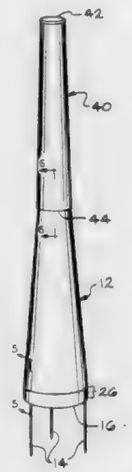
5,345,710
TRAP FOR SMALL ANIMALS
Ray Bitz, 5515 W. Erie, Ottawa Lake, Mich. 49267
Filed Jun. 15, 1993, Ser. No. 77,837
Int. Cl.[5] A01M *23/16*
U.S. Cl. 43—61 **6 Claims**



1. An animal trap comprising
a hollow, tubular housing having first and second ends and an opening for a bait stick holder in the housing intermediate said first and second ends,
closure means mounted on said housing for closing said first end of said housing,
trap door means mounted on said second end of said housing for movement between a first position in which it is inoperable, and a second position in which it is operable, to close said second end of said housing.
trap door latch means movable between a first position in which it is operable, and a second position in which it is inoperable, to maintain said trap door means in said first position,
a bait stick having a first end on which a bait can be supported,
a removable bait stick holder having means for releasably engaging said housing adjacent the bait stick holder opening and supporting said bait stick holder on said housing, said bait stick holder having an aperture through which the bait stick can extend,
support means for pivotally supporting said bait stick within the bait stick holder aperture so that said first end of said bait stick is suspended within said housing, and
means for translating movement of said first end of said bait stick into movement of said trap door latch means between said first and second positions,
wherein, said bait stick and said bait stick holder can be removed from said housing, bait can be applied to said first end of said bait stick outside of said housing and wherein said first end of said bait stick with bait thereon can be reinserted through the opening in said housing and supported therein by said bait stick holder.

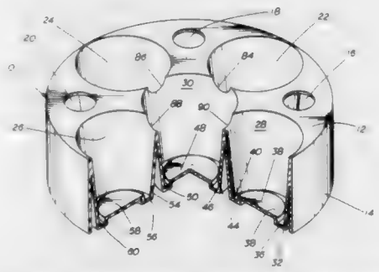
5,345,711
TREESHELTER SYSTEM FOR SEEDLINGS, SAPLINGS, AND THE LIKE
Todd Friesner, 411 W. Second Street, Perrysburg, Ohio 43551
Filed May 19, 1993, Ser. No. 64,824
Int. Cl.[5] A01G *17/12*
U.S. Cl. 47—24 **8 Claims**

1. A unitary treeshelter in combination with a treeshelter extender having a first end with connector means provided thereon, said treeshelter comprising
a hollow, unitary treeshelter body having first and second ends and a longitudinally extending axis, said treeshelter body being open at both ends and having a plurality of bosses formed integrally in the treeshelter body adjacent the first end thereof,
a bore provided in each of said bosses said bores being oriented so that they are substantially parallel to the longitudinal axis of said treeshelter body,
a rod secured in each bore and extending a given distance beyond the first end of said treeshelter body, and
connector means provided on the second end of the treeshelter body, wherein said unitary tree shelter may be installed



over a seedling planted in the ground by positioning the treeshelter over a seedling and pressing downwardly on the treeshelter body until the lower edge of said treeshelter body is flush with the ground and said rods are firmly embedded in the ground and wherein the length of the treeshelter body can be extended by connecting said connector means provided on said second end of the treeshelter body to the connector means on the first end of the treeshelter extender.

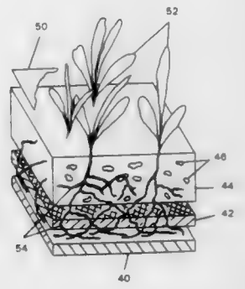
5,345,712
MULTI PURPOSE PLANT HOLDER
Mannie S. Lambert, 6310 Havendale, Houston, Tex. 77072
Filed Jul. 19, 1993, Ser. No. 93,474
Int. Cl.[5] A47G *7/00*
U.S. Cl. 47—39 **3 Claims**



1. An article of manufacture including in combination
a planar member including a substantially perpendicular extension along the perimeter,
a plurality of openings near the perimeter of said planar member,
a plurality of hollow, frustro conical portions positioned in said planar member with a large end of said portions being joined to said planar member and a small end of said portions having a bottom support, and

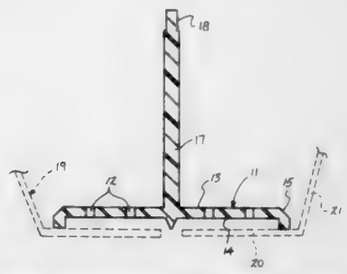
at least one raised support positioned near the center of each bottom support of said plurality of hollow, frustro conical portions.

5,345,713
LOW COST, VERSATILE SOD MAT AND METHOD FOR PROPAGATION
Charles J. Molnar, and Judith R. Molnar, both of 12 Malvern Ct., Devon, Wilmington, Del. 19810
Continuation-in-part of Ser. No. 745,224, Aug. 14, 1991. This application Mar. 22, 1993, Ser. No. 34,231
Int. Cl.[5] A01C *1/04*
U.S. Cl. 47—56 **20 Claims**



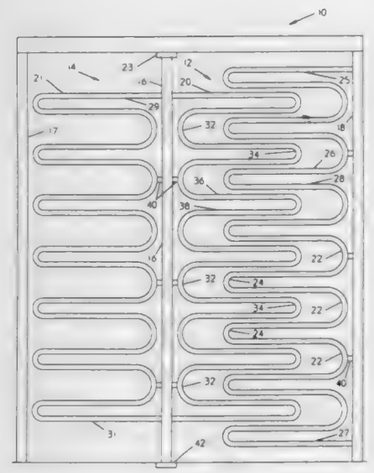
8. A new and improved plant sod mat comprising the following:
a) a polypropylene sod reinforcement wherein said polypropylene sod reinforcement consists essentially of a pattern bonded, polypropylene spunbond fabric and wherein said polypropylene sod reinforcement has has a basis weight of less than or equal to 1.5 opsy;
b) a layer of planting medium on said polypropylene sod reinforcement;
c) viable plants selected from the group comprising herbs, vegetables, flowers or groundcovers growing in said planting medium and whose roots penetrate and entangle with said polypropylene sod reinforcement and thus, form a sod mat.

5,345,714
PLANT SEPARATION DEVICE
John W. Washington, 4667 Ranch Dr., Colorado Springs, Colo. 80918
Filed Jul. 30, 1993, Ser. No. 99,527
Int. Cl.[5] A01G *9/12*
U.S. Cl. 47—70 **5 Claims**



1. A plant separation device for reception within a planting pot, wherein the device comprises,
a mounting plate, the mounting plate having a top wall spaced from a bottom wall, with the mounting plate including a matrix of apertures directed through the mounting plate extending from the top wall through the bottom wall, and
a shaft member fixedly and orthogonally mounted to the top wall medially of the mounting plate, and
the mounting plate includes a peripheral side wall of a truncated conical configuration, wherein the top wall is of a first diameter, the bottom wall of a second diameter, with the second diameter greater than the first diameter permitting ease of extraction of the mounting plate relative to the planting pot, and
the bottom wall includes a plurality of support feet fixedly mounted to the bottom wall arranged to space the mounting plate bottom wall from a planting pot floor of the planting pot.

5,345,715
SERPENTINE STRUCTURE FOR A TURNSTILE
David M. Kosikowski, Brighton, and John W. Kane, Dearborn, both of Mich., assignors to Burle Technologies, Inc., Wilmington, Del.
Filed Aug. 20, 1993, Ser. No. 109,831
Int. Cl.[5] E05D *15/02*
U.S. Cl. 49—42 **5 Claims**



1. In a turnstile of the type which includes a stationary section which defines a plane and a movable section, with the movable section comprised of at least one wing which also defines a plane, with the plane of each wing of the movable section overlapping the plane of the stationary section when each wing approaches the stationary section, with both the stationary section and the wings of the movable section comprising several horizontal structures with spaces between the horizontal structures, and with the horizontal structures of each wing located so that they pass through the spaces of the stationary section as the wing is moved past the stationary section, the improvement comprising:
the horizontal structures of the stationary section and the horizontal structures of each wing of the movable section comprising loops formed with horizontal segments and curved sections joining horizontal segments which are vertically displaced from each other.

5,345,716
SEGMENTED MULTIPLE WIDTH STORM SHUTTER
Mark A. Caplan, 1701 Michigan Ave., Miami Beach, Fla. 33139
Filed Sep. 20, 1993, Ser. No. 124,336
Int. Cl.[5] E05B *65/04*
U.S. Cl. 49—61 **6 Claims**

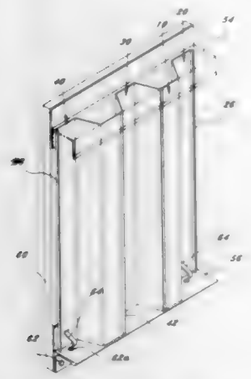
1. A storm shutter for mounting on an exterior portion of a building to protect window or door openings from high winds, flying foreign objects and rain, said storm shutter constructed

of a plurality of individual modular segments to achieve any desired width for a custom fit on any window width comprising:

first flat panel segment of a first width having first and second connecting means disposed along lateral edges;

second panel segment of a second width different than said first width of said first panel segment including third connecting means along one lateral edge connectable to said first panel segment first connecting means, each of said first and second panel segments being rigid, said second panel being of a different shape than said first panel in cross-sectional configuration whereby the first and second panels can be joined together to form a storm shutter;

third rigid panel segment having fourth and fifth connecting means disposed along lateral edges, said fist and second connecting means being engagable with said third connecting means, said fourth connecting means, and said fifth connecting means, whereby the first, second and



third panel segments are joined together in different relationships to form a single rigid storm shutter panel of varying widths to fit a particular window;

a fourth rigid panel segment including an elongated body having a first lateral edge and a second lateral edge and a sixth connecting means disposed along the first lateral edge;

said third rigid panel segment having a flat portion and a pair of oblique angled portions connected at acute angles relative to said flat portion, forming a trapezoidal shape without a base, said second panel segment including a first flat portion and a second flat portion disposed at an obtuse angle relative to each other, and said fourth panel segment having first and third flat sections parallel to each other and connected by a second flat section disposed at an obtuse angle to each parallel panel, whereby a combination of panel segments are joined together forming what appears to be a trapezoidally-corrugated rigid panel for use as a shutter.

5,345,717

WINDOW CONSTRUCTION FOR VEHICLES

Akiyoshi Mori, Chita; Katsuzi Sakuma, Toyota, and Joichi Bansho, Himi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha and Aisin Keikinzoku Kabushiki Kaisha, both of Japan

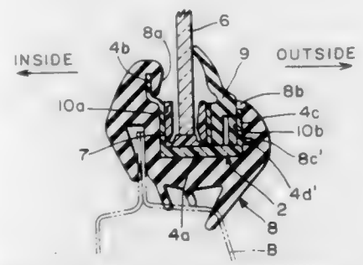
Filed Aug. 27, 1993, Ser. No. 112,607

Claims priority, application Japan, Aug. 31, 1992, 4-231038

Int. Cl.[5] E05D *15/06*

U.S. Cl. 49—404 **7 Claims**

1. A window construction for a vehicle body comprising a sash frame with a window opening for receiving at least one glass pane therein, and a seal member secured to the sash frame and the vehicle body, the sash frame having a projection outwardly extending from an outer surface thereof, and the seal member having a recess into which the projection of the sash



frame is fitted to fixedly secure the seal member on the sash frame.

5,345,718

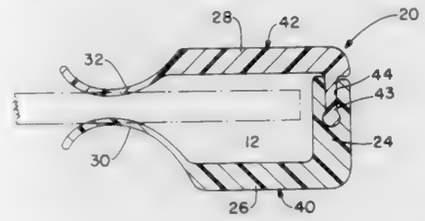
GLASS RUN GUIDE FOR SLIDABLE VEHICLE WINDOW

Ronald E. Dupuy, Wabash, Ind., assignor to GenCorp Inc., Fairlawn, Ohio

Filed May 25, 1993, Ser. No. 67,197

Int. Cl.[5] E05D *15/16*

U.S. Cl. 49—441 **19 Claims**



1. A one-piece glass run guide for a slidable vehicle window, comprising an elongate molded polymeric strip having a substantially U-shaped transverse cross section including a base, an inboard leg and an outboard leg, each of the legs having a projecting lip portion which engages interior and exterior surfaces, respectively, of a slidable vehicle window said glass run guide being substantially vertically disposed below a beltline within a vehicle door cavity such that said interior and exterior surfaces adjacent lateral edges of said slidable vehicle window are substantially continuously engaged by said lip portions below said beltline.

5,345,719

SEALING SYSTEM OR MOVABLE DUAL PANE GLASS

Vijay V. Karwande, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

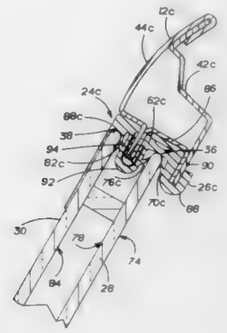
Division of Ser. No. 290,659, Dec. 27, 1988, Pat. No. 5,129,193. This application Apr. 6, 1992, Ser. No. 864,290

Int. Cl.[5] B60J *5/04*

U.S. Cl. 49—502 **2 Claims**

1. A window sealing system for an automobile door of the type formed of inner and outer door panels spaced by a U-channel and having a window aperture formed through the panels adjacent the open end of the U-channel and a window pane assembly having inner and outer spaced, substantially parallel window panes defining an outer peripheral channel therebetween and being slidably movable interiorly of the door panels from one side of the window aperture between a closed position and an open position with respect to the window aperture, the system comprising a seal member carried on the other sides of the window aperture and having lip seal portions sealingly engageable against inner and outer non-peripheral

faces of the inner of the window panes and a pair of bulb portions compressively sealingly engageable against outer



peripheral edges of each of the window panes, one of the bulb portions being carried in the U-channel.

5,345,720

INSULATION PART

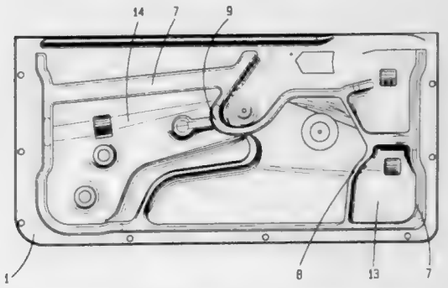
Michael Illbruck, Leverkusen, and Frank Gottschild, Wolfsburg, both of Fed. Rep. of Germany, assignors to Illbruck GmbH, Leverkusen, Fed. Rep. of Germany

Filed Jan. 14, 1993, Ser. No. 4,705

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1992, 9200501[U]; Mar. 20, 1992, 4209024

Int. Cl.[5] B60J *5/04*

U.S. Cl. 49—502 **12 Claims**



1. An insulation part suitable for acoustic insulation and sound absorption and a moisture barrier, and suitable for emplacement in a hollow space between an inner wall and an inner wall lining of an automobile door, comprising:

a foam base which is profiled and has a continuously, approximately constant cross section which is thin as compared with the space between the inner surfaces of the inner wall and the inner wall lining;

a plurality of beads of substantially U-shape in cross-section disposed on a edge side of the foam base and serving for a mutual supporting of the insulation part on the inner surface of both the inner wall and the inner wall lining; and

a plurality of free standing panels extending between beads of said plurality of beads.

5,345,721

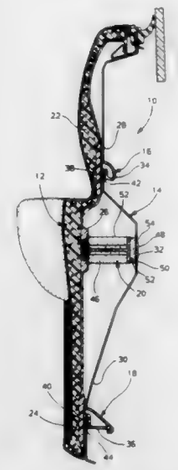
HOOK AND PIN FASTENER ASSEMBLY FOR A DOOR TRIM PANEL

Arthur C. Stein, Grosse Ile, and Loten T. Baskin, West Bloomfield, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 7, 1993, Ser. No. 60,193

Int. Cl.[5] B60J *5/04*

U.S. Cl. 49—502 **3 Claims**



1. A hook and pin fastener assembly for connecting and reliably locating a trim panel to an apertured body panel of a motor vehicle without the use of fasteners comprising:

a plurality of hooks connected to said trim panel to slidably retain said trim panel to said body panel and restrict movement of said trim panel in the lateral direction; and

means for locating and restricting movement of said trim panel in the lateral, vertical, and fore and aft directions without the use of fasteners.

5,345,722

ADJUSTABLE PLASTIC DOOR FRAME

H. Smith McKann, Fredericksburg, Va., assignor to General Products Company, Inc., Fredericksburg, Va.

Continuation-in-part of Ser. No. 858,515, Mar. 27, 1992, Pat. No. 5,187,898. This application Feb. 18, 1993, Ser. No. 19,567

Int. Cl.[5] E06B *1/04*

U.S. Cl. 49—505 **27 Claims**

1. An adjustable door frame, comprising:

a first member unitarily formed without any undercut portions, said first member including

a first trim section for overlying a wall surface adjacent a doorway opening in a wall,

a substantially planar first inside section extending substantially perpendicularly in a single plane from said first trim section for extending into the doorway opening,

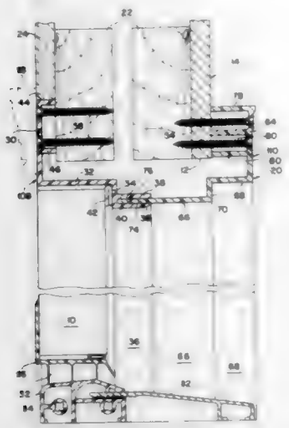
a first door abutment section extending substantially perpendicularly from said first inside section at an end thereof remote from said first trim section in a direction parallel to and opposite to said first trim section, and

a pair of parallel, substantially planar flanges extending substantially perpendicularly from said first abutment section at an end thereof remote from said first inside section in a direction parallel to and opposite to said first inside section, said flanges defining a slot therebetween having a constant width along an entire length said first abutment section to free ends of said flanges; and

a second member unitarily formed without said second member including

a second trim section for overlying a wall surface adjacent an opposite side of the doorway opening in the wall,

a substantially planar second inside section extending substantially perpendicularly from said second trim section in a single plane for extending into the doorway opening toward and adjacent to said first inside section, and



a tongue section extending from said second inside section in a single plane at an end thereof remote from said second trim section as a coplanar extension thereof along an entire length of said tongue section, said slot receiving and frictionally engaging said tongue section;

whereby engagement of said tongue section in said slot provides an adjustable connection of said first and second members to compensate for varying wall thickness, and said first and second members can be engaged by sets of cooling rolls after being formed in extrusion heads.

5,345,723

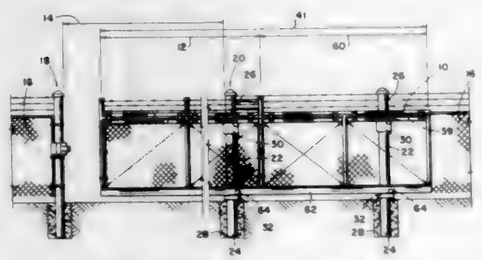
GATE CONVERSION METHOD

Edward L. Gibbs, Tulsa, Okla., assignor to Ameristar Fence Products, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 823,353, Jan. 21, 1992, Pat. No. 5,272,838. This application Jun. 7, 1993, Ser. No. 72,057

Int. Cl.[5] E06B *3/00*

U.S. Cl. 49—506 **6 Claims**



1. A method for converting a gate panel into a rolling cantilever-type gate for spanning an opening defined by a gate-receiving side and a gate-supplying side of a perimeter fence utilizing a conversion kit consisting essentially of a one-piece horizontally extending top-rail extrusion, commercially available roller assemblies, and hardware for attaching the top-rail extrusion to the gate panel, the top-rail extrusion being further defined as comprising a flat vertical plate having a first vertical side and a second vertical side spaced in parallel relation with the first side, a compartment extending horizontally along the top-rail extrusion for its entire length, said compartment being integrally attached to the vertical plate on the second side thereof, said compartment having a downward facing opening extending parallel to the plate and formed by two horizontal lower lips, upper and lower vertical shoulders on the vertical plate extending above and below the compartment, the upper shoulders and the lower shoulders being provided with holes to permit connection to said gate; the method of converting comprising the steps of placing the first vertical side of the extrusion against the gate panel and attaching the same to the gate panel along an upper portion thereof by bolting the extrusion to the gate panel through the holes in the shoulders, attaching at least one upper roller assembly to a supporting post located on the gate-supplying side of the fence such that the upper roller assembly engages the compartment through the downward facing opening whereby the gate panel is supported and movable between open and closed positions.

5,345,724

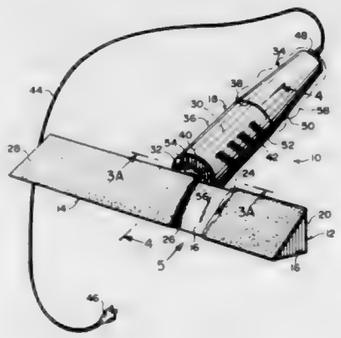
SANDING DEVICE FOR V-SHAPED SLATS

Patrick M. Ng, Jr., 1655 Walea St., Wahiawa, Hi. 96786

Filed Apr. 14, 1993, Ser. No. 45,724

Int. Cl.[5] B24B *23/04*

U.S. Cl. 451—351 **12 Claims**



1. An improved sanding device for various work surfaces which comprises:

a) an elongate wedge, said elongate wedge being fabricated out of a durable material;

b) abrasive material applied to work contact sides of said wedge;

c) means attached to a back end of said wedge, for vibrating said wedge with said abrasive material, so that said abrasive material can be used on V-shaped slats, bi-fold doors, shutters, casing, ornamental work and similar articles; and

d) padding fabricated out of a resilient material, in which said padding is positioned between said abrasive material and said work contact sides of said wedge to cushion said abrasive material.

5,345,725

VARIABLE PITCH LAPPING BLOCK FOR POLISHING LENSES

Frank H. Anthony, 326 Atherton Dr., Metaire, La. 70005

Filed Apr. 6, 1993, Ser. No. 43,650

Int. Cl.[5] B24B *13/005*

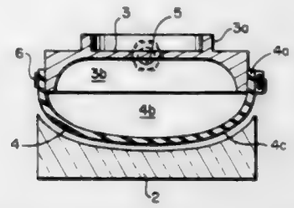
U.S. Cl. 451—390 **15 Claims**

1. A variable pitch lapping block for use in polishing optical lenses in an apparatus for polishing lenses having any one of a plurality of radii of curvatures, said lapping block comprising:

a rigid lapping block body element having a top portion structured for attachment to said apparatus and outer side walls extending downward and away from said top portion for forming an upper portion of a chamber,

a resiliently elastic element having edges and a radius of curvature between the edges, said edges being attached at said side walls to form a closure for said chamber, and

a valve element extending through a side wall of said rigid



lapping block body element and communicating with said chamber for admitting pressurized fluid into said chamber for changing the radius of curvature of said resilient elastic element to conform to a selected one of said plurality of radii of curvatures of said lenses.

5,345,726

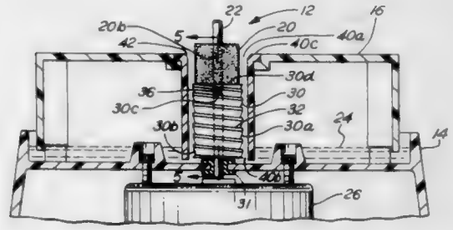
GRINDING BIT APPARATUS

Paul Gach, 15487 Orchard Ridge Dr., Clinton Township, Macomb County, Mich. 48038

Continuation of Ser. No. 913,582, Jul. 14, 1992, abandoned. This application Aug. 20, 1993, Ser. No. 109,647

Int. Cl.[5] B24B *9/10*

U.S. Cl. 451—450 **20 Claims**



1. A grinding bit apparatus for use with a grinding machine, the grinding machine having a base, a prime mover connected with the base, a drive shaft connected with the prime mover, a reservoir of a liquid situated upon the base above the prime mover, and a work table connected with the base and located above the reservoir so that the drive shaft passes through the reservoir and extends above the work table, said grinding bit apparatus comprising:

a pump having an upper end and an opposite lower end, said pump further having a cylindrical sidewall extending from said upper end to said lower end, said pump being structured for being driveably mounted on the drive shaft so as to rotate with the drive shaft and so that said lower end of said pump is located in the liquid, said cylindrical sidewall being provided with external helical groove means extending from said lower end to said upper end of said pump for engaging the liquid;

a grinding bit structured for being removably mounted to the drive shaft adjacent said upper end of said pump;

drive means for transmitting rotation between the drive shaft and said grinding bit; and

annular collar means spaced from said pump and stationarily located relative to the grinding machine for providing confinement of the liquid when said pump is rotated by the drive shaft, said annular collar means having an upper end and an opposite lower end, said upper end of said annular collar means extending to the work table, said lower end of said annular collar means extending into the liquid;

wherein when the drive shaft rotates said pump said external helical groove means engages the liquid so as to pump the liquid, in combination with liquid confinement provided by said annular collar means, to said working surface of said grinding bit.

5,345,727

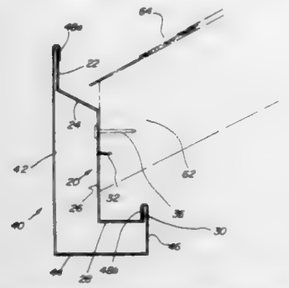
J-SHAPED TROUGH AND SUPPORTING MOUNT

Warren J. C. McCrea, 1046 Cedar Avenue, Burlington, Ontario, Canada L7T 2S1

Filed Apr. 15, 1993, Ser. No. 45,881

Int. Cl.[5] E04D *13/00*

U.S. Cl. 52—11 **1 Claim**



1. A roof drainage system for mounting against the peripheral edge of a roof comprised of the combination of:

a J-shaped trough; and

at least one mounting bracket for supporting said J-shaped trough on the periphery of said roof;

said mounting bracket comprising a first upstanding section, a base section extending orthogonally and rearwardly from the bottom of said first upstanding section, said base section terminating in a second upstanding section spaced rearwardly from and parallel to said first upstanding section, said second upstanding section terminating in a first edge for supporting said trough, said mounting bracket further comprising an angled section extending forwardly upwardly from the top of said first upstanding section and a third upstanding section extending upwardly from the top of said angled section and being spaced forwardly and parallel with respect to said first upstanding section, said third upstanding section terminating in a second edge for supporting said trough;

said trough having a first wall, a base extending orthogonally and rearwardly from the bottom of said first wall and a second wall extending orthogonally from said base and parallel to said first wall, said second wall terminating in a first lip for engaging said first edge of said second upstanding section of said mounting bracket, and said first wall terminating in a second lip for engaging said second edge of said third upstanding section of said mounting bracket wherein said base of said trough is spaced from and parallel to said base of said mounting bracket and said first wall of said trough is spaced from and parallel to said first upstanding section of said mounting bracket when said mounting bracket is mounted adjacent to said periphery of said roof.

5,345,728

SEWER CHIMNEY COUPLING

Peter J. Sugda, 68 Sanrico Dr., Manchester, Conn. 06040-4439

Continuation-in-part of Ser. No. 22,715, Jan. 11, 1993, Pat. No. 5,293,719, which is a division of Ser. No. 789,922, Nov. 12, 1991, Pat. No. 5,189,861. This application May 17, 1993, Ser. No. 62,580

The portion of the term of this patent subsequent to Mar. 15, 2011, has been disclaimed.

Int. Cl.[5] E02D *29/14*

U.S. Cl. 52—21 **19 Claims**

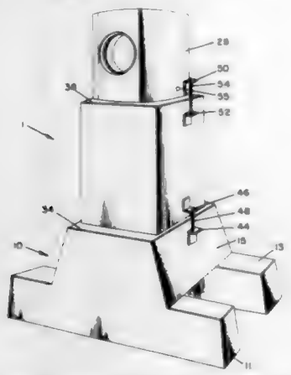
1. A sewer chimney for connecting a surface branch sewer

pipe to a deeply buried main sewer pipe having a fixture with an upwardly facing opening, said sewer chimney comprising:

(a) a base which has first and second leg portions which are positioned on opposite sides of the main sewer line and a bridge portion which extends from said first leg portion to said second leg portion and passes over the main sewer line, said bridge portion having a first vertical bore which is vertically aligned with said upwardly facing opening,

(b) a transitional section which rests on and is secured to said bridge portion, said transitional section having a second vertical bore which is vertically aligned with said first vertical bore,

(c) a cap block which rests on and is secured to the transitional section, said cap block having a third vertical bore which is vertically aligned with said first and second vertical bores, said cap block having a horizontal bore which intersects said third vertical bore, said horizontal bore having an outer opening which is adapted to receive a branch sewer pipe,



(d) a first vertical elongated pipe system which extends from said upwardly facing opening, through said first vertical bore and into said second vertical bore, said first elongated pipe having a top opening and an interior stop which is spaced from said top opening,

(e) a second vertical pipe system which extends from said interior stop through the top opening of said first elongated pipe and into said third vertical bore,

(f) a first seal between said transitional section and said bridge portion,

(g) a second seal between said transitional section and said cap block,

(h) a third seal between said pipe and said bridge portion,

(i) a fourth seal between said pipe and said cap block,

(j) a fifth seal between said pipe and the fixture of said main sewer pipe and,

(k) a sixth seal between said first elongated pipe system and said second elongated pipe system.

5,345,729

SUPPORT FOR TAMPER PROOF SECURING LIGHT FIXTURE ON SUSPENDED CEILING PANEL

Douglas Prahst, Milwaukee; Ralph H. Laird, New Berlin; Richard Kuchler, Big Bend; Lester G. Peterson, Milwaukee, and William D. Benning, Hartland, all of Wis., assignors to Wildeck, Inc., Waukesha, Wis.

Filed Feb. 25, 1993, Ser. No. 25,322

Int. Cl.[5] E04F *19/00*

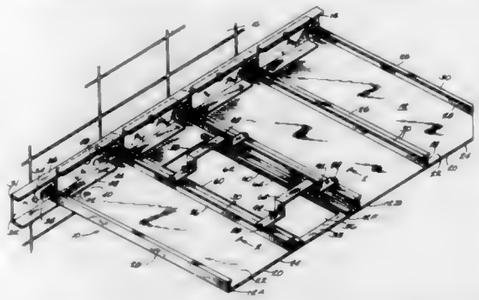
U.S. Cl. 52—28 **18 Claims**

11. A ceiling panel unit including a support for a light fixture including a housing having a peripheral mounting flange, said unit comprising:

a ceiling panel including a planar web section having spaced apart side edges, a rail portion on each of said side edges, a light fixture receiving opening located between said side edges and including end and side margins surrounding said fixture receiving opening and having inner and outer surfaces;

at least one hanger bracket mounted on said side rails and extending in bridging relation over said fixture receiving opening above the outer surface of said side margins;

a pair of jack means interposed said hanger bracket and the outer surfaces of said side margins and having adjustable abutment means movable into a back stop position relative



to the outer surface of the respective one of said side margin; and

suspension means on said hanger bracket connectable with light fixture housing, after the light fixture housing is inserted through said fixture receiving opening, for moving the light fixture into a finally installed position within said fixture receiving opening wherein said ceiling panel side margins are clamped between the light fixture mounting flange and said abutment means.

5,345,730

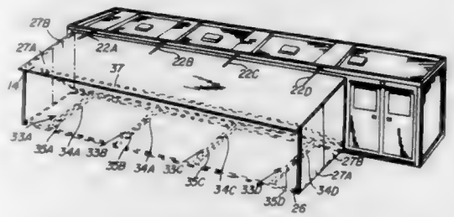
EXPANDABLE STRUCTURE AND SEQUENCE OF EXPANSION

Bruce A. Jurgensen, 3412 - 17th Ave., Forest Grove, Oreg. 97116

Continuation of Ser. No. 552,441, Feb. 5, 1990, abandoned, which is a continuation of Ser. No. 91,582, Aug. 31, 1987, abandoned, which is a continuation of Ser. No. 739,607, May 30, 1985, Pat. No. 4,689,924. This application Jul. 19, 1993, Ser. No. 93,977

Int. Cl.[5] E04B *1/346*

U.S. Cl. 52—64 **1 Claim**



1. A mobile expandable structure adapted to be collapsed to satisfy roadway width requirements and to be utilized in either collapsed or expanded condition for off road use, comprising;

end walls, side walls, a floor and a ceiling defining a core unit interior having length, width and height suitable for personnel occupancy,

at least one of said side walls having fixed side edge portions forming junctures with said end walls and a separated intermediate portion substantially comprising the remainder of the side wall and extending in height from a position below the floor to substantially the height of the ceiling, and a hinged connection along an upper edge of the intermediate portion for pivotal deployment thereof between a closed position inset between the side edge portions and a laterally outwardly extended overhead position exposing a substantially rectangular opening in said side wall extended in length between said side edge portions and in height between the ceiling and floor,

expandable components including an expansion floor having a floor surface, expansion end walls and expansion side wall arranged for stacked positioning thereof in a dedicated floor space adjacent said intermediate portion and extended into said core unit interior, said expansion side wall and expansion end walls being sandwiched between the intermediate side wall portion and the expansion floor, said expansion floor surface providing a visible interior wall extended the major portion of the length of said core unit interior along an inner edge of said dedicated floor space,

a pair of vertical support beams secured to the floor of the structure at the sides of the expansion floor in its stacked position and providing a vertical support edge, said expansion end walls hingedly connected to said vertical support edge for pivotal deployment thereof between the stacked position and a position extended through the wall opening, and a horizontal support edge provided on said floor along said inner edge of said dedicated floor space, said expansion floor hingedly connected to said horizontal support edge of said floor for pivotal deployment thereof between the stored position and a position extended through the wall opening, and

power means for power deployment of the intermediate side wall portion and said expandable components and in the extended position providing expansion of the core unit interior with substantially co-extending floor and ceiling and comparably suitable for personnel occupancy, said power means mounted unobtrusively to the structure for a finished appearance in the collapsed and expanded condition.

5,345,731

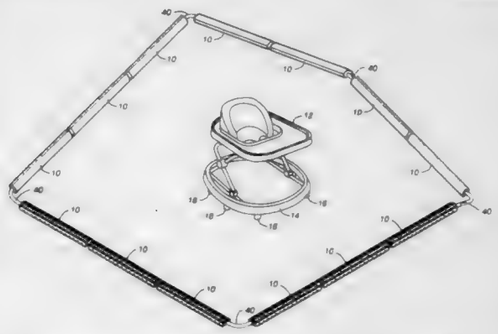
BABY WALKER BARRIER

Jerrold Sykes, 1405 Aster Dr., Antioch, Calif. 94509

Filed Dec. 24, 1992, Ser. No. 996,585

Int. Cl.[5] E01C *11/22;* **E02D** *27/32*

U.S. Cl. 52—102 **6 Claims**



1. Apparatus for forming a barrier on a support surface to restrict movement of a baby walker on said support surface when the apparatus is engaged by said baby walker, said baby walker having a walker body and wheels, said wheels supporting said walker body a predetermined distance above said support surface, said apparatus including at least one elongated barrier element positionable on said support surface and rotatable relative to said support surface, said elongated barrier element including first wheel engagement means comprising an elongated cam element having a cam surface extending lengthwise along said elongated barrier element and slanting upwardly from said support surface when said elongated barrier element is positioned on said support surface for engagement by a wheel of said baby walker, first support surface engagement means including a fulcrum element positioned on one side of said cam surface and extending lengthwise along said elongated barrier element engaging said support surface to prevent sliding of said elongated barrier element relative to said support surface when said walker wheel engages said cam surface whereby engagement between said walker wheel and said cam surface causes rotation of said elongated barrier element about said fulcrum element, and first walker body contact means comprising an elongated protrusion positioned on a second side of said cam surface and spaced from said fulcrum element with the distance between said fulcrum element and said protrusion exceeding said predetermined distance, and said elongated barrier element rotating responsive to engagement of said first wheel engagement means by a baby walker wheel to bring said protrusion into contact with said walker body and jam said elongated barrier element between said support surface and said walker body to terminate movement of said baby walker relative to said support surface.

5,345,732

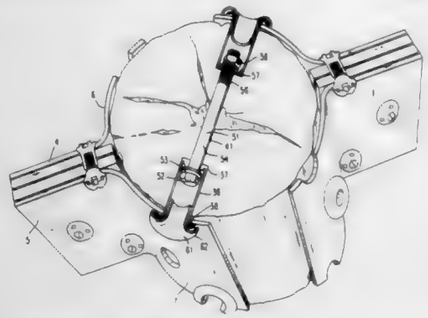
METHOD AND APPARATUS FOR GIVING STRENGTH TO A POLE

John K. Knight, and Noel W. Murray, both of Suite 292 Westlake Bldgs., 175 S. Mayfair Ave., Daly City, Calif. 94015

Filed Jun. 1, 1993, Ser. No. 69,808

Int. Cl.[5] E02D *27/42*

U.S. Cl. 52—170 **22 Claims**



1. A method of giving strength to a pole comprising the steps of:

i) taking a nail comprising;

a) two longitudinally extending metal sections generally of L-shape cross section,

wherein the two sections are secured together so that, in cross-section, the nail is generally of T-shape, wherein each metal section has apertures positioned in a first limb forming part of a cross bar of said T-shape and wherein second limbs of the L-shapes which form the upright of the T-shape are secured together spaced apart by one or more strengthening members, and

b) fasteners sized to extend through said pole and through aligned apertures of opposing longitudinally extending metal sections,

ii) driving the nail into the ground adjacent the pole with the cross-bar of the T-shape adjacent the pole and the upright of the T-shape extending generally radially of the pole, and

iii) fastening the nail to the pole using said fasteners.

5,345,733

TRUCK/TRAILER GAP FILL CLOSURE FOR STORAGE TERMINAL DOCK

Thomas R. Brockman, Kenton, and Mark Dillon, Upper Sandusky, both of Ohio, assignors to Fairborn USA Inc., Upper Sandusky, Ohio

Filed Apr. 20, 1993, Ser. No. 48,174

Int. Cl.[5] E04H *14/00*

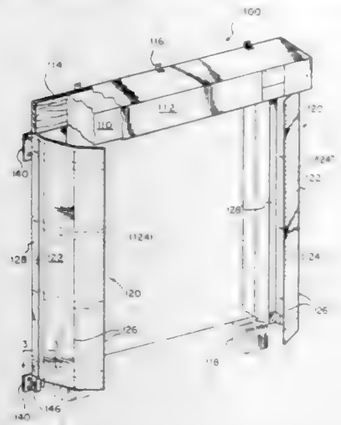
U.S. Cl. 52—173.2 **1 Claim**

1. In a warehouse building having at least one dock door within its wall to receive an open truck/trailer for loading and unloading, a wall mounted gap fill closure unit comprising:

a) hingedly adjustable, outwardly opening lefthand and righthand side wings, each wing having a free end and a wall-mounted anchor end, the anchor end being cantilevered to the building wall, each said wing including resilient stays each of which are secured transversely to the wing in a vertically spaced apart array of the wing, the stays being further secured in position by rigidized wing stiffeners, stiffeners secured within respective wings in a

longitudinal dimension at ends thereof, the stiffeners being longitudinally coextensive with a corresponding jamb of the door and the horizontal dimension of the stays in respective wings likewise being coextensive with the gap to be closed;

b) a bracket secured to the wall and one each hinge leaf supported by the bracket for the respective wings; a knuckle connecting at a lower end to the leaf; a pull pin on the knuckle which is engageable and disengageable with



said knuckle, whereby to fix the active and inactive orientation of the wings relative to the dock door;

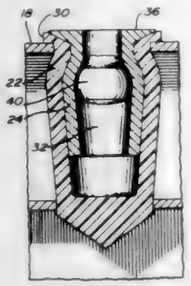
c) a head pas assembly coactively disposed and fixed upon the wall with respect to adjustable side wings, said head pad assembly and said wings being independently flexible, laterally, to offset vertical displacement at a loading dock.

5,345,734

SEALING DEVICE FOR DOUBLE GLAZED WINDOW ASSEMBLY

Luc Tremblay, Boucherville, Canada, assignor to Rivetec Inc., Montreal, Canada

Filed Jul. 27, 1993, Ser. No. 97,208
Claims priority, application Canada, Jan. 25, 1993, 2088027-9
Int. Cl.[5] F06B *1/04*; F16B *13/04*
U.S. Cl. 52—204.52 **6 Claims**



1. In combination, a sealed double glazed window assembly comprising a pair of glass sheets arranged in spaced parallel relationship to form an air space therebetween and a spacing unit disposed between the inner marginal edges of the glass sheets, said spacing unit having an inner face and outer face, each said face having a hole registry with one another, said holes being providing the injection of a as into said space; and a sealing device comprising:

a flexible plug adapted to fit into said holes; said plug defining a hollow cavity having an open end terminating at said outer face of said unit; and

a blind rivet having a portion extending within said cavity of said plug, said rivet comprising

a) a deformable sleeve member received in said cavity;

b) a stem coaxially positioned within said sleeve member, said stem having, at one end thereof, an enlarged head portion positioned inside said cavity below said sleeve member and having an outer diameter greater than that of said sleeve member; said stem having a frangible neck of reduced size inside said cavity; said stem having a portion extending outside said plug; said sleeve member being deformed by an outward pulling action, exerted on said outside portion of said stem whereby said enlarged head portion is forcibly engaged in said sleeve member and deforms said sleeve member to expand said plug in said hole of said spacing unit to thereby sealingly contain the gas injected between the glass sheets.

5,345,735

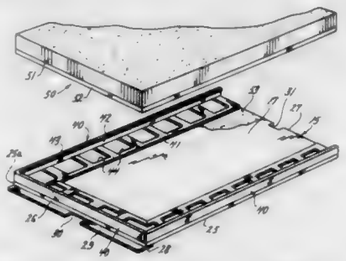
Patent Not Issued For This Number

5,345,736

CARPET SYSTEM FOR UTILITY TRENCH AND METHOD

W. Marvin Shoenfeld, 424 Down Hill Dr., Ballwin, Mo. 63021

Filed Jul. 23, 1992, Ser. No. 918,243
Int. Cl.[5] E04B *5/48*; H02G *3/08*
U.S. Cl. 52—220.5 **9 Claims**



1. A utility trench and carpet cover system in which the carpet covering the trench is not set out from the remaining carpet and in which the trench can be accessed without damage to the carpet comprising

a. a floor,

b. a utility trench having an open top formed in the floor and having recessed shoulders adjacent to the top of said trench,

c. at least one trench cover plate positioning on said shoulders to cover the trench, the cover plate having a support flange positioned on one lateral edge with a portion of the flange secured to the underside of the plate and a portion extending outwardly from said plate for supporting the center of the next adjacent plate, a notch in the flange intermediate its ends and a longitudinally aligned notch in the opposite lateral edge of the cover plate whereby when cover plates are laid end to end the notches coincide,

d. bracket means around three edges of said cover plate, and

e. a carpet segment secured to the plate within said bracket means,

f. whereby a tool is insertable into said alignment notches for lifting the plate off of the trench without damaging the carpet attached to the plate.

5,345,737

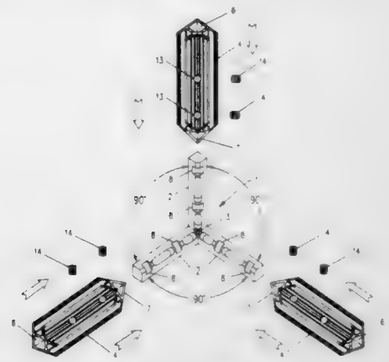
SYSTEM OF MODULAR BUILDING ELEMENTS FOR DISPLAY FIXTURES

Jim S. Latchinian, 1594 NW. 159th St., Miami, Fla. 33169

Filed Jun. 22, 1992, Ser. No. 901,942
Int. Cl.[5] E04B *9/06*; F16D *1/00*
U.S. Cl. 52—280 **26 Claims**

1. A modular system of mutually cooperating building elements comprising an angle connector having at least two elongated arms, each arm having an external cross-sectional profile

and a long dimension, said arms having a common junction, each arm having at least one recess with an inward facing edge facing said junction wherein said edge is disposed transversely to the long dimension of said arm; at least one set screw having a conical end surface; at least one extrusion having a closed



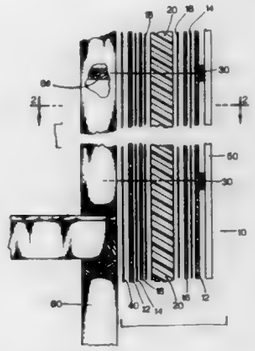
channel for receiving one of said arms; and at least one threaded hole in said channel for receiving said set screw, said threaded hole aligned with said inward facing edge so that said conical end surface of said set screw offsetly engages said inward facing edge for urging said extrusion in direction to said junction.

5,345,738

MULTI-FUNCTIONAL EXTERIOR STRUCTURAL FOAM SHEATHING PANEL

Alkiviadis G. Dimakis, Federal Way, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Continuation of Ser. No. 680,810, Mar. 22, 1991, Pat. No. 5,220,760. This application Apr. 26, 1993, Ser. No. 53,153
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.
Int. Cl.[5] E04C *1/00*; C08H *5/04*
U.S. Cl. 52—309.9 **33 Claims**



1. A sheathing panel comprising:

a core sheet of a manufactured cellular material having first and second major opposed surfaces;

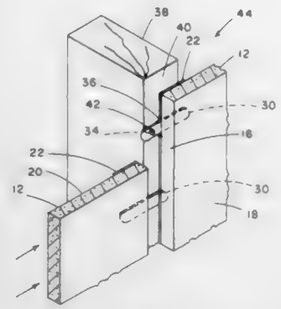
first and second cover sheets secured to the respective first and second major opposed surfaces with the core sheet therebetween, the first and second cover sheets each comprising at least one sheet of cellulosic material impregnated with polyisocyanate within a range of about 8% to 20% by weight of polyisocyanate to cellulosic material with the polyisocyanate being heat cured.

5,345,739

WALLBOARD ATTACHMENT

Robert J. Menchetti, Buffalo, N.Y., assignor to National Gypsum Company, Charlotte, N.C.

Filed Jun. 4, 1993, Ser. No. 71,094
Int. Cl.[5] E04B *2/00*
U.S. Cl. 52—489.2 **20 Claims**



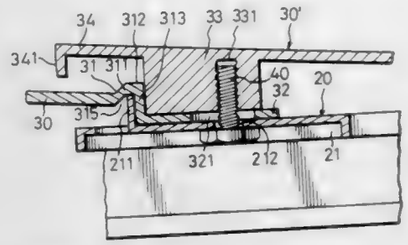
13. A vertical wall comprising a fixed vertical support and a plurality of wallboards, said wallboards having a front face, a back face and two opposite side edges, an elongate, narrow, tape having spaced apart adhered areas thereof adhesively attached to nonadhered areas forming a plurality of spaced pockets between said tape and said back face, mounting clips inserted into at least some of said pockets, and fastening means affixing said mounting clips to said vertical support.

5,345,740

MODULAR ROOF STRUCTURE

Chien-Teh Huang, No. 105, Sec. 4, San-Ho Rd., Sanchung City, Taipei Hsien, Taiwan

Filed Dec. 23, 1992, Ser. No. 995,694
Int. Cl.[5] E04D *1/34*
U.S. Cl. 52—551 **6 Claims**



1. A modular roof structure, comprising:

a grid system of structural beams, said grid system comprising a plurality of parallel beams, each of which has a top side provided with an upward engaging protrusion;

each of said parallel beams having a plurality of roof tiles provided thereon, each of said roof tiles overlapping an adjacent said roof tile on an adjacent one of said parallel beams, each of said roof tiles having a front end and a rear end opposite to said front end, said front end being provided with a hook portion that extends from said front end and comprises a first elongated section with two opposed edges, one of said opposed edges abutting said parallel beam and being located adjacent to said engaging protrusion, a second section extending upwardly from one of said opposed edges of said first section, a third section extending from said second section, said third section being located above said first section and said front end, and a fourth section which interconnects said front end of said roof tile and said third section, wherein said second, third and fourth sections of said hook portion coopera-

tively define a receiving space to receive said engaging protrusion therein, said rear end of said roof tile having a projection that extends downward so as to abut said first elongated section of said adjacent roof tile, and further having a covering member extending from said rear end so as to shield said hook portion of said adjacent roof tile; and

a fastener fastening said hook portion and said projection of said adjacent roof tile on said parallel beam.

5,345,741

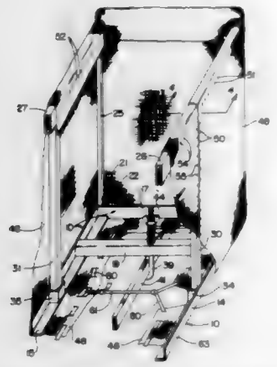
SILT BLOCKAGE FOR CATCH BASINS

Howard O. Slater, and James W. Slater, both of South Windsor, Conn., assignors to J. & H. Slater Construction Co., Inc., South Windsor, Conn.

Continuation of Ser. No. 833,076, Feb. 10, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 127,702

Int. Cl.[5] **E03F** *1/00*

U.S. Cl. 52—646 **15 Claims**



1. A silt barrier subassembly for preventing silt from entering the mouth of a catch basin of the type having a generally horizontally disposed grating covering the mouth of the catch basin, comprising:

a pair of side rails joined at their ends by end rails forming a generally rectangular, hollow main frame;

a pair of end frame members rotatively disposed to said main frame in a manner to permit rotation from a folded position, in which the end frame members lie adjacent to said main frame, and an extended position in which said end frame members extend upwardly from said end rails generally perpendicular to said main frame; and

means disposed on said main frame having a portion extending downwardly below said main frame movably with respect to said main frame and adapted to engage a portion of the grating of the catch basin for drawing said main frame downward toward the grating to secure said main frame tightly to said catch basin above said grating.

5,345,742

FORCE TRANSFER BODY FOR AN ANCHORAGE

David Rogowsky, Belp, and Erwin Siegfried, Liebefeld, both of Switzerland, assignors to VSL International AG, Bern, Switzerland

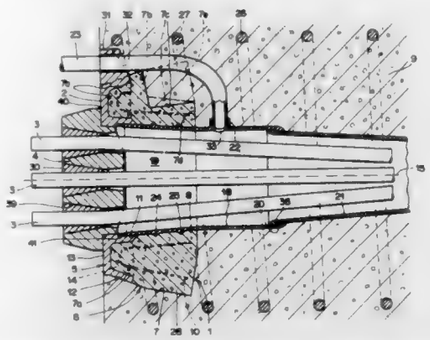
Filed Mar. 17, 1993, Ser. No. 33,300

Claims priority, application European Pat. Off., Mar. 24, 1992, 92810216.9

Int. Cl.[5] **E04C** *5/12*

U.S. Cl. 52—698 **15 Claims**

1. Force transfer body for an anchorage, comprising a body having an abutting surface serving as the contact surface for an anchor head containing individual members of a tension tendon, wherein said body is concreted within a concrete part of a structure, the force transfer body comprising at least first and second partial bodies, said first partial body being essentially annular and having first and second surfaces, with said first surface forming the abutting surface, said second partial body being disposed adjacent said second surface of the first partial body and coupled to said first partial body, the second partial body having the form of a hollow body with an outer surface and an inner generated surface and the outer surface being divided into two essentially annular faces and an outer generated surface, wherein the outer generated surface essentially represents the shell of a truncated cone whose larger face is turned towards the first partial body and wherein the outer generated surface has at least one radially circumferential constriction, an annular surface being formed by the circumferential constriction which, in addition to the smaller face, serves to convey prestressing forces to said concrete part of the structure.



5,345,743

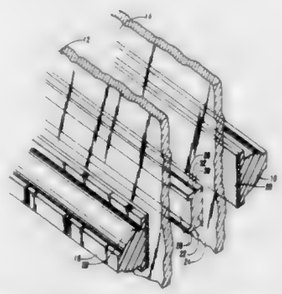
INSULATED WINDOW ASSEMBLY WITH INTERNAL MUNTIN BARS AND METHOD OF MAKING SAME

Bruce A. Baier, Pella, Iowa, assignor to Peela Corporation, Pella, Iowa

Filed Oct. 11, 1990, Ser. No. 595,996

Int. Cl.[5] **E06B** *3/66*

U.S. Cl. 52—455 **14 Claims**



1. An insulated window assembly comprising:

first and second spaced apart panes of transparent sheet material;

a perimeter spacer bar positioned between said panes and extending around the perimeter of said panes and defining two pairs of opposite sides of said window assembly; and

an internal muntin bar grid disposed between said first and second spaced apart panes, said muntin bar grid being formed from a silicone foam material which is low in thermal conductivity to limit heat transfer between said first and second spaced apart panes, and is high in flexibility to allow for bending when forming curved shapes.

5,345,744

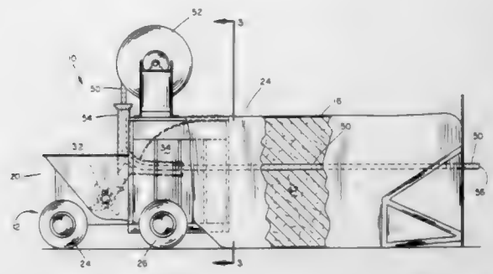
MEANS FOR CREATING AIR CHANNELS IN BAGGED COMPOST MATERIAL

Steven R. Cullen, P.O. Box 642, Astoria, Oreg. 97103

Filed Sep. 22, 1992, Ser. No. 949,447

Int. Cl.[5] **B65B** *43/26, 61/00*

U.S. Cl. 53—128.1 **1 Claim**



1. A compost bagging machine for bagging compost material into an elongated flexible bag having a fixed end and an open mouth;

a wheeled frame means having rearward and forward ends;

a tunnel means on said wheeled frame means and having an intake end for receiving compost material and an output end adapted to receive the mouth of the bag;

a hopper means on said wheeled frame means for receiving compost material;

means at the intake end of said tunnel means for forcing the compost material into said tunnel means, into said bag, and to move said wheeled frame means away from said fixed end of said bag;

means associated with the bagging machine for creating air channels in the compost material in said bag to enhance the composting of the compost material;

said means for creating air channels comprising means for positioning an elongated, perforated pipe means in the compost material;

said means for positioning the elongated pipe means in the compost material including means for positioning the pipe means in a horizontal position, a reel means positioned on said wheeled frame means outwardly of said tunnel means, said reel means having the elongated pipe means wound thereon, and a guide means extending between said reel means and the interior of said tunnel means for guiding the pipe means from said reel means into the interior of said tunnel means.

5,345,745

WRAPPING MATERIAL FOR PROVIDING A DECORATIVE COVERING

Donald E. Weder, Highland, Ill., assignor to Highland Supply Corporation, Highland, Ill.

Continuation of Ser. No. 876,947, May 1, 1992, which is a continuation of Ser. No. 708,521, May 31, 1991, Pat. No. 5,161,348, which is a division of Ser. No. 360,367, Jun. 2, 1989, Pat. No. 5,038,933. This application Dec. 17, 1992, Ser. No. 991,737

Int. Cl.[5] **B65B** *67/08*

U.S. Cl. 53—397 **3 Claims**

1. A method for providing a decorative covering for a pot having an upper end and a lower end and a bottom and a height extending generally between the upper and the lower ends in an outer peripheral surface extending generally between the upper and the lower ends of the pot, comprising:

providing a skirt constructed of a flexible material with a skirt opening formed through a portion thereof;

positioning the skirt on only the upper portion of the pot with the upper end of the pot extending through the skirt opening whereby the skirt extends a distance generally outwardly from the upper portion of the pot; and

securing the skirt to the upper portion of the pot.



5,345,746

METHOD FOR REGULATING THE AMOUNT OF ANTI-BACTERIAL AGENT IN STERILE PACKAGING PROCESSES

Richard M. Franchi, 264 Shagbark Dr., Derby, Conn. 06418

Filed May 6, 1993, Ser. No. 57,515

Int. Cl.[5] **B65B** *55/02*

U.S. Cl. 53—431 **27 Claims**

1. A method of regulating the amount of anti-bacterial agent in sterile packaging processes comprising the steps of partially filling a container with a solution of a standard anti-bacterial agent; then placing an article in the container; then sealing said container to provide a gas space above the solution within the sealed container; then cooling the entire contents of the container until the gas space is partially dehumidified; then heating said container and its contents to a temperature substantially below the boiling point of the solution and at a pressure of about one atmosphere until all the surfaces inside the container above and below the solution, and the entire contents of the container, are sterilized.

5,345,747

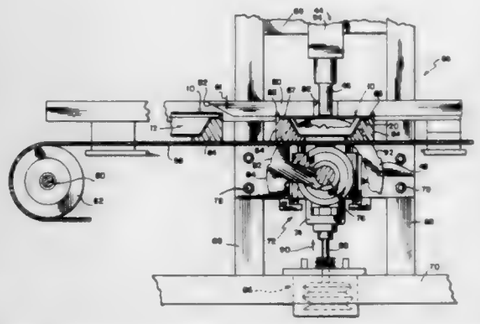
ULTRASONIC SEALING APPARATUS AND METHOD

Glen F. Raque, and Edward A. Robinson, both of Louisville, Ky., assignors to Raque Food Systems, Inc., Louisville, Ky.

Filed Feb. 19, 1993, Ser. No. 19,773

Int. Cl.[5] **B65B** *51/22*

U.S. Cl. 53—478 **36 Claims**



30. A method for sealing a covering material to an outer flange of a container, the method comprising the steps of:

placing a covering material over the container flange;

providing a sealing assembly including a horn and means for

applying pressure to the outer flange and to the covering material against the horn;

moving the container relative to the sealing assembly so that the outer flange of the container and a portion of the covering material positioned over the outer flange passes below the horn;

vibrating the horn at a predetermined frequency to cause friction between the outer flange of the container and the covering material as the outer flange of the container and the portion of the covering material positioned over the outer flange moves between the horn and the pressure applying means to seal the outer flange to the covering material; and

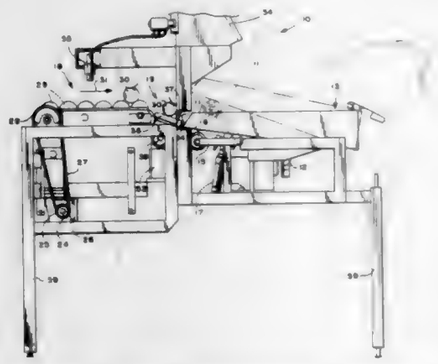
adjusting the angle of the horn relative to the covering material to help propel the covering material in a direction of movement of the container.

5,345,748

BAGGER WITH PLURAL WEIGH CHUTES

Harry C. Powell, Jr., Faber, Va., assignor to Powell Machinery, Inc., Faber, Va.

Filed Apr. 28, 1993, Ser. No. 53,482
Int. Cl.[5] B65B *1/32, 57/00*
U.S. Cl. 53—502 **23 Claims**



1. An automatic bagger for discrete articles, comprising:

a primary weigh pan for weighing articles fed thereto, and upon the articles therein exceeding a predetermined weight, discharging the articles;

first conveying means for delivering articles to said primary weigh pan, said first conveying means including a plurality of discharge structures, said discharge structures immediately adjacent said primary weigh pan;

each said discharge structures comprising a weigh device, and a releasable stop finger for releasably holding an article in said weigh device, each weigh device large enough to receive one of the articles therein; and

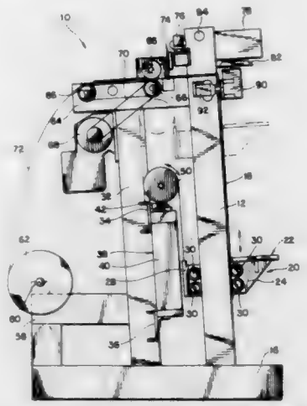
control means for: activating said fingers for holding articles in said weigh devices once said primary weigh pan senses a weight of articles just short of said predetermined weight; for receiving the individual weights of said articles in said weigh devices; for calculating the desired individual or combination of article weights in said weigh devices which is the lowest weight which will cause the articles in said primary weigh pan to exceed said predetermined weight; and for activating said fingers associated with said calculated desired individual or combination of weigh devices.

5,345,749

BUNDLER

Richard C. Tendick, Lakeville, Minn., assignor to Greif Brothers Company, Delaware, Ohio

Filed Jan. 19, 1993, Ser. No. 5,295
Int. Cl.[5] B65B *13/20, 67/08*
U.S. Cl. 53—528 **13 Claims**



1. An apparatus for bundling articles comprising:

support frame means;

a back plate mounted on said support frame means and having a front plate surface;

bottom platen mounted on said support frame for holding a stack of articles;

top platen means mounted on said support means;

wrapping feed means for feeding a sheet of wrapping having a first end and a second end, with said sheet having said first end being positioned over said bottom platen, with said stack of articles being disposed on top of said sheet on said bottom platen and said second end being positioned over said top platen;

platen reciprocating means for vertically reciprocating one of said top and bottom platens to compress said stack between said platens adjacent to said front surface, said platen reciprocating means including an expanding member disposed away from said front surface;

whereby after said stack is compressed between said top and bottom platens, said first and second end are joined to form a bundle, said bundle including said stack of articles and said top platen extending under said wrapping.

5,345,750

APPARATUS FOR SUPPLYING AND SEALING FLAT ARTICLES

Manfred Gries, Karlsruhe, and Roland Klein, Remchingen-Darmsbach, both of Fed. Rep. of Germany, assignors to PVT Piepenbrock Verpackungstechnik GmbH, Osnabruck, Fed. Rep. of Germany

Filed Jan. 22, 1993, Ser. No. 8,671
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1992, 4203435
Int. Cl.[5] B65B *9/02, 51/16*
U.S. Cl. 53—553 **7 Claims**

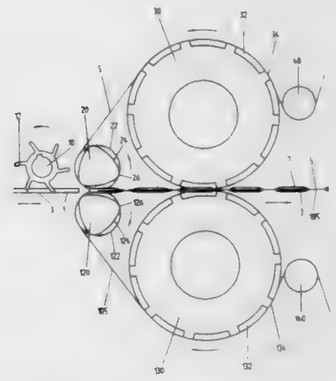
1. Apparatus for supplying and sealing articles between hot sealed sheets, comprising:

conveying means for supplying articles in close succession to one another in at least one line along a conveyor path;

a hot sealing tool including two hot sealing rollers having heating means and depressions forming sealing wells, said rollers arranged parallel to one another, bearing against each other and having axes perpendicular to the conveying path of the articles, one roller being arranged above and another roller being arranged below said conveying path, a sealing sheet being fed and preheated about at least a portion of each roller outside said conveying path;

a finger roller disposed along the conveying path upstream of said hot sealing rollers for positioning the articles, the finger roller having an axis lying parallel to the axes of the hot sealing rollers;

two rollers each having a polygonal cross-section for geometrical constrained guiding, positioning and separating of the articles, the polygonal rollers bearing on each other and a respective one of them being arranged above and below the conveying path downstream of the finger roller and upstream of the hot sealing rollers, each of said polygonal rollers being arranged to receive a preheated sealing sheet from a respective hot sealing roller and to supply said sealing sheet to said respective hot sealing roller so that the hot sealing rollers receive the articles between said depressions and between said sealing sheets;



said hot sealing rollers, polygonal rollers and finger roller lying parallel to one another;

the conveying means, the finger roller, the polygonal rollers and the hot sealing rollers being arranged in a conveying direction seriatim such that the supplying, positioning, separating, and sealing of the articles takes place along a horizontal path; and

means for heating the sealing sheets about said sealing rollers, the polygonal rollers having outer surfaces receiving on their upstream side said preheated sealing sheets from said hot sealing rollers, the polygonal rollers deflecting the heated sealing sheets into the conveying path in the conveying direction between the polygonal rollers and the hot sealing rollers, the hot sealing rollers heating the sealing sheets between the rollers and sealing the articles between the sheets.

5,345,751

POLL AND EYE PROTECTION APPARATUS FOR A HORSE AND METHOD OF MANUFACTURE THEREOF

William L. Edwards, 7130 W. Acoma Dr., Peoria, Ariz. 85381

Filed Jun. 18, 1993, Ser. No. 77,668
Int. Cl.[5] B68C *5/00*
U.S. Cl. 54—80.2 **15 Claims**

1. A method for manufacturing a mask for protecting the eyes and the poll of a horse, comprising the following steps:

(a) cutting screen material according to a horizontally symmetrical pattern that defines two equal sides with respect to a vertical axis; said pattern comprising a bottom edge, two side edges, and a top edge divided into two equal segments by a poll strap protruding upwardly from a center thereof; wherein each segment of the top edge contains a dart protrusion defining three equal and substantially triangular sections having a common vertex and capable of being folded in overlapping configuration to form a three-layered dart in each half of the pattern;

(b) folding the screen material to cause said three equal and substantially triangular sections to overlap;

(c) fastening the three triangular sections folded in overlapping configuration to produce a three-layered dart in each half of the pattern, wherein each dart has a top edge adapted to be placed to rest above one eye of the horse and two lateral edges extending forward over the eye, thus producing a mask of screen material adapted to be disposed over the horse's poll and eyes;



(d) attaching padding material to said bottom edge, said two side edges, said folded top edge, and said poll strap in the screen material produced by steps (a) and (b); and

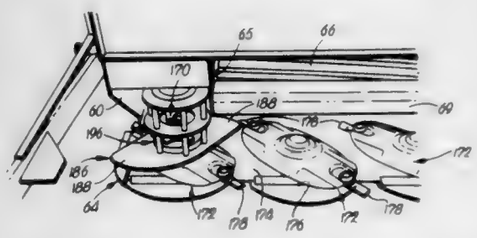
(e) providing fastening means to secure the mask on the horse, wherein the mask is positioned with the darts disposed above the horse's eyes and the poll strap is disposed over the horse's poll.

5,345,752

IMPELLER PLATES FOR ROTARY CUTTING UNITS OF A CROP HARVESTER

Martin E. Pruitt, Hesston; Cecil L. Case, and H. Keith Garrison, both of Newton, all of Kans., assignors to Hay & Forage Industries, Hesston, Kans.

Division of Ser. No. 868,532, Apr. 14, 1992, Pat. No. 5,272,859.
This application May 11, 1993, Ser. No. 62,805
Int. Cl.[5] A01D *34/82*
U.S. Cl. 56—6 **3 Claims**



1. In a rotary mowing machine having a horizontal series of rotary cutter units supported for rotation about individual upright axes and disposed to deliver cut crop to a discharge opening behind the units, each of said cutter units including an elongated, generally flat carrier having a pair of knives located at opposite, longitudinal ends thereof, the opposite end units in the series having knives which move laterally inwardly and rearwardly along the inboard extremities of the end units with respect to the path of travel of the machine, the improvement comprising:

at least one of said end units having an impeller plate rotatable therewith in a plane slightly above the plane of the knives for assisting in delivering cut crop to the discharge opening,

said impeller plate being elongated and oriented such that its longitudinal axis extends at right angles to the longitudinal axis of the carrier with which it is associated, and being

configured to present a pair of diametrically oppositely extending longitudinal lobes,

each of said lobes asymmetrical with respect to said longitudinal axis of the plate and presenting an outer-most tip that is in a retarded position with respect to said axis, and having a curved leading edge that leads arcuately outwardly to the tip about an axis of curvature spaced laterally from said longitudinal axis on the trailing side thereof.

5,345,753

SILENT CHAIN

Tomonori Okuda; Tetsuji Kotera, and Kouji Morishige, all of Nabari, Japan, assignors to Borg-Warner Automotive, K.K., Nabari, Japan

Filed Jul. 28, 1993, Ser. No. 98,433

Int. Cl.[5] F16G *13/00, 13/06*

U.S. Cl. 59—5 **4 Claims**

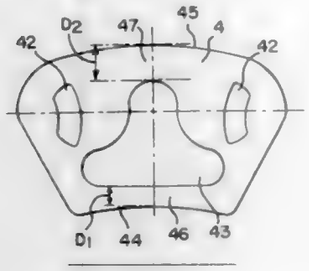
1. A silent chain comprising:

a plurality of interlaced inside link plates, said inside link plates having a pair of teeth and a pair of apertures, said inside link plates being interleaved and interconnected by pins inserted in said apertures,

a plurality of guide link plates, said guide link plates being placed on the outside of said pins,

said guide link plates having a body with an inner edge and an outer edge, a pair of apertures and an opening being substantially triangular in shape with rounded corners,

said triangular opening being located between said pair of apertures and at a distance from said inner edge and at a distance from said outer edge, the distance between said central opening and the inner edge of said guide link being less than the distance between said central opening and the outer edge of said guide link, said central opening extending beyond a horizontal centerline connecting said pair of apertures.



5,345,754

PROCESS AND MECHANISM FOR JOINING MEMBERS

Jean-Michel Deramaux, Saint-Saulve, and Bernard Caron, Aulnoye-Les-Valenciennes, both of France, assignors to Societe Des Forges De Fresnes, France

Filed Mar. 22, 1993, Ser. No. 37,564

Claims priority, application France, Mar. 24, 1992, 92 03517

Int. Cl.[5] B21L *13/00;* **F16G** *15/02*

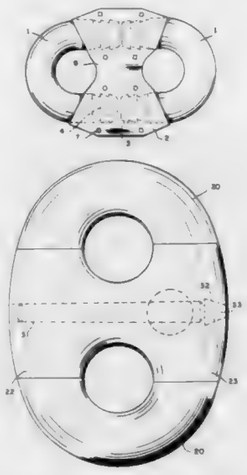
U.S. Cl. 59—30 **11 Claims**

1. A process for assembling two facing extremities of members by means of two half-shells detachably joined by at least one assembly component, comprising the following steps:

forming reliefs either on an inside surface of the half-shells, or on an outside surface of the member extremities with the outside surface of the member extremities or the inside surface of the half-shells respectively remaining smooth;

then positioning the half-shells on the member extremities;

then forging reliefs on the initially smooth half-shells or extremities by direct stamping onto the components displaying the reliefs;



then detachably joining the two half-shells by said assembly components.

5,345,755

STEAM TURBINE PLANT

Hermann Brückner, Uttenreuth, and Werner Emsperger, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

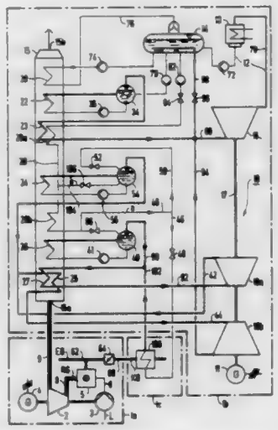
Division of Ser. No. 916,033, Jul. 17, 1992, Pat. No. 5,251,432.

This application Aug. 3, 1993, Ser. No. 101,576

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1991, 4123730

Int. Cl.[5] F02B *43/00*

U.S. Cl. 60—39.12 **6 Claims**



1. A gas and steam turbine plant, comprising:

a steam turbine having a water-steam loop defining a water flow direction;

a gas turbine defining a gas flow direction;

a waste heat boiler connected downstream of said gas turbine as seen in the gas flow direction, said waste heat boiler including a high-pressure preheater connected in said water-steam loop, a high-pressure heater connected downstream of said high-pressure preheater as seen in the water flow direction, a low-pressure heater connected upstream of said high-pressure preheater as seen in the water flow direction, and a medium-pressure heater with an evaporator;

a coal gasification plant connected upstream of said gas turbine;

an outflow line leading into said coal gasification plant and being connected to said water-steam loop downstream of said high-pressure preheater, as seen in water flow direction; and

a water-steam drum communicating with said outflow line and being connected to said evaporator and said high-pressure preheater.

5,345,756

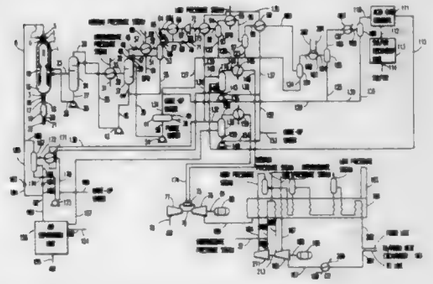
PARTIAL OXIDATION PROCESS WITH PRODUCTION OF POWER

Frederick C. Jahnke, Rye, N.Y.; Paul S. Wallace, Katy, and Pradeep S. Thacker, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 20, 1993, Ser. No. 139,367

Int. Cl.[5] F02G *3/00*

U.S. Cl. 60—39.02 **19 Claims**



1. A partial oxidation process comprising:

(1) reacting a hydrocarbonaceous fuel with a free-oxygen containing gas in a partial oxidation reaction zone to produce a stream of fuel gas, cooling said fuel gas by quenching in water to produce a stream of quenched saturated fuel gas having a temperature in the range of about 350° F. to 600° F. and a pressure in the range of about 500 to 2500 psia, cooling said quenched saturated fuel gas by indirect heat exchange with boiler feed water thereby reducing the temperature of said quenched fuel gas to a temperature in the range of about 410° F. to 550° F. while simultaneously converting said boiler feed water to steam having an intermediate pressure in the range of about 275 to 600 psia, and cleaning said quenched saturated fuel gas with preheated scrubbing water from (2);

(2) preheating scrubbing water comprising process condensate and make-up water to a temperature in the range of about 375° F. to 550° F. by direct heat exchange in a gas-water direct contacting means with cooled quenched saturated fuel gas leaving (1) thereby reducing the temperature of said cooled quenched saturated fuel gas to a temperature in the range of about 300° F. to 540° F., and separating condensed water from said cooled fuel gas;

(3) reducing the pressure of said cooled fuel gas from (2) in the amount of about 100 to 2300 psia, further cooling said fuel gas to a temperature in the range of about 40° F. to 140° F. by indirect heat exchange with cool water thereby condensing out water from said cooled fuel gas stream while heating said cool water to produce heated water having a temperature in the range of about 225° F. to 400° F., and introducing the water condensed out in (2) and (3) into said gas-water direct contacting means in (2) where it is heated for use as gas scrubbing water;

(4) purifying the cooled fuel gas stream from (3);

(5) saturating a stream of nitrogen gas and the stream of purified fuel gas from (4) with said heated water from (3);

(6) superheating the saturated streams of fuel gas and nitrogen gas from (5) to a temperature in the range of about 350° F. to 1000° F.; and introducing said superheated fuel gas and nitrogen gas streams into the combustor of a gas turbine;

(7) burning said saturated fuel gas with a free-oxygen containing gas in said combustor at a temperature in the range of about 2200° F. to 2600° F. and a pressure in the range of about 100 to 1000 psia in the gas turbine to produce an exhaust gas with a reduced amount of NO_x; and

(8) passing said exhaust gas through an expansion turbine for the production of power with an increased output.

5,345,757

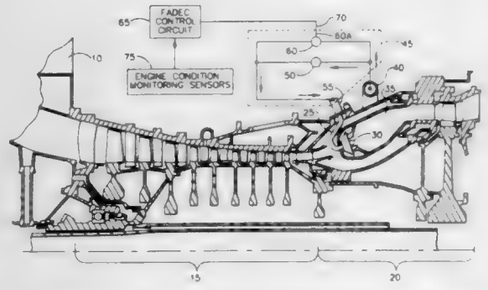
COMBUSTOR APPARATUS FOR USE IN A GAS TURBINE ENGINE

Thomas L. MacLean, Louisville, Ky., and Richard W. Stickles, Loveland, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Sep. 20, 1993, Ser. No. 123,667

Int. Cl.[5] F02C *7/22*

U.S. Cl. 60—39.141 **9 Claims**



1. A combustor apparatus for a gas turbine engine comprising:

a plurality of injectors situated in said engine;

a fuel manifold for supplying fuel to said injectors;

a plurality of first fuel flow paths coupling said manifold to said plurality of injectors to provide fuel thereto;

at least one second fuel flow path for switchably coupling said manifold to at least one of said injectors to supply additional fuel thereto, not every one of said injectors having said second fuel flow path so coupled;

sensing means coupled to said engine for determining if a predetermined engine condition is present, and

electronic control means, coupled to said sensing means and said second fuel flow path, for switching said second fuel path to provide additional fuel to said at least one of said injectors when said sensing means determines that a predetermined engine condition exists.

5,345,758

ROTARY VALVE MULTIPLE COMBUSTOR PULSE DETONATION ENGINE

Thomas R. Bussing, Issaquah, Wash., assignor to Adroit Systems, Inc., Alexandria, Va.

Filed Apr. 14, 1993, Ser. No. 45,771

Int. Cl.[5] F02C *5/02*

U.S. Cl. 60—39.38 **24 Claims**

1. A rotary valve multiple combustor pulse detonation engine comprising:

at least two detonation chambers, each having an inlet end and an outlet end;

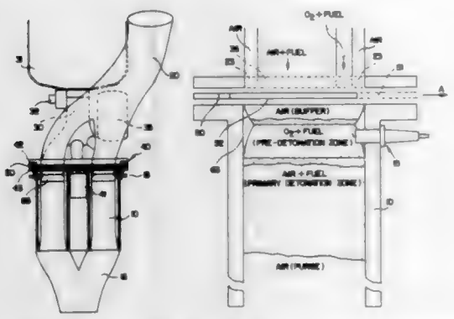
a fuel manifold for supplying fuel from a fuel source to said at least two detonation chambers at said inlet ends;

an inlet air duct manifold for supplying air to said at least two detonation chambers at said inlet ends;

means for initiating a pulsed supersonic shock wave-trig-

gered detonation combustion wave for initiating detonation in said at least two detonation chambers; and

a rotor disk valve having at least one opening and at least one solid portion, wherein said rotor disk valve is positioned between said inlet ends of said detonation chambers and said fuel and inlet air duct manifolds, wherein said rotor disk valve rotates so that said opening is positioned over said inlet end of one of said at least two detonation



chambers to allow fuel and air to enter said detonation chamber, and wherein said rotor disk valve further rotates so that said solid portion is positioned over said inlet end of said one of said at least two detonation chambers so that said fuel and air inside said one of said at least two detonation chambers can be detonated by said means for initiating a pulsed supersonic shock wave-triggered detonation combustion wave.

5,345,759

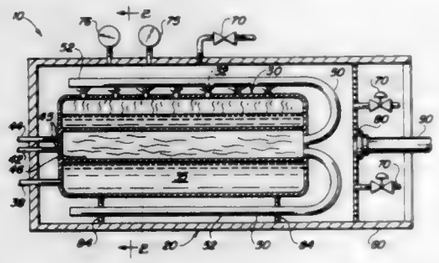
INTERNAL COMBUSTION AND INTERNALLY COOLED STEAM ENGINE AND POWERING METHOD

Maxwell P. Awon, 1 Alexandra Street, St. Clair, Port of Spain, Trinidad and Tobago

Filed Feb. 18, 1992, Ser. No. 836,235

Int. Cl.[5] F02C *7/00*

U.S. Cl. 60—39.53 **12 Claims**



1. An internal combustion and internally cooled steam engine comprising:

a pressure chamber and a boiler, said boiler being concentrically positioned within said pressure chamber and including fluid inlet means,

said boiler further including a plurality of steam outlet apertures,

a combustion chamber concentrically positioned within said boiler, said combustion chamber including air and fuel inlet means therein and being structured and disposed such that air and fuel combusted within said combustion chamber will heat fluid in said boiler so as to form steam which exits said boiler into said pressure chamber through said steam outlet apertures,

at least one flue gas line connected to and extending from said combustion chamber into said pressure chamber and being structured and disposed to receive hot gasses formed by the combustion of the air and fuel in said combustion chamber, and

said flue gas line being substantially disposed within said pressure chamber such that said hot gasses therein super heat said steam in said pressure chamber.

5,345,760

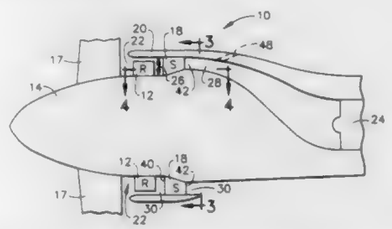
TURBOPROP BOOSTER

Rollin G. Giffin, III, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Feb. 5, 1993, Ser. No. 13,853

Int. Cl.[5] F02K *3/02*

U.S. Cl. 60—226.1 **10 Claims**



1. A booster-compressor for supercharging air into a core engine of a turboprop aircraft engine comprising:

a row of rotor blades comprising a row of sub-sonic impulse rotors, said row of impulse rotors causing the static pressure of said air at an inlet of said row of impulse rotors to be substantially equal to the static pressure of said air at an outlet of said row of impulse rotors throughout the operating range of said turboprop aircraft engine:

a row of stator vanes; and

a shroud surrounding said impulse rotors and said stator vanes, wherein said shroud defines in part an axially-extending flowpath for directing said air into said core engine;

wherein said flowpath defines an axially-converging flowpath along said stator vanes which causes the static pressure of said air at an inlet of said row of stator vanes to be substantially equal to the static pressure of said air at an exit of said row of stator vanes throughout the operating range of said turboprop aircraft engine;

wherein said flowpath maintains a constant cross sectional area along said rotor blades;

wherein each of said impulse rotors includes an inlet angle and an exit angle, said inlet angle being equal to said exit angle.

5,345,761

ENERGY MANAGEMENT SYSTEM FOR HYBRID VEHICLE

Edward T. King, Dearborn; Larry R. Brandenburg, Northville, and Yitshak I. Henig, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 2, 1993, Ser. No. 160,637

Int. Cl.[5] F01N *3/00*

U.S. Cl. 60—274 **7 Claims**

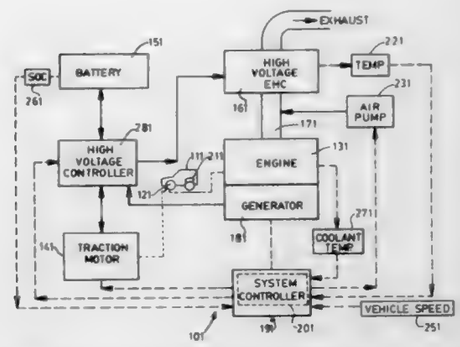
1. An energy management system for a hybrid vehicle having wheels drivingly connected to traction motors, which motors are alternatively energized by an internal combustion engine generator or an electrical storage battery, the system comprising:

(a) an electrical storage battery for energizing said traction motors in a first way;

(b) an electrically heated catalyst for treating the exhaust gas of the internal combustion engine;

(c) a generator driven by the selective operation of said internal combustion engine to energize said traction motors in a second way and to sometimes produce electrical energy in excess of that consumed by the traction motors; and

(d) a controller for selectively transferring said excess electrical energy produced by the internal combustion engine



generator and the electrical energy generated by the traction motors when driven by the wheels, to preferentially said electrically heated catalyst and secondarily to said storage battery.

5,345,762

EXHAUST GAS CONDUIT OF AN INTERNAL COMBUSTION ENGINE WITH A STARTING CATALYSER ARRANGED NEAR THE ENGINE

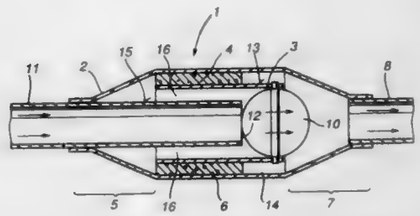
Roland Lütze, Altbach, Fed. Rep. of Germany, assignor to Mercedes-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed Apr. 2, 1993, Ser. No. 42,016

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1992, 4212251

Int. Cl.[5] F01N *3/28*

U.S. Cl. 60—288 **4 Claims**



1. Exhaust gas conduit for an internal combustion engine comprising:

a starting catalyser arranged near the engine and having a casing with a central passage therein;

a catalyser body arranged in said casing, surrounding said central passage in an area between said central passage and an outer wall of said casing, said central passage being open and unobstructed by catalyst, whereby exhaust gas may flow through said central passage without penetrating said catalyst body;

a pipe section of the exhaust gas conduit extending into said central passage from an inlet flow end thereof and forming an annular passage between an outer periphery of said pipe section and an outer wall of said central passage, said annular passage providing an exhaust gas flow path between said central passage and said catalyser body;

an exhaust valve arranged at an outlet flow end of said central passage, said exhaust valve having an open position which permits exhaust gas to flow freely through said central passage without passing through said annular passage and said catalyser body, whereby said annular passage provides an insulating gap between exhaust gas flow and said catalyser body, and a closed position which diverts said exhaust gas flow through said annular passage and said catalyser body.

5,345,763

SECONDARY AIR CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

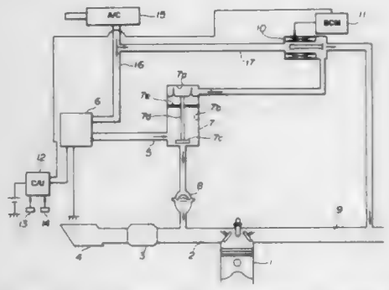
Kazuhiro Sato, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 4, 1993, Ser. No. 13,430

Claims priority, application Japan, Feb. 27, 1992, 4-041209

Int. Cl.[5] F01N *3/30*

U.S. Cl. 60—290 **6 Claims**



1. In an internal combustion engine having an intake passage, an exhaust passage and a catalytic converter disposed in said exhaust passage,

a secondary air feeding system comprising:

an electric air pump of a type which varies a pumping ability thereof in accordance with a voltage applied thereto;

a secondary air inlet passage connected to said air pump for feeding the same with a first amount of fresh air;

a secondary air outlet passage extending from said air pump to said exhaust passage at a position upstream of said catalytic converter;

an electrically controlled valve disposed in said secondary air outlet passage, said valve being opened only when said air pump is energized;

intake air amount measuring means for measuring a second amount of fresh air which is fed to combustion chambers of said engine through said intake passage, said intake air amount measuring means being substantially unaffected by said first amount of fresh air flowing in said secondary air inlet passage;

voltage determining means for determining a voltage applied to said electric pump in such a manner that said first amount of fresh air fed to said exhaust passage by said pump through said secondary air outlet passage is proportional to said second amount of fresh air measured by said intake air amount measuring means; and

voltage applying means for applying the voltage determined by said voltage determining means to said air pump.

5,345,764

CONTROL VALVE FOR BOOTSTRAP HYDRAULIC SYSTEMS

Edward H. Phillips, Troy, Mich., assignor to Techco Corporation, Birmingham, Mich.

Continuation-in-part of Ser. No. 698,601, May 10, 1991. This application Aug. 9, 1991, Ser. No. 743,243

The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—393 **17 Claims**

1. A method of providing tactile feedback for a power steering system in response to rotational inputs applied to a steering wheel, said method comprising the steps of:

providing hydraulic fluid at a preselected pressure as a function of a load pressure by pressure regulating means;

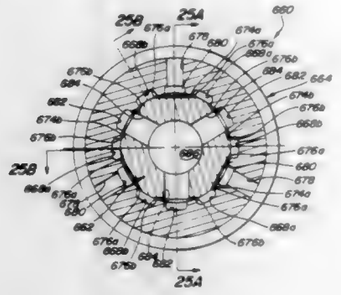
providing means for receiving said rotational inputs, said receiving means including an open-center control valve having first and second resiliently coupled valve members;

supplying said hydrualic fluid at said preselected pressure to an inlet port of said open-centered control valve;

providing fluid communication between first and second output ports of said open-center control valve and first and second ports of a power output transducer, respectively;

controlling the differential output pressure applied to said first and second ports of said power output transducer and the differential fluid flow therebetween in repsonse to said rotational inputs, said differential output pressure defining said load pressure; and

generating said tactile feedback as a function of both of said differential output pressure and said differential fluid flow.



5,345,765

STIRLING ENGINES

Richard F. Kinnersly, Romsey, United Kingdom, assignor to ESD Engines Limited, United Kingdom

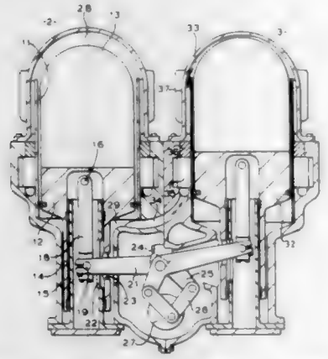
PCT No. PCT/GB91/00599, § 371 Date Oct. 16, 1992, § 102(e) Date Oct. 16, 1992, PCT Pub. No. WO91/16533, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 17, 1991, Ser. No. 949,483

Claims priority, application United Kingdom, Apr. 17, 1990, 9008522.6

Int. Cl.[5] F01B *29/10*

U.S. Cl. 60—525 15 Claims



1. A Stirling engine comprising a cylinder closed at one end, a piston reciprocable in the cylinder without guiding contact between the outer surface of the piston and the cylinder and a mechanical coupling for connecting reciprocatory movement of the piston to a drive member, characterised in that a fixed piston guide with external guide surfaces extends in arm axial direction within the cylinder towards its closed end and terminates in a recess in the piston and in that internal guide surfaces on the piston are in sliding engagement with the external surfaces of the piston guide whereby the piston is guided within the cylinder.

5,345,766

ARRANGEMENT FOR CARRYING OUT A TWO-STAGE LINEAR MOVEMENT

Heinz Leonhartsberger, Schwertberg; Stefan Eppich, Arbing, and Werner Kappelmüller, Schwertberg, all of Austria, assignors to Engel Maschinenbau Gesellschaft m.b.H., Schwertberg, Austria

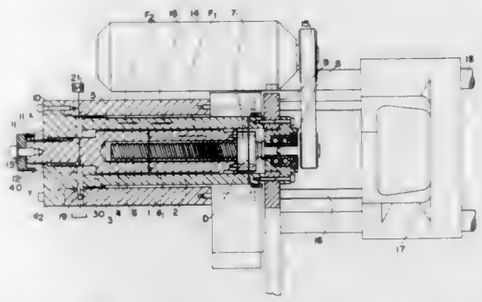
PCT No. PCT/AT92/00003, § 371 Date Jul. 12, 1993, § 102(e) Date Jul. 12, 1993, PCT Pub. No. WO92/11993, PCT Pub. Date Jul. 23, 1992

PCT Filed Jan. 13, 1992, Ser. No. 90,067

Claims priority, application Austria, Jan. 14, 1991, 53/91; Nov. 14, 1991, 2257/91

Int. Cl.[5] F15B *7/00*

U.S. Cl. 60—545 15 Claims



1. An arrangement for carrying out two-stage linear movement comprising:

a stationary unit having a first hydraulic cylinder (1) with a cylinder volume (19);

pressure means operatively connected to the first hydraulic cylinder for building up pressure in the cylinder volume of the first hydraulic cylinder;

a movable unit with a second hydraulic piston (2) mounted for movement in the first hydraulic cylinder, the second hydraulic piston (2) having a hollow volume (3) therein;

a plunger piston (4) mounted for axial movement in the hollow volume of the second hydraulic piston (2) for building up pressure on the hollow volume of the second hydraulic piston;

a nut (7) non-rotatable connected to the plunger piston (4);

a spindle (6) rotatable threaded to the nut, the spindle (6) projecting into the plunger piston (4);

an electric motor operatively connected to the spindle for rotating the spindle and moving the plunger piston in the second hydraulic cylinder in order to build up pressure in the hollow volume of the second hydraulic piston.

5,345,767

VIBRATION MOTOR

Mitsuhiro Ando, Tokyo; Tomokimi Mizuno, Chiryu; Yoshihiro Naruse, Ichikawa, and Iwao Fujimasa, Hino, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Asahi, Japan

Filed Mar. 4, 1992, Ser. No. 845,428

Claims priority, application Japan, Mar. 5, 1991, 3-038628

Int. Cl.[5] F03G *7/00*

U.S. Cl. 60—721 10 Claims

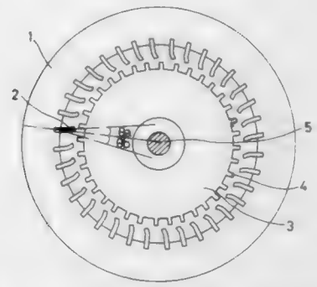
1. A motor device, comprising:

an annular member movable linearly in a direction normal to an axis of the annular member in response to an applied external reciprocal vibratory pressure;

a plurality of equally pitched inwardly extending projections positioned at an inner annulus edge of the annular member, the distal end of each of the projections being bent obliquely to the radii of the annular member;

a rotatable shaft member having an axis and mounted coaxially within the annulus of the annular member; and

a plurality of equally pitched outward projections extending in radial alignment with a radial line of the rotatable shaft



member, the outward projections being spaced from the inward projections, the inward extending projections being brought into engagement with the outward extending projection in response to the external reciprocal vibratory movement of the annular member, the vibratory engagement rotating the shaft member in a single direction.

5,345,768

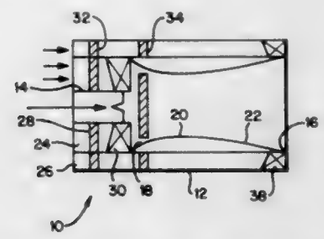
DUAL-FUEL PRE-MIXING BURNER ASSEMBLY

Roy M. Washam, Schenectady, and Robert A. Corr, II, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 7, 1993, Ser. No. 43,816

Int. Cl.[5] F23R *3/36*

U.S. Cl. 60—737 8 Claims



1. A dual-fuel pre-mixing burner assembly for a turbine, comprising:

a burner assembly body having an inlet for flowing fuel and air in a generally downstream direction and having a liquid fuel nozzle disposed substantially centrally of and adjacent said inlet to said body for supplying liquid fuel for flow in the generally downstream direction;

a flow duct, carried by said body and having an upstream converging section, a throat section and a downstream diverging section, for receiving fuel from central nozzle and air from said inlet;

inner and outer generally concentric passages adjacent said body inlet for flowing air through said body;

at least one gaseous fuel nozzle carried by said body and located to flow gaseous fuel through said duct in the generally downstream direction;

said inner passage lying in communication with said flow duct to supply air thereto for pre-mixing, in said duct, air and fuel from at least one of said central liquid fuel nozzle and said gaseous fuel nozzle to form a lean air fuel mixture and for delivery of said pre-mixed air and fuel to a flow region downstream of said duct;

an inner swirler in said inner passage for delivering to said duct air having a flow component in a first tangential direction such that the pre-mixed fuel and air delivered from said duct to said flow region has a flow component in said first tangential direction;

said converging section of said duct and said pre-mixed fuel and air, exiting said converging section of said duct, comprising a means for establishing a centerline recirculation zone in said flow region therefore affording flame stabilization; and

an outer swirler means in said outer passage for delivering to said flow region downstream of said duct air having a flow component in a second tangential direction generally opposite to said first tangential direction and for establishing, in combination with the flow having said first tangential component, a generally annular shear layer in said flow region, said centerline recirculation zone and said annular shear layer comprising a means for flame stabilization in said burner assembly.

5,345,769

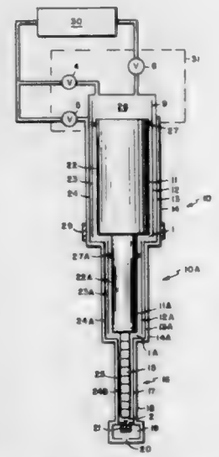
CRYOGENIC REFRIGERATION APPARATUS

Anthony G. Liepert, Boston; James A. Crunkleton, Auburndale; Gregory R. Gallagher, West Newton; Joseph L. Smith, Jr., Concord, all of Mass., and Frederick J. Cogswell, Glastonbury, Conn., assignors to Boreas, Inc., Burlington, Mass.

Filed Nov. 12, 1992, Ser. No. 975,279

Int. Cl.[5] F25B *9/00*

U.S. Cl. 62—6 38 Claims



1. A system for producing a cold environment comprising fluid compression means for supplying fluid under pressure;

a plurality of successive operating stages having variable displacement volumes;

volume-changing means for varying the volumes of said displacement volumes;

input channel means for permitting flow of fluid to and from said successive displacement volumes;

first means for permitting input fluid to be introduced under pressure from said fluid compression means into said input channel means for flow therein to said successive displacement volumes;

second means for permitting fluid in said input channel means to flow to said fluid compression means;

third means for permitting fluid at reduced pressure to flow from the final one of said displacement volumes into an output channel means, said output channel means permitting flow of output fluid to said fluid compression means;

whereby input fluid flowing from said fluid compression means under pressure in said input channel means to said first set of displacement volumes is pre-cooled by regenerative heat exchange with a portion of the structure of said

input channel and by counterflow heat exchange with fluid flowing in said output channel means, and input fluid flowing in said input channel means to said final one of said displacement volumes is pre-cooled primarily by counterflow heat exchange with fluid flowing in said output channel; and

means for thermally decoupling the volume changing means of at least one of said successive operating stages from said input and said output channel means.

5,345,770

LOW-TEMPERATURE REGENERATIVE TYPE REFRIGERATOR

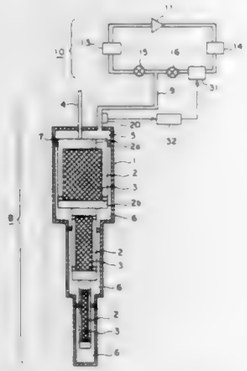
Takashi Inaguchi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,483

Claims priority, application Japan, Jan. 29, 1992, 4-013918; Feb. 24, 1992, 4-036230; Aug. 21, 1992, 4-221863

Int. Cl.[5] F25B *9/00*

U.S. Cl. 62—6 **1 Claim**



1. A low-temperature regenerative type refrigerator comprising:

an expansion unit having a cylinder, a displacer for forming an expansion space within said cylinder, said displacer being disposed within the cylinder so as to be slidable reciprocatively through a seal, and a regenerator for heat exchange of gas which is fed into and discharged from said expansion space;

a compressor for compressing the gas discharged from said expansion unit and feeding the compressed gas to the expansion unit;

a heater for heating the gas fed to said expansion unit from said compressor; and

a heater controller for controlling the quantity of heat of said heater in accordance with the temperature of the gas fed to said expansion unit from said compressor.

5,345,771

PROCESS FOR RECOVERING CONDENSABLE COMPOUNDS FROM INERT GAS-CONDENSABLE COMPOUND VAPOR MIXTURES

Harold L. Dinsmore, Tulsa, Okla., assignor to John Zink Company, A Division of Koch Engineering Company, Inc., Tulsa, Okla.

Filed Mar. 25, 1993, Ser. No. 36,725

Int. Cl.[5] F25J *3/00*

U.S. Cl. 62—18 **28 Claims**

1. An improved process for recovering at least one condensable compound from an inlet inert gas-condensable compound vapor mixture comprising the steps of:

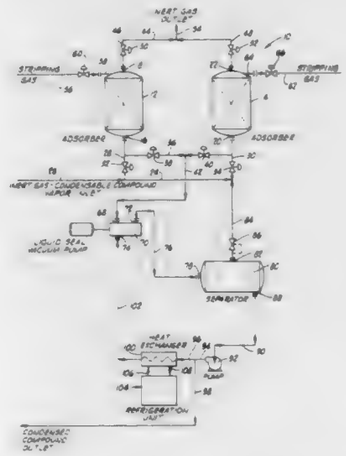
(a) flowing said inlet mixture through a first bed of solid adsorbent having an affinity for said condensable compound so that said condensable compound is adsorbed on said bed and a residue gas stream comprised of substantially condensable compound-free inert gas is produced;

(b) conducting said substantially condensable compound-free inert gas to a location of use or disposal;

(c) evacuating a second bed of solid adsorbent having said condensable compound adsorbed thereon by subjecting said bed to pumping with a cooled liquid seal vacuum pump so that a major portion of said condensable compound is desorbed from said bed, a condensable compound rich inert gas-condensable compound vapor mixture is produced and a major portion of said condensable compound in said inert gas-condensable compound vapor mixture is condensed as a result of said vapor mixture being contacted with said cooled seal liquid in said liquid seal vacuum pump whereby a stream of condensed compound and residue gas comprised of inert gas and a minor portion of condensable compound vapor exit said pump;

(d) separating said condensed compound and residue gas stream exiting said pump in accordance with step (c) into a residue gas stream and a condensed compound stream;

(e) combining the separated residue gas stream of step (d) with said inlet inert gas-condensable compound mixture of step (a) whereby the condensable compound contained therein is adsorbed on said first bed of solid adsorbent;



(f) dividing the separated condensed compound stream of step (d) into first and second streams of condensed compound;

(g) passing said first stream of condensed compound in heat exchange relationship with a cooling medium so that said first stream of condensed compound is cooled to a temperature which produces a condensed compound vapor pressure low enough to evacuate said second bed of solid adsorbent in accordance with step (c) and causes a major portion of said condensable compound vapor to be condensed in accordance with step (c) when said first stream of condensed compound is used as seal liquid for said liquid seal vacuum pump;

(h) recycling said cooled first stream of condensed compound of step (g) to said vacuum pump as cooled seal liquid therefor; and

(i) periodically changing the flow pattern of said inlet inert gas-condensable compound mixture and changing the bed of solid adsorbent being evacuated so that when the bed through which the inlet inert gas-condensable compound mixture is flowing becomes loaded with adsorbed condensable compound, the inlet inert gas-condensable compound mixture is caused to flow through the bed which has just been evacuated.

5,345,772

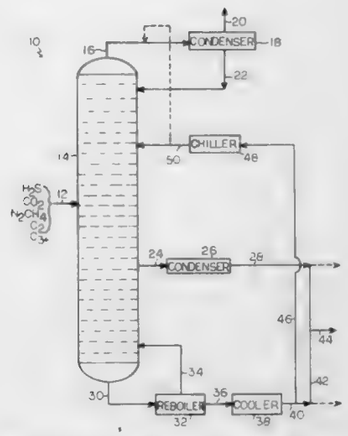
SINGLE COLUMN DISTILLATIVE SEPARATION EMPLOYING BOTTOM ADDITIVES

Richard B. Hopewell, Medfield, Mass., assignor to Process Systems International, Inc., Westborough, Mass.

Filed May 14, 1993, Ser. No. 62,959

Int. Cl.[5] F25J *3/00*

U.S. Cl. 62—20 **17 Claims**



1. A method for the distillative cryogenic separation of a hydrocarbon feed stream comprising CO_2, C_2, C_3 and C_4+ and employing a recycled bottom additive in a single distillative column containing vapor-liquid contacting devices, which method comprises:

a) introducing the feed stream into a single distillative column;

b) introducing a nonpolar liquid C_4+ alkane additive agent into the upper portion of the column above the point of introduction of the feed stream;

c) withdrawing an overhead product stream enriched in CO_2 from the feed stream;

d) condensing at least a portion of the condensed overhead product stream in a condenser and recycling a portion of the condensed overhead stream to the top portion of the distillative column;

e) withdrawing a vapor side product stream, enriched in C_2 or C_3, and deficient in CO_2 from the feed stream, at a point below the point of introduction of the feed stream, and substantially above the bottom of the column;

f) withdrawing from the column bottom a bottom product stream comprising primarily C_4+ alkanes;

g) reboiling at least a portion of the withdrawn bottom product stream and recycling at least a portion of the bottom product stream to the bottom portion of the distillative column; and

h) splitting the column bottom product stream into a majority, recycled bottom additive stream as in 1(b) and a minor, net heavy component recovery product stream.

5,345,773

METHOD AND APPARATUS FOR THE PRODUCTION OF ULTRA-HIGH PURITY NITROGEN

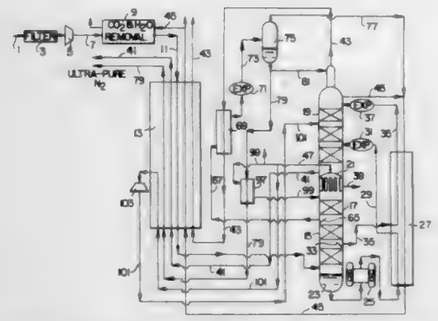
Takashi Nagamura, and Takao Yamamoto, both of Hyogo, Japan, assignors to Teisan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1993, Ser. No. 26,480

Int. Cl.[5] F25J *3/00*

U.S. Cl. 62—38 **13 Claims**

1. In a method for separating air by low temperature liquefaction and fractionation wherein feed air is compressed and cooled and supplied to a high pressure stage of a two-stage fractionation column from the bottom of the high pressure stage of which liquid is expanded and introduced at an intermediate level of a low pressure stage of the column and a gaseous nitrogen product is removed from the top of the high pressure stage, and wherein an oxygen product is removed from the bottom of the low pressure stage and a gaseous nitrogen product is removed from the top of the low pressure stage, both of said stages containing solid material providing solid surfaces on which mass transfer takes place to effect fractionation over



a substantial vertical height in each said stage; the improvement comprising removing a liquid from said high pressure stage intermediate said height of said solid material in said high pressure stage, subcooling said removed liquid, expanding said subcooled liquid to produce a gas and a liquid, and withdrawing said liquid as ultra-high purity nitrogen.

5,345,774

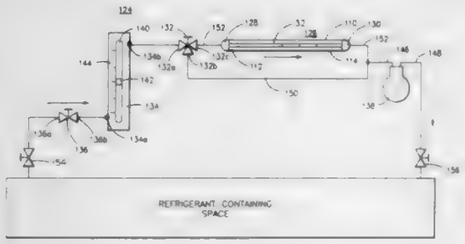
METHOD AND APPARATUS FOR ZERO EMISSIONS TESTING OF A REFRIGERANT IN A CLOSED SYSTEM

Gordon L. Mount, West Monroe, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 1, 1993, Ser. No. 11,874

Int. Cl.[5] F25B *49/00*

U.S. Cl. 62—127 **26 Claims**



1. Apparatus for testing for contaminates in a refrigerant in a closed system having a first and a second isolation valve, the apparatus comprising:

an external fluid circuit capable of being connected between the isolation valves allowing an amount of the refrigerant from the closed system to flow therethrough in a predetermined direction from the first to the second isolation valve when the isolation valves are open; the external circuit including

detecting means for identifying contaminants within the refrigerant as the refrigerant flows therethrough, said detecting means being in series between said isolation valves and having an upstream end and a downstream end relative to the direction of refrigerant flow,

flow meter means in series with said detecting means for determining the rate of flow of said refrigerant flowing through said external fluid circuit, said flow meter means being connected upstream of said detecting means;

flow regulator means for adjusting the flow of refrigerant through said external fluid circuit to a desired rate, said flow regulator means being upstream of said flow meter means; and

three-way valve means for directing the flow of refrigerant through the circuit, said three-way valve means having an inlet port, a first outlet port, and a second outlet port, said inlet port being connected to receive the refrigerant from said flow meter means, and said second outlet port being connected to the upstream end of said detecting means; and

a bypass line coupled to the first outlet port of the three way valve means and to a point downstream of the detecting means;

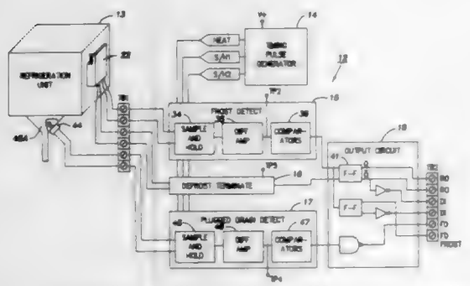
whereby when the isolation valves are open, the flow of refrigerant through said external fluid circuit can be first directed through said bypass line to bypass said detecting means when said three-way valve means has its first outlet port open and its second outlet port closed, thus allowing the flow through the circuit to be adjusted to the desired rate of flow by said flow regulator means, and can then be directed to flow through said detecting means by actuating said valve means so that its first outlet port is closed and its second outlet port is open, thus allowing said detecting means to identify contaminants in the refrigerant prior to the refrigerant being returned to the closed system.

5,345,775

REFRIGERATION SYSTEM DETECTION ASSEMBLY

Ralph G. Ridenour, 626 Lexington-Ontario Rd., Mansfield, Ohio 44903

Filed Mar. 3, 1993, Ser. No. 25,584
Int. Cl.[5] F25D *21/06*
U.S. Cl. 62—140 **18 Claims**



1. A detection assembly for frost or water in a refrigeration system having a cooling unit subject to frost build-up and defrost water to a drain, said assembly comprising, in combination:

a first thermal sensor normally exposed to air and mounted in said refrigeration system at a location subject to build-up of frost or water;

a detection circuit having an input from said first thermal sensor;

means in said detection circuit to energize said first thermal sensor with a voltage sufficiently high to cause said first thermal sensor to self-heat; and

means to compare the resistance of said first thermal sensor at two different times to detect the presence of frost or water around said first thermal sensor and to generate a first signal;

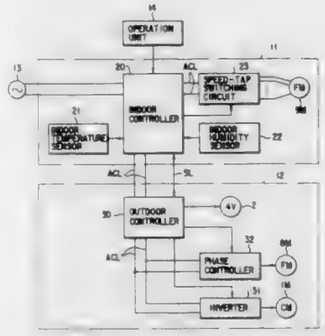
said first signal connected to terminate the refrigeration to said cooling unit.

5,345,776

AIR CONDITIONING APPARATUS CAPABLE OF PERFORMING A DEHUMIDIFYING OPERATION

Megumi Komazaki, Yokohama; Hideaki Suzuki, Fujinomiya; Hideaki Motohashi, Yokohama, and Keiichi Morita, Fujinomiya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 13, 1993, Ser. No. 135,497
Claims priority, application Japan, Oct. 13, 1992, 4-274418
Int. Cl.[5] F24F *11/02*
U.S. Cl. 62—176.3 **10 Claims**



1. An air conditioner apparatus capable of performing a dehumidifying operation, comprising:

a compressor for compressing refrigerant and supplying compressed refrigerant;

an outdoor heat exchanger for exchanging heat between the refrigerant and outdoor air;

an outdoor fan for supplying the outdoor air into said outdoor heat exchanger;

pressure reducing means for reducing the pressure of the refrigerant;

a first indoor heat exchanger for exchanging heat between the refrigerant and indoor air;

an electric expansion valve whose opening can change;

a second indoor heat exchanger for exchanging heat between the refrigerant and the indoor air;

an indoor fan for circulating the indoor air through said second indoor heat exchanger and said first indoor heat exchanger;

first control means for supplying the refrigerant from said compressor back in to said compressor through said outdoor heat exchanger, said pressure reducing means, said first indoor heat exchanger, said electric expansion valve and said second indoor heat exchanger, and for opening said electric expansion valve fully, to thereby perform a cooling operation;

second control means for supplying the refrigerant from said compressor back into said compressor through said first indoor heat exchanger, said electric expansion valve and said second indoor heat exchanger, and for reducing the opening of said electric expansion valve, to thereby perform a dehumidifying operation;

an indoor temperature sensor for detecting indoor temperature (Ta);

an indoor humidity sensor for detecting indoor humidity (Ha);

first detection means for detecting a deviation (T) of the indoor temperature (Ta) from a preset indoor temperature (Ts) and a change (ΔT) in the deviation (T), during the dehumidifying operation;

second detection means for detecting a deviation (H) of the indoor humidity (Ha) from a preset indoor humidity (Hs) and a change (ΔH) in the deviation (H);

adjustment value calculating means for performing fuzzy inference based on the deviation (T), the change (ΔT), the deviation (H) and the change (ΔH), to thereby calculate an adjustment value (ΔF) for adjusting a drive frequency (F) of said compressor and an adjustment value (ΔN) for adjusting a rotational speed (N) of said outdoor fan;

first adjustment means for adjusting the drive frequency (F) of said compressor by said adjustment value (ΔF); and

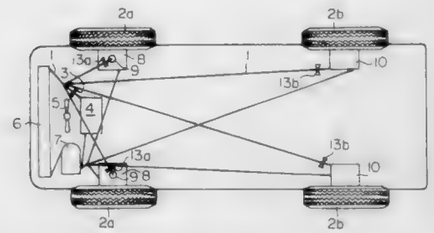
second adjustment means for adjusting the rotational speed (N) of said outdoor fan by said adjustment value (ΔN).

5,345,777

ELECTRIC AUTOMOBILE

Hirokazu Sekino, and Issei Yamakoshi, both of Suwa, Japan, assignors to Seiko Epson Corporation, Nagano, Japan

PCT No. PCT/JP91/00656, § 371 Date Jan. 23, 1992, § 102(e) Date Jan. 23, 1992, PCT Pub. No. WO91/17902, PCT Pub. Date Nov. 28, 1991
Continuation of Ser. No. 809,537, Jan. 23, 1992, abandoned. This PCT application May 17, 1991, Ser. No. 148,180
Claims priority, application Japan, May 24, 1990, 2-134642; Nov. 20, 1990, 2-315431; Nov. 20, 1990, 2-315432
Int. Cl.[5] B60H *1/32*
U.S. Cl. 62—244 **24 Claims**



1. An electric automobile comprising:

a wheel driving motor for driving a driving wheel of an electric automobile; and

a refrigerating system in which a refrigerant flows, and which comprises a compressor, an outdoor heat exchanger, an expansion valve, and an indoor heat exchanger connected one after another by refrigerant pipes,

the wheel driving motor being provided within the refrigerating system, whereby the wheel driving motor is cooled directly by the refrigerant,

wherein the wheel driving motor comprises a sealing shell, a stator within the sealing shell, and a rotor provided inside the stator and having a driving shaft,

the sealing shell having an inlet pipe connected thereto for supplying the refrigerant into the interior of the sealing shell, and an outlet pipe connected thereto for discharging the refrigerant out of the interior of the sealing shell, a flange within said sealing shell having an interior in which said stator is securely supported and shad rotor is rotatably supported,

said refrigerant flowing into the interior of said flange via said inlet pipe to directly contact said stator and said rotor and flowing out of the interior of said flange via said outlet pipe after cooling the stator and rotor,

said shell having opposite sides and ends, said inlet pipe and outlet pipe being located at respective opposite sides and ends of the shell to be in diagonally opposed relation.

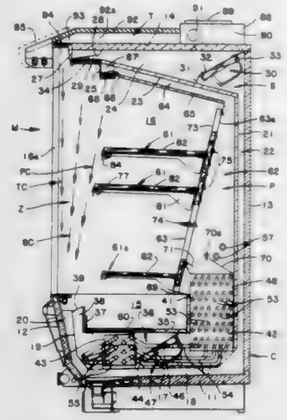
5,345,778

LOW TEMPERATURE DISPLAY MERCHANDISER

Harold L. Roberts, St. Peters, Mo., assignor to Hussmann Corporation, Bridgeton, Mo.

Filed May 7, 1993, Ser. No. 60,154
Int. Cl.[5] A47F *3/04*
U.S. Cl. 62—256 **16 Claims**

1. A refrigerated merchandiser having a cabinet with an open front product display area, primary air system means including evaporator cooling means constructed and arranged for refrigerating primary air to low refrigeration temperatures and primary air circulating means for circulating the refrigerated primary air from said evaporator cooling means to maintain a substantially uniform low temperature throughout the display area, said primary system means including a plurality of vertically spaced shelves, each of said shelves having an upper product supporting deck and lower air channeling means, said air channeling means including an imperforate insulated bottom wall and a plurality of vertical ribs projecting upwardly therefrom and engaging said upper deck to define a plurality of elongated air tunnels constructed and arranged to channel low temperature primary air therethrough and to discharge such air therefrom downwardly in a series of shelf-to-shelf primary



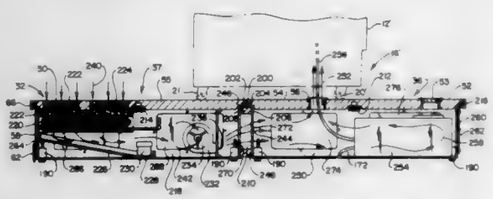
air curtains immediately adjacent to the open front of the display area as part of the primary air circulating means, the primary air circulating means also discharging at least one other primary air curtain downwardly from the top of the merchandiser across the open front of the display area outwardly of the shelf-to-shelf primary air curtains, the air flow of said primary air curtains being the only positive air movement in said display are, and at least one other air system means constructed and arranged for forming another air curtain across the open front of the display area outwardly of said primary air curtains.

5,345,779

MODULAR FLOOR SUB-STRUCTURE FOR THE OPERATIONAL SUPPORT OF COMPUTER SYSTEMS

Edward K. Feeney, Worthington, Ohio, assignor to Liebert Corporation, Columbus, Ohio

Filed Apr. 23, 1993, Ser. No. 51,534
Int. Cl.[5] F04H *9/00;* **F24F** *13/10*
U.S. Cl. 62—259.2 **41 Claims**



1. A floor supported substructure system for a computer system component having a given base peripheral configuration with a base region through which heat removing air may enter, said system component having given operational heat dissipation and power consumption characteristics, comprising:

a plurality of floor modules, each having a lower portion supported from said floor and having side portions extending upwardly therefrom to support an elevated floor sur-

face at a given height and defining a chamber intermediate said lower portion and said elevated floor surface;

the said elevated floor surface of a first said floor module supporting said computer system component and having an air outlet formed therein for providing air transfer communication to said base region;

second and third said floor modules positioned in adjacency with said first module and oriented to effect a substantial alignment of said elevated floor surfaces thereof:

a said floor module chamber retaining an air circulation blower having an input and an air flow output to provide a discrete said floor module providing said air flow output at a capacity corresponding with said heat dissipation characteristic; and

an air flow path defined by at least one said chamber extending from said blower airflow output to said air outlet.

5,345,780

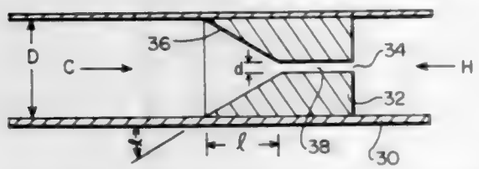
BI-FLOW EXPANSION DEVICE

David A. Aaron, Reisterstown, and Piotr A. Domanski, Potomac, both of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Division of Ser. No. 553,831, Jul. 18, 1990, Pat. No. 5,085,058. This application Dec. 30, 1991, Ser. No. 802,547

Int. Cl.[5] F25D *13/00*

U.S. Cl. 62—324.6 **6 Claims**



2. A bi-flow expansion device for refrigerant in a heat pump having a cooling mode in which refrigerant flows through said expansion device in a first direction, and a heating mode in which refrigerant flows through said device in a second direction, said expansion device comprising a tubular member having a first refrigerant entrance-exit at a first end, said first entrance-exit facing the direction from which refrigerant flows when said heat pump is in the cooling mode, a second refrigerant entrance-exit at a second end, said second entrance-exit facing the direction from which refrigerant flows when said heat pump is in the heating mode, and at least two passages extending between said first and second entrance-exit, said passages defining means for providing a restriction of the flow of refrigerant therethrough when said heat pump is in both the cooling and the heating mode, and fluid flow blocking means for obstructing at least one of said passages and leaving at least one of said passages unobstructed when refrigerant is flowing from said second to said first end, thereby providing different flow restrictions, through said tubular member, for opposite flow directions.

5,345,781

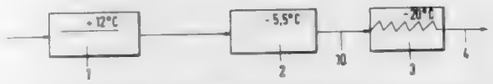
DEVICE FOR COOLING OF FLUIDS AND EDIBLE FOAMS

Ulrich Fels, Rue de Sées 42, 4154 Tönisvorst, Fed. Rep. of Germany; Erich Windhab, Burgrain 37, 8706 Meilen, Switzerland; Ralf Hoffmann, Wilhelmstrasse 44, 4320 Hattingen 13, Fed. Rep. of Germany; Peter von Holdt, Bachstelzenweg 1, 2401 Gross Grönau, Fed. Rep. of Germany, and Lutz Hahn, Mecklenburger Strasse 23, 2401 Gross Grönau, Fed. Rep. of Germany

Filed Jan. 28, 1993, Ser. No. 12,146

Int. Cl.[5] A23G *9/20*

U.S. Cl. 62—343 **7 Claims**



1. A device for the cooling of edible foams, comprising:

a cooling system for pre-freezing an edible foam;

an aeration system outlet-connected to said cooling system;

a motor-driven extruder device designated as a combined deep freezing and transport device outlet-connected to said cooling system for cooling pre-frozen edible foam to a storage temperature,

wherein said extruder device has at least one double screw system comprising:

two screws each having a shaft cylinder with a mantle surface on which the threads of the screws are disposed, said screws being positioned parallel to each other with their rotational axes and being further positioned such that the threads of the second screw are centered between the threads of the first screw and an increased spacing of the rotational axes of the screws is created, such that the front side of the screw thread of the other screw facing the surface of the cylinder mantle of each screw has a radial distance from it;

a housing enclosing said screws, said housing having an inner mantle surface proximate to said screws,

wherein the threads of said screws are positioned so as to scrape against the inner mantle surface of said housing; and

wherein the threads of the screws with the surface of the cylinder mantle of the screws and of the inner mantle surface of the housing bounds an extremely flat screw channel.

5,345,782

FLOW-TYPE ICE MANUFACTURING MACHINE

Kazuhiro Takahashi, Ootashi; Yoshiharu Abe, Fujioka, and Hideyuki Katayanagi, Tatebayashi, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 23, 1993, Ser. No. 21,842

Claims priority, application Japan, Feb. 25, 1992, 4-073205; Feb. 28, 1992, 4-078443; Feb. 28, 1992, 4-078444; Mar. 9, 1992, 4-085070

Int. Cl.[5] F25C *1/12*

U.S. Cl. 62—344 **2 Claims**

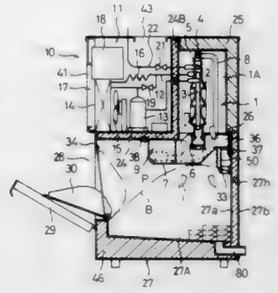
1. A flow-type ice manufacturing machine including substantially vertical ice making panels having ice making surfaces and equipped with a cooling pipe secured on the back sides of said ice making panels for cooling circulating water that flows on said ice making surfaces, said ice manufacturing machine comprising:

an ice making room for accommodating said ice making panels and a source-water sprinkler mounted above said ice making panels;

said source-water sprinkler including a first sprinkler for sprinkling water on said ice making surfaces for forming ice on said ice making surfaces and a second sprinkler for sprinkling sprinkling water on said ice formed on said ice forming surfaces for removing and discharging said formed ice from said surfaces;

a machinery room for accommodating a condensation unit connected with said cooling pipe to form a cooling cycle; and

an ice storage chamber for storing ice formed by said ice making panels and discharged from said ice forming surfaces,



said ice storage chamber having a door at a front of said ice storage chamber for providing users with access to ice stored in said chamber, said chamber having a front portion adjacent said door and a rear portion,

said machinery room being mounted above said front portion of said ice storage chamber; and

said ice making chamber being mounted above said rear portion of said ice storage chamber, said ice removed and discharged from said ice forming surfaces being discharged into said rear portion of said ice storage chamber.

5,345,783

VIBRATING DEVICE FOR ICE MAKING TRAY

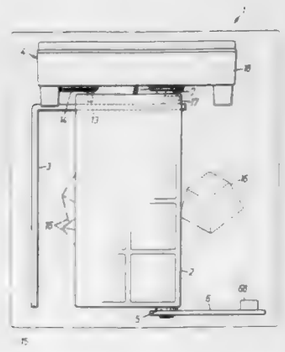
Kazunori Nishikawa, Nagano, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Sep. 2, 1993, Ser. No. 115,117

Claims priority, application Japan, Sep. 4, 1992, 4-260596

Int. Cl.[5] F25C *1/12*

U.S. Cl. 62—345 **9 Claims**



1. (Amended) A vibrating device for an electric refrigerator comprising:

an ice making tray for freezing a liquid which is supplied to the ice making tray;

a fulcrum member mounted on the ice making tray, said ice making tray being rotatable about the fulcrum member;

rotation means for rotating the fulcrum member to perform a frozen liquid removing operation applied to the ice making tray;

a storing chamber for storing frozen liquid which has been removed from the ice making tray by the frozen liquid removing operation applied to the ice making tray;,

reciprocation means for supporting the fulcrum member in a horizontal direction which is orthogonal to an axis direction of the fulcrum member and for reciprocating the fulcrum member in the horizontal direction which is orthogonal to the axis direction of the fulcrum member wherein the reciprocation means includes:

a flat member driven by a motor; and

a link mechanism for coupling the flat member with the fulcrum member.

5,345,784

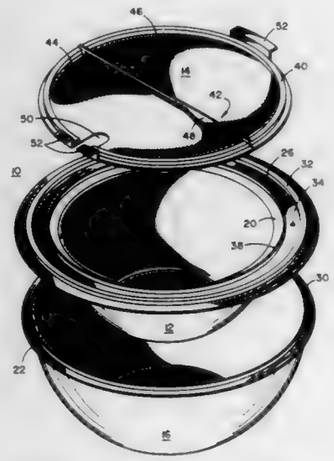
SALAD BOWL HAVING A REFRIGERANT CHAMBER

Gertrude R. Bazemore, and Mark A. Cardy, both of T-4 English Village Apartments, North Wales, Pa. 19454

Filed Jun. 1, 1993, Ser. No. 69,506

Int. Cl.[5] F25D *3/08*

U.S. Cl. 62—371 **20 Claims**



1. A refrigerated salad bowl for maintaining the contents thereof at a temperature that is substantially below the ambient temperature, said salad bowl comprising:

an exterior bowl member;

an interior bowl member;

said interior bowl member being disposed substantially within said exterior bowl member and spaced therefrom to define a refrigerant chamber between said exterior bowl member and said interior bowl member;

vent means for venting said refrigerant chamber to the ambient atmosphere; and

a lid for covering said interior bowl member.

5,345,785

SCROLL COMPRESSOR AND AIR CONDITIONER USING THE SAME

Kazuo Sekigami; Kenichi Oshima, both of Tochigi, and Masahiro Takebayashi, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 30, 1992, Ser. No. 969,375

Claims priority, application Japan, Oct. 30, 1991, 3-284618

Int. Cl.[5] F25B *43/02;* **F04C** *18/02, 29/02*

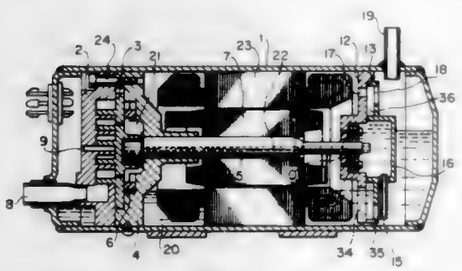
U.S. Cl. 62—468 **18 Claims**

1. A scroll compressor comprising a closed container, an electric motor and a compression mechanism connected to said electric motor through a crankshaft, said compression mechanism, crankshaft and electric motor being lodged within said closed container, said compression mechanism including at least two scrolls each having a spiral lap protruding straight

from an end plate, said two scrolls being engaged with each other with their laps being on the inner side, one scroll making an orbiting movement relative to the other scroll while being prevented from rotating, said scroll compressor being installed in such a way that said crankshaft is maintained substantially horizontal, said small compressor further comprising a separation plate which is resistant to gaseous fluid and which separates the interior of said closed container into a first space lodging said electric motor, crankshaft and compression mechanism and a second space having a discharge pipe for transferring compressed refrigerant gas from the closed container to an outer cycle,

wherein a communicating section to allow communication between said two separated spaces is provided in the section of said separation plate which is below the center of rotation of said electric motor,

wherein a back chamber is provided on the side of the orbiting scroll opposite to the lap thereof, the pressure of said back chamber being kept somewhere between a suction



pressure and a discharge pressure, a sub-bearing rotatably supporting said crankshaft in the vicinity of that end of said crankshaft opposite to a joint section of the crankshaft leading to said compression mechanism,

a support plate supporting said sub-bearing and being held by the inner peripheral surface of said closed container, said support plate having a cutout below a position corresponding to the outer periphery of a rotor of said electric motor,

a cup covering said sub-bearing, said cup being secured to that section of said support plate which is on the side of said crankshaft end supported said sub-bearing, and

wherein said cup has an oil feeding pipe communicating with the interior of said cup covering said sub-bearing and extending downwards from said cup into said second space within said closed container, said separation plate being provided between said oil feeding pipe and said support plate, and a gas passage being provided between said separation plate and said support plate.

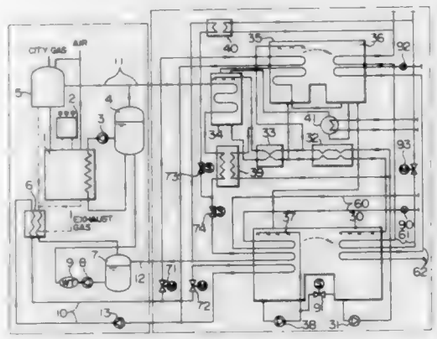
5,345,786

ABSORPTION HEAT PUMP AND COGENERATION SYSTEM UTILIZING EXHAUST HEAT

Hiroaki Yoda, Tsuchiura; Kenzi Machizawa, and Koji Yamamoto, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 20, 1993, Ser. No. 109,445
Claims priority, application Japan, Aug. 27, 1992, 4-228327
Int. Cl.[5] F25B *27/02, 15/00;* **F24J** *1/00*
U.S. Cl. 62—476 **7 Claims**

1. An absorption heat pump which has an evaporator, an absorber, a high-temperature regenerator, a low-temperature regenerator and a condenser and which is capable of utilizing exhaust heat, said absorption heat pump capable of utilizing exhaust heat comprising: a first cycle in which vapor exhaust heat from a fuel cell is used as a heat source for said high-temperature regenerator and said evaporator; and a second cycle



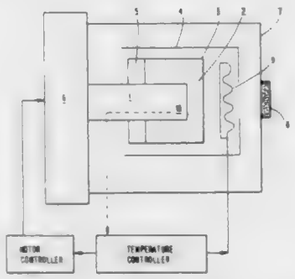
in which warm-water exhaust heat from the fuel cell is used as a heat source for said low-temperature regenerator.

5,345,787

MINIATURE CRYOSORPTION VACUUM PUMP

Harley V. Piltingsrud, Cincinnati, Ohio, assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 762,531, Sep. 19, 1991, abandoned. This application Sep. 30, 1993, Ser. No. 128,731
Int. Cl.[5] B01D *8/00*
U.S. Cl. 62—55.5 **38 Claims**



1. A miniature cryosorption vacuum pump comprising a cold finger having first and second ends, an adsorbent material surrounding one of said first and second ends of said cold finger, and a closed cycle Stirling cycle refrigerator connected to the other of said first and second ends of said cold finger, for lowering the temperature of said cold finger, said miniature cryosorption pump weighing no more than about 2.5 kg and having a lower operable temperature limit of about 70° K.

5,345,788

GRASS CUTTER AND LEAF BLOWER BLADE

Frederick L. Jerry, 21331 Kipling St., Oak Park, Mich. 48237

Filed Nov. 9, 1992, Ser. No. 972,573
Int. Cl.[5] A01D *34/82*
U.S. Cl. 56—255 **2 Claims**

1. A grass cutter and leaf blower blade comprising:

a generally "Z" shape plate, said plate including a substantially straight intermediate portion having a mounting hole therethrough and substantially parallel sides, end portions, integral with said intermediate portion and extending rearward with respect to the direction of travel of the blade, said end portions having arcuate outside edges

each said parallel side, at the intersection with said respective end portion in said forward direction of travel of said



blade, including a pitched and inclined cutting edge section and

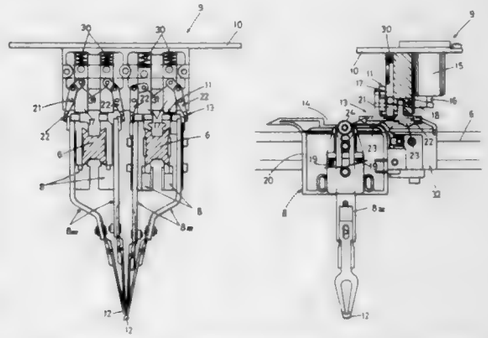
blower means mounted on the end portions.

5,345,789

APPARATUS FOR CONTROLLING DISPLACEMENT OF YARN FEEDERS

Masahiro Yabuta, Wakayama, Japan, assignor to Shima Seiki Mfg., Ltd., Wakayama, Japan

Filed Jul. 9, 1992, Ser. No. 910,915
Claims priority, application Japan, Jul. 11, 1991, 3-198578
Int. Cl.[5] D04B *15/52*
U.S. Cl. 66—126 A **1 Claim**



1. An apparatus for controlling displacement of a plurality of yarn feeders arranged in a flat knitting machine, said flat knitting machine comprises at least one carriage for adjusting movement of knitting needles of needle beds into and out of a knitting zone, yarn guide rails having a front side and a back side are disposed above and in a longitudinal direction of the needle beds, and yarn feeders that feed yarn to the knitting needles by being guided and accompanied by the yarn guide rails,

said yarn feeders are slidably secured to a front side and a back side of said yarn guide rails,

each said yarn feeder includes a yarn feeder rod, said yarn feeder rod is energized upwardly into a coupling recess formed at an upper end of each yarn feeder by a push-up spring (**19**),

a carrying means for selecting one of the yarn feeders,

a lowering means for lowering the selected yarn feeder down to a predetermined position close to tips of the knitting needles,

the carrying means comprising:

a solenoid controlled by a control unit, said solenoid having an output shaft (**16**),

a transmission rod (**18**) is operated by said output shaft, said transmission rod transmits a moving force of the output shaft of the solenoid to a carrying pin (**17**),

said carrying pin moves into and out of the coupling recess depending on a position of said transmission rod, and

the lowering means comprising:

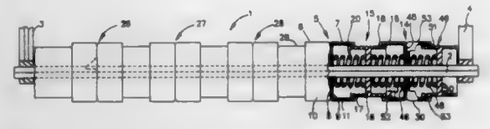
a cam plate connected to the carrying pin including a pair of cams (**23**) for pushing said yarn feeder rod downwardly.

5,345,790

YARN TENSIONER FOR KNITTING MACHINE

Petrus C. Schouten, Raadhuisstraat 49, NL-1016 DD Amsterdam, Netherlands

Filed May 3, 1993, Ser. No. 56,174
Claims priority, application Fed. Rep. of Germany, May 18, 1992, 9206600[U]
Int. Cl.[5] D04B *15/44;* **B65H** *59/22*
U.S. Cl. 66—146 **11 Claims**



1. A yarn tensioner for textile machines comprising:

a support rod,

at least a first and second tension cup, (**19, 30**) each tension cup having a respective flat tension face wall, (**45, 46**) each tensioning cup being axially positioned and free to slide on the support rod (**32**) and orientated to position a respective flat tension face wall against an opposing respective flat tension face wall preparatory to receiving a yarn fiber therebetween;

a first and second compressed spring; (**21, 48**) and

a first and second stationary support (**15, 49**), each stationary support having a support wall (**16, 50**) supporting a respective protruding guide (**18, 51**), the stationary supports being positioned on and fixed to the support rod on opposing sides of the tensioner; each respective protruding guide encasing a respective compressed spring, (**21, 48**) each respective protruding guide (**18, 51**) being slip fit into a corresponding adjacent tension cup (**19, 30**);

each respective compressed spring being co-axially positioned to apply a restoring force from a respective support wall, to a respective tension cup to urge a respective flat tension face wall towards the opposing flat tension face wall.

5,345,791

TUBULAR TEXTILE INSERT FOR STRENGTHENING MATERIAL

Laurent Mathieu, Chateau de Gissey, France, assignor to C.R.S.T. (S.A.), Vitteaux, France

Division of Ser. No. 936,898, Aug. 27, 1992, Pat. No. 5,285,661. This application Nov. 4, 1993, Ser. No. 148,006
Int. Cl.[5] D04B *1/22*
U.S. Cl. 66—190 **5 Claims**

1. Tubular textile inserts to strengthen material, made up of a stock of successive layers of contiguous parallel threads linked together, comprising:

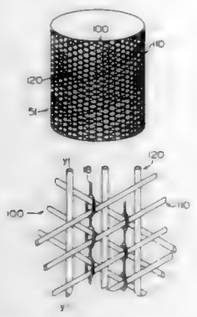
a first single-direction cylindrical layer (**27**) defining a central axis and formed from several contiguous parallel threads arranged in a spiral in relation to the central axis, the spiral arrangement defining a first pitch;

at least a second single-dash direction cylindrical layer (**32**), also formed from several contiguous parallel threads arranged in a spiral but at a pitch disposed in a direction opposite to the first pitch;

the two layers cooperatively defining a generally cylindrical plane, the cylindrical plane containing a plurality of generating lines, each generating line is angularly spaced

apart from adjacent generating lines and extends generally parallel to the central axis;

several binding threads (**18**), arranged parallel to the generating lines of the cylindrical plane, to link together the



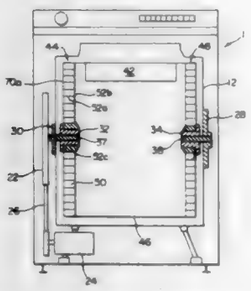
threads of the first and the second layers, said binding threads interlocking said layers by forming knit loops encompassing said layers in a manner to allow movement of one of the layers with respect to the other layer.

5,345,792

BALANCER FOR AN AUTOMATIC WASHER

Eric K. Farrington, Lincoln Township, Berrien County; Brenner M. Sharp, St. Joseph; Victor M. Vukorpa, St. Joseph Township, Berrien County, and Anthony Mason, Lincoln Township, Berrien County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 28, 1992, Ser. No. 997,435
Int. Cl.[5] D06F *37/22*
U.S. Cl. 68—23.2 **18 Claims**



1. A laundry apparatus having a rotatable drum for receiving a clothes load, said rotatable drum being capable of being subject to an out-of-balance mass wherein said out-of-balance mass may create a spinning axis distinct from said horizontal geometric axis, said rotatable drum further comprising:

a generally cylindrical outerwall defining a horizontal axis and having a predetermined diameter and a first end and a second end;

a first disk for forming a first end wall of said rotatable drum and having an outer edge rigidly interconnected with said first end of said generally cylindrical outerwall, said first disk further including:

a plurality of annular chambers, said plurality of annular chambers being concentric, each of said annular chambers being defined by concentric annular inner and outer walls and substantially parallel side walls, said plurality of annular chambers having an innermost chamber having an annular inner wall, each chamber further being adapted to be partially filled with liquid;

a second disk for forming a second end wall of said rotatable drum and having an outer edge rigidly interconnected with said second end of said generally cylindrical outerwall;

a motor for rotatable driving said rotatable drum;

a rotatably supported drive shaft drivingly interconnected with said motor;

a hub drivingly interconnected with said drive shaft, said hub having an outer surface; and

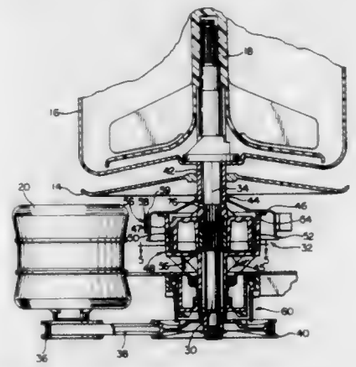
said annular inner wall of said innermost chamber of said first disk being disposed around said outer surface of said hub wherein said first disk is drivingly interconnected with said hub for rotatably driving said rotatable drum.

5,345,793

DRIVE SYSTEM FOR AN AUTOMATIC WASHER

Brenner M. Sharp, St. Joseph Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 21, 1993, Ser. No. 78,510
Int. Cl.[5] D06F *37/30*
U.S. Cl. 68—133 **23 Claims**



1. A gear reduction mechanism comprising:

a rotary input drive shaft;

a sun gear interconnected with said input drive shaft;

a plurality of cylindrical planet gears engaging said sun gear;

an output vertical shaft;

a unitary carrier member being formed of plastic resin and having integral means for rotatably supporting said cylindrical planet gears and further having means for interconnecting with said output vertical shaft for causing rotation of said output vertical shaft; and

a gear housing having an internal gear ring surrounding said cylindrical planet gears, said plurality of cylindrical planet gears engaging said internal gear ring member.

5,345,794

SHACKLELESS PADLOCK SYSTEM

Bruce Jenks, 2279 Colgate Dr., Costa Mesa, Calif. 92626

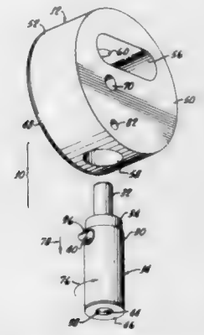
Filed Aug. 17, 1993, Ser. No. 107,535
Int. Cl.[5] E05B *65/48*
U.S. Cl. 70—14 **12 Claims**

1. A shackleless padlock for locking hasp members, said shackleless padlock comprising:

a lock mechanism having a cylindrical body and a bolt protruding from one end thereof and key operated means, disposed within said cylindrical body for causing a spring biased locking pin to retractably protrude from said cylindrical body from a first protruding position to a second protruding position, and means, defining an opening in another end of said cylindrical body, for accepting a key and for providing access for the key to the key operated means;

a padlock body having front and back sides subtending a connecting surface, means defining a slotted recess in the back side, for receiving a hasp member, means, defining a cylindrical bore through said connection surface intersecting said slotted recess, for receiving said lock mechanism cylindrical body and means, defining a second bore in the padlock body aligned with the cylindrical bore and intersecting said slotted recess, for receiving said bolt;

means, defining a pin recess in the padlock body intersecting the cylindrical bore, for receiving the locking pin in the second protruding position in order to lock the lock mechanism with the padlock body with the bolt in the second bore;



means, defining a slot in the cylindrical bore, for receiving the locking pin in the first protruding position in order to align the locking pin with the pin recess and prevent removal of the lock mechanism from the padlock body; and

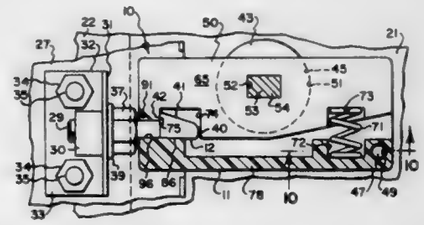
means, defining openings in the padlock body back side, for enabling depression of the spring biased locking pin into the lock mechanism cylindrical body in order to remove the lock mechanism from the padlock body when the locking pin is received in the pin recess and when the locking pin is received in the cylindrical bore slot.

5,345,795

LOCK STRUCTURE

Brent A. James, and Garrick D. James, both of Williamsville, N.Y., assignors to Diversified Control, Inc., Orchard Park, N.Y.

Filed Mar. 10, 1992, Ser. No. 848,865
Int. Cl.[5] B65D *55/14;* **E05B** *65/44*
U.S. Cl. 70—84 **27 Claims**



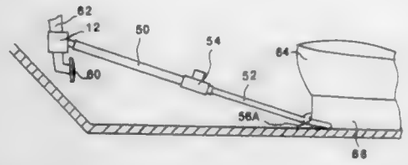
1. A lock structure for mounting between first and second supporting surfaces comprising a member, means for mounting said member on said first supporting surface, a housing, means for mounting said housing on said member, a rocker arm, means pivotally mounting said rocker arm on said member, a keeper, means for mounting said keeper on said second supporting surface, means on said rocker arm for effecting a locking engagement with said keeper, spring means for biasing said rocker arm to a locking position relative to said keeper, and key receiving means extending into said rocker arm and keyed thereto for receiving a key for selectively pivoting said rocker arm out of said locking engagement with said keeper.

5,345,796

VEHICLE BRAKE-PEDAL LOCKING DEVICE

Peter T. C. Chieh, 10531 Perch Ave., Fountain Valley, Calif. 92708; George Kun-Ling Fang, 9799 Red River Cr., Fountain Valley, Calif. 92708, and Franklin W. Baker, 1502½ N. La-Brea, Inglewood, Calif. 90302

Filed Mar. 8, 1993, Ser. No. 27,446
Int. Cl.[5] B60R *25/08*
U.S. Cl. 70—202 **20 Claims**



1. An improved vehicle brake-pedal locking device for use with vehicles having a vehicle seat base structure and a foot-operated brake-pedal having left, right, upper and lower sides and that is attached to a brake-pedal swing-arm, said device comprising;

a) a brake-pedal swing-arm interfacing structure having means for allowing said structure to be attached to the brake-pedal swing-arm,

b) a locking tube having a front end and a back end where the front end is attached to said brake-pedal swing-arm interfacing structure by an attachment means that allows said locking tube to pivot vertically and horizontally,

c) a locking rod having a front end, a back end and a diameter that allows said rod to slidably traverse through said locking tube, said rod having locking serrations,

d) a rod locking means attached to the back end of said locking tube, with said locking means having a rod bore therethrough in alignment with said locking tube, where when said locking rod is inserted through the rod bore and through said locking tube said locking means can lock said locking rod at a selectable length, and

e) a vehicle seat interfacing means attached to the back end of said locking rod, where said interfacing means is configured to allow said device to be held in-place when said interfacing means interfaces with a structural member of the vehicle seat base structure, where when so held with said brake-pedal swing-arm interfacing structure placed over the brake swing-arm, a foot pressure can be applied to said brake-pedal to cause the brake-pedal to depress at which time said rod locking means is activated to allow said locking rod to remain locked in its extended position and allow said improved vehicle brake-pedal locking device to maintain the brake-pedal in its depressed braking position.

5,345,797

MOTOR VEHICLE ANTI-THEFT DEVICE

John Hayes, Blackrock, Ireland, assignor to Robert J. McGrath, Killiney, Ireland

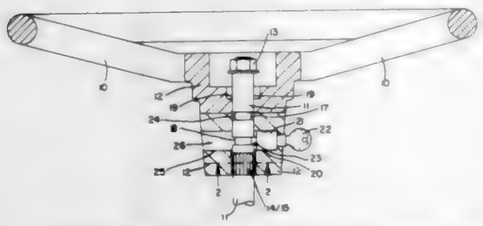
Filed Jun. 2, 1993, Ser. No. 71,248
Int. Cl.[5] B60R *25/02*
U.S. Cl. 70—218 **2 Claims**

1. An anti-theft device for a motor vehicle, comprising:

a steering wheel having a boss by which the steering wheel is mounted onto a steering column of the vehicle, the boss being slidable axially of the column between a first position in which the steering wheel and steering column are secured for co-rotation and a second position in which the steering wheel is freely rotatable on the steering column;

a recess within one end of a bore in the boss which recess opens onto the steering column and which extends transversely with respect to the steering column, the recess having an entrance on a far side of the steering column; and

a lock housed in the recess in the boss for securing the steering wheel in a selected one of the first or second axial positions, the lock being removable from the recess in the boss only when the boss is removed from the steering column and the lock also including an element for selectively engaging in either one of two axially separated



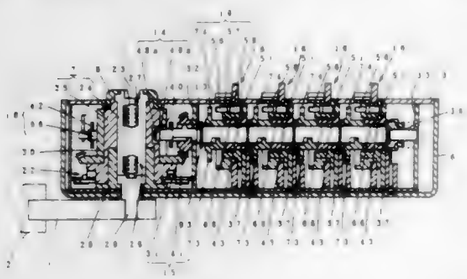
recesses in the steering column to lock the steering wheel in either one of the first or second axial positions, at least the recess corresponding to the second axial position of the steering wheel being a circumferential groove which permits free rotation of the steering wheel while the lock element remains engaged in the groove.

5,345,798

CODE LOCK DEVICE

Hatsuo Nakai, Toyonaka, Japan, assignor to Clover Co., Ltd., Osaka, Japan

Filed Apr. 2, 1993, Ser. No. 42,503
Claims priority, application Japan, Jan. 21, 1993, 5-027361
Int. Cl.[5] E05B *37/00*
U.S. Cl. 70—284 **4 Claims**



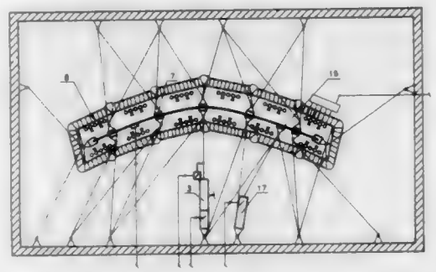
1. A code lock device comprising:
an actuator responding to a release operation and a locking operation;
an actuation shaft capable of reciprocating motion and rotation in first and second opposite directions;
reciprocating mechanism means, provided between said actuator and said actuation shaft, for reciprocating the actuation shaft in response to actuation of the actuator;
rotation mechanism means, provided between said actuator and said actuation shaft, for rotating the actuation shaft in response to actuation of the actuator;
a plurality of dials rotatably mounted on said actuation shaft;
locking mechanism means for allowing actuation of the actuator when a code of each dial is in an alignment forming a release code series, and for restraining the actuation of the actuator when the code of each dial is in non-alignment;
a plurality of drive plates, each of which corresponds to each said dial and integrally rotates with said actuation shaft;
a dial enforce reset mechanism including engaging means, provided between each said drive plate and each corresponding dial, for engaging both in response to reciprocating motion and rotation of the actuation shaft, and for rotating each dial to a predetermined angular position.

5,345,799

METHOD AND DEVICE FOR FORMING VARIOUS WORKPIECES

Pavel Miodushevski; Oleg Sosnin, both of Moscow, and Galina Rajevskaya, Novosibirsk, all of U.S.S.R., assignors to Aliteco AG, Zug, Switzerland

Filed Nov. 6, 1992, Ser. No. 973,104
Claims priority, application European Pat. Off., Jun. 22, 1992, 92110480.8
Int. Cl.[5] B21D *11/00*
U.S. Cl. 72—19 **15 Claims**



1. A method for creep forming a workpiece comprising the steps of:
synchronously heating and cooling a plurality of selected areas of the workpiece from both sides of the workpiece;
displacement forming the workpiece by applying an individual forming force to each of the selected areas and from both sides of the workpiece;
monitoring and controlling the magnitude of the forming forces;
halting the displacement forming in an area of the workpiece where the forming force has reached a predetermined maximum level;
during the halting step maintaining a constant displacement of the workpiece until the magnitudes of all individual forming forces are reduced to a predescribed minimum level; and
thereafter repeating the displacement forming, halting and maintaining steps until the workpiece has been completely displacement formed and reached its desired shape.

5,345,800

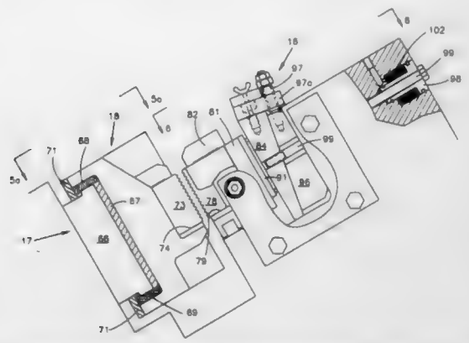
FLAT DIE THREAD ROLLER

Gregory A. Smith; Dale E. Foltz; Robert E. Wisebaker, all of Tiffin, and Robert E. Loy, Bucyrus, all of Ohio, assignors to The National Machinery Company, Tiffin, Ohio

Division of Ser. No. 868,330, Apr. 14, 1992, Pat. No. 5,230,235, which is a division of Ser. No. 652,778, Feb. 8, 1991, Pat. No. 5,131,250. This application Mar. 22, 1993, Ser. No. 34,131
Int. Cl.[5] B21H *3/06*
U.S. Cl. 72—90 **4 Claims**

1. A flat die thread roller comprising a frame, a slide bearing mounted on said frame, a reciprocable slide operable through repeated cycles including working and return strokes to roll a blank in a plane with a substantial vertical component between a die mounted on said slide and a fixed die, said slide bearing and slide including bearing surfaces guiding said slide during said reciprocation thereof, the slide having a first portion for supporting the die and a second portion extending above and away from said first portion, said bearing surfaces including upper bearing surfaces substantially adjacent the second portion of said slide supporting the weight of said slide and being

disposed in a location that is above a substantial portion of said dies, said second portion forming a cover above and thereby



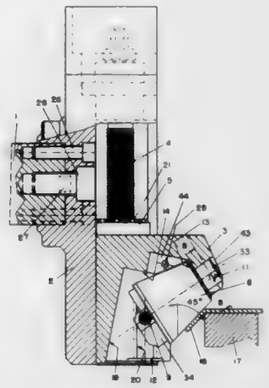
enveloping said upper bearing surfaces whereby they are substantially free of debris from said dies.

5,345,801

PROCEDURE AND APPARATUS FOR FORMING A RECTANGULAR COLLAR AT THE END OF A PIPE

Matti Paakkunainen, Hyvinkää , Finland, assignor to GS-Hydro OY, Hameenlinna, Finland

Filed Apr. 9, 1993, Ser. No. 44,467
Claims priority, application Finland, Apr. 10, 1992, 921627
Int. Cl.[5] B21D *19/04*
U.S. Cl. 72—117 **20 Claims**



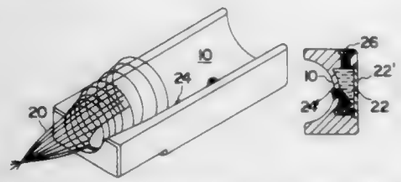
9. Apparatus for forming a substantially rectangular collar at an end of a pipe, the pipe having a longitudinal axis and the apparatus comprising:
a carriage mounted on a tool body, the carriage being movable toward and away from the pipe and being rotatable around the longitudinal axis of the pipe;
a forming element rotatably mounted on the carriage, the forming element having a forming face, the forming element also being slidably movable relative to the carriage, the forming face of the forming element being engagable with and disengagable from the pipe when the carriage moves toward and away from the pipe;
a first and second slot provided in the carriage, an upper end of the forming element being engagable and disengagable from either one of the first and second slots;
turning means for moving the upper end of the forming element between the first slot and the second slot and for pivoting the forming element about a fulcrum at a lower end thereof during movement of the forming element between the slots, the forming face of the forming element being at an acute angle with respect to the longitudinal axis of the pipe when the upper end of the forming element is in the first slot and the forming face being substantially perpendicular to the longitudinal axis of the pipe when the upper end of the forming element is in the second slot;
guides provided in the carriage, the fulcrum at the lower end of the forming element being slidable in the guides such that the lower end of the forming element is movable toward and away from the longitudinal axis of the pipe before and after pivoting of the forming element by the turning means, the turning means sliding the forming element in the guides thereby engages and disengages the upper end of the forming element from the slots.

5,345,802

SHAPED GROOVE COUNTERMATRIX FOR ROTARY GROOVE PULLEY MATRIX AND COUNTERMATRIX BENDING HEAD PIPE BENDING MACHINES

Alessandro Caporusso, and Mario Caporusso, both of Via Pantanelle, 21, Piedimonte San Germano, Frosinone, Italy

Filed Mar. 10, 1993, Ser. No. 29,063
Int. Cl.[5] B21D *7/04*
U.S. Cl. 72—154 **2 Claims**



1. A shaped groove countermatrix for a rotary groove pulley matrix and a countermatrix head pipe bending machine, comprising:
a groove (**10**) having an exit edge (**18**), a semicircular cross-sectional tract with a curved surface, and an end tract (**2**) aligned in a direction of feed of a pipe to be bent in the groove (**10**) during a bending operation;
said end tract (**2**) being tapered, according to substantially elliptic profiles (**20**), both longitudinally and transversely with respect to the semicircular cross-sectional tract;
said end tract (**2**) further having its cross section substantially defined by arcs (**4**, **4'**) of two ellipses with major axes (**6**, **6'**) being parallel to and slightly offset with respect to the plane (**8**) of longitudinal symmetry of the groove (**10**); and
said end tract (**2**) further being tapered starting from a substantially parabolic profile (**14**) having its line of axial symmetry lying in the plane (**8**) of longitudinal symmetry of the groove (**10**) and also having its vertex (**16**) spaced from the exit edge (**18**) of the groove (**10**).

5,345,803

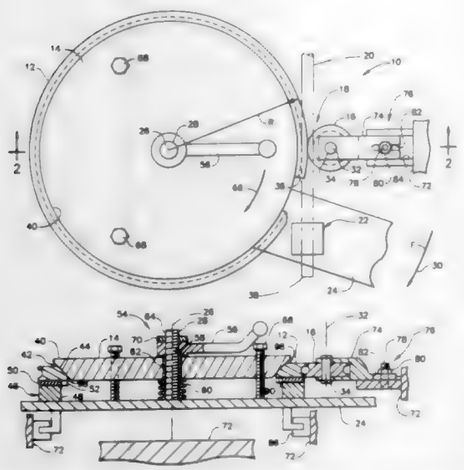
ADJUSTABLE TUBE BENDING METHOD AND APPARATUS

Everett A. Cutter, Bow, N.H., assignor to General Electric Company, Cincinnati, Ohio

Filed Aug. 30, 1993, Ser. No. 113,124
Int. Cl.[5] B21D *7/00*
U.S. Cl. 72—157 **10 Claims**

1. A tube bending apparatus comprising:
a first arcuate die cavity body having a first continuous external surface along at least a portion of a circumference thereof, said first surface having a first radius of curvature;
a second arcuate die cavity follower having a second external surface along at least a portion of a circumference thereof coplanar with said first external surface and converging with said first external surface at a common tangency producing a tube forming zone therebetween;
clamp means for clamping a portion of a tube in a fixed location relative to said first die cavity body;

draw means for drawing said tube through said forming zone while wrapping said tube around said first external surface of said portion of said circumference of said first die cavity body; and



adjustment means for changing said radius of curvature of said first die cavity body.

5,345,804

ROLLER STRAIGHTENING DEVICE FOR STEEL BARS FOR CONCRETE

Noël Carrere, Résidence Crespy 2, Bâtiment 11 Appartement 332, 33400 Talence, France

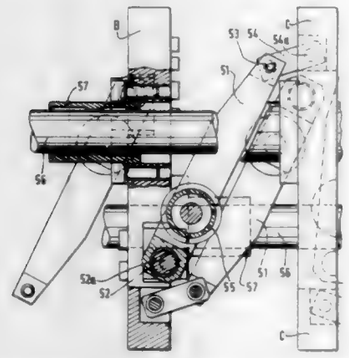
PCT No. PCT/FR91/00368, § 371 Date Jan. 4, 1993, § 102(e) Date Jan. 4, 1993, PCT Pub. No. WO91/17003, PCT Pub. Date Nov. 14, 1991

PCT Filed May 3, 1991, Ser. No. 938,250

Claims priority, application France, May 3, 1990, 90 05569

Int. Cl.[5] B21D *3/05*

U.S. Cl. 72—164 **11 Claims**



1. A straightener for straightening products such as steel bars for concrete comprising: a path extending through the straightener having a center line such that the axis of the product corresponds to the path center line, a plurality of plates displaceable relative to one another while remaining perpendicular to the axis of the product to be straightened; means for displacing said plates in the direction of said axis so that the distance between the plates is modified and so that said plates remain equidistant from each other in order to adapt the straightener to various different products to be straightened, each plate being connected to the adjacent plates by two roller bearing arms having each a first end pivoting on a fixed point of a first plate and a second end connected to a second adjacent plate by means allowing the displacement of said second end in the vicinity of said adjacent plate when the distance between the two plates is modified, each roller bearing arm supporting a straightening roller having a rotation axis, the rotation axis of which is located at a distance from said pivoting point of the roller bearing arm on said first plate which is a quarter of the length of said roller bearing arm, said rollers being located on said roller bearing arms so that the rollers are positioned on both sides of the path center line and modifying the distance between the plates results in moving all the rollers equal distances relative to the path center line.

5,345,805

ROLLING MILL FOR WIRE OR BAR STEEL WITH A CONTINUOUS LIGHT SECTION STEEL OR WIRE TRAIN

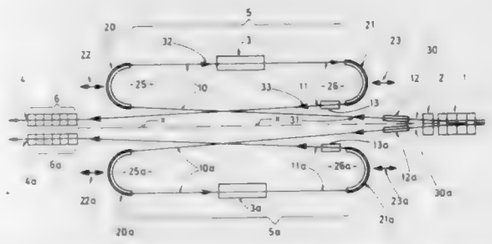
Albert Hauck, Hilchenbach, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed May 19, 1993, Ser. No. 65,097

Claims priority, application Fed. Rep. of Germany, May 23, 1992, 4217149

Int. Cl.[5] B21B *1/18, 41/06*

U.S. Cl. 72—201 **4 Claims**



1. A rolling mill for wire or bar steel having a continuous light-section or wire train, comprising:

a break-down train, having at least one line and a pilot stand;

at least one single line intermediate train, located downstream of said breakdown train and including a group of intermediate stands;

at least one finishing train, located downstream of said intermediate train and having a group of single line finishing stands;

a production line connecting said breakdown and finishing trains;

a first temperature compensation section, located between said pilot stand and said intermediate train and comprising a first horizontal loop former defined by a 180° loop for rolling stock;

a first water box, located downstream of said pilot stand and upstream of said first temperature compensation section;

a section temperature compensation section, located between said intermediate train and said finishing train and comprising a second horizontal loop former defined by a 180° loop for rolling stock; and

a second water box, located downstream of said second temperature compensation section and upstream of said finishing train;

wherein said first and second horizontal loop formers are arranged opposite each other on opposite sides of said intermediate train, respectively; and

wherein said intermediate train and said first and second horizontal loop formers are arranged adjacent to said production line and sidewise relative thereto.

5,345,806

DEVICE FOR MANIPULATING SHEET METAL PIECES

Franco Sartorio; Mario Scavino, and Stefano Vergano, all of Turin, Italy, assignors to Amada Company, Limited, Japan

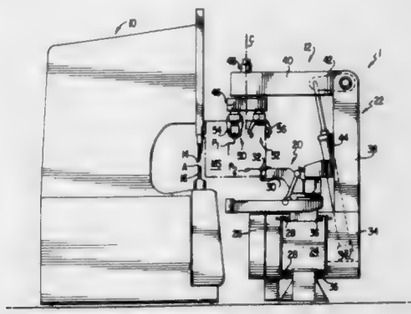
PCT No. PCT/JP90/01731, § 371 Date Aug. 28, 1991, § 102(e) Date Aug. 28, 1991, PCT Pub. No. WO91/09695, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 28, 1990, Ser. No. 752,591

Claims priority, application Italy, Dec. 29, 1989, 68190 A/89; Dec. 29, 1989, 68191 A/89

Int. Cl.[5] B21D *43/00*

U.S. Cl. 72—422 **7 Claims**



1. A manipulator device for a sheet metal processing machine, the sheet metal processing machine having a pair of tools extending along a reference line A, the manipulator device comprising:

a main manipulator unit movable in front of the processing machine and having at least one gripping element for gripping a sheet metal workpiece, the main manipulator unit being adapted to take up a sheet metal workpiece from and pass a sheet metal workpiece to the processing machine; and

an associated auxiliary manipulator unit having first and second gripping elements, each of the first and second gripping elements taking up a sheet metal workpiece from the main manipulator unit and passing a sheet metal workpiece to the main manipulator unit, said auxiliary manipulator unit including means for rotating the first and the second gripping elements about a certain axis perpendicular to a reference line of the processing machine.

5,345,807

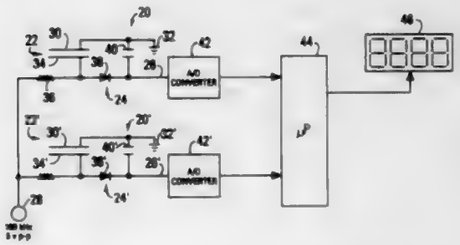
SELF-CALIBRATING VARIABLE PRESSURE TOUCH KEY SYSTEM EMPLOYING TRANSDUCERS SUBJECT TO PARAMETER DRIFT

Orville R. Butts, Chattanooga, Tenn., and Paul R. Tanner, Ft. Oglethorpe, Ga., assignors to General Electric Company, Louisville, Ky.

Continuation of Ser. No. 769,370, Oct. 1, 1991, abandoned. This application Jun. 8, 1993, Ser. No. 73,633

Int. Cl.[5] G01L *27/00*

U.S. Cl. 73—4 R **23 Claims**



1. A variable pressure touch key system comprising:

a pressure transducer device for producing an output signal having a value dependent on touch pressure applied to said transducer device;

means for periodically reading the output signal value to establish a calibration reference value; and

means for periodically reading the output signal value and comparing the output signal value to a plurality of comparison values respectively determined by applying each of a plurality of predetermined change threshold values to the calibration reference value to recognize a particular one of a plurality of potential operation values depending on the amount of touch pressure applied to said pressure transducer device.

5,345,808

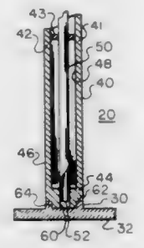
GAS ANALYZER FOR MOLTEN METALS

Geoffrey K. Sigworth, 321 Tioga St., Johnstown, Pa. 15905

Filed Aug. 30, 1993, Ser. No. 113,344

Int. Cl.[5] G01N *7/10*

U.S. Cl. 73—19.07 **16 Claims**



1. A hollow probe for immersion in a molten metal for determining the gas content thereof by drawing a vacuum on the probe and permitting gas to permeate from the molten metal and equilibrate in the probe wherein gas pressure can be measured to determine the gas pressure in the molten metal, the probe comprising:

(a) a porous filter head permeable to gas in said molten metal and impermeable to said molten metal;

(b) a hollow cast iron sleeve having an upper portion and a lower portion, the sleeve attached to said filter head at the lower portion; and

(c) a small diameter tube positioned in said sleeve, said tube having a first end extending to said lower portion of said sleeve adjacent to said filter head, said tube having a second end attached to one of means for drawing a vacuum on said tube and means for measuring gas pressure in said tube.

5,345,809

EXPLOSIVE DETECTION SCREENING SYSTEM

Colin Corrigan, and Lawrence Haley, both of Ottawa, Canada, assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

PCT No. PCT/US90/07269, § 371 Date Aug. 6, 1992, § 102(e) Date Aug. 6, 1992, PCT Pub. No. WO91/09307, PCT Pub. Date Jun. 27, 1991

Continuation-in-part of Ser. No. 447,724, Dec. 8, 1989, Pat. No. 4,987,767, which is a continuation-in-part of Ser. No. 364,663, Jun. 9, 1989, abandoned. This PCT application Dec. 10, 1990, Ser. No. 859,509

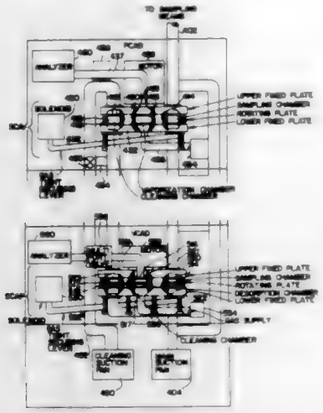
Int. Cl.[5] G01N *1/22, 33/22*

U.S. Cl. 73—23.2 **70 Claims**

1. A portable detection and screening system for the detection of target vapors or target particulates associated with a defined class of target materials such as explosives, chemical agents, drugs or narcotics, said system comprising:

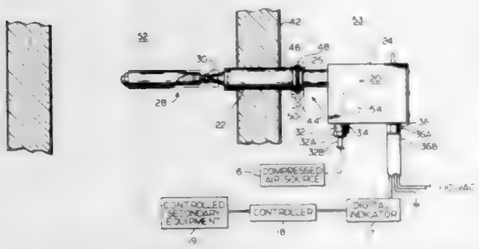
(a) a sampling means having a sequential series of sampling periods for gathering a sample volume of air from a specific area on an individual or object during each sampling period;

(b) a first sample collection and analysis subsystem for collecting target particulates contained in said sample volume of air and converting said target particulates into first a vapor sample for analysis;
(c) a second sample collection and analysis subsystem for concentrating target vapors contained in said sample



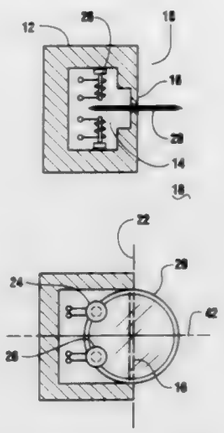
volume of air, said second subsystem having first means for selectively concentrating said target vapors into a second vapor sample for analysis; and
(d) detection means responsive to said target materials to generate a signal in response to the presence of said target materials in either said first or second vapor sample.

5,345,810
NORMALIZED RELATIVE HUMIDITY PROCESS
Jay Rosen, 142 Friedley Ave., Bellevue, Ohio 44811
Division of Ser. No. 895,089, Jun. 8, 1992. This application Dec. 9, 1993, Ser. No. 163,504
Int. Cl.[5] G01W *1/00*
U.S. Cl. 73—29.02 **4 Claims**



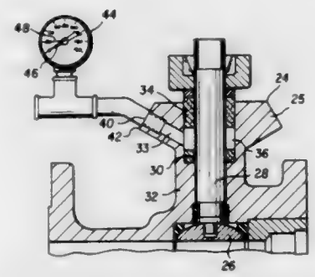
1. A process for humidity measurement comprising the steps of:
regulating the temperature of a sample to a temperature above the dew point temperature of the humidity source,
regulating the temperature of said sample to a temperature below the operational limit of a humidity measurement sensor,
maintaining the sample temperature at a constant predetermined measurement temperature,
measuring the relative humidity of said sample at said constant temperature, and
calculating the absolute moisture content of said sample based solely on sensed relative humidity and absolute measurement pressure.

5,345,811
FLUID DENSITY SENSOR AND SYSTEM
George Alexandrovich, Sr., Commack; Stanley Sporn, Oceanside, and Stanley Wood, Middle Island, all of N.Y., assignors to Parker Hannifin Corporation, Cleveland, Ohio
Filed Apr. 1, 1992, Ser. No. 861,664
Int. Cl.[5] G01N *9/10*
U.S. Cl. 73—32 A **13 Claims**



1. Apparatus for measuring density of a fluid, comprising:
a sensing element adopted for immersion in said fluid;
said element having a body, said body enclosing a chamber, said chamber bounded by a wall separating said fluid external of said body and said chamber;
a disc shaped vibrating member, said vibrating member fixed to said wall along a first axis through a center thereof, a first portion of said member extending in said chamber and a second portion of said member extending in said fluid;
means for exciting resonant frequency vibration of said disc shaped member wherein said member has a linear node extending along said first axis;
and
means for sensing frequency of vibration of said disc shaped member whereby said frequency of vibration is representative of the density of said fluid.

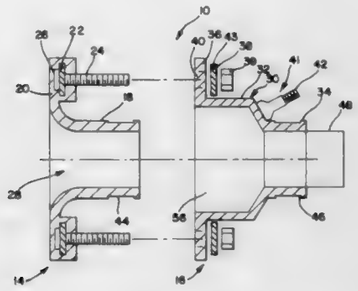
5,345,812
SEAL LEAKAGE MONITORING DEVICE AND METHOD
Mark S. Haboian, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 24, 1992, Ser. No. 903,831
Int. Cl.[5] G01M *3/28*
U.S. Cl. 73—46 **3 Claims**



1. A fluid-containing system comprising a tank for storing a chemical or hazardous fluid and a valve, the valve comprising a stem, a primary stem seal, a secondary stem seal, and a chamber between the primary and secondary stem seals, wherein a pressure gauge in fluid communications with said chamber

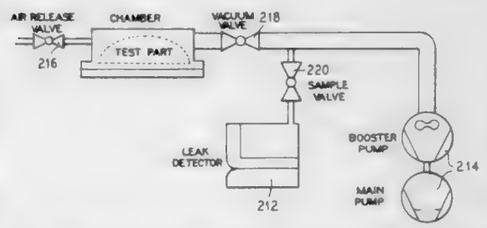
comprises a first pointer for registering existing pressure in said chamber, and a second pointer which remains fixed at the maximum pressure registered by said first pointer.

5,345,813
PRESSURE TESTABLE FLEXIBLE PIPING PENETRATION
Dean Flessas, Lombard, Ill., assignor to Buffalo Environmental Products Corporation, Oak Brook, Ill.
Continuation of Ser. No. 33,390, Mar. 19, 1993, abandoned. This application Dec. 14, 1993, Ser. No. 167,630
Int. Cl.[5] G01M *3/28*
U.S. Cl. 73—46 **12 Claims**



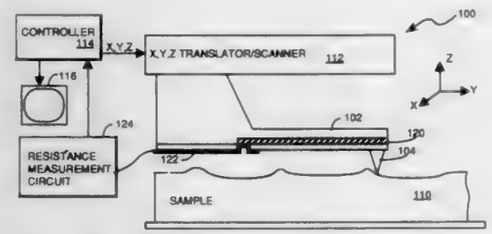
1. A pressure testable flexible piping penetration fitting comprising:
a first elastomeric boot having a flange portion adapted to engage a first side of a containment wall and a body portion adapted to extend through an opening in said containment wall, said body portion further adapted to engage the outer diameter of a pipe extending through said opening;
a second elastomeric boot adapted to overlap said body portion of first elastomeric boot and engage a second side of said containment wall opposite said first side to form an air pocket on said second side of said containment wall between said first and second elastomeric boots;
a test port extending through said second elastomeric boot for pressurizing and monitoring said air pocket.

5,345,814
METHOD AND APPARATUS FOR TESTING VACUUM INSULATION PANEL QUALITY
Nihat O. Cur, Royalton Township, and David B. Kirby, St. Joseph Township, both of Berrien County, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Continuation of Ser. No. 635,489, Dec. 28, 1990, abandoned. This application Jul. 6, 1993, Ser. No. 86,762
Int. Cl.[5] G01M *3/34*
U.S. Cl. 73—49.3 **13 Claims**



1. A method of verifying the integrity of a sealed evacuated container comprising a vacuum insulation panel having at least one flexible film wall, comprising the steps:
evacuating said container of gases to a below atmospheric pressure before sealing;
introducing a low molecular weight gas to the interior of the container before sealing;
introducing a quantity of microporous thermal insulating material into the interior of the container to substantially fill said container before sealing said container;
placing said container in a chamber;
sealing said container with said low molecular weight gas and said microporous thermal insulating material therein while maintaining the pressure within said container below atmospheric pressure;
evacuating said chamber of said low molecular weight gas to a partial pressure level below that of said gas in said sealed container;
evacuating said chamber of all gases to a pressure level below that within the container; and
sensing the gas within said chamber after said sealing and said evacuations to determine whether the rate of increase of said low molecular weight gas in said chamber exceeds a predetermined acceptable leak rate.

5,345,815
ATOMIC FORCE MICROSCOPE HAVING CANTILEVER WITH PIEZORESISTIVE DEFLECTION SENSOR
Thomas Albrecht, San Jose; Marco Tortonese, Stanford, and Robert Barrett, Mountain View, all of Calif., assignors to Board of Trustees, Leland Stanford Jr. University, Palo Alto, Calif.
Continuation of Ser. No. 638,163, Jan. 4, 1991, abandoned. This application Sep. 30, 1992, Ser. No. 954,695
Int. Cl.[5] G01B *7/34*
U.S. Cl. 73—105 **18 Claims**



1. An atomic force microscope comprising:
a sample holder;
a cantilever arm having a fixed end and a free end and a piezoresistive element included within the cantilever arm, deflection of the free end of the cantilever arm changing the resistance of the piezoresistive element;
scanning means for moving the cantilever arm and sample holder relative to one another so as to scan a surface of a sample positioned in the sample holder; and
deflection detection means for detecting changes in the resistance of the piezoresistive element and for generating signals in response to those changes in resistance, the generated signals being representative of features of the surface of the sample.

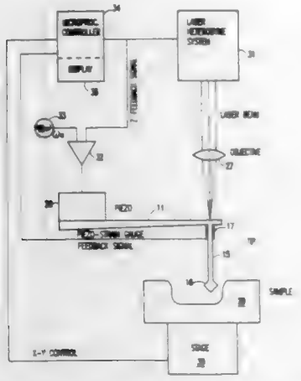
5,345,816
INTEGRATED TIP STRAIN SENSOR FOR USE IN COMBINATION WITH A SINGLE AXIS ATOMIC FORCE MICROSCOPE
Joachim Clabes, 420 Cording Rd., Yorktown Heights, N.Y. 10598; Henri A. Khoury, Yorktown Heights, N.Y., and Laszlo Landstein, 15 Tavano Rd., Ossining, N.Y. 10562-3105
Division of Ser. No. 999,059, Dec. 31, 1992. This application Nov. 24, 1993, Ser. No. 157,800
Int. Cl.[5] G01N *27/00, 23/00*
U.S. Cl. 73—105 **12 Claims**
1. A method of manufacturing an integrated tip strain sensor in combination with an atomic force microscope (AFM) for

profiling a surface in three dimensions, the method comprising the steps of:

using a high resolution direct electron beam (e-beam) deposition process to grow a tip on a tip stem integral with a cantilever beam structure;

depositing a continuous piezoelectric material coating on the tip stem;

treating said piezoelectric material in an oxygen-containing environment to crystallize said piezoelectric material into



a proper phase and to oxidize the exposed cantilever beam structure, thereby achieving an electrical insulating coating on the same;

applying a metal film onto the piezoelectric material coating and at least a bottom surface of the cantilever beam structure as an overcoat to form strain sensor contacts; and

patterning the metal film to yield electrical conductors which extend along the tip stem and along a bottom length of the cantilever beam structure to provide output signal lines from the strain sensor contacts.

5,345,817

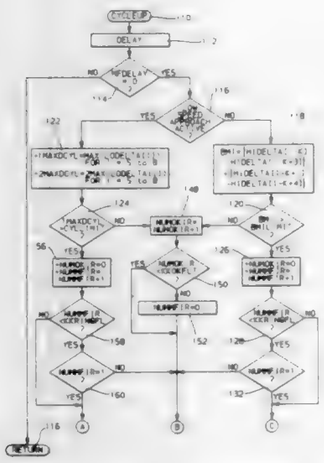
MISFIRE DETECTION IN INTERNAL COMBUSTION ENGINES

Daniel P. Grenn, Highland, and Ronald J. Kubani, Farmington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 22, 1993, Ser. No. 20,961

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—117.3 **8 Claims**



4. A diagnostic system for an engine having n cylinders and an output shaft undergoing two complete revolutions for each engine cycle during which each of the cylinders undergoes a complete cylinder cycle, the system comprising:

means for generating n/2 reference signals for each revolution of the output shaft, each reference signal being generated at a respective predetermined angular position of the output shaft so as to alternately represent a predetermined reference point in the cylinder cycle of each of two of the n cylinders;

means for timing the duration between each of adjacent reference signals during rotation of the output shaft thereby providing a pair of timed durations between each consecutive predetermined angular positions of the output shaft during each engine cycle;

means for determining a first difference between the timed duration in a first pair of timed durations; and

means for indicating an engine malfunction when a predetermined function of the first difference exceeds a predetermined threshold.

5,345,818

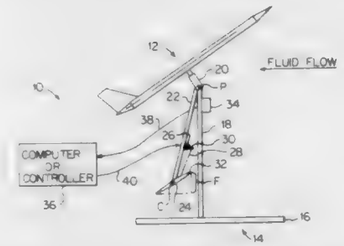
WIND DRIVEN DYNAMIC MANIPULATOR FOR A WIND TUNNEL

John C. Magill, Norcross, and Narayanan M. Komerath, Alpharetta, both of Ga., assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Jun. 25, 1993, Ser. No. 81,135

Int. Cl.[5] G01M *9/00*

U.S. Cl. 73—147 **16 Claims**



1. A wind driven dynamic manipulator for imparting motion to an aerodynamic body disposed within a wind tunnel, said manipulator comprising:

supporting means including a movable portion for supporting said aerodynamic body within said wind tunnel;

a first aerodynamic surface affixed to said supporting means in such a manner as to allow motion to be imparted to said aerodynamic body by an interaction between said movable portion of said first aerodynamic surface and a fluid flow within said wind tunnel; and

a first control means for orienting said aerodynamic surface with respect to said fluid flow, said first control means for allowing said aerodynamic body to be dynamically positioned with respect to said fluid flow.

5,345,819

METHOD AND APPARATUS FOR WELLBORE STABILITY ANALYSIS

Harry L. Dearing, Jr., Sugar Land, Tex., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Oct. 22, 1990, Ser. No. 601,960

Int. Cl.[5] E21B *49/00*

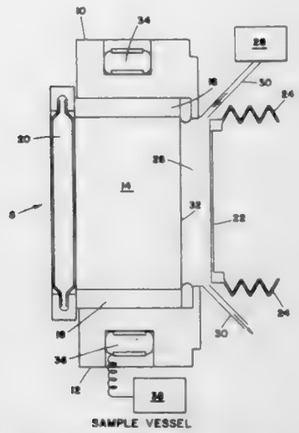
U.S. Cl. 73—153 **8 Claims**

1. An apparatus for determining wellbore stability comprising:

a. means for housing a prismatic shaped rock sample and for controlling the pressure and temperature of the sample, and means for exposing a face of said sample that is not subject to axial loading to a drilling fluid;

b. means for generating an ultrasonic signal coupled to said rock sample;

c. means for measuring the transit time of said ultrasonic signal to travel through said rock sample over a period of time and for generating a measurement signal representa-



tive thereof while said sample is exposed to said drilling fluid; and

d. means, responsive to said measurement signal, for generating according to a predetermined relationship relating said transit time to strength, a signal representative of said strength of said rock sample.

5,345,820

METHOD OF AND ARRANGEMENT FOR DETERMINING GEOHYDRAULIC PERMEABILITY OF GROUND REGIONS THROUGH WHICH GROUND WATER FLOWS

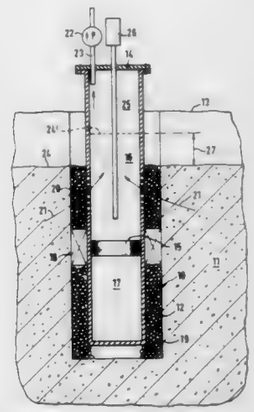
Bruno Bernhardt, Reutlingen, Fed. Rep. of Germany, assignor to IEG Industrie-Engineering GmbH, Reutlingen, Fed. Rep. of Germany

Filed Mar. 11, 1993, Ser. No. 29,823

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1992, 4207692

Int. Cl.[5] E21B *47/00*

U.S. Cl. 73—155 **18 Claims**



1. A method of determining geohydraulic permeability of ground regions through which ground water flows for dimensioning of a well providing ground water circulation, the method comprising the steps of producing a negative pressure of an adjustable magnitude above a ground water level in a well shaft in a ground region to be investigated; measuring a raise of the water level produced by the negative pressure in the well shaft per unit time and also measuring at least one of the negative pressure acting in the well shaft and lowering of the ground water level per unit time after elimination of the negative pressure to obtain respective measuring values; and determining a geohydraulic permeability of the ground level to be investigated from the obtained measuring values.

5,345,821

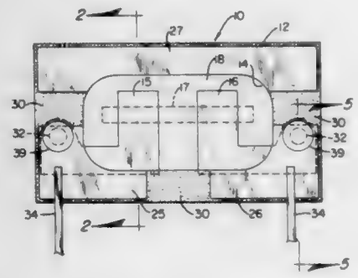
RELATIVE HUMIDITY SENSING APPARATUS

William L. Reich, and David B. Call, both of Boulder, Colo., assignors to A.I.R., Inc., Boulder, Colo.

Filed Jan. 15, 1993, Ser. No. 5,015

Int. Cl.[5] G01N *27/22, 33/18*

U.S. Cl. 73—335.04 **17 Claims**



1. A humidity sensor comprising a support member having a substantially flat support surface and a passageway extending completely through said support member in a direction normal to said surface, said passageway being entirely surrounded by said support member;

a pair of electrically conductive portions on said support member;

a film of material traversing said passageway including means for securing said film to said support member; and

electrode members disposed on said film including at least two capacitive electrode portions with said film interposed therebetween to define a capacitor between said electrode portions, said film being water permeable and having a dielectric constant which varies directly with the amount of moisture therein, and means for establishing electrical contact between said electrically conductive portions.

5,345,822

VIBRATORY GYROSCOPE HAVING A SUPPORT MEMBER

Takeshi Nakamura; Yoshiaki Heinouchi, and Yukio Sakashita, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Jun. 24, 1992, Ser. No. 903,317

Claims priority, application Japan, Jun. 28, 1991, 3-185269; Jul. 8, 1991, 3-194913; Jul. 8, 1991, 3-194914; Jul. 8, 1991, 3-194915; Jul. 8, 1991, 3-194916; Jul. 8, 1991, 3-194917; Jul. 8, 1991, 3-194918; Jul. 8, 1991, 3-194919

Int. Cl.[5] G01P *15/08*

U.S. Cl. 73—505 **14 Claims**

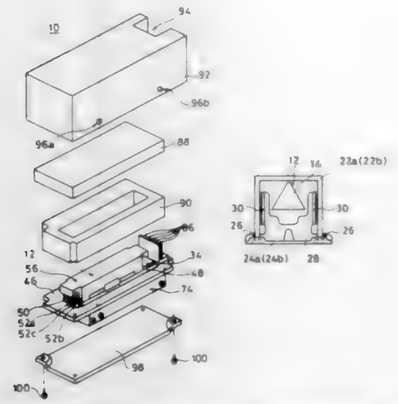
1. A vibratory gyroscope comprising:

a prism-shaped vibrating body;

a plurality of piezoelectric elements formed on the side faces of said vibrating body; and

a supporting member connected to said vibrating body, said

supporting member having a multi-layer structure and fixed in a vicinity of nodal points of said vibrating body,



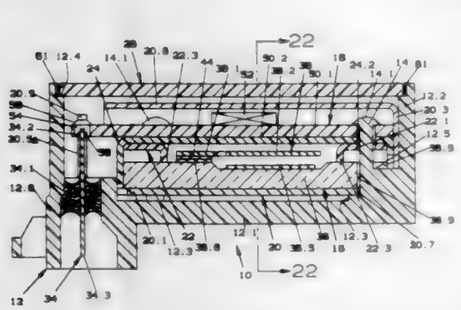
an inside portion of said supporting member being formed by an elastic material, and an outside portion surrounding said inside portion being formed by a solderable material.

5,345,823

ACCELEROMETER

Eric P. Reidemeister, Arlington; Larry K. Johnson, North Attleboro; Keith W. Kawate, Attleboro Falls, all of Mass.; Raymond E. Mandeville, Cumberland, R.I.; Douglas B. Christensen, Attleboro, Mass., and Robert O. Southworth, Pawtucket, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 12, 1991, Ser. No. 790,956
Int. Cl.[5] G01P *15/125*
U.S. Cl. 73—517 R **33 Claims**



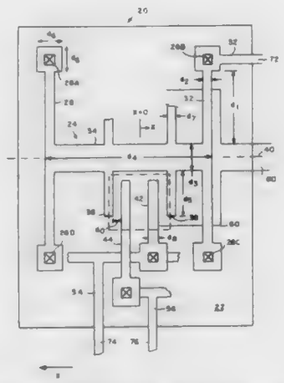
15. An accelerometer device comprising an electrically insulating housing base having integral pins upstanding from the base; an electrically insulating ceramic substrate having a groove with a flat bottom and a selected depth extending across one surface of the substrate and having electrically conductive film means on said one surface defining a capacitor detect plate inside the groove bottom, capacitor source plate connector means outside the groove, and circuit path means connected to the detect plate and source plate connector means; an electrically conductive metal plate member having an attachment portion, a capacitor source plate portion, and integral resilient beams extending between the attachment and source plate portions disposed in a common plane, the attachment portion being secured in electrically conductive relation to the source plate connector means outside the groove to dispose the source plate member portion in spaced relation to the detect plate on the groove bottom to form a capacitor and to be movable relative to the detect plate in response to an acceleration force to provide an electrical signal; gasket means disposed on the substrate around the plate member; a cup-shaped cover fitted over the gasket means and around the substrate to extend over the plate member for excluding contaminants from between the detect and source plate portions of the capacitor, the cover being positioned to limit movement of the source plate member portion away from the detect plate in response to an acceleration force; signal-conditioning electrical circuit means disposed on the cover; the pins extending through openings in each of the substrate, gasket means, cover and electrical circuit means and being staked at distal ends of the pins for securing the substrate, gasket means, cover and electrical circuit means in assembled relation to form an accelerometer mechanism; electrically conductive adhesive extending between the electrical circuit means and substrate electrically connecting the electrical circuit means to the circuit path means for conditioning the electrical signal to provide an output signal corresponding to the acceleration force; and a second housing part secured to the base enclosing the accelerometer mechanism.

5,345,824

MONOLITHIC ACCELEROMETER

Steven J. Sherman, Andover; A. Paul Brokaw, Burlington; Robert W. K. Tsang, Bedford, and Theresa Core, Framington, all of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 569,080, Aug. 17, 1990, abandoned.
This application Mar. 4, 1993, Ser. No. 28,922
Int. Cl.[5] G01P *15/125*
U.S. Cl. 73—517 B **26 Claims**



1. A monolithic semiconductor capacitance-type accelerometer comprising;

a semiconductor substrate comprising a surface,

a plurality of posts extending from the surface of said substrate,

a polysilicon bridge suspended from said posts, said bridge comprising a plurality of moveable fingers,

a plurality of electrically conductive substantially stationary fingers, each of said substantially stationary fingers corresponding to one of said moveable fingers and positioned relative to said corresponding moveable finger such that said moveable finger and said corresponding substantially stationary finger form a capacitor,

whereby movement of said bridge under an accelerative force causes said moveable fingers to move relative to said substantially stationary fingers and alter the capacitance between said moveable fingers and said corresponding stationary fingers, and

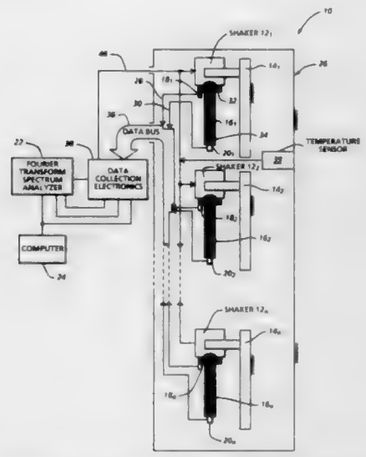
circuitry disposed on said substrate and coupled to said moveable fingers and said substantially stationary fingers for generating a signal indicative of acceleration.

5,345,825

MATERIAL CHARACTERIZING SYSTEM

Gilbert F. Lee, Greenbelt, and Bruce Hartmann, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 8, 1991, Ser. No. 652,821
Int. Cl.[5] G01H *15/00*
U.S. Cl. 73—574 **2 Claims**



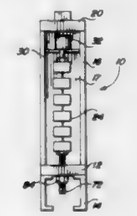
1. In apparatus for determining material properties within a temperature controlled enclosure by means of random noise, a plurality of accelerometers and analyzer means operatively connected to the accelerometers for analysis of acoustical vibration induced by the random noise, the improvement residing in: means for separately mounting a plurality of test specimens with the accelerometers carried thereon in spaced relation within the enclosure, data collection means operatively connecting the accelerometers to the analyzer means for transmission of measurements of the acoustical vibrations induced in the specimens by said random noise from the accelerometers to the analyzer means; and programmed computer means operatively connected to the analyzer means and the data collection means for automatically calculating the material properties of the specimens from said measurements, said programmed computer means including means for selecting the material properties calculated from the measurements obtained at resonant frequencies of the acoustical vibrations and mounting blocks respectively bonded to opposite ends of the specimens on which the accelerometers are carried.

5,345,826

STATIC LOAD TESTER WITH I-BEAM SUPPORT COLUMN

David J. Strong, METL, Inc., 3701 W. Thomas Rd., Pheonix, Ariz. 85019

Filed May 4, 1993, Ser. No. 57,683
Int. Cl.[5] G01N *3/08*
U.S. Cl. 73—826 **11 Claims**



1. A static load tester, to replace prior art, lever arm testers, for applying a tensile load to selected specimens over an extended period of time, said load tester comprising:

an I-beam support column having first and second channels;

a first load sensing device for outputting a signal representative of a tensile load applied to said device, said device being disposed within said first channel of said I-beam and having a first end coupled to said I-beam;

said load sensing device having a second end;

first tensioning apparatus coupled to said I-beam, within said first channel and disposed opposite said load sensing device; and

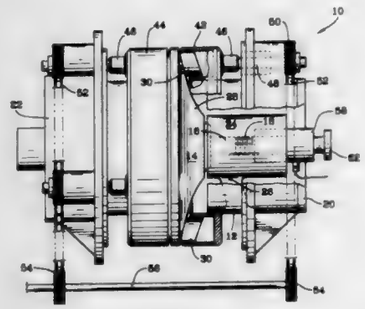
first means for coupling a selected test specimen between said second end of said first load sensing device and said first tensioning apparatus, said first tensioning apparatus applying a tensile force through said first load sensing device and a said selected test specimen, when said selected specimen is so coupled, said first load sensing device outputting a signal representative of the tensile force applied to said selected specimen so coupled.

5,345,827

ABSORPTION DYNAMOMETER AND TORQUE MEASUREMENT THEREFOR

Walter L. Brassert, Belmont, and Paul N. Dahlstrand, Andover, both of Mass., assignors to Northern Research & Engineering Corporation, Woburn, Mass.

Filed Jul. 15, 1993, Ser. No. 92,094
Int. Cl.[5] G01L *3/20*
U.S. Cl. 73—862.15 **23 Claims**



1. An absorption dynamometer having

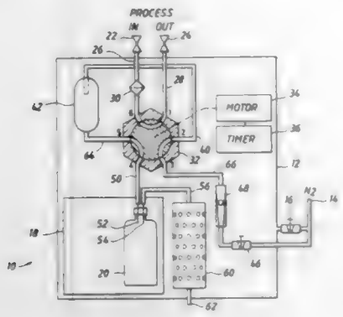
an in-line torque meter the in-line torque sensor having a rotating torsion shaft, one end of the shaft being coupled to the dynamometer, a support means for rotatably supporting the shaft being coupled to the other end of the shaft, the support means being mounted in a housing, the housing axially extending from the dynamometer, at least one first tooth projecting from a first location on the torsion shaft, at least one second tooth projecting from a second location on the torsion shaft, the first location being distal from the second location, the at least one first tooth being proximate the at least one second tooth whereby the teeth interleave, the angular distance between the at least one first tooth and the at least second tooth varying as the torque in the torsion shaft changes, a single sensor being positioned proximate the interleaving teeth.

5,345,828

PROCESS PLANT SAMPLE COLLECTION SYSTEM AND METHOD

Roger Peterson, Sweeny, Tex., assignor to PMMI, Old Ocean, Tex.

Filed Jul. 13, 1992, Ser. No. 882,033
Int. Cl.[5] G01N *1/20*
U.S. Cl. 73—863.72 **10 Claims**



1. An apparatus for sampling a fluid in a process which comprises:
(a) inlet and outlet lines connected with a process to provide a flow of fluid from the process along the inlet line and returning surplus fluid along the outlet line to the process;
(b) valve means having ports connected to said inlet line and outlet line;
(c) a intermediate sample buffer tank having a pair of lines connected thereto which connect with ports of said valve means;
(d) an additional port to said valve means for providing a purge gas flow into said valve means;
(e) a sample port on said valve means providing a flow path from said valve means into a removable sample receiving container;
(f) a flow path from said sample receiving container to vent the sample receiving container of the initial atmosphere therein which might flow through the sample receiving container; and
(g) wherein said valve means comprises a two position means switchable between a filling position so that said buffer tank is filled, and also having a sampling position wherein said sample receiving container is filled from said buffer tank.

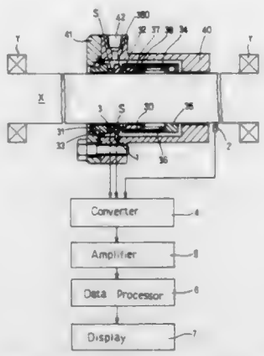
5,345,829

METHOD FOR PREDICTING ABNORMALITY OF MECHANICAL SEAL AND APPARATUS FOR PREDICTING SAME

Yuji Yamauchi, Tokyo, and Kenji Inoue, Kitakyusyu, both of Japan, assignors to Tanken Seiko Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 688,863, Apr. 19, 1991, abandoned. This application Sep. 20, 1993, Ser. No. 124,380
Claims priority, application Japan, Apr. 23, 1990, 2-105291
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—865.9 **6 Claims**

1. A method for predicting abnormality of a mechanical seal which includes a slidable ring mounted on a rotary shaft comprising:
detecting a displacement in a radial direction of said slidable ring as said rotary shaft rotates,
detecting a displacement in a radial direction of said rotary shaft on which the mechanical seal is mounted as said rotary shaft rotates, and



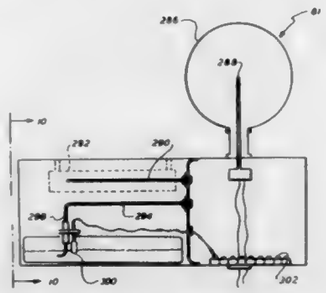
predicting abnormality of the mechanical seal by comparing the detected values of the displacements of the slidable ring and the rotary shaft.

5,345,830

FIRE FIGHTING TRAINER AND APPARATUS INCLUDING A TEMPERATURE SENSOR

William Rogers, Hopatcong; James J. Ernst, Livingston; Steven Williamson, Haledon, and Dominick J. Musto, Middlesex, all of N.J., assignors to Symtron Systems, Inc., Fair Lawn, N.J.

Division of Ser. No. 873,965, Apr. 24, 1992, Pat. No. 5,233,869, which is a continuation of Ser. No. 625,210, Dec. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 387,348, Aug. 9, 1989, Pat. No. 4,983,124, which is a continuation-in-part of Ser. No. 238,453, Aug. 30, 1988, Pat. No. 4,861,270. This application Jun. 18, 1993, Ser. No. 80,484
The portion of the term of this patent subsequent to Jan. 8, 2008, has been disclaimed.
Int. Cl.[5] G09B *19/00;* **G01F** *23/22*
U.S. Cl. 73—866 **2 Claims**



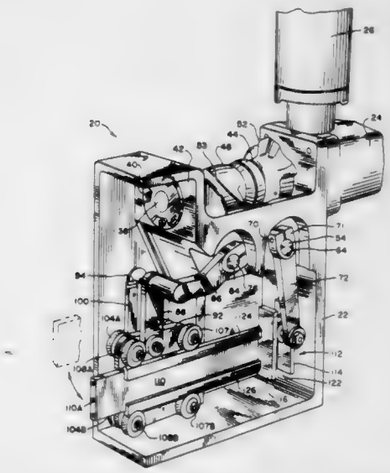
1. A fire fighting trainer comprising:
one or more chambers having respective contents including items chosen from a group of items including furniture and fixtures and equipment;
a smoke generating means having a plurality of outlets disposed in the respective chambers;
a flame generating means having a plurality of outlets disposed in the respective chambers; and
a sensing and control means having a plurality of sensor assemblies disposed in the respective chambers and each sensor assembly connecting to a main control panel, wherein
each said sensor assembly includes a plurality of sensors and each said sensor is capable of sensing and reporting a particular extinguishing agent,
recording and control means for controlling the operation of the trainer and recording the results, and
a temperature sensor for use in the sensor assembly of the fire fighting trainer comprising:
a globe temperature thermocouple;
a housing for supporting the globe temperature thermocouple and a blackened metal sphere on the outside of the housing; and
a wet-bulb temperature thermocouple means supported by the housing on the inside of the housing.

5,345,831

DRIVE FOR LINEAR PICK-AND-PLACE ASSEMBLY APPARATUS

Don G. Sandrock, McHenry, Ill., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jun. 22, 1993, Ser. No. 80,315
Int. Cl.[5] F16H *21/16*
U.S. Cl. 74—53 **13 Claims**



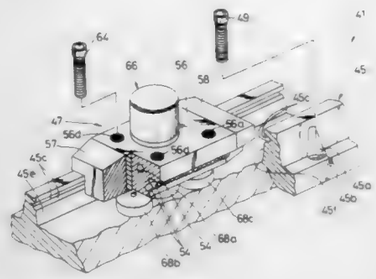
1. A pick-and-place assembly for moving work pieces cyclically between adjacent work stations, said assembly comprising:
an input shaft rotably mounted in a housing and having a lift cam and a translator cam mounted thereon;
first and second output shafts rotably mounted in said housing generally transverse to said input shaft;
a first cam follower mounted on said first output shaft and engaging said translator cam, and a second cam follower mounted on said second output shaft and engaging said lift cam;
a carriage plate disposed in said housing and having a first set of V-rollers mounted thereon for slidably engaging respective V-tracks mounted on a carriage guide bar in said housing, said carriage plate having a second set of V-rollers mounted thereon and positioned to slidably receive respective V-tracks mounted on a translator bar;
a translator arm having a first end mounted on said first output shaft and a distal end positioned to engage said translator bar such that when said input shaft is rotated, said translator arm imparts horizontal movement to said translator bar; and
a lift arm having a first end mounted on said second output shaft and a distal end connected to said carriage plate such that when said input shaft is rotated, said lift arm impacts vertical movement to said carriage plate and said translator bar.

5,345,832

DRIVE APPARATUS

Seiji Takei, Kanagawa, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 7,798
Claims priority, application Japan, Feb. 7, 1992, 4-056069
Int. Cl.[5] F16H *27/02, 15/08;* **G05G** *11/00*
U.S. Cl. 74—89 **4 Claims**



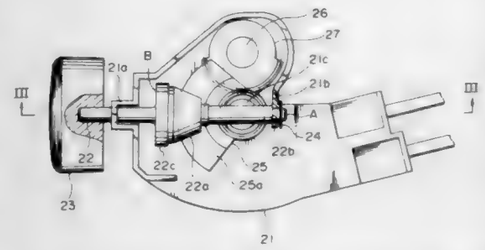
1. A drive apparatus comprising:
a track rail having a track formed along the axial direction;
a slider guided by the track and having a rolling element circulating path;
a torque generation device, having an output shaft, mounted on the slider;
a plurality of drive rollers, the output shaft of the torque generation device applying torque to the drive rollers to cause the drive rollers to roll while engaging the track rail to move the slider along the track; and
at least one substantially spherical rolling element, disposed in the rolling element circulating path, for contacting the track rail and moving along in the rolling element circulating path when the slider moves along the track.

5,345,833

HEATER CONTROL UNIT FOR AUTOMOBILE

Satoshi Sugimoto, Aichi, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Sep. 13, 1993, Ser. No. 119,647
Claims priority, application Japan, Sep. 16, 1992, 4-064505[U]
Int. Cl.[5] F16H *27/02;* **F16C** *1/12*
U.S. Cl. 74—89 **4 Claims**



1. A heater control unit for use in an automobile comprising:
a shaft supported by a first support and a second support formed on a base member and connected with an operation dial at an end thereof;
a first bevel gear disposed on the shaft between the first and second supports;
a second bevel gear rotating about an axis perpendicular to the shaft and engaging the first bevel gear;
a pivotal lever with which a cable coupled with an automobile air conditioner is connected;
transmitting means for transmitting the rotation of the second bevel gear to the pivotal lever in which:
the first bevel gear is integrally formed with the shaft;

the first and second supports are integrally formed with the base member; and

the first support is sectionally crank-shaped and comprises: a lower support wall having an approximately semi-circular lower support surface for receiving a portion of the shaft lower than the axis thereof; and an upper support wall having an approximately semi-circular upper support surface for receiving a portion of the shaft upper than the axis thereof, in which: the upper support wall is disposed at the outside of the lower support wall with respect to the second support; the distance between the inner surface of the lower support wall of the first support and the inner surface of the second support is longer than the distance between an end surface at the second support side of the shaft and an end surface at the first support side of the first bevel gear; the distance between the inner surface of the upper support wall of the first support and the inner surface of the second support is shorter than the entire length of the shaft.

5,345,834

VELOCITY-REDUCED DRIVE SYSTEM

Katsuhiko Hayashi, Hara, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

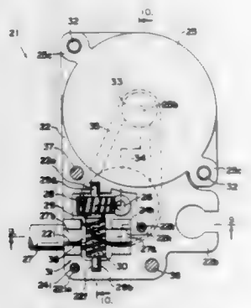
PCT No. PCT/JP91/01753, § 371 Date Aug. 19, 1992, § 102(e) Date Aug. 19, 1992, PCT Pub. No. WO92/12363, PCT Pub. Date Jul. 23, 1992

PCT Filed Dec. 25, 1991, Ser. No. 920,385

Claims priority, application Japan, Jan. 8, 1991, 3-003041[U]

Int. Cl.[5] F16H *1/12, 57/02*

U.S. Cl. 74—421 A **8 Claims**



1. A velocity-reduced drive system comprising:

(a) a motor housed in at least one case of a plurality of cases; and

(b) a reduction gear unit including a worm gear rotatably supported by at least two of said cases, first power transmission means for transmitting rotational force of said motor to said worm gear, and second power transmission means for transmitting the rotational force of said worm gear to an output shaft, said second power transmission means including a worm wheel meshed with said worm gear.

5,345,835

FITTING FOR SHUTTING OFF A FLOW

Hans-Peter Schubert, Erlangen, and Erwin Laurer, Möhrendorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 25, 1993, Ser. No. 8,462

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1990, 4023636

Int. Cl.[5] F16H *1/18*

U.S. Cl. 74—424.8 VA **25 Claims**

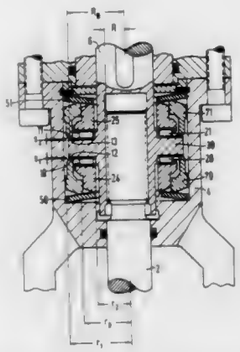
1. Fittings for shutting off a flow, comprising:

a housing;

fixed threaded part being axially displaceable and fixed against relative rotation in said housing;

a rotatable threaded part being axially resiliently and rotatably supported in said housing;

a braking device having at least two friction surfaces facing toward one another and being pressed against one another with a braking force when a predetermined rated force upon said fixed threaded part is exceeded, in order to brake a rotary motion of said rotatable threaded part by means of an axial displacement and form a braking surface,



one of said friction surfaces being connected to and fixed against rotation relative to said rotatable threaded part;

a cup spring assembly having a radial width, an intermediate radius and at least one cup spring for resilient supporting said rotatable threaded part in at least one axial direction; and

the braking force relative to the width of said cup spring assembly being introduced over the intermediate radius of said cup spring assembly.

5,345,836

SHIFT LEVER DEVICE FOR AUTOMATIC TRANSMISSION

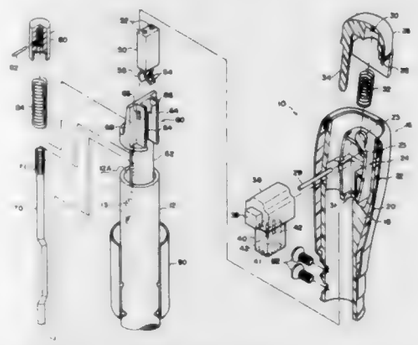
Yoshinobu Yokoyama; Tatsuya Aoki, and Etsuo Shimizu, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Continuation of Ser. No. 763,594, Sep. 23, 1991, abandoned. This application Nov. 10, 1992, Ser. No. 974,355

Claims priority, application Japan, Sep. 26, 1990, 2-100599[U]

Int. Cl.[5] B60K *20/04*

U.S. Cl. 74—473 R **16 Claims**



1. A shift lever device comprising:

a shift lever mounted on a housing, said shift lever having a support member mounted thereon and a protection member which projects in the axial direction thereof from the lower end of said support member and which is inserted into and disposed within said shift lever;

a knob mounted on one end of said shift lever, said knob being gripped by an occupant so as to activate said shift lever;

first connecting means having electrically connected cords, which transmit electricity generated by a power source and which pass through the inside of said shift lever, and an interlocking member which projects from a lower end of said first connecting means, said interlocking member engaging with said support member such that said first connecting means is mounted on said shift lever so that said first connecting means is held in a position radially inward of the outer peripheral surface of one of said shift lever and an extension thereof, said cords being protected from interfering with other components by said protection member; and

second connecting means mounted on said knob, said second connecting means being electrically connected to said first connecting means to transmit electricity to said first connecting means.

5,345,837

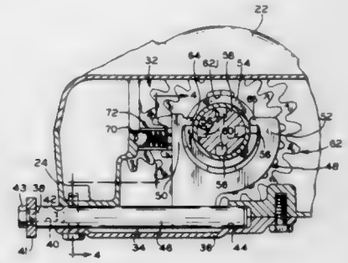
SHIFT LEVER ARRANGEMENT FOR TRANSAXLE

Roland L. von Kaler, and Rocky H. Page, both of Tecumseh, Mich., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Feb. 14, 1992, Ser. No. 837,351

Int. Cl.[5] F16H *3/08;* **B60K** *20/00*

U.S. Cl. 74—475 **26 Claims**



1. A transaxle comprising:

a pair of axles defining an axis of rotation, said axles disposed in a horizontal plane extending through said axis;

a housing rotatably supporting said axles;

an input shaft extending into said housing;

transmission means for transmitting motion from said input shaft to said axles, said transmission means being disposed in said housing, said transmission means including a plurality of selectable gear ratios and in-line shifting means for selectively engaging one of said gear ratios; and

a shifter disposed within said housing and extending outside of said housing in an arrangement which does not increase the height of said transaxle above said horizontal plane, said shifter being pivotable on a horizontal axis, and said shifter adapted to manipulate said in-line shifting means for selecting one of said gear ratios.

5,345,838

EASILY ASSEMBLED CALIBRATABLE DIAL

Robert K. Howie, Jr., Decatur, Ill., assignor to The Grigoleit Company, Decatur, Ill.

Filed Feb. 3, 1993, Ser. No. 12,892

Int. Cl.[5] G05G *1/10*

U.S. Cl. 74—553 **1 Claim**

1. A knob and skit assembly in which the knob and skirt are calibratable relative to each other including:

a knob having a handle and a hub extending from said handle,

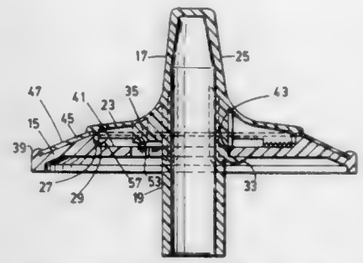
said hub having a control shaft receiving socket at the outer end thereof,

a disk shaped skirt having a central opening adapted to fit over and receive said hub,

means to secure said skirt to said handle for rotation relative thereto,

an indexing notch formed in said central opening of said skirt at the peripheral edge of said opening,

an indexing post formed on said handle and located to align said handle and said skirt when said post is aligned with said indexing notch in said skirt,



means to limit rotation of said handle and said skirt relative to each other,

an axially facing annular rim formed on said handle,

a series of teeth formed in at least one segment on said annular rim,

a shallow well surrounding said central opening formed on the side of said skirt facing said handle, and

teeth formed in at least one arcuate segment in said well and positioned to mesh with said segment of teeth on said annular rim.

5,345,839

SOUND-DAMPED FITTING OF A DRIVE SYSTEM

Hans-Peter Nett, Marktoberdorf; Robert Honzek, Oberthingau; Richard Heindl, and Rainer Hommel, both of Marktoberdorf, all of Fed. Rep. of Germany, assignors to Xaver Fendt & Company, Fed. Rep. of Germany

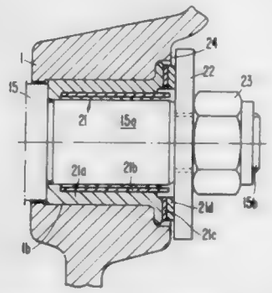
PCT No. PCT/EP91/01182, § 371 Date May 11, 1992, § 102(e) Date May 11, 1992, PCT Pub. No. WO92/01176, PCT Pub. Date Jan. 23, 1992

PCT Filed Jun. 25, 1991, Ser. No. 838,213

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1990, 4022049

Int. Cl.[5] F16H *57/02*

U.S. Cl. 74—606 R **10 Claims**



1. Sound-radiation-damped mounting of a drive system within a vehicle gearbox, comprising noise decoupling damping elements arranged in forward and rearward end zones of the drive system between the vehicle gearbox and drive system supports for conducting structure-borne noise of the drive system, said gearbox including a casing wall with a closable casing wall aperture for enabling an insertion of the drive system into said gearbox, and wherein said drive system supports include rods extending transversely to a drive shaft and a

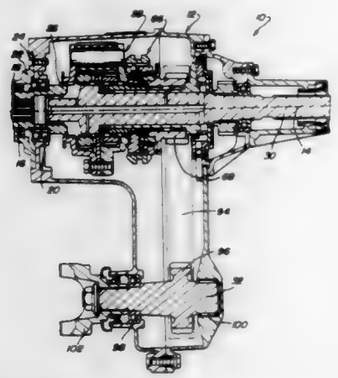
driven shaft of the drive system for supporting the drive system in an operative position within said gearbox, wherein said rods are supported at ends thereof with respect to said vehicle gearbox by way of said noise decoupling damping elements in the form of annular elements inserted in through bores of the vehicle gearbox, and wherein said rods are fixedly connected to said drive system.

5,345,840

TRANSFER CASE WITH INTEGRATED PLANETARY GEAR ASSEMBLY

Barry L. Frost, Waterford, Mich., assignor to New Venture Gear, Inc., Troy, Mich.

Continuation of Ser. No. 961,486, Oct. 15, 1992, Pat. No. 5,284,068. This application Nov. 5, 1993, Ser. No. 147,931
Int. Cl.[5] F16H *3/44*
U.S. Cl. 74—665 GA **25 Claims**



1. A power transfer apparatus for a four-wheel drive vehicle comprising:
a housing;
input means supported for rotation in said housing;
first and second output means supported for rotation in said housing; and
planetary gear means support for axial movement relative to said input means and said first and second output means for establishing different drive connections therebetween, said planetary gear means being axially moveable between a first position for establishing a full-time four-wheel drive mode wherein differentiation is permitted between said first and second output means, and a second position for establishing a part-time four-wheel drive mode wherein differentiation is inhibited between said first and second output means.

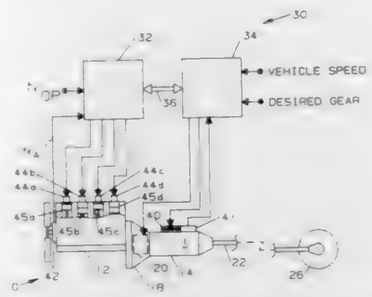
5,345,841

ELEVATED LOW IDLE FOR COASTING IN NEUTRAL

Lorne W. Tweed, Peoria; Timothy A. Cross, Metamora; William M. McClure, East Peoria, and Brian T. Rolli, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Oct. 2, 1992, Ser. No. 955,632
Int. Cl.[5] B60K *41/04*
U.S. Cl. 477—113 **14 Claims**

1. A control system for a vehicle having an engine connected to and adapted to drive a transmission having a plurality of gear ratios, comprising:
means for producing a gear ratio signal corresponding to the actual transmission gear ratio;
a speed sensor adapted to sense vehicle speed and produce a vehicle speed signal;
a first controller adapted to receive the gear ratio signal and the vehicle speed signal, process the gear ratio signal to determine if the transmission is in neutral, compare the vehicle speed signal to a preselected threshold, and regulate engine speed to a preselected value when the transmission is in neutral and the vehicle speed is greater than or equal to the preselected threshold.

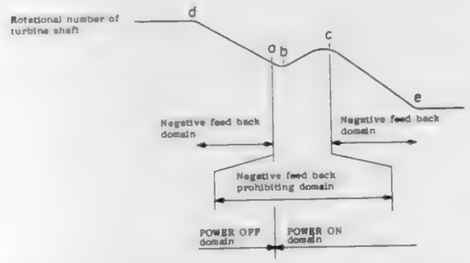


5,345,842

CONTROL DEVICE OF A TRANSMISSION FLUID PRESSURE BY TEMPORARY REDUCTION IN NEGATIVE FEEDBACK CONTROL OF SPEED FOR AN ELECTRONICALLY CONTROLLED AUTOMATIC TRANSMISSION

Shigeki Kondo, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 853,202, Mar. 18, 1992, abandoned. This application Jul. 19, 1993, Ser. No. 93,141
Claims priority, application Japan, Apr. 15, 1991, 3-082249
Int. Cl.[5] F16H *5/64*
U.S. Cl. 477—120 **2 Claims**



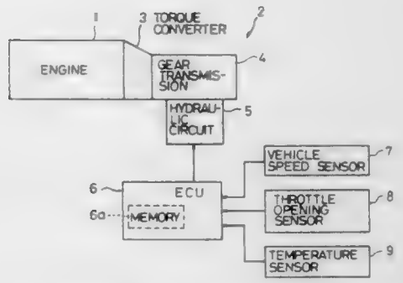
1. A control system for controlling the rotational speed of a rotational member of the automatic transmission, comprising:
a rotational number change detecting means for detecting a rotational number change of a rotational member of at least one of an engine and the automatic transmission;
a transmission fluid pressure controlling means for arbitrarily controlling a transmission fluid pressure; and
a control means for controlling the transmission fluid pressure controlling means by a negative feed back control dependent at least on the rotational number change of the rotational member of at least one of the engine and the automatic transmission, said control means determining whether the engine is in one of a constant speed mode and an acceleration mode, and temporarily reducing a control quantity of the negative feed back control when the engine shifts from a deceleration/closed throttle mode to one of a constant speed mode and an acceleration mode while the transmission fluid pressure controlling means is controlling the transmission fluid pressure for changing a gear in which the transmission to which the engine is coupled is operating.

5,345,843

SPEED CHANGE CONTROL APPARATUS AND METHOD FOR AN AUTOMOTIVE AUTOMATIC TRANSMISSION

Kenjiro Fujita, Kusatsu, and Katsutoshi Usuki, Kyoto, both of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1993, Ser. No. 36,274
Claims priority, application Japan, Mar. 24, 1992, 4-065916
Int. Cl.[5] B60K *41/18*
U.S. Cl. 477—98 **6 Claims**



1. A speed change control apparatus used for an automatic transmission of a vehicle in which required ones of a plurality of frictional engaging elements are engaged or disengaged to establish a required one of a plurality of gears, comprising:
cold state detecting means for detecting a temperature associated with the vehicle;
first memory means for storing a first shift pattern in which shift lines are individually set as a function of both a load of an engine of the vehicle and a vehicle speed;
second memory means for storing a second shift pattern in which shift lines are individually set solely as a function of the vehicle speed;
selecting means for selecting the first shift pattern when the detected temperature associated with the vehicle is higher than a predetermined temperature, and for selecting the second shift pattern when the detected temperature associated with the vehicle is, at most, equal to the predetermined temperature; and
gear determining means for determining a gear to be established based upon the selected shift pattern.

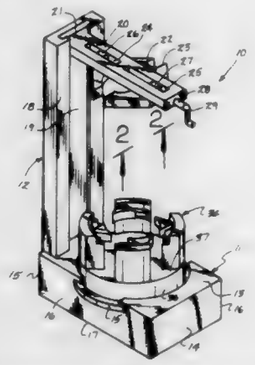
5,345,844

JAR LID OPENER APPARATUS

Morris R. Marsaw, 405 Annette St., P.O. Box 114, Espanola, Canada P0P 1C0

Filed Apr. 12, 1993, Ser. No. 44,804
Int. Cl.[5] B67B *7/18*
U.S. Cl. 81—3.2 **5 Claims**

1. A jar lid opener apparatus, comprising,
a base housing, the base housing including a housing top wall spaced from a housing bottom wall, a housing first end wall spaced from a housing second end wall, and spaced housing side walls, with a support member fixedly mounted to the housing top wall in adjacency to the housing second end wall, with the support member having a front wall, the front wall including an elongate track, and the track orthogonally oriented relative to the housing top wall, and
a mounting plate, the mounting plate including a track follower slidably received within the track, with the mounting plate arranged in a parallel spaced relationship relative to the housing top wall extending over the housing top wall, and
the mounting plate including mounting plate jaw means for grasping a container lid therebetween, and
a chuck assembly rotatably mounted through the base housing top wall for grasping a container body, and
clamp means mounted to the chuck assembly for effecting clamping of a container body upon rotation of the chuck assembly relative to the mounting plate jaw means, and
the mounting plate jaw means includes a first slot and a second slot directed into the mounting plate, with the first slot and the second slot arranged in a longitudinally aligned relationship orthogonally oriented relative to the track, and the mounting plate jaw means further including a first arcuate jaw having a first lug slidably received within the first slot, and a second arcuate jaw having a second lug slidably received within the second slot, wherein the first arcuate jaw and the second arcuate jaw are arranged in a facing mirror image relationship relative to one another oriented between the mounting plate and the housing top wall, and a drive shaft having a right hand threaded portion threadedly received through the first lug, and a left hand threaded portion threadedly received through the second lug, and wherein rotation of the drive shaft effects displacement of the first arcuate jaw relative to the second arcuate jaw, and
the chuck assembly includes a chuck base, having an annular disc projecting radially and exteriorly of the chuck base projecting through at least one housing side wall of said spaced side walls, and the chuck base top wall includes an annular array of arcuate support bosses mounted fixedly and orthogonally thereon, wherein each of the arcuate support bosses includes a mounting wall arranged in a parallel spaced relationship relative to the chuck base top wall, and each mounting wall includes a crank arm, each crank arm having a crank arm first end, including a crank arm arcuate jaw pivotally mounted relative to the crank arm first end, and a rigid crank arm shaft orthogonally and fixedly mounted to the crank arm at a crank arm second end, with each crank arm shaft rotatably received within the chuck base.



5,345,845

RIGHT ANGLE TORQUE TRANSMISSION TOOL

Christopher A. Myers, 8708 Camino San Martin SW., Albuquerque, N. Mex. 87121

Filed Sep. 20, 1993, Ser. No. 123,803
Int. Cl.[5] B25B *17/00*
U.S. Cl. 81—57.29 **1 Claim**

1. A right angle torque transmission tool, comprising,
an elongate housing, the elongate housing having elongate housing spaced side walls, an elongate housing first end wall, and an elongate housing second end wall spaced from the elongate housing first end wall, and an elongate housing bottom wall, and
the elongate housing having an elongate housing cavity and an extension housing fixedly mounted to the elongate housing bottom wall adjacent the elongate housing second end wall, the extension housing having extension housing spaced side walls, and

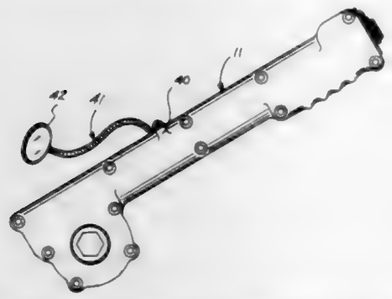
a drive shaft, the drive shaft having shaft first end and a shaft second end, with the shaft first end extending beyond the elongate housing first end wall, and the shaft first end including a shaft first end socket, and

a drive gear integrally mounted to the drive shaft in adjacency to the shaft second end, a first bearing rotatably mounting the drive shaft in adjacency to the shaft first end, and a second bearing rotatably mounting the drive shaft in adjacency to the shaft second end, and

a driven shaft rotatably mounted through the extension housing, with the driven shaft having a driven shaft gear arranged in surrounding relationship relative to the driven shaft concentric therewith, with the driven gear in operative engagement with the drive gear, the driven shaft including a driven shaft polygonal cavity extending coextensively through the driven shaft, the polygonal cavity orthogonally oriented relative to the drive shaft, and

the driven shaft polygonal cavity includes an annular groove concentrically oriented relative to the driven shaft polygonal cavity, with the annular groove oriented medially thereof, and at least one insert arranged for reception within the polygonal cavity, the at least one insert includes a polygonal shank, the polygonal shank complementarily received within the drive shaft polygonal cavity, the polygonal shank further including a resilient annular lock ring concentrically mounted about the polygonal shank, with the resilient lock ring arranged for reception within the annular groove, and

the drive shaft includes a first shaft portion extending from



the drive shaft first end, and a second shaft portion coaxially aligned with the first shaft portion, with the second shaft portion spaced from the first shaft portion, and the second shaft portion extending to the shaft second end, and an intermediate bearing mounted about the second shaft portion within the elongate housing, with the intermediate bearing arranged in spaced adjacency to the second bearing, and a torsion spring plate fixedly mounted between the first shaft portion and the second shaft portion to permit transmission of torque from the first shaft portion to the second shaft portion, and an indicator rod fixedly mounted to the drive shaft and in adjacency to the shaft first end between the shaft first end and the elongate housing first end wall, and the elongate housing first end wall further including an indicator plate fixedly mounted to the elongate housing first end wall between the indicator rod and the elongate housing first end wall, with the indicator plate including an annular graduated scale concentrically oriented relative to the driven shaft, and

a mounting lug fixedly mounted to the elongate housing, and an articulated shaft, the articulated shaft including an articulated shaft first end fixedly mounted to the mounting lug, and an articulated shaft second end, and a mirror plate secured to the articulated shaft second end, and

the articulated shaft includes a plurality of link cylinders, each link cylinder having a link cylinder first end and a link cylinder second end, each link cylinder first end having a link cylinder spherical end, and each link cylinder second end having a link cylinder spherical socket, the link cylinder spherical end arranged for reception and within an adjacent link cylinder spherical socket.

5,345,846

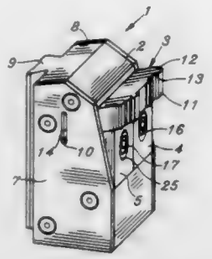
TOOL HOLDER WITH RESHARPENABLE FORM TOOL INSERT

Herman R. Somma, Waterbury, Conn., assignor to Somma Tool Company, Inc., Waterbury, Conn.

Filed Mar. 22, 1993, Ser. No. 35,164

Int. Cl.[5] B23B *27/06, 29/12*

U.S. Cl. 82—13 **11 Claims**



1. A form tool for a rotating work piece, comprising:

a removable, resharpenable form tool insert having a top planar surface providing a rake face, a rear surface and a front form surface providing a clearance face, said front form surface intersecting said top planar surface along a forming edge and defining a first included acute angle, any transverse cross section through said form tool insert being bounded by a quadrilateral having parallel rear and front sides lying in said rear surface and in said front form surface respectively,

a toolholder defining a recess adapted to receive said form tool insert, said recess having an overhanging shelf for locating said top planar surface of the insert, a rear wall joined integrally with said overhanging shelf for locating said rear surface of the insert, and a bottom wall intersecting said rear wall said rear wall and said shelf defining a second included obtuse angle which is the supplement of said first included acute angle,

means locating said tool insert longitudinally in said recess, and

an adjustable tool insert support adapted to raise and relocate said insert in said recess along said rear wall after material is removed from said top planar surface after each resharpening and to clamp said insert against said rear wall and against said shelf said adjustable tool support comprising at least one wedge-shaped member and a threaded screw member having an axis and adapted to draw said wedge-shaped member into said recess, said wedge-shaped member defining first and second surfaces inclined to said axis and cooperating with said tool insert bottom surface and said recess bottom wall respectively, said wedge-shaped member defining a slot receiving said threaded screw member and adapted to move upwardly in said recess toward the shelf as the wedge-shaped member is drawn into said recess.

5,345,847

APPARATUS FOR GUIDING ROD-SHAPED WORKPIECES IN TURNING MACHINES

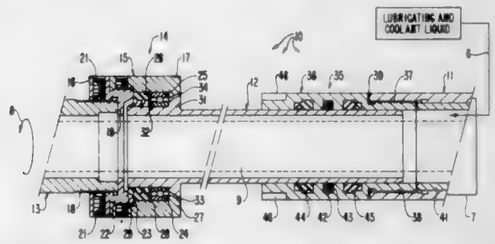
Hans-Michael Weller, Marbach, Fed. Rep. of Germany, assignor to Hainbuch Praezisions-Spannwerkzeugfabrik GmbH, Marbach, Fed. Rep. of Germany

Continuation of Ser. No. 834,549, Feb. 14, 1992, abandoned. This application May 12, 1993, Ser. No. 60,502

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1989, 3926841

Int. Cl.[5] B23B *13/00, 13/08*

U.S. Cl. 82—127 **5 Claims**



1. An apparatus for guiding a rod-shaped workpiece to a machine tool workstation, said apparatus comprising:

a rotatable and axially reciprocable feed tube for feeding said rod-shaped workpiece to said machine tool workstation;

a guide tube axially aligned with said feed tube for guiding said rod-shaped workpiece, said guide tube being axially spaced from said feed tube;

means for introducing a lubricating and coolant liquid into said guide tube;

an intermediate tube spanning between said feed tube and said guide tube, said intermediate tube being axially aligned with said feed tube and said guide tube;

a first coupling for connecting a first end of said intermediate tube to an adjacent end of said feed tube such that said intermediate tube is axially fixed to said feed tube for reciprocation therewith and such that said intermediate tube is journaled to said feed tube so that said feed tube can rotate relative to said intermediate tube;

a first annular seal associated with said first coupling for preventing egress of said lubricating and coolant liquid from between said feed tube and said intermediate tube;

a second coupling for connecting a second end of said intermediate tube to an adjacent end of said guide tube, said second end of said intermediate tube being telescopingly received in said second coupling; and

a second annular seal associated with said second coupling for preventing egress of said lubricating and coolant liquid from between said guide tube and said intermediate tube.

5,345,848

CUTTER

Manfred Knecht, Bergatreute, Fed. Rep. of Germany, assignor to Knecht Maschinenbau GmbH, Bergatreute, Fed. Rep. of Germany

PCT No. PCT/DE91/00324, § 371 Date Nov. 13, 1992, § 102(e) Date Nov. 13, 1992, PCT Pub. No. WO91/17834, PCT Pub. Date Nov. 28, 1991

PCT Filed Apr. 18, 1991, Ser. No. 952,713

Claims priority, application Fed. Rep. of Germany, May 17, 1990, 4015843

Int. Cl.[5] B26D *1/29*

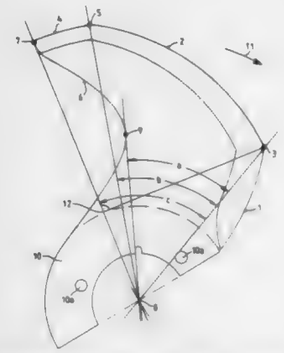
U.S. Cl. 83—663 **3 Claims**

1. A cutter being rotatable in a circumferential direction about an axial point of rotation, comprising:

a cutting edge consisting of first and second cutting portions, said first and second cutting portion is each having only a convex curve shape having equal radii, said first and second cutting portions adjoining one another to form one knee therebetween projecting in the circumferential direction;

an outer edge concentric to the axial point of rotation and adjoining said second portion to from a kink therebetween, said kink being distal from the axial point of rotation; and

a curved rear edge adjoining said outer edge to form a tip therebetween;



wherein said tip and said axial point of rotation define a first radial line, and said knee and said axial point of rotation define a second radial line, said first and second radial lines forming an angle of at least 60 degrees therebetween, and wherein an imaginary line extending through the knee perpendicularly intersects said first radial line at a base point whose distance from the axial point of rotation is at least ¼ the distance between the axial point of rotation and said tip.

5,345,849

FRET-SAW MACHINE

Kouichi Miyamoto, and Shoji Takahashi, both of Chiyoda, Japan, assignors to Ryobi Limited, Tokyo, Japan

Division of Ser. No. 931,588, Aug. 18, 1992, Pat. No. 5,267,498. This application Jul. 7, 1993, Ser. No. 88,517

Claims priority, application Japan, Aug. 20, 1991, 3-065730[U]; Aug. 20, 1991, 3-208014; Aug. 21, 1991, 3-066163[U]; Aug. 21, 1991, 3-066164 [U]; Aug. 26, 1991, 3-213359; Sep. 2, 1991, 3-070017[U]; Sep. 18, 1991, 3-074964[U]

Int. Cl.[5] B27B *19/02;* **B26D** *7/22*

U.S. Cl. 83—783 **4 Claims**

1. A fret-saw machine comprising:

a base unit having a table including a surface on which a workpiece to be cut is placed;

a frame member disposed in the base unit and secured to the table;

a U-shaped arm member having one end portion secured to the frame member and another end portion disposed above the table;

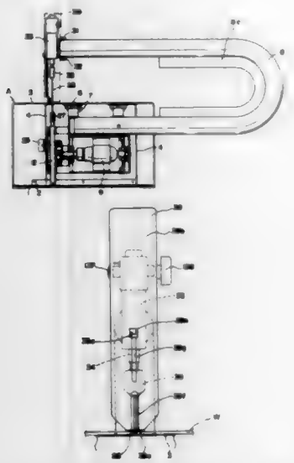
a blade holder means having first and second slide holder units and first and second blade holder units secured to corresponding first and second slide holder units, the first slide holder unit and the first blade holder unit being disposed in the base unit and secured to the frame member and the second slide holder unit and the second blade holder unit being secured to said another end portion of the arm member;

a blade supported at both ends thereof by the first and second blade holder units;

a drive means supported in the base unit by the frame member and connected to the first slide holder unit to drive the blade; and

blade covering means secured to said second blade holder unit for covering said blade, said blade covering means comprising a front plate and side plates integrally formed

with the front plate so as to provide a substantially rectangular box shaped structure, said side plates respectively having free ends adjustably spaced from the surface of the table on which a workpiece is placed to elastically press the workpiece against the surface of the table when the workpiece is cut,



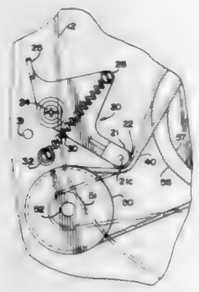
wherein the free ends of the side plates of the box shaped blade covering means have an elasticity different from that of the remaining portion, other than the free ends, constituting the box shaped covering means.

5,345,850

BELT TENSIONING DEVICE FOR BAND SAWS

Roger D. Neitzell, Park Ridge, Ill., assignor to S-B Power Tool Company, Chicago, Ill.

Filed Aug. 9, 1993, Ser. No. 101,291
Int. Cl.[5] B26D *1/48*
U.S. Cl. 83—814 **2 Claims**



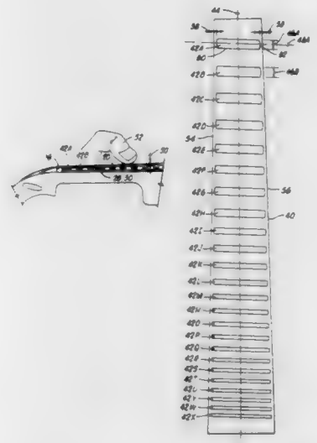
1. A band saw assembly comprising:
a housing;
an upper and a lower spindle wheel each rotatably mounted on said housing and supporting an endless sawing band for movement about said spindle wheels in a vertical plane;
a driving shaft mounting at least one driving sprocket gear;
a driven shaft mounting one of said spindle wheels, said driven shaft mounting at least one driven sprocket gear;
at least one of said driving and driven shafts mounting plural ones of said sprocket gears of different diameters;
a drive belt engaged with selected ones of said driving and driven sprocket gears;
a bracket assembly pivotally mounted on the housing adjacent stop means and including a belt tensioning roller, said bracket assembly further including an overcenter biasing means connected to said bracket assembly and to said housing, thereby alternately and selectively maintaining said roller (a) in engagement with said drive belt so as to impart and maintain a tension in the drive belt and (b) in engagement with said stop means and in spaced relationship with the drive belt so as to facilitate training of the belt over selected ones of said sprocket gears.

5,345,851

ARTICULATED FINGERBOARD FOR A STRINGED MUSICAL INSTRUMENT

Thomas J. Aalfs, Cornwall, N.Y., assignor to Gibson Guitar Corp., Nashville, Tenn.

Filed Jan. 27, 1993, Ser. No. 9,453
Int. Cl.[5] G10D *3/00*
U.S. Cl. 84—315 **41 Claims**



1. A fingerboard for a stringed musical instrument having a nut, a bridge, and a plurality of strings supported by said nut and said bridge, comprising:
said fingerboard having a planar top surface underlying said strings and having a longitudinal axis; and
a plurality of raised playing areas located upon said fingerboard to correspond to proper fingering points on said fingerboard, each raised playing area having a width generally parallel to said longitudinal axis of said fingerboard, and each raised playing area having a height above said top surface of said fingerboard, and said width of each raised playing area being sufficient that a fingertip of a musician playing said instrument may finger one of said strings on said raised playing area with the fingertip selectively defining an end point of vibration of said one of said strings at any selected position across said width of said raised playing area.

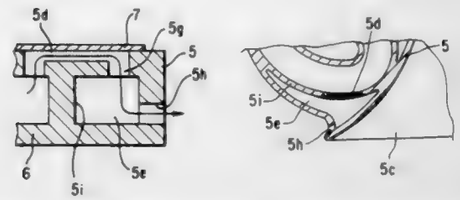
5,345,852

DRAINAGE STRUCTURE OF A VOLUTE HORN

Hidefumi Takahashi, Sawa, and Akio Wakai, Maebashi, both of Japan, assignors to Mitsuba Electric Manufacturing Co., Ltd., Gunma, Japan

Filed Aug. 7, 1992, Ser. No. 925,734
Int. Cl.[5] G10D *7/10*
U.S. Cl. 84—397 **18 Claims**

1. A volute horn comprising a resonating device having a volute sound path with a water collecting portion therein and a drainage structure communicating with said volute sound path at said water collecting portion, said drainage structure comprising a continuously open labyrinthine drainage passageway having a length and a diameter with a large length to diameter ratio in the range of 4 to 20, said passageway inhibiting a decrease in sound pressure in the volute sound path while



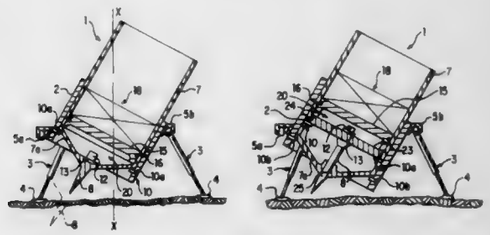
enabling drainage of water during operation of said resonating device.

5,345,853

SYSTEM FOR ANCHORING A PROJECTILE LAUNCHER TO THE GROUND

Roger Crepin, Ville d'Avray, and Thierry Bredy, Asnières les Bourges, both of France, assignors to Giat Industries, Versailles, France

Filed Jul. 19, 1993, Ser. No. 90,175
Claims priority, application France, Dec. 24, 1991, 91 16061
Int. Cl.[5] F42B *23/14, 23/16;* **F41F** *3/042;* **F41A** *1/10*
U.S. Cl. 89—1.818 **19 Claims**



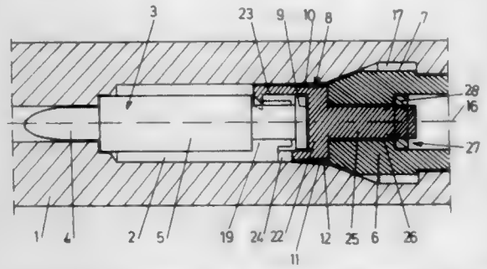
1. System for anchoring a projectile launcher to a penetrable supporting surface, wherein the launcher comprises a tubular body resting on the surface through legs, said tubular body accommodating at least a projectile to be fired and a propellant charge, the system comprising:
at least one anchoring element, said anchoring element being slidably mounted in said tubular body and movable between a first position and a second position, said anchoring element being held in said first position by a detachable attachment device, said anchoring element, in said second position, penetrating the surface when the projectile is fired; and
control means for causing the anchoring element to pass automatically from the first position to the second position.

5,345,854

DEVICE TO SEAL THE CARTRIDGE CHAMBER ON HAND WEAPONS

Reinhard Schieferle, Münster, Austria, and Nehemia Sirkis, Los Angeles, Calif., assignors to VOERE Kufsteiner Geratebau- und Handelsgesellschaft m.b.h., Kufstein and PSE Produkt- und Systementwicklungsgesellshaft m.b.h., Ampass, both of Austria

PCT No. PCT/EP91/01318, § 371 Date Mar. 17, 1993, § 102(e) Date Mar. 17, 1993, PCT Pub. No. WO92/01901, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 13, 1991, Ser. No. 969,288
Claims priority, application Austria, Jul. 19, 1990, 1531/90; Mar. 14, 1991, 565/91
Int. Cl.[5] F41A *3/74*
U.S. Cl. 89—26 **6 Claims**



1. A device for sealing a cartridge chamber, having an axis, of a small arms weapon that fires a caseless cartridge consisting of a propellant charge, having a base, and a bullet that is connected to the propellant charge, said device comprising:
a pot-shaped seal, said seal having a base and a side, where said side projects over the base and has an outer surface;
wherein the weapon further includes a butt having a front edge, where said seal is disposed on the butt front edge so that at least a portion of said side outer surface presses on an adjacent inner surface of the cartridge chamber when the butt is closed;
wherein said side outer surface is defined by a first generatrix, said first generatrix being parallel to the chamber axis and the adjacent chamber inner surface is defined by a second generatrix, where said first and second generatrices converge;
wherein said side outer surface further sealingly engages the chamber adjacent inner surface in response to gas pressure from the propellant charge when the cartridge is fired;
wherein said seal further includes a replaceable insert having a top front side, said insert top front side being disposed proximate said seal base so said insert top front side is adjacent the base of the propellant charge;
wherein said insert is secured to the butt so said insert is replaceable; and
wherein said insert further includes an extractor claw extending parallel to the chamber axis, said extractor claw for engaging a peripheral groove around the propellant charge so an unfired caseless cartridge can be withdrawn from the cartridge chamber.

5,345,855

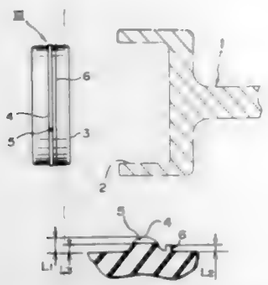
REACTION DISC FOR A BRAKE BOOSTER

Shintaro Uyama, Saitama, Japan, assignor to Jidosha Kiki Co., Ltd., Shibuya, Japan

Filed Jun. 22, 1993, Ser. No. 80,752
Claims priority, application Japan, Jul. 17, 1992, 4-213646
Int. Cl.[5] F15B *9/10*
U.S. Cl. 91—369.2 **7 Claims**

1. A reaction disc for a brake booster in which a burr is formed extending around an external peripheral surface of the reaction disc and an axially extending air vent is formed in the external peripheral surface of the reaction disc;

characterized in that the air vent is provided as a bulge which projects radially outward of the reaction disc and



which is discontinuous in the circumferential direction thereof, said bulge having a height which is greater than a height of the burr

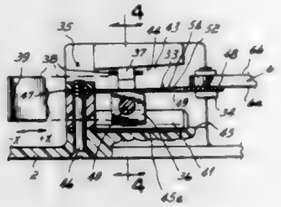
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5,345,856

VALVE POSITIONER HAVING ADJUSTABLE GAIN

Christopher H. Willoughby, Cincinnati, Ohio, assignor to Automax, Inc., Cincinnati, Ohio

Filed Mar. 2, 1993, Ser. No. 25,173
Int. Cl.[5] F15B *13/16*
U.S. Cl. 91—386 **16 Claims**



1. Valve positioner apparatus comprising:
a pilot valve;
a balance beam operatively connected to a hinge spring at one end and to said pilot valve at another end thereof, said hinge spring having a stiffness and including a first end and a second end;
a feedback spring mounted within said positioner and providing balancing force to said balance beam;
a span adjustment mechanism for varying the balancing force provided by said feedback spring; and,
a gain adjustment mechanism independent from said span adjustment mechanism and mounted to said hinge spring for movement between said first and second ends for varying the stiffness of said hinge spring.

5,345,857

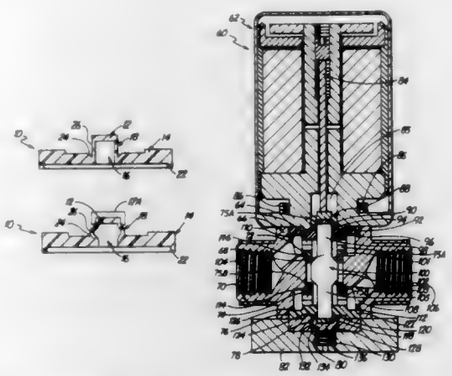
THERMOPLASTIC BELLOWS AND METHOD OF FORMING THE SAME

Patrick H. Murphy, Upland, Calif., assignor to Osmonics, Inc., Minnetonka, Minn.

Filed Feb. 2, 1993, Ser. No. 12,531
Int. Cl.[5] F01B *19/00*; **F16K** *31/00*; **B23P** *19/04*
U.S. Cl. 92—34 **19 Claims**

1. A method of forming a bellows, the method comprising:
forming in a body of thermoplastic material having a head and a shoulder, an inner bore having an inner diameter;
forming at least one thin-walled circumferential band in one circumferential surface between the head and the shoulder;
forming an undercut into the shoulder where the shoulder meets the band, whereby the undercut reduces strain in the band when deforming the body; and
deforming the body to cause each band to bow.

10. A bellows comprising:
a head;
a shoulder;
a blind hole extending from an opening in the shoulder to the head;



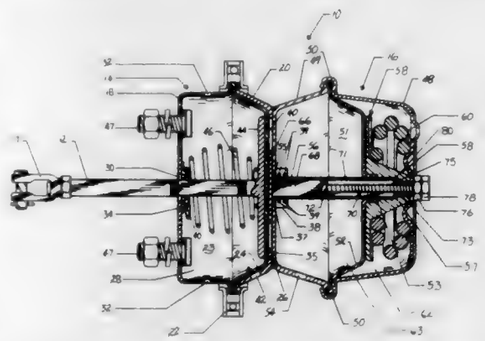
a compressible neck, between the head and the shoulder, through which the blind hole extends, the neck including at least one thin-walled circumferential band located in one circumferential surface between the head and the shoulder; and
an undercut into the shoulder where the shoulder meets the band, whereby the undercut reduces strain in the band when the neck is compressed.

5,345,858

SPRING BRAKE ACTUATOR WITH A PRESSURE PLATE BEARING FOR A CAGING TOOL

William C. Pierce, Muskegon, Mich., assignor to NAI Anchorlok, Inc., Muskegon, Mich.

Filed Jun. 21, 1993, Ser. No. 80,414
Int. Cl.[5] F01B *19/00*
U.S. Cl. 92—48 **14 Claims**



1. In a fluid-operated diaphragm spring brake actuator, having a generally cylindrical housing with an end wall and an aperture therethrough, an elastomeric diaphragm suspended within the housing to divide the interior thereof into a first chamber and a second chamber, a pressure plate disposed within the first chamber and adjacent to the diaphragm, said pressure plate having a pressure plate aperture axially aligned with the housing aperture, a spring in the upper chamber between the pressure plate and the housing, a hollow actuator rod having an axially open end, said actuator rod further having a portion disposed in the second chamber in a position to alternately actuate and release a brake mechanism in response

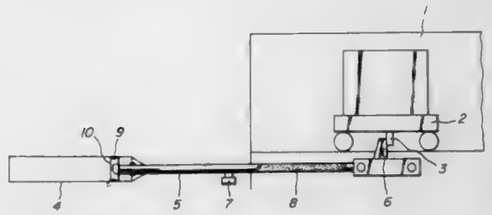
to reciprocal movement of the diaphragm and pressure plate, and a caging tool mounted to the housing and extending through the housing aperture, the pressure plate aperture and into the hollow actuator rod through the open end, the improvement wherein:
a lubricated bearing is mounted within the pressure plate aperture and disposed between the pressure plate and the caging tool so that the pressure plate can reciprocate relative to the caging tool free of frictional contact with the caging tool.

5,345,859

PUSHER CYLINDER FOR TUNNEL KILN

Toshifumi Sugiura, and Kazuhiro Miyahara, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 331,185, Mar. 31, 1989, abandoned.
This application Nov. 13, 1990, Ser. No. 611,463
Claims priority, application Japan, Mar. 31, 1988, 63-42124[U]
Int. Cl.[5] F16J *1/00*
U.S. Cl. 92—172 **3 Claims**



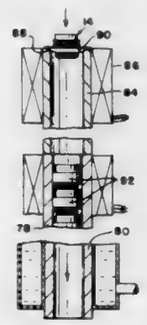
1. A tunnel kiln comprising:
at least one kiln car movably disposed in the tunnel kiln; and
a pusher cylinder comprising a cylinder arranged outside the tunnel kiln and a piston rod having a first end portion movably disposed within said cylinder and a second end portion movably disposed within an interior of the tunnel kiln and engaged with at least one kiln car, said piston rod having a length which is more than twice a stroke of said pusher cylinder;
wherein the pusher cylinder is arranged spaced from the tunnel kiln such that only said second end portion of the piston rod is exposed to the interior of the tunnel kiln when the pusher cylinder is extended.

5,345,860

BANDED PISTON AND METHOD OF MAKING

Richard A. Bowell, Huber Heights, Ohio, assignor to Tri Dayton, Inc., Troy, Ohio

Filed Jul. 6, 1993, Ser. No. 86,054
Int. Cl.[5] F16J *9/00*; **B23P** *15/10*; **F02F** *3/00*
U.S. Cl. 92—192 **18 Claims**



1. A cylindrical piston having a low coefficient of friction polymeric material band hot-formed onto the surface of the piston from a relatively thin, flat circular washer having a central hole the inner edge of which grips a circumferential anchoring groove in one end of said piston, said band surrounding the outer peripheral surface thereof for absorbing reversible bi-directional shock loads in a bore of a fluid cylinder, said piston having at least one annular groove extending generally radially inwardly of its outer surface, and said material having a first solidified state when operating in a fluid cylinder and a second flowable state during hot-forming of the band onto a piston at temperatures considerably above temperatures at which said piston normally functions when in said solidified state, the improvement comprising:
said groove having opposing side walls, at least one of which side walls forms an acute angle with the adjacent portion of said outer peripheral surface of the piston; and
said band being produced by the process of initially preheating said washer to a temperature substantially greater than ambient temperature but not exceeding the temperature at which said material reaches its second flowable state, promptly thereafter hot-forming said washer onto said piston at a temperature sufficiently high to achieve said second flowable state while simultaneously pressing said material radially inward to cause the material to enter and essentially fill said groove, and finally cooling said band to a lower temperature at which said material solidifies, whereby it remains interlocked with said acute angle side wall of said groove and maintains said band firmly against expanding radially outward relative to the outer peripheral surface of said piston.

13. In a method of forming a relatively flat circular fluoropolymeric washer with a central circular opening therethrough into a band over a cylindrical multiple-grooved piston so as to provide a relatively friction-free piston adapted to be reciprocable in a cylindrical bore of a fluid cylinder, said central opening being slightly smaller in diameter than said piston diameter but essentially the same diameter as said piston at the bottom of an anchoring groove provided adjacent one end of said piston, comprising the steps of rapidly expanding said washer at its central opening, pressing said expanded washer over the end of said piston and relaxing the washer to enable the central opening to contract and grip said piston in said anchoring groove; drawing said piston and washer into a heated cylindrical chamber essentially of the same diameter asthe bore of said fluid cylinder to hot-form the washer to the cylindrical shape of said piston; maintaining the piston and washer in said heated chamber for a time period and at a flow-inducing temperature sufficient to cause the fluoropolymer to flow into other grooves of said piston and thereafter cooling the band while it is maintained at said diameter to cause the fluoropolymer to set and firmly grip the outer periphery of said piston, the improvement comprising:
initially heating said washer to a preheating temperature substantially greater than ambient temperature, but not exceeding said flow-inducing temperature prior to drawing the piston into said heated chamber, whereby to enhance flowability of the fluoropolymer into said grooves and thereby reduce the elastic memory of said band to return toward its flat washer state.

5,345,861

PRESS ADJUSTMENT SCREW MECHANISM

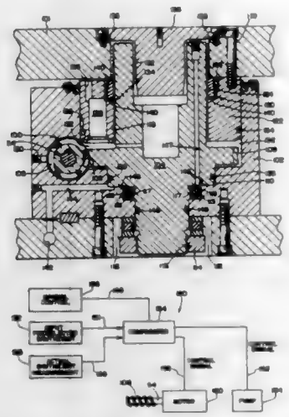
William C. Brewer, Minster; Edward A. Daniel, Fort Loramie, and Frederick C. Bergman, Coldwater, all of Ohio, assignors to The Minater Machine Company, Minster, Ohio

Filed Apr. 20, 1993, Ser. No. 49,992
Int. Cl.[5] B30B *5/00*
U.S. Cl. 100—257 **18 Claims**

1. A press comprising:
a frame structure with a crown and a bed;
a slide guided by the frame structure for rectilinear reciprocating movement in opposed relation to said bed;
a drive means attached to said frame structure for reciprocating said slide;

a bolster assembly mounted to said bed; and

a shutheight adjustment mechanism having a housing, said shutheight adjustment mechanism arranged for adjustment-in-motion, said housing connected said press frame to adjust the shutheight between said slide and said bolster, said adjustment mechanism comprising an adjustment screw attached to said housing and a fluid pressurized chamber between said housing and said screw to preload said screw toward said bolster, said adjustment mechanism further including an adjustment nut threaded on said screw and attached to said bolster so that relative



rotation of said nut and said screw displaces said bolster relative said slide in the rectilinear direction of said slide movement, said adjustment nut including a separate clearance takeup nut attached to said adjustment screw, a clearance takeup means for one of axially separating or drawing together said adjustment nut and said takeup nut, said takeup nut interfering with said adjustment screw such that clearance space between said adjustment screw and said adjustment nut is substantially eliminated whereby shutheight variations are reduced between said slide and said bolster during press operation.

5,345,862

DOCTOR BLADE CARRIER INTENDED MAINLY FOR A SILK-SCREEN PRINTING MACHINE

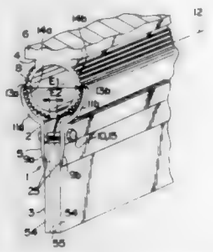
Dominique Giard, 3 rue Denis Poisson, 75017 Paris, France

Filed Jun. 7, 1993, Ser. No. 72,992

Claims priority, application France, Jun. 5, 1992, 92 06869

Int. Cl.[5] B05C *17/04*

U.S. Cl. 101—123 **7 Claims**



1. A doctor blade carrier intended mainly for a silk-screen printing machine, printing machine, or other similar application, and comprising a body (**4**) whose base (**6**) is intended to be gripped and moved; a vise (**5**) for removably fixing a doctor blade (**3**) and having two jaws (**9***a*, **9***b*) with which are associated clamping means (**10**), wherein said doctor blade carrier has a first pair of projecting fastening reliefs (**13***a*, **13***b*) arranged facing each other and located at the ends of two branches (**11***a*, **11***b*) extending the jaws (**9***a*, **9***b*) having the shape of a quarter cylinder; a second pair of a plurality of hollow fastening reliefs (**14***a*, **14***b*) arranged facing each other and located on support means (**8**) fixed to the base (**6**), having the shape of two half cylinders in extension, the spacing between two reliefs (**14***a*, **14***b*) facing each other varying in a discrete fashion from a maximum value (**E1**) to a minimum value (**E2**), the reliefs (**13***a*, **13***b*, **14***a*, **14***b*) being complementary so as to interact in a removable fashion; the same clamping means (**10**, **15**) allowing the angular blocking of the vise (**5**) with respect to the base (**6**) about the main axis (**12**) between two limiting positions; the base (**6**) being intended to be fixed to the chassis (**7**) of the machine.

5,345,863

CONTINUOUS WEB PRINTING APPARATUS

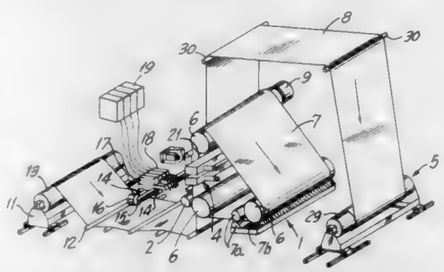
Shuichi Kurata, Osaka; Shiro Ichinose, Nishinomiya; Kazuo Kusaki, Shiga; Toshihiko Ishihara, Sanda; Naozumi Ueno, Osaka, and Toru Morita, Kawanishi, all of Japan, assignors to Kanebo Ltd. and Tosmin Kogyo Co., Ltd., Tokyo, Japan

Filed Jul. 26, 1993, Ser. No. 97,660

Claims priority, application Japan, Jan. 28, 1993, 5-034489

Int. Cl.[5] B05C *17/06*

U.S. Cl. 101—126 **13 Claims**



1. A continuous web printing apparatus comprising:

transport means including an endless belt made of metal and having a sticky surface, a plurality of support rollers having said endless belt entrained therearound, and drive means for rotating said support rollers to move said endless belt;

press means for pressing a continuous web, such as a fabric or a transfer sheet, against said endless belt to stick said continuous web to said endless belt;

an ink jet head disposed between said support rollers in opposed relation to the surface of said continuous web stuck to said endless belt;

an abutment adapted to abut against said endless belt, said abutment being opposed to said ink jet head with said continuous web and said endless belt interposed therebetween;

head gap adjusting means for moving at least either of said ink jet head or said abutment in a direction in which the two are opposed to each other; and

recovering means for peeling said continuous web, which has passed by said ink jet head, from said endless belt for recovery.

5,345,864

PRINTING CYLINDER OF A ROTARY PRINTING PRESS AND A METHOD FOR USE THEREWITH

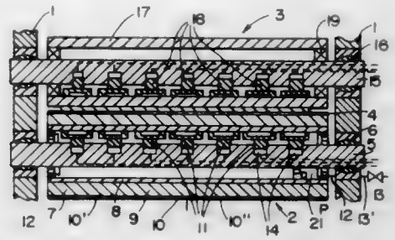
Günther Machguth, Wurenlos; Beat Muller, Mutschellen; Rolf Lehmann, Rudolfstetten, and Eugen Schnyder, Waltenschwil, all of Switzerland, assignors to Sulzer-Escher Wyss AG, Zurich, Switzerland

Filed Sep. 24, 1992, Ser. No. 950,167

Claims priority, application Switzerland, Sep. 25, 1991, 02842/91-6

Int. Cl.[5] B41F *5/00, 13/10*

U.S. Cl. 101—216 **22 Claims**



1. A printing cylinder for a rotary printing press, said printing cylinder comprising:

a jacket comprising a plurality of coaxial tubes, said plurality of coaxial tubes comprising:

a resilient interior tube;

a filler body exterior of said interior tuber and

a printing forme support exterior of said filler body;

a support fixedly secured against rotation relative to said jacket, said jacket being rotatable around said support;

a row of support elements disposed axially next to each other for providing at least partially individually adjustable printing pressures, said support elements being mounted on said support for radial displacement in a printing plane, said jacket being supported by said support elements in the printing plane;

said jacket having an inner chamber;

said jacket having at least one cylindrical, coaxial gap for permitting separation of at least one of said filler body and said printing forme support from at least one of said interior tube and said filler body;

means for sealing said inner chamber of said jacket to be pressure-tight; and

means for selectively charging said inner chamber with different pressures so that said at least one cylindrical, coaxial gap between said plurality of coaxial tubes selectively define a sliding fit or, because of a resilient deformation of said interior tube upon an application of a predeterminate pressure by said means for charging, a press fit with each other.

5,345,865

HICKEY REMOVAL SYSTEM

Norman H. Kemp, Hurst, Tex., assignor to Dahlgren USA, Inc., Carrollton, Tex.

Continuation of Ser. No. 44,215, Apr. 7, 1993, abandoned. This application Dec. 23, 1993, Ser. No. 172,253

Int. Cl.[5] B41F *31/00*

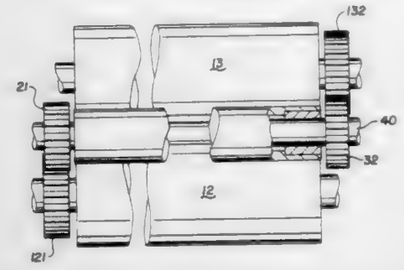
U.S. Cl. 101—349 **24 Claims**

1. In a lithographic press, the combination comprising:

(a) a plate cylinder having a plate surface moving at a first surface velocity;

(b) a first ink form roller having a surface in contact with said plate surface and mounted on a first shaft rotationally driven only by the combination of surface contact between said first ink form roller and other rotating cylinders in said press and direct interconnection with the shaft of a second ink form roller;

(c) a second ink form roller having a surface in contact with said plate surface and mounted on a second shaft rotationally driven only by the combination of surface contact between said second ink form roller and other rotating cylinders in said press and direct interconnection with said first shaft of said first ink form roller; and



(d) a rotational interconnection between said first shaft and said second shaft which maintains the surface velocity of said first ink form roller different from the surface velocity of said second ink form roller.

5,345,866

DOCTOR BLADE BAR ASSEMBLY

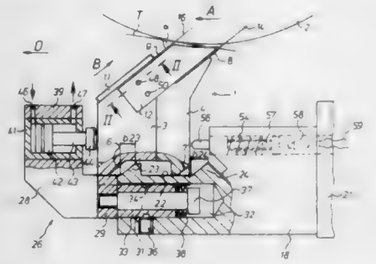
Wolfgang O. Reder, Veitschöchheim, and Georg Schneider, Würzburg, both of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Apr. 26, 1993, Ser. No. 51,657

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1992, 4213659

Int. Cl.[5] B41F *1/46*

U.S. Cl. 101—363 **9 Claims**



9. A doctor blade bar assembly for a short inking unit of a web-fed rotary printing press having a screened ink roller, said doctor blade bar assembly comprising:

a screened ink roller having a surface and being supported for rotation about an axis of rotation in a first direction;

a doctor blade base body;

first and second generally planar spaced doctor blades supported at first ends by said doctor blade base body, said first and second doctor blades each having a doctoring edge which is engageable with said surface of said screened ink roller, said first and second doctor blades extending from said doctor blade base body toward said surface of said screened ink roller along first and second straight lines defined by planes of said first and second planar doctor blades, said first and second straight lines intersecting said surface of said screened ink roller at first and second points of contact at first and second tangent lines at said first and second points of contact;

first and second spaced doctor blade base support beams for supporting said doctor blade base body for sliding movement; and

means to move said doctor blade base body to shift said first and second doctor blades along said first and second straight lines into contact with said surface of said

screened ink roller at said first and second negative contact angles.

5,345,867

DOCTOR BLADE BAR ASSEMBLY

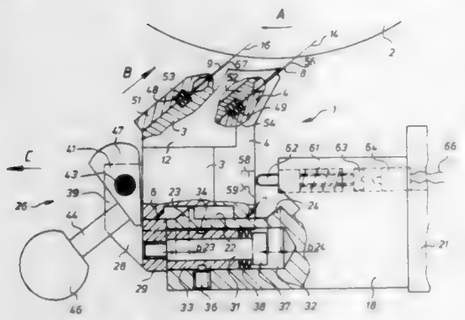
Georg Schneider, Würzburg, and Wolfgang O. Reder, Veitshöchheim, both of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Apr. 26, 1993, Ser. No. 51,666

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1992, 4213660

Int. Cl.[5] **B41F** *1/46*

U.S. Cl. 101—363 **9 Claims**



9. A doctor blade bar assembly for a short inking unit of a web-fed rotary printing press having a screened ink roller, said doctor blade bar assembly comprising:

a screened ink roller having a surface and being supported for rotation about an axis of rotation in a first direction;

a doctor blade base body;

first and second generally planar spaced doctor blades resiliently supported at first ends by said doctor blade base body, said first and second blades each having a doctoring edge which is engageable with said surface of said screened ink roller, said first and second doctor blades extending from said doctor blade base body toward said surface of said screened ink roller along first and second straight lines defined by planes of said first and second planar doctor blades, said first and second straight lines intersecting said surface of said screened ink roller at first and second points of contact at first and second negative contact angles with respect to first and second tangent lines at said first and second points of contact;

first and second spaced doctor blade base support beams for supporting said doctor blade base body for sliding movement; and

means to move said doctor blade base body to shift said first and second doctor blades along said first and second straight lines into contact with said surface of said screened ink roller at said first and second negative contact angles.

5,345,868

PRINTING PLATE MOUNTING SUPPORT AND METHOD

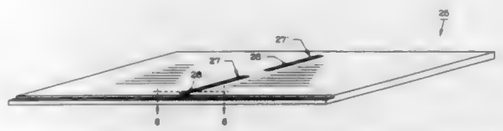
A. Leroy Baker, Burlington, N.C.

Filed Jun. 4, 1993, Ser. No. 71,101

Int. Cl.[5] **B41F** *1/28*

U.S. Cl. 101—415.1 **8 Claims**

1. In a mounting device for positioning a printing plate on a press cylinder, said mounting device having a movable support plate for receiving said printing plate, the improvement comprising: a support plate comprising a pair of planar layers, said layers affixed to each other one above the other, a support plate mounting stud, said upper layer defining a stud slot, said



mounting stud positioned atop said lower layer and extending through said stud slot defined in said upper layer.

5,345,869

LITHOGRAPHIC PLATE, AND METHOD FOR MAKING, HAVING AN OXIDE LAYER DERIVED FROM A TYPE A SOL

John A. Treverton, Daventry, and Jonathan Ball, Deddington, both of England, assignors to Alcan International Limited, Montreal, Canada

PCT No. PCT/GB91/00180, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO91/42140, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 6, 1991, Ser. No. 917,045

Claims priority, application United Kingdom, Feb. 12, 1990, 9003079

Int. Cl.[5] **B41N** *1/08*

U.S. Cl. 101—454 **16 Claims**

1. A lithographic plate comprising:

a substrate;

an oxide layer, said oxide layer directly overlying said substrate and being derived from a Type A sol which is itself derived from an inorganic precursor.

5,345,870

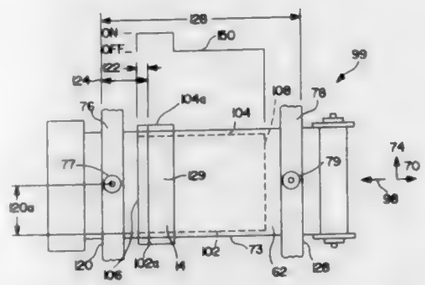
"DIRECT-TO-PRESS" POSITIVE LITHOGRAPHIC PRINTING PLATE AND METHOD FOR MAKING SAME

Dwayne E. Bailey, Billerica, and Kenneth L. Langlais, Andover, both of Mass., assignors to Miles Inc., Wilmington, Mass.

Filed Feb. 10, 1993, Ser. No. 16,055

Int. Cl.[5] **G03B** *27/00*

U.S. Cl. 101—463.1 **13 Claims**



1. A method for producing a positive lithographic printing plate on a web of lithographic material in an imagesetter having a clamp with a configuration for mechanically gripping the web, said method comprising the steps of:

(A) exposing a portion of the web of lithographic material to produce an exposed mechanical gripper area having a configuration corresponding to the configuration of the clamp of the imagesetter;

(B) moving the web so that the exposed mechanical gripper area is underneath the imagesetter clamp;

(C) exposing a negative image on said web of material; and,

(D) processing said exposed mechanical gripper area and said exposed negative image.

5,345,871

IGNITER-DESTRUCTOR DEVICE

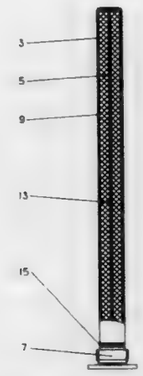
Guido Stang, Buggingen, Fed. Rep. of Germany, assignor to Buck Werke GmbH & Co., Bad Uberkingen, Fed. Rep. of Germany

Continuation of Ser. No. 508,192, Apr. 11, 1990, abandoned. This application Jul. 7, 1993, Ser. No. 88,609

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1989, 3912183

Int. Cl.[5] **F42C** *19/08*

U.S. Cl. 102—202 **32 Claims**



1. An igniter-destructor device comprising:

an elongated capsule having an aluminum sidewall;

an igniter destructor charge positioned within said capsule;

an ignition-expediting material which forms an ignition core axially penetrating said charge;

a flange element coupled to one end of said capsule, said flange element having an axial bore; and

means for protecting the capsule from bursting during firing of the igniter destructor charge so as to prevent any of the igniter destructor charge from making contact with any payload that is surrounding the capsule during firing of the igniter destructor charge, said protecting means including a plastic jacket which covers and longitudinally surrounds the full length of said aluminum sidewall and which prevents the capsule from bursting during firing of the igniter destructor charge.

5,345,872

IGNITER

Sakae Takahashi; Hitoshi Miyazaki, and Hitoshi Kunii, all of Fukushima, Japan, assignors to Nippon Koki Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1993, Ser. No. 121,315

Claims priority, application Japan, May 28, 1993, 5-127574

Int. Cl.[5] **F42B** *3/18*

U.S. Cl. 102—202.2 **5 Claims**

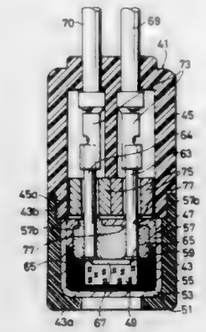
1. An igniter comprising:

an insulated cup made of an insulating member, the insulated cup for accommodating an igniting agent and a header, the insulated cup having a rear end, the rear end of the insulated cup adapted for engaging a harness supporter;

an igniting agent in said insulated cup;

a header for igniting the igniting agent, the header having a header case made of conductive metal, a glass sintered member charged into the header, a pair of lead electrodes inserted into the header at a certain interval therebetween, wherein each of the lead electrodes includes a leading end and a rear end, the rear end of each of the lead electrodes having a harness connected thereto, a heater member for heating the igniting agent, the heater member being bridged between the leading ends of the lead electrodes; and

a harness supporter made of an insulating member, the harness supporter including a preformed mating section at a leading end of the harness supporter engaging the rear end of the insulated cup, the harness supporter having a pair of harnesses inserted into the harness supporter at a certain interval therebetween;



whereby the insulated cup is joined to the harness supporter forming an igniter body; and one of the lead electrodes is electrically conducted to the header case grounding static electricity.

5,345,873

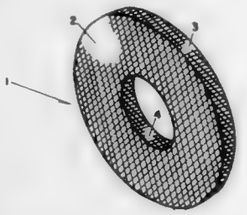
GAS BAG INFLATOR CONTAINING INHIBITED GENERANT

Donald R. Lauritzen, Hyrum, and Bryan P. Crowell, Hooper, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Aug. 24, 1992, Ser. No. 934,609

Int. Cl.[5] **C06D** *5/06*

U.S. Cl. 102—290 **16 Claims**



1. A gas bag inflator comprising:

a combustion chamber having a gas outlet;

a plurality of gas generant bodies disposed within said chamber, each of said generant bodies being coated with a relatively inert burn inhibitor material which substantially covers only one face and the peripheral walls thereof;

means for igniting the inhibited bodies; and

means for routing gas generated from said chamber through the gas outlet.

5,345,874

AUTOMATIC EJECTION SYSTEM FOR TRIP-WIRE TYPE MINES

Georges G. Lemonnier, Arcay, and Bernard R. Roumat, Trouy, both of France, assignors to Giat Industries, Versailles, France

Filed May 27, 1992, Ser. No. 888,595

Claims priority, application France, Jun. 11, 1991, 91 07046

Int. Cl.[5] **F42B** *23/00*

U.S. Cl. 102—424 **25 Claims**

1. A trip-wire mine comprising:

a hollow body accommodating a plurality of trip wires,

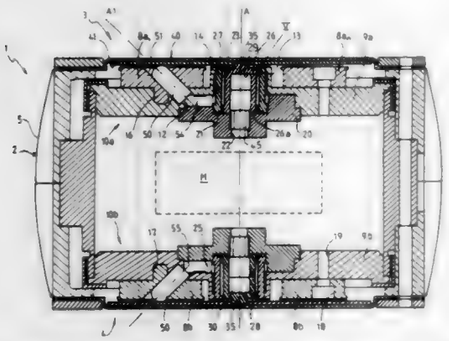
wherein each trip wire is wound on a corresponding reel; and

an automatic trip wire ejection system, the automatic ejection system comprising:

a first device for freeing an opening in a wall of the hollow body of the mine,

a plurality of projectiles, each projectile attached to a corresponding free end of one of the plurality of trip wires, and

means to eject the plurality of projectiles through the opening in the body of the mine, the plurality of trip wires each simultaneously unreeling from the corresponding reels when the plurality of projectiles are ejected, wherein the first device comprises a cutting means mounted in the body of the mine adjacent the wall to cut a lid from said wall, and a second device for ejecting the lid.



2. A trip-wire mine having a hollow body, a plurality of trip wires and a plurality of projectiles located within said hollow body, each projectile attached to a corresponding free end of one of the plurality of trip wires, the hollow body comprising:

two plane parallel faces, a first one of said two faces serving as a support on a ground; and

a cutting means having a cutting plate abutting a second one of said two parallel faces, the cutting means integral with a movable system, said movable system comprising a piston that is telescopically displaceable with a pin along a first axis perpendicular to the cutting plate and passing through a center of the cutting plate, said cutting means cutting the second one of said two parallel faces.

5,345,875

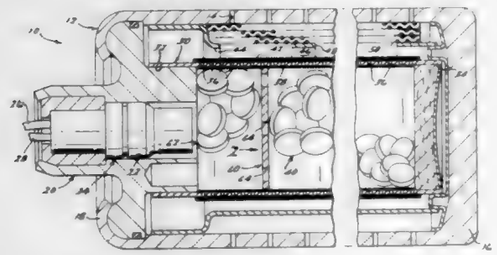
GAS GENERATOR

Steven J. Anderson, Willis, Mich., assignor to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.

Filed Jul. 7, 1993, Ser. No. 87,985

Int. Cl.[5] C06D *5/00*

U.S. Cl. 102—530 **1 Claim**



1. A gas generator comprising:

an elongated cylindrical housing having a central axis and a plurality of gas discharge apertures spaced longitudinally in a side wall thereof;

an elongated cylindrical propellant tube in said housing in coaxial relation thereto and having a plurality of longitudinally spaced apertures in a sidewall thereof and an open end;

a cylindrical igniter at one end of said housing for igniting a propellant and having a central axis coaxially related to the axis of said housing and a discharge end aligned with and communicating with the open end of said propellant tube;

a propellant charge in said propellant tube comprising a plurality of propellant grains; and

a circular shock wave attenuation disc in said propellant tube disposed within said propellant grains so as to divide said grains into first and second longitudinally spaced portions, said shock wave attenuation disc being spaced from the discharge end of said igniter from approximately 10 mm to approximately 50 mm and extending at a right angle to the central axis of said housing, said shock wave attenuation disc having a plurality of apertures therein extending parallel to the axis of said housing in a radially dispersed array whereby a flame front emanating from said igniter is free to move through the first portion of said propellant grains, thence through the apertures in said shock wave disc, thence through the second portion of said propellant grains but a shock wave emanating from said igniter is attenuated by said shock wave attenuation disc to preclude fragmentation of the second portion of said propellant grains.

5,345,876

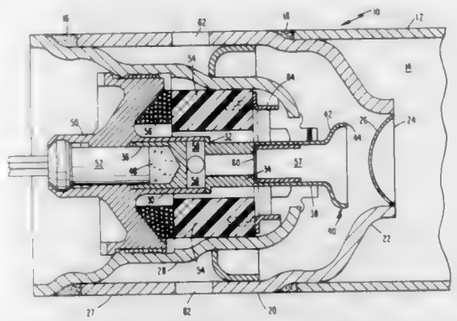
HYBRID INFLATOR

James Rose, Fairfax, and Charles D. Woods, Gainesville, both of Va., assignors to Atlantic Research Corporation, Vienna, Va.

Filed Feb. 4, 1993, Ser. No. 13,600

Int. Cl.[5] C06D *5/00*

U.S. Cl. 102—531 **16 Claims**



1. Inflator device, comprising a pressure tank having stored therein a quantity of inflation gas under pressure, said pressure tank including closure means which prevents egress of said gas from said tank, a sleeve member extending in substantially axial alignment with said closure means, a piston having a first end portion slidably received in an open end of said sleeve member and having a second end portion which includes means thereon for puncturing said closure means, a first pyrotechnic material positioned adjacent said first end portion of said piston, means for igniting said first quantity of pyrotechnic material upon the occurrence of a predetermined condition, and a second pyrotechnic material positioned externally of said sleeve member, whereby upon ignition of said first pyrotechnic material a first combustion gas is produced which drives said piston a predetermined distance toward said closure means such that said second end portion thereof punctures said closure means to permit the stored inflation gas to exit the inflation device through a first passageway, and further wherein each of said sleeve member and said first end portion is sized in length so that said sleeve member and said first end portion cooperate to shield said second pyrotechnic material from said first combustion gas until after said piston has moved said predetermined distance and said closure means has been ruptured, driving of said piston creating a passage adjacent said open end of said sleeve member which enables said first combustion gas to contact and ignite said second pyrotechnic material after said piston has moved said predetermined distance to produce a second combustion gas which contacts the inflation gas by flowing through a second passageway in said inflator device in communication with said tank to increase the temperature of said inflation gas, wherein shielding of said second pyrotechnic material delays the flow of said second combustion gas into said inflation gas exiting the inflator device and the heating thereof.

5,345,877

JUNCTION FOR NEIGHBORING CAR BODIES OF A TRACK-BOUND VEHICLE, ESPECIALLY OF A MAGNETIC LEVITATION TRAIN, HAVING CABLE CONNECTED DOORS

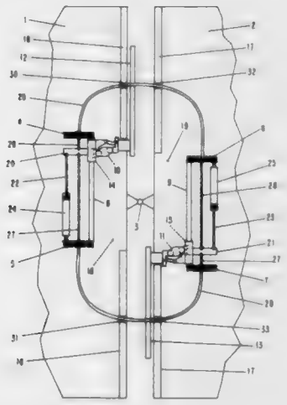
Peter Hermes, München, Fed. Rep. of Germany, assignor to Thyssen Industrie AG, Essen, Fed. Rep. of Germany

Filed Jun. 24, 1993, Ser. No. 83,073

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1992, 4222624

Int. Cl.[5] B61D *17/00*

U.S. Cl. 105—8.1 **8 Claims**



1. A junction for neighboring car bodies of a track-bound vehicle, said Junction comprising:

a first door guided within a first end wall of a first car body for closing a doorway of the first car body;

a second door guided within an adjacent second end wall of the neighboring car body for closing a doorway in the neighboring car body, wherein said first and said second end walls are spaced apart and delimit a space therebetween;

said first and said second doors guided at said first and said second end walls to be movable in opposite directions;

at least one coupling element for coupling said first and said second doors extending through said first and said second end walls and said space therebetween; and

said at least one coupling element comprised of a first component and a second component;

said first component connecting said first and second doors for transmitting forces between said first and second doors;

said second component enclosing said first component and connected to the first and the neighboring car bodies; and

wherein a displacement of said first and second doors relative to the first and neighboring car bodies results in a displacement of said first component relative to said second component.

5,345,878

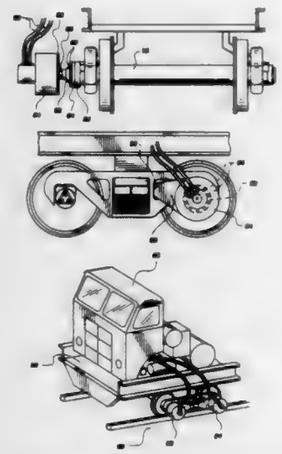
APPARATUS AND METHOD FOR MOVING RAILWAY CARS

Charles Jacob, P.O. Box 611, American Fork, Utah 84003

Filed Aug. 17, 1992, Ser. No. 930,335

Int. Cl.[5] B61C *7/00*

U.S. Cl. 105—136 **4 Claims**



4. Apparatus for moving a railcar including a bed, first and second side trucks disposed beneath and supporting the bed, first and second elongate axles, each having first and second ends, journalled near their ends in the trucks, and four wheels, each disposed near an end of an axle, comprising:

first and second end caps secured to the first ends of the first and second elongate axles, respectively;

first and second hubs secured to the first and second end caps, respectively;

first and second rotatable shafts secured to the first and second hubs, respectively;

first and second hydraulic motors operatively attached to the first and second rotatable shafts, respectively, such that the shafts are rotated under the power of the motors, thereby rotating the hubs, end caps, axles, and wheels;

a rigid elongate torsion arm, having first and second ends, whose first end is secured to the first motor and whose second end is secured to the second motor to stabilize movement of the motors.

5,345,879

STACKABLE FOOT, PARTICULARLY FOR THE BASE OF A CONTAINER OF THE PALETTE TYPE

Gilbert Maillard, 4 rue d'Allondans, 25200 Montbeliard, France

Filed Mar. 9, 1992, Ser. No. 848,635

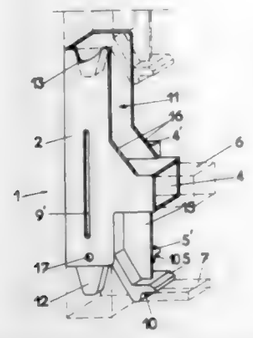
Claims priority, application France, Mar. 8, 1991, 91 03008

Int. Cl.[5] B65D *19/44*

U.S. Cl. 108—53.1 **9 Claims**

1. A stackable foot for a palette, comprising a hollow body and a pair of horizontal sleeves integral with the hollow body and extending horizontally from the hollow body with the

sleeves disposed at right angles to each other, horizontally extending prolongations below the sleeves and in vertical



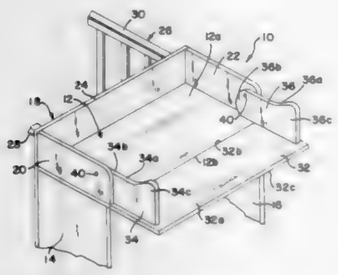
alignment with the sleeves, and vertical ribs integral with and extending between the sleeves and prolongations.

5,345,880

TABLE HAVING A PIVOTING SUPPORT EXTENSION

Louis Shamie, 972 Dean St., Brooklyn, N.Y. 11238

Continuation of Ser. No. 868,465, Apr. 14, 1992, abandoned.
This application Dec. 6, 1993, Ser. No. 163,573
Int. Cl.[5] A47B *57/00*
U.S. Cl. 108—63 **5 Claims**



1. A table comprising:

a main support platform having an upper surface;

at least one restraining wall connected with said main support platform in surrounding relation to said main support platform, said at least one restraining wall extending to a height above said upper surface and being formed by a rear wall having an upper surface and opposite side walls with a spacing therebetween, each side wall having an upper surface;

support extension means for effectively forming an extension of said upper surface of said main support platform, said support extension means including:

a support extension platform which forms an extension of said upper surface of said main support platform in an open position, and

opposite side walls mounted on said support extension platform, with a spacing between said opposite side walls of said support extension means being less than the spacing between said side walls of said at least one restraining wall, said opposite side walls of said support extension means each having a portion with a height greater than a maximum height of said side walls and said rear wall of said at least one restraining wall above said main support platform and with said portion resting upon said upper surface of said main support platform in a closed position so as to support said support extension platform above the upper surfaces of said rear wall and at least rear portions of said side walls of said at least one restraining wall in spaced relation thereto; and

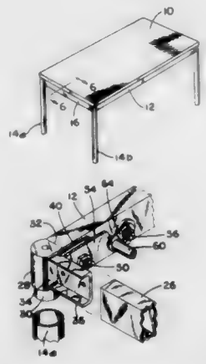
pivoting means for pivotally connecting said opposite side walls of said support extension means with said side walls of said at least one restraining wall such that said support extension means can be pivoted between said open position in which said support extension platform effectively forms an extension of said main support platform and said closed position in which said support extension platform extends above the upper surfaces of said rear wall and at least rear portions of said side walls of said at least one restraining wall in spaced relation thereto.

5,345,881

FOLDING TABLE MECHANISM

William A. Loescher, Redding, Conn., assignor to Howe Furniture Corporation, Trumbull, Conn.

Filed Dec. 19, 1991, Ser. No. 810,515
Int. Cl.[5] A47B *3/00*
U.S. Cl. 108—132 **8 Claims**



1. A locking mechanism for the legs of a folding table having a top side and an underneath side, first and second parallel spaced rails on the underneath side, first and second parallel legs, each mounted to a different end of a stretcher member whereby said legs are positioned abutting the respective ends of said first and second rails when in their unfolded and locked condition, comprising:

first and second leg brackets secured, respectively, to each end of said stretcher member and extending substantially parallel and adjacent to the respective first and second rails;

means interconnecting each of said first and second leg brackets with its respective first and second rail for permitting rotational and translational motion therebetween;

a lock bar extending between said spaced first and second rails parallel to said stretcher member and rotatable about its longitudinal axis;

a cam link secured to each end of said lock bar for rotation therewith;

a first hook link having a first end rotatably connected to one of said interconnecting means and a second end;

a second hook link having a first end rotatably connected to the other one of said interconnecting means and a second end;

means for pivotally interconnecting the second end of said first hook link with one of said cam links;

means for pivotally interconnecting the second end of said second hook link with the other one of said cam links; and

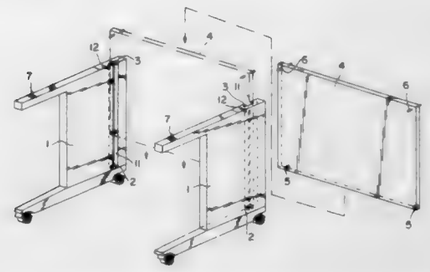
means for rotating said lock bar to permit rotation and translation of said interconnecting means between over center locking positions securing said legs and stretcher member in either of (1) a folded or extended position and (2) a release position.

5,345,882

ASSEMBLY-TYPE TABLE

Tetsuya Yamada, Okayama, Japan, assignor to Sanwa Supply Co., Ltd., Okayama, Japan

Filed Feb. 18, 1993, Ser. No. 19,108
Claims priority, application Japan, Feb. 19, 1992, 4-32242
Int. Cl.[5] A47B *3/00*
U.S. Cl. 108—193 **1 Claim**



1. An assembly-type table comprising two side frames located on left and right sides, a rear frame for supporting said side frames, and a table top panel removably mounted and fixed on said side frames wherein:

a vertical groove is formed in a rear inner surface of each one of said side frames and has a pin at a bottom of said vertical groove and an upwardly opened slot at a top of said vertical groove, two slots are formed at a bottom of said rear frame so as to engage with said pins of said side frames, and two pins are formed at a top of said rear frame so as to engage with said slots of said side frames, so that said rear frame is fixed to said side frames when both side edges of said rear frame are slid into said vertical grooves of said side frames; and

said side frames are further provided with side pins at upper rear portions thereof and upwardly projecting pins at upper front portions thereof, and said table top frame is provided with engagement plates on an under surface thereof at positions that correspond to said side pins of said side frames and with push nuts on an under surface thereof at positions that correspond to said projecting pins of said side frames, so that said table top panel is fixed to said side frames when said engagement plates are inserted under said side pins and said push nuts are engaged with said projecting pins by pushing said top panel from above.

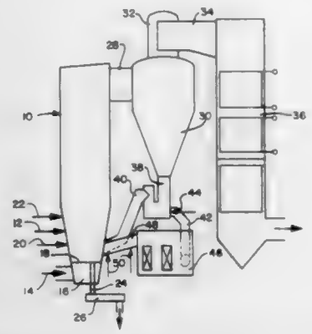
5,345,883

REACTIVATION OF SORBENT IN A FLUID BED BOILER

Paul J. Panos, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 31, 1992, Ser. No. 998,993
Int. Cl.[5] F23J *15/00*
U.S. Cl. 110—345 **3 Claims**

1. In a circulating fluidized bed combustion process for burning a sulfur-containing fuel in a circulating bed of fluidized sorbent particles in a combustor to generate flue gas and sulfur dioxides, separating the generated flue gas from the circulating particles and returning the separated particles to the combustor wherein the sulfur oxides react with sorbent material on the surface of said sorbent particles and wherein unreacted sorbent material remains inside said particles, the improvement comprising injecting a jet of fracturing medium of liquid water or steam at a sufficiently high pressure and direcrted so as to impinge upon said sorbent particles containing unreated sorbent material inside whereby said sorbent particles are mechanically fractured to expose said unreacted sorbent material to said sulfur oxides.

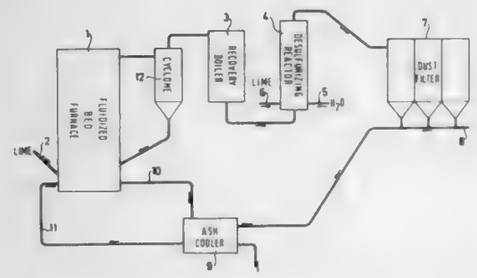


5,345,884

METHOD OF REDUCING POLLUTING EMISSIONS FROM CIRCULATING FLUIDIZED BED COMBUSTION INTALLATIONS

Michel Vandycke, Gambais, and Jean-Xavier Morin, Neuville aux Bois, both of France, assignors to Stein Industrie, Velizy-Villacoublay, France

Filed Nov. 22, 1993, Ser. No. 155,288
Claims priority, application France, Nov. 24, 1992, 92 14086
Int. Cl.[5] F23J *15/00*
U.S. Cl. 110—345 **12 Claims**



1. A method of reducing sulfur oxide emissions from a circulating fluidized bed combustion installation including a furnace from which the dust is recovered at least in part by a cyclone, the partially dedusted gases output by the cyclone passing through a recovery boiler, and then into a dust filter, in which method a desulfurizing agent is inserted into the furnace, wherein:

downstream from said recovery boiler, and upstream from said dust filter, the flue gases are desulfurized in semi-humid manner in a reaction enclosure provided with a water injection inlet; and

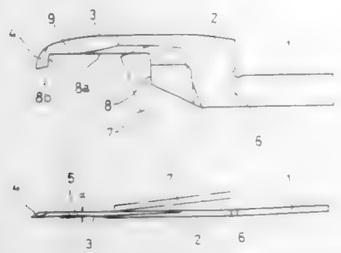
downstream from said dust filter, the resulting desulfurization products are thermally oxidized.

5,345,885

LOOPER OF TUFTING MACHINE

Sota Yoshino, Sakai, Japan, assignor to Nara Company, Ltd., Osaka, Japan

Filed Aug. 2, 1993, Ser. No. 100,266
Claims priority, application Japan, Sep. 9, 1992, 4-063177[U]
Int. Cl.[5] D05C *15/24*
U.S. Cl. 112—80.55 **4 Claims**



1. A looper for use in a tufting machine having a knife, said looper comprising:

an elongated handle having a first end and a second end, said first end of said handle being adapted to be mounted to the tufting machine;

a stem integrally attached at a first end thereof to said second end of said handle and extending therefrom in a substantially longitudinal direction of said handle;

a yarn engaging rod having a first end integrally attached to a second end of said stem and extending therefrom substantially in the longitudinal direction;

a hook integrally mounted at a second end of said yarn engaging rod;

wherein said handle, said stem, said yarn engaging rod, and said hook are respectively formed with first side surfaces, and are respectively formed with second side surfaces opposite said first side surfaces;

wherein said first side surfaces of said handle, said stem, said yarn engaging rod, and said hook are contiguous with one another;

wherein said first side surfaces of said stem, said yarn engaging rod, and said hook together constitute a knife abutting surface of said looper which is adapted to be abutted by the knife of the tufting machine; and

wherein a bend is formed at a junction between said second end of said handle and said first end of said stem, such that said knife abutting surface is angled, in a transverse direction, relative to said first side surface of said handle.

5,345,886

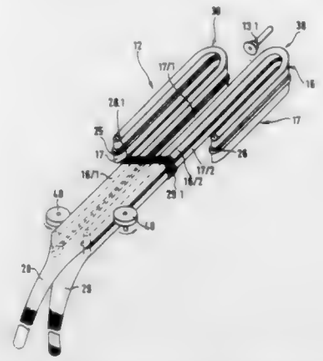
ARRANGEMENT FOR AND METHOD OF PRODUCING PANTYHOSES

Rudolf Eichhorn, Eberstalerstr. 17, 7109 Altkrautheim, Fed. Rep. of Germany

Filed Feb. 5, 1993, Ser. No. 14,383
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1992, 4203383
Int. Cl.[5] D05B *21/00*
U.S. Cl. 112—121.15 **11 Claims**

1. An arrangement for producing a pantyhose from prefabricated hose-shaped individual parts, comprising a cutting device defining a cutting plane;

at least one template movable in work stations and having two tensioning frames for pulling corresponding prefabricated pantyhose parts of a pantyhose, said tensioning frames being movable parallel to one another and each being composed of two supporting arms which are mirror-symmetrical relative to said cutting plane of said cutting device, said supporting arms being immovable relative to one another, bent in a plane of said tensioning frames in a U-shaped manner, and supporting driveable endless transporting belts operative for pulling the pantyhose parts on said tensioning frames and for bringing



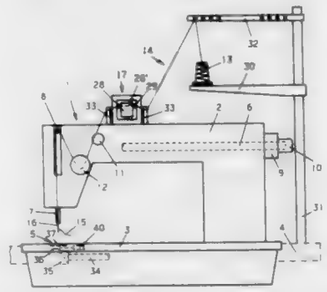
and holding the latter on said tensioning frames in a desired position.

5,345,887

THREAD MANIPULATIONS AT THE BEGINNING AND END OF A SEAM

Gunter Droste, Leopoldshohe, Fed. Rep. of Germany, assignor to Durkopp Adler Aktiengeselischaft, Fed. Rep. of Germany

Filed Oct. 2, 1992, Ser. No. 955,662
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1991, 4132991
Int. Cl.[5] D05B *47/04, 65/02*
U.S. Cl. 112—255 **28 Claims**



1. A method of producing a sewing seam with an attractive appearance, comprising the steps of:

cutting a needle thread and a bobbin thread at the end of a previous first seam such that a trailing end portion of the needle thread hangs out from a sewing needle, and then forming a subsequent second seam in a material to be sewn, wherein in an initial phase of forming the subsequent second seam, said trailing end portion of the needle thread is located so as to hang from an underside of the material and is provided with a first predetermined length by pulling the needle thread back from said material, so that only a short piece of needle thread having said first predetermined length remains on the underside of the material when said second seam is produced, thereby producing a sewing seam with an attractive appearance.

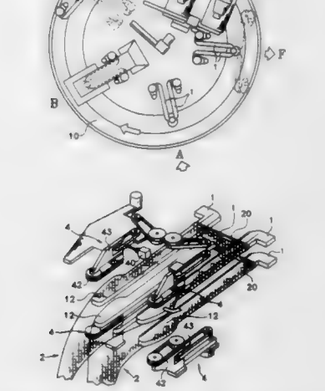
5,345,888

AUTOMATIC NEEDLE THREADER

Samuel R. Frankel, 211 Maple Ave., Shillington, Pa. 19607

Filed Nov. 15, 1993, Ser. No. 152,325
Int. Cl.[5] D05B *87/00*
U.S. Cl. 112—225 **19 Claims**

12. An automatic needle threader comprising a housing; an air chamber attached to said housing; a means for attaching said housing to a sewing machine, said air chamber comprising a proximal section having a first and a second end, said first end attached to said housing; a funnel section having a third and a



fourth end, said third end being attached to said second end of said air chamber; a spout section attached to said fourth end; means for smoothing the frayed end of a single thread comprising means for providing compressed air into said chamber; and means for imparting a swirling motion to said compressed air.

5,345,889

METHOD FOR AUTOMATICALLY SEWING TWO STOCKINGS TO FORM A PANTYHOSE ARTICLE AND MACHINE TO CARRY OUT SAID METHOD

Vinicio Gazzarrini, deceased, late of Impruneta by Alma Gazzarrini , and Pier L. Migliorini, Bracciolini, both of Italy, assignors to Solis S.r.L., Florence, Italy

Filed Sep. 22, 1992, Ser. No. 949,387
Claims priority, application Italy, Sep. 23, 1991, FI 91 A232
Int. Cl.[5] D05B *97/00*
U.S. Cl. 112—262.2 **8 Claims**

1. A method for forming a pantyhose article, the method comprising the steps of:

providing a carriage;

providing first and second pairs of shapes with an elastic edge position on each of said first and second pairs of shapes;

providing a first stocking with an elastic edge;

providing a second stocking with an elastic edge;

sliding a first stocking over a first pair of shapes;

sliding a second stocking over a second pair of shapes;

moving said carriage from said elastic edge position to said elastic edge of one of said first and second stockings furthest away from said elastic edge position;

attaching said carriage to said furthest stocking from said elastic edge position;

moving said carriage attached to said furthest stocking to one of said stockings nearest said elastic edge position;

attaching said carriage to said nearest stocking to said elastic edge position;

moving said carriage attached to said furthest and nearest stockings to said elastic edge position;

providing a datum line on said first and second stockings;

providing a datum position on each of said first and second pairs of shapes;

accumulating said first and second stockings on said first and second pairs of shapes until said datum line of said first and second stockings is aligned with said datum position;

clamping one shape of each of said first and second pairs of shapes and an interposed portion of said first and second stockings together in order to form adjacent portions of said first and second stockings;

cutting said adjacent portions of said first and second stockings to form cut edges on each of said first and second stockings;

spreading apart each shape of said first and second pair of shapes with respect to each other to form first and second sets of cut edges, said first set of cut edges having a cut edge from said first stocking and a cut edge from said second stocking, said second set of cut edges having another cut edge from said first stocking and another cut edge from said second stocking;

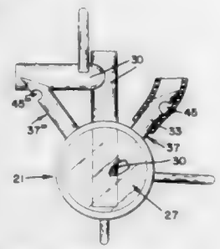
substantially simultaneously sewing a first set of said cut edges together while also sewing a second set of said cut edges together.

5,345,890

MILKING CLAW FERRULE APERTURE AND SANITIZING METHODOLOGY

Lennart G. Petersson, 229 SE. Main St., Douglas, Mass. 01516, and Daniel J. Aneshansley, Cornell University, Dept. of Animal Science, Ithaca, N.Y. 14850

Filed Aug. 26, 1991, Ser. No. 749,525
Int. Cl.[5] A01J *5/04*
U.S. Cl. 119—14.54 **18 Claims**



16. A milking claw ferrule comprising:

(a) a tubular wall which has a central longitudinal axis;

(b) a first end which has a first opening;

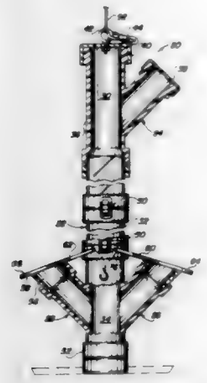
(c) a second end which has a second opening opposite said first opening; and

(d) an aperture through said wall adjacent to said second end, said aperture having a long axis which is parallel to said central longitudinal axis.

5,345,891

Patent Not Issued For This Number

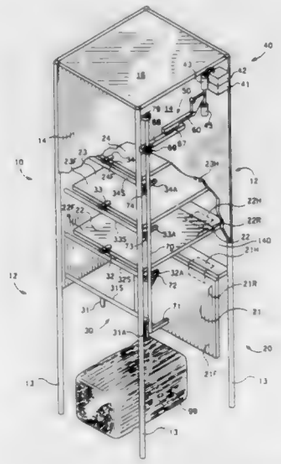
5,345,892
AUTOMATIC PET FEEDER
Osman M. Khan, 16314 E. Vaughn, Gilbert, Ariz. 85234
Filed Mar. 2, 1994, Ser. No. 204,945
Int. Cl.[5] A01K *39/04*
U.S. Cl. 119—51.5 **13 Claims**



1. An automatic pet feeder comprising:
a vertically extending tubular food reservoir; said vertically extending tubular food reservoir having a longitudinal centerline; said tubular food reservoir being closed at an upper end and closed at a lower end;
said tubular food reservoir having a tubular food loading port, adjacent said upper end, extending upwardly at an acute angle to said longitudinal centerline of said vertically extending tubular food reservoir; said tubular food loading port having a removable cap for sealing said food loading port when the food loading port is not in use; and
said tubular food reservoir having a tubular feeding port, adjacent said lower end, extending upwardly at an acute angle to said longitudinal centerline of said vertically extending tubular food reservoir; and
said tubular feeding port having a cover plate for sealing an otherwise open end of said feeding port; and said cover plate being pivotally mounted on said tubular food reservoir so that a pet can pivot said cover plate out of the way to gain access to food in said feeding port of the pet feeder.

5,345,893
HAY DISPENSER
J. W. Morris, 164 N. Algona Ave., San Jacinto, Calif. 92583
Filed Aug. 18, 1993, Ser. No. 107,976
Int. Cl.[5] A01K *5/02*
U.S. Cl. 119—51.11 **6 Claims**

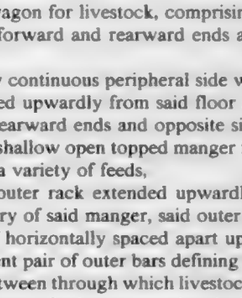
1. A device for storing and dispensing food to an animal at predetermined intervals comprising:
a housing;
a plurality of spaced superimposed shelves supported by said housing defining a plurality of contiguously stacked bins for supporting animal food above the ground; including:
a bottom shelf having:
an attached end pivotally attached to said housing; and
a free end;
said bottom shelf pivotable from a storage position wherein said bottom shelf free end is supported by a bottom latch such that said bottom shelf may support a quantity of animal food to a dispensing position wherein said bottom shelf free end is not supported by a bottom latch such that said bottom shelf pivots about said bottom shelf attached end for dispensing food thereon; and
a second shelf having:
an attached end pivotally attached higher to said housing than said first shelf and
a free end;
said second shelf pivotable from a storage position wherein said second shelf free end is supported by a second latch such that said second shelf may support a quantity of animal food to a dispensing position wherein said bottom shelf free end is not supported by a bottom latch such that said bottom shelf pivots about said bottom shelf attached end for dispensing food thereon;
a latch assembly including:
a plurality of latches including:
a bottom latch having a storage position supporting said bottom shelf free end and a dispensing position not supporting said bottom shelf free end;
a second latch having a storage position supporting said second shelf free end and a dispensing position not supporting said second shelf free end; and
a latch rod coupled to said latches such that a first rotation of said rod moves said bottom latch from the storage position to the dispensing position and a second rotation of said rod moves said second latch



from the storage position to the dispensing position; and
an activation mechanism coupled to said latch rod for rotating said latch rod the first rotation and then the second rotation at predetermined time intervals comprising:
an energy source;
a solenoid connected to said energy source; said solenoid having a shaft;
a timer connected to said solenoid for activating said solenoid to linearly move said shaft from a first position to a second position at predetermined time intervals;
a biasing means connected to said shaft for returning said shaft to the first position when said solenoid is not activated; and
a conversion mechanism coupling said shaft to said rod such that linear movement of said shaft in a first direction rotates said rod for dispensing food and such that movement of said shaft in a second direction does not rotate said rod.

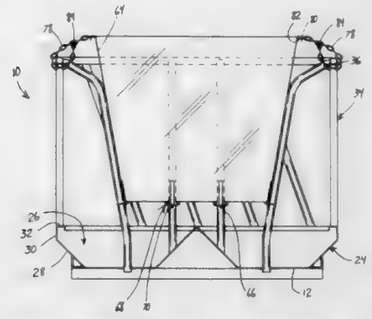
5,345,894
ADAPTOR PLATE FOR SHIELDED DROP-LOCK ADJUSTMENT ON AN ANIMAL FEEDER
Robert B. Evans, III, Fayetteville, N.C., and Leon S. Zimmerman, Lititz, Pa., assignors to Staco, Inc., Schaefferstown, Pa.
Continuation-in-part of Ser. No. 891,203, Jun. 1, 1992, Pat. No. 5,222,460. This application Oct. 1, 1992, Ser. No. 954,824
Int. Cl.[5] A01K *5/00*
U.S. Cl. 119—53 **4 Claims**

1. A shielded drop-lock adjusting means comprising: a support channel; at least one control rod means passing through at least one opening in said channel; a handle means pivotally mounted on one end of said control rod means and having at least one angularly disposed end; and an adaptor plate mounted on said channel and having at least one flange downwardly projecting therefrom in spaced relation to a side of said channel, said plate including an elongated slot running parallel to the space between the at least one adaptor flange and the



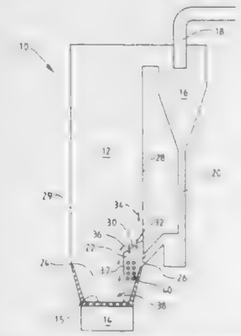
channel side whereby when the at lest one angularly disposed end of said handle means is pivoted away from said support channel, such handle can be used to manipulate said control rod means and when said angularly disposed end is pivoted downwardly into engagement with said slot-like opening, such handle will be locked and cannot manipulate said control rod means.

5,345,895
LIVESTOCK FEEDER WAGON WITH VERTICALLY FLEXING INNER RACK
Douglas L. Stevens, 2304 Skyline Dr., and Robert L. Wiese, R.R. #4, Box 264, both of, Norfolk, Nebr. 68701
Filed Jan. 21, 1994, Ser. No. 184,836
Int. Cl.[5] A01K *5/00*
U.S. Cl. 119—58 **18 Claims**



1. A feeder wagon for livestock, comprising,
floor having forward and rearward ends and opposite side edges,
a substantially continuous peripheral side wall connected to and extended upwardly from said floor adjacent the forward and rearward ends and opposite side edges thereof to define a shallow open topped manger for receiving and dispensing a variety of feeds,
a peripheral outer rack extended upwardly from adjacent the periphery of said manger, said outer rack including a plurality of horizontally spaced apart upright outer bars, each adjacent pair of outer bars defining a first feed opening therebetween through which livestock standing on the ground adjacent feeder may project its head to consume feed in said manger,
an inner rack situated interiorly of said outer rack and including a plurality of horizontally spaced apart inner bars extending downwardly and inwardly from said outer rack, each adjacent pair of inner bars defining a second feed opening through which livestock may consume feed supported in said manger interiorly of the inner rack,
said floor including a plurality of holes at positions spaced longitudinally apart and spaced interiorly from said peripheral side wall,
each of said inner bars having a lower end portion extending through a respective one of said holes in slide fit relation such that said inner bar is free to flex through a limited vertical movement relative to said floor, and
wheel means for supporting said floor in clearance relation above the ground for transport, said wheel means including steerable front wheels and a tongue operatively connected to said steerable front wheels and extended forwardly of said floor for connection to a towing vehicle.

5,345,896
METHOD AND APPARATUS FOR CIRCULATING SOLID MATERIAL IN A FLUIDIZED BED REACTOR
Timo Hyppanen, Karhula, Finland, assignor to A. Ahlstrom Corporation, Noormarkku, Finland
Filed Apr. 5, 1993, Ser. No. 41,580
Int. Cl.[5] F22B *1/00*
U.S. Cl. 122—4 D **26 Claims**



13. Apparatus for circulating solid material in a fluidized bed reactor, comprising:
a reactor chamber, having side walls defining the interior of the reactor chamber and a grid at the bottom of the reactor chamber;
gas discharge opening adjacent the upper end of the reactor chamber;
a fluidized bed of solid particles in said reactor chamber, the fluidized bed having an internal circulation of solid particles;
a particle chamber disposed in the fluidized bed of solid particles, said particle chamber, having a barrier wall provided with openings preventing solid particles of a size bigger than a predetermined size to flow from the reactor chamber into the particle chamber; and
said particle chamber further comprising a wall provided with at least one opening for recirculating particles from said particle chamber into said reactor chamber.

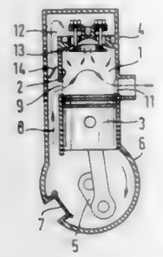
5,345,897
GAS-EXCHANGING PROCESS FOR TWO-STROKE, INTERNAL COMBUSTION ENGINES
Ernst Linder, and Hans Schlembach, both of Muehlacker, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jun. 7, 1993, Ser. No. 71,822
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1992, 4225369
Int. Cl.[5] F02B *75/02*
U.S. Cl. 123—65 A **25 Claims**

1. A gas-exchanging process for two-stroke internal combustion engines, including a combustion chamber (1) which re-

ceives precompressed combustion air and a quantity of fuel, an engine cylinder (2), an engine piston (3), a crank case (6) and a cylinder head (4);

with reverse scavenging in a combustion chamber, in which the engine piston controls inlet and outlet ports provided in the engine cylinder, near bottom dead center (BDC), and in which the combustion air is blown in while precompressed;

supplying and controlling a quantity of fuel directed into the combustion chamber corresponding to the engine load, in an area of a point of ignition; and



directing a second supply of precompressed combustion air into the combustion chamber controlled via an intake valve, likewise in the area of the point of ignition;

along with reverse scavenging as a first scavenging path, this second supply of air serves as a second scavenging path of the gases in the combustion chamber, and additionally produces an ignitable fuel-air mixture in the area of the point of ignition of the combustion chamber;

and controlling the quantity of air of the second supply of air by means of a differential pressure up- and downstream of the intake valve; and

actuating the intake valve by means of said differential pressure.

5,345,898

VALVE OPERATING MECHANISM FOR AN INTERNAL-COMBUSTION ENGINE

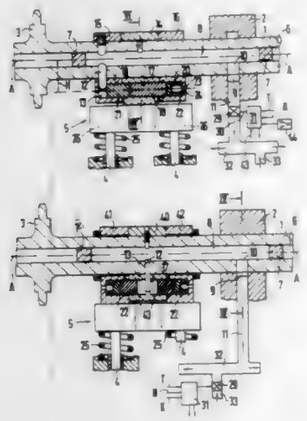
Winfried Krebs, Ludwigsburg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Aug. 27, 1993, Ser. No. 112,328

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1992, 4228796

Int. Cl.[5] F01L *1/34*

U.S. Cl. 123—90.17 **6 Claims**



1. A valve operating mechanism for an internal-combustion engine, comprising at least one cam shaft as well as as least two cams which are arranged on it and have different profiles for the actuating of charge cycle valves, these valves being actuated selectively by one or the other cam, transmission elements arranged between the cam shaft and the charge cycle valves are form-lockingly connectable with one another by means of axially displaceable pistons disposed in the transmission elements wherein the transmission elements are formed by the cams with at least one fixed cam non-rotatably connected with the cam shaft and at least one rotational cam arranged on the cam shaft and rotatable relative to the cam shaft and serving as a shift cam, wherein the at least one shift cam includes a shift cam arranged between two fixed cams wherein the maximal cam lift of the shift cam is larger than that of the fixed cams.

5. A valve operating mechanism for an internal-combustion engine, comprising at least one cam shaft as well as as least two cams which are arranged on it and have different profiles for the actuating of charge cycle valves, these valves being actuated selectively by one or the other cam, transmission elements arranged between the cam shaft and the charge cycle valves are form-lockingly connectable with one another by means of axially displaceable pistons disposed in the transmission elements wherein the transmission elements are formed by the cams with at least one fixed cam non-rotatably connected with the cam shaft and at least one rotational cam arranged on the cam shaft and rotatable relative to the cam shaft and serving as a shift cam, wherein said at least one fixed cam includes a fixed cam arranged directly adjacent to said shift cam on the cam shaft, and wherein a piston is disposed in a hydraulic chamber of the fixed cam and is form-lockingly displaceable by means of oil pressure into a passage bore of the shift cam, wherein another shift cam is arranged on the cam shaft directly adjacent to the fixed cam in such a manner that the fixed cam is situated in the center between the shift cams.

5,345,899

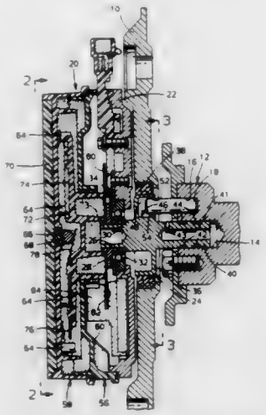
IGNITION DISTRIBUTOR DRIVE

James A. Boyer, and Richard E. Ballentine, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 26, 1993, Ser. No. 112,022

Int. Cl.[5] F02P *7/02*

U.S. Cl. 123—146.5 A **4 Claims**



1. A drive for driving the rotor of an ignition distributor from the camshaft of an internal combustion engine, comprising in combination, an engine camshaft, said camshaft having an axially extending bore, an ignition distributor having a base, said ignition distributor having a coupling that is rotatably supported by said base, said coupling having an axially extending shaft portion that is located in said bore, said coupling having a radially extending slot defined by opposed radially extending side surfaces, a drive pin secured to said camshaft, said pin having a portion located in said slot with said pin engaging said side surfaces of said slot, and a rotor for said distributor driven by said coupling.

5,345,900

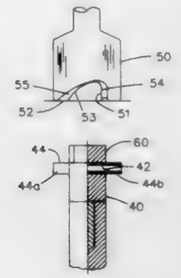
ENGINE STARTER

Lester R. Wisegerber, 38 Brown La., Dayton, Tex. 77535

Filed Feb. 11, 1993, Ser. No. 16,305

Int. Cl.[5] F02N *11/12*

U.S. Cl. 123—179.24 **4 Claims**



1. In a manual pull starting engine having a crankshaft coupled to a pull starting mechanism which has a clutch release upon starting of said engine, an improvement comprising:

a cylindrically shaped extension member on the end of said crankshaft, said extension member extending outwardly of a pulley on said crankshaft, said extension member having projecting transverse pins located diametrically from one another, said extension member being a separate element which is threadedly coupled to said crankshaft at one end and has wrench flats at its other end; and

a socket member having one end sized for sliding reception on said extension member and having diametrically located clutch recesses with shoulders for engaging said pins for rotation of the crankshaft to start said engine and having inclined surfaces for release from said pins upon starting of said engine, said socket member having a shank at its other end for reception in a drill means.

5,345,901

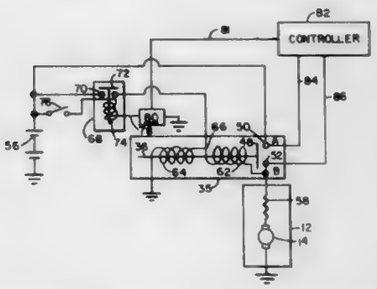
STARTER MOTOR PROTECTION SYSTEM

David R. Siegenthaler, Verona; L. Thomas Lane, Manlius, and John R. Reason, Liverpool, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 26, 1993, Ser. No. 97,143

Int. Cl.[5] F02N *11/10*

U.S. Cl. 123—179.3 **3 Claims**



1. A starter for an internal combustion engine having a ring gear, the starter including:

a starter switch, operable between an open and closed condition, adapted to be electrically connected to an electrical power source;

a pinion adapted to be axially movable into and out of meshing engagement with the ring gear;

a plunger for moving said pinion toward said ring gear and having a movable contact at one end thereof;

first and second stationary contacts both so positioned as to be contacted by said movable contact, said first stationary contact being electrically connected to said electrical power source;

exciting coil means for moving said plunger toward first and second stationary contacts, said exciting coil means comprising a holding coil and an attracting coil, said holding and attracting coils having windings electrically connected in series with one other and having a connection coupled thereto at respective one ends of said holding and attracting coils;

a relay including; (a) a pair of normally open contacts connected in series to said electrical power source and said connection coupling said windings of said holding and attracting coils, and, (b) a relay coil electrically connected in series to said starter switch and the other end of said holding coil, and which is energized when said starter switch is turned on, to thereby close said normally open contacts;

a starter motor, said starter motor being drivingly connected to said pinion;

means for electrically connecting said second stationary contact to said starter motor when said starter switch is closed, whereby, when said first movable contact is moved into contact with said first and second stationary contacts to electrically connect them together, said starter motor will be energized by said electrical power source;

a motor controller comprising:

means for determining the voltage at said first stationary contact;

means for determining the voltage at said second stationary contact;

means for calculating the voltage difference between said first stationary contact and said second stationary contact;

means for comparing said calculated voltage difference to a predetermined reference voltage differential, and, if the calculated voltage differential is not less than or equal to said predetermined reference voltage differential interrupting the power supply to said relay coil.

5,345,902

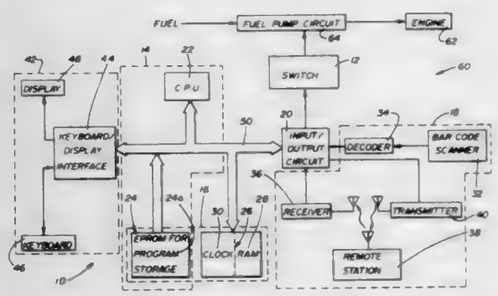
DEVICE FOR CONTROLLING THE FLOW OF FUEL TO AN ENGINE AND METHOD THEREOF

Frederick R. Kalail, Sr., and Harry M. Lapidakis, both of Akron, Ohio, assignors to Fuelproof Systems, Inc., Akron, Ohio

Filed Oct. 16, 1992, Ser. No. 962,263

Int. Cl.[5] F02B *77/00*

U.S. Cl. 123—198 B **6 Claims**



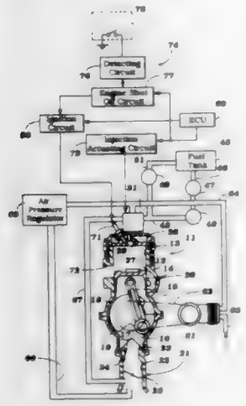
1. A device for controlling the flow of fuel to an engine in a vehicle, comprising:

a) a fuel switch for selectively opening and closing the flow of fuel to the engine;

b) a clock for storing instantaneous time;

c) means for receiving actuation time from a source external to the vehicle; and,
d) processor means for comparing said instantaneous time and said actuation time and selectively actuating said switch means upon a correspondence therebetween.

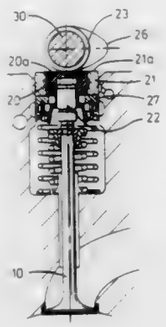
5,345,903
ENGINE STOP CONTROL DEVICE
Hitoshi Motose, and Hidetoshi Ishigami, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Oct. 27, 1993, Ser. No. 144,750
Claims priority, application Japan, Oct. 27, 1992, 4-310826
Int. Cl.[5] F02B *77/00*
U.S. Cl. 123—198 DC **8 Claims**



1. A fuel injected, spark ignited, internal combustion engine having a cylinder, a fuel injector for injecting fuel into said cylinder and having an injection valve operable between an opened position and a closed position, a spark plug for firing a charge in said cylinder, an ignition circuit for firing said spark plug, a kill switch for disabling said ignition circuit for stopping said engine, and control means for precluding the disabling of said ignition circuit when said kill switch is closed until said injection valve is closed.

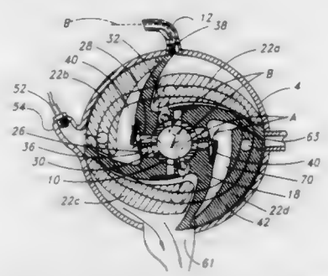
5,345,904
VALVE CONTROL MEANS
Clive Dopson, Norwich, and Jeffrey Allen, Attleborough, both of United Kingdom, assignors to Group Lotus, Norfolk, United Kingdom
Division of Ser. No. 920,389, Aug. 14, 1992, Pat. No. 5,287,830. This application Sep. 29, 1993, Ser. No. 128,527
Claims priority, application United Kingdom, Feb. 16, 1990, 9003603.9; Mar. 29, 1990, 9007022.9
Int. Cl.[5] F01L *1/34;* **F02D** *13/06*
U.S. Cl. 123—198 F **26 Claims**

1. Valve control means for controlling valve means of an internal combustion engine comprising:
cam means comprising a rotatable camshaft having a first cam member and a lobe of circular axial cross-section,
transmitting means for transmitting reciprocating movement to the valve means from said cam means, said transmitting means comprising a first follower member in engagement with said valve means and a second follower member movable relative to said first follower, and
locking means to enable said follower members to be linked so as to move together, wherein
when the follower members are not linked by the locking means the valve means is controlled by the first follower member in engagement with and following the profile of the lobe of circular cross-section and
when the follower members are linked by the locking means the valve means is controlled by the second follower member in engagement with and following the profile of the first cam member and wherein
the second follower member has a bore therethrough and



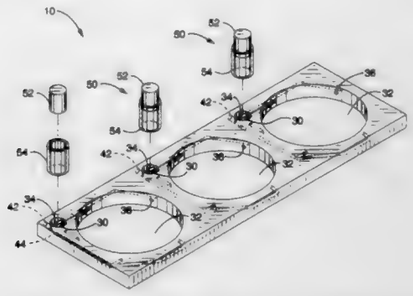
the first follower member is in the form of an inner member located within the bore, said first follower member being movable in the bore relative to the second follower member when the follower members are not linked to move together.

5,345,905
METHOD OF OPERATING A ROTARY INTERNAL COMBUSTION ENGINE
Daniel J. Edwards, P.O. Box 2977, Homer, Ak. 99603
Division of Ser. No. 32,622, Mar. 17, 1993, Pat. No. 5,261,365, which is a continuation-in-part of Ser. No. 888,018, May 26, 1992, abandoned. This application Aug. 3, 1993, Ser. No. 101,404
Int. Cl.[5] F02B *53/02*
U.S. Cl. 123—241 **8 Claims**



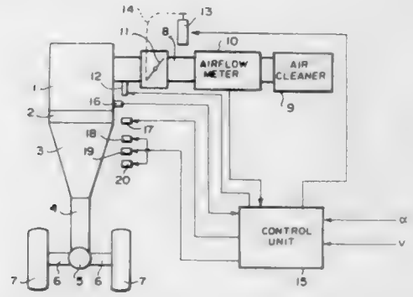
1. A method of operating an internal combustion engine having a piston movable up and down and having compression chambers above and below the piston, comprising the steps of:
cycling the piston into a first upstroke,
filling the compression chamber below the piston with ambient air during the said first upstroke of the piston and simultaneously removing the products of combustion from the chamber above the piston,
cycling the piston into a first downstroke and compressing the air in the chamber below the piston while simultaneously filling the compression chamber above the piston with ambient air and,
bleeding the compressed air away from the chamber beneath the piston,
inserting the said compressed bleed air into the chamber above the piston,
cycling the piston into a second upstroke where the combination of ambient air and bleed compressed air in the chamber above the piston is further compressed and its temperature is raised while simultaneously filling the chamber below the piston with ambient air,
inserting fuel into the chamber above the piston,
detonating the resulting fuel-air mixture, and
cycling the piston into a second downstroke while simultaneously compressing the air in the chamber beneath the piston.

5,345,906
FUEL INJECTION APPARATUS
John R. Luczak, 1203 Lindberg Ave., Pittsburgh, Pa. 15223
Filed Jul. 20, 1993, Ser. No. 95,151
Int. Cl.[5] F02B *3/00*
U.S. Cl. 123—299 **14 Claims**



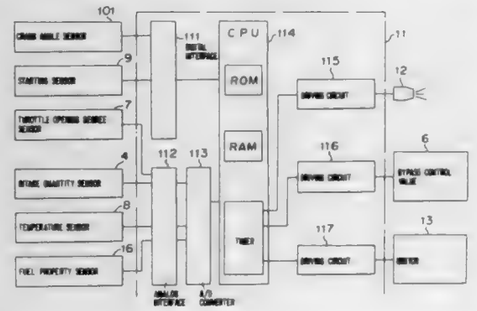
1. An apparatus for uniform injection of material comprising:
(a) a generally planar body member, said body member having first and second sides, said body member including outlet cavity means for dispensing material, said outlet cavity means having a defined boundary, said body member including inlet cavity means for receiving material; and
(b) a plurality of passages, each said passage including an inlet port and an outlet port, each said inlet port opening into said inlet cavity means, each said outlet port opening into said outlet cavity means, said outlet ports disposed around said boundary of said outlet cavity means.

5,345,907
ENGINE CONTROL SYSTEM
Toshihiro Matsuoka, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan
Filed Mar. 12, 1993, Ser. No. 38,337
Claims priority, application Japan, Mar. 17, 1992, 4-059969
Int. Cl.[5] F02D *29/02*
U.S. Cl. 123—399 **5 Claims**



1. An engine control system for a vehicle comprising
a first detecting means which detects the state of driver operation for the engine,
a second detecting means which detects the change in the running state of the vehicle with respect to the state of the driver operation,
a comparator means which compares the change in the state of the driver operation detected by the first detecting means with the change in the running state of the vehicle detected by the second detecting means, and
an engine output control means which controls the output of the engine in response to a driver operation,
wherein said engine output control means increases the change in the engine output for a given amount of driver operation when said comparator means determines that the change in the state of the driver operation is large and the change in the running state of the vehicle is small and reduces the same when said comparator means determines that the change in the state of the driver operation is small and the change in the running state of the vehicle is large.

5,345,908
ELECTRONIC CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE
Yukinobu Nishimura, and Masanobu Uchinami, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 885,819, May 20, 1992, abandoned. This application Aug. 23, 1993, Ser. No. 110,204
Claims priority, application Japan, Jul. 4, 1991, 3-164137
Int. Cl.[5] F02D *43/00*
U.S. Cl. 123—339 **3 Claims**



1. An electronic control device for an internal combustion engine having running condition detecting means for detecting a running state of an engine, which controls at least one of a fuel quantity and an ignition timing of the engine in accordance with the running state, wherein a single fuel is supplied to said internal combustion engine, said electronic control device comprising:
acceleration detecting means for detecting an acceleration state of the engine;
fuel property detecting means for detecting a specific weight of said fuel for characterizing said fuel as one of a heavy fuel and a light fuel based upon an index of refraction of said fuel and a temperature of said fuel; and
correcting means for correcting at least one of the fuel quantity and the ignition timing in accordance with the specific weight of said fuel under the acceleration state.

5,345,909
CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE
Wataru Fukui, and Noriaki Hayashi, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 29, 1993, Ser. No. 83,305
Claims priority, application Japan, Jul. 7, 1992, 4-179809
Int. Cl.[5] F02P *67/077*
U.S. Cl. 123—414 **6 Claims**

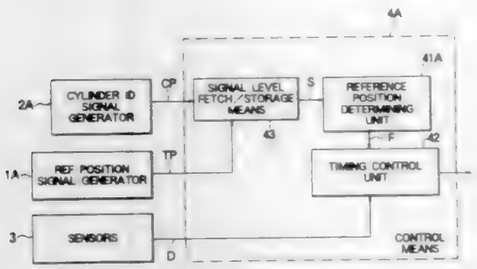
1. An apparatus for controlling operation of an internal combustion engine including a plurality of cylinders, comprising:
reference position signal generating means for generating a reference position signal indicating reference positions for

the individual cylinders of said engine in synchronism with rotation of a crank shaft of said engine;

cylinder identification signal generating means for generating a cylinder identification signal for identifying the engine cylinders in synchronism with rotation of a shaft interlocked to said crank shaft and having a rotation frequency (rpm) corresponding to a half of that of said crank shaft; and

control means for controlling operation of said engine cylinders on the basis of the reference position signal and the cylinder identification signal;

wherein said-reference position signal is comprised of equi-interval rectangular pulses each having a duty cycle of ½ and generated in the number of six during each rotation of said crank shaft, while said cylinder identification signal including different-interval rectangular pulses is generated



a number of times during a single rotation of the interlocked shaft at a given one edge of said equi-interval rectangular pulse such that said different-interval rectangular pulse signal includes series each of four signal levels, said series differing from one another; and

wherein said control means includes:

signal level data storage means for storing the signal levels of said cylinder identification signal at every one edge of the equi-interval rectangular pulses of said cylinder reference position signals;

reference position decision means for determining the reference positions for said individual cylinders on the basis of four successive values of said signal levels for thereby generating a decision signal; and

timing control means for controlling operation of said individual cylinders on the basis of said decision signal.

5,345,910

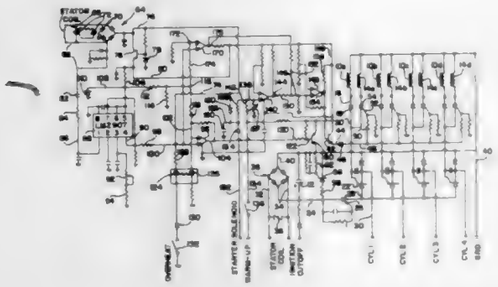
ENGINE IGNITION SYSTEM HAVING IMPROVED WARMUP ADVANCED TIMING CONTROL

Gregry M. Remmers, Ingleside, Ill.; Mark J. Skrzypchak, Kenosha, Wis., and David L. Enlow, Wadsworth, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 19, 1993, Ser. No. 49,155

Int. Cl.[5] F02P *5/14*

U.S. Cl. 123—424 **12 Claims**



1. An ignition system for an internal combustion engine of the type which has an ignition capacitor means, a means to charge said ignition capacitor means and an ignition capacitor discharge means connected to discharge said ignition capacitor means in response to receiving a trigger pulse applied thereto, the system comprising:

trigger pulse generating means for producing trigger pulses in synchronism with the engine, said trigger pulse generating means being adapted to provide a first timing characteristic for discharging said ignition capacitor means and a second timing characteristic that is advanced a predetermined time relative to said first timing characteristic, said trigger pulse generating means providing said second timing characteristic in response to an advance signal being applied thereto;

means for selectively generating an advance signal for application to said trigger pulse generating means, said advance signal generating means producing said advance signal only when enabled;

means for enabling said advance signal generating means for a variable time period after startup of the engine, said enabling means including a timing means for controlling the variable time period, said time period being within the range of a predetermined minimum time period and a longer time period that is a function of the temperature of the engine, said predetermined minimum time period occurring in response to immediate receipt by said timing means of a signal that is indicative of the sensed engine temperature being at a first predetermined level;

said longer time period occurring in response to the receipt by said timing means of one of:

said signal that is indicative of the sensed engine temperature reaching said first predetermined level; and,

a signal that is indicative of an electrical resistance value that is a function of a second temperature level; whichever occurs first.

5,345,911

AIR FUEL RATIO CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

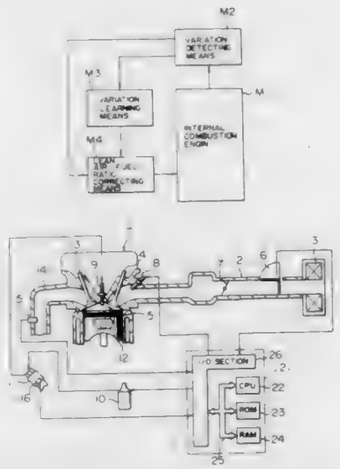
Hisashi Kadowaki, and Takashi Arimura, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 5, 1993, Ser. No. 131,626

Claims priority, application Japan, Oct. 6, 1992, 4-267531

Int. Cl.[5] F02D *41/04*

U.S. Cl. 123—436 **4 Claims**



1. An air-fuel ratio control apparatus for an internal combustion engine for controlling the air-fuel ratio for said internal combustion in accordance with the operating region of said internal combustion engine within a range of the air-fuel ratio from a value having substantially no risk of misfire to a value on the lean side of the stoichiometric air-fuel ratio and close to a misfire limit, said apparatus comprising:

variation detecting means for detecting variations periodically generated in synchronization with the rotation of said internal combustion engine;

variation learning means for learning the latest one of variations detected by said variation detecting means when the air-fuel ratio for said internal combustion engine is controlled at a value having substantially no risk of misfire; and

lean air-fuel ratio correcting means for correcting the air-fuel ratio for said internal combustion engine on the basis of the current variation detected by said variation detecting means and the variation which has been learned by said variation learning means when the air-fuel ratio for said internal combustion engine is controlled at a value close to said misfire limit.

5,345,912

METHOD AND DEVICE FOR CONTROLLING A CARBURETOR

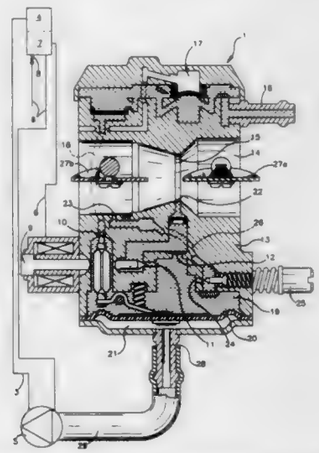
Ulf Svensson, Trollhättan, and Hans Ström, Kode, both of Sweden, assignors to Aktiebolaget Electrolux, Sweden

Filed Feb. 19, 1993, Ser. No. 20,153

Claims priority, application Sweden, Feb. 20, 1992, 9200523-0

Int. Cl.[5] F02M *7/00*

U.S. Cl. 123—438 **8 Claims**



1. A method of controlling a carburetor of an internal combustion engine to automatically adjust an A/F ratio thereof to a preferred value, said method comprising the steps of:

(a) adjusting said A/F ratio to provide a modified relation of said A/F ratio to a speed of rotation of said engine with regard to a predetermined relation of said A/F ratio to said speed of rotation, said A/F ratio being generally continuously adjusted by an adjusting means, said adjusting means being actuated by a first control unit in response to a signal output of a first control circuit;

(b) periodically changing said A/F ratio to a different level for a short period of time, said A/F ratio being changed by said adjusting means, said adjusting means being actuated by a second control unit in response to a signal output of a second control circuit, wherein said second control unit receives a signal corresponding to said speed of rotation;

(c) measuring a change in said speed of rotation when said A/F ratio is changed to said different level;

(d) determining whether said A/F ratio is a leaner mixture or a richer mixture compared to said preferred value;

(e) adjusting said A/F ratio a predetermined step toward said preferred value by said adjusting means, said adjusting means being actuated by said second control unit in response to a signal output of said second control circuit;

(f) repeating steps (b) through (e) until said A/F ratio is substantially equal to said preferred value; and

(g) repeating steps (b) through (f) after a predetermined period of time.

5,345,913

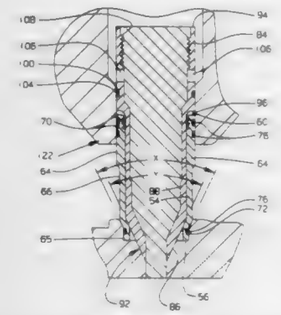
INJECTOR ASSEMBLY

Barry L. Belshaw, Washburn; James K. Berry; Michael A. Marz, both of Peoria, and John E. Tisch, Edelstein, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Nov. 24, 1993, Ser. No. 157,786

Int. Cl.[5] F02M *61/14*

U.S. Cl. 123—470 **18 Claims**



1. An injector assembly adapted for use in an internal combustion engine including a cylinder block defining a bore having a cylinder liner therein defining a cylinder bore, a cylinder head attached to the cylinder block in closing relation to the cylinder bore and having upper and lower walls partially defining a cooling liquid jacket portion, a piston reciprocally mounted in the cylinder bore and defining with the cylinder liner a variable volume combustion chamber, a pair of axially aligned openings through the upper and lower walls with the opening through the lower wall communicating with the combustion chamber and including a bore, an annular shoulder generally facing the cooling liquid jacket portion, and a frustoconical portion converging outwardly from the annular shoulder towards the combustion chamber, comprising:

a non-deformable injector sleeve having a lower annular surface seating against the annular shoulder when in use and an upper annular surface opposite the lower annular surface, the injector sleeve when in use disposed at least partially in the upper and the lower wall openings and extending through the cooling liquid jacket portion;

an injector cone including a lower portion extending through the injector sleeve and an upper portion having a top surface and a bottom surface adjacent the upper annular surface of the injector sleeve; and

a fuel injector extending through the injector cone and adapted for connection with the cylinder head when in use and including a connecting portion connected to the upper portion of the injector cone.

5,345,914

ELECTRONIC FUEL INJECTION CONTROL

Dah-Lain Tang, Canton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 16, 1993, Ser. No. 106,664

Int. Cl.[5] F02D *41/10, 41/12*

U.S. Cl. 123—478 **12 Claims**

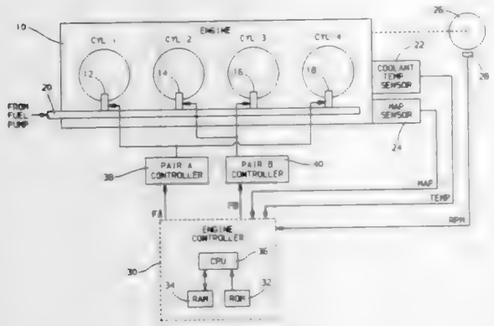
1. A method of controlling a magnitude of a fuel command periodically issued to control at least one pair of fuel injectors in an internal combustion engine, wherein a base fueling re-

quirement is determined each time the fuel command is to be issued to the pair of injectors, comprising the steps of:

sensing an engine operating level;

determining a present base fuel requirement over an engine cycle in accord with the sensed engine operating level;

developing a fueling performance model describing the manner in which past base fuel requirements have been



provided for over a predetermined control period, as a predetermined function of base fuel requirements and fuel commands issued over the control period;

determining a present fuel command in accord with the developed model; and

issuing the present fuel command to control at least the one pair of fuel injectors.

5,345,915

CONTROL SYSTEM FOR THE ELECTRIC FUEL PUMP OF AN INTERNAL COMBUSTION ENGINE

Axel Schmitz-Huebsch, Remseck; Ulrich Koelle, Schwieberdingen, and Dietmar Flaetgen, Vaihingen/Enz, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

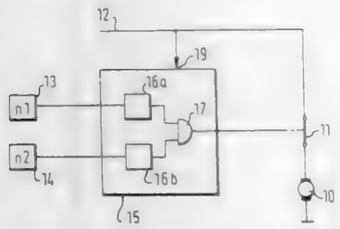
PCT No. PCT/DE92/00740, § 371 Date Apr. 22, 1993, § 102(e) Date Apr. 22, 1993, PCT Pub. No. WO93/07376, PCT Pub. Date Apr. 15, 1993

PCT Filed Apr. 9, 1992, Ser. No. 39,356

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1991, 4133558

Int. Cl.[5] F02M *37/04;* **F02B** *77/00*

U.S. Cl. 123—497 **4 Claims**



1. Control system for an electrically driven fuel pump of an internal combustion engine, said control system comprising first means for sensing a speed of a shaft of said engine, second means for sensing another speed, and logic means for generating a shut off signal for said fuel pump, said logic means being connected to both of said sensing means and having comparison means for generating said shut off signal so as to shut off said fuel pump only if both of said speeds sensed by both said first and second means deviate from a predetermined speed range but not to shut off said fuel pump if only one of said speeds sensed by only one of said means deviates from a predetermined speed range.

5,345,916

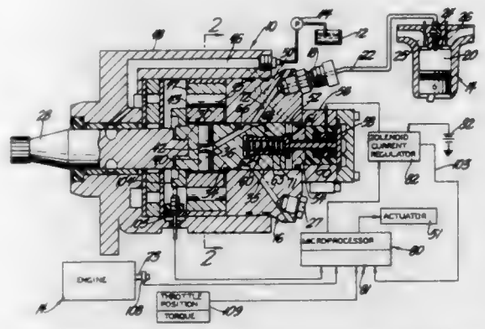
CONTROLLED FUEL INJECTION RATE FOR OPTIMIZING DIESEL ENGINE OPERATION

Richard W. Amann, Bloomfield Hills, and Sharon W. Lum, Farmington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1993, Ser. No. 22,204

Int. Cl.[5] F02M *37/04*

U.S. Cl. 123—506 **5 Claims**



1. A method of fully shaping and and varying the full shapes of pressurized pulse waves of fuel directly injected into the combustion chambers of an internal combustion engine to optimize engine performance over a range of engine speeds and loads employing a fuel distribution pump having plunger means which operate across a fuel control cam with intake ramp means and variable rate pumping ramp means and having spill valve means controlled by a selectively energizable solenoid to effect the intake of fuel into the pump and to subsequently effect the pumping of predetermined quantities of said fuel as predetermined and fully shaped pulse waves into said combustion chambers whose shades are varied to match with different engine speeds and loads for optimizing engine performance comprising the steps of:

a. intaking fuel into said pump while said plunger means operates on the intake ramp means of said cam means,

b. de-energizing the solenoid and prespilling the fuel as said plunger means leaves said intake ramp means and operates on the variable rate pumping ramp means of said cam means,

c. energizing the solenoid when said plunger means reaches a predetermined angle on said variable rate pumping ramp means to terminate the prespilling of fuel so that said plunger means initiates the start of shaping of a shaped pulse wave of fuel pumped at a predetermined rate,

d. de-energizing the solenoid when said plunger means reaches a subsequent predetermined angle on said variable rate pumping ramp means thereby spilling said fuel at a rate which shapes the end of said pulse wave resulting in a wave profile of a predetermined shape while effecting delivery of a predetermined quantity of fuel into said combustion chamber.

5,345,917

EVAPORATIVE FUEL-PROCESSING SYSTEM FOR INTERNAL COMBUSTION ENGINES FOR VEHICLES

Hiroshi Maruyama, and Masayoshi Yamanaka, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

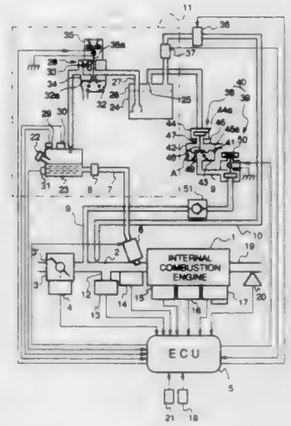
Filed Jul. 2, 1993, Ser. No. 85,168

Claims priority, application Japan, Jul. 24, 1992, 4-218629

Int. Cl.[5] F02M *37/04*

U.S. Cl. 123—520 **8 Claims**

1. In an evaporative fuel-processing system for an internal combustion engine in a vehicle and having an intake system, and a fuel tank, said evaporative fuel-processing system including an evaporative emission control system comprising a canister having an air inlet port communicating with the atmosphere, an evaporative fuel-guiding passage extending between said canister and said fuel tank, a purging passage extending between said canister and said intake system, a purge control valve arranged across said purging passage for controlling opening thereof, a drain shut valve arranged across said inlet port of said canister, control means for controlling operations of said purge control valve and said drain shut valve, and abnormality detecting means for detecting abnormality in said evaporative emission control system and said fuel tank while



operations of said purge control valve and said drain shut valve are controlled by said control means,

the improvement comprising,

evaporative fuel amount detecting means for detecting an amount of evaporative fuel generated within said fuel tank; and

abnormality detection inhibiting means for inhibiting abnormality detection by said abnormality detecting means when the amount of evaporative fuel generated within said fuel tank detected by said evaporative fuel amount detecting means exceeds a predetermined value.

5,345,918

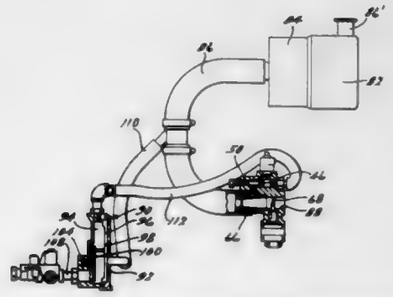
FUEL SYSTEM AND CONSTANT GAS PRESSURE GOVERNOR FOR A SINGLE-CYLINDER, FOUR-STROKE CYCLE ENGINE

John E. Lambert, Dublin, Ohio, assignor to Gas Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 911,960, Jul. 10, 1992, abandoned. This application Mar. 19, 1993, Ser. No. 36,535

Int. Cl.[5] F02M *21/04*

U.S. Cl. 123—527 **6 Claims**



1. A gas fuel carburetor assembly for an internal combustion

gas engine with one or two cylinders comprising an air induction passage and a fuel supply passage;

a gas pressure governor means for regulating the supply pressure for said fuel supply passage;

said governor having a gas chamber and an air reference pressure chamber, said fuel supply passage communicating with said gas chamber;

a venturi member in said induction passage, gas ports in said venturi member communicating with a throat portion of said venturi member, a calibrated gas passage means having a minimal flow restriction for connecting said gas chamber with said gas ports;

a gas valve member registering with said fuel supply passage, spring means for normally urging said gas valve member to a gas supply passage means closing position;

a flexible diaphragm separating said reference pressure chamber and said gas chamber;

a gas valve operator element connecting said valve member and said diaphragm; and

a balance line connecting said reference pressure chamber and said induction passage on the upstream side of said venturi member whereby said induction passage and said reference pressure chamber are in close, unrestricted flow relationship whereby transient pressure changes in said induction passage develop an immediate response by said governor to maintain a desired target air/fuel ratio for a wide range of engine speeds and loads, said balance line having a diameter and length relationship such that $d^2/L \geqq 0.04$ inches where d=balance line internal diameter and L=length from said induction passage to said reference air pressure chamber.

5,345,919

FUEL INJECTION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

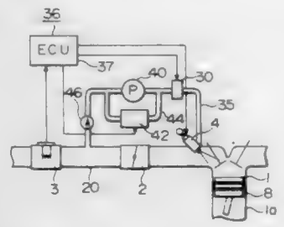
Masanobu Uchinami, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1993, Ser. No. 103,234

Claims priority, application Japan, Aug. 11, 1992, 4-214261

Int. Cl.[5] F02M *23/04*

U.S. Cl. 123—533 **4 Claims**



1. A fuel injection apparatus for an internal combustion engine comprising:

a fuel injector for supplying a fuel to the internal combustion engine;

an air passage having one end connected to said fuel injector for atomizing the fuel injected from said fuel injector and the other end connected to an air source;

an air controlling valve disposed in said air passage for controlling a quantity of air flowing therethrough;

a control unit connected to said air controlling valve for controlling said air controlling valve in accordance with an operating condition of the internal combustion engine;

a pressure pump connected to said air passage for pressurizing the air within said air passage; and

a check valve disposed on an up-stream side of said pressure pump of said air passage for preventing the pressurized air supplied by said pressure pump from flowing backward.

5,345,920

SUPERCHARGING PRESSURE CONTROL SYSTEM FOR SUPERCHARGED INTERNAL COMBUSTION ENGINES

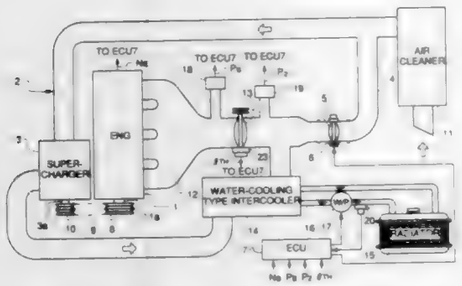
Takuya Sugino; Masahiro Sakanushi; Kenichiro Kinoshita, and Yasuyuki Sando, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 961,097

Claims priority, application Japan, Oct. 16, 1991, 3-296344; Nov. 5, 1991, 3-317542

Int. Cl.[5] F02B *33/00*

U.S. Cl. 123—564 5 Claims



1. In a supercharging pressure control system for a supercharged internal combustion engine including an intake passage for guiding intake air to said engine, and a supercharger arranged in said intake passage for supercharging said engine with said intake air, said supercharging pressure control system comprising supercharging pressure-detecting means arranged in said intake passage at a location downstream of said supercharger for detecting an actual value of supercharging pressure of said intake air located downstream of said supercharger and caused by said supercharger, a bypass passage connected to said intake passage such that said bypass passage bypasses said supercharger, a supercharging pressure control valve arranged in said bypass passage for controlling said supercharging pressure of said intake air, driving means connected to said supercharging pressure control valve for driving said supercharging pressure control valve, and control means connected to said driving means for controlling said driving means,

the improvement wherein said control means includes:

desired supercharging pressure value-setting means for setting a desired value of said supercharging pressure of said intake air;

valve opening-determining means for determining an actual value of degree of opening of said supercharging pressure control valve;

desired opening value-setting means for setting a desired value of said degree of opening of said supercharging pressure control valve depending on operating conditions of said engine; and

control mode-selecting means for selecting a feedback control mode on the one hand in which said degree of opening of said supercharging pressure control valve is controlled so as to make said actual value of said supercharging pressure of said intake air detected by said supercharging pressure-detecting means equal to said desired value of said supercharging pressure of said intake air set by said desired supercharging pressure value-setting means, when said actual value of said supercharging pressure of said intake air detected by said supercharging pressure-detecting means has reached said desired value of said supercharging pressure of said intake air set by said desired supercharging pressure value-setting means, and for selecting an open-loop control mode on the other hand in which said degree of opening of said supercharging pressure control valve is controlled to said desired value of said degree of opening of said supercharging pressure control valve when said actual value of said degree of opening of said supercharging pressure control valve determined by said valve opening-determining means during said feedback control becomes smaller than said desired value of said degree of opening of said supercharging pressure control valve.

5,345,921

ENGINE AIR-FUEL RATIO CONTROLLER

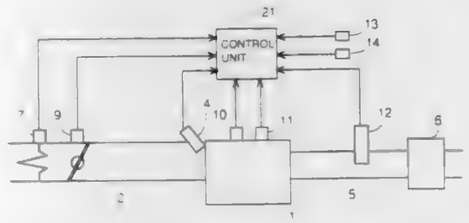
Hiroshi Iwano, Yokosuka, and Hatsuo Nagaishi, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Sep. 30, 1993, Ser. No. 128,964

Claims priority, application Japan, Oct. 2, 1992, 4-265064

Int. Cl.[5] F02D *41/14*

U.S. Cl. 123—686 5 Claims



1. An air-fuel ratio controller for an engine having a combustion chamber, an intake pipe providing air to said combustion chamber, means for supplying fuel to said combustion chamber, an exhaust pipe expelling a burnt gas in said combustion chamber, means for measuring a volume of the air provided by said intake pipe, means for setting a fuel supply amount of said supplying means in proportion with said measured air volume, a three-way catalytic converter provided in said exhaust pipe, an oxygen sensor detecting whether or not the ratio of the air and fuel in said combustion chamber is rich or lean with respect to a theoretical value, means for determining from said detection whether said air-fuel ratio has changed over to lean or rich, means for computing a correction amount based on said change-over state, said amount being a step fraction during said change-over and an integral fraction smaller than said step fraction at times other than during said change-over, and means for correcting said fuel supply amount by said correction amount, said controller comprising:

means for detecting engine start-up,

means for measuring the time elapsed from the engine start-up,

means for detecting engine temperature during the engine start-up,

means for setting a warm-up correction amount according to said engine temperature during the start-up,

means for reducing said warm-up correction amount according to the time elapsed after start-up, and

means for adding said reduced amount to said step fraction.

5,345,922

CATAPULT DEVICE

Peter P. Ott, 237 Canyon Acres Dr., Laguna Beach, Calif. 92651

Filed Jan. 4, 1994, Ser. No. 177,233

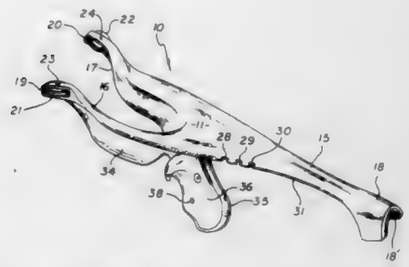
Int. Cl.[5] F41B *7/00*

U.S. Cl. 124—20.1 10 Claims

1. In a portable catapult device including a projectile holding member, two elongated laterally spaced elastomeric members secured to opposite ends of said holding member, a housing having spaced elongated sides and a pair of spaced arms extending outwardly from a main body portion, said free ends of said elastomeric members being attached to opposite sides of said holding member, said main body portion having an integral downwardly extending pistol-type handle, the improvement which comprises:

a pair of pulleys rotatably mounted on the extreme forwardly extending ends of said arms, said elastomeric members extending about respective ones of said arms; and

a plurality of spaced slotted holes provided on each side of said main body portion, a first one of said spaced slotted holes on one side of said main body portion being aligned with a first one of said spaced slotted holes on the other side of said main body portion, and at least a second one of said spaced slotted holes on one side of said main body portion being aligned with a second one of said spaced slotted holes on the other side of said main body portion, one of said free ends of said elastomeric member being secured in one of said aligned slotted holes on one side of said main body portion and the other of said free ends of said elastomeric members being secured in one of said aligned slotted holes on the other side of said main body portion.



5,345,923

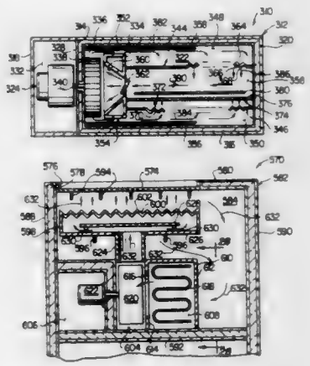
COMMERCIAL HOT AIR IMPINGEMENT COOKING APPARATUS

Clement J. Luebke, Burlington, Vt.; Gerald W. Sank, Pasadena, Md., and Frank A. Slade, Mountain Top, Pa., assignors to Welbilt Corporation, New Hyde Park, N.Y.

Division of Ser. No. 757,236, Sep. 10, 1991, Pat. No. 5,172,682, which is a division of Ser. No. 593,246, Oct. 5, 1990, Pat. No. 5,050,578, which is a division of Ser. No. 279,094, Dec. 2, 1988, Pat. No. 4,972,824. This application Dec. 21, 1992, Ser. No. 994,123

Int. Cl.[5] A21B *1/00*

U.S. Cl. 126—21 A 21 Claims



1. A countertop heated air impingement oven comprising:

a housing;

a cooking chamber with said housing;

a heat conductive food support member horizontally supported within said cooking chamber;

upper plenum means, positioned above said plate member and defining an upper boundary of said cooking chamber, for receiving a supply of heated, pressurized air and converting the received air into a spaced series of downwardly directed, relatively high velocity air jets which laterally diffuse and at least partially overlap prior to striking and evenly blanketing at least a portion of the upper side surface of said food support member in a manner transferring air heat thereto at an accelerated rate;

lower plenum means, positioned below said plate member and defining a lower boundary of said cooking chamber, for receiving a supply of heated, pressurized air and converting the received air into a spaced series of upwardly directed, relatively high velocity air jets which laterally diffuse and at least partially overlap prior to striking and evenly blanketing the lower side surface of said food support member in a manner transferring air heat thereto at an accelerated rate;

a vertically extending baffle structure positioned in said housing and defining on one side thereof a side boundary of said cooking chamber;

a fan plenum positioned on the opposite side of said baffle structure within said housing, said fan plenum communicating with said upper and lower plenum means through supply passages positioned above and below said baffle structure, and communicating with said cooking chamber through a central opening extending horizontally through said baffle structure;

a fan impeller positioned in said fan plenum and drivable to create within said housing a recirculating flow of air which sequentially flows from said fan impeller through said supply passages into said upper and lower plenum means, through said upper and lower plenum means into said cooking chamber in the form of said impingement air jets, and from said cooking chamber through said central baffle structure opening into said fan impeller; and

heating means for heating said recirculating flow of air to a food cooking temperature.

5,345,924

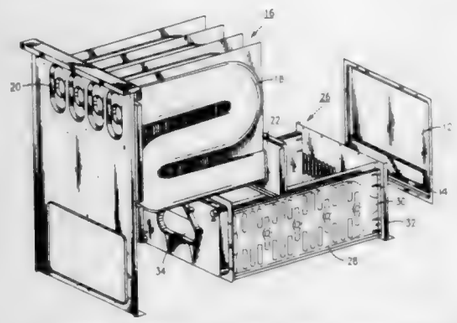
COLD SPOT BAFFLE FOR COUPLING BOX

Larry D. Rieke, Zionsville, and Eric A. Harvey, Plainfield, both of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 2, 1993, Ser. No. 87,208

Int. Cl.[5] F24H *3/02*

U.S. Cl. 126—110 R 5 Claims



1. In a furnace having a primary heat exchanger with a discharge side and a condensing heat exchanger with an inlet side, the improvement comprising:

coupling means having surfaces for fluidly connecting the discharge side of the primary heat exchanger to the inlet side of the condensing heat exchanger so that flue gas produced by operation of the furnace is directed between the heat exchangers, said coupling means having an isolated surface, near said condensing heat exchanger inlet side, which is susceptible to the formation of cold spots; and

baffle means positioned within said coupling means for directing flue gas passing therethrough over said surfaces to maintain temperature equilibrium within said coupling means whereby condensation is prevented from forming therein;

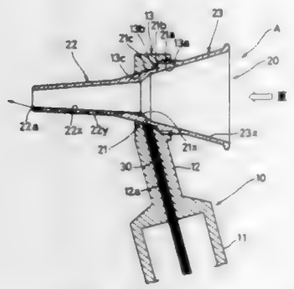
said baffle means being an elongated member and including:
a lower edge portion having a plurality of openings formed therein so that flue gas exiting said discharge ports passes through said plurality of openings and over said isolated surface prior to entering said inlet ports of the condensing heat exchanger.

5,345,925
SELF-ADVANCING ENDOSCOPE
Jimmie B. Allred, III; Peter Bettis, both of Skaneateles, and Karl Decerce, Liverpool, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.
Filed Mar. 26, 1993, Ser. No. 37,937
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **15 Claims**



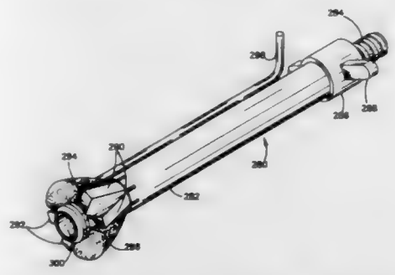
1. A self-advancing intracavity viewing instrument including:
an elongated insertion tube having a longitudinal axis, and;
a propulsion unit connected to said insertion tube comprising: at least three axially aligned washers disposed on said insertion tube and being independently slidable thereon, said washers projecting radially beyond said insertion tube whereby said washers can contact the walls of a passageway; and
means associated with said washers for imparting nonuniform reciprocating axial motion to said washers such that at any point in time more washers are moving in one direction than in an opposite direction;
whereby said insertion tube is propelled along a passageway when said washers are in contact with the walls of a passageway and are in reciprocating axial motion.

5,345,926
MEDICAL OBSERVATION INSTRUMENT
Toshio Chikama, Tokyo, Japan, assignor to Kabushiki Kaisha Machida Seisakusho, Tokyo, Japan
Filed Jan. 29, 1993, Ser. No. 10,990
Claims priority, application Japan, Feb. 10, 1992, 4-057344
Int. Cl.[5] A61B *1/22*
U.S. Cl. 128—9 **9 Claims**



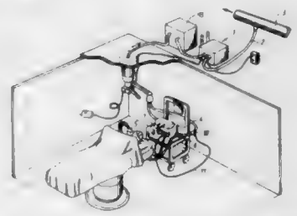
1. A medical observation instrument, said instrument comprising:
(a) a body including a grip portion, a support portion disposed at a distal end of said grip portion, said support portion having a circular arcuate portion, a receiving hole formed in a portion of an inner peripheral surface of said circular arcuate portion corresponding to said grip portion, and tapered support surface, said tapered support surfaces comprising a steeply tapered support surface and a gently tapered support surface;
(b) an observation sleeve removably attached to said body and extending in a direction intersecting a longitudinal direction of said grip portion of said body, said observation sleeve being made of a transparent material, said observation sleeve including a mount portion having a circular section received in and removably attached to said support portion of said body, and a distal end portion having a circular section that extends forward from said mount portion, said mount portion having a tapered surface serving as a first reflecting surface at an inner peripheral surface of said mount portion, said distal end portion having tapered surfaces serving as second and third reflecting surfaces, respectively, at inner and outer peripheral surfaces of said distal end portion, a taper angle of said first reflecting surface being greater than those of said second and third reflecting surfaces; and
(c) light emission means for supplying an illumination light to said observation sleeve, said light emission means received in said receiving hole of said body and facing an outer peripheral surface of said mount portion of said observation sleeve, said illumination light from said light emission means being emitted so that said illumination light is incident on said outer peripheral surface of said mount portion of said observation sleeve, being reflected by said first reflecting surface of said mount portion toward said distal end of said observation sleeve, passing through a peripheral wall of said distal end portion while being reflected by said second and third reflecting surfaces of said distal end portion, and then being outputted forward from a front end face of said observation sleeve.

5,345,927
ARTHROSCOPIC RETRACTORS
Peter M. Bonutti, 1303 W. Evergreen Plz., Effingham, Ill. 62401
Division of Ser. No. 631,740, Dec. 18, 1990, Pat. No. 5,197,971, which is a continuation-in-part of Ser. No. 609,341, Nov. 5, 1990, abandoned, and Ser. No. 487,645, Mar. 2, 1990. This application Mar. 11, 1993, Ser. No. 29,695
Int. Cl.[5] A61M *29/02*
U.S. Cl. 128—20 **13 Claims**



1. A retractor for moving body tissue to facilitate arthroscopic surgery and removal thereafter without significantly damaging the moved tissue, said retractor comprising a distal end portion, a proximal end portion and an intermediate portion interconnecting said distal and proximal end portions, said distal end portion including an array of arms which is expandable from a retracted condition in which said array of arms is relatively small and can be inserted into a relatively small space in body tissue, each of said arms of said array of arms having surface means for applying force to move body tissue to expand the relatively small space upon expansion of said array of arms from the retracted condition to the extended condition, first and second bladder means disposed at spaced apart locations between arms of said array of arms, said first and second bladder means each having chambers for holding fluid under pressure, and conduit means for conducting fluid pressure to inflate said first and second bladder means, said first and second bladder means having surface means for applying force to move body tissue to expand the relatively small space upon inflation of said first and second bladder means, said first bladder means being separated from said second bladder means by a plurality of arms in said array of arms when said first and second bladder means are inflated and said array of arms is in the extended condition.

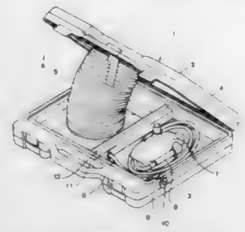
5,345,928
SYSTEM ARRANGEMENT FOR THE EVACUATION OF ANAESTHESIA OR ANALGESIA GAS
Allan Lindkvist, Umeå , Sweden, assignor to Medicvent AB, Umeå, Sweden and Berner International GmbH, Elmshorn, Fed. Rep. of Germany
PCT No. PCT/SE91/00082, § 371 Date Aug. 6, 1992, § 102(e) Date Aug. 6, 1992, PCT Pub. No. WO91/12043, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 6, 1991, Ser. No. 910,035
Claims priority, application Sweden, Feb. 7, 1990, 9000445
Int. Cl.[5] A61M *15/00*
U.S. Cl. 128—203.12 **19 Claims**



1. A system for collecting and removing anesthesia from an anesthesia device in operation theaters comprising:
an anesthesia gas source;
a vacuum source;
a mask device adapted to be applied to the face of a patient and having collecting means for collecting and removing anesthesia gas leaking out and escaping during operation of said system;
at least one supply and removing means communicating said anesthesia gas source and air to said mask device for supplying a mixture of said anesthesia gas and air to said patient and for removing anesthesia gas and air mixture exhaled by said patient;
a vacuum line connected between said vacuum source and said collecting means on said mask device for conducting said anesthesia gas collected by said collecting means to said vacuum source;
a T-shaped joint in said vacuum line having two aligned openings connected to said vacuum line so that a flow path is produced between said aligned openings;
a third opening in said T-shaped joint;
a branch line connecting said third opening to said at least one supply and removing means for conducting therefrom exhaled gas-air mixture to said T-shaped joint and said vacuum source; and
ejector means in said third opening of said T-shaped joint for producing a vacuum in said branch line differing from said vacuum in said vacuum line.

5,345,929
PUMPING DEVICE
Lars-Erik Jansson, Vretvägen 4A, 80426 Gävle; Hans-Ake Stööp, Rotvaltan 19, 80431 Gävle, and Sven E. U. Stattin, Alpgatan 38, 35241 Växjó, all of Sweden
PCT No. PCT/SE91/00417, § 371 Date Dec. 15, 1992, § 102(e) Date Dec. 15, 1992, PCT Pub. No. WO91/19525, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 11, 1991, Ser. No. 960,462
Claims priority, application Sweden, Jun. 11, 1990, 9002073
Int. Cl.[5] A62B *7/00*
U.S. Cl. 128—205.13 **6 Claims**

1. A pumping apparatus of the bellows type, which is adapted for artificial respiration of a distressed person temporarily unable to breathe on their own, comprising:
a substantially rigid dual-purpose pumping/carrying case having a bottom and a lid pivotally connected to said bottom so as to define a carrying space between said lid and said bottom;

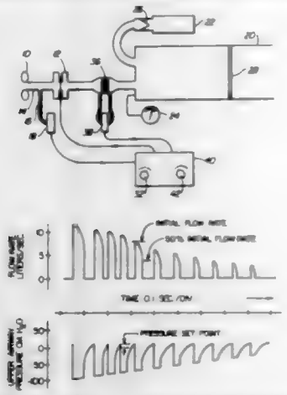


a bellows housed substantially within said case having a folded wall enclosing a bellows space and having two ends; one of said ends being fastened to said lid and the other of said ends being fastened to said bottom so as to establish a variable volume within said bellows space;
whereby said bellows space is expanded to draw air thereinto by pivoting said lid and said bottom away from each other in the direction of opening said case and said bellows space is compressed to force air contained therein out by pivoting said lid and said bottom toward each other in the direction of closing the case; and
said carrying space of said case being substantially greater in volume than said bellows space when the latter is fully compressed and said case is closed, such that useful carrying space remains available for carrying items in said case in addition to said bellows.

5,345,930
METHOD AND APPARATUS FOR ASSISTING EXPULSIONAL MOVEMENT OF PULMONARY SECRETIONS VIA SUPRAMAXIMAL FLOWS
Pierre Cardinal, 42 Beausoleil, Gatineau, Quebec, Canada J8T 7H5; William E. Carscallen, 78 Topley Crescent, Ottawa, Ontario, Canada K1G 4M6, and Robert Ireland, P.O. Box 356, Almonte, Ontario, Canada K0A 1A0
Filed Feb. 10, 1992, Ser. No. 832,895
Int. Cl.[5] A62B *9/02, 7/00;* **A61M** *16/00;* **F16K** *31/02*
U.S. Cl. 128—205.24 **9 Claims**

1. An apparatus for assisting the movement of pulmonary secretions towards the outlet of a subject's respiratory tract by inducing supramaximal flows in a subject's respiratory tract during the subject's exhalation, the apparatus comprising means for moving the secretions toward the outlet of the subject's respiratory tract, said means including:
a) a valve having an opening time to a fully opened condition of not more than 10 milliseconds against a unidirectional expiratory flow of the subject, the valve having an inlet and an outlet, the inlet being adapted to be connected to the outlet of the respiratory tract of the subject;
b) pressure sensing means for generating a first signal indicative of a positive pressure in the upper part of the respiratory tract;
c) means for generating a second signal corresponding to a substantial collapse or near-collapse of the respiratory tract;
d) valve opening control means including means for establishing a predetermined pressure level and operative to open the valve in response to said first signal from said pressure sensing means indicating that the sensed pressure reaches or exceeds said predetermined level; and
e) valve closing control means operative to close the valve in response to said second signal corresponding to a substantial collapse or near-collapse of the respiratory

tract, said opening of said valve inducing a cycle of events in the respiratory tract including a supramaximal expiratory flow and a resulting near-collapse of said tract followed by a closing of said valve, said cycle having a duration considerably shorter than an exhalation time of the subject, said valve opening and valve closing control



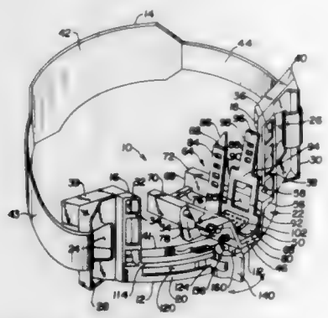
means being operative, synchronously with said cycle, to repetitively open and close said valve a plurality of times during a single exhalation of the subject, said repetitive opening and closing of said valve thus creating a series of said supramaximal flows which is effective to move secretions towards the outlet of the subject's respiratory tract.

5,345,931

ENDOTRACHEAL TUBE HOLDER

Anthony J. Battaglia, Jr., Pittsburgh, Pa., assignor to Marc J. Schnedierman, Caraopolis, Pa.

Filed Sep. 9, 1993, Ser. No. 119,355
Int. Cl.[5] A61M *25/02, 16/00*
U.S. Cl. 128—207.17 **17 Claims**



1. An endotracheal tube holder comprising:

a) a faceplate configured to be positioned against a patient's face and adjacent the patient's mouth, said faceplate including a guide track portion having an elongated guide track therein, with said guide track portion configured to be positioned beneath the patient's mouth;

b) an endotracheal tube platform attached to the guide track portion of said faceplate and configured to carry an endotracheal tube thereon;

c) slide means for moving said endotracheal tube platform along said guide track; and

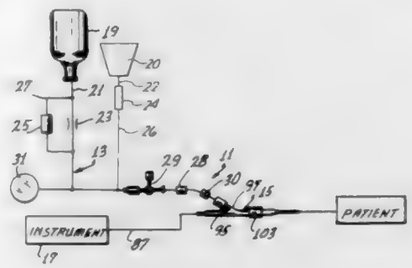
d) locking means for locking said endotracheal tube plateform to one of a plurality of locations along said guide track.

5,345,932

METHOD AND SYSTEM FOR MONITORING OF BLOOD CONSTITUENTS IN VIVO

Masao Yafuso, El Toro, Calif., and Laurence A. Harker, Atlanta, Ga., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 820,565, Jan. 14, 1992, Pat. No. 5,195,963, which is a division of Ser. No. 478,248, Feb. 9, 1990, abandoned. This application Jan. 15, 1993, Ser. No. 5,765
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—637 **32 Claims**



1. A system for in vivo measurement of a constituent of a patient's blood comprising:

a hollow catheter having an interior space and a distal end portion for being placed in a blood vessel of a patient, said distal end portion having an opening to allow blood to enter and exit said interior space of said catheter;

a sensor for sensing the concentration of a constituent of the patient's blood and providing a signal in response thereto, said sensor being located in or near said interior space of said catheter;

introduction means for introducing at least one of the following into said blood vessel: (1) at least one of a vasodilator component and a vasodilation promotor in an amount effective to reduce the vasoconstriction caused by the presence of said catheter in said blood vessel, thereby providing a more accurate determination of the concentration of the blood constituents, and (2) at least one of a platelet/white cell inhibitor component and a platelet/-white cell deactivation promotor in an amount effective to reduce at least one of the platelet activation caused by the presence of said catheter in said blood vessel and the white cell activation caused by the presence of said catheter in said blood vessel, thereby providing a more accurate determination of the concentration of the blood constituent; and

a quantity of at least one of said vasodilator component, said vasodilation promotor, said platelet/white cell inhibitor component and said platelet/white cell deactivation promotor associated with said introduction means.

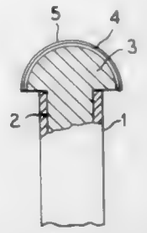
5,345,933

IMPLANTABLE MEDICAL DEVICE WITH A PROTECTED MEDICATION LAYER

Lars-Olof Peterson, Bromma; Ulf Lindegren, Enskede, both of Sweden, and Brigitte Stroetmann, Uttenreuth, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 14, 1992, Ser. No. 944,265
Claims priority, application Sweden, Sep. 25, 1991, 91027789
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—639 **13 Claims**

1. An implantable medical device having ion exchange properties, said device having surfaces which are in communication with the tissue of a patient after implantation of said device, at least a part of these surfaces being covered by a layer composed of a medication, and said layer composed of a medication being covered by at least one layer composed of an ion exchanger material.

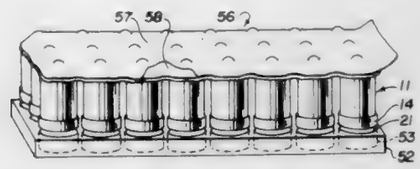


5,345,934

ELECTRODE CONSTRUCTION AND PACKAGE THEREFOR AND METHOD

Albert J. Highe, Redwood City, and Mir A. Imran, Palo Alto, both of Calif., assignors to Physiometrix, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 790,412, Nov. 8, 1991, abandoned. This application Dec. 1, 1992, Ser. No. 983,824
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—639 **18 Claims**



1. An electrode construction comprising a support structure, a conductive electrode material carried by the support structure and having a length and a width and having proximal and distal extremities, said support structure including a compliant sleeve having an open end and surrounding the distal extremity of the conductive electrode material while permitting the conductive electrode material to protrude through the open end and conductive contact means making contact with the proximal extremity of the conductive electrode material.

5,345,935

NON-INVASIVE MEDICAL PROBE PROVIDED WITH SUCTION CUP

Harold D. Hirsch, Taunton; John A. D. Spencer, Pinner, both of United Kingdom, and Ilan Z. Samson, Tel Aviv, Israel, assignors to Egnell Ameda Limited, Somerset, United Kingdom

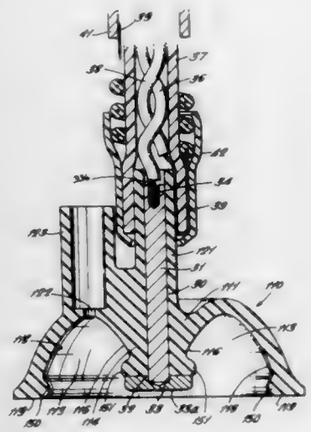
PCT No. PCT/GB91/00615, § 371 Date Oct. 16, 1992, § 102(e) Date Oct. 16, 1992, PCT Pub. No. WO91/15996, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 19, 1991, Ser. No. 937,874
Claims priority, application United Kingdom, Apr. 19, 1990, 9008764
Int. Cl.[5] A61B *5/0448*
U.S. Cl. 128—642 **21 Claims**

1. A non-invasive medical probe for monitoring a patient's condition comprising:

a suction cup having a resilient wall with peripheral rim for application to a patient's skin;

a source of suction which comprises an individual suction pump connected to said cup;

a first and a second non-invasive skin contact electrode adapted for connection to a diagnostic apparatus, the first electrode being disposed internally within the cup on a mounting located centrally within the cup to leave a channel encircling the first electrode within the peripheral rim to be evacuated for securing the cup to the skin, and the second electrode being disposed on an external surface of the probe adjacent to the cup whereby the second electrode provides a second contact in the vicinity of a contact of the first electrode, the first electrode and said mounting being disposed in a plane located behind the peripheral rim of the cup when the cup is in a relaxed or non-suction condition so that initial contact with the patient's skin is made at the peripheral rim of the cup and,



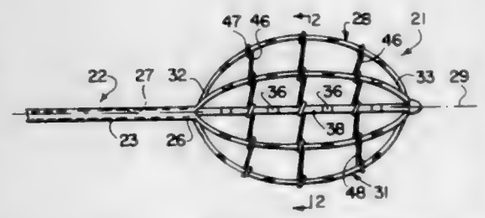
following evacuation of the channel in the cup by said suction pump, the first electrode makes contact with the patient's skin to obtain a signal at the skin surface responsive to a varying condition of the patient, and the cup having a resilience and form such that, when the cup is in contact with a patient's skin and subjected to suction, the wall of the cup deforms allowing the first electrode to be drawn down onto the patient's skin to make contact therewith.

5,345,936

APPARATUS WITH BASKET ASSEMBLY FOR ENDOCARDIAL MAPPING

Mark L. Pomeranz, Los Gatos, and Mir A. Imran, Palo Alto, both of Calif., assignors to Cardiac Pathways Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 44,255, Apr. 7, 1993, which is a continuation-in-part of Ser. No. 983,968, Dec. 1, 1992, which is a continuation-in-part of Ser. No. 656,764, Feb. 15, 1991, Pat. No. 5,156,151. This application Jun. 25, 1993, Ser. No. 83,085
Int. Cl.[5] A61B *5/04;* **A61N** *1/05*
U.S. Cl. 128—642 **15 Claims**



1. Apparatus for mapping a wall of a chamber of a heart having blood therein comprising a flexible elongate member having proximal and distal extremities and at least one lumen extending therethrough, a basket assembly carried by the distal extremity of the flexible elongate member and being movable between contracted and expanded positions, the basket assembly having a plurality of elongate longitudinally-extending

flexible circumferentially spaced-apart arms with proximal and distal extremities, a plurality of longitudinally spaced-apart electrodes carried by each arm for engaging the wall of the heart and spacing means coupled to the arms at locations between the proximal and distal extremities of the arms for establishing a predetermined circumferential spacing between the arms when the basket assembly is in an expanded position in engagement with the wall of the heart, the spacing means having openings therebetween through which blood can flow.

5,345,937

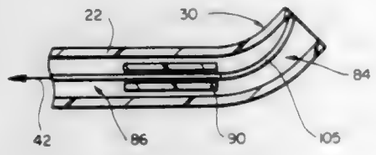
STEERABLE CANNULA

Lee M. Middleman, Portola Valley, and Walter R. Pyka, Redwood City, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 656,261, Feb. 15, 1991, Pat. No. 5,231,989. This application Jul. 28, 1993, Ser. No. 79,717

Int. Cl.[5] A61B *6/00*

U.S. Cl. 128—657 **36 Claims**



1. An article of manufacture comprising:

(a) an elongated tube having an internal lumen, a peripheral wall, and including a hollow, bendable distal segment;

(b) an elastic member engaging the distal segment of the tube and incorporated into the peripheral wall of the tube, the elastic member having (i) a bent shape and (ii) a substantially straight shape, the elastic member being sufficiently stiff to cause the distal segment to bend when the elastic member is in its bent shape; and

(c) straightening means capable of preventing the elastic member from bending;

wherein the straightening means and the elastic member are capable of relative axial movement and wherein such relative axial movement transforms the elastic member from one shape to another for correspondingly bending or unbending the distal segment of the tube.

5,345,938

DIAGNOSTIC APPARATUS FOR CIRCULATORY SYSTEMS

Masayuki Nishiki; Shigemi Fujiwara, both of Ootawara; Mikihito Hayashi; Akira Tsukamoto, both of Tochigi; Kinya Takamizawa, Utsunomiya; Masayuki Takano, Ootawara, and Seiichiro Nagai, Tochigi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 28, 1992, Ser. No. 952,914

Claims priority, application Japan, Sep. 30, 1991, 3-251296

Int. Cl.[5] A61B *8/00, 8/12*

U.S. Cl. 128—660.04 **11 Claims**

1. A diagnostic apparatus for diagnosing the circulatory system of a patient, comprising:

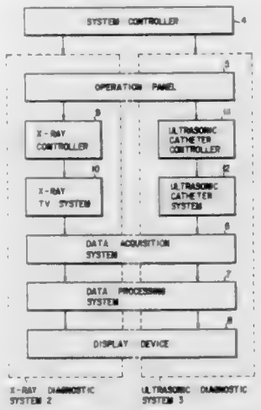
x-ray diagnostic means for irradiating a portion of the patient's body with X-rays to obtain a radiograph of said portion of the patient's body;

ultrasonic diagnostic means, for insertion into the circulatory system of the patient, for scanning a circulatory organ with an ultrasonic wave to thereby obtain an ultrasonic tomogram;

control means, commonly connected to said X-ray diagnostic means and said ultrasonic diagnostic means, for controlling said X-ray diagnostic means and said ultrasonic diagnostic means;

signal processing means, commonly connected to said X-ray diagnostic means and said ultrasonic diagnostic means, for signal-processing the radiograph and the tomogram; and

display means, commonly connected to said signal processing means, for displaying the radiograph and the ultrasonic tomogram, whereby said control means, said signal processing means and said display means are shared by said X-ray diagnostic means and said ultrasonic diagnostic means.



5,345,939

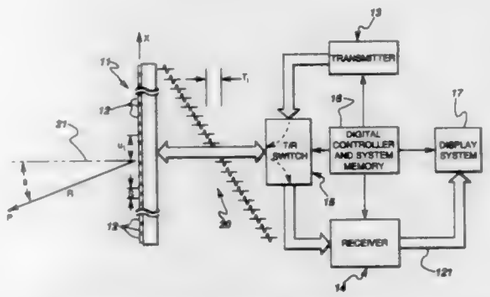
ULTRASOUND IMAGING SYSTEM WITH DYNAMIC WINDOW FUNCTION

William E. Engeler, Scotia; Christopher M. W. Daft, Schenectady, both of N.Y.; John T. Pedicone, Brookfield, and Theodore L. Rhyne, Whitefish Bay, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 24, 1993, Ser. No. 157,760

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—661.01 **8 Claims**



1. An ultrasonic imaging system comprising:

an ultrasonic transducer array having a set of array elements disposed in a pattern and each being separately operable to produce a pulse of ultrasonic energy through a medium during a transmission mode and to produce an echo signal in response to ultrasonic energy impinging thereon during a receive mode;

a transmitter coupled to the ultrasonic transducer array and operable during the transmission mode to apply a separate signal to predetermined array elements such that a steered transmit beam is produced by the array;

a receiver coupled to the ultrasonic transducer array and operable during the receive mode to sample the echo signal produced by selected array elements as the ultrasonic energy impinges thereon and to form a receive beam signal therefrom by separately delaying and summing the respective echo signals sampled from each array element, the receiver having channels that operate to modify the sampled echo signals produced by the transducer array elements with a window function weighting factor as the echo signals are received, each receive channel control circuit further including:

memory means for storing a set of window function curve values at successive memory address locations;

address counter means for producing an address useable by the memory means to produce the window function weighting factor from the stored set of window function curve values; and

calculating means for advancing the address counter means as a function of time as the echo signal is being received; and

a display system coupled to receive the receive beam signal and produce an image therefrom.

5,345,940

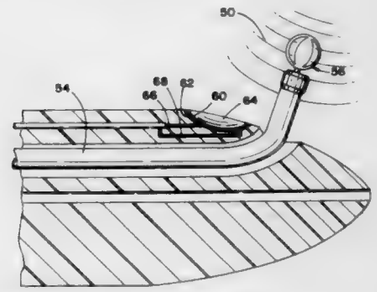
TRANSVASCULAR ULTRASOUND HEMODYNAMIC AND INTERVENTIONAL CATHETER AND METHOD

James B. Seward, and Abdul J. Tajik, both of Rochester, Minn., assignors to Mayo Foundation for Medical Education and Research, Rochester, Minn.

Continuation-in-part of Ser. No. 790,580, Nov. 8, 1991. This application Nov. 6, 1992, Ser. No. 972,626

Int. Cl.[5] A61B *8/00, 17/32*

U.S. Cl. 128—662.06 **8 Claims**



1. A catheter apparatus, comprising:

an elongated body having proximal and distal ends and first and second sides, wherein the first side extends further in the direction of the distal end of the catheter body than the second side;

a port disposed in the catheter body proximate the second side of the catheter body, the port extending from proximate the proximal end of the catheter body to proximate the distal end of the catheter body for receiving a therapeutic device whereby a therapeutic device can be delivered to proximate the distal end of the catheter;

an ultrasonic transducer having a first side and a second side, the ultrasonic transducer being mounted proximate the distal end of the catheter body and being disposed between the port and the first side of the catheter body with the first side of the ultrasonic transducer being proximate the first side of the body and the second side of the transducer being proximate the second side of the body, so that the transducer is tilted toward the port to transmit ultrasound and receive resultant echoes to provide a field of view within which flow rates can be measured and features imaged including the therapeutic device delivered to proximate the distal end of the catheter through the port; and

an electrical conductor disposed in the catheter body for electrically connecting the transducer to control circuitry external of the catheter.

5,345,941

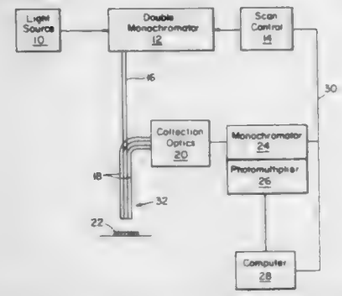
CONTOUR MAPPING OF SPECTRAL DIAGNOSTICS

Richard P. Rava, Boston; Rebecca Richards-Kortum, Cambridge; Michael S. Feld, Waban, all of Mass., and Joseph J. Baraga, Hibbing, Minn., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 772,620, Oct. 4, 1991, Pat. No. 5,201,318, which is a continuation of Ser. No. 342,311, Apr. 24, 1989, abandoned. This application Mar. 1, 1993, Ser. No. 24,674

Int. Cl.[5] A61B *6/00*

U.S. Cl. 128—665 **18 Claims**



1. A method of optically measuring tissue comprising:

directing light from a broadband light source having a multiplicity of excitation wavelengths onto tissue to induce autofluorescence at a multiplicity of emission wavelengths

measuring intensities of the induced autofluorescence at the multiplicity of emission wavelengths to produce intensity data;

generating a contoured electronic representation of the intensity data, the contoured representation being a function of both excitation wavelengths and emission wavelengths;

correcting the contoured representation by removing a component of the representation correlated with a spectrally absorbing material within the tissue; and identifying the presence of a plurality of fluorophores within the tissue from the corrected contoured representation.

5,345,942

Patent Not Issued For This Number

5,345,943

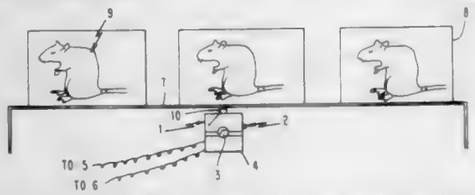
APPARATUS FOR DETERMINING IN VIVO RESPONSE TO THERMAL STIMULATION IN AN UNRESTRAINED SUBJECT

Kenneth M. Hargreaves, Bethesda, Md.; Ronald Dubner, Washington, D.C., and Fred Brown, Rockville, Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 496,573, Mar. 21, 1990, abandoned, which is a division of Ser. No. 278,355, Dec. 1, 1988, Pat. No. 5,025,796. This application Nov. 23, 1992, Ser. No. 981,914

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—742 **8 Claims**



1. In a high sensitivity apparatus for determining the in vivo response to thermal stimulation in an unrestrained subject within a predetermined space which permits the selective

application of radiant heat to a predetermined situs of the subject by means of a light beam, the combination comprising

means for measuring time;

movable means for generating a light beam;

means for detecting said light beam, said detecting means being positioned so that it can detect the withdrawal of the situs from the path of said light beam and said detecting means also being isolated from said light beam generating means;

means for stopping said time measuring means, and said light beam generating means and for inactivating said detecting means, all said means being electrically interconnected, said stopping means being automatically activated by said detecting means upon situs withdrawal;

means for simultaneously starting said time measuring means and said light beam generating means and for activating said detecting means, all said means being electrically interconnected, whereby when said light generating means is aimed at the predetermined situs and positioned at a distance effective to locally provide radiant heat to said situs and said starting means is activated, the light beam elicits from said subject after a latency time period a spontaneous situs withdrawal response thereof which is detected by said detecting means, said time measuring means, said generating means, said detecting means, said stopping means and said starting means being part of an electrical circuit which is to be connected to a power source prior to use.

5,345,944

APPARATUS FOR MEDICAL DIAGNOSIS UTILIZING MASKING OF FIXATION POINT

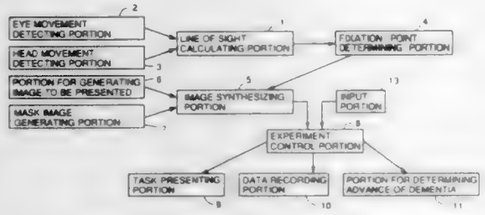
Hitoshi Hongo; Mitsuho Yamada; Kenya Uomori; Hiroshi Yoshimatsu; Keiichi Ueno, all of Kyoto; Mitsuru Fujii, Hokkaido; Shinji Murakami, Hokkaido; Jiro Miyazawa, Hokkaido; Norihito Nakano, Hokkaido; Ryo Fukatsu, Hokkaido, and Naohiko Takahata, Hokkaido, all of Japan, assignors to ATR Auditory and Visual Perception Research Laboratories, Kyoto, Japan

Filed Mar. 16, 1993, Ser. No. 31,976

Claims priority, application Japan, Aug. 12, 1992, 4-215150

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—742 **4 Claims**



1. An apparatus for medical diagnosis employing fixation point masking, enabling diagnosis of a disease related to brain function by detecting line-of-sight of a subject, comprising:

eye movement detecting means for detecting eye movement of said subject;

line-of-sight calculating means responsive to a detection output from said eye movement detecting means for calculating actual movement of the line-of-sight of said subject;

image presenting means for presenting an image as a task for diagnosis to said subject;

image inserting means for inserting, when a fixation point is generated in spatial movement of the line-of-sight calculated by said line-of-sight calculating means, a desired masking image of an arbitrary size to the image presented by said image presenting means for an arbitrary time period, after the lapse of an arbitrary time period from fixation; and

determining means responsive to the movement of the line-of-sight calculated by said line-of-sight calculating means when said masking image is inserted to said presented image, determining whether or not the subject is suffering from a disease related to the brain function.

5,345,945

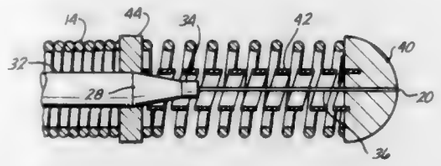
DUAL COIL GUIDEWIRE WITH RADIOPAQUE DISTAL TIP

William S. Hodgson, Cohasset, Mass.; Jagdish C. Dhuwalia, Irvine, and Russell Pflueger, Laguna Niguel, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 865,417, Apr. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 644,802, Jan. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 574,629, Aug. 29, 1990, abandoned. This application Dec. 25, 1993, Ser. No. 143,546

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—772 **17 Claims**



1. A guidewire comprising:

a core wire having proximal and distal ends;

at least a first helical coil spring fit about said core wire, said helical coil spring having proximal and distal ends, with said helical coil spring proximal end secured to said core wire at a location distal said core wire proximal end, and said helical coil spring distal end secured to said core wire distal end; and

a second helical coil spring dimensioned to fit within said first helical coil spring and having a distal end and a free proximal end, said second helical coil spring at said distal end thereof being located at the distal end of said first helical coil spring, said second helical coil spring formed from a radiopaque material.

5,345,946

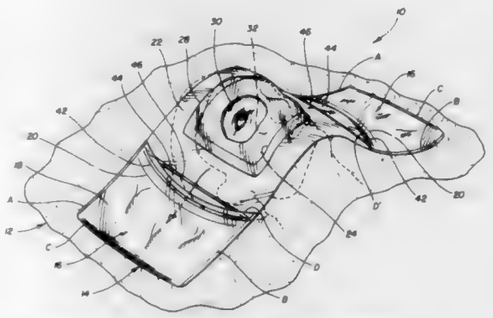
MULTI-ELEMENT SURGICAL DRAPE WITH SEALABLE SURGICAL RUN-OFF POUCHES

David Butterworth, Colleyville, and Susan L. O'Connell, Arlington, both of Tex., assignors to Johnson & Johnson Medical, Inc., Arlington, Tex.

Filed Apr. 23, 1993, Ser. No. 52,257

Int. Cl.[5] A61B *19/08, 19/00*

U.S. Cl. 128—853 **7 Claims**



1. A multi-element surgical drape, comprising

a) a bottom sheet for placement over a patient and comprising

i) a bottom surface for contacting the patient,

ii) a top surface for facing away from the patient after placement,

iii) attachment receptor means on the top surface, and

iv) a fenestration;

b) a top sheet comprising

i) a bottom surface facing the bottom sheet and a top surface facing away from the bottom sheet,

ii) attachment means on the bottom surface that attach to the receptor means on the bottom sheet to removably secure the top sheet to the bottom sheet, and

iii) a fenestration smaller than, and aligned with, the fenestration in the bottom sheet; and

c) a pouch on the top surface of the top sheet, near the fenestration, for collecting fluid runoff during surgery, the pouch comprising

i) a top edge and bottom edge joined by two opposing side edges, the side edges and bottom edge being sealed closed,

ii) means for detachably sealing the top edge to permit opening the pouch to receive fluid and then closing the pouch to prevent leakage of the fluid.

5,345,947

WRIST AND ANKLE SECURED RESTRAINING DEVICE

David P. Fisher, 1116 Crescent, Wichita Falls, Tex. 76305

Filed Jul. 26, 1993, Ser. No. 96,268

Int. Cl.[5] A61F *5/37;* **E05B** *75/00*

U.S. Cl. 128—878 **8 Claims**



1. A restraining device for use in combination with a prisoner hand binding, comprising:

an elongate control strap forming a loop on one end for disposition around some portion of the prisoners's lower legs with the opposite end providing a hand grip;

a releasable buckle means receiving the control strap opposite end therethrough to define a selected length of control strap between said control strap loop and said buckle means; and

a connector strap with snap hook connecting the hand binding to said releasable buckle means;

whereby hand grip control of said control strap enables immediate adjustment of the strap length between said hand binding and said loop.

5,345,948

METHOD OF PERFORMING TRANSLACTRIMAL LASER DACRYOCYSTORHINOSTOMY

Francis E. O'Donnell, Jr., 709 The Hamptons La., Town & Country, Mo. 63017

Filed Apr. 8, 1993, Ser. No. 44,163

Int. Cl.[5] A61B *19/00*

U.S. Cl. 128—898 **12 Claims**

1. A method for performing ophthalmological surgery comprising the steps of:

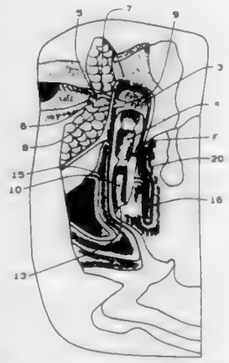
making a first punctum through the upper eyelid margin to attain access to a first canaliculus;

passing a video endoscope through the first punctum and through the first canaliculus;

passing said video endoscope into a lacrimal sac;

making a second punctum through the lower eyelid margin to attain access to a second canaliculus;

passing a bone cutting laser through the second punctum and through the second canaliculus;



passing said bone cutting laser into said lacrimal sac;

visualizing said laser through said video endoscope;

positioning said laser towards an inferior turbinae bone;

activating said laser; and

forming a full thickness fistula through said lacrimal sac and through said inferior turbinate bone.

5,345,949

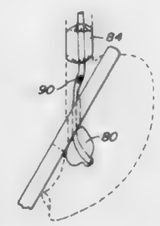
METHODS FOR USE IN SURGICAL GASTROPLASTIC PROCEDURE

Leonard M. Shlain, 40 Century Dr., Mill Valley, Calif. 94941

Continuation-in-part of Ser. No. 939,211, Sep. 2, 1992. This application Aug. 20, 1993, Ser. No. 107,561

Int. Cl.[5] A61B *19/00*

U.S. Cl. 128—898 **6 Claims**



1. A method for performing laparoscopic gastroplasty on a patient, said method comprising:

percutaneously introducing a plurality of trocars through the patient's abdominal wall;

visualizing the patient's stomach using a laparoscope disposed in one of the trocars;

manipulating the stomach to expose the lesser curvature, anterior, and posterior walls of the stomach to the laparoscope;

dissecting the stomach from the mesentery along the lesser and greater curvatures dividing the stomach along a line into a proximal pouch adjacent the esophagus and a distal region;

introducing a banding device for encircling the stomach along a dissecting line for defining the proximal pouch, the distal region with an aperture defined between the proximal pouch and the distal region;

introducing a nasogastric tube into the stomach so that it passes through the aperture;

inflating a first balloon on the nasogastric tube distally of the

aperture and a second balloon in the esophagus, to seal the proximal pouch in the stomach;

introducing a measured volume of fluid into the proximal pouch through the nasogastric tube until the pouch is filled;

repositioning the banding device and reintroducing fluid until the position of the banding device provides a preselected fluid volume upon filling; and

closing the banding device over the stomach along a line defined by the aperture in the band at its final position, with a passage between the proximal pouch and distal region of the stomach being defined by the aperture.

5,345,950

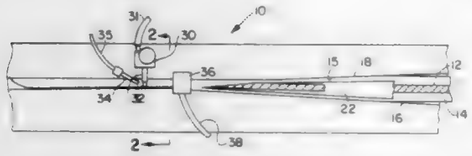
APPARATUS FOR APPLYING STARCH PASTE TO TOBACCO ARTICLES

Herbert F. Adebahr, Greensboro; Derek P. Noakes, Pleasant Garden, and Mark E. Coby, Kernersville, all of N.C., assignors to Lorillard Tobacco Company, New York, N.Y.

Continuation of Ser. No. 558,138, Jul. 25, 1990, abandoned. This application Feb. 12, 1993, Ser. No. 17,981

Int. Cl.[5] A24C *5/24*

U.S. Cl. 131—69 **23 Claims**



1. In a high speed machine for folding and sealing a continuous length of cigarette paper about a tobacco rod, including garniture means for exposing one edge of the paper to define a lap, and means for applying a starch paste to the lap prior to sealing, the improvement wherein the means for applying a starch paste comprises:

a paster nozzle having an outer tip positioned to be in contact with the lap of the cigarette paper for applying paste along the lap; means for supplying starch paste to a metering pump means at a controlled pressure; a high precision metering pump means for receiving paste from the paste supplying means and for supplying paste to said nozzle at a controlled rate, wherein said nozzle has an internal bore sized for delivering paste at a relatively low pressure and at a rate for applying a thin, uniform film of paste to the lap as the paper moves past said tip, and wherein said tip is elongated in cross-section and oriented such that the longer dimension is substantially perpendicular to the direction of paper movement.

5,345,951

SMOKING ARTICLE

Mark A. Serrano, Greenwich, Conn.; Kenneth S. Houghton; Harry V. Lanzillotti, both of Midlothian, Va.; Edward B. Sanders, Richmond, Va.; A. Clifton Lilly, Jr., Chesterfield, Va.; Charles R. Hayward; John R. Hearn, both of Midlothian, Va.; D. Bruce Losee, Jr., Richmond, Va.; Grier S. Fleischhauer, Midlothian, Va., and Willie G. Houck, Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 571,730, Aug. 24, 1990, which is a continuation-in-part of Ser. No. 223,153, Jul. 22, 1988, Pat. No. 4,991,606, and Ser. No. 315,822, Jan. 27, 1989, Pat. No. 4,966,171, which is a continuation-in-part of Ser. No. 223,153, Jul. 22, 1988. This application Aug. 12, 1992, Ser. No. 927,734

Int. Cl.[5] A24D *1/00*

U.S. Cl. 131—194 **29 Claims**

1. A smoking article having a mouth end and a distal end remote from said mouth end, said smoking article comprising:

an active element at said distal end in fluid communication with said mouth end, said active element comprising:

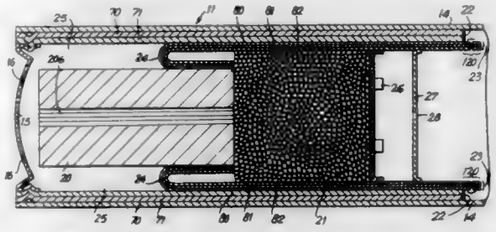
a substantially noncombustible substantially cylindrical hollow sleeve having internal and external walls, and having a first end at said distal end and a second end closer to said mouth end, at least a portion of said sleeve at said first end being metallic;

a heat source contained in said sleeve adjacent said first end, said heat source having a fluid passage therethrough;

a flavor bed in said sleeve adjacent said second end thereof, positioned to receive radiant energy from said heat source and to be in fluid flow relationship with said heat source; and

spacer means for maintaining said flavor bed in spaced-apart relationship with said heat source; wherein:

said sleeve is air-permeable adjacent said heat source for admitting air to support combustion of said heat source, and comprises an inner sleeve which is a laminate of a



metallic foil and paper which is air-impermeable adjacent said flavor bed to prevent combustion of material in said flavor bed; and

said flavor bed being positioned to receive radiant energy from said heat source and to be in fluid flow relationship with said heat source, and being in spaced-apart relationship with said heat source, results in said flavor bed being in radiative, convective and substantially nonconductive heat transfer relationship with said heat source; whereby

said flavor bed is heated substantially exclusively through said radiative, convective and substantially nonconductive heat transfer relationship with said heat source, heat transfer by conduction through said sleeve to said flavor bed being substantially absent; and

when said heat source is ignited and air is drawn through said smoking article, air is heated as it passes through said fluid passage, said heated air flowing through said flavor bed, releasing a flavored aerosol, and carrying it to said mouth end.

5,345,952

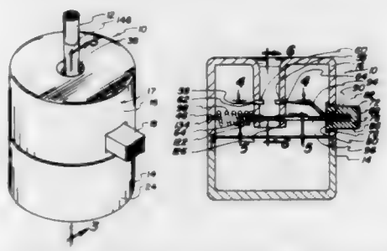
PORTABLE CIGARETTE CUTTER, EXTINGUISHER, AND CONVEYANCE APPARATUS

Wayne J. Nielander, 2019 G St., Belleville, Kans. 66935

Filed Jan. 6, 1994, Ser. No. 178,413

Int. Cl.[5] A24F *13/20*

U.S. Cl. 131—248 **12 Claims**



1. A portable cigarette cutter, extinguisher and conveyance apparatus, comprising:

a) a container means adapted to receive, convey and extinguish portions of a cigarette and its ashes;

b) said container means including an upper enclosure and receiver assembly having a cigarette entrance opening leading to a cigarette receiving member having a hole integral with said cigarette entrance opening so that a cigarette can be inserted therethrough;

c) a blade and sealing assembly movably connected to said container means, said blade and sealing assembly comprising a cutting blade member connected to a blade guide and sealing member, said blade guide and sealing member having an aperture therein;

d) an actuator member mounted on said container means for moving said cutting blade member and said blade guide and sealing member transversely of said hole between a first position in which said cutting blade member is positioned outwardly of said hole and said blade guide and sealing member covers said hole to seal the interior of said container means and a second position in which the cutting blade member transverses said hole to sever off an end portion of a cigarette inserted through said receiving member and said aperture in said blade guide and sealing member is positioned transversely of said hole, thereby allowing the severed end to drop through said aperture into the lower reservoir.

5,345,953

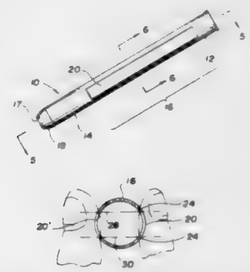
CIGARETTE SNUFFER

Joe E. Taylor, Troy, Mich., assignor to Cigarette Saver, Inc., Troy, Mich.

Filed Oct. 29, 1993, Ser. No. 144,781

Int. Cl.[5] A24F *13/18*

U.S. Cl. 131—256 **6 Claims**



1. In combination with a cigarette having a predetermined diameter and length, a cigarette snuffer for extinguishing the cigarette and storing it for later use by the smoker, said cigarette snuffer comprising:

a cylindrical thin wall tube having an open end section for receiving a cigarette ignited end first, and a closed end section within which the ignited end of the cigarette will be received when fully inserted, and an intermediate section between said end sections, the closed end section extending at least about one inch along the length of the tube;

said tube having a length approximately that of the cigarette;

said tube having a uniform internal diameter throughout the length thereof from said closed end section to said open end section nearly equal to the predetermined diameter of the cigarette received therewithin, whereby the cigarette may be self-retained within the tube by slight frictional engagement with the internal wall of the tube; and

said tube being fully enclosed intermediate said end sections excepting a pair of opposed slots within the tube wall extending substantially the length of said intermediate section and at least one-half the total length of said tube;

said slots being of sufficient width relative to the wall thickness and tube outer diameter through the length of said slots, such that a portion of the cigarette will project beyond the internal tube wall at opposite sides of the tube to facilitate its removal by the smoker, and the remainder of said tube about its circumference and intermediate said slots constituting the major circumferential portion of said tube.

5,345,954

METHOD OF CONTROLLING AND REGULATING THE TRAVELING SPEED OF A CONTINUOUS CIGARETTE ROD ON A CIGARETTE MANUFACTURING MACHINE

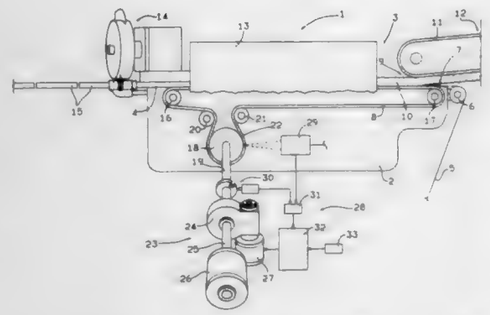
Davide Dall'osso; Franco Ghini, both of Bologna, and Fiorenzo Draghetti, Medicina, all of Italy, assignors to G.D Societa' Per Azioni, Bologna, Italy

Filed Dec. 7, 1992, Ser. No. 986,592

Claims priority, application Italy, Dec. 12, 1991, B091 A 000470

Int. Cl.[5] A24C *5/18*

U.S. Cl. 131—280 **5 Claims**



1. A method of controlling and regulating the traveling speed of a continuous cigarette rod (**4**) on a cigarette manufacturing machine (**1**), whereby a continuous strip of paper (**5**) is fed, through a tobacco loading station (**9**) and along a continuous rod forming beam (**13**), to a transverse cutting device (**14**) by means of a conveyor belt (**8**) engaging a number of guide pulleys (**16**, **17**, **20**, **21**) and a drive pulley (**18**) fitted to a drive shaft (**19**); characterized by the fact that it comprises stages consisting in continuously determining the diameter of the drive pulley (**18**), for obtaining a first control signal as a function of the surface speed of the drive pulley (**18**) and, consequently, as a function of the speed of the conveyor belt (**8**); and in comparing said first control signal with a second control signal as a function of the desired surface speed of the drive pulley (**18**), for obtaining an error signal for controlling the angular speed of said drive shaft (**19**).

5,345,955

COMPOSITE FUEL ELEMENT FOR SMOKING ARTICLES

Jack F. Clearman, Blakely, Ga.; Robert L. Meiring, Winston-Salem, N.C.; Jerry W. Lawson, Clemmons, N.C., and Kenneth O. Baker, Clemmons, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

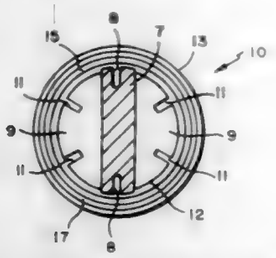
Filed Sep. 17, 1992, Ser. No. 947,002

Int. Cl.[5] A24D *1/00*

U.S. Cl. 131—359 **25 Claims**

1. A composite fuel element for smoking articles comprising at least two integral but distinct component materials, said component materials being contiguous throughout the length of the composite fuel element, and wherein said component materials include a carbonaceous material which burns, and a

material situated substantially within the periphery of the carbonaceous material which does not burn significantly



when compared to the burning material, and wherein said fuel element has a length of less than about 20 mm before burning.

5,345,956

HAIR PIN FOR USE IN CONNECTION WITH A HAIR STYLING TOOL

Tomima L. Edmark, 5335 S. Dentwood Dr., Dallas, Tex. 75220

Continuation of Ser. No. 944,132, Sep. 11, 1992, Pat. No. 5,251,650. This application Aug. 4, 1993, Ser. No. 102,415
The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.
Int. Cl.[5] A45D *8/06*
U.S. Cl. 132—280 **20 Claims**



1. A hair pin for attachment to a hair binding element used to form a hair tail on a user's head, the hair pin comprising:

a platform having an upper surface being slanted upwardly and backwardly such that said platform occupies a spaced generally above the hair binding element when the hair pin is attached to the hair binding element on the head,

at least two prongs including at least one front prong and at least one rear prong, said prongs extending downwardly from an underside of said platform,

each at least one rear prong being disposed adjacent to the head of the user, each at least one front prong being disposed outward from each rear prong and outward from the head of the user, said front and rear prongs positioned to accommodate the hair binding element therebetween, and

at least one of said at least one front prong and said at least one rear prong including a stop for engaging the hair binding element, whereby a relative vertical position of the hair pin is maintained when the hair binding element is accommodated between said front and rear prongs and is engaged by said stop.

5,345,957

DISHWASHER FILTER ARRANGEMENT

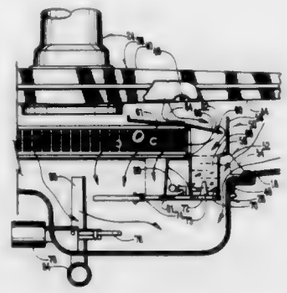
Randall L. Cooper, and Rodney M. Welch, both of Newton, Iowa, assignors to Maytag Corporation, Newton, Iowa

Filed Sep. 7, 1993, Ser. No. 117,730
Int. Cl.[5] A47L *15/22, 15/42*
U.S. Cl. 134—104.1 **18 Claims**

1. A water circulation system for a dishwasher having a washing chamber, a pump housing, a pump within the housing for supplying wash water to the washing chamber to clean objects therein, the system comprising:

a strainer for straining large objects from the wash water and defining a first water recycling inlet into the pump housing for recirculation of wash water to the washing chamber by the pump;

a filter for filtering food particles from the wash water and



defining a second water recycling inlet into the pump housing for recirculation of wash water to the washing chamber by the pump;

a collection chamber adjacent the filter for collecting food particles filtered from the wash water; and

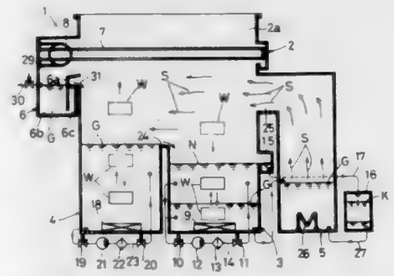
a cylindrical member having a side wall and a bottom wall between the strainer and the filter, by cylindrical member defining the collection chamber.

5,345,958

DOUBLE FLUID LAYER-TYPE ULTRASONIC CLEANING APPARATUS

Shigeo Otsuka, 4-7, Nakashinkai, 2-chome, Higashi-Osaka, Japan

Filed Oct. 4, 1993, Ser. No. 131,148
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—105 **1 Claim**



1. An ultrasonic cleaning apparatus comprising:

a first container (**3**) for holding a first cleaning solution (N) containing a hydrocarbon solvent, and below said first cleaning solution a second cleaning solution (G) containing an inert solvent, said first container having an open end;

a first ultrasonic means (**9**) disposed in said first container and within said second cleaning solution;

a second container (**4**) for holding said second cleaning solution (G) and having an open end;

a second ultrasonic means (**18**) disposed in said second container and within said second cleaning solution;

a third container (**5**) for holding said second cleaning solution (G), and having an open end;

communicating means disposed above said first, second and third containers for communicating the open ends thereof;

heating means (**26**) disposed in said third container for causing evaporation of said second cleaning solution so as to disperse product of said evaporation above the open ends of said first and second containers;

condensing means (**7,8**) disposed in said communicating means for condensing said product of said evaporation; and

means (**6**) disposed below said condensing means for collecting condensation resulting from condensing of said product of said evaporation;

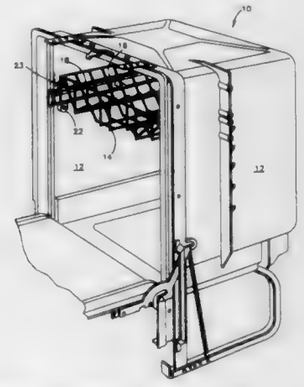
whereby an object to be cleaned is moved within said first container through said first cleaning solution and into said second cleaning solution and said first ultrasonic means is operated, then said object is removed from said second cleaning solution through said first cleaning solution, and then moved into said second cleaning solution within said second container and said second ultrasonic means is operated, and then said object is moved out of said second cleaning solution and through said product of said evaporation.

5,345,959

RACK SUPPORT ROLLER FOR DISHWASHING MACHINE AND METHOD OF ASSEMBLY THEREFOR

James A. Matteson, Kinston, N.C., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jul. 14, 1993, Ser. No. 91,677
Int. Cl.[5] A47L *15/42*
U.S. Cl. 134—201 **8 Claims**



1. A dishwashing machine, comprising:

a tub having walls within which articles can be washed;

a wheel having a central hole;

an axle having a head and a shaft, a part of the shaft being knurled, and the shaft extending through the hole of the wheel;

a washer having a central hole, the shaft extending through the washer hole so as to engage an inner edge of the washer hole with the knurled part of the axle and secure the wheel between the head and the washer;

means to secure the shaft of the axle in a hole in a wall of the tub, the shaft being secured in the hole in the wall; and

an article supporting rack located in the tub and supported by the wheel so as to permit the carrier to be rolled on the wheel.

5,345,960

CONNECTING PIECE FOR LARGE UMBRELLAS

Pai-Feng Tung, No. 20, Lane 673, Chung Cheng Rd., Yi Chia Tsun, Jen Teh Hsiang, Tainan Hsien, Taiwan

Filed Jul. 12, 1993, Ser. No. 91,151
Int. Cl.[5] A45B *25/00*
U.S. Cl. 135—32 **8 Claims**

1. A connecting piece for a large umbrella with a plurality of ribs and stretchers, said connecting piece being substantially U-shaped and comprising a base section (**42**) with two ends and a lateral wall (**41**) having distal ends extending from each said end of said base section (**42**), a protrusion (**43**) projecting from an inner side of each said lateral wall to form a pair of aligned



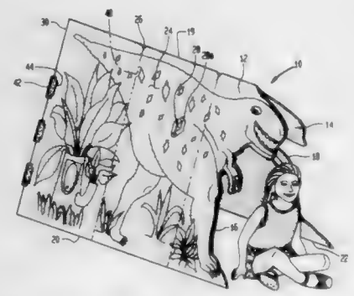
protrusions (**43**) adjacent to said base section (**41**) adapted to securely engage with a through hole (**21**) of a rib (**20**), and a pair of aligned holes (**45**) being formed in said lateral walls (**41**) adjacent to the distal ends of said lateral walls (**41**).

5,345,961

TOY CARDBOARD TENT

N. Wayne Yercha, and Desmond W. Dennis, both of Victoria, Canada, assignors to Dino Pal Toys Ltd., Victoria

Filed Oct. 7, 1993, Ser. No. 133,515
Int. Cl.[5] E04H *15/00*
U.S. Cl. 435—87 **9 Claims**



1. A toy cardboard tent deployable from a flat, stored configuration comprising:

a pair of flat side panels each having identical edge profiles one to another and hingedly connected along a straight upper longitudinal fold line therebetween;

each said side panel having a straight lower distal margin which is generally parallel to said upper fold line;

a triangular shaped flat back panel releasably connectable by a T-shaped locking tab and slot arrangement along each sloping side margin of said back panel between an upright rear end margin of each said side panel wherein said side panels are sloping downwardly from said upper fold line at an acute angle equal to that of said side margin of said back panel;

indicia printed on an outer surface of at least one said side panel depicting an animal figure on each said outer surface, said animal figure facing toward a distal upright front end margin of each said side panel to define an open entrance to said tent;

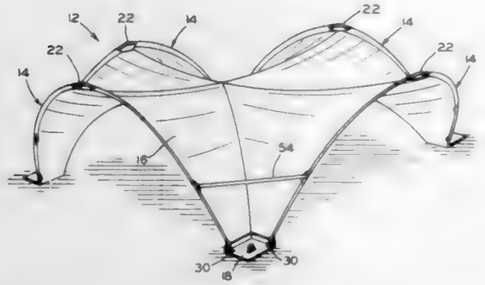
each said front end margin contoured identically one to another to conform to a forwardly facing profile of said animal figure.

5,345,962

ARCH SUPPORTED FABRIC STRUCTURE

C. William Moss, 7830 E. Pecos La., Scottsdale, Ariz. 85253

Filed Jul. 27, 1992, Ser. No. 919,734
Int. Cl.[5] E04H *15/36*
U.S. Cl. 135—102 **14 Claims**



1. A fabric structure comprising:

a) a plurality of peripheral arched support means positioned to form a periphery of a fabric structure, said arched support means including a first curved pole, a second curved pole, and an angled crown segment;

b) a fabric membrane operatively connected to and extending between said plurality of peripheral arched support means, said fabric membrane including a fabric segment for each arched support means, each fabric segment being provided with a center edge, an outer edge having a first sleeve for receiving the first curved pole and a second sleeve for receiving the second curved pole of said arched support means, and two side edges, said side edges being curved and configured to form a reverse curve when side edges from adjacent fabric segments are sewn back to back to form said fabric membrane; and

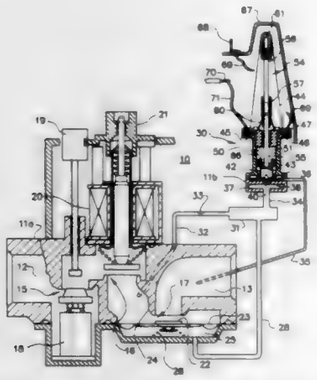
c) tension means for structurally supporting said arched support means on the periphery of the structure whereby a tensile stress is produced in the fabric segment, a compression load is produced on said arched support means, and said fabric membrane is maintained in tension with said arched support means to form the fabric structure.

5,345,963

MODULATING PRESSURE REGULATOR WITH SHAPE MEMORY ALLOY ACTUATOR

Paul Dietiker, Redondo Beach, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 31, 1993, Ser. No. 41,440
Int. Cl.[5] G05D *7/06*
U.S. Cl. 137—12 **20 Claims**



1. A modulating pressure regulator, comprising:

housing means defining fluid inlet and fluid outlet passageways and a main valve seat providing for flow between the fluid inlet and fluid outlet passageways;

a main valve closure member mounted in said housing means for movement relative to the main valve seat for varying the flow between the fluid inlet and outlet passageways;

a main valve actuator operable to vary the position of said main valve closure member relative to the valve seat in response to variations in a control pressure;

servo valve means for producing the control pressure in response to the pressure in the fluid outlet passageway, the control pressure further being dependent on variable biasing means having a servo valve actuator formed of shape memory alloy material, the servo valve actuator acting through a spring element and adapted to change deformation of the spring element in response to varying temperature; and

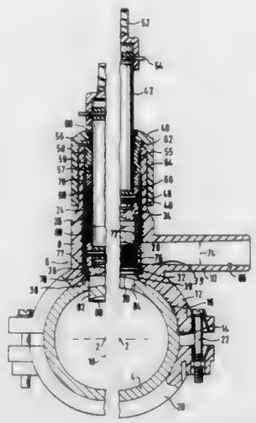
heating means for varying the temperature of the servo valve actuator in response to an electrical control signal.

5,345,964

PIPE PIERCING FITTING AND VALVE

Norbert Friedel, Waghäusel, Fed. Rep. of Germany, assignor to Friatec AG Keramik- und Kunststoffwerke, Mannheim, Fed. Rep. of Germany

Filed May 27, 1993, Ser. No. 67,792
Claims priority, application Fed. Rep. of Germany, May 30, 1992, 4217982
Int. Cl.[5] F16K *43/00, 49/00;* **F16L** *41/06*
U.S. Cl. 137—318 **17 Claims**



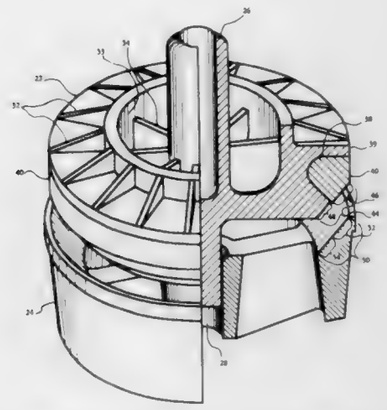
1. A combination pipe piercing fitting and valve comprising a housing which can be bonded by welding to a pipe, said housing comprising a valve casing containing a guide sleeve and a valve stem with a boring tool guided in said guide sleeve for axial movement in order to pierce said pipe and selectively open and shut a branch nipple communicating with the valve casing at a junction, wherein said guide sleeve is axially and rotationally secured in said valve casing and extends at least over the junction of said valve casing and said branch nipple, and said guide sleeve has an opening therethrough adjacent said branch nipple for communication between said pipe and said branch nipple after said pipe has been bored, and said guide sleeve has a bottom end formed as a valve seat for said boring tool between said branch nipple and said pipe, said opening being selectively opened and shut by axial movement of said boring tool along said guide sleeve.

5,345,965

VALVE BODY DESIGN FOR USE WITH PUMPS HANDLING ABRASIVE FLUIDS

George H. Blume, 107 Morning Cloud Cove, Austin, Tex. 78734

Filed May 21, 1993, Ser. No. 65,641
Int. Cl.[5] F16K *15/06*
U.S. Cl. 137—533.25 **11 Claims**



1. An improved valve body in a valve assembly for use in high pressure pumping applications, said valve body comprising:

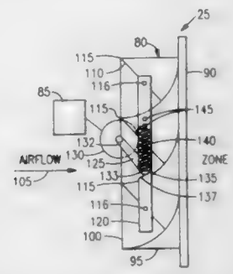
a disc-shaped body comprised of a combination of Kevlar ® and nylon material and having a plurality of ribbed members which provide increased durability and wear resistance.

5,345,966

POWERED DAMPER HAVING AUTOMATIC STATIC DUCT PRESSURE RELIEF

Kevin F. Dudley, Cazenovia, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 23, 1993, Ser. No. 172,299
Int. Cl.[5] F16K *11/16*
U.S. Cl. 137—601 **6 Claims**



1. A damper for controlling the flow of conditioned air, supplied through a supply duct, to a conditioned space, comprising;

a support housing defining a flow passage which communicates said supply duct with said conditioned space;

a plurality of damper blades supported by said housing, in said flow passage, for pivotal movement about respective spaced apart parallel axes;

a blade link interconnecting said damper blades in a ganged relation so that a common pivoted orientation of the damper blades is determined by the position of the blade link, said blade link being movable to any position between a first position wherein said damper blades cooperate with one another so that air flow through said passage is substantially blocked, and, a second position wherein air flow is at a maximum;

means for selectively exerting a force on said blade link to move said link toward said second position to increase the flow of air through said damper, or, for exerting a force on said blade link to move said link toward said first position to decrease the flow of air through said damper; and

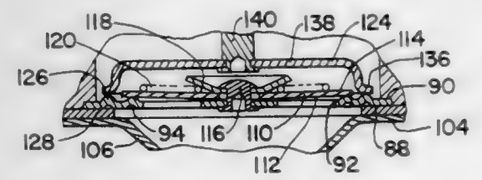
means for allowing said blade link to move toward said second position, in response to a force imparted on said damper blades by a build-up of pressure in the supply duct, said imparted force being sufficient to overcome said force exerted on said blade link to move said link toward said first position.

5,345,967

SECONDARY AIR CONTROL AND CHECK VALVES

Lee A. Naffziger, Sterling, Ill., assignor to Borg-Warner Automotive Electronic & Mechanical Systems Corporation, Sterling Heights, Mich.

Division of Ser. No. 873,499, Apr. 23, 1992, Pat. No. 5,203,872, which is a continuation of Ser. No. 673,777, Mar. 21, 1991, abandoned. This application Mar. 19, 1993, Ser. No. 34,507
Int. Cl.[5] F16K *15/14*
U.S. Cl. 137—614.2 **5 Claims**



1. A valve comprising:

an inlet port;

an outlet port;

a valve element at least nominally shiftable between an open position for providing fluid communication between the inlet port and the outlet port and a closed position for preventing such communication;

a seat having an upstream side in fluid communication with the inlet port and a downstream side in fluid communication with the outlet port, the seat defining an aperture fluid communication between the upstream side and the downstream side when the element is in the open position;

an override member having a peripheral outer portion that extends radially outward and is selectively operatively engageable with the seat to block the flow of a fluid through the aperture;

the override member being selectively engageable with the downstream side of the seat;

the valve element engaging the downstream side of the seat when the valve element is in the closed position;

the valve element being interposed between the valve disk and the seat when the override member is engaged with the seat; and,

the valve element is clamped between the valve disk and the seat when the override member is engaged with the seat.

5,345,968

ROTARY MAGNETIC VALVE FOR LOW NOISE LOW WEAR OPERATION

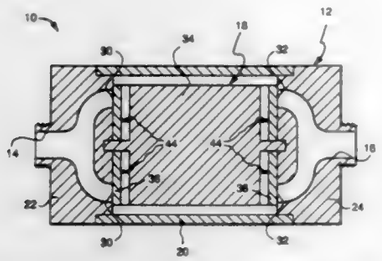
James Day, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 24, 1993, Ser. No. 36,572
Int. Cl.[5] F16K *31/08, 11/052*
U.S. Cl. 137—625.46 **25 Claims**

1. A valve comprising:

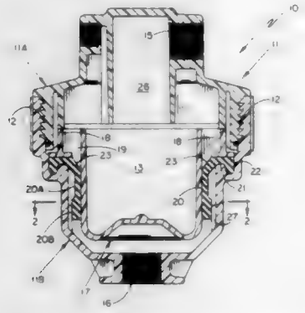
a housing having a hollow interior and first and second passages in fluid communication with said hollow interior;

a valve closure device having first and second ends, said valve closure device comprising a paddle rotatively mounted in said hollow interior about an axis which intersects said first and second ends; and



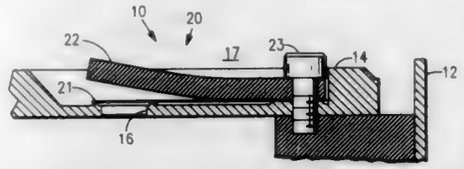
a controller for selectively rotating said valve closure device between a first position where said first and second ends block said first and second passages, respectively, and a second position where said first and second ends do not block said first and second passages.

5,345,969
SEAL IN HIGH PRESSURE PNEUMATIC BOOSTER VALVE
James R. Steele, Stillwater, Minn., assignor to Dynamic Air, Inc., St. Paul, Minn.
Filed Nov. 15, 1993, Ser. No. 151,757
Int. Cl.[5] F16K *15/14*
U.S. Cl. 137—853 **6 Claims**



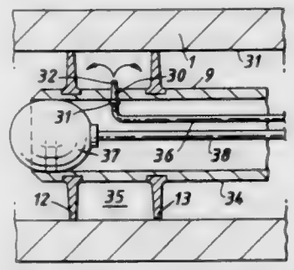
1. A booster valve for providing pressurized air to a pneumatic conveyor, comprising:
a) a generally cylindrical housing having an air inlet opening and an air outlet opening;
b) a hollow chamber within said housing;
c) a cuplike member located coaxially within said chamber with an air-flow space between said cuplike member and said housing, said cuplike member open at an end toward said air inlet opening and closed at the other end;
d) an air inlet passageway providing air communication between said air inlet opening and said open end of said cuplike member into the interior of said cuplike member;
e) an air outlet passageway providing air communication between said air outlet opening and said air-flow space;
f) an air passageway from the open end of said cuplike member to said air-flow space; and
g) a generally cylindrical resilient seal around the exterior of said cuplike member in said air-flow space, said seal biased to close off air flow in said air-flow space, said seal resiliently flexed radially outward to permit air flow from the open end of said cuplike member through said air-flow space when the air pressure at said chamber is greater than the air pressure at said air outlet passageway.

5,345,970
VIRTUAL VALVE STOP
Alexander D. Leyderman, Manlius, and Jiawei Lu, North Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Sep. 2, 1993, Ser. No. 115,077
Int. Cl.[5] F16K *15/16*
U.S. Cl. 137—856 **3 Claims**



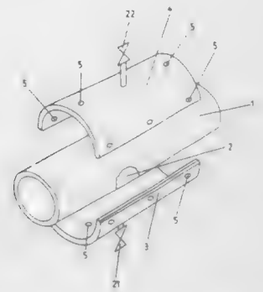
2. A discharge valve assembly including a valve stop and a valve member having a tip and a root with said valve stop having a profile starting at said root and having a first portion which is of an essentially constant radius and which transitions into a second portion which is of a continually decreasing radius.

5,345,971
METHOD OF REPLACING BRANCH MAINS
Anthony D. Elgar, Mitcham; Brian T. Sales, Dorking, and Adrian S. Parkes, Burgess Hill, all of United Kingdom, assignors to British Gas PLC, London, United Kingdom
Filed Nov. 1, 1991, Ser. No. 786,784
Claims priority, application United Kingdom, Nov. 2, 1990, 9023857.7
Int. Cl.[5] F16L *55/18*
U.S. Cl. 138—98 **3 Claims**



1. A method for replacing a length of a branch main joined to a fluid carrying spine main with a length of replacement main having an outer wall of smaller diameter than the diameter of the inner wall of the branch main, the method comprising the steps of:
gaining access to the bore of the branch main at an access point;
feeding the replacement main into the branch main via the access point until the length of branch main has been replaced, one end of the replacement main having at least two spaced annular vanes disposed there around and extending from an outer wall thereof to define a clearance between the replacement main and the branch main when the replacement main has been fed into the branch main;
during and after the feeding step preventing fluid from entering said clearance between the outer wall of the replacement main and the inner wall of the branch main by means of said at least two annular vanes forming a barrier to a flow of fluid therepast; and
after the feeding step, injecting into said clearance, via an injection point in the wall of the replacement main and located between said vanes, a substance capable of forming a seal between the outer wall of the replacement main and the inner wall of the branch main, whereby the seal is formed at a point closer to the one end of the replacement main than to the access point.

5,345,972
METHOD FOR REPAIRING LOCAL DAMAGE TO PIPELINES BY APPLYING CLADDING WITH AN INTERPOSED PROTECTIVE SHEATH
Alfeo Goglio, Melegnano, and Valentino Pistone, Bollate, both of Italy, assignors to Snam S.p.A., Milan, Italy
Filed Mar. 16, 1993, Ser. No. 31,837
Claims priority, application Italy, Mar. 18, 1992, MI92 A 000626
Int. Cl.[5] F16F *55/18*
U.S. Cl. 138—99 **7 Claims**



1. A method for repairing local damage to pipelines by applying cladding or cups with a protective sheath interposed, the method comprising the steps of:
applying two cylindrical half-shells to an outer surface of a pipeline and then joining together edges of the two cylindrical half-shells to form a cylindrical cup around the pipeline;
positioning a circular gasket at each of two ends of the cup in correspondence with a circular projection provided on an inside of each of the two cup ends, said gasket being formed with an inclined bearing surface which matches a surface of the projection;
compressing the two gaskets against the projections and against the outer surface of the pipeline by tie bars applied to terminal flanges positioned at the two ends of the cup, to form a pressure-tight interspace about a damaged portion of the pipeline;
injecting a resin mixture through an injection valve into said interspace to completely fill said interspace and expel air through a vent valve;
closing the vent valve when the resin mixture begins to escape through the vent valve;
continuing an injection of the resin mixture through the injection valve into said interspace until a substantial gauge pressure is obtained within said interspace so as to put the cup in a state of substantial tension and the pipeline in a state of compression; and
closing the injection valve and leaving the injected resin mixture to harden, such that a release of stresses induced in walls of the cup and pipeline enable resin shrinkage during hardening to be compensated, to obtain continuity between the cup, the hardened resin and the pipeline.

5,345,973
ADJUSTABLE CONNECTION LINK BETWEEN THE DOBBY AND THE CRANK LEVERS OF THE HEDDLE FRAME CONTROL RODS IN A LOOM
Costantino Vinciguerra, Florence, Italy, assignor to Nuovopignone-Industrie Meccaniche e Foneria SpA, Florence, Italy
Filed Jun. 7, 1993, Ser. No. 72,744
Claims priority, application Italy, Jun. 11, 1992, MI 92/A/001434
Int. Cl.[5] D03C *1/00, 9/00*
U.S. Cl. 139—57 **4 Claims**



1. An adjustable link for connecting a dobby to the crank lever of a control rod for a loom heddle frame, said link of comprising two tubular bars connected axially together in abutting arrangement by a length-adjustable connection member, characterized in that said two tubular bars are each a hollow aluminum alloy section piece of rectangular cross-section that has two major sides with at least one internal rib perpendicular and fixed to each of the major sides of the rectangle, said section pieces each having a cut away portion exposing a respective corresponding rib-part extending along opposing sides at their abutting adjacent ends to overlap one another in said axially connected state, at least one of said cut away portions having a slot formed therein, said cut away portions being pressed one against the other in an adjustable position by at least one bolt screwed into said cut away portion of one section piece and passing through said slotted hole in the corresponding cut away portion of the other section piece.

5,345,974
HEALD SUPPORTING FRAME
Luigi Bernardi, Gandino, and Antonio Bernini, Forano al Serio, both of Italy, assignors to Lamiflex S.p.A., Ponte Nossa, Italy
Filed Sep. 4, 1992, Ser. No. 941,284
Claims priority, application Italy, Sep. 11, 1991, MI91 A 002404
Int. Cl.[5] D03C *9/06*
U.S. Cl. 139—91 **4 Claims**

1. Heald supporting frame comprising:
a pair of horizontal heald supporting cross-members, said cross members comprising box-like structures, said box-like structures being made of composite material and having ends;
inserts of high mechanical strength connected to said ends of said box-like structures;
a pair of removable side members, said side members having side member ends and being fixed to said inserts for coupling and rigidly locking together said supporting cross members, and;
means for connecting said heald supporting frame to a loom fixed to said inserts;
wherein said inserts are inserted within said ends of said box-like structures, said box-like structures each having walls, an interspace defined between said walls, and an

interspace width defined by said interspace, said inserts defining an insert thickness, said insert thickness being equal to said interspace width, and;

wherein said inserts are constituted by a sandwich-like structure comprising a pair of plates made of metallic or composite materials, and a layer of thermoplastic resin interposed between said plate, said layer of thermoplastic resin having through holes formed therein, said metallic plates having corresponding holes formed therein, said through holes having a smaller diameter than said corresponding holes formed in said plates, said corresponding holes formed in said plates being thus partially covered by a ring of thermoplastic material.



5,345,975

MULTIPLE WEFT REMOVING DEVICES FOR A LOOM

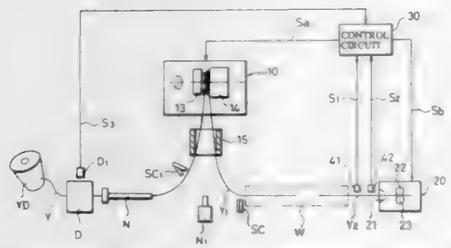
Shigeharu Sawada, Kanazawa, Japan, assignor to Tsudakoma Kogyo Kabushiki Kaisha, Kanazawa, Japan

Filed Aug. 20, 1993, Ser. No. 109,252

Claims priority, application Japan, Aug. 21, 1992, 4-222854

Int. Cl.[5] D03D *47/34*

U.S. Cl. 139—116.2 **4 Claims**



1. A faulty weft yarn removing apparatus for a loom, comprising:

a first weft yarn extracting device adapted to be disposed on a picking side of a fabric;

a second weft yarn extracting device adapted to be disposed on a receiving side of said fabric;

a first weft yarn feeler adapted to be disposed along a picking path of a weft yarn, between said fabric and said second weft yarn extracting device, said first weft yarn feeler detecting the presence of said weft yarn and outputting a signal;

a second weft yarn feeler disposed on either said picking side or said receiving side of said fabric, said second weft yarn feeler detecting the presence and absence of faulty weft yarn and outputting a signal; and

a control circuit connected to receive said signal output from said first weft yarn feeler and said signal output from said second weft yarn feeler, said control circuit actuating one of said first weft yarn extracting device and said second weft yarn extracting device upon receipt of said signal output from said first weft yarn feeler and actuating the other of said first weft yarn extracting device and said second weft yarn extracting device only when said signal output from said second weft yarn feeler does not change.

5,345,976

METHOD FOR A PNEUMATIC WEFT THREAD INSERTION IN AN AIR NOZZLE WEAVING LOOM

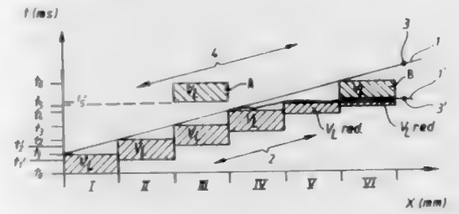
Alain Lazzarotto, St. Clair de la Tour, France, assignor to Lindauer Dornier GmbH, Lindau, Fed. Rep. of Germany

Filed May 21, 1993, Ser. No. 65,613

Claims priority, application Fed. Rep. of Germany, May 21, 1992, 4216749

Int. Cl.[5] D03D *47/30*

U.S. Cl. 139—435.2 **8 Claims**



1. A method for controlling flows for the pneumatic insertion of a weft thread through a weft insertion channel in a nozzle loom having a plurality of weft insertion nozzles, comprising the following steps:

(a) establishing a weft thread insertion travelling field of sequentially effective blowing jets emanating from said weft insertion nozzles, said sequentially effective blowing jets having a first flow speed (V_L) for carrying said weft thread through said weft insertion channel,

(b) reducing said first flow speed of said sequentially effective blowing jets in an end zone along an exit end of said weft insertion channel sufficiently to establish a second flow speed (V_{Lred}) to slacken said weft thread in said end zone; and

(c) then generating again a further flow speed of said sequentially effective blowing jets to form a weft tensioning field just sufficient to straighten said weft thread again for reducing weft thread breakage.

5,345,977

GRIPPER LOOM HAVING WARP THREAD BEARER MEMBERS

Angelo Stacher, Arbon, Switzerland, assignor to Sulzer Rueti AG, Rueti, Switzerland

Filed Apr. 29, 1993, Ser. No. 55,124

Claims priority, application European Pat. Off., Jun. 12, 1992, 92 810455.3

Int. Cl.[5] D03D *47/12, 47/27*

U.S. Cl. 139—449 **12 Claims**

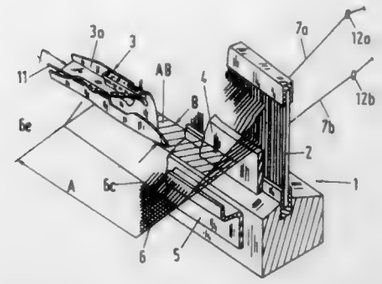
1. In a gripper loom including:

a shed defined from a beat up edge of cloth being woven, said shed including upper and lower warp threads;

a rapier tape having inserter rapier tapes and gripper heads for the insertion of weft yarn in said shed between said upper and lower warp threads in a direction along an insertion path having an insertion length equal to the width of shed in said gripper loom along a path width across said warp threads over which said gripper heads pass;

the improvement comprising;

at least one bearer member supporting the lower warp threads along at least part of the width of shed outside the path width across said lower warp threads over which the gripper heads pass;



said lower warp threads over at least part of the insertion width of the shed acting exclusively as direct support to the gripper heads during the insertion of the weft yarn.

5,345,978

ELECTRICAL INTERCONNECTION ASSEMBLY, PROCESS OF AND APPARATUS FOR MANUFACTURING THE SAME AND WIRE LAYING JIG THEREFOR

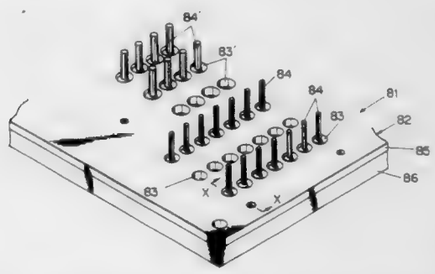
Osamu Okafuji; Akiyoshi Sato, and Akio Yamaguchi, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Division of Ser. No. 921,772, Jul. 30, 1992, Pat. No. 5,289,633, which is a division of Ser. No. 768,658, Nov. 1, 1991, Pat. No. 5,156,557. This application Sep. 29, 1993, Ser. No. 128,130

Claims priority, application Japan, Nov. 6, 1990, 2-299068; Nov. 6, 1990, 2-299069; Jan. 21, 1991, 3-5337

Int. Cl.[5] B21F *27/12*

U.S. Cl. 140—92.1 **1 Claim**



1. A wire laying jig, comprising a pin board having a plurality of wire laying pins provided uprightly thereon, and a wire laying pallet having a plurality of pin holes formed therein such that said wire laying pins are fitted for sliding movement in said pin holes to transfer an insulated wire arranged on said wire laying pins to a wiring plate body, said pin board having a plurality of rotatable plates disposed thereon, said pin board further having a plurality of rotatable elements disposed thereon for rotation at eccentric positions of said rotatable plates, said wire laying pins being provided on said rotatable elements such that they can be positioned at the centers of rotation of said rotatable plates.

5,345,979

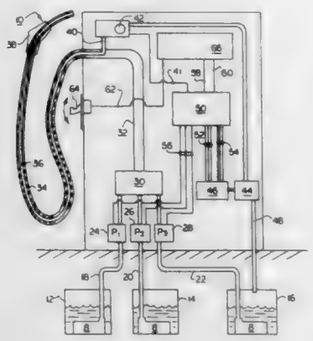
HIGH EFFICIENCY VAPOR RECOVERY FUEL DISPENSING

Mark B. Tucker, Colfax; Edward A. Payne, Greensboro, and Paul D. Miller, Winston-Salem, all of N.C., assignors to Gilbacro, Inc., Greensboro, N.C.

Filed Oct. 29, 1992, Ser. No. 968,595

Int. Cl.[5] B65B *1/04*

U.S. Cl. 141—1 **26 Claims**



13. A method of dispensing volatile liquid fuel with recovery of fuel vapors comprising

pumping fuel through a fuel delivery line at a liquid flow rate to a nozzle,

returning vapors along a vapor return line from the nozzle at an ordinary vapor flow rate through the fuel delivery line during most of a fueling operation,

boosting the vapor flow rate above the ordinary vapor flow rate early in a fueling operation and

subsequently returning the vapors at the ordinary vapor flow rate.

5,345,980

METHOD AND APPARATUS AN AEROSOL CONTAINER

Peter C. W. Burt, Royston, and Laurie K. H. Kwok, Ware, both of England, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 4,180, Jan. 13, 1993, abandoned, which is a continuation of Ser. No. 924,376, Jul. 31, 1992, abandoned, which is a continuation of Ser. No. 585,396, Sep. 20, 1990, abandoned. This application Sep. 7, 1993, Ser. No. 117,980

Claims priority, application United Kingdom, Sep. 21, 1989, 8921337

Int. Cl.[5] B01F *3/00*

U.S. Cl. 141—3 **3 Claims**

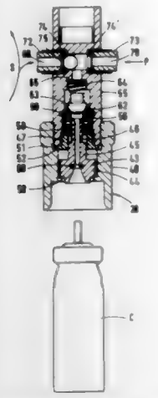
1. A method of introducing into a container a suspension or solution of a pharmaceutical substance in a propellant held under pressure, the suspension or solution being circulated in a line which includes a filling head, said method comprising:

bringing said filling head into communication with the container;

introducing a quantity of such suspension or solution into the container through the filling head;

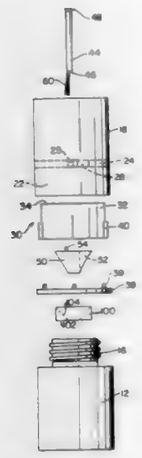
introducing a quantity of high pressure propellant without any of said pharmaceutical substance into the filling head while it is still in communication with the container, thereby to flush through any suspension or solution remaining in the filling head; said filling head permitting introduction of only one of the suspension or solution on the one hand and the propellant alone on the other hand at

any one time, the propellant which contains said pharmaceutical substance and the propellant without any of said



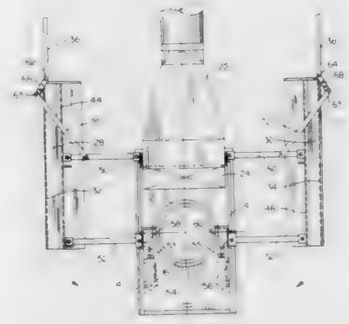
pharmaceutical substance being the same, said propellant being 1,1,1,2-tetrafluoroethane; and
withdrawing the filling head from the container.

5,345,981
APPLICATOR FOR FLUID PRODUCTS
Stanford Pavenick, 141 E. 56 St., Apt. 2K, New York, N.Y. 10022-2722, and Donald Garofalow, 16 Highland Rd., Montvale, N.J. 07645
Continuation-in-part of Ser. No. 950,481, Sep. 24, 1992, Pat. No. 5,207,847. This application Apr. 22, 1993, Ser. No. 51,524
The portion of the term of this patent subsequent to May 3, 2011, has been disclaimed.
Int. Cl.[5] A45D *34/00*
U.S. Cl. 141—20.5 **22 Claims**



1. An applicator for a fluid product, comprising
a bottle defining a reservoir and having an open end,
an annular ring arranged in said open end said bottle, said annular ring having an aperture providing communication between said reservoir and said open end of said bottle,
a cap for enclosing said open end of said bottle, said cap defining an enclosed chamber,
dispensing means for dispensing said fluid product from said chamber, said dispensing means including a stem connected at one end in fluid communication with said chamber and having a dispensing tip disposed at a free end,
passage means remote from said stem for defining a passageway for said fluid product between said chamber and said reservoir, and
valve means disposed in said cap for controlling the flow of said fluid product through said passageway.

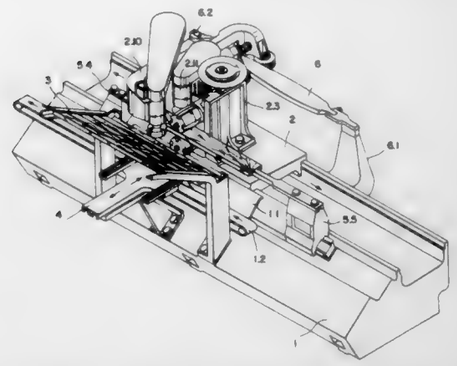
5,345,982
ADJUSTABLE HOOD ASSEMBLY
Ronald P. Nadeau, Syracuse, and Frank V. Smith, Jr., Town of Skaneateles, both of N.Y., assignors to Griffin Environmental Co., Inc., Syracuse, N.Y.
Filed Nov. 18, 1992, Ser. No. 978,395
Int. Cl.[5] E04H *15/14*
U.S. Cl. 141—93 **11 Claims**



9. A method for containing and collecting airborne particulate matter produced by filling a container with material, said method comprising the steps of:
providing a housing having side and rear panels so that the container to be filled is substantially coverable by the housing;
suspending the housing on an articulating frame system including extendable opposed side rails and a pair of openable rear arms so that the side panels can be extended and the rear panels thereby dependently opened for the positioning of the container within said housing and the panels then retracted and closed, respectively, for confining within the housing any airborne particulate matter produced by the delivery of material into the container enclosed in the housing;
providing an entrance port in the housing so that material can be delivered through the housing into the container enclosed therein; and
providing an exhaust port in the housing so that any airborne particulate matter produced by the delivery of material into the enclosed container can be removed from within the housing.

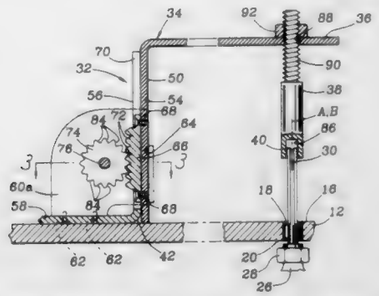
5,345,983
FOUR SIDED ALTERNATING WOODWORKING PLANER WITH TWO SIDED COPYING SYSTEM
Alfredo F. de Abreu, Santo Tirso, Portugal, assignor to Mida-Maquinas Industriais Do Ave, Lda., Trofa, Portugal
Filed Oct. 18, 1993, Ser. No. 137,348
Int. Cl.[5] B27C *1/00, 5/00*
U.S. Cl. 144—116 **14 Claims**

1. A woodworking planer comprising:
a main frame;
a carriage;
guide means for slidingly mounting said carriage on said main frame for alternating longitudinal movement along said main frame in a forward and backward direction;
workpiece locking means provided on said main frame for releasingly securing a workpiece in a fixed position on said main frame relative to the longitudinal movement of said carriage; and



cutting means provided on said carriage for movement therewith to plane four longitudinal sides of the workpiece simultaneously.

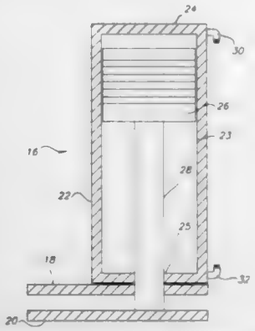
5,345,984
PIN ROUTER APPARATUS
William A. Ardesson, 1580 Ward Dr., Flint, Mich. 48532
Filed Dec. 10, 1993, Ser. No. 165,110
Int. Cl.[5] B27C *5/02*
U.S. Cl. 144—145 A **14 Claims**



1. In routing apparatus for use in cutting a workpiece to the shape of a template secured to said workpiece and including workpiece support means having a generally horizontal upper surface and an opening through said table, a rotary router bit extending through said opening and having a free end at a level above that of said table surface, and means for rotating said bit about an axis, the improvement comprising:
a guide pin overlying said table and extending toward the upper surface thereof,
said guide pin having a socket at its lower end for accommodating the free end of said bit;
and adjusting means for locating said bit and said socket relative to one another so that said socket accommodates said free end of said bit and ensures a coaxial relationship between said bit and said guide pin.

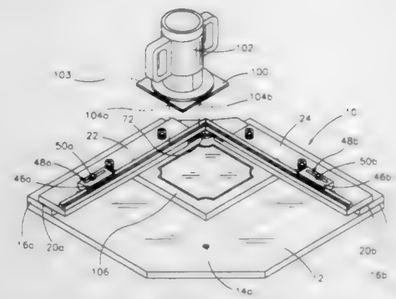
5,345,985
TREE STUMP REMOVAL METHOD AND APPARATUS
Jeffrey W. Murphy, 745 - 10th Ave., Sweet Home, Oreg. 97386
Filed Feb. 16, 1993, Ser. No. 17,755
Int. Cl.[5] A01G *23/06;* **B27M** *1/00*
U.S. Cl. 144—329 **17 Claims**

1. A method of removing a piece of wood from a logging site comprising:
(a) driving a spike into the piece of wood, the spike having a head suitable for receiving a line; and
(b) attaching the spike to the line; then



(c) pulling the piece of wood via the line to a desired area; and then
(d) removing the spike from the piece of wood.

5,345,986
AUXILIARY ROUTER GUIDE
Vincent C. Kieffer, 3205 Augusta Ave., Omaha, Nebr. 68144
Filed Dec. 9, 1993, Ser. No. 163,688
Int. Cl.[5] B27M *3/00;* **B27C** *5/00;* **G01B** *3/14*
U.S. Cl. 144—372 **18 Claims**



18. A method for guiding a router having a rotatable bit along a workpiece having a work face on the upper surface thereof, the router including a router guide plate mounted on the underside of the router, the router guide plate including a pair of guide pins removably secured to the router guide plate and extending downwards therefrom and a tool opening, the tool opening positioned for protrusion of the router bit through the center of the tool opening, said method comprising the steps;
providing a base platform having top and bottom surfaces, a guide pin receiving channel having at least one corner and at least two channel sections, said corner formed between said sections, said channel mounted on the top surface of the base platform, the channel being adapted to receive and guide the guide pins on the router guide plate and alignment means mounted on said bottom surface of said base platform for aligning a work piece relative to said channel;
positioning said base platform adjacent the work face of workpiece such that said bottom surface of said base platform is at least partially overlaying the upper surface of a work piece;
adjusting said alignment means to position a work piece relative to said guide pin receiving channel such that the work face may be routed;
inserting the guide pins of the router guide plate into said guide pin receiving channel;

moving the bit of the router into working engagement with the work face of a work piece; and

cutting a routed line in the work face of a workpiece by maintaining the guide pins in said guide pin receiving channel while simultaneously advancing the guide pins along said guide pin receiving channel;

said step of advancing the guide pins along said channel further including,

advancing the guide pins along a first section of said channel until a first guide pin engages one of said corners;

advancing the first guide pin along a second section of said channel connected to said first section of said channel at said corner, while simultaneously advancing the other guide pin along said first section of said channel to the point of engagement with said corner thereby cutting an arcuate routed line in a work piece, and

advancing both guide pins along said second section of said channel.

5,345,987

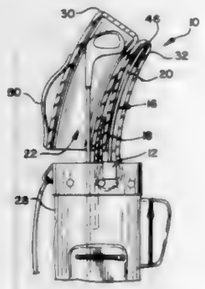
GOLF HEAD COVER

Gar Hagar, 2413 E. 42nd, Des Moines, Iowa 50317

Filed Jul. 30, 1993, Ser. No. 99,538

Int. Cl.[5] A63B *57/00*

U.S. Cl. 150—160 **13 Claims**



13. A golf club head cover retaining apparatus for protecting a golf club having a head and a shaft wherein the apparatus maintains the top of a golf club head cover above and out of contact with a golf bag having a top and a bottom, after the head of the golf club has been removed from the head cover and the golf club has been removed from the bag, comprising:

(a) a flexible wire frame releasably connected to the golf bag, said flexible wire frame having a substantially arched member with a bottom portion and a top portion, said bottom portion extending above the top of the golf bag substantially normal to the plane of the ground when the golf bag is in an upright position, said top portion of said substantially arched member being curved away from said normal position to accommodate substantially the curvature of the head of the golf club;

(b) a fabric covering surrounding at least a portion of said substantially arched member of said flexible wire frame;

(c) a strip which is connected to said fabric covering and depends below said substantially arched member to allow said flexible wire frame to be secured to the golf bag by said strip passing around a cross bar which substantially spans the top of the golf bag, said strip then being attached to a portion of said fabric covering, to thereby secure the head cover retaining apparatus to the golf bag;

(d) a golf club head cover attached to said flexible wire frame and configured to cover and protect the head of the golf club from physical contact with heads of adjacent clubs;

(e) a head cover handle connected to said head cover, said handle allowing said head cover to be more easily removed from the golf club;

(f) a fluted shaft protector with a substantially U-shaped cross-section, said fluted shaft protector having a lower portion which depends into the golf bag and below the top of the golf bag, and said fluted shaft protector also having an upper portion;

(g) means for operably attaching said flexible wire frame to the golf bag; and

(h) means for operably connecting said upper portion of said fluted shaft protector to said flexible wire frame.

5,345,988

PNEUMATIC RADIAL TIRE FOR HEAVY LOADS

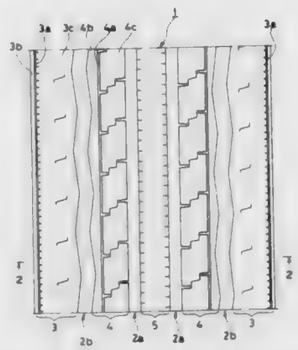
Kazuyuki Kabe, Hiratsuka, and Hajime Tomoda, Kanagawa, both of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 35,034

Claims priority, application Japan, May 27, 1992, 4-134755

Int. Cl.[5] B60C *11/06*

U.S. Cl. 152—209 R **4 Claims**



1. A pneumatic radial tire for heavy loads, having steel belt layers provided on the inner side of a tread, and a tread pattern having a plurality of divisional ribs separated by a plurality of main grooves extending in the circumferential direction of said tire, characterized in that at least the axially inner vertical surfaces of left and right outermost main grooves out of said main grooves are formed so as to extend zigzag in the circumferential direction of said tire, straight narrow grooves which extend continuously in the circumferential direction of said tire being provided at the shoulder side edge portions of ribs axially inward and adjacent to said outermost main grooves, the width W_4 of said narrow grooves being set to a level in the range of 0.5–1 mm, the axes of said narrow grooves which extend in the direction of the depth thereof being inclined in the downwardly inward direction with respect to a normal of said tread surface, said narrow grooves forming laterally separate rib bodies and narrow ribs having a height which is smaller than that of said rib bodies and an axially outer edge which extends in a zigzag line in the circumferential direction of the tire, a ratio of a maximum width W_2 of said narrow ribs to a total width W_1 of said ribs on the axially inner side of said outermost main grooves being set to a level satisfying the relation $W_2/W_1 \leqq 0.3$, an angle α_1 between the side surface which faces the relative outermost main groove of a maximum width portion of each narrow rib and a normal of said tread surface being set smaller than an angle α_2 between the side surface which faces the relative outermost main groove of a minimum width portion of each narrow rib and said normal whereby a circumferential tangential line of which a zigzag side surface on each said outermost main groove meets a bottom surface thereof extends linearly.

5,345,989

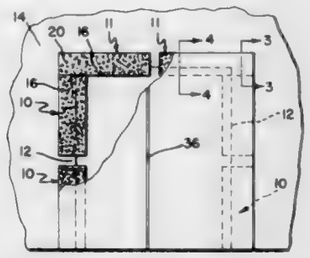
DUST GUARD MOUNTING

Dennis M. Brophy, 524 Green St., Boylston, Mass. 01532

Continuation-in-part of Ser. No. 18,571, Feb. 17, 1993, abandoned. This application Oct. 12, 1993, Ser. No. 134,438

Int. Cl.[5] A47H *23/00*

U.S. Cl. 160—354 **11 Claims**



1. A curtain for mounting on a wall in a building having an unobstructed opening defined by wall edges having front and back sides having finished surfaces such as for a door or archway in a building and a mounting means for temporarily holding the curtain over the opening comprising curtain means constructed and arranged to be temporarily attached to said wall edges around said opening without marring the surface of the front and back sides of said wall edges, said mounting means taking the form of a plurality of generally U shaped elements in crossection having resilient arms that freely extend from a connecting back, said arms of the mounting means being adapted to be temporarily engaged over and supported upon said front and back sides of said wall edges that define said opening, a plurality of said mounting means being adapted to be engaged on said wall edges to surround said opening, each of said U shaped mounting means supporting holding means on at least the outer surfaces of at least one of the arms of said U-shaped element, a curtain cut to a size having a perimeter to cover said opening, and cooperating holding means attached to the perimeter of said curtain to coact with said holding means supported on said U shaped mounting means when said plurality of holding means have been engaged upon said wall edges whereby said curtain may be temporarily attached to said holding means to cover said opening.

5,345,990

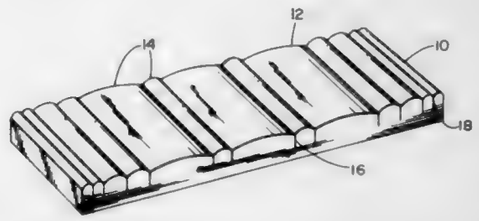
DECORATIVE WALL HANGING ARTICLE

Kenneth J. Potts, 811 Brookline Ave., Louisville, Ky. 40215

Filed Oct. 13, 1993, Ser. No. 135,785

Int. Cl.[5] E04F *10/00*

U.S. Cl. 160—38 **6 Claims**



1. A decorative wall hanging article for detachably securing fabrics thereto and providing a decorative appearance comprising

a form made from a flexible and soft material having a surface provided with a plurality of spaced shapes separated by slits extending into the material of said form,

a rigid member having a perimeter and substantially continuously abutting said form along a region adjacent the perimeter of said rigid member and substantially continuously secured to said form along points interior to said region of abutment, and

a fabric tucked into said slits and between said form and said rigid member in the region of abutment wherein said fabric conforms to said spaced shapes and provides said articles with a decorative appearance.

5,345,991

ROLLING GATE

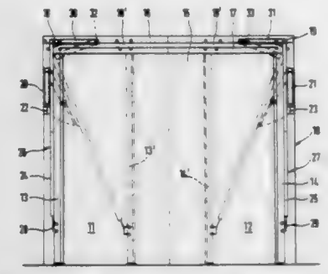
Johann Huber, Reutlingen, and Dieter Lutze, Kirchentellinsfurt, both of Fed. Rep. of Germany, assignors to Reiff GmbH, Reutlingen, Fed. Rep. of Germany

Filed Feb. 12, 1993, Ser. No. 17,620

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1992, 4204267

Int. Cl.[5] E06B *9/08*

U.S. Cl. 160—122 **15 Claims**



1. A rolling gate having a gate opening and comprising two gate parts movable toward each other from opposite sides of the gate opening and away from each other; carriage tracks mounted above the gate opening; a running carriage connected to each of said gate parts and movably mounted on said carriage tracks above the gate opening so as to carry each of said gate parts as said gate parts are moved toward each other or away from each other on said carriage tracks; a guide member extending longitudinally along a front edge of each of said gate parts; an L-shaped force transmitting element connected with each of said gate parts, a first end of said L-shaped force transmitting element being pivotally connected to and slidable along said guide member of said gate part connected with said L-shaped force transmitting element and a second end of said L-shaped force transmitting element being pivotally connected to a stationary member; and linear drive means for each of said gate parts, each of said linear drive means including an extendible driven member connected to respective ones of said L-shaped force transmitting elements to pivot said L-shaped force transmitting elements connected thereto and thus move said gate parts to open and close said gate opening and to apply a controlled closing force to said gate parts.

5,345,992

SHOWER CURTAIN CONFORMAL SUPPORT

Jeffrey B. Turner, 105 Woodbridge Dr., Charleston, W. Va. 25311-1127

Filed Sep. 10, 1993, Ser. No. 118,713

Int. Cl.[5] A47H *1/00*

U.S. Cl. 160—330 **7 Claims**

1. In combination with a curtain having end edges, end edge portions, an intermediate portion, and a top edge portion having a plurality of spaced openings therein, a curtain rod extending between a pair of spaced end walls which, with a rear wall, define an enclosure, means for slidably supporting said curtain on said curtain rod, comprising:

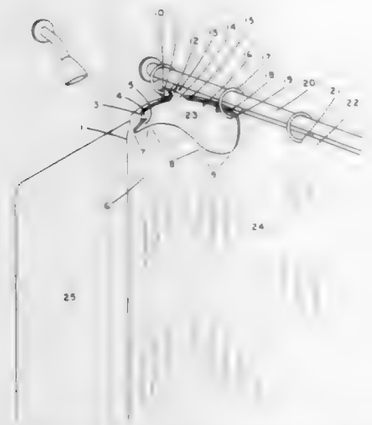
a curtain support including a body having a primary end portion, an intermediate portion, and a secondary end portion, and a support arm having a primary end portion, an intermediate portion, and a secondary end portion, said

intermediate portion of said body disposing said primary and said secondary end portions of said body in generally perpendicular orientation, said primary end portion of said body having a plurality of spaced openings along the upper marginal material thereof, said secondary end portion of said body having a primary tab and a secondary tab, said primary end portion of said support arm extending from said intermediate portion of said body, said intermediate portion of said support arm disposing said secondary end portion of said support arm in alignment with said primary end portion of said body, said secondary end portion of said support arm having an opening in the distal end material thereof;

first attachment means for attaching said primary end portion of said body and said intermediate portion of said curtain to said curtain rod, said first attachment means defined by a singular member of a plurality of curtain attachment members slidably carried on said curtain rod extending through a singular member of said spaced openings in said primary end portion of said body and through a singular member of said spaced openings along said top edge portion of said curtain whereby said primary end portion of said body and said top edge portion of said curtain are attached together and to said curtain rod for slidable movement therealong;

second attachment means for attaching said support arm to said curtain rod, said second attachment means defined by a singular member of a plurality of said curtain attachment members slidably carried on said curtain rod extending through said opening in said secondary end portion of said support arm whereby said support arm is attached to said curtain rod for slidable movement therealong;

third attachment means for attaching said secondary end portion of said body to said curtain, said third attachment means defined by said primary tab of said secondary end portion of said body extending from said body for insertion into a singular member of said spaced openings along said top edge portion of said curtain near at least one said end edge of said curtain.



5,345,993

STRIP FORMING APPARATUS FOR RAPID SOLIDIFICATION

Lloyd E. Hackman, Worthington, Ohio, assignor to Ribbon Technology Corporation, Gahanna, Ohio

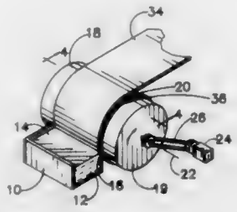
Continuation of Ser. No. 857,477, Mar. 25, 1992, abandoned. This application Sep. 7, 1993, Ser. No. 116,513

Int. Cl.[5] B22D *11/06*

U.S. Cl. 164—423 **5 Claims**

1. An apparatus for melt overflow casting of a metal sheet, the apparatus including a receptacle for containing a pool of molten metal, the receptacle having sidewalls, one of which has an upper, overflow edge over which molten metal flows against a rotatable, heat-conducting drum during rotation of the drum, for extracting heat from liquid metal in contact with the drum and forming the solidified sheet on the peripheral surface of the drum, the apparatus comprising:

(a) an outer cylindrical casting surface formed on the drum and defined by a pair of axially spaced, terminal, annular shoulders on laterally opposite sides of the casting surface and located inwardly from each end of the drum; and



(b) a pair of spaced walls formed on the receptacle at opposite ends of the overflow edge and spaced apart by a distance substantially equal to the distance between said spaced terminal shoulders of the casting surface for confining the region of contact between the molten metal and the drum to said casting surface.

5,345,994

CASTING METAL STRIP

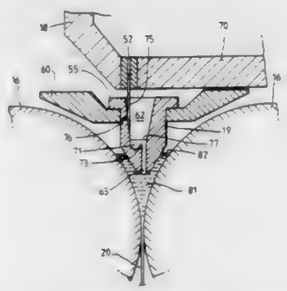
Heiji Kato, Yokasuka, Japan, and John Freeman, Kahibah, Australia, assignors to Ishikawajima-Harima Heavy Industries Company Limited, Tokyo, Japan and John Lysaght (Australia) Limited, Sydney, Australia

Filed Feb. 17, 1993, Ser. No. 18,533

Claims priority, application Australia, Apr. 24, 1992, PL2089

Int. Cl.[5] B22D *11/06, 11/10*

U.S. Cl. 164—480 **14 Claims**



1. Apparatus for casting metal strip comprising a pair of parallel casting rollers forming a nip between them and a metal delivery nozzle for delivering molten metal into the nip between the casting rollers, wherein the metal delivery nozzle comprises an elongate trough to receive molten metal, the floor of the trough comprises an upwardly facing channel and a nozzle outlet slot extending longitudinally of the trough in side by side relationship, the channel merges smoothly at one of its sides with a side wall of the trough and rises at its other side above the root of the channel to the outlet slot, said side wall of the trough is disposed at an acute angle to the vertical and the apparatus further comprises molten metal supply means to supply molten metal to the delivery nozzle in one or more falling streams so as to impinge against the side wall of the trough.

9. A method of casting metal strip from a pair of parallel casting rollers defining a nip therebetween comprising:

introducing molten metal into a delivery nozzle means disposed above said casting rollers, comprising an elongated trough adapted to receive said molten metal, disposed generally parallel to said nip of said casting rollers, which trough comprises:

an upwardly directed nozzle outlet slot means extending longitudinally of said trough at the floor of said trough;

an upwardly facing channel means at the floor of said trough extending longitudinally of said trough extending generally parallel to, and in side by side arrangement with said slot means, having:

a first channel side wall, directed towards said slot, extending higher than the base of said channel; and

a second channel side wall, means directed away from said slot;

a first trough side wall extending smoothly upwardly from side of said nozzle outlet slot means disposed away from said channel means; and

a second trough side wall extending upwardly from said second channel side wall means and outwardly in a direction away from said slot means;

impinging said molten metal onto said second trough side wall thereby forming a sheet of molten metal adhering to and flowing smoothly down said second trough side wall, said second channel side wall means, and thence into said channel means in an amount sufficient to overfill said channel means; and

causing said molten metal to overflow said first channel side wall, between said channel and said slot, and thence to flow into said slot.

5,345,995

REFRACTORY ELEMENT

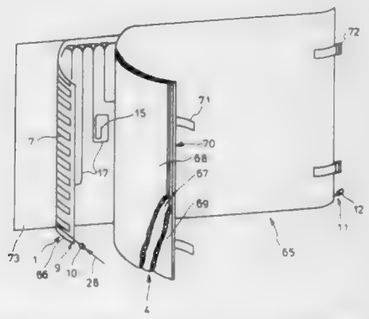
Toshikazu Yano, and Masao Ochi, both of Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 73,619, Jun. 8, 1993, which is a continuation of Ser. No. 695,693, May 3, 1991, abandoned. This application Aug. 26, 1993, Ser. No. 111,889

Claims priority, application Japan, May 21, 1990, 2-130563; May 21, 1990, 2-130564; May 21, 1990, 2-130565; Oct. 4, 1990, 2-267142

Int. Cl.[5] F25D *7/00*

U.S. Cl. 165—46 **5 Claims**



1. A refractory blanket comprising an intermediate layer of pliant, heat resistant cloth material having inner and outer faces; a heat transmission cooling layer joined to the inner face of said intermediate layer and comprising first liquid passages of flexible tubing sewed along and throughout the inner face of said intermediate layer, a layer of heat resistant cloth material also sewed to the inner face of said intermediate layer over said first liquid passages, and a liquid supply port for connecting said first liquid passages to a source of liquid under pressure; an outer ooze cooling layer joined to the outer face of said intermediate layer and comprising a sheet of porous heat resistant insoluble paper material sandwiched between inner and outer layers of heat resistant cloth material, second liquid passages of flexible tubing having a plaurality of outlet ports disposed between said inetermediate layer and said outer ooze cooling layer and arranged to distribute liquid throughout said ooze cooling layer, and fluid passage joints connecting said first and second liquid passages to distribute liquid through said passages when the port of said first liquid passage is connected to a source of liquid under pressure.

5,345,996

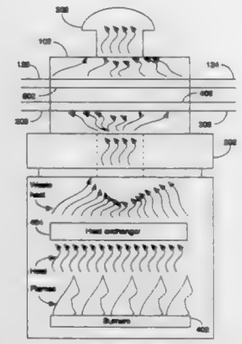
ENERGY SAVING WATER AND AIR BUBBLE HEAT MAXIMIZER FOR SWIMMING POOLS, HOT TUBS, AND SPAS

Robert H. Druien, 6128 Heather St., Palm Beach Gardens, Fla. 33418

Filed Apr. 27, 1993, Ser. No. 53,720

Int. Cl.[5] A61H *33/02*

U.S. Cl. 165—47 **13 Claims**



9. A heat maximizer for reclaiming waste heat from a heater for a bathing facility such as a spa, tub, or pool, the heat maximizer comprising:

a heater;

an exhaust input to receive heated fumes containing waste heat exhausted from the heater; a secondary heat extractor positioned in the exhaust path of the heated fumes received by the exhaust input, the heat extractor further comprising at least one heat transfer conduit, at least one input for inputting air into the heat transfer conduit and at least one output for outputting air from the heat transfer conduit to the bathing facility; and

an exhaust output to vent the heated fumes after the waste heat has been extracted.

5,345,997

COOLING DEVICE

Eckart Drössler, Thüringen, Austria, and Rainer Batliner, Schaanwald, Liechtenstein, assignors to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

Continuation of Ser. No. 883,847, May 15, 1992, abandoned. This application Dec. 17, 1993, Ser. No. 170,647

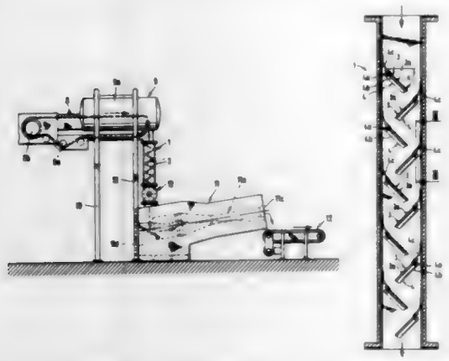
Claims priority, application Fed. Rep. of Germany, May 17, 1991, 4116216

Int. Cl.[5] F27D *15/00;* **C21D** *1/62*

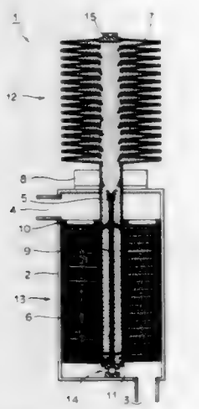
U.S. Cl. 165—47 **6 Claims**

1. Device for cooling small hardware items positioned between a heat treatment furnace (**9**) and a quenching bath (**11***d*), the device comprises wall means forming a generally vertically arranged hollow chamber having an upper inlet end and a lower outlet end, a plurality of baffles (**3**) spaced apart in the vertical direction within the hollow chamber, adjacent said baffles are offset relative to one another and inclined relative to the vertical for forming a tortuous downward flow path between the inlet and the outlet, said baffles each have an adjustable angle of inclination, relative to the vertical, wherein the improvement comprises that said baffles are thermal conductors, said wall means comprises opposed walls, a separate adjustable spring plate connects an upper end of each said

baffle to an adjacent said wall of said hollow chamber, said spring plates are adjustable to the adjustable angle of inclination of said baffles and prevent the small hardware items flowing downwardly over said baffles from bypassing the downward flow path by moving between said baffles and the adjacent said walls.

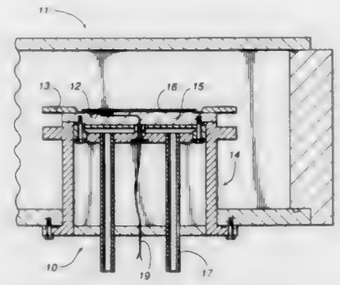


5,345,998
COOLING DEVICE
Akira Itoh, Osaka, Japan, assignor to Itoh Research & Development Laboratory Co., Ltd., Osaka, Japan
Filed Jul. 8, 1993, Ser. No. 90,281
Claims priority, application Japan, Nov. 27, 1992, 4-318552
Int. Cl.[5] F28D *15/02*
U.S. Cl. 165—86 **13 Claims**



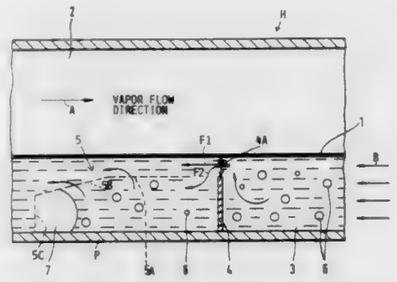
13. A heat pipe comprising a straight tubular heat pipe component having a first internal space and including a heat receiving portion and a heat rejecting portion, said heat pipe further comprising a spiral heat pipe component having a second internal space communicating with said first internal space, said spiral heat pipe component disposed spirally around said heat receiving portion, said heat pipe component further comprising a working fluid sealed within said first and second internal spaces.

5,345,999
METHOD AND APPARATUS FOR COOLING SEMICONDUCTOR WAFERS
Akihiro Hosokawa, Cupertino, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.
Filed Mar. 17, 1993, Ser. No. 32,361
Int. Cl.[5] F28F *7/00*
U.S. Cl. 165—80.2 **20 Claims**



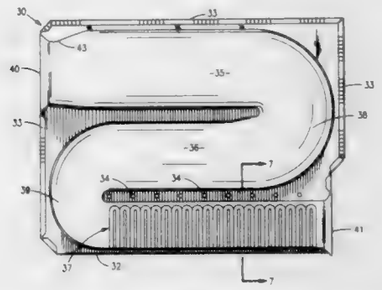
1. A method for cooling a semiconductor wafer, comprising the steps of:
holding a wafer to a pedestal wafer cooling surface with an electrostatic chuck comprising at least two separate electrostatic elements that are adapted to occupy at least two discrete portions of said wafer cooling surface, and which occupies a surface area which is less than that of the wafer cooling surface.

5,346,000
HEAT PIPE WITH A BUBBLE TRAP
Reinhard Schlitt, Bremen, Fed. Rep. of Germany, assignor to ERNO Raumfahrttechnik GmbH, Bremen, Fed. Rep. of Germany
Filed Nov. 29, 1993, Ser. No. 158,411
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1992, 4240082
Int. Cl.[5] F28D *15/02*
U.S. Cl. 165—104.26 **12 Claims**



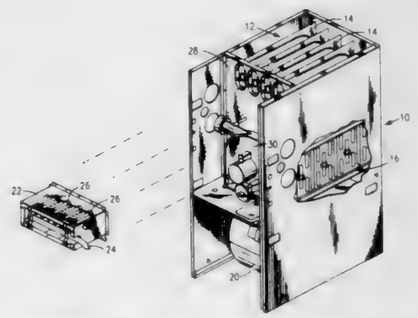
1. A heat pipe structure comprising a heat pipe having at least one liquid flow channel for liquid evaporant and at least one vapor flow channel for vaporized evaporant, said liquid flow channel having a liquid flow cross-section, a bubble trap arranged for collecting gas and/or vapor bubbles from said liquid flow channel of said heat pipe, said bubble trap comprising at least one baffle member (**4**) positioned in at least one location in said liquid flow channel, said baffle member (**4**) blocking a portion of said liquid flow cross-section, and at least one bubble trapping element arranged in said liquid flow channel downstream of said baffle member as viewed in the flow direction, said bubble trapping element being permeable to liquid and impermeable to gas bubbles, said baffle member (**4**) guiding bubbles into said bubble trapping element.

5,346,001
PRIMARY HEAT EXCHANGER HAVING IMPROVED HEAT TRANSFER AND CONDENSATE DRAINAGE
Larry D. Rieke, Zionsville, and Timothy J. Waterman, Carmel, both of Ind., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Jul. 7, 1993, Ser. No. 88,440
Int. Cl.[5] F28F *3/12*
U.S. Cl. 165—170 **17 Claims**



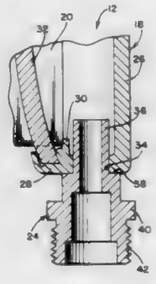
1. In a multi-poise furnace, a primary heat transfer stage for exchanging energy between internal heated flue gases and external comfort air, said stage including
a series of interconnected flow passages that are superimposed in a plane for conducting flue gases between an entrance region in the first flow passage and an exit region in the last flow passage in said series,
said last flow passage in the series containing top and bottom walls and opposed side walls having laterally- disposed indentations formed thereon that extend from the bottom wall partially up said side walls to establish a restricted flow path in the bottom section of said last flow passage and an unrestricted flow path in the top section of said last flow passage adjacent the top wall for increasing the heat transfer surface area of said last passage.

5,346,002
CELL PANEL WITH EXTRUDED BURNER TARGET PLATES AND PROCESS FOR MAKING SAME
Robert C. Swilik, Jr., Indianapolis; Thomas P. Bruce, Columbus; Rex R. Mills, Indianapolis, and Michael J. Larsen, Danville, all of Ind., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Sep. 9, 1993, Ser. No. 119,010
Int. Cl.[5] P24H *3/00*
U.S. Cl. 165—173 **15 Claims**



1. A cell panel for a gas furnace having a burner box containing combustion burners, each of the burners for directing heat into the flared inlet port of a corresponding heat exchanger cell to heat a flow of circulating air passing over the cells, the panel comprising:
a rigid sheet member of substantially flat surface area formed from an extrudable material, the sheet being positioned between a discharge side of the burners and the inlet ports of the heat exchanger cells; and
a plurality of burner target plates formed in said rigid sheet member, each of the plates having a central opening and being extruded from the sheet material to form a concave side being positioned to face the discharge side of a respective combustion burner, and a convex side being formed so that the flared inlet port of a corresponding heat exchanger cell can be seated thereon;
whereby when each of the flared inlet ports of the heat exchanger cells is seated upon and secured to the convex side of a respective burner target plate, the heat exchanger cells are aligned within the furnace to allow heat transfer between the cells and the circulating air.

5,346,003
FACE PLUMBED CONDENSER FOR AUTOMOTIVE AIR CONDITIONER
Gary A. Halstead, and Gregory R. Smith, both of Lockport, N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 12, 1993, Ser. No. 134,455
Int. Cl.[5] F28F *9/02*
U.S. Cl. 165—173 **3 Claims**



1. A heat exchanger for an automotive air conditioning system, comprising,
a pair of parallel tanks at least of one which has a substantially flat face wall and a side wall portion,
a plurality of tubes extending into and between said tanks generally parallel to said face wall, the ends of which face said tank side wall portion with a predetermined spacing therebetween, and,
a fitting secured to and through said face wall generally perpendicular thereto and having a width less than said predetermined distance so that said fitting extends into said tank clear of said tube ends.

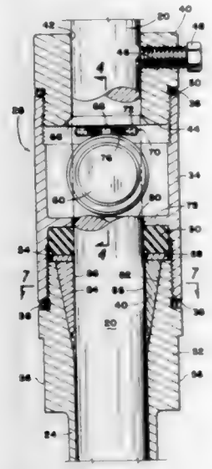
5,346,004
ENVIRONMENTALLY SECURE POLISHED ROD LINER HEAD
B. Michael Borden, 4075 W. Hillside Dr., Sapulpa, Okla. 74066; Brian C. Borden, and Ricky D. Page, both of Glenpool, Okla., assignors to B. Michael Borden, Sapulpa, Okla.
Filed Apr. 13, 1993, Ser. No. 47,648
Int. Cl.[5] E21B *33/00*
U.S. Cl. 166—84 **17 Claims**

1. For use with a polished rod employed in an oil well pumping system for vertically reciprocating a sucker rod string, the polished rod extending through a stuffing box, a polished rod liner head for supporting a tubular polished rod liner on the polished rod, comprising:
a body member having a vertical passageway therethrough for receiving a polished rod, the body member having an upper and a lower end;
means adjacent said body member lower end for attachment of a tubular polished rod liner having a tubular interior that receives the polished rod therein and to thereby

communicate the tubular interior with said body member passageway;

means of affixing said body member to a polished rod to thereby support a polished rod liner thereon; and

a closure member within said body member passageway having an opened and a closed position, the closure member being displaced to an open position when a polished rod is received in said passageway, the closure member moving to the closed position in the absence of a polished rod to thereby close said body member passageway and the polished rod liner tubular interior against the passage of fluid upwardly therethrough.



5,346,005

INFLATABLE BOREHOLE PLUG ASSEMBLIES

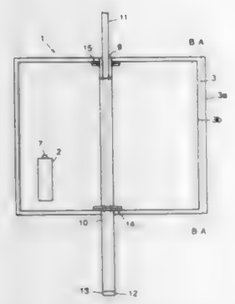
Geoffrey Robbins, St. Peters, Australia, assignor to Sanleo Holdings Pty. Ltd., Milson's Point, Australia

Filed Dec. 23, 1992, Ser. No. 996,185

Claims priority, application Australia, Dec. 24, 1991, PL0178; Dec. 24, 1991, PL0179

Int. Cl.[5] E21B *33/00*

U.S. Cl. 166—187 **22 Claims**



1. An inflatable borehole plug assembly, comprising a sealed gas-tight inflatable container containing a pressurized vessel having pressure releasing means, said pressurized vessel containing an inflating substance and a time delay liquid, adapted so that on operation of the pressure releasing means (i) said time delay is discharged from the pressurized vessel, thereby causing a time delay between said operation of the pressure releasing means and release of said inflating substance from said pressurized vessel, and (ii) after the time delay liquid has been discharged the inflating substance is discharged thereby inflating the inflatable container to form a borehole plug; wherein the inflatable container is adapted so as to allow for operation of the pressure releasing means before the inflatable borehole plug assembly is dropped, lowered or pushed into a borehole.

5,346,006

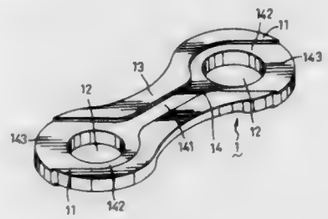
OUTER CHAIN PLATE OF A BICYCLE DRIVE CHAIN

Nick Wu, Tainan, Taiwan, assignor to KMC Chain Industrial Co., Ltd., Tainan Hsien, Taiwan

Filed Sep. 3, 1993, Ser. No. 116,667

Int. Cl.[5] F16G *13/02*

U.S. Cl. 166—206 **5 Claims**



1. An outer chain plate of a bicycle drive chain, said outer chain plate including an elongated plate body with upper and lower edges, two end portions formed with a respective hole, and a waist portion interconnecting said end portions, said plate body having an outer face which is formed with a generally S-shaped longitudinal recess that includes a straight connecting portion formed in said waist portion, and insert portions which are disposed on two ends of said straight connecting portion and which surround a respective one of said holes, a wall surface confining one of said insert portions and an inner wall surface confining the respective one of said holes being displaced by a predetermined distance, said longitudinal recess having two open ends which extend respectively from said insert portions and which open in opposite directions toward a respective one of said upper and lower edges of said plate body, said plate body further having an inner face which is formed with a generally S-shaped longitudinal projection, said longitudinal projection having a shape that corresponds to that of said longitudinal recess and including a connecting portion formed in said waist portion and two flat portions which are disposed on two ends of said connecting portion and which surround a respective one of said holes.

5,346,007

WELL COMPLETION METHOD AND APPARATUS USING A SCAB CASING

Patrick W. Dillon, and William C. Billings, both of Bakersfield, Calif., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 19, 1993, Ser. No. 47,988

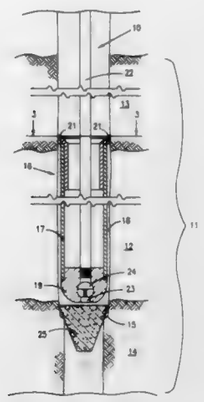
Int. Cl.[5] E21B *43/00*

U.S. Cl. 166—254 **16 Claims**

1. A method for completing a production interval of a wellbore wherein said production interval has at least one trouble zone intermediate two productives zones, said method comprising:

locating said at least trouble zone within said production interval;

positioning a scab conduit across said trouble zone while leaving said two productive zones open to said wellbore; and



cementing said scab conduit in said wellbore to thereby seal off said at least one trouble zone from said wellbore.

5,346,008

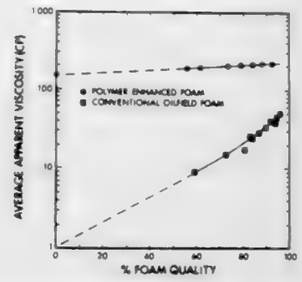
POLYMER ENHANCED FOAM FOR TREATING GAS OVERRIDE OR GAS CHANNELING

Robert D. Sydansk, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 1,484, Jan. 7, 1993. This application Mar. 1, 1993, Ser. No. 22,703

Int. Cl.[5] E21B *43/22, 43/32*

U.S. Cl. 166—274 **17 Claims**



1. A process for reducing gas production into a liquid hydrocarbon production wellbore in fluid communication with a hydrocarbon producing interval of a subterranean formation, the process comprising:

injecting foam components into said liquid hydrocarbon production wellbore, said foam components comprising a substantially uncrosslinked polymer, a surfactant, an aqueous solvent, and a foaming gas, thereby placing a polymer enhanced foam in a gas flowpath in said hydrocarbon producing interval, wherein said foam comprises said substantially uncrosslinked polymer, said surfactant, said aqueous solvent, and said foaming gas, and wherein said foam substantially reduces the flow of a flowing gas through said flowpath into said liquid hydrocarbon production wellbore.

5,346,009

PRECIPITATION OF SCALE INHIBITORS

Jimmie B. Lawson; Robert J. Faircloth, and George N. Iken, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 8, 1993, Ser. No. 14,585

Int. Cl.[5] E21B *43/12, 43/22*

U.S. Cl. 166—279 **9 Claims**

1. A method to reduce scale deposition in an aqueous phase producing wellbore and surrounding formation, wherein the formation comprises $CaSO_4$, the method comprising the steps of:

a) providing a solution comprising an anionic scale inhibitor and a salt having a monovalent cation in a concentration effective to at least about double the solubility of calcium sulfate compared to a scale inhibitor solution in the absence of the salt having a monovalent cation;

b) injecting the solution into the formation;

c) precipitating a portion of the anionic scale inhibitor in the formation as a calcium salt of the anionic scale inhibitor; and

d) producing the aqueous phase from the wellbore.

5,346,010

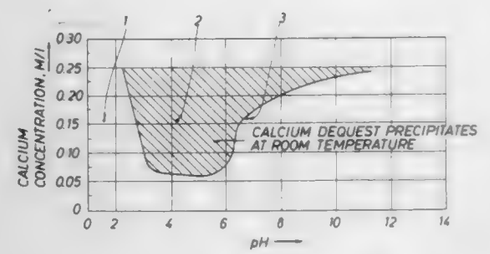
PRECIPITATION OF SCALE INHIBITORS IN SUBTERRANEAN FORMATIONS

Gerald C. Adams, Sugar Land; Robert J. Faircloth, and Jimmie B. Lawson, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 31, 1993, Ser. No. 40,784

Int. Cl.[5] E21B *43/12, 43/22*

U.S. Cl. 166—279 **17 Claims**



1. A process to emplace a scale inhibitor within a brine containing subterranean formation in the vicinity of a producing wellbore comprising:

providing an acidic aqueous solution comprising a dissolved scale inhibitor and a metal cation which combination is slightly soluble in the formation brine, a precursor which is capable of reacting within the formation to become a basic component and a chelating agent in an amount effective to prevent decomposition of the precursor upon contact with steel tubulars;

injecting the acidic aqueous solution into the formation through the wellbore; and

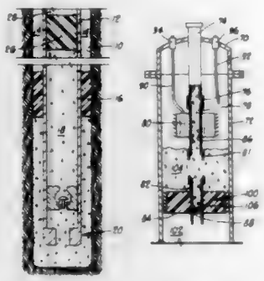
producing formation fluids from the wellbore after the precursor has generated an amount of basic material sufficient to cause an amount of the scale inhibitor and metal cation to precipitate within the formation that is effective to provide scale inhibition.

5,346,011

METHODS OF DISPLACING LIQUIDS THROUGH PIPES

David D. Onan, Lawton; Vincent J. Bila, Duncan; James L. Haney, Duncan; Gary E. Folmnsbee, Duncan; Ronney R. Koch, Duncan, all of Okla.; Randall D. Stilley, London, United Kingdom, and Larry T. Watters, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 1, 1993, Ser. No. 41,083
Int. Cl.[5] E21B *33/16*
U.S. Cl. 166—291 **11 Claims**



1. In a method of cementing a pipe suspended in a subterranean well bore filled with drilling fluid wherein a first solid plug for separating drilling fluid in the pipe from a cement slurry to be pumped therein and for wiping the walls of the pipe is placed in the pipe, a cement slurry is pumped into the pipe to displace the first plug to the bottom of the pipe and to displace the drilling fluid from the pipe into the annulus between the exterior of the pipe and the walls of the well bore, a second solid plug for separating the cement slurry in the pipe form a displacement liquid to be pumped therein and for wiping the walls of the pipe is placed in the pipe and a displacement fluid is pumped into the pipe to displace the second plug to the bottom of the pipe and to displace the cement slurry into the annulus between the pipe and the walls of the well bore, the improvement which comprises:

forming the first liquid separating plug in-situ in said pipe by injecting a first self-thickening liquid therein and permitting said liquid to thicken into a first liquid-separating plug in said pipe prior to pumping said cement slurry thereinto;

pumping said cement slurry into said pipe and displacing said first plug to the bottom of said pipe and said drilling fluid into said annulus;

forming the second liquid separating plug in-situ in said pipe by injecting a second self-thickening liquid therein and permitting said liquid to thicken into a second liquid-separating plug in said pipe prior to pumping said displacement liquid thereinto; and

pumping said displacement liquid into said pipe and displacing said second plug to the bottom of said pipe, displacing said first plug into said annulus and displacing said cement slurry into said annulus.

5,346,012

FINE PARTICLE SIZE CEMENT COMPOSITIONS AND METHODS

James F. Heathman, and Ronald J. Crook, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Feb. 1, 1993, Ser. No. 12,091
Int. Cl.[5] E21B *33/13*
U.S. Cl. 166—293 **15 Claims**

1. A method of cementing in a subterranean zone penetrated by a well bore comprising the steps of:

pumping a fine particle size cement composition into said zone, said cement composition comprising:

a fine particle size hydraulic cement wherein the particles are of a size no greater than about 30 microns and have a Blaine Fineness no less than about 6000 square centimeters per gram;

a fine particle size pozzolanic material characterized by a low calcium hydroxide content whereby it does not chemically react at ordinary temperatures in the presence of water to form a cementitious compound without the addition of calcium hydroxide thereto and which in the presence of water combines with calcium hydroxide released by the hydration of said hydraulic cement wherein the particles are of a size no greater than about 30 microns and have a Blaine Fineness no less than about 5,000 square centimeters per gram, said pozzolanic material being present in said composition in an amount in the range of from about 20% to about 90% by weight of cement therein;

sufficient water to form a pumpable slurry; and

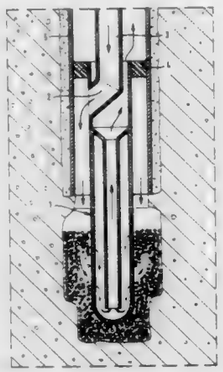
allowing said cement composition to set into a hard substantially impermeable mass in said zone.

5,346,013

METHOD FOR REDUCING OR COMPLETELY STOPPING THE INFLUX OF WATER IN BOREHOLES FOR THE EXTRACTION OF OIL AND/OR HYDROCARBON GAS

Günter Pusch, Celle, and Mohammad Ranjbar, Clausthal-Zellerfeld, both of Fed. Rep. of Germany, assignors to Hoechst AG, Frankfurt, Fed. Rep. of Germany

Filed Apr. 12, 1993, Ser. No. 45,938
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1992, 4212211
Int. Cl.[5] E21B *33/138, 43/25, 43/32*
U.S. Cl. 166—295 **20 Claims**



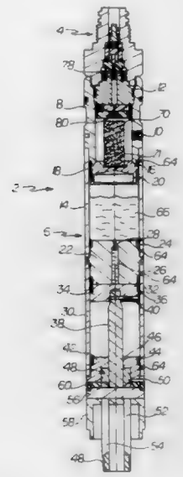
1. A method for reducing or completely stopping the water inflows of a deposit in at least a portion of a borehole for the extraction of oil and/or hydrocarbon gas, which borehole traverses a deposit, a solution of a polymer being introduced, starting from the borehole, into that portion of the deposit in which the water inflows are to be reduced or stopped, and the bore subsequently being put into service for the extraction of oil and/or hydrocarbon gas, the fluids present in the deposit coming into contact with said portion of the deposit containing the polymer and the oil and/or hydrocarbon gas flowing through said portion of the deposit and reaching the borehole, wherein the non-aqueous solution of a hydrophobic, water-insoluble polymer is introduced into the deposit and the polymer precipitates in the presence of the connate water of the deposit.

5,346,014

HEAT ACTIVATED BALLISTIC BLOCKER

Richard J. Ross, Houston, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Mar. 15, 1993, Ser. No. 31,651
Int. Cl.[5] E21B *43/116*
U.S. Cl. 166—297 **32 Claims**



1. An apparatus for use in a wellbore to prevent an igniter from igniting a pyrotechnic device within a downhole well tool until after said downhole well tool is disposed downhole within said wellbore, said apparatus comprising:

a housing having an ignition pathway extending therein, through which said igniter reacts for igniting said pyrotechnic device;

a solid blocking member which is movable between a plurality of positions for selectably obstructing said ignition pathway to prevent said igniter from igniting said pyrotechnic device; and

an actuator for lowering downhole within said wellbore with said downhole well tool and heating to an activation temperature, at which said actuator moves said solid blocking member from a blocking position obstructing said ignition pathway to an ignition position for allowing said igniter to ignite said pyrotechnic device.

5,346,015

METHOD OF STIMULATION OF A SUBTERRANEAN FORMATION

Steven R. Grundmann, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed May 24, 1993, Ser. No. 65,961
Int. Cl.[5] E21B *43/263*
U.S. Cl. 166—299 **17 Claims**

1. A method of treating a subterranean formation to extend or widen fractures intersecting a wellbore in said formation to facilitate the flow of fluids from the formation into the fracture comprising:

introducing an explosive gas comprising a gaseous oxidizer and a gaseous fuel into a fracture intersecting a wellbore penetrating said subterranean formation; and

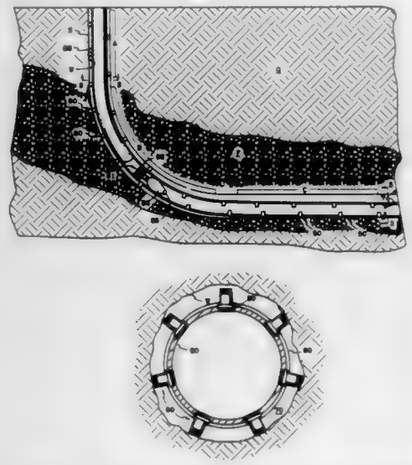
igniting said explosive gas within said fracture whereby the detonation of said gas produces a high pressure wave within said fracture which results in the expansion of said fracture in said formation whereby the subsequent flow of fluids to said wellbore is enhanced.

5,346,016

APPARATUS AND METHOD FOR CENTRALIZING PIPE IN A WELLBORE

Dennis R. Wilson; Jack H. Cole, both of Ponca City; Wilber R. Moyer, Blackwell, and Larry K. Moran, Ponca City, all of Okla., assignors to Conoco Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 761,210, Sep. 16, 1991, Pat. No. 5,228,518. This application Apr. 20, 1993, Ser. No. 51,032
Int. Cl.[5] E21B *17/10*
U.S. Cl. 166—380 **21 Claims**



2. Apparatus for spacing a casing pipe string from the walls of the borehole, comprising:

a plurality of piston guides laterally arranged in the wall of pipe sections making up the casing pipe string, such guides extending between the exterior wall of the casing pipe and a longitudinal bore in the casing pipe;

pistons arranged for sliding movement in said guides from a retracted position, where the outer end of the piston does not extend outwardly beyond the piston guide, to a single predetermined discrete extended position where the outer end of the piston may be moved outwardly from the guide to only one predetermined position;

said guides and retracted pistons being arranged so that they are within the maximum exterior profile of the casing pipe string;

said guides and extended pistons being arranged so that they are substantially clear of the bore in the casing pipe to provide a full opening within the casing pipe bore when said pistons are in said extended position.

16. A method for centralizing a casing pipe string from the walls of a wellbore wherein the wellbore is established for use in a well system involved in the production of hydrocarbons from earth formations, wherein the pipe string is provided with transverse piston guides in the walls of the pipe string and pistons are mounted in the piston guides for movement from a retracted position where the outer end of the pistons are inside the piston guide to an extended position where the outer end of the pistons extends outwardly beyond the piston guides toward the wellbore, and wherein the pipe string is made up of casing pipe sections with casing collars interconnecting the pipe sections, the collars having a greater peripheral wall thickness and a greater outside diameter than the pipe sections so that the collars represent the maximum exterior profile of the pipe string, the method comprising;

moving the pistons from said retracted position to said extended position, wherein in the retracted position an inner end of the piston extends into a bore within the pipe string and an outer end of the piston is within the maximum exterior profile of the pipe string, wherein the piston guides are within the maximum exterior profile of the pipe

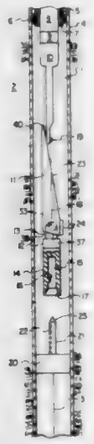
string and do not extend substantially into the bore of the pipe string so that the bore of the pipe string is open when the piston is moved to an extended position, and wherein in the extended position the outer ends of the pistons are moved to a predetermined single position for contact with the wall of the wellbore and the inner end of the piston is substantially clear of the bore of the pipe string to render the bore of the pipe string full open.

5,346,017

METHOD AND APPARATUS FOR SETTING A WHIPSTOCK

Curtis G. Blount, Wasilla, Ak.; Charles M. Hightower, Plano, Tex., and Charles D. Hailey, Oklahoma City, Okla., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 27, 1993, Ser. No. 126,420
Int. Cl.[5] E21B *19/00*
U.S. Cl. 166—380 | **20 Claims**



1. In a method for setting a whipstock which has first and second ends onto a packer which is fixed in a wellbore in the earth, said wellbore having a long axis that extends into the earth, the improvement comprising the stage of: providing a coiled tubing injection unit carrying coiled tubing for insertion into a well conduit that extends along said long axis; providing at one end of said coiled tubing a tool combination comprising a setting tool which carries said whipstock, said whipstock being connected to said setting tool by a shear member, said whipstock carrying a connector that is rotatably and slidably connected to said whipstock so that said whipstock can move laterally to said long axis and rotate about an axis that is transverse to said long axis, said connector carrying a stinger that is adapted to engage said packer; passing said tool combination into said wellbore by said coiled tubing until said stinger engages said packer; moving said whipstock laterally to said long axis and rotating said whipstock about an axis transverse to said long axis until said first and second ends of said whipstock come into contact with opposing sides of said well conduit; and shearing said shear member to separate said setting tool from said whipstock.

5,346,018

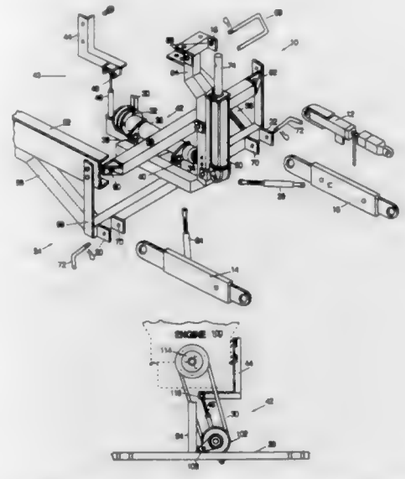
VEHICLE HYDRAULIC THREE-POINT HITCH AND POWER TAKE-OFF SHAFT

Rick L. Koster, 8895 N. 15 E., Idaho Falls, Id. 83401

Filed Oct. 26, 1992, Ser. No. 966,515
Int. Cl.[5] A01B *33/08*
U.S. Cl. 172—47 | **1 Claim**

1. A three-point hitch assembly for attachment of an implement to a vehicle comprising:

a. a frame bracket to attach to the vehicle frame;
b. a pair of lower pivot arms pivotally attached to the frame bracket;
c. hydraulic lift means mounted on the frame bracket for raising and lowering the pivot arms;
d. an upper pivot arm connecting to the hydraulic lift means;
e. a belt-driven power take-off assembly and electric clutch mounted on the frame bracket connected below a vehicle engine pulley, the power take-off assembly and electric clutch further comprising:
1) an engine bracket attached to the engine;
2) a pivotal threaded shaft attached to the engine bracket;
3) an adjusting nut on the threaded shaft;



4) an arm engaging the pivotal threaded shaft and adjusting nut;
5) a power take-off tube pivotally attached to the frame bracket; and
6) a jackshaft within the power take-off tube, wherein belt tension is set by the adjusting nut and constant tension is maintained on the belt regardless of engine motion;
f. electrical control means to control the hydraulic lift means and electric clutch; and wherein the upper and lower pivot arms are maintained in a parallel configuration in a raised and lowered position thereby maintaining the implement in a vertical orientation in a raised and lowered position and in a continuum between the raised and lowered position.

5,346,019

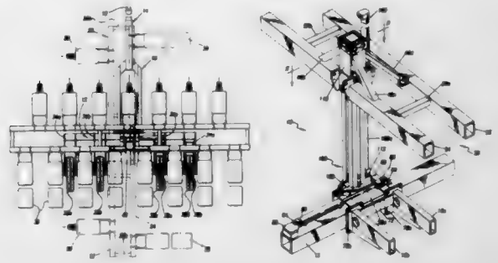
AGRICULTURAL IMPLEMENT WITH COMMON MECHANISM FOR RAISING/LOWERING AND ROTATING A LIFT FRAME ABOUT A VERTICAL AXIS

Jon E. Kinzenbaw, Williamsburg; Alan F. Barry, Fairfax, and Harry C. Deckler, Williamsburg, all of Iowa, assignors to Kinze Manufacturing, Inc., Williamsburg, Iowa

Filed Feb. 26, 1993, Ser. No. 22,991
Int. Cl.[5] A01B *49/00, 63/32*
U.S. Cl. 172—311 | **23 Claims**

1. An agricultural implement adapted to be pulled by a tractor with a hitch and convertible between a use position and a transport position, said implement comprising: a carrier frame having a plurality of ground support wheels and aligned generally transverse to the direction of travel of said tractor; draft tongue means for pivotally connecting said carrier frame to said tractor hitch; lift frame means including a lift frame and a plurality of row units spaced along said frame, said lift frame further including a generally vertical sleeve and at least an integral center frame section extending generally transverse to the direction of travel of the implement; a cornered post

mounted to said carrier frame for rotation about a vertical pivot axis, said cornered post sized for close-fitting sliding engagement with said sleeve; first power means coupling said lift frame to said carrier frame for moving said lift frame substantially vertically along said cornered post between at least a lowered use position and a raised transport position; and sec-



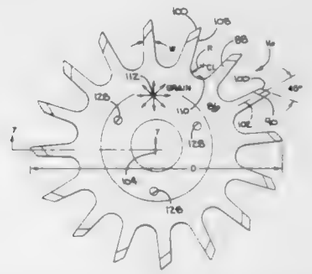
ond power means connected between said cornered post and said carrier frame for rotating said post about said vertical pivot axis thereby to turn said lift frame to a longitudinal position for transport; and characterized in that the distance between said vertical pivot axis and the center of gravity of said lift frame remains substantially constant during raising and lowering of said lift frame.

5,346,020

FORGED CLEARING WHEEL FOR AGRICULTURAL RESIDUE

James H. Bassett, c/o Dawn Equipment Co., 1210 E. State St., Sycamore, Ill. 60178

Filed Aug. 4, 1992, Ser. No. 925,371
Int. Cl.[5] A01B *21/02*
U.S. Cl. 172—540 | **24 Claims**



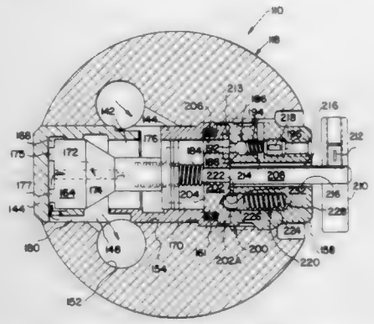
12. A clearing wheel for agricultural residue, said clearing wheel comprising:
a hub defining a central axis about which the clearing wheel can be rotated in use; and
a plurality of cutting teeth projecting radially outwardly from the hub to intercept and resituate residue upon the clearing wheel's being rotated about its central axis,
there being at least a first and second of said teeth,
said first tooth having an internal grain pattern running in a first direction,
said second tooth having an internal grain pattern running in a second direction,
whereby said first and second directions are transverse to each other,
wherein said teeth and hub are formed by a forging process,
said first and second teeth and entire hub being formed as one piece.

5,346,021

FASTENING TOOL HAVING IMPROVED PRESSURE REGULATOR DEVICE

Mark F. Braunlich, Willoughby, Ohio, assignor to The Stanley Works, New Britain, Conn.

Filed May 10, 1993, Ser. No. 58,381
Int. Cl.[5] B25B *23/145*
U.S. Cl. 173—177 | **13 Claims**



7. In an air operated fastener setting tool having an air motor, a housing for the motor, the housing having a passageway for supplying air under pressure to the motor, and a pressure regulator mounted in the housing, the pressure regulator including a valve chamber having an inlet port and an outlet port connected to the passageway with a pressure selecting valve member movable in the chamber between a relatively open position and a relatively restricted position respectively establishing relatively open flow and restricted flow conditions in the chamber between said ports, a spring biasing the pressure selecting valve member toward its open position, and passage means for directing air pressure on the motor side of the pressure selecting valve member against its opposite ends such that it is initially air balanced and biased by the spring toward open position, a selectable set torque device comprising
a plurality of pressure relief pilot valves in the housing for connecting the chamber with atmosphere, each of the pilot valves being adjusted to a different specified tool output torque, and
a manually operable selector mounted within the housing and having a passage in communication with the chamber, the passage being selectively registrable with any one of the pressure relief pilot valves for connecting the chamber with atmosphere and quickly establishing a previously adjusted specified tool output torque.

5,346,022

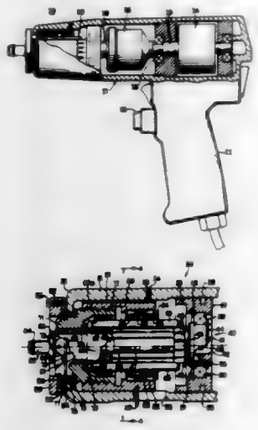
TORQUE LIMITING DEVICE FOR AIR IMPACT TOOL

Bert Krivec, Waukesha, Wis., assignor to Snap-on Incorporated, Kenosha, Wis.

Filed Jan. 29, 1993, Ser. No. 11,497
Int. Cl.[5] B25B *23/157;* **F16D** *3/56*
U.S. Cl. 173—178 | **20 Claims**

1. A torque limiting mechanism comprising:
two coaxial shafts having an axis of rotation, a rigid torque member coupled to one of said shafts and having a peripheral drive surface including a plurality of drive surface portions, a plurality of flexible and resilient torque members coupled to the other of said shafts for engagement with said peripheral drive surface, threaded cylindrical retaining means encircling said resilient torque members and disposed in engagement therewith for holding said resilient torque members in engagement with said peripheral drive surface with a predetermined force for preventing rotation of said resilient torque members and said rigid torque member relative to each other about said axis at torques below a predetermined torque, said retaining means having a sloping engagement portion shaped and dimensioned substantially to make point contact with each

of said resilient torque members longitudinally thereof, said resilient torque members being yieldable at said predetermined torque and above to accommodate relative rotation between said resilient torque members and said rigid torque member, an adjusting member encircling said resilient torque members and disposed in threaded engagement with said cylindrical retaining means, and means



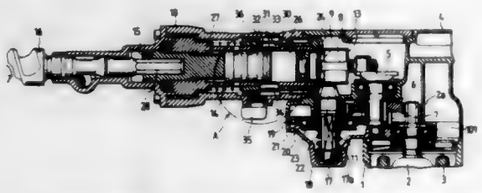
coupled to said adjusting member for accommodating rotation thereof about said axis while preventing axial movement thereof, thereby to effect axial movement of said cylindrical retaining means relative to said resilient torque members for varying said predetermined force to vary the torque at which said resilient torque members will yield.

5,346,023

SLIPPING TORQUE CHANGING APPARATUS FOR IMPACT TOOL

Toshiaki Takagi, Katsuta, and Yoshihiko Watanabe, Ibaraki, both of Japan, assignors to Hitachi Koki Company Limited, Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,310
Int. Cl.[5] B23B *45/16*
U.S. Cl. 173—178 **10 Claims**



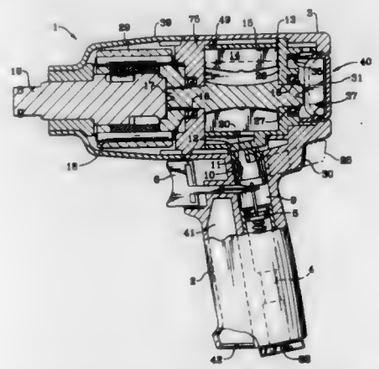
1. A slipping torque changing apparatus for an impact tool comprising:
- a driving source for generating a rotational motion:
- a motion converting mechanism portion, connected with said driving source, for converting the rotational motion of said driving source into a reciprocating motion;
- an impact mechanism portion, being connected with said motion converting mechanism portion, for transmitting said reciprocating motion to a tool end;
- a rotational motion transmitting mechanism portion, being disposed separately from said motion converting mechanism portion, for transmitting the rotational motion of said driving source to the tool end; and
- first and second slipping clutches being disposed at different portions on said rotational motion transmitting mechanism portion;
- said first slipping clutch having a slipping torque larger than a slipping torque of said second slipping clutch;
- said second slipping clutch including a lock-and-unlock member for selectively locking and unlocking said second slipping clutch, so that the second slipping clutch works prior to said first slipping clutch when said lock-and-unlock member is positioned to unlock the second slipping clutch, and conversely, does not work prior to said first slipping clutch when said lock-and-unlock member is positioned to lock the second slipping clutch.

5,346,024

TOOL CONSTRUCTION

Robert E. Geiger, and John M. Clapp, both of Sayre, Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation of Ser. No. 66,637, May 26, 1993, abandoned, which is a continuation of Ser. No. 902,176, Jun. 22, 1992, abandoned. This application Mar. 18, 1994, Ser. No. 214,501
Int. Cl.[5] F01C *21/10*
U.S. Cl. 173—221 **7 Claims**



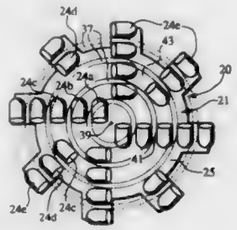
1. A motor driven power tool construction, comprising:
- a motor having unitary one piece motor cylinder and back head provided with an external circumferential planer face valve porting surface in contact with a movable planar face valve for selectively admitting motive media to said motor cylinder.

5,346,025

DRILL BIT WITH IMPROVED INSERT CUTTER PATTERN AND METHOD OF DRILLING

Carl W. Keith, and Ed R. Martin, Jr., both of Spring, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 815,289, Dec. 30, 1991, Pat. No. 5,265,685. This application Sep. 9, 1993, Ser. No. 118,909
The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.
Int. Cl.[5] E21B *10/46, 10/58*
U.S. Cl. 175—57 **4 Claims**



4. In a method of drilling formation material utilizing a drill bit having a plurality cutting elements each connected to and

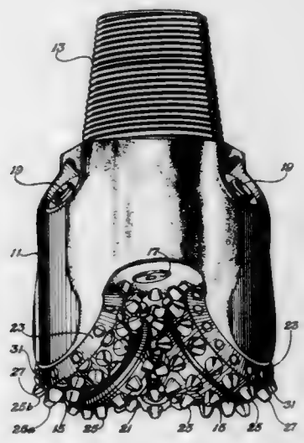
protruding from the face of the bit and including a layer of polycrystalline diamond material with a peripheral cutting edge portion of said layer disposed for cutting engagement with formation material when the bit is rotated about its axis for drilling, the improvement comprising the steps of:
- arranging the cutting elements on the face of the bit in first and second concentric groups relative to the axis of said bit,
- spacing said first group radially from said second group as viewed in a rotated radially extending profile about the axis of the bit so that an annular gap is defined by the space between the cutting edges of the elements in said first group relative to the cutting edges of the elements in said second group,
- rotating said bit against the bottom of a borehole to cut formation material with said gap causing a portion of the formation material to remain uncut by said elements and thereby forming a concentric ridge of formation material including a base portion and an apex portion thereof extending between said first and second groups of cutting elements, and
- breaking off an apex portion of said ridge before said ridge engages the face of the bit and leaving said base portion for reacting against said elements to maintain stable rotation of said bit about its axis.

5,346,026

ROLLING CONE BIT WITH SHEAR CUTTING GAGE

Rudolf C. O. Pessier, and Danny E. Scott, both of Houston, Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 830,130, Jan. 31, 1992, Pat. No. 5,287,936. This application Dec. 17, 1993, Ser. No. 169,880
Int. Cl.[5] E21B *10/00*
U.S. Cl. 175—331 **18 Claims**



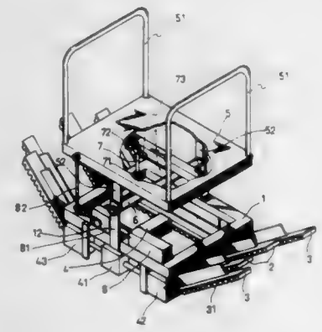
1. In a rolling cutter of an earth-boring bit having a gage surface proximal to a sidewall of a borehole as the cutter rotates about its axis and rolls over the bottom of the borehole, the gage surface having a plurality of gage inserts secured by interference fit in sockets formed in the gage surface, an improved gage insert comprising:
- an elongated cylindrical body secured in an aperture in the gage surface, the body formed of a hard, fracture-tough material;
- a cutting end adapted to extend, during drilling operation, a selected distance from the gage surface, the cutting end formed of a super-hard, abrasion-resistant material, the cutting end having a polygonal face substantially normal to a longitudinal axis of the body;
- at least a pair of cutting surfaces connecting the polygonal face and body of the insert at a selected angle to define cutting edges to shear the sidewall of the borehole, the cutting surfaces intersecting to define a plow edge; and
- the selected angle of each cutting surface defining a negative rake angle with respect to the sidewall of the borehole being sheared.

5,346,027

WALKING TRUCK

Huang Y. Da, and Huang Y. Fong, both of No. 2-2, Fu Hsing, Fu Hsing Li, Tung Hsiao Town, Miaoli Hsien, Taiwan

Filed Jul. 21, 1993, Ser. No. 95,173
Int. Cl.[5] B62B *5/02*
U.S. Cl. 180—8.2 **1 Claim**



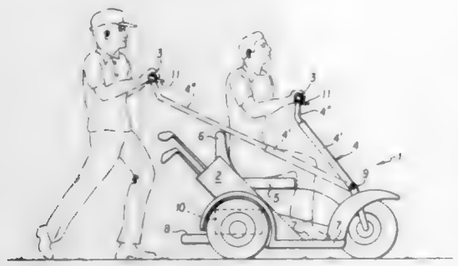
1. A walking truck comprising:
- a base frame having a several pairs of rollers symmetrically disposed at the bottom, a pair of upright supports bilaterially disposed at a top surface of said base frame, a horizontal pivot supported between said upright supports;
- a pair of inner racks joined by transmission axles and cranks and bilaterially disposed under said base frame at right angles relative to said rollers, each inner rack having a toothed bottom wall and two opposite ends respectively and obliquely extended out of said base frame;
- a pair of outer racks bilaterially disposed outside said inner racks under said base frame and respectively coupled to said inner racks by said cranks, each outer rack having a toothed bottom wall and two opposite ends respectively and obliquely extended out of said base frame;
- a first motor drive comprising a first reversible motor, a drive gear box coupled to by said first reversible motor, and two driven gear boxes are driven by said drive gear box to turn said transmission axles and said cranks in moving said inner racks and said outer racks alternatively for going upstairs or downstairs;
- a platform pivotably mounted on said horizontal pivot, said platform having a pendulum at the bottom and two micro switches disposed on two opposite sides by said pendulum;
- a balance linkage connected to said platform and moved to constantly hold said platform in a horizontal balanced manner; and
- a second motor drive mounted on said base frame, said second motor drive having an output shaft coupled to said balance linkage and being controlled by said micro switches to move said balance linkage in either direction in keeping said platform in balance.

5,346,028

GOLF CART WITH ADJUSTABLE STEERING ASSEMBLY

Nicola Cassano, 48 via dei Soncin, Padova, Italy

Filed Jan. 4, 1993, Ser. No. 123
Claims priority, application Italy, Jul. 3, 1992, PD92A124
Int. Cl.[5] B62B *3/04*; B62D *1/18*
U.S. Cl. 180—19.2 8 Claims



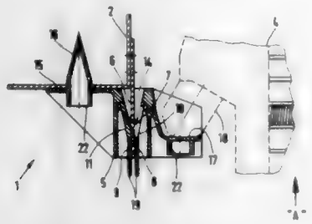
1. A golf cart comprising:
a front wheel;
rear wheels;
a body;
a seat mounted above said body;
front boards located substantially on opposite sides of said seat and a rear board located substantially behind said seat; and
means for steering the golf cart comprising a steering post including a first section having a first end hingedly connected to said front wheel and a second end, a second section telescopically mounted from said second end of said first section, a handlebar attached to said second section, said second section being extendible such that said handlebar is moveable between a first position at which said handlebar is located above said body and a second position at which said handlebar is positioned rearwardly of said body, and wherein the cart is capable of being steered by an operator seated on said seat, standing on said rear board, or walking behind said body.

5,346,029

METHOD AND APPARATUS FOR HOLDING AN ASSEMBLY FOR MOUNTING ON STRUCTURAL PARTS

Hassan Batani, München; Axel Temmesfeld, Raubling, and Eduard Greindl, München, Fed. Rep. of Germany, assignors to BMW AG, Munich, Fed. Rep. of Germany

PCT No. PCT/EP91/01468, § 371 Date Apr. 13, 1992, § 102(e) Date Apr. 13, 1992, PCT Pub. No. WO92/03305, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 3, 1991, Ser. No. 847,081
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1990, 4025661
Int. Cl.[5] B60K *11/04*
U.S. Cl. 180—68.4 12 Claims



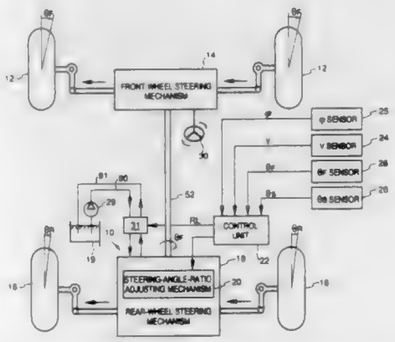
3. An arrangement for mounting a radiator module on a motor vehicle body by way of relative movement of the radiator module and vehicle body in a substantially linear mounting direction, said arrangement comprising:
at least one body vehicle side flange including at least one through opening, said side flange extending essentially transversely of the mounting direction,
and at least one radiator module support bracket having spaced tongues guided along opposite transverse sides of the vehicle side flange during mounting movement in the mounting direction, said tongues being configured to rest elastically against the respective vehicle side flange and including detent noses which self lockingly engage in a spaced relationship within the vehicle side flange through opening.

5,346,030

REAR-WHEEL STEERING APPARATUS FOR VEHICLES

Hiroshi Ohmura, Hatsukaichi; Masanobu Kosaka, Kure, and Koji Hosoda, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 29, 1993, Ser. No. 10,992
Claims priority, application Japan, Jan. 31, 1992, 4-017092
Int. Cl.[5] B62D *7/00*
U.S. Cl. 180—140 16 Claims



1. A rear-wheel steering apparatus which controls a phase inversion of a steering angle ratio of rear wheels when a vehicle is turned, comprising:
electric motor means for setting the steering angle ratio of the rear wheels adjustably with respect to the steering angle of front wheels;
hydraulic driving means for driving the rear wheels with an oil pressure in accordance with the steering angle ratio set by said electric motor means;
detection means for detecting a failed state in a rear-wheel steering control system;
a fail-safe valve for releasing the oil pressure from said hydraulic driving means in order to force to return the steering angle of the rear wheels to a neutral position; and
control means for controlling to stop said electric motor means and controlling said fail-safe valve to release the oil pressure from said hydraulic driving means in response to a detection of the failed state.

5,346,031

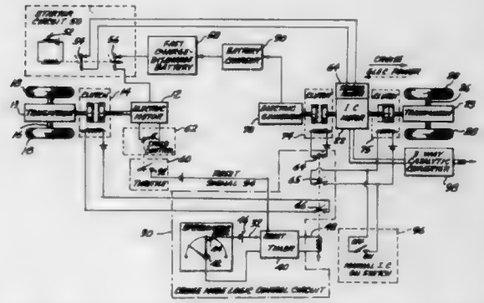
HYBRID MOTOR VEHICLE HAVING AN ELECTRIC MOTOR AND UTILIZING AN INTERNAL COMBUSTION ENGINE FOR FAST CHARGE DURING CRUISE MODE OFF CONDITION

Conrad O. Gardner, 22905 108th Ave. W., Edmonds, Wash. 98020

Continuation of Ser. No. 867,412, Apr. 13, 1992, Pat. No. 5,301,764. This application Oct. 25, 1993, Ser. No. 140,507
Int. Cl.[5] B60L *11/02*
U.S. Cl. 180—179 6 Claims

1. In combination in a motor vehicle having a first pair of wheels and a second pair of wheels:
an electric motor;
a combustion engine;

a fast charge-discharge battery for transferring electrical energy to said electric motor;
a cruise mode control circuit having preprogrammed cruise mode operating conditions which includes a cruise mode on condition when the vehicle operating speed exceeds a predetermined level and for a predetermined time interval and a cruise mode off condition when the cruise mode operating conditions have not been satisified, said control circuit automatically activating first coupling means for connecting said electric motor to one of said first and second pairs of wheels during the cruise mode off condition and automatically activating second coupling means for connecting said combustion engine to one of said first and second pairs of wheels during the cruise mode on condition;



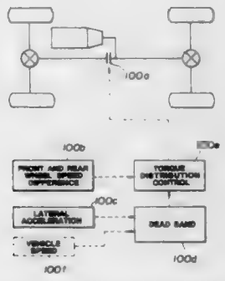
said cruise mode control circuit activating third coupling means for connecting said combustion engine to an electric power generator for charging said fast charge-discharge battery during the cruise mode off condition; and
user controlled means bypassing said control circuit for activating said first coupling means for connecting said electric motor to one of said first and second pairs of wheels during the cruise mode on condition, and user controlled means bypassing said control circuit for activating said second coupling means for connecting said combustion engine to one of said first and second pairs of wheels in the event of failure of said fast charge-discharge battery.

5,346,032

TORQUE DISTRIBUTION CONTROL SYSTEM FOR FOUR WHEEL DRIVE VEHICLE

Hiroki Sasaki, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 25, 1993, Ser. No. 66,268
Claims priority, application Japan, Jun. 8, 1992, 4-147119
Int. Cl.[5] B60K *17/348*
U.S. Cl. 180—233 11 Claims



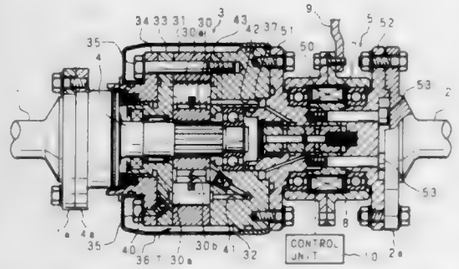
1. A driving force distribution control system for a vehicle, said control system comprising:
a torque distributing clutch for varying a driving torque transmitted from an engine of the vehicle to front wheels of the vehicle in accordance with a control signal while rear wheels of the vehicle are directly connected with the engine;
a front and rear wheel speed difference sensing means for sensing an actual front and rear wheel speed difference;
a lateral acceleration sensing means for sensing a lateral acceleration of the vehicle;
a dead band setting means for setting a predetermined front and rear wheel speed difference dead band in accordance with the lateral acceleration at least when the lateral acceleration is high; and
a driving force distribution controlling means for producing said control signal in accordance with a difference resulting from subtraction of said dead band from said actual front and rear wheel speed difference.

5,346,033

POWER TRANSMISSION APPARATUS FOR VEHICLE

Ichiro Okabe, Yamatotakada; Satoshi Kawai, Sakurai; Hideki Higashira, Ikoma, and Hirakushi Suzou, Uda, all of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Jan. 21, 1992, Ser. No. 823,203
Claims priority, application Japan, Jan. 23, 1991, 3-024034; Apr. 19, 1991, 3-116930; Apr. 19, 1991, 3-116931; Sep. 19, 1991, 3-268982
Int. Cl.[5] B60K *17/35*
U.S. Cl. 180—248 14 Claims



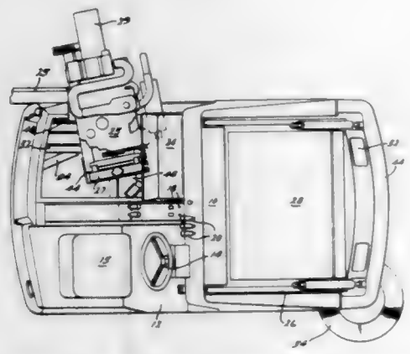
1. A power transmission apparatus for a vehicle which couples respective transmission shafts of front and rear wheels of a vehicle, comprising:
a hydraulic pump having a coaxial rotor and a casing which are interlockingly coupled respectively with said respective transmission shafts and relatively rotate and couple said rotor and casing by hydraulic pressure generated according to a rotational speed difference between said rotor and casing; and
a variable throttle member for controlling the hydraulic coupling of between said rotor and casing including
a spool chamber along the pump axis having first and second holes communicating respectively with the discharge side of said hydraulic pump respectively at different positions along the chamber;
a driving coil adjacent said spool chamber responsive to applied current for producing magnetic fields of first and second different intensities;
a first spool which moves in said spool chamber to a first predetermined position by the magnetic field of first intensity of said driving coil to close or open one of said communicating holes; and
a second spool which moves in said spool chamber to a second predetermined position by the action of the magnetic field of second intensity of said driving coil.

5,346,034

VEHICLE ENGINE MOUNTING SYSTEM

Christopher M. Knowlton, Pinehurst, and Robert J. O'Hara, Soutern Pines, both of N.C., assignors to AAR Corp., Elk Grove Village, Ill.

Division of Ser. No. 458,083, Dec. 28, 1989, Pat. No. 5,137,108.
This application Apr. 24, 1992, Ser. No. 873,247
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.[5] B60K *5/10*
U.S. Cl. 180—298 **15 Claims**



1. A sweeper vehicle having a layout in plan comprising four roughly equal sized quadrants, the front two quadrants comprising a hopper and a hopper lifting and dumping linkage system, the right rear quadrant comprising an operator's compartment and including necessary vehicle and hopper controls, and the left rear quadrant comprising an engine and an engine compartment having a pivotal top hood, a pivotal side door and engine support means, said support means being pivotal about a generally vertical axis to swing said engine between a first normal engine-operating position and a second position in which said engine projects from said vehicle in an exposed condition facilitating access thereto, and shutoff means for rendering said engine inoperative before said support means reaches said second position when moving said support means from said first position.

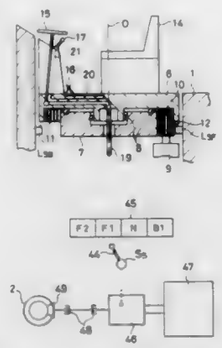
5,346,035

FORK LIFT TRUCK WITH ROTATABLE SEAT AND OPERATOR CONTROLS

Ichiro Ueda; Takashi Suzuki, both of Yokohama, and Akihiko Sakai, Matsudo, all of Japan, assignors to Nippon Yusen Kaisha, Tokyo, Japan

Filed Jan. 4, 1993, Ser. No. 142
Int. Cl.[5] B60K *26/00;* **B62D** *1/02*
U.S. Cl. 180—329 **3 Claims**

1. A fork lift truck comprising:
a self-propelled vehicle having a working mechanism disposed at a front end thereof;
a driver's stand disposed to said self-propelled vehicle between the front end and a rear end of the vehicle opposite said front end;
a driver'seat and a control device mounted respectively to said driver'stand;
a mechanism for revolving said driver's stand around a vertical axis between a position in which the driver's seat is turned in a forward direction facing the front end and another position in which the driver's seat is turned in a backward direction facing the rear end of the vehicle,
a speed change gear having:
a plurality of speed shifting ratios for running in said forward direction,
a plurality of speed shifting ratios for running in said backward direction,
wherein said forward and backward running speed shifting ratios are equal in number, and
a speed change gear controlling device for controlling said speed change gear, wherein said controlling device is responsive to the position of the driver's stand and controls the operation of the speed change gear such that



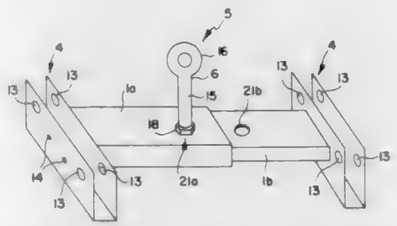
when the driver's stand is turned in the forward direction facing the front end, the speed change gear is restricted to a first of said plurality of speed shifting ratios for running in said backward direction, and when the driver's stand is turned in the backward direction facing the rear end, the speed change gear is restricted to a first of said plurality of speed shifting ratios for running in said forward direction.

5,346,036

ROOF LIFELINE ANCHOR

Mark Arisman, Pheonix; Mike Tomer, Baltimore; Terry Jermolojevs, Columbia; Bill Eyler, Myersville, all of Md.; Dave Tate, Richmond; Greg Morgan, Woodbridge, both of Va., and John Aldous, Ellicott City, Md., assignors to Ryland Homes, Columbia, Md.

Filed Mar. 15, 1993, Ser. No. 31,480
Int. Cl.[5] A62B *35/00*
U.S. Cl. 182—3 **24 Claims**



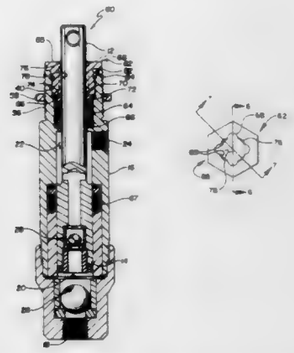
1. A roof lifeline anchor for attachment to and between adjacent roof trusses of a building, comprising an elongate beam having first and second ends, truss attachment means at said first and second ends and lifeline attachment means positioned on said beam substantially midway between said first and second ends, wherein said truss attachment means comprises elongated stirrups each having a bottom wall and two upstanding parallel spaced side walls to receive said roof trusses and further comprising means to attach said members to said trusses.

5,346,037

PACKING NUT AND ROD GUIDE FOR PISTON PAINT PUMPS

Thomas H. Flaig, Robbinsdale, and Norman A. Cyphers, Rogers, both of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.

Filed Sep. 3, 1993, Ser. No. 117,256
Int. Cl.[5] F16N *1/00;* **F16J** *15/18*
U.S. Cl. 184—24 **15 Claims**



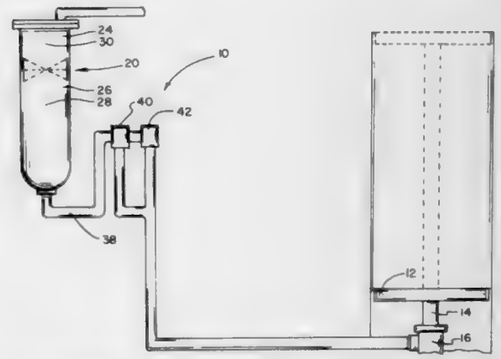
1. A combined packing nut and rod guide for reciprocating paint pumps of the type having a piston rod end extending axially exteriorly of and sealed to a pump housing, the combined packing nut and guide comprising a nut body removably secured to the pump housing and having:
a. a first end extending exteriorly of the pump housing;
b. a second end extending into the pump housing and axially loading a rod packing set;
c. a central bore extending axially through the nut body and sized to closely interfit with the piston rod for guiding the rod in the housing; and
d. at least one relief extending completely axially through the nut body adjacent the bore for providing a lubricating passageway along the piston rod.

5,346,038

KINETIC ENERGY ELEVATOR SYSTEMS

Kurt R. Rehfeld, P.O. Box 274, Rescue, Calif. 95672

Filed Mar. 14, 1994, Ser. No. 212,124
Int. Cl.[5] B66B *11/04*
U.S. Cl. 187—17 **3 Claims**



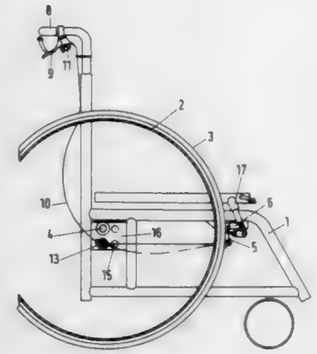
1. A kinetic energy elevator system for raising and lowering an elevator employing air and water comprising, in combination:
an elevator movable in a vertical direction up and down between floors of a building, the elevator having a platform with a downwardly projecting shaft and a casing for receiving the shaft;
a vertically extending control chamber with a vertically reciprocal piston, a supply of the water beneath the piston and a supply of air above the piston, the piston being movable as a function of the pressure of the air above the piston;
a water storage tank coupled to the casing and the control chamber;
water lines coupling the bottom of the control chamber with the casing, such water lines including an up valve to allow the flow of water to the casing and a down valve to allow the flow of water from the casing, the water lines also including a manual valve to shut off the flow of water in the water lines between the water storage tank and the water flowing between the casing and the control tank and the casing;
an air pressure chamber with air lines coupled to the top of the control chamber to feed air under pressure to the control chamber above the piston;
a compressor to provide compressed air via second air lines to the air pressure tank;
an air receiving tank coupled to the second air lines between the compressor and the air pressure tank; and
control means for effecting the flow of water and air between the tanks, chambers and casing to cause the intended non-movement and movement of the elevator upwardly and downwardly.

5,346,039

WHEELCHAIR BRAKE

Gerhard Pfisterer, St. Leon-Rot, Fed. Rep. of Germany, assignor to Otto Bock Orthopaedische Industrie Besitz-und Varwaltungs KG, Duderstadt, Fed. Rep. of Germany

Filed Sep. 8, 1993, Ser. No. 117,792
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1993, 9309593[U]
Int. Cl.[5] B60T *1/00*
U.S. Cl. 188—2 F **11 Claims**



1. A wheelchair brake comprising:
a pressing lever having a free end and an end which is pivoted at a first location;
an elastic member which contacts the free end of said pressing lever, thereby urging the free end of said pressing lever into a neutral position;
a Bowden wire having first and second ends, said Bowden wire being attached at said first end to the free end of said lever;
a first brake lever for operating the brake by a companion, said first brake lever being connected to said second end of said Bowden wire, whereby depression of said first brake lever causes tensioning of said Bowden wire, which in turn causes said pressing lever to pivot from said neutral position into a braking position;

a manually releasable catch for locking said first brake lever upon depression; and

a second brake lever for operating the brake by a wheelchair user, said second brake lever comprising a handle portion, a portion which is pivoted at a second location, and a pressure portion which bears against said pressing lever when said second brake lever is pivoted, thereby urging said pressing lever into a braking position, said second brake lever and elastic member being arranged such that further pivoting of said second brake lever against the action of said elastic member causes said second brake lever to lock in a manually releasable manner.

5,346,040

ONE-PIECE TRANSMISSION BAND

Christopher P. Puchalla, Lombard; Anthony J. Grzesiak, Sauk Village, and Douglas J. Slager, Oak Park, all of Ill., assignors to Borg-Warner Automotive Transmission & Engine Components Corporation, Sterling Heights, Mich.

Continuation of Ser. No. 723,429, Jun. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 508,864, Apr. 12, 1990, abandoned, and Ser. No. 546,161, Jun. 28, 1990, Pat. No. 5,078,237. This application Sep. 23, 1993, Ser. No. 126,055

Int. Cl.[5] **F16D** *49/08*

U.S. Cl. 188—77 W | **12 Claims**



1. A band member (10) for use in a circumferential friction brake about a rotating member consisting of a strap member (12), having opposed end portions (16), extending in a generally circular configuration to form an inner strap circumference and an outer strap circumference, one of said end portions (16) defining an apply member (18) and a first surface for directly engaging with the outer circumference of said strap member (12) and said opposed end portion (16) defining a reaction member (20) and a second surface for directly engaging with the outer circumference of said strap member (12), wherein said end portions (16) are folded flat (22) back into engagement with the outer strap circumference to form a double directly engaged thickness of such strap material (12) at said fold (22) and at said first and second engaging surfaces, and a friction lining (14) adhered to such inner strap circumference.

5,346,041

SLIDING EXHAUST BRAKE SYSTEM

Ryoichi Suzuki, Mishima, and Kazunori Takikawa, Numazu, both of Japan, assignors to Usui Kokusai Sangyo Kaisha Lyd., Japan

Filed Jan. 24, 1991, Ser. No. 645,581

Claims priority, application Japan, Jan. 29, 1990, 2-18189

Int. Cl.[5] **F02D** *9/06*

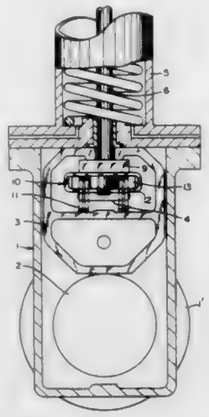
U.S. Cl. 188—273 | **7 Claims**

1. A sliding exhaust brake system comprising:

a housing having an exhaust gas passage and a path extending substantially at right angles to the exhaust gas passage;

a valve member comprising a flat plate, the valve member being capable of moving back and forth in said path into and out of the exhaust gas passage, the valve member being provided with at least one exhaust pressure-adjusting hole, the valve member being mounted in the housing in such a way that the valve member engages a piston rod of an air cylinder device connected with the housing;

an auxiliary switching mechanism which can move a given distance relative to the valve member and which, when the exhaust gas passage is opened, opens the at least one exhaust pressure-adjusting hole, and when the exhaust gas passage is closed, closes the at least one exhaust pressure-adjusting hole, said auxiliary switching mechanism comprising: a support frame having a C-shaped cross section and mounted to a front surface of a block member engaging the valve member near an end of the piston rod remote from the cylinder; and a liner loosely inserted in the frame and sliding on the flat plate of the valve member while making intimate contact with the flat plate of the valve member; and



a holding mechanism which, during the closing of the exhaust gas passage by the valve member, prevents the relative movement between the valve member and the auxiliary switching mechanism until the exhaust gas passage is substantially completely closed by the valve member, said holding mechanism comprising a spring member taking the form of a flat plate engageable with the support frame, one end of the spring member being fixed to the valve member, the support frame being supported by the spring member, whereby the exhaust gas passage can be sufficiently smoothly and quickly closed by the valve member for achieving good response to high exhaust gas pressure in the exhaust gas passage.

5,346,042

VALVE FOR SETTING THE DAMPENING LEVEL OF SUSPENSION STRUTS

Linas A. Paskus, Peoria, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 26, 1993, Ser. No. 38,161

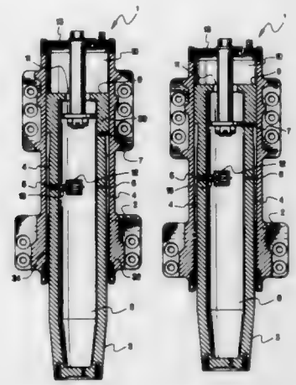
Int. Cl.[5] **F16F** *9/34*

U.S. Cl. 188—322.13 **28 Claims**

1. A valve setting the dampening level of a fluid-filled strut, said strut having a cylinder and having a piston, said piston being slidably disposed for axial movement within said cylinder and forming an annulus therebetween, said piston having an interior chamber and a passageway fluidically coupling fluid in said interior chamber to fluid in said annulus, said valve comprising:

a valve body having a first end portion and a second end portion, and having an orifice between said first end portion and said second end portion, said first end portion being positioned in said passageway of said piston and said second end portion having a housing portion positioned in said interior chamber of said piston, said housing portion having a port that fluidically couples an interior region of said housing portion with said interior chamber of said piston;

a valve stem disposed within said valve body proximate said orifice, said valve stem being movable between a first position in which said valve stem covers said orifice and a second position in which said valve stem uncovers said orifice; and



pressure sensing assembly disposed in said housing portion and positioned in cooperating relationship to said valve stem, said pressure sensing assembly controlling the movement of said valve stem toward said first position in response to fluid pressure in said interior region of said housing moving said pressure sensing assembly in a first direction.

5,346,043

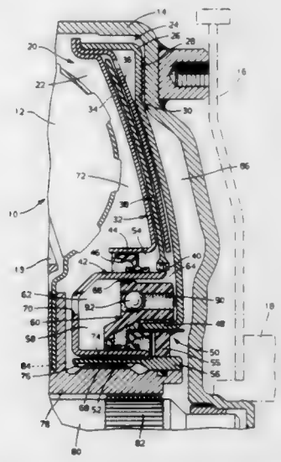
TORQUE CONVERTER AND VISCOUS CLUTCH

Raymond J. Haka, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1993, Ser. No. 113,871

Int. Cl.[5] **F16H** *45/02;* **F16D** *47/06*

U.S. Cl. 192—3.29 **1 Claim**



1. A torque converter and clutch comprising:

an input member;

an output member;

clutch means disposed between said input and output members for effecting a drive connection therebetween, said clutch means comprising:

an apply chamber;

a release chamber;

means for supplying hydraulic fluid to the chambers;

friction clutch means for engaging said input member in response to fluid pressure in the apply chamber;

viscous clutch means operatively connected between the friction clutch means and said output member including drive means secured to the friction clutch means, driven means drivingly connected with said output means, viscous drive fluid disposed between said drive and driven means for transmitting drive torque therebetween, a compensation chamber open to said viscous drive fluid and said hydraulic fluid in said apply chamber and piston means slidably disposed in said compensation chamber for preventing commingling of said viscous drive fluid and said hydraulic fluid and being responsive to the pressure and temperature of said fluids for maintaining a pressure balance between the viscous drive fluid and the hydraulic fluid.

5,346,044

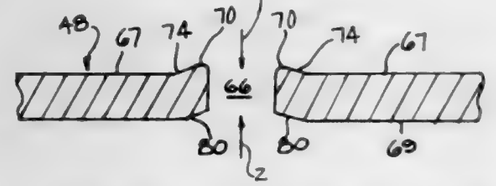
VISCOUS COUPLING APPARATUS WITH COINED PLATES AND METHOD OF MAKING THE SAME

Sankar K. Mohan, and Carl F. Stephens, both of Syracuse, N.Y., assignors to New Venture Gear, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 891,417, May 29, 1992, Pat. No. 5,232,075, which is a continuation of Ser. No. 720,401, Jun. 25, 1991, Pat. No. 5,148,900. This application May 10, 1993, Ser. No. 59,636

Int. Cl.[5] **F16D** *35/00;* **B21D** *22/00*

U.S. Cl. 192—58 C **16 Claims**



1. A plate for use in a viscous coupling comprising a generally planar ring having inner and outer peripheries and an opening formed therein, portions of said ring located adjacent to opposite edge surfaces of said opening being deformed out of the general plane of said ring for providing a pair of offset portions which define oppositely inclined planar ramped surfaces, each of said ramped surfaces terminating in an arcuate wiping surface formed contiguous to its respective opening edge surface, each of said offset portions having a recessed surface formed opposite at least one of said ramped surface and said wiping surface.

14. A method of manufacturing a plate for use in a viscous coupling, said plate being of the type comprising a ring having an upper surface, a lower surface, inner and outer peripheries and a plurality of slots extending at least partly across a dimension of said ring defined between said peripheries, said ring having a generally planar web portion between each adjacent pair of slots and a pair of offset portions formed at opposite ends of said webbed portion and which are each located adjacent to an edge surface of one of said slots, each of said offset portions having a first planar ramped surface formed in said upper surface which terminates in an arcuate wiping surface said arcuate wiping surface extending to said edge surface of said slot, each of said offset portions including a second ramped surface formed in said lower surface which is arranged to be generally opposite to said first ramped surface, said method comprising the steps of:

(a) performing a stamping operation for producing said plurality of laterally spaced slots extending radially at least partly across said ring, said slots having an arcuate surface between said upper surface of said ring and said edge surface of said slots; and

(b) performing a coining operation for producing said offset portions.

5,346,045

ELECTRICALLY POWERED ACTUATOR

George R. Bennett, Findon, and Terence F. H. Faithfull, Cranleigh, both of United Kingdom, assignors to Link-Miles Limited, United Kingdom

Filed Jan. 7, 1993, Ser. No. 1,343

Claims priority, application United Kingdom, Jan. 9, 1992, 00424

Int. Cl.[5] F16D *71/00*

U.S. Cl. 192—141 35 Claims



3. An electrically powered actuator, comprising:

a) a bidirectional electrically powered drive member;

b) a driven member comprising a screw-threaded shaft coupled to the electrically powered drive member to be driven thereby;

c) a travelling member comprising a roller nut engaged with a thread of the screw-threaded shaft of the driven member and displaceable in opposite directions relative to the driven member between two limits of displacement;

d) a shock absorber unit disposed and coupled relative to the driven and travelling members to gradually slow down displacement of the travelling member relative to the driven member when the travelling member approaches each of said limits of displacement; and

e) a centrifugal braking member for selectively restraining the driven member.

5,346,046

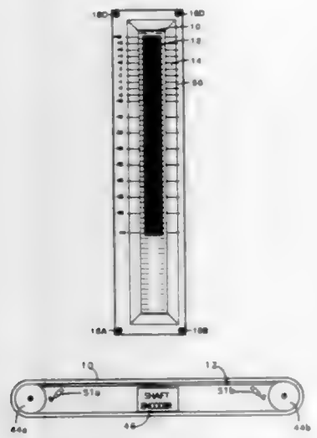
AUTOMATION CONTROL WITH IMPROVED OPERATOR/SYSTEM INTERFACE

John M. Peters, 8930 Mills Ave., Whittier, Calif. 90605

Continuation of Ser. No. 690,101, Apr. 23, 1991, Pat. No. 5,243,513. This application Apr. 29, 1993, Ser. No. 55,666

Int. Cl.[5] F16D *65/14*; G09F *13/34*; G05G *1/00*

U.S. Cl. 192—142 A 8 Claims



1. An endless belt fader control comprising:

a housing having an upper surface, said upper surface having an opening formed therein;

a first pulley and a second pulley disposed within said housing;

a rotatable belt disposed within said housing and supported by said first pulley and said second pulley, said rotatable belt engaging said first pulley and said second pulley such that movement of said rotatable belt imparts rotation to said first and second pulleys, and said rotatable belt extending substantially along said opening formed within said upper surface of said housing;

a signal generating means disposed within said housing and being in communication with said rotatable belt for generating electrical signals indicative of said movement of said rotatable belt, said signal generating means being capable of providing said generated electrical signals to a processing unit disposed externally of said housing; and

a locking means for preventing rotation of said belt in a first direction, said locking means being capable of receiving control signals from said processing unit.

5,346,047

COIN PROCESSING APPARATUS

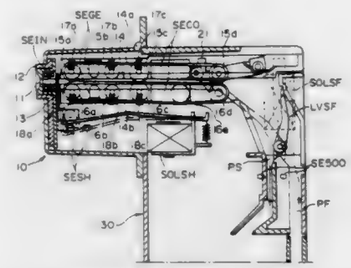
Takeshi Ishida, Sakado; Kenji Koyama, Kawagoe; Hiroshi Kasama, Tsurugashima; Kenji Nishiumi, Sakado, and Kenji Nakajima, Ogose, all of Japan, assignors to Kabushiki Kaisha Nippon Conlux, Japan

Continuation of Ser. No. 761,411, Sep. 17, 1991, abandoned. This application May 26, 1993, Ser. No. 67,733

Claims priority, application Japan, Sep. 20, 1990, 2-250684; Nov. 20, 1990, 2-314561; Nov. 20, 1990, 2-314562; Nov. 20, 1990, 2-314563; Nov. 20, 1990, 2-314564; Nov. 22, 1990, 2-319464

Int. Cl.[5] G07D *3/14*; G07F *9/02*

U.S. Cl. 194—200 35 Claims



1. A coin processing apparatus comprising:

coin conveying means for horizontally conveying coins inserted through a coin slot at a predetermined speed along a coin conveying passage;

coin discriminating means disposed along said coin conveying passage or determining the denomination of the coin being conveyed by said coin conveying means along said coin conveying passage and emitting a corresponding denomination identification output;

a plurality of coin accumulating means providing for each denomination of coin, for accumulating the coins by denominations;

said coin accumulating means being arranged in a direction perpendicular to a direction of conveyance of said coins in said coin conveying passage,

distributing means for distributing the coins passed through said coin conveying passage to one of said plurality of coin accumulating means in correspondence with said denomination identification output of said coin discriminating means, said distributing means including:

an inclined coin passage through which the coin passing through said coin conveying passage rolls down;

a plurality of coin distributing means each disposed along said inclined coin passage and in correspondence with said plurality of coin accumulating means and adapted to selectively execute a first distributing operation for passing a coin rolling through said inclined coin passage and a second distributing operation for directing the coin from said inclined coin passage to a corresponding one of said coin distributing means; and

coin paying-out means for conveying the coins in a substantially horizontal direction from the coins accumulated in said plurality of coin accumulating means, to a coin return means.

5,346,048

APPARATUS FOR COLLECTING ARTICLES

Rene Wilhelm, Zurich, Switzerland, assignor to EGAPRO A.G., Zurich, Switzerland

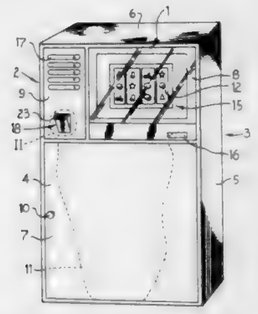
Continuation of Ser. No. 792,536, Nov. 13, 1991, abandoned, which is a continuation of Ser. No. 428,394, Oct. 30, 1989, Pat. No. 5,085,308, which is a continuation-in-part of Ser. No. 228,101, Aug. 15, 1988, abandoned. This application Nov. 12, 1993, Ser. No. 151,591

Claims priority, application Switzerland, May 10, 1988, 1771/88-7

The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.

Int. Cl.[5] G07F *7/06*, *17/34*

U.S. Cl. 194—205 5 Claims



1. Apparatus for receiving and selectively collecting articles, comprising:

a casing;

a container for accepting an article to be selectively collected, having side walls, a flap on the first end and an open bottom on the second end;

a recognition device for selecting or rejecting an article in the container, said recognition device being arranged to detect magnetic properties of the article without physically contacting the article and thereby distinguish between metallic and nonmetallic material and also between ferrous and nonferrous metallic material;

an article retaining stop for retaining the article in said container during recognition;

means for compressing the article retained in said container, said compressing means being coupled to said recognition device;

a collecting device for receiving an article compressed by said compressing means;

a gaming device electrically connected to said recognition device, said gaming device comprising an integral gaming machine having means to determine randomly whether to award a prize and having visual output means positioned upon the front of said apparatus and coupled to said gaming device such that activation of said gaming device also activates said visual output means; and

a prize dispenser coupled to said gaming machine, whereby a prize is dispensed in response to decision by said determining means to award the same.

5,346,049

COIN DISCRIMINATOR USING A PLURALITY OF OPTICAL FIBER GROUPS

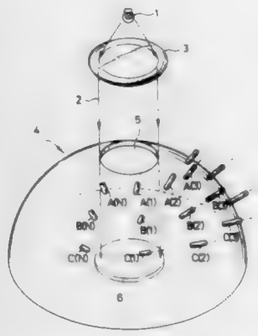
Tohru Nakajima, and Mituhiro Nagase, both of Tokyo, Japan, assignors to Laurel Bank Machines Co., Ltd., Tokyo, Japan

Filed Dec. 1, 1993, Ser. No. 159,599

Claims priority, application Japan, Dec. 2, 1992, 4-323451; Nov. 25, 1993, 5-295309

Int. Cl.[5] G07D *5/00*

U.S. Cl. 194—328 16 Claims



1. A coin discriminating apparatus comprising; irradiating means for irradiating a surface of a coin to be discriminated with light normal thereto, a plurality of optical fiber groups each including a plurality of optical fibers for guiding light reflected by the surface of the coin to be discriminated, each of the optical fibers having a light receiving end portion disposed so that an imaginary extension of a center axis thereof passes through the center of the surface of the coin to be discriminated at a predetermined angle, said predetermined angle being different between different optical fiber groups, a plurality of photoelectric converting means each facing an end portion of an associated one of the optical fiber groups further from the light receiving end portion facing the coin to be discriminated and being adapted for receiving the reflected light guided by the associated optical fiber groups and converting it to an electrical signal proportional to an amount of the received light, and discriminating means for discriminating coins based upon the electrical signals generated by the plurality of photoelectric converting means.

5,346,050

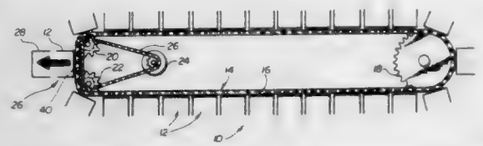
CARTON CONVEYING APPARATUS

Daniel R. Mojden, Clarendon Hills, and Thomas E. Close, Jr., Shorewood, both of Ill., assignors to Fleetwood Systems, Inc., Countryside, Ill.

Filed Jan. 28, 1993, Ser. No. 10,276

Int. Cl.[5] B65G *15/64*

U.S. Cl. 198—345.2 12 Claims



1. An article delivery station alignment apparatus for use with a carousel-type rotary infeed device for articles arranged in stacks of a predetermined length, which infeed device comprises a plurality of carrier pockets each for receiving one of said stacks of articles and movable about a closed track relative to an article delivery station wherein articles are to be discharged from said carrier pockets, said article delivery station being located at one end of said track and defining a vertical axis, said carrier pockets and the stacks of articles therein being

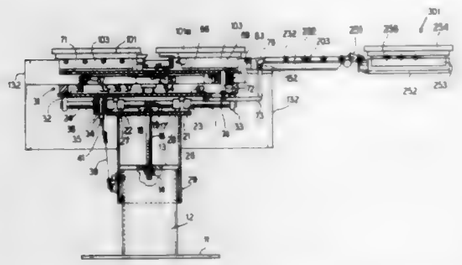
aligned with respective axes parallel to said vertical axis, and wherein said track comprises a closed chain member engaging said carrier pockets and engaged with a plurality of sprockets, said alignment apparatus comprising: a pair of sprockets located adjacent said article delivery station, one of said sprockets being spaced to either side of said vertical axis and engaging said chain member for defining a relatively short, straight segment of said chain member traversing said article delivery station; rigid chain guide means located between said sprockets for holding said chain member in a relatively straight and rigid condition as it traverses said article delivery station intermediate said pair of sprockets, said pair of sprockets and said chain guide means cooperating for aligning a carrier sprocket carried by said chain member and positioned between said pair of said sprockets with said vertical axis of said article delivery station and for discouraging pivotal, rocking motion of said carrier pocket relative to said vertical axis; and stabilizing means comprising a projecting stabilizer pin on each of said carrier pockets defining a pin axis and gripping means located at said article delivery station, said gripping means comprising a pair of complementary rocker members spaced to either side of said pin axis, mounting means for mounting said rocker members for pivotal motion toward and away from said pin axis and drive means for driving said rocker members between a first position spaced apart from and to either side of said stabilized pin of a carrier pocket located in said article delivery station and a second position grippingly engaging said stabilizer pin.

5,346,051

QUICK CHANGE-OVER PALLET SYSTEM

Malcolm E. Keith, West Chicago, Ill., assignor to Midaco Corporation, Elk Grove Village, Ill.

Filed Jul. 29, 1993, Ser. No. 98,930
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—346.1 **10 Claims**



1. A quick change pallet system comprising, a base, first rail guides mounted on said base, a trolley structure with a pair of parallel rails attached to its lower surface which are receivable in said rail guides, first locking means for locking said trolley structure relative to said base, a turntable rotatably mounted on said trolley, second locking means for locking said turntable relative to said trolley, and a second pair of rails mounted on said turntable and a pallet mounted on said second pair of rails.

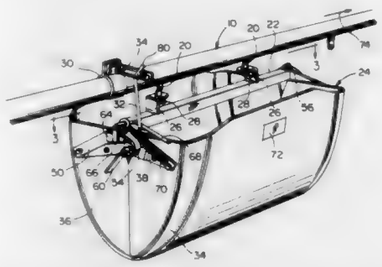
5,346,052

FEED BUCKET FOR PROGRAMMED DELIVERY SYSTEM

Harvey Z. Fox, R.D. 3, Box 11A, Thorp, Wis. 54771

Filed Apr. 23, 1993, Ser. No. 51,675
Int. Cl.[5] B65G *47/46*
U.S. Cl. 198—350 **18 Claims**

1. A clam bucket construction including a longitudinal central axis and a pair of opposite side bucket halves opening toward each other and including upper and lower portions, means pivotally joining adjacent upper portions together for relative inverse swinging of said bucket halves between open positions with their lower portions laterally spaced apart and closed positions with their lower portions swung toward each other, releasable latch means operatively associated with said bucket halves and operable to automatically move said bucket halves toward each other and retain said bucket halves in said



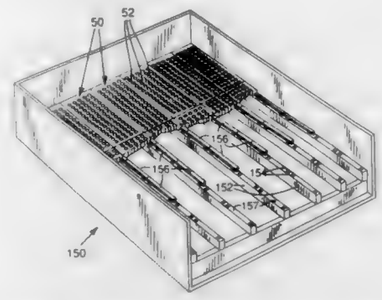
closed positions when said bucket halves are shifted from said open positions to at least predetermined partially closed positions.

5,346,053

MODULAR SCREEN SYSTEM FOR SCREENING DECK

Lloyd A. Dorn, 3008 NE. Washougal River Rd., Washougal, Wash. 98671

Division of Ser. No. 843,637, Feb. 28, 1992, Pat. No. 5,248,043. This application Aug. 11, 1993, Ser. No. 104,711
Int. Cl.[5] B07B *1/49*
U.S. Cl. 198—399 **5 Claims**



1. An alternate screen arrangement for a flat screening deck, said deck including longitudinal support beams defining a plane and including a mounting arrangement for receiving a screen component, the alternate screen arrangement comprising:

a plurality of intermediate frame components mountable to said beams in the manner and in place of said screen component, said intermediate frame components having substantially straight rails including screen mounting formations therealong; and

a plurality of screen modules including edge mounting formations corresponding to said screen mounting formations whereby said screen modules may be removably mounted upon said intermediate frame components, said screen modules including internal support elements transverse to said edge mounting formations.

5,346,054

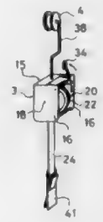
SUSPENDED BELT-TYPE EXPANDABLE AND MOVABLE PART HOLDER UNIT

Shozo Kawasaka, Osaka, Japan, assignor to Touhaku Co., Ltd., Tottori, Japan

Filed Mar. 17, 1993, Ser. No. 32,783
Claims priority, application Japan, May 12, 1992, 4-146643
Int. Cl.[5] B65G *29/00*
U.S. Cl. 198—465.4 **13 Claims**

1. A suspended belt-type expandable and movable part holder unit of a track conveyor system, comprising a belt

pulley rotatably supported by a horizontal shaft held by and between a pair of plates arranged in parallel, a belt wound around said pulley, a ring-shaped spring disposed in said pulley, and means for supporting said pair of plates on a track of said system for movement of said holder unit along the track,



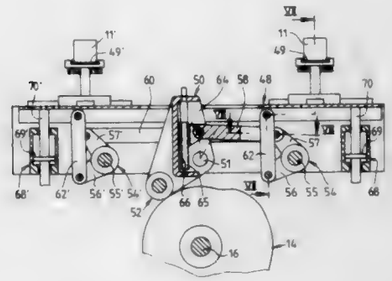
said pulley having a pair of flanges, one of said flanges being a ratchet, a swingable pawl being pivotally connected to one of said plates for engagement with said ratchet, said one plate being further provided with a swingable release means for releasing the engagement of said ratchet and said pawl.

5,346,055

MACHINERY FOR DISCONTINUOUSLY FORWARDING MATERIAL OR WORK PAST OR THROUGH DISCONTINUOUSLY OPERATING TOOLS

Günter Zierpka, Elfenweg 2, D-7500 Karlsruhe 51, Fed. Rep. of Germany

Filed Jul. 2, 1993, Ser. No. 87,576
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1992, 4223340
Int. Cl.[5] B65G *25/00*
U.S. Cl. 198—621 **21 Claims**



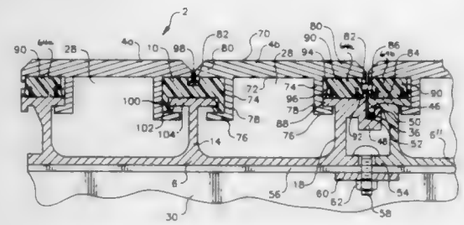
1. Machinery for discontinuously forwarding material or work past or through discontinuously operating tools, such as presses, comprising: two separated work-holder bars parallel to a forwarding stream; a cam with a circumference said bars moving upstream and downstream together subject to said cam, said cam rotating around an axis paralleling said stream; a cam follower, motion of said cam being transmitted to said bars by said follower and by a transmission engaging guides that guide said bars, said bars being accordingly discontinuously shifted in at least one direction essentially cross-stream; said follower being mounted on a rocker pivoting around a pivot secured stationary to the machinery above and substantially paralleling said axis of said cam; a spring forcing said follower against said circumference of said cam; said transmission being a linkage having a reversing lever; a thruster articulated to said rocker at a point remote from said pivot, said thruster pivoting said reversing lever around a pivot also secured stationary to the machinery and parallel to said pivot that said cam pivots around, cross-stream motions of said work-holder bars being derived from said reversing lever.

5,346,056

RECIPROCATING FLOOR CONSTRUCTION

Manfred W. Quaeck, 1515-210th Ave. NE., Redmond, Wash. 98053

Continuation-in-part of Ser. No. 944,697, Sep. 14, 1992, Pat. No. 5,228,556, which is a division of Ser. No. 749,522, Aug. 26, 1991, Pat. No. 5,165,525. This application Feb. 25, 1993, Ser. No. 22,194
Int. Cl.[5] B65G *25/04*
U.S. Cl. 198—750 **25 Claims**



1. A reciprocating floor construction comprising:

a plurality of base sections, each of said base sections having a bottom with an interior, a central rib on said bottom interior, and a pair of sides substantially perpendicular to said bottom;

bearing means on said central rib and on said sides of each of said base sections; and

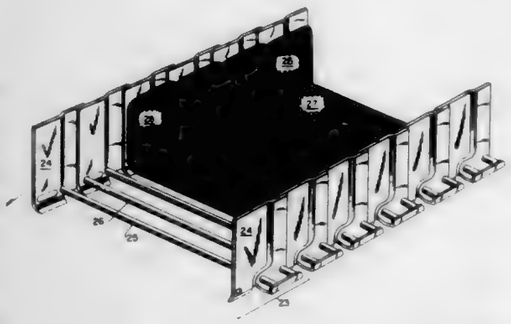
a plurality of slats, two of said slats on each of said base sections, each of said slats having a load bearing portion with an interior and a pair of bearing guide channels on said interior, one of said bearing guide channels containing said bearing means on said base section central rib and the other of said bearing guide channels containing said bearing means on one of said base section sides.

5,346,057

CONVEYOR BELT FOR TREATMENT OF PARTICULATE SOLID MATERIAL

Eugene B. Fisher, Chester; Mark St. John North, Richmond; Warren D. Winterson, Midlothian, all of Va.; Leif E. B. Jaxmar, Vallakra, Sweden; Lennart F. Olsson, Nyhamnslage, Sweden, and Nils S. Selander, Angelholm, Sweden, assignors to Philip Morris Incorporated, New York, N.Y.

Filed Oct. 30, 1992, Ser. No. 969,761
Int. Cl.[5] B65G *21/18*
U.S. Cl. 198—778 **22 Claims**



1. An endless conveyor belt comprised of a plurality of conveyor links which articulate in such a manner that the endless conveyor belt can follow a predetermined path, each conveyor link comprising:

(a) two spacer members substantially perpendicular to the plane formed by the conveyor belt;

(b) a fixed rod fixedly connected to both spacer members;

(c) an articulation rod fixedly connected to both spacer members;

(d) a foraminous bottom member which is fixedly attached to either the fixed rod or the articulation rod or both, the foraminous bottom member extending along a portion of the width of the endless conveyor belt link in a direction transverse to belt travel, and shaped such that the foraminous bottom member does not impede the conveyor belt's articulation; wherein the articulation rod of each conveyor link is connected to an adjacent conveyor link's spacer members, wherein an upstanding flange is attached to one or more ends of each foraminous bottom members wherein the flanges are shaped such that the flanges do not impede the conveyor belt's articulation.

5,346,058

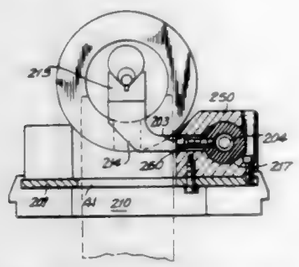
AUTOMATIC ADJUSTMENT OF PALLET WORKPIECE SUPPORT MEMBERS

Luciano Santandrea, and Massimo Lombardi, both of Florence, Italy, assignors to Axis U.S.A. Inc., Marlborough, Mass.

Continuation of Ser. No. 994,147, Dec. 21, 1992, Pat. No. 5,255,778, which is a continuation of Ser. No. 699,913, May 14, 1991, abandoned, which is a division of Ser. No. 326,158, Mar. 20, 1989, Pat. No. 5,115,901, which is a continuation-in-part of Ser. No. 212,267, Jun. 27, 1988, abandoned. This application Jun. 7, 1993, Ser. No. 72,767

Int. Cl.[5] B65G *29/00*

U.S. Cl. 198—803.01 **8 Claims**



1. A pallet for handling workpieces of different dimensions comprising:

a base having an associated plane and an aperture extending through the base, said aperture having an axis in said plane and first and second ends which are opposite one another along said axis;

first and second workpiece support members for supporting a workpiece extending between said support members so that said workpiece spans said aperture, and so that said workpiece can be removed from said support members by a removal member inserted through said aperture to contact said workpiece; and

means for mounting said first and second workpiece support members on said base so that said first and second support members are respectively adjacent said first and second ends and so that both of said first and second support members are movable through a range of adjustment relative to said base substantially parallel to said axis to permit said first and second support members to support workpieces of different dimensions between said support members, said mounting means locating said first and second support members relative to said aperture so that said support members do not interfere with insertion of said removal member through said aperture within said range of adjustment.

5,346,059

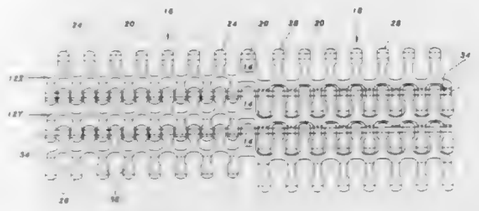
CONVEYOR BELT MODULE

Guy Irwin, 512 Oreland Mill Rd., Oreland, Pa. 19075

Continuation-in-part of Ser. No. 656,853, Feb. 19, 1991, Pat. No. 5,139,135. This application Aug. 17, 1992, Ser. No. 930,179

Int. Cl.[5] B65G *17/06*

U.S. Cl. 198—852 **2 Claims**



1. In a conveyor belt which traverses a belt transport course including course turns wherein the belt follows an arcuate transport path, the conveyor belt comprising

a succession of link members arrayed transversely of the transport course and connected one link member to a next preceding link member by a transverse connecting rod passing through structure of the one and next preceding link members so that forward advance of the preceding link member tractively draws the one link member forwardly,

the conveyor belt having a first side edge which shortens by longitudinal collapse of the link members at said side edge as same advance through a course turn, an opposite side edge of the conveyor belt lengthening by longitudinal expansion of the link members at said opposite side as same advance through the course turn, each link member comprising

a modular unit having a center body and finger sections unitarily joined therewith extending laterally from each of two opposite center body sides, the finger sections each including a set of forwardly and a set of rearwardly facing fingers,

there being spaces intervening adjacent ones of the fingers in each set so that the forwardly facing fingers of each finger section of said one link member are nestably movably receivable in the spaces intervening the rearwardly facing fingers in the finger sections of the next preceding link member, and the forwardly facing fingers of each finger section of the one link member are nestably movably receivable in the spaces intervening the rearwardly facing fingers in the finger sections of the said preceding link member,

the forwardly facing fingers of each finger set of a link member having connecting rod receptive passages therein aligned with each other and with a center body passage,

the rearwardly facing fingers of each finger set of a link member having slots therein for connecting rod pass through, one such finger set being proximal said conveyor belt first side edge and the other finger set proximal the conveyor belt opposite side edge,

the slots in the rearwardly facing fingers of one finger set being aligned with each other with the slots of the other rearwardly facing finger set fingers being aligned one with the others, the slots of the said other rearwardly facing finger set fingers being longer than those in the said one finger set, and being offset in a trailing direction from the slots of the said other rearwardly facing finger set so that

during link member advance through a course turn each link member pivots forwardly at the conveyor belt first edge and rearwardly at the conveyor belt opposite edge to bring a first tip end of the connecting rod passing therethrough stopped against a forward end of the slot in the preceding link member rearwardly facing finger most pro, real said conveyor belt first edge, and a second opposite end of the said connecting rod in tractive drive transmitting stopped position against a rear end of a slot in the preceding link member rearwardly facing finger most proximal said conveyor belt opposite edge, and a mid-length part of the connecting rod in tractive drive transmitting stopped position against a rear end of the slot in the rearwardly facing finger of said one such finger set of the preceding link member which is most remote in said one such finger set from the conveyor belt first edge.

5,346,060

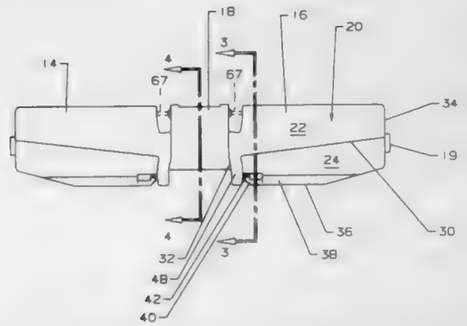
LINK ASSEMBLIES WHICH ARE INTERCONNECTED TO PROVIDE A SELF-TENSIONING CONVEYOR BELT

Gregory A. Ferguson, New Bedford, Mass., assignor to Precision Handling Devices, Inc., Fall River, Mass.

Filed Aug. 31, 1993, Ser. No. 114,945

Int. Cl.[5] B65G *17/06*

U.S. Cl. 198—853 **10 Claims**



1. A link assembly for use in an endless conveyor belt movable along a conveyor rack when driven by a drive mechanism, said assembly comprising a plurality of links interconnected adjacent to each other to form the belt, said links comprising a pair of side links being engageable with said rack, each of said links also having an upper bearing surface and a lower bearings surface, said upper bearing surface and said lower bearings surface of adjacent ones of said interconnected links being arranged in overlapping relationship to form said endless conveyor belt, a center link disposed between and connected to said side links of each of said links, means on said center links for engagement with said drive mechanism for providing motion to said endless conveyor belt, means connected between said side links and the center links of adjacent ones of said interconnected links for coupling said links in overlapping relationship to form said belt, and said coupling means including means formed on said side links and disposed in engagement with said center links for mating in spring-loaded relationship said adjacent links to provide tension in said endless conveyor belt.

5,346,061

BIOSTABLE TREATMENT DELIVERY SYSTEM

Martin H. Newman, Sharon, and Philip Sanfilippo, Natick, both of Mass., assignors to Avitar, Inc., Canton, Mass.

Filed Aug. 6, 1992, Ser. No. 926,767

Int. Cl.[5] B65D *25/08;* **A61B** *19/02*

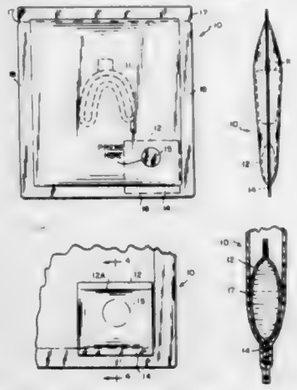
U.S. Cl. 206—221 **9 Claims**

1. A treatment delivery system comprising a readily openable hermetically and completely sealed flexible plastic outer container forming a single first chamber;

a completely sealed and flexible plastic inner container, forming a single second chamber, which is smaller than said outer container and is fixedly positioned within the single first chamber of said outer container so as to be completely enclosed therein, said inner container containing a treatment solution and being made of a thin film plastic material so that it can be readily burst upon the application of pressure thereto;

a dry foam element placed within said outer container;

means on said outer container for indicating the position of said inner container within said outer container so that, when pressure is applied to the outer container at said indicated position, the inner container bursts and said



treatment solution comes into contact with said dry foam element so as to wet said foam element with the treatment solution, whereby the wetted foam element is available for delivery of said treatment solution when the outer container is open.

5,346,062

Patent Not Issued For This Number

5,346,063

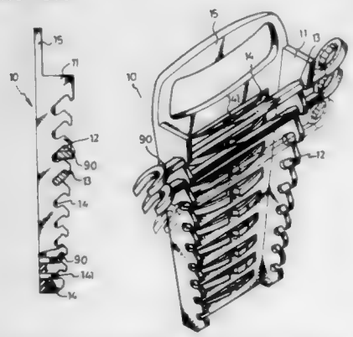
TOOL HOLDER

Jessie Chow, No. 18, Houchuang Rd., Pei Twen Dist., Taichung, Taiwan

Filed Apr. 27, 1993, Ser. No. 53,888

Int. Cl.[5] B65D *85/28*

U.S. Cl. 206—376 **3 Claims**



1. A tool holder for holding tools comprising a board including opposite sides and opposite ends, a pair of wall members extending from said opposite sides respectively and formed integral with said board and formed with pairs of aligned notches for receiving said tools, each of said notches including an oblong shape and including a first end having a shoulder formed therein and a second end located close to said board, a plurality of resilient members formed integral with said board and projecting from said board to a space formed between said wall members and each being aligned with one pair of said oblong shape notches, said resilient members projecting towards said second ends of said notches for biasing said tools against said shoulders so as to hold said tools in said notches;

said tool holder having a normal upright position and an inverted upside-down position, wherein the oblong shape notches slope upward from said second end adjacent to

the board to the first end shoulder when the tool holder is in the normal upright position, wherein the shoulder of each oblong shape notch comprises a downward facing recess for receiving and holding tools in the normal upright position of the tool holder, said tools being biased along said upward slope of the oblong shape notches into the shoulder recesses by said resilient members, and wherein the tools are held stably in said recesses by gravity if the tool holder is inverted to the upside-down position;

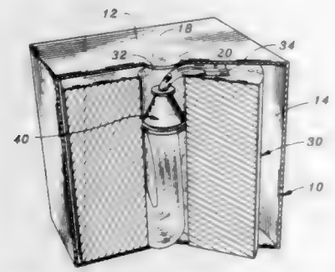
said oblong shape notches being formed with respective openings for inserting and removing tools, said openings being formed on a bottom side of the respective oblong shape notches and being downwardly directed from the oblong shape notches when the tool holder is in the normal upright position.

5,346,064

CENTER-PULL ROLL PRODUCT DISPENSER PACKAGE

Jack A. Rizzuto, Antioch, Calif., assignor to James River Paper Company, Inc., Richmond, Va.

Filed Feb. 25, 1993, Ser. No. 22,301
Int. Cl.[5] B65H *16/00*
U.S. Cl. 206—409 **8 Claims**



1. A dispenser package comprising, in combination:

a container including a plurality of interconnected walls defining an interior, at least one of said walls defining a dispensing aperture communicating with said interior;

a coreless, center-pull roll product formed by overlapping convolutions of web material positioned in said interior, said coreless, center-pull roll product having a central opening extending therethrough in at least partial registry with said dispensing aperture defined by an innermost convolution of said web material and a lead end connected to said innermost convolution;

a dispenser nozzle defining a passageway for said lead end, said dispenser nozzle positionable substantially wholly located within the confines of the coreless, center-pull roll product central opening, completely surrounded by said innermost convolution of said web material and completely within said interior which defines a first position, said nozzle being moveable to a second position spaced from said first position wherein said dispenser nozzle has at least a portion thereof located externally of said central opening, projects through said dispensing aperture and is connected to said container at said dispensing aperture during dispensing of said coreless, center-pull roll product; and

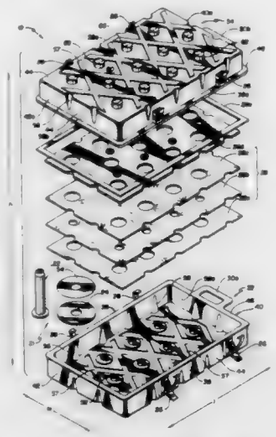
a removable closure element for closing said dispensing aperture prior to dispensing of said coreless, center-pull roll product when said dispenser nozzle is located in said first position, said coreless, center-pull roll product lead end extending through said dispenser nozzle passageway both when said dispenser nozzle is located at said first position within said coreless, center-pull roll product central opening and also when said dispenser nozzle is located at said second position and is connected to said container at said dispensing aperture.

5,346,065

MEDIA SHIPPING CONTAINER

William M. Dunbar, Cottage Grove, Minn., and Harold B. Stinson, Weatherford, Okla., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 11, 1993, Ser. No. 16,780
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—444 **8 Claims**



1. A container for holding and transporting punched diskette media to prevent damage to the media, comprising:

a) an outer shell formed of durable preformed material, the outer shell having a first inner side surface and a second inner side surface, the first and the second inner side surfaces each having a first and a second recessed structure suitable for receiving a hollow spindle therein;

b) spindle mounting means for carrying a plurality of punched diskette media, the spindle mounting means comprising an elongate spindle with a first hollowed end for placement on the outer shell first recessed structure and a second chamfered end suitable for placement within the outer shell second recessed structure, the spindle mounting means having a media holder suitable for retaining media placed on the spindle;

c) outer shell closure means for securely closing the container; and

d) outer shell handle means for carrying the container in a position which always places the spindle in a horizontal orientation so that the weight of the media is on the spindle during carrying to reduce the pressure on other media and increase the effective yield of the media.

5,346,066

KEY SAFE

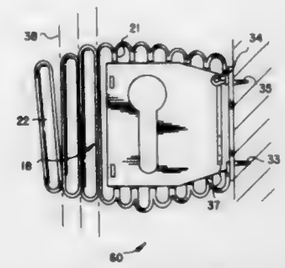
Ray A. Jones, 9421 Glen Ridge Dr., Laurel, Md. 20707

Filed Aug. 2, 1991, Ser. No. 739,415
Int. Cl.[5] A47G *29/10*
U.S. Cl. 206—457 **20 Claims**

1. A device for hiding small objects comprising:

an olefin polymer facade resembling the nest of a stinging insect, the facade forming at least a portion of a hollow interior for receiving the small object;

means for retaining the small object within the hollow interior; and



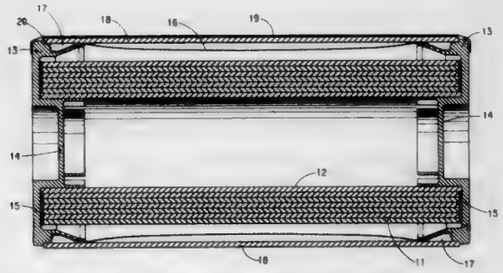
means integral to the facade for fastening the device to an exterior surface above the ground.

5,346,067

PACKAGE FOR INDIVIDUAL OBJECTS WITH END PIECES HAVING TUBULAR FILM ATTACHED THERETO

Wilfried Haufe, and Herbert Kajnath, both of Neu-Isenburg, Fed. Rep. of Germany, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 21, 1993, Ser. No. 64,087
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1990, 4038011
Int. Cl.[5] B65D *71/08, 85/42*
U.S. Cl. 206—497 **23 Claims**



1. A package for an object, comprising a support component extending axially to an object, two end pieces resting, respectively, on the ends of the support component and each end piece having a circumference projecting beyond the cross-section of the object, and a tensioned tubular film joined with the end pieces to create a union therewith and fix the end pieces in their position, characterized in that the tubular film is attached in grooves or recesses encircling the circumference of the end pieces by a positive or a frictional joint.

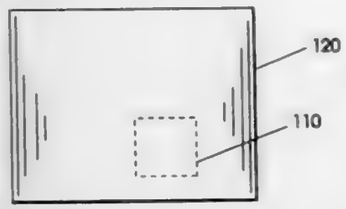
5,346,068

CONTAINERIZATION SYSTEM

Samuel T. Gouge, and James E. Shue, both of Raleigh, N.C., assignors to Rhone-Poulenc Inc., Research Triangle Park, N.C.

Division of Ser. No. 859,112, Mar. 27, 1992, Pat. No. 5,253,759. This application Aug. 5, 1993, Ser. No. 103,481
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] B65D *81/32, 85/82*
U.S. Cl. 206—524.7 **22 Claims**

1. A containerization system which comprises at least one inner cold water soluble bag containing an agrochemical selected in the group comprising plant protection agents, pesticides, insecticides, herbicides, fungicides, nematicides, acaricides, plant nutrients, plant growth regulators, the containerization system further comprising an outer cold water soluble bag containing another hazardous compound different from the first and selected in the group comprising activity promoters. penetrating agents, synergists, antidotes, sticking agents,



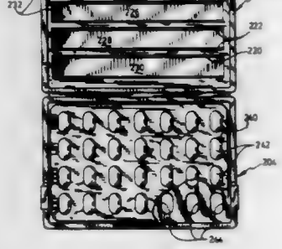
spreaders, activators, compatibility agents, adjuvants for the cold water soluble bags, plasticizers, the outer bag also containing the inner bag with its content.

5,346,069

CONTAINER

Thomas D. Intini, 9270 Recollet Street, Ville Brossard, Quebec, Canada

Continuation-in-part of Ser. No. 949,984, Sep. 24, 1992, abandoned. This application Mar. 15, 1993, Ser. No. 31,724
Int. Cl.[5] B65D *83/04, 55/02*
U.S. Cl. 206—531 **4 Claims**



1. A self dispensing package arrangement for a pharmaceutical product which is contained in a cavity formed in a blister layer of a blister pack which has a rupturable film enclosing the pharmaceutical product in said cavity, said package comprising a bottom member and a cover member, means hingedly connecting said bottom member and said cover member, a track located on an inside surface of said cover member, at least one plunger slidably mounted on said track and moveable therealong, means for receiving said blister pack, the arrangement being such that upon closing of the cover member when said plunger is aligned with said cavity, said plunger contacts a top of said blister layer to thereby force the product through the rupturable film.

5,346,070

PORTABLE FOOD TRAY WITH CUP HOLDER

Douglas S. McSpadden, Belmont, N.C., assignor to McSpadden Development Company, Belmont, N.C.

Filed Jul. 6, 1993, Ser. No. 87,655
Int. Cl.[5] B65D *21/02*
U.S. Cl. 206—561 **10 Claims**

1. A portable food tray for supporting food and a drink container and which is adapted to be securely and comfortably held by one hand of the user, and comprising a self supporting sheet material which is shaped to include

a generally flat surface portion,

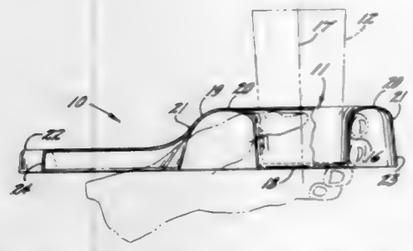
a cup-like portion which is sized to receive a drink container

and which comprises a substantially cylindrical wall, an upper open end, and a bottom end, and with said cylindrical wall defining a central axis and having an axial dimension of at least about 1½ inches,

an interconnecting wall portion which interconnects said upper end of said cup-like portion to said flat surface portion so that said central axis of said cylindrical wall extends perpendicularly to said flat surface portion and said bottom end of said cup-like portion is substantially coplanar with said flat surface portion, said interconnecting wall portion including an annular wall segment joined to said upper open end of said cup-like portion and spaced above said flat surface portion, and a depending wall segment extending from said annular wall segment to said flat surface portion, and with said depending wall segment being spaced from said cylindrical wall a distance of at least about ¾ inches and configured to permit the thumb and at least the index finger of the user to surround and grip the outside of the cylindrical wall of the cup-like portion,

a peripheral outer edge portion extending upwardly from the periphery of said flat surface portion, and

at least one rib which has the configuration of an inverted U in cross section extending from said depending wall segment of said interconnecting wall portion to said peripheral outer edge portion so as to divide said flat surface portion into at least two compartments with said one rib extending upwardly from said flat surface portion to define an upper surface which is spaced above said flat surface portion, and



said annular wall segment of said interconnecting wall portion being spaced above said flat surface portion a distance equal to about twice the spacing between said upper surface of said one rib and said flat surface portion.

10. A portable food tray for supporting food and a drink container and which is adapted to be securely and comfortably held by one hand of the user, and comprising a self supporting sheet material which is shaped to include

a generally flat surface portion,

a cup-like portion which is sized to receive a drink container and which comprises a substantially cylindrical wall, an upper open end, and a bottom end, and with said cylindrical wall defining a central axis and having an axial dimension of at least about 1½ inches,

an interconnecting wall portion which interconnects said upper end of said cup-like portion to said flat surface portion so that said central axis of said cylindrical wall extends perpendicularly to said flat surface portion, and with said interconnecting wall portion being spaced from said cylindrical wall and configured to permit the thumb and at least the index finger of the user to surround and grip the outside of the cylindrical wall of the cup-like portion, and

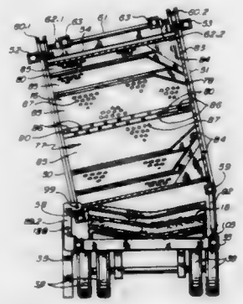
wherein said bottom end of said cup-like portion is closed with a bottom wall, and wherein said bottom wall is perforated so that it can be easily removed to allow the cup-like portion to more readily accommodate taller drink containers.

5,346,071

TROMMEL SCREENING APPARATUS

James H. Page, Bottineau, and Robert J. Page, Grand Forks, both of N. Dak., assignors to Norkot Manufacturing Co., Inc., Bottineau, N. Dak.

Filed Nov. 5, 1993, Ser. No. 148,635
Int. Cl.[5] B07B 1/24
U.S. Cl. 209—257 21 Claims



1. A trommel screening apparatus for screening material comprising:

a) a support frame;

b) a trommel screen cage for receiving material to be screened, the screen cage having an open front, a closed back, and outer peripheral framework and a screen panel attached to the peripheral framework;

c) a carriage, the screen cage rotatably mounted to the carriage, the carriage tiltably mounted to the support frame whereby the screen cage with the open front is positionable to receive and screen material and to dump unscreened material out of the apparatus;

d) a variably tilting means for tilting the carriage and screen cage; and

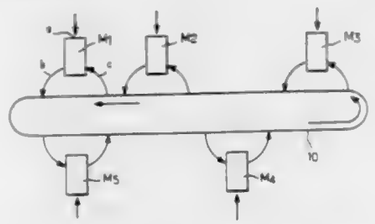
e) a drive means engaged with the trommel screen cage for rotating the screen cage whereby the material in the screen cage is tumbled and the screened material falls downwardly through and below the screen panel.

5,346,072

SORTING INSTALLATION FOR ARTICLES HAVING DIFFERENT DESTINATIONS

Jean-Raoul Dian, Paris, and Michel Gand, Champlan, both of France, assignors to Compagnie Generale D'Automatisme CGA-HBS, Bretigny sur Orge, France

Filed Apr. 8, 1993, Ser. No. 44,057
Claims priority, application France, Apr. 13, 1992, 92 04504
Int. Cl.[5] B07C 5/00
U.S. Cl. 209—584 3 Claims



1. An installation for sorting articles having different destinations, said destinations being divided into N groups of little-used destinations, wherein the installation comprises: n sorting machines, each machine M_i comprising p_i storage regions corresponding to p_i of the N groups of little-used destinations, in such a manner that

$$\sum_{i=1}^{i=n} p_i = N;$$

and common article transfer means connecting the n machines M_i in a closed circuit;

each sorting machine comprising: conveyor means for transferring the articles placed on its input having such destinations as pertain to the p_i groups associated with the machine to the p_i storage regions of the machine; n−1 intermediate storage regions, each intermediate storage region being associated with the group of destinations associated with a respective one of the n−1 other machines; conveyor means for transferring the articles of the destination not pertaining to the p_i groups of destinations corresponding to the machine to the appropriate intermediate storage regions; means for transferring the articles stored in each intermediate storage region to said common transfer means; temporary storage means for storing the articles placed on said common transfer means whose destination pertains to one of the p_i groups associated with said machine; and means for conveying the articles stored in the temporary storage means to said conveyor means corresponding to said p_i storage regions of the machine in accordance with their destinations;

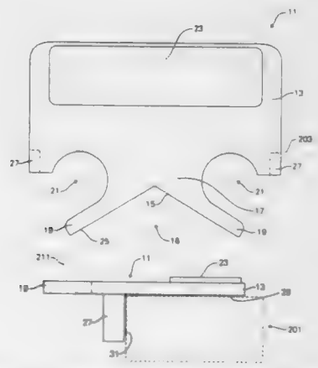
wherein the destinations for the articles also comprise T groups of destinations of full usage, and wherein each sorting machine comprises T main storage regions associated with the T groups of destinations respectively.

5,346,073

PORTABLE GUITAR STAND

Dennis W. Broersma, and Broersma: Donna A., both of 1540 Calle Fidelidad, Thousand Oaks, Calif. 91360

Filed Oct. 23, 1992, Ser. No. 965,871
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—13 21 Claims



1. A device for supporting an object against a fixture having a top surface, comprising:

a base having a bottom surface adapted for placement on the top surface of the fixture;

holding means coupled to the base for holding the object stationary against the fixture; and

restraining means on the bottom surface of the base using surface contact with the top surface of the fixture for inhibiting movement of the base with respect to the fixture when holding and supporting the object;

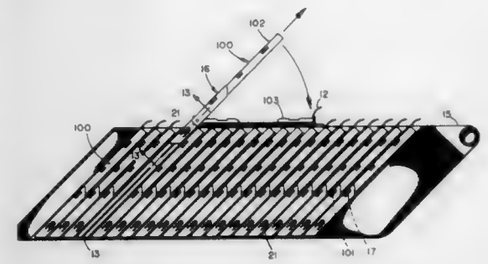
wherein a weight is coupled to the base, such that the movement is further inhibited.

5,346,074

PORTABLE DISPENSING UNIT FOR COMPACT DISKS

Jason W. Overholser, 4840 Lincolnshire St., Buena Park, Calif. 90621

Filed Feb. 12, 1993, Ser. No. 16,974
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—40 5 Claims



1. An apparatus for dispensing and transporting compact discs within compact disc container comprising:

(a) a housing;

(b) at least one pair of opposing guide rails in the housing; and

(c) at least one guide and retention member, within the pair of opposing guide rails to guide and retain the compact disc container, comprising:

a guide and retention frame;

at least one compact disc container retention tab on the frame;

at least one retrieving tab attached to the compact disc container; and

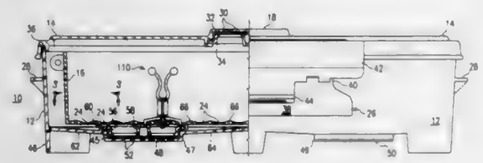
at least one locking key on the frame to retain the guide and retention frame in the guide rails.

5,346,075

APPARATUS AND METHOD FOR HOLDING A MEDICAL INSTRUMENT

Robert L. Nichols, Jacksonville; Keith F. Lindsey, Troup, and William H. Patterson, Jacksonville, all of Tex., assignors to Johnson & Johnson Medical, Inc., Arlington, Tex.

Filed Apr. 17, 1992, Ser. No. 870,558
Int. Cl.[5] A61L 2/00
U.S. Cl. 211—60.1 54 Claims



1. Apparatus for holding a medical instrument, comprising:

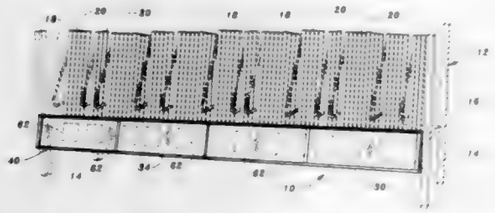
a platform having a plurality of apertures;

a cradle for holding the medical instrument, said cradle having first and second interlockable regions;

a first mating element coupled to said cradle; and

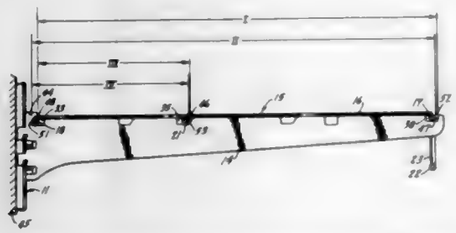
a second mating element for coupling to said first mating element through a selected one of said apertures, such that said cradle is coupled to said platform.

5,346,076
ELONGATED ELEMENT DISPLAY AND RETENTION APPARATUS
Douglas M. Hart, Sacramento, Calif., assignor to OrePac Building Products, Wilsonville, Oreg.
Filed Mar. 16, 1993, Ser. No. 31,843
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—86 9 Claims



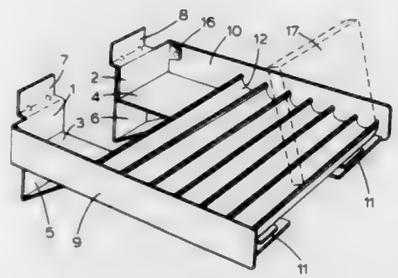
1. Elongated element display and retention apparatus, said display and retention apparatus for attachment to a storage rack having a support deck with an upper surface partially defined by a front deck edge, said support deck upper surface engageable by ends of elongated elements to support said elongated elements in a generally upright condition, said display and retention apparatus comprising, in combination:
a housing including interconnected end walls, a bottom wall, a top wall, a front wall, and a back wall, said interconnected walls defining an interior for accommodating, protecting, and displaying informational materials relating to said elongated elements;
attachment means for attaching said housing to said storage rack with said housing back wall adjacent to said front deck edge and at least a portion of said housing back wall projecting upwardly to an elevation above said support deck upper surface whereby said back wall is engageable by elongated elements on said support deck to prevent said engaging elongated elements from falling from said support deck over said front deck edge, said housing back wall having an inclined display surface for supporting said informational materials in positions whereby the information on the informational materials is readily observable from a location above and in front of said housing; and
spacer means projecting from said housing rear wall away from said housing for engaging said storage rack and cooperating with said storage rack to maintain said display surface inclined.

5,346,077
WIRE SHELVING AND BRACKET SYSTEM
Harold M. Randall, Fullerton, Calif., assignor to Newell Operating Company, Freeport, Ill.
Filed Mar. 18, 1992, Ser. No. 856,081
Int. Cl.[5] A47F 5/08
U.S. Cl. 211—90 5 Claims



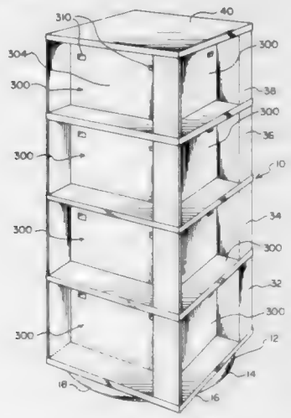
1. A ventilated shelf assembly, said ventilated shelf assembly including
a bracket and
a ventilated shelf adapted to be supported on the bracket,
said ventilated shelf having a first longitudinal member located at the inner edge portion of the shelf which is structurally connected to transverse member means which extends outwardly from the first longitudinal member and a second longitudinal member which is also structurally connected to the transverse member means but located outwardly from the first longitudinal member, the first longitudinal member including an innermost surface, the second longitudinal member including an outermost surface,
said longitudinal members and transverse members means forming an integral, substantially rigid, one piece ventilated shelf,
said bracket having support engaging means at its inner end adapted to engage with a supporting structure,
said bracket further having a nesting recess formed therein at its inner end portion for receiving the first longitudinal member,
said nesting recess having a bottom surface on which said first longitudinal member rests, an inner generally vertical surface having a height no less than the vertical dimension of the first longitudinal member, an outer generally vertical surface and an upper surface which extends from the inner generally vertical surface outwardly so as to partially overlie the bottom surface,
the outer generally vertical surface of said nesting recess being located outwardly from the outer end of the upper surface a distance sufficient to form an opening of a width sufficient to receive the first longitudinal member,
the bracket also including an outer recess with an outermost vertical surface,
the longitudinal distance between (a) the outermost surface of the outer recess in the bracket and the outer end of the upper surface of the nesting recess being less than (b) the distance between the outermost surface of the second longitudinal member and the innermost surface of the first longitudinal member
whereby the shelf can only be assembled to the bracket by inserting the first longitudinal member in the nesting recess from a position in which the outer end of the shelf is elevated above the bracket, and the shelf moved toward the inner end of the bracket until the upper surface of the nesting recess at least partially overlies the first longitudinal member.

5,346,078
DISPLAY SHELF ASSEMBLY
Ulf Ernetoft, 426 Glencairn Ave., Toronto, Ontario, Canada M5N 1V4
Filed Aug. 12, 1993, Ser. No. 105,116
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—90 5 Claims



1. A shelf assembly, for mounting on a vertically oriented display board provided with horizontal slots having at least the upper side undercut so as to accept hook in shelf brackets, comprising a pair of spaced brackets each having an arm adapted to project horizontally from and perpendicular to the display board, each arm having a flat, shelf supporting upper side, the bracket arms being provided with opposed, upstanding, flanges on one side of each arm, each arm having, at its wall end a vertically extending wall contacting surface, the wall contacting surface having, at its upper side, an inturned-to-the-wall part with an upturned hook end part adapted, when the brackets are in position on a display board, to hook into the undercut part of a horizontal slot on a slotted wall display board, a shelf resting on and attached to the flat upper sides of the pair of brackets to form a unitary assembly, and wherein the flanges on the arms of the brackets act as outer shelf end stops to prevent shelf supported items being, inadvertently, pushed sideways off the shelf.

5,346,079
DATA STORAGE MEDIA CAROUSEL
Macy J. Price, Jr., Louisville, and Timothy J. Pickles, Brighton, both of Colo., assignors to Engineered Data Products, Inc., Broomfield, Colo.
Filed Feb. 23, 1993, Ser. No. 21,692
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—131 5 Claims



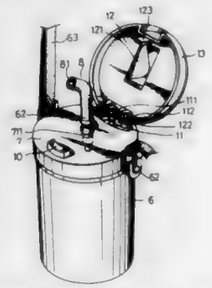
1. A storage system for data storage media, said storage system comprising:
a base unit;
a plurality of modular units having an upper end and a lower end;
front surfaces around the perimeter of said modular units;
said lower ends having a recessed portion behind said front surfaces;
said upper ends include an upstanding flange portion extending parallel to said front surfaces and recessed therefrom to engage in said recessed portion of said lower end to enable said modular units to securely vertically stack on one another; and
at least one compartment on each of said modular units for storing data storage media.

5,346,080

Patent Not Issued For This Number

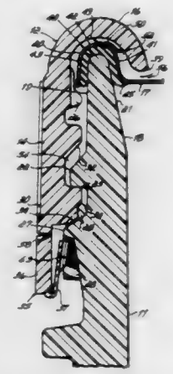
5,346,081
KETTLE WITH UPWARD BOUNDING COVER AND AUTOMATICALLY EXTENSIBLE SUCKER
Bang H. Lin, Tainan, Taiwan, assignor to Shing Hong Industrial Co., Ltd., Taiwan
Filed Jan. 26, 1994, Ser. No. 186,640
Int. Cl.[5] B65D 51/18
U.S. Cl. 215—229 6 Claims

1. A kettle with an upward bounding cover and an automatically extensible sucker, comprising: a kettle body, a kettle cap screwed on an upper open end of said kettle body, a cover member disposed on said kettle cap to cover the same, and a sucker means inserted through a central hole of said kettle cap to communicate with an inner chamber of said kettle body, characterized in that one end of said kettle cap includes a pivot support seat onto which a resilient member is pivotally connected, and a pressing board fitted at a bottom end of said cover member, one end of said pressing board being engaged with one end of said resilient member, the other end of said pressing board being formed with an engaging hook section, said kettle cap being formed with a first depression corresponding to said engaging hook section, one lateral side wall of said first depression being formed with an engaging recess, whereby said engaging hook section is able to engage with said engaging recess, making said cover member associate with and cover a top surface of said kettle cap with said resilient member



resiliently being bent and biased against said to surface of said kettle cap, and when said cover member associates with said kettle cap, said pressing board simultaneously presses and folds said sucker means to block flow therethrough, a prying member being pivotally disposed in said depression of said kettle cap, said prying member having a trigger section projecting from a front edge thereof, whereby by pressing said prying member, said trigger section is able to move and separate said engaging hook section from said engaging recess, and by the resilient restoring force of said resilient member, said pressing board and cover member are automatically uplifted in a bounding manner.

5,346,082
COMPOSITE CLOSURE WITH SEALING FORCE INDICATING MEANS AND RATCHET OPERATED TAMPER INDICATING BAND
Charles S. Ochs, and James D. Hasser, both of Lancaster, Ohio, assignors to Anchor Hocking Packaging Co., Lancaster, Ohio
Continuation-in-part of Ser. No. 897,786, Jun. 12, 1992, abandoned. This application Jun. 9, 1993, Ser. No. 71,764
Int. Cl.[5] B65D 41/34
U.S. Cl. 215—252 28 Claims



1. A package comprising the combination of a container and a composite closure on said container,

said closure including a molded plastic ring and a separately formed metal disk inserted in said ring,

said disk having a center portion and an annular raised bead around said center portion, said bead having a top and presenting a downwardly opening groove containing a gasket which is sealingly engageable with a rim of said container,

said ring having a skirt with securing means which are engageable with cooperating means on said container,

said ring having an inwardly extending semi-toroidal annular lip, said lip curving downwardly and inwardly over said bead to a lower inner edge, said lip having an undersurface which adjacent said lower inner edge is spaced radially inwardly from said bead, said lip bearing on said bead at substantially the top of the bead to exert downward force on said bead at least when said container is being sealed and not exerting radial clamping force across said bead,

said lower edge being spaced by a visible vertical gap above said center portion of said disk when said disk forms a seal with said container,

force in reaction to downward force exerted by said lip on the top of said bead bending said lip upwardly as a torsion spring and thereby increasing the height of said gap sufficiently that said height provides a visible indicator that said lip has exerted sealing force on the disk.

5,346,083

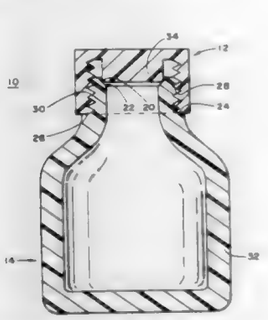
CONTAINER AND/OR CLOSURE THEREFOR

Pill-Soon Song, and William R. Parker, Jr., both of Lincoln, Nebr., assignors to The Board of Regents of The University of Nebraska, Lincoln, Nebr.

Continuation of Ser. No. 892,248, Jun. 2, 1992, abandoned. This application Dec. 27, 1993, Ser. No. 173,280

Int. Cl.[5] B65D *53/00*

U.S. Cl. 215—341 **5 Claims**



1. The combination of a container and a cap comprising:

a container having a solid wall with wall portions defining an opening wherein an enclosure is defined capable of containing fluids;

a cap adapted to close said opening;

said container having a first surface and a second surface and said cap having a third surface, a fourth surface, and a fifth surface;

said third surface and said fifth surface defining a circular edge;

said first surface cooperating with said third surface and said fifth surface wherein said first surface and said circular edge engage each other in a closed line when said cap is fully inserted;

said second surface and said fourth surface engaging each other to form a stop against further movement of said cap and container toward each other;

said circular edge being part of a solid cylinder integrally connected to and extending downwardly from said cap and said first surface being flat and positioned to engage said circular edge of said part of said solid cylinder, wherein the closed line has a width perpendicular to its length within a range of 0.5 millimeters to 1.5 millimeters; and

means for forcing said cooperating surfaces together with a pressure of at least 100 psi;

said first and third cooperating surfaces meeting at a first angle of between 75 degrees and 105 degrees and said first and fifth surfaces meeting at a second angle of between 75 degrees and 105 degrees.

5,346,084

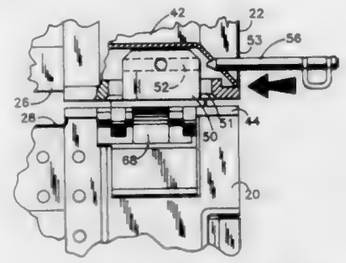
INTERMODAL CONTAINER WITH INTEGRATED INTERBOX CONNECTORS

Howard J. Jurgevich, Monticello, Ind., assignor to Rosby Corporation, Monon, Ind.

Filed Apr. 19, 1993, Ser. No. 49,838

Int. Cl.[5] B65D *7/26, 21/02*

U.S. Cl. 220—1.5 **22 Claims**



1. In an intermodal cargo container for carrying cargo, the container having a space enclosing structure including a floor, a roof, a pair of parallel side walls, and first and second end walls respectively connected between the side walls, with at least one of the side walls and end walls defining an opening therethrough to permit entry and exit of cargo, the improvement comprising integrated interbox connectors movably connected to the container and positionable between in a stored position situated within the space enclosing structure of the container and a connecting position situated on top of the roof of the container, and securing means for securing the interbox connectors to a vertically adjacent container.

5,346,085

LOCKABLE CONTAINER

Maria Svensson, Hovas; Jan Nordlander, Lerum, and Annika Andersson, Göteborg, all of Sweden, assignors to Molnlycke AB, Molnlycke, Sweden

Filed Oct. 14, 1993, Ser. No. 135,541

Claims priority, application Sweden, Apr. 15, 1991, 9101120

Int. Cl.[5] B65D *55/14*

U.S. Cl. 220—210 **6 Claims**

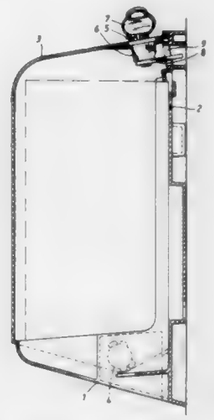
1. A lockable container having an interior and an exterior, said container comprising

a base part;

a cover pivotally attached to the base part for displacement between a closed position in which the cover and the base delimit a substantially enclosed space and an open position;

a lock mounted on said container, said lock presenting a lock catch operable from the exterior of the container by a key, which catch is displaceable between a locking position in which said catch engages a receiving portion and a free position;

wherein on the interior of the container, the container presents a holder for said key when said lock is not being activated, said holder being located with respect to the receiving portion such that the lock catch, through mechanical contact with the key, is prevented from engaging the receiving portion when the cover is in said closed position.



5,346,086

SHARPS DISPOSAL CONTAINER WITH A PIVOTED CLOSURE DOOR

John Harris, Gwent, United Kingdom, assignor to Frontier Plastics (South Wales) Limited, Gwent, United Kingdom

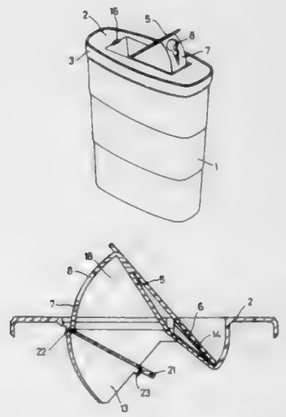
PCT No. PCT/GB91/01624, § 371 Date May 18, 1993, § 102(e) Date May 18, 1993, PCT Pub. No. WO92/05744, PCT Pub. Date Apr. 16, 1992

PCT Filed Sep. 20, 1991, Ser. No. 30,405

Claims priority, application United Kingdom, Sep. 27, 1990, 9021075

Int. Cl.[5] B65D *51/18*

U.S. Cl. 220—254 **7 Claims**



1. A sharps disposal container, comprising a container body defining an interior and closed by a lid having side and top walls, said top wall defining an opening, a door mounted on a pivot on said lid in said opening, an end wall depending from said door and defining an access opening, the door being swingable about said pivot to raise said end wall above said top wall, a first pair of downwardly projecting skirts depending from the door and connected to said end wall, and a second pair of downwardly projecting skirts depending from said lid, wherein said two pairs of skirts together ensure that the container body interior is closed during pivoting of said door, except for access to said interior through said access opening in said end wall for receipt of sharps when the end wall is raised, said end wall having a lower edge, and a flap pivotally attached to said lower edge to act as an auxiliary internal closure member for said opening within which said door is located.

5,346,087

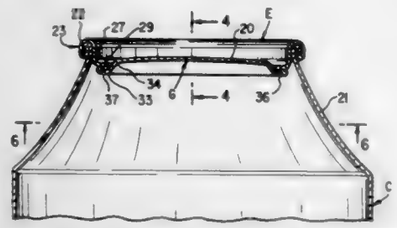
REINFORCED BEVERAGE CAN END WITH PUSH DOWN GATE

Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020-5531

Filed Jul. 23, 1993, Ser. No. 95,741

Int. Cl.[5] B65D *17/32*

U.S. Cl. 220—268 **19 Claims**



1. In a can end of formed sheet metal with a peripheral connection means about a center expansion panel of the can end, including a curl, a seaming panel and an inward chuck wall adapted to fit upon the open top of a can to form a seamed rim, with the chuck wall at the inner side of the can wall having an inwardly turned radius at its base, the improvement comprising;

(a) a tightly folded, ring-shaped triple fold having an upper layer extending inwardly from the chuck wall radius, an outwardly folded intermediate layer and an inwardly folded bottom layer with the metal at the inner edge of the bottom layer extending to the center expansion panel and,

(b) a score-cut at the underside of said bottom layer extended partially through the bottom layer adapted to permit the center expansion panel to be moved downwardly and severed from the triple fold.

5,346,088

REUSABLE BEVERAGE CAN CAP

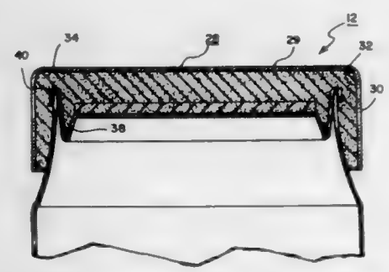
Joseph Brimo, II, 724 Johns La., Ambler, Pa. 19002

Continuation-in-part of Ser. No. 977,892, Nov. 18, 1992, Pat. No. 5,221,020. This application Jun. 21, 1993, Ser. No. 80,411

The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.

Int. Cl.[5] B65D *43/08*

U.S. Cl. 220—357 **6 Claims**



1. A cap for a beverage can, said beverage can having a beaded rim, a substantially recessed top surface within the periphery of the beaded rim, and an annular groove adjacent to the beaded rim, comprising:

an outer shell having an inner side, an outer side, an outer flange defining means adapted to enshroud the beaded rim

of the beverage can, and an inner flange defining means adapted to mate with the annular groove; and

a substantially flat and round elastomeric member affixed to the inner side of the outer shell, interior to the inner flange and defining means adapted to sealingly engage the recessed top surface of the beverage can.

5,346,089

PRODUCE PACKAGING AND METHODS OF SEALING SAME

Richard S. Brown, 34325 Chualar Canyon Rd., and Bennett W. Brown, 34012 Chualar Canyon Rd., both of, Chualar, Calif. 93925

Filed Jul. 20, 1992, Ser. No. 916,400
Int. Cl.[5] B65D *33/00*
U.S. Cl. 220—403 **8 Claims**



1. A container assembly for storage and transport of large quantities of edible produce in substantially ready to eat form in such manner that risk of metal contamination of the produce is minimized, said container assembly comprising:

a) an outer peripheral carton side wall;

b) a bottom section secured to said side wall in such manner that the bottom section tightly engages the side wall with sufficient frictional force to hold a substantial weight of produce in the container assembly and eliminates need for metal fasteners to secure the bottom section to the side wall;

c) a flexible and foldable container disposed in said carton and initially having opposed gusseted side edges and having an initially open upper end for filling the container with produce;

d) means associated with said container to hermetically seal the initially open upper end by turning the upper end upon itself in the form of a roll extending entirely across the upper end and having several layers of the side wall rolled into that roll;

e) excess material sections on said side wall enabling formation of extended portions of the roll which initially extend substantially beyond the side wall of the container when the latter is filled with produce, said extended portions of the roll being folded back on top of the roll, thereby forming a closed top on the container with no portion of the roll extending beyond the side wall of the container, to thereby form an air-tight interior compartment in said container in which produce can be stored in a controlled atmosphere;

f) tape means for holding the extended portions on the roll or container top and for holding the roll on the top of the container in such manner to maintain the hermetic seal and which tape means is readily manually removable thereby permitting easy manual opening without the need for nor the requirement of a metal implement to open the upper end; and

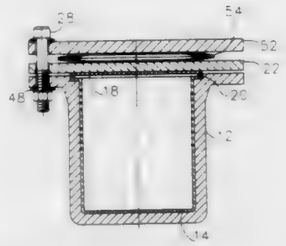
g) a lid for disposition over the upper end of said carton and which can be secured thereto without need for metal fasteners therefor.

5,346,090

APPARATUS FOR REFINING DIAMONDS

Ankur Purohit, and Ahnal A. Purohit, both of Darien, Ill., assignors to Anshal, Inc., Darien, Ill.

Division of Ser. No. 662,469, Feb. 28, 1991, Pat. No. 5,133,792.
This application Jul. 27, 1992, Ser. No. 919,879
Int. Cl.[5] B65D *90/04*
U.S. Cl. 220—410 **19 Claims**



1. Vessel apparatus for refining diamonds, comprising the combination of

an open-top liner having a surrounding annular sealing area, a liner cover having an annular sealing area opposed to the liner sealing area, and an annular seal suited to be confined between the opposed annular sealing areas;

an open-top pressure shell snugly fitted around the outside of the liner and having an annular securing area spaced outwardly adjacent the annular sealing areas, and a shell cover butted flush against the liner cover and having an annular securing area opposed to the shell securing area;

the shell cover and liner cover being readily removable to expose the open-top liner for providing loading and unloading access of the vessel apparatus for diamonds and solvents contained therewithin during refining, and the shell and shell cover, liner and liner cover, and annular seal being sized to provide that when the vessel apparatus is closed and sealed during refining that the annular securing areas of the shell and shell cover remain spaced apart;

securing means cooperating at the annular securing areas for biasing the securing areas toward one another for thereby compressing the annular seal between the annular sealing areas of the liner and liner cover when the vessel apparatus is closed and sealed during refining;

said liner, liner cover, and annular seal each being formed of heat and chemically resistent durable material to withstand elevated operating temperatures and the solvents contained in the vessel apparatus during refining, but said liner and liner cover each being inadequate to contain solvent pressures in the vessel apparatus; and said shell and shell cover, and said securing means each being formed of durable heat resistent material to withstand the elevated operating temperatures and solvent pressures in the vessel apparatus during refining; and

said securing means comprising spring means operable for resiliently drawing the securing areas toward one another and the sealing areas against the annular seal therebetween, for maintaining a substantially uniform continuous resilient force between the annular sealing areas and the annular seal therebetween substantially independently of the refining temperatures and pressures.

5,346,091

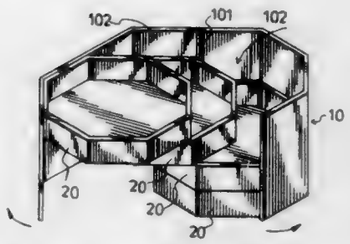
MULTIPLE TRAY CONTAINER

Wen-Hsiung H. Hsu, No. 31, Alley 12, Lane 261, Sec. 2, Hsi-Yuan Rd., Taipei, Taiwan

Filed Jul. 8, 1993, Ser. No. 88,746
Int. Cl.[5] B65D *6/18*
U.S. Cl. 220—503 **4 Claims**

1. A box comprising:

an elongated surrounding wall having a plurality of interconnected vertical wall sections and two distal ends, each of said vertical wall sections having an inner wall surface, every two adjacent said vertical wall sections being pivotally interconnected along a vertically extending fold line, said surrounding wall being movable between a folded position, wherein said vertical wall sections cooperatively define an enclosure, and an unfolded position, wherein said distal ends are spaced apart from each other; and



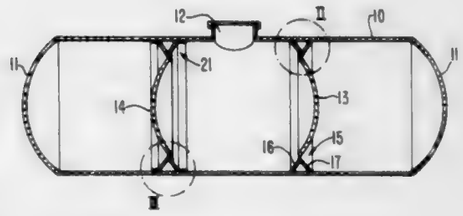
a plurality of trays, each having a periphery secured to said inner wall surface of a respective one of said vertical wall sections, so that the trays are arranged in a stack, the trays being disposed one substantially directly above another in said enclosure when said surrounding wall is in said folded position, and in staggered relationship to each other when the surrounding wall is in the unfolded position.

5,346,092

TANK HAVING AN INTERMEDIATE WALL

Helmut Gerhard, deceased, late of Weitefeld, Fed. Rep. of Germany by Jan Gerhard-de Vries, Till Gerhard, heirs , assignor to Westerwaelder Eisenwerk Gerhard GmbH, Fed. Rep. of Germany

Filed Dec. 18, 1992, Ser. No. 993,075
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1991, 9116117[U]
Int. Cl.[5] B65D *25/00*
U.S. Cl. 220—553 **5 Claims**



1. A tank having

a substantially cylindrical jacket,

a profile ring having two legs, said two legs connected to each other to form an apex and said two legs being welded to the internal surface of said tank jacket so that said apex faces the interior of the tank, and

a curved intermediate wall having a peripheral portion overlapping and welded to one of the legs of said profile ring.

5,346,093

LIQUID STORAGE SYSTEM

Louis De Benedittis, Nesconset, N.Y., and Charles A. Frey, Sr., Lancaster, Pa., assignors to Areo-Power Unitized Fueler Company, Inc., Smithtown, N.Y.

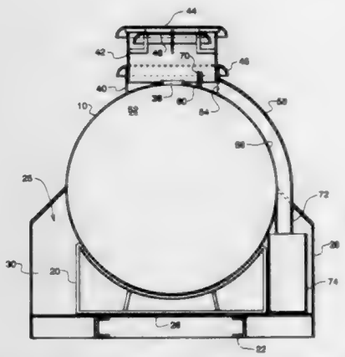
Filed Jan. 28, 1994, Ser. No. 188,830
Int. Cl.[5] B65D *25/18*
U.S. Cl. 220—565 **6 Claims**

1. In an above-ground storage system for holding volatile liquids where there is an internal storage tank having a longitudinal axis extending in a horizontal direction, an external containment dike structure beneath said tank and in which the tank is located, a vent at the top of the tank through which liquids may escape from the interior of the tank, drainage means for carrying liquids from said vent downwardly into said dike, and means for controlling the flow of liquid from said vent to said dike comprising:

a collar mounted on the tank and surrounding said vent;

said collar having an outlet communicating with said drainage means;

a weir mounted in said collar between said vent and said outlet and forming with the collar a chamber adapted to



receive and hold a limited overflow of liquid from the tank;

said weir being connected to an outer surface of the tank and having ends connected to the inside of said collar;

a cover over and spaced vertically above said vent;

a neck extending downwardly from the cover and fitted into said collar;

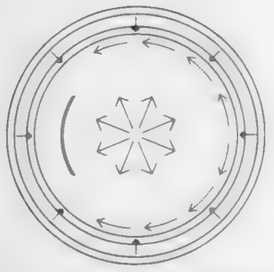
and said weir having an upper edge over which liquid may flow when the capacity of said chamber in said collar is exceeded for discharge through said outlet and into said drainage means.

5,346,094

FULLY PUMPABLE DRUM BOTTOM

Harry L. Strawser, Maineville, Ohio, assignor to Astro Containers, Inc.

Filed Feb. 12, 1993, Ser. No. 61,423
Int. Cl.[5] B65D *81/36*
U.S. Cl. 220—571 **6 Claims**

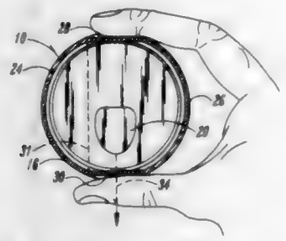


1. An improved drum bottom for facilitating the evacuation of contents, comprising:

a drum bottom, including a raised centerpoint from which contents flow outwardly into a sloping channel, said sloping channel extending circumferentially about the periphery of the drum bottom and tapering in a downwardly direction towards a depression extending about a circumferentially limited area of the drum bottom for holding and collecting the contents, said depression being a lowest

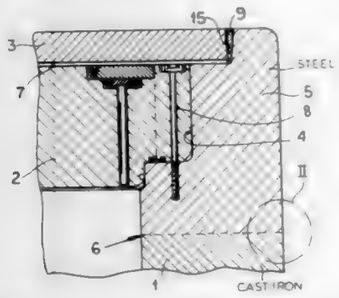
point in a limited circumferential portion of said loping channel, whereby substantially all of the residual fluid in a drum is collected in the depression as the drum contents are emptied.

5,346,095
BEVERAGE CAN
Richard E. Deal, 614 S. Moore, Algona, Iowa 50511
Filed Jun. 1, 1993, Ser. No. 69,623
Int. Cl.[5] B65D 7/42
U.S. Cl. 220—669 13 Claims



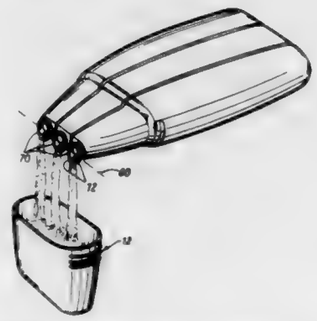
1. An improved beverage can comprising:
a top wall with means for selectively opening the can;
a bottom wall;
a substantially cylindrical sidewall extending between and being integrally formed with the top and bottom walls, the sidewall having a pair of opposing curved portions and a pair of opposing flattened portions which form the substantially cylindrical side wall, the flattened portions having upper and lower ends, the flattened portions being oriented for gripping by a person's thumb and fingers for holding the can, and
a continuous circular rim adjacent the upper and lower ends of the flattened portions so that the can is rollable along a surface or track.

5,346,096
RADIATION-SHIELDING TRANSPORT AND STORAGE CONTAINER
Rudolf Diersch, Essen; Klaus Janberg, Ratingen-Lintorf; Dieter Methling, Hattingen, and Karl Schröder, Siegen, all of Fed. Rep. of Germany, assignors to GNS Gesellschaft Fur Nuklear-Service mbH, Essen, Fed. Rep. of Germany
Filed Sep. 22, 1992, Ser. No. 948,719
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1991, 4135066
Int. Cl.[5] B65D 25/18
U.S. Cl. 220—679 6 Claims



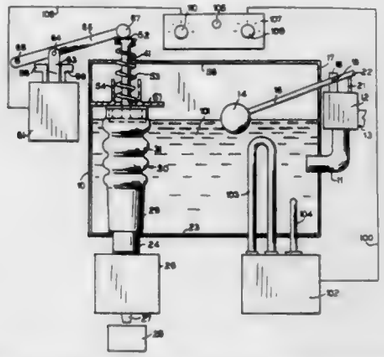
1. A radiation-shielding storage/transport container comprising:
a cast-iron vessel having an open end defining an end face;
a steel ring engaging the end face and forming at least one annular seat;
an aluminothermic weld unitarily bonding the ring to the end face; and
a cover secured to the steel ring in the seat thereof.

5,346,097
DISPENSING CONTAINER
Tristan G. Melland, and Clive H. Gay, both of 8 Printing House Yard, Hackney Rd., Shoreditch, London, England E2 7PR
PCT No. PCT/GB90/01537, § 371 Date Jun. 2, 1992, § 102(e) Date Jun. 2, 1992, PCT Pub. No. WO91/04923, PCT Pub. Date Apr. 18, 1991
PCT Filed Oct. 5, 1990, Ser. No. 844,605
Claims priority, application United Kingdom, Oct. 6, 1989, 8922542
Int. Cl.[5] B67D 5/60
U.S. Cl. 222—132 14 Claims



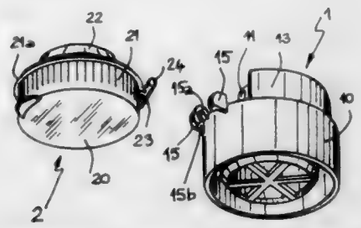
1. A dispensing container which includes:
a) a moulded bottle formed in one piece and comprising at least two distinct compartments for accommodating different fluent materials, each compartment having an outlet at an operatively upper end thereof, the compartments having equal total volumes and also having equal cross-sectional areas at each level of the bottle, the bottle having a cross-section which tapers in a direction from a bottom portion to a top portion thereof;
b) a pouring spout communicating with each of the compartment outlets, the pouring spouts being spaced apart from one another with the centres of the pouring spouts lying on an imaginary straight line, each pouring spout being defined by a continuous circumscribing wall which is spaced apart by the circumscribing wall of any other pouring spout not shared by any other pouring spout;
c) a single cap dimensioned to fit onto the operatively upper end of the bottle and having sealing means for sealing all the pouring spouts simultaneously when so fitted; the design of the spout and bottle being such that when the cap is removed and the bottle is tilted away from an upright orientation with the imaginary straight line remaining horizontal, the contents of the compartments are dispensed simultaneously at equal flow rates and in distinct streams, from the compartments without cross contamination between adjacent streams, and when the bottle is thereafter returned to an upright orientation, fluent material originating from one compartment is prevented from flowing back into any other compartment and cross-contamination of the compartments is avoided, and
d) an air vent associated with each compartment which is also sealed by the cap when the cap is fitted onto the operatively upper end of the bottle; the provision of an air vent for each compartment outlet allowing air to enter each compartment as the contents of the compartments are dispensed, thereby ensuring that the contents of the compartments are dispensed smoothly in their distinct streams,
the cap and bottle having cooperating clip formations which engage one another in clipping fashion when the cap is correctly fitted onto the upper end of the bottle.

5,346,098
DEVICES FOR DISPENSING LIQUID
Alan M. King, Westmount, and Orn Arnason, Quebec, both of Canada, assignors to VKI Technologies, Inc., Saint-Hubert, Canada
Filed Oct. 18, 1993, Ser. No. 136,872
Int. Cl.[5] B67D 5/62, 5/30
U.S. Cl. 222—146.5 15 Claims



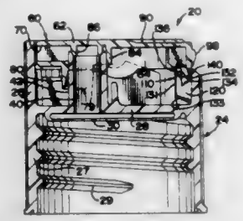
1. Means for dispensing liquid for a beverage brewer comprising, a container means with liquid therein, a supply tube with an outlet end and an input end, an actuating means connected to said supply tube so as to move said input end from a first position above a level of the liquid in said container means to a second position where said input end is below the level of the liquid in said container means so as to deliver liquid from said outlet end.

5,346,099
POUR-THROUGH STOPPER WITH HINGED LID
Pierre Salmon, Les Granges d'en Haut, Châtillon d'Azergues, France 69380 , and Michel Quigrat, 2 Rue des Ecureuils, Gleizé , France 69400
Filed Aug. 10, 1993, Ser. No. 103,665
Claims priority, application France, Aug. 11, 1992, 92 10066
Int. Cl.[5] B67B 5/00
U.S. Cl. 222—153 5 Claims



1. In a pour-through stopper including a pourer having a generally cylindrical skirt with upper and lower edges and inner and outer surfaces, an inviolable safety band connected to the pourer and a lid having a flange for engaging the safety band, the improvement comprising, the lid having a foot member including two coaxial lugs, the pourer including two spaced wing members extending outwardly relative to the outer surface of the skirt, each of said wing members having a bore therein which is oriented generally parallel to a line tangent to the outer surface of the skirt, said bores having a maximum width dimension, each of said wing members having a cut-out therein forming an opening into said bores, said openings being oriented toward the lower edge of the skirt and being of a dimension which is smaller than said width dimension of said bores, and said lugs being engageable within said bores after being urged through said openings.

5,346,100
TOGGLE-ACTION DISPENSING CLOSURE WITH AN ACTUATION-PREVENTION ABUTMENT AND A FRACTURE CONTROL SURFACE
Dieter Lay, Oconomowoc, Wis., assignor to AptarGroup, Inc., Crystal Lake, Ill.
Filed Jan. 14, 1994, Ser. No. 182,292
Int. Cl.[5] B65D 47/00; B67D 5/32
U.S. Cl. 222—153 10 Claims

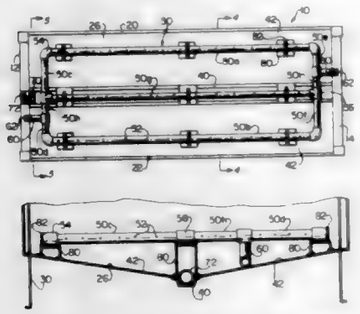


1. In a toggle-action dispensing closure for an opening to a container wherein said closure includes:
a body for engaging said container over said opening and defining a discharge aperture communicating with said opening; and
an actuator pivotally mounted on said body for occluding flow from said container through said discharge aperture when said actuator means is in a closed non-dispensing position and for permitting flow from said container when force is applied to said actuator to tilt said actuator to an open dispensing position, said body having a severable abutment under said actuator, and said actuator having a shearing wall for confronting said abutment when said actuator is in said non-dispensing position to prevent tilting of said actuator to said dispensing position in response to said actuator being subjected to a force less than a predetermined force, but said shearing wall shearing said abutment from said body when said actuator is subjected to at least said predetermined force so that thereafter said actuator can be tilted to said dispensing position in response to the application of force less than said predetermined force, the improvement comprising:
said body defining a receiving space behind said abutment for receiving said shearing wall, said body having:
(1) a rear surface spaced from said abutment and defining the rear of said recess and
(2) a fracture control surface defining the bottom of said recess, said control surface extending from said rear surface to said abutment.

5,346,101
SPARGER CONTAINER FOR SHIPMENT OF DRY MATERIALS
Gary W. Hargis, Gordon; David Francis, Milledgeville, and Clifton A. Brooks, Gordon, all of Ga., assignors to Hargis Container Corporation, Gordon, Ga.
Filed Apr. 19, 1993, Ser. No. 47,410
Int. Cl.[5] B67D 5/06
U.S. Cl. 222—195 10 Claims

1. A sparger container comprising:
a pair of opposed end walls;
a pair of opposed side walls;
a closed floor including an open-topped, longitudinally-extending channel having top edges, and two generally planar sides slanting upwardly from said top edges of said channel to said side walls;
a sparger system including a generally rectangular network of pipes disposed along the inner perimeter of said side and

end walls, and at least one inlet providing fluid communication between a source of pressurized fluid and said



pipes, said pipes being provided with a plurality of holes therethrough; and

an outlet positioned in said channel.

5,346,102

DISPENSING CARTRIDGE HAVING A RESILIENT FOLLOWER

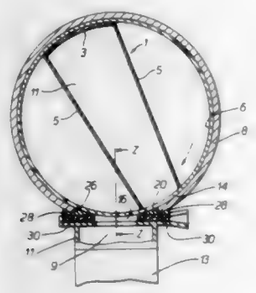
Anil Bhagwat, Hemel Hempstead, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 28, 1993, Ser. No. 82,863

Claims priority, application United Kingdom, Jul. 17, 1992, 9215262.8

Int. Cl.[5] B65D *37/00*; **B67D** *5/42*

U.S. Cl. 222—206 **10 Claims**



1. A dispensing cartridge adapted to discharge material therefrom to a receiving member during a dispensing operation comprising:

a substantially rigid outer member defining a chamber and an outer port therein,

a substantially rigid inner member defining a chamber storing the material and an inner port therein, said inner member being located within the chamber of said outer member with the inner port thereof being aligned with the outer port of said outer member during the dispensing operation, said inner member deflecting to conform to said outer member when substantially filled with material and deflecting away from said outer member during the dispensing operation to facilitate the dispensing of material from the chamber of said inner member, through the inner and outer port, and to the receiving member.

5,346,103

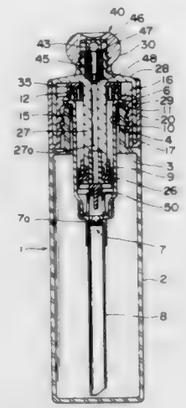
COMPRESSION SPRAYER FOR LIQUIDS

Hiroshi Mizushima; Tadao Saito, and Takamitsu Nozawa, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co, Ltd., Tokyo, Japan

Continuation of Ser. No. 848,966, Apr. 24, 1992, abandoned. This application Jan. 3, 1994, Ser. No. 177,185

Int. Cl.[5] B65D *88/54*

U.S. Cl. 222—321 **10 Claims**



1. A liquid sprayer comprising:

a container body provided with a neck portion extending therefrom;

a one-piece cylinder hanging from said neck portion into the container body;

a suction valve provided at the lower end portion of the cylinder;

a suction pipe extending from the suction valve to the inner bottom of the container body;

an erecting wall having an upper end portion engaged with the upper portion of said cylinder, and being attached to the outer surface of said neck portion;

an erecting guide trunk connected to the lower end of the erecting wall, and surrounding the erecting wall from outside with a constant distance therefrom;

a trunk piston upwardly and downwardly movably fitted into said cylinder;

a stem extending from the piston;

a connecting piece attached to the upper end of the stem;

a sliding trunk hanging from the connecting piece and being upwardly and downwardly movably fitted into the gap between said erecting wall and guide trunk, wherein the sliding trunk stabilizes the stem to cause steady upward and downward movement of the stem as the sliding trunk moves upwardly and downwardly within the gap between the erecting wall and the guide trunk;

a head provided above said stem, and having a spraying aperture communicating with the interior of said stem; and

a discharge valve provided in the upper portion of said stem.

5,346,104

DISCHARGING PATH OPEN/CLOSE SHIFTING VALVE FOR LIQUID STORING CONTAINER

Sang-Hyen Jeong, No. 481-61, Mang Yang-Ri, On Yang-Myun, Ul San-Kun, Kyung Nam, Rep. of Korea

Filed Feb. 10, 1993, Ser. No. 16,032

Claims priority, application Rep. of Korea, Dec. 24, 1992, 1992 - 25615; Jan. 27, 1993, 1993 - 00988

Int. Cl.[5] B65D *83/00*

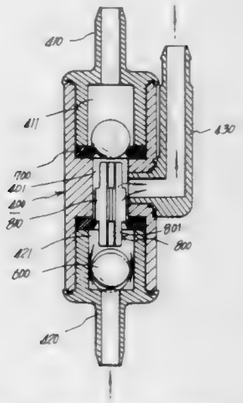
U.S. Cl. 222—402.19 **4 Claims**

1. A fluid discharge apparatus comprising:

a storage tank for the fluid;

a discharging structure outside the storage tank through which the fluid is discharged;

a discharge valve within the storage tank, the discharge valve having first and second connecting pipes extending therefrom towards opposite ends of the storage tank, the discharge valve including a flow path and the first and second connecting pipes being connected to the flow path, the flow path including first and second ascending and descending closure means so that when the flow path to one of said first and second connecting pipes is open, the flow path to the other of said first and second connecting pipes is closed, the flow path being closed by one of said first and second closure means by gravity urging the one of said first and second closure means into a closed position;



a discharge pipe extending from a position in communication with the flow path of the discharge valve between the first and second closure means to the discharging structure;

a plunger located in the flow path of the discharge valve, the plunger movable within the flow path in response to gravity between a first position to move one of said first and second closure means so that it does not close the flow path, a second position to move the other of said first and second closure means so that it does not close the flow path;

whereby the discharge structure in operation produces a suction force greater than the force of gravity on the first and second closure means and contents of the storage tank man be discharged through the discharge structure when the storage tank is in an upright or inverted position.

5,346,105

DISPENSER FOR GRANULAR MATERIAL

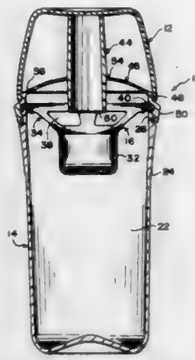
Frederik J. Onneweer, Tervuren, Belgium, assignor to Dart Industries Inc., Deerfield, Ill.

Filed Dec. 30, 1993, Ser. No. 176,569

Int. Cl.[5] G01F *11/26*

U.S. Cl. 222—455 **16 Claims**

1. A dispenser for selective continuous pour and single dose dispensing of granular material, said dispenser comprising a container, said container defining an internal storage chamber, a dispensing spout having one inner inlet end inwardly directed toward said chamber, and an outer outlet end exterior of said container, a dose cup mounted within said chamber and having a discharge mouth aligned with and opening toward said spout, means for mounting said spout on said container for selective movement between a first continuous pour position and a second dose position, said inlet end of said spout, in said first position of said spout, being in outwardly spaced relation to said dose cup discharge mouth with a continuous flow path for granular material formed exterior of said cup from said chamber to said inlet end, said inlet end of said spout, in said second position of said spout, being in said cup inward of said mouth thereof forming a flow path for granular material to said inlet



end solely from said cup, and precluding flow of granular material from said chamber to said inlet end.

5,346,106

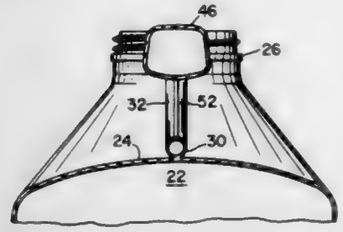
CONTAINER HAVING NO-GLUG POURING SPOUT

Carl D. Ring, Oakland, Tenn., assignor to Ring Can Corporation, Oakland, Tenn.

Filed Dec. 1, 1993, Ser. No. 159,564

Int. Cl.[5] A47G *19/14*

U.S. Cl. 222—465.1 **4 Claims**



1. A blow molded plastic container comprising a bottom, side wall means extending upwardly from said bottom and defining therewith a chamber for containing a fluid, top wall means closing said chamber and having a spout forming an opening through which the fluid may be poured from said chamber, a hollow vent tube formed integrally on said top wall means and having a front open end communicating with said spout opening and a rear open end communicating with said chamber, a hollow handle closed at its front and rear ends, and means integrally connecting the front and rear ends of said handle on said vent tube.

5,346,107

DISPENSING DEVICE FOR A RECEPTACLE CONTAINING A PRODUCT OF LIQUID TO PASTY CONSISTENCY

Hervé Bouix, Marly le Roi, and Vincent de Laforcade, Clamart, both of France, assignors to L'Oreal, Paris, France

Filed Nov. 27, 1992, Ser. No. 982,551

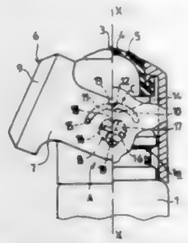
Claims priority, application France, Nov. 29, 1991, 91 14775

Int. Cl.[5] B65D *25/40*

U.S. Cl. 222—490 **11 Claims**

1. Dispensing device, for a receptacle containing a product of liquid to pasty consistency, including a sealing capsule fitted with a dispensing opening, the said capsule including a means of closing which is in the form of a clamp with two arms linked by a crosspiece, said crosspiece having one area which serves to close the said opening, the ends of the said arms away from

the crosspiece having means of articulation on a section fixed to the receptacle, said means of articulation allowing displacement of the clamp along the axial direction of the receptacle in order to distance the crosspiece from the said opening, wherein rotation of the clamp will cause displacement of the crosspiece at a tangent to the said opening, said dispensing device including a cam system, located between the arms of the clamp and a fixed part of the receptacle causing, from commencement of rotation of the cam from the closed position, the aforementioned displacement of the clamp along said axial direction, wherein the means of articulation (A) of the clamp include, for each arm, a non-circular axis (**16**, **116**) cooperating with a window (**17**, **117**) having an internal surface engaged by said axis in such a way that, whatever the angle of the axis, the contact between the axis (**16**, **116**) and the internal surface of the window (**17**, **117**) will be sufficiently close to avoid any unexpected movement of the clamp in relation to the receptacle, whilst initiating the aforementioned displacement along the axial direction.



5,346,108

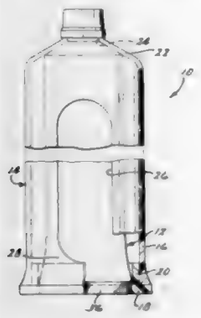
GAGED DISPENSING APPARATUS

Arthur M. Pasinski, 3440 Bigelow, Howell, Mich. 48843

Filed Oct. 26, 1992, Ser. No. 966,280

Int. Cl.[5] **B65D** *35/00*

U.S. Cl. 222—494 **8 Claims**



1. A gaged dispensing apparatus, comprising:

a container for holding a supply of a viscous material, said container having an opening at one end thereof for permitting the discharge of said viscous material from said container; and

resilient metering means, interposed between a first chamber of said container which holds a supply of viscous material and a second chamber of said container which communicates with said opening, for limiting the volume of said material dispensed through said opening to a predetermined volume in response to the application of pressure to said first chamber of said container,

said resilient metering means including

a plastic reciprocating element which has a body following a generally spherical arc that is normally bowed away from said opening of said container, and

aperture means formed at least in part by said reciprocating element for permitting said viscous material to flow from said first chamber to said second chamber until said generally spherically arcing body provides a metering seal between said first and second chambers in a closed position, said seal preventing discharge of additional viscous material from said opening.

5,346,109

Patent Not Issued For This Number

5,346,110

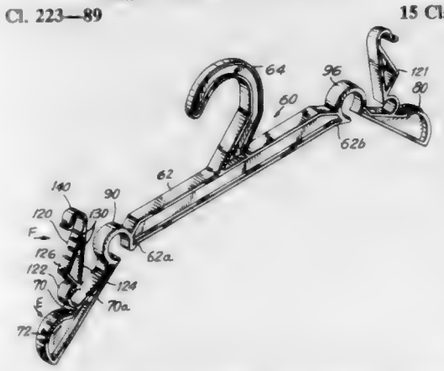
GARMENT HANGER WITH PIVOTABLE ARMS

Nicolean Petrou, 1531 W. Tadmar Ave., Anaheim, Calif. 92802

Filed May 21, 1993, Ser. No. 65,973

Int. Cl.[5] **A47G** *25/48, 25/50*

U.S. Cl. 223—89 **15 Claims**



1. A one-piece garment hanger comprising an elongated hanger body integrally molded from a plastic material, said hanger body having first and second opposing ends, a first arm integrally formed to said first end of said hanger body and a second arm integrally formed to said second end of said hanger body, said first and second arms extending downwardly and outwardly from said hanger body at an acute angle with respect thereto, an integrally formed essentially semi-circular biasing means biasingly coupling said first and second arms to said hanger body tending to urge said first and second arms away from one another, said first and second arms being manually forcible towards one another against the opposing spring action provided by said biasing means to releasably capture a garment therebetween.

5,346,111

PORTABLE, PERSONAL COMPUTER, PERSONAL COMMUNICATOR HOLDER

James B. Huntley; James Brian Huntley; Tonya M. Huntley, and Cornelius L. Burroughs, all of P.O. Box 55287, Washington, D.C. 20040

Filed Dec. 14, 1992, Ser. No. 987,827

Int. Cl.[5] **A45F** *3/08*

U.S. Cl. 224—265 **1 Claim**



1. An apparatus for supporting a telephone headset comprising first and second members and an adjustable strap means;

the first member comprising first and second legs forming a substantially L-shaped section wherein the first leg is short relative to the second leg, the second longer leg is adapted to be positioned across a user's chest and the first leg extends from one end of the second leg over one of the user's shoulders, the first member further includes a substantially vertical section extending from the other end of the second leg and upwardly from the user's shoulder, wherein the substantially vertical section comprises a bracket means for attaching the telephone handset;

the second member comprising third and fourth legs forming a substantially L-shaped section wherein the third leg is shorter relative to the fourth leg, the fourth leg is attached to the other end of the first leg and the third short leg is adjacent to the vertical section wherein the four legs, when connected, form a substantially rectangular configuration having two rear corners and two front corners;

the adjustable strap means comprising two adjustable straps wherein each adjustable strap extends from adjacent one rear corner, under one of the user's armpits to a point adjacent to one front corner of the substantially rectangular configuration; whereby fastening and adjusting the strap means under the user's arms provides for comfort and stability:

the apparatus further comprising three straps configured to support a computer or communicating device in a raised stable position or a lowered stable position; two of the straps attached to the second leg, wherein the two straps are attached at opposite ends of the second leg and are secured to the personal computer or communicating device; the third strap being secured to the second leg approximately midway between the first two straps and at a bottom point of the computer or communicating device.

5,346,112

CAPSTAN DRAW APPARATUS FOR PERIODICALLY GRIPPING AND DRAWING AN ELONGATED MEMBER

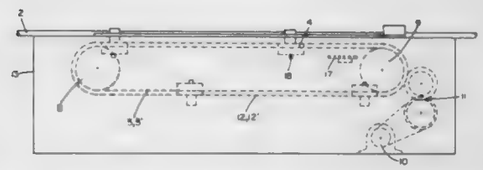
Gerhard Ziemek; Harry Staschewski, and Hermann Meyer, all of Langenhagen, Fed. Rep. of Germany, assignors to Kabelmetal Electro GmbH, Hanover, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 631,882, Dec. 21, 1990, abandoned. This application Jan. 22, 1993, Ser. No. 7,793

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1990, 4004312

Int. Cl.[5] **B65H** *20/00*

U.S. Cl. 226—173 **4 Claims**



1. A capstan draw apparatus for periodically gripping and drawing an elongated member in a longitudinal path, comprising:

a plurality of split clamps each including a pair of oppositely disposed, clamping elements for transversely closing and engaging and then transversely opening and disengaging the longitudinally drawn, elongated member;

a plurality of support carriages each having one of said split clamps positioned thereon;

an endless capstan chain drive means for longitudinally pulling each of said support carriages in an endless path of rotation, said drive means including first and second endless capstan chains spatially positioned parallel to each other, each of said plurality of support carriages being connected to said pair of capstan chains at different fixed positions along their respective endless lengths;

an elongated frame means positioned along and on opposite sides of a straight path for successively engaging each of said split clamps for successively closing said split clamps about the elongated member for longitudinally drawing same, and then successively opening and disengaging each of said split clamps from the longitudinally drawn, elongated member; and

an endless lateral guide frame means including first and second oppositely disposed, parallel endless lateral guide frames that are spatially positioned parallel to said endless capstan chains and extend on opposite sides of said plurality of support carriages for continuously supporting each of said support carriages in a positively guided manner for uniform movement thereof throughout their entire endless paths of rotation.

5,346,113

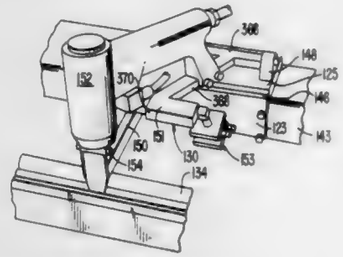
ROTATABLE STAPLER ASSEMBLY

Marvin P. Cosden, Dover, Del., assignor to Delmarva Sash & Door Co. of Maryland, Inc., Barclay, Md.

Division of Ser. No. 730,223, Jul. 15, 1991, Pat. No. 5,191,706. This application Jan. 6, 1993, Ser. No. 1,501

Int. Cl.[5] **B27F** *7/17*

U.S. Cl. 227—110 **15 Claims**



4. A stapling assembly comprising:

a base, a bar having spaced top and bottom arms and a middle portion extending between said arms, a stapler and an air cylinder assembly;

said bottom arm being rotatably attached to said base, said stapler being attached to said middle portion and said air cylinder assembly extending between and being connected near its respective ends to said base and said top arm.

5,346,114

ELECTRIC STAPLER WITH UNMOVABLY FIXED MAGAZINE

Hiroshi Udagawa; Kunio Ishizaki, and Katsunori Manabe, all of Tokyo, Japan, assignors to Max Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 976,374, Nov. 13, 1992, abandoned, which is a continuation of Ser. No. 759,533, Sep. 13, 1992, Pat. No. 5,269,451. This application Jan. 7, 1994, Ser. No. 178,625

Claims priority, application Japan, Sep. 14, 1990, 2-96625[U]; Sep. 14, 1990, 2-245695; Sep. 14, 1990, 2-245696; Jan. 17, 1991, 3-4724[U]; Jan. 17, 1991, 3-4725[U]; Jan. 17, 1991, 3-4726[U]

Int. Cl.[5] **B27F** *7/17*

U.S. Cl. 227—120 **9 Claims**

1. An electric stapler comprising:

a body frame

a magazine fixedly secured to said body frame so that said magazine remains in a fixed position relative to said body frame;

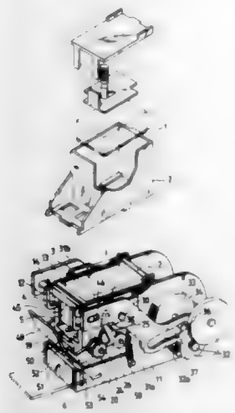
a cartridge, coupled to said magazine, for housing a plurality of staple sheets, each of said staple sheets including staples conjoined together in stacked state, each staple having legs with a point;

a driver for driving a staple out of one of said staple sheets, said driver being supported by said magazine so that said driver can be rectilinearly reciprocated;

means for clinching said staple driven out by said driver, said clinching means being supported by said body frame so that said clinching means is located to face said driver and can be reciprocated, said clinching means supporting

material to be stapled when the points of said staple legs first contact said material to be stapled; and

means for repeatedly moving said driver and said clinching means toward and away from each other in mutually opposite directions nearly simultaneously, so that as said driver is moved into a position to drive said staple into



material to be stapled, said clinching means moves in a direction opposite to the direction of movement of said driver while maintaining a supporting relation with said material, said clinching means immediately bending said staple as the staple protrudes from the material so as to fasten the staple to the material.

5,346,115

SURGICAL STAPLE INSERTER

Eric Perouse, 176 Parc de Cassan, 95290 L'Isle Adam, France; Thierry Richard, 71 Boulevard Arago, 75013 Paris, France, and Yves Arnissolle, Saint Genis-Laval, France, assignors to Eric Perouse, L'Isle Adam; Thierry Richard, Paris and Laboratoire Perouse Implant, Bornel, all of France

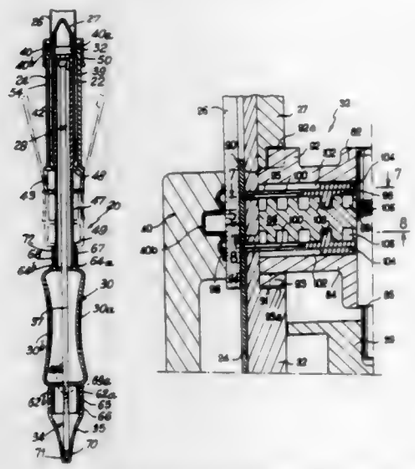
PCT No. PCT/FR92/00287, § 371 Date Jan. 29, 1993, § 102(e) Date Jan. 29, 1993, PCT Pub. No. WO. 92/17117, PCT Pub. Date Oct. 15, 1992

PCT Filed Mar. 30, 1992, Ser. No. 966,186

Claims priority, application France, Mar. 29, 1991, 9103913

Int. Cl.[5] A61B *17/115*

U.S. Cl. 227—179 **19 Claims**



16. A surgical staple inserter assembly for joining two ducts including a vessel and a tubular vessel prosthesis, said assembly having a longitudinal axis and comprising:

an internal part to be received inside the ducts and an external part to remain outside the ducts;

one of said internal and external parts including a staple holder containing a series of staples, each said staple having two points joined together by a crosspiece, said staples being disposed in at least one ring arranged concentrically of said axis with said points oriented radially of said axis, said staple holder including members to eject said staples;

the other of said internal and external parts including an anvil;

means for effecting a relative movement radially of said axis between said anvil and said staple holder between a radially expanded position and a radially contracted position; and

means for effecting a relative movement between said staple holder and said anvil along said axis in said radially expanded position.

5,346,116

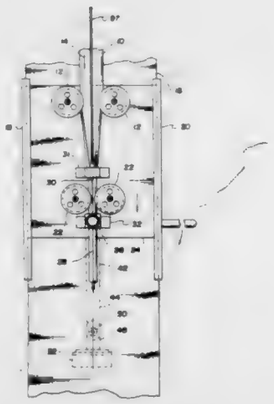
MACHINE FOR FORMING A METAL STRIP INTO A TUBULAR FORM HAVING A STOP-RESTART DISPLACEMENT MECHANISM

Bertie F. Hall, Jr., 5179 Christine Ct., Ann Arbor, Mich. 48103

Filed Jun. 24, 1993, Ser. No. 81,641

Int. Cl.[5] B23K *9/02*

U.S. Cl. 228—148 **31 Claims**



11. A method for operating a machine for forming a tube from a metal strip, said machine having at least one pair of forming rolls, a pair of weld closing rolls, and a welder for welding a seam formed by the longitudinal edges of the metal strip after being formed by the weld closing rolls, said method comprising the steps of:

longitudinally displacing from a normal operation location at least said welder and said weld closing rolls to a start position selected to place said welder over a previously welded portion of said seam in response to said machine being stopped; and

longitudinally displacing at least said welder and said weld closing rolls to said normal operating location in response to said machine being started, said welder overwelding said previously welded portion of said seam during said longitudinal displacement and continuing to weld the seam formed by said pair of weld closing rolls thereafter.

5,346,117

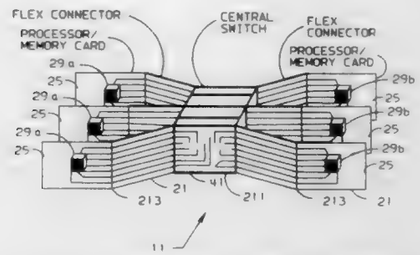
METHOD OF FABRICATING A PARALLEL PROCESSOR PACKAGE

Harold Kohn, Endwell, and Donald J. Lazzarini, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 27, 1993, Ser. No. 97,604

Int. Cl.[5] H05K *3/36*

U.S. Cl. 228—180.22 **6 Claims**



1. A method of fabricating a parallel processor structure having a plurality of processor integrated circuit chips, and a plurality of memory integrated circuit chips, with signal interconnection circuitization means therebetween, wherein

a. the processor integrated circuit chips and the memory integrated circuited chips are mounted on a plurality of printed circuit cards and boards with a first processor integrated circuit printed circuit board having a first processor integrated circuit chip mounted thereon, a second processor integrated circuit printed circuit board having a second processor integrated circuit chip mounted thereon, a first memory integrated circuit printed circuit board having a first memory integrated circuit chip mounted thereon, and a second memory integrated circuit printed circuit board having a second memory integrated circuit chip mounted thereon;

b. said printed circuit cards and boards are mounted on a plurality of circuitized flexible strips, said circuitized flexible strips having a signal interconnection circuitization portion with X-Y planar circuitization and vias and through holes for Z-axis circuitization, a terminal portion having means for joining a printed circuit board thereto, and a flexible, circuitized portion between said signal interconnection circuitization portion and said terminal portion, and

c. said circuitized flexible strips being joined at a signal interconnection circuitization body portion having X-axis, Y-axis, and Z-axis signal interconnection between processor integrated circuit chips and memory integrated circuit chips and comprising a laminate of said circuitized flexible strips at their signal interconnection circuitization portions, whereby said circuitized flexible strips are laminated in physical and electrical connection at their signal interconnection circuitization portions and spaced apart at their terminal portions;

said process comprising selectively forming electrical interconnections between separate circuitized flexible strips by:

a. providing vias and through holes in individual circuitized flex strips;

b. circuitizing and plating the vias and through holes;

c. filling the vias and through holes with solder and forming solder bumps at the tops and bottoms of the vias and through holes;

d. providing a sticker sheet with clearance holes for the solder bumps;

e. laying up a plurality of the circuitized flexible strips to form a stack of circuitized flexible strips;

f. applying an elevated pressure and temperature to the stack to crush the solder bumps, bond, and homogenize solder bump material and fuse the sticker sheets; and

g. cooling the stack to solidify the homogenized solder bump material.

5,346,118

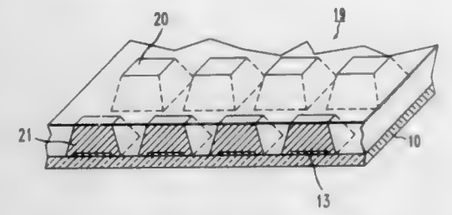
SURFACE MOUNT SOLDER ASSEMBLY OF LEADLESS INTEGRATED CIRCUIT PACKAGES TO SUBSTRATES

Yinon Degani, Highland Park; Thomas D. Dudderar, Chatham, both of N.J., and William L. Woods, Jr., Keithville, La., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 28, 1993, Ser. No. 128,492

Int. Cl.[5] H05K *3/34*

U.S. Cl. 228—180.22 **20 Claims**



1. A process of soldering at least one component to a substrate, said process comprising forming a plurality of solder bumps on pads of said at least one component, placing the component with solder bumps adjacent pads on the substrate, heating the bumps to a temperature sufficient to reflow said bumps, and allowing the bumps to resolidify joining the component to the substrate,

said bumps are formed by stencil printing solder paste deposits on said pads of the component, heating the solder paste deposits to the reflow temperature of the solder in the solder paste, and allowing the solder to solidify forming the bumps on the pads of the component, wherein

said stencil printing is conducted through apertures in an ultra-thick stencil,

the apertures have trapezoidal crossection in the plane normal to the broad surfaces of the stencil, with the top opening of the aperture being smaller than the bottom opening and with the walls of the aperture sloping at an angle within a range of from 1 to 45 degrees from the vertical,

said solder paste has a low tackiness and high metal loading characteristics, and

said solder paste deposit covers an area which is equal to or exceeds an area of the metal pad in a ratio of from 1.5:1 to 5:1.

5,346,119

WORK PIECES HAVING A WEAR RESISTANT COATING PRODUCED BY BRAZING AND PROCESS FOR PRODUCING SAME

Manfred Koschlig, Aschaffenburg, and Harald Krappitz, Hanau-Grossauheim, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 31, 1993, Ser. No. 41,426

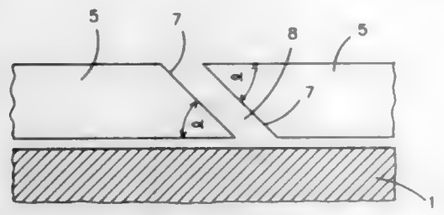
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1992, 9204579[U]; Nov. 10, 1992, 4237890

Int. Cl.[5] B24D *3/00;* **B23K** *31/02*

U.S. Cl. 228—248.1 **6 Claims**

1. A process of providing an abrasive and wear resistant surface coating to a part that is subject to wear comprising applying to the surface of said part to be protected a flexible material made of plastic having a finely divided hard substance and a brazing alloy powder mixture embedded in the plastic, heating said material to a temperature exceeding the liquidation point of the embedded brazing powder mixture, to volatil-

ize said plastic and deposit said hard substance and brazing alloy on said surface, wherein said flexible material is divided

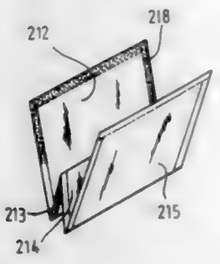


into substantially square shaped joint face segments, the edge length of which is between 20 and 60 mm.

5,346,120
LETTER BLANK

Damion A. G. R. da Costa, and Simon R. G. R. da Costa, both of Merton Lodge, Middle Lincombe Road, Torquay, TQ1 2NE, United Kingdom

PCT No. PCT/GB91/01906, § 371 Date Apr. 27, 1993, § 102(e) Date Apr. 27, 1993, PCT Pub. No. WO92/07725, PCT Pub. Date May 14, 1992
PCT Filed Oct. 30, 1991, Ser. No. 39,334
Claims priority, application United Kingdom, Oct. 30, 1990, 9023594; Nov. 24, 1990, 9025599; Jun. 19, 1991, 9113256
Int. Cl.[5] B65D *27/14*
U.S. Cl. 229—92.5 **1 Claim**



1. A letter blank having front and rear faces, said blank comprising:

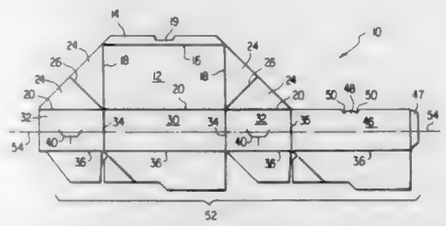
a substantially rectangular letter section having opposite sides with first opposed edges, and opposite ends with second opposed edges perpendicular to said first edges; and

at least a first pair of marginal edge strips of substantially constant width extending continuously, from end to end along said first pair of opposed edges of said letter section, said edge strips being joined to said letter section by respective rows of perforations enabling said edge strips to be torn away from said letter section; said letter blank including three mutually parallel crease lines which extend from side to side, parallel to said second pair of edges, to divide said blank into a top portion, a bottom portion, and two middle portions, said top and bottom portions being substantially identical to one another in size, and said two middle portions being substantially identical to one another in size, said middle portions being of the same width as said top and bottom portions and being substantially shorter, from end to end, than said top and bottom portions such that, when said letter blank is fan folded on said crease lines, with said top and bottom portions opposed and said middle portions disposed therebetween, said top and bottom portions completely enclose said middle portions and extend substantially beyond said middle portions to partially overlie each other directly; each of said marginal edge strips being provided with at least one adhesively coated area on said front face of said blank along at least one of said top and bottom portions, for securing the opposed top and bottom portions together, and each of said marginal edge strips being provided with at least one adhesively coated area on said rear face of said blank along at least one of said middle portions, for securing said two middle portions together, whereby contacting portions of said edge strips can be secured to one another with said blank fan folded, and whereby said edge strips can be torn away to thereby enable said letter section to be fully opened into a flat, rectangular sheet.

5,346,121
WEB TUCK PAPERBOARD CARTON

Jonathan T. Beales, Memphis, Tenn., assignor to International Paper Company, Purchase, N.Y.

Filed Oct. 5, 1993, Ser. No. 131,587
Int. Cl.[5] B65D *5/66*
U.S. Cl. 229—148 **4 Claims**



1. A unitary blank of paperboard for forming a rectangular parallelepiped container, said blank including first and second rectangular side and first and second rectangular end panels foldably joined in series by respective fold lines, said side and end panels being aligned and alternately arranged along a horizontal axis, each of said side and end panels having an upper edge and a lower edge, bottom forming panels foldably attached to said lower edges of at least some of said side and end panels, a top rectangular closure panel foldably attached to said upper edge of a first one of said side panels, said top closure panel having an upper edge foldably attached to a front closure flap, said top closure panel having two opposite vertical side edges, two triangular web panels each having a diagonal fold line and respectively foldably secured to respective said upper edges of each of said two end panels and to a respective said opposite side edge of said top closure panel, said top closure panel side edges being of a vertical extent at least as great as the horizontal extent of said rectangular end panels, each of said two end panels having a slit extending therethrough, means on said front closure flap and said upper edge of said other and second side panel to latch said front closure flap to said other side panel.

5,346,122
OVAL SHAPED BOX

Elliott Leader, Paramus, and Ezra Hedaya, Eatontown, both of N.J., assignors to Royal Sound Co., Inc., Eatontown, N.J.

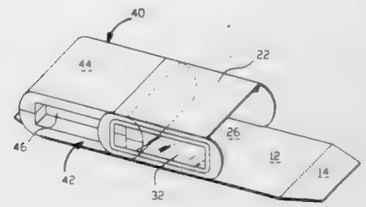
Filed Dec. 23, 1992, Ser. No. 995,999
Int. Cl.[5] B65D *25/54*
U.S. Cl. 229—162 **10 Claims**

1. An oval-shaped box for packaging an electronic product and the like, comprising:

a) a base member having a plurality of members integrally formed therewith including a first side flap connected to a first side of said base member, a second side flap connected to a second and opposite side of said base member, a first oval-shaped end flap connected to a third side of said base member, a second oval-shaped end flap connected to a fourth and opposite side of said base member, a bridging flap having a first side connected to one side of said second oval end flap, and an attachment flap connected to a second side of said bridging flap;

b) said attachment flap being foldable and connectable to said first oval end flap to define a product-receiving compartment;

c) said first side flap and said second side flap being foldable and insertable into said product-receiving compartment to close said box and to form an oval configuration;



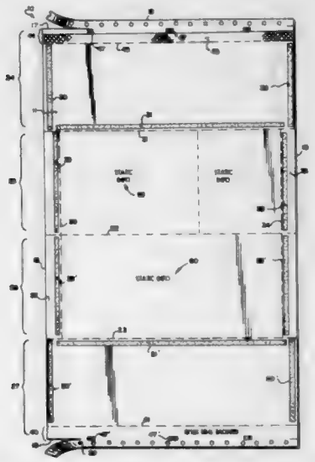
d) a first foam section and a second foam section which cooperate to form an oval-shaped foam enclosure for housing a product, said foam enclosure being insertable into said product-receiving compartment prior to closing said box; and

e) said first and second foam sections each having cutouts which cooperate to form an open end to define a viewing area on one end of said foam enclosure.

5,346,123
MAILER TYPE BUSINESS FORM AND INTERMEDIATE WITH BUILT IN REPLY ENVELOPE

Leo Lombardo, Manchester, N.H., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Mar. 19, 1993, Ser. No. 34,544
Int. Cl.[5] B65D *27/06*
U.S. Cl. 229—305 **21 Claims**



1. A mailer type business form intermediate comprising:

a sheet of paper having first and second opposite parallel longitudinal edges; first and second opposite end edges; a first face adapted to provide the majority of the interior of a mailer when constructed from the sheet; and a second face adapted to provide the exterior of the mailer when constructed;

first, second and third fold lines formed in said sheet perpendicular to said longitudinal edges, and dividing said sheet into, in sequence, first, second, third, and fourth panels of virtually identical size, said first panel being defined by said first end edge and said first fold line, and said fourth panel by said second end edge and said third fold line;

a first machine-activated adhesive pattern provided on said first face of at least of said first and fourth panels for joining said first and fourth panels together along said longitudinal edges and adjacent said first and third fold lines for forming a replay envelope when said sheet is folded about said second fold line;

first and second longitudinal lines of weakness formed in said second and third panels parallel to and adjacent, and spaced from, said first and second longitudinal edges, respectively, said lines of weakness defining with said longitudinal edges first and second longitudinal margin portions;

second and third machine-activated adhesive patterns, disposed on said first face of said sheet in said first and second longitudinal margin portions for holding said second and third panels together when said sheet is folded about said second fold line,

a first end line of weakness formed in said sheet parallel to and adjacent, and spaced from, said second end edge to define a first end margin portion;

a fourth fold line formed in said sheet parallel to and adjacent, and spaced from, said first end edge to define a reply envelope flap portion;

a recipient-activated strip of adhesive disposed on said first face of said reply envelope flap portion;

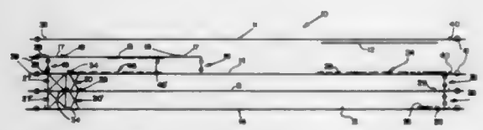
fourth machine-activated adhesive patterns disposed on said first face of said sheet in at least one of said first end margin portion and reply envelope flap portion, said fourth patterns comprising widely spaced shapes of adhesive for tacking said first and second end edges of said sheet together when said sheet is folded about said second fold line to provide a mailer; and

fifth machine-activated adhesive patterns disposed on said second face of said sheet in at least one of said first and second panels, and third and fourth panels; said fifth adhesive patterns in one of said reply envelope flap and said first end margin, and adjacent said second fold line, respectively, said first patterns comprising widely spaced shapes of adhesive for tacking at least one of said first and second panels, and third and fourth panels, together when said sheet is folded about said first, second and third fold lines, to provide readily releasable attachment therebetween.

5,346,124
CERTIFIED MAILER

Stanley C. Chess, Jerome, Id., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jul. 1, 1993, Ser. No. 84,593
Int. Cl.[5] B65D *27/06*
U.S. Cl. 229—305 **25 Claims**



1. A return mailer comprising:

a top ply having an outgoing address area for receiving outgoing address indicia visible when viewing a top face thereof, and extending in a first direction, said top ply also having a bottom face;

a first line of weakness formed in said top ply extending substantially transverse to said first direction in the area of said outgoing address indicia visible when viewing said top face of said top ply, said first line of weakness defining said top ply into a body portion and a stub portion;

a second ply connected to and cooperating with said top ply

to forming an outgoing and reply envelope, said second ply having a top face facing said top ply bottom face, and a bottom face, said bottom face being devoid of address indicia;

a first fold line formed in said second ply in substantial alignment with said first line of weakness and defining said second ply into a body portion, and a flap portion;

a sealing agent disposed on said second ply top face on an endmost area of said flap portion;

said flap portion having a length sufficient, when said second ply is folded about said first fold line, to completely cover any outgoing address indicia visible when viewing said top face of said top ply within said outgoing address area;

reply address indicia visible on said top face of said top ply body portion, remote from said outgoing address area; and

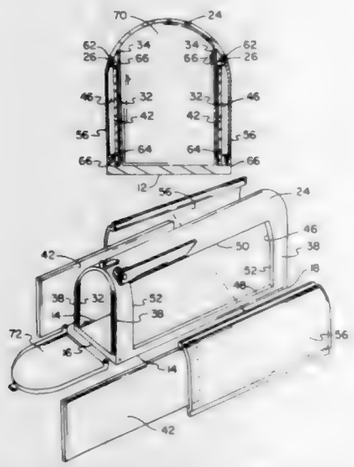
means for removably covering said reply address indicia.

5,346,125

DESIGNER MAILBOXES WITH REMOVABLE DECORATIVE SIDE PANELS

Randolph T. Critzer, Sr., 14325 Branched Antler Dr., Midlothian, Va. 23112

Filed Feb. 18, 1994, Ser. No. 198,292
Int. Cl.[5] B65D *91/00*
U.S. Cl. 232—17 **5 Claims**



1. A new and improved designer mailbox with removable decorative side panels comprising, in combination:

a lower base plate in a generally rectangular configuration with parallel side edges and parallel front and rear edges;

a semi-cylindrical roof panel having parallel lower edges located above the side edges of the base plate and extending from the front edge to the rear edge of the base plate;

a pair of parallel planar interior side walls parallel with the side edges of the base plate and extending upwardly from the base plate at locations spaced inwardly from the side edges, the interior side walls having upper edges formed integrally with the roof panel interiorly of its lower edges;

a pair of parallel exterior side walls extending upwardly from the side edges of the base plate to the lower edges of the roof panel and spaced a distance outwardly from the interior wall to thereby form generally rectangular spaces between the interior and exterior side walls;

an opening in each exterior side wall extending from a horizontal lower edge parallel with the side edges of the base plate to a horizontal upper edge formed in the roof panel with parallel generally vertical edges therebetween;

a transparent insert positionable in each opening of the exterior wall, each insert being planar in its lower extent and curved in its upper extent to form a smooth curve continuation of the roof panel, each insert including generally L-shaped members with their longer legs positionable interiorly of the upper and lower edges defining the opening whereby a force by the user adjacent to the upper edges of either insert will effect sufficient deformation of the insert to effect its removal from the opening or its insertion thereto;

a vertical back wall permanently coupling the base plate, interior and exterior side walls and roof panel at the rears thereof;

a front wall pivotally secured at its lower edge to the side walls adjacent to the front thereof for opening and closing access to the interior of the mailbox between the interior side walls; and

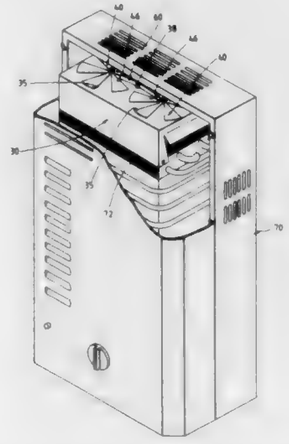
a plurality of removable decorative sheets positioned in the opening.

5,346,126

DEVICE FOR CONTROLLING HEATING EFFICIENCY OF WATER HEATER

Shin-Chang Lai, No. 1, Lane 3, Dien-Chou, South District, Taichung, Taiwan

Filed May 6, 1993, Ser. No. 77,776
Int. Cl.[5] F23N *3/00*
U.S. Cl. 236—1 G **7 Claims**



1. A device for controlling the heating efficiency of a water heater comprising:

a housing having a predetermined number of ventilation holes and mounted over heat collecting pieces inside a water heater;

a predetermined number of dampers, each of which is corresponding in shape and location to each of said ventilation holes and is movably mounted on said housing; and

at least one heat sensing element mounted on said housing and pivoted to said dampers;

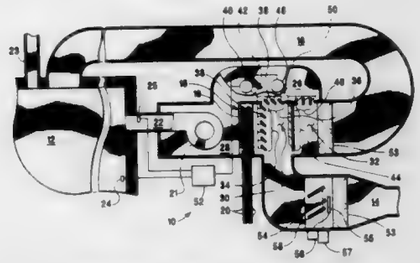
wherein said housing is provided with at least one set of ventilating port having a predetermined number of ventilation holes of geometric shape; and wherein said heat sensing element is subject to a deformation caused by a heat so as to trigger said dampers to open or close said ventilating port.

5,346,127

AIR CONDITIONING SYSTEM WITH ENHANCED DEHUMIDIFICATION FEATURE

Peter G. Creighton, Fort Lauderdale, Fla., assignor to Creighton and Associates, Inc., Ft. Lauderdale, Fla.

Filed Oct. 14, 1993, Ser. No. 136,347
Int. Cl.[5] G05D *23/13*
U.S. Cl. 236—13 **28 Claims**



1. An air conditioning system comprising:

a return duct extending to a source of indoor air;

a ventilation duct extending to a source of outdoor air;

a input mixing plenum for mixing air from said return duct with air from said ventilation duct;

cooling means for cooling air provided thereto from said input mixing plenum;

a bypass duct extending around said cooling means from said indoor air supply duct;

first airflow regulation means to control the flow of air from said return duct into said input mixing plenum and into said bypass duct;

an output mixing plenum for mixing air flowing from said cooling means with air flowing from said bypass duct;

a supply duct through which air from said output mixing plenum is discharged;

a fan for moving air from said return duct and from said ventilation duct, through said cooling means and through said bypass duct, to said supply duct;

cooling regulation means controlling a rate at which heat is removed from air flowing through said input mixing plenum; and

system control means for providing a variable overall rate of air cooling, wherein, to provide relatively low levels of said overall rate of air cooling, said system control means varies operation of said cooling regulation means, while holding said first airflow regulation means in a state providing a minimum level of airflow from said return duct into said input mixing plenum, and wherein, to provide relatively high levels of said overall rate of air cooling, said system control means varies operation of said first airflow regulation means, while holding said cooling regulation means at a level providing maximum cooling of air flowing through said input mixing plenum.

5,346,128

HUMIDITY CONTROL SYSTEM

Paul C. Wacker, Hennepin County, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

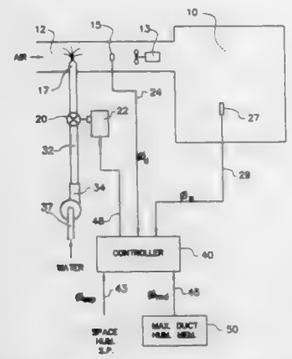
Filed Jul. 22, 1993, Ser. No. 94,741
Int. Cl.[5] B01F *3/02*
U.S. Cl. 236—44 A **10 Claims**

1. Apparatus for controlling humidity in a space including a humidity sensor providing a space humidity signal encoding a value representing the space humidity and receiving air from a duct, said duct including humidity control apparatus for variably changing the humidity of the air passing through the duct to a level which is a function of the value encoded in a humidity demand signal, comprising

a) a duct humidity sensor having i) a sensing element mounted in the duct and providing a sensor signal encoding a sensor value following the current duct humidity, and ii) duct humidity signal means receiving the sensor signal, for providing a duct humidity signal encoding a duct humidity value dependent on the sensor value and approximating the current value of the duct humidity;

b) a first calculator means recording a space humidity set point value and receiving the space humidity signal, for providing a space humidity error signal encoding a space humidity error value equal to the difference between the space humidity value and the space humidity set point value;

c) a memory means for issuing a duct humidity limit signal encoding a preselected maximum duct humidity value;



d) a second calculator means receiving the space humidity error signal and the duct humidity limit signal, for calculating a duct humidity set point value as a function of the space humidity error value, and less than the duct humidity maximum value, and for issuing a duct humidity set point signal encoding the duct humidity set point value; and

e) modulator means receiving the duct humidity set point signal and the duct humidity signal, for providing a humidity demand signal having a value responsive to the difference between the duct humidity set point value and the duct humidity value encoded in the duct humidity signal.

5,346,129

INDOOR CLIMATE CONTROLLER SYSTEM ADJUSTING BOTH DRY-BULB TEMPERATURE AND WET-BULB OR DEW POINT TEMPERATURE IN THE ENCLOSURE

Dipak J. Shah, Eden Prairie; James H. Krueger, Plymouth, and Rolf L. Strand, Crystal, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 17, 1993, Ser. No. 61,516
Int. Cl.[5] B01F *3/02*
U.S. Cl. 236—44 C **9 Claims**

1. Apparatus for cooperating with a controller for a climate control system for modifying the temperature and humidity of air within an enclosure, said controller activating the climate control system responsive to a composite error value encoded in a composite error signal falling within a preselected range of error values, said apparatus comprising

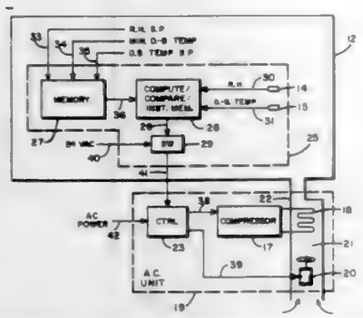
a) a humidity sensor providing a humidity temperature signal encoding at least one of the wet-bulb temperature and the dew point temperature;

b) a temperature sensor providing an air temperature signal encoding the dry-bulb temperature value;

c) a memory recording a dry-bulb temperature set point value and a humidity temperature set point value, and providing a set point signal encoding the dry-bulb and humidity temperatures set point values; and

d) error computation means receiving the humidity and air temperature signals and the set point signal, for computing

the composite error value as a function of the values encoded in the humidity and air temperature signals and



the set point signal, and for encoding the composite error value in the composite error signal.

5,346,130

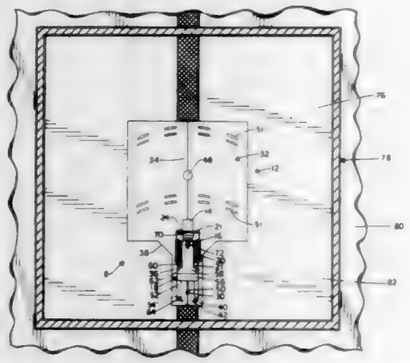
THERMALLY RESPONSIVE AIR DIFFUSER

Johan Rademaker, West Olive, Mich., assignor to Hart & Cooley, Inc., Holland, Mich.

Filed Aug. 10, 1992, Ser. No. 927,811

Int. Cl.[5] F24F *13/08*

U.S. Cl. 236—49.5 **16 Claims**



1. An air diffuser arrangement, mountable in an air duct for control of air flow patterns through the duct, the diffuser arrangement comprising:

at least two vanes pivotably mountable to a supporting structure in the air duct, each of the vanes being disposed and movable within a plane between a closed position and at least one open position to selectively deflect air flowing through the central path of the air flow;

an actuator means, mountable to the supporting structure and connected to said vanes, for controlling positioning of the vanes; and

each of the planes being parallel to each other, and the vanes controlling the air flow through the duct by selectively deflecting, in response to the actuator means, air flowing through the central path of the air flow, when positioned in the closed position.

5,346,131

DEVICE FOR SUPPORTING RAILS

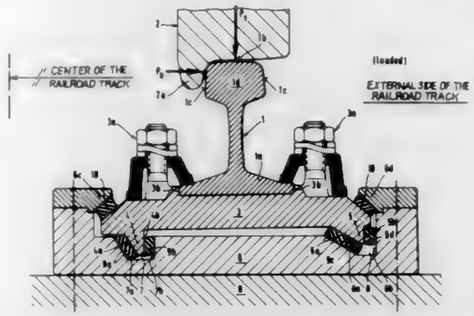
Peter Meier, Sevelen; Ralf Ludwig, Sennwald, both of Switzerland, and Klaus Wechselberger, Feldkirch, Austria, assignors to Hilti Aktiengesellschaft, Furstentum Liechtenstein, Fed. Rep. of Germany

Filed Jan. 28, 1993, Ser. No. 10,231

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1992, 4206207; Jun. 25, 1992, 4220799

Int. Cl.[5] E01B *9/38, 9/68*

U.S. Cl. 238—283 **11 Claims**



1. Device for supporting a rail (**1**) extending in a long direction and located in a railroad track for railborne vehicles, each said rail having a top surface located in a generally horizontal plane of said railroad track, said railroad track comprising a pair of spaced rails having a center therebetween extending in the long direction, said device comprising a support plate (**3**) positioned on a support bed (**6**), interengaging profiled surfaces on said support plate (**3**) and support bed (**6**) and extending in the long direction of said rails, elastic elements interposed at least in certain regions between said profiled surfaces, said profiled surfaces comprising sets of flanks (**4***a*, **7***a*, **4***b*, **7***b*, **5***a*, **8***a*, **5***b*, **8***b*) disposed in spaced facing relation and extending in the long direction of said rails, said sets of flanks including at least two sets of first flanks extending at an angle different from 90° with respect to a line perpendicular to the plane containing the top surfaces of said rails, the angle of said at least two sets of first flanks diverging from the perpendicular line in the upward direction towards the center of the railroad track and the angles increasing in angular measurement relative to the center of the said railroad track from inside said rails to outside said rails.

5,346,132

MIST GENERATOR

Gary S. Hahn, 2371 Lagoon View Drive, Cardiff by the Sea, Calif. 92007, and David R. Williams, San Diego, Calif. 92007, assignors to Gary S. Hahn, Cardiff by the Sea, Calif.

Filed Nov. 12, 1992, Ser. No. 974,801

Int. Cl.[5] B05B *1/28, 3/08, 11/02*

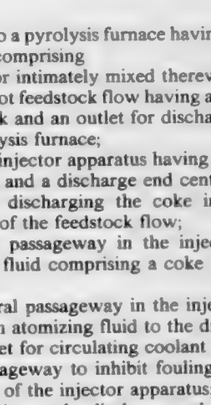
U.S. Cl. 839—71 **17 Claims**

1. A mist generator comprising:

a housing;

a mist rotor within the housing and having at least one mist hole, rotatably supported substantially within a mist chamber;

means for rotating the mist rotor, supported by the housing;



a bowl in the mist chamber for supplying a fluid medium to the mist rotor; and

a bowl supply port in the bowl for supplying a mist medium.

5,346,133

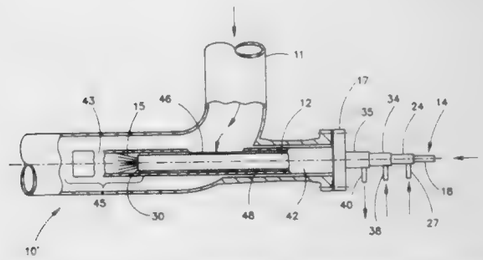
HIGH TEMPERATURE LIQUID INJECTION APPARATUS

Alan E. Bogner, West View, Pa.; Peter Cherish, Kingwood, and Scott T. Schamp, Houston, both of Tex., assignors to The M. W. Kellogg Company, Houston, Tex.

Filed Mar. 25, 1993, Ser. No. 36,746

Int. Cl.[5] B05B *7/00*

U.S. Cl. 239—132.3 **13 Claims**



1. A feed line to a pyrolysis furnace having utility for feeding a hot feedstock comprising

a coke inhibitor intimately mixed therewith comprising:

a conduit for hot feedstock flow having an inlet for receiving the feedstock and an outlet for discharging the feedstock to the pyrolysis furnace;

a longitudinal injector apparatus having an inlet end outside the conduit, and a discharge end centrally located in the conduit for discharging the coke inhibitor adjacent a central axis of the feedstock flow;

a first central passageway in the injection apparatus for supplying a fluid comprising a coke inhibitor to the discharge end;

a second central passageway in the injection apparatus for supplying an atomizing fluid to the discharge end;

a cooling jacket for circulating coolant adjacent the second central passageway to inhibit fouling in the first central passageway of the injector apparatus;

a mixing chamber at the discharge end in fluid communication with the first and second central passageways for receiving and mixing the coke inhibitor and atomizing fluids to form a fluid mixture therein;

a discharge orifice in a nozzle adjacent the mixing chamber for atomizing the coke inhibitor fluid as the fluid mixture passes from the mixing chamber through the discharge orifice;

an annular shroud disposed along a length of the injector apparatus;

a source of shroud fluid for supply to the shroud; and

a mixing zone in the shroud adjacent the discharge orifice for mixing the atomized coke inhibitor fluid with the shroud fluid for discharge into the feedstock flow;

wherein the shroud fluid are adapted for substantially vaporizing the atomized coke inhibitor before passing from the shroud mixing zone.

5,346,134

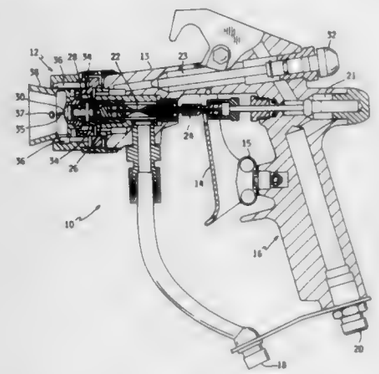
CO_2-ASSISTED SPRAY GUN AND NOZZLE

Yamin Ma, Roseville; Richard Grady, Eden Prairie; Robert J. Lind, Robbinsdale, and Tera D. McCutcheon, Coon Rapids, all of Minn., assignors to Graco Inc., Golden Valley, Minn.

Filed Jun. 1, 1993, Ser. No. 69,597

Int. Cl.[5] B05B *1/26*

U.S. Cl. 239—288.5 **11 Claims**



1. A spray gun nozzle for the spraying of atomized liquids with the assistance of pressurized carbon dioxide gas, comprising:

a) a liquid spray orifice positioned along an axis and having means for receiving a source of pressurized liquid;

b) a plurality of first gas jet orifices positioned symmetrically about the axis of said liquid spray orifice, each of said gas jet orifices having means for receiving a source of pressurized carbon dioxide gas;

c) a shield member symmetrically positioned about said axis and extending axially from proximate said liquid spray orifice to a predetermined distance downstream from said liquid spray orifice, said shield member having a downstream opening to permit the passage of atomized liquid particles therethrough, and having a plurality of further gas jet orifices therein, each of said further gas jet orifices being generally directed toward said axis; and

d) means for supplying a source of pressurized carbon dioxide gas to said further gas jet orifices;

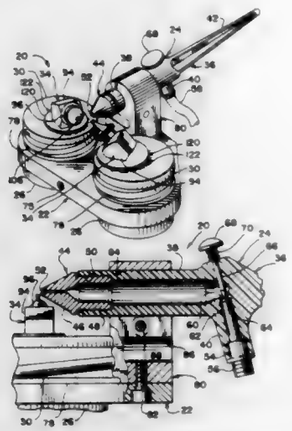
whereby said carbon dioxide gas emitted from said plurality of further gas jet orifices in said shield member envelopes said atomized liquids and thereby prevents entrainment of air with said atomized liquids.

5,346,135

SPRAYING APPARATUS FOR BLENDING LIQUIDS IN A GASEOUS SPRAY SYSTEM

Edward C. Vincent, 247 S. Kenilworth Ave., Oak Park, Ill. 60302-3115

Filed Jun. 16, 1992, Ser. No. 899,252
Int. Cl.[5] B05B *7/08, 7/12*
U.S. Cl. 239—306 **7 Claims**



1. A spraying apparatus adapted for blending liquids in a gaseous spray stream, which comprises:

a support,

gas nozzle means adapted for discharging a gas jet to be directed at an object to be sprayed,

means mounting said gas nozzle means on said support,

a plurality of liquid container means,

means movably mounting each of said liquid container means on said support,

a plurality of liquid nozzle means each including suction inlet means and suction outlet means, said suction outlet means being adapted for removal of liquid therefrom by aspiration, and

means mounting said plurality of liquid nozzle means on respective ones of said plurality of liquid container means for movement of each liquid nozzle means with the corresponding liquid container means and in communication of said suction inlet means of the liquid nozzle means with the interior of the container means for suction flow of liquid from the container means to the suction inlet means,

whereby the suction outlet means of each of said liquid nozzle means may be moved in respective directions to and from said gas jet to thereby dispose the suction outlet means relative to said gas jet to effect aspiration of liquid from the suction outlet means of the plurality of liquid nozzle means into the gas jet at rates which vary with respect to each suction outlet means for spraying an object with the resulting spray mixture,

said means mounting said plurality of liquid nozzle means on respective container means including means for adjusting the disposition of each liquid nozzle means relative to the container means on which it is mounted and thereby to said gas jet.

5,346,136

FUEL INJECTION VALVE

H. Eugene Bassett, Houston, Tex., assignor to Dover Resources, Inc., Tulsa, Okla.

Filed Oct. 12, 1993, Ser. No. 135,074
Int. Cl.[5] B05B *1/30*
U.S. Cl. 239—533.2 **22 Claims**

1. A fuel injection valve for injecting a gaseous fluid into an engine comprising:

a tubular housing having

a central throughway;

an annular, axially directed valve seat defining an outlet from the throughway;

at least one housing fuel inlet communicating the exterior of the housing with the throughway outwardly of the valve seat;

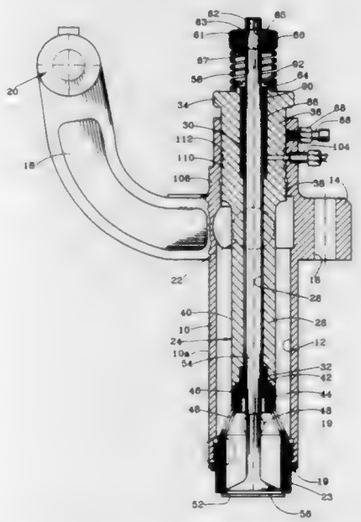
a sealing section outwardly of the housing fuel inlet and including an internal annular enlargement in the central throughway, a housing buffer inlet through the housing communicating the exterior of the housing with the enlargement;

means for communicating a buffer fluid injector with an upstream end of the housing buffer inlet;

a valve stem mounted for reciprocation in the throughway and having a valve element at an inner end thereof in opposition to the valve seat;

and first and second annular housing seal means sealing between the valve stem and the housing, respectively inwardly and outwardly of a downstream end of the housing buffer inlet;

a tubular cage coaxially removably receiving at least a portion of the housing and having



an open inner end adjacent the valve seat and adapted for receipt in an engine;

a cage fuel inlet disposed inwardly of the sealing section of the housing;

and a cage buffer inlet extending through the cage, the cage buffer inlet being communicable with the injector and having a downstream end opening to an annular locus between the exterior of the housing and an interior surface of the cage disposed outwardly of the cage fuel inlet;

at least one of the cage or the housing having an annular distribution groove communicating with said locus and with the downstream end of the cage buffer inlet;

and first and second annular cage seal means sealing between the housing and the cage, respectively inwardly and outwardly of the downstream end of the cage buffer inlet;

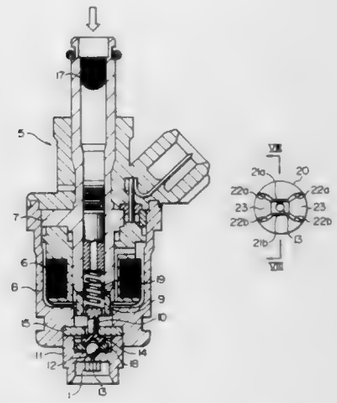
the cage and the housing being sized and configured to define a fuel flow space laterally between the interior surface of the cage and the exterior of the housing and longitudinally between the cage fuel inlet and the housing fuel inlet.

5,346,137

ELECTROMAGNETIC FUEL INJECTION VALVE

Yoshio Okamoto, Ibaraki; Hisanobu Kanamaru, Katsuta; Hitoshi Maeda, Abiko; Satoshi Suzuki, Katsuta; Tohru Ishikawa, Takahagi; Tokuo Kosuge, Ibaraki; Kiyoshi Amou, Katsuta; Hiroshi Ohki, Tsuchiura; Koji Nakagawa, Matsudo; Yoshiyuki Tanabe, and Mizuho Yokoyama, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,396
Claims priority, application Japan, Jan. 30, 1992, 4-014727
Int. Cl.[5] F02M *51/00*
U.S. Cl. 239—585.4 **27 Claims**



1. An electromagnetic fuel injection valve comprising:

a valve body;

a valve seat which cooperates with said valve body;

a fuel injection port disposed downstream of said valve seat; and

dividing means for dividing injection fuel injected from said fuel injection port, said dividing means being formed as a single element with a member in which said fuel injection port is formed and including parallel walls substantially parallel to each other with said fuel injection port interposed therebetween and arcuate walls connected to said parallel walls having a diameter larger than that of said fuel injection port, said walls extending from said member in a direction of an axis of the valve.

5,346,138

SEAL FOR METERING ORIFICE

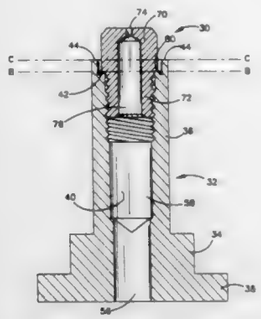
Ralph G. Ridenour, Mansfield, Ohio, assignor to Universal Enterprises Inc., Mansfield, Ohio

Filed Feb. 16, 1993, Ser. No. 18,086
Int. Cl.[5] B05B *15/08*
U.S. Cl. 239—600 **22 Claims**

10. A device for dispensing a metered amount of fluid, comprising:

an orifice seal member, said orifice seal member comprising a sealing surface and defining a metering orifice through which the metered amount of fluid flows, said sealing surface being generally planar;

an orifice housing, said orifice housing defining a bore and comprising first and second surfaces, said bore being adapted to removably receive said orifice seal member and to sealably receive a fluid carrying conduit such that fluid from said conduit is communicated to the metering orifice, wherein the first and second surfaces have an axis in common with the sealing surface when the orifice seal member is received within the bore and are separated by a groove, said groove allowing said first surface to be axially compressed and radially deformed by said sealing



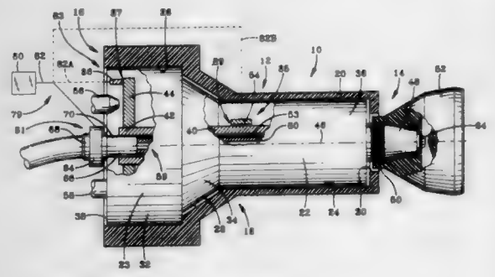
surface and thereby sealably mount the orifice seal member to the orifice housing.

5,346,139

TRANSFER OF ELECTROSTATIC CHARGE THROUGH A TURBINE DRIVE SHAFT TO A ROTARY ATOMIZER HEAD

Dennis Davis, Bay Village, and Harold Beam, Oberlin, both of Ohio, assignors to Nordson Corp., Westlake, Ohio

Continuation of Ser. No. 985,058, Dec. 3, 1992, abandoned. This application Dec. 21, 1993, Ser. No. 171,027
Int. Cl.[5] B05B *5/04*
U.S. Cl. 239—703 **18 Claims**



1. A rotary atomizer, comprising:

a housing formed of a non-electrically conductive material having a forward end and a rearward end and defining an interior chamber therebetween;

rotary drive means disposed within said interior chamber and having a cup-shaped, atomizing head mounted thereto outside of said forward end of said housing for rotating said cup-shaped atomizing head about an axis of rotation extending longitudinally through said housing;

means for supplying coating material to said cup-shaped, atomizing head;

means for conducting high voltage electrostatic energy through said rotary drive means within said housing and into said cup-shaped, atomizing head without conducting said high voltage electrostatic energy through said non-electrically conductive material forming said housing; and

said cup-shaped atomizing head being constructed of a composite material including a low capacitance insulating material and electrically conducting material whereby said high voltage electrostatic energy is transmitted from said rotary drive means through said cup-shaped, atomizing head to charge said coating material with said high voltage electrostatic energy by contact with at least a part of said electrically conducting material in said atomizing head.

5,346,140

MOUNTING APPARATUS FOR SPRAY GUNS

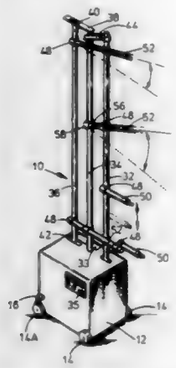
David H. Campbell, Merseyside, Great Britain, assignor to Eurotec Surface Coating System Ltd., Wigan, England

Filed Dec. 7, 1992, Ser. No. 986,217

Claims priority, application United Kingdom, Dec. 7, 1991, 9126033

Int. Cl.[5] B05B *15/08*

U.S. Cl. 239—750 **12 Claims**



1. A spray gun apparatus comprising a first reciprocal member and second and third spaced fixed members, the first, second and third members being parallel to each other, a first spray gun mounted to said first and second members and a second spray gun mounted to said first and third members, and means for causing reciprocal movement of said first member and corresponding arcuate movement of said first and second spray guns, whereby the first and second spray guns have different ranges of arcuate movement due to their mounting.

5,346,141

METHOD FOR PULVERIZING SILICON PARTICLES BY FLUID JET ENERGY

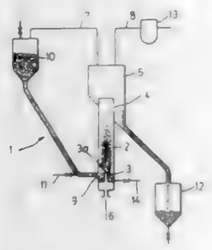
Hee Y. Kim; Dae H. Kwon; Yong M. Song; Sung W. Kim; Jong Y. Jeon; Kang M. Lee, and Jae S. Lee, all of Daejon, Rep. of Korea, assignors to Korea Research Institute of Chemical Technology, Daejon, Rep. of Korea

Filed Jan. 6, 1993, Ser. No. 1,094

Claims priority, application Rep. of Korea, Mar. 19, 1992, 4529/1992

Int. Cl.[5] B02C *19/06, 19/12, 23/00*

U.S. Cl. 241—5 **20 Claims**



1. In generating silicon seed particles of about 100–1,000 microns by pulverizing silicon feed particles of about 300–3,000 microns, a method which comprises the steps of:

providing a single pulverizing chamber having a lower section and an upper section both disposed along an axial direction of said chamber with a jet nozzle disposed in said lower section;

introducing said silicon feed particles into said pulverizing chamber through an inlet hole positioned at the wall of said pulverizing chamber:

providing a jet stream in said axial direction of said pulverizing chamber with a jet velocity of about 300–10,000 m/sec at a jet nozzle outlet by introducing a stream of gas through said jet nozzle, and thereby accelerating silicon particles near said jet nozzle into collision with each other and pulverization thereof so that said seed particles are generated;

allowing said jet stream to expand into said upper section of said pulverizing chamber so that the expanded gas flows axially upward through said chamber;

maintaining the average gas velocity in said upper section of said chamber in a range of about 0.5–30 m/sec so that relatively small silicon particles below a predetermined size are caused to rise up within said upper section;

maintaining the particle density below about 0.2 between said jet nozzle outlet and a vent hole in the wall of said upper section, and thereby providing a dilute-phase fluidized bed without an upper boundary above said jet nozzle such that relatively large particles over said predetermined size in said upper section fall by gravity and re-pulverize in said jet stream; and

providing the cross-sectional area of said vent hole substantially smaller than that of said upper section of said pulverizing chamber so that said small silicon particles in said upper section are effectively removed out of said pulverizing chamber through said vent hole.

5,346,142

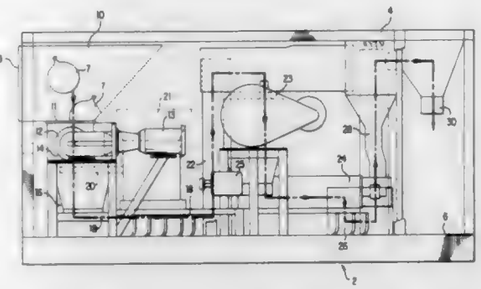
CONTINUOUS SHREDDING APPARATUS FOR MEDICAL WASTE MATERIAL AND METHOD FOR USE THEREOF

Charles R. Miller, Houston, and Haskell B. Berry, Jr., Channel View, both of Tex., assignors to Premier Medical Technology Inc., Houston, Tex.

Filed Feb. 5, 1993, Ser. No. 14,877

Int. Cl.[5] B02C *23/38*

U.S. Cl. 241—21 **24 Claims**



1. A method for shredding medical waste material comprising:

loading waste material into a hopper;

passing the waste material into a primary shredder;

initially shredding the waste material in the primary shredder;

adding sterilant to the initially shredded waste material;

passing the initially shredded material into a first continuously conveying screw conveyor wherein the initially shredded material and sterilant are mixed together;

conveying the mixed material into a high speed shredder rotating at a higher speed than said primary shredder;

further shredding the mixed material in the high speed shredder;

removing the shredded material by a second conveyor to a discharging area, and

discharging the sterilized shredded waste material.

5,346,143

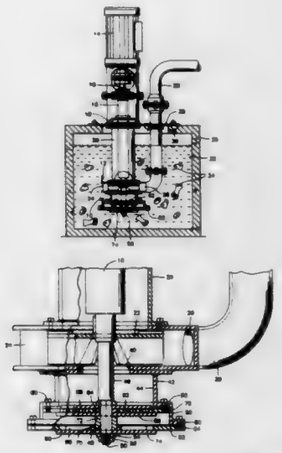
FISH MINCER PUMP

Ronald C. Askin, Glendive, Mont., assignor to Crisafulli Pump Company, Inc., Glendive, Mont.

Filed Jul. 14, 1993, Ser. No. 91,025

Int. Cl.[5] B02C *23/36*

U.S. Cl. 241—46.017 **13 Claims**



1. A fish mincer pump comprising a centrifugal pump including a casing having a suction inlet opening in one wall thereof and a tangential discharge, an impeller in said casing connected to and driven by a pump shaft, said casing including a generally cylindrical inlet extension extending laterally from said suction inlet opening, said pump shaft extending coaxially through said extension, a chopper plate mounted on an end of said extension remote from the pump, said chopper plate including a plurality of large arcuate openings defined by radial spokes, a chopper knife mounted on an end of said pump shaft with the chopper knife including sharpened edge portions associated with a surface of the chopper plate remote from said extension, the improvement comprising a mincer plate mounted on said extension between the chopper plate and pump inlet opening, said mincer plate being spaced axially from the chopper plate and including a plurality of small holes extending therethrough, a cutter knife drivingly connected to said pump shaft, said cutter knife being disposed in spaced relation to the chopper plate and including sharpened edge portions closely associated with one surface of said mincer plate to chop fish waste passing through the holes in the mincer plate whereby all fish waste passing into the inlet opening of the centrifugal pump will have a maximum size determined by the size of the holes in the mincer plate and the shearing action between the rotatable cutter knife and mincer plate.

5,346,144

DOCUMENT SHREDDER AND CONTAINER AS A SUBSTRUCTURE FOR IT

Hartmut Stangenberg, Owingen, and Rolf Gasteier, Markdorf/-Bodensee, both of Fed. Rep. of Germany, assignors to Schleicher & Co. International Aktiengesellschaft, Fed. Rep. of Germany

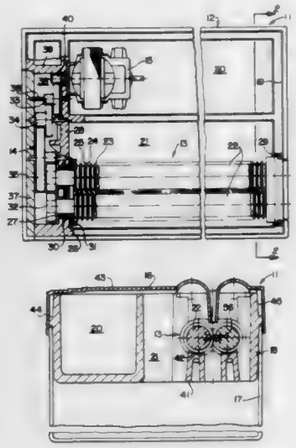
Filed Mar. 15, 1991, Ser. No. 669,763

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1990, 4008654

Int. Cl.[5] B02C *4/08*

U.S. Cl. 241—100 **11 Claims**

1. A document shredder having a cutting mechanism, which has interengaging cutting rollers driven by an electric motor via a gear, wherein the cutting mechanism, the motor and the gear are located in an integral, self-supporting casing, the cutting rollers comprising cutting disks, each cutting disk having a substantially radial face and a sloped face, each radial face of a first cutting roller cooperates, in an overlapping area with an oppositely corresponding radial face of a cutting disk of a second cutting roller for providing a strip cut; wherein there is provided a passage for cut strips between two adjacent sloped faces; the casing having strippers cooperating with the



cutting rollers, which strippers being integral with the casing and constructed as lower casing longitudinal beams, wherein the strippers are segment-shaped, the segment shape being adapted to the cutting rollers shape and cover a circumferential portion of more than 45 degree of a lower circumferential part of the cutting roller outside the overlapping area.

5,346,145

DISPERSING AND GRINDING APPARATUS

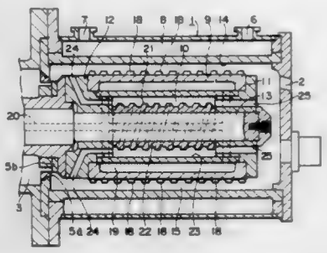
Mitsuo Kamiwano, Yokohama, and Yoshitaka Inoue, Tokyo, both of Japan, assignors to Inoue Mfg., Inc., Japan

Filed Dec. 11, 1992, Ser. No. 989,189

Claims priority, application Japan, Dec. 13, 1991, 3-351223

Int. Cl.[5] B02C *17/16, 17/18*

U.S. Cl. 241—172 **12 Claims**



1. A dispersing and grinding apparatus, comprising:

a grinding vessel having an upstream end, a downstream end, an inner peripheral wall between the upstream and downstream ends, an inlet at the upstream end for admitting a material to be processed into the grinding vessel and an outlet at the downstream end for discharging processed material from the grinding vessel;

a cylindrical rotor having an outer peripheral surface and being rotatably disposed within the grinding vessel, the rotor having an upstream end plate fitted at an upstream end of the rotor, a downstream end plate fitted at a downstream end of the rotor, and an inside flow path extending in the axial direction of the rotor and coacting with the grinding vessel to define an annular flow path between the

outer peripheral surface of the rotor and the inner peripheral wall of the grinding vessel;

guiding means disposed within the annular flow path for guiding the flow of a mixture of the material and a grinding medium lengthwise through and circumferentially around the annular flow path from the inlet to the outlet when the rotor is rotated so that the grinding medium is moved slowly by the guiding means through the grinding vessel;

means for returning the grinding medium from the downstream end to the upstream end of the grinding vessel and including a backward screw disposed within the inside flow path for backwardly urging the grinding medium from the downstream end toward the upstream end;

inflow conduit means at the downstream end of the grinding vessel for leading the grinding medium from the annular flow path at the downstream end of the grinding vessel to the inside flow path, the inflow conduit means being formed in the downstream end plate and having an aperture on the outer peripheral surface of the downstream end plate; and

outflow conduit means at the upstream end of the grinding vessel and communicating with the annular flow path for leading the grinding medium from the inside flow path back to the annular flow path at the upstream end for returning the grinding medium from the downstream end to the upstream end of the grinding vessel, the outflow conduit means being formed in the upstream end plate and having an aperture at the center portion of the upstream end plate.

5,346,146

VERTICAL PULVERIZER

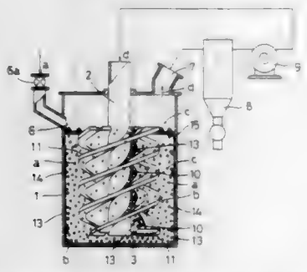
Sachihito Nitta, Yao, Japan, assignor to Kubota Corporation, Osaka, Japan

Filed Mar. 29, 1993, Ser. No. 38,265

Claims priority, application Japan, Mar. 30, 1992, 4-074363; Jan. 22, 1993, 5-009303

Int. Cl.[5] B02C *19/22*

U.S. Cl. 241—172 **6 Claims**



1. A vertical medium-stirring pulverizer comprising: a vertically extending pulverizing shell having an inner surface; pulverizing medium filling part of said shell, the inner surface of said shell being exposed to said pulverizing medium; a screw including a shaft extending vertically in said shell, and a blade extending along said shaft, said blade having an uppermost surface located radially outwardly of the shaft of said screw and exposed to the interior of said shell and to said pulverizing medium occupying part of the interior of said shell; a plurality of magnets disposed on at least one of said inner surface of said shell and said uppermost surface of said blade, each of said magnets having an uppermost portion facing away from the surface on which it is mounted exposed at said surface to the interior of said shell and to said pulverizing medium.

5,346,147

CRUSHING APPARATUS

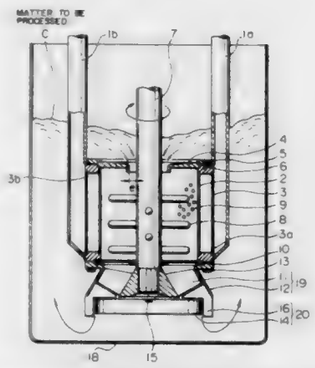
Tsuyoshi Ishikawa, and Akio Kinouchi, both of Tochigi, Japan, assignors to Mitsui Miike Kakouki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1993, Ser. No. 114,962

Claims priority, application Japan, Jan. 8, 1993, 5-000251[U]

Int. Cl.[5] B02C *17/00*

U.S. Cl. 241—172 **8 Claims**



1. A crushing apparatus for crushing a supplied material into the form of a fine powder, said crushing apparatus comprising:

a processing tank to which the material is supplied;

a crushing tank shaped into a longitudinal cylinder, capable of being moved up and down by an elevator apparatus so as to be positioned within said processing tank;

an agitator shaft rotatable by means of a drive source, positioned in a vertical direction at a center portion of the crushing tank, and an agitating member attached to the agitator shaft to be rotated together therewith; and

an axial flow pump member including: an inclined casing provided at a lower portion of said crushing tank, having a cylindrical shape of which diameter is increased toward the lower end and fixed to said crushing tank in a manner capable of communicating therewith; and an inclined vane driveably connected to a lower portion of said agitator shaft so as to be positioned within said inclined casing;

an axial flow promoting member provided at the lower portion of said crushing tank by way of said axial flow pump member, said axial flow promoting member including guide plates attached to the lower portion of said inclined casing and turbine vanes attached to the lower portion of said agitator shaft; and

wherein the material is supplied into the crushing tank while disposing said crushing tank within the processing tank, the material being circulated between an interior of the crushing tank and an interior of said processing tank while being agitated to be crushed by said agitating member within the crushing tank, whereby an axial flow flowing downward is generated within the crushing tank by said axial flow pump member.

5,346,148

ASYMMETRIC PULVERIZER TIRE

Bryan Hand, Norton; Ronald D. Mizak, Wadsworth, and Robert R. Piepho, Akron, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

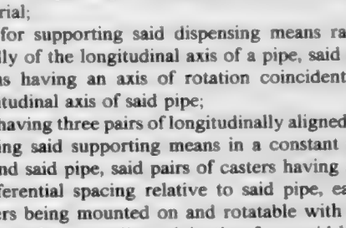
Filed Mar. 16, 1993, Ser. No. 33,694

Int. Cl.[5] B02C *15/06, 15/14*

U.S. Cl. 241—293 **14 Claims**

1. A tire for a roll wheel assembly used to crush material in a pulverizer, the tire having an asymmetrical outside diameter outer surface for contacting and crushing the material, the tire comprising:

a first reinforcing section fixed to the outer surface of the tire to provide the asymmetrical outside diameter outer surface at a location where the tire is subjected to wearing due to performing the crushing of the material; and



a second reinforcing section fixed to an inner surface of the tire directly opposite of the location where the tire is subjected to wearing for minimizing localized thinning of the tire.

5,346,149

ADJUSTABLE PIPE WRAP MACHINE

Robert E. Cobb, 9118 E. Latimer Ct., Tulsa, Okla. 74115

Continuation of Ser. No. 608,353, Nov. 2, 1990, abandoned. This application Aug. 16, 1993, Ser. No. 108,765

Int. Cl.[5] B21F *17/00*

U.S. Cl. 242—7.22 **5 Claims**

1. A pipe wrapping machine comprising:

means for dispensing a continuous strip of pipe wrapping material;

means for supporting said dispensing means radially outwardly of the longitudinal axis of a pipe, said supporting means having an axis of rotation coincident with said longitudinal axis of said pipe;

means having three pairs of longitudinally aligned casters for guiding said supporting means in a constant spiral path around said pipe, said pairs of casters having a fixed circumferential spacing relative to said pipe, each of said casters being mounted on and rotatable with a shaft extending along a radius originating from said longitudinal axis of said pipe;

means adjustably connecting said guiding means to said supporting means for selectively varying the radial disposition of said casters to conform to the outer diameter of said pipe and to cause said longitudinal axis of said pipe to coincide with said axis of rotation of said supporting means; and

means connecting both casters of each said pair of longitudinally aligned casters for simultaneous rotation of both casters of each said pair with their respective shafts about their respective said radii without varying said radial disposition of said casters to provide a preselected overlap of dispensed wrapping material around said pipe.

5,346,150

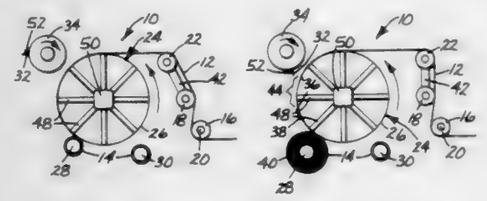
TAIL GAP WINDER

Leonard M. Volin, Grant Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 823,961, Jan. 21, 1992, abandoned. This application Mar. 26, 1993, Ser. No. 38,555

Int. Cl.[5] B65H *19/28*

U.S. Cl. 242—527.1 **20 Claims**



1. A winding system for winding a web on cores mounted on respective first and second wind up spindles and for transferring the web between cores on the fly, comprising:

a first roller around which the web winds;

a rotating drum located downline of the first roller such that the web travels in contact with a portion of the surface of the rotating drum;

a retractable idler roller located between the first roller and the rotating drum, wherein the idler roller is movable toward and away from the rotating drum;

a cutter to cut the web;

means for moving the idler roller away from the rotating drum immediately after the web is cut to lengthen the distance between the idler roller and the rotating drum to cause the web to slide on the surface of the rotating drum, thereby creating a gap between the cut ends of the web; and

means for transferring the web from the core mounted on the first wind-up spindle to the core mounted on the second wind-up spindle.

5,346,151

SEVERING A WEB

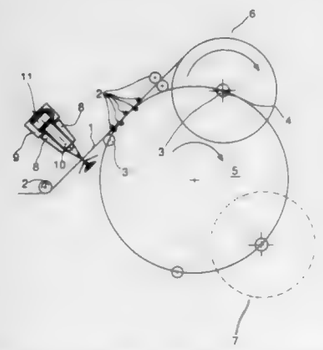
Clifton Zimmermann, Karlsruhe, and Heribert Kuerten, Neustadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 23, 1993, Ser. No. 35,658

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1992, 4209630

Int. Cl.[5] B65H *19/26*

U.S. Cl. 242—521 **4 Claims**



1. A method for severing a moving web of material, which comprises causing the location of the web where it is to be severed to become embrittled transversely to the direction of

movement of the web and introducing into the embrittled severance location a plurality of perforation cuts in such a way that the tension of the web is sufficient to initiate cracks which start from the perforation cuts and propagate rapidly.

5,346,152

BELT PRETENSIONER FOR VEHICLE SAFETY BELT SYSTEMS

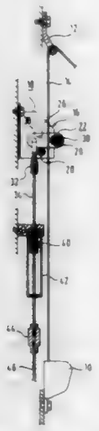
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Mar. 30, 1993, Ser. No. 39,747

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1992, 4211009

Int. Cl.[5] B60R *22/46*

U.S. Cl. 242—371 **8 Claims**



1. A belt pretensioner for a vehicle safety belt system, comprising:

a frame for attachment to the vehicle bodywork and having a pair of parallel side walls interconnected by a base and a deflection member mounted between said side walls,

a linear drive adapted to provide a pulling force,

a belt retractor,

a belt deflection fitting,

and a bracket having a pair of parallel legs spaced from each other, a rod interconnecting said legs at a first end thereof and an engagement member connected to a second end of each leg,

wherein said legs have an intermediate edge portion bearing on said deflection member and a section of belt webbing extends in a plane between said retractor and said deflection fitting, and extends freely through an opening defined between said legs, said rod and said deflection member, and

wherein said linear drive is connected to said engagement member,

said bracket, upon activation of said linear drive, moving around said deflection member, towards and along said base, engaging said webbing section and forming a loop of belt webbing by pulling said webbing against, around and past said deflection member to reduce the effective length of belt webbing.

5,346,153

WINCH STRAP ANCHOR

Edward W. Ebey, Nashotah, Wis., assignor to Fulton Performance Products, Inc., Mosinee, Wis.

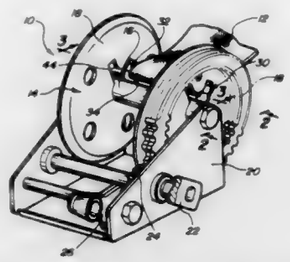
Filed May 3, 1993, Ser. No. 56,483

Int. Cl.[5] B65H *75/28*

U.S. Cl. 242—579 **8 Claims**

1. In a winch assembly for winding and unwinding a tie means to pull and deploy a structure, the winch assembly including a selectively rotatable winch drum having an axial hub and a pair of parallel drum walls, the improvement comprising:

an anchor plate for fastening the tie means to the winch drum, said drum walls including aligned substantially V-shaped apertures with the apex proximate said axial hub, the ends of said anchor plate being inserted into said



apertures to detachably mount said anchor plate to said winch drum whereby said anchor plate ends can travel along respective arms of the V-shaped apertures, said anchor plate lying in close proximity to the axial hub upon winding the tie means to facilitate substantially concentric winding of the tie means thereby reducing irregular cranking force of the winch assembly.

5,346,154

METHOD OF FORMING TRANSFER TAIL AND APPARATUS THEREOF

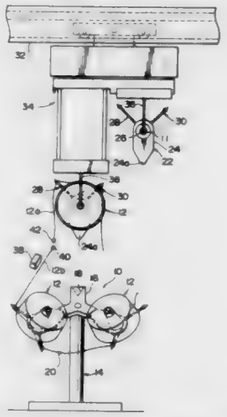
Kiyoaki Mori, Komatsu, Japan, assignor to Tsudakoma Kogyo Kabushiki Kaisha, Kanazawa, Japan

Filed Sep. 11, 1992, Ser. No. 944,087

Claims priority, application Japan, Sep. 11, 1991, 3-258712; Sep. 19, 1991, 3-266975; Sep. 20, 1991, 3-268582

Int. Cl.[5] B65H *49/12*

U.S. Cl. 242—131 **15 Claims**



1. A transfer tail formation apparatus comprising:

a weft feeding means for feeding a weft to a weaving machine and including a rotary member for supporting and rotating weft packages;

a catching means provided in the vicinity of the rotary member for catching a tail end of a weft extending from one weft package supported by said rotary member and for catching a leading end of a weft extending from another weft package supported by said rotary member, wherein said catching means includes an operating portion in the vicinity of common movement loci of the tail end of said one weft package and the leading end of the other weft package when both the weft packages are supported and rotated by said rotary member; and

a knotter for knotting both the ends caught by said catching means.

5,346,155

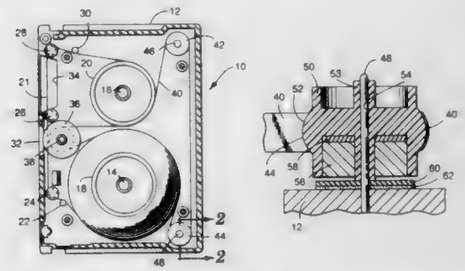
BELT DRIVEN CARTRIDGE WITH MAGNETIC BRAKE ASSEMBLY

Jerry L. Alexander, St. Paul Park; Durkee B. Richards, Stillwater, and Glenn R. Gaster, Plymouth, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 876,396, Apr. 30, 1992, abandoned. This application Dec. 4, 1992, Ser. No. 987,113

Int. Cl.[5] G11B *23/087*

U.S. Cl. 242—334 **12 Claims**



1. A belt driven data cartridge of the type in which a magnetic recording tape wound on a pair of tape spools, each mounted on a shaft affixed to a base, is reversibly driven from one said spool to the other by a thin, continuous flexible belt in contact with the periphery of each said spool, and tension maintaining the belt in driving contact with the respective spools is provided by stretching the belt around at least a portion of the periphery of a drive puck, the respective spools, and at least one roller,

wherein said roller includes an outer periphery structured to contact said drive belt, an inner sleeve defining a bore structured to rotate on a shaft fixed to said base and in combination with said base, a magnetic brake assembly for controllably resisting rotation of the roller, thereby imparting controlled tension on said belt, said roller further having interior walls defining a recess, and within said brake assembly comprises a permanent magnet assembly mounted coaxially with said bore within said recess, a magnetizable member which is part of the base and extends radially around and coaxially with said shaft, and means for separating a top surface of said magnetizable member a predetermined distance from said permanent magnet assembly such that rotation of the roller and magnet assembly mounted therein with respect to the magnetizable member imparts a predetermined amount of drag resisting said rotation.

5,346,156

MAGNETIC-TAPE CASSETTE APPARATUS COMPRISING A DECK FOR MAGNETIC-TAPE CASSETTES REVERSING MECHANISM

Norbert Kunze, Ehringshausen, and Georg Weber, Lohra Weipoltshausen, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 8, 1992, Ser. No. 941,465

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1991, 4130403

Int. Cl.[5] G11B *15/26*

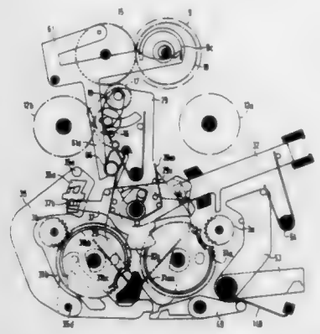
U.S. Cl. 242—340 **11 Claims**

1. A magnetic tape cassette apparatus, comprising:

a) reel drive means including a pair of reel discs, said reel drive means being switchable from a first operating mode for driving a reel disc in a first tape transport direction and a second operating mode for driving the other reel disc in a second, opposite direction of rotation;

b) a pair of toothed drive wheels;

c) switching means for switching the reel drive means between the first and second operating modes, said switching means including a switching lever pivotable between the switching lever position in which the switching lever cooperates with one of said reel discs and a second switching lever position in which the switching lever cooperates with the other of said reel discs; and



d) a pair of rotatable switching wheels each rotatable about an axis of rotation, said switching wheels each including (i) teeth which are engageable with and driven by the teeth of a respective toothed drive wheel and (ii) an actuating element protruding axially from the switching wheel which engages the switching lever upon rotation of the switching wheel for moving said switching lever from one switching lever position to the other switching lever position.

5,346,157

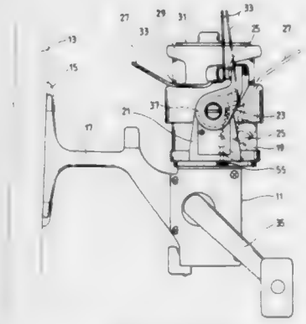
SPINNING REEL FOR FISHING

Kyoichi Kaneko, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Mar. 24, 1992, Ser. No. 856,565

Int. Cl.[5] A01K *89/01*

U.S. Cl. 242—232 **5 Claims**



1. A spinning reel for fishing including a spool supported by a reel main body and making a traverse movement in accordance with a winding operation of a handle, a rotor rotatably supported by the reel main body and rotating in accordance with the winding operation of the handle, a bail supporting member rotatably mounted on a bail supporting arm of the rotor and to which a bail is secured, and a distribution-urging means for distribution-urging the bail supporting member into a fishline winding position and a fishline releasing position, said

spinning reel comprising:

an engagement member having a fishline engaging portion for engaging with a fishline when said bail supporting member is located at the fishline releasing position, wherein said engagement member is rotatably supported concentrically with respect to said bail supporting member;

urging means for urging said engagement member in a same direction of rotation as a rotating direction of the bail supporting member to the fishline releasing position;

interlocking means for rotating said engagement member as a consequence of movement of the bail supporting member into the fishline winding position; and

retaining means for retaining said engagement member at a fishline engaged position when said bail supporting member is located at the fishline releasing position.

5,346,158

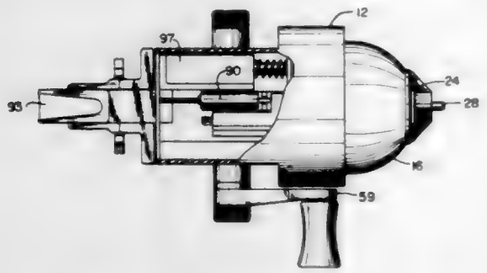
CASTING REEL WITH AUTOMATIC DRAG AND CASTING MECHANISM

Frank E. Epperson, Aurora, Colo., assignor to F.M.&G., Inc., Aurora, Colo.

Continuation-in-part of Ser. No. 714,689, Jun. 13, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 960,137

Int. Cl.[5] **A01K** *89/015*

U.S. Cl. 242—236 **20 Claims**



1. In a casting reel wherein there is provided a housing, a crankshaft internally of said housing with a handle projecting from one end of said crankshaft, a line pick-up member, and a spool at one end of said housing for a fishing line, the improvement comprising;

a drive shaft drivingly connected to said line pick-up member including drive means for imparting rotation of said crankshaft to said line pick-up member in order to reel said line onto said spool; and

first and second releasable drag means to selectively impart rotation of said crankshaft to said drive shaft, said first drag means being axially movable in response to rotation of said crankshaft in one direction to frictionally engage said second drag means whereby to gradually impart the rotation of said crankshaft to said second drag means, said second drag means being drivingly connected to said drive means whereby to cause said drive means to rotate said line pick-up member when said first drag means is moved into engagement with said second drag means, said second drag means including at least one frictional surface member, and said first drag means including at least one sleeve member movable in response to rotation of said crankshaft in the one direction into engagement with said friction plate member and said first drag means being further movable in a direction away from said second drag means in response to rotation of said crankshaft in the opposite direction whereby to release said second drag means from locking engagement with said first drag means.

5,346,159

PAY OUT SYSTEM AND TENSION LIMITER DEVICE INCLUDED THEREIN

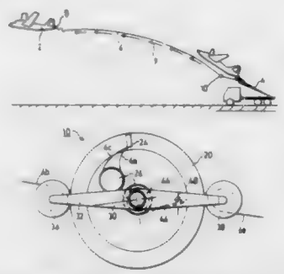
Ehud Dekel, Nofit, Israel, assignor to State of Israel, Ministry of Defence-Rafael-Armament Development Authority, Haifa, Israel

Filed May 25, 1993, Ser. No. 66,258

Claims priority, application Israel, May 29, 1992, 102053

Int. Cl.[5] **B65H** *75/02;* **F41G** *7/00*

U.S. Cl. 244—3.12 **14 Claims**



10. A tension limiter device connected to a flexible elongated element under tension between two relatively-movable objects in order to prevent the tension from exceeding a predetermined value, comprising:

a bobbin on which the central portion of the flexible elongated element is wound in loop form, with one end of the flexible elongated element connected to one object and the opposite end of the flexible elongated element connected to the other object;

a tension sensor for sensing the tension in at least one of the ends of the flexible elongated element;

and a clutch normally coupling said bobbin to said tension sensor but effective, upon the tension sensor sensing a tension reaching a predetermined value, to decouple the bobbin from the tension sensor and to permit the bobbin to rotate in a direction to pay out said flexible elongated element from said bobbin and thereby to prevent the tension in said flexible elongated element from exceeding said predetermined value.

5,346,160

ELECTRO-EXPULSIVE DEICING SYSTEM HAVING FAIL SAFE CONDUCTIVE BRIDGE MEANS

Nathan Pisarski, Stow, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 30, 1992, Ser. No. 906,931

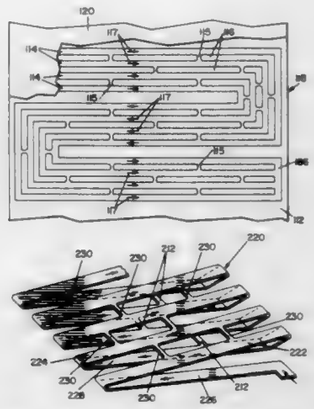
Int. Cl.[5] **B64D** *15/16*

U.S. Cl. 244—134 R **26 Claims**

24. A deicing apparatus comprising:

at least one expulsive means having a conductive path patterned to have a plurality of substantially parallel segments, said plurality of segments being interconnected to adjacent segments by a plurality of first conductive bridges provided along the length of said segments, said at least one expulsive means being disposed proximate to

member so that current flowing through said at least one expulsive means produces an electroexpulsive separation



force between said at least one expulsive means and said member, thereby causing separation therebetween.

5,346,161

APPARATUS FOR GUIDING A LOAD, ESPECIALLY ON THE LOADING FLOOR OF AN AIRCRAFT

Wilfried Eilenstein-Wiegmann, Stuhr, and Guenter Vogg, Bremen, both of Fed. Rep. of Germany, assignors to Deutsche Aerospace Airbus GmbH, Hamburg, Fed. Rep. of Germany

Filed Mar. 29, 1993, Ser. No. 39,812

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1992, 4210191

Int. Cl.[5] **B64D** *9/00*

U.S. Cl. 244—137.1 **12 Claims**

1. An apparatus for guiding a piece of freight on a loading floor within a cargo hold of an aircraft, comprising guide means (**1**, **2**) for laterally aligning and restraining said piece of freight, carrier means (**10**) for mounting said guide means to said loading floor, hinging means (**11**) for journalling said carrier means (**10**) to said loading floor of said aircraft, and latching means (**15**) having a cantilevered section for guiding and restraining said piece of freight in a vertical direction, and toggle lever means (**26**) for tilting said carrier means (**10**) into a recessed position in said loading floor, said toggle lever means (**26**) being arranged between said carrier means and a fixed point (**30**) in said loading floor, said latching means comprising a cantilevered guide finger (**15**) extending substantially horizontally and substantially perpendicularly to said guide means when said guide means are in an upright operative position, said cantilevered guide finger (**15**) of said latching means being mounted for rotation about an axis (**16**) for receiving said guide finger into said loading floor below a plane defined by said loading floor, said apparatus further comprising cam means (**17**, **18**, **34**) for rotating said guide finger (**15**) about said axis (**16**) into a recessed position, said cam means being operated by a tilting movement of said guide means into said recessed position, wherein said cam means comprise a cam surface (**17**) as part of said latching means and a further cam member (**18**, **34**) secured to said loading floor, said cam member and said cam surface engaging each other in response to a tilting operation.

5,346,162

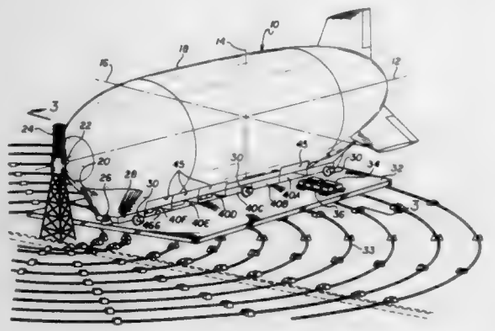
CARGO COMPARTMENT FOR A LIGHTER-THAN-AIR VEHICLE

Robert G. Belie, Moorpark, and Leland M. Nicolai, Castaic, both of Calif., assignors to Lockheed Corporation, Calabasas, Calif.

Filed Nov. 8, 1993, Ser. No. 148,224

Int. Cl.[5] **B64C** *1/22*

U.S. Cl. 244—137.1 **20 Claims**



1. A cargo compartment for a lighter-than-air vehicle, the vehicle having a longitudinal, vertical and lateral axis, the cargo compartment comprising:

a cargo carrying structure mounted to the bottom of the vehicle, said structure extending along at least a portion of the longitudinal axis of the vehicle and having a plurality of open ended passageways, each having a floor, and extending along the longitudinal axis of the vehicle, each of said passageways aligned with the lateral axis of the vehicle and extending completely through said structure, said passageways adapted to simultaneously off load cargo from one end of said passageway and to on load cargo from the opposite end;

first means mounted in each passageway for moving the cargo in one end and out the opposite end of said passageway and intermediate positions therebetween; and

second means for releasable securing the cargo within said passageway.

5,346,163

POWER SUPPLY REGULATION SYSTEM FOR A RAILWAY

Naoko Momma; Korefumi Tashiro, both of Hitachi, and Masahito Ikeda, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 913,361

Claims priority, application Japan, Jul. 19, 1991, 3-179178

Int. Cl.[5] **B61L** *27/00;* **B60L** *15/38*

U.S. Cl. 246—5 **2 Claims**

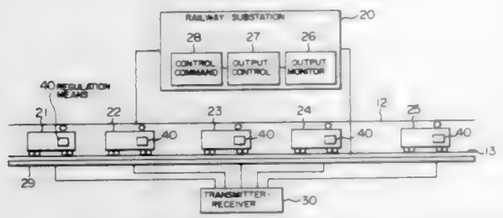
1. A power supply system for a railway, comprising:

at least one power substation for supplying electric power to a power receiving territory of a railway line, said substation having a function of restraining supply of electric

power exceeding a predetermined amount of electric power;

electric power detection means for detecting when electric power supplied from said substation exceeds said predetermined amount of electric power;

voltage detection means for detecting the voltages of electric power received at each of a plurality of electric cars operated in said power receiving territory in response to a



detection that electric power supplied from said substation exceeds said predetermined amount of electric power; and

drive force reduction means for selecting at least one of said electric cars to reduce drive force of the selected electric car to reduce drive force of the selected electric car in response to a detection that the voltage of the electric power received at said selected car has fallen below a predetermined voltage.

5,346,164

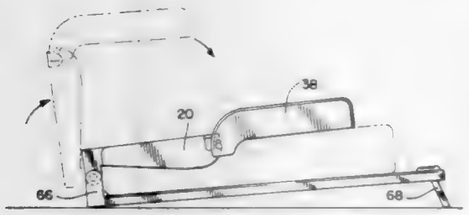
KEYBOARD COVER AND WRIST REST

Michael Allen, Perkasie, Pa., assignor to Fellowes Manufacturing Company, Itasca, Ill.

Filed Feb. 8, 1993, Ser. No. 14,837

Int. Cl.[5] B43L *15/00*

U.S. Cl. 248—118 **17 Claims**



1. A cover and wrist rest for a keyboard comprising:

a. a lower tray with a bottom, a front and a rear with the rear adjacent the keyboard; and,

b. an upper tray with a top surface, a front, and a rear, the front of the upper tray being hinged to the front of the lower tray;

c. means hingedly mounting the lower tray's rear whereby the lower and upper trays are pivotable between a first keyboard cover position wherein the upper tray and lower tray are adapted to cover the keys on the keyboard and a second wrist rest position wherein the upper tray is adapted to be located above the lower tray so that the top surface of the upper tray provides a rest for a keyboard user's wrists and such that the top surface of the upper tray is above and spaced from the bottom of the lower tray to define a compartment.

5,346,165

RESTRAINING DEVICE

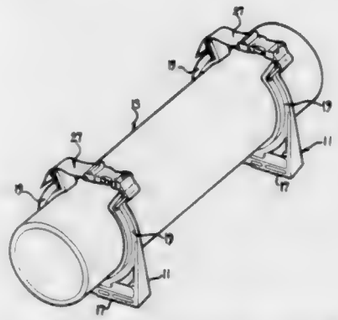
Robert G. Frean, 108 Kalamunda Road, Gooseberry Hill, and Leslie R. Moss, Denham, both of Australia, assignors to Robert George Frean, Gooseberry Hills, Australia

Filed Jan. 29, 1992, Ser. No. 828,800

Claims priority, application Australia, Aug. 2, 1989, PJ5582; Dec. 11, 1989, PJ7812

Int. Cl.[5] A47G *23/02*

U.S. Cl. 248—146 **13 Claims**



1. A restraining device for an object comprising a body having a base for location against a support surface and a pair of side portions extending from said base, said base and said side portions being formed from a resilient material and defining an opening capable of expansion and contraction for receiving and clampingly retaining said object, said base being deformable to define spaced apart sections for engaging and maintaining stable contact with said support surface upon expansion and contraction of said opening through deformation of said side portions and said base, the point of contact of said spaced apart sections with the support surface varying with deformation of said side portions and said base so as to provide a spaced apart contact with the support surface with the points of contact being spaced apart a greater distance as the object received is increased in size, said base and said side portions co-operating to define a clamping ring portion forming a periphery of said opening of variable size to accommodate different sized objects, said base comprising an elongated base portion and said ring portion being mounted on the inner longitudinal face of said base portion at a region intermediate the ends thereof.

5,346,166

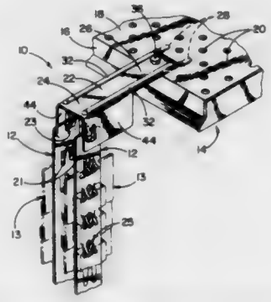
HEAVY DUTY HANGER ASSEMBLY WITH LABEL WINGS AND ORIENTING HOOKS

Stanley C. Valiulis, Rockford, Ill., assignor to Southern Imperial, Inc., Rockford, Ill.

Filed Aug. 23, 1993, Ser. No. 109,964

Int. Cl.[5] A47B *91/06*

U.S. Cl. 248—220.4 **6 Claims**



1. A display hanger for suspending merchandise forwardly

of a generally horizontal display shelf having a plurality of vertically extending hole means formed therein, said hanger comprising a generally horizontal metal support plate, said plate having first and second end portions, said first end portion having integral support means for retaining said hanger in said hole means, two substantially flat wings formed integrally with and projecting downwardly from opposite lateral margins of said plate adjacent said second end portion for holding indicia labels, each of said wings having a lower edge, a support hook struck from each of said wings above the lower edge of the wing and projecting inwardly from the wing, each of said hooks having a first segment extending inwardly from the respective wing and spaced above said lower edge and having a second segment formed integrally with said first segment and projecting upwardly from said first segment, each of said second segments having an upper free end spaced inwardly from the respective wing to enable merchandise to be placed on and supported from said hook.

5,346,167

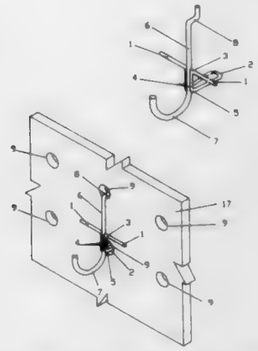
PEG BOARD HANGER

Darrell E. Smialek, 1647 Augusta Way, Casselberry, Fla. 32707

Filed Jul. 15, 1993, Ser. No. 92,397

Int. Cl.[5] A47B *96/06*

U.S. Cl. 248—222.1 **8 Claims**



1. A hanger for storage of items, such as tools, and display of merchandise for use with an aperture mounting board having a plurality of apertures, said hanger comprising:

(a) an S-shaped wire member having a body defined by two ends, said body laying generally parallel and in vertical orientation to a surface of the mounting board, with one end engaging a first aperture;

(b) an angularly projecting load carrier attached to the other end of said body; and

(c) means attached to said body for securing the body to a second aperture of the mounting board, said means comprises deformable wings extending perpendicular and horizontal from said hanger body parallel to said surface of the mounting board, and a deformable projecting member extending perpendicular and rearwardly from the hanger body engaging said second aperture.

5,346,168

GUITAR HANGING FIXTURE

Joseph G. Astrella, 40 Kenberma Rd., Worcester, Mass. 01604

Filed Jul. 6, 1993, Ser. No. 85,929

Int. Cl.[5] E04G *3/00*

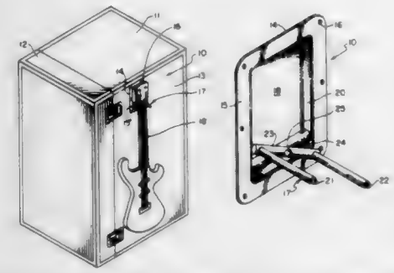
U.S. Cl. 248—278 **6 Claims**

1. A hanging fixture for a musical instrument comprising:

a mounting plate having a central recess;

a hanger means movably carried on said mounting plate within said plate recess movable between a storage position and an operative position;

said hanger means having a rotatable shaft carried on said mounting plate and a U-shaped yoke pivotably secured to said shaft and partially occupying said plate recess when said hanger means is in its storage position and cantilevered outwardly from said mounting plate when said hanger means is in its operative position; and



said hanger means yoke includes a cross bar having opposite ends with a pair of spaced-apart hanger support members secured to said rod ends respectively.

5,346,169

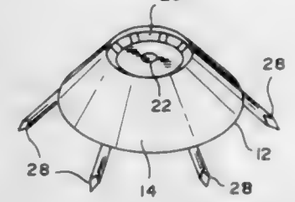
SUPPORT BRACKET

Eli Polonsky, 1608 S. Kenton St., Aurora, Colo. 80012

Filed Mar. 8, 1993, Ser. No. 27,798

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—547 **5 Claims**



1. A hanger bracket to be secured to a support surface for supporting an article to be hung, comprising:

a base member including a frustro-conical side wall surface disposed at an angle with respect to said support surface, said base member including a plurality of upwardly opening elongated slots formed in said frustro-conical side wall surface;

a cover for covering said base member; said cover including a centrally disposed opening and interior frustro-conical wall surface complimentary to the base member frustro-conical side wall surface;

said cover being permanently attached to said base member, said interior wall surface of said cover covering said upwardly opening elongated slots, forming elongated channels between said base member and said cover, disposed at an angle to said support surface, said channels having a first end opening adjacent an upper central portion of said base member and a second end opening adjacent the lower peripheral edge of said base member;

a centrally disposed well in said base member complementary with said centrally disposed opening of said cover; said well and said opening providing access to said first end opening of each of said elongated channels;

fastener means structured to be inserted into said elongated channels and extending therethrough and outwardly at an angle from said base member for engagement with said support surface; and,

attachment means for supporting weighted objects to said hanger bracket.

5,346,170

METHOD AND APPARATUS FOR ADJUSTING AND MAINTAINING THE HEIGHT OF A SPRING-ACTION PASSENGER SEAT

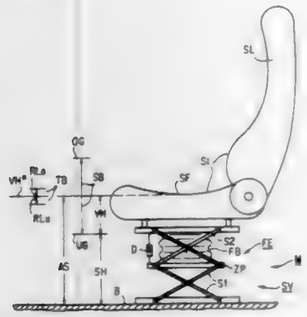
Klaus Schmidt, Roth, and Werner Stecher, Abenberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 13, 1992, Ser. No. 976,244

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 4137509

Int. Cl.[5] **F16M** *13/00*

U.S. Cl. 248—550 **20 Claims**



3. An apparatus for adjusting and maintaining the absolute seating surface height of a spring-action passenger seat, independent of interference factors, particularly in a motor vehicle, comprising:

a) means for adjusting a first, stationary basic component of the absolute seating surface height value;

b) means for adjusting a second, quasi-stationary regulation component of the absolute seating surface height value;

c) a resiliency regulation mechanism controlling the means for adjusting the second, quasi-stationary regulation component to allow dampened oscillations of the seat around a reference value for the second, quasi-stationary regulation component; and

d) a measurement device continuously detecting the value of the second, quasi-stationary regulation component and deriving a time average value of the second quasi-stationary regulation component from the measurement values and providing this time average value to the regulation mechanism, wherein said regulation mechanism controls said means for adjusting the second, quasi-stationary regulation component so that the time average value of the second quasi-stationary regulation component of the absolute seating surface height approaches the value of the reference value independent of the actual weight of a person resting on the seat.

5,346,171

METHOD AND APPARATUS FOR FORMING PLASTIC PANELS FROM RECYCLED PLASTIC CHIPS

Edward L. Kephart, Alexandria, Minn., assignor to Recycled Plastics, Inc., Garfield, Minn.

Filed Feb. 25, 1993, Ser. No. 22,230

Int. Cl.[5] **B41B** *11/60*

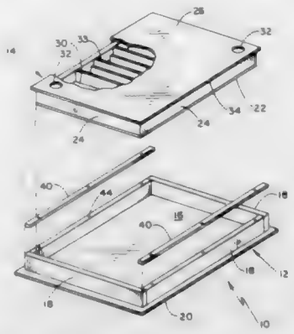
U.S. Cl. 249—156 **10 Claims**

1. A mold adapted for use with a platen press, comprising:

(a) a bottom member having a bottom surface and a plurality of side walls defining a recess, said side walls defining a profile of said recess and each having a top surface;

(b) a top member having a lower portion adapted to be received within said recess of said bottom member, said lower portion of said top member having a profile corresponding to the profile of said recess, said lower portion of said top member and said bottom plate defining a cavity therebetween, wherein said top member has a pair of flanged edges each extending over said top surfaces of said bottom member side walls; and

(c) a pair of shims, one disposed upon each said top surfaces of opposite said bottom member side walls, for selectively



establishing a depth of the cavity defined between said top and said bottom members by limiting how far said top member lower portion can be received into said bottom member recess, wherein said cavity depth is identical to the height of said shims.

5,346,172

SERVO VALVE

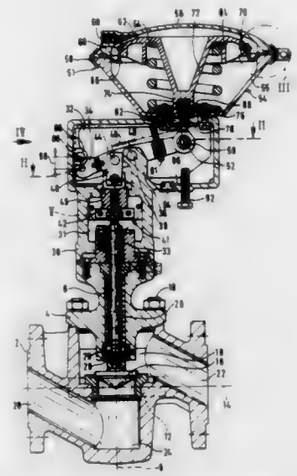
Wolfgang Gonsior, Lindau-Bodolz, Fed. Rep. of Germany, assignor to Gulde Regelarmaturen GmbH & Co. KG, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 16, 1993, Ser. No. 46,732

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1992, 4213957

Int. Cl.[5] **F16K** *31/12, 31/145*

U.S. Cl. 251—58 **27 Claims**



1. A servo valve comprising a valve housing, a valve spindle movable axially within said housing, a drive for operating said spindle, and a position controller for actuating said drive depending on the position of said spindle, wherein said valve spindle is operatively coupled to said drive by a lever and a link body; said lever is arranged in a lever housing, having first and second chambers, interposed between said valve housing and said drive with one end of said lever housing connected to said valve housing and another end of said lever housing connected to a housing for said drive, said valve spindle partially projecting into said first chamber; a guide block, which couples between said valve spindle and said lever is slidably guided in said lever housing, said second chamber of the lever housing having a support on which said lever is pivotally mounted, and said position controller is directly connected to said lever housing and closes off said second chamber via a plate.

5,346,173

ACTUATOR

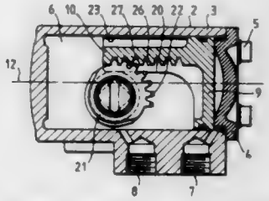
Björn Rasmusson, Vintrosa, Sweden, assignor to Ingenjorsfirma Rason Aktiebolag, Orebro, Sweden

Filed Sep. 29, 1993, Ser. No. 128,153

Claims priority, application European Pat. Off., Oct. 16, 1992, 9203037-8

Int. Cl.[5] **F16K** *31/12*

U.S. Cl. 251—58 **16 Claims**



1. An actuator for turning a shaft (**11**) to a limited degree, e.g. the shaft of a butterfly valve or the like, the actuator comprising a housing (**2**) having a cylindrical chamber (**6**), inlets and outlets (**7**, **8**) for a pressure fluid to the cylindrical chamber, a piston (**9**) in the cylindrical chamber, which can be displaced in the cylindrical chamber by means of a pressure fluid and is provided with a rack (**10**) with a toothed segment (**27**) cooperating with a gear ring segment (**22**), fixedly mounted on said shaft (**11**), which extends right through the cylindrical chamber (**6**) and through the wall of the housing (**2**), characterized in that said toothed segment (**27**) is disposed at the bottom of a groove (**26**) in the rack (**10**), that said gear ring segment (**22**) has a breadth in the axial direction, which corresponds to the breadth of said groove, and that said gear ring segment is provided in the groove (**26**) to mesh with the toothed segment, the shaft (**11**) in this way being fixed in the axial direction in the housing (**2**).

5,346,174

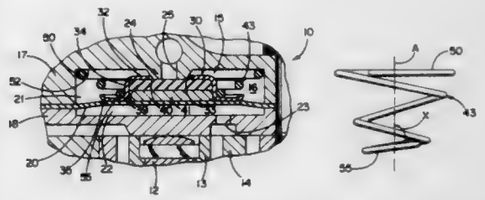
SPRING-BIASED VALVE ASSEMBLY FOR A GEAR PUMP

Frank L. Harwath, Rockford, Ill., assignor to Suntec Industries Incorporated, Rockford, Ill.

Filed Jan. 24, 1994, Ser. No. 185,032

Int. Cl.[5] **F16K** *31/126*

U.S. Cl. 251—61.3 **3 Claims**



1. A valve assembly comprising a body having a valve seat with a port therein, a valve member movable between open and closed positions with respect to said port, a coil spring located between said body and one side of said valve member and operable to urge said valve member toward said open position, a flexible diaphragm engageable with the opposite side of said valve member and operable to urge said valve member toward said closed position against the bias of said spring when said diaphragm is subjected to pressurized fluid, said spring having a longitudinal axis and having a first end coil located in engagement with said body, said spring having a relaxed state and a fully compressed state and being in said fully compressed state when said valve member is in said closed position, and said spring having a second end coil engageable with said one side of said valve member, said second end coil being disposed in a plane which is inclined at an acute angle relative to the axis of the spring when the spring is in said relaxed state and being disposed in a plane extending substantially perpendicular to said axis when said spring is in said fully compressed state thereby to enable said valve member to squarely engage said valve seat when said valve member is in said closed position.

5,346,175

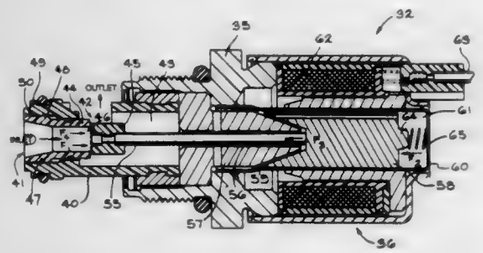
VARIABLE ASSIST STEERING CONTROL VALVE

Harry A. Hunnicutt, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Dec. 31, 1992, Ser. No. 999,425

Int. Cl.[5] **B62D** *5/06*

U.S. Cl. 251—129.08 **6 Claims**



1. A pressure control valve for use in a variable assist power steering system of a vehicle, the control valve comprising:

a housing having an inlet for receiving fluid and an outlet for discharging said fluid, said housing further having a fluid carrying passageway connecting said inlet and said outlet;

a valve element movable within said passageway and operable for controlling the fluid pressure difference between said inlet and said outlet within a predetermined pressure range, said valve element being subjected to a momentum force caused by fluid flow through said passageway;

a solenoid carried by said housing, said solenoid including an armature connected to and movable with said valve element, said solenoid responsive to an electric control signal for exerting a magnetic force on said armature for positioning said valve element within said passageway to achieve a selected fluid pressure difference between said inlet and said outlet, said control signal being variable from a predetermined minimum level up to a predetermined maximum level, said solenoid further including a fixed core piece, said core piece cooperating with said armature to define an air gap therebetween, said air gap being variable and said magnetic force being a function of said air gap size;

biasing means for exerting a balancing force on said valve element in opposition to said momentum force such that an initial increase in said control signal above said minimum level causes an increase in fluid pressure difference between said inlet and said outlet; and

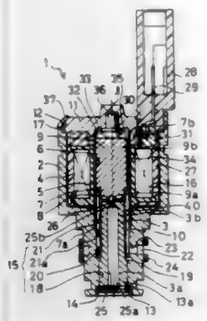
a valve base within said passageway, said valve base having an adjustable position within said passageway, said valve base cooperating with said valve element to shift said armature towards or away from said core piece to adjust said air gap, and said valve base being positioned to adjust the fluid pressure difference between said inlet and said outlet to a predetermined value when said control signal is at a predetermined level.

5,346,176

SOLENOID VALVE

Akira Fujimoto, and Takeshi Taniguchi, both of Miyazaki, Japan, assignors to Honda Lock Mfg. Co. Ltd., Miyazaki, Japan

Filed Aug. 27, 1993, Ser. No. 113,603
Int. Cl.[5] F16K *31/06*
U.S. Cl. 251—129.15 **4 Claims**



1. A solenoid operated valve comprising:
a valve housing;
said valve housing having a closure for an upper end opening thereof and having a first engaging hole in a lower end thereof;
said first engaging hole continuing to a bobbin center hole;
said closure having a second engaging hole on an inner side thereof;
a valve seat at a bottom of said valve housing;
a seal pipe within said bobbin center hole
a movable pole piece in said seal pipe, said movable pole piece having a valve member at an end face therein;
means for biasing said movable pole piece in said seal pipe;
a structure enabling a first end and a second end of said seal pipe to be pressed in said first and said second engaging holes, respectively;
a bobbin set inside said valve housing, said bobbin having a coil wound thereon;
said first engaging hole having a first taper therein;
said second engaging hole having a second taper therein;
a first tapered end of said seal pipe fits sealingly in said first taper; and
a second tapered end of said seal pipe fits sealingly in said second taper.

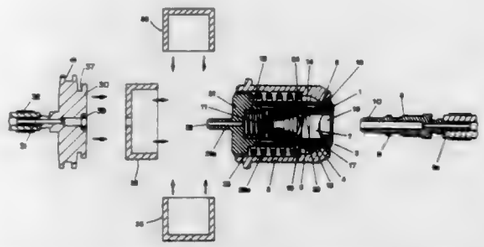
5,346,177

HIGH PRESSURE GAS LINE BREAKAWAY CONNECTOR

R. P. Grant Paulsen, West Hill; Ralph Rackham, Toronto, and Peter J. Thuerig, Brampton, all of Canada, assignors to Fuel Maker Corporation, Toronto, Canada

Filed Jun. 13, 1991, Ser. No. 713,362
Int. Cl.[5] F16L *37/28*
U.S. Cl. 251—149.6 **2 Claims**

1. In a tension-activated auto-disengaging fluid line connection device that comprises:
(1) a connector with complementary, interfitting but disengageable male and female portions, one of such portions being provided with coupling means in the form of a nipple for receiving fluid from a high pressure source and thereby constituting the pressurized portion of the connector, the other portion of the connector constituting the non-pressurized portion of the connector;
(2) a spring-activated check valve contained within the pressurized portion of the connector, biased by a check valve spring mounted within the said pressurized portion to displace the check valve towards closure;
(3) a probe, formed upon the non-pressurized portion of the connector for opening the check valve upon assembly of the connector;
(4) latch means carried by said connector for releasably holding the male and female connector portions together, once assembled.
(5) an actuator, connected to said latch means so as to effect release of the latch means by the application of pressure to the actuator, such actuator being accessible from outside of the connector;
(6) a housing, extending over the actuator and positioned to contact and apply pressure to activate such actuator upon displacement of the housing with respect to the connector;
(7) a principal spring means applying a force for biasing the housing to separate from the actuator;



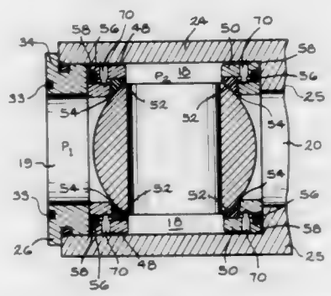
wherein the housing and actuator are positioned so that upon application of tension to the connector, the housing will advance towards the actuator, and at a predetermined level of tension, will activate such actuator by applying pressure thereto and thereby effect release of the latch means and disengagement of the male and female portions of the connector, the improvement comprising an adaptor having:
(1) a pressure plate provided with connection means on one side for connection to a high pressure fluid source, and on the other side with a passage to receive the nipple with a sealed but sliding fit; and
(2) means to connect the pressure plate and housing together; to thereby allow line pressure to bias the actuator to advance against the force of the principal spring and reduce the predetermined level of tension that will effect release of the latch means.

5,346,178

PRESSURE EQUALIZED FLOW CONTROL VALVE

William J. Baker, Valley Center, Calif., assignor to National-Oilwell, Houston, Tex.

Filed Sep. 28, 1993, Ser. No. 127,983
Int. Cl.[5] F16K *5/06*
U.S. Cl. 251—315 SE **11 Claims**



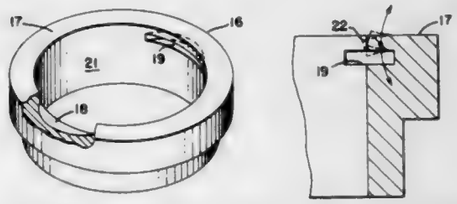
1. A valve for controlling passage of fluid through a flow line, comprising:
a valve body having upstream and downstream flow passages, a generally cylindrical valve chamber communicating with the flow passages, means for controlling fluid flow through the passages, means for operating the fluid control means between open and closed positions and means for equalizing differential pressure in the valve chamber,
the flow control means including a central passageway for communicating fluid between the passages and positioned between a pair of spaced annular seat carriers in the valve chamber,
each seat carrier being disposed in an encircling relationship around a valve seat and including an annular recess on an inwardly facing surface and an annular recess on an axially facing surface,
the recess on the axially facing surface including an inlet, the valve seat positioned within the recess on the inwardly facing surface and a seal positioned within the recess on the axially facing surface,
the pressure equalization means including a fluid passage extending radially within the upstream seat carrier,
whereby the pressure equalization passage is for communicating upstream pressure from the inlet of the recess on the axially facing surface through the upstream seat carrier to the valve chamber.

5,346,179

GALLING RESISTANT FLEX-SEAT FOR GATE VALVES

Bernhard Lochmann, Oklahoma City, Okla., assignor to FMC Corporation, Chicago, Ill.

Filed May 5, 1993, Ser. No. 57,138
Int. Cl.[5] F16K *3/00*
U.S. Cl. 251—328 **4 Claims**



1. A galling resistant valve seat for a gate valve having a valve gate for motion between valve closed and valve open positions, comprising
a valve seat member having a valve seat surface and an inside diameter for surrounding a flow path,
said inside diameter having at least one slot cut along a limited portion thereof, said slot being positioned adjacent to and spaced from said valve seat surface, whereby valve seat surface flexibility is increased in the valve seat surface area adjacent to said slot and valve gate galling is thereby minimized.

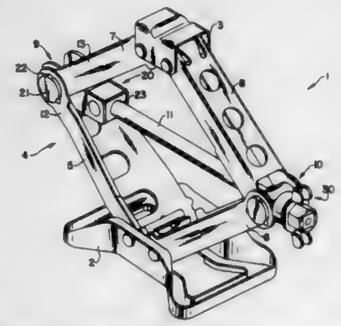
5,346,180

PANTOGRAPH JACK

David J. Popowich, Toronto, Canada, assignor to Seeburn Metal Products Limited, Ontario, Canada

Filed Jun. 10, 1993, Ser. No. 74,445
Int. Cl.[5] B66F *3/22*
U.S. Cl. 254—126 **4 Claims**

1. A pantograph jack comprising:
a base for engaging a ground support;
a load rest for placement under and to engage a vehicle;
a parallelogram pantograph including first and second arms each pivotally coupled at a first end thereof to said base, third and fourth arms each pivotally coupled at a first end thereof to the load rest, second ends of said first and third arms being pivotally coupled at a first joint and second ends of said second and fourth arms being pivotally coupled at a second joint, said first and second joints being disposed in a substantially in a common horizontal plane on a substantially horizontal diagonal of the pantograph,
a drive screw having first and second longitudinal end portions and mounted so as to extend between said first and second joints and so as to be rotatable about an axis coextensive with said diagonal, said drive screw having a length so as to extend between the first and second joints irrespective of a vertical distance between said base end and said load rest;
said second joint including a trunnion bearing having an opening coaxial with said drive screw for receiving said second longitudinal end portion of the drive screw so that said drive screw is rotatable relative to said trunnion bearing but is linearly fixed with respect thereto;
said first joint including a trunnion nut assembly, said trunnion nut assembly comprising a trunnion pin engaged with said second ends of said first and third arms so that said first and third arms are pivotable about said trunnion pin, said trunnion pin having a long axis, first and second substantially flat side faces parallel to said long axis and a



drive screw receiving bore extending in a direction substantially perpendicular to said long axis; and
a unitary extension component having first and second portions, said first portion having a trunnion pin key hole extending in a first direction and having an internal transverse cross-section corresponding to a transverse cross-section of said trunnion pin for slideably receiving said trunnion pin, said second portion extending in a second direction, said second direction being generally perpendicular to said first direction, and projecting towards said second joint to shorten a distance between said first and said second joints and thereby minimizing a length of said drive screw, said second portion having a threaded bore defined therethrough for rotatably receiving said drive screw, and said first portion having an aperture defined through a wall thereof aligned with said threaded bore of said second portion of said trunnion nut assembly, said drive screw receiving bore of said trunnion pin being aligned with said threaded bore and said aperture when said trunnion pin is received in said key hole.

5,346,181

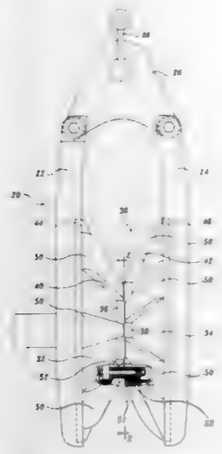
HAULING SHEAVE WITH CLEATS

Harold T. Cook, Jr., Bainbridge Island; Donn B. Furlong, Bellevue; Robert A. Svendsen, and Allan P. Rustad, both of Seattle, all of Wash., assignors to Marco Seattle, Inc., Seattle, Wash.

Filed Jun. 11, 1991, Ser. No. 713,164
Int. Cl.[5] B66D *1/30*
U.S. Cl. 254—374 **10 Claims**

1. In a hauling block for nets or line, an improved sheave mounted for rotation on a frame to form a block, the improvement comprising:
a sheave having a central hub portion, said sheave having mutually opposing hauling surfaces extending outwardly from said hub portion, said hauling surfaces diverging as they extend outwardly from said hub portion, each side of said sheave terminating in a circumferential rim portion,

each of said hauling surfaces having a plurality of cleat receiving pockets extending outwardly from said hub portion, said pockets having bottom surfaces and longitudinal side walls,



cleats positioned in each of said pockets, each of said cleats including a rigid backbone, and a wear restraint gripping material shell formed around said backbone, said shell having a bottom portion sized to be received in said pocket, and

means fastening said cleats to said sheave halves.

5,346,182

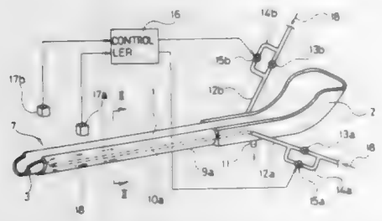
TEEMING TROUGH

Manabu Kurotobi, and Mutsuo Uchida, both of Osaka, Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Jun. 16, 1993, Ser. No. 78,728

Int. Cl.[5] B22D *41/60*

U.S. Cl. 266—78 6 Claims



1. A teeming trough for pouring molten metal into a mold comprising a horizontally extending body for pouring molten metal, water cooling jackets formed at both sides of the body, cooling-water feed paths for supplying cooling water into the water cooling jackets, means for adjusting cooling water feeds in the respective cooling-water feed paths, means for detecting a lateral bend of the body, and means for controlling the cooling-water feed adjusting means on the basis of a detection signal from the bend detecting means in such a manner that the cooling water feed to the water cooling jacket at the bent side of the body is decreased to lower the effect of cooling at the bent side.

5,346,183

FUMELESS CUPOLAS

David R. Westley, Wolverhampton, England, assignor to The BOC Group plc, Windlesham, England

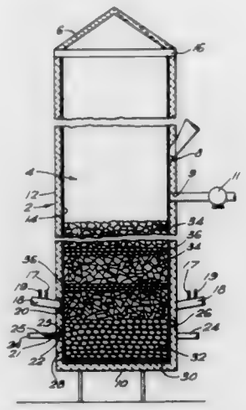
Division of Ser. No. 3,899, Jan. 13, 1993, Pat. No. 5,309,232.

This application Oct. 12, 1993, Ser. No. 135,218

Claims priority, application United Kingdom, Jan. 31, 1992, 9202073.4

Int. Cl.[5] C21C *7/00*

U.S. Cl. 266—197 4 Claims



1. A vertical shaft furnace for melting a metal in the absence of an air blast comprising:

(a) a bed of coke material maintained in a bottom region of the furnace;

(b) means for introducing the metal to the coke bed to form a charge;

(c) at least one fuel burner for generating a hot gas mixture from a fuel and oxygen in an amount greater than a stoichiometric amount needed for complete combustion of the fuel;

(d) said at least one fuel burner adapted to direct the hot gas mixture towards the coke material to thereby generate sufficient heat to melt the metal and allow the molten metal to flow downwardly through the coke bed;

(e) means located below the at least one fuel burner for injecting an oxygen containing gas into the coke bed; and

(f) means for discharging the molten metal from the furnace.

5,346,184

METHOD AND APPARATUS FOR RAPIDLY SOLIDIFIED INGOT PRODUCTION

Amit K. Ghosh, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed May 18, 1993, Ser. No. 62,896

Int. Cl.[5] B23K *15/00;* B22D *23/00*

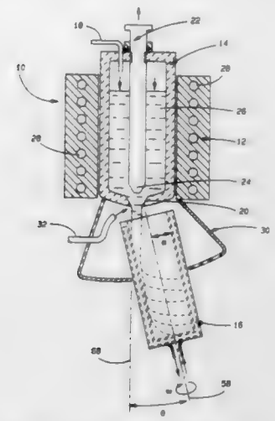
U.S. Cl. 266—202 29 Claims

1. An apparatus for producing a rapidly solidified ingot of a material having a fine scale microstructure capable of precipitating uniformly dispersed fine particles, said apparatus utilizing a furnace and a crucible capable of heating the material into a melt and pouring the melt from the crucible in a stream generally defining a pouring axis, said apparatus comprising:

an ingot mold including a bottom wall and sidewalls having interior surfaces generally cooperating to define a mold cavity having a central axis extending longitudinally therethrough, said ingot mold also including portions defining an opening opposite said bottom wall, said opening being configured to receive the melt being poured;

means for positioning said mold in an inclined position with respect to the pouring axis such that an inclination angle is defined between said central axis and the pouring axis; and

means for rotating said ingot mold about said central axis as the melt is poured into said ingot mold to shear a thin layer of the melt from the poured stream as the stream contact said interior surfaces, said ingot mold being capable of



extracting heat and rapidly solidifying the sheared layer into an ingot having a fine scale microstructure capable of precipitating uniformly dispersed fine particles as successive layers are applied thereto.

5,346,185

VACUUM-SUCTION DEGASSING APPARATUS

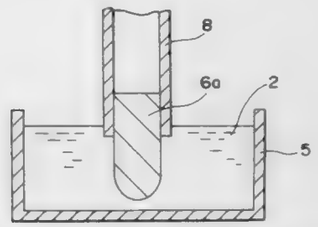
Masamichi Sano, Nagoya; Nobuo Miyagawa, and Kunji Yamamoto, both of Tajimi, all of Japan, assignors to Tokyo Yogyo Kabushiki Kaisha, Tokyo and Masamichi Sano, Nagoya, both of Japan

Continuation of Ser. No. 998,631, Dec. 29, 1992, abandoned, which is a continuation of Ser. No. 715,637, Jun. 14, 1991, abandoned. This application Jun. 8, 1993, Ser. No. 73,660

Claims priority, application Japan, Jun. 16, 1990, 2-158324

Int. Cl.[5] C21C *7/00*

U.S. Cl. 266—208 10 Claims



1. A vacuum-suction degassing apparatus comprising:

a vessel containing a melt;

a porous rod made of a ceramic porous material permeable to gas and impermeable to melts, said porous material having a chemical composition which chemically reacts with an impurity in said melt to yield a product gas, a portion of said porous rod being immersed in said melt in the vessel so as to define a chemical reaction interface with said melt; and

sucking means for sucking said product gas through said porous rod, in a manner such that a portion of said porous rod which protrudes above the surface of said melt is kept at a vacuum or at a reduced pressure to create a pressure difference for sucking said product gas, wherein said suction created by said pressure difference causes said gas product to permeate said porous rod in an axial direction thereof.

5,346,186

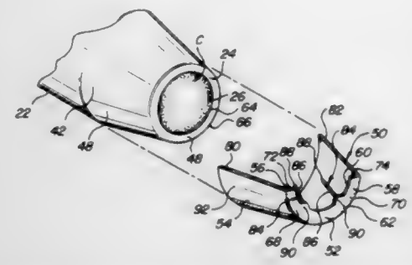
NOZZLE GUARD FOR BLAST FURNACE MUDGUN

William F. Given, Woodhaven, Mich., assignor to Protective Technologies, Inc., Grosse Ile, Mich.

Filed Jun. 7, 1993, Ser. No. 72,611

Int. Cl.[5] C21B *7/12*

U.S. Cl. 266—270 24 Claims



1. A protective nozzle guard device (**50**, **50'**) for attachment to a nozzle (**22**) of a blast furnace clay gun (**16**) used for selectively closing a taphole (**12**) of a blast furnace (**10**) to stop outflow of molten metal and slag therethrough by inserting a nose (**32**) of the nozzle (**22**) into the taphole (**12**) and injecting clay material (C) into the taphole (**12**) through a nozzle opening (**26**) in an endface (**24**) of the nozzle (**22**), said nozzle guard device (**50**, **50'**) comprising:

a face guard member (**52**) having a back surface (**56**) an opposite front surface (**58**) and an outer peripheral surface (**60**);

and mounting means (**84**, **84'**) projecting beyond said back surface (**56**) and spaced inwardly from said outer peripheral surface (**60**) of said face guard member (**52**) so as to be insertable into the nozzle opening (**26**) for engaging the clay material contained within the nozzle opening (**26**) in response to inserting said mounting means (**84**, **84'**) into said nozzle opening (**26**) to thereby mount and retain said face guard member (**54**) in overlying shielding relation with the end face (**24**) of the nozzle (**22**).

5,346,187

ROLL BELLOWS-TYPE PNEUMATIC SHOCK ABSORBER HAVING A REINFORCED ROLL BELLOWS

Gunter Drescher, Hanover, Fed. Rep. of Germany, assignor to Continental Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 670,308, Mar. 15, 1991, abandoned. This application Jul. 30, 1992, Ser. No. 923,001

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1990, 4009495

Int. Cl.[5] F16F *9/04*

U.S. Cl. 267—64.11 13 Claims

1. A roll bellows-type pneumatic shock absorber without a rolling piston comprising:

a roll bellows comprising a roll bellows wall made of an elastomeric material with imbedded first reinforcement layers, said roll bellows wall having a first and a second end section, with a main body of said roll bellows wall extending between said first and said second end sections;

a first and a second fixture, said first end section connected to said first fixture and said second end section connected to said second fixture;

said first end section comprising a second imbedded reinforcement layer for additionally stiffening said first end section to form a stiffened roll bellows wall section;

during shock absorbing movements, said main body forming a rolling lobe and said stiffened roll bellows wall section

remaining stable under pressure loads occurring during the shock absorbing movements, said rolling lobe rolling



on and supported at said stiffened roll bellows wall section.

5,346,188

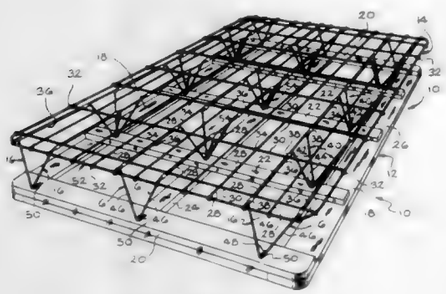
HINGED WIRE FORM MEMBERS

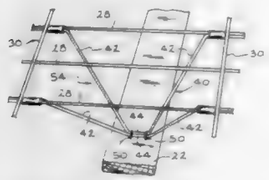
Kevin T. Rodgers, Stamping Ground, Ky., and James Lewis, Hanover Park, Ill., assignors to Hoover Group, Inc., Alpharetta, Ga.

Filed Mar. 14, 1993, Ser. No. 31,095

Int. Cl.[5] F16F *3/00*; A47C *25/00*

U.S. Cl. 267—106 **17 Claims**





1. A bedding foundation comprising:

a generally rectangular support frame;

a generally rectangular wire grid disposed above said support frame a predetermined distance; and

a plurality of wire form members hingedly mounted on said wire grid for rotational movement between folded and standing positions, each of said wire form members having leg portions which, when said wire form members are in said folded position are disposed against said wire grid and which, when said wire form members are in said standing position extend from said wire grid at an angle of less than ninety degrees to the plane formed by said wire grid, said wire form members being arranged in pairs on said wire grid with the leg portions of one wire form member of each pair being inclined in the opposite direction relative to the leg portions of the other wire form member of said pair in said standing positions of said wire form members, said leg portions ending in feet at the distal ends thereof attached to said support frame to thereby enable said wire grid to be mounted on a support frame and maintained at said predetermined distance therefrom;

the hinged mounting of said wire form members permitting a plurality of subassemblies of said wire grids and said wire form members to stacked one upon another in a compact form with the wire form members in the folded positions.

5,346,189

HYDRAULICALLY DAMPED RUBBER BEARING

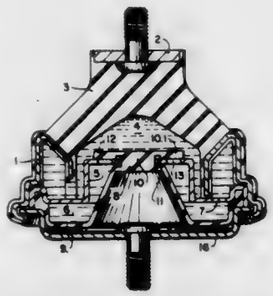
Axel Rudolph, Bensheim, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Division of Ser. No. 916,563, Jul. 20, 1992. This application Nov. 24, 1993, Ser. No. 157,594

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1991, 4126673

Int. Cl.[5] F16F *9/10*

U.S. Cl. 267—219 **6 Claims**



1. In a hydraulically damped rubber bearing with a supported component attached to a supporting component by an element made of a resilient material, wherein the supported and supporting components enclose an activating chamber occupied by a fluid, the activating chamber is separated from a compensation chamber by a partition, the partition accommodates at least one port, a section of the partition is flexible, and the compensation chamber is sealed off from outside by a diaphragm secured to the supporting component, the improvement wherein both the flexible section of the partition and the diaphragm are formed by a single one piece molding; and wherein the molding has an undercut elevation and snaps into a perforation through a substantially rigid section of the partition.

5,346,190

BOX SPRING ASSEMBLY SUPPORT SPRING

Upton R. Dabney, Lexington, Ky., assignor to Hoover Group, Inc., Alpharetta, Ga.

Filed Feb. 22, 1993, Ser. No. 20,745

Int. Cl.[5] F16F *3/00*; A47C *25/00*

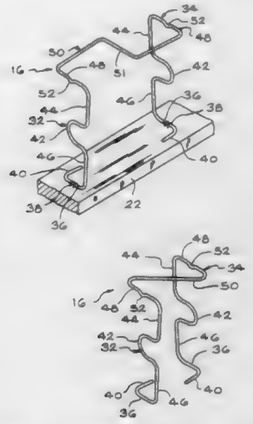
U.S. Cl. 267—95 **19 Claims**

1. A box spring assembly comprising:

a generally rectangular frame;

a generally horizontal support deck disposed a predetermined distance above said frame, said support deck including a plurality of straight wires arranged in criss-cross fashion, said straight wires including long wires extending lengthwise of said frame and cross wires extending crosswise of said frame, said support deck also including a border wire being of a generally rectangular shape and supporting said long wires and said cross wires; and

a plurality of support springs arranged between and secured to said support deck and said frame so as to yieldably support said deck on said frame, said support springs being unitarily formed and including a pair of side-by-side yieldable portions each being oriented in a substantially vertical plane, a mounting bar means extending between the upper ends of said yieldable portions, said mounting bar means coacting with at least one of said straight wires for securing said support spring to said support deck, mounting foot means extending from the lower ends of said yieldable portions for securing said support spring to said frame, said yieldable portions each including a substantially vertical upper column section and a substantially vertical lower column section connected together by a laterally extending middle section configured to bend within a substantially vertical plane in response to downwardly directed loads.



5,346,191

HYDRAULICALLY DAMPING RUBBER ENGINE MOUNT

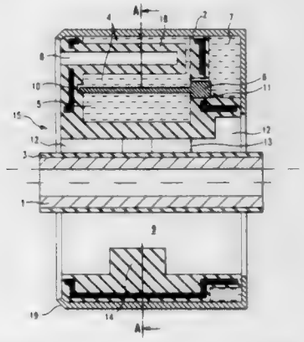
Axel Rudolph, Bensheim, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim/Bergstr., Fed. Rep. of Germany

Filed Apr. 30, 1993, Ser. No. 55,855

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1992, 4228842

Int. Cl.[5] F16F *7/00*

U.S. Cl. 267—140.12 **13 Claims**



1. Hydraulically damping engine mount comprising

an inner tube,

an outer tube surrounding said inner tube at a radial distance therefrom,

an elastomeric cushion between said inner tube and said outer tube, said cushion having therein first and second liquid filled working chambers which are hydraulically connected by a passage, said first and second liquid filled chambers lying between said inner tube and said outer tube,

a vibratable dividing wall separating said first and second working chambers, and

elastomerically deformable pocket means in said first working chamber, said pocket means defining therein a gas filled cavity which is open to atmosphere.

5,346,192

HYDRAULIC BEARING WITH ELECTROMAGNETICALLY COMPENSATED CHAMBERS

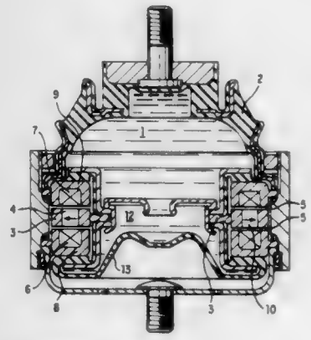
Uwe Weltin, Rimbach; Ulrich Freudenberg, Hirschberg, and Tillman Freudenberg, Fürth/Steinbach, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Feb. 8, 1993, Ser. No. 14,964

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1992, 4204070

Int. Cl.[5] F16F *15/03*

U.S. Cl. 267—140.14 **20 Claims**



1. A rubber bearing comprising:

a liquid-filled working chamber bounded by a compensating wall comprised at least partially of a material that is capable of being moved by magnetic forces and capable of moving back and forth in the direction of said working chamber;

a first magnetic coil and a second magnetic coil, each of which is capable of receiving an electric alternating current, wherein the first magnetic coil is oriented to generate a first alternating magnetic flux and the second magnetic coil is oriented to generate a second alternating magnetic flux; and

a permanent magnet arrangement, comprising at least one permanent magnet, generating a permanent magnet magnetic flux, whereby said permanent magnet arrangement is oriented so that the first alternating magnetic flux strengthens the permanent magnet magnetic flux on one side of said compensating wall and the second alternating magnetic flux weakens the permanent magnet magnetic flux on an opposite side of said compensating wall.

5,346,193

APPARATUS FOR SUCKING BY NEGATIVE PRESSURE

Shinsuke Kitagawa, Fuchu, Japan, assignor to Kitagawa Kogyo Co., Ltd., Hiroshima, Japan

Filed Sep. 22, 1992, Ser. No. 949,033

Claims priority, application Japan, Oct. 8, 1991, 3-090616[U]; Oct. 8, 1991, 3-090617[U]

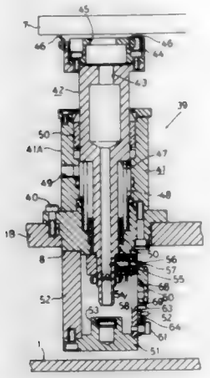
Int. Cl.[5] B25B *11/00*

U.S. Cl. 269—21 **6 Claims**

1. An apparatus for sucking an article on a table the inside of which is provided with a negative pressure recess by negative pressure, characterized in that the upper part of the table is

provided with plural sucking mechanisms each of which comprising:

a vertically movable piston the top of which is provided with a sucking pad and the inside of which is provided with a air passage from the top to the bottom, the piston being forced up by an elastic member;



a hook device clamping the piston in its descending position and releasing the clamped piston with the descent of the piston; and

an intercepting device intercepting the air passage in the piston in its descending position from the negative pressure recess.

5,346,194

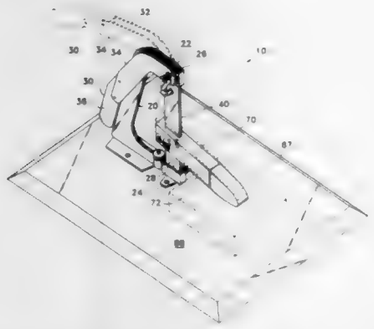
ADJUSTABLE CLAMP

Louis F. Coffin, III, San Jose, Calif., assignor to MapleTek Engineering, Inc., Sunnyvale, Calif.

Filed Jul. 7, 1993, Ser. No. 88,180

Int. Cl.[5] B25B *1/14*

U.S. Cl. 269—166 **14 Claims**



1. A carpenter's clamp for clamping a workpiece to a mounting surface comprising:

a C-shaped frame having a top receiver aperture at a top end of said frame and a bottom receiver aperture at a bottom end of said frame;

a slide bar slidably mounted in an axial direction within said top and bottom receiver apertures;

driving means comprising a handle pivotally attached to said frame for providing a downward axial force to said slide bar when lowering said handle;

over-center locking means attached to said driving means for securely locking said slide bar in a downward position after said handle is lowered from an unstable position to a stable snap-over position; and

a holding arm having a holding surface at a distal end, said holding arm being slidably mounted to said slide bar, said slide bar positioned between a pair of biasing pins on said holding arm.

5,346,195

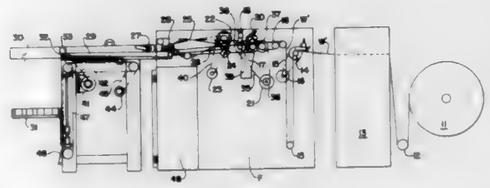
APPARATUS AND METHOD FOR INDEXING SHEETS

Edward W. Heimann, Woodridge, and Thomas E. Dash, Auroa, both of Ill., assignors to Wallace Computer Services, Inc., Hillside, Ill.

Filed Jan. 14, 1993, Ser. No. 4,526

Int. Cl.[5] B65H *41/00*

U.S. Cl. 270—52.5 **10 Claims**



1. A method for producing multi-page reports and the like which are provided in indexed, stacked form comprising the steps of

providing means at one end of a production line for delivering web means for receiving printed information,

providing backstop means at the other line end for receiving sheets cut from said web means with printed information on said sheets and arranged in indexed form for ready separation into individual reports with index sheets projecting toward said one end,

printing said web means between said ends by applying printed information thereto by printer means,

providing rotary knife means for producing report sheets wherein at least one end sheet of each report is of different length from the other sheets,

continuously advancing said web means through said knife means and transversely cutting the same, and

during said continuously advancing step cyclically changing the speed relationship of said knife means to the speed of said web means toward said knife means to develop said one end sheet and a compensating length sheet all while maintaining continuous motion with said printer means.

4. A method for producing multi-page reports and the like which are provided in indexed, stacked form comprising the steps of providing means at one end of a production line for delivering web means for receiving printed information, providing backstop means at the other line end for receiving sheets from said web means with printed information on said sheets and arranged in indexed form for ready separation into individual reports with index sheets projecting toward said one end, printing said web means between said ends by applying printed information thereto by printer means, providing rotary knife means for producing report sheets wherein at least one end sheet of each report is of different length from the other sheets, advancing said web means through said knife means and transversely cutting the same, and cyclically changing the speed relationship of said knife means to the speed of said web means toward said knife means to develop said one end sheet and a compensating length sheet all while maintaining continuous motion with said printer means, providing upper and lower belt systems defining a nip and directing said cut sheets toward and into said nip, and shingling said cut sheets thereafter.

5,346,196

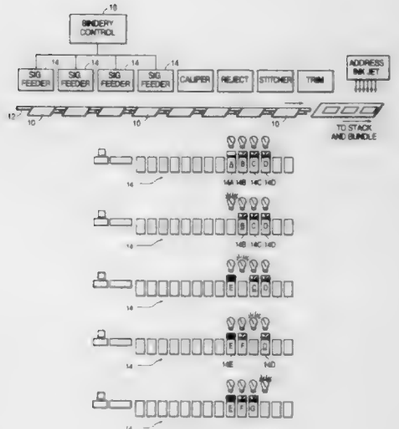
CYCLE BINDING LINE WITH SIGNATURE REPLACEMENT INDICATOR MEANS

William E. Nussbaum, Chevy Chase, Md., and Michael J. Armstrong, Arlington, Va., assignors to U.S. News & World Report, L.P., Washington, D.C.

Filed Mar. 5, 1993, Ser. No. 26,801

Int. Cl.[5] B65H *39/02*

U.S. Cl. 270—54 **7 Claims**



6. A machine for the assembly of multiple distinct editions of magazines in a continuous assembly process, said machine having a plurality of induction points for gathering signatures, wherein each edition is composed of common signatures which are common to all editions of the magazine and one or more variable signatures which differ for each different edition, the improvement comprising:

(a) means for organizing each different edition into homogeneous processing groups;

(b) a first induction point having the variable signatures for a first homogeneous processing group;

(c) a second induction point having the variable signatures for a second homogeneous processing group;

(d) means for activating the induction points having the variable signatures for the first homogeneous processing group;

(e) means for deactivating the induction points having the variable signatures for the first processing group when the first processing group has been completed and, without stopping the assembly process, means for activating the induction points having the variable signatures for the second homogeneous processing group;

(f) means for replacing without stopping the assembly process the variable signatures at the first induction point with signatures of a processing group different from the signatures of the first processing group.

5,346,197

MANUAL RECORDING PAPER INSERTION MECHANISM

Masatoshi Takano, Akikawa, and Satoshi Hokamura, Niza, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 909,020, Jul. 6, 1992, abandoned. This application Oct. 6, 1993, Ser. No. 132,214

Claims priority, application Japan, Jul. 5, 1991, 3-261484

Int. Cl.[5] B65H *3/44*

U.S. Cl. 271—9 **23 Claims**

1. A paper cassette which is detachably attached to a printer, said printer including a feed member for individually feeding paper, said cassette comprising:

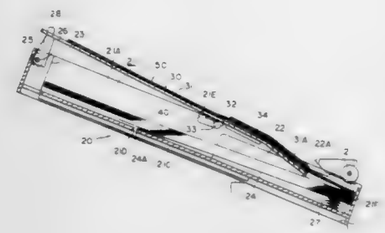
a cassette body having side walls;

a tray member provided in said cassette body, for receiving a plurality of papers in a stacked state, said feed member being disposed above one end of said tray member for individually feeding the paper stacked on said tray member in a predetermined direction;

a lift member disposed on a bottom surface of said cassette body below said one end of said tray member for urging said one end toward said feed member, thereby causing said stacked papers to be pressed against said feed member;

a guide member disposed above said tray member having one end adjacent to said feed member, said one end of said guide member being swingable towards said one end of said tray member, said guide member being swingably supported by said side walls of said cassette body; and

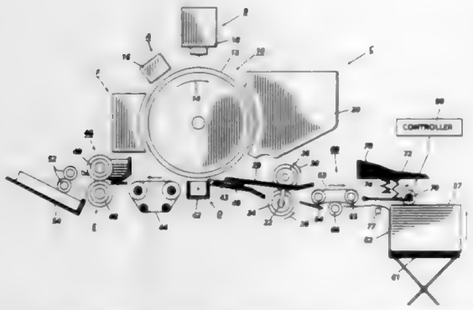
means for swinging one end of said tray member away from said feed member when said one end of said guide member is swung towards said one end of said tray member in such a fashion that a spacing is provided between said feed member and the plurality of stacked papers, which allows other papers, distinct from the stacked papers, to be placed in said spacing and to be fed by said feed member, a top surface of said guide member comprising means for supporting the other papers to be fed by said feed member.



5,346,198

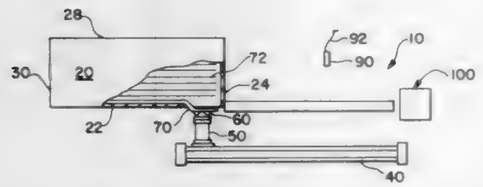
Patent Not Issued For This Number

5,346,199
ADJUSTABLE NUDGER ROLL NORMAL FORCE USING MULTIPLE SPRINGS
Michael J. Martin; Kathleen M. Martin, both of Hamlin; Russell J. Sokac, Rochester, and Lloyd W. Durfey, Palmyra, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 1, 1993, Ser. No. 143,953
Int. Cl.[5] B65H *7/08*
U.S. Cl. 271—110 **14 Claims**



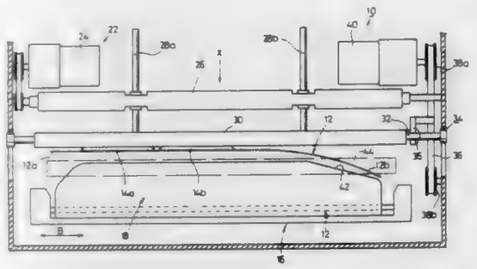
4. A friction retard feeder apparatus for feeding substrates from a stack to a retard mechanism, comprising:
an elevator mechanism adapted to support a substrate stack and incrementally index the substrate stack upwardly as required;
a pivotable shaft;
an adjustable nudger roll mounted on said pivotable shaft;
a first spring mounted to apply a normal force to said nudger roll in order to press said nudger roll against the substrate stack so as to provide sufficient normal force of nudger roll against the substrate stack to feed substrates therefrom; and
a second spring mounted to be compressed by pivotal movement of said nudger roll and apply an additional normal force on the substrate stack only after said first spring has been compressed a predetermined amount by upward movement of the substrate stack by said elevator mechanism.

5,346,200
CONVERTED CONTAINER END BAG SEPARATOR
Steve Sarvik, Oxie; Gert Hellstrom, and Denniver Olsson, both of Malmo, all of Sweden, assignors to BallCorporation, Muncie, Ind.
Filed Mar. 17, 1993, Ser. No. 32,673
Int. Cl.[5] B65H *3/08*
U.S. Cl. 271—102 **23 Claims**



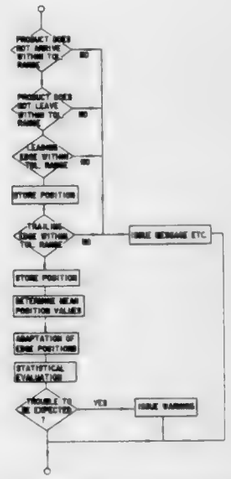
1. An assembly for separating a cylindrical bag, sized to receive container ends, from a stack of such cylindrical bags at a first location, and for positioning the cylindrical bag to a second location to receive a stick of nested container ends therein, said assembly comprising:
a longitudinally extending bag magazine having a bottom portion for supporting a stack of cylindrical bags, said bottom portion having a cutout section;
a gripping member for engaging a cylindrical bag in said magazine at said first location;
an elongated bag support for longitudinally supporting the cylindrical bag when the bag is at said second location, said second location being above said bag support and completely separate from said first location; and
means for moving said gripping member to position a cylindrical bag from said first location to said second location, wherein a cylindrical bag is engageable by said gripping member through said cutout section at said first location, and wherein said second location is longitudinally displaced from said first location, whereby movement of said gripping member to position a cylindrical bag from said first location to said second location slidably removes the cylindrical bag from said bag magazine.

5,346,201
SHEET FEEDING DEVICE
Toshihiro Suya, Minamiashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Division of Ser. No. 805,945, Dec. 12, 1991, Pat. No. 5,246,220.
This application May 26, 1993, Ser. No. 67,582
Claims priority, application Japan, Dec. 14, 1990, 2-402476; Dec. 14, 1990, 2-402477; Dec. 14, 1990, 2-402478
Int. Cl.[5] B65H *3/46*
U.S. Cl. 271—104 **6 Claims**



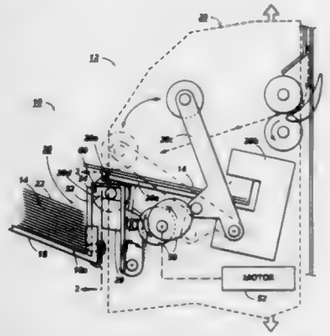
1. A device for feeding sheets one by one, said device comprising:
sheet separating means disposed facing a first end of a leading edge in the withdrawal direction of an uppermost sheet of stacked sheets, for taking out the uppermost sheet; and
engaging means located at a sheet placement portion, for supporting the leading edges in the withdrawal direction of said stacked sheets, said engaging means having a cut-away portion facing a second end of the leading edge of the uppermost sheet, said second end being on an opposite side of the uppermost sheet with respect to said first end, said second end being spaced away from said sheet separating means, said cut-away portion being formed to prevent the second end of the uppermost sheet from contacting said engaging means due to hang down of the uppermost sheet.

5,346,202
METHOD OF MONITORING THE TRANSPORT OF PRINT PRODUCTS IN A PRINTING-FIELD MACHINE
Manfred Jurkewitz, Wiesloch, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany
Filed Apr. 1, 1993, Ser. No. 41,838
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1992, 4210957
Int. Cl.[5] B65H *7/02*
U.S. Cl. 271—258 **2 Claims**



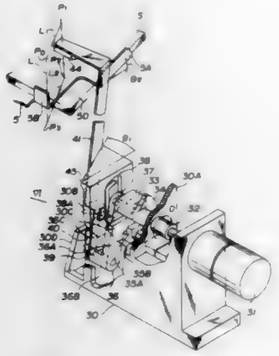
1. Method of monitoring the transport of print products in a printing-field machine, which includes:
by means of a transport device, conveying similar print products one after the other past at lest one stationary detection system for detecting a leading edge and a trailing edge of the print product,
by means of a position-measuring device, continuously determining the position of the print product with respect to a fixed location of the machine, feeding signals from the detection system and from the position-measuring device to a control device containing a computer,
continuously determining the detected position of the print product with the control device with respect to a reference position based upon the signals from the detection system and the position-measuring device, and
generating, in the control device, a trouble signal for displaying transport troubles based upon a deviation of the actual position from the reference position of the print produce, the trouble signal being generated in accordance with the position of the print product, based upon a mean value averaged over a defined number of print products,
the method which further comprises the steps of:
in a first step, forming, in the control device, monitoring zones for the leading and trailing edges of the print product, for a zone free of a print product and for a print-product zone, by initially determining the positions of the leading and trailing edges over a defined number of print products and storing them in the control device, by, furthermore, forming means values of the measured position values of the leading and trailing edges, determining whether the mean values exceed a given tolerance range; if the tolerance range is exceeded and if the detection system does not produce a signal after the transport device has moved a given distance, re-determining the positions of the leading and trailing edges over a further defined number of print products and storing the re-determined positions in the control device until the mean vales are within the tolerance range and, thereafter, defining the monitoring zones in which the signal generated by the detection system for the respective zones may be present;
in a second step, determining the actual positions of the edges of all further print products and checking as to whether the respective edges are within the given monitoring zone for the respective edge, as to whether the print product is within the print-product zone, as to whether the print product is really not within the print-product-free zone, and quickly stopping the machine if the outcome of the checking is negative;
determining the spread of the position values of the edges and comparing it with a limit value; generating a warning signal if the limit value is exceeded; and repeating the foregoing method steps if the change in the transport sped exceeds a defined amount.

5,346,203
HIGH CAPACITY SHEET STACKING SYSTEM WITH VARIABLE HEIGHT INPUT AND STACKING REGISTRATION
Denis J. Stemmle, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Aug. 30, 1993, Ser. No. 113,004
Int. Cl.[5] B65H *39/10*
U.S. Cl. 271—288 **10 Claims**



1. A high capacity sheet stacking and registration system for stacking output sheets of a reproduction apparatus in at least one stacking tray wherein said stacking tray is inclined so that sheets stacked therein move towards a stacking end for stacking registration; comprising:
a vertically repositionable sheet input feeder for feeding sheets into said stacking tray for stacking therein;
said sheet input feeder being vertically movable upwardly with increasing stack height in said stacking tray to change the vertical position at which it feeds sheets into said stacking tray in correspondence with said increasing stack height;
and a vertically repositionable sheet stacking registration edge adjacent said stacking end of said inclined stacking tray;
said vertically repositionable sheet stacking registration edge being operatively controlled in coordination with said vertically repositionable sheet input feeder to increase the effective height of said stacking registration edge as the stack height in the stacking tray increases without interfering with the continuing feeding of further sheets into said stacking tray by said vertically repositionable sheet input feeder.

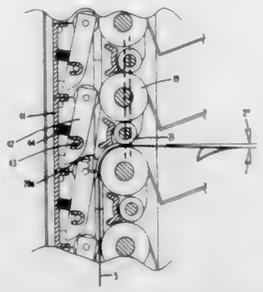
5,346,204
SHEET ARRANGING DEVICE AND SHEET SORTER
Toshio Endoh; Hiroshi Tobita, and Hiroshi Yamamoto, all of Naka, Japan, assignors to Ikegami Tsushinki Co., Ltd., Tokyo, Japan
Filed Jul. 8, 1993, Ser. No. 87,323
Claims priority, application Japan, Jul. 13, 1992, 4-185429
Int. Cl.[5] B65H *39/10, 9/00*
U.S. Cl. 271—294 13 Claims



1. A sheet arranging device for properly arranging sheets on a tray in the superimposed state by displacing a sheet in a first predetermined direction, comprising;
an arm having a frictional member disposed at the uppermost end thereof, said frictional member being brought in contact with the upper surface of a sheet with a predetermined intensity of frictional force,
first displacing means for annularly displacing said frictional member to assume a first operative state or a second operative state, said first operative state being such that said frictional member is brought in contact with the upper surface of the sheet, and said second operative state being such that said frictional member is not brought in contact with the upper surface of the sheet, said first displacing means comprising:
a main body having a first annular guide groove and a second guide groove formed thereon at predetermined positions thereof, said second guide groove extending in a second predetermined direction,
a movable member having said arm operatively secured thereto, said movable member including a first pin at one end and a second pin at the other end thereof, said first pin being displaceably received in said first guide groove, and said second pin being displaceably received in said second guide groove, and
second displacing means for displacing said first pin along said first guide groove, and
guiding means for guiding the movement of said frictional member so as to allow said frictional member to move substantially in parallel with said first predetermined direction while said frictional member is held in said first operative state.

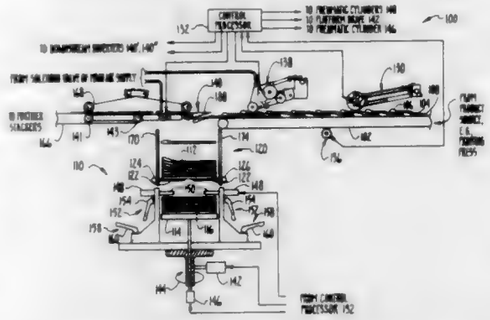
5,346,205
SORTER HAVING PIVOTABLE DIVERTER GATES WITH NIP ROLLERS AND DIVERTER MODULE ASSEMBLY THEREFOR
Frederick J. Lawreance, Tustin, Calif., assignor to Gradco (Japan) Ltd., Tokyo, Japan
Filed Jun. 7, 1993, Ser. No. 72,028
Int. Cl.[5] B65H *39/10*
U.S. Cl. 271—297 11 Claims

1. In a sheet receiver apparatus comprising a plurality of sheet receiving trays, means for supplying sheets to said trays from a printing machine, including a driven sheet feed roll assembly and a pressure applying assembly in opposing relation to apply sheet feeding pressure to sheets between said assemblies and defining a sheet feed path therebetween: the improvement wherein said driven sheet feed roll assembly includes a plurality of driven feed rolls and normally closed pivotal gates associated with said driven feed rolls spaced along said feed path in the direction of sheet feed, drive shafts for said driven feed rolls extending horizontally, said gates



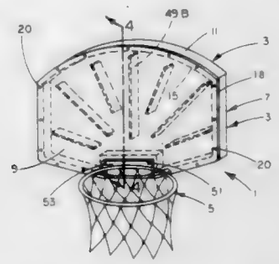
being pivotally supported on said drive shafts and forming a substantially planar guide surface between said driven feed rolls at one side of said feed path, means for pivotally opening said gates to deflect sheets towards a tray from said feed path, and nip rolls carried by said gates and engaging said driven feed rolls between said feed path and said tray to carry the deflected sheet to said tray.

5,346,206
PROCESSING A STREAM OF IMBRICATED PRINTED PRODUCTS INTO SUCCESSIVE STACKS
Horst Steinhart, Huntington Beach, Calif., assignor to Rima Enterprises, Inc., Huntington Beach, Calif.
Filed Jan. 2, 1992, Ser. No. 816,189
Int. Cl.[5] B65H *31/24*
U.S. Cl. 271—305 51 Claims



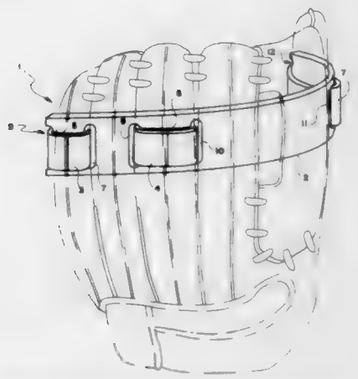
1. A product handling system for an imbricated stream of products, each product having at least one connected edge, comprising:
a plurality of product stacking bins wherein each stacking bin includes a product size adjustment device;
a conveyor for moving the products from a product source to a first one of the stacking bins;
a gapper for selectively gapping the products on the conveyor, thereby providing a plurality of gapped imbricated product streams;
a plurality of diverters wherein each diverter selectively connects one stacking bin to the next stacking bin so that the stacking bins are serially connected, each diverter comprising a wedge connected to an actuating device coplanar to the conveyor in a low-profile assembly; and
a control processor for controlling the activation of the gapper and the diverters;
whereby the combination of the low-profile diverter and the product size adjustment device allows for a plurality of product types to be quickly stacked in the plurality of stacking bins.

5,346,207
ILLUMINATED BACKBOARD
Calvin Heinen, 23822 Charlesburg Rd., Kiel, Wis. 53042
Filed Jul. 12, 1993, Ser. No. 89,321
Int. Cl.[5] A63B *63/08*
U.S. Cl. 273—1.5 R 20 Claims



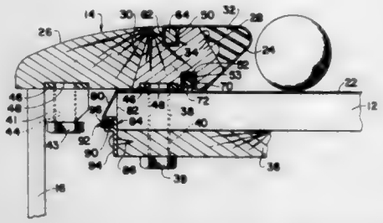
1. An illuminated backboard comprising:
a. an opaque frame having a flat back wall and a peripheral wall upstanding from the back wall, the peripheral wall having a predetermined outline, a front surface, and a bottom portion;
b. a translucent front panel attached to the front surface of the frame peripheral wall and having an outline substantially similar to the outline of the frame peripheral wall, the front panel cooperating with the frame to define a cavity;
c. a hoop joined to the frame; and
d. light means secured to the frame in the cavity proximate the hoop for illuminating the front panel.

5,346,208
BASEBALL GLOVE TRAINING DEVICE
Albert T. Wood, Sr., Rd. 1, Box 481, Felton, Del. 19943
Filed May 10, 1993, Ser. No. 59,124
Int. Cl.[5] A63B *71/02*
U.S. Cl. 273—26 C 3 Claims



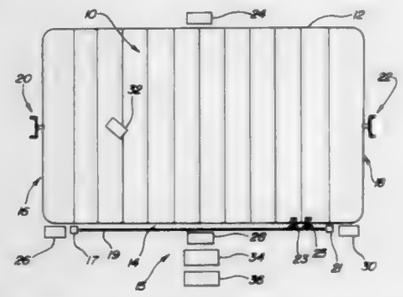
1. A baseball glove training device comprising:
a semi-cylindrical solid piece; and
means for attaching said semi-cylindrical solid piece to a back portion of a glove so as to prevent the glove from being closed, wherein said semi-cylindrical solid piece further comprises a first groove located at one end thereof and a second groove located at the other end thereof opposite said one end.

5,346,209
SYSTEM FOR COVERING POOL AND BILLIARDS TABLES
Timothy D. Kring, 1224 Treasure Cay Ct., Punta Gorda, Fla. 33950
Filed Jul. 19, 1993, Ser. No. 92,723
Int. Cl.[5] A63D *15/00*
U.S. Cl. 473—32 15 Claims



1. A system for covering the elongate rail element mounted along the edge of a pool or billiards table, said system comprising:
a cloth cover that is wrapped about an inside, cushioned edge of said rail element, said cover including upper and lower sections;
an upper groove formed longitudinally in an upper surface of said rail element for receiving said upper section of said cover;
first spline means that are received in a relatively tight fit in said upper groove to hold said upper section of said cover therein;
a lower groove formed longitudinally in a bottom surface of said rail element; an elongate channel member that is received by and attached within said lower groove for receiving said lower section of said cover; and
second spline means that are received in a relatively tight fit in said channel member to hold said lower section of said cover therein.

5,346,210
OBJECT LOCATOR SYSTEM
Reinhold E. Utke; John L. Eidsness; Dale P. Van de Loo; Gary L. Ellingson, all of Moorhead, Minn., and Joel T. Aslakson, Fargo, N. Dak., assignors to Teem Systems, Inc., Moorhead, Minn.
Filed Aug. 28, 1992, Ser. No. 937,477
Int. Cl.[5] A63B *61/00*
U.S. Cl. 273—55 R 31 Claims



1. An object locating system for locating a gaming ball relative to a playing field, said object locating system comprising:
a calibration source positionable relative to the playing field, said calibration source operable to emit an ultrasonic signal at a first frequency;
an object marking unit positionable relative to the playing field and relative to said gaming ball, said object marking

unit operable to emit an ultrasonic signal at substantially the first frequency and a radio frequency signal at a second frequency, wherein the calibration source is further operable to receive the radio frequency signal from the object marking unit and discontinue emitting the ultrasonic signal upon receipt of the radio frequency signal;

a plurality of sensors positionable relative to the playing field, each of said sensors operable to receive the ultrasonic signal from either the calibration source or the object marking unit and convert the ultrasonic signal into a proportionate electrical signal; and

a processing unit operable to receive the electrical signals from each of the sensors and measure a time delay between ultrasonic signals received from at least two of the sensors.

5,346,211

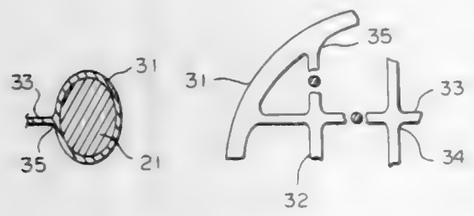
GAME RACKET

Li-Min Ou, and Chien-Der Lin, both of No. 1-3, Lane 251, Tong-Yeang Rd., Feng-Yuan City, Taichung, Taiwan

Filed Jun. 24, 1993, Ser. No. 80,812

Int. Cl.[5] A63B *51/04*

U.S. Cl. 273—73 C **17 Claims**



1. A game racket comprising a head frame and a handle extending downwards from a bottom end of said head frame; wherein said head frame further has a grid made of a plastic material of excellent elasticity and structural strength by injection molding in a molding tool in which said head frame is disposed, said grid having a wrapping portion of an appropriate thickness, said wrapping portion wrapped around an outer peripheral surface of said head frame, said grid having a ball-striking surface made up of a plurality of horizontal strings and longitudinal strings,

wherein said longitudinal strings and said horizontal strings intersect to form a plurality of intersections, each of which has four corners provided respectively with a reinforcing portion of arcuate construction; and wherein said longitudinal strings and said horizontal strings meet respectively with an inner circumferential surface of said wrapping portion to form a plurality of connecting places provided respectively on said inner circumferential surface thereof with a reinforcing portion of arcuate construction at said connecting places.

5,346,212

RACKET FOR BALL GAMES AND STRING PORTION OR STRING THEREFOR

Siegfried Kuebler, Mozartstr. 17, W-7770 Überlingen, Fed. Rep. of Germany

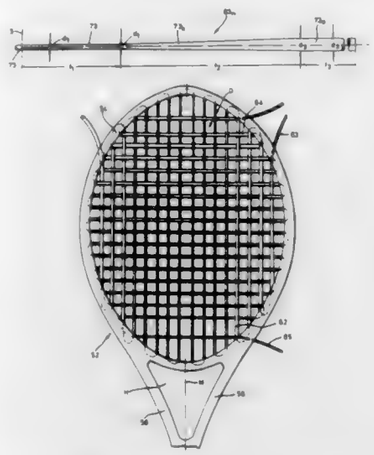
Filed Feb. 11, 1993, Ser. No. 16,530

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1992, 4207377; Aug. 4, 1992, 4225669

Int. Cl.[5] A63B *51/02*

U.S. Cl. 273—73 D **16 Claims**

1. A racket for ball games, which comprises: a stringing frame having a string area with a middle region thereof; a stringing surface in said frame comprising mutually crossing string lengths in a first and second direction, wherein said string lengths are sections of at least one longer string portion, at least some of said string lengths having different lengths in said frame; wherein said string sections in one direction in the middle region of said stringing surface have different cross-sections than the shortest string section in said direction; and wherein at least one of said string portion and string section is of varying cross-section.



5,346,213

GOLF CLUB HEAD

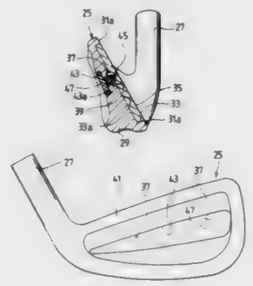
Magoichi Yamada, Tokyo, Japan, assignor to Daiwa Golf Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1993, Ser. No. 8,494

Claims priority, application Japan, Jan. 23, 1992, 4-001954[U]

Int. Cl.[5] A63B *53/04*

U.S. Cl. 273—78 **19 Claims**



1. A golf club head comprising:

an iron main body including integral face, back and sole portions;

a face plate made of synthetic resin and attached to said face portion for defining a hitting surface;

a support pin inserted into said main body from said back portion, threadingly engaged with said face plate and prevented from being exposed on said hitting surface; and

cover means provided on said back of said support pin wherein said cover means is formed of a flexible member.

8. A golf club head comprising:

an iron main body including integral face, back and sole portions;

a face plate made of synthetic resin and attached to said face portion, said face plate defining a first outer configuration around its perimeter, wherein said back portion is formed with a concave area defining a second outer configuration around its perimeter, said concave area being located at a position of said back portion opposite a position of said face plate on said face portion, and wherein said first outer configuration is substantially the same as said second outer configuration.

5,346,214

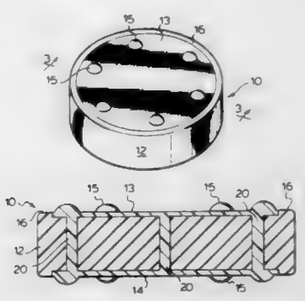
PUCK FOR USE BY IN LINE ROLLER SKATE HOCKEY PLAYERS

Todd Bruhm, 250 Woodland Acres Cres., Maple, Ontario, Canada L6A 1G1

Filed Oct. 25, 1993, Ser. No. 140,438

Int. Cl.[5] A63B *71/00*

U.S. Cl. 273—128 R **3 Claims**



1. A game piece for use by players using in-line roller skates on high friction surfaces such as roadways and streets comprising in combination; a disc shaped body having planar and parallel end faces and a cylindrical peripheral wall; said game piece being formed of hard rubber and having disc shaped hard plastic riding members covering said end faces to provide relative friction free sliding surfaces thereto;

said end face disc members being held together one with the other by hard plastic rivets passed through the game piece body and integrally formed with the disc face members; and having a lip formed and extending upwardly around the edge of each end piece of the game piece rubber body, to maintain with the action of the rivets, the riding surface members in position on the game piece when stuck by a player.

5,346,215

THREE-DIMENSIONAL PUZZLE

Sabine Asch, Heilbronner Strasse 100, 7120 Bietigheim-Bissingen, Fed. Rep. of Germany

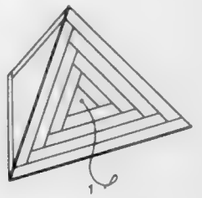
PCT No. PCT/EP91/01614, § 371 Date Feb. 18, 1993, § 102(e) Date Feb. 18, 1993, PCT Pub. No. WO92/03199, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 24, 1991, Ser. No. 975,535

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1990, 9012335[U]

Int. Cl.[5] A63F *9/12*

U.S. Cl. 273—155 **13 Claims**



1. A three-dimensional puzzle including connected together puzzle elements, said puzzle elements including a plurality of truncated pyramids connected to one another in ascending size order to form a helical band which widens from top to bottom when in an unassembled condition and to form a tetrahedron when in an assembled condition.

5,346,216

GOLF CLUB HEAD

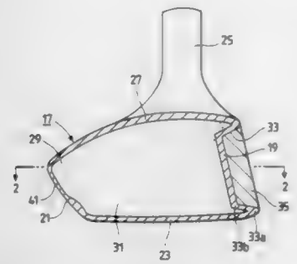
Yuichi Aizawa, Tokyo, Japan, assignor to Daiwa Golf Co., Ltd., Higashikurume, Japan

Filed Feb. 22, 1993, Ser. No. 20,974

Claims priority, application Japan, Feb. 27, 1992, 4-009228[U]

Int. Cl.[5] A63B *53/04*

U.S. Cl. 273—167 H **27 Claims**



1. A golf club head, comprising:

a hollow shell including an opening portion and a cup portion sharing a first common perimeter, said opening portion extending into said cup portion and comprising at least one surface;

a bottom sharing a second common perimeter with said opening portion, said first common perimeter being dimensionally larger than said second common perimeter; and

a face plate received in and substantially filling a recess defined by the opening portion, said face plate defining a striking surface for striking a golf ball;

wherein said first common perimeter circumscribes said striking surface, and said opening portion, said cup portion and said bottom enclose an inner chamber.

5,346,217

HOLLOW METAL ALLOY WOOD-TYPE GOLF HEAD

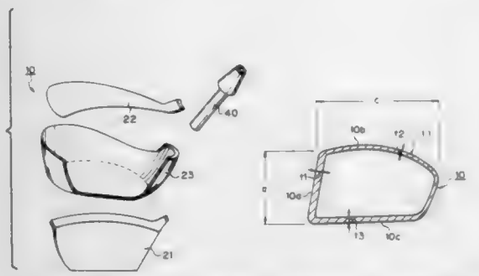
Kazuhiro Tsuchiya, Hamamatsu; Toshiharu Hoshi, Shizuoka; Atsushi Tsuchida, and Kenzaburo Iijima, both of Hamamatsu, all of Japan, assignors to Yamaha Corporation, Japan

Filed Feb. 6, 1992, Ser. No. 832,057

Claims priority, application Japan, Feb. 8, 1991, 3-039227; Jun. 14, 1991, 3-170720

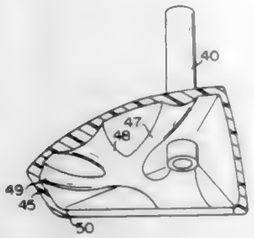
Int. Cl.[5] A63B *53/04*

U.S. Cl. 273—167 R **5 Claims**



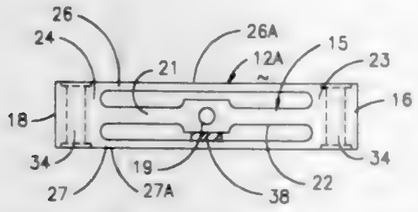
1. A metal wood type golf head, comprising a hollow metallic shell having a face, a crown, a sole and a volume defined by its external dimensions, said face, said crown and said sole each having respective thicknesses, said thickness of said face being in a range from 2 to 4 mm and said volume being 190 cc or larger, at least a part of said face being made of Ti alloy of a composition which contains 3 to 6% by weight of Al, 2 to 4% by weight of V, 1 to 3% by weight of Mo. 1 to 3% by weight of Fe and Ti in balance.

5,346,218
METAL WOOD GOLF CLUB WITH PERMANENTLY ATTACHED INTERNAL GATES
Michael Wyte, Culver City, Calif., assignor to Wilson Sporting Goods Co., Chicago, Ill.
Filed Sep. 28, 1993, Ser. No. 127,813
Int. Cl.[5] A63B *53/04*; **B22C** *9/04*
U.S. Cl. 273—167 R **5 Claims**



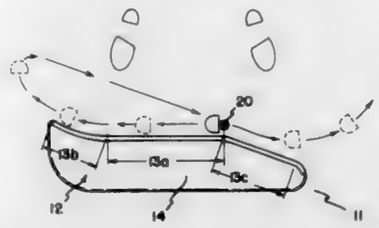
1. A cast metal wood clubhead having a face wall, a toe wall, a heel wall, a top wall, and a side wall extending from the toe wall to the heel wall below the top wall, each of said walls having exterior and interior surfaces to provide said clubhead with an interior chamber, a portion of said toe wall or heel wall providing a gate area, at least one internal gate extending from said gate area to the interior surface of the top wall and extending along the interior surface of the top wall.

5,346,219
GOLF PUTTER HEAD
Richard J. Pehoski, 133 Maplewood Dr., Bolingbrook, Ill. 60440, and Joseph A. Pessetti, 2910 N. Maple, Franklin Park, Ill. 60131
Filed May 7, 1993, Ser. No. 57,875
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—168 **2 Claims**



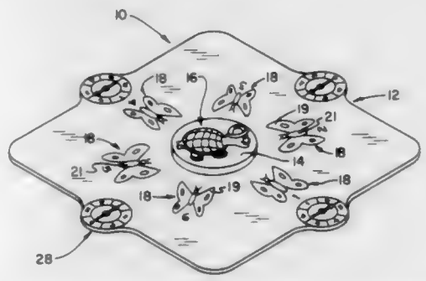
1. A golf putter head, said putter head being of symmetrical configuration and having a bottom and a top, said putter head comprising an elongated rectangular center member, first and second outer side members each having ends, said center member and said side members being of substantially the same height, the ends of said side members being affixed to respective opposite sides of said center member to form relative rigid end portions, said center member having reduced portions on both sides thereof to form two symmetrical spacings each extending from the bottom to the top of said putter head between said reduced portions and said outer side members, said spacings being uniform from the bottom to the top of said putter head, and said spacings enabling said first and second outer members to be less rigid intermediate their ends whereby when either of said outer side members strike a ball there is flexure which geometrically tends to cradle and guide the ball in the line directed.

5,346,220
GOLF CLUB SWING PRACTICE DEVICE
Patrice A. Cooper, 9325 Olympia Dr., Eden Prairie, Minn. 55347, and H. Jo-Ann Lindsay, 2 Merilane, Edina, Minn. 55436
Continuation of Ser. No. 988,234, Dec. 9, 1992, abandoned. This application Sep. 28, 1993, Ser. No. 128,563
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—191 R **17 Claims**



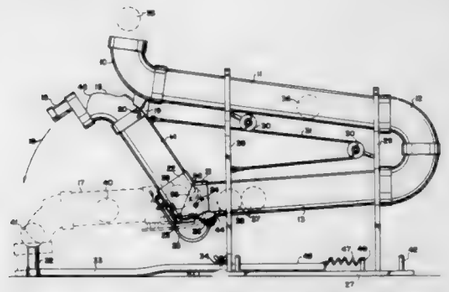
16. A device for guiding a golf club through a proper golf swing, the device being adapted to be supported by the ground or floor in a practice tee area, and comprising:
- a first guiding section that is substantially straight and capable of being oriented along the line of intended golf ball movement;
- a second guiding section that projects rearwardly from the first guiding section along a line that curves away from said line of intended golf ball movement on one side thereof; and
- a third guiding section that projects forwardly from the first guiding section along a substantially straight line that extends angularly away from the line of intended golf movement on the opposite side thereof.

5,346,221
COLOR AND NUMBER GAME APPARATUS
Gladys E. Gray, 14255 Lewis Rd., Clio, Mich. 48420
Filed Dec. 27, 1993, Ser. No. 172,926
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—243 **10 Claims**



1. A new and improved color and number game apparatus, comprising:
- a board assembly which includes a central portion adapted to receive a simulated snapping turtle assembly, said board assembly including a plurality of numbered pairs of simulated butterfly-wing-receiving portions arrayed circumferentially around said simulated snapping turtle assembly,
- a simulated snapping turtle assembly which includes a simulated turtle shell housing assembly and a simulated head member, said simulated snapping turtle assembly adapted to be received by said central portion of said board assembly,
- a plurality of separate, colored pairs of simulated butterfly wing assemblies adapted to be placed upon said numbered pairs of simulated butterfly-wing-receiving portions of said board assembly, and
- a chance selection device, operated by a player, for selecting a number that corresponds to a numbered pair of said simulated butterfly-wing-receiving portions of said board assembly.

5,346,222
GOLF BALL TEEING APPARATUS
Walter C. Luther, Sr., Rte. 4, Box 453, Lake City, Fla. 32055
Filed Apr. 8, 1993, Ser. No. 44,033
Int. Cl.[5] A63B *69/36, 57/00*
U.S. Cl. 273—201 **18 Claims**

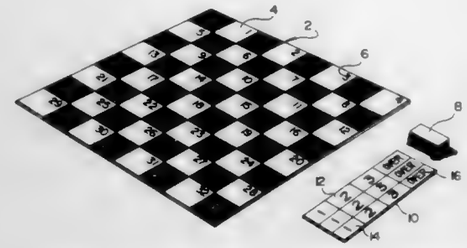


1. A golf ball teeing apparatus comprising a base and a golf ball dispensing magazine mounted to said base and adapted to store a plurality of golf balls and feed them by gravity one at a time to an exit port, a pivotable tubular arm having a proximal end and a distal end and being hingedly attached at said proximal end to said exit port and having an open mouth at said distal end for dispensing a golf ball therefrom, said mouth being adapted and arranged to deposit a golf ball being discharged from said mouth onto a tee centered with respect to said mouth, automatic stop means at said exit port for preventing a golf ball from freely passing into said pivotable arm when it is pivoted downwardly, and by-pass means actuated by moving said pivotable arm downwardly to permit one golf ball to by-pass said stop means and roll to said mouth.

5,346,223
THREAD WOUND GOLF BALL
Akihiko Hamada, Kakogawa, and Akira Kato, Kobe, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Apr. 28, 1993, Ser. No. 53,234
Claims priority, application Japan, Apr. 28, 1992, 4-135773
Int. Cl.[5] A63B *37/00*
U.S. Cl. 273—227 **9 Claims**

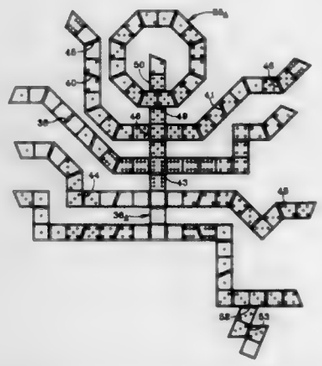
1. A thread wound golf ball comprising a core, a thread rubber layer formed on said core and a cover layer covering the thread rubber layer, the thread rubber constituting said thread rubber layer being obtained from a rubber latex blend comprising a depolymerized high-cis polyisoprene rubber latex.

5,346,224
PENALTY CHECKERS GAME
Karl G. Remus, 215 - 201 Joseph Street, Pembroke, Ontario, Canada
Filed Nov. 12, 1993, Ser. No. 150,807
Int. Cl.[5] A63F *3/02*
U.S. Cl. 273—260 **9 Claims**



1. A checkers type board game comprising a checkers type board having aligned vertical and horizontal rows including diagonal rows of playing spaces, each playing space carrying a distinctive identification code, checkers playing pieces, and a plurality of cards, each carrying a different identification code on a side corresponding to one of the space identification code, whereby during play of the game, selection and display of the identification code of a card is to result in removal of any playing piece situated on the space having an identification code corresponding to that of the selected card.

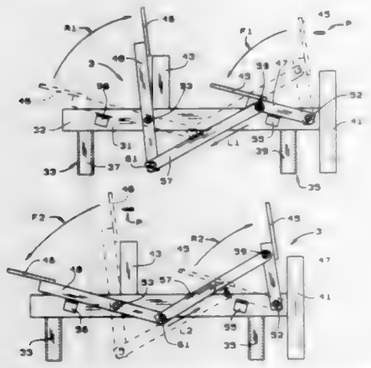
5,346,225
TILE GAME AND METHOD OF PLAYING SAME
Jack Walling, 500 Aurora-Hudson Rd., Aurora, Ohio 44202
Filed Dec. 17, 1993, Ser. No. 170,000
Int. Cl.[5] A63F *9/20*
U.S. Cl. 273—294 **9 Claims**



1. Tiles for a tile placement game, said tiles comprising:
- a pair of laterally spaced, parallel, side edges and a pair of longitudinally spaced end edges extending transversely between said side edges to define an obverse playing face;
- said playing surface divided into two indicia-presenting portions by a divider means extending substantially transversely between the side edges;
- said indicia-presenting portions being both of rectangular outline on a first plurality of said tiles;
- said indicia-presenting portions being one of rectangular outline and one of trapezoidal outline on a second plurality of said tiles;
- said indicia-presenting portions being both of trapezoidal outline on a third plurality of said tiles;
- said tiles being combined to provide a pool of tile for a single game using all of the tiles regardless of the shape of the indicia-presenting portions; and,

preselected indicia provided on said indicia-presenting portions.

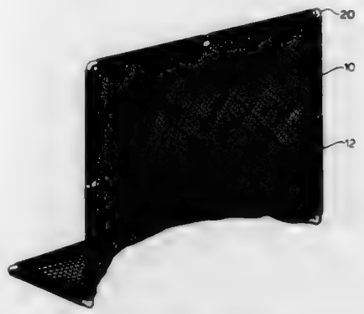
5,346,226
RESET TARGET SYSTEM
James E. Block, Franklin, Mo., assignor to Shotstop Target Systems, Inc., Union, Mo.
Filed Oct. 7, 1993, Ser. No. 132,883
Int. Cl.[5] F41J *7/04*
U.S. Cl. 273—388 **5 Claims**



1. A resetting target assembly for pistol or rifle target practice comprising:
an upright frame for supporting the target assembly;
a cross member on said upright support frame;
a first target plate and a second target plate, substantially longitudinally aligned on said cross member, the second target plate being arranged substantially behind the first target plate;
a linkage means cooperatively connecting said first target plate and said target plate capable of translating falling energy generated by said first plate when said first plate is struck by a projectile to raise the second target plate from a horizontal position to a vertical position, and correspondingly, to translate falling energy of said second plate generated when said second plate is struck by a projectile to raise said first target plate from a horizontal to a vertical position; and
a first shank pivotally mounting said first target plate to said cross member, and a second shank pivotally mounting said second target plate to said cross member, and said linkage means interconnecting between said first and second shanks, said second shank being longer than said first shank, to facilitate the usage of the energy generated when said first and second target plates are struck by a projectile to provide a raising of one of said plates from a horizontal to a vertical position for resetting of a target for practice.

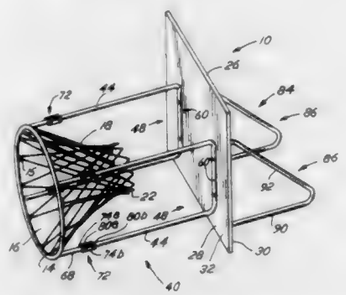
5,346,227
GOAL NET
Roger Amram, Willowdale, and Michael Lamarche, Orillia, both of Canada, assignors to Fun Bunch Inc., Willowdale, Canada
Filed Apr. 20, 1993, Ser. No. 48,216
Int. Cl.[5] A63B *63/00*
U.S. Cl. 273—400 **2 Claims**

1. A collapsible hockey goal net comprising
a frame having a crossbar and supported by posts and a bottom rail connected to each post, one or more of the components of the frame being comprised of two tubes detachably coupled together,
an elastic cord connecting components of the frame, and
a mesh provided along its peripheral edges with sleeves into which components of the frame are slidably received, a separate sleeve being provided for each component of the frame to which the mesh attaches with a clearance being provided between adjacent sleeves to facilitate coupling and uncoupling of connectors between frame components,
the sleeves being composed of a material which is less flexible than the mesh and having a tighter weave than the



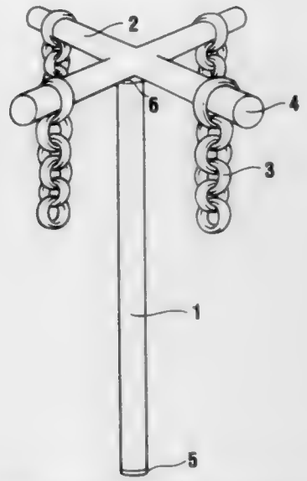
mesh, the sleeves being wide enough to permit the components of the frame to slide freely within the sleeves,
whereby adjoining components if the frame are rigidly connected when coupled together and can be uncoupled while the elastic cord retains a flexible connection between adjoining components.

5,346,228
SOCCER GOAL AND GAMING APPARATUS
James C. Offutt, Evanston, Ill., assignor to Rimball Marketing and Development, Inc., Evanston, Ill.
Filed Aug. 25, 1993, Ser. No. 111,648
Int. Cl.[5] A63B *63/02*
U.S. Cl. 273—402 **25 Claims**



1. A goal positionable on a playing surface for use with a ball, comprising,
a planar hoop having a circular aperture of a size large enough to admit passage of the ball;
a backboard having a planar front face of an area larger than the area of the circular aperture of said hoop;
a frame rigidly connecting said hoop to said backboard, said frame maintaining said hoop in a plane spaced apart from and parallel to the plane of said front face of said backboard, said frame maintaining said hoop a predetermined distance from said backboard front face; and
playing surface engaging means for engaging the playing surface and maintaining said backboard and said hoop in planes substantially perpendicular to the plane of the playing surface.

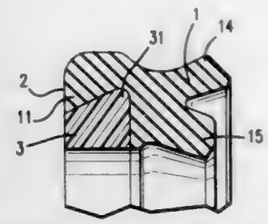
5,346,229
BALANCING STICK TOY HAVING 4 EXTENDING POLES WITH LINKED CHAINS THEREON
Willie C. Hunter, 4303 Pattontown Rd., Ooltewah, Tenn. 37363
Filed Mar. 5, 1993, Ser. No. 26,737
Int. Cl.[5] A63B *67/00*
U.S. Cl. 273—449 **1 Claim**



1. A balancing toy used to test the users ability to maintain the stick in the correct vertical balance on the tip of the finger, comprising:
an injection molded, thin, hollow, plastic stick, 36" long, having top and bottom ends, the thin, hollow plastic material is such that the stick is subjected to waving or bending motion during use to add a degree of difficulty to the toy because it exaggerates any movement the stick makes when out of the correct vertical balance;
four injection molded, plastic poles, 5' long, each pole is attached at one end of the top end of the stick, extending perpendicular thereto, spaced evenly at 90 degree angles from an adjacent pole;
four injection molded, plastic linked chains, 5' long, each one is attached at the free end of each of the four poles, where the chains extend downwardly, vertically from the end of their respective plastic poles, the chains also serve to intensify any movement that tilts the stick out of the correct vertical balance;
four rubber tips each attached to the free end of each of the four poles in order to prevent eye injury;
a plastic rounded bottom attached to the bottom of the stick to add a degree of difficulty to the toy when the stick is tilted out of the correct vertical balance, the rounded bottom makes the stick difficult to control.

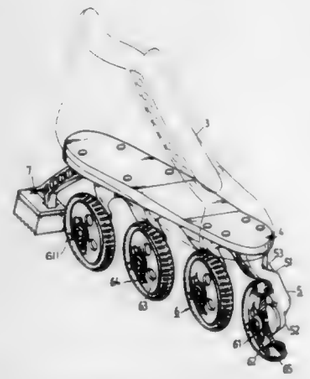
5,346,230
SEAL FOR A RECIPROCATING ROD
Herbert Schumacher, Gorxheimertal; Roland Ehmsen, and Werner Trauth, both of Weinheim, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany
Filed Mar. 18, 1993, Ser. No. 32,904
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1992, 4210540
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—152 **9 Claims**

1. A seal for sealing a gap between a reciprocating rod and a housing, wherein the seal comprises a sealing ring of elastomeric material and a guide ring of a polymer material, wherein the guide ring comprises at least one radially outwardly pointing projection whereby said projection is able to be snapped into place in a recess of the sealing ring, and wherein the sealing ring comprises a first section, a second section, and an intermediate contracted portion, wherein the first section comprises a retaining section which is compressed radially during normal operational use in a space between the guide ring and the housing, the second section comprises at least one sealing



lip, and the intermediate contracted portion comprises a contracted neck portion between said first section and said second section, wherein the contacted neck portion has a radial outward extent less than a radial outward extent of the retaining section and wherein the contracted neck portion forms a flexible hinge between said first section and said second section.

5,346,231
SKATE CONSTRUCTION WITH PRE-SET BUFFERING, SHOCK-ABSORBING AND THE TOPOGRAPHY COMPLIANCE FUNCTIONS
Diana Ho, No. 13, Tien Shui W. 6 Street, Taichung, Taiwan
Filed Jan. 27, 1993, Ser. No. 9,708
Int. Cl.[5] A63C *17/06*
U.S. Cl. 280—11.2 **3 Claims**



1. A skate having buffering, shock-absorbing and topographical complying functions comprising: a footwear, a sole plate having atop side and a bottom side, wherein the footwear is firmly affixed to the top side of the sole plate, a stop block affixed to the heel portion of the sole plate, which stop block is capable of reaching the ground during use,
a single hub suspended from the bottom side of the sole plate comprising a plurality of spaced suspended support arms, wherein each suspended support arm is made of a tough material having bending resilience and is in the form of a bow bending to one side of said skate forming an upper bend and a lower bend, a reinforcing rib connecting the upper bend of each support arm to the sole plate to reinforce the upward bending resistance of each support arm, a horizontal axle hole at the lower bend of each support arm, a plurality of buffer wheels, wherein each buffer wheel is connected to the sole plate solely by a single support arm pivotally coupled to only one side of each wheel at the axle hole via a ball bearing, each buffer wheel comprising a hub of rigid material and a ring provided

with an air valve of soft material at a proper position to provide an air pathway for an inflatable tire positioned on the wheel ring; whereby the skate may be used on various terrains, including lawns, concrete pavements and unlevelled ground, and still exhibit buffering and shock-absorbing properties.

5,346,232

WHEELBARROW POWER STRAP

Richard J. Bushon, 1335 S. Cortez Rd., Apache Junction, Ariz. 85219

Filed Apr. 8, 1993, Ser. No. 44,015
Int. Cl.[5] B62B *1/22*
U.S. Cl. 280—47.31 **2 Claims**



1. In a wheelbarrow comprising a frame having a pair of handleshafts, a wheel rotatably mounted between and to the handleshafts adjacent a first end of each of the handleshafts for supporting the wheelbarrow and allowing the wheelbarrow to be moved, each of the handleshafts having a handle adjacent a second end of the handleshaft, a material carrying bin mounted on and supported by the pair of handleshafts intermediate the ends of the handleshafts, the second ends of the handleshafts extending beyond the material carrying bin and being spaced apart from each other to enable a laborer to grasp the handles to lift one end of the wheelbarrow and move the wheelbarrow, the improvement comprising:

a flexible cross member of seat belt strapping extending between and secured to the handleshafts at a location between the handles and the material carrying bin whereby a laborer grasping the handles can place the front of his thigh against the cross member to exert a force on the wheelbarrow to initiate lifting and forward movement of the wheelbarrow using his thigh muscles to reduce any strain on the arms, shoulders and/or back of the laborer;

said cross member being secured to the handleshafts by eyebolts having looped heads secured to ends of said cross member whereby said cross member can twist to have a flat surface of the strapping pass over the thigh of the laborer for comfort and the length of the cross member can be adjusted to fit the spacing between the handleshafts.

5,346,233

SLIDER FOR ADJUSTING THE POSITION OF THE DUAL AXLES OF A SEMI-TRAILER

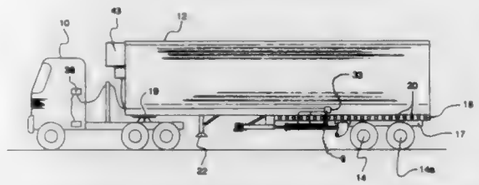
Donald W. Moser, 1720 Farmington Rd., Pottstown, Pa. 19464

Continuation-in-part of Ser. No. 525,385, May 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 335,236, Apr. 10, 1989, abandoned. This application Jan. 21, 1992, Ser. No. 822,963
Int. Cl.[5] B62D *33/08*
U.S. Cl. 280—149.2 **9 Claims**

1. In a system for adjusting the position of the dual rear axle assembly of a semi-trailer of the type having a track extending longitudinally along the bottom thereof which is provided with a longitudinal array of apertures; a slidable carriage, supporting a dual rear axle assembly having wheels at each end of its axles; said carriage being mounted on said track for sliding motion along said track to a desired position; and pin means affixed to said carriage, said pin means being extendable into said apertures to fix the position of said carriage with respect to said track and being retractable to permit sliding of said carriage along said track; the improvement comprising the combination therewith of:

braking means for holding said semi-trailer fixed while leaving said wheels free to roll along the ground;

controllable carriage-positioning means having a proximal and a distal and being affixed to said semi-trailer and



acting between said track and said carriage for selectively adjusting the longitudinal position of said carriage along said track as said wheels thereof roll along the ground said controllable carriage-positioning means comprising a control cable having position-control switch means at the distal end thereof, which switching means are operative from beside said semi-trailer to control the position of said carriage; and

pin-control means affixed to said carriage for retracting said pin means to free said carriage for sliding motion during said adjusting of said carriage position, and for selectively extending said pin means into said apertures when said carriage is in said desired position said pin-control means comprises said control cable having pin-control switch means at the distal end thereof and operable from a position beside said semi-trailer to control said pin means.

5,346,234

VEHICLE INCLUDING AN HYDRAULIC DRIVE MECHANISM

Thomas P. Kadaja, Eugene, Oreg., assignor to Robert D. McCay, Jr., Creswell; Wallace A. Sprenger, Harrisburg, both of Oreg.; Kwangsook Chung, Seoul, Rep. of Korea; Kevin M. Hughes and Karna M. Hughes, both of Eugene, Oreg.

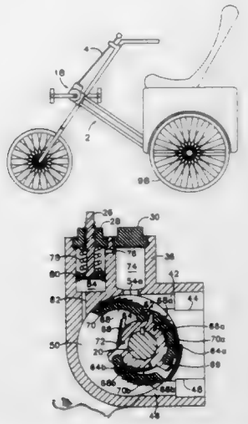
Filed Nov. 25, 1991, Ser. No. 797,062
Int. Cl.[5] B62M *1/10*
U.S. Cl. 280—216 **14 Claims**

1. A vehicle comprising:

(a) at least two drive wheels;

(b) a fluidic drive mechanism including a case defining two cylindrical chambers, an inlet into each said chamber, an outlet out from each said chamber, an elongate crankshaft rotatably attached to said case and extending sealingly through said chambers, a vane assembly located within each of said chambers and attached to said crankshaft for rotation therewith, and a first reservoir in fluid communication with each said chamber, said first reservoir having therein a piston movable within each said first reservoir for displacing fluid, a bias means for biasing said piston in a direction of bias, and a limiter for limiting the movement of said piston; and

(c) wherein rotation of said crankshaft rotates said vane assemblies thereby generating fluid pressure within said chambers and when said fluid pressure is sufficient to overcome said bias means said piston moves opposite said direction of bias thereby moving fluid into said first reservoir and adjustment of said limiter increases and decreases the range of movement of said piston thereby decreasing and increasing, respectively, an amount of fluid communicated to each said outlet and to a respective fluid motor for conversion t mechanical power for rotating said wheels.

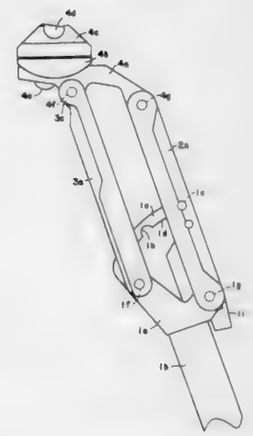


5,346,235

BICYCLE SEAT POST SEATING AND CLEARANCE POSITIONING SYSTEM

Michael J. Holman, 45 Ranch View Rd., Rolling Hills Estates, Calif. 90274

Filed Feb. 8, 1993, Ser. No. 14,797
Int. Cl.[5] B62J *1/02*
U.S. Cl. 280—226.1 **19 Claims**



1. A cycle saddle mounting assembly for mounting at a fixed location on a cycle frame in an upwardly projecting tubular frame member of the cycle frame having means for journaling a crank supporting a pair of cycle pedals, said assembly comprising:

a unitary frame mounting means for mounting said assembly in said tubular frame member;

saddle mounting means for accommodating the mounting of a cycle saddle thereon; and

articulated linkage means, coupled between said unitary frame mounting means and said saddle mounting means, for operatively moving said saddle mounting means to, and securing said saddle mounting means at, selected positions along a path relative to said frame mounting means between a predetermined standard riding position and a relatively more rearward position; and wherein

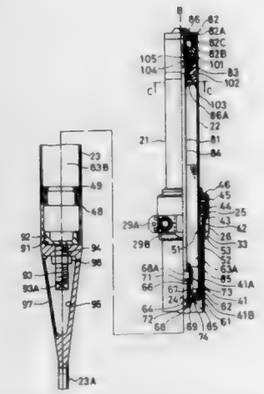
said linkage means is operative to move said saddle mounting means to positions forward of said standard riding position, whereby the distance between said saddle mounting means and the crank of the cycle pedals lessens as said saddle mounting means is moved further forward.

5,346,236

SUSPENSION DEVICE FOR BICYCLE

Toshio Ohma, Shizuoka, Japan, assignor to Showa Corporation, Shizuoka, Japan

Filed Jul. 21, 1993, Ser. No. 95,717
Claims priority, application Japan, Jul. 29, 1992, 4-058444[U]
Int. Cl.[5] B62K *25/08*
U.S. Cl. 280—276 **6 Claims**



1. A suspension device for a bicycle comprising:

a pair of left and right side tubes fixed to a steering bracket which is, in turn, rotatably supported at the front portion of the bicycle;

a pair of left and right fork legs coupled with said slide tubes in slidable fashion and adapted to hold a front wheel;

fluid chambers and gas chambers extending over both of said slide tubes and said fork legs;

damping force generating device provided within the fluid chambers between said slide tubes and said fork legs;

the suspension device further comprising:

a partitioning wall member disposed within each fluid chamber in each fork leg at the lower side of each damping force generating device and slidable within an axial direction of each fork leg, said partitioning wall member having partitioning wall member position adjusting means capable of manual position change from the outside.

5,346,237

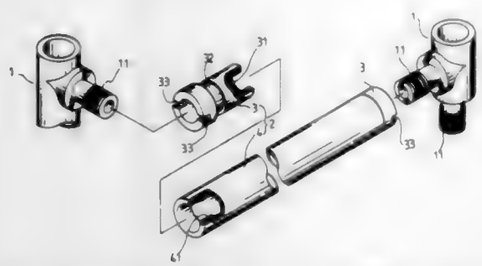
BICYCLE FRAME CONSISTED OF CARBON FIBER FRAME TUBES AND METAL CONNECTORS

Tsai-Te Wang, No. 139, Kuo Sheng St., Yung Kang Hsiang, Tainan Hsien, Taiwan

Filed Jul. 14, 1993, Ser. No. 91,012
Int. Cl.[5] B62K *19/18*
U.S. Cl. 280—281.1 **5 Claims**

1. A bicycle frame comprising a plurality of frame tubes interconnected together by metal connectors at opposite ends of the tubes, each connector including at least two threaded sockets and each frame tube comprising a carbon fiber tube with a threaded metal connecting member at each end of the carbon fiber tube, the connector members being threaded onto respective ones of the threaded sockets, wherein each metal connecting member is engaged with one of the carbon fiber

tubes by means of an annular groove in the connecting member and an interfitting annular flange on the carbon fiber tube and



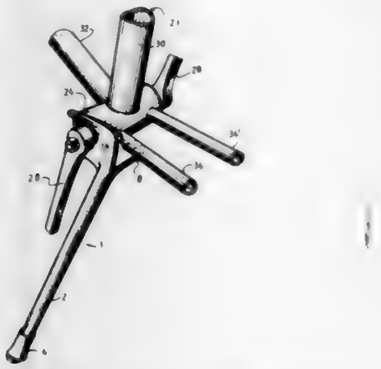
wherein a respective end face of the carbon fiber tube abuts against a side of the groove.

5,346,238

PORTABLE REMOVABLE BICYCLE STAND

Peter Greenfield, Freeport, N.Y., assignor to Greenfield Industries, Inc., Freeport, N.Y.

Filed Jun. 8, 1993, Ser. No. 73,734
Int. Cl.[5] B62H *1/00*
U.S. Cl. 280—293 **7 Claims**



1. A portable removable stand for a bicycle said bicycle having a frame including a crank spindle and a chain stay tube, the stand comprising:

an elongated member having an upper portion and lower portion;

said upper portion having bicycle support means comprising an L-shaped member having well defined first and second legs whose apex where said legs meet is located at the top of and on the longitudinal axis of said elongated member, said legs being substantially offset 90 degrees from each other and tilted from said longitudinal axis so that neither of said legs is parallel to or at right angles to said longitudinal axis;

said first leg forming one edge of a planar tab extending laterally from said elongated member and having a slot therein which engages about said crank spindle;

said planar tab disposed essentially parallel to the plane of the bicycle frame when engaged about said crank spindle;

said second leg comprising a shoulder element which engages and supports thereon said chain stay tube, said shoulder element extending from said elongated member thereby being at a substantially 90-degree offset from the plane of said tab; whereby

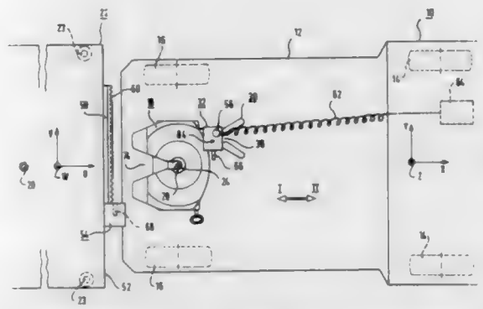
the combined engagement of said support means by the bicycle serves to transfer the weight of the bicycle to said elongated member and thence to the ground therebeneath.

5,346,239

TRACTOR TRAIN, OPTIONALLY AN ARTICULATED TRAIN

Gerhard Wohlhüter, München, Fed. Rep. of Germany, assignor to Rockinger Spezialfabrik fur Anhangerkupplungen GmbH & Co., Munich, Fed. Rep. of Germany

Filed Oct. 27, 1992, Ser. No. 967,695
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1991, 4135795; European Pat. Off., Aug. 14, 1992, 92113933.3
Int. Cl.[5] B60D *1/62*
U.S. Cl. 280—420 **41 Claims**



1. A combination of two vehicles (**10**, **22**) comprising:

a first vehicle (**10**) with a first-vehicle longitudinal axis (X), a first-vehicle transverse axis (Y), and a first-vehicle vertical axis (Z);

a second vehicle (**22**) with a second-vehicle longitudinal axis (U), a second-vehicle transverse axis (V) and a second-vehicle vertical axis (W);

an articulated coupling means (**18**, **20**) with a coupling axis (**24**) substantially parallel to one of the vertical axes (Z, W), said coupling means providing a push-and-pull connection between the two vehicles (**10**, **22**);

a supply unit (**64**) operatively associated with at least one of said first and second vehicles (**10**, **22**);

a flexible supply line (**62**) operatively associated with the supply unit (**64**);

a supply-line-coupling means (**32**, **54**) between the two vehicles (**10**, **22**) having a first coupling half (**32**) on the first vehicle (**10**) and a second coupling half (**54**) on the second vehicle (**22**);

said at least one flexible supply line (**62**) permitting, when the first and the second coupling halves (**32**, **54**) are coupled to each other, relative pivoting movements of the vehicles (**10**, **22**) about the coupling axis (**24**);

one (**32**, **54**) of the first and the second coupling halves being operatively rigidly disposed on one (**10**, **22**) of the two vehicles, and the other one (**32**, **54**) of the first and the second coupling halves being connected by the flexible supply line (**62**) to the supply unit (**64**) of the other one (**10**, **22**) of the two vehicles;

a positioning means (**30**) provided on the other one (**10**, **22**) of the two vehicles for positioning the other coupling half (**32**) on the other one (**10**, **22**) of the two vehicles in a ready-for-capture position when the first and the second vehicles (**10**, **22**) are separated, the positioning means (**30**) permitting the other one (**32**, **54**) of the first and second coupling halves a freedom of movement with respect to the other one (**10**, **22**) of the two vehicles; and

a catch device (**50**) provided on the one (**10**, **22**) of the two vehicles for trapping the other coupling half (**32**, **54**), as positioned in said ready-for-capture position on the other one (**10**, **22**) of the two vehicles, in a catch position in response to an approach movement between the first and the second vehicles (**10**, **22**), whereby the other one (**32**, **54**) of the first and the second coupling halves is received in said catch position by the one (**10**, **22**) of the first and the second vehicles and displaced from the other one (**10**, **22**) of the first and the second vehicles;

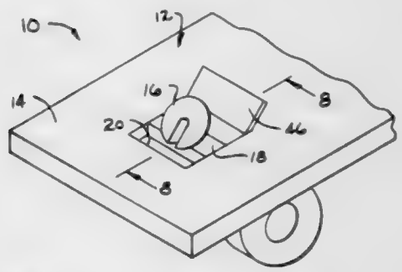
wherein said catch position of the other coupling half (**32**, **54**) corresponds to one of a coupling engagement position of said first and second coupling halves and a location on a transport path defined by the length of the catch device (**50**) from which the other coupling half is movable to a coupling engagement position of said first and second coupling halves (**32**, **54**), the other coupling half (**32**, **54**) being separated from the positioning means (**30**) in said coupling engagement position and being attached to the one (**10**, **22**) of the first and the second vehicles in the coupling engagement position, and the first and the second coupling halves (**32**, **54**) remaining coupled while the first and the second vehicles are in common motion.

5,346,240

FIFTH WHEEL MOUNTING

Charles A. Pettit, 7008 Summit Valley Rd., Hesperia, Calif. 92345

Filed Sep. 3, 1993, Ser. No. 115,815
Int. Cl.[5] B60D *1/54*
U.S. Cl. 280—438.1 **16 Claims**



1. A fifth wheel mounting comprising:

a trunk having at least first and second side walls secured together for mounting in a truck bed having an opening therein, said trunk having a top opening therein;

a mounting frame positioned within said trunk; and

a pivot shaft attached to both said first and second side walls of said trunk and extending across said trunk, said mounting frame being pivoted on said pivot shaft, said mounting frame having a floor plate on one side thereof and having fifth wheel mounting means on the other side thereof, said mounting frame being rotatable about said pivot shaft from a first position wherein said floor plate is substantially in line with the top of said first and second side walls to a second position wherein said fifth wheel mounting means is exposed so that said fifth wheel mounting can be placed in an opening in a truck bed to selectively expose said fifth wheel mounting means, said mounting frame being rotatable about said pivot shaft from said second position back to said first position; and

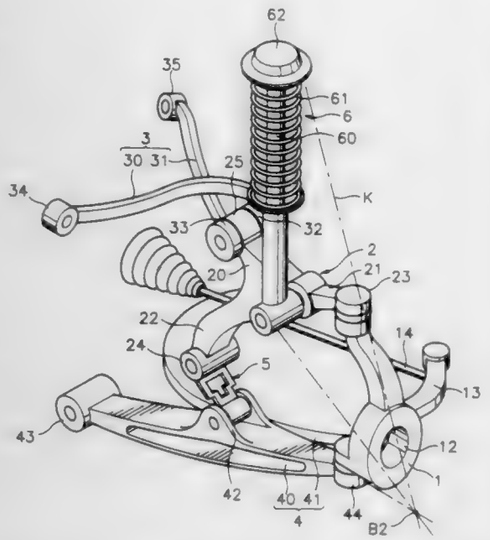
a manual stop interengaged between said mounting frame and said trunk to stop said mounting frame in its motion between said second position toward said first position to prevent complete closure of said mounting frame to said first position until a latch is manually released whereupon said mounting frame can move to said first position.

5,346,241

VEHICLE SUSPENSION SYSTEM FOR A STEERABLE WHEEL

Unkoo Lee, Kyungki, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Dec. 27, 1993, Ser. No. 172,802
Claims priority, application Rep. of Korea, Dec. 28, 1992, 92-25848
Int. Cl.[5] B60G *3/00*
U.S. Cl. 280—691 **4 Claims**



1. A vehicle suspension system for a steerable wheel comprising:

a steering knuckle for rotatably supporting a wheel, the steering knuckle including a projection at a rear part connected with a known tie rod by a ball joint to be steered by the tie rod;

a connecting arm including an upper side projection, a wheel side projection, and a lower side projection, the connecting arm having an upper connecting point of the wheel side projection connected to an upper end of the steering knuckle by a ball joint;

an upper control arm including a front arm and a rear arm, the upper control arm having wheel side connecting points connected to an upper end connecting point of the upper side projection of the connecting arm, and vehicle side connecting points connected to a vehicle body;

a lower control arm including a front arm and a rear arm having connecting points at both ends, the lower control arm having the vehicle body side connecting points connected to the vehicle body by a rubber bush, and the wheel sideconnecting points concentrated on a lower part of the steering knuckle and connected to the lower part of the steering knuckle;

a control link pivotally connected between the lower connecting point of the lower side projection of the connecting arm and an upward projection at a middle point of the lower control arm; and

a strut arm for absorbing and reducing impact applied in an up-and-down direction with respect to the vehicle body, the strut arm including a shock absorber and a spring, and having an upper part connected to the vehicle body by an insulated connection part, and a lower part pivotally connected to the wheel side projection of the connecting arm.

5,346,242

APPARATUS FOR ACTIVE MOTOR VEHICLE SUSPENSIONS

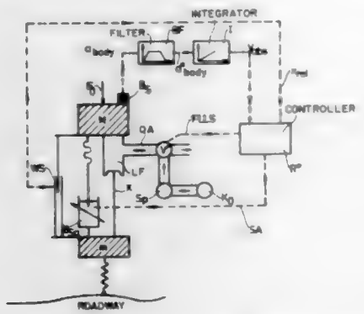
Dean C. Karnopp, Davis, Calif., assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 129,114, Dec. 4, 1987, abandoned. This application Jul. 11, 1989, Ser. No. 379,699

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1986, 3641950; Nov. 11, 1987, 3738284

Int. Cl.[5] B60G *17/015*

U.S. Cl. 280—707 **5 Claims**



1. An apparatus secured between a vehicle body (M) and wheel (m) for active body suspension control in motor vehicles having a plurality of springs and damping elements, comprising a load leveling body suspension system (FLLS) which includes a controller (R''), a relative position sensor (WS) which produces a relative body suspension deflection output signal (X_{rel}) derived from a vertical position of said vehicle body relative to the wheel position, a first control element (LF) which is an air suspension having a spring constant, means (QA) for permitting fluid flow to and from said first control element (LF), a second control element in the form of a semi-active damper (B_{Sa}), said first and second control elements being positioned between the wheel and the body, a signal processing circuit (BF, I), a body motion sensor (B_S) connected with said signal processing circuit for determining body velocity which is converted into an absolute vertical velocity output signal (V_{abs}) by said signal processing circuit, said absolute vertical velocity signal (V_{abs}) and said relative body suspension deflection output signal (X_{rel}) are directed into said controller (R''), said controller (R'') directs an output signal (FLLS) to said first control element (LF) to control said first control element, said absolute vertical velocity signal (V_{abs} is also directed into controller (R'') said and said controller (R'') directs an output signal (SA) to said second control element (B_{Sa}) to control said second control element.

5,346,243

FOLDING TOW BAR APPARATUS AND METHODS

Leon Boeck, R.R. 1, Box 138, Easton, Minn. 56025

Filed May 29, 1992, Ser. No. 891,404

Int. Cl.[5] B60D *1/44*

U.S. Cl. 280—478.1 **13 Claims**

1. A tow bar apparatus mountable on a first vehicle for attachment to a second vehicle, said tow bar apparatus comprising:

a support mountable to the first vehicle to be towed;

a first arm with first and second ends;

first pivot means for pivotally mounting the first end of the first arm to the support;

a second arm with first and second ends;

second pivot means for pivotally mounting the first end of the second arm to the support;

a third arm with first and second ends;

third pivot means for pivotally mounting the second end of the first arm to the first end of the third arm;

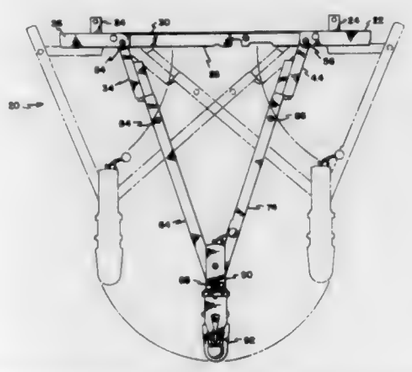
a fourth arm with first and second ends;

fourth pivot means for pivotally mounting the second end of the second arm to the first end of the fourth arm;

fifth pivot means for pivotally mounting the second end of the third arm to the second end of the fourth arm;

coupling means interconnected with at least one of the third and fourth arms for attaching the tow bar apparatus to the second vehicle to tow the first vehicle, wherein the coupling means is pivotally moveable relative to both the third and fourth arms; and

means for selectively locking the coupling means to one of the third and fourth arms in a first position and in a second position for preventing relative rotational movement between the coupling means and the third or fourth arm, the first position locking the coupling means in a vehicle towing position for use in towing the first vehicle, the second position locking the coupling means in an apparatus stowing position for use in stowing the tow bar apparatus on the first vehicle, wherein the means for selectively locking includes:



a finger slidably mounted to one of the third and fourth arms;

a plate extending from the coupling means, the plate having a first slot and a second slot, each of the first and second slots alternatively receiving the finger, the finger received by the first slot when the coupling means is in the first position, the finger received by the second slot when the coupling means is in the second position, the finger being moveable away from the first and second slots to move the finger between the first and second slots as the finger and the plate are pivotally moved relative to one another; and

spring means for biasing the finger toward the plate.

5,346,244

SKI COMPRISING A PROJECTING CENTRAL PLATFORM

Jacques Le Masson, Cran-Gevrier, France, assignor to Salomon SA, France

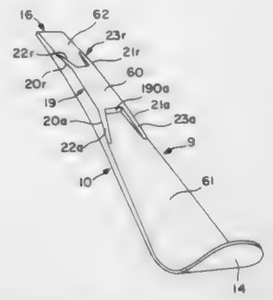
Filed Jan. 28, 1993, Ser. No. 10,181

Claims priority, application France, Jan. 28, 1992, 92 01046

Int. Cl.[5] A63C *5/04*

U.S. Cl. 280—607 **8 Claims**

1. A ski having the shape of an elongated beam comprising a lower slide face, an upper face, and two lateral edges, said upper face having a central portion comprising a platform projecting upward so that the upper face of said ski is consituted by an upper central surface projecting upward from a front upper surface and a rear upper surface and positioned between said front and rear upper surfaces, said central platform having a front edge and a rear edge and at least two connection projection portions laterally spaced from each other and extending from each of said front and rear edges toward the front and rear of the ski, each of said portions being narrower than said platform and having a height which decreases from one end at the upper central surface to an opposite end which merges into a respective front and rear upper surface, wherein each of said connection projection portions



has a longitudinal length which is substantially less than a longitudinal length of said upper central surface between said front and rear edges.

5,346,245

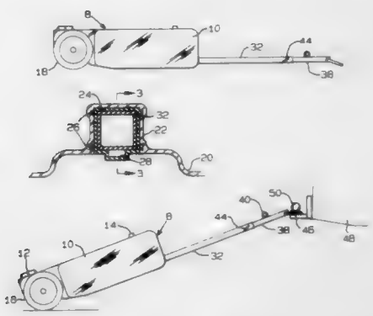
PORTABLE TANK WITH EXTENDING HANDLE

Jack C. Budrow, and Lars E. Eriksson, both of Battle Creek, Mich., assignors to Barker Manufacturing Company, Inc., Battle Creek, Mich.

Filed Aug. 10, 1993, Ser. No. 104,197

Int. Cl.[5] B62B *1/12, 1/16*

U.S. Cl. 280—655 **7 Claims**



1. A portable tank for fluids comprising, in combination, a receptacle formed of a molded synthetic plastic having a port, an upper portion, a lower portion, a front end, a rear end and a longitudinal axis, a pair of wheels rotatably mounted on said receptacle adjacent said rear end, a metal elongated tubular handle support molded into said receptacle lower portion during the molding thereof substantially parallel to said longitudinal axis having an inner bore, anchors defined on said tubular handle support embedded into the material of said receptacle, a tubular handle telescopingly received within said handle support bore and axially displaceable therein between retracted and extended positions, stop means mounted on said tubular handle support limiting extension of said handle therein at said extended position, said handle having an outer end, a handle extension mounted on said handle outer end, and a hand grip defined on said handle extension.

5,346,246

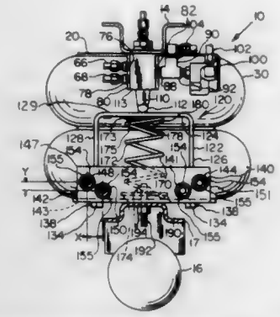
AUTOMATIC AIR BAG SUSPENSION CONTROL SYSTEM

Cecil Lander, and Alex Khaykin, both of Pittsburgh, Pa., assignors to Load-Air, Inc., Carnegie, Pa.

Filed Nov. 23, 1992, Ser. No. 980,507

Int. Cl.[5] B60G *11/26*

U.S. Cl. 280—711 **22 Claims**



1. A vehicle energy absorbing system for a vehicle having a suspension system, a frame and an axle, wherein the frame is spaced apart from the axle in a vertical direction and the suspension system mechanically couples the frame to the axle, said vehicle energy absorbing system comprising:

an expandable air bag mechanically coupled to the frame and the axle;

a distance indicator for indicating a vertical distance between the frame and the axle attached to the vehicle;

an air bag pressure control valve in fluid communication with said air bag and operable with said distance indicator; and

a source of air under pressure attached to the vehicle and in fluid communication with said air bag pressure control valve, whereby when said distance indicator indicates a first vertical distance between the frame and the axle, said valve is positioned in a first position supplying air from said source of air to said air bag at a first air pressure and when said distance indicator indicates a second vertical distance between the frame and the axle, said valve is positioned in a second position supplying air from said source of air to said air bag at a second air pressure and whereby said air bag insignificantly affects the distance between the frame and the axle while significantly affecting the smoothness of the ride of the vehicle.

5,346,247

TRUCK AIR RIDE SUSPENSION

Gary A. Snyder, Marionville, Mo., assignor to Reyco Industries, Inc., Springfield, Mo.

Filed May 14, 1993, Ser. No. 61,668

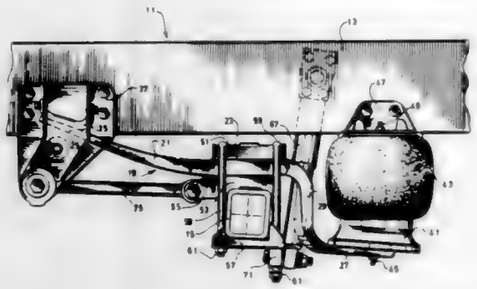
Int. Cl.[5] B60G *9/02, 11/46*

U.S. Cl. 280—712 **3 Claims**

1. A suspension for a vehicle having a rear axle beneath a frame thereof,

an elongated gooseneck spring having a center portion, an upwardly inclined front portion and a lower trailing rear portion extending inwardly under said frame, said front portion of said spring operatively engaging a front hanger mounted on said frame,

means clamping said spring to said rear axle at said center portion of said spring, and



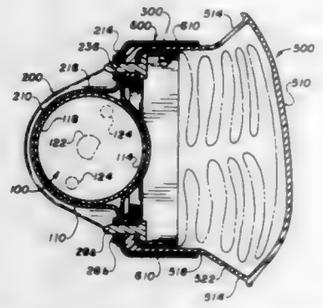
an air spring mounted on said lower trailing rear portion of said spring and attached to said frame.

5,346,248

AIRBAG ASSEMBLY

John F. Rhein, St. Clair; Lynn M. Redmond, New Baltimore, and Dennis F. Farquhar, New Baltimore, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Jun. 2, 1992, Ser. No. 892,200
Int. Cl.[5] B60K *21/16*
U.S. Cl. 280—728 R **50 Claims**



1. An airbag assembly comprising an inflator/shield subassembly, a coupling device, an airbag, a cover and a reaction device;

said inflator/shield subassembly being positioned to supply inflation fluid to said airbag;

said coupling device, said airbag, said inflator/shield subassembly and said cover being coupled to said reaction device with a set of fastening elements each of which extends through portions of said airbag, said cover, said reaction device and said inflator/shield subassembly.

5,346,249

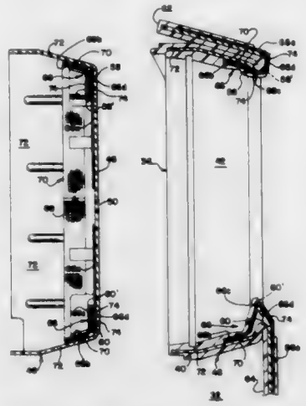
AIRBAG COVER HINGE REINFORCEMENT FOR HIGH PERFORMANCE INFLATOR

Alain F. Hallard, Cisse, France, and John E. Allard, North Ogden, Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Jul. 16, 1993, Ser. No. 93,815
Claims priority, application France, Aug. 7, 1992, 92 08929
Int. Cl.[5] B60R *21/08*
U.S. Cl. 280—728 B **23 Claims**

1. A hinge for a cover of a container adapted to be pivotally opened by an inflating air bag contained therein, comprising:

a strip of scrim formed of high strength elongated flexible fibers and secured along opposite edge portions of said strip to said cover and a wall of said enclosure, respectively, said strip including an integral hinge portion between inner edges of said opposite edge portions and joined with at least one of said edge portions along a fold line wherein said hinge portion is in an overlying relationship with said one edge portion while said cover is in a



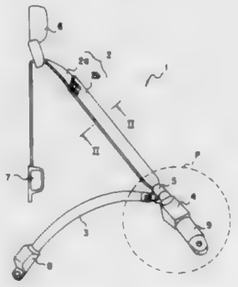
closed position with said air bag in an uninflated condition and hingedly movable to unfold along said fold line to an open position away from said overlying relationship upon inflation of said air bag.

5,346,250

INFLATABLE SEAT BELT UNIT

Misao Kamiyama, Hikone, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Sep. 23, 1992, Ser. No. 949,585
Claims priority, application Japan, Sep. 24, 1991, 3-243250
Int. Cl.[5] B60R *21/18*
U.S. Cl. 280—733 **7 Claims**



1. An inflatable seat belt unit, comprising:

an elongated belt for restraining an occupant in a vehicle;

at least a portion of said elongated belt being formed in a bag-shape;

said bag-shape portion being maintained, in a normal case, in a generally flat shape;

gas generating means for inflating said bag-shape portion in an emergency;

a tongue connected to an end of said elongated belt;

a buckle unit capable of being fixed to the vehicle;

said tongue being removably insertable and engageable with said buckle unit;

said buckle unit is provided with a buckle side gas flow hole which communicates with said gas generating means;

said tongue is provided with a tongue side gas flow hole which communicates with said bag-shape portion;

when said tongue is in an inserted and engaged state with said buckle unit said buckle side gas flow hole and said tongue side gas flow hole communicate with each other and a gas flowing passage is formed which communicates

said gas generating means with said bag-shape portion of said belt;

wherein said buckle unit is provided with a buckle side cap which is constructed to close said buckle side gas flow hole during said normal case and which is constructed to open said buckle side gas flow hole in an emergency after being ruptured by gas released from said gas generating means, and further said tongue is provided with a tongue side cap which is constructed to close said tongue side gas flow hole during said normal case and which is constructed to open said tongue side flow hole in an emergency after being ruptured by said gas; and

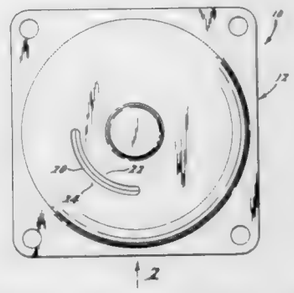
wherein a filter is provided in said tongue side gas flow hole, said filter preventing intrusion of foreign objects into said bag-shape portion of said belt.

5,346,251

OVERPRESSURE REGULATING AIRBAG INFLATOR

Dennis W. Burnard, Roseville; Steven Kmenta, Canton, and Timothy E. Hughes, Livonia, all of Mich., assignors to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.

Filed Jul. 22, 1993, Ser. No. 96,477
Int. Cl.[5] B60R *21/26*
U.S. Cl. 280—737 **2 Claims**



1. In an inflatable vehicle occupant restraint system comprising an inflator housing with a gas producing pyrotechnic therein,

an improved overpressure regulating system for said inflator housing comprising an arcuate stress concentration groove in said housing of reduced cross section relative to the remainder of said housing whereby said groove ruptures upon the occurrence of a predetermined pressure internally of said housing.

5,346,252

INFLATOR AND METHOD OF ASSEMBLY

George J. Levosinski, Marine City, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Mar. 2, 1993, Ser. No. 25,445
Int. Cl.[5] B60R *21/26;* **B01D** *29/50*
U.S. Cl. 280—740 **10 Claims**

6. Apparatus for inflating a vehicle occupant restraint such as an air bag, said apparatus comprising:

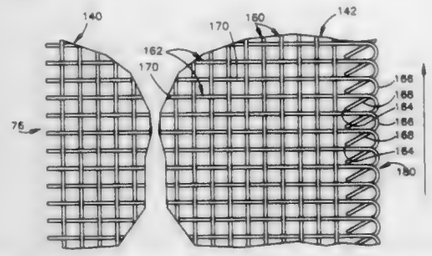
a source of gas for inflating the vehicle occupant restraint;

a tubular wall with a plurality of gas flow openings for directing said gas to flow from the inside of said tubular wall to the outside of said tubular wall;

a sheet of rupturable pressure controlling material extending circumferentially around the inside of said tubular wall and across said gas flow openings, said sheet of rupturable pressure controlling material blocking said gas from flowing into said gas flow openings; and

a cylindrical filter assembly located within said tubular wall between said source of gas and said sheet of rupturable pressure controlling material, said filter assembly comprising a woven mesh plenum screen extending circumferentially around the inside of said sheet of rupturable pressure controlling material, said woven mesh plenum screen having an edge adjoining said sheet of rupturable pressure controlling material;

said edge of said woven mesh plenum screen being a selvage comprising means for minimizing the tendency of said woven mesh plenum screen to rupture said sheet of rupturable pressure controlling material where said edge adjoins said sheet of rupturable pressure controlling material;



said woven mesh plenum screen comprising a plurality of woven strands including strands extending circumferentially around the inside of said sheet of rupturable pressure controlling material, each of said circumferentially extending strands having an arcuate end surface defining the circumferential terminus of the respective strand, said selvage being defined by said arcuate end surfaces.

5,346,253

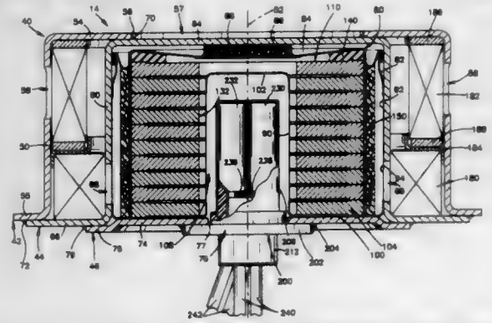
Patent Not Issued For This Number

5,346,254

INFLATOR ASSEMBLY

Dean M. Esterberg, Tempe, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

Filed Feb. 1, 1993, Ser. No. 12,054
Int. Cl.[5] B60R *21/28*
U.S. Cl. 280—741 **6 Claims**



1. Apparatus for use in inflating an inflatable vehicle occupant restraint, said apparatus comprising:

gas generating means for generating gas to inflate the inflatable vehicle occupant restraint, said gas generating means including a body of gas generating material which, when ignited, generates said gas, said body of gas generating material having an initial surface portion; and

igniter means for igniting said body of gas generating material, said igniter means being actuatable in a first stage and in a second stage;

said igniter means igniting said body of gas generating material at a first ignitable surface area of said body of gas generating material when said igniter means is actuated in said first stage, said first ignitable surface area including said initial surface portion of said body of gas generating material;

said igniter means including means for forming cracks in said

body of ignitable gas generating material when said igniter means is actuated in said second stage, said cracks containing newly exposed surface portions of said body of gas generating material;

said igniter means igniting said body of gas generating material at a second ignitable surface area of said body of gas generating material when said igniter means is actuated in said second stage, said second ignitable surface area including said initial surface portion, said second ignitable surface area further including said newly exposed surface portions and thus being larger than said first ignitable surface area.

5,346,255

STEERING COLUMN WITH A SAFETY ELEMENT FOR A MOTOR VEHICLE EQUIPPED WITH AN INFLATABLE AIR BAG IN THE STEERING WHEEL

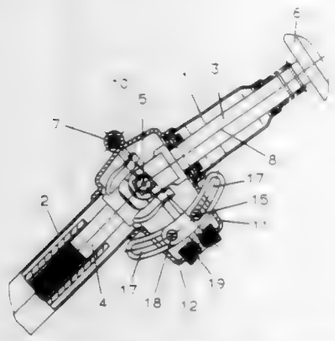
Burkhard Schäfer, Lemförde, and Kai-Uwe Grams, Cappeln, both of Fed. Rep. of Germany, assignors to Lemforder Metallwaren AG, Lemforde, Fed. Rep. of Germany

Filed Apr. 2, 1993, Ser. No. 42,144

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1992, 4211674

Int. Cl.[5] B60R *21/22*; B62D *1/18, 1/19*

U.S. Cl. 280—775 **7 Claims**



1. A steering column for a motor vehicle equipped with an inflatable airbag in the steering wheel, comprising:

an upper steering shaft part and a lower steering shaft part, said upper and lower steering shaft parts being connected to one another by a universal joint;

a housing formed of a movable upper housing part and lower housing part rigidly attached to a body of the motor vehicle, the upper housing part and the lower housing part being connected by a hinge at a hinge axis extending approximately horizontally in a plane of intersection of axes of said universal joint, said upper steering shaft and said lower steering shaft being rotatably mounted in said housing, said hinge being arranged at a spaced location and above a central longitudinal axis of a steering column formed by the axes of the upper steering shaft and the lower steering shaft;

interlocking means for interlocking the upper housing part and the lower housing part with one another only in positions in which said axes of said upper steering shaft and lower steering shaft intersect one another, by said universal joint, to form an angle that is open toward said hinge, said interlocking means for maintaining said two housing parts in said position and for releasing said two housing parts by recoil forces caused by ignition of said airbag during inflation of said airbag.

5,346,256

DEVICE FOR MOTORIZED MOVEMENT OF A SAFETY BELT IN A MOTOR VEHICLE

Martin Wiesler, Baden-Baden-Neuweier; Thomas Huck, Lichtenau, and Herbert Schiller, Buehlertal, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

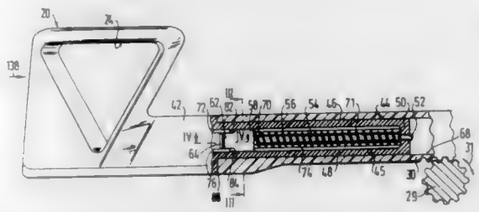
PCT No. PCT/DE91/00630, § 371 Date Feb. 9, 1993, § 102(e) Date Feb. 9, 1993, PCT Pub. No. WO92/02388, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 6, 1991, Ser. No. 977,423

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1990, 4025217; Aug. 23, 1990, 4026637

Int. Cl.[5] B60R *22/02*

U.S. Cl. 280—802 **5 Claims**



1. A device for motorized movement of a safety belt in a motor vehicle from a stored position to a deployed position, said device comprising

drive means including a pinion drivable in opposite rotation directions;

a toothed rack meshed with said pinion and having a component part structured to loosely hold said safety belt at an end portion thereof, said component part contacting an interior region of said motor vehicle when said safety belt is in said stored position; and

means for displacing said component part relative to said toothed rack against a spring force and in a direction said component part moves during motion of said safety belt into said deployed position, said component part having an elongated guide carriage and said toothed rack is provided with a slide guide extending in a longitudinal direction in said toothed rack, said slide guide and said elongated guide carriage being structured so that said guide carriage is guided slidably in said slide guide, said guide carriage having a frame structure comprising two parallel frame parts connected by a cross piece frame part, and a guide pin arranged in a region surrounded by said frame parts and secured to said guide carriage in a longitudinal direction of said guide carriage.

5,346,257

PRETENSIONER FOR VEHICLE SEAT BELTS

Koji Hiramatsu, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan

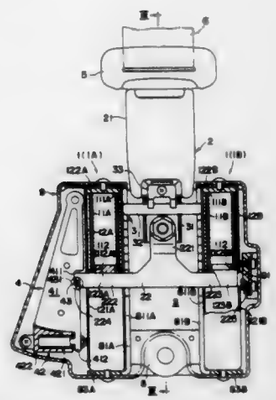
Filed Jan. 21, 1993, Ser. No. 7,153

Claims priority, application Japan, Jan. 21, 1992, 4-029093

Int. Cl.[5] B60R *22/46*

U.S. Cl. 280—806 **2 Claims**

1. In a pretensioner for a vehicle seat belt system having connector means connected to a belt system component and axial driving means for moving the connector means along a predetermined path, the improvement wherein the driving means exerts axial driving forces on the connector means in substantially the same direction as the path of movement of the connector means and includes a pair of driving members arranged in tandem and spaced apart laterally from each other on either side of a space between them, and the connector means includes at least a portion that upon movement along the path moves through the space between the driving members.



5,346,258

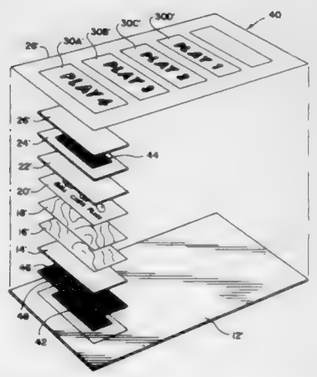
GAME TICKET CONFUSION PATTERNS

William F. Behm, Marietta, Ga.; Stanley Litman, Gilroy, and Bradly W. Walton, San Jose, both of Calif., assignors to Scientific Games, Inc., Alpharetta, Ga.

Continuation-in-part of Ser. No. 879,827, May 7, 1992, abandoned. This application Jan. 13, 1993, Ser. No. 4,157

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—102 **52 Claims**



1. A game card comprising:

a card substrate having an upper surface and a lower surface;

a play indicia affixed to said upper surface of said card substrate;

a removable elastomeric coating secured to said upper surface of said card substrate over said play indicia; and

a removable confusion pattern interposed between said removable coating and said play indicia wherein said removable confusion pattern is removed when said removable coating is removed.

5,346,259

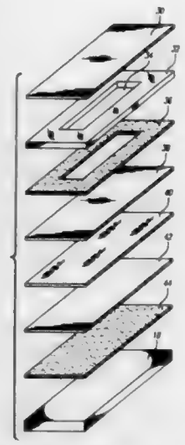
ANTI-THEFT LABEL CONSTRUCTION

Anton Mocilnikar, Cleveland, and Charles K. Herrmann, Cleveland Heights, both of Ohio, assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed Jul. 16, 1992, Ser. No. 914,979

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—108 **19 Claims**



1. A tamper proof label comprising:

a first layer consisting of an ultraviolet curable matt varnish;

a second layer consisting of a clear polyethylene teraphthalate film having a thickness substantially greater than the thickness of the ultraviolet curable matt varnish which is located above the clear polyethylene teraphthalate film, said clear polyethylene teraphthalate film oriented to form a support layer surrounding, or surrounded by a fragile layer in which the clear polyethylene teraphthalate film is not present;

a third layer consisting of a clear acrylic adhesive adhered to the lower surface of the clear polyethylene teraphthalate film, and located beneath the ultraviolet curable matt varnish in those areas in which the clear polyethylene teraphthalate film is not present;

a fourth layer consisting of a patterned destrux varnish layer located beneath the clear acrylic adhesive layer;

a fifth layer consisting of an authentication layer located beneath the patterned destrux varnish layer, said pattern destrux varnish layer causing said authentication layer to appear torn by variably releasing the authentication layer when the label is removed from an article or product to which it has been applied; and

a pressure sensitive adhesive layer located below said authentication layer which bonds aggressively to products to which the label is affixed.

5,346,260

DEVICE FOR CONNECTING A FUEL NOZZLE TO A FILLING HOSE

Heinz-Ulrich Meyer-Berg, Plettenberg; Gerhard Jaeger, Herscheid, and Karlheinz Ehlers, HamburgHochkamp, all of Fed. Rep. of Germany, assignors to Albert Hiby GmbH & Co. KG, Plettenberg, Fed. Rep. of Germany

Filed Feb. 1, 1993, Ser. No. 12,282

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1992, 4202956

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—1 **14 Claims**

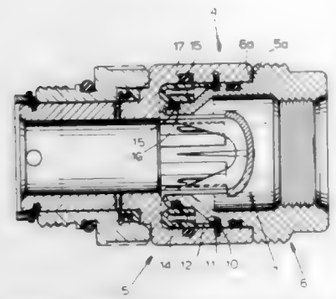
1. A device for connecting a refueling nozzle with a filling hose, comprising:

a female coupling member affixed to a refueling nozzle;

a male coupling member affixed to a filling hose and receivable in said female coupling member;

a detent ring mounted fixedly on one of said members and engageable in a recess formed in the other of said coupling members upon insertion of said male coupling member in said female coupling member for retaining said coupling members in a coupled state until said device is subjected to a tension force resulting from departure of a refueling vehicle with said nozzle in its refueling port from a refueling station provided with said nozzle and said hose;

decoupling means in said recess for disengaging said members to release said nozzle from said hose upon applying of the tension force to said device;



means including a space for providing a limited angular play between said male and female coupling members after said male member is received in said female coupling member, said space permit ting angular disalignment of said members in said coupling state upon applying a disaligning torque effecting angular disalignment of said members;

a restoring spring in said space braced between said coupling members and coaxially aligning said male coupling member in said female coupling member upon discontinuance of said disaligning torque; and

levering means on said members cooperating with said disengaging means for levering said detent ring out of said recess and said male coupling member out of said female coupling member upon said disaligning torque becomes sufficient to overcome a restoring force of said spring.

5,346,261

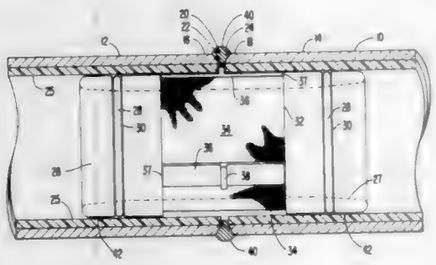
COUPLED PIPE ASSEMBLY HAVING A TAPERED INTERIOR SLEEVE

William D. Abbema, Pearland, Tex., assignor to Tuboscope Vetco International, Inc., Houston, Tex.

Filed Mar. 25, 1993, Ser. No. 36,844

Int. Cl.[5] F16L *13/02*

U.S. Cl. 285—22 6 Claims



1. A coupled pipe assembly comprising, a pair of opposed, axially positioned pipes each having opposed beveled ends spaced apart to form a separated area therebetween, a corrosion-resistant lining on interior surfaces of said pipes, a sleeve having an internal corrosion-resistant lining and a uniform, continuous diameter portion along a length thereof inserted axially within said pipes between said opposed beveled ends along a uniform continuous diameter portion of said pipes, said sleeve including each end thereof having an internally tapered cross-section extending to and forming a rounded end edge portion, a pair of O-ring seals each circumferentially mounted on said sleeve a distance from each end thereof and in sealing engagement with said interior surfaces of said pipes, a circumferential relieved area in an interior surface of said sleeve between said O-ring seals, a layer of heat-deflecting material provided within said relieved area and having an outer surface terminating short of said exterior surface of said sleeve, a plurality of retainers for retaining said heat-deflecting material within said relieved area of said sleeve, said retainers being connected to opposed edge surfaces of said relieved area in spaced-apart relation and each of said retainers having a lug radially extending into said separated area between said opposed, beveled pipe ends and in contact therewith, a continuous weld deposit produced in said separated area and bonded to each said lug and to the opposed beveled pipe ends to form a welded joint between said opposed ends of said pipes and a sealant provided between said exterior surface of said sleeve and said interior surfaces of said pipes.

5,346,262

TUBE CONNECTION

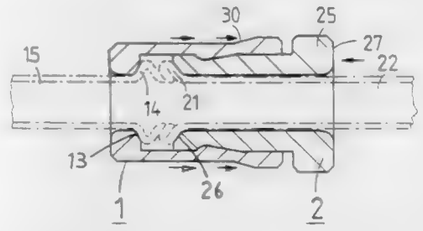
Gerhard Liebig, Heidelberg, Fed. Rep. of Germany, assignor to Bundy International Limited, Abingdon, England

Continuation of Ser. No. 852,532, Mar. 17, 1992, abandoned. This application Nov. 3, 1993, Ser. No. 145,725

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1991, 4108741

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—23 11 Claims



1. A tube connection for thin-walled, small calibre metal tubes comprising:

a first metal tube furnished with a flange at a first end;

a second metal tube furnished with a flange at a first end disposed facing the first end of the first tube;

a first sleeve surrounding the first metal tube and having a part which is smaller in diameter than said flange of said first metal tube and which engages the flange of the first metal tube;

a second sleeve surrounding the second metal tube and having and end portion which is smaller in diameter than said flange of said second metal tube which engages the flange of the second metal tube;

the second sleeve being disposed co-axially inside the first sleeve with the flanges of the first and second metal tubes being disposed between said part of the first sleeve which engages the flange of the first metal tube and said end portion of the second sleeve which engages the flange of the second metal tube; said first sleeve engaging said second sleeve in deformed interlocking engagement therewith;

the second sleeve having a substantially uniform inner diameter therethrough and circular thicker portion relative to an adjacent portion at an end nearest the flange of the second metal tube, and the first sleeve having a generally cylindrical outer surface a first portion of which has a first diameter and a second portion of which has an increased diameter, a connection between the first and second

sleeves and between the first and second metal tubes being effected by causing at least a part of the increased diameter portion of the first sleeve to be reduced in diameter in response to axial pressure between a deforming member acting on said first sleeve and said second sleeve, whereby an inner part of the first sleeve is deformed into said deformed interlocking engagement behind the thicker portion of the second sleeve.

5,346,263

FLEXIBLE LINE ELEMENT WITH THERMAL INSULATION

Peter Huzenlaub, Dettenheim, and Heinz Schmidt, Karlsruhe, both of Fed. Rep. of Germany, assignors to IWK Regler und Kompensatoren GmbH, Stutensee, Fed. Rep. of Germany

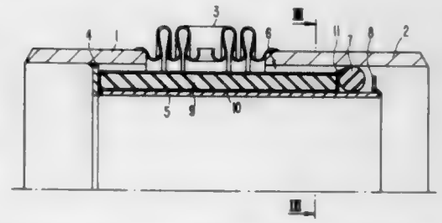
PCT No. PCT/EP91/00412, § 371 Date Sep. 3, 1992, § 102(e) Date Sep. 3, 1992, PCT Pub. No. WO91/14126, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 5, 1991, Ser. No. 927,652

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1990, 9002752

Int. Cl.[5] F16L *11/12*

U.S. Cl. 285—53 13 Claims



1. Device for a flexible gas type connection of pipes, the device including a bellows, and connecting pieces joined to said bellows at opposite ends thereof, said connecting pieces being adapted to be connected to opposed ends of the pipes, and an insulation extending between the connecting pieces, wherein the insulation includes a double tubular insulating cassette of a cassette casing filled with a heat-resistant thermal insulating material, the cassette casing covering the heat-resistant thermal insulation material both on an outer and an inner side thereof, wherein the cassette extends into an interior of both connecting pieces, and means for sealing and for retaining the tubular insulating cassette is gas tight connection to the interior of said connecting pieces, and wherein said means includes a seal provided at least between the insulating cassette and at least one of the connecting pieces, said seal slidingly engaging an inner side of said at least one connecting piece.

5,346,264

LIQUID TIGHT INTERNAL SNAP CONNECTOR FOR CONNECTING CORRUGATED PLASTIC CONDUIT

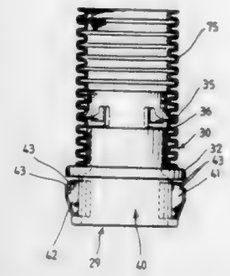
Joseph P. Law, Scotch Plains, and Robert Oehler, Westfield, both of N.J., assignors to Heyco Molded Products, Inc., Kenilworth, N.J.

Continuation-in-part of Ser. No. 850,084, Mar. 19, 1992, abandoned. This application May 11, 1992, Ser. No. 881,024

Int. Cl.[5] F16L *3/04*

U.S. Cl. 285—158 21 Claims

1. A fitting connecting non helical plastic corrugated tubing having an alternating small inside diameter and a larger inside diameter of said corrugations, said fitting including an opening therethrough, a liquid tight corrugated tubing connecting portion for receiving one end of said corrugated tubing thereover in liquid tight engagement, said liquid tight corrugated tubing connecting portion including a shank, said shank having an outside diameter and an end, a shoulder, at least one pawl, said at least one pawl including hinge means a bevel and a bearing surface, said at least one pawl resiliently extending to engage itself within said larger inside diameter of said corrugations, and a collar on said shank, said collar having an outside diameter, said collar's outside diameter greater than said shank's outside diameter and slightly greater than said small inside diameter of said corrugations and receiving said last



mentioned corrugations thereover in liquid tight engagement, said collar extending along said shank from said shoulder and having a termination spaced away from said shank end, said pawl extending from said shank between said collar termination and said shank end.

5,346,265

COUPLING SLEEVE FOR CONNECTING THIN-WALLED PIPE ENDS

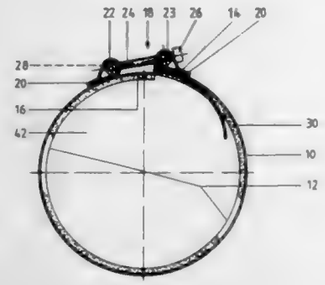
Manfred Meinig, Rietheim-Weilheim, Fed. Rep. of Germany, assignor to METU-System Meinig KG, Rietheim-Weilheim, Fed. Rep. of Germany

Filed May 13, 1993, Ser. No. 60,551

Claims priority, application Fed. Rep. of Germany, May 18, 1992, 4216403

Int. Cl.[5] F16L *17/04*

U.S. Cl. 285—373 13 Claims



1. A coupling sleeve for connecting the ends of two thin-walled pipes comprising:

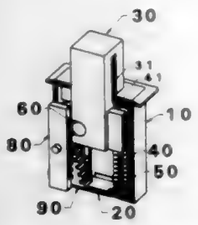
a tubular sheet-metal strip having overlapping ends,

a clamping device on the outside of said strip for selectively tightening said sheet-metal strip to decrease the internal diameter thereof

an elastic sealing strip substantially covering the inside of the sheet-metal strip except for the outer of the two overlapping ends, and

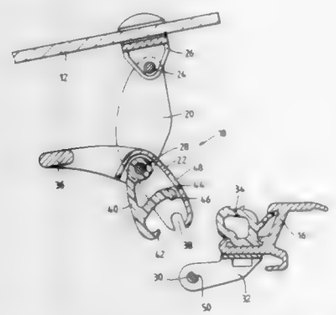
a resilient stop member having a first end fixed adjacent the overlapping ends of the coupling sleeve, a middle portion extending between said overlapping ends and into said sealing strip, and a second end located approximately at the axial middle of the coupling sleeve and projecting into the interior space within the coupling sleeve and sealing strip when the coupling sleeve is in the untightened condition thereof, the inner one of said overlapping of the sheet-metal strip engaging said stop member and pressing said second end of said stop member into said elastic sealing strip when the coupling sleeve is in the tightened condition thereof.

5,346,266
RACK AND PINION PULL-UP LATCH
Robert H. Bisbing, 854 Grove Ave., Springfield, Pa. 19064
Filed Apr. 27, 1993, Ser. No. 53,462
Int. Cl.[5] E05C *5/00*
U.S. Cl. 292—64 7 Claims



1. A rack and pinion pull-up latch comprising a housing, a first rack fixed within said housing, a second rack disposed within said housing and adapted for reciprocating motion within said housing, said second rack having a latching finger projecting through a wall of said housing, a push-button disposed within said housing and adapted for reciprocating motion within said housing, means provided to secure said push-button in positions substantially corresponding to both extremes of travel of said push-button, a stepped pinion having two sets of gear teeth of differing pitch diameters pivotally secured to said push-button and in engagement with said first rack and said second rack, whereby, in response to motion imparted to said push-button, said second rack is caused to move in a direction opposite to said motion imparted to said push-button.

5,346,267
LATCH FOR HINGED PANEL
Timothy D. Betteridge, Erdington, and Adrian K. Lawler, West Midlands, both of England, assignors to Britax Weathershields Limited, England
Filed Jan. 12, 1993, Ser. No. 3,461
Claims priority, application United Kingdom, Jan. 14, 1992, 9200665.9
Int. Cl.[5] E05C *17/32*
U.S. Cl. 292—263 2 Claims



1. A latch for a hinged panel mounted in a frame, the latch comprising a toggle mechanism having a first link, a first pivot pin adapted to connect the panel to the first link, a second link having an open-ended slot in one end thereof, a second pivot pin connecting the first link to the second link, a third pivot pin adapted to be mounted on the frame and adapted to engage in said slot, so that the first and second links are movable between a closed position in which the two links are aligned in overlapping relationship with each other and an open position in which the two links are held together in aligned end-to-end relationship with each other, a retention lever pivotally mounted on the second link and having a hook-like formation adapted to engage with the third pivot pin to retain it in the slot, resilient means on the hook-like formation for biassing it into a position to inhibit movement out of its engaged position, and interlock means so arranged that the hook-like formation can disengage from the third pivot pin only when the panel is in an intermediate position between its closed position and its opened position.

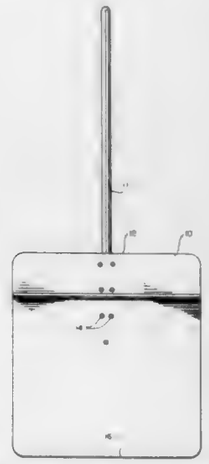
5,346,268
TOOL FOR LIFTING GRILL OFF OF BARBECUE BURNER
Lester H. Baker, 340 S. Lynx Creek Rd., Prescott, Ariz. 86303, and Donald B. Mitchell, 515 W. Highland, Phoenix, Ariz. 85013
Filed Nov. 12, 1993, Ser. No. 151,150
Int. Cl.[5] A47J *49/00*
U.S. Cl. 294—9 5 Claims



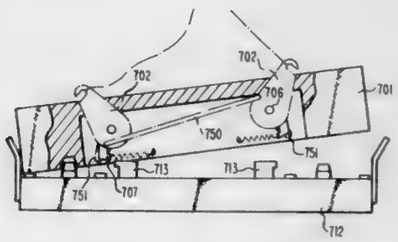
1. A tool for barbecue use comprising:
a pair of juxtapositioned longitudinal extending rods attached together with one rod being movably mounted relative to the other,
a pair of cooperating heads mounted at one common end of each of said rods, said pair of cooperating heads having a separated position and a capture position, the separated position allowing one of said heads to be inserted through the grid of a barbecue grill, the capture position grasping therebetween the grid of said barbecue grill,
spring means mounted on said tool for biasing one of said rods relative to the other of said rods for causing said heads to grasp the grid therebetween in the capture position, and
a pair of handles mounted at the opposite common end of each of said rods for use in moving said rods to the separated position against said biased spring means for engaging and releasing the grid.

5,346,269
PLATFORM TOOL FOR MOVING MATERIAL
Owen D. Price, P.O. Box 6, Orangeville, Utah 84537
Continuation of Ser. No. 748,442, Aug. 22, 1991, abandoned. This application Jan. 14, 1993, Ser. No. 4,454
Int. Cl.[5] A01B *1/02;* E01H *5/02*
U.S. Cl. 294—49 10 Claims

1. A tool for moving material comprising:
a rectangular platform for receiving a normal load of material to be moved by the tool and having a forward edge and a rearward edge defining a length therebetween and having a width, said length and width each being between about eighteen and thirty-six inches;
a handle;
a handle receiving shank secured to said platform and extending from the rearward edge toward the forward edge for a portion of the length of the platform, said handle receiving shank forming a curve in said platform over the portion of the length of the platform secured to the handle receiving shank; and
said platform being made of a material having a normally flat configuration over its length forwardly of the handle receiving shank but being flexible enough so that, as the platform is loaded to a normal load to be carried by the tool, the platform will flex to continue the curve formed by the handle receiving shank over at least a portion of the platform forwardly of the handle receiving shank so that a portion of the platform adjacent the forward edge thereof extends under the load, whereby material loaded on the platform will substantially remain on the platform as the platform is dragged over a surface by means of the handle with the handle extending at an angle to the surface.

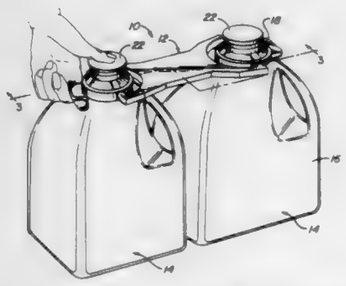


5,346,270
AUTO-CLAMPER FOR PALLETS
Hisao Kuse, Ishikawa, Japan, assignor to Tsudakoma Kogyo Kabushiki Kaisha, Japan
Continuation of Ser. No. 978,200, Nov. 18, 1992, abandoned, which is a continuation of Ser. No. 767,053, Sep. 27, 1991, abandoned, which is a division of Ser. No. 421,148, Apr. 13, 1989, Pat. No. 5,052,735. This application Apr. 29, 1993, Ser. No. 56,736
Claims priority, application Japan, Oct. 14, 1988, 63-258921; Dec. 23, 1988, 63-327299; May 16, 1989, 1-123966
Int. Cl.[5] B66C *1/26, 1/28*
U.S. Cl. 294—81.5 12 Claims



1. An automated clamping system comprising:
a pallet adapted to be raised and lowered by a lifting device;
a frame adapted to support said pallet, said frame having anchor means mounted thereon for securing said pallet upon placement of said pallet on said frame; and
automatic clamping means mounted on said pallet and normally actuated to an engaged position whereby said pallet is automatically secured to said anchor means upon lowering of said pallet onto said frame, said automatic clamping means being further disposed for automatic actuation to a disengaged position with respect to said anchor means upon application of a lifting force sufficient to lift said pallet off of said frame.

5,346,271
CARRIER FOR CONTAINERS
Richard W. Erickson, Pomona, Calif., assignor to International Omni-Pac Corp., Walnut, Calif.
Filed Feb. 25, 1993, Ser. No. 22,142
Int. Cl.[5] B65D *71/00*
U.S. Cl. 294—87.2 23 Claims

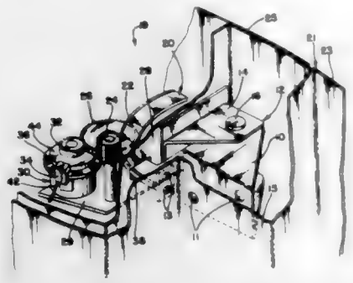


1. A carrier for containers each including an upper neck, said carrier comprising:
a plurality of container holding means for releasably receiving the necks of containers with each holding means receiving the neck of one container and supporting the container by its neck,
a relatively rigid bridge section extending between and joining said container holding means by which the carrier may be held to support said carrier in a normal carrying position with a container supported in each said container holding means, and wherein
each container holding means comprises pivotal container neck engaging means for engaging in supporting relation the neck of a container, and pivot means joining said neck engaging means and said bridge section, in a manner which permits pivotal movement of said neck engaging means relative to said bridge section, and
each neck engaging means is free to pivot at its respective pivot means relative to the other neck engaging means and to said bridge section.

5,346,272
DOOR HINGE WITH INFINITELY ADJUSTABLE DETENT
William L. Priest, Sterling Height; Gary D. Bree, Clarkston, and David E. Compeau, Oxford, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Jun. 7, 1993, Ser. No. 73,212
Int. Cl.[5] B60J *5/00*
U.S. Cl. 296—146.11 9 Claims

1. A vehicle comprising:
a vehicle body;
a hinge mounted to the vehicle body;
a vehicle door hung on the hinge and pivotable with respect to the vehicle body, allowing the door to open and closed;
means for mechanically coupling the vehicle door hinge to an electric braking mechanism
first sensing means for determining whether the vehicle door has been in a stationary position for a predetermined amount of time;
means for activating the electric braking mechanism when

the first sensing means determines that the vehicle door has been in the stationary position for the predetermined



amount of time, thereby providing a holding force to the vehicle door in the stationary position.

5,346,273

WEATHER STRIP

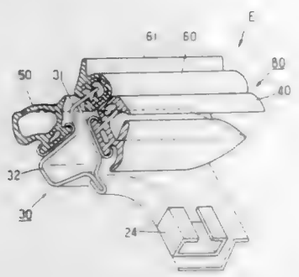
Norio Takeuchi, Hiroshima, Japan, assignor to Nishikawa Rubber Co., Ltd., Hiroshima, Japan

Filed Jan. 29, 1993, Ser. No. 11,663

Claims priority, application Japan, Jan. 31, 1992, 4-046315

Int. Cl.[5] B60J *10/08*

U.S. Cl. 296—146.9 **5 Claims**



1. A weather strip comprising a main seal, a door cutline seal having a lip gap seal protruding from an upper surface thereof, and a run channel which elastically contacts an upper end edge of a door glass, wherein the main seal and the lip gap seal respectively elastically contact an opening edge of a body except an upper portion of a center pillar, and wherein the main seal, the door cutline seal and the run channel are respectively attached to a door sash, the weather strip further comprising a hollow body side weather strip attached to the upper portion of the center pillar to elastically contact a rear end edge of the door glass.

5,346,274

SPOILER TO REAR DECK LID ASSEMBLY

Pradip K. Syamal, West Bloomfield, and Ronald A. Mueller, Rochester Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 16, 1993, Ser. No. 92,101

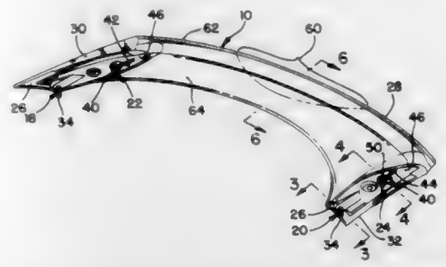
Int. Cl.[5] B62D *35/00*

U.S. Cl. 296—180.1 **8 Claims**

1. A spoiler to deck lid assembly of a vehicle that absorbs energy from a rearward impact and which maintains the connection between said spoiler and said deck lid throughout said rearward impact wherein said spoiler has a front portion and a rear portion, and said rear portion being farther towards the rear of said vehicle than said front portion, comprising:

means for rigidly connecting said front portion of said spoiler to said deck lid;

means for slidably connecting said rear portion of said spoiler to said deck lid permitting sliding movement only between a rearward and a forward position so that said slidable connecting means keeps said spoiler connected to



said deck lid during said rearward impact irregardless of whether said rigid connecting means becomes disconnected from said rearward impact.

5,346,275

REAR END OF A VEHICLE BODY

Norbert Enning, Denkendorf, and Heinrich Timm, Ingolstadt, both of Fed. Rep. of Germany, assignors to Audi AG, Ingolstadt, Fed. Rep. of Germany

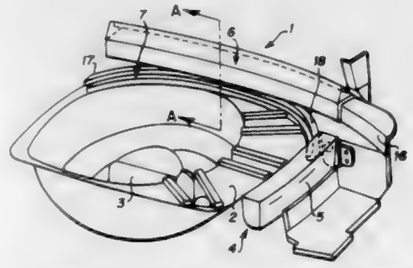
PCT No. PCT/EP91/02113, § 371 Date Mar. 31, 1993, § 102(e) Date Mar. 31, 1993, PCT Pub. No. WO92/11159, PCT Pub. Date Jul. 9, 1992

PCT Filed Nov. 8, 1991, Ser. No. 30,388

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1990, 4040978

Int. Cl.[5] B60R *27/00*

U.S. Cl. 296—195 **20 Claims**



1. In a vehicle body rear end which includes a pair of transversely spaced longitudinal bearers each having an impact-absorption unit disposed at a rearward end portion thereof, a trunk floor interposed between said longitudinal bearers and a trunk-access door, an improved rear end bearing structure comprising in operative combination:

a) a lower cross member disposed beneath the level of the trunk floor having a middle region and opposed ends, each of said ends being forwardly curved and joined in abutment with a corresponding impact-absorption unit of said pair of longitudinal bearers;

b) an upper cross member disposed on top of said lower cross member and having a middle region aligned with said middle region of said lower cross member and a pair of ends on which are supported outwardly disposed rear body elements, said upper cross member having a contour forming a lower supporting edge of the trunk-access door; and

c) means for connecting said middle portions of said upper and lower cross members to form a compound beam.

5,346,276

BEARING STRUCTURE FOR THE BODYWORK OF A PASSENGER CAR

Norbert Enning, Denkendorf; Gundolf Kreis, Oberstimm; Karl Reiter, Lenting, and Heinrich Timm, Ingolstadt, all of Fed. Rep. of Germany, assignors to Audi AG, Ingolstadt, Fed. Rep. of Germany

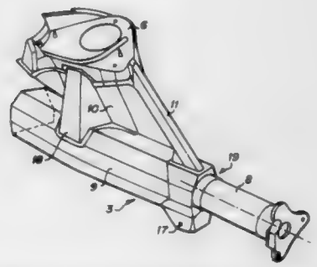
PCT No. PCT/EP91/02266, § 371 Date May 11, 1993, § 102(e) Date May 11, 1993, PCT Pub. No. WO92/11165, PCT Pub. Date Jul. 9, 1992

PCT Filed Nov. 29, 1991, Ser. No. 50,367

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1990, 4041023

Int. Cl.[5] B62D *25/20*

U.S. Cl. 296—203 **20 Claims**



1. In a front-end bearing structure for a vehicle bodywork comprising a frame structure of bearers which includes a pair of spaced apart longitudinal bearer assemblies disposed along bottom sides of the bodywork, each of said bearer assemblies comprising a longitudinal bearer member, an upstanding, substantially perpendicular support member connected to an upper surface of said longitudinal bearer member for supporting a front suspension strut mount at a height above said longitudinal bearer member, a diagonally-oriented supporting bearer member having a first, lower end portion connected to said longitudinal bearer member and a second, upper end portion connected to said suspension strut mount, said diagonally-oriented supporting member is disposed forwardly of said perpendicular support member, said longitudinal bearer assemblies forming a closed triangular framework, as seen in elevation, the front-end bearing structure further including a pair of generally horizontally-oriented suspension strut bearer members for connecting each of said suspension strut mounts to a respective vertically-oriented and rearwardly disposed side door pillar at an upper region thereof and adjacent a connection point for a roof column member, wherein the improvement comprises in operative combination;

a) each of said longitudinal bearer members comprises:

i) a pair of adjoining, axially aligned bearer segments including a first forwardly disposed bearer segment and second rearwardly disposed bearer segment;

ii) a connector assembly connecting adjoining ends of said first and second bearer segments; and

iii) said connector assembly comprises a pair of half shell portions wherein at least one of said half shell portions is connected to the lower end region of said diagonally-oriented supporting bearer member.

5,346,277

FOLDABLE HEADREST MECHANISM

Raymond E. Holobaugh, Jamestown, and W. Clark Rogers, Denton, both of N.C., assignors to Parma Corporation, Denton, N.C.

Filed Jul. 30, 1992, Ser. No. 922,627

Int. Cl.[5] A47C *1/02*

U.S. Cl. 297—61 **31 Claims**

23. A seating unit comprising:

(a) a seat frame including a backrest, a seat, and a base;

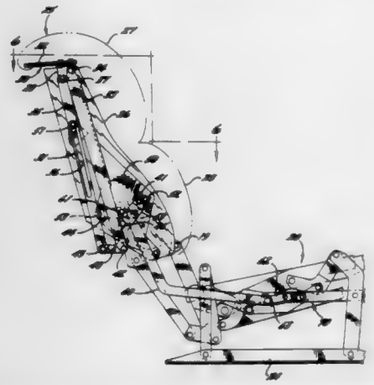
(b) mounting means fixed to said backrest of said seat frame;

(c) an elevating link pivotally interconnected at its forward end with said mounting means;

(d) a rear extension link pivotally interconnected at its lowermost portion to said elevating link on the end thereof opposite said pivot with said mounting means;

(e) a front extension link pivotally interconnected at its lowermost portion to said elevating link intermediate said pivots thereon with said mounting means and said rear extension link;

(f) a headrest plate pivotally interconnected to said rear extension link and to said front extension link;



(g) means for pivoting said elevating link about said pivot with said mounting means, so that the pivoting of said elevating link causes said rear extension link to translate substantially vertically a first distance and said front extension link to translate substantially parallel to said rear extension link a second distance, said first distance being sufficiently greater than said second distance to pivot said headrest plate from a generally horizontally position adjacent overlying said backrest to a generally vertical position.

5,346,278

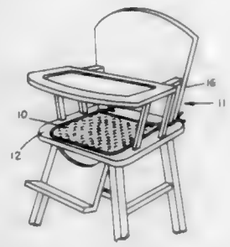
NON-SLIP CUSHION

Jacques H. Dehondt, 4513 Cove Trail, Anderson, S.C. 29621

Continuation of Ser. No. 893,560, Jun. 3, 1992, abandoned, which is a continuation of Ser. No. 728,356, Jul. 11, 1991, abandoned. This application Aug. 26, 1993, Ser. No. 112,211

Int. Cl.[5] A47C *27/00*

U.S. Cl. 297—219.1 **7 Claims**



1. A non-slip cushion for a seat comprising a single layer of scrim fabric having spaced fibers extending longitudinally and transversely so as to possess substantial resistance to stretching in directions at right angles to each other;

said scrim fabric having enlarged substantially rectangular openings therein formed by said longitudinally and transversely extending spaced fibers;

globules of a rubbery polymeric material deposited on both sides of said scrim fabric providing each side thereof with a frictional coating of plastic foam material;

said coated scrim fabric being configured to conform to the shape of a seat and positioned thereon to provide a cushion for a user of the seat;

said cushion being breathable and flexible so as to lie flat against the seat surface under the weight of a user and maintaining a high coefficient of friction between one side of said cushion and said seat, and on the other side between said cushion and a user sitting on said cushion;

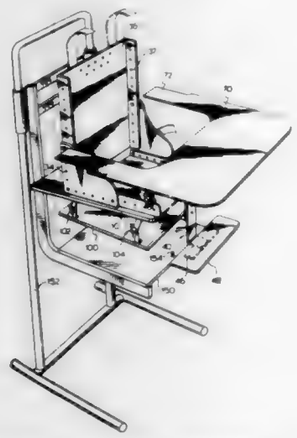
said single layer of fabric being oriented in said cushion so that said scrim is in respective transverse and longitudinal alignment on said seat; and, said scrim fabric having a peripheral portion providing a border, edge including a binder, said binder being extended to form ties at one end of said cushion for securement to a chair back; whereby the user is protected against sliding and skidding off the seat and the cushion is protected against stretching under the weight of the user.

5,346,279

ORTHOPEDIC APPLIANCE

Michael N. Pecorella, 2829 Dundas St. West, Apt. #1, Toronto, Ontario, Canada M6P 1Y6

Filed Feb. 18, 1993, Ser. No. 18,134
Int. Cl.[5] A47C *1/08*
U.S. Cl. 297—256.1 **3 Claims**



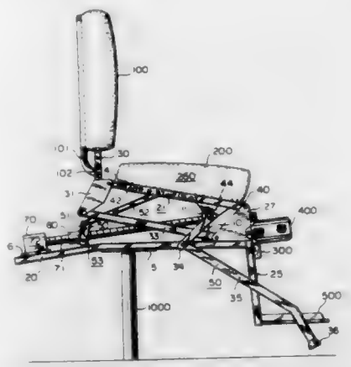
1. A child-fitting orthopedic construction of a size easily carried by a guardian of a child using said construction, said construction having size adjustment features accommodating child growth and comprising a seating assembly formed by a seat bottom which is horizontally adjustable to vary front to back depth of said seating assembly and a seat back which is vertically adjustable to vary height of said seating assembly, said seat bottom and said seat back being adjustably secured relative to one another by seat adjustment means comprising a plurality of locking positions with adjacent locking positions being separated from one another by intervening material which blocks slippage between the adjacent locking positions, said construction further comprising a base having a horizontal bottom base portion and a tilt mechanism between said horizontal bottom base portion and said seating assembly, said base comprising both an independent support in one mode of use of said construction and an attachment piece to an auxiliary support in another mode of use of said construction.

5,346,280

CHAIR WITH AUTOMATIC STANDING AID

Norman A. Deumite, P.O. Box 83330, Baton Rouge, La. 70884-3330

Filed Mar. 31, 1992, Ser. No. 861,216
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—330 **27 Claims**



1. A chair with an automatic standing aid which comprises:

a main frame adapted to be mounted on a supporting base;

a framework of articulated linkage mounted on said main frame so as to move an occupant into a standing position when raised and move an occupant into a sitting position when lowered;

a seat and seat back combination for supporting an occupant on said framework of articulated linkage, wherein said seat is mounted to said framework of articulated linkage so as to be horizontal when said framework of articulated linkage is lowered and vertical when said framework of articulated linkage is raised, said seat back being mounted to said articulated linkage so as to remain substantially vertical as the framework of articulated linkage is raised and lowered;

drive means for automatically raising and lowering the framework of articulated linkage mounted on said main frame and connected to said framework of articulated linkage; and

at least one articulated stabilizer pivotally anchored to the main frame and connected to the framework of articulated linkage so as to contact the ground when the framework of articulated linkage is completely raised and lift off the ground when said framework of articulated linkage is completely lowered, wherein each stabilizer has a wheel attached to the end thereof which contacts the ground, wherein said stabilizer contacts the ground at a point in front of the main frame.

5,346,281

SPRING BIASED INERTIAL LATCH FOR VEHICLE SEAT ASSEMBLIES

Daniel Hughes, Mississauga, Canada, assignor to Bertrand Faure Ltd., Mississauga, Canada

Filed Nov. 12, 1992, Ser. No. 974,532
Claims priority, application Canada, Mar. 31, 1992, 2064490
Int. Cl.[5] B60N *2/02*
U.S. Cl. 297—367 **22 Claims**

1. An inertial latching mechanism for use in a vehicle seat assembly having a seatback member pivotally movable with respect to a seat member, wherein said latching mechanism is used to secure said seatback member against pivotal movement relative to said seat member in a first direction when a vehicle in which said seat assembly is mounted undergoes acceleration in a generally opposite second direction greater than a design threshold acceleration value, said latching mechanism comprising:

first and second hinged members pivotally mounted about a common first pivot with said first hinged member having a first gear rack arranged thereon, wherein one of said first and second hinged members is mounted on one of said seat and seatback members and the other of said first and second hinged members is mounted on the other of said seat and seatback members;

a pawl means having an engaging portion adapted for latching engagement with said gear rack, said pawl means being mounted on said second hinged member for movement between a first latched position whereat said pawl means engages said gear rack to secure said first hinged member as aforesaid, a second transitional position, and a



third unlatched position whereat said pawl means is disengaged from said gear rack;

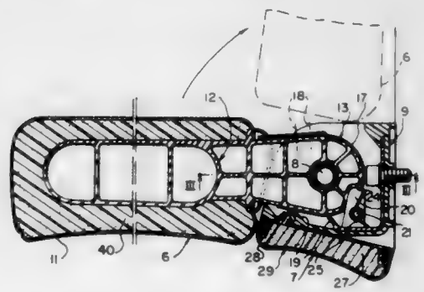
a spring means interconnected at all times between said second hinged member and said pawl means so as to retain said pawl means in said third unlatched position until said vehicle undergoes acceleration in said second direction above said design threshold value, above which value the inertial forces of the pawl means overcome said retention, thereby to cause relative movement of said pawl means in said first direction past said second transitional position, beyond which second transitional position said spring means is interconnected as aforesaid to bias said pawl means toward said first latched position and to hold said pawl means in said first latched position.

5,346,282

HEADREST FOR MOTOR-VEHICLE SEATS, PARTICULARLY FOR REAR SEATS

Emilio De Filippo, Bruzolo, Italy, assignor to Gestind-M.B. "Manifattura di Bruzolo S.p.A., Bruzolo, Italy

Filed Mar. 9, 1993, Ser. No. 29,051
Claims priority, application Italy, Oct. 14, 1992, T092 A 000823; Oct. 14, 1992, T092 A 000825
Int. Cl.[5] B60N *2/02*
U.S. Cl. 297—395 **4 Claims**



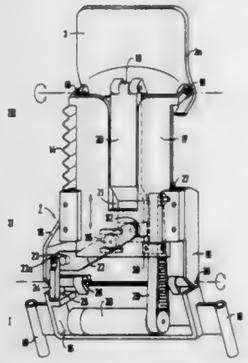
2. Headrest for motor-vehicle seats, particularly for rear seats, wherein said headrest is separated from the backrest of the respective seat and is pivotally supported on one side thereof by a support element fixed to a wall of the motor-vehicle compartment, said headrest being movable between an operative position of normal use and an inoperative position, adjacent to the wall of the compartment, wherein said support element includes a mechanism for locking the headrest in its operative position, and spring means operatively interposed between the support element and the headrest, and biasing the headrest towards its inoperative position.

5,346,283

DENTAL PATIENT CHAIR WITH AN ADJUSTABLE HEADREST

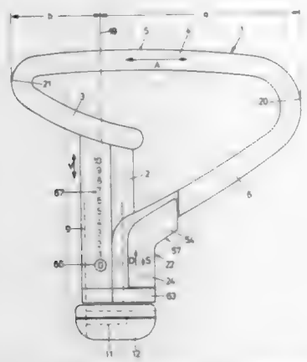
Ulrich Steininger, Darmstadt; Klaus Stoeckl, Bensheim, and Tilman Phleps, Lorsch, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 15, 1992, Ser. No. 883,395
Claims priority, application European Pat. Off., Jun. 10, 1991, 91109500.8
Int. Cl.[5] A47C *7/38*
U.S. Cl. 297—408 **10 Claims**



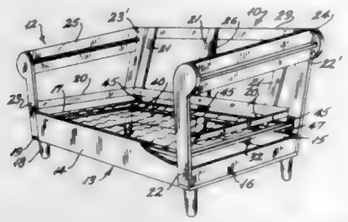
1. A dental patient chair comprising a headrest, a backrest, a headrest carrier, first means for adjustably positioning the headrest carrier in said backrest, second means disposed in said headrest carrier for positioning the headrest relative to said headrest carrier, said second means including a bracing member pivotably connected to the headrest on a first axis, a link extending at least over a part of the length of the headrest carrier, said link having a pivotable connection with the headrest on a second axis offset from the first axis, and adjustment means being allocated to the headrest carrier and having a connection to said link for shifting the link to cause pivoting of said headrest on the first axis, the headrest carrier being composed of a lower section, a middle section and an upper section, said lower section containing a base part mounted for longitudinal displacement in the backrest by said first means for adjustably positioning, said middle section containing a middle carrier pivotably connected to the base part and being slightly pivotable in comparison thereto, the upper section containing the bracing member for movement relative thereto, and the backrest having an upwardly open cutout portion with guide means provided on both sides of said cutout, said first means for adjustably positioning including the lower section having means coacting with said guide means.

5,346,284
SEATING FURNITURE ARMREST
Friedrich W. Dauphin, Offenhausen, Fed. Rep. of Germany, assignor to Dauphin Entwicklungs- u. Beteiligungs-GmbH, Neukirchen, Fed. Rep. of Germany
Filed Sep. 1, 1993, Ser. No. 114,365
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1992, 4230230
Int. Cl.[5] A47C 7/54
U.S. Cl. 297—411.36 13 Claims



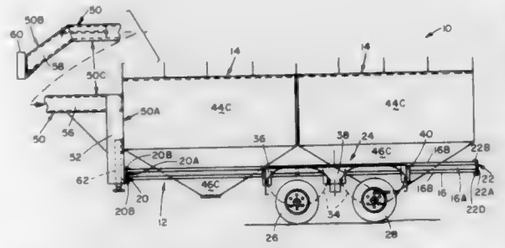
1. An armrest for seating furniture, in particular for office chairs, comprising
a guide column (9) extending in a vertical direction (V),
an armrest body (1) which is guided thereon telescopically displaceably by means of a counter guide, which armrest body (1) comprises an arm bearing surface,
a locking device (17) arranged on the armrest body (1) for vertically fixing the armrest body (1) in relation to the guide column (9), which locking device (17) comprises a locking member (16) releasably engaging with a locking recess (15) on the guide column (9),
wherein the guide column (9) and the counter guide (8) of the armrest body (1) are formed in such symmetrical manner in relation to an axis symmetry (19) extending in the vertical direction (V), that the armrest body (1) is securable on the guide column (9) in two different assembly positions rotated by 180° about the axis of symmetry (19) one referred the other.

5,346,285
STRUCTURALLY REINFORCED FURNITURE FRAMES
David T. West, III, 1925 Maple Wood Dr., Hagerstown, Md. 21740
Continuation of Ser. No. 873,269, Apr. 24, 1992, abandoned. This application Oct. 25, 1993, Ser. No. 140,883
Int. Cl.[5] A47C 7/16
U.S. Cl. 297—452.18 12 Claims



1. An article of furniture utilized for seating comprising, a rectilinear horizontally oriented wood frame deck having front, rear and opposite side components, vertically extending wooden arm rest support posts connected to said frame deck adjacent each side component thereof, at least one vertically extending wooden back rest support post fastened to said rear component of said frame deck, each of said arm rest support posts and said at least one back rest support post having inner and outer surfaces, a rectilinear horizontally oriented metallic reinforcing frame having front, rear and opposite side portions, and fastening means for securing said reinforcing frame directly to said inner surfaces of each of said arm rest support posts and said at least one back rest support post adjacent said wooden frame deck so as to reinforce said support posts.

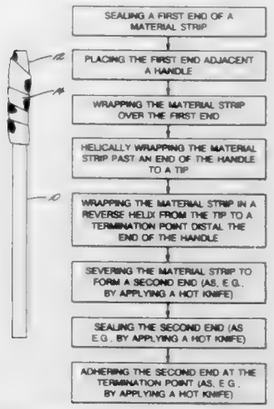
5,346,286
MATERIAL TRANSPORTING HOPPER TRAILER HAVING IMPROVED MOBILE SUPPORT FRAME
Robert G. Oberle, P.O. Box 85, Great Bend, Kans. 67530-0085
Filed Apr. 21, 1992, Ser. No. 871,904
Int. Cl.[5] B60P 1/56
U.S. Cl. 298—8 H 11 Claims



1. A material transporting hopper trailer, comprising:
(a) at least one hopper having a pair of opposite front and rear ends and including a lowered tapered portion having a pair of opposite inclined side walls, each of said inclined side walls of said lowered tapered portion of said hopper being disposed along one of a pair of respective opposite inclined side planes which extend between said opposite front and rear ends of said hopper and diverge from one another upwardly and outwardly away from a pair of opposite sides of a substantially vertical central plane which extends between said front and rear ends of said hopper; and
(b) a support frame including a pair of longitudinal members extending between said front and rear ends of said hopper and being laterally spaced apart from one another, each of said longitudinal members being a substantially U-shaped channel in cross-section and having a longitudinal planar main structural portion and a pair of reinforcing flange portions attached along opposite edges of said main structural portion, said planar main structural portions of said longitudinal members being directly engaged in a flush relationship with said opposite inclined side walls of said lower tapered portion of said hopper such that said longitudinal planar main structural portions of said longitudinal members are disposed in said respective inclined side planes and thereby support said lower tapered portion of said hopper in a cradled relationship therebetween.

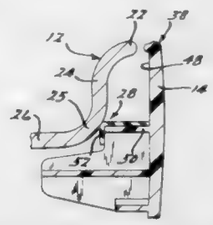
5,346,287
LOW CONTAMINATION SWAB EMPLOYING TUBULAR KNIT FABRIC
Simon W. Burrow, Pasadena, and David P. Nobile, Rancho Cucamonga, both of Calif., assignors to The Morgan Crucible Company plc, Windsor, United Kingdom
Continuation of Ser. No. 697,308, May 7, 1991, Pat. No. 5,214,821. This application May 28, 1993, Ser. No. 69,880
Int. Cl.[5] A46D 1/08
U.S. Cl. 300—21 10 Claims
1. A method for manufacturing a low contamination swab

having a handle and a material strip of knitted fabric with trapped fiber edges, the method comprising the steps of:
placing a first end of the material strip of knitted fabric adjacent the handle,
wrapping the material strip of knitted fabric over the first end,
helically wrapping the material strip of knitted fabric past an end of the handle to a tip,



wrapping the material strip of knitted fabric in a reverse helix from the tip to a termination point distal the end of the handle,
severing the material strip of knitted fabric to form a second end, and
adhering the second end at the termination point.

5,346,288
AUTOMOTIVE WHEEL AND COVER ASSEMBLY WITH CUSHIONING BAND
Charles F. Hodge, Plymouth; Syed H. Sarmast, Northville; Gerald F. Herbert, and Dennis M. Sopko, both of Dearborn Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Oct. 18, 1993, Ser. No. 136,865
Int. Cl.[5] B60B 7/00
U.S. Cl. 301—37.37 3 Claims



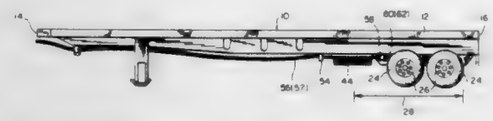
1. A wheel and cover assembly for an automotive vehicle comprising:
a road wheel having an annular laterally outer surface;
a cover member formed as a disc overlying the wheel laterally outer surface and having a laterally inner annular surface facing the wheel, and further including a plurality of circumferentially spaced upstanding ribs projecting perpendicularly from the laterally inner surface, each rib including a radially outer surface extending perpendicularly from the laterally inner surface of the cover member toward the wheel and a facing surface extending radially inwardly and perpendicularly to the radially outer surface; and
a resilient cushioning member extending continuously circumferentially and positioned laterally between the road wheel and the cover member and adapted to be compressibly engaged between the rib facing surface and only the wheel laterally outer surface.

5,346,289
CONTROL VALVE FOR HYDRAULIC BRAKING SYSTEM
Frederick W. Cords, Good Thunder, and David Frye, North Mankato, both of Minn., assignors to Total Quality Enterprises, Inc., Mankato, Minn.
Filed Oct. 30, 1992, Ser. No. 969,877
Int. Cl.[5] B60T 7/20
U.S. Cl. 303—7 17 Claims



1. A braking system for a towed vehicle having brakes and configured to be coupled to a towing vehicle of the type having brakes and means for providing a brake signal indicative of brake actuation, the braking system comprising:
a hydraulic pump configured to receive the towing vehicle brake signal, for providing pressurized hydraulic fluid for the towed vehicle brakes in response to actuation of the towing vehicle brakes;
hydraulic valve means operatively connecting the hydraulic pump to the towed vehicle brakes for hydraulic fluid flow; and
a piston in the hydraulic valve means responsive to forces between the towed and towing vehicles, for modulating hydraulic fluid flow from the hydraulic pump to the towed vehicle brakes as a function of forces between the towed and towing vehicles.

5,346,290
STRUCTURE FOR AIRBRAKE TUBING
Eric D. Orcutt, Rockvale, Tenn., assignor to Dana Corporation, Toledo, Ohio
Filed Apr. 26, 1993, Ser. No. 51,966
Int. Cl.[5] F16L 15/00, 41/14; B60T 17/04
U.S. Cl. 303—7 4 Claims



1. In combination with a truck trailer having at least one axle movable fore and aft with respect to the truck trailer, the truck trailer having a service supply line for providing compressed air for service braking of wheels mounted on the axle, an emergency air supply line for providing emergency air pressure to the brakes of the wheels, a service airbrake line connected to the brakes, and an emergency airbrake line connected to the brakes, the improvement comprising:
a first bracket fixed to the truck trailer at a location proximate the ends of the service air and emergency air supply lines and a second bracket fixed to the truck trailer at a location proximate the ends Of the service and emergency

airbrake lines, wherein the second bracket is fixed with respect to the axle for movement with the axle, the brackets having openings therethrough;

a first tube having first and second ends and a coiled portion between the first and second ends, the first tube being connected to the service air supply line at the first end with a spring nut and to the service air brake line at the second end with a spring nut;

a second tube having first and second ends and a coiled portion between the first and second ends, the coiled portion of the second tube being disposed within the coiled portion of the first tube, the second tube being connected to the emergency air supply at the first end with a spring nut and emergency airbrake line at the second end with a spring nut; and

four identical unitary end fittings mounted in openings in the brackets for connecting the first and second ends of the first and second tubes directly to the air supply and airbrake lines with second nuts;

the four identical end fittings comprising:

first threaded portions for threadably connecting by threadable engagement only with the spring nuts on one of the ends of the coiled tubes;

second threaded portions being received through the openings in the respective brackets;

third threaded portions of a diameter less than the second threaded portions for threadably engaging nuts on the airbrake or air supply lines;

unitary nut portions unitary with and located between the first and second threaded portions for engaging one side of the brackets, and second nuts threadably mounted on the second threaded portions by threadable engagement only for securing the end fittings to the brackets by sandwiching the brackets between the second nuts and the unitary nut portions.

5,346,291

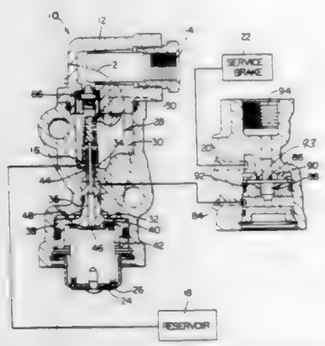
FLUID PRESSURE CONTROL VALVE WITH VALVE MEMBER MOUNTED ON GUIDE PIN SLIDABLY CARRIED BY PISTON

Andrew Marsh, Elyria, and Bruce E. Latvala, Grafton, both of Ohio, assignors to Allied-Signal Inc., Morristown, N.J.

Filed Dec. 2, 1992, Ser. No. 984,409

Int. Cl.[5] F16B *13/02*

U.S. Cl. 303—28 **15 Claims**



1. Fluid pressure responsive valve comprising a housing having an inlet port, an outlet port, and an exhaust port, said housing defining a chamber therewithin communicating said ports with one another, said chamber being defined by a wall of said housing, a valve seat defined on said chamber, a piston slidably mounted in said chamber, said piston including a portion extending through said valve seat, and a valve member carried on said portion of the piston, said valve member being mounted on and guided by a guide pin carried by said piston and slidable with respect thereto and also being separated from the wall defining said chamber, a spring yieldably urging said piston toward a position holding said valve member away from said valve seat, said piston including a fluid pressure responsive surface responsive to fluid pressure at said inlet port to move away from said valve seat to thereby permit said valve member to sealingly engage said valve seat, said piston thereafter moving away from said valve member.

5,346,292

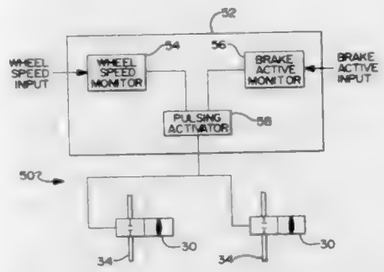
ACTIVE COMPENSATION SYSTEM

Thomas J. Hall, Holly, Mich., assignor to ITT Corporation, New York, N.Y.

Filed Apr. 21, 1993, Ser. No. 51,112

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—91 **24 Claims**



1. A method of eliminating excessive brake fluid pressure buildup that causes undesirable brake drag in a vehicle open hydraulic antilocking brake system of the type having an electronic controller and a brake conduit connected to a normally closed outlet valve that is connected to a pressure relief conduit, comprising the steps of:

(A) determining a time when the antilocking brake system is deactivated, using the electronic controller;

(B) determining a condition when brake drag exists, using the electronic controller; and

(C) pulsing the normally closed outlet valve beginning at the time in step (A) when the condition from step (B) exists, using the electronic controller, to thereby allow the excessive brake fluid pressure to exit the brake conduit through the normally closed outlet valve and the pressure relief conduit.

5,346,293

METHOD FOR ANTI-SKID BRAKE CONTROL

Katsumi Higashi, Higashimatsuyama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1993, Ser. No. 83,522

Claims priority, application Japan, Jul. 17, 1992, 4-190653

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—92 **5 Claims**

1. A method for anti-skid brake control comprising:

detecting a wheel speed by a wheel speed sensor,

comparing the detected wheel speed with an anti-skid brake control lower limit speed at which anti-skid brake control is initiated,

determining locking of the wheel on the basis of said wheel speed when said detected wheel speed is higher than said anti-skid brake control lower limit speed, and

controlling, when it is determined that said wheel is showing a tendency to lock, braking force for at least said wheel so that the locking tendency is cancelled,

said method additionally comprising determining whether said wheel sensor is defective by the steps of:

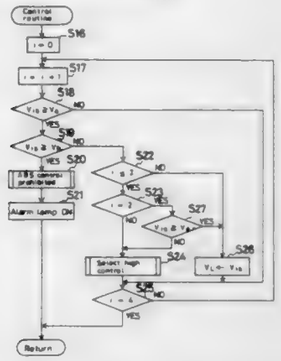
setting a first reference speed which is higher than said anti-skid brake control lower limit speed,

detecting a start-up wheel speed by said wheel speed sensor when the wheel speed gradually increases during starting of a vehicle,

comparing said start-up wheel speed with said first reference speed, and

determining said wheel speed sensor is defective, when said start-up wheel speed is higher than said first reference speed, and

said method further comprising:



modifying said anti-skid control, when said start-up wheel speed is higher than said first reference speed, by at least one of suspending said anti-skid brake control and performing anti-skid brake control for front wheels of said vehicle by using a highest wheel speed of said front wheels.

5,346,294

Patent Not Issued For This Number

5,346,295

COMPACT DISC STORAGE BOX AND RACK

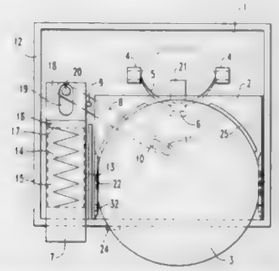
Herbert Richter, Englesbrand, Fed. Rep. of Germany, assignor to Herbert Richter, Metallwaren-Apparatebau GmbH & Co., Pforzheim, Fed. Rep. of Germany

Filed Jan. 22, 1993, Ser. No. 7,721

Claims priority, application Fed. Rep. of Germany, May 4, 1992, 9205830

Int. Cl.[5] A47B *81/06*

U.S. Cl. 312—9.12 **14 Claims**



1. A compact disc storage box for receiving a compact disc (CD) consisting of a housing having a bottom plate and a cover plate with side walls joined together such that said bottom plate and said cover plate are disposed in spaced parallel relationship to each other and define therebetween a space with a front opening, a disc carrier supported in said housing so as to be slidable into, and out of, said housing through said front opening between an inner end position in which said disc carrier is fully inserted in said housing and an outer end position in which said disc carrier is slid at least partially out of said housing, means for releasably retaining said disc carrier in its inner end position, said retaining means including a spring clip mounted pivotally on said bottom plate and extending transverse to the direction of sliding movement of said disc carrier into, and out of, said housing, said spring clip engaging said disc carrier, an ejector slide slidably supported in said compact disc storage box adjacent to, and at one side of, said disc carrier so as to be slidable in the same direction as said disc carrier and a double arm lever pivotally supported on a lug integrally formed with the bottom plate and having first and second ends, the first end hinged to said ejector slide and the second end hinged to said disc carrier.

5,346,296

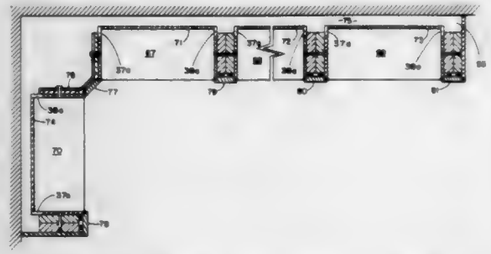
ASSEMBLY OF WALL UNITS WITH CONCEALED WIRE STORAGE

James O. Kelley, Spring Lake, Mich., assignor to Sligh Furniture Co., Holland, Mich.

Continuation of Ser. No. 770,015, Sep. 30, 1991, abandoned, which is a continuation of Ser. No. 505,555, Apr. 6, 1990, abandoned. This application Mar. 23, 1993, Ser. No. 36,193

Int. Cl.[5] A47B *53/00*

U.S. Cl. 312—198 **8 Claims**



1. A free standing furniture unit particularly suited for placement against a wall or back to back against like furniture units comprising:

one or more modules connected together in edge to edge fashion, each module having a front, back and sides, the sides comprising a pair of spaced vertical side panels, a rear panel extending between the side panels and enclosing the back of the module, components selected from the group consisting of shelves, cabinets, drawers and work surfaces being mounted between the side panels, the unit further comprising end panels mounted on outer surfaces of the side panels at exposed ends of the furniture unit, the end panels covering the side panels and extending rearwardly past rear edges of the side panels and the rear panels of the modules, such that when the furniture unit is placed against a wall, rear edges of the end panels can abut the wall so as to create the impression of a built-in furniture unit, while the rear panels and rear edges of the side panels are spaced away from the wall, the spacing being sufficient that electrical wiring and connectors can fit behind the unit and can extend in a completely concealed fashion from module to module between end panels at opposite ends of the furniture unit.

5,346,297

AUXILIARY STORAGE AND DISPENSING UNIT

Angus R. Colson, Jr., 1460 Myrtle, Jamul, Calif. 91935; Linda Pinney, 425 8th St.; Gregory J. Gruzdowich, 13352 Caminito Carmel, both of Del Mar, Calif. 92014, and Patrick M. Steusloff, 9414 Keck Ct., San Diego, Calif. 92129

Filed Jan. 4, 1993, Ser. No. 361

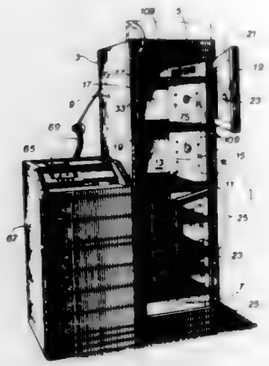
Int. Cl.[5] E05C *7/06*

U.S. Cl. 312—215 **49 Claims**

1. An auxiliary storage and dispensing unit for use in combination with a separate computer-controlled supply and medication dispenser station, said station including a keyboard for inputting coded information concerning the particular dispensable items needed for a patient and information as to the party entering the information, that causes electrical impulses to be issued therefrom in conformance with such information, comprising:

a) a cabinet having integrally connected top, bottom, side

and rear cabinet panels defining a tall storage and interior dispensing cavity accessible through a front opening;
b) a plurality of horizontally openable and closeable doors including door frames and transparent windows hingedly mounted and lockable over said front opening;
c) means for locking said doors when they are closed over said front opening; and,



d) door unlocking means interconnectable with the computer-controlled station and said locking means for receipt of said electrical impulses from said station to selectively unlock one or more of said doors at a particular location on said cabinet as a function of information inputted to said station.

5,346,298

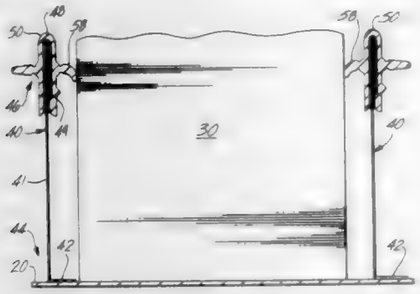
CARTRIDGE RETAINING MEANS

James E. Headley, Whittier, Calif., assignor to J. B. Engineering Co., Inc., Monrovia, Calif.

Continuation-in-part of Ser. No. 662,211, Feb. 28, 1991, Pat. No. 5,193,891. This application Mar. 16, 1993, Ser. No. 33,281

Int. Cl.[5] A47B *81/06*

U.S. Cl. 312—348.3 **19 Claims**



1. A storage cabinet drawer adapted for retaining plural cartridges in a spaced-apart relationship, the drawer comprising:
a drawer floor;
plural, substantially parallel, elongated channel walls attached to the floor; and
at least two elongated retaining devices attached to adjacent channel walls, each device having a resilient rib extending longitudinally and continuously along a length of each wall and protruding laterally into the channel in opposing relationship and normal to each wall, wherein the opposing ribs each have free ends with a thin cross section in relation to a lateral length of the ribs to provide narrow free ends comprising means for substantially linearly contacting and resiliently engaging opposite side edges of cartridges therebetween for holding them in place.

5,346,299

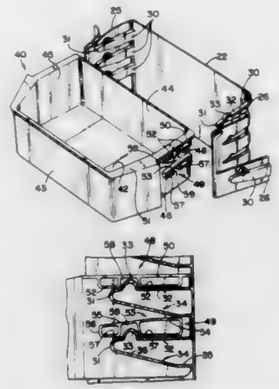
REFRIGERATOR DOOR MODULE MOUNTING ASSEMBLY

Robert L. Werkmeister, Shepherdsville, and Michael J. McCauley, Coxs Creek, both of Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jul. 15, 1993, Ser. No. 92,040

Int. Cl.[5] A47B *96/16*

U.S. Cl. 312—405.1 **11 Claims**



7. A refrigerator door storage module assembly including:
a refrigerator door having an outer shell and an inner liner including side walls and a rear wall defining a recess;
at least three module supporting ribs projecting inwardly of each of said side walls and aligned with corresponding ribs projecting inwardly of said other side wall;
each of said ribs extending forward from said liner rear wall to a distal end and including top and bottom walls; said top wall being generally horizontal and including an upwardly projecting tab proximate its distal end; and said bottom wall having a relatively short horizontal portion adjacent said liner rear wall and an upwardly inclined portion extending between said relatively short horizontal portion and said rib distal end so that the facing top and bottom walls of said vertically adjacent module supporting ribs diverge toward their distal ends;
at least one door storage module receivable in said door liner recess, said module including a pair of spaced apart side walls positionable adjacent said door liner side walls;
a pair of rails projecting outward of each of said module side walls and extending from adjacent the rear edge of the corresponding module side wall toward the front of said module; each rail defining a downward opening recess;
whereby said at least one module is assembled to said door by sliding said module rails between adjacent pairs of said liner ribs with said module rails received between vertically adjacent ones of said ribs until said recesses are aligned with corresponding tabs and then lowering said module to insert said tabs into said recesses.

5,346,300

BACK FIRE HELICAL ANTENNA

Hirohiko Yamamoto; Keijirou Higashi; Hiroyuki Takebe; Hiroshi Nakano, and Tomozo Ohta, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

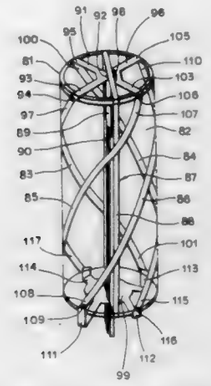
Filed Jul. 1, 1992, Ser. No. 907,137

Claims priority, application Japan, Jul. 5, 1991, 3-165976; Jul. 11, 1991, 3-171077; Dec. 16, 1991, 3-331886

Int. Cl.[5] H01Q *11/08, 1/36*

U.S. Cl. 343—895 **24 Claims**

1. A back fire helical antenna including a radiation conductor disposed helically, comprising:
a strip line including a dielectric substrate having a main surface and a back surface, a first strip conductor formed on said main surface, a second strip conductor formed on said main surface and electrically connected with said first strip conductor, and a conductive earth plate formed on said back surface,
said second strip conductor, said dielectric substrate and said conductive earth plate having transformation means for matching impedance of said radiation conductor and impedance of said strip line,



said radiation conductor being disposed helically about said strip line set as a center,
said radiation conductor having a first end electrically connected with said transformation means,
said radiation conductor having a second end electrically connected with said conductive earth plate.

5,346,301

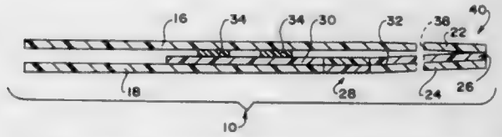
RECLOSABLE BAG WITH OFFSET END SEAL

Paul W. Scarberry, N51 WI6838 Fair Oak Pkwy., Menomonee Falls, Wis. 53051, and Barrie A. Bray, Brown Deer, Wis., assignors to Paul W. Scarberry, Menomonee Falls, Wis.

Filed Apr. 2, 1993, Ser. No. 41,752

Int. Cl.[5] B65D *33/18*

U.S. Cl. 383—5 **15 Claims**



1. A preopened reclosable bag having an offset end seal, the bag being formed from a folded over strip of plastic having one closed side edge and at least one open edge, the strip being used to create a continuous strip of bags, each bag comprising:
rectangular first and second layers of plastic, said first layer being sealed directly to said second layer along three of four edges thereof;
a gasket strip lying along one open side edge of said first layer of plastic and being heat sealed along its length to the first layer of plastic to produce a first flap lying along the side edge of the plastic and a second flap extending into the bag from the seal, the gasket strip being interposed between the layers of plastic;
closure means positioned along an open side edge of said second layer of plastic in a manner to allow engagement of said second layer of-plastic to said second flap of said gasket strip;
said side edges of said layers of plastic and said first gasket flap interposed therebetween being heat sealed together, the sealed area being scored to create a tear away tamper indicating end strip for the bag.

5,346,302

APPARATUS FOR MIXING LIQUIDS IN A CERTAIN RATIO

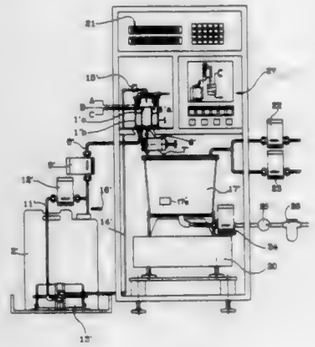
Do H. Ryu, Kyungsangnam-Do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Choongchungbook-Do, Rep. of Korea

Filed Nov. 21, 1991, Ser. No. 795,450

Claims priority, application Rep. of Korea, May 15, 1991, 7867/1991

Int. Cl.[5] B01F *13/02, 15/04*

U.S. Cl. 366—101 **10 Claims**



1. A liquid dispenser comprising:
a self-lubricating plastic container;
liquid level sensing means for sensing levels of a liquid supplied in said container;
liquid dispensing means for dispensing the liquid from said container in a quantity corresponding to a capacity of said container; and
automatic liquid supply means for automatically supplying the liquid from a chemical tank to said container.

5,346,303

SHAKER/INCUBATOR

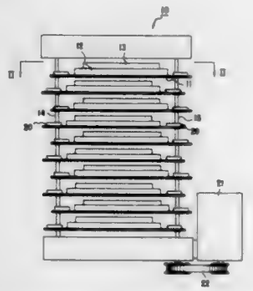
Aarne Heinonen, and Hannu Hietanen, both of Turku, Finland, assignors to Wallac Oy, Turku, Finland

Filed May 3, 1993, Ser. No. 55,298

Claims priority, application Finland, May 4, 1992, 922003

Int. Cl.[5] B01F *11/00*

U.S. Cl. 366—208 **3 Claims**



1. A shaker comprising at least two shaking plates, each plate having a plurality of recesses; a plurality of shaking bars, including an amount of a sample, insertable and removable from said plurality of recesses; a vertical separation distance defined between said at least two plates; a rotatable shaft connected to said at least two plates by an eccentric; drive means for driving said shaft and said eccentric in a predetermined rotational direction; a first gear connected to said eccentric; a second gear provided on a portion of said at least two shaking plates; sections of said first and second gears in rolling contact

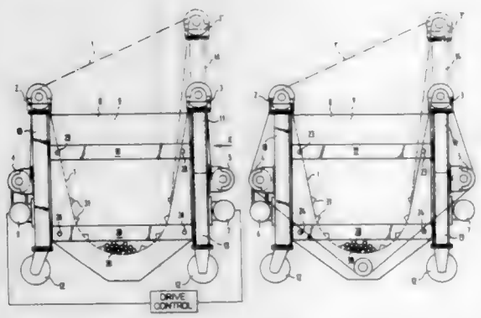
with each other; said first gear having a predetermined number of teeth which is less than a predetermined number of teeth of said second gear; said first gear rotating in a direction opposite to said predetermined rotational direction of said shaft and said eccentric and said first gear concentric with said eccentric; and, a predetermined difference established between diameters of said first and said second gears in which the diameter of the first gear is substantially twice as large as a distance established between a center point of said eccentric and a center point of said shaft.

5,346,304

APPARATUS FOR MIXING PROPELLANT CHARGE POWDER RODS

Helmut Kleinhans, Heldenstein/Harting, Fed. Rep. of Germany, assignor to WNC-Nitrochemie GmbH, Aschau, Fed. Rep. of Germany

Continuation of Ser. No. 690,947, Apr. 26, 1991, Pat. No. 5,290,100. This application Dec. 1, 1993, Ser. No. 159,747
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1989, 3930014; Apr. 19, 1990, 4012523
Int. Cl.[5] B01F *13/00*
U.S. Cl. 366—219 **11 Claims**



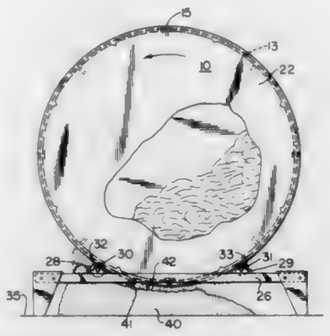
1. An apparatus for mixing propellant powder rods comprising:
a support frame,
a pair of deflecting drums mounted to said support frame, with said deflecting drums being disposed along parallel axes and being laterally spaced from each other,
a flexible band supportingly draped between said deflecting drums and so that the flexible band is suspended freely and forms a downwardly hanging unsupported loop therebetween,
a plurality of transverse studs mounted on the side of said band facing the interior of said loop,
lateral limiting means mounted to said support frame on each side of the portion of said band extending between said deflecting drums, and
drive means for moving said band back and forth between said deflecting drums,
whereby said band and said limiting means are adapted to support the powder rods so that the powder rods are supported upon the loop of said band and with their longitudinal length being transverse to the direction of movement of said band between said deflecting drums and whereby said transverse studs engage the powder rods and enhance the mixing thereof.

5,346,305

COMPOSTING APPARATUS

Francis B. Chester, 305 Monmouth Ave., Spring Lake, N.J. 07762

Filed Nov. 8, 1993, Ser. No. 149,044
Int. Cl.[5] C05F *11/08, 11/06;* **B01F** *9/02*
U.S. Cl. 366—233 **3 Claims**



1. A composting apparatus which comprises
(a) a drum of substantially circular cross section,
(b) said drum having opposite end walls and a generally cylindrical sidewall,
(c) said sidewall including wall panels having perforated portions,
(d) a removable door panel forming a portion of said sidewall and providing access for loading material into said drum,
(e) a support structure for said drum, supporting said drum for rotation at a height at which the lowermost portions of said drum are above ground level while providing access to said removable door panel for manual loading of said drum with materials for composting,
(f) a drive operative to controllably rotate said drum,
(g) a removable cover operative, when installed, to cover the perforated portions of said wall panels and effectively prevent the passage of materials therethrough, and
(h) a clearing bar, secured to the exterior of said drum, projecting radially therefrom and extending generally across the width of the perforated portions of said wall panels,
(i) said clearing bar being operative, when said cover is removed and said drum is rotated, to maintain a predetermined clearance space between lower portions of said drum and upper portions of an accumulating pile of sifted composted materials passing through the perforated portions of said wall panels.

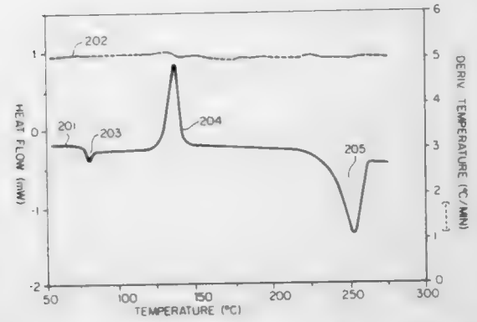
5,346,306

METHOD AND APPARATUS FOR MODULATED DIFFERENTIAL ANALYSIS

Michael Reading, London, England; Brian K. Hahn, Newark, and Benjamin S. Crowe, Centerville, both of Del., assignors to TA Instruments, Inc., New Castle, Del.

Continuation of Ser. No. 844,448, Mar. 2, 1992, Pat. No. 5,224,775. This application May 7, 1993, Ser. No. 60,214
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.[5] G01N *25/00*
U.S. Cl. 374—10 **44 Claims**

1. A method for analyzing a material using a differential scanning calorimeter comprising the steps of:
(a) selecting an underlying heating rate, modulation frequency and modulation amplitude;
(b) lacing a sample of the material in the differential scanning calorimeter;
(c) varying the temperature of the sample in the differential scanning calorimeter according to the selected underlying heating rate, the selected modulation frequency and the selected modulation amplitude;
(d) recording a signal representative of differential changes in the heat flow to and from the sample; and



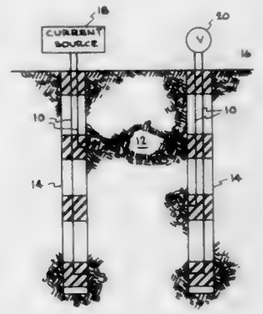
(e) deconvoluting the signal representative of differential changes in the heat flow to and from the sample to compute at least one deconvoluted signal.

5,346,307

USING ELECTRICAL RESISTANCE TOMOGRAPHY TO MAP SUBSURFACE TEMPERATURES

Abelardo L. Ramirez, Pleasanton; Dwayne A. Chesnut, San Francisco, and William D. Daily, Livermore, all of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Jun. 3, 1993, Ser. No. 72,601
Int. Cl.[5] G01K *3/00, 7/16, 13/00*
U.S. Cl. 374—136 **17 Claims**



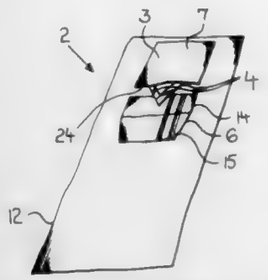
1. A method for remotely determining subsurface soil or rock temperatures using electrical resistance tomography, comprising:
a. measuring subsurface soil or rock ground resistance at least twice with a set of electrodes;
b. calculating an electrical resistance tomograph using Poisson's equation from the measured ground resistances;
c. re-measuring the subsurface soil or rock ground resistances as a process changes the temperature of the subsurface soil or rock;
d. calculating an electrical resistance tomograph from the re-measured ground resistances using said Poisson's equation;
e. calculating a difference tomograph from the tomographs produced from the measuring and the re-measuring steps; and
f. relating said difference tomograph to changes in soil or rock temperature.

5,346,308

BAG WITH STORAGE POCKET WHICH CONVERTS INTO A BEACH TOWEL

Dominique J. Buhot, and Rena Ross, both of P.O. Box 4414, Winter Park, Fla. 32793-4414

Filed Aug. 12, 1992, Ser. No. 928,287
Int. Cl.[5] B65D *30/10*
U.S. Cl. 383—4 **11 Claims**



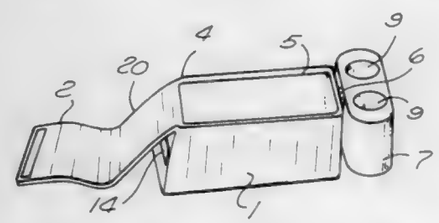
1. A bag with storage pocket which converts into a beach towel comprising:
a beach towel,
a bag front wall attached to said beach towel,
a flap attached to said beach towel, said flap comprising a flap base attached to said beach towel and a free flap rotatably attached to said flap base, and
straps attached to said flap base and said bag front wall, said straps extending between said bag front wall and said beach towel.

5,346,309

COLLAPSIBLE, PORTABLE, MULTIPLE USE, INSULATED BAG WITH COMPANION ATTACHABLE MULTIPLE USE BAG

Steven C. Book, North Hollywood, Calif., assignor to Auto-Shade, Inc., Moorpark, Calif.

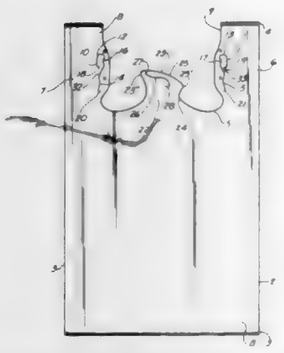
Continuation of Ser. No. 757,077, Sep. 10, 1991, Pat. No. 5,190,376. This application Oct. 29, 1992, Ser. No. 968,160
The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.
Int. Cl.[5] B65D *30/08*
U.S. Cl. 383—4 **8 Claims**



1. A storage bag that can be attached to an external mounting surface comprising:
a flexible bag having a front wall, a back wall, a pair of side walls and a bottom wall, said walls defining a cavity that has an inner volume, said flexible bag further having a top cover pivotally attached to said back wall such that said top cover can be placed over said cavity, said front wall having a first attachment strip; and,
a companion bag that has outer dimensions smaller than said inner volume of said cavity such that said companion bag can be stored within said cavity of said flexible bag such that said flexible bag and said companion bag can be folded into a collapsed position, said companion bag having a beverage cavity adapted to receive a beverage container, said companion bag having a second attachment strip attached to said first attachment strip such that said

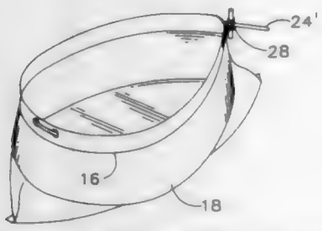
companion bag is attached to said flexible bag and a third attachment strip attached to said bottom wall and adapted to attach said flexible bag to an external mounting surface.

5,346,310
THERMOPLASTIC BAG SYSTEM
Tai H. Nguyen, Kenner, La., assignor to Advance Poly Bag, Inc., Metairie, La.
Continuation-in-part of Ser. No. 2,196, Jan. 8, 1993, Pat. No. 5,269,605. This application Dec. 9, 1993, Ser. No. 164,264
Int. Cl.[5] B65D *1/34*
U.S. Cl. 383—9 **3 Claims**



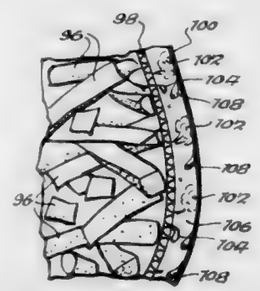
1. A thermoplastic bag having first and second sides and bottom and top ends, said bag comprising:
a bag mouth having opposing ends and a medial area;
a tab emanating from said bag mouth, said tab further comprising a bulbous top portion having a having a sloping top edge having a first upper end extension and second, lower end extension; said tab further including a neck area juxtaposed said bulbous top portion and said bag mouth, said neck having a first, longer neck edge and second, shorter neck edge respectively situated under said first upper and second lower end extensions of said bulbous top portion.

5,346,311
SEALABLE OPEN-MOUTH BAG
Buzz L. Siler, 3328 Lakeview Blvd., Lake Oswego, Oreg. 97035, and Daniel R. Garcia, 17905 SW. Pacific Hwy., Tualatin, Oreg. 97062
Filed Sep. 20, 1993, Ser. No. 124,154
Int. Cl.[5] B65D *33/30*
U.S. Cl. 383—75 **2 Claims**



1. A flexible bag having an open top end configured to be releasably retained in a fully open condition, the bag comprising:
a) a bag body of flexible material forming closed side walls, a closed bottom end, an open top end, and a hollow interior thereinbetween,
b) a peripheral sleeve on the bag body adjacent to and encircling the open top end thereof, the sleeve forming an enclosed, hollow, peripheral pocket about the open top end of the bag body,
c) an elongated strap member having opposite end portions, the strap member being freely contained within the sleeve and encircling the open top end of the bag body, the opposite end portions of the strap member exiting the sleeve closely adjacent each other and configured for connection to each other outside of the sleeve, the strap member configured, with its opposite end portions connected together, to form an outwardly-tensioned hoop that retains the top end of the bag body in fully open condition, and
d) a flexible, bag-encircling apron member secured at an upper edge on the bag body adjacent the open end thereof and extending downwardly therefrom about the outside of the side walls of the bag body, the apron member configured to support an upper portion of the bag body a spaced distance above an underlying surface upon which the bag is to be disposed and maintain the open top end of the bag body in a substantially level, bowl-like condition against tilting and collapse to prevent inadvertent spillage of the contents of the bag.

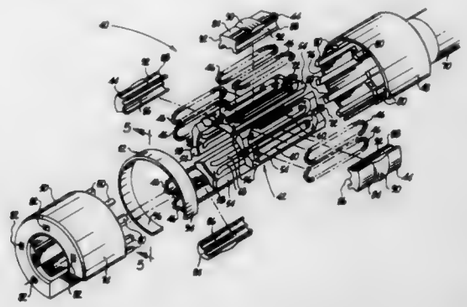
5,346,312
BAGS FOR MAINTAINING CRISPNESS OF COOKED FOODSTUFF
Ronald D. Mabry, Orchard Park, N.Y., and Gerald F. Unger, Richmond Hts., Ohio, assignors to Flexo Transparent Inc., Buffalo, N.Y. and The Unger Company, Cleveland, Ohio
Filed Jun. 7, 1993, Ser. No. 72,885
Int. Cl.[5] B65D *30/08*
U.S. Cl. 383—113 **29 Claims**



1. A bag, which comprises a product compartment defined by walls having at least two plies of film:
(a) a nonporous exterior film ply, and
(b) a porous interior film ply as a bag liner for engagement with a package product, said porous interior film ply having inner and outer surfaces, said outer surface being in proximity to said nonporous exterior film ply, said porous interior film ply and nonporous exterior film ply being spaced sufficiently from one another to form an enclosed vacant fluid reservoir, said porous interior film ply having a plurality of tapered apertures extending from said outer surface of said interior film ply and emptying into said vacant fluid reservoir.

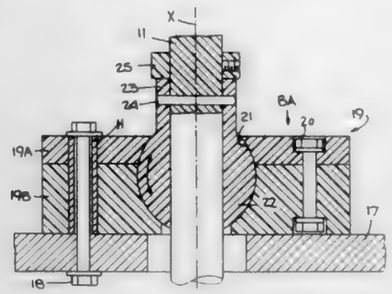
5,346,313
LINEAR MOTION BEARING ASSEMBLY
Alison Ng, New York, N.Y., assignor to Thomson Industries, Inc., Port Washington, N.Y.
Filed Jul. 20, 1993, Ser. No. 94,514
Int. Cl.[5] F16C *29/06*
U.S. Cl. 384—43 **22 Claims**

1. A linear motion bearing assembly for movement along a shaft comprising:
ball retainer structure having at least a portion of a plurality of axial ball tracks formed therein, said ball tracks including a load bearing portion, a return portion and turnarounds interconnecting said load bearing and return portions;
a plurality of bearing balls disposed in said ball tracks;
an outer housing including a pair of sleeves for enclosing substantially all of an exposed exterior surface of said ball retainer structure, said sleeves being formed of an engineering plastic;



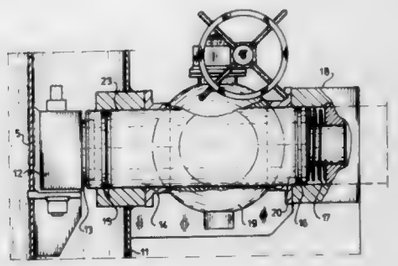
a plurality of load bearing plates axially positioned within said outer housing for receiving load from said balls disposed in said load bearing portion of the ball tracks; and
plate retainer means disposed at least partially around a medial portion of said ball retainer structure for maintaining said plurality of load bearing plates in position and for receiving load from said load bearing plates.

5,346,315
BALL AND SOCKET BEARING ASSEMBLY FOR A RUDDER POST
Jeffrey W. Strong, Boca Raton, and John R. Newton, Jupiter, both of Fla., assignors to Tides Marine, Inc., Boca Raton, Fla.
Filed May 7, 1993, Ser. No. 25,618
Int. Cl.[5] F16C *23/04;* **B63H** *25/06*
U.S. Cl. 384—192 **9 Claims**



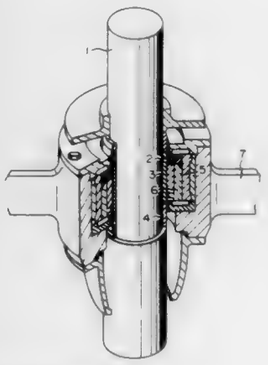
1. A ball and socket bearing assembly engaging a rudder post installed in the stern of a boat having a hull and maintaining its proper position regardless of the degree to which the post deviates from a vertical axis and is subjected to hydrodynamic forces seeking to displace the post, said assembly comprising:
(a) a journal box mountable on a horizontal platform in the boat, said box having an internal spheroidal cavity; and
(b) a bearing having a longitudinal bore through which the post extends, said bearing having a spheroidal section whose form conforms to that of the cavity, the spheroidal section being nested and rotatable in the cavity of the box and being confined thereby, and a cylindrical section integral with the spheroidal section and projecting out of an opening in the box, said bearing aligning itself with the post extending therethrough regardless of the degree to which it deviates from the vertical axis.

5,346,314
BEARING ASSEMBLY AND VESSEL TURRET ASSEMBLY
René Perratone, and Yves Tosetti, both of Menton, France, assignors to Single Buoy Moorings, Inc., Marly, Switzerland
Filed Jan. 21, 1993, Ser. No. 6,996
Int. Cl.[5] B63B *21/00*
U.S. Cl. 384—97 **11 Claims**



1. Bearing assembly having at least a section of which one side is exposed to a first condition and the other side to a second condition, wherein on the other side a compartment is provided which can receive said section, wherein said section is displaceable between a first position in which it acts as a part of the bearing and a second position in which it can be exchanged, wherein said compartment is provided with valve means to isolate the compartment together with the section in its second position from said first condition.

5,346,316
BEARING UNIT, DRAINAGE PUMP AND HYDRAULIC TURBINE EACH INCORPORATING THE BEARING UNIT
Ryoji Okada, Ibaraki; Kooju Aizawa, Hitachi; Masayuki Yamada; Kenji Otani, both of Tsuchiura; Kunio Takada, Ibaraki; Mitsuaki Haneda, Ibaraki, and Toshihiro Yamada, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 18, 1993, Ser. No. 34,379
Claims priority, application Japan, Mar. 18, 1992, 4-091571
Int. Cl.[5] F16C *33/04*
U.S. Cl. 384—297 **10 Claims**



1. A bearing unit comprising:
a bearing; and

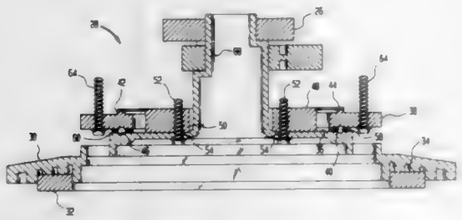
a sleeve which is in slide-contact with said bearing, wherein said bearing and/or said sleeve made of a metal having a contact surface applied with a sprayed coating, the main component of which is WC, and which contains one or more elements selected from a group consisting of nickel, chromium and cobalt as a binder material thereof, and the number ratio of blow holes contained in the surface of said sprayed coating and having a size of not smaller than 20 μm is 15 per square millimeter or less.

5,346,317

HORIZONTAL BEARING ARRANGEMENT WITH CONTROLLED DRAG

Jack L. Williams, Orange, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Aug. 9, 1993, Ser. No. 104,959
Int. Cl.[5] F16C *19/10*
U.S. Cl. 384—611 **12 Claims**



1. A horizontal bearing arrangement, for (a) coupling thereto, and (b) rotatably supporting, an electrically-powered device, comprising:

a generally annular base;

said base having a substantially planar platform and annular groove formed thereon;

a plate surmounting said platform, having an annular trough formed therein;

said groove and trough are in mutually confronting alignment;

a plurality of rolling elements, interposed between and rollingly engaged within said trough of said platform and said groove of said plate, for accommodating rotation of said plate relative to said platform; and

restraining means coupled to said base, and surmounting said plate, for restraining rotation of said plate, and said restraining means comprising a disk with radially-extending limbs for biasingly engaging said plate and for imposing a controlled drag on the plate rotation.

5,346,318

THERMAL RECORDING HEAD DRIVING DEVICE

Takafumi Endo, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

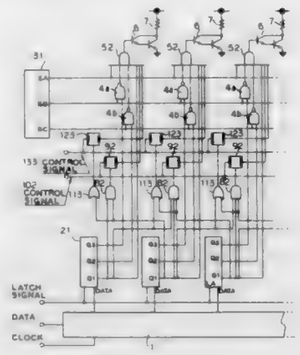
Filed Sep. 28, 1992, Ser. No. 952,254
Claims priority, application Japan, Oct. 3, 1991, 3-281906; Oct. 21, 1991, 3-299621
Int. Cl.[5] B41J *2/36*
U.S. Cl. 400—120.15 **4 Claims**

1. A thermal recording head driving device for driving a plurality of thermal recording heads associated with respective dots to be energized comprising:

a number of latch circuits for retaining information on the energization of the thermal recording heads in the present line which is indicative of the temperature of the thermal heads in said present line, which is recorded with respect to dots serving as objects to be energized, and for retaining respective information on the energization of the thermal recording heads in the previous lines which is indicative of the temperature of the thermal heads in said previous lines, which is recorded with respect to dots serving as objects to be energized;

a number of gate circuits for outputting pulse signals each indicative of an energizable state of each thermal recording head therefrom;

a gate signal generating unit for outputting gate signals to generate the pulse signals each indicative of the energizable state of each thermal recording head in accordance with each of output patterns of the said latch circuits, to said gate circuits; and



a number of AND gates for inputting control signals to control the time required to energize the said thermal recording heads to each of the said gate circuits in response to the recorded information output from the initial latch circuit and other adjacent latch circuits of the said latch circuits provided for every dot.

5,346,319

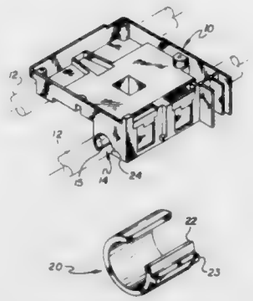
Patent Not Issued For This Number

5,346,320

PRINTER CARRIAGE BUSHING

Michael A. Nguyen, Singapore, Singapore, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 23, 1992, Ser. No. 965,480
Int. Cl.[5] B41J *11/22*
U.S. Cl. 400—354 **8 Claims**



1. A bushing assembly for a printer carriage supportable in a radial direction for movement along one or more parallel slider rods, said assembly comprising:

a rigid bushing housing having a dimensionally stable inner wall which terminates in a lower slot;

a resilient molded bushing liner having a C-shaped bearing surface and an outer wall, wherein said inner wall of said housing and said outer wall of said liner are C-shaped, said liner having an axially extending gap therein whereby said liner may be compressed and is slideable into said housing along the direction of movement of said carriage, said molded liner comprising a mixture of self-lubricating materials which shrinks during the molding process and which is dimensionally less stable than said housing inner wall, said liner being slidably mounted in said inner wall so that said lower slot of said bushing housing and said gap of said liner both face downwardly after mounting on the one or more slider rods;

wherein said inner wall confines said outer wall of said liner to hold said liner in a predetermined position without any additional adjustment in the radial direction, said inner wall preventing said bearing surface from exceeding a desired tolerance with a slider rod on which said liner rides during operation of said printer carriage; and

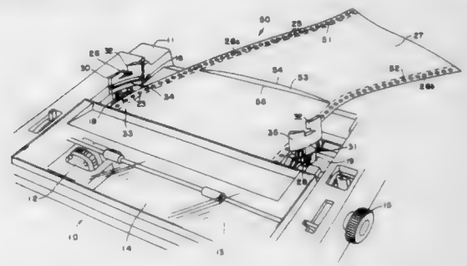
said outer wall further including a stop member for engaging said inner wall to prevent rotation of said liner relative to said housing.

5,346,321

PRINTER WITH EDGE STRIP TRIMMER INCLUDING A DOWNWARDLY EXTENDING EDGE SURFACE

James R. Eudy, 4316 Whitetail Ln., Midland, N.C. 28107

Continuation-in-part of Ser. No. 947,751, Sep. 21, 1992, which is a continuation-in-part of Ser. No. 826,820, Jan. 28, 1992, Pat. No. 5,190,386. This application Mar. 22, 1993, Ser. No. 34,118
The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.
Int. Cl.[5] B41J *11/26*
U.S. Cl. 400—621.1 **16 Claims**



1. In a printer having first and second opposed sprocket means positioned on opposed sides of a printer platen for feeding from an upstream to a downstream direction continuous-feed paper sheets having continuous-feed edge strips formed along the opposing sides of the paper sheets, the combination of an edge strip trimming apparatus, said edge strip trimming apparatus comprising first and second edge strip trimmers, each of said edge strip trimmers comprising:

(a) edge strip hold-down means positioned in spaced-apart relation to one of the first and second sprocket means for receiving a sheet of paper to be separated from the edge strip and for holding the edge strip against the sprocket means as the paper is fed through the printer;

(b) separating means for separating the edge strip from the paper sheet, said separating means comprising a paper sheet support bed for extending inwardly from the edge strip hold-down means to a point underneath the horizontal plane of the paper sheet for progressively diverging the plane of the edge strip from the plane of the paper sheet as the paper sheets are successively fed through the printer; and

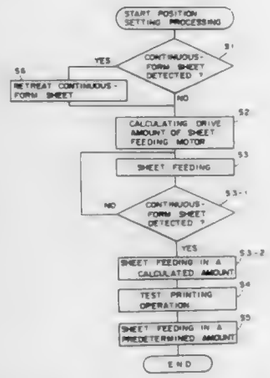
(c) an edge surface defined by said support bed, said edge surface having a gradual compound curve which tapers forwardly in the direction from which the paper sheets are fed through the printer, and downwardly to a point beneath the bottom surface of said edge strip hold-down means, said edge surface extending downwardly to ensure separation of the edge strip from each successive paper sheet as said sheets are progressively fed through the printer.

5,346,322

PRINTING DEVICE HAVING PAPER FEED CONTROL

Shuhei Okamori, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 821,330, Jan. 13, 1992, abandoned, and Ser. No. 513,825, Apr. 24, 1990, abandoned. This application Jun. 3, 1993, Ser. No. 71,376
Claims priority, application Japan, Apr. 24, 1989, 1-104157; Dec. 26, 1989, 1-340125
Int. Cl.[5] B41J *29/44*
U.S. Cl. 400—709 **17 Claims**



1. A printing device, capable of employing at least a continuous-form printing sheet successively having a plurality of printing forms along a predetermined direction, comprising a printing unit for executing a printing operation on a printing sheet, and a sheet feeding unit for feeding the printing sheet along said predetermined direction at least toward a position at which said printing unit is located, said printing device further comprising:

printing start position setting means for inputting data representative of a print start position on said printing sheet without moving said printing sheet, said position being spaced apart from a first leading edge of the printing sheet;

detecting means, provided at a point upstream of said printing unit for detecting if said printing sheet is at said point;

first controlling means for controlling said sheet feeding unit so at to reversely feed the printing sheet while said first leading edge of said printing sheet is detected by said detecting means;

second controlling means for controlling said sheet feeding unit so as to forwardly feed the printing sheet toward said printing unit until said first leading edge of said printing sheet is detected by said detecting means;

third controlling means for controlling said sheet feeding unit so as to further feed the printing sheet in accordance with data inputted by said printing start position setting means so that the print start position is located at said printing unit;

print controlling means for controlling said printing unit so as to execute a test printing operation when the print start position having been set by said print start position setting means is located at said printing unit;

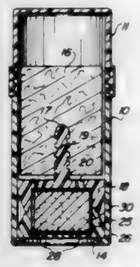
cutting means downstream of said printing unit;

fourth controlling means for controlling said sheet feeding unit so as to feed said printing sheet forwardly until a boundary position between a form on which said printing operation is executed and the next successive form is positioned at said cutting means with a second leading edge, said first controlling means retracting said sheet until said second leading edge is detected by said detecting means;

whereby said test printing operation is executed on the print start position, so that a positional relation between said print start position and the leading edge of the printing sheet is

represented on said printing sheet and thereafter the printing sheet is fed so that said boundary is located at said cutting means.

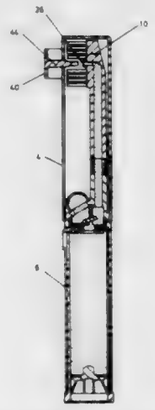
5,346,323
PUSH-UP PACKAGE
Dennis Harris, Scottsdale, and Ronald General, Phoenix, both of Ariz., assignors to GHS Products, Inc., Phoenix, Ariz.
Continuation-in-part of Ser. No. 958,698, Oct. 9, 1992, Pat. No. 5,286,126. This application Aug. 6, 1993, Ser. No. 103,276
The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.
Int. Cl.[5] A45D *40/02*
U.S. Cl. 401—82 14 Claims



1. A solid crystal deodorant product and package including in combination:
a hollow main body portion having first and second ends and having a uniform cross section across the length thereof between said first and second ends, said main body portion open on at least at the first end thereof;
a slide member located within and frictionally engaging the interior of said main body portion and configured to permit movement therein from the second end of said main body portion to the first end thereof;
blocking means at the second end of said main body portion for inhibiting said slide member from moving past the second end of said main body portion;
a solid crystal deodorant product;
means on said slide member for holding said solid crystal deodorant product thereon for movement therewith within said main body portion, with said crystal deodorant product spaced from said main body portion to permit fluid to flow therebetween during use of said package and spaced from said slide member to permit fluid to flow between said crystal deodorant and said slide member; and
aperture means in said slide member for permitting the passage of fluid therethrough to the second end of said main body portion during use of said package.

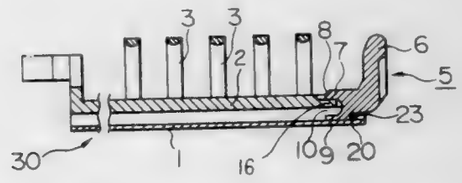
5,346,324
DENTIFRICE DISPENSING TOOTHBRUSH WITH REPLACEABLE CARTRIDGE
Youti Kuo, 88 Foxbourne Rd., Penfield, N.Y. 14526
Continuation-in-part of Ser. No. 762,470, Sep. 19, 1991. This application Sep. 28, 1993, Ser. No. 127,828
Int. Cl.[5] A46B *11/02*
U.S. Cl. 401—146 8 Claims

1. A dentifrice dispensing toothbrush comprising:
a. a pump assembly which consists of:
i. a pump chamber having a base which has an interior surface and an exterior surface, a top, a side wall disposed between the interior surface of the base and the top, a first opening positioned in the base, a second opening positioned in either the sidewall or the top and a third opening positioned in the top;
ii. a resilient, elastic, compressible button for supplying a pumping force, said button having an external surface, an internal surface and a base which is fixed to the second opening in the top or side wall of the pump chamber in a manner such that the button is depressed when a pumping force is applied to its external surface forcing dentifrice material to flow from the pump chamber through the third opening in the top thereof, and is returned to its original shape by its resilient force when the pumping force is released causing dentifrice material to flow to the pump chamber through the first opening in the base of the chamber;
iii. a partition which divides the pump chamber into an intake compartment and a discharge compartment, said partition being attached to the top of the pump chamber between the second and third openings and to the interior surface of the base of the pump chamber in a manner such that it overlies the first opening;
iv. a flap check valve attached to the interior surface of the base for preventing backflow of dentifrice material through the first opening in the base of the pump chamber;
v. an arched aperture in said partition for placing the intake compartment and discharge compartment in communication with each other, said arched aperture being positioned in the end of the partition that is attached to the interior surface of the base in a manner such that it overlies the flap check valve and the first opening, the width of said arched aperture being substantially the same as the width of the flap check valve



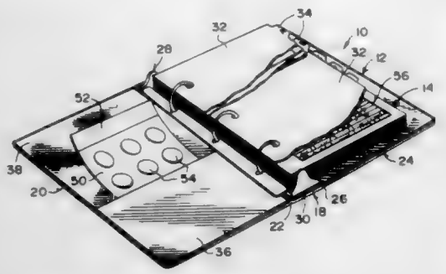
and the height of said arched aperture being less than the length of the flap check valve;
b. a brush head having a platform with an outlet opening therethrough and a series of bristles which are attached to the platform;
c. a neck comprising a hollow conduit having two open ends, one of which is in communication with the opening in the platform of the brush head and the remaining of which is in communication with the third opening in the top of the pump chamber; and
d. a brush handle comprising a housing for storing a removable cartridge, said housing being comprised of a tubular side wall having a top which is attached to the exterior surface of the base of the pump chamber and a bottom which is open;
e. a removable cartridge stored in said housing, said removable cartridge being comprised of:
i. a top which has an interior surface and an exterior surface, said top having an opening therethrough which is in communication with the opening in the base of the pump chamber;
ii. a base;
iii. a side wall disposed between the base and the top;
iv. a follower disc; and
f. locking means for preventing pumping action when the follower disc is at its terminal position, said locking means comprising a plug which is attached to the follower disc and which simultaneously blocks the flap check valve in its open position while sealing off the first opening and the arched aperture when the follower disc is at its terminal position, thereby preventing further flow of dentifrice material from the cartridge and the intake chamber to the discharge chamber and the brush head.

5,346,325
PAPER HOLDER HAVING A LOCKING DEVICE
Seiichi Yamanoi, 1670-2, Oaza-Butai, Ina-machi, Tsukuba-gun, Ibaraki-ken, Japan
Filed Jul. 23, 1993, Ser. No. 94,992
Claims priority, application Japan, Jul. 24, 1992, 4-057716[U]
Int. Cl.[5] B42F *3/00*
U.S. Cl. 402—38 8 Claims



1. A paper holder having a locking device for preventing clipping fingers from incidental opening comprising:
a back plate made of a resilient material,
a pair of main bodies having longitudinal inner sides pivotally connected to each other and longitudinal outer sides embracing both of longitudinal outer sides of said back plate and rotatable at the embraced outer sides as pivotal portions and
a plurality pairs of arcuate clipping fingers planted in a row at the upper surface of the said main bodies along the longitudinal direction thereof, in which the top end of each pair of the clipping fingers are capable of engaging or disengaging with each other by the vertical movement of the joining inner sides of said main bodies and
a locking mechanism rotatably engaged at one end of said main bodies, wherein
the locking mechanism comprises a vertical manipulation member and an actuation portion disposed at the back of said manipulation member, in which
the actuation member has an upper member which is to be in contact with the upper surface of an engaging portion on both corners of the joining inner sides at the longitudinal end of said main bodies and a lower member which is to be contact with a lower surface of said engaging portion upon manipulation, and in which
said upper member and said lower member extend horizontally opposing to each other to define a gap therebetween which is greater than the thickness of said engaging portion, whereby
said upper member of the manipulation member is brought into contact with and immovably retains the upward movement of said main bodies in a vertically erected state of said manipulation member; and
wherein retaining fingers protrude from the upper surface on the outer corners at the longitudinal end of the main bodies, while retaining ridges are formed along said edges at the back of the manipulation member such that the retaining fingers of said main bodies can be resiliently seized on the outsides thereof with said retaining ridges at the back of said manipulation member.

5,346,326
VIDEO GUIDE
Donald J. Bienvenu, 1311 W. "I" St., Wilmington, Calif. 90744
Filed Jul. 30, 1993, Ser. No. 99,424
Int. Cl.[5] B42F *13/00*
U.S. Cl. 402—79 11 Claims



1. A video guide which comprises:
a) a binder, said binder including a spine, a front cover hinged to said spine containing a pocket on an inner surface of said front cover for storing notes, cards and similar articles therein, a back cover hinged to said spine, a three ring mechanism mounted on an inner surface of said spine for holding the data pages within said binder;
b) a plurality of data pages held within said binder for listing and keeping track of video cassette tapes that are rented and bought;
c) a plurality of index dividers each having a tab with one letter of the alphabet thereon, so as to arrange in alphabetical order the video cassette tapes listed on said data pages;
d) a pocket on an inner surface of said front cover for storing notes, cards and similar articles therein;
e) a plurality of memo pages for keeping track of video cassette tapes to buy, rent and that are loaned out;
f) a first title box with the words "VIDEO GUIDE" applied to an outer surface of said spine;
g) a second title box with the words "VIDEO GUIDE" applied to an outer surface of said front cover, so that said first and said second title boxes will identify said binder; and
h) a plurality of application sheets, each having at least one adhesive rectangular label and a plurality of adhesive circular number stickers which can be applied to the actual video cassette tapes, so that the tapes can be correlated to the information placed upon said data pages in said binder.

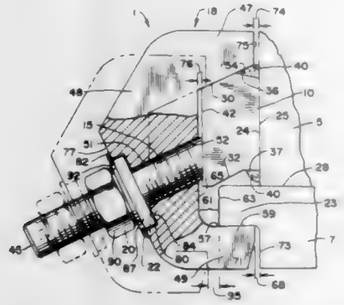
5,346,327
SPRINGY FASTENER HELD OPEN BY A MELTABLE MATERIAL
Edward Herbert, 1 Dyer Cemetery Rd., Canton, Conn. 06019-2029
Filed Nov. 10, 1992, Ser. No. 974,847
Int. Cl.[5] H01R *4/10, 4/48*
U.S. Cl. 403—272 9 Claims



1. A method of securing at least one member, comprising providing a tube made of a springy material which is restrained in a first diameter by a second material so as to freely receive at least one member,

inserting the at least one member into the tube,
melting the second material so that the tube is no longer restrained and the tube's diameter is constricted so as to secure the at least one member,
wherein the tube comprises a first lengthwise edge and a second lengthwise edge, and
the second material is in the form of a wedge and is positioned to fit between the first and second lengthwise edges of the tube so as to force open the tube into a diameter larger than its unrestrained diameter.

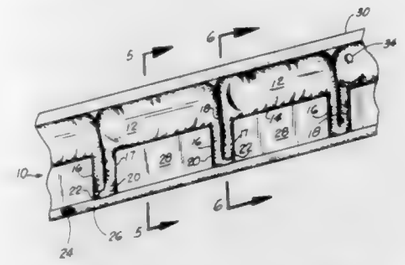
5,346,328
PRESS DIE CLAMP
Dennis H. Vaders, Elkin, N.C., assignor to Masonite Corporation, Chicago, Ill.
Continuation of Ser. No. 880,703, May 8, 1992, abandoned. This application Sep. 28, 1993, Ser. No. 129,875
Int. Cl.[5] F16B *1/00, 4/00*
U.S. Cl. 403—374 **23 Claims**



1. An apparatus for clamping together first and second separable components comprising
(a) a support member having an inclined surface and being adapted to be fixed to the first component,
(b) a mounting member fixed to said support member and extending therefrom, and
(c) a clamping member slidably mounted on said mounting member and movable between a clamping position and a detached position thereon, said clamping member having first and second legs, said first leg having a first surface being adapted to frictionally engage the second component and said second leg having a second surface being adapted to frictionally engage the support member along said inclined surface when in said clamping position, said first and second legs retaining the first component adjacent to the second component during thermal expansion of the components while in said clamping position, said clamping member being disengagable from both said first and second components when in said detached position.

23. In a clamping system for holding a first component to a lip of a second component, the components having surfaces that extend due to heat expansion, the improvement comprising:
(a) a first member having first and second oppositely disposed faces and an inclined surface, said first member adapted to be fixed to the first component at said first face,
(b) a mounting member fixed to the first member and extending outwardly from said second face,
(c) means for clamping the first component to the second component slidably mounted on the mounting member, said means having a first sloped surface adapted to frictionally engage said inclined surface and a second surface adapted to frictionally engage the lip of the second component while in spaced relation to the extending surfaces thereof.

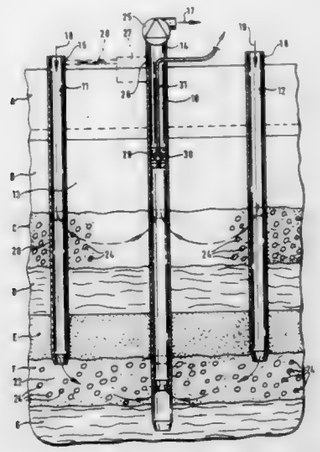
5,346,329
FLOATING BARRIER METHOD AND APPARATUS
Kip B. Goans, and Richard J. Lazes, both of Harvey, La., assignors to Oil Stop, Inc., New Orleans, La.
Continuation-in-part of Ser. No. 19,030, Feb. 18, 1993, which is a continuation-in-part of Ser. No. 933,721, Aug. 24, 1992, which is a continuation-in-part of Ser. No. 752,002, Aug. 29, 1991, Pat. No. 5,195,844, which is a continuation of Ser. No. 638,704, Jan. 8, 1991, abandoned, which is a continuation of Ser. No. 424,158, Oct. 19, 1989, Pat. No. 5,022,785. This application Feb. 19, 1993, Ser. No. 19,863
Int. Cl.[5] E02B *15/04*
U.S. Cl. 405—68 **22 Claims**



1. A flexible inflatable float boom for confining a material floatable on a liquid surface comprising:
(a) a plurality of sealed inflatable buoyancy chambers sequentially secured together;
(b) impervious channel means communicating with and extending downwardly from each of said buoyancy chambers for providing access to each of said buoyancy chamber;
(c) passageway means for coupling a lower end region of a said channel means of one of said buoyancy chambers with a lower end region of a said channel means of its adjacent said buoyancy chamber, said passageway means and said channel means providing for the passage of a pressurized inflating medium there through into said buoyancy chambers;
(d) ballast means secured to said float boom underneath said buoyancy chambers for maintaining said boom in a proper orientation when deployed; and,
(e) means for blocking access to a said buoyancy chamber whenever the internal pressure within its respective said channel means is less than the external hydrostatic pressure acting upon the said channel means.

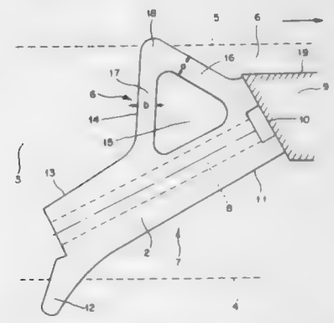
5,346,330
METHOD OF YIELDING OIL RESIDUES OR OIL CONTAINING LIQUIDS FROM CONTAMINATED GROUND LAYERS
Bruno Bernhardt, Reutlingen, Fed. Rep. of Germany, assignor to IEG Industrie-Engineering GmbH, Betzingen, Fed. Rep. of Germany
Filed May 19, 1993, Ser. No. 63,991
Claims priority, application Fed. Rep. of Germany, May 23, 1992, 4217184
Int. Cl.[5] E02B *15/08;* **B09B** *3/00*
U.S. Cl. 405—128 **10 Claims**

1. A method of yielding oil residues or oil containing liquids from contaminated ground layers, comprising the steps of forming at least two adjacent bore holes in a contaminated ground region; producing connecting passages between said bore holes by loosening and partially rinsing out components of a ground material which surrounds said bore holes by directing a liquid in any of said bore holes; applying an underpressure in at least one of said bore holes for aspirating a liquid column upwardly in said at least one bore hole; supplying a fluid in at least another of said bore holes with maintaining a pressure difference between said bore holes; and in said at least one bore hole which is under underpressure, aspirating oil



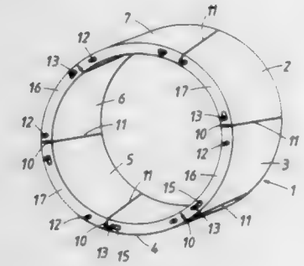
which is separated from the liquid column inside said one bore hole or an oil containing cover layer of the liquid column.

5,346,331
SHIELD TAIL SEALING
Siegfried Glang, Hamburg, and Lothar Anheuser, Bad Nauheim, both of Fed. Rep. of Germany, assignors to Phoenix Aktiengesellschaft, Hamburg, Fed. Rep. of Germany
PCT No. PCT/DE92/00860, § 371 Date Mar. 19, 1993, § 102(e) Date Mar. 19, 1993, PCT Pub. No. WO93/08370, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 10, 1992, Ser. No. 30,373
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1991, 4134433
Int. Cl.[5] E21D *9/06*
U.S. Cl. 405—147 **16 Claims**



1. Shield tail sealing for driving shields for use with a tunnel lining which has an outer side and an upper zone, said sealing comprising
a basic body made of elastomeric material and having an outer side and having a substantially rectangular cross section in a longitudinal direction and being inclined against a driving direction;
a sealing nose having an inner side, formed by molding at a sliding end on said inner side which, in an operating condition, elastically presses against said outer side of said tunnel lining;
a shield tail having a mounting support and an outer surface;
a holding means extending substantially centrally in the basic body and fastened on said mounting support of said shield tail; and
in said upper zone adjacent to the shield tail, the basic body having on the outer side at least one outer sealing lip having a lip nose of which said lip nose in an installed condition projects beyond the outer surface of the shield tail.

5,346,332
TUBBING-TYPE TUNNEL LINING
Harald Wagner, Mauthausen, and Alfred Schulter, Linz, both of Austria, assignors to Ingenieure Mayreder, Kraus & Co. Consult Gesellschaft m.b.H., Linz, Austria
Filed May 28, 1993, Ser. No. 68,966
Claims priority, application Austria, May 29, 1992, 1123/92
Int. Cl.[5] E21D *11/04*
U.S. Cl. 405—153 **12 Claims**



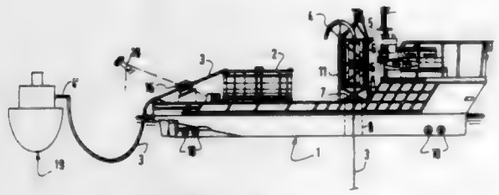
1. In a tunnel lining, comprising
a plurality of tubbing rings, each of which comprises an even number of similar tubbing blocks each having end faces defining gaps between adjacent ones of said tubbing rings and formed with holes, and inclined side faces defining inclined longitudinal gaps between adjacent blocks of the same ring and formed with continuous longitudinal grooves,
a plurality of plugs extending in said holes in adjacent end faces of adjacent ones of said blocks of adjacent ones of said rings and adapted to permit a transmission of limited shear forces between said adjacent rings and
a plurality of keys extending in registering ones of said grooves in adjacent ones of said inclined side faces of adjacent ones of said blocks of each of said rings hold said adjacent blocks together,
wherein each of said tubbing rings is adapted to assume a relaxed state, in which adjacent ones of said inclined side faces of adjacent ones of said blocks of said ring are spaced apart to define said longitudinal gaps, and
each of said tubbing rings when in said relaxed state is adapted to be compressed in its peripheral direction so as to reduce the width of said longitudinal gaps,
the improvement residing in that
each of said blocks of each of said rings is connected at least on one side of said ring to at least one of said blocks of an adjacent one of said rings by at least two of said plugs, only a first one of which is retained in said connected blocks by a locating bearing formed by one of said holes whereas at least one additional one of said two plugs extends in at least one of said two connected blocks in a slot, which constitutes another one of said holes and permits a limited displacement of said block in response to a compression of the adjacent portion of the associated one of said rings in its peripheral direction.

5,346,333

PROCESS FOR LAYING FLEXIBLE TUBULAR CONDUITS USING A PLURALITY OF SHIPS

René Maloberti, Champigny, and Alain Coutarel, Paris, both of France, assignors to Coflexip, France

PCT No. PCT/FR91/00263, § 371 Date Jan. 23, 1992, § 102(e) Date Jan. 23, 1992, PCT Pub. No. WO91/15696, PCT Pub. Date Oct. 17, 1991
PCT Filed Apr. 2, 1991, Ser. No. 776,392
Claims priority, application France, Mar. 30, 1990, 90 04102
Int. Cl.[5] F16L *1/04*
U.S. Cl. 405—168.3 9 Claims



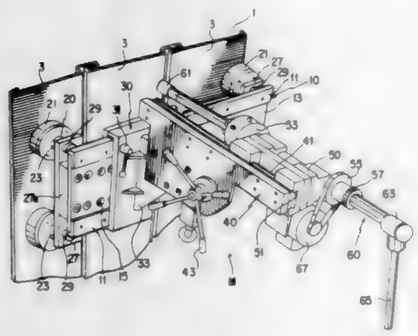
1. A process for transferring flexible conduits from at least one supply ship to a laying ship for laying said conduits onto an ocean floor, comprising transferring a flexible conduit to be laid on said ocean floor by continuous unrolling at a laying site from at least one supply ship to a laying ship, said supply ship and said laying ship being separated from one another and connected only by said flexible conduit, wherein said flexible conduit is gradually transferred from said supply ship to a storage means located on said laying ship.

5,346,334

APPARATUS FOR INJECTING SOIL CONDITIONING FLUID

Kikuo Einaru, Tokyo; Shinsuke Seko, deceased, late of Tokyo by Tomio Seko, legal representative , and Tomio Seko, Tokyo, all of Japan, assignors to SunEarth Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/00979, § 371 Date May 21, 1992, § 102(e) Date May 21, 1992, PCT Pub. No. WO92/01840, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 24, 1991, Ser. No. 856,974
Claims priority, application Japan, Jul. 24, 1990, 2-195201; Apr. 3, 1991, 3-071071
Int. Cl.[5] E02D *3/12*
U.S. Cl. 405—269 4 Claims



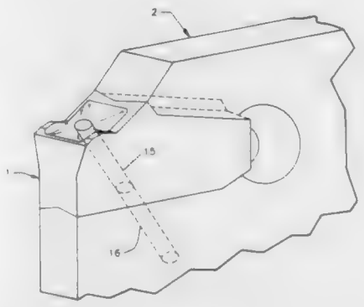
1. An apparatus for injecting a soil conditioning fluid into a soil foundation including:
a boring machine for boring the soil foundation and injecting said soil conditioning fluid into the soil foundation for hardening; and
magnet fixture means for securing said boring machine to one of a magnetic wall surface supporting the soil foundation and a magnetic wall surface mounted on a member supporting the soil foundation;
said boring machine including:
a planar base having guide rails on opposite sides thereof and a magnet fixture means for securing said planar base to said magnetic wall mounted thereon;
a movable base mounted on said planar base, said movable base being slidable along said guide rails and able to be secured in a desired position;
a slide base disposed on said movable base and having an axial guide rail extending in a perpendicular direction relative to a plane formed by said guide rails;
a slider engaged with and guided by said axial guide rail of said slide base and reciprocally slidable in said perpendicular direction and a hollow rod rotatably mounted on said slider and having a hole-saw type cutter at a front end thereof, said hollow rod being capable of injecting the soil conditioning fluid from a rear end portion thereof into the soil foundation through said cutter;
first drive means for rotating said hollow rod; and
second drive means for reciprocally moving said slider.

5,346,335

METAL CUTTING TOOL

Jacob Harpaz, Kfar Vradim; Raphael Wertheim, Kiryat Bialik, and Benjamin Betman, Kiryat Chaim, all of Israel, assignors to Iscar Ltd., Migdal Tefen, Israel

Continuation of Ser. No. 861,560, Apr. 1, 1992, abandoned. This application Jun. 7, 1993, Ser. No. 73,965
Claims priority, application Israel, Apr. 2, 1991, 97746
Int. Cl.[5] B23B *27/10*
U.S. Cl. 407—11 19 Claims



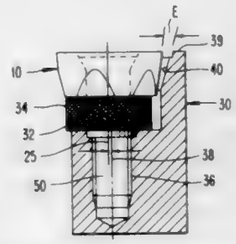
1. A metal cutting tool comprising:
a metal insert including
upper and bottom faces,
laterally directed front and rear faces,
a pair of longitudinally directed side faces,
a laterally directed front cutting edge defined at a junction of said upper and front faces,
a rake surface formed in said upper face adjacent said front cutting edge,
chip forming means formed in said rake surface and having adjoining relatively raised and recessed portions, and
bore means for cooling said insert and for deflecting a chip cut by said cutting edge away from said insert, said bore means including at least one through-going bore formed in said insert, each bore extending in a direction towards said cutting edge from a bore inlet formed in said bottom surface to a bore outlet formed in one said recessed portion so as to be superposed by the chip cut by said cutting edge and passing over said rake surface, said bore outlet being spaced from the cut chip by reason of said raised portions on which the cut chip rides;
insert holder means for releasably retaining said insert, said insert holder means being formed with a cooling fluid duct having one end adapted to be coupled to a cooling fluid supply source and an opposite end coupled to said bore inlet when said insert is retained in said insert holder means; and a cooling fluid supply source in fluid communication with the cooling fluid duct to supply cooling fluid to the fore means at a pressure of from 1 to 20 atmospheres.

5,346,336

METAL-CUTTING INSERT HAVING A ROUND CUTTING EDGE

Pasquale F. Rescigno, West Paterson, N.J., assignor to Sandvik, Inc., Fair Lawn, N.J.

Filed Nov. 4, 1992, Ser. No. 971,216
Int. Cl.[5] B23B *27/08, 27/06*
U.S. Cl. 407—104 8 Claims



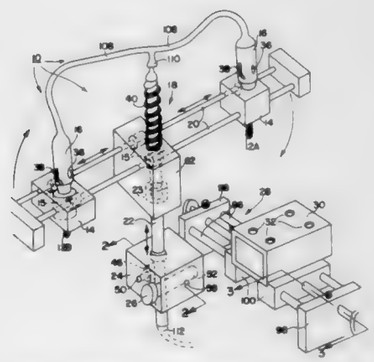
1. An indexable metal-turning insert comprising:
a top chipbreaking surface;
a bottom mounting surface;
a frusto-conical clearance surface extending between said top and bottom surfaces and intersecting said top surface to form therewith a round cutting edge, said clearance surface having a circumference; and
a plurality of circumferentially spaced flat facets formed in said clearance surface, upper ends of said facets being spaced below said cutting edge, each facet being inclined at an acute angle relative to a center axis of the metal-turning insert, each facet having a height no greater than fifty to seventy percent of a height of said metal-turning insert.

5,346,337

AUTOMATIC TAPPING MACHINE

T. Bruce Truesdell, 14010 Shadow Oaks Way, Saratoga, Calif. 95070

Filed Apr. 30, 1993, Ser. No. 56,378
Int. Cl.[5] B23B *35/00, 39/14, 47/26*
U.S. Cl. 408—1 R 22 Claims



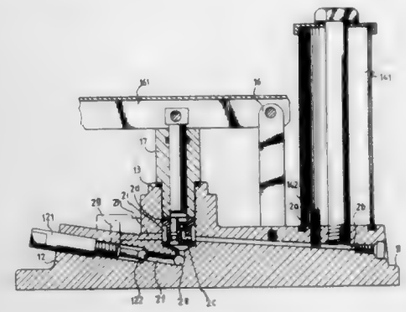
20. A method for tapping a plurality of holes in an area of a part which comprises:
(a) securing said part in a vise accessible to an apparatus for cutting threads in a plurality of holes in various locations of a part, which apparatus comprises:
(i) a base;
(ii) a tap chuck means adapted for coupling at least one tap to a motor;
(iii) a chuck support means for supporting said tap chuck;
(iv) a means supported by said base for manually cantilevering said chuck support means to engage said at least one tap with each of said plurality of holes;
(b) securing a tap in said tap chuck means;
(c) manually cantilevering said tap over each said hole and inserting said tap in each said hole while rotating said tap such as to cut a thread in each hole.

5,346,338

METHOD FOR FORMING WORKING FLUID PASSAGES IN A BASE OF A HYDRAULIC JACK

Ta C. Wang, No. 269, Sec. 2, An Ho Rd., Tainan, Taiwan

Filed May 20, 1993, Ser. No. 63,793
Int. Cl.[5] B23B *35/00*
U.S. Cl. 408—1 R 1 Claim



1. A method for forming working fluid passages in a base of a hydraulic jack which includes a pressure relieve seat, a check valve seat, a reservoir seat, and a supporting rod seat integrally formed thereon, the method includes the steps of:
(1) forming a supporting rod seat passage by drilling from a lower portion of the check valve seat to communicate with a chamber defined in a lower portion of the supporting rod seat;
(2) forming a first connecting passage by drilling from a side surface of the pressure relieve seat to communicate with the supporting rod seat passage;
(3) forming a pressure relieve passage by drilling from the side surface of the pressure relieve seat to communicate with the supporting rod seat passage, the pressure relieve passage is substantially parallel to the first connecting passage and disposed between the first connecting passage and the chamber;
(4) forming a second connecting passage by drilling from a second side of the pressure relieve seat to communicate with the pressure relieve passage, the first connecting passage transversely communicates with the second connecting passage;
(5) forming a main passage by drilling from a lower portion of the reservoir seat to communicate with the lower portion of the check valve seat; and
(6) forming an outlet passage by drilling from a top surface of the reservoir seat downward to communicate with the main passage.

5,346,339

PIPELINE CLEANING PROCESS

Ronald E. Himes; Jeffrey A. Dahl; Charles V. Hunt, and Marlin D. Holtmyer, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 16, 1993, Ser. No. 78,930
Int. Cl.[5] F16L *1/04;* B08B *9/04*
U.S. Cl. 405—171 19 Claims

1. A method of cleaning the interior of a pipeline comprising passing a crosslinked cellulose ether, derivative gel pig through said pipeline, said pig being prepared by:

admixing a cellulose ether derivative comprising a reaction product produced by the reaction of a hydroxyalkyl cellulose having a molar substitution of from about 1.5 to about 3, the alkyl being selected from the group of ethyl and propyl with a vinyl phosphonic acid in the presence of a redox system at a temperature in the range of from about 20 to about 60° C. with a sufficient quantity of an aqueous fluid containing at least a trace amount of at least one divalent cation to form a base gel;

admixing a sufficient quantity of a crosslinking activator comprising a Lewis base or Bronsted-Lowry base with said base gel to initiate crosslinking of said base gel; and

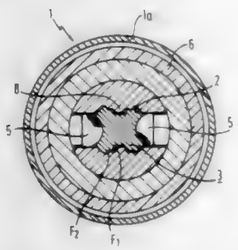
introducing said base gel containing the crosslinking activator into said pipeline in amounts and at a rate sufficient to remove contaminants from the interior of said pipeline.

5,346,340

TORQUE TRANSMITTING DEVICE

Erich Runge, Künzelsau, Fed. Rep. of Germany, assignor to Plica Werkzeugfabrik AG, Mollis, Switzerland

Filed Mar. 30, 1993, Ser. No. 40,123
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1992, 4210451
Int. Cl.[5] B23B *51/00, 31/02*
U.S. Cl. 408—226 14 Claims



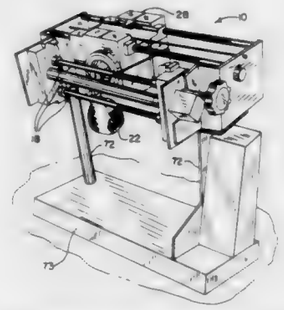
1. A device provided on machine tools for transmitting torque onto tools, comprising at least two diametrically opposite rotary driving grooves (7) openly issuing at the end of the tool shank (3) and rotary drivers (8) of the machine tool seal (1) engaging in these and at least one locking member (5) being disposed in the tool seat (1) to be radially movable for engagement in a locking groove (4) in the tool shank (3) axially closed at both ends, characterized in that each rotary driver (8) is symmetrical about a first plane which extends in an axial direction through a rotary axis and through a center of each of the rotary drivers (8), the rotary drivers (8) are symmetrical about a second plane which extends in an axial direction through the rotary axis, the first and second planes are perpendicular to each other, and each of the rotary drivers (8) have a cross-section which includes a step-shaped taper at each of two flanks, and at least two mutually offset driving surface (F1, F2) at each of the step-shaped tapers.

5,346,341

AUTOMATIC CHIP REMOVAL SYSTEM FOR SIGN ENGRAVING MACHINE

George F. Jambor, Cedarburg, Wis., assignor to Brady USA, Inc., Milwaukee, Wis.

Filed Mar. 2, 1993, Ser. No. 25,012
Int. Cl.[5] B23C *3/00;* B23Q *11/02*
U.S. Cl. 409—132 11 Claims



1. A method for removing chips produced by a machine for engraving a sign blank of the type using a cutter on a rotating cutting head to engrave a line on the sign blank, the method comprising:

orienting an axis of rotation for the cutter closer to horizontal than to vertical;

feeding the sign blank in a path in close proximity to the cutter;

engraving the sign blank by generating chips that fall from the cutting region into an enclosure having an exhaust opening into a chute that is aimed downward from the enclosure;

moving the chips in a circumferential direction through rotation of the cutter on the cutter head so that the average chip velocity has a substantial circumferential component around an axis of rotation of the cutter; and

directing the chips into the exhaust opening and through the chute, without the use of auxiliary devices such as fans, blowers or vacuum generators, where the chips are allowed to fall downward and out of the enclosure.

5. A machine for engraving a sign blank comprising:

a movable frame;

a sign support for supporting the sign blank in a support plane that is oriented so that engraving chips fall from a cutting region on the sign blank;

a cutting head mounted to the movable frame for axial movement along and rotation around a rotation axis that is substantially orthogonal to the support plane;

the cutter head having a plurality of projecting members with outer edges that taper and recede from the axis of rotation to a periphery of the cutting head;

wherein the projecting members and the periphery of the cutting head define an envelope as the cutting head rotates; and

a guide member mounted to the frame which is spaced from the envelope, and enclose the envelope and form a chip swirling volume into which chips generated by engraving the sign blank naturally fall, the guide member having

a contact surface having an access opening through which the cutting tip protrudes to engrave the sign blank,

a gutter wall having an exhaust opening located slightly beyond the peripheral edge of the face of the cutter head,

a ramped wall connecting the contact surface to the gutter wall, the ramped wall being parallel to the envelope of the rotating cutting head, and

an exhaust chute depending from the gutter wall to exhaust chips flowing through the exhaust opening;

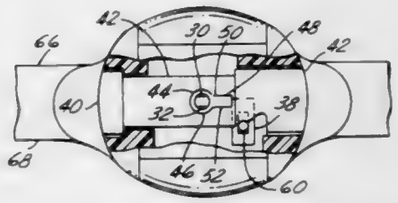
wherein the projecting members rotate when the machine is engraving and deflect chips in the swirling volume so that centrifugal and normal forces cause the chips to swirl, migrate towards the gutter wall, and eventually pass through the exhaust opening in the gutter wall and exhaust through the exhaust chute.

5,346,342

SHAFT LOCK ARRANGMENT FOR A POWER TOOL

Charles D. Winchester, Easley, S.C., assignor to Ryobi Motor Products Corp., Easley, S.C.

Filed Mar. 19, 1993, Ser. No. 34,547
Int. Cl.[5] B23C *1/20*
U.S. Cl. 409—134 17 Claims



1. A shaft lock arrangement for a power tool, the power tool having a housing, an electric motor having a rotary output shaft mounted in the housing and an ON/OFF electrical switch to selectively provide electrical power to the motor from a source of electrical power, said shaft lock arrangement comprising:

a non-circular portion provided on one end of said output shaft;

a shaft lock slidably displaceable in a direction normal to said output shaft between a run position and a lock position, said shaft lock mounted in said housing adjacent to said one end of said output shaft and having a through aperture receiving said one end of said output shaft therein, said through aperture having at least a locking portion engageable with said non-circular portion of said output shaft when said shaft lock is in said locked position prohibiting the rotation of said output shaft, a run detent and a locked detent;

a lock-out switch mounted in said housing and connected in series with said ON/OFF switch, said lock-out switch having a toggle to switch said lock-out switch from an open state to a closed state, said toggle resiliently biased to engage said run and said locked detents to hold said shaft lock in said run and locked positions respectively, said toggle when engaged in said run detent placing said lock-out switch to said closed state and when engaged in said locked detent placing said lock-out switch to said open position.

5,346,343

MILLING HEAD

Werner Babel, Pfronten, Fed. Rep. of Germany, assignor to MAHO Aktiengesellschaft, Pfronten, Fed. Rep. of Germany

Filed Apr. 6, 1993, Ser. No. 43,351
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1992, 9204823
Int. Cl.[5] B23C *1/12*
U.S. Cl. 409—201 7 Claims

1. A milling head for a machine tool for milling longitudinal edges of a workpiece clamped to a work bench, comprising:

a base;

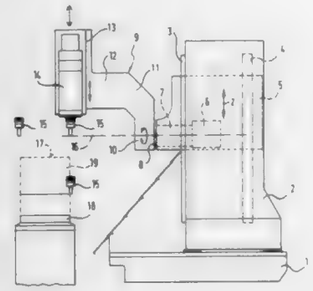
a work head mounted on said base for horizontal alignment along a horizontal axis;

a carrier comprising a unitary element, said unitary element comprising a first section rotatably mounted on said work head for rotation about said horizontal axis and a second section disposed at an angle to said first section;

a housing mounted on said second section of said carrier;

a spindle having an upper end and a lower end disposed for reciprocal movement within said housing;

a tool holder disposed at the lower end of said spindle;



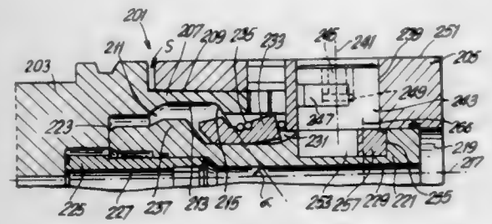
wherein said carrier and housing are configured such that a tip of a tool in said tool holder is alignable to remain on said horizontal axis during rotation of said carrier about said horizontal axis.

5,346,344

CUTTING AREA

Dieter Kress, Aalen; Friedrich Häberle, Lauchheim, and Günther Hertel, Nuremberg, all of Fed. Rep. of Germany, assignors to MAPAL Fabrik Für Prazisionswerkzeuge Dr. Kress KG, Aalen, Fed. Rep. of Germany

Filed Apr. 1, 1992, Ser. No. 861,768
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1991, 4110720; May 31, 1991, 4117765; Sep. 26, 1991, 4132019
Int. Cl.[5] B23B *31/02*
U.S. Cl. 409—234 18 Claims



1. An interface between a clamping shaft for receiving a tool carrier and the tool carrier, said interface comprising:

a hollow fitting pivot provided on the clamping shaft and having an inner wall and a first clamping surface provided on said inner wall;

a clamping pin located in an interior of the tool carrier and axially displaceable therein, said clamping pin having a second clamping surface;

a plurality of clamping elements arranged about a circumference of said clamping pin for axial movement there along, said clamping elements being radially movable, upon displacement of said clamping pin in a clamping direction, from a first position, in which they are disengaged from said first and second clamping surfaces, to a second position, in which they engage said first and second clamping surfaces whereby the tool carrier is clamped in the clamping shaft; and

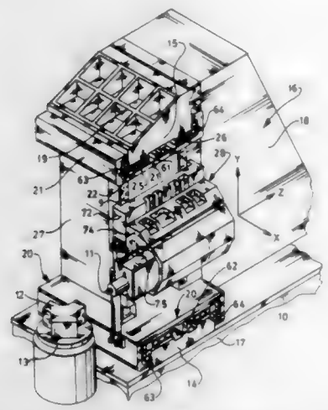
means for biasing said clamping elements to the first position thereof.

5,346,345

HIGH-FORCE LINEAR MOTOR ASSEMBLY USING TANDEM AXES

Charles L. Jerzycke, Northville; Richard Ogletree, Southfield, both of Mich., and Frederick A. Sommerhalter, Jr., Oyster Bay, N.Y., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 31, 1992, Ser. No. 923,700
Int. Cl.[5] B23Q *1/02*
U.S. Cl. 409—235 15 Claims



1. A linear motor assembly having enhanced mechanical stiffness, the assembly comprising:
(a) at least one pair of rigidly fixed and interconnected tandem rails defining a first axis of movement and spaced apart normal to such first axis;
(b) at least one pair of tied frames movable along said pair of rails, each frame presenting at least one pair of opposed parallel bearing surfaces;
(c) at least one linear motor effective to operate between each rail and frame to selectively move said frames;
(d) bearings supported between each rail and each bearing surface of each frame, said bearings being preloaded with an interference load while permitting bearing movement; and
(e) means supported by said tied frames defining other axes of movement actuated by other linear motors.

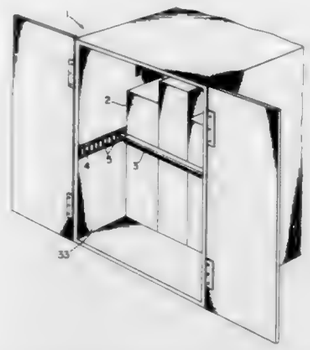
5,346,346

CARGO SHORING ASSEMBLY FOR A FREIGHT TRANSPORT VEHICLE

Gerald D. Martin, 8780 Ashbrook Dr., West Chester, Ohio 45069, and Joseph E. Martin, 358-AA Mann Rd., Covington, Ky. 41015

Filed Nov. 19, 1992, Ser. No. 977,767
Int. Cl.[5] B60P *7/15;* **B61D** *45/00*
U.S. Cl. 410—146 9 Claims

7. A cargo-shoring assembly adapted to releasably engage a mounting member secured to a freight transport vehicle, said assembly comprising:
an elongated hollow-form cargo-engaging member having opposing first and second ends;
an extender slidably carried in the cargo-engaging member, said extender having an outer end adjacent said first end; and
a latch clip pivotally connected to the extender a fixed distance inwardly of the outer end thereof, said latch clip having a mounting member-engaging portion, said latch clip pivotable to extend the mounting member-engaging portion axially beyond the outer end and to retract the mounting member-engaging portion axially within the outer end; said cargo engaging member, said extender, and said latch clip being configured such that said latch clip, while axially retracted within said extender outer end, may be substantially and fully received within said cargo engaging member such that no portion of said latch clip



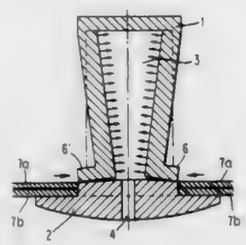
extends axially beyond the first end of said cargo engaging member.

5,346,347

REMOVABLE FASTENER CAPABLE OF ELASTIC DEFORMATION

Michel Barikosky, and Christian Girardiere, both of Paris, France, assignors to Clipp-Off, Nanterre, France

Filed Jan. 21, 1993, Ser. No. 4,897
Claims priority, application France, Jan. 24, 1992, 92 00750
Int. Cl.[5] F16B *13/04, 37/04*
U.S. Cl. 411—19 9 Claims



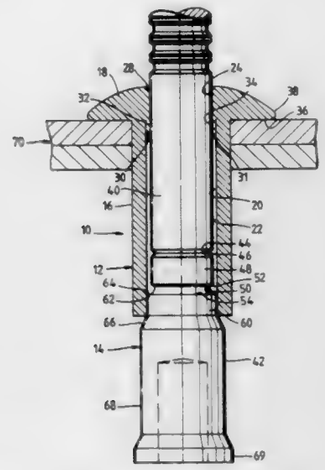
1. A fastener for a part, from which it can be removed again, comprising
a body a flanged head projecting from one end of said body;
a central cavity within said body and communicating with outside of the body;
at least one wall portion of said body having an inner side bounding a segment of said cavity, wherein said wall portion elastically deforms when an outside force is applied to said wall portion;
a projection on an outer side of said wall portion, wherein said projection and said flanged head bound a jaw by means of which the fastener can be affixed to said part and on account of the deformation of said wall portion the projection will open and release the part and the fastener from each other; and
means for applying said deforming force, wherein the deforming-force means are pressure or vacuum sources, the cavity is substantially sealed and said pressure or vacuum sources communicate with said central cavity to create a pressure imbalance causing said outside force.

5,346,348

SELF-PLUGGING BLIND FASTENER

Keith Denham, Welwyn Garden, England, assignor to Avdel Systems Limited, Welwyn Garden, England

Filed Jul. 27, 1993, Ser. No. 97,025
Claims priority, application United Kingdom, Aug. 21, 1992, 9217806.0
Int. Cl.[5] F16B *13/04, 13/06*
U.S. Cl. 411—43 12 Claims



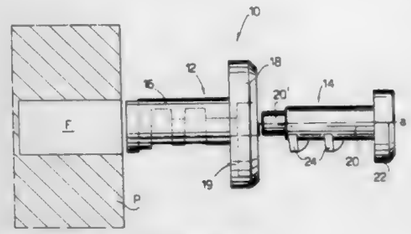
1. A self-plugging blind fastener comprising a tubular body and a stem, the body having an elongate shank, a radially enlarged preformed head at one end of the shank, a tail end at the other end of the shank and a bore extending axially throughout the body from the tail end to the head end, the bore having a main region extending from the tail end of the shank to an annular stop-shoulder adjacent to the preformed head, and a region of reduced diameter, as compared with the main region, extending from the stop-shoulder towards the head end, the stop shoulder presenting a stop-face which faces towards the tail end, and having an annular cleavage coaxial with the reduced region of the bore and extending axially from the stop-face towards the head end of the body, whereby the stop shoulder is radially separated from surrounding material of the body, and thus forms an integral annular skirt on the radially inward side of the cleavage, said stem being disposed in the bore of the body, and comprising an elongate stem-tail which extends through the reduced diameter region and projects from the head end of the body, and a plug disposed adjacent to the tail end of the body and joined to the stem-tail by a frangible breakneck, the plug having a first part adjacent to the breakneck, a locking recess spaced from the breakneck by the first part, a radially enlarged plug shoulder adjacent to the locking recess, and shank enlarging means whereby, on pulling the plug along the bore towards the preformed head, the shank may be radially enlarged to form a blind head, said radially enlarged plug shoulder presenting a planar face directed towards the stem-tail for engaging the stop face of the body, whereby, on pulling the plug along the bore, the annular skirt may be engaged by the planar face of the plug and deformed so as to enter the locking recess of the plug, wherein the stop-face of the annular skirt is planar, whereby, on pulling the plug so as to move the planar face of the plug shoulder axially into engagement with the planar stop-face of the skirt, so as to apply an axially compressive load to the skirt, the skirt is deformed at a position intermediate between its ends, so as to enter the locking recess, and the stop-face at the free end of the skirt remains in static engagement with the planar face of the plug shoulder.

5,346,349

FASTENING DEVICE, FOR EXAMPLE FOR FURNITURE COMPONENTS AND THE LIKE

Antonio Giovannetti, Via Fratelli Cervi - Residenza Fontana, Milano 2 - Segrate (Milano), Italy

Filed Feb. 9, 1993, Ser. No. 15,536
Claims priority, application Italy, Mar. 23, 1992, MI92 A 000678
Int. Cl.[5] F16B *21/00;* **B25G** *3/00, 3/20*
U.S. Cl. 411—549 8 Claims



1. A fastening device comprising:
a container-guide element to be received into a hole in a panel;
said container-guide element having an enlarged head, a body integral with said head and provided with a cavity having a longitudinal axis, a longitudinal opening connecting said longitudinal cavity with the outside, at least one intermediate seating communicating with said longitudinal cavity, and an end seating;
a locking member having an enlarged head, a shaft integral with said head and defining a longitudinal axis, at least one tongue protruding from said shaft, oblique with respect to the longitudinal axis of the shaft and extending for an arc around said axis, said shaft having a coaxial end;
said locking member being housed into the container-guide element with the shaft into the cavity and the end of the shaft into the end seating, said locking member being rotatable around its longitudinal axis between a rest position, wherein said at least one tongue is received into said at least one intermediate seating, and a locking position, wherein said at least one tongue is rotated outside of the container-guide element and is engaged with a wall of said hole.

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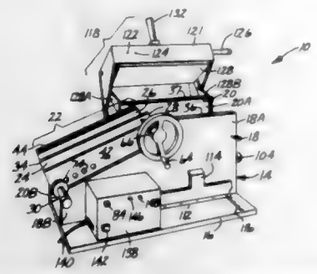
HOT MELT ADHESIVE APPLICATOR

Robert A. Luhman, Deer Park, Wis.; Gary K. Kuhn, Scandia, Minn.; Kenneth J. Perrington, Maplewood, Minn.; Karl M. Kropp, St. Paul, Minn., and Michael W. Gruber, Huntsville, Ala., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 876,486, Apr. 30, 1992, which is a continuation of Ser. No. 594,640, Oct. 4, 1990, Pat. No. 5,152,654. This application Dec. 6, 1993, Ser. No. 163,151
The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.
Int. Cl.[5] B42C *9/02*
U.S. Cl. 412—37 14 Claims

1. An apparatus for binding a plurality of sheets of paper together comprising:
a frame;
means mounted on the frame for presenting one edge of the sheets of paper in a substantially horizontal plane for binding, wherein the presenting means comprises a pair of clamping plates for clamping the sheets of paper therebetween;
means mounted on the frame for heating and melting a solid hot melt adhesive material sheet after the solid hot melt adhesive material sheet is placed on top of the edge of the sheets of paper to cause the liquid adhesive to penetrate the seams between the sheets of paper to bind the sheets of

paper together while leaving substantially no adhesive on the outsides of the outermost of the sheets of paper; and means, separate from the heating and melting means, mounted on the presenting means for maintaining a tem-

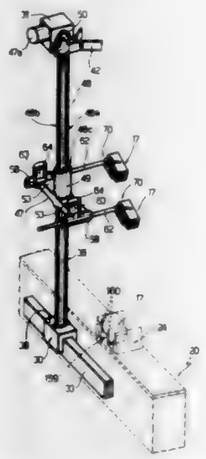


perature profile across the top of the edge of the sheets of paper at a sufficiently high temperature to prevent the adhesive material from drying before the paper sheets are properly bound and to facilitate adherence of the adhesive material onto the sheets of paper.

5,346,351
POSTAL ROBOT

Vincenzo Priolo, and Giorgio Repetto, both of Genova, Italy, assignors to Elsag Bailey, S.p.A., Italy

Filed Jan. 22, 1993, Ser. No. 7,725
Claims priority, application Italy, Jan. 22, 1992, TO92A 000042
Int. Cl.[5] B65G *1/04*
U.S. Cl. 414—277 **17 Claims**



1. A postal robot for emptying a postal machine having a plurality of containers for containing postal items, the robot comprising:

(a) take-up means for taking up the postal items the take-up means comprising a support body having a substantially L-shaped cross section including a vertical portion and a horizontal portion substantially perpendicular to said vertical portion and defining a support surface having respective adjoining flat surfaces which are angularly offset with respect to each other by an obtuse angle;

(b) an automatic drive means for moving the take-up means;

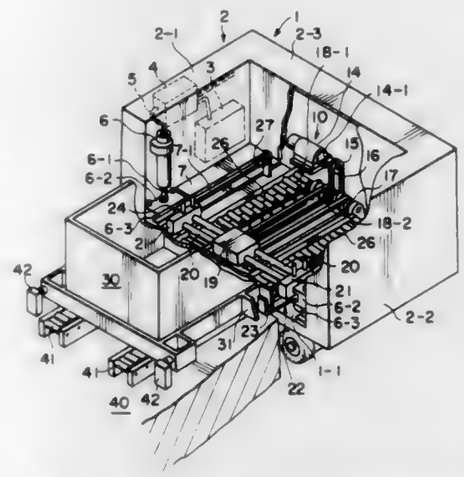
(c) a clamping element pivotable relative to the support body; and

(d) a first drive means for moving the clamping element relative to the support body.

5,346,352
FREIGHT MOVING APPARATUS IN CARRIER VEHICLE

Michio Ito, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Feb. 18, 1992, Ser. No. 836,373
Claims priority, application Japan, Feb. 19, 1991, 3-46134
Int. Cl.[5] B65G *67/04*
U.S. Cl. 414—400 **2 Claims**



1. A freight moving apparatus for transferring freight between a freight station and a carrier vehicle, said apparatus comprising:

a carrier vehicle having a floor with a first conveyor means for shifting freight along the floor, first stops defining a first position for the freight on said first conveyor means;

a freight station having second conveyor means for moving freight along a surface of the station, said station having second stops for defining a second position for the freight on said second conveyor means;

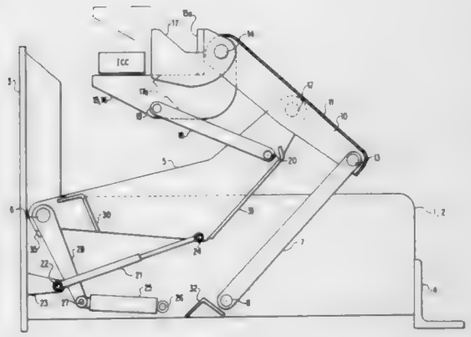
means for positively moving the freight between the first and second positions including a block movable along a horizontal path along the floor of the carrier vehicle between a third position with the freight engaging the first stops and a fourth position with the freight being transferred to the second conveyor means and engaging the second stops, a hook being mounted on the block for vertical movement relative to the block, an electric motor for driving the block along the horizontal path between the third and fourth positions, means for shifting the hook vertically between a retracted position and an engaged position as the block is adjacent said fourth position, control means for stopping the electric motor when the freight engages one of the stops, said control means including a torque limiter for detecting any change of torque of the electric motor when the freight engages the stop; and

said freight being provided with hook receivers for engagement by said hook when the hook is moved vertically upward from the retracted position to the engaging position so that when the freight is in said second position and the block is in said fourth position, said means for shifting the hook is actuated to engage the hook in the hook receivers and the electric motor is the actuated to shift the block from the fourth position toward the third position to shift the freight to the first position.

5,346,353
VEHICLE RESTRAINT

James C. Alexander, London, Canada, assignor to The Serco Corporation, London, Canada

Continuation of Ser. No. 727,172, Jul. 9, 1991, Pat. No. 5,259,718, which is a continuation of Ser. No. 466,799, Jan. 18, 1990, Pat. No. 5,120,181. This application Jan. 12, 1993, Ser. No. 3,467
Int. Cl.[5] B65G *67/02*
U.S. Cl. 414—401 **22 Claims**



1. A device for restraining a vehicle to prevent movement away from a loading dock comprising;

a vertically moving member carrying a hook member movable in a vertical direction without any substantial horizontal or rotational component to such movement,

means to raise said vertically moving member from a lower inoperative position where said vehicle can move toward or away from the loading dock to an upper operative position where said vehicle is restrained from movement away from said loading dock,

said hook member having multiple hook positions defined by first and second wall portions spaced from each other at different distances from said loading dock when said vertically moving member is in said upper operative position, said hook member comprising a first hook component having said first wall portion and a second hook component having said second wall portion, said second hook component movable relative to said first hook component to expose said first hook component for engagement with said vehicle.

5,346,354
CARRIAGE FOR TRANSFERRING OBJECTS

Nils Erik Hellstrom, Strandvagen 65, S-870 52 Nyland, Sweden

Continuation-in-part of Ser. No. 634,866, Jan. 4, 1991, abandoned. This application Nov. 10, 1992, Ser. No. 974,045
Claims priority, application Sweden, May 30, 1988, 8802007
Int. Cl.[5] B60P *3/035;* **B60S** *13/00*
U.S. Cl. 414—430 **4 Claims**

1. A steerable carriage for transferring wheeled vehicles, comprising:

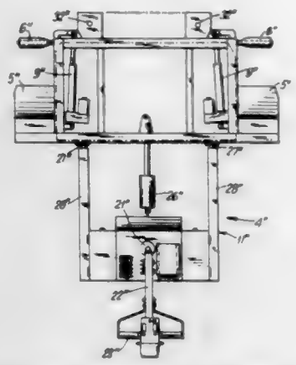
means for engaging the carriage with a vehicle in a propulsion force transmitting manner, and for elevating at least one wheel of the vehicle from a ground level, said carriage being arranged to transmit a propulsion force to the vehicle through said engaging means and through said at least one elevated wheel of the vehicle;

at least one support member on said engaging means arranged to be respectively movable to cause the wheel and the support member to assume a relative position in which at least a part of the wheel is located on the support member and is supported by the support member;

at least one actuating member on said engaging means;

a chassis having at least one steerable wheel in a forward part thereof; and

legs on said chassis extending between the forward part and said engaging means, wherein said legs have an adjustable

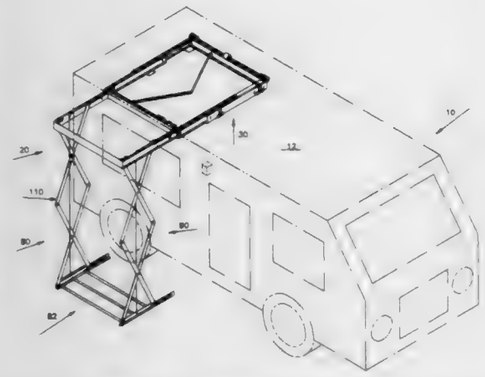


length to permit adjustment of a distance between the forward part of the chassis and said engaging means.

5,346,355
ROOF TOP CARRIER

Edwin Riemer, 7813 Leavorite Dr., Las Vegas, Nev. 89128

Continuation-in-part of Ser. No. 801,482, Dec. 2, 1991, abandoned. This application Jun. 3, 1993, Ser. No. 71,452
Int. Cl.[5] B60P *1/46*
U.S. Cl. 414—542 **14 Claims**



1. In a roof top carrier adapted to be mounted on the roof of a motor home and movable between a retracted position and an extended position to move a load from the roof of the motor home to a position near ground level adjacent to the motor home, the improvement comprising:

a) two spaced apart fixed rails;

b) four sliding elements movable relative to one another in a horizontal plane, the sliding elements comprising two spaced apart mid slide rails and two spaced apart outer slide rails, the outer slide rails being a load attaching elements;

c) a horizontal drive motor and cable means interconnecting the spaced apart fixed rails and the sliding elements for moving the sliding elements telescopically to extend the outer slide rails to a position remote from the fixed rails;

d) guide channels formed in each of the fixed rails, the mid slide rails and the outer slide rails;

e) rollers mounted to each of the fixed rails, the mid slide rails and the outer slide rails and operable inside in the guide channels to effect horizontal movement of each of the fixed rails, the mid slide rails and the outer rails;

f) a drop cradle attached to the spaced apart outer slide

sections, the drop cradle including a drop cradle base and a pair of scissor mechanisms connecting the drop cradle base to the spaced apart outer slide sections; and

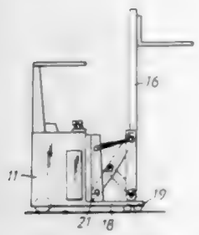
g) a vertical drive motor and cable means attached to the drop cradle for raising and lowering the drop cradle from a position between the spaced apart outer sections and a position adjacent ground level adjacent the motor home.

5,346,356

FORK-LIFT TRUCK

Lars Eriksson, Mantorp, and Anders Fransson, Mjölby, both of Sweden, assignors to BT Industries AB, Mjolby, Sweden

Filed Jan. 21, 1993, Ser. No. 6,973
Int. Cl.[5] B66F *9/00*
U.S. Cl. 414—631 **11 Claims**



1. A materials-handling fork-lift truck, comprising:

a chassis having two forwardly extending and mutually parallel support legs;

a chassis-mounted lifting mast assembly having a raisable and lowerable lifting fork; and

a linkage mechanism arranged for displacing said lifting mast assembly along the support legs between a first withdrawn position and a second extended position in which the lifting fork is located close to the outer extremities of the support legs, the lifting mast assembly being freely supported on the support legs, said linkage mechanism being

a pantograph mechanism including

a first strut being pivotally mounted between an upstanding frame part on the truck chassis and the lifting mast assembly,

a second strut shorter than the first strut being pivotally mounted between the first strut and the mast assembly, and

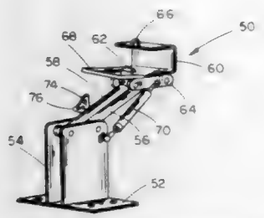
a hydraulic piston-cylinder device arranged for moving the struts and displacing the lifting mast assembly.

5,346,357

SELF-LOCKING PARALLEL-MOTION DOLLY MOUNT

Curtis C. Hassell, 791 Highway 238, Jacksonville, Oreg. 97530

Division of Ser. No. 756,696, Sep. 6, 1991, Pat. No. 5,209,628.
This application Feb. 16, 1993, Ser. No. 18,140
Int. Cl.[5] B60R *9/00*
U.S. Cl. 414—462 **4 Claims**



1. A self-locking dolly mount apparatus for storing and removably extending a towing dolly, comprising:

(a) a generally vertical support stand;

(b) a first pivot arm and a second pivot arm, each having a lower end and an upper end, and each pivotally attached at its lower end to said support stand, said first and second pivot arms pivoting between a stowed position and a load/unload position;

(c) a dolly mount bracket pivotally attached to the upper ends of said first and second pivot arms, said dolly mount bracket having an aperture; and

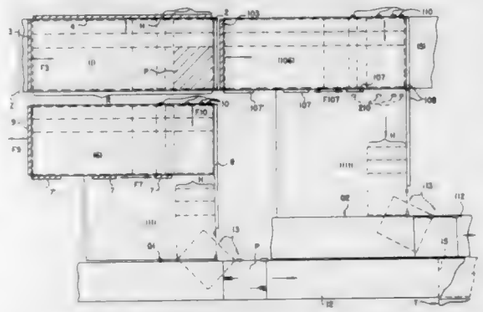
(d) a self-lock flange secured to the upper end of said second pivot arm wherein said self-lock flange pivots to a position in which the flange extends through the aperture so as to secure a towing dolly within said dolly mount bracket when said first and second pivot arms are in the stowed position and wherein said self-lock flange pivots to a position so as to release a towing dolly from within said dolly mount bracket when said first and second pivot arms are in the load/unload position.

5,346,358

APPARATUS FOR AUTOMATICALLY STACKING DIFFERENTLY SIZED PANELS OR PACKES OF PANELS

Piergiorgio Benuzzi, Bologna, Italy, assignor to Giben Impianti S.P.A., Pianoro, Italy

Filed Aug. 24, 1992, Ser. No. 933,684
Claims priority, application Italy, Sep. 13, 1991, GE91 A 0000113
Int. Cl.[5] B65G *57/08*
U.S. Cl. 414—790.9 **13 Claims**



1. An apparatus for automatically stacking differently sized packs of panels according to size, where a group of longitudinal rows and lateral columns of packs are formed side-by-side by a cutting device with a final cut of each row being made along a cutting axis parallel to the row so that the packs of each row have different lengths parallel to the cutting axis but same widths perpendicular to the cutting axis, the apparatus comprising:

a parking area located adjacent to the cutting device;

a shifting means for shifting the group of rows from the cutting device to said parking area with said rows remaining parallel to the cutting axis;

a transfer station located adjacent said parking area;

a removing means for removing a leading row of said group from said parking area to said transfer station in a direction parallel to the cutting axis, the direction of movement defining a leading edge for each pack;

a moving means for moving a remainder of the group of rows in said parking area so that a new leading row takes the place of the leading row previously removed by said removing means;

a transport means for transporting packs in a direction perpendicular to the cutting axis, said transport means being located adjacent said transfer station;

a gripper means for gripping at one side each pack at said transfer station sequentially and individually, and for delivering that pack (a) directly to said transport means with said leading edge parallel to the cutting axis where the leading edge is a longer side of said pack or (b) after a 90° rotation to said transport means with said leading edge perpendicular to the cutting axis where the leading edge is a shorter side of said pack; and

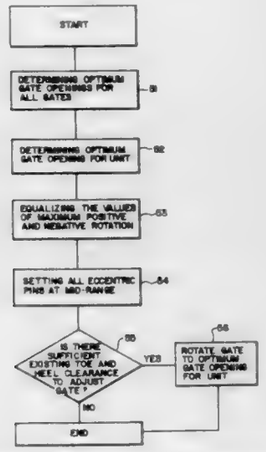
a plurality of lifting platforms adjacent said transport means to which the packs are transported and piled with the same size packs being piled at the same said platforms.

5,346,359

METHOD OF ADJUSTING A WICKET GATE

Charles W. Propst, MC-63, Box 108, Moyers, W. Va. 26813

Filed Sep. 17, 1992, Ser. No. 946,140
Int. Cl.[5] F01D *17/16*
U.S. Cl. 415—1 **18 Claims**



1. A method for adjusting a unit of wicket gates comprising the steps of:

(A) measuring initial gate openings;

(B) fixing a position of a gate;

(C) sequentially rotating all other gates to a common selected opening;

(D) incrementing the common selected opening if the common selected opening is not equal to a final gap between a last rotated gate and the fixed gate;

(E) repeating step D until the common selected opening is equal to the final gap between the last rotated gate and the fixed gate, the optimum opening for the fixed gate being the common selected opening when the common selected opening is equal to the final gate between the last rotated gate and the fixed gate;

(F) repeating steps B through E until the optimum opening for each gate has been determined;

(G) determining an optimum unit opening for the unit; and

(H) rotating each gate to the optimum unit opening.

5,346,360

APPARATUS AND METHODS FOR CONVERTING A STEAM TURBINE CONTROL SYSTEM FROM MECHANICAL/HYDRAULIC TO ELECTRICAL/HYDRAULIC CONTROL

Edward J. Cooper, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 3, 1993, Ser. No. 101,305
Int. Cl.[5] F01D *17/06*
U.S. Cl. 415—38 **5 Claims**

1. In a steam turbine control system having mechanical or hydraulic input to a mechanical control link within a control valve servo enclosure and which controls the output of said enclosure to an actuator of a steam valve for supplying steam to a turbine, a method of converting from a control system having the mechanical or hydraulic input to a control system having electrical/hydraulic input, comprising the steps of:

disconnecting the mechanical or hydraulic input to said mechanical control link;

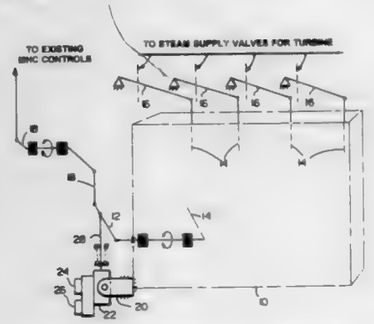
coupling a hydraulic actuator to said link;

coupling an electrically controlled servo valve to control a supply of hydraulic fluid to said actuator to enable movement of the actuator to control the steam valve actuator to modulate steam flow to the turbine in response to movement of said actuator; and

coupling a shut-off valve in said hydraulic fluid supply to substantially instantaneously stop the supply of hydraulic fluid to said actuator in response to a system upset to enable said actuator to substantially instantaneously control said link to actuate the steam valve to preclude flow of steam to said turbine.

5. A control system for a steam turbine comprising:

a control link for controlling an actuator for a valve for supplying steam to the turbine;



a fluid actuated cylinder connected to said control link and biased for movement to a position wherein the control link controls the actuator to close the steam supply valve to the turbine;

a fluid supply for supplying fluid to said cylinder;

an electro-hydraulic servo control valve for controlling the supply of fluid to said cylinder;

a shut-off valve movable into first and second positions normally enabling fluid from said fluid supply flow through said servo control valve to said cylinder and preventing fluid from flowing from said fluid supply through said servo control valve to said cylinder, respectively; and

means for normally maintaining said shut-off valve in said first position to enable said servo control valve to modulate the flow of fluid to said cylinder and responsive to a steam turbine system upset for preventing fluid from flowing to said cylinder whereby, said cylinder being biased into the position to close the steam supply valve.

5,346,361

AIR SEAL FOR PUMP WITH VERTICAL SHAFT

Daniel J. Jurgill, Wilburton, and Gerald A. Wetzel, Ashland, both of Pa., assignors to Goulds Pumps, Incorporated, Seneca Falls, N.Y.

Filed Apr. 15, 1993, Ser. No. 48,351
Int. Cl.[5] F04D *29/12*
U.S. Cl. 415—111 **13 Claims**

4. A sealing apparatus for a vertical centrifugal pump having a rotary shaft with a lower end operably connected to an impeller, said impeller rotating within a cavity in the pump to pressurize fluid entering the cavity, said sealing apparatus comprising:

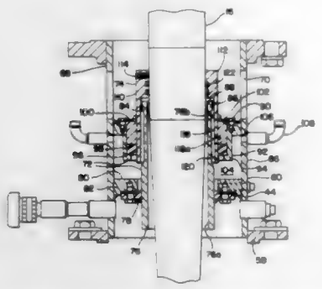
a chamber containing gas circumferentially disposed about the shaft, said chamber in fluid communication with the cavity;

a stationary assembly disposed about the shaft and forming a second chamber for containing liquid;

a rotary assembly disposed about and connected to the shaft,

a portion of said rotary assembly extending over a portion of said stationary assembly;

said rotary assembly and said stationary assembly forming sealing means to prevent the escape of gas from the chamber when the fluid enters said chamber from said cavity, said portion of said rotary assembly extending into the second chamber such that said extending portion of said rotary assembly is submerged in the liquid to constitute



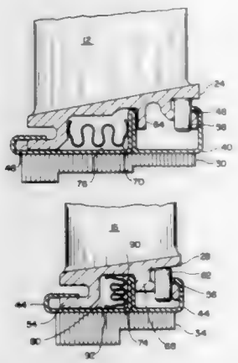
part of said sealing means, and stationary assembly including a rotary sealing means circumscribing and contacting a face of said rotary assembly for sealing between said face and said stationary assembly, the flow of fluid into said gas filled chamber compressing the gas within said chamber to form a buffer to prevent contact between the fluid and the rotary sealing means, said sealing means inhibiting the flow of liquid from said second chamber due to the compression of gas in said gas chamber.

5,346,362

MECHANICAL DAMPER

Kurt J. Bonner, Maineville, Ohio, and Jose M. Alvarez, Jr., Coral Gables, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 26, 1993, Ser. No. 52,874
Int. Cl.[5] F01D *9/04*
U.S. Cl. 415—191 **8 Claims**



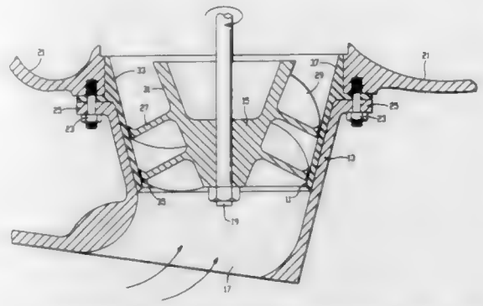
1. In combination, a stator for rotating machinery which includes integrally cast stator vanes and shrouds, the inner shroud of said shrouds being disposed adjacent to the inner diameter of said vanes and defining an annular surface, a segmented honeycomb seal element concentrically supported to the shroud and defining with said annular surface an annular cavity, a mechanical damper being E-shaped in cross-section fabricated from flexible, resilient spring material adaptable to form an annular shape to fit within said cavity and bear against the surface of said inner shroud in frictional relationship to dissipate energy of the vibratory motion imparted to said stator.

5,346,363

LINER FOR A WATER JET PROPULSION PUMP

Richard C. Stallman, and William T. Stallman, both of Alameda, Calif., assignors to Outboard Jet - Trutol Bearings, Inc., San Leandro, Calif.

Filed Apr. 23, 1993, Ser. No. 52,168
Int. Cl.[5] F04D *29/02*
U.S. Cl. 415—197 **2 Claims**



1. An improved liner for a water jet propulsion pump called a jet drive having a pump volute with an intake casing removably secured thereto and a water impeller disposed in said casing, said impeller having blades with peripheral ends disposed proximate to the internal wall of said casing and which sweep a truncated cone-shaped volume, said liner comprising

a resilient hollow truncated inverted cone-shaped sleeve disposed between said impeller blade peripheral ends and the internal wall of said intake casing, the outer surface of said liner shaped to conform to said internal wall of said casing, the internal surface of said liner shaped to mate in close surrounding spaced relation to said impeller blade peripheral ends, and

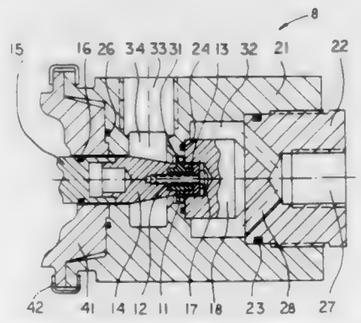
an integral flange extending from the external surface of said liner and formed for being sandwiched between said pump volute and said intake casing.

5,346,364

VERY HIGH SPEED HYDRAULIC TURBINE DRIVE

Davorin Kapich, 3111 Serrand Dr., Carlsbad, Calif. 92009

Continuation-in-part of Ser. No. 890,370, May 26, 1992, Pat. No. 5,236,305, which is a continuation of Ser. No. 655,575, Dec. 24, 1990, abandoned. This application Aug. 10, 1993, Ser. No. 104,196
The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.
Int. Cl.[5] F01D *9/02*
U.S. Cl. 415—202 **11 Claims**



1. A very high speed axial hydraulic turbine drive comprising:

(a) a housing;

(b) a shaft defining a shaft axis;

(c) a turbine nozzle body defining a turbine nozzle body outlet surface comprising a hydraulic fluid cavity and a plurality of nozzles each of said nozzles providing a passageway for hydraulic fluid to pass from said hydraulic fluid cavity to said outlet surface and defining a nozzle centerline, where each of said nozzle centerlines:

(1) intersects said turbine body outlet surface at points of intersection on a circle defining a nozzle exit circle which circle is concentric about said shaft axis and defines a nozzle exit plane which is perpendicular to said axis and

(2) forms an angle of about 10 to 30 degrees with said nozzle exit plane;

(d) an axial flow hydraulic turbine wheel assemble comprising:

(1) a plastic turbine wheel comprising a plurally of axial flow turbine blades on a blade circle having a diameter of less than 1.250 inch;

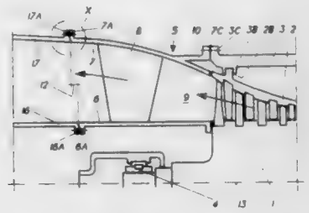
(2) a metal confinement-compression means for confining under compression substantially all of said plastic turbine wheel except said plurality of turbine blades, said turbine wheel assembly being arranged in relation to said shaft and said turbine body outlet surface such that hydraulic fluid discharged from said nozzle impinge on said blades to cause rotation of said turbine wheel and said shaft.

5,346,365

GAS TURBINE WITH EXHAUST GAS CASING AND EXHAUST GAS DUCT

Kamil Matyscak, Uehlingen-Brenden, Fed. Rep. of Germany, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Sep. 1, 1993, Ser. No. 114,181
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1992, 4232088
Int. Cl.[5] F01D *25/28*
U.S. Cl. 415—213.1 **1 Claim**



1. An axial flow turbomachine in which outlet rotor blades are followed downstream by at least an exhaust gas casing, comprising:

the exhaust gas casing having boundary walls that consist of a ring-shaped hub-end inner part and a ring-shaped outer part which bound a diffuser, the inner part and the outer part each comprising two half shells separable at a horizontal split plane;

the exhaust gas casing emerging into an exhaust gas duct, the exhaust gas duct having boundary walls that consist of a ring-shaped hub-end inner part and a ring-shaped outer part; and,

flanges on the exhaust gas casing and the exhaust gas duct Connecting the respective inner parts and outer pans,

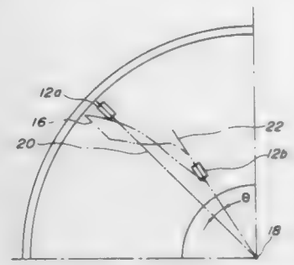
wherein the flanges connecting the inner parts and the flanges connecting the outer parts located in different vertical planes, and wherein the flanges have conically extending contact surfaces.

5,346,366

BLADED ROTOR AND APPARATUS FOR PRODUCING SAME

Shinsuke Eguchi; Masayuki Suzuki, and Tetsuo Fukuoka, all of Atsugi, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 2, 1993, Ser. No. 70,662
Claims priority, application Japan, Jun. 12, 1992, 4-179037
Int. Cl.[5] F01D *5/22, 33/18;* **B23P** *15/00*
U.S. Cl. 416—180 **13 Claims**



1. In a torque converter, a bladed rotor comprising a shell, a core and a plurality of blades disposed between the shell and the core, said shell being concentric with an axis of rotation of said rotor and in the form of an axially separated half of a circular ring with a nearly circular cross section, said core being concentric with the axis of rotation of said rotor and in the form of an axially separated half of a circular ring with a nearly circular cross section smaller than that of said shell, each of said blades being so shaped, with respect to a cross sectional view of said rotor, as to correspond in shape to a space between the shell and the core, each of said blades having curved side surfaces and having at a shell engaged edge thereof two fingers fitted in slots formed in said shell and at a core engaged edge thereof a finger fitted in a slot formed in said core, said shell engaged edge and said core engaged edge being curved with respect to an elevational view of said rotor so as to extend across a straight line extending radially through the center of said core;

said slots of said shell and said core being shaped and arranged so as to have, with respect to an elevational view of said rotor, longitudinal axes which coincide with straight lines extending radially through the center of said core, respectively;

said slots of said shell and said core being shaped and arranged so as to be formable by punches and dies through relative movement thereof in parallel to the axis of rotation of said rotor; and

said fingers of said blades being shaped so as to be engageable with said slots of said shell and said core through relative movements of said shell and said blades in parallel to the axis of rotation of said rotor.

5,346,367

ADVANCED COMPOSITE ROTOR BLADE

Leonard J. Doolin, Milford; Eric G. Olsen, Woodbury; William C. Reinfelder, Woodbridge, and George Capowich, Shelton, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 685,174, Dec. 21, 1984, abandoned. This application Sep. 2, 1986, Ser. No. 902,991
Int. Cl.[5] B63H *1/26, 5/06, 7/02;* **F01D** *5/14*
U.S. Cl. 416—230 **6 Claims**

1. An advanced composite helicopter rotor blade of predetermined airfoil contour from leading edge to trailing edge including upper and lower spar/skin members, a leading edge sheath and a trailing edge stiffener, an internal I-shaped web located at a midchord position of the blade, said web having flanges in contact with the inner surfaces of said upper and lower spar/skin members, a first honeycomb core positioned

on the leading edge side of said web, and a second honeycomb core positioned on the trailing edge side of said web, said spar/skin members, leading edge sheath, and web comprising the structural support of said blade for reaction of torsion and bending moments, said trailing edge stiffener, leading edge sheath and said spar/skin members combining to comprise a secondary structural support, a metallic counterweight positioned within said leading edge sheath for a portion of the blade span, said leading edge sheath being joined to said upper and lower spar/skin members by a plurality of bond planes, balance weights positioned in the honeycomb core in the outer



portion of the blade and a tip closure, said spar/skin members being formed of a plurality of preselected ply groupings, and wherein said blade is manufactured substantially by a single major cure process combining and positioning said upper and lower spar/skin members, I-shaped web, first and second honeycomb cores, and trailing edge stiffener in a matched metal mold, closing the mold against the back pressure of the honeycomb core, compacting the spar/skin laminates, and curing said blade members, thus forming a major blade portion, followed by the bonding of said leading edge sheath to said major blade portion.

5,346,368

SLUDGE FLOW MEASURING SYSTEM

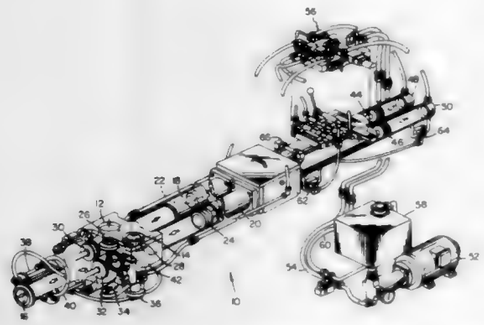
Edward A. Oakley, South Salem, N.Y.; Harry K. Crow, Ridgefield, Conn.; Thomas M. Anderson, Forest Lake; Richard T. Atherton, Excelsior, both of Minn., and Berthold A. Fehn, Krefeld, Fed. Rep. of Germany, assignors to Schwing America, Inc., White Bear, Minn.

Continuation of Ser. No. 981,982, Nov. 24, 1992, Pat. No. 5,257,912, which is a continuation of Ser. No. 870,874, Apr. 20, 1992, abandoned, which is a continuation of Ser. No. 595,457, Oct. 10, 1990, Pat. No. 5,106,272. This application Oct. 1, 1993, Ser. No. 131,091

The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.

Int. Cl.[5] F04B *21/00*

U.S. Cl. 417—63 **14 Claims**



1. A method of monitoring operation of a positive displacement piston/cylinder pump, the method comprising:

sensing a parameter which bears a known relationship to a flow of material out of a cylinder of the pump, the material containing solids, liquids and gases and being partially compressible; and

determining a fill percentage of the cylinder based upon the sensed parameter;

providing an output signal as a function of the determined fill percentage.

5,346,369

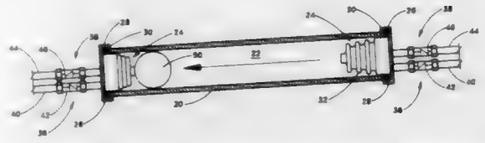
BILGE PUMP ACTUATED BY WAVE MOTION

William L. Miller, Jr., 3067 SW. 45 St., Fort Lauderdale, Fla. 33312

Filed Dec. 16, 1993, Ser. No. 167,175

Int. Cl.[5] B63B *13/00;* **F04B** *17/00*

U.S. Cl. 417—211 **12 Claims**



1. A pump actuated by reciprocal oscillating motion, said pump comprising:

a casing member enclosing an elongated chamber therewithin;

a pair of flexible bellows disposed at the opposing distal ends of said chamber, each of said bellows, in a normal unflexed state, extending inward into said chamber, and each of said bellows enclosing a pumping chamber;

each of said pumping chambers having a one way intake port and a one way output port; and

a piston positioned within said chamber for reciprocation therewithin under the influence of gravity in response to the reciprocal oscillating motion;

said piston having a reciprocal stroke such that, at the extremes of said reciprocal stroke, said piston alternately compresses each of said flexible bellows, thereby alternately decreasing the volume of each of said pumping chambers;

said elongated chamber comprising a substantially cylindrical chamber, and said piston comprising a substantially spheroid member.

5,346,370

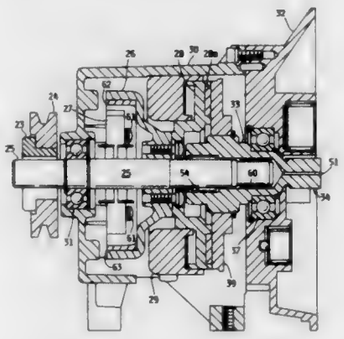
PORTABLE PUMPING SYSTEM WITH GENERATOR POWERED CLUTCH ASSEMBLY

Duane D. Krohn, Westminster, Colo., assignor to Graco Inc., Golden Valley, Minn.

Filed Nov. 8, 1993, Ser. No. 149,051

Int. Cl.[5] F04B *9/00;* **H02K** *7/10*

U.S. Cl. 417—223 **15 Claims**



1. A portable spraying system adapted for interchangeable power sources, comprising:

a) a cart having an upper platform for attachment of a pumping assembly and a lower platform for removable attachment of a power source;

b) a clutch housing attached to said upper platform, said clutch housing having a projecting drive shaft extending over said lower platform, said drive shaft having a drive pulley thereon;

c) a pump housing attached to said clutch housing, said pump housing having an input drive gear and means for actuating a liquid pump;

d) a pinion shaft mounted in said clutch housing in axial alignment with said drive shaft, with said pinion shaft extending outwardly from said clutch housing to engage said input drive gear;

e) a clutch plate affixed to said drive shaft in said clutch housing, and a clutch armature slidably mounted to said pinion shaft;

f) a generator stator affixed inside said clutch housing and a generator rotor attached to said drive shaft and to said clutch plate; and

g) means for deriving electrical energy from said generator stator for magnetically actuating said armature into contact against said clutch plate.

5,346,371

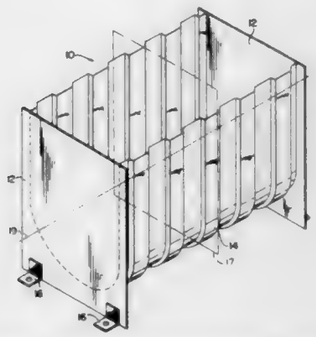
HYDRAULIC ELEVATOR OIL TANK

Louis Bialy, Simsbury, and Rajendra V. Mistry, Farmington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 763,389, Sep. 20, 1991, abandoned. This application May 4, 1993, Ser. No. 58,826

Int. Cl.[5] F04B *39/06*

U.S. Cl. 417—312 **7 Claims**



1. An elevator tank for holding hydraulic fluid comprising:

a first end panel,

a second end panel,

an axis extending between said first and second end panels, and

a single third panel forming a trough for holding said hydraulic fluid, said third panel having a first end portion attaching to said first end panel, and a second end portion attaching to said second end panel, said third panel having corrugations in planes normal to said axis such that the heat and noise dissipating ability and strength of the tank is enhanced.

5,346,372

FLUID FLOW REGULATING DEVICE

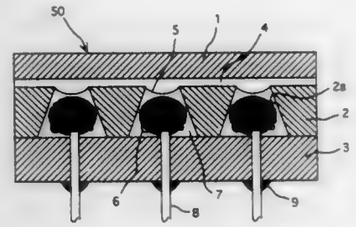
Yoshihiro Naruse, Ichikawa; Mitsuhiro Ando, Tokyo; Tomokimi Mizuno, Ichikawa, and Naomasa Nakajima, Tokyo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 914,745, Jul. 20, 1992, abandoned. This application Dec. 3, 1993, Ser. No. 161,065

Claims priority, application Japan, Jul. 18, 1991, 3-178482

Int. Cl.[5] F04B *17/00*

U.S. Cl. 417—379 **7 Claims**



1. An optically operated fluid-flow regulating device comprising:

a continuous linear fluid-flow passage;

a plurality of driving mechanisms each having a chamber, a diaphragm disposed at an opening of the chamber so as to be in parallel with the linear fluid-flow passage, a light-heat conversion substance accommodated in the chamber, and an operating fluid stored in the chamber;

a plurality of optical fibers extending respectively at one end into each of the chambers to expose the light-heat conversion substance directly to light at said one end of each fiber; and

a controller having a plurality of independently operated optical sources, corresponding in number to the plurality of optical fibers, for emitting light, when turned on, transmitted to said one end of each optical fiber, respectively.

5,346,373

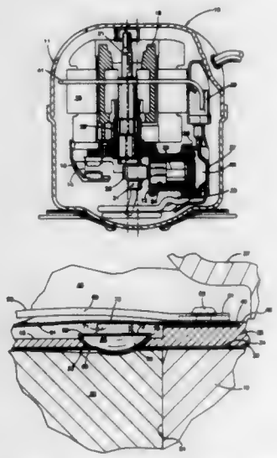
REFRIGERATION COMPRESSOR HAVING A SPHERICAL DISCHARGE VALVE

Delmar R. Riffe, Cullman, Ala., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jun. 17, 1993, Ser. No. 52,761

Int. Cl.[5] F04B *39/10;* **F16K** *15/14*

U.S. Cl. 417—415 **15 Claims**



1. A discharge valve assembly for a refrigeration compressor

comprising a valve plate having an inner face exposed to a compression space and an outer face exposed to a discharge space, said valve plate having a discharge port extending therethrough between said inner and outer faces, a valve seat surrounding said port on said outer face, said valve seat having a spherical surface, a valve poppet having a base portion with a flat surface facing away from said valve seat and a spherical head portion facing said valve seat, said valve seat and said head portion having the same radius of curvature so that said head portion makes surface abutting sealing contact with said valve seat in the closed position, said head portion spherical surface having a diameter greater than the diameter of said valve seat, a valve stop member extending over said valve poppet a spaced distance from said base portion, and a flat leaf spring engaging said poppet flat surface biasing said poppet toward said valve seat.

5,346,374

ROTATING SPIRAL PUMP WITH COOLING BETWEEN RADIAL STEPS

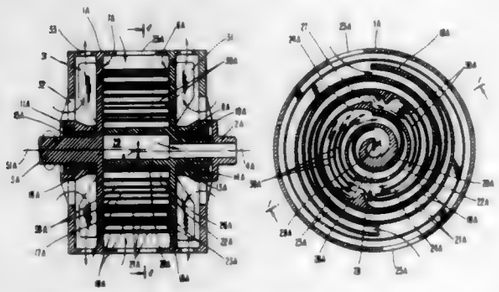
Heinrich Güttinger, Wettingen, Switzerland, assignor to Aginfor AG fur Industrielle Forschung, Wettingen, Switzerland

Filed Jul. 20, 1993, Ser. No. 93,740

Claims priority, application European Pat. Off., Jul. 20, 1992, 92810551.9

Int. Cl.[5] **F04C** *18/04, 23/00, 29/04*

U.S. Cl. 418—6 4 Claims



1. A rotating spiral pump comprising:

a housing;

two opposing displacement disks rotatably disposed in the housing, said displacement disks having inner facing sides and outer sides;

the two displacement disks being provided on the inner facing sides with ribs that extend perpendicularly from the inner faces and are arranged spirally, the ribs from each disk interlocking to form pumping chambers and free face ends of the ribs of each disk sealing against the inner face of the opposing displacement disk;

the spirally arranged ribs on each disk being arranged in at least two radially positioned steps, the steps being separated radially by rotating spaces, wherein a radially outer step has at least one more pumping chamber than a radially inner step; and

cooling means provided in the space between an outlet of the radially outer step and an inlet of the radially inner step of at least one disk, the cooling means rotating with the space.

5,346,375

DELIVERY VALVE FOR A SCROLL COMPRESSOR

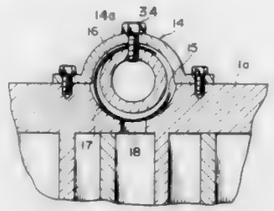
Kazuyuki Akiyama; Yoshinori Shirafuji, and Keiju Sakaino, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1992, Ser. No. 980,183

Claims priority, application Japan, Dec. 11, 1991, 3-350398

Int. Cl.[5] **F04C** *18/04, 29/00;* **F16K** *15/14*

U.S. Cl. 418—15 10 Claims



1. In a scroll compressor which includes a stationary scroll plate provided with a scroll wrap, and a revolving scroll plate provided with a scroll wrap and disposed so that the scroll wrap of the stationary scroll plate and that of the revolving scroll plate engage, the scroll compressor further including a delivery valve, the scroll compressor comprising:

the stationary scroll plate including a stationary disk provided with a valve element seating surface formed in the upper surface thereof, and a discharge port formed therethrough so as to open in the valve element seating surface;

a discharge valve element for opening or closing the discharge port, seated on the valve element seating surface of the stationary disk of the stationary scroll plate; and

a valve element holding member holding the discharge valve element and limiting the lift of the discharge valve element;

wherein the valve element seating surface has a concave cylindrical shape, and the discharge valve element has a cylindrical shape conforming to the concave cylindrical shape of the valve element seating surface, and wherein said discharge valve element includes a first fixed end and a second free end such that said discharge valve element has a cantilever mount, and wherein said discharge valve element extends partially about said valve element holding member such that at least part of said valve element holding member is disposed radially inside of said cylindrical shape of said discharge valve element.

5,346,376

AXIAL THRUST APPLYING STRUCTURE FOR THE SCROLLS OF A SCROLL TYPE COMPRESSOR

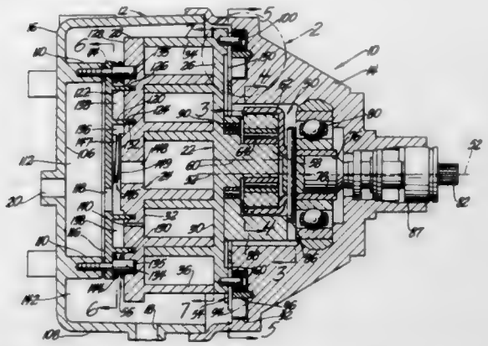
Mark J. Bookbinder, Detroit, Mich.; Christopher M. Bellinger, Lockport, and Michael E. Daniels, Depew, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 20, 1993, Ser. No. 109,197

Int. Cl.[5] **F04C** *18/04, 27/00*

U.S. Cl. 418—55.4 3 Claims

1. A scroll type compressor including a housing with a front section and a rear section; a fluid inlet in the housing; a fluid outlet in the housing; a non-orbital scroll including an end plate, a spiral wrap and an outlet passage through a central portion of the end plate mounted in the rear section of the housing by a mounting assembly which permits axial movement of the non-orbital scroll relative to the housing; an orbital scroll including an end plate and a spiral wrap mounted in the front portion of the housing and cooperating with the non-orbital scroll to form at least one pair of fluid pockets; a scroll drive to drive the orbital scroll in an orbital path; an anti rotation assembly to prevent rotation of the orbital scroll while permitting orbital movement; and an axial thrust load assembly including a baffle plate mounted in the rear section of the housing, a first pressure chamber flange integral with the baffle plate and extending forwardly toward the scrolls, a second pressure chamber flange integral with the baffle plate, extending forwardly toward the scrolls and surrounding the first pressure chamber flange grooves in the end plate of the non-orbital scroll telescopically receiving the first pressure chamber flange and the second pressure chamber flange and a resilient seal in each groove for sealing between the end plate of the



non-orbital scroll and the forward edges of the first and second pressure chamber flanges operable to maintain sealing during axial movement of the non-orbital scroll within the compressor housing, a passage through the end plate of the non-orbital scroll between the first and second pressure chamber flanges, and wherein the first pressure chamber flange surrounds the outlet passage.

5,346,377

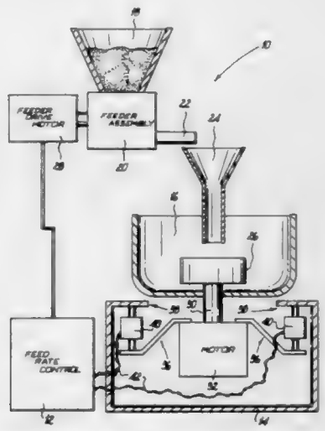
APPARATUS FOR FLASH FLOW PROCESSING HAVING FEED RATE CONTROL

Beuford A. Bogue, Broad Run, and John A. Hrubec, Annandale, both of Va., assignors to Fuisz Technologies Ltd., Chantilly, Va.

Filed Oct. 7, 1993, Ser. No. 133,747

Int. Cl.[5] **B29C** *67/00;* **A23G** *3/02*

U.S. Cl. 425—9 13 Claims



8. Apparatus for flash flow melt spin processing having feed rate control, comprising:

a spinner head assembly, the spinner head assembly including a spinner head having a continuous perimeter for providing heat and centrifugal force to a material being processed and a heating element substantially continuous with the spinner head perimeter for generating said heat, and spinner drive means connected to the spinner head for providing said centrifugal force thereto;

support means for supporting the spinner head assembly and detecting a force exerted by the spinner head assembly on the support means;

a feed rate controller electrically connected to the support means which uses said detected force to determine a load of the material being processed in the spinner head, comparing said load to a preselected load and determining a difference therefrom; and

a feeder assembly responsive to said difference that supplies the material.

5,346,378

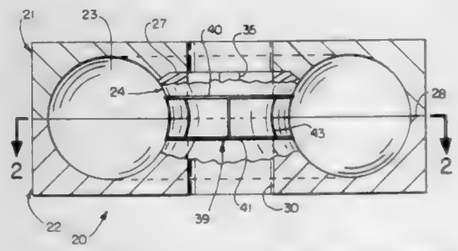
APPARATUS FOR FORMING A CURING ENVELOPE

Calvin M. Kassaw, Jr., Dardanelle, and Jolanta K. Klimek, Havana, both of Ark., assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Division of Ser. No. 823,178, Jan. 21, 1992, Pat. No. 5,221,510. This application Apr. 9, 1993, Ser. No. 45,028

Int. Cl.[5] **B29C** *33/42*

U.S. Cl. 425—28.1 14 Claims



1. A mold insert for use in a curing mold for molding an inner tube, the mold having a center core against which an inside wall of the tube is urged by internal pressure in the tube during curing, said insert comprising a pair of coaxial rings adapted to closely circumscribe the center core of the curing mold for forming a pair of coaxial grooves in the inside wall of the tube being cured in the mold, and means interconnecting said rings for maintaining the axial spacing therebetween when assembled into the mold about the center core.

5,346,379

EXTRUDING DEVICE FOR EXTRUDING PLASTIC TUBING WITH A MEASURING DEVICE FOR MEASURING THE WALL THICKNESS OF THE PLASTIC TUBING

Volkmar R. Wölfl, Vlotho-Valdorf, and Ulrich Neumann, Bad Oynhausen, both of Fed. Rep. of Germany, assignors to CONPRO GmbH, Vlotho, Fed. Rep. of Germany

Filed Oct. 16, 1992, Ser. No. 962,385

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1991, 4134285

Int. Cl.[5] **B29C** *47/00*

U.S. Cl. 425—67 23 Claims

1. An extruding device for extruding plastic tubing comprising:

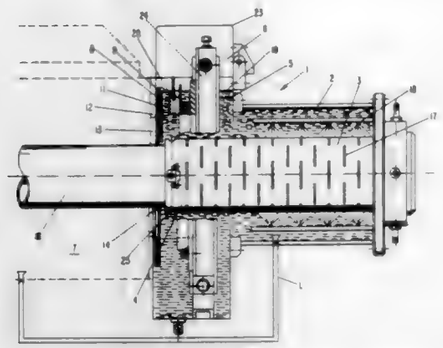
an extruder with an outlet;

a cooling device connected to said outlet of said extruder, said cooling device comprising a water-filled chamber and a circulating cooling element in the form of a vacuum tank directly connected downstream to said water-filled chamber such that a sealed passage for the plastic tubing between said water-filled chamber and said vacuum tank is provided;

said water-filled chamber having a water-filled cooling part and a water-filled measuring part;

a water- and vacuum-conveying connection between said measuring part and said vacuum tank;

a water-cooled calibrating sleeve with an inner wall surface connected within said cooling part and completely immersed in water, said calibrating sleeve pulling the extruded plastic tubing against said inner wall surface; and



a measuring device, for measuring the wall thickness of the plastic tubing, connected within said measuring part, said measuring device comprising at least one ultrasonic measuring head radially positioned relative to the plastic tubing, said measuring head measuring the plastic tubing through the water within said measuring part.

5,346,380

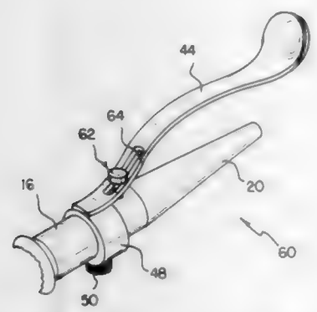
CAULKING TUBE EXTENSION NOZZLE

James T. Ables, 11620 Snowline Cir., Anchorage, Ak. 99516

Filed Sep. 22, 1993, Ser. No. 124,794

Int. Cl.[5] B05C *17/005*; B28B *3/00*

U.S. Cl. 425—87 **2 Claims**



1. A caulking tube extension nozzle comprising:

a nozzle coupling means for attaching to a caulking tube, said coupling means comprising a hollow cylindrical member; gripping means coupled to an exterior surface of said cylindrical member for facilitating a rotation of said cylindrical member, said gripping means comprising at least one wing member fixedly secured to said cylindrical member; said cylindrical member having a first interior surface with thread means for engaging a caulking tube nozzle, said thread means comprising a helical member disposed upon said first interior surface; said cylindrical member further having a second interior surface engagable to a caulking tube nozzle receiver, said first interior surface having a first diameter and said second interior surface having a second diameter, with said second diameter is greater than said first diameter;

an elongated tube coupled to said nozzle coupling means in fluid communication with said caulking tube, said elongated tube having a flexible section allowing said tube to bend, said flexible section comprising a plurality of pleats formed in said elongated tube;

a conical tip in fluid communication with said tube, said conical tip being trimable to define an opening through which caulking may be dispensed;

a bead forming means coupled to said elongated tube for shaping a bead of caulking dispensed from said elongated tube, said bead forming means comprising a collar slidably disposed upon said elongated tube; a fastening means for securing a position of said collar along and around said elongated tube; an arcuate spoon member coupled to said collar and extending therefrom past said conical tip; and a head member positioned at a distal end of said spoon member, whereby said head member may contact and shape said caulking dispensed through said conical tip; and,

a pivot means for pivoting said bead forming means towards said conical tip.

5,346,381

APPARATUS FOR PREPARATION OF SAMPLES FOR SPECTROGRAPHIC ANALYSIS

Joseph Marcovecchio, Berkeley Heights, and Joseph K. Katzenberger, Lebanon, both of N.J., assignors to Instruments SA, Inc., Edison, N.J.

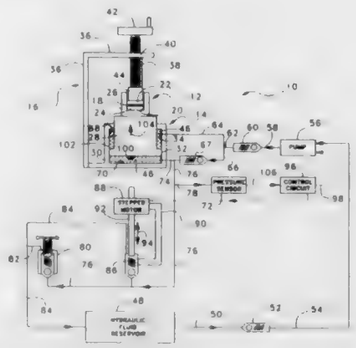
Division of Ser. No. 647,419, Jan. 29, 1991, Pat. No. 5,198,241.

This application Sep. 28, 1992, Ser. No. 952,263

The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.

Int. Cl.[5] B29C *43/00*

U.S. Cl. 425—149 **11 Claims**



1. Sample pelletization apparatus for compressing a sample by hydraulic pressure said apparatus including automated pressure control means and comprising:

a) a die for receiving said sample in compressible form;

b) an abutment for holding said sample in a fixed position against said hydraulic pressure;

c) hydraulic piston-and-cylinder means positioned to drive said die in a direction toward said abutment;

d) a pump for feeding hydraulic fluid to pressurize said piston-and-cylinder means to a working pressure; and

e) a pressure control valve coupled to said piston-and-cylinder means for controlling the working pressure in said hydraulic cylinder, said pressure control valve comprising:

i) a sealing member;

ii) a valve seat defining an outlet configured, dimensioned and positioned to engage said sealing member with said sealing member closing said outlet;

iii) compressible spring means urging said sealing member towards said seat to close said outlet;

iv) a backing member putting said spring means under compression by maintaining a distance between said backing member and said seat;

v) mechanical structure for adjusting said distance to actuate said pressure control valve; and

f) manually settable control circuit means for said mechanical structure said control circuit means being connected with said backing member to effect control of said pressure control valve and including means to receive operator inputs of desired relief pressure and desired bleed-down time.

5,346,382

HOT RUNNER EXCHANGE APPARATUS FOR USE IN AN INJECTION MOLDING MACHINE

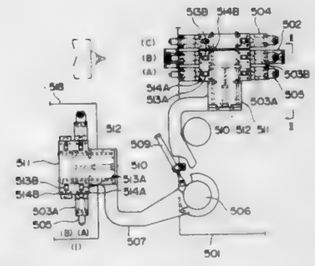
Hiroshi Kanno, Numazu; Tsugio Toyama, Sunto; Koichi Kanazawa, and Koichi Ozawa, both of Susono, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1992, Ser. No. 912,755

Claims priority, application Japan, Jul. 12, 1991, 3-054174[U]; Sep. 2, 1991, 3-221366; Sep. 5, 1991, 3-225589; Sep. 10, 1991, 3-230433

Int. Cl.[5] B29C *45/56*

U.S. Cl. 425—190 **11 Claims**



1. Hot runner exchange apparatus utilized in a vertical injection molding machine comprising a metal mold opened and closed in a vertical direction, a mold clamping device, an injection device having a cylinder, a nozzle at a front end of said heating cylinder, said nozzle being directed in a horizontal direction, and a hot runner acting as a passage for supplying molten resin to said mold clamping device from said injection device, said hot runner exchange apparatus comprising:

hanging means for hanging said hot runner;

means for moving said hanging means in a vertical direction;

means for moving said hanging means in a horizontal direction;

a frame member for supporting said hanging means, said vertical moving means and said horizontal moving means;

means for moving said frame member in taking in and taking out directions of said hot runner; and

means, disposed in said frame member, for moving said frame member in a direction perpendicular to said taking in and taking out directions.

5,346,383

LOW SHEAR FREE-FLOW EXTRUDER BREAKER PLATE

Ralph E. Starnes, Jr., Carroll County, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Jan. 28, 1994, Ser. No. 187,990

Int. Cl.[5] B29B *7/42, 7/74*; B29C *47/68*

U.S. Cl. 425—197 **14 Claims**

8. An extruder device comprising:

a barrel,

a screw disposed in said barrel so as to form an annular channel in said barrel,

a breaker plate disposed at an end of said barrel downstream of said screw, and

a conduit disposed downstream of said breaker plate for feeding extruded material to a crosshead device for applying insulation to an advancing wire;

wherein said breaker plate comprises:

a plate having an upstream side adapted to receive a material to be extruded and a downstream side to which the material is to be extruded, a plurality of concentric grooves are formed in said plate and



a plurality of holes of varying diameters formed in said grooves and arranged so as to minimize spacing between said holes.

5,346,384

APPARATUS FOR THE PRODUCTION OF PLASTIC PIPES

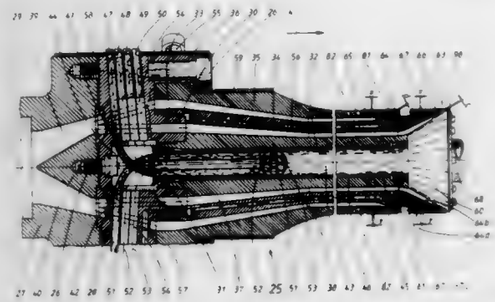
Ralph-Peter Hegler, Bad Kissingen, and Wilhelm Hegler, Goethestrasse 2, D-873o Bad Kissigen, both of Fed. Rep. of Germany, assignors to Wilhelm Hegler, Fed. Rep. of Germany

Filed Mar. 6, 1992, Ser. No. 847,947

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1991, 4111228

Int. Cl.[5] B29C *47/22, 47/26*

U.S. Cl. 425—381 **6 Claims**



1. An apparatus for the production of plastic pipes (23) comprising:

a plurality of half shells (2), of which each is provided with a mold recess (105) and of which two at a time combine as a pair on a molding path (9) to form a mold surrounding a mold space (103) with a central longitudinal axis (29), and which half shells are arranged on a machine bed (1) in the form of two endless chains (3, 3') and which half shells form said mold when guided in a direction (4) of production; an injection head (25) of an extruder being arranged upstream of said molding path (9) and having an internal channel (37) and an external channel (38) surrounding said internal channel (37), which channels (37, 38) extend substantially concentrically of said central longitudinal axis (29) and which respectively, issue in one substantially ring-shaped internal nozzle (63) and one substantially ring-shaped external nozzle (83), which is upstream of the internal nozzle (63) in the direction (4) of production and which nozzles (63, 83) are directly delimited, respectively, by a nozzle ring (66, 81) of which at least one (66, 81) is adjustable for modification of the width (c, d) of an extrusion orifice of one of said nozzles (63, 83); and

wherein the at least one adjustable nozzle ring (**66**, **81**) is one nozzle ring of an internal nozzle ring (**66**) and an external nozzle ring (**81**) guided displaceably on the injection head (**25**) in the direction of said central longitudinal axis (**29**) and tiltable in relation to said central longitudinal axis (**29**) thereby adjusting said width (c, d) of said extrusion orifice of said nozzle (**63**, **83**); and

wherein said at least one adjustable nozzle ring is connected with the injection head (**25**) by means of a plurality of tension adjusting screws (**67**, **82**) and pressure adjusting screws (**67'**, **82'**) alternately arranged along the circumference of said adjustable nozzle ring and extending parallel to said central longitudinal axis (**29**), whereby said tension adjusting screws (**67**, **82**) are screwed with a thread into a threaded bore of said adjustable nozzle ring and supported in an abutment of the injection head and whereby the pressure adjusting screws (**67'**, **82'**) are screwed into a threaded bore of the abutment of the injection head and is pressed against said adjustable nozzle ring, whereby through common actuation of the tension adjusting screws and the pressure adjusting screws said adjustable nozzle ring is displaceable in the direction of said central longitudinal axis (**29**) and tiltable in relation to said central longitudinal axis (**29**).

5,346,385

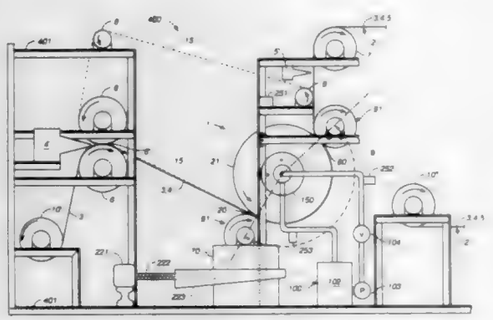
CHILLED ROLLER APPARATUS FOR ACHIEVING DESIRED SURFACE ROUGHNESS CHARACTERISTICS OF AN ELECTRODE MATERIAL ON A WEB

Mike McAleavey, San Jose, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Oct. 29, 1992, Ser. No. 968,370

Int. Cl.[5] B29C *53/84, 59/04*

U.S. Cl. 425—363 **24 Claims**



1. An apparatus for achieving desired surface roughness characteristics on an uncured, paste-like electrode material on a substrate web for forming an electrochemical cell, comprising:

a roller, an exterior surface of the roller being continuous and polished and having a constant surface roughness;

means for rotating the roller;

nip roller means including a nip roller for pressing electrode material coated on the substrate web against the surface of the roller in a nip defined by the nip roller and the roller so that a surface of the electrode material assumes substantially the same roughness characteristics as the surface of the roller, the nip roller means including means for moving the nip roller toward and away from the roller to adjust a thickness of the electrode material;

means for holding the electrode material against the surface of the roller through a desired arc length after the electrode material is pressed against the surface of the roller by the nip roller, the holding means including means for redirecting the substrate web around the roller and for maintaining the substrate web under a substantially constant tension to hold the electrode material against the roller; and

means for cooling the roller to a casting temperature for casting the electrode material that has been pressed against and is held against the portion of the roller, the casting of the electrode material causing the electrode material to tend to adhere to the substrate web.

5,346,386

DEVICE FOR BLOW MOULDING

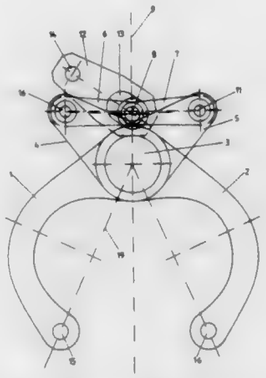
Peter Albrecht, Hamburg; Michael Linke, Ahrensburg, and Marek Peterko, Tornesch, all of Fed. Rep. of Germany, assignors to Krupp Corpoplast Maschinenbau GmbH, Hamburg, Fed. Rep. of Germany

Filed Apr. 7, 1993, Ser. No. 44,257

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1992, 4212583

Int. Cl.[5] B29C *49/56*

U.S. Cl. 425—541 **18 Claims**



1. Device for blow moulding of a thermoplastic synthetic material comprising a blow mould consisting of at least two blow moulding elements, said blow mould being provided with an internal space intended for shaping a container to be produced and in which the blow moulding elements are arranged in the region of mould carriers supported so that they can be swiveled, said mould carriers (**1**, **2**) being mounted on a shaft (**3**), a locking device (**17**) provided in the area of the ends of the mould carriers (**1**, **2**) positioned away from the shaft (**3**), and the mould carriers (**1**, **2**) in the region of their extension away from the locking device (**17**) project beyond the shaft (**3**) by means of actuating arms (**4**, **5**) which via elongated coupling levers (**6**, **7**) are coupled rotationally to an adjusting element (**8**), which is substantially guided in the direction of a center line (**9**) of the blow mould, the longitudinal axis of said coupling levers being angled relative to said actuating arms when said mould carriers are in an open position such that a force exerted on either of said mould carriers in a direction toward the other mould carrier a resulting force will be exerted on said adjusting element in a direction toward said shaft and means for limiting movement of said adjusting element beyond a predetermined point toward said shaft whereby said mould carriers are self-locked in an open position.

5,346,387

MOLD FOR MANUFACTURING POLYURETHANE PARTS FOR USING THE RIM PROCESS

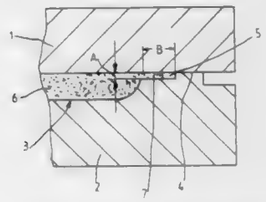
Heinz Müller, and Klaus Schulte, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 15, 1992, Ser. No. 884,105

Claims priority, application Fed. Rep. of Germany, May 24, 1991, 4116951

Int. Cl.[5] B29C *45/02*

U.S. Cl. 425—543 **2 Claims**



1. A mold for manufacturing polyurethane parts using the reaction injection molding process, comprising two mold halves which between them enclose a mold cavity, said mold cavity being sealed by a sealing surface, and wherein a gap of 15 to 30 mm depth and 0.15 to 0.25 mm width is provided between the mold cavity and the sealing surface.

5,346,388

INJECTION MOLDING NOZZLE WHICH RETAINS A THERMOCOUPLE ELEMENT

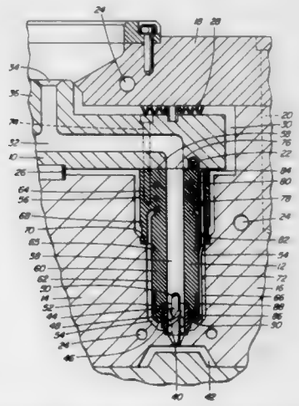
Jobst U. Gellert, 7A Prince Street, Georgetown, Ontario, Canada L7G 2X1

Filed Aug. 16, 1993, Ser. No. 106,617

Claims priority, application Canada, Jul. 28, 1993, 2101480

Int. Cl.[5] B29C *45/20*

U.S. Cl. 425—549 **2 Claims**



1. In a heated injection molding nozzle having a rear end, a front end, a rear collar portion adjacent the rear end, a front portion extending forwardly from the rear collar portion, and a melt channel extending therethrough to convey melt from an inlet at the rear end towards a gate extending through a cooled mold to a cavity, the rear collar portion having a generally cylindrical outer surface and the front portion having a generally cylindrical outer surface which is smaller in diameter than the outer surface of the rear collar portion, the nozzle to be seated in a well in the cooled mold with an insulative air space extending between the outer surface of the front portion of the nozzle and a surrounding generally cylindrical inner surface of the well, the rear collar portion of the nozzle having a thermocouple element duct extending therethrough in alignment with the insulative air space between the outer surface of the front portion of the nozzle and the surrounding inner surface of the well, having the improvement wherein;

the front portion of the nozzle has a thermocouple element bore extending a predetermined distance rearwardly from the front end, and the rear end of the nozzle has a thermocouple element groove extending from the thermocouple element duct to the outer surface of the rear collar portion, whereby a suitably bendable and retentive thermocouple element removably mounted with a front portion of the thermocouple element received in the thermocouple element bore and bent to extend rearwardly through the insulative air space between the outer surface of the front portion of the nozzle and the surrounding inner surface of the well and through the thermocouple element duct through the rear collar portion with a rear portion of the thermocouple element bent to extend through the thermocouple element groove in the rear end of the nozzle is securely self-retained in place.

5,346,389

COMBUSTION APPARATUS FOR HIGH-TEMPERATURE ENVIRONMENT

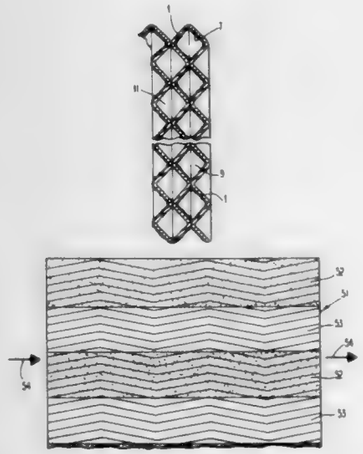
William B. Retallick, West Chester, Pa., and William R. Alcorn, Chagrin Falls, Ohio, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 408,521, Sep. 18, 1989, Pat. No. 5,202,303, which is a continuation-in-part of Ser. No. 315,048, Feb. 24, 1989, abandoned. This application Sep. 30, 1992, Ser. No. 953,939

The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.

Int. Cl.[5] F23D *21/00*

U.S. Cl. 431—7 **9 Claims**



1. A catalytic reactor made from a plurality of layers of metal, the layers of metal having surfaces which define first and second sets of channels, the channels of the first set alternating with the channels of the second set, and wherein the metal surfaces which define the channels of the first set are coated with a catalyst, and wherein the metal surfaces which define the channels of the second set are not coated with a catalyst, wherein the layers of metal are corrugated with a herringbone pattern, and wherein the corrugations of adjacent layers are out of phase with each other, wherein adjacent layers do not nest together, wherein the corrugations define zigzag paths for gas traveling through the reactor, and

wherein the catalyst coating is applied in blands that are separated by bands of uncoated regions.

5,346,390

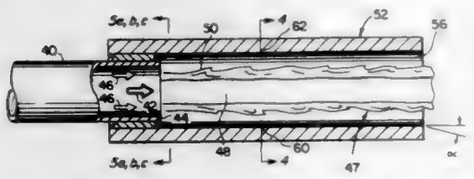
METHOD AND APPARATUS FOR OXY-FUEL HEATING WITH LOWERED NO_x IN HIGH TEMPERATURE CORROSIVE ENVIRONMENTS

Aleksandar G. Slavejkov, Allentown; Zbigniew Zurecki, Macungie, both of Pa.; Mahendra L. Joshi, Altamonte Springs, and James K. Nabors, Apopka, both of Fla., assignors to Air Products and Chemicals, Inc., Allentown, Pa. and Combustion Tech, Inc, Apopka, Fla.

Division of Ser. No. 860,652, Mar. 30, 1992, Pat. No. 5,256,058. This application Aug. 17, 1993, Ser. No. 108,030

Int. Cl.[5] **F23M** *3/02*

U.S. Cl. 431—8 **6 Claims**



1. A method of producing a low NOX oxy-fuel flame for heating a chamber to an elevated temperature comprising the steps of:

producing an oxy-fuel flame of the type wherein a core of a fuel rich phase is surrounded by a sheath of a fuel lean phase by using a post mix concentric tube oxy-fuel burner to produce said flame by causing fuel to exit a central tube and oxygen to exit a concentric tube surrounding said central tube and controlling flow of oxygen and fuel to a maximum velocity of 600 feet per second as they exit the burner;

confining and directing said flame in a precombustor having generally a cylindrical shaped passage wall extending for a distance from a point where said flame is generated to a point where said flame can be introduced into a heating device, said distance (length) being determined from the ratio of length of the passage wall of the precombustor to diameter of the passage wall being between 2 and 6 and at a rate of heat generation between 0.25 and 40 million Btu/hour; and

fixing said maximum velocity and ratio so that only an oxy-fuel flame of the type wherein a core of a fuel-rich phase surrounded by an oxygen-rich sheath is created and extends throughout the length of said precombustor without combustion occurring on the wall forming the precombustor.

5,346,391

CLEAN BURNING BURNER, PARTICULARLY FOR COMBUSTION OF GASIFIED LIQUID FUEL, SUCH AS FUEL OIL, OR OF GAS

Jörg Fullemann, Mastrils, and Heinrich Boner, Malaus, both of Switzerland, assignors to Füllemann Patent AG, Mastrils, Switzerland

Filed Feb. 24, 1993, Ser. No. 22,721

Claims priority, application Switzerland, Feb. 28, 1992, 636/92-0

Int. Cl.[5] **F23D** *7/00*

U.S. Cl. 431—116 **25 Claims**

1. Clean burning burner for gasifying and combusting liquid fuel, said burner having

a burner body (**15**);

fuel supply means (**11**, **13**; **77**, **79**) providing atomized fuel under pressure;

an air blower (**9**) providing a blown air stream;

means for defining a gasification space (**66**) for effectively complete gasification of the atomized fuel and said blown air supplied by said fuel supply means and said air blower, respectively;

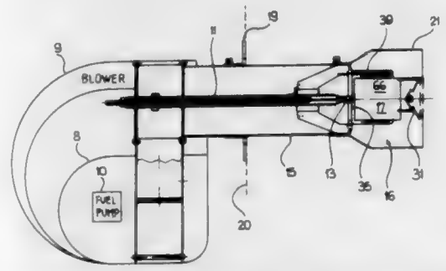
a gasification space air inlet means (**35**) formed with a gasification space air inlet opening (**55**), coupled to the burner body;

a stream deflection element (**31**) located spaced from the means defining a gasification space and positioned to provide for mixing of the atomized fuel with the blown air,

said stream deflection element having a remote end (**58**, **60***a*), remote from said gasification space air inlet opening (**55**);

a flame tube (**21**) outside of, and surrounding the gasification space (**66**) extending longitudinally from a region in the vicinity of the gasification space air inlet opening (**55**) approximately up to the remote end (**58**, **60***a*) of the stream deflection element (**31**);

said stream deflection element (**31**) being, at least in part hollow cup-shaped perforated member, and a perforated plate extending over and spaced from said cup-shaped member to form a recirculation zone therebetween, and being shaped, configured and said stream deflecting element being positioned with respect to the flame tube (**21**) to form an essentially ring-shaped outlet space (**40**) between the deflection element (**31**) and the flame tube (**21**) where the root or base of the flame of the burner will form upon mixing and combustion of the gasified fuel-air mixture in said gasification space, said flame extending in essentially radial direction to the end of the flame tube;



means forming a first recirculation path (I) for recirculation of hot combustion gases back into said gasification space (**66**) formed by said stream deflection element (**31**), in combustion with said flame tube (**21**), and located between said means forming said gasification space and said flame tube,

said stream deflection element (**31**) deflecting hot combustion gases into said first recirculation path; and

wherein the stream deflection element (**31**) and perforated plate are formed with a plurality of openings (**57**, **61**, **59**; **57'**), which openings are positioned for conducting hot combustion gases from said recirculation zone through said stream deflection element and plate and into said first recirculation path (**66**) in a second recirculation path (II), while heating said stream deflection element.

5,346,392

CIGARETTE-SHAPED GAS LIGHTER

Jong-Il Kim, #94-1 Suyu 1-dong, Tobong-gu, Seoul, Rep. of Korea

Filed Jul. 29, 1993, Ser. No. 98,784

Claims priority, application Rep. of Korea, Jul. 30, 1992, 1992-14208

Int. Cl.[5] **F23Q** *1/02*

U.S. Cl. 431—277 **3 Claims**

1. A cigarette-shaped gas lighter comprising:

a solid main body;

a mounting base formed at an upper section of said solid main body;

a twice-stepped recess formed in said mounting base, said recess having upper and lower shoulders;

a gas injection regulating unit formed in said recess;

a spark generating unit mounted on said mounting base, said spark generating unit including

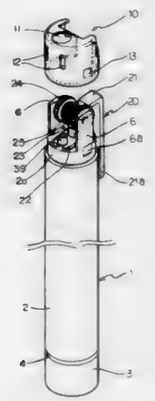
a lighter flint upwardly biased by a spring received in said mounting base, and

a sparker supported by a pair of support columns extending upwardly from said mounting base, said sparker being serrated at its sparking surface and coming into frictional contact with the top of said lighter flint to generate a spark;

said gas injection regulating unit including

a cylinder received in a larger section of said recess such that a top end of said cylinder comes into close contact with the lower shoulder of said recess, and

a gas regulating member having a gas inlet chamber at its lower section and a gas nozzle at its upper end, the gas regulating member being received in said recess such that said gas inlet chamber is closely received in said cylinder and said gas nozzle protrudes out of said mounting section of said main body, said gas regulating member being biased downwardly by a spring supported between the upper shoulder of said recess and said gas inlet chamber with a packing interposed between said upper shoulder and the top of said spring;



a lever pin for lifting said gas injection regulating unit to allow gas to be projected from said gas nozzle of said gas regulating member, said lever pin including a clip extending downwardly from its press surface for clipping said gas lighter;

a cap having a gas recharger, said cap being hermetically screwed on the bottom of said main body with a packing interposed therebetween; and

a top cover mounted on said mounting section of said main body, said top cover having a flame projection opening for allowing a flame projected from said gas nozzle to rush to the outside of said gas lighter,

whereby said gas lighter, having the same length and the same diameter as those of a conventional cigarette, is carriable in a conventional cigarette pack.

5,346,393

MULTIPLE-BED THERMAL OXIDIZER CONTROL DAMPER SYSTEM

Melanius D'Souza, San Dimas, Calif., assignor to Smith Engineering Company, Ontario, Calif.

Filed Feb. 2, 1993, Ser. No. 12,354

Int. Cl.[5] **F27D** *17/00*

U.S. Cl. 432—179 **6 Claims**

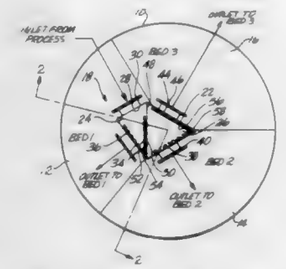
1. A damper for controlling flow in a regenerative thermal oxidizer having three regenerator beds, the damper comprising:

a body having first and second chambers, the first chamber having a first aperture therein for communication with an external flow path and a second aperture therein for communication with a first regenerator bed, the second chamber having a third aperture for communication with a second regenerator bed, and a fourth aperture for communication with a third regenerator bed;

a septum separating the first and second chambers and containing a fifth aperture;

a first damper blade pivotally mounted within the first chamber intermediate the second and fifth apertures;

means for pivoting the first damper blade between a first position sealing the fifth aperture in the septum and a second position covering and sealing the second aperture;



a second damper blade pivotally mounted within the second chamber intermediate the third aperture and fourth aperture; and

means for pivoting the second damper blade between a first position covering and sealing the fourth aperture and a second position covering and sealing the third aperture.

5,346,394

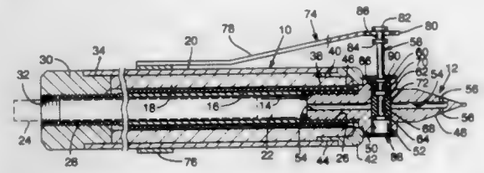
MOLTEN WAX APPLICATOR

Mario P. DeStefanis, 10925 SW. Riverside Dr., Portland

Filed Nov. 15, 1993, Ser. No. 151,863

Int. Cl.[5] **A61C** *3/00*

U.S. Cl. 433—32 **13 Claims**



1. A molten wax applicator comprising:

a) a hollow stock providing a reservoir for holding molten wax,

b) heating means in operative contact with the reservoir for maintaining the wax in molten condition,

c) connected to the stock a heat conductive nozzle having a wax-dispensing tip,

d) a conduit through the nozzle interconnecting the reservoir with the dispensing tip, and

e) positioned in the tip for controlling the flow of molten wax through the conduit, valve means incorporating as a conduit-sealing component a component fabricated from a resilient polymeric material which is chemically resistant to the action of hot molten wax and which melts at a temperature of from 150°–480° F.

5,346,395

DENTAL ARCH BITE REGISTRATION DEVICE

Loren S. Adell, 200 Adell Blvd., Sunnyvale, Tex. 75182, assignor to Loren S. Adell and Michael Adell, Sunnyvale, Tex.

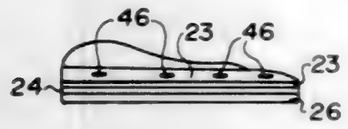
Filed Apr. 15, 1993, Ser. No. 47,783

Int. Cl.[5] **A61C** *9/00*

U.S. Cl. 433—71 **20 Claims**

1. A dental arch bite registration device comprising a multi-laminar occlusal wall for placement between a pair of dental arches before they are impressed into the device, one lamina of

said occlusal wall adapted to confront one of said pair of dental arches and another lamina of said occlusal wall adapted to confront the other of said pair of dental arches, wherein said one lamina has a durometer different from that of said another lamina such that when said dental arches are impressed into the



device during a bite, said one lamina takes an impression of said one arch that is noticeably deeper than the impression that said another lamina takes of said other arch, and wherein the thickness of said occlusal wall is throughout no greater than 0.100 inch before said arches are impressed into the device.

5,346,396

DENTAL PROSTHESIS

Yasuharu Hakamatsuka, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1993, Ser. No. 15,643
Claims priority, application Japan, Feb. 19, 1992, 4-031920
Int. Cl.[5] A61C *13/08*
U.S. Cl. 433—208 **11 Claims**



1. A dental prosthesis comprising:
a substrate body comprising titanium; and
a molding body comprising a crystallized glass which is molded on a part of the substrate body to form a shape corresponding to at least a crown of a tooth, said crystallized glass having a thermal expansion coefficient of $\pm 5 \times 10^{-7}$ with respect to the titanium,
wherein the molding body is chemically bonded to the substrate body.

5,346,397

PROCESS FOR MAKING CERAMIC DENTAL CROWNS

Kenneth S. Braiman, 6723 La Loma Dr., Jacksonville, Fla. 32217

Filed Jun. 15, 1993, Ser. No. 76,981
Int. Cl.[5] A61C *5/10*
U.S. Cl. 433—223 **11 Claims**



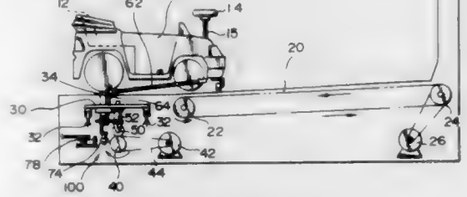
1. A process for making a ceramic dental crown comprising the steps of:
A. molding approximate tooth-shaped unfired thin powder shells representative of various teeth from a hardenable liquid mixture of ceramic powder and a predetermined small amount of at least one member of the group consisting of
i) acrylic powders dissolved in a polyacrylic monomer,
ii) liquid resin
iii) heated waxes
iv) watered starches into shapes of a generally sturdy matrix having approximate predetermined tooth shapes and having highly detailed anatomical contours of various teeth;
B. selecting one of the unfired powder shells of approximate predetermined tooth contours having the greatest similarities to the crown desired for a particular patient;
C. applying a paste buildup of conventional porcelain powders to the selected one of the unfired powder shells to fill same into a more detailed fit molding to a conventional substructure;
D. purging the selected paste buildup and one powder shell by heating same which purges extraneous material therefrom;
E. baking the purged selected one buildup and shell under vacuum in a conventional manner to eliminate one member of the group in step A and obtain a solid homogenous ceramic crown;
F. grinding the baked crown to its final shape in a conventional manner; and
G. finishing the ground baked crown to its final shape and appearance in a conventional manner to produce the final ceramic crown.

5,346,398

STATIONARY GAME MACHINE

Hiroki Nakahata, Yokohama; Yoshinori Satoh, Kawasaki, and Tatsuhisa Yabushita, Tokyo, all of Japan, assignors to Namco Ltd., Tokyo, Japan

Filed Jul. 22, 1992, Ser. No. 916,667
Claims priority, application Japan, Jul. 26, 1991, 3-210125
Int. Cl.[5] G09B *9/05;* **A63G** *31/16*
U.S. Cl. 434—70 **17 Claims**



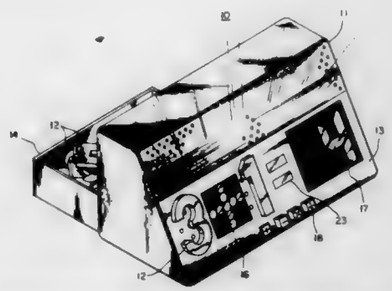
1. A stationary game machine comprising:
a dummy mover having a player's seat;
display means for displaying a path of movement in front of said dummy mover; and
means responsive to steering by the player for controlling an orientation of said dummy mover,
said means for controlling the orientation of said dummy mover comprising:
a truck section transversely movable in a direction crossing said path of movement, said truck section pivotally supporting said dummy mover so that the orientation of said dummy mover can be controlled;
an angle control section responsive to steering by the player for controlling a pivoted angle of said dummy mover relative to said truck section;
a rotating member disposed in a direction crossing said path of movement;
a pressure roller disposed on said truck section in pressure contact with said rotating member and said pressure roller; and
a drive section for rotatably driving at least one of said rotating member and said pressure roller; and
a cross-angle control section, comprising a steering wheel provided in said dummy mover, a steering shaft, a connecting rod pivotally connected to said steering shaft through an arm and a pole for pivotally connecting said connecting rod to said truck section for controlling a cross-angle of said pressure roller relative to said rotating member such that a component of force acting on said truck section through said pressure roller in said crossing direction will be in the same direction as said steered direction and equal to a value corresponding to said pivoted angle, wherein a rearward portion of said dummy mover is fixedly mounted on a support shaft pivotally supported by said truck section and an operating portion of said cross-angle control section is connected to said support shaft through an intermediate connector and located in a forward portion of said dummy mover,
whereby said dummy mover can be steered and transversely moved by the player in said crossing direction such that the forward portion of said dummy mover can be moved faster and further relative to the rearward portion when said operating portion is steered by the player.

5,346,399

EDUCATIONAL GAME FOR CHILDREN

Toshihiko Sakow, 82 Copley Ave., Teaneck, N.J. 07666

Filed Nov. 17, 1993, Ser. No. 153,093
Int. Cl.[5] G09B *1/00*
U.S. Cl. 434—201 **6 Claims**



1. An educational apparatus comprising a support member, a plurality of alphanumeric display members including an actuator located on each of said display members at a position in accordance with the identity of the respective display member, means for releasably coupling said display members at predetermined respective positions on said support member, and output means responsive to the positions of a plurality of said actuators of respective support member coupled display members for producing an audible signal in accordance with a predetermined relationship of said coupled display members, wherein said output means includes a plurality of switch members located on said support member along the loci of respective support member coupled display member actuator, said display members includes numeral shaped members, a calculator network having an input connected to said switches, an output being selectively actuated for different mathematical function operations and an LCD connected to said output of said calculator network, said sensible signal is an audible message.

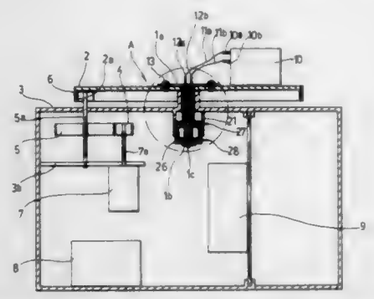
5,346,400

SENSOR ROTATING APPARATUS

Dong-Il Shin, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyongki, Rep. of Korea

Filed Jan. 6, 1993, Ser. No. 1,712
Claims priority, application Rep. of Korea, Jan. 6, 1992, 92-34
Int. Cl.[5] H01R *39/02*
U.S. Cl. 439—17 **11 Claims**

1. A sensor rotating apparatus comprising:
drive means for generating a rotational output power;
first and second reduction gear assemblies for reducing the rotational output power of said drive means, said first and second gear assemblies cooperating with said drive means and having a predetermined gear ratio;
a sensor turntable for causing, using the reduced rotational output power of said drive means, a sensor to rotate, said sensor turntable carrying said sensor at a predetermined position thereon and rotating at a predetermined rotating velocity which is determined in accordance with said gear ratio of the first and second reduction gear assemblies;
a casing having a hub for rotatably supporting said sensor turntable;
a housing holder extending downwardly from said casing in order to be oppositely arranged to said hub;
a rotating shaft for rotating at a same time of rotation of said sensor turntable and transmitting a sensing signal of said sensor to a control circuit unit, said rotating shaft being



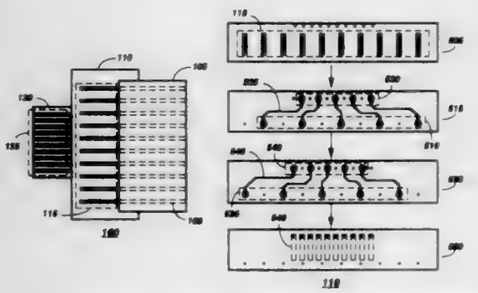
inserted in both said hub and said housing holder and having a pair of longitudinal grooves for receiving a pair of input terminals for transmitting said sensing signal of the sensor and being fixed to said sensor turntable using a first fixing member in order to rotate at the same time of rotation of said sensor turntable;
a bearing assembly for supporting said rotating shaft, said bearing assembly being electrically connected to said pair of input terminals of the rotating shaft and being arranged so as to surround said rotating shaft; and
support means for preventing said bearing assembly from undesirable separation from said rotating shaft due to the rotational force of said rotating shaft, said support means being mounted on a lower end of said rotating shaft using a second fixing member.

5,346,401

ELECTRICAL CONNECTOR FOR TRANSLATING BETWEEN FIRST AND SECOND SETS OF TERMINALS HAVING DIFFERENT PITCHES

John Delianides, Lake Worth, and Cindy L. Davis, Boynton Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 22, 1993, Ser. No. 51,138
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—67 **17 Claims**



1. An electrical connector for translating from different

sized connections, the electrical connector comprising a first heat seal connector comprising a first plurality of interconnects formed at a first pitch, a second heat seal connector comprising a second plurality of interconnects formed at a second pitch smaller than the first pitch, and a translation circuit which includes:

a first outer layer on which a first set of outer terminals is formed at the first pitch for aligning with and electrically coupling to the first plurality of interconnects;

a second outer layer on which a second set of outer terminals is formed at the second pitch for aligning with and electrically coupling to the second plurality of interconnects;

a first inner layer for interconnecting a first outer terminal subset and a second outer terminal subset, wherein the first outer terminal subset comprises a first portion of the first set of outer terminals and the second outer terminal subset comprises a first portion of the second set of outer terminals; and

a second inner layer for interconnecting a third outer terminal subset and a fourth outer terminal subset, wherein the third outer terminal subset comprises a second portion of the first set of outer terminals and the fourth outer terminal subset comprises a second portion of the second set of outer terminals.

5,346,402

ELECTRONIC CIRCUIT DEVICE AND MANUFACTURING METHOD THEREOF

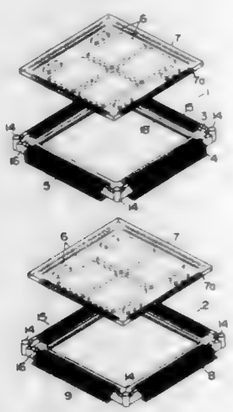
Takeo Yasuho, Neyagawa; Hirofumi Tajika, Osaki, and Katsumi Kohzu, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 19, 1993, Ser. No. 19,671

Claims priority, application Japan, Mar. 9, 1992, 4-050292; Jun. 8, 1992, 4-147245

Int. Cl.[5] H01R *23/72*

U.S. Cl. 439—71 **18 Claims**



1. An electronic circuit device comprising:

at least one first circuit module comprising (i) a first terminal section having a first annular insulating frame body and a first plurality of terminals provided on said first annular insulating frame body to extend outwardly from said first annular insulating frame body in a C-shaped configuration, and (ii) a first circuit substrate having a first plurality of wiring patterns adapted for connection with the first plurality of terminals, said first circuit substrate having mounted thereon a first circuitry which is connected to said first plurality of terminals through said first plurality of wiring patterns;

a second circuit module comprising (i) a second terminal section having a second annular insulating frame body and a second plurality of terminals provided on said second annular insulating frame body to extend outwardly from said second annular insulating frame body in an L-shaped configuration, and (ii) a second circuit substrate having a second plurality of wiring patterns adapted for connection with the second plurality of terminals, said second circuit substrate having mounted thereon a second circuitry which is connected to said second plurality of terminals through said second plurality of wiring patterns;

said at least one first circuit module being stacked on said second circuit module to provide stacked circuit modules, said second circuit module being disposed at a lowermost area of said stacked circuit modules, and the first and second circuit modules being connected to one another by direct engagement of said first and second pluralities of terminals; and

a roof means for providing electromagnetic shielding, provided above said at least one first circuit module.

5,346,403

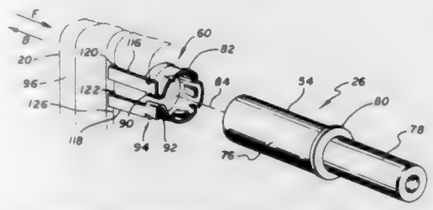
CONNECTOR GROUNDING ARRANGEMENT

Peter J. Hyzin, Lake Forest, Calif., assignor to ITT Corporation, Secaucus, N.J.

Filed Jul. 22, 1993, Ser. No. 95,243

Int. Cl.[5] H01R *13/648*

U.S. Cl. 439—95 **9 Claims**



1. A connector which includes a conductive shell having a cavity, a dielectric insert lying in said shell cavity and having sides at the outside of the insert and having forward and rearward ends and having a passage extending between its ends with the passage having a passage axis, a grounded contact which lies in said insert passage and which has a grounded outer surface and which has a rear end for connection to a cable having a grounded part, and a clip which is formed of sheet metal and which has a band part that lies around and in engagement with said contact and which has an outside part which extends to the outside of said insert and engages said shell, characterized by:

said band part is bent in substantially a circle about said axis with the thickness dimension of said sheet metal extending radial to said axis, and said band has forward and rearward edges, and said band has a plurality of slits at a first of said edges, with a sheet metal portion at one side of each slit being bent to form a location that is positioned substantially along a side of the slit so said location lies closer to said axis than adjacent parts of said band and so said location contacts said grounded contact.

5,346,404

SURFACE MOUNTING CONNECTOR

Masashi Shimada, Atsugi, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 8, 1993, Ser. No. 73,931

Claims priority, application Japan, Jun. 16, 1992, 4-156390

Int. Cl.[5] H01R *13/629*

U.S. Cl. 439—108 **6 Claims**

6. A surface mounting connector comprising a connector body having terminal leads exiting therefrom and disposed to engage the surface of a printed circuit board, and an alignment block supported by the connector body to engage the terminal leads intermediate the ends thereof and having grooves for receiving the terminal leads, the connector body having locating means for locating the alignment block in position, said connector body having a boss for engaging a locating hole of a circuit board, said locating means being positioned on an axis of said boss, and wherein said connector body has a ground

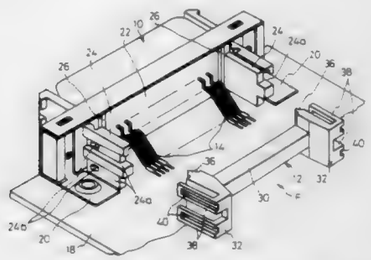


plate fixed to a said circuit board and the alignment block engages with a surface of said ground plate.

5,346,405

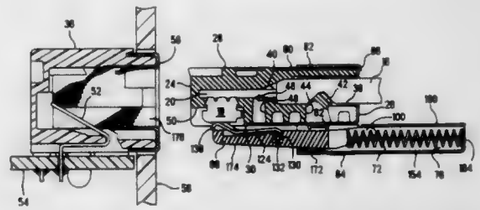
SHUNTED CONNECTOR ASSEMBLY AND SHUNT ASSEMBLY THEREFOR

Benjamin H. Mosser, III, Middletown; Robert H. Frantz, Newville, and Lynn R. Sipe, Lewistown, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed May 4, 1993, Ser. No. 58,555

Int. Cl.[5] H01R *25/00*

U.S. Cl. 439—188 **11 Claims**



1. A shunt assembly for shorting electrical contacts of an electrical connector comprising:

an insulative contact support member on an electrical connector,

an electrical shunt contact supported on the support member,

a shell member receiving the connector and the support member,

a spring biasing the support member toward a first position alongside a mating end of the connector with the shunt contact in engagement with selected electrical contacts on the connector,

the support member being urged to a second position by movement of the mating end into engagement with another, mating electrical connector, with the shunt contact being disengaged from the selected electrical contacts,

and at least one cam surface on the support member engaging the connector during said movement of the support member, said cam surface biasing the support member outward relative to the connector to separate the shunt contact from the connector without frictional engagement therebetween.

5,346,406

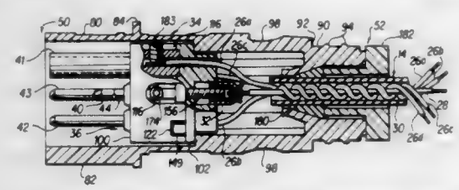
ELECTRICAL CABLE AND CONNECTOR ASSEMBLY WITH SAFETY PILOT LINE DISCONNECT, ESPECIALLY FOR ELECTRIC VEHICLE

Ernest G. Hoffman, Middlefield, and Alfred L. Ehrenfels, Cheshire, both of Conn., assignors to Hubbell Incorporated, Orange, Conn.

Filed Apr. 30, 1993, Ser. No. 55,025

Int. Cl.[5] H01R *11/22, 23/02*

U.S. Cl. 439—474 **27 Claims**



1. An electrical cable and connector assembly adapted to be coupled to an electrical device, the combination comprising:

an electrical cable having at least a first electrical conductor and a second electrical conductor, said conductors having a first end and a second end; and

an electrical connector having a housing, a first contact member fixedly coupled to said housing, a first coupling member for coupling said first end of said first conductor to said first contact member at a first connection point within said housing, a second contact member fixedly coupled to said housing, and a second coupling member for fixedly coupling said first end of said second conductor to said second contact member at a second connection point within said housing,

said second ends of said first and second conductors being coupled to the electrical device housing at a third connection point by a third coupling member and a fourth connection point by a fourth coupling member, respectively, said first conductor having a first length extending between said second connection point of said second conductor and said fourth connection point of said second conductor, said second conductor having a second length extending between said second and fourth connection points of said second conductor, said first length of said first conductor being shorter than said second length of said second conductor between said second and fourth connection points such that a longitudinal tensile force applied to said cable is first transmitted to said first conductor due to its shorter length between said second and fourth connection point, said first conductor being releasably coupled between said first contact member and the electrical device by one of said first and second coupling member for disconnecting electricity between said first contact member and the electrical device upon application of the longitudinal tensile force being transmitted along said cable so that one of said first and second ends of said first conductor releases before damage occurs to said second conductor.

5,346,407

BATTERY CONNECTOR COVER

Brian M. Hood, Mount Clemens, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Continuation of Ser. No. 767,309, Sep. 27, 1991, abandoned. This application Sep. 17, 1993, Ser. No. 122,841

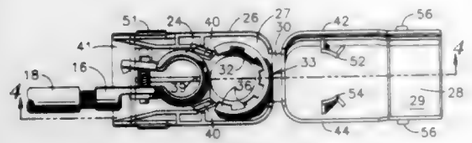
Int. Cl.[5] H01R *13/52*

U.S. Cl. 439—522 **26 Claims**

1. A battery connector cover for mounting to a terminal connector of the type adapted to clamp to a battery post comprising

a top wall and bottom wall configured for forming an enclosure for a connector of the having a split ring section forming an opening for receiving a battery post and bolt

means for compressing the split ring section about a battery post to clamp the connector to the battery post, said bottom wall having an aperture to receive a battery post



therethrough, and the bottom wall having means extending therefrom for force-fit securing the connector to said bottom wall so that the opening of the connector is in alignment with said aperture.

5,346,408

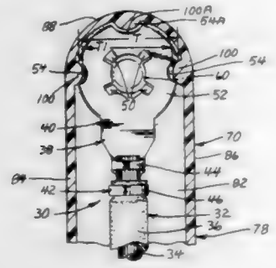
BATTERY CABLE ASSEMBLY

John M. Chupak, West Middlesex, Pa., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 27, 1993, Ser. No. 172,976

Int. Cl.[5] H01R *13/52*

U.S. Cl. 439—522 **5 Claims**



1. A battery cable assembly for connection with a terminal post of a battery comprising:

a battery cable having a conductive core and an insulated sheath,

a metal cable terminal having a generally forward planar eyelet portion and a rearward crimping portion for securing said terminal to said battery cable,

said eyelet portion having a central through opening and a pair of opposed notches at its sides,

a plastic, flexible battery terminal cover having a forward portion provided with a generally rectangular shaped slot for slidably receiving said eyelet portion of said terminal and a rearward portion for receiving said crimping portion of said terminal,

said forward portion of said battery terminal cover having aligned openings through its top and bottom sides and having inwardly facing ribs extending axially of said aligned opening and between said top and bottom sides,

said eyelet portion having a maximum transverse dimension which is greater than the transverse dimension between said ribs,

said ribs being engaged by said eyelet portion of said terminal when said terminal is slidably inserted into the cover and with the eyelet portion causing said ribs to move away from each other and deflect said cover from its normal free state position in opposition to its self biasing forces until the notches on the sides of the eyelet portion are aligned with the ribs whereupon said cover and ribs return toward their normal free state position and with said ribs being received within said notches to retain said cable terminal and battery cover connected together.

5,346,409

FIXABLE ELECTRIC PLUG CONNECTION AND A PROCESS FOR FIXING AN ELECTRIC PLUG CONNECTION

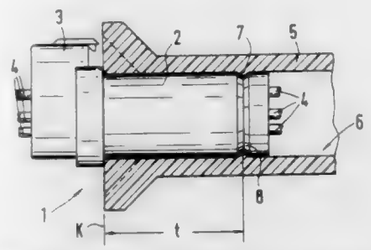
Hans Weiner, Mühlacker, and Elmar Kloesters, Leonberg, both of Fed. Rep. of Germany, assignors to Dr. Ing. L.C.F. Porsche AG, Fed. Rep. of Germany

Filed Feb. 1, 1993, Ser. No. 11,742

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1992, 4202846

Int. Cl.[5] H01R *13/73*

U.S. Cl. 439—542 **5 Claims**



1. An electric plug connection for use in a vehicle, comprising:

a socket housing having socket contacts contained therein;

a plug housing having plug contacts contained therein, said socket contacts and plug contacts each being connected with electric conducting wires and being mated with one another when said socket housing and plug housing are fitted to one another; and

a one-piece elongated component having only a single through-opening having at lest one projection, one of said socket and plug housings being shaped so as to be insertable into one end of said through-opening, wherein an outer contour of said one housing substantially corresponds to the size of said through-opening and wherein said one housing includes a surrounding groove which can be locked in said through-opening via said at least one projection.

5,346,410

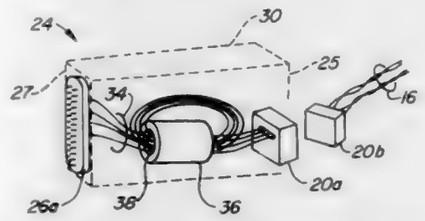
FILTERED CONNECTOR/ADAPTOR FOR UNSHIELDED TWISTED PAIR WIRING

Alston C. Moore, Jr., Boulder Creek, Calif., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Filed Jun. 14, 1993, Ser. No. 76,028

Int. Cl.[5] H01R *13/658*

U.S. Cl. 439—607 **13 Claims**



1. A connector for coupling an electronic apparatus, to unshielded wiring, the electronic apparatus being of a type that can incidentally produce electromagnetic interference (EMI) that may be communicated to the unshielded wiring to which the electronic apparatus is coupled, the connector comprising:

a non-metallic housing;

first means mounted in the housing for connecting the connector to the electronic apparatus;

second means mounted in the housing for connecting the connector wiring for electrically communicating said first and second means to one another; and

suppression means associated with the connector wiring forming a common mode filter to attenuate common mode EMI radiation resulting from communication of the incidental EMI to the connector wiring from the electrical apparatus.

5,346,411

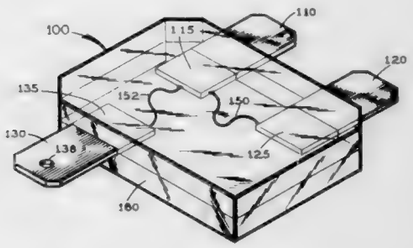
TAP-IN BLADE FUSE

Kurt D. Nikkinen, 1374 Wynnewood Dr., West Palm Beach, Fla. 33417-5642

Filed Dec. 13, 1993, Ser. No. 165,191

Int. Cl.[5] H01M *85/22*

U.S. Cl. 439—621 **10 Claims**



1. A tap-in blade fuse comprising:

terminal blades with one end within a housing and a second end for connection to an electrical panel;

an accessory blade with one end connected to the housing and a second end extending from the housing, wherein the second end includes a through-hole therethrough; and

fuse links for connecting all the blades together.

5,346,412

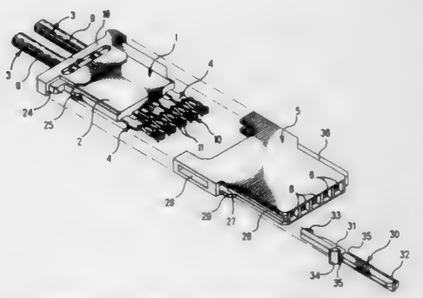
BREAK AWAY KEY AND LATCH ASSEMBLY

James L. Fedder, Etters, and John R. Shuey, Mechanicsburg, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 27, 1993, Ser. No. 98,486

Int. Cl.[5] H01R *13/64*

U.S. Cl. 439—681 **11 Claims**



1. An electrical connector comprising: an insulating housing block, electrical contacts in the housing block, an insulating housing, a break away key and latch assembly comprising, an in line latch and key joined together, the latch being constructed to connect to the housing, the key being constructed to be removed from the latch, the latch being constructed to connect to the housing without the key being joined to the latch, a hook on the latch removably connected to the housing block, and a keyway in the housing through which the latch passes to engage and connect with the housing block.

5,346,413

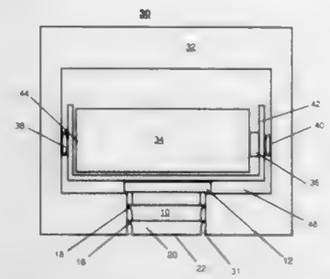
SEALING ELECTRICAL CONTACT

Robert Leon, Miami, and Christian Schneider, Ft. Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 937,012, Aug. 31, 1992, abandoned. This application Dec. 29, 1993, Ser. No. 175,170

Int. Cl.[5] H01R *13/41*

U.S. Cl. 439—733 **2 Claims**



1. An electronic device having electrical contacts for insertion into a housing wall of the electronic device, said electrical contact comprising:

a substantially solid conductive member having a radius less than the opening in the housing wall;

a pair of substantially planar contact surfaces disposed on opposing ends of the conductive member, said contact surfaces further comprising:

an electrical connection means, including a flex circuit, and wherein at least one contact surface is mounted so as to be substantially flush with an outside surface of the housing wall;

at least two barbs disposed concentrically about the periphery of the conductive member, and between said planar contact surfaces, wherein the barbs have a larger radius than the opening of the housing wall, said barbs wedging into the housing wall, providing an environmental seal; and

a head region disposed about one of said substantially planar contact surfaces having a circumference larger than the contact, and the opening in said housing wall.

5,346,414

CONSTRUCTION OF REAR HOLDER FOR CONNECTOR CAPABLE TO BE DRAWN OUT

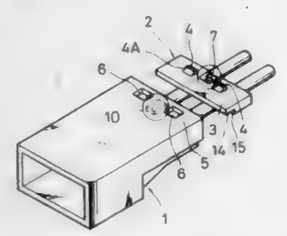
Hitoshi Sakai; Hitoshi Saitoh, and Osamu Sugiyama, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jul. 21, 1993, Ser. No. 94,232

Claims priority, application Japan, Aug. 10, 1992, 4-055998[U]

Int. Cl.[5] H01R *13/514*

U.S. Cl. 439—752 **7 Claims**



1. A construction of a rear holder for a connector capable to be drawn out with help of means for pulling the rear holder out, said means having a shape of a bar with a tipped end, said rear holder as a stopper for movement of connector terminals being inserted into a connector housing from a opening behind and engaging with said housing by means-of at least a projec-

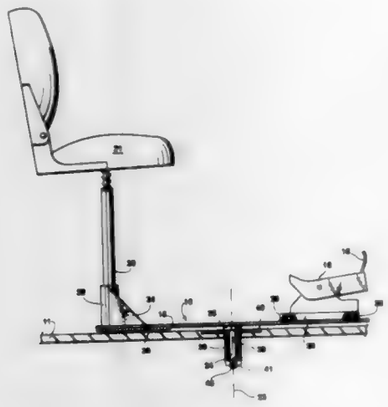
tion on-the holder and a hole in the upper wall of the housing, comprising a channel with a pit at the front bottom, said channel being scooped in the structure constituted with said upper wall and said rear holder from the back.

5,346,415

SUPPORT APPARATUS FOR USE IN A FISHING BOAT

Linda J. Waymon, 1927 Belleview Rd., and Jimmy D. McGuire, 296 Country Club Rd., both of Pocahontas, Ark. 72455

Filed Sep. 20, 1993, Ser. No. 123,674
Int. Cl.[5] B60L *15/20*
U.S. Cl. 440—7 **20 Claims**



16. Apparatus comprising:
a substantially planar plate having a top surface and a bottom surface, a first end, and a second end;
a sleeve connected to said plate top surface adjacent said second end thereof and extending upwardly from said top surface;
a shaft connected to said bottom surface of said plate roughly intermediate said first and second ends of said plate, and extending downwardly from said bottom surface; and
a non-skid material connected to said plate bottom surface beneath said sleeve.

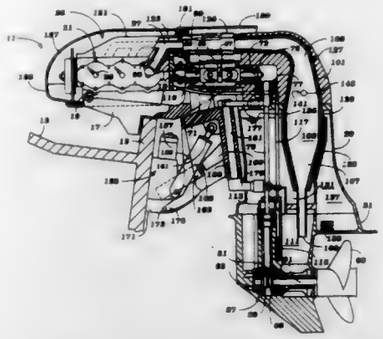
5,346,416

EXHAUST SYSTEM FOR OUTBOARD MOTOR

Susumu Yamazaki, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushuki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 661,431, Feb. 25, 1991, abandoned. This application Aug. 12, 1993, Ser. No. 105,475
Claims priority, application Japan, Feb. 25, 1990, 2-42654
The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.
Int. Cl.[5] B63H *21/28*
U.S. Cl. 440—89 **8 Claims**

1. An outboard motor for attachment as a unit to the transom of a watercraft comprising: means for affixing said outboard motor unit to said transom; an engine having a horizontally disposed engine output shaft and at least one exhaust port disposed forwardly of said transom; a driveshaft housing disposed rearwardly of said transom and journaling a driveshaft for rotation about a generally vertically extending axis and driven by said output shaft; propulsion means at the lower end of said driveshaft housing and driven by said driveshaft for propelling the watercraft; a generally vertically extending expansion chamber formed in said driveshaft housing and having a horizontally extending med at the upper end of said expansion chamber and said driveshaft housing; and, exhaust means extending from said engine exhaust to said horizontally extending inlet for delivering exhaust gasses thereto, for expanding said exhaust gasses, and restricted exhaust gas discharge in the lower portion of said driveshaft housing for subsequently contracting exhaust gases before discharging to the atmosphere, through an underwater high speed exhaust



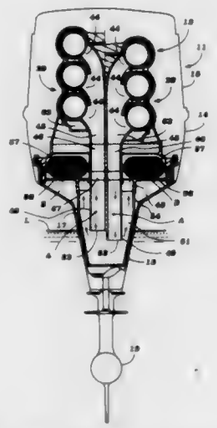
discharge and low speed exhaust means, extending from said expansion chamber to the atmosphere above the water for cooling and expanding exhaust gases before discharging to the atmosphere.

5,346,417

EXHAUST GAS CLEANING DEVICE FOR OUTBOARD MOTOR

Atsushi Isogawa, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Feb. 26, 1993, Ser. No. 23,591
Claims priority, application Japan, Mar. 6, 1992, 4-084684
Int. Cl.[5] F01N *3/28*
U.S. Cl. 440—89 **28 Claims**



1. An outboard motor having a power head including an internal combustion engine having an exhaust port, a drive shaft housing depending from said power head and defining an internal cavity, means forming an expansion chamber in said internal cavity, means defining an underwater exhaust gas discharge, exhaust pipe extending from said exhaust port into said expansion chamber and terminating at the lower end thereof for delivering exhaust gases to said expansion chamber, exhaust conduit means extending from an upper end of said expansion chamber to said underwater exhaust gas discharge for discharge of exhaust gases from said expansion chamber to the atmosphere through the body of water in which said outboard motor is operating, and a catalyst bed through which exhaust gases must pass in their path to said underwater exhaust gas discharge, said catalyst bed being comprised of at

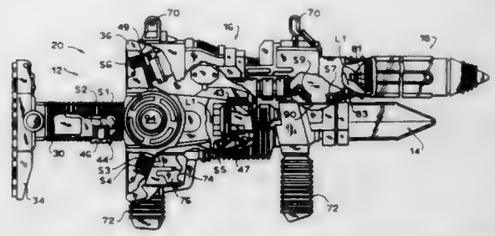
least two spaced apart portions having an open gap therebetween.

5,346,418

KIT FOR ASSEMBLING TOY WEAPONS

Avi Arad, Westport, Conn., assignor to Toy Biz, Inc., New York, N.Y.

Filed Oct. 1, 1992, Ser. No. 955,311
Int. Cl.[5] A63H *5/04*
U.S. Cl. 446—91 **26 Claims**



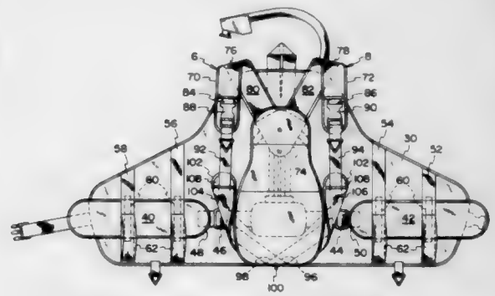
1. A kit for assembling a plurality of toy weapons, comprising:
(A) a basic weapon having a first configuration; and
(B) a first plurality of conversion means for converting said basic weapon to a second plurality of different weapon configurations, said basic weapon and said conversion means in said first plurality being releasably securable together to form a second plurality of weapons, said second plurality being greater than said first plurality and including at least one weapon configuration wherein said basic weapon and at least one of said conversion means are releasably securable together and extend through and beyond each end of another of said conversion means.

5,346,419

BUOYANCY COMPENSATOR DEVICE WITH BACKPACK AND ADJUSTABLE HARNESS

Karl Kaiser, Long Beach, Calif., assignor to International Divers Inc., La Mirada, Calif.

Filed May 14, 1993, Ser. No. 60,624
Int. Cl.[5] B63C *9/105*
U.S. Cl. 441—96 **13 Claims**



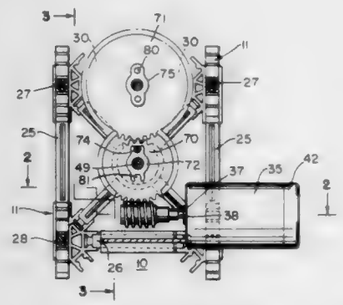
1. A buoyancy compensator device comprising:
a) a backpack portion having an inside wall and an outside wall;
b) said backpack portion includes a securing band extending from said outside wall and adapted for securing an air tank to said backpack;
c) said backpack having a harness attaches on said inside wall, said harness being adapted for securing said backpack to a wearer;
d) said harness including a pair of shoulder straps;
e) each of said shoulder straps having a first connection location and a second connection location on said inside wall wherein said first connection location is spaced from said second connection location on said inside wall of said backpack.

5,346,420

GEARING AND DRIVE MECHANISM FOR CONSTRUCTION TOY SYSTEM

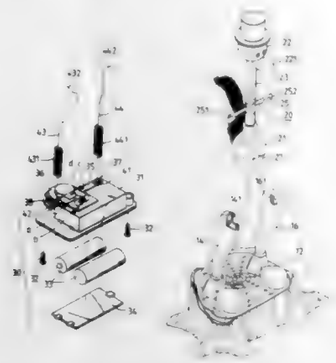
Joel I. Glickman, Huntington Valley, Pa., assignor to Connector Set Limited Partnership, Hatfield, Pa.

Division of Ser. No. 25,183, Mar. 2, 1993, which is a continuation-in-part of Ser. No. 717,639, Jun. 19, 1991, Pat. No. 5,199,919, which is a continuation-in-part of Ser. No. 687,386, Apr. 18, 1991, Pat. No. 5,137,486, which is a continuation-in-part of Ser. No. 625,809, Dec. 11, 1990, Pat. No. 5,061,219. This application Jun. 3, 1993, Ser. No. 72,271
Int. Cl.[5] A63H *33/06*
U.S. Cl. 446—126 **6 Claims**



1. In a construction toy system of the type comprising a plurality of connector elements and a plurality of rod-like struts engageable with said connector elements to lateral, snap-in engagement to form a coherent skeletal structure, and wherein said struts and connector elements are engageable to form elemental structural units in the form of isosceles right triangles, and wherein said struts are provided in a graduated progression in which struts of one size are appropriate to form the hypotenuse side of an isosceles right triangle in which the base sides are formed by struts of the next smaller size, and wherein said connector elements have a center opening for rotatably receiving a strut and a plurality of pairs of gripping arms extending radially from said center opening and adapted for the lateral snap-in engagement of struts, a drive system which comprises
(a) one or more pinion gears of equal size and having a pinion gear pitch diameter,
(b) one or more spur gears of equal size and having a spur gear pitch diameter,
(c) said spur gears being adapted for meshing engagement with a pinion gear or with another spur gear,
(d) the respective pitch diameters of said pinion and spur gears being such that
(i) the center-to-center spacing between a meshing pinion and spur gear equals the center to center distance between a pair of connector elements joined by a strut element of a first predetermined length connected to radially oriented gripping means of each connector element of the pair, and
(ii) the center-to-center spacing between a pair of meshing spur gears equals the center-to-center distance between a pair of connector elements joined by a strut of a length next larger in progression than said first predetermined length connected to radially oriented gripping means of each connector element of the pair.

5,346,421
TOY BIRD CAPABLE OF DRINKING WATER AND PRODUCING SOUND
Thomas Yeh, 10F, No. 97, Sec. 2, Nan-Gun Rd., Taipei, Taiwan
Filed Jan. 24, 1994, Ser. No. 185,147
Int. Cl.[5] A63H *13/00, 33/00, 5/00, 3/52*
U.S. Cl. 446—199 **2 Claims**



1. A toy bird capable of appearing to drink water and producing sound and comprising: a base provided thereon with two limbs, each of which has a support hole located at a top end of a hollow interior thereof; a hollow tubular body having a head located at the top end thereof, a spherical container located at the bottom end thereof, and a middle tube located between said head and said spherical container for holding therein a liquid, said middle tube being provided centrally and horizontally with a support rod having two ends dimensioned to fit into said two support holes of said two limbs; wherein said base is provided with a sound device comprising a battery housing, a sound circuit board and a speaker; wherein said two limbs are provided respectively with a conducting element making contact at a bottom thereof with two predetermined contact points of said sound circuit board, said conducting elements each having a top extending to reach the periphery of said two support holes; and wherein said support rod has two ends, each of which is provided with a curved segment capable of triggering said sound device to produce a tooting sound at the time when said support rod is caused to swivel along with said tubular body so that said curved segments of said two ends of said support rod make contact with two top ends of said two conducting elements simultaneously.

5,346,422
TOY ARTICLES OF MANUFACTURE COMPRISING SPONTANEOUSLY WETTABLE FIBERS
Shriram Bagrodia, Kingsport; Bobby M. Phillips, Jonesborough; E. Phillip Smith, Blountville; Kenny R. Parker, and Paul A. Rundquist, both of Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.
Filed Dec. 8, 1992, Ser. No. 986,837
Int. Cl.[5] B32B *27/00*
U.S. Cl. 446—394 **30 Claims**

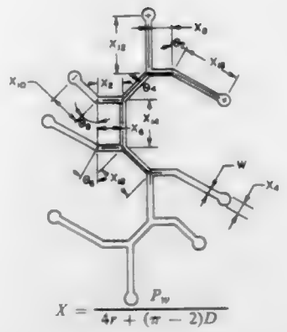
1. An article of manufacture consisting of a toy having a plurality of synthetic fibers capable of spontaneously transporting water on the surface thereof, said fibers satisfying the following equation

$$(1-X\cos\theta_a)<0,$$

wherein

θ_a is the advancing contact angle of water measured on a flat film made from the same material as the fiber and having the same surface treatment, if any,

X is a shape factor of the fiber cross-section that satisfies the following equation

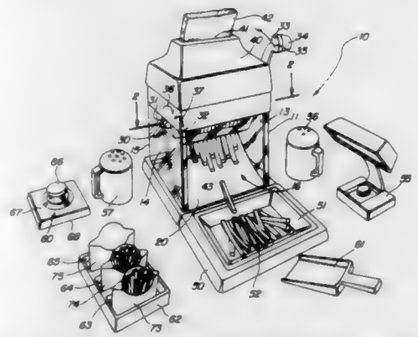


$$X=\frac{P_w}{4r+(\pi-2)D}$$

wherein

P_w is the wetted perimeter of the fiber and r is the radius of the circumscribed circle circumscribing the fiber cross-section and D is the minor axis dimension across the fiber cross-section.

5,346,423
TOY FOR MAKING SIMULATED FRENCH FRIES
Martin J. Caveza, Redondo Beach; Caleb S. Chung, Van Nuys, and John N. Handy, Long Beach, all of Calif., assignors to Mattel, Inc., El Segundo, Calif.
Filed Feb. 1, 1993, Ser. No. 12,062
Int. Cl.[5] A63H *33/30*
U.S. Cl. 446—479 **5 Claims**



1. For use in making simulated french fried potatoes, a toy comprising:

a housing defining a feed passage for receiving a bread slice portion extending upwardly within said housing which is substantially greater in length than a child's finger length and a frontal opening and a curved downwardly inclined chute for guiding said bread segments outwardly through said frontal opening;

a crank rotatably supported upon said housing;

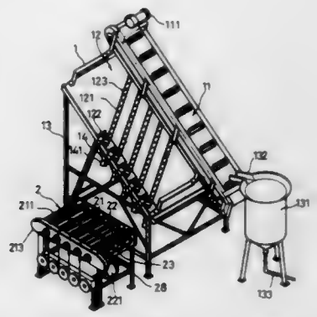
cutting means including a pair of rollers having interleaved cutting members and clearance grooves formed therein and a pair of equal diameter gears mutually meshed and each coupled to one of said rollers operatively coupled to said crank and positioned to receive said bread slice portion, said cutting means cutting said bread slide portion into a plurality of elongated segments;

means for receiving and retaining a supply of coloring material and for applying a coloring material to said elongated segments to impart a browned cooked appearance thereto replicating french fried potatoes including a shaker having an interior cavity and multiple aperture top; and

a crust removing die having a rectangular cutting edge

corresponding to the size of bread slice portion to be placed within said passage.

5,346,424
AUTOMATIC SIZE-GRADING AND SHRIMP PEELING MACHINERY
Yi-Chich Chiu, Taoyuan; Hann-Yun Wu; Su-Ming Chen, both of Taipei; Few-Long Wu, Ilan Hsien, and Ming-Yih Chang, Taipei, all of Taiwan, assignors to Horng Shen Machinery Co., Ltd., Ilan Hsien, Taiwan
Filed Aug. 20, 1993, Ser. No. 110,061
Int. Cl.[5] A22C *29/02*
U.S. Cl. 452—5 **7 Claims**



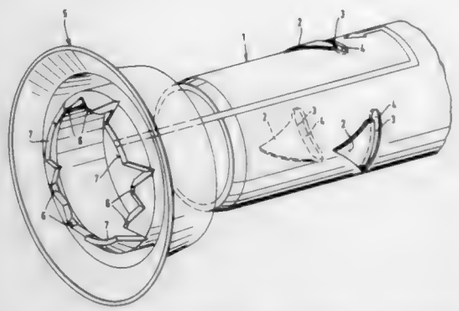
1. An automatic size-grading and peeling machine for shrimps comprising a plate-partition conveyer, a slanting platform, an automatic grading machine a machine supporting frame, a plurality of feeding pipes mounted on said automatic grading machine; said plate-partition conveyer being fastened to said slanting platform; at least three or conveying screw shafts mounted on said slanting platform being used to connect said plate-partition conveyer and said feeding pipes, a peeling machine, said automatic grading machine being mounted on said machine supporting frame so as to have a plurality of feeding ports mounted over said peeling machine; said peeling machine including a plurality of small and large peeling rollers, a plurality of squeezing wheels, plurality, of squeezing belts and weight assemblies; said peeling machine having at least three peeling units each, of which includes one of a said large peeling rollers and two of said small peeling rollers; said peeling machine further comprising a pressing roller and at least one squeezing wheel being mounted between two of said small peeling rollers; said squeezing wheel and said pressing roller being mounted perpendicular to and over said small peeling roller.

5,346,425
APPARATUS AND METHOD FOR FILLING TUBULAR CASTINGS
Udo Kuenzel, Johannisberg; Friedrich Geiss, Wiesbaden, and Arno Romeike, Taunusstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Aug. 25, 1992, Ser. No. 934,238
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1991, 9110734[U]
Int. Cl.[5] A22C *11/02*
U.S. Cl. 452—38 **17 Claims**

1. An apparatus for filling tubular casings, comprising:

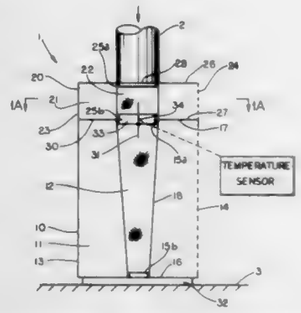
a filling tube having a locking device, the locking device including at least one locking element; and

a reusable calibrating ring that is lockable on the filling tube and comprising at least one locking tab, at least one guide tab and two concentric rings which are connected on one side and which are U-shaped in axial cross-section wherein the two concentric rings include an outer ring and an inner ring, the outer ring having a diameter larger than the diameter of the inner ring, the outer ring having a dish-shaped shoulder formed thereon at the open side of



the U, an outside diameter of the shoulder being equal to a calibrating size of a tubular casing.

5,346,426
METHOD AND AN APPARATUS IN VENTILATION
Mats Kronfält, S-262 42 Ängelholm, Nordanvindsgatan 7 C, Sweden
PCT No. PCT/SE91/00248, § 371 Date Sep. 29, 1992, § 102(e) Date Sep. 29, 1992, PCT Pub. No. WO91/14905, PCT Pub. Date Oct. 3, 1991
PCT Filed Apr. 2, 1991, Ser. No. 927,494
Claims priority, application Sweden, Mar. 29, 1990, 9001142
Int. Cl.[5] F24F *13/068*
U.S. Cl. 454—66 **18 Claims**



8. Apparatus for heating, cooling and ventilating an enclosed space having a suction outlet for air removal in a region of the ceiling of the space, said apparatus comprising:

first impulse means for supplying air into said space, in a substantially horizontal band, at a relatively low speed with a substantially uniform distribution, said band extending from a floor of said space to a height of about 2 to 2.5 meters thereabove during cooling and ventilating phases of said space, and

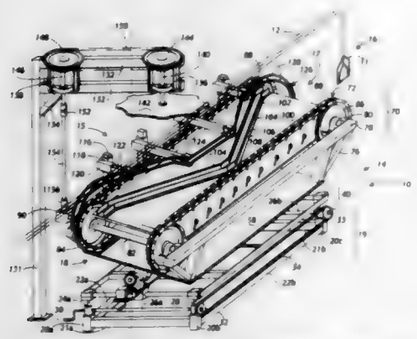
second impulse means located above said first impulse means for supplying air into said space in the form of an air jet which is relatively narrow compared to said band of air produced by said first impulse means, said air jet flowing substantially horizontally into said space at a relatively high flow rate to form a horizontal air layer extending a substantial distance beyond said second impulse means to sweep polluted air from said space.

5,346,427

APPARATUS AND METHOD FOR REMOVING TURKEY VISCERA

Stevie Clark, 1120 Diehl St., Raeford, N.C. 28376

Filed Aug. 26, 1993, Ser. No. 112,560
Int. Cl.[5] A22C *21/06*
U.S. Cl. 452—118 13 Claims



1. An apparatus for processing a poultry carcass carried substantially horizontally on three suspenders attached to a first conveyor, comprising:

a frame carrying a cam track that defines a V-shape path;

a pair of continuous second conveyors attached to sprockets in a spaced-apart relation;

means for driving the second conveyors in synchronization with the travel of the first conveyor; and

a plurality of tool modules attached in spaced-apart relation to the pair of second conveyors, each tool module comprising:

a pair of blocks, one of which attaches to a separate one of the second conveyors and the pair being transversely aligned;

a pair of spaced-apart rods connected between the blocks;

a plate slidably received on the pair of rods for transverse travel between the pair of conveyors; and

a tool connected to the plate with a cam wheel connected to the plate,

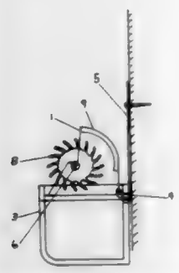
whereby a poultry carcass, being carried by the first conveyor into alignment with one of the tool modules, is processed by the tool brought into contact with the poultry carcass in response to the cam wheel traveling in the cam track from a first position near one of the second conveyors to a second position near the other of the second conveyors.

5,346,428

WALL MOUNTED FORCED AIR VENT HUMIDIFIER AND DRAFT CONTROL DEVICE

Carl R. Robinson, Jr., 16668 Mt. Hoffmane Cir., Fountain Valley, Calif. 92708

Filed Jan. 11, 1993, Ser. No. 2,637
Int. Cl.[5] F24F *6/02*
U.S. Cl. 454—328 6 Claims



1. An improved forced air vent humidifier and draft control adapted to be positioned in an air stream being expelled for a register comprising:

a. a bowl having an open surface at the top and an attachment means to attach the bowl;

b. a mounting bracket that attaches to a wall and that accepts the attachment means of the bowl;

c. a cylindrical drum fan with axles protruding beyond the ends of the drum;

d. a drum fan mounting means that accepts the drum fan axles and suspends the drum fan over the bowl; and

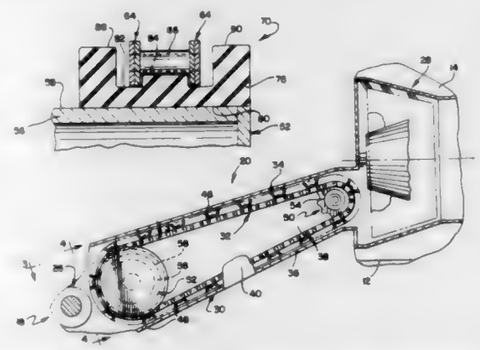
e. a curved deflector having the concave side facing the drum fan, the bottom edge of the deflector being positioned substantially at the vertical level of the drum fan axles whereby only the upper half of the drum fan is shielded from the air expelled form the register.

5,346,429

FEEDER ASSEMBLY FOR A COMBINE

Herb M. Farley, Braidwood, Ill., assignor to Case Corporation, Racine, Wis.

Filed Feb. 24, 1993, Ser. No. 21,770
Int. Cl.[5] A01D *75/18;* A01F *12/00*
U.S. Cl. 460—16 17 Claims



1. A feeder assembly for a combine, said feeder assembly for a combine. said feeder assembly comprising:

at least two laterally spaced endless metal chains having laterally elongated material engaging slats driven thereby;

first and second laterally elongated chain supports arranged in fore-and-aft spaced relation relative to each other and about which the metal chains orbitally move in unison relative to each other, said first support having laterally spaced sprockets arranged in driving relation relative to said metal chains and with the second support defining a relatively smooth metal outer surface between opposite ends thereof; and

an annularly formed elastomeric assembly non-rotatably fitted between the smooth outer metal surface of the second support and each of said metal chains to dampen contact noise between the melt chains and the support thereby reducing noise generation as the chains move thereabout.

5,346,430

NON-IMPACT PRINTING OF BUSINESS FORMS FROM CONTINUOUS WEBS HAVING ADHESIVE COATINGS

George Baxter, Youngstown, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

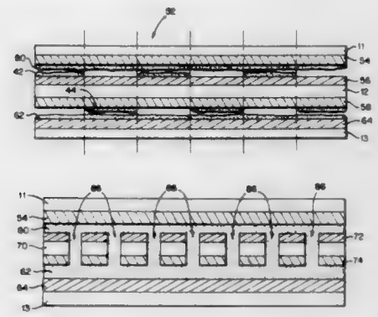
Filed Oct. 15, 1992, Ser. No. 961,365
Int. Cl.[5] B41L *1/24, 1/26*
U.S. Cl. 462—2 19 Claims

1. An assembly of webs for constructing a carbonless multipart business forms, at least one web being fed into a non-impact printer, said assembly of webs comprising:

a coated back web having a plurality of back glue strips extending laterally across at least a portion of the back of said coated back web;

a coated front and back web having a plurality of segmented glue strips extending laterally across at least a portion of the back and front of said coated front and back web, said segmented glue strips on said front of said coated front and back web laterally staggered from the segmented glue strips on said back of the coated front and back web, said segmented glue strips on the front of the coated front and back web adhering to and aligned with corresponding back glue strips when said coated front and back web and coated back web are registered, and

a coated front and back web having a plurality of glue strips extending laterally across at least a portion of the front of the coated front and back web, said front glue strips adhering to and aligned with corresponding segmented glue strips on said back of said coated front and back web when said coated front and back web and coated back web are registered.

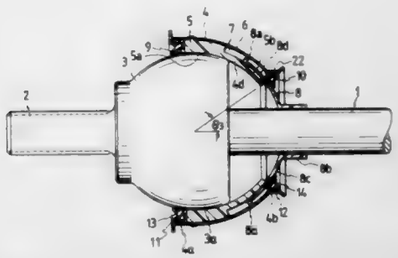


5,346,431

SEALING COVER FOR COUPLING

Koshi Okuyama; Masahiro Shiraishi, both of Shizuoka, and Takashi Miyazaki, Kanagawa, all of Japan, assignors to NOK Corporation, Tokyo, Japan

Continuation of Ser. No. 614,633, Nov. 16, 1990, abandoned.
This application Feb. 17, 1993, Ser. No. 22,601
Claims priority, application Japan, Nov. 27, 1989, 1-137049[U]; Jan. 9, 1990, 2-358[U]; Jan. 12, 1990, 2-1216[U]
Int. Cl.[5] F16D *3/84*
U.S. Cl. 464—171 20 Claims



1. A sealing cover fitted on a coupling connecting an input shaft to an output shaft for universal joint type relative movement of the shafts with respect to each other, the coupling having an outer member with an outer part spherical surface and connected to one of the shafts, the sealing cover comprising:

a first part spherical shell comprising a radially outer portion made of metal, a radially inner portion made of synthetic resin having an inner part spherical surface slidably fitted on said outer part spherical surface of said outer member, and a substantially part spherically shaped channel open at one end of said first part spherical shell near the other of said shafts;

a second part spherical shell having an outer surface, one end slidably inserted in said channel, and fitted at the other end thereof on said other shaft;

a first sealing member fixedly attached on the other end of said first part spherical shell having a first lip portion of rubber material thereon in sealing engagement with said outer part spherical surface of said outer member;

a second sealing member fixedly attached on said one end of said first part spherical shell and having a second lip portion of rubber material thereon in sealing engagement with said outer surface of said second part spherical shell; and

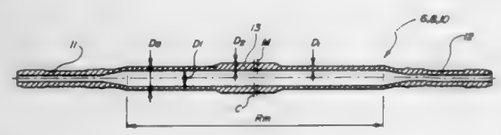
means for compensating for thermal expansion of said first part spherical shell, said compensating means comprising an annular groove on substantially the largest diameter portion of said inner part spherical surface of said radially inner portion of said first part spherical shell.

5,346,432

DRIVESHAFT WITH ADDITIONAL MASSES

Klaus Greulich, Muhlenstrasse 1, D-5461 Hollig, and Peter Amborn, In den Garten 2, D-5206 Neunkirchen, both of Fed. Rep. of Germany

Filed Aug. 28, 1991, Ser. No. 751,079
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1990, 4027296
Int. Cl.[5] B60K *17/22;* F16C *3/02*
U.S. Cl. 464—180 6 Claims



1. A one piece driveshaft formed by deformation comprising:

a tubular shaft comprising a central portion, a pair of transition portions adjacent said central portion, and a pair of end portions, each end portion including a toothed receiving portion for connection with torque transmitting means, said tubular shaft showing symmetry of rotation and having a circumferential wall defining an internal central bore passing through said shaft; and

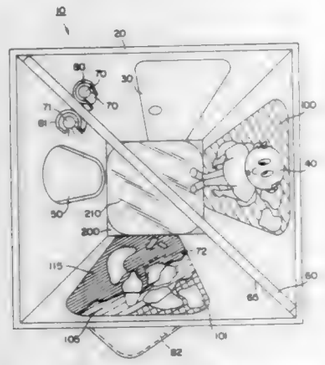
at least one mass element integrally connected to and axially positioned along said central tube portion, said mass element unitarily formed with said shaft as a radially thickened wall portion, said wall of said shaft in said transition portions being conical between said central portion and said end portions internally and externally and said wall of said shaft in said central portion being of uniform circumferential thickness with the exception of the area of said at least one mass element and said wall in said central portion having a uniform circumferential thickness and an increased outer diameter or a decreased diametrical central bore in the area of said at least one mass element and said end portion central bore having a constant diameter which is smaller than the diameter of the central portion central bore and said at least one mass element maintains the symmetry of rotation of the driveshaft.

5,346,433

MIRROR ILLUSION

Steve Weinreich, Monmouth Jct., N.J., assignor to Inventures, Inc., Parsippany, N.J.

Filed Feb. 5, 1993, Ser. No. 13,921
Int. Cl.[5] A63J *21/00*
U.S. Cl. 472—63 **25 Claims**



1. A vanishing illusion device for disappearing an object located within the device comprising:

a housing;

a partially reflective and partially transparent mirror within said housing, said mirror having a first surface and a second surface;

an object to be vanished located rearwardly of and facing the second surface of said mirror;

variable illumination means for alternatively illuminating primarily said object to be vanished whereby the object may be directly observed through the mirror from a position facing the first surface of said mirror or primarily the space in front of the first surface of the mirror whereby the object will be obscured from being viewed through the mirror by an observer facing the first surface of the mirror; said variable illumination means comprising a first reflector and lamp assembly positioned to direct light towards a viewer facing the first surface of the mirror to thereby increase the amount of light reflected directly toward such viewer when the variable illumination means is illuminating primarily the space in front of the first surface of the mirror, thereby facilitating the obscuring and vanishing illusion of the object; and

a second lamp and reflector assembly located within said housing and adjacent to the second surface of the partially reflective and partially transparent mirror and positioned to illuminate said object to be vanished and said first reflector and lamp assembly positioned to direct light towards a viewer facing the first surface of the mirror via the first surface of the mirror to thereby obscure said object to be vanished from being viewed through the mirror.

5,346,434

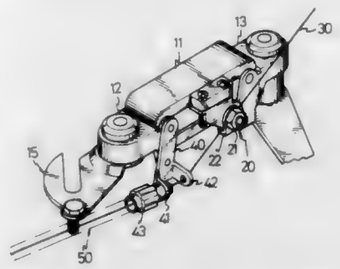
REAR DERAILLEUR MECHANISM FOR A BICYCLE

Yi-Hsung Hsu, No. 9, Lane 130, Sec. 1, Kwangfu Rd., San Chung City, Taipei Hsien, Taiwan

Filed Aug. 27, 1993, Ser. No. 112,803
Int. Cl.[5] F10H *61/00*
U.S. Cl. 474—82 **2 Claims**

1. A bicycle derailleur mechanism comprising a clamp plate (**15**), a first pivot means (**12**) attached thereto, a pivotable parallelogram body (**11**) received thereon and a second pivot means (**13**) attached to the pivotable parallelogram body (**11**), a bracket (**40**) secured to the first pivot means (**12**), an adjuster nipple (**43**) threadedly engaged with the bracket (**40**) and a cable clamp means (**20**) secured to the pivotable parallelogram body (**11**), an inner cable **30** and an outer cable (**50**), the improvement comprising:

the bracket (**40**) including two spaced parallel lugs extending perpendicularly therefrom, the first lug (**41**) defining a threaded hole (**411**) therethrough and the second lug (**42**) defining a plain hole (**421**) therethrough, the adjuster



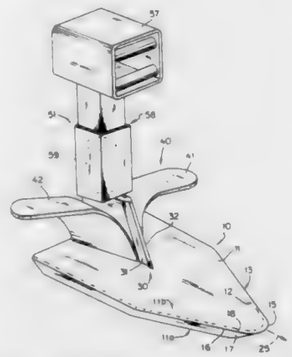
nipple (**43**) threadedly engaging in the threaded hole (**411**) of the first lug (**41**) the inner cable (**30**) extending through the adjuster nipple (**43**) and the plain hole (**421**), to be secured by the clamp means (**20**) to the pivotable parallelogram body (**11**), the outer cable (**50**) locating in a cylindrical recess of the adjuster nipple (**43**).

5,346,435

CARCASS HIDE OPENING

Paul A. Green, Cannon Hill; Russel J. Rankin, Clear Mountain; Phillip R. Boyce, Murrarrie; Raymond M. White, Capalba; John W. Buhot, Coorparoo; Darryl J. Heidke, Morningside; Andrew M. Leiner, Sunnybank; Andrew L. Finney, Marsden; Matthew Aqualini, Mt Gravatt; Edward G. Mills, Wilston; Richard J. Gibbons, Cannon Hill; John C. Abood, Capalaba; David G. Roberts, Cleveland, and David P. Thomas, Morningside, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation and Meat Research Corporation, both of Sydney, Australia

PCT No. PCT/AU91/00567, § 371 Date Jul. 16, 1992, § 102(e) Date Jul. 16, 1992, PCT Pub. No. WO92/10102, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 6, 1991, Ser. No. 910,181
Claims priority, application Australia, Dec. 6, 1990, PK 3748
Int. Cl.[5] A22B *5/20*
U.S. Cl. 452—160 **15 Claims**



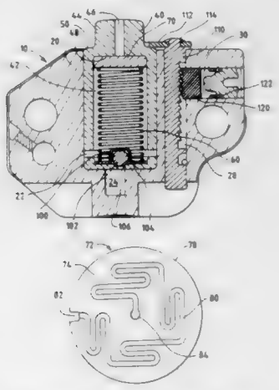
1. Apparatus for opening a carcass hide preparatory to removal of the hide from the carcass, the apparatus includes a clearing member which is operable to be inserted between the hide and subcutaneous tissues and to be advanced along an advancement line extending along a length of the carcass, the clearing member having a leading extremity extending transverse to the advancement line and which is operative to separate the hide from the subcutaneous tissues as it advances, the apparatus further including an opening means located so as to trail behind the leading extremity of the clearing member as the clearing member is advanced along the advancement line, the opening means being operative to cut the hide to create an opening cut in the hide along the advancement line, the apparatus further including clamping means operative to clamp the edges of the hide behind the opening means relative to the advancement line and to hold the hide edges, the apparatus further including a mechanical drive arrangement associated with the clearing member and the opening means and operative to advance the clearing member and opening means along the carcass away from the clamping means so that the clearing member separates the hide from the subcutaneous tissues and the opening means creates the opening cut in the hide along the advancement line.

5,346,436

AIR VENT FOR HYDRAULIC CHAIN TENSIONER

Francis J. Hunter, Sterling Heights, Mich.; Mark M. Wigsten, Lansing, and Sam A. Kuznets, Burdett, both of N.Y., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Sep. 23, 1993, Ser. No. 126,464
Int. Cl.[5] F16H *7/08*
U.S. Cl. 474—110 **20 Claims**



1. A hydraulic chain tensioner comprising:

a. a housing having a fluid filled chamber;

b. a hollow plunger slidably received within the fluid chamber and having an upper end, the upper end having an aperture;

c. a spring biasing the plunger in a protruding direction; and,

d. a vent including a disk having a first surface, a second surface, and a periphery and at least one channel formed on at least one surface of the disk, the channel having a first end terminating at the periphery of the disk and a second end terminating in a position to establish a connection between the atmosphere and the chamber through the aperture.

5,346,437

DUAL SOURCE DRIVE SYSTEM

Bobby Chang, Thousand Oaks, Calif., assignor to R. R. Donnelley & Sons Company, Lisle, Ill.

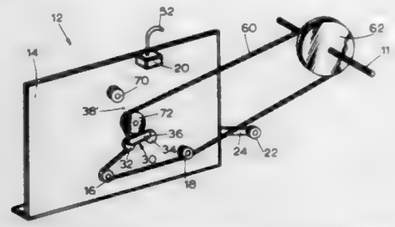
Filed Sep. 20, 1993, Ser. No. 123,950
Int. Cl.[5] F16H *7/08*
U.S. Cl. 474—134 **30 Claims**

1. A drive system which is connected to a motive power source and which is capable of rotating a drive shaft at one of a plurality of speeds, comprising:

a first drive pulley capable of rotating the drive shaft at a first speed;

a second drive pulley capable of rotating the drive shaft at a second speed;

a double-sided drive belt selectively engagable with one of the first and second drive pulleys and further engaged with the drive shaft wherein the double-sided drive belt rotates the drive shaft in response to the rotation of the one of the first and second drive pulleys; and



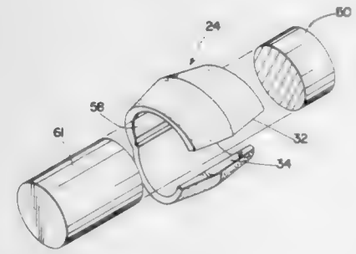
means coupled to the double-sided drive belt for transferring the double-sided drive belt from one of the first and second drive pulleys to the other of the first and second drive pulleys.

5,346,438

BELT GUIDE PULLEY

Roland W. Gerstenberger, Asheville, and William R. Joyce, Fairview, both of N.C., assignors to R. G. Technical Associates, Inc., Arden, N.C.

Continuation-in-part of Ser. No. 931,844, Aug. 18, 1992. This application Jul. 12, 1993, Ser. No. 89,845
Int. Cl.[5] F16H *55/12*
U.S. Cl. 474—151 **18 Claims**



1. A belt guide pulley adapted to be attached to a shaft comprising:

a unitary clam shell shaped member; said member including first and second curved halves; each half having an inner curved surface and an outer curved surface; each half having a free end;

a weakened section on said member and located between said free ends; said weakened section connecting said first curved half to said second curved half; said weakened section enabling said free ends to be moved relative to one another whereby said member may be readily placed on the shaft;

connection apparatus for connecting said first free end to said second free end; said member is substantially void of any supporting structure between said inner curved surfaces of each half.

5,346,439

TOOTHED TRANSMISSION BELT

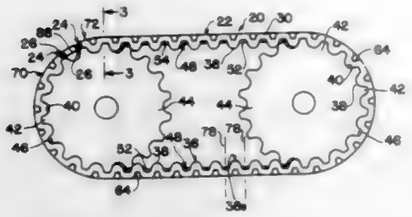
William R. Lynch, Copiague, N.Y., assignor to Winfred M. Berg, Inc., East Rockaway, N.Y.

Filed Jan. 4, 1993, Ser. No. 277
Int. Cl.[5] F16D *1/00*
U.S. Cl. 474—205 **3 Claims**

1. A belt for use in drive transmission means comprising a top portion and a bottom portion, said bottom portion having a plurality of indented portions forming teeth adapted to mesh within cavities of toothed transmission wheel means wherein

each tooth has a shape corresponding to the following equation:

$$x=+/-a[\cosh^{-1} a/y-\sqrt{1-(y/a)^2}]$$



where a is a constant, x is a value along an x-axis, y is a value along a y-axis, and cosh represents an inverse hyperbolic cosine function.

5,346,440

TRANSVERSE ELEMENT FOR A DRIVE BELT

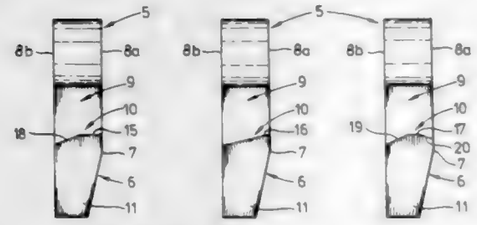
Paul M. Smeets, Tilburg, Netherlands, assignor to Van Doorne's Transmissie B.V., Tilburg, Netherlands

Filed Mar. 3, 1993, Ser. No. 25,750

Claims priority, application Netherlands, Mar. 24, 1992, 9200537

Int. Cl.[5] F16G *1/22*

U.S. Cl. 474—242 **19 Claims**



1. Transverse element for a drive belt of the kind in which transverse elements whose principal planes rest against each other are fitted displaceably on one or more supports, provided with one or more supporting surfaces for the support(s), which supporting surface is profiled at least in the direction transverse to the principal planes of the transverse element and has a supporting surface center which lies at equal distances from the principal planes, the supporting surface being profiled in such a manner that a resultant force, which is to be exerted by a support on the transverse element, essentially engages outside the supporting surface center.

5,346,441

COMBINATION OF TWO-STATOR-ROTOR UNITS WITH A CONNECTING GEAR UNIT THEREBETWEEN

Walter Kurz, Durach; Reinhard Deppert, Gochsheim; Wolfgang Baier, Obbach, and Manfred Lutz, Schweinfurt, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

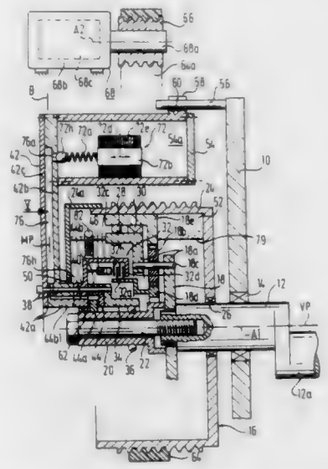
Filed Feb. 3, 1993, Ser. No. 12,592

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1992, 9201326

Int. Cl.[5] F16H *3/44*

U.S. Cl. 475—116 **27 Claims**

1. A combination of a first stator-rotor unit (**10**,**12***a*) having first stator means (**10**) and first rotor means (**12***a*) rotatable about a first rotor axis (**A1**), of at least one second stator-rotor unit (**68**) having second stator means (**68***b*) and second rotor means (**68***c*) rotatable about a second rotor axis (A2), and of a connecting gear unit (**16**) having a gear means compartment (**52**), a first terminal member (**18***a*) connected for common rotation with said first rotor means (**12***a*) about said first rotor axis (**A1**), a second terminal member (**24**) in driving connection with said second rotor means (**68***c*) and transmission-ratio-changeable transmission gear means (**18**) within said gear means compartment (**52**), operating circuitry means having a plurality of circuit components (**44**,**80**, **46**,**54**,**72**,**80***p*) allocated to said connecting gear unit (**16**), an internal group (**44**,**80**,**46**) of said circuit components being accommodated within said gear means compartment (**52**), an external group (**54**,**72**,**80***p*) of said circuit components being provided outside said gear means compartment (**52**), said external group (**54**,**72**,**80***p*) of



circuit components being carried by a plate-shaped carrier unit (**42**) having a main plane (MP) substantially orthogonal with respect to said first rotor axis (**A1**) and being connected to a stationary compartment confining unit (**42***a*,**40**) participating in confining said gear means compartment (**52**), said plate-shaped carrier unit (**42**) including a plurality of connecting channels (**74**,**76**,**78**,**80**,**84**), said connecting channels (**74**, **76**,**78**,**80**,**84**) having longitudinal axes substantially lying in said main plane (MP), said connecting channels (**74**,**76**, **78**,**80**,**84**) connecting respective internal (**44**,**46**,**80**) and external (**54**,**72**,**80***p*) circuit components.

5,346,442

RANGE SHIFT ARRANGEMENT FOR FOUR-WHEEL DRIVE VEHICLES

Richard E. Eastman, Central Square, N.Y., assignor to New Venture Gear, Inc., Troy, Mich.

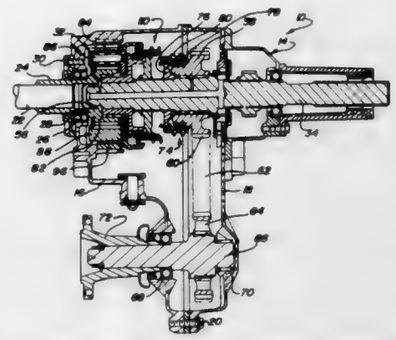
Filed Aug. 19, 1992, Ser. No. 932,289

Int. Cl.[5] F16H *37/06*

U.S. Cl. 475—223 **22 Claims**

1. A power transfer apparatus comprising:
a housing;
a first member supported for rotation in said housing;
a second member supported in said housing for rotation relative to said first member;
a planetary gear assembly coupled to said first member for rotatably driving an output member at a reduced ratio relative to said first member;
clutch means supported for rotation with said second member and movable between a first position for coupling said second member to said output member of said planetary gear assembly for rotatably driving said second member at said reduced ratio, and a second position for coupling said second member for rotation with said first member; and

synchronizer means for causing speed synchronization between said first and second members in response to move-



ment of said clutch means from said first position to said second position.

5,346,443

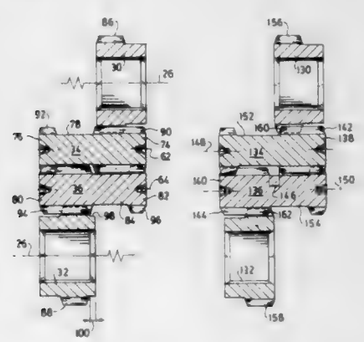
PARALLEL-AXIS GEAR DIFFERENTIAL WITH LIMITED EDGE CONTACT BETWEEN GEAR MEMBERS

Daniel E. Crysler, Spencerport, and Steven E. Ostertag, Rochester, both of N.Y., assignors to Zexel-Gleason USA, Inc., Rochester, N.Y.

Filed Feb. 23, 1993, Ser. No. 21,351

Int. Cl.[5] F16H *1/42*

U.S. Cl. 475—252 **9 Claims**



1. A parallel-axis gear differential comprising:
a housing rotatable about a common axis of rotation of a pair of drive shafts;
top and bottom side gears positioned within said housing for receiving ends of the respective drive shafts for rotation therewith about said common axis;
at least one pair of top and bottom planet gears positioned within said housing in engagement with said side gears for rotation about respective axes that extend parallel to said common axis of rotation;
each of said top and bottom planet gears having a main gear section and a transfer gear section interconnected by a stem section;
said main gear section of said top planet gear being in mesh with both said top side gear and said transfer gear section of said bottom planet gear;
said main gear section of said bottom planet gear being in mesh with both said bottom side gear and said transfer gear section of said top planet gear;
one of (a) said top and bottom side gears and (b) said main gear sections of the top and bottom planet gears having respective teeth separated by a clearance space in a direction along said common axis; and
the other of (a) said top and bottom side gears and (b) said main gear sections of the top and bottom planet gears having respective teeth that overlap said teeth of said one of (a) the top and bottom side gears and (b) the main gear sections of the top and bottom planet gears within said clearance space.

5,346,444

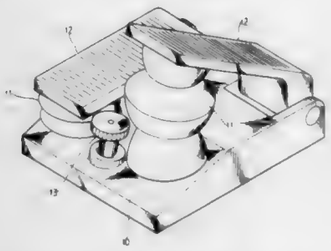
CONTROL VALVE FOR AN EXERCISE STAIR DEVICE

Kuo C. Hsieh, P.O. Box 82-144, Taipei, Taiwan

Filed Apr. 8, 1993, Ser. No. 45,050

Int. Cl.[5] A63B *21/008*

U.S. Cl. 482—53 **1 Claim**



1. An exercise stair device comprising: a frame, a pair of foot pedals pivotally connected at one end to said frame, pneumatic resistance means mounted adjacent the other ends of said foot pedals adapted to resistively engage said foot pedals, a control valve comprising:
a cylinder provided with a first nozzle, a second nozzle aligned with said first nozzle, and a third nozzle perpendicular to a line extending through said first nozzle and said second nozzle, said first nozzle being connected with a sensor which is in turn connected with a music producing device;
a spring disposed within said cylinder;
a ferrule mounted on said spring;
a valve plate fitted on said ferrule;
a piston housing said spring, said ferrule and said valve plate being disposed within said cylinder, said piston having a frame in an interior and being formed with recesses which will be aligned with said nozzles by turning said piston;
a spring-loaded spline inserted into said piston and supported by the frame of said piston; and
a lid engaged with the upper ends of said spring-loaded spline and said piston,
whereby the exercise stair device resistance is easily adjusted.

5,346,445

ARM LEVER FOR AN EXERCISE BICYCLE

Chi-Ming Chang, Taichung Hsien, Taiwan, assignor to Giant Manufacturing Co., Ltd., Taichung Hsien, Taiwan

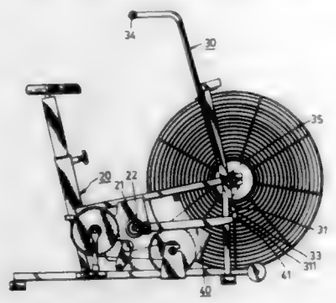
Filed Jan. 5, 1994, Ser. No. 177,731

Int. Cl.[5] A63B *21/12*

U.S. Cl. 482—62 **4 Claims**

1. An arm lever for an exercise bicycle which includes a frame, a drive shaft mounted rotatably on a rear end portion of the frame, and a crank arm with a first end connected eccentrically to one end of the drive shaft and a second end, said arm lever having a top end, a bottom end and an intermediate pivot portion between said top and bottom ends, said pivot portion being adapted to be mounted pivotally on a front end portion of the frame, said bottom end being adapted to be connected to the second end of the crank arm, wherein the improvement comprises:
said bottom end of said arm lever being provided with a locking plate, said locking plate having a forked extension with a distal bottom end and an upright slit which opens from said distal bottom end, said forked extension being further formed with a plurality of spaced locking holes

which extend through said slit, said slit being adapted to permit extension of the second end of the crank arm therein, said forked extension being adapted to be connected to the second end of the crank arm at a selected one of said locking holes to vary distance of the second end of the crank arm from said pivot portion and vary correspondingly range of pivoting movement of said arm lever.



5,346,446

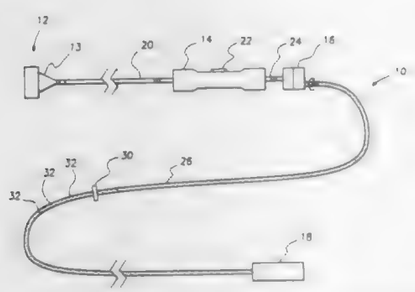
JUMP ROPE HAVING SPRINKLING APPARATUS

Ronald R. Kaiser, II, 12060 Cavell, Livonia, Mich. 48150

Filed Jan. 24, 1992, Ser. No. 825,375

Int. Cl.[5] A63B *5/20*

U.S. Cl. 482—82 | **11 Claims**



10. An apparatus for use as a jumping rope, comprising:

water supply means for providing a flow of water comprising a tube connectable at a first end thereof to a water source and permanently connected to a first handle at a second end of the tube;

said first handle being connected to said tube at a first end of the first handle and having a water exit at a second end of the first handle;

said water exit being operatively connected to a swivel means for preventing twisting of a jump rope hose portion, said jump rope hose portion being operatively connected at a first end to said swivel means, and said swivel means being coextensive with said first handle;

said jump rope hose portion including a series of apertures for the release of water in a predetermined area of the jump rope hose portion;

a sealing member for sealing a second end of said jump rope hose portion;

a second handle adjacent said second end of said jump rope hose portion; and

an auxiliary handle provided with clamping means so as to allow said auxiliary handle to be selectively clamped along said jump rope hose portion to shorten an operative length of the jump rope hose portion.

5,346,447

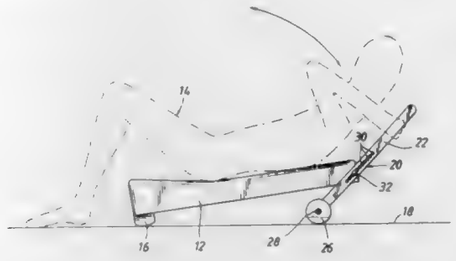
EXERCISE MACHINE

Kenneth W. Stearns, Houston, Tex., assignor to Stearns Technologies, Inc., Houston, Tex.

Continuation of Ser. No. 793,857, Nov. 18, 1991, abandoned. This application Jun. 14, 1993, Ser. No. 77,320

Int. Cl.[5] A63B *21/068*

U.S. Cl. 482—96 **25 Claims**



1. An exercise machine adapted for placement on a supporting surface and adapted for using the body weight of the user as a resistance to exercise which may be selectively varied, said exercise machine comprising:

an elongate platform;

lever means including a lever pivotally connected to a pivot axis of said platform for lifting a first end of said platform against the body weight of the user;

pivot means disposed at the second end of the platform for supporting the second end of the platform with respect to a supporting surface as said first end pivots about said second end of said platform with said pivot means remaining in a substantially fixed position with respect to said supporting surface during pivoting of said platform about said second end while said first end of said platform is lifted and lowered during exercising by the user;

a roller carried by said lever for supporting and producing rolling movement of said first end of said platform with respect to said supporting surface whereby said roller allows said first end of said platform to roll along said supporting surface as said platform pivots about said second end of said platform;

means on said lever to adjust selectively the pivot axis and leverage force required for pivoting of said lever against the weight of a user on the platform; and

actuating means which may be actuated by the user on the platform for pivoting of said lever about said pivot axis and lifting of said first end of said platform against the resistance provided by the body weight of the user.

5,346,448

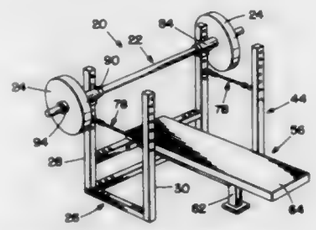
FREE WEIGHT LIFTING SYSTEM

Robert E. Sollo, 1132 Ocean Ave., New London, Conn. 06320

Filed May 4, 1993, Ser. No. 58,277

Int. Cl.[5] A63B *21/078*

U.S. Cl. 482—104 **20 Claims**



1. A free weight lifting system comprising:

spaced apart support means;

elongated lifting bar means for lifting by a weight lifter, said lifting bar means being detached from said support means and freely movable relative to said support means, said lifting bar means having upper and lower surfaces and opposed ends for selectively receiving and supporting weights to be lifted and an inboard region to be gripped by the weight lifter; and

a pair of generally parallel spaced apart yieldable cord means having opposed ends removably fixed to and extending between said spaced apart support means and selectively engageable in one instance by said upper surface at spaced locations for imparting progressively increasing resistance to the weight lifter as said lifting bar means is raised into engagement therewith by the weight lifter;

said yieldable cord means being selectively engageable in another instance by said lower surface at spaced locations for imparting progressively increasing assistance to the weight lifter as said lifting bar means is lowered into engagement therewith by the weight lifter.

5,346,449

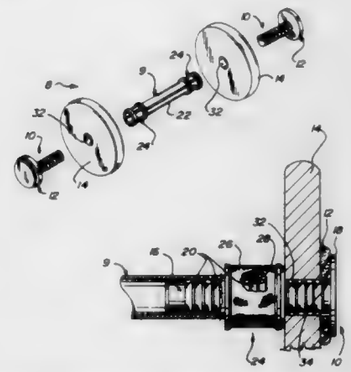
BARBELL SYSTEM WITH IMPROVED LOCKING FEATURE

Bruce E. Schlagel, 5340 E. Vale Dr., Denver, Colo. 80222

Filed Jun. 3, 1993, Ser. No. 71,681

Int. Cl.[5] A63B *21/075*

U.S. Cl. 482—107 **9 Claims**



1. A barbell system onto which weights can be releasably locked, comprising:

a pair of plunger pieces each having an elongated shaft and an end plate; and

an elongated handle including means located thereon for releasably gripping the shaft of each plunger piece so as to retain a weight between the handle and the end plate of each plunger piece and for releasing said shaft to allow the shaft and weight to be removed, wherein said releasably gripping means comprises:

a locking sleeve;

a plurality of balls retained within the locking sleeve; and

a biasing means retained between the locking sleeve and the elongated handle for biasing the locking sleeve from a released position into a gripping position, wherein in said gripping position the plurality of balls are urged toward the elongated shaft of the plunger piece to retain the plunger piece in position within the handle;

whereby the locking sleeve can be selectively slid toward the released position to release the grip of the plurality of balls on the elongated shaft of the plunger pieces and upon release of the locking sleeve the biasing means will slide the locking sleeve toward the gripping position to grip and retain the elongated shaft in position within the handle.

5,346,450

EXERCISE DEVICES

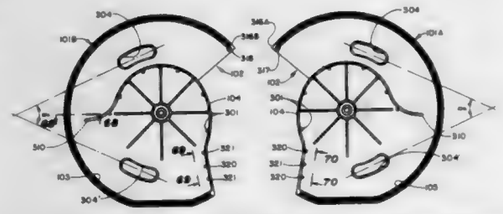
Scott Caruthers, Millersville, Md., assignor to DAR Products Corporation, Baltimore, Md.

Continuation-in-part of Ser. No. 890,943, May 29, 1992, which is a continuation-in-part of Ser. No. 470,616, Jan. 26, 1990, Pat. No. 5,139,472, which is a continuation-in-part of Ser. No. 241,297, Sep. 9, 1988, Pat. No. 4,896,880, which is a continuation-in-part of Ser. No. 94,794, Sep. 14, 1987, Pat. No. 4,813,669. This application Mar. 26, 1993, Ser. No. 38,151

The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.

Int. Cl.[5] A63B *21/075*

U.S. Cl. 482—108 **7 Claims**



1. In an exercise device, the combination of a housing including complementary diametrically-opposed housing halves, each of which is relatively thin-walled, the housing halves having peripheral edges mated together along a common midplane between the housing halves, means for securing the housing halves together, each of the housing halves having a concave recessed portion formed therein, the concave recessed portions being substantially aligned with one another when the housing halves are joined together, a weight means disposed within the concave recessed portions substantially at right angles to the common midplane between the housing portions, the housing having an opening formed therein substantially tangentially of the housing, whereby the hand of the user may be inserted through the opening in the housing and at least partially around the weight means radially thereof, the opening being bounded by an outer wall and an inner wall, the user's hand being disposed at least partially between the weight means and the walls of the housing, such that a forceful grip is not required by the user, and such that the necessity for employing the user's conjunctive adjoining muscles is substantially reduced, thereby substantially reducing the tendency to detract from the development of the user's targeted muscle, the inner wall and the outer wall of the housing halves having respective peripheral edges along which the housing halves mate, the inner wall of each housing half having a plurality of spaced-apart ribs formed adjacent to the inner wall, so that each of the ribs on one of the housing halves is positioned opposite a respective rib on the other of the housing halves, wherein the ribs, in alternating sequence, extend from the peripheral edge of the inner wall to form respective extending pins and alternating ribs are recessed from the peripheral edge of the inner wall, the respective pins extending a length from the respective housing half and joining the opposing recessed rib on the complementary housing half, the opposing recessed ribs being recessed by a length equal to the length of the extending pin.

5,346,451

EXERCISE APPARATUS WITH TELESCOPING POLE PIECES

Randolph F. Miller, Mount Vernon, Wash., assignor to Tunturi, Inc., Redmond, Wash.

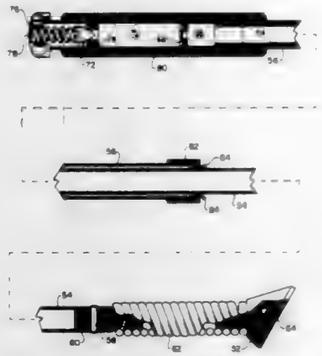
Filed Jan. 28, 1993, Ser. No. 10,348

Int. Cl.[5] A63B *21/008*

U.S. Cl. 482—112 **13 Claims**

13. In a dual-action exercise apparatus of a type involving a fixed base and means on said base whereby a user can exercise

by use of means enabling reciprocating movement of the legs and feet relative to the base and also by use of means enabling reciprocating arm and hand movement relative to the base, the improvement wherein said means enabling reciprocating arm and hand movement comprises a pair of pump pole means, each with inner and outer tubes in telescoped, partially overlapping relation, each said inner tube having an end remote from the outer tube which is connected through spring means to the base of the exercise apparatus, each said inner tube also having at its end within the associated outer tube a pressure seal engaging the inner wall of the outer tube, said associated outer tube at its end remote from the inner tube having a hand



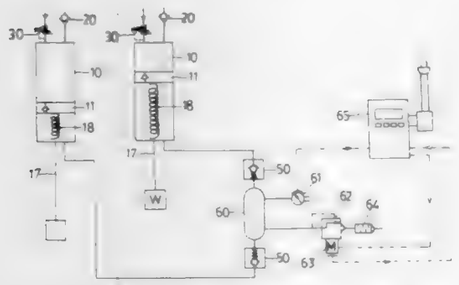
engageable grip means and a variable pressure release valve which, with the inner wall of the outer tube and the seal means, form an air chamber in which air is pressurized upon progressive movement of the inner tube into the outer tube and into which air is drawn past said seal means upon progressive movement of the inner tube out of the outer tube, each said associated outer tube having the same inner diameter essentially throughout its length and providing pressurized air resistance during movement of the inner tube into the outer tube throughout most of the length of the tubes in a manner simulating the actual downward movement of a user's hands and arms which would occur if the user were actually polling over ground.

5,346,452

ADJUSTABLE AIR RESISTANCE SYSTEM FOR FITNESS EQUIPMENT

Tse-Fen Ku, Fl. 5, No. 5, Lane 12, Mo Fan Str., Taichung, Taiwan

Filed Apr. 1, 1993, Ser. No. 41,192
Int. Cl.[5] A63B *22/04*
U.S. Cl. 482—113 **5 Claims**



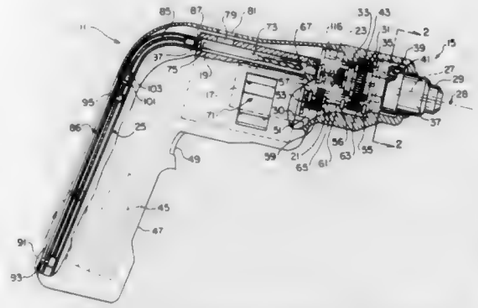
1. An adjustable air resistance system comprising two air cylinders, each having a suction type flow rate regulating valve and a check valve on the outside and a piston valve on the inside, said piston valve being coupled to a piston rod extended out of the respective air cylinder and coupled to a respective point of application on a fitness equipment, said piston rod being mounted with a compression spring retained between said piston valve and the respective air cylinder, each air cylinder being respectively connected to an air accumulator through an one-way pressure regulating valve, and a pressure control system to control the pressure of said air accumulator.

5,346,453

MULTIPLE BIT POWER DRILL

Otto Rivera-Bottzeck, 312 Wright St., Apt. 106, Lakewood, Colo. 80228

Filed Aug. 12, 1993, Ser. No. 105,113
Int. Cl.[5] B23Q *3/157;* **B23B** *45/00*
U.S. Cl. 483—1 **18 Claims**



14. A method for selecting and mounting a bit element in a multiple bit power drill that has a housing having a handle, a central portion, and a forward part; a chuck assembly, rotatably mounted to said housing forward part and having a central bore for receiving a tool bit element, and including bit-grasping jaws and a rotatable sleeve for controlling said jaws; motor means mounted in said central portion for reversibly driving said chuck assembly; slip clutch means disposed in drive relationship between said motor and said chuck assembly, and adapted to slip in its drive relationship when a predetermined amount of torque is experienced; and a cylindrical magazine mounted in said central portion for rotation about a longitudinal axis, and having a plurality of longitudinal chambers therethrough, each of said chambers adapted to mount a bit element, said magazine being rotatable to align each of said magazine chambers with the central bore of said chuck assembly; said method including the steps of:

a) providing bit-handling means for physically and magnetically engaging the rear end of a bit element;

b) rotating said magazine to bring a chamber containing a selected bit element into alignment with said chuck assembly central bore;

c) engaging said selected bit element with said bit-handling means and extending said bit-handling means forwardly through said chamber so as to urge said bit element from said chamber to said chuck assembly bore; and

d) holding said chuck assembly sleeve against rotation and energizing said motor means to drive said assembly in rotation to cause said jaws to grasp and hold said bit element.

5,346,454

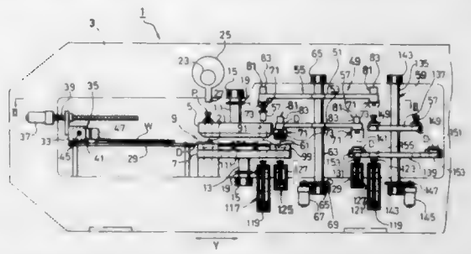
TURRET PUNCH PRESS

Tetsuji Hayashi, La Mirada, Calif., assignor to Amada Manufacturing America, Inc., LaMirada, Calif.

Filed Jan. 21, 1993, Ser. No. 6,941
Int. Cl.[5] B23Q *3/155*
U.S. Cl. 483—29 **18 Claims**

1. A turret punch press comprising: an upper rotary turret

for holding punches and a lower rotary turret for holding dies, the diameter of the lower turret being larger than that of the



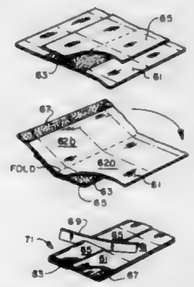
upper turret so that a punch exchange position and a die exchange position are separated away from each other.

5,346,455

METHODS OF MAKING POP-UP PROMOTIONAL ITEMS

John K. Volkert, Northfield, Ill., assignor to Papermasters, Inc., Northfield, Ill.

Continuation-in-part of Ser. No. 817,281, Jan. 6, 1992, Pat. No. 5,181,901, which is a continuation-in-part of Ser. No. 463,118, Jan. 10, 1990, Pat. No. 5,078,670, which is a continuation-in-part of Ser. No. 381,047, Jul. 17, 1989, abandoned. This application Dec. 30, 1992, Ser. No. 998,933
Int. Cl.[5] B65H *45/30;* **B32B** *31/00*
U.S. Cl. 493—335 **18 Claims**



1. A method of making pop-up elements, which method comprises

providing a continuous web of sheet material having first and second surfaces on opposite sides of said web, said web being designed to provide a series of blanks for fabrication into structurally identical pop-up elements,

superimposing onto said continuous web at least one continuous strip of sheet material carrying a pressure-sensitive adhesive pattern so as to apply said pressure-sensitive adhesive pattern to said first surface of said web along a straight line,

applying a pattern of bonding adhesive to said second surface of said web,

manipulating said web and said superimposed strip so as to superimpose one portion of said web upon a remaining portion of said web with said second surfaces in contact with each other so that said bonding adhesive pattern effects a secure joinder therebetween, and

cutting said sheet material web and strip so as to create a plurality of pop-up elements, which elements each include a flag section and a supporting base section having at least two panels hinged to said flag section which panels are also hinged to each other and have oppositely facing surfaces that carry pressure-sensitive adhesive covered by said strip,

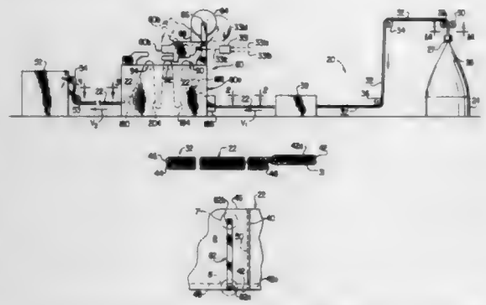
said pressure-sensitive adhesive allowing said pop-up elements to be adhered to a supporting surface or between a pair of facing supporting panels following removal of said strip and thereby assume an attention-attracting three-dimensional configuration.

5,346,456

PLASTIC FILM BAG MANUFACTURING APPARATUS AND ASSOCIATED METHODS, AND PLASTIC FILM BAGS PRODUCED THEREBY

Gary L. Rutledge, and Edgar R. Pitcher, both of Dallas, Tex., assignors to John C. Marrelli, Tustin, Calif.

Division of Ser. No. 389,757, Aug. 4, 1989, Pat. No. 5,188,580, which is a continuation-in-part of Ser. No. 117,209, Nov. 4, 1987, Pat. No. 4,854,735. This application Feb. 18, 1993, Ser. No. 18,834
Int. Cl.[5] B31B *1/90*
U.S. Cl. 493—211 **12 Claims**



1. A method of manufacturing plastic film bags comprising the steps of:

continuously extruding a plastic film tube;

flattening the tube to a web configuration having a duality of opposite side edge portions;

forming a longitudinally spaced series of transversely extending heat weld lines on the web to define the closed ends of a series of bag portions on the web;

laterally folding the web to a configuration in which one of said side edge portions projects outwardly from the balance of the laterally folded web;

anchoring the one end of each of a series of enlongated flexible bag tie elements to said outwardly projecting side edge portion of the laterally folded web at longitudinally spaced locations thereon adjacent what will be the open ends of the bags being formed, each tie element having a free end adapted to be looped around and tightly close the open end of its bag; and

continuously conveying the laterally folded web, with said tie elements anchored thereto, to a receiving location.

5,346,457

DEVICE FOR ELIMINATING CURL OF RECORDING PAPER FOR USE IN IMAGE FORMING APPARATUS

Yasuo Kimura, Ichinomiya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 22, 1993, Ser. No. 50,635
Claims priority, application Japan, May 27, 1992, 4-134615
Int. Cl.[5] B41F *13/54;* **B65H** *23/34*
U.S. Cl. 493—320 **17 Claims**

1. An image forming apparatus comprising:

a case main body;

an openable cover member for covering the case main body;

means for feeding paper along a paper feed path;

a container unit mounted in said case main body for holding a roll of recording paper;

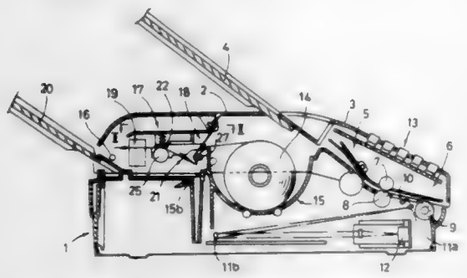
an image recording unit mounted in said case main body for forming an image on the recording paper adjacent to the container unit; and

a curl eliminating unit for curving the recording paper during passage along the paper feed path of the recording

paper from the container unit to the image recording unit, wherein the curl eliminating unit comprises:

a support member for supporting a surface of the recording paper on a side of the case main body;

a support means for supporting the support member and urging the support member toward the recording paper in an oscillatable manner;



a curve forming member disposed in the openable cover member so as to press and curve the recording paper toward the case main body; and

a restricting member provided in the openable cover member for restricting the support member from moving lengthwise with respect to the paper feed path when the case main body is closed.

5,346,458

ELECTROHYDRAULIC ENERGY CONVERTER FOR CARDIAC ASSIST DEVICES AND ARTIFICIAL HEARTS

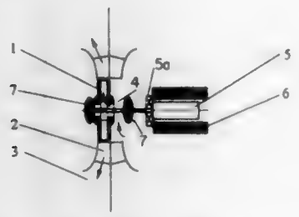
Klaus Affeld, Niebuhrstr. 11A, 1 Berlin 12, Fed. Rep. of Germany

Filed Jun. 25, 1991, Ser. No. 720,322

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1990, 4020120

Int. Cl.[5] A61N *1/362*

U.S. Cl. 600—16 **18 Claims**



1. A system to convert electric energy into hydraulic energy of a transmitter fluid to actuate and control a diaphragm or flexible wall of a blood pump for use in a cardiac assist system or in a total artificial heart comprising:

a continuously running radial centrifugal hydraulic pump with an impeller having inlets on both sides;

first and second diffusor elements arranged back to back, said first diffusor element connected to and issuing into a housing of a first blood pump, and said second diffusor element connected to and issuing into either a displacement chamber, or a housing of a second blood pump, wherein said first and second diffusor elements circumferentially surround said impeller;

a brushless electric motor mounted in fixed relationship to said first blood pump housing and having a stator and a rotor, said rotor being connected with the impeller of the centrifugal pump; and

means for initiating axial movement of said rotor and said impeller.

5,346,459

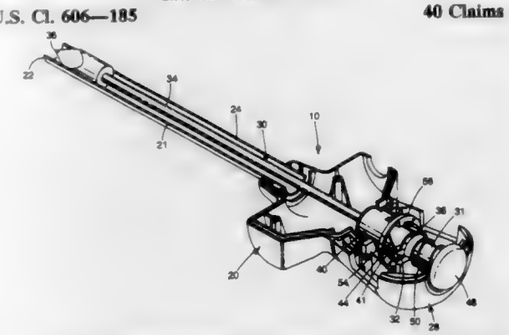
TROCAR

John J. Allen, Mendota Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 14, 1993, Ser. No. 48,274

Int. Cl.[5] A61B *17/34*

U.S. Cl. 606—185 **40 Claims**



1. A trocar for placement in the lumen of a cannula to facilitate inserting the cannula through the wall of a body cavity, the trocar comprising:

a handle,

an obturator having a proximal portion and a distal portion with a cutting surface for piercing the wall of the body cavity, and an axis,

means mounting said proximal and distal portions for relative angular movement about the axis of the obturator,

means for retracting said obturator proximally relative to the cannula as the proximal and distal portions move angularly relative to each other after the cutting surface has at least partially penetrated through the wall of the body cavity, wherein said retracting means comprises axial biasing means for axially biasing said obturator proximally toward a retracted position, and

angular biasing means for angularly biasing said proximal portion of the obturator relative to the distal portion.

5,346,460

Patent Not Issued For This Number

5,346,461

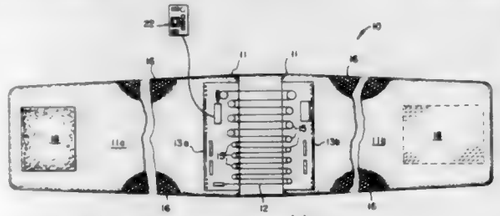
ELECTROMECHANICAL BACK BRACE APPARATUS

Thomas J. Heinz, Flintridge; Tom Walker, Ojai, and Eric D. Plambeck, Ventura, all of Calif., assignors to Bio-Cybernetics International, Pasadena, Calif.

Filed Oct. 23, 1992, Ser. No. 965,305

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—19 **15 Claims**



1. A back brace apparatus comprising:

a brace body adapted to be wrapped around the trunk of a patient, said brace body comprising two separate segments;

means at the end of each brace segment for allowing the two ends to be detachably connected together around the patient's trunk; and,

means for automatically tightening the brace comprising a cable operatively connected to said two segments, a motor operatively connected to apply tension to said cable, means for controlling said motor, a reduction gear train connected to said motor, a worm attached to said gear train, a worm gear engaged with said worm, a spool connected to said worm gear to which is attached one end of the cable with the other end of the cable affixed to the other brace segment so that operation of the motor shortens or lengthens the cable in order to tighten or loosen the brace.

5,346,462

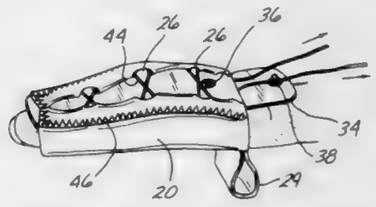
ADJUSTABLE TENSION FINGER OR TOE SPLINT

Lois M. Barber, Pismo Beach, Calif., assignor to LMB Hand Rehab Products, Inc., San Luis Obispo, Calif.

Filed Jan. 21, 1993, Ser. No. 7,337

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—22 **12 Claims**



1. An adjustable tension and adjustable compression finger or toe splint comprising:

a first part comprising a strip of material for lengthwise dorsal or volar contact with a finger or toe;

a second part comprising a stiffening means for dorsal or volar contact with a finger or toe to be splinted; and,

means for securing said stiffening means to said strip of material for adjustable compression along the length of the splint while surrounding a finger or toe to be splinted;

wherein said strip is formed of elastic material and is provided with lengthwise opposed edge portions defining interior channels along two opposed edges and with openings spaced along the length of said channels and cord means for insertion within said lengthwise channels and wherein said stiffening means is provided with at least one opening for receiving a portion of said cord means for adjusting tension around a finger or toe.

5,346,463

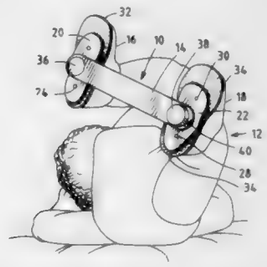
DYNAMIC VARIABLE TORQUE LONG BONE TORSION REDUCER

Mark F. Devens, 659 Arlington Pl., Chicago, Ill. 60614

Filed Jun. 3, 1992, Ser. No. 893,174

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—23 **34 Claims**



1. An orthopedic appliance for applying a dynamic corrective force or torque to the long bones of a user, said orthopedic device comprising,

A. an elongated spacing member having first and second ends,

B. first and second torque applying members, said first and second torque applying members being supported for rotation on said first and second ends respectively of said elongated spacing member,

C. first and second attachment means for securing the feet of a user to said first and second torque applying members for rotation therewith,

D. first and second torque generating means,

E. means for supporting said first and second torque generating means such that said first torque generating means applies a torque between said elongated spacing member and said first torque applying member, and said second torque generating means applies a torque between said elongated spacing member and said second torque applying member, whereby a dynamic torque is continuously applied to the long bones of a user.

5,346,464

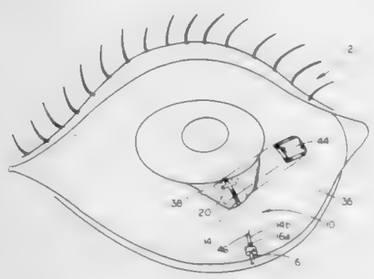
METHOD AND APPARATUS FOR REDUCING INTRAOCULAR PRESSURE

Carl B. Camras, 10401 N. 108th St., Omaha, Nebr. 68142

Continuation-in-part of Ser. No. 848,916, Mar. 10, 1992, abandoned. This application Apr. 14, 1993, Ser. No. 48,465

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—9 **8 Claims**



1. A surgical procedure for reducing intraocular pressure within an eye, the eye including an anterior chamber with aqueous humor under pressure therein, a cornea and surrounding marginal limbus by which the cornea is continuous with a layer of scleral tissue covered by a layer of conjunctival tissue, the conjunctival tissue forming a cul-de-sac around the periphery of the forward external surface of the eye and under the eyelids, said procedure including the steps of:

providing a tubular shunt having first and second coaxially and removably connected tubes, having a length to extend from within the anterior chamber to a portion of the conjunctival cul-de-sac, the first tube having first and second ends and the second tube having first and second ends, with a filter mounted within said second tube to prevent bacterial ingress;

inserting the first end of the first tube into the anterior chamber;

piercing the conjunctival layer and passing the second end of the first tube outwardly therethrough to lay externally of the conjunctival layer;

connecting the first end of the second tube to the second end the first tube such that said second tube lays externally of the conjunctival layer.

5,346,465

Patent Not Issued For This Number

5,346,466

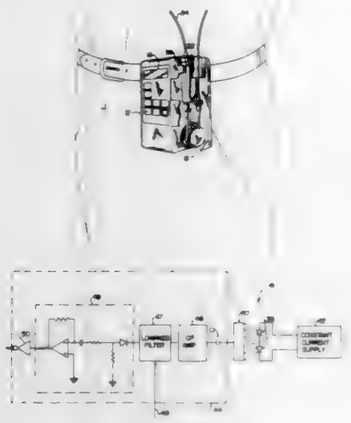
DROP DETECTION METHOD AND APPARATUS

Denis Y. Yerlikaya, Des Peres; Randall J. Krohn, Ballwin; Clarence L. Walker, Webster Groves; Michael J. Wilhelm, Rolla, and Curtis D. Kinghorn, Ferguson, all of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 678,639, Apr. 1, 1991, Pat. No. 5,256,155. This application Apr. 1, 1992, Ser. No. 861,672

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—253 **35 Claims**



1. A drop flow detector comprising:

a substantially hollow drop chamber having an inlet end and an opposed outlet end, said drop chamber having an outer wall with an outer edge;

means for detecting a drop passing from said inlet end to said outlet end, the drop passing either in a vertical direction or at an angle varied from the vertical direction including the drop moving along said outer wall of said drop chamber, said means for detecting a drop including:

at least two light sources for passing light through said drop chamber, each of said light sources having a main axis of illumination, each of said main axes of illumination being directed through said drop chamber;

a light detector for detecting light emitted from said light sources after passing through said drop chamber and for producing an electrical output signal related thereto;

circuit means responsive to the output signal of said light detector for determining the existence of drop flow; and,

blocking means for blocking the DC component of the output signal of said light detector from transmission to said circuit means, said blocking means transmitting frequency components at and above a predetermined threshold frequency to produce a filtered output signal.

5,346,467

COLL-KARAFIN URETERAL STENT-CATHETER HAVING VARYING DIAMETER STENT

Milton E. Coll, 6 Pear Tree La., Lafayette Hill, Pa. 19444

Continuation of Ser. No. 885,789, May 20, 1992, Pat. No. 5,221,253, which is a continuation of Ser. No. 704,718, May 20, 1991, Pat. No. 5,116,309, which is a continuation of Ser. No. 301,090, Jan. 25, 1989, abandoned. This application Jun. 11, 1993, Ser. No. 74,502

The portion of the term of this patent subsequent to May 26, 2009, has been disclaimed.

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—8 **18 Claims**

1. An elongated unitary, flexible tubular ureteral stent for implantation in a ureteral meatus, comprising:

a pair of preformed curls at both ends of the stent and a fluid passage channel extending substantially the entire length of said stent;

a drain passage segment having a plurality of drain passages communicating said channel to the outside of said stent, said channel within said passage segment having a first channel width, said drain passage segment having a first outer width, one end of said drain passage segment being closed and a portion of said passage segment forming one of said pair of preformed curls; and

a ureteral catheter receiving segment integral and co-extensive with said passage segment and having a second outer width, said channel extending along the length of said receiving segment and having a second channel width, said second channel width and said second outer width being larger than said first channel width and said first outer width, respectively, wherein the junction between said catheter receiving segment and said drain passage



segment being gradually tapered to form a continuous, non-abrupt outer surface, a portion of said catheter receiving segment forming the other preformed curl,

wherein the length of said drain passage segment being about twice the length of said catheter receiving segment.

5,346,468

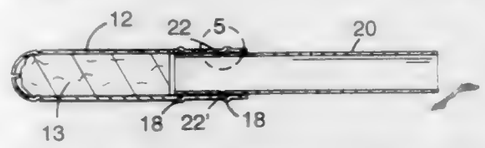
TAMPON APPLICATOR

Terese A. Campion, Enfield, Conn.; Mark D. Albright, Wales, and Betsy A. Davison, Wilbraham, both of Mass., assignors to Tambrands Inc., White Plains, N.Y.

Continuation of Ser. No. 819,753, Jan. 13, 1992, abandoned. This application Dec. 22, 1993, Ser. No. 171,853

Int. Cl.[5] A61F *15/00*

U.S. Cl. 604—13 **36 Claims**



1. An insertion device for inserting material into a body cavity comprising:

an elongate, tubular holder shaped for insertion into the body cavity, adapted to hold the material to be inserted, and having a material expulsion end portion; and

a plunger, telescopically and slidably mounted in said holder distal to said expulsion end and adapted to expel said material from said holder when pushed manually into said holder;

wherein said holder comprises an outer paper layer and a cellophane layer having an outer surface and an inner surface, substantially all of the area of said inner surface being supported by and adhered to said paper layer on an outer surface of said paper layer, said cellophane layer having a WVTR of less than 100 $g/m^2/day$.

5,346,469

HANDPIECE FOR SURGICAL OPERATION

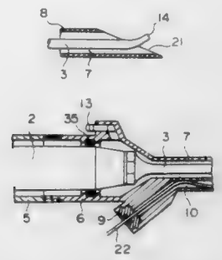
Tadaaki Ikeda, Yokohama, and Morito Idemoto, Akita, both of Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Filed Jun. 25, 1993, Ser. No. 85,771

Claims priority, application Japan, Oct. 7, 1992, 4-268859

Int. Cl.[5] A61B *17/20, 17/32*

U.S. Cl. 604—22 **13 Claims**



1. A handpiece for surgical operation, for crushing, or cutting, separating and removing foreign bodies within biological histology or a body cavity by ultrasonic vibration, comprising:

a source of ultrasonic vibration;

a vibrator having a joint section and a tip section reduced in diameter, connected to the source of ultrasonic vibration for transmitting and enlarging mechanical vibration of ultrasonic frequency, and

a cover made of heat-resistant resin for receiving and covering said source of ultrasonic vibration and said vibrator,

wherein the source of ultrasonic vibration and the vibrator communicate with each other and are connected to each other by a suction passage extending therethrough in a lengthwise direction, wherein said cover has, in combination, a body cover for receiving therein said source of ultrasonic vibration and the joint section of said vibrator and a tip cover for covering said tip section, and wherein said tip section of said vibrator has a forward end thereof which is curved in arcuate configuration;

wherein a curvature point of the forward end of the tip section of the vibrator is located within 30 mm and at least 3/100 wavelength from the forward end of the tip section, and wherein a curvature angle is equal to or less than 35 degrees;

wherein said tip cover is so formed as to be rotatable about a longitudinal axis of the vibrator and to be capable of being fixed in a selected position of rotation; and

wherein said tip cover has a forward end surface thereof which has an angle with respect to an axis of the vibrator in the lengthwise direction.

5,346,470

CONTRAST MEDIA INJECTOR

Eamonn Hobbs, Queensbury, N.Y.; Irvin F. Hawkins, Mincanopy, Fla.; Arthur Zimmet, Centerport, N.Y.; John Goodman, Huntington, N.Y., and Daniel Recinella, Hadley, N.Y., assignors to E-Z-EM, Inc., Westbury, N.Y.

Continuation-in-part of Ser. No. 931,908, Aug. 17, 1992, which is a division of Ser. No. 629,180, Dec. 20, 1990, Pat. No. 5,249,579. This application Jan. 27, 1993, Ser. No. 9,861

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—24 **9 Claims**

1. An apparatus for use with a contrast media injector of the type including a source of gas and a source of liquid, the apparatus comprising:

a gas delivery channel;

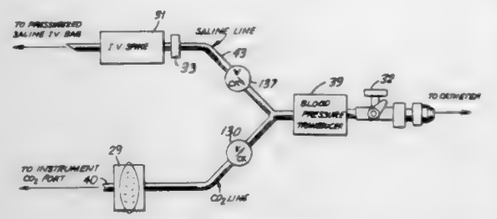
means for connecting said gas delivery channel to a gas source;

a liquid delivery channel;

means for connecting said liquid delivery channel to a liquid source;

electro-conductive wires connectable to a power source;

a plurality of normally closed, automatic valves for controlling the flow of gas and liquid from said gas and liquid channels, said normally closed valves including means for opening in response to predetermined internal pressures, a said normally closed valves including means for insuring



that the gas and liquid do not simultaneously exit from said gas and liquid channels, when the back pressure of the gas is greater than the back pressure of the liquid, said normally closed valves minimizing inadvertent mixing of said gas and liquid;

said means for connecting said gas channel to said gas source including means to connect said electro-conductive wires to a power source.

5,346,471

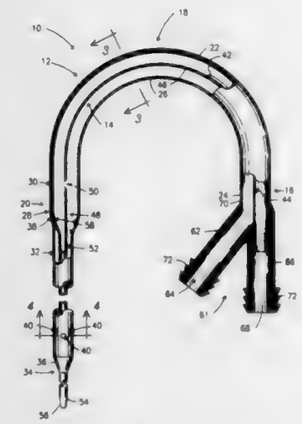
DUAL LUMEN CATHETER

J. Daniel Raulerson, 1205 Belleville Ave., Brewton, Ala. 36426

Filed Mar. 22, 1993, Ser. No. 35,035

Int. Cl.[5] A61M *3/00*

U.S. Cl. 604—43 **5 Claims**



1. A multilumen catheter comprising an extraction lumen including a proximal extraction portion and a return lumen including a corresponding proximal return portion coupled to a medical device, an arcuate intermediate section, and a distal section to be partially placed into the patient wherein the cross-sectional area of said extraction lumen and said return lumen in said proximal section is greater than the cross-sectional area of said extraction lumen and said return lumen in at least a portion of said distal section, said distal extraction portion comprises a first extraction region having a first cross-sectional area and a second extraction having a second cross-sectional area less than said first diameter of said first extraction region disposed in spaced relationship relative to each other by an extraction transition region having a proximal end and a distal end wherein the cross-sectional area thereof decreases

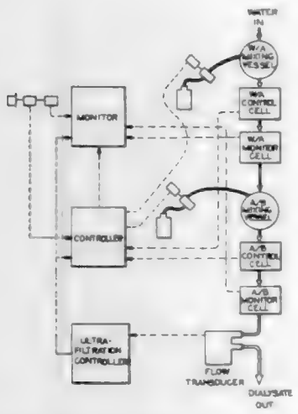
from said proximal end and to said distal end and said distal return portion comprises a first return region having a first diameter and a second return region having a second diameter less than said first diameter of said first return region diameter disposed in operative communication relative to each other by a return transition region to reduce the creation of fluid pressure resulting from the flow of fluid through said multilumen catheter.

5,346,472

APPARATUS AND METHOD FOR PREVENTING HYPOTENSION IN A DIALYSIS PATIENT

Prakash R. Keshaviah, Plymouth; Jian Ruan, Maplewood, both of Minn.; Jim Ebben, Hudson, Wis.; Dave Luhring, Savage, Minn., and Charles J. Dubauskas, St. Petersburg, Fla., assignors to Baxter International Inc., Deerfield, Ill.

Filed Jun. 2, 1993, Ser. No. 72,413
Int. Cl.[5] A61M *31/00, 1/00, 37/00*
U.S. Cl. 604—65 **22 Claims**



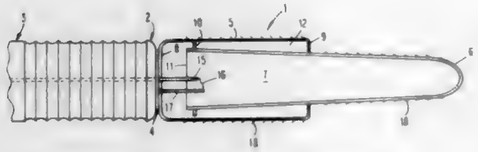
1. A method for preventing hypotension in a patient receiving hemodialysis comprising the steps of providing a means for generating a signal, and automatically delivering to the patient, through a dialyzer, sodium in response to said signal generated by the patient or other person wherein the signal is generated by the patient or the other person actuating a switch on a controller extending from a hemodialysis machine.

5,346,473

OXY-HYDROGEN PROPELLED TORPEDO FOR INTRODUCING ANGIOPLASTY GUIDE WIRE

Robert L. Bowman, Bethesda, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Feb. 22, 1993, Ser. No. 20,952
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—95 **19 Claims**



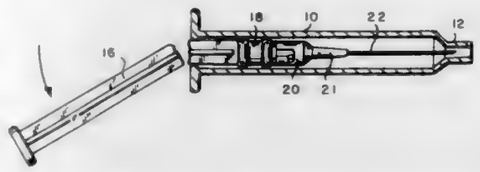
1. A wire-directed catheter which comprises:
a guide wire having a distal end and a proximal tip; and
ramming means attached to the proximal tip of the guide wire for propelling said wire-directed catheter through a lumen, said ramming means comprising a hollow base portion and a hollow ram portion which are telescopically connected to each other so as to define a hollow combustion chamber therebetween.

5,346,474

DISPOSABLE SAFETY SYRINGE

Richard J. King, Jupiter, Fla., assignor to Design & Engineering Associates, Jupiter, Fla.

Continuation of Ser. No. 787,915, Nov. 6, 1991, Pat. No. 5,188,601. This application Feb. 22, 1993, Ser. No. 27,509
The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.
Int. Cl.[5] A61M *5/00, 5/32*
U.S. Cl. 604—110 **19 Claims**



1. A disposable safety syringe assembly characterized by having:
a substantially elongated nonbreakable translucent plastic barrel assembly, said barrel assembly having a forward end, a rearward end, an exterior surface and an interior surface, with the interior surface defining an interior space, and wherein the barrel assembly is open ended in its rearward end, and wherein the forward end is provided with a constricted neck portion with a bore extending only partially therethrough;
(b) a needle assembly, disposed within said barrel assembly, said needle assembly including a substantially cylindrical hub member having a forward end and a rearward end, wherein the rearward end is provided with an internal twist-locking member, and the forward end is provided with a constricted neck portion, said hub member further having a bore therethrough for communicating with the interior space of the barrel assembly;
wherein the constricted neck portion of said needle assembly is of a size and shape to removably wedge fit within the constricted neck portion of said barrel assembly, and
wherein said needle assembly further includes a hollow needle mounted within the forward end of said hub member and passing through said constricted neck portion; said needle being capable of penetrating the partially open bore at the end of the barrel neck, when said assemblies are mated; and
(c) a plunger assembly including a breakable plastic rod portion movable with respect to the syringe barrel assembly, said rod portion including a gasket member mounted near its forward end, and terminating with a twist-locking member at its forward end, said locking member being capable of locking and unlocking with the internal twist-locking member of the needle assembly by application of rotational force with application of less than one complete rotational movement.

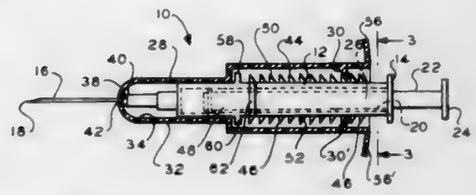
5,346,475

SINGLE USE SYRINGE

Edward Gregorio, 9 Van Doren Ave., Chatham, N.J. 07928

Filed Oct. 27, 1993, Ser. No. 144,882
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **3 Claims**

1. A single use syringe comprising:
a barrel having an axis and having an end needle and having a coaxial plunger;
a protective shield slidably engaging and supported on the barrel for covering the needle after needle use; and
a non-reversible lock unit for locking the shield in place to the barrel after covering the needle wherein the lock unit includes at least one lock subassembly comprising:
at least one axial parallel row of barrel teeth fixedly connected to the barrel at an outer surface of the barrel; and
at least one shield tooth fixedly connected to the shield at an interior surface thereof;
said shield tooth being a resilient spring-like tooth and being inclined in a rearward direction away from the needle for locking in front of a tooth at the front of the row of barrel teeth when the shield is in a needle-covering position, wherein
the shield has a slot disposed parallel to the axis for travel therethrough of the row of barrel teeth;
the shield has a bubble-like wall extension disposed over and covering over the slot; and
a bar is provided on the barrel to maintain the cover in a spaced relationship between the barrel and the cover.

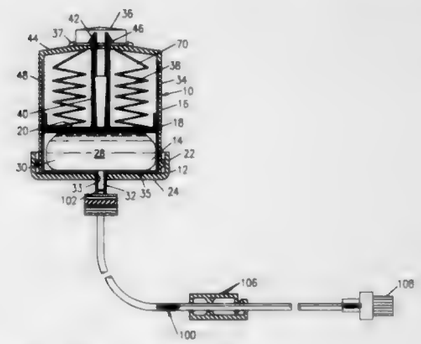


5,346,476

FLUID DELIVERY SYSTEM

Edward E. Elson, 4356 Claytor Cir., Anaheim, Calif. 92806, assignor to Edward E. Elson, Anaheim, Calif.

Filed Apr. 29, 1992, Ser. No. 875,756
Int. Cl.[5] A61M *5/20, 5/00*
U.S. Cl. 604—135 **17 Claims**



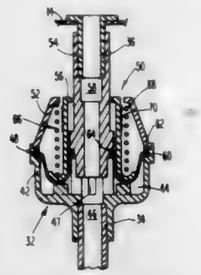
1. A fluid delivery system comprising:
a drive mechanism connected to a cap with a hollow compressible bladder which can be filled with a material to be dispensed, the bladder being located between the drive mechanism and the cap,
the hollow compressible bladder having access means for connecting an internal space within the bladder to a flow tube, and
the cap holding the compressible bladder with the access means accessible through an opening in the cap, the cap having an open end and a closed end with an upper surface of the bladder being exposed to view through the open end of the cap,
the drive mechanism comprising:
a shell having a top and a cylindrical wall, the wall having a length, a diameter and an upper end and a lower end, the top of the shell being located on the upper end of the wall, the lower end of the wall having first securing means thereon cooperating with second securing means on the cap to attach the drive mechanism to the open end of the cap to form an assembled fluid delivery system having a space enclosing the bladder within the shell and the cap when the shell is attached to the cap,
a piston located within the shell, said piston being moveable within the assembled fluid delivery system from a loaded position to an unloaded position, the piston being located between the upper end of the wall and the lower end of the wall in the loaded position and the piston in the unloaded position being located further from the upper end of the wall and closer to the lower end of the wall than in the loaded position, the piston being in contact with the upper surface of the bladder throughout a movement of the piston from the loaded position to the unloaded position,
a pressure delivery means positioned between the piston and the top of the shell, the pressure delivery means being a spring formed from a spirally wound wire having a fixed length, the spring being capable of expanding from a compressed configuration to an expanded configuration and exerting a substantially constant preset force against the piston when expanding from the compressed configuration to the expanded configuration,
a shaft extending from the piston and through the pressure delivery means, an upper end of the shaft extending through and held in an opening in a central portion of the top of the shell when the piston is in the loaded position, and
a movable knob positioned over the opening in the central portion of the top of the shell, said knob mateable to the upper end of the shaft to prevent the piston from accidentally being released from the loaded position and rotatable to release the shaft such that rotating of the knob releases the shaft, allowing the pressure delivery means to push the piston towards the cap, compressing the bladder and forcing material contained within the bladder to be expelled through the access means in the bladder.

5,346,477

PRESSURE GAUGE FOR REGULATING PRESSURE IN A DISPOSABLE PRESSURE CUFF

Floyd V. Edwards, Eggertsville, and Norman M. Strobel, Newfane, both of N.Y., assignors to Harmac Medical Products, Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 415,068, Sep. 29, 1989, Pat. No. 5,053,012. This application Oct. 1, 1991, Ser. No. 769,544
Int. Cl.[5] A61M *37/00, 1/00*
U.S. Cl. 604—141 **7 Claims**



1. Apparatus for regulating fluid pressure in a pressure infusion device having an infusion bag, a bladder for containing a fluid under pressure, and a pocket holding the infusion bag in contact with the bladder, wherein said fluid under pressure is supplied by a fluid source, said apparatus comprising: conduit for transmitting fluid from said fluid source; and
gauge means, coupled between said fluid source and said bladder by said conduit, for receiving said fluid under pressure from said source and providing said fluid to said bladder, for indicating a range of fluid pressures therein

and for maintaining the pressure of fluid in said bladder between minimum and maximum pressures, whereby the pressure of fluid in said bladder is automatically regulated, said gauge means comprising:

first housing means for receiving a flow of said fluid under pressure, said first housing means comprising a body forming a chamber having an inlet and an outlet and a first member projecting from said body;

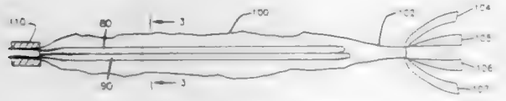
diaphragm means for sealing said chamber;

second housing means for enclosing said chamber, said second housing means comprising a second member telescopingly coupled to said first member for movement thereupon to indicate a range of pressures of said flow of fluid through said chamber, wherein said diaphragm means is connected between said first housing means and said second housing means;

a first valve means, formed between said first housing means and said second housing means, for permitting the passage of fluid through said chamber when the pressure of fluid exceeds a minimum pressure; and

a second valve means, formed between said first housing means and said second housing means, for preventing the passage of fluid through said chamber when the pressure of said fluid exceeds a maximum pressure.

5,346,478
PULMONARY CATHETER
Walter J. Jinotti, 10 Scott St., New Brunswick, N.J. 08903
Filed Jun. 7, 1993, Ser. No. 72,004
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—171 **1 Claim**



1. A pulmonary catheter assembly comprising

a tube assembly adapted to be inserted into the mouth of a patient,

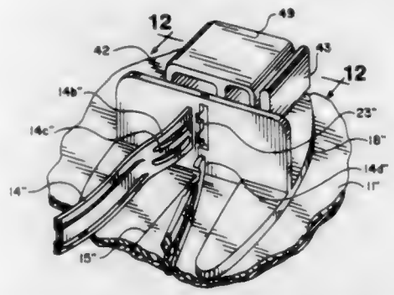
said tube assembly having a first end to be inserted into a patient and a second end remote therefrom, and

a flexible sleeve enclosing said tube assembly, said sleeve having a first patient end and a second end remote therefrom, said sleeve having its second end secured in air-tight engagement to said second end of said tube assembly and extending therefrom to several inches beyond said patient end of said tube assembly, said sleeve being inflatable like a balloon with the introduction of a gas into said first end thereof when said tube assembly is to be inserted into a patient, said sleeve having a considerably larger diameter than said tube assembly when inflated, said tube assembly being completed enclosed in said sleeve when it is withdrawn from a patient without exposure of an operator of said tube assembly thereto and to any substances which might be thereon, and

a plurality of ties secured to said first end of said sleeve for tying said sleeve in place during operation on a patient.

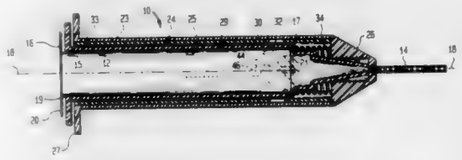
5,346,479
RETENTION DEVICE
Barry L. Schneider, McHenry, Ill., assignor to Hollister Incorporated, Libertyville, Ill.
Continuation-in-part of Ser. No. 895,335, Jun. 8, 1992, Pat. No. 5,267,967. This application Jun. 18, 1993, Ser. No. 79,016
Int. Cl.[5] A61M *5/32;* **B65D** *63/00, 67/02*
U.S. Cl. 604—174 **13 Claims**

1. A retention device for retaining objects, comprising a retainer body having a passage extending therethrough and having an elongated strap with one end portion joined at a junction to said body and an opposite free end portion insertable into and through said passage to form said strap into an object-retaining loop; said strap having a longitudinal series of transversely-extending ratchet teeth along one surface thereof; said body including a bottom platform; a first substantially flexible side wall pivotally connected to said platform, extending along said passage, and having an upper portion; a second substantially rigid side wall connected to said platform, extending along said passage and having an intermediate portion and



an upper portion; a flexible top wall joined to said upper portion of said first side wall and being connected by a flexible web to said intermediate portion of said second side wall; and latching means extending downwardly from a central portion of said top wall for engaging said teeth and preventing reverse movement of said strap in said passage; said latching means being shifted out of engagement with said teeth when said first side wall is squeezed towards said second side wall to cause pivotal movement of said first side wall and lateral flexure of said central portion of said top wall.

5,346,480
SYRINGE WITH RETRACTABLE NEEDLE
Charles D. Hess, and Charles W. Wickstrom, both of Tulsa, Okla., assignors to Q-Med, Inc., Tulsa, Okla.
Filed Dec. 14, 1992, Ser. No. 990,669
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—197 **21 Claims**



1. A syringe comprising:

a longitudinal axis;

a barrel having a barrel circumference, a needle end, an outer surface, and an inner surface, and a plunger end defining a plunger opening,

a needle means extending from the needle end of the barrel;

a plunger having a compression end and a needle end, with the needle end capable of being positioned to extend longitudinally into the plunger opening of the barrel, there being a reservoir in the barrel between the needle end of the plunger and the needle end of the barrel;

a sleeve having an open sleeve plunger end with the barrel capable of being positioned to extend into the sleeve through the sleeve open end, a sleeve needle end, a sleeve circumference, an inner surface and an outer surface,

a groove defined in the sleeve inner surface the groove having at least one longitudinal groove section which extends longitudinally for at least part of the sleeve length and a circumferential section which extends circumferentially for at least part of the sleeve circumference, the circumferential section having a needle side edge and a plunger end side edge,

the needle side edge of the circumferential section having at least two needle side slide edges extending from the sleeve groove toward the needle end at an angle to the longitudinal axis and ending at a needle side stop, with the succeeding needle side slide edge beginning at the stop of the previous needle side slide edge,

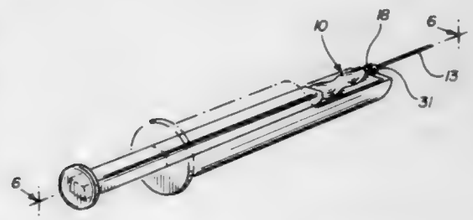
the plunger side edge of the circumferential section having at least one plunger side slide edge extending from the sleeve groove toward the plunger end at an angle to the longitudinal axis and ending at a plunger side stop, with each succeeding plunger side slide edge beginning at the stop of the previous plunger side slide edge, each plunger side slide edge, needle side slide edges and plunger side slide edges are located along the circumferential section in a staggered configuration whereby a longitudinal projection from a stop on one of the needle side or plunger side edge intersects a slide edge of an opposing side slide edge, opposing plunger side slide edges and needle side slide edges extending toward the circumferential section around the sleeve circumference,

the inner surface of the sleeve further defining at least one longitudinal groove, with each longitudinal groove extending from a plunger side slide edge to a lock means;

a key extending from the side of the barrel at the plunger end, into the sleeve groove, and

a means to force the barrel longitudinally away from the sleeve needle end.

5,346,481
VACCINE DELIVERY SYSTEM
Leonid Bunin, Woodbridge, N.J., assignor to Merck & Co., Inc., Rahway, N.J.
Filed Oct. 14, 1993, Ser. No. 137,239
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—204 **6 Claims**



1. A vaccine delivery system suitable for human or animal administration comprising a single dosage hypodermic syringe having an "hour-glass" shaped container portion made of plastic, said container portion sized so that the air and the minor drop of contents ejected during aspiration is equivalent in volume to the lower half of the "hour-glass" shaped container; a needle portion comprising a hollow sharp needle extending from one neck of the plastic container portion and a rigid clamp assembly means fitted with plunger means at the other end which can be slidably moved over the container portion expel the container contents.

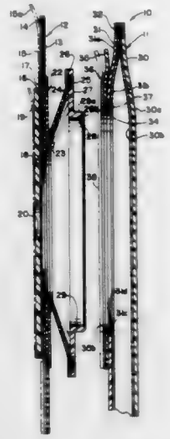
5,346,482
TWO-PIECE OSTOMY APPLIANCE HAVING FLUSHABLE POUCH AND FACEPLATE WITH PROTECTIVE COLLAR
Michael Metz, Chicago, and James J. Peterson, Island Lake, both of Ill., assignors to Hollister Incorporated, Libertyville, Ill.
Filed Apr. 2, 1993, Ser. No. 42,008
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—338 **10 Claims**

1. A two-piece ostomy appliance comprising a faceplate component and a flushable pouch component;

said faceplate component comprising a thin, flexible, adhesive-coated patch having a stoma-receiving opening and a relatively stiff but flexible attachment ring of water-insoluble material secured to said patch about said opening;

said attachment ring having a thin outer flange portion and an inner annular collar portion extending axially away from both said flange portion and said patch and having an opening concentric with said stoma-receiving opening of said patch;

said pouch component having a pair of side walls joined together along their outer margins and each comprising a primary layer of strong but water-soluble material capable of quickly dissolving in the water of a toiletbowl in which the pouch is discardable and a protective inner layer of



relatively weak but water-insoluble material incapable of maintaining the structural integrity of said pouch component when said primary layer is dissolved;

one of aid walls having a side opening therethrough along which edges of said primary and protective layers of said one wall are exposed;

said collar portion having an outer surface with an axial length greater tan the thickness of said one wall and with a diameter the same or slightly less than that of said side opening, whereby, said collar portion shields said exposed edges of said layers about said side opening of said pouch component from contact with fluids passing therethrough;

and means for releasably securing said pouch component to said attachment ring.

5,346,483
EXTERNAL MALE CATHETER
Charles E. Thaxton, Sr., 325 Glen St., New Britain, Conn. 06051
Filed Jun. 7, 1993, Ser. No. 72,443
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—353 **12 Claims**

1. A external male catheter, comprising:

a waistband,

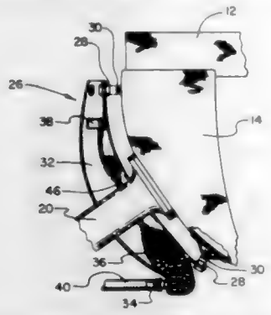
a sheath support member attached to said waistband, said sheath support member including a first aperture through which a penis is inserted, said sheath support member also including a first attachment assembly positioned circumferentially around said aperture, and

a removable and replaceable sheath assembly which includes a second attachment assembly which is complementary to said first attachment assembly and is attachable thereto, said sheath assembly also including a sheath member connected to said second attachment assembly, said sheath member including an extension portion, located at one end of said sheath member, said extension portion including a

second aperture for draining urine from said sheath assembly,

further including:

a urine receptacle assembly in fluid communication with said sheath assembly including a third attachment assembly



that can be removed and replaced for and replaceable attachment to a complementary fourth attachment assembly connected to said sheath support member, such that said urine receptacle assembly is supported by said sheath support member when said third attachment assembly and said fourth attachment assembly are connected together.

5,346,484

CUSHION-LIKE MEMBER FOR ABDOMINAL OPERATIONS

Arnold C. M. Van Lindert, Lorentzlaan 179, NL-3707 HH Zeist, Netherlands

Filed Oct. 8, 1992, Ser. No. 958,254

Claims priority, application Netherlands, Oct. 8, 1991, 9101692

Int. Cl.[5] A61F *13/15, 13/20, 13/00*

U.S. Cl. 604—358 **14 Claims**



1. A flexible cushion member for insertion into a body cavity formed during surgery for restraining at least one body organ, said member formed of an absorbent material for absorbing blood and other fluids and having a preformed outer contour adapted for use in said body cavity, wherein a portion of said outer contour is convex, and a portion of said cushion member which is opposite said convex portion is concave in shape and defines a recess therein for eliminating pressure on retroperitoneal vessels in said body cavity during use of said flexible cushion member.

5,346,485

POLYMERIC COMPOSITION FOR THE ABSORPTION OF PROTEINACEOUS FLUIDS

Sandra M. Yarbrough, Appleton; Ramakant T. Shet, and Ronald S. Harland, both of Neenah, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 519,629, May 7, 1990. This application Apr. 30, 1993, Ser. No. 56,222

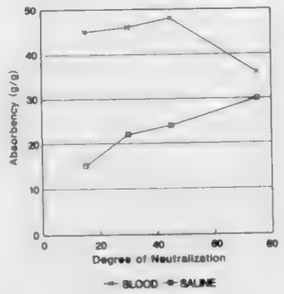
Int. Cl.[5] A61F *13/15, 13/20*

U.S. Cl. 604—368 **18 Claims**

1. A blood-swellable, generally blood-insoluble polymeric composition comprising:

at least about 20 mole percent based on said polymeric composition of a polymerized carboxyl group-containing monomer; and

a crosslinking agent, said polymeric composition being characterized in that:



(a) it has a degree of neutralization within a range of from about 10 to about 45 mole percent of said carboxyl groups,

(b) at least 50 percent of the neutralized carboxyl groups are neutralized with a potassium or lithium base.

5,346,486

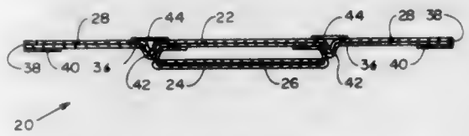
SANITARY NAPKIN HAVING LATERALLY EXTENSIBLE MEANS FOR ATTACHMENT TO THE UNDERGARMENT OF THE WEARER

Thomas W. Osborn, III, Cincinnati; George S. Reising, Batavia, and Richard G. Coe, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 431,009, Nov. 1, 1989, abandoned. This application May 21, 1991, Ser. No. 707,233

Int. Cl.[5] A61F *13/15, 13/20*

U.S. Cl. 604—385.1 **9 Claims**



1. A sanitary napkin for wearing in a wearer's undergarment, said sanitary napkin having a longitudinal axis extending in a longitudinal direction, a lateral axis extending in a lateral direction, two spaced apart longitudinal edges, and a central portion, said sanitary napkin comprising:

a liquid pervious topsheet;

a liquid impervious backsheet joined to said topsheet;

an absorbent core positioned between said topsheet and said backsheet;

at least one flap extending laterally outward from said sanitary napkin for folding under and securing to the wearer's undergarment, said flap being joined to at least one of said topsheet and backsheet, and having a proximal edge where said flap is joined to at least one of said topsheet and said backsheet and a distal edge furthest from said longitudinal axis;

said central portion being laterally inboard said proximal edge of said flap and being comprised of at least a portion of said topsheet, backsheet, and absorbent core;

a longitudinally oriented pleate joining the proximal edge of said pleat to said central portion;

at least one spring having a laterally oriented vector component spanning said pleat, whereby said flap is elastically extensible in the lateral direction; and

an adhesive on said elastically extensible flap for attaching said flap to the wearer's undergarment, wherein said adhesive is at least partially movable with said flap.

5,346,487

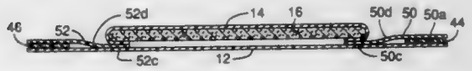
DISPOSABLE ABSORBENT GARMENT

Penny C. Lovestedt, Renton, Wash., assignor to Paragon Trade Brands, Inc., Federal Way, Wash.

Filed May 26, 1993, Ser. No. 68,505

Int. Cl.[5] A61F *13/15, 13/20*

U.S. Cl. 604—385.1 **20 Claims**



1. A disposable absorbent garment comprising

a liquid impervious back sheet having inner and outer sides, opposed transverse waist regions, and a crotch region therebetween,

an elongate waistband secured to and extending along the inner side of a waist region of the back sheet,

an absorbent pad overlying the inner side of said crotch region of the back sheet, said pad having an end edge spaced inwardly from said waistband,

a liquid pervious liner sheet overlying said pad and having an end margin portion wrapped around said end edge of the pad and terminating between the pad and back sheet, and

a hydrophobic extension sheet extending between said pad and waistband having a first portion overlying said waistband and a second portion interposed between said pad and back sheet.

5,346,488

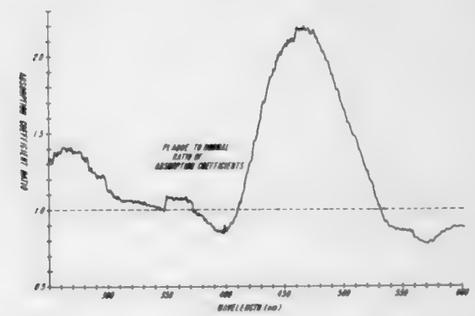
LASER-INDUCED ABLATION OF ATHEROSCLEROTIC PLAQUE

Martin Prince, Cambridge; Allan Oseroff, Brookline, and John A. Parrish, Weston, all of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 790,600, Nov. 7, 1991, abandoned, which is a continuation of Ser. No. 720,595, Apr. 8, 1985, abandoned. This application Mar. 2, 1992, Ser. No. 844,243

Int. Cl.[5] A61N *5/06*

U.S. Cl. 606—7 **31 Claims**



1. A method of enhancing absorption of light by atherosclerotic plaque in a human patient to improve discrimination of said atherosclerotic plaque from surrounding tissue by light, comprising, the steps of:

administering a carotenoid to said human patient whereby at least a portion of said carotenoid accumulates in said atherosclerotic plaque thereby altering said atherosclerotic plaque's composition.

5,346,489

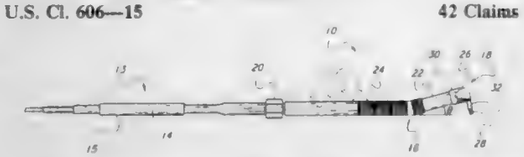
MEDICAL LASER DELIVERY SYSTEM

Michael B. Levy, Woodinville, and Steven E. Wojcik, Bothell, both of Wash., assignors to Luxar Corporation, Bothell, Wash.

Filed Nov. 18, 1992, Ser. No. 977,665

Int. Cl.[5] A61B *17/36*

U.S. Cl. 606—15 **42 Claims**



7. A medical laser delivery system usable in conjunction with a laser energy source and a delivered arm coupled to the laser energy source to transmit laser energy, comprising:

a handpiece adapted for rotatable coupling to the delivery arm, the handpiece including transmission means for transmitting the laser energy received from the delivery arm, the handpiece being rotatable about its longitudinal axis;

means for preventing the handpiece from decoupling from the delivery arm when rotating the handpiece during use; and

a distal delivery system coupled to the handpiece, the distal delivery system delivering the laser energy received from the handpiece to a surgical site when the laser energy source is actuated;

wherein the handpiece includes a handpiece body for rotatable coupling to the delivery arm and a handpiece head having one end coupled to the handpiece body and another end coupled to the distal delivery system, the handpiece head being pivotally coupled to the handpiece body to permit adjustable movement of the handpiece head to variable angles with respect to the handpiece body, the fiber extension being flexible and extending interior of the handpiece body and the handpiece head.

5,346,490

Patent Not Issued For This Number

5,346,491

FEED DEVICE FOR BIPOLAR ELECTRODES FOR CAPSULOTOMY

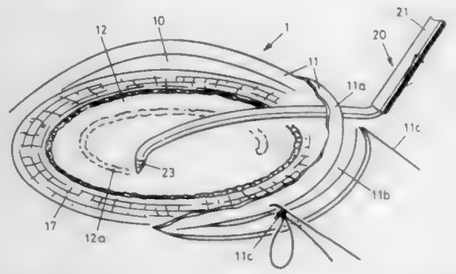
Heinz A. Oertli, Teufen, Switzerland, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 7, 1991, Ser. No. 788,808

Claims priority, application Switzerland, Mar. 28, 1991, 965/91

Int. Cl.[5] A61B *17/39*

U.S. Cl. 606—37 **16 Claims**



1. An electrical capsulotomy device for eye microsurgery, comprising:

a bipolar diathermy instrument;

a high-frequency generator producing an output signal;
modulating means for modulating said output signal from said high-frequency generator and producing a modulated output signal at an output thereof;
said modulating means operating to periodically interrupt passage of said high-frequency output signal according to a predetermined duty cycle;
said duty cycle having a pulse duration time t_p and a pulse pause time t_i according to the relationship

$$2 \leq t_i/t_p \leq 10;$$

a power amplifier having an input connected to said output of said modulating means and receiving said modulated output signal from said modulating means for producing an output therefrom; and
a transformer having a primary winding connected to the output of said power amplifier and having a secondary winding connected to said bipolar diathermy instrument.

5,346,492

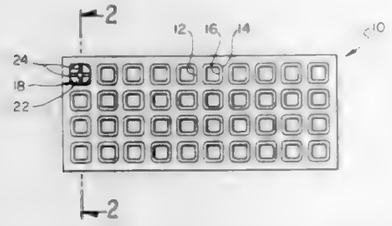
PERFORATED METALLIC PANELS AND STRIPS FOR INTERNAL FIXATION OF BONE FRACTURES AND FOR RECONSTRUCTIVE SURGERY

Frank H. Morgan, Las Vegas, Nev., assignor to TiMesh, Inc., Las Vegas, Nev.

Continuation-in-part of Ser. No. 860,029, Mar. 30, 1992, abandoned. This application Mar. 9, 1993, Ser. No. 28,207

Int. Cl.[5] A61F *2/28*

U.S. Cl. 606—60 | **4 Claims**



1. A pliable metallic perforated mesh plate structure for use with bone screws having a screw head including a hemispherical underside portion and a low profile upper portion for the internal fixation of fractures and for use in orthognathic and reconstructive surgery,
said perforated mesh plate structure having a face side and a bone interface side and including a multiplicity of substantially square perforations arranged uniformly in rows and lines, and
said substantially square perforations each including an arcuate chamfer extending inwardly from the face side of said mesh plate structure to the bone interface side of said mesh plate structure in substantially uniform configuration about the entire periphery thereof.

5,346,493

TOP-ENTRY ROD RETAINER

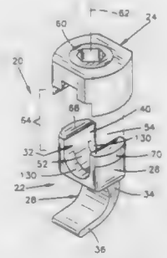
Terrence M. Stahurski, Rocky River, Ohio; Marc A. Asher, Prairie Village, Kans.; William L. Carson, Columbia, Mo.; Walter E. Stripgen, Golden, Colo.; Charles F. Heinig, Ware Neck, Va.; Robert W. Gaines, Jr., Columbia, Mo., and Frank S. Janson, Rocky River, Ohio, assignors to AcroMed Corporation, Cleveland, Ohio

Division of Ser. No. 771,723, Oct. 4, 1991, Pat. No. 5,257,993. This application Jul. 30, 1993, Ser. No. 105,281

Int. Cl.[5] A61F *5/00*

U.S. Cl. 606—61 | **5 Claims**

1. An apparatus for use in retaining a longitudinally extending member in position relative to a spinal column, said apparatus comprising a body having an open ended recess which extends through the body and is open along one side to enable the longitudinally extending member to be moved into the recess, said recess having a side opening, a first end opening formed in a first side of the body and intersecting the side opening, and a second end opening formed in a second side of the body opposite from the first side and intersecting the side opening to enable the longitudinally extending member to be moved into the recess through the side opening and to extend from the first and second sides of said body through the first and second end openings, said body including first and second flanges disposed on opposite sides of said side opening, a connector element extending from a side of said body opposite from the side opening and connectable with the spinal column to connect said body with the spinal column, an end cap movable between a disengaged position spaced from said body and an engaged position extending across the side opening in said



body, said end cap including a base, a is an inner thread convolution which is disposed in said end cap. first retainer surface connected with and disposed adjacent a first side of said base, and a second retainer surface connected with and disposed adjacent a second side of said base, said first flange being engageable with said first retainer surface and said second flange being engageable with said second retainer surface upon rotation of said end cap through less than one half of a revolution relative to said body from a disengaged position to an engaged position to releasably interconnect said end cap and said body, and a clamp-member mounted on said end cap, said clamp member being movable relative to said end cap when said end cap is in the engaged position to clamp a longitudinally extending member disposed in the recess against said body and to press said first and second retainer surfaces against said first and second flanges to hold said end cap against movement from the engaged position to a disengaged position.

5,346,494

Patent Not Issued For This Number

5,346,495

BIOMEDICAL CEMENT APPLICATOR

Joseph H. Vargas, III, Box 7118, RR #3, Woodstock Ave., Rutland, Vt. 05701

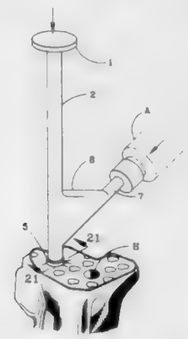
Filed Feb. 28, 1994, Ser. No. 202,731

Int. Cl.[5] A61F *5/04*

U.S. Cl. 606—92 | **6 Claims**

1. A one piece biomedical cement applicator, comprising.
a. a body with a top side, a back side, the long axis symmetry of which is perpendicular to the long axis of symmetry of said top side, two parallel lateral sides, the respective long axis of symmetry of said two parallel lateral sides being perpendicular to said long axis of symmetry of said top side and a front side, the long axis of symmetry of which is inclined at an angle obtuse to the horizontal lie of said long axis of symmetry of said top side;

b. a first rodlike extension of triform breadth throughout and extending from one end of said top side of said body, the long central axis of which said first rodlike extension is perpendicular to said long axis of symmetry of said top side, the posterior portion of which said first rodlike extension is coextensive in a straight line with said back side and the lateral portions of which are coextensive in straight lines respectively with said parallel lateral sides respectively;
c. a solid cylindrically shaped disk covering the whole top or said first rodlike extension, the diameter of which said disk is greater in length than the said uniform breadth of said first rodlike extension, the perpendicular central axis of symmetry of which said disk is collinear with the long central axis of said first rodlike extension;
d. a second cylindrically shaped rodlike extension of uniform diameter throughout and extending from the bottom of said body formed by the coalescence of said back side, said two parallel sides and said front side, the long central axis of which said second rodlike extension is perpendicular to said long axis of symmetry of said top side and nearly collinear with the long central axis of said first rodlike extension with the posterior portion of said second rodlike extension coextensive with said hack side, and the lateral portions of said second rodlike extension coextensive respectively with said parallel lateral sides respectively;
e. a uniformly solid stop piece affixed to and circumscribing the whole of said second rodlike extension in proximity to the base of said second rodlike extension, the perpendicular axis of symmetry of which said stop piece is collinear with the long central axis of said second rodlike extension and the horizontal axis of symmetry of which said stop piece is greater in length than the length of the greatest breadth of said second rodlike extension;
f. a hollowed out beveled end commencing at the base of



said second rodlike extension, the bottom of which said beveled end is uniformly sharp edged;
g. a third rodlike extension of uniform breadth throughout and extending from the other end of said top side of said body, the long central axis of which said third rodlike extension lies at an angle obtuse to the lie of said long axis of symmetry of said top side, and the inclination of the frontal portion of which said third rodlike extension is coextensive in a straight line with the inclination of said front side with the lateral portions of said third rodlike extension coextensive in straight lines respectively with said parallel later sides respectively;
h. a hollow cylindrically shaped head atop said third rodlike extension, the central axis of symmetry of which said hollow cylindrically shaped head is collinear with the long central axis of said third rodlike extension;
i. threading means inscribed about the whole of the inner walling of said hollow cylindrically shaped head;
j. a first hole in the center of the bottom side of said hollow cylindrically shaped head;
k. a hollow canal with uniform breadth throughout centered on the long central axis of said third rodlike extension which said canal commences at said first hole and courses on a straight line through the whole of said third rodlike extension and said body to a location within said body centered nearly on the long central axis of said rodlike extension;
l. a cannular extension of said hollow canal with uniform breadth throughout and equal to the breadth of said hollow canal which said cannular extension commences at said location within said body and runs through the whole of said second rodlike extension centered on the long central axis of said second rodlike extension and terminating in a second hole in the bottom of said second rodlike extension which said second hole leads into said hollowed out beveled end.

5,346,496

DRILL-DEVICE FOR ALIGNMENT OF A BONE SCREW DRIVEN INTO THE NECK OF A FEMUR

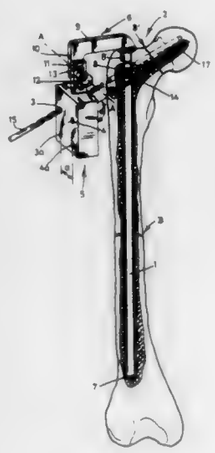
Dietmar Pennig, Hans-Driesch-Strasse 12, 935 Köln, Fed. Rep. of Germany

Filed Aug. 13, 1993, Ser. No. 106,223

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1991, 4141153

Int. Cl.[5] A61B *17/56*

U.S. Cl. 606—96 | **13 Claims**



1. A drill-guide device for a drill to produce a bone-screw pilot hole extending substantially transverse to a longitudinally extending intramedullary nail which has been longitudinally installed in a femur having a fracture in the femoral neck thereof, wherein the intramedullary nail has a longitudinal axis and an exposed proximal end, said device comprising a drill template (**5**) and adjustable means for removably attaching of said template to the proximal end (**2**) of the intramedullary nail (**1**), and for adjustably tilting said template about a horizontal axis (A—A) extending transverse to the longitudinal axis of the intramedullary nail (**1**) and transverse to the radial direction of the femoral neck, said adjustable means including means for vertically adjusting said template in a direction parallel to the longitudinal axis of the intramedullary nail (**1**), said drill template (**5**) having at least two drill-guide bores (**3, 4**) which are at a horizontal spacing transverse to the longitudinal axis of the intramedullary nail (**1**) and transverse to the direction of the femoral neck, said spacing being sufficient for said bores to straddle the intramedullary nail (**1**).

5,346,497

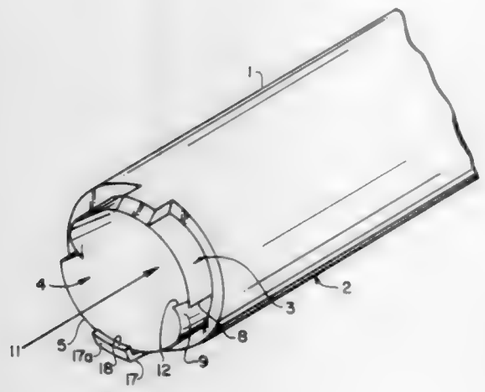
SURGICAL CUTTING HEAD WITH ASYMMETRICAL CUTTING NOTCH

Gabriel Simon; William Lee; Izuru Nose, and Jean-Marie Parel, all of Miami, Fla., assignors to The University of Miami, Miami, Fla.

Continuation of Ser. No. 913,474, Jul. 15, 1992, abandoned. This application Aug. 25, 1993, Ser. No. 111,591

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—107 **6 Claims**



1. A surgical cutting head for use in infusion/aspiration devices comprising:

(a) a hollow first tube, adapted to be movable when said cutting head is connected to an infusion/aspiration device, having a distal end and a proximal end having a cutting edge formed therein, said first tube being open and defining an exterior surface and an interior surface further defining an associated interior space suitable for transporting fluids and tissue particles therethrough, said first tube containing at least one asymmetrical two-sided notch for cutting tissue which proceeds distally from said first tube's proximal end along said first tube to an apex where said sides of said notch meet, a first side of said notch commencing at said first tube's proximal end and being generally in a plane parallel to said first tube's longitudinal axis, said first side having a sharpened cutting edge commencing at said first tube's proximal end and extending for a discernable distance towards said apex along said first side's length, the second side of said notch, commencing at said first tube's proximal end at a point radially inwardly from said first side having a sharpened cutting edge extending for a discernable distance into said first tube's associated interior space, and

(b) a hollow second tube, adapted to be stationary when said cutting head is connected to an infusion/aspiration device, having a distal end and a proximal end, said second tube being disposed concentrically around said first tube and having at least one projection located at its proximal end and extending radially inwardly thereform overhanging said first tube's proximal end, said second tube being open at its proximal end and defining an exterior surface and an interior surface, said interior surface said second tube being opposed to and spaced from said exterior surface of said first tube and defining therewith an associated, fluid traversable inner space between said first and second tubes for communicating with said second tube's proximal end.

5,346,498

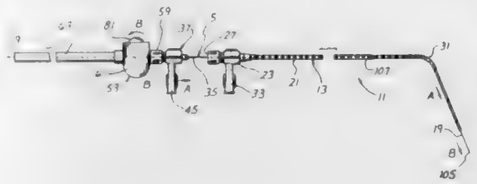
CONTROLLER FOR MANIPULATION OF INSTRUMENTS WITHIN A CATHETER

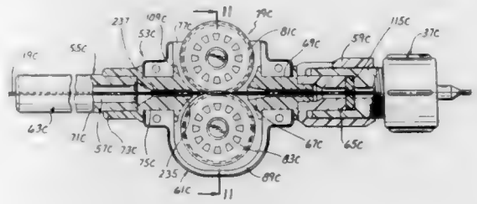
John P. Greelis, Aliso Viejo, and Fred R. Tietge, San Diego, both of Calif., assignors to Imagyn Medical, Inc., Laguna Niguel, Calif.

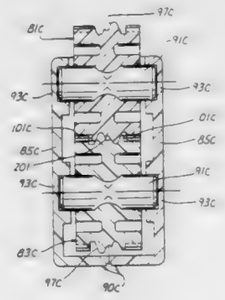
Continuation-in-part of Ser. No. 788,338, Nov. 6, 1991. This application Jan. 25, 1993, Ser. No. 8,774

Int. Cl.[5] A61M *37/00*

U.S. Cl. 606—108 **28 Claims**







1. A controller for moving an elongated medical instrument in a catheter, said controller comprising:

a supporting structure including a mounting section adapted to be coupled to a catheter and a drive section;

first and second wheels, each of said wheels having a peripheral surface;

each of said peripheral surfaces having an instrument groove portion;

one of said wheels having a circumferentially extending recess in its peripheral surface and another of said wheels providing a circumferentially extending projection; and

said wheels being rotatably mounted on the drive section with the peripheral surfaces in generally confronting relationship and with the instrument groove portions being in confronting relationship to provide an instrument groove which is sized to receive an elongated medical instrument, the projection being in the recess and the recess extending circumferentially sufficiently so that the recess and projection maintain the instrument groove portions of the wheels in a desired alignment as the wheels rotate.

5,346,499

DEPILATION APPARATUS AND METHOD USING A VIBRATION MEMBER TO AFFECT THE FUNCTION OF NERVES IN THE SKIN

Andreas J. Garenfeld, Eindhoven, and Robert H. Munnig Schmidt, Groningen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

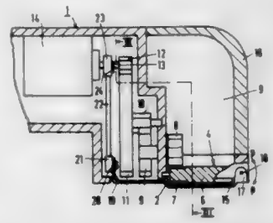
Continuation of Ser. No. 808,332, Dec. 16, 1991. This application May 3, 1993, Ser. No. 56,596

Claims priority, application Netherlands, Feb. 28, 1991, 9002770

Int. Cl.[5] A45D *26/00*

U.S. Cl. 606—133 **16 Claims**

1. A depilation method whereby hairs are gripped and pulled from the skin by means of a depilation member, wherein immediately prior to depilation a vibration member which is driven by a motor with a movement relative to a housing to which said vibration member is attached, is brought into contact with the skin to be depilated, which vibration member exerts forces



of sufficient intensity on the skin that the function of nerves in the skin is affected.

5,346,500

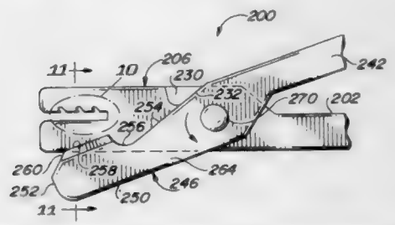
SUTURE CUTTING SCISSOR APPARATUS

Sood Suchart, 6036 N. 19th Ave., Suite 311, Phoenix, Ariz. 85015

Filed Feb. 16, 1993, Ser. No. 18,234

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—138 **17 Claims**



1. Scissor apparatus for holding and cutting sutures extending outwardly from a sutured skin surface, comprising, in combination:

holder blade means, including

a holder blade having a planar bottom surface to be disposed on the sutured skin surface and a planar top surface parallel to the planar bottom surface,

holder handle means secured to the holder blade for positioning the holder blade relative to sutures to be cut,

a slot in the holder blade for receiving sutures to be cut, and

notch means in the slot for receiving sutures to be cut; and

cutter blade means pivotally secured to the holder blade means, including

a cutter blade for cutting the sutures received in the slot of the holder blade means, and

cutter handle means secured to the cutter blade for moving the cutter blade relative to the holder blade to cut the sutures in the slot of the cutter blade.

5,346,501

LAPAROSCOPIC ABSORBABLE ANASTOMOSIC FASTENER AND MEANS FOR APPLYING

Donald W. Regula, Belle Meade; Michael F. Bregen, Lebanon, both of N.J.; Zoltan Szabo, San Francisco, and Barry N. Gardiner, Orinda, both of Calif., assignors to Ethicon, Inc., Somerville, N.J.

Filed Feb. 5, 1993, Ser. No. 14,019

Int. Cl.[5] A61B *17/00*

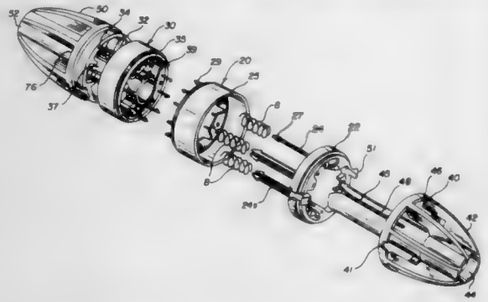
U.S. Cl. 606—151 **30 Claims**

1. In combination: an anastomotic coupler mechanism having a hollow tubular interior and

an applier comprising a tubular shaft with proximal and distal ends and defining an axis for placement within said hollow interior;

a retaining mechanism at said distal end having a first position for holding said shaft within said hollow tubular interior; and

an activating mechanism located at said shaft proximal end, capable of activating said retaining mechanism to cause said retaining mechanism to move from its first position to



a second position wherein said coupler may be released from said shaft; and wherein said activating mechanism is a push button means which is connected to said retaining mechanism, and said push button means capable of causing said retaining mechanism to move from said first position transverse to said shaft to said second position.

5,346,502

LAPAROSCOPIC ULTRASONIC SURGICAL INSTRUMENT AND METHODS FOR MANUFACTURING THE INSTRUMENTS

Brian K. Estabrook, Foxboro; Stephen DiMatteo, Seekonk, both of Mass.; Lionel J. Motta, Coventry, R.I., and John C. Wright, Mystic, Conn., assignors to Ultracision, Inc., Smithfield, R.I.

Filed Apr. 15, 1993, Ser. No. 46,852

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—169 **41 Claims**



1. Ultrasonic surgical apparatus comprising:

an elongated shaft having a proximal end and a surgical blade at a distal end;

said proximal end, said shaft and said blade being one-piece integral construction and adapted to transmit ultrasonic energy therealong from said proximal end to said blade; and

a sheath extending about and generally radially spaced from said shaft;

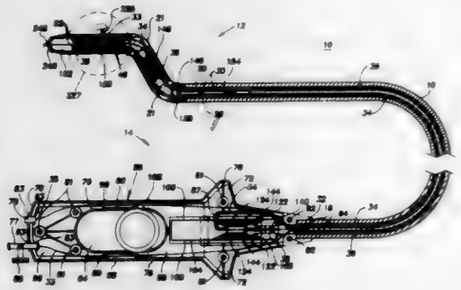
the largest lateral dimensions of said proximal end and said blade being greater than the smallest internal diameter of said sheath.

5,346,503
CUTTING INSTRUMENTS FOR ENDOSCOPIC SURGERY
James C. Chow, 3001 Caroline Dr., Mt. Vernon, Ill. 62864
Division of Ser. No. 622,451, Dec. 5, 1990, abandoned, which is a division of Ser. No. 502,217, Mar. 30, 1990, Pat. No. 5,029,573.
This application Jan. 6, 1993, Ser. No. 1,386
Int. Cl.[5] A61B *1/00*; B26B *3/00*
U.S. Cl. 606—170 2 Claims



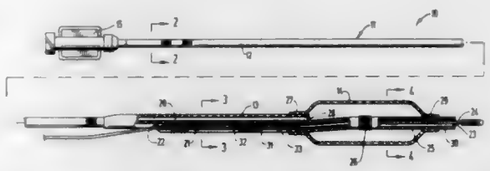
1. An endoscopic surgical cutting instrument for use on humans comprising:
an elongated handle having an operative portion extending laterally from the distal end of said handle, said operative portion being substantially at a right angle to said handle and having a distal side and a proximal side, said distal side having opposing blunt ends and a concave blade section between said blunt ends which extends to the proximal side so that said blunt ends are used to probe human tissue and the blade section is used to cut human tissue.

5,346,504
INTRALUMINAL MANIPULATOR WITH A HEAD HAVING ARTICULATING LINKS
Mark Ortiz, Milford, and Joseph Paraschac, Cincinnati, both of Ohio, assignors to Ethicon, Inc., Somerville, N.J.
Filed Nov. 19, 1992, Ser. No. 979,501
Int. Cl.[5] A61B *1/26*
U.S. Cl. 606—192 28 Claims



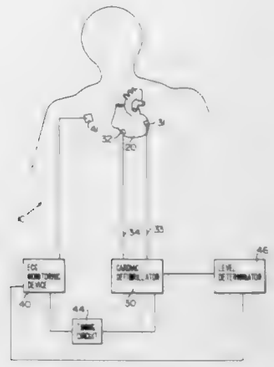
1. An intraluminal manipulator comprising a head, a handle and a motion transfer means connecting said head to said handle, said head being movable between generally straight and generally arched configurations, said handle housing an actuation means, said motion transfer means being operable to transfer motion from the actuation means to the head, whereby manipulation of the actuation means in a first manner causes the head to arch and manipulation of the actuation means in a second manner causes the head to straighten, the head being adapted to be inserted into a lumen while in a generally straight configuration and the actuation means thereafter being manipulated in said first manner, causing the head to arch, said head being adapted to engage a surface surrounding the lumen when in said arched configuration, the actuation means being manipulated in the second manner to straighten the head, disengaging the head from the surface surrounding the lumen and thereby allowing removal of said head from the lumen and wherein a shaft interconnects the handle and the head, said shaft having a plurality of inner longitudinal channels formed therethrough which provide a communication path between the handle and the head from the motion transfer means, said actuation means comprising a trigger, said handle comprises first and second body sections, said first and second body sections defining an inner chamber and a central aperture, said trigger having an inner end which is received by the inner chamber and an outer end which extends into the central aperture and wherein the second body section comprises a pair of ratchets, said ratchets having front and rear portions, said front portion including teeth which point in a first direction and said rear portion including teeth which point in a second direction.

5,346,505
EASILY EXCHANGEABLE CATHETER SYSTEM
Andrew R. Leopold, Sunnyvale, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.
Continuation of Ser. No. 712,088, Jun. 7, 1991, Pat. No. 5,154,725. This application Jul. 28, 1992, Ser. No. 920,795
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—194 12 Claims



1. A readily exchangeable balloon dilatation catheter comprising:
a) an elongated, high strength proximal tubular member which is formed of hypotubing, which has proximal and distal ends and which has an inner lumen extending therein;
b) a flexible distal tubular member which is secured to the distal end of the high strength proximal tubular member, which has an inflation lumen extending longitudinally therein with a proximal end in fluid communication with the inner lumen of the high strength proximal tubular member and a distal end with an inflation port therein, and which has a guidewire receiving inner lumen extending longitudinally between a first guidewire port and a distal guidewire port in the distal end thereof, the proximal guidewire port being spaced longitudinally from the distal port in the distal end and having an entry angel of not more than about 30°; and
c) an inflatable, relatively inelastic balloon on the distal tubular member having a distal end sealingly bonded about the distal end of the distal tubular member and an interior which is in fluid communication with the inflation lumen through the inflation port thereof.

5,346,506
METHOD FOR ESTABLISHING DEFIBRILLATION THRESHOLD FOR A CARDIAC DEFIBRILLATOR
Morton M. Mower, 5501 Village Dr., #302, Edina, Minn. 55435, and Peng S. Chen, 474 Paulette Pl., La Canada, Calif. 91011
Filed Nov. 10, 1992, Ser. No. 974,049
Int. Cl.[5] A61N *1/39*
U.S. Cl. 607—7 1 Claim



1. A method of determining a defibrillation threshold, said method comprising the steps of;
implanting defibrillation electrodes on or about the heart;
observing the electrical activity of the heart so as to determine the occurrence of ventricular depolarization, such that the periodic occurrence of the mid-upslope of the T-wave (ventricular repolarization) may be determined;
applying an initial electrical test shock to the heart through said defibrillation electrodes with an energy level which is a best a priori estimate of the 50% probability of reaching the upper limit of vulnerability;
sensing for the occurrence of ventricular fibrillation following application of said initial electrical test shock;
applying a subsequent electrical test shock to the heart via said defibrillation electrodes reduced in magnitude by a predetermined amount from initial test shock, if ventricular fibrillation has not occurred as a result of said initial test shock;
again sensing for the occurrence of ventricular fibrillation following application of said subsequent test shock;
repeating the steps of applying subsequent electrical test shocks each reduced in magnitude by said predetermined amount from said prior test shock, and sensing for ventricular fibrillation after each said test shock;
upon sensing ventricular fibrillation following the application of a test shock, the energy level of said test shock which causes ventricular fibrillation being considered a second data point and the energy level of the test shock prior to said test shock which causes ventricular fibrillation being considered a first data point, apply a subsequent test shock increased in magnitude by said predetermined amount from the test shock considered said second data point, said subsequent test shock being considered a third data point;
sense for the occurrence of defibrillation and deliver salvage shock if defibrillation does not occur;
if defibrillation is not sensed following said test shock considered said third data point, apply a test shock increased in magnitude by said predetermined amount from said test shock considered said third data point, said test shock being considered a fourth data point;
again sense for ventricular fibrillation and deliver a salvage shock if defibrillation has not occurred; if ventricular fibrillation is sensed a fifth data point is predicted to be of increased magnitude by said predetermined amount from said shock considered said fourth data point; if ventricular fibrillation is not sensed then a fifth data point in predicted to be of decreased magnitude by said predetermined amount from said shock considered said fourth data point;
if defibrillation has occurred following the application of the test shock considered said third data point, apply a test shock decreased in magnitude by said predetermined amount, said test shock being considered a fourth data point;
again sense for ventricular fibrillation and deliver a salvage shock if ventricular fibrillation occurs; if ventricular fibrillation is sensed said fifth data point is predicted to be of increased magnitude by said predetermined amount from said fourth data point; if ventricular fibrillation is not sensed then said fifth data point is predicted to be of decreased magnitude by said predetermined amount from said fourth data point; and,
use the average of said five data points as the shock strength associated with 50% probability of successful defibrillation, for establishing the defibrillation threshold.

5,346,507
INTRAOCULAR LENS AND A POLYMER COMPOSITION FOR MAKING SAME
Svyatoslav N. Fedorov, pereulok Dostoevskogo, I/2I,kv.32; Leonid F. Linnik, ulitsa Deguninskaya,17,kv.36, both of Moscow; Givi D. Shimshlashvili, ulitsa Machabeli,II., Tbilisi; Valentina S. Starshinova, Karelsky bulvar,24,kv.75., Moscow; Pavel P. Zak, Telegrafny pereulok,II/I6,kv.6I., Moscow; Mikhail A. Ostrovsky, ulitsa 26 Bakinskikh komissarov-,II,kv.90., Moscow; Irina B. Fedorovich, ulitsa Dmitria Ulyanova,3,kv.I46., Moscow; Valentina A. Roslyakova, ulitsa Griboedova,21,kv.22.; Valentin V. Guzeev, prospekt Pobedy-,I/2,kv.I5., both of Dzerzhinsk; Alexandr I. Dyachkov, ulitsa Kljukvina,5,kv.39., Gorkovskaya oblast, Dzerzhinsk; Irina I. Afanasieva, ulitsa Uritskogo,I2-a,kv.50., Gorkovskaya oblast, Dzerzhinsk; Vera S. Ljusina, ulitsa Stroitelei,3,kv.I3I., Gorkovskaya oblast, Dzerzhinsk, and Evgeny I. Degtev, Yaroslavskoe shosse,14,kv.34., Moscow, all of U.S.S.R.
PCT No. PCT/SU89/00201, § 371 Date Apr. 3, 1991, § 102(e) Date Apr. 3, 1991, PCT Pub. No. WO91/01696, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 27, 1989, Ser. No. 671,716
The portion of the term of this patent subsequent to Mar. 13, 2010, has been disclaimed.
Int. Cl.[5] A61F *2/16*
U.S. Cl. 623—6 1 Claim

1. An intraocular lens comprising a UV-absorbing optic lens comprising polymethylmethacrylate, 4-alkoxy-2-hydroxybenzophenone or tetraoxybenzophenone as a UV-absorbing material, 4-(2,4-dimethylphenylazo)-5-methyl-2-phenyl-1,2,3-triazole, and dibutylphthalate as a plasticizer, said components being present in the following weight percent ratio:

UV-absorbing material	1.65 to 3.0
4-(2,4-dimethylphenylazo)-5-methyl-2-phenyl-1,2,3-triazole	0.011 to 0.016
dibutylphthalate	4.8 to 5.0
polymethylmethacrylate	balance

wherein the lens is made of a material having the following light transmission spectrum in its visible portion at the following wave lengths:
400 nm—10 to 27 percent of light transmission;
420 nm—21 to 37 percent;
440 nm—37 to 55 percent;
460 nm—52 to 63 percent;
480 nm—70 to 78 percent;
500 nm—85 to 90 percent; and
520–650 nm—90 to 95 percent.

5,346,508

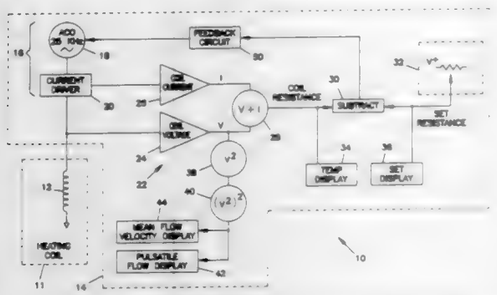
APPARATUS AND METHOD FOR PERFORMING DIAGNOSTICS AND INTRAVASCULAR THERAPIES

Roger Hastings, Burnsville, Minn., assignor to SCIMED Life Systems, Inc., Maple Grove, Minn.

Filed Apr. 29, 1993, Ser. No. 55,702

Int. Cl.[5] A61B *5/026*

U.S. Cl. 607—99 **15 Claims**



1. An apparatus for performing intravascular therapy comprising:

a catheter having a shaft and a balloon attached to a distal portion of the shaft wherein the interior of the balloon communicates with an inflation lumen in the shaft used to deliver inflation fluid to the interior of the balloon;

a controlled signal source for generating a variable driving signal;

a heating element located in the interior of the balloon, the heating element communicating with the signal source which receives the variable driving signal and heat the inflation fluid within the balloon;

a current meter communicating with the heating element which measures the current flowing through the heating element;

a voltage meter communicating with the heating element to measure the voltage across the heating element;

a divider circuit communicating with the current meter and the voltage meter which generates a measured signal;

a subtractor circuit communicating with the measure signal which compares the measured signal with a desired signal and generates an output signal representative of the comparison; and

a feedback circuit communicating with the subtractor circuit to receive the output of the subtractor circuit and generate an output signal having an exponential relation to the output of the subtractor circuit, the output of the feedback circuit communicating with the signal source to vary the driving signal delivered to the heating element;

wherein the shaft of the catheter includes an inner tubular member extending through the interior of the balloon, an outer tubular member concentrically located around the exterior of the inner tubular member wherein the inflation lumen is formed between the outer and inner tubular members, wherein the heating element is supported on the inner tubular member.

5,346,509

PROCESS FOR DYEING HAIR BY THE SEQUENTIAL TREATMENT OF HAIR WITH METAL ION-CONTAINING COMPOSITION AND WITH A DYE COMPOSITION CONTAINING 5,6-DIHYDROXYINDOLE-2-CARBOXYLIC ACID AND CERTAIN DERIVATIVES THEREOF

Thomas M. Schultz, Highland Mills, N.Y.; Keith C. Brown, New Canaan; Leszek J. Wolfram, Stamford, both of Conn., and Giuseppe Prota, Napoli, Italy, assignors to Clairol Incorporated, Stamford, Conn.

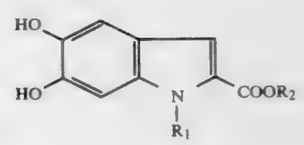
Continuation of Ser. No. 846,966, Mar. 6, 1992, abandoned, which is a continuation of Ser. No. 629,181, Dec. 21, 1990, abandoned, which is a continuation of Ser. No. 371,697, Jun. 23, 1989, abandoned, which is a continuation of Ser. No. 193,389, May 12, 1988, abandoned. This application Apr. 14, 1993, Ser. No. 46,462

Int. Cl.[5] A61K *7/13*

U.S. Cl. 8—423 **8 Claims**

1. A process for dyeing human hair a brown color, the process consisting of the steps set forth below:

(a) applying to the hair an aqueous buffered hair dye composition having a pH of from about 3 to about 10, said hair dye composition consisting essentially of from about 0.01 to about 5% by weight of a colorant having the structure:



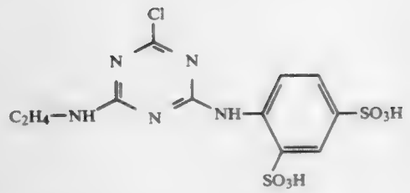
wherein R_1 is hydrogen, benzyl or an alkyl of from 1 to 6 carbon atoms and R_2 is hydrogen, benzyl or an alkyl substituent group;

(b) applying an aqueous composition consisting essentially of a transition metal ion selected from the group consisting of Cu^{+2}, Fe^{+2}, Fe^{+3}, Co^{+2}, Mn^{+2} and Ti^{+2} to the hair for a period of time sufficient to deposit on the hair an amount of said metal ion effective to promote the conversion of the colorant of structure I to a melanin-type pigment,

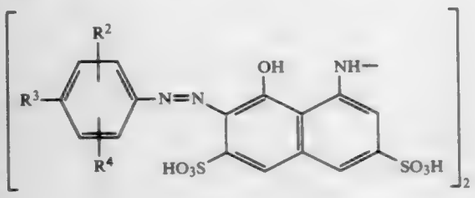
said step (a) being conducted before or after the conduct of step (b), and

(c) optionally rinsing the hair with water following steps (a) and (b),

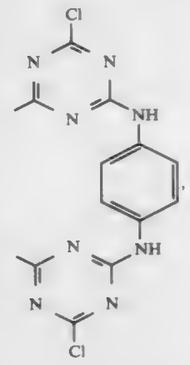
the hair following the completion of the process having a brown color tone.



and a dye of the formula II



(II)



where

one of the two radicals R^2 and R^3 is methoxy and the other is hydroxysulfonyl, and

R^4 is hydrogen or hydroxysulfonyl.

5,346,510

MIXTURES OF REACTIVE DYES

Reinhold Krallmann, Weisenheim; Regina Laws, Heppenheim, and Wolfgang Schrott, Boehl-Iggelheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

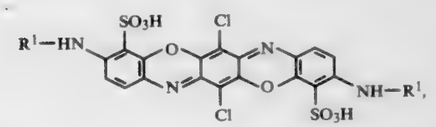
Filed Oct. 13, 1993, Ser. No. 134,908

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1992, 4234621

Int. Cl.[5] C09B *67/00, 62/04*

U.S. Cl. 8—638 **4 Claims**

1. Dye mixtures comprising the dye of the formula I



(I)

where R^1 is in each instance the radical of the formula

5,346,511

ANTIFOAM/DEFOAMER COMPOSITIONS FOR BAYER PROCESS

Peter A. Dimas, Wheaton, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

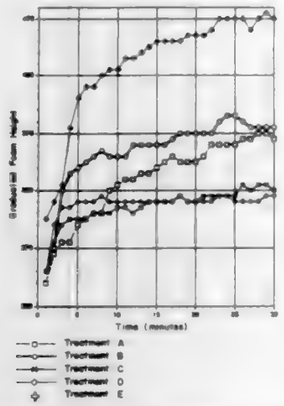
Filed Mar. 12, 1993, Ser. No. 30,745

Int. Cl.[5] B01J *19/00;* **C01F** *7/04, 7/06, 7/08*

U.S. Cl. 23—293 R **4 Claims**

1. A method for reducing foam in a Bayer process liquor, the method comprising the steps of adding to the Bayer process liquor an effective amount of an antifoam/defoamer composi-

tion comprising a polyoxyalkylated glycerol and a polyhydric alcohol fatty acid ester, wherein the effective amount of the



antifoam/defoamer composition added to the Bayer process liquid reduces foam in the Bayer process liquor.

5,346,512

CARBON TREATMENT OF RECLAIMED AMMONIUM PERCHLORATE

Kathryh F. Miks, North Ogden; Dennis J. Fife, Brigham City, and Steven J. Bradley, North Ogden, all of Utah, assignors to Thiokol Corporation, Ogden, Utah

Filed Aug. 5, 1993, Ser. No. 102,584
Int. Cl.[5] C01C *1/28*
U.S. Cl. 23—302 A **17 Claims**



1. A process of reclaiming ammonium perchlorate comprising the steps of:
(a) obtaining an ammonium perchlorate solution;
(b) contacting the ammonium perchlorate solution with activated carbon; and
(c) recrystallizing the ammonium perchlorate solution.

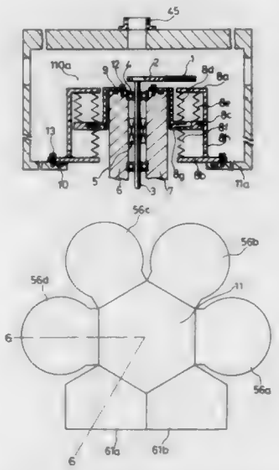
5,346,513

METHOD FOR PRODUCING SEMICONDUCTOR DEVICE USING A VACUUM SEALING MECHANISM HAVING INNER AND OUTER BELLOWS

Takao Taniguchi, and Hiroshi Satou, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 854,875, Mar. 23, 1992, Pat. No. 5,266,119. This application May 24, 1993, Ser. No. 65,756
Claims priority, application Japan, May 13, 1991, 3-138490
Int. Cl.[5] C23C *16/00*; H01L *21/306, 21/68*
U.S. Cl. 29—25.01 **8 Claims**

1. A method for producing a semiconductor device using an apparatus comprising:
a spare chamber;
a reaction chamber;
a carrier chamber having an opening and capable of being vacuum sealed;
a carrier member comprising a substrate holder, an arm member, and means for carrying a substrate which vertically reciprocates in the opening of said carrier chamber; and
a sealing mechanism fixed to said carrier member and including a flange having opposed first and second surfaces and an air inlet, an inner bellows and an outer bellows attached to the first surface of said flange and to said carrier member and forming a ring-shaped space between them, the air inlet opening into the ring-shaped space, and a second bellows attached to the second surface of said flange and said carrier chamber;
said production method comprising:



evacuating said spare chamber and said carrier chamber and carrying a semiconductor substrate from said spare chamber to said carrier chamber;
evacuating said carrier chamber and said reaction chamber to a low vacuum and carrying said semiconductor substrate from said carrier chamber to said reaction chamber;
treating said semiconductor substrate in said reaction chamber;
evacuating said reaction chamber and said carrier chamber and carrying said semiconductor substrate from said reaction chamber to said carrier chamber; and
bringing said carrier chamber and said spare chamber to atmospheric pressure and carrying said semiconductor substrate from said carrier chamber to said spare chamber.

5,346,514

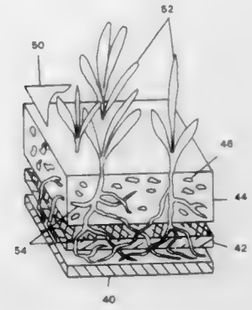
VERSATILE PLANT SOD MAT AND METHOD FOR PROPAGATION

Charles I. Molnar, and Judith R. Molnar, both of 12 Malvern Ct., Devon, Wilmington, Del. 19810

Continuation-in-part of Ser. No. 716,208, Jun. 17, 1991, Pat. No. 5,224,290. This application Jun. 30, 1993, Ser. No. 85,643
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.[5] A01C *1/04*; A01G *7/00*; A01B *79/00*
U.S. Cl. 47—58 **20 Claims**

1. A new and improved plant sod mat comprising the following:
a. a nylon sod reinforcement wherein said nylon sod reinforcement comprises a nylon nonwoven fabric with a fabric basis weight of less than 2 opsy;

b. a layer of planting medium on said nylon sod reinforcement and;



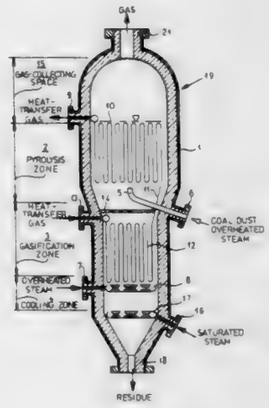
c. viable plants growing in said planting medium and whose roots penetrate and entangle with said nylon sod reinforcement and thus form a sod mat.

5,346,515

FLUIDIZED BED GAS GENERATOR FOR ALLOTHERMIC GASIFICATION OF COAL

Helmut Kubiak, Herne; Hans J. Schröter, Mühlheim; Günther Gappa, Gelsenkirchen; Heinrich Kalwitzki, Essen, and Klaus Knop, Geldern, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 727,646, Jul. 9, 1991, abandoned, which is a division of Ser. No. 348,574, May 19, 1989, Pat. No. 5,064,444. This application Oct. 19, 1992, Ser. No. 963,284
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1986, 3635215
The portion of the term of this patent subsequent to Nov. 12, 2008, has been disclaimed.
Int. Cl.[5] C10J *3/56*
U.S. Cl. 48—73 **1 Claim**



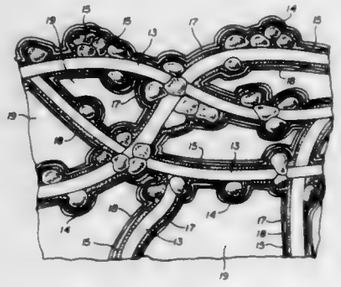
1. A fluidized bed gas generator comprising:
a cylindrical pressure tank having a vertical axis, said tank comprising:
a pyrolysis zone in an upper area of said tank provided with a set of heat exchange tubes;
a gasification zone located beneath said pyrolysis zone and provided with a set of heat exchange tubes;
a cooling zone located below said gasification zone, each of said zones lying one above another along said vertical axis;
a coal-supply device which is a supply lance leading into said pyrolysis zone and opening upwardly therein below said set of heat exchange tubes in said pyrolysis zone;
a means for supplying coal to said supply lance whereby said coal is transported with a gas;
a steam supply pipe connection leading into an inflow bottom of said gasification zone, said bottom being a hollow structure at least partially extending across said tank perpendicular to said vertical axis and having upwardly open outlets distributing steam from said supply pipe;
a further steam supply connection leading into a further inflow bottom of said cooling zone, said cooling zone being delineated between said inflow bottoms;
a downwardly tapering evacuation sluice leading from said cooling zone;
means for conducting a heat transfer gas supply into said pyrolysis and gasification zones and including a heat transfer gas supply connection leading through said gasification zone and communicating with said set of heat exchange tubes in said pyrolysis zone and with said set of heat exchange tubes in said gasification zone;
a dam permeable to gas and solids disposed between and separating said gasification and pyrolysis zones; and
a gas collecting space above said pyrolysis zone and having a gas outlet.

5,346,516

NON-WOVEN ABRASIVE MATERIAL CONTAINING HYDROGENATED VEGETABLE OILS

Robinette S. Alkhas, Rancho Cucamonga, and Michael Salyards, Hesperia, both of Calif., assignors to Tepco, Ltd., Phelan, Calif.

Filed Sep. 16, 1993, Ser. No. 122,762
Int. Cl.[5] B24B *1/00*
U.S. Cl. 51—296 **26 Claims**



1. A non-woven abrasive material comprising:
a lofty, open, three dimensional web of non-woven fibers randomly intertwined;
abrasive particles carried by said web with at least some of the particles distributed within the interior of the web;
binder material in the web bonding said fibers together and bonding said abrasive particles to the fibers;
said web containing voids constituting a substantial portion of the volume of the three dimensional web; and
hydrogenated vegetable oil in solid form coating said fibers, particles and binder material at the surface of the web and within said voids.

5,346,517

METHOD OF MANUFACTURING INSERTS PREFERABLY FOR MACHINING OF HEAT RESISTANT MATERIALS

Marianne Collin, Enskede, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed Mar. 25, 1992, Ser. No. 857,275
Claims priority, application Sweden, Mar. 25, 1991, 9100895
Int. Cl.[5] B24D *3/34*; C04B *35/52*
U.S. Cl. 51—309 **7 Claims**

1. A ceramic body cutting tool insert comprising 10–40

volume % single crystal whiskers homogeneously and essentially unidirectionally disposed in a ceramic matrix.

5,346,518

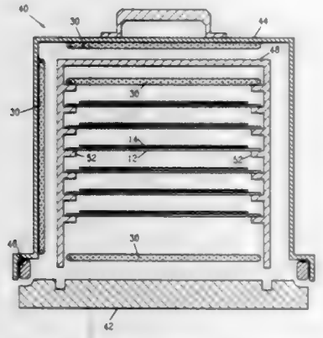
VAPOR DRAIN SYSTEM

Robert J. Baseman, Brewster, N.Y.; Charles A. Brown, Los Gatos, Calif.; Benjamin N. Eldridge, Hopewell Junction, N.Y.; Laura B. Rothman, South Kent, Conn.; Herman R. Wendt, San Jose, Calif.; James T. Yeh, Katonah, and Arthur R. Zingher, White Plains, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 23, 1993, Ser. No. 35,999

Int. Cl.[5] B65B *5/00;* **B65D** *81/26, 85/62;* **F17C** *11/00*

U.S. Cl. 55—267 **24 Claims**



1. A vapor drain system comprising:

an enclosure for holding a vapor sensitive product between processing steps of its manufacture; and

vapor removal element means disposed in said enclosure for removing contaminating vapors outgassing from a source within said enclosure, the conductance of said vapor removal element sufficiently exceeding the conductance of said source of contaminating vapors to maintain the relative vapor concentration (RVC) of said contaminating vapors in said enclosure at ten percent (10%) or less adjacent the vapor sensitive product to thereby inhibit the formation of contaminating layers on said product.

5,346,519

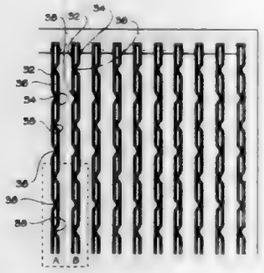
FILTER MEDIA CONSTRUCTION

Roger D. Williams, Dallas, N.C., assignor to Pneumafil Corporation, Charlotte, N.C.

Filed Apr. 27, 1993, Ser. No. 53,602

Int. Cl.[5] B01D *27/06, 29/07*

U.S. Cl. 55—489 **3 Claims**



1. Filter media for use in removing foreign matter from an air stream flowing therethrough, said filter media comprising first and second generally flat sheets of filtering material extending in generally parallel relation to one another with a spacing therebetween, said first and second sheets forming a first filter pair whereby said air stream can flow through said first and second sheets to said spacing therebetween while depositing said foreign matter on the outwardly facing surfaces of said first and second sheets, said first sheet being formed with a plurality of dimples spaced from one another along the extending length of said first sheet and projecting across said spacing to abut said second sheet, and said second sheet being formed with a plurality of dimples spaced from one another along the extending length of said second sheet and projecting across said spacing to abut said first sheet, said dimples in said first sheet being spaced from said dimples in said second sheet.

5,346,520

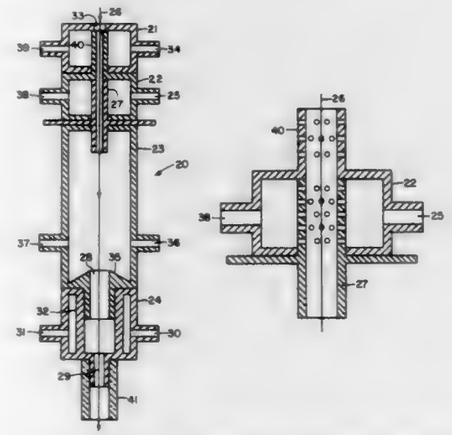
APPARATUS FOR APPLYING A CARBON COATING TO OPTICAL FIBERS

Joseph C. Meabon, Castle Hayne, N.C.; Michelle R. Tuzzolo, Wrightsville Beach, N.Y., and Eric H. Urruti, Wilmington, N.C., assignors to Corning Incorporated, Corning, N.Y.

Filed Sep. 23, 1992, Ser. No. 950,072

Int. Cl.[5] C03C *25/02;* **C03B** *37/025*

U.S. Cl. 65—423 **9 Claims**



1. A reactor vessel for applying an amorphous carbon coating to an optical waveguide fiber, comprising

means for supplying reactant gas to said reactor vessel,

an internal fiber exit port,

an angled surface extending from said internal fiber exit port to the inner perimeter of said reactor vessel,

an external fiber exit port, and

a means for providing an inert gas shield at said external fiber exit port,

wherein the inside diameter of said internal fiber exit port is chosen such that a boundary layer of gases and reaction by-products formed near the surface of said fiber is substantially undisrupted.

5,346,521

APPARATUS AND METHOD FOR FABRICATING OPTICAL FIBER COUPLER

Song-Fure Lin, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Taiwan

Filed Apr. 11, 1991, Ser. No. 683,963

Int. Cl.[5] C03B *23/04*

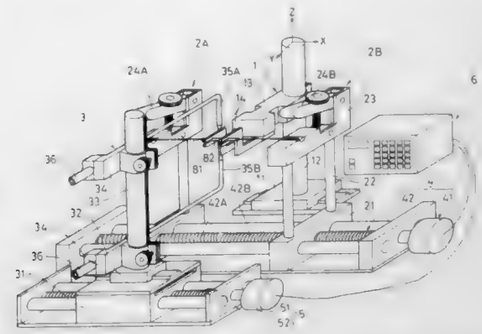
U.S. Cl. 65—407 **7 Claims**

1. An apparatus for fabricating an optical fiber coupler including an optical fiber strand having at least two segments of optical fibers which are spliced near their centers to form a spliced portion adapted to be sleeved in a quartz tube for being fused, comprising:

a holding device capable of holding thereon said quartz tube;

two pulling stages respectively disposed on two opposite sides of said holding device for respectively clipping two ends of said fiber strand for oppositely pulling said fiber strand according to a predetermined pulling mode, said pulling stages positioned such that said quartz tube will remain stationary on said holding device while said fiber strands are pulled;

a heating device including at least a torch blowpipe for indirectly heating said spliced portion through said quartz tube, and a torch holder for holding thereon said torch blowpipe;



a first driving mechanism for moving said two pulling stages toward opposite directions;

a second driving mechanism for reciprocatingly moving said torch holder to enable said torch blowpipe to reciprocatingly translate along the axial direction of said quartz tube; and

a programmable controller coupled to and for controlling said heating device, said first driving mechanism and said second driving mechanism.

5,346,522

METHOD AND APPARATUS FOR MOLDING OPTICAL GLASS ELEMENTS OR THE LIKE

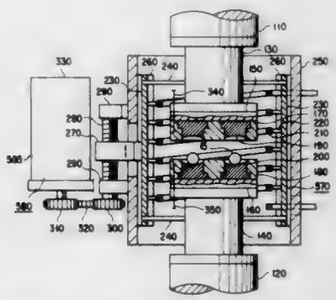
Yoshizo Komiyama, Gotenba; Fumio Arai, Numazu; Yutaka Hasegawa, Numazu; Tetsuya Tanioka, Numazu; Hisataka Sugiyama, Shizuoka; Yoshiyasu Toyama, Numazu, and Fusao Nakanishi, Fuji, all of Japan, assignors to Toshiba Machine Co., Ltd., Tokyo, Japan

Filed Jul. 2, 1993, Ser. No. 85,033

Claims priority, application Japan, Jul. 3, 1992, 4-200579

Int. Cl.[5] C03B *23/00*

U.S. Cl. 65—64 **29 Claims**



1. An apparatus for molding optical glass elements, or the like comprising:

a pair of molds, upper and lower, arranged in a mutually opposed relation;

heating means, provided around these molds, for heating the upper and lower molds and a glass blank placed between these molds;

mold moving means for enabling the upper and lower molds which are heated by the heating means to be set in press-contact with each other and for press-molding the glass blank between these molds;

supporting means for supporting the heating means along a direction in which the mold is moved by the mold moving means; and

moving means for allowing the heating means which is supported by the supporting means to be adjustably moved relative to the mold.

5,346,523

METHOD OF MOLDING CHALCOGENIDE GLASS LENSES

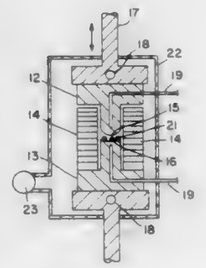
Masakatsu Sugai, Amagasaki; Yasuo Mizuno, Hirakata; Masaki Ikeda, Hirakata, and Akihiko Yoshida, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 31, 1993, Ser. No. 40,412

Claims priority, application Japan, Mar. 31, 1992, 4-076490; Feb. 8, 1993, 5-019803

Int. Cl.[5] C03B *11/12*

U.S. Cl. 65—102 **4 Claims**



1. A method of molding a chalcogenide glass lens, comprising the steps of:

providing a mold assembly having a mold cavity which includes a pair of molds having different curvature radiuses,

placing a block of chalcogenide glass within said cavity,

heating said pair of molds having different curvature radiuses from each other and said block of chalcogenide glass, in such manner that the temperature of the mold having smaller curvature radius is higher than the temperature of the other mold,

pressing said block of chalcogenide glass to form a molded chalcogenide glass lens, and

removing the molded chalcogenide glass lens from said mold assembly.

5,346,524

OXYGEN/FUEL FIRING OF FURNACES WITH MASSIVE, LOW VELOCITY, TURBULENT FLAMES

Donald E. Shamp, Millbury, Ohio; Thomas F. Stark, Littleton, Colo., and Harry E. Swisher, Jr., Parkersburg, W. Va., assignors to Schuller International, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 944,551, Sep. 14, 1992, abandoned. This application Feb. 9, 1993, Ser. No. 15,491

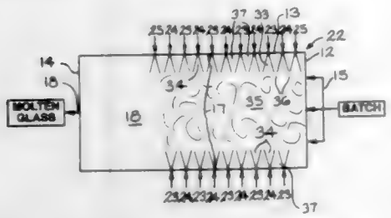
Int. Cl.[5] C03B *5/16*

U.S. Cl. 65—134.4 **14 Claims**

1. In a process of heating a material in a furnace by combusting a gaseous fuel with an oxidant containing at least 90% oxygen and exhausting the products of combustion, the improvement comprising:

introducing the oxidant and gaseous fuel into the furnace through separate nozzles spaced apart at least ten inches in a common wall from one another such that the oxidant stream does not contact the fuel stream in enough concentration to generate substantial combustion until a safe distance from the walls or roof, using at least three of said nozzles with the number of oxidant nozzles being at least

equal to the number of fuel nozzles, and positioning said nozzles such that each oxidant nozzle is adjacent to at least



one fuel nozzle and operating said nozzles to form a flame cloud covering at least 70% of said material in the portion of the furnace containing said nozzles.

5,346,525

TAKE OUT DEVICE

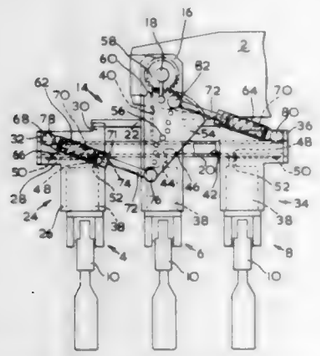
Vladimir Vajda, Nussbaumen, and Horst W. Müller, Diessenhofen/TG, both of Switzerland, assignors to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Jan. 13, 1993, Ser. No. 3,546

Claims priority, application United Kingdom, Jan. 23, 1992, 9201401.8

Int. Cl.[5] C03B *9/44*

U.S. Cl. 65—260 **4 Claims**



1. A takeout device for picking up formed glass containers from blow molds of a glassware forming machine and depositing the picked up containers on a dead plate of the machine comprising

first and second takeout tongs, a support,

said first takeout tong secured to said support,

means secured to said support for supporting said second takeout tong for displacement from a first position, defining a first spacing with said first takeout tong, to a second position, defining a second spacing with said first takeout tong,

a pivotally displaceable transfer arm,

a shaft secured to said transfer arm for supporting said support for rotation relative to said transfer arm,

a pinion secured to said shaft,

a gear segment pivotally secured to said support for rotation about an axis and in operative engagement with said pinion,

a link having first and second ends, said link pivotally secured at said first end to said second takeout tong and pivotally secured at said second end to said gear segment at a first location spaced from said axis so that rotation of said transfer arm through a selected angle will conjointly rotate said gear segment and displace said link to move said second takeout tong from said first position to said second position.

5,346,526

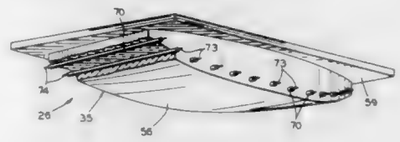
APPARATUS FOR BENDING GLASS SHEETS

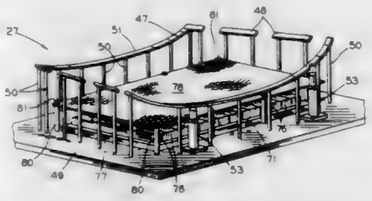
Jeffrey R. Flaugher, Carlton; Timothy A. Nissen, Northville, both of Mich.; Vincent N. Procaccini, Toledo, and Sugato Deb, Perrysburg, both of Ohio, assignors to Libbey-Owens-Ford Co., Toledo, Ohio

Division of Ser. No. 817,784, Jan. 8, 1992, Pat. No. 5,279,635. This application Aug. 19, 1993, Ser. No. 108,238

Int. Cl.[5] C03B *23/03*

U.S. Cl. 65—273 **3 Claims**





1. Apparatus for press bending glass sheets comprising, a furnace for heating a sheet of glass to substantially the softening point thereof, conveyor means for supporting and conveying said heated sheet along a generally horizontal path from said furnace toward and between opposed lower and upper horizontally disposed press members located outside said furnace and having complemental shaping surfaces, said lower press member including a ring-type shaping rail mounted upon a base and having an upwardly directed peripheral shaping surface, said upper press member including a refractory shaping element having a continuous shaping surface complementary to said shaping surface of said lower press member, an array of elongated radiant heating strips mounted on said base beneath said shaping rail and aligned generally parallel to the path of movement of said sheet, means for individually regulating the heat output of each said radiant heating strip for establishing a predetermined temperature profile across the array of heating strips, a plurality of spaced, elongated electrical resistance-type heating elements embedded in said refracting shaping element of said upper press member, said heating elements being spaced across said shaping element and aligned generally parallel to said path of movement and to said shaping surface, and means for regulating the power supplied to each said heating element for providing a predetermined temperature across said shaping surface.

5,346,527

SOIL TREATMENT

Gerald L. Rehbein, White Bear Lake, and Paul D. Montain, Lino Lakes, both of Minn., assignors to L & G Rehbein, Inc., Centerville, Minn.

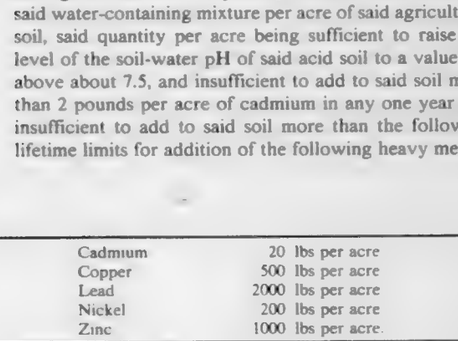
Filed Jan. 22, 1991, Ser. No. 644,956

Int. Cl.[5] C05F *17/00*

U.S. Cl. 71—12 **20 Claims**

1. A method for treating agricultural soil having a soil-water acid pH below 6.5 and a plant-available phosphorus level not over about 400 pounds per acre with sewage sludge ash in admixture with water treatment lime so as to enhance the nutrient value and raise the pH of the soil for improved plant growth, while simultaneously minimizing the risk of wind blown ash dust, comprising

(a) mixing tonnage quantities of sewage sludge ash having, by weight, a solids ash content between 35 and 100 percent and a water content between zero and 65 percent with water treatment lime having, by weight, a solids lime content between 10 and 70 percent and a water content between 30 and 90 percent, said mixing being at a site remote from said agriculture soil to be treated and being sufficient to form a relatively uniform mixture characterized by containing sufficient water to cause said mixture to exhibit a liquid or pasty spreadable consistency, said mixture being further characterized by having a water content of at least 25 percent and not over 75 percent by weight, and by having a weight ratio between about two and six parts of sewage sludge ash solids to one part by



weight of water treatment lime solids, said weight ratio being predetermined from a preliminary analysis of the agricultural soil contemplated for treatment to determine the preexisting pH and plant-available phosphorous levels of said soil, the ratio of said ash solids to said lime solids being reduced commensurately with a reduced pH of the soil to be treated with said mixture, and said ash solids having a constituent content including phosphorus and potassium, said constituent content of the following heavy metals, if present, being such as not to exceed the following approximate weight percentages of said ash solids:

Cadmium	0.02%
Copper	1.40%
Lead	0.26%
Nickel	0.10%
Zinc	1.40%

(b) transporting said mixture from said mixing site to the agricultural soil on which said mixture is to be applied,

(c) spreading said mixture in a relatively uniform manner on said agricultural soil at a quantity between 2 and 70 tons of said water-containing mixture per acre of said agricultural soil, said quantity per acre being sufficient to raise the level of the soil-water pH of said acid soil to a value not above about 7.5, and insufficient to add to said soil more than 2 pounds per acre of cadmium in any one year and insufficient to add to said soil more than the following lifetime limits for addition of the following heavy metals:

Cadmium	20 lbs per acre
Copper	500 lbs per acre
Lead	2000 lbs per acre
Nickel	200 lbs per acre
Zinc	1000 lbs per acre.

5,346,528

CONTINUOUS AUTOMATIC STEEL MAKING METHOD AND FACILITY

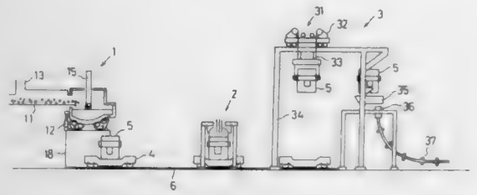
Koichi Takashima, Toyonaka, and Shoji Nakamura, Ena, both of Japan, assignors to Kyoei Steel Co., Ltd., Osaka, Japan

Filed Mar. 3, 1993, Ser. No. 27,243

Claims priority, application Japan, Sep. 18, 1992, 4-275456; Sep. 22, 1992, 4-278005

Int. Cl.[5] C22B *4/00*

U.S. Cl. 75—10.15 **21 Claims**



1. An automatic method of making steel, said method comprising the steps of:

charging steel making materials into an electric furnace and melting the steel making materials using heat,

tapping molten steel from the electric furnace,

delivering the tapped molten steel into a ladle loaded on a conveyor car located at a position associated with the electric furnace,

moving the conveying car, on which the ladle containing the molten steel is mounted, into a second position associated with a continuous casting machine,

moving the ladle containing the molten steel from the conveying car at said second position to a position above a tundish, and subsequently returning the conveying car to the position associated with the electric furnace,

pouring molten steel from the ladle into the tundish,

continuously casting the molten steel poured into the tundish, and

continuously controlling control devices of the electric furnace, the conveying car, and the continuous casting machine with a master controller such that said steps are coordinated with one another.

5,346,529

POWDERED METAL MIXTURE COMPOSITION

Björn O. A. Pettersson, Huntsville, Ala., assignor to Tecsyn PMP, Inc., Huntsville, Ala.

Filed Mar. 23, 1992, Ser. No. 855,881

Int. Cl.[5] B22F *1/00*

U.S. Cl. 75—252 **1 Claim**

1. A powdered metal mixture comprising:

(a) between 0.9 and 1.3% by weight of graphite;

(b) between 0.8 and 3.0% by weight of copper;

(c) between 0.01 and 5.0% by weight of a solid lubricant selected from the group consisting of manganese sulphide, graphite, selenium, bismuth, and tellurium;

(d) up to 98.3% by weight of iron having an average particle size of substantially 100 mesh with an oxide content less than 0.3% by weight; and

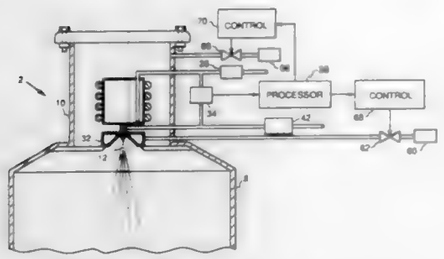
(e) between 0.01 and 50% by weight of a powdered tool steel alloy selected from those commercially available powders designated by the American Steel and Iron Institute as M2, M3, and T15.

5,346,530

METHOD FOR ATOMIZING LIQUID METAL UTILIZING LIQUID FLOW RATE SENSOR

Steven A. Miller, Amsterdam, and Neil A. Johnson, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 5, 1993, Ser. No. 42,911
Int. Cl.[5] B22F *9/00*
U.S. Cl. 75—331 30 Claims



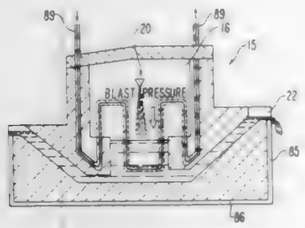
1. A method for controlling the melt flow rate of a melt when atomizing liquid metal comprising the steps of:
providing a liquid metal supply vessel coupled to a nozzle for directing a stream of the liquid metal therefrom;
providing atomizing gas converging in the stream as it exits the nozzle;
providing at least one gas flow into the liquid metal contained in the vessel;
sensing a pressure difference between the gas flow and the pressure outside the vessel;
calculating a flow rate of the stream from the pressure difference;
providing a flow control, operatively connected to the gas flow in the liquid melt vessel, for adjusting the flow rate of the stream; and
selectively adjusting the flow control in response to the determined pressure difference.

5,346,531

SLAG SEPARATOR

Frederick T. Streets, Sidney, Ohio, assignor to Honda of America Mfg., Inc., Ohio

Continuation-in-part of Ser. No. 899,372, Jun. 16, 1992, Pat. No. 5,246,483. This application May 21, 1993, Ser. No. 64,442
Int. Cl.[5] C21C *1/00*
U.S. Cl. 75—582 35 Claims



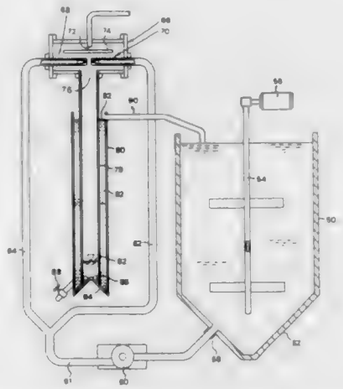
1. A slag separator for receiving a molten metal or alloy and slag mixture from a cupola and separating the metal or alloy from the slag, comprising:
a settling means comprising at least one chamber for receiving said molten metal or alloy and slag mixture from said cupola;
a refractory material lining said chamber to protect said chamber from mechanical, thermal, or chemical characteristics of said molten mixture;
fluid cooling means surrounding said refractory material to reduce the temperature of said refractory material to reduce the erosion of the refractory material caused by the mechanical, thermal, or chemical characteristics of the molten mixture; and
means for separating said metal or alloy from said slag.

5,346,532

PROCESS AND APPARATUS FOR RECOVERING METAL VALUES FROM ORE

Ian M. Sinclair, 19 Marico Road, Emmarentia, Johannesburg, Transvaal, and Henry A. Simonsen, 43 Ann Arbor Place, Glendower, Edenvale, Transvaal, both of South Africa

Filed Jun. 2, 1993, Ser. No. 70,719
Claims priority, application South Africa, Jun. 2, 1992, 92/4013
Int. Cl.[5] C22B *3/00, 3/02*
U.S. Cl. 75—744 20 Claims



1. A process for recovering metal values from ore including the steps of:
comminuting the ore;
mixing the comminuted ore with a liquid to form a pulp; and
projecting a plurality of streams of the pulp against one another, thereby causing erosion of ore particles in the pulp.

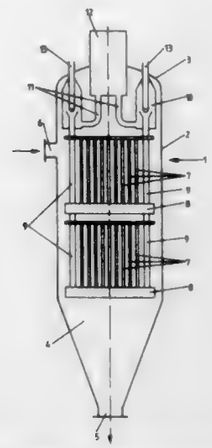
5,346,533

METHOD OF MONITORING FILTER COMPONENTS

Werner Jelich, Bochum; Heiko Rehwinkel, Bottrop; Friedrich Klauke, Ratingen; Dieter König, Hattingen, and Udo Kalthoff, Mülheim/Ruhr, all of Fed. Rep. of Germany, assignors to Deutsche Babcock Energie- und Umwelttechnik Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Jul. 28, 1993, Ser. No. 98,595
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1992, 4226145
Int. Cl.[5] B01D *35/143*
U.S. Cl. 95—20 8 Claims

1. A method for monitoring hollow filter elements used for filtering hot and dusty gases, comprising the steps of: arranging said filter elements in groups in a filter housing; connecting each group through a single supply line with a filtered-gas line; conveying filtered gas away through said filtered gas line; injecting a filtering sweeping medium with flow in form of a gas into each supply line in cycles at higher pressure; registering a filtering cycle; recording and measuring at least one of sweeper flow and filtered gas flow; comparing a result of said measuring step with a registration of a sweeping cycle; and releasing an alarm when a difference results from said comparing step, whereby a defective filter element can be isolated and penetration of unfiltered gas into the filtered gas is prevented, each sweeping cycle being related to a change at a filtered gas side, a group having a defective filter element being excluded from sweeping and a fracture in the defective filter element becoming sealed with dust and decontamination being initiated.

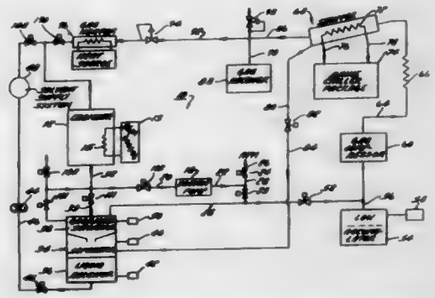


5,346,534

PROCESS FOR TREATING AN ARTICLE WITH A VOLATILE FLUID

David C. H. Grant, Selbyville, Del., assignor to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 847,262, Mar. 6, 1992, Pat. No. 5,232,476, which is a continuation-in-part of Ser. No. 581,020, Sep. 12, 1990, Pat. No. 5,106,404. This application Jun. 2, 1993, Ser. No. 71,581
Int. Cl.[5] B01D *19/00*
U.S. Cl. 95—39 8 Claims



1. A process for treating an article with a volatile fluid, which comprises:
(a) disposing the article in a chamber in a manner that admits air to the chamber;
(b) sealing the chamber;
(c) evacuating the chamber to remove substantially all of the air therefrom;
(d) introducing the fluid into the chamber so that the fluid contacts the article and fills the chamber with fluid vapors;
(e) evacuating the chamber to remove fluid vapors therefrom;
(f) drying the article by circulating a gas through the chamber;
(g) then evacuating the chamber to remove residual fluid vapors therefrom; and
(h) then opening the chamber and removing the treated article from the chamber.

5,346,535

USE OF CRYSTALLINE MOLECULAR SIEVES CONTAINING CHARGED OCTAHEDRAL SITES IN REMOVING VOLATILE ORGANIC COMPOUNDS FROM A MIXTURE OF THE SAME

Steven M. Kuznicki, Easton, Pa.; Dinh Dang, South Plainfield, N.J.; David T. Hayhurst, Willoughby, and Kathleen A. Thrush, Easton, Pa., assignors to Engelhard Corporation, Iselin, N.J.

Filed Aug. 23, 1991, Ser. No. 749,012
Int. Cl.[5] B01D *53/04*
U.S. Cl. 95—96 7 Claims

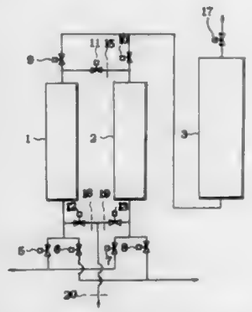
1. A cyclic process for the removal of volatile organic compounds from a mixture of the same with moist gas stream wherein said mixture is adsorbed at ambient temperature or substantially ambient temperature and is subsequently desorbed which comprises contacting said mixture with a molecular sieve containing octahedrally coordinated active sites and thereafter thermally regenerating said sieve at temperatures up to 150° C.

5,346,536

PROCESS FOR SEPARATING NITROGEN GAS

Isao Kaneshige, Kurashiki; Tsuneo Genba; Takeshi Tamaru, both of Okayama, and Tetsuhiko Matsuura, Bizen, all of Japan, assignors to Kuraray Chemical Co., Ltd., Bizen, Japan

Filed Mar. 16, 1993, Ser. No. 32,023
Claims priority, application Japan, Mar. 17, 1992, 4-092054
Int. Cl.[5] B01D *53/04*
U.S. Cl. 95—103 4 Claims



1. A process for separating nitrogen gas from a pressurized gas mixture predominantly composed of nitrogen gas and oxygen gas in a nitrogen gas separation apparatus of a pressure swing adsorption system, having at least first and second adsorbers filled with a carbon molecular sieve and a product nitrogen gas holder, the process comprising the steps of:
adsorbing oxygen gas selectively in the first adsorber, from a pressurized gaseous mixture with a carbon molecular sieve, while withdrawing nitrogen gas;
regenerating a carbon molecular sieve in the second adsorber, by releasing the adsorbed oxygen;
carrying out a transfer of the gas under pressure remaining in the first adsorber in which the adsorption step is complete, to the second adsorber in which the regeneration step is complete simultaneously through a piping connecting a raw material gas inlet of the first adsorber to a raw material gas inlet of the second adsorber or/and through a piping connecting a product nitrogen outlet of the first adsorber to a product nitrogen outlet of the second adsorber; and
selectively starting an adsorption of oxygen gas in the second adsorber in which the gas transfer step is complete and regenerating the carbon molecular sieve in the first adsorber in which the gas transfer step is complete by releasing the adsorbed oxygen simultaneously, such that said steps of the first adsorber and the second adsorber are alternatively and successively repeated;

wherein:

said gas transfer step comprises the further step of outwardly discharging part of the gas being transferred from the piping connecting the raw material gas inlet of the first adsorber and the raw material gas inlet of the second adsorber, and as required, from the piping connecting the product nitrogen gas outlet of said first and second adsorbers.

5,346,537

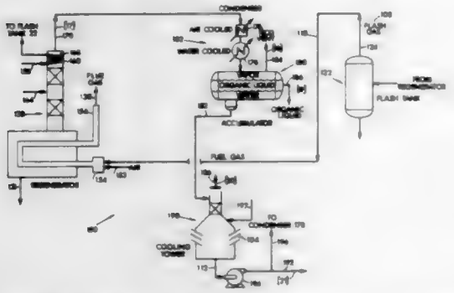
METHOD AND SYSTEM FOR CONTROLLING EMISSIONS FROM GLYCOL DEHYDRATORS

Philip S. Lowell, Austin, Tex., assignor to Gas Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 825,540, Jan. 24, 1992, Pat. No. 5,209,762. This application May 10, 1993, Ser. No. 59,490

Int. Cl.[5] B01D *53/14*

U.S. Cl. 95—161 **10 Claims**



1. In the method for extracting water from a gas stream containing quantities of water and of volatile organic compounds by contacting said gas stream with a glycol to absorb the water, and then regenerating the glycol for further use in said extracting by heating the moist glycol in a glycol regenerator to vaporize the water contained in same as steam and venting the steam and gasified volatile organics which have been absorbed by the glycol during contact with the gas stream; the improvement enabling control of emissions of said volatile organic compounds which have been absorbed by the glycol during contact with said gas stream, while minimizing contaminants in the produced water streams; comprising:

flowing the vented steam and gasified volatile organics from the glycol regenerator as input to a cooling condenser means including in series an air-cooled condenser and a downstream water-cooled condenser, said input being condensed at said condenser means into a condenser water stream having a relatively high content of said organic compounds, an organic vent gas, and an organic liquid;

passing said condenser water stream through a cooling tower in counter-current or cross-current relation to stripping air, whereby said condenser water stream is stripped of substantial parts of its organics content and emerges from the bottom of said cooling tower as a stripped water stream having relatively low content of said organics; and

utilizing at least a part of the stripped water stream for cooling said water-cooled condenser.

5,346,538

MOLDING OF SINTERED STRONTIUM/CALCIUM INDATE AND THE USE THEREOF

Winfried Becker, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

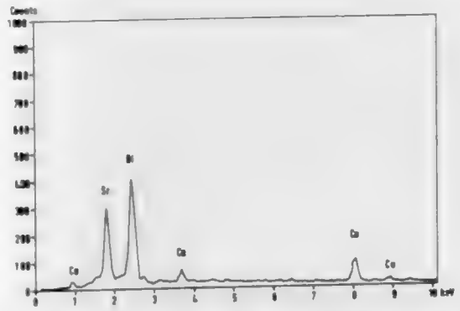
PCT No. PCT/EP89/01606, § 371 Date Jun. 27, 1991, § 102(e) Date Jun. 27, 1991, PCT Pub. No. WO90/07476, PCT Pub. Date Jul. 12, 1990

PCT Filed Dec. 23, 1989, Ser. No. 720,494

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1988, 3844208

Int. Cl.[5] B28B *7/34;* **C04B** *35/02*

U.S. Cl. 106—38.9 **8 Claims**



1. A method for using a molding for performing a chemical reaction in the presence of molten bismuth (III) oxide at temperatures of at least 800° C.; said method comprising forming a reaction vessel from the molding wherein the molding is composed of sintered indate or indate solidified from a melt of the formula $(Sr,Ca)In_2O_4$; and conducting the reaction in the vessel; wherein the bismuth (III) oxide is present in the vessel and does not react with the indate.

5,346,539

FLAME-RETARDANT ADHESIVE

Norihiro Hosoi, and Shuji Azuma, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Mar. 26, 1993, Ser. No. 37,380

Claims priority, application Japan, Jul. 26, 1991, 3-209935; Jul. 22, 1992, 4-217336

Int. Cl.[5] C09D *5/18*

U.S. Cl. 106—18.12 **6 Claims**

1. A flame-retardant adhesive comprising 100 parts by weight of a resin composition having an MI value (at 190° C.) of 30–220, 5–40 parts by weight of a chloric or bromic flame-retardant wherein said chloric flame-retardant contains 65 wt % or more of chlorine and said bromic flame-retardant contains 80 wt % or more of bromine, 1–30 parts by weight of an inorganic flame-retardant and 0.1–20 parts by weight of silica powder having an average particle diameter of 0.01 to 40 microns.

5,346,540

COLORED LEAD

Barbara Schlennert, Grosshabersdorf, Fed. Rep. of Germany, assignor to A. W. Faber-Castell Unternehmensverwaltung GmbH & Co., Stein, Fed. Rep. of Germany

Filed Feb. 1, 1993, Ser. No. 9,473

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1992, 9201503[U]

Int. Cl.[5] C09D *13/00*

U.S. Cl. 106—19 B **4 Claims**

1. A colored lead useful for colored pencils to draw a line on a carrier having a metallic and glossy effect, comprising:

a basic substance composed of at least one fatty acid;

an emulsifier;

a binder;

from 10 to 50% by weight of mica powder; and

from 10 to 50% by weight of at least one metal powder.

5,346,541

WATER DISPERSIBLE FORMULATIONS AND MATERIALS AND METHODS FOR INFLUENCING THEIR WATER DISPERSIBILITY

Leonard J. Goldman, and Susan M. Roesch, both of Gainesville, Fla., assignors to Net/Tech International, Inc., Baldwin, N.Y.

Filed Nov. 18, 1992, Ser. No. 978,219

Int. Cl.[5] C08L *1/00, 1/26*

U.S. Cl. 106—163.1 **43 Claims**

1. A water-dispersible formulation for use in manufacturing water dispersible materials consisting essentially of about 1% to about 90% by weight of a water dispersible cellulose ether binder; about 10% to about 98.99% by weight cellulose fibers and about 0.01% to about 30% by weight of a gas releasing agent, said cellulose fibers being randomly dispersed throughout said cellulose ether binder.

5,346,542

AQUEOUS DISPERSION OF ENTERIC POLYMERS AND A METHOD FOR PRODUCING THE SAME

Honda Yosuke; Tanabe Tsuneaki, and Yaginuma Yoshihito, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 6, 1992, Ser. No. 973,125

Claims priority, application Japan, Nov. 6, 1991, 3-289957

Int. Cl.[5] C08L *1/08*

U.S. Cl. 106—194 **9 Claims**

1. A latex of enteric polymers, which comprises:

i) water and

ii) enteric cellulose derivatives without ester-bonded substituents, the cellulose derivatives have anionic functional groups wherein from 0.5 to 60 mole % of the anionic functional groups are forming nontoxic salts with at least one cation selected from the group consisting of magnesium ion, calcium ion, barium ion and aluminum ion and the cellulose derivatives are globular solid particles With a diameter of 20 μm and below.

5,346,543

DEINKING AGENT FOR RECLAIMING WASTE PAPER

Yoshie Hirakouchi, Koga; Ikuo Adachi, Yotsukaidou, and Yoshiaki Nagai, Tokyo, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Oct. 13, 1993, Ser. No. 135,909

Claims priority, application Japan, Oct. 15, 1992, 4-277531

Int. Cl.[5] C08L *91/00*

U.S. Cl. 106—243 **20 Claims**

1. A deinking agent for reclaiming waste paper comprising a mixture obtained by treating, with a quaternizing agent, a product prepared by addition of alkylene oxide to a reaction product of an amine having at least two active hydrogen atoms in its molecule with a fatty acid and/or a fatty acid alkyl ester, an amount of the quaternizing agent being 0.1 to 0.9 mole of per mole of the amine.

5,346,544

COATING COMPOSITION FOR GLASS CONTAINERS

Masatoshi Shibata, Yokohama; Teruto Isonage, Kashiwa; Eiji Kamiryo, Nabari, and Kiyoshi Shinohara, Hirakata, all of Japan, assignors to Kirin Brewery Company Ltd., Tokyo, Japan

Division of Ser. No. 723,979, Jul. 1, 1991, Pat. No. 5,284,508. This application Aug. 13, 1993, Ser. No. 107,205

Claims priority, application Japan, Jul. 5, 1990, 2-177826; Jul. 5, 1990, 2-177827; Nov. 13, 1990, 2-306731

Int. Cl.[5] C09D *191/00*

U.S. Cl. 106—244 **3 Claims**

1. A scratch masking composition for glass containers consisting of (a) at least one member selected from the group consisting of medium chain C_8–C_{12} fatty acid triglycerides and long chain C_{16}–C_{22} unsaturated fatty triglycerides, and (b) a fatty acid isopropyl.

5,346,545

STABILISATION OF ORGANIC PIGMENTS

Laurent Chassot, Praroman, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 5, 1993, Ser. No. 26,962

Claims priority, application Switzerland, Mar. 5, 1992, 693/92

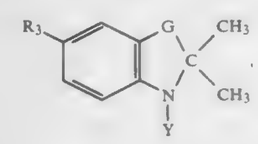
Int. Cl.[5] C09B *67/50*

U.S. Cl. 106—410 **12 Claims**

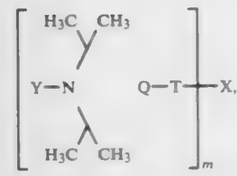
1. A light-stabilised pigment composition consisting essentially of

a) at least one organic pigment chosen from the group consisting of azo pigments, quinacridones, phthalocyanines, indanthrones, flavanthrones, pyranthrones, anthraquinones, perylenes, dioxazines, perinones, thioindigo, isoindolines, isoindolinones and metal complexes; and

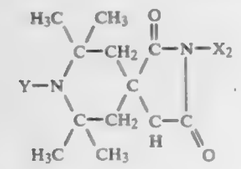
b) 1 to 100% by weight, based on the pigment, of a nitroxyl compound of the formula



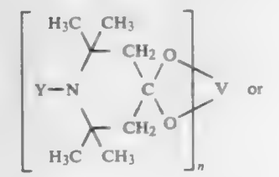
(III)



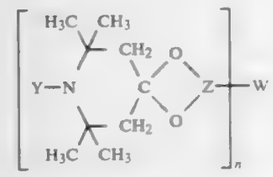
(IV)



(IX)



(VI)



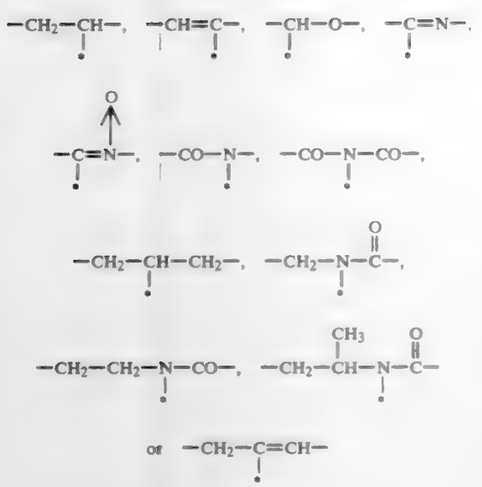
(VII)

wherein R_3 is C_1–C_{18}alkyl or C_1–C_{18}alkoxy;

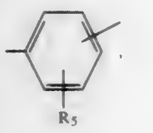
G is a divalent group of the formula $—CR_4=CH—$ or $—CHR_4—CH_2—$;

R_4 is C_1–C_{18}alkyl;

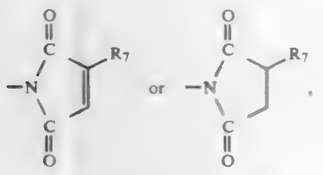
Q is a group of the formula



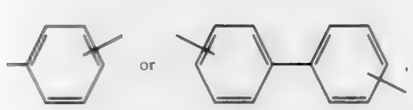
in which the bond labelled * is the bond leading to T;
T is a direct bond or a group of the formula



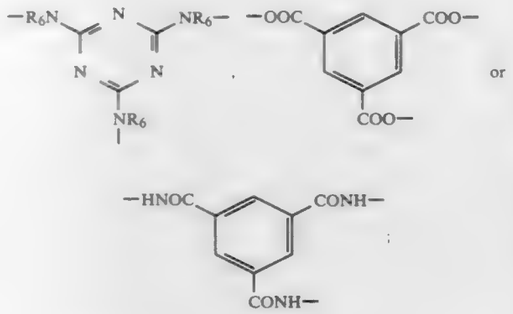
in which R_5 is hydrogen, halogen or C_1–C_4alkyl, or $-(CH_2)_r-$,
in which r is 1 or 2;
m is the number 1, 2, 3, 4 or 6;
X, when m=1, is hydrogen, C_1–C_{18}alkyl, phenyl which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4alkoxy, phenyl or halogen, or, under the condition that T, if bonded to a nitrogen atom, is not a direct bond, is a group of the formula —OCO—NR_6R_7, —OSO_2—NR_6R_7, —OCO—R_7, —$COOR_7$, —$CONR_6R_7$, —NR_6—COR_7, —NR_6—$CONR_6R_7$, —OR_7, —NR_6R_7 or



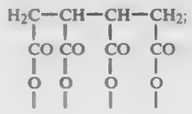
in which R_6 is hydrogen or C_1–C_{18}alkyl, R_7 is C_1–C_{18}alkyl, C_2–C_{12}alkenyl, C_5–C_{12}cycloalkyl, or phenyl or naphthyl which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4alkoxy, halogen, phenyl or nitro, or a group $-(CH_2)_S-CHR_8R_9$, s is zero, 1, 2, or 3, R_8 is hydrogen, methyl or phenyl and R_9 is —OH, halogen or a group —$COOCH_3$ or —$COOC_2H_5$;
X, when m=2, is a group of the formula $-(CH_2)_p$ or, under the condition that T, if bonded to a nitrogen atom, is not a direct bond, is a group of the formula —O—$(CH_2)_p$—O—, —NR_6—$(CH_2)_p$—NR_6—, —OCO—M—COO—, —NR_6—CO—M—CO—NR_6—, —OCO—NH—M—NH—COO— or —NR_6—CONH—NH—CO—NR_6—, in which M is $-(CH_2)_p-$,



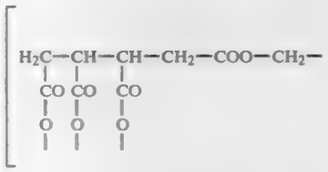
and p is a number between 2 and 10;
X, when m=3, is a group

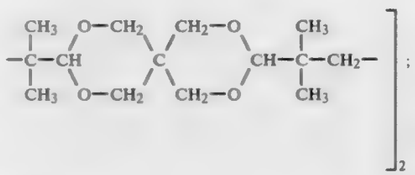


X, when m=4, is a group



X, when m=6, is a group

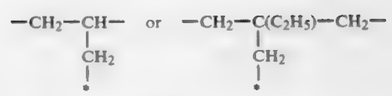




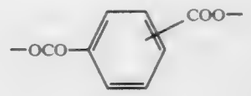
X_2 is C_1–C_{18}alkylene;
n is the number 1 or 2;
V, when n=1, is C_2–C_8alkylene or hydroxyalkylene or C_4–C_{22}acyloxyalkylene; or
V, when n=2, is the group $(-CH_2)_2C(CH_2-)_2$ or



Z is a group of the formula



in which the bond labelled with * is the bond leading to W;
W, when n=1, is a group —$OCOR_{10}$, in which R_{10} is C_1–C_{18}alkyl, or phenyl or naphthyl which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4alkoxy or halogen; or
W, when n=2, is a group of the formula —OCO—$(CH_2)_p$—COO— or



and Y is O.

5,346,546

AGGREGATE-TiO_2 PIGMENT PRODUCTS

Adam F. Kaliski, East Windsor, N.J., assignor to Industrial Progress, Inc., East Windsor, N.J.

Continuation-in-part of Ser. No. 765,929, Sep. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 733,987, Jul. 22, 1991, abandoned. This application Mar. 23, 1992, Ser. No. 856,367
Int. Cl.[5] C09C *1/36*
U.S. Cl. 106—436 **13 Claims**

1. Aggregate-TiO_2 pigment products comprising in each 100 parts, by weight, at least one particulate TiO_2 material in proportions of at least 50 parts, by weight, employed alone or in a combination with other pigmentary and subpigmentary raw materials, and at least .one cement/adhesive in proportions of from 0.1 up to 23 parts, by weight.

5,346,547

METHOD OF MAKING CONCRETE ELECTRICALLY CONDUCTIVE FOR ELECTROMAGNETIC SHIELDING PURPOSES

Ray G. McCormack, St. Joseph, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 8, 1992, Ser. No. 880,442
Int. Cl.[5] C04B *14/48*
U.S. Cl. 106—644 **15 Claims**

1. A method for making electrically conductive articles having substantial electromagnetic shielding capability, consisting essentially of:
forming a settable mixture of concrete and magnetized metallic fibers; and,
orienting the fibers randomly, yielding electrical contact between at least a substantial portion of the fibers and adjacent fibers to produce substantial electrical continuity through the concrete and fiber mixture.

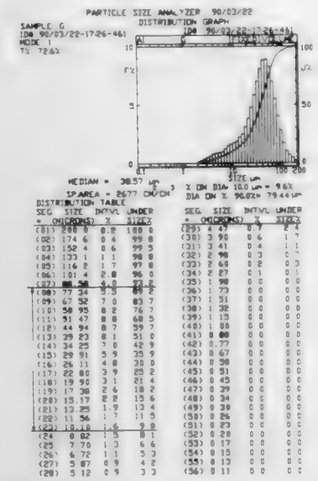
5,346,548

HIGHLY DURABLE CEMENT PRODUCTS CONTAINING SILICEOUS ASHES

Povindar K. Mehta, El Cerrito, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 917,908, Jul. 21, 1992, abandoned, which is a continuation of Ser. No. 543,262, Jun. 25, 1990, abandoned. This application Jan. 4, 1993, Ser. No. 47
Int. Cl.[5] C04B *16/02*
U.S. Cl. 106—705 **17 Claims**

1. A dry mix composition for preparation of concrete products upon addition of aggregate and water, said composition consisting essentially of:
at least one cement; and
from about 5% to about 30% by weight of the cement of siliceous ash from crop residue, wherein the ash is from about 60% to about 95% by weight silica, at least about 90% of the silica is amorphous, at least about 75% of ash particles are in a size range of from about 4 to about 75



micrometers, and the ash particles have a mean particle diameter measured by laser-light scattering of at least 6 micrometers and a B.E.T. surface area of at least 20 m^2/g, said composition providing upon addition of water and aggregate a concrete product characterized after 28 days by a compressive strength of at least 2500 psi and a chloride permeability of less than about 2000 coulombs when determined in accordance with AASHTO T-277.

5,346,549

ENVIRONMENTALLY STABILIZED PRODUCTS FORMED FROM ASH AND PAPERMILL WASTE

William B. Johnson, 209 Mississippi Dr., Monticello, Minn. 55362

Filed Oct. 23, 1992, Ser. No. 967,490
Int. Cl.[5] C04B *7/12, 7/24*
U.S. Cl. 106—708 **20 Claims**

1. A method of producing environmentally stable formed bodies useful as an unfused building material including as ingredients, ash and papermill waste containing cellulose fiber and clay, said method comprising,
admixing about 3–7 parts by weight of said ash and 7–3 parts by weight of said papermill waste to make a total of 10 parts by weight with an oxidant in an amount effective to promote oxidation of at least a portion of the admixture,
providing or maintaining in said admixture a sufficient amount of water to render the admixture plastic,
thereafter forming the plastic admixture into bodies, and
allowing the formed bodies to harden to provide an environmentally stable product.

5,346,550

LOW TEMPERATURE WELL CEMENTING COMPOSITIONS AND METHODS

Robert A. Kunzi, Bakersfield, Calif.; Edward F. Vinson, Duncan, Okla.; Patty L. Totten, Duncan, Okla., and Bobby G. Brake, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 832,209, Feb. 5, 1992, abandoned. This application Aug. 26, 1993, Ser. No. 112,826

Int. Cl.[5] C04B *14/04*

U.S. Cl. 106—709 **11 Claims**

1. An improved hydraulic cement composition for cementing wells drilled through low temperature earth formations comprising:

a hydraulic cement present in said composition in an amount in the range of from about 5 pounds to about 30 pounds per sack;

gypsum cement present in an amount in the range of from about 25 pounds to about 50 pounds per sack;

fly ash present in an amount in the range of from about 5 pounds to about 30 pounds per sack;

an alkali metal halide present in an amount in the range of from about 1 pound to about 18 pounds per sack; and

water present in an amount in the range of from about 2 gallons to about 12 gallons per sack,

an alcohol freezing point depressant present in said composition in an amount in the range of from about 1% to about 18% by weight of the water in said composition.

5,346,551

DEVICE FOR BLOWING OFF COATING MATERIAL IN THE COATING OF METAL BANDS

Heinrich Pannenbecker, Duisburg; Ronald Jabs, Moers; Heinrich Schmitz, Dinslaken; Wulf Dechene, Düsseldorf-Angermund; Manfred Splitt, Finnentrop, and Hans-Joachim Heiler, Moers, all of Fed. Rep. of Germany, assignors to Thyssen Stahl AG, Duisburg

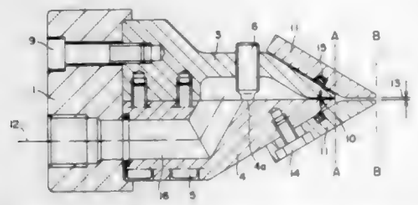
PCT No. PCT/EP91/01273, § 371 Date Mar. 18, 1993, § 102(e) Date Mar. 18, 1993, PCT Pub. No. WO92/02656, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 9, 1991, Ser. No. 976,986

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1990, 4024229

Int. Cl.[5] B05C *3/12*

U.S. Cl. 118—63 **6 Claims**



1. A device for blowing off excess coating material from a metal band by means of a blowing off jet of a blowing off medium, comprising

a nozzle structure having a first extended jet slit formed therein extending in a direction which is transverse to said metal band, said blowing off jet emerging from said jet slit to impinge on said metal band,

said nozzle structure comprising a plurality of individual nozzle bodies arranged sealingly against each other in a row extending in said transverse direction, each of said nozzle bodies having individually adjustable nozzle lips forming partial jet slits which together form said first extended jet slit, whereby said blowing off jet can be separately controlled with each of said partial jet slits by adjusting said nozzle lips of each of said individual nozzle bodies.

5,346,552

DEVICE HAVING A PROFILE STRIP EQUIPPED WITH A SQUEEZE ELEMENT THAT IS FREELY MOVABLE TRANSVERSELY TO A WORKING SURFACE

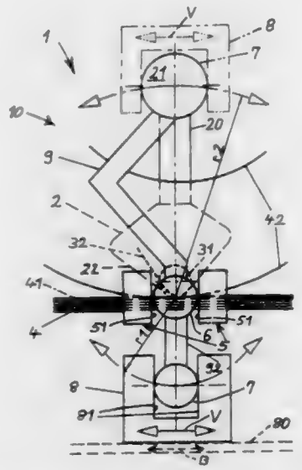
Johannes Zimmer, Ebentaler Str. 133, 9020 Klagenfurt, Fed. Rep. of Germany

Filed Sep. 23, 1992, Ser. No. 948,644

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1991, 9112033[U]

Int. Cl.[5] B05C *11/02*R a

U.S. Cl. 118—126 **22 Claims**



1. Squeegee means (**1**) comprising a squeegee device (**10**), which has a profile strip (**2**) longitudinally extending therewith and which can be pressed by its squeegee working edge or face (**3**) against a working surface (**4**), the squeegee device (**10**) being pivotable by means of pivot bearings about a squeegee device pivot axis (**30**) coinciding with the squeegee working edge (**3**) or extending in the vicinity of a bearing edge or face, said pivot bearings (**5**) being located in the axial end regions of the squeegee device pivot axis (**30**) and fix the position thereof and in which the profile strip (**2**) is connected to a part (**21**), which projects over the working surface (**4**) in the direction of the profile strip longitudinal extension and is in engagement with a pivot bearing (**5**) located outside and laterally of the working surface (**4**), wherein the profile strip (**2**) is equipped with a squeegee element, and the squeegee device (**10**) is positioned loosely, i.e. freely movable via the squeegee element (**300**) in a direction at right angles to the working surface (**4**) resting on the latter, and a profile strip bearing part (**6**) engages loosely on pivot bearing guide surfaces (**51**) at right angles to the working surface (**4**) for fixing the pivot axis position and is inserted so as to be freely rotatable or pivotable in the pivot bearings (**5**) and at least one part (**21**) of the profile strip (**2**) projecting over the working surface (**4**) is fixed to the profile strip bearing part (**6**), which is located in the vicinity of the squeegee device pivot axis (**30**) and is circular or circular cylindrical; and without positive or non-positive fixing to the squeegee means (**1**), the squeegee device (**10**) can be pressed against the working surface (**4**) only with the magnetic force of a magnet device positioned below the working surface and/or with the weight of the squeegee device; and for controlling and the fixed setting of a squeegee device pivot angle, a portion of the profile strip or a part (**7**) is fixed to the squeegee device (**10**) and has a radial spacing (r) to the squeegee device pivot axis (**30**) and is in loose (fastening-free) engagement with a control part (**8**) movable and fixable transversely to the profile strip longitudinal extension.

5,346,553

CABIN FOR SPRAY-COATING WORKPIECES WITH MATERIAL IN POWDER FORM

Joachim Pingel, Hamburg, Fed. Rep. of Germany, assignor to Farb-Tec Gesellschaft fur Beschichtungskabinen, Hamburg, Fed. Rep. of Germany

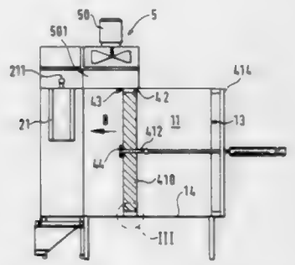
PCT No. PCT/EP90/00941, § 371 Date Dec. 13, 1991, § 102(e) Date Dec. 13, 1991, PCT Pub. No. WO90/15670, PCT Pub. Date Dec. 27, 1990

PCT Filed Jun. 15, 1990, Ser. No. 778,100

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1989, 8907539[U]

Int. Cl.[5] B05L *19/00*; **B05B** *15/12*

U.S. Cl. 118—309 **34 Claims**



1. A booth for the spray-coating of workpieces with powdery coating material, comprising a booth interior defined by walls, a booth floor and a booth ceiling, said booth interior having a specific longitudinal axis and interior cross-sectional contour, in a direction of which the workpieces are movable into or through the booth, a cleaning device which is movable in the booth interior in a direction of movement along the longitudinal axis, and a vacuum source connected to the cleaning device, the cleaning device comprising a rigid carrier which is equipped with mechanical cleaning elements, which, during the working movement of the cleaning device, bear flexibly at least against parts of the interior cross-sectional contour of the booth interior, wherein the cleaning device is dimensioned so that a working gap is left between the carrier and the interior cross-sectional contour that is bridged elastically by the cleaning elements and wherein the cleaning device through a connection to the vacuum source sucks away powder material released from the booth interior walls by the cleaning elements.

5,346,554

APPARATUS FOR FORMING A THIN FILM

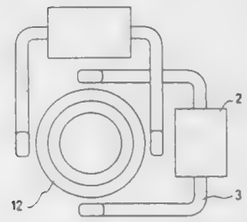
Mizuaki Suzuki, and Matsuo Kishi, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Apr. 11, 1991, Ser. No. 684,062

Claims priority, application Japan, Apr. 12, 1990, 2-98320; Jun. 6, 1990, 3-148042; Nov. 16, 1990, 2-310278

Int. Cl.[5] C23C *14/30*

U.S. Cl. 118—723 EB **6 Claims**



1. An apparatus for forming a thin film comprising:

means for generating an electron beam by a hollow cathodic discharge;

a crucible for holding a vaporizable substance;

means comprising two electromagnets arranged at right angles to each other near the crucible for generating a magnetic field effective to scan the electron beam on the vaporizable substance, each electromagnet having a core having a north pole end and a south pole end facing each other across the crucible; and

means for supplying an alternating current to the two electromagnets to effect scanning of the electron beam in a two-dimensional pattern on the vaporizable substance.

5,346,555

DEVICE FOR THERMAL TREATMENT AND FILM FORMING PROCESS

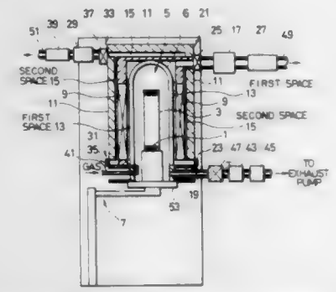
Shinji Nunotani; Koichi Takahashi, and Naoto Miyashita, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 28, 1993, Ser. No. 98,097

Claims priority, application Japan, Jul. 30, 1992, 4-203842

Int. Cl.[5] C23C *16/00*

U.S. Cl. 118—724 **6 Claims**



1. A device for a thermal treatment process and a film forming process comprising:

a film forming process chamber for forming a film on a semiconductor substrate under high temperatures;

heating means, positioned to enclose the outer periphery of said film forming process chamber, for heating the inside of said film forming process chamber to a high temperature; and

insulating means positioned to enclose the outer periphery of said heating means;

a first space is formed between said film forming process chamber and said heating means;

a second space is formed between said heating means and said insulating member, said first space being isolated from said second space;

first exhaust means is provided for exhausting air from within said first space; and

second exhaust means is provided for exhausting air from within said second space,

wherein

prior to inserting the semiconductor substrate into and removing the semiconductor substrate from said film forming process chamber, high temperature air is exhausted from said first space and said second space by said first exhaust means and said second exhaust means, respectively, in order to cool inside of said film forming process chamber.

5,346,556

LATHING AND CLEANING PROCESS FOR PHOTORECEPTOR SUBSTRATES

Phillip G. Perry, Webster; Gene W. O'Dell, Williamson, and Thomas P. Debies, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 1, 1993, Ser. No. 143,721
Int. Cl.[5] B08B *3/04, 3/08;* C23G *1/02*
U.S. Cl. 134—2 24 Claims

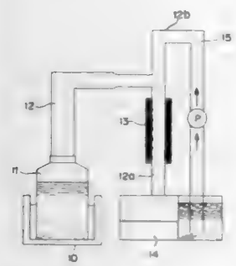
1. A method of cleaning a substrate comprising:
(1) lathing a substrate surface with a cutting fluid composition comprising:
(A) at least one antioxidant;
(B) at least one surfactant;
(C) at least one lubricant; and
(D) water;
(2) rinsing the lathed substrate surface with deionized water having a resistivity of at least 2M ohm-cm;
(3) immersing the rinsed lathed substrate surface in a bath of deionized water having a resistivity of at least 2M ohm-cm; and
(4) removing the substrate from the bath of deionized water at a rate which prevents water droplets from forming on the substrate.

5,346,557

PROCESS FOR CLEANING SILICON MASS AND THE RECOVERY OF NITRIC ACID

Hideo Ito; Mitsutoshi Narukawa, and Kazuhiro Sakai, all of Yokkaichi, Japan, assignors to Hi-Silicon, Co., Ltd., Mie, Japan

Filed Oct. 28, 1992, Ser. No. 967,066
Claims priority, application Japan, Oct. 29, 1991, 3-308268; Oct. 31, 1991, 3-311484
Int. Cl.[5] B08B *3/04*
U.S. Cl. 134—10 18 Claims



1. A process comprising:
sufficiently heating a liquid waste solution "obtained from cleaning a polycrystalline silicon mass" has been inserted after which comprises nitric acid, hydrofluoric acid, hydrosilicofluoric acid, and water so as to boil off a hydrofluoric acid containing vapor;
transmitting said hydrofluoric acid containing vapor, said heating being effective to remove the hydrosilicofluoric acid to a condensation region;
condensing said vapor in said condensation region to form a liquid condensate; and
recovering said nitric acid as a substantially pure solution;
wherein liquid hydrofluoric acid is added to said condensation region during said condensing step.

5,346,558

SOLDERABLE ANISOTROPICALLY CONDUCTIVE COMPOSITION AND METHOD OF USING SAME

Eckart Mathias, Catonsville, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jun. 28, 1993, Ser. No. 82,653
Int. Cl.[5] B23K *35/34*
U.S. Cl. 148—23 15 Claims

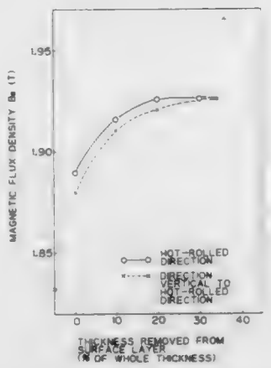
1. An anisotropically-conductive solder paste composition which comprises finely-divided metal alloy particles dispersed in a solution of an organic polymer in an organic solvent which has a boiling point above the softening temperature of the polymer and no higher than the melting point of the metal alloy particles, wherein the polymer has a softening temperature at or below the melting point of the metal alloy particles and where said composition is free of a fluxing agent.

5,346,559

PROCESS FOR MANUFACTURING DOUBLE ORIENTED ELECTRICAL STEEL SHEET HAVING HIGH MAGNETIC FLUX DENSITY

Yoshiyuki Ushigami; Satoshi Arai; Yozo Suga; Yasunari Yoshitomi; Nobuyuki Takahashi, and Takehide Senuma, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 680,937, Apr. 5, 1991, abandoned. This application Mar. 19, 1993, Ser. No. 34,615
Claims priority, application Japan, Apr. 12, 1990, 2-95126; Apr. 16, 1990, 2-97718; Apr. 20, 1990, 2-103180; Apr. 20, 1990, 2-103181
Int. Cl.[5] C21D *8/12*
U.S. Cl. 148—111 2 Claims



2. A process for manufacturing a double oriented electrical steel sheet having a high flux density, which comprises subjecting a hot rolled sheet comprised of 0.8–6.7% by weight of Si, 0.008–0.048% by weight of acid soluble Al, 0.010% by weight or less of N, and the balance being Fe and unavoidable impurities to a cold-rolling at a reduction rate of 40–80%, and then subjecting the resulting sheet to another cold-rolling in the direction vertical to the above cold-rolled direction at a reduction rate of 30–70% in the final thickness, followed by the steps of annealing to effect primary recrystallization, applying an annealing separator, and applying a finishing annealing to effect secondary recrystallization and purification of the steel, wherein the growth of the secondary recrystallization of {110}<uvw> oriented grains from the surface of the steel sheet is suppressed by removing at least 1/10 of the whole thickness of both surfaces of the hot rolled sheet in the thickness direction, and then annealing said hot rolled sheet from which the surface layers are removed at a temperature of 750°–1200° C., for 30 seconds to 30 minutes.

5,346,560

PROCESS FOR THE TREATMENT OF FERROUS METAL PARTS TO IMPROVE THEIR CORROSION RESISTANCE AND FRICTION PROPERTIES SIMULTANEOUSLY

Sylvie Mournet, Gourgois, and Joseph Wawra, Saint-Just-/Saint-Rambert, both of France, assignors to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement, Andrezieux-Boutheon, France

Filed Jun. 11, 1992, Ser. No. 896,928
Claims priority, application France, Jul. 16, 1991, 91 08946
Int. Cl.[5] C23C *8/40*
U.S. Cl. 148—217 9 Claims

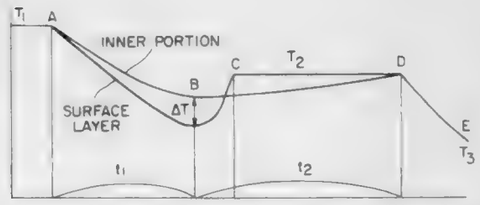
1. Process for the treatment of ferrous metal parts to improve both corrosion resistance and friction properties of the parts including the steps of nitriding, oxidation and wax coating, said process comprising:
(i) performing the nitriding step in a bath of molten salts consisting essentially of carbonates and cyanates of alkaline metals k, Na and Li, CO_3^{2-} anions being present in 1 to 35% by weight and CNO^- anions in 35 to 65% by weight of the total weight of the bath whereas in the total weight of alkaline cations, the weight proportions are 25 to 42.6% for Na^+, 42.6 to 62.5% for K^+ and 11.3 to 17.1% for Li^+, the nitriding being carried out to result in the formation of a layer comprising a) a close-packed deep sublayer and b) a porous superficial sub-layer, the superficial sub-layer having a thickness between 5 and 25 μm and exhibiting pores ranging between 0.2 and 3 μm in diameter,
(ii) carrying out the oxidation step in a bath of molten oxidizing alkaline salts at a temperature ranging between about 350 and 450° C., and
(iii) impregnating the porous superficial sub-layer with a hydrophobic wax, the wax being a carbonaceous organic compound with a molecular weight between 500 and 10,000, with a surface tension in the liquid state between 10 and 73 mN/m, the contact angle between the solid phase of the superficial layer and the wax in the liquid state ranging between 0 and 75°.

5,346,561

SPHEROIDAL GRAPHITE CAST IRON MEMBER HAVING IMPROVED MECHANICAL STRENGTH HAND METHOD OF PRODUCING SAME

Fumio Obata; Hisashi Yasuda; Hideaki Nagayoshi, all of Kitakyusyu; Kiyoshi Suehara; Kouhei Imanishi, both of Fukuoka, and Toshiki Yoshida, Tochigi, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 22,623
Claims priority, application Japan, Feb. 27, 1992, 4-076299
Int. Cl.[5] C21D *5/00;* C22C *37/04*
U.S. Cl. 148—321 7 Claims



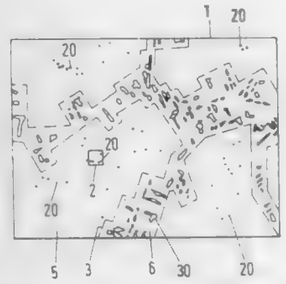
1. A spheroidal graphite cast iron member having two outer surface layer portions, each mostly composed of a ferrite phase and having a thickness of at least 1 mm, and an inner portion composed of a pearlite phase and a ferrite phase each of said surface layer portions having a ferritization ratio of 70% or more which is larger than that of said inner portion by at least about 15%.

5,346,562

METHOD OF PRODUCTION OF IRON ALUMINIDE MATERIALS

Emad Batawi, Marthalen, and John Peters, Winterthur, both of Switzerland, assignors to Sulzer Innotec AG, Winterthur, Switzerland

Filed Sep. 13, 1993, Ser. No. 120,718
Claims priority, application European Pat. Off., Sep. 16, 1992, 92810713.5
Int. Cl.[5] C22C *38/06*
U.S. Cl. 148—542 1 Claim



1. A method of producing iron aluminide materials from a Fe_3Al base alloy comprising 18–35% by atomic weight of Al, 3–15% by atomic weight of Cr, 0.2–0.5% by atomic weight of at least one of B and C, 0–8% by atomic weight of at least one of Mo, Nb, Zr, Y and V, and a remainder consisting of iron, which comprises:
(a) melting the Fe_3Al base alloy at a melting temperature in a chamber held at vacuum;
(b) adding a protective gas to the chamber producing an atmosphere in the chamber of between 0.2 and 1.0 bar;
(c) adding Ti, Zr and an Fe-Cr alloy containing N to the melted Fe_3Al base alloy at a temperature 200°–400° K. above the melting temperature, forming dispersoids of (Ti,Zr)N 2–10% by volume which are satisfactorily wettable by the melted Fe_3Al base alloy so that upon solidification the dispersoids embed in a monocrystalline phase;
(d) pumping the protective gas away after a holding time between 100 and 1000 seconds;
(e) solidifying the melted Fe_3Al base alloy containing the dispersoids;
(f) hot rolling the solidified Fe_3Al base alloy containing the dispersoids at a temperature between 650° and 1000° C.; and
(g) annealing the Fe_3Al base alloy containing the dispersoids at a temperature between 400° and 1000° C.

5,346,563

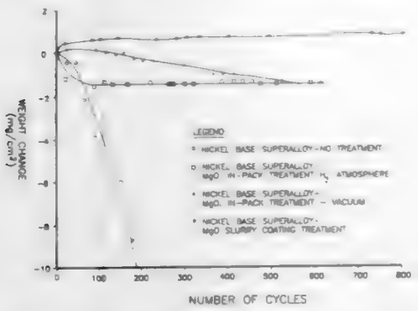
METHOD FOR REMOVING SULFUR FROM SUPERALLOY ARTICLES TO IMPROVE THEIR OXIDATION RESISTANCE

William P. Allen, Portland; Norman S. Bornstein, West Hartford; Stephen Chin, Wallingford; Michael DeCrescente, Wethersfield; David N. Duhl, Newington; Donald R. Parille, South Windsor; Roscoe A. Pike, Granby, and John G. Smeggil, Simsbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 796,981, Nov. 25, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 47,253
Int. Cl.[5] C22F *1/10*
U.S. Cl. 148—675 39 Claims

1. A method for removing sulfur from a solid nickel-base superalloy article, said article having a normally occurring

alumina surface film, comprising the step of heating the article in the presence of a source of magnesium at a temperature at



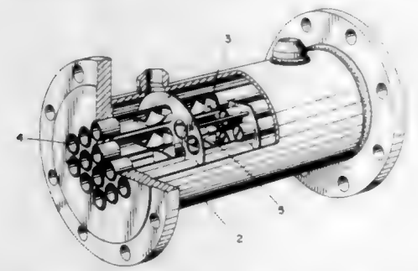
which magnesium in the source reacts with the alumina film thereby enabling said sulfur to diffuse out of the article.

5,346,564

METHOD OF SAFELY PREPARING AN EXPLOSIVE EMULSION COMPOSITION

Ricky T. Vance, Cordova, Ala.; George L. Griffith, Bethlehem, Pa., and Dennis J. Brown, Jasper, Ala., assignors to Nelson Brothers, Inc., Parrish, Ala.

Filed Jun. 16, 1993, Ser. No. 77,686
Int. Cl.[5] D03D *23/00, 43/00*
U.S. Cl. 149—109.6 **12 Claims**



1. A method of preparing an explosive composition comprising:
(a) forming a water-in-oil emulsion explosive;
(b) uniformly cooling said emulsion using a shell and tube heat exchanger; and
(c) adding an oxidizer to said emulsion.

5,346,565

WATER BARRIER OF WATER-SWELLABLE CLAY SANDWICHED BETWEEN INTERCONNECTED LAYERS OF FLEXIBLE FABRIC NEEDLED TOGETHER USING A LUBRICANT

Alec W. White, Hoffman Estates, Ill., assignor to American Colloid Company, Arlington Heights, Ill.

Continuation of Ser. No. 628,497, Dec. 17, 1990, Pat. No. 5,174,231. This application Dec. 4, 1992, Ser. No. 986,112
The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.
Int. Cl.[5] B01D *39/00;* **B32B** *5/06, 5/16, 5/26, 5/30, 7/08, 31/16;* **C02F** *1/42;* **D04H** *1/41*
U.S. Cl. 156—71 **39 Claims**

1. A method of preventing water from contacting a structure comprising installing a multi-layer article of manufacture against said structure, said multi-layer article including first and second sheet material layers having a layer of water-swellable clay therebetween, said first and second sheet material layers secured together on opposite sides of the clay layer by needle punching or sewing to interconnect fibers from one flexible sheet material layer to the other flexible sheet material layer, thereby confining the clay therebetween after contacting the clay with a liquid lubricant, in an amount in the range of about 0.1% to about 40% based on the dry weight of the clay layer.

5,346,566

WATER BARRIER OF WATER-SWELLABLE CLAY OR OTHER ABRASIVE MATERIAL SANDWICHED BETWEEN INTERCONNECTED LAYERS OF FLEXIBLE FABRIC SEWN OR NEEDLED TOGETHER USING A LUBRICANT AND/OR A LIQUID ADHESIVE

Alec W. White, Hoffman Estates, Ill., assignor to American Colloid Company, Arlington Heights, Ill.

Continuation-in-part of Ser. No. 628,497, Dec. 17, 1990, Pat. No. 5,174,231. This application Dec. 16, 1992, Ser. No. 990,988
The portion of the term of this patent subsequent to Dec. 16, 2009, has been disclaimed.
Int. Cl.[5] B01D *39/00;* **B32B** *5/06, 5/16, 5/26, 5/30, 7/08, 31/16;* **C02F** *1/42;* **D04H** *1/111*
U.S. Cl. 156—71 **30 Claims**

1. A multi-layer article of manufacture comprising a pair of flexible fabric layers having a layer of powdered or granular abrasive material sandwiched therebetween, said pair of fabric layers structurally interconnected one to the other with continuous, elongate fibers to confine the abrasive material therebetween, and wherein at least one of the flexible fabric layers includes a partially penetrated coating of an adhesive in an amount sufficient to increase the shear strength of the article, but insufficient to completely penetrate the fabric layer.

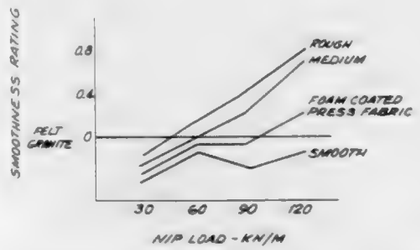
29. A method of preventing water from contacting a structure comprising installing a multi-layer article of manufacture against said structure; said multi-layer article including first and second sheet material layers having a layer of water-swellable clay therebetween, said first and second sheet material layers secured together on opposite sides of the clay layer by needle punching or sewing, and thereafter applying a water-insoluble adhesive to at least one of the sheet material layers during manufacture such that the adhesive bridges an area between essentially horizontally disposed sheet material fibers and essentially vertically disposed securing fibers to increase the shear strength of the article.

5,346,567

FOAM COATING OF PRESS FABRICS TO ACHIEVE A CONTROLLED VOID VOLUME

James M. Barnewall, Albany, N.Y., assignor to Albany International Corp., Menands, N.Y.

Continuation-in-part of Ser. No. 566,829, Aug. 14, 1990, abandoned, Division of Ser. No. 265,258, Oct. 31, 1988, Pat. No. 5,118,557. This application Jun. 17, 1992, Ser. No. 900,174
Int. Cl.[5] B32B *5/02;* **D21F** *3/00*
U.S. Cl. 156—78 **9 Claims**



1. The method of modifying a press fabric for a papermaking machine to improve water removal characteristics, to impart a better finish to the paper, and to enhance paper making characteristics, which method comprises the steps of:

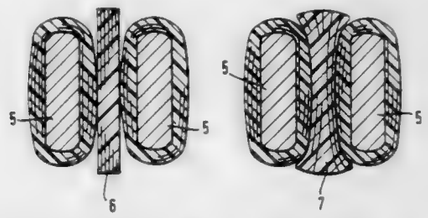
(a) applying a thin continuous layer of a polymeric foam to the upper surface of a press fabric;
(b) drying said foam;
(c) repeating steps (a) and (b) one or more times sufficient to form an effective coating on said press fabric; and
(d) curing the thus coated press fabric.

5,346,568

EXPANDING ELECTRICAL INSULATING LAMINATE, METHOD FOR ITS MANUFACTURE AND APPLICATION

Helmut Gsellmann, Graz, Austria, assignor to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft, Austria

Continuation of Ser. No. 688,577, May 28, 1991, abandoned. This application Mar. 16, 1993, Ser. No. 31,835
Claims priority, application Austria, Sep. 28, 1989, 2265/89
Int. Cl.[5] H02K *1/04, 15/02, 15/12*
U.S. Cl. 156—83 **5 Claims**



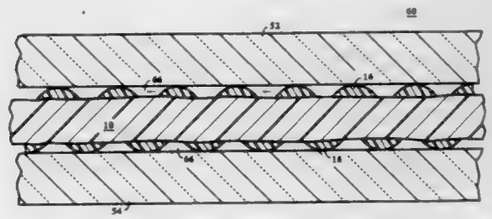
1. A method of electrically insulating a device comprising mounting a laminate comprising highly elastic electrically insulating fibers and a binder in the form of a heat softening thermosetting plastic in an amount of 10–28% by weight of the laminate which holds the fibers in a mechanically compressed stated into a space adjacent the device, heating the laminate by soaking the laminate in a hot thermosetting liquid plastic soaking medium such that the laminate expands to fill the space and the thermosetting liquid plastic soaking medium fills the pores of the expanded laminate and curing the expanded laminate and the thermosetting soaking medium.

5,346,569

PROCESS FOR DEAIRING AN INTERFACE REGION

Robert H. M. Simon, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed May 17, 1993, Ser. No. 61,957
Int. Cl.[5] B32B *17/00, 31/00*
U.S. Cl. 156—87 **10 Claims**



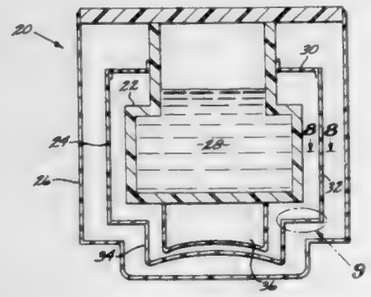
8. A process for preparing a deaired prelaminate for a safety glazing which comprises:
i) applying to each side of a sheet of plasticized partial polyvinyl butyral, a multitude of spaced plastic projections which protrude about 0.1 to 0.75 mils (0.003 to 0.02 mm) from the surface of the sheet, the refractive indices of the projections being about the same as that of the sheet, said projections being capable of little or no adhesion to glass;
ii) placing a glass panel in face to face contact with each side of the sheet so the sheet is supported between the panels through contact with the projections; and
iii) heating the panels and supported sheet to at least about 50° C. while imposing a positive pressure or vacuum on the interface region between the panels and supported sheet to evacuate air from the interface through spaces between the projections and adhere the sheet to the panels to form the deaired prelaminate.

5,346,570

CRYOGENIC DEWAR AND METHOD OF FABRICATION

Laurence Warden, and Keith Esser, both of San Diego, Calif., assignors to Biomagnetic Technologies, Inc., San Diego, Calif.

Filed Jul. 30, 1992, Ser. No. 922,677
Int. Cl.[5] B31C *3/00*
U.S. Cl. 156—191 **13 Claims**



1. A method for preparing a dewar, comprising the steps of:
preparing a thermal shield tail cap by
furnishing a tail cap mandrel,
applying a layer of radiative insulation over the tail cap mandrel,
applying a layer of fiberglass cloth over the layer of radiative insulation,
applying a layer of thermal foil overlying the layer of fiberglass cloth, the thermal foil being formed of thermal conductors embedded in a B-staged film adhesive matrix,
applying a layer of fiberglass cloth overlying the layer of thermal foil, and
consolidating the layer of radiative insulation, layer of thermal foil and layer of fiberglass cloth, and partially curing the B-staged film adhesive;
preparing a thermal shield body by
furnishing a body mandrel,
applying a layer of radiative insulation overlying the body mandrel,
applying an inner layer of fiberglass cloth overlying the layer of radiative insulation,
applying a metallic screen overlying the inner layer, and
applying an outer layer of fiberglass cloth overlying the metallic screen;
joining the thermal shield cap to the thermal shield body; and
consolidating the joined thermal shield cap and thermal shield body, to form a dewar heat shield.

5,346,571

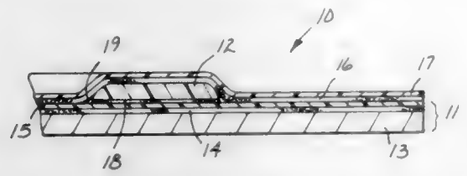
METHOD FOR MAKING ARCHITECTURAL SIGNS WITH RAISED GRAPHICS

Robert R. Condon, St. Paul; Daniel P. Pohl, Grant Township, Washington County, and Frank T. Sher, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 876,057, Apr. 28, 1992, Pat. No. 5,246,757. This application May 24, 1993, Ser. No. 65,947
Int. Cl.[5] B32B *31/10, 31/20*
U.S. Cl. 156—212 **3 Claims**

1. A method of making a raised graphic sign comprising the steps of:

a. adhesively applying a laterally porous base layer to the upper surface of a substrate;
b. applying one or more alphanumeric characters having a height of least 10 mils to the base layer on the substrate;
c. adhesively applying an overlay film, adhesive side down over the configuration of step b; and



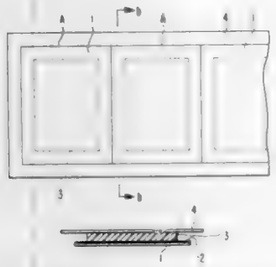
d. processing the configuration of step c in a heat vacuum applicator at a pressure and temperature sufficient to conform the overlay film to the alphanumeric characters and tightly bond the overlay film to the alphanumeric characters and the base layer wherein average maximum lift of the overlay film from the base layer is less than 2 mm.

5,346,572

METHOD OF PRODUCING SEALING MATERIAL FOR ELECTRIC WIRE CONNECTION

Masaharu Tahara, and Kiyonobu Yoshimura, both of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Division of Ser. No. 701,913, May 17, 1991, Pat. No. 5,246,755.
This application Jun. 15, 1993, Ser. No. 76,643
Claims priority, application Japan, May 19, 1990, 2-129498; Jan. 14, 1991, 3-14766
Int. Cl.[5] B29C *47/06*
U.S. Cl. 156—244.19 6 Claims



1. A method of producing a sealing material for electric wire connection, which comprises extruding a viscous sealing material from a die in a tape form, cutting the tape-form material with a transverse cut in a length narrower than the width of a tape-form releasable material travelling at a cross direction and downstream thereof to form viscous sealing pieces, attaching the viscous sealing pieces onto the travelling tape-form releasable material with a constant spacing between the viscous sealing pieces, and adhering respective sheet-form base material bodies to each viscous sealing piece before or after attaching the viscous sealing piece onto the releasable material.

5,346,573

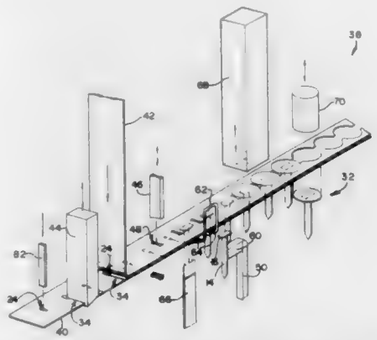
METHOD OF MANUFACTURING A PAPER BINDER

Murray B. Blumberg, Sandton, South Africa, and William M. Hoffman, Hamilton, Ohio, assignors to Technokantoor Limited, Brussels, Belgium

Division of Ser. No. 3,464, Jan. 12, 1993, Pat. No. 5,292,204.
This application Aug. 3, 1993, Ser. No. 100,986
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—256 9 Claims

1. A method of manufacturing a binder for binding sheet material, which method includes the steps of

providing two thin head forming elements that are capable of being bonded together;
forming an aperture in one of the elements;
forming an access slot in said apertured element which extends from the aperture to the periphery of said apertured element;



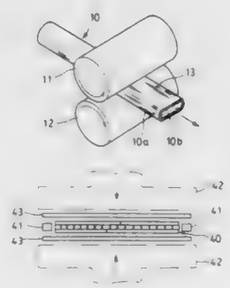
inserting a binding member into the aperture, the member having a pair of prongs and an anchor formation for each prong; and
bonding the elements together with the anchor formations sandwiched therebetween and with the prongs extending therefrom.

5,346,574

PROCESS FOR MANUFACTURING A LAMINATE

Yasuo Tamura, Kanagawa; Ryoji Tanaka; Takahiko Gohma, both of Tokyo, and Mitsumasa Horikawa, Aichi, all of Japan, assignors to Koyo Sangyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 743,584, Aug. 9, 1991, abandoned. This application Jul. 1, 1992, Ser. No. 907,784
Claims priority, application Japan, Aug. 16, 1990, 2-216221
Int. Cl.[5] B27J *1/00*; B29C *65/02*
U.S. Cl. 156—257 5 Claims



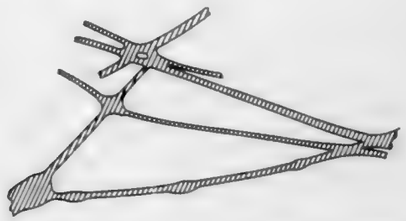
1. A method for manufacturing a laminate comprising:
a first step of compressing a plurality of vegetable stalks, each having an epidermis and a porous core to form cracks in the epidermis;
a second step of impregnating the vegetable stalks with a thermal hardener solution by soaking the thermal hardener solution through the cracks and into the core;
a third step of drying the impregnated vegetable stalks;
a fourth step of placing the dried vegetable stalks side-by-side and in contact with one another to form a sheet;
a fifth step of applying an adhesive agent to the sheet;
a sixth step of placing an additional sheet on said formed sheet to form a plurality of layers; and
a seventh step of applying pressure to the plurality of layers and subjecting the plurality of layers to a heat treatment to harden said thermal hardener solution and form a laminate.

5,346,575

GLASS FIBER INSULATION AND PROCESS

Edward J. Griffith, Manchester, and Toan M. Ngo, Eureka, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 767,968, Sep. 30, 1991, Pat. No. 5,223,336.
This application Mar. 5, 1993, Ser. No. 26,651
Int. Cl.[5] B27N *3/00*
U.S. Cl. 156—62.6 6 Claims



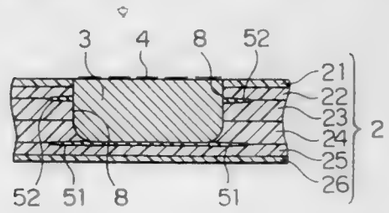
1. A process for preparing a form retaining insulating body of glass fibers comprising applying to the fibers a tacking agent comprising an aqueous acid aluminum phosphate solution containing a molar ratio of Al_2O_3 to P_2O_5 of less than 1, shaping said body and then removing water from said tacking agent to form an amorphous, water insoluble, non-hygroscopic polymer whereby the glass fibers of the body form are resilently bonded together.

5,346,576

METHOD OF MANUFACTURING IC CARD

Makoto Kobayashi, Sanda; Syojiro Kodai, and Katsunori Ochi, both of Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 648,511, Jan. 30, 1991, Pat. No. 5,250,341.
This application Jul. 2, 1993, Ser. No. 85,054
Claims priority, application Japan, Mar. 26, 1990, 2-78295
Int. Cl.[5] B32B *31/00*; B29C *65/02*
U.S. Cl. 156—293 10 Claims



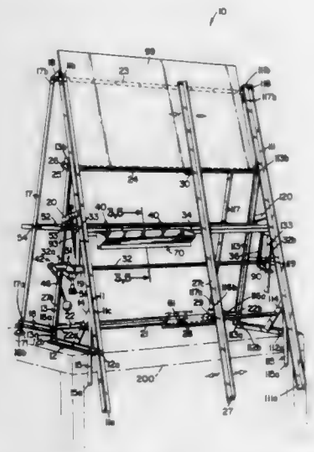
1. A method of manufacturing an IC card comprising:
forming through holes in a plurality of core sheets;
providing a core sheet without a hole;
stacking the core sheets with through holes in sequence on the core sheet without a hole to form an opening defined by the through holes, and the core sheet without a hole, including placing at least one adhesive layer between and contacting at least two adjacent core sheets at the periphery of the through holes leaving adhesive-free areas between the core sheets remote from the opening;
placing an IC module into the opening, a gap being formed between the opening and the IC module; and
applying heat and pressure to the core sheets, at least one adhesive layer, and IC module, wherein the gap between said IC module and said core sheets is filled while applying heat and pressure.

5,346,577

UNIVERSAL SILK SCREEN COATING MACHINE

Roderick D. Johnson, Duluth, and Jan N. Heath, Cloquet, both of Minn., assignors to The Chromaline Corporation, Duluth, Minn.

Division of Ser. No. 591,800, Oct. 2, 1990, Pat. No. 5,093,160.
This application Oct. 7, 1991, Ser. No. 772,080
Int. Cl.[5] C09J *5/02*
U.S. Cl. 156—308.8 12 Claims



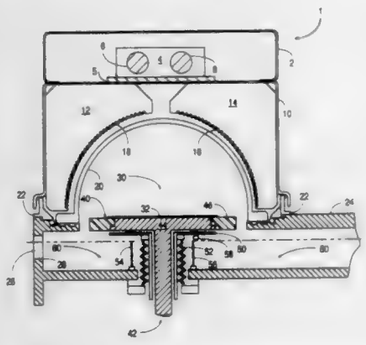
1. A method of applying a film to a screen, comprising:
(a) placing a film over a rotatable guide plate;
(b) wetting a screen to ensure adhesion of the film to the screen and placing the screen overlying the plate, whereby a leading edge of the film contacts a lower portion of the screen;
(c) applying force to the screen in a downward direction causing the plate to rotate from a first position to a second position;
(d) maintaining the plate in a substantially fixed position; and
(e) moving the screen, wherein the film is applied to the screen.

5,346,578

INDUCTION PLASMA SOURCE

Jeffrey C. Benzing, Saratoga; Eliot K. Broadbent, and Kirkwood H. Rough, both of San Jose, all of Calif., assignors to Novellus Systems, Inc., San Jose, Calif.

Filed Nov. 4, 1992, Ser. No. 971,363
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—345 25 Claims



1. A plasma process apparatus for integrated circuit fabrica-

tion having a chamber and a platen for supporting on a surface thereof a substrate in the chamber, comprising:

a hemispherically shaped induction coil having multiple helical windings, a base winding thereof being generally parallel to and coplanar with the support surface of the platen, and each of the other windings being generally parallel to the support surface of the platen, the chamber being disposed inside the induction coil;

a low frequency radio frequency power source coupled to the induction coil; and

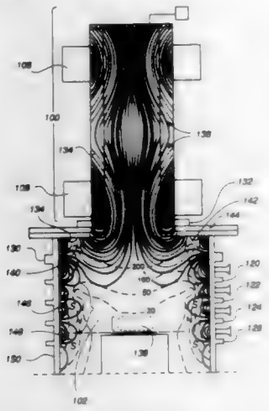
a bias power source coupled to the platen for biasing the substrate.

5,346,579

MAGNETIC FIELD ENHANCED PLASMA PROCESSING CHAMBER

Joel M. Cook, Pleasanton, and John R. Trow, Santa Clara, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 780,667, Oct. 17, 1991, abandoned.
This application Jul. 19, 1993, Ser. No. 93,445
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—345 **8 Claims**



1. In a plasma reactor comprising a vacuum chamber for etching a substrate, the improvement which comprises

magnet means for generating a ring multicusp magnetic field adjacent to an inner wall of said chamber and about the substrate processing region comprising alternating pairs of magnet rings fastened to the external wall of said chamber in a direction parallel to the plane of the substrate and parallel to each other, alternating magnet rings magnetically polarized in a direction opposite to each other wherein a permanent magnet ring is fastened to the upper portion of said chamber adjacent to a source of etch plasma to remove magnetic field lines from said plasma, the direction of magnetization of said permanent magnet ring being axial with the central axis of said chamber.

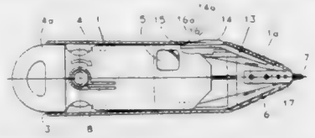
5,346,580

DEVICE FOR APPLYING A POSSIBLY COATED ADHESIVE FILM TO A SUBSTRATE

Johann Elges, Augsburg, and Hermann Goldschmidt, Bobingen, both of Fed. Rep. of Germany, assignors to Citius Buerotechnik GmbH, Gerstofen, Fed. Rep. of Germany

Filed Jun. 22, 1993, Ser. No. 80,751
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1992, 4220843
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—540 **11 Claims**

1. A device for applying an adhesive film to a substrate, consisting of a housing and an interchangeable cassette fitting in this housing and which comprises a supply spool, from which a backing strip provided with the adhesive film can be unrolled, an empty spool which can be driven from the supply roll through a drive device, for winding up the empty backing strip, and an application tongue, over which the backing strip coming from the supply spool is fed, wherein the housing has



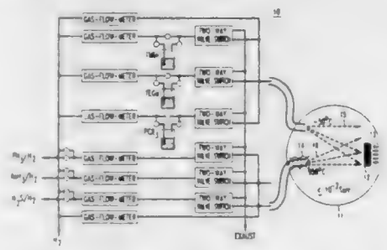
a through opening for the application tongue at its front end and a loading opening for introducing and removing the cassette at its opposite, rear end, wherein the cassette (**4**) can be slid into the housing (**1**) from its loading opening (**3**) to the through opening (**2**) in a straight line, wherein a compression spring (**9**) extending in the direction of movement of the cassette (**4**) is arranged in the housing (**1**) and is contacted by a projection (**11**) on the cassette, before the application tongue (**7**) has reached the through opening (**2**), and wherein a spring-loaded detent device (**13**, **15**, **16***a*) with a push-button (**14**) is provided, acting between the cassette (**4**) and the housing (**1**), by means of which the cassette (**4**) pushed forward against the spring force of the compression spring (**9**) in the housing (**1**) into its working position, in which the application tongue (**7**) projects through the through opening (**2**) out of the housing (**1**), can be locked relative to the housing, and which can be released by actuating the push-button (**14**), so that the cassette (**4**) is automatically pushed back into its position of non-use under the action of the compression spring (**9**), in which position the tip (**7***a*) of the application tongue (**7**) lies within the housing (**1**).

5,346,581

METHOD OF MAKING A COMPOUND SEMICONDUCTOR DEVICE

Won-Tien Tsang, Holmdel, assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 1, 1993, Ser. No. 42,385
Int. Cl.[5] C30B *25/20, 25/04*
U.S. Cl. 117—97 **10 Claims**



1. In a method of making a semiconductor device comprising

a) providing a semiconductor body that comprises III/V semiconductor material;

b) removing at least a portion of said III/V semiconductor material by a process that comprises contacting at least a part of said III/V semiconductor material with a gaseous etching medium such that an etched semiconductor surface results; and

the improvement comprising the method further comprises

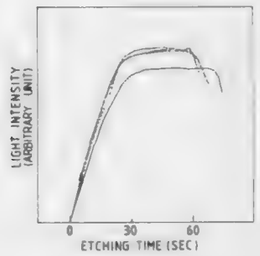
c) carrying out step b) in a reactor chamber with less than 10^{-2} Torr background pressure, the reactor chamber comprising means adapted for simultaneously exposing said III/V semiconductor material to a beam or beams of said gaseous etching medium and a III/V semiconductor precursor chemical, and the III/V semiconductor material is exposed, during at least a part of the removing step, to a beam or beams of said gaseous etching medium and the III/V semiconductor precursor chemical.

5,346,582

DRY ETCHING APPARATUS

Masaharu Yachi, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 774,860, Oct. 11, 1991, Pat. No. 5,232,537.
This application Apr. 26, 1993, Ser. No. 51,694
Claims priority, application Japan, Oct. 12, 1990, 2-273622; Sep. 26, 1991, 3-247301
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—626 **3 Claims**



1. A dry etching method in which gas introduced into a chamber is ionized to become plasma to etch a layer formed on a semiconductor wafer, comprising the following steps:

providing a plurality of monitoring areas on the wafer;

detecting the intensity of light beams emanating from said plurality of monitoring areas, the intensity of said light beams representing a thickness of the layer at the respective monitoring areas;

determining etching end times of the respective monitoring areas based on the detected intensity of said light beams;

calculating etching parameters including a uniformity of etching rate in said monitoring areas based on the determined etching end times and a thickness of said layer; and

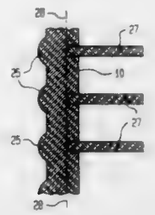
controlling an etching process based on the calculated etching parameters so that subsequent wafers are etched within said uniformity of etching rate.

5,346,583

OPTICAL FIBER ALIGNMENT TECHNIQUES

Nagesh R. Basavanhally, Trenton, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 2, 1993, Ser. No. 115,083
Int. Cl.[5] B32B *31/00*; C03C *27/00*
U.S. Cl. 156—629 **8 Claims**



1. A method for making optical devices comprising the steps of:

forming of a light transmissive material a substrate having first and second opposite surface;

forming on the first surface of the substrate at least one lens having a central axis comprising the step of defining the lens by photolithographic masking and etching;

the lens having a focal point that lies between the first and second surfaces of the substrate;

forming on the second surface by photolithographic masking and etching an aperture extending into the substrate, the aperture having a diameter approximately equal to the diameter of an optical fiber;

mounting the optical fiber on the second surface of the substrate by fitting one end of the optical fiber snugly within the aperture such that the central axis of the optical fiber is substantially coincident with the central axis of the lens;

the aperture extending from the second surface of the substrate to said focal point, whereby the lens is capable of focusing light onto the mounted optical fiber.

5. A method for making optical devices comprising the steps of:

forming of a light transmissive material a substrate having first and second opposite flat surfaces;

forming on the first surface of the substrate at least one lens having a central axis comprising the step of defining the lens by photolithographic masking and etching;

forming on the second surface of the substrate an alignment pin extending from the substrate comprising the step of defining the alignment pin by photolithographic masking and etching;

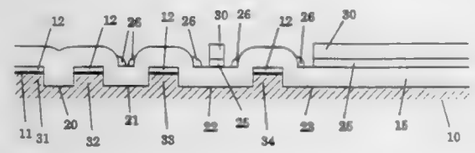
and mounting the optical fiber on the second surface of the substrate comprising the step of mounting the optical fiber within a ferrule having a central opening, and projecting the alignment pin into the central opening of the ferrule.

5,346,584

PLANARIZATION PROCESS FOR IC TRENCH ISOLATION USING OXIDIZED POLYSILICON FILLER

Andre I. Nasr, Marlborough, and Steven S. Cooperman, Southborough, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 28, 1993, Ser. No. 98,164
Int. Cl.[5] H01L *21/306, 21/304*
U.S. Cl. 156—636 **10 Claims**



1. A method of planarizing a face of a semiconductor substrate comprising:

forming flat active area mesas and trenches on said face;

depositing a conformal coating of a dielectric material or a material converted to a dielectric material over said face, forming depressions above said trenches;

depositing a layer of silicon over the conformal coating;

patterning the silicon layer with a photoresist to form resist blocks in the depressions above said trenches;

etching said silicon to leave silicon segments remaining in the areas beneath the resist blocks;

annealing the silicon to convert said silicon to oxide;

polishing the face of the semiconductor substrate with dielectric filled trenches to the level of the tops of the active areas so as to produce a substantially planar surface.

5,346,585

USE OF A FACETED ETCH PROCESS TO ELIMINATE STRINGERS

Trung T. Doan, and Guy T. Blalock, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

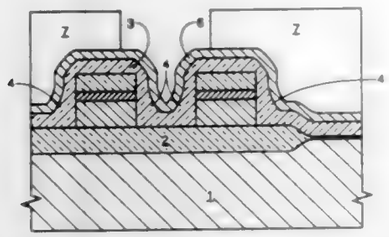
Filed Apr. 20, 1993, Ser. No. 49,274
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—643 **17 Claims**

1. A method to minimize residual deposits during etch, said method comprising the following steps of:

creating a first layer having a prograde profile, said prograde profile of said first layer being formed by removing

a portion of said first layer and depositing said portion at another site on said first layer;

disposing another layer superjacent said first layer; and



patterning and selectively removing said another layer, whereby said removal of said another layer is unobstructed by said profile of said first layer.

5,346,586

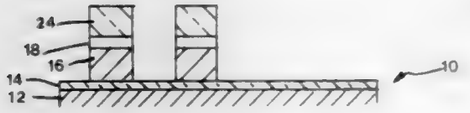
METHOD FOR SELECTIVELY ETCHING POLYSILICON TO GATE OXIDE USING AN INSITU OZONE PHOTORESIST STRIP

David J. Keller, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Dec. 23, 1992, Ser. No. 996,074

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—656 **16 Claims**



1. In semiconductor manufacture, a method for etching a silicide layer and a polysilicon layer to a gate oxide layer formed on a substrate, comprising:

forming an oxide layer on the silicide layer;

forming a patterned photoresist mask on the oxide layer;

forming an oxide hard mask by etching the oxide layer through the photoresist mask in an etch chamber of a reactive ion etcher (RIE) using a first gas etchant;

removing the photoresist mask insitu in the etch chamber using an ozone plasma;

etching the silicide layer insitu in the etch chamber using the oxide hard mask and a second gas etchant; and

etching the polysilicon layer insitu in the etch chamber using the oxide mask and a third gas etchant.

5,346,587

PLANARIZATION OF A GATE ELECTRODE FOR IMPROVED GATE PATTERNING OVER NON-PLANAR ACTIVE AREA ISOLATION

Trung T. Doan, Kuna, and Charles H. Dennison, Boise, both of Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Aug. 12, 1993, Ser. No. 105,276

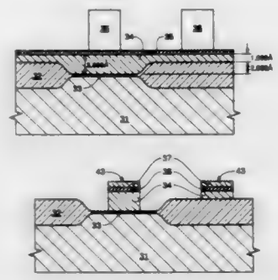
Int. Cl.[5] H01L *21/306*; B44C *1/22*; C23F *1/00*; C03C *15/00*

U.S. Cl. 156—657 **19 Claims**

1. A process for providing a planarized conductor on a non-planar starting substrate, said process comprising the steps of:

forming a layer of planarized conductive material overlying neighboring isolation regions such that the height of said conductive material extends above the topology of said isolation regions;

forming a layer of reflective material superjacent and coextensive said planarized conductive material; and



patterning said conductive material thereby forming said planarized conductor.

5,346,588

PROCESS FOR THE CHLORINE-FREE BLEACHING OF CELLULOSIC MATERIALS WITH OZONE

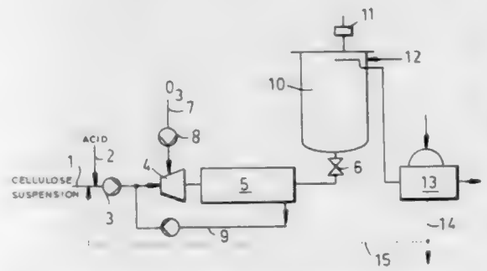
Herbert Sixta, Vöcklabruck; Gerhard Götzinger, Fistersdorf; Anton Höglinger, Timelkam; Peter Hendel, Vöcklabruck; Wilfried Rückl, Vöcklabruck; Walter Peter, Vöcklabruck; Friedrich Kurz, Attnang-Puchheim; Alfred Schrittwieser, and Manfred Schneeweisz, both of Vöcklabruck, all of Austria, assignors to Lenzing Aktiengesellschaft, Lenzing, Austria

Continuation of Ser. No. 605,744, Oct. 30, 1990, abandoned. This application Mar. 26, 1992, Ser. No. 859,236

Claims priority, application Austria, Oct. 30, 1989, 2494/89; Nov. 10, 1989, 2588/89

Int. Cl.[5] D21C *9/153*

U.S. Cl. 162—65 **13 Claims**



1. A process for the chlorine free bleaching of pulps in an aqueous suspension which comprises:

(a) forming said suspension with a consistency of 3 to 20 mass percent;

(b) introducing into said suspension an ozone-containing gas having an ozone content of 20 to 300 g/m^3 in an amount corresponding to at most 2 mass percent ozone calculated on dry pulps of said suspension during vigorous agitation in a high shear mixer of the suspension to react with the suspension forming a reaction mixture;

(c) maintaining a pressure of said ozone-containing gas at a pressure of 1.1 to 15 bar during introduction into the suspension;

(d) transferring the suspension of the ozone-containing gas from the high shear mixer to a tube reactor and continuing the reaction of the suspension and the ozone-containing gas, while maintaining the pressure of the ozone-containing gas at 1.1 to 15 bar; and

(e) controlling reaction conditions during contact of the ozone-containing gas with the suspension during steps (b), (c) and (d) to maintain a reaction temperature of 15° to 80° C., a pH of 1 to 8, and a volume ratio of gas:liquid in said reaction mixture of 1:2.5 to 1:6.

5,346,589

CRYSTALLINE CELLULOSE PRODUCTION

Edit L. Braunstein, Rochester; Robert L. Dostie, Penfield; Keith H. Germano, Webster; Steve C. Lamb, Victor; Christopher S. Penet, Henrietta, and Paul B. Richards, Rochester, all of N.Y., assignors to Genencor International, Inc., Rochester, N.Y.

PCT No. PCT/US92/01387, § 371 Date Oct. 20, 1992, § 102(e) Date Oct. 20, 1992, PCT Pub. No. WO92/14760, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 21, 1992, Ser. No. 937,825

Int. Cl.[5] D21C *3/20*

U.S. Cl. 162—72 **8 Claims**

1. A process for converting a cellulosic material to a crystalline cellulose material, the process comprising:

a) selecting as a starting material, a never dried cellulosic material; and

b) subjecting the never dried material to enzymatic hydrolysis using a cellulase enzyme at a temperature of from about 35°–75° C., and at a pH from about 2.0 to 4.0, for a time sufficient to form crystalline cellulose having a degree of polymerization (DP) from about 800 down to the level-off degree of polymerization (LODP) of the starting material.

5,346,590

DRYER SCREEN IN A PAPER MACHINE

Erkki Jaala, Tampere, Finland, assignor to Tamfelt Oy Ab, Tampere, Finland

Filed Jan. 29, 1993, Ser. No. 10,693

Claims priority, application Finland, Feb. 24, 1992, 920809

Int. Cl.[5] D03D *11/00*

U.S. Cl. 162—232 **10 Claims**



1. A dryer screen for a dryer section of a paper-making machine, comprising:

a bottom gauze layer and a top gauze layer, each having respective weft threads and warp threads, the gauze layers being bonded together during weaving so that the warp threads of the surface gauze layer are interwoven only with the weft threads of the surface gauze layer, and the bottom and surface gauze layers are bonded together by passing of the warp threads of the bottom gauze layer at suitable intervals over the weft threads of the surface gauze layer along a weft thread side facing a surface of the dryer screen, all warp threads in the dryer screen being substantially similar in cross-section, and the cross-sectional area and shape of the weft threads of the bottom gauze layer being selected so that the respective actual lengths of the warp threads of the surface gauze layer and the warp threads of the bottom gauze layer are substantially equal per a length unit of the dryer screen.

5,346,591

APPARATUS FOR TREATMENT OF CHIPS WITH HEATED BLACK LIQUOR

Kaj Henricson, Kotka, Finland, assignor to Kamyr, Inc., Glens Falls, N.Y.

Division of Ser. No. 744,506, Aug. 14, 1991, Pat. No. 5,213,662. This application Apr. 27, 1993, Ser. No. 52,756

Int. Cl.[5] D21C *7/14*

U.S. Cl. 162—249 **9 Claims**

1. Apparatus for treating comminuted cellulosic fibrous material to produce kraft pulp, comprising:

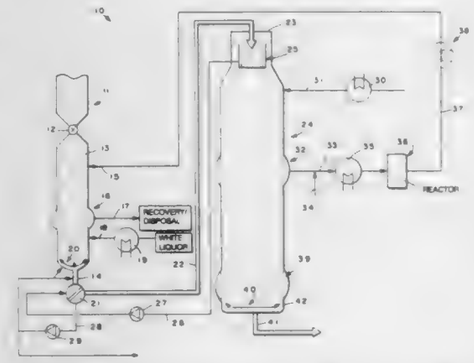
a steaming vessel;

a generally upright treatment vessel operatively connected to said steaming vessel;

an upright continuous digester for cooking the comminuted cellulosic fibrous material at a cooking temperature, operatively connected to said treatment vessel, said digester having a material inlet at the top thereof, and a material outlet at the bottom thereof;

withdrawal screen means located at an intermediate portion of said digester, between the inlet and outlet thereof, for withdrawing black liquor from said digester into a withdrawal conduit;

heating means for heating the withdrawn black liquor above



the cooking temperature in said withdrawn conduit to cause sulfur compounds to separate from the black liquor and be available for reaction with material steamed in said treatment vessel;

recirculating means for recirculating the heated withdrawn black liquor from said heating means to said treatment vessel at a first point thereof; and

withdrawal means for withdrawing black liquor from said treatment vessel at a second point thereof, vertically below said first point.

5,346,592

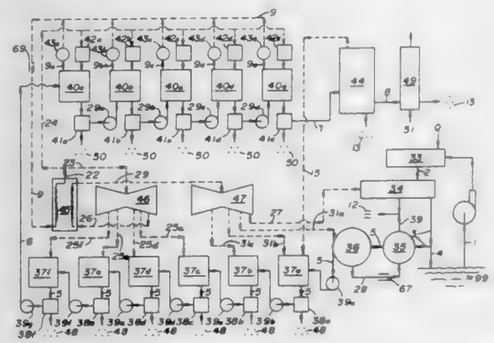
COMBINED WATER PURIFICATION AND POWER OF GENERATING PLANT

Anas A. Madani, P.O. Box 8004, Jeddah, Saudi Arabia

Filed Aug. 11, 1993, Ser. No. 105,006

Int. Cl.[5] C02F *1/10*

U.S. Cl. 202—176 **16 Claims**



1. A water purification and power generating plant which operates on a regenerative-reheat cycle comprising:

a. a steam heater capable of super-heating steam;

b. a water treatment tank capable of receiving a volume of contaminated water to be purified;

c. a heat exchanger capable of heating said contaminated water delivered from said water treatment tank;

d. an indirect contact feed heater capable of receiving and

further heating said contaminated water delivered from said heat exchanger;

e. multi-stage direct contact feed heaters, said multi-stage direct contact feed heaters including a plurality of direct contact feed heaters arranged in a series arrangement capable of gradually heating and diluting said contaminated water delivered thereto from said indirect contact feed heater, each said direct contact feed heater being capable of receiving said super-heated steam from said steam heater to heat and to dilute said contaminated water contained therein, each said direct contact feed heater having a pumping means capable of forcibly moving and elevating the pressure of said contaminated water from one said direct contact feed heater to an adjacent direct contact feed heater located downstream therefrom, each said direct contact feed heater also including a filtering means capable of removing particulating solutes from said contaminated water contained therein;

f. multi-stage evaporators capable of evaporating said contaminated water delivered from last said direct contact feed heater, said multi-stage evaporators including a plurality of evaporator tanks arranged in a series arrangement capable of receiving said contaminated water and superheated steam from said steam heater to supply heat of vaporization needed to evaporate said contaminated water contained therein, each said evaporator tank also connected to a filtering means capable of removing any particulating solutes from said contaminated water contained therein;

g. a demister connected to one of said evaporator tanks capable of removing any entrained liquid or solid in said steam and water vapor exiting therefrom;

h. a means for delivering said steam and water vapor produced by evaporation of said contaminated water inside each said evaporation tank to said steam heater for superheating;

i. a combination power generating and steam moving means capable of producing electrical power and capable of moving said super-heated steam through the plant, said combination power generating and steam moving means including a turbine system which operates on a regenerative-reheat cycle;

j. a condenser means capable of receiving said exhaust steam from said turbine system and condensing it into portable water, said condenser being disposed between said water treatment tank and said heat exchanger so that said contaminated water delivered from said water treatment tank may be used as a coolant medium in said condenser means;

k. a water conduit means capable of transporting said contaminated water in said plant, and;

l. a steam conduit means capable of transporting said superheated steam within said plant.

5,346,593

INTERMEDIATE REBOILER FOR A METHANOL PLANT

Edward J. Cialkowski, Houston, and Thomas P. Ognisty, The Woodlands, both of Tex., assignors to The M. W. Kellogg Company, Houston, Tex.

Filed Jun. 18, 1993, Ser. No. 79,063
Int. Cl.[5] B01D *3/14*
U.S. Cl. 203—18 **13 Claims**

1. A methanol refining column, consisting essentially of:

an upright vessel containing vapor-liquid contacting elements disposed between upper and lower ends thereof;

an overhead condenser in fluid communication with the vessel adjacent the upper end thereof;

a methanol product outlet disposed adjacent the upper end of the vessel;

a methanol enriching section disposed between the methanol product outlet and a mid-column feed inlet;

a methanol stripping section disposed between the feed inlet and a fusel oil take-off zone;

a methanol and fusel oil stripping section disposed below the fusel oil take-off zone;

a bottoms reboiler in fluid communication with the vessel adjacent the lower end thereof;

a bottoms outlet adjacent the lower end of the vessel;

an intermediate reboiler for heating the vessel above the bottoms reboiler and adjacent the fusel oil take-off zone; and

a line from the fusel oil take-off zone to feed the intermediate reboiler, and a side-stream from the intermediate reboiler feed for fusel oil take-off.

13. A method for refining methanol from an aqueous stream containing heavier organic contaminants, consisting essentially of the steps of:

(a) feeding the aqueous methanol stream to an inlet zone of a refining column below an upper rectifying section and above a lower stripping section;

(b) refluxing condensate overhead;



(c) recovering a high purity methanol product overhead;

(d) feeding a stream to an intermediate reboiler from a fusel oil take-off zone having a temperature of from about 85° C. to about 110° C.;

(e) recovering a fusel oil product as a side-stream from the intermediate reboiler feed stream;

(f) heating fusel oil in the intermediate reboiler with a process stream in heat exchange therewith to supply from about 70 to about 90 percent of a heat load in the column;

(g) recirculating the heated fusel oil from step (f) to the fusel oil take-off zone;

(h) heating the refining column in a bottoms reboiler with steam having a temperature above about 120° C. and greater than the temperature of the hot process stream in step (f), to supply from about 10 to about 30 percent of the heat load to the column; and

(i) withdrawing an aqueous bottoms product from the column.

5,346,594

PROCESS FOR THE PURIFICATION OF 1,1-DICHLORO-1-FLUOROETHANE

Paul Lechaude, Brussels, Belgium; Gilles Darago; Philippe Krafft, both of Tavaux, France, and Jean-Pierre Catinat, Binche, Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Filed Jan. 12, 1993, Ser. No. 2,765
Claims priority, application Belgium, Jan. 13, 1992, 09200026
Int. Cl.[5] B01D *3/34;* **C07C** *17/38*
U.S. Cl. 203—29 **8 Claims**

1. Process for purification of crude 1,1-dichloro-1-fluoroethane, comprising:

(a) treating a mixture consisting essentially of crude 1,1-dichloro-1-fluoroethane and hydrogen fluoride with chlorine at a ratio of chlorine which does not exceed 50% by weight based on the weight of the mixture of crude 1,1-dichloro-1-fluoroethane and hydrogen fluoride in the presence of a Lewis acid; and

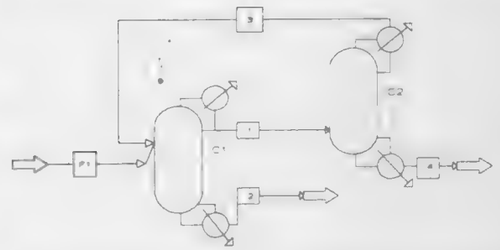
(b) distilling to recover purified 1,1-dichloro-1-fluoroethane, wherein hydrogen fluoride is present during the treatment with chlorine at a ratio of at least 5% by weight with respect to the mixture of crude 1,1-dichloro-1-fluoroethane and hydrogen fluoride.

5,346,595

PROCESS FOR THE PURIFICATION OF A PENTAFLUOROETHANE AZEOTROPE

Paul G. Clemmer; Hsueh S. Tung, and Addison M. Smith, all of Erie, N.Y., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Feb. 23, 1993, Ser. No. 23,827
Int. Cl.[5] B01D *3/14;* **C07C** *17/38*
U.S. Cl. 203—75 **19 Claims**



1. A process for the purification of pentafluoroethane comprising:

(a) subjecting a mixture comprising pentafluoroethane and at least about 0.5 mole % chloropentafluoroethane to a distillation step in which a composition enriched in one of pentafluoroethane or chloropentafluoroethane is removed as distillate **1** with a bottoms **1** being enriched in the other component and removed;

(b) subjecting distillate **1** to at least one additional distillation step conducted at a different pressure in which the component enriched as bottoms **1** is removed as a distillate **2** and recycled as a feed to step (a), with a bottoms **2** being enriched in the component enriched in distillate **1** and removed;

(c) optionally repeating step (a) and step (b) one or more times; and

(d) recovering purified pentafluoroethane as either bottoms **1** or bottoms **2**.

5,346,596

METHOD FOR BYPASSING A MONOPOLAR ELECTROLYZER IN SERIES

Pierluigi A. V. Borrione, Milan, Italy; Gregory J. E. Morris, Midland, Mich.; Maurizio Marzupio, Capriate San Gervasio, Italy, and Michel Pillet, Grasse, France, assignors to De Nora Permelec S.p.A., Italy

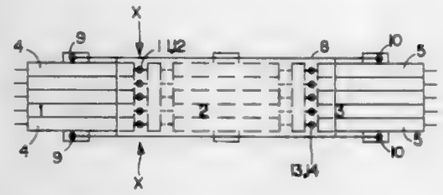
Continuation-in-part of Ser. No. 910,246, Jul. 9, 1992, Pat. No. 5,207,883, which is a continuation-in-part of Ser. No. 751,340, Aug. 29, 1991, abandoned. This application Feb. 26, 1993, Ser. No. 24,194
Claims priority, application Italy, Dec. 21, 1990, 22510; European Pat. Off., Dec. 20, 1991, 91122025.9
Int. Cl.[5] C25B *15/02, 9/04*
U.S. Cl. 204—1.11 **4 Claims**

1. A method for by-passing a monopolar electrolyzer out of a plurality of monopolar electrolyzers connected in series to an electrical power source, which electrolyzers consist of individual electrolysis cells each having anodic and cathodic contact points, by means of a jumper switch means comprising an internal circuitry and a multiplicity of extension arms for connection to the electrolyzers immediately preceding and following the electrolyzer to be by-passed, characterized in that

said jumper switch means is positioned on a mobile cart (**33**) provided with mechanical devices suitable for permitting withdrawal of an electrolyzer out of the plurality of electrolyzers connected in series;

said cart is brought in proximity of the electrolyzer to be by-passed;

said jumper switch means is moved above the plurality of electrolyzers and supported by said multiplicity of extension arms fixed onto the contact points of the two electrolyzers immediately preceding and immediately following



the electrolyzer to be by-passed, said multiplicity of extension arms comprising first extension arms connected to the anodic contact point of each individual cell of the electrolyzer immediately preceding the electrolyzer to be by-passed and second extension arms connected to the cathodic contact point of each individual cell of the electrolyzer to be by-passed, said first and second extension arms being joined to said internal circuitry to provide by-passing of the electrolyzer without a shift of electrical current in the adjacent cells of the electrolyzers immediately preceding and immediately following the electrolyzer to be by-passed;

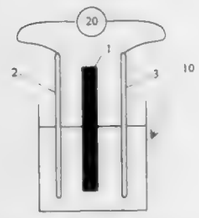
the by-passed electrolyzer is transferred onto said cart and moved to a maintenance area.

5,346,597

PROCESS FOR ETCHING ORGANIC POLYMERIC MATERIALS

Rong-Jer Lee, Lin Nei Town; Shy-Ming Ho, Hsinchu, and Tsung H. Wang, Taichung, all of Taiwan, assignors to Industrial Technology Institute, Chutung, Taiwan

Filed Sep. 27, 1993, Ser. No. 127,327
Int. Cl.[5] C25F *3/02*
U.S. Cl. 204—129.1 **14 Claims**



13. A method for etching a polymeric resin comprising the steps of:

(a) placing said polymeric resin to be etched in an etching bath which contains two electrodes immersed in an etching solution, said etching solution comprises an acid or a metallic hydroxide; and

(b) applying a direct current of between 0.5 and 20 V to said electrodes.

5,346,598

METHOD FOR THE PREVENTION OF FOULING AND/OR CORROSION OF STRUCTURES IN SEAWATER, BRACKISH WATER AND/OR FRESH WATER

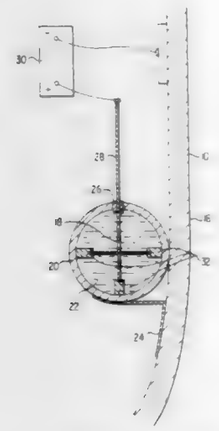
William J. Riffe, Morehead City, N.C., and Jack D. Carter, Austin, Tex., assignors to Marine Environmental Research, Inc., Morehead City, N.C.

Continuation-in-part of Ser. No. 523,418, May 15, 1990, Pat. No. 5,055,165, which is a continuation-in-part of Ser. No. 145,275, Jan. 19, 1988, abandoned, which is a continuation-in-part of Ser. No. 548,214, Jul. 5, 1990, Pat. No. 5,009,757, which is a continuation of Ser. No. 145,275, Jan. 19, 1988, abandoned. This application Feb. 21, 1991, Ser. No. 658,582

The portion of the term of this patent subsequent to Apr. 23, 2008, has been disclaimed.

Int. Cl.[5] C23F *13/00*

U.S. Cl. 204—147 **13 Claims**



1. A method for preventing the fouling or corrosion of a structure having a surface in contact with seawater, brackish water, fresh water, or a combination of these, said method comprising using a structure having a conductive zinc-containing surface, where said structure is made of zinc or of a zinc-containing alloy or said structure is made of a conductive or non-conductive material and is equipped with a zinc-containing surface layer or with a zinc-containing coating applied thereto, wherein said conductive zinc-containing surface layer and coating form an interfacial layer between said conductive structure and said water, said coating further containing a silicate, iron oxide, di-iron phosphide, or a mixture thereof, said method further comprising: (a) inducing and maintaining a negative capacitive charge on the surface of said structure in contact with said water sufficient to prevent said fouling or said corrosion; or (b) inducing and maintaining an asymmetric alternating electrostatic potential on said conductive zinc-containing coating sufficient to prevent said fouling or said corrosion; using as a means for inducing said negative capacitive charge or for inducing said asymmetric alternating electrostatic potential, a means comprising at least one condenser bank attached to said structure, wherein said at least one condenser bank is protected from contact by said water, wherein said means for inducing said negative capacitive charge or for inducing said asymmetric alternating electrostatic potential has a terminal of a first polarity conductively connected to said zinc-containing surface and a terminal of opposite polarity capacitively connected to said zinc-containing surface, wherein said terminal polarity capacitively connected to said zinc containing surface is protected from contact by said water environment.

5,346,599

CAPILLARY ZONE ELECTROPHORETIC DETECTION OF BIOLOGICAL THIOLS AND THEIR S-NITROSATED AND OXIDIZED DERIVATIVES

Jonathan Stamler, 220 Marlborough St., #1, Boston, Mass. 02116, and Joseph Loscalzo, 50 Pacella Dr., Dedham, Mass. 02026

Filed Jan. 26, 1993, Ser. No. 9,469

Int. Cl.[5] G01N *27/26, 27/447*

U.S. Cl. 204—180.1 **12 Claims**

1. A method for separating and detecting individual thiol compounds in a biological sample comprising subjecting said sample to capillary electrophoresis.

5,346,600

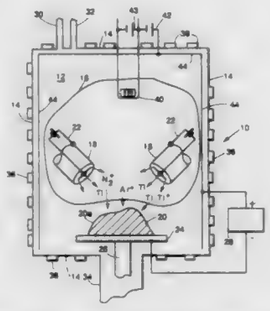
PLASMA-ENHANCED MAGNETRON-SPUTTERED DEPOSITION OF MATERIALS

Simon K. Nieh, Monrovia; Jesse N. Matossian, Canoga Park, and Frans G. Krajenbrink, Newbury Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 14, 1992, Ser. No. 929,986

Int. Cl.[5] C23C *14/35*

U.S. Cl. 204—192.3 **19 Claims**



10. A process for depositing a hard coating of a metal compound selected from the group consisting of nitrides, carbides, and carbo-nitrides onto a surface of a substrate material, comprising the steps of:

(a) heating said substrate to a chosen temperature;

(b) depositing said coating of said metal compound onto said surface of said substrate by sputtering a metal from a magnetron sputtering source in the presence of a plasma comprising an inert gas and at least one reactive gas containing an element selected from the group consisting of nitrogen and carbon, said magnetron sputtering source operated independently and electrically decoupled from said plasma and from said substrate; and

(c) simultaneous with said deposition, bombarding said substrate with inert gas ions from said independently controlled and decoupled plasma to maintain said temperature of said substrate and to control the microstructure of said coating.

5,346,601

SPUTTER COATING COLLIMATOR WITH INTEGRAL REACTIVE GAS DISTRIBUTION

Andrew Barada, 41 Sunrise Ave., New Canaan, Conn. 06840, and Steven D. Hurwitt, 159 Pascak Rd., Park Ridge, N.J. 07656

Filed May 11, 1993, Ser. No. 60,315

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—192.15 **14 Claims**

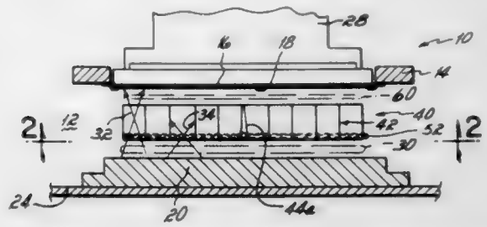
11. A method of reactive sputter coating a film onto three dimensional features of a semiconductor wafer having a central area and an outer rim, the method comprising the steps of:

supporting a stepped semiconductor wafer in a vacuum sputter coating chamber;

supporting a sputtering target in the vacuum chamber with a sputtering surface thereof facing the wafer;

filling the chamber with a sputtering gas at a vacuum pressure level;

producing a plasma of the sputtering gas in the space between the target and the wafer and bombarding the target with ions from the plasma to sputter coating material therefrom for propagation onto the wafer;



disposing a collimator in the chamber between the plasma and the wafer, the collimator including a grid of vanes having a width extending in a direction from the target to the wafer to restrict propagation paths of the sputtered material onto the wafer; and

supplying reactive gas through passages in the vanes and discharging the reactive gas from the passages in a region inward of the outer rim of the wafer.

5,346,602

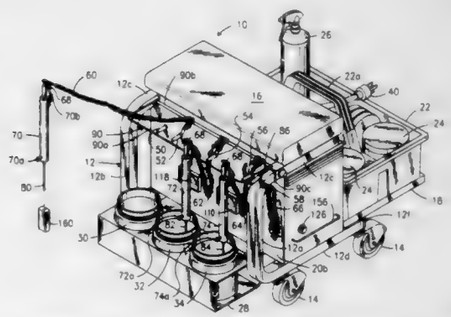
MOBILE ELECTROPLATING UNIT

Daniel A. McLaughlin, Madeira Beach, Fla., assignor to Gold Effects, Inc., Madeira Beach, Fla.

Filed Sep. 24, 1993, Ser. No. 126,375

Int. Cl.[5] C25D *17/00, 17/14*

U.S. Cl. 204—224 R **27 Claims**



1. Apparatus for plating metal surfaces, comprising: a support member, wheels provided on the support member to enable said member to be moved to any desired position during a metal plating operation, a seat provided for the support member to enable an operator to assume a sitting position on the support member while using the apparatus to plate a metal surface, a D.C. power source carried on the support member, a plurality of chemical solution receptacles positioned on the support member in proximal relation to the seat, and means provided on the support member for sequentially applying chemical solutions in said receptacles to a metal surface to be plated, said means being connectable to the D.C. power source for completing an electrical circuit from the D.C. power source to the metal surface to be plated.

5,346,603

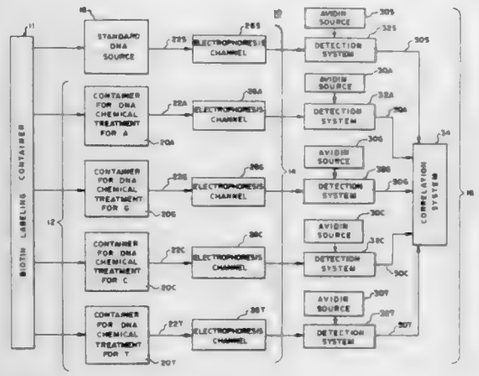
DNA SEQUENCING

Lyle R. Middendorf, and John A. Brumbaugh, both of Lincoln, Nebr., assignors to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Continuation of Ser. No. 799,712, Nov. 26, 1991, abandoned, which is a continuation of Ser. No. 632,605, Dec. 24, 1990, abandoned, which is a continuation of Ser. No. 78,279, Jul. 27, 1987, abandoned, which is a division of Ser. No. 594,676, Mar. 29, 1984, Pat. No. 4,729,947. This application Sep. 24, 1992, Ser. No. 950,734

Int. Cl.[5] C25B *9/00*

U.S. Cl. 204—299 R **6 Claims**



1. Apparatus comprising:

separating apparatus;

said separating apparatus having at least four identical gel electrophoresis channels and at least four separate channel-introducing sections each of which corresponds to a different one of said at least four identical gel electrophoresis channels, wherein each of said four identical channel-introducing sections is adapted to receive DNA fragments terminated at different ones of four nucleic acid molecules, A, G, C and T;

means establishing potential across said at least four identical gel electrophoresis channels and at least four separate channel-introducing sections, wherein bands of more mobile DNA fragments are fully resolved in the gel electrophoresis channels while some of the less mobile strands to be later formed into bands are unresolved in a continuous process;

said separating apparatus including means for maintaining four separate groups of DNA fragments in accordance with the terminating base;

means for marking said DNA fragments prior to their entrance into the electrophoresis gel with biotin;

means for attaching a flourescent marker to avidin;

means for marking said DNA fragments after they have been electrophoresed through said electrophoresis apparatus with fluorescenated avidin;

means for selectively pulsing said markers with light;

means for detecting the fluorescence of said marker across a time period in which background fluorescence is reduced; and

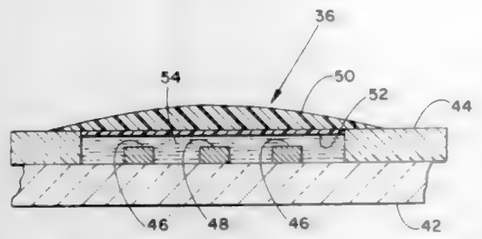
said means for detecting including means for converting said fluorescence into electrical signals indicating the time sequence of bands of DNA marked with fluorescence corresponding to each of the DNA fragments cleaved at different ones of the nucleic acid groups.

5,346,604

SELF-ACTIVATING CHEMICAL SENSOR SYSTEM

Kee Van Sin, Lino Lakes; Carter Anderson, Eagan, and Kellie Erbisch, Columbia Heights, all of Minn., assignors to Diametrics Medical, Inc., Roseville, Minn.

Filed Oct. 21, 1992, Ser. No. 964,583
Int. Cl.[5] G01N *27/404*
U.S. Cl. 204—415 12 Claims



1. A self-activating sensing system for detecting oxygen comprising:

(a) an electrode system including spaced electrodes separated on a dielectric substrate;

(b) an hydration-activated electrolyte system including a solvent medium containing an electrolyte salt covering and connecting the spaced electrodes;

(c) a liquid-tight, gas-permeable vapor transport layer physically covering the electrode system and electrolyte system for permitting passage of ambient gases including water vapor to the electrolyte system;

(d) an outer electrolyte-activating layer on the vapor-transport layer comprising an hydrophilic material for absorbing water vapor from the ambient atmosphere for passage via the vapor transport layer to the electrolyte system to thereby activate the sensing system upon the assembly thereof and maintain the sensing system in an active state during storage, said electrolyte-activating layer further being of a material readily displaced from the vapor transport layer by an aqueous sample; and

(e) means connecting the electrodes to external circuitry.

5,346,605

APPARATUS FOR QUANTITATIVE DETERMINATION OF CHEMICAL OXIDIZING OR REDUCING AGENTS IN A FLUID ENVIRONMENT

Duane K. Wolcott, Baton Rouge, and Stephen A. Noding, Brusly, both of La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 934,203, Aug. 24, 1992, abandoned. This application Jun. 29, 1993, Ser. No. 84,786
Int. Cl.[5] G01N *27/40, 27/404*
U.S. Cl. 204—412 23 Claims

1. A sensor suited for use in an apparatus for the quantitative determination of chemical oxidizing or reducing agents in a fluid environment, comprising:

a first, sensing electrode for contacting oxidizing or reducing agents in the fluid environment and producing an ionic species therefrom;

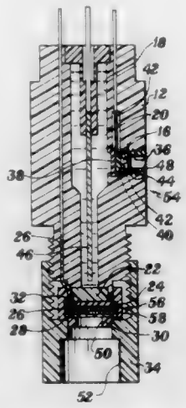
a layer of an electrochemically inert hydrated salt or combination of electrochemically inert hydrated salts adjacent the first electrode and through which an oxidizing or reducing agent species must pass to encounter the first electrode;

means for retaining the layer of salt(s) in such position;

a reservoir of an electrolytic solution;

a second electrode in contact with the reservoir of electrolytic solution; and

an ion-exchange membrane separating the electrolytic solution and second electrode from the first electrode, which prevents the ionic species produced at the first electrode



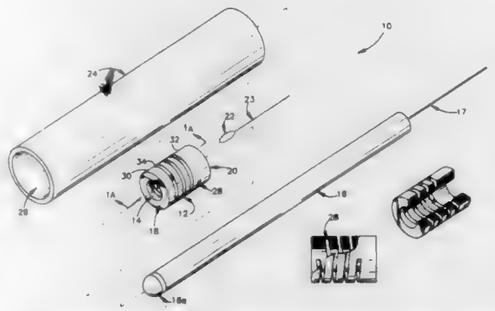
from an oxidizing or reducing agent from passing into the reservoir of electrolytic solution.

5,346,606

ELECTROCHEMICAL SENSOR

Kurt W. Christner, and Stewart Thoeni, both of Carson City, Nev., assignors to Elsag International N.V., Amsterdam Zuidoost, Netherlands

Filed Aug. 16, 1993, Ser. No. 106,529
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—433 16 Claims



1. A device for use in connection with measuring ionic properties in a specimen fluid, which comprises:

(a) a salt bridge comprising an electrolyte-impregnated unitary semipermeable plug having

(i) a central bore and a first end adapted to contact the specimen fluid,

(ii) a second end opposite the first end,

(iii) a longitudinal axis extending between said first end and said second end, and

(iv) an outer surface radially outward of said longitudinal axis,

wherein said plug has a spiral cut in said outer surface and penetrating into said central bore, said spiral having at least one complete turn and starting at or near said first end and ending at or near said second end; and

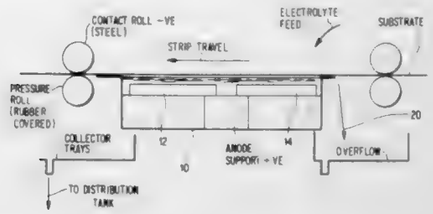
(b) an impermeable material deposited in said spiral to substantially fill said spiral thereby forming an ion impermeable spiral barrier.

5,346,607

ELECTROLYTIC TINPLATING AND PRODUCT

John L. Swanson, Pittsburgh, Pa., and Lowell W. Austin, Weirton, W. Va., assignors to Weirton Steel Corporation, Weirton, W. Va.

Filed Sep. 30, 1992, Ser. No. 954,762
Int. Cl.[5] C25D *3/30, 21/18, 5/26*
U.S. Cl. 205—99 12 Claims



1. Halogen-system electrolytic tinplating of flat-rolled steel, comprising the steps of

(A) providing electrolytic plating cell means with an aqueous stannous electrolytic plating bath and means for connecting flat-rolled steel substrate to serve as the cathode for electrolytic tinplating during passage through such bath, in which

the pH of the electrolytic plating bath is in a range of about 2 to less than about 5 and such plating bath contains an alkali metal fluoride in solution,

such plating bath including sufficient fluoride ion to sustain fluorostannite complex ion $(SnF_6)^{-4}$ concentration so as to prevent undesirable precipitation of stannous ion salts from the bath within such pH range, with

stannous ions entering the electrolytic bath solution from solid sources of lead-contaminated tin electrolytically connected to serve as the anode for electrolytic tinplating,

such anode including lead so as to electrolytically introduce normally unfilterable lead into the solution at or above a level which would result in an undesirable percentage of lead in the tin as electroplated from the bath onto the flat-rolled steel substrate, and

(B) chemically treating the electrolytic plating bath to establish a solid-phase bivalent metal compound in such plating bath,

the solid-phase of such bivalent metal compound being substantially insoluble in such plating bath within such pH range of operations,

such solid-phase bivalent metal compound exhibiting an extended surface area having an affinity for adsorption of such previously unfilterable electrolytically-introduced lead which associates itself with the solid-phase bivalent metal compound within such pH range of operations so as to prevent its deposition from the bath onto the flat-rolled steel, thus

decreasing the percentage by weight of lead in the tin electrolytically deposited to a percentage by weight below the percentage by weight of lead being introduced to such bath from such tin anode.

5,346,608

METHOD FOR OBTAINING NEODYMIUM OR NEODYMIUM-IRON ALLOY BY ELECTROLYSIS OF MELTS CONTAINING NEODYMIUM COMPOUNDS

Ulrich Ströder, Johannesberg, Fed. Rep. of Germany; Jean-Jacques Duruz, Geneva, Switzerland, and Jean-Louis Jorda, Neuville, France, assignors to Heraeus Elektrochemie GmbH, Hanau am Main and Moltech Invent SA, Luxembourg

Filed Dec. 18, 1992, Ser. No. 992,691
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 4142160
Int. Cl.[5] C25C *3/34;* C25D *3/66*
U.S. Cl. 205—231 16 Claims

1. In a method for obtaining neodymium or neodymium-iron alloy by electrolysis of a melt containing neodymium oxide, neodymium fluoride, alkali metal fluorides, and optionally alkali earth metal fluorides, using at least one anode and at least one cathode at least partially immersed in the melt, the improvement wherein the anode is a hollow body formed of magnetite and the electrolysis is carried out at a melt temperature from about 750° C. to about 1100° C.

5,346,609

HYDROCARBON UPGRADING PROCESS

David L. Fletcher, Turnesville; Michael S. Sarli, Haddonfield, and Stuart S. Shih, Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Aug. 15, 1991, Ser. No. 745,311
Int. Cl.[5] C10G *69/02*
U.S. Cl. 208—89 18 Claims

1. A process of upgrading a sulfur containing hydrocarbon comprising a catalytically cracked naphtha feed fraction comprising olefins and boiling in the gasoline boiling range, the feed fraction being selected from a naphtha having a boiling range in the range of C_6 to 330° F., a naphtha having a boiling range in the range of C_5 to 420° F., a naphtha having a boiling range in the range of 260° to 412° F. or a naphtha boiling in the range of 330° to 500° F., which comprises:

contacting such sulfur containing naphtha feed fraction with a hydrodesulfurization catalyst in a first reaction zone, operating under a combination of elevated temperature, elevated pressure and an atmosphere comprising hydrogen, such as to produce a first intermediate reaction zone product comprising a normally liquid fraction which has a reduced sulfur content and a reduced octane number as compared to the feed;

cascading the first intermediate reaction zone product to a second reaction zone and contacting the first intermediate product in the second reaction zone in the presence of hydrogen with a different catalyst, comprising a zeolitic behaving refractory solid having an acid activity equivalent to at least about 20 alpha, and a topology such that, in the aluminosilicate form, it would have a constraint index of 2 to 12; under a combination of conditions comprising elevated temperature of from 700° to 800° F., sufficient to convert said first intermediate product fraction boiling in the gasoline boiling range to a product comprising a fraction boiling in the gasoline boiling range having a higher octane number than said first intermediate gasoline boiling range fraction; and

recovering at least said upgraded gasoline boiling range product fraction.

5,346,610

MULTI-STAGE REGENERATION OF CATALYST IN A BUBBLING BED CATALYST REGENERATOR

Hartley Owen, Worton, Md., and Paul H. Schipper, Doylestown, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 30, 1992, Ser. No. 997,748
Int. Cl.[5] C10G *11/00*
U.S. Cl. 208—113 9 Claims

1. A fluidized catalytic cracking process wherein a heavy hydrocarbon feed comprising hydrocarbons having a boiling point above about 650° F. is catalytically cracked to lighter products comprising the steps of:

catalytically cracking said feed in a catalytic cracking zone operating at catalytic cracking conditions including a riser top temperature of about 950° to 1075° F. by mixing, in the base of • riser reactor, a heavy crackable feed with a source of hot regenerated catalytic cracking catalyst withdrawn from a catalyst regenerator, and cracking said feed in said riser reactor to produce catalytically cracked products and spent catalyst which are discharged from the top of the riser into a catalyst disengaging zone;

separating cracked products from spent catalyst in said catalyst disengaging zone to produce a cracked product

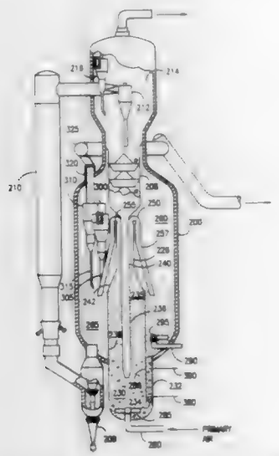
vapor phase which is recovered as a product and a spent catalyst phase at a temperature of about 950° to 1075° F. which is discharged from said disengaging zone into a catalyst stripper contiguous with and beneath said disengaging zone;

steam stripping said spent catalyst with stripping steam in said stripping zone to produce a stripper vapor comprising cracked products and stripping steam which is removed from said stripping zone as a product and a stripped catalyst phase which is discharged into a vertical standpipe beneath said stripping zone;

discharging stripped catalyst from said standpipe into a coke combustor catalyst regeneration zone contiguous with and beneath said stripping zone;

heating said stripped catalyst in said coke combustor to at least 1100° F. by adding a controlled amount of hot regenerated catalyst having a temperature from 1200° to 1500° F. from an encompassing fluidized bed of regenerated catalyst at least partially covering said coke combustor;

regenerating said stripped and heated catalyst in said coke combustor at catalyst regeneration conditions including a temperature above 1100° F., contact with an oxygen containing gas at a superficial vapor velocity above 3 feet per second and sufficient to maintain at least turbulent or fast fluidized bed conditions to produce at least partially regenerated catalyst and flue gas;



discharging upwardly from said coke combustor a dilute phase mixture of flue gas and at least partially regenerated FCC catalyst into a superimposed dilute phase transport riser mounted above said coke combustor;

discharging from said dilute phase transport riser at least partially regenerated FCC catalyst and flue gas;

separating said discharged FCC catalyst from flue gas and collecting said discharged FCC catalyst in said encompassing fluidized bed having a depth of at least 2 feet and encompassing at least a portion of said coke combustor;

recycling regenerated catalyst from said encompassing fluidized bed into said coke combustor by removing regenerated catalyst via a vertical trough recycle means having a top and a bottom with:

a height of at least 2 feet;

an inlet in said top portion thereof for regenerated catalyst immersed in said encompassing fluidized bed;

an outlet in said bottom portion in said coke combustor;

at least one fluidizing gas inlet at an elevation intermediate said top and said bottom for fluidizing gas;

controlling, at least periodically, the flow of recycled catalyst from said encompassing fluidized bed to said coke combustor by changing the amount of fluidizing gas added to said vertical trough; and

withdrawing regenerated catalyst from said encompassing fluidized bed and charging same to said base of said riser reactor.

5,346,611

REFORMING/DEHYDROCYCLIZATION CATALYSTS

Peter K. Coughlin, Yorktown, and Regis J. Pellet, Croton-on-Hudson, both of N.Y., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 855,301, Mar. 23, 1992, Pat. No. 5,225,071, which is a continuation-in-part of Ser. No. 625,273, Dec. 10, 1990, Pat. No. 5,098,877, which is a continuation-in-part of Ser. No. 447,340, Jan. 18, 1990, abandoned, which is a continuation of Ser. No. 157,977, Feb. 19, 1988, abandoned, which is a division of Ser. No. 844,951, Mar. 27, 1986, Pat. No. 4,741,820. This application Jul. 2, 1993, Ser. No. 86,961

The portion of the term of this patent subsequent to May 3, 2005, has been disclaimed.

Int. Cl.[5] C10G *35/06;* **C07C** *2/52*

U.S. Cl. 208—138 **20 Claims**

1. A reforming process comprising contacting a mixed hydrocarbon fraction to obtain a higher-octane product under effective reforming conditions using a catalyst comprising amounts effective to render the catalyst active as a reforming catalyst of:

(a) at least one MP-NZMS characterized in the calcined form by an adsorption of isobutane of at least 2 percent by weight at a partial pressure of 500 torr and a temperature of 20° C. and also characterized by an adsorption of triethylamine less than about 5 percent by weight at a partial pressure of 2.6 torr and a temperature of 22° C.;

(b) an inorganic-oxide binder; and

(c) at least one Group VIII metal.

5,346,612

DISTILLATE HYDROGENATION UTILIZING A CATALYST COMPRISING PLATINUM, PALLADIUM, AND A BETA ZEOLITE SUPPORT

Simon G. Kukes, Naperville; Frederick T. Clark, Wheaton, and P. Donald Hopkins, St. Charles, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Feb. 19, 1993, Ser. No. 21,530

Int. Cl.[5] C10G *45/00, 45/52, 45/54*

U.S. Cl. 208—143 **14 Claims**

1. A process for the hydrogenation of a hydrocarbon feedstock consisting essentially of hydrocarbon boiling between about 150° F. and 700° F. at atmospheric pressure which comprises reacting said feedstock with hydrogen at hydrogenation conditions in the presence of a catalyst comprising hydrogenation metals and a support comprising beta zeolite, said hydrogenation metals comprising from about 0.1 percent by weight to about 2.0 percent by weight each of palladium and platinum and measured as a percentage of said catalyst, and said beta zeolite comprising sodium in an amount ranging from about 1 ppm by weight to about 3.0 percent by weight of said beta zeolite.

5,346,613

FCC PROCESS WITH TOTAL CATALYST BLENDING

David A. Lomas, Barrington, and David A. Wegerer, Lisle, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Sep. 24, 1993, Ser. No. 125,723

Int. Cl.[5] C10G *35/14, 9/32, 11/18*

U.S. Cl. 208—164 **15 Claims**

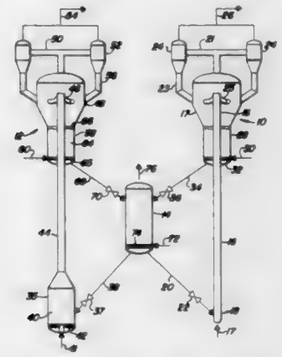
1. A process for the fluidized catalytic cracking of hydrocarbons comprising:

(a) passing regenerated catalyst from a regeneration zone into a blending zone;

(b) passing spent catalyst from a reaction zone into said blending zone;

(c) fluidizing said spent and regenerated catalyst in said blending zone to produce blended catalyst comprising a mixture of said spent and regenerated catalyst;

(d) passing a first portion of said blended catalyst to said reaction zone and contacting said first portion of blended catalyst with a hydrocarbon-containing feedstream in said reaction zone to crack hydrocarbons and deposit coke on said blended catalyst to produce spent catalyst and hydrocarbon products and separating a hydrocarbon containing product stream from said spent catalyst; and,



(e) passing a second portion of said blended catalyst to said regeneration zone and contacting said second portion of blended catalyst with an oxygen-containing regeneration gas to combust coke from said blended catalyst and produce regeneration gas and regenerated catalyst and separating said regeneration gas from said regenerated catalyst.

5,346,614

REMOVAL OF HYDROGEN SULFIDE FROM AN OIL-CONTAINING MIXTURE HAVING A CONTINUOUS AQUEOUS PHASE

Christohper R. Culver, Fillmore, and Clifford D. Juengst, Aliso Viejo, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 10, 1992, Ser. No. 974,250

Int. Cl.[5] C10G *17/08*

U.S. Cl. 208—242 **30 Claims**

1. A method for removing hydrogen sulfide from a mixture comprising a continuous aqueous phase having a pH of at least 6 and a first oil phase, the method comprising the step of introducing a sufficient amount of sulfur dioxide into the mixture to form a treated mixture comprising a continuous aqueous phase having a pH less than 6 and a second oil phase, the pH of the aqueous phases being measured at ambient conditions and the treated mixture being substantially devoid of a sulfur sludge.

5,346,615

PROCESS FOR DEASPHALTING AND DEMETALATING CRUDE PETROLEUM OR ITS FRACTIONS

Cesar Savastano, Zelo Buon Persico, Italy, assignor to Eniricerche S.p.A., Milan, Italy

Continuation of Ser. No. 709,492, Jun. 3, 1991, abandoned. This application May 27, 1993, Ser. No. 76,361

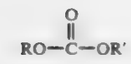
Claims priority, application Italy, Jun. 4, 1990, 20533 A/90; Nov. 23, 1990, 22177 A/90

Int. Cl.[5] C10C *3/02*

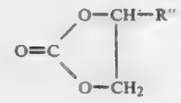
U.S. Cl. 208—309 **19 Claims**

1. A process for deasphalting and demetallizing crude petroleum, or a fraction thereof, containing asphaltenes and metals, said process consisting essentially of

a) contacting said crude or its fraction with a deasphalting agent consisting of an organic carbonate selected from the group consisting of dialkyl carbonates definable by the formula:



where R and R′, which can be the same or different, represent a C1–C3 alkyl radical, and cyclic carbonates definable by the formula:



where R″ represents hydrogen or methyl to form a crude/carbonate combination;

b) raising the temperature of the crude/carbonate combination to form a homogeneous liquid phase;

c) maintaining the homogeneous liquid phase for a time sufficient to form a precipitate comprised of a solid residue rich in asphaltenes and asphaltenic metals;

d) separating said solid residue from the homogeneous liquid phase under conditions which maintain the homogeneous liquid phase; and

e) cooling the homogeneous liquid phase recovered in step d) to induce separation of the homogeneous liquid phase into a refined liquid phase and an extracted liquid phase.

5,346,616

APPARATUS FOR PATHOGEN REDUCTION IN WASTE

Robert W. Christy, Sr., and Paul G. Christy, both of Devon, Pa., assignors to RDP Company, Plymouth Meeting, Pa.

Continuation of Ser. No. 654,781, Feb. 13, 1991, which is a division of Ser. No. 505,938, Apr. 6, 1990, Pat. No. 5,013,458. This application Nov. 3, 1992, Ser. No. 971,531

Int. Cl.[5] B01D *35/18;* **C02C** *3/00*

U.S. Cl. 210—179 **1 Claim**



1. Apparatus for treatment of sludge, comprising:

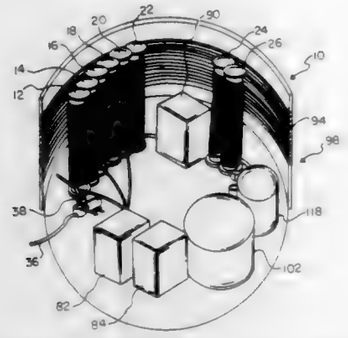
(a) means for supplying dewatered sludge from a source of dewatered sludge and additive from a source of additive, the dewatered sludge having a solids content in the range of 10–60% and the additive selected from the group consisting of calcium oxide and calcium carbonate;

(b) means for mixing the sludge and additive to generate and release heat including means for supplying said additive in sufficient quantity to adjust the pH of the sludge to at least a level of about 12, including means for maintaining the pH level of the sludge for at least about 2 hours;

(c) means for retaining within the sludge at least a substantial amount of the heat released during the mixing by maintaining the sludge in a substantially closed chamber at an elevated temperature for a period of time; and

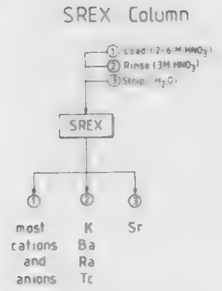
(d) means for applying supplemental heat to the sludge while it is in said substantially closed chamber.

5,346,617
METHOD AND APPARATUS FOR PURIFYING WASTE WATER
Burton W. Costello, 6780 Schooner Bay Cir., Sarasota, Fla. 34231
Filed Mar. 17, 1992, Ser. No. 852,784
Int. Cl.[5] C02F *1/78*
U.S. Cl. 210—192 1 Claim



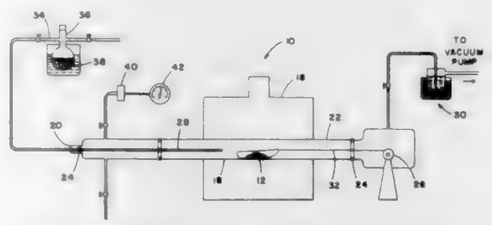
1. A system for the purifying of water passing through the system, the system comprising in combination:
a plurality of vertically extending catalytic reaction chambers including a first chamber, a second chamber and at least one subsequent chamber;
a quantity of particulate material formed of mineral granules comprised principally of manganese dioxide the granules further containing additional minerals in limited amounts, the particulate material being located within the first and second chambers for catalytically removing contaminants from the water contacting the granules as the water passes through the first and second chambers;
a plurality of pipes, including a first pipe, a second pipe, and at least one subsequent pipe, the first pipe being connected to the first chamber for feeding the water from outside the system into the first chamber, the second pipe being in fluid communication with the first chamber and the second chamber for feeding the water from the first chamber to the second chamber and the subsequent pipe being connected to each subsequent chamber for feeding the water therefrom;
a first ozone injector connected with the first pipe in advance of the first chamber and in fluid communication therewith for injecting ozone into the water upstream of the first chamber, and a second ozone injector connected with the second pipe and in fluid communication therewith for injecting ozone into the water between the first and second chambers;
a sand filter connected to the first pipe in advance of the first injector for the removal of particulate material from the water;
an ultra violet device to for the production of hydroxyl ions connected to a subsequent chamber to further treat the water such that a continuing oxidation and disinfection process is provided;
an extended pipe assembly connected to the outlet of the ultra violet device wherein the reaction chambers and extended pipe assembly are connected by tubing for injecting residual ozone from the chambers to the extended pipe assembly for continuous oxidation and ozonation, the extended pipe assembly being spirally wrapped to form a continuous loop, said spirally wrapped continuous loop defining an enclosure, the first, second, and subsequent chambers being disposed within said enclosure;
a carbon filter connected to the outlet of the extended pipe assembly for the polishing of the water;
a back wash tank connected to the reaction chambers to receive and store water for back washing the system; and
pump means for feeding the water through the plurality of pipes, sand filter, reaction chambers, injectors, extended pipe assembly, and carbon filter in a continuous and automatic cycle of operation while injecting ozone into the first pipe and the second pipe.

5,346,618
LIQUID CHROMATOGRAPHIC EXTRACTION MEDIUM
E. Philip Horwitz, Naperville, and Mark L. Dietz, Evanston, both of Ill., assignors to ARCH Development Corporation, Chicago, Ill.
Continuation of Ser. No. 822,710, Jan. 21, 1992, abandoned, which is a division of Ser. No. 507,419, Apr. 9, 1990, Pat. No. 5,110,474. This application Apr. 23, 1993, Ser. No. 51,608
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.2 23 Claims



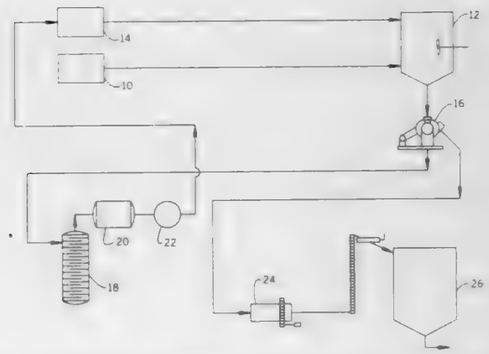
1. An extractant medium for selectively removing at least one of strontium and technetium and from a liquid comprising, an extraction solution dispersed on an inert resin substrate material with said extractant solution consisting essentially of a Crown ether dissolved in an organic diluent capable of dissolving at least 0.3M of water and up to about 6.0M of water, with said Crown ether and said diluent on said inert resin both having limited solubility in water such that said ether and said diluent are not significantly eluted upon exposure to substantial volumes of water during the chromatographic process.

5,346,619
CARBON-CLAD ZIRCONIUM OXIDE PARTICLES
Eric F. Funkenbusch, White Bear Lake; Peter W. Carr, Minneapolis; Douglas A. Hanggi, St. Paul, and Thomas P. Weber, Minneapolis, all of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.
Division of Ser. No. 5,873, Jan. 15, 1993, Pat. No. 5,254,262, which is a continuation of Ser. No. 805,529, Dec. 11, 1991, abandoned, which is a division of Ser. No. 497,594, Mar. 22, 1990, Pat. No. 5,108,597. This application Jul. 14, 1993, Ser. No. 92,387
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.2 6 Claims



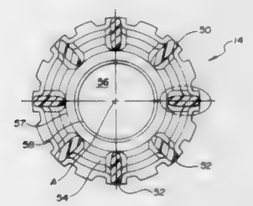
1. A chromatography column selected from the group consisting of a liquid chromatography column, a gas chromatography column and a supercritical fluid chromatography column, comprising a packing consisting of a plurality of porous zirconium oxide particles having core zirconium oxide particles having pore diameters from about 20–5000 Å, and which have surfaces substantially covered by a carbon cladding, wherein the carbon-clad spherules have a surface area of about 5–300 m^2/g.

5,346,620
PROCESS FOR WASTE WATER TREATMENT BY REMOVAL OF SODIUM SULFATE
David C. Hendrix; Andrew J. McNabb, both of Lake Jackson; Nguyen L. Kim, Clute; Michael Loden, Lubbock, and Jaime R. Morales, Sugarland, all of Tex., assignors to BASF Corporation, Parsippany, N.J.
Filed Aug. 31, 1993, Ser. No. 114,701
Int. Cl.[5] B01D *9/02*; C02C *3/30*
U.S. Cl. 210—605 16 Claims



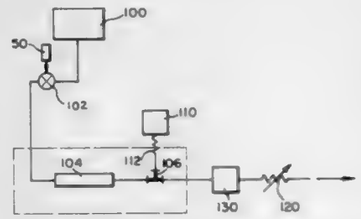
1. A process for treatment of waste water streams having a concentration of above 20% sodium sulfate, including the steps of
a) removing sodium sulfate from waste water in the form of crystals, by the addition of organic solvent, wherein said solvent is miscible in aqueous solution at temperatures between 20° C. and 110° C.,
b) biological pre-treatment with activated sludge
c) denitrification with activated sludge and
d) nitrification with activated sludge.

5,346,621
HOLLOW FIBER BLOOD OXYGENATOR
William S. Haworth, White Bear Lake; Robert W. Olsen, Plymouth; Mark S. Goodin, Medina, and Larry E. Fuller, Plymouth, all of Minn., assignors to Avecor Cardiovascular, Inc., Plymouth, Minn.
Filed May 19, 1993, Ser. No. 63,996
Int. Cl.[5] B01D *11/00, 61/00*; A61M *1/14, 1/34*
U.S. Cl. 210—645 12 Claims



1. A method of oxygenating blood in a generally vertically disposed, radial flow, hollow fiber blood oxygenator, said oxygenator including a hollow fiber bundle wound on a hollow core, said core having an interior lumen, radially spaced inlet and outlet manifolds surrounding the hollow fiber bundle, and means for providing blood only from the top of the interior lumen only to the inlet manifold, the oxygenator, bundle, core, lumen, and manifolds having corresponding top and bottom ends, said method comprising:
introducing blood into the interior lumen at the bottom of the core at a pressure sufficient to induce blood flow to the top of the lumen;
delivering blood from the top of the lumen, through the providing means only, and into the inlet manifold;
providing a blood flow from the inlet manifold along the length thereof into and radially outward through the bundle and into the outlet manifold along the length thereof; and
providing a blood outlet at the bottom of the outlet manifold for allowing blood to exit the oxygenator.

5,346,622
HYDROCARBON CLASS SEPARATION AND QUANTITATION BY SPLIT COLUMN EFFLUENT ANALYSIS
Matthew S. Klee, and Mu Zou Wang, both of Wilmington, Del., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 4, 1993, Ser. No. 26,385
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—659 10 Claims



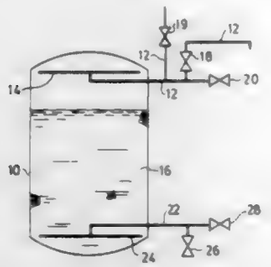
1. A method of separating and classifying the relative amounts of two or more classes of hydrocarbon molecules in a sample, comprising the steps of:
injecting an input stream comprising a mobile phase and the sample into a chromatograph at predetermined conditions of pressure, temperature and flow rate;
splitting an effluent stream exiting the chromatograph into a first effluent stream and a second effluent stream;
determining the mass of carbon in each of the classes of hydrocarbons in the first effluent stream;
directing the second effluent stream through a variable restrictor; and
adjusting the variable restrictor to independently control the pressure and flow rate of the input stream.

5,346,623
COUNTER-CURRENT PROCESS FOR THE RAPID REGENERATION OF ION EXCHANGE MATERIALS IN AN UNRESTRAINED BED
Gerhard K. Kunz, Heiligenhaus, Fed. Rep. of Germany; George L. Dimotsis, Landsdale, Pa., and Richard L. Sampson, Trumbull, Conn., assignors to EDR Acquisition Corp., Plantsville, Conn.
Filed Mar. 18, 1992, Ser. No. 853,045
Int. Cl.[5] C02F *1/42*
U.S. Cl. 210—678 12 Claims

1. A method of regenerating an ion exchanger which comprises:
(a) providing an ion exchanger having a non-constrained bed of ion exchange material in the form of ion exchange granules;
(b) passing a solution to be treated in a downward charging direction through said bed of ion exchange material resulting in the formation of a concentration profile of ions that have been exchanged from the top to the bottom of said bed through said ion exchange material with said profile

exhibiting a higher concentration of ions at the top of said bed;

(c) followed by passing a regenerating solution upwardly through the non-constrained bed of ion exchange material in a controlled intermittent pulsed flow manner comprising an alternating up flow of regenerating solution followed by a down flow of liquid in a direction opposite the



up flow, the direction and velocity of said up flow of regenerating solution being sufficient to lift and generate a perceptible mixing of ion exchange materials in approximately the bottom 10% to 30% portion of said ion exchange bed, with said down flow being sufficient to seat the bed in less time than normal gravitational settle time and terminate mixing.

5,346,624

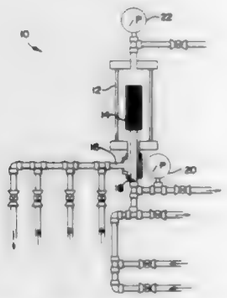
METHOD AND APPARATUS FOR TREATMENT OF AQUEOUS SOLUTIONS

Bruce L. Libutti, Teaneck, and Kurt Bozenmayer, West Milford, both of N.J., assignors to The Graver Company, Union, N.J.

Filed Jan. 11, 1993, Ser. No. 2,957

Int. Cl.[5] B01O *37/02*; C02F *1/42*

U.S. Cl. 210—679 **35 Claims**



10. A method for removing ionic and suspended particulate impurities from a liquid containing said impurities, comprising:

dispersing freely flowing ion exchange particles, ion exchange fibers, and relatively inert fibers in a liquid medium to produce a precoat slurry;

depositing the slurry on a filter support and carrying away at least a portion of the liquid medium to produce a precoated bed comprising a clumped mixture of the ion exchange particles, the ion exchange fibers and the inert fibers; and

directing a liquid containing ionic and suspended particulate impurities through the bed.

5,346,625

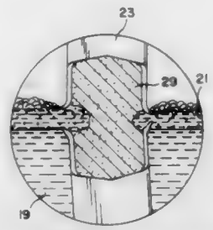
FLAMMABLE NEUTRALIZING SYSTEM AND PACKET

Michael C. Webb, Chester Springs, Pa., assignor to Environ Products, Inc., Lionville, Pa.

Filed Oct. 16, 1992, Ser. No. 962,981

Int. Cl.[5] C02F *1/28*

U.S. Cl. 210—691 **17 Claims**



1. A device for removing petroleum products leaked into an enclosed portion of a fuel transfer system, comprising:

a water insoluble container having a quantity of a petroleum product mitigation agent enclosed therein for mitigating the flammable nature of said petroleum product; and

a water insoluble, petroleum product soluble release means for releasing said quantity mitigation agent upon contact with a petroleum product whereby said release means is dissolved or melted by contact with said petroleum product thereby permitting said mitigation agent to be released from said container to mitigate the flammable nature of said petroleum product.

5,346,626

METHOD OF REMOVING SCALE

Katsuhiko Momozaki; Masako Kusunoki; Fumio Kawamura, all of Tokyo; Hisao Ono, Yokkaichi; Katsumi Itoh, Kameyama; Yoshihiro Shimizu, Aichi, and Yuuichi Ono, Tokyo, all of Japan, assignors to Kurita Water Industries Ltd. and Japan Synthetic Rubber Co., Ltd., both of Tokyo, Japan

Filed Jun. 29, 1993, Ser. No. 83,236

Claims priority, application Japan, Jun. 29, 1992, 4-194924

Int. Cl.[5] C02F *5/10*

U.S. Cl. 210—701 **9 Claims**

1. A method of removing calcium compound-containing scale including calcium carbonate in a cooling water system in which said scale is formed which comprises adding to the cooling water in the cooling water system, while the system is operating, 0.01 weight % or more based on the total amount of water contained in the cooling water system of a scale dissolving agent which comprises a copolymer containing vinyl monomer units having a carboxy group or salt thereof and vinyl monomer units having an isoprene sulfonic acid group or salt thereof in amounts such that the mol ratio of the carboxyl group to the sulfonic acid group is in the range of 30:70 to 95:5, said copolymer having a weight average molecular weight calibrated with polystyrene sulfonic acid sodium salt of 1,000 to 100,000, thereby producing a cleaved or dissolved scale solution, and, thereafter discharging said cleaved or dissolved scale solution from the cooling water system.

5,346,627

METHOD FOR REMOVING METALS FROM A FLUID STREAM

Kristine S. Siefert, Crete; Pek L. Choo, Naperville; John W. Sparapany, Bolingbrook, and John H. Collins, Bloomingdale, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 923,653, Aug. 3, 1992, abandoned, which is a division of Ser. No. 845,870, Mar. 3, 1992, Pat. No. 5,164,095. This application Sep. 20, 1993, Ser. No. 123,805

The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.

Int. Cl.[5] C02F *1/62*

U.S. Cl. 210—729 **23 Claims**

1. A method for removing monovalent and divalent metals from a fluid stream containing these metals comprising the steps of:

treating the fluid stream with a water soluble ethylene dichloride ammonia polymer having a molecular weight of from 500 to 100,000 that contains from 5 to 50 mole percent of dithiocarbamate salt groups to form complexes with the monovalent and divalent metals; and

passing the fluid stream through a filtering device to remove the complexes from the fluid stream.

5,346,628

POLYMERS FOR FLOCCULATING RED MUD FROM BAYER PROCESS LIQUORS

Anthony G. Sommese, Naperville, and Robert P. Mahoney, Warrenville, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Oct. 29, 1993, Ser. No. 146,288

Int. Cl.[5] C02F *1/56*

U.S. Cl. 210—734 **8 Claims**

1. A method for settling red mud from a Bayer process liquor, the method comprises adding to a Bayer process liquor containing suspended red mud a flocculant polymer which contains acrylic acid and from about 1 to about 99 mole percent of at least one monomer selected from the group consisting of vinylamine and vinylformamide.

5,346,629

METHOD FOR PROCESSING FILTER BACKWASH FLUID FOR REUSE AS CLEANING FLUID

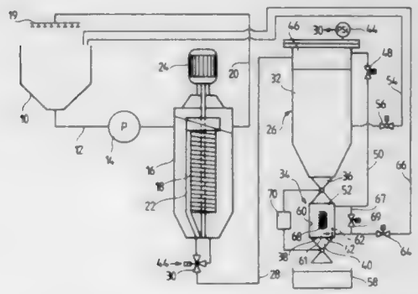
Karl-Heinz Wüller, Simmerath, Fed. Rep. of Germany, assignor to Durr GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 22, 1992, Ser. No. 948,681

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1991, 4133099

Int. Cl.[5] B01D *21/30*

U.S. Cl. 210—739 **8 Claims**



1. A method of cleaning a contaminated backwashing liquid which contains impurities removed from filter means by backflushing said filter means with said backwashing liquid, said method comprising the steps of:

(a) forming a volume from at least a portion of said contaminated backwashing liquid;

(b) allowing said volume to stand for a first time period thereby allowing at least some of said impurities to settle within said volume;

(c) applying a positive pressure to said volume after said first time period during a second time period while said volume is allowed to stand, said second time period being at the most as long as said first time period, thereby increasing the sedimentation rate of said impurities;

(d) performing a pressure-tight separation of a lower portion of said volume containing settled impurities from an upper portion of said volume after said first time period has elapsed; and

(e) removing one of said portions of said volume from the other of said portions thereby recovering at least a major portion of the used backwashing fluid.

2. A method of industrially cleaning objects, wherein said objects are cleaned in a cleaning process with the aid of a cleaning liquid and wherein at least a portion of the used cleaning liquid comprising impurities washed from said objects is pumped through filter means having an inlet side and an outlet side, thereby retaining impurities at said filter means, and then returned into said cleaning process, said method also comprising the steps of:

(a) backflushing said filter means with said cleaning liquid thereby obtaining a contaminated backwashing liquid consisting of cleaning liquid and impurities previously retained by the filter means;

(b) forming a volume from at least a portion of said contaminated backwashing liquid;

(c) allowing said volume to stand for a first time period thereby allowing at least some of said impurities to settle within said volume;

(d) applying a positive pressure to said volume during a second time period while said volume is allowed to stand, said second time period being at the most as long as said first time period, thereby increasing the sedimentation rate of said impurities;

(e) performing a pressure-tight separation of a lower portion of said volume containing settled impurities from an upper portion of said volume after said first time period has elapsed;

(f) removing one of said portions of said volume from the other of said portions thereby recovering at least a major portion of the cleaning liquid used for backflushing said filter means; and

(g) returning said recovered cleaning liquid portion into said cleaning process.

3. The method as recited in claim **1** or **2**, wherein during said first time period said volume is confined within a container means in which an air cushion is formed above said volume and compressed during the formation of said volume within said container means, thereby forming a pressure source acting on said volume during said second time period.

4. The method as recited in claim **3**, wherein said lower portion is removed from said container means with the aid of compressed air and said lower portion is acted upon by the compressed air of said air cushion.

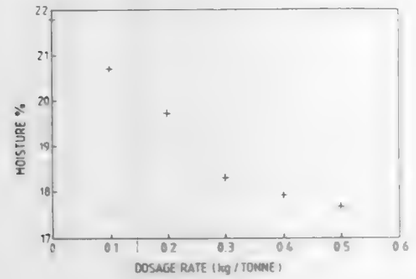
5. The method as recited in claim **4**, wherein the removing of said lower portion is triggered by sensor means responsive to said settled impurities.

5,346,630

COAL DEWATERING

Mark E. Kenney, South Perth, Australia, assignor to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

PCT No. PCT/GB91/00752, § 371 Date May 15, 1993, § 102(e) Date May 15, 1993, PCT Pub. No. WO92/20421, PCT Pub. Date Nov. 26, 1992
PCT Filed May 13, 1991, Ser. No. 961,904
Claims priority, application Australia, May 8, 1990, PK0018
Int. Cl.[5] B01D *33/62*
U.S. Cl. 210—770 **5 Claims**



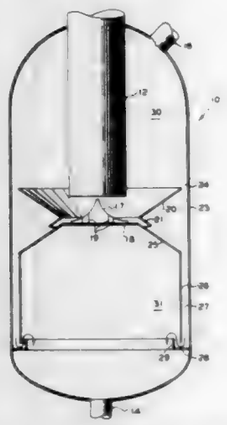
1. A process for dewatering an aqueous coal slurry filter cake comprising spraying the coal slurry filter cake with at least 5 g per tonne of filtered coal of a dewatering aid consisting essentially of a C_8 to C_{20} aliphatic carboxylic acid or a derivative thereof selected from esters, amides and salts of fatty acids and applying a pressure differential across the cake to remove water therefrom.

5,346,631

PHASE SEPARATOR

Patrick H. Terry, Middletown, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 7, 1992, Ser. No. 986,324
Int. Cl.[5] B01D *21/26*
U.S. Cl. 210—789 **11 Claims**



11. An apparatus for separating a mixture of two distinct fluid phases comprising:
- a vessel having a cylindrical body including a first chamber and a second chamber;
- a cylindrical conduit vertically disposed in the vessel for introducing a flowing stream of a mixture of two distinct phases upwardly into the vessel;
- means for reversing the flowing stream to a downward direction;
- a flow streamlining deflector for directing the downwardly flowing stream radially outwardly to form a stream having a top layer of a less dense phase and a bottom layer of a more dense phase, the deflector being an annular ring with a top and a base, the ring extending from the top downwardly and outwardly from the conduit in substantially concave fashion and facing radially outwardly at the base, the base having a diameter of from about 10% to about 20% greater than the diameter of the conduit;
- a horizontally disposed platform below the streamlining deflector through which the conduit passes, the diameter of the platform being less than that of the vessel diameter;
- a concentrical cylindrical member within the vessel below the flow streamlining deflector;
- a first baffle ring extending downwardly and outwardly from the platform to the cylindrical member;
- a second baffle ring extending upwardly and outwardly from a first end positioned at a point spaced above the base of the deflector to a point spaced from the cylindrical body of the vessel;
- a sealing ring extending downwardly and outwardly from the first end of the second baffle ring to a point beyond the platform and defining a passageway therebetween.

5,346,632

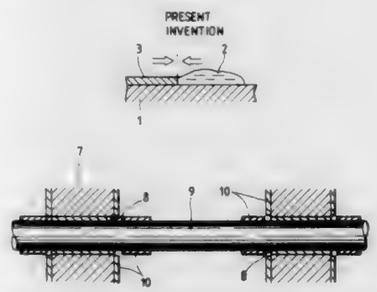
Patent Not Issued For This Number

5,346,633

METHOD FOR SURFACE TREATMENT OF A BODY, SURFACE TREATMENT AGENT, SURFACE TREATED BODY, SURFACE TREATED MEMBERS, AND APPARATUS BEING FURNISHED WITH SAME

Takayuki Nakakawaji, Hitachi; Atsushi Morihara, Katsuta; Mitsuyoshi Shoji, Juo; Koji Sato, Hitachi; Yutaka Ito, Takahagi; Ryuichi Kaji, Kitaibaraki, and Hiroshi Go, Zama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1992, Ser. No. 852,704
Claims priority, application Japan, Mar. 19, 1991, 3-054342
Int. Cl.[5] C10M *147/04*
U.S. Cl. 252—10 **9 Claims**



1. A semiconductor device characterized in comprising a semiconductor chip, a base body bearing the semiconductor chip, a package means for insulating said semiconductor chip from outside, a heat transferring means for taking heat generated at said semiconductor chip out to outside of said package means, and heat conductive lubricant composition existing between said heat transferring means and said base body, and that a compound layer having a terminal group which chemically combines with surface of said base body and/or said heat transferring means and a water repellent and oil repellent atomic group is formed around said heat conductive lubricant composition in a manner that said atomic group and said heat conductive lubricant composition are repellent each other.

5,346,634

LUBRICANT COMPOSITION FOR HOT PLASTIC WORKING

Yoshihiko Sawazaki; Yasuo Okumura, and Nobuichi Arai, all of Tokyo, Japan, assignors to Nihon Parkerizing Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1993, Ser. No. 17,394
Int. Cl.[5] C10M *103/02*
U.S. Cl. 252—30 **8 Claims**

1. A lubricant composition for hot plastic working of metal material comprising 100 parts by weight of graphite particles and 2 to 100 parts by weight of particles of at least one metal oxide selected from the group consisting of tin oxides, calcium oxide, copper oxides and aluminum oxide, and having an average particle size of 0.01 to 20.0 μm.

5,346,635

LOW AND LIGHT ASH OILS

Behrooz A. Khorramian, New York, N.Y., assignor to Material Innovation, Inc., Leonia, N.J.

Filed Jun. 3, 1993, Ser. No. 70,854
Int. Cl.[5] C10M *141/08, 141/10*
U.S. Cl. 252—33.3 **14 Claims**

1. A lubricating oil comprising:
- a. about 80% of a paraffinic base oil;
- b. about 1 to about 3% of a magnesium salt of an alkylated aryl sulfonic acid or calcium salt of benzene sulfonic acid;
- c. about 0.005% of a compounded silicone fluid;
- d. about 0.05 to 1.5% of 1H-Benzotriazole-1-Methanamine N,N-bis(2-Ethyl Hexyl)-Methyl;
- e. about 0.05 to about 0.15% of a 2,5-dimercapto-1,3,4-thiadiazole derivative;
- h. about 0.50% of a diethanolamine derivative;
- i. about 9 to about 10% of an ethylene-propylene copolymer;
- j. about 2% of a dispersant selected from the group consisting of a borated polyisobutenyl succinic anhydride, an amine with (polybuteryl) succinic, a polyethylene poly-, compound with (polybutenyl)succinic anhydride and combinations thereof;
- k. about 0.3% of a dialkyl fumerate/vinyl acetate copolymer; and
- l. about 0.05% of the group consisting of (tetrapropenyl)-butanedioic acid, monoester with 1,2-propanediol and (Tetrapropenyl))-butanedioic acid wherein said the lubricant oil is absolutely free of ZDTP.

5,346,636

COLLOIDAL PRODUCTS CONTAINING BORON AND PHOSPHORUS, THEIR PREPARATION AND THEIR USES AS LUBRICATING ADDITIVES

Guy Parc, Rueil Malmaison, and Maurice Born, Nanterre, both of France, assignors to Institute Francais du Petrole, Rueil Malmaison, France

Filed Sep. 30, 1992, Ser. No. 953,615
Claims priority, application France, Sep. 30, 1991, 91 12096
Int. Cl.[5] C10M *101/02, 159/02*
U.S. Cl. 252—49.9 **21 Claims**

1. A colloidal product containing boron and phosphorus obtained by a process comprising:
- (1) providing a borated overbased sulfonate selected from the group consisting of a overbased alkali metal sulfonate and a borated overbased, highly basic alkaline-earth sulfonate;
- (2) reacting said overbased sulfonate with at least one phosphorus sulfide; and
- (3) separating the product obtained.

5,346,637

ANTIWEAR ADDITIVES

Andrew G. Horodysky, Cherry Hill, N.J., and Shi-Ming Wu, Newtown, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 16, 1992, Ser. No. 991,614
Int. Cl.[5] C10M *137/00*
U.S. Cl. 252—49.9 **25 Claims**

1. A lubricant composition comprising a major proportion of lubricant and a minor multifunctional antioxidant and antiwear amount of an additive product comprising the reaction product of a hydrocarbon-substituted diacyl halide, derived from a hydrocarbon-substituted succinic ester-carboxylic acid and a halogenating agent, a source of phosphorus or a source of phosphorus and an aryl or alkaryl amine, the hydrocarbon group of the hydrocarbon-substituted succinic ester-acid contains from about 1 to about 300 carbon atoms.

5,346,638

OXIDE MAGNETIC MATERIAL

Takashi Kodama, Nagaokakyo, and Yasunobu Yoneda, Takefu, both of Japan, assignors to Murata Manufacturing Co., Inc., Japan

Filed Sep. 14, 1993, Ser. No. 120,945
Claims priority, application Japan, Sep. 14, 1992, 4-271177
Int. Cl.[5] C04B *35/28*
U.S. Cl. 252—62.59 **1 Claim**

1. An oxide magnetic material consisting essentially of a basic composition of a Ni-Mg-Cu-Bi ferrite and additives incorporated therein, said basic composition consisting essentially of 45.0 to 49.0 mol % of Fe_2O_3, 3.0 to 9.0 mol % of MgO, 1.0 to 4.0 mol % of CuO, 0.1 to 1.5 mol % of Bi_2O_3, and the balance of NiO, said additives consisting essentially of 0.1 to 0.5 wt % of SiO_2 and 0.05 to 0.35 wt % of Co_3O_4, and exhibiting a temperature coefficient of inductance in the range of 0–75 ppm/° C.

5,346,639

SPRAY DISPENSED SHAMPOO

Geoff Hatfield, 1003 Hill St., Cincinnati, Ohio 45202

Filed Jan. 11, 1994, Ser. No. 179,920
Int. Cl.[5] C11D *17/04*
U.S. Cl. 252—90 **7 Claims**

1. In combination, a spray dispenser and a shampoo composition, said shampoo composition having a viscosity less than 40 CPS, formed from the combination of anionic surfactants, amphoteric surfactants and nonionic surfactants at a combined concentration of said surfactants of 8% to 15% wherein said composition is substantially free from neutral thixotropic salts.

5,346,640

CLEANER COMPOSITIONS FOR REMOVING GRAFFITI FROM SURFACES

Cassius W. Leys, Hartsdale, N.Y., assignor to Transcontinental Marketing Group, Inc., Windham, N.Y.

Continuation-in-part of Ser. No. 694,463, May 1, 1991, abandoned, which is a continuation of Ser. No. 400,564, Aug. 30, 1989, Pat. No. 5,024,780, and a continuation-in-part of Ser. No. 423,258, Oct. 18, 1989, abandoned. This application Mar. 11, 1992, Ser. No. 850,396
Int. Cl.[5] C09D *9/00;* **C11D** *7/22, 7/50*
U.S. Cl. 252—162 **18 Claims**

1. A base composition for removing graffiti from a surface comprising in percentage by volume of the composition:
- (a) N-methylpyrrolidone in an amount between about 10 and about 60 percent;
- (b) propylene carbonate in an amount between about 5 and about 60 percent;
- (c) an ingredient selected from the group consisting of dipropylene glycol methyl ether acetate and dipropylene glycol monomethyl ether acetate in an amount between about 2 and about 25 percent;

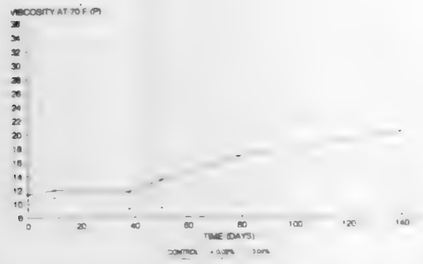
(d) isocetyl alcohol in an amount between about 7.5 and about 25 percent;
(e) hydroxypropyl cellulose in an amount between about 1.0 and about 3.5 percent;
(f) an ethoxylated nonyl phenol surfactant in an amount between about 0.5 and about 3.0 percent; and
(g) dimethyl sulfoxide in an amount between about 4 percent and about 30 percent by volume of the composition.

5,346,641

THICKENED AQUEOUS ABRASIVE CLEANSER WITH IMPROVED COLLOIDAL STABILITY

Brian P. Argo, Tracy, and Clement K. Choy, Alamo, both of Calif., assignors to The Clorox Company, Oakland, Calif.

Continuation of Ser. No. 823,633, Jan. 17, 1992, abandoned. This application Aug. 20, 1993, Ser. No. 110,342
Int. Cl.[5] C11D *9/20, 9/12, 3/395*
U.S. Cl. 252—163 **18 Claims**



1. A hard surface abrasive scouring cleanser comprising, in aqueous solution,
(a) a colloidal aluminum oxide thickener having average particle size, in dispersion, of no greater than about one micron;
(b) at least one surfactant which can associate with the aluminum oxide to provide proper rheology and cleaning;
(c) an electrolyte/buffer to promote the environment in which the aluminum oxide and surfactant can associate to provide proper rheology;
(d) a particulate abrasive;
(e) a viscosity stabilizing amount of a multivalent ionic metal salt, the metal selected from the group consisting of magnesium, aluminum, zinc and gallium; and an anion of said salt selected from the group consisting of halides, sulfate, nitrate and borate, and mixtures thereof; and wherein the composition has an alkaline pH and is resistant to increases in viscosity or yield value over time.

5,346,642

HAIR CONDITIONING SHAMPOO CONTAINING LONG CHAIN ALCOHOL COMPONENT

Amrit M. Patel, Dayton, and Clarence R. Robbins, Martinsville, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 507,335, Apr. 9, 1990, Pat. No. 5,213,716, which is a continuation-in-part of Ser. No. 432,644, Nov. 7, 1989, Pat. No. 5,051,250, which is a continuation-in-part of Ser. No. 432,952, Nov. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 369,361, Jun. 21, 1989, abandoned. This application Dec. 3, 1992, Ser. No. 984,786
The portion of the term of this patent subsequent to Mar. 5, 2008, has been disclaimed.
Int. Cl.[5] C11D *1/68, 3/20, 3/37*
U.S. Cl. 252—174.21 **17 Claims**

1. A stable hair conditioning shampoo in emulsion or suspension form which comprises 1 to 35% of a synthetic organic detergent, 0.3 to 10% of a water insoluble hair conditioning agent, and a stabilizer comprising a long chain primary alcohol having an average of from about 30 to 45 carbon atoms in the chain or alkoxylated derivatives thereof, said alcohol or derivative thereof being present in sufficient proportion to stabilize the emulsion or suspension, and 60 to 90% of an aqueous medium, with the ratio of content of the long chain alcohol or derivative thereof to the conditioning agent being in the range of from about 0.2 to 5:1.

5,346,643

POLYNUCLEAR COMPLEX SALT WASTE WATER CLARIFICANTS AND THEIR PREPARATION

Tadahiko Kuno, 14-16, Minamirinkan 8-Chome, Yamato-Shi, Kanagawa 242, Japan, assignor to Tadahiko Kuno, Kanagawa; Jun-ichi Hosokawa, Tokyo and Toko Abasu Co., Ltd., Kanagawa, all of Japan

Filed Dec. 9, 1992, Ser. No. 987,811
Claims priority, application Japan, Dec. 11, 1991, 3-351057
Int. Cl.[5] C02F *5/02*
U.S. Cl. 252—175 **5 Claims**

1. A wastewater clarificant containing a polynuclear complex salt comprising sulfates of potassium, iron, calcium, sodium, magnesium and aluminum, obtained by heating and pressurizing at 100° C. to 190° C. and 1 kgf/cm^2, an aqueous solution containing a mixture of said sulfates.

5,346,644

COMPOSITIONS, ARTICLES & METHODS FOR SCAVENGING OXYGEN

Drew V. Speer; William P. Roberts, both of Columbia; Charles R. Morgan, Brookeville, and Cynthia L. Ebner, Mt. Airy, all of Md., assignors to W.R. Grace & Co.-Conn., New York, Conn.

Continuation of Ser. No. 733,901, Jul. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 679,419, Apr. 2, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 52,851
Int. Cl.[5] C09K *15/02, 15/04*
U.S. Cl. 252—188.28 **20 Claims**

1. A method of scavenging oxygen from a package for an oxygen-sensitive product wherein the method comprises incorporating into the package a layer comprising a composition consisting essentially of
(a) an ethylenically unsaturated hydrocarbon polymer having a molecular weight of at least 1,000 and
(b) a transition metal catalyst; wherein the rate of oxygen scavenging is at least 0.5 cc oxygen per day per gram of hydrocarbon polymer and the scavenging capacity is at least 1 cc oxygen per gram of polymer, and wherein scavenging occurs during the storage of a product in a package comprising the composition.

5,346,645

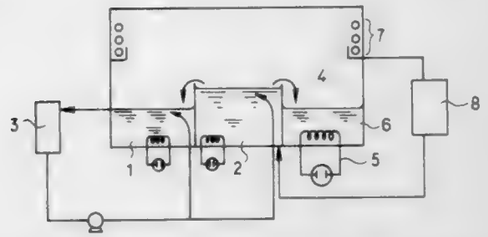
DESICCANT COMPOSITION AND A METHOD OF DESICCATING ARTICLES

Yukio Omure; Satoshi Ide; Takahiro Matsuda; Hirokaza Aoyama, and Eiji Seki, all of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Filed May 28, 1992, Ser. No. 889,364
Claims priority, application Japan, May 28, 1991, 3-123803
Int. Cl.[5] C09K *3/18*
U.S. Cl. 252—194 **7 Claims**

1. A desiccating method for removing surface water from an article which comprises contacting the article with a desiccant composition comprising at least one fluorinated aliphatic 1,1,2,3,4,4-hexafluorobutane, 2-methyl-1,1,1,3,3,3-hexafluoropropane, 1,2,2,3,3,4-hexafluorobutane, 1,1,1,2,3,3,4-heptafluorobutane, 1,1,2,2,3,4,4-heptafluorobutane, 1,1,1,2,3,4,4-heptafluorobutane, 1,1,2,2,3,3,4-heptafluorobutane, 1,1,1,2,3,3,4,4-octafluorobutane, 1,1,1,2,2,3,3,4-octafluorobutane, 1,1,2,2,3,3,4,4-octafluorobutane, 1,1,1,2,2,3,3,4,4-nonafluororbutane, 1,1,1,2,2,3,4,4,4-nonafluorobutane, 1,1,2,3,3,4,5,5-octafluoropentane, 1,1,1,2,2,5,5,5-octafluoropentane, 1,1,1,2,2,3,3,4,4,5,5-undecafluoropentane, 1,1,1,2,2,3,3,4,5,5,5-undecafluoropentane,

1,1,2,2,3,3,4,4,5,5,6,6-dodecafluorohexane, 1,1,1,2,2,5,5,6,6,6-decafluorohexane, 2-trifluoromethyl-1,1,1,2,4,4-hexafluorobutane, 2-trifluoromethyl-1,1,1,2,3,3,4,4-octafluorobutane, 2-trifluoromethyl-1,1,1,3,4,5,5-heptafluoropentane, 2-trifluoromethyl-1,1,1,2,3,4,5-heptafluoropentane, 2-trifluoromethyl-1,1,1,3,4,5,5,5-octafluoropentane, 2-trifluoromethyl-1,1,1,2,3,4,5,5-octafluoropentane, 2-trifluoromethyl-1,1,1,2,3,5,5,5-octafluoropentane, 2-trifluoromethyl-1,1,1,2,3,4,5,5,5-nonafluoropentane, 1,1,1,2,2,3,3,4,4,5,5,6,6-tridecafluorohexane and



1,1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluororohexane, and 3 to 25% by weight, based on the weight of the composition, of at least one alcohol selected from the group consisting of methanol, ethanol, i-propanol, n-propanol, i-butanon, sec-butanol, tert-butanol, 2,2,2-trifluoroethanol, 2,2,3,3-tetrafluoropropanol, and 2,2,3,3,3,-pentafluoropropanol.

5. The desiccating method of claim 1 which comprises dipping said article in said desiccant composition maintained at a temperature between 40° C. and the boiling temperature of the composition and, then, contacting the same article with the vapor of said desiccant composition.

5,346,646

TETRALIN COMPOUND, LIQUID CRYSTAL MATERIAL, LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL ELEMENT

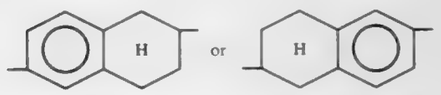
Junichi Kawabata; Hideo Yamaoka; Yuuichirou Tatsuki, and Shinichi Nishiyama, all of Sodegaura, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Apr. 14, 1993, Ser. No. 45,682
Claims priority, application Japan, Apr. 14, 1992, 4-94463
Int. Cl.[5] C09K *19/32;* **C07C** *69/76*
U.S. Cl. 252—299.62 **27 Claims**

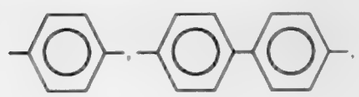
7. A liquid crystal composition comprising a tetralin compound represented by the following formula [I]:

$$R—X—A^1—Y^1—A^2—(Y^2—A^3)_n—Z—R^* \quad [I]$$

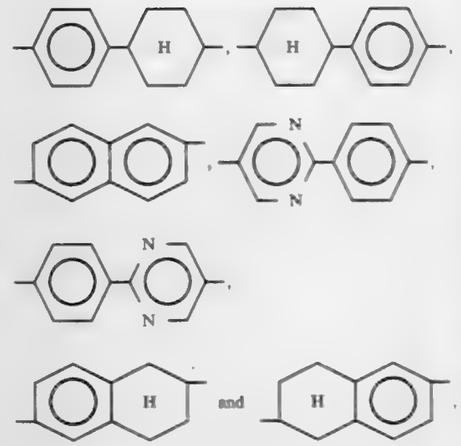
wherein
R is an alkyl group of 3–20 carbon atoms,
X is —O—CO—, —O— or a single bond,
n is 0 or 1, and
when n is 0, one of A^1 and A^2 is



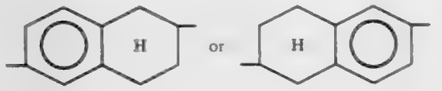
and the residual A^1 or A^2 is a group selected from the group consisting of



-continued



and when n is 1, one of A^1 A^2 and A^3 is



and the residual two of A^1 A^2 and A^3 are 1,4-phenylene group,
Y^1 and Y^2 are each independently a group selected from the group consisting of —COO—, —O—CO—, —CH_2CH_2—, —CH_2O— and —OCH_2—,
Z is —O—, —O—CO— or a single bond, and
R^* is a group selected from the group consisting of —C*H(CF_3)—C_6H_{13}, —C*H(CH_3)—C_6H_{13}, —C*H(CH_3)—C_5H_{11}, —C*H(C_2H_5)—C_5H_{11}, —C*H(C_2H_5)—C_6H_{13}, —CH_2—C*H(CH_3)—C_2H_5, —(CH_2)$_3$—C*H(CH_3)—C_2H_5 and C*H(CF_3)CH_2—COO'C_2H_5, and
a liquid crystal compound other than the tetralin compound.

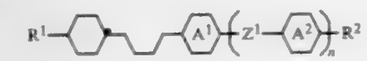
5,346,647

CYCLOHEXANE COMPOUNDS USED IN LIQUID CRYSTALLINE MIXTURES

Stephen Kelly, Möhlin, Switzerland, and Frans Leenhouts, Achel, Belgium, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 943,375, Sep. 10, 1992, abandoned, which is a continuation of Ser. No. 554,636, Jul. 17, 1990, abandoned. This application Dec. 13, 1993, Ser. No. 166,603
Claims priority, application Switzerland, Jul. 25, 1989, 2779/89; Apr. 10, 1990, 1239/90
Int. Cl.[5] C09K *19/30, 19/34;* **C07D** *239/02*
U.S. Cl. 252—299.63 **18 Claims**

15. A liquid crystalline mixture with at least 2 components, wherein at least one component is a compound of formula I



wherein n is 0 or 1; R^1 represents a group R^3 or $R^3—A^3—Z^2—$; R^2 is a group R^4 or $R^4—A^4—Z^3—$; ring A^1 represents 1,4-phenylene, or 1,4-phenylene having 1CH or 2CH groups replaced by nitrogen, the rings A^1 being unsubstituted or substituted with at least one of halogen, cyano or methyl; A^3, A^4 and ring A^2 each independently represent 1,4-phenylene or 1,4-phenylene having 1CH or 2CH groups replaced by nitrogen, each of

the 1,4-phenylene or 1,4-phenylene having 1CH or 2CH groups replaced by nitrogen being unsubstituted or substituted with at least one of halogen, cyano or methyl, or trans-1,4-cyclohexylene, trans-1,3-dioxane-2,5-diyl, 1-cyano-trans-1,4-cyclohexylene, bicyclo [2.2.2]octane-1,4-diyl, naphthalene-2,6-diyl, tetralin-2,6-diyl or and trans-decalin-2,6-diyl; Z^1, Z^2 and Z^3 each independently represent a single covalent bond, —COO—, —OOC—, CH_2O—, —OCH_2—, —CH_2CH_2—, —C|—, —$(CH_2)_3$—, —$O(CH_2)_3$—, —$(CH_2)_4$— or a trans form of —CH=CH—CH_2O— or —OCH_2 —CH=CH—; R^3 and R^4 have a maximum of 18 carbon atoms and each independently represent halogen, cyano, —NCS, —CF_3, —OCF_3, alkyl, alkyl having one >CH—CH< replaced by >C=C<, alkyl having one methylene group or two non-adjacent methylene groups replaced by at least one of —O—, —COO— or —OOC—, alkyl having one methylene group replaced by —CHX—, alkyl with one methylene group or two non-adjacent methylene groups being replaced by at least one of —O—, —COO—, or —OOC—, and one methylene group being replaced by —CHX—, alkyl having >CH—CH< replaced by >C=C< with one methylene group or two non-adjacent methylene groups being replaced by at least one of —O—, —COO— or —OOC—, alkyl having one >CH—CH< replaced by >C=C< with one methylene group replaced by —CHX—, and alkyl having one >CH—CH< replaced by >C=C< with one methylene or two non-adjacent methylene groups being replaced by at least one of —O—, —COO— or —OOC—, and one methylene group being replaced by —CHX—; and X represents halogen, cyano or methyl.

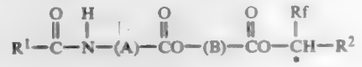
5,346,648

ANTIFERROELECTRIC LIQUID CRYSTAL COMPOUND AND LIQUID CRYSTAL COMPOSITION CONTAINING THE SAME

Yasuhiro Koide; Hiroyuki Mogamiya, and Yoshiichi Suzuki, all of Tokyo, Japan, assignors to Showa Shell Sekiyu Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1993, Ser. No. 128,106
Claims priority, application Japan, Sep. 30, 1992, 4-285181
Int. Cl.[5] C09K *19/12, 19/20;* **C07C** *229/42*
U.S. Cl. 252—299.65 **7 Claims**

1. An antiferroelectric liquid crystal compound represented by the following general formula (I):



wherein R^1 and R^2 are each independently selected from the group consisting of alkyl groups having from 3 to 18 carbon atoms, Rf is a lower alkyl group or a fluorinated lower alkyl group, (A) and (B) are each independently selected from the group consisting of 1,4-phenylene, 4,4-biphenylene, and 2,6-naphthalene which may be substituted with at least a halogen atom, and * shows an asymmetric carbon atom.

5,346,649

CONDUCTING POLYMER MATERIAL AND METHOD FOR ITS PRODUCTION

Toivo Kärnä, Porvoo; Jukka Laakso, Helsinki, both of Finland; Kalle Levon, Brooklyn, N.Y., and Esko Savolainen, Hollola, Finland, assignors to Neste Oy, Kulloo, Finland

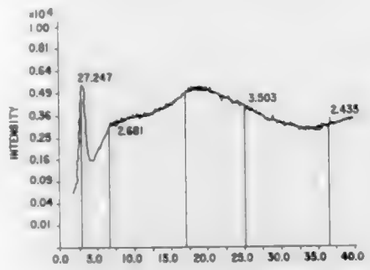
Filed Dec. 4, 1992, Ser. No. 988,902
Claims priority, application Finland, Dec. 5, 1991, 915760; Mar. 30, 1992, FI-915760; Aug. 11, 1992, 923580
Int. Cl.[5] H01B *1/00*
U.S. Cl. 252—500 **14 Claims**

1. A process for the preparation of a solid, electrically conductive plastic material comprising:

(a) blending a polyaniline compound with a functionalized protonic acid in a weight ratio of 1:10–3:1,

(b) heat-treating the blend of step (a) by using melt processing equipment at 80° to 210° C. for 10 seconds to 20 minutes,

(c) mixing the heat-treated blend of step (b) with a thermoplastic polymer in a weight ration of 1:100 to 20:1, and



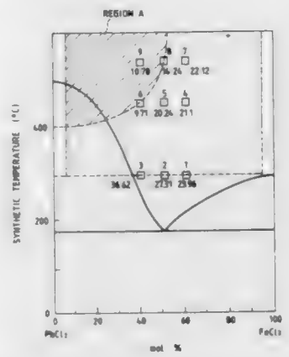
(d) melt processing the mixture of step (c) to yield said solid, electrically conductive plastic material.

5,346,650

GRAPHITE INTERLAMINAR COMPOUND AND METHOD FOR PRODUCING THE SAME

Osamu Toda, Sendai; Michio Inagaki, and Masahiko Ohhira, both of Sapporo, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 785,853, Oct. 31, 1991, abandoned. This application Aug. 16, 1993, Ser. No. 107,419
Claims priority, application Japan, Nov. 2, 1990, 2-295516
Int. Cl.[5] H01B *1/00, 1/04*
U.S. Cl. 252—506 **5 Claims**



1. A graphite intercalation compound comprising $PbCl_2$ and $FeCl_3$ intercalated into graphite, wherein the molar ratio of Pb to Fe is at least 0.5, and wherein the combined weight of the $PbCl_2$ and $FeCl_3$ is at least 40% of the weight of the graphite.

5,346,651

SILVER CONTAINING CONDUCTIVE COATINGS

Joanna Oprosky, Canonsburg, and David Stotka, Washington, both of Pa., assignors to Cerdec Corporation, Washington, Pa.

Filed Aug. 31, 1993, Ser. No. 113,666
Int. Cl.[5] H01B *1/02;* **C03C** *8/18*
U.S. Cl. 252—514 **12 Claims**

1. A silver-containing conductive coating composition which comprises

(a) from about 40% to about 90% by weight of a silver particulate material selected from the group consisting of silver powder, silver flake and mixture thereof,

(b) from about 4% to about 12% by weight of a low firing lead-free glass frit having the following composition:

ZnO	13–18% by weight
SiO_2	18.0–25.0% by weight
ZrO_2	2.4–3.5% by weight
B_2O_3	7.5–12.5% by weight
Na_2O	3.0–6.0% by weight
Bi_2O_3	35.0–46.0% by weight
TiO_2	1.0–2.5% by weight
Al_2O_3	0–1.0% by weight

and,

(c) from about 7% to about 40% by weight of a liquid organic vehicle which functions to form a dispersion of the silver particulate and glass frit materials and permit the easy application of the composition to a substrate.

5,346,652

NAIL POLISH REMOVER COMPOSITION

Vincent A. Dotolo, Clearwater; John R. Schwartz, Largo, and Jaye Kraus-Marchak, Dunedin, all of Fla., assignors to Dotolo Research Corporation, Largo, Fla.

Filed Mar. 16, 1992, Ser. No. 851,738
Int. Cl.[5] A61K *7/047;* **C11D** *7/32, 7/26, 7/50*
U.S. Cl. 252—542 **15 Claims**

1. A fingernail polish remover and a finger artificial nail tip remover non-aqueous composition consisting essentially of the following ingredients:

a) d-limonene

b) about 25 to 45 weight percent of N-methyl-2-pyrrolidone

c) about 1 to 15 weight percent cetyl acetate, the d-limonene being at least 50% by weight of the composition.

2. A non-aqueous cleaning composition consisting essentially of the following ingredients in approximate percent by weight:

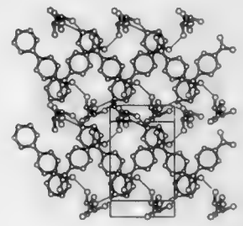
Ingredients	% by weight
1. d-limonene	40–70
2. N-methyl pyrrolidone	25–45
3. cetyl acetate	3–10

5,346,653

NON-LINEAR OPTICAL MATERIAL, METHOD OF MANUFACTURING THE SAME AND OPTICAL WAVELENGTH CONVERTER

Yusuke Ozaki, Toyonaka; Hisashi Minemoto, Kyoto; Nobuo Sonoda, Settsu; Tetsuji Kawakami, Katano; Tatsurou Kawamura, Takatsuki, and Katsuya Wakita, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 31, 1992, Ser. No. 829,737
Claims priority, application Japan, Feb. 18, 1991, 3-046058; Aug. 26, 1991, 3-213550
Int. Cl.[5] F21V *9/00;* **G02B** *6/00*
U.S. Cl. 252—582 **8 Claims**



8. An optical wavelength converter comprising an optical cavity and an optical wavelength conversion crystal of a non-linear optical material inserted in said optical cavity, said non-linear optical material comprising a salt formed from an organic compound and an optically active organic acid selected from the group consisting of phenylsuccinic acid, malic acid, mandelic acid, leucinic acid, lactic acid, tartaric acid, abietic acid, quinic acid, camphoric acid, camphor-10-sulfonic acid, methoxyphenylacetic acid, 2-methoxy-2-trifluoromethyl-phenylacetic acid and phenylpropionic acid, wherein said organic compound has a conjugated π electron system containing both electron donor and acceptor groups and has at least one substituent group selected from the group consisting of —NH_2, —NH—, and

which is located outside of said conjugated π electron system wherein:

said conjugated π electron system is derived from a material selected from the group consisting of benzene derivatives, pyridine derivatives, pyrimidine derivatives, pyrazine derivatives, triazine derivatives, pyrane derivatives, pyrrole derivatives, pyrroline derivatives, pyrazole derivatives, imidazole derivatives, furan derivatives, thiophene derivatives, thiazole derivatives, naphthalene derivatives, quinoline derivatives, indole derivatives, benzimidazole derivatives, indazole derivatives, benzofuran derivatives, benzothiazole derivatives, vinyl derivatives, and allyl derivatives;

said electron donor groups are selected from the group consisting of amino groups, monosubstituted amino groups, disubstituted amino groups, hydroxyl groups, and alkoxy groups;

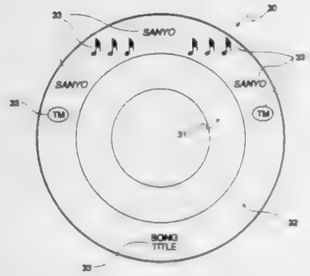
said electron acceptor groups are selected from the group consisting of nitro groups, cyano groups, and carbonyl groups.

5,346,654

MEHOD OF FORMING INDICIA ON COMPACT DISKS AND INDICIA-BEARING COMPACT DISKS

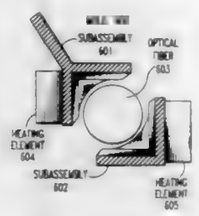
Ichiro Kodaka, Closter, N.J.; Shoji Ishida, and Charles Plumer, both of Richmond, both of Ind., assignors to Sanyo Laser Products, Inc., Richmond, Ind.

Filed Jul. 31, 1992, Ser. No. 923,033
Int. Cl.[5] G11B *7/00*
U.S. Cl. 264—1.33 **11 Claims**



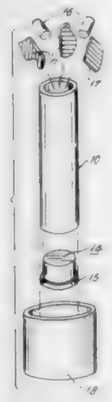
6. In a method of manufacturing a CD, the improvement comprising the steps of limiting recordation of digital data to a central portion of a disk to provide a recorded disk with a smooth and unrecorded peripheral portion, placing desired indicia on the unrecorded peripheral portion of the recorded disk, and thereafter producing a production tooling for the manufacturing of a CD from the disk which is adapted to display the desired indicia.

5,346,655
METHOD OF THERMOFORMING AN OPTICAL FIBER END
Lee L. Blyler, Jr., Basking Ridge, N.J.; Gary J. Grimes, Thornton, and Lawrence J. Haas, Broomfield, both of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Continuation of Ser. No. 788,062, Nov. 5, 1991, abandoned, which is a division of Ser. No. 590,974, Oct. 1, 1990, Pat. No. 5,153,932. This application Jul. 26, 1993, Ser. No. 97,304
Int. Cl.[5] B29C *51/18*; B29D *11/00*
U.S. Cl. 264—1.28 5 Claims



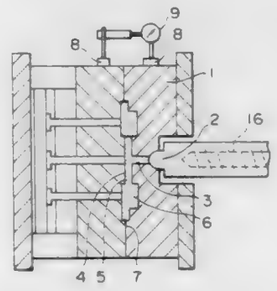
1. A method for thermoforming a length of an optical fiber having a first shape, the optical fiber having a cladding material and a core material, said method comprising:
heating said optical fiber; and
placing the heated optical fiber in a mold with a cavity that makes a gradual transition along its length from said first shape to a second shape and
gradually reforming said length of said optical fiber form the end of said optical fiber from said first shape to said second shape in the mold so as to maintain the cross-sectional area of said optical fiber constant thereby maintaining the optical mode volume of said optical fiber to reduce optical loss.

5,346,656
PROCESS FOR RECLAIMING SCRAPS OF CRAYON
Grace Shafir, 600 Sylvan Ave., Englewood Cliffs, N.J. 07632
Filed Apr. 30, 1993, Ser. No. 55,539
Int. Cl.[5] B29C *35/00*
U.S. Cl. 264—26 7 Claims



1. A method of forming a new crayon from crayon scraps, said method including the steps of:
(a) providing a nonmetallic mold having an open upper end, a lower end closed by a removable plug, and an elongated circular cross-section cavity;
(b) placing a charge of solid crayon scraps in said cavity;
(c) maintaining said mold in an upright molding position wherein its open upper end is positioned above its lower end while subjecting said charge to microwave energy to heat said scraps until they become a molten mass and cooling said molten mass until it solidifies into a new crayon; and then
(d) removing said new crayon from said cavity by removing said plug and then applying a force to said new crayon at its end remote from said open upper end of said mold, which force is directed to drive said new crayon out of said cavity through said open upper end of said mold.

5,346,657
INJECTION MOLDING METHOD USING A PLURALITY OF CONTROL PARAMETERS
Hitoshi Hara, Funabashi, and Toru Okuda, Nara, both of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan
Filed Apr. 29, 1993, Ser. No. 53,651
Claims priority, application Japan, May 8, 1992, 4-142015
Int. Cl.[5] B29C *45/76*
U.S. Cl. 264—40.1 4 Claims

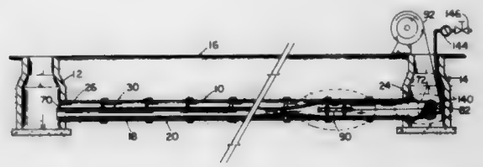


1. An injection molding method of molding by using an injection molding machine, wherein a plurality of control parameters including an injection speed, an injection pressure and a mold opening degree are controlled from a moment immediately before filling up a mold cavity with resin as commanding parameters in an order determined in accordance with characteristics demanded by the resin to obtain predetermined set values such that when the injection pressure is controlled as the commanding parameter, the injection speed is controlled as a subordinate parameter under a given restriction and, when the mold opening degree is controlled as the commanding parameter, the injection pressure is controlled as a subordinate parameter under a given restriction, comprising injecting resin into a mold cavity wherein immediately before the mold cavity is filled up with said resin and after the mold opening degrees reaches a predetermined set value, the control is switched from a mode in which the injection speed is controlled as the commanding parameter to reach a set value to another mode in which the injection pressure is controlled as the commanding parameter to reach a set value.

5,346,658
METHOD FOR INSTALLING A PIPE LINER
Joseph L. Gargiulo, Colts Neck, N.J., assignor to American Pipe & Plastics, Inc., Binghamton, N.Y.
Continuation of Ser. No. 818,616, Jan. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 709,635, Jun. 3, 1991, Pat. No. 5,213,727. This application May 5, 1993, Ser. No. 59,016
Int. Cl.[5] B29C *63/34*
U.S. Cl. 264—40.3 9 Claims

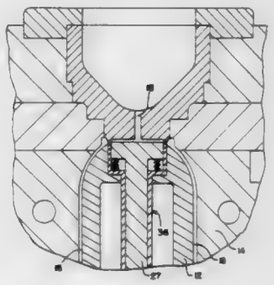
1. A method for installing a pipe liner in a pipe comprising the steps of:
reducing the diameter of the liner so that it can be positioned within the pipe;
installing the liner in the pipe;
enlarging an upstream nd of the liner;
disposing a liner expander having at least one resilient disk shaped expanding portion within the upstream end;

inserting a plug in the upstream end of the liner while leaving the downstream end of the liner open to atmospheric pressure;
connecting a source of heated fluid, the fluid heated external to the liner, to the plug, the heated fluid having a temperature sufficient to soften the liner for mechanical expansion by the liner expander;
injecting the heated fluid through the plug and into the liner, upstream of the liner expander, and allowing a portion of the heated fluid to pass through the liner expander for heating and softening the liner immediately ahead and in front of the liner expander;



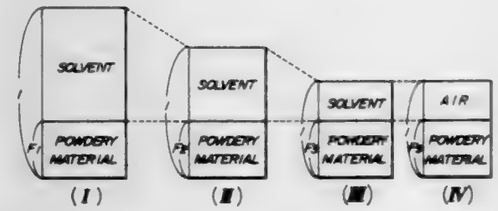
pressurizing the upstream end of the liner with the heated fluid at a pressure being sufficient to propel the liner expander from the upstream end to a downstream end of the liner for continuously, progressively engaging the liner with the expanding portion of the liner expander to mechanically expand the liner into contact with the pipe;
retaining the liner expander at least partially within the liner at the downstream end to seal the downstream end of the liner and
reducing the temperature of the externally heated fluid to below the softening temperature of the liner.

5,346,659
METHOD FOR PRODUCING A WELD-LINE FREE INJECTION MOLDED PLASTIC CONTAINER BODY PORTION
James E. Buhler, Waterford; Scott W. Demarest, Caledonia, and Karl J. Bobinger, Union Grove, all of Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Nov. 23, 1992, Ser. No. 979,976
Int. Cl.[5] B29C *45/40, 69/00*
U.S. Cl. 264—68 5 Claims



1. A method of forming, from injected plastic material, a weld-line free container body portion having at a first end a neck opening of a smaller diameter than the diameter of the container body portion and at a second end an opening substantially equal to the diameter of the container body portion, the method comprising the steps of:
providing a molding mechanism having an A mold component which has formed therein a mold-forming cavity and gating means to allow injected plastic material to reach that cavity, and a B mold component having protruding therefrom a mold-forming core,
the A and B mold components, when fitted together, being configured to form the container body portion within the space existing between the core and the cavity,
the A and B mold components further being designed to be separated after the formation of the container body portion,
the molding mechanism having, slideably located within the mold forming core, means for forming the neck opening in the closed end of the container body portion and having movably located within the B component, means for stripping the formed container body portion from the mold forming core, the means for forming the neck opening in the closed end of the container body portion comprising an independently moveable cutting collar for cutting the neck opening, and the cutting collar surrounding a punch pin for ejecting the cut section of the container body portion to form the neck opening, the punch pin being centrally and slideably located in the center of the mold-forming core;
applying pressure on the B mold component so that the B mold component is forced against the A mold component, then
injecting, through the gating means in the A mold component, a plastic material into the space existing between the molding core and the molding cavity so that the container body portion having one end closed is formed therebetween, then
applying force to the B mold component so that the B mold component moves away from the A mold component, then
applying force to the cutting collar and punch pin so that a neck opening is first cut and then opened in the previously closed end of the container body portion, and then
applying power to the means for stripping so that the formed container body portion is stripped from its position on the molding core.

5,346,660
METHOD OF MANUFACTURING POWDER MOLDING
Akio Matsumoto, Fukuoka, Japan, assignor to Toto Ltd., Fukuoka, Japan
Filed Feb. 23, 1993, Ser. No. 22,776
Claims priority, application Japan, Sep. 7, 1990, 2-238747
Int. Cl.[5] B28B *1/08, 1/20, 1/26*
U.S. Cl. 264—69 12 Claims



1. A method of manufacturing a powdery molding of a large packing fraction by slip casting, comprising the steps of:
mixing a powdery material and a solvent into a mixture which exhibits a dilatant flow and which has a volume fraction F1 of said powdery material;
pouring said mixture into a porous mold to make a molding of desired shape which has a volume fraction F2 of said powdery material, said volume fraction F2 being greater than said volume fraction F1;
drying said molding, said dried molding having a volume fraction F3 of said powdery material; and
wherein said mixing step further comprises adjusting said volume fraction F1 of said mixture to a value at least as large as a value where a resulting value of said volume fraction F3 abruptly rises relative to a small marginal increase of said volume fraction F1.

5,346,661

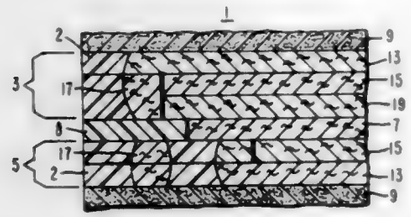
HOT COMPRESSION PROCESS FOR MAKING EDGE SEALS FOR FUEL CELLS

Thomas J. Dunyak, Blacksburg, Va., and Samuel J. Granata, Jr., South Greensburg, Pa., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Continuation of Ser. No. 522,756, May 14, 1990. This application Mar. 2, 1992, Ser. No. 842,765

Int. Cl.[5] B29C *65/54*

U.S. Cl. 264—138 **14 Claims**



1. A hot compression process for making edge seals for fuel cells, comprised of pairs of electrode assemblies with a matrix seal disposed between the electrodes of each pair, each pair of assemblies disposed between two gas-conducting plates comprising the steps of:

forming a rectangular-shaped electrode assembly to a nominal size larger than a finished size, the assembly having opposed sides, one side for contacting a gas-conducting plate and the opposed side for conducting a matrix seal;

applying at least one bead of elastomer to a peripheral band adjacent the peripheral margins on each opposed side of the electrode assembly so that the beads on the opposing sides are aligned;

providing a pair of press platens;

heating the press platens to a temperature generally in the range of 180° C. to 230° C.;

compressing the electrode assembly with the elastomer applied thereto between the heated press platens for a sufficient period and with a force sufficient to cause the beads to permeate the entire thickness of the adjacent assembly so that there is essentially no buildup of the elastomer between the platen and the electrode assembly and the elastomer forms a generally gas impervious seal adjacent the peripheral margins, the seal extending from one opposed side of the assembly to the other for preventing gas leakage across the peripheral margins for the assembly;

removing the electrode assembly from between the platens;

allowing the removed electrode assembly to cool to ambient temperature; and

trimming the cooled electrode assembly to a finished size.

5,346,662

METHOD OF MANUFACTURING A COMPOSITE SEAL

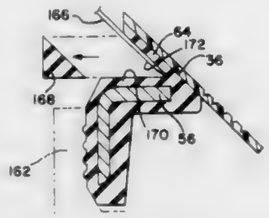
David D. Black, Elgin, Ill., and John B. Wagner, Greenfield, Ind., assignors to SKF USA Inc., Elgin, Ill.

Filed Oct. 8, 1992, Ser. No. 957,785

Int. Cl.[5] B29C *33/14*

U.S. Cl. 264—138 **8 Claims**

1. A method of manufacturing a composite oil seal having a seal casing with an axial casing flange, a radial casing flange with an inner margin and a primary seal element made from a thin, flexible seal ring made of lubricous fluorocarbon material of frustoconical cross-section, said seal ring having a central portion and a radially outer portion, and said seal ring being secured to said radial flange of said seal casing by a positioning collar of cured elastomer extending between a portion of said radial casing flange and a generally central portion of the non-contact side of said seal element, and wherein at least said radially outer portion of said seal ring is of frustoconical cross-section, said method comprising positioning said casing within a mold having various elements with surfaces defining portions of a mold cavity, including a mold surface adapted to receive and support a portion of said primary seal element, positioning a seal ring with at least its radially outer portion within said mold cavity with the central portion of its non-contact side in facing relation to said radial casing flange, and its outer margin spaced radially outwardly of said radially inner margin of said radial casing flange, closing said mold elements to define a cavity having said seal ring and a portion of said casing lying



within said cavity, said cavity including a space for forming a solid annular support ring between said casing radial flange and said outer margin of said seal ring, filling said cavity with a fluent curable elastomer and permitting said elastomer to cure so as to bond said non-contact side of said casing flange to said seal ring, removing said composite seal from said mold and subsequently removing a substantial portion of said solid annular support ring so as to create a composite seal having said seal ring joined to said casing only by a cured elastomeric positioning collar of thin cross section.

5,346,663

METHOD OF PRODUCING A SPLICELESS ANNULAR TREAD CAP

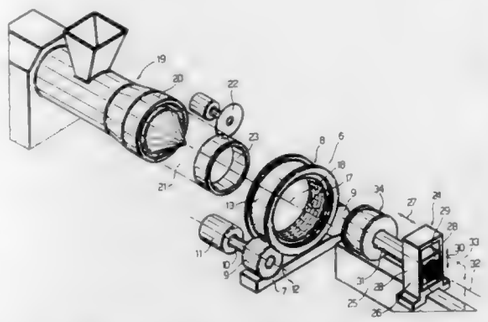
Karl J. Siegenthaler, Rome - Ostia, Italy, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 27, 1992, Ser. No. 967,358

Claims priority, application Italy, Oct. 31, 1991, TO91A 000823

Int. Cl.[5] B29D *30/00*

U.S. Cl. 264—150 **5 Claims**



1. A method of producing a spliceless annular tread cap, comprising the steps of extruding a continuous spliceless tube of elastomeric material; cutting said continuous tube into spliceless preformed tubular portions; feeding one of said preformed spliceless tubular portions directly inside an annular body, an inner annular surface of said annular body presenting a diameter approximately equal to but no smaller than, the outside diameter of said tubular portion, and negatively reproduces the pattern of the finished tread cap; fitting said tubular portion inside said annular body and about a roller positioned within said annular body; bringing said roller into contact with said tubular portion; and rolling said roller along the inner surface of said annular body, so as to radially expand and calendar said tubular portion against the inner surface of said annular body.

5,346,664

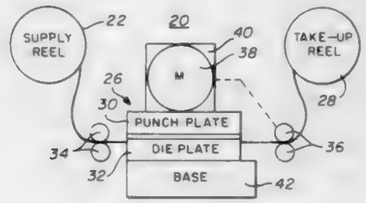
APPARATUS AND METHOD FOR FORMING A RIBBON OF CONTINUOUSLY CONNECTED DISH-SHAPED SEQUINS

Harry Lenson, 1302 13th St., North Bergen, N.J. 07047

Filed May 11, 1992, Ser. No. 881,466

Int. Cl.[5] B29D *19/04*

U.S. Cl. 264—154 **14 Claims**



1. A method of forming continuously connected dish-shaped sequins comprising the steps of:

feeding a continuous ribbon of moldable material into a punch-and-die system;

forming the punch-and-die system of a punch portion and a die portion movable with respect to each other, said punch portion including a hole punch, a cutting element, and a dish-shape forming punch;

moving the continuous ribbon through the punch-and-die system incrementally to fixed positions at discrete, spaced intervals; and

moving said punch portion with respect to said die portion as said ribbon moves through the system such that simultaneously, at the fixed positions, a hole is punched, the outer shape of the sequin is formed with the cutting element so as to leave a connecting portion between sequins, and a dish shape is formed on each sequin in the continuous ribbon of material with the dish-shaped forming punch to form a continuous ribbon of connected dish-shaped sequins.

5,346,665

METHOD OF BLOW MOLDING AND BLOW MOLDING SYSTEM

Yasuto Watanabe; Masao Hara; Takashi Tomita; Tetsuya Nakata, and Kenji Moriwaki, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 6, 1991, Ser. No. 803,216

Claims priority, application Japan, Dec. 19, 1990, 2-403590; Dec. 26, 1990, 2-406955; Dec. 26, 1990, 2-406956

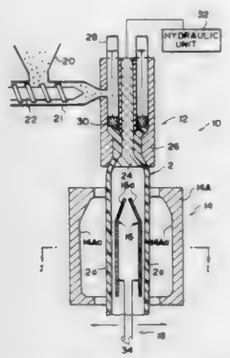
Int. Cl.[5] B29C *49/20, 49/42*

U.S. Cl. 264—516 **13 Claims**

1. A method of blow molding a resin article having a pair of thickened parts comprising the steps of suspending a parison between halves of a blow mold the inner surface of which defines the outer shape of the article to be molded, pinch-off mold portions being provided on lower portions of the mold halves with the pinch-off mold portions being movable relative to the mold halves between a pinch-off position where said pinch-off mold portions abut against each other to pinch off the parison and a retracted position where the pinch-off mold portions are spaced from each other to give access to the space between inner surfaces of the mold halves,

inserting a pair of expander panels into the space inside the parison, each of the expander panels have an abutment surface which substantially conforms in shape to a part of the inner surface of the blow mold which corresponds to one of the pair of thickened parts of the article.

moving the expander panels away from each other toward said parts of the inner surface of the blow mold to press said abutment surfaces of the expander panels against a pair of parts of the parison which are diametrically opposed to each other with the mold halves closed and the pinch-off mold portions in the retracted position,



removing the expander panels away from the blow mold through the space between the pinch-off mold portions,

moving the pinch-off mold portions to the pinch-off position, and

blowing pressurized gas into the parison.

5,346,666

BLOW MOLDING PROCESS AND APPARATUS FOR PRODUCING HOLLOW PLASTIC ARTICLES

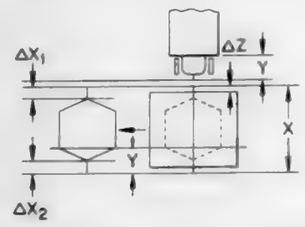
Yoshiaki Kanoh; Hiroaki Furuya, and Hiroyuki Takatori, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Mar. 11, 1992, Ser. No. 849,715

Claims priority, application Japan, Mar. 12, 1991, 3-046840; Mar. 27, 1991, 3-087518

Int. Cl.[5] B29C *49/04, 49/16, 49/64*

U.S. Cl. 264—521 **6 Claims**



1. A blow molding process for producing hollow plastic articles comprising:

providing an extrusion machine having a die defining a downwardly extending annular melt passage in combination with air blowing means and a mold having a cooling means below the die including two mold halves defining a cavity, and

performing in each blow molding run the steps of:

plasticizing and metering an engineering plastic material within the extrusion machine;

extruding the plasticized and metered material having a hollow form through the die annular passage toward the mold, when the mold is opened; and

preblowing air at a low pressure from the die into the interior of the extruded hollow material during the extrusion step, to thereby produce a parison having a longitudinal hollow form to be partially received in the mold and molded to form the article within the cavity defined by said mold halves,

wherein the extrusion machine is activated so as to elevate an extrusion speed from zero up to a level near a predeter-

mined full speed α immediately after the commencement of the extruding step,

wherein both the extrusion and preblowing steps for preparing said parison are commenced concurrently, and

wherein a material remaining in the die is integrated with an upstream portion of a downstream parison prepared in a preceding blow molding, said portion having a closed and free lower end.

5,346,667

METHOD OF MANUFACTURING SINTERED ALUMINUM ALLOY PARTS

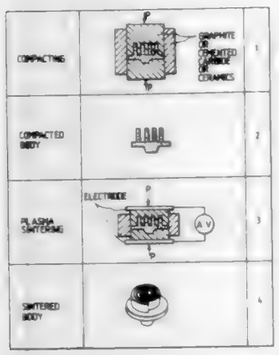
Yasuo Kamitsuma, Mito; Yusaku Nakagawa, Hitachi; Yoshihiro Kobayashi, Hitachi; Shoichi Nakashima, Hitachi; Tadashi Iizuka, Ashikaga; Keiichi Nakamura, Tokyo, and Hideo Shikata, Matsudo, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Powdered Metals Co., Ltd., Matsudo, both of Japan

Filed Sep. 29, 1992, Ser. No. 953,018

Claims priority, application Japan, Oct. 1, 1991, 3-252676

Int. Cl.[5] B22F *9/00*

U.S. Cl. 419—52 **9 Claims**



1. A method of manufacturing sintered aluminum alloy parts characterized by comprising the steps of:

compression molding an Al alloy powder solidified by a rapid cooling which powder consists essentially of 1~45 wt % of Si, 0.5~5 wt % of Ce, 0.5~5 wt % of Zr, 0.1~9 wt % of at least one of 0.1 to 1.0 of Fe and an 0.1 to 9 wt % of an element selected from the group consisting of Y, Cu, Mg, Mn, Zn, Li, Co, Cr, Ni, W, Nb and Mo, and remainder wt % of Al; and

thereafter sintering the compression molded alloy powder by heating via an electric current conduction therethrough in the form of a plasma discharge while applying pressure thereto.

5,346,668

COPPER BASED ALLOY FOR WEAR RESISTANT SLIDING LAYER AND SLIDING MEMBER

Tadashi Tanaka, Konan; Masaaki Sakamoto, Nagoya; Koichi Yamamoto, Komaki, and Kenji Sakai, Ichinomiya, all of Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

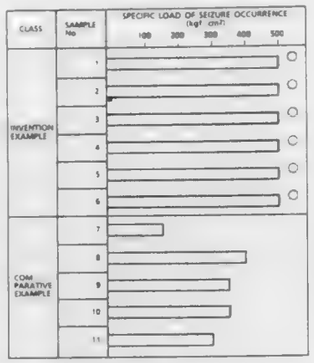
Filed Mar. 30, 1993, Ser. No. 40,028

Claims priority, application Japan, Mar. 31, 1992, 4-077342

Int. Cl.[5] C22C *30/00, 9/00*

U.S. Cl. 420—485 **8 Claims**

1. A wear-resistant sliding layer having superior anti-seizure and corrosion properties formed of a sintered alloy consisting essentially of 10 to 35 wt % of zinc, 10 to 20 wt % of lead, 1



to 10 wt % of nickel, 0.1 to 1 wt % of boron, and balance copper and unavoidable impurities.

5,346,669

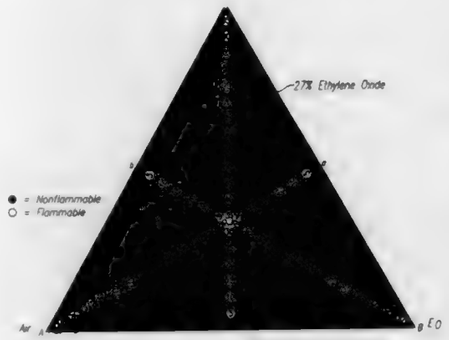
OZONE-FRIENDLY STERILANT MIXTURE

Mark A. Sweval, Lafayette; W. Douglas Register, West Lafayette; Mark L. Robin, West Lafayette, and Yuichi Iikubo, West Lafayette, all of Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Division of Ser. No. 948,094, Sep. 21, 1992. This application Dec. 6, 1993, Ser No. 162,671

Int. Cl.[5] A01N *29/00*; A61L *9/04*

U.S. Cl. 422—34 **8 Claims**



1. A method for sterilizing an article comprising contacting said article with a sterilizingly effective amount of a non-flammable sterilant mixture comprising from about 20 mole percent to about 35 mole percent ethylene oxide, and from about 65 mole percent to about 80 mole percent 1,1,1,2,3,3,3-heptafluoropropane.

5,346,670

PHTHALOCYANINE AND TETRABENZTRIAZAPORPHYRIN REAGENTS

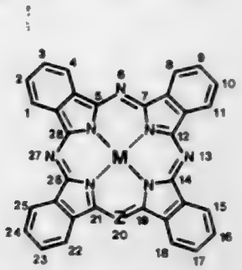
George E. Renzoni; Deborah C. Schindele; Louis J. Theodore, all of Seattle, Wash.; Clifford C. Leznoff, Ontario, Canada; Karen L. Fearon, Woodinville, and Barry V. Pepich, Seattle, both of Wash., assignors to British Technology Group U.S.A. Inc., Gulph Mills, Pa.

Continuation of Ser. No. 398,433, Aug. 29, 1989, Pat. No. 5,135,717, and a continuation-in-part of Ser. No. 366,971, Jun. 14, 1989, which is a continuation-in-part of Ser. No. 61,937, Jun. 12, 1987, abandoned, and Ser. No. 946,475, Dec. 24, 1986, Pat. No. 4,803,170, said Ser. No. 398,433, is a continuation-in-part of Ser. No. 241,608, Sep. 8, 1988, abandoned. This application Jun. 8, 1992, Ser. No. 895,601

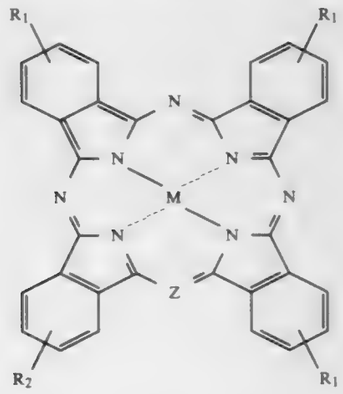
The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.

Int. Cl.[5] G01N *21/76*

U.S. Cl. 422—52 **25 Claims**



1. A reagent having the formula:



wherein

M is selected from the group consisting of hydrogen, aluminum, silicon, phosphorus, gallium, germanium, cadmium, scandium, magnesium, tin, and zinc;

each R_1 is independently —XYW, —O-phenyl, —S-phenyl, —YW, —W, or hydrogen, and wherein at least one R_1 is —XYW, —O-phenyl, or —S-phenyl;

X is oxygen, nitrogen, sulfur, phosphorus, silicon, or selenium; or X is CR_3R_4, wherein R_3 and R_4 are independently selected from the group consisting of hydrogen, alkyl, aryl, and aralkyl, or R_3 and R_4 together form a carbonyl oxygen; or X is phenyl;

Y is a linking group between X and W when R_1 is —XYW, or between W and an aromatic ring of said reagent when R_1 is —YW;

W is a water-soluble group;

R_2 is —A or —Y'A, wherein —A is a biological entity and Y' is a linking group to —A; or R_2 is a reactive or activatable group; and

Z is nitrogen.

5,346,671

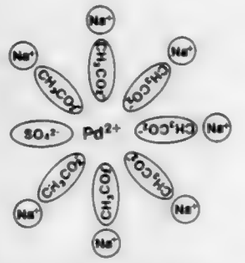
SPECIFIC AND REVERSIBLE CARBON MONOXIDE SENSOR

Kisholoy Goswami; Devinder P. S. Saini; Stanley M. Klainer, all of Henderson, and Chuka H. Ejiofor, Las Vegas, all of Nev., assignors to FCI - FiberChem, Inc., Las Vegas, Nev.

Continuation-in-part of Ser. No. 9,066, Jan. 26, 1993. This application Feb. 25, 1993, Ser. No. 22,324

Int. Cl.[5] G01N *31/00, 33/00*

U.S. Cl. 422—86 **16 Claims**



1. A CO sensor comprising, in solution:

a color forming agent which is reduced by CO and produces a color change;

a catalyst which is reduced by CO and which thereby also reduces the color forming agent;

a reversing agent which oxidizes the reduced color forming agent back to its initial oxidation state;

a redox property modifying agent which prevents reduction of the catalyst and the color forming agent in the absence of CO;

wherein, the reversing agent is selected from the group consisting of a source of Fe^{+3}, Cr^{+6} and Ce^{+4} ions and the redox property modifying agent is a source of acetate counterions.

5,346,672

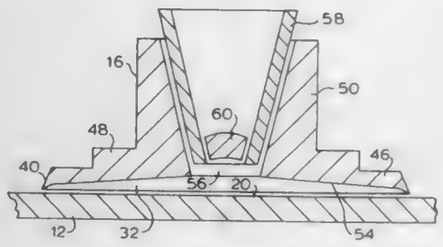
DEVICES FOR CONTAINING BIOLOGICAL SPECIMENS FOR THERMAL PROCESSING

Marilyn J. Stapleton, Durham; Villette S. Thorpe, Goldsboro, and Warren R. Jewett, Cary, all of N.C., assignors to Gene Tec Corporation, Durham, N.C.

Continuation-in-part of Ser. No. 836,348, Mar. 3, 1992, and a continuation-in-part of Ser. No. 855,318, Mar. 23, 1992, Pat. No. 5,281,516, and a continuation-in-part of Ser. No. 929,720, Aug. 12, 1992, abandoned, which is a division of Ser. No. 438,592, Nov. 17, 1989, Pat. No. 5,188,963. This application Mar. 2, 1993, Ser. No. 25,093

Int. Cl.[5] B01L *3/00*

U.S. Cl. 422—102 **6 Claims**



1. A chamber device for detecting molecular targets in a biological specimen at temperatures elevated above ambient temperature, comprising:

(a) a microscope slide having a flat specimen area containing a biological specimen;

(b) a cover covering said flat specimen area; said cover

comprising a flange which sealingly contacts the microscope slide about the flat specimen area, a ceiling connected to the flange and a neck which protrudes upwardly from the ceiling;

(c) said cover and said flat specimen area forming an enclosure having an interior space comprising a chamber device that prevents evaporative loss of reaction fluids;

(d) said neck in said cover having a channel for adding reaction fluids to said chamber device and removing reaction fluids from said chamber device after said enclosure is formed; and

(e) means for closing said channel to provide a water vapor barrier in said chamber device.

5,346,673

DEVICE AND PROCESS FOR THE PRODUCTION OF A REACTION MIXTURE FROM AT LEAST TWO FLOWABLE REACTION COMPONENTS

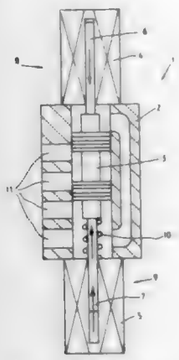
Ferdinand Althausen, Neunkirchen; Jürgen Wirth, Cologne, and Reiner Raffel, Siegburg, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Hennecke GmbH, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 898,632, Jun. 15, 1992, Pat. No. 5,283,040. This application Oct. 27, 1993, Ser. No. 144,112

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1991, 4120321

Int. Cl.[5] **C08F** *2/00;* **G05B** *1/00;* **G05D** *16/00;* **F17D** *1/00*

U.S. Cl. 422—133 **2 Claims**



1. In a process of the operation of a device for the production of a reaction mixture from at least two flowable reaction components, the steps comprising:

a) providing storage containers and supply lines which lead via at least one servo-controlled inlet member into a mixing chamber,

b) opening the inlet member by activating a moving electromagnet of a sliding valve such that a slide is pressed against a restoring spring, and following conclusion of the mixing process,

c) deactivating said moving electromagnet to return the slide to the closed position; the improvement comprising the steps of:

d) providing a holding magnet in the a second opposing side of the slide,

e) activating the holding electromagnet to build up a maximum force of the holding electromagnet which is greater than a maximum force of the moving magnet,

f) activating the moving electromagnet after a delay time in which the holding magnet has built up its maximum force,

g) opening the slide by deactivating the holding electromagnet after the moving magnet has built up its maximum force, thereby causing the force of the moving electromagnet to open the slide.

5,346,674

PROCESS AND APPARATUS FOR REMOVAL OF IMPURITIES FROM FLUE GASES

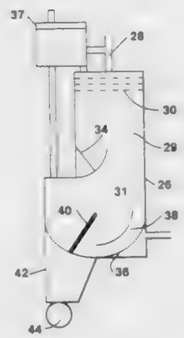
Peter Weinwurm, and Paul S. Weinwurm, both of Brampton, Canada, assignors to Aggio Recovery, Rexdale, Canada

PCT No. PCT/CA90/00463, § 371 Date Jun. 22, 1992, § 102(e) Date Jun. 22, 1992, PCT Pub. No. WO91/09664, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 21, 1990, Ser. No. 861,884

Int. Cl.[5] **B01D** *53/02*

U.S. Cl. 422—168 **13 Claims**



1. A process for substantially removing at least one gaseous impurity selected from gases of heavy metals, salts, acids and hydrocarbons and submicron particle emissions contained in gases which comprises the steps of:

cooling the gases by means of a liquified gas selected from nitrogen and air to a temperature in the range of 60° C. to −20° C. to precipitate said at least one impurity of said contained impurities;

contacting the gases during cooling of the gases with a powdered sorbent selected from diatomaceous earth, perlite, expanded vermiculite, expanded sodium/calcium glass, expanded clay, and zeolites which has a surface area between 30 m^2/g to 600 m^2/g and a pore volume between 0.3 and 1.0 cc/g to collect said impurity;

adding an alkali metal to said sorbent to adjust the pH of the sorbent to about 9 to 11;

forming a filter bed of said sorbent in a filter chamber and passing the cooled gases through said filter bed;

collecting said impurity by adsorbing and absorbing precipitated heavy metal and salts, condensed acids and hydrocarbons, and submicron emissions of the filter bed;

recycling said sorbent until the pore volume of the sorbent is substantially saturated with said at least one impurity; and

discharging the saturated sorbent.

5,346,675

EXHAUST GAS CLEANING APPARATUS

Masayoshi Usui, Numazu, and Haruo Serizawa, Shizuoka, both of Japan, assignors to Usui Kokusai Sangyo Kabushiki Kaisha, Japan

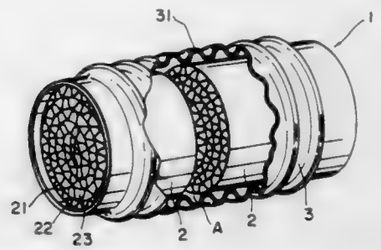
Filed Dec. 12, 1989, Ser. No. 449,266

Claims priority, application Japan, Dec. 16, 1988, 63-0162402[U]; Dec. 20, 1988, 63-0164029[U]

Int. Cl.[5] **F01N** *3/10*

U.S. Cl. 422—180 **22 Claims**

1. An exhaust gas cleaning apparatus comprising: a single honeycomb core body carrying thereon an exhaust gas cleaning catalyst and composed of a sheet band made of a thin metal sheet and a corrugated band made from another thin metal sheet, said sheet band and said corrugated band being superposed one over another so as to have areas of contact therebetween and so as to define many network-patterned gas flow passages along a central longitudinal axis thereof; and a metal casing having a central axis and being opened at opposite ends, said honeycomb core body being inserted in and fixed directly to said metal casing, said metal casing having an outer wall



expandable and contractible axially so as to follow stress due to a thermal expansion of said honeycomb core body.

5,346,676

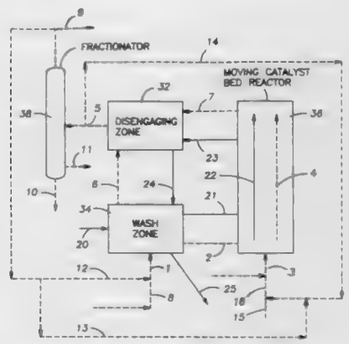
APPARATUS OF ALKYLATION USING ALKANES AND OLEFINS

Clifford S. Crossland, P.O. Box 890509, Houston, Tex. 77289-0509; Alan Johnson; John Woods, both of 333 Wyecroft Road, Units 6&7, Oakville Ontario, Canada L6K 2H2 , and Elliot G. Pitt, 4017 Taffey Crescent, Mississauga, Canada L5L-2H6

Continuation of Ser. No. 791,290, Nov. 13, 1991, abandoned, which is a division of Ser. No. 632,478, Dec. 24, 1990, Pat. No. 5,157,196. This application Jun. 25, 1993, Ser. No. 82,517

Int. Cl.[5] **B01J** *8/08*

U.S. Cl. 422—211 **1 Claim**



1. An apparatus for conducting alkylation of alkanes with olefins comprising:

(a) a vertical reactor means containing a solid particulate catalyst slurried with an alkane for reacting said alkane with an olefin,

(b) a wash/catalyst make-up vessel means for washing the solid particulate catalyst with alkane to remove residual alkylate and to slurry the catalyst, fluidly connected to the lower end of said vertical reactor means for recycle of the washed Solid particulate catalyst to the reactor, and having an entry for alkane wash and catalyst make up,

(c) an olefin entry means at the lower end of said vertical reactor means to bring the alkylation olefin into contact with said solid particulate alkylation catalyst slurried with an alkane,

(d) means to move said slurried catalyst through said vertical reactor means;

(e) a disengaging vessel means fluidly connected to said vertical reactor means to receive the slurried catalyst in a mixture with alkane and alkylation product therefrom, in fluid communication with said wash/catalyst make-up vessel means to receive alkane wash therefrom and to remove slurried catalyst to said wash/catalyst make-up vessel means, for contacting said slurried catalyst from said vertical reactor means with the alkane wash and removing residual alkylation product from said alkane wash; and

(f) exit means to remove alkylation product from said disengaging vessel.

5,346,677

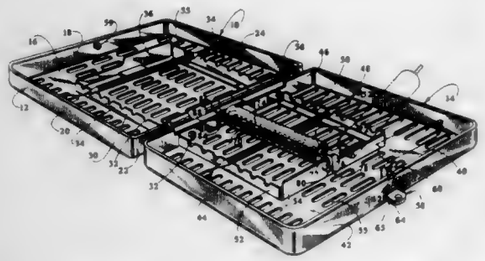
INSTRUMENT CASSETTE

William B. Risk, 511 Valleyview Ln., Lafayette, Ind. 47905

Continuation of Ser. No. 940,536, Sep. 4, 1992, abandoned. This application Nov. 9, 1993, Ser. No. 150,549

Int. Cl.[5] **A61L** *2/00;* **B01L** *9/00*

U.S. Cl. 422—297 **19 Claims**



1. An instrument cassette for holding and sterilizing dental instruments comprising:

a lower tray and an upper cover hingeably joined together for movement between an open position and a closed position;

instrument positioning racks fastened to the tray and the cover for positioning the instruments in side-by-side relation within the tray and the cover; and

instrument retaining means for releasably retaining instruments in the positioning rack in the cover, said retaining means comprising a retaining bar having means at a first end thereof for pivotally mounting the retaining bar to the cover for pivotal movement in at least two planes, means at a second end thereof for releasably fastening the retaining bar to the cover, and a resilient retaining member mounted on the retaining bar, the resilient retaining member pressingly contacting the instruments positioned in the positioning rack in the cover when the retaining bar is fastened to the cover to thereby retain the instruments in the positioning rack in the cover.

5,346,678

PRODUCTION OF HIGH SPECIFIC ACTIVITY SILICON-32

Dennis R. Phillips, Los Alamos, N. Mex., and Mark A. Brzezinski, Santa Barbara, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 25, 1992, Ser. No. 950,552

Int. Cl.[5] **C01B** *33/00, 33/113;* **G21G** *4/04*

U.S. Cl. 423—2 **14 Claims**

1. A process for preparation of a high purity, high specific activity silicon-32 solution comprising:

contacting an irradiated potassium chloride target containing spallation products with a sufficient amount of water, hydrochloric acid or potassium hydroxide to form a first solution;

filtering the first solution;

adjusting pH of the first solution to within a range of from about 5.5 to about 7.5;

admixing a sufficient amount of a molybdate-reagent and a dilute acid with the first solution whereby the pH of the first solution is adjusted to about 1.5 and a silicon-molybdate complex is formed;

contacting the first solution including the silicon-molybdate complex with a dextran-based material whereby the silicon-molybdate complex is adsorbed from the first solution onto the dextran-based material;

washing the dextran-based material with a sufficient amount of a dilute acid containing a soluble metal halide to remove substantially all residual contaminants;

separating the silicon-molybdate complex from the dextran-based material into a second solution;

adding amounts of hydrochloric acid and hydrogen peroxide to the second solution sufficient to maintain separation of the silicon and molybdate ions and to yield an oxidation state of the molybdate adapted for subsequent separation onto an anionic exchange material; and,

contacting the second solution with an anion exchange material whereby the molybdate is retained by the anion exchange material and the silicon remains in the second solution.

5,346,679

METHOD FOR REDUCTION OF CARBON DIOXIDE, CATALYST FOR THE REDUCTION, AND METHOD FOR PRODUCTION OF THE CATALYST

Toshihiko Osaki, Nishio; Hiroshi Taoda, Nagoya, and Hiromi Yamakita, Owari-Asahi, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, Tokyo, Japan

Division of Ser. No. 925,663, Aug. 7, 1992, abandoned. This application Feb. 17, 1993, Ser. No. 19,646

Claims priority, application Japan, Aug. 15, 1991, 3-229518; Aug. 15, 1991, 3-229519

Int. Cl.[5] C01B *31/18*

U.S. Cl. 423—210 5 Claims

1. A method for reducing carbon dioxide into carbon monoxide, consisting essentially of the steps of:

mixing carbon dioxide and hydrogen gas in the presence of tungsten sulfide catalyst having a W:S mol ratio of from about 1.96 to 2.42 to obtain a mixed gas having a CO_2:H_2 mol ratio of from about 0.1 to 5; and

supplying to said tungsten sulfide catalyst, one energy selected from the group consisting of heat and sunlight, thereby inducing reaction between said carbon dioxide and said hydrogen to convert said carbon dioxide into carbon monoxide at a temperature ranging from 300° C. to 500° C.

5,346,680

SODIUM PERCARBONATE STABILIZED BY COATING

Richard Roesler, Kraainem, Belgium; Alfred Soentgerath, Hausen-Reuschenbach, Fed. Rep. of Germany; Werner Doetsch, Bad Hoenningen, Fed. Rep. of Germany, and Gerd Hecken, Vettelschoss, Fed. Rep. of Germany, assignors to Solvay Interox GmbH, Hoellriegelskreuth, Fed. Rep. of Germany

Filed Oct. 18, 1993, Ser. No. 137,251

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1992, 4234966; Aug. 10, 1993, 4326804

Int. Cl.[5] C01B *31/00*

U.S. Cl. 423—274 32 Claims

1. Sodium percarbonate particles coated with a solid inorganic coating material wherein the coating material comprises a mixture of sodium carbonate and sodium chloride.

10. A process for producing stabilized sodium percarbonate particles coated with a solid inorganic coating material, said process comprising coating particles of sodium percarbonate with a coating material which comprises a mixture of sodium carbonate and sodium chloride by treating the particles to be coated with an aqueous liquid composition containing said coating material and thereafter drying the treated particles.

5,346,681

SYNTHETIC ALUMINOSILICATES AND THEIR USE AS HETEROGENEOUS EQUILIBRATION CATALYSTS

Bernd Pachaly, Burghausen, and Konrad Mautner, Kastl, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 21, 1993, Ser. No. 79,428

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1992, 4227594

Int. Cl.[5] C01B *33/26*

U.S. Cl. 423—328.1 6 Claims

1. A process for preparing synthetic aluminosilicates, which comprises (I) forming a gel by hydrolysis, with water or a mixture of water and alkanol, at a pH of 7.0 to 9.5, of (a) 10 to 90 mol percent of monomeric and/or polymeric silicic acid ester and 90 to 10 mol percent of aluminum alcoholate, based on the total amount of silicon and aluminum atoms, and (b) a doping agent, which is a compound of boron or a metal other than aluminum, which is soluble in water, alkanol or a mixture of water and alkanol, in an amount of from 0.1 to 5.0% by weight based on the total weight of the silicon and aluminum compound, separating the gel from the solution, drying the gel, and (II) heating the previously dried gel to at least 200° C.

5,346,682

PROCESS FOR THE PREPARATION OF PARTIALLY-SUBSTITUTED FLUOROSILANE

Makoto Aritsuka, Yamaguchi; Atsuhisa Mimoto, Kanagawa, and Isao Harada, Yamaguchi, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Nov. 24, 1993, Ser. No. 156,702

Claims priority, application Japan, Nov. 27, 1992, 4-318816

Int. Cl.[5] C01B *33/08*

U.S. Cl. 423—342 4 Claims

1. A process for the preparation of a partially-substituted fluorosilane represented by the following formula: SiH_nF_{4-n} wherein n stands for an integer of 1 to 3, said process comprising converting a corresponding partially-substituted chlorosilane represented by the following formula: SiH_nCl_{4-n} wherein n has the same meaning as defined above into the partially-substituted fluorosilane by halogen replacement while using a fluorinating agent, wherein the fluorinating agent is zinc fluoride having a water content not higher than 0.2 wt. %.

5,346,683

UNCAPPED AND THINNED CARBON NANOTUBES AND PROCESS

Malcolm L. H. Green, and Shik C. Tsang, both of Oxford, United Kingdom, assignors to Gas Research Institute, Chicago, Ill.

Filed Mar. 26, 1993, Ser. No. 37,573

Int. Cl.[5] D01F *9/12*

U.S. Cl. 423—447.2 22 Claims

1. A process for uncapping carbon nanotubes capped at their ends comprising: providing carbon nanotubes capped at their ends; contacting said carbon nanotubes capped at their ends with a reactant gas stream comprising a reactant gas capable of reacting with carbon in a capped region of said ends of said carbon nanotubes capped at their ends to form a gaseous product thereby opening at least one end of said carbon nanotube.

5,346,684

RECOVERY OF ANHYDROUS HYDROGEN FLUORIDE FROM DEPLETED URANIUM HEXAFLUORIDE

James H. Mestepey, Muskogee, Okla., assignor to Sequoyah Fuels Corporation, Gore, Okla.

Continuation of Ser. No. 753,323, Aug. 30, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 7,016

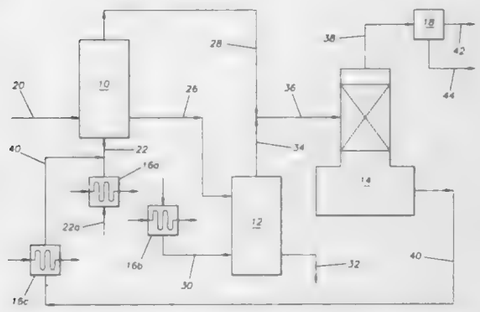
Int. Cl.[5] C01B *7/19, 9/08*

U.S. Cl. 423—488 18 Claims

1. A method for recovering an anhydrous hydrogen fluoride product from depleted gaseous uranium hexafluoride comprising the steps of:

reacting said depleted gaseous uranium hexafluoride in a first reaction zone with a first gaseous water feed by gas contacting to produce a uranyl fluoride intermediate and a first mixture of hydrogen fluoride and water;

reacting said uranyl fluoride intermediate from said first reaction zone with a second water feed in a second reaction zone to produce a triuranium octoxide product and a second mixture made up of water, hydrogen fluoride and oxygen;



combining said first and second mixtures to form a third mixture made up of water, hydrogen fluoride and oxygen;

distilling said third mixture in a separation zone to produce an anhydrous product stream containing said anhydrous hydrogen fluoride product and oxygen, and an aqueous stream made up of a water and hydrogen fluoride azeotrope; and

combining said aqueous stream with said depleted gaseous uranium hexafluoride in said first reaction zone.

5,346,685

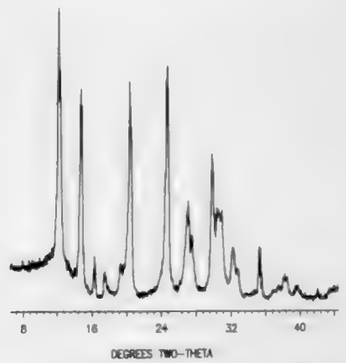
SYNTHETIC POROUS CRYSTALLINE MCM-51, ITS SYNTHESIS AND USE

Ahmad Moini, Lawrenceville, N.J., assignor to Mobil Oil Corp., Fairfax, Va.

Filed Apr. 23, 1993, Ser. No. 51,714

Int. Cl.[5] C01B *15/16;* B01J *27/16*

U.S. Cl. 423—718 17 Claims



1. A synthetic porous crystalline material characterized by an X-ray diffraction pattern including values substantially as set forth in Table I of the specification and having a composition in terms of TiO_2 and P_2O_5 comprising the molar relationship:

$$TiO_2:(0.5\pm0.1)P_2O_5.$$

5,346,686

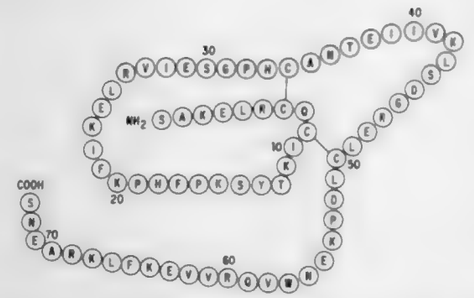
LABELLED INTERLEUKIN-8 AND MEDICAL USES THEREOF

Leon R. Lyle, Webster Groves, Mo., and Steven L. Kunkel, Ann Arbor, Mich., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo. and Curators of the University of Michigan, Ann Arbor, Mich.

Filed Oct. 5, 1992, Ser. No. 956,863

Int. Cl.[5] A61K *49/02*

U.S. Cl. 424—1.41 23 Claims



1. A method of imaging a target site in an animal body, comprising providing a radionuclide-labelled CXC chemokine, wherein C stands for cysteine and X stands for an amino acid, introducing a detectable amount of said labelled CXC chemokine into an animal's body, allowing the labelled CXC chemokine to accumulate at a target site of the animal's body, wherein neutrophils having Interleukin-8 receptor molecules are located at said target site, and detecting the accumulated, labelled CXC chemokine so as to image said target site.

5,346,687

DIRECT RADIOLABELING OF ANTIBODY AGAINST STAGE SPECIFIC EMBRYONIC ANTIGEN FOR DIAGNOSTIC IMAGING

Buck A. Rhodes, Albuquerque, N. Mex., assignor to Rhomed Incorporated, Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 391,474, Aug. 9, 1989, Pat. No. 5,078,985. This application Jan. 3, 1992, Ser. No. 816,476

The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.

Int. Cl.[5] A61K *49/02, 43/00, 39/395;* C07B *59/00*

U.S. Cl. 424—1.49 20 Claims

1. A method of radiolabeling antibody against stage specific embryonic antigen-1 with a radionuclide to obtain stable labeling, comprising the steps of:

a) incubating the antibody against stage specific embryonic antigen-1 with a Sn (II) agent, the period of incubation being sufficient to reduce available disulfide bonds to thiolate groups and allow formation of Sn (II)-containing and sulfur-containing complexes, while preventing excessive fragmentation of the antibody;

b) purifying the reduced antibody to remove uncomplexed Sn (II) agents and other impurities yet retaining Sn (II) in a sufficient amount to reduce the radionuclide and not generate significant radio-chemical impurities, the radionuclide to be added in a subsequent step; and

c) radiolabeling the purified antibody with the Sn (II)-containing and sulfur-containing complexes by adding the radionuclide, whereby the Sn (II) agent reduces the radionuclide and the reduced radionuclide forms radionuclide-containing and sulfur-containing complexes.

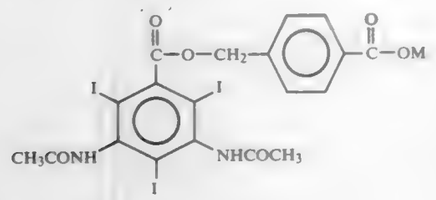
5,346,688

IODINATED WETTING AGENTS

Edward R. Bacon, East Greenbush, N.Y., and Gregory L. McIntire, West Chester, Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Dec. 16, 1992, Ser. No. 991,640
Int. Cl.[5] A61K 49/04
U.S. Cl. 424—5 5 Claims

1. A compound having the structure



wherein M is H or a cation.

5,346,689

METHOD OF PERFORMING ANGIOGRAPHY

Gholam A. Peyman, and Bahram Khoobehi, both of 2020 Gravier St., Ste. B, New Orleans, La. 70112-2234

Division of Ser. No. 880,301, May 9, 1992, Pat. No. 5,266,302, which is a continuation of Ser. No. 592,190, Oct. 3, 1990, abandoned. This application Aug. 24, 1993, Ser. No. 111,294
Int. Cl.[5] A61K 49/00
U.S. Cl. 424—7.1 7 Claims

1. A method of performing photocoagulation therapy and angiography of the ocular fundus of an eye of a patient comprising the steps of:

performing photocoagulation therapy on the eye of the patient;

injecting intravenously a solution of purified calcein into the patient in an effective amount immediately prior to angiography; and

performing angiography on the patient.

5,346,690

COMPOSITION OF A SUPERPARAMAGNETIC OR FERROMAGNETIC PARTICLE AND AN X-RAY CONTRAST AGENT FOR MRI

Helge G. Gundersen, and Jo Klaveness, both of Oslo, Norway, assignors to Nycomed Imaging AS, Oslo, Norway

PCT No. PCT/EP90/01195, § 371 Date Jan. 21, 1992, § 102(e) Date Jan. 21, 1992, PCT Pub. No. WO91/01147, PCT Pub. Date Feb. 7, 1991
PCT Filed Jul. 19, 1990, Ser. No. 820,643
Claims priority, application United Kingdom, Jul. 21, 1989, 8916782.9
Int. Cl.[5] A61B 5/055; A61K 31/195
U.S. Cl. 424—9 19 Claims

1. A contrast medium for enteral use comprising superparamagnetic, ferrimagnetic and ferromagnetic particles and, as a separate chemical entity, a physiologically tolerable osmoactive iodinated X-ray contrast agent, wherein said osmoactive agent is present at a concentration of 10–800 mmol/l.

19. A diagnostic contrast agent kit comprising a plurality of superparamagnetic, ferrimagnetic or ferromagnetic particles and, packaged separately thereto, a physiologically tolerable osmoactive agent.

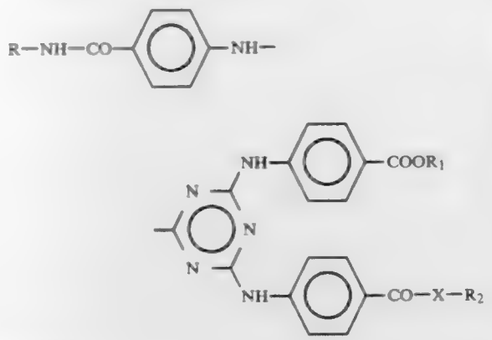
5,346,691

S-TRIAZINE DERIVATIVES AS LIGHT STABILIZERS

Giuseppe Raspanti, Bergamo, Italy, assignor to 3V Inc., Weehawkin, N.J.

Filed May 20, 1993, Ser. No. 63,747
Int. Cl.[5] A61K 7/42; C07D 251/70
U.S. Cl. 424—59 6 Claims

1. Compounds of formula (I):



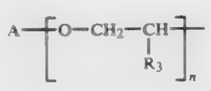
(I)

in which

R is C_1-C_{18} straight or branched alkyl, C_5-C_{12} cycloalkyl optionally substituted with one or more C_1-C_4 alkyl;

X is oxygen or the —NH— group;

R_1 has the same meanings as R or it is hydrogen, an alkali metal, an ammonium group or a group of formula (II):



(II)

in which A is C_1-C_{18} straight or branched alkyl, C_5-C_8 cycloalkyl, aryl optionally substituted with one or more C_1-C_4 alkyl, R_3 is hydrogen or methyl and n can be an integer from 1 to 10;

R_2 has the same meanings as R when X is the —NH— group; and it has the same meanings as R_1 when X is oxygen.

5,346,692

NAIL LACQUER FOR THE TREATMENT OF ONYCHOMYCOSIS

Wolfgang Wohlrab, and Katrin Wellner, both of Halle, Fed. Rep. of Germany, assignors to Roehm Pharma GmbH, Weiterstadt, Fed. Rep. of Germany

Filed Apr. 8, 1993, Ser. No. 43,927
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1992, 4212105
Int. Cl.[5] A61K 7/043
U.S. Cl. 424—61 13 Claims

1. A nail lacquer (nail polish) for treatment of onychomycosis, comprising:

a) a polymeric film forming agent,

b) at least one antimycotically active substance,

c) urea; and

d) a solvent which comprises

i) 50–70 wt. % of acetone; and

(ii) 30–50 wt. % of 90 volume % aqueous ethanol;

wherein in a first step, said polymeric film forming agent is dissolved in said acetone component of said solvent, and then in a second step, said antimycotically active substance and said urea are added to said polymeric film forming agent, in dissolved form in said aqueous ethanol; and

wherein following topical application and drying of said nail lacquer, the antimycotically active substance and said urea are liberated from the lacquer.

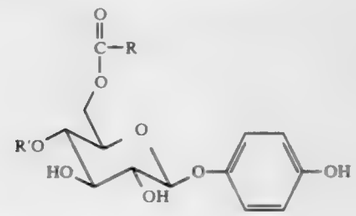
5,346,693

DEPIGMENTING COSMETIC OR DERMATOLOGICAL COMPOSITION CONTAINING ARBUTOSIDE DERIVATIVES

Eric Pilleux, Paris; Ming Li, Gif-sur-Yvette; Jean-Pierre Cosson, Nouméa; Daniel Guénard, Montrouge; Thierry Sevenet, and Pierre Potier, both of Paris, all of France, assignors to L'Oreal, Paris, France

Filed Jul. 17, 1992, Ser. No. 913,955
Claims priority, application France, Jul. 19, 1991, 91 09188
Int. Cl.[5] A61K 7/135
U.S. Cl. 424—62 10 Claims

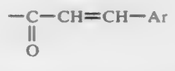
1. A cosmetic or dermatological composition with a depigmenting action, comprising a cosmetically or dermatologically acceptable excipient and, as an active ingredient, an arbutoside derivative with the following formula:



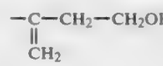
(I)

wherein:

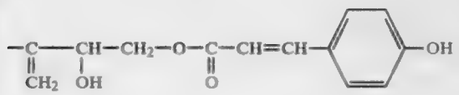
R′ represents a hydrogen atom or the



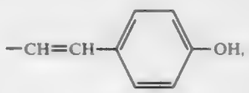
radical, where Ar represents a phenyl radical substituted by at least one hydroxyl group, and R is an unsaturated aliphatic or aromatic hydroxylated residue selected from the group consisting of:



(i)

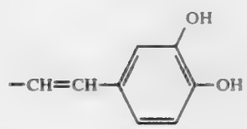


(ii)



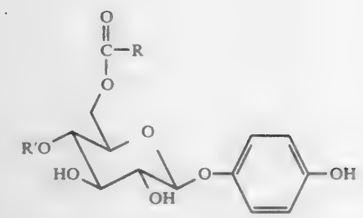
(iii)

and



(iv)

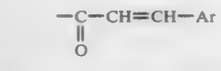
6. A method of cosmetic or dermatological treatment of skin comprising applying to skin to be depigmented a composition comprising a cosmetically or dermatologically acceptable excipient and, as an active ingredient, an arbutoside derivative with the following formula:



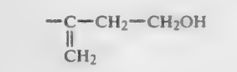
(I)

wherein:

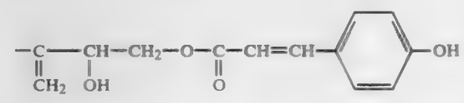
R′ represents a hydrogen atom or the



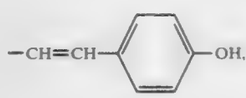
radical, where Ar represents a phenyl radical substituted by at least one hydroxyl group, and R is an unsaturated aliphatic or aromatic hydroxylated residue selected from the group consisting of:



(i)

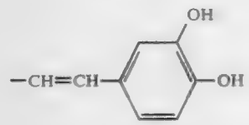


(ii)



(iii)

and



(iv)

5,346,694

ACID STABLE GEL STICK ANTIPERSPIRANT COMPOSITIONS AND PROCESS FOR MAKING THEM

Prem S. Juneja, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 696,376, May 6, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 47,255
Int. Cl.[5] A61K 7/34, 7/36, 7/38
U.S. Cl. 424—66 23 Claims

1. A solid antiperspirant composition in gel stick form, having an acidic pH, comprising:

(a) from about 0.5% to about 35% of an antiperspirant active;

(b) from about 0.5% to about 10% of a gelling agent which is a dibenzylidene alditol or a mixture of dibenzylidene alditols;

(c) from about 5% to about 98% of a solvent for said gelling agent; and

(d) from about 0.05% to about 5%, by weight, of a gelling agent stabilizer, said stabilizer being a basic metallic salt of an acid having a pKa of from about 3.8 to about 6.5 at ambient temperature, said salts being at least partially soluble in the composition, and said stabilizer being selected from the group consisting of C_4–C_6 alkyl dicarbox-

ylate, C_4–C_8 alkyl monocarboxylate, unsubstituted benzoate, and mono-halogen-, mono-, di-, and tri-hydroxy-, methyl-, ethyl-, and mono- and di-methoxy-substituted benzoate, wherein said gelling agent stabilizer does not contain amino or amido functionalities.

5,346,695

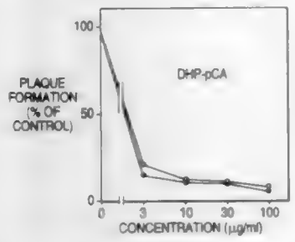
METHODS OF INHIBITING HIV REPLICATION IN VITRO USING POLYMERS OF P-HYDROXYLATED CINNAMIC ACIDS

Meihan Nonoyama, St. Petersburg; Akiko Tanaka; Patrick K. Lai, both of Clearwater, all of Fla.; Kunio Konno, Tokyo, Japan; Yutaka Kawazoe, Tokyo, Japan, and Hiroshi Sakagami, Tokyo, Japan, assignors to Tampa Bay Research Institute, St. Petersburg, Fla.

Continuation of Ser. No. 675,943, Mar. 27, 1991. This application Dec. 28, 1992, Ser. No. 996,869

Int. Cl.[5] A61K *31/74, 31/745*

U.S. Cl. 424—78.08 **5 Claims**



1. A method for inhibiting replication of HIV in human cells infected with the virus which comprises contacting the cells in vitro with polymers of p-hydroxylated cinnamic acid or polymers of substituted p-hydroxylated cinnamic acid wherein the substituent is selected from the group consisting of methoxy and hydroxy groups, said polymers having molecular weights within the range of about 2,000 to about 5,000 and anti-HIV activity.

5,346,696

ASIALOGLYCOPROTEIN - CONJUGATED MEDICINAL AGENT

Chung Y. Kim, and Hyo S. Lee, both of Seoul, Rep. of Korea, assignors to Korea Green Cross Corporation, Rep. of Korea

PCT No. PCT/KR92/00023, § 371 Date Feb. 4, 1993, § 102(e) Date Feb. 4, 1993, PCT Pub. No. WO92/22310, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 19, 1992, Ser. No. 983,595

Claims priority, application Rep. of Korea, Jun. 19, 1991, 91-10186

Int. Cl.[5] A61K *37/66*

U.S. Cl. 424—85.4 **19 Claims**

1. The asialoglycoprotein-conjugated medicinal agent having the following formula (1),

P-(S)x-Gal-GA-INF (1)

wherein

P is a peptide residue of a human serum glycoprotein;

S is a sugar residue of a human serum glycoprotein

Gal is a galactose residue;

GA is a glutaraldehyde residue;

x is equal to or greater than 1; and

INF is interferon.

5,346,697

ACTIVE OXYGEN SCAVENGER

Yoshie Tokuyama; Hiroshi Suzuki; Yoshihisa Matsuo, and Eiko Takeuchi, all of Kagawa Ken, Japan, assignors to Soken Co., Ltd., Kagawa Ken, Japan

Filed May 19, 1992, Ser. No. 885,724

Claims priority, application Japan, Nov. 13, 1991, 3-324029

Int. Cl.[5] A61K *35/78*

U.S. Cl. 424—195.1 **17 Claims**

1. A method of preparing an extract of rice which is effective as a scavenger of active oxygen, which comprises:

adding water to rice in the amount of from 2 to 5 times by volume the amount of the rice;

pretreating the water and rice mixture with an acid or an alkali;

allowing the mixture to stand at a temperature not higher than 40° C.;

compressing the resultant mixture; and

recovering the liquid obtained.

5,346,698

SYNERGISTIC PESTICIDAL COMPOSITIONS

Kenneth D. Abercrombie, Clovis, Calif., assignor to Mycogen Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 641,419, Jan. 15, 1991, Pat. No. 5,192,546. This application Mar. 8, 1993, Ser. No. 28,041

The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.

Int. Cl.[5] A01N *25/00*

U.S. Cl. 424—405 **30 Claims**

1. A composition for the control of a pest, said composition comprising a first ingredient which is a monocarboxylic acid having about seven to about twenty carbon atoms, or a salt thereof, or a mixture of said monocarboxylic acids or salts thereof, and a second ingredient which is an avermectin, ivermectin, or milbemycin, wherein said first ingredient is present in a concentration of at least about 0.2% and the second ingredient is present in a concentration between about 3 ppm and about 110 ppm.

5,346,699

METHOD FOR CONTROLLING PESTS BY A PESTICIDAL FOAM

Barbara H. Tiernan, Cupertino, and Stanley M. Woogerd, San Rafael, both of Calif., assignors to Foam Innovations, Inc., Pleasanton, Calif.

Continuation of Ser. No. 739,139, Jul. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 648,142, Apr. 11, 1991, abandoned, which is a continuation of Ser. No. 346,644, May 3, 1989, abandoned. This application May 17, 1993, Ser. No. 63,361

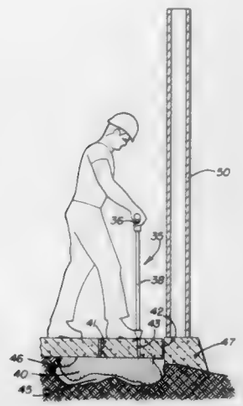
Int. Cl.[5] A01N *25/16*

U.S. Cl. 424—405 **19 Claims**

1. A method of controlling pests selected from the group consisting of termites, ants, spiders, mites, roaches, fleas, house nesting flies, silverfish, lice, earwigs, wasps, bees, sowbugs and crickets, comprising the steps of:

mixing a liquid foamable residual pesticide with a foaming agent, water and air, the pesticide being selected from the group consisting of the carbamates, the pyrethrins, the pyrethroids, the organophosphates, the chlorinated hydrocarbons and the borates, to produce a temporary non-solidifying pesticidal wet foam having an expansion ratio, defined as the ratio of the final foam volume to the sum of the volumes of the pesticide, the foaming agent and the water, of between 20 to 1 and 5 to 1 and a flowability of less than about 30 seconds; and

applying said foam, with repetition if necessary, at a locus whereby the foam contacts a surface which defines the locus, and thereafter deposits the pesticide on the surface



and dissipates, so as to provide effective residual pesticidal activity on the surface.

5,346,700

INSECTICIDAL BAIT COMPOSITION FOR COCKROACHES

Billy J. Stapleton, and Susie Stapleton, both of 401 Arrowhead Dr., Rogersville, Tenn. 37857

Continuation of Ser. No. 579,381, Sep. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 395,607, Oct. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 940,093, Dec. 9, 1986, abandoned. This application Nov. 9, 1992, Ser. No. 974,364

Int. Cl.[5] A01N *25/08*

U.S. Cl. 424—410 **5 Claims**

1. An insecticidal bait composition for roach control consisting of from about 30 to about 34 weight percent boric acid, from about 8 to about 10 weight percent crushed onions, from about 6 to about 13 weight percent sugar, from about 20 to about 22 weight percent milk and from about 26 to about 30 weight percent flour, said components being thoroughly mixed together, whereby the composition has a paste consistency and adheres to surfaces to enable application of the composition into cracks and crevices, the composition drying thereafter into a relatively hard form to retain the composition in place for control of roaches in adjacent locations.

5,346,701

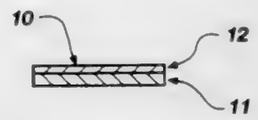
TRANSMUCOSAL DELIVERY OF MACROMOLECULAR DRUGS

Sonia J. Heiber; Charles D. Ebert, and Sirish C. Dave, all of Salt Lake City, Utah, assignors to TheraTech, Inc., Salt Lake City, Utah

Filed Feb. 22, 1993, Ser. No. 27,508

Int. Cl.[5] A61F *13/02*

U.S. Cl. 424—435 **24 Claims**



1. A system for mucosally administering a macromolecular drug to the oral cavity comprising an inner drug/enhancer/-polymer layer having one surface adapted to contact the mucosal tissue of the oral cavity and adhere thereto when wet and an opposing surface in contact with and adhering to an overlying inert layer, said inner layer containing from about two to sixty percent by weight of a bile salt enhancer, five to sixty five percent by weight of a hydrophilic polymer and an effective amount of a macromolecular drug having a molecular weight of at least 500 daltons.

5,346,702

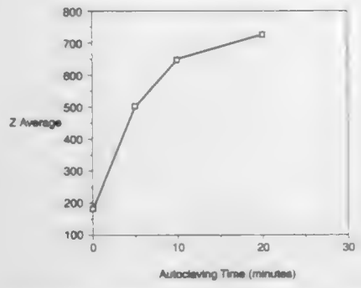
USE OF NON-IONIC CLOUD POINT MODIFIERS TO MINIMIZE NANOPARTICLE AGGREGATION DURING STERILIZATION

George C. Na, Fort Washington, and Natarajan Rajagopalan, Phoenixville, both of Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Dec. 4, 1992, Ser. No. 985,424

Int. Cl.[5] A61K *9/14, 9/54*

U.S. Cl. 424—490 **14 Claims**



1. A composition comprised of nanoparticles containing a diagnostic or having a nonionic surfactant as a surface modifier adsorbed on the surface thereof and a non-ionic cloud point modifier associated therewith, which cloud point modifier is present in an amount of 0.01–50 % by weight based on the total weight of the composition and sufficient to increase the cloud point of the surface modifier wherein said nanoparticles are resistant to size growth when said composition is heat sterilized at 121° C. for 15 minutes.

5,346,703

BODY CAVITY DRUG DELIVERY WITH THERMO-IRREVERSIBLE POLYOXYALKYLENE AND IONIC POLYSACCHARIDE GELS

Tacey X. Viegas, Canton; Lorraine E. Reeve, Dexter, and Raymond L. Henry, Grosse Pointe Woods, all of Mich., assignors to Mediventures, Inc., Dearborn, Mich.

Continuation-in-part of Ser. No. 563,640, Aug. 7, 1990, Pat. No. 5,143,731. This application Aug. 31, 1992, Ser. No. 939,475

The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.

Int. Cl.[5] A61K *9/107, 47/34, 47/36*

U.S. Cl. 424—486 **28 Claims**

1. A pharamaceutical aqueous gel composition, said composition comprising

(1) about 0.2% to about 2.5% by weight of an ionic polysaccharide;

(2) about 10% to about 50% by weight of a polyoxyalkylene block copolymer of general formula

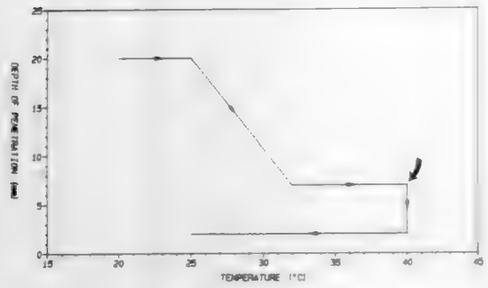
$$Y[(A)_n - - - E - - - H]_x$$

where A is a polyoxyalkylene moiety having an oxygen/carbon atom ratio of less than 0.5, x is at least 2, Y is derived from water or an organic compound containing x reactive hydrogen atoms, E is a polyoxyethylene moiety constituting at least 60 percent by weight of the polyoxyalkylene block copolymer, n has a value such that the minimum molecular weight of A is between about 500 and about 900, as determined by the hydroxyl number of an intermediate of general formula

$$Y\,[(A)_n \cdots H]_x$$

and the average molecular weight of the polyoxyalkylene block copolymer is between about 5000 and about 50,000;

(3) about 0.01% to about 60% by weight of a pharmacologically effective amount of a drug selected from the group consisting of antibacterials, antihistamines, decongestants, antiinflammatories, antiparasitics, antivirals, local anesthetics, antifungals, analgesics, antiarthritics, antiastrunat-



ics, anticoagulants, anticonvulsants, antidepressants, antidiabetics, antieoplastics, antipsychotics, antihypertensives, spermicidals, and muscle relaxants;

(4) a pharmaceutically acceptable buffer sufficient to maintain the p_H of the aqueous gel composition at a desired level; and

(5) optionally, a latent form of a counter-ion capable of cross-linking the ionic polysaccharide,

wherein the aqueous gel composition is a liquid at room temperature or below and a gel at mammalian body temperature.

5,346,704

POLYFUNCTIONAL AGROCHEMICAL BICARBONATE-CONTAINING COMPOSITIONS

M. Stephen Lajoie, Basking Ridge, N.J., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Division of Ser. No. 907,625, Jul. 2, 1992. This application Aug. 11, 1993, Ser. No. 104,561

Int. Cl.[5] A01N *59/00, 25/12, 25/24, 25/32*

U.S. Cl. 424—717 **5 Claims**

1. A dry pulverulent composition which has a combination of ingredients comprising (1) a particulated fungicidal ingredient wherein the average particle size diameter is in the range between about 10–600 microns; (2) a fungicidal inorganic salt ingredient selected from the group consisting of alkali metal bicarbonates, ammonium bicarbonate and mixtures thereof, which is adsorbed on the surface of the particulated fungitidal ingredient; and (3) a compatibility enhancing ingredient selected from the group consisting of water-soluble organic compounds which are in solid form at a temperature below about 10° C.

5,346,705

BAIT FOR LOBSTERS AND CRABS AND METHOD OF MAKING THE SAME

David S. Wirkala, 13 South St., Yarmouth, Me. 04096

Continuation-in-part of Ser. No. 856,502, Mar. 25, 1992, abandoned. This application Apr. 9, 1993, Ser. No. 45,667

Int. Cl.[5] A23K *1/10;* **A23L** *1/325*

U.S. Cl. 426—1 **3 Claims**

1. The method of converting fish wastes containing meat, skin and bones into a shaped bait for use in trapping lobsters and crabs, said method consisting of the steps of grinding such wastes in a manner such as to produce a supply of coarse ground particles predominately in the one-half inch size with minor amounts of over-sized particles which require a longer interval to coagulate than the one-half inch particles and minor amounts of under-sized particles which clog the grinder, the under-sized particles being in the three-eighths inch size range and the over-sized particles being in the five-eighths inch size; mixing the coarse ground particles with a volume of rock salt, said rock salt being approximately in the range of 10% to 25% of the volume of coarse ground particles to thereby treat all the particles with rock salt and to expose all particles to the air, whereby a semi-fluid mixture is formed; packaging the semi-fluid mixture in containers which are porous at least when wet and which also shape the mixture until coagulated to form a salt encrusted solid product having little odor.

5,346,706

MALT BEVERAGE PROCESS

Cameron R. Murray, and William J. Van Der Meer, both of London, Canada, assignors to John Labatt Limited, London, Canada

Continuation-in-part of Ser. No. 783,332, Oct. 28, 1991, abandoned. This application Oct. 27, 1992, Ser. No. 967,275

Int. Cl.[5] C12C *11/00*

U.S. Cl. 426—11 **29 Claims**

1. A cold contact process for the production of nonalcoholic malt beverages comprising the steps of:

i) adding an amount of yeast slurry containing about 25% to 75% wet packed yeast slurry suspended in a fresh regularly brewed, beer, to a boiled malt wort of from about 12 to 20 degrees Plato and a pH of greater than 4.0 and less than about 5.0 and containing about 150 to 350 ppm w/v of said wort of an edible acid; and wherein said amount of said slurry is sufficient to produce a yeast cell concentration in the resulting wort/slurry mixture of about 40 million to 80 million yeast cells per milliliter thereof;

ii) contacting said yeast and said wort in said mixture for greater than about 10, up to a maximum of about 30 hours, at a temperature of greater than about zero up to a maximum of less than about 7 degrees Centigrade;

iii) separating the thusly contacted wort from all but from 0.5 to 2 million cells per milliliter of the separated wort and aging the resulting beverage;

iv) organoleptically supplementing said wort with beer ester flavors to form a mixture; and,

v) diluting the resulting beverage as necessary with water to produce a nonalcoholic malt beverage.

5,346,707

FOOD AND FEEDSTUFF

Thomas Olin, Enbacken 33, S-183 46 Täby, Sweden

Continuation of Ser. No. 678,972, Apr. 25, 1991, Pat. No. 5,183,674. This application Jan. 29, 1993, Ser. No. 10,792

Claims priority, application Sweden, Dec. 2, 1988, 8804376-5

The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.

Int. Cl.[5] A23K *1/00*

U.S. Cl. 426—69 **20 Claims**

1. A parenteral nutrition composition for humans or animals comprising protein from said composition replaced by at least one keto acid of a non-essential amino acid according to the formula R—CO—COOX, wherein R is a part of a non-essential amino acid and X is selected from the group consisting of hydrogen, an alkali metal, an alkaline earth metal or an organic base, wherein said keto acid is present in an amount of 1 to 20% by weight, which composition is capable of substantially reducing nitrogen excretion.

5,346,708

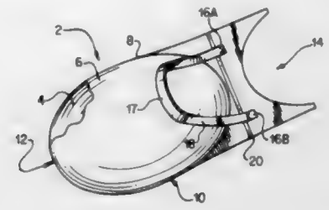
THERMOPLASTIC BAG WITH SEPARATE HANDLE AND METHOD OF MAKING SAME

John P. Carson, Spartanburg, S.C., assignor to W. R. Grace & Co.-Conn., Duncan, S.C.

Filed Oct. 8, 1992, Ser. No. 958,393

Int. Cl.[5] B65D *30/00*

U.S. Cl. 426—110 **21 Claims**



18. A method of making a product containing package with separate attached carrying handle comprising:

(a) providing a bag having front and rear panels of a thermoplastic film, the panels being joined to each other at respective side edges to form sides of a product-receiving bag pocket, the bag having:

(i) a closed bag pocket bottom end formed by a transverse heat seal contoured to accommodate an end of a product inserted into the bag pocket through an open mouth end opposite the closed bag pocket bottom end, and

(ii) a handle, having ends and a middle, the handle attached at its ends to one of the bag panels at the mouth end, and optionally attached at its middle to said one bag panel, each end of the handle further having a contiguous depending portion extending to the middle of the handle, and such that when said contiguous depending portions are in an unfolded position, said middle is positioned below said closed bottom end;

(b) inserting a product through the open mouth end;

(c) evacuating the bag to collapse it about the product;

(d) activating a means for closing to

(i) close the bag open mouth end and, at the same time,

(ii) attach the ends of the handle to the bag;

(e) heat shrinking the product containing bag; and

(f) pulling the handle up and over the mouth end thereby providing a handle for gripping and lifting said product-containing package.

5,346,709

PROCESS FOR THE PRODUCTION OF A MARINE OIL PREPARATION

Johan Myhre, Oslo, Norway, assignor to ScanHall A.S., Oslo, Norway

PCT No. PCT/NO/0000140, § 371 Date Apr. 14, 1992, § 102(e) Date Apr. 14, 1992, PCT Pub. No. WO91/03943, PCT Pub. Date Apr. 4, 1991

PCT Filed Sep. 12, 1990, Ser. No. 842,194

Claims priority, application Norway, Sep. 18, 1989, 893708

Int. Cl.[5] A23D *7/00;* **A23L** *1/24;* **B65B** *31/02;* **B65D** *85/72*

U.S. Cl. 426—111 **26 Claims**

17. A marine oil product comprising a container formed of an airtight material, and inside said container, a marine oil mayonnaise-type emulsion or paste, comprising an oil-in-water emulsion, wherein said oil is a marine oil, marine oil concentrate, or a mixture thereof, wherein said marine oil, marine oil concentrate, or mixture thereof comprises a fatty acid consisting essentially of omega-3 polyunsaturated fatty acids, and wherein said tube or container is arranged to collapse during use proportionally to the amount of said marine oil mayonnaise-type emulsion or paste remaining after a portion of said marine oil preparation is dispensed from said container, wherein no air space forms in said container after said dispensing, and wherein no discernible oxidation occurs during the storage and use of said marine oil mayonnaise-type emulsion or paste.

5,346,710

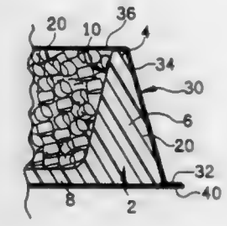
ANIMAL FEEDING SYSTEM AND METHOD THEREFOR

Linda Geitner, Encinitas, Calif., assignor to Contagious Concepts, Encinitas, Calif.

Continuation of Ser. No. 542,176, Jun. 22, 1990, abandoned. This application Jun. 1, 1993, Ser. No. 70,047

Int. Cl.[5] B65D *21/00, 43/03, 81/00*

U.S. Cl. 426—115 **13 Claims**



1. A pre-packaged non-human animal feeding system for feeding non-human animals, comprising:

a self-supporting food bowl made from an edible material for non-human animal consumption, said bowl having a closed bottom, a side and a top rim located opposite said bottom, said closed bottom, side and top rim defining a bowl interior;

a quantity of non-human animal food contained within the bowl interior, said non-human animal food being specifically selected for non-human animal consumption;

a beverage bowl having a closed bottom, a top rim located opposite said closed bottom and a side extending between the top rim and the bottom, said top rim of the beverage bowl defining an open top of the beverage bowl, said food bowl containing said animal food being nested within the beverage bowl with the top rim of the beverage bowl located proximate the bottom of the food bowl, the bottom of the beverage bowl covering the top rim of the food bowl and the side of the beverage bowl covering the side of the food bowl so that the beverage bowl serves as a partial enclosure for both the food bowl and the animal food, said beverage bowl being separable from the food bowl to also serve as a receptacle for an animal beverage; and

a removable cover attached to the top rim of the beverage bowl to close the open top of the beverage bowl and seal both the food bowl and the animal food from contact with outside air.

5,346,711

METHOD OF MAKING AN ANIMAL MUSCLE STRIP PRODUCT

Eugene D. Gagliardi, Atglen, Pa., assignor to Designer Foods, Wilmington, Del.

Filed Oct. 15, 1992, Ser. No. 961,231

Int. Cl.[5] A23L *1/31, 1/315*

U.S. Cl. 426—243 **11 Claims**

1. A method of making a food product from an unprocessed animal muscle material having an upper surface and a lower surface, the upper and lower surfaces being spaced apart a predetermined distance and extending generally parallel with respect to each other, the material including a first end surface and a second end surface, the first and second end surfaces being spaced apart a first distance, said method comprising the steps of:

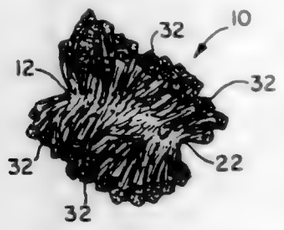
cutting through the first end surface of the material along a

first cut line extending between the upper and lower surfaces a second distance;

cutting through the second end surface of the material along a second cut line extending between the upper and lower surfaces a third distance, said third distance combined with said second distance being less than said first distance to establish an uncut core area between said first and second end surfaces;

cutting the material from the upper surface to the lower surface along a plurality of spaced generally parallel third cut lines extending between the first end surface and said core area;

cutting the material from the upper surface to the lower surface along a plurality of spaced generally parallel fourth cut lines extending between the second end surface



and said core area, the location of the first cut line, the second cut line, the plurality of third cut lines, the plurality of fourth cut lines and the predetermined distance between the upper and lower surfaces being selected such that a plurality of strips of material of predetermined size extend from said core area toward the first and second end surfaces; and

applying heat to said material to cook said material and to cause said strips of material to extend outwardly from said core area in a random manner, said predetermined size of said strips being selected such that said strips of material extend outwardly from said core area in a random manner upon the heat being applied to said material and wherein said strips of material are readily removable from said core area by grasping each of said strips and breaking the grasped strip from said core area after the heat is applied.

5,346,712

METHODS FOR INHIBITING WHITE BLUSH ON PROCESSED CARROTS

Joe H. Cherry, Auburn, Ala.; Sheo S. Singh, West Lafayette, and Barry L. Friedson, Indianapolis, both of Ind., assignors to Extended Product Life, Inc., W. Conshohocken, Pa.

Filed Nov. 30, 1993, Ser. No. 159,286
Int. Cl.[5] A23B *7/154*
U.S. Cl. 426—321 **9 Claims**

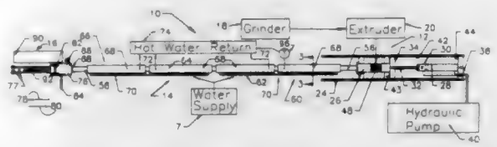
1. A method for inhibiting the formation of white blush on processed carrots, comprising processing the carrots for consumption and exposing the processed carrots to a solution of citric acid and L-cysteine hydrochloride, in weight percentage ratios ranging from about 71 parts citric acid to about 29 parts L-cysteine hydrochloride to about 90 parts citric acid to about 10 parts L-cysteine hydrochloride, and the remainder water until the citric acid and L-cysteine hydrochloride have been diluted to a combined weight percentage concentration of from about 0.7 to at least about 1.7 weight percent of the solution, said exposing including contacting the processed carrots with the solution for a time sufficient such that said contacting inhibits the formation of white blush on the processed carrots when the processed carrots are exposed to an atmosphere that would result in the formation of white blush on the processed carrots in the absence of said contacting.

5,346,713

METHOD FOR FORMING A COMPRESSED BAR FROM AN OIL SEED CROP

Robert G. Leader, R.R. 1 Box 262, Brookston, Ind. 47923

Filed Jan. 21, 1993, Ser. No. 6,815
Int. Cl.[5] A23L *1/00*
U.S. Cl. 426—454 **7 Claims**



1. A method of forming a compressed bar from an oil seed crop including oil and meal, the method comprising the steps of:

heating the oil seed crop to a predetermined temperature to form a semi-liquid product;

loading the semi-liquid product into an inlet of a load barrel, the load barrel having an outlet with a predetermined outlet area;

applying pressure to the oil seed crop in the load barrel to force the oil seed crop into a tube having an inlet coupled to the outlet of the load barrel, the inlet of the tube having an inlet area which is smaller than the outlet area of the outlet of the load barrel, thereby increasing the pressure required to push the oil seed crop through the tube;

cooling the semi-liquid product in a cooling stage located adjacent the outlet of the load barrel to a predetermined threshold temperature; and

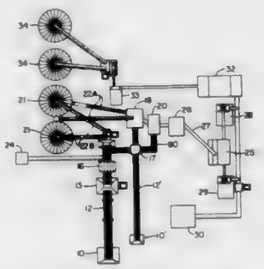
further cooling the semi-liquid product after the oil seed crop passes through the cooling stage to form the compressed bar which contains both the oil and meal from the oil seed crop.

5,346,714

METHOD OF RECYCLING WASTE FOOD MATERIALS INTO USEFUL BYPRODUCTS

Thomas J. Peters, Denver, Colo., assignor to SSDE Technologies Corporation, Denver, Colo.

Division of Ser. No. 790,368, Nov. 12, 1991, Pat. No. 5,230,917.
This application Jun. 14, 1993, Ser. No. 77,126
Int. Cl.[5] A23K *1/00*
U.S. Cl. 426—465 **3 Claims**



1. The method of recycling waste food materials into useful byproducts comprising the steps of:

drying said food materials by dehydrating for a time interval necessary to reduce the moisture content to less than 25%;

extruding said food materials in an oxygen-free atmosphere at an elevated temperature level sufficient to sterilize said food materials;

cooling said food materials; and

thereafter tumbling and drying said food materials to reduce said food materials to particle form.

5,346,715

BREADFOOD FREEZING METHOD

Robert Fertel, 24 Woodfield Rd., Pomona, N.Y. 10970

Filed Jun. 30, 1993, Ser. No. 85,307
Int. Cl.[5] A21D *6/00*
U.S. Cl. 426—524 **10 Claims**

1. A freezing process for producing bagels having the taste and texture of fresh bagels, comprising the steps of:

a. preparing and shaping bagel dough into the form of at least one bagel shape;

b. proofing said bagel shape until said dough is relaxed;

c. boiling the prepared bagel shape in water at about 212° F., for about ½ to 2 min;

d. removing said bagel shape from said water and immediately exposing said bagel shape to cool water;

e. removing said bagel shape from said cool water and immediately exposing said bagel shape to moving air, thereby drying the excess moisture from the surface of said bagel shape;

f. removing said bagel shape from said moving air and immediately placing said bagel shape in a freezer at a temperature less than about 10 degrees.

5,346,716

LOW CALORIE LOW FAT BUTTER-LIKE SPREAD

Abraham I. Bakal, Parsippany; Penny A. Cash, Denville, both of N.J., and Marvin E. Eisenstadt, Neponsit, N.Y., assignors to Cumberland Packing Corp., Brooklyn, N.Y.

Filed Aug. 28, 1992, Ser. No. 936,935
Int. Cl.[5] A23D *7/04*
U.S. Cl. 426—603 **18 Claims**

1. A low calorie, low fat spread, having the consistency and spreadability of butter, and being suitable for frying, said spread consisting essentially of between about 5–30% by weight of a fat, between about 50–85% by weight of water, and between about 0.5–5% by weight of gelatinized natural starch.

5,346,717

METHOD OF PREPARING DENTAL CERAMICS FOR BONDING

Paul V. McCrory, Withington, England, assignor to The Victoria University of Manchester, Manchester, England

PCT No. PCT/GB91/01141, § 371 Date Jan. 12, 1993, § 102(e) Date Jan. 12, 1993, PCT Pub. No. WO92/00935, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 10, 1991, Ser. No. 961,712
Claims priority, application United Kingdom, Jul. 12, 1990, 9015364.4
Int. Cl.[5] A01N *1/02*
U.S. Cl. 427—2.27 **12 Claims**

1. A method for preparing the fitting surface of a dental ceramic body for subsequent bonding to a tooth, the method comprising the steps of:

depositing by a vapor phase deposition technique, directly onto said fitting surface of the ceramic body, a strongly adherent coating of a metal oxide; and

applying to said metal oxide coating a phosphate methacrylate dental cement which reacts with said metal oxide coating to provide durable bonding of the body to such cement.

5,346,718

ELECTROLUMINESCENT LAMP CONTACTS AND METHOD OF MAKING OF SAME

Harold Thorgersen, Woodbury, and Lyman Daigle, Bethlehem, both of Conn., assignors to Timex Corporation, Middlebury, Conn.

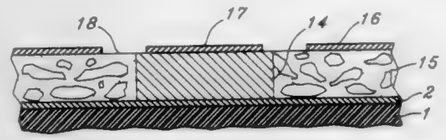
Filed May 10, 1993, Ser. No. 58,337
Int. Cl.[5] B05D *5/12;* **B32B** *9/00;* **H01J** *1/70, 1/72*
U.S. Cl. 427—66 **5 Claims**

1. A process for providing a pair of electrical contact areas on one side of an electroluminescent lamp, comprising the steps of:

providing a transparent substrate having a first conductive layer thereon,

depositing a bump of conductive material on said first conductive layer,

depositing an electroluminescent insulating layer on said first conductive layer, including an isolating portion surrounding said bump,



depositing a second conductive layer on said electroluminescent layer in noncontacting relationship with said bump, and

providing said bump with an exposed conductive surface for making electrical contact thereto on the side of said electroluminescent lamp opposite that of the substrate, and

depositing a pair of electrical contact areas on said lamp, one of which is electrically connected to said bump.

5,346,719

TUNGSTEN METALLIZATION OF CVD DIAMOND

Kenneth P. Zarnoch, Scotia, and Charles D. Iacovangelo, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 2, 1993, Ser. No. 100,406
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—97 **16 Claims**

1. A process for improving adhesion of metal coatings on diamond surfaces comprising:

depositing an initial uniform thin coating of a refractory metal on a diamond surface, wherein the initial coating of the refractory metal is about 10–10,000 angstroms;

heat treating said initial coating to form a refractory metal-carbon bonding layer with said diamond; and

then continuing deposition of said refractory metal.

5,346,720

PALLADIUM THICK FILM RESISTOR CONTAINING BORON NITRIDE

James H. Lombard, and Leonard J. Anderson, both of Albuquerque, N. Mex., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 939,223, Sep. 2, 1992, Pat. No. 5,250,358.
This application Jul. 6, 1993, Ser. No. 86,292
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—101 **16 Claims**

1. A process for forming an electrical resistive, sintered palladium film onto a refractory substrate, said process comprising

applying a paste onto the substrate to form a particulate layer, said paste being composed of a mixture of powders dispersed in a vaporizable liquid vehicle, said mixture being composed predominantly of sinterable palladium powder and comprising a boron nitride powder and a tantalum oxide powder and

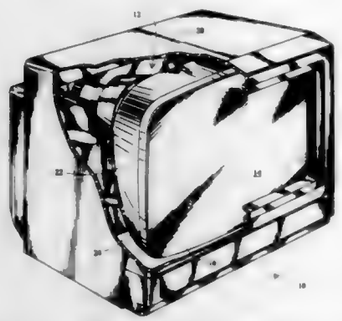
heating the particulate layer to a temperature effective to sinter the palladium powder to form an integral film comprising a first dispersed phase derived from said boron nitride powder and a second dispersed phase derived from said tantalum oxide powder.

5,346,721

METHOD FOR COATING CRT FACE PANELS

Hua-Sou Tong, Arlington Heights, and Gregory Prando, Chicago, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 458,127, Dec. 28, 1989, abandoned. This application May 13, 1992, Ser. No. 882,205
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—126.2 19 Claims



1. A method for reducing both the reflectivity and the electrical resistivity of the surface of a cathode ray tube comprising:

(a) providing an ionic solution consisting essentially of a dissociated metallic compound having a metallic cation moiety selected from the group consisting of tin, palladium, platinum, silver and antimony and a silane in an organic solvent,

(b) applying said solution on the surface of a cathode ray tube to provide a coating of said silane and said metallic cation moiety on said surface, and

(c) curing said cathode ray tube at an elevated temperature of from about 120° C. to about 200° C. for a period of from about 0.1 hour to about 2 hours to convert said metallic cation moiety to a metal oxide in situ and to provide a transparent coating of an oxide of said metallic moiety dispersed in a matrix of siloxane on the surface of said cathode ray tube.

5,346,722

METHOD FOR IMPROVING THE THERMAL SHOCK RESISTANCE OF A WASHCOATED BODY

Patricia A. Beauseigneur, Waverly; Irwin M. Lachman, and Mallanagouda D. Patil, both of Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed May 18, 1993, Ser. No. 63,495
Int. Cl.[5] B05D *1/32*
U.S. Cl. 427—300 17 Claims

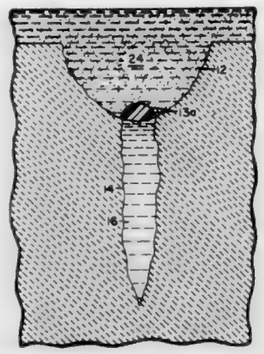
1. A method for producing a thermally shock resistant washcoated substrate, said method comprising:

a) providing a porous sintered body having microcracks and pores;

b) providing a washcoating slurry which comprises an oxide having a surface area of no less than about 50 m^2/g or a precursor of said oxide and a gel-forming agent, and providing a buffer solution, wherein the washcoating slurry and the buffer solution are at pH's which result in formation of a gel on contact of the slurry with the buffer solution;

c) introducing the buffer solution into the microcracks, and optionally into the pores of the porous sintered body which have a size of less than about 5 micrometers in diameter,

d) contacting the porous sintered body having the introduced buffer solution with the washcoating slurry to form a gel at the interface of said buffer solution and said washcoating slurry, whereby the slurry is prevented from entering the microcracks; and



e) calcining the porous sintered body from step d at a temperature and for a time sufficient to form said washcoated substrate.

5,346,723

METHOD FOR CURING ORGANOSILOXANE COMPOSITIONS IN THE PRESENCE OF CURE INHIBITING MATERIALS

Carol A. Hoag, and Steven W. Wilson, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jul. 12, 1993, Ser. No. 88,955
Int. Cl.[5] B05D *3/10*; B32B *27/26*; C09D *183/05*
U.S. Cl. 427—302 4 Claims

1. A method for curing an organosiloxane composition containing an organohydrogensiloxane as the curing agent when said composition is in contact with a substrate having on its surface a solder paste comprising at least one cure-inhibiting component, said method comprising the sequential steps of

1) applying a layer of a liquid organosilicon compound containing at least two silicon-bonded hydrogen atoms per molecule to at least those portions of said substrate containing said cure-inhibiting component, wherein said layer is as thin as possible while being sufficient to overcome the effect of the cure-inhibiting component,

2) applying a curable organosiloxane composition over said layer of liquid organosilicon compound, the composition comprising

A) a polyorganosiloxane containing an average of at least two alkenyl radicals or silanol groups per molecule and exhibiting a viscosity greater than 0.1 Pa.s;

B) an amount of a liquid organohydrogensiloxane sufficient to cure said composition, where said organohydrogensiloxane contains an average of at least two silicon-bonded hydrogen atoms per molecule, with the proviso that the sum of the average number of alkenyl radicals or silanol groups per molecule present in said polyorganosiloxane and the average number of silicon-bonded hydrogen atoms per molecule in said organohyrogensiloxane is greater than 4, and the molar ratio of silicon bonded hydrogen atoms in said organohydrogensiloxane to alkenyl radicals or silanol groups in said polyorganosiloxane is from 0.3 to 20; and

C) an amount of a catalyst sufficient to promote curing of said composition, where said catalyst is a platinum group metal or a compound of said metal; and

3) exposing said composition to conditions that promote curing of said composition in the presence of said catalyst, whereby curing of said composition in the presence of said component is enabled by the presence of said layer of a liquid organosilicon compound.

5,346,724

OIL AND FAT COMPOSITION FOR LUBRICATING FOOD PROCESSING MACHINES AND USE THEREOF

Ryoji Ohgake, Yachimata; Mitsuo Okada, Yokohama; Hiroyuki Takashima, Yamato; Teruo Shimizu, Omiya, and Narihito Yamamoto, Minamisaitama, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 966,678, Oct. 26, 1992, abandoned, which is a continuation of Ser. No. 789,723, Nov. 8, 1991, abandoned. This application Jan. 5, 1993, Ser. No. 860
Claims priority, application Japan, Apr. 12, 1991, 3-108370
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—384 19 Claims

1. A method for lubricating parts of food or agricultural products processing machines and tools or surfaces of items for the storage, preparation, cooking or handling of food or agricultural products by applying to said parts or surfaces an oil or fat composition which comprises an ester of a medium chain saturated fatty acid of 6 to 10 carbon atoms and a polyglycerol and/or a mixed fatty acid ester of a polyglycerol, the mixed fatty acid being a medium chain saturated fatty acid of 6 to 10 carbon atoms and a long chain saturated fatty acid of more than 10 carbon atoms and, optionally, a triglyceride of a medium chain saturated fatty acid of 6 to 10 carbon atoms.

5,346,725

TREATMENT FOR NYLON AND OTHER TEXTILES

Eugene F. Targosz, 1717 E. Union Hills Dr., Phoenix, Ariz. 85024

Filed Aug. 18, 1993, Ser. No. 108,329
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—389.9 14 Claims

1. A process for enhancing the performance and wearing qualities of textile fibers by treating the textile fibers with a composition produced by the steps, comprising:

aquatically mixing a quaternary compound having an affinity to enhance the softness and abrasion resistance of textile fibers selected from the group consisting of nylon, rayon, dacron, cotton, linen, hemp, polyester, polyethylene, polypropylene, polyamides, wool, and silk, with

a partially hydrolyzed film-forming polymer having an affinity to attach to said textile fibers, said polymer being selected from the group consisting of polyvinyl alcohol and polyvinyl acetate, after

mixing a plasticizer with said polymer to increase the strength of the textile fibers, said plasticizer being selected from the group consisting of propylene glycol, ethylene glycol, diethylene glycol, dipropylene glycol, hexylene glycol, tetraethylene glycol, 2 pyrolodone, tributoxylethyl phosphate, dibutyl phthalate, and diethyl phthalate.

5,346,726

MALEIC ANHYDRIDE/VINYL OR ALLYL ETHER POLYMER STAIN-RESISTS

Engelbert Pechhold, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 634,794, Dec. 27, 1990, abandoned. This application Oct. 15, 1992, Ser. No. 962,156
Int. Cl.[5] D06M *15/19*
U.S. Cl. 427—393.4 14 Claims

1. A process for imparting resistance to staining of a polyamide textile substrate by an acid dye which comprises applying to said substrate an effective amount of an aqueous solution or an aqueous dispersion of a composition comprising a water-soluble or water-dispersible hydrolyzed polymer of maleic anhydride and (a) an allyl ether or (b) a vinyl ether or a mixture of the same having a pH of 3 or less, wherein said polymer contains between about 0.7 and 1.3 polymer units derived from one or more allyl or vinyl ether monomers per polymer unit derived from maleic anhydride, and said ether is represented by the formula:

$$CH_2=CH-(CH_2)_k-O-(CH_2)_m-(A)_n-R$$

wherein

R is hydrogen or an alkyl radical containing 4 to 8 carbon atoms;

A is a divalent radical $-SO_2R^1-$ or $-CONR^1-$ in which R^1 is hydrogen or an alkyl radical containing 1 to 6 carbon atoms;

k is 0 or 1;

m is 0 or 2; and

n is 0 or 1.

5,346,727

APPLICATION OF SMOOTH PVOF-BASED POWDER COATINGS TO SUBSTRATES

Benjamin Simkin, Audubon, Pa., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Division of Ser. No. 892,457, Jun. 2, 1992, abandoned. This application Jul. 13, 1993, Ser. No. 90,683
Int. Cl.[5] B05D *1/06*
U.S. Cl. 427—486 3 Claims

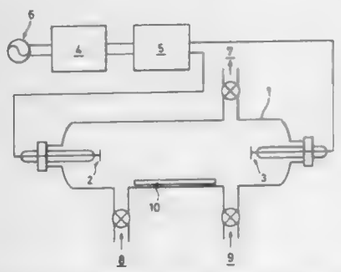
1. A process for providing a substrate with a smooth coating comprising (a) applying on said substrate a powder coating composition prepared by a process comprising the steps of (i) blending a mixture comprised of a poly(vinylidene fluoride) resin, a thermoplastic resin, a pigment, and about 0.1 to 5.0 weight percent, based on the weight of the mixture, of a vinylidene fluoride/tetrafluoroethylene/hexafluoropropylene terpolymer, (ii) pelletizing the blend from (i), and (iii) cryogenically grinding the pellets from (ii); (b) heating said powder coating composition above its melt temperature; and (c) cooling the coated substrate.

5,346,728

METHOD FOR REFORMING SURFACE

Yasuhiko Yoshida, 484-16, Naema, Ooaza, Ooimachi, Iruma-gun, Saitama, Japan, assignor to C. Itoh Fine Chemical Co., Ltd., Chiyoda; Yoichi Murayama, Tokyo and Yasuhiko Yoshida, Saitama, all of Japan

Filed Mar. 31, 1993, Ser. No. 40,976
Claims priority, application Japan, Jan. 29, 1993, 5-014212
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—569 1 Claim



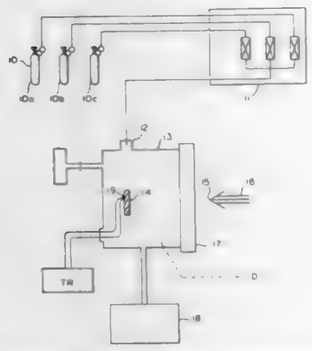
1. A method for reforming a surface of an organic macromolecular material, which comprises the step of treating the surface of an organic macromolecular material with iodine plasma.

5,346,729

SOLAR-INDUCED CHEMICAL VAPOR DEPOSITION OF DIAMOND-TYPE CARBON FILMS

J. Roland Pitts, Lakewood; C. Edwin Tracy, Golden; David E. King, Lakewood, all of Colo., and James T. Stanley, Beaverton, Oreg., assignors to Midwest Research Institute, Kansas City, Mo.

Filed May 17, 1993, Ser. No. 62,840
Int. Cl.[5] B05D *3/06;* **C23C** *16/00*
U.S. Cl. 427—582 12 Claims



1. A chemical vapor deposition method for depositing transparent continuous coatings of sp^3-bonded diamond carbon film, comprising:

a) providing a volatile hydrocarbon gas/ H_2 reactant mixture in a cold wall vacuum chemical vapor deposition chamber containing a substrate for said films, at pressures of from about 1 to about 50 Torr; and

b) directing a concentrated solar flux of from about 40 to about 60 watts/cm^2 through said reactant mixture to produce substrate temperatures of about 750° C. to about 950° C. to activate deposition of the film on said substrate.

5,346,730

PROCESS FOR DEPOSITING A COPPER CONTAINING LAYER I

Thomas Kruck, Erfstadt-Bliesheim, and Christian Terfloth, Cologne, both of Fed. Rep. of Germany, assignors to Kali-Chemie AG, Hanover, Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 735,514
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1990, 4023879
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—584 29 Claims

1. A process for depositing a copper-containing layer on a substrate, said process comprising decomposing in the gas or vapor phase and in the presence of said substrate a compound corresponding to the formula (I)

RO—Cu—L (I)

wherein

R represents a 1-aryl lower alkyl group, a branched, optionally substituted alkyl group with 3 to 6 carbon atoms, or an aryl group, and

L represents (C1 to C6-alkyl)isonitrile, aryl isonitrile, carbon monoxide, dialkylaminodifluorophosphane, organyl difluorophosphane, triaryl phosphane, trialkyl phosphane, trifluorophosphane, or trichlorophosphane,

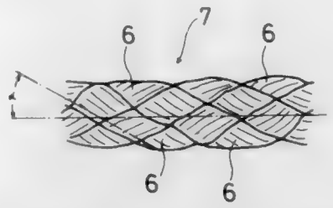
whereby a copper-containing layer is applied to said substrate.

5,346,731

FIBER-REINFORCED RUBBER

Yasuyuki Nakanishi, Kobe, Japan, assignor to Bando Chemical Industries, Ltd., Kobe, Japan

Filed Jul. 11, 1991, Ser. No. 728,335
Claims priority, application Japan, Jul. 12, 1990, 2-186090
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] F16G *1/10;* **F16L** *11/08;* **C08K** *7/02*
U.S. Cl. 428—34.5 19 Claims



1. A fiber-reinforced rubber article, comprising:

a rubber body portion; and

a fiber reinforcement embedded in said rubber body portion, said fiber reinforcement comprising a plurality of tubular braided cords braided by yarns, each said tubular braided cord being braided by more than three yarns at a braid angle in a range between 10° and 35° wherein said braid angle is an angle between a said yarn forming said tubular braided cord and the axial line of said tubular braided cord, and each said tubular braided cord having a fistulous center hole defined by said tubular braided cord.

5,346,732

PERFORMANCE SUPER HIGH FLOW ETHYLENE POLYMER COMPOSITIONS

Shih-Yaw Lai, Sugar Land; Lonnie G. Hazlitt, and Pak-Wing S. Chum, both of Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 4, 1992, Ser. No. 924,775
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—35.7 3 Claims

1. A thermally formed article formed by extruding a composition comprising at least one linear ethylene polymer having:

(a) a density from about 0.87 g/cm^3 to about 0.965 g/cm^3,

(b) a melt index, I_2, as measured by ASTM D-1238 (190° C./2.16 kg), from about 0.1 grams/10 minutes to about 2 grams/10 minutes,

(c) a melt index, I_{10}, as measured by ASTM D-1238 (190° C./10 kg), from about 28 grams/10 minutes to about 55 grams/10 minutes,

(d) a melt flow ratio, I_{10}/I_2, from about 14 to about 550, and

(e) a processing index from about 0.005 Kpoise to about 1 Kpoise.

5,346,733

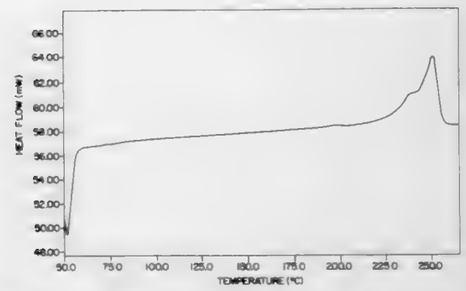
ELEVATED TEMPERATURE DIMENSIONALLY STABLE POLYESTER ARTICLES WITH LOW GAS PERMEABILITY

Edward J. Dalgewicz, III, Millstone, and Richard A. Freundlich, Plainsboro, both of N.J., assignors to Therma-Plate Corporation, South Plainfield, N.J.

Division of Ser. No. 863,204, Apr. 3, 1992. This application Apr. 16, 1993, Ser. No. 47,028
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—35.7 23 Claims

1. An article of manufacture consisting essentially of a substantially non-oriented thermoplastic, crystallizable polyethylene terephthalate homopolymer with an intrinsic viscosity of from about 0.65 to about 1.2;

said polyethylene terephthalate providing a gas barrier having an oxygen permeability of from about 0.2 to about 4.9 cc-mil/100 in^2-24 hrs-atm at 23° C. and at 100% relative humidity inside and 60% relative humidity outside; and,



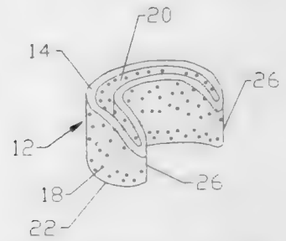
having an enthalpy of recrystallization from about 0 to about −2.1 calories per gram as determined by differential scanning calorimetry.

5,346,734

PERFORATED LATEX ORAL POUCH FOR LOOSE SNUFF

Richard A. Wydick, Jr., Columbus, Ohio, assignor to Bethanie K. Wydick, Columbus, Ohio

Filed Apr. 16, 1993, Ser. No. 47,023
Int. Cl.[5] B32B *1/06;* **A24B** *15/30*
U.S. Cl. 428—36.5 1 Claim



1. An oral pouch containing loose moist snuff, that is adapted to be inserted into the lower gum and lip area of the mouth in order to reduce the direct physical contact of the tobacco while at the same time moistening the snuff creating the tobacco juice, comprising: a top opening, a closed bottom, and two closed ends, said pouch being constructed of an orally safe insulating material selected from the group consisting of natural rubber, pure silicone, and natural latex rubber, having a thickness of approximately 0.025 inches, said pouch being microscopically perforated to allow saliva to flow through said perforations thereby moistening the packed moist snuff contents of said pouch, said pouch being trimmable with scissors to achieve optimum comfort when inserted into the gum and lip area.

5,346,735

PEELABLE BARRIER FILM FOR VACUUM SKIN PACKAGES AND THE LIKE

Robin H. Logan, Moore; Solomon Bekele, Taylors; Henry W. Stockley, III, Spartanburg, and Gloria G. Toney, Greer, all of S.C., assignors to W. R. Grace & Co.-Conn, Duncan, S.C.

Filed Aug. 14, 1992, Ser. No. 930,882
Int. Cl.[5] B32B *1/08*
U.S. Cl. 428—36.7 12 Claims

1. A web for vacuum skin packaging and the like which web is separable into permeable and impermeable films, said web comprising a permeable film and an impermeable film, wherein said permeable film comprises

(a) a sealant layer;

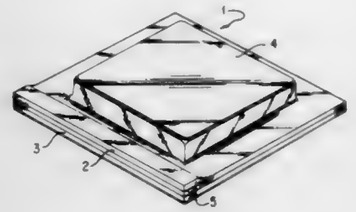
(b) a core layer comprising ethylene copolymer of relatively high gas permeability;

(c) an optical layer comprising a linear ethylene/alpha-olefin copolymer having a density of between about 0.900 and 0.940 gms/cm^3; and said impermeable film comprises

(d) a first EVOH layer immediately adjacent to the optical layer;

(e) a first intermediate layer selected from the group consisting of an ionomer and an ionomer blend, the first intermediate layer being adjacent to the first EVOH layer;

(f) a second EVOH layer adjacent to the first intermediate layer;



(g) a second intermediate layer selected from the group consisting of an ionomer and an ionomer blend, the second intermediate layer being adjacent to the second EVOH layer;

(h) an optional layer comprising a polymer selected from an ionomer, an ethylene vinyl acetate copolymer, and mixtures thereof; and

(i) an outer or second surface layer of an abuse resistant polymeric material;

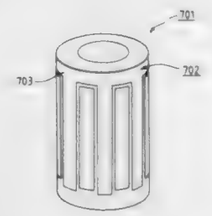
said sealant layer of the permeable film being capable of sealing to a polymeric surface with a bond strength greater than the force required to delaminate said impermeable film from said permeable film at said optical layer (c) and said first EVOH layer (d).

5,346,736

MAGNETIC TAPE CASSETTE

Masato Mizuno, and Kengo Oishi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 889,434, May 28, 1992, Pat. No. 5,219,074, which is a division of Ser. No. 799,204, Nov. 27, 1991, Pat. No. 5,175,661, which is a division of Ser. No. 697,560, May 9, 1991, Pat. No. 5,101,307, which is a division of Ser. No. 323,926, Mar. 15, 1989, Pat. No. 5,041,938. This application Dec. 15, 1992, Ser. No. 991,290
Claims priority, application Japan, Mar. 15, 1988, 63-33175; Mar. 22, 1988, 63-33176; Apr. 1, 1988, 63-36416; Apr. 1, 1988, 63-42993; Apr. 7, 1988, 63-46184; Apr. 7, 1988, 63-46185; Apr. 18, 1988, 63-50834
Int. Cl.[5] B32B *1/08, 3/10*
U.S. Cl. 428—36.9 6 Claims



1. In a magnetic tape cassette incorporating a guide member disposed in sliding contact with a magnetic tape for stabilizing the running of the magnetic tape, the improvement wherein said guide member comprises a cylindrical body molded of a synthetic resin, an antistatic ultraviolet-cured coating having a low electrical resistance of no more than 1×10^{11} ohms/cm,

and a high-hardness ultraviolet-cured coating having a pencil hardness of at least 5 H, said high-hardness ultraviolet-cured coating having a pencil hardness of at least 5 H being formed alternatively with the antistatic ultraviolet-cured coating having a low electrical resistance of no more than 1×10^{11} ohms/cm on an outer peripheral surface of the cylindrical body in the form of stripes extending generally along the axis of the cylindrical body, arranged in an inclined relation to the axis of the cylindrical body, or arranged spirally.

5,346,737

LUBRICATED POLYACETAL COMPOSITIONS

Tatsu-Hiro Takahashi, Vienna, W. Va., and Toshikazu Kobayashi, Yokohama, Japan, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 795,951, Nov. 21, 1991, abandoned. This application Jul. 16, 1993, Ser. No. 90,292

Int. Cl.[5] **B29D** *22/00*

U.S. Cl. 428—36.9 10 Claims

1. A composition consisting essentially of (A) 80–99 percent by weight of a polyacetal, (B) 0.5–10 percent by weight of at least one lubricant and (C) 0.5–10 percent by weight of an ethylene-based random polymer of the formula E/X/Y wherein

E is ethylene,

X is selected from the group consisting of methyl acrylate, butyl acrylate, and ethyl acrylate,

Y is selected from the group consisting of glycidyl methacrylate, glycidyl acrylate, and glycidyl vinyl ether, and wherein E/X/Y comprises 60–98.5 percent by weight E, 0.5–35 percent by weight X and 1–10 percent by weight Y, as based upon the total weight of E, X, and Y only, and further provided that the weight percent of (A), (B), and (C) is based upon the total weight of (A), (B), and (C) only.

5,346,738

IDENTIFICATION LABEL WITH MICRO-ENCAPSULATED ETCHANT

John Samonides, Streamwood, Ill., assignor to X-Cal Corporation, Bartlett, Ill.

Filed Nov. 4, 1992, Ser. No. 971,351

Int. Cl.[5] **B32B** *3/26*

U.S. Cl. 428—40 12 Claims



1. An identification label for permanently marking a metal surface with an identifying indicia, said label comprising a protective cover sheet, a pressure sensitive adhesive having an inner and an outer surface and having its outer surface in intimate, irremovable contact with said cover sheet, a liner with a release coating removably affixed to the inner surface of said adhesive, and first identifying indicia comprising a micro-encapsulated metal etchant printed on the inner surface of said adhesive, whereby when said liner is removed, said label may be adhesively attached to a metal surface with the etchant of the identifying indicia in contact therewith, whereby said identifying indicia will be permanently etched into the metal surface.

5,346,739

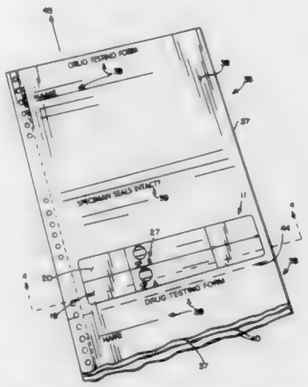
VOID LABEL

Gary J. Nassoiy, West Norwood, Mass., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed May 11, 1993, Ser. No. 59,276

Int. Cl.[5] **B42D** *15/00*

U.S. Cl. 428—40 20 Claims



1. A business form with label consisting essentially of:

a multilayered main paper ply assembly having indicia on a topmost face thereof;

a multipart label assembly on a portion of said top face of said main ply, spaced from said indicia;

said label assembly consists essentially of: a first adhesive layer engaging said top face of said main ply; a release liner covering said first adhesive layer and having a top face opposite said first adhesive layer; a second adhesive layer covering said top face of said release liner; and a label covering said second adhesive layer; said first adhesive having a much greater affinity for said main paper ply assembly topmost face and said release liner than said second adhesive has for said release liner so that if a force is applied to said label said second adhesive will release from said release liner before said first adhesive will release; and

wherein at least a portion of said label comprises a tamper evident feature so that once said label portion is removed from said release liner and applied to a surface, when it is removed from the surface said label portion will indicate tampering.

5,346,740

OPTICAL INFORMATION RECORDING MEDIUM

Eiji Ohno; Noboru Yamada; Kenichi Nagata; Kenichi Nishiuchi, all of Osaka, and Nobuo Akahira, Yawata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

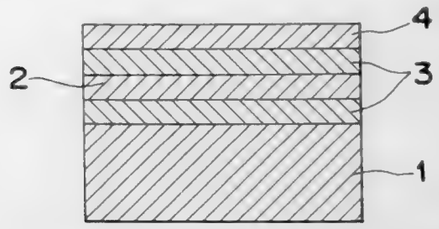
Filed Sep. 25, 1991, Ser. No. 765,514

Claims priority, application Japan, Sep. 25, 1990, 2-255829; Sep. 25, 1990, 2-255831; Sep. 25, 1990, 2-255832

Int. Cl.[5] **B32B** *3/02*

U.S. Cl. 428—64 15 Claims

1. An optical information recording medium comprising a substrate, and a dielectric layer, a recording layer, a dielectric layer and a reflective layer which are laminated on said substrate in this order or a reflective layer, a dielectric layer, a recording layer and a dielectric layer which are laminated on said substrate in this order, wherein the state of said recording layer is reversibly changed between optically recognizable



states by irradiation and said recording layer has a thickness of from 1 nm to 10 nm.

5,346,741

MULTIPACK FOR WOUND ROLLS

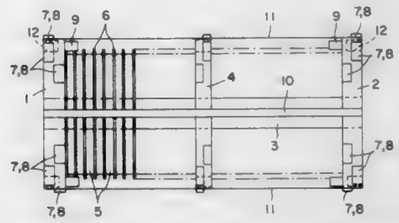
Jose Toral; Hermann Brandstetter, both of Münich; Gottfried Lutz, Seefeld, and Hartmut Thiele, Münich, all of Fed. Rep. of Germany, assignors to BASF Magnetics GmbH, Mannheim, Fed. Rep. of Germany

Filed Mar. 16, 1993, Ser. No. 31,906

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1992, 9203577[U]

Int. Cl.[5] **B65D** *61/00, 67/00, 21/02, 6/34*

U.S. Cl. 428—65 4 Claims



1. A multipack for wound rolls, comprising recording media in tape form, which are wound up onto flangeless hubs with central internal bores, the wound rolls being arranged in series on a horizontal tube and protected against the effect of dust and impact by sheathing and fixing means, it being possible to transport a plurality of rolls in one unit, wherein each tube is fastened on two rectangular end plates each having two large and four narrow sides, whose narrow sides are located to the outside of the multipack, the wound rolls being separated by flexible compressible intermediate layers lying in between, the end plates including on all four narrow sides projections and matching depressions positioned such that when the multipacks are stacked on top of and next to one another on one and the same pallet, each projection matches the depression above, below or next to it, and a film of plastic being drawn over each multipack and each multipack being held together by a plurality of straps lashed around the end plates.

5,346,742

SEALING TAPE FOR WRAPPING UP A CABLE EXTENDING THROUGH A CABLE PASSAGEWAY OPENING

Helmut Dehling, Dorsten, Fed. Rep. of Germany, assignor to Stewing Kunststoffbetrieb GmbH, Dorsten, Fed. Rep. of Germany

Filed Oct. 29, 1992, Ser. No. 968,094

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1991, 4135570

Int. Cl.[5] **C09J** *7/02*

U.S. Cl. 428—67 2 Claims

1. A sealing tape for wrapping up a cable to be extended through a cable passageway opening to form a seal between the cable and the cable passageway opening, said sealing tape comprising an inner surface facing the cable and having a roughened surface area, said roughened surface area being formed by friction elements protruding from said inner surface, and said friction elements being made as friction teeth which are made of a metal and are anchored in a sealing tape material,



wherein said friction teeth are squeezed out from a sheet metal insert, and wherein said sheet metal insert includes openings and sheet metal panels encompassing said openings, said friction teeth protruding from said sheet metal panels, and said sheet metal panels having portions free of friction teeth and land portions extending from said free portions between adjacent openings.

5,346,743

RESIN ENCAPSULATION TYPE SEMICONDUCTOR DEVICE

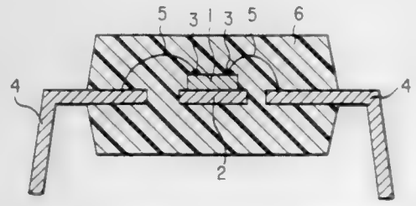
Ken Uchida, Tokyo; Michiya Higashi, and Shinetsu Fujieda, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 8, 1993, Ser. No. 28,696

Claims priority, application Japan, Mar. 13, 1992, 4-054712; Mar. 13, 1992, 4-054713

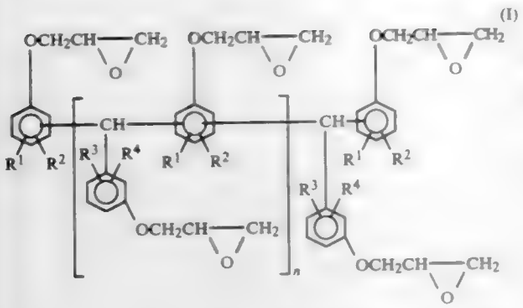
Int. Cl.[5] **C08G** *59/32*

U.S. Cl. 428—76 20 Claims



1. A resin encapsulation type semiconductor device, comprising a semiconductor element encapsulated with an epoxy resin composition, said composition containing as essential components:

(a) an epoxy resin represented by formula (I) given below:



where R^1, R^2, R^3, and R^4 are hydrogen or an alkyl group respectively, and $n \geqq 0$,

(b) a phenolic resin curing agent,

(c) an imidazole compound, and

(d) triphenyl phosphate or a derivative thereof.

5,346,744

Patent Not Issued For This Number

5,346,745

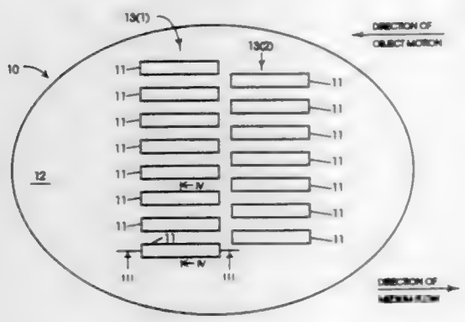
ELASTIC MICRO-FABRICATED SURFACE LAYER FOR REDUCING TURBULENCE AND DRAG ON AN OBJECT WHILE IT MOVES THROUGH A FLUID MEDIUM

Promode R. Bandyopadhyay, Providence, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 1, 1993, Ser. No. 69,820

Int. Cl.[5] B32B *3/28;* **B63B** *1/32;* **B64C** *1/06*

U.S. Cl. 428—156 8 Claims



1. For use in reducing turbulence in connection with motion of an object relative to a fluid medium, a surface layer mounted on said object comprising:

(A) a plurality of surface elements arranged in rows on said surface, surface elements of each row being arranged generally orthogonal to the direction of relative motion, each surface element comprising means defining a cavity, said means including a bottom surface layer, sidewalls, and an upper lip supported along an upstream edge in a cantilevered manner and extending in a downstream direction over said cavity to define a gap permitting fluid communication between said medium and said cavity, said lip being flexible so as to facilitate deflection in response to differentials between pressure inside said cavity and outside said cavity; and

(B) means defining fluid communication passageways for facilitating fluid communication between cavities of adjacent surface elements in each row.

5,346,746

TRANSFERS

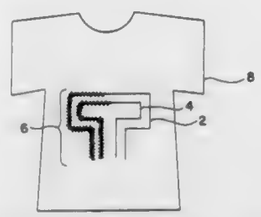
Louis B. Abrams, St. Louis, Mo., assignor to High Voltage Graphics, Inc., Fort Collins, Colo.

Division of Ser. No. 676,377, Mar. 28, 1991, Pat. No. 5,207,851.

This application Mar. 4, 1993, Ser. No. 26,005

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—195 3 Claims



1. A combination decorative transfer for clothing having a flock component with at least one open interior cutout section along its width and length, and a second material which is dimensionally slightly greater than the open interior of the flock to furnish some overlap therewith when applied in overlying relationship thereto, said second material having dimensions less than the overall width and length dimension of the flock component, said flock component being positioned over the second material in such a manner that the flock component overlaps the second material and the second material is solely visible through the open interior section of the flock component, said flock thickness being greater than 0.5 mm, the second material being a twill, an adhesive bonding said twill around its periphery to the said overlying flock component, a hot melt adhesive provided rearwardly upon both said twill and flock component to adhere the transfer to any clothing upon the application of heat and pressure frontally applied to the said transfer during its application, a release adhesive applied forwardly to the said transfer, and a release sheet applied to said release adhesive and capable of being removed after the transfer is applied through the application of the heat and pressure to the transfer during its application to clothing.

5,346,747

COMPOSITE PRINTED CIRCUIT BOARD SUBSTRATE AND PROCESS FOR ITS MANUFACTURE

Vincent M. Vancho; Hak H. Wu; Yutao Ma, and Erik L. Jorgensen, all of Tucson, Ariz., assignors to Granmont, Inc., Tucson, Ariz.

Filed Dec. 24, 1992, Ser. No. 996,651

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—209 6 Claims

1. A composite printed circuit board substrate having a fibre reinforcement and a polymer matrix, wherein the fibre reinforcement comprises thermotropic melt processable liquid crystal polymer (LCP) fibres.

5,346,748

FLUORESCENT DISPLAY PANEL CONTAINING CHIP OF INTEGRATED CIRCUIT WITH DISCREPANCY MARKERS TO AID IN LEAD BONDING

Shinji Yokono, Tokyo, Japan, assignor to NEC Corporation, Japan

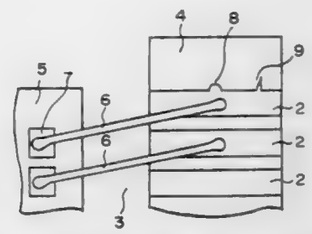
Filed Jan. 7, 1993, Ser. No. 1,263

Claims priority, application Japan, Jan. 8, 1992, 4-001177; Jan. 27, 1992, 4-011495

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—209 9 Claims

1. A fluorescent display panel comprising: a set of anode segments formed on a substrate; a fluorescent layer formed on said anode segments; a set of lead conductors formed on said substrate, each lead conductor of said set of lead conductors being connected to a corresponding anode segment at one end and forming a lead conductor bonding pad at the other end; an insulator layer formed on said substrate by a thick film process for covering said set of lead conductors; an aperture formed in said insulator layer for exposing surfaces of said lead conductor bonding pads, a chip of an integrated circuit mounted on said substrate; a set of bonding wires, each bonding wire of said set



of bonding wires electrically connecting a bonding pad of said chip of integrated circuit to a corresponding bonding pad of a lead conductor; and

at least one marker means formed on a lead conductor bonding pad including a center marker and a discrepancy marker for indicating a position discrepancy of said insulator layer from a designed position.

5,346,749

PROCESS FOR OBTAINING INSULATING CERAMIC INSERTS BY MULTILAYER STACKING

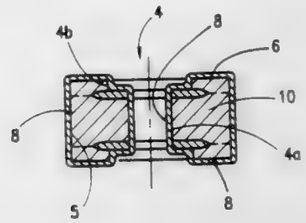
Armand Bettinelli, St Paul les trois châteaux, France, assignor to N-Xeram, Bollene Cedex, France

Filed Mar. 23, 1993, Ser. No. 38,599

Claims priority, application France, Mar. 23, 1992, 92/04257

Int. Cl.[5] B32B *09/00*

U.S. Cl. 428—209 31 Claims



1. A product produced by a process for manufacturing an insulating ceramic insert, said product comprising a ceramic body defined by two non-metallized end faces, an external lateral surface and at least one bore joining said two end faces, wherein said process comprises:

casting at least two plane sheets from a slip of insulating ceramic powder to obtain at least two green sheets,

printing ring-shaped patterns, by silk screening, on at least one face of one of said green sheets with the aid of a conducting metallization ink or paste,

performing a pressing operation on the silk-screen printed sheet,

performing a punching operation on all said sheets to obtain a number of holes, each of said holes of said silk-screen printed sheet matching the interior of a ring of said ring-shaped patterns and having a diameter less than that of holes of the other sheets, stacking said sheets by bringing into coincidence the axes of the various holes, thereby obtaining said at least one bore,

performing a pressing operation to agglomerate said sheets,

performing a cutting-out operation around said at least one bore to obtain said external lateral surface and thereby fabricating at least one green insert,

metallizing said at least one green insert on its external lateral surface, and

performing a heat treatment to fire and sinter said insert.

5,346,750

POROUS SUBSTRATE AND CONDUCTIVE INK FILLED VIAS FOR PRINTED CIRCUITS

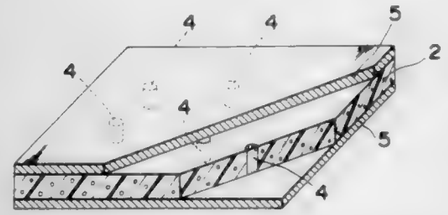
Akihito Hatakeyama, Kadoma; Hiroshi Sogo, Nishinomiya; Tamao Kojima; Yasuhiko Horio, both of Osaka; Masahide Tsukamoto, Nara, and Yasushi Fukumura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed May 6, 1993, Ser. No. 57,972

Claims priority, application Japan, May 6, 1992, 4-113527; May 20, 1992, 4-127160; Jul. 6, 1992, 4-178019; Jan. 12, 1993, 5-003263; Apr. 5, 1993, 5-077840

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—209 10 Claims



1. An organic substrate used for printed circuits, which comprises a porous raw material, electro-conductive paste filled in through-holes formed in said porous raw material, and metal foils applied onto opposite surfaces of said porous raw material, said metal foils adhered to the opposite surfaces of said porous raw material being electrically connected to each other through the electro-conductive paste by compressing said porous raw material applied with said metal foils through heating and pressurization.

5,346,751

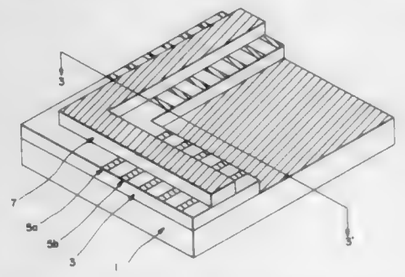
ELECTRONIC PACKAGE USING CLOSED PORE COMPOSITES

John W. Lau, Gaithersburg, and Jack H. Enloe, Columbia, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 588,799, Sep. 27, 1990, Pat. No. 5,102,749, which is a continuation of Ser. No. 286,557, Dec. 19, 1988, Pat. No. 5,017,034. This application May 14, 1991, Ser. No. 699,854

Int. Cl.[5] C04B *35/52;* **H05K** *1/03*

U.S. Cl. 428—210 13 Claims



1. An electronic package comprising a thermally conductive substrate, having a thermal conductivity of at least about 0.70 W/cm-k, and a first low dielectric constant layer, having a dielectric constant of about 3.0 or less, laminated onto said substrate, a first side of said layer and said substrate defining a layer-substrate interface, and said layer comprising a closed

pore composite of 55–60 vol. % hollow glass microspheres in a glass containing matrix.

5,346,752

HEAT-RESISTANT MOISTUREPROOF FILM

Tsutomu Sawada; Shinichi Ohashi, and Shigenobu Yoshida, all of Tsuchiura, Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

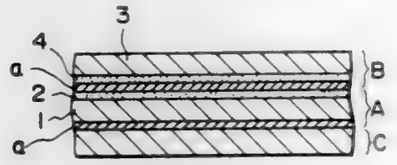
PCT No. PCT/JP91/01417, § 371 Date Jul. 29, 1992, § 102(e) Date Jul. 29, 1992, PCT Pub. No. WO92/06842, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 17, 1991, Ser. No. 859,702

Claims priority, application Japan, Oct. 17, 1990, 2-278406

Int. Cl.[5] B32B *9/00, 7/02, 27/30;* **B65D** *65/40*

U.S. Cl. 428—216 **16 Claims**



1. A heat-resistant moistureproof film comprising:

a first layer (A), the first layer (A) being a transparent laminated film comprising:

a base film composed of a polyvinyl alcohol having a saponification degree of not less than 99 mol%; and,

a first transparent silicon oxide thin film formed on at least one side of the base film;

a second layer (B) bonded to one side of the first layer (A), the second layer (B) comprising:

at least one layer of a transparent plastic film other than a polyvinyl alcohol film; and,

a second transparent silicon oxide thin film of 100 to 5000 Å in thickness formed on at least one side of the transparent plastic film; and,

at least one transparent plastic film being a heat-resistant film having a sum of the absolute values of percentages of heatshrinkage in a machine direction and a transverse direction when heated at 150° for 30 minutes, of not more than 1% and a light transmittance of not less than 85% by ASTM D-1003; and,

a third layer (C) bonded to an opposing side of the first layer (A), the third layer (C) being a heat-sealable resin layer.

5,346,753

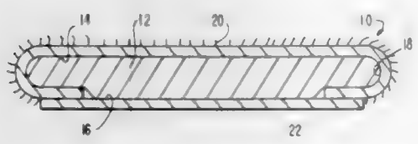
POWDER PUFF

William K. Ostrower, Oyster Bay Cove, N.Y., assignor to Penthouse Manufacturing Co., Inc., Freeport, N.Y.

Filed Sep. 14, 1993, Ser. No. 120,533

Int. Cl.[5] B05D *3/02;* **A45D** *33/34*

U.S. Cl. 428—220 **10 Claims**



1. A powder puff having opposed faces and a polyester pile fabric on at least one face for applying cosmetics or the like to the skin, the polyester pile fabric being formed from a multifilament polyester yarn of from 250 to about 850 denier, the filaments of the yarn having a denier per filament of from about 0.75 to about 5 d.p.f., wherein said polyester pile fabric has the aesthetic appearance and tactile characteristics of cotton pile fabric.

5,346,754

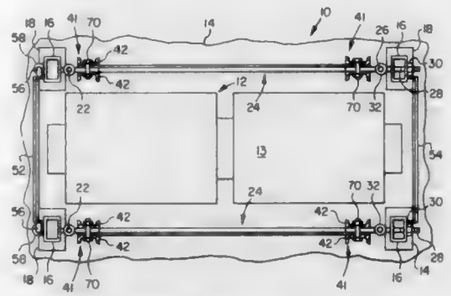
FABRIC EQUIPMENT GUARD

Chong S. Yun, Gillette, Wyo., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 26, 1993, Ser. No. 23,656

Int. Cl.[5] B32B *5/6, 27/00;* **E04C** *1/00;* **E05D** *15/16*

U.S. Cl. 428—228 **9 Claims**



1. A machinery guard comprising:

at least one elongated generally planar panel member forming a barrier to a machinery space and spaced apart support members for said panel member;

connectors between each of said support members and said panel member for supporting said panel member to prevent incursion into said machinery space;

said panel member has opposed, substantially rigid end members for securing said panel member to said connectors and said panel member being formed of a sheet of reinforced flexible foraminous fabric and said fabric is sandwiched between reinforcing sheets having plural windows formed therein for exposure of said foraminous fabric and said panel member being removable from said support members and being foldable to provide access to said machinery space.

5,346,755

STAIN RESISTANT CLEANABLE PVC FABRIC

David R. Morse, Sandown, N.H., assignor to Borden, Inc., Columbus, Ohio

Filed Nov. 4, 1993, Ser. No. 147,786

Int. Cl.[5] B32B *27/08*

U.S. Cl. 428—286 **20 Claims**

1. A flexible plastic coated film comprising a base film and a polymeric coating thereon wherein:

A. the base film comprises a polyvinyl chloride resin, from about 10 to 60 parts by weight for each 100 parts of resin of a polymeric plasticizer resulting from the condensation of a polyhydric alcohol and a dibasic organic acid and about 10 to 50 parts based on 100 parts by weight of the resin of an alloying polymer selected from the group consisting of acrylonitrilebutadiene copolymer rubber and ethylene-n-butyl acryiate-carbon monoxide polymer; and

B. the coating comprises a member selected from the group consisting of polymethyl methacrylate and polymethyl methacrylate mixed with a flexibilizing polymer for the polymethyl methacrylate, and mixtures thereof;

C. the quantity of polymethyl methacrylate is at least 50% by weight of the polymeric material in the coating; and

D. the plastic coated film has a thickness of about 0.003 to 0.02 inches.

5,346,756

NONWOVEN TEXTILE MATERIAL FROM BLENDS OF PROPYLENE POLYMER MATERIAL AND OLEFIN POLYMER COMPOSITIONS

Kumar Ogale, New Castle County, and Michael E. Starsinic, Cecil County, both of Del., assignors to Himont Incorporated, Wilmington, Del.

Filed Oct. 30, 1992, Ser. No. 968,766

Int. Cl.[5] D03D *3/00;* **D04H** *1/58;* **D02G** *3/00;* **C08L** *23/04*

U.S. Cl. 428—288 **10 Claims**

1. A nonwoven textile material comprising fibers obtained from a blend of (A) 5 to 95% of a propylene polymer material selected from the group consisting of a crystalline propylene homopolymer having an isotactic index of greater than 90 and a copolymer of propylene and ethylene having an isotactic index of greater than 85 and an ethylene content of less than 10%, and (B) 95 to 5% of an olefin polymer material selected from the group consisting of:

(1) a random propylene terpolymer consisting essentially of:

(a) from about 85 to 96% propylene,

(b) from about 1.5 to 5% ethylene, and

(c) from about 2.5 to 10% C_{4-8} alpha-olefins;

(2) a propylene polymer composition consisting essentially of:

(a) 30 to 65% of a copolymer of propylene with a C_{4-8} alpha-olefin containing from 80 to 98% propylene, and

(b) 35 to 70% of a co- or terpolymer of propylene with ethylene and, optionally, a C_{4-8} alpha-olefin;

(3) a propylene polymer composition consisting essentially of:

(a) 30 to 60% of linear low density polyethylene, and

(b) from 40 to 70% of one or more crystalline copolymers of propylene with one or more comonomers selected from ethylene or C_{4-8} alpha-olefins, or combinations thereof; and

(4) a propylene polymer composition consisting essentially of:

(a) from 10 to 50% of a propylene polymer having an isotactic index of greater than 80, or a copolymer of propylene with ethylene or a C_4–C_8 alpha-olefin or combinations thereof, containing over 80% propylene and having an isotactic index greater than 80,

(b) from about 5 to 20 parts of a semi-crystalline copolymer fraction, which copolymer is insoluble in xylene at room or ambient temperature, and

(c) from 40 to 80% of a copolymer fraction of ethylene with propylene or a C_4–C_8 alpha-olefin, and optionally with minor amounts of a diene, said copolymer fraction containing less than 40% ethylene or a C_4–C_8 alpha-olefin or combinations thereof, being soluble in xylene at room temperature and having an intrinsic viscosity from 1.5 to 4 dl/g, wherein the total of the (b) and (c) fractions, based on the total olefin polymer composition, being from about 50% to 90%, and the weight ratio of (b)/(c) being less than 0.4.

5,346,757

DOOR MAT AND A METHOD OF MANUFACTURE THEREOF

Akira Nakata, Komaki, Japan, assignor to Yugengaisya Towa, Aichi, Japan

Filed Aug. 24, 1992, Ser. No. 932,496

Claims priority, application Japan, Feb. 7, 1992, 4-057065; Jun. 2, 1992, 4-168399

Int. Cl.[5] D04H *1/04;* **B32B** *33/00;* **D02G** *3/00*

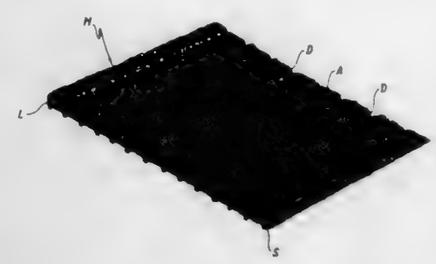
U.S. Cl. 428—296 **1 Claim**

1. A door mat comprising a three-layer integral mass of mutually fused and bonded loops of synthetic resin monofilaments, said mat comprising:

(a) a bottom anti-slip layer (S) consisting of a lattice shaped arrangement having a plurality of open spaces (**19**) which open spaces (**19**) are adapted to receive and contain mud or dirt that is deposited on the top of the mat and which filtered downwardly through the mat,

(b) a top surface layer (A) that has an arrangement of concave depressions in its otherwise planar surface, said depressions presenting a patterned concave-convex design appearance in the top surface layer (A), and

(c) an intermediate layer (L) sandwiched between said bottom anti-slip layer (S) and said top surface layer (A),



wherein the size or shapes of the loops in said three layers being progressively larger from the bottom anti-slip layer through the intermediate layer to the top surface layer, and whereby mud deposited on said top surface (A) passes downwardly through said intermediate layer (L) and into said open spaced (**19**) of said bottom anti-slip layer (S) to thus insure that the mud is not scattered outside the perimeter of the door mat.

5,346,758

MAGNETIC COATING COMPOSITION AND MAGNETIC RECORDING MEDIUM

Yoshiyuki Shibuya; Shigeo Daimon, both of Osaka, and Kazuo Okamura, Hyogo, all of Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 703,949, Feb. 21, 1985, abandoned. This application Nov. 24, 1986, Ser. No. 935,083

Claims priority, application Japan, Mar. 1, 1984, 59-39941

Int. Cl.[5] G11B *5/00*

U.S. Cl. 428—328 **11 Claims**

1. A magnetic coating composition comprising a main magnetic material selected from the group consisting of magnetic iron oxide particles, cobalt-modified iron oxide particles, chromium dioxide particles and metallic iron particles, and acicular particles containing iron carbide produced by contacting acicular particles of iron oxyhydroxide or iron oxide with carbon monoxide or with a mixture of carbon monoxide and hydrogen, said acicular particles being up to 2 μm in average particles size (long axis or length) and having an average axial ratio of from about 3 to about 20 of primary particles.

5,346,759

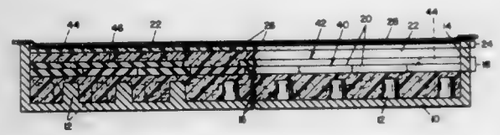
DECKING STRUCTURE

Robert J. Will, New Hanover, N.C., assignor to The BFGoodrich Company, Akron, Ohio

Filed May 26, 1992, Ser. No. 888,934

Int. Cl.[5] B32B *17/00, 25/00*

U.S. Cl. 428—329 **17 Claims**



1. A decking apparatus comprising:

a top layer of a first composition comprised of ultra high molecular weight polyethylene (UHMWP) and abrasive particles, said top layer having a top side and a bottom

side, wherein a pattern is provided in said top side for improving the traction thereof.

5,346,760

COMPOSITE MATERIAL BASED ON RUBBERS OF THE SILICONE TYPE AND OF THE ETHYLENE-PROPYLENE COPOLYMER OR TERPOLYMER TYPE

Guy Lemoine; Etienne Benard, both of Le Havre, and Christian Exandier, Le Fontenay, all of France, assignors to Total Ruffinage Distribution S.A., Levallois Perret, France

Filed Jan. 23, 1992, Ser. No. 824,326

Int. Cl.[5] B32B *5/16, 25/08, 25/16, 25/20*

U.S. Cl. 428—331 **16 Claims**

1. A composite material comprising at least two different elastomer layers, the first layer having a first composition of from 40 to 80 percent by weight of silicone rubber and from 20 to 60 percent by weight of ethylene-propylene copolymer and/or terpolymer rubber, the second layer having a second composition whose rubber content consists essentially of from 50 to 100 percent by weight of ethylene-propylene copolymer and/or terpolymer, and from 0 to 50 percent by weight of a rubber selected from the group consisting of nitrile rubbers, styrene-butadiene rubbers, natural rubbers, fluoroelastomers, chlorosulfonated or chlorinated polyethylenes, acrylic rubbers, epichlorohydrin rubbers, thermoplastic elastomers and nonvulcanizable thermoplastics, the first composition contains more than 10 percent by weight of silica and the second composition contains more than 10 percent by weight of silica in said compositions, and the silica has a pore volume ranging from 150 to 250 m^3/gram and an average primary particle size of less than 12 nanometers.

5,346,761

FLEXIBLE MAGNETIC RECORDING MEDIA HAVING A BACKING COATING CONTAINING A POLYURETHANE RESIN HAVING A PHOSPHATE GROUP AND PRECIPATED SILICA

Hermann Roller, Ludwigshafen; Peter Engelhardt, Hessisch Oldendorf; Reinhold Baur, Ortenberg; Michael Bobrich, Boehl-Iggelheim; Werner Latzel, Oberkirch; Werner Lenz, Bad Durkheim, and Rudolf Suettinger, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Magnetics GmbH, Mannheim, Fed. Rep. of Germany

Filed May 14, 1993, Ser. No. 60,975

Claims priority, application Fed. Rep. of Germany, May 21, 1992, 4216847

Int. Cl.[5] G11B *5/00*

U.S. Cl. 428—331 **2 Claims**

1. A magnetic recording medium consisting essentially of a nonmagnetic substrate film having first and second main surfaces, a magnetic layer on one main surface of the substrate and a backing coating on the second main surface of the substrate, said backing coating consisting essentially of a polymeric binder, nonmagnetic pigments, the backing coating consisting essentially of from 15 to 40% by volume, based on the volume of the backing coating, of a precipitated silica which has an SiO_2 content of from 98 to 98.5%, a pH of from 5 to 7 and a specific surface area of from 90 to 650 m^2/g and the surface of which has been treated with from 0.05 to 0.25 mg/m^2 of a polyurethane which has a main molecular weight M_w of from 40,000 to 120,000 and contains phosphate groups in an amount of from 10 to 100 milliequivalents of phosphate per kilogram of polyurethane.

5,346,762

LAMINATED POLYPHENYLENE SULFIDE FILM AND PROCESS FOR PRODUCING THE SAME

Kenji Kida, Otsu; Shinichiro Miyaji, Shiga, and Yukichi Deguchi, Otsu, all of Japan, assignors to Toray Industries, Inc., Japan

PCT No. PCT/JP92/00486, § 371 Date Jan. 28, 1993, § 102(e) Date Jan. 28, 1993, PCT Pub. No. WO92/18331, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 17, 1992, Ser. No. 958,338

Claims priority, application Japan, Apr. 18, 1991, 3-086875

Int. Cl.[5] B32B *27/06, 27/28*

U.S. Cl. 428—336 **5 Claims**

1. A laminated polyphenylene sulfide film comprising a central layer consisting essentially of a biaxially oriented poly-p-phenylene sulfide film, and a surface layer consisting essentially of a phenylene sulfide copolymer film in which at least one copolymerization unit other than p-phenylene sulfide unit is copolymerized with p-phenylene sulfide unit, which is laminated on at least one surface of the central layer, the resin compositions constituting said layers satisfying the following equations (1)–(4):

$$50 \leqq PPSF(A) \leqq 95 \quad (1)$$

$$PPSF(B) \geqq 90 \quad (2)$$

$$3 \leqq COPF(A) < 50 \quad (3)$$

$$PPSF(A) < PPSF(B) \quad (4)$$

wherein

PPSF(A) is the content of p-phenylene sulfide unit in said surface layer in terms of mol % with respect to the total repeating units in said surface layer;

PPSF(B) is the content of p-phenylene sulfide unit in said central layer in terms of mol % with respect to the total repeating units in said central layer; and

COPF(A) is the content of copolymerization unit in said surface layer, whose content is the second largest next to that of p-phenylene sulfide unit, in terms of mol % with respect to the total repeating units in said surface layer.

5,346,763

MULTILAYER FILM STRUCTURE

Riccardo Balloni, Milan, Italy, and M. Lawrence Tsai, Rochester, N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 21, 1993, Ser. No. 51,121

Int. Cl.[5] B32B *27/08*

U.S. Cl. 428—349 **24 Claims**

1. A multilayer film structure comprising:

(A) a core layer of high density polyethylene including either a minor proportion of a maleic anhydride modified high density polyethylene blended therein or having

(B) a skin layer of maleic anhydride modified polyethylene on one side and

(C) on the other side a heat sealable or a printable skin layer;

said structure having an unbalanced orientation such that the degree of transverse direction orientation produces a visible rippled and striated appearance with the appearance being parallel to the transverse direction of orientation.

5,346,764

RESIN LAMINATES

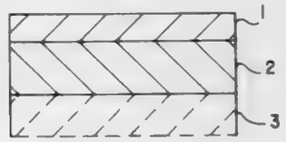
Hiroshi Kudo, Tokyo, and Shinji Kawamura, Himeji, both of Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 830,342, Jan. 31, 1992, abandoned, which is a continuation of Ser. No. 386,081, Jul. 26, 1989, abandoned. This application Jun. 7, 1993, Ser. No. 73,291

Claims priority, application Japan, Jul. 30, 1988, 63-190984

Int. Cl.[5] B32B *27/08, 7/12*

U.S. Cl. 428—349 **10 Claims**



1. A resin laminate comprising:

a heat-sealable layer (A) containing a random copolymer obtainable by copolymerizing ethylene with an α-olefin having from 4 to 10 inclusive carbon atoms, having a density ranging from 0.900 to 0.915 g/cm^3, and a melt index ranging from 5 to 50 grams per 10 minutes (190° C.); and

a linear low density polyethylene (LLDPE) layer (B) having a tensile modulus of 4,000 kg/cm^2 or higher and a melting point higher than that of the heat-sealable layer (A),

wherein the heat-sealable layer (A) is laminated on the polyolefinic resin layer (B).

5,346,765

COVER TAPE FOR PACKAGING CHIP TYPE ELECTRONIC PARTS

Shigeru Maeda, Kobe, and Tomoharu Miyamoto, Itami, both of Japan, assignors to Sumitono Bakelite Company Limited, Tokyo, Japan

PCT No. PCT/JP91/00133, § 371 Date Mar. 4, 1992, § 102(e) Date Mar. 4, 1992, PCT Pub. No. WO91/12187, PCT Pub. Date Aug. 22, 1991

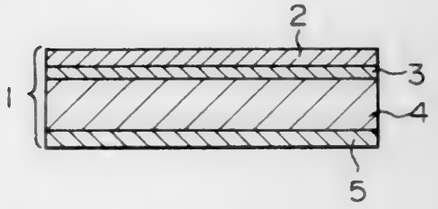
PCT Filed Feb. 5, 1991, Ser. No. 768,302

Claims priority, application Japan, Feb. 6, 1990, 2-10225[U]

The portion of the term of this patent subsequent to Mar. 4, 2009, has been disclaimed.

Int. Cl.[5] B32B *5/16, 7/12*

U.S. Cl. 428—354 **6 Claims**



1. A cover tape for packaging of chip type electronic parts which is heat-sealable to a plastic carrier tape having at given intervals pockets for accommodation of chip type electronic parts, said cover tape comprising an outer layer and an adhesion layer;

said outer layer is a biaxially oriented film selected from the group consisting of polyester, polypropylene, and nylon, said outer layer having a thickness of from 6 to 100 μm;

said adhesion layer consisting of a dispersion of conductive fine powders in a thermoplastic resin, said conductive fine powders selected from the group consisting of tin oxides zinc oxide, titanium oxide, silicon-based organic compounds, and combinations thereof, said adhesion layer having a thickness of 5 μm or less;

wherein the amount of conductive fine powders is 10–100 parts by weight per 100 parts by weight of the thermoplastic resin of the adhesion layer, and the surface resistance of the adhesion layer is 10^{13} ohms per square or less;

the interlaminar adhesion strength between the outer layer and the adhesion layer is 10/120 g/mm of sealing width; and

the visible light transmittance of the cover tape is 10% or more.

5,346,766

POSITIONABLE-REPOSITIONABLE PRESSURE-SENSITIVE ADHESIVE

James W. Otter, Geneva, and Gary R. Watts, Ashtabula, both of Ohio, assignors to Avery International Corporation, Pasadena, Calif.

Continuation of Ser. No. 478,675, Feb. 12, 1990, Pat. No. 5,192,612, which is a continuation-in-part of Ser. No. 429,719, Oct. 31, 1989, abandoned. This application Mar. 3, 1993, Ser. No. 25,948

The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.

Int. Cl.[5] C09J *7/02*

U.S. Cl. 428—355 **26 Claims**



1. A laminate comprising a substrate and a layer of pressure-sensitive adhesive for adhering the laminate to a mounting surface, said pressure-sensitive adhesive containing a pressure-sensitive acrylic adhesive base resin, a detackifying resin and a detackifying particulate, said detackifying resin comprising a polycaprolactone polymer and said pressure-sensitive adhesive containing from about 1% to about 30% by weight of said polycaprolactone polymer based on the dry weight of the pressure-sensitive adhesive.

5,346,767

ABRASION RESISTANT HIGHLY FILLED POLYESTER COMPOSITIONS

Mark G. Tilley, Evansville, and Robert R. Gallucci, Mt. Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 22, 1992, Ser. No. 994,795

Int. Cl.[5] B32B *27/36*

U.S. Cl. 428—412 **44 Claims**

44. An abrasion resistant coating for highly filled polyester-containing compositions with suitable adherence thereto, comprising:

(a) from 0–70 weight percent of a polybutylene terephthalate resin;

(b) from 0.14 70 weight percent of a polyethylene terephthalate resin, with the proviso that the sum of the amounts of the polybutylene terephthalate resin and the polyethylene terephthalate resin must be at least 10 weight percent of the total composition;

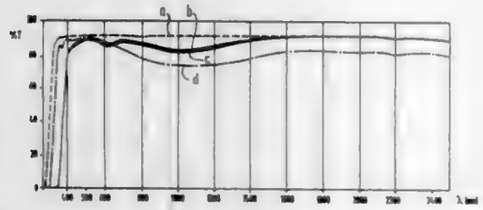
(c) from 0–35 weight percent of an aromatic polycarbonate resin wherein the resin of (a)+(b) is equal to or greater than (c);
(d) an effective stabilizing amount of a stabilizer selected from the group consisting of phosphites, acidic phosphate salts, polyacid pyrophosphates and salts thereof, phosphates of Group IB or Group IIB metals, and phosphorus oxo-acids;
(e) from 0–15 weight percent of a styrene-rubber impact modifier;
(f) from 0–35 weight percent of a polyetherester or polyetherimide ester resin;
(g) from 30–80 weight percent of an inorganic filler selected from the group consisting of barium sulfate, strontium sulfate, zirconium oxide, zinc oxide and zinc sulfate; and
(h) from 0–30 percent of a fibrous glass reinforcing filler;
(i) a curable transparent coating selected from the group consisting of
a coating comprising a colloidal silica which is dispersed in a silanol and/or acrylic or methacrylic derived polymer system; and
a coating comprising an aminoplast resin.

5,346,768

SODA-LIME GLASS CONTAINING VANADIUM

Ernst Winter, Etzenricht; Friedrich Marwan; Joachim Bretschneider, both of Weiden, and Hubert Drexler, Regensburg, all of Fed. Rep. of Germany, assignors to Flachglas AG, Fürth/Bavaria, Fed. Rep. of Germany

Filed Apr. 8, 1992, Ser. No. 865,075
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1991, 4111702; European Pat. Off., Aug. 21, 1991, 91114017
Int. Cl.[5] B32B *17/06*
U.S. Cl. 428—426 **16 Claims**



1. A soda-lime glass containing vanadium processable by the float process, with an UV absorption up to about 90% of the UV radiation for wavelengths of below 350 nm, comprising 70 to 74 weight % SiO_2, 0 to 2 weight % Al_2O_3, 0.1 weight % or less Fe_2O_3, 0 to 0.15 weight % TiO_2, 7.5 to 10 weight % CaO, 3.5 to 5.4 weight % MgO, 12 to 15 weight % Na_2O, 0 to 1 weight % K_2O, 0 to 0.02 weight % BaO, 0.1 to 0.3 weight % SO_3, 3 to 7 ppm CoO and 0.1 to 0.3 weight % V_2O_5, whereby the sum of all weight percentages is 100%.

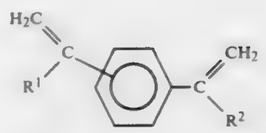
5,346,769

PROCESS FOR PREPARING A PREPEG COMPRISING A RESIN DERIVED FROM DIALKENYLBENZENE AND POLYARYLAMINE REACTANTS

Larry S. Corley, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 813,617, Dec. 26, 1991, abandoned. This application Jun. 2, 1993, Ser. No. 71,426
Int. Cl.[5] B32B *17/06, 9/04;* **C08G** *67/02*
U.S. Cl. 428—426 **11 Claims**

1. A process for preparing a prepreg comprising:
impregnating a fibrous glass substitute with a solventless thermosettable composition comprising:
(a) a dialkenylbenzene represented by the structural formula



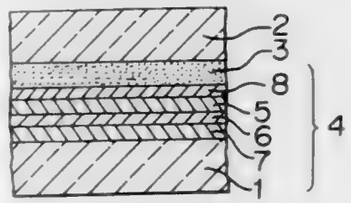
in which R^1 and R^2 are each independently selected from the group consisting of C_{1-6} alkyl, C_{1-6} alkoxy and halogen;
(b) from about 0.05 to about 5 weight percent, based on the weight of the dialkenylbenzene, of a cationic curing agent for the dialkenylbenzene; and
(c) a polyarylamine present in an amount effective to inhibit gelation of the dialkenylbenzene and within the range of about 0.05 and 20 moles per mole of the curing agent; and subjecting said impregnated substrate to an elevated temperature effective to partially cure the thermosettable composition.

5,346,770

LAMINATED GLASS STRUCTURE

Koichi Osada, Tokyo; Eiichi Ando, and Akira Mitsui, both of Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 834,201, Feb. 12, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 135,186
Claims priority, application Japan, Feb. 14, 1991, 3-40857
Int. Cl.[5] B32B *15/00*
U.S. Cl. 428—432 **12 Claims**



1. A laminated glass structure, which comprises:
a) at least one glass sheet;
b) a plastic layer provided at the bonding surface of said glass sheet; and
c) a functioning layer consisting of single or multi-layered films which is provided between the bonding surfaces of the glass sheet and the plastic layer, wherein the functioning layer has a controlling layer as the layer in contact with the plastic layer, which comprises an effective amount of an oxide having the formula MCr_xO_y, wherein M is at least one element selected from the group consisting of Ti, Zn, Sn, Ni, Zr, Al, Mg and Fe; and wherein the atomic ratio of Cr to atoms other than oxygen in the controlling layer is from 10% to 60%, and
wherein the film thickness of said controlling layer is from 10 Å to 500 Å.

5,346,771

CURABLE PHOSPHAZENE COMPOSITIONS AND COATED ARTICLES

Akihiko Kurahashi, and Masahiro Kitayama, both of Sodegaura, Japan, assignors to Idemitsu Petrochemical Company Limited, Tokyo, Japan

Division of Ser. No. 512,285, Apr. 20, 1990, Pat. No. 5,280,090. This application Jul. 1, 1993, Ser. No. 84,916
Claims priority, application Japan, Apr. 26, 1989, 1-107984
Int. Cl.[5] B32B *9/04*
U.S. Cl. 428—447 **5 Claims**

1. An article comprising a substrate and a cured coating or layer of a curable phosphazene composition provided on a surface of the substrate, the curable phosphazene composition comprising from 10 to 99.5 parts by weight of a curable phosphazene compound which is a compound as represented by the general formula (I):



(I)

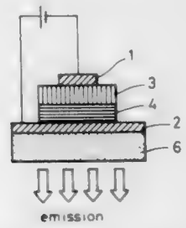
wherein
a and b are real numbers, in which a is greater than 0 and b is equal to or greater than 1, provided, however, that a+b=2;
n is 3 to 18;
X is a group having a reactive double bond; and
Y is a non-curable group;
and from 0.5 to 90 parts by weight of a silicone-modified curable compound having a (meth)acrylate group.

5,346,772

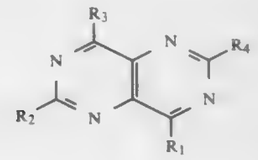
ORGANIC ELECTROLUMINESCENCE DEVICE

Shuzo Akiyama; Kenichiro Nakashima, both of Nagasaki; Kunio Imai, Tsurugashima; Ryuji Murayama, Tsurugashima, and Jun Funaki, Tsurugashima, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 27, 1993, Ser. No. 53,648
Claims priority, application Japan, Aug. 14, 1992, 4-216876
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—457 **18 Claims**



1. An organic electroluminescence device comprising an anode, a positive-hole transport layer of organic compound, an emitting layer of organic compound, and a cathode which are laminated in sequence, wherein said emitting layer comprises a pyrimidopyrimidine derivative represented by formula 1



(1)

where R_1–R_4 are independently hydrogen atom, halogen atom and functional groups represented by formula 2



(2)

where R_5 and R_6 are independently hydrogen atom, alkyl group, aryl group, or R_5 and R_6 taken together comprises the atoms or groups necessary to complete a cycloalkyl or heterocyclic ring.

5,346,773

ADHESIVE COMPOSITES AND ARTICLES CONTAINING COMPATIBILIZED COMPOSITION COMPRISING A POLYAMIDE AND A POLYPROPYLENE

Anthony Simoens, Vedrin, Belgium, assignor to Solvay & Cie (Société Anonyme), Brussels, Belgium

Division of Ser. No. 458,387, Dec. 28, 1989, Pat. No. 5,140,059. This application Jun. 12, 1992, Ser. No. 898,092
Claims priority, application France, Jan. 12, 1989, 89 00424
Int. Cl.[5] B32B *27/34*
U.S. Cl. 428—476.9 **15 Claims**

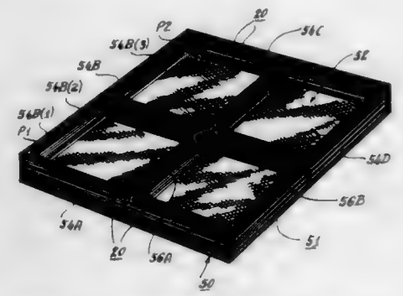
1. An adhesive composite, comprising:
a. a layer consisting of a compatibilized composition comprised of at least one polyamide, and at least one propylene polymer which is at least partially modified by a polar monomer and which has a melt flow index (MFI) measured according to ASTM standard D 1238-86 (230/2.16 conditions) such that 70 g/10 min. ≦MFI of the propylene polymer≦80 g/10 min.; and
b. a layer consisting of at least one other material which is comprised of at least one organic synthetic polymer and which is bonded to the layer consisting of a compatibilized composition.

5,346,774

FIBER-REINFORCED COMPOSITE STRUCTURES, AND METHODS OF MAKING SAME

Keith E. Burgess, Kennebunk, Me., assignor to Techniweave, Inc., Rochester, N.H.

Filed Feb. 27, 1992, Ser. No. 842,647
Int. Cl.[5] B29B *7/00;* **B32B** *3/28*
U.S. Cl. 428—542.8 **16 Claims**



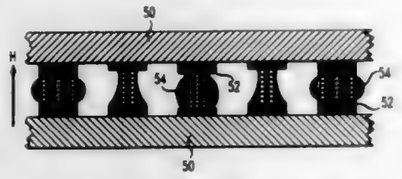
1. A preform for infiltration with matrix material to produce a reinforced composite structure comprising
at least two elements that are made using yarns and are angularly disposed with respect to each other and joined to each other along a juncture therebetween by yarns that are common to and integral with said elements, at least one of said elements including walls between which is included at least one internal pocket to receive reinforcement material.

5,346,775

ARTICLE COMPRISING SOLDER WITH IMPROVED MECHANICAL PROPERTIES

Sungho Jin, Millington, and Mark T. McCormack, Summit, both of N.J., assignors to AT&T Laboratories, Murray Hill, N.J.

Filed Feb. 22, 1993, Ser. No. 21,005
Int. Cl.[5] C22C *1/10*
U.S. Cl. 428—614 12 Claims



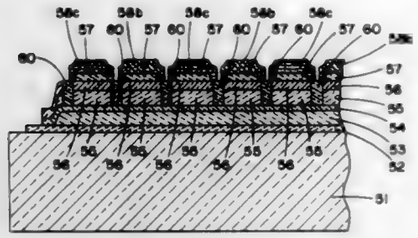
1. An article comprising a solder composition comprising a solder matrix material and magnetic particles, wherein said particles have a magnetic field-induced substantially ordered distribution either in a columnar pattern oriented substantially in the direction of a magnetic field which was or is applied to said solder composition or in a three dimensional chain network in at least a portion of the solder matrix material and said particles represent a volume fraction of said solder composition in the range of 0.5–10%.

5,346,776

ELECTROLUMINESCENT PANEL

Kouji Taniguchi, Shiki; Koichi Tanaka, Nara; Kousuke Terada, Tenri; Akiyoshi Mikami, Yamatotakada, and Masaru Yoshida, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Division of Ser. No. 759,205, Sep. 11, 1991, Pat. No. 5,156,924, which is a continuation of Ser. No. 455,752, Dec. 22, 1989, abandoned. This application Mar. 19, 1992, Ser. No. 853,938
Claims priority, application Japan, Dec. 29, 1988, 63-331991
Int. Cl.[5] H05B *33/14*
U.S. Cl. 428—690 3 Claims



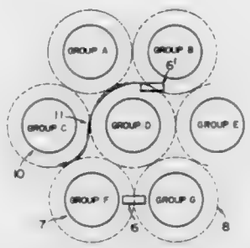
1. An electroluminescent panel, comprising:
first and second electrodes;
first and second insulating layers disposed between said first and second electrodes;
light emitting layer means, disposed between said first and second insulating layers for generating light as a function of a voltage applied by said first and second electrodes, said light emitting layer means having a plurality of cavities formed therein which limit propagation of the generated light within said light emitting means; and
a photo-conductive layer disposed between said first electrode and said first insulating layer to give a hysteresis in light emission luminance versus applied voltage characteristic.

5,346,777

CHEMICAL REACTION INSTALLATION

Shigeaki Namba; Tatsuo Sakamoto, both of Hitachi, and Toshiki Kahara, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 34,539
Claims priority, application Japan, Mar. 19, 1992, 4-063159
Int. Cl.[5] H01M *8/24*
U.S. Cl. 429—12 11 Claims



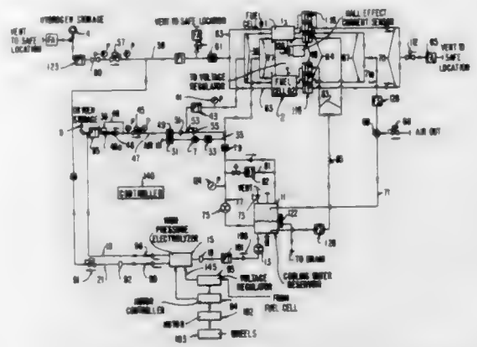
1. A chemical reaction installation comprising a pillar mounted on a floor surface; a plurality of floors provided on said pillar in spaced relation to one another in a direction of a height of said pillar; a chemical reaction portion formed by a plurality of chemical reaction vessels provided on each of said floors; a through portion provided at an inside of the chemical reaction installation and extending through each of said plurality of floors, process variables occurring in accordance with a reaction in said chemical reaction vessels being supplied into or discharged from said chemical reaction vessels through said through portion; and a crane provided at the outside of said chemical reaction portion for exchanging each of said chemical reaction vessels.

5,346,778

ELECTROCHEMICAL LOAD MANAGEMENT SYSTEM FOR TRANSPORTATION APPLICATIONS

James M. Ewan, Palm Beach Gardens; Steven M. Misiaszek, Tequesta, and Donald P. Alessi, Jr., Lake Park, all of Fla., assignors to Energy Partners, Inc., West Palm Beach, Fla.

Filed Aug. 13, 1992, Ser. No. 929,618
Int. Cl.[5] H01M *8/18*
U.S. Cl. 429—19 19 Claims



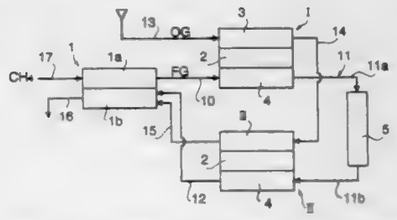
16. In a process for galvanically generating electricity, the process comprising separately passing hydrogen gas and air through a stack of ion-exchange membrane fuel cells, to generate electrical current and by-product water, and removing the by-product water; wherein the improvement comprises feeding the air and hydrogen gas to the fuel cell stack at a pressure of not greater than about 30 psig and at a temperature below the ambient boiling point of water, and further providing pure oxygen gas which is admixed with the air fed to the fuel cell stack so that oxygen enriched air is fed to the fuel cell stack when the amperage output from the fuel cell stack is above a set level, wherein the proportion of oxygen in the oxygen enriched air is not greater than about 60% but not less than about 30% by volume.

5,346,779

FUEL REFORMING METHOD AND APPARATUS FOR POWER GENERATION SYSTEM USING FUEL CELLS

Kenzo Nakazawa, Yokohama, Japan, assignor to Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1993, Ser. No. 78,556
Claims priority, application Japan, Jun. 25, 1992, 4-190118
Int. Cl.[5] H01M *8/06*
U.S. Cl. 429—19 16 Claims



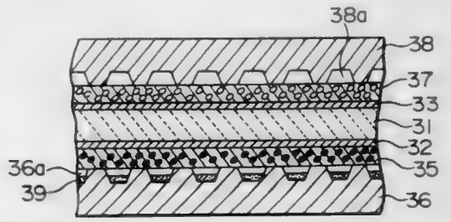
1. A reformer arrangement for a fuel cell power generation system in which a raw material gas is reformed with steam to a fuel gas and the fuel gas is fed to a fuel electrode of a fuel cell for power generation, comprising:
a main reformer for reforming the raw material gas to the fuel gas;
a fuel cell for receiving the fuel gas to cause the power generation and to produce steam; and
a second reformer for reforming with the steam non-reformed raw material gas discharged from the fuel electrode;
wherein the second reformer includes a cylindrical or tubular main body, an entrance for the gas discharged from the fuel electrode is formed at one end of the main body, an exit for the gas is formed at the other end of the main body, a reforming catalyst is placed in a space between the gas entrance and exit, and a lid is provided at one or both ends of the main body for loading and unloading of a reforming catalyst.

5,346,780

FUEL CELL AND METHOD FOR PRODUCING AN ELECTRODE USED THEREFOR

Nobukazu Suzuki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Nov. 20, 1992, Ser. No. 978,262
Claims priority, application Japan, Nov. 25, 1991, 3-309133
Int. Cl.[5] H01M *8/02, 4/90*
U.S. Cl. 429—42 9 Claims



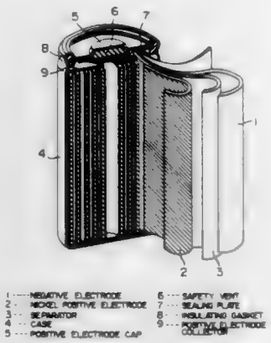
1. A fuel cell comprising a pair of gas diffusion electrodes having an anode and a cathode, and an acidic electrolyte layer between said pair of gas-diffusion electrodes, said cathode comprising:
electroconductive carrier particles; and
noble metal catalysts disposed on surfaces of said electroconductive carrier particles,
wherein the surfaces of said electroconductive carrier particles and the surfaces of said noble metal catalysts are covered with a proton-conductive thin film which is capable of dissolving and diffusing oxygen and offering resistance to heat and acids.

5,346,781

ALKALINE STORAGE BATTERY

Kohji Yuasa, Moriguchi; Munehisa Ikoma, Katano; Hiroshi Kawano, Ibaraki; Osamu Takahashi, Fujisawa, and Isao Matsumoto, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 356,246, May 24, 1989, Pat. No. 5,034,289. This application Jan. 28, 1991, Ser. No. 646,012
Claims priority, application Japan, Feb. 23, 1989, 1-43709
The portion of the term of this patent subsequent to Jul. 23, 2008, has been disclaimed.
Int. Cl.[5] H01M *10/24*
U.S. Cl. 429—59 22 Claims



1. An alkaline storage battery comprising: a positive electrode containing a metal oxide as a main constituent material thereof; a negative electrode containing, as a main constituent material thereof, a hydrogen absorbing alloy capable of electrochemically absorbing/desorbing hydrogen acting as an active material; an alkaline electrolytic solution; and a separator; and said negative electrode including a hydrophobic material disposed only in a surface layer of said negative electrode and including a hydrophilic material disposed only in the inside of said negative electrode, said surface layer being free of said hydrophilic material and said inside of said negative electrode being free of said hydrophobic material.

5,346,782

CAP FOR COVERING TERMINAL BOLTS OF BATTERIES

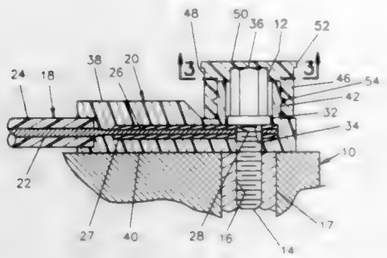
Kenneth A. Julian, Oak Brook, Ill., assignor to Julian Electric, Inc., Westmont, Ill.

Continuation of Ser. No. 665,160, Mar. 6, 1991, abandoned. This application Apr. 3, 1992, Ser. No. 863,398
Int. Cl.[5] H01M *2/00*
U.S. Cl. 429—65 1 Claim

1. A resilient deformable cap for covering a terminal head having a polygon shaped cross section, a portion of which is surrounded by a tubular projection of insulating material extending from adjacent the base thereof, said tubular projection being co-axial with the axis of said terminal and having an outer diameter and an open end, said cap comprising:
a first tubular section having two ends and an inner diameter which is smaller than the greatest dimension across a top of said head having a polygon cross section so as to tightly

fit around the portion of said terminal head which is not surrounded by said tubular projection,

a second tubular section coaxial with said first tubular section and adjacent one of said ends thereof, said second tubular section having an inner diameter which is not greater than said outer diameter of said tubular projection so as to fit tightly around said outer diameter,



a planar top transverse to the axis of said tubular sections and adjacent the other of said ends of said first tubular section, and

said first tubular section having a length not more than the length of said portion of said terminal head which is not surrounded by said tubular projection.

5,346,783

MANGANESE DIOXIDE CATHODE FOR A RECHARGEABLE ALKALINE CELL, AND CELL CONTAINING THE SAME

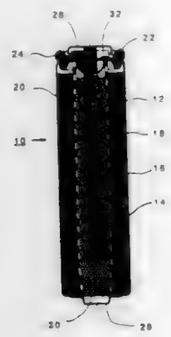
Klaus Tomantschger, and Christopher Michalowski, both of Mississauga, Canada, assignors to Battery Technologies Inc., Richmond Hill, Canada

Continuation of Ser. No. 824,208, Jan. 22, 1992, Pat. No. 5,204,195, which is a division of Ser. No. 497,908, Mar. 23, 1990, Pat. No. 5,108,852. This application Apr. 6, 1993, Ser. No. 42,786

The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.

Int. Cl.[5] H01M *4/62, 2/18*

U.S. Cl. 429—66 **25 Claims**



1. A rechargeable electrochemical cell, comprising:

a container having an inner peripheral surface and a bottom surface;

a cylindrical zinc anode, centrally disposed within said container;

an aqueous alkaline electrolyte disposed within said container;

an annular manganese dioxide cathode disposed within said container, said cathode having an outer peripheral surface, an inner peripheral surface, a bottom surface and a top surface;

a separator comprising at least a first ion permeable membrane, disposed within said container between said cathode and said anode; and

a closure member disposed over the top of said container so as to seal the components disposed therein within said container;

wherein said cathode is restricted from significantly changing its dimensions during cycling by interference at least at its outer periphery with said inner periphery of said container, and further by at least one of interference at its bottom with said container, interference at its inner periphery with said separator, and interference at its top with said closure member.

5,346,784

ELECTRONIC DEVICE HAVING AN INTEGRAL BATTERY DOOR/BELT CLIP ELEMENT

William J. Scheid, Coral Springs, Fla., assignor to Motorola Inc., Schaumburg, Ill.

Filed Nov. 13, 1992, Ser. No. 976,121

Int. Cl.[5] H01M *2/10*

U.S. Cl. 429—98 **13 Claims**

1. A portable communication receiver for receiving selective call messages, comprising:

receiving circuitry for receiving a radio frequency (RF) signal and recovering therefrom a selective call message;

a battery coupled to and powering the receiving circuitry;

a housing in which the battery is situated; and

a removable battery door/belt clip element for providing the dual functions of enclosing the battery and attaching to an external article, the removable battery door/belt clip element comprising:

a battery door for enclosing the battery within the housing; and

a belt clip formed contiguously therefrom for attaching the portable communication receiver to the external article.

5,346,785

PHOTOCHARGEABLE AIR BATTERY

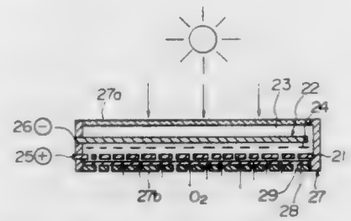
Keiji Akuto, Sayama; Naoki Kato, Higashimurayama; Tsutomu Ogata, Sayama, and Masaaki Takeuchi, Ootsu, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jan. 19, 1993, Ser. No. 5,301

Claims priority, application Japan, Jan. 21, 1992, 4-008715; Jan. 21, 1992, 4-008716

Int. Cl.[5] H01M *12/00*

U.S. Cl. 429—111 **17 Claims**



1. A photochargeable air battery Comprising:

a positive electrode comprising an oxygen catalyst;

a negative electrode comprising a metal, metal oxide, metal alloy, or metal complex;

electrolyte for communicating said positive electrode and said negative electrode; and

a battery case for housing said negative electrode, said positive electrode and said electrolyte so that external light is irradiated onto said negative electrode;

wherein said photochargeable air battery is discharged by means of oxidation of said negative electrode, and is charged by means of reducing said negative electrode using light energy,

wherein said battery case comprises a means for containing said electrolyte and for allowing contact of air to said positive electrode, said containing means including an oxygen permeable material.

5,346,786

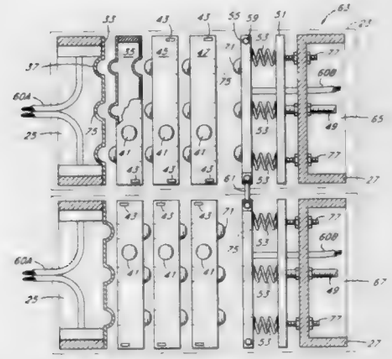
MODULAR RACK MOUNTED BATTERY SYSTEM

Philip J. Hodgetts, 16041 Burgess Cir., Westminster, Calif. 92683

Filed Mar. 21, 1994, Ser. No. 216,176

Int. Cl.[5] H01M *6/48*

U.S. Cl. 429—159 **15 Claims**



1. A battery system comprising:

means for carrying a plurality of self contained bipolar battery cell units in a serial connected orientation;

a battery cell unit further comprising:

a first electrode having a set of extended structures;

a second electrode having a set of recessed structures complementary to said extended structures;

a housing supporting said first electrode in an outwardly facing first direction and supporting said second electrode in an outwardly facing direction opposite to that of said first electrode;

a connection terminal extending normal to said first direction and connected to one of said first and said second electrodes; and

an electrolyte in contact with said first and said second electrodes and contained by said first electrode, said second electrode and said housing.

5,346,787

ALLYL CARBONATE POLYMER SOLID ELECTROLYTES

Benjamin Chaloner-Gill, Santa Clara, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Apr. 19, 1993, Ser. No. 49,213

Int. Cl.[5] H01M *6/16*

U.S. Cl. 429—192 **17 Claims**

4. An electrolyte according to claim **1**, wherein the inorganic ion salt is LiPF6.

5,346,788

MICROPOROUS POLYURETHANE BASED BATTERY SEPARATOR

Victor S. C. Chang, Ellicott City; Richard C. Hartwig, Laurel, both of Md.; Joseph T. Lundquist, Gilroy, Calif.; Marc E. Parham, Bedford, and Anthony J. Laccetti, North Andover, both of Mass., assignors to W.R. Grace & Co.-Conn., New York, N.Y.

Filed Apr. 1, 1993, Ser. No. 41,740

Int. Cl.[5] H01M *2/16*

U.S. Cl. 429—244 **17 Claims**

1. A battery separator comprising a microporous sheet product having a thickness of less than about 50 mils bound by first and second major surfaces of the sheet product, comprising a mixture of from 1:4 to 4:1 wt. ratio of a thermoplastic polyurethane and a particulate filler and having a porous sheet embedded between the first and second major surfaces of said sheet product, and having porosity throughout the sheet product's thickness with a distribution of nominal pore size increasing from each major surface toward the interior, central portion of the sheet product's thickness.

5,346,789

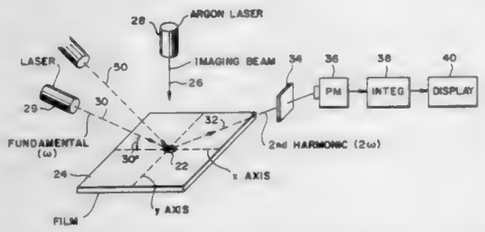
ORIENTED BIOLOGICAL MATERIAL FOR OPTICAL INFORMATION STORAGE AND PROCESSING

Aaron Lewis, Jerusalem, Israel; Zhongping Chen, Syracuse, N.Y., and Hiroyuki Takei, Hatoyama, Japan, assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 801,576, Dec. 6, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 983,166

Int. Cl.[5] G11B *7/00, 7/26*

U.S. Cl. 430—19 **27 Claims**



1. A method of producing a stable reversible, high resolution image on a bacteriorhodopsin (BR)-containing film, comprising:

dissolving polyvinyl alcohol PVA in a buffer to form a PVA solution;

dissolving a BR material which is optically switchable between first and second states in a buffer to form a BR solution;

adjusting the pH of said BR solution to produce a high pH BR solution;

mixing said PVA and high pH BR solutions to form a BR-PVA solution;

forming a film of said BR-PVA solution;

drying said film;

directing light of a first spectral range to selected locations in said film to expose selected BR molecules in said film to an optical image to switch the selected BR molecules from their first to their second state and thereby to switch the color of said exposed BR molecules to provide a corresponding image; and

directing light of a second spectral range to illuminate selected locations in said film to cause previously exposed BR molecules to emit light at a second harmonic of the illuminating light in said second spectral range to thereby nondestructively detect said image.

7. A method of producing an oriented bacteriorhodopsin (BR)-polyvinyl alcohol (PVA) film capable of receiving a stable image for optical information storage, comprising:

dissolving in a buffer a BR material capable of responding to light of a first spectral range of light energy to change its structure to an intermediate state which is capable of responding to a second spectral range of light energy to change back to said BR material, to thereby form a BR solution;

dissolving in a buffer a PVA material to thereby form a PVA solution;

mixing said BR solution and said PVA solution to produce a BR-PVA solution;

spreading a volume of the BR-PVA solution on a substrate to form a BR-PVA film from said BR-PVA solution;

diffusing a high pH buffer into said film before completely drying to control the orientation of said BR material in said film and to increase the stability of said BR intermediate state: and

drying said film to a thickness of about 150 to 200 microns with an optical density of about 0.15, with the film having an absorption spectrum substantially the same as that of said BR material in said solution.

5,346,790

TONER COMPOSITIONS AND PROCESSES THEREOF

Guerino G. Sacripante, Oakville; Michael K. Georges, Guelph; Grazyna Kmiecik-Lawrynowicz, Burlington, all of Canada, and Timothy J. Fuller, W. Henrietta, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1992, Ser. No. 990,476

Int. Cl.[5] G03G *9/00*

U.S. Cl. 430—106 **26 Claims**

1. A process for the preparation of an in situ toner comprising:

(i) preparing an organic phase comprised of a first nonpolar olefinic monomer, a second nonpolar diolefinic monomer, a pigment, a free radical initiator, and optionally a charge control agent;

(ii) adding the organic phase to an aqueous phase comprised of at least one surfactant;

(iii) shearing the organic phase into the aqueous phase to form a microdroplet suspension of the organic phase dispersed in the aqueous phase;

(iv) heating and polymerizing the microdroplets in the suspension to form nonpolar olefinic resin particles with a volume average diameter particle size of from about 0.5 to about 10 microns;

(v) halogenating the nonpolar olefinic resin particle mixture to form a nonpolar toner having a halopolymer resin outer surface or encapsulating shell; and

(vi) optionally isolating the surface halogenated nonpolar toner.

5,346,791

ELECTROCONDUCTIVE MAGNETIC CARRIER, DEVELOPER USING THE SAME AND IMAGE FORMATION METHOD

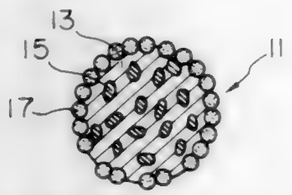
Yoshio Ozawa; Yukio Ikeda, and Katsuhiro Yoshioka, all of Tamaki, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Nov. 30, 1992, Ser. No. 982,841

Claims priority, application Japan, Nov. 29, 1991, 3-340033; Nov. 29, 1991, 3-340034

Int. Cl.[5] G03G *9/083*

U.S. Cl. 430—106.6 **30 Claims**



1. An electroconductive magnetic carrier for use with developer, comprising carrier particles with an average particle diameter of 5 to 100 μm, each of said carrier particles comprising

(i) a basic particle which comprises a binder resin and discrete magnetic particles with an average particle diameter of 0.05 to 1.0 μm dispersed in said binder resin, and

(ii) electroconductive finely-divided particles with an average particle diameter of 0.5 μm or less which are fixed on the surface of said basic particle.

5,346,792

COLOR TONER

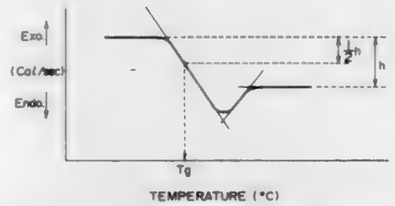
Hiroyuki Kobayashi, and Takaaki Kohtaki, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1992, Ser. No. 895,046

Claims priority, application Japan, Jun. 11, 1991, 3-139095

Int. Cl.[5] G03G *9/087*

U.S. Cl. 430—109 **17 Claims**



1. A color toner, comprising: a binder resin and a colorant; the binder resin comprising a polyester resin obtained from a monomer mixture including, at least:

25–35 mol. % of a dibasic aromatic acid component (a) selected from the group consisting of isophthalic acid, terephthalic acid and derivatives thereof,

2–4 mol. % of a tribasic aromatic acid component (b) selected from the group consisting of trimellitic acid and derivatives thereof,

12–18 mol. % of a dibasic acid component (c) selected from the group consisting of dodecenylsuccinic acid, octylsuccinic acid, and anhydrides thereof, and

45–60 mol. % of an etherified diphenol component (d) obtained by propoxidation or/and epoxidation, each percentage being based on a total of the monomers,

wherein the polyester resin has a hydroxyl value of 10–20, a weight-average molecular weight (Mw) of 13,000–20,000, a number-average molecular weight (Mn) of 5,000–8,000, and a weight-average molecular weight/number-average molecular weight (Mw/Mn) ratio of 2–3.5.

5,346,793

TONER COMPOSITIONS WITH ALUMINUM CHARGE ENHANCING ADDITIVES

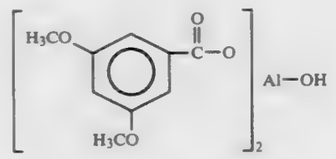
Jacques C. Bertrand, Ontatio; Denise R. Bayley, Fairport; Thomas R. Pickering, Webster, and Roger N. Ciccarelli, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 23, 1992, Ser. No. 948,554

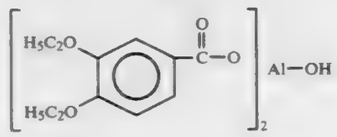
Int. Cl.[5] G03G *9/097*

U.S. Cl. 430—110 **14 Claims**

1. A negatively charged toner composition comprised of resin, pigment, and an aluminum charge enhancing additive of the following formulas

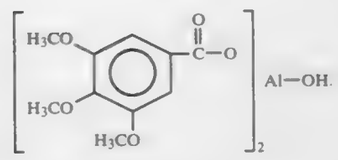


or



-continued

or



11. A dry developer composition comprised of the toner composition of claim **1** and carrier particles.

5,346,794

ELECTROPHOTOGRAPHIC TONER

Mitsutoshi Anzai; Yuji Matsuura; Osamu Mukudai; Miki Kanno, and Kayoko Watanabe, all of Tsukuba, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

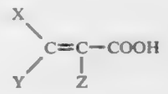
Filed Jan. 28, 1993, Ser. No. 10,575

Claims priority, application Japan, Mar. 3, 1992, 4-080299; Mar. 3, 1992, 4-080300; Apr. 22, 1992, 4-127951; Apr. 22, 1992, 4-127952

Int. Cl.[5] G03G *9/097*

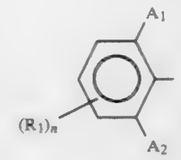
U.S. Cl. 430—110 **10 Claims**

1. An electrophotographic toner containing a charge control agent of the following formula (I):

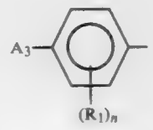


(I)

wherein each of X and Y which are independent of each other, is a hydrogen atom,



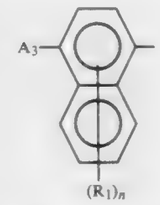
(wherein each of A_1 and A_2 is a hydrogen atom or an electron attracting group, provided that A_1 and A_2 are not simultaneously hydrogen atoms, R_1 is a hydrogen atom, a halogen atom, an alkyl group, a cycloalkyl group, an aralkyl group, an aryl group, an alkoxy group, a dialkylamino group, a diarylamino group, a diaralkylamino group or a hydroxyl group, and n is 0, 1 or 2, provided that when n is 2, the plurality of R_1 may be the same or different),



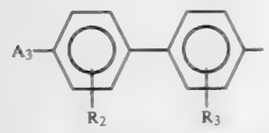
(wherein A_3 is an electron attracting group, and R_1 and n are as defined above),



(wherein A_3, R_1 and n are as defined above),



(wherein A_3, R_1 and n are as defined above) or



(wherein A_3 is as defined above, and each of R_2 and R_3 is a hydrogen atom, an alkyl group, a cycloalkyl group, an aralkyl group, an aryl group, an alkoxy group or a hydroxyl group), provided that X and Y are not simultaneously hydrogen atoms, and Z is a hydrogen atom, an alkyl group or an aryl group.

5,346,795

TONER AND DEVELOPER COMPOSITIONS

Thomas R. Pickering, Webster; Denise R. Bayley, Fairport; Roger N. Ciccarelli, Rochester, and Jacques C. Bertrand, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

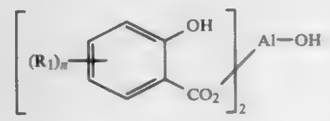
Filed May 27, 1993, Ser. No. 67,927

The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.

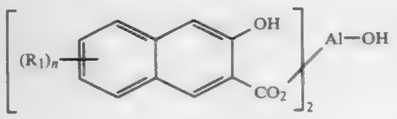
Int. Cl.[5] G03G *9/097*

U.S. Cl. 430—110 **28 Claims**

1. A toner composition comprised of resin, pigment and a mixture of charge enhancing additives comprised of an alkylsalicyclic acid and a charge additive of the formula



or



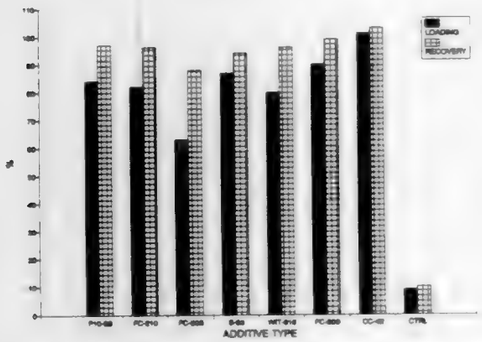
wherein R_1 is selected from the group consisting of hydrogen and alkyl, and n is zero, 1,2, 3, or 4.

5,346,796

ELECTRICALLY STABILIZED LIQUID TONERS

Yaacov Almog, Rehovot, Israel, assignor to Spectrum Sciences B.V., Wassenaar, Netherlands

Filed Jul. 20, 1992, Ser. No. 915,291
Int. Cl.[5] G03G *9/12, 9/135*
U.S. Cl. 430—115 20 Claims



1. A homogeneous liquid composition, for use in the preparation of liquid toners containing at least one charge director and in which the electrical properties of the charge director(s) is/are stabilized, which composition comprises:

(1) insulating non-polar carrier liquid compatible with liquid toners for electrostatic imaging;

(2) at least one charge director other than an amine salt; and

(3) at least one stabilizing component in an amount effective to stabilize the electrical properties of said at least one charge director, said component being selected from non-quaternary amine salts and being soluble in the carrier.

5,346,797

TONER PROCESSES

Grazyna E. Kmiecik-Lawrynowicz, Burlington; Raj D. Patel, and Guerino G. Sacripante, both of Oakville, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 25, 1993, Ser. No. 22,575
Int. Cl.[5] G03G *9/087*
U.S. Cl. 430—137 28 Claims

1. A process for the preparation of toner compositions consisting essentially of

(i) preparing a pigment dispersion in a solvent, which dispersion is comprised of a pigment, an ionic surfactant and optionally a charge control agent;

(ii) shearing the pigment dispersion with a latex mixture comprised of a counterionic surfactant with a charge polarity of opposite sign to that of said ionic surfactant, a nonionic surfactant and resin particles, thereby causing a flocculation or heterocoagulation of the formed particles of pigment, resin and charge control agent to form electrostatically bound toner size aggregates; and

(iii) heating the statically bound aggregated particles to form said toner composition comprised of polymeric resin, pigment and optionally a charge control agent.

5,346,798

SUSPENSION POLYMERIZATION METHOD AND TONER FOR ELECTROPHOTOGRAPHY OBTAINED THEREWITH

Masafumi Kamiyama; Masahiro Maeda; Hiroki Totsuka; Akihiro Sano, and Toshiya Matsushita, all of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1993, Ser. No. 30,652
Claims priority, application Japan, Mar. 18, 1992, 4-091565; Mar. 18, 1992, 4-091566; Mar. 18, 1992, 4-091567; Mar. 18, 1992, 4-091568; Mar. 18, 1992, 4-091569; Mar. 18, 1992, 4-091570
Int. Cl.[5] G03G *9/09*
U.S. Cl. 430—137 22 Claims

1. A suspension polymerization method for producing a negatively or positively charged polymerized particle comprising the steps of:

preparing a continuous phase component of an aqueous medium;

preparing a dispersed phase component comprising a monomer composition and at least one solid compound which acts as a charge control agent for maintaining a negative or positive charge on said polymerized particle;

preparing suspension polymerization means comprising a continuous phase vessel for holding a continuous phase component, a dispersed phase vessel for holding a dispersed phase component, shearing means for providing a shear force, and a polymerization vessel for polymerization reaction; and in turn

placing the continuous phase component in the continuous phase vessel and the dispersed phase component in the dispersed phase vessel;

continuously and simultaneously supplying each of the dispersed phase component and the continuous phase component, separately, to the shearing means for providing a shear force;

exerting a shear force on the dispersed phase component and the continuous component in the shearing means to form a suspension material comprising polymerizable liquid drops of a desired size;

leading the suspension material to the polymerization vessel; and

subsequently subjecting the suspension material in the polymerization vessel to a polymerization reaction to form said negatively or positively charged polymerized particle.

5,346,799

NOVOLAK RESINS AND THEIR USE IN RADIATION-SENSITIVE COMPOSITIONS WHEREIN THE NOVOLAK RESINS ARE MADE BY CONDENSING 2,6-DIMETHYLPHENOL, 2,3-DIMETHYLPHENOL, A PARA-SUBSTITUTED PHENOL AND AN ALDEHYDE

Alfred T. Jeffries, III, and David J. Brzozowy, both of Providence, R.I., assignors to OCG Microelectronic Materials, Inc., West Paterson, N.J.

Continuation-in-part of Ser. No. 812,498, Dec. 23, 1991, abandoned. This application Dec. 7, 1992, Ser. No. 986,223
Int. Cl.[5] G03F *7/023, 7/30*
U.S. Cl. 430—192 8 Claims

1. A radiation-sensitive composition useful as a positive-working photoresist dissolved in a solvent comprising an admixture of:

(A) a photoactive compound;

(B) an alkali-soluble novolak binder resin made by the condensation reaction of a mixture of phenolic monomers with at least one aldehyde source, said phenolic monomers consisting of:

(1) about 2–18% by weight of said mixture being 2,6-dimethylphenol;

(2) about 55–75% by weight of said mixture being 2,3-dimethylphenol; and

(3) about 16–40% by weight of said mixture being a para-substituted lower alkyl phenol selected from the group consisting of 3,4-dimethylphenol, para-cresol, and para-cresol dimer;

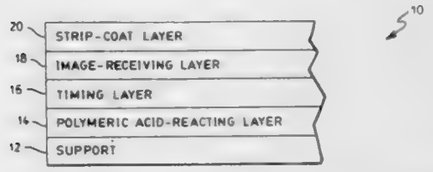
the amount of said aldehyde source being at least a stoichiometric amount to react with all of said phenolic moieties; and wherein the photoactive compound is from about 5% to about 40% by weight of the solids in said radiation-sensitive composition; and the alkali-soluble novolak resin is from about 95% to about 60% by weight of the solids in said radiation-sensitive composition.

5,346,800

IMAGE-RECEIVING ELEMENT FOR DIFFUSION TRANSFER PHOTOGRAPHIC FILM PRODUCTS

James A. Foley, Wellesley; Nicholas S. Hadzekyriakides, Arlington, and James J. Reardon, Winchester, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 6, 1993, Ser. No. 132,538
Int. Cl.[5] G03C *5/54, 11/12, 1/90*
U.S. Cl. 430—213 12 Claims



1. An image-receiving element for use in a photographic diffusion transfer color process which comprises, in sequence:

a support;

an image-receiving layer; and

a strip-coat layer overlying said image-receiving layer, said strip-coat layer comprising a mixture of a hydrophilic colloid and an aluminum salt.

6. The image-receiving element as defined in claim 1 wherein said image-receiving layer comprises a graft copolymer of 4-vinylpyridine and vinyl benzyl trimethylammonium chloride grafted onto hydroxyethylcellulose.

5,346,801

METHOD OF FORMING IMAGES

Hiroshi Watanabe; Tatsuichi Maehashi; Koichi Nakatani; Katsunori Kato, and Tawara Komamura, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

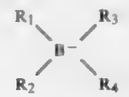
Filed Mar. 18, 1993, Ser. No. 33,497
Claims priority, application Japan, Apr. 1, 1992, 4-079928
Int. Cl.[5] G03F *7/34, 7/031*
U.S. Cl. 430—253 13 Claims

1. A process of forming an image on an image forming material comprising a support and provided thereon, a photosensitive layer and a covering film in that order to form an image, comprising the steps of:

imagewise exposing the material by laser beam scanning using a semiconductor laser; and

peeling the covering film from the exposed material to form an image on the support or on the covering film; wherein said photosensitive layer contains a colorant, an addition-polymerizable or cross-linkable compound and an effective amount to initiate photopolymerization of a photopolymerization initiator which is a salt of a cationic dye with a borate anion,

said borate anion being represented by the following Formula (1):



Formula (1)

wherein R_1, R_2, R_3 and R_4 independently represent an alkyl group, an aryl group, an aralkyl group, an alkenyl group, an alkinyl group, a cycloalkyl group, or a heterocyclic group; and

said cationic dye being selected from the group consisting of cyanine dyes, indoaniline dyes and azulenium dyes.

5,346,802

PROCESS FOR LASER-MARKING THERMOPLASTIC ARTICLES

Yoshinori Ohbachi, and Hisashi Tomita, both of Shizuoka, Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Sep. 29, 1992, Ser. No. 952,418
Claims priority, application Japan, Oct. 2, 1991, 3-255204
Int. Cl.[5] G03C *1/494, 3/00, 5/44;* D06N *7/04*
U.S. Cl. 430—270 4 Claims

1. A process for laser-marking a thermoplastic surface region of an article, comprising providing an article which includes a surface region to be laser-marked formed of a thermoplastic resin composition which consists essentially of polybutylene terephthalate, and a flame retardant in an amount sufficient to impart of said thermoplastic resin composition a critical oxygen index of 22% or above as determined by ASTM D2863, and then subjecting the surface region of the article to laser irradiation so as to inscribed a mark on the article's surface region.

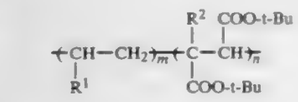
5,346,803

PHOTORESIST COMPOSITION COMPRISING A COPOLYMER HAVING A DI-T-BUTYL FUMARATE

James V. Crivello, Clifton Park, and Sang-Yeon Shim, Troy, both of N.Y., assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1993, Ser. No. 121,410
Int. Cl.[5] G03F *7/004*
U.S. Cl. 430—270 16 Claims

1. A photoresist composition comprising a polymer of the following formula (1):



(1)

wherein R^1 is a substituted or unsubstituted aromatic group or $-(CH_2)_p-SiR^3$ wherein R^3 is a methyl or ethyl group and p is equal to 0 or 1, R^2 is a hydrogen atom or methyl group, t-Bu is a tertiary-butyl group, and $n/(m+n)$ is from 0.1 to 0.9, in admixture with a photoacid generator.

5,346,804

ACID-CLEAVABLE RADIATION-SENSITIVE COMPOUNDS, POSITIVE WORKING RADIATION-SENSITIVE MIXTURE CONTAINING THESES COMPOUNDS, AND RADIATION-SENSITIVE RECORDING MATERIAL PRODUCED WITH THIS MIXTURE

Geog Pawlowski, Wiesbaden, Fed. Rep. of Germany; Ralph Dammel, Coventry, R.I.; Horst Roeschert, Ober-Hilbersheim, Fed. Rep. of Germany; Walter Spiess, Dieburg, Fed. Rep. of Germany, and Charlotte Eckes, Mainz, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

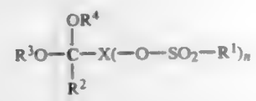
Filed Apr. 20, 1992, Ser. No. 871,008
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1991, 4112970
Int. Cl.[5] G03C *1/73, 1/725;* G03F *7/025, 7/027*
U.S. Cl. 430—281 19 Claims

1. A positive-working radiation-sensitive mixture which comprises

a. a polymeric binder which is insoluble in water and soluble or at least swellable in aqueous alkaline solutions, and

b. a compound, which generates a strong acid under the

action of actinic radiation and which has at least one acid-cleavable C—O—C bond wherein the compound is of the formula



(I)

in which

R^1 is an unsubstituted or substituted alkyl, fluorinated alkyl, perfluoralkyl or aryl radical,

R^2 is a hydrogen atom, an unsubstituted or substituted alkyl radical, or an unsubstituted or substituted aryl radical, $(R^1—SO_2—O—)_nX—$, or $R^3O—$,

R^3 and R^4 are identical or different and are unsubstituted or substituted alkyl, cycloalkylalkyl, cycloalkenylalkyl or aralkyl radicals, in which 1 to 3 aliphatic CH_2 or CH groups are optionally replaced by one or more of NR^5, O, S, CO, CO—O, CO—NH, O—CO—NH, CO—NH—CO, NH—CO—NH, SO_2, SO_2—O or SO_2—NH, or unsubstituted or substituted alkenyl, alkynl, cycloalkyl or mutually linked to form an unsubstituted or substituted heterocyclic ring,

R^5 is an acyl radical,

n is an integer from 1 to 3, and

X is an alkylene, cyloalkylene, or arylene group if n is 1 or X is a(n+1)-valent radical of an alkane, cycloalkane, or arena if n is 2 or 3.

5,346,805

PHOTOPOLYMERIZABLE COMPOSITION

Syunichi Kondo, and Akira Umehara, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

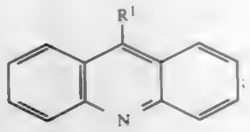
Continuation of Ser. No. 786,075, Oct. 31, 1991, abandoned. This application Sep. 17, 1993, Ser. No. 122,187

Claims priority, application Japan, Nov. 1, 1990, 2-296514

Int. Cl.[5] G03C *1/72;* **G03F** *7/029*

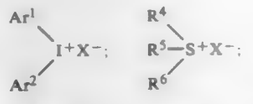
U.S. Cl. 430—281 **22 Claims**

1. A photopolymerizable composition which comprises a polymerizable compound having at least one ethylenically unsaturated double bond and a photopolymerization initiator, wherein the photopolymerization initiator comprises an onium compound and an acridine derivative, said acridine derivative being represented by the following formula (I);



(I)

wherein R^1 represents an unsubstituted or substituted phenyl, alkyl or alkoxy group, and said onium compound being selected from the group consisting of compounds represented by the following formulae (II) and (III):



(II) (III)

wherein Ar^1 and Ar^2 may be the same or different and each represents a substituted or unsubstituted aryl group, the substituents of the aryl group being selected from the group consisting of alkyl, haloalkyl, cycloalkyl, aryl, alkoxy, nitro, carbonyl, alkoxycarbonyl, hydroxy and mercapto groups, and halogen atoms, R^4, R^5 and R^6 may be the same or different and each represents a substituted or unsubstituted alkyl or aryl group, with the proviso that each two of R^4, R^5 and R^6, and Ar^1 and Ar^2 may be bonded together through a single bond or a substituent, and X represents an anion.

5,346,806

ACID-CLEAVABLE RADIATION-SENSITIVE COMPOUNDS, RADIATION-SENSITIVE MIXTURE CONTAINING THESE COMPOUNDS, AND RADIATION-SENSITIVE RECORDING MATERIAL PRODUCED WITH THIS MIXTURE

Georg Pawlowski, Wiesbaden, Fed. Rep. of Germany; Ralph Dammel, Coventry, R.I.; Horst Roeschert, Ober-Hilbersheim, Fed. Rep. of Germany; Walter Spiess, Dieburg, Fed. Rep. of Germany, and Charlotte Eckes, Mainz, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 20, 1992, Ser. No. 871,011

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1991, 4112969

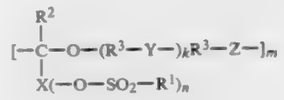
Int. Cl.[5] G03C *1/73, 1/725;* **G03F** *7/025, 7/027*

U.S. Cl. 430—284 **20 Claims**

1. A positive-working radiation-sensitive mixture which comprises:

a) a polymeric binder which is insoluble in water and soluble or at least swellable in aqueous alkaline solutions, and

b) an oligomer having repeating units of the formula



(I)

in which

R^1 is an alkyl, halalkyl or aryl radical,

R^2 is a hydrogen atom, an alkyl, alkenyl or aryl radical or the group $R^1—SO_2—O)_nX—$,

R^3 is a cycloalkylenedialkyl, cycloalkenylenedialkyl, arylenedialkyl, heteroarylenedialkyl, alkylene, alkenylene, alkynylene, cycloalkylene or arylene group,

X is an alkylene, cycloalkylene or arylene group if n is 1, or a (n+1)-valent radical of an alkene, cycloalkene, or arene if n is 2 or 3.

Y is O, S, CO, CO—O, SO_2, NR^4, CO—NH, O—CO—NR^5, NH—CO—NR^5—CO—O,

Z is O, CO—NR^6, O—CO—NR^5 or NH—CO—NR^6,

R^4 is an acyl radical,

R^5 is a hydrogen atom or an alkyl-, cycloalkyl, alkenyl, alkynyl or aryl radical,

R^6 is an alkyl, cycloalkyl, alkenyl, alkynyl or aryl radical,

k is 0, 1, 2, 4 or 4,

m is an integer greater than 1 and

n is 1, 2 or 3,

where R^3 and Y in recurring groupings (R^3—Y—) can have identical or different definitions.

5,346,807

Patent Not Issued For This Number

5,346,808

POSITIVE IMAGE FORMATION UTILIZING O-QUINONEDIAZIDE COMPOSITION INCLUDING SELECTED PHENOLIC DERIVATIVES OF 4-(4-HYDROXYPHENYL)-CYCLOHEXANONE

Alfred T. Jeffries, III, Providence, R.I., assignor to OCG Microelectronic Materials, Inc., West Paterson, N.J.

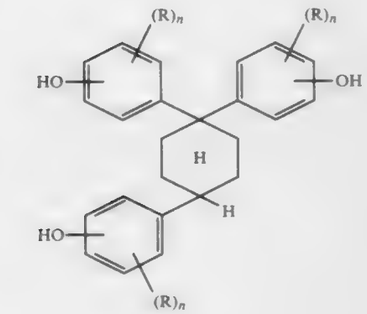
Division of Ser. No. 45,024, Apr. 5, 1993, Pat. No. 5,283,374. This application Nov. 8, 1993, Ser. No. 148,235

Int. Cl.[5] G03F *7/32*

U.S. Cl. 430—296 **7 Claims**

1. The process of developing an image-wise exposed photoresist-coated substrate to form a positive-working image comprising:

(a) coating said substrate with a radiation-sensitive composition useful as a photoresist, said composition comprising an admixture in a solvent of: at least one alkali-soluble binder resin, at least one o-quinonediazide photoactive compound, and an effective sensitive enhancing amount of at least one phenolic derivative of 4-(4-hydroxyphenol) cyclohexanone compound of formula (I):



(I)

where each R is individually selected from the group consisting of hydrogen and a lower alkyl group having 1–4 carbon atoms and each n is 0, 1, or 2; the amount of said binder resin being about 60 to 95% by weight, the amount of said photoactive compound being about 5% to about 50% by weight, based on the total solids content of said radiation-sensitive composition;

(b) subjecting said coating on said substrate to an image-wise exposure of radiant light energy; and

(c) subjecting said image-wise exposed coated substrate to a developing solution to form a positive-working, image-wise pattern in the coating.

5,346,809

RAPID-ACCESS METHOD OF FORMING A STABILIZED SILVER HALIDE COLOR IMAGE

Shun Takada, and Satoshi Masumi, both of Odawara, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Dec. 15, 1992, Ser. No. 990,728

Claims priority, application Japan, Dec. 26, 1991, 3-345209

Int. Cl.[5] G03C *7/46, 7/00, 5/18, 1/06*

U.S. Cl. 430—393 **16 Claims**

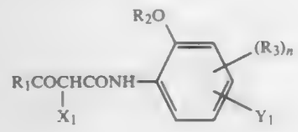
1. A method of forming a color image comprising steps of imagewise exposing to light a silver halide color photographic light-sensitive material which comprises a support having thereon a silver halide emulsion layer,

developing said exposed light-sensitive material with a color developer,

bleach-fixing said developed light-sensitive material with a bleach-fixer, and

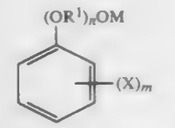
washing said bleach-fixed light-sensitive material,

wherein said silver halide emulsion layer contains a yellow coupler having a molecular weight of not more than 800 and represented by Formula Y-1 and a compound represented by Formula I, II, III or IV; said developing step is carried out for not more than 25 seconds, and said color developer is replenished with a developer replenisher in a ratio of from 20 ml to 150 ml per square meter of light-sensitive material developed by said developer; and the total time of said developing step, bleach-fixing step and washing step is not more than 2 minutes;



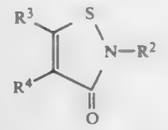
(Y-1)

wherein R_1 is alkyl, cycloalkyl, or aryl; R_2 is alkyl, cycloalkyl, acyl, or aryl; R_3 is a substituent; Y_1 is an organic group; X_1 is a split off group and n is 0 or 1;



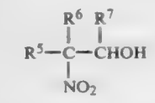
(I)

wherein R^1 is an alkylene group having 1 to 5 carbon atoms; M is hydrogen, alkali metal, or alkyl; X is halogen, alkyl, cycloalkyl, aryl, carboxyl, amino, hydroxyl, sulfo, nitro, alkoxycarbonyl; m is an integer of 1 to 5 and n is 0 or 1;



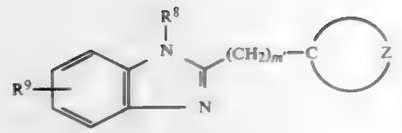
(II)

wherein R^2 is hydrogen, alkyl, cycloalkyl, heterocyclic, alkenyl, aralkyl, aryl, alkoxyl, —CONHR, where R is selected from the group consisting of hydrogen, alkyl, aryl, alkylthio, arylthio, alkylsulfonyl, and arylsulfonyl; R^3 and R^4 are each hydrogen, halogen, alkyl, cycloalkyl, aryl, heterocyclic, cyano, alkylthio, arylthio, alkylsulfoxide, alkylsulfonyl or alkylsulfinyl, R^3 and R^4 may be linked with each other to form a benzene ring which may have a substituent;



(III)

wherein R^5 and R^6 are each hydrogen, halogen, alkyl, having 1 to 5 carbon atoms, or hydroxymethyl; and R^7 is hydrogen or alkyl having 1 to 5 carbon atoms;



(IV)

wherein R^8 is hydrogen, alkyl, or aryl; R^9 is hydrogen, alkyl, aryl, nitro, carboxyl, sulfo, sulfamoyl, hydroxyl, halogen, alkoxy, or thiazolyl; Z is a group of atoms necessary to form a thiazole ring; and m' is 0 or 1.

5,346,810

SILVER HALIDE PHOTOGRAPHIC MATERIAL

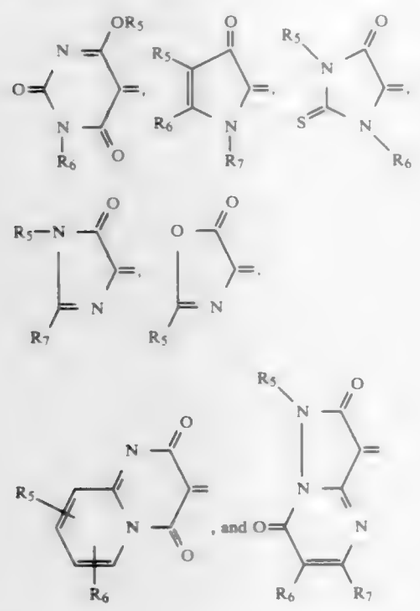
Shigeru Ohno, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 12, 1993, Ser. No. 3,476
Claims priority, application Japan, Jan. 20, 1992, 4-27548
Int. Cl.[5] G03C *1/06*
U.S. Cl. 430—522 **17 Claims**

1. A silver halide photographic element comprising a support having thereon a hydrophilic colloid layer which contains a dispersion of solid fine grains having a mean grain size from 0.005 μm to 10 μm of a compound of formula (I) which is present in the amount of 0.5 to 1,000 mg/m^2:

$$A_1=(L_1-L_2)_m=L_3-(L_4=L_5)_n-A_2 \quad (I)$$

wherein A_1 and A_2 each represents an acidic nucleus necessary for forming an oxonole dye, excepting the case where A_1 and A_2 are both 2-pyrazolin-5-one nuclei, the case where they are both barbituric acid nuclei, and the case where they are both 2,6(1H,3H)-pyridinedione nuclei, and wherein at least one of the acidic nuclei represented by A_1 and A_2 is selected from the group consisting of a pyrazolo[3,4-b]pyridine-3,6-dione nucleus, 2(5H)-furanone nucleus,



wherein R_5, R_6 and R_7 each represents a hydrogen atom or a substituent; provided that R_5 and R_6 may be bonded to each other to form a 5-membered or 6-membered ring; L_1, L_2, L_3, L_4 and L_5 each represents a methine group; and m and n each represents 0, 1 or 2; provided that the compound does not have any dissociating proton-containing substituent or salt thereof capable of dissolving the compound during development, except for the enolic proton constituting a part of the chromophoric group of an oxonole dye.

5,346,811

METHOD AND PRODUCTS FOR HUMAN PAPILLOMAVIRUS DETECTION

Iván Galindo-Castro; José L. Ramirez, and Rafael R. Aldao, all of Caracas, Venezuela, assignors to Cerveceria Polar, Calif. and Universidad Central de Venezuela, Caracas, Venezuela

Continuation-in-part of Ser. No. 733,034, Jul. 22, 1991, abandoned. This application Jan. 15, 1992, Ser. No. 820,412
Int. Cl.[5] C12Q *1/70, 1/68;* **C07H** *21/00;* **C07K** *15/00*
U.S. Cl. 435—5 **28 Claims**

1. A polynucleotide molecule comprising the sequence:

5' GAACTTATTACCAGTGTTATACAGG 3' (SEQ ID NO 1),

or stably hybridizable fragments thereof, wherein said polynucleotide molecule can simultaneously stably hybridize to human papillomavirus 11 DNA and human Papillomavirus 6 DNA, but cannot stably hybridize to either human papillomavirus 16 DNA or human papillomavirus 18 DNA, and

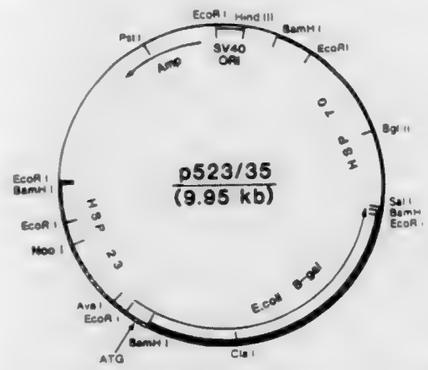
provided that said polynucleotide molecule is not the entire human papillomavirus 6 genome, or human papillomavirus 11 genome.

5,346,812

TERATOGEN ASSAY

Richard W. Voellmy, and Jayakumar Ananthan-Nair, both of Miami, Fla., assignors to The University of Miami, Coral Gables, Fla.

Continuation of Ser. No. 404,232, Sep. 7, 1989, abandoned. This application Sep. 18, 1992, Ser. No. 946,618
Int. Cl.[5] C12Q *1/68;* **G01N** *33/53;* **C12P** *21/00*
U.S. Cl. 435—6 **3 Claims**



1. A method of screening a test substance for potential teratogenicity, comprising the steps:

providing primary embryonic cells from a Drosophila transformed via a P element with a hybrid gene comprising a coding sequence for a detectable expression product under the control of the promoter and leader sequence of the 23 kDa Drosophila heat shock protein gene,

exposing said primary embryonic cells in vitro to the test substance, and

assaying in vitro for the detectable expression product in the cells, the presence of the expression product in the cells providing an indication of the potential teratogenicity of the test substance.

5,346,813

METHOD OF SCREENING FOR SMALL CELL LUNG CARCINOMA

Heinz Bodenmüller, and Andreas Dessauer, both of Tutzing, Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 617,102, Nov. 19, 1990, abandoned. This application Nov. 25, 1992, Ser. No. 982,112
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1989, 3940209
Int. Cl.[5] G01N *33/574, 33/53*
U.S. Cl. 435—7.23 **23 Claims**

1. A method of screening for small cell lung carcinoma comprising,

contacting a body fluid sample with antibodies or antibody fragments which specifically bind synaptophysin,

detecting at least one member of the group consisting of synaptophysin monomers, synaptophysin oligomers, and synaptophysin fragments,

wherein the presence of synaptophysin in the body fluid sample is associated with the presence of small cell lung carcinoma.

5,346,814

METHOD OF DETECTING CELL RESPONSE TO CELL-DAMAGING ENERGY

George M. Hahn, Stanford; Alie H. Saad, Menlo Park, and Amato J. Giaccia, Redwood City, all of Calif., assignors to Board of Trustees of the Leland Stanford Jr. University, Stanford, Calif.

Filed Oct. 14, 1992, Ser. No. 961,268
Int. Cl.[5] C12Q *1/16;* **G01N** *23/00*
U.S. Cl. 435—35 **17 Claims**

1. A method of assessing the susceptibility of a cell of a known origin to cell-damaging energy, comprising

exposing a cell from a known origin to an amount of cell-damaging energy effective to increase a potassium channel current in said cell,

measuring a voltage-dependent potassium current in a cell from the known origin, before and after said exposing, and

using the change in the measured current before and after exposing, to assess the ability of a cell from the known origin to resist said energy.

5,346,815

SODIUM ION BINDING PROTEINS

Terry A. Krulwich, New York, N.Y., and D. Mack Ivey, Fayetteville, Ark., assignors to The Mount Sinai School of Medicine of the City University of New York, New York, N.Y.

Filed Aug. 28, 1992, Ser. No. 938,188
Int. Cl.[5] C12N *1/20, 15/00;* **C07H** *19/00, 21/00*
U.S. Cl. 435—69.1 **11 Claims**

1. A purified and isolated DNA sequence selected from the group consisting of:

(a) a DNA sequence encoding the NhaS amino acid sequence of FIG. 1 (SEQ. ID. NO.: 2);

(b) a DNA sequence that hybridizes under stringent conditions to the complement of the nhaS DNA sequence of FIG. 1 (Seq. ID No.: 1), wherein the protein encoded by the coding strand of the DNA retains the sodium ion binding function of the NhaS protein; and

(c) a DNA sequence that hybridizes under stringent conditions to the coding sequence of the nhaS DNA sequence of FIG. 1 (Seq. ID No.: 1), wherein the protein encoded by the coding strand of the DNA retains the sodium ion binding function of the NhaS protein.

5,346,816

ENZYMATIC PROCESS FOR THE ENANTIOSELECTIVE PREPARATION OF OPTICALLY ACTIVE CYANOHYDRINS

Herfried Griengl; Norbert Klempier, both of Graz, and Peter Pöchlauer, Linz, all of Austria, assignors to Chemie Linz Gesellschaft m.b.H., Austria

Filed Sep. 1, 1992, Ser. No. 943,376
Claims priority, application Austria, Oct. 31, 1991, 2174/91
Int. Cl.[5] C12P *13/00, 41/00*
U.S. Cl. 435—128 **8 Claims**

1. An enantioselective process for the preparation of the S-enantiomer of an optically active cyanohydrin which comprises reacting an aldehyde or an asymmetric ketone with a cyanohydrin of the formula $R_1R_2C(OH)(CN)$ in which R_1 and R_2 independently of one another denote hydrogen or a hydrocarbon group which is unsubstituted or substituted with groups which are inert under the reactions conditions or R_1 and R_2 together denote an alkylene group having 4 or 5 C-atoms, where R_1 and R_2 are not simultaneously hydrogen, in a diluent in the presence of an S-hydroxynitrile lyase of the genus *Hevea* or *Sorghum* and isolating cyanohydrin formed, from the reaction mixture.

5,346,817

METHOD FOR PRODUCING A MICROBIAL POLYESTER

Minoru Akiyama, and Yoshiharu Doi, both of Yokohama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 23, 1992, Ser. No. 903,021
Claims priority, application Japan, Jun. 24, 1991, 3-177721; Sep. 5, 1991, 3-254199
Int. Cl.[5] C08G *63/06;* **C12P** *7/62;* **C12R** *1/05*
U.S. Cl. 435—135 **7 Claims**

1. A method for producing a microbial polyester comprising D-(−)-3-hydroxybutyrate monomer units, which comprises the steps of:

(1) providing a liquid medium containing at least one essential carbon source selected from the group consisting of fatty acids each having 10 to 22 carbon atoms and derivatives thereof;

(2) culturing a strain belonging to the species *Alcaligenes lipolytica,* said strain producing a microbial polyester comprising D-(−)-3-hydroxybutyrate monomer units and being negative to both a nitrate reduction and a denitrification reaction, in said liquid medium, thereby obtaining a cultured broth containing a microbial polyester comprising D-(−)-3-hydroxybutyrate monomer units; and

(3) isolating said microbial polyester from said cultured broth.

5,346,818

METHOD FOR THE CONJUGATIVE TRANSFER OF MOBILIZABLE VECTORS FOR *E. COLI* TO GRAM-POSITIVE BACTERIA AND VECTORS SUITABLE FOR USE IN SUCH A METHOD

Andreas Schäfer; Jörn Kalinowski, and Alfred Pühler, all of Bielefeld, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 8, 1989, Ser. No. 447,139
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1988, 3841453
Int. Cl.[5] C12N *15/00, 15/63, 15/74, 15/77*
U.S. Cl. 435—172.3 **20 Claims**

1. A method for the conjugative transfer of a mobilizable vector from cells of an *E. coli* mobilizer strain to Coryneform bacterial cells which comprising producing restriction-defective cells of said Coryneform bacteria and crossing said defective cells with cells of said *E. coli* strain carrying said vector under conditions such that transfer of said vector to said defective cells is effected.

5,346,819

GLYCEROL DEHYDROGENASE, PROCESS FOR ITS PRODUCTION AND ITS USE

Osao Adachi, and Kazunobu Matsushita, both of Yamaguchi, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Feb. 19, 1993, Ser. No. 19,676
Claims priority, application Japan, Feb. 24, 1992, 4-073568
Int. Cl.[5] C12N *9/04, 9/02*
U.S. Cl. 435—190 **3 Claims**

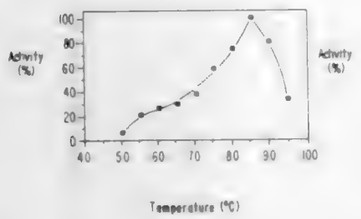
1. A purified glycerol dehydrogenase, which produces glyceraldehyde from glycerol, having the following properties:
(a) catalyzing the following reaction: glycerol+electron acceptor=glyceraldehyde+reduced electron acceptor,
(b) optimum pH: pH 8–9,
(c) pH stability: stable at pH 7–11,
(d) optimum temperature: 20°–25° C.,
(e) thermal stability: stable at a temperature of 30° C. or less for 10 minutes at a pH of 7.0,
(f) molecular weight: 70,000 by gel filtration and SDS polyacrylamide gel electrophoresis,
(g) bound to pyrroloquinoline quinone as a prosthetic group,
(h) soluble and stable without the need of an ionic or non-ionic surfactant.

5,346,820

THERMOSTABLE PROTEASE FROM *THERMOBACTEROIDES*

Garabed Antranikian, Seevetal 1-Hittfeld, and Michael Klingeberg, Gronau, both of Fed. Rep. of Germany, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Oct. 22, 1992, Ser. No. 938,268
Claims priority, application Denmark, Jun. 15, 1990, 1459/90
Int. Cl.[5] C12N *9/48, 9/50, 9/52;* **C11D** *10/00*
U.S. Cl. 435—220 **13 Claims**



1. An isolated protease which:
(a) has a pH optimum in the range of 6.5 to 10.0;
(b) has a temperature optimum in the range of 75 to 95° C.; and
(c) is obtained from a strain of *Thermobacteroides proteolyticus.*

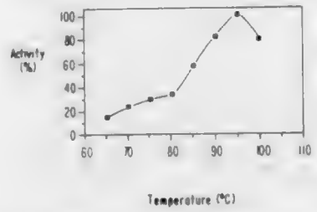
5,346,821

THERMOSTABLE PROTEASE FROM STAPHYLOTHERMUS

Garabed Antranikian, Seevetal 1-Hittfeld, and Michael Klingeberg, Gronau, both of Fed. Rep. of Germany, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK91/00159, § 371 Date Oct. 22, 1992, § 102(e) Date Oct. 22, 1992, PCT Pub. No. WO90/15621, PCT Pub. Date Dec. 27, 1990
PCT Filed Jun. 14, 1991, Ser. No. 949,491
Claims priority, application Denmark, Jun. 15, 1990, 1460/90
Int. Cl.[5] C12N *9/50, 9/52, 9/48;* **C11D** *10/00*
U.S. Cl. 435—220 **14 Claims**

1. An isolated protease having the following properties:
(a) a pH optimum in the range of 6.5 to 10.0;
(b) a temperature optimum in the range of 90° to 100° C.; and



(c) immunochemical properties identical to those of the protease obtained from the strain *Staphylothermus marinus,* DSM No. 3639.

5,346,822

ALKALINE PROTEASES FROM *BACILLUS PUMILUS*

Roman Vetter, Burgdorf; Detlef Wilke, Wennigsen; Bernhard Moeller; Martina Mueller, both of Hannover; Ingo Muecke, Barsinghausen; Meike Takenberg, Hannover, and Gerhard Konieczny-Janda, Pattensen, all of Fed. Rep. of Germany, assignors to Solvay Enzymes GmbH & Co. KG, Nienburg/Weser, Fed. Rep. of Germany

Filed May 26, 1993, Ser. No. 67,086
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1992, 4218448
Int. Cl.[5] C12N *9/54*
U.S. Cl. 435—221 **8 Claims**

1. An isolated alkaline Bacillus protease obtained by cultivation of *Bacillus pumilus* DSM 5777 or a microorganism transformed to contain in expressible form a highly alkaline protease gene isolated from *Bacillus pumilus* DSM 5777, said protease having either set of the following properties:
(1) Action: degradation of proteins and peptides;
(2) pH optimum: approximately between pH values of 10.5 to 11.0:
(3) pH stability: upon incubation at 4° C. for 24 hours at pH values between 9.7 to 10.8 the enzyme proves to be completely stable;
(4) temperature optimum: approximately 60° C.;
(5) temperature stability: by incubation of the protease at temperatures of up to 45° C. for 15 minutes. The activity of the protease is substantially 100%; after 15 minutes' incubation at 50° C., the residual activity of the protease is at least 90%;

or

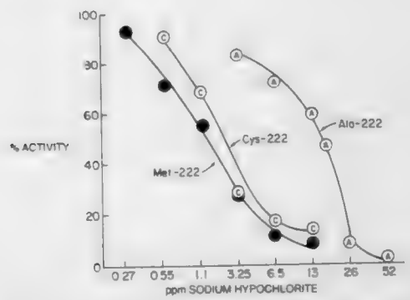
(1) Action: degradation of proteins and peptides;
(2) pH optimum: approximately between pH values of 8.5 to 9.01;
(3) pH stability: upon incubation at 4° C. for 24 hours between pH values of 5.5 to 10.5, the enzyme proves to be completely stable:
(4) temperature optimum: approximately 50° C.;
(5) temperature stability: by incubation of the protease at temperatures of up to 40° C. for 15 minutes, the activity of the protease is substantially 100%; after 15 minutes' incubation at 45° C., the residual activity of the protease is at least 95%. incubation at 45° C. the residual activity of the protease is at least 95%.

5,346,823

SUBTILISIN MODIFICATIONS TO ENHANCE OXIDATIVE STABILITY

David A. Estell, San Mateo; James A. Wells, and Richard R. Bott, both of Burlingame, all of Calif., assignors to Genencor, Inc., Rochester, N.Y.

Continuation of Ser. No. 521,010, May 9, 1990, which is a continuation of Ser. No. 91,235, Aug. 31, 1987, abandoned, which is a division of Ser. No. 614,612, May 29, 1984, Pat. No. 4,760,025. This application Mar. 24, 1993, Ser. No. 36,592
The portion of the term of this patent subsequent to May 10, 2011, has been disclaimed.
Int. Cl.[5] C12N *15/00, 15/57, 15/75, 15/11*
U.S. Cl. 435—222 **4 Claims**



1. A method for making a mutant *Bacillus subtilisin* having altered oxidative stability, the method comprising:
a) obtaining a DNA fragment consisting essentially of a region encoding a *Bacillus subtilisin;*
b) substituting codons encoding either serine of alanine into said DNA fragment within a codon region encoding a methionine, tryptophan, cysteine or lysine provided that said methionine, tryptophan, cysteine or lysine is oxidized in the presence of an oxidizing agent;
c) transforming a Bacillus host cell with said mutated DNA;
d) expressing said mutant subtilisin;
e) recovering said mutant subtilisin; and
f) screening said mutant subtilisin for improved oxidative stability by assaying residual enzyme activity of the mutant in the presence of an oxidizing agent.

5,346,824

DNA ENCODING VARIANTS OF TISSUE PLASMINOGEN ACTIVATORS AND EXPRESSION VECTORS AND HOSTS THEREOF

Stephen Anderson, Princeton, N.J.; Kevin M. Brady, Concord, Calif.; Bruce A. Keyt, Pacifica, Calif., and Leonard G. Presta, San Francisco, Calif., assignors to Genentech, Inc., So. San Francisco, Calif.

Continuation of Ser. No. 824,740, Jan. 21, 1992, Pat. No. 5,270,198, which is a continuation of Ser. No. 480,691, Feb. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 196,909, May 20, 1988, abandoned. This application Mar. 22, 1993, Ser. No. 36,014
Int. Cl.[5] C12N *9/64, 15/00, 15/58*
U.S. Cl. 435—240.2 **7 Claims**

1. A DNA molecule encoding a fibrinolytically active human tissue plasminogen activator (t-PA) amino acid sequence variant having one or more amino acid substitutions which provide an Asn-X-Ser or Asn-X-Thr tripeptidyl sequence that starts at an amino acid position selected from the group consisting of amino acid positions 57 to 61, 63 to 69, 99, 101, 103 to 105, 106, 107, 109, 112 and 250 of the amino acid sequence of native human t-PA, wherein X is any amino acid except proline.

5,346,825

METHOD FOR IMPROVING THE RATE OF CELL FUSION

Yoshio Kawamura, Kokubunji; Kazuo Sato, Tokyo; Shinji Tanaka, Akishima; Hiroyuki Kohida, Fuchu, and Masatoshi Sakurano, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 253,560, Oct. 5, 1988, Pat. No. 5,154,814. This application Jul. 8, 1992, Ser. No. 910,524
Claims priority, application Japan, Oct. 7, 1987, 62-251494
Int. Cl.[5] C12N *5/00*
U.S. Cl. 435—240.26 **5 Claims**

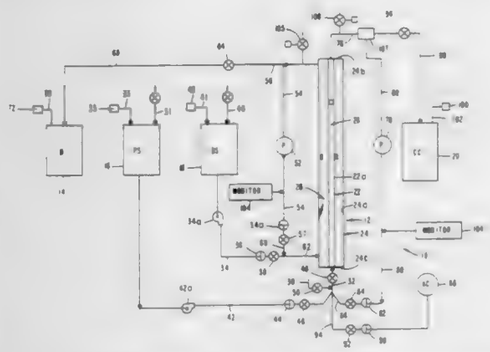
1. A method of improving the rate of cell fusion comprising the steps of:
(a) providing a first vessel having at least one chamber for receiving cells, the at least one chamber having a bottom wall and at least one slit formed therein;
(b) providing a second vessel in communication with the at least one chamber through the at least one slit, the at least one slit being smaller in size than a size of the cells received therein;
(c) supplying an isotonic solution into the first vessel;
(d) supplying cells having a cell membrane into the at least one chamber;
(e) holding the cells in contact with a bottom wall surface around the at least one slit in the at least one chamber and providing isotonic solution in the second vessel;
(f) separating from the bottom wall surface the cells which were held in contact with the bottom wall surface around the at least one slit by transferring the isotonic solution from the second vessel through the at least one slit into the at least one chamber; and
(g) repeating the cell holding step (e) and the cell separating step (f) alternately until cell fusion occurs.

5,346,826

PROCESS FOR CONDUCTING BIOCHEMICAL REACTIONS

Franklin T. Andrews, 824 Kainui Pl., Hailua, Hi. 96734

Filed Oct. 18, 1989, Ser. No. 423,800
Int. Cl.[5] C12N *5/00, 5/02;* **C12M** *1/12*
U.S. Cl. 435—240.241 **6 Claims**



1. An in vitro process for growing living cellular material comprising of the steps of:
a) filling a flexible, semi-permeable, tubular membrane with live cells in a concentration range of from 10^2 to 10^7 cells per milliliter, said tubular membrane having an exclusion range of from 500 to 1,000,000 Daltons, a length of from 1 to 8 feet, and a diameter of from 0.025 to 3.0 inches, said tubular membrane having a wall to which cellular material tends to adhere, said wall being periodically agitated to remove cell material adhering to it,
b) immersing the tubular membrane in an aqueous medium,

c) continuously feeding a concentrated aqueous nutrient solution to the live cells inside the tubular membrane,

d) controlling conditions within the tubular membrane to promote rapid growth of the live cells by maintaining

(i) the temperature of the cells and aqueous medium in the range of from 50 to 75 degrees Fahrenheit,

(ii) the pH of the concentrated nutrient solution and aqueous medium essentially equal to each other and in the range of from 3.0 to 11.0,

(iii) the velocity of the concentrated nutrient solution through the tubular membrane in the range of from 0.005 to 3.0 feet per minute, and

(iv) the velocity of the aqueous medium over the exterior of the tubular membrane in the range of from 0.005 to 5.0 feet per minute, and

d) withdrawing the cells from the tubular membrane at a controlled rate to maintain the number of individual cells within the membrane in the range of from 10^2 to 10^{10} cells per milliliter, and

wherein immature cells are removed and retained in a holding tank to grow to mature size, and wherein the cells are separated from concentrated nutrient solution associated therewith, and the nutrient solution is recycled to the holding tank.

5,346,827

Patent Not Issued For This Number

5,346,828

STEREOISOMERIC ENRICHMENT OF 2-AMINO-3-HYDROXY-3-PHENYLPROPIONIC ACIDS USING D-THREONINE ALDOLASE

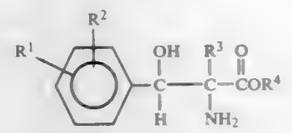
David I. Stirling, Fanwood; Muppala S. Raju, Bridgewater, and Andrew L. Zeitlin, Somerville, all of N.J., assignors to Celgene Corporation, Warren, N.J.

Continuation-in-part of Ser. No. 689,300, Apr. 22, 1991, abandoned, and Ser. No. 676,102, Mar. 27, 1991, abandoned. This application Mar. 2, 1992, Ser. No. 844,724

Int. Cl.[5] C12P *41/00*

U.S. Cl. 435—280 17 Claims

1. A process for the enantiomeric enrichment of a mixture of D- and L-threo 2-amino-3-hydroxy-3-phenylpropionic acids of the formula:



in which each of R^1 and R^2, independently of the other, is hydrogen, hydroxy, halo, nitro, trifluoromethyl, lower alkyl, lower alkoxy, lower alkylsulfonyl, lower alkylsulfinyl, or lower alkylthio;

R^3 is hydrogen or methyl; and

R^4 is hydrogen or a carboxylic acid protecting group; and the salts thereof with base when R^4 is hydrogen, which comprises bringing said mixture into contact in an aqueous medium with D-threonine aldolase which is enzymatically active with respect to the D-threo enantiomer but substantially inactive with respect to the L-threo enantiomer, until the D-threo enantiomer is converted to the corresponding benzaldehyde and an amino acid derivative of the formula $R^3CH(NH_2)COOR^4$, while the L-threo enantiomer remains substantially unconverted.

5,346,829

DEVICE AND METHOD FOR DETECTING PRESENCE AND EXTENT OF MICRO-ORGANISMS IN A LIQUID SAMPLE OR ON A SOLID SURFACE

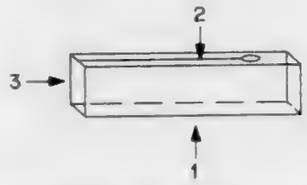
Benjamin Alspector, San Martin 13/8, Jerusalem 93341, Israel

Filed Feb. 16, 1993, Ser. No. 18,179

Claims priority, application Israel, Feb. 16, 1992, 100964

Int. Cl.[5] C12M *1/28*

U.S. Cl. 435—294 24 Claims



1. A device for detecting the presence of a microorganism in a liquid sample or on a solid surface, comprising:

an elongated cover member which is open at least at one end thereof and having a slit in a wall of said cover member from said open end and extended along at least part of its longitudinal axis;

an elongated support member accommodated within said cover member for carrying a microorganism culture medium on one or opposite surfaces thereof, which support member is movable into and out from said cover member; and

means for facilitating movement of said support member into and out from said cover member comprising a handle attached to said support member at the one end thereof and projecting out of said cover member, which handle is movable within said slit, thereby sliding said support member into and out of said cover member through said open end.

5,346,830

GENE EXPRESSION SYSTEM BASED ON REGULATORY ELEMENTS OF BATERIOPHAGE P2 AND SATELLITE PHAGE P4

Gail Christie, Richmond, Va., assignor to The Center for Innovative Technology, Herndon, Va.

Continuation of Ser. No. 714,141, Jun. 11, 1991, abandoned. This application Mar. 8, 1993, Ser. No. 28,730

Int. Cl.[5] C12N *15/70, 1/21, 15/11, 15/31*

U.S. Cl. 435—320.1 2 Claims

1. An *E. coli* heterologous gene expression system comprising:

a) a multicopy expression vector comprising an F promoter from bacteriophage P2; and

b) at least one copy of a DNA sequence comprising a delta gene from satellite bacteriophage P4 operably linked to a regulatable promoter.

5,346,831

CYTORICH PROCESS SYSTEM

Charles L. Carrico, Jr.; William A. Fox, both of Burlington; James W. Geyer, and Ernest A. Knesel, Jr., both of Greensboro, all of N.C., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 953,036, Sep. 29, 1992, abandoned. This application Aug. 30, 1993, Ser. No. 112,001

Int. Cl.[5] G01N *1/00*

U.S. Cl. 436—174 11 Claims

1. A method for preparing a monolayer of a cytological material on a cationically-charged substrate, which comprises the steps of:

(a) separating the cytological material by centrifugation over a density gradient;

(b) producing a packed pellet of the cytological material;

(c) mixing the pellet of the cytological material;

(d) withdrawing an aliquot of a predetermined volume from the mixed pellet of the cytological material;

(e) depositing the aliquot in a predetermined volume of water into a sedimentation vessel having a base, which vessel is removable secured to the cationically-charged substrate;

(f) allowing the cytological material to settle onto the substrate under the force of gravity without flow of the aliquot and the water from the base of the sedimentation vessel;

(g) after settlement of the cytological material, removing the water from the sedimentation vessel.

5,346,832

HOMOGENEOUS AMPEROMETRIC IMMUNOASSAY

Masuo Aizawa, Tokyo, Japan; Brenda D. Manning, North Easton, Mass.; Miki Hidaka, Los Angeles, Calif., and Laura S. Uretsky, Milford, Mass., assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.

Continuation of Ser. No. 364,731, Jun. 9, 1989, Pat. No. 5,198,637. This application Dec. 18, 1992, Ser. No. 993,224

The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.

Int. Cl.[5] G01N *33/536, 33/543*

U.S. Cl. 436—518 20 Claims

1. A method for determining the concentration of an analyte present in a sample of biological fluid contained in an electrochemical cell equipped with a set of electrodes, said method comprising the steps of:

a) forming an electroactive complex containing an antigenic analyte chemically bonded to a carrier molecule, said carrier molecule also being chemically bonded to an electroactive molecule capable of transferring a charge to an electrode;

b) adding the biological fluid, predetermined amounts of the electroactive complex, and an antibody to the analyte to the cell;

c) applying a voltage across the electrodes and measuring the current in the fluid at different voltage levels to form a voltage/current relationship for the sample fluid; and

d) comparing the voltage/current relationship for the sample fluid with standard voltage/current relationships generated using known amounts of analytes to determine the concentration of analyte present in the sample.

5,346,833

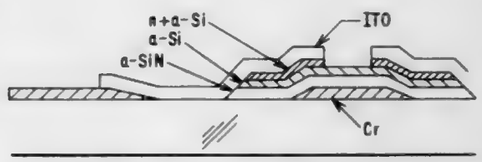
SIMPLIFIED METHOD OF MAKING ACTIVE MATRIX LIQUID CRYSTAL DISPLAY

Biing-Seng Wu, Hsin-Chu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Apr. 5, 1993, Ser. No. 43,669

Int. Cl.[5] H01L *31/18*

U.S. Cl. 437—4 7 Claims



1. A three mask method of fabricating an inverted staggered thin film transistor of an inverted staggered structure for active matrix crystal display systems with a matrix of picture elements, each thin film transistor having a gate, a source, and a drain, comprising the steps of:

depositing a metal film on a transparent substrate;

patterning said metal film as said gate electrode of said thin film transistor, as scan lines, and as data lines using a first mask;

successively depositing an insulating layer, an amorphous semiconductor layer, and a heavily doped amorphous semiconductor layer over said transparent substrate;

simultaneously patterning said insulating layer, said amorphous semiconductor layer, and said heavily doped amorphous semiconductor layer using a second mask to form a mesa;

depositing a transparent conducting layer over said mesa; and

patterning said transparent conducting layer using a third mask to form electrodes of picture elements, and cross-over connections of said data lines at cross-points with said scan lines.

5,346,834

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE AND A SEMICONDUCTOR MEMORY DEVICE

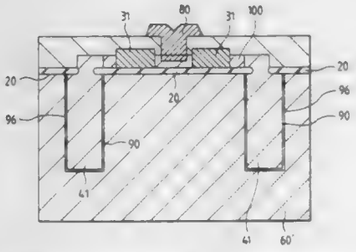
Dai Hisamoto, Kokubunji; Toru Kaga, Urawa; Shinichiro Kimura, Hachioji; Masahiro Moniwa, Hannou; Haruhiko Tanaka, Kokubunji; Atsushi Hiraiwa, Kodaira, and Eiji Takeda, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 742,196, Aug. 5, 1991, Pat. No. 5,115,289, which is a continuation of Ser. No. 438,016, Nov. 20, 1989, abandoned. This application Mar. 3, 1992, Ser. No. 845,063

Claims priority, application Japan, Nov. 21, 1988, 63-292499; Feb. 28, 1989, 1-45403

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—41 1 Claim



1. A method of manufacturing a semiconductor memory device comprising:

a first step of forming a trench in a surface silicon substrate and forming an insulating film on an inner wall of said trench up to a predetermined height;

a second step of packing a conductor layer into said trench up to the surface level of said silicon substrate;

a third step of growing a first silicon oxide film on said silicon substrate and on said conductor layer and depositing a first silicon nitride film thereon;

a fourth step of etching said first silicon nitride film, said first silicon oxide film, said silicon substrate and said conductor layer at least to the level of said predetermined height by employing a resist pattern as a mask to form a silicon island comprised of a part of said silicon substrate and a part of said conductor layer;

a fifth step of growing a second silicon oxide film on a surface of said silicon substrate exposed by said second step and on a surface of said silicon island, depositing a second silicon nitride film thereon, and etching said second silicon nitride film so as to leave a portion of said second silicon nitride film deposited on a side wall of said silicon island and deposited on a connection of said silicon island and said conductor layer,

a sixth step of growing a third silicon oxide film by thermal oxidation of the surface of said silicon substrate to separate

electrically said silicon island from said silicon substrate; and

a seventh step of forming a gate electrode on said silicon island and forming a source region and drain region in said silicon island by employing said gate electrode as a mask.

5,346,835

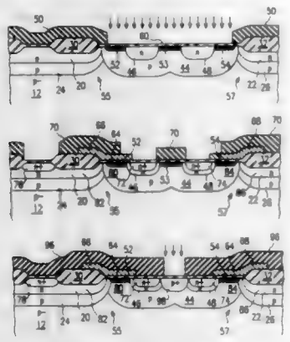
TRIPLE DIFFUSED LATERAL RESURF INSULATED GATE FIELD EFFECT TRANSISTOR COMPATIBLE WITH PROCESS AND METHOD

Satwinder Malhi, Garland; Taylor R. Efland, Richardson, and Oh-Kyong Kwon, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 909,244, Jul. 6, 1992, abandoned. This application Jul. 21, 1993, Ser. No. 95,805

Int. Cl.[5] H01L *21/266*

U.S. Cl. 437—41 **11 Claims**



1. A method for the simultaneous fabrication of a reduced surface field (RESURF) lateral transistor having a drain-gate breakdown voltage in excess of forty volts and a low-power field-effect transistor in an integrated circuit, comprising the steps of:

providing a semiconductor layer having a first conductivity type;

defining first and second active device areas in the semiconductor layer, the RESURF transistor to be formed in the first active device area, the low-power transistor to be formed in the second active device area;

forming a first body of a second conductivity type opposite that of said first conductivity type at the face in the first area, the first body including a drift region;

forming a second body of the first conductivity type at the face in the first area to be laterally adjacent the first body, the second body including a RESURF channel region;

forming a first-density dopant subregion of a RESURF source region of the RESURF transistor at the face to adjoin the RESURF channel region and to be spaced from the first body;

forming a LOCOS oxide region at the face over the drift region;

simultaneously performing a threshold voltage adjust implant into the RESURF channel region and into a low-power transistor channel region in the second area;

simultaneously forming a gate insulator layer over the RESURF channel region and the low-power transistor region;

simultaneously forming a pair of conductive gates to be insulatively disposed over the RESURF channel region and the low-power transistor channel region, respectively; and

simultaneously forming the following regions to be of the second conductivity type: a source region and a drain region to be spaced by the low-power transistor channel region, a RESURF drain region to be conductively connected to the drift region and spaced from the RESURF source region, and a second-density dopant subregion having a higher density than the first density of the RESURF source region to be conductively connected to the low-density dopant subregion thereof.

5,346,836

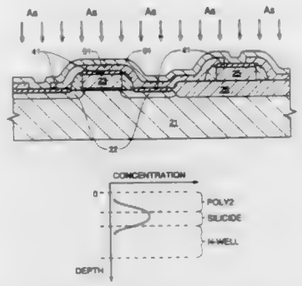
PROCESS FOR FORMING LOW RESISTANCE CONTACTS BETWEEN SILICIDE AREAS AND UPPER LEVEL POLYSILICON INTERCONNECTS

Monte Manning, Kuna; Steve V. Cole, and Tyler A. Lowrey, both of Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 713,589, Jun. 6, 1991, abandoned. This application Aug. 17, 1993, Ser. No. 108,147

Int. Cl.[5] H01L *21/283, 21/223*

U.S. Cl. 437—46 **12 Claims**



1. A process for forming low resistance interconnects between an active area having a silicided surface, and an upper level polysilicon layer, in a process used for fabrication of a semiconductor device on a silicon wafer substrate, said process comprising:

a) forming said active area into said wafer substrate;

b) forming said silicided surface from a layer of metal deposited on said active area;

c) forming a dielectric over existing materials residing over said wafer surface;

d) providing openings to said silicided surface at interconnect locations;

e) depositing a layer of said upper level polysilicon on said dielectric and into said openings to thereby form said silicided surface; and

f) implanting a dopant impurity of arsenic at a dose of approximately 5×10^{15} atoms/cm^2 at an implanting energy of approximately 180 keV into said upper level polysilicon layer being approximately 1000Å thick, thereby conductively doping said layer of upper level polysilicon;

wherein a major portion of implanted conductive impurities reside at the interface between said upper level polysilicon and said silicided surface, thereby forming low resistive contacts between said silicide surfaced active areas and said conductively doped upper level polysilicon.

5,346,837

METHOD OF MAKING AVALANCHE PHOTODIODE

Shinji Funaba, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 863,761, Apr. 6, 1992, Pat. No. 5,281,844. This application Oct. 19, 1993, Ser. No. 137,777

Claims priority, application Japan, Apr. 18, 1991, 3-86835

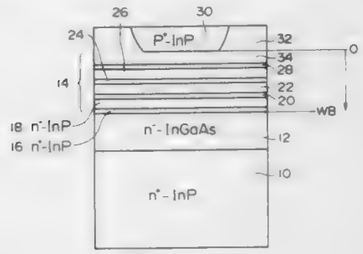
Int. Cl.[5] H01L *31/18*

U.S. Cl. 437—3 **3 Claims**

1. A method of making an avalanche photodiode comprising the steps of:

depositing a light-absorbing semiconductor layer of a first conductivity type on a semiconductor substrate of the first conductivity type;

successively depositing a plurality of pairs of semiconductor layers on said light-absorbing layer, each of said pairs comprising a first semiconductor layer of the first conductivity type containing a first dopant impurity concentration and a second semiconductor layer of the first conductivity type containing second dopant impurity concentration smaller than the first dopant impurity concentration; and



forming a semiconductor light-receiving layer of a second conductivity type on said pairs of layers to form a pn junction with said pairs of layers.

5,346,838

METHOD FOR FABRICATING AN INSULATED GATE CONTROL THYRISTOR

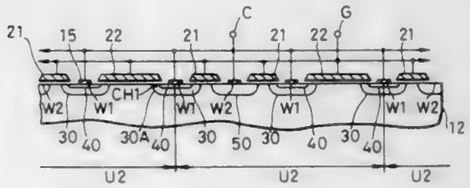
Katsunori Ueno, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Division of Ser. No. 846,046, Mar. 5, 1992, Pat. No. 5,281,833. This application Oct. 28, 1993, Ser. No. 141,924

Claims priority, application Japan, Mar. 14, 1991, 3-48490

Int. Cl.[5] H01L *21/00*

U.S. Cl. 437—7 **4 Claims**



1. A method for fabricating an insulated gate control thyristor comprising the steps of:

forming an anode region of a first conductivity type;

forming a base region of a second conductivity type to produce a junction with said anode region;

forming an insulating layer on a surface of said base region;

forming a plurality of gates on said insulating layer;

forming a plurality of first windows and a plurality of second windows in said insulating layer in such a manner that each one of said plurality of first windows and each one of said plurality of second windows are adjacent to each one of said plurality of gates;

forming a plurality of emitter layers by diffusing impurities of the first conductivity type into said base region from said plurality of first windows;

forming a plurality of cathode layers by diffusing impurities of the second conductivity type into said plurality of emitter layers;

forming a plurality of collector layers by diffusing impurities of the first conductivity type into said base region from said plurality of second windows;

connecting an anode terminal to said anode region;

connecting a cathode terminal to said plurality of cathode layers and to said plurality of collector layers; and

connecting a gate terminal to said plurality of gates.

5,346,839

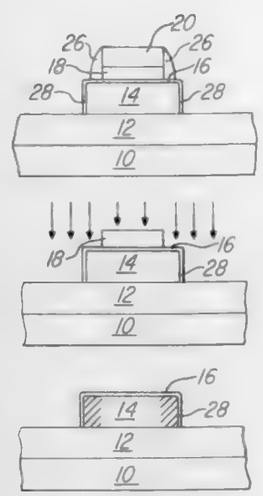
SIDEWALL DOPING TECHNIQUE FOR SOI TRANSISTORS

Ravishankar Sundaresan, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 712,381, Jun. 10, 1991, Pat. No. 5,292,670. This application Jan. 8, 1993, Ser. No. 1,875

Int. Cl.[5] H01L *21/265, 21/302, 21/76*

U.S. Cl. 437—21 **8 Claims**



1. A process for fabricating a semiconductor-on-insulator integrated circuit structure, comprising the steps of:

providing a substrate having at a surface thereof a monocrystalline semiconductor material layer overlying an insulator layer;

depositing an oxide layer, covering said monocrystalline semiconductor layer;

providing a pattered masking layer over said oxide layer, comprising a first and a second masking material layer, said masking layer being patterned to cover predetermined portions of said monocrystalline semiconductor layer where active devices are to be formed;

depositing additional said second masking material, which forms sidewall spacers on said patterned masking layer, so that said patterned masking layer with said spacers covers a larger fraction of said semiconductor layer than was covered by said masking layer alone;

etching away at least some portions of said monocrystalline semiconductor material layer, using said patterned masking layer and said spacers as a mask, forming a mesa;

forming sidewall insulation filaments on said monocrystalline semiconductor material mesa, subsequent to said etching away at least some portions of said monocrystalline semiconductor material, so that said monocrystalline semiconductor layer mesa with said filaments covers a larger fraction of said semiconductor layer than was covered by said masking layer alone;

removing all but said first masking material layer of the patterned masking layers,;

implanting a dopant into at least some of the portions of said semiconductor material which are not covered by said first masking material layer to form doped mesa edges, subsequent to said forming of the sidewall insulation filaments and subsequent to said removing all but aid first masking layer step;

removing said first masking material layer, and;

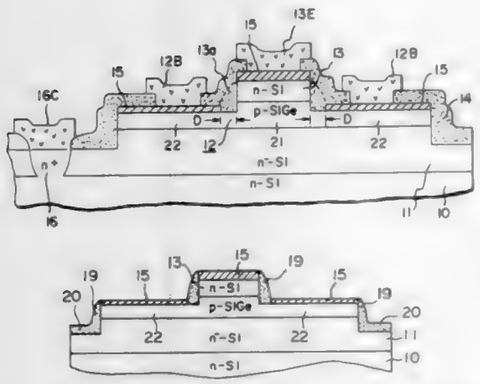
fabricating active devices in said mesas.

5,346,840

METHOD OF PRODUCING HETEROJUNCTION BIPOLAR TRANSISTOR HAVING NARROW BAND GAP BASE TYPE

Hiroshi Fujioka, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 704,721, May 20, 1991, Pat. No. 5,198,689, which is a continuation of Ser. No. 442,828, Nov. 29, 1989, abandoned. This application Dec. 7, 1992, Ser. No. 986,294
Claims priority, application Japan, Nov. 30, 1988, 63-304503
Int. Cl.[5] H01L *21/265, 29/70*
U.S. Cl. 437—31 **8 Claims**



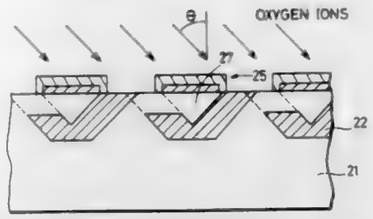
1. A method of producing a heterojunction bipolar transistor, comprising the steps of:
growing a collector layer of silicon on a substrate of silicon;
growing a base layer of silicon-germanium on said collector layer;
growing an emitter layer of silicon on said base layer;
mesa-etching said collector layer, said base layer and said emitter layer so that said base layer has a first base portion and a second base portion, and said emitter layer has a vertical wall, a heterojunction being formed at an interface between said second base portion of said base layer and said emitter layer;
depositing a first insulating layer on said collector layer, said first base portion of said base layer and said emitter layer;
selectively etching said first insulating layer by an anisotropic etching process so that a sidewall which is a part of said first insulating layer is left on said first base portion and along said vertical wall of said emitter layer;
selectively growing a metallic layer on said first base portion of said base layer and said emitter layer, an edge of said metallic layer being substantially close to said heterojunction, and said metallic layer being a member selected from the group consisting of tungsten, molybdenum, tungsten silicide and platinum silicide;
forming a second insulating layer on said metallic layer and said sidewall;
forming a first contact hole through which said emitter layer is partially exposed, a second contact hole through which said collector layer is partially exposed, and a third contact hole through which said metallic layer is partially exposed; and
forming an emitter electrode, a collector electrode and a base electrode on said emitter layer, said collector layer and said first base portion through said first, second and third contact holes, respectively.

5,346,841

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE USING ION IMPLANTATION

Kotaro Yajima, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 744,107, Aug. 13, 1991, abandoned. This application Jul. 6, 1993, Ser. No. 86,741
Claims priority, application Japan, Aug. 21, 1990, 2-222053
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—35 **3 Claims**



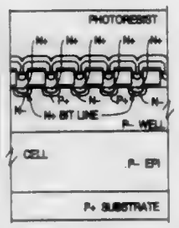
1. A method of manufacturing a semiconductor device comprising the steps of:
preparing a semiconductor substrate formed of single crystal silicon;
forming a mask for block ion implantation on the main surface of the semiconductor substrate; and
implanting oxygen ions from the direction making an angle of about 45° with respect to the main surface of said semiconductor substrate while intermittently changing values of the implantation energy and the dose to form an insulator layer including oxide silicon surrounding an active region in said semiconductor substrate, increasing the values of the ion implantation energy being accompanied with increasing the values of the dose, the values of the implantation energy and the dose being selected so as to fully enclose said active region with said insulator layer,
wherein said step of the irradiation of the oxygen ions is carried out with said semiconductor substrate being rotated in a plane parallel to the main surface, and
said step of forming the mask includes the steps of depositing a silicon oxide film on the main surface on said semiconductor substrate, selectively removing this silicon oxide film to form a patterned silicon oxide film, and then further covering the surface and side surface of the patterned silicon oxide film with a silicon nitride film.

5,346,842

METHOD OF MAKING ALTERNATE METAL/SOURCE VIRTUAL GROUND FLASH EPROM CELL ARRAY

Albert Bergemont, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 4, 1992, Ser. No. 830,938
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **2 Claims**



1. A method of fabricating an alternate source virtual ground flash EPROM array in a silicon substrate of P-type conductivity, the EPROM array including a plurality of cross-point EPROM cells, the method comprising:

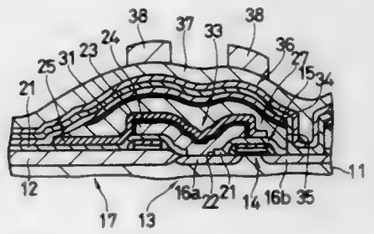
forming a layer of first insulating material on the silicon substrate;
forming a first layer of polysilicon (poly1) on the layer of first insulating material;
forming a layer of second insulating material on the first layer of poly1;
forming a poly1 mask to define, in the array area, parallel lines of the second insulating material and underlying first layer of poly1;
etching exposed portions of the second insulating material and underlying first layer of poly1 to define, in the array area, a plurality of spaced-apart, parallel vertical strips of second insulating material and underlying poly1;
after removing the poly1 mask, introducing N-type dopant into the silicon substrate between the parallel vertical strips of second insulating material and underlying poly1 to form spaced-apart, parallel N+ bit lines;
using the second insulating material as a mask to prevent introduction of N-type dopant outside of the array area;
implanting alternate N+ bit lines with additional N+ dopant to form graded source lines that alternate with buried N+ drain lines;
performing a differential oxidation step to form additional oxide on the second insulating material of the vertical strips while simultaneously forming oxide over the graded source lines and the N+ drain lines;
removing the second insulating material in selected areas outside of the array to allow formation of transistors in the periphery.
forming a second layer of polysilicon (poly2) over the structure formed in the preceding steps;
forming a layer of tungsten silicide over the second layer of poly2;
forming a poly2mask on the layer of tungsten silicide;
etching the tungsten silicide and the underlying poly2to form, in the array area, poly2word lines perpendicular to the strips of second insulating material and underlying poly1 but separated from the poly1 by the second insulating material and to form access transistor gates and, out of the array, gates for peripheral transistors;
forming another resist mask over and without removing the poly2resist mask; and
utilizing the poly2word lines in a self-aligned etch step to define poly1 floating gates of the cross-point EPROM cells of the array without affecting peripheral or access transistors.

5,346,843

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING A MEMORY CELL AND PERIPHERAL CIRCUIT INCLUDING FORMING A FIRST ELECTRODE FOR THE CAPACITOR

Hideaki Kuroda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 21, 1992, Ser. No. 871,705
Claims priority, application Japan, Apr. 30, 1991, 3-126889
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 **5 Claims**



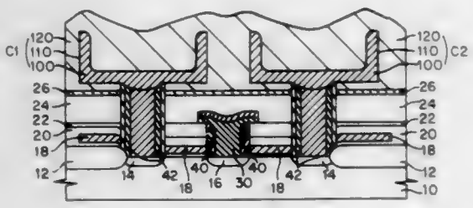
1. A method of manufacturing a semiconductor memory having a memory cell region and a peripheral circuit region, and a memory cell being constituted by a transistor and a capacitor, comprising the steps of:
forming a conductive film which comprises a first electrode for a plate electrode of said capacitor;
forming a first resist on an entire surface of said peripheral circuit and memory cell regions;
patterning said conductive film using said first resist as a mask to form said first electrode;
forming a first insulating film on said conductive film so as to planarize said conductive film;
forming a second resist on the entire surface of said memory cell region;
removing said first insulating film from said peripheral circuit region by wet etching using said second resist as a mask;
removing said conductive film from said peripheral circuit region using said second resist as a mask; and
removing said second resist.

5,346,844

METHOD FOR FABRICATING SEMICONDUCTOR MEMORY DEVICE

Hyun-jin Cho, and Taek-yong Jang, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 30, 1992, Ser. No. 907,068
Claims priority, application Rep. of Korea, Oct. 17, 1991, 91-18318
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **7 Claims**



1. A method for fabricating a semiconductor memory device comprising the steps of:
forming a first planarized insulating layer on a semiconductor substrate where a transistor having a source, drain and gate electrode is formed;
forming a first contact hole by partly removing said first insulating layer formed on said drain region;
forming a first spacer on an inner side wall of said first contact hole;
forming a bit line connected to said drain region via said first contact hole;
forming a second planarized insulating layer on the overall resultant structure;
forming a second contact hole by partly removing said first and second insulating layers formed on said source region;
forming a second spacer on an inner side wall of said second contact hole; and
forming a storage electrode connected to said source region via said second contact hole.

5,346,845

PROCESS FOR FORMING A TRENCH CAPACTTOR MEMORY CELL

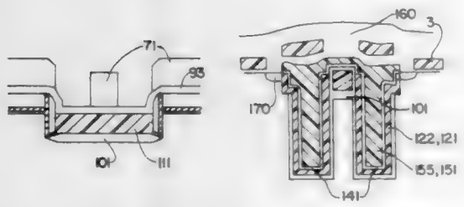
Young-Kwon Jun, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Oct. 13, 1992, Ser. No. 960,149

Claims priority, application Rep. of Korea, Oct. 12, 1991, 91-17940

Int. Cl.[5] **H01L** *21/70, 27/00*

U.S. Cl. 437—52 **3 Claims**



1. A process for forming a trench capacitor memory cell, comprising the steps of:

a) forming a pad oxide layer, a first silicon nitride layer and a first oxide layer upon a silicon substrate, patterning to form an active region by etching the pad oxide layer, the first silicon nitride layer and the first oxide layer so that the remaining portions define the active region, and forming a field region by etching the silicon substrate except for the active region;

b) depositing a second silicon nitride layer to a certain thickness, depositing a second oxide layer thereupon, and forming an active region insulating layer around the active region by anisotropic dry etching the second oxide layer and the second nitride layer so that the insulating layer comprising nitride and oxide remains on the sides and top of the active region;

c) growing a third oxide layer on the bottom of the field region by a thermal oxidation process;

d) depositing a doped first polysilicon, and forming a polysilicon plug within the field region by anisotropic dry etching the first polysilicon;

e) depositing a fourth oxide layer, defining a trench region within the field region by a photoresist process, dry-etching the fourth oxide layer using the photoresist as a mask, sequentially etching the first polysilicon and the third oxide layer, wherein the photoresist used as a mask substantially remains, and forming a trench by anisotropic dry etching the silicon substrate;

f) removing the photoresist, removing the exposed portions of the first and second oxide layers and the fourth oxide layer by an oxide layer etching process, and forming a fifth oxide layer on the inside walls of the trench and around the polysilicon plug by a thermal oxidation process;

g) etching the exposed portion of the first and second silicon nitride layers, depositing a doped second polysilicon, forming a flat insulating layer, and forming an insulating plug within the trench by an etching process;

h) patterning a capacitor storage electrode in a self-aligned manner by etching back the exposed second polysilicon, removing the insulating plug from within the trench, and forming a capacitor dielectric layer and capacitor plate electrode, thereby forming a capacitor; and

i) forming a transistor gate, and forming a source/drain region of the transistor in a self-aligned manner.

5,346,846

METHOD OF MANUFACTURING A HIGHLY INTEGRATED SEMICONDUCTOR DEVICE

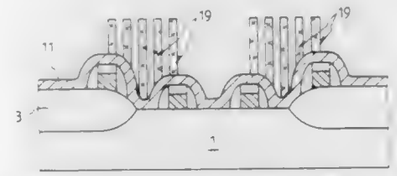
Young J. Park, Kyoungki, and Ha J. Jeon, Seoul, both of Rep. of Korea, assignors to Hyundai Electronics Industries Co. Ltd., Rep. of Korea

Filed Jun. 29, 1993, Ser. No. 84,760

Claims priority, application Rep. of Korea, Jun. 30, 1992, 92-11560

Int. Cl.[5] **H01L** *21/70*

U.S. Cl. 437—52 **6 Claims**



1. A method of manufacturing a highly integrated semiconductor device comprising the steps of:

forming a field oxide layer on part of a silicon substrate;

forming a word line, a mask oxide layer, and a spacer oxide layer on said silicon substrate and on said field oxide layer;

depositing a first polysilicon layer over the entire surface of said semiconductor device;

forming on said first polysilicon layer a photoresist pattern having a cylinder-shaped window;

forming a first oxide layer over the entire surface of said semiconductor device;

etching said first oxide layer through an etchback process until said photoresist pattern is exposed;

removing the exposed photoresist pattern entirely so that a cylinder-shaped oxide layer remains and a portion of the first polysilicon layer is exposed;

forming a polysilicon layer of hemisphere grain structures on the surface of said cylinder-shaped oxide layer and on the exposed first polysilicon layer, the hemisphere grain structures of said layer of hemisphere grain structures being separated from each other so as to leave exposed openings on the surface of said cylinder-shaped oxide layer;

etching the exposed part of said cylinder-shaped oxide layer through the openings formed by said polysilicon layer of the hemisphere grain structures so as to form several cylinder-shaped oxide layer patterns;

removing said polysilicon layer of the hemisphere grain structures;

depositing a second polysilicon layer on said cylinder-shaped oxide layer patterns and on the exposed surface of said first polysilicon layer; and

etching said first polysilicon layer and said second polysilicon layer using a mask for forming a storage electrode made up of said first polysilicon layer and the second polysilicon layer formed on said cylinder-shaped oxide layer patterns.

5,346,847

METHOD FOR FABRICATING A SEMICONDUCTOR MEMORY DEVICE HAVING STORAGE NODE OVERLAP WITH BIT LINE

Young K. Jun, Seoul, Rep. of Korea, assignor to Gold Star Electron Co., Ltd., Rep. of Korea

Division of Ser. No. 850,676, Mar. 13, 1992, Pat. No. 5,270,561. This application Oct. 5, 1993, Ser. No. 131,707

Claims priority, application Rep. of Korea, Mar. 15, 1991, 4137/1991; Mar. 15, 1991, 4139/1991

Int. Cl.[5] **H01L** *21/70, 27/00*

U.S. Cl. 437—52 **6 Claims**

1. A method for fabricating a semiconductor memory device, including:

providing a substrate;

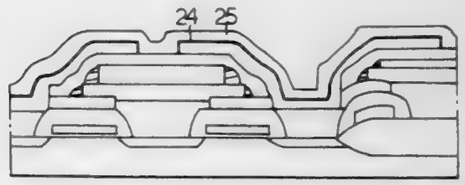
forming a plurality of active regions on the substrate, each active region formed by successively forming a field oxide for isolating the active region from adjacent active regions, a gate, a laterally spaced source and drain region, and a first oxide film which covers the gate;

filling a doped polysilicon film over each source region to form a source contact connection layer;

forming a second oxide film over the gates and the source and drain regions;

removing the second oxide film over the drain regions;

filling a second doped polysilicon film over each drain region to form drain contact connection layers;



forming a refractory metal bit line over each drain contact connection layer;

forming an insulating film for leveling the surface over each bit line;

forming a refractory metal side wall at each side of each bit line and insulating film for levelling the surfaces, the refractory metal of the bit lines and the refractory metal of the side walls being the same material;

depositing a third oxide film over the whole surface;

removing the second and third oxide films from over the source contact connection layers; and

forming a capacitor above each source region, each capacitor including a storage node overlapping a corresponding bit line, a dielectric film and a plate.

5,346,848

METHOD OF BONDING SILICON AND III-V SEMICONDUCTOR MATERIALS

Melissa E. Grupen-Shemansky, Phoenix, and Bertrand F. Cambou, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1993, Ser. No. 70,068

Int. Cl.[5] **H01L** *21/302*

U.S. Cl. 437—61 **9 Claims**

1. A method of bonding a silicon wafer and a III-V semiconductor wafer, comprising the steps of:

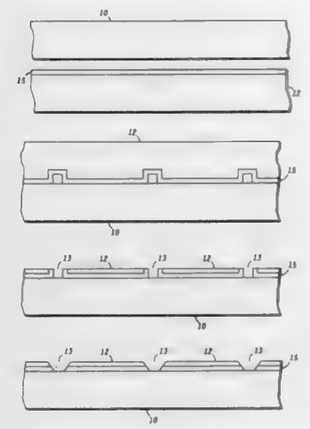
providing a silicon wafer having a first and a second major surface;

providing a III-V semiconductor wafer having a first and a second major surface;

forming a bonding interlayer on the first major surface of the III-V semiconductor wafer;

bonding the silicon wafer and the III-V semiconductor wafer together by using a first thermal or a thermo-anodic bonding process, such that the bonding interlayer is positioned between the III-V semiconductor wafer and the first major surface of the silicon wafer;

removing a portion of the III-V semiconductor wafer from the second major surface of the III-V semiconductor wafer; and subjecting the III-V semiconductor wafer and the silicon wafer to a second thermal or thermo-anodic bonding process at a temperature less than approximately



200° C. after the step of removing a portion of the III-V semiconductor wafer.

5,346,849

METHOD OF MAKING A GROOVE STRUCTURE FOR ISOLATION BETWEEN ELEMENTS COMPRISING A GTO THYRISTOR

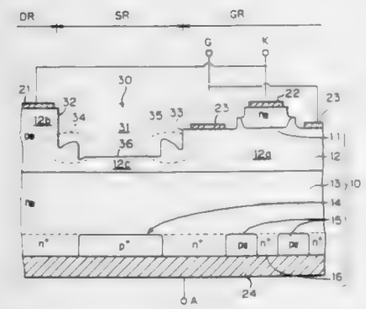
Futoshi Tokunoh, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 8,833, Jan. 25, 1993, Pat. No. 5,281,847, which is a continuation of Ser. No. 707,904, May 30, 1991, abandoned. This application Sep. 9, 1993, Ser. No. 118,192

Claims priority, application Japan, Jun. 12, 1990, 2-154621

Int. Cl.[5] **H01L** *21/306*

U.S. Cl. 437—66 **12 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

(a) forming in a semiconductor body first and second semiconductor element structures disposed with an area therebetween in a direction parallel to a major surface of said semiconductor body;

(b) selectively etching a part of said major surface of said semiconductor body located in said area to form a groove having a width within said area; and

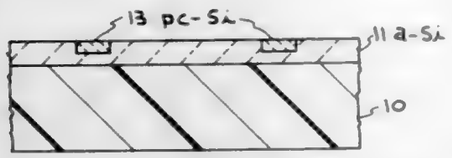
(c) selectively etching said major surface of said semiconductor body in a range including said groove and wider than said groove to form a multistage groove having a depth increasing stepwise in series toward the center thereof.

5,346,850

CRYSTALLIZATION AND DOPING OF AMORPHOUS SILICON ON LOW TEMPERATURE PLASTIC

James L. Kaschmitter, Pleasanton; Joel B. Truher, Palo Alto; Kurt H. Weiner, Campbell, all of Calif., and Thomas W. Sigmon, Beaverton, Oreg., assignors to Regents of the University of California, Oakland, Calif.

Filed Oct. 29, 1992, Ser. No. 968,561
Int. Cl.[5] C30B 31/20; H01L 21/20
U.S. Cl. 437—81 24 Claims



1. A method for improving the crystallinity of a thin film of amorphous silicon directly deposited on a low temperature plastic substrate incapable of withstanding sustained processing temperatures higher than about 180° C. and sustained processing time periods longer than about 10^5 nanoseconds, comprising the steps of:

positioning the deposited thin film in a controlled atmosphere; and

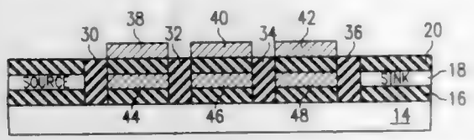
applying at least one pulse from a pulsed high energy source onto the thin film for a time period sufficient to change the crystallinity of the thin film without heating the substrate above a temperature of about 180° C. for more than about 10^5 nanoseconds.

5,346,851

METHOD OF FABRICATING SHANNON CELL CIRCUITS

John N. Randall, Richardson; Gary A. Frazier, Garland, both of Tex., and Rajni J. Aggarwal, Somerville, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 20, 1992, Ser. No. 979,117
Int. Cl.[5] H01L 21/20
U.S. Cl. 437—89 3 Claims



1. A method of fabricating a quantum-effect implementation of Shannon Cell, comprising the steps of:

providing a semiconductor substrate;

forming a first barrier layer overlying the substrate;

forming a quantum layer overlying the first barrier layer;

forming a second barrier layer overlying the quantum layer;

etching through said first and second barrier layers and said quantum layer to separate a first quantum dot logic unit area from a second quantum dot logic unit area;

etching three trenches in the first quantum dot logic unit area to define a first filter quantum dot and a first control quantum dot;

etching three trenches in the second quantum dot logic unit area to define a second filter quantum dot and a second control quantum dot;

regrowing heterojunction tunnel barriers in the trenches;

forming an X-input contact conductively coupled to the quantum well in the first quantum dot logic unit area;

forming a first control contact insulatively adjacent the first control quantum dot, such that potentials placed on the first control contact align or misalign electron energy states within the first control quantum dot with electron energy states of the first filter quantum dot;

forming a first output contact conductively coupled to the quantum well opposite the first filter quantum dot and the first control quantum dot from the X-input contact;

forming a Y-input contact conductively coupled to the quantum well in the second quantum dot logic unit area;

forming a second control contact insulatively adjacent the second control quantum dot and coupled to the first control contact, such that potentials placed on the second control contact align or misalign electron energy states within the second control quantum dot with electron energy states of the second filter quantum dot; and

forming a second output contact conductively coupled to the quantum well opposite the second filter quantum dot and the second control quantum dot from the Y-input contact, the second output contact coupled to said first output contact.

5,346,852

LOW TEMPERATURE PROCESS FOR PRODUCING INDIUM-CONTAINING SEMICONDUCTOR MATERIALS

Robert W. Gedridge, Jr., Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 25, 1993, Ser. No. 27,314
Int. Cl.[5] H01L 21/20; C23C 16/00
U.S. Cl. 437—104 17 Claims

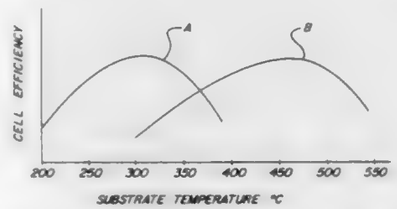
1. In a process of forming an indium-containing semiconductor material by chemical vapor deposition the improvement comprising using triisopropylindium as a source of indium for film growth temperatures between 100° C. to less than or equal to 250° C.

5,346,853

MICROWAVE ENERGIZED DEPOSITION PROCESS WITH SUBSTRATE TEMPERATURE CONTROL FOR THE FABRICATION OF P-I-N PHOTOVOLTAIC DEVICES

Subhendu Guha; Chi C. Yang, and XiXiang Xu, all of Troy, Mich., assignors to United Solar Systems Corporation, Troy, Mich.

Continuation of Ser. No. 907,750, Jun. 29, 1992, abandoned.
This application Jan. 21, 1994, Ser. No. 185,309
Int. Cl.[5] H01L 21/00, 21/02, 21/326
U.S. Cl. 437—113 2 Claims



1. A method for the manufacture of an p-i-n type photovoltaic device of the type comprising a body of substantially intrinsic Group IV semiconductor alloy interposed between two oppositely doped semiconductor layers, said method including the steps of:

I. Depositing a body of semiconductor material of a first conductivity type upon a substrate;

II. Depositing a body of a substantially intrinsic Group IV semiconductor alloy upon said body of semiconductor :material of a first conductivity type, by a microwave energized glow discharge deposition process comprising:

a. providing a deposition system having a plasma region defined therein, said system including a conduit for introducing a process gas there into and a source of of microwave energy for activating said process gas in said plasma region so as to decompose said gas and form a plasma therefrom;

b. supporting said substrate, with said body of semiconductor material of a first conductivity type thereupon, in said plasma region;

c. maintaining said substrate at a temperature in excess of 400° C.;

d. introducing a process gas having a Group IV semiconductor element therein into said system;

e. maintaining the process gas at a process pressure which is less than atmospheric;

f. inputting microwave energy into said system at a power level at least sufficient to sustain a plasma of said process gas at said process pressure in said plasma region, whereby said microwave energy creates a plasma from, and decomposes, the process gas so as to deposit a layer of said Group IV semiconductor alloy material on the body of semiconductor material of a first conductivity type; and

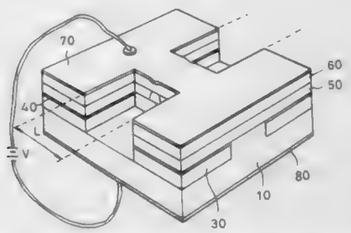
III. Depositing a body of semiconductor material of a second conductivity type, opposite said first conductivity type, upon said layer of Group IV semiconductor alloy material.

5,346,854

METHOD OF MAKING A SEMICONDUCTOR LASER

Hyung S. Ahn, Anyang, and Won T. Choi, Seoul, both of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 6, 1992, Ser. No. 972,015
Claims priority, application Rep. of Korea, Nov. 7, 1991, 19770/1991
Int. Cl.[5] H01L 21/20
U.S. Cl. 437—129 19 Claims



1. A method for manufacturing a semiconductor laser comprising the steps of:

preparing a compound semiconductor substrate of a first conductivity type;

patterning an upper surface of the substrate to form a ridge at a center portion of the upper surface;

forming a first compound semiconductor layer of a second conductivity type and a second compound semiconductor layer of a second conductivity type over respective portions of the upper surface of the substrate disposed at opposite sides of the ridge, the first compound semiconductor layer and the second compound semiconductor layer having same heights as the ridge;

forming another second compound semiconductor layer on an entire surface of the ridge and the second compound semiconductor;

patterning the another second compound semiconductor layer to form a cavity extending in a direction perpendicular to the ridge;

forming a third compound semiconductor layer of the first conductivity type as a clad layer above an upper surface of the another second compound semiconductor layer, the cavity being filled sufficiently by the third compound semiconductor layer;

forming a fourth compound semiconductor layer of an undoped type as an active layer over the third compound semiconductor layer;

forming a fifth compound semiconductor layer of the second conductivity type, as another clad layer, over the fourth compound semiconductor layer to obtain a multi-layered structure;

forming a first electrode and a second electrode over the fifth compound semiconductor layer and beneath the substrate, respectively, the electrodes being adapted to apply an electric power received from a power source to the semiconductor laser;

defining a center portion of the multi-layered structure as a chip region and defining opposite portions of the multilayered structure disposed at opposite sides of the chip region, respectively, as guide regions, the center portion including the cavity;

partially removing the first to the fifth compound semiconductor layers and the first electrode at portions disposed at opposite sides of the chip region, each portion extending from each corresponding edge of the cavity to each respective corresponding edge of the ridge, to partially separate the chip region from the guide regions; and

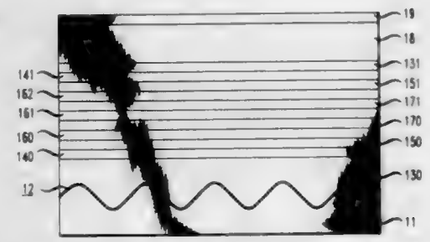
further partially removing the first electrode and the first to the fifth compound semiconductor layers disposed within the chip region, leaving intact the portions of the first electrode and the first to the fifth compound semiconductor layers disposed over the ridge, to form a semiconductor laser chip.

5,346,855

METHOD OF MAKING AN INP-BASED DFB LASER

Erin K. Byrne, Piscataway; Utpal K. Chakrabarti, Scotch Plains, and Todd R. Hayes, Plainfield, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 19, 1993, Ser. No. 6,352
Int. Cl.[5] H01L 21/20
U.S. Cl. 437—129 6 Claims



1. A method of making an article comprising an InP-based semiconductor laser, the method comprising

a) providing a semiconductor body that comprises InP and has a major surface;

b) processing the body such that on at least a portion of the surface an essentially regular sequence of elevated and depressed elongate features is formed, said sequence of features to be referred to as a grating means;

c) heating the body to a deposition temperature and depositing at least on the grating means epitaxial semiconductor material; and

d) carrying out one or more further steps towards completion of the article;

CHARACTERIZED IN THAT the method further comprises

e) contacting, prior to step c), the grating with a sulfur-containing aqueous medium, and depositing said epitaxial material by a vapor deposition technique.

5,346,856

METHOD OF MAKING A SELECTIVE COMPOSITIONAL DISORDERING OF A GAAS BASED HETEROSTRUCTURE BY THE IN-DIFFUSION OF AU THROUGH A SINGLE CRYSTAL, EPITAXIALLY GROWN GE FILM

Kenneth A. Jones, Brick, N.J., and Howard S. Lee, Vulaines sur Seine, France, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 10, 1993, Ser. No. 60,073
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—132 14 Claims



1. A method for producing a buried heterostructure device comprising the steps of:

a.) providing a superlattice substrate comprising at least one planar GaAs layer and at least two AlGaAs layers each in juxtaposition with the GaAs layer;

b.) epitaxially depositing a single crystal germanium layer on the superlattice substrate;

c.) depositing a gold layer on the germanium layer;

d.) imagewise patterning and etching away selected portions of the gold and germanium layers;

e.) encapsulating the superlattice substrate in a compatible, heat resistant encapsulating material; and

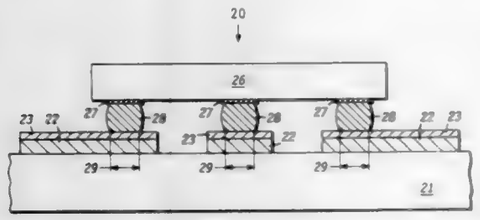
f.) annealing the encapsulated superlattice substrate to attain homogeneous disordering in an uppermost region of the superlattice substrate.

5,346,857

METHOD FOR FORMING A FLIP-CHIP BOND FROM A GOLD-TIN EUTECTIC

Thomas A. Scharr, Mesa; Russell T. Lee, Phoenix, and Ravichandran Subrahmanyan, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 28, 1992, Ser. No. 952,005
Int. Cl.[5] H01L *21/283, 21/58, 21/60, 21/603*
U.S. Cl. 437—183 12 Claims



1. A method for forming a flip-chip bond from a gold-tin eutectic, comprising the steps of:

providing a semiconductor integrated circuit having at least one gold bump;

providing a substrate having at least one conductive bonding area, the at least one conductive bonding area coated with tin; and

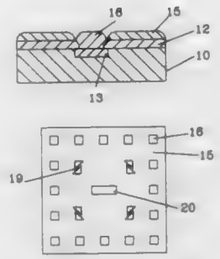
flip-chip bonding the at least one gold bump with the at least one conductive bonding area to form the gold-tin eutectic.

5,346,858

SEMICONDUCTOR NON-CORROSIVE METAL OVERCOAT

James R. Thomas, Woodlands; Larry W. Nye, Sherman, and Richard M. Brook, Austin, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 16, 1992, Ser. No. 914,832
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—189 4 Claims



1. A method for eliminating active metal circuit corrosion through the surface passivation layer and around contacts on a semiconductor device, comprising the steps of:

applying non-corrosive multi-layers of at least two different metals over the entire surface of the semiconductor device, including the passivation layer, and over the contacts on the semiconductor device;

etching the non-corrosive multi-layers to separate the non-corrosive multi-layers on the contacts from the non-corrosive multi-layers on the passivation layer to electrically isolate the contacts and the non-corrosive multi-layers thereon from the non-corrosive multi-layers on the passivation layer; and

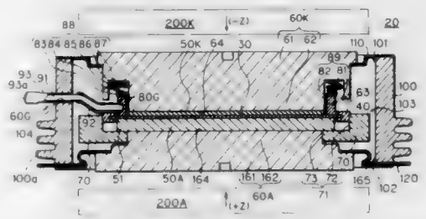
leaving the non-corrosive multi-layers on the passivation layer on the completed semiconductor device.

5,346,859

METHOD FOR FABRICATING A FULL PRESS-PACK TYPE SEMICONDUCTOR DEVICE

Kazuhiko Niwayama, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 888,656, May 27, 1992, Pat. No. 5,278,434.
This application Sep. 24, 1993, Ser. No. 125,836
Claims priority, application Japan, May 30, 1991, 3-127370
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—209 4 Claims



1. A method of fabricating a semiconductor device, comprising the steps of:

(a) obtaining a semiconductor body having a semiconductor substrate, a first electrode formed in a central region of a first major surface of said semiconductor substrate, and a second electrode formed on a second major surface of said semiconductor substrate;

(b) obtaining a first external electrode having a base portion, a projecting portion formed integrally with said base portion, a ringlike recess formed in a region of said base portion which surrounds said projecting portion, and a contact surface defined by a front end surface of said projecting portion:

(c) obtaining a second conductive external electrode;

(d) obtaining an insulating casing defining a cylindrical internal space having first and second openings;

(e) holding said first external electrode in said internal space of said casing in such a direction that said base portion and said projecting portion are opposed to said first and second openings, respectively, and fixing said base portion to said casing in said first opening;

(f) introducing an elastic means into said internal space of said casing from said second opening to hold said elastic means in said ringlike recess;

(g) inserting a ring into said internal space of said casing from said second opening to dispose said ring on said elastic means in said ringlike recess;

(h) introducing a first conductive distortion buffering plate into said internal space of said casing from said second opening to superimpose said first distortion buffering plate on said contact surface of said first external electrode;

(i) introducing said semiconductor body, a second conductive distortion buffering plate and said second external electrode into said internal space of said casing from said second opening, said semiconductor body, in a peripheral region of said first major surface, being superimposed on said ring, a surface of said second distortion buffering plate being superimposed on said second major surface of said semiconductor body, said second external electrode being superimposed on another surface of said second distortion buffering plate; and

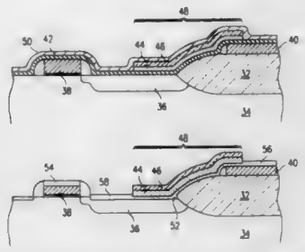
(j) fixing said second external electrode to said casing in said second opening while said second external electrode is pressed against said first external electrode.

5,346,860

METHOD FOR FABRICATING AN INTERCONNECT STRUCTURE IN AN INTEGRATED CIRCUIT

Che-Chia Wei, Plano, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 891,450, May 29, 1992, Pat. No. 5,313,084.
This application Jul. 6, 1993, Ser. No. 88,197
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—200 9 Claims



1. A method for fabricating an interconnect structure in an integrated circuit, comprising the steps of:

forming a first conductive layer over an underlying region in the integrated circuit;

forming a buffer layer over the first conductive layer;

forming an insulating layer over the buffer layer;

patterning the insulating layer and the buffer layer to define a form for the interconnect structure;

forming a second conductive layer over the integrated circuit; and

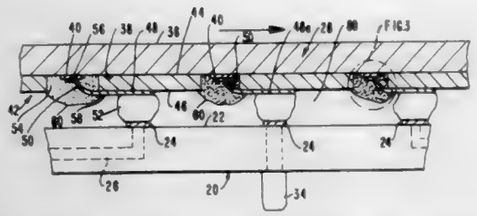
annealing to form silicide from portions of the first and second conductive layers and the buffer layer, wherein the interconnect structure is formed.

5,346,861

SEMICONDUCTOR CHIP ASSEMBLIES AND METHODS OF MAKING SAME

Igor Y. Khandros, Peekskill, and Thomas H. DiStefano, Bronxville, both of N.Y., assignors to Tessera, Inc., Elmsford, N.Y.

Division of Ser. No. 586,758, Sep. 24, 1990, Pat. No. 5,148,266.
This application Apr. 9, 1992, Ser. No. 865,984
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—209 21 Claims



1. A method of assembling a semiconductor chip comprising the steps of:

(a) assembling a flexible sheetlike dielectric interposer formed separately from the chip and having first and second surfaces to the chip so that a first surface of said interposer confronts a front surface of said chip, so that said first surface of said interposer bears on said front surface of said chip and so that a portion of said interposer overlies a contact pattern area encompassed by a pattern of contacts on the front surface of said chip; and

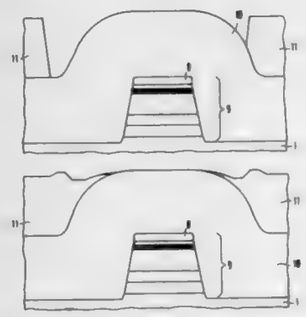
(b) connecting the contacts on said chip to terminals disposed on the second surface of said interposer within an area of said interposer overlying said contact pattern area by means of flexible leads so that such leads extend between the contacts and terminals through apertures in said interposer and so that each such terminal is moveable with respect to the associated contact.

5,346,862

METHOD FOR THE ELECTRICAL INSULATION OF A CIRCUIT FUNCTION ELEMENT ON A SEMICONDUCTOR COMPONENT

Lothar Schleicher, Munich; Hans-Peter Zwicknagl, Stuttgart, and Elke Schoening, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengellschaft, Munich, Fed. Rep. of Germany

Filed May 3, 1993, Ser. No. 55,351
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1992, 4220315
Int. Cl.[5] H01L *21/465*
U.S. Cl. 437—228 12 Claims



1. A method for the electrical insulation of a circuit function element on a semiconductor component, comprising the steps of:

etching the circuit function element to form a mesa;

applying a dielectric that completely covers the mesa surface-wide at least up to a height of the mesa;
employing a mask and applying photoresist having flowability with temperature treatment onto the portions of the dielectric present at the side of the mesa;
planarizing the surface of the dielectric with the flowing photoresist by heating; and
etching the photoresist and the dielectric with the same etching rate until the mesa is uncovered.

5,346,863

LOW TEMPERATURE SEALING COMPOSITION

Hajime Hikata; Kumi Tanaka, and Kazuyoshi Shindo, all of Shiga, Japan, assignors to Nippon Electric Glass Co., Ltd., Otsu, Japan

Filed Dec. 8, 1993, Ser. No. 164,136
Claims priority, application Japan, Dec. 11, 1992, 4-353124
Int. Cl.[5] C03C *8/10, 8/24*
U.S. Cl. 501—17 **5 Claims**

3. A low temperature sealing composition comprising 45 vol. % to 80 vol. % of glass powder and 20 vol. % to 55 vol. % of refractory filler powder, said glass powder consisting essentially of 45.0 to 85.0 wt. % of PbO, 1.0 to 11.0 wt. % of B_2O_3, 1.0 to 45.0 wt. % of Bi_2O_3, 0.2 to 10.0 wt. % of Fe_2O_3, 0 to 15.0 wt. % of ZnO, 0 to 5.0 wt. % of CuO, 0 to 5.0 wt. % of V_2O_5, 0 to 3.0 wt. % of SnO_2, 0 to 5.0 wt. % of SiO_2 plus Al_2O_3, 0 to 7.0 wt. % of BaO, 0 to 5.0 wt. % of TiO_2, 0 to 5.0 wt. % of ZrO_2 and 0 to 6.0 wt. % of F_2.

5,346,864

PROCESS OF PRODUCTION OF A GLASS INTENDED TO BE TRANSFORMED INTO CONTINUOUS OR STABLE FIBERS

Stephane Maugendre, Chantilly, and Bernard Dubois, Paris, both of France, assignors to Saint-Gobain Recherch, Aubervilliers, France

Continuation of Ser. No. 583,419, Sep. 17, 1990, abandoned. This application Feb. 3, 1993, Ser. No. 13,677
Claims priority, application France, Sep. 18, 1989, 89 12169
Int. Cl.[5] C03C *13/00*
U.S. Cl. 501—35 **40 Claims**

1. A process for the production of glass for use in forming glass fibers, said process comprising:
melting a mixture of vitrifiable products to produce a molten glass containing iron oxides in an amount of about 1 weight % or less; and
incorporating in said mixture at least two oxidizing agents, wherein a first of said oxidizing agents is calcium nitrate, and a second of said oxidizing agents is at least one agent selected from the group consisting of an oxidized compound of manganese in which said manganese is in a state of oxidation greater than 2 and potassium dichromate to regulate the degree of oxidation of the molten glass produced from said mixture.

5,346,865

RARE EARTH-DOPED, STABILIZED CADMIUM HALIDE GLASSES

Bruce G. Aitken, Corning; Frank A. Annunziata, Horseheads; Roger F. Bartholomew, Painted Post; Mark A. Newhouse, Corning; Mark L. Powley, Campbell, and Andrea L. Sadd, Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 947,446, Sep. 21, 1992, Pat. No. 5,240,885. This application Jul. 6, 1993, Ser. No. 86,048
The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.
Int. Cl.[5] C03C *3/32, 4/10*
U.S. Cl. 501—40 **5 Claims**

1. A transparent glass exhibiting excellent transmission far into the infrared region of the electromagnetic radiation spectrum consisting essentially, expressed in terms of mole percent, of 42–55% CdF_2 and/or $CdCl_2$, 30–40% NaF and/or NaCl, 2–20% total of BaF_2 and/or $BaCl_2$+KF and/or KCl, consisting of 0–15% BaF_2 and/or $BaCl_2$ and 0–7% KF and/or KCl, 1–12% total of at least one stabilizing metal halide in the indicated proportion selected from the group consisting of 0–10% LiX, 0–10% BeX_2, 0–10% MgX_2, 0–10% MnX_2, 0–12% PbX_2, 0–10% COX_2, 0–7% TlX, and 0–10% ZnX_2, wherein X is at least one halide selected from the group consisting of fluoride, chloride, and bromide, and 0.005–0.5% ReX_3, wherein Re is at least one rare earth metal selected from the lanthanide series of rare earth metals and X is at least one halide selected from the group consisting of fluoride, chloride, and bromide, and wherein up to 10% total of at least one metal selected from the group consisting of Cd, Ba, Na, and K can be incorporated as a bromide.

5,346,866

DENTAL CERAMIC MATERIAL WITH A RELATIVELY LOW PROCESSING TEMPERATURE

Ottmar Komma, Niddatal, and Juergen Steidl, Woellstadt, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellscht, Frankfurt and Ducera Dental Geselischaft mbH, Rosbach, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 979,644, Nov. 20, 1992, Pat. No. 5,281,563. This application Oct. 28, 1993, Ser. No. 143,367
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1991, 4138875
Int. Cl.[5] C03C *3/118, 3/091*
U.S. Cl. 501—59 **10 Claims**

1. A dental ceramic material for the preparation and repair of metal ceramic and fully ceramic dentures, said material having a processing temperature below 700° C. and a coefficient of thermal expansion α of $13–14 \cdot 10^{-6} \cdot K^{-1}$ between 25° and 500° C., said material comprising 60 to 65% by weight of SiO_2, 8.5 to 11% by weight of Al_2O_3, 8 to 12% by weight of K_2O, 10.5 to 12% by weight of Na_2O, 0.7 to 2% by weight of CaO, 0.5 to 2.5% by weight of B_2O_3, 0.1 to 0.6% by weight of Sb_2O_3, 0 to 0.5% by weight of CeO_2, 1 to 3.8% by weight of TiO_2, 0.8 to 1.4% by weight of Li_2O and 0.6 to 2.4% by weight of F_2.

5,346,867

NEUTRAL GRAY ABSORBING GLASS COMPRISING MANGANESE OXIDE FOR SELENIUM RETENTION DURING PROCESSING

James V. Jones, Toledo, Ohio, and Edward N. Boulos, Troy, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 17, 1993, Ser. No. 168,347
Int. Cl.[5] C03C *3/087*
U.S. Cl. 501—71 **14 Claims**

1. A heat absorbing, neutral gray colored glass composition having a base glass composition comprising by weight: 68 to 75% SiO_2, 10 to 18% Na_2O, 5 to 15% CaO, 0 to 10% MgO, 0 to 5% Al_2O_3, and 0 to 5% K_2O, where CaO + MgO is 6 to 15% and Na_2O + K_2O is 10 to 20%, and colorants consisting essentially of: 0.90 to 1.90 wt. % total iron oxide as Fe_2O_3; 0.002 to 0.025 wt. % cobalt as Co; 0.0010 to 0.0060 wt. % selenium as Se; 0.10 to 1.0 wt. % manganese oxide as MnO_2; and 0.0 to 1.0% titanium oxide as TiO_2; the glass at 4 mm. control thickness having light transmittance using illuminant A of 10.0% to 55.0%, ultra violet transmittance less than 25.0%, and infra red transmittance is less than about 50.0%.

5,346,868

INORGANIC FIBER

Axel Eschner, Wiesbaden, Fed. Rep. of Germany, assignor to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Jun. 8, 1993, Ser. No. 73,067
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1992, 4228353
Int. Cl.[5] C04B *35/02*
U.S. Cl. 501—95 **13 Claims**

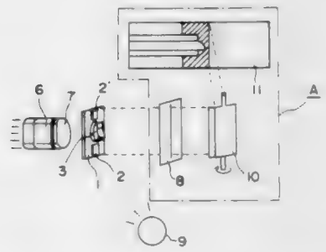
1. An inorganic fiber, at least 90% by weight of which comprises 20–50% by weight of CaO and 50–80% by weight of Al_2O_3, and up to 10% by weight of which comprises impurities, based on the weight of the fiber, with the proviso that the fiber contain up to 1.5% by weight of SiO_2.

5,346,869

SINTERED SILICON NITRIDE BODIES SUITABLE FOR USE AS HIGH IMPACT MATERIALS

Takao Nishioka; Takehisa Yamamoto; Kenji Matsunuma; Akira Yamakawa, and Masaya Miyake, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Continuation of Ser. No. 11,096, Jan. 26, 1993, abandoned, which is a continuation of Ser. No. 823,976, Jan. 22, 1992, abandoned. This application Dec. 29, 1993, Ser. No. 175,490
Claims priority, application Japan, Jun. 26, 1991, 3-154547
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—98 **1 Claim**



1. A sintered silicon nitride body suitable for use as a high impact material, comprising 80 to 98 wt % of silicon nitride and a sintering aid consisting of 1 to 10 wt % Y_2O_3, 0.5 to 4.0 wt % Al_2O_3, and 0.5 to 1.0 wt % MgO, said sintered silicon nitride body having a porosity not higher than 3%, a shock compressive elasticity limit (Hugonoit-elastic limit (HEL)) of at least 15 GPa, and a bending strength of at least 100 kg/mm^2.

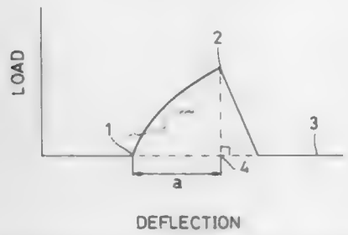
5,346,870

ALUMINUM TITANATE CERAMIC AND PROCESS FOR PRODUCING THE SAME

Yasushi Noguchi, Nagoya; Shinichi Miwa, Tajimi, and Kaname Fukao, Inuyama, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Aug. 21, 1992, Ser. No. 933,222
Claims priority, application Japan, Aug. 28, 1991, 3-242641
Int. Cl.[5] C04B *35/46, 35/48*
U.S. Cl. 501—136 **5 Claims**

1. An aluminum titanate ceramic comprising:
40–60% by weight of Al_2O_3, 30–45% by weight of TiO_2, 1–10% by weight of SiO_2, 0–4% by weight of Fe_2O_3, 0.1–1.5% by weight of MgO and 0.1–10% by weight of RE_2O_3, where RE represents Y, Yb, Er, Dy, Ho, Tm or Lu;
in the form of a crystalline phase of aluminum titanate and a solid solution thereof, a crystalline phase of mullite and a



crystalline phase of rare earth titanate represented by $RE_2Ti_2O_7$.

5,346,871

CATALYST FOR DEHYDROGENATION OF PARAFFINS

John L. Robbins, Stockton; Elise Marucchi-Soos, Warren; Jack W. Johnson, Clinton, and John F. Brody, Bound Brook, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 9, 1993, Ser. No. 28,442
Int. Cl.[5] B01J *21/16, 23/08, 23/06*
U.S. Cl. 502—61 **7 Claims**

1. A catalyst composition comprising an alloy of Group VIII noble metal and a metal selected from the group consisting of zinc and gallium on a support selected from the group consisting of silica, silica-pillared clays, zinc oxide modified silica and zinc oxide modified silica-pillared clays when said alloy is a zinc alloy, and silica, silica-pillared clays, gallium oxide modified silica and gallium oxide modified silica-pillared clays when said alloy is a gallium alloy.

5,346,872

COCATALYST FOR VANADIUM/TITANIUM CONTAINING POLYMERIZATION CATALYST

Raghu Menon, West Chester; Albert P. Masino, Hamilton, and Mark K. Reinking, Mason, all of Ohio, assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Filed Jan. 29, 1993, Ser. No. 10,737
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—116 **16 Claims**

1. A catalyst component for ethylene polymerization consisting essentially of a solid product obtained by the steps of:
(a) pretreating a silica support to remove surface hydroxyl groups;
(b) contacting said pretreated silica support with a magnesium-containing compound selected from the group consisting of magnesium compounds having the formula ROMgX, where R is a C_1 to C_{12} hydrocarbyl and X is a halogen; dihydrocarbyloxy magnesium, alkylmagnesium halides; magnesium aluminum-complexes having the formula $(MgRR')_m(AlR_3)_n$ where R, R' and R'' are the same or different and are alkyl groups and the ratio of m/n is from about 0.5 to 10; and mixtures thereof;
(c) drying the reaction mixture obtained in step (b) to form a solid product;
(d) contacting said dried solid product of step (c) with at least one modifying compound selected from the group consiting of silicon halides, boron halides, aluminum halides, alkyl silicon halides, and mixtures thereof;
(e) washing said product of step (d) with a hydrocarbon solvent; and
(f) reacting the product of step (e) interchangeably or simultaneously with a vanadium-containing compound having the formula $V(OR)_x(O)_y(X^2)_z$ wherein R is a hydrocarbyl having from 1 to 18 carbon atoms; X^2 is halogen; x is 0 or an integer from 1 to 5; y is 0 or 1; and $z=(5-x-2y)$ or 4 or 3 when $x=0$, $y=0$; and titanium-containing compound

having the structural formula $TiX^1_p(OR^1)_q$ where X is halogen; R^1 is aryl, alkyl, aralkyl, cycloalkyl or alkylsilyl; p is an integer from 1 to 4; q is 0 or an integer from 1 to 3; and the sum of p and q is 4.

5,346,873

CATALYTIC SYSTEM AND SYSTEM FOR COPOLYMERIZING CARBON MONOXIDE WITH ONE OR MORE OLEFINS

Anna Sommazzi, Santa Magherita Ligure; Gabriele Lugli, San Donato Milanese; Fabio Garbassi, Novara, and Fausto Calderazzo, Ghezzano, all of Italy, assignors to Enichem S.p.A., Milan, Italy

Filed Mar. 11, 1993, Ser. No. 29,476

Claims priority, application Italy, Mar. 11, 1992, MI.92-A/000554; Dec. 11, 1992, MI.92-A/002819

Int. Cl.[5] C07C *45/49;* **B01J** *31/00*

U.S. Cl. 502—165 **11 Claims**

1. Homogeneous catalytic system active in the preparation of alternating copolymers of olefins with carbon monoxide (CO), constituted by:

(a) at least one salt of a metal of Group IB of the Periodic Table,

(b) a bidentate chelating base containing two phosphorus or nitrogen atoms wherein the bidentate chelating base falls within the group of compounds having the general formula

$$R_1R_2—M—R—M—R_3R_4$$

in which:

M represents a phosphorus or nitrogen atom,

R stands for a polymethylene radical containing from 2 to 3 carbon atoms, a cycloalkylidene radical containing from 2 to 10 carbon atoms, a phenylene radical,

R_1, R_2, R_3, and R_4, which are the same or may be different from each other, represent an alkyl radical of from 1 to 6 carbon atoms, a cycloalkyl radical of from 3 to 6 carbon atoms, an aromatic radical of from 6 to 12 carbon atoms, and

(c) an inorganic or organic oxidizing agent, wherein the inorganic oxidizing agent is nitrosonium tetrafluoroborate $NOBF_4$, and the organic oxidizing agent is para-benzoquinone.

5,346,874

DISTILLATE HYDROGENATION

Frederick T. Clark, Wheaton; Simon G. Kukes, Naperville, and P. Donald Hopkins, St. Charles, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 851,311, Mar. 16, 1992, Pat. No. 5,271,828. This application Aug. 10, 1993, Ser. No. 104,780

Int. Cl.[5] B01J *21/02, 29/00*

U.S. Cl. 502—207 **7 Claims**

1. A hydrogenation catalyst suitable for hydrogenation of a hydrocarbon feedstock comprising from about 0.1% to about 2.0% by weight of palladium and from about 0.1% to about 2.0% by weight of platinum, each incorporated onto a support comprising a refractory oxide matrix and borosilicate, wherein said borosilicate, calculated as oxide, comprises from about 30% to about 60% by weight of said support.

5,346,875

METHOD OF MANUFACTURING FLUID CATALYTIC CRACKING CATALYST

William A. Wachter, Baton Rouge, La., and Stuart L. Soled, Pittstown, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jul. 21, 1993, Ser. No. 95,612

Int. Cl.[5] B01J *21/12, 29/04, 37/03*

U.S. Cl. 502—233 **8 Claims**

1. A method of manufacturing a catalytic cracking catalyst comprising:

providing a framework structure having a measurable isoelectric point, wherein the framework structure is at least one component selected from the group consisting of a crystalline tetrahedral framework oxide component, an active porous inorganic oxide catalyst framework component, and an inert catalyst framework component;

providing an inorganic oxide sol having a measurable pH;

measuring the isoelectric point of each component of the framework structure;

measuring the pH of the inorganic oxide sol;

matching the isoelectric point of each component of the framework structure to the pH of the inorganic oxide sol;

combining in solution the inorganic oxide sol with each component of the framework structure; and

drying the combined solution.

2. The method of claim 1, wherein the inorganic oxide sol is a silica sol or alumina sol.

5,346,876

AIR PURIFYING AGENT AND A PROCESS FOR PRODUCING SAME

Shozo Ichimura; Seikichi Tabei, and Michinori Hashimoto, all of Tokyo, Japan, assignors to Nippon Chemical Industrial Co., Ltd., Tokyo, Japan

Filed May 25, 1993, Ser. No. 66,219

Int. Cl.[5] B01J *20/20;* **A61L** *9/16;* **B01D** *53/04, 53/36*

U.S. Cl. 502—417 **16 Claims**

1. (Amended) An air purifying agent comprising activated manganese dioxide and iodate supported on a carbon carrier, wherein the total amount of supported chemical components is within the range of 0.1 to 20% by weight relative to the total weight of the agent, and wherein the weight ratio of activated manganese dioxide calculated as MnO_2 to iodate is within the range of about 1:0.1–9.

5,346,877

HEAT TRANSFER SHEETS

Masayuki Nakamura, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 614,266, Nov. 16, 1990, Pat. No. 5,252,530, which is a continuation of Ser. No. 404,408, Sep. 8, 1989, Pat. No. 4,990,484. This application Jul. 8, 1993, Ser. No. 86,874

Claims priority, application Japan, Sep. 12, 1988, 63-226426

The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.

Int. Cl.[5] B41M *5/035, 5/38*

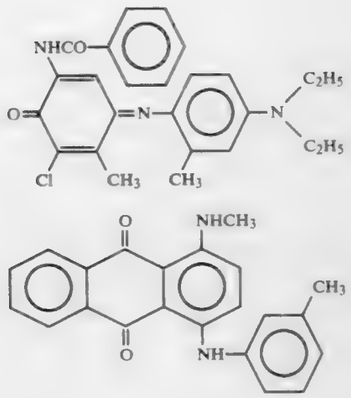
U.S. Cl. 503—227 **7 Claims**

1. A heat transfer sheet comprising:

a base sheet; and

a dye carrier layer formed on one side of said base sheet,

said dye carrier layer comprising a binder and a mixture of at least two dyes expressed by the following formulae (I) and (II):



5,346,878

RECORDING MATERIAL

Masakatsu Nakatsuka, Kanagawa; Naomasa Koike, and Akinori Okada, both of Tokyo, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc. and Mitsubishi Paper Mills Limited, both of Tokyo, Japan

Continuation-in-part of Ser. No. 946,694, Sep. 18, 1992, Pat. No. 5,306,688. This application Aug. 18, 1993, Ser. No. 108,500

Claims priority, application Japan, Sep. 24, 1991, 3-243201; Jun. 26, 1992, 4-168744; Nov. 6, 1992, 4-297027

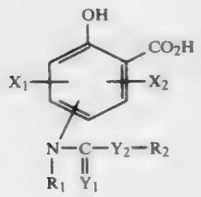
Int. Cl.[5] B41M *5/30*

U.S. Cl. 503—209 **20 Claims**

1. A heat-sensitive recording material comprising a substrate having at least one layer thereon comprising:

a colorless or pale colored dyestuff precursor;

an electron accepting compound which develops the color of said dyestuff precursor by heat-reaction, wherein said electron accepting compound is one or more compounds selected from a salicylic acid derivative represented by the formula (1)



(1)

wherein X_1 and X_2 are a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, an aralkyl group or an aryl group, Y_1 and Y_2 are an oxygen atom or a sulfur atom, R_1 is a hydrogen atom, an alkyl group, an aralkyl group or an aryl group, and R_2 is an alkyl group, an alkenyl group, an aralkyl group or an aryl group, or a metal salt of said salicylic acid derivative, and

an aliphatic amide compound having 18～60 carbon atoms.

5,346,879

PLANT GROWTH REGULATOR CONTAINING A PHTHALIMIDE DERIVATIVE

Akio Manabe, Kobe; Masato Mizutani, Toyonaka; Naonori Hirata, Sanda; Sachiko Uwayokote, Nishinomiya; Kazuo Izumi, Ashiya, and Kenji Arai, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company Limited, Japan

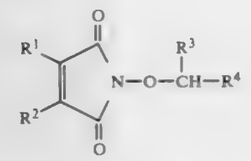
Division of Ser. No. 571,998, Aug. 24, 1990, Pat. No. 5,228,899. This application Apr. 14, 1993, Ser. No. 46,836

Claims priority, application Japan, Aug. 25, 1989, 2-219083; Aug. 25, 1989, 1-219084

Int. Cl.[5] A01N *3/02, 43/36;* **C07D** *403/12*

U.S. Cl. 504—115 **12 Claims**

1. A plant growth regulator comprising, as an active ingredient, a substituted dicarboxylic acid derivative having the formula:



(II)

wherein R^1 and R^2 are, same or different, a hydrogen atom, a fluorine atom, a chlorine atom, a bromine atom, an iodine atom, a C_1–C_3 alkyl group or together represent a C_3–C_5 alkylene group or a divalent organic group represented by the formula, —CH=CH—CH=CH—, optionally substituted by X_n to form a cyclic group; R^3 is a hydrogen atom or a C_1–C_3 alkyl group; and R^4 is a cyano group or a group represented by the formula, $—COOR^5$, $—CH_2COOR^5$ or $—CONR^6R^7$, in which X is, same or different, a fluorine atom, a chlorine atom, a bromine atom, an iodine atom, a C_1–C_4 alkyl group, a C_1–C_4 alkoxy group, a hydroxyl group, a nitro group or an amino group and n is 0, 1, 2, 3 or 4, R^5 is a hydrogen atom or a C_1–C_6 alkyl group, R^6 and R^7 are, same or different, a hydrogen atom, a C_1–C_4 alkyl group or together represent a C_3–C_5 alkylene group optionally substituted by a methyl group, or physiologically acceptable metal salts or amine salts thereof, and an inert carrier or diluent.

5,346,880

HERBICIDALLY ACTIVE PYRIMIDINYLTHIOALKANE DERIVATIVES

Toshio Goto, Kokubunkji; Yoshinori Kitagawa, Moka; Hidenori Hayakawa, Oyama; Katsuhiko Shibuya, Oyama, and Ryo Watanabe, Oyama, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

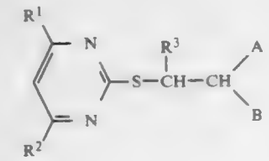
Filed Apr. 6, 1993, Ser. No. 43,513

Claims priority, application Japan, Apr. 13, 1992, 4-118540; Jun. 30, 1992, 4-194529; Sep. 11, 1992, 4-267865

Int. Cl.[5] A01N *43/54;* **C07D** *239/47, 239/56, 239/60*

U.S. Cl. 504—242 **8 Claims**

1. A pyrimidinylthioalkane derivative of the formula



wherein

R^1 represents C_1-C_4-alkyl, C_1-C_4-alkoxy, halo, C_1-C_4-haloalkyl or C_1-C_4-haloalkoxy,

R^2 represents C_1-C_4-alkyl, C_1-C_4-alkoxy, halo, C_1-C_4-haloalkyl or C_1-C_4-haloalkoxy,

R^3 represents straight chain or branched C_1-C_{30}-alkyl op-

tionally substituted by C_3-C_8-cycloalkyl, halogen, naphthyl or optionally substituted phenyl; phenyl optionally substituted by halogen, C_1-C_4-alkyl, C_1-C_4-haloalkyl, nitro or cyano; naphthyl; or C_3-C_8-cycloalkyl, and

A represents hydroxy, and

B represents hydrogen, or

A and B together=0.

5,346,881

2-(BICYCLIC HETEROCYCLYL)-6-FLUOROALKYLURACILS

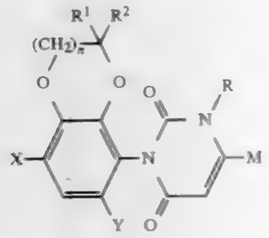
George Theodoridis, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Aug. 13, 1993, Ser. No. 107,097

Int. Cl.[5] A01N *43/48*; C07D *239/55*

U.S. Cl. 504—243 13 Claims

1. A compound of the formula:



in which

M is fluoroalkyl(C_{1-6}); R is hydrogen, alkyl(C_{1-6}), 2-alkynyl(C_{3-6}); 2-alkenyl(C_{3-6}), or cyanoalkyl(C_{1-6}); R^1 is hydrogen or alkyl(C_{1-6}); R^2 is hydrogen or alkyl(C_{1-6}); Y is hydrogen, fluorine, chlorine, or bromine; X is hydrogen, fluorine, chlorine, bromine, cyano, alkyl(C_{1-6}), or fluoroalkyl(C_{1-6}); and n is 0 or 1.

5,346,882

JOSEPHSON CONTACTS IN HIGH TEMPERATURE SUPERCONDUCTORS AND METHOD OF FABRICATION THEREOF

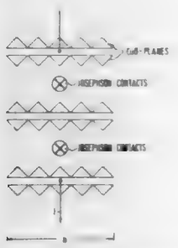
Paul Müller, Graf-Konrad-Strasse 8, W-8000 Munich 40, Fed. Rep. of Germany

Filed Jul. 20, 1992, Ser. No. 917,177

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1991, 4124048

Int. Cl.[5] C30B *29/10*

U.S. Cl. 505—190 17 Claims



1. Method for fabricating high temperature superconductors, which, after the following fabrication steps, form at least one intrinsic Josephson junction:

a small single-crystal, the dimensions of which are below the penetration depth of the magnetic field perpendicular to the crystallographic c-axis, is drawn from the melt of a high temperature superconductor or deposited epitaxially on a substrate;

the single-crystal is fabricated or post-processed in an inert atmosphere of in a vacuum at controlled oxygen partial pressure;

at the boundaries parallel to the superconducting layers of the single-crystal well-conducting contacts are vapor-deposited; and

the single-crystal is cooled below its superconducting transition temperature.

5,346,883

METHOD OF MANUFACTURING SUPERCONDUCTIVE PRODUCTS

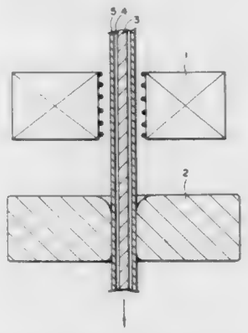
Shoji Shiga, Utsunomiya; Naoki Uno, and Yasuzo Tanaka, both of Yokohama, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 754,247, Aug. 26, 1991, abandoned, which is a continuation of Ser. No. 528,901, May 24, 1990, abandoned, which is a continuation of Ser. No. 233,270, Aug. 17, 1988, abandoned. This application Jan. 27, 1993, Ser. No. 9,383

Claims priority, application Japan, Aug. 21, 1987, 62-207829; Aug. 21, 1987, 62-207955; Aug. 25, 1987, 62-210423; Sep. 4, 1987, 62-221305

Int. Cl.[5] H01L *39/24*

U.S. Cl. 505—100 20 Claims



1. A method of manufacturing a superconductive product comprising:

heating a longitudinally elongated body comprising a superconductive material selected from the group consisting of $BiSrCaCu_2O_y$ and $Tl_2Ba_2Ca_2Cu_3O_z$ to a temperature higher than the melting point of the superconductive material, thereby melting the superconductive material and obtaining a molten superconductive material; and

continuously passing said elongated body through a furnace having a temperature gradient from a high temperature region in the furnace toward a low temperature region in an outlet of the furnace, the temperature gradient being 100° C./cm, wherein the temperature in the outlet of the furnace is lower then the melting point of the superconductive material, so as to cool the molten superconductive material in the longitudinal direction of said elongated body, wherein an average cooling rate for cooling the molten superconductive material is 1° C./minute, thereby solidifying and recrystallizing the superconductive material along said elongated body such that the a-axis or the b-axis of each crystal of the superconductive material is oriented in the longitudinal direction of said elongated body.

5,346,884

SUBSTITUTED 2,6-DIMETHYLBICYCLO[3,3,1]NON-6-ENES, PROCESSES FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

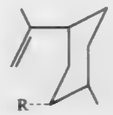
Anubhav P. S. Narula; Matthew J. McGinnis, both of Hazlet; Charles E. J. Beck, Summit; Marie R. Hanna, Keyport, all of N.J., and Franc T. Schiet, New York, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Oct. 1, 1993, Ser. No. 130,396

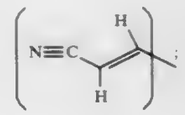
Int. Cl.[5] A61K *7/46*

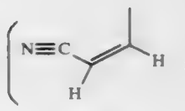
U.S. Cl. 512—6 21 Claims

1. A substituted 2,6-dimethylbicyclo[3,3,1]non-6-ene derivative defined according to the structure:



wherein R is a moiety selected from the group consisting of:





and



wherein the dashed line represents a carbon-carbon single bond or a carbon-carbon double bond.

5. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, perfumed articles and colognes comprising the step of intimately admixing with a perfume base, a perfumed article base or a cologne base an aroma augmenting, enhancing or imparting quantity of at least one compound defined according to claim **1**.

5,346,885

POLYCYCLIC COMPOUNDS AND THEIR USE AS PERFUMING INGREDIENTS

Hubert Mimoun, Challex, France; Francois Delay, Carouge, and Philippe Schneider, Geneva, both of Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

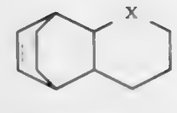
Filed Jul. 20, 1993, Ser. No. 94,658

Claims priority, application Switzerland, Jul. 22, 1992, 2307/92

Int. Cl.[5] A61K *7/46*

U.S. Cl. 512—15 8 Claims

1. A method to confer, improve, enhance or modify the odor properties of a perfuming composition or a perfumed article, which method comprises adding to said composition or article a fragrance effective amount of a polycyclic ketonic compound of formula



(Ia, b)

wherein symbol X designates a C=O (Ia) or $C(CH_3)$—$OC(O)CH_3$ (Ib) group and the dotted line indicates the location of a single or double bond in formula (Ia) and of a double bond in formula (Ib).

5,346,886

TOPICAL α-1-ANTITRYPSIN, NON-AQUEOUS LIPID MISCIBLE, BENZALKONIUM CHLORIDE COMPOSITIONS FOR TREATING SKIN

John Lezdey, 976 Kingston Dr., Cherry Hill, N.J. 08034, and Allan Wachter, 9822 S. Grandview, Tempe, Ariz. 85284

Filed Nov. 15, 1993, Ser. No. 151,980

Int. Cl.[5] A61K *37/10, 31/135*

U.S. Cl. 514—8 1 Claim

1. In a pharameceutical composition for the topical treatment of a mammal having a skin disease in which said composition contains an effective amount of α-1-antitrypsin and a non-aqueous lipid miscible carrier the improvement which comprises said composition containing an effective amount of benzalkonium chloride at an effective concentration for increasing the chemical stability and, penetration of said protease inhibitor in the skin.

5,346,887

GLAUCOMA TREATMENT

Herman H. Stein, Highland Park; Jacob J. Plattner, Libertyville, and Steven R. Crowley, Vernon Hills, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 488,810, Mar. 2, 1990, Pat. No. 5,036,051, which is a division of Ser. No. 240,567, Sep. 8, 1988, Pat. No. 4,927,807, which is a continuation-in-part of Ser. No. 105,636, Oct. 6, 1987, abandoned. This application Apr. 23, 1991, Ser. No. 690,148

Int. Cl.[5] A61K *37/00, 31/56, 31/535, 31/415*

U.S. Cl. 514—18 8 Claims

1. A method for treating glaucoma or reducing and/or controlling intraocular pressure comprising administering to a patient in need a therapeutically effective amount of the renin inhibiting compound H-((beta,beta-dimethyl)-beta-Ala)-(4-OCH_3)Phe-His amide of 2(S)-amino-1-cyclohexyl-3(R),4(S)-dihydroxy-6-methylheptane, or a pharmaceutically acceptable salt or ester thereof in combination with a therapeutically effective amount of a steroidal antiinflammatory agent.

5,346,888

DIPEPTIDE ALKYL ESTERS AND THEIR USES

Peter E. Lipsky, Dallas, and Dwain L. Thiele, Coppell, both of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 643,580, Mar. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 168,177, Aug. 15, 1988, Pat. No. 5,047,401, which is a division of Ser. No. 774,051, Sep. 9, 1985, Pat. No. 4,752,602. This application Dec. 21, 1992, Ser. No. 994,600

Int. Cl.[5] A61K *37/02*; C07K *5/06*

U.S. Cl. 514—19 4 Claims

1. A method of treating a tumor of myeloid or lymphoid origin which is sensitive to dipeptide alkyl esters comprising administering a therapeutically effective amount of an alkyl ester of a dipeptide consisting essentially of the L-amino acid leucine, said alkyl dipeptide ester being sufficient to substantially deactivate natural killer cells or cytotoxic T-lymphocytes.

5,346,889

PROCESS FOR EXTRACTING ENDOTOXIN

Masakazu Tsuchiya; Aya Takaoka, and Kazuaki Harada, all of Amagasaki, Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 15, 1992, Ser. No. 991,214

Claims priority, application Japan, Dec. 24, 1991, 3-356409

Int. Cl.[5] **A61K** *37/02;* **A61L** *2/16*

U.S. Cl. 514—21 **26 Claims**

1. A process for extracting endotoxin adhered to or adsorbed on a surface of a container or device, which comprises contacting the container or device with a solution comprising at least one of albumin and globulin.

5,346,890

ANTIOXIDATION ACTIVE SUBSTANCE AND UTILIZATION THEREOF

Yoshihide Hagiwara, 4-14,, Hiraisanso, Takarazuka-shi, Hyogo-ken, and Hideaki Hagiwara, Takarazuka, both of Japan, assignors to Yoshihide Hagiwara, Takarazuka, Japan

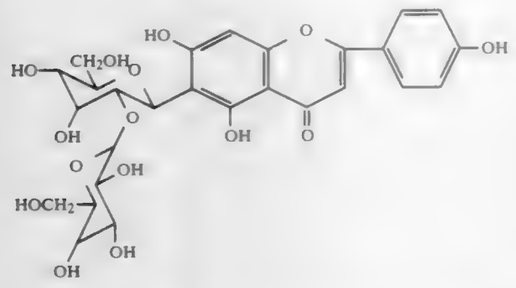
Filed Aug. 14, 1991, Ser. No. 745,251

Claims priority, application Japan, May 14, 1990, 2-121077; Aug. 17, 1990, 2-217344; Aug. 21, 1990, 2-220398; Mar. 1, 1991, 3-059374; Mar. 4, 1991, 3-062558; Mar. 4, 1991, 3-062559; Mar. 4, 1991, 3-062688

Int. Cl.[5] **A61K** *31/70*

U.S. Cl. 514—27 **15 Claims**

1. A cosmetic composition which consists essentially of a cosmetic matrix and an effective antioxidant amount of 2'-O-glucosyl-isovitexin having the formula



in an amount of 0.001 to 1% by weight of said composition.

5,346,891

LIPOPOLYSACCHARIDE-PRODUCING BACTERIA, LIPOPOLYSACCHARIDES, AND LIPOPOLYSACCHARIDE-CONTAINING, MEDICINES AND VETERINARY MEDICINES

Gen-Ichiro Soma, 1-10-21, Higashi-Tamagawa, Setagaya Ward, Tokyo; Kiyoshi Yoshimura; Daisuke Tsukioka, both of Chiba; Den'ichi Mizuno, Okamoto-18, Kamakura City, Kanagawa, and Haruyuki Oshima, Hachioji, all of Japan, assignors to Gen-Ichiro Soma, Tokyo and Den'ichi Mizuno, Kanagawa, both of Japan

Filed Aug. 20, 1991, Ser. No. 747,633

Claims priority, application Japan, Aug. 20, 1990, 2-218599; Nov. 20, 1990, 2-312932

Int. Cl.[5] **A61K** *31/715;* **C12N** *1/00, 1/20*

U.S. Cl. 514—54 **6 Claims**

1. A lipopolysaccharide produced by a strain of the species *Serratia ficaria*, having all of the identifying characteristics of FERM BP-3509 and exhibiting a dominant molecular weight of 5,000±1,000 as determined by SDS-PAGE method, having 2±1 phosphorus, 9±1 hexoeamines and 2±1 KDO per molecular weight of 5,000, wherein the identifying characteristics are as follows:

a) Morphological characteristics
   1) Small rod
   2) No Motility
   3) Gram stain: −
b) Growth
   1) Standard agar medium: A yellow to creamy round opaque colony is formed;
2) SS agar medium: A white translucent colony is formed;
3) TSI agar medium: No change is found on the slant, but a higher layer changes to yellow; Gas is produced.
c) Physiological characteristics
   1) Voges-Proskauer reaction: +
   2) Indole production: −
   3) Hydrogen sulfide production: −
   4) Utilization of citrate: +
   5) Urease: −
   6) Oxidass: −
   7) O-F test: +
d) Utilization of carbon sources
   1) Lactose: +
   2) Adonitol: −
   3) Rhamnose: +
   4) Mannitol: +
   5) Esculin: +
   6) Inositol: −
   7) Sorbitol: +
   8) Arabinose: +
   9) Raffinose: +
   10) Sucrose: +
e) Others
   1) Lyein decarboxylase: −
   2) Utilization of malonate: −
   3) Arginine dihydroxylase: −
   4) Phenylalanine deaminase: −
   5) Ornithine decarboxylase: −.

5,346,892

ABSORBABLE DUSTING POWDER DERIVED FROM REDUCED-PROTEIN MODIFIED STARCH

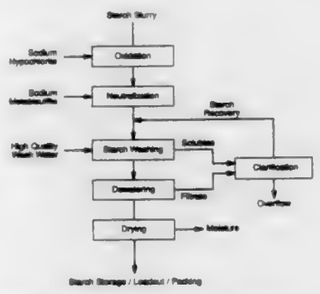
Larry E. Fitt, Orland Park, and Harry T. McNary, Westmont, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Continuation-in-part of Ser. No. 623,158, Dec. 5, 1990, Pat. No. 5,126,334. This application Apr. 3, 1992, Ser. No. 862,774

The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.

Int. Cl.[5] **C08B** *31/00;* **A41D** *19/00*

U.S. Cl. 514—60 **8 Claims**



1. A modified starch composition comprising a protein content of less than about 0.15% by weight and from about 0.03 to about 0.5% by weight oxidized hydroxyl groups.

5,346,893

RAPAMYCIN 42-SULFONATES AND 42-(N-CARBALKOXY) SULFAMATES USEFUL AS IMMUNOSUPPRESSIVE AGENTS

Amedeo Failli, Princeton Junction, N.J.; Wenling Kao, Paoli; Robert J. Steffan, Langhorne, both of Pa., and Robert L. Vogel, Stratford, N.J., assignors to American Home Products Corporation, Madison, N.J.

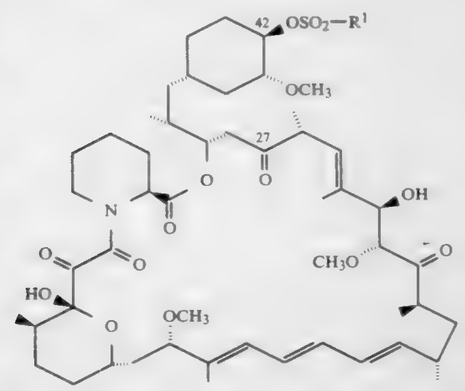
Continuation-in-part of Ser. No. 917,555, Jul. 21, 1992, Pat. No. 5,238,443, which is a division of Ser. No. 486,637, Mar. 19, 1992, Pat. No. 5,177,203. This application May 19, 1993, Ser. No. 65,107

The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.

Int. Cl.[5] **A61K** *31/395;* **C07D** *491/06*

U.S. Cl. 314—183 **14 Claims**

1. A compound of formula (I)



(I)

where R^1 is C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_2–C_6 alkenyl, or C_2–C_6 alkynyl; or an aromatic moiety selected from phenyl, naphthyl and 4-(phenylaza) phenyl wherein said aromatic group is optionally substituted by one or more substituents selected from C_1–C_6 alkyl, C_1–C_6 alkoxy, hydroxy, amino, mono- or di-(C_1–C_6)alkylamino, carboxy, (C_1–C_6 alkoxy)carbonyl, C_2–C_7 alkanoyl, (C_1–C_6) thioalkyl, halo, cyano, nitro, trifluoromethyl, trifluoromethoxy or R^1 is a heteroaromatic group of 5 to 10 ring atoms containing oxygen, nitrogen or sulfur as heteroatom wherein said heteroaromatic group is optionally substituted by one or more substituents selected from C_1–C_6 alkyl, C_1–C_6 alkoxy, hydroxy, amino, mono- or di-(C_1–C_6)alkylamino, carboxy, (C_1–C_6 alkoxy)carbonyl, C_2–C_7 alkanoyl, (C_1–C_6) thioalkyl, halo, cyano, nitro, trifluoromethyl, trifluoromethoxy or R^1 is $NHCO_2R^2$ whergin R^2 is lower alkyl containing 1 to 6 carbon atoms; or a pharmaceutically acceptable salt thereof.

14. A method of treating transplantation rejection, host versus graft disease, autoimmune diseases, and diseases of inflammation in a mammal by administering an effective amount of a compound of formula I as shown and defined in claim 1.

5,346,894

TREATMENT OF LYSO PAF-MEDIATED DISEASES WITH PAF ANTAGONISTS AND PROCEDURE FOR DETERMINING THEIR EFFICACY

Ruth Korth, Palestrinastrasse 9, D-8000 München 19, Fed. Rep. of Germany

Filed Oct. 28, 1992, Ser. No. 969,674

Claims priority, application European Pat. Off., Nov. 4, 1991, 91118745.8

Int. Cl.[5] **A61K** *31/55, 31/535, 31/44*

U.S. Cl. 514—220 **1 Claim**

1. A method of treating psychosis or paranoid syndrome with elevated lyso paf levels comprising administering to a subject requiring said treatment an effective amount of at least one triazolothieno-diazepine selected from the group consisting of 3-(4-(2-chlorophenyl)-9-methyl-6H-thieno (3,2-f)(1,2,4) triazolo-(4,3-a)-(1,4) diazepine-2-yl)-1-(4-morpholinyl)-1-propanone; (3-(4-(2-chlorophenyl)- 9-cyclopropyl-6H-thieno (3,2-f)-(1,2,4) triazolo (4,3-a) (1,4) diazepine-2-yl)-1-(4-morpholinyl)-1-propanone; and tetrahydro-4,7,8,10 methyl (chloro-2 phenyl)6 (dimethoxy-3,4-phenyl) thio) methylthiocarbonyl-9 pyrido (4',3', −4.5) thieno (3,2-f) triazolo-1,2,3(4,3-a) diazepine-1.4).

5,346,895

CHROMANS AND THIOCHROMANS WITH HETEROARYLETHYNYL SUBSTITUENTS AT THE 7-POSITION HAVING RETINOID-LIKE BIOLOGICAL ACTIVITY

Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allergan, Inc., Irvine, Calif.

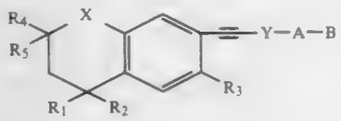
Continuation of Ser. No. 676,151, Mar. 26, 1991, abandoned. This application Jan. 6, 1993, Ser. No. 1,010

The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.

Int. Cl.[5] **A61K** *31/50, 31/35, 31/38;* **C07D** *335/06*

U.S. Cl. 514—247 **29 Claims**

1. A compound of the formula



where

X is S or O;

R_1, R_2, R_4 and R_5 independently are hydrogen or lower alkyl of 1 to 2 carbons, and R_3 is hydrogen or lower alkyl;

Y is a heteroaryl group or a lower alkyl substituted heteroaryl group where heteroaryl is selected from a group consisting of pyridyl, thienyl, furyl, pyridazinyl, pyrimidinyl, pyrazinyl, thiazolyl and oxazolyl;

A is lower branched chain alkyl having 2 to 6 carbons, cycloalkyl having 3 to 6 carbons, alkenyl having 2 to 6 carbons and 1 or 2 double bonds, alkynyl having 2 to 6 carbons and 1 or 2 triple bonds, $(CH_2)_n$ and where n is an integer from 0–5;

B is COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $COONR_9R_{10}$, where R_8 is an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or phenyl or lower alkylphenyl.

5,346,896

1-(ARYL OR HETEROARYL)-4[ω-(ARYL OR HETEROARYL)ω-(ARYL OR HETEROARYL)ALKYLENE]PIPERAZINES

Terence J. Ward, Reading, and Graham J. Warrellow, Stanmore, both of England, assignors to John Wyeth & Brother, Limited, Maidenhead, United Kingdom

PCT No. PCT/GB91/01693, § 371 Date Jun. 3, 1992, § 102(e) Date Jun. 3, 1992, PCT Pub. No. WO92/06082, PCT Pub. Date Apr. 16, 1992

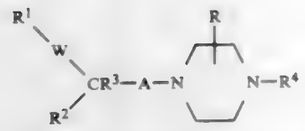
PCT Filed Oct. 1, 1991, Ser. No. 867,221

Claims priority, application United Kingdom, Oct. 3, 1990, 9021535

Int. Cl.[5] **A61K** *31/495;* **C07D** *295/088, 401/06, 403/06*

U.S. Cl. 514—252 **6 Claims**

1. A compound of the formula (I)



(I)

or a pharmaceutically acceptable acid addition salt thereof, wherein

W is $(CH_2)_m$, CHOH or O,

m is one of the integers 1 or 2,

A is an alkylene chain of 1 to 3 carbon atoms optionally substituted by one or more (lower)alkyl groups,

R is hydrogen or lower alkyl,

R^1 and R^2 are each, independently, phenyl, naphthyl, pyridinyl, pyrimidinyl, pyrazinyl, imidazolyl, pyrazolyl, triazolyl or tetrazolyl each of which may be optionally substituted by one or more substituents selected from lower alkyl, lower alkoxy, halogen, halo(lower)alkyl, nitro, amino, (lower)alkylamino, di(lower)alkylamino, phenyl, halophenyl, (lower)alkylphenyl or (lower)alkoxyphenyl,

R^3 is hydrogen or lower alkyl and

R^4 is phenyl, naphthyl, pyridinyl, pyrimidinyl, pyrazinyl, quinolinyl, or isoquinolinyl each of which may be optionally substituted by one or more substituents selected from lower alkyl, lower alkoxy, halogen, halo(lower)alkyl, nitro, amino, (lower)alkylamino, di(lower)alkylamino, phenyl, halophenyl, (lower)alkylphenyl (lower)alkoxyphenyl, hydroxy, hydroxy(lower)alkyl, and $—CONR^5R^6$ (where R^5 and R^6 are each hydrogen, lower alkyl or $—NHSO_2$(lower)alkyl).

5,346,897

AGENTS FOR POTENTIATING THE EFFECTS OF ANTITUMOR AGENTS AND COMBATING MULTIPLE DRUG RESISTANCE

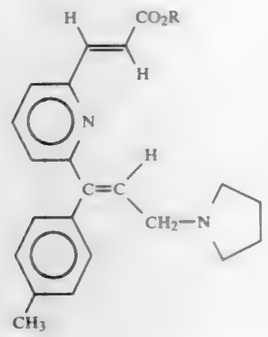
Ann C. King, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 539,839, Jun. 18, 1990, Pat. No. 5,124,338. This application Jun. 10, 1992, Ser. No. 899,711

Int. Cl.[5] A01N *43/42;* **A61K** *31/44*

U.S. Cl. 514—290 **8 Claims**

1. A method of increasing the sensitivity of a tumor to an antineoplastic agent, which tumor is harbored in a subject and which tumor is resistant to said antineoplastic agent, comprising concurrently administering to said subject an antineoplastic agent and a potentiating agent, said potentiating agent selected from the class consisting of



I

wherein R is C_{1-4} alkyl, and the pharmaceutically acceptable salts thereof, said potentiating agent being administered in an amount effective to increase the sensitivity of said tumor to said antineoplastic agent.

5,346,898

ANTI-FUNGAL URACIL COMPOUNDS

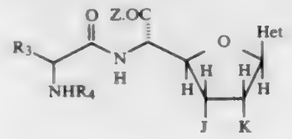
Alan B. Cooper, Caldwell; Anil K. Saksena, Upper Montclair; Raymond Lovey, West Caldwell; Viyyoor Girijavallabhan, Parsippany, and Ashit Ganguly, Upper Montclair, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jun. 18, 1992, Ser. No. 900,712

Int. Cl.[5] A61K *31/495, 31/505;* **C07D** *239/10, 405/04*

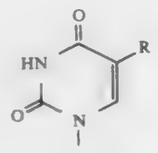
U.S. Cl. 514—255 **8 Claims**

1. A compound of the formula:

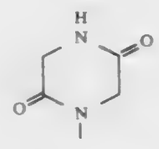


I

or pharmaceutically acceptable salts thereof, wherein Het is

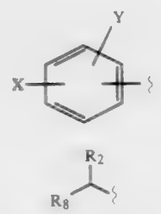


or

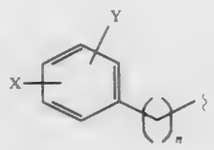


R is H, COOH; C_1–C_{12} alkyl; CHO; CN; CH_2OH; or $CONH_2$;

wherein R_3 is



wherein R_8 is



R_2 is H; OH; F; C_1–C_6 alkoxy; alkyl; SH; S-alkyl; or SO_2-alkyl;

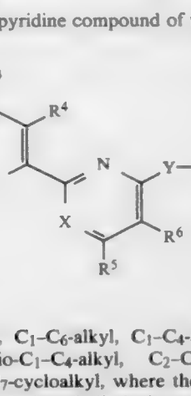
R_4 is H; a natural amino acid attached by a peptide bond; or a metabolizable group;

J is OH, H, Br, Cl, or F;

K is OH, H, Br, Cl, or F;

X and Y are the same or different and are independently selected from the group consisting of H; OH; O-C_1–C_{14} alkyl; F; Cl; Br; NO_2, and alkyl;

Z is R_5NR_6;



wherein Z' is R_5NR_6,

R_5 is $(CH_2)_{11}CH_3$;

R_6 is H; OH; O-benzyl; O-aryl; O-C_4–C_{14} alkyl; C_1–C_{12} alkyl; phenyl; substituted phenyl; or CO-R_7; and

R_7 is H, C_1–C_{16} alkyl, aryl or alkylaryl; and

n is an integer from 0 to 16.

5,346,899

SUBSTITUTED PYRIDINE DERIVATIVES AND PESTICIDES CONTAINING THEM

Thomas Mueller, Hessheim; Karl Eicken, Wachenheim; Albrecht Harreus, Ludwigshafen; Hartmann Koenig, Limburgerhof; Costin Rentzea, Heidelberg; Eberhard Ammermann, Heppenheim, and Gisela Lorenz, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 1, 1993, Ser. No. 115,041

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1992, 4230215

Int. Cl.[5] A01N *43/54;* **C07D** *401/14*

U.S. Cl. 514—256 **4 Claims**

1. A substituted pyridine compound of the formula I

I

where

R^1 is hydrogen, C_1–C_6-alkyl, C_1–C_4-alkoxy-C_1–C_4-alkyl, C_1–C_4-alkylthio-C_1–C_4-alkyl, C_2–C_6-alkenyl, C_2–C_6-alkynyl, C_3–C_7-cycloalkyl, where the cycloalkyl radical may be monosubstituted, disubstituted or trisubstituted by C_1–C_4-alkyl, or halogen, phenyl, phenoxy-C_1–C_4-alkyl, phenylmercapto-C_1–C_4-alkyl, phenyl-C_1–C_4-alkyl, phenoxy or phenylmercapto, where the six last-mentioned radicals may be monosubstituted, disubstituted or trisubstituted in the phenyl moiety by halogen, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl or C_1–C_4-haloalkoxy;

R^2, R^3 and R^4 independently of one another are each hydrogen, C_1–C_6-alkyl or phenyl where the phenyl radical may be monosubstituted, disubstituted or trisubstituted by halogen, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl or C_1–C_4-haloalkoxy;

R^5 is hydrogen, C_1–C_6-alkyl, C_3–C_7-cycloalkyl, C_3–C_7-cycloalkyl-C_1–C_4-alkyl, where the two last mentioned radicals may be monosubstituted, disubstituted or trisubstituted in the cycloalkyl moiety by C_1–C_4-alkyl, or C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkoxy-C_1–C_4-alkyl, R^8R^9N—, C_1–C_4-alkylthio-C_1–C_4-alkyl, hydroxyl, halogen, C_2–C_6-alkenyl, C_2–C_6-alkynyl, C_3–C_6-alkenyloxy, C_3–C_6-alkynyloxy, phenyl, phenoxy, phenyl-C_1–C_4-alkyl, phenoxy-C_1–C_4-alkyl, phenylmercapto-C_1–C_4-alkyl or phenylmercapto, where the six last-mentioned radicals may be monosubstituted, disubstituted or trisubstituted in the phenyl moiety by halogen, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl or C_1–C_4-haloalkoxy;

R^6 is hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkoxycarbonyl, halogen or phenyl, where the phenyl radical may be monosubstituted, disubstituted or trisubstituted by halogen, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl or C_1–C_4-haloalkoxy, or

R^5 and R^6 together form a polymethylene chain of the formula $—(CH_2)_m—$ in which m is 3 or 4;

R^7 is hydrogen, C_1–C_{12}-alkyl, C_3–C_{12}-alkenyl, C_3–C_8-alkynyl, where the three last-mentioned groups may be monosubstituted, disubstituted or trisubstituted by halogen, or C_1–C_6-alkoxy-C_2–C_{10}-alkyl, monocyclic or polycyclic C_3–C_{10}-cycloalkyl or C_3–C_{10}-cycloalkylmethyl, where these rings may be monosubstituted, disubstituted or trisubstituted by C_1–C_4-alkyl or monosubstituted by phenyl, or monocyclic or polycyclic C_5–C_{10}-cycloalkenyl or C_5–C_{10}-cycloalkenylmethyl, where these rings may be monosubstituted, disubstituted or trisubstituted by C_1–C_4-alkyl or monosubstituted by phenyl, or phenyl or phenyl-C_1–C_6-alkyl, phenyl-C_3–C_6-alkenyl or phenoxy-C_2–C_6-alkyl, where the four last-mentioned radicals may be monosubstituted, disubstituted or trisubstituted in the phenyl moiety by halogen, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio;

R^8 and R^9 independently of one another are each hydrogen, C_1–C_6-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl, C_3–C_7-cycloalkyl, where the cycloalkyl radical may be monosubstituted, disubstituted or trisubstituted by C_1–C_4-alkyl, or phenyl or phenyl-C_1–C_4-alkyl, where the two last-mentioned radicals may be monosubstituted, disubstituted or trisubstituted in the phenyl moiety by halogen, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl or C_1–C_4-haloalkoxy, or the two radicals R^8 and R^9, together with the nitrogen atom to which they are bonded, form an unsubstituted or monosubstituted, disubstituted, trisubstituted or tetrasubstituted 5- to 7-membered, saturated or unsaturated heterocyclic structure having 1 to 3 identical or different heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur, and the substituent C_1–C_4-alkyl;

X is CH or N;

Y is



R^{10} is hydrogen or C_1–C_6-alkyl and

R^{11} is hydrogen, C_1–C_6-alkyl or C_3–C_8-cycloalkyl, where the cycloalkyl radical may be monosubstituted, disubstituted or trisubstituted by C_1–C_4-alkyl or monosubstituted by phenyl, or phenyl or phenyl-C_1–C_4-alkyl, where the two last-mentioned radicals may be monosubstituted, disubstituted or trisubstituted in the phenyl moiety by halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-haloalkyl, or its plant-tolerated acid addition salts or metal salt complexes, with the exception of the compounds E-6-for-

myloximino-4-methoxy-2,2'-bipyridine, Z-6-formyloximino-4-methoxy-2,2'-bipyridine and 6-formyl-O-methyloximino-4-methoxy-2,2'-bipyridine.

5,346,900

5-ALKYL-6-[[AMINO]METHYL]PYRIDO[2,3-D]PYRIMIDINE DERIVATIVES AND METHODS OF USING THESE DERIVATIVES

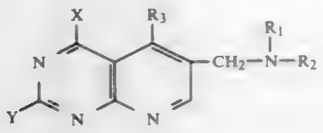
Aleem Gangjee, Glenshaw, Pa., assignor to Duquesne University of the Holy Ghost, Pittsburgh, Pa.

Continuation of Ser. No. 829,519, Jan. 31, 1992, abandoned, which is a continuation of Ser. No. 682,043, Apr. 8, 1991, abandoned. This application Sep. 23, 1992, Ser. No. 950,982

Int. Cl.[5] **A61K** *31/505;* C07D *471/04*

U.S. Cl. 514—258 **15 Claims**

1. A compound and pharmaceutically acceptable salts having the formula:



wherein x and y are the same or different and are selected frown the group consisting of OH and NH_2; wherein R_1 is selected from the group consisting of hydrogen, a first lower alkyl group, a nitroso group and formyl group; wherein R_2 is selected from the group consisting of a second lower alkyl group which is the same as or different than said first lower alkyl group, an aryl group, an alkylaryl group, a substituted aryl group and a substituted alkylaryl group, and each substituent of said substituted aryl group or said substituted alkylaryl group is the same as or different and is selected frown the group consisting of a third lower alkyl group which is the same as or different than said first lower alkyl group or said second lower alkyl group, an alicyclichydrocarbon selected from the group consisting of cyclopropyl, cyclobutyl, cyclopentyl and cyclohexyl, an alkoxy group, an alkoxyaryloxy group and a halogen; and wherein R_3 is a fourth lower alkyl group which is the same or different than first lower alkyl group, said second lower alkyl group or said third lower alkyl group.

5,346,901

PYRAZOLOPYRIMIDINONE ANTIANGINAL AGENTS

Andrew S. Bell, Deal; David Brown, Nr Canterbury, and Nicholas K. Terrett, Deal, all of United Kingdom, assignors to Pfizer Inc., New York, N.Y.

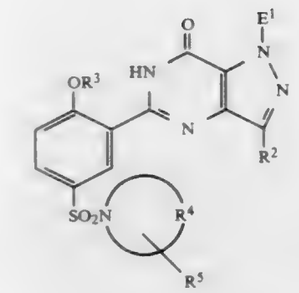
Division of Ser. No. 882,988, May 14, 1992, Pat. No. 5,250,534, which is a continuation of Ser. No. 717,227, Jun. 14, 1991, abandoned. This application Jun. 29, 1993, Ser. No. 84,827

Claims priority, application United Kingdom, Jun. 20, 1990, 9013750.6

Int. Cl.[5] **A61K** *31/505;* C07D *487/04*

U.S. Cl. 514—258 **4 Claims**

1. A compound of the formula:



wherein

R^1 is H, C_1–C_3 alkyl, C_3–C_5 cycloalkyl or C_1–C_3 perfluoroalkyl;

R^2 is H, C_1–C_6 alkyl optionally substituted by OH, C_1–C_3 alkoxy or C_3–C_6 cycloalkyl, or C_1–C_3 perfluoroalkyl;

R^3 is C_1–C_6 alkyl, C_3–C_6 alkenyl, C_3–C_6 alkynyl, C_3–C_7 cycloalkyl, C_1–C_6 perfluoroalkyl or (C_3–C_6 cycloalkyl)-C_1–C_6 alkyl;

R^4 taken together with the nitrogen atom to which it is attached completes a pyrrolidinyl, piperidino, or morpholino group;

R^5 is H, C_1–C_4 alkyl, C_1–C_3 alkoxy, NR^7R^8, or $CONR^7R^8$;

R^7 and R^8 are each independently H, C_1–C_4 alkyl, (C_1–C_3 alkoxy)C_2–C_4 alkyl or hydroxy C_2–C_4 alkyl; and pharmaceutically acceptable salts thereof.

5,346,902

FUNGICIDAL DIAZINYL DIOXIME

John M. Clough, Marlow; Christopher R. A. Godfrey, Bracknell, and Paul J. de Fraine, Wokingham, all of England, assignors to Imperial Chemical Industries PLC, Millbank, England

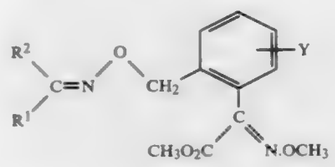
Division of Ser. No. 745,820, Aug. 16, 1991, Pat. No. 5,238,956. This application May 11, 1993, Ser. No. 60,396

Claims priority, application United Kingdom, Aug. 22, 1990, 9018408.6

Int. Cl.[5] **A61K** *31/505;* **C07D** *239/34, 239/46, 239/42*

U.S. Cl. 514—269 **10 Claims**

1. A compound having the general formula (I):



and stereoisomers thereof, wherein Y is hydrogen, halo, hydroxy, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, C_{1-4} alkylcarbonyl, C_{1-4} alkoxycarbonyl, phenoxy, nitro or cyano; R^1 is a substituted monocyclic heteroaryl ring having two nitrogen atoms; and R^2 is hydrogen, optionally substituted alkyl, optionally substituted cycloalkyl or optionally substituted aralkyl.

5,346,903

AQUEOUS SUSPENSION PREPARATION FOR INJECTION, METHOD FOR PRODUCING THE SAME AND USE THEREOF FOR PRODUCING PAIN RELIEF

Eric W. Ackerman, Am Nuenen; Rene J. E. Grouls, and Hendrikus H. M. Korsten, both of Eindhoven, all of Netherlands, assignors to Stichting Catharina Ziekenhuis, Netherlands

Filed Nov. 20, 1992, Ser. No. 979,128

Claims priority, application Netherlands, Mar. 20, 1990, 9000634

Int. Cl.[5] **A61K** *31/485*

U.S. Cl. 514—282 **16 Claims**

1. An aqueous suspension preparation for injection to combat pain comprising a water-insoluble local anesthetic and/or narcotic analgesic in the form of particles wherein more than 99% of said particles have a diameter of less than 100 μm and more than 90% have a diameter of less than 50 μm, the mean particle diameter being less than 20 μm, said particles being suspended in an aqueous medium wherein the sole agent for stabilizing the suspension is a non-ionic surface-active agent in an amount of less than 1 wt. %.

5,346,904

SULPHONYL COMPOUND

Dieter Flockerzi, and Kurt Klemm, both of Allensbach, Fed. Rep. of Germany, assignors to BYK Gulden Lomberg Chemische Fabrik GmbH, Constance, Fed. Rep. of Germany

PCT No. PCT/EP91/00895, § 371 Date Nov. 4, 1992, § 102(e) Date Nov. 4, 1992, PCT Pub. No. WO91/17991, PCT Pub. Date Nov. 28, 1991

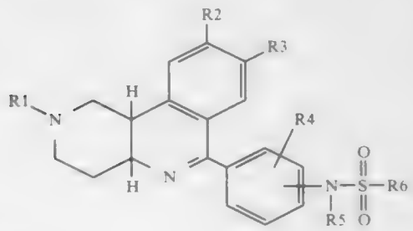
PCT Filed May 14, 1991, Ser. No. 945,975

Claims priority, application Switzerland, May 16, 1990, 1658/90

Int. Cl.[5] **A61K** *31/445;* **C07D** *471/04*

U.S. Cl. 514—292 **9 Claims**

1. A compound of formula I



wherein

R1 denotes 1-4C-alkyl,

R2 denotes hydrogen (H), 1-4C-alkyl or 1-4C-alkoxy,

R3 denotes hydrogen (H), 1-4C-alkyl or 1-4C-alkoxy,

R4 denotes hydrogen (H), methyl or methoxy,

R5 denotes hydrogen (H) or 1-4C-alkyl and

R6 denotes 1-4C-alkyl, phenyl or substituted phenyl with one or two identical or different substituents selected from the group consisting of 1-4C-alkyl, 1-4C-alkoxy, hydroxyl and halogen,

or a salt thereof.

5,346,905

1-SUBSTITUTED 1H-IMIDAZO-[4,5-C]QUINOLIN-4-AMINES

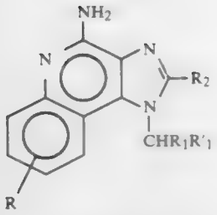
John F. Gerster, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 754,610, Sep. 4, 1991, Pat. No. 5,268,376. This application Aug. 21, 1992, Ser. No. 933,408

Int. Cl.[5] **C07D** *471/04;* **A61K** *31/44*

U.S. Cl. 514—293 **11 Claims**

1. A compound of the formula:



wherein R'_1 is hydrogen and R_1 is 2-, 3-, or 4-pyridyl;

R_2 is selected from the group consisting of hydrogen, alkyl of one to about four carbon atoms, phenyl, and substituted phenyl wherein the substituent is selected from the group consisting of alkyl of one to about four carbon atoms, alkoxy of one to about four carbon atoms, and halogen; and

R is selected from the group consisting of hydrogen, straight chain or branched chain alkoxy containing one to about four carbon atoms, halogen, and straight chain or branched chain alkyl containing one to about four carbon atoms;

or a pharmaceutically acceptable acid addition salt thereof.

5,346,906

SUBSTITUTED PYRIDINES, THEIR PREPARATION, FORMULATIONS AND USE IN DEMENTIA

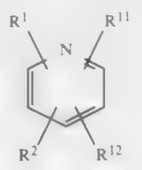
Raymond Baker, Much Hadham; John Saunders, Near Ware; Timothy M. Willson, Chelmsford, and Janusz J. Kulagowski, Bishops Stortford, all of England, assignors to Merck Sharpe & Dohme Ltd., Hoddesdon, England

Continuation of Ser. No. 798,852, Nov. 18, 1991, abandoned, which is a continuation of Ser. No. 564,491, Aug. 8, 1990, abandoned. This application Nov. 16, 1992, Ser. No. 976,795

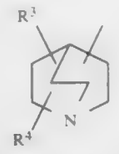
Int. Cl.[5] **C07D** *451/00;* **A61K** *31/46*

U.S. Cl. 514—305 **8 Claims**

1. A pyridine compound of Formula I below:



which is substituted on one of the ring carbon atoms with an R^1 azabicyclic ring substituent selected from the group consisting of



wherein the broken line represents a single or a, double bond;

R^3 and R^4 independently represent hydrogen, C_{1-4} alkyl, halo, C_{1-4} alkoxy, hydroxy, carboxy or C_{1-4} alkoxycarbonyl; or R^3 and R^4 together represent carbonyl;

R^2, R^{11} and R^{12} are each independently selected from the group consisting of hydrogen, halo, —CF_3, —OR^6, —NR^6R^7, —$NHOR^6$, —$NHNH_2$, —CN, COR^8, and the hydrocarbon radicals: C_1–C_{15} alkyl, C_{2-15} alkenyl, C_{2-15} alkynyl, aryl, aralkyl, which in turn are optionally substituted by halo, OR^6, CF_3, NR^6R^7, —NO_2, keto, SR^6, —SOR^6, SO_2R^6, CO_2R^6, $CONR^6R^7$, wherein R^6 is se-

lected from the group consisting of hydrogen, C_{1-6} alkyl, C_{2-6} alkenyl and C_{2-6} alkynyl; R^7 is selected from the group consisting of hydrogen, C_{1-6} alkyl and $—COCH_3$ and R^8 is selected from the group consisting of $—OR^6$ and $—NR^6R^7$; and pharmaceutically acceptable salts and prodrugs thereof, provided that the compound is neither 3-hydroxy-3-(2-pyridinyl)-1-azabicyclo[2.2.2]octane nor 3-(2-pyridinyl)-1 -azabicyclo[2.2.2]oct-2 -ene.

5,346,907

AMINO ACID ANALOG CCK ANTAGONISTS

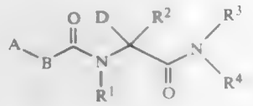
James F. Kerwin, Jr., Mundelein; Mark W. Holladay, Libertyville, and Michael J. Bennett, Morton Grove, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 793,414, Jun. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 582,896, Apr. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 376,778, Jul. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 177,715, Apr. 5, 1988, abandoned. This application Feb. 16, 1993, Ser. No. 17,565

Int. Cl.[5] **A61K** *31/47;* **C07D** *215/22, 209/18*

U.S. Cl. 514—312 6 Claims

1. A compound of the formula:



or a pharmaceutically-acceptable salt, ester or amide thereof, wherein:

A is heteroaryl or substituted heteroaryl;

B is absent, or is O, N, S, ethylene, or substituted ethylene;

R^1 is hydrogen or C_1–C_3-alkyl;

R^2 is:

(1) hydrogen,

(2) aryl-C_1–C_3-alkyl, or

(3) when R^3 is hydrogen, additionally C_1–C_6-alkyl, C_3–C_7-cycloalkyl, or C_2–C_6-alkenyl;

or

R^2 and D are linked together with the atoms to which they are attached to form:

(a) —C_4–C_7-alkylene, or

(b) —$(CH_2)_q$-G-$(CH_2)_q$-, wherein q is independently 1, 2 or 3 at each occurrence and G is O or S;

D is selected from the group consisting of:

(1) hydrogen,

(2) C_1–C_6-alkyl,

(3) C_2–C_6-alkenyl,

(4) C_3–C_7-cycloalkyl,

(5) aryl,

(6) substituted aryl,

(7) Het,

(8) substituted Het,

(9) aryl-C_1–C_6-alkyl-,

(10) Het-C_1–C_6-alkyl-,

(11) substituted Het-C_1–C_6-alkyl-,

(12) aryl-(mono-substituted-C_1–C_6-alkyl)-,

(13) Het-(mono-substituted-C_1–C_6-alkyl)-,

(14) R^6-O-C_1–C_6-alkyl-, wherein:

R^6 is:

(i) hydrogen,

(ii) C_1–C_6-alkyl,

(iii) aryl-C_1–C_6-alkyl-,

(iv) substituted aryl-C_1–C_6-alkyl-, or

(v) R^7-N-R^8-C(O)-, wherein

R^7 is:

(a) C_1–C_6-alkyl,

(b) aryl,

(c) substituted aryl,

(d) Het,

(e) aryl-C_1–C_6-alkyl-,

(f) substituted aryl-C_1–C_6-alkyl-, or

(g) Het-C_1–C_6-alkyl-;

and

R^8 is:

(a) hydrogen,

(b) C_1–C_6 alkyl,

(c) aryl,

(d) substituted aryl, or

(e) aryl-C_1–C_6-alkyl-;

or

R^7 and R^8 may be linked together with the atoms to which they are attached to form N—C_4–C_7-alkylene or N—$(CH_2)_q$G-$(CH_2)_q$-, wherein q and G are as defined above;

(15) R^9-S-C_1–C_6-alkyl-,

wherein:

R^9 is:

(i) C_1–C_6-alkyl,

(ii) C_2–C_6-alkenyl,

(iii) aryl-C_1–C_6-alkyl-,

(iv) substituted aryl-C_1–C_6-alkyl-, or

(v) R^7-N—R^8-C(O)-, wherein R^7 and R^8 are as defined above;

(16) R^{10}-$S(O)_n$-C_1–C_6-alkyl-,

wherein:

n is 1 or 2, and

R^{10} is C_1–C_6-alkyl-, aryl-C_1–C_6-alkyl-, or substituted aryl-C_1–C_6-alkyl-; and

(17) R^{11}-NH—C_1–C_6-alkyl-,

wherein:

R^{11} is:

(i) hydrogen,

(ii) N-protecting group, or

(iii) R^7-J-CO-, wherein R^7 is as defined above, and J is:

(a) absent,

(b) ethylene,

(c) substituted ethylene,

(d) O,

(e) O—CH_2,

(f) S,

(f) S—CH_2,

(h) NH, or

(i) N(C_1–C_3-alkyl); or

(18) D is linked together with R^2 and atoms to which they are attached to form C_4–C_7-alkylene or —$(CH_2)_q$-G-$(CH_2)_q$-, wherein q and G are as defined above; or

(19) D is linked together with R^3 and atoms to which they are attached to form —CO—N—C_3–C_6-alkylene or —CO—N—$(CH_2)_q$G$(CH_2)_q$-, wherein q and G are as defined above;

R^3 is hydrogen or if R^2 or D is hydrogen, then additionally:

(1) C_1–C_6-alkyl,

(2) C_1–C_3-alkyl—O—C_1–C_3-alkyl,

(3) C_2–C_6-alkenyl,

(4) aryl-C_1–C_6-alkyl-,

(5) C_3–C_7-cycloalkyl, or

(6) —C_1–C_6-alkylene-CO_2-R^{14}, wherein R^{14} is C_1–C_6-alkyl or C_3—C_7-cycloalkyl;

or

R^3 and D may be linked together to form —CO—N—C-3—C_5-alkylene or —CO—N—$(CH_2)_q$-G-$(CH_2)_q$-, wherein q and G are as defined above;

R^4 is selected from the group consisting of:

(1) C_1–C_3-alkyl,

(2) C_1–C_3-alkyl—O—C_1–C_3-alkyl,

(3) C_2–C_4-alkenyl,

(4) aryl,

(5) aryl-C_1–C_6-alkyl-,

(6) C_3–C_7-cycloalkyl,

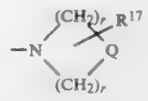
(7) cyano-C_1–C_6-alkyl, or

—C_1–C_3-alkylene-CO_2-R^{14}, wherein

R^{14} is C_1–C_6-alkyl, C_3–C_7-cycloalkyl, aryl, or aryl-C_1–C_6-arylene;

or

if R^2 is hydrogen, then R^3 and R^4 may be additionally linked to form:



wherein:

r is independently at each occurrence 1 or 2, Q is CH_2 or O, and

R^{17} represents one or two substituents independently selected from the group consisting of:

(1) hydrogen,

(2) C_1–C_6-alkyl,

(3) aryl, and

(4) —C(O)-R^{18}, wherein R^{18} is:

(i) aryl,

(ii) substituted aryl,

(iii) heteroaryl,

(iv) aryl-C_1–C_3-alkyl-,

(v) substituted aryl-C_1–C_3-alkyl, or

(vi) N—$R^{19}R^{20}$,

wherein:

R^{19} is H or C_1–C_3 alkyl, and

R^{20} is aryl, aryl-C_1–C_6-alkyl-, or heteroaryl-C_1–C_6 alkyl-.

5,346,908

NITROGEN-CONTAINING CYCLOHETERO CYCLOHETEROAMINOARYL DERIVATIVES FOR CNS DISORDERS

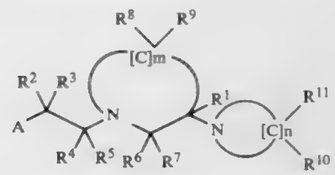
Wayne Bowen, Derwood; Brian R. de Costa, Rockville; Celia Dominguez, Gaithersburg; Xiao-Shu He, Derwood, and Kenner C. Rice, Bethesda, all of Md., assignors to National Institutes of Health, Bethesda, Md. and Brown University, Providence, R.I.

Filed Jun. 25, 1992, Ser. No. 904,354

Int. Cl.[5] **A61K** *31/55, 31/445, 31/40;* **C07D** *211/08*

U.S. Cl. 514—316 12 Claims

1. A compound of the formula



or a pharmaceutically acceptable salt thereof, wherein each of R^1, R^4, R^5, R^6 and R^7 is independently selected from the group consisting of methyl, ethyl, propyl, benzyl, and haloloweralkyl of one to five carbon atoms;

wherein each of R^2, R^3 and R^8 through R^{11} is independently selected from hydrido, hydroxy, methyl, ethyl, propyl, benzyl, phenoxy, benzyloxy and halololoweralkyl of one to five carbon atoms;

wherein n is four or five and m is two or three, with the proviso that when n is four, m is three; and

wherein A is phenyl, naphthyl, benzothienyl, benzofuranyl or thienyl; wherein any of the foregoing A groups can be further substituted with one or more substituents independently selected from hydroxy, methyl, ethyl, propyl, methoxy, ethoxy, methylenedioxy, halo, trifluoromethyl, amino, methylamino and dimethylamino.

5,346,909

FUNGICIDAL COMPOSITION

Hubert Sauter, Mannheim; Klaus Schelberger, Goennheim; Reinhold Saur, Boehl-Iggelheim; Gisela Lorenz, Neustadt, and Eberhard Ammermann, Heppenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengsellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 25,577, Mar. 3, 1993, Pat. No. 5,286,724, which is a division of Ser. No. 904,654, Jun. 26, 1992, Pat. No. 5,242,920. This application Oct. 14, 1993, Ser. No. 136,035

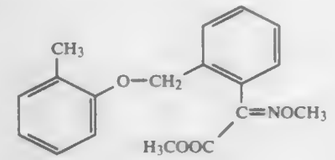
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1991, 4124255

Int. Cl.[5] **A01N** *43/40, 37/12*

U.S. Cl. 514—317 8 Claims

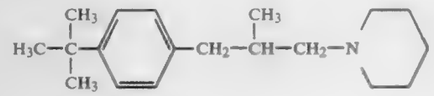
1. A fungicidal composition comprising a synergistically fungicidally effective amount of a composition of

a: methyl α-methoximino-2-[(2-methylphenoxy)-methyl]-phenylacetate of the formula



and

b: N-[3-(4-tert.-butylphenyl)-2-methylpropyl]-piperidine



in a ratio of a:b from 5:1 to 1:5.

5,346,910

MALEIMIDE DERIVATIVES OF OXOTREMORINE

Eugene J. Trybulski, Park Ridge, N.J., and Herbert J. Brabander, Nanuet, N.Y., assignors to American Cyanamid Company, Wayne, N.J.

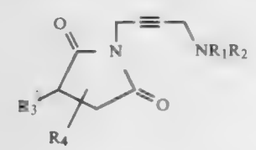
Filed Jun. 3, 1992, Ser. No. 893,146

Int. Cl.[5] **A61K** *31/445, 31/40;* **C07D** *207/40*

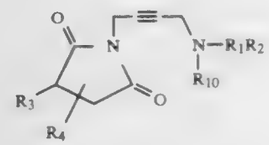
U.S. Cl. 514—326 4 Claims

1. A compound selected from those of the formulae II and IV:

II

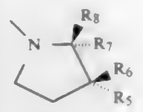


IV



wherein R_1 and R_2 are independently selected from straight and branched (C_1–C_6)alkyl; or R_1 is selected from straight and branched (C_1–C_6)alkyl and R_2 is —$(CH_2)_nR_9$ where n=2–6 and R_9 is selected from hydroxy, (C_1–C_{10})acyloxy, and trialkylsilyloxy or R_1 and R_2 taken together with their associated

N(itrogen) are selected from the group consisting of pyrrolidine, piperidine and moieties of the formula:



wherein R_5 and R_6 are independently selected from (C_1–C_1-0)acyloxy, (C_1–C_6)alkoxy, aroyloxy, substituted aroyloxy (wherein the substituting moiety is selected from hydroxy, halo, alkyl (C_1–C_6) and alkoxy (C_1–C_6), hydroxy, thio, (C_1–C-6)alkylthio, (C_1–C_6)alkyldithio, (C_1–C_{10})acylthio and hydrogen; and R_7 and R_8 are selected from hydrogen, substituted methyl wherein the substituting moiety is selected from hydroxy, halo, (C_1–C_6) alkylsulfonyloxy and phenylsulfonyloxy with the proviso that only one R_5, R_6, R_7, or R_8 can be a substituent other than hydrogen;

R_3 is selected from hydrogen, straight and branched (C_1–C-6)alkyl;

R_4 is selected from, straight and branched (C_1–C_6) alkylthio;

R_{10} is selected from (C_1–C_6)alkyl; and the pharmacologically acceptable salts thereof.

5,346,911

AZABICYCLO AND AZACYCLO OXIME AND AMINE CHOLINERGIC AGENTS AND METHODS OF TREATMENT

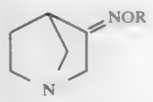
Corinne E. Augelli-Szafran, Ypsilanti; Stephen D. Barrett, Ferndale; Bradley W. Caprathe, Redford; Adam A. Galan, Ann Arbor; Juan C. Jaen, Plymouth, all of Mich.; David J. Lauffer, Stow, Mass.; Walter H. Moos, Oakland, Calif.; Michael R. Pavia, Newton, Mass.; Kathryn B. Sanders, Tecumseh, Mich.; Haile Tecle, and Anthony J. Thomas, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 778,412, Oct. 16, 1991, Pat. No. 5,306,718, which is a continuation-in-part of Ser. No. 641,478, Jan. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 591,647, Oct. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 488,916, Mar. 6, 1990, abandoned. This application Aug. 24, 1993, Ser. No. 110,904

Int. Cl.[5] **A61K** *31/44;* **C07D** *211/70*

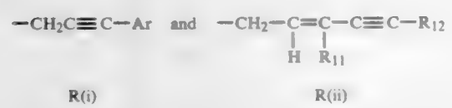
U.S. Cl. 514—339 **12 Claims**

1. A compound of the formula



V

wherein R is selected from the group



R(i) R(ii)

wherein Ar is an aromatic group selected from phenoxy, phenyl, 2-or 3-thienyl, 2-or 3-furanyl,

2- or 3-pyrrolyl, 2-, 3-, or 4-pyridinyl, wherein the aromatic group is unsubstituted or substituted with 1 or 2 substituents selected from straight or branched alkyl having from 1 to 4 carbon atoms, straight or branched alkoxy having from 1 to 4 carbon atoms, chlorine, fluorine, bromine, trifluoromethyl, nitro, hydroxy, trifluoromethoxy, amino, amino substituted with 1 or 2 straight or branched lower alkyl groups having from 1 to 4 carbon atoms;

R_{11} is an alkyl group of 1 to 4 carbon atoms;

R_{12} is hydrogen or Ar as defined above; or an individual geometric and optically active isomer, or a pharmaceutically acceptable salt thereof.

5,346,912

2-CYANO-3-HYDROXY-(N-PYRIDYL)-PROPENAMIDE COMPOUNDS

Elizabeth A. Kuo, Swindon, England, assignor to Roussel-Uclaf, France

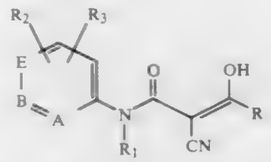
Filed Dec. 20, 1993, Ser. No. 170,372

Claims priority, application United Kingdom, Jan. 5, 1993, 9300083.4

Int. Cl.[5] **C07D** *213/02;* **A61K** *31/44*

U.S. Cl. 514—352 **10 Claims**

1. A compound selected from the group consisting of a compound of the formula



I

wherein two of A, B and E are =CH— and the third is =N—, R is selected from the group consisting of cycloalkyl of 3 to 6 carbon atoms, and alkenyl and alkynyl of 2 to 6 carbon atoms, R_1 is hydrogen or alkyl of 1 to 3 carbon atoms, R_2 and R_3 together are —O—CH_2—O— or are individually selected from the group consisting of hydrogen, halogen, —NO_2, —CN, alkyl, alkylthio and alkoxy of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, —COR_4, —$(CH_2)_m$—CX_3, —O—$(CH_2)_m$—CX_3, —S—$(CH_2)_m$—CX_3, —O—$(CX_2)_m$—CX_3 and —S—$(CX_2)_m$—CX_3, R_4 is hydrogen or alkyl or cycloalkyl of up to 6 carbon atoms, X is halogen and m is 0, 1, 2 or 3 and their addition salts with a non-toxic, pharmaceutically acceptable base.

5,346,913

N-IODOPROPARGYL HYDANTOIN COMPOUNDS, COMPOSITIONS, PREPARATION, AND USE AS ANTIMICROBIAL AGENTS

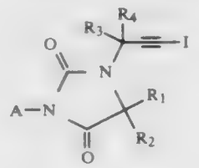
Adam C. T. Hsu, Lansdale; Steven H. Shaber, Horsham, and Enrique L. Michelotti, Fort Washington, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed May 26, 1992, Ser. No. 888,572

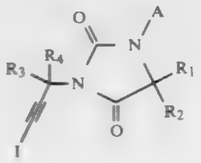
Int. Cl.[5] **C07D** *233/32;* **A61K** *31/53*

U.S. Cl. 514—389 **6 Claims**

1. N-iodopropargyl hydantoin compounds having a structure according to Formula I or Formula II:



I



II

wherein A is selected from C_1 to C_{12} straight or branched

alkyl; benzyl; allyl; C_3–C_6 alkynyl optionally substituted with halogen; and hydrogen;

R_1, R_2 are independently selected from hydrogen; C_1–C_3 alkyl; and phenyl optionally substituted with halogen, nitro, alkoxy (C_1–C_3), or haloalkyl (C_1–C_3); or may be joined together along with the hydantoin ring carbon to which they are attached to form a saturated (C_3–C_7) or unsaturated (C_5–C_7) spiro ring; and

R_3, R_4 are independently hydrogen or C_1–C_3 alkyl.

5,346,914

(4-ALKOXYPYRAN-4-YL) SUBSTITUTED ARYLALKYLARYL-, ARYLALKENYLARYL-, AND ARYLALKYNYLARYLUREA INHIBITORS OF 5-LIPOXYGENASE

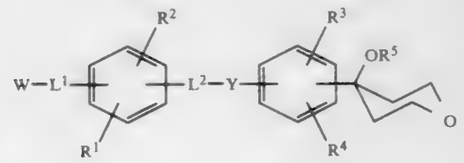
Joseph F. Dellaria, Lindenhurst; Anwer Basha, Lake Forest; Lawrence A. Black, Vernon Hills; Linda J. Dorn, Arlington Heights, and Wendy Lee, Chicago, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed May 14, 1993, Ser. No. 61,988

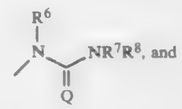
Int. Cl.[5] **A61K** *31/35, 31/415, 31/495;* **C07D** *309/10, 405/10, 405/12*

U.S. Cl. 514—402 **16 Claims**

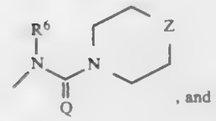
1. A compound of the formula:



or a pharmaceutically acceptable salt thereof wherein W is selected from the group consisting of



(a)



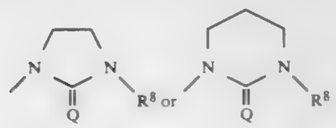
, and

wherein

Q is oxygen or sulfur,

R^6 and R^7 are independently selected from the group consisting of hydrogen and alkyl of one to four carbon atoms, provided that when L^1 is a valence bond, R^6 is alkyl of one to four carbon atoms, or

R^6 and R^7, taken together with the nitrogen atoms to which they are attached, define a radical of the formula



or

R^8 is selected from the group consisting of

hydrogen,

alkyl of one to four carbon atoms,

haloalkyl of one to four carbon atoms,

unsubstituted phenyl,

phenyl substituted with

alkyl of one to four carbon atoms,

alkoxy of one to four carbon atoms,

haloalkyl, or

halogen,

hydroxyalkyl of from one to four carbon atoms,

aminoalkyl of from one to four carbon atoms,

carboxyalkyl of from one to four carbon atoms,

(alkoxycarbonyl)alkyl where the alkyl and alkoxy portions each are of one to four carbon atoms,

(alkylaminocarbonyl)alkyl, where the alkyl and aminoalkyl portions each are of one to four carbon atoms; and

Z is —CH2—, oxygen, sulfur, or —NR9 wherein R9 is hydrogen or alkyl of one to four carbon atoms;

L^1 is a valence bond or is selected from alkylene of one to three carbon atoms, propenylene, and propynylene;

R^1, R^2, R^3, and R^4 are independently selected from the group consisting of

alkyl of one to four carbon atoms,

alkoxy of one to four carbon atoms,

haloalkyl,

halogen,

cyano,

amino,

alkoxycarbonyl of one to four carbon atoms, and

dialkylaminocarbonyl where the alkyl portions are each of one to four carbon atoms;

L^2 is a valence bond or is selected from alkylene of one to three carbon atoms, propenylene, and propynylene;

Y is selected from the group consisting of

oxygen,

>NR10, where R10 is hydrogen or alkyl of one to four carbon atoms, and

where n=0, 1, or 2; and

R^5 is alkyl of one to four carbon atoms.

16. A method of inhibiting 5-lipoxygenase enzyme activity in a mammal in need of such treatment comprising administering an effective amount of a compound as defined in claim **1**.

5,346,915

CHROMANS AND THIOCHROMANS WITH PHENYLETHYNYL SUBSTITUENTS AT THE 7-POSITION HAVING RETINOLD-LIKE BIOLOGICAL ACTIVITY

(b) **Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allergan, Inc., Irvine, Calif.**

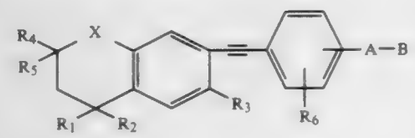
Continuation of Ser. No. 655,524, Feb. 13, 1991, abandoned. This application Jan. 6, 1993, Ser. No. 1,009

The portion of the term of this patent subsequent to Dec. 25, 2007, has been disclaimed.

Int. Cl.[5] **A61K** *31/38, 31/35;* **C07D** *335/06, 311/04*

U.S. Cl. 514—432 **30 Claims**

1. A compound of the formula



where X is S or O;

R_1, R_2, R_4 and R_5 independently are hydrogen or lower alkyl of 1 to 3 carbons, and R_3 is hydrogen or lower alkyl;

A is lower branched chain alkyl having 2 to 6 carbons, cycloalkyl having 3 to 6 carbons, alkenyl having 2 to 6 carbons and 1 or 2 double bonds, alkynyl having 2 to 6 carbons and 1 or 2 triple bonds, $(CH_2)_n$ and where n is an integer from 0–5;

R_6 is hydrogen, lower alkyl, lower alkenyl or lower cycloalkyl having 1 to 6 carbons, or halogen; and

B is COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $COONR_9R_{10}$, where R_8 is an alkyl group of 1 to

10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or phenyl or lower alkylphenyl.

5,346,916

ALKOXY-3-[(TOLUENESULFONYLAMINOALKYL-)AMINO] CHROMAN COMPOUNDS

Gérald Guillaumet, Orleans, and Béatrice Guardiola, Neuilly Sur Seine, both of France, assignors to Adir Et Compagnie, Courbevoie, France

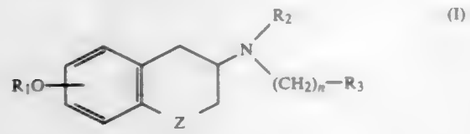
Division of Ser. No. 959,044, Oct. 9, 1992, which is a division of Ser. No. 677,136, Mar. 29, 1991, Pat. No. 5,252,578. This application Mar. 16, 1993, Ser. No. 33,156

Claims priority, application France, Apr. 9, 1990, 90 04481

Int. Cl.[5] A61K *31/385;* **C07D** *335/04*

U.S. Cl. 514—434 **13 Claims**

1. A compound selected from those of formula (I):



(I)

in which:

Z represents oxygen or sulfur,

R_1 represents hydrogen or $(C_1$–$C_6)$ alkyl,

R_2 represents hydrogen or $(C_1$–$C_6)$ alkyl,

n is an integer of 1 to 6 inclusive,

R_3 represents an amino group substituted with:

an phenylsulfonyl optionally substituted with alkyl, alkoxy, hydroxyl, or halogen,

its enantiomers, diastereoisomers and epimers and its pharmaceutically-acceptable acid addition salts.

5,346,917

THIOXANTHENONE ANTITUMOR AGENTS

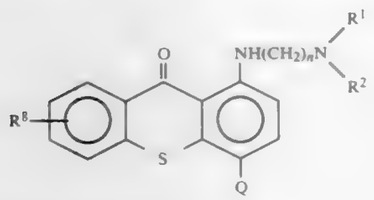
Theodore C. Miller; Joseph C. Collins, both of East Greenbush; Kenneth C. Mattes, Irondequoit; Mark P. Wentland, Colonie, all of N.Y.; Robert B. Perni, Robeson, Pa.; Thomas H. Corbett, Grosse Pointe Park, Mich., and Joseph W. Guiles, Chester Springs, Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

Continuation-in-part of Ser. No. 835,159, Feb. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 713,173, Jun. 10, 1991, abandoned. This application Apr. 8, 1993, Ser. No. 44,843

Int. Cl.[5] A01N *43/18;* **C07D** *335/12*

U.S. Cl. 514—437 **25 Claims**

1. A compound of formula



wherein n is 2 or 3;

R^1 and R^2 are independently lower-alkyl;

Q is $CH_2N(R^4)SO_2R^7$;

R^4 is hydrogen, lower-alkyl or Ar;

R^7 is lower-alkyl, or Ar;

R^8 is hydrogen, lower-alkyl, lower-alkoxy, or hydroxy; and

Ar is phenyl or phenyl substituted with methyl, methoxyl, hydroxy, halogen or nitro, with the proviso that when n is 2, R^1 and R^2 are ethyl, R^8 is hydrogen and Q is CH_2NHSO_2Ar, the Ar group cannot be 4-monosubstituted by methyl or halogen;

or a pharmaceutically acceptable acid-addition salt or solvate thereof.

5,346,918

MILBEMYCIN ETHER DERIVATIVES, THEIR PREPARATION AND THEIR THERAPEUTIC AND AGROCHEMICAL USES

Yasuhiro Morisawa; Akio Saito; Toshimitsu Toyama, and Susumu Kaneko, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

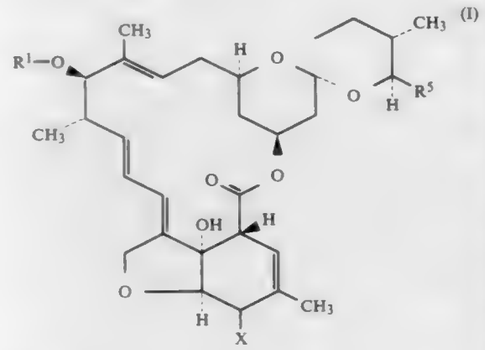
Filed Feb. 27, 1991, Ser. No. 661,833

Claims priority, application Japan, Mar. 1, 1990, 2-50760

Int. Cl.[5] A61K *31/365;* **C07D** *325/00*

U.S. Cl. 514—450 **17 Claims**

1. A compound of the formula (I):



(I)

in which:

R^1 represents: a cycloalkyl group having from 4 to 8 carbon atoms; an alkyl group having from 1 to 4 carbon atoms and substituted by a cycloalkyl group having from 3 to 8 carbon atoms, said cycloalkyl group being unsubtituted or having at least one substituent selected from the group consisting of substituents (c); or a group having the following formula:



(i)

wherein:

R^2 represents: a hydrogen atom; a halogen atom; a cyano group; a nitro group; an alkyl group having from 1 to 4 carbon atoms; a substituted alkyl group which has from 1 to 4 carbon atoms and which has at least one substituent selected from the group consisting of substituents (a); an alkoxy group having from 1 to 4 carbon atoms; an alkoxyalkoxy group having a total of from 2 to 6 carbon atoms; or a group having one of the following formulae:

$-(CH_2)_nNHR^9$

$-(CH_2)_nNR^9COR^6$

$-(CH_2)_nNR^9COCOR^6$

$-(CH_2)_nNR^9COCOOR^7$

$-(CH_2)_nNR^9CHR^6NHCOR^6$

$-(CH_2)_nNR^9CHR^6NHCONHR^6$

$-(CH_2)_nNR^9CHR^6NHCOOR^7$

$-(CH_2)_nNR^9C(=Y)YR^6$

$-(Ch_2)_nNR^9C(=Y)NR^6R^6$

$-(CH_2)_nNR^9C(=Y)NR^6NR^6R^6$

$-(CH_2)_nNR^9C(=Y)NR^6NHZ$

$-(CH_2)_nNR^9C(=NR^{10})NHR^{10}$

$-(CH_2)_nNR^9C(=NR^{10})R^6$ or

$-(CH_2)_nNR^9SO_mR^6$

wherein:

m is 1 or 2;

n is 0, 1 or 2;

R^6 represents a hydrogen atom; an alkyl group having from 1 to 8 carbon atoms; a substituted alkyl group having from 1 to 8 carbon atoms and having at least one substituent selected from the group consisting of substituents (b); an aliphatic hydrocarbon group having from 2 to 8 carbon atoms and having one or two carbon-carbon double or triple bonds; a cycloalkyl group having from 3 to 8 carbon atoms; a substituted cycloalkyl group having from 3 to 8 carbon atoms and having at least one substituent selected from the group consisting of substituents (c); an aryl group which has from 6 to 14 ring carbon atoms and which is unsubstituted or which has at least one substituent selected from the group consisting of substituents (c); an aryloxy group which has from 6 to 14 ring carbon atoms and which is unsubstituted or which has at least one substituent selected from the group consisting of substituents (c); an arylthio group which has from 6 to 14 ring carbon atoms and which is unsubstituted or which has at least one substituent selected from the group consisting of substituents (c); and, where there are two or more groups or atoms represented by R^6, these are the same or different from each other;

R^7 represents an alkyl group having from 1 to 4 carbon atoms, a cycloalkyl group having from 3 to 7 carbon atoms, or an aralkyl group in which an alkyl group having from 1 to 4 carbon atoms is substituted by from 1 to 3 aryl groups which have from 6 to 10 ring carbon atoms and which have at least one substituent selected from the group consisting of substituents (c);

R^9 represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms;

R^{10} represents any of the groups or atoms defined above for R^6, or it represents a cyano group, a nitro group, a group of formula $—COOR^7$, wherein R^7 is as defined above, or a group of formula $—COR^6$, wherein R^6 is as defined above;

Y represents an oxygen atom or a sulfur atom; and, where there are two or more groups represented by Y, these are the same or different from each other;

Z represents a group of formula $—COOR^7$, wherein R^7 is as defined above, a group of formula $—COR^6$, wherein R^6 is as defined above, or a group of formula $—SO_2R^6$, wherein R^6 is as defined above;

Q represents a methylene group, an ethylene group or a group of formula $—OCH_2—$;

R^5 represents a methyl group, an ethyl group, an isopropyl group or a sec-butyl group; and

X represents: a hydroxy group; an alkanoyloxy group which has from 1 to 5 carbon atoms, and which is unsubstituted or has at least one substituent selected from the group consisting of substituents (d); or a hydroxyimino group;

substituents (a):

halogen atomes, alkoxy groups having from 1 to 4 carbon atoms, alkylthio groups having from 1 to 4 carbon atoms, and alkanoyloxy groups having from 1 to 5 carbon atoms;

substituents (b):

cycloalkyl groups having from 3 to 8 carbon atoms; alkoxy groups having from 1 to 4 carbon atoms; alkylthio groups having from 1 to 4 carbon atoms; cyanoalkylthio groups having from 2 to 5 carbon atoms; alkoxycarbonyl groups having from 2 to 5 carbon atoms; halogen atoms; cyano groups; nitro groups; amino groups; aryl groups which have from 6 to 14 ring carbon atoms and which are unsubstituted or have at least one substitutent selected from the group consisting of substituents (c); aryloxy groups which have from 6 to 14 ring carbon atoms and which are unsubstituted or have at least one substituent selected from the group consisting of substituents (c); and arylthio groups which have from 6 to 14 ring carbon atoms and which are unsubstituted or have at least one substituent selected from the group consisting of substitutents (c);

substituents (c):

alkyl groups having from 1 to 4 carbon atoms, alkoxy groups having from 1 to 4 carbon atoms, alkylthio groups having from 1 to 4 carbon atoms, alkanoyloxy groups having from 1 to 5 carbon atoms, alkoxycarbonyl groups having from 2 to 5 carbon atoms, halogen atoms, cyano groups, nitro groups, amino groups, alkylamino groups in which the alkyl parts has from 1 to 4 carbon atoms, dialkylamino groups in which each alkyl part is independently selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms, carbamoyl groups, alkylcarbamoyl groups in which the alkyl part has from 1 to 4 carbon atoms, dialkylcarbamoyl groups in which each alkyl part is independently selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms, and alkanoylamino groups having from 1 to 5 carbon atoms;

substituents (d):

halogen atoms, alkoxy groups having from 1 to 4 carbon atoms, alkoxycarbonyl groups having from 2 to 5 carbon atoms, and carboxy groups.

5,346,919

ANTI-BACTERIAL SUBSTANCES AND MICROORGANISMS WHICH PRODUCE THEM

Tsuneo Watanabe, Tsukuba; Takeshi Yasumoto, Sendai; Michio Murata, Tokyo; Michito Tagawa, Saitama; Hiroyuki Narushima, Saitama; Takashi Furusato, Saitama; Masao Kuwahara, Saitama; Masami Hanaue, Saitama, and Tatsuya Seki, Funabashi, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

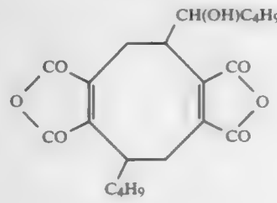
Filed Aug. 2, 1993, Ser. No. 100,171

Claims priority, application Japan, Aug. 3, 1992, 4-206690

Int. Cl.[5] A61K *31/34;* **C07D** *307/93;* **C12P** *7/40*

U.S. Cl. 514—468 **12 Claims**

1. A compound represented by the structural formula (A):



(A)

or a free acid formed by hydrolyzing one or two acid anhydride groups of compound A, or an ester, or salt thereof.

5,346,920

CARBAMIC ACID DERIVATIVES, AND THEIR PRODUCTION AND USE

Noriyasu Sakamoto, Nishinomiya; Hirosi Kisida, Takarazuka; Noritada Matsuo, Itami; Hiroaki Fujimoto, and Kimitoshi Umeda, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

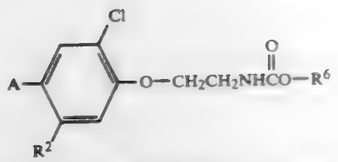
Continuation of Ser. No. 856,734, Mar. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 705,344, May 24, 1991, abandoned. This application May 17, 1993, Ser. No. 62,328

Claims priority, application Japan, Jun. 6, 1990, 2-149017

Int. Cl.[5] C07C *261/00;* **A01N** *37/12*

U.S. Cl. 514—539 **17 Claims**

1. A carbamic acid derivative of the formula:



wherein A is 3,5-difluorophenoxy, 3,4-dichlorophenoxy, 3-chlorophenoxy, 4-chlorophenoxy or 4-fluorophenoxy; R^2 is a hydrogen atom or a chlorine atom, and R^6 is a methyl group, an ethyl group or a 2-chloroethyl group.

5,346,921

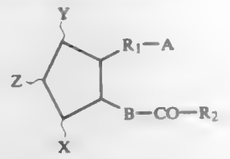
TREATMENT OF INFLAMMATION WITH 15-KETO-PROSTAGLANDIN COMPOUNDS

Ryuji Ueno, Hyogo, Japan, assignor to R-Tech Ueno, Ltd., Osaka, Japan

Continuation of Ser. No. 726,672, Jul. 8, 1991, abandoned. This application Nov. 5, 1992, Ser. No. 972,092
Claims priority, application Japan, Jul. 10, 1990, 2-184963
Int. Cl.[5] A61K *31/19, 31/557, 31/12*
U.S. Cl. 514—573 **12 Claims**

1. A method of treatment of a patient having an inflammation characterized by lesions caused by a defensive reaction or an inflammatory reaction of the patient and having signs of redness, heat, pain, swelling and loss of function which comprises administering, to a subject in need of such treatment, an anti-inflammatorily effective amount of a 15-keto-prostaglandin compound having the formula:

(I)



wherein X and Y are hydrogen, hydroxy, halo, lower alkyl, hydroxy(lower)alkyl, or oxo, with the proviso that at least one of X and Y is a group other than hydrogen, and the 5-membered ring may have at least one double bond, Z is hydrogen or halo, A is $—CH_2OH$, $—COCH_2OH$, —COOH or its functional derivative, B is $—CH_2—CH_2$, —CH=CH— or —C≡C—, R_1 is a bivalent saturated or unsaturated, lower or medium aliphatic hydrocarbon residue which is unsubstituted or substituted with halo, oxo or aryl, R_2 is a saturated or unsaturated, lower or medium aliphatic hydrocarbon residue which is unsubstituted or substituted with halo, hydroxy, oxo, lower alkoxy, lower alkanoyloxy, cyclo(lower)alkyl, aryl or aryloxy, and a carbon atom of R_2 adjacent to the "CO" is substituted by at least one halogen atom; or R_2 is a saturated or unsaturated aliphatic hydrocarbon residue containing a 5 carbon atom chain attached to the "C" of the "CO" which is unsbustituted or substituted with halo, hydroxy, oxo, lower alkoxy, lower alkanoyloxy, cyclo(lower)alkyl, aryl or aryloxy, [and said carbon atom of R_2 adjacent to the CO is substituted by at least one halogen atom or] and the terminal carbon atom of R_2 is substituted by a lower alkyl.

5,346,922

INSECT REPELLENT LOTIONS AND SPRAYS

Donald T. Beldock, New York, N.Y., and John A. Beldock, Washington, D.C., assignors to Primavera Laboratories, Inc., Rye, N.Y.

Division of Ser. No. 905,166, Jun. 24, 1992, Pat. No. 5,227,406, which is a continuation of Ser. No. 506,471, Apr. 9, 1990, abandoned. This application Mar. 26, 1993, Ser. No. 37,260
Int. Cl.[5] A01N *31/02, 31/04, 31/06*
U.S. Cl. 514—703 **10 Claims**

1. An insect repellent, comprising:

a) a conveying medium constituting up to 99.97% of the insect repellent;
b) between 0.01% and 1% terpineol;
c) between 0.01% and 1% citronella; and
d) between 0.01% and 1% rhodinol extra,

wherein all listed percentages (%) are weight percentages, and wherein said terpineol, citronella, and rhodinol extra together constitute no more than 3% of the insect repellent, and wherein said conveying medium with said terpineol, said citronella, and said rhodinol extra is suitable for application on human skin.

5,346,923

Patent Not Issued For This Number

5,346,924

HETEROGENEOUS ION EXCHANGE MATERIALS COMPRISING POLYETHYLENE OF LINEAR LOW DENSITY OR HIGH DENSITY HIGH MOLECULAR WEIGHT

Anthony Giuffrida, North Andover, Mass., assignor to IP Holding Company, Wilmington, Del.

Filed Sep. 23, 1992, Ser. No. 949,707
Int. Cl.[5] C08J *5/20, 5/22*
U.S. Cl. 521—28 **18 Claims**

1. A heterogeneous ion exchange material which comprises an ion exchange resin incorporated within a binder, the binder comprising a material selected from the group consisting of (a) linear low density polyethylene and (b) high density polyethylene having an average molecular weight greater than 200,000.

5,346,925

METHOD FOR PRODUCING α-OLEFIN POLYMERS

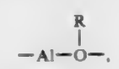
Toshihiko Sugano; Takashi Fujita, and Kazuyo Kuwaba, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Nov. 10, 1993, Ser. No. 149,911
Claims priority, application Japan, Nov. 10, 1992, 4-300138; Nov. 11, 1992, 4-301146; Dec. 9, 1992, 4-329509
Int. Cl.[5] C08J *9/40*
U.S. Cl. 521—54 **21 Claims**

1. In a process for preparing α-olefin polymers in which an α-olefin is contacted with a catalyst to polymerize, the improvement which comprise the use as the catalyst of a solid product comprising Components (ii) and (iii) supported on Component (i):

Component (i) being an organic porous polymer having an average particle diameter of 5 to 1,000 μm, in which the total pore volume of all pores whose diameter is 0.006 to 10 μm is no smaller than 0.3 cc/g, and the total pore volume of all pores whose diameter is 0.05 to 2 μm is no smaller than 50% of the total pore volume of all pores whose diameter is 0.006 to 10 μm;

Component (ii) being a compound having the structure



in which R is a hydrocarbyl group having 1 to 10 carbon atoms; and

Component (iii) being a compound of a transition metal of the Groups IVB to VIB in the Periodic Table, having at least one conjugated 5-membered cyclic ligand.

5,346,926

SMALL DIAMETER ELECTRIC WIRE INSULATED WITH HIGHLY EXPANDED CELLULAR POLYETHYLENE AND PRODUCTION THEREOF

Toshio Sakamoto; Kenichiro Kumai, and Shigeru Gotoh, all of Kanagawa, Japan, assignors to Nippon Unicar Company Limited, Tokyo, Japan

Filed Oct. 14, 1993, Ser. No. 136,667
Int. Cl.[5] C08J *9/06*
U.S. Cl. 521—81 **7 Claims**

1. A process for producing an expandable resin composition for a small diameter electric wire insulated with a highly-expanded cellular polyethylene, said process comprising:

(1) heat-kneading at a temperature higher than 135° C.
(i) 100 parts by weight of a low density polyethylene having a density of 0.890 to 0.925 g/ml;
(ii) 1 to 110 parts by weight of a high-density polyethylene having a melting point higher than 130° C.; and
(iii) 0.3 to 5 parts by weight of a low molecular weight polyolefin wax having an average molecular weight 1500 to 8000 and a melting point of 100° C. to 160° C.; and

(2) heat-kneading at a temperature of 120° C. to 130° C. and at preliminary expansion ratio lower than 5%:
(i) 100 parts by weight of the mixture obtained in (1) with;
(ii) 0.5 to 5 parts by weight of a low temperature decomposable chemical blowing agent.

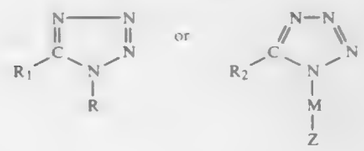
5,346,927

BLOWING AGENTS OF THE TETRAZOLES AND THEIR DERIVATIVES

Atsuhiro Onishi, Takasago; Koichi Matsunami, Toyonaka; Masanao Ebara, and Hiroaki Tanaka, both of Takasago, all of Japan, assignors to Toyo Kasei Kogyo Company, Ltd., Japan

Continuation-in-part of Ser. No. 798,561, Nov. 26, 1991, abandoned. This application Sep. 8, 1992, Ser. No. 941,836
Claims priority, application Japan, Nov. 26, 1990, 3-24953; Aug. 26, 1991, 240402
Int. Cl.[5] C08J *9/10*
U.S. Cl. 521—90 **7 Claims**

1. In a process for the production of cellular products which comprises incorporating a blowing agent into rubber or a synthetic polymer and then heating to activate the blowing agent, the improvement which comprises using as the blowing agent tetrazole compounds represented by the formulae:



where:

R and R_1 are the same or different and are OH, COOH, SO_3H, NO_2, halogen and NR_4R_5 wherein R_4 and R_5 are each H or C_1–C_4 alkyl or R and R_1 are phenyl, benzyl, or phenethyl substituted or substituted by 1 to 3 halogens, OH, NO_2, COOH and NR_4R_5 wherein R_4 and R_5 are as defined above, R_2 is H, OH, COOH, SO_3H, NO_2, halogen or NR_4R_5 wherein R_4 and R_5 are as defined above, C_1 to C_6 alkyl, C_3 to C_6 cycloalkyl or C_2 to C_6 alkenyl, unsubstituted or substituted by C_1 to C_6 alkyl, OH, COOH, SO_3H, NO_2, halogen or NR_4R_5 wherein R_4 and R_5 are as defined above or R_2 is phenyl, benzyl or phenethyl unsubstituted or substituted by 1 to 3 halogens, OH, NO_2 or NR_4R_5, wherein R_4 and R_5 are as defined above, C_1 to C_4 alkyl and esters or amides of lower carboxylic acids;

M is Ca, Cu, Zn, Mn, Fe, Co, Ni or Ba and Z is a univalent inorganic or organic group which binds to or forms a salt with M.

5,346,928

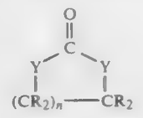
RIGID POLYURETHANE FOAMS

Rik De Vos, Rotselaar, and N. Washington Keane, Kraainem, both of Belgium, assignors to Imperial Chemical Industries PLC, London, England

Filed Sep. 9, 1993, Ser. No. 119,273
Int. Cl.[5] C08L *75/04*
U.S. Cl. 521—166 **20 Claims**

1. Process for the preparation of rigid foams comprising the step of reacting an organic polyisocyanate with an isocyanate-reactive material in the presence of a blowing promotor being an isocyanate-reactive cyclic compound of formula:

(I)



wherein

Y is O or NR^1 wherein each R^1 independently is a lower alkyl radical of C_1–C_6 or a lower alkyl radical substituted with an isocyanate-reactive group;

each R independently is hydrogen, a lower alkyl radical of C_1–C_6 or $(CH_2)_m$—X wherein X is an isocyanate-reactive group which is OH or NH_2 and m is 0, 1 or 2; and

n is 1 or 2;

with the proviso that at least one of R^1 or R is or comprises an isocyanate-reactive group;

and in the presence of an inert insoluble organic liquid which is present as the dispersed phase of an emulsion or a micro-emulsion and in the presence of a metal salt catalyst characterised in that the isocyanate-reactive material comprises a polyether polyol of average nominal functionality 2 to 6 and number average equivalent molecular weight between 1000 and 2000.

5,346,929

BIODEGRADABLE PLASTIC AND ARTICLES MADE THEREFROM

Alvin Guttag, 6612 Whittier Blvd., Bethesda, Md. 20817

Division of Ser. No. 486,217, Feb. 28, 1990, Pat. No. 5,120,089. This application Mar. 18, 1992, Ser. No. 853,428
Int. Cl.[5] C08L *3/00, 1/00;* **C12N** *1/26;* **D21C** *1/00;* **C08K** *5/00, 5/56*
U.S. Cl. 523—124 **25 Claims**

1. A biodegradable plastic comprising at least one synthetic plastic polymer, at least one natural polymer and a polymer attacking agent for said synthetic plastic polymer or said natural polymer wherein said polymer attacking agent comprises a microorganism or an enzyme.

5,346,930

RIGID FIBERBOARD

Richard L. Maine, North Windham, Conn., and Joseph W. Cook, Brighton, Tenn., assignors to Lydall, Inc., Manchester, Conn.

Continuation-in-part of Ser. No. 789,065, Nov. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 714,679, Jun. 13, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 48,677
Int. Cl.[5] C09D *13/00;* **C08K** *11/00*
U.S. Cl. 523—164 **12 Claims**

1. A pencil slat, comprising:

(A) about 38% to 75% of wet-laid recycled cellulose fibers recovered from recycled materials selected from the group consisting of recycled papers, linters, rags and mixtures thereof;

(B) about 10% to 30% of organic, particulate filler selected from the group consisting of corn cob flour, corn starch, rice hull flour, nut shell flour, fruit pit flour, wood flour, cork dust and mixtures thereof;

(C) a sufficient amount of thermosetting binder to provide rigidity to the pencil slat and within the range of about 10% to 35%, said binder being selected from the group consisting of phenolic resins, melamine resins, urea-formaldehyde resins, epoxy resins and mixtures thereof; and

(D) a sufficient amount of lubricating agent to allow a pencil made with said slat to be smoothly sharpened and within the range of about 2% to 15%, said lubricating agent being selected from the group consisting of polyethylene powder, wax, talc, stearates, fatty acids and mixtures thereof.

5,346,931

COLOR FORMER PREPARATIONS

Dietrich Hoffmann, Roedersheim-Gronau, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 24, 1992, Ser. No. 825,374

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1991, 4103966

Int. Cl.[5] C08K *9/10*

U.S. Cl. 523—201 **8 Claims**

1. A color former comprising

A) a core of solid particles of a color former containing a colorless or barely colored color former of fluorans, lactones, phthalides or spirodipyrans which in contact with an electron acceptor gives a color reaction,

B) a first envelope of a water-soluble nonionic polymer, and

C) a second envelope of a crosslinked polymer.

5,346,932

SILICONE RUBBER COMPOSITION AND METHOD FOR CURING THE SAME

Masaharu Takahashi, Gunma, and Jun Hatakeyama, Ibaraki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 654,428, Jan. 25, 1991, abandoned. This application Aug. 19, 1992, Ser. No. 932,138

Claims priority, application Japan, Jan. 26, 1990, 2-17081

Int. Cl.[5] C08K *9/06;* **C08L** *83/00;* **B29C** *35/08*

U.S. Cl. 523—213 **21 Claims**

1. A silicone rubber composition curable by irradiation with high-frequency electromagnetic waves which comprise, as a uniform blend:

(a) 100 parts by weight of a diorganopolysiloxane represented by the average unit formula

$$R_aSiO_{(4-a)/2},$$

in which R is an unsubstituted or substituted monovalent hydrocarbon group having 1 to 10 carbon atoms and a is a positive number in the range from 1.95 to 2.05, and having an average degree of polymerization in the range from 3,000 to 30,000;

(b) from 10 to 300 parts by weight of an unmodified finely divided silica filler substantially having a chemical formula of SiO_2;

(c) from 25 to 100 parts by weight of an organic-modified silica or polyorganosilsesquioxane powder each having cyanoalkyl functional organic groups bonded to the silicon atoms, the content of the functional organic groups being at least 0.3% by weight in the silica or polyorganosilsesquioxane powder; and

(d) an organic peroxide curing agent in an amount sufficient to cure the composition when the composition is heated.

5,346,933

THERMOPLASTIC/THERMOSETTABLE COATINGS OR INKS FOR GLASS, CERAMIC AND OTHER HARD SURFACES

Timothy A. Knell, McMurray, Pa., assignor to Cerdec Corporation, Washington, Pa.

Filed Dec. 30, 1992, Ser. No. 998,628

Int. Cl.[5] C08K *3/20;* **C08L** *63/02, 63/04*

U.S. Cl. 523—427 **2 Claims**

1. A thermoplastic/thermosettable coating or ink composition for glass, ceramic or other hard surface which comprises

(a) a blend of epoxy resins selected from the group consisting of bisphenol A epoxy resin, bisphenol F epoxy resin, epoxy cresyl novolac resin and epoxy phenol novolac resin, the said epoxy resins having an epoxide equivalent weight of 150 to 2000 and the blend having a viscosity, determined by Brookfield HBT Viscometer at 200° F. 5 RPM, in the range of 500 to 15,000 cps,

(b) a dicyandiamide curing agent for said epoxy blend which provides a latency period of about 30 minutes at a screening temperature of about 120°–270° F.,

(c) an adhesion promoter in an amount up to about 5% by weight of the composition,

(d) a wetting agent in an amount up to about 5% by weight of the composition, and

(e) a rheological modifier in an amount up to about 10% by weight of the composition, the melting or softening point of said composition being in the range of about 10° C. to about 120° C.

5,346,934

FOOTWEAR ADDITIVE MADE FROM RECYCLED MATERIALS

Henry T. Chriss, 3280 SW. 170th, #1008, Beaverton, Oreg. 97005

Filed Dec. 21, 1992, Ser. No. 994,591

Int. Cl.[5] C08L *89/06;* **B32B** *9/02*

U.S. Cl. 524—11 **7 Claims**

1. A composition useful for athletic shoe midsoles and outsoles, said composition comprising:

(a) a material selected from the group consisting of (i) crosslinked or millable polyurethane and (ii) natural or synthetic rubbers; and

(b) about 10–25 wt % of a homogeneous additive made from recycled shoe materials, said additive exhibiting an average particle size within the range. from about 450μm to about 550 μm with a deviation of less than about 20% from the average particle size and made of a mixture comprising:

65–80 wt % natural or synthetic rubber,

2–5 wt % polyurethane foam,

1–2.5 wt % natural or synthetic leather, and

10–15 wt % of fibrous material.

5,346,935

HYDROGEL

Yasuyuki Suzuki, Suita, and Hisayoshi Shimizu, Takatsuki, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 888,926, May 27, 1992, abandoned. This application Nov. 2, 1993, Ser. No. 144,510

Claims priority, application Japan, May 28, 1991, 3-154000

Int. Cl.[5] C08L *1/00*

U.S. Cl. 524—18 **8 Claims**

1. A hydrogel consisting essentially of water, protirelin, polyvinyl alcohol and at least one substance which can absorb 50 to 2000 times their weights of water, the substance which can absorb water being selected from the group consisting of water-absorbent resins, polyacrylate salt polymers, hyaluronic acid or a salt thereof and β-1,3-glucan.

5,346,936

STARCH/POLYMER MIXTURE, PROCESS FOR THE PREPARATION THEREOF, AND PRODUCTS OBTAINABLE THEREFROM

Friedrich S. Buehler, Thusis; Eduard Schmid, Bonaduz, and Hans-Joachim Schultze, Chur, all of Switzerland, assignors to EMS-Inventa AG, Switzerland

Filed Jun. 15, 1992, Ser. No. 898,132

Claims priority, application Fed. Rep. of Germany, Jun. 17, 1991, 4119915

Int. Cl.[5] C08L *3/04, 101/00;* **C08K** *5/21, 5/05*

U.S. Cl. 524—47 **27 Claims**

1. A biodegradable, single-phase starch/polymer mixture comprising

(a) 10 to 99 parts by weight of a starch molding composition comprising

(i) 95 to 45 parts by weight of at least one chemically modified starch,

(ii) 0.1 to 5 parts by weight of urea, urea derivatives, or mixtures thereof,

(iii) 4.9 to 50 parts of at least one plasticizer, the parts of (i), (ii), and (iii) adding up to 100, and

(b) 90 to 1 parts by weight of at least one linear polymer other than ethylene copolymers, the parts of components (a) and (b) adding up to 100.

5,346,937

MODIFYING AGENTS FOR THERMOSETTING RESINS AND THERMOSETTING RESINS PREPARED USING THESE AGENTS

Josef Kuchler, Trostberg; Hans-Georg Erben, Rosenheim, and Josef Seeholzer, Trostberg, all of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 861,960, Apr. 2, 1992, abandoned. This application Jun. 11, 1993, Ser. No. 74,548

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1991, 4111142

Int. Cl.[5] C08G *12/40, 12/34*

U.S. Cl. 524—47 **16 Claims**

1. A process for the manufacture of a modified melamine-formaldehyde resin comprising:

subjecting the following to an aqueous condensation reaction, by combining:

1 mol of melamine;

1.5 to 3.5 mol of formaldehyde;

0.5 to 5% by weight of a polyhydric alcohol based on melamine plus formaldehyde; and,

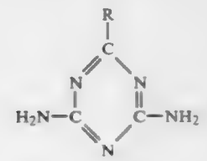
0.5 to 10% by weight of a modifying agent based on the weight of the melamine and formaldehyde

wherein said condensation reaction is at a pH of about 7.5 to about 10 and a temperature of about 70° to about 100° C. up to a water-dilutability of 1:1.0 to 2.0 and wherein said polyhydric alcohol is selected from the group consisting of ethylene glycol, diethylene glycol, dipropylene glycol, diisopropylene glycol, dibutylene glycol, di-tert-butylene glycol and ethylene propyl glycol and wherein said modifying agent comprises:

a) 10 to 75% by weight of dicyandiamide;

b) 5 to 70% by weight of cold water soluble starch which is soluble at about 18° to about 25° C.; and,

c) 20 to 85% by weight of a guanamine of the general formula



wherein R is a radical selected from the group consisting of methyl, phenyl, and phenyl substituted by an alkyl group.

5,346,938

SMOKE SUPPRESSED FLAME RETARDANT UNSATURATED POLYESTER RESIN COMPOSITIONS

Enrico J. Termine; Nicolai A. Favstritsky, both of Lafayette, and Kevin G. Taylor, W. Lafayette, all of Ind., assignors to Great Lakes Chemical Corp., W. Lafayette, Ind.

Continuation-in-part of Ser. No. 408,143, Sep. 15, 1989, abandoned, which is a continuation-in-part of Ser. No. 289,973, Dec. 22, 1988, abandoned. This application Jul. 3, 1991, Ser. No. 725,341

Int. Cl.[5] C08K *3/22, 3/40, 5/521*

U.S. Cl. 524—117 **12 Claims**

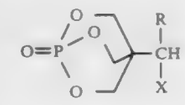
1. A smoke suppressed thermoset resin composition comprising:

a thermoset polyester resin; and

a mixture comprising:

at least one flame retardant agent selected from alumina trihydrate or magnesium hydroxide; and

a smoke suppressant comprising at least one bicyclic phosphate compound of the formula:



where X is OH, OR′ or OC(O)R′; R is H or a saturated or unsaturated straight-chain or branched-chain C_1–C_{17} alkyl; and R′ is a saturated or unsaturated C_1–C_{17} alkyl.

5,346,939

WATER CURABLE RESIN COMPOSITIONS

Dean M. Moren, North St. Paul, and Dean A. Ersfeld, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 25, 1993, Ser. No. 8,743

Int. Cl.[5] C08J *3/215, 3/21;* **C08L** *23/02*

U.S. Cl. 524—176 **25 Claims**

1. A water-curable polymer solution comprising:

(a) about 30–99 wt-% of a water-reactive liquid organometallic compound having at least three hydrolyzable groups per molecule; and

(b) about 1–70 wt-% of a nonreactive organic thermoplastic polymer, having a number average molecular weight of at least about 1,000, dissolved within the water-reactive liquid organometallic compound;

wherein the polymer solution is stable at a temperature of about 0°–100° C. and is capable of curing upon exposure to water to form a composite material at a temperature of about 10°–100° C.

5,346,940

TWO-PART FAST CURING RTV SILICONE FOR FORMED-ON-PART AUTOMOTIVE GASKET

David M. Brassard, Aurora; Hans E. Haas, Stow, and David W. Friedel, Chesterland, all of Ohio, assignors to Loctite Corporation, Hartford, Conn.

Filed Mar. 24, 1993, Ser. No. 36,496

Int. Cl.[5] C08K *5/54*

U.S. Cl. 524—267 **15 Claims**

1. A fast curing two-part RTV silicone formulation comprising:

a silanol terminated polyorganosiloxane;

at least 5% by weight of the formulation of a tri- or tetramethoxy or enoxy functional silane crosslinker;

water; and,

a condensation catalyst selected from the group consisting of

stannous carboxylate compounds, dimethyl tin (IV) compounds and mixtures thereof, the water being present in a first of said two parts and the second of said two parts being free of water and comprising said crosslinker component.

5,346,941

POWDER FOR THE MODIFICATION OF THERMOPLASTIC RESINS

Haruhiko Furukawa, and Akihiko Shirahata, both of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed May 17, 1993, Ser. No. 62,674

Claims priority, application Japan, May 22, 1992, 4-156025

Int. Cl.[5] C08K *5/54*

U.S. Cl. 524—268 12 Claims

1. A composition consisting essentially of

(A) 100 parts by weight of a liquid polydiorganosiloxane selected from the group consisting of polydimethylsiloxane polymers, dimethylsiloxane-methyloctylsiloxane copolymers, methylphenylsiloxane-dimethylsiloxane copolymers and diphenylsiloxane-dimethylsiloxane copolymers;

(B) 40 to 200 parts by weight of a silica powder that has a specific surface area of at least 50 m^2/g, said silica (B) being selected from the group consisting of a wet-method silica and a dry-method silica; and

(C) 10 to 50 parts by weight of a polyorganosiloxane resin which is a solid at room temperature, said resin consisting essentially of ($R_3SiO_{\frac{1}{2}}$) siloxane units and (SiO_2) siloxane units in the molar ratio of 1:4 to 1:1, respectively, where R is selected from the group consisting of alkyl radicals and phenyl radical, said composition being a powder.

5,346,942

MONOLITHIC REFRACTORIES

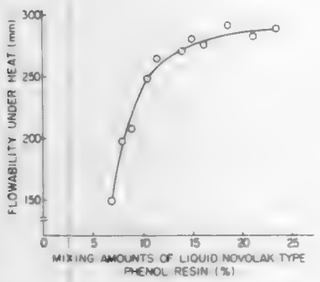
Takashi Yamamura, Okayama; Ryosuke Nakamura, and Hiroshi Kiriyama, both of Bizen, all of Japan, assignors to Shinagawa Refractories Co., Ltd., Japan

Continuation of Ser. No. 689,245, Jun. 11, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 34,665

Claims priority, application Japan, Oct. 11, 1989, 1-262960; Mar. 19, 1990, 2-66876

Int. Cl.[5] C08K *5/09, 5/01;* **C08L** *61/00;* **B22C** *1/22*

U.S. Cl. 524—322 4 Claims



1. A monolithic refractory with self-flowability which does not harden at room temperature comprising an organic separation preventative with a melting point or softening point of not less than 50° C., admixed with a formulation comprising 80 to 90 wt% refractory aggregate and 10 to 20 wt% liquid novolak type phenol resin dissolved in an organic solvent, said refractory having a flow value in the range of 125 to 180 mm at room temperature, and said organic separation preventative being at least one member selected from the group consisting of a polyolefin, a methane series hydrocarbon, an aliphatic acid or salts or esters thereof, being insoluble in the organic solvent containing the liquid novolak type phenol resin and being present in an amount sufficient to prevent separation of said refractory aggregate at room temperature.

5,346,943

SEALER COMPOSITION FOR WOOD, CONCRETE, POROUS MATERIALS

Sohan L. Khungar, Woodridge; L. Martin Graves, Jr., Bolingbrook, and Robin M. Gryziecki, Aurora, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Mar. 8, 1993, Ser. No. 27,957

Int. Cl.[5] C08L *23/20;* **C08K** *5/01, 5/09, 5/17*

U.S. Cl. 524—398 12 Claims

1. A C_4 linear polymer water-based wax-free stable emulsion composition used as a sealer for wood, concrete, porous materials first prepared as a stable gel wherein said gel has a viscosity of less than about 5000 centipoise at room temperature from a non-hydrogenated liquid homopolymer selected from the group consisting of polybutene and polyisobutylene with a number average molecular weight of from about 300 to about 10,000, a gel-forming metal soap of a carboxylic acid of from about 12 to about 20 carbon atoms, an amine to reduce the viscosity of said gel selected from the group consisting of triethylamine, triethanolamine and morpholine, a hydrocarbon solvent, an emulsifier which is optionally a nonionic emulsifier, a cationic emulsifier, an anionic emulsifier and mixtures thereof, and an emulsifying-stablizing agent consisting of an acrylic acid copolymer crosslinked with a polyalkenyl polyether wherein said liquid homopolymer is present in an amount of less than 10 wt. percent, said metal soap is present in an amount of from about 1 wt % to 5 wt %, said amine in an amount of from about 0.1 wt. % to 2.0 wt. %, said emulsifier in an amount of from about 0.5 wt. % to about 5 wt. %, said emulsifying-stabilizing agent is present in an amount of from about 0.02 wt. % to about 2.0 wt. %, and said hydrocarbon solvent is present in an amount less than about 35 weight percent of the emulsion composition, wherein said amounts are in percentages of the weight of the water emulsion wherein pH of said emulsion composition is within the range of from about 7 to about 10.

5,346,944

POLYOLEFIN RESIN COMPOSITION

Haruo Hayashida, Chiba; Ryoichi Nomura, Ichihara, and Satoru Koyama, Sodegaura, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 806,218, Dec. 13, 1991, abandoned. This application Mar. 4, 1993, Ser. No. 26,096

Claims priority, application Japan, Dec. 21, 1990, 2-405105; Dec. 21, 1990, 2-405106; Dec. 21, 1990, 2-405107

Int. Cl.[5] C08K *3/34, 5/13, 5/49*

U.S. Cl. 524—451 4 Claims

1. A polyolefin resin composition consisting essentially of a mixture of 100 parts by weight of a polyolefin resin with (a) 0.01–3.0 parts by weight of an antiblocking agent, the surface OH group content of which is 200 μmol/g or less, (d) 0.01–3.0 parts by weight of a phenol type antioxidant selected from the group consisting of tris(3,5-di-t-butyl-4-hydroxybenzyl-)isocyanurate,2,2′methylenebis(4-ethyl-6-t-butylphenol),n-octadecyl-3-(3′,5′-di-t-butyl-4′-hydroxyphenol) propionate, 4,4′-thio-bis(3-methyl-6-t-butylphenol), 4,4′-butylidenebis(3-methyl-6-t-butylphenol),2,2′-methylenebis(4-methyl-6-t-butylphenol),N,N,′-hexamethylenebis(3,5-di-t-butyl-4-hydroxyhydrocinnamide), triethylene glycol-bis[3-(3′-t-butyl-5′-methyl-4-hydroxyphenyl propionate] and a mixture of bis(ethyl 3,5-di-t-butyl-4-hydroxybenzylphosphate) calcium and PE wax having a weight ratio of 1:1, and (e) 0.01 to 0.2 parts by weight of a phosphite antioxidant,

wherein the cumulative amount of acids having a solid acid acidity pKa or 4.8 or less on the surface of the antiblocking agent is 250 μmol/g or less.

5,346,945

GLASS FIBER-REINFORCED STYRENE COPOLYMERS

Andreas Deckers, Ludwigshafen, and Norbert Guentherberg, Speyer, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 23, 1993, Ser. No. 110,216

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1992, 4228571

Int. Cl.[5] C08J *5/08;* **C08K** *3/40;* **C08L** *25/04*

U.S. Cl. 524—494 2 Claims

1. A thermoplastic molding material comprising, based on the sum of A, B, C and D,

A: 30 to 95% by weight of a copolymer A comprising, in each case, based on A

a_1: 50 to 95% by weight of styrene, α-methylstyrene, a nuclear-substituted styrene derivative or mixtures of these monomers (a_1) and

a_2: 5 to 50% by weight of acrylonitrile (a_2)

B: up to 60% by weight of a graft copolymer B

b_1: prepared either by emulsion polymerization of, based on B, 15 to 85% by weight of a monomer mixture based either on

b_{11}: styrene-acrylonitrile in the ratio 9:1 to 4:6, or

b_{12}: styrene-acrylonitrile-methyl methacrylate in the ratio **19:1:0** to **8:6:6** on 15 to 85% by weight of a latex, obtained as an emulsion, of an elastomer based on butadiene or acrylic ester as grafting base; or by

b_2: solution polymerization of, based on B, 15 to 85% by weight of a monomer mixture based on

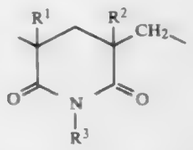
b_{21}: styrene-acrylonitrile in the ratio 9:1 to 4:6 or

b_{22}: styrene-acrylonitrile-methyl methacrylate in the ratio 19:1:1 to 8:6:6 on 15 to 85% by weight of an elastomer, prepared in solution, based on butadiene or an acrylic ester or an EPDM elastomer as grafting base;

C: 1 to 40% by weight of a reinforcing agent C based on an inorganic glass, and also

D: 0.1 to 10% by weight of a copolymer D of, based on B,

d_1: 10 to 90% by weight of units of the formula I



(I)

in which R^1 and R^2 are hydrogen or methyl and R^3 is hydrogen, C_1–C_8alkyl, C_5–C_{12}2-cycloalkyl or C_6–C_{16}aryl or C_6–C_{16}aralkyl, and

d_2: 10 to 90% by weight of units derived from a copolymerizable monomer selected from styrene, α-methylstyrene, (meth) acrylonitrile or (meth)acrylic acid esters,

with the proviso that the acid number S of the copolymer D is at least 0.5 meq/g..

5,346,946

OCULAR LENS MATERIAL

Yasuhiro Yokoyama; Noriko Iwata; Eri Ito; Ichiro Ando, all of Nagoya; Shoji Ichinohe, and Toshio Yamazaki, both of Annaka, all of Japan, assignors to Menicon Co., Ltd, Nagoya and Shin-Etsu Chemical Co., Ltd., Tokyo, both of Japan

Filed Aug. 25, 1993, Ser. No. 111,452

Claims priority, application Japan, Aug. 26, 1992, 4-227341; Jul. 20, 1993, 5-179257

Int. Cl.[5] C08F *30/08*

U.S. Cl. 524—547 7 Claims

1. An ocular lens material made of a copolymer comprising, as main copolymerizable components (A) a polysiloxane macromonomer having polymerizable groups bonded via one or more urethane bonds to the siloxane main chain, of the formula (I):

$$A^1—U^1—S^1—U^2—A^2— \quad (I)$$

wherein A^1 is a group of the formula (II):

$$Y^{21}—R^{31}— \quad (II)$$

wherein Y^{21} is an acryloyloxy group, a methacryloyloxy group, a vinyl group or an allyl group, and R^{31} is a linear or branched alkylene group having from 2 to 6 carbon atoms;

A^2 is a group of the formula (III):

$$—R^{34}—Y^{22} \quad (III)$$

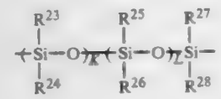
wherein Y^{22} is an acryloyloxy group, a methacryloyloxy group, a vinyl group or an allyl group, and R^{34} is a linear or branched alkylene group having from 2 to 6 carbon atoms;

U^1 is a group of the formula (IV):

$$—X^{21}—E^{21}—X^{25}—R^{32}— \quad (IV)$$

wherein X^{21} is a covalent bond, an oxygen atom or an alkylene glycol group having from 1 to 6 carbon atoms, E^{21} is —CONH— (provided that in this case, X^{21} is a covalent bond, and E^{21} forms an urethane bond together with X^{25}) or a bivalent group derived from a diisocyanate selected from the group consisting of saturated or unsaturated aliphatic, alicyclic and aromatic diisocyanates (provided in that this case, X^{21} is an oxygen atom or an alkylene glycol group having from 1 to 6 carbon atoms, and E^{21} forms an urethane bond together with X^{21} and X^{25}), X^{25} is an oxygen atom or an alkylene glycol group having from 1 to 6 carbon atoms, and R^{32} is a linear or branched alkylene group having from 1 to 6 carbon atoms;

S^1 is a group of the formula (V):



(V)

wherein each of R^{23}, R^{24}, R^{25}, R^{26}, R^{27} and R^{28} independently represents an alkyl group having from 1 to 6 carbon atoms, a fluoroalkyl group or a phenyl group, K is an integer of from 1 to 50, and L is an integer of from 0 to (50−K);

U^2 is a group of the formula (VI):

$$—R^{33}—X^{26}—E^{22}—X^{22}— \quad (VI)$$

wherein R^{33} is a linear or branched alkylene group having from 1 to 6 carbon atoms, X^{22} is a covalent bond, an oxygen atom or an alkylene glycol group having from 1 to 6 carbon atoms, X^{26} is an oxygen atom or an alkylene glycol group having from 1 to 6 carbon atoms, and E^{22} is —CONH (provided that in this case, X^{22} is a covalent bond, and E^{22} forms an urethane bond together with X^{26}) or a bivalent group derived from a diisocyanate selected from the group consisting of aturated or unsaturated aliphatic, alicyclic and aromatic diisocyanate (provided that in this case, X^{22} is an oxygen atom or an alkylene glycol group having from 1 to 6 carbon atoms, and E^{22} forms an urethane bond together with X^{22}; and X^{26}); and (B) an alkyl (meth)acrylamide, wherein the weight ratio of the polysiloxane macromonomer to the alkyl (meth)acrylamide is from 5/95 to 90/10, having a water content of at least 5% and the total amount of the polysiloxane macromonomer and the alkyl (meth)acrylamide is at least 25% by weight.

5,346,947

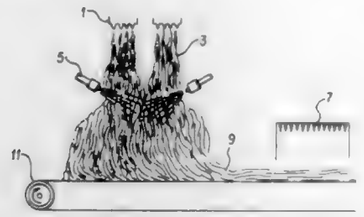
WATER SOLUBLE BINDER COMPOSITIONS CONTAINING BETA-HYDROXY URETHANES AND POLYFUNCTIONAL CARBOXYLIC ACIDS

Gerald J. Guerro, Trumbull; William Arthur, and Balwant Singh, both of Stamford, all of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Division of Ser. No. 362,908, Jun. 8, 1989. This application Feb. 6, 1992, Ser. No. 832,133

Int. Cl.[5] C08J *3/00;* C08K *3/20;* C08L *75/00;* C08F *20/00*

U.S. Cl. 524—591 15 Claims



1. A binder composition comprising an aqueous solution of an unreacted mixture of:

(i) an at least partially cross-linkable beta-hydroxy urethane functional material and

(ii) a polycarboxylic acid selected from the group consisting of

1,2,3,4-butanetetracarboxylic acid (BTCA)
1,2,3,4-butanetetracarboxylic acid anhydride
1,2,3,4-cyclopentane-tetracarboxylic acid
1,2,3,4-cyclopentane-tetracarboxylic acid anhydride
pyromellitic acid
pyromellitic anhydride
maleic acid
maleic anhydride
2,3,4,5-tetrahydrofuran carboxylic acid
2,3,4,5-tetrahydrofuran carboxylic acid anhydride
and mixtures thereof,

in a beta-hydroxy urethane functional material to polycarboxylic acid weight ratio of from about 4:1 to about 1:5.

5,346,948

ODOR FREE, AIR DRY, DECORATIVE LATEX PAINTS

F. Louis Floyd, Strongsville, and Gary P. Craun, Berea, both of Ohio, assignors to The Glidden Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 19,633, Feb. 18, 1993, Pat. No. 5,326,808. This application Sep. 2, 1993, Ser. No. 115,109

Int. Cl.[5] C08K *5/09*

U.S. Cl. 524—773 16 Claims

1. An aqueous ambient dry paint coating composition containing a polymerized polymeric binder free of organic coalescing solvent and other volatile organic compounds, the polymeric binder comprising:

a vinyl acetate polymer comprising polymerized vinyl acetate monomer containing chlorinated modifier selected from a chlorinated paraffin, a chlorinated fatty acid, or a chlorinated fatty acid ester, where the chlorinated modifier has a number average molecular weight between about 150 and 5,000 and a Tg below about −20° C., the polymeric binder containing at least 1% by weight of said chlorinated modifier, where said polymeric binder is produced by mixing the chlorinated modifier in the vinyl acetate monomer to provide an organic mixture of chlorinated modifier and vinyl acetate monomer, where said organic mixture is polymerized in water to produce chlorinated modified vinyl acetate emulsion polymer and provide a polymeric binder having a Tg less than 20° C.

5,346,949

FLUORINE CONTAINING AQUEOUS COMPOSITION HAVING WATER REPELLENT AND OIL REPELLENT PROPERTIES

Yuji Fukazawa, Shizuoka, Japan, assignor to Hoechst Gosei K.K., Tokyo, Japan

Filed May 25, 1993, Ser. No. 66,664

Claims priority, application Japan, May 29, 1992, 4-180249

Int. Cl.[5] C08L *27/12*

U.S. Cl. 524—805 8 Claims

1. A fluorine containing aqueous composition having water repellent and oil repellent properties comprising:

(A) a fluorine containing copolymer aqueous emulsion obtained by radical polymerization after refining the size of the dispersed particles to under 0.3 microns through an emulsifying process in water by adding a surfactant to a composition of monomers comprising:

(a) 2 to 40 mol % of a perfluoro-alkyl-acrylate monomer wherein the alkyl group has 6 to 12 carbon atoms;

(b) 0.1 to 15 mol % of an α,β-ethylenically unsaturated monomer containing carboxyl group which can be copolymerized with monomer (a);

(c) 0 to 25 mol % of an α,β-ethylenically unsaturated monomer containing hydroxyl groups which can be copolymerized with the monomers (a) and (b); and

(d) 97.9 to 45 mol % of α,β-ethylenically unsaturated monomer which can be copolymerized with the monomers described in (a), (b) and (c) and which is different than monomers (a), (b) and (c); and

(B) a cationic water soluble polymer compound.

5,346,950

RESIN COMPOSITION

Taichi Negi, Kurashiki; Akira Mochizuki, Tsukuba; Shiro Nagata, Kurashiki; Komei Yamasaki, Ichihara; Keisuke Funaki, Ichihara, and Takashi Sumitomo, Ichihara, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki and Idemitsu Petrochemical Co., Ltd., Tokyo, both of Japan

Continuation of Ser. No. 794,582, Nov. 19, 1991, , which is a division of Ser. No. 413,997, Sep. 28, 1989, Pat. No. 5,089,353. This application Oct. 25, 1993, Ser. No. 140,886

Claims priority, application Japan, Oct. 14, 1988, 63-260235; Oct. 21, 1988, 63-266898

Int. Cl.[5] C08L *29/02, 25/04, 25/06*

U.S. Cl. 525—57 11 Claims

1. A resin composition comprising a blend of 5 to 95 parts by weight of (A) a saponified product of an ethylene-vinyl acetate copolymer having an ethylene content of 20 to 60 mol % and a degree of saponification of at least 90% and 95 to 5 parts by weight of (B) a styrene-based polymer having mainly syndiotactic configuration.

5,346,951

RELEASING AGENTS AND RESIN COMPOSITIONS THEREWITH

Ataru Suwada, Kyoto, Japan, assignor to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Jul. 15, 1993, Ser. No. 91,255

Claims priority, application Japan, Jul. 17, 1992, 4-213494

Int. Cl.[5] C08G *63/48*

U.S. Cl. 525—64 23 Claims

1. A releasing agent obtained by reacting an orgainic polysiloxane comprising a hydroxyl group or an epoxy group with an ethylenically unsaturated dicarboxylic acid grafted polyolefin or with a reaction product of said grafted polyolefin and an active hydrogen atom-containing compound selected from the group consisting of an alcohol, an amine and an aminoalcohol.

5,346,952

BLENDS OF POLYPHENYLENE ETHER, AROMATIC VINYL RESINS AND VINYL AROMATIC-VINYL HETEROCYCLIC MONOMER GRAFTED BUTADIENE BASED POLYMERS

Masafumi Hongo; Hideki Yano, and Hideyuki Shigemitsu, all of Otake, Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Continuation of Ser. No. 837,703, Feb. 20, 1993, abandoned, which is a continuation of Ser. No. 526,736, May 22, 1990, abandoned. This application Apr. 30, 1993, Ser. No. 54,838

Claims priority, application Japan, May 23, 1989, 1-129385; Aug. 9, 1989, 1-204601

Int. Cl.[5] C08L *39/04, 51/04, 71/12*

U.S. Cl. 525—68 11 Claims

1. A thermoplastic resin composition comprising (A) 10 to 60 parts by weight of a polyphenylene ether resin, (B) 20 to 70 parts by weight of an aromatic vinyl resin free of a nitrogen-containing heterocyclic compound and (C) 10 to 60 parts by weight of a graft copolymer obtained by polymerizing an aromatic vinyl monomer and a heterocyclic compound having a vinyl group and containing nitrogen as the hetero atom, optionally with at least one ethylenically unsaturated compound selected from the group consisting of methacrylic acid esters, acrylic acid esters, maleimide derivatives and vinyl group-containing nitrogen bases, in the presence of a butadiene based rubbery polymer, wherein the total amount of the components (A), (B) and (C) is 100 parts by weight.

5,346,953

CORE-SHELL ABS COPOLYMERS AND METHOD FOR THEIR PREPARATION

James J. Scobbo, Jr., Guilderland, and Gregory J. Stoddard, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 15,958, Feb. 8, 1993, abandoned. This application Oct. 7, 1993, Ser. No. 132,951

Int. Cl.[5] C08L *51/04, 33/04, 33/20;* C08F *279/02*

U.S. Cl. 525—74 6 Claims

1. A core-shell copolymer comprising particles wherein the core comprises particles of a diene-maleic anhydride copolymer and the shell is a copolymer of an ethylenically unsaturated nitrile, an alkenylaromatic compound and glycidyl methacrylate, said shell completely surrounding and being chemically linked to said core particles.

5,346,954

THERMOPLASTIC AND THERMOSET POLYMER COMPOSITIONS

Jiun-Chen Wu, Holland; William J. Work, Huntington Valley; David L. Dunkelberger, Newtown, and Newman M. Bortnick, Oreland, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 679,411, Apr. 2, 1991, Pat. No. 5,237,004, which is a division of Ser. No. 189,340, May 13, 1988, abandoned, which is a continuation-in-part of Ser. No. 922,133, Nov. 18, 1986, abandoned. This application Nov. 17, 1992, Ser. No. 977,592

Int. Cl.[5] C08L *51/04*

U.S. Cl. 525—85 9 Claims

1. A process for preparing a thermoplastic polymer composition comprising thermoplastic matrix polymer and, distributed throughout the thermoplastic matrix polymer, substantially spherical core-shell polymer particles, said particles having an average diameter of from 2 to 15 μm and a particle size distribution such that at least 90% by weight of the particles fall within ±20% of the average particle diameter, a core of rubbery alkyl acrylate polymer and one or more shells, the outer shell of which is compatible with the matrix polymer, wherein the process comprises:

A) polymerizing a first aqueous emulsion of the one or more monomers which, when polymerized, produce a particulate composition comprising polymer particles;

B) performing one or more times the steps of

1) swelling the particles of the particulate composition produced in A), or if appropriate the particles of B2), with one or more monomers, and

2) polymerizing the swelling monomer within the particles until all of the monomers have been polymerized; and

c) polymerizing one or more monomers which are polymerizable to form a polymer compatible with the matrix polymer to produce the core-shell polymer particles,

and blending the resulting core-shell polymer particles, in an amount of 0.1 to 40% by weight of the total composition, with said thermoplastic matrix polymer.

5,346,955

POLYMERIC WEB COMPOSITIONS HAVING IMPROVED ALKALINE SOLUBILITY

Philip A. Sasse, Alpharetta; Debra H. Durrance, Lilburn, both of Ga., and Glenn A. Taylor, Obergerlafingen, Switzerland, assignors to Kimberly-Clark Corporation, Neenah, Wis. and Belland Aktiengesellschaft, Solothurn, Sweden

Division of Ser. No. 744,136, Aug. 13, 1991, Pat. No. 5,217,795. This application Feb. 17, 1993, Ser. No. 18,686

Int. Cl.[5] C08L *31/02, 33/02, 53/02, 77/12*

U.S. Cl. 525—92 14 Claims

1. A composition of matter comprising a blend of from about 50 to about 90 weight percent of a copolymer of a (meth)acrylate ester and (meth)acrylic acid, from about 5 to about 30 weight percent of a copolymer of ethylene and (meth)acrylic acid, and from about 1 to about 10 weight percent of a linear polyether block amide copolymer thermoplastic elastomer having flexible polyether segments connected with rigid polyamide segments.

5,346,956

PROCESS FOR MANUFACTURING MULTISEQUENCE STAR OR NETWORK POLYCONDENSATES BY DI- OR MULTI-ALDEHYDE COUPLING, AND POLYCONDENSATES OBTAINED

Yves Gnanou, Talence, France, assignor to Elf Atochem S.A., Puteaux, France

Filed Jan. 11, 1993, Ser. No. 2,818

Claims priority, application France, Jan. 10, 1992, 92 00200

Int. Cl.[5] C08L *33/04, 61/00;* C08K *5/07*

U.S. Cl. 525—24 50 Claims

1. A process for coupling a living polymer comprising living terminal (meth)acrylic units, which process comprises the steps of:

(i) anionically polymerizing with an initiator system consisting of a functional initiator and a ligand to obtain a living polymer comprising living terminal (meth)acrylic units;

(ii) reacting the living polymer with an aldehyde compound of formula:

$$R—(CHO)_r$$

in which $r \geq 2$; R is an alkyl, cycloalkyl, aryl, or aralkyl group having from 2 to 24 carbon atoms, unsubstituted or substituted by at least one substituent comprising a C_{1-6} alkoxy or di(C_{1-6}alkyl)amino, halogen, or trifluoromethyl; and

(iii) recovering the final polycondensate.

5,346,957
ADHESIVE COMPOSITION
Suguru Tsuji, Tokyo; Hiromi Numata, and Shinji Komiyama, both of Kanagawa, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 888,710, May 27, 1992, abandoned. This application Aug. 19, 1993, Ser. No. 109,574
Claims priority, application Japan, May 27, 1991, 3-151072; Jun. 18, 1991, 3-173154
Int. Cl.[5] C08L 9/02, 63/00
U.S. Cl. 525—122 7 Claims

1. An adhesive composition comprising
(A) 100 parts by weight of at least one rubber component selected from the group consisting of
(i) unsaturated nitrile-conjugated diene copolymer rubbers prepared by an aqueous suspension polymerization, containing 10–45 wt. % of unsaturated nitrile units in their polymer chains and having a Mooney viscosity (ML_{1+4}, 100° C.) of 30–100, and
(ii) hydrogenated unsaturated nitrile-conjugated diene copolymer rubbers obtained by hydrogenating carbon-carbon double bonds in unsaturated nitrile-conjugated diene copolymer rubbers prepared by an aqueous suspension polymerization, containing 10–45 weight percent of unsaturated nitrile units in the polymer chain and having a Mooney viscosity (ML_{1+4}, 100° C.) of 30–100, said rubber component containing 10 ppm or less of organic and inorganic ions and having an electric conductance of 30 μS/cm as measured on an extractant solution when extracted with deionized water, and (B) 50–500 parts by weight of at least one thermosetting resin selected from the group consisting of phenolic resins and epoxy resins.

5,346,958
CURABLE COATING COMPOSITIONS CONTAINING POLYSTYRENE MICROPARTICLES
Yoshiyuki Yukawa, Hiratsuka; Motoshi Yabuta, Hadano; Akimasa Nakahata, Hiratsuka; Yuzo Miyamoto, Yokohama; Masaaki Kobayashi, Kobe, and Naruhito Ueno, Aichi, all of Japan, assignors to Kansai Paint Company, Limited, Amagasaki, Japan
Filed Apr. 16, 1993, Ser. No. 46,987
Claims priority, application Japan, Apr. 20, 1992, 4-099950
Int. Cl.[5] C08F 8/30, 8/32; C08L 75/04
U.S. Cl. 525—124 11 Claims

1. A curable top coating composition comprising:
(A) a hydroxyl-containing vinyl resin containing 45 to 55% by weight of styrene monomer as copolymerized unit of the resin,
(B) at least one crosslinking agent selected from the group consisting of amino resins, polyisocyanate compounds and blocked polyisocyanate compounds, and
C) a microparticulate polymer having an average particle diameter within the range of 0.01 to 1 μm and containing 40 to 60% by weight of styrene monomer as a copolymerized component of each particle, wherein the cured film from said coating composition contains the styrene-derived benzene ring in a proportion of 13 to 40% by weight of the total resin solids.

5,346,959
FUNCTIONALIZED ETHYLENE OXIDE ANTISTATIC AGENTS FOR ABS/SMA BLENDS
Goman (Gomez) Peter M., Tarrytown, N.Y.; Kishore Udipi, Longmeadow, and Lionel R. Stebbins, Belchertown, both of Mass., assignors to Monsanto Company, St. Louis, Mo.
Continuation-in-part of Ser. No. 827,440, Jan. 19, 1992, abandoned. This application Jul. 21, 1993, Ser. No. 95,291
Int. Cl.[5] C08L 25/08, 53/02, 71/02
U.S. Cl. 525—187 13 Claims

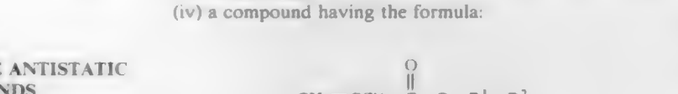
1. An antistatic thermoplastic composition comprising:
a. from 93 to 80% by weight of a styrenic polymer blend which comprises acrylonitrile-butadiene-styrene copolymers and styrene-maleic anhydride copolymers; and
b. from 7 to 20% by weight of an antistatic agent which comprises a functionalized ethylene oxide polymer wherein the ethylene oxide polymer is selected from the group consisting of ethylene oxide homopolymers and blocked ethylene oxide copolymers having propylene oxide end blocks, wherein at least one internal block of the copolymer comprises ethylene oxide repeating units or ethylene oxide propylene oxide random repeating units, and wherein the functional group of the functionalized ethylene oxide polymer is selected from the group consisting of hydroxy, epoxy and amino groups; and a minor amount of an alkali metal salt capable of complexing with the functionalized ethylene oxide polymer;
wherein the sum of components (a) and (b) total 100% by weight and wherein the mole ratio of anhydride groups of the styrene-maleic anhydride copolymer to functional groups of the functionalized ethylene oxide polymer is in the range of about 5:1 to about 12:1.

5,346,960
FATTY ACID HYDROXYALKYLAMIDES AS COREACTABLE STABILIZERS AND FLOW AIDS FOR POWDER COATINGS
Richard F. Merritt, Ft. Washington; Kurt A. Wood, Abington, and Aurelia de la Cuesta Sheppard, Newtown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
Division of Ser. No. 920,405, Jul. 27, 1992, Pat. No. 5,216,090. This application Feb. 22, 1993, Ser. No. 71,786
Int. Cl.[5] C08L 33/02, 33/06
U.S. Cl. 525—221 7 Claims

1. A thermosetting powder coating composition having improved optical properties comprising a carboxylic acid group-containing acrylic, a beta-hydroxyalkylamide curing agent, and about 0.1 percent to about 15 percent of a fatty acid hydroxyalkylamide group-containing material selected from the group consisting of lauramide diethanolamine, acetamide diethanolamine, capramide diethanolamine and stearamide diethanolamine.

5,346,961
PROCESS FOR CROSSLINKING
Richard G. Shaw, Millstone, and Paul J. Caronia, Succasunna, both of N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.
Filed Apr. 7, 1993, Ser. No. 43,564
Int. Cl.[5] C08F 8/00
U.S. Cl. 525—281 10 Claims

1. A process for crosslinking comprising (a) introducing into a reactor, under crosslinking conditions, a mixture comprising
(i) one or more polyolefins;
(ii) organic peroxide;
(iii) an ester, ether or ketone containing two or more unsaturated groups; and
(iv) a compound having the formula:



wherein R = hydrogen, methyl, or ethyl;
R^1 = an alkylene having 1 to 6 carbon atoms; and
R^2 = an alkyl having 8 or more carbon atoms or $Si(R^3)_3$ wherein R^3 is hydrogen or alkoxy having 1 to 6 carbon atoms; each R^3 is the same or different; and at least one R^3 is an alkoxy,
and (b) crosslinking the polyolefin(s).

5,346,962
ELASTOMERS HAVING REDUCED HYSTERESIS PREPARED WITH VINYL IMIDAZOLE
William L. Hergenrother, Akron, Ohio, and Martin E. Morrow, Muscatine, Iowa, assignors to Bridgestone/Firestone, Inc., Akron, Ohio
Filed Nov. 3, 1993, Ser. No. 145,128
Int. Cl.[5] C08F 271/02
U.S. Cl. 525—281 19 Claims

1. An endcapped polymer prepared by reacting a living polymer having at least one functional site with at least about one equivalent of an endcapping agent, said endcapping agent being a vinyl substituted imidazole or vinyl substituted benzimidazole,
wherein said living polymer is formed by polymerization of a monomer or mixture thereof in solution in the present of a polymerization initiator, said monomer or mixture thereof being selected from the group consisting of conjugated dienes having from 4 to about 12 carbon atoms and mixtures of one or more said conjugated dienes with one or more monovinyl aromatic monomers having from 8 to about 18 carbon atoms.

5,346,963
GRAFT-MODIFIED, SUBSTANTIALLY LINEAR ETHYLENE POLYMERS AND METHODS FOR THEIR USE
Morgan M. Hughes, Angleton; Kyle G. Kummer, Lake Jackson; Stephen R. Betso, Lake Jackson; Michael E. Rowland, Lake Jackson, and Morris S. Edmondson, Alvin, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.
Filed Apr. 28, 1993, Ser. No. 54,376
Int. Cl.[5] C08F 255/02
U.S. Cl. 525—285 12 Claims

1. A substantially linear ethylene polymer grafted with at least about 0.01 wt %, based on the weight of the grafted ethylene polymer, of an unsaturated organic compound containing at least one ethylenic unsaturation and at least one carboxyl group or at least one derivative of the carboxyl group selected from the group consisting of an ester, an anhydride and a salt, the ethylene polymer characterized as having:
(i) a melt flow ratio, I_{10}/I_2, ≧5.63;
(ii) a molecular weight distribution, M_w/M_n, defined by the equation: $M_w/M_n \leqq (I_{10}/I_2) - 4.63$;
(iii) a density greater than about 0,850 g/cm^3; and
(iv) a critical shear rate at onset of surface melt fracture of at least 50 percent greater than the critical shear rate at the onset of surface melt fracture of a linear olefin polymer having about the same I_2 and Mw/Mn.

5,346,964
(MODIFIED) HYDROGENATED DIENE BLOCK COPOLYMER AND COMPOSITION COMPRISING THE SAME
Tooru Shibata; Toshio Teramoto; Yoshiharu Hashiguchi, and Kunio Goshima, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan
Division of Ser. No. 937,723, Sep. 1, 1992, which is a division of Ser. No. 524,809, May 18, 1990, Pat. No. 5,191,024. This application Jun. 23, 1993, Ser. No. 80,115
Claims priority, application Japan, May 19, 1989, 1-124429; May 19, 1989, 1-124430
Int. Cl.[5] C08F 297/04, 287/00
U.S. Cl. 525—314 3 Claims

1. A hydrogenated diene block copolymer having a polystyrene-reduced number-average molecular weight of 100,000–600,000 which is a hydrogenation product of an (A)-(B) block copolymer consisting of (A) an alkenyl aromatic compound polymer block and (B) an alkenyl aromatic compound-conjugated diene random copolymer block, an (A)-(B)-(C) block copolymer consisting of the block (A), the block (B) and (C) an alkenyl aromatic compound-conjugated diene copolymer tapered block wherein the proportion of the alkenyl aromatic compound increases gradually, or an (A)-(B)-(A) block copolymer consisting of the block (A), the block (B) and the block (A), in which block copolymer
(1) the weight proportion of the alkenyl aromatic compound/the conjugated diene is 5–40/95–60,
(2) the total of the bound alkenyl aromatic compound contents in the block (A) and the block (C) or the two block (A)'s is 3–25% by weight based on the total monomers and the content of the bound alkenyl aromatic compound in at least one block (A) is at least 3% by weight, and
(3) the vinyl content in the conjugated diene portion in the block (B) is more than 60%, and in which hydrogenation copolymer at least 90% of the double bonds of the conjugated diene portion is saturated.

3. A modified hydrogenated diene block copolymer obtained by modifying 100 parts by weight of a hydrogenated diene block copolymer according to claim 1 with 0.01–20 parts by weight of an unsaturated compound having at least one functional group selected from the group consisting of acid anhydride group, carboxyl group, hydroxyl group, amino group and epoxy group.

5,346,965
PROCESS FOR THE PRODUCTION OF FUEL ADDITIVES FROM CHLORINATED POLYBUTENES
James L. Dever, Copley; Mannat C. Menon, Macedonia; Steven D. Phillips, Solon, and Larry J. Baldwin, Berea, all of Ohio, assignors to Ferro Corporation, Cleveland, Ohio
Filed Aug. 19, 1993, Ser. No. 109,226
Int. Cl.[5] C08F 8/32
U.S. Cl. 525—379 14 Claims

1. A process for preparing a polybutene amine composition comprising the steps of:
reacting a chlorinated polybutene with an excess of at least one mole of at least one type of an amine compound per mole of said chlorinated polybutene at a reaction temperature of at least about 100° C.;
neutralizing the reaction mixture with a base selected from the group of alkali metal and alkaline earth metal alkoxides and amides with formation of one of an alcohol or ammonia, respectively;
neutralizing any excess base with an acid that will produce essentially no waters as a by-product;
recovering the polybutene amine composition; and
removing excess of said amine compound.

5,346,966
L,D-POLYLACTIDE COPOLYMERS WITH CONTROLLED MORPHOLOGY
Maria Spinu, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 816,433, Dec. 31, 1991, Pat. No. 5,270,400. This application Oct. 26, 1993, Ser. No. 141,183
Int. Cl.[5] C08G 63/08
U.S. Cl. 525—411 9 Claims

1. A copolymer of the formula R'O—(BAIABL)$_y$—BAIABOR' wherein L is the residue of a diacyl chloride or diisocyanate containing 8 to 20 carbon atoms, A is a copolymer of 10 to 90 weight percent L-lactide and 90 to 10 weight percent D-lactide, B is a polylactide formed from 98 to 100 weight percent L-lactide or 98 to 100 weight percent D-lactide, R' is H, a chain extender residue or a capping agent, and —I— is the residue of a diamine or diol containing 2 to 100 carbon atoms, and y is 0 to 100.

5,346,967

BLENDS OF THERMOPLASTIC POLYESTER RESINS AND AMORPHOUS POLYAMIDES

Donald C. Clagett; Daniel W. Fox, and Louis M. Maresca, all of Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 693,775, Apr. 26, 1991, abandoned, which is a continuation of Ser. No. 117,246, Nov. 4, 1987, abandoned. This application Jan. 25, 1993, Ser. No. 8,267

Int. Cl.[5] C08L *77/00*

U.S. Cl. 525—425 14 Claims

1. A method for enhancing the barrier resistance of a molded article to oxygen and carbon dioxide consisting of (a) blending a composition consisting entirely of a thermoplastic polyester resin having an intrinsic viscosity of from about 0.4 to about 2.0 dl/g as measured in a 60:40 phenol:tetrachlorethane mixture at 23°–30° C. containing less than 2% of wholly aromatic resin moieties and an effective barrier-resistance-improving amount of an amorphous polyamide resin; and (b) molding said blend into an article of specific dimensions by extrusion or injection molding.

5,346,968

OLIGOSILOXANES AND REINFORCED THERMOPLASTIC AND CERAMIC MATERIALS OBTAINABLE THEREWITH

Karl-Heinz Haas, Frankenthal, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 944,744, Sep. 14, 1992, abandoned, which is a continuation of Ser. No. 682,294, Apr. 9, 1991, abandoned. This application Dec. 1, 1993, Ser. No. 159,707

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1990, 4012765

Int. Cl.[5] C08L *79/08, 77/00*

U.S. Cl. 525—431 12 Claims

1. A thermoplastic composition which comprises: an oligosiloxane of the formula



where R^1 is C_1–C_4-alkyl and n is from 2 to 50, and a polymer selected from the group consisting of polyamides, polyphenylene sulfones, polyphenylene ether sulfones, aromatic polyether imides, polyamide imides and aromatic polyether ketones.

5,346,969

POLYIMIDE POLYMERIC BLENDS

Mureo Kaku, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 23, 1992, Ser. No. 996,256

Int. Cl.[5] C08L *79/08*

U.S. Cl. 525—432 11 Claims

1. A particulate polymeric blend of

(a) about from 99 to 20% by weight of at least one polyamide which is melt processible at a temperature of less than about 400° C. and, complementally,

(b) about from 1 to 80% by weight of polyimide precursor resin prepared from at least one aromatic diamine and at least one aromatic dianhydride in which less than about 98% of the polymeric units are converted to polyimide.

5,346,970

BLEND OF POLYETHYLENE TEREPHTHALATE MATRIX AND THERMOTROPIC LIQUID CRYSTAL BLOCK COPOLYMER

Sophia Dashevsky, Fair Lawn, N.J.; Ki-Soo Kim, Katonah; Stanley W. Palmaka, Yonkers, both of N.Y.; Roy L. Johnston, Charlotte, N.C.; Leonardus A. G. Busscher, Duiven, and Johannes A. Juijn, Velp, both of Netherlands, assignors to Akzo Nobel nv, Arnhem, Netherlands

Continuation of Ser. No. 812,606, Dec. 23, 1991, abandoned. This application Jul. 22, 1993, Ser. No. 96,756

Int. Cl.[5] C08L *67/02*

U.S. Cl. 525—444 8 Claims

1. A blend of (1) a flexible coil polymer matrix of poly(ethylene terephthalate) and (2) a thermotropic liquid crystalline segmented block copolymer which comprises rod and flexible coil polymer blocks, the rod blocks being main chain, containing a flexible spacer, and being of the formula



where Ar represents phenyl with para- bond sites, n can range from 2 to 10, and x can range from about 2 to about 50, the flexible coil blocks being of poly(butylene terephthalate).

5,346,971

AQUEOUS SUSPENSION POLYMERIZATION OF 1,3-BUTADIENE TO PRODUCE SYNDIOTACTIC-1,2-POLYBUTADIENE

Kenichi Hongyo; Michinori Suzuki, and Kazuhiro Akikawa, all of Ichihara, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed May 11, 1993, Ser. No. 59,293

Claims priority, application Japan, May 15, 1992, 4-165284; May 15, 1992, 4-165285; Oct. 9, 1992, 4-271361; Oct. 13, 1992, 4-274288

Int. Cl.[5] C08F *2/18, 136/06*

U.S. Cl. 526—94 14 Claims

1. A process for producing polybutadiene essentially consisting of syndiotactic-1,2-polybutadiene in an aqueous medium, comprising a step of polymerizing diene essentially consisting of 1,3-butadiene in the presence of:

(A) a catalyst composition comprising

(a) a transition metal compound, and

(b) an organometallic compound which includes a metal selected from groups 1, 2, 12 and 13 of Periodic Table;

(B) an initiator comprising at least one component selected from the group consisting of carbon disulfide, an isothiocyanate compound, and a xanthogenic compound; and

(C) 20 to 100 parts by volume per 100 parts by volume of the diene of an inert organic liquid consisting essentially of a halogenated hydrocarbon.

5,346,972

MAGNESIUM CHLORIDE PARTICLES WITH A TRUNCATED STRUCTURE, CATALYTIC COMPONENT SUPPORTED ON THESE PARTICLES, POLYOLEFINS OBTAINED BY EMPLOYING THIS CATALYTIC COMPONENT, PROCEDURES FOR MANUFACTURING THESE PRODUCTS

Laurent Duranel, Arthez de Bearn, and Jean-Pierre Roche, Pau, both of France, assignors to Elf Atochem S. A., France

Division of Ser. No. 657,756, Feb. 19, 1991, Pat. No. 5,212,133. This application Oct. 26, 1992, Ser. No. 968,036

Claims priority, application France, Feb. 19, 1990, 90 01948

Int. Cl.[5] C08F *10/00, 10/02, 10/06*

U.S. Cl. 526—125 12 Claims

1. A polyolefin obtained by polymerization of one or more C_2 to C_{12} olefins in the presence of a catalytic system comprising a catalytic component containing $MgCl_2$ and a transition metal compound, and of a cocatalyst based on an organoaluminum compound, wherein said polyolefin consists of particles having essentially the shape of two truncated right cones connected by their larger bases, which truncated cones are incurved towards the axis of symmetry perpendicular to the bases, at the intersection of the envelope of the truncated cones with two orthogonal planes passing through said axis of symmetry.

5,346,973

POURABLE LIQUID SURFACTANT CONCENTRATE

Dieter Feustel, Monheim; Uwe Held, Velbert; Rainer Hoefer, Duesseldorf, and Thomas Engels, Frechen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/00310, § 371 Date Oct. 28, 1992, § 102(e) Date Oct. 28, 1992, PCT Pub. No. WO91/13140, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 19, 1991, Ser. No. 927,626

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1990, 4006391

Int. Cl.[5] C08F *2/00;* C11D *1/825*

U.S. Cl. 526—209 19 Claims

1. A pourable aqueous liquid surfactant concentrate containing from about 50 to about 90% by weight of a surfactant mixture comprising:

A) from about 10 to about 90% by weight of at least one compound of the formula

$$R^1—O—(CH_2—CH_2O)_n—H \quad (I)$$

in which R^1 is a saturated or unsaturated hydrocarbon radical of a primary C_{8-22} alcohol attached by carbon and n is a number of from 25 to 60; and

B) from about 90 to about 10% by weight of at least one compound of the formula

$$H(OCH_2—CH_2)_p—O \quad \underset{|}{R^2—CH—CH_2} \quad O—(CH_2—CH_2O)_q—H \quad (II)$$

in which R^2 is a saturated or unsaturated C_{6-14} radical attached by carbon, and p and q are each a number of from 0 to 25, the sum of p and q being a number of from 5 to 25.

5,346,974

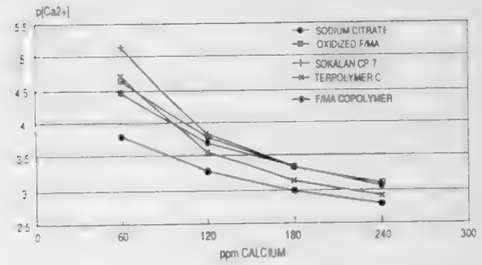
POLYETHER POLYCARBOXYLATE COMPOSITIONS USEFUL AS DETERGENT BUILDERS

Carmine P. Iovine, Bridgewater; Rama S. Chandran, So. Bound Brook, and John C. Leighton, Flanders, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

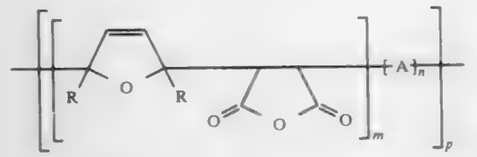
Division of Ser. No. 690,741, Apr. 24, 1991, Pat. No. 5,187,238, which is a division of Ser. No. 422,355, Oct. 16, 1989, Pat. No. 5,087,682. This application Sep. 17, 1992, Ser. No. 946,714

Int. Cl.[5] C08F *222/02, 220/04, 224/00, 222/06, 222/10, 216/12, 218/04*

U.S. Cl. 526—240 8 Claims



1. A polymer comprising hydrolysis products and salts thereof of a polymer of furan, maleic anhydride and at least one copolymerized comonomer, comprising a repeating unit of the structure:



wherein A is a repeating unit derived from at least one copolymerized comonomer, selected from the group consisting of alkenyl alkyl ethers, alkyl acrylates, alkenyl carboxyalkyl ethers, vinyl esters of carboxylic acids, unsaturated carboxylic acids, and unsaturated dicarboxylic acids other than maleic acid and their anhydrides and esters; R is H, —CH_3, —CH_2CH_3, or a combination thereof; m is at least 1; n is greater than zero; and p is an integer from about 5 to 6,000.

5,346,975

LIGHT-SENSITIVE COMPOSITION

Keitaro Aoshima, and Hideo Miyake, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Sep. 16, 1992, Ser. No. 945,388

Claims priority, application Japan, Sep. 20, 1991, 3-242027; Sep. 20, 1991, 3-242097

Int. Cl.[5] C08F *226/06, 230/02, 228/02, 218/02, 265/06*

U.S. Cl. 526—263 20 Claims

1. A light-sensitive composition comprising a photo-crosslinkable polymer compound wherein the photo-crosslinkable polymer compound comprises structural units represented by the following formula (I) in an amount of not less than 1% by weight on the basis of the total weight of the photo-crosslinkable polymer compound;

wherein R^1 represents a hydrogen atom or methyl group; X represents a single bond, an ester bond or an amide bond; R^2 represents a single bond or a divalent bridging group composed of two or more kinds of atoms selected from the group consisting of C, H, N, O and S; and Y represents a polymer group having a weight average molecular weight of not less than 500 and comprising structural units represented by the following formula (II) in an amount of not less than 5% by weight on the basis of the total weight of the group Y;

where R^3 represents a hydrogen atom or methyl group; R^4 represents a single bond or a divalent bridging group composed of two or more kinds of atoms selected from the group consisting of C, H, N, O and S; and Z represents a functional group represented by the following formula (III);

where R^5 and R^6 independently represent a hydrogen atom, a halogen atom or an alkyl group having 1 to 12 carbon atoms, or R^5 and R^6 may combine to form a 5- or 6-membered cyclic ring.

5,346,976

ITACONATE COPOLYMERIC COMPOSITIONS FOR CONTACT LENSES

Edward J. Ellis, Lynnfield, Mass.; Alfred P. Olson, Barnstead, N.H., and James A. Bonafini, Jr., Lunenburg, Mass., assignors to Polymer Technology Corporation, Wilmington, Mass.

Filed Mar. 29, 1993, Ser. No. 38,970

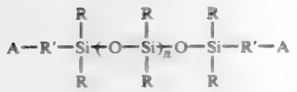
Int. Cl.[5] C08F *30/08, 20/22*

U.S. Cl. 526—279 19 Claims

1. A copolymer useful as a contact lens material which is the polymerization product of a mixture comprising:

(a) an itaconate;

(b) a siloxane compound represented by formula (I):



(I)

wherein:

each A is independently an activated unsaturated radical;

each R is independently selected from the group consisting of a C_1–C_{12} monovalent hydrocarbon radical, a C_1–C_{12} monovalent hydrocarbon radical containing ether linkages, a halogen-substituted C_1–C_{12} monovalent hydrocarbon radical, and a halogen-substituted C_1–C_{12} monovalent hydrocarbon radical containing ether linkages;

each R′ is independently a C_1–C_{22} divalent hydrocarbon radical; and

n averages about 15 to about 50;

(c) an ethylenically unsaturated, monofunctional organosiloxane monomer; and

(d) a hydrophilic monomer.

5,346,977

METHOD OF APPLYING A SKIN-PROTECTIVE COMPOSITION

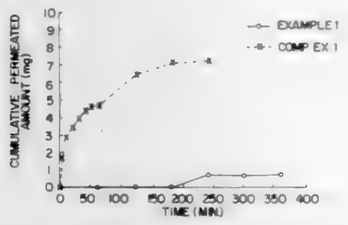
Yoshio Sakai, Takefu, and Izumi Saitoh, Nishinomiya, both of Japan, assignors to Shionogi & Co., Ltd., Osaka and Nissin Chemical Industry Co., Ltd., Fukui, both of Japan

Division of Ser. No. 502,773, Apr. 2, 1990, abandoned. This application Apr. 26, 1993, Ser. No. 52,293

Claims priority, application Japan, Apr. 1, 1989, 1-82549

Int. Cl.[5] C08F *20/10, 220/10*

U.S. Cl. 526—318.44 **9 Claims**



1. A method of protecting the skin, which comprises applying to the skin a skin-protective amount of a composition which consists essentially of an acrylic copolymer consisting of

(A) 40 to 85% by weight of an alkyl acrylate,

(B) 5 to 50% by weight of an alkyl methacrylate, and

(C) 10 to 30% by weight of a mono-ethylenically unsaturated monomer having a carboxyl group, and a medium.

5,346,978

POLYMERIC COMPOSITIONS USEFUL IN OXYGEN PERMEABLE CONTACT LENSES

Richard C. Baron, Tewksbury, Mass., and Scott D. Rothenberger, Derry, N.H., assignors to Polymer Technology Corporation, Wilmington, Mass.

Continuation of Ser. No. 958,663, Oct. 8, 1992, abandoned, which is a continuation of Ser. No. 851,873, Mar. 16, 1992, Pat. No. 5,177,168, which is a continuation of Ser. No. 697,112, May 8, 1991, abandoned, which is a division of Ser. No. 422,612, Oct. 17, 1989, Pat. No. 5,032,658. This application Jun. 29, 1993, Ser. No. 84,398

The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.

Int. Cl.[5] C08F *22/10*

U.S. Cl. 526—321 **16 Claims**

1. A contact lens material which is the polymerization product of a mixture comprising neopentyl methacrylate.

5,346,979

CURABLE RESIN, PROCESS FOR MAKING AND ELECTRONIC PART PROTECTIVE COATING

Hiroshige Okinoshima, Annaka, and Hideto Kato, Takasaki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

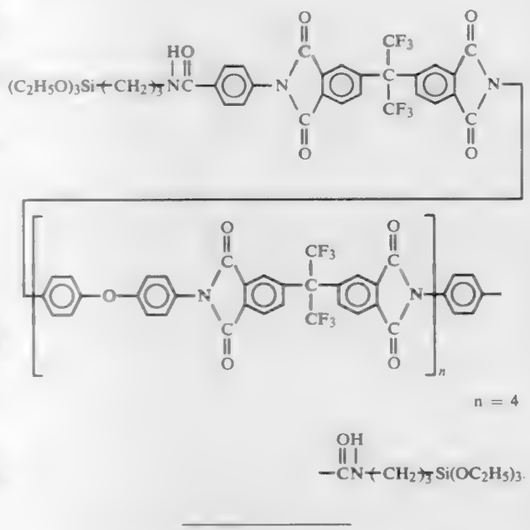
Filed Jan. 12, 1993, Ser. No. 3,398

Claims priority, application Japan, Jan. 17, 1992, 4-26223

Int. Cl.[5] C08G *77/26*

U.S. Cl. 528—26 **4 Claims**

1. A curable resin having the following structural formula



n = 4

5,346,980

CROSSLINKABLE SILARYLENE-SILOXANE COPOLYMERS

Gaddam N. Babu, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 868,534, Apr. 14, 1992, abandoned. This application Jan. 28, 1993, Ser. No. 10,656

Int. Cl.[5] C08G *77/04, 77/20*

U.S. Cl. 528—40 **16 Claims**

1. A crosslinkable silarylene-siloxane pressure sensitive adhesive copolymer composition comprises a copolymer comprising a backbone having randomly arranged silarylene units and siloxane units, of which siloxane units at least 55 mol percent are arylsiloxane units, there being an average of no more than two consecutive units of either siloxane or silarylene in the backbone of the copolymer, said copolymer comprising at least 0.05 mol percent crosslinking functionality.

5,346,981

RADIOPAQUE POLYURETHANES

Ashok M. Sarpeshkar, Upper St. Clair, and Peter H. Markusch, McMurray, both of Pa., assignors to Miles Inc., Pittsburgh, Pa.

Filed Jan. 13, 1993, Ser. No. 3,755

Int. Cl.[5] C08G *18/32*

U.S. Cl. 528—85 **8 Claims**

1. An optically clear radiopaque polyurethane composition comprising a reaction product of

(a) a cycloaliphatic diisocyanate;

(b) at least one polyester diol having a molecular weight of from about 1000 to about 6000;

(c) an isocyanate-reactive bromine-containing aromatic chain extender; and

(d) optionally, a catalyst;

wherein the quantity of component (c) is such that the amount of bromine in the polyurethane composition is from 20 to 30% by weight, and wherein the components are reacted at an isocyanate index of from 0.95 to 1.2.

5,346,982

HEAT-RESISTANT ADHESIVE

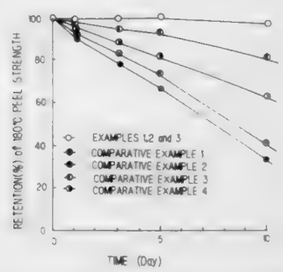
Shoji Tamai, Yokohama; Katsuaki Iiyama, and Akihiro Yamaguchi, both of Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 833,161, Feb. 10, 1992, abandoned. This application Jun. 7, 1993, Ser. No. 72,691

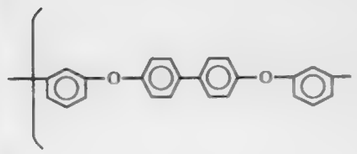
Claims priority, application Japan, Feb. 21, 1991, 3-027406

Int. Cl.[5] C08G *73/10, 69/26*

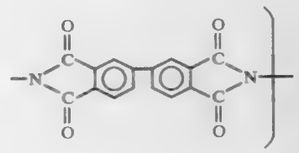
U.S. Cl. 528—183 **6 Claims**



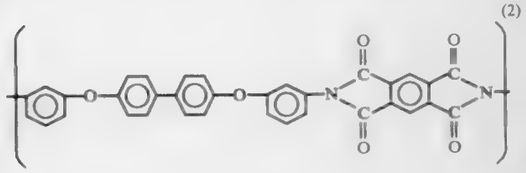
1. A heat-resistant adhesive essentially consisting of a polyimide comprising in a polymer molecule from 10 to 99% by mole of structural units having the formula (1):



(1)



and from 1 to 90% by mole of structural units having the formula (2):



(2)

5,346,983

SUBSTITUTED PHENYL COMPOUNDS AND PROCESSES FOR PREPARING THE SAME

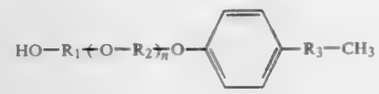
Michael T. Sheehan; James R. Sounik; Bret F. Hann, all of Corpus Christi, and William W. Wilkison, III, Richardson, all of Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed May 28, 1993, Ser. No. 70,144

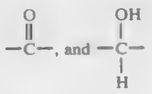
Int. Cl.[5] C08G *65/38*

U.S. Cl. 528—212 **6 Claims**

1. Substituted phenyl compounds having the structural formula (I):



wherein n is 1–1000; R_1=R_2, and R_1 and R_2 are from the group consisting of —CH_2—CH_2—; —C_2—$C(CH_3)H$—; and —$C(CH_3)H$—CH_2—; and R_3 is from the group;



and the diasteromeric salts thereof.

5,346,984

STAR-SHAPED NYLONS, METHODS FOR THEIR PREPARATION, TETRASUBSTITUTED CARBOXYLIC ACIDS AND METHODS FOR THEIR PREPARATION

Naoki Hasegawa; Arimitsu Usuki; Akane Okada, and Toshio Kurauchi, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Apr. 14, 1993, Ser. No. 46,837

Claims priority, application Japan, Apr. 14, 1992, 4-121310; Feb. 26, 1993, 5-062896

Int. Cl.[5] C08G *69/08, 69/14*

U.S. Cl. 528—323 **17 Claims**

1. A star-shaped nylon with polymer chains emanating from 3 or more polymerization initiation groups which are substituents bonded to every other or more separated carbon atoms on an aromatic ring of an aromatic compound.

5,346,985

DRAWABLE HIGH TENSILE STRENGTH ARAMIDS

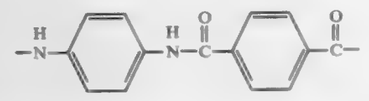
Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 30, 1991, Ser. No. 772,383

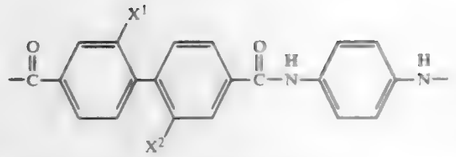
Int. Cl.[5] C08G *69/26, 69/32, 69/40*

U.S. Cl. 528—331 **16 Claims**

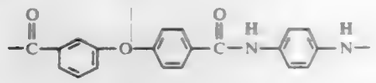
1. A drawable aramid random copolymer, consisting essentially of, of up to about 10 mole percent of a first unit of the formula



about 30 to about 70 mole percent of a second unit of the formula



and about 70 to about 30 mole percent of a third unit of the formula



wherein

X^1 and X^2 are independently selected from the group consisting of chlorine, bromine, nitro and methyl.

5,346,986

AGGLOMERATED POLYMER PARTICLES OF FINELY DIVIDED, WATER-SOLUBLE OR WATER-SWELLABLE POLYMERS, THE PREPARATION THEREOF AND THE USE THEREOF

Reinhard Schneider, Frankenthal; Norbert Grund, Ludwigshafen, and Heinrich Hartmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 9, 1993, Ser. No. 104,066

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1991, 4103969

Int. Cl.[5] C08F *6/20*

U.S. Cl. 528—495 **5 Claims**

1. A process for the preparation of a finely divided, water-soluble or water-swellable polymer by isolating the polymer particles from a water-in-oil emulsion of a water-soluble or water-swellable polymer, wherein the water-in-oil polymer emulsion is azeotropically dewatered in the presence of from 1 to 40% by weight, based on the polymer, of a polyalkylene glycol which

a) is synthesized by an addition reaction of a C_2–C_4-alkylene oxide with an alcohol, phenol, amine or carboxylic acid; and

b) contains not less than two polymerized alkylene oxide units.

5,346,987

PREPARATION OF COMPOUNDED RUBBER COMPOSITION FROM BUBBLE-CONTAINING ETHYLENE/α-OLEFIN RUBBER

Takashi Nakahara; Toshiaki Kimura, and Takashi Mishima, all of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 684,790, Apr. 15, 1991, abandoned, which is a division of Ser. No. 420,883, Oct. 13, 1989, Pat. No. 5,068,256. This application Sep. 21, 1992, Ser. No. 947,972

Claims priority, application Japan, Oct. 14, 1988, 63-258922; Sep. 22, 1989, 1-247687

Int. Cl.[5] C08C *4/00;* **C08F** *236/20*

U.S. Cl. 528—502 **2 Claims**

1. A process for preparing a compounded, bubble-free rubber composition which comprises mixing and kneading at least one compounding agent selected from reinforcing materials, fillers, softeners and vulcanizing accelerators with a base rubber comprising (A) a non-vulcanized copolymer of (1) about 50 to 95 mol % of ethylene, (2) about 5 to 50 mol % of α-olefin having at least 3 carbon atoms, and (3) 0 to about 10 mol % of non-conjugated polyene and (B) 5–1000 parts by volume, based on 100 parts by volume of the base rubber, of bubbles and providing a water absorption volume as measured in accordance with ASTM D1506 of less than 20% by volume of the total volume of bubbles.

5,346,988

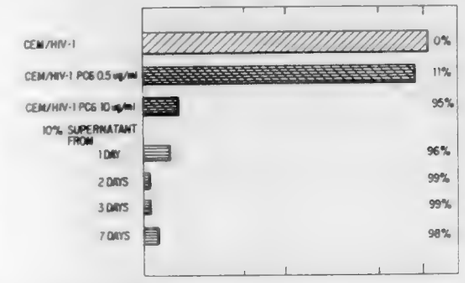
PROCESS FOR OBTAINING CELLULAR PROTEIN HAVING ANTI-HIV ACTIVITY

Meihan Nonoyama, St. Petersburg; Akiko Tanaka, and Patrick K. Lai, both of Clearwater, all of Fla., assignors to Tampa Bay Research Institute, St. Petersburg, Fla.

Continuation-in-part of Ser. No. 540,973, Jun. 20, 1990, abandoned. This application Feb. 22, 1991, Ser. No. 659,564

Int. Cl.[5] A61K *37/02;* **C07K** *1/14, 3/02, 15/06*

U.S. Cl. 530—300 **19 Claims**



1. A method for obtaining a cellular protein having anti-HIV activity which comprises:

(a) culturing CD4-positive T cells in a tissue culture medium under conditions in which the cells are induced to produce and secrete at least one protein soluble in the culture medium having anti-HIV activity,

(b) separating the cells from the culture medium containing the protein having anti-HIV activity, and

(c) recovering the protein from the medium, wherein the protein is characterized by a molecular weight of about 7,000 to about 12,000 daltons as determined by gel filtration analysis.

5,346,989

PEPTIDES FOR USE IN INDUCTION OF T CELL ACTIVATION AGAINST HIV-1

Anders Vahlne, Hovas; Bo Svennerholm, Gothenburg; Lars Rymo, Hovas; Stig Jeansson, Gothenburg; Peter Horal, Gothenburg; Cecil Czerkinsky, Gothenburg, and Jan Holmgren, Vastra Frolunda, all of Sweden, assignors to Syntello Vaccine Development KB, Gothenburg, Sweden

Continuation of Ser. No. 709,709, Jun. 3, 1991, Pat. No. 5,272,251, which is a continuation-in-part of Ser. No. 571,080, Aug. 22, 1990, abandoned. This application Sep. 13, 1993, Ser. No. 121,032

Int. Cl.[5] A61K *37/02, 39/12, 37/00;* **C07K** *5/00*

U.S. Cl. 530—324 **11 Claims**

1. A peptide having the amino acid sequence X-Ser-Ser-Ser-Gly-Arg-Met-Ile-Met-Glu-Lys-Gly-Glu-Ile-Lys-Asn-Cys-Ser-Phe-Asn-Ile-Ser-Thr-Ser-Y wherein X is either a hydrogen atom of the amino terminal NH_2 group of said peptide or an additional amino acid selected to facilitate coupling of said peptide to a carrier and Y is selected from the group consisting of an amino group, a hydroxy group, a Cysteine residue, a Cysteine residue followed by an amino group and a Cysteine residue followed by a hydroxy group.

5,346,990

SEX-ASSOCIATED MEMBRANE PROTEINS AND METHODS FOR INCREASING THE PROBABILITY THAT OFFSPRING WILL BE OF A DESIRED SEX

Glenn F. Spaulding, Chandler, Ariz., assignor to Cytogam, Inc., Chandler, Ariz.

Division of Ser. No. 351,642, May 12, 1989, Pat. No. 5,021,244, which is a continuation-in-part of Ser. No. 282,922, Dec. 6, 1988, abandoned, which is a continuation of Ser. No. 35,986, Apr. 8, 1987, abandoned. This application Mar. 12, 1991, Ser. No. 667,974

Int. Cl.[5] C12N *1/00;* **A61K** *35/52;* **G01N** *21/64*

U.S. Cl. 530—350 **8 Claims**

1. A refined X sex-associated membrane protein characterized by a higher band density on an SDS/PAGE of plasma membrane proteins prepared from X-enriched sperm subpopulations as compared to the corresponding band density on an SDS/PAGE of plasma membrane proteins prepared from whole sperm or prepared from Y-enriched sperm subpopulations; or a refined Y sex-associated membrane protein characterized by a higher band density on an SDS/PAGE of plasma membrane proteins prepared from Y-enriched sperm subpopulations as compared to the corresponding band density on an SDS/PAGE of plasma membrane proteins prepared from whole sperm or prepared from X-enriched sperm subpopulations.

5,346,991

TISSUE FACTOR MUTANTS USEFUL FOR THE TREATMENT OF MYOCARDIAL INFARCTION AND COAGULOPATHIC DISORDERS

Soumitra Roy, San Francisco, and Gordon A. Vehar, San Carlos, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed Jun. 13, 1991, Ser. No. 714,819

Int. Cl.[5] C07K *13/00;* **C12N** *15/12;* **A61K** *37/02*

U.S. Cl. 530—350 **13 Claims**

1. A tissue factor protein mutant capable of inhibiting the ability of endogenous tissue factor to induce coagulation, wherein either or both the positively charged amino acid residues 165 and 166 are substituted with an α-amino acid other than one bearing a substantially positively charged side chain at physiological pH.

5,346,992

PROCESS FOR ISOLATING HUMAN ALBUMIN FROM SUPERNATANT IV, IN PARTICULAR IV-4, OR FROM COHN'S FRACTION V OR FROM AN ANALOGOUS SUPERNATANT OR FRACTION

Michel G. J. Grandgeorge, Vaugneray; Jean-Luc B. Veron, Sourcieux-les-Mines, and Pierre L. J. Fournier, Lyons, all of France, assignors to Pasteur Merieux Serums et Vaccins, France

Filed Feb. 6, 1992, Ser. No. 832,081

Claims priority, application France, Feb. 7, 1991, 91 01365

Int. Cl.[5] C07K *3/00;* **B01D** *15/00*

U.S. Cl. 530—364 **9 Claims**

1. A process for isolating albumin having a purity greater than 99% with a polymer content lower than 1%, from a supernatant IV, or from COHN's fraction V derived from an alcoholic fractionation, comprising two anion exchange chromatographic steps, wherein one step is carried out on a hydrophilic anion exchange column with binding of albumin to the column followed by elution, and the other step is carried out on a hydrophobic anion exchange column.

5,346,993

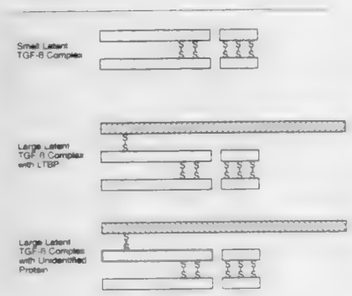
ISOLATED, LARGE LATENT COMPLEXES OF TGF-β2 AND TGF-β3, AND NEW BINDING PROTEIN FOR LATENT FORM TGF-β1, TGF-β2 AND TGF-β3 LTBP-2

Kohei Miyazono; Carl-Henrik Heldin, and Anders Olofsson, all of Uppsala, Sweden, assignors to Ludwig Institute for Cancer Research, N.Y.

Division of Ser. No. 826,577, Jan. 27, 1992, Pat. No. 5,280,109. This application Jul. 15, 1993, Ser. No. 92,331

Int. Cl.[5] C07K *13/00*

U.S. Cl. 530—399 **4 Claims**



1. Isolated molecular complex consisting of:

(i) a molecule of LTBP-2 binding protein, which is immunologically distinct from latent, TGF-β1 binding protein and has a molecular mass of about 150 KDa as determined by SDS-PAGE;

(ii) dimerized, beta latency associated peptide linked to said LTBP-2 binding protein via a disulphide bond, and;

(iii) dimerized TGF-β, non-covalently associated with said dimerized, beta latency associated peptide

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5,346,994

SHELF-STABLE PRODUCT AND PROCESS FOR ISOLATING RNA, DNA AND PROTEINS

Piotr Chomczynski, 778 Avon Fields La., Cincinnati, Ohio 45229

Filed Jan. 28, 1992, Ser. No. 826,984

The portion of the term of this patent subsequent to Jun. 27, 2006, has been disclaimed.

Int. Cl.[5] C07H *21/02*

U.S. Cl. 530—419 **30 Claims**

1. A solvent solution comprising: effective amounts of phenol, a guanidinium compound and a thiocyanate compound selected from the group consisting of ammonium thiocyanate and sodium thiocyanate for extracting substantially pure and undegraded RNA, substantially pure and undegraded DNA, and proteins from biological tissue.

5,346,995

PREPARATION OF COPPER 2-ALKOXYISOBUTYLISONITRILE COMPLEXES AND ^{99m}TC LABELLING OF 2-ALKOXYISOBUTYLISONITRILE

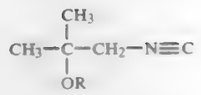
Lee Te-Wei; Ting Gann, both of Taipei; Su Chang-Shinn, and Chyi Shyh-Yi, both of Tau-Yen, all of Taiwan, assignors to Institute of Nuclear Energy Research, Taiwan

Division of Ser. No. 797,066, Nov. 25, 1991, Pat. No. 5,210,270. This application Jan. 13, 1993, Ser. No. 3,736

Int. Cl.[5] C07F *13/00*

U.S. Cl. 534—14 **6 Claims**

1. A method comprising (i) reacting a 2-alkoxy-isobutylisonitrile having the general formula (I):



(I)

wherein R is an alkyl group having 1–4 carbon atoms, with a copper salt to provide a copper isonitrile complex, and (ii) labelling said complex with technitium-99m in the presence of Sn(II), wherein the labelled yield is higher than 90%.

5,346,996

RARE EARTH CRYPTATES, PROCESSES FOR THEIR PREPARATION, SYNTHESIS INTERMEDIATES AND APPLICATION AS FLUORESCENT TRACERS

Jean-Marie Lehn, Strasbourg; Gérard Mathis, Bagnols-sur-Ceze; Béatrice Alpha; Robert Deschenaux, both of Strasbourg, and Etienne Jolu, Bagnols-sur-Ceze, all of France, assignors to Compagnie Oris Industrie, Paris Cedex, France

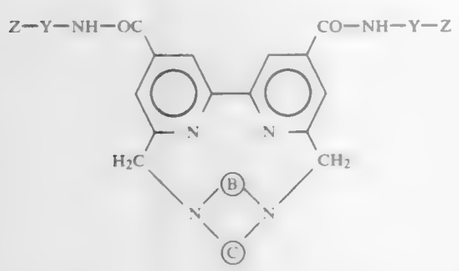
Division of Ser. No. 737,556, Jul. 26, 1991, Pat. No. 5,162,508, which is a continuation of Ser. No. 547,316, Jul. 2, 1990, abandoned, which is a continuation of Ser. No. 147,693, Jan. 25, 1988, abandoned. This application Sep. 14, 1992, Ser. No. 927,063

Claims priority, application France, Dec. 18, 1987, 87 17765

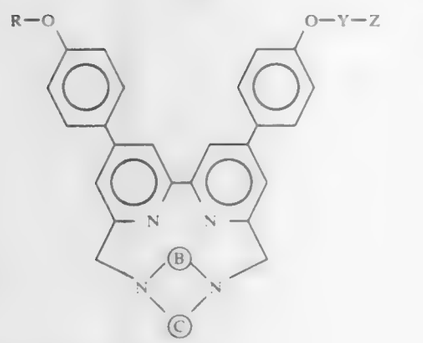
Int. Cl.[5] **C07F** *15/00;* **C07D** *401/04;* **G01N** *33/533*

U.S. Cl. 534—15 | **11 Claims**

1. A method of labeling a biological substance comprising coupling said substance with a rare earth cryptate consisting essentially of at least one rare earth salt complexed by a macropolycyclic compound of formula I or II:



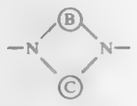
I



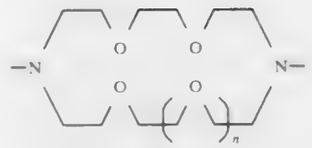
II

in which:

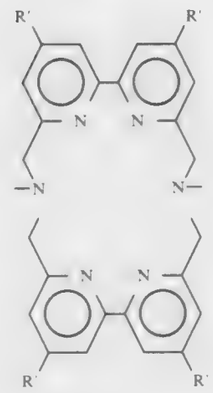
(a) the ring of the formula



is a macrocycle of the formula:



or



where n=0 or 1,

where R′ is hydrogen, —CO—N—H—Y—Z, or —COOR′ in which R′ is C_1–C_{10} alkyl;

(b) Y is a divalent organic radical selected from the group consisting of (1) linear or branched C_1–C_{20} alkylene group optionally containing at least one double bond and optionally being interrupted by one or more heteroatoms selected from the group consisting of O, N, S and P, (2) C_5–C_8 cycloalkylene group optionally substituted by an alkyl, aryl or sulfonate group; and (3) C_6–C_{14} arylene group optionally substituted by an alkyl, aryl or sulfonate group;

(c) Z is a functional group capable of bonding covalently with said biological substance; and

(d) R is methyl or the group —Y—Z where Y and Z are as defined above.

5,346,997

AGENTS FOR COMPLEXING SODIUM UNDER BIOLOGICAL CONDITIONS

James G. Murphy, 820 Robert St., Venice, Fla. 34285

Filed Aug. 26, 1992, Ser. No. 935,571

Int. Cl.[5] **C07G** *3/00, 11/00;* **A01N** *43/04;* **A61R** *31/70*

U.S. Cl. 536—4.1 | **7 Claims**

1. An agent for complexing sodium ions comprising a benzyl glucuronic acid, said benzyl glucuronic acid being beta-d-glucopyranosiduronic acid, said agent further comprising the salt and ester of said benzyl glucuronic acid, said agent being used in combination with an oil carrier for pharmaceutical applications.

5,346,998

BRAZZEIN SWEETENER

Bengt G. Hellekant, and Ding Ming, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 21,540, Feb. 16, 1993. This application Jun. 29, 1993, Ser. No. 84,846

Int. Cl.[5] **C12N** *15/29*

U.S. Cl. 536—23.6 | **1 Claim**

1. The DNA sequence essentially according to SEQ ID NO: 2, wherein the DNA sequence is located outside of a *Pentadiplandra brazzeana* Baillon cell, and the DNA sequence codes for essentially the protein of SEQ ID NO: 1, wherein the DNA sequence is essentially free of *Pentadiplandra brazzeana* plant material other than Brazzein.

5,346,999

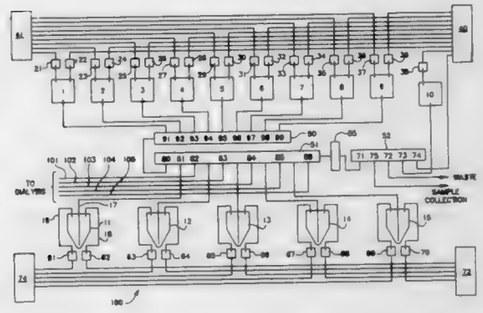
METHOD OF NUCLEIC ACID EXTRACTION

Guy R. Cathcart, Berkeley; Paul D. Grossman, Foster City; P. Eric Mayrand, Pacifica; Eric S. Nordman, San Bruno, and Norman M. Whiteley, San Carlos, all of Calif., assignors to Applied Biosystems, Inc., Foster City, Calif.

Continuation-in-part of Ser. No. 692,958, Jan. 18, 1985, abandoned, and a continuation-in-part of Ser. No. 850,869, Apr. 11, 1986, abandoned. This application Mar. 24, 1989, Ser. No. 328,471

Int. Cl.[5] **C07H** *23/00*

U.S. Cl. 536—25.41 | **19 Claims**



1. A method of extracting nucleic acids from cells comprising the steps:

(a) creating a lysate by treating said cells with proteinase K in the presence of a lysis buffer;

(b) mixing said lysate with a phenol-based solvent system, thereby creating an emulsion;

(c) heating said emulsion to a temperature greater than 35 degrees C. in the absence of mixing action and without centrifugation to promote separation of said emulsion into an aqueous phase containing said nucleic acids and an organic phase containing phenol and denatured proteins;

(d) removing said organic phase to leave a remaining aqueous phase containing said nucleic acids.

5,347,000

PROCESS FOR THE PREPARATION OF 2-CHLOROSULFINYLAZETIDINONE

Jag M. Khanna; Yatendra Kumar, and Arun Malhotra, all of New Delhi, India, assignors to Ranbaxy Laboratories Ltd., New Delhi, India

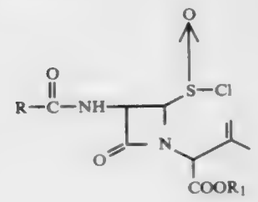
Filed Apr. 21, 1993, Ser. No. 51,086

Claims priority, application India, Nov. 5, 1992, 1014/92

Int. Cl.[5] **C07D** *205/095, 501/02*

U.S. Cl. 540—218 | **10 Claims**

1. A process for preparing a 2-chlorosulfinylazetidinone of the formula (II),



FORMULA II

wherein

R is hydrogen, C_1–C_3 alkyl, halomethyl or cyanomethyl, or

R is the group R_3, wherein R_3 is phenyl or phenyl substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, protected hydroxy, nitro, cyano, or trifluoromethyl, or

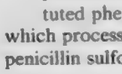
R is a group of formula (IV),



FORMULA IV

wherein R_4 is t-butyl, 2,2,2-trichloroethyl, benzyl, or

R is a group of formula (VII),



FORMULA VII

wherein R_5 is as R_3 defined above, 2-thienyl, 3-thienyl, 2-furyl, or 3-furyl, and n is 0 or 1, or

R is a substituted aralkyl group of formula (VIII),



FORMULA VIII

wherein R_6 has the same meaning as R_5 defined above, and W is protected hydroxy or protected amino, and

R_1 is a carboxylic acid protecting group selected from the group consisting of C_1–C_4 alkyl, 2,2,2-trihaloalkyl, benzyl, p-nitrobenzyl, p-methoxybenzyl, phenacyl, halo substituted phenacyl and 1,1 diphenylmethyl,

which process comprises heating in an inert organic solvent a penicillin sulfoxide ester of the formula (I),

FORMULA I

wherein R and R_1 are as defined above, at a temperature between about 75° and 140° C., with an N-chlorohalogenating agent and in the presence of a weakly basic N-alkali metal salt of phthalimide or succinimide.

5,347,001

PROCESS FOR PREPARING SULPHONYLPRISTINAMYCIN II_B

Xavier Radisson, Lyon, France, assignor to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR91/00579, § 371 Date Jan. 4, 1993, § 102(e) Date Jan. 4, 1993, PCT Pub. No. WO92/01692, PCT Pub. Date Feb. 6, 1992

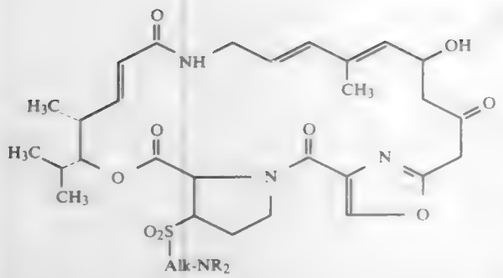
PCT Filed Jul. 15, 1991, Ser. No. 961,915

Claims priority, application France, Jul. 16, 1990, 90 09033

Int. Cl.[5] **C07D** *498/14;* **C07K** *5/12;* **A61K** *31/42*

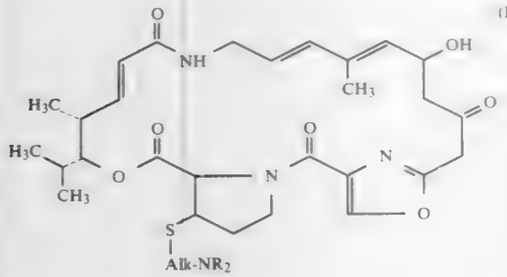
U.S. Cl. 540—456 | **4 Claims**

1. A process for preparing 26-[(2-dialkylaminoalkyl)sulphonyl]pristinamycin II_B of formula:



(I)

in which Alk represents a linear or branched alkylene radical and R represents linear or branched alkyl radicals, these radicals containing 1 to 10 carbon atoms, comprising oxidation of 26-[(2-dialkylaminoalkyl)thio]-pristinamycin II_B of formula:



(II)

in which Alk and R are defined as above, with 3.5 to 20 equivalents of hydrogen peroxide in the presence of an alkali metal tungstate, in a two-phase medium, at a temperature of between 10° and 25° C.

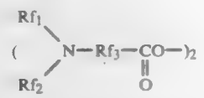
5,347,002

NITROGEN-CONTAINING PERFLUOROALKANOYL PEROXIDE AND METHOD FOR PRODUCTION THEREOF

Haruhiko Fukaya, Oobu; Takashi Abe, Kasugai; Eiji Hayashi, Konan, and Yoshio Hayakawa, Jinmokuji, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, Tokyo, Japan

Division of Ser. No. 997,360, Dec. 28, 1992, Pat. No. 5,256,825, which is a division of Ser. No. 941,884, Sep. 8, 1992, Pat. No. 5,208,339. This application Jun. 21, 1993, Ser. No. 78,817
Claims priority, application Japan, Nov. 15, 1991, 3-355487
Int. Cl.[5] C07D *207/04, 405/12*
U.S. Cl. 540—596 **3 Claims**

1. A nitrogen-containing perfluoroalkanoyl peroxide represented by the formula:



(I)

wherein Rf_1 and Rf_2 independently stand for a perfluoroalkyl group of 1 to 5 atoms, provided that Rf_1 and Rf_2 are joined to each other directly to form a five-membered ring or seven-membered ring, and Rf_3 stands for a perfluoroalkylene group of 1 to 3 carbon atoms.

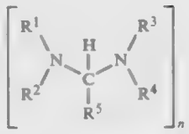
5,347,003

METHODS FOR REGENERATING A SULFUR SCAVENGING COMPOUND FROM A PRODUCT OF A SULFUR SCAVENGING REACTION

Edward A. Trauffer, Glenside, and Robert D. Evans, Warminster, both of Pa., assignors to Quaker Chemical Corporation, Wilmington, Del.

Filed Mar. 5, 1993, Ser. No. 26,891
Int. Cl.[5] C07C *211/09;* **C07D** *251/04*
U.S. Cl. 544—8 **17 Claims**

1. A method for regenerating an N-C-N compound from a product of a sulfur scavenging reaction in which said N-C-N compound removes a sulfur atom from a sulfur compound, said N-C-N compound being represented by the formula (I):



(I)

where n is an integer of 1 to 100, and each of R^1, R^2R^3, R^4, and R^5 is independently selected from the group consisting of:

(i) hydrogen;

(ii) a substituted or unsubstituted, saturated or unsaturated, linear, branched or cyclic hydrocarbon chain of 1 to 20 carbons;

(iii) a substituted or unsubstituted, saturated or unsaturated, linear, branched or cyclic hydrocarbon chain of 1 to 20 carbons comprising at least one heteroatom selected from the group consisting of nitrogen, oxygen, sulfur and halogen;

(iv) a substituted or unsubstituted polymeric chain; and

(v) a direct bond to any other of R^1, R^2, R^3, R^4, and R^5, said product comprising a hetero compound having sulfur, carbon and nitrogen atoms in its backbone, the method comprising the steps of:

(a) mixing said product with:

(1) a nitrogen compound represented by the formula (II):



(II)

where each of R^6 and R^7 are independently selected from the group consisting of:

(i) hydrogen;

(ii) a substituted or unsubstituted, saturated or unsaturated, linear, branched or cyclic hydrocarbon chain of 1 to 20 carbons;

(iii) a substituted or unsubstituted, saturated or unsaturated, linear, branched or cyclic hydrocarbon chain of 1 to 20 carbons comprising at least one heteroatom selected from the group consisting of boron, nitrogen, oxygen, sulfur and halogen; and

(iv) a substituted or unsubstituted polymeric chain; and salts thereof; and

(2) an alkaline compound selected from the group consisting of an alkali metal compound, an alkaline earth metal compound and a transiton metal compound, to form one of a solution, slurry or dispersion;

(b) reacting said hetero compound with said nitrogen compound in the presence of said alkaline compound, such that a sulfur atom of said hetero compound is replaced by a nitrogen atom of said nitrogen compound; and

(c) if necessary, adjusting the pH of said solution to about 8 to about 13.

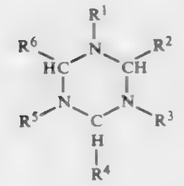
5,347,004

MIXTURES OF HEXAHYDROTRIAZINES USEFUL AS H_2S SCAVENGERS

Gordon T. Rivers, Houston, and Richard L. Rybacki, Katy, both of Tex., assignors to Baker Hughes, Inc., Houston, Tex.

Filed Oct. 9, 1992, Ser. No. 959,223
Int. Cl.[5] C07D *251/04*
U.S. Cl. 544—180 **24 Claims**

1. A hexahydrotriazine of the formula:



(i)

where R^1, R^3 and R^5 are independently selected from the group consisting of hydrogen and an alkyl radical, including substituted alkyl radicals, of 1 to 5 carbon atoms; and where R^2, R^4 and R^6 are independently selected from the group consisting of hydrogen and an alkyl radical, including substituted alkyl radicals, of 1 to 5 carbon atoms where at least one of the R groups, R^1, R^2, R^3, R^4, R^5 and R^6, is an alkoxyalkylene group.

5,347,005

PHARMACEUTICAL COMPOSITIONS CONTAINING (65)-FOLINIC ACID AND SALTS THEREOF

Hans R. Mueller, Schaffhausen; Martin Ulmann, Dachsen; Josef Conti, Schaffhausen, and Gunter Muerdel, Tengen-Busslingen, all of Switzerland, assignors to Eprova AG, Schaffhausen, Switzerland

Division of Ser. No. 668,681, Mar. 7, 1991, Pat. No. 5,134,235, which is a continuation of Ser. No. 294,631, Dec. 23, 1988. This application Jun. 2, 1992, Ser. No. 896,482
Claims priority, application Switzerland, May 15, 1987, 01883/87
Int. Cl.[5] C07D *475/04*
U.S. Cl. 544—258 **2 Claims**

1. Magnesium salt of (6S)-folinic acid.

5,347,006

METHOD OF PREPARING A POLYMORPH OF TERFENADINE

Augusto Lavacchielli, Via Crespi 67, 28100 Novara; Mirco Fornaroli, Via 4 Novembre 50, 28068 Romentino (No), and Giovanni Colli, Via Alberio 29, 28066 Galliate (No), all of Italy

Filed Dec. 31, 1992, Ser. No. 999,596
Int. Cl.[5] C07D *211/22*
U.S. Cl. 546—241 **9 Claims**

1. A method for preparing HMP terfenadine comprising the steps of:

(a) reacting terfenadone free-base with sodium borohydride to yield mixed polymorph terfenadine; and

(b) crystallizing said mixed polymorph terfenadine from a seeded ester or ketone solvent system to yield substantially pure HMP terfenadine.

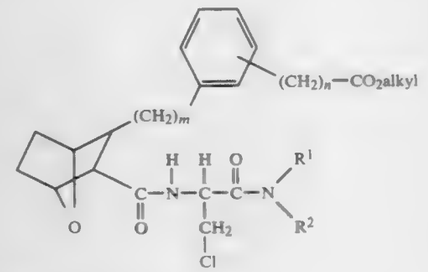
5,347,007

METHOD OF PREPARING 7-OXABICYCLOHEPTYL SUBSTITUTED HETEROCYCLIC AMIDE PROSTAGLANDIN ANALOGS USEFUL IN THE TREATMENT OF THROMBOTIC AND VASOSPASTIC DISEASE

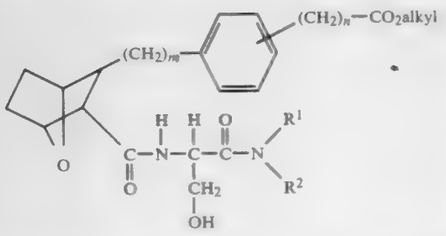
Jagabandhu Das, Hamilton Square, N.J., and David Kronenthal, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 900,383, Jun. 18, 1992, Pat. No. 5,260,448, which is a continuation-in-part of Ser. No. 846,842, Mar. 6, 1992, abandoned. This application Oct. 4, 1993, Ser. No. 131,189
Int. Cl.[5] C07D *213/36, 233/60*
U.S. Cl. 546—269 **1 Claim**

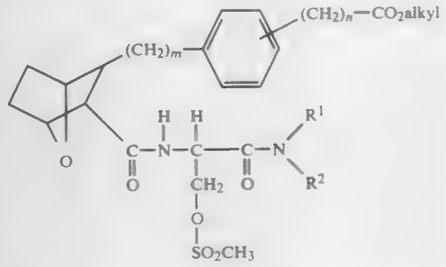
1. A method for preparing a chloromethylamide of the structure



wherein m is 1, 2or 3;
n is 0, 1, 2, 3 or 4;
$(CH_2)_n$ is unsubstituted or is substituted with one or two alkyl groups;
R^1 is lower alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl, saturated heterocycle, or aromatic heterocycle; and
R^2 is hydrogen, lower alkyl, aryl, or aralkyl, or R^1 and R^2 together with the N to which they are linked form a 5- to 8- membered ring; and which comprises treating a hydroxymethyl compound of the structure



with a methanesulfonyl chloride in the presence of an organic base to form the mesylated compound of the structure



and treating the mesylated compound with an alkali metal

chloride or a quanternary ammonium chloride salt in the presence of dimethylformamide or dichloromethane to form the desired chloromethylamide compound.

5,347,008

THIO(CYCLO) ALKANEPOLYCARBOXYLIC ACIDS CONTAINING HETEROCYCLIC SUBSTITUENTS

Robert L. Bentley, Urmston; Michael P. Savage, Heald Green, and Kenneth W. Shelton, Brooklands, all of United Kingdom, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

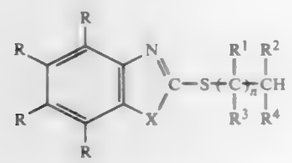
Continuation of Ser. No. 348,096, May 3, 1989, abandoned, which is a continuation of Ser. No. 865,946, May 19, 1986, abandoned, which is a continuation of Ser. No. 610,146, May 14, 1984, abandoned. This application Nov. 12, 1992, Ser. No. 975,153

Claims priority, application United Kingdom, May 14, 1983, 8313322

Int. Cl.[5] C07D *277/74*

U.S. Cl. 548—170 **8 Claims**

1. An organic amine addition salt of a compound of formula I



I

in which each of R independently of the others is H, C_1–C_{12}-alkyl, C_1–C_{12}alkoxy, C_1–C_4-halogenoalkyl, C_1–C_{12}-alkylthio, C_1–C_{12}-alkylsulfonyl, phenyl, C_7–C_{16}-alkylphenyl, C_7–C_{16}-phenylalkyl, C_5–C_8-cycloalkyl, halogen, $—NO_2$, —CN, —COOH, —COO(C_1–C_4-alkyl), —OH or $—NH_2$,

X is —S—,

n is zero or 1, and

when n is 1, R^1, R^2, R^3 and R^4 independently of one another are H, C_1–C_{18}-alkyl, C_1–C_4-hydroxyalkyl, C_2–C_{12}-mono-, di- or tri-carboxyalkyl, C_1–C_4-halogenoalkyl, C_2–C_{10}-alkoxyalkyl, —COOH or aryl or aralkyl having 6 to 10 C atoms, or said aryl or said aralkyl substituted with C_1–C_4-alkyl, C_1–C_4-alkoxy, $—NO_2$, —COOH, —OH or halogen, or

R^1 and R^2 together are linear or branched C_3–C_8-alkylene which is unsubstituted or substituted with 1 or 2 carboxyl groups, or

R^1 and R^2 together are a direct bond, and

when n is zero, R^2 and R^4 are carboxyl, subject to the proviso that the group



contains at least two and not more than four carboxyl groups.

5,347,009

HERBICIDAL 1-(3-HALO-4-TRIFLUOROMETHYLPHENYL) TETRAZOLINONES

Toshio Goto; Hidenori Hayakawa, both of Tochigi; Yukiyoshi Watanabe, Saitama, and Akihiko Yanagi, Tochigi, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

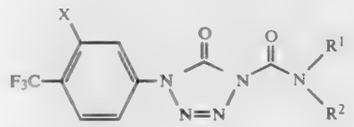
Filed May 26, 1993, Ser. No. 67,379

Claims priority, application Japan, May 28, 1992, 4-160082

Int. Cl.[5] C07D *257/04;* **A01N** *43/713*

U.S. Cl. 548—251 **9 Claims**

1. A 1- (3 -halo-4-trifluoromethylphenyl) tetrazolinone of the formula



(I)

wherein

X represents halogen,

R^1 represents C_{1-3} alkyl, and

R^2 represents C_{1-3} alkyl.

5,347,010

TETRZOLINONE HERBICIDES

Toshio Goto; Hidenori Hayakawa, both of Tochigi; Yukiyoshi Watanabe, Saitama; Shin-ichi Narabu, Ibaragi, and Akihiko Yanagi, Tochigi, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

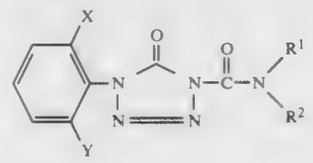
Filed Jul. 1, 1993, Ser. No. 86,606

Claims priority, application Japan, Jul. 9, 1992, 4-204271; Oct. 29, 1992, 4-312607

Int. Cl.[5] C07D *257/04;* **A01N** *43/713*

U.S. Cl. 548—251 **9 Claims**

1. A tetrazolinone of the formula



wherein

X is chlorine or bromine.

Y is hydrogen, chlorine, bromine, methyl or ethyl, and

R^1 and R^2 each independently is C_{2-4} alkyl.

5,347,011

SUBSTITUTED TRIAZOLES AS ANGIOTENSIN II INHIBITORS

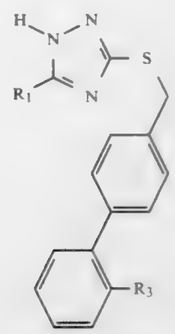
Victor T. Bandurco, Bridgewater; William V. Murray, Belle Mead; Michael P. Wachter, Bloomsbury, and Charles F. Schwender, Califon, all of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 828,394, Jan. 30, 1992, Pat. No. 5,240,953. This application Jun. 7, 1993, Ser. No. 71,827

Int. Cl.[5] C07D *249/12*

U.S. Cl. 548—264.2 **1 Claim**

1. A compound of the formula:



wherein R_1 is selected from H, C_{1-10}alkyl, C_{2-10}alkenyl, benzyl, substituted benzyl (wherein the substituent is selected from the group consisting of C_{1-5}alkyl, NO_2 and halo), phenyl, phenylethenyl and 2-phenylpropenyl; and R_3 is selected from the group consisting of CO_2H, CO_2C_{1-6}alkyl and CN.

5,347,012

NAPHTHOTHIOPYRANONE DERIVATIVES

Tatsubiko Sano, Omiya; Keiko Saijo, Saitama; Sadakazu Yokomori, Urawa; Yoshimoto Nakashima, Ageo, and Katsuo Hatayama, Omiya, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/00825, § 371 Date Dec. 11, 1992, § 102(e) Date Dec. 11, 1992, PCT Pub. No. WO92/00294, PCT Pub. Date Jan. 9, 1992

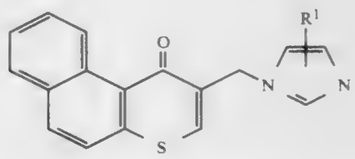
PCT Filed Jun. 20, 1991, Ser. No. 952,544

Claims priority, application Japan, Jun. 22, 1990, 2-164658

Int. Cl.[5] C07D *409/06*

U.S. Cl. 548—311.4 **18 Claims**

1. A naphthothiopranone derivative represented by the formula:



(wherein R^1 is a hydrogen atom or an alkyl group having 1 to 4 carbon atoms) or an acid addition salt thereof.

5,347,013

6-HETEROCYCLIC-4-AMINO-1,2,2A,3,4,5-HEXAHYDROBENZ[CD]INDOLES

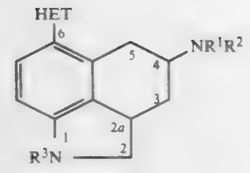
Richard N. Booher; Michael E. Flaugh, both of Indianapolis; David E. Lawhorn, Greenfield; Michael J. Martinelli; Charles J. Paget, Jr., both of Indianapolis, and John M. Schaus, Zionsville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 676,679, Mar. 28, 1991, Pat. No. 5,244,911. This application Sep. 30, 1992, Ser. No. 954,171

Int. Cl.[5] A61K *31/42;* **C07D** *413/04*

U.S. Cl. 548—436 **12 Claims**

1. Compounds of the formula



wherein

R^1 is hydrogen, C_1–C_4 alkyl, C_3–C_4 alkenyl, cyclopropylmethyl, aryl (C_1–C_4 alkyl), $—(CH_2)_nS(C_1$–C_4 alkyl), —C(O)R^4 or $—(CH_2)_nC(O)NR^5R^6$;

R^2 is hydrogen, C_1–C_4 alkyl, cyclopropylmethyl or C_3–C_4 alkenyl;

R^3 is hydrogen, C_1–C_4 alkyl or an amino blocking group;

n is 1–4;

R^4 is hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy or phenyl;

R^5 and R^6 are independently hydrogen, C_1–C_4 alkyl, or C_5–C_8 cycloalkyl with the proviso that when one of R^5 or R^6 is a cycloalkyl the other is hydrogen; and

HET is an isoxazolyl or substituted isoxazolyl ring; or pharmaceutically acceptable salts thereof.

5,347,014

PROCESS FOR PREPARING 1,4-DIKETO-3,6-DIPHENYLPYRROLO-[3,4-C]-PYRROLE

Fridolin Babler, Hockessin, Del., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 996,216, Dec. 23, 1992, abandoned. This application Feb. 4, 1993, Ser. No. 13,444

Int. Cl.[5] C07D *487/04*

U.S. Cl. 548—453 **16 Claims**

1. A platelet form of 1,4-diketo-3,6-diphenylpyrrolo-[3,4-C]-pyrrole, characterized by an X-ray diffraction pattern exhibiting one very strong line corresponding to 2Θ double glancing angles of 6.5, one strong line corresponding to 19.5 and five relatively weak lines corresponding to 13.0, 14.8, 26.2, 26.4 and 27.2.

5,347,015

DISULFIDES

Harald Keller, Ludwigshafen; Wolfgang Schrepp, Heidelberg, and Harald Fuchs, Carlsberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 20, 1992, Ser. No. 932,995

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1991, 4127821

Int. Cl.[5] C07D *403/12;* **C07C** *309/66, 309/64*

U.S. Cl. 548—455 **2 Claims**

1. A disulfide of the formula (I)

$$X^1—(CH_2)_n—S—S—(CH_2)_n—X^2 \quad (I)$$

where X^1 and X^2 are identical to one another and are each —Br, phthalimido, $—NH_2$, $—OOC—(CH_2)_3—COOH$, $—OSO_2—CH_3$, $—NH—(CH_2)_2—NH2$, $—SO_3H$ or $—SO_3^-M^+$ in which M^+ is Li^+, Na^+ or K^+, and n is an integer from 11 to 13, or X^1 is —OH and X^2 is —Br and n is from 11 to 13, or X^1 and X^2 are each $—COO—CH_2—CH_3$ and n is from 11 to 13.

5,347,016

N-OXYGENATED ARYLPYRROLE INTERMEDIATES FOR INSECTICIDAL, ACARICIDAL AND NEMATICIDAL AGENTS

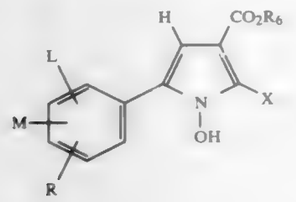
Venkataraman Kameswaran, Princeton Junction, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 818,319, Jan. 8, 1992, Pat. No. 5,232,979, which is a division of Ser. No. 447,726, Dec. 8, 1989, Pat. No. 5,102,904. This application May 14, 1993, Ser. No. 61,904

Int. Cl.[5] C07D *207/46, 407/10*

U.S. Cl. 548—531 **1 Claim**

1. A compound useful in the preparation of N-oxygenated arylpyrroles having the structural formula:

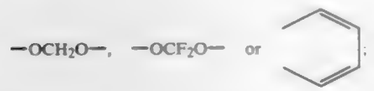


wherein

X is H or CF_3;

L is H, F, Cl or Br;

M and R are each independently H, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_3 alkylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, cyano, F, Cl, Br, I, nitro, CF_3, R_1CF_2Z, R_2CO or NR_3R_4; and when M and R are on adjacent positions and taken with the carbon atoms to which they are attached they may form a ring in which MR represents the structure:



Z is $S(O)_n$ or O;

R_1 is H, F, CHF_2, CHFCl or CF_3;

R_2 is C_1–C_3 alkyl, C_1–C_3 alkoxy or NR_3R_4;

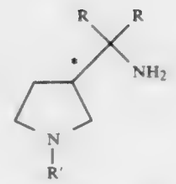
R_3 is H or C_1–C_3 alkyl;

R_4 is H, C_1–C_3 alkyl or R_5CO;

R_5 is H or C_1–C_3 alkyl; and

n is an integer of 0, 1 or 2; and

R_6 is hydrogen, C_1–C_6 alkyl or C_3–C_6 cycloalkyl.



in which * denotes an asymmetric carbon atom having the R or S configuration; R′ is benzyl, p-methoxybenzyl, α-methylbenzyl or an optical isomer thereof, methoxy, ethoxy, or dimethylamino, and R is alkyl of 1 to 3 carbon atoms, which comprises:

(1) reacting a chiral 1-R′-3-pyrrolidinol with an alkylsulfonyl halide or arylsulfonyl halide in the presence of a base in an aprotic solvent;

(2) reacting a resulting chiral 1-R′-3-pyrrolidinol sulfonate ester with a cyanide reagent in an aprotic solvent, and

(3) reacting a resulting chiral 3-cyanopyrrolidine of opposite configuration with an excess of alkyl lithium in the presence of a Lewis acid in an aprotic solvent.

5,347,017

PROCESS FOR CHIRAL 3-(1-AMINO-1,1-BISALKYLMETHYL)-1-SUBSTITUTED-PYRROLIDINES

Victor Fedij, Holland, Mich.; Mark J. Suto, San Diego, Calif.; James N. Wemple, and James R. Zeller, both of Holland, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jul. 7, 1993, Ser. No. 88,464

Int. Cl.[5] C07D *207/50, 207/09*

U.S. Cl. 548—566 **28 Claims**

1. A process for preparing a chiral compound of the formula

5,347,018

PROCESS FOR PRODUCING SULFOLANE COMPOUNDS

Earl Clark, Jr.; Howard F. Efner, and Jimmie J. Straw, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 28, 1993, Ser. No. 127,615

Int. Cl.[5] C07D *333/08, 333/48*

U.S. Cl. 549—84 **19 Claims**

1. A process comprising: **(1)** contacting a conjugated diene with sulfur dioxide under conditions sufficient to synthesize a mixture of a sulfolene compound and impurities; **(2)** transferring said mixture to an impurities removal vessel; **(3)** contacting said mixture of sulfolene compound and impurities with a freezing point depressant; **(4)** substantially removing said impurities to produce an impurities-reduced sulfolene compound; and **(5)** hydrogenating said impurities-reduced sulfolene compound under conditions sufficient to produce a sulfolane compound; wherein said impurities comprise unreacted sulfur dioxide; said freezing point depressant comprises an aromatic compound selected from the group consisting of naphthalenes, methylnaphthalenes, biphenyl, a derivative of benzene, and combinations of two or more thereof; said derivative of benzene is selected from the group consisting of alkyl, alkenyl, amino, halo, alkaryl, and alkaryl-aromatic compounds and is liquid at about 20°–30° C.; and said freezing point depressant is present in an amount sufficient to keep said sulfolene compound in liquid state.

5,347,019

PROCESS FOR THE PREPARATION OF 4-(2-AMINOPHENYLTHIO)NAPHTHALIC ANHYDRIDE DERIVATIVES

Wolfgang Bauer, Maintal, and Wassilis Koumbouris, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Cassella AG, Frankfurt, Fed. Rep. of Germany

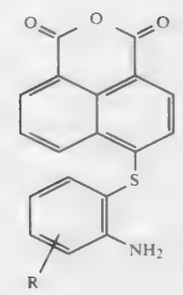
Filed May 18, 1993, Ser. No. 63,148

Claims priority, application Fed. Rep. of Germany, May 21, 1992, 4216796

Int. Cl.[5] C07D *311/78*

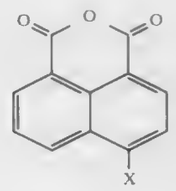
U.S. Cl. 549—232 **23 Claims**

1. Process for the preparation of 4-(2-aminophenylthio)-naphthalic anhydride derivatives of the formula I



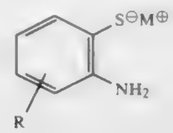
(I)

in which R denotes H, methyl, ethyl, methoxy, ethoxy or chlorine, comprising reacting 4-halonaphthalic anhydrides of the formula II



(II)

in which X denotes chlorine or bromine, with 2-aminothiophenolates of the formula III



(III)

in which R has the meaning mentioned above and $M^{\oplus}$ is selected from the group consisting of an alkali metal cation, ammonium ion and a substituted ammonium ion; wherein said 4-halonaphthalic anhydride of the formula II employed has a maximum particle size of about 50 μm.

5,347,020

PROCESS FOR THE PREPARATION AND PURIFICATION OF THERMOLABILE COMPOUNDS

Michael Aigner; Wolfgang Dersch; Dieter Reichert, all of Ingelheim am Rhein; Horst Schwall, Gau-Algesheim, and Werner Warth, Ingelheim am Rhein, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

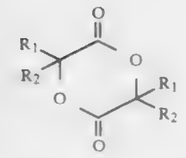
Continuation of Ser. No. 868,921, Apr. 15, 1992, abandoned, which is a continuation of Ser. No. 613,185, Nov. 13, 1990, abandoned, which is a division of Ser. No. 112,849, Oct. 23, 1987, Pat. No. 4,990,222. This application Feb. 3, 1993, Ser. No. 13,517

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1986, 3636188; Oct. 24, 1986, 36361987; Jul. 28, 1987, 3724933; Aug. 8, 1987, 3726499

Int. Cl.[5] C07D *319/00*

U.S. Cl. 549—274 **4 Claims**

1. A process for the preparation of a glycolide of the general formula



wherein R_1 and R_2 independently of one another are hydrogen or a branched or unbranched alkyl radical with up to 16 carbon atoms, from the corresponding low molecular weight poly-α-hydroxycarboxylic acid or an α-halogenocarboxylic acid salt in the presence of a catalyst, wherein the starting compound is subjected to thermolysis which is carried out continuously under forced conveyance in a reactor with a rising temperature gradient, and the glycolide formed is distilled off.

5,347,021

PROCESS OF VAPOR PHASE CATALYTIC HYDROGENATION OF MALEIC ANHYDRIDE TO GAMMA-BUTYROLACTONE IN HIGH CONVERSION AND HIGH SELECTIVITY USING AN ACTIVATED CATALYST

Paul D. Taylor, West Milford; Waldo De Thomas, Parsippany, and Donald W. Buchanan, Jr., Wayne, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 521,065, Apr. 16, 1990, abandoned. This application Feb. 19, 1991, Ser. No. 656,388

The portion of the term of this patent subsequent to Aug. 20, 2008, has been disclaimed.

Int. Cl.[5] C07D *307/33*

U.S. Cl. 549—325 **15 Claims**

1. A process for vapor phase catalytic hydrogenation of a feed compound selected from maleic anhydride, succinic anhydride, maleic acid, succinic acid, and mixtures thereof, to gamma-butyrolactone, in a conversion of about 95%, or more, and a selectivity of about 80%, or more, which comprises:

(a) providing an activated catalyst composition in a reactor, said catalyst being capable of production of gamma-butyrolactone for at least about 100 hours before reactivation of the catalyst, and for at least about 2000 hours without requiring fresh catalyst, comprising:

(1) said composition consisting essentially of about 30–65% by weight of CuO, about 18–50% by weight of ZnO, about 8–22% by weight of Al_2O_3, having a total pore volume of about 0.05 to 0.5 cc/g, and a surface area of about 20 to 120 m^2/g,

(2) reducing said catalyst composition with hydrogen in a gradually increasing hydrogen concentration of from about 0.5% to about 10% initial concentration of hydrogen in an inert diluent to 100% hydrogen in the final concentration under conditions of an increasing reduction temperature of about 150° to about 350° C. for about 5 to 20 hours, and

(3) activating the reduced catalyst in hydrogen at an activation temperature of at least 400° C., for a period of at least about 8 hours, to provide an activated catalyst having a total pore volume of about 0.08 to 0.3 cc/g, and a surface area of about 15 to 100 m^2/g,

(b) providing a vapor mixture of said feed compound in hydrogen at a molar ratio of hydrogen to feed compound of about 200:1 to 500:1, and

(c) passing said vapor mixture over said activated catalyst at (i) a pressure of about 50 to 500 psig, and (ii) a feed rate space velocity of about 0.03 to 1.0 $hours^{-1}$, for (iii) a contact time of less than about 10 seconds, at (iv) a reaction temperature of about 200° to about 400° C.,

said process being capable of production of gamma-butyrolactone for at least about 100 hours before reactivation of the catalyst, and of at least about 2000 hours without requiring fresh catalyst.

5,347,022

PREPARATION OF DI- OR TRIARYLMETHANE DYES BY OXIDATION

Thomas Gessner, Heidelberg, and Udo Mayer, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

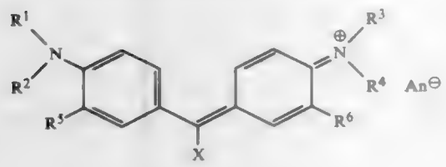
Filed Mar. 29, 1993, Ser. No. 38,865

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1992, 4211782

Int. Cl.[5] C09B *11/10*

U.S. Cl. 552—113 **6 Claims**

1. A process for preparing dyes of the formula I



(I)

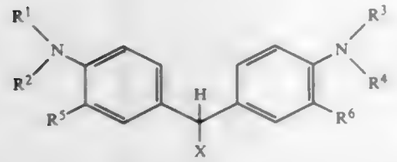
where

R^1, R^2, R^3 and R^4 are independently of one another C_1–C_8-alkyl which may be substituted and may be interrupted by from 1 to 3 oxygen atoms in the ether function, phenyl or C_1–C_4-alkylphenyl, and

R^5 and R^6 are independently of one another hydrogen or methyl,

X is hydrogen, substituted or unsubstituted phenyl or substituted or unsubstituted naphthyl, and

$An^{\ominus}$ is an anion, by oxidation of a leuco compound of the formula II



(II)

where R^1, R^2, R^3, R^4, R^5, R^6 and X are each as defined above, in the presence of a diluent, peroxomonosulfuric acid or a salt thereof as oxidizing agent, and a catalyst consisting essentially of an oxygen transfer catalyst which contains a complexed heavy metal ion; or molybdenic acid in admixture with vanadium in the form of $VO^{2\oplus}$ ions or pentavalent vanadium compounds.

5,347,023

PROCESS FOR TREATING FATTY ACIDS

Antonius J. M. Heynen, Walbecklaan, and James P. Ward, Vlaardingen, both of Netherlands, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

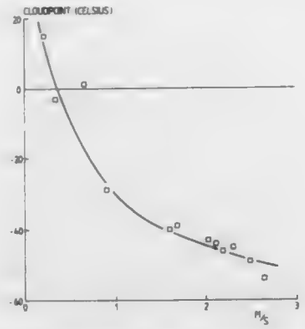
Continuation of Ser. No. 574,350, Aug. 29, 1990, abandoned. This application Jan. 28, 1993, Ser. No. 13,535

Claims priority, application Netherlands, Aug. 29, 1989, 8902182

Int. Cl.[5] C11B *3/02*

U.S. Cl. 554—186 **6 Claims**

1. A process for obtaining a fatty acid product having a reduced freezing point below −10° C., as compared to the freezing point of the starting material, which comprises dissolving urea and a fatty acid starting material containing a mixture of single branched and multiple branched fatty acids predominantly containing 18 carbon atoms, in a lower alcohol, cooling the resulting solution so as to crystallize out crystals of a urea inclusion compound, and recovering said fatty acid product from the remaining solution, said recovered fatty acid product having an increased multiple branched to single



branched ratio as compared to the multiple branched to single branched ratio of the fatty acid starting material.

5,347,024

PREPARATION OF ADDITION POLYMERIZATION CATALYSTS VIA LEWIS ACID MITIGATED METAL CENTER OXIDATION

Peter N. Nickias; David D. Devore; Francis J. Timmers, all of Midland, Mich.; Robert K. Rosen, Sugar Land, Tex., and Robert D. Mussell, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 19, 1993, Ser. No. 34,434

Int. Cl.[5] C07C *7/00*

U.S. Cl. 556—11 **9 Claims**

1. A process for the preparation of a cationic metal complex corresponding to the formula:

$$[Cp_d(ZY)_bML_c^{+}]_q[J_pA]^{-q},$$

wherein:

Cp independently each occurrence is a cyclopentadienyl group n-bound to M, or a hydrocarbyl, silyl, halo, halohydrocarbyl, hydrocarbylmetalloid or halohydrocarbylmetalloid substituted derivative of said cyclopentadienyl group, said Cp containing up to 50 nonhydrogen atoms, and, when a is 2, optionally both Cp groups may be joined together by a bridging group;

a is 1 or 2;

b is 0 or 1;

cis 1 or 2;

the sum of a, b and c is 3;

Z is a divalent moiety comprising oxygen, nitrogen, phosphorous, boron, or a member of Group 14 of the Periodic Table of the Elements, said moiety having up to 30 nonhydrogen atoms;

Y is a linking group comprising nitrogen, phosphorus, oxygen or sulfur covalently bonded to M and Z through said nitrogen, phosphorus, oxygen or sulfur atom;

L independently each occurrence is hydride, halo, or a monovalent anionic ligand selected from covalently bonded hydrocarbyl, silyl, amido, phosphido, alkoxy, aryloxy, and sulfido groups optionally being further substituted with one or more amine, phosphine, ether, or thioether groups, said ligand having up to 50 nonhydrogen atoms;

M is titanium or zirconium in the +4 oxidation state;

p is an integer from 0 to 4;

q is 1 or 2;

J is the Lewis acid mitigating agent, and

A is a reduced remnant of a neutral organic oxidizing agent and may be ligating or nonligating,

the steps of the process comprising contacting in a noninterfering, noncoordinating solvent at a temperature from −100° C. to 300° C.:

1) a reduced metal precursor complex corresponding to the formula: $Cp_d(ZY)_bM^*L_c$, wherein Cp, Z, Y, L, a, b, and c are as previously defined, and M^* is the same metal as M but in a +3 oxidation state;

2) a neutral organic oxidizing agent, A^*, capable of accepting one or more electrons and oxidizing M^* to M and which in reduced form is A;

and, if A is a ligating group,

3) a Lewis acid mitigating agent, J.

5,347,025

CATALYST FOR POLYMERIZATION OF VINYL COMPOUND

Satoru Yamada, and Akihiro Yano, both of Mie, Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

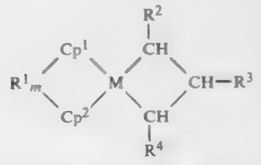
Filed Sep. 7, 1993, Ser. No. 117,290

Claims priority, application Japan, Sep. 9, 1992, 4-265527

Int. Cl.[5] C07F *7/28*

U.S. Cl. 556—11 **3 Claims**

1. An organometal complex represented by General Formula (1) below:



(I)

where Cp^1 and Cp^2 are independently a cyclopentadienyl group; R^1 is a group selected from alkylene groups or arylalkylene groups having 1 to 20 carbons, dialkylsillylene groups, dialkylgermanylene groups, alkylphosphinediYl groups, or alkylimino groups, and R^1 crosslinking Cp^2 together; m is 0 or 1; M is titanium, zirconium, or hafnium; and R^2, R^3, and R^4 are independently hydrogen, a hydrocarbon group of 1 to 12 carbons, an alkoxy group, or an aryloxy group.

5,347,026

FLUORENE COMPOUNDS AND METHODS FOR MAKING

Konstantinos Patsidis; H. G. Alt, both of Bayreuth, Fed. Rep. of Germany, and Syriac J. Palackal, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 11, 1993, Ser. No. 75,931

Int. Cl.[5] C07F *7/02, 7/22, 7/30*

U.S. Cl. 556—87 **33 Claims**

1. A process comprising:

(1) reacting an alkali metal salt of Z with MX_4 to produce a trihalo compound,

wherein Z is an unsubstituted fluorenyl or a substituted fluorenyl, M is Ge, Si, or Sn, and X is Cl, Br, F, or I:

(2) reacting said trihalo compound with an alkali metal salt of Z′ to produce a dihalo compound,

wherein Z′ is an unsubstituted cyclopentadienyl, substituted cyclopentadienyl, unsubstituted indenyl, substituted indenyl, unsubstituted tetrahydroindenyl, substituted tetrahydronindenyl, unsubstituted fluorenyl, or a substituted fluorenyl

wherein substituents on substituted Z or Z′ can be the same or different and are alkyl radicals containing from 1 to 20 carbon atoms; and

(3) reacting said dihalo compound with at least one alkali metal organic compound to produce $Z\text{-}MR_2\text{-}Z'$,

wherein each R is individually selected and is a hydrocarbyl radical containing 1 to 20 carbon atoms.

14. A process comprising:

(1) reacting an alkali metal salt of Z with $GeCl_4$ to produce a trihalo compound,

wherein Z is an unsubstituted fluorenyl radical;

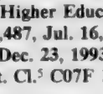
(2) reacting said trihalo compound with an alkali metal salt of Z′ to produce a dihalo compound,

wherein Z′ is an unsubstituted cyclopentadienyl radical; and

(3) reacting said dihalo compound with at least one alkali metal organic compound to produce $Z\text{-}GeR_2\text{-}Z'$,

wherein each R is an alkyl, cycloalkyl, or aryl radical containing 1 to 8 carbon atoms.

17. A compound of the formula



wherein Z is a substituted or unsubstituted fluorenyl,

M is Ge, or Sn, and

X is Cl, Br, F, or I.

5,347,027

NOBLE METAL SUPPORTED ON A BASE METAL CATALYST

James S. Ritscher, Marietta, Ohio; Wei T. Yang, Belle Mead, N.J.; George M. Omietanski, Marietta, Ohio; Robert L. Ocheltree, Pennsboro, and Earl E. Malson, New Martinsville, both of W. Va., assignors to OSi Specialties, Inc., Danbury, Conn.

Division of Ser. No. 813,083, Dec. 24, 1991, Pat. No. 5,250,490. This application Apr. 22, 1993, Ser. No. 52,181

Int. Cl.[5] C07F *7/08, 7/10, 7/18*

U.S. Cl. 556—413 **12 Claims**

1. In a hydrosilation process, the improvement which comprises employing a catalyst produced by an electroless process for making a catalyst having a noble metal deposited on a base metal, which process comprises in a liquid or gaseous medium

(1) contacting a base metal with a chemical cleaning agent selected from the group consisting of a chlorosilane, an alkoxysilane and a non-oxidizing acid, and

(2) treating said base metal under reducing conditions with a noble metal-containing material.

5,347,028

HIGHLY FUNCTIONALIZED POLYCYCLOSILOXANES AND THEIR POLYMERIZATION INTO THERMALLY REVERSIBLE LIVING RUBBERS

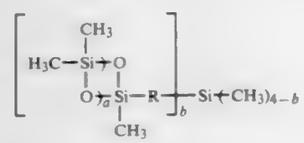
Mark A. Buese, Upper Darby, and Pao-Sun Chang, Philadelphia, both of Pa., assignors to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.

Division of Ser. No. 915,487, Jul. 16, 1992, Pat. No. 5,298,589. This application Dec. 23, 1993, Ser. No. 173,734

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—460 **20 Claims**

1. A polycyclosiloxane according to formula I,



(I)

wherein

R is oxygen, or C_1 to C_{12} straight or branched chain alkylenyl,

a is 2 to 20, and

b is 2 to 4.

5,347,029

DIALKYL (DIALKOXYPHOSPHINYL)METHYL PHOSPHATES AS ANTI-INFLAMMATORY AGENTS

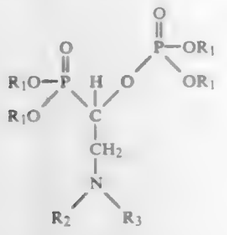
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 717,428, Jun. 19, 1991, abandoned. This application Dec. 16, 1993, Ser. No. 168,441

Int. Cl.[5] C07C *261/00*

U.S. Cl. 558—158 15 Claims

1. A compound of formula



(IV)

wherein

R_1 is independent and selected from the group consisting of hydrogen, C_1–C_{10} alkyl, —C_6H_5;

adjacent R_1 taken together may be —$CH_2(CH_2)_nCH_2$—or —$CH_2C(CH_3)_2CH_2$—;

R_2 is selected from the group consisting of hydrogen, C_1–C_{10} alkyl, C_3–C_7 cycloalkyl, —CH_2CH=CH_2, —CH_2CH_2OH, —$CH_2(CH_2)_nAr$, —$CH_2CH_2OCH_2Ar$, —$CH(C_6H_5)_2$, and 1 '- or 2 '-(1',2',3',4'-tetrahydro)-naphthylene;

R_3 is selected from the group consisting of hydrogen, C_1–C_{10} alkyl, —$CO(CH_2)_mCH_3$, —CO_2CH_2Ar, and —COAr;

n is 0, 1, or 2;

m is 0 thru 9;

Ar is selected from the group consisting of

(a) phenyl, 1- or 2-naphthyl, 3-indolyl, 2-, 3-, or 4-pyridinyl, or 1-imidazolyl,

(b) phenyl optionally substituted with 1 thru 5 —F or —Cl,

(c) phenyl optionally substituted with 1 thru 3 —Br, —I, —CF_3, —R_4, or —OR_4,

(d) phenyl substituted with —$COOR_4$, —$OCOR_4$, —SO_2NH_2, —$NHSO_2R_4$, and —$NHCOR_4$;

R_4 is C_1–C_5 alkyl;

provided, however, when R_1 is —C_2H_5, neither R_2 nor R_3 may be —C_3H_7;

and pharmaceutically acceptable salts thereof.

5,347,030

RADIOIODINATED PHOSPHOLIPID ETHER ANALOGUES AND METHODS OF USING SAME

Raymond E. Counsell, Ann Arbor, Mich.; Karen L. Meyer, Norman, Okla.; Susan W. Schwendner, Ann Arbor, Mich., and Terushi Haradahira, Fukuoka, Japan, assignors to The Board of Regents of The University of Michigan, Ann Arbor, Mich.

Division of Ser. No. 602,157, Oct. 22, 1990, Pat. No. 5,087,721, which is a continuation-in-part of Ser. No. 573,586, Aug. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 112,865, Oct. 23, 1987, Pat. No. 4,965,391. This application Feb. 10, 1992, Ser. No. 833,303

Int. Cl.[5] C07F *9/09*

U.S. Cl. 558—169 1 Claim

1. The compound rac-1-O-Hexadecyl-2-O-iodobenzoyl-3-O-glycerol phosphocholine, wherein iodo is a radioactive isotope of iodine selected from the group consisting of ^{122}I, ^{123}I, ^{125}I, and ^{131}I.

5,347,031

CATALYSTS USED FOR PRODUCING CARBONIC ACID ESTERS AND METHODS OF PRODUCING CARBONIC ACID ESTERS USING THE SAME

Takeshi Koyama; Masao Tonosaki; Nobuhiro Yamada, and Kenji Mori, all of Handa, Japan, assignors to JGC Corporation, Tokyo, Japan

Filed Aug. 13, 1992, Ser. No. 929,294

Claims priority, application Japan, Aug. 19, 1991, 3-230817; Jun. 29, 1992, 4-171331

Int. Cl.[5] C07C *69/96*

U.S. Cl. 558—260 37 Claims

1. A process of producing carbonic acid esters which comprises reacting an alcohol with carbon monoxide and oxygen under vapor phase condition in the presence of a catalyst comprising a copper halide and at least one hydroxide compound selected from a group consisting of alkali metal hydroxides and alkali earth metal hydroxides carried on a porous carrier, wherein a molar ratio of the hydroxide group of the hydroxide copper atom in the copper halide is within the range of 0.3 to 2.0.

5,347,032

PREPARATION OF ALKYL CYANOACETATES

Helmut Reichelt, Neustadt, and Clemens Grund, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 2, 1993, Ser. No. 100,360

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1992, 4227505

Int. Cl.[5] C07C *253/14, 253/30*

U.S. Cl. 558—443 5 Claims

1. A process for the preparation of a C_4–C_{10}alkyl cyanoacetate by the reaction of cyanoacetic acid with a C_4–C_{10}alkanol, comprising reacting cyanoacetic acid in an aqueous medium, with from 5 to 30 times its molar amount of a C_4–C_{10}alkanol at a temperature of from 35° to 150° and under a pressure of from 70 to 1013 mbar, in the presence of a catalytic amount of an acid, while a C_4–C_{10} alkanol/water azeotrope is separated during the reaction, and wherein said cyanoacetic acid is not extracted from said aqueous medium prior to esterification.

5,347,033

PREPARATION OF 5-CYANOVALERAMIDE

Tom Witzel; Eberhard Fuchs, both of Ludwigshafen, and Franz Merger, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 28, 1993, Ser. No. 82,585

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1992, 4221604

Int. Cl.[5] C07C *253/30, 255/29*

U.S. Cl. 558—445 8 Claims

1. A process for praparing 5-cyanovalerimide by reacting adiponitrile with water at from 50° and 200° C. in the presence of a supported copper catalyst wherein the sole catalytic agent comprises metallic copper and a support material, which comprises employing from 1 to 15 mol of water per mol of adiponitrile and a residence time of from 5 to 60 minutes.

5,347,034

PROCESS FOR THE PRODUCTION OF POLY(O-ALKYLURETHANES) OF THE DIPHENYL METHANE SERIES

Günter Hammen, Rommerskirchen; Thomas Schieb, Roesrath, and Stefan Wershofen, Moenchengladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 21, 1992, Ser. No. 871,914

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1991, 4113156

Int. Cl.[5] C07C *261/00*

U.S. Cl. 560—25 6 Claims

1. A process for the production of monomeric and/or polymeric poly(O-alkylurethanes) of the diphenyl methane series comprising reacting

a) amines selected from the group consisting of 4,4'-diaminodiphenyl methane, 2,4'-diaminodiphenyl methane, 2,2'-diaminodiphenyl methane, higher homologs thereof formed in the condensation of aniline with formaldehyde, and mixtures thereof; with

b) a dialkyl carbonate containing from 1 to 2 carbon atoms per alkyl group;

in the presence of

c) a catalyst;

wherein said dialkyl carbonate is present in a quantity such that the molar ratio of dialkyl carbonate to amine is at least 40:1, and the formed monomeric and/or polymeric poly(O-alkylurethanes) crystallize out in a highly pure form upon cooling.

5,347,035

METHOD FOR CRYSTALLIZING α-L-ASPARTYL-L-PHENYLALANINE METHYL ESTER

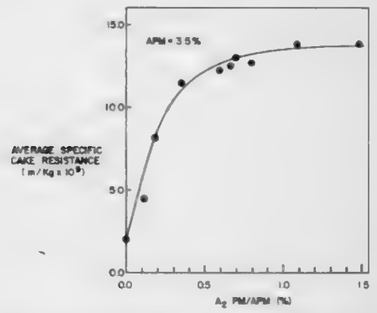
Hidetoshi Wakamatsu, Eijsden, Netherlands; Tsuneo Harada, Yamaguchi, Japan; Yukio Kunisawa, Yamaguchi, Japan, and Kiyotaka Oyama, Yamaguchi, Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Continuation of Ser. No. 880,732, May 6, 1992, abandoned. This application Sep. 23, 1993, Ser. No. 125,193

Claims priority, application Japan, Apr. 13, 1992, 4-118464

Int. Cl.[5] C07C *229/00*

U.S. Cl. 560—41 10 Claims



1. A method for crystallizing α-L-aspartyl-L-phenylalanine methyl ester from a hot aqueous solution containing α-L-aspartyl-L-phenylalanine methyl ester by cooling, which comprises the steps of:

(i) continuously supplying a hot aqueous solution of α-L-aspartyl-L-phenylalanine methyl ester to a crystallization vessel;

(ii) monitoring the content of L-aspartyl-L-aspartyl-L-phenylalanine methyl esters in said solution and adjusting the concentration of said solution so that (a) the content of L-aspartyl-L-aspartyl-L-phenylalanine methyl esters is less than 0.6% by weight based on the weight of α-L-aspartyl-L-phenylalanine methyl ester in said solution, or (b) if the content of L-aspartyl-L-aspartyl-L-phenylalanine methyl esters is 0.6% by weight or more based on the weight of α-L-aspartyl-L-phenylalanine methyl ester in said solution, the concentration of L-aspartyl-L-aspartyl-L-phenylalanine methyl esters in said solution is adjusted to be 150 ppm by weight or less;

(ii) lowering the temperature of said solution to at least a solubility temperature of α-L-aspartyl-L-phenylalanine methyl ester to thereby form a slurry; and

(iii) continuously discharging the formed slurry from the crystallization vessel.

5,347,036

SUBSTITUTED DI-T-BUTYLPHENOLS

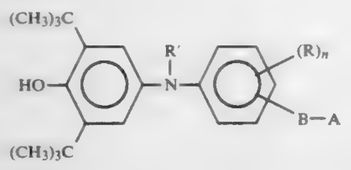
Robert A. Scherrer, White Bear, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 757,358, Jul. 22, 1985. This application May 26, 1993, Ser. No. 67,636

Int. Cl.[5] C07C *229/40*

U.S. Cl. 560—45 7 Claims

1. A compound of the formula



wherein R is hydrogen, lower alkyl, lower alkoxy, lower alkylthio, halogen, amino, lower alkylamino, di(lower alkylamino), lower acylamido, or hydroxy, and n is 0, 1 or 2, with the proviso that if n is 2, all R substituents combined contain no more than 6 carbon atoms; R' is hydrogen, lower alkyl, acetyl or trifluoroacetyl; A is carboxyl or



and when A is carboxyl, B is a carbon-carbon bond, lower alkylene, lower alkenylene, lower alkylene containing one ether or thioether link in the alkylene chain, or



and when A is



B is a carbon-carbon bond; or a derivative of a compound wherein A is carboxyl, said derivative selected from the group consisting of a lower alkyl ester, a (lower)alkylamino(lower)alkyl ester, a pharmaceutically acceptable (lower) alkylamino(-lower)alkyl ester acid-addition salt, and a pharmaceutically acceptable carboxylate salt.

5,347,037

(RR) AND (RS STEREOISOMERS OF N-(7-ETHOXYCARBONYLMETHOXY-1,2,3,-TETRAHYDRONAPHTH-2-YL)-2-(3-CHLOROPHENYL)-2-HYDROXYETHANAMINE AND THEIR PHARMACEUTICALLY ACCEPTABLE SALTS

Robert Boigegrain, Castelnau le Lez, France; Roberto Cecchi, Lodi-Milan, and Sergio Boveri, Tortona, both of Italy, assignors to Sanofi, Paris, France

Continuation of Ser. No. 909,315, Jul. 6, 1992, abandoned, which is a continuation of Ser. No. 698,087, May 10, 1991, abandoned, which is a division of Ser. No. 488,137, Mar. 5, 1990, Pat. No. 5,041,606, which is a division of Ser. No. 230,860, Aug. 11, 1988, Pat. No. 4,927,955. This application Sep. 1, 1993, Ser. No. 114,190

Claims priority, application France, Aug. 12, 1987, 87 11498; Jun. 14, 1988, 88 07948

Int. Cl.[5] **C07C** *229/40, 229/42*

U.S. Cl. 560—45 | **2 Claims**

1. A substantially optically pure compound which is N-[(2S)-7-ethoxycarbonylmethoxy-1,2,3,4-tetrahydronaphth-2-yl]-(2R)-2-(3-chlorophenyl)-2-hydroxyethanamine and its pharmaceutically acceptable salts.

5,347,038

PROCESS OF THE PREPARATION OF 2,5-DI-PHENYLAMINO-TEREPHTHALIC ACID AND ITS DIALKYL ESTERS IN A HIGH PURITY

Otto Arndt, Hofheim am Taunus; Hermann Fuchs, Königstein/-Taunus, and Walter Gilb, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

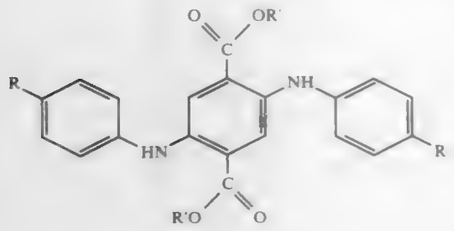
Filed May 20, 1993, Ser. No. 64,116

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1990, 4037244; Jan. 16, 1991, 4101084

Int. Cl.[5] **C07C** *229/00*

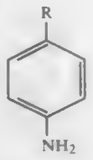
U.S. Cl. 560—48 | **11 Claims**

1. A process for the preparation of 2,5-di-phenylamino-terephthalic acid or one of its di-alkyl esters, of the formula (1)



(1)

in which R is a hydrogen atom or a methyl group and R′ is a hydrogen atom or a methyl or ethyl group, by (1) reaction of a succinic acid di-alkyl(C_1–C_2) ester by a Dieckmann condensation with a sodium alcoholate in xylene to give the di-sodium salt of the 2,5-dihydroxy-cyclohexadiene-1,4-dicarboxylic acid dialkyl(C_1–C_2) ester, (2) reaction of the condensation product thus obtained, after decomposition of the di-sodium salt with an acid, with a phenylamine of the formula (2)



(2)

in which R has the abovementioned meaning, in the presence of an organic acid in xylene to give the 2,5-di-phenylamino-3,6-dihydro-terephthalic acid di-alkyl(C_1–C_2) ester, (3) dehydrogenation (oxidation) of the resulting 1,4-cyclohexadiene derivative with oxygen to give the corresponding 2,5-di-phenylamino-terephthalic acid di-alkyl(C_1–C_2) ester, (4) hydrolysis of the resulting dialkyl ester in methanolic sodium hydroxide solution to give the corresponding 2,5-di-phenylamino-terephthalic acid di-sodium salt and (5) liberation of the 2,5-di-phenylamino-terepthalic acid from said di-sodium salt with an acid, which comprises not isolating the 2,5-dihydroxy-cyclohexadiene-1,4-dicarboxylic acid di-alkyl(C_1–C_2) ester obtained in stage (1) from its reaction mixture in xylene, using propionic acid or hexafluoropropanesulfonic acid as the acid catalyst for the reaction with the phenylamine of said formula (2) in stage (2), carrying out the dehydrogenation (oxidation) of the resulting 2,5-diphenylamino-3,6-dihydro-terephthalic acid di-alkyl(C_1–C_2) ester in stage (3) with 100% pure oxygen in a closed apparatus in the presence of a catalyst of V4A steel and/or of a transition metal of the periodic table of the elements and/or of a rare earth metal having variable oxidation levels or a compound thereof, or a mixture thereof, the oxygen content of the gas atmosphere above the reaction mixture being kept constant at below 8 percent by volume, intermediately isolating the resulting 2,5-di-phenylamino-terephthalic acid di-alkyl(C_1–C_2) ester from the aqueous medium by filtration, and subsequently purifying the di-alkyl(C_1–C_2) ester intermediately isolated by blowing out with steam on the suction filter and subsequently washing with methanol or ethanol.

5,347,039

PROCESS FOR THE PREPARATION OF DERIVATIVES OF 3,5-DIHYDROXYPENTANOIC ACID

Patrick Leon, Tassin La Demi Lune; Xavier Radisson, Lyon, and Viviane Massonneau, Ecully, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony Cedex, France

PCT No. PCT/FR91/00989, § 371 Date Aug. 11, 1993, § 102(e) Date Aug. 11, 1993, PCT Pub. No. WO92/10461, PCT Pub. Date Jun. 25, 1992

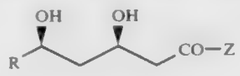
PCT Filed Dec. 10, 1991, Ser. No. 74,827

Claims priority, application France, Dec. 11, 1990, 90 15469

Int. Cl.[5] **C07C** *69/76*

U.S. Cl. 560—60 | **20 Claims**

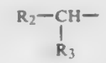
1. Process for the selective preparation of syn derivatives of 3,5-dihydroxypentanoic acid of general formula:



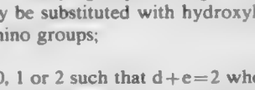
in which

Z represents an alkoxy radical in which the alkyl part contains 1 to about 4 carbon atoms, an alkylthio radical in which the alkyl part contains 1 to about 4 carbon atoms, an amino radical, an alkylamino radical in which the alkyl part contains 1 to about 4 carbon atoms or a dialkylamino radical in which each alkyl part contains 1 to about 4 carbon atoms,

R represents either a radical R_1-Y- in which Y represents a —CH_2CH_2—, —CH=CH— or —C≡C— radical and R_1 represents an optionally substituted aliphatic, alicyclic, aromatic or heteroaromatic radical or a radical



in which R_2 represents a halogen atom or an alkoxy radical in which the alkyl part cotains 1 to about 4 carbon atoms, an alkylthio radical in which the alkyl part contains 1 to about 4 carbon atoms, an arylthio radical, an amino radical, a monoalkylamino radical in which the alkyl part contains 1 to about 4 carbon atoms or a dialkylamino radical in which each alkyl part contains 1 to about 4 carbon atoms and R_3 represents a hydrogen atoms or is identical to R_2, characterized in that a chiral or racemic hydroxyketone or general formula:



in which R and Z are defined as above, is stereoselectively reduced using sodium or potassium borohydride or cyanoborohydride in combination with a titanium derivative, and the produce obtained is isolated.

5,347,040

SENSITIZED ONIUM SALTS

Arnost Reiser, and Xiaohua He, both of Brooklyn, N.Y., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 9, 1992, Ser. No. 988,435

Int. Cl.[5] **C07C** *69/017, 301/00, 301/02;* **C07F** *9/40*

U.S. Cl. 560—139 | **3 Claims**

1. An onium salt capable of generating acid upon exposure to actinic radiation having the following structure:

$$(R_1)_a(R_2)_b(R_3)_cQ^+—A—M^+X^-—B—X'^-$$

where:

Q is S;

R_1, R_2 and R_3 are independently aromatic groups having 6–12 carbon atoms, which may be substituted with hydroxyl, alkoxyl, amino or alkylamino groups; or aliphatic groups having 1–12 carbon atoms, which may be substituted with hydroxyl, alkoxyl, amino or alkylamino groups; or aralkyl groups having 7–18 carbon atoms, which may be substituted with hydroxyl, alkoxyl, amino or alkylamino groups;

M^+ is a cationic organic group having the structure:

$$Q'^+(R_4)_d(R_5)_e(R_6)_f$$

where Q′ is S;

R_4, R_5, and R_6 are independently aromatic groups having 6–12 carbon atoms, which may be substituted with hydroxyl, alkoxyl, amino or alkylamino groups; or aliphatic groups having 1–12 carbon atoms, which may be substituted with hydroxyl, alkoxyl, amino or alkylamino groups; or aralkyl groups having 7–18 carbon atoms, which may be substituted with hydroxyl, alkoxyl, amino or alkylamino groups;

f=0;

d and e are 0, 1 or 2 such that d+e=2 when R_4 and R_5 are monovalent groups; and d+e=1 when R_4 or R_5 is a divalent group;

A is a divalent group selected from the group of hindered alkylene groups having 4–12 carbon atoms; aromatic groups having 6–18 carbon atoms, which may be substituted with hydroxyl, alkoxyl, amino or alkylamino groups; and aralkyl groups having 7–24 carbon atoms, which may be substituted with hydroxyl, alkoxyl, amino or alkylamino groups;

B is a divalent aromatic sensitizer which absorbs radiation having a wavelength longer than 300 nm and is capable of transferring an electron to Q,

x^- and X'^- are anionic groups independently selected from the group consisting of sulfate, sulfonate, sulfite phosphate, phosphite and carboxylate; and when

c=0;

a and b=0, 1, or 2 such that a+b=2 when $R_1$and R_2 are monovalent groups;

and a+b=1 when R_1 or R_2 is a divalent group;

wherein A provides a spatial separation between Q and M, and B provides a spatial separation between X and X′, such that the spatial separation provided by A between Q and M is substantially the same as the spatial separation provided by B between X and X′.

5,347,041

MOLECULAR COMPOSITES

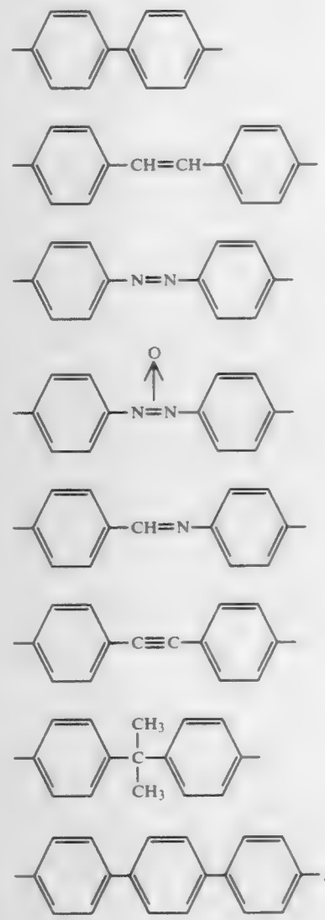
Jerome B. Lando, Shaker Heights, Ohio, assignor to Edison Polymer Innovation Corporation, Brecksville, Ohio

Filed Jun. 16, 1993, Ser. No. 78,537

Int. Cl.[5] **C07C** *69/017*

U.S. Cl. 560—141 | **2 Claims**

1. A compound of the formula H—(R_3-)$_m$—C≡C—C≡C—R_2—R_1—R_2—C≡C—C≡C—(R_3)$_m$—H in which R_1 is a member selected from the group consisting of



R_2 is —O—CO—$(CH_2)_n$—; R_3 is alkyl, and m is a whole number from about 3 to 18.

5,347,042

OPTICALLY ACTIVE SULPHUR-CONTAINING AMINO ACID DERIVATIVES, THEIR PREPARATION, THEIR POLYMERISATION TO GIVE OPTICALLY ACTIVE POLYMERS AND THE USE THEREOF

Michael Grosse-Bley, Cologne; Bruno Bömer, Bergisch Gladbach; Rolf Grosser, Leverkusen; Dieter Arlt, and Walter Lange, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

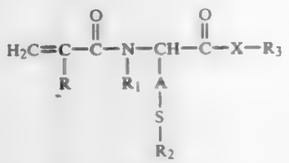
Filed Jun. 11, 1992, Ser. No. 897,196

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1991, 4120695

Int. Cl.[5] **C07C** *323/41*

U.S. Cl. 560—153 **5 Claims**

1. An optically active sulphur-containing amino acid derivative of the formula



(I)

in which

R represents hydrogen, methyl or fluorine,

R_1 represents hydrogen or C_1–C_4-alkyl,

R_2 represents a straight-chain, branched or cyclic alkyl radical having up to 10 C atoms, or phenyl

R_3 represents a C_{10}-terpenyl radical, an adamantyl radical or a decahydronaphthyl radical, or represents a branched alkyl or cycloalkyl radical having from 2 to 20 C atoms, which is optionally mono-, di- or trisubstituted by halogen, alkoxy having 1 to 4 C atoms, or C_3–C_{12}-cycloalkyl, wherein the aryl and cycloalkyl radicals are optionally substituted by C_1–C_4-alkyl, and

A represents a methylene or dimethylene group which is optionally mono- or di-C_1–C_4-alkyl-substituted.

5,347,043

PROCESS FOR PREPARING MICHAEL ADDITION PRODUCTS

Mahmood Sabahi, Baton Rouge, and Robert G. Irwin, Prairieville, both of La., assignors to Albemarle Corporation, Richmond, Va.

Filed Dec. 20, 1993, Ser. No. 169,261

Int. Cl.[5] **C07C** *69/34, 69/38, 67/465, 67/00*

U.S. Cl. 560—190 **18 Claims**

1. In a process for reacting one molar proportion of a dialkyl malonate with at least three molar proportions of an alkyl acrylate in the presence of a basic initiator and a phase transfer catalyst to prepare a Michael addition product mixture that contains molecules having at least three alkyl acrylate moieties, the improvement which comprises preheating a mixture of the alkyl acrylate, the initiator, and the phase transfer catalyst to 60°–80° C. and then gradually adding the dialkyl malonate to the preheated mixture to effect reaction with the alkyl acrylate.

5,347,044

TRANS-BETA-ISOCYANATOACRYLATE ESTERS, THEIR PREPARATION, AND POLYMERS MADE THEREFROM

Thomas J. Byerley, Mission; Cecil C. Chappelow, Leawood, and J. David Eick, Overland Park, all of Kans., assignors to Curators of the University of Missouri, Columbia, Mo.

Filed Apr. 6, 1992, Ser. No. 864,236

Int. Cl.[5] **C07C** *265/06, 265/08*

U.S. Cl. 560—355 **14 Claims**

1. A substantially pure compound comprising a trans-beta-isocyanatoacrylate ester in which an isocyanato functionality is directly linked to a beta-carbon in an acrylate portion of the compound, wherein said trans-beta-isocyanatoacrylate ester is iso-n-hexyl trans-beta-isocyanatoacrylate, cyclohexyl trans-beta-isocyanatoacrylate, benzyl trans-beta-isocyanatoacrylate, 2-methoxyethyl trans-beta-isocyanatoacrylate, 2-ethoxyethyl trans-beta-isocyanatoacrylate or 2-butoxyethyl trans-beta-isocyanatoacrylate.

5,347,045

SULFONATED 2,2′-BIS (DIPHENYLPHOSPHINOMETHYL)-1,1′-BINAPHTHALENES, PROCESS FOR THEIR PREPARATION AND THEIR USE IN A PROCESS FOR THE HYDROFORMYLATION OF OLEFINICALLY UNSATURATED COMPOUNDS

Wolfgang A. Herrmann, Giggenhausen; Rainer Manetsberger, München; Helmut Bahrmann, Hamminkeln; Christian Kohlpaintner, Stephanskirchen, and Peter Lappe, Dinslaken, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

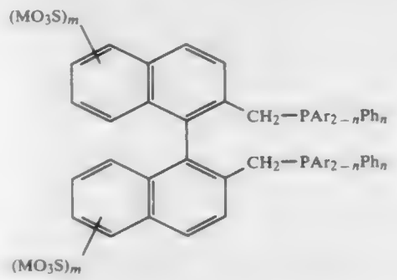
Filed May 25, 1993, Ser. No. 66,553

Claims priority, application Fed. Rep. of Germany, May 29, 1992, 4217803; Dec. 28, 1992, 4244274

Int. Cl.[5] **C07C** *309/35*

U.S. Cl. 562—35 **1 Claim**

1. A sulfonated 2,2′-bis(diphenylphosphinomethyl)-1,1′-binaphthalene of the formula



in which Ar is m-C_6H_4—SO_3M, M is hydrogen, ammonium, a monovalent metal, or a chemical equivalent of a polyvalent metal; Ph is phenyl radical, m, which may be the same or different, is 1 or 2, and n, which may be the same or different, is 0, 1, or 2.

5,347,046

CATALYST AND PROCESS FOR USING SAME FOR THE PREPARATION OF UNSATURATED CARBOXYLIC ACID ESTERS

James F. White, Hudson; Barbara Slawski, Parma, and Geoffrey White, Shaker Heights, all of Ohio, assignors to Engelhard Corporation, Iselin, N.J.

Filed May 25, 1993, Ser. No. 67,445

Int. Cl.[5] **C07C** *67/05;* **B01J** *31/00, 23/58*

U.S. Cl. 560—245 **17 Claims**

1. A process for preparing ethylenically unsaturated esters comprising reacting in the vapor phase at least one olefinic compound with at least one carboxylic acid and molecular oxygen in the presence of an effective amount of a catalyst composition comprising (i) one or more palladium group metals and/or compounds thereof, (ii) gold and/or compounds thereof, and (iii) one or more promoters selected from the group consisting of copper, nickel, cobalt, iron, manganese, lead, silver and compounds thereof; wherein the gram-atom ratio of metal in the promoter to palladium group metal is up to about 0.4.

5,347,047

PREPARATION OF ACYLAROMATIC COMPOUNDS

Wolfgang Siegel, Mannheim, and Irene Troetsch-Schaller, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 1, 1993, Ser. No. 158,776

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1992, 4240965

Int. Cl.[5] **C07C** *59/76, 45/00*

U.S. Cl. 562—460 **4 Claims**

1. A process for preparing acylaromatic compounds from aromatic compounds and carboxylic acids, which comprises reacting the starting compounds with phosgene in the presence of an aliphatic phosphine oxide or of an N,N-dialkylformamide and of an Fe(II), Fe(III) or Zn(II) compound.

5,347,048

PROCESS FOR PRODUCING (±)-2,5,5,8A-TETRAMETHYL-1-(CARBOXYMETHYL)-2-HYDROXYDECALIN

Goro Asanuma, Kurashiki, and Yoshin Tamai, Shibata, both of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Division of Ser. No. 995,978, Dec. 23, 1992, Pat. No. 5,290,955. This application Sep. 7, 1993, Ser. No. 116,605

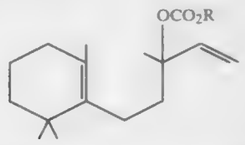
Claims priority, application Japan, Dec. 29, 1991, 3-358777; Dec. 29, 1991, 3-358778

Int. Cl.[5] **C07C** *61/12*

U.S. Cl. 562—501 **18 Claims**

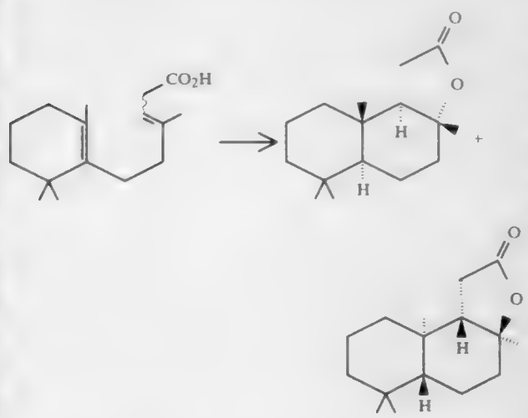
1. A process for producing (±)-2,5,5,8a-tetramethyl-1-(carboxymethyl)-2-hydroxydecalin, comprising the steps of:

allowing a carbonate of dihydro-β-vinyl-ionol according to the following formula:



wherein R is an alkyl group, to reach with carbon monoxide in the presence of a palladium catalyst to form β-monocyclohomofarnesic acid;

cyclizing said β-monocyclohomofarnesic acid in the presence of an acid catalyst to form (±)-norambreinolide, according to the following reaction:



and hydrolyzing said (±)-norambreinolide to form (±)-2,5,5,8a-tetramethyl-1-(carboxymethyl)-2-hydroxydecalin.

5,347,049

PROCESSES FOR PREPARING DIAMINO COMPOUNDS

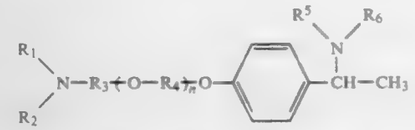
Michael T. Sheehan; James R. Sounik; Bret F. Hann, all of Corpus Christi, and William W. Wilkison, III, Richardson, all of Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 69,948, May 28, 1993, Pat. No. 5,312,990. This application Jan. 11, 1994, Ser. No. 179,796

Int. Cl.[5] **C07C** *209/26*

U.S. Cl. 564—347 **13 Claims**

1. A process for preparing di-amino compounds having the structural formula:



wherein n is 0–1000; R_3 equals R4, and R_3 and R_4 are from the group —CH_2—CH_2—; —CH_2—$C(CH_3)H$—; and —$C(CH_3)H$—CH_2—; and R_1, R_2, R_5, and R_6 are each independently selected from the group consisting of H, —CH_3, —CH_2CH_3, —CH_2OH, and —CH_2—CH_2—OH, which comprises the steps of (a) reacting an alkali metal hydroxide with 4hydroxyacetophenone to form the alkali metal salt of said 4-hydroxyacetophenone, (b) reacting the alkali metal salt of 4-hydroxyacetophenone with an oxide material selected from the group consisting of ethylene oxide and propylene oxide to form an oxylated material, and then, (c) subjecting the oxylated material to reductive amination, under suitable conditions of temperature from about 150° to about 350° and pressure from about 500 psi to about 10,000 psi in order to form the di-amino compounds covered by the structural formula (I) set forth above.

5,347,050

3-AMINOPROPOXYPHENYL DERIVATIVES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Richard Berthold, 9 Ahornstrasse, CH-4103 Bottmingen, Switzerland, and William J. Louis, 3 Balmoral Avenue, Kew, 3101 Victoria, Australia

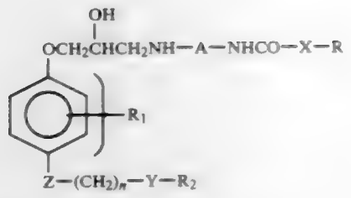
Continuation of Ser. No. 782,791, Oct. 21, 1991, abandoned, which is a continuation of Ser. No. 584,306, Sep. 17, 1990, abandoned, which is a continuation of Ser. No. 474,185, Feb. 2, 1990, abandoned, which is a continuation of Ser. No. 399,721, Aug. 25, 1989, abandoned, which is a continuation of Ser. No. 307,028, Feb. 3, 1989, abandoned, which is a continuation of Ser. No. 173,845, Mar. 28, 1988, abandoned, which is a continuation of Ser. No. 897,557, Aug. 18, 1986, abandoned, which is a continuation of Ser. No. 778,831, Sep. 23, 1985, abandoned, which is a continuation of Ser. No. 567,471, Jan. 3, 1984, abandoned, which is a division of Ser. No. 318,292, Nov. 4, 1981, Pat. No. 4,425,362. This application Apr. 13, 1993, Ser. No. 46,937

Claims priority, application Switzerland, Nov. 6, 1980, 8249/80; Dec. 18, 1980, 9347/80; Jun. 19, 1981, 4073/81; Jun. 19, 1991, 4074/81

Int. Cl.[5] **C07C** *93/06*

U.S. Cl. 564—349 **7 Claims**

1. A compound of formula I



wherein
R is alkyl, alkenyl, cycloalkyl, cycloalkylalkyl or optionally substituted aryl, aralkyl or aralkenyl,
R_1 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, halogen of atomic number of from 9 to 53, trifluoromethyl, pyrrol-1-yl, cyano, carbamoyl, alkenyl of 2 to 5 carbon atom, alkenyloxy of 3 to 5 carbon atoms wherein the double bond is not attached to the carbon atom adjacent to the oxygen atom, alkanoyl of 2 to 5 carbon atoms, nitro, amino, alkanoylamino of 1 to 5 carbon atoms or alkoxycarbonylamino of 1 to 4 carbon atoms in the alkoxy moiety thereof,
R_2 is hydrogen or has the significance indicated above for R,
A is alkylene,
X is a bond
Y is an oxygen or a sulfur atom and either Z is an oxygen atom and n is 2 or 3 or Z is a bond and n is 1, 2 or 3,
with the provisos that
when R_2 is cycloalkylalkyl and R is alkyl then R_1 is other than hydrogen,
and when R_2 is hydrogen, then Z is an oxygen atom,
or physiologically acceptable hydrolyzable derivative thereof having the hydroxy group in the 2 position of the 3-aminopropoxy side chain in esterified form,
or a pharmaceutically acceptable salt form thereof.

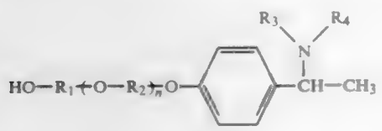
5,347,051

PROCESSES FOR PREPARING AMINES

Michael T. Sheehan; James R. Sounik; Bret F. Hann, all of Corpus Christi, and William W. Wilkison, III, Richardson, all of Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 69,949, May 28, 1993, Pat. No. 5,300,691. This application Jan. 11, 1994, Ser. No. 179,788
Int. Cl.[5] C07C *209/26*
U.S. Cl. 564—389 **13 Claims**

1. A process for preparing amino compounds having the structural formula:



wherein n is 0–1000; R_1 equals R_2, and R_1 and R_2 are from the group $—CH_2—CH_2—$; $—CH_2—C(CH_3)H—$; and $—C(CH_3)H—CH_2—$; and R_3 and R_4 are each independently selected from the group consisting of H, $—CH_3$, $—CH_2CH_3$, $—CH_2OH$, and $—CH_2—CH_2—OH$, which comprises the steps of (a) reacting an alkali metal hydroxide with 4-hydroxyacetophenone to form the alkali metal salt of said 4-hydroxyacetophenone, (b) reacting the alkali metal salt of 4-hydroxyacetophenone with an oxide material selected from the group consisting of ethylene oxide and propylene oxide to form an oxylated material, and then, (c) subjecting the oxylated material to reductive amination, under suitable conditions of temperature from about 50° C. to about 150° C. and pressure from about 300 psi to about 600 psi in order to form the amino compounds covered by the structural formula (I) set forth above.

5,347,052

PREPARATION OF 3,5-DIAMINOBENZOTRIFLUORIDE

David E. Albright, Jr., Niagara Falls, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Apr. 15, 1991, Ser. No. 685,106
Int. Cl.[5] C07C *209/32*
U.S. Cl. 564—417 **20 Claims**

1. A process for the preparation of 3,5-diaminobenzotrifluoride which comprises treating 4-chloro-3,5-dinitrobenzotrifluoride, in a methanol solvent, with hydrogen gas in the presence of magnesium oxide and in the presence of a catalyst which comprises palladium on a carbon support.

5,347,053

PROCESS FOR PREPARING ALKYLAMINES

Bonnie G. McKinnie, Magnolia, Ark., and W. Brian Harrod, Minden, La., assignors to Albemarle Corporation, Richmond, Va.

Filed Nov. 4, 1992, Ser. No. 971,085
Int. Cl.[5] C07C *209/08*
U.S. Cl. 564—481 **18 Claims**

1. In a process for producing alkylamine from olefin by hydrohalogenating said olefin to form haloalkane and reacting said haloalkane with amine to form said alkylamine, the improvement comprising heat-treating said alkylamine in the presence of an aqueous alkaline or alkaline earth metal hydroxide at a temperature and for a period of time sufficient to minimize the formation of flocculent precipitate during storage of said alkylamine.

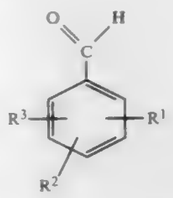
5,347,054

PROCESS FOR PREPARING AROMATIC ALDEHYDES

Gilbert Billeb, Kelkheim/Taunus, and Peter Burg, Kriftel/-Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

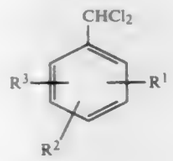
Filed Nov. 23, 1993, Ser. No. 156,451
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1992, 4239737
Int. Cl.[5] C07C *45/42*
U.S. Cl. 568—437 **9 Claims**

1. A process for preparing aromatic aldehydes of the formula (1)



(1)

in which R^1, R^2, R^3 independently of one another are H, F, Cl or Br, which comprises hydrolyzing a dichloromethyl-substituted benzene of the formula (2)



(2)

in which R^1, R^2, R^3 have the abovementioned meanings with

a from about 1 to about 50 % strength aqueous solution of one or more zinc salts of the formula (3)

$$ZnX_n \quad (3)$$

in which X is F, Cl, Br, I, OH or SO_4, and n is, depending on the anion X, the number 1 or 2, at temperatures of from about 70° to about 160° C.

5,347,055

OLIGOMERS OF STYRENE AS FLEGMATIZERS FOR ORGANIC PEROXIDES

Duane B. Priddy, Midland, Mich., and Mehmet Demirörs, Terneuzen, Netherlands, assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 896,265, Jun. 10, 1992, abandoned. This application Jun. 24, 1993, Ser. No. 82,325
Int. Cl.[5] C07C *409/00*; B01J *31/02*
U.S. Cl. 568—559 **20 Claims**

1. A storage stable organic peroxide composition having reduced heat-and/or shock-sensitivity, the composition comprising an organic peroxide and from about 10 to about 90 percent, based on the total weight of the flegmatizer and the peroxide, of a flegmatizer comprising an oligomer of styrene or an oligomer of styrene and at least one comonomer, the oligomer having from 2 to about 5 repeating units.

5,347,056

PROCESS FOR PRODUCING UNSATURATED ALCOHOLS

Yoshihisa Watanabe, and Mitsuhiko Kurashige, both of Inashiki, Japan, assignors to Mitsubishi Petrochemical Company, Ltd., Tokyo, Japan

Filed Aug. 4, 1993, Ser. No. 101,746
Claims priority, application Japan, Aug. 7, 1992, 4-211573
Int. Cl.[5] C07C *27/00, 29/14, 33/03, 33/20*
U.S. Cl. 568—881 **21 Claims**

1. A process for producing an unsaturated alcohol from an unsaturated aldehyde by a hydrogen transfer reaction with an alcohol, comprising the step of reacting an unsaturated aldehyde with a primary or secondary alcohol in the presence of a hydrogen transfer catalyst consisting of an oxide selected from the group consisting of oxides of Y, La, Pr, Nd, Sm and mixtures thereof.

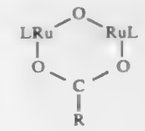
5,347,057

METHOD FOR OXIDATION OF METHANE AND OTHER HYDRO-CARBONS

Mirza M. T. Khan, 3850 Downers Dr., Downers Grove, Ill. 60515

Filed Jan. 25, 1993, Ser. No. 8,185
Int. Cl.[5] C07C *29/50, 31/04*
U.S. Cl. 568—910 **16 Claims**

1. A process for selectively oxidizing alkanes or aromatic hydrocarbons where the products of oxidation are alcohols, ketones or mixtures thereof comprising the steps of:
(a) placing the alkane or aromatic hydrocarbon in contact with oxygen, and
(b) adding a ruthenium metal complex catalyst activated by an "end-oxo"
group, said catalyst having the formula LRu=O, where L is a Schiff or a substituted Schiff base; or
a "bridging -oxo" group, said catalyst having the formula:



wherein L is a Schiff base or a substitute Schiff base and R is H, or an alkyl (C<10) or an aryl (C<30).

5,347,058

PROCESS FOR THE PRODUCTION OF FLUORINATED OLEFINS

William B. Farnham, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 7, 1993, Ser. No. 163,497
Int. Cl.[5] C07C *17/33, 21/18, 21/185, 21/14*
U.S. Cl. 570—142 **16 Claims**

1. A process for the production of fluorinated olefins, comprising, heating to a temperature of about 150° C. to about 400° C. a compound of the formula $R^1R^2CFCR^4R^5C(O)OSiR^3_3$, in the presence of a thermolysis catalyst, wherein:
R^1 and R^2 are each independently fluorine, hydrocarbyl or substituted hydrocarbyl;
R^3 is hydrocarbyl, substituted hydrocarbyl, or oxysilyl; R^4 is fluorine or perfluoroalkyl; and
R^5 is hydrogen or fluorine; and provided that when R^4 is fluorine, said temperature is 200° C. to 400° C.

5,347,059

PROCESS FOR PREPARING 1,1-DICHLORO-1,3,3,3-TETRA-FLUOROPROPANE

Pascal Pennetreau, La Hulpe; Francine Janssens, Vilvoorde, and Pierre Barthelemy, Jodoigne, all of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Continuation of Ser. No. 910,906, Jul. 10, 1992, abandoned. This application Jan. 18, 1994, Ser. No. 182,365
Claims priority, application Belgium, Jul. 10, 1991, 09100657
Int. Cl.[5] C07C *17/08*
U.S. Cl. 570—166 **8 Claims**

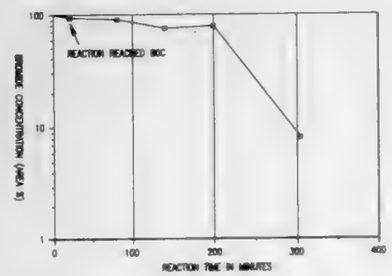
1. A process for preparing 1,1-dichloro-1,3,3,3-tetrafluoropropane, comprising:
reacting 1,1,1,3,3,3-hexachloropropane in the liquid phase with hydrogen fluoride, in a mole ratio of hydrogen fluoride to 1,1,1,3,3,3-hexachloropropane of at least 4 and not exceed more than 20, at a reaction temperature of at least about 100° C. and not more than about 150° C., and in the presence of a tin tetrachloride catalyst to produce 1,1-dichloro-1,3,3,3-tetrafluoropropane; and
recovering said 1,1-dichloro-1,3,3,3-tetrafluoropropane.

5,347,060

PHASE-TRANSFER CATALYSIS WITH ONIUM-CONTAINING SYNTHETIC MESOPOROUS CRYSTALLINE MATERIAL

Stuart D. Hellring, Yardley, Pa., and Jeffrey S. Beck, Princeton, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 735,238, Jul. 24, 1991, abandoned. This application Jun. 11, 1993, Ser. No. 75,010
Int. Cl.[5] C07C *17/20*; B01J *31/18*
U.S. Cl. 570—235 **11 Claims**

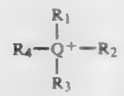


1. A method for carrying out phase-transfer catalysis in a plural phase reaction system containing an organic phase and an aqueous phase, maintained under phase-transfer catalysis

conditions, with a synthetic composition of matter comprising an inorganic ultra-large pore non-layered crystalline material which contains immobilized onium ion within its pores, wherein said crystalline phase material has a hexagonal arrangement of uniformly-sized pores having diameters of at least about 15 Angstrom Units, and a composition, expressed on an anhydrous basis as follows:

$$rRM_{n/q}(W_aX_bY_cZ_dO_h)$$

wherein R is the total organic material not included in M and comprises an onium ion of the formula:



wherein Q is nitrogen or phosphorus and wherein at least one of R_1, R_2, R_3 and R_4 is aryl or alkyl of from 6 to about 36 carbon atoms, the remainder of R_1, R_2, R_3 and R_4 being selected the group consisting of hydrogen and alkyl of from 1 to 5 carbon atoms; r is the number of moles or mole fraction of R; M is one or more ions; n is the charge of the composition excluding M expressed as oxides; q is the weighted molar average valence of M; n/q is the number of moles or mole fraction of M; W is one or more divalent elements; X is one or more trivalent elements; Y is one or more tetravalent elements; Z is one or more pentavalent elements; a, b, c, and d are mole fractions of W, X, Y, and Z, respectively; h is a number from 1 to 2.5; and (a+b+c+d)=1, said crystalline phase exhibiting a hexagonal electron diffraction pattern that can be indexed with a d_{100} value greater than about 18 Angstrom Units whereby said composition of matter transfers a functional reactant ion or group from one phase to another phase.

5,347,061

PROCESS FOR PRODUCING GASOLINE HAVING LOWER BENZENE CONTENT AND DISTILLATION END POINT

Mohsen N. Harandi, Longhorne, Pa.; Hartley Owen, Worton, Md., and Paul H. Schipper, Doylestown, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Mar. 8, 1993, Ser. No. 28,057

Int. Cl.[5] C07C *2/66*

U.S. Cl. 585—323 **19 Claims**

1. A process for the production of gasoline having reduced benzene content and lower boiling end point, comprising:

a) introducing reformer effluent into a fractionation system for separation and recovery of an overhead stream comprising C_5- hydrocarbons, a bottom stream comprising C_9+ alkylaromatic and non-aromatic hydrocarbons, a stream comprising benzene rich C_6 hydrocarbons, and a stream comprising C_7–C_8 hydrocarbons;

b) passing said benzene rich C_6 stream and a portion of said C_9+ hydrocarbon stream to a hydrocarbon cracking and alkylation reactor containing acidic shape selective metallo-silicate catalyst particles under cracking, alkylation and transalkylation conversion conditions whereby a portion of said benzene is converted to C_7+ alkylaromatics and a portion of said C_9+ hydrocarbons is converted to lower molecular weight hydrocarbons;

c) recycling effluent from said reactor to said fractionation tower to separate and recycle unconverted benzene and unconverted C_9+ hydrocarbons whereby the production of C_7–C_9 alkylaromatics is maximized.

5,347,062

PROCESS FOR PREPARING ALKYL-SUBSTITUTED AROMATIC HYDROCARBONS

Masami Fukao, Shiga; Takuo Hibi, Osaka; Kazuo Kimura, Osaka; Masahiro Usui, Chiba, and Gohfu Suzukamo, Osaka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Division of Ser. No. 815,889, Jan. 7, 1992, Pat. No. 5,227,559, which is a continuation of Ser. No. 570,548, Aug. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 305,755, Feb. 3, 1989, abandoned. This application Feb. 24, 1993, Ser. No. 21,852

Claims priority, application Japan, Feb. 3, 1988, 63-24527; Aug. 10, 1988, 63-200794; Nov. 8, 1988, 63-282933; Dec. 27, 1988, 63-331081

Int. Cl.[5] C07C *2/66*

U.S. Cl. 585—452 **15 Claims**

1. A process for preparing an alkyl-substituted hydrocarbon comprising:

alkylating an aromatic hydrocarbon having at least one hydrogen atom at an alpha-position in a side chain with an olefin in the presence of a solid base which is obtained by reacting alumina, an alkali metal hydroxide and an alkali metal as follows,

(a) reacting the alumina with the alkali metal hydroxide under the following conditions,

(1) at a temperature not lower than 200° C. and lower than 400° C. when said alkali metal hydroxide is potassium hydroxide and said alkali metal is sodium, or

(2) at a temperature of 200° C. to 600° C. when said alkali metal hydroxide is potassium hydroxide and said alkali metal is other than sodium, or when the alkali metal hydroxide is other than potassium hydroxide; and then

(b) reacting the product of step (a) with the alkali metal at a temperature of 200° C. to 600° C. in an inert gas atmosphere to obtain said solid base.

5,347,063

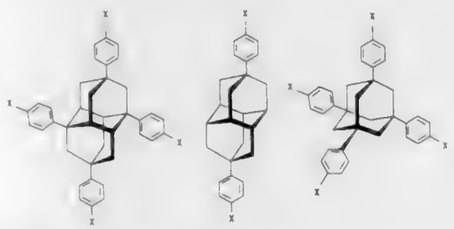
METHOD FOR DIRECT ARYLATION OF DIAMONDOIDS

Dong-Min Shen, Langhorne, Pa.; Orville L. Chapman, Los Angeles, Calif.; Ling Lin, Los Angeles, Calif., and Rafael Ortiz, Los Angeles, Calif., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Mar. 9, 1993, Ser. No. 28,458

Int. Cl.[5] C07C *13/28*

U.S. Cl. 585—352 **17 Claims**



1. A method for arylating a diamondoid compound comprising the steps of:

(a) providing a non-halogenated diamondoid compound or mixture of non-halogenated diamondoid compounds and an aromatic compound or mixture of aromatic compounds wherein at least one diamondoid compound and at least one aromatic compound are at least partially miscible;

(b) mixing the compounds of step (a) to form at least a partial solution;

(c) providing a reactive halide source selected from the group consisting of alkyl halides, benzyl halides, and allylic halides in the mixture of step (b);

(d) adding a Lewis acid to said mixture of step (c);

(e) heating said mixture of step (d) to temperature above ambient and holding said heated mixture at elevated temperature;

(f) recovering an arylated diamondoid compound from said solution.

5,347,064

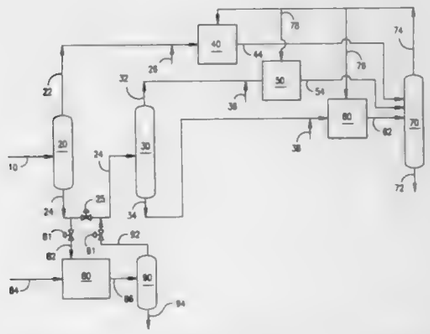
MULTIPLE SPLIT FEED ISOPARAFFIN-OLEFIN ALKYLATION

Jonathan E. Child, Sewell; Kenneth J. Del Rossi, Woodbury, both of N.J.; Albin Huss, Jr., Chadds Ford, Pa., and Robert S. Kurtas, Rancho Palos Verdes, Calif., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 12, 1993, Ser. No. 45,435

Int. Cl.[5] C07C *2/62*

U.S. Cl. 585—716 **19 Claims**



1. An isoparaffin-olefin alkylation process comprising the steps of:

(a) providing a feed comprising propene, 1-butene, and 2-butenes;

(b) separating a first intermediate stream from said feed, said first intermediate stream being enriched in propene in comparison to said feed;

(c) separating a second intermediate stream from said feed, said second intermediate stream being enriched in 1-butene in comparison to said feed;

(d) separating a third intermediate stream from said feed, said third intermediate stream being enriched in 2-butenes in comparison to said feed;

(e) contacting said first intermediate stream with excess isobutane in a first reaction zone containing BF_3 and H_3PO_4 in BF_3:H_3PO_4 molar ratios of from about 0.5:1 to about 1.5:1 under isobutane-propene alkylation conversion conditions including temperature T_1 to produce a first alkylate product enriched in isoparaffins having more than 4 carbon atoms;

(f) contacting said second intermediate stream with excess isobutane in a second reaction zone containing BF_3 and H_3PO_4 in BF_3:H_3PO_4 molar ratios of from about 0.5:1 to about 1.5:1 under isobutane-1-butene alkylation conversion conditions including temperature T_2, wherein $T_2<T_1$, to produce a second alkylate product enriched in isoparaffins having more than 5 carbon atoms;

(g) contacting said third intermediate stream with excess isobutane in a third reaction zone containing BF_3 and H_3PO_4 in BF_3:H_3PO_4 molar ratios of from about 0.5:1 to about 1.5:1 under isobutene-2-butenes alkylation conversion conditions including temperature T_3, wherein $T_3<T_2<T_1$, to produce a third alkylate product enriched in isoparaffins having more than 5 carbon atoms; and

(h) recovering said alkylate products from steps (e), (f), and (g).

5,347,065

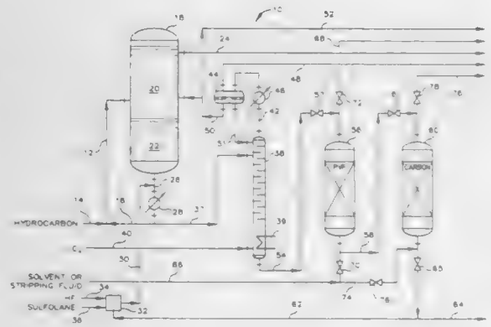
ALKYLATION CATALYST REGENERATION

Richard L. Anderson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 26, 1993, Ser. No. 51,916

Int. Cl.[5] C07C *2/62*

U.S. Cl. 585—724 **8 Claims**



1. An alkylation process, comprising the steps of:

(a) mixing sulfolane having a concentration of water with HF to form a catalyst mixture comprising sulfone, water and HF;

(b) contacting a hydrocarbon mixture, comprising olefins and isoparaffins, with said catalyst mixture within a reaction zone to thereby produce a reaction product and a reaction by-product;

(c) separating said reaction product from said catalyst mixture within a first separation zone to produce a separated reaction product and a separated catalyst mixture with said separated catalyst mixture containing a portion of said reaction by-product;

(d) passing a portion of said separated catalyst mixture to a second separation zone to thereby separate said portion of said separated catalyst mixture into a second separation zone overhead stream, comprising a portion of the HF component of said portion of said separated catalyst mixture and a portion of the water component of said portion of said separated catalyst mixture, and a second separation zone bottoms stream, comprising a portion of the sulfolane component of said portion of said separated catalyst mixture and a portion of the reaction by-product component of said portion of said separated catalyst mixture;

(e) utilizing a remaining portion of said separated catalyst mixture as a portion of said catalyst mixture;

(f) condensing said second separation zone overhead stream to produce a condensed second separation zone overhead stream;

(g) utilizing a portion of said condensed second separation zone overhead stream as a portion of said catalyst mixture; and

(h) passing a remaining portion of said condensed second separation zone overhead stream to downstream processing at a rate which is effective in maintaining a concentration of water in said separated catalyst mixture below about 10 weight percent.

5,347,066

ALKYLATION PROCESS FOR REACTING AN OLEFIN FEED BEING SUBSTANTIALLY FREE OF ISOBUTYLENE WHICH UTILIZES A HYDROGEN FLUORIDE AND SULFONE CATALYST

Bruce B. Randolph, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 6, 1993, Ser. No. 57,372
Int. Cl.[5] C07C *2/62*
U.S. Cl. 585—724 **12 Claims**

1. A method of improving the quality of an alkylate product produced form the alkylation of 1-butene in an alkylation process which uses a hydrogen fluoride-containing catalyst, the method comprises the steps of:

providing with said hydrogen fluoride-containing catalyst a concentration of a sulfone;

contacting an admixture comprising an isoparaffin and an olefin feed having a volumetric ratio of isobutylene to 1-butene of less than 1:10, with said hydrogen fluoride-containing catalyst within a reaction zone; and

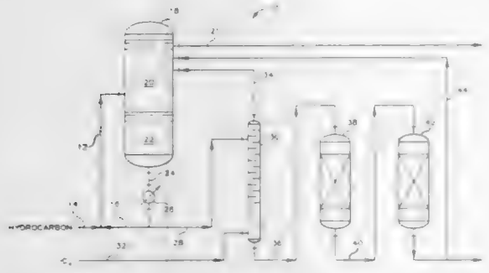
producing said alkylate product.

5,347,067

ALKYLATION CATALYST REGENERATION

Alan D. Eastman, and Ronald G. Abbott, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 904,938, Jun. 26, 1992, Pat. No. 5,276,245. This application Aug. 24, 1993, Ser. No. 119,861
Int. Cl.[5] C07C *2/62*
U.S. Cl. 585—724 **10 Claims**



1. An alkylation process, comprising the steps of:

(a) contacting a hydrocarbon mixture, comprising olefins and isoparaffins, with a catalyst mixture, comprising sulfolane and HF, within a reaction zone to thereby produce a reaction product and a reaction by-product;

(b) separating said reaction product from said catalyst mixture within a first separation zone to produce a separated reaction product and a separated catalyst mixture with said separated catalyst mixture containing a substantial amount of said reaction by-product;

(c) utilizing said separated catalyst mixture as at least a portion of said catalyst mixture;

(d) passing a portion of said separated catalyst mixture to a second separation zone to thereby separate said a portion of said separated catalyst mixture into a second separation zone overhead stream, comprising a major portion of the HF component of said a portion of said separated catalyst mixture, and a second separation zone bottoms stream comprising a major portion of the sulfolane component of said a portion of said separated catalyst mixture and a major portion of the reaction by-product component of said a portion of said separated catalyst mixture;

(e) utilizing said second separation zone overhead stream as at least a portion of the HF component of said catalyst mixture;

(f) contacting said second separation zone bottoms stream with alumina to thereby remove a substantial portion of the HF contained in said second separation zone bottoms stream to produce a neutralized second separation zone bottoms stream;

(g) contacting said neutralized second separation zone bottoms stream with carbon to thereby remove a substantial portion of said major portion of the reaction by-product to produce a sulfolane stream substantially free of said reaction by-product and HF; and

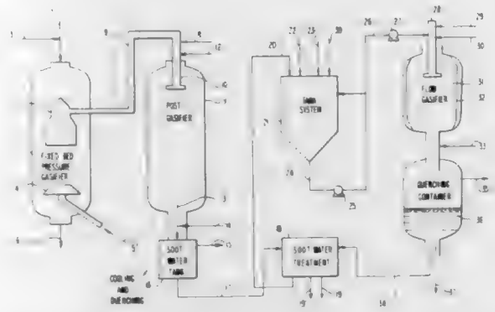
(h) utilizing said sulfolane stream as at least a portion of the sulfolane component of said catalyst mixture.

5,347,068

METHOD OF SIMULTANEOUS DISPOSAL OF SOLID AND LIQUID WASTES

Wolfgang Rabe, Bernsdorf; Lutz Gröschel, Hoyerswerda; Karl Sowka, Dörgenhausen; Günter Scholz, Hoyerswerda; Günter Seifert, Cottbus; Manfred Dürlich, Hoyerswerda; Emil Reichl, Hoyerswerda, and Heinz Polenski, Hoyerswerda, all of Fed. Rep. of Germany, assignors to Energiewerke Schwarze Pumpe Aktiengesellschaft, Pumpe, Fed. Rep. of Germany

Filed Jun. 19, 1992, Ser. No. 901,492
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1991, 4125521
Int. Cl.[5] A62D *3/00*; **A61L** *11/00*; **B09B** *3/00*
U.S. Cl. 588—205 **4 Claims**



1. Method for simultaneous disposal of solid and liquid wastes comprising the steps of:

a. gasifying in a fixed bed pressure gasifier a gasification material consisting of 99 to 30% of brown coal briquettes and 1 to 70% of a solid waste material containing at least one member selected from the group consisting of sulfur, hydrocarbons, PCBs, dioxins and heavy metals, to form a fixed bed pressure gasification crude gas;

b. post-gasifying in a post-gasifier at a temperature greater than 1,000° C. and with a dwell time of more than 2 seconds the crude gas from step a) together with an oxygen-containing gas and a liquid waste portion having a heat content of greater than 20,000 kJ/kg and containing at least one member selected from the group consisting of hydrocarbons, PCBs and heavy metals to form a disposal gas;

c. cooling said disposal gas to less than 200° C. and quenching to form a soot water; and

d. gasifying in a flow gasifier said soot water together with at least one pollutant slurry, another liquid waste portion having a heat content of greater than 20,000 kJ/kg and containing at least one member selected from the group consisting of hydrocarbons, sulfur, PCBs, heavy metals and dioxins and solid components comprising a solid waste, said solid components containing greater than 10% mineral components and at least one member selected from the group consisting of sulfur, heavy metals, PCBs, dioxins, furans and hydrocarbons, the solid components being present in an amount equal to 3 to 35% by weight of a total amount of said soot water, said at least one pollutant slurry, said other liquid waste portion and the solid components, at a temperature more than 50° C. above a melting point of said mineral components.

5,347,069

TREATING OILY WASTES

Parameshwaran S. Sundar, Fairfax, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Oct. 27, 1992, Ser. No. 967,352
Int. Cl.[5] C10G *17/10*
U.S. Cl. 588—252 **18 Claims**

1. A method for treating oily wastes burdened by one or more contaminating hydrocarbons wherein the oily waste is formed into granules, said method comprises:

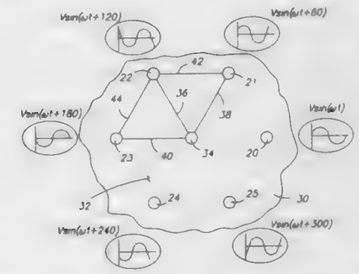
a. mixing the oily waste with a granulating medium under turbulent flow conditions, wherein granules are formed having an attrition index of less than about 10 percent and a filtration index of greater than 0.20 gallons per minute per square foot.

5,347,070

TREATING OF SOLID EARTHEN MATERIAL AND A METHOD FOR MEASURING MOISTURE CONTENT AND RESISTIVITY OF SOLID EARTHEN MATERIAL

William Heath; Richard Richardson, and Steven Goheen, all of Richland, Wash., assignors to Battelle Pacific Northwest Labs, Richland, Wash.

Filed Nov. 13, 1991, Ser. No. 792,213
Int. Cl.[5] E02D *3/00*
U.S. Cl. 588—253 **56 Claims**



1. A method of treating solid earthen material comprising the steps of:

inserting a plurality of electrodes into a region of solid earthen material to be treated; and

applying at least six phases of voltages to corresponding ones of the electrodes to create current paths between pairs of the electrodes and through the region of material.

5,347,071

PROCESS FOR THE REMOVAL OF HEAVY METALS FROM CONTAMINANTS

Masafumi Moriya, Iwakura; Kazuo Hosoda, Katsushika; Masatoshi Yoshida, Katsushika, and Masayoshi Tsukanome, Katsushika, all of Japan, assignors to Miyoshi Yushi Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 837,609, Feb. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 574,067, Aug. 29, 1990, abandoned. This application Nov. 3, 1992, Ser. No. 970,879
Claims priority, application Japan, Dec. 20, 1989, 1-330089; Jul. 13, 1990, 2-186744
Int. Cl.[5] C02F *11/14*
U.S. Cl. 588—256 **14 Claims**

1. A process for the treatment of a solid contaminant containing at least one heavy metal, which comprises:

adding an immobilizing effective amount of metal scavenger to the solid contaminant and mixing said solid contaminant and said metal scavenger in the presence of water to immobilize the heavy metal, said metal scavenger comprising:

a polyamine derivative formed from a polyamine having a molecular weight not higher than 500, said polyamine derivative containing, per molecule of said polyamine, at least one dithiocarboxyl group or a salt thereof as a N-substituting group substituted for an active hydrogen atom of said polyamine; and

a polyethylene derivative formed from a polyethyleneimine having an average molecular weight of at least 5,000, said polyethylene derivative containing, per molecule of said polyethyleneimine, at least one dithiocarboxyl group substituted for an active hydrogen atom of said polyethyleneimine, wherein the mixing ratio of the polyamine derivative to the polyethyleneimine derivative is from about 9:1–7:3 by weight, and wherein from about 43% to about 99% of the substitutable active hydrogen atoms of the polyethyeleneimine and from about 56% to about 100% of the substitutable active hydrogen atoms of the polyamine are substituted by the dithiocarboxyl group.

5,347,072

STABILIZING INORGANIC SUBSTRATES

Harold W. Adams, No. 7 Overlook Dr., Monroe, Conn. 06468

Continuation-in-part of Ser. No. 738,866, Aug. 1, 1991, abandoned. This application Dec. 14, 1992, Ser. No. 989,708
Int. Cl.[5] B09B *3/00*
U.S. Cl. 588—256 **7 Claims**

6. A method of preventing the leaching of metals, metal ions or other inorganic ions from soil or sand containing metals, metal ions or other inorganic ions comprising mixing said soil or sand with sulfur vapor and heating said mixture at a temperature greater than the boiling point of sulfur for a sufficient time to prevent leaching of metals, metal ions or other inorganic ions from said soil or sand.

5,347,073

FIXATION OF HEAVY METALS, MERCURY RECOVERY AND DIOXINS DESTRUCTION IN MUNICIPAL SOLID WASTE INCINERATOR ASH

Wolfgang A. Hochleitner, Allentown, and Stephen P. Goff, Orefield, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 28, 1993, Ser. No. 53,798
Int. Cl.[5] B09B *3/00*; **C04B** *18/08*
U.S. Cl. 588—256 **1 Claim**

1. In a process for the stabilization of heavy metals-containing fly ash obtained by subjecting flue gas to particulate separation, which process comprises forming a mixture of the fly ash and a calcium-containing material, said calcium-containing material being present in the mixture so as to provide a weight ratio of calcium to fly ash from about 0.04 to about 0.5:1, heating the mixture to a temperature in the range of from about 475° C. to about 650° C. and maintaining said temperature for a period of time from about 30 minutes to about five hours while in the presence of an oxygen-containing gas to produce a thermally treated fly ash and a purge gas, the improvement for (1) volatilizing and subsequently recovering any mercury which may be contained in the fly ash; (2) destroying any dioxins which may be contained in the fly ash and (3) preventing any elemental arsenic and selenium which may be contained in the fly ash from volatilizing and subsequently contaminating the purge gas comprising:

(a) narrowing said temperature range from about 475° C.–650° C. to about 475° C.–600° C.;

(b) separating the thermally treated fly ash from the purge gas; and

(c) cooling the separated purge gas to a temperature below 357° C. in order to condense out and recover at least a portion of the mercury.

5,347,074

FIXATION OF HEAVY METALS, MERCURY RECOVERY AND DIOXINS DESTRUCTION IN SCRUBBED MUNICIPAL SOLID WASTE INCINERATOR ASH

Wolfgang A. Hochleitner, Allentown, and Stephen P. Goff, Orefield, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 27, 1993, Ser. No. 53,985
Int. Cl.[5] C04B *18/08, 18/06*
U.S. Cl. 588—256 **1 Claim**

1. In a process for the stabilization of heavy metals-containing fly ash obtained by subjecting a flue gas containing acid gas components to scrubbing with an aqueous slurry of a calcium-containing compound wherein the calcium-containing compound is present in an amount from about 1.2 to about 4 times the stoichiometric amount required to capture the acid gas components in the flue gas and to particulate separation to recover the fly ash, which process comprises heating the fly ash to a temperature in the range from about 375° C. to about 650° C. and maintaining said temperature for a period of time from about 170 seconds to about five hours while in the presence of an oxygen-containing gas to produce a thermally treated fly ash and a purge gas, the improvement for (1) volatizing and subsequently recovering any mercury which may be contained in the fly ash; (2) destroying any dioxins which may be contained in the fly ash and (3) preventing any elemental arsenic and selenium which may be contained in the fly ash from volatizing and subsequently contaminating the purge gas comprising:

(a) narrowing said temperature range from about 375° C.–650° C. to about 400° C.–600° C.;

(b) separating the thermally treated fly ash from the purge gas; and

(c) cooling the separated purge gas to a temperature below 357° C. in order to condense out and recover at least a portion of the mercury.

5,347,075

MUTAGENESIS TESTING USING TRANSGENIC NON-HUMAN ANIMALS CARRYING TEST DNA SEQUENCES

Joseph A. Sorge, San Diego, Calif., assignor to Stratagene, La Jolla, Calif.

Continuation of Ser. No. 45,037, May 1, 1987, abandoned. This application Jun. 6, 1991, Ser. No. 711,332
The portion of the term of this patent subsequent to Sep. 18, 2009, has been disclaimed.
Int. Cl.[5] C12N *15/00*
U.S. Cl. 800—2 **3 Claims**

1. A transgenic mouse whose somatic and germ cells contain the beta-galactosidase gene flanked by the bacteriophage lambda cos sites, and the expression of said beta-galactosidase gene being capable of detection in *E. coli.*

5,347,076

HERBICIDE-TOLERANT PLANTS EXPRESSING CARBAMATE HYDROLASE

Hans-Dieter Pohlenz; Werner Boidol, and Wolfgang Streber, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 353,871, May 18, 1989, abandoned. This application Nov. 19, 1990, Ser. No. 615,448
Claims priority, application Fed. Rep. of Germany, May 19, 1988, 3817384
Int. Cl.[5] A01H *4/00;* **C12N** *15/82*
U.S. Cl. 800—205 **12 Claims**

1. A chimeric carbamate hydrolase gene comprising regulatory regions which are functional in plant cells, operably linked to a carbamate hydrolase gene having the activity of a carbamate hydrolase from *Arthrobacter oxidans.*

5,347,077

TOXIC WASTE FIXANT AND METHOD FOR USING SAME

Carel W. J. Hooykaas, Rotterdam, Netherlands, and Jeffrey P. Newton, Wichita, Kans., assignors to Pelt & Hooykaas B.V., Rotterdam, Netherlands

Filed Oct. 1, 1992, Ser. No. 955,296
Claims priority, application Netherlands, Oct. 1, 1991, 9101656
Int. Cl.[5] B09B *3/00;* **C04B** *18/04*
U.S. Cl. 588—257 **17 Claims**

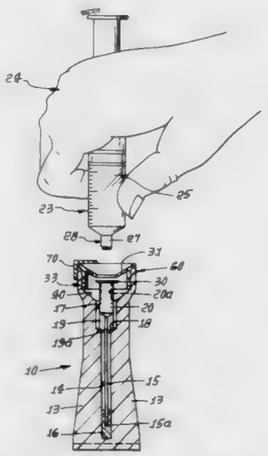
1. A fixant for fixing toxic waste material consisting of mixed inorganic and organic toxic compounds, said fixant consisting of an inorganic hydraulic binding agent and a mixture of an iron salt and a manganese salt, wherein said salts react with the toxic compounds at ambient temperature to obtain a metal compound or cluster, and wherein said salts are selected from the group consisting of sulfate and chloride.

5,347,078

SYRINGE NEEDLE DISPOSAL APPARATUS

John F. Eckels, 440 Jeremiah, #F, Simi Valley, Calif. 93065

Filed Sep. 4, 1992, Ser. No. 941,239
Int. Cl.[5] A61M *5/32;* **B09B** *1/00*
U.S. Cl. 588—258 **17 Claims**



13. Apparatus for disposing of the needle of a hypodermic syringe, the needle having an associated hub, the syringe also having a tubular body to which the hub is removably attached, that includes:

a) an upright, protective receptacle having a downward entrance, and a trap door at said entrance,

b) the needle and hub to be inserted into the receptacle via said entrance and past said trap door,

c) the trap door configured to block withdrawal of the hub and needle from the receptacle in response to said insertion,

d) whereby the received needle and hub are contained in the carrier for disposal,

e) a bore in the receptacle with sealant therein to receive penetration of the needle, with the receptacle supported in standing position and a counterbore in the receptacle within which said hub is received, for locating the hub and needle in the receptacle.

5,347,079

INBRED CORN LINE PHGV6

William K. Martin, Tifton, Ga., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Feb. 3, 1992, Ser. No. 831,229
Int. Cl.[5] A01H *5/00, 4/00;* **C12N** *5/04*
U.S. Cl. 800—200 **6 Claims**

1. Inbred corn seed designed PHGV6 and having ATCC Accession No. 75695.

5,347,080

INBRED CORN LINE PHK74

Lori L. Carrigan, Spicer, and Martin L. Wieland, Lake Lillian, both of Minn., assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Feb. 3, 1992, Ser. No. 831,238
Int. Cl.[5] A01H *5/00, 4/00;* **C12N** *5/04*
U.S. Cl. 800—200 **8 Claims**

1. Inbred corn seed designated PHK74 and having ATCC Accession No. 75557.

5,347,081

INBRED CORN LINE PHK56

Philip R. Martin, Alburnett, Iowa, assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Continuation of Ser. No. 542,352, Jun. 20, 1990, abandoned. This application Jan. 19, 1993, Ser. No. 6,193
Int. Cl.[5] A01H *5/00, 4/00;* **C12N** *5/04*
U.S. Cl. 800—200 **7 Claims**

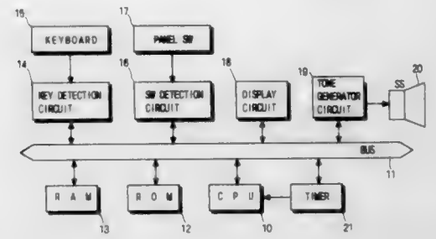
1. Inbred corn seed designated PHK56, having the ATCC Accession No. 75677.

5,347,082

AUTOMATIC MUSICAL PLAYING INSTRUMENT HAVING PLAYING ORDER CONTROL OPERABLE DURING PLAYING

Fumihiko Ojima, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Feb. 28, 1992, Ser. No. 843,577
Claims priority, application Japan, Mar. 1, 1991, 3-036320
Int. Cl.[5] G10H *7/00;* **G04B** *13/00;* **A63H** *5/00*
U.S. Cl. 84—609 **19 Claims**



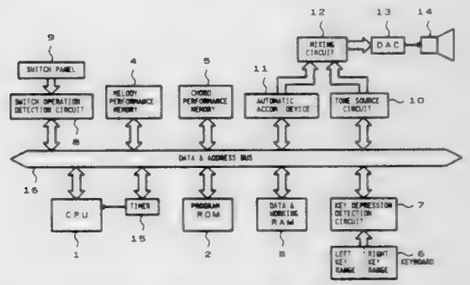
1. An automatic musical playing instrument comprising:
memory means for storing playing data of a plurality of pieces of music;
playing means for reading the playing data from the memory means and for automatically playing according to the read data;
playing order memory means for storing a playing order of the pieces of music stored in the memory means;
order change designation means, operable during playing of playing data, for designating a change of the playing order stored in the playing order memory means; and
playing control means for controlling the playing order so that if the change of next music has been designated by the order change designation means, the playing data of the changed music in place of previously stored music in the playing order memory means is supplied to the playing means, otherwise the playing data of the previously stored music in the playing order memory means is supplied to the playing means.

5,347,083

AUTOMATIC PERFORMANCE DEVICE HAVING A FUNCTION OF AUTOMATICALLY CONTROLLING STORAGE AND READOUT OF PERFORMANCE DATA

Satoshi Suzuki, and Takashi Ikeda, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Jul. 23, 1993, Ser. No. 96,608
Claims priority, application Japan, Jul. 27, 1992, 4-218766
Int. Cl.[5] G10H *1/38, 7/00*
U.S. Cl. 84—613 **7 Claims**



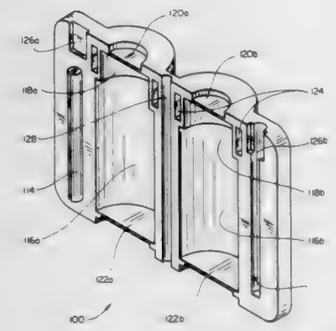
1. An automatic performance device comprising:
storage means having a plurality of storage areas, each of the storage areas storing a series of performance data corresponding to a music piece, thereby said storage means being capable of storing performance data of plural music pieces:
input means for inputting desired performance data:
write-control means for controlling write of the performance data input by said input means, into a first storage area of said storage means;
search means for making a comparison between the performance data already stored in storage areas of said storage means other than said first storage area and the input performance data, in order to detect whether or not performance data of a music piece corresponding to the input performance data are already stored in said storage means, and also for detecting, on the basis of the result of the comparison, a second storage area of said storage means where performance data of a music piece corresponding to the input performance data are stored; and
performance control means for, if said second storage area has been detected, sequentially reading out a series of performance data from said second storage area.

5,347,084

HINGED GEL-FILLED SECURITY AND ENVIRONMENTAL PROTECTION DEVICE

Karen Roney, Milford, Ohio, and Michael Rafko, Apex, N.C., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 712,320, Jun. 7, 1991, abandoned. This application Dec. 7, 1992, Ser. No. 988,050
Int. Cl.[5] H01R *13/52*
U.S. Cl. 174—92 **8 Claims**



1. An environmental protection and security device for coaxial cable splices and/or coaxial cable to tap port connections comprising:
a hinged body which includes at least one longitudinal elongate pin member and longitudinal elongate pin receptacle member on and extending along a substantial portion of opposite but peripheral edges on the device with cavity halves therebetween capable of forming an enclosure around the coaxial cable splice or the cable to tap port connection upon the closing of the device and the locking of the elongate pin and elongate pin receptacle hietubers, at least one edge of the elongate pin member or the elongate pin receptacle member including a slot to permit the dislodging of the elongate pin member from the elongate pin receptacle member through the insertion of a third body therein, and wherein the elongate pin member includes a slot along its longitudinal length permit flexing of the elongate pin member upon closing of the device and movement of the elongate pin member into the elongate pin receptacle member.

5,347,085

MULTIFILAMENTARY OXIDE SUPERCONDUCTING WIRES AND METHOD OF MANUFACTURING THE SAME

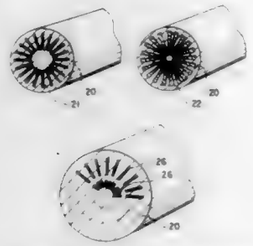
Hiroyuki Kikuchi; Masanao Mimura; Naoki Uno, and Yasuzo Tanaka, all of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1992, Ser. No. 828,471

Claims priority, application Japan, Feb. 7, 1991, 3-038124; Feb. 7, 1991, 3-038125; Feb. 13, 1991, 3-041072

Int. Cl.[5] H01B *12/00*

U.S. Cl. 505—231 6 Claims



1. A multifilamentary oxide superconducting wire, comprising a metal matrix and a plurality of oxide superconductor filaments each having an oblong cross section and arranged in said metal matrix such that a longer side of said oblong cross section extends in a radial direction of the oxide superconducting wire, wherein said oxide superconductor filaments have a flatness (L^2/S) of not less than 18, where L (mm) is a peripheral length in cross section of the oxide superconductor filaments, and S (mm^2) is a cross sectional area of the oxide superconductor filaments.

5,347,086

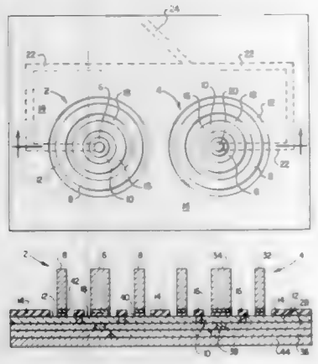
COAXIAL DIE AND SUBSTRATE BUMPS

Curtis N. Potter; David A. Gibson, both of Austin, Tex., and Uttam S. Ghoshal, Richmond, Calif., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Filed Mar. 24, 1992, Ser. No. 856,501

Int. Cl.[5] A05K *1/00*

U.S. Cl. 174—261 18 Claims



1. A coaxial bump for connecting a die to a substrate, said coaxial bump comprising:

a center conductor line; and

a ground ring spaced from and surrounding said center conductor line wherein said ground ring provides said center conductor line with electromagnetic shielding from adjacent signal bumps thereby permitting only a very low level of crosstalk between said center conductor line and said adjacent signal bumps.

5,347,087

TONE GENERATION DEVICE CAPABLE OF VARYING DELAY TIME LENGTH AT THE START OF TONE GENERATION

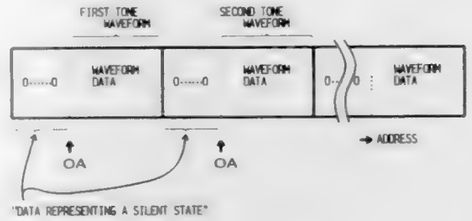
Koichi Kozuki, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Dec. 3, 1992, Ser. No. 985,813

Claims priority, application Japan, Dec. 6, 1991, 3-323007

Int. Cl.[5] G10H *1/053, 1/06, 7/04*

U.S. Cl. 84—605 14 Claims



1. A tone generation device comprising:

tone designation means for designating that a tone should be generated;

waveform memory means for storing data representing a silent state in a first address area having a first predetermined number of addresses and storing tone waveform data in a second address area;

address signal generation means for generating an address signal for reading out stored data from the waveform memory means; and

control means for controlling the address signal generation means, having designation means for designating a second predetermined number of addresses of said first address area from which the data representing a silent state is to be read out, said second predetermined number being any optional number no greater than said first predetermined number of addresses, so as to read out the data representing a silent state from the second predetermined number of addresses of said first address area designated by said designation means in response to the designation of tone generation and thereafter read out the tone waveform data from the second address area.

5,347,088

ELECTRICAL JUNCTION BOX

Thomas R. Marsh, High Point, and Carl R. Porter, Shelby, both of N.C., assignors to Tenn-Tex Plastics, Inc., Kernersville and Specialty Lighting, Shelby, both of N.C.

Filed Sep. 22, 1992, Ser. No. 949,386

Int. Cl.[5] H05K *5/00*

U.S. Cl. 174—50 19 Claims

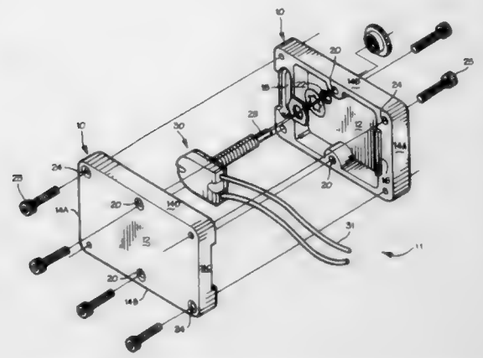
1. An electrical junction box formed of two identical, oppositely facing, and reversed members, each member comprising:

a base;

a plurality of peripheral walls extending from said base and joined at their adjacent ends to form an open interior in said member;

the walls of each member extending toward and engaging the walls of the other member; and

two of said plurality of walls of each member being oppositely disposed with one of said two walls having a projection extending in the direction of the other member and the other of said two walls having a recess disposed for receipt of at least one wire lead and the projection from said one wall of the other member in positioning the members together with facing interiors forming a closed junction box interior, said projection and said recess forming a pathway to accommodate and secure leads exiting the junction box.



5,347,089

BRANCH OFF

Alan Barrat, and Graham Miles, both of Swindon, England, assignors to Raychem Limited, United Kingdom

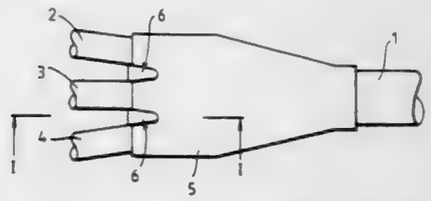
PCT No. PCT/GB91/00994, § 371 Date Dec. 16, 1992, § 102(e) Date Dec. 16, 1992, PCT Pub. No. WO92/00623, PCT Pub. Date Jan. 9, 1992

PCT Filed Jun. 20, 1991, Ser. No. 958,340

Claims priority, application United Kingdom, Jun. 22, 1990, 9013987.4

Int. Cl.[5] H02G *15/08*

U.S. Cl. 174—84 R 13 Claims



1. An arrangement for enclosing a branch-off between a pair of elongate bodies, which comprises a dimensionally recoverable sleeve which can surround the branch-off, and one or more clips which can be positioned about opposed walls of the sleeve to divide the sleeve into channels for the bodies, the or each clip being of unitary form and having a pair of legs that are splayed outwardly to facilitate positioning of the clip over the sleeve walls, the or each clip being mechanically deformable so that the legs can be forced towards each other after the clip has been positioned on the sleeve walls but sufficiently rigid, at least in its deformed state, to resist opening out of the legs under the recovery forces of the sleeve.

13. A method of enclosing a branch-off between a pair of elongate bodies, which comprises:

(i) positioning a dimensionally recoverable sleeve about the branch-off;

(ii) positioning a mechanically deformable clip about opposed walls of the sleeve to divide the sleeve into channels for the bodies, the clip being of unitary form and having a pair of legs that are splayed outwardly to facilitate positioning of the clip over the sleeve;

(iii) forcing the legs of the clip towards each other into engagement with the sleeve walls; and

(iv) recovering the sleeve about the branch-off;

the clip being sufficiently rigid, at least after its legs have been forced towards each other, to resist opening out of the legs under the recovery forces of the sleeve.

5,347,090

METHOD FOR CONNECTING THE SCREEN OF AT LEAST ONE SCREENED ELECTRICAL CABLE TO AN ELECTRICAL LINK WIRE, AND CONNECTION OBTAINED BY IMPLEMENTATION OF THIS METHOD

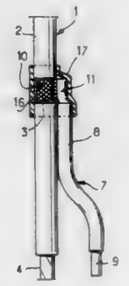
Léon G. Cerda, Carry-le-Rouet, France, assignor to Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Oct. 29, 1992, Ser. No. 968,187

Claims priority, application France, Nov. 12, 1991, 91 13862

Int. Cl.[5] B32B *31/06*

U.S. Cl. 174—84 R 8 Claims



1. A method for connecting a screen of a screened electrical cable to an electrical link wire, said screened electrical cable (**1**) including, from the outside in, an insulating protective jacket (**2**), a screen (**3**), and at least one electrical wire (**4**), said electrical link wire (**7**) including an insulating protective jacket (**8**) and a conductor (**9**), said method comprising the steps of:

stripping a part (**10**) of the cable (**1**) of its insulating protective jacket (**2**), leaving the screen (**3**) bare,

stripping a corresponding part (**11**) of the link wire (**7**) of its insulating protective jacket (**8**), leaving the link wire (**9**) bare,

coating at least one of the respective bare parts (**10, 11**) of the cable (**1**) and of the link wire (**7**) with an electrically conductive adhesive (**16**);

placing said parts (**10, 11**) facing each other,

winding a tape of heat-shrinkable insulating material around said parts (**10, 11**); and

heat-shrinking said tape in place.

5,347,091

MULTILAYER CIRCUIT CARD CONNECTOR

Donald R. Schroeder, Lafayette, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Aug. 21, 1992, Ser. No. 933,424

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—262 6 Claims

1. A multilayer circuit card connector for electrically interconnecting a first electronic module to a second electronic module comprising:

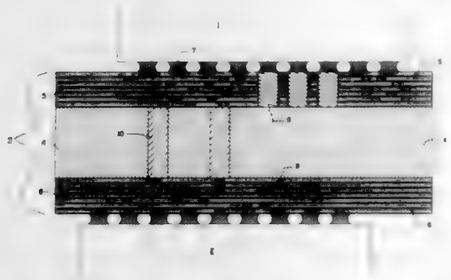
a rigid nitride ceramic core of electrically insulative characteristic and thermally conductive characteristic with a thermal expansion characteristic similar to said first and second electronic modules;

a first electrical via extending from a first surface of said core to a second surface of said core, said electrical via being electrically conductive;

a first rigid laminate of a first electrically insulative oxide layer and a second electrically insulative oxide layer and a wiring pattern therebetween, said first rigid laminate bonded to said core on said first surface thereof, said first rigid laminate further comprising a first laminate electrical

via electrically coupling between a first laminate surface opposite said core and said first electrical via;

a second rigid laminate of a first electrically insulative oxide layer and a second electrically insulative oxide layer and a wiring pattern therebetween, said second rigid laminate bonded to said core on said second surface thereof, said second rigid laminate further comprising second laminate electrical vias electrically coupling between a first laminate surface of said second rigid laminate opposite said core and said first electrical via; and



means for thermally and electrically connecting said first electronic module to said first rigid laminate and means for thermally and electrically connecting said second electronic module to said second rigid laminate, whereby said first and said second electronic modules are electrically interconnected.

5,347,092

COMPENSATION SCALE FOR MEASURING THE WEIGHT OR MASS OF AN OBJECT

Willy Buchs, Lonay; Roland Cochard, and Pierre Jeannin, both of Morges, all of Switzerland, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

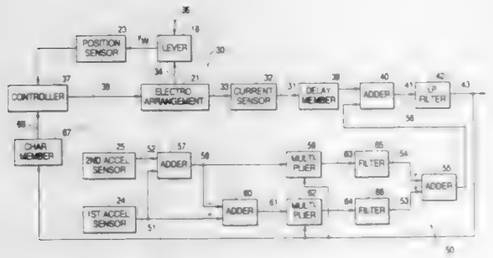
PCT No. PCT/DE90/00935, § 371 Date Jul. 20, 1992, § 102(e) Date Jul. 20, 1992, PCT Pub. No. WO91/10884, PCT Pub. Date Jul. 25, 1991

PCT Filed Dec. 4, 1990, Ser. No. 910,291

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1990, 4001614

Int. Cl.[5] G01G *1/38*

U.S. Cl. 177—212 **19 Claims**



1. A compensation scale comprising,

a movably guided component that is deflected from a predetermined position relative to a carrier of the scale in at least one direction by a load whose weight or mass is to be determined;

an electromagnetic arrangement which includes at least one coil for generating a force relative to the load;

a lever coupled to the movably guided component and mounted to move about a pivot point for influencing the force generated by the electromagnetic arrangement relative to the load;

a position sensor which determines the position of the movable component relative to the carrier and outputs a signal;

a controller which determines current flowing through the coil as a function of the signal output by the position sensor so that the movable component returns to the predetermined position with the current being a measure for the weight or the mass of the load, the controller producing an uncorrected measuring result signal related to the current;

at least two acceleration sensors disposed at the movable component for determining the translatory acceleration in the at least one direction and a rotational acceleration of the movable component about a rotation axis passing through the pivot point and essentially perpendicular to the lever, the acceleration sensors outputting signals to a correction signal processing arrangement which determines at least one correction signal for correcting the uncorrected measuring result signal representing the measure for the weight or mass of the load to produce a corrected measuring result signal.

5,347,093

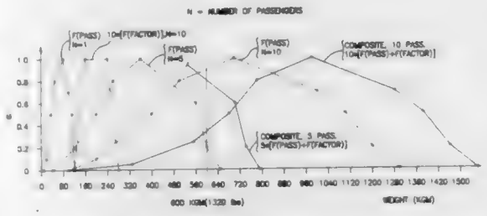
FUZZY TAILORING OF ELEVATOR PASSENGER FUZZY SETS

Jeremy B. Kezer, Farmington; Bertram F. Kupersmith, Avon, and David J. Sirag, Jr., South Windsor, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Continuation-in-part of Ser. No. 927,039, Aug. 10, 1992, Pat. No. 5,258,587. This application Jul. 22, 1993, Ser. No. 95,879

Int. Cl.[5] B66B *3/00*

U.S. Cl. 187—131 **20 Claims**



1. A method of dispatching a plurality of elevator cars in a building comprising:

providing a plurality of signals representing a basic fuzzy set for a single passenger including basis elements of the possible amounts of weight which one passenger may add to an elevator car and corresponding membership values indicative of the likelihood that one passenger has added the related amount of weight to the car ;

providing a plurality of signals representing a factor fuzzy set for a single passenger including basis elements indicative of additional amounts of weight which each passenger may have compared with the likelihood of weight expressed in said single passenger fuzzy set, including basis elements of possible additional passenger weight and corresponding membership values indicative of the likelihood of a passenger having the related additional weight;

providing a plurality of signals representing a plurality of composite fuzzy sets, one for each possible number, N, of passengers which may be in the elevator, each reflecting N times the fuzzy summation of said basic fuzzy set and said factor fuzzy set;

providing a weight signal indicative of the weight of passengers in an elevator;

providing a plurality of signals representing a passenger count fuzzy set in which each of the terms corresponds to a related term of one of said composite fuzzy sets which has a basis element equaling the weight indicated by said weight signal, each term of said passenger count fuzzy set having a basis element equaling the number of passengers corresponding to the composite fuzzy set of the related term and a degree of membership the same as the degree of membership of said related term; and

dispatching elevators to provide service in said building in response to a process using the signals of said passenger fuzzy set to provide corresponding representations of the number of passengers in said elevator.

5,347,094

ELEVATOR SHAFTWAY INTRUSION DEVICE

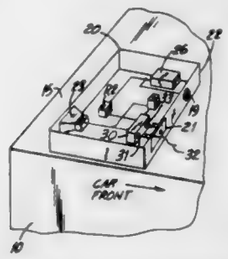
Richard J. Leone; Robert F. Cummins, both of Yonkers; Joseph Vitiello, Riverdale, and Thomas Brochhagan, North Bellmore, all of N.Y., assignors to TOC Holding Copmany of New York, Inc., Bronx, N.Y.

Continuation of Ser. No. 719,418, Jun. 24, 1991, Pat. No. 5,283,400, which is a continuation-in-part of Ser. No. 462,593, Jan. 9, 1990, Pat. No. 5,025,895. This application May 4, 1993, Ser. No. 57,339

The portion of the term of this patent subsequent to Jun. 25, 2008, has been disclaimed.

Int. Cl.[5] B66B *5/00*; **G08B** *21/00*

U.S. Cl. 187—140 **30 Claims**



1. A detection system for detecting intrusion into an elevator shaft having an elevator cab therein and a plurality of elevator shaft access ways in at least one wall of said shaft comprising:

an intrusion detector mounted at a location within said shaft above the elevator cab for monitoring an energy field in a zone of detection including at least a portion of the elevator shaft proximate the top of said cab, or mounted at a location within said shaft below said elevator cab for monitoring an energy field in a zone of detection including at least a portion of the elevator shaft proximate the bottom of said cab, said intrusion detector providing a detection signal representing a disturbance in said energy field caused by an intruder in the shaft, entering said zone of detection,

a power supply for supplying power to said system,

a detection indicator responsive to said detection signal for generating a first audible signal,

and a battery back-up means for providing power to said detection system in the absence or interruption of said power from said power supply means.

5,347,095

ELECTRICAL RECEPTACLE FOR USE WITH ANNUNCIATOR APPARATUS FOR MONITORING ELECTRICAL CONNECTIONS

Abraham Zeder, 8 Wintergreen Cir., Andover, Mass. 01810

Division of Ser. No. 725,979, Jul. 5, 1991, Pat. No. 5,258,744. This application Jan. 14, 1993, Ser. No. 4,532

Int. Cl.[5] H01R *33/96*

U.S. Cl. 200—51.09 **2 Claims**

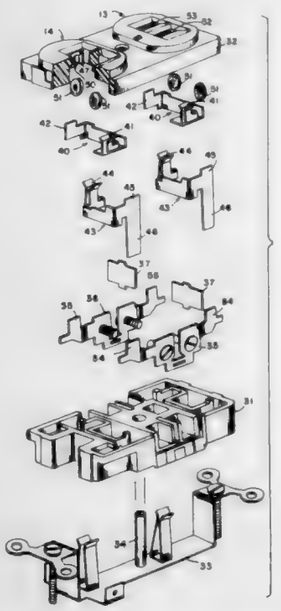
1. An electrical receptacle for use with an apparatus for detecting the removal from said receptacle of an electrical plug with a plurality of male contacts, said apparatus having first and second signalling inputs, said receptacle being adapted for connection to power and neutral conductors from a power source and comprising:

A. receptacle housing means for supporting the electrical plug, said receptacle housing means having an internal cavity and apertures defining passages from said internal cavity exteriorly of said receptacle housing means,

B. a first contact engaging means for engaging one of the male contacts of the plug, and a second contact engaging means for engaging another one of the male contacts of the plug, each of said contact engaging means being supported by said receptacle housing means in said internal cavity,

C. power terminal wiring means for receiving the power conductor and neutral terminal wiring means for receiving the neutral conductor each of said terminal wiring means extending through said apertures and located partially in said internal cavity and partially exteriorly to said receptacle housing means and being adapted for connection to said first signalling input of the apparatus,

D. power electrical switching means for connecting said power terminal wiring means to said first contact engaging



means and neutral electrical switching means for connecting said neutral terminal wiring means to said second contact engaging means, each of said electrical switching means controlling the conductive state between said respective terminal wiring means and said contact engaging means and being positioned in said internal cavity,

E. power switch actuating means and neutral switch actuating means, each being supported by said receptacle housing means in said internal cavity and responsive to the insertion of plug male contacts into said receptacle housing means for changing the conductive state of said power and neutral electrical switching means respectively, whereby the conductive state between said first and second contact engaging means and respective said terminal means depends on the presence or absence of the plug in said receptacle housing means.

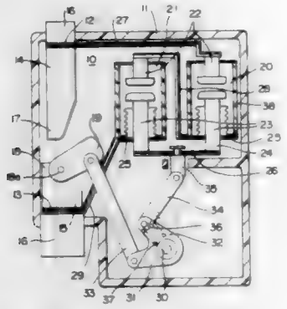
F. conductive feedthrough means extending from said neutral switching means and through another of said apertures in said housing means thereby to provide an electrical connection exteriorly of said receptacle housing means to said second signalling input.

5,347,096

ELECTRICAL CIRCUIT BREAKER WITH TWO VACUUM CARTRIDGES IN SERIES

Roger Bolongeat-Mobleu, Echirolles; Frederic Burnaz, Sassenage, and Peter Malkin, St. Nazaire les Eymes, all of France, assignors to Merlin Gerin, France

Filed Oct. 15, 1992, Ser. No. 962,516
Claims priority, application France, Oct. 17, 1991, 91 13062
Int. Cl.[5] H01H *33/66*
U.S. Cl. 200—148 B **12 Claims**



1. A medium to high voltage circuit breaker comprising:
first and second vacuum switches, said first vacuum switch comprising a first pair of arcing contacts housed in a first insulating housing and including a first movable arcing contact, said second vacuum switch comprising a second pair of arcing contacts housed in a second insulating housing and including a second movable arcing contact;
an electrical connector connecting the first and second vacuum switches to each other in series;
a mechanical link connected to said first and second movable arcing contacts to open and close the first and second pairs of arcing contacts simultaneously;
a pair of main contacts electrically connected in parallel to said first and second arcing contacts;
an operating mechanism connected to said main contacts and to said mechanical link to open the first and second pairs of arcing contacts after the pair of main contacts open and to close the first and second pairs of arcing contacts before the pair of main contacts close; and
a sealed enclosure filled with a high dielectric strength gas and housing therein said first and second vacuum switches, said electrical connector, said mechanical link, said pair of main contacts and said operating mechanism.

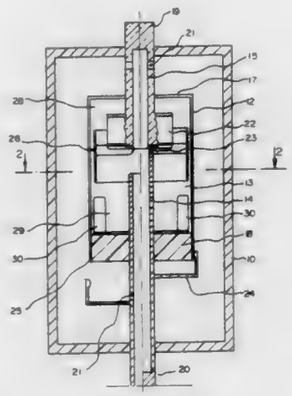
5,347,097

ELECTRICAL CIRCUIT BREAKER WITH ROTATING ARC AND SELF-EXTINGUISHING EXPANSION

Roger Bolongeat-Mobleu, Echirolles, and Peter Malkin, St. Ismier, both of France, assignors to Merlin Gerin, France

Continuation of Ser. No. 731,977, Jul. 18, 1991, abandoned. This application Aug. 2, 1993, Ser. No. 101,279
Claims priority, application France, Aug. 1, 1990, 90 09938
Int. Cl.[5] H01H *33/18, 33/72*
U.S. Cl. 200—148 B **12 Claims**

1. An electrical circuit breaker, comprising:
a sealed enclosure filled with a high dielectric strength gas;
an arc extinguishing chamber having an elongated housing and being sealed off at opposite ends by first and second end plates, respectively, said arc extinguishing chamber being located within said sealed enclosure;
a first contact and a second contact which are adapted to separate from each other to define an open position, wherein a closed position is defined by said first and second contacts being in abutment with each other;
a magnetic blowout coil disposed adjacent said first end plate of the arc extinguishing chamber, said magnetic blowout coil adapted to generate a magnetic field to aid in extinguishing an arc formed upon separation of the first and second contacts;
at least one duct formed in one of said first and second contacts to allow gas communication between the arc extinguishing chamber and the sealed enclosure; and
a deflector shield disposed in said arc extinguishing chamber and surrounding said first and second contacts in said closed position, an outer surface of the deflector shield and an inner surface of the arc extinguishing chamber



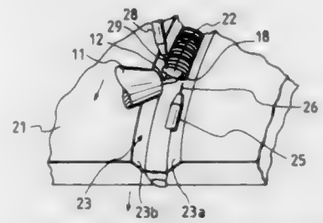
forming a gap therebetween, opposite axial ends of the deflector shield being open to allow gas communication between said sealed enclosure and said deflector shield; wherein
said arc extinguishing chamber includes a first open area formed adjacent said first end plate and a second open area formed adjacent said second end plate, said gap allowing gas communication between said first and second open areas.

5,347,098

METHOD OF WELDING NICKEL OR NICKEL ALLOY PRODUCTS

Yasuo Murakami; Hideki Kashimura, both of Hikari; Kiichi Katayama, Tokyo; Hiroshi Imaizumi, Tokyo; Toshio Katou, Tokyo, and Hideaki Nakashima, Tokyo, all of Japan, assignors to Nippon Steel Corporation and Aichi Sangyo Co., Ltd., both of Tokyo, Japan

Filed Jul. 14, 1992, Ser. No. 913,186
Claims priority, application Japan, Jul. 15, 1991, 3-266741
Int. Cl.[5] B23K *9/23*
U.S. Cl. 219—61 **19 Claims**



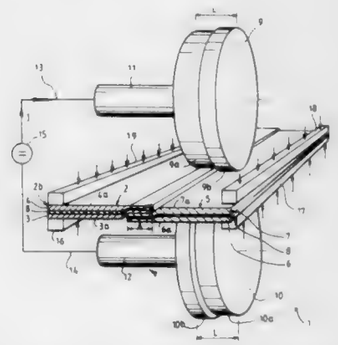
19. A pipe welding method that welds the circumference of butt-jointed pipes, at least one of the pipes comprising nickel or a nickel alloy, said pipe welding method comprising the steps of:
generating an arc between the pipes to be welded together and a tungsten electrode held by a welding torch, the pipes serving as a positive pole and the tungsten electrode serving as a negative pole;
emitting a shielding gas that comprises an argon-based mixed gas that contains at least one of hydrogen and helium from a confining gas nozzle concentric with the tungsten electrode and thereby confining the apparent flaring angle of the arc to a maximum of 80 degrees; and
applying a first welding pass by moving the welding torch along the weld line while feeding the tip of a first filler wire into a part of the molten pool directly below the arc; and
applying second and subsequent welding passes by confining the arc through said step of emitting the shielding gas, oscillating the first filler wire integrally with the welding torch in a direction perpendicular to the weld line with a predetermined amplitude and frequency and moving the first filler wire along the weld line while feeding the tip thereof to a part of the molten pool directly below the arc, and oscillating a second filler wire at the same frequency as the first filler wire but 180° out of phase with the oscillation of the first filler wire, and moving the second filler wire along the weld line while feeding the tip thereof into the molten pool.

5,347,099

METHOD AND DEVICE FOR THE ELECTRIC WELDING OF SHEETS OF MULTILAYER STRUCTURE

Frank Gissinger, Dunkerque, and Thierry Gheysens, Oudezeele, both of France, assignors to Sollac, Puteaux, France

Filed Mar. 4, 1993, Ser. No. 26,689
Claims priority, application France, Mar. 5, 1992, 92 02666
Int. Cl.[5] B23K *11/08, 11/06*
U.S. Cl. 219—81 **19 Claims**



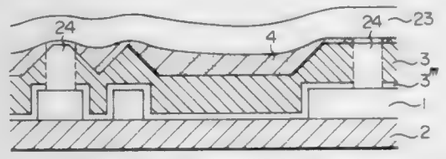
1. Method for the electric welding of at least two sheets that each have a multilayer structure, termed sandwich sheet, each sandwich sheet having at least two metal sheets that are mechanically interconnected by a film of polymer that is disposed between the at least two metal sheets,
said method comprising the steps of:
partially overlapping first and second sandwich sheets,
contacting inner faces of the first and second sandwich sheets in said overlapping region,
positioning first and second rollers on first and second opposite regions of first and second outer faces of, respectively, the first and second sandwich sheets, each roller having first and second cylindrical regions with first and second cylindrical radii, the first cylindrical radii of each roller being smaller than the second cylindrical radii of the same roller, the fist and second rollers being positioned in confronting relation to each other in alignment with said overlapping region, wherein the second cylindrical region of the first roller opposes part of the first cylindrical region of the second roller and the second cylindrical region of the second roller opposed part of the first cylindrical region of the first roller, the second cylindrical regions of the first and second rollers being electrically conductive,
supplying electrical power to at least the second cylindrical regions of the first and second rollers,
exerting, by means of said rollers, a clamping force on said overlapping region of said first and second sandwich sheets thereby contacting the second region of the first roller to the inner surface of the second sandwich sheet and contacting the second region of the second roller to the inner surface of the second sheet, and
displacing said first and second rollers along said overlapping region.

5,347,100

SEMICONDUCTOR DEVICE, PROCESS FOR THE PRODUCTION THEREOF AND APPARATUS FOR MICROWAVE PLASMA TREATMENT

Takuya Fukuda; Michio Ohue, both of Hitachi; Fumiyuki Kanai, Hoya; Atsuyoshi Koike, Kokubunji; Katsuaki Saito, and Kazuo Suzuki, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Engineering & Services, Inc., Hitachi, both of Japan

Filed Mar. 26, 1992, Ser. No. 857,658
Claims priority, application Japan, Mar. 29, 1991, 3-089425; Sep. 17, 1991, 3-235930
Int. Cl.[5] B23K *9/00;* **B44C** *1/22*
U.S. Cl. 219—121.43 **11 Claims**



1. A semiconductor device comprising a semiconductor substrate, first metal connection layers provided on the semiconductor substrate through an insulating layer, a first silicon oxide layer provided on the first metal connection layer and the insulating layer, and a second connection layer provided on the first silicon oxide layer, wherein portions of the first silicon oxide layer provided on the insulating layer have greater thicknesses than the first metal connection layers, and portions of the first silicon layer provided on the first metal connection layers have thicknesses substantially the same as one another, and wherein the width of a groove of the first silicon oxide layer formed in lines of the first metal connection layers is larger than the width of a groove between the lines of the first metal connection layers.

5,347,101

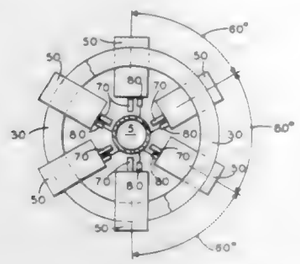
AUTOMATIC TRACKING SYSTEM FOR PIPELINE WELDING

Michael J. Brennan, Columbus, Ohio, and Clyde D. Noel, Houma, La., assignors to McDermott International, Inc., New Orleans, La.

Filed Feb. 7, 1994, Ser. No. 193,494
Int. Cl.[5] B23K *9/127*
U.S. Cl. 219—124.34 **8 Claims**

1. A system for automatically tracking a surface for performing a welding, the system comprising:
a. a frame;
b. a pair of ring gears movably mounted to the frame, the ring gears being spaced apart from each other;
c. three weld heads movably mounted to each ring gear, the weld heads having welding means for providing a weld and laser scanning means for scanning a surface and for measuring distances over the surface; and

d. control means communicating with the laser scanning means for receiving the measured distances and for controlling the movement of the ring gears and the movement of the weld heads.

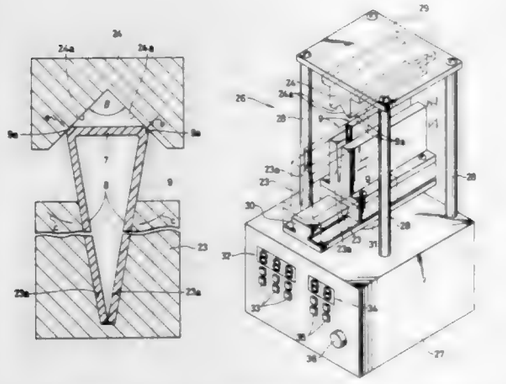


5,347,102

HEATING DEVICE USED FOR PRODUCTION OF SHUTTER FOR A DISK CASSETTE

Shuichi Kikuchi, Miyagi, and Toshiro Kobayashi, Kanagawa, both of Japan, assignors to Sony Corporation, Shinagawa, Japan

Division of Ser. No. 765,559, Sep. 26, 1991, Pat. No. 5,262,917.
This application Mar. 15, 1993, Ser. No. 31,554
Claims priority, application Japan, Oct. 1, 1990, 2-263347
Int. Cl.[5] B29C *17/04*
U.S. Cl. 219—243 | 7 Claims



1. A heating device for production of a shutter made of synthetic resin and shaped into a U-form in section, the heating device being used for heating a pair of corner portions of the shutter to extinguish residual stresses that exist in the corner portions that are formed where a connecting portion of the shutter connects a pair of shutter plates that cover the respective upper surface and the lower surface of the case so as to be able to open and close a head insertion opening provided in at least one of the upper surface and the lower surface of the case, wherein the heating device comprises:

support means for fixedly supporting the free ends of a pair of shutter plates in a vertical position wherein the free ends, which are in opposed relation to the respective ends that have been already connected to a connecting portion of the shutter, are in contact with each other at a distal position of each free end;

fixed heating means for receiving and contacting only a pair of corner portions of the shutter that have been fixedly supported by said support means, in order to heat said corner portions to a predetermined temperature;

temperature setting means for setting said predetermined temperature; and

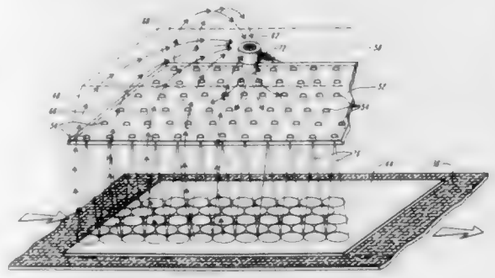
heating-duration setting means for setting a heating duration by said heating means.

5,347,103

CONVECTION FURNACE USING SHIMMED GAS AMPLIFIER

Pierre J. LeMieux, Andover, Mass., assignor to BTU International, North Billerica, Mass.

Filed Aug. 31, 1993, Ser. No. 115,211
Int. Cl.[5] A21B *1/26;* F27B *9/10;* F27D *7/04*
U.S. Cl. 219—400 24 Claims



1. A convection furnace comprising:

a thermally insulated housing;

a sealed, pressurizable heating box mounted inside said housing defining a heating chamber;

a heating element mounted inside said box;

a gas plenum inside said housing above said heating box; and

a gas amplifier mounted in an upper section of said box to draw gas from said plenum into said box for circulation over said heating element, said gas amplifier comprising:

a nozzle having an entrance from said plenum, said entrance being formed with a Coanda profile, and an exit to said heating chamber,

opposed interior surfaces configured to define an annular gap surrounding said entrance of said nozzle, one of said opposed surfaces being contiguous with said Coanda profile of said nozzle,

a gas input inlet for connection to a source of pressurized gas, said inlet being in fluid communication with said annular gap to introduce a pressurized input gas from the source of pressurized gas to said annular gap for flow over said Coanda profile of said nozzle and into said heating chamber, whereby gas in said plenum becomes entrained in said flow of input gas, and

a shim disposed between said opposed surfaces to define the width of said annular gap, said shim having a plurality of radially inwardly extending teeth thereon configured to protrude into a flow passage of said nozzle, whereby said flow of input gas and entrained gas becomes capable of withstanding pressure in said heating chamber.

5,347,104

HEATER CONTROL CIRCUIT

Makoto Morishima, and Yoshihiro Kanaya, both of Nagoya, Japan, assignors to Rinnai Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 524,198, May 16, 1990, abandoned.
This application May 21, 1992, Ser. No. 887,421
Claims priority, application Japan, Dec. 12, 1989, 1-321653
Int. Cl.[5] H05B *3/68, 3/02*
U.S. Cl. 219—451 2 Claims

1. A heater control circuit comprising:

an electrical heater provided to cook articles to be cooked, and electrically connected across respective first and second terminals of a house wiring connector for connection to a power source;

a triac having first and second anodes and electrically connected in series between the first connector terminal and the heater to control the heater;

manually operable switch means electrically coupled to the heater so as to actuate and deactuate the heater in response to respective on and off operation of the switch means, said switch means being electrically connected in series between the first connector terminal and the first triac anode; and

control means electrically coupled to the heater and the triac for controlling the heater and comprising a pair of normally open relay contacts, closeable only upon on operation of said switch means and electrically connected in series with the heater so as to actuate and deactuate the heater, said relay contacts being also electrically connected in series between the second connector terminal and the second triac anode and opened in response to the off operation of the switch means,

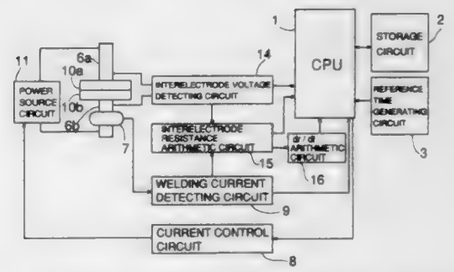
whereby the off operation of the switch means will open a first electrically conductive path through the switch means from the first connector terminal to the first anode of the triac and will also cause the control means to open a second electrically conductive path from the second connector terminal through the heater and the relay contacts to the second anode of the triac.

5,347,105

WELDING CONTROLLER

Shingo Kawai, Nagoya, Japan, assignor to Nadex Co., Ltd., Nagoya, Japan

Filed Apr. 27, 1993, Ser. No. 52,906
Claims priority, application Japan, May 1, 1992, 4-140044
Int. Cl.[5] B23K *11/24*
U.S. Cl. 219—110 9 Claims



1. A controller for a welding machine in which workpieces are pinched between a pair of electrodes through which welding current is supplied to weld the workpieces, said controller comprising;

means for detecting an amount of resistance between the electrodes;

means for monitoring occurrence of a phenomenon that interelectrode resistance detected by the detecting means shifts from an upward tendency to a downward tendency; and

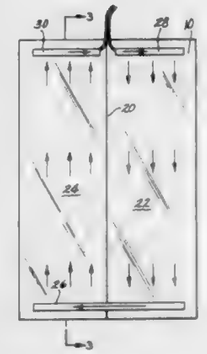
welding current adjusting means for increasing the amperage of welding current with time from a low value insufficient for welding, until the monitoring means monitors the occurrence of the phenomenon, and maintaining the amperage at a constant value when the monitoring means monitors the occurrence of the phenomenon.

5,347,106

FOG-RESISANT MIRROR ASSEMBLY

Carl A. Reiser, 142 Cider Mill Rd., Glastonbury, Conn. 06033, and Richard D. Sawyer, 5 Trails End Dr., Canton, Conn. 06019

Continuation of Ser. No. 367,140, Jun. 16, 1989, Pat. No. 5,083,009. This application Jan. 13, 1992, Ser. No. 819,874
The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.
Int. Cl.[5] H05B *1/00, 3/16*
U.S. Cl. 219—219 19 Claims



1. A fog-resistant mirror assembly usable with conventional household current, said assembly comprising:

a) a first glass sheet having an electrically conductive material coating on a surface thereof;

b) a scribe line traversing said conductive material coating to divide the latter into adjacent electrically conductive separate parts, said scribe line being covered with a high dielectric strength material sufficient to prevent arcing across said scribe line;

c) a current-inlet bus connected to one of said conductive material coating parts at one end of said first glass sheet;

d) a current outlet bus connected to an adjacent one of said conductive material coating parts at said one end of said first glass sheet;

e) a current transfer bus connected to both of said conductive material coating parts and spanning said scribe line at an opposite end of said one end thereof; and

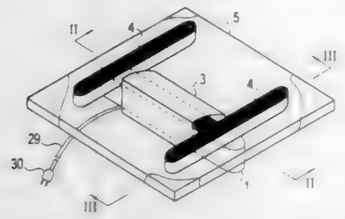
f) said inlet, transfer and said outlet buses being formed from a foil tape having both in-plane and through-plane conductance and combining with said scribe line to increase the current to a length which exceeds the distance between said first and opposite ends of said first glass sheet.

5,347,107

LOW FREQUENCY ELECTROMAGNETIC INDUCTION HEATER WITH MAGNETIC FLUX DIFFUSING MEMBERS

Atsushi Iguchi, and Kuniaki Iguchi, both of Kyoto, Japan, assignors to Nikko Corporation Ltd. and Senko Denki Corporation Ltd., both of Kyoto, Japan

Filed Aug. 5, 1993, Ser. No. 102,275
Claims priority, application Japan, Sep. 3, 1992, 4-235917
Int. Cl.[5] H05B *6/12*
U.S. Cl. 219—624 **16 Claims**



1. An electromagnetic induction heater comprising an iron core of a transverse dimension W_1 and having a longitudinal axis, ends and a central part, said iron core being wrapped with an electric wire to form a coil around said core, said ends of said iron core each being fixed to an elongated magnetic flux diffusing member, said magnetic flux diffusing members having longitudinal axes disposed substantially perpendicularly to the longitudinal axis of said iron core, said magnetic flux diffusing members being connected to a metal plate and each having length W_2 which is greater than said transverse dimension W_1 of said iron core,

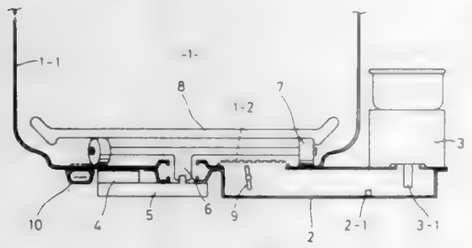
wherein a magnetic flux flows through a closed magnetic circuit comprising said iron core, said magnetic flux diffusing members and said metal plate by connecting said electric wire to a low frequency alternating current power source, the magnetic flux being diffused by spreading from dimension W_1 to length W_2, so that said metal plate is heated by Joule heat.

5,347,108

MICROWAVE OVEN HAVING A FUNCTION FOR MATCHING IMPEDANCE

Hiroshi Minakawa, Higashiosaka; Masatugu Fukui, Osaka; Masayuki Uno, Yamatotakada, and Hiroshi Kinoshita, Nishinomiya, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 21, 1993, Ser. No. 6,959
Claims priority, application Japan, Jan. 23, 1992, 4-010067; Mar. 24, 1992, 4-065829; Sep. 24, 1992, 4-253321; Sep. 25, 1992, 4-256291
Int. Cl.[5] H05B *6/74*
U.S. Cl. 219—696 **68 Claims**



1. A microwave oven comprising:

a heating chamber having an opening through which a microwave is introduced therein,

a turntable provided in said heating chamber for supporting a substance to be heated,

means for generating a microwave,

a waveguide for guiding said microwave into said heating chamber via said opening,

means provided at the inner wall face of said waveguide or said heating chamber for detecting an electric field,

a metal reflector provided rotatably about a predetermined shaft in the proximity of said opening in the interior of said waveguide for adjusting impedance of load at the side of said heating chamber by a rotation angle thereof, and

means responsive to an output of said electric field detecting means for controlling the rotation angle of said metal reflector,

wherein said control means comprises

first means for controlling the rotation angle of said metal reflector according to a first control method during a predetermined time period after initiation of operation of said microwave oven, and

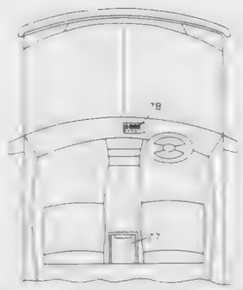
second means for controlling the rotation angle of said metal reflector according to a second control method differing from said first control method after elapse of said predetermined time period after initiation of operation of said microwave oven.

5,347,109

HIGH-FREQUENCY HEATING APPARATUS MOUNTED ON A MOTOR VEHICLE

Yuji Nakabayashi; Naoyoshi Maehara; Daisuke Bessyo, and Takahiro Matsumoto, all of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP91/00998, § 371 Date Mar. 20, 1992, § 102(e) Date Mar. 20, 1992, PCT Pub. No. WO92/02111, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 25, 1991, Ser. No. 842,146
Claims priority, application Japan, Jul. 25, 1990, 2-197250; Nov. 30, 1990, 2-338177
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—716 **18 Claims**



1. A high-frequency heating apparatus which is mounted on a transport device for transporting at least one of human beings, animals and articles, comprising:

a DC power source;

an inverter power source which receives DC power obtained from said DC power source;

a magnetron which is actuated by an output of said inverter power source;

an error amplifier which applies to a pulse width control circuit a signal indicative of difference between..an output signal of a current detecting means for detecting current flowing through said magnetron and an output signal of a reference signal generator; and

a DC output detecting means for directly or indirectly detecting a magnitude of an output of said DC power source;

wherein an operation of said inverter power source is controlled by an output of said pulse width control circuit and an output of said reference signal generator is controlled on the basis of a signal of said DC output detecting means.

16. A high-frequency heating apparatus comprising:

a cell or a DC power source obtained by rectifying AC obtained from a dynamo;

an inverter power source for converting said DC power source into high-frequency AC;

a control circuit for controlling said inverter power source;

a magnetron which is actuated by an output of said inverter power source such that an article to be heated is heated by an output of said magnetron;

an apparatus body including a heating chamber for accommodating the article;

an acceleration detecting means for detecting acceleration applied to said apparatus body, which is incorporated into or provided on said apparatus body; and

an acceleration control means which is actuated by an output of said acceleration detecting means,

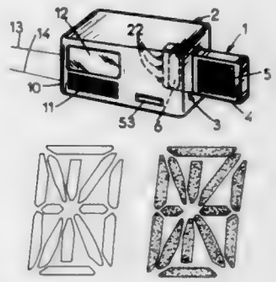
wherein when the output of said acceleration detecting means becomes equal to or more than a predetermined reference acceleration value, said control circuit is operative to stop an operation of said inverter power source.

5,347,110

INFORMATION TRANSMISSION BY THE TIME MODULATION OF A CHARACTER DISPLAY AREA

Yves Audebert, Croissy-sur-Seine, and Achille Delahaye, Chennevieres-Sur-Marne, both of France, assignors to Adventure, Issy-Les-Moulineaux, France

PCT No. PCT/FR90/00569, § 371 Date Jan. 28, 1992, § 102(e) Date Jan. 28, 1992, PCT Pub. No. WO91/02328, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 26, 1990, Ser. No. 820,672
Claims priority, application France, Jul. 28, 1989, 89 10201
Int. Cl.[5] G06K *19/067*
U.S. Cl. 235—380 **7 Claims**



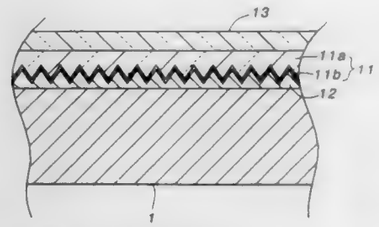
4. Article comprising means for storing binary information to be transmitted to external means for processing said information, and means for commanding the modulation of the reflectance of at least one area of a liquid crystal device forming part of said article, as a function of said information, to permit the transmission of said information by an automatic optical reading of the reflectance of said area, which reading is effected by a reader, wherein said liquid crystal device is a screen comprising a plurality of alphanumeric character display areas, said screen being associated with means for selectively commanding (a) said display of alphanumeric characters on the areas of said screen, in conformity with alphanumeric information to be visually displayed and computed in said article and (b) a time modulation of the reflectance of at least one character area of said screen between two levels of reflectance for the transmission, to said processing means, of serial binary information computed in said article.

5,347,111

AUTHENTICITY IDENTIFYING STRUCTURE FOR AN ARTICLE

Hidekazu Hoshino, Kanagawa, Japan, assignor to NHK Spring Co., Ltd., Kanagawa, Japan

Filed Dec. 23, 1992, Ser. No. 998,067
Claims priority, application Japan, Dec. 26, 1991, 3-357646
Int. Cl.[5] G06K *19/00;* **B42D** *15/00*
U.S. Cl. 235—457 **6 Claims**



1. An identifying structure for determining the authenticity of an article, comprising:

identification region provided on said article including an identification layer having a specific light reflective property, and a polarization plane rotating layer consisting of optically anisotropic material which rotates a plane of polarization of incident light to said identification region when said light is reflected by said identification region substantially by 90°;

light emitting means for projecting incident light upon said light reflecting region, said incident light comprising linearly polarized light having a certain wave length and a plane of polarization extending in a first direction;

light receiving means for receiving exit light therefrom;

a filter provided in association with said light receiving means said filter, allowing transmission of light having a plane of polarization extending in a second direction which is substantially perpendicular to said first direction; and

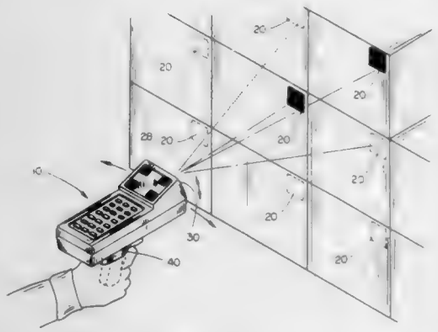
identification means for detecting the authenticity of said article by evaluating said exit light received by said light receiving means.

5,347,112

READER FOR DECODING TWO-DIMENSIONAL OPTICAL INFORMATION

Dennis A. Durbin, Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Filed Mar. 12, 1992, Ser. No. 849,771
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—462 **21 Claims**



1. An apparatus for reading two-dimensional optical information, comprising:

(a) a housing having an opening;

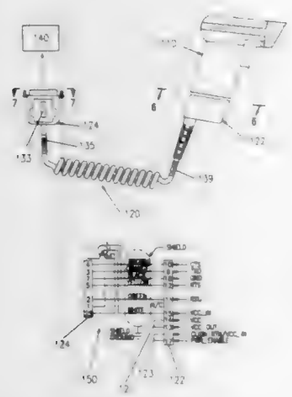
(b) a photosensitive array mounted within said housing;
(b) optical string means associated with said array and said opening of said housing for focusing optical information on said array;
(c) array and optical string control means for controlling said array and optical string;
(d) memory means for storing output from said array;
(d) pattern recognition means for assisting a user in recognizing and confirming the decodability of optical information;
(e) display means associated with said housing for displaying an image of said array output, as processed by said pattern recognition means, said display means further including optical information decodability indication means;
(f) user feedback means, providing user interface with said apparatus, for facilitating user control over said optical string means, array, and display means;
(g) decoding means for decoding optical information; and
(h) electrical power supply means for providing power for the operation of said apparatus.

5,347,113

MULTIPLE-INTERFACE SELECTION SYSTEM FOR COMPUTER PERIPHERALS

Brad R. Reddersen; Phillip W. Shepard, and Rockie D. Moch, all of Eugene, Oreg., assignors to Spectra-Physics Scanning Systems, Inc., Eugene, Oreg.

Continuation-in-part of Ser. No. 34,189, Mar. 22, 1993, which is a continuation of Ser. No. 788,267, Nov. 4, 1991, abandoned. This application Mar. 25, 1993, Ser. No. 39,606
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—462 **16 Claims**



1. A method for configuring a data reader for a particular host comprising the steps of
providing the data reader with sufficient internal hardware and/or firmware so as to be configurable for at least two different hosts;
selecting a matching interconnect cable corresponding to the data reader and the particular host, the interconnect cable having a label thereon containing encoded data which may be read by the data reader;
connecting a first end of the interconnect cable to the data reader a second end to the host;
activating the data reader and the host;
selecting internal hardware and/or firmware for the data reader by the steps of:
reading the encoded data contained on the label of the interconnect cable,
processing the encoded data which contains instructions for selection of internal hardware and/or firmware for the data reader, and
by means of an internal configuration routine, configuring the data reader for the particular host on the basis of the instructions from the encoded data.

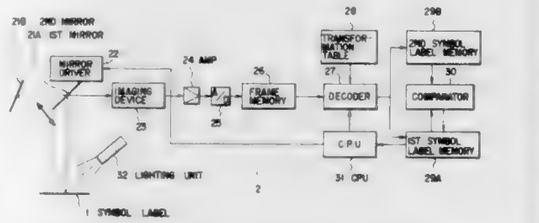
13. An interface connector cable for configuring a handheld data reader for a particular application or host, comprising
a first end connector connectable to the handheld data reader, the first end connecting having at least one electrical connection between two contacts for completing an internal configuration selection circuit within the handheld data reader thereby internally configuring the handheld data reader for the particular application or host;
a label with configuration data encoded thereon, the configuration data comprising information used by the handheld data reader unit to configure itself for the given host; and
an identifying code located on an outer surface of the interface connector cable, the identifying code corresponding to the particular application or host.

5,347,114

BAR CODE SYMBOL READING APPARATUS

Hisakatsu Tanaka, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1992, Ser. No. 957,406
Claims priority, application Japan, Oct. 25, 1991, 3-279068; Sep. 7, 1992, 4-238441
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—467 **19 Claims**



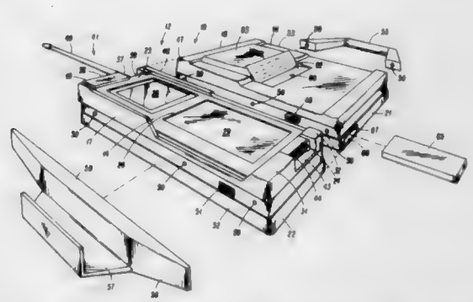
1. A bar code symbol reading apparatus, comprising:
condition-changing means for changing an imaging condition under which a bar code symbol will be imaged;
imaging means for imaging same components of the bar code symbol at least twice by changing the imaging condition at least twice by said condition-changing means, thereby imaging the same components of the bar code symbol under at least two different imaging conditions, and producing at least two respective imaging results;
decoding means for decoding said at least two imaging results of said imaging means to obtain at least two respective decoding results;
at least two storing means for storing said at least two decoding results of said decoding means; and
synthesizing means for synthesizing said at least two image results stored in said at least two storing means to produce a signal corresponding to the imaged bar code symbol.

5,347,115

PORTABLE MODULAR WORK STATION INCLUDING PRINTER AND PORTABLE DATA COLLECTION TERMINAL

Richard A. Sherman, Toddville; Darald R. Schultz; Steven H. Salvay, both of Cedar Rapids; Robert B. Jaeger, Swisher; Patrick H. Davis, and George E. Hanson, both of Cedar Rapids, all of Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 759,740, Sep. 12, 1991, abandoned, and a continuation-in-part of Ser. No. 616,857, Nov. 21, 1990, Pat. No. 5,186,558, said Ser. No. 759,740, is a continuation-in-part of Ser. No. 634,246, Dec. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 463,748, Jan. 12, 1990, abandoned. This application Dec. 21, 1992, Ser. No. 994,428
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—472 **15 Claims**



1. Portable data collection apparatus including a carrying case for a hand-held portable data collection terminal, the carrying case comprising:
a printer module of elongate and generally rectangular shape having oppositely disposed side walls and including a printer mechanism, a self contained power source for operating the printer mechanism and a paper tray for retaining internally of the printer module a continuous supply of printer media;
a docking module of elongate and generally rectangular shape having oppositely disposed side walls, the docking module including a receiving cavity for receiving the portable data collection terminal and means for releasably retaining the data collection terminal within said cavity;
means for attaching the docking module in parallel alignment with the printer module to the printer module, such that one of the side walls of the printer module becomes disposed adjacent and substantially in parallel to one of the side walls of the docking module;
means communicatively coupling the portable data collection terminal to the printer mechanism for transferring data to be printed to the printer mechanism; and
a carrying handle attached to the other of the opposite side walls of the printer module.

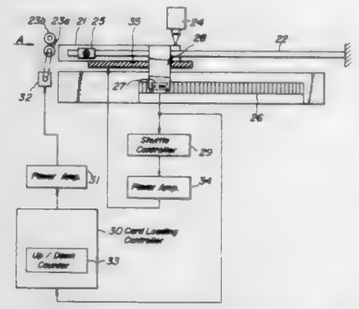
5,347,116

APPARATUS FOR RECORDING AND/OR REPRODUCING INFORMATION ON AND/OR FROM OPTICAL RECORD MEDIUM

Akito Saito, and Tsuyoshi Togawa, both of Hino, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1991, Ser. No. 787,094
Claims priority, application Japan, Nov. 6, 1990, 2-298988
Int. Cl.[5] G06K *13/04*
U.S. Cl. 239—479 **9 Claims**

1. An optical information recording and/or reproducing apparatus comprising:
a movable means for carrying an optical record medium thereon;
an optical head for projecting a recording and/or reproducing light beam onto the optical record medium placed on the movable means to perform information recording and/or reproduction;
an optical record medium loading means for placing the optical record medium on the movable means;
a driving means for moving the movable means with respect to said optical head; and



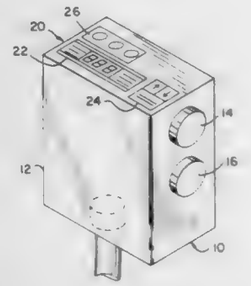
a control means for controlling said driving means such that said movable means is driven into a predetermined card loading position by said driving means prior to placement of said optical record medium on said movable means by said optical record medium loading means.

5,347,117

OPERATOR INTERFACE FOR A PHOTOELECTRIC CONTROL UNIT

Elik I. Fooks; Patrick J. Delaney, III, both of Middlesex County, and Philip E. Johnson, Worcester County, all of Mass., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Dec. 30, 1992, Ser. No. 999,508
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—221 **7 Claims**



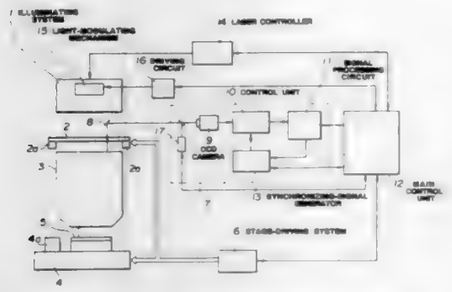
1. A photoelectric control unit for sensing the presence of target objects by periodically transmitting light pulses and synchronously detecting return light pulses, comprising:
an electronic system for periodically generating light pulses and synchronously detecting light pulses including a microprocessor control system having a plurality of different control functions whereby the operational features of said control system can be regulated; and
an operator interface operable in a first programming mode for interactively displaying a plurality of operating parameters to the operator and accepting operator inputs to modify said operating parameters, and a second running mode for displaying indications identifying which of said operating parameters are in active control of said operational features;
wherein said identifying indications comprise a plurality of icons, each of which provides a visual indication as to both the activation of one of said operational features in

said running mode and the selection for interactive modification of the same operational feature in said programming mode.

5,347,118
ALIGNING METHOD AND APPARATUS DETECTING MISALIGNMENT USING IMAGE SIGNALS FROM IMAGE PICKUP

Takehiko Iwanaga, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 2,428, Jan. 8, 1993, abandoned. This application Nov. 22, 1993, Ser. No. 155,538
Claims priority, application Japan, Jan. 17, 1992, 4-026011; Jan. 17, 1992, 4-026085
Int. Cl.[5] G01J *1/32*
U.S. Cl. 250—205 **12 Claims**

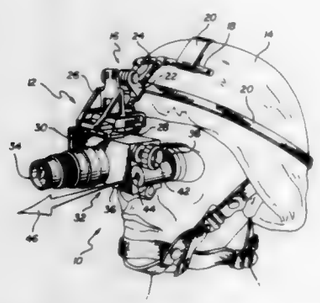


1. An aligning method, comprising the steps of:
detecting misalignment of a substrate using an image signal from image pickup means for receiving light reflected by an alignment mark on the substrate illuminated by pulse light;
moving the substrate in accordance the detected misalignment; and
if the amount of light received by the image pickup means during a predetermined time period does not reach a predetermined value, increasing the predetermined time period, and reducing the amount of light emitted by the source of the pulse light for each pulse if the amount of light exceeds the predetermined value.

5,347,119
NIGHT VISION DEVICE WITH DUAL-ACTION ARTIFICIAL ILLUMINATION

Clifford Connors, Tempe, Ariz., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Jun. 25, 1993, Ser. No. 83,028
Int. Cl.[5] H01J *31/50, 40/14*
U.S. Cl. 250—214 VT **17 Claims**

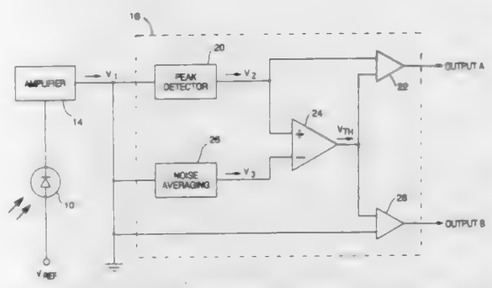


1. A night vision device comprising:
a housing which may be suspended relative to a user's head and eyes, the housing having an objective lens admitting low-level light from a night scene, an image intensifier apparatus providing an intensified image representative of the low-level night scene, and an eye piece into which the user may look with at least one eye to view the intensified representative image;
an infrared supplemental illumination light; and
a singular dual-action control switch for both the image intensifier apparatus and the supplemental light which allows the user to selectively choose between a first mode of switch operation in which the user may purposefully manipulate an external switch feature of the housing in order to momentarily illuminate the supplemental light, the switch automatically extinguishing the supplemental light once the user discontinues manipulation of the switch feature, and a second mode of switch operation in which the supplemental illumination light may be locked on.

5,347,120
METHOD AND APPARATUS FOR PULSED-LASER DETECTION

Lawrence G. Decker, Loveland, Ohio; Janet R. Poston, Alexandria, Ky., and Edward F. Hume, Cincinnati, Ohio, assignors to Cincinnati Microwave, Inc., Cincinnati, Ohio

Continuation of Ser. No. 890,555, May 28, 1992, Pat. No. 5,206,500. This application Apr. 27, 1993, Ser. No. 53,468
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 B **10 Claims**

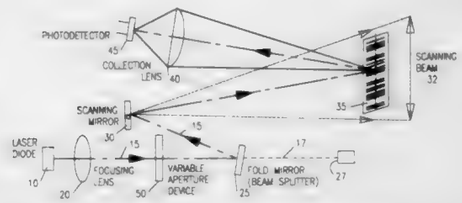


1. A method for determining the strength and proximity of a pulsed-laser radar signal which has been detected by a radar detection apparatus, said radar detection apparatus comprising a photodetector, a decision network coupled to the photodetector, a processor coupled to the decision network, and a threat indicator coupled to the processor, the method comprising:
evaluating the detected signal with the decision network, said decision network generating an output pulse when the detected signal is a valid signal according to predefined criteria implemented in the decision network;
counting output pulses which occur for consecutive detected signals with the processor;
providing a look-up table in the processor having predetermined values therein;
looking up the count in the look-up table and generating a value which corresponds to the count; and
driving the output level of the threat indicator in proportion to the generated value.

5,347,121
VARIABLE FOCUS OPTICAL SYSTEM FOR DATA READING

Robert W. Rudeen, Eugene, Oreg., assignor to Spectra-Physics Scanning Systems, Inc., Eugene, Oreg.

Filed Dec. 18, 1992, Ser. No. 992,932
Int. Cl.[5] G06K *7/10*
U.S. Cl. 250—235 **37 Claims**

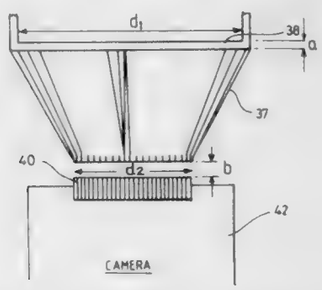


1. An optical system for data reading, comprising:
a light source generating an optical beam along an outgoing optical path toward an object to be read;
a focusing system positioned in the outgoing optical path for focusing the optical beam to a given focal point;
means for varying position of the focal point of the optical beam comprising an aperture device positioned in the outgoing optical path, the aperture device comprising a module with a plurality of LCD regions wherein activation of certain of said LCD regions defines and varies an opening therethrough of a plurality of different size aperture widths;
a scanning apparatus for receiving the optical beam which has passed through the aperture device and for producing a scanning pattern of the optical beam toward the object; and
a detector for detecting light reflecting and/or scattered off the object.

5,347,122
LIGHT TRANSMISSION SYSTEM WITH PHOTON TRANSFER TO AN OPTICAL DETECTOR AND CELL INVESTIGATION TECHNIQUES USING THE LIGHT TRANSMISSION SYSTEM

Richard E. Ansorge; Clare E. Hooper, both of Cambridge; William W. Neale, Great Wilbraham, and Philip Stanley, Cambridge, all of Great Britain, assignors to Cambridge Imaging Limited, Cambridge, Great Britain

PCT No. PCT/GB90/01920, § 371 Date May 15, 1992, § 102(e) Date May 15, 1992, PCT Pub. No. WO91/09300, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 10, 1990, Ser. No. 849,436
Claims priority, application United Kingdom, Dec. 8, 1989, 8927754
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.11 **19 Claims**

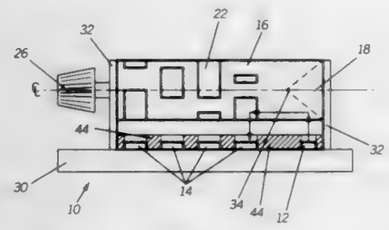


1. A light transmission system in which photon emission from material on a first surface is to be transferred to an optical detector, comprising a fibre optic face plate located between the first surface and the detector with a gap between the face plate and the detector, wherein the detector includes a fibre optic plate entry window which in combination with said fibre optic face plate forms a focused image of discrete photon emitting sites on the first surface of said detector.

5,347,123
OPTICAL CONTROL SWITCH DEVICE HAVING A PLURALITY OF LIGHT RECEPTORS

Gregory D. Jackson, Sunrise; David E. Reiff, and Mac W. Branan, both of Ft. Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 6, 1993, Ser. No. 57,377
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—229 **20 Claims**

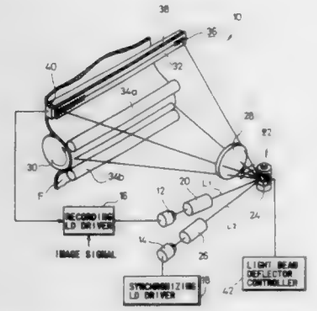


1. An optical control device comprising:
a light source;
a plurality of light receptors coplanarly disposed with said light source;
a light director having a plurality of optical apertures arranged to selectively direct light to the plurality of light receptors, the light director having integrally formed means for directing light from said light source to the plurality of optical apertures in said light director.

5,347,124
CONTROL SYSTEM FOR OSCILLATORY-MIRROR LIGHT BEAM DEFLECTOR

Yasunori Narukawa, Kanagawa, and Akinori Hamana, Omiya, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa and Fuji Photo Optical Co.,, Saitama, both of Japan

Filed Jun. 16, 1993, Ser. No. 77,037
Claims priority, application Japan, Jun. 17, 1992, 4-158268
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—235 **7 Claims**



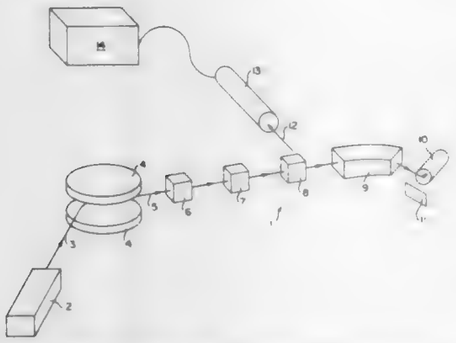
1. A control system for controlling an oscillatory-mirror light beam deflector, comprising:
a drive circuit for applying a drive signal to energize the oscillatory-mirror light beam deflector;
detector means for detecting the drive condition of the oscillatory-mirror light beam deflector and producing a

drive condition signal indicative of the detected drive condition;
a PID processor circuit having a proportional circuit, an integrator, and a differentiator, for generating an adjusting signal derived from said drive condition signal; and
a processor for processing said drive condition signal with said adjusting signal to thereby produce said drive signal.

5,347,125
MASS SPECTROMETER HAVING MEANS FOR OBSERVING THE RADIATION EMITTED WHEN IONS COLLIDE WITH A TARGET GAS

John L. Holmes, Ottawa, and Alexander A. Mommers, Vanier, both of Canada, assignors to Fisons plc, Ipswich, England

Filed May 28, 1993, Ser. No. 68,743
Claims priority, application United Kingdom, May 29, 1992, 9211458.6
Int. Cl.[5] B01D *59/44*; H01J *49/00*
U.S. Cl. 250—281 **22 Claims**



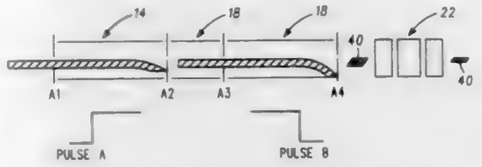
13. A substantially enclosed collision cell comprising:
a wall bounding said collision cell;
an entrance aperture and an exit aperture in said wall, through which an ion beam may be passed to traverse said collision cell;
an observation region in said collision cell adjacent to said entrance aperture;
a first window in said wall through which radiation generated in said observation region may pass; and
an exit region in said collision cell adjacent to said exit aperture and in communication with said observation region, said exit region comprising radiation-trapping means for minimizing the transmission to said first window of radiation generated in said exit region;
wherein said radiation-trapping means comprises a blackened coating on the wall of said collision cell in said exit region; and
the wall of said collision dell in said observation region opposite to said first-window comprises a highly polished concave surface.

5,347,126
TIME-OF-FLIGHT DIRECT RECOIL ION SCATTERING SPECTROMETER

Alan R. Krauss, Naperville; Dieter M. Gruen, Downers Grove, and George J. Lamich, Orland Park, all of Ill., assignors to ARCH Development Corporation, Chicago, Ill.

Filed Jul. 2, 1992, Ser. No. 908,282
Int. Cl.[5] H01J *37/147*
U.S. Cl. 250—309 **25 Claims**

1. A time-of-flight direct recoil ion scattering spectrometer, comprising:
means for producing a paraxial beam of ions;
means for pulsing said beam of ions, said pulsing means operative to dynamically adjust the interval between successive beam pulses in accordance with the combination of ion beam mass and energy to maximize repetition rate consistent with resolved data separation, said means for pulsing comprising a plurality of pulsed deflection plates separated from each other by an ion drift space for removing ions with laterally directed velocities;

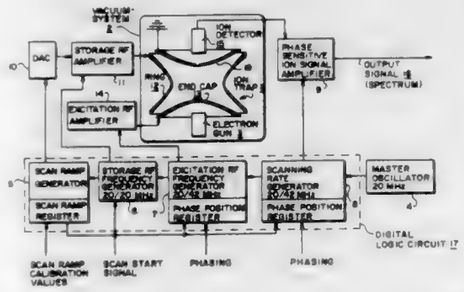


means for detecting particles emitted from a sample bombarded by said pulsed beam of ions; and
means for providing differential pumping of an incoming ion beam path and an outgoing beam path of said spectrometer.

5,347,127
METHOD AND DEVICE FOR IN-PHASE EXCITATION OF ION EJECTION FROM ION TRAP MASS SPECTROMETERS

Jochen Franzen, Bremen, Fed. Rep. of Germany, assignor to Bruker-Franzen Analytik, GmbH, Bremen, Fed. Rep. of Germany

Filed Dec. 23, 1992, Ser. No. 996,058
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1991, 4142871
Int. Cl.[5] B01D *59/44*; H01J *49/00*
U.S. Cl. 250—292 **26 Claims**

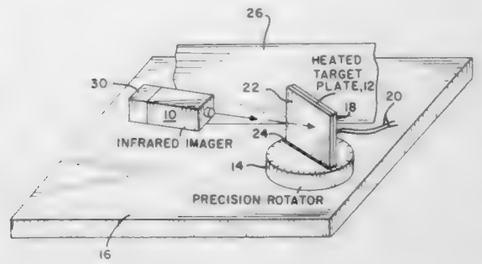


15. Apparatus for recording a mass spectrum, the apparatus comprising:
a quadrupole storage ion trap;
a storage signal generator for applying to the storage ion trap an oscillating storage signal having an amplitude, a frequency and a phase;
an excitation signal generator for applying to the storage ion trap an oscillating excitation signal having a frequency and a phase relative to the frequency and phase of the storage signal;
an ion detection circuit for detecting ions ejected from the trap and generating an output signal, the ions being ejected from the trap in groups of ion pulses, all of the ion pulses in an ion pulse group comprising ions of substantially equal masses and being ejected during an ejection cycle corresponding to that group, each ejection cycle being of a finite time duration;
a frequency control circuit which sets the frequency of the excitation signal relative to the frequency of the storage signal such that the phase of the excitation signal coincides with the phase of the storage signal periodically and the time period between said phase coincidences is t; and
a scanning control circuit which varies the amplitude of the storage signal to consecutively eject ion pulse groups from the trap such that the time between the start of successive ejection cycles is constant and equal to t.

5,347,128
DIRECTIONAL EMITTANCE SURFACE MEASUREMENT SYSTEM AND PROCESS

Chith K. Puram, Yorktown; Kamran Daryabeigi, Virginia Beach; Robert Wright, and David W. Alderfer, both of Newport News, all of Va., assignors to Vigyan, Inc., Hampton, Va.

Filed Apr. 19, 1993, Ser. No. 49,126
Int. Cl.[5] G01N *21/71, 25/00*
U.S. Cl. 250—330 **17 Claims**

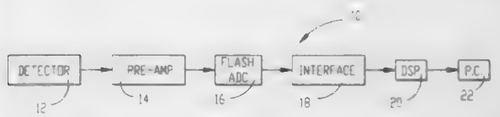


1. Apparatus for measuring variations of directional emittance of surfaces at different temperatures comprising:
a flat surface target plate test specimen;
means for heating said target plate test specimen over a selected and controlled incremental temperature range;
an infrared imager disposed at a fixed distance from and in optical alignment with said target plate test specimen;
means for selectively rotating said target plate test specimen to vary the inclination angle thereof relative to said infrared imager;
means for measuring target plate temperature data from said infrared imager;
means for measuring the inclination angle; and
means for calculating directional emittance values from the measured temperatures from said infrared imager and measured inclination angles.

5,347,129
SYSTEM FOR DETERMINING THE TYPE OF NUCLEAR RADIATION FROM DETECTOR OUTPUT PULSE SHAPE

William H. Miller, and Ronald R. Berliner, both of Columbia, Mo., assignors to University of Missouri-Columbia, Columbia, Mo.

Filed Apr. 14, 1993, Ser. No. 48,272
Int. Cl.[5] G01T *1/00, 1/15*
U.S. Cl. 250—336.1 **17 Claims**

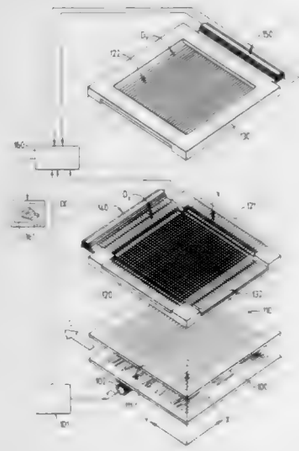


1. An apparatus for determining the presence and type of nuclear radiations comprising:
detector means for detecting the presence of a nuclear radiation and, in response, for producing a detector signal representative thereof, said detector signal having a shape characteristic of the radiation including the type of radiation; and
signal processing means including means for receiving said detector signal and responsive thereto for determining the type of the radiation, said signal processing means including
memory means for storing a reference pulse shape digital data set characteristic of a type of radiation,
means for producing a detector pulse shape digital data set representative of the shape of said detector signal, and
value producing means for producing a correlation value representative of the statistical cross correlation between said detector pulse shape digital data set and said reference pulse shape digital data set, said correlation value being indicative of whether the nuclear radiation is said type of radiation characterized by said reference pulse shape digital data set.

5,347,130
METHOD AND DEVICE FOR MEASURING THE DISTRIBUTION OF RADIOACTIVITY ON A FLAT SAMPLE

Fritz Berthold, Pforzheim, Fed. Rep. of Germany, assignor to Laboratorium Prof. Dr. Rudolf Berthold GmbH & Co., KG, Wildbad, Fed. Rep. of Germany

Filed Nov. 25, 1992, Ser. No. 981,391
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1991, 4139368
Int. Cl.[5] G01T *1/185*
U.S. Cl. 250—385.1 **18 Claims**



1. In a device for effecting a location-sensitive measurement of a flat sample of radiation emitting material having a plurality of partial areas, the flat sample lying substantially in a sample plane, which device includes: radiation detector means; a screen plate having radiation passage openings, the screen plate being disposed between the detector means and the flat sample and the radiation passage openings being oriented for directing radiation from the sample to the detector means and the detector means being arranged for detecting radiation emanating from one group of the partial areas in accordance with the shape of the screen plate openings; signal evaluation means for processing and storing information based on radiation detected by the detector means; and means operatively associated with the sample for effecting a relative displacement between the sample and the detector means and for detecting radiation and storing information for another group of partial areas, to produce a total measurement composed of a plurality of successively performed partial measurements which provide a measurement of the total distribution of radiation emitted by the sample, the improvement wherein:
said screen plate has a width and is provided with a plurality of slits which extend in parallel with one another in a first direction substantially parallel to the sample plane, essentially across the entire width of the screen plate, and which constitute said passage openings; and
said detector means are operative for effecting a simulta-

neous, location-sensitive detection of strip-like partial areas of the sample which are in line with the slits;

said means for effecting a relative displacement are operative for causing the relative displacement to occur exclusively in a second direction which is transverse to the first direction and which is substantially parallel to the sample plane;

said device has a desired spatial detection resolution in the second direction;

said signal evaluation means comprise an electronic evaluation unit with a memory device and a display device for displaying measured radiation intensity distribution Z (x, y) of the radiation;

with respect to the first direction, radiation from the sample is detected in a location-sensitive manner;

said slits in said screen plate each have a width dimension, which is in the second direction, with a value that at least approximately corresponds to the desired spatial detection resolution in the second direction; and

said means for effecting a relative displacement are operative for producing successive displacements through a distance not greater than the slit width dimension between successive measurements effected by said detector means.

5,347,131

GAS IONIZING-RADIATION DETECTOR

Georges Charpak, 37 Rue de la Plaine, 75020 Paris, France

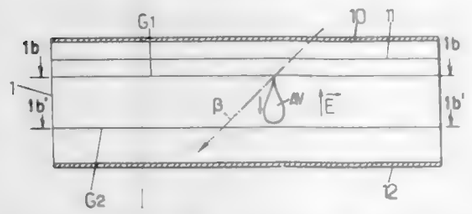
PCT No. PCT/FR92/00743, § 371 Date May 12, 1993, § 102(e) Date May 12, 1993

PCT Filed Jul. 29, 1992, Ser. No. 50,096

Claims priority, application France, Jul. 29, 1991, 91 09604

Int. Cl.[5] H01J *47/02*

U.S. Cl. 250—385.1 **13 Claims**



1. Gas ionizing-radiation detector, comprising in a sealed enclosure a gas generating ionization electrons by the avalanche phenomenon, and at least two grids held at different electrical potentials and making it possible to accelerate the ionization electrons, wherein at least one of said grids is formed in a first direction by a plurality of electrically insulating wires acting as a support, and in a second direction, distinct from the first, by a plurality of electrically conducting wires, said wires directed along the first and second directions respectively forming a woven mesh.

5,347,132

POSITION SENSITIVE DETECTOR PROVIDING POSITION INFORMATION WITH ENHANCED RELIABILITY AND PERFORMANCE

Louis M. Holzman; Thomas F. Kelly, both of Madison, and Patrick P. Camus, Middleton, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jul. 30, 1993, Ser. No. 99,938

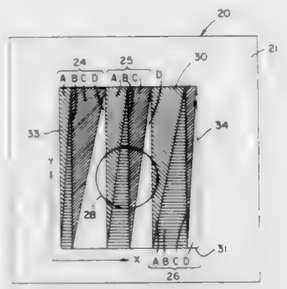
Int. Cl.[5] G01T *1/29*

U.S. Cl. 250—389 **44 Claims**

19. A position sensitive detector comprising:

(a) means for converting an event impact into an emitted cloud of electrons correlated to the position of impact;

(b) a position sensitive anode unit mounted adjacent to the means for converting to receive the cloud of electrons emitted therefrom, the position sensitive anode unit comprising a plurality of sets of electrode elements formed on a planar surface of a substrate, each set comprising first, second, third and fourth electrode elements electrically isolated from each other, the first and third electrode elements having wedge shapes tapering from the top to the bottom of the unit and the second and fourth electrode elements having wedge shapes tapering from the bottom to the top, the sets arranged adjacent to each other between the left and right sides of the unit, the first and second electrode elements in each set increasing progressively in width from set to set across the unit and the third and fourth electrode elements decreasing progressively in



width from set to set across the unit, and electrical conductors connecting together all of the first electrode elements in all of the sets to form a first electrode, all of the second electrode elements in all of the sets to form a second electrode, all of the third electrode elements in all of the sets to form a third electrode, and all of the fourth electrodes in all of the sets to form a fourth electrode; and

(c) means for measuring the charge on each of the first, second, third and fourth electrodes and means for calculating the position of a charge impact on the anode unit from the measured charges.

5,347,133

POWDER AGITATOR

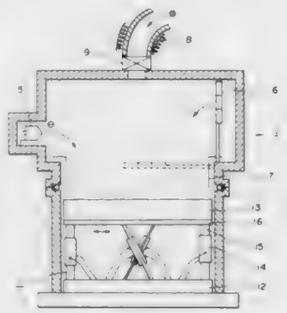
Hitoshi Toki; Yoshihisa Yonezawa, and Shigeo Itoh, all of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Jun. 25, 1993, Ser. No. 82,460

Claims priority, application Japan, Jun. 25, 1992, 4-191682

Int. Cl.[5] H01J *5/00*

U.S. Cl. 250—492.3 **4 Claims**



1. A powder agitator in combination with an ion implantation device or an ionized beam deposition device, comprising:

a vessel for receiving powders therein; and

a drive section coupled to said vessel for vertically moving said vessel while rotating said vessel and keeping said vessel horizontal;

said drive section carrying out rotation of said vessel while alternating a direction of rotation of said vessel and varying a rotational speed of said vessel depending on the direction of rotation of said vessel.

5,347,134

APPARATUS FOR REPAIRING DEFECTS IN EMULSION MASKS BY PASSING LASER LIGHT THROUGH A VARIABLE SHAPED APERTURE

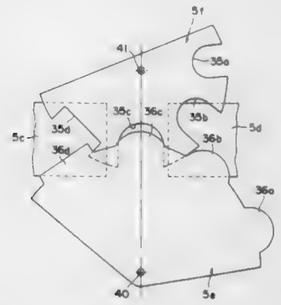
Hiroyuki Hashimoto, and Kazuo Watanabe, both of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Division of Ser. No. 530,276, May 30, 1990, abandoned. This application Oct. 8, 1992, Ser. No. 957,897

Claims priority, application Japan, Jun. 6, 1989, 1-143248; Jun. 12, 1989, 1-149253; Sep. 14, 1989, 1-238872; Sep. 14, 1989, 1-238873

Int. Cl.[5] H01L *21/64*

U.S. Cl. 250—492.1 **19 Claims**



1. An apparatus for repairing a defect in an emulsion layer of an emulsion mask, comprising: a laser oscillator for generating a laser light; an aperture means comprising an aperture for shaping the laser light upon passage of the light through it, said aperture means further comprising a plurality of blades having edges, wherein the edges overlie one another to form said aperture, the edge of at least one of said blades having a curved protrusion and the edge of at least another blade having a curved cutout, said protrusion and cutout being cooperable to define a curved contour of the aperture, said blades being adjustable in position to change the shape and size of the aperture; and means for projecting the laser light through said aperture onto the emulsion layer to form an image of the aperture on the defect so as to remove the defect.

5,347,135

METHOD AND APPARATUS EMPLOYING A LINEAR ARRAY IR REGION RADIATION DEVICES FOR LOCATING THE POSITION OF CONVEYOR TRANSPORTED PRODUCTS

David E. Harris, Powell, and Brent E. Bowman, Hilliard, both of Ohio, assignors to Harris Instrument Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 720,260, Jun. 24, 1991, Pat. No. 5,220,177. This application Apr. 1, 1993, Ser. No. 41,792

The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.

Int. Cl.[5] G01N *21/86;* **G01V** *9/04*

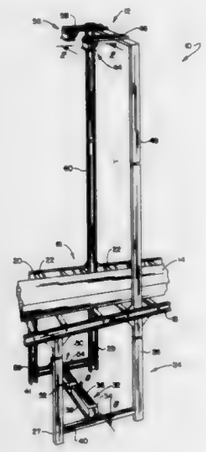
U.S. Cl. 250—548 **26 Claims**

1. Apparatus for locating an edge of material, comprising:

an array of discrete radiation emitting devices located a select distance from one side of said material and extending partially outwardly from said edge, each said device being responsive to the application of current thereto to emit infra-red radiation;

a photoresponsive receiver responsive to radiation in the visible and infra-red regions of the electromagnetic spectrum, located a stand-off distance from the opposite side of said material and positioned for response to said infra-red radiation which transitions between conditions of attenuation and non-attenuation in the vicinity of said edge to derive output signals corresponding with the amplitudes thereof;

a drive network responsive to control inputs for applying said current to said discrete radiation emitting devices; and



a control circuit for deriving said control inputs at a predetermined frequency and responsive to said photoresponsive receiver output signals for deriving a time-based trigger signal corresponding with the location of said edge.

5,347,136

CONDUIT CONSTRUCTION LASER SYSTEM AND LASER BEAM RECEIVER

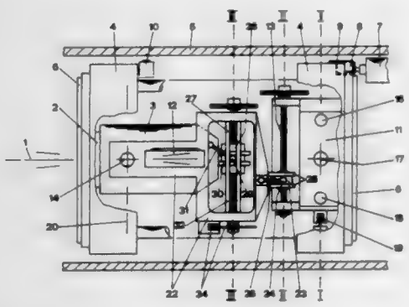
Hans-Rudolf Ammann, Amriswil, Switzerland, assignor to Ammann Lasertechnik AG, Amriswil, Switzerland

Filed Nov. 10, 1992, Ser. No. 974,179

Claims priority, application Switzerland, Nov. 25, 1991, 03440/91

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—206.3 **15 Claims**



1. A conduit construction laser system having automatic levelling of the longitudinal axis and means for adjusting the inclination and the lateral alignment of the laser beam, said system comprising a light source for producing the laser beam, wherein the light source has a front end and a rear end and is mounted for pivotal movement about mutually perpendicular pivot axes that intersect adjacent the front end from which the laser beam is emitted, and wherein the light source is pivotable about its longitudinal axis and about a transverse axis; and an adjusting device articulated to the rear end of the light source,

said adjusting device having means for adjusting the horizontal displacement of the rear end of the light source so that the light source is pivotable about a vertical axis for the lateral alignment of the laser beam, and further means for adjusting the vertical displacement of the rear end of the light source so that the light source is pivotable about a horizontal axis for levelling the laser beam.

5,347,137

MULTI LENS FOR EFFICIENT COLLECTION OF LIGHT AT VARYING DISTANCES

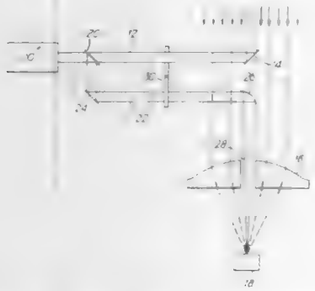
Graham S. B. Street, Reading, United Kingdom, assignor to Imatronic Limited, Berkshire, United Kingdom

Filed Jul. 8, 1992, Ser. No. 856,959

Claims priority, application United Kingdom, Sep. 17, 1990, 9020285

Int. Cl.[5] **G01N** *21/86*

U.S. Cl. 250—561 **9 Claims**



1. Optical apparatus comprising a light beam source; light detector means and convergent optical means for directing light returned from a target onto the detector means, characterised in that the convergent optical means comprises a plurality of zonal elements each having an associated target distance at which returned light is directed optimally onto the detector means, the light gathering capability of the respective elements varying as between the elements with an increase in associated target distance so as to compensate for the reduction in the intensity of reflected light as a function of said distance.

5,347,138

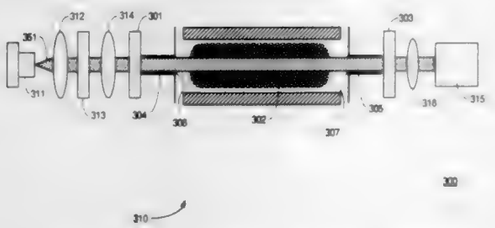
IN SITU REAL TIME PARTICLE MONITOR FOR A SPUTTER COATER CHAMBER

Derek G. Aqui, San Jose, and Peter G. Borden, San Mateo, both of Calif., assignors to High Yield Technology, Sunnyvale, Calif.

Filed Apr. 1, 1993, Ser. No. 41,088

Int. Cl.[5] **G01N** *15/06*

U.S. Cl. 250—573 **18 Claims**



1. An apparatus for monitoring particles in a process chamber for a sputter deposition process using plasma, said process chamber having first and second ports allowing access to said plasma in said process chamber, comprising:

a laser source for providing an incident laser beam;

a set of optical components for collimating, polarizing and focussing said laser beam through said first and second ports on said plasma; and

a detector for detecting from a measurement of the phase of said incident laser beam particles in said plasma passing through said incident laser beam.

5,347,139

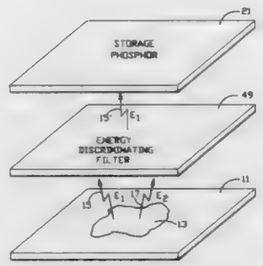
DUAL ENERGY TRACER QUANTITATIVE ANALYSIS

David L. Barker, Foster City; Richard F. Johnston, Murphys, and Siobhan C. Pickett, Palo Alto, all of Calif., assignors to Molecular Dynamics, Sunnyvale, Calif.

Continuation of Ser. No. 710,140, Jun. 4, 1991, abandoned. This application Jan. 12, 1993, Ser. No. 4,229

Int. Cl.[5] **G03G** *5/16;* **G01J** *5/04*

U.S. Cl. 250—583 **10 Claims**



1. A method for quantitative analysis of two target substances existing on a substrate comprising:

tagging first and second target substances on a substrate with primary and secondary labels, respectively, the primary label having a more energetic radiation emission characteristic than the secondary label, radiation emitted by the labels having the property of activating storage phosphor material,

providing the substrate with a set of standards for each label,

exposing a first radiation storage phosphor material to said substrate containing said tagged target substances and said standards, thereby creating a latent image on said first radiation storage phosphor material,

exposing a second radiation storage phosphor material to said substrate through a radiation emission attenuating membrane, said membrane attenuating substantially more of the less energetic radiation from the target substance tagged with the secondary label than the more energetic radiation from the target substance tagged with the primary label, thereby creating a second latent image on said second radiation storage phosphor material with a relatively larger intensity contribution from the primary label than that from the secondary label as compared to corresponding contributions to the latent image on the first radiation storage phosphor material,

developing the latent images to produce first and second image patterns,

constructing an image intensity curve from each of said image patterns such that exposure efficiencies of said labels are substantially constants in said curves,

calculating the exposure efficiency, E, for each label under both exposuring steps from portions of said image intensity curves corresponding to said set of standards for each label and from an independent measurement of radiation emitted from each standard on said substrate, yielding four efficiencies, E_{1P}, E_{2P}, E_{1S}, E_{2S} where

E_{1P}=Efficiency for primary label in first radiation storage phosphor material exposing step

E_{2P}=Efficiency for primary label in second radiation storage phosphor material exposing step

E_{1S}=Efficiency for secondary label in first radiation storage phosphor material exposing step

E_{2S}=Efficiency for secondary label in second radiation storage phosphor material exposing step,

measuring integrated image intensity per spot area on each image intensity curve as concentrations C_1 and C_2, and solving the two equations for D_P and D_S

$$C_1 = E_{1P}D_P + E_{1S}D_S$$

$$C_2 = E_{2P}D_P + E_{2S}D_S$$

where D_P and D_S is the total radiation per label at said spot area, the total radiation per label indicating the amount of each of the two tagged target substances on the substrate.

5,347,140

RESONANT ELECTRON TRANSFER DEVICE

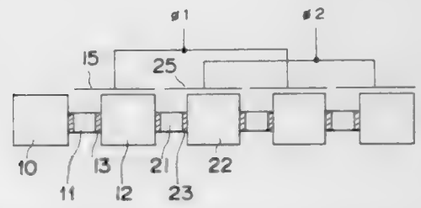
Yoshihiko Hirai, Osaka; Kiyoshi Morimoto; Yasuaki Terui, both of Neyagawa; Atsuo Wada; Kenji Okada, both of Suita; Juro Yasui, Toyonaka, and Masaaki Niwa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 27, 1992, Ser. No. 935,988

Claims priority, application Japan, Aug. 27, 1991, 3-215207; Sep. 12, 1991, 3-232806; Sep. 12, 1991, 3-232807; Oct. 1, 1991, 3-253412; Oct. 2, 1991, 3-255171; Nov. 8, 1991, 3-292777

Int. Cl.[5] **H01L** *29/88*

U.S. Cl. 257—17 **6 Claims**



1. A resonant electron transfer device comprising:

a plurality of one-dimensional quantum wires each having a quantum well elongated in one direction;

a plurality of zero-dimensional quantum dots each having a quantum well whose lowest quantum energy level is higher than that of said quantum wire of said one-dimensional quantum wire; and

a plurality of electrodes formed on said quantum wires and quantum dots for controlling internal potentials of respective quantum wires and quantum dots;

wherein said plurality of quantum wires and quantum dots are arranged alternately so as to form a predetermined connection structure;

wherein one of said quantum wires and an adjacent one of said quantum dots are connected via a potential barrier capable of exhibiting a tunnel effect therebetween;

and wherein information is transmitted from one of said quantum wires to one of said quantum dots or vice versa in accordance with controlling voltages supplied to said plurality of electrodes.

5,347,141

MULTITERMINAL LATERAL S-SHAPED NEGATIVE DIFFERENTIAL CONDUCTANCE DEVICE

Martin N. Wybourne, Eugene, Oreg.; Doran D. Smith, Brick, N.J.; Stephen M. Goodnick, Corvallis, Oreg.; Jong-Ching Wu, and Chris Berven, both of Eugene, Oreg., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 9, 1993, Ser. No. 149,256

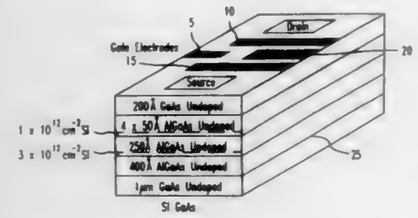
Int. Cl.[5] **H01L** *29/80*

U.S. Cl. 257—24 **4 Claims**

1. A multiterminal lateral device comprising:

a heterointerface having a double real space constriction and potential barrier structure formed around an electron cache region; and

a plurality of terminals formed over the heterointerface, the terminals being configured such that an S-shaped negative differential conductance is exhibited in the device;



wherein the plurality of terminals includes at least a source and a drain terminal and a split gate configuration formed between the source and drain terminals.

5,347,142

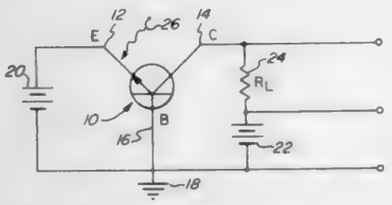
MODES OF INFRARED HOT ELECTRON TRANSISTOR OPERATION IN INFRARED DETECTION

Kwong-Kit Choi, Tinton Falls, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 25, 1993, Ser. No. 82,316

Int. Cl.[5] **H01L** *27/14, 31/00*

U.S. Cl. 257—29 **4 Claims**



1. An infrared detection circuit comprising:

an infrared hot electron transistor having an emitter, base, and collector, the base being common;

an emitter voltage supply connected between the emitter and the base;

a collector voltage supply connected between the collector and the base; and

a load connected between the collector and said collector supply voltage,

wherein an amplified output voltage is obtained when infrared radiation is detected by said infrared hot electron transistor and wherein:

$$\frac{R_L}{r} > \left(\frac{1}{\alpha} - 1\right)$$

wherein,

R_L=the value of said load,

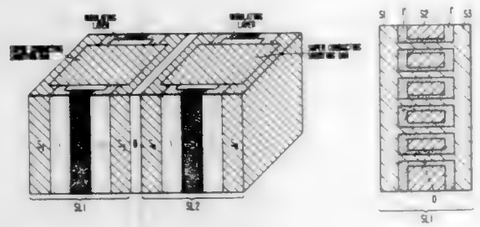
r=the value of the internal resistance between the emitter and the base, and

α=the value of said infrared hot electron transistor photocurrent transfer ratio.

5,347,143
TUNNELLING BARRIER BETWEEN TWO NON-TUNNELLING SUPERCONDUCTOR-INSULATOR-CONTROLLING SUPERCONDUCTOR-INSULATOR-SUPERCONDUCTOR STRUCTURES

Hehrwart Schröder, Überlingen-Hödingen, Fed. Rep. of Germany, assignor to Dornier Luftfahrt GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 884,087, May 18, 1992, abandoned.
This application Aug. 9, 1993, Ser. No. 103,307
Claims priority, application Fed. Rep. of Germany, May 17, 1991, 4116120
Int. Cl.[5] H01L *39/22, 39/24*
U.S. Cl. 505—191 **22 Claims**

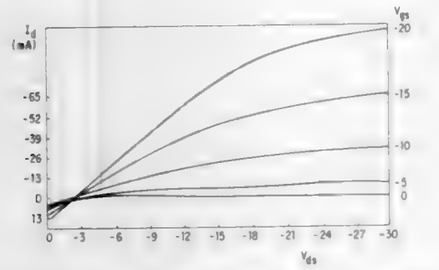


1. A controllable superconductor structure, comprising:
a first superconducting layer of material;
a second superconducting layer of material substantially parallel to and electrically connected with said first superconducting layer; and
a control superconducting layer of material formed between and electrically insulated from said first and second layers, said superconducting control layer having inputs to receive a variable control current for controlling the controllable superconductor structure.

5,347,144
THIN-LAYER FIELD-EFFECT TRANSISTORS WITH MIS STRUCTURE WHOSE INSULATOR AND SEMICONDUCTOR ARE MADE OF ORGANIC MATERIALS

Francis Garnier, Champigny; Gilles Horowitz, Villebon sur Yvette, and Denis Fichou, Paris, all of France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France

PCT No. PCT/FR91/00541, § 371 Date Jan. 3, 1993, § 102(e) Date Jan. 3, 1993, PCT Pub. No. WO92/01313, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 4, 1991, Ser. No. 966,048
Claims priority, application France, Jul. 4, 1990, 90 08488
Int. Cl.[5] H01L *29/28*
U.S. Cl. 257—40 **14 Claims**

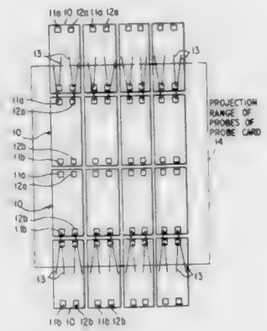


1. A thin-layer field-effect transistor (TFT) with an MIS structure comprising a thin semiconductor layer between a source and a drain, said thin semiconductor layer being in contact with one surface of a thin layer made of insulating material, and said thin insulating layer being in contact by its other surface with a conducting grid, wherein said semiconductor is composed of at least one polyconjugated organic compound which contains at least 8 conjugated bonds and has a molecular weight of no greater than approximately 2,000, and wherein said thin layer of insulating material comprises an insulating organic polymer having a dielectric constant at least equal to 5.

5,347,145
PAD ARRANGEMENT FOR A SEMICONDUCTOR DEVICE

Hiroaki Tanaka, Yokohama, and Masaru Koyanagi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 26, 1991, Ser. No. 813,524
Claims priority, application Japan, Dec. 27, 1990, 2-418770
Int. Cl.[5] H01L *23/02*
U.S. Cl. 257—48 **27 Claims**



1. A semiconductor device, comprising:
a rectangular semiconductor chip including an integrated circuit;
a plurality of voltage stress examination pads on said semiconductor chip for receiving a stress examination voltage to be applied to said integrated circuit, said voltage stress examination pads including groups of pads, wherein the pads of each group are connected to each other, a first pad of each group is arranged adjacent to a first side of said rectangular semiconductor chip, and a second pad of each group is arranged adjacent to a second side of said rectangular semiconductor chip, said second side being opposite said first side.

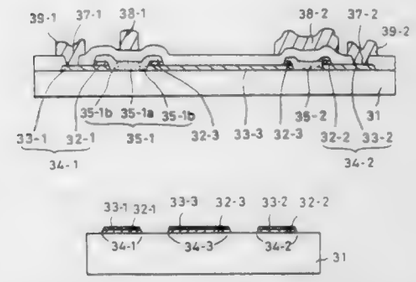
5,347,146
POLYSILICON THIN FILM TRANSISTOR OF A LIQUID CRYSTAL DISPLAY

Hoe S. Soh, Kwacheon, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 30, 1992, Ser. No. 998,533
Claims priority, application Rep. of Korea, Dec. 30, 1991, 25534/1991
Int. Cl.[5] H01L *27/01, 27/13, 29/48*
U.S. Cl. 257—59 **10 Claims**

9. A thin film transistor comprising:
a substrate;
a first semiconductor layer formed over one side portion of an upper surface of the substrate and provided with at least one exposed edge, the first semiconductor layer also having a contact at its upper surface;
a second semiconductor layer formed over the other side portion of the upper surface of the substrate and provided with at least one exposed edge, the second semiconductor layer also having a contact at its upper surface;
a third semiconductor layer formed over the upper surface

of the substrate between both side portions thereof and provided with at least one exposed edge;
a first active semiconductor layer formed over the upper surface of the substrate such that it is in contact with the facing edges of the first and third semiconductor layers;
a second active semiconductor layer formed over the upper surface of the substrate such that it is in contact with the facing edges of the second and third semiconductor layers;
a gate insulating film formed over the resultant entire exposed surface of the substrate and all layers formed thereon, except for the contacts of the first and second semiconductor layers;

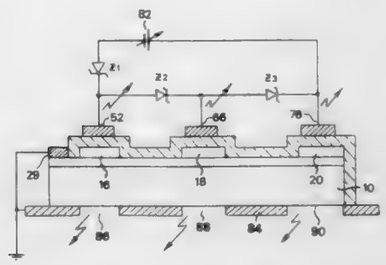


a first electrode formed over the gate insulating film and connected with the first semiconductor layer through the contact of the first semiconductor layer;
a second electrode formed over the gate insulating film and connected with the second semiconductor layer through the contact of the second semiconductor layer;
a first gate electrode formed over the gate insulating film and having a width smaller than the width between the first and third semiconductor layers; and
a second gate electrode formed over the gate insulating film such that it is disposed above the second active semiconductor layer.

5,347,147
LIGHT EMITTING DIAMOND DEVICE

Barbara L. Jones, 80 Chisbury Close, Forest Park, Bracknell, RG 12 3TX, England

Continuation of Ser. No. 800,226, Nov. 29, 1991, abandoned.
This application Dec. 6, 1993, Ser. No. 163,392
Claims priority, application United Kingdom, Nov. 28, 1990, 9025837.7
Int. Cl.[5] H01L *33/00, 31/12, 31/16, 49/00*
U.S. Cl. 257—77 **15 Claims**

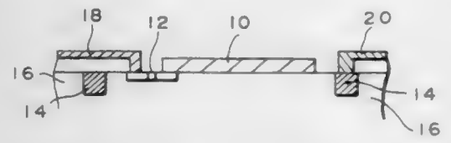


1. A light emitting device comprising:
a substrate of transparent intrinsic diamond material having a p-type region formed therein;
a first transparent layer of diamond material deposited over the p-type region and covering at least a portion thereof;
at least one optically transparent conductive contact on or adjacent to the first transparent layer, said at least one optically transparent conductive contact being transparent to visible light; and
a conductive contact applied to the first p-type region.

5,347,148
SEMI-INSULATING COMPOUND SEMICONDUCTOR DEVICE

Kuninobu Tanaka, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Nov. 25, 1992, Ser. No. 981,485
Claims priority, application Japan, Nov. 27, 1991, 3-335823
Int. Cl.[5] H01L *27/04*
U.S. Cl. 257—173 **10 Claims**

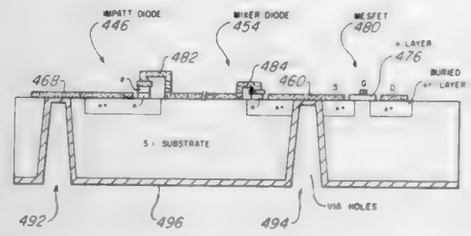


1. A semi-insulating compound semiconductor device, comprising:
an element formation region containing an element;
an input terminal portion for said element on a surface of a part of said element formation region, said input terminal portion having a protection diode connected thereto;
a conduction region at least partially surrounding the input terminal portion and protection diode and positioned between said input terminal portion and said element, said conduction region extending downwardly from said surface of said element formation region and terminating at a depth which allows an input path between said input terminal portion and a remainder of said element formation region containing said element; and
said conduction region being connected to a potential which is sufficient to prevent low-frequency oscillation of said element.

5,347,149
INTEGRATED CIRCUIT AND METHOD

Burhan Bayraktaroglu, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 29, 1989, Ser. No. 443,538
Int. Cl.[5] H01L *29/161, 29/90*
U.S. Cl. 257—192 **13 Claims**



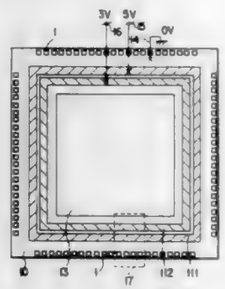
1. An integrated circuit including both two-terminal and three terminal devices, comprising:
(a) a first layer of semi-insulating semiconductor material including doped contact regions;
(b) a second layer of doped semiconductor material on said first, layer, said second layer including a plurality of electrically isolated regions, a first of said isolated regions forming an IMPATT diode avalanche drift region and located on one of said contact regions, and a second of said isolated regions forming a FET channel region and located straddling two of said contact regions;

(c) a top IMPATT region on said first disconnected region; and
(d) a gate over said FET channel region.

5,347,150
SEMICONDUCTOR INPUT/OUTPUT CIRCUITS OPERATING AT DIFFERENT POWER SUPPLY VOLTAGES

Izumi Sakai; Yukinori Uchino, both of Yokohama; Yasunori Tanaka, Yokosuka, and Toshiaki Mori, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1993, Ser. No. 39,666
Claims priority, application Japan, Mar. 31, 1992, 4-105957; Dec. 14, 1992, 4-353626
Int. Cl.[5] H01L *27/10*
U.S. Cl. 259—203 **21 Claims**



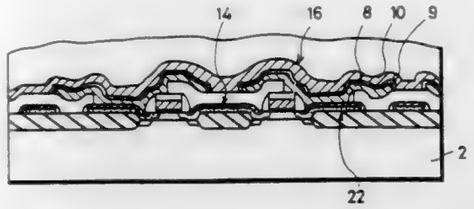
1. A semiconductor integrated circuit device comprising:
a semiconductor substrate;
a plurality of interface terminals on a peripheral portion of said semiconductor substrate;
a main logic circuit portion on said semiconductor substrate;
a plurality of well regions of a conductivity type different from that of said semiconductor substrate, between said interface terminals and said main logic circuit portion, at least one of said well regions being biased at a potential different from that of said semiconductor substrate; and
a plurality of interface circuits each having a MOSFET in one of said well regions, said MOSFET having a first terminal connected to one of said interface terminals, and a second terminal connected to said main logic circuit portion, and having a CMOS structure,
wherein along each side of said semiconductor substrate, multiple ones of the plurality of well regions extend in parallel.

5,347,151
DRAM WITH MEMORY CELLS HAVING ACCESS TRANSISTOR FORMED ON SOLID PHASE EPITAXIAL SINGLE CRYSTALLINE LAYER AND MANUFACTURING METHOD THEREOF

Masahiro Shimizu; Takehisa Yamaguchi, and Natsuo Ajika, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 797,888
Claims priority, application Japan, Dec. 6, 1990, 2-400683
Int. Cl.[5] H01L *29/78, 23/00*
U.S. Cl. 257—296 **7 Claims**

1. A DRAM with memory cells each having one transistor and one capacitor, comprising:
a silicon substrate of a first conductivity type having a main surface;
a single crystalline silicon layer having an upper surface and a lower surface, said lower surface being in contact with the main surface of said silicon substrate, said single crystalline silicon layer being an epitaxial single crystal layer grown in contact with the main surface of the silicon substrate;
a transistor having first and second impurity regions of a second conductivity type spaced apart from each other on the upper surface of said single crystalline silicon layer, a gate insulating film on the surface of said single crystalline silicon layer, and a gate electrode on the gate insulating film between the first and second impurity regions;
a capacitor having a first electrode layer connected to said

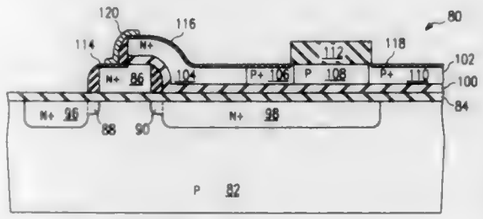


first impurity region of said transistor, a dielectric layer formed on the surface of said first electrode layer and a second electrode layer formed on the surface of said dielectric layer;
a first conductive layer in contact with said gate electrode; and
a bit line comprising a second conductive layer of polycrystalline silicon formed as a common layer as said single crystalline silicon layer and being in contact with said second impurity region of said transistor.

5,347,152
STACKED CMOS LATCH WITH CROSS-COUPLED CAPACITORS

Ravishankar Sundaresan, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 811,891, Dec. 19, 1991, abandoned, which is a continuation of Ser. No. 373,745, Jun. 30, 1989, abandoned. This application Nov. 23, 1993, Ser. No. 156,992
Int. Cl.[5] H01L *27/10;* **G11C** *11/34*
U.S. Cl. 257—304 **10 Claims**

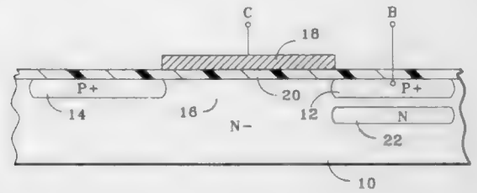


1. A SRAM comprising:
a bulk transisitor having a gate;
a stacked transistor having a gate and first and second source/drain regions; and
a discrete first capacitor plate located between said gate of said bulk transistor and said first source/drain region of said stacked transistor;
wherein said gate of said stacked transistor comprises a first diffused region, said first diffused region also forming a first source/drain region of said bulk transistor and a second capacitor plate.

5,347,153
SHORT CHANNEL TRANSISTORS

Paul E. Bakeman, Jr., South Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 874,673, Apr. 27, 1992, abandoned. This application Sep. 20, 1993, Ser. No. 124,521
Int. Cl.[5] H01L *27/01, 29/00*
U.S. Cl. 257—345 **17 Claims**

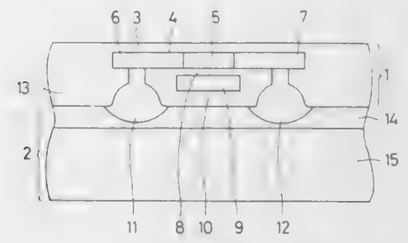


1. A short channel field effect transistor comprising
a semiconductor substrate having a given surface and a given type dopant,
a source electrode disposed within said semiconductor substrate, said source electrode having a dopant of a type opposite to the given type dopant and an edge, said source electrode generating a depletion region penetrating into said semiconductor substrate,
a channel disposed in said semiconductor substrate adjacent to said source electrode providing a source electrode-channel interface at the edge of said source electrode,
a region disposed below said source electrode within said semiconductor substrate having the same type dopant as that of said semiconductor substrate and an edge, the edge of said region being aligned along a line perpendicular to the given surface of said semiconductor substrate with the source electrode-channel interface, said region having a higher dopant concentration than that of the dopant of said semiconductor substrate sufficient to substantially prevent penetration of the depletion region generated by said source electrode into said semiconductor substrate, and
a supply voltage terminal coupled to said source electrode.

5,347,154
LIGHT VALVE DEVICE USING SEMICONDUCTIVE COMPOSITE SUBSTRATE

Kunihiro Takahashi; Yoshikazu Kojima; Hiroaki Takasu; Nobuyoshi Matsuyama; Hitoshi Niwa; Tomoyuki Yoshino, and Tsuneo Yamazaki, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Nov. 13, 1991, Ser. No. 791,912
Claims priority, application Japan, Nov. 15, 1990, 2-309437; Jan. 23, 1991, 3-006561; Feb. 16, 1991, 3-022420; Apr. 11, 1991, 3-079330; Apr. 11, 1991, 3-079337
Int. Cl.[5] H01L *27/01, 27/13*
U.S. Cl. 257—347 **25 Claims**

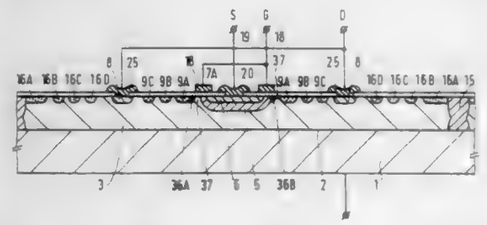


1. A semiconductor device formed of a single crystal semiconductor thin film on a support layer, comprising:
a thin film layer including a surface insulating film having a flat face, a single crystal silicon semiconductor thin film having a uniform crystal orientation disposed below said surface insulating film and having source regions, drain regions, and channel-forming regions constituting transistor elements, an insulating film disposed on the single crystal semiconductor thin film at the side opposed to said surface insulating film and constituting a gate insulator, an electrode film disposed on the insulating film at the side opposed to said single crystal silicon semiconductor thin film and constituting gate electrodes of said transistor elements, a back insulating film disposed over the electrode film at the side opposed to said insulating film, source electrodes disposed on the back insulating film at the side opposed to the electrode film and electrically connected with each of the source regions through the insulating film and the back insulating film; and
a support layer fixedly adhered in a face-to-face relation to said back insulating film.

5,347,155
SEMICONDUCTOR DEVICE HAVING A LATERAL DMOST WITH BREAKDOWN VOLTAGE RAISING ZONES AND PROVISIONS FOR EXCHANGING CHARGE WITH THE BACK GATE REGION

Adrianus W. Ludikhuize, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 20, 1993, Ser. No. 65,084
Claims priority, application European Pat. Off., May 21, 1992, 92201456.8
Int. Cl.[5] H01L *29/06, 29/72, 29/76, 29/78*
U.S. Cl. 257—492 **14 Claims**



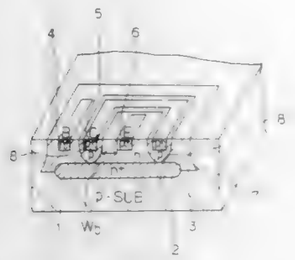
1. A semiconductor device of the RESURF type with a lateral DMOST (LDMOST), comprising a semiconductor body of substantially a first conductivity type and a surface zone which adjoins a surface, which is of a second conductivity type opposed to the first, and which forms a pn junction with the semiconductor body at the side remote from the surface, which LDMOST comprises a back gate region in the form of a surface zone of the first conductivity type provided in the surface region with a source region in the form of a surface zone of the second conductivity type in the back gate region and a channel region defined between the source region and an edge of the back gate region, and a drain region in the form of a surface zone of the second conductivity type which is at a distance from the back gate region, and a number of breakdown voltage raising zones of the first conductivity type provided so as to adjoin the surface between the back gate and the drain region, characterized in that at least one zone of the back gate region forming zone and of the first breakdown voltage raising zone, which lies closest to the back gate region, is locally provided with at least one portion projecting towards the other zone, at the area of which projecting portion the distance between this zone and the other zone is smaller than at an adjoining portion of this zone.

5,347,156

LATERAL BIPOLAR TRANSISTOR WITH A PARTICULAR COLLECTOR STRUCTURE

Hisashi Sakaue, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jun. 18, 1992, Ser. No. 900,386
Claims priority, application Japan, Jul. 26, 1991, 3-187764
Int. Cl.[5] H01L *29/70, 29/73*
U.S. Cl. 257—575 1 Claim



1. A lateral transistor, comprising:
(a) a semiconductor substrate;
(b) a buried layer formed in the semiconductor substrate;
(c) an epitaxial layer formed on the buried layer and having a first conductivity-type of p-type or n-type;
(d) two diffusion zones formed on the epitaxial layer and having a second conductivity-type opposite to the first conductivity-type, the two diffusion zones being an emitter zone and a collector zone;
(e) a well zone surrounding the collector zone, said well zone being in physical contact with the buried layer; and
(f) a base zone comprising an epitaxial layer interposed between the emitter zone and the collector zone,
wherein the well zone has the same conductive type as the collector zone and a lower concentration than the collector zone.

5,347,157

MULTILAYER STRUCTURE HAVING A (111)-ORIENTED BUFFER LAYER

Liang-Sun Hung, Webster; John A. Agostinelli, and Jose M. Mir, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1992, Ser. No. 992,213
Int. Cl.[5] H01L *29/04, 29/161*
U.S. Cl. 257—627 19 Claims



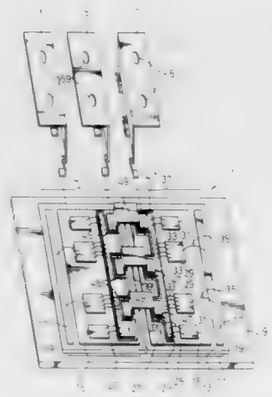
1. A multilayer structure comprising in order:
a (111)-oriented single crystal substrate, said substrate being doped or undoped, said substrate being a semiconductor selected from the group consisting of Si_xGe_{1-x} semiconductors, wherein x is from 0 to 1, and semiconductors having at least one element selected from the group consisting of Al, Ca, and In and at least one element selected from the group consisting of N, P, As, and Sb, said substrate defining a substrate superlattice dimension equal to 3 times a sublattice constant of said substrate; and
an epitaxial metal oxide buffer layer having a three-fold rotation symmetry about the substrate <111>direction, said buffer layer defining a buffer layer superlattice dimension equal to 4 times the oxygen-to-oxygen lattice spacing of said buffer layer, said buffer layer superlattice dimension being within 15 percent of said substrate superlattice dimension.

5,347,158

SEMICONDUCTOR DEVICE HAVING A PARTICULAR TERMINAL ARRANGEMENT

Tadashi Matsuda, Kawasaki, and Tetsujiro Tsunoda, Fujisawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 18, 1993, Ser. No. 107,616
Claims priority, application Japan, Aug. 19, 1992, 4-220106
Int. Cl.[5] H01L *23/16, 39/02, 23/02*
U.S. Cl. 257—691 15 Claims



1. A semiconductor device, comprising:
a radiation plate;
a first conductor fixed on said radiation plate;
a first insulating layer fixed on said first conductor;
a second conductor fixed on said first insulating layer;
at least one semiconductor element and a second insulating layer fixed on said second conductor;
a third conductor fixed on said second insulating layer;
a fourth conductor for electrically connecting the surface electrode of said semiconductor element with said third conductor;
a first power terminal fixed on said second conductor; and
a second power terminal fixed on said third conductor.

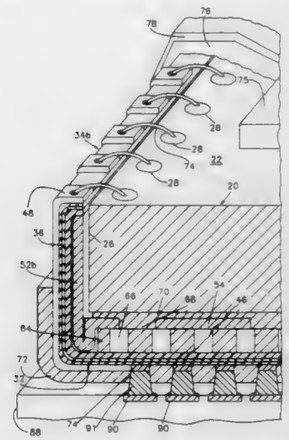
5,347,159

SEMICONDUCTOR CHIP ASSEMBLIES WITH FACE-UP MOUNTING AND REAR-SURFACE CONNECTION TO SUBSTRATE

Igor Y. Khandros, Peekskill, and Thomas H. Distefano, Bronxville, both of N.Y., assignors to Tessera, Inc., Elmsford, N.Y.

Continuation-in-part of Ser. No. 673,020, Mar. 21, 1991, Pat. No. 5,148,265, which is a continuation-in-part of Ser. No. 586,758, Sep. 24, 1990, Pat. No. 5,148,266. This application Sep. 24, 1991, Ser. No. 765,928
Int. Cl.[5] H01L *23/02, 23/12*
U.S. Cl. 257—692 27 Claims

1. A semiconductor chip assembly comprising:
(a) a semiconductor chip having oppositely-facing front and rear surfaces, edges extending between said front and rear surfaces and contacts on said front surface;
(b) a generally sheetlike backing element underlying said chip, said backing element having a top surface facing toward the rear surface of said chip and a bottom surface facing away from said chip, said backing element having a central region aligned with said chip, said backing element also having terminals thereon, at least some of said terminals being disposed on said bottom surface in said central region of said backing element; and
(c) electrically conductive interconnecting said contacts on said chip front surface and said terminals on said backing element bottom surface, said leads extending alongside said edges, said backing element and leads being flexible so



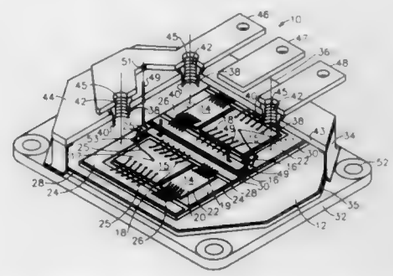
that said terminals on said backing element are moveable with respect to said chip,
said chip assembly further comprising at least one generally sheet-like, flexible flap connected to said backing element, each said flap extending upwardly alongside one edge of said chip, each said lead including a flap portion extending along one said flap.

5,347,160

POWER SEMICONDUCTOR INTEGRATED CIRCUIT PACKAGE

Thomas A. Sutrina, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 28, 1992, Ser. No. 951,591
Int. Cl.[5] H01L *23/48, 29/46, 29/54, 29/52*
U.S. Cl. 257—698 36 Claims



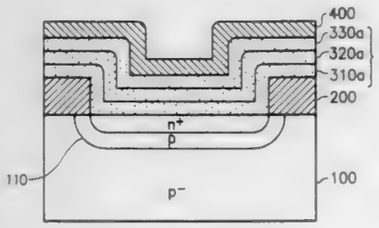
1. A hermetically sealed semiconductor package comprising:
at least one integrated circuit with each integrated circuit having first and second opposed faces with the first face having at least one electrode providing at least a first circuit connection to the integrated circuit and with the second face providing a second circuit connection to the integrated circuit;
a thermally conductive base thermally coupled to the second face for conducting heat generated by operation of the at least one integrated circuit;
an insulator electrically isolating the first circuit connection from the second circuit connection;
a side wall extending upward from the base; and
a lid extending from the side wall, the base, sidewall and lid forming a hermetically sealed cavity in which the at least one integrated circuit is disposed and the lid having at least one depression projecting inward below an inner and outer surface of the lid into the cavity, touching and electrically contacting at least one of the circuit connections at a plane below the inner surface of the lid within the cavity.

5,347,161

STACKED-LAYER STRUCTURE POLYSILICON EMITTER CONTACTED P-N JUNCTION DIODE

Shye-Lin Wu, Nan-Tou; Chung-Len Lee, and Tan-Fu Lei, both of Hsinchu, all of Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Sep. 2, 1992, Ser. No. 939,244
Int. Cl.[5] H01L *23/48, 29/46*
U.S. Cl. 257—756 4 Claims



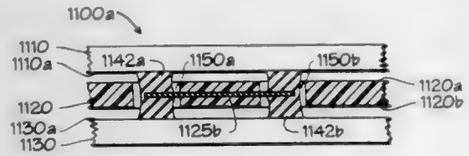
1. A p-n junction diode, comprising:
(a) a substrate of p-type semiconductor;
(b) a stack of at least two layers of N^+-type polysilicon formed upon said substrate; and
(c) an electrode disposed over said stack of at least two n^+-type polysilicon layers;
wherein each of said n^+-type polysilicon layers has a thickness in the range from 500 Å to 1000 Å and a donor concentration of at least 10^{20} cm^{-3}.

5,347,162

PREFORMED PLANAR STRUCTURES EMPLOYING EMBEDDED CONDUCTORS

Nicholas F. Pasch, Pacifica, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 981,096, Nov. 24, 1992, which is a continuation of Ser. No. 775,009, Oct. 11, 1991, Pat. No. 5,168,346, which is a continuation of Ser. No. 576,182, Aug. 30, 1990, Pat. No. 5,111,279, which is a continuation of Ser. No. 400,572, Aug. 28, 1989, abandoned. This application Aug. 12, 1993, Ser. No. 105,838
Int. Cl.[5] H01L *23/48, 29/44, 29/52*
U.S. Cl. 257—773 20 Claims



1. A flip-chip structure, comprising:
a chip having first solder balls on a face thereof;
a substrate having corresponding second solder balls on a face thereof;
a separate and distinct preformed planar structure disposed

between the chip and the substrate, having two opposite faces, one face in contact with the chip and the opposite face in contact with the substrate;

through holes extending through the preformed planar structure from the one face to the opposite face;

at least one conductive element embedded within the preformed planar structure and extending only partially into at least one corresponding through hole; and

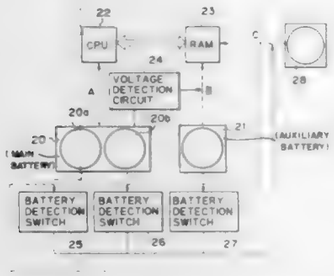
at least one solder joint consisting essentially of at least one first solder ball and at least one corresponding second solder ball fused within the through holes to each other and to at least one corresponding conductive element to form an electrical connection between the at least one first solder ball, the at least one second solder ball and the at least one corresponding conductive element.

5,347,163

POWER SUPPLY BACKUP DEVICE FOR USE IN PORTABLE ELECTRONIC APPARATUS

Yutaka Yoshimura, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 31, 1992, Ser. No. 827,948
Claims priority, application Japan, Feb. 4, 1991, 3-013524
Int. Cl.[5] H02J *7/00*
U.S. Cl. 307—66 **4 Claims**



1. A power supply backup device used for a portable electronic apparatus having a main battery and an auxiliary battery, comprising:

a backup battery for supplying power to said portable electronic apparatus at a time of exchange of at least one of said main battery and said auxiliary battery;

means for detecting a physical removal of said main battery and said auxiliary battery respectively from said apparatus; and

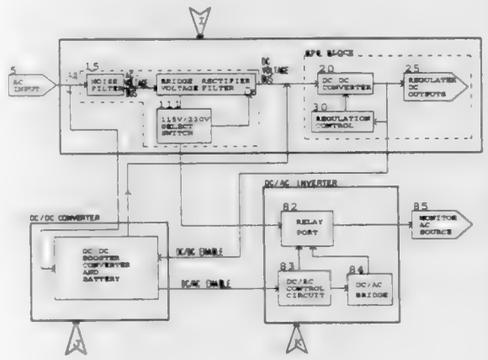
means for switching over a circuit for connecting said backup battery with said apparatus so as to supply power from said backup battery when said detecting means detects the removal of at least one of said main battery and said auxiliary battery.

5,347,164

UNINTERRUPTIBLE POWER SUPPLY HAVING A 115V OR 230V SELECTABLE AC OUTPUT AND POWER SAVING

Wen-Jen Yeh, Hsinchu, Taiwan, assignor to Accton Technology Corporation, Hsinchu, Taiwan

Filed Oct. 8, 1992, Ser. No. 957,965
Int. Cl.[5] H02J *9/00*
U.S. Cl. 307—66 **3 Claims**



1. An uninterruptible power supply featuring selectable AC output voltages and power savings comprising:

a source of interruptible utility-supplied AC power;

a first device comprising the series combination of, respectively, a noise filter connected to said utility-supplied AC power, a bridge rectifier and filtering capacitors connected to a DC voltage bus, together with a 115 V/230 V selecting switch in which the 115 V/230 V selecting switch serves two purposes, namely, (1) when AC utility power is available, the switch selects different input voltage ranges for utility-supplied AC power, and (2) when AC utility power is not available, the switch sets different backup AC output voltage ranges according to the input voltage range;

a second device comprising a DC/DC booster converter and a battery, wherein the DC/DC booster converter converts battery power to a 300 V DC power, charges the battery and detects utility power failure and the output thereof connects to said DC voltage bus;

a third device comprising a DC/DC step-down converter for converting a high voltage DC to a low voltage DC, a regulation control and regulated DC outputs, in which the DC/DC step-down converter connects to said DC voltage bus and serves as a drive circuit and an isolation circuit for the regulated DC outputs; the regulation control connected to the low voltage DC output and the DC/DC step-down converter comprising a PWM (pulse width modulation) controller and an over voltage protection circuit which regulate the output of the DC/DC step-down converter;

a fourth device comprising a DC/AC inverter control circuit connected to said second device by a DC/AC inverter enable line which enables or disables the DC/AC inverter;

a fifth device comprising a relay port which comprises an isolation utility power relay, a full/half bridge select relay and a utility power/backup power select relay which is connected to the first device, the fourth device and the sixth device, respectively, to decide whether 115 VAC, or 230 VAC will be functioning on an AC outlet; and

a sixth device comprising a DC/AC inverter supplied with DC power from the second device which supplies AC power under control of the fourth device to the fifth device for supplying AC power to an outlet when the utility-supplied AC power fails;

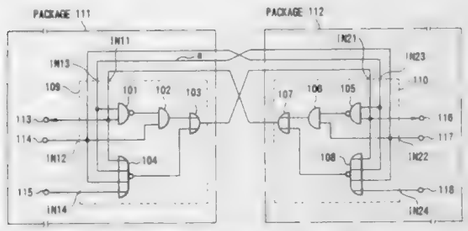
whereby when the utility power is normal, a DC regulated voltage is supplied for the load from the third device; and when the utility-supplied AC power fails, a backup battery power is boosted to a DC high voltage by the second device and sent to the first device from which DC voltage continues to be provided to the third device for output to the DC load; and also, by means of the fourth, fifth and sixth devices and by setting the selecting switch in the first device, a back up source of AC power is supplied for external AC loads.

5,347,165

REDUNDANCY SYSTEM SWITCHING CONTROL SYSTEM

Takashi Miyazono, Tokyo, Japan, assignor to Nec Corporation, Japan

Filed Dec. 2, 1992, Ser. No. 984,534
Claims priority, application Japan, Dec. 3, 1991, 344154
Int. Cl.[5] H02J *4/00*
U.S. Cl. 307—85 **6 Claims**



1. A redundancy system switching control system comprising:

two packages alternately switched as an operating system package and a standby system package; and

logic circuits which are arranged on said two packages, respectively, and each of which outputs selection information/non-selection information to a remote package using self-package alarm information, self-package forcible switching information, remote-package alarm information, and selection information/non-selection information as four inputs,

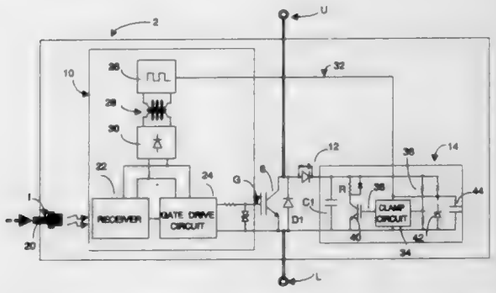
wherein each of said logic circuits, when a self-package serves as said operating system package, outputs selection information to said remote package by receiving any one of non-selection information from said remote package and the self-package alarm information obtained when said self-package does not receive the remote-package alarm information, and each of said logic circuits, when said self-package serves as said standby system package, outputs non-selection information to said remote package by receiving any one of selection information from said remote package and the self-package forcible switching information.

5,347,166

APPARATUS AND METHOD FOR SWITCHING HIGH POWER LEVELS

Colin D. Schauder, Murrysville, Pa., assignor to Electric Power Research Institute, Palo Alto, Calif.

Filed Feb. 1, 1993, Ser. No. 11,956
Int. Cl.[5] H01H *33/00*
U.S. Cl. 307—113 **19 Claims**



1. A valve for switching at high current levels a high voltage present between two voltage rails, comprising:

a number N modules coupled in series between said voltage rails, wherein each said module includes:

a switching device having an input terminal, and first and second output terminals, said device switchably coupling together said first and second output terminals in response to a signal at said input terminal;

an input port receiving an input signal;

input means, coupled to said input port, for providing a drive signal to said input terminal of said switching device;

first and second output ports respectively coupled to said first and second output terminals of said switching device; and

output means, coupled between said first and second output terminals of said switching device, for maintaining a predetermined maximum voltage differential therebetween, and further coupled to said input means;

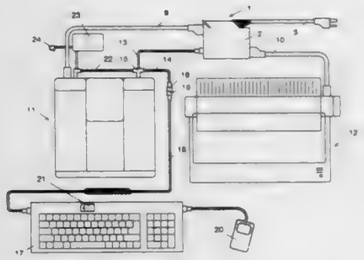
wherein said output means derives its operating potential from said first and second output terminals of said switching device, and provides therefrom an operating potential to said input means.

5,347,167

POWER CONTROLLER USING KEYBOARD AND COMPUTER INTERFACE

Amar Singh, Brier, Wash., assignor to Sophisticated Circuits, Inc., Bothell, Wash.

Continuation of Ser. No. 564,565, Aug. 9, 1990, abandoned. This application Dec. 7, 1992, Ser. No. 987,540
Int. Cl.[5] H02J *4/00*
U.S. Cl. 307—125 **5 Claims**



5. An external power control device for providing power to a computer and at least one peripheral device, comprising:

a means for connecting said device to an AC power source;

a plurality of connectors for allowing the computer and at least one peripheral device to be connected to said power control device;

a means for selectively transmitting power to one or more of said plurality to connectors;

a means for receiving instructions from the computer, said instructions comprising information on the selective transmission of power to the computer and any peripheral devices connected to said plurality of connectors;

wherein, the computer and any combination of peripheral devices may be powered up selectively by said control device.

5,347,168

CRYOGENIC ELECTRONICS POWER SUPPLY AND POWER SINK

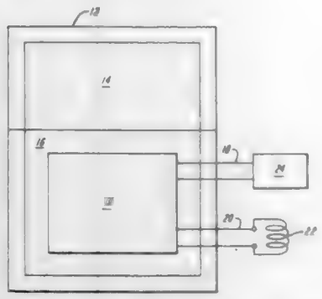
Carl J. Russo, Loveland, Ohio, assignor to American Superconductor Corporation, Westboro, Mass.

Filed Aug. 21, 1992, Ser. No. 934,036
Int. Cl.[5] H03K *3/38*
U.S. Cl. 307—245 **6 Claims**

1. A switching power supply comprising:

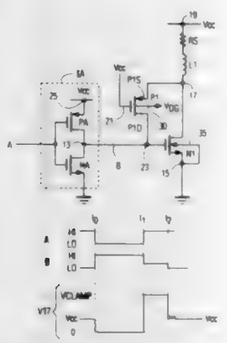
a switching power supply circuit comprising at least one inductor winding composed of a high temperature superconducting material and at least one of a MOSFET, bipolar IGFET, GTO or other power device in circuit configuration with said inductor winding,

refrigeration means for cryogenically cooling at least said inductor winding of said circuit to a temperature wherein said inductor winding exhibits superconducting characteristics, and



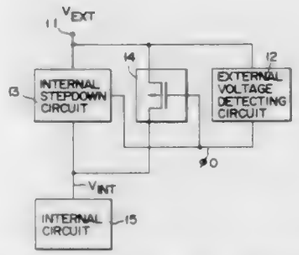
input/output means for supplying power to said circuit and receiving power from said circuit,
said circuit providing at least one hundred watts of power.

5,347,169
INDUCTIVE LOAD DUMP CIRCUIT
Donald R. Preslar, 264 Kingbird Ct., Three Bridges, N.J. 08887, and Raymond L. Giordano, 219 Thatcher Hill Rd., Flemington, N.J. 08822
Filed Sep. 8, 1992, Ser. No. 941,736
Int. Cl.[5] H01H *47/00*; H03K *17/08*
U.S. Cl. 307—246 **23 Claims**



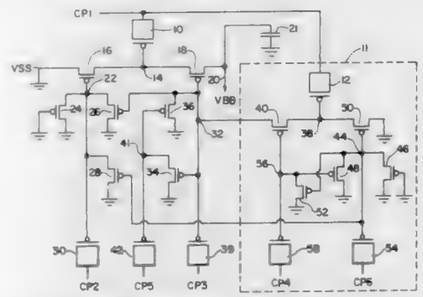
10. A combination comprising:
first and second power terminals for the application therebetween of an operating potential;
first and second insulated-gate field effect transistors, each IGFET having source and drain electrodes defining the ends of a conduction path and a control electrode;
an inductive load;
means connecting the source of said first IGFET to said first power terminal and the drain of said first IGFET to an intermediate node;
means connecting said inductive load between said intermediate node and said second power terminal;
means for selectively applying a turn-on signal and a turn-off signal to the control electrode of said first IGFET;
direct current (d.c.) means connecting the conduction path of said second IGFET between said intermediate node and the control electrode of said first IGFET for providing a selectively enabled direct current connected feedback path between the drain and the control electrode of said first IGFET; and
means for applying a fixed potential to the control electrode of said second IGFET having a value to maintain said second IGFET non-conducting until the voltage at said intermediate node exceeds said fixed potential in a direction to turn on said second IGFET and for then enabling a feedback conduction through the dc connected conduction path of the second IGFET.

5,347,170
SEMICONDUCTOR INTEGRATED CIRCUIT HAVING A VOLTAGE STEPDOWN MECHANISM
Shigeyuki Hayakawa, Yokohama, and Leiichi Yanagisawa, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 651,440, Feb. 7, 1991, Pat. No. 5,184,031. This application Sep. 11, 1992, Ser. No. 943,538
Claims priority, application Japan, Feb. 28, 1990, 2-27086
Int. Cl.[5] H03K *3/01*
U.S. Cl. 307—296.1 **12 Claims**



1. A semiconductor integrated circuit comprising:
an internal circuit having a node;
means for receiving a supply voltage;
voltage detecting means for detecting a value of the supply voltage;
voltage stepdown means for operating in one of
an active mode for stepping down the supply voltage to apply a voltage to the node and
an inactive mode, the voltage stepdown means operating in either the active mode or in the inactive mode in response to the voltage detecting means; and
means, responsive to the voltage detecting means, for switching the receiving means to the node at times when the voltage stepdown means is operating in the inactive mode.

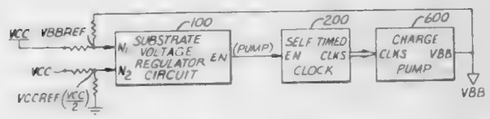
5,347,171
EFFICIENT NEGATIVE CHARGE PUMP
Michael V. Cordoba, and Kim C. Hardee, both of Colorado Springs, Colo., assignors to United Memories, Inc., Colorado Springs, Colo. and Nippon Steel Semiconductor Corporation, Chiba, Japan
Filed Oct. 15, 1992, Ser. No. 961,439
Int. Cl.[5] G05F *1/56*
U.S. Cl. 307—296.2 **21 Claims**



1. A charge pump comprising:
a secondary charge pump coupled to a first node;
a first transistor having gate, source and drain electrodes

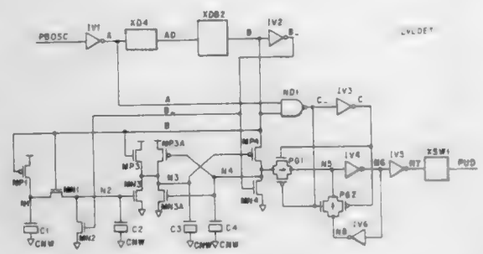
wherein said gate electrode is coupled to said first node, said drain electrode is coupled to a substrate and said source electrode is coupled to a second node;
a second transistor having gate, source and drain electrodes wherein said drain electrode is coupled to said second node, said source electrode is coupled to a first power supply and said gate electrode is coupled to a third node;
a third transistor having gate, source and drain electrodes wherein said drain electrode and gate electrode are coupled to said first power supply, and said source electrode is coupled to said third node;
a fourth transistor having gate, source and drain electrodes wherein said drain electrode is coupled to said first power supply, said source electrode is coupled to said third node, and said gate electrode is coupled to said first node;
a fifth transistor **28** having gate, source and drain electrodes wherein said drain electrode is coupled to said first power supply, said source electrode is coupled to said third node, and said gate electrode is coupled to said secondary charge pump;
a sixth transistor having gate, source and drain electrodes wherein said drain electrode is coupled to said first power supply, said source electrode is coupled to said first node, and said gate electrode is coupled to a fourth node;
a seventh transistor having gate, source and drain electrodes wherein said drain electrode is coupled to said first power supply, said source electrode is coupled to said fourth node, and said gate electrode is coupled to said first node;
a plurality of capacitors wherein said first, second, third and fourth nodes are coupled to respective ones of said plurality of capacitors, each of said capacitors coupled to receive respective clock pulses.

5,347,172
OSCILLATORLESS SUBSTRATE BIAS GENERATOR
Michael V. Cordoba, and Kim C. Hardee, both of Colorado Springs, Colo., assignors to United Memories, Inc., Colorado Springs, Colo. and Nippon Steel Semiconductor Corporation, Chiba, Japan
Filed Oct. 22, 1992, Ser. No. 964,912
Int. Cl.[5] H03K *3/354*
U.S. Cl. 307—296.2 **35 Claims**



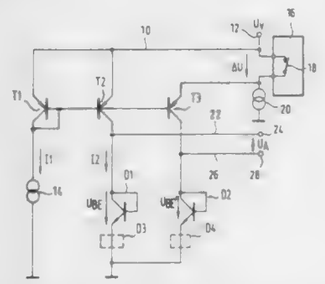
1. A substrate bias generator for an integrated circuit comprising:
a voltage regulator circuit coupled to the substrate of said integrated circuit for outputting a clock enabling signal when the substrate voltage varies from a predetermined level;
a self-timed clock circuit coupled to receive the clock enabling signal from the voltage regulator circuit and configured to generate a full cycle of clock signals in response thereto, the clock circuit including means for maintaining a full self-timed cycle even when the clock enabling signal terminates during the self-timed cycle; and
a pump circuit responsive to the clock signals for pumping charge to the substrate to alter the voltage at the substrate and preparing for subsequent pumping.

5,347,173
DYNAMIC MEMORY, A POWER UP DETECTION CIRCUIT, AND A LEVEL DETECTION CIRCUIT
Hugh P. McAdams, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 560,542, Jul. 31, 1990, abandoned. This application Jul. 2, 1992, Ser. No. 908,633
Int. Cl.[5] H03K *3/01, 3/26*
U.S. Cl. 307—296.4 **5 Claims**



1. A power up detection circuit for detecting when a power source voltage reaches a certain level relative to a reference voltage, comprising:
A. a voltage divider having a first node and a second node, the first node being coupled to the power source voltage at only selected times and the second node being connected to the reference voltage at only the selected times;
B. a control signal source producing a control signal only between the selected times;
C. a first switch connected between the first and second nodes for connecting together the first and second nodes in response to receiving the control signal, when connected the first and second nodes carrying an equilibrium voltage related to the power source voltage; and
D. a second switch switching in response to the equilibrium voltage received from the second node attaining a threshold level.

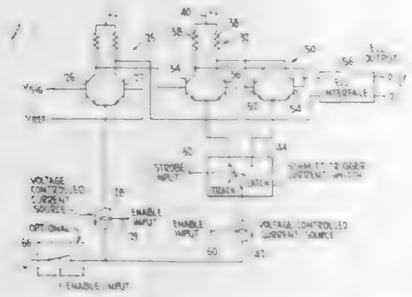
5,347,174
CIRCUIT ARRANGEMENT FOR CONVERTING A VOLTAGE DROP TAPPED FROM A TEST OBJECT FROM A PREDETERMINED INPUT VOLTAGE RANGE TO A DESIRED OUTPUT VOLTAGE RANGE
Laszlo Götz, Freising, Fed. Rep. of Germany, assignor to Texas Instruments Deutschland GmbH, Freising, Fed. Rep. of Germany
Filed Jul. 1, 1992, Ser. No. 907,269
Int. Cl.[5] H03K *17/30*
U.S. Cl. 307—360 **4 Claims**



1. A circuit for converting a voltage drop tapped from a test object from a predetermined input voltage range to a desired output voltage range, said circuit comprising:
a current mirror circuit having an input transistor and an output transistor;

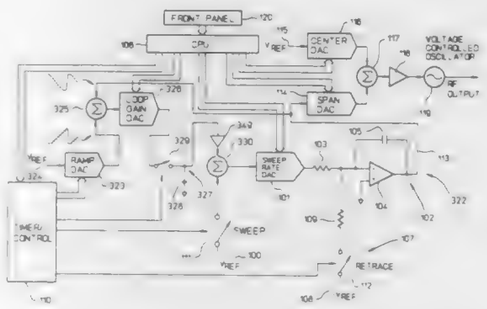
a first constant current source connected to the input of said current mirror circuit via said input transistor for providing a constant current thereto;
a first diode connected to the output of said current mirror circuit via said output transistor for receiving a current therefrom of equal magnitude to the current provided by said first constant current source to the input of said current mirror circuit;
said first diode and the output transistor of said current mirror circuit defining a first circuit branch;
a second circuit branch of identical configuration to the first circuit branch and lying parallel thereto, said second circuit branch including a third transistor and a second diode connected to the output of said third transistor;
a second constant current source connected to the input of said third transistor for providing a test current thereto;
a supply voltage terminal connected to said current mirror circuit;
the test object being adapted to be connected to the supply voltage terminal and between said second constant current source and the input of said third transistor to be traversed by the test current from said second constant current source;
a first output terminal connected between the output of said current mirror circuit and said first diode; and
a second output terminal connected between the output of said third transistor and said second diode whereby a converted voltage drop is obtainable from said first and second output terminals in relation to the voltage drop as tapped from the test object.

5,347,175
VOLTAGE COMPARATOR WITH REDUCED SETTLING TIME
Owen B. Laug, Barnesville, and T. Michael Souders, Frederick, both of, assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.
Filed May 12, 1992, Ser. No. 882,392
Int. Cl.[5] H03K *5/24*
U.S. Cl. 307—354 **14 Claims**



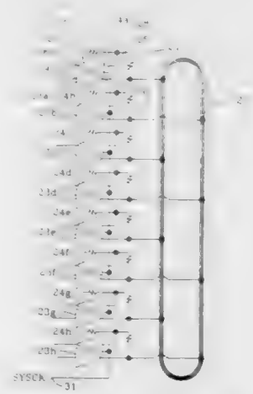
1. In a voltage comparator circuit comprising a pair of transistors, each having an emitter, a base and a collector, each of said transistors being connected to conduct current along an emitter-collector current path from a first current source to a reference point, the base of a first reference transistor of said pair being connected to means for supplying a reference voltage level, and the base of a second signal transistor of said pair being connected to means for supplying a signal the voltage level of which is to be measured, and means for comparing the currents conducted through the first and second transistors to compare the reference voltage level to the signal voltage level, the improvement comprising:
switching means in the emitter-collector current path of each of said pair of transistors, for selectively controlling the flow of current from said source of current through said first and second transistors; and
timing means for controlling said switching means in order that current flows through said first and second transistors only at particular times when it is desired to compare the reference voltage level to the signal voltage level.

5,347,176
ANALOG RAMP GENERATOR WITH DIGITAL CORRECTION
Alan R. Bloom, Santa Rosa, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Feb. 17, 1993, Ser. No. 18,948
Int. Cl.[5] H03K *6/00, 4/08*
U.S. Cl. 307—490 **20 Claims**



1. A circuit for correcting errors in an analog ramp generator, the analog ramp generator comprising an analog integrator circuit responsive to a reference signal applied to the analog integrator circuit for generating an analog ramp signal, the correction circuit comprising:
means for generating a corresponding digital ramp signal;
means connected to the analog integrator circuit and to the digital ramp signal generating means for producing an error signal based on a difference between the digital and analog ramp signals; and
means connected to the error signal producing means and responsive to the error signal and the reference signal for feeding back the error signal to the analog integrator circuit;
whereby the analog ramp signal is forced to track the digital ramp signal.

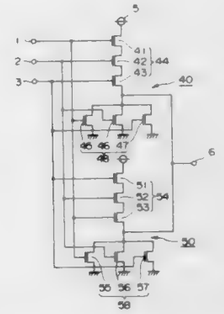
5,347,177
SYSTEM FOR INTERCONNECTING VLSI CIRCUITS WITH TRANSMISSION LINE CHARACTERISTICS
Robert J. Lipp, 15881 Rose Ave., Los Gatos, Calif. 95030
Filed Jan. 14, 1993, Ser. No. 4,364
Int. Cl.[5] H03K *17/16, 19/0175*
U.S. Cl. 307—443 **47 Claims**



1. A system receiving a clock signal, comprising:

a transmission line;
a plurality of input buffers having active input impedances selected to form distributed terminating resistances for said transmission line, said input buffers including an input buffer coupled to said clock signal and said transmission line, said input buffer receiving an input signal from said transmission line and setting an input threshold voltage level close to a voltage level of said input signal, after an initial phase of said clock signal; and
a plurality of output buffers coupled to said transmission line for driving said input signal.

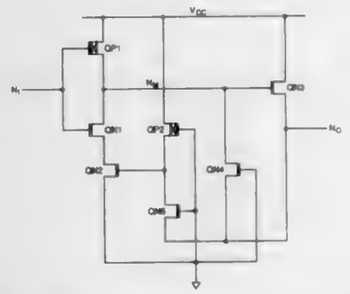
5,347,178
CMOS SEMICONDUCTOR LOGIC CIRCUIT WITH MULTIPLE INPUT GATES
Mitsuhiro Deguchi, and Michio Komoda, both of Itami, Japan, assignors to Mitsubishi Denki Kaisha Kitaitami Seisakusho, Itami, Japan
Filed Jan. 21, 1993, Ser. No. 7,148
Claims priority, application Japan, Jan. 23, 1992, 4-009861
Int. Cl.[5] H03K *19/092, 19/094*
U.S. Cl. 307—451 **25 Claims**



1. A semiconductor logic circuit comprising:
a plurality of multiple input gate circuits, each multiple input gate circuit including n inputs, a series circuit including n transistors of one conductivity type connected in series, and n transistors of a different conductivity type connected to said series circuit;
n input pins, each connected to one of said inputs; and
an output pin connected in common to each of said multiple input gate circuits;
a control electrode of a k-th transistor, in each series circuit at an end of that series circuit closer to a voltage supply input, being connected to a different one of said n input pins, where k is from 1 to n.

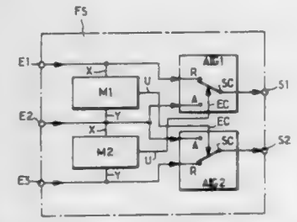
5,347,179
INVERTING OUTPUT DRIVER CIRCUIT FOR REDUCING ELECTRON INJECTION INTO THE SUBSTRATE
Stephen L. Casper, and Kevin G. Duesman, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.
Filed Apr. 15, 1993, Ser. No. 48,158
Int. Cl.[5] H03K *19/20*
U.S. Cl. 307—451 **20 Claims**

1. A space-efficient, inverting output driver circuit that reduces hot electron injection, said circuit comprising:
first and second P-channel FETs;
first, second, third, fourth and fifth N-channel FETs;
each P-channel FET and each N-channel FET having, by definition, a gate, a source region, a drain region, and a channel region;
said fifth N-channel FET having greater drive than said second P-channel FET;
the gate of the second N-channel FET being coupled to a power supply voltage (V_{CC}) through the second P-channel FET;
the gates of the second P-channel FET, the fourth N-channel FET, and the fifth N-channel FET being permanently held at ground potential;
an input node which is coupled to the gates of the first P-channel FET and the first N-channel FET;
an intermediate node that is coupled to a power supply voltage (V_{CC}) through the first P-channel FET, and to



ground through both the first N-channel FET and the second N-channel FET, said first and second N-channel FETs being series coupled, with the first N-channel FET being electrically nearer the intermediate node;
said intermediate node being coupled to the gate of the third N-channel FET; and
a final output node that is coupled to V_{CC} through the third N-channel FET, to the intermediate node through the fourth N-channel FET, and to the gate of the second N-channel FET through the fifth N-channel FET.

5,347,180
THREE-INPUT SIGNAL SECTION, APPLICATION TO A SELECTOR WITH N INPUTS AND TO A POLLER WITH N INPUTS
Rémi Bascans, Toulouse; Christophe Fleury, Colomiers; Eric Autechaud, Toulouse, and Christian N'Guyen, Blagnac, all of France, assignors to Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle, Paris, France
Filed Jul. 23, 1992, Ser. No. 919,139
Claims priority, application France, Aug. 2, 1991, 91 09879
Int. Cl.[5] H03K *19/23, 19/003*
U.S. Cl. 307—464 **12 Claims**



1. A signal selector (FS) comprising a first input (E1), a second input (E2) and a third input (E3) which are able to receive respectively a first signal (E_s1), a second signal (E_s2) and a third signal (E_s3) and comprising a first output (S1) and a second output (S2), which comprises:
a first two-channel diverter (AIG1) provided with an active input (A), with a quiescent input (R), and with a control input (EC) which is able to receive a control signal which sets, depending on its state, said first diverter (AIG1) to an active state (ACT) or to a quiescent state (REP), and with a common output (SC), said quiescent input (R) and said active input (A) of said first diverter (AIG1) being respectively connected to said first input (E1) and second input

(E2) of said signal selector (FS), whereas said common output (SC) of said first diverter (AIG1) is connected to said first output (S1) of the signal selector (FS), this common output (SC) transmitting the signal applied to the active input (A) when said first diverter (AIG1) is in the active state (ACT), and transmitting the signal applied to the quiescent input (R) when said first diverter (AIG1) is in the quiescent state (REP);

a second two-channel diverter (AIG2) provided with an active input (A), with a quiescent input (R), and with a control input (EC) which is able to receive a control signal which sets, depending on its state, said diverter (AIG2) to an active state (ACT) or to a quiescent state (REP), and with a common output (SC), said active input (A) and said quiescent input (R) of said second diverter (AIG2) being respectively connected to said second input (E2) and third input (E3) of said signal selector (FS), whereas said common output (SC) of said second diverter (AIG2) is connected to said second output (S2) of the signal selector (FS), this common output (SC) transmitting the signal applied to the active input (A) when said second diverter (AIG2) is in the active state (ACT), and transmitting the signal applied to the quiescent input (R) when said second diverter (AIG2) is in the quiescent state (REP);

a first monitor (M1) with two inputs (X, Y), connected respectively to said first input (E1) and second input (E2) of said signal selector (FS), which is able to measure the deviation between said first signal (E_s1) and second signal (E_s2) and whose output (U) is connected to the control input (EC) of said second diverter (AIG2) and is able to control the state of this second diverter (AIG2); and

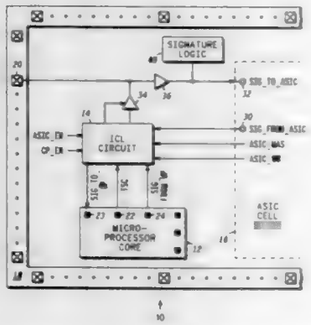
a second monitor (M2) with two inputs (X, Y), connected respectively to said second input (E2) and third input (E3) of said signal selector (FS), which is able to measure the deviation between said second signal (E_s2) and third signal (E_s3) and whose output (U) is connected to the control input (EC) of said first diverter (AIG1) and is able to control the state of this first diverter (AIG1).

5,347,181

INTERFACE CONTROL LOGIC FOR EMBEDDING A MICROPROCESSOR IN A GATE ARRAY

Laurin R. Ashby, Mesa, Ariz., and Franz Steininger, Munich, Fed. Rep. of Germany, assignors to Motorola, Inc.

Filed Apr. 29, 1992, Ser. No. 875,508
Int. Cl.[5] H03K *19/177*
U.S. Cl. 307—465 **11 Claims**



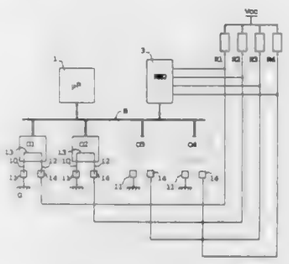
1. A logic circuit for providing a flexible interface between a microprocessor, an ASIC cell block and the external world, the microprocessor circuit and the ASIC cell block being located within a gate array where the microprocessor circuit is fully diffused and fixed-placed within the gate array, the logic circuit comprising a plurality of circuits for providing an interface between a plurality of microprocessor I/O pads to the ASIC cell block and to the external world, said logic circuit being fixed-placed within the gate array, said ASIC cell block being utilized to provide customer defined predetermined functions.

5,347,182

DEVICE FOR INDICATING THAT AN OPTIONAL COMPONENT IS MOUNTED ON A BOARD

Pierre Sauvage, Champ Sur Drac, France, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 25, 1992, Ser. No. 950,259
Claims priority, application France, Sep. 26, 1991, 91 12142
Int. Cl.[5] H03K *19/003*
U.S. Cl. 307—465.1 **13 Claims**



1. In combination, a microprocessor board having a plurality of connector means for receiving respective optional electronic components, one of said optional electronic component having (a) a plurality of electrical contact pins including a first pin and a second pin, and (b) means electrically interconnecting said first and second pins; each said connector means of the microprocessor board having a plurality of contacts including a first and a second contact for respectively making electrical contact with said first and second pins of one of said optional component upon the latter being inserted into said connector means; said microprocessor board further having:

a first voltage supply line,

a second voltage supply line connected to the said first contact of each said connector means,

respective biased logic-level means associated with each connector means, each said biased logic-level means having a logic-level reference point and being connected to said first supply line to establish a first voltage logic level at said reference point in the absence of said optional electronic component in the corresponding said connector means, said biased logic-level means being further connected to said second contact of the corresponding said connector means and being responsive to said second contact being connected to said second voltage supply line, through said second and first pins of said optional electronic component inserted in the connector means, to cause a second voltage logic level to be established at said reference point replacing the said first logic level, and

analyzing means connected to said reference point of each said connector means for determining the logic level thereat thereby to determine whether said optional component has been inserted in the corresponding said connector means.

5,347,183

SENSE AMPLIFIER WITH LIMITED OUTPUT VOLTAGE SWING AND CROSS-COUPLED TAIL DEVICE FEEDBACK

Cathal G. Phelan, Santa Clara, Calif., assignor to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Oct. 5, 1992, Ser. No. 956,794
Int. Cl.[5] G01R *19/00*
U.S. Cl. 307—530 **15 Claims**

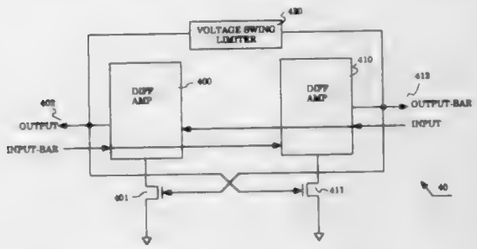
1. A sense amplifier circuit having a pair of complementary inputs and a pair of complementary outputs, comprising:

a sense amplifier for receiving a pair of complementary inputs to generate a pair of complementary outputs; and

a voltage swing limiter coupled to said pair of complementary outputs of said sense amplifier for limiting the voltage swing of said pair of complementary outputs;

wherein said sense amplifier comprises:

first differential amplifier receiving said pair of complementary inputs to generate first output of said pair of complementary outputs, said first differential amplifier coupled to a first current source device for biasing;



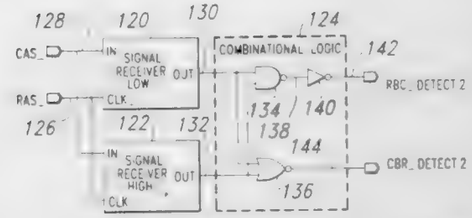
second differential amplifier receiving said pair of complementary inputs to generate second output of said pair of complementary outputs, said second differential amplifier coupled to a second current source device for biasing, and said sense amplifier circuit further comprising a feedback circuit cross-coupling said first output of said pair of complementary outputs to drive said second current source device and cross-coupling said second output of said pair of complementary outputs to drive said first current source device.

5,347,184

DUAL RECEIVER EDGE-TRIGGERED DIGITAL SIGNAL LEVEL DETECTION SYSTEM

Michael C. Stephens, Jr., Stafford; Roger D. Norwood, Sugar Land; Duy-Loan T. Le, Missouri City, and Kenneth A. Poteet, Sugar Land, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 29, 1992, Ser. No. 998,166
Int. Cl.[5] H03K *19/01*
U.S. Cl. 307—480 **8 Claims**



1. A level detection system receiving two input signals to indicate one or another logic state of the first input signal at the transition of the second input signal from an inactive state to an active state, the system comprising:

A. a first signal receiver having a first input receiving the first input signal, and a second input receiving the second input signal, the first signal receiver having an output producing an output signal of one logic state while the second input signal is inactive and an output signal of the same logic state as the first input signal While the second input signal is active;

B. a second signal receiver having a first input receiving the first input signal, and a second input receiving the second input signal, the second signal receiver having an output producing an output signal of another logic state while the second input signal is inactive and an output signal of the same logic state as the first input signal while the second input signal is active; and

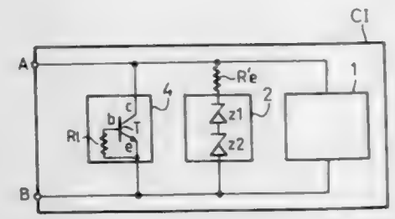
C. combinational logic receiving the output signals from the two receivers and producing at least one indicate signal of the same logic state as the first input signal in response to a change in logic state in one of the outputs from the receivers.

5,347,185

PROTECTION STRUCTURE AGAINST LATCH-UP IN A CMOS CIRCUIT

Francois Tailliet, Epinay sur Seine, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly Cedex, France

Filed Jun. 3, 1992, Ser. No. 892,941
Int. Cl.[5] H01P *1/22;* **H03K** *3/26*
U.S. Cl. 307—540 **24 Claims**



1. A CMOS circuit protected against latch-up, comprising:

internal circuitry connected between a first more positive supply terminal and a second more negative supply terminal to draw power therefrom, said internal circuitry having, as known parameters, a current I_1 and a voltage V_1 for the triggering of the latch-up phenomenon;

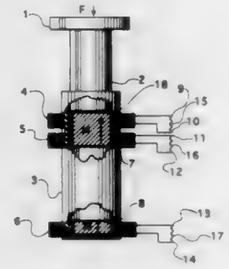
a limiter, connected, in parallel with the internal circuitry, between the first supply terminal and the second supply terminal, this limiter having a triggering threshold below voltage V_1 and consuming current of a value far higher than I_1 when a voltage of V_1 or greater is applied between the first and second supply terminals.

5,347,186

LINEAR MOTION ELECTRIC POWER GENERATOR

John A. Konotchick, San Diego, Calif., assignor to McQ Associates, Inc., Fredericksburg, Va. and KAB Laboratories Inc., San Diego, Calif.

Filed May 26, 1992, Ser. No. 888,021
Int. Cl.[5] H02K *35/02*
U.S. Cl. 310—17 **26 Claims**



1. A linear motion electric power generator for generating electric current from mechanical work done by an intermittent force comprising:

at least one rare earth magnet defining a magnetic field, said at least one magnetic being contained in a non-ferrous, non-conducting tube,

at least one coil located within said magnetic field, said at least one magnet and said at least one coil being arranged to permit bi-directional, linear, or approximately linear,

motion of said at least one magnet relative to said at least one coil so as to generate an electric current in said at least one coil, and

a springless orientation means for maintaining a neutral position in the absence of said force, of said at least one magnet relative to said at least one coil, from which said bi-directional, linear, or approximately linear, motion occurs.

5,347,187

MINIATURE ELECTRIC MOTOR

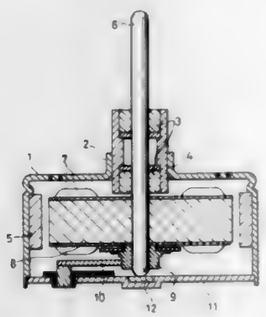
Toshiaki Tsuzaki, and Noriyoshi Naito, both of Yonago, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 16, 1992, Ser. No. 913,637

Claims priority, application Japan, Aug. 29, 1991, 3-68998[U]; Aug. 29, 1991, 3-68999[U]

Int. Cl.[5] H02K *5/16*

U.S. Cl. 310—40 MM **5 Claims**



1. A miniature electric motor comprising:

a rotor having a rotor shaft;

a stator; and

a single-piece frame top of generally cylindrical bowl shape for supporting said stator and said rotor;

a frame bottom secured to said frame top forming a frame enclosing said stator and said rotor;

said single-piece frame top forming a hollow cylindrical socket for holding a bearing structure projecting both outwardly and inwardly from a roof plane of said frame; and

said bearing structure comprising at least one bearing metal, said bearing structure being tightly fit in said socket of said frame and projecting both outwardly and inwardly from said roof plane of said frame, said bearing structure having a first and a second rotating sliding contact point to said rotor shaft;

wherein a predetermined clearance is formed in the direction of an axis of said rotor shaft between said first rotating sliding contact point and said second rotating sliding contact point.

5,347,188

ELECTRIC MACHINE WITH ENHANCED LIQUID COOLING

Walter J. Iseman, Monroe Center; Michael G. Schneider, Rockford; William Schumacher, Oregen; Patrick J. Murray, and Roger J. Collings, both of Rockford, all of Ill., assignors to Sunstrand Corporation, Rockford, Ill.

Filed Sep. 9, 1992, Ser. No. 942,248

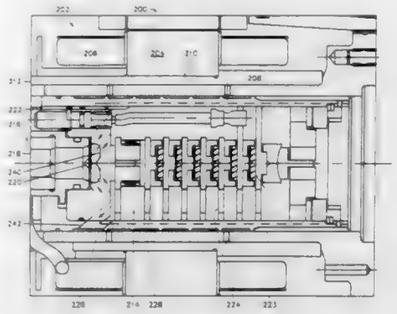
Int. Cl.[5] H02K *11/00, 9/00, 9/19, 1/32*

U.S. Cl. 310—68 D **6 Claims**

1. A cooling system for an exciter generator for use in a self-excited electrical power generator comprising:

a hollow shaft containing a fullwave diode assembly, for rectifying alternating current produced by an exciter rotor, in thermal contact with the hollow shaft; and

a liquid coolant circuit for receiving coolant liquid flowing axially along the shaft and splitting flow between flow axially through the inside of the hollow shaft in thermal contact with diodes in the diode assembly and flow radially outward to a flow path between an outside surface of the diode assembly add an inside surface of the hollow



shaft axially along the diode assembly to absorb heat generated by the exciter rotor, the coolant circuit further comprising: a flow path extending radially inward from the flow path between the outside surface of the diode assembly and the inside surface of the hollow shaft to the inside of the diode assembly.

5,347,189

SPINDLE MOTOR WITH LABYRINTH SEALED BEARING

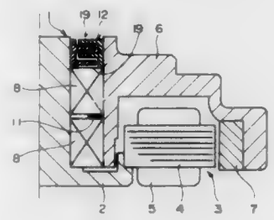
Masanobu Chuta, Naka, and Tokumon Ogawa, Komagane, both of Japan, assignors to Nippon Densan Corporation, Kyoto, Japan

Filed Sep. 25, 1992, Ser. No. 951,661

Claims priority, application Japan, Sep. 25, 1991, 3-274833; Sep. 30, 1991, 3-280455

Int. Cl.[5] H02K *5/124, 7/08*

U.S. Cl. 310—90 **2 Claims**



1. A spindle motor with a labyrinth sealed bearing comprising:

a stationary member;

a hub for rotation relative to the stationary member;

ball bearings mounted between the stationary member and the hub;

a labyrinth sealing means provided axially outside of the ball bearings for preventing the escape of grease from the ball bearings;

said labyrinth sealing means comprising a first member mounted to the stationary member, a second member mounted to the hub, and a third member mounted to the stationary member and having a shape identical to that of the first member; and

said first and third members, each having an annular portion thereof fixedly mounted to the stationary member and an annular projection thereof extending radially outwardly from the annular portion, and said second member having an annular portion thereof fixedly mounted to the hub and an annular projection thereof extending radially inwardly from the annular portion, the three projections of the first, second, and third members being axially aligned towards the outside of the motor, the annular portion of the third member abutting at one end a corresponding end of the annular portion of the first member.

5,347,190

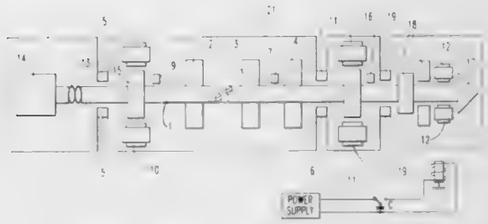
MAGNETIC BEARING SYSTEMS

David W. Lewis; Robert R. Humphris; Eric H. Maslen; Paul E. Allaire; Ronald D. Williams and Steven W. Yates, all of Charlottesville, Va., assignors to University of Virginia Patent Foundation, Charlottesville, Va.

Continuation-in-part of Ser. No. 359,772, May 31, 1989, abandoned, which is a continuation-in-part of Ser. No. 242,264, Sep. 9, 1988, abandoned. This application Aug. 3, 1990, Ser. No. 562,339

Int. Cl.[5] H02K *7/09*

U.S. Cl. 310—90.5 **30 Claims**



1. A rotatable machine comprising:

a housing:

a rotor having a plurality of masses and a shaft means, wherein the plurality of masses are distributed along the shaft means and included within the masses is at least one shaft portion having a circular peripheral face;

magnetic bearing means including a plurality of stationary peripherally spaced magnetizable pole pieces mounted to the housing and coacting to support the rotor in a radial direction;

sensing means for measuring a position of the shaft means relative to a face of each pole piece; and

a controller for each of the plurality of stationary peripherally spaced magnetizable pole pieces for controlling variable magnetic bearing parameters for changing values of stiffness and damping of the rotor, and for outputting status information relating to a respective pole piece in response to the measurements from the sensing means, and;

a supervisory controller responsive to the status information of each of the controllers for governing said controllers.

5,347,191

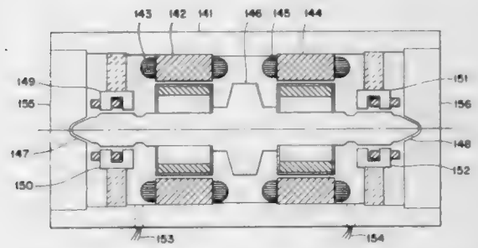
DYNAMIC TRANSFORMER POWER SUPPLY

Jonathan R. Wood, Sudbury, Mass., assignor to Altor, Inc., Natick, Mass.

Filed Jun. 26, 1992, Ser. No. 904,590

Int. Cl.[5] H02K *47/04, 47/14, 47/20*

U.S. Cl. 310—113 **24 Claims**



1. A dynamic transformer for converting a source of AC or DC input power to AC or DC output power for use in electronic equipment, said dynamic transformer comprising:

a primary winding;

a secondary winding, physically separated from the primary winding and having no electromagnetic coupling with the primary winding;

a relatively high speed rotary element, cooperating with two sets of permanent magnets, the flux of the first set of permanent magnets being linked to said primary winding and the flux of the second set of permanent magnets being linked to said secondary winding;

bearing means for supporting said rotary element during operation; and

means for simultaneously delivering the input and output of electrical energy to and from said primary winding and said secondary winding.

5,347,192

VIBRATION WAVE MOTOR

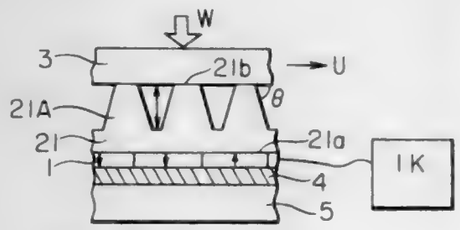
Hitoshi Mukohjima; Akira Hiramatsu; Kazuhiro Izukawa; Takuo Okuno; Ichiro Okumura, all of Yokohama, and Takayuki Tsukimoto, Fujisawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 709,800, Jun. 3, 1991, abandoned, which is a continuation of Ser. No. 402,994, Sep. 6, 1989, abandoned, which is a continuation of Ser. No. 169,130, Mar. 10, 1988, abandoned, which is a continuation of Ser. No. 888,338, Jul. 23, 1988, abandoned. This application Dec. 16, 1992, Ser. No. 991,716

Claims priority, application Japan, Aug. 5, 1985, 60-172001; Jun. 30, 1986, 61-152952

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—323 **14 Claims**



1. A vibration wave motor, comprising:

a movable member having a friction surface:

an elastic member being positioned in contact with said movable member; and

electro-mechanical transducer means for displacing said elastic member, wherein a travelling vibration wave is generated in said elastic member by said electro-mechanical transducer means in response to an applied driving signal of a predetermined frequency;

wherein said elastic member has projections integrally formed thereon and is arranged to contact said friction surface of said movable member to transmit the travelling vibration wave to said movable member, and wherein a frequency of a first natural mode of bending vibration of each of said projections is higher than the predetermined frequency of the driving signal.

5,347,193

SPARK PLUG HAVING AN EROSION RESISTANT TIP

Takafumi Oshima; Kazuya Iwata, and Tsutomu Okayama, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Oct. 13, 1992, Ser. No. 960,113

Int. Cl.[5] H01T *13/20, 13/39*

U.S. Cl. 313—141 **4 Claims**

1. In a spark plug electrode which includes a metallic shell

having a tubular insulator in which a center electrode is provided, a front end of the center electrode forming a spark gap with an outer electrode extended from the metallic shell, the spark plug electrode comprising:

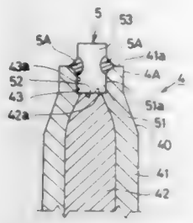
the center electrode being made of a heat-conductor core cladded by a nickel-alloyed metal;

a recess provided on a front end surface of the nickel-alloyed metal;

a columnar tip made of a precious metal, a rear end of the tip being fitted in the recess in such a manner that a front end of the tip is somewhat protracted from the recess;

an outer surface of the tip being bonded to an inner surface of the recess all through their circumference by means of laser or electron beam welding;

a dimensional relationship of A,B,C,D,E,F and G being given as follows:



0.3 mm≦A≦0.8 mm, 1.2A≦B≦3A, 0.1 mm≦(C-A)/2≦0.5 mm, D≦(C-A)/2, E≧B/4, 0 mm≦F≦0.5 mm and A/5≦G≦A/2

where

A: a diameter of the columnar tip,

B: a length of the columnar tip,

C: a diameter of a front end of the nickel-alloyed metal,

D: a length of a front end of the nickel-alloyed metal,

E: a length of the front end of the tip which is protracted from the recess,

F: a distance between a rear end of the tip and a front end of the heat-conductor core,

G: a distance of a welding portion penetrated from the outer surface of the tip to the inner surface of the recess.

5,347,194

OXIDE CATHODE WITH RARE EARTH ADDITION

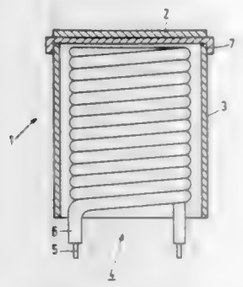
Petrus J. A. M. Derks, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 781,541, Oct. 22, 1991, abandoned. This application Apr. 21, 1993, Ser. No. 51,255

Claims priority, application Netherlands, Oct. 22, 1990, 9002291

Int. Cl.[5] H01J *19/06*

U.S. Cl. 313—346 R **18 Claims**



2. A cathode comprising a supporting body substantially comprising nickel and a layer of electron-emissive material provided on the body, the layer comprising barium oxide, at least one oxide selected from the group consisting of strontium oxide and calcium oxide and at least one rare earth metal, characterized in that the number of rare earth metal atoms which are provided by the at least one rare earth metal in the electron-emissive material, as a fraction of the number of barium atoms and atoms selected from the group consisting of strontium and calcium atoms provided by the at least one oxide selected from the group consisting of strontium oxide and calcium oxide in the electron-emissive material, is 10–500 ppm and in that the rare earth metal atoms provided by the at least one rare earth metal are distributed substantially uniformly in each particle of barium oxide and the at least one oxide selected from the group consisting of calcium oxide and strontium oxide present in at least the upper part of the layer of electron-emissive material.

5,347,195

ELASTIC SUPPORT DEVICE FOR A SHADOW MASK OF A COLOR PICTURE TUBE

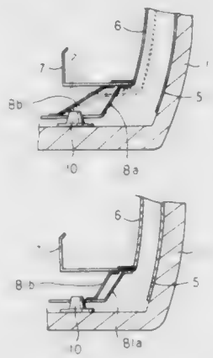
Ho S. Seo, Daeku-si, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 17, 1992, Ser. No. 852,523

Claims priority, application Rep. of Korea, Apr. 1, 1991, 4417/1991

Int. Cl.[5] H01J *29/07*

U.S. Cl. 313—404 **4 Claims**



1. An elastic support device for a shadow mask of a color picture tube, which cooperates with a frame to elastically support said shadow mask on a panel, said device comprising:

a first elastic member having a first end fixed to said frame and a second end coupled to a panel pin, wherein said panel pin is secured to said panel, thereby exerting elastic force upon said frame, said panel pin having a front side and a back side; and

a second elastic member having a first end slidably coupled with said frame and a second end fixed to said first elastic member, thereby exerting auxiliary elastic force upon said frame,

wherein said second end of said second elastic member which is fixed to said first elastic member is located on said back side of said panel pin.

5,347,196

LINE OUTPUT TRANSFORMER

Hans Meershoek, Chungli, Taiwan, assignor to U.S. Philips Corporation, New York, N.Y.

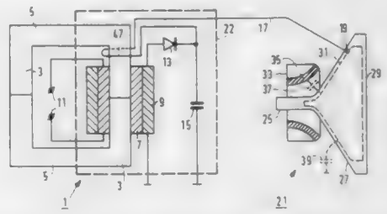
Filed Mar. 16, 1993, Ser. No. 32,344

Claims priority, application European Pat. Off., Mar. 19, 1992, 92200784.4

Int. Cl.[5] H01J *29/06*

U.S. Cl. 315—8 **11 Claims**

1. A line output transformer comprising; a ferromagnetic core having at least one leg, at least one high voltage winding arranged on a leg of the core and being magnetically coupled to the core, rectifier means and capacitor means coupled to the high voltage winding for generating a smoothed DC voltage, a high voltage conductor electrically connected to the rectifier means for applying said DC-voltage to an electrode of a cathode ray tube, characterized in that the high voltage conductor comprises a first portion of said conductor that is magnetically coupled to the ferromagnetic core.



5,347,197

DISPLAY DEVICE HAVING A DISPLAY TUBE INCLUDING A COLD CATHODE AND A CURRENT MIRROR DRIVE CIRCUIT FOR THE COLD CATHODE

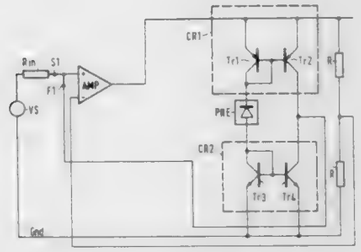
Terence Doyle, and Matheus J. G. Lammers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 19, 1993, Ser. No. 35,131

Claims priority, application European Pat. Off., Mar. 23, 1992, 92200831.3

Int. Cl.[5] H05B *39/00*

U.S. Cl. 315—94 **3 Claims**



1. A display device having a display tube including a cold cathode, said display device comprising:

amplifying means having a signal input and a feedback input;

first current mirror means coupled to said amplifying means and having a first terminal and a second terminal;

second current mirror means having an input and an output;

said cold cathode having a first end coupled to said first terminal of said first current mirror means, and a second end coupled to said input of said second current mirror means; and

feedback means having a first end coupled to said second terminal of said first current mirror means and to said output of said second current mirror means, and a second end coupled to said feedback input of said amplifying means.

5,347,198

LOW COST AC SWITCH FOR ELECTROLUMINESCENT LAMPS

Robert A. Kimball, Scottsdale, Ariz., assignor to Durel Corporation, Tempe, Ariz.

Filed Jun. 1, 1993, Ser. No. 69,738

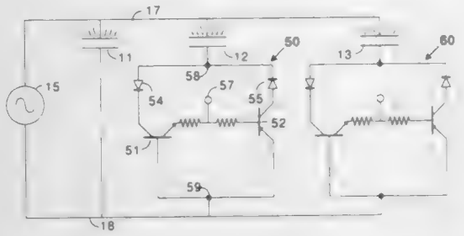
Int. Cl.[5] H05B *37/00*

U.S. Cl. 315—167 **9 Claims**

1. A switch circuit for series connection between an electroluminescent lamp and a source of alternating current, said switch circuit comprising:

a first terminal for connection to said electroluminescent lamp, a second terminal for connection to said source, and a control terminal;

a first current path including a first transistor and a second current path including a second transistor, wherein said first current path and said second current path are connected in parallel between said first terminal and said second terminal and wherein said first transistor and said second transistor are connected to said control terminal;



wherein said first current path and said second current path conduct on alternate half cycles of said alternating current when an enabling signal is applied to said control terminal and wherein neither current path conducts when a disabling signal is applied to said control terminal, thereby preventing DC bias from accumulating on said lamp.

5,347,199

THIN-TYPE PICTURE DISPLAY DEVICE WITH MEANS FOR EFFECTING ELECTRON TRANSPORT BY SECONDARD EMISSION

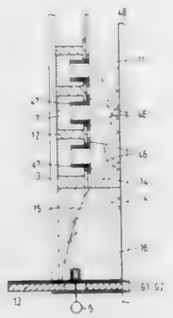
Gerardus G. P. Van Gorkom; Petrus H. F. Trompenaars, and Gerardus A. H. M. Vrijssen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 954,949, Sep. 30, 1992, abandoned, which is a continuation of Ser. No. 637,039, Jan. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 830,951, Feb. 6, 1992, abandoned, which is a continuation of Ser. No. 582,677, Apr. 24, 1990, abandoned. This application Apr. 26, 1993, Ser. No. 53,980

Claims priority, application Netherlands, Jan. 10, 1990, 9000060; Jun. 5, 1990, 9001266; Nov. 26, 1990, 9002566

Int. Cl.[5] G09G *3/10*

U.S. Cl. 315—169.1 **57 Claims**



1. A display device comprising a luminescent screen and means for selectively energizing different areas of said screen comprising:

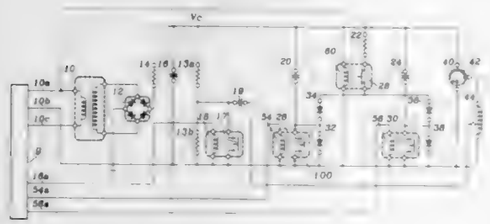
a. at least one longitudinally extending electron transport duct defined by at least one wall means comprising a material having a predetermined secondary emission coefficient;

b. electron source means for producing electrons in the at least one duct;

c. electrode means for producing an electric field within the

at least one duct to effect electron propagation along a length of said duct by means of secondary emission;
d. means for selectively extracting electrons from predetermined locations along the length of said at least one duct; and
e. means for directing said electrons to said screen areas; characterized in that said electrode means is constructed for producing a field component E_y substantially in the longitudinal direction of the duct to effect propagation of the electrons in said longitudinal direction and for producing a field component E_x substantially transverse to the longitudinal direction to promote contact of the propagating electrons with the at least one wall means before said electrons attain velocities above a predetermined magnitude.

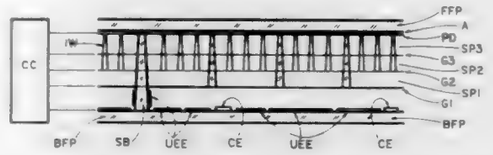
5,347,200
STROBE LIGHT SWITCHING ARRANGEMENT WITH REDUCED TRANSIENT CURRENTS
Nicholas F. De Nardis, Marshfield, Wis., assignor to Multi Electric Mfg. Inc., Chicago, Ill.
Filed Feb. 26, 1993, Ser. No. 23,397
Int. Cl.[5] H05B *41/00*
U.S. Cl. 315—241 S **8 Claims**



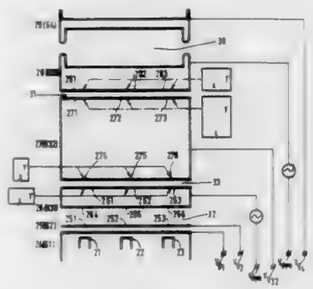
1. In combination:
a DC power supply;
a strobe lamp, having an ignition electrode, coupled across said DC power supply;
a first and a second energy storage capacitor coupled across said DC power supply for operating said strobe lamp at corresponding different intensity levels;
means in circuit with said second capacitor enabling said second capacitor to be continually charged from said DC power supply;
trigger means energizing said ignition electrode for periodically discharging one or both of said capacitors through said strobe lamp; and
switching means coupled to said second capacitor for connecting it in a discharge path with said strobe lamp.

5,347,201
DISPLAY DEVICE
Jemm Y. Liang, San Jose, and Shichao Ge, Santa Clara, both of Calif., assignors to Panocorp Display Systems, Santa Clara, Calif.
Continuation-in-part of Ser. No. 657,867, Feb. 25, 1991, Pat. No. 5,170,100, and a continuation-in-part of Ser. No. 730,110, Jul. 15, 1991, Pat. No. 5,229,691, and a continuation-in-part of Ser. No. 812,730, Dec. 23, 1991. This application Sep. 11, 1992, Ser. No. 943,934
Int. Cl.[5] G09G *1/04;* **H01J** *29/70, 1/02*
U.S. Cl. 315—366 **21 Claims**

1. A display device for displaying images when viewed in a viewing direction, comprising:
a first and a second face plate;
a set of side walls or a set of spacer means, which together with the face plates, define a vacuum chamber therein;
an anode placed on or near the first face plate in the chamber;
cathodoluminescent means in the chamber on or near the anode, for generating light in response to bombardment of electrons;
a multitude of electron emitting cathode elements, each containing at least one control gate, at least one base electrode and at least one field emitter, on or near the second face plate;
means for applying voltage to the cathode elements to cause the elements to generate electrons forming an electron cloud;
control electrodes in two or more individual layers between the anode and the cathode to control and accelerate the free electrons generated by the cathode towards the anode and the cathodoluminescent means to cause the cathodoluminescent means to emit light for displaying images; and
means for applying electrical potentials to the control electrodes such that electrons from the electron cloud are directed to selected locations of the cathodoluminescent means in selected quantities for displaying images at said desired locations of the desired brightness, said control electrodes being in two different layers between the face plates, the control electrodes in one layer each being transverse to and overlaps those in the other layer in overlapping areas when viewed in the viewing direction, each overlapping area between an electrode in one layer and another electrode in the other layer defining a pixel of the image.

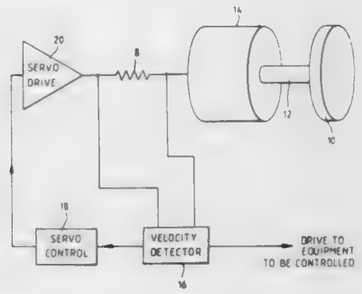


5,347,202
DISPLAY DEVICE AND CATHODE RAY TUBE
Lambert J. Stil, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 13, 1992, Ser. No. 867,586
Claims priority, application European Pat. Off., Apr. 17, 1991, 91200902.4
Int. Cl.[5] G09G *1/04;* **H01J** *29/46, 29/50*
U.S. Cl. 315—382 **10 Claims**



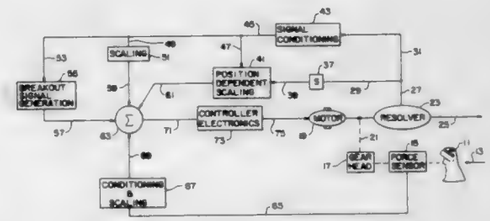
1. A display device comprising a cathode ray tubed and a deflection unit, said cathode ray tube including an electron gun for producing a plurality of coplanar electron beams, said electron gun having a main lens portion, through which said beams pass, said display device including means for producing in said main lens portion a main lens field and a quadrupole lens field having dynamically varying strengths, characterized in that the display device further includes means for producing a cylindrical lens field having a dynamically varying strength through which said beams pass before entering the main lens portion, said cylindrical lens field effecting substantially no variation of the beam cross-sectional sizes in a first direction parallel to the plane of the beams while effecting a substantial variation of the beam cross-sectional sizes in a second direction transverse to said plane.

5,347,203
CONTROL SYSTEM, ESPECIALLY FOR FILM AND VIDEO TAPE TRANSPORT
Peter R. Swinson, St Albans, United Kingdom, assignor to Rank Cintel Limited, United Kingdom
Filed Jul. 16, 1991, Ser. No. 730,687
Claims priority, application United Kingdom, Oct. 30, 1990, 9023533.4
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—268 **8 Claims**



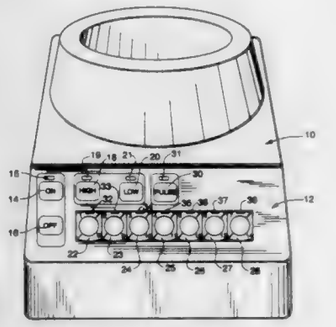
1. A control device for a system, comprising:
rotatable control means for varying a parameter of said system to be controlled;
sensing means for sensing a speed and sense of rotation of said rotatable control means imparted thereto by an operator; and
motor means for driving said rotatable control means to maintain constant speed and sense, at substantially the sensed speed and sense, after setting by the operator.

5,347,204
POSITION DEPENDENT RATE DAMPENING IN ANY ACTIVE HAND CONTROLLER
William W. Gregory, St. Petersburg, and James W. Kauffman, Palm Harbor, both of Fla., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 6, 1992, Ser. No. 957,427
Int. Cl.[5] G05B *5/01;* **B64C** *37/00*
U.S. Cl. 318—632 **9 Claims**



1. An active hand controller system comprising:
manual input control means;
a motor in connection with said manual input control means to provide desired force and feel characteristics of said manual input control means;
sensing means which senses predetermined characteristics, including position, of said manual input control means and generates output signals indicative of said predetermined characteristics;
controller electronic means which controls said motor in response to input signals;
feedback means electrically connected to said sensing means to provide said input signals to said controller electronic means; and
selective dampening means electrically connected to said sensing means which provides a greater dampening signal to said controller electronics when said manual input control means is positioned at/or about its null position than when its positioned other than at/or about its null position.

5,347,205
SPEED AND MODE CONTROL FOR A BLENDER
Clinton E. Piland, Henrico County, Va., assignor to Hamilton Beach/ Proctor-Silex, Inc., Glen Allen, Va.
Filed Sep. 11, 1992, Ser. No. 944,048
Int. Cl.[5] H02P *5/28*
U.S. Cl. 318—811 **19 Claims**



1. A blender or the like comprising:
a drive motor;
gating means connected in series with said drive motor across an AC voltage source, said gating means having an on stale permitting an energizing current to flow through said drive motor and an off state blocking current flow through said drive motor, said gating means assuming said off state each time the AC voltage is zero;
a zero-crossing detector for producing an output signal at each zero voltage crossing of said AC voltage;
a plurality of manually actuated switch means comprising a pulse mode switch, speed range selection switch means for selecting one of N speed ranges, and M speed selection switches; and,
a controller including,
a memory storing a plurality of delay values representing delay intervals, said memory having at least N×M addressable locations for storing N×M values representing delay intervals;
first means responsive to manual actuation of selected ones of said switch means for selecting one of said values;
second means for tolling a selected delay interval represented by the selected one of said delay values and turning said gating means on at the end of the selected delay interval;
third means for sensing said output signals and initiating operation of said second means each time said zero-crossing detector senses a zero voltage crossing; and,
sequence control means for sensing said switch means and enabling said first means, said sequence control means being responsive to actuation of said speed range selection switch means, said pulse mode switch and one of said selection switches, in sequence, for repeatedly sensing said switch means and enabling said first means

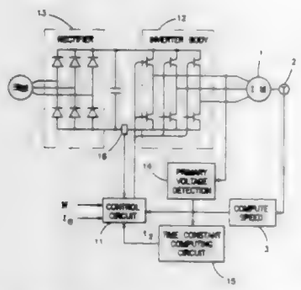
only so long as one of said speed selection switches is actuated.

5,347,206

VECTOR CONTROL METHOD OF INDUCTION MOTOR

Kazuhiko Doi, Cyoful; Koji Yamada, Tokyo, and Masayuki Mori, Tsushima, all of Japan, assignors to Otis Elevator Company, Farmington, Conn.

Continuation-in-part of Ser. No. 636,855, Jan. 2, 1991, abandoned. This application Aug. 12, 1991, Ser. No. 750,422
Claims priority, application Japan, Jul. 4, 1989, 1-172758
Int. Cl.[5] H02P *1/26*
U.S. Cl. 318—818 **4 Claims**



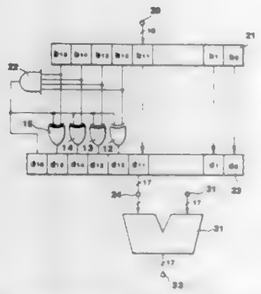
1. A vector control method for an induction motor for driving an elevator based on a secondary time constant, comprising the step of determining the secondary time constant by passing a constant current, of the same phase as during a passing of current to the excitation side of the induction motor, with the elevator mechanically stopped.

5,347,207

DISC SHAPED RECORDING MEDIUM HAVING A ZERO TRACK ADDRESS AND MULTIBIT OPPOSITE POLARITY TRACK ADDRESSES AND AN ADDRESS DISCRIMINATION CIRCUIT FOR READING SUCH RECORDING MEDIUM

Tadashi Otsuki, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Jan. 27, 1993, Ser. No. 9,897
Claims priority, application Japan, Jan. 28, 1992, 4-035743
Int. Cl.[5] G11B *17/22, 5/02, 3/70, 5/84*
U.S. Cl. 369—33 **5 Claims**



5. An address discriminating circuit for a recording medium in the form of a disc in which locations on said disc other than a predetermined location set as a zero-address are represented by (+) side addresses and (−) side addresses with respect to said zero address, and in which the information concerning these addresses are at least recorded as address data constituted by N bits, one of said (+) side address data and said (−) side address data being recorded in the form of said N bit data of which upper n bits, where N>n and n is at least 2, are all set to one of the binary states, with the remaining bits of said N bits representing the addresses, the other of said (+) side address data and said (−) side address data are recorded as data by said N bits exclusive of those data in which the upper n bits are in said one of said binary states, said address discriminating circuit comprising:

an AND gate having a plurality of inputs, the inputs coupled for sensing from a first register the binary state of said upper n bits, and AND gate further having an output coupled to a second register to store the binary state of said output as a most significant bit; and

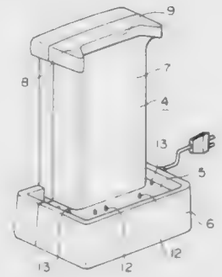
the plurality of exclusive OR gates, each exclusive OR gate having at least two inputs, a first input of each exclusive OR gate connected in common and coupled to the output of the AND gate, as second input of each exclusive OR gate coupled to one input of the AND gate, each exclusive OR gate having an output coupled to store the binary state of such output as successive next most significant bits within the second register.

5,347,208

CHARGING EQUIPMENT FOR CHARGING A PORTABLE APPARATUS AND SEPARABLE CELL PACK

Shinobu Iida, Tokyo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 25, 1993, Ser. No. 66,216
Claims priority, application Japan, May 26, 1992, 4-133242
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—2 **1 Claim**



1. Charging equipment for charging a portable apparatus containing a separable cell pack therein, comprising:

a portable apparatus charging portion which receives said portable apparatus containing the separable cell pack for charging said cell pack, said portable apparatus charging portion including a simple cell pack charging portion to receive said cell pack separated from said apparatus for charging said cell pack,

a charging base portion formed with a U-shaped recess portion for receiving said apparatus containing the cell pack or said cell pack separated from said apparatus, and

a square pillar portion projecting upwards from and perpendicularly to said recess portion and formed with a flange at an upper portion of the pillar portion,

said flange, said square pillar portion and said charging base portion constituting said portable apparatus charging portion and said simple cell pack charging portion.

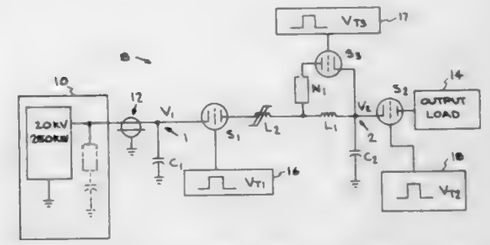
5,347,209

VOLTAGE CONTROL IN PULSED SYSTEM BY PREDICT-AHEAD CONTROL

Anthony N. Payne, San Lorenzo; James A. Watson, Tracy, and Stephen E. Sampayan, Manteca, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 21, 1992, Ser. No. 933,154
Int. Cl.[5] G05F *1/46*
U.S. Cl. 323—271 **13 Claims**

1. A method for regulating the voltage V(t) at a node in a circuit, wherein the voltage V(t) is a voltage waveform having a predictable shape that is a function of the time response of the circuit components, and wherein the node has a regulation circuit coupled thereto by a switch, said switch being closed by asserting a trigger pulse, the method comprising predicting the



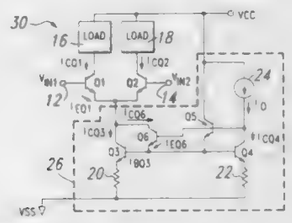
node voltage V(t+Δ) at a future time t+Δ where Δ is equal to the amount of time delay between asserting the trigger pulse and actual switch closure, and asserting the trigger pulse when the prediction of the future voltage V(t+Δ) equals the desired node voltage.

5,347,210

CURRENT SWITCH WITH BIPOLAR SWITCHING TRANSISTOR AND β COMPENSATING CIRCUIT

Baoson Nguyen, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 31, 1993, Ser. No. 40,763
Int. Cl.[5] G05F *3/16*
U.S. Cl. 323—315 **18 Claims**



11. A current switch, comprising:

at least one switching transistor having a collector electrode for coupling to a first voltage source, an emitter electrode, a base electrode for receiving a control signal, and a current gain β, said at least one switching transistor responsive to said control signal to turn on to produce a collector current; and

a bias circuit for causing said collector current to have a predetermined value when said at least one switching transistor is on, said bias circuit including:

first and second transistors having base electrodes coupled in common, said first transistor having a collector electrode coupled to the emitter electrode of said at least one switching transistor and an emitter electrode for coupling to a second voltage source, said second transistor having a collector electrode for coupling to a current source and an emitter electrode for coupling to said second voltage source; and

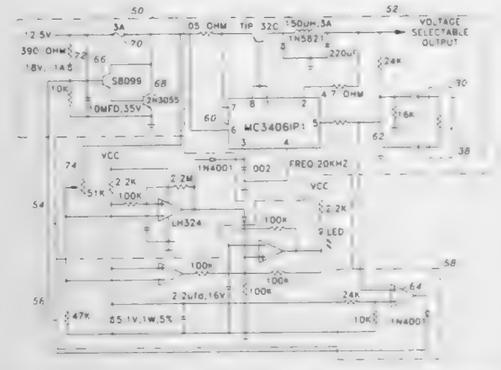
a compensating circuit coupled to the emitter electrode of said at least one switching transistor for reducing the dependence of said collector current of said at least one switching transistor on said current gain **62** , said compensating circuit including a third transistor having a collector electrode coupled to the emitter electrode of said at least one switching transistor, an emitter electrode coupled to the base electrode of said first transistor, and a base electrode coupled to the collector electrode of said second transistor.

5,347,211

SELECTABLE OUTPUT POWER CONVERTER

Peter J. Jakubowski, Huntington Beach, Calif., assignor to Innova Electronics Corporation, Fountain Valley, Calif.

Filed Mar. 11, 1993, Ser. No. 30,670
Int. Cl.[5] G05F *1/575*
U.S. Cl. 323—351 **21 Claims**



1. A power converter for providing a selectable output voltage, the power converter comprising:

(a) a converter circuit having an input port for receiving an input voltage and an output port for providing an output voltage, said converter circuit having a keyway;

(b) a key configured to be received by said keyway, said key comprising a body within which an electrical component is disposed, said electrical component having a predetermined value; and

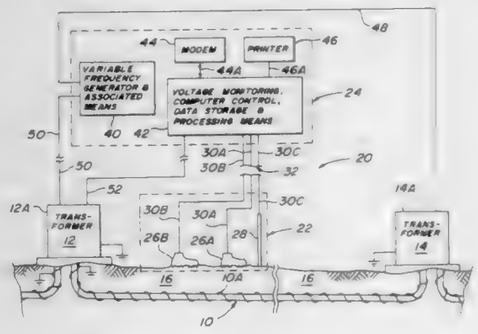
(c) wherein the value of the output voltage is determined by the value of said electrical component such that the output voltage is varied by replacing the key with another key having an electronic component of a different value.

5,347,212

SYSTEM AND METHOD OF USE FOR CONDUCTING A NEUTRAL CORROSION SURVEY

Craig D. Bass, 7700 NW. John Anders Rd., Kansas City, Mo. 64152; Richard D. Valenti, Jr., 5201 Dunhill Rd., Fayetteville, N.Y. 13066, and Emer C. Flounders, Jr., 2118 Horace Ave., Abington, Pa. 19001

Filed Sep. 9, 1992, Ser. No. 942,688
Int. Cl.[5] G01R *19/00*
U.S. Cl. 324—67 **62 Claims**



1. A method for non-intrusively testing the status of corrosion of at least one neutral conductor of an underground electrical cable forming a portion of an electrical distribution system, said cable additionally comprising at least one primary conductor carrying AC current therethrough when said cable is in service providing normal electrical utility power to said

distribution system, said neutral conductor of said cable being connected between a pair of electrically grounded structures, said method for testing being accomplished while leaving said cable in normal operation and comprising the steps of:

(a) impressing an electrical test signal of a predetermined frequency between said grounded structures while said cable is in service providing normal electrical utility power to said distribution system via said primary conductor to impress said test signal on said neutral conductor while leaving said neutral conductor connected to said structures so that said neutral conductor remains grounded,

(b) causing a pair of electrically conductive probes to contact the ground located over said underground cable at relatively closely spaced intervals while said test signal is impressed on said neutral conductor, and

(c) measuring the voltage gradients produced by said test signal in the ground by using monitoring means coupled to said spaced electrically conductive probes while said probes are n contact with the ground and while said primary conductor is carrying said AC current therethrough.

5,347,213

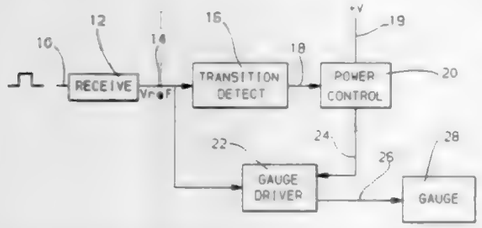
AIR CORE GAUGE METHOD AND APPARATUS WITH REDUCED POWER DISSIPATION

William J. Johnston, Flint; James W. Guest, Cadillac, both of Mich., and James D. Richardson, Kokomo, Ind., assignors to Delco Electronics Corp., Kokmo, Ind.

Filed Aug. 28, 1992, Ser. No. 936,486

Int. Cl.[5] G01R *5/14, 7/00, 1/20;* **G01P** *3/481*

U.S. Cl. 324—143 **5 Claims**



1. An apparatus to which an input signal is coupled, the input signal being indicative of a measure of a parameter, the apparatus comprising:

a gauge device for indicating the measure of the parameter;

means for detecting transitions in the input signal and for providing a control signal in response to detected transitions;

means, responsive to the input signal and the control signal, for providing an output signal for driving the gauge device to indicate the measure of the parameter, the output signal having a first power level during detected transitions in the input signal and for otherwise having a second power level, where the first power level is greater than the second power level.

5,347,214

METHOD AND DEVICE FOR SETTING THE SHORT CIRCUIT MOMENT IN ELECTRIC MOTORS, PARTICULARLY IN SERVOMOTORS

Walter Haussecker, Buehlertal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 8, 1992, Ser. No. 941,930

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1991, 4129495

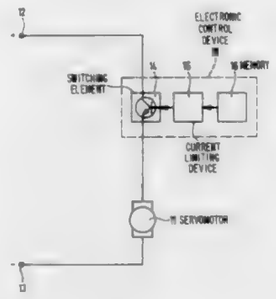
Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—158 MG **8 Claims**

1. A method of setting a short circuit moment in an electric motor, comprising the steps of:

measuring the actual short circuit moment of the electric motor;

comparing the actual short circuit moment to a predetermined short circuit moment;



calculating a set short circuit current, Iks, corresponding to a desired set short circuit moment, Mks; and

storing a setting corresponding to the set short circuit current, Iks, in an electronic control device for the electric motor.

5,347,215

SEMICONDUCTOR CHIP TEST JIG

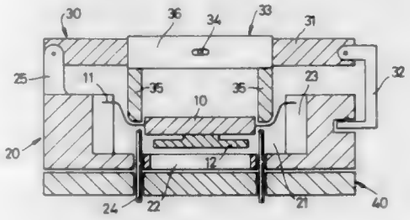
Ross L. Armstrong, Meadowpark, and George A. Meiklejohn, Bellevue Crescent, both of United Kingdom, assignors to Digital Equipment International Ltd., Switzerland

Filed Jun. 18, 1992, Ser. No. 900,631

Claims priority, application United Kingdom, Jun. 27, 1991, 9114076.4

Int. Cl.[5] G01R *1/04*

U.S. Cl. 324—158.1 **12 Claims**



1. A test jig for leaded semi-conductors comprising:

a body including a bottom and side walls, said side walls extending laterally away from said bottom to form a well space region therebetween for housing a leaded semiconductor during testing; the bottom having openings extending therethrough;

resiliently biased contact pins extending through the openings for supporting contact with the leads of said semiconductor;

fins located in the well space region extending inwardly of two opposing side walls towards a central region of said well for locating leads of said semi-conductor in alignment with said contact pins for support on the the ends thereof; said leads of said semiconductor being placed between said fins; and

a cover comprising holding surfaces positioned to contact said leads at directly opposite locations on said leads when said body and and cover are brought together.

5,347,216

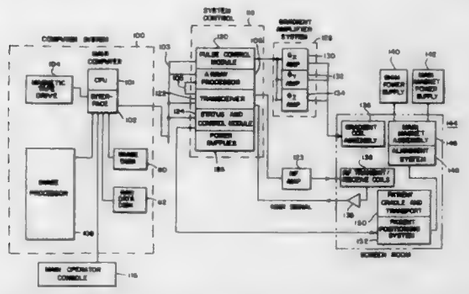
FAST NMR IMAGE ACQUISITION WITH SPECTRALLY SELECTIVE INVERSION PULSE

Thomas K. Foo, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Jun. 23, 1992, Ser. No. 902,634

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—309 **4 Claims**



1. In an NMR system, a method for conducting a scan comprised of a set of steady-state free precession pulse sequences in which a magnetic field gradient is stepped through a corresponding set of values to acquire NMR data from which an image is reconstructed, the steps comprising:

a) performing a contrast preparation pulse sequence which includes producing a spectrally selective RF inversion pulse which is tuned to the Larmor frequency of a selected spin species to be suppressed in the reconstructed image;

b) performing a SSFP pulse sequence series in which a subset of said set of steady-state free precession pulse sequences are performed to acquire a portion of the NMR data; and

c) repeating steps a) and b) until all steady-state free precession pulse sequences in said set have been performed without any significant recovery period therebetween.

5,347,217

MAGNETIC RESONANCE SPECTROSCOPY AND IMAGING

Martin O. Leach, Wallington, and Jonathan C. Sharp, Leicester, both of United Kingdom, assignors to British Technology Group Limited, London, United Kingdom

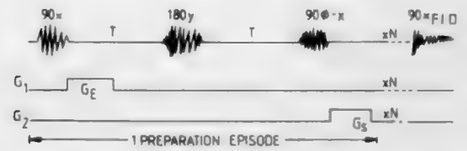
PCT No. PCT/GB91/01247, § 371 Date Mar. 5, 1993, § 102(e) Date Mar. 5, 1993, PCT Pub. No. WO92/02828, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 25, 1991, Ser. No. 966,158

Claims priority, application United Kingdom, Aug. 2, 1990, 9016989.7

Int. Cl.[5] G01R *33/00*

U.S. Cl. 324—309 **9 Claims**



1. A method of preparing the magnetization in a sample for magnetic resonance comprising:

applying to the sample a first e.m. preparation pulse to flip the spins in the sample away from the B_o direction,

then applying a phase-encoding gradient magnetic field pulse of predetermined magnitude and duration to the sample to give a positional variation of phase in one direction in the sample,

and subsequently applying second e.m. preparation pulse to the sample to return the spins to the B_o direction, the phase variation encoded during the application of the phase-encoding gradient magnetic field pulse resulting in a predetermined spatial variation in magnetization along the B_o axis to enable a resonance signal to be then obtained from a predetermined localized region in a single acquistition.

5,347,218

METHOD AND APPARATUS FOR RAPID SPIN ECHO MAGNETIC RESONANCE IMAGING

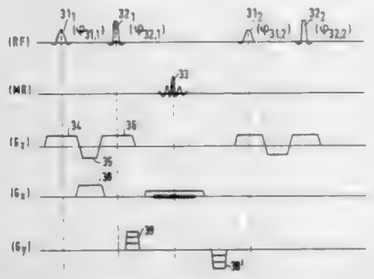
Gerrit H. Van Yperen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 23, 1993, Ser. No. 52,302

Claims priority, application European Pat. Off., Apr. 24, 1992, 92201156.4

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—309 **20 Claims**



1. Method for magnetic resonance imaging of a body placed in a stationary and substantially homogeneous main magnetic field, the method comprising repeated execution, with a repetition time TR, of a sequence including the following steps:

application of a first RF-pulse for excitation of at least a portion of the body,

application of at least a first gradient magnetic field for phase encoding of the excited portion,

application of a second RF-pulse at a time τ after the first RF-pulse,

detection of a magnetic resonance spin-echo signal around a time 2τ after the first RF-pulse, wherein:

the repetition time TR between the first RF-pulses in subsequent sequences is shorter than a transverse relaxation time T_2 of a relevant substance of the body,

said first gradient magnetic field is applied after the application of the second RF-pulse, and

a second gradient magnetic field for compensation of the phase encoding caused by the first gradient magnetic field is applied in the interval after occurrence of the magnetic resonance spin-echo signal and before application of the first RF-pulse in a next sequence.

5,347,219

RESONATOR ARRANGEMENT FOR ELECTRON SPIN RESONANCE SPECTROSCOPY

Ekkehard Gentsch, Karlsruhe, and Dieter Schmalbein, Marxzell-Burbach, both of Fed. Rep. of Germany, assignors to Bruker Analytische Messtechnik GmbH, Fed. Rep. of Germany

Filed Jul. 31, 1992, Ser. No. 923,040

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1991, 4125653

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—316 **7 Claims**

1. An electron spin resonance resonator comprising:

a) a carrier plate carrying

i) means for inserting a sample into said resonator,

ii) means for feeding microwave energy to said resonator, and

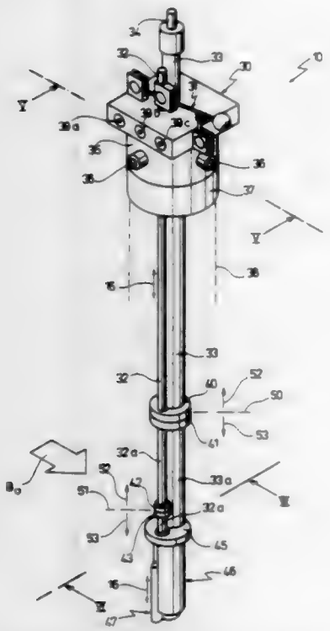
iii) means for adjusting microwave coupling to said resonator;

b) an elongate intermediate section extending along an axis and having a first end and a second end, said first end being connectable to said carrier plate, said intermediate section having

i) axial sample guide means connectable, at said first end, to said sample inserting means and terminating in a first axially oriented connector disposed at said second end of said intermediate section,

ii) a rigid axial microwave line connectable, at said first end, to said microwave feeding means and to said microwave coupling adjusting means, said microwave line terminating in a second axially oriented connector disposed at said second end of said intermediate section and;

c) a modular cavity section having a first end and a second end and a microwave cavity formed therein, said cavity section having,



i) axial sample receiving means having a proximal end in communication with said cavity and having a distal end terminating in a third axially oriented connector adapted for connecting to said first axially oriented connector, and

ii) cavity coupling means being displaceable relative to said cavity, said cavity coupling means having a first end coupled to said cavity and having a second end terminating in a fourth axially oriented connector adapted for connecting to said second axially oriented connector,

whereby when said first and said third connectors are mated with each other, a sample may be inserted into said cavity via said sample inserting means, said sample guide means, and said sample receiving means and

when said second and said fourth connectors are mated with each other, microwave energy is fed into said cavity via said microwave feeding means and said axial microwave line and, simultaneously, said cavity coupling means is activated by said rigid axial microwave line thereby adjusting the microwave coupling.

5,347,220

MAGNETIC RESONANCE APPARATUS COMPRISING A BIRD-CAGE RF COIL

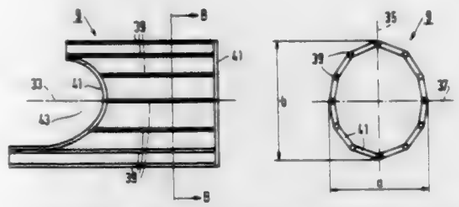
Teunis R. Van Heelsbergen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 9, 1992, Ser. No. 990,328

Claims priority, application European Pat. Off., Dec. 11, 1991, 91203257.0

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—318 **7 Claims**



1. A magnetic resonance apparatus, comprising a mainly cylindrical RF coil having a longitudinally directed central axis and a mutually perpendicular symmetry plane and reference plane which intersect each other along the central axis, and also comprises a plurality of rod conductors which extend parallel to the central axis across a mainly cylindrical surface, and loop conductors which extend around the central axis near the ends of the rod conductors, said plurality of rod conductors including rod conductors which are situated diametrically near the symmetry plane on opposite sides of the reference plane and rod conductors which are situated diametrically near the reference plane on opposite sides of the symmetry plane, the reference plane on opposite sides of the symmetry plane, the reference plane on opposite sides of the symmetry plane, the rod conductors situated near the symmetry plane on opposite sides of the reference plane being longer than the rod conductors situated near the reference plane on opposite sides of the symmetry plane, and the rod conductors situated near the symmetry plane on one side of the reference plane being longer than the rod conductors situated near the symmetry plane on the other side of the reference plane.

5,347,221

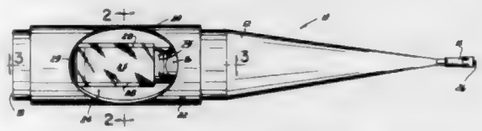
TRUNCATED NUCLEAR MAGNETIC IMAGING PROBE

Kenneth A. Rubinson, 354 Oakwood Park Dr., Cincinnati, Ohio 45238

Filed Mar. 9, 1993, Ser. No. 28,386

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—318 **20 Claims**



1. A truncated probe for nuclear magnetic or electron paramagnetic resonance imaging comprising:

a hollow outer conductor having first and second ends;

a central conductor being mounted within said outer conductor, said central conductor being electrically coupled to said outer conductor at said second end of said outer conductor; and

an opening in said outer conductor proximate said second end so that a magnetic field is emitted from said central conductor near said second end in response to one of a radio and microwave frequency pulse traveling along said central conductor to said second end of said outer conductor, said emitted magnetic field having a shade corresponding to said opening to induce a magnetic field response from a sample surrounding said opening in said outer conductor, energy from said magnetic field response being received by said central conductor which conducts said magnetic field response out of said truncated probe for imaging of said sample surrounding said opening.

5,347,222

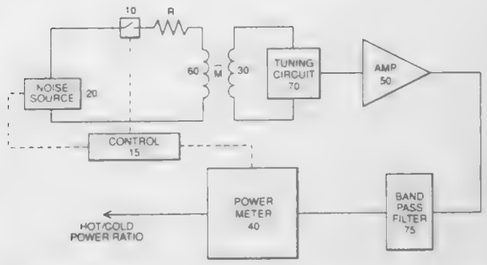
SIGNAL/NOISE RATIO OPTIMIZATION TUNING SYSTEM

Timothy R. Fox, Chicago, and Richard J. Faehnrich, Niles, both of Ill., assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jan. 11, 1993, Ser. No. 2,795

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—322 **13 Claims**



1. A signal/noise ratio optimization tuning system for tuning a receiver antenna circuit and amplifier comprising:

a switch-controlled noise source means weakly coupled to the receiver antenna circuit during tuning operations for switching a noise source between higher and lower power states at a predetermined frequency;

a noise power meter means synchronized to the switch-controlled noise source means for measuring outputs of the amplifier, wherein the noise power meter means measures the outputs of the amplifier when the noise source is switched between higher and lower power states and computes a ratio of the amplifier output with the noise source in the higher power state to the amplifier output with the noise source in the lower power state; and

tuning adjustment means for tuning the receiver antenna circuit and amplifier to maximize the ratio of amplifier outputs with the noise source in the higher and lower power states by making an adjustment to the receiver antenna circuit.

5,347,223

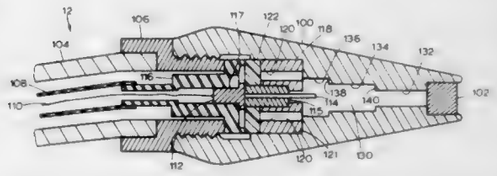
GAS LEAK DETECTOR SENSING TIP WITH INTERIOR CONCENTRIC BORES AND CORONA CURRENT GENERATION

Jan Krema, Elk Grove Village, and Dennis Martell, Naperville, both of Ill., assignors to J and N Associates, Inc., Valparaiso, Ind.

Filed Jan. 22, 1993, Ser. No. 7,844

Int. Cl.[5] G01N *27/70, 27/60;* **G08B** *21/00*

U.S. Cl. 324—455 **25 Claims**



16. A gas leak detector apparatus having a sensing tip that operates on the corona principle, said sensing tip having a pair of electrodes across which a high voltage is provided to generate a corona current through said electrodes, said sensing tip comprising:

a first electrode comprising a conductive housing having a first end having a gas inlet formed therein and a second end, said housing having a flow passage formed therein, said flow passage comprising:

a first bore having a first diameter, said first bore being provided between said gas inlet and said second end of said conductive housing; and

a second bore having a second diameter, said second diameter being smaller than said first diameter of said first bore: said second bore being provided between said first bore and said gas inlet formed in said conductive housing:

a second electrode provided in the interior of said conductive housing, said second electrode having a tip being provided at a defined location with respect to said first bore formed in said conductive housing;

a voltage supply circuit for generating a high voltage sufficient to cause a corona to be formed across said first and said second electrodes: and

a conductive member that connects said voltage supply circuit to said second electrode so that said high voltage is provided to said second electrode to form a corona across said first and said second electrodes so that a corona current is induced to flow through said first and said second electrodes.

5,347,224

CURRENT MONITORING CIRCUIT HAVING CONTROLLED SENSITIVITY TO TEMPERATURE AND SUPPLY VOLTAGE

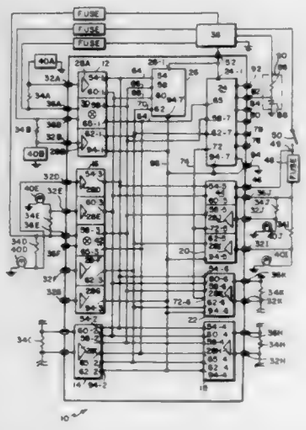
A. Paul Brokaw, Burlington, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Feb. 26, 1992, Ser. No. 843,349

The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—522 **17 Claims**



1. An apparatus for monitoring current flowing through a shunt in a circuit, comprising:

a comparator having two output states and being responsive to a voltage developed across a shunt in the circuit as a result of the current flowing through the circuit, the shunt being coupled to the comparator, so that the comparator assumes one of its two output states when the voltage developed across the shunt is greater than a predetermined threshold switching voltage of the comparator and the other of its two output states when the voltage devel-

oped across the shunt is less than said threshold switching voltage, said threshold switching voltage changing as a result of changes in a supply voltage of the circuit or changes in temperature; and

a threshold switching voltage sensitivity control circuit coupled to and controlling the threshold switching voltage of the comparator for providing selectable control of sensitivity of the threshold switching voltage to changes in a supply voltage of the circuit and for providing selectable control of a sensitivity of the threshold switching voltage to changes in temperature.

5,347,225

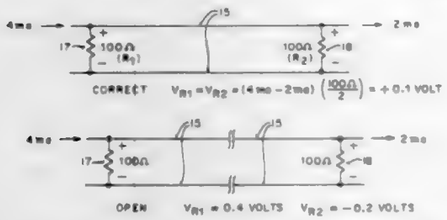
NETWORK MONITOR AND TEST APPARATUS

Martin H. Graham, Berkeley, Calif., assignor to Tut Systems, Inc., Pleasant Hill, Calif.

Continuation of Ser. No. 991,181, Dec. 16, 1992, abandoned, which is a division of Ser. No. 731,634, Jul. 17, 1991, abandoned. This application Mar. 10, 1994, Ser. No. 208,914

Int. Cl.[5] G01R *31/08*

U.S. Cl. 324—523 **11 Claims**



1. A method for monitoring the condition of a twisted pair line having a first end and a second end comprising the steps of:

applying to said first end of said twisted pair line, alternately, a first DC current having a first direction and a second DC current having a second direction opposite to said first direction, said first and second currents alternating at rate slow enough so as to allow said twisted pair line to be stable in response to said first current and said second current;

applying to said second end of said twisted pair line concurrent with applying to said first end of said twisted pair line said first and said second DC currents, a third DC current equal in value and direction to said first DC current and a fourth DC currents equal in value and direction to said second DC current, said third and fourth DC currents alternating on said twisted pair line at a rate slow enough to permit said twisted pair line to become stable in response to said first and second DC currents, said alternating of said third and fourth DC currents being asynchronous with said alternating second DC currents: and

comparing the potential on said twisted pair line to a predetermined potential, said predetermined potential being selected such that a determination is made of the condition of said twisted pair line including a determination of said twisted pair line being open, crossed, short circuited, or terminated in a predetermined resistance value.

5,347,226

ARRAY SPREADING RESISTANCE PROBE (ASRP) METHOD FOR PROFILE EXTRACTION FROM SEMICONDUCTOR CHIPS OF CELLULAR CONSTRUCTION

Walter A. Bachmann, Sunnyvale, and Peggy A. Hale, Ben Lomond, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 16, 1992, Ser. No. 977,264

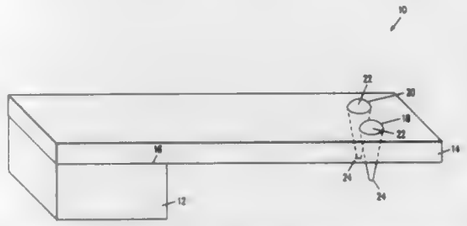
Int. Cl.[5] G01R *27/02*

U.S. Cl. 324—724 **33 Claims**

1. A semiconductor scanning resistance probe responsive to an external positioning and control device for generating a resistivity current in a semiconductor device, the semiconductor scanning resistance probe comprising:

a semiconductor substrate;

a cantilever formed on the semiconductor substrate, the cantilever having a plurality of projections and a corresponding plurality of probe tip openings, each projection having a distal end, each probe tip opening extending through the cantilever to the distal end of one projection; and



a plurality of probes, each probe being formed within a corresponding one of the probe tip openings so that a portion of each probe extends beyond the distal end of said one projection,

whereby the resistivity current flows between the probes when the plurality of probes are placed into contact with the semiconductor device by the external positioning and control device.

5,347,227

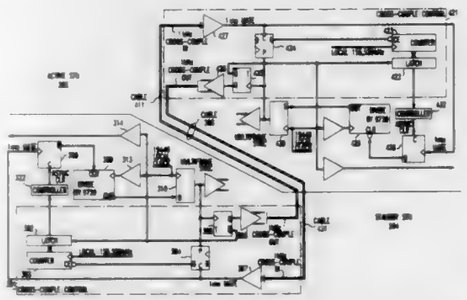
CLOCK PHASE ADJUSTMENT BETWEEN DUPLICATED CLOCK CIRCUITS

James R. Bortolini, Boulder, Colo., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 10, 1992, Ser. No. 988,580

Int. Cl.[5] H03K *7/00, 17/00*

U.S. Cl. 328—63 **7 Claims**



1. An apparatus for adjusting phase of first timing signals generated by a first clock circuit, comprising:

a counter counting at a fixed rate in response to being started by an internal signal repetitively generated by the first clock circuit after generation of a first predetermined number of first timing signals by the first clock circuit;

means in a second clock circuit for repetitively generating an external signal after generation of a second predetermined number of second timing signals by the second clock circuit where the first and second predetermined numbers are equal;

means for transmitting the external signal to the first clock circuit and the transmitting means being adjusted to cause a delay resulting in an integer count of the counter;

the counter responsive to receipt of the external signal by the first clock circuit to stop counting;

a latch responsive to a falling edge of the internal signal for storing the contents of the counter; and

means responsive to a difference between the contents of the latch and the integer count due to the delay of the transmission means for modifying the phase of the first timing signals upon the latch storing the contents of the counter.

5,347,228

BPSK DEMODULATOR USING COMPOUND PHASE-LOCKED LOOP

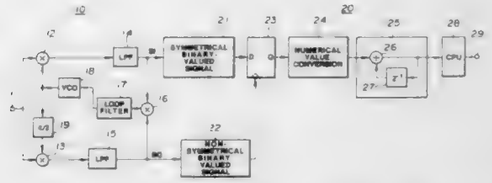
Jun Iwasaki, Tokyo, Japan, assignor to Sony, Tokyo, Japan

Filed Jul. 20, 1993, Ser. No. 94,560

Claims priority, application Japan, Jul. 31, 1992, 4-225282

Int. Cl.[5] H04L *27/22*

U.S. Cl. 329—308 **6 Claims**



1. A BPSK demodulator having a compound phase locked loop, comprising

first binary-valued signal forming converting means for converting demodulated synchronizing component signals into binary-valued signals,

second binary-valued signal forming converting means for converting demodulated quadrature component signals into binary-valued signals,

a flip-flop having an output of said first binary-valued signal forming means as a data input and having an output of said second binary-valued signal forming converting means as a clock input,

integrating means for integrating an output of said flip-flop, and

decision means for deciding that, if the absolute value of an output of said integrating means is larger than a predetermined threshold, said compound phase locked loop is in an unlocked state.

5,347,229

POWER AMPLIFIER WITH HARMONICALLY TRAPPED HETEROJUNCTION BIPOLAR TRANSISTOR

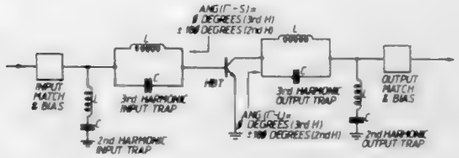
Charles Suckling, Rushden, and Glenn Collinson, Hitchin, both of United Kingdom, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 16, 1992, Ser. No. 990,996

Claims priority, application United Kingdom, Dec. 16, 1991, 9126616

Int. Cl.[5] H03F *3/217*

U.S. Cl. 330—251 **9 Claims**



1. A power amplifier for operation within a narrow bandwidth regime, said power amplifier comprising:

a heterojunction bipolar transistor having a base, a collector and an emitter for providing a non-linear gain;

an input terminal connected to the base of said heterojunction bipolar transistor for providing an input electrical signal thereto;

an output terminal connected to the collector of said heterojunction bipolar transistor for providing an amplified output electrical signal;

harmonic input trap circuit means interposed in the connection between said input terminal and the base of said heterojunction bipolar transistor and being resonant at a harmonic of substantially band center frequency; and

harmonic output trap circuit means interposed in the connection between the collector of said heterojunction bipolar transistor and said output terminal;

said harmonic input and output trap circuit means increasing the efficiency of the power amplifier by dissipating energy resulting from harmonic generation by said heterojunction bipolar transistor during amplification of the electrical signal.

5,347,230

AMPLIFICATION CIRCUIT

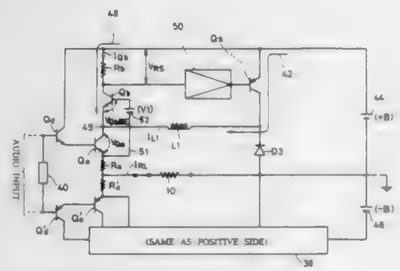
Masao Noro, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Jun. 17, 1992, Ser. No. 900,194

Claims priority, application Japan, Jun. 20, 1991, 3-176094

Int. Cl.[5] H03F *3/26, 3/38*

U.S. Cl. 330—297 **8 Claims**



1. An amplification circuit comprising:

power amplifying means for amplifying an input signal, the power amplifying means capable of being driven by receiving a source voltage;

a power source;

main power source supplying means for supplying a source voltage from said power source to said power amplifying means,

said main power source supplying means comprising,

a switching element, provided between said power amplifying means and said power source, for switching transmission of said power source voltage to said power amplifying means,

smoothing means for smoothing a switching output through the switching element and

switching control means for controlling a switching operation of the switching element;

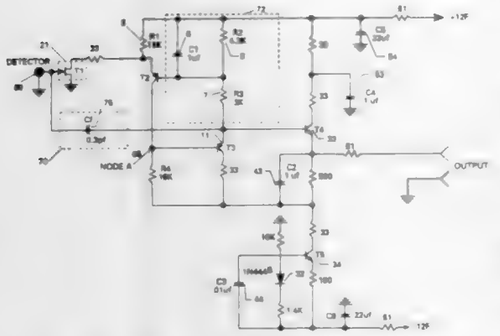
auxiliary power source supplying means for supplementing a deficiency of said source voltage to permit the power amplifying means to be driven normally, said switching control means further comprising current detection means for detecting a current flowing through said auxiliary power source supplying means, said switching element being controlled in accordance with said detected current of said current detection means.

5,347,231

LOW NOISE CHARGE SENSITIVE PREAMPLIFIER DC STABILIZED WITHOUT A PHYSICAL RESISTOR

Giuseppe Bertuccio, Brianza, Italy; Pavel Rehak, Patchogue, N.Y., and Deming Xi, Beijing, China, assignors to Associated Universities, Inc., Washington, D.C.

Filed Feb. 23, 1993, Ser. No. 21,239
Int. Cl.[5] H03F *3/16*
U.S. Cl. 330—300 **10 Claims**



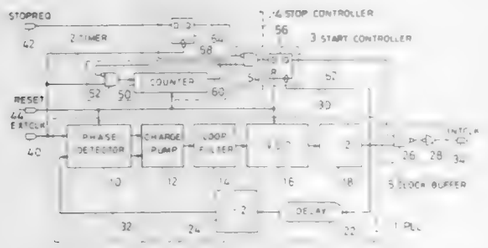
1. A charge sensitive preamplifier without a resistor or resistance components in parallel with a feedback capacitor for amplifying a charge delivered by a detector comprising:
an input cascode having a first and a second transistor, the second transistor behaving as being in a common base configuration;
first feedback means comprising a capacitor connected between an output transistor and said detector, for performing the charge to voltage conversion; and
second feedback means, connected between said output transistor and the base of the second transistor of said input cascode, for stabilizing the DC operating point of said preamplifier.

5,347,232

PHASE LOCKED LOOP CLOCK GENERATOR

Yoshito Nishimichi, Osaka, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed May 14, 1993, Ser. No. 61,016
Claims priority, application Japan, May 15, 1992, 4-123126; Jul. 17, 1992, 4-190425
Int. Cl.[5] H03L *7/095, 7/10*
U.S. Cl. 331—1 A **19 Claims**



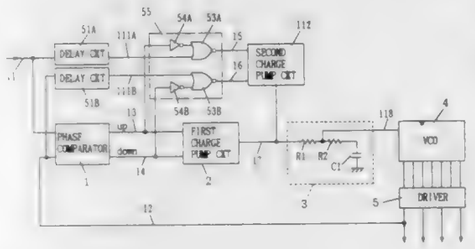
1. A clock generator for feeding as a source clock signal an internal clock signal in synchronism with an external clock signal serving as a reference clock signal to a load circuit, said clock generator comprising:
a clock signal generation means for generating the source clock signal, having an initial phase, to be input to said load circuit, said clock signal generation means further adjusting the initial phase of said source clock signal generated to another phase causing the source clock signal to be synchronous with the reference clock signal; and
a clock signal propagation control means for controlling the propagation of the source clock signal delivered from said clock signal generation means by preventing said source clock signal as the internal clock signal from being outputted to said load circuit unless the source clock signal can be fed in synchronism with said reference clock signal.

5,347,233

PLL CIRCUIT APPARATUS AND PHASE DIFFERENCE DETECTING CIRCUIT APPARATUS

Atsuhiko Ishibashi; Harufusa Kondoh, and Masaya Kitao, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1993, Ser. No. 40,314
Claims priority, application Japan, Apr. 2, 1992, 4-081057; Sep. 11, 1992, 4-243164
Int. Cl.[5] H03L *7/00*
U.S. Cl. 331—2 **20 Claims**



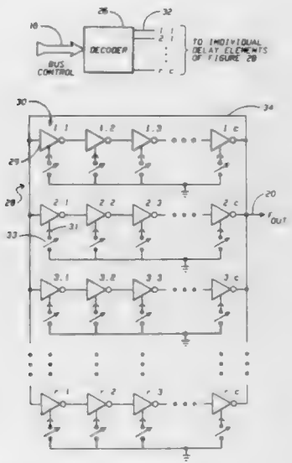
1. A phase-locked loop apparatus of an analog control type, comprising:
integrating means for performing an integrating operation of an input signal;
internal clock signal generating means responsive to an output of said integrating means for generating an internal clock signal for internal synchronization;
means for receiving an externally generated reference clock signal;
phase difference detecting means for detecting a first phase difference between said externally generated reference clock signal and said internal clock signal for providing a phase difference detection pulse signal having a pulse width representing said first phase difference;
integration control means responsive to said phase difference detection pulse signal from said phase difference detecting means for promoting a supply of said input signal by said integrating means;
reference pulse width signal generating means for generating a reference pulse width signal having the same frequency as that of either said externally generated reference clock signal or said internal clock signal and of a predetermined pulse width;
pulse width comparing means for comparing the pulse width of said phase difference detection pulse signal with the pulse width of said reference pulse width signal for providing an output signal representing a second phase difference of said phase difference detection pulse signal and said reference pulse width signal; and
control means responsive to said second phase difference signal for controlling a manner of said integrating operation of said integrating means.

5,347,234

DIGITAL VOLTAGE CONTROLLED OSCILLATOR

John E. Gersbach, Burlington, and Ilya I. Novof, Essex Junction, both of Vt., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 26, 1993, Ser. No. 37,202
Int. Cl.[5] H03B *27/00*
U.S. Cl. 331—57 **17 Claims**



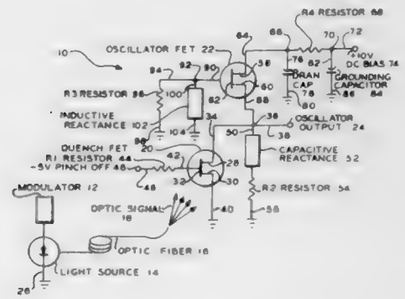
1. A digital phase lock loop, comprising:
a digital voltage controlled oscillator which is responsive to a first set of control signals to provide an output signal;
a phase detector for receiving and comparing the frequency of said output signal with the frequency of a reference signal, and for outputting a second control signal based on the comparison; and
a digital filter which is responsive to said second control signal to output said first set of control signals to said digital voltage controlled oscillator, said digital voltage controlled oscillator comprising (i) an array of delay elements and (ii) a decoder for receiving said first set of said control signals and selectively activating one or more of said delay elements in response thereto.

5,347,235

OPTICALLY CONTROLLED OSCILLATOR

Thomas P. Higgins, and Dana J. Sturzebecher, both of Tinton Falls, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 2, 1992, Ser. No. 970,191
Int. Cl.[5] G01J *5/00*
U.S. Cl. 331—66 **7 Claims**



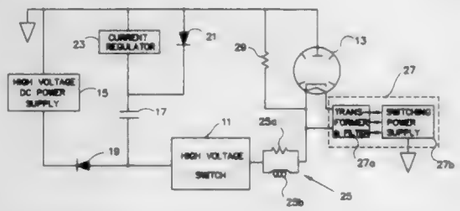
6. An optically controlled oscillator circuit comprising;
a light source for emitting light at a selective wavelength;
control means coupled to said light source for controlling the intensity of light from said light source;
a quench FET;
an oscillator field effect transistor (FET) having a drain and a source and a gate;
circuit means having a circuit output junction;
said circuit means connecting the source and drain of said oscillator FET in series circuit with said a quench FET and with said circuit output junction across a source of positive voltage; and
means optically coupled from said light source on a surface of said quench FET.

5,347,236

MODULATOR FOR NEGATIVE PULSE ACTIVATED OSCILLATORS

Steven D. Neuharth, Glendale; James Lobsinger, Peoria, and Dean J. Janke, Phoenix, all of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 25, 1993, Ser. No. 83,956
Int. Cl.[5] H03B *9/10*
U.S. Cl. 331—87 **13 Claims**



1. A modulator for modulating an oscillator having an anode, a cathode, and a filament, the modulator including a voltage source having a first terminal coupled to the anode and a second terminal, a switch having an on state and an off state, a first terminal of the switch coupled to the second terminal of the voltage source and a second terminal of the switch coupled to the cathode, the voltage source, switch, and oscillator arranged in a manner for current to flow between the anode and cathode when the switch is in the on state and for current not to flow between the anode and cathode when the switch is in the off state, the modulator further including a current regulator having first and second terminals respectively coupled to said first and second terminals of the voltage source for controlling current flow between the anode and cathode when the switch is in the on state, characterized in that the modulator further comprises a voltage controller coupled between said second terminal of said switch and said cathode, said voltage controller constructed and arranged to control time rate of change of voltage across said switch.

5,347,237

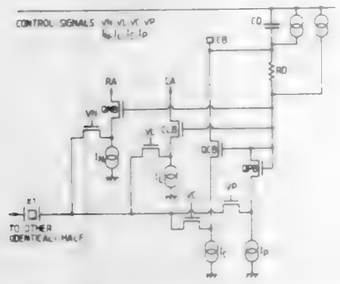
CRYSTAL OSCILLATOR

George H. S. Rokos, Bishop's Stortford, United Kingdom, assignor to Northern Telecom Limited, Montreal, Canada

PCT No. PCT/GB91/02287, § 371 Date Aug. 16, 1993, § 102(e) Date Aug. 16, 1993, PCT Pub. No. WO92/11691, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 20, 1991, Ser. No. 64,156
Claims priority, application United Kingdom, Dec. 20, 1990, 9027738
Int. Cl.[5] H03B *5/36*
U.S. Cl. 331—116 FE **6 Claims**

1. A frequency tuneable crystal oscillator arrangement, including a piezo-electric crystal, means for providing a drive current to the crystal, a reactance into which a current corresponding to the crystal current is fed whereby to develop a corresponding voltage across that reactance, and an adjustable

gain amplifier for amplifying said voltage and for feeding said amplified voltage back to the crystal, wherein said reactance is arranged in series with the crystal, and wherein the reactance comprises a plurality of different impedances, there being



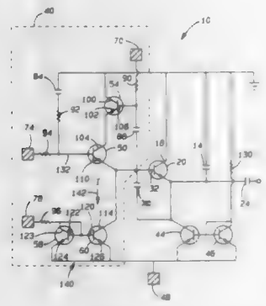
current steering means for dividing the current corresponding to the crystal current between the impedances whereby to determine the effective value of the reactance in series with the crystal whereby to control the crystal frequency.

5,347,238

BIPOLAR MICROWAVE MONOLITHIC VOLTAGE CONTROLLED OSCILLATOR USING ACTIVE INDUCTORS

Kevin W. Kobayashi, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jul. 6, 1993, Ser. No. 88,009
Int. Cl.[5] H03B *5/24;* **H03H** *11/04*
U.S. Cl. 331—117 R **12 Claims**



1. A voltage controlled oscillator for providing a fixed amplitude output at an adjustable frequency, said voltage controlled oscillator comprising:

a first transistor including an emitter, a base and a collector;

capacitance means connected between said emitter and said base of said first transistor for providing a first capacitance therebetween;

inductance simulating means for generating a controllable impedance and including second and third transistors each with a base, an emitter, and a collector, wherein the second and third transistors are connected between the base and the collector of said first transistor and wherein the controllable impedance includes an inductive reactance component related to a quiescent bias current flowing through the third transistor; and

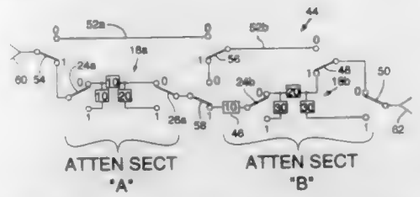
current means connected to said third transistor for generating said quiescent bias current to vary said inductive reactance component, wherein said inductive reactance component and said first capacitance vary said adjustable frequency of oscillation.

5,347,239

STEP ATTENUATOR

Henry F. Loehner, Spokane, Wash., and Steven C. Zemke, Post Falls, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 3, 1992, Ser. No. 984,756
Int. Cl.[5] H01P *1/22*
U.S. Cl. 333—81 R **22 Claims**



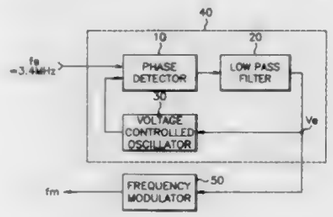
1. A multi-step RF attenuation circuit comprising an input port and an output port, each presenting a characteristic impedance that matches a predetermined characteristic impedance, at least four attenuation paths and a through-path interposed between the input and output ports, and electronic switches for routing an input signal through any of said paths, wherein the through path includes two or three switches.

5,347,240

CIRCUIT AND METHOD FOR AUTOMATICALLY CONTROLLING THE CARRIER FREQUENCY OF A VIDEO RECORDING DEVICE

Eui-Keun Park, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 25, 1992, Ser. No. 934,217
Claims priority, application Rep. of Korea, Apr. 3, 1992, 1992-5552
Int. Cl.[5] H03C *3/09;* **H03L** *1/00, 7/00, 7/06*
U.S. Cl. 332—127 **20 Claims**



1. A frequency control circuit for automatically controlling a carrier frequency of a video tape recorder, said frequency control circuit comprising:

voltage controlled oscillator means for generating, in response to an error voltage, an output signal having a controlled frequency equal to a reference frequency;

phase detector means for generating an error signal representing a phase difference between said output signal of said voltage controlled oscillator means and a given reference signal having said reference frequency;

means for converting said error signal into said error voltage; and

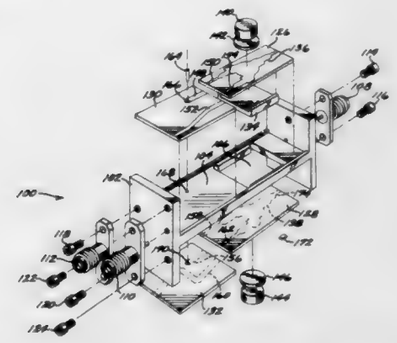
frequency modulator means for generating a frequency modulation signal by controlling generation of said carrier frequency in response to said error voltage and varying said carrier frequency in accordance with variations of a voltage level of a luminance component of a video signal.

5,347,241

DUAL JUNCTION BACK-TO-BACK MICROSTRIP FOUR-PORT CIRCULATORS

Steve K. Panaretos, Los Angeles, and Clifton Quan, Arcadia, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 8, 1993, Ser. No. 14,586
Int. Cl.[5] H01P *1/387*
U.S. Cl. 333—1.1 **17 Claims**



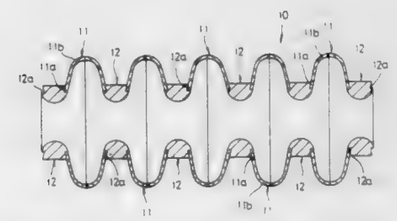
1. A dual junction back-to-back four-port microstrip circulator, comprising first and second three-port single junction circulators each comprising a substrate on which a conductive pattern is formed, said substrates of said first and second circulators situated back-to-back, one port of said first circulator being connected to a port of said second circulator via an interconnection extending through said substrates, and means for providing magnetic field bias to said first and second circulators.

5,347,242

SUPERCONDUCTING ACCELERATING TUBE COMPRISED OF HALF-CELLS CONNECTED BY RING SHAPED ELEMENTS

Takashi Shimano; Misao Sakano, and Shinichi Mukoyama, all of Yokohama, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 927,277
Int. Cl.[5] H05H *9/00;* **H01B** *12/06*
U.S. Cl. 333—99 S **20 Claims**



1. A superconducting accelerating tube comprising:

a plurality of half cells, each half cell being comprised of a superconductor material is a dish form and each half cell having a substantially constant thickness;

each half cell having a generally circular periphery and having a small-diameter portion and a large-diameter portion, and wherein each half cell has a shell diameter which varies between the small-diameter portion and the large-diameter portion;

the respective large-diameter portions of adjacent half cells being connected together; and

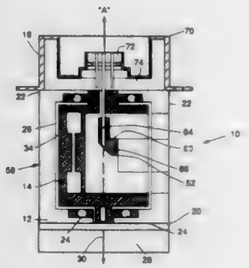
a respective ring-shaped connecting member, comprised of a superconductor material, interposed between said small-diameter portions of adjacent half cells, said adjacent half cells each having a welded connection to portions of said ring-shaped connecting members such that said adjacent half cells are connected together via said respective ring-shaped connecting member with said ring-shaped connecting member disposed between said small-diameter portions.

5,347,243

NON-CONTACTING WAVEGUIDE "T" SWITCH

Rolf Kich, Redondo Beach, and Omar M. Al-Bundak, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 23, 1992, Ser. No. 995,482
Int. Cl.[5] H01P *1/10, 5/12*
U.S. Cl. 333—106 **27 Claims**



1. A waveguide switch comprising:

a stator having at least one waveguide port;

a coaxial conductor comprising a center conductor and a outer conductor for carrying a coaxial transmission, the coaxial conductor being affixed to the stator; and

a rotor mounted for rotation relative to the stator, the rotor including at least one waveguide and at least one impedance matching transformer disposed in the at least one waveguide for receiving said coaxial center conductor and converting the coaxial transmission into a waveguide transmission, the transformer having a bore which forms a non-contacting sleeve about the coaxial conductor, the at least one waveguide carrying the waveguide transmission radiated from the transformer to the at least one waveguide port.

5,347,244

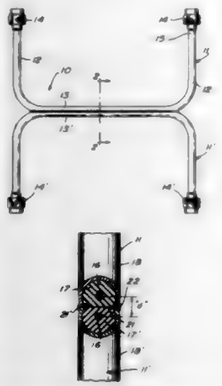
BROADBAND DIRECTIONAL COUPLER USING CABLES

Osvaldo Monti, Montreal, Canada, assignor to Canadian Marconi Company, Montreal, Canada

Filed Dec. 29, 1992, Ser. No. 998,054
Int. Cl.[5] H01P *5/18;* **H01R** *43/00*
U.S. Cl. 333—115 **13 Claims**

1. A broadband directional coupler comprising a first and second flexible coaxial cable each having an inner conductor surrounded by an insulating material and a semi-rigid outer conductive shielding sleeve about said insulating material, an elongated opening in said outer conductive shielding sleeve and formed axially along a predetermined length thereof, said insulating material adjacent said elongated opening having a flat mating surface extending substantially parallel to said inner conductor along a predetermined length, and means to connect said first and second coaxial cables to each other along said predetermined length of said mating surfaces about said elongated openings with said surfaces in juxtaposed contact and said shielding sleeve of said first and second cables in shielding contact with one another about said elongated openings, said inner conductor of said first and second flexible coaxial cables being disposed in parallel alignment to one another along said predetermined length, said mating surface being disposed at a

predetermined depth in said insulating material and spaced from said inner conductor whereby said inner conductors are



spaced a predetermined distance by said insulating material to achieve a desired coupling characteristic.

5,347,245

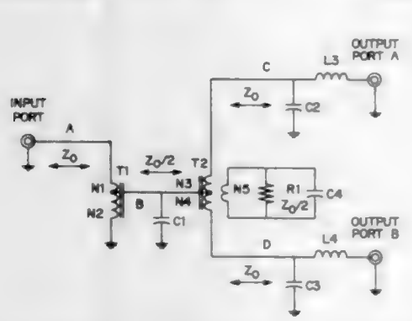
CATV SIGNAL SPLITTER

W. Andrew Wright, Jr., Bethlehem, Pa., assignor to Bark Lee Yee, Allentown, Pa., a part interest

Filed Nov. 5, 1993, Ser. No. 148,254

Int. Cl.[5] H03H *7/48*

U.S. Cl. 333—131 **14 Claims**



1. A signal splitter circuit for use in a CATV system, comprising:

a) an input port and two output ports,

b) an autotransformer having a pair of inductively coupled coils, the coils having ends connected to the output ports, the coils being connected to the input port, and

c) a bridge load circuit, the bridge load circuit comprising a coil connected in parallel with a load, the coil being inductively coupled to at least a portion of the autotransformer, wherein the bridge load circuit is free of any connection to the signal splitter circuit other than through inductive coupling to the autotransformer.

5,347,246

MOUNTING ASSEMBLY FOR DIELECTRIC RESONATOR DEVICE

Alfred H. Bellows, Wayland, and Frederick A. Loughridge, Ipswich, both of Mass., assignors to GTE Control Devices Incorporated, Standish, Me.

Filed Oct. 29, 1992, Ser. No. 968,635

Int. Cl.[5] H01P *7/10*

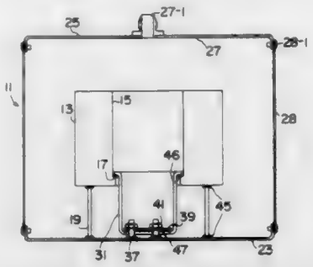
U.S. Cl. 333—219.1 **5 Claims**

1. A dielectric resonator device comprising:

a. an enclosure having a bottom wall,

b. a pedestal seated inside said enclosure on said bottom wall, said pedestal being made of quartz.

c. a dielectric resonator element seated on said pedestal,



d. a bracket for holding said dielectric resonator down on said pedestal, said bracket being made of quartz, and

e. means for securing said bracket to said bottom wall.

5,347,247

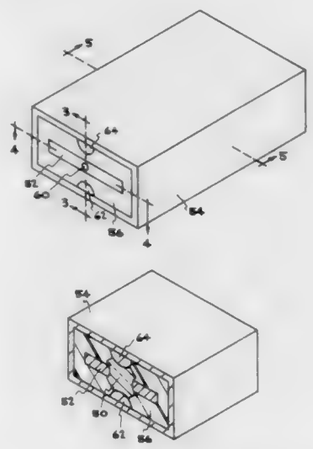
ELECTRO-OPTIC COMPONENT MOUNTING DEVICE

Michael E. Gruchalla, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 2, 1993, Ser. No. 70,749

Int. Cl.[5] H01P *1/00*

U.S. Cl. 333—245 **19 Claims**



1. Apparatus for integrally mounting an electro-optic device in a transmission line, comprising:

a plurality of electrodes formed on the surface of the electro-optic device;

a conductor having an aperture formed therein for receiving the electro-optic device;

a conductive ground surface spaced apart from and surrounding said conductor;

means for making a direct electrical connection between the center conductor and electrodes formed on the surface of the electro-optic device;

means for making direct electrical connections between one or more electrodes formed on the surface of the electro-optic device and the conductive ground surface;

dielectric material located between the conductive ground surface and the center conductor.

5,347,248

PROTECTIVE SWITCHING DEVICE FOR DIFFERENCE-CURRENT AND UNDERVOLTAGE TRIPPING

Franz Herbert, Alzenau, Fed. Rep. of Germany, assignor to Heinrich Kopp AG, Kahl am Main, Fed. Rep. of Germany

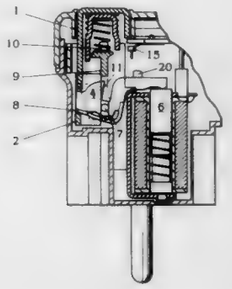
PCT No. PCT/DE92/00053, § 371 Date Oct. 15, 1992, § 102(e) Date Oct. 15, 1992, PCT Pub. No. WO92/15110, PCT Pub. Date Sep. 3, 1992

PCT Filed Jan. 25, 1992, Ser. No. 940,889

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1991, 4105040

Int. Cl.[5] H01H *73/00*

U.S. Cl. 335—18 **10 Claims**



1. A protective switching device disposed within a housing having a stop adapted for current interruption responsive to difference-current and/or undervoltage, the device comprising:

a spring-loaded tripping element;

means for controlling said spring-loaded tripping element;

contact means for selectively allowing current flow through the device;

a pivotal coupling element having an abutment surface, said pivotal coupling element and said contact means being in spring-loaded engagement with each other; and

a control button for pivoting said coupling element against said tripping element to (i) set said tripping element and (ii) place said abutment surface against said contact means to allow current flow;

whereby at least one of a difference-current and an undervoltage detected by said controlling means releases said tripping element and pivots said coupling element against the housing stop, whereby said contact means slides off said abutment surface and terminates current flow.

5,347,249

MAGNET WIRE AND ELECTROMAGNETIC RELAY USING THE SAME

Akihisa Takeuchi; Waichiro Kozen, and Hirohiko Nakabayashi, all of Aichi, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

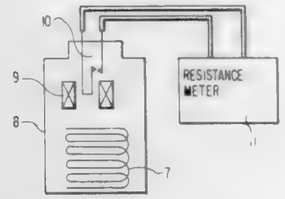
Division of Ser. No. 117,607, Nov. 6, 1987, Pat. No. 5,254,408. This application Apr. 27, 1993, Ser. No. 52,998

Claims priority, application Japan, Nov. 11, 1986, 61-268904; Nov. 11, 1986, 61-268905; Nov. 11, 1986, 61-268906

Int. Cl.[5] H01H *51/22*

U.S. Cl. 335—78 **4 Claims**

1. An electromagnetic relay comprising a polyurethane magnet wire which comprises a conductor having provided thereon a polyurethane insulation coating which contains organic compounds, wherein the total amount of phenolic compounds contained in the organic compounds which evaporate from said coating by heating at 280° C. for 2 minutes is 0.2 wt% or less based on the weight of said coating and the total



amount of said organic compounds is 2 wt% or less based on the weight of said coating.

5,347,250

ELECTROMAGNETIC SWITCHING DEVICE

Markus Muske, Lohmar, Fed. Rep. of Germany, assignor to Klochner-Moeller Elektrizitats GmbH, Bonn, Fed. Rep. of Germany

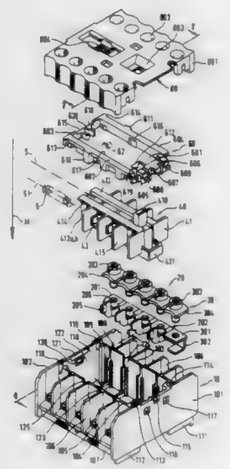
PCT No. PCT/EP89/00526, § 371 Date Apr. 8, 1991, § 102(e) Date Apr. 8, 1991, PCT Pub. No. WO89/11726, PCT Pub. Date Nov. 30, 1989

PCT Filed May 13, 1989, Ser. No. 582,864

Claims priority, application Fed. Rep. of Germany, May 19, 1988, 3817002

Int. Cl.[5] H01H *67/02*

U.S. Cl. 335—132 **20 Claims**

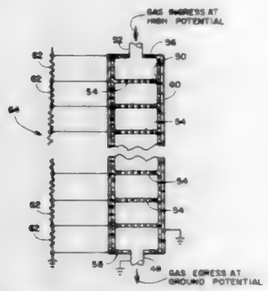


1. Electromagnetic switching device with a drive space accommodating a magnet and a coil and formed by a base member, said drive space being connected in a shape-mating fashion with a housing containing a switch contact space and connection contact spaces, said housing accommodating a contact support displaceable against a return spring with positively guided, movable bridge contacts attached by way of contact pressure springs, and with related, fixed connecting contacts, characterized in that parts of the device comprising connecting contacts and coil terminals, a contact support with return spring, and a switch space cover, and an insertion means releasably attached to the switch space cover, to be accommodated by the housing, are assembled in succession from only one direction (M) extending perpendicularly to a shifting direction (S) of the contact support, and are retained by means of interlocking connections.

5,347,251
GAS COOLED HIGH VOLTAGE LEADS FOR SUPERCONDUCTING COILS

Hubert G. Arrendale, Ramona, Calif., assignor to Martin Marietta Corporntion, San Diego, Calif.

Filed Nov. 19, 1993, Ser. No. 155,413
Int. Cl.[5] H01F *7/22*
U.S. Cl. 335—216 **9 Claims**

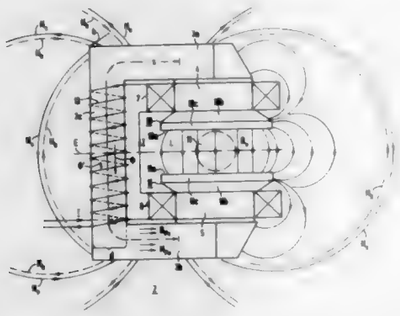


1. A voltage divider system for reducing a high gas electrical potential to ground without exceeding the breakdown potential of the gas, which comprises:
a tube of electrically insulating material;
means for directing said gas at high potential into an entrance end of said tube;
a series of transverse conductive screens spaced along said tube from said entrance end to an exit end;
said screens insulated from each other;
an array of resistors connected in series, each succeeding resistor connected across each succeeding pair of said screens; and
said resistor array connected between said high potential at said entrance end and ground potential at said exit end.

5,347,252
MAGNETIC DEVICE HAVING A YOKE MEMBER FOR GENERATING A MAGNETIC STRAY FIELD

Günther Ries, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 31, 1992, Ser. No. 923,274
Claims priority, application European Pat. Off., Aug. 1, 1991, 91112957.5
Int. Cl.[5] H01F *5/00*
U.S. Cl. 335—299 **11 Claims**

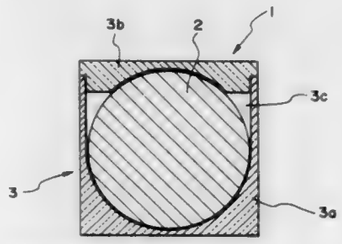


1. A device comprising:
a) a magnetic circuit which includes a yoke member, said yoke member being made of soft magnetic material having a finite relative permeability;
b) a magnetic field generating device generating a magnetic flux in said yoke member and also generating a magnetic stray field due to a magnetic dipole moment in said yoke member, which in turn is due to the relative permeability of said yoke member; and
c) a compensating-field winding, said compensating-field winding, surrounding a section of said yoke member, being electrically excited so that, in addition to the magnetic flux produced by the magnetic field generating device in the yoke member, a supplemental magnetic flux of a magnitude is created such that the magnetic dipole moment of the yoke member that produces the stray field is at least partially compensated for.

5,347,253
ATTRACTING BODY UTILIZING MAGNET

Konomu Ogikubo, Saitama, Japan, assignor to MagX Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1993, Ser. No. 95,212
Claims priority, application Japan, Apr. 12, 1993, 5-108866
Int. Cl.[5] H01F *7/02;* **A63H** *33/04, 33/26;* **A63F** *3/00*
U.S. Cl. 335—302 **8 Claims**

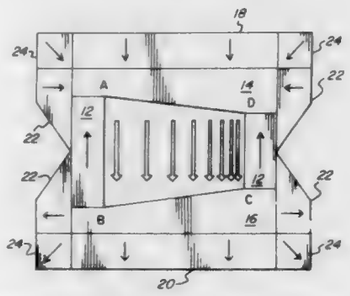


1. An attracting body comprising:
a case having at least two thin attracting surfaces, and a spherical accommodation space defined inside said case; and
a spherical magnet body having paired N and S poles on a single axis of said spherical magnet body disposed in said spherical accommodation space, a clearance being defined between said spherical magnet body and said spherical accommodation space, and said spherical magnet body and said spherical accommodation space being substantially concentric for rotation of said spherical magnet body in said spherical accommodation space.

5,347,254
TUBULAR STRUCTURE HAVING TRANSVERSE MAGNETIC FIELD WITH GRADIENT

Herbert A. Leupold, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 28,483, Mar. 8, 1993. This application Jan. 5, 1994, Ser. No. 177,827
Int. Cl.[5] H01F *7/02*
U.S. Cl. 335—306 **6 Claims**



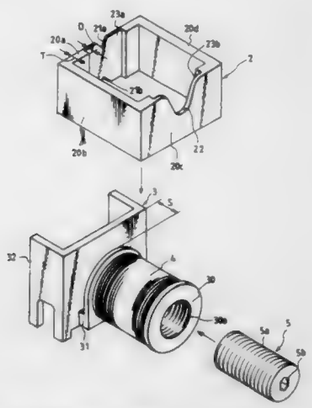
1. A tubular structure having a laterally varying transverse magnetic field comprising:

a first rectangular side magnet;
a second rectangular side magnet parallel to and spaced a distance from said first rectangular side magnet;
a top pole piece bridging the space between said first and second side magnets; and
a bottom pole piece bridge bridging the space between said first and second side magnets opposite said top pole piece,
said first side magnet having a magnetic orientation with the greatest magnetic potential adjacent said top pole piece,
said second side magnet having a magnetic orientation with the greatest magnetic potential against said top pole piece,
said top and bottom pole pieces having a thickness such that a gap or working space within the tubular structure that decreases from said first side magnet to said second side magnet, whereby a laterally varying transverse magnetic field is formed between said top and bottom pole pieces.

5,347,255
VARIABLE INDUCTANCE COIL DEVICE

Yutaka Saitoh; Shinichiro Ito, and Yukiharu Kinoshita, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,102
Claims priority, application Japan, May 7, 1992, 4-114506
Int. Cl.[5] H01F *21/06*
U.S. Cl. 336—83 **3 Claims**

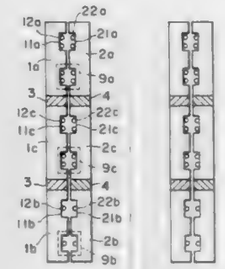


1. A variable inductance coil device comprising:
an outer magnetic member which is integrally made of a magnetic material to form a closed loop;
a bobbin member having a coil bobbin and a base, said bobbin member receiving said outer magnetic material in a spacing between said coil bobbin and said base such that a position of said coil bobbin can be adjusted relative to said outer magnetic member;
a coil member wound around said coil bobbin;
an inner magnetic member positioned inside said coil bobbin, said inner magnetic member forming two magnetic gaps at its both ends with respect to said outer magnetic member;
means for moving said inner magnetic member relative to said coil bobbin and said outer magnetic member to adjust said gaps at both ends of said inner magnetic member at the same time.

5,347,256
ROTARY TRANSFORMER

Naoto Yumiki, Hirakata; Kenji Matsuura, Nara, and Akiharu Jinno, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 20, 1992, Ser. No. 870,924
Claims priority, application Japan, Apr. 26, 1991, 3-097169
Int. Cl.[5] H01F *15/04, 27/24*
U.S. Cl. 336—84 C **7 Claims**

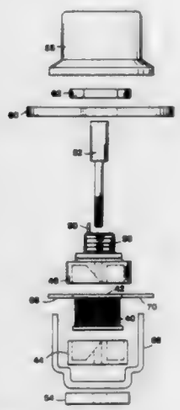


1. A rotary transformer comprising:
a plurality of core pairs, each including a rotary core and a stationary core disposed so as to be coaxially rotatable relative to each other while defining a very small air gap therebetween thereby forming a magnetic circuit, at least one of said core pairs having a different frequency characteristic and permeability from that of at least one other of said core pairs;
a plurality of coil pairs respectively mounted in grooves formed on confronting, surfaces of said core pairs; and
combining means for combining said plural core pairs in the axial or radial direction, said combining means comprising an electrically conductive material.

5,347,257
VARYING INDUCTANCES

George E. Biegel, Framingham, Mass., assignor to Stocker & Yale, Inc., Beverly, Mass.

Continuation-in-part of Ser. No. 484,112, Feb. 23, 1990, Pat. No. 5,140,228. This application May 29, 1992, Ser. No. 891,421
Int. Cl.[5] H01F *21/06*
U.S. Cl. 336—134 **9 Claims**



1. A variable inductor comprising:
a coil of electrically conductive material, said coil being supported on a bobbin having a plurality of extensions protruding therefrom on which a plurality of electrical leads to said coil are mounted;
two distinct, separately formed portions of magnetic core

material positioned to conduct magnetic flux resulting from passage of electrical current through said coil, one of said portions of magnetic core material being movable, the other of said portions of magnetic core material being fixed, said fixed portion and said movable portion each having a substantially ring-shaped recess, said portions being positioned with said recesses facing each other, said coil being positioned between said portions of magnetic core material, and extending into each of said recesses, each of said portions of magnetic core material comprising a central boss occupying a space surrounded by said coil;

a control device attached to said movable portion of magnetic core material in a manner such that said movable portion can be rotated in its entirety with respect to said fixed portion, by manipulating said control device, to change the configuration of a gap located between said fixed portion and said movable portion within said space surrounded by said coil, said control device being manually rotatable and being attached to said movable portion of magnetic core material in a manner such that said movable portion rotates in conjunction with said control device; and

a bracket constructed in a manner such that said bracket remains in a fixed position with respect to one of said portions of magnetic core material as said movable portion of magnetic core material is rotated with respect to said fixed portion;

each of said portions of magnetic core material having an outer wall comprising a plurality of openings, the openings in the outer wall of said one of said portions of magnetic core material engaging said bracket to ensure that said bracket remains in a fixed position with respect to said openings of said one of said portions of magnetic core material, the openings in the outer wall of the other portion of magnetic core material engaging said extensions of said bobbin to ensure that said extensions of said bobbin remain in a fixed position with respect to said openings of said other portion of magnetic core material, said openings in said outer wall of said other portion of magnetic core material also providing conduits for leads connected to said coil;

said bracket being constructed to contact said extensions of said bobbin when said movable portion of magnetic core material is rotated with respect to said fixed portion of magnetic core material to a maximum inductance position and when said movable portion is rotated to a minimum inductance position, said bracket thereby preventing further rotation of said movable portion with respect to said fixed portion beyond said maximum and minimum inductance positions at which said stop contacts said bracket.

5,347,258
ANNULAR RESISTOR COUPLED WITH PRINTED CIRCUIT BOARD THROUGH-HOLE
James R. Howard, Santa Clara; Gregory L. Lucas, Newark; Scott K. Bryan, and Jin S. Choe, both of San Jose, all of Calif., assignors to ZYCON Corporation, Santa Clara, Calif.
Filed Apr. 7, 1993, Ser. No. 44,301
Int. Cl.[5] H01C *7/00*
U.S. Cl. 338—333 **33 Claims**

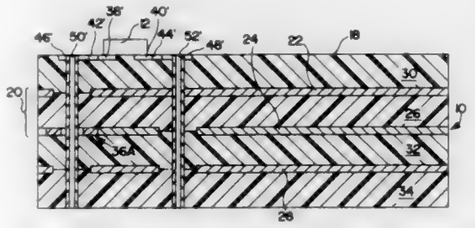
1. A resistor assembly in a printed circuit board (PCB), comprising

a conductive through-hole in the PCB,

a conductive pad surrounding and conductively interconnected with the through-hole,

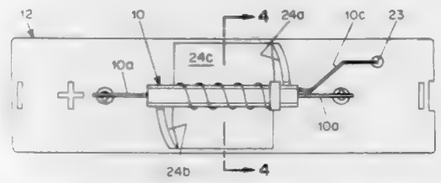
a conductive layer surrounding and generally co-planar with the conductive pad, the conductive layer being spaced apart from the conductive pad to form an annular recess, and

a resistor body arranged in the annular recess and formed of a conductive material having a selected resistivity, the resistor body in the annular recess having an outer perimeter conductively interconnected with the conductive layer and an inner perimeter conductively interconnected



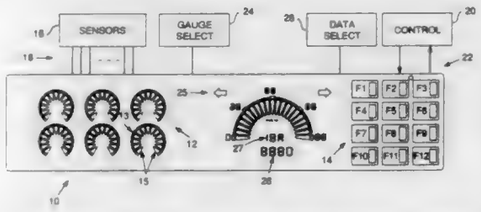
with the conductive through-hole by means of the conductive pad.

5,347,259
STROBE WARNING LIGHT
Mark P. Jongewaard, Arvada, Colo., assignor to Wheelock, Inc., Long Branch, N.J.
Filed Mar. 16, 1993, Ser. No. 31,949
Int. Cl.[5] G08B *5/00*
U.S. Cl. 340—331 **12 Claims**



1. A strobe warning light comprising an elongated strobe lamp having a longitudinal axis, a lamp support supporting the lamp in a predetermined position, and a reflector on the support that includes a first surface positioned on one side of a first reference plane that includes the lamp axis and a second surface spaced apart axially of the lamp from the first surface and positioned on the other side of the first reference plane, the first and second surfaces facing generally toward each other and being configured and oriented to receive light from the lamp and reflect it opposite directions along paths generally parallel to the lamp axis and on opposite sides of the first reference plane so that each one of the first and second surfaces directs reflected light predominantly past the other of the first and second surfaces.

5,347,260
METHOD AND APPARATUS FOR RECEIVING DATA
Geoffrey D. Ginzel, Peoria, and Ricky D. Vance, Washington, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Continuation of Ser. No. 945,464, Sep. 16, 1992, abandoned. This application Dec. 6, 1993, Ser. No. 161,431
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—438 **9 Claims**



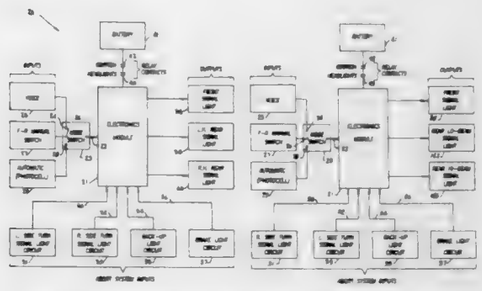
1. An apparatus for receiving data and displaying a plurality of parameters, comprising:

a plurality of sensor means for producing sensor signals in response to sensed parameters;

an instrument means for receiving said sensor signals and responsively producing an instrument signal, said instrument means including one or more display means for indicating sensed parameter values; and

a communication link connected to and between said instrument means and a control means for receiving said instrument signal via said communication link and responsively producing a control signal in response to said instrument signal; said instrument means receives said control signal and responsively indicates parameter values on said one or more display means.

5,347,261
"HANDS FREE" VEHICLE BRIGHT LIGHT SIGNAL SYSTEM
Robert Adell, 31800 S. Brandingham, Franklin, Mich. 48025
Filed Jan. 21, 1993, Ser. No. 6,838
Int. Cl.[5] B60Q *1/26*
U.S. Cl. 340—469 **22 Claims**



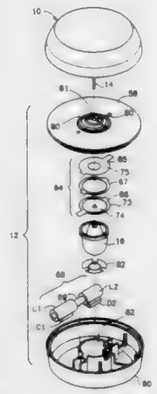
1. A hands free vehicle bright light signal system for transmitting a signal to a driver of another vehicle to request the driver to dim his vehicle's bright headlights, comprising in combination: at least one signal light mounted on the exterior of a first vehicle for transmitting a signal to said driver of another vehicle to request said driver of another vehicle to dim his vehicle's bright headlights; and a control system for activating said signal light of said first vehicle, said control system including a means for initiating operation of said signal light without the hands of a driver of said first vehicle and a means for permitting said driver of said first vehicle to establish a threshold level for activating said signal light of said first vehicle.

5,347,262
THEFT-DETERRENT DEVICE PROVIDING FORCE-SENSITIVE TAMPER DETECTION
Robert C. Thurmond, Largo; Edward J. DiCarlo, New Port Richey; Fred W. Herman, Tampa; Dennis L. Hogan, St. Petersburg; John L. Lynch, Holiday, and Hildan B. Russell, St. Petersburg, all of Fla., assignors to Security Tag Systems, Inc., Deerfield Beach, Fla.
Filed Oct. 23, 1992, Ser. No. 965,914
Int. Cl.[5] G08B *13/24*
U.S. Cl. 340—572 **20 Claims**

1. A device for deterring theft of a protected article, the device comprising

means for attaching the device to the article, with said attaching means being embodied in two components that are adapted to be locked together on opposite sides of a portion of said article to prevent unauthorized removal of the device from the article, wherein the attaching means include a pin that is anchored within one component and a clutch contained in the other component for grasping the pin to provide a predetermined retaining force for resisting separation of the components by prying or pulling the components apart;

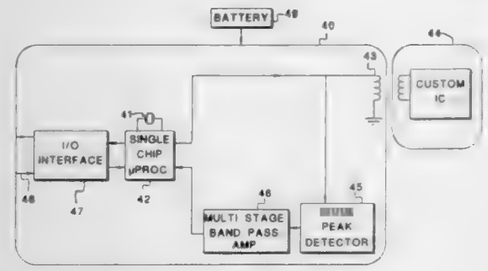
an electrical switch having contact elements disposed in one of the two components such that the state of the switch is changed by application to the two components of at least a predetermined threshold separation force applied in opposition to said predetermined retaining force to thereby detect said application of at least said predetermined threshold separation force; and



a transponder coupled to the switch for responding to an irradiated interrogation signal by radiating an alarm signal when the switch changes state in response to application to the two components of at least said predetermined threshold separation force;

wherein one of the contact elements includes a rim and a dome that is deflected relative to the rim in accordance with the direction in which the force is applied to the dome, and another one of the contact elements includes a ring that contacts the dome when the dome is deflected to a given position with respect to the rim.

5,347,263
ELECTRONIC IDENTIFIER APPARATUS AND METHOD UTILIZING A SINGLE CHIP MICROCONTROLLER AND AN ANTENNA COIL
Gary T. Carroll, Boulder, and J. Donald Pauley, Estes Park, both of Colo., assignors to Gnuco Technology Corporation, Boulder, Colo.
Filed Feb. 5, 1993, Ser. No. 14,458
Int. Cl.[5] G08B *13/14*
U.S. Cl. 340—572 **17 Claims**



1. Electronic identifier apparatus comprising:

an antenna coil;

a single chip microcontroller, said single chip microcontroller including:

a memory circuit wherein a control program is stored, and

a multiplicity of I/O pins through which data signals are

transferred into and out of said single chip microcontroller, each I/O pin being connected to a respective I/O circuit included within said single chip microcontroller, a plurality of said I/O pins being connected in parallel to said antenna coil;

extraction means connected to said antenna coil for extracting an ID carrier signal from whatever signals may be present at said antenna coil;

a band pass amplifier connected to said extraction means, said band pass amplifier being configured to pass the ID carrier signal received through said antenna coil and extraction means, any ID carrier signal that passes through said band pass amplifier being connected to said single chip microcontroller;

said single chip microcontroller being configured by said control program to (a) generate a power output signal that is applied to said antenna coil through said plurality of parallel-connected I/O pins, (b) decode any ID carrier signal that is received from said band pass amplifier, and (c) produce at least one control signal responsive to the receipt and decoding of a particular ID carrier signal; and

an interface circuit connected to said single chip microcontroller circuit through which said control signal operates to perform a specified function.

5,347,264

METHOD AND APPARATUS FOR AUTOMATICALLY CONTROLLING A WATER SUPPLY USING MOVEMENT DETECTOR MEANS

Mats Björkman, Bromma, Sweden, assignor to RB Larmprodukter AB, Bromma, Sweden

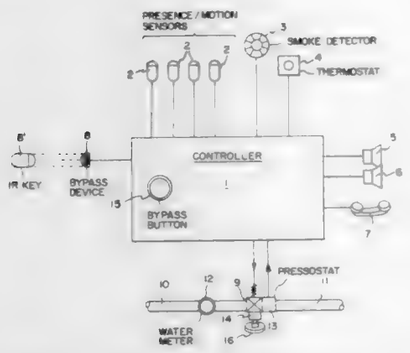
PCT No. PCT/SE91/00579, § 371 Date Mar. 8, 1993, § 102(e) Date Mar. 8, 1993, PCT Pub. No. WO92/05385, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 4, 1991, Ser. No. 984,583

Claims priority, application Sweden, Sep. 14, 1990, 9002932

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—611 **14 Claims**



1. A method of minimizing risk of leakage of water from a pipe system supplying water from a main supply line to one or more output points in a premises, comprising the steps of providing a valve between the pipe system and the main supply line, detecting whether there is at least one of presence or movement of an individual within the premises independently of demand for water any output point, automatically maintaining said valve in an open state when said one of presence or movement is detected and automatically maintaining said valve in a closed state when said one of presence or movement is not detected.

5,347,265

INFORMATION PROCESSING APPARATUS PROVIDING A CONNECTION STATE

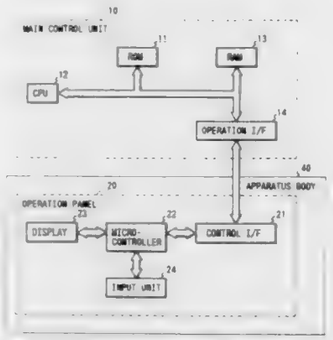
Akihiro Shimura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 795,749, Nov. 21, 1991, abandoned. This application Sep. 15, 1993, Ser. No. 121,253

Claims priority, application Japan, Nov. 21, 1990, 2-316485

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—653 **12 Claims**



1. An information processing apparatus comprising:

an apparatus main body having display means;

a main control unit which is detachably attached to the apparatus main body, said display means providing a display under control of said main control unit when said control unit is attached;

detecting means, provided for said apparatus main body, for detecting a connecting state between the apparatus main body and the main control unit; and

means for controlling said display means dependent upon said detecting means or providing display information indicative of a disconnected state irrespective of the control of said main control unit when said apparatus main body and said main control unit are in a disconnected state.

5,347,266

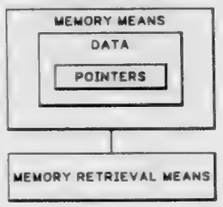
METHOD AND DEVICE FOR ACCESSING SHARED CHARACTER PATTERNS, AND RESULTING STORED DECOMPRESSIBLE FONT STRUCTURE

Joseph H. Bauman, and Claude W. Nichols, III, both of Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 493,056, Mar. 13, 1990, abandoned. This application Jan. 16, 1992, Ser. No. 824,743

Int. Cl.[5] G09G *5/22*

U.S. Cl. 340—735 **8 Claims**



1. A computerized method of compressing a plurality of fonts for space-saving storage in a memory device connected with an electronic printer controller, where each font includes a set of characters and where at least one character is common to more than one font, the method comprising:

recognizing the characters that are common to more than one font;

retaining in a memory device one copy of each character that is common to more than one font and omitting the remaining copies from the memory device;

creating pointers in the memory device both to replace the omitted copies of characters that are common to more than one font and to identify the retained copies of characters;

combining the characters from each font that are not common to more than one font with the respective pointers that replaced the omitted copies of characters from each font; and

storing the combined characters and pointers in the memory device.

5,347,267

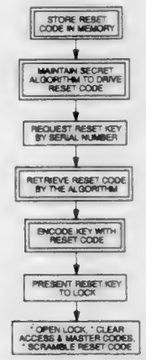
ELECTRONIC LOCK RESET SYSTEM AND METHOD

James S. Murray, South Lyon, Mich., assignor to Stanley Home Automation, Novi, Mich.

Filed Sep. 28, 1992, Ser. No. 951,814

Int. Cl.[5] E05B *49/00*

U.S. Cl. 340—825.31 **6 Claims**



1. In a lockable unit having a lock system comprising an electronic lock having a nonvolatile memory containing a permanent reset code and addresses for user programmed master code and access codes, keys each having a single permanent key code, and circuit means for reading key codes of the keys and for comparing key codes with the lock codes; a method of operating and resetting the lock comprising the steps of:

reading a key code from one of the keys into memory at a master code address to establish a master code;

reading a key code from another key into memory at an access code address to establish an access code.

encoding a programmable reset key with the reset code;

subsequently presenting a key to the lock, reading it key code and sequentially comparing its key code to the access code, the master code and the reset code;

opening the lock if the key code of the presented key matches any of the reset, master and access codes;

then, if the key code of the presented key matches the reset code,

determining the presented key is the reset key;

erasing the memory at the master code and access code addresses; and

disabling the reset function of the reset key by altering the key code of the reset key.

5,347,268

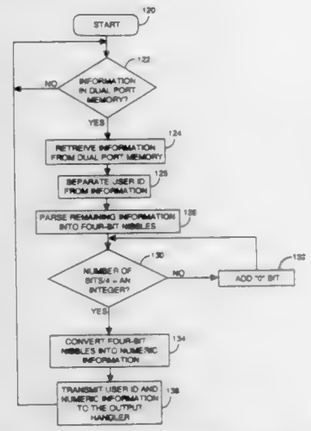
DATA HANDLER FOR HANDLING DATA HAVING MULTIPLE DATA FORMATS

Leonard E. Nelson, and Robert K. Lockhart, Jr., both of Boynton Beach, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 18, 1991, Ser. No. 781,032

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 340—825.44 **34 Claims**



1. A method in a radio frequency (RF) communication system for transmitting information comprising multiple data formats, the method comprising the steps of:

(a) receiving said information;

(b) parsing the information into a plurality of nibbles, each of said plurality of nibbles comprising a predetermined number of bits;

(c) providing said plurality of nibbles to a terminal as a message;

(d) encoding said message; and

(e) providing said encoded message to transmitting means for transmission therefrom.

5,347,269

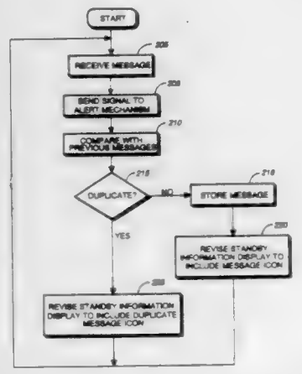
ICONIC DUPLICATE MESSAGE INDICATOR

Dean P. Vanden Heuvel, Chandler, and Danny Walker, Gilbert, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 8, 1992, Ser. No. 880,384

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 340—825.44 **14 Claims**



8. In a selective call receiver for presenting a plurality of messages to a user, a method for indicating to a user that a

duplicate message has been received, the method comprising the steps of:

(a) receiving a message;

(b) storing the received message in a memory;

(c) determining whether the received message is substantially equivalent to any of previously stored messages; and

(d) displaying a duplicate message icon if the received message is a duplicate message that is substantially equivalent to one of the previously stored messages, wherein the duplicate message icon indicates which of the previously stored messages is the one of the previously stored messages.

5,347,270

METHOD OF TESTING SWITCHES AND SWITCHING CIRCUIT

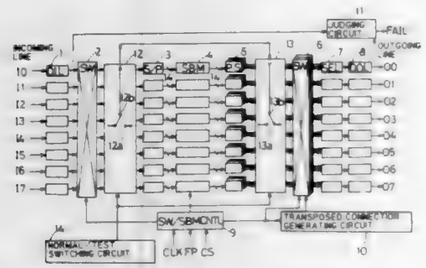
Yoshio Matsuda; Harufusa Kondoh; Isamu Hayashi, and Hiromi Notani, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1992, Ser. No. 889,379

Claims priority, application Japan, Dec. 27, 1991, 3-346712

Int. Cl.[5] H04L *12/26*; H04M *3/26*

U.S. Cl. 340—825.8 | **21 Claims**



1. A method of testing switches of a signal transmission system including a signal processor for performing a predetermined processing upon receipt of a plurality of inputs in predetermined number to provide outputs in the same number as said predetermined number, a first switch of matrix structure for performing a first predetermined exchange before said predetermined processing, and a second switch of matrix structure for performing a second predetermined exchange after said predetermined processing, said method comprising the steps of:

(a) placing a matrix indicative of connection in said first switch in transposed relation to a matrix indicative of connection in said second switch;

(b) connecting said first switch to said second switch, with said signal processor bypassed;

(c) inputting a predetermined data to said first switch; and

(d) judging if a data from said second switch coincides with said predetermined data.

5,347,271

NETWORK SWITCHING CONTOROL METHOD AND SYSTEM

Masaaki Iwasaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 28, 1992, Ser. No. 891,153

Claims priority, application Japan, May 28, 1991, 3-152395

Int. Cl.[5] H04L *12/24*

U.S. Cl. 340—827 | **19 Claims**

14. A network switching control system comprising:

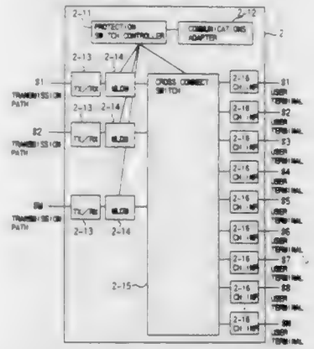
a plurality of nodes forming a network, each node having a respective, first adjacent node and a respective, second adjacent node;

a plurality of transmission routes, formed by the nodes and comprising communications channels between each of the plurality of nodes, including an active route and a protection route, said active route formed by a first subset of the plurality of nodes, and said protection route formed by a second subset of the plurality of nodes; and

network management means, operatively coupled to the nodes, for managing the network formed by the nodes connected to the transmission routes by determining the active route and the protection route,

wherein each one of the plurality of nodes comprises:

switch means for selectively coupling incoming communications channels and outgoing communications channels with one another to selectively form one of the plurality of transmission routes;



first means for generating a switching control instruction which requests the second subset of nodes instead of the first subset of nodes in response to the switching control instruction transferred from the respective, first adjacent node in the protection route; and

second means, operatively coupled to said switch means and said first means, for transferring the switching control instruction generated by said first means to the respective, second adjacent node in the protection route via said switch means.

5,347,272

SYSTEM FOR DETERMINING COMMUNICATION ROUTES IN A NETWORK

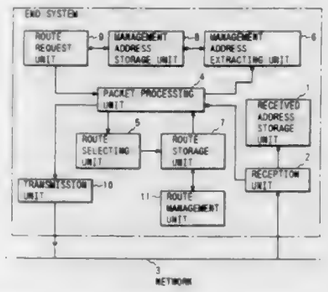
Hiromi Ota, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1992, Ser. No. 943,567

Claims priority, application Japan, Sep. 13, 1991, 3-235060; Feb. 14, 1992, 4-028545

Int. Cl.[5] H04B *3/38*

U.S. Cl. 340—827 | **9 Claims**



1. A network system comprising: a network, a plurality of end systems connected to said network, said end systems acting only as sources and destinations of data to be transmitted and received; and a plurality of intermediate systems for relaying said data to be transmitted and received to and from said plurality of end systems;

wherein at least one of said plurality of intermediate systems includes:

broadcast communication means for transmitting broadcast communication data, in which an address of said at least one of said plurality of intermediate systems is set as a sender, to said plurality of end systems connected to said network to which said at least one of said plurality of intermediate systems is connected as well as to at least one other of said plurality of said intermediate systems;

preparing means for preparing routing information on the basis of the broadcast communication data transmitted by said at least one other of said plurality of intermediate systems;

first routing information storage means for storing the routing information prepared by said preparing means; and

returning means for returning the routing information to at least one of said plurality of end systems upon request of said at least one of said plurality of end systems, and

wherein said at least one said plurality of said end systems includes:

extracting means which, upon receiving respective broadcast communication data transmitted from said at least one of said plurality of intermediate systems, is adapted to extract an address of said at least one of said plurality of intermediate systems respectively contained in the broadcast communication data;

storage means for storing the address extracted by said extracting means;

request means for requesting routing information from said at least one of plurality of intermediate systems on the basis of the address of said at least one of said plurality of intermediate systems in said storage means when the data is transmitted to said network; and

selecting means for selecting a selected one of said plurality of intermediate systems from which the relaying of data is requested, on the basis of the respective routing information from said plurality of intermediate systems obtained as a result of the request by said request means.

5,347,273

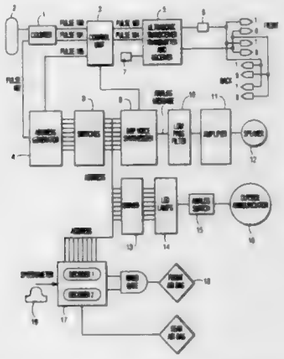
ADJUSTABLE, ULTRASONIC COLLISION WARNING SYSTEM

Kamyar Katiraie, 406 Orchid Ave., Corona Del Mar, Calif. 92625

Filed Jan. 14, 1993, Ser. No. 4,299

Int. Cl.[5] G08G *1/16*

U.S. Cl. 340—903 | **4 Claims**



1. A collision warning system for signaling proximity to an object in the path of travel of a vehicle comprising:

means affixed to said vehicle for generating and transmitting ultrasonic signals in the direction of forward or reverse motion of said vehicle,

means affixed to said vehicle for receiving said transmitted ultrasonic single reflected back to said vehicle from said object,

signal detection means responsive to said means for receiving said transmitted ultrasonic signals reflected back to said vehicle from said object for signaling the presence of said object in at least one of n adjacent fields, each of said n fields representing a predetermined linear distance from said vehicle,

wherein said detection means further comprises means for generating n audible recorded messages each of said messages being different for each of said n fields.

5,347,274

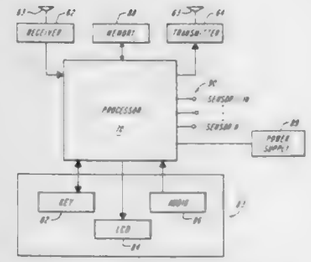
HAZARDOUS WASTE TRANSPORT MANAGEMENT SYSTEM

John J. Hassett, Marblehead, Mass., assignor to AT/COMM Incorporated, Marblehead, Mass.

Continuation-in-part of Ser. No. 901,277, Jun. 19, 1992, and a continuation-in-part of Ser. No. 901,278, Jun. 19, 1992, Pat. No. 5,289,183, which is a continuation-in-part of Ser. No. 525,103, May 17, 1990, Pat. No. 5,144,553. This application Sep. 16, 1992, Ser. No. 945,534

Int. Cl.[5] G08G *1/123*

U.S. Cl. 340—988 | **18 Claims**



1. A system for managing vehicular transport of hazardous waste, such system comprising

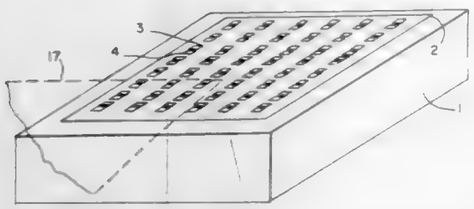
a central data handler for maintaining records of hazardous waste materials being shipped in a plurality of waste shipment vehicles in a region

a plurality of vehicle RF transponders, each vehicle RF transponder being located on a waste shipment vehicle and including memory means for storing data, processing means for receiving and handling data, and RF transceiver means for bidirectionally communicating messages related to the data,

a plurality of sensors on said vehicle for sensing conditions of hazardous waste material in a waste shipment which may change as said vehicle moves, said sensors sensing at least one of an environmental condition, reaction condition, leakage/emission condition and maintenance of intact hazardous waste load condition while the vehicle is in motion, and providing sensed data indicative of sensed condition to the RF transponder of such vehicle, and

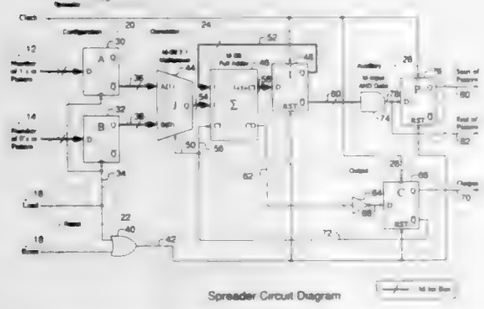
a plurality of base transponders distributed throughout the region, each base transponder including means for transmitting messages to and from the central data handler and further including RF base transceiver means for bidirectionally receiving and transmitting messages to and from each vehicle RF transponder within its range, wherein each vehicle transponder is programmed to transmit said sensed data to a base transponder, and the base transponder relays received messages to the central data handler for tracking waste shipments and condition of hazardous waste material included in each shipment as the waste shipment vehicle travels through the region near base transponder locations.

5,347,275
OPTICAL POINTER INPUT DEVICE
Clifford B. Lau, 94-871 Farrington Hwy., 2nd Floor, Waipahu, Hi. 96797-3146
Continuation-in-part of Ser. No. 770,453, Oct. 3, 1991, Pat. No. 5,302,948. This application Dec. 23, 1991, Ser. No. 811,976
Int. Cl.[5] G01V *9/04*
U.S. Cl. 341—20 9 Claims



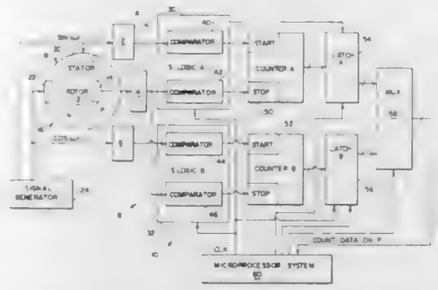
1. A computer input apparatus having an array of regularly spaced light emitters and adjacent sensors, (a field of regularly arranged symbols positioned apart from the sensors,) an object for covering one of said sensors or a group of said sensors when a corner of said object is pointed to a particular symbol within the field, a sensing network connected to the sensors for sensing which of the sensors have been covered by said object, and an output connected to the sensing network for supplying information corresponding to the covered sensor or sensors and the pointed to symbol from the sensing network to a computer.

5,347,276
SERIAL BINARY PATTERN GENERATOR
Stephen C. Gilardi, Mystic, Conn., assignor to TRW Inc., Redondo Beach, Calif.
Filed Jul. 13, 1992, Ser. No. 912,385
Int. Cl.[5] H03M *7/46*
U.S. Cl. 341—59 21 Claims



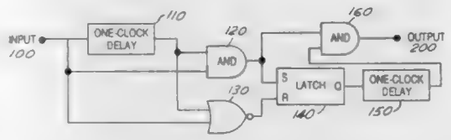
1. A circuit for generating serial binary patterns, said circuit comprising:
a first data source means for generating a first digital word having a given binary value A;
a second data source means for generating a second digital word having a given binary value B; and
a processing means for producing a continuous serial stream of binary data including A one and B zeros in successive (A+B) bit-length words, wherein said successive (A+B) bit-length words include at least one multi-bit word, and wherein the occurrences of the ones in said multi-bit word are maximally spread apart and the occurrences of the zeros in said multi-bit word are maximally spread apart.

5,347,277
DUAL PHASE RESOLVER TO DIGITAL CONVERTER
Thomas A. Nondahl, Wauwatosa; Robert L. Pitsch, Grafton, and David M. Brod, Greendale, all of Wis., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.
Filed Sep. 30, 1992, Ser. No. 954,837
Int. Cl.[5] H03M *1/64*
U.S. Cl. 341—116 10 Claims



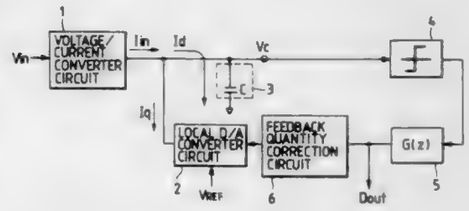
1. A rotor shaft position detection system, comprising:
a rotor having a rotor winding for producing a rotor signal;
a stator having a first stator winding and a second stator winding;
means for exciting said first stator winding with a sinewave type reference signal and for exciting said second stator winding with a cosinewave type reference signal;
means for measuring a first phase lag of the rotor signal with respect to the sinewave type reference signal;
means for measuring a second phase lag of the rotor signal with respect to the cosinewave type reference signal; and
output means for providing an indication of said rotor shaft position, wherein said indication is based upon said first phase lag when said rotor signal and said cosinewave type reference signal are in near coincidence or a rotor position reading has been skipped by said means for measuring a second phase lag, and said indication is based upon said second phase lag when said rotor signal and said sinewave type reference signal are in near coincidence or a rotor position reading has been skipped by said means for measuring a first phase lag.

5,347,278
PULSE DENSITY MAPPING METHOD AND CIRCUIT FOR DELTA SIGMA MODULATORS
Kent R. Callahan, Colorado Springs, and Christopher J. Kemp, Monument, both of Colo., assignors to Ford Motor Company, Dearborn, Mich.
Filed Sep. 30, 1993, Ser. No. 129,886
Int. Cl.[5] H03M *3/02*
U.S. Cl. 341—143 8 Claims



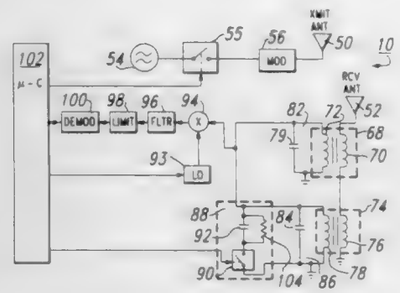
1. A pulse mapping method for receiving at an input node a serial pulse train signal of 0 and 1 pulses at a known clock rate from a Delta Sigma modulator, comprising the steps of:
a. repetitively sampling two adjacent pulses at the input node for defining sampled clock periods,
b. generating all 0's at an output node responsive to no 11 pairs being present in the input signal during sequentially sampled clock periods.
c. generating a 1 at the output node responsive to the input signal and the input signal delayed by one clock period both being 1's when no 00 pairs are present in the input signal during sequentially sampled clock periods.
d. generating a 1 at the output node for each 11 pair not paired with a 00 pair when 11 and 00 pairs are serially alternating in the input signal during sequentially sampled clock periods,
whereby the pulse density of 1's in the output signal increases only responsive to an increase in the net number of 11 pairs in the input signal during the sampled clock periods.

5,347,279
ANALOG/DIGITAL CONVERTER OF THE OVER-SAMPLING TYPE WITH FEEDBACK CORRECTION TO OFFSET SAMPLING ERROR
Yukihito Ishihara; Kazuo Yamakido, and Yuko Tamba, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 2, 1992, Ser. No. 939,594
Claims priority, application Japan, Sep. 2, 1991, 3-248277
Int. Cl.[5] H03M *1/50*
U.S. Cl. 341—166 14 Claims



1. An analog/digital converter comprising:
an analog integrating circuit having a terminal supplied with a first current signal corresponding to an analog input signal at an input of said converter, wherein said analog integrating circuit includes a capacitance element having a first end connected to said terminal of said analog integrating circuit and having a second end connected to a predetermined potential, said analog integrating circuit providing an output potential at said terminal indicative of a voltage across said first and second ends of said capacitance element;
a quantizing circuit including a voltage comparing circuit which compares said output potential at said terminal of said analog integrating circuit with a predetermined reference potential and which operates in accordance with timings of operating cycles, wherein said analog input signal is continuously sampled during timings of each of said operating cycles;
a digital integrating circuit which provides a digital output signal based on an output of said quantizing circuit; and
a feedback circuit which operates in accordance with said operating cycles, each operating cycle being composed of a first half cycle and a second half cycle, which outputs to said terminal of said analog integrating circuit a first signal corresponding to a digital output signal of a preceding operating cycle during said first half cycle of a currently operating cycle, and which outputs to said terminal of said analog integrating circuit, during said second half cycle of said currently operating cycle, a second signal corresponding to a digital output signal of said currently operating cycle and determined in said first half cycle thereof, wherein an average value of said first and second signals of said currently operating cycle is equal to a value of a second current signal corresponding to said digital output signal of said currently operating cycle, and wherein said analog integrating circuit integrates a differential current based on a difference between said first current signal and said second current signal.

5,347,280
FREQUENCY DIVERSITY TRANSPONDER ARRANGEMENT
Josef H. Schuermann, Oberhummel, Fed. Rep. of Germany, assignor to Texas Instruments Deutschland GmbH, Dallas, Tex.
Filed Jul. 2, 1993, Ser. No. 86,786
Int. Cl.[5] G01S *13/74*
U.S. Cl. 342—42 18 Claims

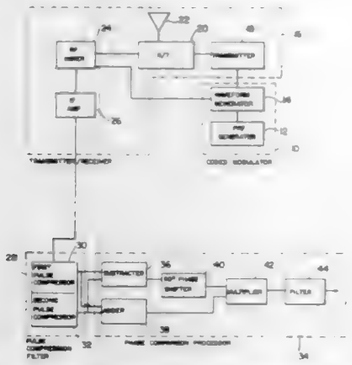


1. An interrogator/transponder system, said system comprising:
a) a transponder operable to receive a wireless RF interrogation; and to transmit a wireless RF response, said response comprising a first channel response centered at frequency FDX1=RF+SC and a second channel response centered at frequency FDX2=RF−SC; and
b) an interrogator, said interrogator having
i. a transmit antenna for transmitting said wireless RF interrogation,
ii. a receive antenna for receiving said wireless RF response,
iii. a first circuit in electrical communication with said receive antenna and operable to receive said first channel response,
iv. a second circuit in electrical communication with said receive antenna and operable to receive said second channel response,
v. a controller in electrical communication with said first and second circuits and operable to select one of said responses therefrom, and
vi. a demodulator for receiving said selected response and for demodulating an uplink message therefrom.

5,347,281
FREQUENCY-CODED MONOPULSE MTI
Bernard L. Lewis, Oxon Hill, Md., and Ben H. Cantrell, Springfield, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jul. 23, 1976, Ser. No. 707,465
Int. Cl.[5] G01S *13/52, 13/58*
U.S. Cl. 342—160 3 Claims

1. A pulse-compression, MTI, doppler-radar system for determining target velocity from a single, frequency-coded, uncompressed target-return pulse, and including a transmitter/receiver, said system comprising:
coded modulator means for generating a frequency-coded uncompressed pulse having segments of one half of said frequency-coded uncompressed pulse which are frequency-coded with odd harmonic sidebands of a pulse repetition frequency and segments of the other half coded with even harmonic sidebands of said pulse repetition frequency and a center segment coded with a carrier frequency, said frequency-coded uncompressed pulse provided to said transmitter/receiver;
pulse-compression filter means receiving the output of said transmitter, said pulse-compression filter means including first and second pulse compressors, the first said pulse compressor for pulse compressing one-half of said fre-

quency-coded target-return pulse and the second said pulse compressor for pulse compressing the other half of said frequency-coded target-return pulse; and



phase-comparison processor means receiving the pulse-compressed signals from said first and second pulse compressors for comparing the phase information between the pulse compressed signals from said first and second pulse compressors.

5,347,282

APPARATUS FOR THE OBSERVATION AND INDENTIFICATION OF HELICOPTERS

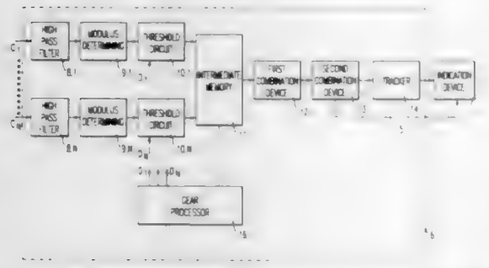
Richard E. M. G. La Grange, and Willem A. Hol, both of Hengelo, Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Oct. 8, 1992, Ser. No. 957,784

Claims priority, application Netherlands, Oct. 16, 1991, 9101720

Int. Cl.[5] **G01S** *13/50, 7/292*

U.S. Cl. 342—193 **12 Claims**



1. An FMCW radar apparatus for the detection and identification of at least one helicopter having rotor blades, comprising:

transmitter means coupled to directional antenna means, for the transmission of periodical linear frequency-modulated signals, with a time duration of one period taken at least substantially equal to an expected duration of one blade flash from the helicopter rotor blades;

receiver means coupled to the antenna means and provided with mixing means for the generation of heterodyne signals from a signal representing the transmitted signal and received radar echoes;

Fourier analysis means for the transformation per period of the heterodyne signals for obtaining a spectrum of the blade flash; and

processor means for deriving from the spectrum and its symmetry structure the helicopter distance and the symmetry structure of its rotor.

5,347,283

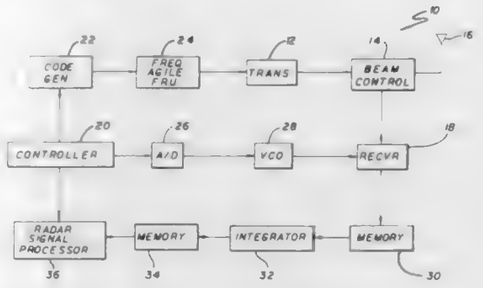
FREQUENCY AGILE RADAR

Howard J. Krizek, Santa Clarita, and Gordon M. Johnsen, West Hills, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 14, 1989, Ser. No. 366,975

Int. Cl.[5] **G01S** *13/38, 7/282*

U.S. Cl. 342—201 **17 Claims**



1. A radar system for transmitting and receiving a pseudo-random sequence of pulses, each at a different frequency comprising:

first means for transmitting a pseudo-random sequence of pulses, each at a different frequency at least one of said pulses having a medium pulse repetition frequency;

second means for receiving returns from said transmitted pulses, said second means including a radar receiver for performing range calculations utilizing said pulse having a medium pulse repetition frequency;

third means for tuning said radar receiver to a first transmit frequency prior to the return of a first pulse transmitted at said first frequency and for retuning said receiver to a second frequency prior to the return of a second pulse transmitted at a second frequency said second pulse having a low pulse repetition frequency; and

fourth means for coherently integrating said received first and second pulses.

5,347,284

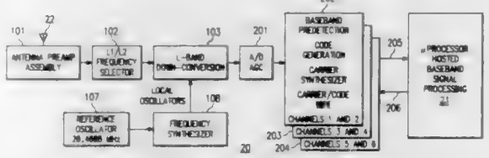
SYSTEM AND METHOD FOR A DIGITAL NAVIGATION SATELLITE RECEIVER

John P. Volpi, Garland; Leonard J. LaPadula, III, Carrollton; Chyi H. Lu, Plano, all of Tex.; Hugh L. Scott, Colorado Springs, Colo.; Mitchel B. Stiles, Plano, Tex., and David W. Rekieta, Allen, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 28, 1991, Ser. No. 662,585

Int. Cl.[5] **H04B** *7/19, 15/00;* **G01S** *13/00*

U.S. Cl. 342—356 **25 Claims**



1. A receiver for acquiring and tracking analog spread spectrum signals, each signal having an analog carrier signal modulated with data and pseudorandom noise codes, comprising:

a downconversion circuit for downconverting the analog spread spectrum signal to an analog downconverted spread spectrum signal at a frequency sufficiently low enough for digitization;

a local clock generation circuit coupled to said downconversion circuit for generating a sample clock frequency to

produce said analog downconverted spread spectrum signal and providing control signals for the receiver;

a sampling circuit for converting said analog downconverted spread spectrum signal to a digital spread spectrum signal;

a plurality of channel processing circuits for demodulating said digital spread spectrum signal to obtain actual code and carrier phase information, each channel processing circuit generating an estimated code and carrier phase and comparing said estimated code and carrier phase to said actual code and carrier phase, each channel processing circuit including correlators for generating predetection integration data in response to said comparison;

a search processor which autonomously controls said plurality of channel processing circuits for searching and acquiring said analog spread spectrum signal; and

a general purpose processor for overall receiver control.

5,347,285

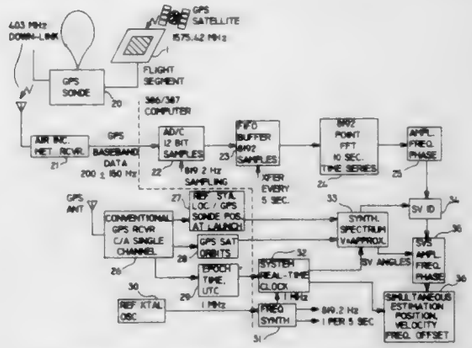
METHOD AND APPARATUS FOR TRACKING THE POSITION AND VELOCITY OF AIRBORNE INSTRUMENTATION

Peter F. MacDoran; David B. Call, both of Boulder, and Kenneth L. Gold, Boone, all of Colo., assignors to A.I.R., Inc., Boulder, Colo.

Filed Jun. 15, 1992, Ser. No. 898,948

Int. Cl.[5] **H04B** *7/185;* **G01S** *5/02*

U.S. Cl. 342—357 **20 Claims**



7. The method for tracking the position and velocity of an airborne meteorological instrument from a processing station remote from said instrument wherein a receiver in said instrument intercepts wideband spread spectrum signals transmitted from satellites above the horizon, the method comprising:

(a) compressing said wideband spectrum signals received from said satellites into a narrow band on the order of 70 Hz centered at 10.23 MHz;

(b) removing frequency bias with a reference oscillator whereby to produce a narrow baseband that will not pass into a negative frequency space;

(c) forming said narrow baseband of 200±150 Hz comprised of sine wave superpositions;

(d) transmitting said baseband to said processing station and producing a digital representation of said sine wave superpositions at said processing station;

(e) processing said digital representations to produce spectral lines composed of amplitude, frequency and phase values;

(f) generating a synthetic spectrum including a frequency offset value corresponding to the frequency offset value of said reference oscillator based on approximate location and velocity of said visible satellites and converting to digital values representative of said spectrum; and

(g) comparing said spectral lines with said digital values to determine the location of said instrument.

5,347,286

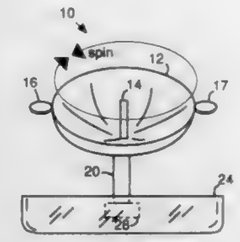
AUTOMATIC ANTENNA POINTING SYSTEM BASED ON GLOBAL POSITIONING SYSTEM (GPS) ATTITUDE INFORMATION

Daniel Babitch, San Jose, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Continuation of Ser. No. 835,187, Feb. 13, 1992, abandoned. This application Mar. 19, 1993, Ser. No. 33,953

Int. Cl.[5] **H01Q** *3/00, 21/00;* **H04B** *7/185;* **G01S** *5/02*

U.S. Cl. 342—359 **10 Claims**



1. A communications system, comprising:

a directional antenna supported by a mobile platform subject to continuous irregular motion;

a plurality of GPS patch antennas mounted non-collinearly apart from one another and attached to said mobile platform at points where said platform shadows the GPS antennas from GPS satellite visibility to a minimum extent;

attitude determination means including maximum likelihood estimations (MLE) optimization means for resolving integer ambiguities and multiplexing means for coupling all of the GPS patch antennas into a single GPS receiver downconverter for calculating a platform attitude based on the phases of a plurality of GPS signals received by the GPS patch antennas from at least three GPS satellites; and

servo means mechanically connected to the directional antenna and for automatically positioning the directional antenna according to a pointing direction obtained by the attitude determination means wherein a radio communication may be established.

5,347,287

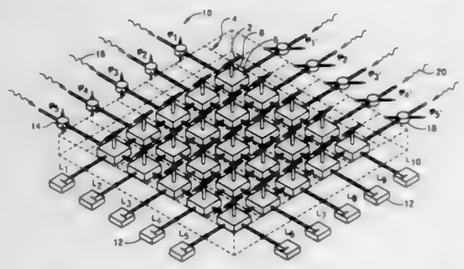
CONFORMAL PHASED ARRAY ANTENNA

Ross A. Speciale, Redondo Beach, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Apr. 19, 1991, Ser. No. 687,662

Int. Cl.[5] **H01Q** *3/22*

U.S. Cl. 342—375 **6 Claims**



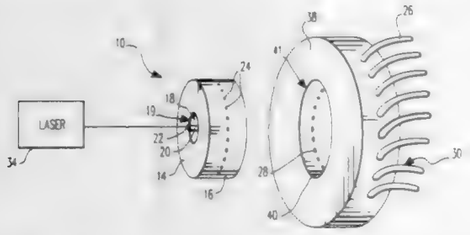
1. A phased array antenna comprising:

a two-dimensional array of antenna elements configured in a lattice all antenna elements being similarly oriented to form a two-dimensional antenna aperture surface;

an array of units cells configured in a lattice structure that matches, at least in number and form, the layer of the

antenna elements and which is physically coextensive therewith as a back plane, each unit cell comprising:
at least one means for delaying the phase of an electromagnetic wave passing therethrough, and means for electromagnetically coupling each unit cell to a uniquely corresponding antenna element;
means for electromagnetically coupling each unit cell to each of the adjacent unit cells;
means external to the back plane for providing electromagnetic excitation, the phase of which has been selectively delayed, at input ports defined by a set of backplane peripheral unit cells of said array of unit cells; and
means for terminating in a matching impedance the backplane peripheral unit cells which are not being excited.

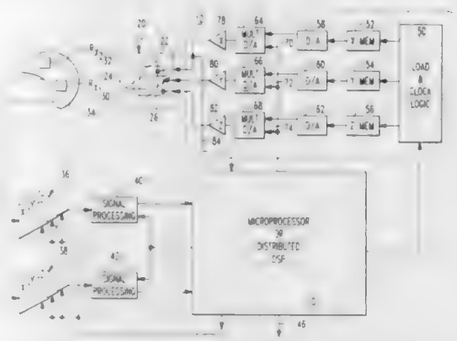
5,347,288
OPTICAL COMMUTATOR
Derrick J. Page, Crownsville, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 26, 1993, Ser. No. 67,191
Int. Cl.[5] H01Q *3/02*
U.S. Cl. 342—375 **20 Claims**



1. A device for delaying signals fed to radiating elements of an array antenna, the device providing delay paths of selectable length between the respective radiating elements and signal generating means, the device comprising:
(a) a set of first fiber optic lines, each first fiber optic line having a first end, a second end and a selected length wherein selected first fiber optic line first ends receive signals from the signal generating means;
(b) a set of second fiber optic lines, each second fiber optic line having a first end, a second end and a selected length and wherein the first ends of selected second fiber optic lines are alignable with the second ends of selected first fiber optic lines and wherein the second fiber optic line second ends are connected to respective radiating elements through optical to microwave signal converting means; and
(c) means for moving at least one of the first and second sets of optical fibers relative to the other of the first and second sets of fibers, wherein delay paths are formed comprised of respective aligned first and second optical lines.

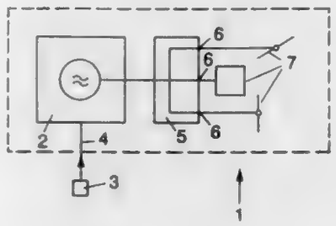
5,347,289
METHOD AND DEVICE FOR MEASURING THE POSITION AND ORIENTATION OF OBJECTS IN THE PRESENCE OF INTERFERING METALS
Scott T. Elhardt, Maple Grove, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.
Filed Jun. 29, 1993, Ser. No. 84,831
Int. Cl.[5] G01S *5/04*
U.S. Cl. 342—448 **27 Claims**

1. A sensing device for determining the position and orientation of an object in a predefined space, comprising:
a magnetic field generation means for generating a magnetic field having a rotating field vector, the field generation means situated in the predefined space at a known location and in a known orientation;
a first sensor means for sensing the rotating field vector and generating a signal in response to the rotating field vector, the first sensor means attached to the object whose position is being sensed;
a second sensor means for sensing the rotating field vector and generating a signal in response to the rotating field vector, the second sensor means attached to the object whose position is being sensed;
a timing means attached to the transmitting means and the first sensor means for sensing a first time period in which the rotating field vector travels between a reference point and the first sensor means, the timing means being further



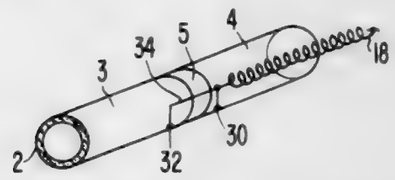
attached to the second sensor means for measuring a second time period in which the rotating magnetic field vector travels between the reference point and the second sensor means; and
a computing means for computing the position of the first sensor means based upon the first time period and for computing the position of the second sensor means based upon the second time period, the computing means for further computing the orientation of the object based upon the position of the first sensor means and the second sensor means.

5,347,290
COMB GENERATOR, DEVICE AND PROCESS FOR CALIBRATING MEASUREMENT SECTIONS
Heinrich Garn, Vienna, and Josef Rasinger, Mödling, both of Austria, assignors to Oesterreichisches Forschungszentrum Seibersdorf GES.m.b.h., Seibersdorf, Austria
PCT No. PCT/AT90/00119, § 371 Date Jul. 8, 1991, § 102(e) Date Jul. 8, 1991, PCT Pub. No. WO91/09317, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 10, 1990, Ser. No. 859,504
Claims priority, application Austria, Dec. 11, 1989, 2796
Int. Cl.[5] G01R *29/08*
U.S. Cl. 343—703 **43 Claims**



1. A measuring transmitter comprising:
a comb generator which is preferably battery operated and which generates a frequency-stable comb spectrum and an amplitude-stable comb spectrum;
an antenna arrangement for generating selectable field distributions, said antenna arrangement being connected to said comb generator and having at least two antennas of different types;
powering means for connecting said at least two antennas to said comb generator, said powering means connecting said at least two antennas so that said comb generator will power said at least two antennas individually, in series, for use of the measuring transmitter to calibrate measurement sections for measurement of interference fields, and said powering means connecting said at least two antennas so that said comb generator will power said at least two antennas simultaneously, for use of the measuring transmitter as a radio interference simulator, said powering means comprising at least one coupling member for connecting said at least two antennas to said comb generator.

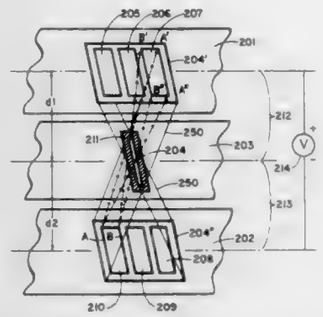
5,347,291
CAPACITIVE-TYPE, ELECTRICALLY SHORT, BROADBAND ANTENNA AND COUPLING SYSTEMS
Richard L. Moore, 4102 Beacon Pl., Oceanside, Calif. 92056
Continuation of Ser. No. 802,564, Dec. 5, 1991, abandoned. This application Jun. 29, 1993, Ser. No. 82,915
Int. Cl.[5] H01Q *9/00, 1/24*
U.S. Cl. 343—749 **23 Claims**



1. An antenna for transmitting or receiving radiation having a wavelength λ comprising:
a first electrode forming a first surface of a capacitor radiator,
a second electrode, spaced from said first electrode by a gap, and forming a second surface of said capacitor radiator,
the sum of the gap dimension and the dimensions of said first and second electrodes not exceeding λ 4,
an inductor having one end thereof coupled to one of said first and second electrodes,
wire means for connecting said one end of said inductor to said one of said first and second electrodes,
additional wire means for connecting the other of said electrodes to ground, and
means for inhibiting transmission or reception of electromagnetic energy of wavelength λ from said wire means and said additional wire means so that transmission or reception of electromagnetic energy primarily emanates from said electrode surfaces.

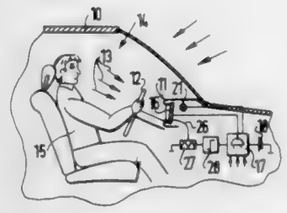
5,347,292
SUPER HIGH RESOLUTION COLD CATHODE FLUORESCENT DISPLAY
Shichao Ge, Santa Clara, and Victor Lam, Saratoga, both of Calif., assignors to PanoCorp Display Systems, Santa Clara, Calif.
Filed Oct. 28, 1992, Ser. No. 967,976
Int. Cl.[5] G09G *3/24;* **H01J** *1/02*
U.S. Cl. 345—74 **56 Claims**

1. A display apparatus comprising:
a housing defining a chamber therein, said housing having a face plate and a back plate;
an anode placed on or near the face plate;
luminescent means, placed on or near the anode, that emits light in response to bombardment of electrons, said luminescent means having two portions defining at least a first and a second pixel dot;
a plurality of individually addressable, controllable electron point source cathodes arranged in at least a first and a second group on or near the back plate;
a circuit for applying electrical potentials to the anode and groups of cathodes for causing the cathodes to emit electrons and causing the electrons to travel to the pixel dots, and direct matrix addressing and electron emission control of the cathodes;
a shield between the face and back plates, said shield defining at least one aperture therein located between the groups of cathodes and the pixel dots, said shield substantially shielding the pixel dots from electrons passing be-



tween the cathodes and pixel dots except for electrons passing through said aperture, wherein said aperture is of such dimensions that electrons emitted by cathodes in said at least first and second groups and spread over an area larger than said dimensions will converge and pass through the aperture and then diverge towards the pixel dots, and that electrons emitted by the first group of cathodes and passing through the aperture will travel to substantially only the first pixel dot, and that electrons emitted by the second group of cathodes and passing through the aperture will travel to substantially only the second pixel dot, thereby reducing crosstalk between pixel dots.

5,347,293
DISPLAY DEVICE FOR MOTOR VEHICLES
Werner Wiedemann, Herzogenaurach, and Walter Ereth, Stein, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE89/00420, § 371 Date Mar. 11, 1991, § 102(e) Date Mar. 11, 1991, PCT Pub. No. WO90/03024, PCT Pub. Date Mar. 22, 1990
PCT Filed Jun. 24, 1989, Ser. No. 663,919
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1988, 3830695
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—87 **5 Claims**



1. Display device for displaying a succession of images in a motor vehicle, comprising
a graphic-capable transflective dot matrix LCD (19);
means (21) for backlighting said LCD, and
a Liquid Crystal Display (LCD) control circuit (17), having an output connected to and controlling said LCD, said control circuit including

driver stages electrically activating matrix dots or pixels (22,25) of said LCD,

memory means in said control circuit for representing information as one of said images on said LCD by brightness contrast including instructions to said drivers for applying a voltage to certain activated matrix dots, as opposed to the remaining non-activated matrix dots, to which no voltage is applied,

means in said control circuit for comparing, in each successive image to be displayed on said LCD, the number of activated matrix dots or pixels to the number of non-activated matrix dots or pixels, in order to use the result of this comparison as a factor in automatic selection of a contrast mode, and

means (27) for selectively setting said display, under conditions of bright ambient lighting, to a positive contrast mode in which a majority of pixels in said image are bright, thereby assuring adequate legibility of said information, and under conditions of dim ambient lighting, to a negative contrast mode in which a majority of pixels in said image are dark, thereby preventing dazzling of a vehicle operator.

5,347,294

IMAGE DISPLAY APPARATUS

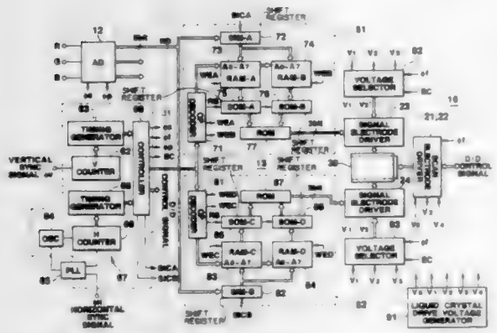
Minoru Usui, Akishima; Kouji Yamagishi, Oome; Ken Yoshino, Koganei, and Hideki Mori, Tokyo, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1992, Ser. No. 866,744

Claims priority, application Japan, Apr. 17, 1991, 3-110831; Jun. 12, 1991, 3-140269; Sep. 13, 1991, 3-263188; Sep. 26, 1991, 3-276597

Int. Cl.[5] **G09G** *3/36;* **H04N** *9/12*

U.S. Cl. 345—89 **12 Claims**



1. An image display apparatus for supplying gray scale data according to a video signal to a liquid crystal device to present a gray-scaled display, and for scanning said liquid crystal panel N times where N is an integer equal to or greater than 2 during one field period of the video signal, the apparatus comprising:

gray scale data generating means for comparing a current video signal of a picture area with a previous corresponding video signal of the same picture area at a predetermined earlier period, and for producing a comparison result; and for generating gray scale data for N times in accordance with the comparison result; and

drive means for driving said liquid crystal device with gray scales based on said gray scale data generated by said gray scale data generating means.

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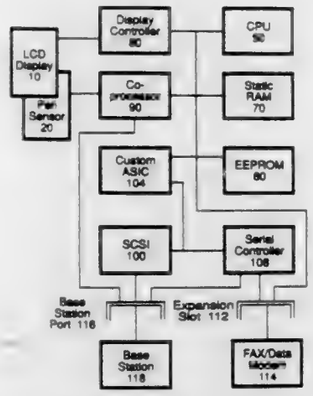
CONTROL OF A COMPUTER THROUGH A POSITION-SENSED STYLUS

Todd Agulnick, Newton Centre, Mass.; Robert Carr, San Francisco, Calif.; Tony Hoeber, Woodside, Calif.; S. Jerrold Kaplan, San Francisco, Calif.; David R. Low, Oakland, Calif., and Michael Ouye, Palo Alto, Calif., assignors to GO Corporation, Foster City, Calif.

Filed Oct. 31, 1990, Ser. No. 610,231

Int. Cl.[5] **G09G** *5/00*

U.S. Cl. 345—156 **46 Claims**



1. An apparatus for controlling a computer system, the computer system comprising a screen for displaying information and a stylus having a tip for inputting information into the computer, including:

first detecting means coupled to said computer for detecting a stroke of the stylus tip in contact with the screen;

second detecting means coupled to said computer for detecting a departure of the stylus tip from the screen;

means coupled to said computer for defining termination of a gesture comprising at least one stroke in response to said departure of the stylus tip;

means coupled to said computer for recognizing a plurality of said gestures, said recognizing means including means for comparing each said gesture to at least one predefined shape;

means coupled to said computer for implementing each said recognized gesture, said implementing means including means for performing a predetermined action associated with each said predefined shape, said predetermined action being determined by the context in which said gesture was used, including a first context in which said action is executed upon an operating system level object and a second context in which said action is executed upon an application level object.

5,347,296

ELECTROGRAPHIC PROCESS FOR PRODUCING AN IMAGE WITH DEPTH PERCEPTION AND RESULTING STRUCTURE

Walter J. Lewicki, Jr., Lancaster, Pa., and John H. Bowers, Clarksburg, N.J., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 769,470, Oct. 1, 1991, Pat. No. 5,187,501, and a continuation-in-part of Ser. No. 862,069, Apr. 2, 1992, abandoned, which is a division of Ser. No. 510,067, Apr. 17, 1990, Pat. No. 5,162,179. This application Feb. 8, 1993, Ser. No. 14,744

Int. Cl.[5] **G01D** *15/06;* **G03G** *13/14*

U.S. Cl. 346—153.1 **19 Claims**

1. An electrographic process for producing an imaged substrate having an image depth perception comprising the following steps:

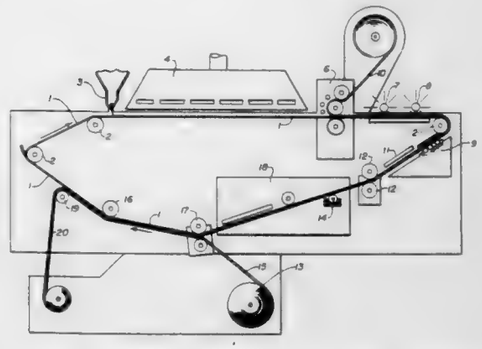
(a) in an electrographic system dispensing a first dielectric layer on a movable conductive means;

(b) passing this first dielectric layer on the conductive means to an imaging station where a first electrostatic latent image is deposited upon the dielectric layer;

(c) subsequently passing the first latent image formed thereby to a developer station where the first latent image is developed on said first dielectric layer to form thereby a first imaged dielectric surface;

(d) subsequently dispensing a second dielectric layer on top of said first dielectric layer;

(e) passing said second dielectric layer to an imaging station



where a second electrostatic latent image is deposited thereon;

(f) passing this second electrostatic image to a developer station where the second image is developed on said second dielectric layer to form thereby a second imaged dielectric surface;

(g) superimposing and adhering at least two of the resulting dielectric layer together, at least two of which are image-developed to from thereby a multilayered dielectric structure;

(h) continuing step (a)–(g) for a preselected number of runs;

(i) overcoating at least one imaged dielectric surface at a time after development of said first latent image; and

(j) removing said multilayered dielectric structure at a time after development of said second dielectric layer.

5,347,297

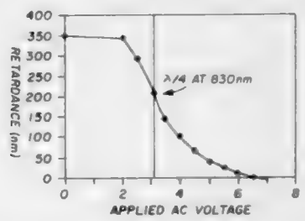
APPARATUS AND METHOD FOR OPTIMIZING PERFORMANCE IN AN OPTICAL STORAGE SYSTEM READ/WRITE HEAD

Edward C. Gage, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 13, 1991, Ser. No. 806,407

Int. Cl.[5] **H04N** *1/21;* **B41J** *2/435*

U.S. Cl. 346—108 **12 Claims**



1. A read/write head for optical storage systems using either differential absorption of an optical beam mechanism or differential rotation of linear polarization mechanism of an optical beam to identify regions on an optical storage medium, said read/write head comprising:

a source of radiation for providing a radiation beam;

a lens for providing a collimated radiation beam when said radiation beam is passed therethrough;

a first beam splitter having said collimated radiation beam applied thereto, said first beam splitter providing a linearly polarized radiation beam;

a first liquid crystal cell through which said polarized radiation beam is transmitted, said first liquid crystal cell providing a retardance for said linearly polarized radiation beam resulting in a circularly polarized radiation beam when a first voltage is applied to said first liquid cell;

a second lens focussing said circularly polarized radiation beam transmitted by said first liquid crystal cell on said storage medium, wherein said second lens results in a reflected recollimated radiation beam for radiation reflected by said optical storage medium, said recollimated radiation beam being transmitted through said first liquid crystal cell and said first beam splitter, wherein transmission through said first liquid crystal cell results in a linearly polarized radiation beam having a signal radiation component with a polarization perpendicular to a polarization of said polarized radiation beam, wherein said first beam splitter reflects a signal radiation beam;

a second liquid crystal cell and a half wave plate through which said reflected signal radiation beam is transmitted to provide a final radiation beam, said second liquid crystal cell providing a retardance of said signal radiation beam which is a function of a second voltage applied to said second liquid crystal cell;

a second beam splitter for receiving said final radiation beam, said second beam splitter dividing said final radiation beam into a transmitted signal beam and a reflected signal beam; and

a first and a second radiation detector, said first radiation detector providing a first signal in response to said transmitted signal beam, said second detector providing a second signal in response to said reflected signal beam, wherein a comparison of said first and said second signals differentiates between storage regions on said optical storage medium.

5,347,298

EXPOSURE CONTROL DEVICE FOR USE IN ELECTROPHOTOGRAPHIC PRINTING APPARATUS

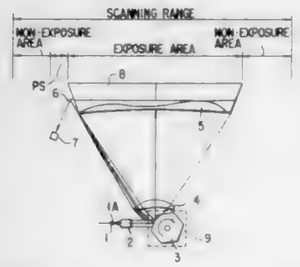
Masami Gokita, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 26, 1992, Ser. No. 841,546

Claims priority, application Japan, Feb. 28, 1991, 3-059512

Int. Cl.[5] **G01D** *9/42*

U.S. Cl. 346—108 **17 Claims**



1. An exposure control device for electrophotographic printing, comprising:

means for generating a laser beam;

means for guiding the laser beam from said generating means to repeatedly scan a scanning range constituted by an exposure area and a non-exposure area external to the

exposure area, thereby producing a latent image having image densities;

sensing means, having a predetermined sensitivity range responsive to a laser beam falling within the predetermined sensitivity range for sensing the laser beam directed to a reference position of the non-exposure area to provide a sense signal;

means for controlling said generating means to synchronize a timing of a scanning start for the exposure area with the sense signal provided by said sensing means;

means for energizing said generating means to generate the laser beam having a first laser power while said guiding means guides the laser beam to the exposure area and having a second laser power while said guiding means guides the laser beam to the reference position of the non-exposure area;

first setting means for setting a first laser control signal serving as a reference for the first laser power which represents one of the available image densities of said latent image;

second setting means for setting a second laser control signal serving as another reference for the second laser power which is independent of the first laser power, said second laser control signal corresponding to a value falling within the predetermined sensitivity range of said sensing means; and

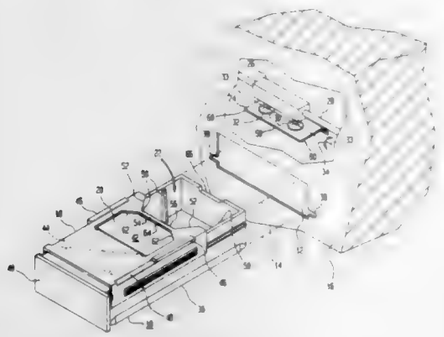
means for driving said generating means based on the first and second laser control signals respectively set by said first and second setting means.

5,347,299

SHEET FILM CARTRIDGE FOR THERMAL DYE PRINTER

Steven F. Entz, Hilton; Bradley S. Jadrich, Rochester, both of N.Y., and Gunther Schoelpple, Kirchheim/Nabem, Fed. Rep. of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 24, 1992, Ser. No. 824,977
Int. Cl.[5] B41J *11/00, 2/435*
U.S. Cl. 346—76 L **14 Claims**



7. A thermal printer comprising:

a film feed mechanism having a laterally movable and angularly rotatable head for picking up and holding a sheet of film while carrying the sheet to or from a printing location in the printer; and

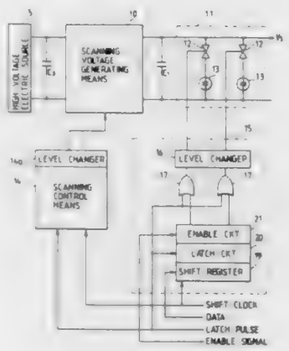
a removable film supply cartridge for insertion into the printer in indexed relation to the film feed mechanism, the cartridge having a top lid and defining a first cavity normally covered for holding a supply of unused sheet film and a second cavity normally open for receiving used sheets of film, the lid having a rear edge, a window and a closure for the window which is movable between an open and a closed position, the closure being arranged to be opened when the cartridge is inserted into the printer, said window having angled corners along one edge which slightly interfere with the sheet of film being picked out of the cartridge through the window by the feed mechanism such that sheets of film are drawn one-by-one through the open window by the feed mechanism, the closure being arranged to be closed when the cartridge is not in the printer such that the unused film is protected from contamination and damage.

5,347,300

INK-JET PRINTER DRIVER

Yoshikiyo Futagawa, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 509,640, Apr. 17, 1990, abandoned.
This application Mar. 23, 1993, Ser. No. 35,886
Claims priority, application Japan, Apr. 17, 1989, 1-97162; Jul. 3, 1989, 1-171430; Oct. 20, 1989, 1-273051
Int. Cl.[5] B41J *2/01*
U.S. Cl. 347—9 **13 Claims**



1. An ink jet printer driver comprising:

a plurality of electrostriction elements for jetting ink through nozzles onto a target to form a matrix of ink dots in a character pattern, each of the electrostriction elements having an inherent capacitance;

gating means for controlling driving of the electrostriction elements, the gating means including a plurality of gates each being coupled to one of the electrostriction elements and having a control terminal;

scanning voltage generating means, coupled to each of the gates, for generating a scanning voltage having a first predetermined waveform for driving the plurality of electrostriction elements, the scanning voltage generating means controlling rising and falling characteristics of the first predetermined waveform independent of the inherent capacitance of the electrostriction elements, the scanning voltage causing the inherent capacitance of the electrostriction elements to each store a voltage having a second predetermined waveform based on the scanning voltage; and

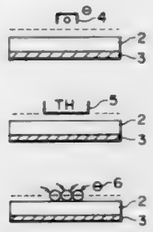
control signal generating means for generating a plurality of control signals and supplying each of the control signals to the control terminal of a corresponding one of the gates to control each of the gates to enable the scanning voltage to drive the plurality of electrostriction elements in accordance with the control signals, the control signal generating means generating the plurality of control signals such that said each of the plurality of control signals causes said corresponding one of the gates to supply the scanning voltage to a corresponding one of the electrostriction elements for a predetermined amount of time during each period of time that the scanning voltage is at a maximum level to maintain the voltage stored in the inherent capacitance of each of the electrostriction elements at a predetermined value.

5,347,301

TRANSFER-TYPE ELECTROTHERMOGRAPHIC RECORDING METHOD AND RECORDING MEDIUM FOR USE WITH THE SAME

Toshiyuki Kawanishi; Kunichika Morohoshi, and Masato Igarashi, all of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 570,796, Aug. 22, 1990, abandoned.
This application Feb. 22, 1993, Ser. No. 20,463
Claims priority, application Japan, Aug. 23, 1989, 1-214869; Sep. 19, 1989, 1-240578; Nov. 2, 1989, 1-284763; Jan. 29, 1990, 2-16171
The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.
Int. Cl.[5] G01D *15/06*
U.S. Cl. 346—153.1 **18 Claims**



1. A transfer-type electrothermographic recording method comprising the steps of:

uniformly charging an electrothermographic recording layer of a recording medium, which exhibits chargeability A at room temperature and chargeability B above room temperature, where the chargeability A and B are in a relationship of $A > B \geqq 0$;

forming a latent electrostatic image by applying digital thermal signals which correspond to an original image by a thermal head under an application of a bias voltage;

developing said latent electrostatic image with a toner of which polarity is the same as or opposite to the polarity of said latent electrostatic image to form a toner image;

transferring said toner image to a receiving medium; and

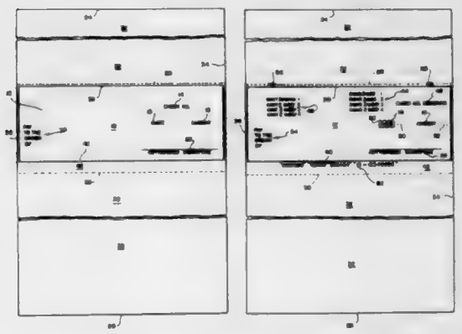
fixing said toner image transferred on said receiving medium.

5,347,302

METHOD FOR MICR ENCODING OF CHECKS USING LASER PRINTERS AND CONFIRMATION OF MICR POSITIONING

Jerome Simonoff, 65 Cornell Dr., Plainview, N.Y. 11803

Filed Apr. 26, 1993, Ser. No. 51,844
Int. Cl.[5] G01D *15/06;* **G03G** *21/00*
U.S. Cl. 346—153.1 **14 Claims**



1. A method for the laser printing of additional information on a preprinted paper sheet having thereon a blank check form for permitting subsequent visual confirmation of registration and proper placement of said information on said check form which method, comprises the steps of:

providing a paper sheet having preprinted thereon an aligned blank check form, which sheet, includes at least two separate indicator base marks and a clear band area,

laser printing on said paper sheet at least two indices of registration associated with said at least two indicator base marks and also printing selected additional information, using magnetic toner and an MICR character font,

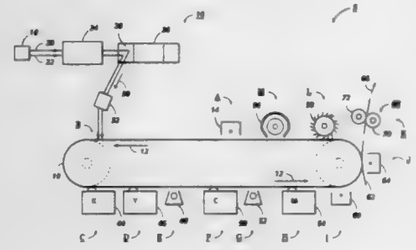
whereby proper alignment and location of the printed additional information can be confirmed by visually observing the spatial relationship between said indicator base marks and said indices of registration.

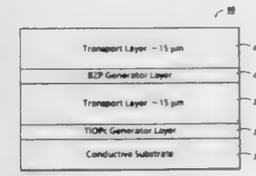
5,347,303

FULL COLOR XEROGRAPHIC PRINTING SYSTEM WITH DUAL WAVELENGTH, SINGLE OPTICAL SYSTEM ROS AND DUAL LAYER PHOTORECEPTOR

Gregory J. Kovacs, Sunnyvale, and G. A. Neville Connell, Cupertino, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 4, 1993, Ser. No. 349
Int. Cl.[5] G03G *15/01;* **G01D** *15/14*
U.S. Cl. 346—157 **16 Claims**





1. A full color xerographic printing system comprising:

a raster output scanner optical system for generating at least one first modulated beam at a first wavelength and at least one second modulated beam at a second wavelength, said second wavelength being different from said first wavelength,

a photoreceptor means having a first layer and a second layer, said first layer being sensitive or accessible only to said first wavelength and said second layer being sensitive or accessible only to said second wavelength, and

xerographic means for charging said photoreceptor means, said xerographic means then exposing areas of said photoreceptor means to neither modulated beam, said first modulated beam, said second modulated beam, or both first modulated beam and second modulated beam, and, after exposure, said xerographic means depositing different color toners on said photoreceptor means in response to exposure of said areas of said layers to said modulated beams, whereby said different color toners produce black and white and all six of the primary colors.

5,347,304

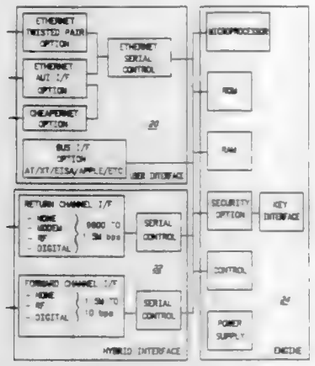
REMOTE LINK ADAPTER FOR USE IN TV BROADCAST DATA TRANSMISSION SYSTEM

Eduardo J. Moura, San Jose, and James C. Long, Sunnyvale, both of Calif., assignors to Hybrid Networks, Inc., Cupertino, Calif.

Continuation of Ser. No. 757,151, Sep. 10, 1991, abandoned. This application Jul. 28, 1993, Ser. No. 98,764

Int. Cl.[5] H04H *1/00*

U.S. Cl. 348—12 **9 Claims**



1. In a high speed digital information transmission system in which multi megabit per second digital data is addressably broadcast using contiguous bandwidth in a television channel to a remote site, a remote link adapter comprising

a hybrid interface for receiving and demodulating a multi megabit per second digitally encoded signal to verify an address and obtain the transmitted digital data, said hybrid interface providing a full duplex asymmetric network connection which is constructed from independent forward and return transmission channels in two directions,

a user interface for providing said digital data to data terminal equipment,

microprocessor control means for controlling said hybrid interface in accordance with protocols for controlling the flow of said digital data and the addressing in the forward and return transmission channels, and

a bus interconnecting said user interface, said hybrid interface, and said microprocessor control means.

5,347,305

VIDEO TELEPHONE SYSTEM

Daniel R. Bush, Franktown; Ashok Patel, Castle Rock, and Charlie W. Zetterower, Parker, all of Colo., assignors to Alkanox Corporation, Evergreen, Colo.

Continuation-in-part of Ser. No. 482,649, Feb. 21, 1990, Pat. No. 5,164,980. This application Dec. 17, 1990, Ser. No. 628,607

The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.

Int. Cl.[5] H04M *11/00;* **H04N** *7/14*

U.S. Cl. 348—14 **37 Claims**

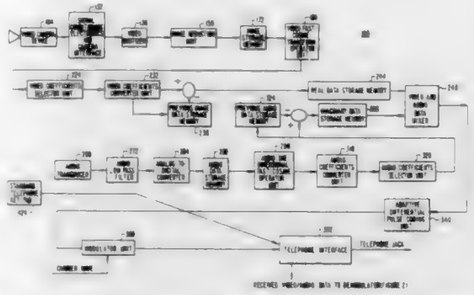
23. An apparatus for substantially simultaneously transmitting and receiving video and audio signals over an ordinary voice grade telephone line, comprising:

first means for generating video information;

second means for generating audio information;

third means for producing compressed video information and compressed audio information for transmission, in substantially real time, over an ordinary voice grade telephone line having a limited bandwidth in the range of about 300–3400 Hz, said third means includes means for producing said compressed audio information separately from means for producing said compressed video information, wherein said step of producing includes compressing said video information by a factor of at least 57 times and compressing said audio information by a factor of at least 42 times;

fourth means for reproducing video information and audio information from said compressed video information and said compressed audio information after transmission thereof;



fifth means for displaying images using said video information; and

sixth means for generating sounds using said audio information.

5,347,306

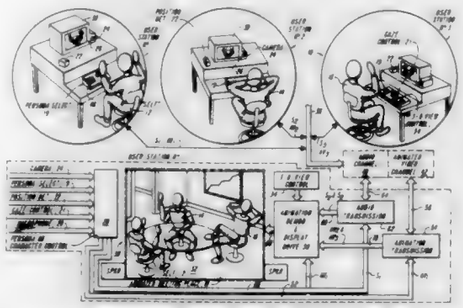
ANIMATED ELECTRONIC MEETING PLACE

Tohei Nitta, Newton, Mass., assignor to Mitsubishi Electric Research Laboratories, Inc., Cambridge, Mass.

Filed Dec. 17, 1993, Ser. No. 169,163

Int. Cl.[5] H04N *7/12;* **H04M** *11/00*

U.S. Cl. 348—15 **15 Claims**



1. An animated electronic meeting place in which characters representing participants are depicted in a scene, comprising:

means at a first location for transmitting audio signals corresponding to speech of a participant and animation graphic control signals corresponding to the position and motion that the character corresponding to said participant is to possess in said scene; and,

means at a second location and responsive to said signals for reproducing said speech and for generating said scene with each of said participants therein in animated form as a character driven by said animation graphic control signals.

5,347,307

PORTABLE CAMERA HAVING A BATTERY COMPARTMENT BELOW THE LENS OPTICAL AXIS

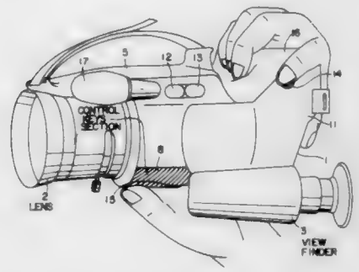
Chifuyu Tanaka, Tokyo, and Koji Takahashi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 726,282, Jul. 5, 1991, abandoned. This application Apr. 27, 1993, Ser. No. 53,313

Claims priority, application Japan, Jul. 6, 1990, 2-072064

Int. Cl.[5] H04N *5/225*

U.S. Cl. 348—372 **25 Claims**



1. A video camera comprising:

optical lenses for receiving light from an object;

a conversion element for converting the light from the object to an electrical signal;

a processing circuit for processing the electrical signal to produce a video signal;

a housing for housing each of (i) said conversion element, (ii) said processing circuit, and (iii) at least a portion of said optical lenses; and

a battery load section for supporting a battery which supplies power to said video camera, said battery load section being disposed at a bottom of said housing and capable of supporting different kinds of batteries of different sizes.

5,347,308

ADAPTIVE CODING METHOD FOR INTERLACED SCAN DIGITAL VIDEO SEQUENCES

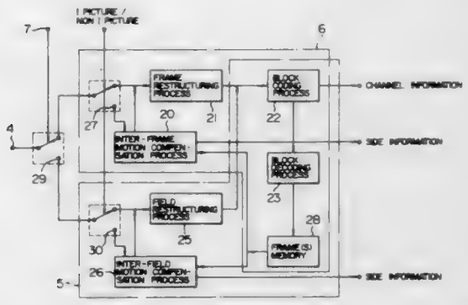
Lucas H. Y. Wai, Marsiling, Singapore, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 5, 1992, Ser. No. 956,954

Claims priority, application Japan, Oct. 11, 1991, 3-263911

Int. Cl.[5] H04N *7/137*

U.S. Cl. 348—394 **36 Claims**



1. A method of coding an interlaced scan digital video signal comprising the steps of:

(a) partitioning each frame of said interlaced scan digital video signal into blocks of pixel data;

(b) determining a difference of pixel values of two fields within each of said blocks of pixel data;

said step (b) of determining a difference of pixel values of two fields comprising

(i) calculating a mean square error between a line pair comprising an even and an adjacent odd line of a respective block of said blocks of pixel data,

(ii) calculating a mean square error between consecutive odd line pairs and consecutive even line pairs of said respective block, and

(iii) comparing the two calculated mean square errors; and

(c) subjecting each of said blocks of pixel data, according to said difference, (i) to a field coding process where at least one of an intra-field correlation or an inter-field correlation is used to achieve information compaction, or (ii) to a frame coding process where at least one of an intra-frame correlation or an inter-frame correlation is used to achieve information compaction.

5,347,309

IMAGE CODING METHOD AND APPARATUS

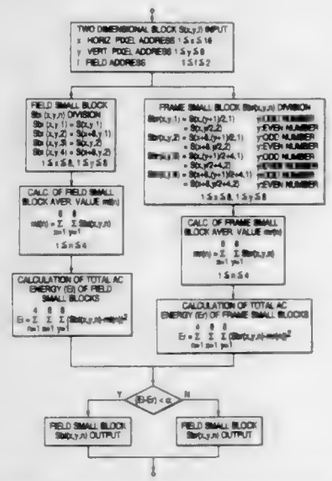
Toshiya Takahashi, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 21, 1992, Ser. No. 871,697

Claims priority, application Japan, Apr. 25, 1991, 3-095807; Jun. 17, 1991, 3-144445

Int. Cl.[5] H04N *7/137*

U.S. Cl. 348—401 **6 Claims**



1. An image coding method comprising the steps of:

inputting interlaced scanned image data of a plurality of frames;

dividing said image data in each frame into two-dimensional blocks;

dividing each of said two-dimensional blocks into field small blocks each containing only data of one of two fields of said each frame and frame small blocks each containing data of both of said two fields;

calculating an activity of each of said two-dimensional blocks;

selecting either said field small blocks or said frame small blocks by using said activity as an index to obtain selected small blocks; and

coding said selected small blocks,

wherein said step of calculating an activity of each of said two-dimensional blocks comprises the sub-steps of:

calculating a total AC energy of said field small blocks (Ei) and a total Ac energy of said frame small blocks (Er); and

calculating, as said activity, an energy difference (Ei−Er) between said total AC energy of said field small blocks (Ei) and said total Ac energy of said frame small blocks (Er), and

wherein said step of selecting either said field small blocks or said frame small blocks comprises the sub-steps of:

comparing said energy difference (Ei−Er) with a predetermined constant value (α); and

selecting said field small blocks when said energy difference is smaller than said predetermined constant value and selecting said frame small blocks otherwise.

5,347,310

APPARATUS FOR COMPRESSION ENCODING VIDEO SIGNALS

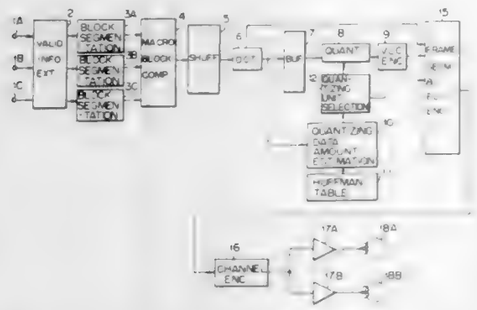
Takaaki Yamada, Kanagawa; Hiroshi Okada, and Naofumi Yanagihara, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 16, 1992, Ser. No. 991,267

Claims priority, application Japan, Dec. 28, 1991, 3-358631

Int. Cl.[5] H04N *7/133*

U.S. Cl. 348—405 | **18 Claims**



1. Apparatus for compression encoding video signals, comprising: block segmenting means for segmenting a vertical interval of video picture elements into a plurality of blocks of picture elements; orthogonal transform means for providing an orthogonal transformation of respective blocks, the orthogonal transformation of a block being represented by a two-dimensional array of transform coefficients of differing values; means for partitioning said two-dimensional array of transform coefficients into respective areas; and quantizing means for quantizing said respective areas with respective quantizing values by dividing the value of the transform coefficients in said respective areas by a respective divisor $2^{n/2}$, where n is an integer which is not constant for all said respective areas.

5,347,311

METHOD AND APPARATUS FOR UNEVENLY ENCODING ERROR IMAGES

Stuart J. Golin, East Windsor, N.J., assignor to Intel Corporation, Santa Clara, Calif.

Filed May 28, 1993, Ser. No. 69,137

Int. Cl.[5] H04N *7/137*

U.S. Cl. 348—416 | **8 Claims**

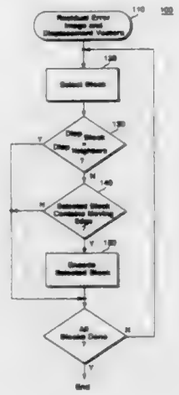
1. A method for partially encoding an error image, comprising the steps of:

(a) dividing said error image into a plurality of blocks;

(b) selecting one block from said plurality of blocks, said selected block having errors associated therewith;

(c) selecting a boundary lying along said selected block that is associated with a discontinuity;

(d) determining reduced errors by unevenly reducing said errors associated with said selected block, wherein said errors are reduced by a reduction factor that increasingly reduces said errors as a distance between said errors and said boundary increases; and



(e) encoding said selected block in accordance with said reduced errors.

5,347,312

MOTION COMPENSATED VIDEO SIGNAL PROCESSING

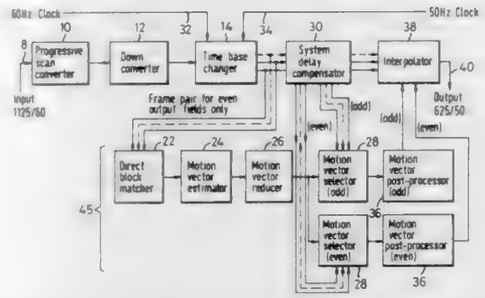
Nicholas I. Saunders, Basingstoke; Stephen M. Keating, and Carl W. Walters, both of Reading, all of United Kingdom, assignors to Sony United Kingdom Limited, Staines, United Kingdom

Filed Dec. 9, 1992, Ser. No. 988,440

Claims priority, application United Kingdom, Jan. 24, 1992, 9201612.0

Int. Cl.[5] H04N *7/01*

U.S. Cl. 348—443 | **24 Claims**



1. Video signal processing apparatus for interpolating pairs of temporally adjacent input images of an input video signal to produce corresponding output images of an output video signal, said video signal processing apparatus comprising:

a motion vector processor for generating sets of motion vectors from some but not all of said pairs of temporally adjacent input images corresponding to output images;

selecting means for selecting one of said sets of motion vectors for each of said corresponding output images; and

motion compensated interpolating means for interpolating said pairs of temporally adjacent input images to produce said corresponding output images using the set of motion vectors respectively selected for said corresponding output images.

5,347,313

VIDEO SIGNAL COMPENSATION APPARATUS FOR TELEVISION RECEIVER

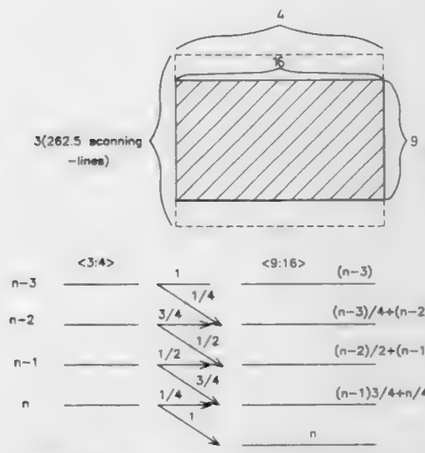
Sung U. Choi, Seoul, Rep. of Korea, assignor to Goldstart Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 29, 1993, Ser. No. 38,614

Claims priority, application Rep. of Korea, Mar. 30, 1992, 5240/1992

Int. Cl.[5] H04N *7/01*

U.S. Cl. 348—445 | **13 Claims**



1. A video signal compensation apparatus for a television receiver, comprising:

field signal output means for generating two field signals which have opposite logic levels per each field, in response to a vertical synchronization signal of a received analog video signal which has a first aspect ratio;

address counter means for generating a write address for the writing of a video signal, utilizing said vertical synchronization signal and a system sampling pulse;

A/D converting means for converting the received analog video signal into a digital video signal, utilizing the sampling pulse;

read/write control means for generating a read signal and a write signal for memorization, utilizing the two field signals and the system sampling pulse;

read address generating means for generating a read address, line-by-line, which is suitable for a second aspect ratio, utilizing the write address;

address switching means for selectively passing the write address and the read address, in response to said two field signals;

field memory means for storing the digital video signal field-by-field and for reading the stored video signal line-by-line, thereby pixel-interpolating the stored digital video signal;

data switching means for outputting the pixel-interpolated interpolated digital video signal from the field memory means, line-by-line, or inputting the digital video signal from the A/D converting means to the field memory means, field-by-field, in response to said two field signals;

line compensation-operation means for performing an addition operation with a video signal which is inputted line-by-line via the data switching means, thereby to line-interpolate a video signal suitably to the second aspect ratio; and

output means for outputting the line video signals from the line compensation-operation means in an established order which is suitable to the second aspect ratio.

5,347,314

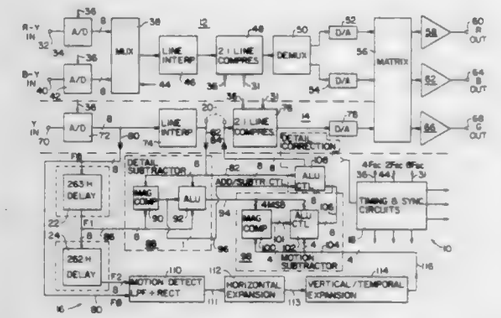
VIDEO SCAN CONVERTER

Yves C. Faroudja, 26595 Anacapa Dr., Los Altos Hills, Calif. 94022, and Charles A. Bialo, San Jose, Calif., assignors to Yves C. Faroudja, Los Altos Hills, Calif.

Continuation-in-part of Ser. No. 671,478, Mar. 19, 1991, Pat. No. 5,159,451. This application Sep. 30, 1992, Ser. No. 954,382

Int. Cl.[5] H04N *7/01, 7/12*

U.S. Cl. 348—448 | **19 Claims**



1. An expansible video scan converter comprising:

input means for receiving a video signal at a first scan rate,

output means for providing said video signal at a second scan rate,

a main signal path coupling said input means and said output means, said main signal path including

line interpolation means for interpolating pixels in original scan lines of said video signal and for putting out interpolated scan lines comprised of pixels interpolated in the spatial domain,

time scale modification means for combining original and interpolated scan lines into a video signal at the second scan rate, and

optional further path insertion means between the line interpolation means and the time scale modification means, and

removable connecting path means bridging the optional further path insertion means.

5,347,315

MODULAR ENCODER FOR GENERATING A DIGITAL MULTIPLEX SIGNAL AND DECODER FOR PROCESSING SUCH A SIGNAL

Jean Mary, Orsay, and Jean-Michel Masson, Courson Monteloup, both of France, assignors to Matra Communication, France

Filed Jan. 12, 1993, Ser. No. 3,496

Claims priority, application France, Jan. 16, 1992, 92 00408

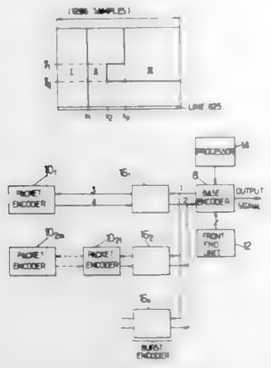
Int. Cl.[5] H04N *7/08*

U.S. Cl. 348—473 | **9 Claims**

8. A decoder for splitting up a multiplex signal consisting of packets originating from a plurality of sources each of which supplies a sequence of packets that are distributed in successive bursts, each occupying a predetermined and adjustable fraction of a line in a television frame, said decoder comprising:

a base decoder assembly containing a programmable memory for determining controllable identifying windows in the television frame each allocated to one respective said sequence and containing means for programming said programmable memory responsive to data in said multiplex signal indicating characteristic line numbers and sample numbers in said characteristic lines where there is a change from one said window to another said window; and

a plurality of blocks each connected to a respective one of said output and each having at least one burst decoder



operating as a slave to the base decoder assembly and as a master to at least one packet decoder attached thereto.

5,347,316

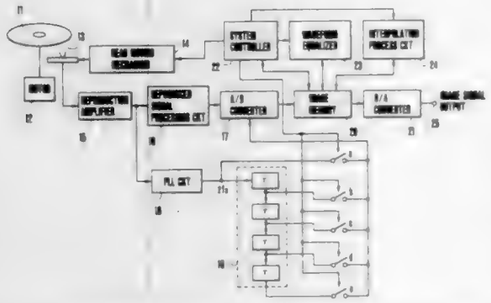
IMAGE INFORMATION TRANSMISSION SYSTEM HAVING TIME BASE VARIATION CORRECTING FUNCTION

Tokihiko Ogura, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 793,610, Nov. 18, 1991, abandoned. This application Dec. 23, 1993, Ser. No. 173,703

Int. Cl.[5] H04N *5/95*

U.S. Cl. 348—497 **6 Claims**



1. An image information transmission system for transmitting image information, comprising:

(A) conversion means arranged to receive a transmitted analog image signal, to convert the received analog image signal into digital image data in synchronism with a sampling clock signal and to output the digital image data;

(B) storing means for inputting the digital image data outputted from said conversion means and storing the inputted digital image data; and

(C) sampling clock signal delay means arranged to detect a difference value between data indicating a largest value and data indicating a second largest value among a plurality of data in a specific term of the image data, to compare the detected difference value with a given threshold value, to delay the sampling clock signal according to the result of comparison, and to supply the delayed sampling clock signal to said conversion means.

5,347,317

HORIZONTAL OSCILLATION CONTROL CIRCUIT FOR A CATHODE-RAY TUBE

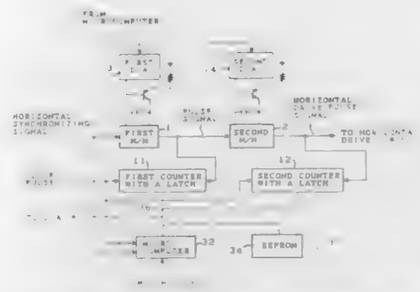
Haruo Sakurai, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1992, Ser. No. 911,086

Claims priority, application Japan, Jan. 16, 1992, 4-024278

Int. Cl.[5] H04N *5/04*

U.S. Cl. 348—511 **11 Claims**



1. A horizontal oscillation circuit comprising: a first pulse generator section for generating a pulse signal having a pulse width corresponding to a first set value and for setting a picture display position using an input horizontal synchronizing signal as trigger pulses; a second pulse generator section for generating a horizontal drive pulse signal having a pulse width corresponding to a second set value using the trailing edges of the pulse signal output from said first pulse generator section; a first measurement section for measuring the pulse width of the pulse signal output from said first pulse generator section; a second measurement section for measuring the pulse width of said horizontal drive pulse signal; and a control section for outputting the first set value and the second set value such that a difference between an output of said first measurement section and a first target value is dissolved, and a difference between an output of said second measurement section and a second target value is dissolved.

5,347,318

APPARATUS FOR PROCESSING VIDEO SIGNALS HAVING DIFFERENT ASPECT RATIOS

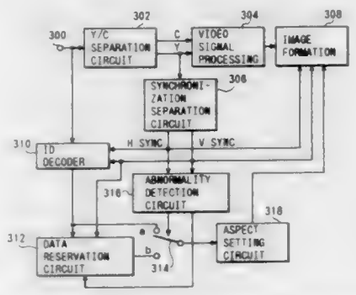
Takashi Kobayashi, Mitaka; Hiroyuki Takimoto; Taizou Hori, both of Yokohama; Hiroyuki Fukuoka, Hiratsuka; Yoshihiro Nakatani, Yokohama; Jun Makino, Kunitachi, and Shinichi Koyama, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1993, Ser. No. 74,957

Claims priority, application Japan, Jun. 16, 1992, 4-156783; Jun. 16, 1992, 4-156785; Jun. 16, 1992, 4-156786; Jun. 16, 1992, 4-156787

Int. Cl.[5] H04N *5/48, 7/087*

U.S. Cl. 348—556 **6 Claims**



1. A video signal processing apparatus comprising:

a) input means for inputting a video signal;

b) detecting means for detecting an aspect ratio of said video signal inputted to said input means;

c) holding means for holding aspect information representing said aspect ratio detected by said detecting means;

d) abnormal state detecting means for detecting an abnormal state of said video signal inputted to said input means; and

e) output means for selectively outputting aspect information outputted from said aspect ratio detecting means and said aspect information held by said holding means, in accordance with an output of said abnormal state detecting means.

5,347,319

CIRCUIT FOR REGULATING THE COLOR SUBCARRIER AMPLITUDE IN A VIDEO RECORDER

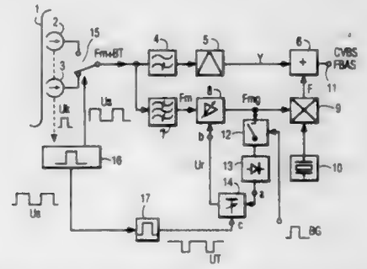
Helmut Sowig, Villingen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen, Fed. Rep. of Germany

Filed Jan. 15, 1993, Ser. No. 4,046

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1992, 4201564

Int. Cl.[5] H04N *9/78*

U.S. Cl. 348—645 **8 Claims**



1. A circuit for regulating the amplitude of a color subcarrier in a video recorder used with a television receiver which employs overscanning of electron beams, said circuit comprising:

means for receiving said color subcarrier and providing a regulating voltage representative of the amplitude of said color subcarrier, wherein said means for receiving includes variable time constant means for switching from a short time constant during an overscanning period of a television signal to a long time constant immediately prior to the end of said overscanning period so as to change said regulating voltage; and

a variable amplifier responsive to said regulating voltage for regulating the amplitude of said color subcarrier in response to said time constant changes.

5,347,320

CIRCUIT FOR PREVENTING AUTOMATIC WHITE BALANCE ERROR OPERATION

Jong-Gyun Lim, Kyonggi-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyonggi-do, Rep. of Korea

Filed Oct. 20, 1992, Ser. No. 963,547

Claims priority, application Rep. of Korea, Nov. 30, 1991, 91-21063

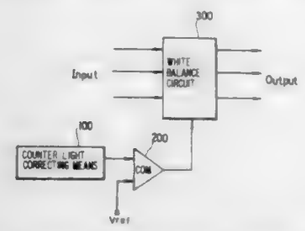
Int. Cl.[5] H04N *9/73, 9/04*

U.S. Cl. 348—655 **3 Claims**

1. In a camera provided with an automatic white balance circuit, an automatic white balance circuit error operation preventing circuit comprising:

counter light correcting means for executing a counter light correction,

comparing means for outputting a control signal for maintaining a present white balance state when a counter light correcting voltage outputted from said counter light correcting means is greater than a reference value; and



maintaining means for maintaining a present white balance correcting state when the control signal is outputted by the comparing means and outputting a white balance corrected video signal.

5,347,321

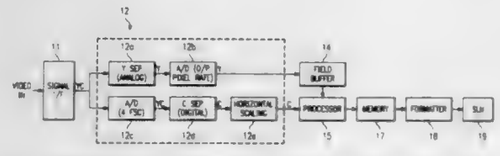
COLOR SEPARATOR FOR DIGITAL TELEVISION

Robert J. Gove, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 30, 1993, Ser. No. 129,716

Int. Cl.[5] H04N *9/77*

U.S. Cl. 348—663 **15 Claims**



1. A digital color separator for a video signal receiver, comprising:

an analog luminance separation unit for receiving a video input signal and for separating said signal's luminance component from said signal's chrominance components;

a first analog-to-digital converter for sampling said luminance component at a rate determined by the number of pixels per line to be displayed;

a second analog-to-digital converter for receiving said input signal and for sampling said input signal at a rate appropriate for digital color separation;

a digital chrominance separation unit for receiving data samples from said second analog-to-digital converter and for separating samples of said luminance component from samples of said chrominance components; and

a scaling unit for scaling said chrominance samples so that the number of chrominance samples per line is substantially the same as said number of pixels per line to be displayed.

5,347,322

VIDEO STORAGE AND SYNCHRONIZATION

Abby P. Levine, New York, N.Y., and Barry H. Minnerly, Rowayton, Conn., assignors to Rebo Research, New York, N.Y.

Continuation of Ser. No. 727,480, Jul. 9, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 53,295

Int. Cl.[5] H04N *9/64*

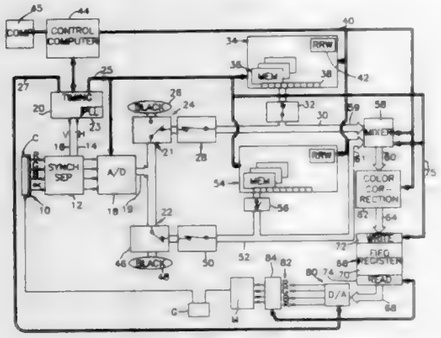
U.S. Cl. 348—718 **27 Claims**

1. A video frame storage and synchronization system for processing digital video signals including a series of pixel values arranged in fields in a preselected raster order, the system comprising:

(a) a system digital input connection for accepting an incoming digital video signal;

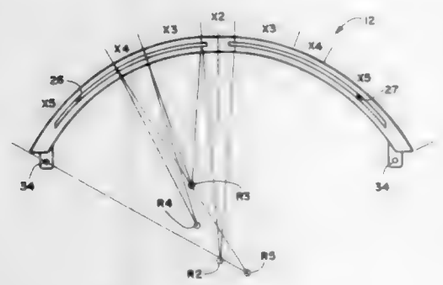
(b) a first memory;

(c) first memory write means for writing pixel values into said first memory;
(d) first memory read means for reading pixel values from said first memory to provide said pixels read from said first memory in said preselected raster order;
(e) timing means for synchronizing said first memory read means with said incoming digital video signal so that each pixel value read from said first memory is provided simultaneously with the corresponding pixel value of a field in said incoming digital video signal;
(f) digital buffer means having a buffer input and a buffer



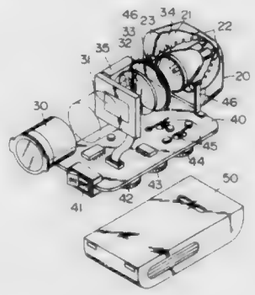
output for accepting successive pixel values in order as presented at said buffer input, discharging pixel values in the same order at said buffer output and providing a time delay between acceptance and discharge of each such pixel value;
(g) means for adjusting said time delay provided by said digital buffer means; and
(h) routing means for selectively routing digital video signals from said system digital input connection to said first memory write means, said buffer input or both, and for selectively routing digital video signals from said first memory read means to said buffer input.

5,347,323
SUNGLASSES
Ken Wilson, 9926 Prospect Ave., #131, Santee, Calif. 92071
Filed Sep. 3, 1991, Ser. No. 753,806
Int. Cl.[5] G02C *7/02*
U.S. Cl. 351—44 **2 Claims**



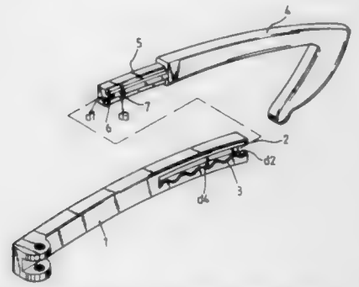
1. A pair of sunglasses comprising:
an elongated lens support frame member having a left end and a right end, said lens support frame member further having a left lens support portion and a right lens support portion, and a downwardly extending post member being located between said left and right lens support portions and also being connected to them;
a left lens having a top edge, a bottom edge, a left edge, a right edge and a front surface, said left lens further having a substantially symmetrical curvature **R1** in its horizontal plane;
a right lens having a top edge, a bottom edge, a left edge, a right edge and a front surface, said right lens further having a substantially symmetrical curvature **R1** in its horizontal plane;
said left and right lens support portions each having a top wall, a bottom wall, a front wall and a rear wall; a groove is formed in the bottom wall of each of said left and right lens support portions for detachably receiving the top edges of said respective left and right lenses, the curvature of said grooves in their horizontal plane being asymmetrical so that the respective lenses have to be bent while installing them into said grooves;
said post member having a left edge and a right edge and a horizontal radius **R2** of curvature and a width **X2** between the left and right edges of the post member;
said left lens support portion having in sequence from the left edge of the post member: a width **X3** having a radius **R3**, a width **X4** having a radius **R4**, and a width **X5** having a radius **R5**;
said right lens support portion having in sequence from the right edge of the post member: a width **X3** having a radius **R3**, a width **X4** having a radius **R4**, and a width **X5** having a radius **R5**;
X2, **X3**, **X4** and **X5** are all different widths and **R2**, **R3**, **R4** and **R5** are different radii wherein **R4**>**R3**, **R2**>**R4**, **R5**>**R2**, and **X3**>**X4**, **X5**>**X3**;
a pair of elongated temple members each having a front end;
means for pivotally connecting the front ends of said temple members to the respective left and right ends of said lens support frame member.

5,347,324
VIDEO PROJECTOR WITH BATTERY AND REPLACEABLE LAMP UNIT
Hidemi Sasaki, and Shinji Suzuki, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jun. 25, 1992, Ser. No. 904,322
Claims priority, application Japan, Jun. 27, 1991, 3-156950
Int. Cl.[5] H04N *5/74, 5/64*
U.S. Cl. 348—789 **14 Claims**



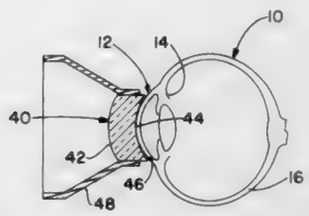
1. A video projector, comprising:
a cabinet;
a projection lens arranged in said cabinet;
a transmission type display means arranged in said cabinet and displaying an image based on a video signal;
a lamp unit arranged in said cabinet; and
a battery mounting section formed on the bottom of said cabinet to mount a projector driving battery so that said projector sits on top of said battery so that said battery provides increased stability to said projector when mounted.

5,347,325
ADJUSTABLE TEMPLE FOR GLASSES
Tony Lei, No. 15, Lane 30, Chung Shan 7th St., Tainan City, Taiwan
Filed Oct. 25, 1993, Ser. No. 140,626
Int. Cl.[5] G02C *5/20*
U.S. Cl. 351—118 **1 Claim**



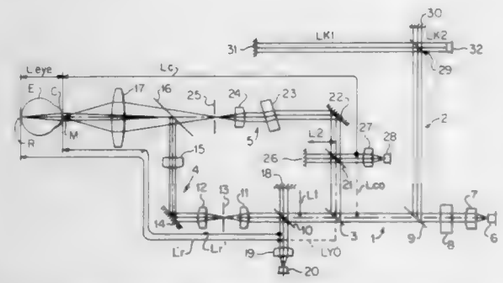
1. An adjustable temple for glasses comprising:
a foot having a C shaped slot at one end, said slot having a sinewave shaped portion at bottom edge and a flat edge at top portion thereof;
an ear hook having an integral reduced portion at one end adapted to slide in said slot of said foot, said reduced portion having a rail at one side thereof and a protuberance extending from said rail, and being characterized in that said protuberance produces friction in said slot to prevent free movement of said ear hook.

5,347,326
DIAGNOSTIC OR THERAPEUTIC CONTACT LENS
Donald A. Volk, 7893 Enterprise Dr., Mentor, Ohio 44060
Filed Oct. 5, 1992, Ser. No. 956,747
Int. Cl.[5] A61B *3/00;* **G02C** *7/01*
U.S. Cl. 351—160 R **20 Claims**



1. A diagnostic or therapeutic contact lens for use in examination or treatment of the eye of a patient comprising,
a lens body constructed of a rigid, transparent material and having a concave posterior surface with a curvature substantially conforming to the curvature of the cornea of the eye, said posterior surface being movable on said cornea during examination or treatment of the eye, a peripheral edge formed by the thickness of said lens body wherein the thickness of said lens body will prevent closure of the eyelid of said eye when the contact lens is positioned in the cornea of the eye, and an anterior surface spaced from posterior surface by the thickness of said lens body,
said posterior surface having means for permitting the egress of air from between said posterior surface and the surface of the cornea to substantially eliminate the formation of air bubbles in at least the optical portion of said posterior surface which would adversely affect examination or treatment of the eye using the contact lens.

5,347,327
PROCESS AND APPARATUS FOR MEASURING AXIAL EYE LENGTH
Akihiko Sekine, and Fumio Ohtomo, both of Tokyo, Japan, assignors to Kabushiki Kaisha Topcon, Tokyo, Japan
Filed Apr. 15, 1992, Ser. No. 868,565
Claims priority, application Japan, Apr. 15, 1991, 3-82657; Apr. 22, 1991, 3-90877
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—211 **8 Claims**



1. An apparatus for measuring an axial length of an eye having an eyeball, a cornea and a retina comprising:
a measuring optical system having a coherent light source, said coherent light source projecting monochromatic coherent light having a variable wavelength onto the eyeball, said measuring optical system including a retina optical for projecting said coherent light onto the retina of said eyeball and receiving light reflected from said retina, said retina optical system having a retina reference surface to reflect the coherent light as retina reference light, and a light receiver for receiving interference light between said reflected light from the retina and the retina reference light; and
a cornea optical system for projecting said coherent light onto the cornea of said eyeball and for receiving light reflected from said cornea, said cornea optical system having a cornea reference surface to reflect the coherent light as cornea reference light, and a light receiver for receiving interference light between said reflected light from the cornea and the cornea reference light;
means for varying the wavelength of the coherent light and means for mixing interference signals outputted from said corresponding light receivers of the retina optical system and the cornea optical system;
means for obtaining beat signals according to the varying means and the mixing means; and
means for calculating an axial eye length according to the beat signals.

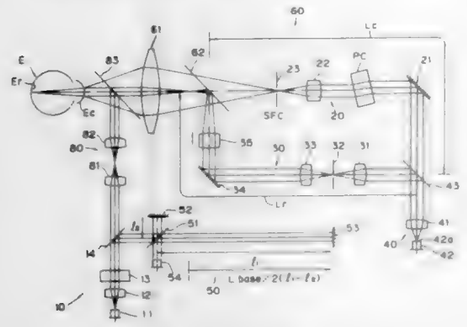
5,347,328
APPARATUS FOR MEASURING AN INTRAOCULAR LENGTH BETWEEN ANTERIOR AND POSTERIOR PORTIONS OF AN EYE
Akihiko Sekine, and Funio Ohtomo, both of Tokyo, Japan, assignors to Kabushiki Kaisha Topcon, Tokyo, Japan
Filed Apr. 21, 1992, Ser. No. 872,266
Claims priority, application Japan, Apr. 22, 1991, 3-090878
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—211 **12 Claims**

1. An apparatus for measuring an intraocular length between anterior and posterior positions of a living eye, comprising:
a laser source to emit a laser beam of light, having variable wavelengths, onto said eye; and
means for measuring interference between light reflected by the anterior portion of said eye and light reflected by the posterior portion of said eye,
the intraocular length of said eye being measured according to said interference,

said measuring interference means comprising:

light splitting means for separating said light reflected by the anterior portion and said light reflected by the posterior portion;

an anterior portion reflected light optical system for receiving said light reflected by the anterior portion from said light splitting means;



a posterior portion reflected light optical system for receiving said light reflected by the posterior portion from said light splitting means; and

interference light receiving optical system for combining an output from said anterior portion reflected light optical system with an output from said posterior portion reflected light optical system at a substantially identical wave front to produce and receive interference light for measurement.

5,347,329

APPARATUS FOR OPHTHALMIC TREATMENT USING A LIGHT BEAM

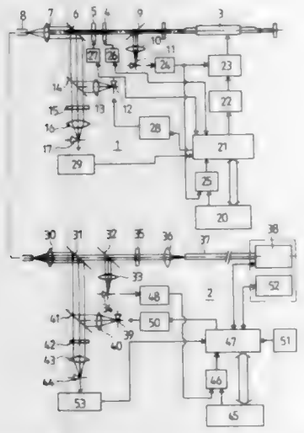
Yasuo Ota, Gamagori, Japan, assignor to Nidek Co., Ltd., Gamagori, Japan

Filed Jul. 30, 1992, Ser. No. 921,696

Claims priority, application Japan, Jul. 31, 1991, 3-215816

Int. Cl.[5] A61B *3/10*

U.S. Cl. 351—221 **15 Claims**



1. An apparatus for optical treatment using a light beam comprising an apparatus body and a light relaying device for introducing treatment light emitted from said apparatus body into a delivery unit, wherein the apparatus body is connected with the light relaying device through an optical transmission cable, said apparatus body further comprising: treatment light emitting means which emits the light for optical treatment; first communication light emitting means which emits communication light for transmission to said light relaying device through said optical transmission cable; first communication light receiving means which receives communication light transmitted to said apparatus body through said optical transmission cable; and first control means which controls the treatment light emitted from said treatment light emitting means and the communication light emitted from said first communication light emitting means, and further generates a first received communication signal from the communication light received by said first communication light receiving means; and

said light relaying device comprising: light separating means which separates the treatment light and the communication light emitted from said apparatus body and transmitted through said optical transmission cable; second communication light receiving means which receives the communication light separated by said light separating means; second communication light emitting means which emits communication light for transmittal to said apparatus body through said optical transmission cable; second control means which controls the treatment light emitted from said treatment light emitting means and the communication light emitted from said second communication light emitting means, and further generates a second received communication signal from the communication light received by said second communication light receiving means.

5,347,330

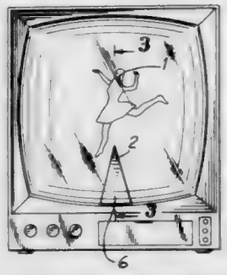
SYSTEM AND METHOD USING THE PULFRICH STEREO-ILLUSION PHENOMENON TO SCREEN EYES AND DETECT OCULAR AND OPTIC NERVE DISEASE

Albert J. Hofeldt, 200 E. 57th St., New York, N.Y. 10022

Filed May 14, 1993, Ser. No. 61,966

Int. Cl.[5] A61B *3/02, 3/032*

U.S. Cl. 351—223 **12 Claims**



1. A system for measuring the Pulfrich stereo-illusion phenomenon in people with normal vision and without ocular and optic nerve disease, and for diagnosing ocular and optic nerve diseases in people who are incapable or capable of experiencing the Pulfrich stereo-illusion phenomenon, which comprises two eye pieces, an audio-visual recording, a device capable of showing and playing the recording to a person to be measured, and means for making a record of the results measured, wherein the recording shows a ballerina moving in a pendulum motion behind a reference point which comprises a cone, and wherein the eye pieces have means for diminishing the amount of light received by each eye, and said means for making a record of the results measured comprises recording when the person to be measured sees the ballerina moving in a pendulum motion back and forth behind the reference point and whether or not the person to be measured also sees the ballerina rotating around the cone in either a clockwise or counter-clockwise direction as the amount of light perceived by each eye in turn is varied by means of the two eye pieces.

5,347,331

OPHTHALMIC APPARATUS FOR PHOTOGRAPHING THE ANTERIOR PART OF THE EYE WITH A REPRODUCIBLE PHOTOGRAPHING POSITION

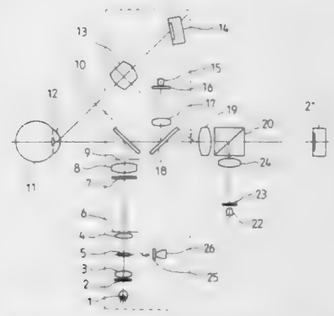
Naoki Isogai, Nishio, and Hirohiko Hanaki, Gamagori, both of Japan, assignors to Nidek Co., Ltd., Aichi, Japan

Filed Jun. 11, 1993, Ser. No. 74,494

Claims priority, application Japan, Jun. 30, 1992, 4-197520

Int. Cl.[5] A61B *3/14;* **G03B** *29/00*

U.S. Cl. 354—62 **10 Claims**



9. Ophthalmic photographing apparatus for photographing an anterior part of an examinee's eye, comprising:

an alignment optical system including,

a reflection image forming means for forming an image reflected on a cornea of the examinee's eye,

a photographing optical system for photographing an image of the anterior part of the examinee's eye,

an alignment reticle;

means for displaying said image of the anterior part of the examinee's eye and an image of said alignment reticle;

a slit image projection system for projecting a slit image onto the examinee's eye;

a photographing system for photographing a sectional image of the examinee's eye through a CCD camera based on Sheimpflug's principle, said sectional image being obtained through said slit image projected by said slit image projection system;

means for storing a memorized picture image of the sectional image photographed with said CCD camera;

means for detecting alignment deviation by processing a signal of said memorized picture image to detect at least three points near the apex of said cornea and by finding a dislocation distance of an apical position of said cornea from a reference position;

means for displaying the photographed sectional picture image of the examinee's eye;

a display circuit for displaying g graphic pattern on the display means; and

means for correcting the graphic pattern displayed on the display means on the basis of said dislocation distance.

5,347,332

FILM CARTRIDGE DRIVING MECHANISM OF A CAMERA

Tsutomu Wakabayashi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jul. 28, 1992, Ser. No. 920,883

Claims priority, application Japan, Aug. 2, 1991, 3-216321; Oct. 15, 1991, 3-296361

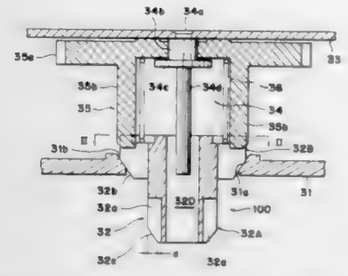
Int. Cl.[5] G03B *1/18, 17/26*

U.S. Cl. 354—173.1 **14 Claims**

1. A film cartridge positioning device of a camera comprising:

an engagement member which is capable of engaging with a spool shaft of the film cartridge and which is rotatable about an axis;

a support portion which supports said engagement member in such a way that said engagement member is substantially movable in a direction along said axis and in directions transverse to said axis; and



a positioning portion which positions said engagement member to a predetermined position with respect to directions transverse to said axis before loading of said film cartridge.

5,347,333

LENS-DRIVING DEVICE FOR CAMERA

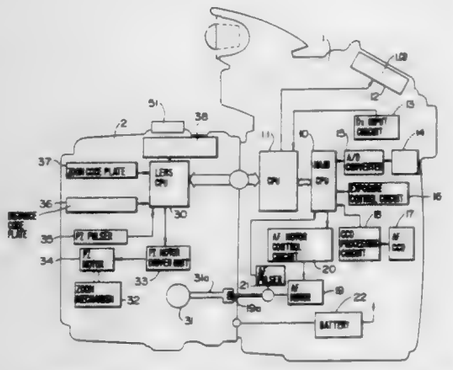
Hiroyuki Takahashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 656,225, Feb. 15, 1991, abandoned. This application Dec. 14, 1992, Ser. No. 997,146

Claims priority, application Japan, Feb. 15, 1990, 2-34607

Int. Cl.[5] G03B *1/18*

U.S. Cl. 354—187 **42 Claims**



1. A lens-driving device for a camera that includes a photographing lens having at least one specific lens group that is movable in an optical axis direction, comprising:

lens driving means for driving said at least one specific lens group between a photographing position and an accommodated position;

a memory for storing a photographing position occupied by said at least one specific lens group upon an occurrence of a certain event; and

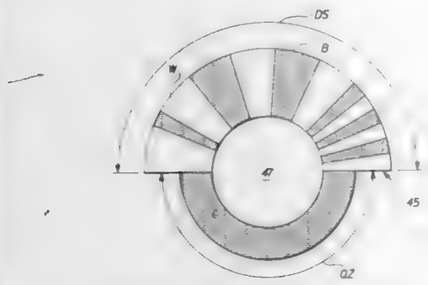
means for controlling a movement of said at least one specific lens group, by said lens driving means, to return said at least one specific lens group to said photographing position stored in said memory upon an occurrence of a predetermined event, said at least one specific lens group performing a focus adjustment.

5,347,334

FILM CASSETTE WITH BAR-CODED FILM SPOOL AND PROVISION FOR FILM DOUBLE EXPOSURE PREVENTION

David C. Smart, Fairport, and Stephen H. Miller, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 30, 1993, Ser. No. 159,901
Int. Cl.[5] G03B *17/26*
U.S. Cl. 354—275 4 Claims



1. A photographic film cassette comprising a light tight housing, a rotatable film spool, the spool having a radial bar coded disk mounted thereon for rotation with the spool, the cassette characterized by:

the housing having a circumferential lip portion at the radial bar coded disk end of the spool adapted for engagement with a mechanical double exposure prevention hook in the cassette receiving chamber of a camera as the cassette is loaded endwise into the camera; and

the radial bar coded disk having a first arcuate segment extending to the circumferential lip portion to inhibit engagement of the hook with the lip portion of the cassette housing when the disk is rotationally positioned to indicate that film in the cassette is unexposed and having a second arcuate segment extending part way to the lip portion to define a gap between the disk and the lip portion thereby to allow the hook to engage the lip portion when the disk is rotationally positioned to indicate that at least some of the film in the cassette is exposed.

5,347,335

LID LATCH DEVICE IN CAMERA

Masayuki Misawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

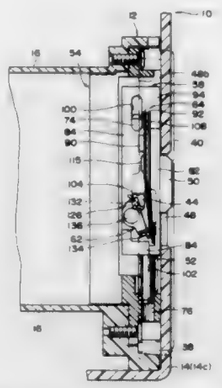
Filed Oct. 20, 1993, Ser. No. 138,435
Claims priority, application Japan, Oct. 28, 1992, 4-80682[U]
Int. Cl.[5] G03B *17/02*
U.S. Cl. 354—288 39 Claims

1. A lid latch device adapted to be used for a back lid openable to a camera, said device comprising:

latch means for latching said back lid in a closed position;

release means for releasing said latch means, said back lid being unlatched from said closed position when said latch means is released; and

switch means for switching an output signal from a first predetermined level to a second predetermined level, said switch means being actuated directly by said back lid only when said back lid is moved to said closed position and latched by said latch means.

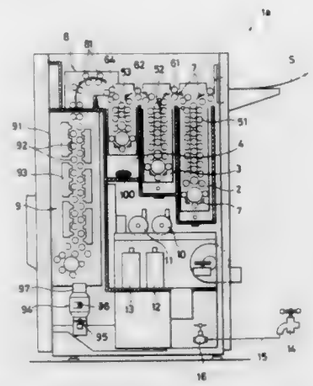


5,347,336

PHOTOGRAPHIC SILVER HALIDE PHOTOSENSITIVE MATERIAL PROCESSING APPARATUS AND METHOD OF PREVENTING BIO-SLIME GENERATION IN A WASH TANK THEREOF

Minoru Yamada, Minami-ashigara, and Katsumi Hayashi, Odawara, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 506,635, Apr. 9, 1990, abandoned. This application Mar. 2, 1992, Ser. No. 844,865
Claims priority, application Japan, Apr. 11, 1989, 1-91533
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 5 Claims



1. A method for controlling bio-slime formation in a washing tank of an automatic processor, said washing tank having a discharge port at a bottom thereof and containing water during an operating period of said processor, said method comprising the steps of:

emptying said washing tank during a quiescent period of said processor;

filling said washing tank with fresh water; and

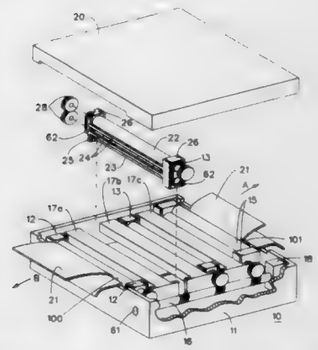
emptying said washing tank again so as to prevent bio-slime formation during the quiescent period.

5,347,337

VERTICAL AND HORIZONTAL POSITIONING AND COUPLING OF AUTOMATIC TRAY PROCESSOR CELLS

David L. Patton, Webster; Joseph A. Mainco, Rochester; John H. Rosenburgh, Hilton, and Ralph L. Piccinino, Jr., Rush, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1993, Ser. No. 57,131
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 14 Claims



1. An apparatus for processing photosensitive materials, said apparatus comprising:

a processing module comprising a container, at least one processing assembly placed in said container and at least one transport assembly disposed adjacent said at least one processing assembly, said at least one processing assembly and said at least one transport assembly forming a substantially continuous channel through which a processing solution flows, said at least one processing assembly and said at least one transport assembly substantially filling said container and being relatively dimensioned so that a small volume is provided for holding and moving processing solution and photosensitive material through said processing module, at least one discharge opening is provided in said at least one transport assembly or said at least one processing assembly for introducing processing solution to said channel, wherein two or more modules may be interconnected so that the photosensitive material may transported from one of the modules to the next module; and

means for circulating the processing solution from said small volume provided in said module directly to said at least one discharge opening.

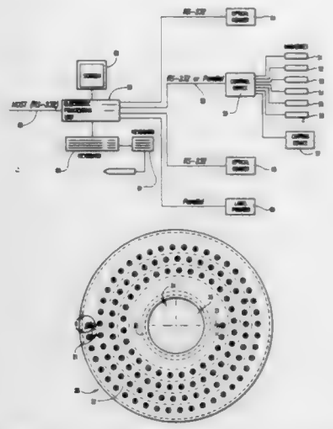
5,347,338

METHOD FOR AUTOMATED LABORATORIES OF DEVELOPING PHOTOGRAPHIC FILMS AND A MAGAZINE FOR STORING ROLLS OF FILM FOR IMPLEMENTING THE METHOD

Clemens Weibel, Lutry, Switzerland, assignor to Fotolabo S.A., Ropraz, Switzerland

Filed Apr. 9, 1993, Ser. No. 45,820
Claims priority, application Switzerland, Apr. 10, 1992, 1187/92-2
Int. Cl.[5] G03D *13/08*
U.S. Cl. 354—340 24 Claims

1. A method for automated laboratories of developing photographic rolls of film, in which rolls of film of the same format are and are treated in groups as the result of an operation of splicing, including automatic opening of the rolls of film and automatic connection of the films end-to-end, comprising the following steps: by means of an electronic processing unit the whole of the technical and commercial data relative to each roll of film is picked up and this data is memorized on a data base, and the rolls of film are stored in a structured storage member with a position for each roll of film being identified and memorized on the data base, the said storage member serving as intermediary between the pick-up unit and the splicing, so as to dissociate the pick-up unit and the splicing and to render these two operations not immediately interdependent in time.

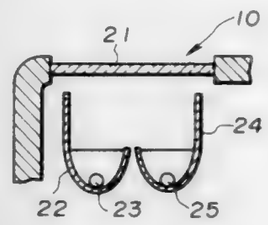


5,347,339

STROBE APPARATUS

Hiroshi Terada, Mitaka, and Keiichi Tsuchida, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1992, Ser. No. 870,562
Int. Cl.[5] G03B *15/03*, *3/00*
U.S. Cl. 354—402 18 Claims



1. A camera with a strobe apparatus comprising:

taking lens means having an optical axis;

distance measuring means for measuring the distances of objects in a plurality of places across an image field transverse to said optical axis;

flashing means provided with a first flashing part having first light distribution characteristics such that a flashing light amount varies gradually in moving in a first direction across the image field and a second flashing part having second light distribution characteristics such that flashing light amount varies gradually in moving in a second direction across the image field and opposite said first direction;

a flashing amount determining means for determining the respective flashing amounts of said first and second flashing parts responsive to said distance measuring means so as to properly expose at least two objects whose distances have been measured by said distance measuring means;

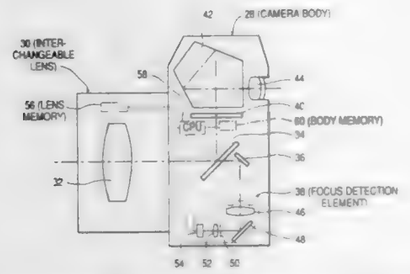
a flashing controlling means controlling the flashing amounts of said first flashing part and second flashing part in conformity with the respective flashing amounts determined by said flashing amount determining means;

said flashing means being provided with:

a flashing tube for flashing;

a reflector for reflecting light from said flash tube toward an object and having a first reflecting part and second reflecting part each having a curved surface and an extension wherein the reflecting curved surfaces and the extensions of the first and second reflecting parts are asymmetrical relative to an imaginary plane;
a light condensing lens in front of said reflector; and
the flashing tube and shade being movable to adjust the distance between said light condensing lens and said reflector and flashing tube in accordance with zooming information.

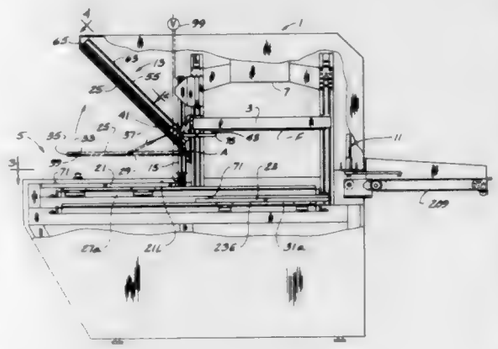
5,347,340
CAMERA HAVING A FOCUS DETECTION DEVICE AND INTERCHANGEABLE LENS
Shinichi Tsukada, Toride, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Oct. 14, 1993, Ser. No. 136,108
Claims priority, application Japan, Oct. 15, 1992, 4-277354
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—402 **18 Claims**



1. A focus detection device for a camera which is capable of accommodating an interchangeable lens, comprising:
(a) focus detection means for performing focus detection in a detection region, and for outputting a focal point position;
(b) memory means for storing data representing a field curvature of the interchangeable lens, and for storing data representing characteristics of the focus detection means; and
(c) correction means for correcting the focal point position output by the focus detection means based upon the data stored in the memory means representing the field curvature of the interchangeable lens and based upon the data representing characteristics of the focus detection means.

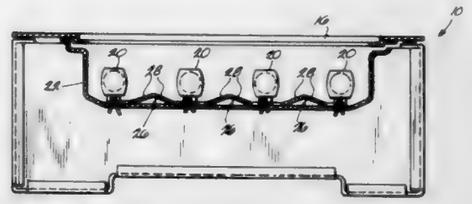
5,347,341
PHOTOGRAPHIC PRINTING APPARATUS
John W. Powers, Springfield, and Daniel G. Choate, Everton, both of Mo., assignors to Western Litho Plate & Supply Co., St. Louis, Mo.
Filed Jun. 10, 1993, Ser. No. 75,218
Int. Cl.[5] G03B *27/04*
U.S. Cl. 355—91 **4 Claims**

1. Apparatus for exposing photosensitized plates to light through films comprising
an exposure station in which a plate is exposed to light through a film;
a window movable downwardly from a raised retracted position above a plate and film thereon in exposure position at the exposure station to a lowered position pressing down on the film and plate in exposure position;
a loading station adjacent the exposure station from which plates and films are fed forward into the exposure station, the window being raised for the infeed;
a platen movable from a position at the loading station for the manual loading thereon of a plate and a film on the plate or a plate per se to exposure position in the exposure station;
a light source for exposing the plate to light through the film when the window is down;
means associated with the window operable after exposure of a plate to light through film at the exposure station to grip the film to the bottom of the window for raising the film with the window when the window is raised;
plate discharge means operable when the window is raised for discharging the exposed plate from the exposure station; and
film discharge means operable when the window is raised for discharging the raised film from the exposure station; characterized in that:
the apparatus is provided with film-receiving means above the loading position of the platen at the loading station for receiving films discharged from the exposure station;
the film discharge means for discharging a raised film from the exposure station comprises means for transferring a film from its raised position on the bottom of the raised window to the film-receiving means;
the film-receiving means comprising a tray having an inclined film-receiving position in an inclined plane angled



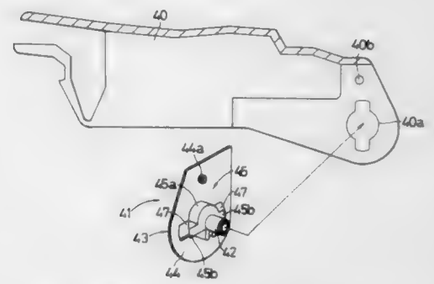
downwardly and forwardly toward the exposure station, the tray being pivoted at one end constituting its forward end toward the exposure station for swinging movement about a generally horizontal axis transverse to the apparatus between its inclined film-receiving position and a generally horizontal film-retrieving position above the loading station;
the film discharge means comprising a carriage extending transversely with respect to the apparatus above the loading station, means mounting the carriage for movement in an inclined plane above and generally parallel to the said inclined plane of the tray toward and away from the exposure station, a set of vacuum grippers carried by the carriage for movement up and down relative to the carriage between a raised position for gripping a film on the bottom of the raised window at the bottom face of the film and a lowered position for withdrawing the gripped film rearward from the exposure station and carrying it back over the tray, means for moving the carriage in its said inclined plane of movement between a rearward raised retracted position away from the exposure station and a forward lowered advanced position wherein the grippers are under the raised window, and means for raising and lowering the grippers.

5,347,342
TRANSILLUMINATOR
Timothy G. J. Ehr, Menomonee Falls, Wis., assignor to Fotodyne Incorporated, Hartland, Wis.
Filed Mar. 31, 1993, Ser. No. 40,670
Int. Cl.[5] G03B *27/04*
U.S. Cl. 355—113 **17 Claims**



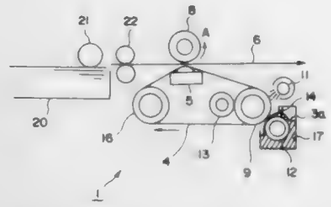
1. A transilluminator comprising
a housing having therein a UV-transmissible window,
a UV light source supported within said housing for transmitting UV light through said window, and
means for reflecting an image of said light source through said window so that said light source appears at said window to be more than one light source.

5,347,343
PHOTOSENSITIVE DRUM CARTRIDGE AND AN IMAGE FORMING APPARATUS USING THE SAME
Yoshinori Ohtsuka, Yamatokoriyama; Hideki Umeda, Tenri; Toyokazu Mori, Yamatokoriyama; Masaru Tsuji, Nara, and Atsuyuki Katoh, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 8, 1993, Ser. No. 88,876
Claims priority, application Japan, Jul. 16, 1992, 4-189182
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—200 **4 Claims**



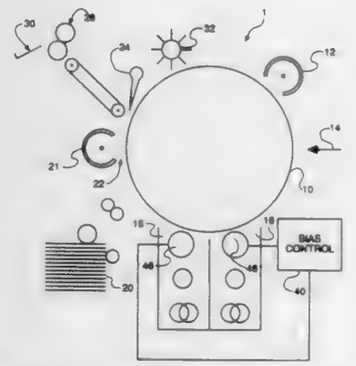
1. A photosensitive drum cartridge for attachment with a printer main body, said cartridge comprising:
a photosensitive drum cartridge main body provided with a supporting member made of an elastic material for supporting a photosensitive drum, the supporting member comprising:
a supporting shaft for rotatably supporting the photosensitive drum;
and a base body means integrated with the supporting shaft for positioning the supporting shaft with respect to the photosensitive drum cartridge main body;
said base body means including a flat plate having a shape identical to a front end portion of a sidewall of the cartridge main body, said base body means also having an engaging body integrally formed at the center of said flat plate, said engaging body having an oval projection protruding from said flat plate, and a pair of engaging pieces integrally formed at right and left sides of said projection and separated from said flat plate by a predetermined distance, said supporting shaft projecting from the center of said projection.

5,347,344
METHOD FOR RECYCLING AN INK SHEET AND THERMAL TRANSFER PRINTER USING THE SAME
Shinichi Itoh, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Aug. 18, 1993, Ser. No. 107,989
Claims priority, application Japan, Aug. 24, 1992, 4-223921
Int. Cl.[5] G03G *15/00, 21/00*
U.S. Cl. 355—200 **18 Claims**



1. A method for recycling an ink sheet composed of a transparent base film and an ink layer coated on said base film, said method comprising the steps of:
(a) superimposing said ink sheet, composed of an ink remaining portion at which said ink layer is remained on said base film and of an ink transferred portion at which said ink layer is removed from said base film, on a uniformly charged photosensitive means;
(b) exposing said photosensitive means to light through said ink sheet to form a charged pattern on a surface of said photosensitive means in accordance with said ink transferred portion;
(c) applying ink powder selectively to said ink transferred portion by electrostatic force occurring corresponding to said charged pattern; and
(d) fusing said ink powder applied on said ink sheet to form a uniform ink layer with said ink remaining portion on said base film.

5,347,345
METHOD AND APPARATUS OF CREATING TWO-COLOR IMAGES IN A SINGLE PASS
Hans W. Osterhoudt, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 19, 1992, Ser. No. 963,444
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—246 **3 Claims**



1. Apparatus for creating two-color images in a single pass, said apparatus comprising:

means for forming an electrostatic image having at least three levels of electrostatic potential of a single polarity,

means for applying a first toner of a first color and a first polarity to said electrostatic image in the presence of a first electric field urging said first toner image away from two of said three levels of potential and toward the other level of potential, and

means for applying a second toner of a second color and said first polarity to said image in the presence of a second electric field urging said second toner away from one of said three levels of potential and toward at least one of said levels of potential.

5,347,346

IMAGE FORMING APPARATUS WITH IMPROVED EFFICIENCY OF MAINTENANCE CONTROL

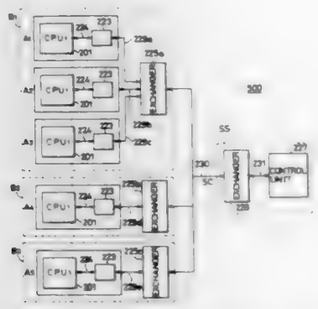
Tadafumi Shimizu, Toyokawa; Yoshiaki Takano, Toyohashi; Hiroyuki Ideyama; Manabu Kamitamari, both of Toyokawa; Kadotaro Nishimori, Amagasaki; Yoshihiko Hatta, Toyokawa; Masazumi Ito; Tsugihito Yoshiyama, both of Toyohashi; Yoshifumi Shibata, Toyokawa, and Yoshiaki Hata, Ashiya, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 21, 1990, Ser. No. 632,076

Claims priority, application Japan, Dec. 25, 1989, 1-337254; Dec. 25, 1989, 1-337255; Dec. 25, 1989, 1-337256; Dec. 25, 1989, 1-337257

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—202 **34 Claims**



1. An image forming apparatus connected to an external control unit through a communication line, said external control unit includes means for sending a control signal to the image forming apparatus through the communication line, said image forming apparatus comprising:

image forming means for forming an image on paper, said image forming means performing an image forming operation using a variable parameter;

receiving means connected with the communication line for receiving the control signal from the external control unit through said communication line;

detecting means for detecting a condition of said image forming means;

adjusting means for varying said parameter based on a result of said detecting means; and

control means for controlling said detecting means and said adjusting means such that said detecting means detects the condition of said image forming means and said adjusting means varies said parameter used in said image forming operation in response to reception of said control signal by said receiving means.

5,347,347

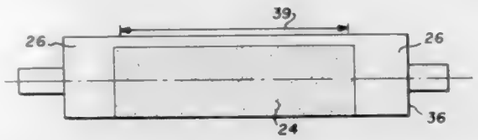
APPARATUS FOR APPLYING TONER TO AN ELECTROSTATIC IMAGE HAVING IMPROVED DEVELOPER FLOW

Thomas K. Hilbert, Spencerport, and Theodore H. Morse, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 25, 1993, Ser. No. 66,264

Int. Cl.[5] G03G *15/09*

U.S. Cl. 355—253 **7 Claims**



1. Apparatus for applying toner to an electrostatic image carried by an image member, said apparatus comprising:

a sump for holding a dry developer having a high coercivity component,

an applicator for moving such developer through a development zone in toning relation to the electrostatic image, the applicator including

a magnetic core having alternating magnetic poles and being rotatable around an axis of rotation,

a stationary sleeve around the core which sleeve has an outside surface, the outside surface having a portion in the development zone facing the electrostatic image and portions leading to and away from the development zone, said surface being rough in the portion leading to the development zone but smooth or less rough in the portion in the development zone, and

means for rotating the core to move developer along a path along said surface first across the toughened portion leading to the development zone and then through the development zone to the portion leading away from the development zone.

5,347,348

IMAGE FIXING APPARATUS WITH DETECTOR FOR DETECTING MOVEMENT OF ENDLESS BELT

Tsunetoshi Nagata, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 50,997, Apr. 22, 1993, abandoned, which is a continuation of Ser. No. 892,407, May 29, 1992, abandoned, which is a continuation of Ser. No. 588,326, Sep. 26, 1990, abandoned. This application Dec. 16, 1993, Ser. No. 167,623

Claims priority, application Japan, Sep. 27, 1989, 1-251235

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—285 **8 Claims**

1. An image heating apparatus, comprising:

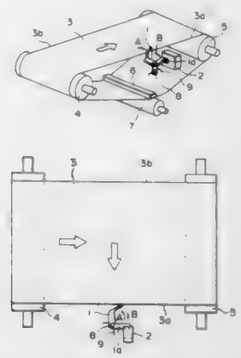
a heater;

an endless belt movable in sliding contact with said heater;

a first roller, disposed downstream of said heater with respect to a movement direction of said endless belt, said endless belt being stretched around said first roller;

a second roller, disposed upstream of said heater with respect to the movement direction of said endless belt, said endless belt being stretched around said second roller;

a displaceable member contacting an edge of said endless belt at a position downstream of said first roller and upstream of said second roller, said movable means comprising heat insulative resin; and



a photosensor for optically detecting said displaceable member to determine a lateral shift of said endless belt.

5,347,349

IMAGE FORMING APPARATUS HAVING A PROTECTIVE GATE MEMBER

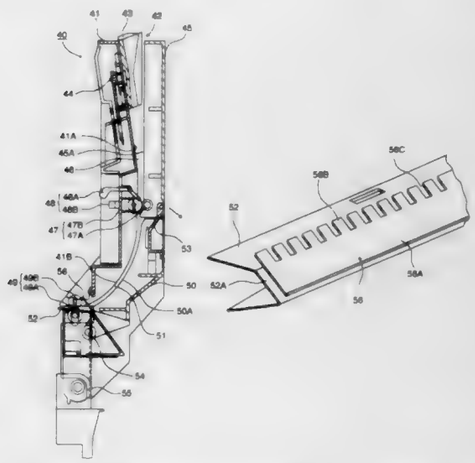
Kenji Sato, and Hiroyuki Honda, both of Hachioji, Japan, assignors to Konica Corporation, Japan

Filed Jul. 2, 1993, Ser. No. 87,627

Claims priority, application Japan, Jul. 21, 1992, 4-051225; Jul. 21, 1992, 4-194130; Sep. 29, 1992, 4-260370

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—309 **3 Claims**



1. An apparatus for forming an image on a recording sheet comprising a casing;

an image former disposed in said casing;

a conveyor for moving a sheet through a sheet passage to said image former so that said sheet receives an image thereon from said image former, said sheet passage positioned at a lower portion of said casing;

a manual sheet-feeder for manually feeding a sheet to said apparatus, said sheet-feeder being mounted on a side of said casing, there being an entrance for said manual feeder at the top of said casing, a manual sheet-feeder passage extending downwardly from said entrance and connected to said sheet passage through which a manually-fed sheet is conveyed to the image former,

a gate member adapted to block said manual sheet-feeder passage to prevent a foreign substance entering said manual sheet-feeder passage and from entering said sheet passage.

5,347,350

SHEET FEEDER

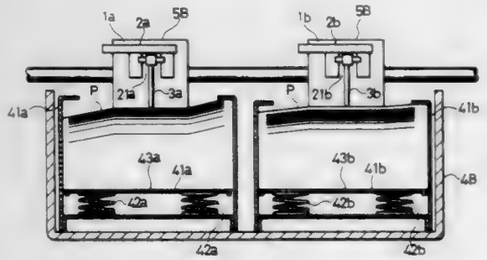
Akinobu Nakahata, Sakai; Hiroshi Kubota, Osaka; Kouji Migita, Sakai; Masami Fuchi, Neyagawa; Kenji Oda, Toyonaka; Yoshinori Makiura, Kawachinagano, and Katsuhide Yamaguchi, Takatsuki, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 935,117, Aug. 24, 1992, abandoned. This application Sep. 24, 1993, Ser. No. 127,469

Claims priority, application Japan, Aug. 28, 1991, 3-215690; Sep. 3, 1991, 3-223106

Int. Cl.[5] G03G *15/00, 21/00*

U.S. Cl. 355—309 **18 Claims**



1. A sheet feeding arrangement comprising:

a feeder for feeding at least one sheet;

a cassette comprising means for holding at least a first stack of sheets, and biasing means for biasing sheets in said cassette upwards so as to bring uppermost sheets of said at least one stack into contact with the feeder;

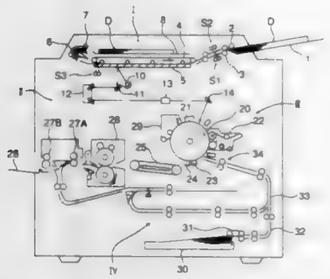
a plurality of sheet detectors arranged in positions corresponding to the respective stacks of sheets for detecting the height of the respective stacks of sheets contained in the cassette means; said detectors being spaced apart in a direction perpendicular to the feed direction of said feeder;

control means responsive to outputs of said plurality of sheet detector means for determining the absence of sheets in the cassette means when at least one of the plurality of sheet detectors detects that the height of a stack of sheets thereunder has become lower than a predetermined height, and for stopping a sheet feeding operation by said feeder;

said cassette comprising means for holding a second stack of sheets spaced from said first stack in the direction perpendicular to the feed direction of said feeder, said sheet detector means comprising first and second detectors for detecting the heights of said first and second stacks, respectively, and said control means comprises means for stopping the sheet feeding operation in response to the detection by at least one of said detector means that the height of the respective stack is below said predetermined height;

said cassette being shaped to permit the selective loading of a single stack of sheets of larger size than the sheets of said first and second stacks, to replace said first and second stacks of sheets, with said first and second detectors positioned to detect the height of said single stack at spaced apart locations, and further comprising means for determining the presence of said single stack in said cassette, and wherein said control means is responsive to the detection of said single stack in said cassette for stopping said feeder only when said first and second detectors both detect the presence of sheets that the height of said single stack is below said predetermined height.

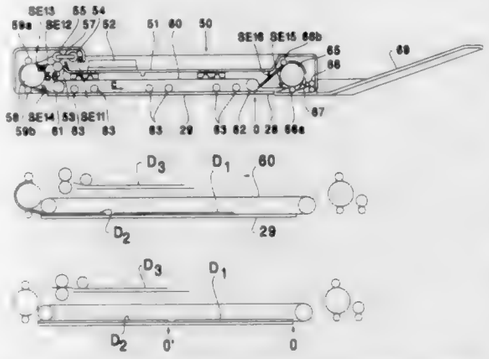
5,347,351
IMAGE FORMING APPARATUS FOR COPYING ONE AND TWO-SIDED DOCUMENTS
Shizuo Morita; Masakazu Fukuchi, and Satoshi Haneda, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed May 19, 1993, Ser. No. 64,408
Claims priority, application Japan, Jun. 2, 1992, 4-141644; Sep. 24, 1992, 4-254942
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—313 **7 Claims**



1. An image forming apparatus comprising:
(a) feeder means for feeding one by one a plurality of mixed documents including one-sided image documents and two-sided image documents to a reading station for copying said mixed documents on a plurality of recording sheets;
(b) discriminating means for discriminating whether each of the plurality of mixed documents is one of a one-sided image document and a two-sided image document; and
(c) means for selecting a copying mode so that the plurality of mixed documents are copied in one of a one-sided copying mode wherein all images of the plurality of mixed documents are respectively copied on only one side of each of the plurality of recording sheets, a two-sided copying mode wherein all images of the plurality of mixed documents are copied on two sides of each of said plurality of recording sheets, and another copying mode wherein the images are copied in an order that corresponds to an order of the images on the plurality of mixed documents in accordance with a predetermined desired copying mode; and
wherein when the two-side copying mode is selected by said selecting means and when said discriminating means discriminates an absence of an image on one side of a document, one-sided copying for said one side of said document is inhibited.

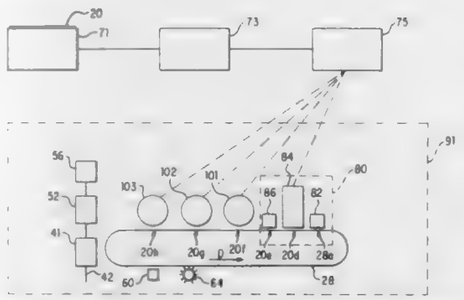
5,347,352
COPYING APPARATUS WITH AUTOMATIC DOCUMENT FEEDING DEVICE
Yuusuk Morigami; Akira Ohhata, both of Toyohashi; Wataru Hamakawa, Okazaki; Hirokazu Matsuo, Toyonashi; Hiroyasu Nagato, and Takuma Ishikawa, both of Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Sep. 28, 1992, Ser. No. 952,649
Claims priority, application Japan, Sep. 30, 1991, 3-252420; Oct. 1, 1991, 3-253971; Oct. 1, 1991, 3-253972; Oct. 1, 1991, 3-253973
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—321 **24 Claims**

1. A copying apparatus comprising:
a platen glass;
an original document support table which supports a plurality of originals;
original document feed means for feeding a first original, a second original and a third original one by one in this order from the support table along an original document path to said platen glass;
image forming means for forming an image of an original document disposed on the platen glass and transferring the image onto a copy sheet at an image transfer station;
paper storage means for storing a plurality of copy paper;
paper feed means for feeding said copy paper one by one along a copy paper path to the image transfer station;



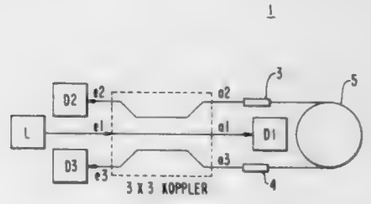
original document detecting means for detecting the originals in the original document path, said detecting means detects said first original, second original and third original before said first original has been subjected to image formation; and
control means for controlling said paper feed means in response to said original detecting means.

5,347,353
TANDEM HIGH PRODUCTIVITY COLOR ARCHITECTURE USING A PHOTOCONDUCTIVE INTERMEDIATE BELT
Gerald M. Fletcher, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Sep. 24, 1993, Ser. No. 125,728
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—326 R **27 Claims**



1. An image forming apparatus forming a multi-colored copy image of a multi-colored original image on an image receiving member, the multi-colored copy image comprising a plurality of color layers, the image forming apparatus comprising:
a photoconductive belt;
first charging means for charging a portion of the belt;
first image forming means for forming a latent electrostatic image in the charged portion of the belt;
first developing means for developing the latent electrostatic image into a first developed image, the first developed image forming a first one of the plurality of color layers;
a plurality of second image forming means, each second image forming means forming a second developed image, the second developed image of each second image forming means being another one of the plurality of color layers;
a plurality of first image transferring means, each for transferring one of the second developed images from the corresponding one of the plurality of second image forming means to the charged portion of the belt to form the multi-colored image; and
second image transferring means for transferring the multi-colored copy image formed on the charged portion of the belt to the image receiving member.

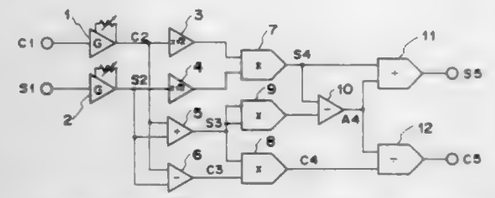
5,347,354
SAGNAC-TYPE OPTICAL FIBER GYROSCOPE HAVING DEPOLARIZERS OF DIFFERING LENGTHS
Reinhard Müller, Puchheim; Engelbert Hartl, and Gert Trommer, both of München, all of Fed. Rep. of Germany, assignors to Deutsch Aerospace, Ottobrun, Fed. Rep. of Germany
Filed Jun. 22, 1992, Ser. No. 902,237
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1991, 4120675
Int. Cl.[5] G01C *19/72*
U.S. Cl. 356—350 **7 Claims**



1. A Sagnac-type fiber optic gyroscope comprising:
a 3×3 coupler having three inputs and three outputs;
a fiber optic waveguide coil comprising an optical fiber having two ends which are optically coupled respectively to two of the three outputs of the 3×3 coupler,
a light source optically coupled to one of said inputs of the coupler; and
two radiation detectors optically coupled to the other two inputs of the coupler; and
first and second fiber depolarizers arranged between respective ends of the fiber optic waveguide coil and the respective outputs of the 3×3 coupler to which they are coupled, each of said fiber depolarizers comprising at least two sections of birefringent fiber optic waveguides spliced to one another with the main axes of two adjacent fiber sections enclosing a predetermined angle of 45°;
wherein length of the fiber sections are all different, and length differences between fiber sections are, in each case, larger than a depolarization length of the birefringent fiber optic waveguides.

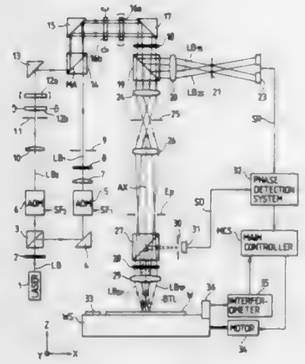
5,347,355
SIGNAL PROCESSING APPARATUS AND METHOD, AND DISPLACEMENT DETECTING APPARATUS USING THE SAME
Tadashi Eguchi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 19, 1993, Ser. No. 5,576
Claims priority, application Japan, Jan. 21, 1992, 4-008469
Int. Cl.[5] G01B *11/02*
U.S. Cl. 356—356 **10 Claims**

1. A signal processing apparatus, comprising:
an input portion for receiving original two-phase signals each having a possibility of amplitude fluctuation;
a signal processing portion for forming new two-phase signals from the original two-phase signals received by said input portion, said signal processing portion forming intermediate stage two-phase signals and a phase component eliminated signal having the phase components of said original signals eliminated therefrom in parallel from said original two-phase signals, and eliminating the fluctuation component of amplitude by the offsetting process of respective ones of said intermediate stage two-phase signals



and said phase component eliminated signal to thereby form said new two-phase signals, said new two-phase signals having a predetermined phase relation with said original two-phase signals; and
an output portion for outputting said new two-phase signals.

5,347,356
SUBSTRATE ALIGNING DEVICE USING INTERFERENCE LIGHT GENERATED BY TWO BEAMS IRRADIATING DIFFRACTION GRATING
Kazuya Ota, Tokyo; Nobutaka Magome, Kawasaki; Hideo Mizutani, Yokohama, and Kouichiro Komatsu, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 671,109, Mar. 18, 1991, abandoned. This application Nov. 25, 1992, Ser. No. 982,129
Claims priority, application Japan, Mar. 20, 1990, 2-71563
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—363 **19 Claims**



1. An aligning device comprising:
a movable stage for holding a substrate;
a reference grating plate provided on said stage;
irradiation means for supplying two beams for irradiating said reference grating plate with a crossing angle, a predetermined frequency difference existing between frequencies of said two beams, said irradiation means having a shielding member for partially shielding selectively a crossing area where said two beams cross each other on aid reference grating plate;
a photoelectric detector for receiving interference light generated by light diffracted in substantially the same direction from said crossing area on said reference grating plate and generating detection signals; and
measuring means for measuring at least one of said crossing angle of said two beams and a rotational error of a crossing line between said reference grating plate and a plane containing principal rays of said two beams with respect to a direction of grating arrangement of said reference

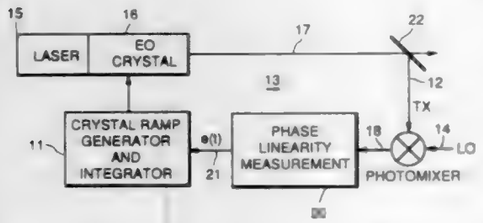
grating plate, on the basis of a phase difference of first and second detection signals, said first detection signal being generated by said photoelectric detector when a first area within said crossing area is shielded by said shielding member, and said second detection signal being generated by said photoelectric detector when a second area within said crossing area is shielded by said shielding member, said first and second areas having at least portions thereof that differ from each other.

5,347,357

HIGH-VOLTAGE CRYSTAL RAMP GENERATOR AND INTEGRATOR FOR FM LASER RADAR

Charles E. Nourrcier, Jr., Lakewood, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 28, 1993, Ser. No. 10,124
Int. Cl.[5] G01C *3/08;* **G02B** *26/00;* **G02F** *1/23*
U.S. Cl. 356—5 **13 Claims**



1. Apparatus for driving an EO crystal in a laser radar system, said crystal having an output and a predetermined capacitance, said apparatus comprising:

means for supplying a constant current to said crystal for integration by the capacitance of the crystal to produce a voltage signal across said capacitance comprising a linear ramp voltage occurring over a selected time interval; and

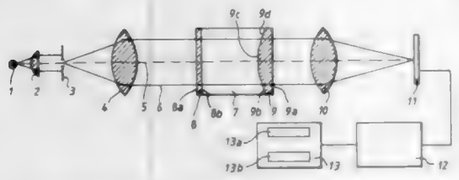
means responsive to the output of said EO crystal for applying a correction current to said constant current to provide fine correction to said linear ramp voltage.

5,347,358

REFRACTOMETER

Wolfgang Nebe, and Rolf Godat, both of Jena, Fed. Rep. of Germany, assignors to Carl Zeiss Jena GmbH, Jena, Fed. Rep. of Germany

Filed Jul. 20, 1993, Ser. No. 94,524
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1992, 4223840
Int. Cl.[5] G01N *21/03, 21/41*
U.S. Cl. 356—128 **12 Claims**



1. A refractometer comprising:

a light source for generating rays of light;

illuminating optic collimating means for collimating said rays to form a collimated light beam defining an optical axis and having a predetermined cross section transverse to said axis;

a cuvette arranged on said axis and defining a hollow enclosed interior space for receiving a sample to be analyzed;

said cuvette having a transparent entry window and a transparent exit window for passing said light beam into and out of said interior space, respectively;

said entry window having an entry inner surface and said exit window having an exit inner surface and said inner surfaces delimiting said interior space;

sensor means disposed downstream of said exit window and defining a plurality of independently registering surface areas for detecting deflections of the light transmitted through said cuvette;

said inner surfaces extending over at least two regions of said cross section of said collimated light beam; and,

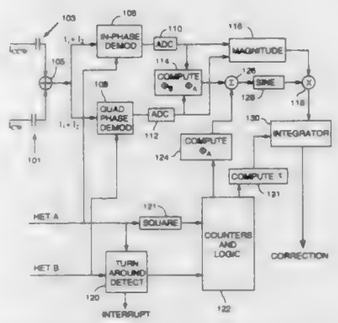
said exit inner surface being subdivided into a plurality of component surfaces arranged in corresponding ones of said regions of said cross section with said component surfaces being inclined at different angles with respect to each other.

5,347,359

APPARATUS AND METHOD FOR CORRECTING RING LASER GYROSCOPE PHASE ANGLE ERRORS INDUCED BY LOCK-IN

Thomas J. Hutchings, Canoga Park; Edward Kanegsberg, Pacific Palisades; Sheridan W. Hammons, Thousand Oaks; Daryl C. Stjern, deceased, late of Thousand Oaks, and Edmund W. Rusche, legal representative, Thousand Oaks, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Oct. 19, 1987, Ser. No. 110,003
Int. Cl.[5] G01B *9/02;* **H01S** *3/083*
U.S. Cl. 356—350 **18 Claims**



1. A ring laser gyroscope having a frame with a cavity therein for guiding a first light beam having an intensity I_1 in a clockwise direction around the cavity and a second light beam having an intensity I_2 in a counterclockwise direction around the cavity, the ring laser gyroscope being dithered in a dither cycle at a vibration frequency and a vibration amplitude, comprising:

means for heterodyning the first and second beams to produce a pair of quadrature heterodyne signals that are functions of the angular output of the ring laser gyroscope;

phase measuring means for determining a phase signal indicative of the phase angle between a signal selected from the heterodyne signals and a signal selected from an intensity sum signal I_1+I_2 and an intensity difference signal indicative of I_1-I_2;

means for combining the chosen heterodyne signal and the phase signal to determine a phase error signal; and

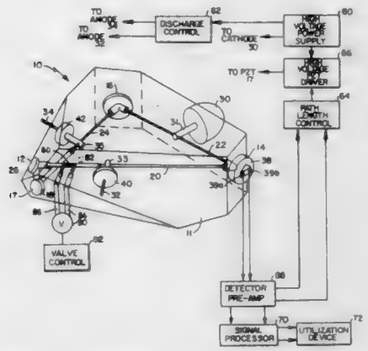
means for processing the phase error signal to produce a control signal for adjusting the output of the ring laser gyroscope to correct for errors introduced at turnarounds in the rotational motion of the ring laser gyroscope.

5,347,360

RING LASER GYRO

Michael Holz, Newton Centre, Mass., assignor to Ratheon Company, Lexington, Mass.

Continuation of Ser. No. 948,426, Dec. 31, 1986, abandoned, which is a continuation of Ser. No. 412,442, Aug. 27, 1982, abandoned. This application Sep. 13, 1989, Ser. No. 415,924
Int. Cl.[5] G01B *9/02;* **G01C** *19/64*
U.S. Cl. 356—350 **9 Claims**



1. A method of operating a ring laser gyro, wherein a discharge current is used in a gain medium to produce a beam of electromagnetic energy and an output signal is produced in response to rotation of the ring, the interaction of the beam with said discharge producing a bias component in said output signal, comprising the steps of:

providing a bypass path in said ring; and

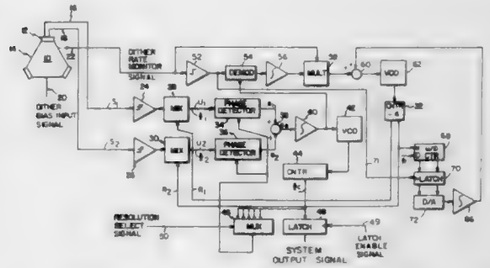
controlling the flow of the gain medium through said ring and said bypass path to substantially eliminate said bias component due to the interaction of said beam with a predetermined level of said discharge current.

5,347,361

ROTATION SENSOR OUTPUT SIGNAL PROCESSOR

Robert M. Kay, Seminole, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 8, 1992, Ser. No. 865,128
Int. Cl.[5] G01C *19/64*
U.S. Cl. 356—350 **20 Claims**



1. An angular rotation sensing system for sensing rotational motion, said angular rotation sensing system providing a sensing system output signal, indicative of high resolution increments of angular rotation, said angular rotation sensing system comprising:

an angular motion sensor for providing an angular motion sensor signal having an inertial component due to any system rotation input angle and an oscillation component due to rotational oscillation of said angular motion sensor sensed by said angular motion sensor;

mixer means for receiving a mixer means input signal representative of both said inertial component and said oscillation component and a reference signal, said mixer means providing a mixer means output signal that is representative of said mixer means input signal modulated with said reference signal; and

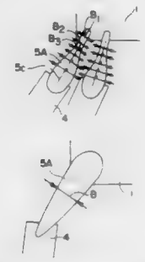
synchronous oscillator means for producing a control signal phase synchronized with said mixer means output signal, said synchronous oscillator means also for providing said system output signal based on said control signal.

5,347,362

BONDING WIRE INSPECTION METHOD

Kenji Sugawara, Tokyo, Japan, assignor to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Dec. 1, 1992, Ser. No. 983,661
Claims priority, application Japan, Dec. 2, 1991, 3-341834
Int. Cl.[5] G01B *11/00*
U.S. Cl. 356—372 **3 Claims**



1. A method of inspecting wires bonded between pads of a semiconductor chip and leads of a lead frame, said method comprising the steps of:

moving a single optical means in a Z direction to focus said single optical means onto a surface of a semiconductor chip with a desired lead and desired bonding wire within an image field of said single optical means, said single optical means comprising a low magnification camera with a shallow depth of focus;

photographing an indistinct image of said desired bonding wire;

measuring a width of said indistinct image of said desired bonding wire;

moving said single optical means in said Z direction to focus said single optical means onto a lead;

photographing an indistinct image of said desired bonding wire;

measuring a width of said indistinct image of said desired bonding wire; and

calculating a height of said desired bonding wire from said measured widths of said indistinct image of said desired bonding wire when said single optical means is focused on said surface of said semiconductor chip and focused onto said lead;

whereby a more precise measurement of the height of said bonding wire is made.

5,347,363

EXTERNAL LEAD SHAPE MEASUREMENT APPARATUS FOR MEASURING LEAD SHAPE OF SEMICONDUCTOR PACKAGE BY USING STEREOSCOPIC VISION

Kazuyuki Yamanaka, Fujisawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jul. 24, 1992, Ser. No. 918,064
Claims priority, application Japan, Jul. 25, 1991, 3-186533
Int. Cl.[5] G01B *11/24;* **H04N** *7/18*
U.S. Cl. 356—376 **12 Claims**

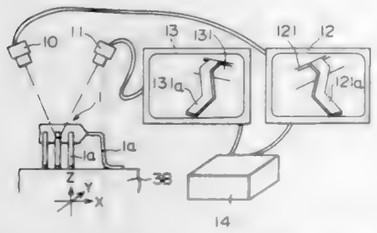
1. A lead shape measurement apparatus having a plurality of imaging devices in which at least two imaging devices image a

lead shape from different directions, and forming an image of said lead shape in a stereoscopic vision, comprising:

a first perspective imaging device for photographing external leads to be measured, from an oblique direction;

a second perspective imaging device for photographing external leads to be measured, from an oblique direction different from that of said first perspective imaging device so as to include a same photographic field of vision as said first perspective imaging device;

first measurement point determination means for determining as a measurement sampling point a center point of two intersecting virtual straight lines which intersect two ridges of said external leads to be measured in a first image plane by photography of said first perspective imaging device;



a second measurement point determination means, in a second image plane by said second perspective imaging device, for setting an epipolar line on the basis of sight lines when said measurement sampling point of said first imaging device is photographed, and for determining a center point of two intersecting virtual straight lines which intersect two ridges of said external leads to be measured in said second image plane and which exists upon said epipolar line and for further determining said center point in said second image plane to be specified as a same point as said measurement sampling point; and wherein:

a plurality of measurement sampling points are determined to calculate three-dimensional coordinates determined, with said three-dimensional coordinates being used as the basis for measurement of a three-dimensional shape of said external leads to be measured.

5,347,364

TOTAL REFLECTION MEASURING APPARATUS

Kazuhiko Kawasaki, and Tadashi Miyazaki, both of Hachioji, Japan, assignors to Jasco Corporation, Hachioji, Japan

Filed Jan. 21, 1993, Ser. No. 6,770

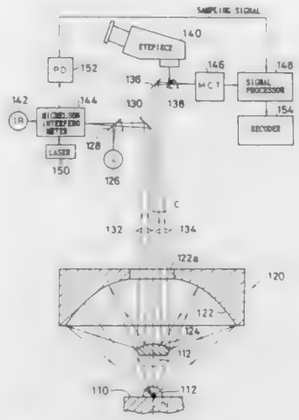
Claims priority, application Japan, Jan. 23, 1992, 4-032778

Int. Cl.[5] G01J *3/02;* **G01N** *21/01*

U.S. Cl. 356—445 **4 Claims**

1. A total reflection measuring apparatus comprising a cassegrain mirror which has a cassegrain primary mirror and a cassegrain secondary mirror, and which focuses light which is reflected by the secondary mirror and the primary mirror on an object to be measured;

a prism positioned at a location behind said cassegrain secondary mirror; and



a prism lifting means for lifting the prism between a shadow behind the cassegrain secondary mirror and the object to be measured.

5,347,365

DEVICE FOR RECEIVING CLOSED CAPTIONED BROADCASTS

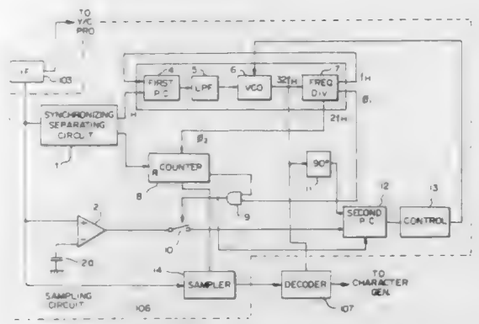
Masami Harigai, and Hiroyasu Kishi, both of Gunma, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Sep. 22, 1992, Ser. No. 948,684

Claims priority, application Japan, Sep. 27, 1991, 3-249709

Int. Cl.[5] H04N *5/445*

U.S. Cl. 348—525 **7 Claims**



6. A device for phase locking a signal to a run-in clock following a horizontal sync signal in a predetermined horizontal line in a television signal, comprising:

separating means for extracting said horizontal sync signal, a vertical sync signal, and said run-in clock from an IF video signal;

a first phase lock loop;

said first phase-lock loop including a voltage controlled oscillator producing a first output signal at a first frequency and means for producing a second output signal at a second frequency divided down from said first frequency;

said first phase lock loop locking said second output signal tosaid horizontal sync signal;

means for producing a gate signal coincident with a duration of said run-in signal;

a second phase lock loop including said voltage controlled oscillator;

said second phase lock loop being enabled by said gate signal; and

said second phase lock loop locking said first output signal to said run-in clock during an occurrence of said gate signal.

5,347,366

FIXATION STRUCTURE OF DEFLECTION YOKE AND FOCUS MAGNET FOR PROJECTION CATHODE RAY TUBE

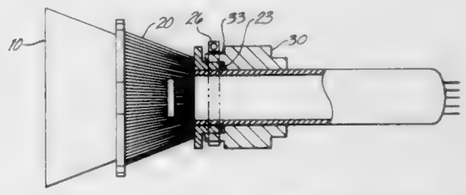
Sungwoo Ham, Suwon, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea

Filed May 25, 1993, Ser. No. 67,570

Claims priority, application Rep. of Korea, Nov. 10, 1992, 92-21044

Int. Cl.[5] H01H *5/00*

U.S. Cl. 348—829 **3 Claims**



1. A structure for fixation of a deflection yoke and a focus magnet used in a projection cathode ray tube including an electron gun installed within a neck portion of the tube emitting electron beams, the focus magnet mounted on the periphery of the neck portion of the tube and the deflection yoke mounted on the periphery of a funnel portion of the tube deflecting the electron beams, a fixing part of the focus magnet and a fixing part of the deflection yoke being overlapped and these fixing parts being mounted on the periphery of the tube by one common clamp.

5,347,367

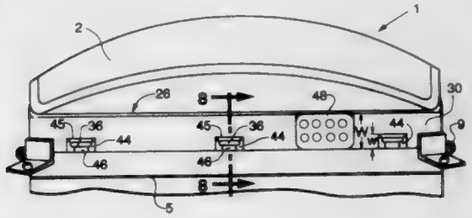
CATHODE-RAY TUBE HAVING IMPLOSION PROTECTION MEANS WITH OPENINGS

Harry R. Swank, Lancaster; Carl L. Lundvall, II, Lititz, and Raymond E. Keller, Clarks Summit, all of Pa., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed May 3, 1993, Ser. No. 55,344

Int. Cl.[5] H04N *5/65*

U.S. Cl. 348—822 **5 Claims**



2. The cathode-ray tube as described in claim 1, wherein said implosion protection band has a front edge and a back edge, said front edge being adjacent to a viewing portion of said faceplate and said back edge being spaced from said sealing edge of said sidewall, said opening being adjacent to said back edge of said implosion protection band.

5,347,368

IMAGE RECORDING APPARATUS HAVING A SMALL-CAPACITY FRAME MEMORY AND AN IMAGE RECORDING METHOD

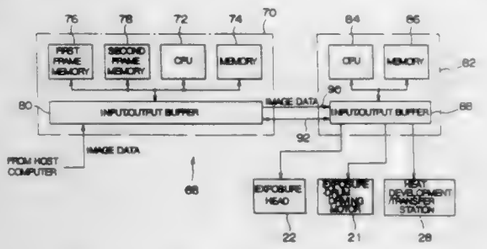
Yasuyuki Mochizuki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 29, 1992, Ser. No. 827,756

Claims priority, application Japan, Jan. 31, 1991, 3-10958

Int. Cl.[5] H04N *1/21, 1/387*

U.S. Cl. 358—296 **18 Claims**



1. An image recording method comprising the steps of:

(a) when an image represented by image data is expressible as an image having a small number of gradations per pixel, storing first image data in first storage means for storing image data having a large number of pixels per unit area and a small number of gradations per pixel, and when the image represented by image data is not expressible as an image having a small number of gradations per pixel, storing second image data in second storage means for storing image data having a small number of pixels per unit area and a large number of gradations per pixel;

(b) converting the first image data stored in said first storage means to first converted image data having a large number of gradations per pixel, and converting the second image data stored in said second storage means to second converted image data having a large number of pixels per unit area; and

(c) recording a final image in accordance with the first converted image data and the second converted image data.

5,347,369

PRINTER CALIBRATION USING A TONE REPRODUCTION CURVE AND REQUIRING NO MEASURING EQUIPMENT

Steven J. Harrington, Holley, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 22, 1993, Ser. No. 35,082

Int. Cl.[5] H04N *1/40, 1/23, 1/46*

U.S. Cl. 358—401 **20 Claims**

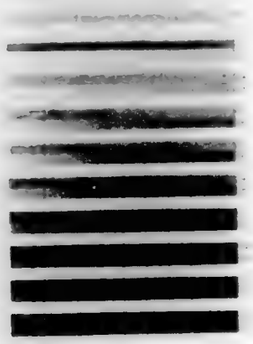
1. A method for determining a tone reproduction curve for calibrating a printer comprising:

providing a plurality of bands of an accurate gray level standard, each band being of a different gray level value;

printing a corresponding plurality of smoothly increasing sequences of gray level specifications using the printer, each of said corresponding plurality of sequences being adjacent a corresponding one of said plurality of bands and smoothly increasing from a gray level value below that of said corresponding band to a gray level higher than said corresponding band;

visually comparing each of said plurality of bands of gray

level standard with said corresponding one of said sequences of gray level specifications;



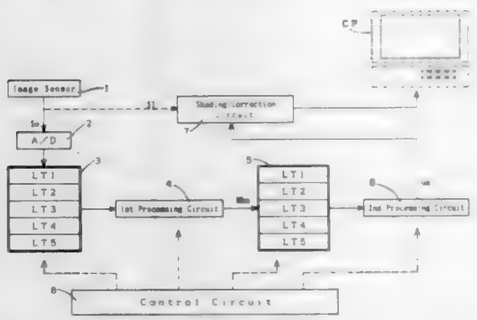
manually determining a point along each said sequence that appears equal to said corresponding band; and
calibrating the printer using said determined points.

5,347,370

SHADING CORRECTION METHOD AND APPARATUS

Mitsuhiro Ishihara; Mineo Kubota; Takashi Kanda, all of Kofu; Toru Kitta, and Mitsuo Tsuchiya, both of Yamanashi, all of Japan, assignors to NISCA Corporation, Yamanashi, Japan

Filed Dec. 28, 1993, Ser. No. 174,526
Claims priority, application Japan, Dec. 28, 1992, 4-360213
Int. Cl.[5] G06K *9/02*
U.S. Cl. 358—461 **16 Claims**



9. A shading correction method in which a standard surface having an imaginary matrix of pixels arrayed in a main-scanning direction to form scanning lines of pixels and arrayed in a sub-scanning direction to form scanning rows of pixels is preliminarily scanned prior to image reading of an objective original image to eliminate shading distortion appearing in an image scanning system, comprising:

(a) partitioning said standard surface into a plurality of scanning blocks composed of equal scanning lines;

(b) scanning the pixels on said standard surface in the main-scanning direction to obtain image signals by line;

(c) repeating the scanning of the pixels in each scanning lines in the main-scanning direction until all the scanning lines in each scanning block is completely scanned;

(d) effecting a first arithmetic processing to determine sets of block median values of the scanning blocks from said image signals of pixels in the scanning lines of the respective scanning blocks;

(e) effecting a second arithmetic processing to determine one set of global median values from said block median values of said scanning blocks; and

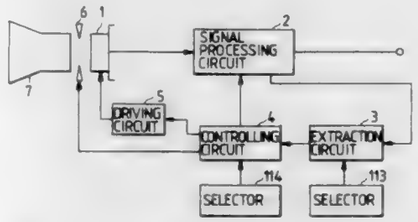
(f) subjecting objective image data obtained by reading said original image to shading correction based on said global median values.

5,347,371

VIDEO CAMERA WITH EXTRACTION UNIT FOR EXTRACTING SPECIFIC PORTION OF VIDEO SIGNAL

Ryuji Nishimura, Yokohama; Akihito Nishizawa, Yokosuka; Mayuko Yamamoto, Fujisawa, and Takuya Imaide, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 798,892, Nov. 27, 1991, Pat. No. 5,293,255. This application Sep. 3, 1992, Ser. No. 940,348
Claims priority, application Japan, Sep. 3, 1991, 3-248485
Int. Cl.[5] H04N *5/232*
U.S. Cl. 358—453 **22 Claims**



1. A video camera comprising:

means including an image pickup device and a signal processing circuit responsive thereto for processing the image picked up by the image pickup device and providing a video signal as an output;

extraction means for extracting a signal representative of a specific portion of a target object of the video signal of the signal processing circuit irrespective of movement of the target object within the picked up image; and

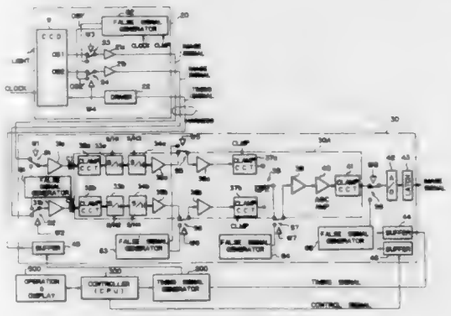
control means responsive to the signal extracted by the extraction means for effecting control of at least one of the signal processing circuit and at least one input control parameter of the video camera in accordance therewith.

5,347,372

IMAGE SCANNING AND PROCESSING APPARATUS WITH ERROR CHECKING

Hiroyuki Takahashi, Tsurugashima; Wataru Nara, Kawasaki; Yasushi Kamo, Tokyo; Toshiyuki Aihara, Kamakura, and Seiji Tsuchiko, Sagamihara, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 24, 1993, Ser. No. 156,851
Claims priority, application Japan, Nov. 27, 1992, 4-318178
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—471 **3 Claims**



1. An image scanner comprising:

image reading means for reading an image optically to

thereby generate an odd order and an even order analog image signal representative of said image; and

image signal processing means for converting said odd order and even order analog image signals to digital image signals;

said image signal processing means comprising:

first amplifiers for amplifying respectively said odd order and even order analog image imagenals;

sample and hold circuits for sampling and holding respectively image signal portions of said odd order and even order analog image signals amplified by said amplifiers;

clamp circuits for clamping respectively black dummy portions of said odd order and even order analog image signals sampled and held by said sample and hold circuits;

a multiplexer for multiplexing said odd order and even order analog image signals clamped by said clamp circuits;

a second amplifier for amplifying an output of said multiplexer;

an analog-to-digital converter for transforming said output of said multiplexer amplified by said second amplifier to a digital image signal;

a false signal generator for generating a false reference signal;

an input circuit for inputting a test command; and

signal switching means located on a signal path extending from said image reading means to said analog-to-digital converter for delivering, when a test command is entered on said input circuit, said false reference signal to a part of said signal path downstream of said signal switching means or delivering, when said test command is not entered, a signal appearing on said signal path upstream of said signal switching means to said signal path downstream of said signal switching means.

5,347,373

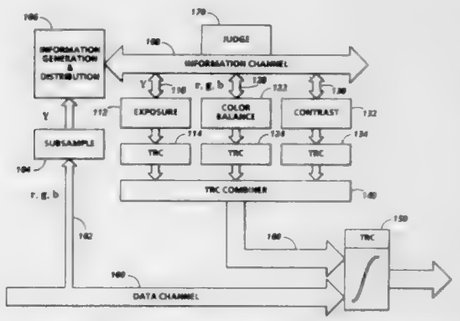
Patent Not Issued For This Number

5,347,374

CASCADED IMAGE PROCESSING USING HISTOGRAM PREDICTION

William A. Fuss, Rochester, and Reiner Eschbach, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 5, 1993, Ser. No. 147,614
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—522 **12 Claims**



1. A method of cascade processing a natural scene image recorded as a set of electronic signals, at n image processing modules each requiring histogram data, including the steps of:

receiving a set of color image-describing electronic signals from a source of natural scene images;

deriving from the received color image describing signals a signal representing overall intensity of the image;

from the intensity signal, generating a histogram signal, describing a population of intensity signals at each possible intensity level in the image;

using the histogram signal at a first image processing module, and generating a first tone reproduction curve reflecting processing of the image at the first image processing module;

operating on the histogram signal with the tone reproduction curve to produce a modified histogram signal;

operating on the modified histogram signal with a filter, to produce a blurred or smoothed modified histogram signal;

directing the blurred or smoothed modified histogram signal to a next image processing module;

using the histogram signal at the next image processing module, and generating a second tone reproduction curve reflecting processing of the image at the next image processing module;

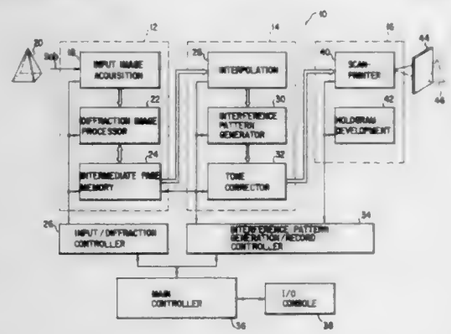
combining each of the generated tone reproduction curves, and applying the curve to the received color image describing signals.

5,347,375

COMPUTER-ASSISTED HOLOGRAPHIC IMAGE FORMATION TECHNIQUE WHICH DETERMINES INTERFERENCE PATTERN DATA USED TO FORM THE HOLOGRAPHIC

Tutomu Saito, Yokohama, and Toshikazu Matsui, Kobe, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 25, 1992, Ser. No. 981,296
Claims priority, application Japan, Nov. 26, 1991, 3-336137; Nov. 26, 1991, 3-336138
Int. Cl.[5] G03H *1/08, 1/04;* **G06F** *7/38;* **G06K** *9/76*
U.S. Cl. 359—9 **32 Claims**



1. An apparatus for forming a hologram for reproduction, comprising:

first computation means for receiving an input image signal representing an object and for computing corresponding diffraction pattern data with a first sampling density;

second computation means coupled to said first computation means, for interpolating the diffraction pattern data to generate interpolated diffraction pattern data with an increased second sampling density;

third computation means coupled to said second computation means, for computing interference pattern data between the interpolated diffraction pattern data and reference wave data; and

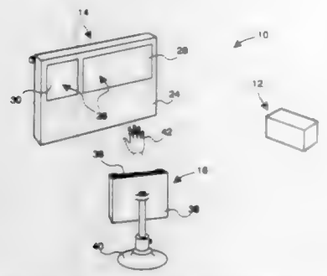
holographic image forming means coupled to said third computation means, for outputting the interference pattern data to a preselected type of output device, and for allowing reproduction of a holographic image to be formed by controlling a generation of coherent light using the interference pattern data.

5,347,376

METHOD AND APPARATUS FOR PRODUCING A HOLOGRAPHIC SHADOWGRAM

Hsuan S. Chen, Midland, and Gregory A. Wright, Saginaw, both of Mich., assignors to Saginaw Valley State University, Saginaw, Mich.

Filed Feb. 5, 1993, Ser. No. 14,105
Int. Cl.[5] G03H *1/04, 1/02*
U.S. Cl. 359—28 14 Claims



1. An apparatus for producing a holographic shadowgram of an object, the apparatus comprising:

light source means for generating a coherent light beam;

reflector means for reflecting the coherent light beam to simultaneously produce a diffuse object beam and a coherent reference beam such that differential vibration between the object and reference beams is substantially eliminated, and for back illuminating the object with the object beam such that the object and reference beams create a substantially stable interference pattern, the reflector means comprising a rigid board having a reflective surface, the reflective surface having a diffuse portion and a non-diffuse portion wherein the diffuse portion reflects the coherent light beam to produce the diffuse object beam and the non-diffuse portion reflects the coherent light beam to produce the coherent reference beam; and

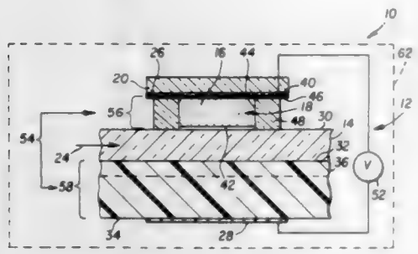
recorder means for recording the interference pattern of the object and reference beams to produce the holographic shadowgram.

5,347,377

PLANAR WAVEGUIDE LIQUID CRYSTAL VARIABLE RETARDER

Joseph F. Revelli, Jr., Rochester; Eric T. Prince, Fairport; Steven C. Switalski, and Hsue-Yang Liu, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 17, 1992, Ser. No. 899,961
Int. Cl.[5] G02F *1/1335, 1/137, 1/01*
U.S. Cl. 359—42 24 Claims



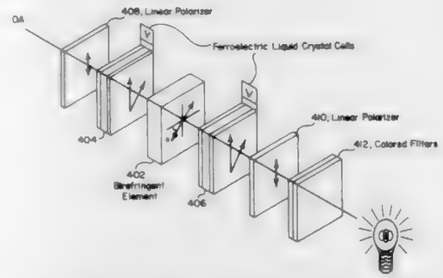
1. A waveguide optical device comprising a substantially planer guide member for propagation of light in a longitudinal direction, said guide member having upper and lower boundaries, a chamber positioned adjacent to a surface of said guide member, a mass of birefringent material disposed in said chamber said birefringent material having molecular dipoles subject to alignment by an imposed electrical field, said birefringent mass for generating a delay or optical path difference and being overlapped by the optical field of said propagated light, an upper electrode disposed in spaced relation to said birefringent mass, a lower electrode disposed in spaced relation to said guide member, said electrodes having the capability of imposing an alternating current voltage across said birefringent mass to rotate the molecular dipoles of said birefringent mass in a plane defined by the normal to said substantially planar guide member and the propagation vector of said light, said boundaries and said electrodes defining an upper isolation zone between said upper electrode and said upper boundary, a guide path between said boundaries, and a lower isolation zone between said lower boundary and said lower electrode, said guide path having an effective index of refraction greater than the effective indexes of refraction of said isolation zones.

5,347,378

FAST SWITCHING COLOR FILTERS FOR FRAME-SEQUENTIAL VIDEO USING FERROELECTRIC LIQUID CRYSTAL COLOR-SELECTIVE FILTERS

Mark A. Handschy; Linden Stuart, III, both of Boulder, Colo., and Hugh Masterson, Churchtown, Ireland, assignors to Displaytech, Inc., Boulder, Colo.

Continuation of Ser. No. 678,876, Apr. 4, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 47,348
Int. Cl.[5] G02F *1/13, 1/133, 1/1335*
U.S. Cl. 359—53 52 Claims



9. A color-selective filter system which sequentially produces three primary colors at different times, comprising:

at least two linear polarizer means for polarizing light passing therethrough to a predetermined polarization;

ferroelectric liquid crystal color;selective filter means, including exactly two, and no more, ferroelectric liquid crystal cells which are switched to interfere with different ones of said primary colors at different switching states thereof based on a driving signal, said plurality of cells being optically in series with both said linear polarizer means.

5,347,379

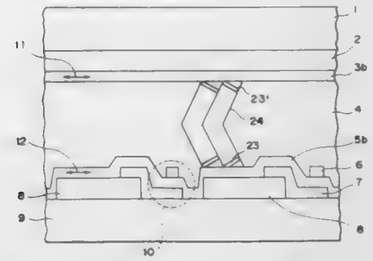
LIQUID CRYSTAL DEVICE WITH MIM INSULATOR FORMED AS A CONTINUOUS MONOMOLECULAR FILM

Hideyuki Kawagishi, Ayase; Kiyoshi Takimoto, Kawasaki; Haruki Kawada, Yokohama; Hiroshi Matsuda, Isehara, and Yoshihiro Yanagisawa, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 710,404, Jun. 5, 1991, abandoned. This application Nov. 10, 1993, Ser. No. 150,264
Claims priority, application Japan, Jun. 7, 1990, 2-147313; Jun. 7, 1990, 2-147316; May 17, 1991, 3-140733
Int. Cl.[5] G02F *1/1343, 1/1337*
U.S. Cl. 359—58 5 Claims

1. A liquid crystal device, comprising: a pair of substrates, either having a plurality of electrodes including picture element electrodes and a liquid crystal layer having a chiral smectic phase provided between said substrates, wherein a first substrate of said pair of substrates comprises:

(i) a plurality of first electrodes dividedly disposed to partially overlap said picture element electrodes, said plurality of first electrodes being covered with a continuous monomolecular or monomolecular built-up film; and



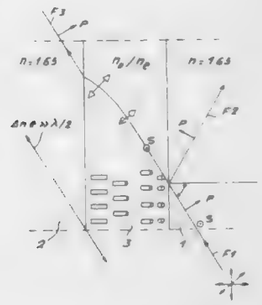
(ii) a plurality of second electrodes provided on said continuous monomolecular or monomolecular built-up film in areas other than over said picture element electrode such that a MIM device is formed where said first electrodes, said monomolecular or monomolecular built-up film and said second electrodes overlap in layers.

5,347,380

LIQUID CRYSTAL OPTICAL POLARIZATION SEPARATOR WITH PARRALLEL ALIGNMENT ON ONE SUBSTRATE, PERPENDICULAR ON OTHER

Jean-Claude Lehureau, Des Bois, France, assignor to Thomson-CSF, Puteaux, France

Filed Dec. 11, 1992, Ser. No. 989,365
Claims priority, application France, Dec. 20, 1991, 91 15900
Int. Cl.[5] G02F *1/13, 1/1337;* G02B *5/30*
U.S. Cl. 359—57 10 Claims



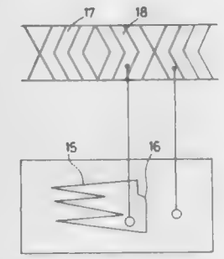
1. An optical polarization separator in which an incident light beam containing a P polarization and S polarization is received wherein said P polarization is reflected and said S polarization is transmitted, said separator comprising a nematic liquid crystal element trapped between a first transparent slide and a second transparent slide, one face of said first slide being in contact with the liquid crystal element so that the liquid crystal molecules in contact with the said one face of said first slide are parallel to said one face of said first slide, one face of the second slide being in contact with the liquid crystal element so that the liquid crystal molecules are oriented perpendicular to said one face of said second slide, wherein said liquid crystal element has a directrix which rotates said S polarization when said S polarization propagates through said liquid crystal element.

5,347,381

FERROELECTRIC LIQUID CRYSTAL DISPLAY DEVICE WITH MOLECULES BETWEEN HAIRPIN AND LIGHTNING DEFECTS FOLLOWING THE LIGHTNING DEFECTS

Tokihiko Shinomiya, Nara; Tsugiko Taniguchi, Kitakatsuragi; Tomoaki Kuratate, Nara, and Kenichi Nakagawa, Fujinomiya, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 22, 1992, Ser. No. 823,857
Claims priority, application Japan, Jan. 25, 1991, 3-007879; Jan. 31, 1991, 3-032395
Int. Cl.[5] G02F *1/1337, 1/13*
U.S. Cl. 359—78 4 Claims



1. A ferroelectric liquid crystal device comprising:

upper and lower substrates, each being provided with electrodes on their respective surfaces, the substrates arranged with the electrode provided surfaces opposing each other

an insulating film formed on the electrodes on each of the substrates,

an orientation film formed on the insulating film and subjected to a uniaxial orientation treatment, the orientation film on each of the two substrates being arranged, wherein the orientation directions are the same,

a liquid crystal composition with a chiral smectic C phase injected between the two substrates,

drive means for switching an optical axis of the liquid crystals in the liquid crystal composition by selectively applying a voltage to the electrodes,

means for optically identifying the switching of the optical axis, in which when the drive means is operated, the liquid crystal composition can reverse its molecular direction near the substrate and show a chevron structure which bends in a dogleg shape as a layer structure when it shows the chiral smectic C phase wherein molecules of the liquid crystal composition that are arrayed in a field between a lightning defect and a hairpin defect appear to follow the lightning defect and to oppose a direction of the uniaxial orientation treatment and wherein a pretilt angle θ_p of the liquid crystal composition to the orientation film is between 8° and 35°.

5,347,382

LIQUID CRYSTAL CELL RETARDER WITH DRIVING BEYOND RETARDANCE VALUE AND TWO CELLS FOR HIGH SPEED

Scott H. Rumbaugh, 19419 SW. Tualamere, Lake Oswego, Oreg. 97035

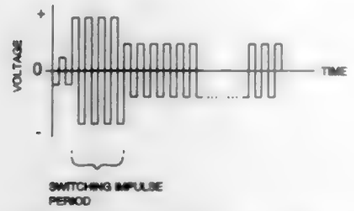
Filed Apr. 23, 1992, Ser. No. 872,599
Int. Cl.[5] G02F *1/137*
U.S. Cl. 359—84 21 Claims

1. An optical retarder system, comprising:

(a) first retarder means for controlling the retardance of light passing therethrough along a first eigen-axis thereof relative to a second eigen-axis thereof in response to the application of a first signal thereto; and

(b) first drive means, connected to said first retarder means, for supplying said first signal to said first retarder means, said drive means including first control means for chang-

ing said retardance from a first retardance to a second retardance by causing said first signal to change, in a direction to move toward said second retardance, from a first amplitude which is required for said first retardance



to a second amplitude, beyond a third amplitude which is required for said second retardance, for a period of time, and then causing said first signal to change to the said second amplitude required for a second retardance.

5,347,383

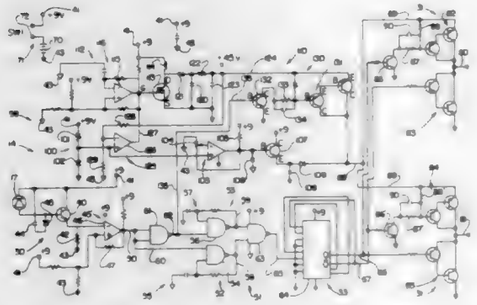
HIGH SPEED, LOW POWER DRIVING CIRCUIT FOR LIQUID CRYSTAL SHUTTER

John D. Fergason, Sunnyvale, Calif., assignor to OSD Envizion Company, Menlo Park, Calif.

Continuation of Ser. No. 365,167, Jun. 12, 1989, abandoned. This application Sep. 11, 1992, Ser. No. 943,994

Int. Cl.[5] **G02F** *1/13*

U.S. Cl. 359—85 **37 Claims**



1. A power supply for a liquid crystal shutter, comprising

input means for providing an input representative of an optical characteristic of such shutter,

output means for supplying an electrical driving signal to such shutter to cause such optical characteristic thereof,

power circuit means for selectively supplying to such output means a drive signal of selected power as a function of the input from said input means, and

AC control signal means for selectively supplying an AC driving control signal at a frequency selected between two or more different, non-zero frequencies as a function of the input from said input means, to said output means to deliver such electrical driving signal according to the characteristics of such AC driving control signal.

5,347,384

FIBER OPTIC DISTRIBUTION OF IMAGE DATA

John M. McReynolds, and Robert A. Glicksman, both of San Jose, Calif., assignors to Loral Aerospace Corp., New York, N.Y.

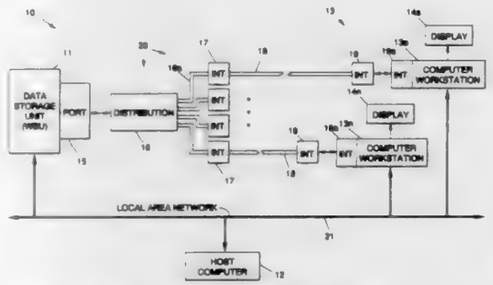
Filed Jun. 30, 1992, Ser. No. 906,768

Int. Cl.[5] **H04B** *10/20*

U.S. Cl. 359—118 **4 Claims**

1. A data distribution system for use with a data storage system having an input/output port, a host computer, and a plurality of computer workstations, all of which are coupled together by way of a network, and wherein the host computer comprises network software that is adapted to control communication of control signals between the data storage system and the plurality of computer workstations, said data distribution system comprising:

a distribution circuit coupled to the input/output port of the data storage system that is adapted to convert electrical signals derived from the data storage system into optical signals that are to be processed by the computer workstations and for converting received optical signals into electrical signals;



a first plurality of individual optical fibers that are respectively coupled between the distribution circuit and the plurality of computer workstations; and

a plurality of interface circuits respectively coupled between the first plurality of individual optical fibers and the computer workstations for converting optical signals into electrical signals that are processable by the computer workstation and for converting electrical signals into optical signals that are transmittable over the first plurality of individual optical fibers to the distribution circuit;

and wherein the distribution circuit is adapted to convert received optical signals transmitted over the first plurality of individual optical fibers into electrical signals that are to be stored in the data storage system.

5,347,385

FREQUENCY-MULTIPLEX OPTICAL TRANSMISSION APPARATUS

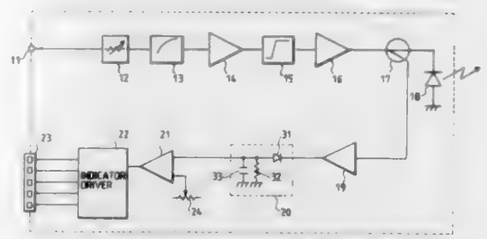
Mitsutoshi Imada, Kanagawa, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 31, 1992, Ser. No. 830,317

Claims priority, application Japan, Feb. 8, 1991, 3-17881

Int. Cl.[5] **H04J** *14/00;* **H04B** *10/00*

U.S. Cl. 359—132 **14 Claims**



1. An apparatus for carrying out frequency-multiplex optical transmissions, comprising:

means for supplying an analog-frequency-multiplexed RF input signal to a laser diode;

split means for taking out part of the RF input signal before being supplied to said laser diode;

detection means for detecting the RF input signal obtained from the split means;

an indicator; and

drive means for causing the indicator to indicate a modulation signal level of the laser diode on the basis of a modulation signal level of said RF input signal obtained from an output signal of the detection means.

5,347,386

CONTROL APPARATUS

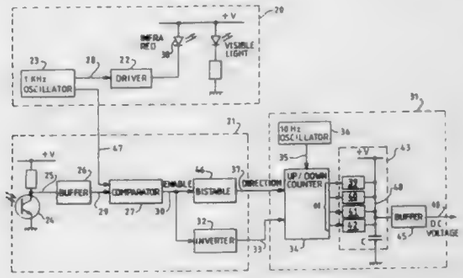
Terence K. Gibbs, Portsmouth; Graham Luck, Chichester, both of England, and David Wares, Glasgow, Scotland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 17, 1991, Ser. No. 778,036

Claims priority, application European Pat. Off., Oct. 17, 1990, 90311404.9

Int. Cl.[5] **H04B** *10/00*

U.S. Cl. 359—146 **10 Claims**



1. A control apparatus responsive to manual stimulus comprising:

a photosensitive detector;

a transmitter having a light source for projecting a beam of light along a path normally directed away from said detector;

a receiver for receiving an output from said detector and for generating an enable pulse having a duration determined by a length of time for which the beam is reflected towards the detector by a reflective article;

conversion means for varying an output signal level as a function of the duration of the enable pulse, wherein the conversion means comprises first means for increasing the signal level in response to and during a first enable pulse generated when a reflective article is placed in said beam a first time, and for decreasing the signal level in response to and during a second enable pulse occurring after the first enable pulse, said second enable pulse being generated when a reflective article is placed in said beam a second time; second means for decreasing the signal level during the first enable pulse when the signal level reaches a maximum value, and for increasing the signal level during the second enable pulse when the signal level reaches a mimimum value, and a bidirectional counter having:

a clock input responsive to a first clock signal when the enable pulse is asserted on an enable input; and

a direction input responsive to direction control means for configuring the counter to count up in response to the first enable pulse, and for configuring the counter to count down in response to the second enable pulse;

the first means comprises a bistable circuit for switching the direction input between a first logic state and a second logic state in response to the leading edge transition of the enable pulse; and

the second means includes means for triggering the bistable circuit to switch the direction input between first and second states in response to either a leading edge transition of the enable pulse or a leading edge transition on an overflow output from the counter.

5,347,387

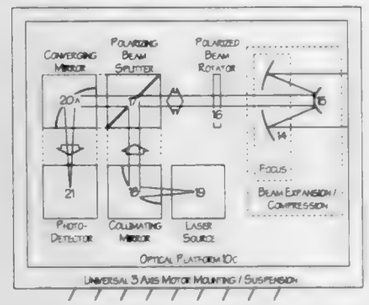
SELF-ALIGNING OPTICAL TRANSCEIVER

Robert C. Rice, 3724 Amsterdam Ter., Burtonsville, Md. 20866-1927

Filed Mar. 24, 1992, Ser. No. 856,995

Int. Cl.[5] **H04B** *10/00*

U.S. Cl. 359—152 **26 Claims**



1. A compact transceiver adapted for carrier mounting to optically span free space, atmosphere or underwater for laser image projection comprising:

a spherical radiation permeable shell having a supporting base for hermetically housing components thereof;

(a) a system of motors including two nested pancake motors: an outer motor having its stator supported by the shell and an inner motor having its stator supported within and orthogonal to an outer motor armature, outer and inner armatures of said pancake motors being suspended in a frictionless manner from their respective stators and having some lateral and rotational freedom of movement so as to isolate the armatures from the stator movement;

(b) said armatures having a common center clearance for a telescope to expand and collimate transmission radiation, focus received radiation and to reflect and absorb off-axis radiation; said telescope being coaxially mounted on a platform which is transversely supported by the inner motor armature within said clearance;

(c) means, responsive to modulated transmission radiation containing information from the carrier for generating an intense coherent radiation to be expanded and collimated by said telescope; and

phase proportional logic means selected from the group consisting of internal and external to the shell for effecting said system of motors to direct said telescope to a predetermined direction relative to the carrier mounting whereby said transmission radiation is maintained in the desired direction and isolated from carrier movement.

5,347,388

PUSH-PULL OPTICAL RECEIVER HAVING GAIN CONTROL

Frank R. Little, Alpharetta; Herman A. Kruse, Winder; John G. Megna, Lilburn, and Rezin E. Pidgeon, Atlanta, all of Ga., assignors to Scientific-Atlanta, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 481,436, Sep. 3, 1991, which is a continuation-in-part of Ser. No. 445,299, Dec. 1, 1989, Pat. No. 4,998,012. This application Sep. 3, 1991, Ser. No. 753,951

Int. Cl.[5] **H04B** *10/06*

U.S. Cl. 359—189 **10 Claims**

1. An optical receiver circuit for an incoming optical signal having broadband radio frequency amplitude modulation, said circuit comprising:

an optical detector for receiving said optical signal and generating therefrom an electrical signal which varies with the optical signal power level;

first means for amplifying said electrical signal;

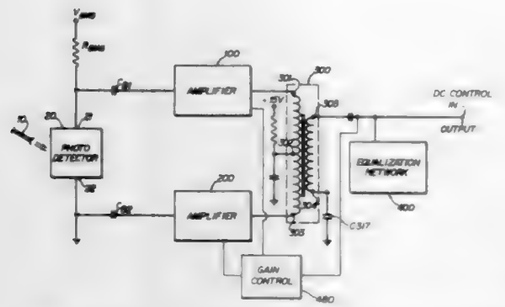
second means for amplifying said electrical signal;

said first amplifying means and said second amplifying

means each comprising a transimpedance amplifier stage including a first field effect transistor having a gate terminal, a drain terminal and a source terminal, each of said gate terminals being connected to a terminal of said optical detector and each drain terminal being connected to the gate terminal of the same field effect transistor through a selectable feedback resistor;

means for coupling said first amplifying means and said second amplifying means in a push-pull relationship;

said first amplifying means and said second amplifying means each further comprising a high impedance buffer amplifier stage having an input terminal connected to the



drain terminal of its respective transimpedance amplifier stage and an output terminal connected to a terminal of said push-pull coupling means;

a gain control circuit responsive to a control signal for varying a gain of said first amplifying means and second amplifying means; and

wherein the high impedance buffer amplifier stages of said first and second amplifying means each comprise a second field effect transistor having a drain terminal connected to a terminal of said push-pull coupling means, a gate terminal connected to the drain terminal of said first field effect transistor and a source terminal connected to said gain control circuit.

5,347,389

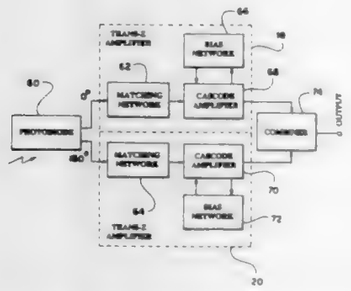
PUSH-PULL OPTICAL RECEIVER WITH CASCODE AMPLIFIERS

John Skrobko, Berkeley Lake, Ga., assignor to Scientific-Atlanta, Inc., Norcross, Ga.

Filed May 27, 1993, Ser. No. 68,371

Int. Cl.[5] H04B *10/06*

U.S. Cl. 359—189 **14 Claims**



9. An optical receiver circuit for an optical signal having broadband radio frequency amplitude modulation, said circuit comprising:

an optical detector having an input terminal and an output terminal, said optical detector operative for receiving said optical signal and for generating therefrom an electrical signal which varies with the power level of said optical signal;

first amplifying means arranged in a cascode configuration for amplifying said electrical signal;

second amplifying means arranged in a cascode configuration for amplifying said electrical signal;

said first amplifying means and said second amplifying means each comprising:

a transimpedance amplifier stage including a first field effect transistor having a gate terminal, a drain terminal and a source terminal, each of said gate terminals being connected to said output terminal of said optical detector through a respective coupling capacitor, wherein the drain terminal of each first field effect transistor is connected to the gate terminal of the same first field effect transistor through a selectable feedback resistor; and

a cascode stage including a second field effect transistor having a gate terminal, a drain terminal and a source terminal, each of said gate terminals being coupled to a bias source, each of said drain terminals being coupled to a power source, and each of said source terminals being coupled to the drain terminal of said first field effect transistor of said transimpedance amplifier stage; and

means for coupling said first amplifying means and said second amplifying means in a push-pull relationship.

5,347,390

Patent Not Issued For This Number

5,347,391

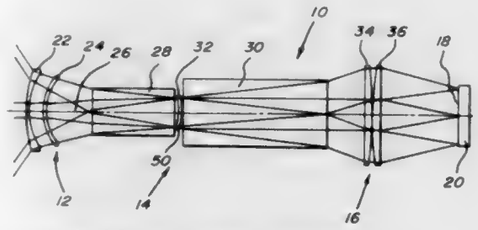
ULTRA WIDE FIELD OF VIEW SCANNING SURVEILLANCE OPTICAL SYSTEM

Lacy G. Cook, El Segundo, and Bryce A. Wheeler, Mammoth Lake, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 18, 1992, Ser. No. 992,398

Int. Cl.[5] G02B *26/08, 13/06*

U.S. Cl. 359—211 **16 Claims**



1. A refractive optical system comprising:

first lens means for receiving light from a scene;

prism means for redirecting said light, said prism means including a singlet lens and being positioned to receive light from said first lens means, said prism means enabling scanning of an ultra wide field of view of said scene;

second lens means for focusing said light on a viewing plane, said second lens means positioned to receive light from said prism means such that said ultra wide field of view of said scene is focused on a detection plane.

5,347,392

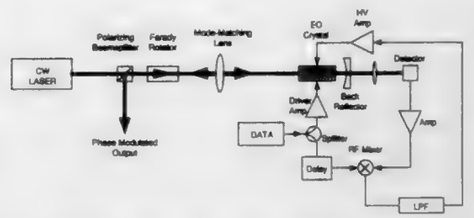
ELECTRIC-OPTIC RESONANT PHASE MODULATOR

Chien-Chung Chen, San Gabariel; Deborah L. Robinson, Scotts Valley, and Hamid Hemmati, Encino, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 26, 1992, Ser. No. 842,300

Int. Cl.[5] G03H *1/02;* **G08B** *5/23;* **H01S** *3/10*

U.S. Cl. 359—279 **16 Claims**



1. A resonant cavity electro-optic phase modulator for coherent optical communications, the modulator comprising:

an elongated electro-optic crystal for receiving a beam of coherent light, said crystal having an input end and an output end;

a mirror positioned near the output end of said crystal for reflecting coherent light traveling through said crystal;

means at said input end of said crystal for coupling said coherent light into said crystal;

means for applying a voltage across said crystal for modulating the index of refraction of said crystal and thus the phase of said coherent light; and

means for applying a bias voltage to said crystal for maintaining said cavity on resonance with said beam of coherent light.

5,347,393

ELECTRO-OPTICAL DISPLAY DEVICE WITH SUB-ELECTRODES

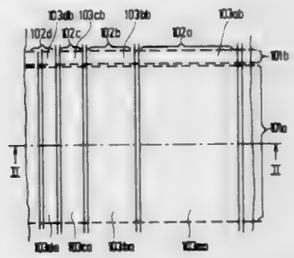
Johannes A. M. M. Van Haaren; Franciscus J. J. Blommaert, and Antonius G. H. Verhulst, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1992, Ser. No. 975,178

Claims priority, application European Pat. Off., Nov. 19, 1991, 91202999.8

Int. Cl.[5] G02F *1/03, 1/1343*

U.S. Cl. 359—254 **9 Claims**



1. A display device comprising an electro-optical medium which is switchable between two optical states and is arranged between a first supporting plate provided with row electrodes and a second supporting plate provided with column electrodes, the column electrodes defining pixels at areas of crossing with a row electrode, the column electrodes divided into n column sub-electrodes ($n \geqq 4$) and defining n sub-pixels at areas of crossing with a row electrode, at least two of which column sub-electrodes in each column have different widths, said device also comprising a drive circuit for energizing combinations of column sub-electrodes associated with grey scale stages,

characterized in that the combination of the width ratios of the column sub-electrodes and the energizations of the column sub-electrodes representing N grey scale stages including two extreme transmission levels, causes a change of periodicity for consecutive stages in the grey scale, which change is smaller than that resulting from a subdivision of the column electrodes into $(n-1)$ column sub-electrodes in accordance with an exponential subdivision.

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NONLINEAR OPTICAL MATERIALS, METHOD OF MANUFACTURING THE SAME, AND OPTICAL WAVELENGTH CONVERTER

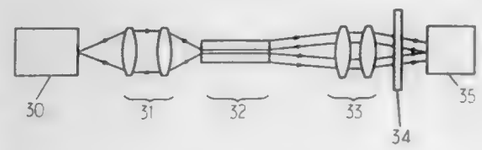
Katsuya Wakita, Nara; Tetsuji Kawakami, Katano; Nobuo Sonoda, Settsu, and Hisashi Minemoto, Otsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 6, 1993, Ser. No. 43,407

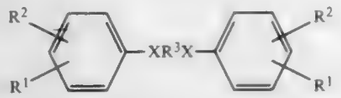
Claims priority, application Japan, Jun. 5, 1992, 4-145351; Dec. 1, 1992, 4-321578

Int. Cl.[5] G02F *1/35*

U.S. Cl. 359—326 **5 Claims**



2. A wavelength converter of an optical waveguide type of which nonlinear optical material of the waveguide for propagating the fundamental wave comprises a compound represented by the general formula (1)



(1)

wherein R^1 denotes an electron attractive group, R^2 denotes a group selected from the group consisting of a hydrogen atom, methyl group, methoxy group and electron attractive group, R^3 denotes a straight-chain alkylene group, and X denotes an oxygen or sulfur atom.

5,347,395

OPTICAL POWER LIMITING DEVICE

Peter Lautenschlager, Markdorf, and Werner Scherber, Bermatingen, both of Fed. Rep. of Germany, assignors to Dornier GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 6, 1992, Ser. No. 924,646

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1991, 4125952

Int. Cl.[5] F21V *9/04*

U.S. Cl. 359—359 **30 Claims**

1. An optical power limiting device whose transmissibility within a predetermined wave length range is a function of intensity of incident radiation, comprising:

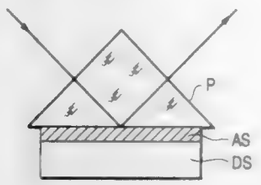
a prism having at least one plane boundary surface;

two layers, which are applied to the plane boundary surface, one above the other, a first of said two layers being an active layer comprising a material having a dielectric function with a real component that is negative in the predetermined wave length range, and the second of said two layers being a dispersion layer comprising a material having a refraction index in the predetermined wave

length range that is strongly dependent on temperature; and

means for guiding incident radiation into the prism and onto the plane boundary surface, whereby the dispersion layer is heated in response to increasing intensity of said incident radiation.

25. Method of protecting an IR detector from high intensity radiation, comprising the steps of:



providing a prism having at least one plane boundary surface with two layers applied thereto, a first of said layers being an active layer made of a material having a dielectric function with a real component that is negative in a predetermined wave length range, and the second of said layers being a dispersion layer made of a material having a refraction index in the predetermined wave length range that is strongly dependent on temperature; and

heating said dispersion layer in response to increasing intensity of said radiation.

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PHOTOVIDEO CAMERA

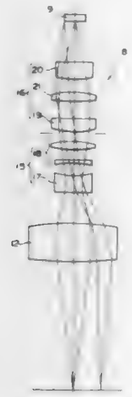
Toshio Tomiyoshi, Saitama; Tetsuya Yagi; Masami Torizuka, both of Kanagawa; Kenichi Hamano; Mitsuru Hachiya, both of Saitama, and Motoshi Mizoguchi, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 819,778, Jan. 13, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 164,679

Claims priority, application Japan, Jan. 16, 1991, 3-015002

Int. Cl.[5] **H04N** *1/04*

U.S. Cl. 358—479 **7 Claims**



1. A photovideo camera for providing an image signal corresponding to a visible image formed on a developed film comprising:

a film stage for supporting the film;

a main unit containing a lens unit for causing the visible image of the developed film to fall on a solid-state pickup device and electric circuits connected thereto for producing the image signal;

said lens unit comprising a lens barrel, a front lens fixedly held in said lens barrel at a lower end thereof, a zoom lens system held in said lens barrel above said front lens, and a relay lens system held in said lens barrel above said zoom lens system,

said relay lens system comprising a front component lens fixedly held in the lens barrel, a rear component lens fixedly held in the upper end of said lens barrel, whereby a focus of the visible image on the solid-state pickup device is achieved without affecting a magnification factor of said zoom lens system; and

a column supporting said main unit so that a selected distance is provided between said film stage and the lens surface of said main unit.

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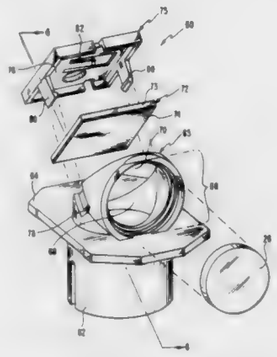
DIOPTER CELL ASSEMBLY FOR A BINOCULAR VIEWING SYSTEM

John C. Nelson; Gary M. Vance, both of Roanoke; Vincent J. Thomas, and Thomas H. Pifer, Jr., both of Christianburg, all of Va., assignors to ITT Corporation, New York, N.Y.

Filed Mar. 30, 1993, Ser. No. 39,755

Int. Cl.[5] **G02B** *23/02*

U.S. Cl. 359—629 **19 Claims**



1. An optical device for reorienting an optical image, comprising:

a housing having a first and second optical pathway disposed therein, wherein said first and second optical pathway both align with a common aperture in said housing;

a mirror disposed external of said housing, wherein said mirror overlaps and covers said aperture, said mirror reflecting light traveling through said aperture from said first optical pathway into said second optical pathway; and

attachment means for attaching said mirror to said housing, over said aperture, wherein said attachment means includes a retaining member that partially envelops said mirror and mechanically interconnects with said housing by means of a snap fit created by the shapes of said retaining member and said housing, thereby retaining said mirror over said aperture between said retaining member and said housing.

5,347,398

OPTICAL SYSTEM FOR FORMING AN IMAGE OF A PLANE ON A SPHERICAL SURFACE

Jacques Debize, Saint Heand, France, assignor to Essilor International Cie Generale D'Optique, Creteil Cedex, France

Filed Jan. 6, 1993, Ser. No. 1,551

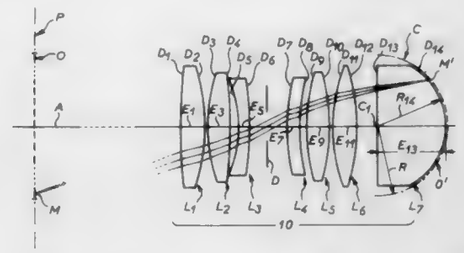
Claims priority, application France, Jan. 20, 1992, 92 00530

Int. Cl.[5] **G02B** *9/64, 1/04, 1/12*

U.S. Cl. 359—648 **25 Claims**

1. Optical system for projecting an image of an object plane on a spherical surface, said optical system comprising plural optical elements in optical alignment with a spherical exit dioptric or refractive interface, said plural optical elements be

configured to form the spherical image of the object plane substantially superimposed on said spherical interface, said spherical interface having a radius less than the focal length of the optical system, a dioptric or refractive interface of said plural optical elements immediately preceding the exit dioptric or refractive interface being planar.



2. Optical system for projecting an image of an object plane on a spherical surface, said optical system comprising plural optical elements in optical alignment and having a spherical exit dioptric or refractive interface, said plural optical elements be configured to form the spherical image of the object plane substantially superimposed on said spherical interface, said spherical interface having a radius less than the focal length of the optical system.

5,347,399

ZOOM LENS SYSTEM

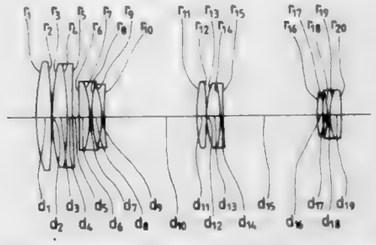
Shuji Yoneyama, and Takayuki Sensui, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 964,439

Claims priority, application Japan, Oct. 21, 1991, 3-336414; Feb. 27, 1992, 4-041138; Aug. 17, 1992, 4-217764

Int. Cl.[5] **G02B** *15/14*

U.S. Cl. 359—690 **11 Claims**



1. A zoom lens system consisting of, in order from the object side, first lens group having a positive power, a second lens group having a negative power and a third lens group having a positive power, said first lens group being fixed during zooming, said second and third lens groups being moved along the optical axis as zooming ks effected, said system satisfying the following conditions (a) and (b):

$$0.8 < fW/f1 < 1.25 \quad (a)$$

$$m2L < -1 < m2S \quad (b)$$

where

fW: the focal length of the overall system at the wide-angle end;

*f*1: the focal length of the first lens group;

m2L: the magnification by the second lens group at the telephoto end; and

m2S: the magnification by the second lens group at the wide-angle end.

5,347,400

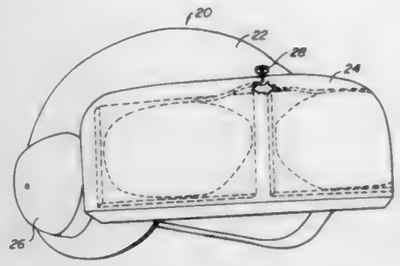
OPTICAL SYSTEM FOR VIRTUAL REALITY HELMET

Ken Hunter, 835 Laurel Ave., Belmont, Calif. 94002

Filed May 6, 1993, Ser. No. 58,618

Int. Cl.[5] **G02B** *7/02*

U.S. Cl. 359—815 **29 Claims**



1. An optical system for a virtual reality head mounted display (HMD) having a frame for mounting on a person's head, the optical system comprising:

a housing coupled to the frame;

a pair of displays attached to the housing, each display defining a visual plane;

a first lens disposed between a first of the displays and a first of the person's eyes;

a second lens disposed between a second of the displays and a second of the person's eyes; and

means for mounting the first and second lenses to the housing such that each lens is disposed at a first angle in a range of 1°–15° relative to the visual plane, the mounting means including means for adjusting the distance between the first and second lenses.

5,347,401

REFLECTING TELESCOPE AND ITS PRODUCTION PROCESS

Hermann Hügenell, Maxdorferstr. 47, Lambsheim, Fed. Rep. of Germany, assignor to Hermann Hugenell, Lamshein and Karl Friedrich Angstenberger, Ludwigshafen/Rhein, both of Fed. Rep. of Germany

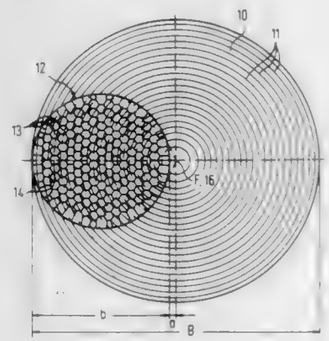
PCT No. PCT/EP90/00889, § 371 Date Dec. 6, 1991, § 102(e) Date Dec. 6, 1991, PCT Pub. No. WO90/15352, PCT Pub. Date Dec. 13, 1990

PCT Filed Jun. 5, 1990, Ser. No. 776,300

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1989, 3918620; Jul. 17, 1989, 3923588

Int. Cl.[5] **G02B** *5/10*

U.S. Cl. 359—853 **6 Claims**



1. A method of manufacturing a primary mirror for a reflecting telescope with a tube and the primary mirror being located therein, the focal point of the primary mirror being outside the tube, the surface of the primary mirror being aspherical and in

the form of a circular pitch surface of a hypothetical, rotationally symmetrical large mirror with an aspherical surface, whose optical axis is located alongside the circular pitch surface of the primary mirror and is parallel to the light incidence direction, the method comprising the steps of:

producing of individual mirror segment blanks, whose shape is determined by dividing the aspherical surface of the circular primary reflector into single sections;

preshaping a mirror surface of the individual mirror blanks to form a spherical surface whose curvature approaches substantially the aspherical surface of the primary mirror;

reworking of the mirror surface of the individual mirror blanks for producing a final aspherical surface shape of the mirror surface of each mirror segment; and

joining together the reworked mirror blanks to form the primary reflector.

5,347,402

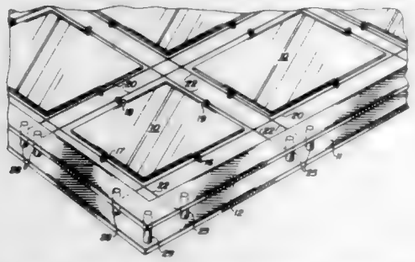
MULTIPLE MIRROR ASSEMBLY FOR SOLAR COLLECTOR

Porter Arbogast, P.O. Box 5015, Page, Ariz. 86040

Filed Aug. 12, 1992, Ser. No. 929,767

Int. Cl.[5] G02B *5/10*

U.S. Cl. 359—853 **18 Claims**



1. A mirror assembly for a multiple-mirror apparatus having an array of mirrors arranged in rows and columns, and each individually attached to an underlying support structure, said mirror assembly including in combination:

a mirror frame for a support structure;

a plurality of mirrors arranged in rows and columns in said mirror frame;

guide means on each of said mirrors;

flexible cord members attached to said mirror frame and extending through said guide means; and

tensioning means for selectively tensioning said flexible cord members to hold said mirrors in a common plane in said mirror frame.

5,347,403

APPARATUS AND METHOD FOR RECORDING AND READING INFORMATION

Tadashi Uekusa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 10, 1992, Ser. No. 943,029

Claims priority, application Japan, Sep. 20, 1991, 3-241349; Jun. 10, 1992, 4-150792

Int. Cl.[5] G03B *17/24;* **G11B** *5/09, 5/633*

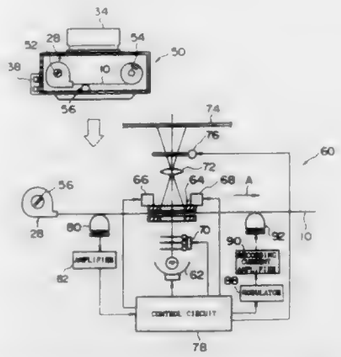
U.S. Cl. 360—3 **9 Claims**

1. An information recording apparatus comprising:

means for performing a photographic process on a photographic film having a magnetic recording section thereon;

adding means for adding to information to be recorded at least one of an error detection code for detecting an error in the information and an error correction code for correcting the error in the information; and

recording means for recording in a magnetic recording section provided in a photographic film the information to



which at least one of the error detection code and the error correction code is added by said adding means.

5,347,404

APPARATUS FOR RECORDING AND REPRODUCING CAPTION INFORMATION ON AN AUDIO TRACK OF A VIDEO TAPE USED IN A VIDEO TAPE RECORDER

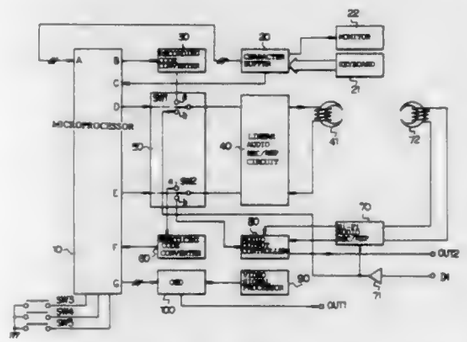
Hyeong-Deok Han, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 27, 1991, Ser. No. 766,775

Claims priority, application Rep. of Korea, Dec. 12, 1990, 90-19635

Int. Cl.[5] G11B *5/02*

U.S. Cl. 360—19.1 **12 Claims**



1. An apparatus used in a video recorder, for recording and reproducing a caption signal comprised of a caption character display signal combined with a video signal, on an audio track of a video tape, said apparatus comprising:

character buffer means for memorizing caption character data received from a keyboard, and for providing a monitor with said caption character data;

processing means for converting said caption character data from said character buffer means to a pulse code signal during a caption recording mode;

recording code converter means for converting said pulse code signal into a first mono-audio frequency signal during said caption recording mode;

linear audio recording/reproducing means for recording said first mono-audio frequency signal on the video tape via a linear audio head, and for generating a processed mono-audio frequency signal by processing a reproduced mono-audio frequency signal received from said linear audio head;

reproducing code converter means for converting said processed mono-audio frequency signal into rectangular pulses;

said processing means for converting said rectangular pulses from said reproducing code converter means to reproduced caption character data during a caption reproducing mode;

Hi-Fi audio recording/reproducing means for recording on the video tape a first Hi-Fi audio signal received from a buffer via a Hi-Fi audio head and for generating a processed Hi-Fi audio signal by processing a reproduced Hi-Fi audio signal received from said Hi-Fi audio head;

output controller means for enabling transmission of said processed mono-audio frequency signal and said processed Hi-Fi audio signal from said linear audio recording-/reproducing means and said Hi-Fi audio recording/reproducing means, respectively, to an output port;

mode selector means for enabling transmission of said first mono-audio frequency signal from said recording code converter means to said linear audio recording/reproducing means during said caption recording mode, and for enabling transmission of said processed mono-audio frequency signal from said linear audio recording/reproducing means to said reproducing code converter means during said caption reproducing mode;

video signal processor means for processing said video signal; and

on-screen-display means for generating said caption signal, thereby enabling a visual display of a caption, in dependence upon said reproduced caption character data received from said processing means and said video signal from said video signal processor means.

5,347,405

MAGNETIC RECORDING CORRECTION CIRCUIT FOR REDUCING INTERFERENCE WAVES BY THIRD-DEGREE INTER-MODULATION DISTORTIONS

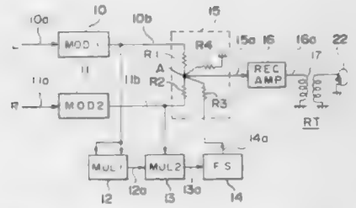
Naoto Hayashi, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 25, 1992, Ser. No. 841,024

Claims priority, application Japan, Feb. 27, 1991, 3-055982

Int. Cl.[5] G11B *5/02;* **F16M** *13/00*

U.S. Cl. 360—30 **5 Claims**



1. A magnetic recording correction circuit for a video recorder comprising:

a first signal supply circuit for outputting a first signal having a predetermined frequency;

a first multiplier supplied with said first signal to output a first multiplied signal having a frequency which is twice as high as that of said first signal;

a second signal supply circuit for outputting a second signal;

a second multiplier supplied with said second signal and said first multiplied signal output by said first multiplier to output a correction signal having a component of a sum frequency of said first multiplied signal and said second signal and a component of a difference frequency therebetween;

an adding circuit for adding said first signal, said second signal, and said correction signal; and

a phase shifter provided at least on the output side of said second multiplier to impose a phase characteristic on said correction signal with respect to said first and second signals, thereby removing a third-degree inter-modulation distortion occurring between said first and second signals.

5,347,406

DIGITAL VIDEO RECORDING APPARATUS FOR RECORDING DIGITAL VIDEO SIGNALS OF REDUCED BIT RATE ON MAGNETIC TAPE HAVING PARTICULAR THICKNESS, ENERGY PRODUCT AND SURFACE ROUGHNESS

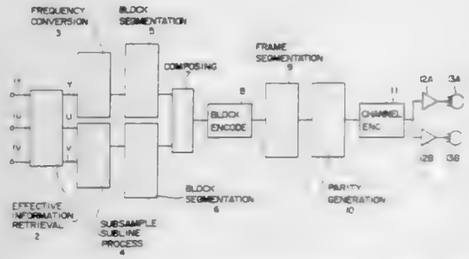
Kazunobu Chiba; Kenichi Sato, and Yuichi Arisaka, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 784,751, Oct. 30, 1991, Pat. No. 5,253,122, which is a continuation-in-part of Ser. No. 768,871, Oct. 29, 1991. This application Jun. 28, 1993, Ser. No. 83,990

Claims priority, application Japan, Oct. 31, 1990, 2-294676

Int. Cl.[5] H04N *5/783*

U.S. Cl. 360—33.1 **13 Claims**



1. An apparatus for magnetically recording digital video signals, comprising:

a magnetic tape wound in a cassette and having a width of no more than approximately 8 mm and a thickness of no more than approximately 7 μm, said tape including a nonmagnetic base on which there is a magnetic layer composed of at least one thin magnetic metal film and having an energy product of at least 100 G.cm.Oe, and a surface roughness of at most 0.003 μm, as measured in center line average height;

data processing means for reducing the data of said input digital video signal by a ratio of approximately 1:9 so as to provide a recordable signal having a reduced data bit rate; and

means for recording said reduced data bit rate signal in successive skewed tracks on said tape with an areal recording density of at least approximately 0.8 bit/μm^2.

5,347,407

METHOD AND SYSTEM FOR REMOVING PARTICLES WITHOUT REQUIRING A SEPARATE CLEANING MECHANISM FROM A TAPE IN A TAPE DRIVE SYSTEM

Erik Solhjell, and Tore Ronning, both of Oslo, Norway, assignors to Tandberg Data A/S, Oslo, Norway

Filed May 29, 1992, Ser. No. 890,006

Int. Cl.[5] G11B *5/09, 15/48*

U.S. Cl. 360—53 **14 Claims**

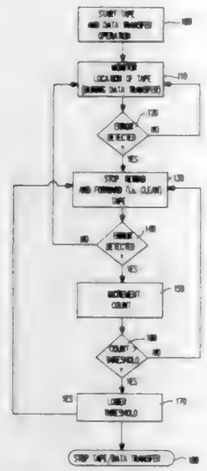
1. A method for removing particles without requiring a separate cleaning mechanism from a tape in a tape drive system including a write/read head wherein a data transfer operation is completed by satisfying a threshold requirement indicative of no errors on said tape, said method comprising the steps of:

monitoring the location of said tape during said data transfer operation, said location being monitored relative to an end of said tape or prerecorded data on said tape wherein said monitoring is performed continuously;

detecting for an occurrence of said particles indicative of an error on said tape during said data transfer operation;

stopping said data transfer operation upon said occurrence of said error;

rewinding said tape to a location substantially distant from the location of said error such that the particles are removed from the tape;



forwarding said tape to a location of last good data information preceding the location of said error; and

rewriting information of said data stream at the location of said error.

5,347,408

MAGNETIC RECORDING AND REPRODUCING METHOD AND APPARATUS WITH VERTICAL MAGNETIZATION COMPONENT REDUCTION

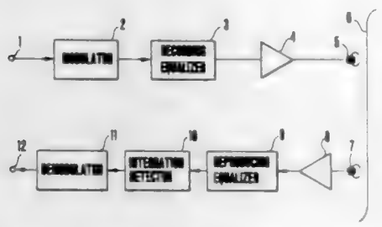
Makoto Gohda, Tokyo; Shinichi Yamashita, Kanagawa, and Yasuyuki Tanaka, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 30, 1992, Ser. No. 828,137

Claims priority, application Japan, Feb. 7, 1991, 3-016469

Int. Cl.[5] G11B *5/035;* **B05D** *5/12;* **C23C** *16/00;* **H01F** *1/00*

U.S. Cl. 360—65 **10 Claims**



7. A magnetic recording and reproducing method comprising the steps of:

converting a digital signal to be recorded into a digital signal having a suppressed low-frequency spectrum;

recording the converted digital signal on a magnetic recording medium in which a plurality of metal evaporated films having different crystal-growth directions are laminated, wherein magnetization components of the plurality of metal evaporated films of said magnetic recording medium in a vertical direction relative to a surface thereof are substantially zero in total;

reproducing the digital signal from the magnetic recording medium;

performing waveform equalization on the reproduced digital signal; and

performing integration detection on the waveform-equalized digital signal to restore an original digital signal.

5,347,409

DEVICE MAINTAINING FAST FORWARD/REWIND/PLAY RELATIONSHIP DURING CHANGE OF SELECTED PLAY DIRECTION OF REVERSING TAPE PLAYER

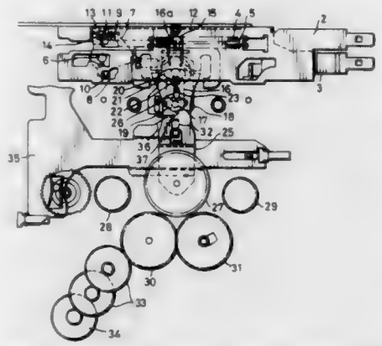
Tamotsu Tamura, Oohtawara, Japan, assignor to Shinwa Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1993, Ser. No. 59,116

Claims priority, application Japan, May 21, 1992, 4-128496

Int. Cl.[5] G11B *15/44*

U.S. Cl. 360—74.1 **12 Claims**



1. A device for fast-forwarding and rewinding a cassette tape player, comprising:

first and second switches;

means for detecting a direction of play;

a plate having first and second operating positions and a stub;

means for rotating said plate in one of first and second directions responsive to actuation of one of said first and second switches, respectively;

means for placing said plate in one of said first and second operating positions responsive to said means for detecting;

a switching arm rotatably mounted on said stub and having forward and reverse rotation positions;

an idler gear rotatably mounted at an end of said switching arm;

said plate including means for rotating said switching arm in a direction parallel to said one of first and second directions if said plate is in said first operating position; and

said plate including means for rotating said arm in an opposite direction to said one of first and second directions if said plate is in said second operating position.

5,347,410

SENSITIVITY CORRECTING CIRCUIT OF SERVO SIGNAL DETECTION ON DATA SURFACE AND OFFSET MEASURING CIRCUIT IN MAGNETIC DISK UNIT

Teruyuki Narita, Kawasaki; Atsushi Sato, Higashine; Masao Tsunekawa, and Hideaki Tanaka, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Japan

Filed Apr. 28, 1992, Ser. No. 875,647

Claims priority, application Japan, Apr. 30, 1991, 3-098506; Apr. 30, 1991, 3-098509

Int. Cl.[5] G11B *5/596*

U.S. Cl. 360—77.04 **6 Claims**

1. A sensitivity correcting circuit for a servo signal detection on a data surface in a magnetic disk unit having

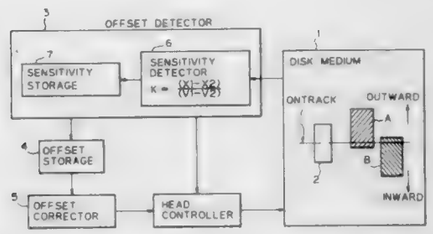
disk media each having first servo information (A) recorded thereon with an outward offset of predetermined quantity from an ontrack position and second servo information (B) with an inward offset of predetermined quantity from the ontrack position;

a plurality of data heads provided in correspondence with the disk media;

offset detection means for reading signals (V_A, V_B) on the first and second servo information (A,B) on one disk medium with the data head, detecting an offset of the data head by multiplying a differential signal ($V_A - V_B$) of the read signals by a proportional coefficient K representing an output sensitivity of the data head;

offset storage means for storing the offset of each data head; and

offset correction means for correcting the position of a data head selected for reading or writing one disk medium in a way to remove the offset of the selected data head stored in the offset storage means, the sensitivity correcting circuit comprising



sensitivity detection means disposed in the offset detection section, for outwardly offsetting one data head from an ontrack position by a given quantity (X1), said sensitivity detection means including means for reading signals (V_A, V_B) on the first and second servo information (A, B), means for detecting a differential signal (V1) of the read signals, means for inwardly offsetting the data head from the ontrack position by a given quantity (X2), means for reading signals on the first and second servo information, means for detecting a differential signal (V2) of the read signals, and means for computing a proportional coefficient K for the data head according to the differential signals (V1, V2).

5,347,411

APPARATUS FOR DRIVING BRAKES IN A TAPE RECORDER

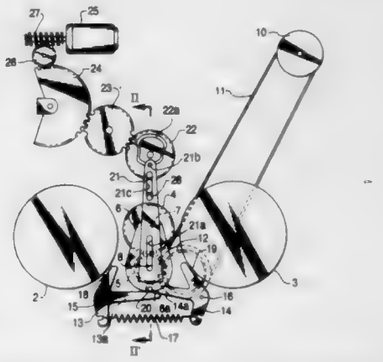
Kwang Moon Choi, Suweon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 15, 1992, Ser. No. 821,198

Claims priority, application Rep. of Korea, Jan. 31, 1991, 91-1824

Int. Cl.[5] G11B *15/22*

U.S. Cl. 242—341 **27 Claims**



1. A brake driving apparatus of a tape recorder, said apparatus comprising:

reel braking means for braking reel tables with a force transferred from capstan motor means, said capstan motor means for transporting a tape by driving said reel tables, said reel braking means comprising:

an arm having a slot and being rotated on a fixed axis by a driving force transmitted from said capstan motor means,

brakes for engaging said reel tables and being rotated on stationary axes, said brakes being biased by a spring, and

a pin connecting said brakes to each other and for being mounted into and dismounted from said slot of said arm; and

reel releasing means for releasing said brakes to enable rotation of said reel tables, said reel releasing means being slidably driven by a loading motor.

5,347,412

FLOATING MAGNETIC HEAD

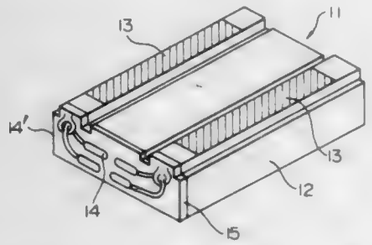
Hideo Nitta, Mooka; Kunio Kanai, Konosu, and Yasuo Arai, Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 41,056

Claims priority, application Japan, Apr. 6, 1992, 4-113090

Int. Cl.[5] G11B *5/60, 21/21*

U.S. Cl. 360—103 **8 Claims**



1. A floating magnetic head comprising: a slider with a non-magnetic substrate characterized in that the non-magnetic substrate has a main composition of MnO, NiO and a sub composition of Al_2O_3 whose composition consists of MnO of 20 to 80 wt % in terms of MnO, NiO of 20 to 80 wt % in terms of NiO, and Al_2O_3 of 1 to 20 wt % in terms of Al_2O_3, the structure of the substrate being a two-phase structure comprising a 20% to 80% rock salt type structure of (MnO, NiO) and a 80% to 20% spinel structure of (MnO, NiO) Al_2O_3, and said substrate having an average grain size of 5 to 15 μm.

5,347,413

DE-SWAGING TECHNIQUE FOR HEAD GIMBAL ASSEMBLY

Lawrence E. Hanke, Eagan; Dennis R. Nielsen, Apple Valley, and David D. Koester, Chanhassen, all of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Nov. 13, 1992, Ser. No. 976,369

Int. Cl.[5] G11B *21/16*

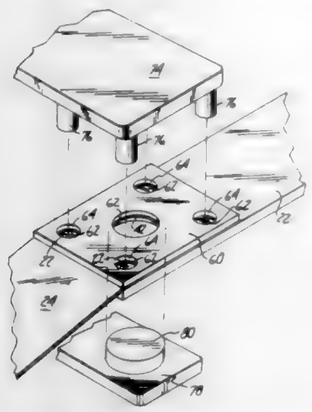
U.S. Cl. 360—104 **10 Claims**

1. An apparatus in a magnetic transducer support for connecting a magnetic transducer carrying arm to a support arm, the apparatus comprising:

a ball stake connection for mounting the support arm to the transducer carrying arm, the ball stake connection comprising a first hole defined in the support arm and creating a passageway through the support arm, a second hole defined in the transducer carrying arm substantially aligned with the first hole and creating a passageway through the transducer carrying arm, and a tubular member which extends through the first and second holes for connecting the transducer carrying arm to the support arm; and

a plurality of tool insertion holes defined in one of the transducer carrying arm and the support arm for receiving a first tool therethrough, the tool insertion holes being arranged in a pattern in the one arm around the respective

first or second hole, the other of the support arm and the transducer carrying arm having a surface exposed to the tool insertion holes, wherein the first tool extends through the tool insertion holes to apply a force to the surface on



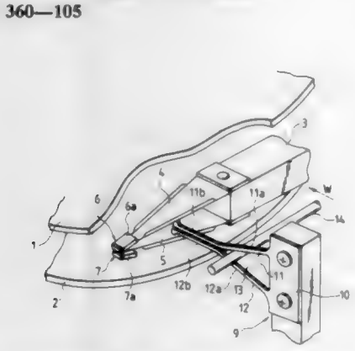
the other of the support arm and the transducer carrying arm to disconnect the tubular member from at least one of the transducer carrying arm and the support arm thereby disengaging the ball stake connector.

5,347,414

MAGNETIC DISK DRIVE WITH A CONTROLLABLY POSITIONED FLOATING MAGNETIC HEAD

Hisashi Kano, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 26, 1991, Ser. No. 674,908
Claims priority, application Japan, Mar. 27, 1990, 2-77849
Int. Cl.[5] G11B *5/54*
U.S. Cl. 360—105 **13 Claims**



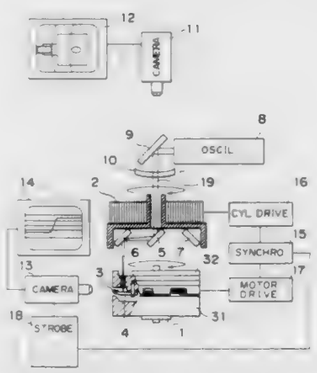
4. A magnetic disk drive comprising:
(a) a pair of concentric, parallel spaced magnetic disks connected together for corotation with each other;
(b) an arm movable between said magnetic disks;
(c) a pair of flexures attached to said arm and confronting said magnetic disks, respectively, said flexures being normally spaced relatively far from said magnetic disks;
(d) a pair of floating magnetic heads having a pair of negative pressure sliders, respectively, and carried on front ends of the respective flexures at respective sides which face toward corresponding ones of said magnetic disks, each of said flexures normally holding a corresponding one of said magnetic heads in a position spaced relatively far from a corresponding one of said magnetic disks;
(e) a pair of resilient pusher members normally spaced from said flexures and engageable with said flexures, respectively, to urge them toward said magnetic disks until said magnetic heads are displaced toward said magnetic disks beyond a floating position in which said magnetic heads are floating over said magnetic disks by virtue of a positive pressure created between said magnetic heads and said magnetic disks due to the coaction between said negative pressure sliders and said magnetic disks; and
(f) means for urging said pusher members towards said flexures, said resilient pusher members being overcome by said positive pressure and resiliently flexing in a direction away from said magnetic disks when they are urged by said urging means to move said magnetic heads toward said magnetic disks beyond said floating position.

5,347,415

HEAD HEIGHT ADJUSTMENT METHOD INCLUDING A SYNCHRONIZED ROTATING LASER BEAM OPTICAL AXIS

Akio Murata, Takatsuki; Takaaki Maegawa, Neyagawa; Hideaki Mukae, Sanda, and Masaru Higashionji, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Oska, Japan

Filed Apr. 12, 1993, Ser. No. 44,775
Claims priority, application Japan, Apr. 15, 1992, 4-095069
Int. Cl.[5] G11B *5/58, 21/24*
U.S. Cl. 360—109 **2 Claims**



1. A method of adjusting the height of a magnetic head secured to a head base accommodated in a rotary cylinder, said method comprising the steps of:
rotating an optical axis of a laser beam in synchronism with the rotary cylinder so that the optical axis is always maintained stationary relative to the magnetic head; and
irradiating the laser beam to a portion of the head base in the proximity of a head chip secured to the head base, thereby adjusting the head height during rotation of the rotary cylinder.

5,347,416

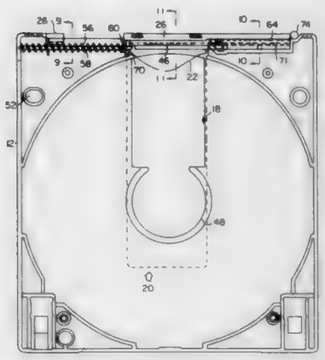
DISC CARTRIDGE HAVING IMPROVED SHUTTER

Masaru Ikebe, and Haruo Shiba, both of Nagano, Japan, assignors to TDK Corporation, Japan

Continuation of Ser. No. 723,901, Jul. 1, 1991, abandoned, which is a continuation of Ser. No. 566,249, Aug. 13, 1991, Pat. No. 5,072,326, which is a continuation of Ser. No. 257,431, Oct. 13, 1988, Pat. No. 4,991,048. This application Mar. 17, 1993, Ser. No. 32,266
Claims priority, application Japan, Oct. 15, 1987, 62-156644; Oct. 15, 1987, 62-156646
The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.
Int. Cl.[5] G11B *23/03*
U.S. Cl. 360—133 **1 Claim**

1. A disc cartridge comprising:
a casing comprising an upper casing member and a lower casing member joined together to define an interior space in said casing, said casing having at least one pickup inserting hole therein;

a disc mounted in said casing so as to be rotatable therein; and
a shutter having a substantially U-shape and comprising upper and lower shutter plates and a slider for connecting said upper and lower shutter plates to each other, said slider being slidably fitted on said casing for covering and uncovering said pickup inserting hole;
said slider including a first side wall arranged on the side of said slider to which the slider moves to uncover said pickup inserting hole, said first side wall having an opening;



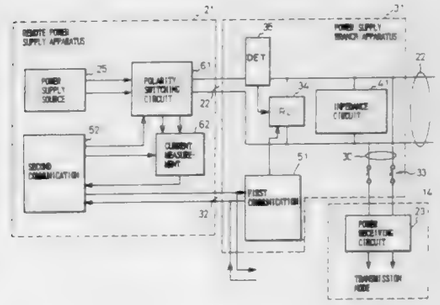
a shaft engagedly fitted in said opening, said slider being guided on said shaft, and also including biasing means urging said shutter in the direction of covering said pickup inserting hole;
said casing having an inner surface defining said interior space, said inner surface including guiding means;
said slider also including a second side wall on the opposite wall of said slider with respect to said pick-up inserting hole and having guided means comprising a projection which slidably engages with said guiding means of said casing.

5,347,417

POWER SUPPLY PROTECTION SYSTEM APPLIED TO OPTICAL SUBSCRIBER NETWORK

Hideyuki Motoori, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 20, 1993, Ser. No. 49,088
Claims priority, application Japan, Apr. 20, 1992, 4-099720
Int. Cl.[5] H02H *3/30*
U.S. Cl. 361—64 **10 Claims**



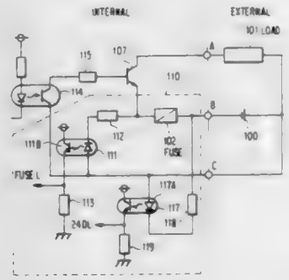
8. A power supply protection system applied to an optical subscriber network which is comprised of a plurality of subscriber transmission nodes for each subscriber, the subscriber transmission nodes having respective power receiving circuits to which a remote power is supplied through a pair of power supply lines from a remote power supply apparatus in a multidrop form, said power supply protection system including a plurality of power supply branch apparatuses inserted in series with said pair of power supply lines and disposed in correspondence with and close to said subscriber transmission nodes, wherein each of said power supply branch apparatuses comprises:
normally closed contacts inserted in a pair of power supply branch lines which branch lines are distributed from said pair of power supply lines to said power receiving circuits; an overcurrent detector inserted in series with said pair of power supply lines; and a relay connected to said overcurrent detector and to said normally closed contacts and being operative when said overcurrent detector detects an occurrence of an overcurrent, to open said normally closed contacts; and a first communication means being operable to control said relay;
said remote power supply apparatus including a second communication means which cooperates with said first communication means, wherein said second communication means is operative, via said first communication means, to individually deenergize, in a sequential order, relays of said power supply branch apparatuses which relays have been energized by said overcurrent detector to close said normally closed contacts in said sequential order, and said remote power supply is restarted selectively only through the normally closed contacts which do not activate said overcurrent detector during deenergization in said sequential order to close said normally closed contacts.

5,347,418

FUSE BLOWOUT DETECTOR CIRCUIT

Takahiko Ando, and Toshihito Mizoe, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1992, Ser. No. 842,658
Claims priority, application Japan, Feb. 27, 1991, 3-032965
Int. Cl.[5] H01H *85/30;* **H02H** *5/04*
U.S. Cl. 361—104 **13 Claims**



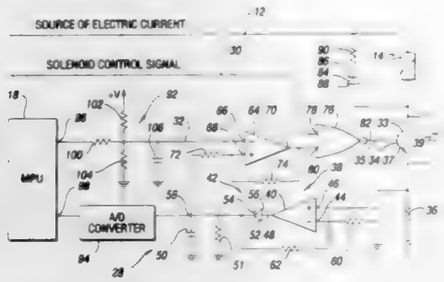
9. A fuse blowout detector circuit for insertion between a power supply and a load device of an electrical circuit including switching means for controlling the supply of power from said power supply to said load device and a fuse for protecting said load device from an overcurrent, said fuse blowout detector circuit comprising:
a first insulated signal coupler means having a primary side connected in parallel with both ends of a circuit comprising a series connection of said power supply and said fuse, and a secondary side insulated from said first side for outputting a fuse blowout detection signal when said fuse is blown, independently of an on/off state of said switching means, and
a second insulated signal coupler means having a primary side thereof connected in parallel with both ends of said power supply and a secondary side for outputting a power off detection signal when said power supply is switched off.

5,347,419

CURRENT LIMITING SOLENOID DRIVER

LaVerne A. Caron; Edward F. Handley; W. Paul Kuo, all of Kalamazoo, and E. James Lane, Highland, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 22, 1992, Ser. No. 994,779
Int. Cl.[5] H03K *3/01, 5/08;* F02D *41/20;* G05F *1/40*
U.S. Cl. 361—154 29 Claims



1. An apparatus for controlling, in response to a solenoid control signal and with respect to a predetermined current reference signal, electric current from a source thereof to actuate and hold actuated an electric solenoid in a manner to prevent damage form a short circuit of the solenoid, the apparatus comprising:

switching means for rapidly switching current applied to the solenoid on and off to generate a pulsed current, the switching means including at least one switching transistor having a collector, an emitter and a base, the solenoid being connected between the source of electric current and the collector of the switching transistor;

detecting means for detecting current flow through the solenoid and generating in response thereto a peak signal representative of the amount of current flowing through the solenoid, the detecting means including a current sensing resistor connected between the emitter of the switching transistor and ground,

a differential amplifier having an inverting input, a noninverting input and an output, the noninverting input thereof being connected to the emitter of the switching transistor, and

peak detector having an input and an output, the input thereof being connected to the output of the differential amplifier, the peak detector having an impedance sufficiently high to enable the differential amplifier to respond quickly and being further constructed such that a voltage appearing at the peak detector output has a predetermined value when current through the solenoid is sufficient to hold the solenoid actuated, the voltage appearing at the peak detector output when a short circuit is present across the solenoid increasing rapidly to a sufficiently high value that the time required during a short circuit condition to allow the voltage preparing at the peak detector output to decay to a value allowing the switching transistor to switch on again is longer than the time the switching transistor is switched on, thus providing a duty cycle sufficiently low to prevent damage to the switching transistor;

comparing means for comparing the peak signal with the predetermined current reference signal and generating a deviation signal representative of the difference therebetween; and

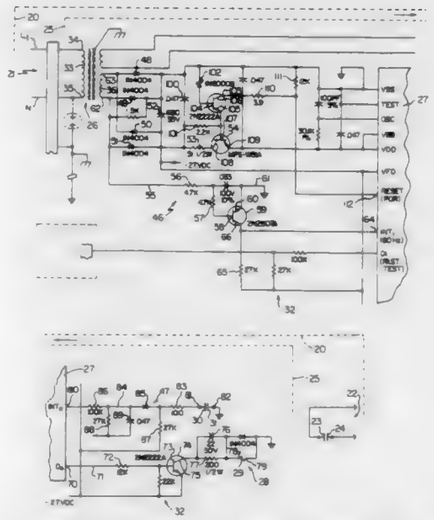
logical gating means for gating the solenoid control signal with the deviation signal and generating a solenoid current control signal to switch the switching transistor off and on respectively when the peak signal reaches predetermined maximum and minimum levels.

5,347,420

ELECTRICALLY OPERATED CONTROL DEVICE AND SYSTEM FOR AN APPLIANCE AND METHOD OF OPERATING THE SAME

Daniel L. Fowler, Kentwood, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation of Ser. No. 792,881, Nov. 19, 1991, Pat. No. 5,218,509, which is a continuation of Ser. No. 581,381, Sep. 12, 1990, abandoned, which is a continuation of Ser. No. 405,987, Sep. 12, 1989, abandoned, which is a division of Ser. No. 153,097, Feb. 8, 1987, abandoned, which is a division of Ser. No. 869,137, May 30, 1986, Pat. No. 4,745,515. This application Jun. 2, 1993, Ser. No. 71,075
The portion of the term of this patent subsequent to May 17, 2008, has been disclaimed.
Int. Cl.[5] H01H *47/32*
U.S. Cl. 361—155 4 Claims



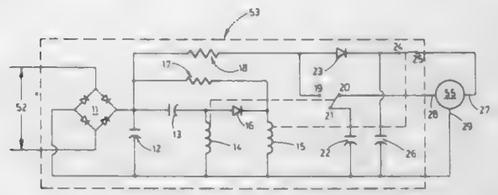
1. In a method of operating a control system for an appliance, said system comprising a power source of alternating electrical current that has a repeating voltage wave cycle and a repeating current wave cycle, load means for using said electrical current to provide an output of said load means for said appliance, relay means having normally open contact means and coil means for closing said contact means only when said coil means is energized, electrical circuit means for interconnecting said power source to said load means only through said contact means to provide said output and only when said contact means are closed by said coil means, said coil means having a normal voltage rating that will cause said contact means to close in a certain time period after said normal voltage is initially applied across said coil means, and control means for causing said coil means to close said contact means, the improvement comprising the step of operating said coil means initially with a high voltage that is substantially larger than said normal voltage across said coil means to close said contact means each time said relay coil means closes said contact means from said open condition thereof and then reducing the voltage across said coil means to substantially the normal voltage therefor or a voltage lower than said normal voltage for holding said contact means in said closed condition thereof, the step of operating said coil means comprising the step of interconnecting said coil means across a positive or negative going D.C. signal with a capacitor and a resistance that are disposed in parallel between one side of said coil means and one side of said D.C. signal with said D.C. signal having said high voltage.

5,347,421

LAW ENERGY SOLENOID ENERGIZER

George Alexanian, 7255 N. Geraldine, Fresno, Calif. 93711

Filed Dec. 17, 1992, Ser. No. 992,129
Int. Cl.[5] H01H *47/04*
U.S. Cl. 361—156 13 Claims



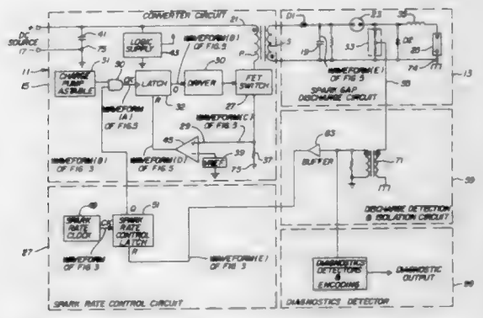
1. A circuit for energizing a latching solenoid on an AC (alternating current line comprising a rectifier means connected to said AC line, said rectifier having two output leads, first and second activatable switching means, each respectively controlling a first and second set of contacts, a biasing means separating said switching means, four DC charge storage means, the first of which is connected in parallel with said output leads, the second of which is connected in series between both switching means and one output lead wherein the combination of the second charge storage means, the pair of switching means, and the biasing means are in parallel with said first DC charge storage means, the third of which is connected in a line closed by said first switching means, and the fourth of which is connected to a line opened by said second switching means; a first resistance means connected between said one output lead and said second switching means; a second resistance means connected in between said one output lead and said first set of contacts, a second biasing means in series between said second resistance means and said second set of contacts, said latching solenoid having separate activation and deactivation terminals, said activation terminal connected to a line leading from said first set of contacts and said deactivation terminal connected to a line leading form said second set of contacts; whereby low voltage AC power applied to said circuit causes the solenoid to latch open, very low voltage AC power is required to keep said solenoid latched open, and when the AC power is removed the solenoid latches closed.

5,347,422

APPARATUS AND METHOD FOR AN IGNITION SYSTEM

Kenneth W. Smith; Bruce E. Dolmovich, and John R. Frus, all of Jacksonville, Fla., assignors to Unison Industries Limited Partnership, Jacksonville, Fla.

Filed Sep. 9, 1992, Ser. No. 942,654
Int. Cl.[5] F23Q *3/00*
U.S. Cl. 361—253 9 Claims



1. An ignition system responsive to a power source for igniting fuel in a turbine engine, the system comprising:

an energy storage device;

means for pumping energy from the power source into the energy storage device;

an output circuit including an igniter plug;

a passive device for conducting energy from the energy storage device into the output circuit in order to create a spark event when the energy held in the energy storage device reaches a level that breaks down a high impedance in the passive device, which otherwise prevents the flow of energy from the energy storage to the output circuit;

a sensor for sensing when the spark event occurs and providing a signal indicative thereof; and

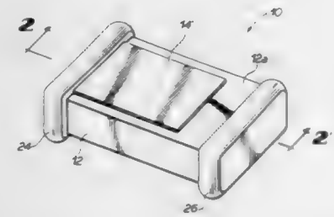
means responsive to the signal from the sensor for selectively enabling and disabling the pumping means so as to control the rate at which successive spark events occur.

5,347,423

TRIMMABLE COMPOSITE MULTILAYER CAPACITOR AND METHOD

Joel B. deNeuf, State College; Bruce E. Helms, Warrior's Mark, and Delmont L. Billotte, Madisonburg, all of Pa., assignors to Murata Erie North America, Inc., Smyrna, Ga.

Filed Aug. 24, 1992, Ser. No. 934,798
Int. Cl.[5] H01G *4/10*
U.S. Cl. 361—313 24 Claims



13. A trimmable composite multilayer capacitor exhibiting a high quality factor Q and permitting efficient functional trimming over a wide range while in a circuit, comprising:

a capacitor body defined by a plurality of interleaved first and second electrodes spaced apart by dielectric material, said plurality for establishing a fixed capacitance, said capacitor body being sintered at a first temperature;

a trimmable outermost electrode on said capacitor body capable of depletion for particularly selecting an overall capacitance of said capacitor, said trimmable outermost electrode being sintered with said capacitor body at a second temperature which is less than said first temperature and which prevents substantial migration of said trimmable outermost electrode into an underlying dielectric layer of said capacitor body; and

first and second terminations at respective first and second ends of said capacitor body, said first termination being connected to said first electrodes and to said trimmable outermost electrode, said second termination being connected to said second electrodes.

5,347,424

TILTING MECHANISM HAVING ROTATABLE EXTENSION, FOR INFORMATION INPUTTING APPARATUS

Ryosuke Akahane, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Sep. 18, 1992, Ser. No. 946,610
Claims priority, application Japan, Sep. 20, 1991, 3-084729[U]
Int. Cl.[5] H05K *5/02;* G06F *1/16*
U.S. Cl. 361—680 5 Claims

1. A tilting mechanism in combination with an information inputting apparatus, characterized in that

a pair of substantially vertical face portions at a rear portion of said information inputting apparatus and a pair of foot

members opposed to said substantially vertical face portions are engaged with each other

said substantially vertical face portions being located on opposite side portions of said information inputting apparatus;

each of said vertical face portions has provided thereon a first fixed shaft and a first guide portion around said first fixed shaft which advances in a direction gradually spaced away from said first fixed shaft toward a bottom face of said information inputting apparatus, and a notch hole connected to a lower portion of said first guide portion and extending upwardly;

each of said foot members has provided thereon a second guide portion which is fitted for sliding movement with said first fixed shaft and extends in a longitudinal direction of said foot member and a second fixed shaft which is fitted for sliding movement with said first guide portion, and a resilient piece is provided projecting at a side portion of said foot member;



a foot cover, said foot cover is supported for rotation on said first fixed shaft and has an extending through portion provided therein for sliding movement relative to said foot member so that said foot cover may be rotated together with said foot member, and said foot cover further has a resilient piece receiving portion provided thereon with which said resilient piece is contacted when said second fixed shaft is positioned at said notch hole; and

said second fixed shafts are slidably moved, when said information inputting apparatus is to be used, along said first guide portions from a retracted condition, and then also after said resilient pieces are contacted with said resilient piece receiving portions, said second fixed shafts are further slidably moved until said second fixed shafts are fitted with said notch holes thereby to thereafter maintain said foot members in a projecting condition; whereby said foot members may serve as legs of said information inputting apparatus thereby to tilt said information inputting apparatus.

5,347,425

DOCKING STATION FOR A PORTABLE COMPUTER

Matt Herron, Menlo Park, and David Blakely, Mt. View, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Oct. 15, 1992, Ser. No. 961,236

Int. Cl.[5] H05K *7/10*; **G06F** *1/16*

U.S. Cl. 361—683 **1 Claim**

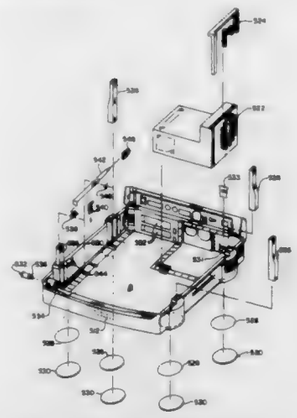
1. A housing for a docking station receiving a portable computer and supporting a load comprising a display monitor thereon, the portable computer being capable of insertion into and removal from the docking station without binding interference due to deformation of the docking station due to the load of the display monitor, the housing comprising:

a top case with a top surface having a top and a bottom, right and left sides and a rear wall;

a skeleton and docking platform assembly for receiving and supporting the portable computer when said portable computer is inserted into the docking station;

a base casing with a bottom surface and front, rear, right, and left sides, the skeleton and docking platform assembly mounting on the bottom surface, the top case mounting atop the base casing and substantially enclosing the skeleton and docking platform assembly to form a rigid unit to support said display monitor thereon, the top case, the skeleton and docking platform assembly, and the base casing together defining a rectangular opening above the front side of the base casing through which rectangular opening the portable computer is passed when being docked to the docking station;

at least first and second cross beams having opposing ends mounted on the bottom of the top case, the first and second cross beams being spaced apart and extending from the right side to the left side of the top case above the rectangular opening;



at least first, second, third, and fourth columns each having a top and a bottom, said first and second columns mounted against the right side of the base casing and said third and fourth columns mounted against said left side of the base casing such that each of said columns forms a substantially perpendicular support for one of the opposing ends of the cross beams, the tops of the columns contacting the opposing ends of the cross beams so that the load imposed by the display monitor will be supported by the first and second cross beams in the top case and then directed into the first, second, third, and fourth columns and thence into the bottom surface of the base casing;

the top surface of the top case of the housing resisting deformation due to the load of the display monitor, the housing thereby not interfering with insertion and removal of the portable computer within said rectangular opening.

5,347,426

ELECTRONIC DEVICE INCLUDING A PASSIVE ELECTRONIC COMPONENT

Salim Dermarkar, Saint Jean de Moirans, France; Xavier Dumant, Montreal, Canada, and Michel Lebailly, Bollene, France, assignors to Pechiney Recherche, Paris, France

Continuation of Ser. No. 927,730, Aug. 11, 1992, abandoned, which is a continuation of Ser. No. 682,958, Apr. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 362,366, Jun. 5, 1989, abandoned. This application Sep. 9, 1993, Ser. No. 118,176 Claims priority, application France, Sep. 13, 1988, 88 12548

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—708 **8 Claims**

1. An electronic device comprising:

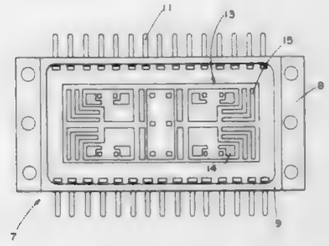
a) at least one heat-generating electronic component; and

b) a passive electronic component supporting said at least one heat-generating electronic component, said passive electronic component comprising:

a porous preform comprising particles of green silicon carbide or polygranular graphite, and

a metal filling the porosities of said preform by penetration of metal in liquid form followed by solidification, said metal selected from the group consisting of aluminum, an aluminum alloy, magnesium and a magnesium alloy,

said preform forming about 50 to 90% by volume of said passive electronic component,



said passive electronic component being formed of an isotropic composite made of two randomly oriented interpenetrating networks of a ceramic phase and a metallic phase, and having a coefficient of thermal expansion below about $1.3\times10^{-6}\,K^{-1}$ at 30°–400° C. and a density below about $3100\ kg.m^{-3}$.

5,347,427

CABINET ASSEMBLY

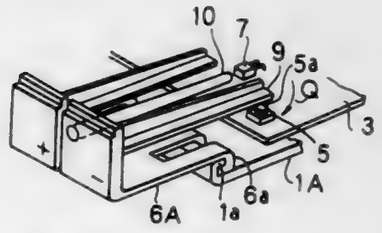
Hirotaka Kinoshita, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1993, Ser. No. 24,439

Claims priority, application Japan, Apr. 20, 1992, 4-125442; Dec. 9, 1992, 4-329274

Int. Cl.[5] H05K *5/00*

U.S. Cl. 361—752 **2 Claims**



1. A cabinet assembly comprising:

a cabinet;

a main wiring board provided with a control circuit and disposed within the cabinet;

switches for switching and adjusting the control circuit, mounted on the main wiring board;

a light emitting element for indicating actions of the control circuit, mounted on the main wiring board; and

keys capable of being pushed from outside the cabinet and each of said keys having a key top forming a portion of the external shape of the cabinet and a working arm integrally formed with and substantially perpendicular to the key top;

wherein each of said keys is provided integrally with an actuating rod for operating the corresponding switch when the respective key is pushed by flexure of the working arm such that the direction of the pressure applied to the respective key is parallel to the direction of flexure of the working arm, and the light emitted by the light emitting element is transmitted by a light transmitting member directly to the key top of the respective key to illuminate the key top.

5,347,428

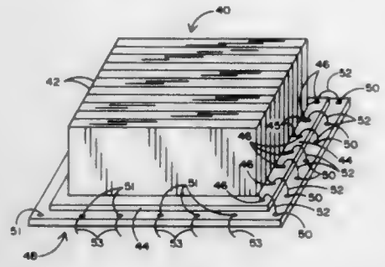
MODULE COMPRISING IC MEMORY STACK DEDICATED TO AND STRUCTURALLY COMBINED WITH AN IC MICROPROCESSOR CHIP

John C. Carson, Corona del Mar; Ronald J. Indin, Huntington Beach, and Stuart N. Shanken, Irvine, all of Calif., assignors to Irvine Sensors Corporation, Costa Mesa, Calif.

Filed Dec. 3, 1992, Ser. No. 985,837

Int. Cl.[5] H05K *7/02*

U.S. Cl. 361—760 **26 Claims**



1. A computer module comprising:

an integrated circuit microprocessor chip containing computer circuitry:

a stack of glued together integrated circuit memory chips, each containing memory circuitry dedicated to the computer module;

terminals formed on the microprocessor chip, including memory-interface terminals connected to the computer circuitry contained in the microprocessor chip;

the stack of memory chips having a planar access surface to which an array of spaced electrical leads extend from the memory circuitry;

means for electrically connecting each memory-interface terminal on the microprocessor chip to at least one of the leads at the access surface of the stack of memory chips; and

means for structurally integrating the stack of memory chips and the microprocessor chip to constitute a computer module.

5,347,429

PLASTIC-MOLDED-TYPE SEMICONDUCTOR DEVICE

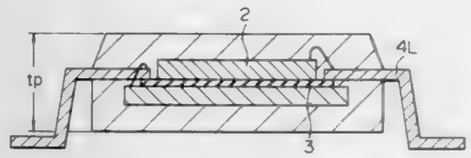
Ryuji Kohno, Ibaraki; Asao Nishimura, Ushiku; Makoto Kitano, Tsuchiura; Akihiro Yaguchi, and Nae Yoneda, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 791,194, Nov. 13, 1991, abandoned. This application May 28, 1993, Ser. No. 68,319

Claims priority, application Japan, Nov. 14, 1990, 2-308208

Int. Cl.[5] H05K *5/02*

U.S. Cl. 361—813 **10 Claims**



1. A plastic-molded-type semiconductor device including a plurality of semiconductor chips each having a circuit formed surface, metallic wires connected to electrode pads of said semiconductor chips, leads connected to said metallic wires, and only an insulating film interposed, without a tab, between said semiconductor chips and sealed in a resin member such that said insulating film is disposed on a circuit formed surface of one of said semiconductor chips which serves as a base with the other of said semiconductor chips being mounted on said

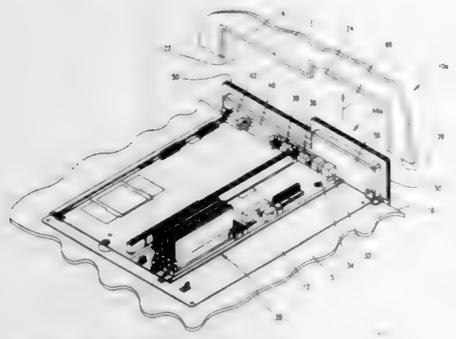
base through said insulating film with said circuit formed surface of each of said other semiconductor chips facing away from said insulating film such that said circuit formed surfaces of said one and said other of the semiconductor chips are directed in the same direction; end portions of said leads being bonded to a surface of said insulating film such that said end portions of the leads and said other of said semiconductor chips are disposed in a common plane on the surface of the insulating film member; and wherein all electrode pads of said semiconductor chips connected to said metallic wires are exposed to the circuit formed surface thereof.

5,347,430

COMPUTER CHASSIS CONSTRUCTION

James D. Curlee, and Jerry D. Gandre, both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Apr. 6, 1993, Ser. No. 43,312
Int. Cl.[5] H05K *9/00*
U.S. Cl. 361—816 **12 Claims**



1. Computer apparatus comprising;
a metal chassis having contiguous, perpendicular first and second walls having inner sides, said second wall having a cutout area formed therein; and
a unitary I/O output bracket member removably and complementarily received in and covering said cutout area, said unitary I/O output bracket member having:
a periphery cooperating with a peripheral wall edge portion of said cutout area to form therewith an EMI seal, and
a plurality of I/O connection openings configured and arranged to complementarily receive a plurality of I/O connector devices operatively mounted on a printed circuit board carried by said chassis.

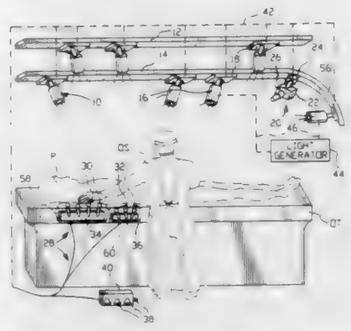
5,347,431

LIGHTING SYSTEM AND CAMERA FOR OPERATING ROOM

Ray A. Blackwell, 350 E. 17th St., New York, N.Y. 10003, and Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023

Filed Dec. 20, 1991, Ser. No. 810,831
Int. Cl.[5] F21V *21/14*
U.S. Cl. 362—11 **12 Claims**

1. A surgical lighting system, comprising:
light source means for emitting electromagnetic radiation, said light source means including an output portion and a remote light generator and additionally including a plurality of optical fibers connecting said light generator to said output portion;
support means for holding said output portion above an operating table in an operating room, said output portion being movably mounted to said support means;
drive means operatively coupled to said light source means for automatically moving said output portion relative to said support means;
activation means operatively connected to said drive means for controllably energizing said drive means in response to manipulations by a surgeon working at the operating table; and



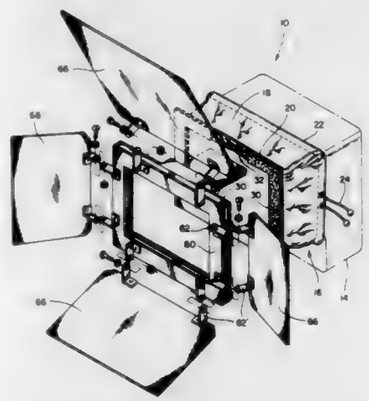
disposition means operatively linked to said activation means for enabling disposition thereof in proximity to the operating table.

5,347,432

PHOTOGRAPHIC LIGHTING CONTROL SYSTEM

Gary J. Chiavetta, 1212 N. 33rd Ave., Melrose Park, Ill. 60160

Filed Jun. 11, 1993, Ser. No. 75,644
Int. Cl.[5] F21V *21/00;* **G03B** *15/02*
U.S. Cl. 362—18 **10 Claims**



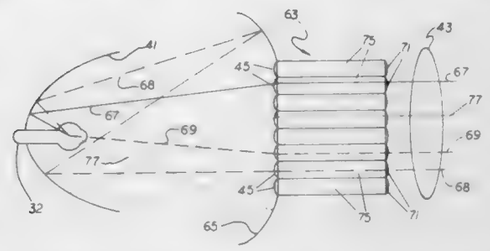
1. A system for controlling light emanating from a light source in a photographic situation, the system comprising a sleeve which is engageable over a lens of the light source for directing light therefrom in a predetermined manner to cause convergence of the light into a chosen path, the sleeve having a larger in diameter end incorporating a drawstring and a smaller in diameter end incorporating a strip of engaging material about a periphery thereof, means for engaging a converging assembly to a housing of the light source in a manner to cause all light emanating from the light source to pass through the converging assembly, the converging assembly comprising a base plate which is in the form of a picture frame and which includes a strip of engaging material on a back surface thereof by means of which it is engaged to sleeve and the base plate is adapted to engage a filter therein and having structure extending away from the lens therebehind in a manner to direct light from the lens substantially forward by limiting lateral scatter.

5,347,433

COLLIMATED BEAM OF LIGHT AND SYSTEMS AND METHODS FOR IMPLEMENTATION THEREOF

Steven R. Sedlmayr, 1948 Ellis, Mesa, Ariz. 85028

Filed Jun. 11, 1992, Ser. No. 898,951
Int. Cl.[5] F21V *13/04, 8/00*
U.S. Cl. 362—32 **20 Claims**



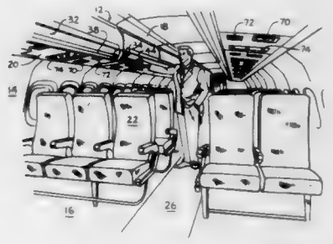
1. A system of producing a collimated beam of light having a substantially uniform flux intensity across substantially the entire beam, comprising:
a light source;
first and second reflecting means arranged on opposite sides of said light source along an optical axis, said second reflecting means including an opening positioned for receiving light from the light source and also from said first concave reflecting means, and said second reflecting means positioned for reflecting light back to said first reflecting means; and
a light integrating and collimating means including a plurality of light pipes located in said opening and juxtaposed as a fly-eye structure, each of said light pipes including a first lens and a second lens for bending light rays along a path generally parallel to the optical axis.

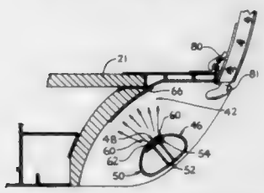
5,347,434

AIRCRAFT BAG-RACK WITH AN ILLUMINATED HANDRAIL

Samuel M. Drake, Buena Park, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jul. 6, 1992, Ser. No. 908,356
Int. Cl.[5] B60Q *1/00;* **B64D** *47/02, 11/00*
U.S. Cl. 362—73 **29 Claims**





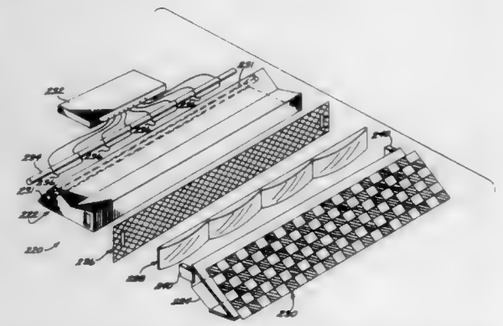
1. A combination compartment and handrail structure for a vehicle, comprising:
a compartment mounted on a vehicle structure;
a handrail providing generally full hand gripping thereof by a user;
a means for mounting said handrail on said compartment at a desired position relative to said compartment; and
a light, forming a part of said handrail about which the user may extend a full hand grip and illuminating at least a portion of said compartment and a desired portion of said handrail said compartment and handrail mounted generally along the length of said vehicle.

5,347,435

LINEAR LAMP HOLOGRAPHIC TRAPPED BEAM CENTER HIGH MOUNTED STOPLIGHT

Ronald T. Smith, Torrance, and Andrew Daiber, Stanford, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 22, 1992, Ser. No. 994,816
Int. Cl.[5] B60Q *1/26*
U.S. Cl. 362—80.1 **12 Claims**



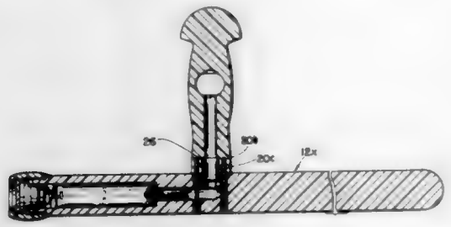
1. A holographic stoplight for a vehicle having a rear window, comprising:
a hologram mounted adjacent said rear window for diffracting playback illumination to produce a holographic stoplight image visible from behind the vehicle;
a light source for providing playback illumination, said source comprising a gas-filled lamp tube excited by electrical energy, wherein said playback illumination enters said light guiding means through an input aperture, and said light guiding means comprises an optical light guide and means for trapping said playback illumination through total internal reflection at air/light guilde interfaces, except light which is diffracted by said hologram into the ambient, wherein said optical light guide comprises a solid member of transparent material characterized by planar surfaces, and said hologram is affixed adjacent a first one of said surfaces;
an optical concentrator for collecting and collimating light generated by said light source to within a predetermined angular range;
light guiding means for guiding the collected and collimated light from said concerntrator to said hologram; and
wherein the efficiency of said hologram is graded, so that the hologram has a lower efficiency adjacent the Unput aperture than the hologram efficiency at a distance remote from said input aperture and further wherein the light source and the concentrator provide a substantially uniform illumination over the surface area of said hologram;

5,347,436

COMBINATION BATON/LIGHT EMITTING DEVICE

Arthur C. Clyde, Teaneck, N.J.; Andrew I. Sneider, New York, N.Y., and Patricia L. Watson, Teaneck, N.J., assignors to Clyde, Sneider & Watson, Ltd., New York, N.Y.

Filed Apr. 22, 1993, Ser. No. 51,155
Int. Cl.[5] A63B 15/02; F21L 1/00
U.S. Cl. 362—102 20 Claims



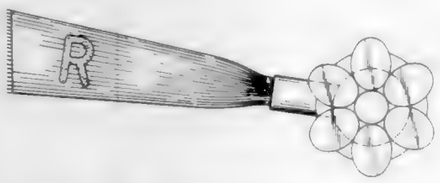
1. A combined flashlight-baton, comprising:
a stick portion and a handle portion orthogonal to said stick portion;
said stick portion including at one end thereof a hollow cylindrical chamber having a mouth opening at one end of said stick thereinto and a flashlight mechanism received within said hollow cylindrical chamber through said opening;
said flashlight mechanism comprising a metallic cylindrical member having a longitudinal slit, said cylindrical member being spring biased to widen the diameter thereof and said slit and fitably engaged with the inner wall of said chamber, first and second electrical contact members, said first electrical contact member including means urging said first electrical contact into electrical contact relationship with said metallic cylinder and a switch, means isolating said second electrical contact member from said cylindrical member and said first electrical contact and connected with said switch, and a light mechanism proximate to said one end completing an electrical circuit through said switch and an electrical supply means;
said handle portion having an axis transverse to the longitudinal axis of said stick portion and housing said switch, said handle portion having means therein for maintaining the location of said switch for operation with the same hand of the individual holding said combined flashlight-baton.

5,347,437

ELECTRONIC JEWELRY WITH INSCRIBED FIBER OPTIC TAIL

Lorraine A. Cocca; Gary L. Turbeville, both of 4999 NW. Fourth Ave., Boca Raton, Fla. 33431, and Cesare W. Brown, 6807 Calle Del Paz S., Boca Raton, Fla. 33433

Filed Jun. 11, 1993, Ser. No. 75,753
Int. Cl.[5] F21L 15/08
U.S. Cl. 362—104 18 Claims



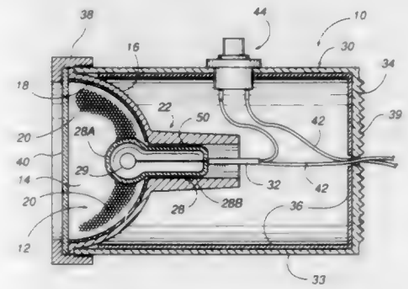
1. Electronic jewelry operable with a power source and having a fastener for attachment of the jewelry, the electronic jewelry comprising:
a cover for at least partially covering the power source and the fastener;
a light-emitting diode having leads electrically connectable to the power source to cause light to be emitted from the light-emitting diode;
a piece of ribbon containing a plurality of light-transmissive fibers, said piece of ribbon having a discontinuity of the light-transmissive fibers in the shape of a symbol; and
means for mounting one end of the ribbon to one end of the light-emitting diode and covering said light emitting diode, such that when light is transmitted from the light emitting diode, such light will be transmitted through the fibers and emitted around an edge of the symbol, but such light will not be emitted within other internal parts of the ribbon.

5,347,438

COMBINED ILLUMINATION AND SAFETY LAMP

Robert A. Lerner, 836 Santa Fe Ave., Albany, Calif. 94706

Filed Jun. 25, 1993, Ser. No. 82,674
Int. Cl.[5] F21L 7/00
U.S. Cl. 362—186 19 Claims



1. A lamp, comprising:
a bowl-shaped reflector, said reflector having a concave reflective front surface a back surface and an apex;
said reflector having an aperture extending therethrough at the apex thereof for mounting a light-source therein;
a housing enclosing said back surface of said reflector, at least a portion of said housing being transparent and including a color filter material;
a light-source mounted in said aperture, said light-source including a filament enclosed in a transparent envelope; and
said transparent envelope having a filament portion thereof extending beyond said front surface into said reflector and a neck portion thereof extending through said aperture beyond said back surface of said reflector, whereby a first portion of light from said incandescent light-source may escape via said neck portion of said transparent envelope through said aperture into said housing for illuminating said color filter material, thereby providing a color safety signal.

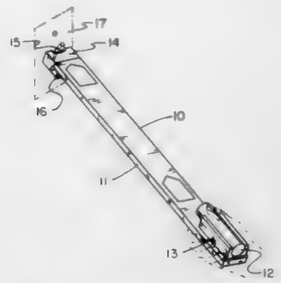
5,347,439

FLASHLIGHT HOLDER

James A. Warren, 3706 Amber Ave., Rowlett, Tex. 75088

Filed May 6, 1993, Ser. No. 57,518
Int. Cl.[5] F21L 7/00
U.S. Cl. 362—190 4 Claims

1. A new and improved flashlight holder which comprises: an elongated base member; said elongated base member having first and second opposed ends orthogonally related to a longitudinal axis defined by said elongated base member, said base member further having upper and lower opposed sides extending in the direction of said axis between said opposed ends thereof; means proximal to said first end of said base member to removeably affix a flashlight to said upper side thereof; and means on said second end of said base member to operatively engage a vertically-mounted electrical toggle switch;,
wherein said means to operatively engage said switch comprises an arcuate recess in said second end of said base member and a depending projection on said lower side of said base member, said depending projection having a first edge proximal to said arcuate recess, said depending projection having a second distal edge extending angularly rearwardly toward said first end of said base member transversely of said base member.

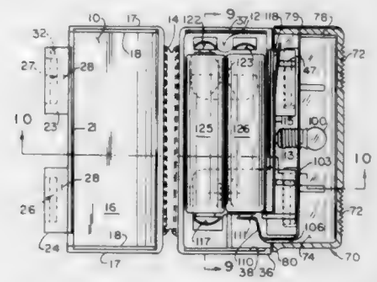


5,347,440

PORTABLE LIGHT

Stephen A. Roberts, Orange County, Calif.; Leo B. Roberts, St. Louis County, and Ronald R. Klawitter, Franklin County, both of Mo., assignors to Roberts Marketing, Inc., St. Louis, Mo.

Filed Apr. 12, 1993, Ser. No. 48,835
Int. Cl.[5] F21L 7/00
U.S. Cl. 362—200 13 Claims



1. A portable electric lamp comprising front and back surfaces and containing battery means to power a lamp bulb, an enclosure having a light-transmitting lens portion, said enclosure housing said lamp bulb, means for mounting said enclosure for sliding movement with respect to said body, and switch means responsive to said sliding movement to connect said bulb electrically to said battery means, said body being made of plastic and formed of two cavities, hinged along a long edge parallel to a long axis of said enclosure, said edge being on an opposite edge of said body from said means for mounting said enclosure.

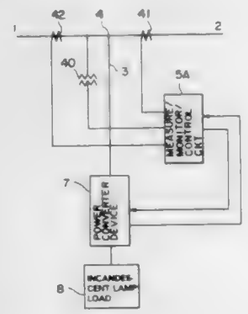
5,347,441

THYRISTOR CONVERTER SYSTEM WITH HIGHER HARMONICS SUPPRESSION

Makoto Terada; Isao Furo; Hiroshi Suzuki, and Isao Iyoda, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 583,199, Sep. 17, 1990, abandoned. This application Sep. 22, 1992, Ser. No. 948,496
Claims priority, application Japan, Sep. 18, 1989, 1-239837
Int. Cl.[5] H02J 1/02
U.S. Cl. 363—39 18 Claims

1. A converter system for higher harmonic suppression, adapted to be coupled to an AC power source, said system comprising:
a first input portion adaptable to be connected to an AC power source defining a power source side;
a second input portion interconnected with said first input portion adaptable to be connected to a system load defining an AC load side;
semiconductor converter circuit having a predetermined rise and fall time, said semiconductor converter circuit including semiconductor switching elements coupled across the AC power source for converting AC power supplied from the AC power source into DC power having an input connected to said first and second input portions and an output connectable to a branch load having a large time constant;



measurement means for measuring electrical parameters at said first input portion, said second input portion and a connection point of said first and second input portions and the converter circuit input;
means for determining control delay angels and overlap angles of voltage and current supplied from the AC power source; and
a control circuit, having inputs coupled to outputs of the measurement means, for controlling the switching operations of the semiconductor switching elements of the semiconductor converter circuit, wherein the control circuit means controls the delay angle of the semiconductor switching elements such that the higher harmonics contents of a current flowing into the power source side are minimized.

5,347,442

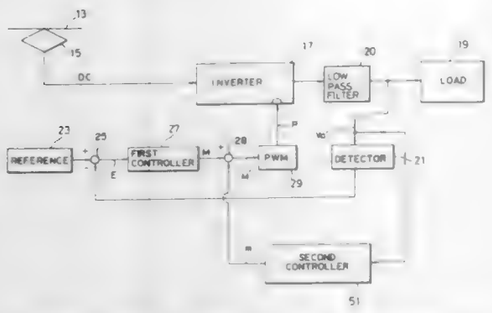
ELECTRIC POWER SUPPLY SYSTEM FOR ELECTRIC TRAIN WHICH REMOVES FLICKERING IN LIGHTING

Takuma Henmi, and Susumu Yamada, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed May 8, 1992, Ser. No. 879,913
Claims priority, application Japan, May 13, 1991, 3-107566
Int. Cl.[5] H02M 7/42
U.S. Cl. 363—41 5 Claims

1. An AC power supply system comprising:
an inverter for inverting DC power to AC power;
a filter for passing components of said AC power having a frequency lower than a cut-off frequency of said filter;
first detecting means for detecting an amplitude of an output of said filter;
second detecting means for detecting any deviation of said amplitude from a reference signal and outputting an error signal;
first control means for controlling said inverter in accordance with said error signal output from said second detecting means; and
second control means, connected to receive said output of said filter, for detecting and removing flickering components of low frequency from said output of said filter, said second control means comprising flickering components contained in said output of said filter;

a phase shifter for shifting a phase of said flickering components output from said flickering component passing means, said flickering components having experienced a phase lag as a result of passing through said flickering component passing means; and



an adder for adding together an output of said second control means and an output of said first control means so as to remove said flickering components from said error signal.

5,347,443

INVERTER APPARATUS AND A RESTARTING METHOD AT AN INSTANTANEOUS POWER FAILURE

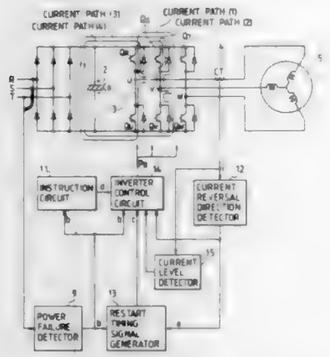
Masaharu Muramatsu, and Hiroshi Fujii, both of Chiba, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 34,883

Claims priority, application Japan, Mar. 19, 1992, 4-063051

Int. Cl.[5] **H02M** *3/24;* **H02P** *1/26*

U.S. Cl. 363—98 **8 Claims**



1. An inverter apparatus comprising:

residual voltage detection means for detecting a frequency and a phase of a residual voltage of an induction motor based on a direction of a current flowing in an induction motor connected to an output of the inverter apparatus by ON/OFF control of switching elements in one of an upper arm and lower arm of an inverter portion simultaneously from a time after elapse of a predetermined period of time from occurrence of a power failure until a time of determination of restarting timing; and

restart means for restarting said induction motor at the frequency and the phase detected by said residual voltage detection means in determining the restart timing based on said residual voltage detection means and the recovery timing of said power failure.

5,347,444

OUTPUT CIRCUIT OF PWM INVERTER

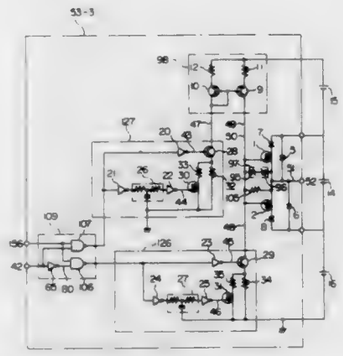
Kazuyuki Takada, Hirakata, and Toru Kishi, Yamatokoriyama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 29, 1993, Ser. No. 143,504

Claims priority, application Japan, Oct. 30, 1992, 4-292472; Oct. 30, 1992, 4-292473; Dec. 8, 1992, 4-327769

Int. Cl.[5] **H02M** *5/44*

U.S. Cl. 363—98 **24 Claims**



6. An output circuit of a PWM inverter comprising:

a first power MOS-FET of N channel type, a second power MOS-FET of P channel type, and first, second, third and fourth diodes;

current mirror means **1** including a current flowing-in terminal and first and second current flowing-out terminals and which functions to flow out from said first current flowing-out terminal a current in association with a current flowing out from said second current flowing-out terminal;

current control means **3** including a current input terminal and for controlling a current flowing in from said current input terminal;

current control means **2** including a current input terminal and for controlling a current flowing in from said current input terminal;

a DC main power supply; and

a first DC power supply having a negative terminal connected to a positive terminal of said DC main power supply;

said first power MOS-FET having a drain connected to a cathode of said third diode;

said third diode having an anode connected to a cathode of said first diode and the positive terminal of said DC main power supply;

said second power MOS-FET having a drain connected to an anode of said fourth diode;

said fourth diode having a cathode connected to an anode of said second diode and a negative terminal of said DC main power supply;

said first power MOS-FET having a source connected to an anode of said first diode, a source of said second power MOS-FET and a cathode of said second diode;

said first power MOS-FET having a gate connected to a gate of said second power MOS-FET, said first current flowing-out terminal of said current mirror means **1** and said current input terminal of said current control means **2**, said second current flowing-out terminal of said current mirror means **1** being connected to said current input terminal of said current control means **3**;

said first DC power supply having a positive terminal connected to said current flowing-in terminal of said current mirror means **1**;

a resistor and voltage limit means having a zener phenomenon for a positive and negative bidirectional voltage being

connected in parallel between said gate and source of said first or second power MOS-FET;

said current mirror means **1** and said current control means **2** having:

a first state in which a current flowing out from said first current flowing-out terminal of said current mirror means **1** is a first current value and a current flowing in from said current input terminal of said current control means **2** is a seventh current value;

a second state in which a current flowing out from said first current flowing-out terminal of said current mirror means **1** is a second current value and a current flowing in from said current input terminal of said current control means **2** is an eighth current value;

a third state in which a current flowing out from said first current flowing-out terminal of said current mirror means **1** is a fifth current value and a current flowing in from said current input terminal of said current control means **2** is a third current value;

a fourth state in which a current flowing out from said first current flowing-out terminal of said current mirror means **1** is a sixth current value and a current flowing in from said current input terminal of said current control means **2** is a fourth current value; and

a fifth state in which a current flowing out from said first current flowing-out terminal of said current mirror means **1** is a ninth current value and a current flowing in from said current input terminal of said current control means **2** is also said ninth current value;

said first current value being larger than said seventh current value;

said second current value being larger than said eighth current value;

said third current value being larger than said fifth current value;

said fourth current value being larger than said sixth current value;

a different between said first current value and said seventh current value being larger than a difference between said second current value and said eighth current value;

a difference between said third current value and said fifth current value being larger than a difference between said fourth current value and said sixth current value;

said first state capable of proceeding to only said second and fifth states;

said second state capable of proceeding to only said third and fifth states;

said third state capable of proceeding to only said fourth and fifth states;

said fourth state capable of proceeding to only said first and fifth states; and

said fifth state capable of proceeding to at least said first and third states.

5,347,445

METHOD OF ADAPTIVE CONTROL OF POSITION-ADJUSTABLE DRIVES IN WHICH DRIVE DISTANCES ARE DIVIDED INTO EVALUATION ZONES AND DRIVE PARAMETERS ARE DETERMINED BY TABLE LOOKUP ADDRESSING

Bernhard Moosmann, Hardt; Jürgen Fischer, Schramberg-S., and Wolfgang Bauspiess, Villingen, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Dec. 17, 1991, Ser. No. 808,668

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1990, 4040796

Int. Cl.[5] **G05B** *13/02*

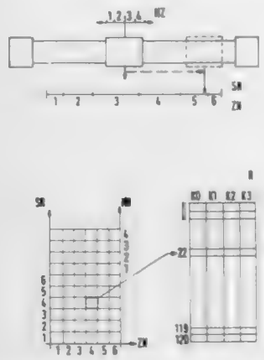
U.S. Cl. 364—148 **18 Claims**

1. A method for the adaptive automatic control of position-adjustable drives for determining parameters, optimized from the drive motion comprising the steps.

evaluating a drive distance determining an operational course between its stops points; subdividing said drive distance into calculated, consecutively numbered evaluation zones; storing values of the evaluation zones in a data memory storage;

determining the parameters describing the drive motion with the aid of the thus calculated evaluation zones; assigning the parameters describing the drive motion in each case into a consecutively numbered zone system;

storing the parameters in the data memory storage;



deriving and assigning a data address from the number of a zone of a first zone system and from the number of a zone of a second zone system;

storing an automatic control parameter field for the drive motion in the memory storage;

addressing the automatic control parameter field with the derived and assigned data address for obtaining control parameters;

entering the control parameters into an automatic control circuit for determination of a set point.

5,347,446

MODEL PREDICTIVE CONTROL APPARATUS

Yutaka Iino, and Junko Ohya, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

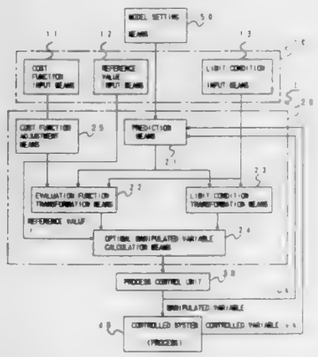
PCT No. PCT/JP92/00131, § 371 Date Oct. 8, 1992, § 102(e) Date Oct. 8, 1992, PCT Pub. No. WO92/14197, PCT Pub. Date Aug. 20, 1992

PCT Filed Feb. 10, 1992, Ser. No. 938,256

Claims priority, application Japan, Feb. 8, 1991, 3-017527; Feb. 20, 1991, 3-047494; Apr. 8, 1991, 3-075333; Jul. 30, 1991, 3-190162

Int. Cl.[5] **G05B** *13/04, 13/02*

U.S. Cl. 364—149 **21 Claims**



1. A model predictive control apparatus comprising:

prediction means in which a model approximating a dynamic characteristic of a controlled system having a plu-

rality of manipulated variables and controlled variables is used to determine a predictive equation of future values of the controlled variables; and

arithmetic means adapted to transform limit conditions of a control condition to manipulated variables, and to calculate a manipulated variable to minimize an cost function in a quadratic form relating to a difference between a future reference value and a control variable, and a manipulated variable, set on the basis of said predictive equation while satisfying said limit conditions, thus to give the determined manipulated variable to said controlled system.

5,347,447

ADAPTIVE CONTROL SYSTEM AND METHOD THEREOF

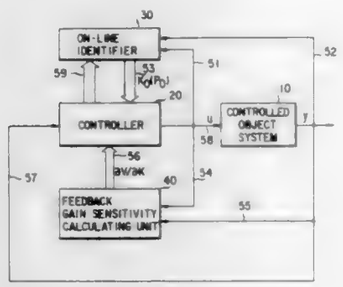
Junichi Kiji; Naoki Imasaki, both of Urayasu, and Tsunekazu Endo, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 27, 1992, Ser. No. 966,887

Claims priority, application Japan, Oct. 28, 1991, 3-281607; Jul. 29, 1992, 4-202610

Int. Cl.[5] G05B *13/02*

U.S. Cl. 364—152 **6 Claims**



4. An adaptive control method comprising the steps of:

estimating a system parameter of a controlled object system;

providing an initial value for correction of a feedback gain by use of the estimated system parameter;

correcting the state feedback gain by use of a proper initial value which causes a sensitivity of the feedback gain to be set to zero; and

effecting the estimation of the system parameter again when the sensitivity of the feedback gain deviates from zero.

5,347,448

MULTIPROCESSOR SYSTEM FOR HYDRAULIC EXCAVATOR

Sang-Yop Nam, Seoul, Rep. of Korea, assignor to Samsung Heavy Industries Co., Ltd., Changwon, Rep. of Korea

Filed Nov. 25, 1992, Ser. No. 981,211

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—167.01 **1 Claim**

1. A multiprocessor system for a hydraulic excavator, comprising

a main CPU module for executing an operation function of excavator control data so as to assure proper management and security of an engine;

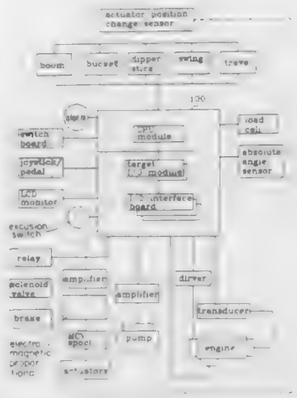
an input control means connected to the main CPU module through a main bus for processing external input signals;

an engine and pump control means connected to the main CPU module through the main bus for receiving data supplied from external sensors and controlling the engine and pump;

a boom position control means for positioning a boom in place and for controlling execution of an operation by a boom;

a dipper position control means for executing a dipper positioning control and for controlling execution of an operation by a dipper;

a bucket position control means for executing a bucket positioning control and for controlling execution of an operation by a bucket;



a swing position control means for controlling operation and positioning of a swing part; and

a travel position control means for controlling operation of a travel part.

5,347,449

METHOD FOR ELIMINATING MALFUNCTIONS, IN PARTICULAR IN SPINNING MACHINES

Urs Meyer, Niederglatt, and Roland Beringer, Hausen b. Brugg, both of Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

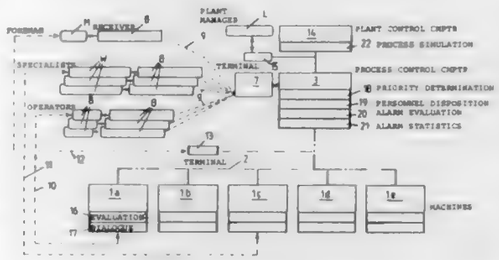
PCT No. PCT/CH91/00097, § 371 Date Dec. 18, 1991, § 102(e) Date Dec. 18, 1991, PCT Pub. No. WO91/16481, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 23, 1991, Ser. No. 778,813

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1990, 4012930; Switzerland, Jan. 23, 1991, 0189/91-5; Apr. 5, 1991, 1025/91-2

Int. Cl.[5] G05B *9/02;* **G06F** *15/46;* **D01H** *13/14*

U.S. Cl. 364—185 **23 Claims**



1. An alarm system for eliminating malfunctions in textile machines, comprising:

a control unit configured with each said textile machine, said control unit comprising evaluating means for continuously classifying types of malfunctions occurring at said textile machine, assigning a priority to the malfunctions, designating a specific type of operator necessary to correct the malfunctions, and generating a corresponding malfunction signal containing information on the classification, priority, and type operator related to the malfunctions;

a central process control computer in communication with each said control unit, said process control computer receiving said malfunction signals from all of said textile machines, said central process control computer comprising program means for categorizing, and prioritizing all received said malfunction signals from said control units and selecting particular operators based on priority of malfunctions needed to correct the malfunctions, said central process control computer controlling elimination of the malfunctions by priority;

an alarm call transmitter system operably configured with and controlled by said process control computer, said transmitter system comprising means for individually summoning to the appropriate malfunctioning textile machines one or more specific operators selected by said central process control computer, said summoning means identifying to the operators the respective malfunctions occurring at said textile machines, said transmitter system including receivers carried by the operators for receiving alarm signals from said alarm call transmitter system.

5,347,450

MESSAGE ROUTING IN A MULTIPROCESSOR COMPUTER SYSTEM

Steven F. Nugent, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 752,957, Aug. 28, 1991, which is a continuation of Ser. No. 298,551, Jan. 18, 1989. This application Aug. 19, 1993, Ser. No. 108,254

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—200 **12 Claims**

4. In a computer system having a plurality of nodes including a first node, a second node, and a third node, each node of said plurality of nodes having a router coupled to said each node, each router including at least one channel coupling said each router to another router, said each router for routing information between nodes of said plurality of nodes, a first router being coupled to said first node, a second router being coupled to said second node, a third router being coupled to said third node, each node of said plurality of nodes having a unique node address assigned to said each node, said first router for communicating information to a destination node in said computer system over a route comprising a series of channels, said first router including at least two of said channels, said at least two channels including a first channel and a second channel, said first channel coupling said first router to said second router, said second channel coupling said first router to said third router, each channel having a channel dimension corresponding to said each channel, said each channel dimension being a function of the addresses of said first node and said destination node, a method for communicating information in said computer system comprising the steps of:

(1) reserving route from said first node to said destination node, said route comprising a series of channels of increasing channel dimension, said step of reserving said route performed by said first router, said step of reserving said route further including the steps of:

(a) receiving relative address information from said first node, said relative address information received by said first router;

(b) examining a lowest order bit of said relative address information, said lowest order bit indicating said information is to be transmitted in a first channel dimension, said examining step being performed by said first router;

(c) reserving said first channel for transmission of said information, said first channel corresponding to said first channel dimension;

(d) sending said relative address information from said first router to said second router on said first channel;

(e) examining said relative address information at said second router beginning at a bit position corresponding to a channel higher in dimension than said first channel dimension a set bit indicating said address information is to be transmitted in a second channel dimension higher than said first channel dimension, said second channel dimension corresponding to a third channel, said third channel coupling said second router to a fourth router;

(f) reserving said third channel for transmission of relative address information received on said first channel;

(g) receiving said relative address information on said third channel, said relative address information received by said fourth router;

(h) repeating steps (e) through (g) for successive routers until said relative address information arrives at said destination node;

(2) said destination node acknowledging the availability to accept information from said first node by transmitting acknowledgment information back to said first node;

(3) communicating said information from said first node to said destination node, said step of communicating said information performed by said first router;

(4) releasing said reserved route from said first node to said destination node through said successive routers along said reserved route, said step of releasing being initiated by said first router.

5,347,451

ELECTRONIC CASH REGISTER HAVING AUXILIARY FILE CONTAINING INFORMATION WHICH IS TRANSFERRABLE TO AN ARTICLE FILE TO REDUCE OPERATOR ENTRIES

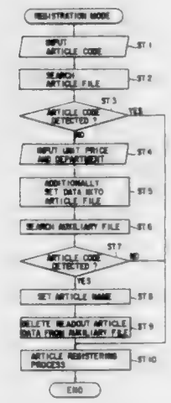
Yasuhiro Fujiwara, Mishima; Ryuuichi Fukuoka, Ichihara, and Ryuuichirou Masui, Tokyo, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jul. 31, 1992, Ser. No. 923,850

Claims priority, application Japan, Aug. 8, 1991, 3-199296; Oct. 7, 1991, 3-259460; Mar. 27, 1992, 4-071407

Int. Cl.[5] G06F *15/21*

U.S. Cl. 364—405 **13 Claims**



1. An electronic cash register comprising:

memory means for storing an article file in which a plurality of first article data for various articles are filed; and

circuit means for performing sales registration on the basis of the article file stored in said memory means;

said memory means having an auxiliary file stored therein and means for filing a plurality of second article data, each of said second article data containing an article code and an article name; and

said circuit means includes:

input means for inputting at least an article code and information related to one of said articles; and

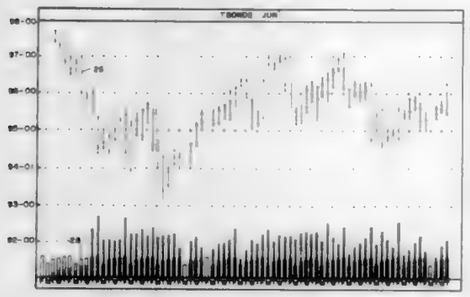
processing means for reading out that one of said plurality of second article data from the auxiliary file which is identified by an article code input from said input means, for producing first article data by appending predetermined items of information input from said input means to the article code and the article name contained in the read second article data, and for setting the produced first article data in said article file.

5,347,452

METHOD FOR PROVIDING A VISUAL DISPLAY OF CURRENT TRADING VOLUME AND CUMULATIVE AVERAGE TRADING VOLUME FOR PRESELECTED TIME INTERVALS

William P. Bay, Jr., 46 S. Saint Andrews Dr., Ormond Beach, Fla. 32174

Filed Jul. 12, 1991, Ser. No. 729,041
Int. Cl.[5] G06F *15/24*
U.S. Cl. 364—408 **6 Claims**



1. A method for displaying market trading volume in selected commodities for developing a priori knowledge of price trends from abnormal trading volume comprising the steps of:

gathering historical data representative of an average volume of trades of a predetermined market item for each of a plurality of preselected time intervals;

generating a graph comprising a set of first sequential markers, each of the first markers corresponding to one of the preselected time intervals and having an amplitude representative of the average volume of trades of the predetermined item during each preselected time interval taken over a predetermined number of the preselected time intervals;

generating a set of second markers substantially concurrently in time with the corresponding preselected time intervals and positioning the second markers on the graph in proximity to corresponding ones of the first markers, respectively, each of the second markers having an amplitude representative of the volume of trades in the preselected item during the most recent ones of the preselected time intervals with the difference in amplitude being indicative of trade volume deviation from average trade volume;

comparing the amplitude of the second markers to the amplitude of corresponding ones of the first markers to determine differences therebetween; and

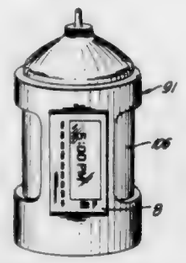
predicting price movements in the predetermined item from the amplitude differences between the first and second markers.

5,347,453

PORTABLE PROGRAMMABLE MEDICATION ALARM DEVICE AND METHOD AND APPARATUS FOR PROGRAMMING AND USING THE SAME

Federico A. Maestre, P.O. Box 2206, San Juan, P.R. 00902

Filed Mar. 30, 1992, Ser. No. 860,414
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413 **29 Claims**



1. A portable medication alarm device for use in the administration of an eye medication prescribed to a patient which comprises:

a casing of physically thin dimensions;

data storage means, disposed in said casing, for storing data representative of at least one prescribed eye medication dosage schedule specifying a prescribed administration time, a prescribed dosage amount and a prescribed administration route for each eye medication dosage to be administered to said patient;

data programming means, disposed in said casings, for programming in said data storage means, data representative of said prescribed eye medication dosage schedule;

timing means, disposed in said casing, for timing the occurrence of each said prescribed administration time specified in said prescribed eye medication dosage schedule;

alarm signal generating means, disposed in said casing, for generating a dosage alarm signal in response to the timed occurrence of each said prescribed administration time;

display means, disposed in said casing, for visually displaying in response to the timed occurrence of each said administration time, a graphical representation of the prescribed dosage amount and the administration route for said medication dosage specified in said prescribed eye medication dosage schedule; and

an eye medication dispenser bottle holder having a base portion,

an upper portion with a substantially circular opening,

a side wall portion connecting said base portion and said upper portion,

an inner cavity accessible through said substantially circular opening, and adapted for slidable receipt of an eye medication dispenser bottle having flexible side walls and containing a quantity of said eye medication,

at least one side wall cut-out portion formed in said side wall portion, for permitting said patient to squeeze and deform the flexible side walls of said eye medication dispenser bottle so as to manually express from said eye medication dispenser bottle, a number of drops of eye medication in accordance with the prescribed dosage amount displayed on said display means, and to administer said drops into the eyes of said patient in accordance with the prescribed administration route visually displayed on said display means, and

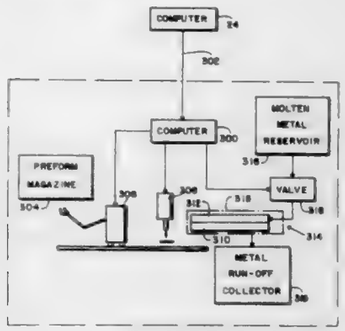
said casing being mounted to either said base portion, said upper portion or said side wall portion of said eye medication dispenser bottle holder.

5,347,454

METHOD, SYSTEM AND MOLD ASSEMBLY FOR USE IN PREPARING A DENTAL RESTORATION

David R. Mushabac, 919 Ocean Ave., Brooklyn, N.Y. 11226

Continuation-in-part of Ser. No. 507,162, Apr. 10, 1990, and Ser. No. 526,512, May 21, 1990, Pat. No. 5,224,049. This application Aug. 21, 1990, Ser. No. 569,923
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.280 **5 Claims**



1. A method for use in preparing dental appliances, comprising the steps of:

automatically receiving a plurality of electrical signals encoding geometric specifications of a plurality of dental prostheses, said specifications including dimensions and shape of tooth preparations at dental sites at which said prostheses are to be affixed and configuration of said prostheses;

automatically calculating from said geometric specifications additional geometric specifications of a common nearest net shape from which all of said plurality of dental prostheses may be machined;

upon completing said step of calculating, providing a pair of mold components to produce, in cooperation with one another, a mold cavity having dimensions and configuration corresponding at least substantially to dimensions and configuration of said common nearest net shape;

operating a robotic device to automatically place said first mold component and said second mold component in predetermined relative positions to form said mold cavity;

automatically introducing into said mold cavity a quantity of a fluidic solidifiable dental material; and

removing a prosthesis form from said mold cavity upon solidification of the dental material with which said mold cavity is filled.

5,347,455

SCINTILLATION CAMERA

Takashi Ichihara, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

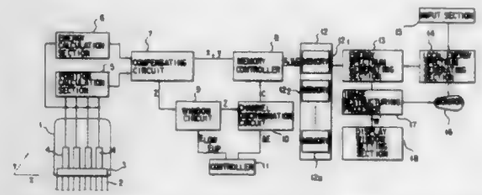
Filed Oct. 22, 1993, Ser. No. 139,812
Claims priority, application Japan, Oct. 23, 1992, 4-285804
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.24 **15 Claims**

1. A scintillation camera comprising:

a camera body for detecting a γ-ray emitted from a radioisotope provided to a human body to be examined;

means for measuring an incident position of the γ-ray and its density based on the detection result of said camera body; and

means for generating a density distributions of the γ-ray for every incident position based on the measurement result



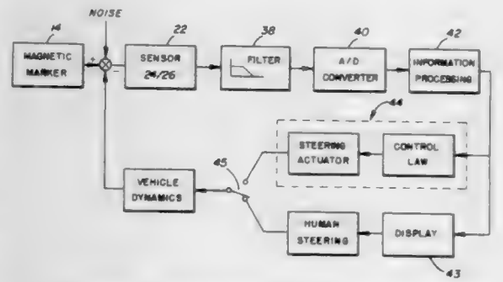
of said measuring means, thereby obtaining the density distributions of the γ-ray for every incident position.

5,347,456

INTELLIGENT ROADWAY REFERENCE SYSTEM FOR VEHICLE LATERAL GUIDANCE AND CONTROL

Wei-bin Zhang, Richmond, and Robert E. Parsons, Walnut Creek, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed May 22, 1991, Ser. No. 704,294
Int. Cl.[5] G05D *1/03;* **G06F** *15/50*
U.S. Cl. 364—424.02 **29 Claims**



1. A direction sensing method for controlling the lateral displacement of a vehicle moving along a pathway having embedded therein a series of magnetic markers, the method comprising the steps of:

positioning a first magnetic field sensor in the vehicle for determining a vertical component of the magnetic field strength at one of the magnetic markers;

positioning a second magnetic field sensor in the vehicle for determining a horizontal component of the magnetic field strength at the same one of the magnetic markers; and

correlating said determined vertical and horizontal components of the magnetic field strength to obtain the lateral displacement of the vehicle.

5,347,457

METHOD AND APPARATUS FOR CONTROLLING VEHICLE SUSPENSION SUCH THAT SUSPENSION CHARACTERISTICS ARE CHANGED AT A POINT IN TIME WHEN A VEHICLE WHEEL REACHES A ROAD SURFACE IRREGULARITY DETECTED IN FRONT OF THE VEHICLE

Tadao Tanaka; Takao Morita; Akihiko Togashi; Naohiro Kishimoto, and Hiroaki Yoshida, all of Aichi, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1991, Ser. No. 760,160
Claims priority, application Japan, Sep. 18, 1990, 2-248418
Int. Cl.[5] B60G *17/00, 17/08*
U.S. Cl. 364—424.05 **26 Claims**

15. A vehicular suspension control apparatus for controlling a suspension having at least one of spring rigidity and damper

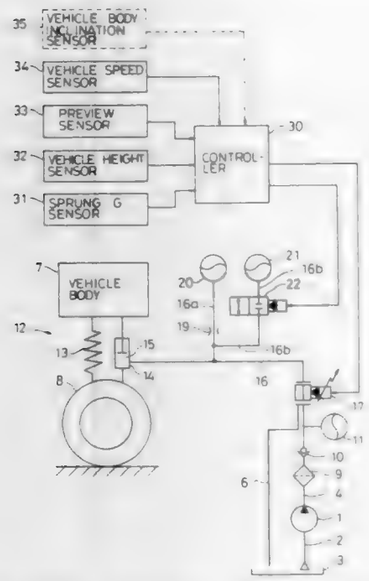
rigidity characteristics, which is provided between at least one wheel and a body of a vehicle, comprising:

suspension characteristic changing means for changing at least one of said spring rigidity and damper rigidity characteristics of said suspension;

a forward road surface sensor means attached to said vehicle body for detecting an irregularity of a road surface located in front of said vehicle body at a predetermined distance from said sensor when said vehicle body is at a predetermined height and a predetermined inclination, said predetermined height and said predetermined inclination jointly referred to as a predetermined attitude;

a vehicle speed sensor for detecting a vehicle speed;

control means, responsive to said vehicle speed sensor, for calculating a point in time when said wheel reaches the irregularity of the road surface, in accordance with said vehicle speed detected by said vehicle speed sensor, when the irregularity of the road sensor is detected by said forward road surface sensor, and delivering a command signal, for lowering at least one of said spring rigidity and said damper rigidity characteristics of said suspension, to



said suspension characteristic changing means not later than said calculated point in time; and

vehicle body attitude sensing means for detecting a vehicle height and an inclination of said vehicle body;

wherein said control means corrects said predetermined distance in accordance with a variation of said detected vehicle height and said detected vehicle body inclination from said predetermined attitude, and calculates said point in time in accordance with said corrected predetermined distance and said vehicle speed detected by said vehicle speed sensor;

wherein said vehicle includes front and rear wheels;

wherein said vehicle body attitude sensing means includes vehicle height sensing means for detecting vehicle heights at least at the respective locations of said front and rear wheels; and

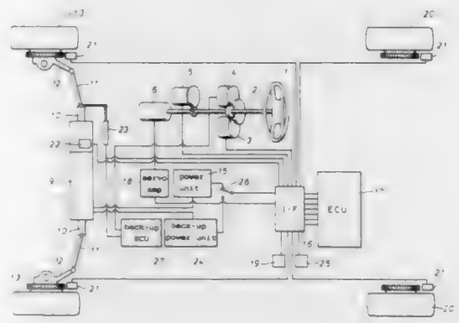
wherein said control means executes said correction of said predetermined distance when any of said vehicle heights detected by said vehicle height sensing means deviates from a range defined by predetermined upper and lower limit values.

5,347,458

VEHICLE STEERING CONTROL SYSTEM

Mitsuya Serizawa, and Yorihisa Yamamoto, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1991, Ser. No. 764,787
Claims priority, application Japan, Sep. 25, 1990, 2-255696
Int. Cl.[5] B62D *5/04*
U.S. Cl. 364—424.05 **6 Claims**



3. A steering control system for a vehicle comprising:

a steering wheel;

a steering mechanism for steering steerable wheels;

a first powered actuator for actuating said steering mechanism according to a steering input from said steering wheel; a second powered actuator for applying a reaction force T to said steering wheel; and

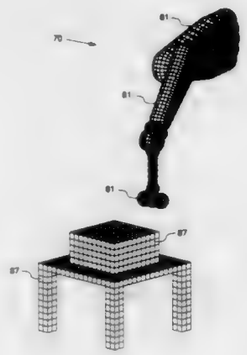
said reaction force T is represented by a mathematical function comprising an acceleration term which is proportional to an angular acceleration of said steering wheel, a velocity term which is proportional to an angular velocity of said steering wheel, a proportional term which is proportional to an angular displacement of said steering wheel, and a constant term which is constant in value but changes sign depending on said angular displacement of said steering wheel from a neutral position.

5,347,459

REAL TIME COLLISION DETECTION

Michael A. Greenspan, Ottawa, and Nestor Burtnyk, Kanata, both of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Mar. 17, 1993, Ser. No. 32,314
Int. Cl.[5] B25J *9/00;* **G06F** *15/72*
U.S. Cl. 364—461 **9 Claims**



1. In a device having one or more moveable elements residing within a finite space, a method of detecting a collision state between an object within the finite space and a model of the one or more moveable elements, comprising the steps of:

(a) determining relative strengths of a set of discrete points throughout the space, the relative strength of any point being a measure of the distance from that point to the object;

(b) storing values representative of the relative strengths in a memory;

(c) determining a set of values of relative strengths of a set of reference points by approximating a volume occupied by the model of the one or more moveable elements by a set of spheres, each sphere being centered at one of the reference points, the relative strength value of each reference point, corresponding to a radius of a sphere centered at that point;

(d) storing the set of values in a memory;

(e) identifying the discrete points that correspond in location to each of the reference points; and,

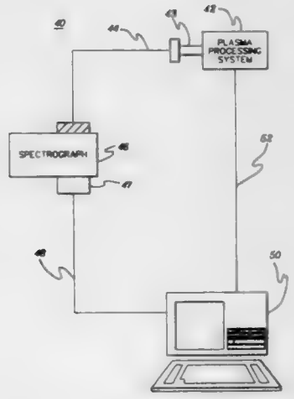
(f) comparing the stored values representative of the relative strengths of the reference points with the stored values representative of the relative strengths of the corresponding discrete points in the space, a collision state being detected when the ratio of any of the compared values representative of the relative strengths of the reference points and the values representative of the relative strengths of the corresponding discrete points in the space is greater than or equal to 1.

5,347,460

METHOD AND SYSTEM EMPLOYING OPTICAL EMISSION SPECTROSCOPY FOR MONITORING AND CONTROLLING SEMICONDUCTOR FABRICATION

George G. Gifford, Bethel, Conn., and Brock E. Osborn, Hyde Park, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 25, 1992, Ser. No. 935,076
Int. Cl.[5] G06F *15/46;* **C23C** *14/00*
U.S. Cl. 364—468 **40 Claims**



31. A closed loop system for manufacturing a semiconductor, said closed loop system comprising:

semiconductor manufacturing apparatus including a fabrication chamber and apparatus for generating a plasma process therein;

at least one electronically adjustable mechanism for controlling plasma processing within said fabrication chamber;

means, associated with said fabrication chamber, for collecting an electromagnetic wavelength spectra from within said fabrication chamber while plasma processing is occurring therein, said collected spectra comprising wavelength and relative intensity data;

means for determining an intensity peak location for at least some of the different electromagnetic wavelengths represented by said wavelength data;

processor means coupled to said collecting means and said determining means for automatically identifying using a Markov random field model at least one vaporized species contained within said chamber during plasma processing using said wavelength and relative intensity data and said intensity peak location information; and

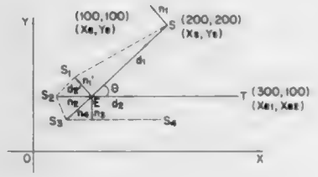
real-time feedback control means responsive to said processor means for regulating within predetermined limits said plasma processing occurring within said fabrication chamber based on said wavelength and relative intensity data, located peak information and identified vaporized species, said feedback control means being coupled to said at least one electronically adjustable mechanism and including means for electronically adjusting said at least one adjustable mechanism to maintain said plasma processing occurring within said fabrication chamber within said predetermined limits.

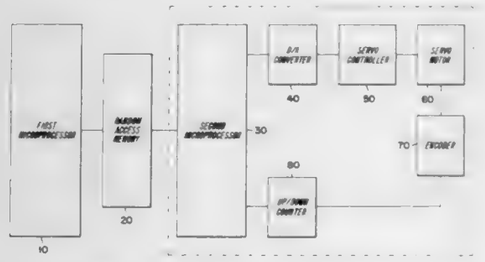
5,347,461

TOOL TRAVEL PATH CREATING METHOD

Jin I. Song, Incheon, and Moon Kang, Suwon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 17, 1993, Ser. No. 122,666
Claims priority, application Rep. of Korea, Sep. 18, 1992, 92-17063
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.29 **10 Claims**





1. A tool travel path creating method for a control device, said method comprising the steps of:

reading a G-code program;

determining whether or not any correction command is included in the read G-code program;

determining whether or not an interior angle between a first vector, from a starting point of correction to a work starting point, and a second vector, from the work starting point to a work ending point, is acute when any correction command is included in the read G-code program;

if said interior angle is acute, creating a tool travel path to be corrected in accordance with the following steps:

calculating and storing data for a third vector starting from the work starting point and with a direction perpendicular to said first vector and the same length as the radius of the tool;

calculating and storing data for a fourth vector starting from the work starting point and formed by adding said second vector to an intermediary vector with the same

direction as said second vector and the same length as the radius of the tool;

calculating and storing data for a fifth vector starting from the work starting point and with a direction perpendicular to said second vector and the same length as the radius of the tool; and,

calculating and storing data for a sixth vector starting from the work starting point and with the same direction as said first vector and a length of $2\frac{1}{2}$ of the radius of the tool.

5,347,462

METHOD FOR MACHINING PRINTED CIRCUIT BOARD

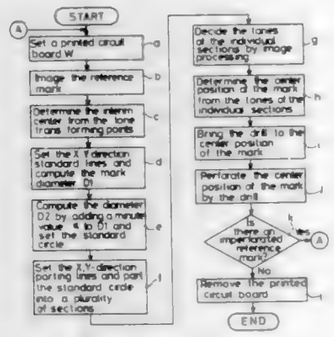
Kiyoshi Okuda, and Masatoshi Araki, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1993, Ser. No. 28,883

Claims priority, application Japan, Mar. 11, 1992, 4-052718

Int. Cl.[5] **G06F** *15/46;* **B23B** *49/04*

U.S. Cl. 364—474.34 **10 Claims**



3. A method of processing a printed circuit board, wherein the board has a mark thereon with a first distinguishing tone and the board surrounding the mark has a second distinguishing tone, said method comprising the steps of:

producing an image of said mark with image processing means,

detecting intersections first and second axes at a periphery of the image, averaging the distances between said intersections, on each of said first and second axes, to determine first and second diameters on said first and second axes and an interim center,

averaging said first and second diameters to determine a mark diameter,

adding a predetermined value to said mark diameter to determine a standard circle diameter,

centering a standard circle of said standard circle diameter at said interim center,

separating said standard circle with equidistantly spaced lines extending parallel to said first and second axes to form a plurality of separate areas,

determining a tone of each of said areas as a function of the ratio of the first and second tones therein,

averaging the determined tones of said areas in directions parallel to said first and second axes to determine a center position, and

machining said printed circuit board using a position thereon corresponding to said center position as a reference.

5,347,463

SYSTEM AND METHOD FOR LINE PRODUCTION MANAGEMENT

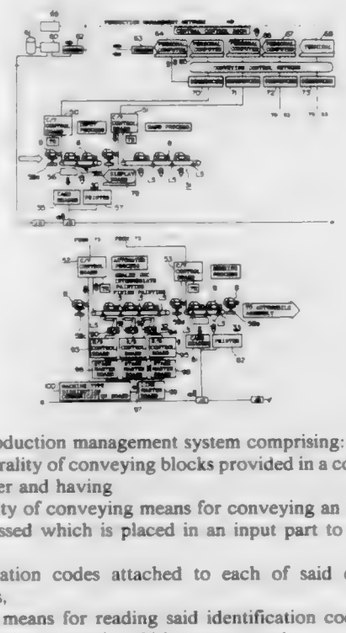
Shunji Nakamura, and Toru Sakai, both of Suzuka, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1991, Ser. No. 722,606

Claims priority, application Japan, Jul. 3, 1990, 2-176155; Aug. 3, 1990, 2-206123; Aug. 3, 1990, 2-206124; Aug. 3, 1990, 2-206125; Sep. 13, 1990, 2-243594; Sep. 13, 1990, 2-243595; Sep. 13, 1990, 2-243596; Sep. 13, 1990, 2-243597; Sep. 13, 1990, 2-243599; Oct. 18, 1990, 2-280154

Int. Cl.[5] **G06F** *15/46;* **B65G** *43/00;* **G07B** *15/02*

U.S. Cl. 364—478 **8 Claims**



1. A production management system comprising:

(a) a plurality of conveying blocks provided in a consecutive manner and having

a plurality of conveying means for conveying an item to be processed which is placed in an input part to a sending part,

identification codes attached to each of said conveying means,

reading means for reading said identification codes of the conveying means in said input part, and

register means having a plurality of memory areas connected in a consecutive manner, identification codes read by said reading means being input into the initial step memory area, the register means successively shifting the inputted identification codes in the direction of the final step memory area, provided there are empty memory areas, and discharging said identification code of a conveying means from the final step memory area when an item to be processed is sent from said conveying means in said sending part;

(b) transfer means for transferring an item to be processed which is sent from previous conveying block to said conveying means at an input part after the conveying block;

(c) input means for inputting data relating to items to be processed which are placed in said input part of initial step conveying block of said conveying blocks;

(d) memory means for storing the identification code read by said reading means of said initial step conveying block and the data inputted by said inputting means as a set each time an item to be processed is positioned in the conveying means of said initial step conveying block; and

(e) rewriting means for writing said identification code read by said reading means of said following conveying block in place of said identification code in said memory means relating to an item to be processed when the item to be processed is transferred by said transfer means;

a characteristic identification code being attached to the transfer means, the identification code relating to an item

to be processed in said memory means being replaced by the identification code of the transfer means by said rewriting means while said item to be processed is in the transfer means, and after the item to be processed has been transferred, said rewriting means replaces said characteristic identification code with an identification code read by said reading means of the following conveying block.

5,347,464

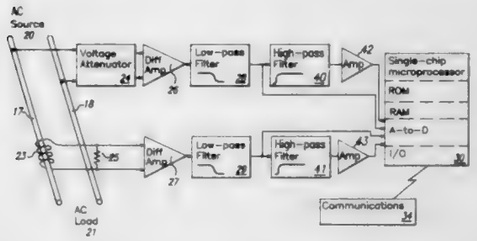
HIGH-PASS FILTER FOR ENHANCING THE RESOLUTION OF AC POWER LINE HARMONIC MEASUREMENTS

Alexander McEachern, Oakland, and Bryan D. Hord, San Francisco, both of Calif., assignors to Basic Measuring Instruments, Foster City, Calif.

Filed Sep. 22, 1992, Ser. No. 949,026

Int. Cl.[5] **G01R** *31/11;* **G06F** *15/56*

U.S. Cl. 364—483 **24 Claims**



1. An apparatus for measuring alternating current power line voltage waveform harmonics from an alternating current power system having at least two line conductors and a fundamental frequency, the apparatus comprising:

a. means for receiving a signal proportional to an alternating current power line voltage waveform, said means coupled to the line conductors;

b. means for filtering the signal forming a filtered signal, said means coupled to the means for receiving a signal, wherein the means for filtering the signal comprises a high-pass filter having a corner frequency higher than the fundamental frequency of the alternating current power system and lower than three times the fundamental frequency of the alternating current power system;

c. means for amplifying the filtered signal forming an amplified signal; and

d. means for converting the amplified signal to a frequency-domain signal having harmonic signals, said means coupled to the means for filtering the signal.

5,347,465

METHOD OF INTEGRATED CIRCUIT CHIPS DESIGN

Raymond J. Ferreri, Stormville; Glenn E. Holmes, Wappingers Falls, and Steven Magdo, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 12, 1992, Ser. No. 881,961

Int. Cl.[5] **G06F** *15/60*

U.S. Cl. 364—488 **2 Claims**

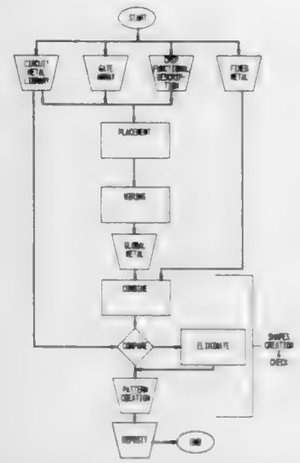
1. A computer implemented method of personalizing a gate array from a plurality of circuit cells that have been formed in a semiconductor substrate to a specified functional design in which a personalized gate array utilizes less than all of said plurality of circuit cells, comprising the steps of:

generating a global metal data pattern and a circuit metal data pattern providing global interconnecting metallization and circuit metal interconnecting metallization for interconnecting less than all of said plurality of circuit cells to form said personalized gate array based upon said specified functional design;

providing a fixed metal data pattern for providing fixed metal connecting metallization shapes to couple power to all of said plurality of circuit cells;

identifying, in said fixed metal data pattern, fixed metal data related to fixed metal shapes that are unused in said personalized gate array;

generating a modified fixed metal data pattern by deleting



from said fixed metal data pattern fixed metal data related to said unused fixed metal shapes identified in said identification step; and

generating a metallization data pattern for said gate array by combining said circuit metal data pattern, said global metal data pattern and said modified fixed metal data pattern.

5,347,466

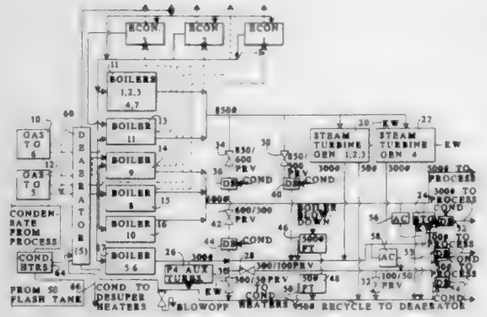
METHOD AND APPARATUS FOR POWER PLANT SIMULATION AND OPTIMIZATION

Randall K. Nichols, Corpus Christi, Tex., and Charles M. Thatcher, Fayetteville, Ark., assignors to The Board of Trustees of the University of Arkansas, Little Rock, Ark.

Filed Jul. 15, 1991, Ser. No. 731,204

Int. Cl.[5] **G06F** *15/20;* **F01K** *13/02*

U.S. Cl. 364—492 **8 Claims**



1. A method for simulating operation of a powerhouse and optimizing the operating characteristics thereof, said powerhouse including at least one steam turbine driven electric generator and at least one boiler for generating steam for said turbine, in which predetermined constants include the electrical power demand required by a process plant powered by said powerhouse, the cost of purchased electric power required to

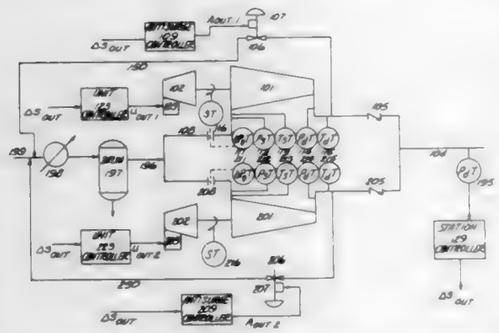
satisfy said demand which cannot be supplied by said powerhouse, and the cost of fuel required to operate said boiler, said method comprising the steps of defining the operating characteristics of said generator which represent a generator output power which satisfies said demand or which represent the maximum capacity of said generator, said defined generator operating characteristics including the required steam flow from said boiler to operate said generator, defining the operating characteristics of said boiler which produce said required steam flow, said defined boiler operating characteristics including the amount of fuel per unit time to operate said boiler, calculating the operating cost for the power plant consisting of the cost of the fuel per unit time plus the cost of said purchased power per unit time, randomly varying a plurality of the operating characteristics of said generator and said boiler by simulation, calculating said operating cost associated with said simulated randomly varied operating characteristics, and iteratively repeating said simulated random varying of operating characteristics and calculation of operating costs until an optimized lower total operating cost is arrive at, and manifesting the operating characteristics associated with said lower operating cost.

5,347,467

LOAD SHARING METHOD AND APPARATUS FOR CONTROLLING A MAIN GAS PARAMETER OF A COMPRESSOR STATION WITH MULTIPLE DYNAMIC COMPRESSORS

Naum Staroselsky; Saul Mirsky, both of West Des Moines, Iowa; Paul A. Reinke, Elkhart, Ind.; Paul M. Negley, Urbandale, and Robert J. Sibthorp, Ankeny, both of Iowa, assignors to Compressor Controls Corporation, Des Moines, Iowa

Filed Jun. 22, 1992, Ser. No. 902,006
Int. Cl.[5] F04D *27/02;* **G04B** *13/02*
U.S. Cl. 364—510 **9 Claims**



1. A method of controlling a compressor station pumping gas from a process located upstream from said station to a process located downstream from said station, said compressor station including a plurality of parallel working dynamic compressors; each of said compressors being operated by a unit final control means for changing the compressor performance; said compressor station being also equipped with a station control system for adjusting the station performance to demands of both said upstream and downstream processes in order to maintain a main process gas parameter, said station control system consisting of a station control means for controlling said main process gas parameter; unit control means, one for each compressor, for operating said unit final control means; and antisurge control means, one for each compressor, for computing a relative distance between a compressor operating point and a respective surge limit, and preventing said relative distance from decreasing below some predetermined minimum level by opening an antisurge final control means, said method comprising:

developing a corrective change of the output of said station control means to prevent a deviation of said main process gas parameter from its required level;

computing for each individual compressor a normalized relative distance to a surge control line, said normalized distance being equal to zero at the moment when said relative distance of compressor operating point from the respective surge limit becomes equal to said predetermined minimum level, selecting among said normalized relative distances to the respective surge control lines of parallel working compressors the highest normalized relative distance;

operating said unit final control means of the compressor with the highest normalized relative distance to its surge control line by a scaled corrective change of the output of said station control means to restore said main process gas parameter to the required level;

developing a unit corrective signal for each individual compressor to equalize its normalized relative distance to the respective surge control line with said selected highest normalized relative distance; and

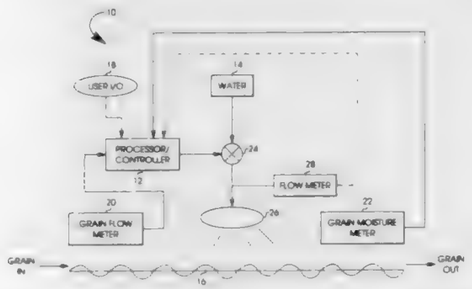
operating said unit final control means for each individual compressor, which normalized relative distance to the respective surge control line is shorter than said selected highest normalized relative distance, by combination of the scaled changes of the output of said station control means and said unit corrective signal whereby said process parameter is restored to the required level and said normalized relative distance to the compressor surge control line is equalized with the selected highest normalized relative distance.

5,347,468

COMPUTERIZED GRAIN DELIVERY SYSTEM

Steven J. Rupp, Minnetonka; Larry C. McNeff, Hopkins, and Clayton V. McNeff, Minneapolis, all of Minn., assignors to SarTec Corporation, Anoka, Minn.

Filed Oct. 2, 1992, Ser. No. 955,468
Int. Cl.[5] A23N *17/00*
U.S. Cl. 364—510 **19 Claims**



1. A method of controlling the addition of liquid to a continuous flow of material, comprising the steps of:

providing liquid flow control means for controlling flow of the liquid;

providing an initial dry material moisture level, a target moisture level and a material flow rate;

calculating, based on the initial dry material moisture level and the material flow rate, an initial liquid flow rate sufficient to raise the material to approximately the target moisture level;

setting the liquid flow control means to provide liquid at approximately the initial liquid flow rate;

determining an expected wet material moisture level for the initial liquid flow rate and the dry material moisture level;

measuring a wet material moisture level;

determining if the measured wet material moisture level has fallen outside an equation deadband surrounding the expected wet material moisture level measurement; and

if the wet material moisture level is outside of the deadband, setting the liquid flow control means to a revised liquid flow rate sufficient to condition the material to approximately the target moisture level, wherein the step of setting the liquid flow control means comprises the steps of:

calculating a revised dry material moisture level based on the initial liquid flow rate and the wet material moisture level;

calculating the revised liquid flow rate; and

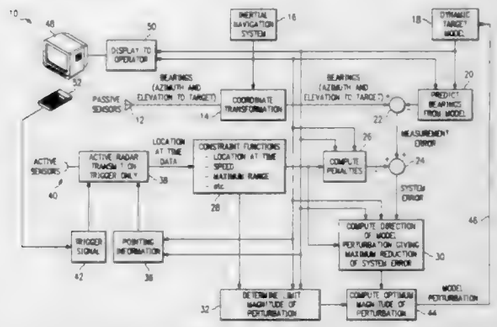
setting the liquid flow control means to provide liquid at approximately the revised liquid flow rate.

5,347,469

COVERT RANGING METHOD AND SYSTEM

William C. Choate, 6247 Twin Oaks Cir., Dallas, Tex. 75240; Charles E. Frey, 4921 S. Colony Blvd., Colony, Tex. 75056, and Anthony K. Tyree, 1917 Walters, Plano, Tex. 75023

Filed Jul. 22, 1992, Ser. No. 918,534
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—516 **25 Claims**



1. A method for covertly determining and predicting target data relative to a predetermined position, comprising the steps of:

(a) passively sensing a target to produce a passive target data set;

(b) relating said passive target data set to said predetermined position to produce a transformed passive data set;

(c) comparing said transformed passive data set to a predicted target data set to generate a measurement error;

(d) actively sensing said target for a minimally detectable period of time to produce an active target data set;

(e) relating said active target data set to said measurement error to produce a system error; and

(f) changing said predicted target data set in response to said system error.

5,347,470

Patent Not Issued For This Number

5,347,471

CHECKING FIXTURE WITH COMPUTER COMPENSATION FOR DATA COLLECTION DEVICE LOCATORS

David L. Simon, Grosse Pointe Woods, and Scott M. Kloock, Washington, both of Mich., assignors to Simco Industries, Inc., Roseville, Mich.

Filed Sep. 18, 1992, Ser. No. 947,253
Int. Cl.[5] G01B *3/28;* **G06F** *15/46*
U.S. Cl. 364—559 **13 Claims**

1. A checking fixture for comparing dimensions of manufactured parts to a perfect part as designed, comprising:

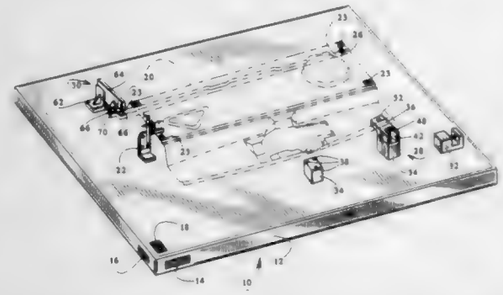
a base having starts formed therein;

mounting means on the base for supporting a manufactured part to be checked in a known position relative to the starts;

a plurality of data collection device holder means attached to the base for mounting a data collection device near the manufactured part, each holder means having a datum element;

at least one data collection device mountable on said holder means for measuring the distance from the datum element of that holder to the part being checked;

data storage means for storing data descriptive of the known location and orientation of the datum elements of the holders relative to the starts, and the distance measurements taken by the data collection device; and



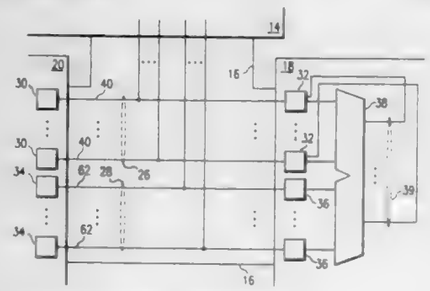
computing means operable on the data stored in the data storage means, for calculating the location of a checked point on the part being checked, based on the known location and orientation of the datum element and the data collection device's distance measurement from the datum element.

5,347,472

PRECHARGE CIRCUITRY AND BUS FOR LOW POWER APPLICATIONS

Bill Podkowa, Plano, Tex., assignor to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation of Ser. No. 675,570, Mar. 26, 1991, abandoned, which is a continuation of Ser. No. 371,571, Jun. 26, 1989, Pat. No. 5,003,501, which is a continuation-in-part of Ser. No. 208,889, Jun. 17, 1988, Pat. No. 5,050,113, Ser. No. 208,891, Jun. 17, 1988, Pat. No. 4,959,646, Ser. No. 203,424, Jun. 7, 1988, Pat. No. 4,873,665, and Ser. No. 208,890, Jun. 17, 1988, abandoned. This application May 28, 1993, Ser. No. 70,651
The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.
Int. Cl.[5] G06F *13/00, 13/38*
U.S. Cl. 364—569 **1 Claim**



1. An integrated circuit, comprising:

a memory;

a sequencer;

comparison circuitry;

first and second busses, each of said busses connecting said memory to said comparison circuitry;

wherein said sequencer and said comparison circuitry are connected and programmed so that said comparison circuitry compares pending data on said first bus to pending data on said second bus, and additional data for said first bus and data for said second bus are fetched if said comparison circuitry detects a match between said pending

data on said first bus and pending data on said second bus; and

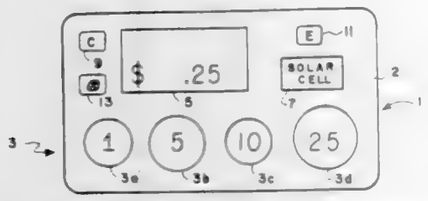
a clocked latch connected between said memory and said first bus, so that said first bus is held at a constant potential except when data on said first bus is required to change.

5,347,473

COIN COUNTING CALCULATOR

Charles D. Hallman, 4520 Newberry, Wayne, Mich. 48184, and Dennis P. McElhone, 80 Groveland, Howell, Mich. 48843

Filed Sep. 23, 1993, Ser. No. 125,174
Int. Cl.[5] G06F *3/00*; G09B *19/18*
U.S. Cl. 364—709.02 **4 Claims**



1. An electronic calculator for calculating monetary values of coins, said calculator comprising:

a plurality of manually activated coin switches, each said coin switch representing a magnitude of a value of a particular coin denomination;

an accumulator for storing a tabulated sum;

step value storage means for storing a plurality of step values, each one thereof having a magnitude equal to one of said magnitudes representing the value of one of said particular coin denominations;

incrementing means, responsive to the activation of one of said plurality of coin switches, for incrementing the tabulated sum by a one of said plurality of step values having a magnitude equal to the magnitude of the value of the coin denomination associated with said activated coin switch;

a previous value input buffer for storing a previous input value equal to the magnitude associated with the value of the particular coin denomination of said activated coin switch;

a decrement switch;

decrementing means for decrementing said tabulated sum by said previous value input upon activation of said decrement switch in order to arrive at a value for said tabulated sum equal to a previous value thereof before the depression of said activated coin switch;

a clear switch for resetting said tabulated sum stored in said accumulator, said display number stored in said output buffer, and said previous input value stored in said previous input value buffer to zero; and

display means for displaying said accumulated sum;

whereby the monetary values of coins are independently calculated by activating said coin switches for the appropriate coin denominations.

5,347,474

SELF-CALIBRATION OF AN NDIR GAS SENSOR

Jacob Y. Wong, Santa Barbara, Calif., assignor to Gaztech Corporation, Goleta, Calif.

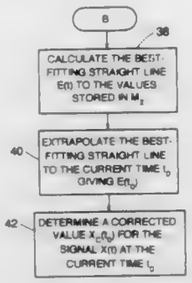
Filed Sep. 19, 1991, Ser. No. 762,396
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—571.02 **5 Claims**

1. A method for drift compensation of a sensor used for measuring a cyclical variable X that is known to lie within a known range extending from a low value X_L to a high value X_H during a part of each cycle, said sensor producing an electrical signal x(t) representative of the instantaneous value of X at time t, said method comprising the steps of:

a) determining when x(t) is between x_L and x_H where x_L and x_H denote the values of x(t) corresponding to x_L and x_H respectively;

b) sampling x(t) during each cycle when x(t) is between x_L and x_H and storing a representative quiescent value of x(t) for each cycle;

c) determining a linear function E(t) that best fits the representative quiescent values of x(t) that were stored in a number of successive cycles;



d) extrapolating the linear function E(t) to the present time t_0, thereby obtaining $E(t_0)$;

e) determining a corrected value $x_c(t_0)$ for the signal x(t) at the present time t_0 which is compensated for sensor drift; and,

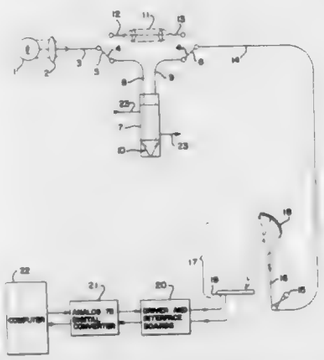
f) producing an enabling signal when $x_c(t_0)$ exceeds a preset threshold level.

5,347,475

METHOD FOR TRANSFERRING SPECTRAL INFORMATION AMONG SPECTROMETERS

James L. Taylor, and Jay C. Knepper, both of Naperville, Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Sep. 20, 1991, Ser. No. 764,147
Int. Cl.[5] G01J *3/02*; G06F *15/42*
U.S. Cl. 364—571.01 **28 Claims**



1. A method for transferring spectral information, comprising spectral images, from a source spectrometer to a target spectrometer for transferring chemometric models from said source spectrometer to said target spectrometer, comprising the steps of:

(a) passing substantially monochromatic light into said source and target spectrometers and displaying a spectrum of light intensity at various wavelengths for each spectrometer;

(b) developing a correlation between said spectra of light intensities at various wavelengths such that the location and shape of said target spectrometer correlated spectrum of light intensity at various wavelengths derived from said substantially monochromatic light is expressed as a function of said source spectrometer spectrum of light intensity at various wavelengths derived from said substantially monochromatic light;

(c) processing a sample having known physical properties into said source spectrometer and displaying spectral images;

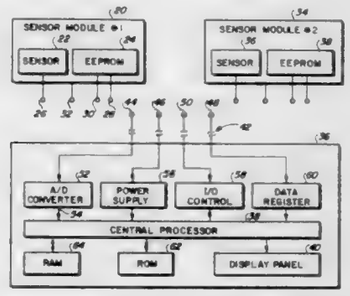
(d) developing a transformation for said spectral images from said source spectrometer such that said correlated and transformed spectral images are transformed to appear substantially similar to said spectral images of said sample measured with said target spectrometer; and

(e) generating a chemometric model to relate said correlated and transformed spectral images from said target spectrometer to said physical properties of said sample corresponding to said spectral images.

5,347,476

INSTRUMENTATION SYSTEM WITH MULTIPLE SENSOR MODULES

Ronald V. McBean, Sr., 551 W. Kent Dr., Chandler, Ariz. 85224 **Filed Nov. 25, 1992, Ser. No. 982,309**
Int. Cl.[5] G01C *25/00*
U.S. Cl. 364—571.04 **7 Claims**



1. An instrumentation apparatus for sensing and measuring a plurality of types of conditions such as temperature, pressure and the like, said apparatus comprising in combination:

a. a first sensor module including a sensor responsive to a first type of condition for generating a first electrical signal indicative of such first type of condition;

b. at least a second sensor module including a sensor responsive to a second type of condition for generating a second electrical signal indicative of such second type of condition;

c. central processor means being selectively responsive to the electrical signal generated by said first sensor module for computing a measurement sensed by said first sensor module, said central processor means also being selectively responsive to the electrical signal generated by said second sensor module for computing a measurement sensed by said first sensor module;

d. display means coupled to said central processor means for numerically displaying the measurement computed by said central processor means;

e. means for selectively coupling one of said first and second sensor modules to said central processor;

f. each of said first and second sensor modules including a memory storing sensor type code data for indicating to said central processor means the type of condition sensed by the sensor included in each such sensor module;

g. each of said first and second sensor modules including a clock input terminal for receiving a synchronizing clock signal, each of said first and second sensor modules including a memory data output terminal for providing the stored sensor type code data as a serial data stream, each of said first and second sensor modules including a power input terminal for receiving operating power, and each of said first and second sensor modules including an analog output terminal for providing an analog output signal;

h. said central processor means including a clock output terminal providing a clocking signal and adapted to be coupled to the clock input terminal of the selected sensor module, said central processor including a memory data input terminal coupled to the memory data output terminal of the selected sensor module, said central processor means being responsive to the sensor type code data of the selected sensor module that is coupled to said central processor means for controlling the manner by which said central processor computes the measurement sensed by the selected sensor module, said central processor means including a power source terminal coupled to the power input terminal of the selected sensor module, and said central processor means further including an analog input terminal coupled to the analog output terminal of the selected sensor module for receiving the analog output signal provided thereby, said central processor means further including an analog-to-digital converter for converting the analog output signal provided by the selected sensor module to a digital signal;

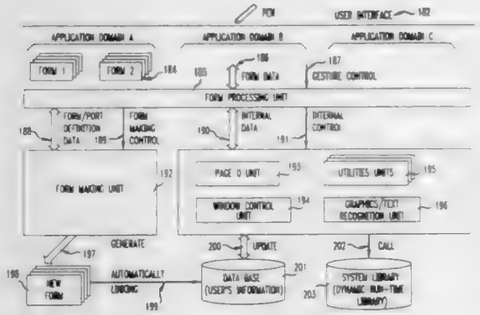
i. each of said clock input terminals, memory data output terminals, power input terminals, and analog output terminals being of each sensor module being separate from one another.

5,347,477

PEN-BASED FORM COMPUTER

Jack Lee, 2nd Fl., 38, Ching Hsing Rd., Wen Shan Distr., Taipei, Taiwan

Continuation-in-part of Ser. No. 826,900, Jan. 28, 1992, abandoned. This application Mar. 2, 1993, Ser. No. 25,188
Int. Cl.[5] G06F *1/00*
U.S. Cl. 364—709.11 **4 Claims**



1. A pen-base form computer comprising:

a palm-top computer being compatible with personal computers on data and file format and operated through form control, said palm-top computer being capable of receiving data input through a hand-writing operation and being either for independent use or on-line operation with external computer mainframes;

a hand-writing display and input device comprising a touch control panel overlaid a LCD display to receive touch data or signals from a pen or the fingers;

a gesture control unit for controlling the operations of recognition, insert, delete, escape, alter, scroll up, scroll down, scroll left, scroll right;

a hand writing style training unit for recognition the user's writing style through a learning procedure to learn particular characters written by the user;

a form making unit to define port definition by making port geometry through gesture control and linking fixed format data field and free format field automatically without inputting any computer software program;

a form processing unit being to drive different form operations through a page zero unit via a window control unit according to different gestures, said form processing unit needing only one memory space for its executing code

while processing multiple forms and comprising a graphic/text recognition unit to receive input data;
a pen input device unit being to obtain the non-distortion point by means of center point smoothing and moving window smoothing; and
an on-line character recognition unit to recognize input characters according to stroke sectioning, stroke's length, angle, sequence, velocity, Pen Up to Pen Down distance and angle by means of the a Dynamic Programming.

5,347,478

METHOD OF AND DEVICE FOR COMPRESSING AND REPRODUCING WAVEFORM DATA

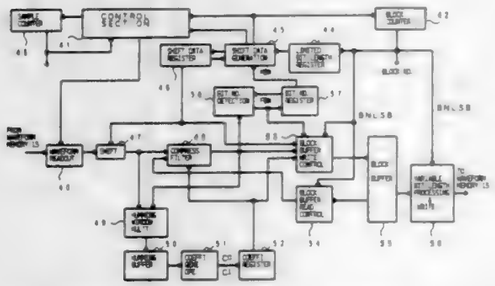
Hideo Suzuki, and Kazuhisa Okamura, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Jun. 9, 1992, Ser. No. 896,105

Claims priority, application Japan, Jun. 9, 1991, 3-163798; Jun. 9, 1991, 3-163799

Int. Cl.[5] G06F *7/00, 15/31*

U.S. Cl. 364—715.02 **52 Claims**



9. A musical tone generating device comprising:
means for acquiring waveform data, said waveform data to be used as a musical sound source and said waveform data comprising a plurality of data items, each having plural bits;
weight coefficient providing means;
reduction operation means for inputting waveform data to be compressed and performing an operation for reducing a value of the waveform data in accordance with a weight coefficient provided by the weight coefficient providing means;
coefficient generation means for producing a filter coefficient;
compression filter means for inputting waveform data provided by the reduction operation means and inputting the filter coefficient produced by the coefficient generation means and performing a data compression processing on the waveform data using a linear prediction method; and
memory means for storing waveform data on which the data compression processing and the data reduction processing have been performed.

5,347,479

SMALL-SIZE WAVELET TRANSFORM APPARATUS

Takashi Miyazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

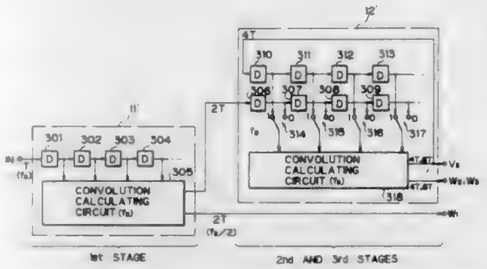
Filed Dec. 22, 1992, Ser. No. 995,059

Claims priority, application Japan, Dec. 27, 1991, 3-345885; Dec. 27, 1991, 3-345887

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—725 **51 Claims**

1. A wavelet transform apparatus for a one-dimensional signal, comprising:
N (N=2,3, . . .)-stages of two-band analysis filter circuits, each having a series of delay units for receiving a signal at a predetermined clock rate and a convolution calculating circuit for performing a convolution upon outputs of said delay units with predetermined high and low frequency filtering coefficients and summing them to generate high and low frequency component signals, a first stage of said two-band analysis filter circuits receiving the one-dimensional signal, the low frequency component signal of the i-th (i=1,2, . . . , N−1) stage of said two-band analysis filter circuits being input to the delay units of the (i+1)-th stage of said two-band analysis filter circuits, at least two adjacent two-band analysis filter circuits having a common convolution calculating circuit; and



first selector means, connected between the delay units of said at least two adjacent two-band analysis filter circuits and the common convolution calculating circuit thereof, for selectively connecting the outputs of the delay circuits of said at least two adjacent two-band analysis filter circuits to the common convolution calculating circuit,
thereby converting the one-dimensional signal into the high frequency component signals of the first to (N−1)-th stages of said two-band analysis filter circuits and the low frequency component signal of the N-th stage of said two-band analysis filter circuits.

5,347,480

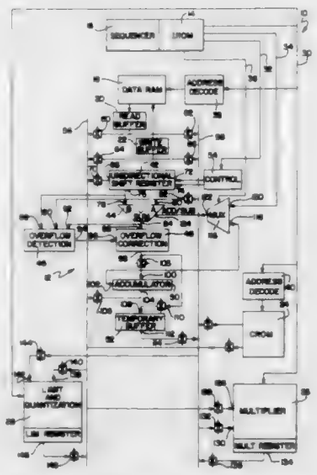
DIGITAL SIGNAL PROCESSING APPARATUS

Safdar M. Asghar; John G. Bartkowiak, both of Austin, and Michael A. Nix, Buda, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 783,899, Oct. 29, 1991, abandoned. This application Apr. 27, 1993, Ser. No. 53,959

Int. Cl.[5] G06F *15/00*

U.S. Cl. 364—736 **1 Claim**



1. An apparatus for processing data according to a plurality of instructions; the apparatus comprising:
a control means for controlling operation of the apparatus, said control means issuing said plurality of instructions in a bus system according to a predetermined program; said issuing being effected in a plurality of clock cycles, no more than one instruction of said plurality of instructions being issued in any respective clock cycle of said plurality of clock cycles;
a plurality of logical processing means for operatively responding to said plurality of instructions to perform logical processing of data according to predetermined logical relationships; each respective logical processing means of said plurality of logical processing means effecting said logical processing according to a respective said predetermined logical relationship;
each respective instruction of said plurality of instructions including a respective address information portion and a respective instruction information portion; at least a portion of said respective address portion designating a respective logical processing means of said plurality of logical processing means as an identified logical processing means, at least a portion of said respective instruction information portion providing operational details regarding said respective predetermined logical relationship effected by said identified logical processing means;
said bus system establishing operative connection among said control means and said plurality of logical processing means; said bus system including an address bus system and an instruction bus system; said address bus system communicating said address information portions of said plurality of instructions, said instruction bus system communicating said instruction information portions of said plurality of instructions;
at least one selected set of said logical processing means comprising at least two said respective logical processing means operatively responding to at least a portion of at least one predetermined said respective address information portion to perform said logical processing of data.

5,347,481

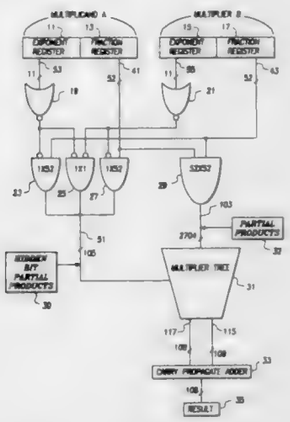
METHOD AND APPARATUS FOR MULTIPLYING DENORMALIZED BINARY FLOATING POINT NUMBERS WITHOUT ADDITIONAL DELAY

Ted Williams, Los Gatos, Calif., assignor to HaL Computer Systems, Inc., Campbell, Calif.

Filed Feb. 1, 1993, Ser. No. 989,707

Int. Cl.[5] G06F *7/38, 7/52*

U.S. Cl. 364—748 **12 Claims**



1. An apparatus for multiplying two binary floating point numbers, comprising:
storage registers for storing first and second numbers containing exponent and fraction fields;
hidden bit partial product generating means coupled to the storage registers for generating the hidden bit partial products dependent on the first and second numbers;
partial product generating means coupled to the storage registers for generating the partial products of the fraction fields of the first and second numbers;
a multiplier tree comprising a plurality of tree slices coupled to the partial product generating means for receiving and summing the partial products according to their binary weights, and further coupled to hidden bit partial product generating means for receiving the hidden bit partial product after receiving the partial products and summing the hidden bit partial products together with the partial products, and producing first and second sums, each tree slice containing a plurality of bit adders for summing the partial products and hidden bit partial products, the bit adders hierarchically arranged into a plurality of processing levels, number of levels being equal to or less than the number of levels needed for summing only the partial products; and
a bit adder coupled to the multiplier tree for summing the first and second sums and producing a final sum equal to the product of the fraction fields of the first and second numbers.

5,347,482

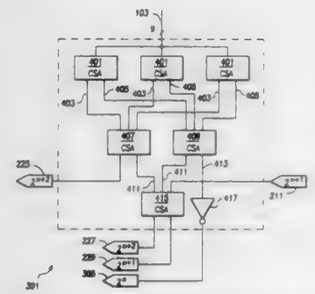
MULTIPLIER TREE USING NINE-TO-THREE ADDERS

Ted Williams, Los Gatos, Calif., assignor to HaL Computer Systems, Inc., Campbell, Calif.

Filed Dec. 14, 1992, Ser. No. 990,627

Int. Cl.[5] G06F *7/52*

U.S. Cl. 364—757 **10 Claims**



1. A nine-to-three bit adder for summing nine partial products in a multiplier tree, comprising:
first logic means having nine inputs for receiving and summing nine partial products of weight 2^n, where n is an integer, and having six outputs, and producing three primary output bits of weight 2^n and producing three primary output bits of weight 2^{n+1}, such that the combined value of the output bits equals the combined value of the nine partial products;
second logic means having six inputs coupled to the outputs of first logic means for receiving and summing the six primary output bits, and having four outputs for producing a carry-out bit of weight 2^{n+1} to be applied to another logic means in the multiplier tree, two secondary output bits of weight 2^{n+1} and a third secondary output bit of weight 2^n, such that the combined value of the three secondary output bits and the carry-out bit equals the combined value of the six primary output bits;
third logic means having three inputs coupled to the outputs of the second logic means for receiving and summing the three secondary output bits, having an input coupled to another logic means in the multiplier tree for receiving a carry-in bit of weight 2^{n+1}, for summing the three secondary output bits and the carry-in bit, and having three outputs for producing three final output bits, having weight 2^{n+2}, 2^{n+1}, and 2^n respectively;
such that the combined value of the three final output bits

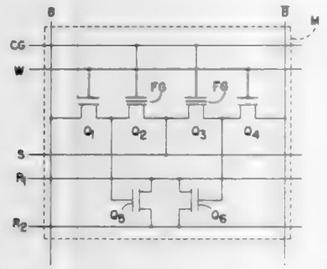
and the carry-out bit equals the combined value of the nine partial products and the carry-in bit, and such that the production of the carry-out bit is logically independent on the input of the carry-in bit.

5,347,483

NON-VOLATILE ASSOCIATIVE MEMORY WITH LOW TRANSISTOR COUNT

Yasuo Torimaru, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 5, 1993, Ser. No. 27,132
Claims priority, application Japan, Mar. 6, 1992, 4-49874
Int. Cl.[5] G11C *15/00*
U.S. Cl. 365—49 | **8 Claims**



1. A non-volatile memory cell comprising:

first and second selecting transistors, a gate of said first selecting transistor and a gate of said second selecting transistor being connected to a word line, a drain of said first selecting transistor being connected to a first bit line, a drain of said second selecting transistor being connected to a second bit line;

first and second non-volatile memory transistors for storing data in a non-volatile manner, a drain of said first non-volatile memory transistor being connected to a source of said first selecting transistor, a drain of said second non-volatile memory transistor being connected to a source of said second selecting transistor, a source of said first non-volatile memory transistor and a source of said second non-volatile memory transistor being connected to a source line, a gate of said first non-volatile memory transistor and a gate of said second non-volatile memory transistor being connected to a control gate line; and

first and second output transistors, a drain of said first output transistor and a drain of said second output transistor being directly connected to a first output line, a source of said first output transistor and a source of said second output transistor being directly connected to a second output line, a gate of said first output transistor being connected to a drain of said first non-volatile memory transistor, a gate of said second output transistor being connected to a drain of said second non-volatile memory transistor.

5,347,484

NONVOLATILE MEMORY WITH BLOCKED REDUNDANT COLUMNS AND CORRESPONDING CONTENT ADDRESSABLE MEMORY SETS

Phillip M. Kwong; Sachidanandan Sambandan, both of Folsom; Sherif R. B. Sweha, El Dorado Hills, and Duane R. Mills, Folsom, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 901,387, Jun. 19, 1992, abandoned.
This application Mar. 23, 1994, Ser. No. 216,766
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—49 | **19 Claims**

1. A nonvolatile memory device, comprising:

(A) a main memory array for storing data, wherein the main memory array comprises:

(1) a first block;

(2) a second block;

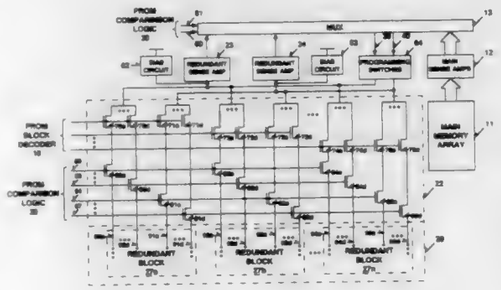
(B) a redundant memory array that comprises

(1) a first redundant block that comprises a first redundant column of memory cells and a second redundant column of memory cells, wherein the first redundant block is associated with the first block of the main memory array and is selected when the first block is selected, wherein the first and second redundant columns of the first redundant block are used to replace defective columns of the first block;

(2) a second redundant block that comprises a third redundant column of memory cells and a fourth redundant column of memory cells, wherein the second redundant block is associated with the second block of the main memory array and is selected when the second block is selected, wherein the third and fourth redundant columns of the second redundant block are used to replace defective columns of the second block;

(C) a content addressable memory (CAM) that comprises

(1) a first set of CAM cells associated with the first redundant column of the first redundant block and the third



redundant column of the second redundant block for storing a first address of a first defective column in the main memory array, wherein the first set of CAM cells cause the first redundant column in the first redundant block to replace the first defective column when the first defective column is in the first block, wherein the first set of CAM cells cause the third redundant column in the second redundant block to replace the first defective column when the first defective column is in the second block;

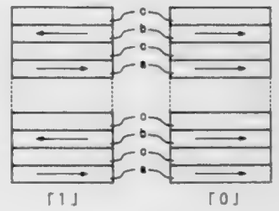
(2) a second set of CAM cells associated with the second redundant column of the first redundant block and the fourth redundant column of the second redundant block for storing a second address of a second defective column in the main memory array, wherein the second set of CAM cells cause the second redundant column in the first redundant block to replace the second defective column when the second defective column is in the first block, wherein the second set of CAM cells cause the fourth redundant column in the second redundant block to replace the second column when the second defective column is in the second block.

5,347,485

MAGNETIC THIN FILM MEMORY

Motohisa Taguchi; Tatsuya Fukami; Kazuo Hashima; Yukari Toide; Yuji Kawano; Yoshio Fujii; Takashi Tokunaga; Yoshiyuki Nakaki; Kazuhiko Tsutsumi; Hiroshi Kobayashi; Yuzou Ohdoi; Shinji Tanabe, and Hiroshi Shibata, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1993, Ser. No. 25,250
Claims priority, application Japan, Mar. 3, 1992, 4-045603; Mar. 19, 1992, 4-063208
Int. Cl.[5] G11C *11/15*
U.S. Cl. 365—171 | **19 Claims**



1. A magnetic thin film memory to record information by a magnetization direction of a magnetic thin film and to read out a recorded information from the magnetic thin film according to a resistance thereof changeable by magneto-resistance effect, said magnetic thin film comprising:

at least one first magnetic layer;

at least one second magnetic layer of a lower coercive force than the at least one first magnetic layer; and

at least one nonmagnetic conductive layer;

such that the at least one first magnetic layer and the at least one second magnetic layer are laminated interposing one of the at least one nonmagnetic layer between one of the at least one first magnetic layer and one of the at least one second magnetic layer wherein one of the at least one first magnetic layer is followed by one of the at least one nonmagnetic layer followed by one of the at least one second magnetic layer in a repetitive manner.

5,347,486

NONVOLATILE MEMORY DEVICE HAVING SELF-REFRESH FUNCTION

Takahiko Urai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 12, 1993, Ser. No. 151,196
Claims priority, application Japan, Nov. 12, 1992, 4-302089
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—185 | **7 Claims**

1. A nonvolatile memory device comprising:

a plurality of word lines;

a plurality of bit lines;

a plurality of nonvolatile memory cells, each connected to one of said word lines and one of said bit lines;

a row selecting means, connected to said word lines, for selecting one word line therefrom and driving it;

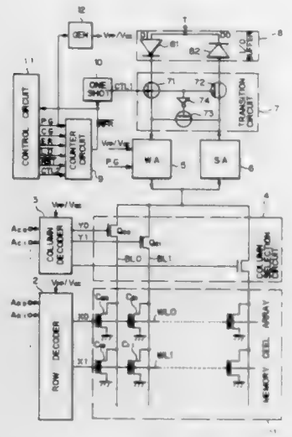
a write amplifier;

a sense amplifier;

a column selecting means, connected to said bit lines, to an output of said write amplifier, and to an input of said sense amplifier, for selecting one bit line therefrom to connect it to the output of said write amplifier and the input of said sense amplifier;

an input/output buffer; and

a transition circuit, connected to said input/output buffer, to said write amplifier, and to said sense amplifier, for transisting data from said input/output buffer to an input write amplifier in a write mode, transiting data from an output of said sense amplifier to said input/output buffer in a read mode, and transiting data from the output of said sense



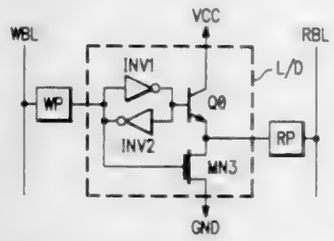
amplifier to the input of said write amplifier in a self-refresh mode.

5,347,487

BICMOS LATCH/DRIVER CIRCUIT, SUCH AS FOR A GATE ARRAY MEMORY CELL

Tim P. Dao, Coppell, and Frank J. Svejda, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 31, 1991, Ser. No. 708,944
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.05 | **12 Claims**



1. A BICMOS memory cell that stores a data bit value from a WRITE bitline, and makes that data bit value available at a READ bitline comprising:

a WRITE transmission gate coupled to receive data from the WRITE bitline;

a READ transmission gate coupled to output data onto the READ bitline;

a latch circuit for latching data from the WRITE input circuit; and

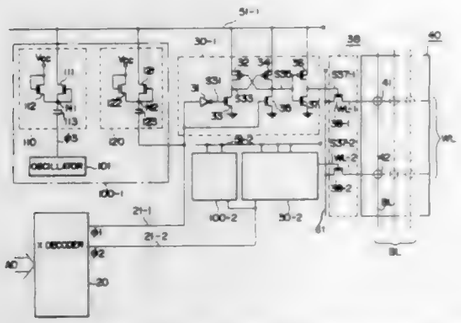
a driver circuit including at least one NPN bipolar transistor for pulling the READ bitline HI through a READ transmission gate in accordance with the data in the latch circuit driver circuit and an n-channel transistor for pulling the READ bitline LO.

5,347,488

SEMICONDUCTOR MEMORY DEVICE FOR GENERATING A CONTROLLING SIGNAL TO SELECT A WORD LINE

Yuichi Matsushita, Miyazaki, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1993, Ser. No. 19,698
Claims priority, application Japan, Feb. 20, 1992, 4-033245
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.11 **18 Claims**



1. A semiconductor memory device for generating a control signal to select a word line, comprising:
a memory cell for storing data therein;
a word line coupled to said memory cell;
a first voltage line for providing a first signal having a first potential level;
a word line activation circuit coupled to said word line and said first voltage line, for supplying said first signal from said first voltage line to said word line in response to a control signal;
a second voltage line for providing a second signal having a second potential level;
a control circuit coupled to said second voltage line and said word line activation circuit, for outputting said control signal in response to an activation signal, said control signal having a potential corresponding to said second potential level;
a first voltage supply circuit coupled to said second voltage line, for normally supplying a main voltage signal to said second voltage line to maintain said second voltage line at or above said second potential level; and
a second voltage supply circuit coupled to said second voltage line, for supplying a compensation voltage signal to said second voltage line in response to said activation signal, in order to compensate said second voltage line at or above said second potential level.

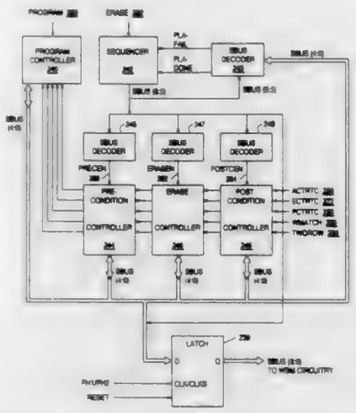
5,347,489

METHOD AND CIRCUITRY FOR PRECONDITIONING SHORTED ROWS IN A NONVOLATILE SEMICONDUCTOR MEMORY INCORPORATING ROW REDUNDANCY

Amit Merchant, Citrus Heights; Mickey L. Fandrich, Placerville, and Neal Mielke, Los Altos Hills, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Apr. 21, 1992, Ser. No. 871,848
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—203 **3 Claims**

1. A method of preconditioning a shorted memory cell in a nonvolatile semiconductor memory array including a multiplicity of normal memory cells, each memory cell having a threshold voltage, preconditioning raising the threshold voltage of the shorted memory cell to a level sufficient to prevent its leaking current during erase verification of normal memory cells, the method comprising the steps of:
a) applying a precondition pulse to the shorted memory cell;
b) comparing the threshold voltage of the shorted memory cell to a shorted cell precondition reference voltage level, the shorted cell precondition reference voltage level being lower than a normal cell precondition reference voltage level above which the threshold voltage of normal memory cells are raised by preconditioning; and



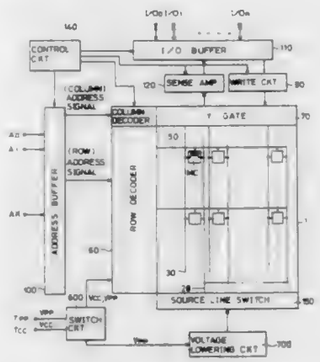
c) repeating steps a) through b) until the threshold voltage level of the shorted memory cell is greater than the shorted cell precondition reference voltage level.

5,347,490

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

Yasushi Terada; Takeshi Nakayama; Shinichi Kobayashi; Yoshikazu Miyawaki, and Masanori Hayashikoshi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1991, Ser. No. 711,532
Claims priority, application Japan, Jun. 15, 1990, 2-158361
Int. Cl.[5] G11C *11/34*
U.S. Cl. 365—219 **36 Claims**



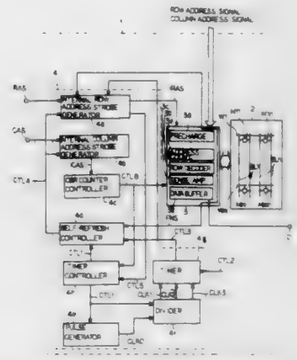
1. A nonvolatile semiconductor memory device, comprising:
a memory cell array including a plurality of electrically erasable and programmable memory cells,
each of said electrically erasable and programmable memory cells having a source electrode, a drain electrode, a floating gate, and a control gate,
each of said memory cells enabling erasure of data by drawing out from the floating gate the electrons stored therein through the source electrode by a tunnel phenomenon;
means for lowering an externally applied predetermined high voltage in a sufficient range in which said tunnel phenomenon occurs; and
means for applying an output of said voltage lowering means to said source electrodes of said memory cells in order to erase data stored in each of said memory cells.

5,347,491

DYNAMIC RANDOM ACCESS MEMORY DEVICE HAVING AUTOREFRESHING UNIT FOR PRODUCING INTERNAL ROW ADDRESS STROBE SIGNAL AND INTERNAL COLUMN ADDRESS STROBE SIGNAL

Akihiko Kagami, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 9, 1992, Ser. No. 865,863
Claims priority, application Japan, Apr. 11, 1991, 3-0108642
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—222 **4 Claims**



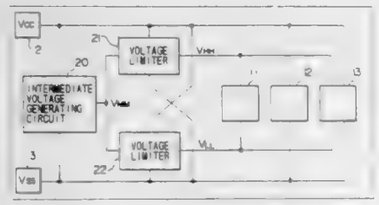
1. A dynamic random access memory device having a standard mode and an autorefreshing mode of operation, comprising:
a) a plurality of memory cells arranged in rows and columns;
b) peripheral circuits operative to assist a read-out cycle and a write-in cycle in said standard mode and to be responsive to an internal row address strobe signal for carrying out a self-refreshing cycle in said autorefreshing mode of operation; and
c) an autorefreshing unit responsive to an external column address strobe signal as well as an external row address strobe signal sequentially shifted to an active level in a predetermined order, and operative to periodically produce said internal row address strobe signal for causing said peripheral circuits to repeat said self-refreshing cycle and to produce an internal column address strobe signal on the basis of said external column address strobe signal so as to continue to remain in said autorefreshing mode even if said external column address strobe signal is recovered to an inactive level before producing said integral row address strobe signal, said autorefreshing unit comprising:
c-1) a timer controller operative to produce a first control signal upon entry of said autorefreshing mode,
c-2) a pulse generator responsive to said first control signal, and producing a basic clock signal,
c-3) a divider activated with said first control signal, and producing first, second and third clock signals different in pulse width from one another on the basis of said basic clock signal,
c-4) a timer responsive to a second control signal for selecting either the first or third clock signal, and producing a third control signal,
c-5) a self-refresh controller supplied with said first and third control signal as well as with a finish signal indicative of completion of a sense amplification carried out in said peripheral circuits, and producing a fourth control signal,
c-6) an internal row address strobe generator supplied with said external row address strobe signal and said fourth control signal, and producing said internal row address strobe signal and a fifth control signal,
c-7) an internal column address strobe generator supplied with said external column address strobe signal and said fourth control signal, and producing said internal column strobe signal, and
c-8) a CBR counter controller supplied with said internal column address strobe signal, and producing an eighth control signal, said eighth control signal being supplied to said peripheral circuits, said timer controller discriminating said autorefreshing mode in the co-presence of said fifth and eighth control signals.

5,347,492

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Masashi Horiguchi, Kawasaki; Kiyoo Itoh, Higashikurume; Yoshiki Kawajiri, Akishima; Goro Kitsukawa, Tokyo; Takayuki Kawahara, and Takesada Akiba, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Device Engineering Co., Ltd., Mobara, both of Japan

Division of Ser. No. 870,460, Apr. 17, 1992, Pat. No. 5,289,425.
This application Nov. 16, 1993, Ser. No. 152,387
Claims priority, application Japan, Apr. 18, 1991, 3-086549; Sep. 3, 1991, 3-222698
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—226 **5 Claims**



3. A semiconductor integrated circuit device comprising:
a first circuit for outputting, responding to an input signal, a first high voltage when an output signal of an output thereof rises and meanwhile outputting a first low voltage when said output signal of said output falls;
a second circuit the output of which is connected in common with said output of said first circuit for outputting a second high voltage lower than said first high voltage to said output, and outputting a second low voltage higher than said first low voltage to said output; and
a third circuit for detecting the voltage of said output of said first circuit;
wherein, said second high voltage is outputted to said output by said second circuit after the output signal at said output rises to said first high voltage by said first circuit, and meanwhile said second low voltage is outputted to said output by said second circuit after the output signal at said output falls to said first low voltage by said first circuit by controlling the operation of said first and second circuits on the basis of the detected output of said third circuit.

5,347,493

ROW DECODER FOR NAND-TYPE ROM

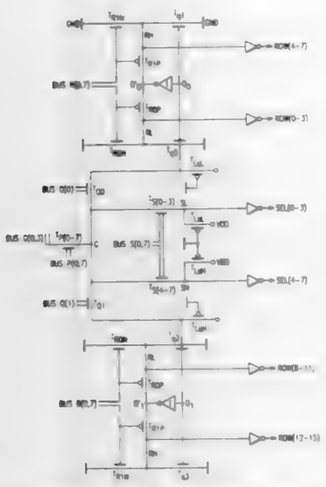
Luigi Pascucci, Giovanni, Italy, assignor to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed Aug. 31, 1992, Ser. No. 938,731
Claims priority, application Italy, Aug. 30, 1991, 91A0027
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.06 **20 Claims**

1. An integrated circuit, comprising:
a first node;
multiple N-channel first transistors each connected in series between said first node and a respective active-low selection line;

multiple N-channel second transistors each connected in parallel between said first node and a respective parcel-select line;

one or more N-channel third transistors each connected between said first node and a respective second node, said second node also being connected to a respective load element which sources current thereto;



an inverter connected from said second node to a third node;

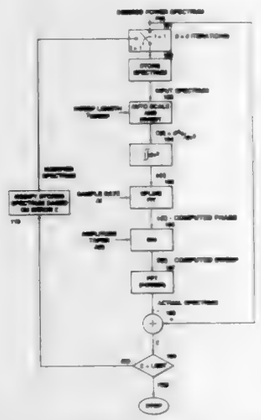
multiple P-channel fourth transistors each connected in parallel between said third node and a respective fourth node, each said fourth node also being connected to a load which sinks current from said fourth node.

5,347,494

SHAPED-SWEEP TECHNOLOGY

Kenneth D. Andersen, Kingwood, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Jul. 1, 1993, Ser. No. 86,776
Int. Cl.[5] G01V *1/00*
U.S. Cl. 367—42 **3 Claims**



2. A method for producing seismic wavelet shapes with minimal side lobe energy, which method comprises:

a. selecting a power spectrum from the group consisting of the following equation and its substantial equivalents:

$$P(f) = K\left[\frac{f}{f_p} e^{-\frac{1}{m}\left(\frac{f}{f_p}\right)^m}\right]^n$$

wherein

P(f) is the desired power spectrum,

K is an arbitrary constant used to scale the equation,

f is the frequency of the sweep in Hertz, ranging from about 0.5 f_p Hz to about 2.0 f_p Hz,

f_p is the frequency at which the spectrum peaks, and is set between about 10 Hz and about 80 Hz,

m is a constant which defines the function type, where m is not necessarily an integer, and

n is the order of the derivative, where n is not necessarily an integer;

b. computing a spectrally shaped sweep for said power spectrum so that the Fourier transform of said sweep's autocorrelation is substantially the same as that of said power spectrum;

c. using said spectrally shaped sweep as a reference signal for driving a seismic vibrator;

d. using said vibrator to impart vibrations to the earth;

e. collecting seismic data from the earth, which data result from said vibrations; and

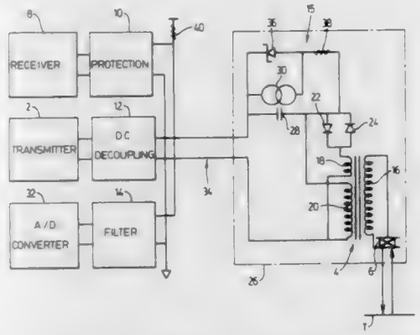
f. deconvolving the seismic data with said reference signal.

5,347,495

MATCHING TRANSFORMER FOR ULTRASONIC TRANSDUCER

Bogdan Cherek; Son C. Nguyen, and Andy Adams, all of Peterborough, Canada, assignors to Milltronics Ltd., Peterborough, Canada

Filed Apr. 30, 1993, Ser. No. 54,141
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—87 **4 Claims**



1. In a transceiver circuit for a pulse-echo acoustic ranging device comprising a transmitter generating pulses of electrical energy at a predetermined operating frequency, an electro-acoustic piezo-electric transducer operating at said predetermined frequency for transducing said pulses into shots of acoustic energy and transducing echoed acoustic energy into electrical energy, a receiver for receiving and amplifying electric signals transduced by said transducer from echoed acoustic energy, and a transformer having windings connected to said transmitter, said receiver and said transducer, the improvement wherein:

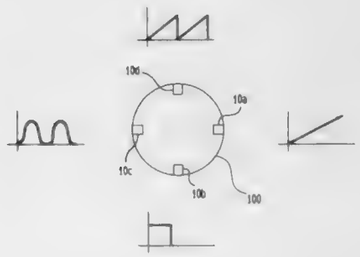
the transformer has a first winding connected to the transducer and acting as a secondary winding in respect of the transmitter and a primary winding in respect of the receiver, a second winding connected to both the transmitter and the receiver and acting as a secondary winding in respect of the receiver, a third winding in series with a pair of back-to-back diodes, the third winding and the diode pair being connected, in parallel with the second winding, to the transmitter and the receiver, the third winding acting as a primary winding in respect of said transmitter and being of much lower inductance than the second winding, and a connection of the second and third windings at least to the transmitter includes series capacitance such as to provide series resonance of the circuit at a frequency close to the predetermined operating frequency when the transmitter is active.

5,347,496

METHOD AND SYSTEM OF MAPPING ACOUSTIC NEAR FIELD

Joseph A. Clark, Arlington, and Michael A. Sartori, McLean, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 11, 1993, Ser. No. 104,707
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—140 **16 Claims**



1. A method of mapping the acoustic near field of an axial symmetric structure, comprising the steps of:

generating a set of repeatable excitation signals for transmission over a corresponding set of channels;

converting each repeatable excitation signal from said set of repeatable excitation signals to excitation energy at an excitation source site from a corresponding set of excitation source sites located radially around said structure;

measuring the acoustic near field of said structure due to said excitation energy along a line that conforms to a longitudinal surface of said structure; and

repeating said steps of converting and measuring as said set of repeatable excitation signals is incrementally shifted around said set of excitation source sites, wherein said mapping of the acoustic near field is complete when each said excitation source site has produced said excitation energy corresponding with each said repeatable excitation signal.

5,347,497

TIDE INDICATOR SYSTEM

Stephen J. Allen, 119 Hemlock Rd., Sudbury, Mass. 01776

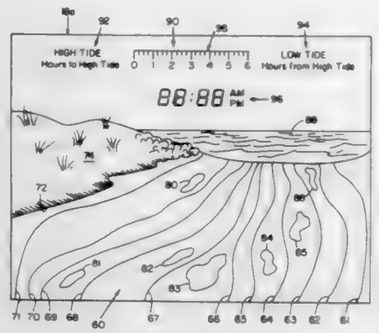
Filed Aug. 25, 1992, Ser. No. 936,037
Int. Cl.[5] G04B *19/26*
U.S. Cl. 368—19 **21 Claims**

1. An animated graphic tidal indicator system, comprising:

means for storing time intervals between a plurality of consecutive tides;

means for determining a plurality of temporal positions, each indicative of a relative water depth, in a current time interval based on the actual time of day; and

visual display means, responsive to said means for determining, for displaying a plurality of sequential animated



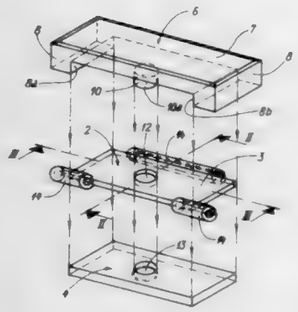
scenes representing variations of said relative water depth between tidal extremes in said time interval.

5,347,498

WATCH BRACELET

Eric Loth, Bienne, and Joseph Fray, Glovelier, both of Switzerland, assignors to Montres Rado S.A., Biel, Switzerland

Filed Sep. 10, 1993, Ser. No. 118,620
Claims priority, application France, Sep. 11, 1992, 92 10946
Int. Cl.[5] G04B *37/00;* **F16G** *13/18;* **A44C** *5/02*
U.S. Cl. 368—282 **7 Claims**



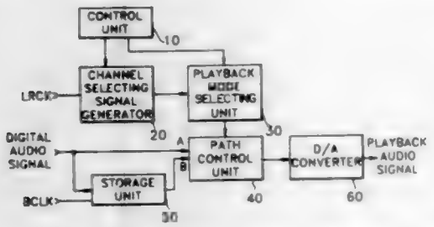
1. A bracelet formed of links which are hinged together and which include an inner face, an outer face and two lateral faces, said links comprising a link core provided with hinges, a first and a second protection part and means for securing said protection parts onto said link core, said first protection part covering over entirely the inner face of said link core, said second protection part comprising a central portion which covers over entirely the outer face of said link core and two lateral portions which cover over the lateral faces of the link core and of the first protection part and said securing means comprising at least one stud fixed to said second protection part, said stud extending through piercings effected respectively in said link core and in said first protection part and being retained in said piercings by a swaged rivet head on its distal end.

5,347,499

CIRCUIT FOR SELECTIVELY SETTING A MONAURAL PLAYBACK CHANNEL IN A STEREO AUDIO APPARATUS

Tae-jin Woo, Incheon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Feb. 24, 1993, Ser. No. 21,684
Claims priority, application Rep. of Korea, Feb. 27, 1992, 92-3112
Int. Cl.[5] H04B 1/20
U.S. Cl. 369—4 13 Claims



1. A circuit for selectively setting a monaural playback channel in a stereo audio apparatus, which digitally signal-processes audio signals of a plurality of channels reproduced from a recording media and converts, via a D/A converter, the audio signals into analog output signals, said circuit comprising:

a channel selecting signal generator for generating a channel selecting signal to select a channel, from the plurality of channels, which corresponds to a signal desired to be reproduced among the audio signals of the plurality of channels;

storage means for temporarily storing the audio signals of the plurality of channels, said storage means being synchronous to a predetermined clock signal;

path controlling means for controlling the paths of (a) an audio signal supplied after being processed into a digital signal and (b) a signal output from said storage means, so as to transmit to the D/A converter the audio signals corresponding to the channels selectively set by said channel selecting signal generator; and

control means for outputting to said channel selecting signal generator a control signal designating a desired channel to be reproduced in response to user commands, and controlling the generation of said channel selecting signal.

5,347,500

COMPACT OPTICAL PICKUP HEAD WITH TRACKING ERROR SIGNAL GENERATOR

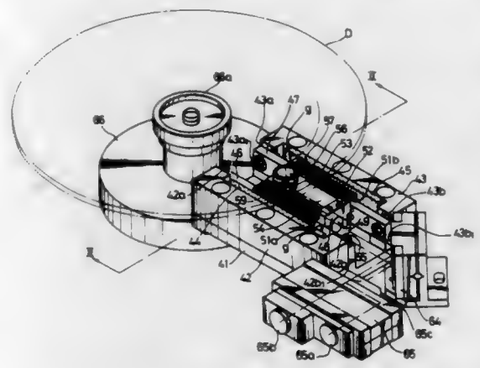
Naoya Eguchi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 533,930, Jun. 6, 1990, abandoned. This application Nov. 29, 1993, Ser. No. 159,080
Claims priority, application Japan, Jun. 21, 1989, 1-158529
Int. Cl.[5] G11B 7/00
U.S. Cl. 369—44.14 2 Claims

2. An optical head apparatus comprising:

a fixed optical system including a light beam source, a photodetector, and a beam splitter for splitting a light beam emitted from said light beam source, so that a portion of the light beam is irradiated on said photodetector;

a movable optical system having an objective lens, a first coil, a focussing actuator for supporting said objective lens and for moving said objective lens in a direction parallel to an optical axis of said objective lens using at least one of a plurality of second coils, each having four sides and being formed as a substantially square coil of L-letter shape, a pair of sides of each of the plurality of second coils being formed perpendicular to the optical axis of said objective lens, one side of each of the plurality of second coils being formed parallel to the optical axis of the objective lens, a member provided on said actuator, a linear motor including magnets provided to face said first coil and said sides of said plurality of second coils parallel to said optical axis, whereby said sides of said plurality of second coils parallel to said optional axis are within a common magnetic gap formed by said magnets of said linear motor, guiding means for guiding said member in a direction perpendicular to the axis of said objective lens, and a yoke, said movable optical system being provided in



a plane that is parallel to the direction perpendicular to the axis of the objective lens and said fixed optical system being provided in said same plane; and

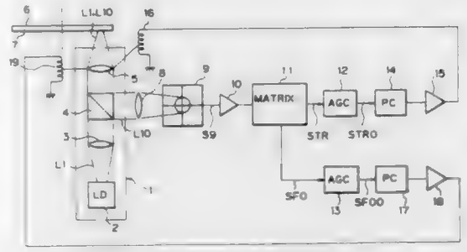
a tracking means provided between said fixed optical system and said movable optical system and including a mirror for changing a path of the light beam emitted from said light beam source and the light beam irradiated on said photodetector.

5,347,501

SERVO APPARATUS OF AN OPTICAL DISC HAVING CALIBRATION FOR GAIN CONTROL

Shinichiro Iimura, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Nov. 21, 1990, Ser. No. 618,265
Claims priority, application Japan, Nov. 30, 1989, 1-311722
Int. Cl.[5] G11B 7/00
U.S. Cl. 369—44.25 11 Claims



11. A servo focusing apparatus of an optical disc, comprising:

amplitude detecting means for detecting an amplitude of a focusing error signal which was formed on the basis of a detection output from divided detectors of an optical pickup in a state in which a servo focusing and a servo tracking are operating;

gain control signal generating means for generating a gain control signal to provide a predetermined relation between a detection output from said amplitude detecting means and a reference value when said servo focusing and said servo tracking are operating; and

control means for holding the gain control signal from said

gain control signal generating means and for controlling the amplitude of the servo focusing signal which is supplied to the optical pickup by the gain control signal upon a recording or reproducing operation by the optical pickup;

wherein when said servo focusing and said servo tracking are operating, said gain control signal generating means generates gain control signals corresponding to at least three points: the inner rim, outer rim, and an intermediate position between the inner and outer rims of the optical disc and has memory means for storing gain control signals corresponding to the at least three points which were obtained before the recording or reproducing operation by the optical pickup has started;

wherein said amplitude detecting means comprises peak value detecting means for detecting a peak value and a bottom value of a sum signal from the divided detectors; and

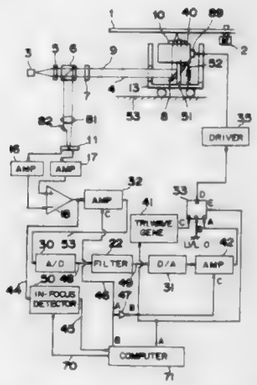
wherein said gain control signal generating means operates such that after an average value of the peak values which were detected by the peak value detecting means is received and divided by a predetermined reference value, an inverse number of a resultant value of the division is calculated and generated as the gain control signal.

5,347,502

FOCUSING CONTROL SYSTEM FOR USE IN AN INFORMATION RECORDING AND REPRODUCING APPARATUS

Shinichi Yamada, Hirakata, and Masayuki Shibano, Izumisano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 6, 1992, Ser. No. 972,581
Claims priority, application Japan, Nov. 8, 1991, 3-292987
Int. Cl.[5] G11B 7/09
U.S. Cl. 369—44.29 10 Claims



1. A focusing control system for use in an information recording and reproducing apparatus, said focusing control system performing a focusing control operation wherein a beam for reproducing signals from a recording surface of a recording medium is focused on the recording surface of the recording medium, said focusing control system comprising:

a deviation detection means for detecting an amount of deviation between a position of a point on which the beam is focused and a position of the recording surface of the recording medium;

an amplification means for amplifying an output signal from said deviation detection means, said amplification means having a variable amplification factor;

an A/D conversion means for converting an output signal from said amplification means to a digital signal;

a drive means for moving said point on which the beam is focused in a direction perpendicular to the recording surface of the recording medium; and

a focusing control means for controlling said drive means in response to an output signal from said A/D conversion means so that said point on which the beam is focused is positioned on the recording surface of the recording medium, said focusing control means having a variable gain,

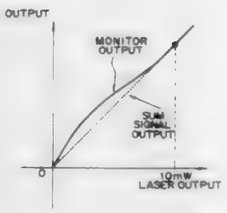
wherein the amplification factor of said amplification means is reduced during a given period after the focusing control operation is triggered and the gain of said focusing control means is increased in accordance with a reduction in amplification factor of said amplification means.

5,347,503

OPTICAL INFORMATION PROCESSING APPARATUS FOR CORRECTING LINEARITY OF A PHOTOSENSOR OUTPUT WITH RESPECT TO POWER OF AN EMITTED LIGHT BEAM

Osamu Koyama; Tadashi Kato, both of Kawasaki; Masayuki Usui, Yokohama; Yoshihiko Watanabe, Yokohama; Hisatoshi Baba, Yokohama; Hirotake Ando, Tokyo; Hideo Nakajima; Shinji Sakai, both of Yokohama, and Kenji Tamaki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 562,021, Aug. 2, 1990, abandoned. This application Nov. 18, 1993, Ser. No. 154,385
Claims priority, application Japan, Aug. 4, 1989, 1-203069
Int. Cl.[5] G11B 7/00
U.S. Cl. 369—44.32 9 Claims



8. An optical information processing apparatus comprising:

a laser diode for emitting a laser beam to irradiate an optical information recording medium, and for emitting a monitoring light;

a first photosensor, attached to said laser diode, for receiving the monitoring light emitted from said laser diode, and for producing an output;

control means for controlling power of the laser beam emitted from said laser diode in accordance with the output of said first photosensor;

a second photosensor for receiving one of a laser beam reflected by the recording medium and a laser beam transmitted through the recording medium, and for producing an output; and

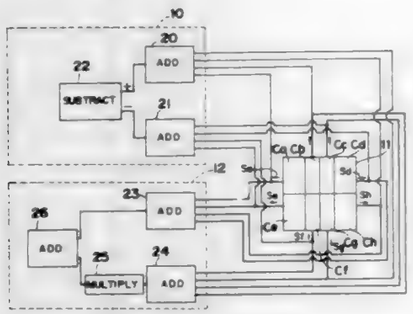
correction means for automatically correcting linearity of the output of said first photosensor with respect to the power of the laser beam to irradiate the recording medium with the laser beam, in accordance with the output of said second photosensor.

5,347,504

OPTICAL DISK APPARATUS FOR OPTICALLY RECORDING OR REPRODUCING INFORMATION ON AN OPTICAL RECORDING MEDIUM

Noboru Ito, Hirakata; Shinichi Tanaka, Kyoto; Hidenori Wada, Sakai; Sadao Mizuno, Ibaraki, and Hideki Hayashi, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 18, 1992, Ser. No. 993,384
Claims priority, application Japan, Dec. 19, 1991, 3-336505
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.41 **5 Claims**



1. An optical disk apparatus for reproducing information recorded on a recording track of an optical recording medium comprising:

a light source means for emitting a laser beam in a first direction;

a beam splitting means located adjacent to said laser source means for splitting said emitted light into first, second, and third laser beams having diffraction orders of +1, 0 and −1, respectively;

a converging means located between said optical recording medium and said beam splitting means for converging said second laser beam on said recording track and said first and third laser beams around and opposite sides of said recording track;

a beam guide means located in paths of reflected laser beams from said optical recording medium in a second direction;

a first photodetection means inserted in a path of said guided second laser beam reflected from said recording track passing through said converging means and said beam guide means, said first photodetection means receiving said second laser beam for producing focus signal and producing information signals representing said information recorded on said recording track based on said received reflected second laser beam, said first photodetection means formed by dividing a photoelectric element into four portions vertically and into two portions horizontally such that eight segments of said divided photoelectric element are arranged in a matrix, said matrix is formed in a rectangular shape, each of said segments producing an electric signal based on said reflected second laser beam received thereon;

second photodetection means inserted in paths of said first and third laser beams reflected from portions around opposite sides of said recording track, respectively, for producing tracking signals; and

signal reproduction means connected with said first photodetection means for reproducing a record signal recorded on said recording track based on said information signals, said signal reproduction means comprising:

(a) a first addition means for adding signals produced by four of said segments arranged in vertical opposite side end portions of said matrix to produce a first added signal;

(b) a second addition means for adding signals produced by four of said segments arranged in vertical center portions of said matrix to produce a second added signal;

(c) a multiplier means for multiplying said second added signal by a predetermined value to produce a multiplied signal; and

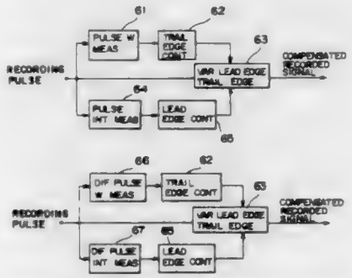
(d) a third addition means for adding said first added signal and said multiplied signal to produce said record signal.

5,347,505

OPTICAL MEDIUM RECORDING METHOD AND APPARATUS EMPLOYING PULSE WIDTH DELAY AND/OR ADVANCEMENT

Masaharu Moritsugu; Haruhiko Izumi, and Masakazu Taguchi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 19, 1993, Ser. No. 4,865
Claims priority, application Japan, Jan. 20, 1992, 4-007780; Mar. 19, 1992, 4-064046; Oct. 9, 1992, 4-271592
Int. Cl.[5] H04N *5/76*
U.S. Cl. 369—59 **23 Claims**



13. An optical recording apparatus comprising:

a rotating mechanism for rotating an optical medium on which information is recorded;

an optical head having a light source for recording information on said optical medium by producing a light beam;

a moving mechanism for moving the optical head to a predetermined position on the optical medium;

recording controlling means for controlling the light source of said optical head in accordance with a recording pulse, said recording pulse having a pulse width and separated from another, preceding recording pulse by a pulse interval, said pulse width and said pulse interval being changed in response to the information to be recorded on said optical medium, such that recording marks are formed on said optical medium during a high-level period of said recorded pulse, said recording controlling means comprising:

relative pulse width measuring means for subtracting, from the pulse width of a given recording pulse, the width of a pulse interval preceding said given recording pulse, to obtain a first relative difference;

fall controlling means for effecting a recording compensation by advancing a fall of said gives recording pulse by a lead such that said lead increases with said first relative difference;

relative pulse interval measuring means for subtracting, from the width of a pulse interval preceding a given recording pulse, the pulse width of a preceding recording pulse that precedes said pulse interval, to obtain a second relative difference; and

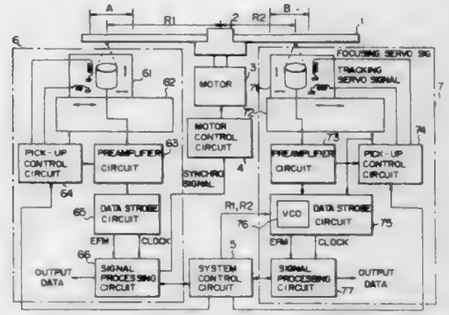
rise controlling means for effecting a recording compensation by delaying the rise of said given recording pulse by a delay such that said delay decreases with said second relative difference.

5,347,506

OPTICAL DISK PLAYER INCLUDING A PLURALITY OF INDEPENDENT PICK-UPS

Yasunori Matsudo, and Hisashi Naka, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 29, 1992, Ser. No. 968,529
Claims priority, application Japan, Nov. 1, 1991, 3-286948
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—124 **4 Claims**



1. An optical disk player for simultaneously reading a plurality of data respectively recorded on a plurality of recording areas of an optical disk, comprising:

a plurality of optical pick-ups for reading said data; said plurality of optical pick-ups including a first optical pick-up and at least one other optical pick-up;

a plurality of pick-up positioning mechanisms which are respectively provided for each of said plurality of optical pick-ups, and independently move corresponding ones of said plurality of optical pick-ups;

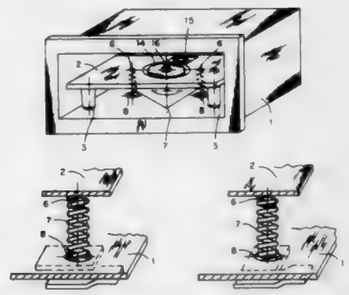
reading speed changing means which are respectively provided for each of said at least one other optical pick-up, and which change read rates of said at one other optical pick-up according to linear velocities of said optical disk at reading positions of said at least one other optical pick-up.

5,347,507

APPARATUS WITH ADJUSTABLE ISOLATION RESILIENCE CONSUMER ELECTRONICS

Hans R. Kühn, St. Georgen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Continuation of Ser. No. 635,145, Dec. 20, 1990, abandoned. This application Apr. 30, 1992, Ser. No. 879,163
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1989, 3914303
Int. Cl.[5] G11B *33/08*
U.S. Cl. 369—263 **5 Claims**



1. Consumer electronics apparatus with vibration-sensitive components for installation and operation in vehicles, comprising: housing means; a vehicle element and main resilient elements having attenuating properties between said housing means and said vehicle element for preventing shock and vibrations from being transmitted from said housing means to said vehicle element, said vehicle element having a resonance frequency, said vibration-sensitive components having an effective resulting isolation resilience; means for adjusting said resonance frequency by varying said effective resulting isolation resilience and thereby optimizing operating reliability of said components; said apparatus being a compact disk player installed in a vehicle; said adjusting means having supplemental resilient elements distributed symmetrically to said main resilient elements; said housing means holding said vibration-sensitive components and having two bores; said vehicle element having two pins at substantially the same location as said bores, said supplemental resilient elements extending through said bores and being rotatable to secure releasably said supplemental resilient elements to said housing means, said supplemental resilient elements extending between said pins and said bores, said supplemental resilient elements exerting a pressure component on said vehicle element for relieving said main resilient elements, said vehicle element having a weight resting on said main and supplemental resilient elements.

5. Consumer electronics apparatus with vibration-sensitive components for installation and operation in vehicles, comprising: housing means; a vehicle element and resilient elements having attenuating properties between said housing means and said vehicle element for preventing shock and vibrations from being transmitted from said housing means to said vehicle element, said vehicle element having a resonance frequency, said vibration-sensitive components having an effective resulting isolation resilience; and means for adjusting said resonance frequency by varying said effective resulting isolation resilience and thereby optimizing operating reliability of said components; said means for adjusting said resonance frequency comprising a system of magnets affecting said resilience; a magnetic component on said vehicle element; said system of magnets comprising a system of electromagnets; an induction coil on said housing means and in alignment with said magnetic component on said vehicle element, said induction coil having excitation current, said resonance frequency being adjustable by varying said excitation current; means for detecting amplitude of acceleration of said vehicle element relative to said housing means; capacitor means for superimposing on alternating signal on said excitation current; said housing means holding said vibration-sensitive components, said alternating voltage being a measure of said amplitude of acceleration of said vehicle element relative to said housing means.

5,347,508

OPTICAL INFORMATION STORAGE DISK FOR USE WITH ELECTRONIC ARTICLE SURVEILLANCE SYSTEMS

David P. Montbriand, Hudson, Wis., and Peter J. Zarembo, Shoreview, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 22, 1992, Ser. No. 872,151
Int. Cl.[5] G11B *7/24;* **G08B** *13/08*
U.S. Cl. 369—273 **6 Claims**



1. An optical information disk of the type comprising a generally planar, generally annular first disk surface and an opposed, generally annular second disk surface oriented generally parallel to said first disk surface, an outer, generally circular peripheral rim extending between said first and second disk surfaces and structure defining a generally centered aperture extending between said first and second disk surfaces and a

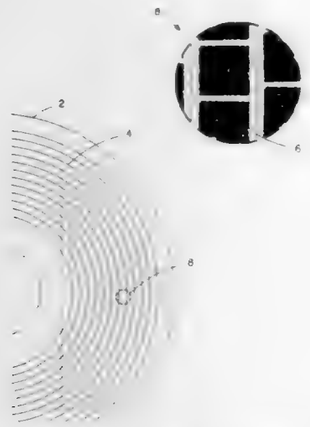
plurality of generally concentric data tracks optically accessible from at least one of said disk surfaces, wherein said disk is further adapted for use with a magnetic electronic surveillance system to prevent unauthorized removal of said disk from an access restricted location, said disk further comprising a generally annular, magnetic electronic surveillance marker carried about said aperture and means for securing said marker to said disk without impairing the operability of said disk, wherein said disk includes structure defining a groove in said first disk surface including a generally cylindrical groove inner wall oriented generally normal to said first disk surface, an opposed, generally cylindrical groove outer wall oriented generally normal to said first disk surface, and a generally annular bottom wall oriented generally parallel to said first disk surface extending between said inner and outer groove walls and wherein said marker is positioned within said groove.

5,347,509

RECOVERING DIGITAL INFORMATION REPRESENTED BY MULTI-DIMENSIONALLY ENCODED SYMBOLS CARRIED BY AN INFORMATION STORAGE MEDIUM

Paul R. Goldberg, Palo Alto; Douglas E. Mandell, San Francisco, and Martin J. Richards, Redwood City, all of Calif., assignors to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

PCT No. PCT/US92/04778, § 371 Date Jan. 13, 1993, PCT Filed Jun. 4, 1992, Ser. No. 962,217
Int. Cl.[5] G11B *7/26, 5/09*
U.S. Cl. 369—275.3 **22 Claims**



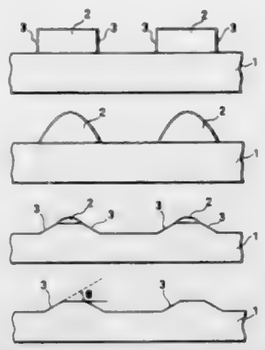
10. An information storage medium comprising two or more segments of symbols representing digital values, wherein said symbols are arranged within said segments according to a pattern having two or more dimensions such that said digital values can be established in response to a differentiable characteristic intrinsic to said symbols and positioning of said symbols within said pattern, said segments arranged in one or more tracks.

5,347,510

METHOD OF MANUFACTURING A MASTER PLATE WHERE ITS GUIDE GROOVE HAS AN INCLINED ANGLE

Junji Hirokane; Hiroyuki Katayama, both of Nara; Junichiro Nakayama; Michinobu Mieda, both of Shiki, and Kenji Ohta, Kitakatsuragi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 14, 1993, Ser. No. 4,266
Claims priority, application Japan, Jan. 21, 1992, 4-008501
Int. Cl.[5] G11B *7/26*
U.S. Cl. 369—275.5 **15 Claims**



1. A master plate, for manufacturing a stamper for injection molding of an optical memory device comprising:

a substrate member having a plurality of guiding grooves on a surface thereof, the guiding grooves being spaced at a predetermined interval, each guiding groove having edge portions,

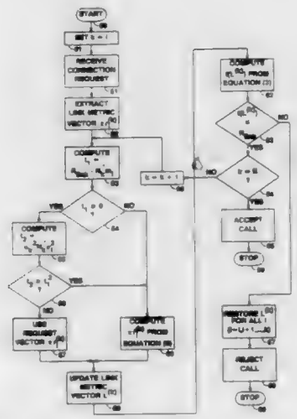
wherein said edge portions are inclined with respect to the surface of said substrate member, and inclined angles of said edge portions with respect to the surface of said substrate member are not more than 30°.

5,347,511

TRAFFIC MANAGEMENT IN PACKET COMMUNICATIONS NETWORKS

Levent Gun, Durham, N.C., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 7, 1993, Ser. No. 73,232
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—54 **15 Claims**



6. A method of establishing new connections in a packet communications network including a plurality of switching

nodes interconnected by transmission links, and in which data packets are transmitted over multilink paths between a source node and a destination node, said data packets each belonging to one of a plurality of classes of traffic, said method comprising the steps of

storing, at each said node, a vector representation of the traffic load reserved for those connections in each of said plurality of classes of traffic to be transmitted on each transmission link terminating in said node,

initiating a new connection in said network by propagating a connection request along the route selected for that connection, each said connection request including a vector representing the characteristics of said new connection including class of service for said new connection, and

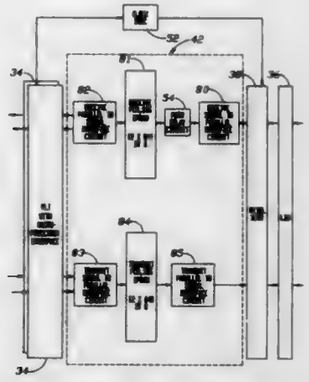
updating, in response to said connection request, said representation of traffic load for the class of traffic of said connection request and for all lower classes of traffic, said updating taking place by vector addition of said connection request vector to said vector representation of said traffic load at each of said nodes along said route.

5,347,512

TELECOMMUNICATION SYSTEM WITH DELAY DATA BUFFER AND METHOD

William A. Fechalos, Naperville, and Barry W. Jones, Hoffman Estates, both of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 17, 1993, Ser. No. 124,056
Int. Cl.[5] H04J *3/12;* **H04M** *3/22*
U.S. Cl. 370—58.2 **42 Claims**



1. In a telecommunication system having a multiport receiving switch with a central control circuit for distributing information received over a multichannel link from a multiport sending switch to at least one of a plurality of peripheral circuits which perform a plurality of various applications in the telecommunications system, the improvement being a data delay buffer, comprising:

means responsive to receipt of certain signalling information at the receiving switch to seize a channel at the receiving switch for receipt of data transmitted from the sending switch to at least one of the peripheral circuits of the receiving switch; and

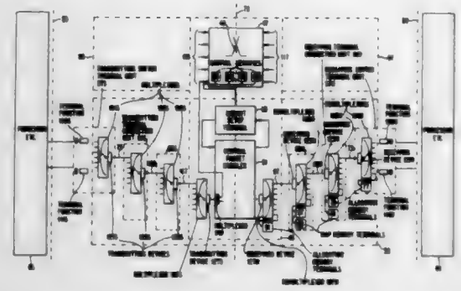
means responsive to the seizing of the channel at the receiving switch for temporarily delaying the sending of the data to at least one of the peripheral circuits for a predetermined interval.

5,347,513

FAST OPERATING PROGRAM CONTROLLED DIGITAL UNISWITCH

Erik O. Abefelt, Vällingby; Lars-Göran Petersen, Tumba, and Sture G. Roos, Bergshamra, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 15, 1992, Ser. No. 990,464
Claims priority, application Sweden, Dec. 16, 1991, 9103719
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—58.3 **20 Claims**



1. A uniswitch comprising a plurality of units which are distributed locally and which are mutually connected by means of physical links, wherein one of said units, called the switch core, includes a circuit switch for setting-up circuit-switched connections, said circuit switch including a central circuit switch having incoming and outgoing ports and also having control memories which define which incoming ports shall be connected with which outgoing ports for establishing the routes of the circuit-switched connections through the central circuit switch, wherein a distributed packet switch which includes a plurality of packet handlers is provided, said distributed packet switch includes a transmitting and receiving device for respectively transmitting and receiving control packets which are comprised of time slots wherein one packet handler is provided in each of said units, wherein the packet handlers and the physical links form a packet-switched network through which the control packets are switched by the packet switch, and a central packet handler provided at the switch core which includes circuit setup devices for interaction with control memories; and said control packets that are addressed to the central packet handler and contain a command requesting handling of a connection operate the central circuit switch upon being received in the central packet handler.

5,347,514

PROCESSOR-BASED SMART PACKET MEMORY INTERFACE

Gordon T. Davis; Donald J. Donaghy; Laurence V. Marks, and Challis L. Purrington, Sr., all of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

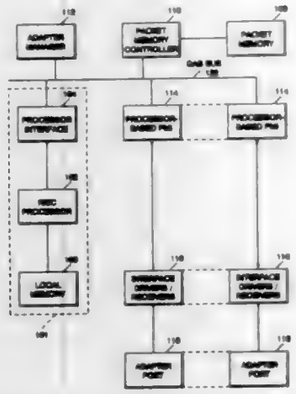
Filed Mar. 26, 1993, Ser. No. 37,196
Int. Cl.[5] H04L *12/02*
U.S. Cl. 370—60 **18 Claims**

1. A processor-based packet memory interface for controlling a transfer of packet data between multiple communications channels and packet memory in a communications adapter using one or more requestor IDS, wherein each requestor ID is a unique reference number identifying a transmit or receive process, comprising:

a processor, configured to reserve at least one block of memory in the packet memory, receive a pointer from the communications adapter, wherein said received pointer points to said at least one block of memory reserved by said processor, and to reserve said reserved block of memory to free the requestor ID so that the number of concurrent processes is not limited to the number of requestor

ID's that can be handled by the communications adapter; and

processor RAM, coupled to said processor, configured to



store said pointer to said at least one block of memory in the packet memory and to temporarily store packet data for transfer between the communications channels and the communications adapter.

5,347,515

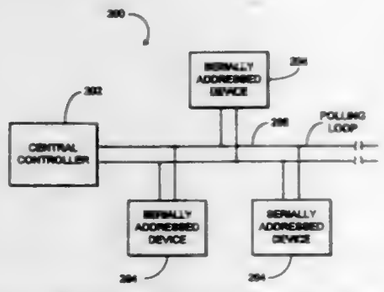
METHOD AND APPARATUS FOR GLOBAL POLLING HAVING CONTENTION-BASED ADDRESS IDENTIFICATION

Francis C. Marino, Dix Hills, N.Y., assignor to Pittway Corporation, Syosset, N.Y.

Filed Mar. 27, 1992, Ser. No. 859,070

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—85.2 **10 Claims**



5. In a loop having a plurality of serially addressable devices each having a unique address and being coupled to each other by a pair of wires, in which data is transferred from or to each device by means of a multi-voltage level line signal generated by a central controller, apparatus for global polling said devices comprising:

means in said central controller for transmitting a preamble signal for instituting global polling;

means in said central controller for transmitting a plurality of bit intervals corresponding to a number of bits in an address for each device plus a number of bits in a message;

self-identifying means in each device in contention for responding to said central controller for identifying each device by said unique address, wherein any of said devices in said loop can respond to the poll and wherein said central controller does not know the addresses of the devices that will respond to the poll prior to said identification of each device by its unique address, said self-identifying means comprising means for providing a low impedance across output terminals of said device when an address bit is a first logic state and means for providing a high impedance across said output terminals when an address bit is a second logic state;

means for monitoring the voltage level on said loop by each device in contention;

means in said self-identifying means for terminating output of said device address if, when said device provides said second logic state at said output terminals, said monitoring means indicates a voltage level corresponding to said first logic state on said loop.

5,347,516

SYSTEM FOR ACCESS FROM LAN TO ISDN WITH MEANS FOR CHANGING BETWEEN USE OF PACKET SWITCH AND LINE SWITCH WITHOUT INTERRUPTION OF DATA TRANSMISSION

Atsushi Yoshida, Tokyo, Japan, assignor to NEC Corporation, Japan

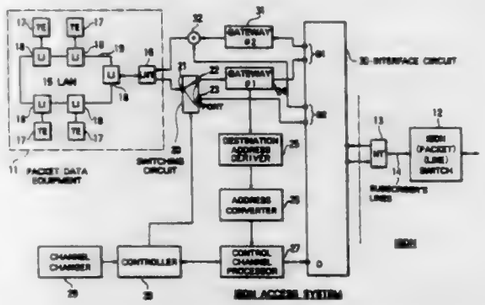
Continuation of Ser. No. 868,722, Apr. 14, 1992, abandoned.

This application Oct. 4, 1993, Ser. No. 131,858

Claims priority, application Japan, Apr. 14, 1991, 3-082695

Int. Cl.[5] H04J *3/24*

U.S. Cl. 370—94.1 **7 Claims**



1. A system for use in access to ISDN (Integrated Service Digital Network) from a packet data equipment for producing a packet data signal to be transmitted, said ISDN comprising an ISDN switch including a line switch and a packet switch, a plurality of subscriber's lines extending from said ISDN switch, each of said subscriber's lines transmitting a TDM (Time Division Multiplex) signal which comprises first and second communication information channels for conveying communication information and a control channel for conveying a control signal for data link establishment and call control, said system comprising:

switching means having an input port and first and second output ports and coupled to said packet data equipment at said input port for switching said input port to one of said first and second output ports by a switching signal, said switching means receiving said packet data signal through said input port from said packet data equipment without interruption and delivering said packet data signal as a first switched signal to said first output port when said input port is switched to said first output port, said switching means delivering said packet data signal as a second switched signal to said second output port when said input port is switched to said second output port;

first gateway means coupled to said first output port for performing protocol conversion of said first switched signal to produce a converted signal;

control channel processing means responsive to an enabling signal for producing a control channel signal as a call connection requires, said control channel signal having a destination address of a called party, a channel indicator representative of a particular channel, said particular channel being one of said first and second communication information channels to be connected, and a switch indicator representative of a particular one of said packet switch and said line switch which is predetermined corresponding to said particular channel, said control channel processing means producing a connection acknowledge signal after said call connection is completed in said ISDN switch;

generating means for generating a channel change signal;

control means coupled to said generating means and responsive to said channel change signal for producing said enabling signal, said control means responsive to said connection acknowledge signal for producing switching signal; and

interface means coupled to said first gateway means, said second output port of said switching means, said control channel processing means, and a specific line, said specific line being one of said subscriber's lines, said interface means delivering said converted signal into said first communication information channel when said switching means switches said input port to said first output port, and delivering, said second switched signal into said second communication information channel when said switching means switches said input port to said second output port and delivering said control channel signal into said control channel, respectively, which is transmitted to said ISDN switch through said specific line.

5,347,517

INFORMATION PROCESSING APPARATUS

Seiichiro Satomura, Kawasaki, and Kano Takeshita, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

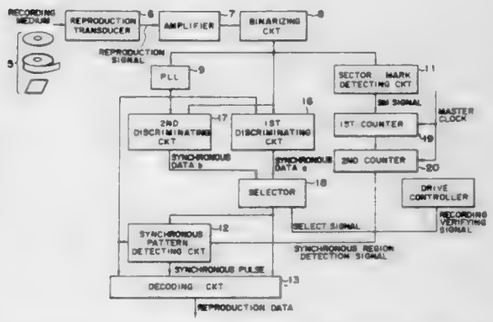
Continuation of Ser. No. 611,747, Nov. 13, 1990, abandoned.

This application Sep. 8, 1993, Ser. No. 117,656

Claims priority, application Japan, Nov. 16, 1989, 1-298119; Dec. 21, 1989, 1-329682

Int. Cl.[5] G06F *11/00;* **H04L** *12/00;* **G11B** *5/09*

U.S. Cl. 371—55 **14 Claims**



1. An information processing apparatus having a function of reproducing digital information recorded on a recording medium, said apparatus comprising:

binarizing means for transforming a reproduction signal read from the recording medium into a binary signal;

means for forming from the binary signal a bit synchronous signal for use when the digital information is decoded;

means for detecting an inverted portion of the binary signal with a window of a predetermined period set on the basis of the bit synchronous signal and for producing a synchronous binary signal synchronized with the bit synchronous signal is accordance with a result of the detection;

decoding means for decoding the digital information on the recording medium on the basis of the synchronous binary signal and the bit synchronous signal; and

means for widening the period of the window when reproduction of the digital information is impossible during normal reproduction.

5,347,518

METHOD OF AUTOMATING A BUILD VERIFICATION PROCESS

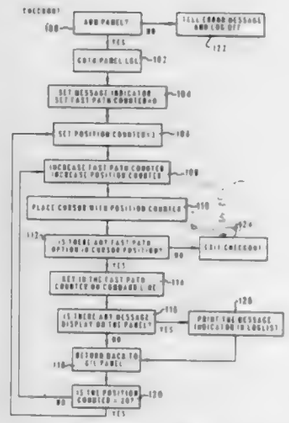
Adrienne Y. Lee, Grapevine, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 634,280, Dec. 21, 1990, abandoned.

This application Apr. 6, 1993, Ser. No. 42,843

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—19 **9 Claims**



1. A method of testing an application program on a host processor, wherein a build verification process is applied to invoke panels for a user of said application program executing with a database management program, comprising:

loading and executing a network simulation program by said user on said host processor, said simulation program providing a simulation of said network with which said database program interacts;

establishing a terminal session in said database management program and controlling said application program by said network simulation program, said database management program operating to prevent an error within said application program from prematurely terminating said simulation; and

accessing said application program by said simulation program and applying at least one record list containing said build verification process to invoke panels in said application program for said user.

5,347,519

PREPROGRAMMING TESTING IN A FIELD PROGRAMMABLE GATE ARRAY

Laurence H. Cooke; Christopher E. Phillips, both of San Jose, and William J. Allen, Cupertino, all of Calif., assignors to Crosspoint Solutions Inc., Santa Clara, Calif.

Filed Dec. 3, 1991, Ser. No. 801,237

Int. Cl.[5] H04B *17/00*

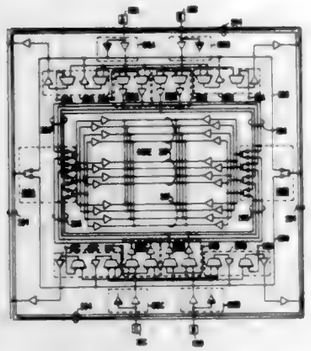
U.S. Cl. 371—22.2 **14 Claims**

1. An integrated circuit having a plurality of input/output buffer circuit blocks, said input/output buffer circuit blocks interconnected by a serial scan path for carrying signals for testing said integrated circuit, said integrated circuit comprising

a plurality of conducting lines for selectively carrying clock signals; and

at least one clock circuit block interconnected with said input/output buffer circuit blocks by said serial scan path, said clock circuit block selecting said conducting lines to

carry said clock signals responsive to signals on said serial scan path;



wherein signals on said serial scan path are used to control said clock circuit.

5,347,520

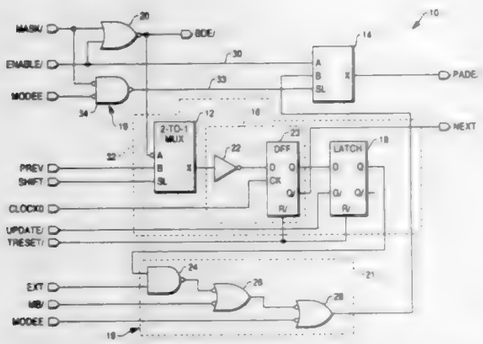
BOUNDARY-SCAN ENABLE CELL WITH NON-CRITICAL ENABLE PATH

David L. Simpson, and Wilson E. Smoak, III, both of West Columbia, S.C., assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 18, 1991, Ser. No. 761,607

Int. Cl.[5] H04B *17/00*

U.S. Cl. 371—22.3 **3 Claims**



1. A boundary-scan cell for testing a system logic and its pin connections comprising:

a monitoring circuit including a NOR gate having critical enable term and non-critical term inputs and having a term output and a test output for comparison with a twin cell;

a first multiplexer having critical enable term, non-critical term, and shift inputs;

a sampling circuit coupled between the term output of the monitoring circuit and the non-critical term input of the first multiplexer including a second multiplexer having a term input and a previous cell contents input, a shift register coupled to the output of the second multiplexer including an inverter coupled to the output of the second multiplexer and a D-type flip-flop coupled to the output of the inverter, and a latch coupled between the output of the shift register and the non-critical term input of the first multiplexer; and

a test control circuit including a first subcircuit coupled between the latch output and the non-critical term input of the first multiplexer including a first NAND gate having latch and first test inputs, a second NAND gate having first NAND gate and second test inputs, and a third NAND gate having second NAND gate and third test input and a non-critical term output, and a second subcircuit coupled between the system logic and the shift input of the first multiplexer including an OR gate having non-critical term and third test inputs.

5,347,521

METHOD AND ARRANGEMENT FOR DATA TRANSMISSION WITH LOAD MONITOR AND ADAPTIVE DISTRIBUTION

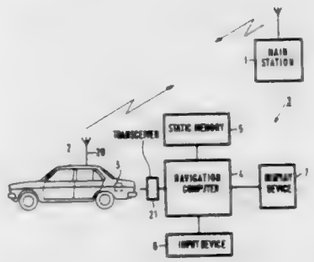
Frans Zijderhand, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 8, 1992, Ser. No. 911,236

Claims priority, application European Pat. Off., Jul. 8, 1991, 91201764

Int. Cl.[5] H04J *3/16*

U.S. Cl. 370—85.3 **9 Claims**



9. Traffic navigation mobile apparatus comprising: a sub-station adapted to communicate with a main station by way of a communication channel which is subdivided into time slots having a length and times of occurrence determined by a time slot distribution of a data transmission signal transmitted by the main station, said sub-station having its own predetermined probability p between 0 and 1 governing its right to transmit a data packet within a time slot, said sub-station having means for receiving control instructions from said main station including a probability adjustment command, and means for modifying its probability p in accordance with the probability adjustment command of the received control instructions.

5,347,522

METHOD AND APPARATUS FOR DETECTING PSEUDO NOISE PATTERN FOR REMOTE LOOPBACK TEST

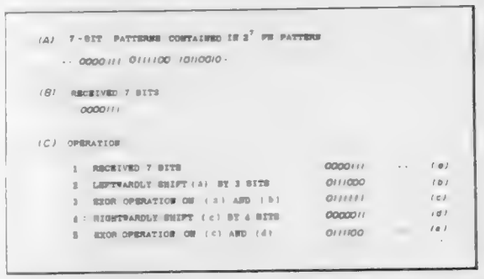
Hisakazu Ohmori, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 12, 1991, Ser. No. 730,262

Claims priority, application Japan, Jul. 13, 1990, 2-185886

Int. Cl.[5] G06F *11/08*

U.S. Cl. 371—20.5 **12 Claims**



1. A method for detecting a PN (Pseudo Noise) pattern for a remote loopback test in a communication system, said method comprising the steps of:

(a) receiving a first n-bit pattern (n is an arbitrary number) which is a part of said PN pattern;

(b) leftwardly shifting said first n-bit pattern by a first predetermined number of bits, so that a second n-bit pattern is generated;

(c) executing an exclusive-OR operation on said first n-bit pattern and said second n-bit pattern, so that a third n-bit pattern is generated;

(d) rightwardly shifting said third n-bit pattern by a second predetermined number of bits, so that a fourth n-bit pattern is generated;

(e) executing an exclusive-OR operation on said third n-bit pattern and said fourth n-bit pattern, so that a fifth n-bit pattern is generated,

wherein said fifth n-bit pattern shows a sixth n-bit pattern which should be received after said first n-bit pattern, and said step (b) through (e) are repeatedly carried out each time n bits of said first n-bit pattern are received at step (a);

(f) determining whether or not said fifth n-bit pattern is identical to said sixth n-bit pattern; and

(g) generating a pattern detection signal when said fifth n-bit pattern is identical to said sixth n-bit pattern for a predetermined number of times to activate by said pattern detection signal a predetermined loopback test procedure in the communication system.

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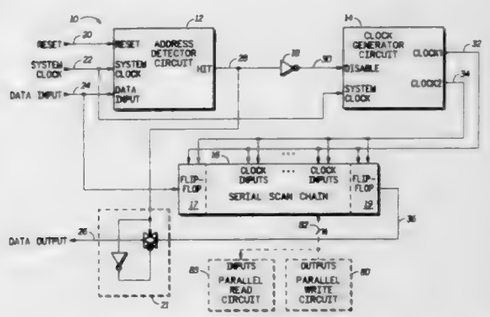
DATA PROCESSING SYSTEM HAVING SERIAL SELF ADDRESS DECODING AND METHOD OF OPERATION

Sunil P. Khatri; William C. Bruce, Jr., both of Austin, and William C. Moyer, Dripping Springs, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 844,056, Mar. 2, 1992, abandoned. This application Dec. 27, 1993, Ser. No. 174,960

Int. Cl.[5] H04B *17/00*

U.S. Cl. 371—22.3 **22 Claims**



1. In a data processing system, a serial self-address decoding circuit used for serially receiving address and data, comprising:

means for address detecting, said means having a first input for serially receiving M address bits from a serial communication conductor within the data processing system, where M is an integer, a second input for receiving a system clock signal, and an output for providing an address match signal indicating detection of receipt of a predetermined binary address from the serial communication conductor;

a means for clock generation having a first input coupled to the output of the means for address detecting, a second input for receiving the system clock signal, and an output for selectively providing at least one control clock signal in response to both the address match signal and the system clock signal, the means for clock generation being enabled when the address match signal is asserted and being disabled when the address match signal is deasserted; and

a storage means having at least one clock input coupled to the at least one control clock signal, a second input coupled to the same serial communication conductor which is used to receive the M address bits, the serial communication conductor being used to serially transmit a first set of N data bits separate from the M address bits, where N is an integer, the serial communication conductor being time division multiplexed to serially provide both the M address bits to the means for address detecting, in a first time interval, and the first set of N data bits to the storage means, in a second time interval, wherein the first and second time intervals do not overlap, said storage means selectively storing the first set of N data bits in response to a predetermined M address bits being received by the means for address decoding and in response to the at least one control clock signal, and having an output for concurrently serially providing a second set of N data bits in response to the at least one control clock signal.

5,347,524

PROTOCOL ANALYZER

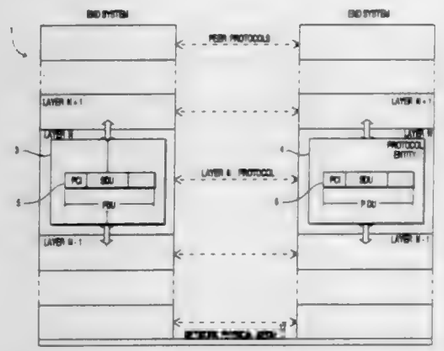
Colin S. I'Anson, Stoke Gifford; Neil McKee, Horfield, both of United Kingdom, and James R. Galloway, Holzgerlingen, Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 12, 1991, Ser. No. 757,973

Claims priority, application European Pat. Off., Sep. 13, 1990, 90310017.0

Int. Cl.[5] G06F *11/00;* **H04J** *3/00*

U.S. Cl. 371—29.1 **20 Claims**



1. A network protocol analyzer for monitoring a selected communication connection in accordance with a predetermined protocol between two entities by the exchange of protocol data units over a data network, said protocol being a cyclically-operating and having multiple states, a transition between said states are conditioned on said protocol data units, and said data network supporting a plurality of simultaneous communication connections between multiple pairs of said entities, said analyzer comprising:

(a) monitoring means for monitoring the network;

(b) connection-selection means connected to the monitoring means for selectively identifying said protocol data units relevant to said selected communication connection and for deriving protocol-units relevant to said selected communication connection;

(c) connection I.D. storing means connected to said connection-selection means for providing information for identifying said relevant selected communication connection;

(d) protocol-follower means including current-state memory means for storing a current protocol state of said selected communication connection, said protocol-follower means being conditioned in dependence on said states of said protocol, when one of said predetermined protocol data units is validly received for said current protocol state, a change to another of said states being caused in relation to said selected communication connection according to said protocol from the current protocol state as indicated by said current-state memory means, said protocol-follower

means undating said current protocol state in said current-state memory means; and

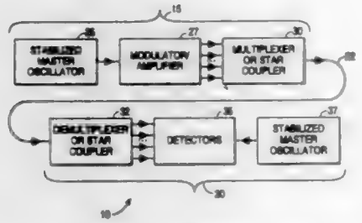
(e) alarm means in response to said protocol-follower means for providing an output indication when a said relevant protocol data unit, as represented by the corresponding protocol is an invalid one for said current protocol state.

5,347,525

GENERATION OF MULTIPLE STABILIZED FREQUENCY REFERENCES USING A MODE-COUPLED LASER

Gregory W. Faris, Menlo Park, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Feb. 19, 1993, Ser. No. 19,980
Int. Cl.[5] H01S *3/098*
U.S. Cl. 372—19 **40 Claims**



38. A spread spectrum communication system for communicating an input signal on an optical communications medium comprising:

a first mode-coupled master laser having a stabilized cavity capable of supporting a plurality of modes, said modes being characterized by respective mode frequencies that differ from one another;

means for coupling optical power at at least some of said mode frequencies to the communications medium;

means for modulating said optical power according to the input signal;

a second mode-coupled master laser having a stabilized cavity capable of supporting a plurality of modes having mode frequencies having a predetermined relationship with the mode frequencies coupled to the communications medium; and

a photodetector having incident thereon (a) light from said second master laser, and (b) optical signals from the communications medium so as to provide a detectible electrical signal representing the input signal.

5,347,526

WAVELENGTH-TUNABLE SEMICONDUCTOR LASER

Nobuo Suzuki; Masaki Tohyama, and Masaaki Onomura, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

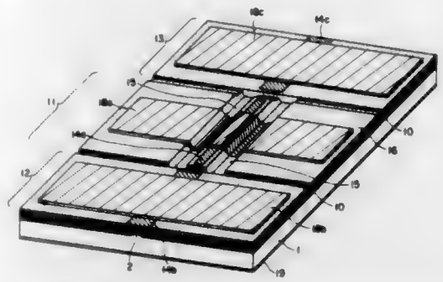
Filed Mar. 31, 1993, Ser. No. 40,853
Claims priority, application Japan, Mar. 31, 1992, 4-105671; Dec. 4, 1992, 4-324551
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—20 **15 Claims**

1. A wavelength-tunable semiconductor laser comprising:

a semiconductor substrate having first and second major surfaces;

a distributed-feedback resonator having an active layer and a cladding layer, formed on the first major surface of said substrate and shaped like a stripe, said resonator being divided into a first section and a second section aligned along the length of the resonator;

first and second electrodes formed on the first and second sections of said resonator, respectively, for controlling current densities in the first and the second section independently, temperature changing more in said first section than in said second section, due to changes in densities of currents injected into said first and second sections, wherein said first and second sections are so designed such that a thermal resistance in said first section is higher than that in said second section; and



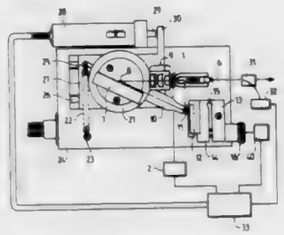
a third electrode formed on the second major surface of said semiconductor substrate.

5,347,527

PROCESS OF ADJUSTMENT OF A CONTINUOUSLY TUNABLE LIGHT SOURCE

François Favre, Perros Guirec, and Daniel Le Guen, Louannec, both of France, assignors to France Telecom, Paris, France

Filed Apr. 12, 1993, Ser. No. 45,098
Claims priority, application France, Apr. 13, 1992, 92 04514
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—20 **10 Claims**



1. A process of adjustment of a continuously tunable external cavity light source, said source comprising:

a laser controlled by an injected current with an optical axis and a first and a second facet, the first facet having a low reflection coefficient,

a diffraction grating placed on the axis of the laser, on the side of the first facet, rotatable about an axis intersecting the laser axis at right-angles, and, with the second facet of the laser, forming the external cavity,

an arm rigidly connected to the grating having a mobile end which is in permanent contact with a slide plane perpendicular to the optical axis of the laser,

means of fine adjustment of the slide plane with respect to the laser,

the tunning of the source being achieved by a shifting of the grating, wherein:

(a) an approximate adjustment is made of the rotation and position of the slide plane,

(b) the grating is rotated and, simultaneously, the emissive power of the source is measured with respect to the current injected as a function of the rotation of the grating,

(c) the number of emissive power jumps is counted with respect to the current injected during the rotation of the grating, each jump being given a sign depending on its direction,

(d) the fine adjustment means are used in accordance with the result of the count,

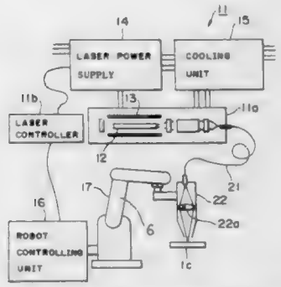
(e) operations (b), (c) and (d) are repeated until the count result is zero.

5,347,528

PULSE LASER IRRADIATION APPARATUS FOR COATED METAL MATERIAL

Koichi Haruta, and Yuichiro Terashi, Sodegaura, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Apr. 5, 1993, Ser. No. 42,516
Claims priority, application Japan, Apr. 3, 1992, 4-110837
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—25 **11 Claims**



1. A pulse laser irradiation apparatus for irradiating a pulse laser beam onto coated metal materials, comprising:

a pulse laser generator having a laser medium and a power supply for exciting said pulse laser from outside; and

a generation control section for controlling the pulse laser generator;

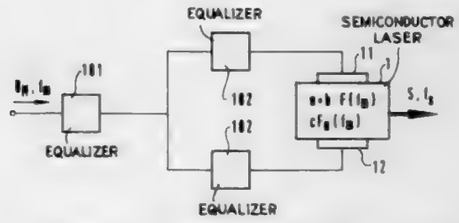
wherein said generation control section generates two reactangular waves in a pulse wave form at every cycle of the pulse laser beam generated by said pulse laser generator and controls a relationship between a peak power P_1(kW) and a pulse width t_1(msec) of a first rectangular wave and a peak power P_2(kW) and a pulse width t_2(msec) of a second rectangular wave in predetermined ranges.

5,347,529

METHOD FOR GENERATING A DISTORTION-FREE, FREQUENCY-MODULATED OPTICAL SIGNAL AND APPARATUS FOR THE IMPLEMENTATION OF SUCH A METHOD

Reinhold Noe, Paderborn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 23, 1993, Ser. No. 95,401
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1992, 4226187
Int. Cl.[5] H01S *3/10, 3/091*
U.S. Cl. 372—28 **38 Claims**



1. (Amended) A method for generating a frequency-modulated optical signal, comprising the steps of:

providing a semiconductor laser having at least a pump electrode;

pumping the semiconductor laser with an electrical voltage that is applied to the pump electrode of the semiconductor laser and that modulates with a modulation frequency, the semiconductor laser having a frequency transfer function with a thermal low-pass part that is dependent on the modulation frequency, said low-pass part effecting a distortion of the generated, frequency-modulated optical signal;

subjecting to distortion, for generating the frequency-modulated optical signal such that the frequency-modulated optical signal is at least partially free of distortion producible by the thermal low-pass part, at least one of:

a) for a semiconductor laser having in addition to the pump electrode, a further electrode for applying the modulating voltage, the modulating voltage applied to the pump electrode and the modulating voltage applied to the further electrode such that the distorted, modulating voltages together at least partially compensate the distortion of the frequency-modulated optical signal; or

b) the frequency-modulated optical signal itself in order to compensate a distortion of the frequency-modulated signal with reference to a signal frequency of the frequency-modulated signal; or

c) for a frequency-modulated, optical superposition signal generated by superimposing the frequency-modulated optical signal with an optical reference signal having a specific, modulatable reference frequency, the reference signal with reference to the reference frequency that at least partially compensates the distortion of the frequency-modulated optical signal contained in the superposition signal.

24. An apparatus for generating a frequency modulated optical signal, comprising:

a semiconductor laser having at least a pump electrode;

an electrical voltage that is applied to the pump electrode of the semiconductor laser and that modulates with a modulation frequency, the semiconductor laser having a frequency transfer function with a thermal low-pass part that is dependent on the modulation frequency, said low-pass part effecting a distortion of the generated, frequency-modulated optical signal;

an amplitude signal that is dependent on an intermediate frequency of an intermediate frequency signal acquired from the superimposed signal being generated such that said amplitude signal with reference to a specific amplitude level has at least two level crossings with slopes inclined in a same direction at two respective specific characteristic frequency values of the intermediate frequency that differ from one another and, when the frequency-modulated optical signal output by the semiconductor laser is undistorted, intermediate frequency values occur that are equal to the characteristic frequency values, and given a frequency-related deviation of the intermediate frequency values from the characteristic frequency values, the intermediate frequency values being in turn at least approximately adjusted back to the characteristic frequency values by a change of the reference frequency of the reference signal that is effected by an output signal generated from a constantly identified amplitude level of the amplitude signal;

a frequency discriminator for generating the amplitude signal that is dependent on the intermediate frequency from the intermediate frequency signal; and

a control means, whereby a continuously identified amplitude level of the amplitude signal is used as an actual value and a specific amplitude level is used as a rated value, said control means generating an output signal that is dependent on a deviation of this actual value from this rated value that is supplied as a control signal to a frequency-modulatable, optical reference signal transmitter generating the reference signal for the purpose of a change of the reference frequency of the reference signal such that the deviation of the actual value from the rated value is at least approximately eliminated;

wherein a frequency-modulated signal is generated that is at least partially free of the distortion caused by the thermal low-pass part.

5,347,530

PULSED GAS-DISCHARGE LASER SYSTEM

Frank Gekat, Korb; Hans Klingenberg, Tuebingen, and Gerhard Krutlan, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.V., Bonn, Fed. Rep. of Germany

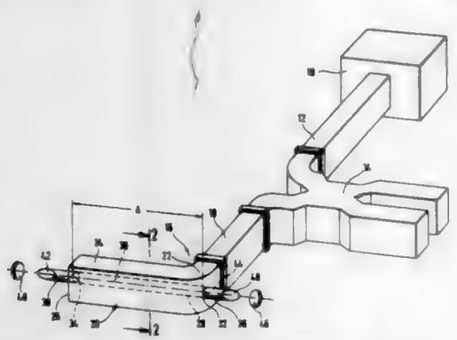
PCT No. PCT/EP92/00808, § 371 Date Feb. 11, 1993, § 102(e) Date Feb. 11, 1993, PCT Pub. No. WO92/19028, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 9, 1992, Ser. No. 958,336

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1991, 4112946

Int. Cl.[5] H01S *3/097*

U.S. Cl. 372—82 **19 Claims**



1. A pulsed excimer laser system, comprising:
a resonator;
a gas volume filled with laser gas in which a gas discharge is ignitable;
a microwave discharge structure at least partially surrounding the gas volume for maintaining the gas discharge;
a microwave source for generating a microwave pulse;
a microwave line leading from the microwave source to the microwave discharge structure via a coupling element; and
a resonant microwave storage structure which communicates with the gas volume and includes at least a partial section extending between the microwave discharge structure and the microwave line;
wherein the microwave storage structure stores the energy from the microwave pulse emitted by the microwave source until the ignition of the gas discharge and then maintains the gas discharge using the stored energy.

5,347,531

TRANSVERSE DISCHARGING EXCITATION PULSE LASER OSCILLATOR APPARATUS

Hajime Nakatani, and Atsushi Sugitatsu, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

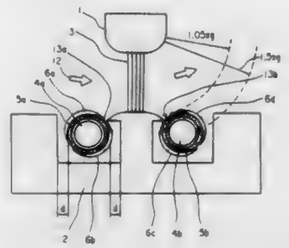
PCT No. PCT/JP91/00159, § 371 Date Oct. 2, 1991, § 102(e) Date Oct. 2, 1991, PCT Pub. No. WO92/14285, PCT Pub. Date Aug. 20, 1992

PCT Filed Feb. 8, 1991, Ser. No. 752,573

Int. Cl.[5] H01S *3/097*

U.S. Cl. 372—86 **12 Claims**

1. A transverse discharge excitation pulse laser oscillation apparatus comprising:
a first main electrode;
a second main electrode facing the first main electrode along an optical axis and separated from the first main electrode by a distance g;
a hollow pipe formed of a dielectric material and disposed on one side of the second main electrode in a direction perpendicular to the optical axis;
an auxiliary electrode formed within the hollow pipe;
at least one corona starting electrode in contact with the hollow pipe, the corona starting electrode being at a same potential as the second main electrode, wherein a corona discharge starts from the corona starting electrode and extends over a surface of the hollow pipe and generates ultraviolet radiation;
a laser gas disposed between said first and second main electrodes, the laser gas being pre-ionized by the generated ultra-violet radiation to thereby produce a uniform main discharge between said first and second main electrodes;



where a distance l represents one half one an outer circumferential length of the hollow pipe divided by a number of corona starting electrodes, a first direction is defined by a straight line between a point where corona discharge starts at the corona starting electrodes and a center of a face of the first main electrode facing the second main electrode, a second direction is defined by a straight line perpendicular to a direction in which the corona discharge develops, an angle θ representing an angle produced between the first and second directions,
wherein for $\theta < 72.5$ degrees, $l \times \cos\theta > 6$ mm; and
wherein for $\theta \geqq 72.5$ degrees, $l \times N > 6$ mm,
where N is a fixed value of 0.3.

5,347,532

LASER HAVING AT LEAST ONE ANODE AND ONE CATHODE FOR PREIONIZATION AND/OR DISCHARGE

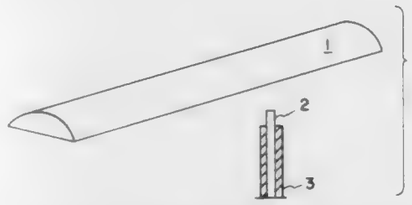
Ulrich Rebhan, and Frank Voss, both of Göttingen, Fed. Rep. of Germany, assignors to Lambda Physik Gesellschaft Zur Herstellung Von Lasern mbH, Gottingen, Fed. Rep. of Germany

Filed Dec. 4, 1992, Ser. No. 985,320

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1992, 4233634

Int. Cl.[5] H01S *3/097*

U.S. Cl. 372—87 **7 Claims**



1. An excimer laser comprising at least one anode and one cathode for pre-ionization,
wherein the surfaces of the anode and the cathode which are exposed to the pre-ionization spark are made of metallic materials of different standard potentials with said metallic cathode material having a higher standard potential than said metallic anode material.

5,347,533

OPTICAL SEMICONDUCTOR DEVICE, METHOD OF PRODUCING THE OPTICAL SEMICONDUCTOR DEVICE, AND LASER DEVICE USING OPTICAL SEMICONDUCTOR DEVICES

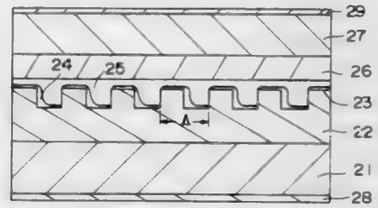
Toshio Higashi, and Shouichi Ogita, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 15, 1992, Ser. No. 945,484

Claims priority, application Japan, Sep. 17, 1991, 3-236144; Nov. 25, 1991, 3-308183; Jul. 3, 1992, 4-177123

Int. Cl.[5] H01S *3/08*

U.S. Cl. 372—96 **30 Claims**



1. An optical semiconductor device comprising:
first and second cladding layers;
a light guide layer sandwiched between said first and second cladding layers; and
a layer structure provided in said light guide layer, said layer structure having a first periodic variation in a refractive index in a predetermined direction, and a second periodic variation in an optical gain in the predetermined direction, the first periodic variation having a period identical to that of the second periodic variation, and the first periodic variation and the second periodic variation having a phase difference.

5,347,534

AUTOMATIC GAIN CONTROL SYSTEM

Shigeo Akazawa; Masaharu Mori, and Masahiro Hamatsu, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

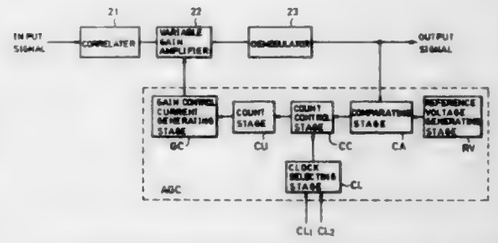
Continuation-in-part of Ser. No. 224,576, Jul. 26, 1988, Pat. No. 4,899,364. This application Feb. 5, 1990, Ser. No. 475,157

Claims priority, application Japan, Jul. 31, 1987, 62-192219; Oct. 23, 1987, 62-267763

The portion of the term of this patent subsequent to Feb. 6, 2007, has been disclaimed.

Int. Cl.[5] H04L *9/00*

U.S. Cl. 375—1 **2 Claims**



1. A carrier sense apparatus in a spread spectrum receiver comprising:
correlation means for correlating a reference signal and a spread spectrum signal received by the receiver;
a demodulator for demodulating data from a correlation output from said correlation means;
variable gain amplifier means provided between said correlation means and said demodulator to amplify said correlation output;
gain control means for comparing a correlation spike from said demodulator with positive or negative first and second threshold voltages according to the polarity of the correlation spike and for producing a gain control signal responsive to a result of said comparison to control the gain of said variable gain amplifier means to maintain the peak of said correlation spike between said positive or negative first and second threshold voltages; and
carrier sense means for comparing a first signal corresponding to said gain control signal with a second signal for comparison with the first signal to provide a carrier sense signal responsive to whether the first signal is larger than the second signal or not to determine whether or not a signal corresponding to the reference signal is transmitted.

5,347,535

CDMA COMMUNICATION SYSTEM

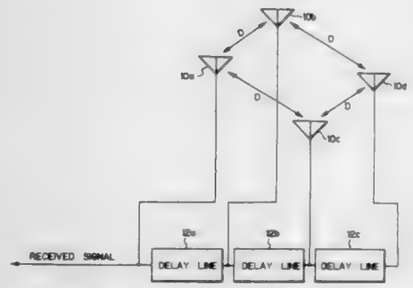
Yoshio Karasawa, and Hisato Iwai, both of Saitama, Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,659

Claims priority, application Japan, Mar. 18, 1992, 4-091573

Int. Cl.[5] H04B *7/04*

U.S. Cl. 375—1 **18 Claims**



1. A CDMA communication system using spreading codes, said system having a plurality of mobile stations and at least one base station, said mobile stations and said base station provided with respective receiving sections each of which has a path diversity function for reducing multipath fading, said base station comprising:
an array antenna having a plurality of integrated antenna elements spaced by a distance substantially equal to one to several wavelengths from each other so as to produce a space diversity effect; and
a plurality of delay means coupled with said respective antenna elements, for applying time delays to signals which pass through said respective antenna elements, said time delay being different from each other by a one symbol period of the spreading codes or more.

5,347,536

MULTIPATH NOISE REDUCTION FOR SPREAD SPECTRUM SIGNALS

Thomas K. Meehan, Glendale, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 17, 1993, Ser. No. 39,783

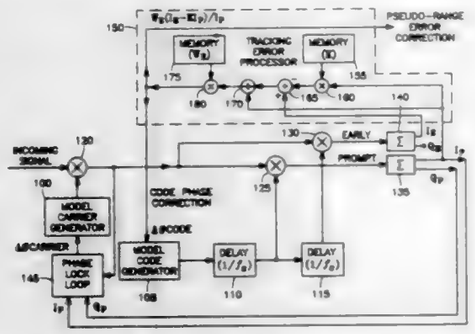
Int. Cl.[5] H04L *27/30*

U.S. Cl. 375—1 **66 Claims**

1. In a receiver for receiving an incoming signal consisting of a carrier tone modulated by a spread spectrum code sequence, the receiver being of the type which generates a local model of the carrier tone and a local model of the code sequence, apparatus for measuring multipath distortion, comprising:
means for generating plural versions of said model code sequence delayed by respective multiples of a predetermined delay time;
means for generating plural product signals by a multiplication of said incoming signal by one of (a) said model

carrier tone and (b) a respective one of said plural model code versions, and then multiplying the result of said multiplication by the other of (a) and (b);

correlator means for computing respective cross-correlation functions from respective ones of said plural product signals; and



measuring means for computing an error corresponding to a deviation from a predetermined relationship among said respective cross-correlation functions, and for outputting said error as a measurement of multipath distortion in said incoming signal.

5,347,537

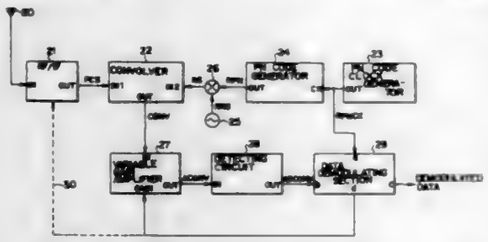
SPREAD SPECTRUM COMMUNICATION DEVICE

Masaharu Mori; Motohiro Gochi, and Shigeru Takeuchi, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Division of Ser. No. 19,369, Feb. 17, 1993, Pat. No. 5,323,419, which is a division of Ser. No. 852,578, Mar. 17, 1992, Pat. No. 5,218,620. This application Jan. 31, 1994, Ser. No. 189,186

Int. Cl.[5] H04L *27/32*

U.S. Cl. 375—1 **4 Claims**



1. A spread spectrum communication method for communicating data by spreading the spectrum thereof, using PN codes, comprising: 'A. on the transmitter side,

a) a step of generating a spread-spectrum-modulated output consisting of a first modulated output portion, which is spread-spectrum-modulated, and a second modulated output portion, which is spread-spectrum-modulated, following said first modulated output portion; and

b) a step of transmitting said spread-spectrum-modulated output so as to transmit said second modulated output portion with a low electric power and said first modulated output portion with a high electric power; and

B. on the receiver side,

a) a step of setting a gain in a path from reception to generation of the correlation-modulated output of said received input at a low level;

b) a step of detecting from said correlation-demodulated output consisting of a first correlation-demodulated output portion corresponding to said first modulated output portion and a second correlation-demodulated output portion corresponding to said second modulated output portion an end of said first correlation-demodulated output portion; and

c) a step of setting the gain in said path at a high level at the detecting of the end.

5,347,538

TRANSCEIVER FOR BIDIRECTIONAL LINK, INTEGRATED CIRCUIT INCLUDING THE TRANSCEIVER, AND APPLICATION TO COMMUNICATION BETWEEN UNITS OF A SYSTEM

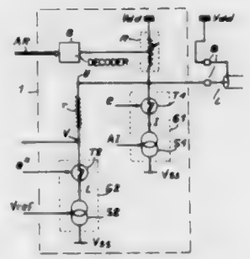
Roland Marbot, Versailles, France, assignor to Bull S.A., Paris, France

Filed Feb. 28, 1992, Ser. No. 843,210

Claims priority, application France, Mar. 14, 1991, 91 03127

Int. Cl.[5] H04B *1/38;* **H04L** *5/16*

U.S. Cl. 375—7 **37 Claims**



1. A transceiver adapted to be connected by a transmission link to a similar second transceiver, said link including at least one transmission line (L, L*), said transceiver including amplification means for producing transmission signals over said link in response to transmission command signals (e, e*) and for producing reception signals (s, s*) in response to transmission signals produced over said link by said second transceiver, wherein said amplification means include, for each transmission line (L, L*), a bi-directional amplifier (1), including:

a first adaptation impedance means (R) for adaptation to the transmission line and being connected to said transmission line;

a first generator (G1) having an active and an inactive state and commanded in response to said transmission command signals (e, e*) for supplying current to said first impedance means (R) and said transmission line in parallel; and

detection means (G2, r) operatively connected to said first adaptation impedance means (R) for furnishing a measurement signal (V), which is representative of either a current circulating in the adaptation impedance means (R) when said first generator (G1) is active, or a sum of the current circulating in the adaptation impedance means (R) and a compensation value when said first generator (G1) is not active,

said compensation value being determined so as to meet a compensation condition according to which said measurement signal (V) depends on the transmission signals produced by the other transceiver.

5,347,539

HIGH SPEED TWO WIRE MODEM

Manickam R. Sridhar, Norton; Aniruddha Mukherjee, Framingham, and John L. Moran, III, Millville, all of Mass., assignors to Codex Corporation, Mansfield, Mass.

Division of Ser. No. 685,571, Apr. 15, 1991, Pat. No. 5,214,637. This application Jan. 15, 1993, Ser. No. 4,037

Int. Cl.[5] H04B *1/38;* **H04L** *5/16, 5/14;* **H04J** *15/00*

U.S. Cl. 375—8 **5 Claims**

1. In a data communications network, method of switching between primary and secondary communication media connections of said network, which connections are used for

communication by first and second modems coupled to said network, said method comprising the steps of:

(a) communicating data between said first and second modems over said primary communication media connection;

(b) detecting a failure in said primary connection;

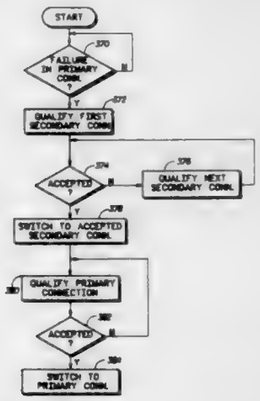
(c) in response to said failure detection, qualifying a secondary communication media connection, wherein qualifying a secondary communication media connection includes the steps of:

(c1) selecting one secondary connection from a plurality of secondary connections;

(c2) determining if said selected secondary connection can support communication at a desired combination of carrier frequency, baud rate and data a bit rate in order to accept said selected secondary connection;

(c3) qualifying said selected secondary connection upon acceptance; and

(c4) upon rejection of said selected secondary connection, selecting another secondary connection of said plurality and repeating the steps of (c2) through (c4);



(d) switching communication of said first and second modems from said failed primary to said qualified secondary communication media connection;

(e) while communicating data between said first and second modems over said qualified secondary communication media connection, qualifying said primary communication media connection, wherein qualifying said primary communication media connection includes the steps of:

(e1) determining if said primary connection can support communication at a desired combination of carrier frequency, baud rate and data bit rate in order to accept said primary connection;

(e2) qualifying said primary connection upon acceptance; and

(e3) upon rejection, maintain the communication of data over said selected secondary connection; and

(f) restoring communication of said first and second modems from said secondary to said qualified primary communication media connection and repeating step (a).

5,347,540

DYNAMIC STORAGE ALLOCATION IN A LOGIC ANALYZER

Kevin C. Karrick, Aloha, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Jul. 8, 1992, Ser. No. 910,059

Int. Cl.[5] H04L *25/38*

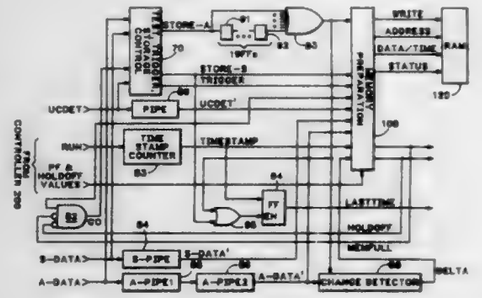
U.S. Cl. 375—10 **6 Claims**

1. A method of dynamic memory allocation between synchronous and asynchronous data acquired by a test instrument for digital data acquisition and analysis, the method comprising the steps of:

acquiring synchronous data from a first input signal source at times determined by a clock source external to the test instrument;

acquiring asynchronous data from a second input signal source at times determined by a clock source internal to the test instrument;

generating timestamp values;



determining by reference to the clock source external to the test instrument when the synchronous data is valid;

determining when the asynchronous data is valid; and

packing valid synchronous data, valid asynchronous data, and timestamp values into a memory according to a sequence in which the synchronous data and asynchronous data was acquired, with each data and timestamp value being identified with status bits to indicate which was synchronous data, which was asynchronous data, and which was a timestamp value.

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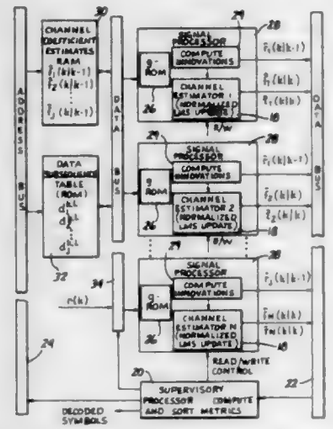
APPARATUS AND METHOD FOR UTILIZING A BLIND EQUALIZER BASED ON A BAYESIAN SYMBOL SEQUENCE ESTIMATOR FOR USE IN DIGITAL COMMUNICATION

Ronald A. Iltis, and John J. Shynk, both of Goleta, Calif., assignors to The Regents of the Univ. of California, Oakland, Calif.

Filed Nov. 2, 1992, Ser. No. 969,901

Int. Cl.[5] H03H *7/30*

U.S. Cl. 375—12 **20 Claims**



1. (once amended) An apparatus for performing blind equal-

ization of digital communication over a communication channel upon which data signals are received comprising:

a memory for storing every possible data subsequence in which intersymbol interference could occur and for storing updated communication channel coefficients;

a first data bus coupled to said memory for communicating said received data signals, stored data subsequences and stored updated communication channel coefficients;

a plurality of signal processors each coupled in parallel to said first data bus, each processor for generating estimated received data signals and updated estimated communication channel coefficients, each processor generating said estimated received data signals and updated estimated communication channel coefficients for one of said stored possible data subsequences;

a second data bus coupled in parallel to said plurality of signal processors for communicating said estimated data signals and updated estimated communication channel coefficients; and

a central processing circuit coupled to said first and second data buses for controlling operation of said first and second data buses and said plurality of signal processors, for estimating unconditional channel coefficients, for storing said estimated unconditional channel coefficients in said memory, and for decoding said received data according to a Bayesian estimation based on said estimated unconditional channel coefficients and updated estimated communication channel coefficients for each of said stored possible subsequences,

whereby said received data which is subject to data smearing is reliably decoded notwithstanding intersymbol interference and without use of training data or signaling preambles.

5,347,542

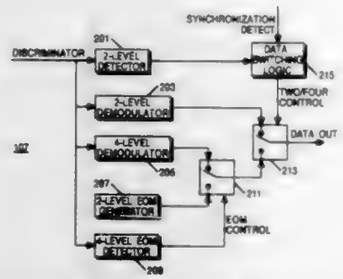
DEMODULATION SELECTION FOR A COMMUNICATION SIGNAL

Christopher N. Kurby, Elmhurst; Donald R. Beyer, Bartlett; Anne P. Davies-Walsh, Lindenhurst; Kevin L. Fluharty, Elgin, and Matthew R. Miller, Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 28, 1991, Ser. No. 723,288

Int. Cl.[5] H04L *25/49*

U.S. Cl. 375—17 **24 Claims**



13. A communication unit capable of demodulating a received signal that was modulated by one of a first modulation scheme and a second modulation scheme, the communication unit comprising:

means for outputting a signal formed by attempting to demodulate the received signal using a first demodulation scheme;

means for detecting when the received signal was modulated by the second modulation scheme; and

means, operative coupled to said detecting means, for outputting a signal formed by demodulating the received signal using a second demodulation scheme.

5,347,543

DEVICE FOR DIFFERENTIAL-MODE INFORMATION TRANSMISSION BETWEEN AT LEAST TWO ELEMENTS OF A MOTOR VEHICLE

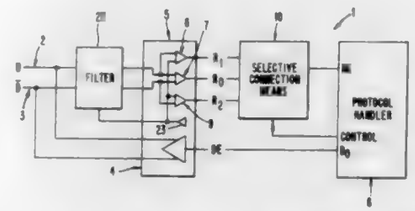
Jean-Luc Lecoco, Sevres, and Pierre Magne, Courbevoie, both of France, assignors to Automobiles Peugeot, Paris; Automobiles Citroen, Neuilly-sur-Seine and Regie Nationale des Usines Renault, Boulogne Billancourt, all of France

Filed Aug. 3, 1992, Ser. No. 923,480

Claims priority, application France, Aug. 7, 1991, 91 10070

Int. Cl.[5] H04B *3/00*

U.S. Cl. 375—36 **12 Claims**



1. A device for differential-mode information transmission between at least two elements of a motor vehicle, linked by two information transmission lines, each of the elements comprising information sending means and information reception means, linked to a protocol handler, wherein the reception means of each element comprise a first comparator receiving as input signals transiting on the two information transmission lines, a second comparator receiving as input signals transiting on one information transmission line and a third comparator receiving as input signals transiting on the other information transmission line and, interposed between output of the first, second and third comparators and an information input of the protocol handler, means for selective connection of an output of the first comparator or of an output of means for logically combining outputs of the second and third comparators, to the information input of the protocol handler, under control of the protocol handler as a function of the state of signals present at the information input of the protocol handler, in order to permit operation of the device in normal differential mode and in degraded mode on the basis of information transiting on one of the transmission lines.

5,347,544

GAIN OR LOSS COMPENSATION CIRCUIT FOR TELEPHONE LINES

Frank X. Garcia, and Bruce R. Miller, both of Aurora, Ill., assignors to Teltrend Inc., St. Charles, Ill.

Filed May 3, 1993, Ser. No. 56,412

Int. Cl.[5] H04B *3/04*

U.S. Cl. 375—36 **5 Claims**

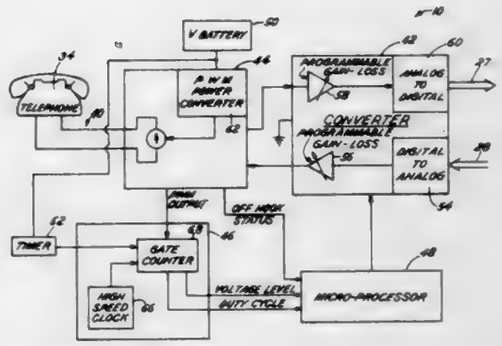
1. A gain or loss compensation circuit, interconnected between a digital carrier transmission line and a customer loop telephone line, said telephone line defining a length, comprising, in combination:

a converter, interconnected to said transmission line, for accepting a receive digital data signal and converting said receive digital data signal to a receive intermediate analog signal and for accepting a transmit intermediate analog signal and converting said transmit intermediate analog signal to a transmit digital data signal, said converter changing said analog signals with a variable gain in response to a compensation signal;

an interface circuit, interconnected between said converter and said telephone line, for accepting said receive intermediate analog signal and providing a receive analog telephone signal to said telephone line and for accepting a transmit analog telephone signal from said telephone line and providing a transmit intermediate analog signal to said converter, said interface circuit including a pulse width

modulated power converter defining a pulse width, said pulse width being correlated to said length of said telephone line, and said interface circuit providing a direct current to said telephone line related to said pulse width;

a gate array for sensing said pulse width of said power converter and responsively providing a measured signal representative of said pulse width; and



a controller for receiving said measured signal and responsively providing said compensation signal to said converter to vary said variable gain of said converter relative to said pulse width of said power converter and said length of said telephone line.

5,347,545

MULTI-TERMINAL COMMUNICATION EQUIPMENT FOR SMOOTHLY AND CORRECTLY COMMUNICATING DATA BETWEEN A PLURALITY OF TERMINAL EQUIPMENTS

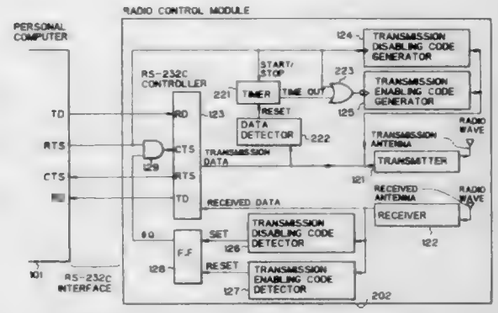
Tomoyuki Ishii, and Nobuyoshi Kondo, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 24, 1992, Ser. No. 825,507

Claims priority, application Japan, Jan. 25, 1991, 3-7691; Nov. 1, 1991, 3-287796

Int. Cl.[5] H04L *27/00*

U.S. Cl. 375—37 **28 Claims**



1. A multiple-terminal communication equipment, comprising a system comprising data communication means for performing data transmission, information processing means, coupled to said communication means, for processing the data, and data input/output means, coupled to said processing means, for inputting and outputting the data, said system realizing radio communication between at least two terminals by transmitting, before transmitting the data from one terminal, a transmission disabling code for disabling data transmission of other terminals, and after completely transmitting the data from said one terminal, a transmission enabling code for canceling the transmission disabled states of the other terminals.

5,347,546

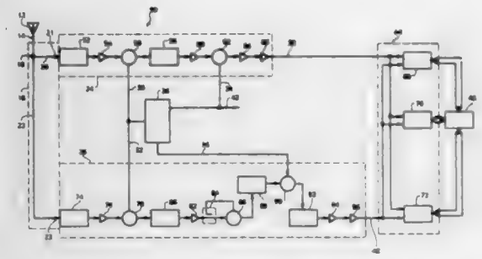
METHOD AND APPARATUS FOR PREFILTERING A GLOBAL POSITIONING SYSTEM RECEIVER

Kamran K. Abadi, Menlo Park, and Steven C. Evans, Soquel, both of Calif., assignors to Ashtech, Inc., Sunnyvale, Calif.

Filed Apr. 28, 1992, Ser. No. 874,795

Int. Cl.[5] H04L *25/06*

U.S. Cl. 375—75 **20 Claims**



13. A method for pre-filtering a global positioning system receiver, comprising the steps of:

(a) receiving a plurality of L-band radio frequency signals having unique modulation and originating in a plurality of global positioning system satellites;

(b) splitting said plurality of radio frequency signals into at least a first L1 radio frequency signal and a second L2 radio frequency signal;

(c) passing said first L1 radio frequency signal to a first radio frequency receiving section through a L1 signal passage defining a path from a common junction point to said L1 radio frequency receiving station, while simultaneously passing said L2 radio frequency signal to a second radio frequency receiving section through a L2 signal passage defining a path from said common junction point to said L2 radio frequency receiving section;

(d) isolating said L1 radio frequency signal from the L2 signal passage and isolating said L2 radio frequency signal from the L1 signal passage, while substantially preserving the L1 radio frequency and L2 radio frequency signals;

(1) fixing the lengths of said L2 passage such that the impedance at the end of said L2 passage is substantially infinite with respect to said L1 radio frequency signal;

(2) fixing the length of said L1 passage such that the impedance at the end of said L2 passage is substantially infinite with respect to said L2 radio frequency signal;

(3) matching the lengths of said L1 passage and said L2 passage such that the impedance at the end of said L2 passage is substantially infinite with respect to the L1 radio frequency signal and the impedance at the end of said L1 passage is substantially infinite with respect to the L2 radio frequency signal; and

(4) simultaneously, substantially minimizing unwanted reflection of L1 and L2 radio frequency signals along the L2 and L1 paths, respectively;

(e) feeding said L1 and said L2 radio frequency signals to said first L1 radio frequency receiving section and said second L2 radio frequency receiving section;

(f) developing intermediate frequency signals in the first L1 radio frequency receiving section and the second L2 radio frequency receiving station; and

(g) processing said intermediate frequency signals for determining a relative phase for each signal and end quantities of position, distance, velocity, time or the like.

5,347,547

METHOD AND APPARATUS FOR SYNCHRONIZING TRANSMITTER AND RECEIVER FOR HIGH SPEED DATA COMMUNICATION

Marc C. Gleichert, San Jose, and Yun-Che Wang, Los Altos, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 21, 1992, Ser. No. 839,978
Int. Cl.[5] H04L 7/00; G06F 11/10
U.S. Cl. 375—114 11 Claims

8. In a method for controlling receiver/transmitter synchronization in an 8B/10B receiver in which the receiver aligns its byte boundaries after receipt of and responsive to a specified unique resynchronization code bytes, THE IMPROVEMENT COMPRISING,

decoding digital data received by said receiver by on-the-fly combinatorial logic circuits looking for said specified unique resynchronization code byte;

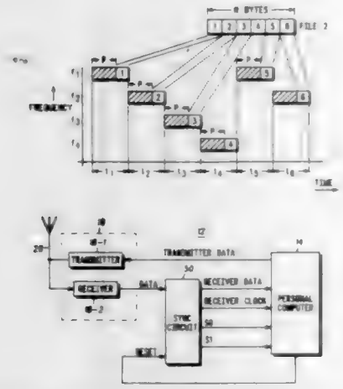
resynchronizing said receiver responsive to said specified unique resynchronization code byte only after two said specified unique resynchronization code bytes have been received which said two specified unique resynchronization code bytes are less than a specified number of bytes apart.

5,347,548

CIRCUIT FOR SIMULTANEOUS RECOVERY OF BIT CLOCK AND FRAME SYNCHRONIZATION

Thomas S. Messerges, Schaumburg; Larry C. Puhl, Sleepy Hollow, and Ezzat A. Dabbish, Cary, all of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jun. 19, 1992, Ser. No. 901,047
Int. Cl.[5] H04L 7/00, 7/06
U.S. Cl. 375—116 9 Claims



1. A circuit for simultaneously acquiring bit synchronization and frame synchronization in a serial data signal having a nominal data rate, said citcuit comprising:

dual-phase correlator means for indicating frame synchronization, said circuit means having an input receiving said serial data stream at said nominal data rate and having an output, said correlator means further comprising a first M-bit shift register receiving said serial data signal and clocked by a first clock signal at a data rate ∅1; a second M-bit shift register receiving said data signal and clocked by a second clock signal at a data rate 518 1+180° degrees; and means for comparing the received data of said first and second shift registers to a predetermined data pattern and for providing an output signal indicating frame synchronization is achieved when said received data of either said first or said second shift register matches said predetermined bit pattern;

said circuit further comprising an N-stage commutator means for establishing the validity of said nominal data rate of said data stream and for providing a bit clock signal from said data stream when said nominal data rate is valid, said N-stage commutator having an input receiving said serial data stream at said nominal rate.

5,347,549

METHOD AND APPARATUS FOR INTERFACING BETWEEN A TWISTED PAIR AND AN INTELLIGENT CELL

Donald D. Baumann, San Jose; W. Mike Berke, Newark; Stephen F. Dreyer, Palo Alto; Rod G. Sinks, Cupertino, and Kurt A. Stoll, Fremont, all of Calif., assignors to Echelon Corporation, Palo Alto, Calif.

Filed Apr. 20, 1993, Ser. No. 49,534
Int. Cl.[5] H04L 5/24; H04B 1/38
U.S. Cl. 375—117 12 Claims



1. In a network having a plurality of nodes interconnected by a line where communications occur by transmitting packets over the line and where the end of a packet is signified by the transmission of a first pulse having a predetermined duration and a polarity, an improved method comprising the steps of:

transmitting onto the line a second pulse following the first pulse, the second pulse being of an opposite polarity to the first pulse and having a duration approximately equal to the predetermined duration of the first pulse; and,

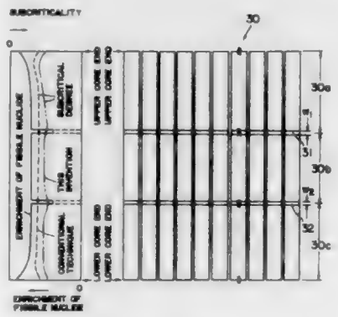
following the second pulse, clamping the line.

5,347,550

CORE OF LIGHT-WATER REACTOR

Akira Tanabe, Tokyo; Ritsuo Yoshioka; Makoto Ueda, both of Yokohama; Koichi Sakurada, Narashino, and Shouichi Watanabe, Ibaraki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 544,053, Jun. 22, 1990, abandoned, which is a continuation of Ser. No. 173,786, Mar. 28, 1988, abandoned. This application Mar. 22, 1993, Ser. No. 34,670
Claims priority, application Japan, Mar. 28, 1987, 62-72990; Apr. 9, 1987, 62-85748
Int. Cl.[5] G21C 3/30, 5/20, 7/04
U.S. Cl. 376—173 10 Claims



1. A water reactor core comprising:

a plurality of fuel assemblies each including a number of fuel rods,

at least some of the fuel rods including upper, lower, and middle enriched fissile areas, at least two of the upper, lower, and middle enriched fissile areas having different vertical widths,

at least some of the fuel rods including upper and lower interposed areas not enriched in fissile nuclide at axial predetermined portions between areas of enriched fissile nuclide, the upper interposed area being between the upper and middle enriched fissile area, the lower interposed area being between the middle and lower enriched fissile areas, the interposed areas including natural or depleted uranium, the upper interposed area having a vertical width different than that of the lower interposed area, the vertical widths of both the upper and the lower interposed areas each being between about 3 and 8 centimeters, and

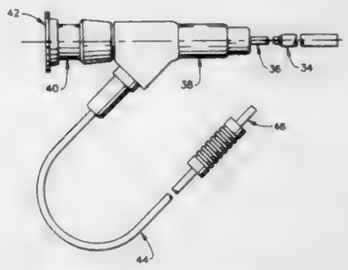
wherein a burnable poison is added to fuel pellets located in fuel rods adjacent to the upper and lower interposed areas.

5,347,551

METHOD FOR EXAMINING IRRADIATED FUEL BUNDLE SPACER SPRINGS USING FIBER-OPTIC VISUAL INSPECTION EQUIPMENT

John A. Kervinen, Palo Alto, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Jul. 9, 1993, Ser. No. 87,563
Int. Cl.[5] G21C 17/00
U.S. Cl. 376—248 19 Claims



1. A method for inspecting spacer springs of a nuclear fuel bundle assembly having a plurality of spacers, each of said spacers comprising first through fourth ferrules joined in a square array having an inner central space, said first and second ferrules having a common spacer spring, comprising the steps of:

inserting a distal end of a fiber-optic scope having image and light guides through an upper tie plate and between the fuel rods of said fuel bundle assembly at the top thereof;

lowering said distal end of said scope into said inner central space until a side aperture of said scope is at the elevation of said common spacer spring;

supplying light to said light guide and redirecting said light out said side aperture to a spot proximal to the field of view of said image guide; and

visually inspecting for defects that portion of said spacer spring which appears in the image received by said ocular lens.

5,347,552

METHOD FOR USING A THIMBLE OF A PRESSURIZED WATER NUCLEAR REACTOR AND DEVICE FOR ADJUSTING THE AXIAL POSITION OF THE THIMBLE

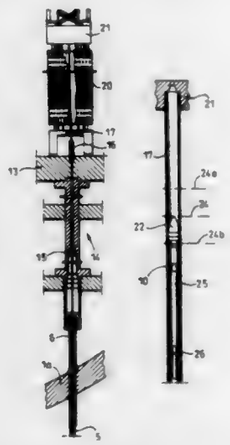
Jacques Malmasson, Evry, France, assignor to Framatome, Courbevoie, France

Filed Jul. 6, 1993, Ser. No. 88,668
Claims priority, application France, Jul. 3, 1992, 92 08263
Int. Cl.[5] G21C 17/00
U.S. Cl. 376—254 8 Claims

1. In a nuclear reactor comprising a vessel, a core comprised of fuel assemblies and lower internals of the reactor disposed in the vessel, a measurement room outside the vessel, at least one guidance tube joining the measurement room to the vessel, at least one vertical channel passing through the lower internals, beneath the core in line with a vertical tube guide of a fuel assembly of the core, and at least one thimble ensuring guidance of a probe, the method comprising the steps of

(a) introducing the thimble in a guidance duct comprising the guidance tube, the vertical channel and the vertical tube guide of the assembly, so that a closed end of the thimble penetrates inside the tube guide as far as a predetermined level, corresponding to a first position of the thimble, in the guidance duct;

(b) measuring neutron flux inside the assembly when the reactor is operating, through the probe guided into the thimble, over a first period of use;



(c) displacing the thimble along the axis of the guidance duct from said first position to a second position, from the measurement room; and

(d) measuring neutron flux inside the assembly in the reactor, over a second period of use, the position of at least one preferential wear zone of the thimble being different with respect to at least one zone of the guidance tube during said first and second periods of use.

5,347,553

METHOD OF INSTALLING A CONTROL ROOM CONSOLE IN A NUCLEAR POWER PLANT

Kenneth Scarola; David S. Jamison, both of Windsor; Richard M. Manazir, North Canton; Robert L. Rescorl, Vernon, and Daryl L. Harmon, Enfield, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Continuation of Ser. No. 925,855, Aug. 6, 1992, Pat. No. 5,267,278, which is a division of Ser. No. 430,792, Nov. 2, 1989, Pat. No. 5,267,277. This application Oct. 6, 1993, Ser. No. 132,699
Int. Cl.[5] G21C 17/00
U.S. Cl. 376—259 5 Claims



1. A method for installing a multi-panel, computer driven console in the control room of a nuclear power plant in which a plurality of major plant functions are performed, at least two of the panels having plant-specific algorithms for processing plant operating parameters and distinct indicator, alarm and control system man-machine interfaces pertaining to a respective two major plant functions comprising the steps of:

(a) installing at least two generic panels in the control room,

wherein each generic panel includes a generic hardware configuration and a generic software configuration which has generic parameter processing algorithms, which together define a generic man-machine interface for each of said at least two major plant functions;

(b) testing the generic panels with test parameters to confirm the interaction of the generic hardware configuration with the generic software configuration;

(c) outside the control room and in parallel with at least one of the steps (a) and (b), preparing a plant specific software configuration which has plant specific parameter processing algorithms;

(d) after steps (b) and (c), integrating the plant specific software configuration with the generic panels in the plant control room to define final panels; and

(e) testing the final panels to confirm the interaction of the generic hardware configuration with the plant specific software configuration, which together provide the plant-specific man-machine interface.

5,347,554

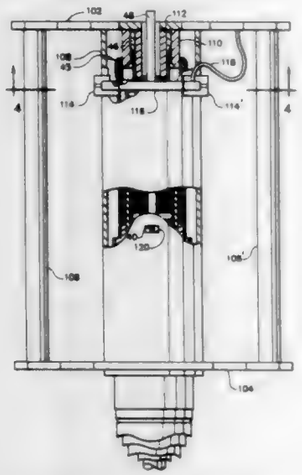
OUTER FILTER REMOVAL TOOL

Thomas W. White, San Jose; Edward J. Pulpan, San Ramon; Robert S. Tsukida, San Jose; Edward W. Saxon, San Jose, and Frank Ortega, San Jose, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Oct. 12, 1993, Ser. No. 135,872

Int. Cl.[5] G21C *19/00*

U.S. Cl. 376—260 **20 Claims**



1. A tool for removing an outer filter from a control rod drive after a control rod has been uncoupled therefrom, said outer filter having a radially outwardly projecting flange, comprising:

a cylindrical shield having a wall with diametrally opposed first and second circumferentially extending slots of similar shape formed at a predetermined distance from an end of said shield, said shield being sized such that said outer filter fits inside;

means for supporting said shield in a vertical position surrounding said outer filter with said first and second slots at an elevation slightly lower than the elevation of a lower boundary of said outer filter flange; and

means for coupling said surrounded outer filter to said shield, said coupling means having a fully inserted position whereat first and second portions thereof respectively protrude into said first and second slots; and

means for retaining said coupling means in said fully inserted position.

5,347,555

METHOD FOR SHREDDING AND PACKING FUEL ASSEMBLY CASES OR SIMILAR NUCLEAR REACTOR STRUCTURAL ELEMENTS AND APPARATUS FOR PERFORMING THE METHOD

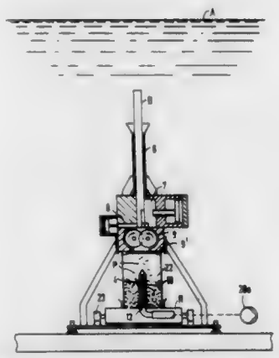
Klaus Knecht, and Heinz Knaab, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 22, 1993, Ser. No. 51,636

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1992, 4213260

Int. Cl.[5] G21C *19/34*

U.S. Cl. 376—261 **23 Claims**



9. A method for shredding and packing used fuel assembly cases of nuclear reactors, which comprises: shredding fuel assembly cases to scrap pieces; flushing the scrap pieces in a transport container; flushing out particles of foreign matter and collecting the particles in the interior of the transport container; packing the flushed scrap pieces around the particles of foreign matter collected in the interior; and inserting the packed transport container into a sealable disposal container.

5,347,556

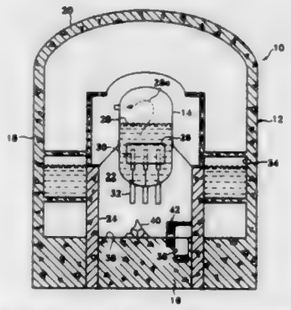
CORIUM SHIELD

Douglas B. McDonald, Pleasanton, and Carol E. Buchholz, San Jose, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Jul. 1, 1993, Ser. No. 84,113

Int. Cl.[5] G21C *9/016*

U.S. Cl. 376—280 **20 Claims**



1. A shield for restricting flow of molten corium released from a nuclear reactor core disposed in a reactor pressure vessel inside a containment vessel so that said molten corium does not flow into a water sump disposed in a floor of the containment vessel, comprising:

an upper wall extending vertically upwardly from said floor and laterally bounding said sump for blocking fluid flow into said sump from said floor; and

a lower wall extending vertically downwardly from said floor and coextensively with said upper wall, and laterally bounding said sump;

wherein said upper wall has a plurality of laterally spaced flow channels extending horizontally therethrough, each channel having a bottom disposed coextensively with said floor for channeling water therefrom through said upper wall into said sump, and each channel having a height and a length selected for allowing heat from said molten corium to dissipate into said upper and lower walls upon flow of said molten corium through said channel so that said molten corium is solidified therein.

5,347,557

APPARATUS FOR DECONTAMINATING RADIOACTIVELY CONTAMINATED SURFACES

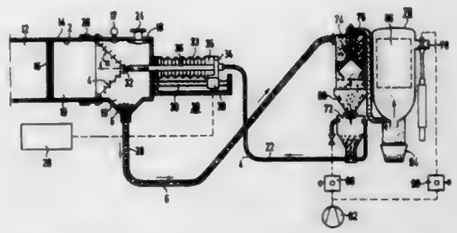
Hermann Operschall, Lauf; Karl-Heinz Hack, Kunreuth; Klaus Hengelhaupt, Nuermberg, and Konrad Meier-Hynek, Herzogenaurach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 19, 1993, Ser. No. 34,689

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1993, 4306631

Int. Cl.[5] G21C *19/42*

U.S. Cl. 376—316 **20 Claims**



1. An apparatus for decontaminating a radioactively contaminated surface region of a pipe, connector or vessel being open at one end, with a dry mechanical blasting medium, comprising:

a processing bell to be mounted on an open end of a pipe, connector or vessel having a radioactively contaminated surface region to be decontaminated;

a flexible dustproof duct connected to said processing bell;

a retaining device protruding into said duct and being movable from outside in the interior of the pipe, connector or vessel;

a blasting head disposed on said retaining device; and

a blasting system being connected to said blasting head and having a continuous circulation of a dry mechanical blasting medium.

5,347,558

INPUT FREQUENCY CONVERTER TO INCREASE INPUT FREQUENCY RANGE OF A SYNCHRONOUS DELAY LINE

Bobby B. Nikjou, Tempe, Ariz., assignor to Intel Corporation, Santa Clara, Calif.

Filed Oct. 20, 1993, Ser. No. 139,196

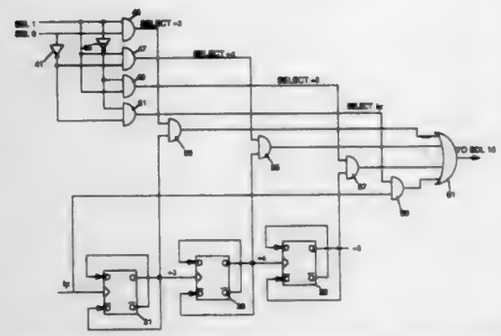
Int. Cl.[5] H03K *21/00*

U.S. Cl. 377—47 **5 Claims**

1. A front end to a frequency multiplier which increases the reliable operational input frequency range of the frequency multiplier adapted to operate using a predetermined optimal input frequency, said front end comprising:

a) a decoder for generating a set of select signals from a smaller set of control signals;

b) a frequency divider means coupled between the frequency converter and an input clock source for generating a predetermined set of clock frequencies by dividing the input clock source such that one of said set of predetermined clock frequencies is substantially equal to the predetermined optimal input frequency;



c) inhibit circuit means for selecting the one clock frequency from said set of predetermined clock frequencies which is substantially equal to the predetermined optimal input frequency based upon said set of select signals.

5,347,559

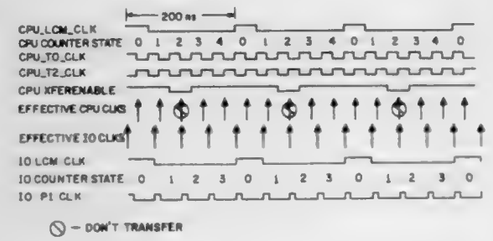
APPARATUS AND METHOD OF DATA TRANSFER BETWEEN SYSTEMS USING DIFFERENT CLOCKS

Thomas B. Hawkins, Boylston; William Bruckert, and Thomas D. Bissett, both of Northboro, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 30, 1992, Ser. No. 998,714

Int. Cl.[5] H03K *21/08*

U.S. Cl. 377—54 **10 Claims**



1. Apparatus comprising:

means for providing a data value;

a counter;

means for detecting a selected state of said counter to load said data value into said counter in accordance with said detected state of said counter;

means for storing data bits with the logic state of selected ones of said bits corresponding to a temporal relationship of pairs of pulses of clock signals for which valid data transfers can occur

means responsive to output signals from said counter for selectively providing said selected bits as an enable signal in accordance with the state of said counter; and

at least one recirculating state device fed by said enable signal and said clock signals to selectively permit or inhibit transfer of data fed to said recirculating state device in accordance with the state of said enable signal.

5,347,560

FUEL ASSEMBLY WITH SECURED ROD ENDS AT THE FOOT

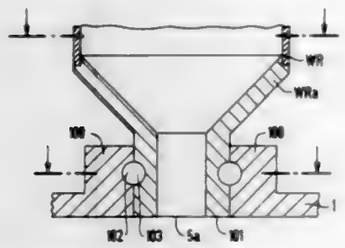
Hans-Joachim Lippert, Höchstadt, and Werner Meier, Kunreuth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, München, Fed. Rep. of Germany

Division of Ser. No. 33,590, Mar. 18, 1993, Pat. No. 5,309,491. This application Oct. 29, 1993, Ser. No. 145,694

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1990, 4029539

Int. Cl.[5] G21C *3/34*

U.S. Cl. 376—446 **15 Claims**



1. A fuel assembly, comprising:

a) a rod cluster containing mutually parallel fuel rods including rods with lower end pieces;

b) a top plate covering said cluster at the top and having coolant outlets formed therein;

c) a base plate covering said cluster at the bottom and having coolant inlets formed therein;

d) said base plate and at least said end piece of one of said rods each having a connecting part with profiles being adapted to one another for forming a releasable connection of said end piece to said base plate with said end piece being introduced into said connection from above; and

e) a bolt for preventing lifting of said rod off said base plate.

5,347,561

X-RAY EXPOSURE APPARATUS AND SEMICONDUCTOR-DEVICE MANUFACTURING METHOD

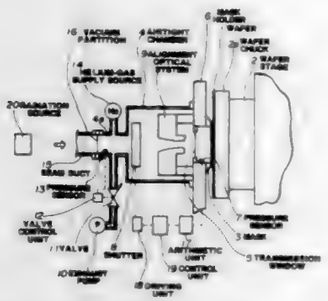
Ryuichi Ebinuma, Machida, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 966,846, Oct. 27, 1992, abandoned. This application Dec. 17, 1993, Ser. No. 168,412

Claims priority, application Japan, Nov. 1, 1991, 3-315417

Int. Cl.[5] G21K *5/00*

U.S. Cl. 378—34 **19 Claims**



1. An x-ray exposure apparatus, comprising:

substrate holding means for holding a substrate in atmosphere;

original holding means for holding an original having a pattern;

adjustment means for adjusting an amount of x-ray exposure to the original and the substrate;

pressure detection means for detecting atmospheric pressure information in the vicinity of the substrate;

calculation means for calculating intensity information of the x-rays irradiating the substrate, based on a detection output from said pressure detection means; and

control means for controlling said adjustment means in accordance with a result calculated by said calculation means.

5,347,562

SYNCHRONIZING GROUPS OF BASE STATIONS IN TIME DIVISION DUPLEX COMMUNICATION SYSTEMS

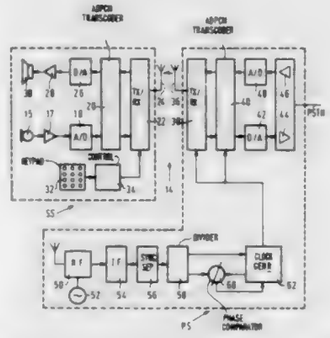
Edwin R. Candy, Cambridge, England, assignor to Hutchinson Personal Communications Limited, Cambridge, England

Continuation of Ser. No. 671,846, Apr. 12, 1991, abandoned. This application Jun. 2, 1993, Ser. No. 71,862

Claims priority, application United Kingdom, Aug. 18, 1989, 8918908

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—58 **9 Claims**



1. A primary station for use in a cordless telephone system, in which communication between the primary station and a transportable secondary station is by way of a time division duplex radio link, said primary station comprising:

radio transceiving means for communicating with a secondary station,

means for receiving a radio signal which is broadcast by a source which is external to the cordless telephone system,

means for deriving a characteristic from the received radio signal, which characteristic is present in the received radio signal for a reason other than synchronizing stations in the cordless telephone system,

a clock generator for controlling the switching of the radio transceiving means between successive transmit and receive periods, and

means responsive to the derived characteristic for adjusting the clock generator so that the transmit period of the radio transceiving means is synchronized with those of at least one other primary station.

5,347,563

METHOD FOR DETERMINING THE FUNCTION REPRESENTING THE EFFECT OF NON-RECIPROCITY OF A RADIOGRAPHIC FILM

Robert Heidsieck, Versailles, France, assignor to General Electric CGR S.A., Issy les Moulineaux, France

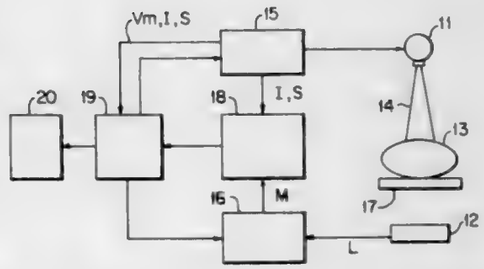
Filed Jul. 5, 1991, Ser. No. 726,175

Claims priority, application France, Jul. 6, 1990, 90 08626

Int. Cl.[5] G01N *23/04*

U.S. Cl. 378—62 **11 Claims**

2. A method for determining the function representing the effect of non-reciprocity of a radiographic film in a system of radiology designed to examine an object that includes an X-ray tube, the supply voltage V of which may assume various values V_m, with continuous or discrete variation, said X-ray tube emitting an X-ray beam in the form of pulses of variable duration t_i towards the object to be examined, a receiver of the X-radiation that has crossed the object form an image of said object, a cell for the detection of the X-rays that have crossed the object to be examined, that enables the conversion of a physical variable, characterizing the X-ray beam, into a measurement signal L, an integrator circuit that integrates the measurement signal L for the duration t_i and gives a signal M,



and a device to compute the yield D given by the ratio of M to the product $I \times t_i$ (or mA.s) of the anode current I of the tube by the duration t_i of the exposure, wherein said method includes the following steps:

(a) determining the coefficients of non-reciprocity CNRT (t_i) of the film expression in exposure time t_i for an optical density DO_{refo} of said film;

(b) determining the reference lumination L_{ref} received by said film;

(c) calculating the photon dose rates d_i on said film by the formula:

$$d_i = \frac{L_{ref} \times CNRT\,(t_i)}{t_i}$$

(d) determining the coefficients of non-reciprocity CNRD (d_i) expressed in photon dose rate d_i by the application of the formula:

$$CNRD\,(d_i) = CNRT\,(t_i)$$

wherein the step (a) includes the following operations:

(a1) making, by means of a variable time sensitograph, a first sensitogram S_{refo} when the exposure time is set for a reference time t_{refo};

(a2) making, by means of the same variable time sensitograph, q sensitograms S_1 to S_q for q different exposure times t_i;

(a3) choosing a reference optical density DO_{refo};

(a4) measuring, on each sensitogram, the illumination step Ech_{refo}; $Ech_1 \ldots Ech_i \ldots Ech_q$ corresponding to the optical density DO_{refo};

(a5) calculating the coefficient CNRT (t_i) by the equation:

$$CNRT\,(t_i) = \exp\left[\log_{10}\left(\frac{Ech_{refo} - Ech_i}{K}\right)\right]$$

5,347,564

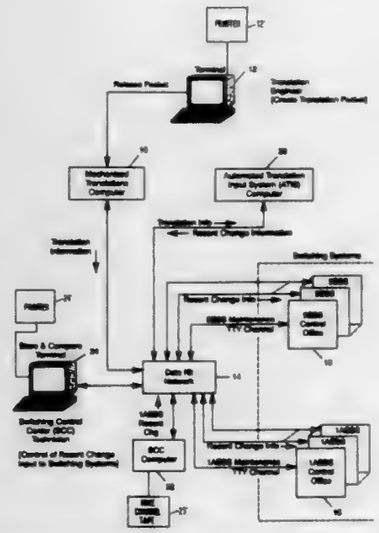
AUTOMATED TRANSLATION INPUT SYSTEM

Mark F. Davis, Severna Park, Md.; Paul J. Glaser, Martinsburg, W. Va.; William H. A. Brandt, Baltimore, and Rudolph Somwaru, Burtonsville, both of Md., assignors to The Chesapeake and Potomac Telephone Company of Maryland, Baltimore, Md.

Filed Dec. 20, 1991, Ser. No. 811,370

Int. Cl.[5] H04M *3/26, 7/06*

U.S. Cl. 379—12 **20 Claims**



1. A mechanized translation system (MTS) operated in a telecommunications network having stored program control (SPC) switches controlled by switching control centers (SCC), said mechanized translation system including computer, storage and printer means for generating MTS forms containing information for effecting translations in said SPC switches, for storing said information and for presenting said information in printed forms, said MTS being operatively connected to said switching control centers and having manually operable means for translating said information in said MTS forms into messages in switch command language for effecting translations in at least certain of the programs controlling said SPC switches, said MTS further comprising;

a) first automated translation (AT) storage means having stored therein switch command language data corresponding to predetermined information in predetermined MTS forms;

b) AT computer means associated with said first AT storage means, said AT computer means having access to said MTS storage means to permit inspection of the contents thereof and selection from said contents of MTS forms containing information corresponding to said switch command language data stored in said first AT storage means, said AT computer means including terminal node means operable to access said predetermined MTS forms in said MTS storage means, to store said MTS forms, to permit comparison by a human operator of said MTS forms to said predetermined information in predetermined forms for which switch command language data is stored in said first AT storage means, and to produce at said terminal node means a switch command language translation of said predetermined information; and

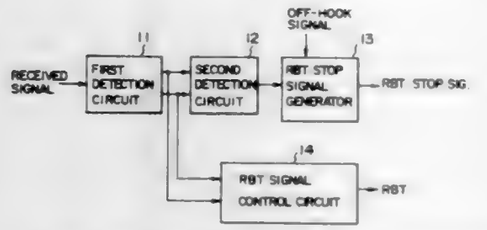
c) means for inputting said switch command language translation at said terminal node means to a selected SPC switch.

5,347,565

ORDER WIRE DEVICE HAVING FUNCTION FOR REDUCING NOISE IN COMMUNICATION SYSTEM HAVING A PLURALITY OF ORDER WIRE DEVICES

Kimio Uekama, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 4, 1992, Ser. No. 894,367
Claims priority, application Japan, Jun. 6, 1991, 3-135143
Int. Cl.[5] H04M *1/24, 1/00;* **H04J** *3/06;* **G05B** *23/02*
U.S. Cl. 379—12 **9 Claims**



1. An order wire device in a communication system having a plurality of order wire devices, signals output from each of said order wire devices being serially transmitted to remaining order wire devices, each of said order wire devices being capable of simultaneously calling remaining order wire devices in an all station calling mode, said order wire device comprising:

first signal output means for outputting a ring-back-tone signal;

detection means for detecting a request for a call in said all station calling mode;

first control means, operatively coupled to said first signal output means and said detection means, for activating said first signal output means when said detection means detects said request;

second control means, operatively coupled to said first signal output means, for inactivating said first signal output means when an off-hook operation which is an operation enabling communication with a calling order wire device is carried out in response to said request;

second signal output means, operatively coupled to said detection means, for outputting a stop signal when said detection means detects said request and the off-hook operation has been carried out; and

said detection means also detecting a stop signal output from another order wire device in which the off-hook operation has been carried out;

said second control means being operatively coupled to said detection means for inactivating said first signal output means when said detection means detects said request and the stop signal.

5,347,566

RETROFIT SUBSCRIBER LOOP CARRIER SYSTEM WITH IMPROVED PERFORMANCE MONITORING AND REMOTE PROVISIONING

Edward K. Law, Santa Clara, and Yick M. Chan, Palo Alto, both of Calif., assignors to Digital Transmission Systems, Inc., Norcross, Ga.

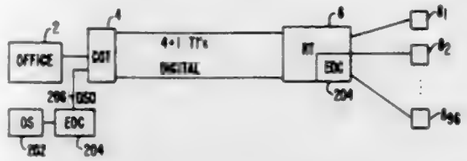
Filed Oct. 23, 1991, Ser. No. 781,466
Int. Cl.[5] H04M *1/24*
U.S. Cl. 379—27 **16 Claims**

MICROFICHE APPENDIX INCLUDED
(152 Microfiche, 3 Pages)

1. A subscriber loop carrier system for transporting a plurality of signals originating from a central office terminal to subscriber locations coupled to a remote terminal, said remote terminal comprising:

a plurality of channel units for transmitting and receiving said subscriber signals; and

a control unit operably coupled to said channel units, said control unit communicating control and monitoring information to and from said plurality of channel units, said control unit coupled to said channel units by a read disable bus (RNDIS), said read disable bus communicating said



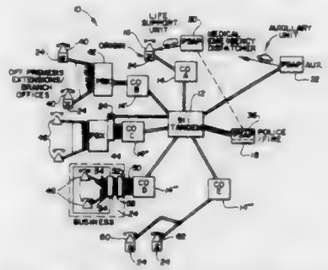
control and monitoring information between said control unit and said plurality of channel units by modulating a voltage level on said RNDIS bus within a predefined high voltage level.

5,347,567

APPARATUS AND METHOD FOR IDENTIFYING A CALLING STATION

Martin Moody, Inver Grove Heights, and Gordan Osgood, Starbuck, both of Minn., assignors to Telident, Incorporated, Minneapolis, Minn.

Filed Sep. 10, 1992, Ser. No. 943,055
Int. Cl.[5] H04M *11/00, 11/04*
U.S. Cl. 379—45 **16 Claims**



16. A method of identifying a specific station of a plurality of stations initiating a telephone call, comprising the step of:

(a) permanently assigning a fixed designation to a geographically-defined station capable of initiating a telephone call;

(b) encoding said designation into an electronic format;

(c) providing means at the station for transmitting the encoded, fixed designation to an answering point;

(d) sensing, at the answering point, the telephone call by the geographically-defined station;

(e) disposing the answering point to receive the encoded designation; and

(f) transmitting the encoded, fixed designation to the answering point.

5,347,568

EMERGENCY CALL STATION IDENTIFICATION SYSTEM

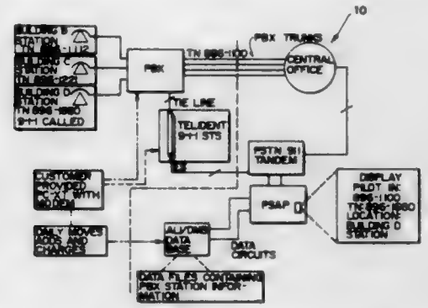
Martin Moody, Inver Grove Heights; Donald Madson, Shoreview, and Gordan Osgood, Starbuck, all of Minn., assignors to Telident, Incorporated, Minneapolis, Minn.

Continuation of Ser. No. 686,492, Apr. 17, 1991, Pat. No. 5,235,630. This application Jul. 9, 1993, Ser. No. 89,846
Int. Cl.[5] H04M *11/04*
U.S. Cl. 379—45 **5 Claims**

1. Apparatus for identifying, to an appropriate public safety answering point (PSAP) connected in a "9-1-1" emergency call network having a designated protocol, a specific station, of a plurality of geographically-dispersed stations represented by a common phone number identifiable by the "9-1-1" emergency call network and serviced by a private branch exchange (PBX) having a different protocol, initiating a "9-1-1" emergency call, comprising:

(a) means for assigning an arbitrary designation representing a specific station identified as having initiated a "9-1-1" emergency call, and for transmitting said arbitrary designation to the appropriate PSAP; and

(b) means, integral in a common module with said assigning means, for harmonizing, prior to entry of the emergency



call into the "9-1-1" emergency call network, the PBX protocol with the protocol of the "9-1-1" emergency call network;

(c) wherein the PSAP identifies the specific station having initiated the "9-1-1" emergency call based upon said arbitrary designation; and

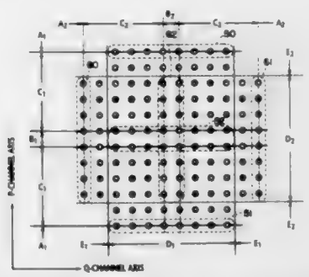
(d) wherein the PSAP identifies the specific station having initiated the "9-1-1" emergency call without the need of any companion equipment to said module.

5,347,569

GAIN CONTROL CIRCUITRY FOR QAM DEMODULATOR

Takeshi Yamamoto, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 26, 1992, Ser. No. 841,820
Claims priority, application Japan, Feb. 27, 1991, 3-031263
Int. Cl.[5] H04L *5/12, 23/02*
U.S. Cl. 375—39 **4 Claims**



1. A gain control circuit for first and second gain-controlled amplifiers which amplify first- and second-channel baseband components of a 2^{2n+3}-QAM (quadrature amplitude modulation) signal, respectively, said baseband components having an orthogonal phase relationship with respect to each other, said circuit comprising:

means for recovering a first data signal and a first error signal from the output of said first gain-controlled amplifier and recovering a second data signal and a second error signal from the output of said second gain-controlled amplifier;

means for defining along a first axis of the signal constellation of the QAM signal two outermost regions A_1, an innermost region B_1, and two intermediate regions C_1 respectively lying between the outermost regions A_1 and the innermost region B_1 and defining along said first axis of said constellation two outer regions E_2 and an inner region D_2 therebetween, and determining the location of the signal point of said first baseband component with respect to said regions A_1, B_1, C_1, D_2 and E_2 in dependence on said first data signal and said first error signal to produce a first logical output signal representative of the location determined with respect to the regions A_1, B_1 and C_1, and a second logical output signal representative of the location determined with respect to the regions D_2 and E_2;

means for defining along a second, orthogonal axis of the signal constellation two outermost regions A_2, an innermost regions B_2, and two intermediate regions C_2 respectively lying between the outermost regions A_2 and the innermost region B_2 and defining along said second axis of said constellation two outer regions E_1 and an inner region D_1 therebetween, and determining the location of the signal point of said second baseband component with respect to said regions A_2, B_2, C_2, D_1 and E_1 in dependence on said second data signal and said second error signal to produce a third logical output signal which is representative of the location determined with respect to the regions A_2, B_2 and C_2, and a fourth logical output signal representative of the location determined with respect to the regions D_1 and E_1; and

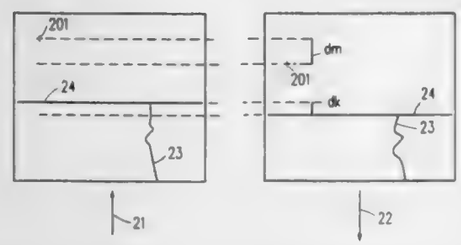
means for controlling said first gain-controlled amplifier in accordance with said first and fourth logical output signals and controlling said second gain-controlled amplifier in accordance with said third and second logical output signals.

5,347,570

METHOD FOR PERIPHERAL ANGIOGRAPHY AND ARRANGEMENT FOR CARRYING OUT THE METHOD

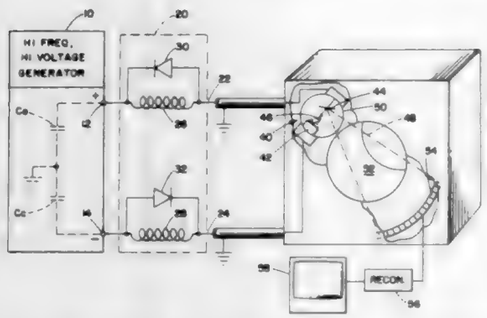
Wilfried Haaks, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 21, 1993, Ser. No. 80,274
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1992, 4220282
Int. Cl.[5] H05G *1/64*
U.S. Cl. 378—98.12 **6 Claims**



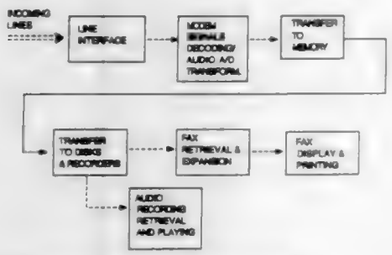
1. A method for peripheral angiography in which the examination zone (1, 2) and an X-ray imaging system (3, 4) for generating X-ray images consisting of lines are displaced relative to one another, X-ray images of neighbouring parts of the examination zone being formed in different positions, a contrast image and a mask image being acquired from the X-ray images and the contrast image and the mask image being subtracted from one another, characterized in that after injection of contrast medium the displacement is controlled so that the contrast medium bolus remains reproduced in the X-ray images, and that the contrast image is acquired from X-ray image lines which already reproduce the contrast medium whereas the mask image is acquired from the parts of the X-ray images which do not yet reproduce the contrast medium.

5,347,571
X-RAY TUBE ARC SUPPRESSOR
Avery D. Furbee, Elmhurst; Lester Miller, Forest Park, and Carl F. Bauer, Chicago, all of Ill., assignors to Picker International, Inc., Highland Hts., Ohio
Filed Oct. 6, 1992, Ser. No. 957,219
Int. Cl.[5] H05G 1/10
U.S. Cl. 378—105 12 Claims



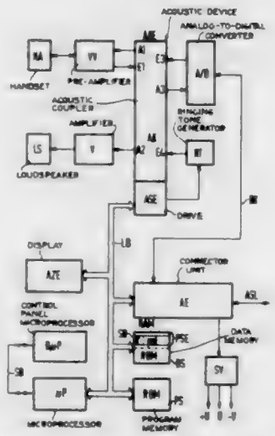
1. A power supply for an x-ray tube of an x-ray diagnostic scanner, the power supply comprising:
a high frequency voltage supply means for supplying a high frequency rectified voltage;
an arc suppressor means connected with the high frequency voltage supply means, the arc suppressing means including:
an inductive load which stores energy during a sudden current rise associated with x-ray tube arcing, the inductive load including a plurality of coils arranged at spaced intervals along a central axis,
a means connected with the inductive load for dissipating the stored energy;
an x-ray tube which is connected with the inductive load of the arc suppressing means.

5,347,572
TELEPHONE LINE MONITORING APPARATUS AND METHOD
Shlomo Avni, Givataim, Israel, assignor to Teletron Ltd., Petah Tikva, Israel
Filed Sep. 5, 1991, Ser. No. 755,128
Claims priority, application Israel, Sep. 6, 1990, 095601; Sep. 6, 1990, 095602
Int. Cl.[5] H04M 11/00; H04N 1/00
U.S. Cl. 379—100 7 Claims



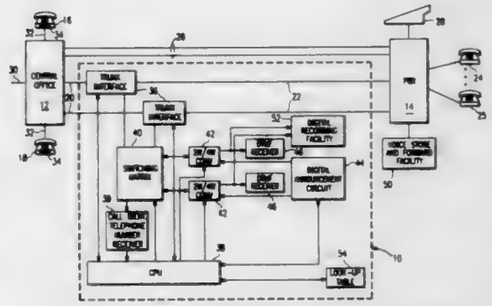
1. Fax monitoring apparatus, comprising:
line interface means connected in parallel to a telephone line for simultaneously detecting and analyzing audio signals produced on the telephone line by two fax machines communicating through the telephone line;
analysis means for analyzing and interpreting the audio signals to form a compressed fax image;
expansion means for expanding the compressed fax image into a bit-mapped image;
storage means for storing the compressed fax image and/or the bit-mapped image; and
display means for displaying the bit-mapped image of the original fax transmission.

5,347,573
METHOD FOR INFLUENCING A SIGNALLING PROCEDURE IMPLEMENTED IN A COMMUNICATION TERMINAL EQUIPMENT
Wolfgang Wilde, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Jun. 11, 1992, Ser. No. 897,087
Claims priority, application European Pat. Off., Jun. 13, 1991, 91109744.2
Int. Cl.[5] H04M 3/42
U.S. Cl. 379—201 18 Claims



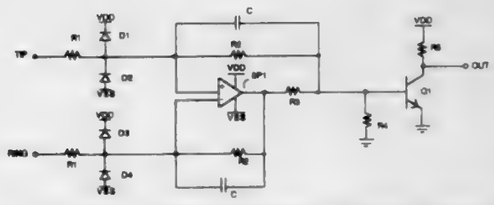
1. A method for controlling a signalling procedure in a communication terminal equipment, a call setup or call clearing between the communication terminal equipment and a communication system connected thereto, as well as, performance feature controls within a framework of the call setup and call clearing and during a communication phase being controlled by the signalling procedure realized in program-oriented terms and controlled by key actuations, comprising the steps of:
providing signalling sub-procedures definable by different procedure control information, said signalling sub-procedures forming the signalling procedure;
forming first procedure control information that defines a signalling sub-procedure after every activation of the communication terminal equipment and before every branching of the signalling procedure into a plurality of signalling sub-procedures and communicating said first procedure control information to a display device for displaying at least the first procedure control information;
activating a sequence key in the communication terminal equipment, and in response thereto forming further procedure control information defining a further signalling sub-procedure and communicating the further procedure control information to the display device; and
activating an actuation key in the communication terminal equipment, and in response thereto selecting and executing a signalling sub-procedure respectively defined by procedure control information most recently supplied to the display device.

5,347,574
AUTOMATED CALL SCREENING
Sanford J. Morganstein, Elgin, Ill., assignor to Dytel Inc., Phoenix, Ariz.
Continuation of Ser. No. 568,582, Aug. 16, 1990, Pat. No. 5,109,405, which is a continuation of Ser. No. 217,179, Jul. 11, 1988, Pat. No. 5,029,196. This application Apr. 1, 1992, Ser. No. 861,998
The portion of the term of this patent subsequent to Jul. 2, 2008, has been disclaimed.
Int. Cl.[5] H04M 3/54
U.S. Cl. 379—210 2 Claims



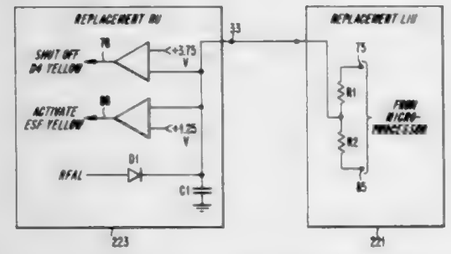
1. A method for controlling routing of a telephone call, comprising the steps of:
programming a route directory with at least one potential calling party identity to be associated with one of a plurality of destinations including an intended called party and a voice messaging facility;
receiving an incoming telephone call directed to a switching system and receiving an identity of a calling party placing said incoming call;
accessing said route directory in response to said incoming call to determine a destination route of said incoming call based upon said identity of said calling party;
connecting said incoming call to said voice messaging facility in response to said incoming call having a calling party identity programmed to route said incoming call to said voice messaging facility as determined by said route directory; and
indicating to an intended called party that said incoming call was connected to said voice messaging facility.

5,347,575
CIRCUIT TO DETECT THE HOOK STATUS AND RINGING AT THE CPE END OF A TELEPHONE NETWORK
Abear Naseer, Chandler; Lalit O. Patel, Mesa, and Edward M. Horiuchi, Glendale, all of Ariz., assignors to AG Communication Systems Corporation, Phoenix, Ariz.
Filed Mar. 26, 1992, Ser. No. 857,908
Int. Cl.[5] H04M 3/00
U.S. Cl. 379—377 10 Claims



1. A circuit for detecting the status of a telephone line, said status being either on-hook, or off-hook, said telephone line also providing a ringing signal, said ringing signal having a frequency, said telephone line comprising a first lead and a second lead, said circuit comprising:
a transconductance means for converting a voltage difference between said first lead and said second lead of said telephone line into a current, said current having a magnitude proportional to said voltage difference; and
a current detector means for detecting said current from said transconductance means, said current detector means detects said on-hook status when a predefined amount of current is detected, said current detector means detects said off-hook status in an absence of said predefined amount of current, said ringing signal causing said current to fluctuate above and below said predefined amount at the same frequency as said ringing signal, whereby said current detector means also provides alternating on-hook and off-hook status at the same frequency as said ringing signal.

5,347,576
LINE INTERFACE UNIT RETROFIT CIRCUIT
Steven C. Taylor, Hillsborough, Calif., assignor to Verilink Corporation, San Jose, Calif.
Filed Aug. 15, 1991, Ser. No. 744,576
Int. Cl.[5] H03K 5/00
U.S. Cl. 379—399 5 Claims



1. A retrofit circuit for communicating one of three conditions from a line interface unit to a receiver unit, using one external connection between said line interface unit and said receiver unit, said line interface unit having a detection circuit responsive to a received signal on said line interface unit using extended superframe format and with no yellow alarm for outputting a first input signal at a first terminal, responsive to the received signal on said line interface unit using extended superframe format and with yellow alarm for outputting a second input signal at the first terminal, responsive to the received signal on said line interface unit using superframe format and with no yellow alarm for outputting a third input signal at a second terminal, and responsive to the received signal on said line interface unit using superframe format and with yellow alarm for outputting a fourth input signal at the second terminal, comprising:
a first resistor located on said line interface unit connected between the first terminal and said external connection;
a second resistor located on said line interface unit connected between the second terminal and said external connection;
wherein said first resistor and said second resistor responsive to the first input signal at the first terminal and the third input signal at the second terminal output a first voltage level at said external connection, responsive to the second input signal at the first terminal and the third input signal at the second terminal output a second voltage level at said external connection, and responsive to the second input signal at the first terminal and the fourth input signal at the second terminal output a third voltage level at said external connection;
a voltage comparator having a first threshold and a second

threshold and located on said receiver unit, responsive to detecting the first voltage level at said external connection above the first threshold for outputting a first output signal at a first output terminal and a third output signal at a second output terminal, responsive to detecting the second voltage level at said external connection between the first threshold and the second threshold for outputting a second output signal at the first output terminal and a third output signal at the second output terminal, responsive to detecting the third voltage level at said external connection below the second threshold for outputting a second output signal at the first output terminal and a fourth output signal at the second output terminal; and

rectifying means located on said receiver unit connected between said external connection and an output of a receiver-fail circuit, responsive to the received signal on said line interface unit using superframe format and with yellow alarm, for passing a receive signal failure signal to said external connection.

5,347,577

BATTERY FEED CIRCUIT FOR SUPPLYING FEED CURRENT TO TELEPHONE SET

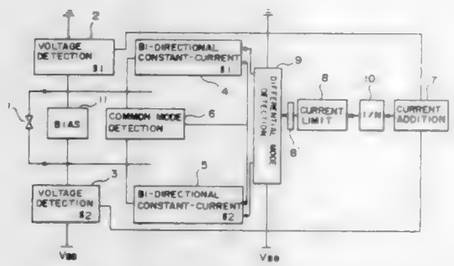
Kenji Takato; Kazuhiro Yoshida, both of Kawasaki, and Kazuyuki Minohara, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 3, 1992, Ser. No. 939,913

Claims priority, application Japan, Sep. 5, 1991, 3-226002

Int. Cl.[5] H04M *19/00*

U.S. Cl. 379—413 **10 Claims**



1. A battery feed circuit for supplying a feed current to a telephone set via a 2-wire telecommunication line formed of a first line and a second line, said battery feed circuit comprising:

first voltage detection means for detecting a first voltage across said first line and a ground line having an electric potential of zero and for outputting a first output current corresponding to said first voltage;

second voltage detection means for detecting a second voltage across said second line and a power line connected to a power supply of said battery feed circuit and for outputting a second output current corresponding to said second voltage;

current source means responsive to a first control signal for respectively generating first and second currents in said first and second lines, said first and second currents in said first and second lines being equal in magnitude and opposite in direction, said current source means also varying said first and second currents in said first and second lines in response to a common mode voltage across said first and second lines;

first feedback means responsive to the first and second voltages detected by said first and second voltage detection means for generating said first control signal, said first feedback means comprising current addition means for adding said first current from said first voltage detection means and said second current from said second voltage detection means to each other, and current limit means for limiting a current obtained by said current addition means so as to not exceed a predetermined value, said first feedback means generating said first control signal based on a current obtained by said current limit means; and

second feedback means for generating said second control signal by detecting the common mode voltage across said first and second lines.

5,347,578

COMPUTER SYSTEM SECURITY

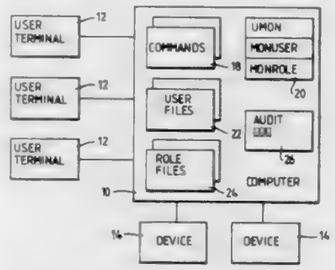
Paul Duxbury, Sandbach, England, assignor to International Computers Limited, London, England

Filed Feb. 24, 1993, Ser. No. 22,058

Claims priority, application United Kingdom, Mar. 17, 1992, 9205774.4

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—4 **9 Claims**



1. A computer system comprising

(a) a computer providing a plurality of protected resources,

(b) a plurality of user access means attached to the computer for allowing each user to send commands to the computer, said commands including a user monitor command containing an argument specifying one of said protected resources, and

(c) command execution means in said computer, for executing said user monitor command by checking that predetermined conditions are satisfied and then, provided that said predetermined conditions are satisfied, for acessing said one of said protected resources on behalf of said user, and then returning a result to the user.

5,347,579

PERSONAL COMPUTER DIARY

Robert R. Blandford, 1809 Paul Spring Rd., Alexandria, Va. 22307

Continuation-in-part of Ser. No. 637,675, Jan. 7, 1991, Pat. No. 5,189,700, which is a continuation-in-part of Ser. No. 375,502, Jul. 5, 1989, abandoned. This application Feb. 22, 1993, Ser. No. 20,354

Int. Cl.[5] H04K *1/00;* **H04L** *9/02;* **G06F** *1/00*

U.S. Cl. 380—25 **30 Claims**

1. A computer system for archiving data blocks, comprising

data processing means for forming and editing original data blocks;

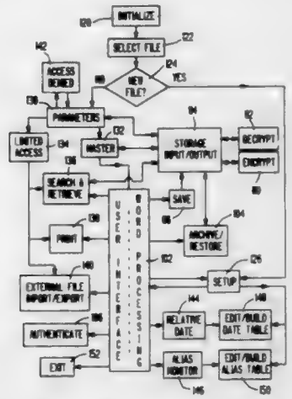
means for generating and storing a first representation of each formed and edited original data block combined with an original date as a reference data block;

means for preventing modification of a reference data block;

means for storing a second version of each original data block and corresponding original date in association with the respective reference data block as a working data block;

means for modifying one of said stored working data blocks to produce a modified working data block wherein the modifications to said one working data block are made by marking the one working data block so that the modifications can be identified and removed or restored to recreate the corresponding original data block; and

authentication means for removing the marked modifications from the modified working data block to recreate the corresponding original data block and original date and for generating a representation of such recreated original



data block which is identical to the corresponding stored reference data block in the absence of corruption of said data blocks.

5,347,580

AUTHENTICATION METHOD AND SYSTEM WITH A SMARTCARD

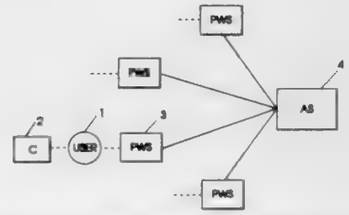
Refik Molva, Juan-Les-Pins, and Gene Tsudik, Thalwil, both of European Pat. Off., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 1, 1993, Ser. No. 34,023

Claims priority, application European Pat. Off., Apr. 23, 1992, 92810294.6

Int. Cl.[5] H04L *9/32*

U.S. Cl. 380—25 **21 Claims**



13. A system for authenticating a user with a smartcard, said system including authentication server means and a plurality of distributed work stations connected to said server means, comprising:

said smartcard having

a card identifier,

a running value device for indicating a card running value, input-output means, and

encrypting means with a secret card key for computing a first encryption of the indicated card running value under the secret card key,

each said work station having

input means for receiving the user name the card identifier, the card running value, and a user authenticator computed from the user's personal identifier and the first encryption,

means for encrypting the card running value under the user authenticator,

means connectable to said server for transmitting to the server the user name, the card running value, the card identifier, and a second encryption of the card running value under the user authenticator,

said server means having

at least one memory storing user names, user personal identifiers, at least one secret key, and preferably, card identifiers,

means for determining a potential secret card key from the received card identifier and a potential personal identifier from the received user name,

means for computing a first potential encryption of the received card running value under the potential secret card key,

means for obtaining a potential user authenticator from the potential personal identifier and the computed first potential encryption,

means for computing a second potential encryption of the received card running value under the potential user authenticator,

means for comparing the second potential encryption with the received second encryption,

means for transmitting a signal to the work station, which is an accept signal if the second potential encryption matches the received second encryption, and which is a non-accept signal otherwise.

5,347,581

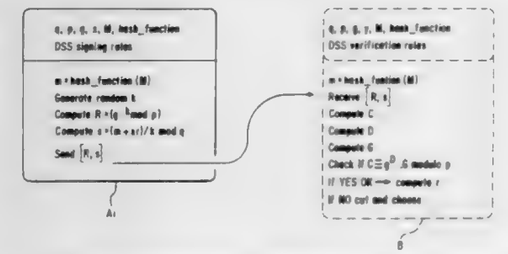
VERIFICATION PROCESS FOR A COMMUNICATION SYSTEM

David Naccache, Maisons-Alfort, and David M'Raihi, Paris, both of France, assignors to Gemplus Developpement, Gemenos, France

Filed Sep. 15, 1993, Ser. No. 122,716

Int. Cl.[5] H04K *1/00*

U.S. Cl. 380—30 **7 Claims**



1. A verification process in a system comprising α communicating devices Ai to be connected to a central verification device B by the means of communication interfaces,

each communicating device Ai

having data processing means, communication means, memory means and random or pseudo-random generation means,

performing a digital signature algorithm and producing a digital signature signal, and

transmitting a digital signature signal to the central verification device B,

the central verification device B

having data processing means, communication means and memory means,

verifying, in a batch, simultaneously a set of many digital signatures signals once all these digital signature signals have been received, by

performing, firstly, processings of the received digital signature signals and by

computing, secondly, on the processing results a verification calculation.

5,347,582

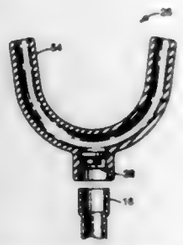
Patent Not Issued For This Number

5,347,583

ELECTRONIC STETHOSCOPE HAVING BINAURAL EARPIECE

Alan P. Dieken, Oakdale, and Jon A. Kirschhoffer, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 16, 1992, Ser. No. 991,840
Int. Cl.[5] A61B *7/04*
U.S. Cl. 381—67 **10 Claims**



1. A binaural electronic stethoscope adapted to receive auscultatory sounds from a body and adapted to transmit said auscultatory sounds to a user, comprising:
- a chestpiece adapted to utilized in cooperation with said body;
- an acoustical transducer cooperating with said chestpiece for receiving said auscultatory sounds and transforming said auscultatory sounds into an electrical input signal;
- signal processing means being operatively coupled to said acoustical transducer for processing said electrical input signal to produce an electrical output signal;
- a housing;
- first tubular means coupling said chestpiece to said housing;
- speaker means mounted within said housing for converting said electrical output signal into an acoustical output signal;
- electrical connection means for coupling said electrical output signal to said speaker;
- second and third tubular means coupled to said housing and acoustically coupled to said speaker for acoustically transmitting said acoustical output signal;
- first and second earpieces coupled to said second and third tubular means, respectively, for receiving said acoustical output signal and providing said acoustical output signal to said user;
- said first tubular means having an acoustical cavity which is acoustically coupled to said speaker in said housing, said first tubular means forming an acoustic cavity which enhances the frequency response of said speaker;
- whereby said acoustical cavity of said first tubular means and said second and third tubular means form sound channels both in front of and behind said speaker providing balanced acoustical response.

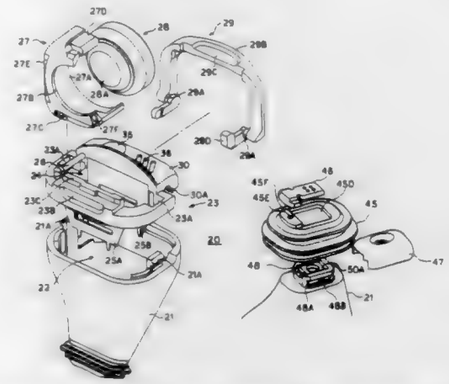
5,347,584

HEARING AID

Yoshiyuki Narisawa, Tokyo, Japan, assignor to Rion Kabushiki-Kaisha, Kokubunji, Japan

Filed Mar. 6, 1992, Ser. No. 847,934
Claims priority, application Japan, May 31, 1991, 3-048773[U]; Jun. 28, 1991, 3-058408[U]
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—69.2 **8 Claims**

1. A hearing aid, comprising:
- a case for inserting into an ear hole;
- a panel portion attached to said case for closing an opening thereof;
- a taking-out knob to be turned to project from said panel portion to an outside position for serving as a knob means when a wearer takes out said case from said ear hole;
- a battery holder holding a battery and supported by said panel portion to be able to turn within a battery accommodation window provided with said panel portion;
- a cam means turning together with said taking-out knob and turning said battery holder from a first turning position to a second turning position when said taking-out knob is turned to the position where said taking-out knob projects to said outside position; and



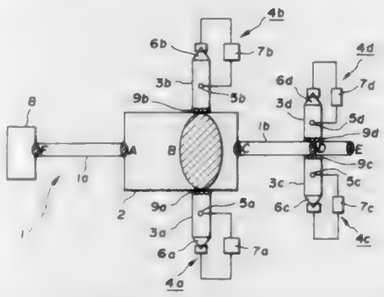
- a battery connecting means electrically connected to electrodes of said battery when said battery holder is at the first turning position and disconnected from said electrodes when said battery holder is at the second turning position.

5,347,585

SOUND ATTENUATING SYSTEM

Masao Taki; Takuji Mori, both of Tokyo, and Shuntaro Murakami, Kanagawa, all of Japan, assignors to Calsonic Corporation and Nishiwaki Laboratory, Tokyo, Japan

Filed Sep. 10, 1991, Ser. No. 756,233
Int. Cl.[5] H04B *15/00*
U.S. Cl. 381—71 **23 Claims**



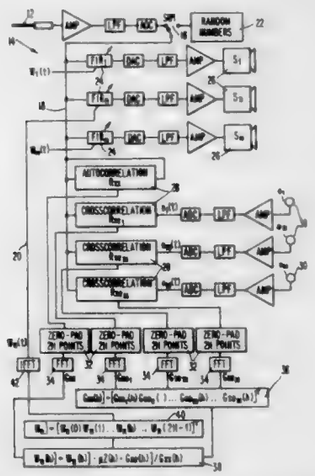
1. A sound attenuating system for attenuating sound issued from a sound source, comprising:
- a main conduit through which the sound from said sound source propagates;
- a passive silencer operatively installed in said main conduit thereby to define at least two passive acoustic reflecting surfaces at front and rear portions of said passive silencer; and
- a pair of branched conduit systems arranged on said passive silencer to define an active acoustic reflecting surface in said passive silencer, each branched conduit system including
  - a branched conduit connected to said main conduit,
  - a secondary sound source installed in said branched conduit for issuing a secondary sound when driven,
  - a sound detecting sensor installed in said branched conduit at a location between said secondary sound source and said main conduit, said sound detecting sensor detecting a reference signal based on a signal from said sound source, and
  - a signal processing unit for driving said secondary sound source by processing said reference signal,
- wherein said branched conduit systems are so constructed that said active acoustic reflecting surface thus produced in said passive silencer permits a partial permeation of sound therethrough.

5,347,586

ADAPTIVE SYSTEM FOR CONTROLLING NOISE GENERATED BY OR EMANATING FROM A PRIMARY NOISE SOURCE

Peter D. Hill, Monroeville, and Thomas H. Putman, Penn Hills Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 28, 1992, Ser. No. 874,898
Int. Cl.[5] A61F *11/06;* **H03B** *29/00*
U.S. Cl. 381—71 **15 Claims**



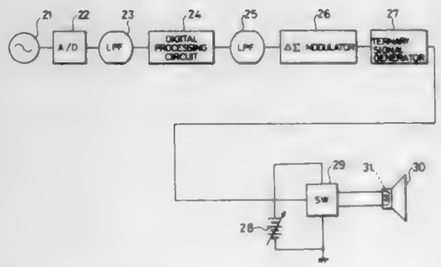
1. An adaptive system for controlling noise generated by or emanating from a primary noise source, comprising:
- (a) reference means for generating a reference signal (x(t)) that is correlated with the noise emanating from the primary noise source;
- (b) secondary source means for generating a plurality of secondary sound waves;
- (c) detection means for detecting a plurality of far-field sound waves in a far-field of said primary noise source, and generating a plurality of error signals each of which is indicative of the power of a corresponding far-field sound wave; and
- (d) adaptive control means for controlling said secondary source means in accordance with said reference signal and said error signals so as to minimize the power in said far-field sound waves; wherein said adaptive control means comprises:
  - (i) correlation means for generating autocorrelation data on the basis of said reference signal and generating crosscorrelation data on the basis of said reference signal and said error signals;
  - (ii) fast Fourier transform (FFT) means for generating auto-spectrum data and cross-spectrum data on the basis of said autocorrelation and crosscorrelation data;
  - (iii) finite impulse response (FIR) means, coupled to said reference means, for filtering said reference signal in accordance with a plurality of weighting functions and for providing filtered versions of said reference signal to control the output of said secondary source means, each of the weighting functions being associated with a corresponding one of said secondary sound waves to be generated by said secondary source means; and
  - (iv) adapting means for processing said auto-spectrum and cross-spectrum data so as to derive said weighting functions, and for providing said weighting functions to said FIR means.

5,347,587

SPEAKER DRIVING DEVICE

Ryutaro Takahashi; Toru Hayase, and Kunihiko Ohbayashi, all of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 5, 1992, Ser. No. 956,358
Claims priority, application Japan, Nov. 20, 1991, 3-304571; Nov. 22, 1991, 3-307351
Int. Cl.[5] H04R *3/00*
U.S. Cl. 381—117 **18 Claims**



9. A speaker driving comprising:
- a constant voltage source for generating a voltage to be applied to a voice coil in a speaker;
- delta sigma modulating means responsive to a multi-bit digital audio signal for producing a one-bit binary digital audio pulse density modulated (PDM) signal by high-speed sampling delta sigma-modulation;
- ternary signal generating means for producing a ternary signal from said one-bit digital audio PDM signal; and
- switching means for switching the polarity of the constant voltage as applied to the speaker depending on whether the ternary signal is +1 or −1 and for controlling the application of the constant voltage to said voice coil by switching said constant voltage source between on and off according to an absolute value of said ternary signal, the absolute value being either 0 or 1, said speaker functioning as an acoustic low-pass filter.

5,347,588

METHOD AND APPARATUS FOR VIDEO IMAGING OF TIRE GROUND CONTACT PATCH

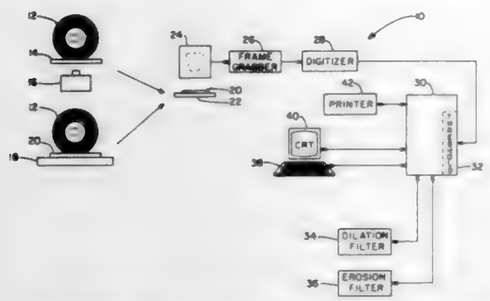
Paul B. Wilson, Tallmadge, Ohio, assignor to Bridgesteon Corporation, Tokyo, Japan

Filed Oct. 11, 1991, Ser. No. 776,527
Int. Cl.[5] G06K *9/36;* **G01M** *17/00*
U.S. Cl. 382—1 **11 Claims**

7. A method for video imaging the interface area between a tire and its contacting loading surface, also known as a tire footprint, comprising the steps of:
- (a) generating a footprint of a tire upon a planar surface;
- (b) generating a digitized video image of said footprint from said planar surface, said digitized video image comprising an array of pixels, regions in said digitized video image corresponding to tread elements being attributed a first value, and regions in said digitized video image corresponding to void areas being attributed a second value;
- (c) summing the total value of all pixels having said first value, thereby determining a tread contact area;
- dilating said array of pixels a first number of times until no pixels of said second value remain within the region en-

compassed by a contour of the footprint, thereby generating a dilated pixel array, eroding said dilated pixel array a second number of times, generating an eroded pixel array, said second number being one greater than said first number, dilating said eroded pixel array one time, generating a uniform footprint contour, and determining the area of said footprint within said uniform footprint contour; and

(e) subtracting said tread contact area from said area of said footprint, thereby determining a void area.

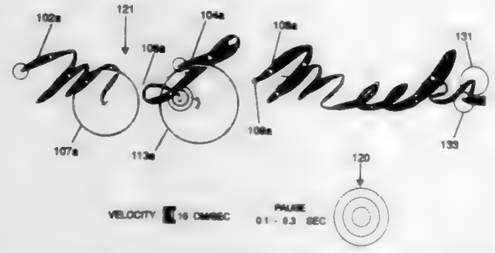


5,347,589

SYSTEM AND METHOD FOR DISPLAYING HANDWRITING PARAMETERS FOR HANDWRITING VERIFICATION

M. Littleton Meeks, Lincoln, and Theodore T. Kuklinski, West Newton, both of Mass., assignors to Meeks Associates, Inc., Lincoln, Mass.

Continuation of Ser. No. 783,566, Oct. 28, 1991, abandoned.
This application Jun. 22, 1993, Ser. No. 80,680
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—3 **34 Claims**



1. A method of displaying handwriting and handwriting parameters from movement of a stylus across a surface, comprising:

resolving the tangential speed of the stylus tip as it moves along a trace across the surface;

recording on a record member the stylus trace as a thin line; and

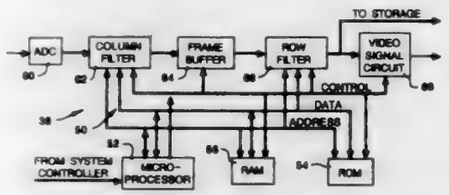
recording an envelope, which is visually distinguishable from the thin line, on the record member along and about the thin line, in which the width of the envelope is modulated in proportion to the stylus tangential speed to visually indicate the stylus tangential speed, for displaying both the handwriting and the stylus tangential speed.

5,347,590

SPATIAL FILTER FOR AN IMAGE PROCESSING SYSTEM

Edward D. Nonnweiler, Milwaukee, and David L. McDaniel, Dousman, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Jun. 10, 1991, Ser. No. 712,764
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—6 **10 Claims**



1. A spatial filter for a two dimensional image consisting of a plurality of picture elements arranged in rows and columns comprising:

means for receiving picture elements on a column by column basis and sequentially within each column;

first means for applying a first single dimension filter function to each column of picture elements received via a connection to said means for receiving;

a first memory connected to said first means for applying a first single dimension filter function to store picture elements that have been processed by said first means;

means for reading the stored picture elements from said first memory row by row in a field interlaced order; and

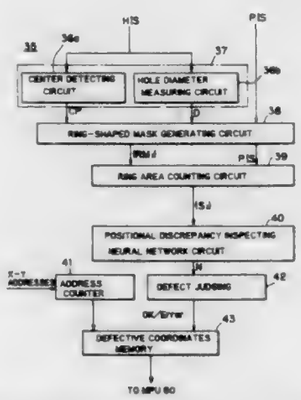
second means for applying a second single dimension filter function to each row of picture elements read from said first memory.

5,347,591

METHOD OF AND DEVICE FOR DETERMINING POSITIONING BETWEEN A HOLE AND A WIRING PATTERN ON A PRINTED CIRCUIT BOARD BY UTILIZING A SET OF AREA VALUES

Hiroyuki Onishi, and Tetsuo Hoki, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Oct. 29, 1991, Ser. No. 784,574
Claims priority, application Japan, Oct. 30, 1990, 2-294106
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—8 **12 Claims**



1. A method of inspecting a pattern on a printed board on which a wiring pattern is provided and through which a through hole is formed, said method comprising steps:

(a) of optically reading said printed board to obtain image data comprising a plurality of pixels and representing an image of said printed board;

(b) of obtaining a pattern image representing said wiring pattern and a hole image representing said through hole on the basis of said image data;

(c) of obtaining a plurality of similar ring-shaped masks from said hole image;

(d) of calculating a set of area values each representing an area of an overlapped region of said pattern image and each of said plurality of similar ring-shaped masks;

(e) of obtaining a relative positional relation between said wiring pattern and said through hole as a function of said set of area values;

said relative positional relation being expressed by a characteristic value, and prior to said step (c) said method also comprising steps:

(f) of obtaining a first correlation which shows values of said set of area values in relation to particular states of said relative positional relation, and

(g) of utilizing a first neural network to obtain a second correlation which shows values of said characteristic value in relation to particular values of said set of said area values;

said step (e) comprising step (e-1) of using said second correlation for converting said set of said area values which are yielded at said step (d) to said characteristic value;

said step (e-1) comprising steps of:

(e-1-1) preparing a second neural network,

(e-1-2) teaching said second correlation to said second neural network, and

(e-1-3) as said characteristic value, determining an output of said second neural network by inputting said step of said area values to said second neural network;

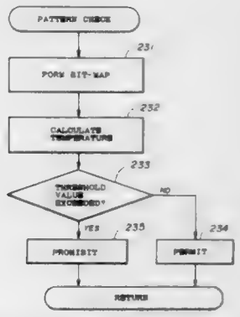
said step (g) comprising step (g-1) of utilizing a first neural network to obtain said second correlation.

5,347,592

PATTERN JUDGING METHOD AND MASK PRODUCING METHOD USING THE PATTERN JUDGING METHOD

Hiroshi Yasuda; Satoru Yamazaki, and Kiichi Sakamoto, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jul. 23, 1992, Ser. No. 917,260
Claims priority, application Japan, Jul. 29, 1991, 3-188787
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—8 **15 Claims**



1. A pattern judging method to be implemented on a computer for automatically determining whether or not a pattern should be formed in a mask, said pattern judging method comprising the steps of:

(a) dividing an area of the mask where a desired pattern is to be formed into a plurality of regions;

(b) calculating a predetermined physical quantity, based on a charged particle beam being irradiated in a predetermined pattern formed in each of the regions where one or a plurality of openings corresponding to the desired pattern are formed in the mask; and

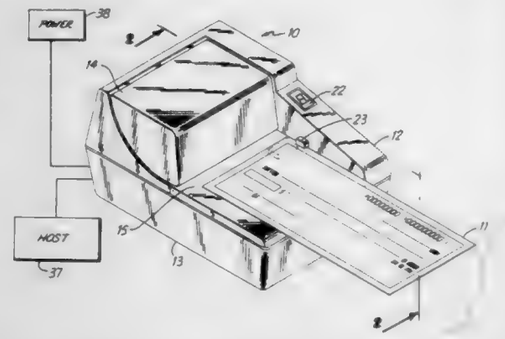
(c) forming the one or plurality of openings corresponding to the predetermined pattern in a corresponding region of the mask if the predetermined quantity calculated in step (b) does not exceed a threshold value for at least one of the regions.

5,347,593

CHARACTER RECOGNITION SYSTEM

Gary M. Klinefelter, Eden Prairie, Minn., assignor to Soricon Corporation, Boulder, Colo.

Filed Aug. 20, 1992, Ser. No. 932,618
Int. Cl.[5] G06K *9/46*
U.S. Cl. 382—29 **20 Claims**



1. A method for acquiring signal representations intended to correspond to those character representations, out of a set of possible known character representations, provided on a nonmagnetic material substrate so as to be capable of establishing corresponding magnetic fields, said method comprising:

moving said substrate along a path past a magnetic field sensor such that magnetic field, each emanating from a corresponding one of said character representations on said substrate, are sensed thereby during corresponding character waveform time intervals to provide measured character waveforms in an output signal thereof, each measured character waveform corresponding to one of said character representations on said substrate, each said time interval having a first predetermined number of successive subintervals, the character representations of said set of possible known character representations each having an expected character waveform provided therefor by a magnetic field sensor if moved thereby on a nonmagnetic substrate;

determining a second predetermined number, less than said first predetermined number, of subintervals for a measured character waveform from the subintervals which form a character waveform time interval thereof by selecting subintervals therein, each of which has a character waveform extremum;

ordering the subintervals of the measured character waveform by extrema thereof;

ordering corresponding subintervals of said character representations of said set of possible known character waveforms by the extrema thereof; and

comparing the ordering of the subintervals of the expected character waveform time intervals of the known character representation with the ordering of the character waveform time intervals of the measured character waveform,

eliminating, from being selected as matching character representations on said substrate having such measured character waveform, character representation of said set of possible known character representations having associated therewith expected character waveforms in which the ordering of the character waveform extrema occur in

subintervals of a corresponding expected character waveform time interval therefor that is different than the ordering of those subintervals corresponding to the respective said subinterval of the measured waveform; and

providing a signal representation for such a measured character waveform corresponding to one character representation of said set of possible said character representations remaining after said of eliminating of character representations.

5,347,594

METHOD OF IMAGE ANALYSIS

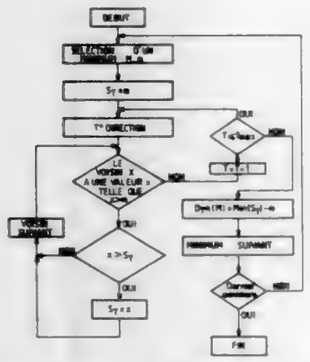
Michel Grimaud, Paris, France, assignor to General Electric CGR, Issy Les Moulineaux, France

Filed Dec. 10, 1992, Ser. No. 988,099

Claims priority, application France, Dec. 10, 1991, 91 15308

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—29 **20 Claims**



1. A method of image analysis, which comprises the following steps:

generating a signal of an image;

locating the minima points of the image signal;

determining a signal dynamic, for each of the minima points, which is dependent on the environment of the points neighboring the minimum point and which is constituted by the difference between the image signal value at the minimum point and a minimum maximorum image signal value for the neighboring points;

extracting those minima points whose dynamic is greater than a threshold; and

analyzing the image as a function of the list of points corresponding to the minima points extracted.

5,347,595

PREPROCESSING MEANS FOR USE IN A PATTERN CLASSIFICATION SYSTEM

Mindy R. Bokser, San Francisco, Calif., assignor to Palantir Corporation (Calera Recognition Systems), Sunnyvale, Calif.

Division of Ser. No. 485,636, Feb. 26, 1990, Pat. No. 5,077,807, which is a continuation of Ser. No. 163,374, Apr. 25, 1988, Pat. No. 5,060,277, which is a division of Ser. No. 786,035, Oct. 10, 1985, Pat. No. 4,773,099. This application Aug. 23, 1991, Ser. No. 749,282

Int. Cl.[5] G06K *9/62*

U.S. Cl. 382—36 **10 Claims**

1. A method for processing reference data comprising the steps of:

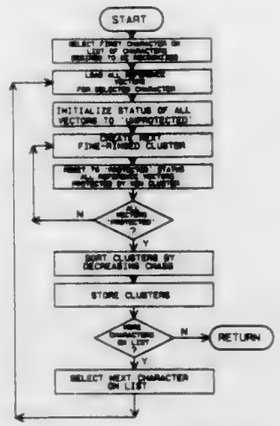
obtaining reference data defining one or more references;

sorting said references into one or more classes;

forming a plurality of sets of ringed clusters, each said set of ringed clusters being uniquely associated with an associated class, such that each said set has associated therewith all of said references for its associated class,

wherein each said ringed cluster is a medium ringed cluster comprising:

possibility sphere, such that all said references of said associated class of a selected set of medium ringed clusters is contained in at least one of said possibility spheres said selected set of medium ringed clusters;



a certainty sphere in which is contained a plurality said references such that all of said references contained on said certainty sphere belong to said associated class of said medium ringed cluster; and

a confidence sphere lying between said certainty sphere and said possibility sphere.

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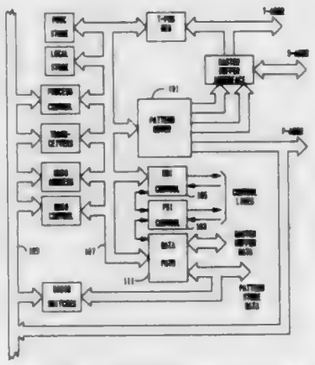
PATTERN MOVER FOR RASTER PRINTING

Ruben Dominguez, Jr., El Paso, Tex., and Stephen D. Hanna, Boulder, Colo., assignors to IBM Corporation, Armonk, N.Y.

Continuation of Ser. No. 219,686, Jul. 15, 1988, abandoned. This application May 21, 1993, Ser. No. 65,701

Int. Cl.[5] G06K *9/36*

U.S. Cl. 382—46 **5 Claims**



1. A system for selectively moving prestored image patterns or segments thereof to construct an image, said image being composed in an image storage means for displaying/printing as pels comprising:

pattern storage means for storing individual patterns in the forms of pels;

first addressing means for retrieving from said pattern storage means quads of pels comprising a selected a pattern;

transfer means for moving said quads of pels to said image storage means, said transfer means including,

means for selectively removing a single row or column of original image pels from an edge of a quad being moved, and

means for rotating said quads of pels; and

second addressing means for supplying addresses in the image storage means at which said quads from said transferring means are stored to compose the image to be printed.

5,347,597

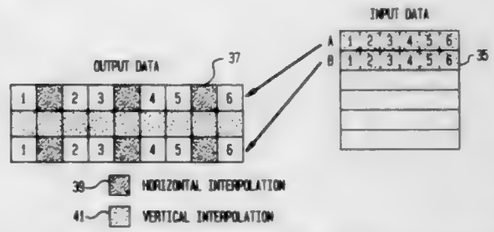
IMAGE SCALING FOR THERMAL PRINTERS AND THE LIKE

Stanley W. Stephenson, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 612,654, Nov. 14, 1990, abandoned. This application Feb. 20, 1992, Ser. No. 840,661

Int. Cl.[5] G06K *9/42*

U.S. Cl. 382—47 **6 Claims**



1. A method of enlarging an image composed of a plurality of successive lines of pixels comprising the steps of:

selecting said lines in successive pairs and storing both lines of each pair in memory;

scaling both of said stored lines horizontally by generating an additional averaged pixel between each pair of successive pixels in the same line, each of said additional pixels having a density equal to the average of densities of the immediately adjacent pixels in the same line;

generating in memory a third line of all averaged pixels, each pixel of which is equal in density to the average of the densities of the corresponding pixels in each of said horizontally scaled lines; and

reading out of memory in sequence to provide vertical scaling, the first of the horizontally scaled pair of lines, the third line generated in memory, and the second of the horizontally scaled pair of lines.

5,347,598

IMAGE PROCESSING APPARATUS

Masami Ogawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 632,611, Dec. 26, 1990, abandoned, which is a continuation of Ser. No. 169,611, Mar. 17, 1988, abandoned. This application Apr. 19, 1993, Ser. No. 47,354

Claims priority, application Japan, Mar. 20, 1987, 62-64368; Mar. 20, 1987, 62-64369; Nov. 16, 1987, 62-287498; Nov. 16, 1987, 62-287499

Int. Cl.[5] G06K *9/20*

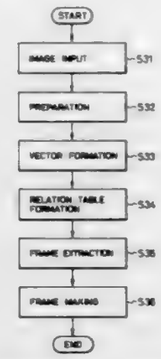
U.S. Cl. 382—48 **78 Claims**

1. An image processing apparatus comprising:

line segment extracting means for extracting from an original image a plurality of line segments including characteristic points;

classifying means for classifying the line segments extracted by said line segment extracting means in accordance with angles between the line segments connected to the characteristic points, wherein said classifying means classifies the line segments into parallel lines, other parallel lines, and tilted lines in accordance with the angles formed between the line segments connected to the characteristic points;

frame making means for making a frame in accordance with the classification results of said classifying means; and



numerical operating means for performing an operation on numerical information within the frame made by said frame making means.

5,347,599

ADAPTIVE INTERPOLATION METHOD AND APPARATUS USING CORRELATION DETECTION

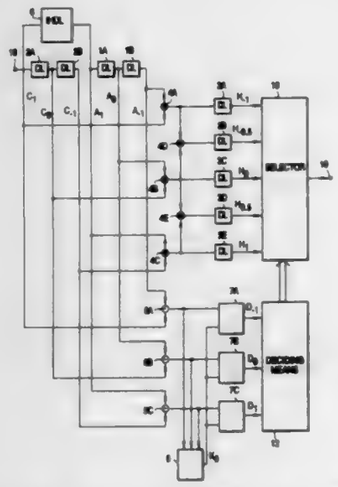
Haruo Yamashita, Osaka; Tsumoru Fukushima, Katano, and Hideshi Ishihara, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 11, 1992, Ser. No. 897,260

Claims priority, application Japan, Jun. 14, 1991, 3-142922; Dec. 2, 1991, 3-317819

Int. Cl.[5] H04N *5/14*

U.S. Cl. 382—54 **12 Claims**



1. A correlation detection interpolation apparatus comprising a calculation means for setting plural interpolation lines passing through the pixel to be interpolated at an angle of a maximum ±90 degrees to the vertical, obtaining the arithmetic mean of the pixel level of the two pixels located above and below the pixel to be interpolated on each of the plural interpolation lines, and obtaining the pixel level of the pixel to be interpolated,

a correlation value detection means for obtaining a pixel level difference of two pixels located on each of said plural interpolation lines as a correlation value,

a setting means for outputting a reference value used to determine whether the correlation indicated by the corre-

lation value output by the correlation value detection means exists,

a comparison means for comparing the magnitude of the correlation value output by the correlation value detection means with the reference value, and outputting a binary signal set showing the presence of a correlation in each direction,

a determination means for determining the best of the plural interpolation lines using the output set of the comparison means, said determination means determining whether said binary signal set output by the comparison means indicates a correct interpolation direction and, if said binary signal set is correct, identifying the corresponding interpolation line, and if incorrect identifying the vertical interpolation line, and

a selection means for selecting and passing the output of the calculation means according to the output of the determination means.

5,347,600

METHOD AND APPARATUS FOR COMPRESSION AND DECOMPRESSION OF DIGITAL IMAGE DATA

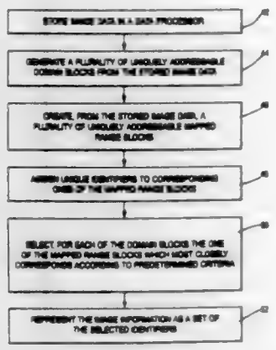
Michael F. Barnsley, and Alan D. Sloan, both of Atlanta, Ga., assignors to Interated Systems, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 375,840, Jul. 5, 1989, Pat. No. 5,065,447. This application Oct. 23, 1991, Ser. No. 781,586

The portion of the term of this patent subsequent to Nov. 12, 2008, has been disclaimed.

Int. Cl.[5] G06K *9/36*

U.S. Cl. 382—56 **13 Claims**



1. A method for automatically processing digital image data consisting of image information, the method comprising the steps performed by a data processor of:

storing the image data in the data processor;

generating a plurality of uniquely addressable domain blocks from the stored image data, each of the domain blocks representing a different portion of the image information such that all of the domain blocks together contain all of the stored image information, and at least two of the domain blocks being unequal in shape;

creating, from the stored image data, a plurality of uniquely addressable mapped range blocks corresponding to different subsets of the image data with each of the subsets having a unique address, the creating step including the substep of

executing, for each of the mapped range blocks, a corresponding procedure upon the one of the subsets of the image data which corresponds to the mapped range block;

assigning unique identifiers to corresponding ones of the mapped range blocks, each of the identifiers specifying for the corresponding mapped range block a procedure and an address of the corresponding subset of image data;

selecting, for each of the domain blocks, the one of the mapped range blocks which most closely corresponds to the domain block, according to predetermined criteria; and

representing the image information as a set of the identifiers of the selected mapped range blocks.

5,347,601

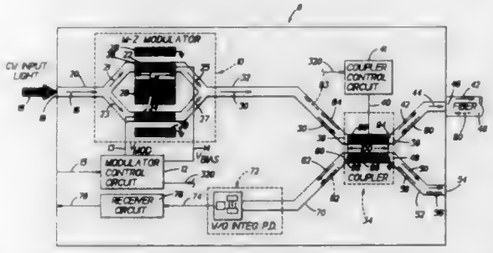
INTEGRATED OPTICAL RECEIVER/TRANSMITTER

Robert W. Ade, Bolton, and Donald E. Bossi, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 29, 1993, Ser. No. 37,863

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—3 **25 Claims**



1. An integrated optical receiver/transmitter (transceiver), comprising:

a substrate;

modulator means, fabricated above said substrate, responsive to a modulation signal, for receiving input light, and for providing a modulated transmit light;

a first waveguide fabricated above said substrate and connected to said modulator means for propagating said modulated transmit light;

a second waveguide fabricated above said substrate and different from said first waveguide;

photodetector means, fabricated above said substrate, connected to said second waveguide for detecting receive light propagating along said second integrated waveguide, and for providing a receive signal indicative of the intensity of said receive light.

5,347,602

A DEVICE FOR BENDING A LIGHT WAVEGUIDE TO DETECT SIGNAL THEREIN

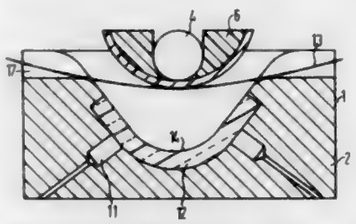
Lothar Finzel, Unterschleissheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 2, 1993, Ser. No. 25,134

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1992, 4206814

Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—25 **14 Claims**



1. A light waveguide signal detector comprising a base part having a pressure trough lined with an optically transparent, elastic material for receiving a light waveguide fiber to be tested; at least one light receiver being arranged in the base part under the transparent elastic material; a pressure part fitting into the pressure trough to hold the fiber in a curved path on the transparent elastic material, said pressure part being rounded on at least one side; and Unitary means having an opaque, elastic surface engaging said fiber and conformable to said pressure trough for simultaneously shielding a portion of the fiber in the curved path from external light and for elastically pressing said portion of the fiber in said curved path against said transparent elastic material.

5,347,603

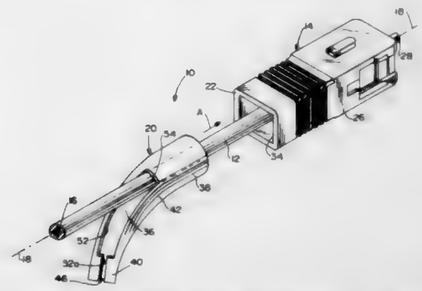
RIGHT ANGLE CABLE STRAIN RELIEF

Yuriy Belenkiy, Chicago, Ill.; Dennis Cheatham, Garland, Tex.; Xavier Clairadin, Naperville, Ill.; Igor Grois, Northbrook, Ill., and Mark Margolin, Lincolnwood, Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jun. 14, 1993, Ser. No. 77,174

Int. Cl.[5] G02B *6/44*

U.S. Cl. 385—86 **12 Claims**



1. In a right angle strain relief system for an optical fiber cable, including a fiber optic connector for terminating a fiber of the cable on a longitudinal connector axis, and a right angle strain relief boot extending from a rear of the connector, the boot having a cable-receiving passage therethrough, the boot having a first leg portion and a second leg portion joined at a bend, the first leg portion being on said longitudinal connector axis and defining a proximal end of the boot coupled to said rear of the connector, and said second leg portion extending transversely of the longitudinal connector axis and defining an open distal end of the boot from which the optical fiber cable extends,

wherein the improvement comprises

slot means in the boot extending from the open distal end thereof generally to at least the bend in the boot, the slot means being of a width to allow the optical fiber cable to be moved outwardly of the second leg portion to a position projecting from the first leg portion generally on the longitudinal connector axis, and

complementary interengaging coupling means between the proximal end of the boot and the connector to provide for rotation of the boot about the longitudinal connector axis,

whereby the cable can be moved out of the second leg portion through the slot means and the boot can be rotated to various angular orientations relative to the connector without twisting the cable.

5,347,604

TRANSFER MOLDING TYPE MANUFACTURING METHOD OF PIGTAIL-TYPE OPTICAL MODULE

Hisao Go; Mitsuaki Nishie, and Keiichi Imamura, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 7, 1993, Ser. No. 72,455

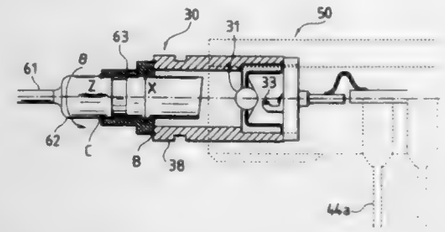
Claims priority, application Japan, Jun. 8, 1992, 4-173807

Int. Cl.[5] G02B *6/36*

U.S. Cl. 385—92 **5 Claims**

1. A method for manufacturing a pigtail-type optical module comprising an optical fiber, an optical element and an electronic circuit, the optical fiber and the optical element being optically coupled, the optical element and the electronic circuit being electrically connected, the method comprising the steps of:

transfer molding an assembly comprising the optical element, a holder portion capable of receiving a ferrule, and the electronic circuit, to produce a molded single unit assembly;



inserting the ferrule attached to an end portion of the optical fiber into the holder portion of the molded single unit assembly, and

adjusting an optical coupling efficiency between the optical fiber and the optical element by moving the ferrule within the holder portion of the molded single unit assembly.

5,347,605

OPTOELECTRONIC COMPONENT HAVING SPHERICAL ADJUSTING MEANS

Jan Isaksson, Täby, Sweden, assignor to Asea Brown Boveri AB, Vasteras, Sweden

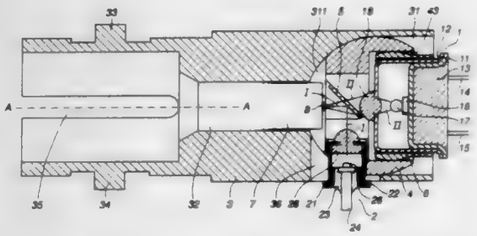
PCT No. PCT/SE92/00200, § 371 Date Oct. 8, 1993, § 102(e) Date Oct. 8, 1993, PCT Pub. No. WO92/20171, PCT Pub. Date Nov. 12, 1992

PCT Filed Mar. 21, 1992, Ser. No. 129,126

Claims priority, application Sweden, May 6, 1991, 9101344

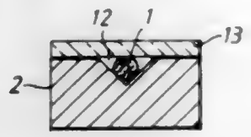
Int. Cl.[5] G02B *6/42*

U.S. Cl. 385—92 **6 Claims**



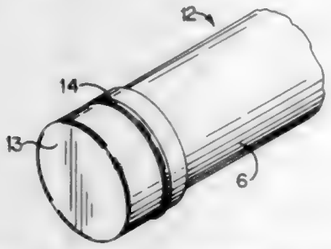
1. An optoelectronic component for emitting and/or receiving light, and a housing (3), a first (2) and a second (1) optoelectronic semiconductor element (1) as well as a semitransparent mirror (5) for deflecting incident and/or emitted light to or from the first semiconductor element, wherein the mirror and the first semiconductor element are mounted in a first spherical body (4), which is adjustably journalled in a spherical recess (31) in the housing, and that the second semiconductor element (1) is mounted in a second spherical body (6) which is adjustably journalled in a cylindrical recess in the first spherical body (4).

5,347,606
METHOD AND AN ARRANGEMENT FOR SPLICING OPTICAL WAVEGUIDES
Lars Johansen, Haninge, Sweden, assignor to Televerket, Farsta, Sweden
Filed Dec. 23, 1992, Ser. No. 996,313
Claims priority, application Sweden, Jan. 13, 1992, 92000702
Int. Cl.[5] G02B 6/38
U.S. Cl. 385—95 3 Claims



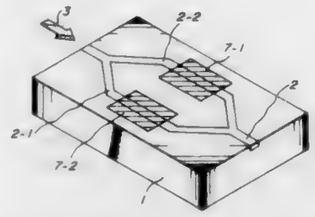
1. An arrangement for splicing optical waveguides comprising a support member for supporting the ends of the waveguides requiring splicing, one surface of the said member having a groove formed therein in which the ends of the waveguides are located, in alignment, in a spaced-apart relationship, a solidifiable refractive index-matching means in the space between the ends of the waveguides, a cover for enclosing the ends of the waveguides and the refractive index-matching means in the groove, means for regaining the cover in position wherein said solidifiable refractive index-matching means adheres to said support member after said refractive index matching means solidified.

5,347,607
OPTICAL CABLE HAVING PRESTRIPPED TERMINAL ELEMENTS
J. David Abernethy, Hickory, N.C., assignor to Siecor Corporation, Hickory, N.C.
Filed Sep. 4, 1992, Ser. No. 941,292
Int. Cl.[5] G02B 6/44
U.S. Cl. 385—102 3 Claims



1. An optical transmission cable having at least one light waveguide with a prestripped coating, comprising:
(a) a light waveguide which has a coating thereon throughout its length except for an uncoated terminal free end having no attachments thereto;
(b) an outer jacket covering both the coated and uncoated portions of said light waveguide; and,
(c) a cap covering the cable and at which the uncoated light waveguide is located.

5,347,608
OPTICAL WAVEGUIDE AND OPTICAL WAVEGUIDE DEVICE
Masanori Nakamura, and Yoshikazu Sakaguchi, both of Gifu, Japan, assignors to Ibiden Co., Ltd., Gifu, Japan
Filed May 28, 1993, Ser. No. 68,102
Claims priority, application Japan, Jun. 30, 1992, 4-172989
Int. Cl.[5] G02B 6/10
U.S. Cl. 385—130 14 Claims



1. A single mode optical waveguide comprising:
a $LiTaO_3$ monocrystalline substrate, and a $LiNbO_3$ monocrystalline thin film waveguide formed on a surface of said $LiTaO_3$ monocrystalline substrate, said thin film waveguide having Mach-Zehnder type branched sections on a part of the thin film waveguide, and including at least an Na content in a range of 0.1 to 14.3 mol % and a Mg content in a range of 0.8 to 10.8 mol %, so that lattice lengths of the $LiNbO_3$ monocrystalline thin film waveguide and the $LiTaO_3$ monocrystalline substrate are matched with each other with the following relationship being satisfied;
in the case of TM mode,

$$1.9<(T+0.7)/\lambda<5.7\ (T>0)$$

in the case of TE mode,

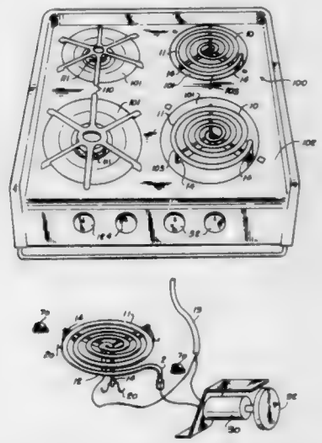
$$0.29<(T+0.04)/\lambda<1.19\ (T>0)$$

where $T(\mu m)$ represents a thickness of the $LiNbO_3$ monocrystalline thin film waveguide and $\lambda(\mu m)$ a wavelength of the guided wave.

5,347,609
METHOD AND ASSEMBLY FOR CONVERTING A MOBILE GAS RANGE TO COMBINATION GAS-ELECTRIC RANGE
William W. Huff, 38022 Sierra Hwy., Palmdale, Calif. 93550
Filed Sep. 8, 1992, Ser. No. 941,909
Int. Cl.[5] F24C 1/06; H05B 3/68
U.S. Cl. 392—309 8 Claims

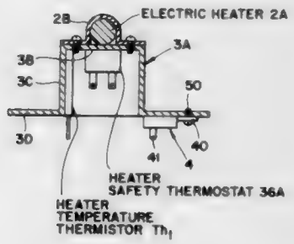
1. An assembly for converting a gas burner of a gas-operated range of the type typically provided in a recreational vehicle to an electric burner suitable for operation by a recreational vehicle's 125-volt generator or by connection to an external 125-volt power supply such as is commonly available at parks and campgrounds so that the recreational vehicle range has a range with both electrically operated and gas operated range top burners with the electric burner separated on the range from the gas operated burners, comprising,
an electric heating element sized for mounting in spaced-apart relation to other electric or gas-operated burners on a range top,
a plurality of radial supports attached under the electric heating element for supporting the electric heating element on the range top,
an electric control electrically connected to the heating element for controlling temperature of the heating element,
means for electrically connecting the electric heating element to an electric power source,

a control cover plate having a top portion for covering and protecting the power control when mounted, a base portion with means for mounting the cover plate to the range, and a rear portion supporting the top portion in spaced relation to the base portion, and
a threaded plug for replacing a gas control valve associated with a gas burner removed from a threaded hole in a range central gas line,



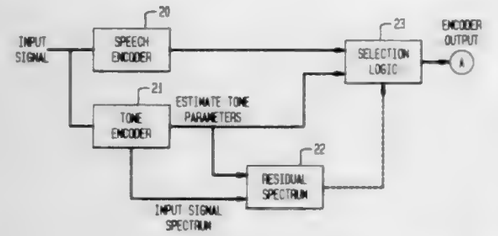
a spring clip for securing the electric heating element to the range, further comprising two lengths joined at a first bend forming a first point of flexure, the lengths extending from the first bend approximately in parallel to a point of second bend for each length forming a channel therebetween, the channel sized to fit over a heating element radial support, each length then bending at its respective point of second bend away from the other length in an upward-oriented concave curvature forming a second point of flexure.

5,347,610
SAFETY CONTROL SYSTEM FOR A CLOTHES WASHER INCORPORATING PRIMARY, SECONDARY, AND TERTIARY TEMPERATURE SENSORS
Hong Y. Lee, Kyungki-Do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Dec. 14, 1992, Ser. No. 990,242
Claims priority, application Rep. of Korea, Jul. 9, 1992, 92-12671[U]
Int. Cl.[5] H05B 1/02; F24H 1/00; D06F 39/04
U.S. Cl. 392—447 3 Claims



1. A boiling water clothes washing machine comprising:
a tub having a bottom surface therein,
a metallic support plate mounted adjacent said bottom surface,
a heater mounted in direct contact with an upper side of said support plate, and
control means for controlling the temperature of said heater, comprising:
a primary heater temperature detecting means comprising a thermistor mounted to an underside of said support plate for detecting the heater temperature conducted through said support plate,
a secondary heater temperature detecting means comprising a thermostat mounted to said underside for detecting the heater temperature conducted through said support plate, and
a third heater temperature detecting means comprising a fuse mounted to said underside for detecting the heater temperature conducted through said support plate,
said control means constituting means for controlling the temperature of said heater in response to a heater temperature detected by said thermostat in the event of a malfunction of said thermistor, and controlling the temperature of said heater in response to a heater temperature detected by said fuse in the event of a malfunction of both said thermistor and said thermostat.

5,347,611
APPARATUS AND METHOD FOR TRANSPARENT TONE PASSING OVER NARROWBAND DIGITAL CHANNELS
Hyokang Chang, Potomac, Md., assignor to Telogy Networks Inc., Gaithersburg, Md.
Filed Jan. 17, 1992, Ser. No. 822,316
Int. Cl.[5] G10L 7/00, 7/06
U.S. Cl. 395—2.15 12 Claims



1. A narrowband digital channel signal passing system comprising:
a transmit side and a receive side, the transmit side being electronically linked for communication with the receive side,
input means on the transmit side for receiving input signals, the input signals including voice communication input signals and tone signals,
speech signal encoding means connected to the input means and located on the transmit side for encoding the input signals in a manner desirable for speech signal coding, the speech signal encoding means providing a speech encoded output signal,
signal transform means connected to the input means and located on the transmit side for providing an input signal spectrum by extracting amplitude and frequency spectra from the input signals,
tone signal encoding means connected to the signal transform means and located on the transmit side for encoding the input signal spectrum in a manner desirable for tone signal coding to provide a tone encoded output signal,
comparison means for comparing the input signal spectrum with the tone encoded output signal providing a residual spectrum having an amplitude,
means for determining if the amplitude of the residual spectrum is greater than or less than a threshold level, and
selection means for providing the speech output signal to the receive side if the amplitude is greater than the threshold

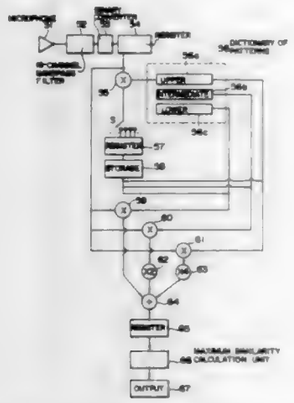
level and for providing the tone encoded output signal to the receive side if the amplitude is less than the threshold level.

5,347,612

VOICE RECOGNITION SYSTEM AND METHOD INVOLVING REGISTERED VOICE PATTERNS FORMED FROM SUPERPOSITION OF A PLURALITY OF OTHER VOICE PATTERNS

Junichiroh Fujimoto, Yokohama; Seigo Yasuda, Yokosuka, and Tomofumi Nakatani, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 184,446, Mar. 29, 1988, abandoned.
This application Jul. 16, 1990, Ser. No. 552,842
Claims priority, application Japan, Jul. 30, 1986, 61-179394; Mar. 18, 1987, 62-63406
Int. Cl.[5] G10L *7/08*
U.S. Cl. 395—2.52 **12 Claims**



1. A voice pattern similarity calculating apparatus for calculating a degree of similarity through comparing an input voice pattern and a registered voice pattern, the apparatus comprising:

a) voice pattern generating means for generating a digital voice pattern having a predetermined number of elements by dividing an input voice signal into the same predetermined number of frequency bands and forming a digitized output signal for each of the bands;

b) a library for storing registered voice patterns which include sub-patterns which have been previously formed by a method including the steps of:

1) forming a plurality of voice patterns by repetitively pronouncing the same sound,

2) superimposing the plurality of voice patterns to form a superimposed pattern,

3) digitizing the value of each element of the superimposed pattern to form digitized superimposed pattern values, and

4) forming plural sub-patterns from the digitized superimposed pattern values, the sub-patterns having a plurality of elements, the plural sub-patterns being for forming binary numbers by combining respective elements of the plurality of elements of the sub-patterns;

c) comparison means for comparing:

(1) the predetermined plurality of elements in the digitized voice pattern from the voice pattern generating means, with

(2) the predetermined plurality of elements of the sub-patterns; and

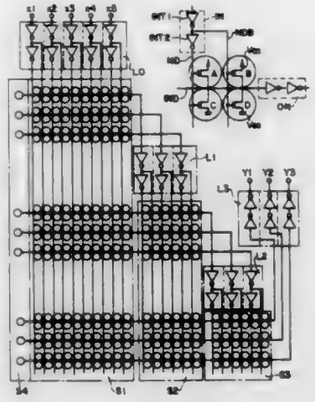
d) similarity calculating means for calculating the degree of similarity from a result of comparing from the comparison means.

5,347,613

MOS MULTI-LAYER NEURAL NETWORK INCLUDING A PLURALITY OF HIDDEN LAYERS INTERPOSED BETWEEN SYNAPSE GROUPS FOR PERFORMING PATTERN RECOGNITION

Ho-sun Chung, and Hyo-jin Han, both of Taegu, Rep. of Korea, assignors to Semsung Electronics Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Aug. 15, 1991, Ser. No. 745,346
Claims priority, application Rep. of Korea, Aug. 18, 1990, 90-12915
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—24 **5 Claims**



1. A MOS multi-layer neutral network receiving an m-bit input and generating an n-bit output, said neural network comprising:

an input layer having m neurons each selectively arranged to receive a corresponding bit value of said m-bit input, each neuron including first and second serially coupled CMOS inverters, an output from each first CMOS inverter being connected to an input of a corresponding second CMOS inverter to generate a non-inverted output therefrom, said output from each first CMOS inverter also providing an inverted output associated with each neuron;

an input synapse group having a plurality of transistor synapse means coupled to respective ones of said inverted and non-inverted outputs from said input layer to form a transistor group matrix, said transistor synapse means generating a plurality of output row bias signals, each transistor synapse means being assigned a predetermined weight value (current driving strength) in relation to its position along the transistor group matrix, each row in the transistor group matrix being responsive to a respective bias signal pre-assigned to provide a select unit weight value bias signal onto said each row and also being responsive to a sum bias signal from each of said transistor synapse means respectively coupled thereto and driven by corresponding ones of said inverted and non-inverted outputs,

wherein each row is associated with one of said output row bias signals generated in response to the selected unity weight value bias signal and the respective sum bias signal coupled thereto;

an output layer having n neurons each selectively arranged to output a corresponding bit value of said n-bit output;

at least one hidden layer, each coupled in succession between said input layer and said output layer and including n neurons, wherein a first hidden layer of said at least one hidden layer couples first preselected n output row bias signals from said input synapse group to respective ones of its corresponding n neurons,

each said at least one hidden layer being logically coupled to transfer the correspondingly input preselected n output row bias signals to both said output layer and to every subsequent hidden layer coupled thereto in succession; and

at least one transfer synapse group, each associated with a corresponding one of said at least one hidden layers and providing respective n first output row bias signals, each transfer synapse group having a plurality of transfer synapse means coupled to corresponding ones of inverted and noninverted outputs from said respective n neurons and further coupled to second preselected n output row bias signals from said input synapse group to form a transfer group matrix for generating said respective first n output row bias signals, each transfer synapse means being assigned a predetermined weight value (current driving strength) as a function of its position along the respective transfer group matrix,

wherein each row in a respective transfer group matrix is coupled to each of the n neurons of each successive said at least one transfer synapse group or, if said respective transfer synapse group is the last in succession, then to corresponding inputs of said n neurons of said output layer, and

wherein said input synapse group couples a supply voltage to each neuron of said output layer and said at least one hidden layer such that when a corresponding bit value into an input layer neuron is "1", then when a connection weight value is selected to be positive, a first supply voltage is connected with a connection strength of a corresponding connection weight value through a PMOS transistor whose gate is connected to each corresponding inverted output, and when a connection weight value is selected to be negative, a second supply voltage is connected instead through an NMOS transistor whose gate is connected to each corresponding non-inverted output,

when a corresponding bit value into said input layer is "0", then when a connection weight value is selected to be positive, a first supply voltage is connected with a connection strength of a corresponding connection weight value through a PMOS transistor whose gate is connected to each corresponding non-inverted output, and when a connection weight value is selected to be negative, a second supply voltage is connected instead through an NMOS transistor whose gate is connected to each corresponding inverted output, and

when said input bit value is "1" or "0" and a connection weight value is "0, " nothing is connected, and

wherein each transfer synapse group is composed of PMOS and NMOS transistors for connecting inverted and noninverted neuron outputs associated therewith.

5,347,614

KNOWLEDGE PROCESSING SYSTEM STRUCTURIZING TOOL

Naoyuki Yamada, Katsuta; Takayasu Kasahara, Hitachi, and Yasuhiro Kobayashi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 592,798, Oct. 4, 1990, abandoned. This application Mar. 29, 1993, Ser. No. 39,686
Claims priority, application Japan, Oct. 9, 1989, 1-262012
Int. Cl.[5] G06F *15/18, 9/44, 15/40*
U.S. Cl. 395—75 **8 Claims**

1. An assistant tool for assisting creation of an inference program in a knowledge processing system, comprising:

input means for inputting information related to a problem desired to be solved, in accordance with selection menus for permitting a user to select classified items of a predetermined search control strategy, said items determining an initial node, a goal node and developments of intermediate nodes of a general-purpose search program;

fist storage means for storing the input information inputted through said input means to be used in creating an inference program;

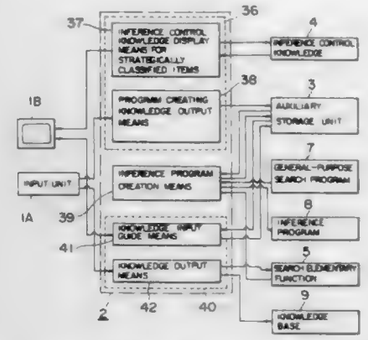
second storage means for storing a skeleton of said general-purpose search program and skeletons to search elementary functions which are to be included in said skeleton of said general-purpose search program;

third storage means for storing search functions which are to be included in said skeletons of said search elementary functions;

fourth storage means for storing a correspondence table in which correspondences are preliminarily established between said skeletons of said search elementary functions and said search functions based on said items of said search control strategy;

fifth storage means for storing a procedure for creating an inference program by utilizing said skeleton of said general-purpose search program; and

means, connected to said input means and said first, second,



third, fourth and fifth storage means, for creating an inference program for solving the desired problem based on said skeleton of said general-purpose search program;

wherein said means or relating said inference program includes:

means for completing said skeletons of said search, elementary functions by selecting required search functions from said third storage means in accordance with said procedure stored in said fifth storage means while referring to said correspondence table stored in said fourth storage table means, and

means for completing said skeleton of said general-purpose search program to create said inference program by using said completed skeletons of said search elementary functions.

5,347,615

RULE GENERATING AND VERIFYING APPARATUS FOR FUZZY CONTROL USING TEMPORARY EXCLUSION OF A SELECTED RULE

Takeshi Yamakawa, Iizuka, and Tsutomu Ishida, Suita, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 924,589, Aug. 19, 1992, Pat. No. 5,239,620, which is a continuation of Ser. No. 714,828, Jun. 13, 1991, abandoned, which is a division of Ser. No. 392,303, Aug. 11, 1989, abandoned. This application Jun. 18, 1993, Ser. No. 78,109
Claims priority, application Japan, Aug. 18, 1988, 63-203912
The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.
Int. Cl.[5] G06F *9/44*
U.S. Cl. 395—76 **4 Claims**

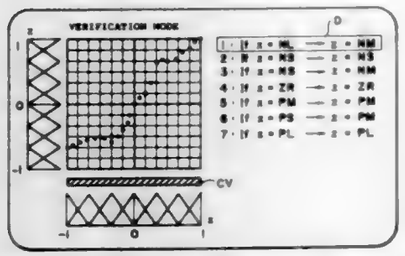
1. A rule verifying apparatus comprising:

a memory device storing set fuzzy rules and fuzzy membership functions concerning input and output variables and related to the set rules;

an input device for specifying at least one stored fuzzy rule to be temporarily excluded from said set rules when the set rules are used in a fuzzy inference operation; said at

least one temporarily excluded rule remaining stored along with the other set rules;

a fuzzy inference device connected to said memory device and said input device and which subjects an input value to a fuzzy inference operation using said stored set rules excluding said at least one rule specified as being tempo-



rarily excluded, to obtain a corresponding output value; and

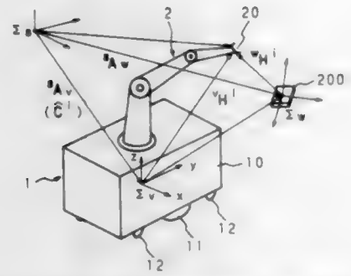
an output device connected to said fuzzy inference device which outputs the output value obtained by the fuzzy inference operation performed by said fuzzy inference device.

5,347,616

METHOD OF CONTROLLING POSITION AND ATTITUDE OF WORKING ROBOT AND ITS MANIPULATOR AND APPARATUS THEREOF

Mamoru Minami, Daito, Japan, assignor to Tsubakimoto Chain Co., Osaka, Japan

Filed Oct. 29, 1991, Ser. No. 787,304
Claims priority, application Japan, Jan. 28, 1991, 3-027874
Int. Cl.[5] B25J *13/00*
U.S. Cl. 395—86 **1 Claim**



1. A control system for controlling the position and attitude of a manipulator which is mounted on a moving body comprising an autonomously-traveling truck defining a moving coordinate system which is fixed with respect to said autonomously-traveling truck, said manipulator including a plurality of knuckles and a mechanical hand and which conducts various operations, comprising:

a position and attitude error operation unit for receiving first instruction values representing the desired position and attitude of the hand, for receiving values representing the actual position and attitude of the hand, and for outputting error values representing the disparity between said desired position and said actual position;

an instruction value operation unit, coupled to said position and attitude error operation unit, for receiving said error values, for receiving said values representing the actual position of the hand, and for outputting second instruction values representing a new position and attitude;

a first coordinate transformation unit, coupled to said instruction value operation unit, for receiving said second instruction values, for receiving a first matrix which is the inverse of a second matrix representing the position and orientation of said truck, and for outputting a third matrix representing position and attitude instruction values based on said moving coordinate system;

a backward kinematics operation unit, coupled to said first coordinate transformation unit, for receiving said third matrix and outputting a first set of knuckle angle vectors;

a servo-system, coupled to said backward kinematics operation unit, for receiving said first set of knuckle angle vectors and outputting a second set of knuckle angle vectors representing the operating state of respective knuckles;

a forward kinematics operation unit, coupled to said servo-system, for receiving said second set of knuckle angle vectors and outputting a fourth matrix representing position and attitude of said manipulator;

a second coordinate transformation unit, coupled to said forward kinematics operation unit, for receiving said fourth matrix and said second matrix and outputting said values representing the actual position and attitude of the hand; and

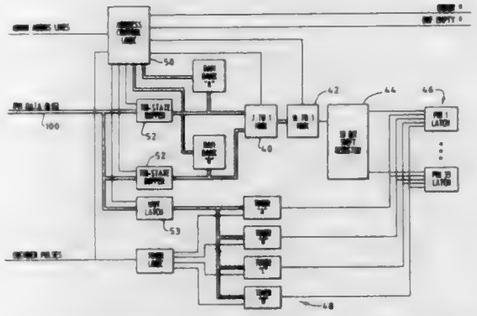
a position and orientation operation unit, coupled to said first and second coordinate transformation units, for receiving initial position and orientation estimated values of said truck and truck driving information and outputting said first and second matrices.

5,347,617

PRINTER HAVING A MULTIPLE SCAN LINE PRINTHEAD CONTROLLER

David R. Webb, Westlake Village; Yuen W. Wong, Glendale; Werner Loewenthal, North Hollywood, and Stan D. Shurygailo, El Segundo, all of Calif., assignors to Dataproducts Corporation, Woodland Hills, Calif.

Filed Nov. 9, 1990, Ser. No. 613,327
Int. Cl.[5] G06K *15/00*
U.S. Cl. 395—108 **6 Claims**



1. A printer having a printhead for printing an image onto a printing medium as the printhead makes a plurality of substantially horizontal passes across the printing medium, the printhead including a plurality of printing elements each of which is vertically displaced relative to its adjacent printing elements wherein the printhead has n printing elements and makes p passes over the printing medium in order to print the image; the improvement comprising:

(a) first means for generating and storing a bit mapped raster matrix of an image to be printed wherein the first means includes a matrix memory means for storing the bits of the bit mapped raster matrix, wherein each column of the matrix memory is logically divided into at least p adjacent groups corresponding to the p passes of the printhead, and each group includes n consecutive bits corresponding to the n printing elements; and

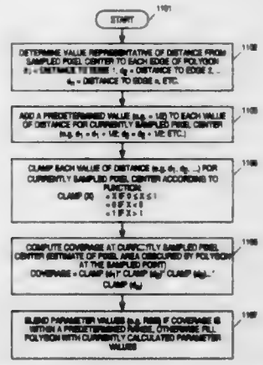
(b) second means for accessing from the bit mapped raster matrix a group of bits corresponding in number to the number of printing elements of the print head to drive the printing elements of the printhead so as to print the image, said second means including control means for sequentially accessing, for each pass of the printhead, the group in each column corresponding to the pass, and applying the bits of the group to the corresponding printing elements, said control means including a shift register for storing said group of bits, said shift register having a plurality of outputs, each output being coupled to a printing element.

5,347,618

METHOD FOR DISPLAY RENDERING BY DETERMINING THE COVERAGE OF PIXELS IN POLYGONS

Kurt Akeley, Union City, Calif., assignor to Silicon Graphics, Inc., Mountain View, Calif.

Division of Ser. No. 657,087, Feb. 19, 1991. This application Jun. 3, 1993, Ser. No. 71,469
Int. Cl.[5] G06F *15/72, 15/62*
U.S. Cl. 395—121 **10 Claims**



1. In a computer controlled display system with a display device having an array of pixels, a method for rendering a polygon for display said method comprising the steps of:

a) determining a coverage of a pixel within said polygon by said polygon by:

i) determining a first value representative of a distance from a center of said pixel to an edge of said polygon;

ii) adding a first predetermined value to said first value representative of the distance for said pixel to produce a second value.;

iii) clamping said second value according to a function which provides a constant second predetermined value if said second value is less than a first predetermined range and which provides the second value if the second value is within said first predetermined range and which provides a constant third predetermined value if said second value is greater than said first predetermined range;

iv) repeating steps i–iii for each edge of said polygon;

v) computing the coverage of the pixel by calculating the product of all clamped values corresponding to edges of said polygon;

b) determining coverages of each pixel of said polygon;

c) storing a plurality pixel values in memory, wherein said pixel values are a function of said coverage;

d) generating electrical signals to actuate pixels of said polygon according to said pixel values;

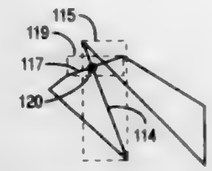
e) displaying said polygon on a display device.

5,347,619

NONCONVEX POLYGON IDENTIFIER

David J. Erb, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1991, Ser. No. 693,828
Int. Cl.[5] G06K *9/00*
U.S. Cl. 395—126 **18 Claims**



10. A system for identifying a polygon to be displayed on a computer graphics system, comprising:

means for inputting said polygon to said computer graphics system in order to display said polygon:

means for determining a bounding box for each of at least two non-adjacent edges of said input polygon, said bounding boxes having dimensions corresponding to x and y coordinates of said at least two non-adjacent edges;

means for determining a point of intersection between lines representing said at least two non-adjacent edges;

processor means for comparing said point of intersection with each of said bounding boxes; and

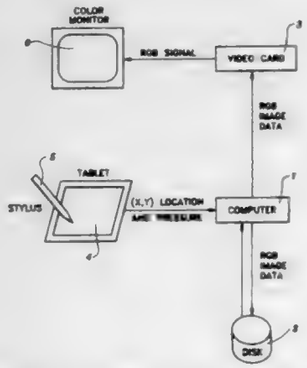
means for utilizing the results of said comparison to determine whether said input polygon is a complex polygon having self intersecting edges and multiple y scan lines for a single x value.

5,347,620

SYSTEM AND METHOD FOR DIGITAL RENDERING OF IMAGES AND PRINTED ARTICULATION

Mark A. Zimmer, 2509 Huntington Dr., Aptos, Calif. 95003

PCT No. PCT/US91/06412, § 371 Date Aug. 14, 1992, § 102(e) Date Aug. 14, 1992
PCT Filed Sep. 5, 1991, Ser. No. 920,566
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—129 **10 Claims**



8. A method for sequencing and rendering marks of contact between an implement tip and a surface for producing strokes or marks of said implement onto said surface, said strokes or marks being continuous, smooth, and without visible artifacts, said strokes or marks being rendered for the purpose of simulating accurately the strokes or marks occuring in the use of natural media, wherein said strokes or marks are produced in a two-dimensional image field on a computer, said method comprising the following steps:

computing a two-dimensional array of two-dimensional

height fields, said array of height fields representing renderings of the said implement tip, each said rendering representing a separate horizontal and vertical subpixel offset, the number of said renderings being a function of the width of said implement tip,

evaluating a set of placement positions for the rendering of marks of contact, said positions being regularly spaced along said strokes, said spacing being calculated as a percentage of the current width of said implement tip, said positions being measured at subpixel accuracy,

designating, for each of said placement positions, a height field from said two-dimensional array of height fields which corresponds most closely with said horizontal and vertical subpixel offsets of said placement position,

subtracting, for each of said placement positions, said horizontal and vertical subpixel offsets from said placement position to yield an integer horizontal and vertical pixel offset within said two-dimensional image field, and

overlaying, for each of said placement positions a corresponding designated height field at said integer horizontal and vertical pixel position, to render said marks of contact between said tip and said two-dimensional image field, said designated height fields being used as a plurality of donor tip deposit fractions.

5,347,621

METHOD AND APPARATUS FOR PROCESSING IMAGE DATA

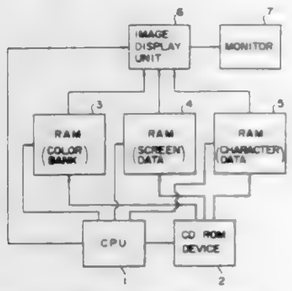
Teiji Yutaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 13, 1991, Ser. No. 760,063

Claims priority, application Japan, Sep. 19, 1990, 2-249705; Sep. 21, 1990, 2-252230

Int. Cl.[5] G06K *1/00*

U.S. Cl. 395—131 **6 Claims**



5. A method of processing image data of a color image which is to be displayed on a screen and is constituted of a predetermined number of divided blocks each composed of a predetermined number of pixels, the method comprising the steps of:

providing first, second and third data tables to display the colors of the individual pixels;

determining from said first data table the correspondence between the pixels of each of the divided blocks and the color data of the pixels;

determining from said second data table the correspondence between a plurality of palettes and the color dat usable in said palettes; and

determining from said third data table the correspondence between the divided blocks and said palettes.

5,347,622

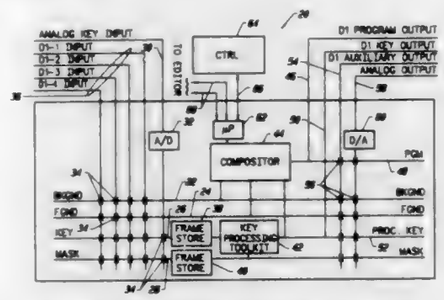
DIGITAL IMAGE COMPOSITING SYSTEM AND METHOD

Sohei Takemoto, Fremont, and Kenneth A. Woodhouse, Menlo Park, both of Calif., assignors to ACCOM Inc., Menlo Park, Calif.

Filed Apr. 12, 1991, Ser. No. 685,291

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—135 **14 Claims**



1. A digital image compositing system comprising:

a plurality of digital video signal inputs;

a key signal processing system;

a video image compositor;

a first plurality of crosspoint switches, coupling said plurality of digital video signal inputs to said key signal processing system and to said video image compositor;

a key input coupled through said plurality of crosspoint switches to said key signal processing system;

a plurality of digital video signal outputs; and

a second plurality of crosspoint switches, coupling said key signal processing system and said video image compositor to said plurality of digital video signal outputs;

wherein said key signal processing system has at least one characteristic selected from the group consisting of:

(i) said key signal processing system includes a look-up table containing a plurality of user-selectable look-up table input/output characteristics, said key signal processing system being configured to allow selection of different look-up table input/output characteristics for a television frame to provide different outputs for different portions of the television frame;

(ii) said key signal processing system is configured to provide user-selectable randomized rounding of fractional values of the digital video signals to integers over different ranges of fractional values, with fractional values outside said different ranges being rounded to a closest digit;

(iii) said key signal processing system includes a microprocessor-controllable clipping circuit that selects from a plurality of different clipping characteristics;

(iv) said key signal processing system includes a microprocessor-controllable clipping circuit, responsive to a user selection, that selects from a plurality of different clipping characteristics;

(vi) said key signal processing system includes a microprocessor-controlled edge softening filter/interpolating circuit for edge blending of a key signal supplied to said key input;

(vii) said key signal processing system includes a microprocessor-controlled two-dimensional finite impulse response filter for edge blending of a key signal supplied to said key input;

(vii) said key signal processing system and said video image compositor are configured to provide user selectable randomized rounding of fractional values of digital video signals to integers over different ranges of fractional values, with fractional values outside said different ranges being rounded to a closest digit;

(viii) said key signal processing system includes a look-up table containing a plurality of look-up table input/output characteristics, and means controlling said look up table to allow selection of different look-up table input/output characteristics for a television frame to provide different outputs for different portions of the television frame; and

(ix) said key signal processing system includes a look-up table containing a plurality of look-up table input/output characteristics, and user-selected means controlling said look-up table for allowing user selection of different look-up table input/output characteristics.

5,347,623

INFORMATION RETRIEVAL APPARATUS WITH USER INTERFACE FOR DISPLAYING AND PRINTING OF RETRIEVED DATA IN DIFFERENT SELECTED SEQUENCES

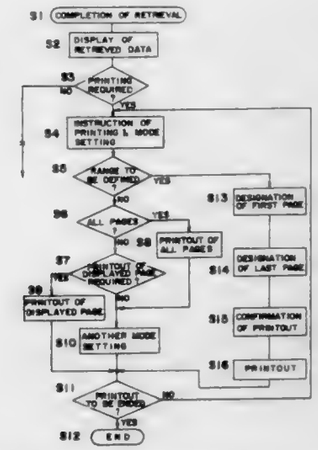
Sakuharu Takano, and Sumio Kita, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 27, 1988, Ser. No. 263,557

Claims priority, application Japan, Oct. 29, 1987, 62-274172; Oct. 31, 1987, 62-276571; Oct. 31, 1987, 62-276572; Oct. 31, 1987, 62-276573; Oct. 31, 1987, 62-276575; Oct. 31, 1987, 62-276576; Oct. 31, 1987, 62-276577; Oct. 31, 1987, 62-276578

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—157 **4 Claims**



1. A method of information retrieval and printing of primary information stored within a memory of a processing apparatus, based upon secondary information, comprising the steps of:

inputting secondary information as selected by a system user;

comparing the inputted secondary information with sets of descriptive annexed secondary information stored in the memory as annexed to respective pieces of the primary information;

retrieving one of the respective pieces of the primary information with descriptive annexed secondary information which is determined as corresponding to the inputted secondary information during said step of comparing; and

printing the retrieved primary information comprising the sequential steps of

scrolling various pages of the retrieved primary information manually on display means,

designating and fixedly displaying a first page of the retrieved primary information manually on the display means,

scrolling remaining pages of the retrieved primary information,

designating and fixedly displaying additional pages of the retrieved primary information sequentially, the additional pages being displayed fixedly overlapping each other on the display means, and

printing the designated pages of the retrieved primary information sequentially in order, the fixedly displayed pages reviewable prior to said substep of printing.

5,347,624

METHOD AND APPARATUS FOR DISPLAY CONTROL

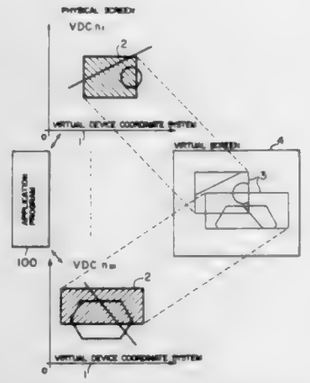
Katsuya Takanashi, Hadano; Shouji Nakamura, Yokohama; Takashi Akaosugi, Hadano; Tomihiko Kojima, Machida; Tooru Takahashi, Yokohama, and Ritsuo Shirahama, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 152,485, Feb. 5, 1988, abandoned. This application May 7, 1990, Ser. No. 518,334

Claims priority, application Japan, Mar. 5, 1987, 62-51023; Mar. 19, 1987, 62-65427

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—157 **13 Claims**



1. A display control apparatus for mapping data to be displayed on to a virtual screen using an application program and displaying a specified area of the virtual screen in a physical screen, said apparatus comprising:

first means for individually effecting a drawing operation using image data, vectorized graphic data and coded character data of said data to be displayed in a plurality of virtual devices, respectively, each virtual device having a virtual device space defined by a normalized coordinate system independent of a coordinate system of the physical screen, said image data, vectorized graphic data and coded character data being described according to at least said normalized coordinate system for use by said application program;

second means for mapping specified data of each of said virtual device spaces onto said virtual screen at desired map positions in a form of at least one of said image data, vectorized graphic data and coded character data, thereby generating new data;

third means for writing said new data in a specified area of a memory of said virtual screen;

fourth means for mapping said specified data, mapped on said virtual screen, onto said physical screen on a bit-map basis; and

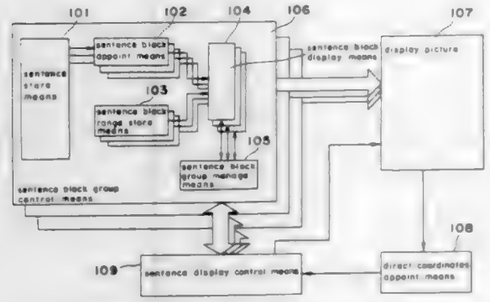
fifth means for displaying on a display equipment data of said physical screen.

5,347,625

DOCUMENT DISPLAY PROCESSING APPARATUS INCLUDING MEANS FOR CONTROLLING THE DISPLAY OF PLURAL TEXT BLOCK GROUPS

Kazuo Kajimoto, Neyagawa, and Tomoyuki Nonomura, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 20, 1991, Ser. No. 748,189
Claims priority, application Japan, Aug. 24, 1990, 2-222764
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—145 28 Claims



1. A document processing apparatus for controlling the display of text on a display frame of a display device, said apparatus comprising:

coordinate input means for inputting user instructions including display coordinates of the display frame as specified by a user;

text block group control means for controlling a grouping of text to be displayed on said display frame, said text block group control means including (1) memory means for storing a plurality of text characters, (2) block area coordinates storing means for storing information indicative of coordinates of a plurality of rectangular display areas of the display frame each constituting a text block area, (3) text block specifying means for specifying text characters from among the plurality of text characters, the text characters specified by said text block specifying means for display in each of the plurality of rectangular display areas stored in said block area coordinates storing means, (4) text block display means for controlling the display of the text block areas stored in said block area coordinates storing means containing the text characters specified by said text block specifying means, and (5) text block group management means for designating a text block group containing one or more text block areas to be displayed by said text block display means; and

display control means for receiving the user instructions from said coordinate input means and for controlling said text block group control means in accordance with the user instructions, said display control means including (1) specified text block detecting means for detecting which one of a plurality of displayed text block areas has been specified by the user based on the display coordinates of said coordinate input means, (2) specified text block group detecting means for detecting a displayed text block group containing the one of the plurality of displayed text block areas detected by said specified text block detecting means, and (3) stream-in operation means for transferring, responsive to a corresponding user instruction via said coordinate input means, text characters from one text block group detected by said specified text block group detecting means to another defined text block group;

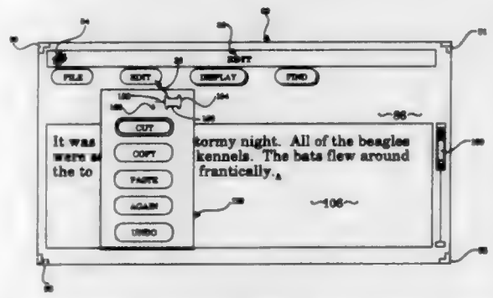
wherein said stream-in operation means includes (1) a text block area direct specifying means for directly specifying a rectangular display area of a new text block area according to said coordinates input means, (2) a replacement text block forming means for forming the new text block area specified by said text block area direct specifying means, (3) a replacement text block character number computing means for computing a number of text characters to be included in the new text block area according to a size of the new text block area, (4) a character integrating means for integrating all of the text characters specified by a corresponding sentence block specifying means so as to write the text characters as one continuous text into said text character storing means, (5) a replacement text block specification setting means for extracting a number of characters computed by said text block character number computing means from among the continuous text so as to set the extracted characters into the text block area newly formed by said replacement text block forming means, and (6) a replacement block group forming means for forming a replacement block group containing at least one newly formed block group area.

5,347,626

METHOD AND APPARATUS FOR SELECTING AND EXECUTING DEFAULTS IN WINDOW BASED DISPLAYED SYSTEM

Anthony Hoeber, Woodside; Alan Mandler, San Francisco, both of Calif., and Norman Cox, Irving, Tex., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 323,775, Mar. 15, 1989, abandoned.
This application May 21, 1993, Ser. No. 66,328
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—156 4 Claims



1. In a computer controlled display system having a display coupled to a central processing unit (CPU) for displaying a plurality of data, said data including at least one button stack, said button stack corresponding to a plurality of menu functions and a default function, a method for choosing and executing said default function such that none of said plurality of menu functions corresponding to said button stack are displayed, said method comprising the steps of:

(a) generating and displaying said button stack on said display, said button stack having a first visual appearance including a button stack title, said button stack having a right area half and a left area half;

(b) positioning a cursor on said display using a cursor control device coupled to said CPU, said cursor being placed on the right area half of said button stack;

(c) providing a first signal to said CPU to denote a selection of said default function, said first signal being generated by a user depressing a switch on said cursor control device;

(d) modifying said button stack from said first visual appearance to a second visual appearance in response to said cursor being placed on the right area half of said button stack and said first signal, said second appearance comprising a title of said default function;

(e) releasing said switch on said cursor control device;

(f) returning said button stack to said first visual appearance and executing said default function;

(g) positioning said cursor on said display using said cursor control device coupled to said CPU, said cursor being placed on the left area half of said button stack;

(h) providing a second signal to said CPU to denote a selection of paid menu function, said second signal being generated by a user depressing said switch on said cursor control device;

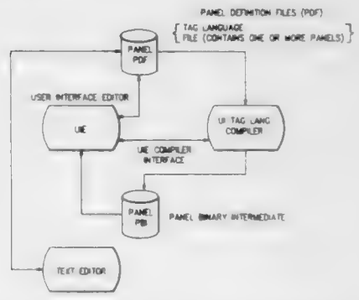
(i) generating and displaying a menu list on said display in response to said cursor being placed on the left area half of said button stack and said second signal, said menu list comprising a plurality of menu titles associated with said plurality of menu functions.

5,347,627

GRAPHICAL USER INTERFACE INCLUDING DYNAMIC SIZING AND SPACING

Robert P. Hoffmann, Endwell, N.Y.; Jerry W. Malcolm, Austin, Tex.; John D. Montgomery, Binghamton, N.Y., and Steve S. Stone, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 7, 1992, Ser. No. 864,766
Int. Cl.[5] G06F *15/00, 3/14*
U.S. Cl. 395—157 3 Claims



1. A method of doing one or more of defining, creating, or editing a graphical user interface panel file comprising:

a. opening a graphical user interface source code file containing an object entry for the user interface panel and for each object within the panel, said object entries including the size and location of the object;

b. editing the graphical user interface source code file to form an edited graphical user interface source code file, and update the size and location source entries of each object;

c. compiling the edited graphical user interface source code file; and

d. storing the compiled graphical user interface object code file in a Panel Binary Intermediate file.

5,347,628

METHOD OF GRAPHICALLY ACCESSING ELECTRONIC DATA

Susan C. Brewer, Keller; Kathy A. Brink, Coppell; William H. Krebs, Jr., Euless, and Robert P. Welch, Colleyville, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

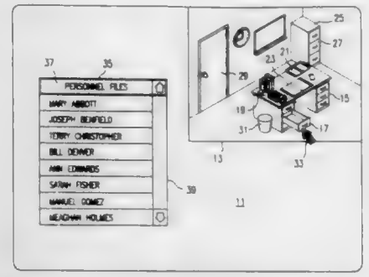
Filed Jan. 18, 1990, Ser. No. 467,697
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—159 15 Claims

1. A method in a data processing system, including a display screen and a user operated device, for graphically accessing electronic data, which comprises the steps of:

displaying on said screen a graphical representation of a work area, said work area including at least one icon that is movable in said representation of said work area between a closed position and an open position;

operating said device to move said icon to an open position;

automatically opening a window on said screen in response to moving said icon to said open position while said icon



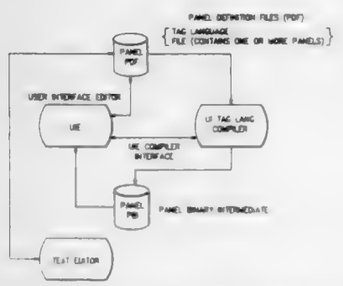
and representation of said work area remain visible on said screen; and displaying said data in said window.

5,347,629

GRAPHICAL USER INTERFACE INCLUDING UPDATING OF MULTIPLE PANELS USING WHAT YOU SEE IS WHAT YOU GET (WYSIWYG) EDITOR

John P. Barrett, Austin, Tex.; Robert P. Hoffmann, Endwell, and John D. Montgomery, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 7, 1992, Ser. No. 864,770
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—161 4 Claims



1. A method of doing one or more of defining, creating, or editing a target graphical user interface panel file, said graphical user interface panel file containing at least one graphical object, which method comprises:

a. opening a source graphical user interface file and identifying an object to be copied, said object being a linked list comprising

i. an object start identifier, and an object end identifier, and

ii. pointers therebetween for attributes of the object to be copied;

b. copying the source object start identifier, the object end identifier, the pointers therebetween for the attributes thereof, and the code corresponding to the attributes to the target graphical user interface file; and

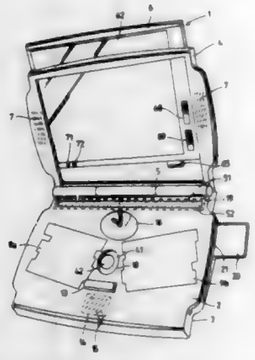
c. storing the copied graphical user interface code file in a Panel Binary Intermediate file.

5,347,630

COMPUTER SYSTEM HAVING A DETACHABLE DISPLAY

Shoichi Ishizawa, and Kyoichi Ideno, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 25, 1992, Ser. No. 860,738
Claims priority, application Japan, Apr. 23, 1991, 3-092227
Int. Cl.[5] G06F *3/147*
U.S. Cl. 395—164 **18 Claims**



1. A computer system comprising:
a main body having:
a processor for processing input data received from a source external to the main body;
a first memory for storing display data processed by said processor; and
a first connector for transferring said display data to a source external to the main body;
a display device attachable to and detachable from said main body, said display device having:
a display panel;
a second connector, connected to said first connector when said display device is attached to said main body, for transferring said display data to a source internal to the main body;
a second memory storing said display data received through said second connector;
a display controller for controlling the display; and
a power supply means for supplying power to each of said display panels, said second memory and said display controller.

5,347,631

BIT ALIGNED DATA BLOCK TRANSFER METHOD AND APPARATUS

John R. Providenza, Beaverton, and Lee Boekelheide, Tigard, both of Oreg., assignors to Network Computing Devices, Inc., Mountain View, Calif.

Continuation of Ser. No. 617,198, Nov. 23, 1990. This application Oct. 12, 1993, Ser. No. 135,797
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—164 **11 Claims**

Rasterop	SRC	DEST	Operation		Memory Cycle Reduction
DEST_VAL=DEST AND SRC	0	x	read SRC,	write 0	3 -> 2
DEST_VAL=DEST AND SRC	1	x	read SRC		3 -> 1
DEST_VAL=DEST OR SRC	1	x	read SRC,	write 1	3 -> 2
DEST_VAL=DEST OR SRC	0	x	read SRC		3 -> 1
DEST_VAL=DEST XOR SRC	1	x	read SRC,	R&W DEST	3 -> 3
DEST_VAL=DEST XOR SRC	0	x	read SRC		3 -> 1

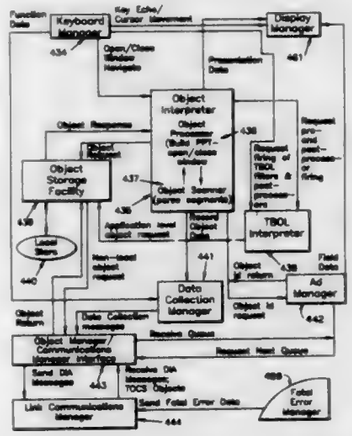
1. A system for transfer of graphics data in a memory, said transferred data being defined according to a predetermined logic expression representative of a logic relationship involving first and second operands, each operand being representative of respective data with at least one of said first and second operands being representative of graphics data in said memory, said system comprising:
image modification means for managing said memory for selectively effecting a given memory operation representing said predetermined logic expression with respect to said operands and providing an image output per said predetermined logic expression, and
means for identifying, before engaging at least one of said first and second operands, the logical effect that one of said operands will have on the image output per said predetermined logic expression and causing said image modification means to manage said memory with respect to other than said one of said operands when it is determined said one of said operands fails to have a logical effect on said output.

5,347,632

RECEPTION SYSTEM FOR AN INTERACTIVE COMPUTER NETWORK AND METHOD OF OPERATION

Robert Filepp, Springfield, N.J.; Michael L. Gordon, Dobbs Ferry, N.Y.; Alexander W. Bidwell, New York, N.Y.; Francis C. Young, Pearl River, N.Y.; Allan M. Wolf, Ridgefield, Conn.; Sam Meo, New York, N.Y.; Duane Tiemann, Trumbull; Robert D. Cohen, New Fairfield, both of Conn.; Mel Bellar, New York, N.Y.; Kenneth H. Appleman, Brooklyn, N.Y.; Lawrence Abrahams, New York, N.Y., and Michael J. Silfen, Croton, N.Y., assignors to Prodigy Services Company, White Plains, N.Y.

Continuation-in-part of Ser. No. 328,790, Mar. 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 219,931, Jul. 15, 1988, abandoned. This application Jul. 28, 1989, Ser. No. 388,156
Int. Cl.[5] G06F *13/38*
U.S. Cl. 395—200 **43 Claims**



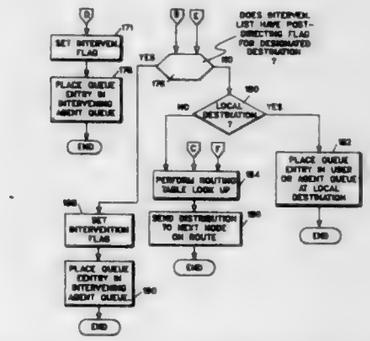
1. A reception system provided in an interactive computer network, the reception system for presenting partitioned applications that include informational and transactional services to a user, the reception system comprising:
input means for receiving user inputs, at least some of which include requests for partitioned applications;
storage means for storing objects, the objects collectively including data and executable program instructions used in generating the partitioned applications, and the storage means further retaining objects between requests for partitioned applications;
object processing means responsive to the input means for selectively retrieving and interpreting objects to extract data and program instructions required for composing and generating the partitioned applications; and
communication means for sending object requests arising within the object processing means to and receiving objects from the interactive network when objects required for generating the partitioned applications are unavailable at the storage means.

5,347,633

SYSTEM FOR SELECTIVELY INTERCEPTING AND REROUTING DATA NETWORK TRAFFIC

James C. Ashfield, Raleigh; Gregory D. Baker, Apex; Robert C. Nevins; Jeffrey A. Raynes, both of Raleigh; Aaron T. Sultan, Carrboro; Joseph K. Parks, Durham; Michael D. Rhodin, and Reid L. Sayre, both of Raleigh, all of N.C., assignors to International Business Machines, Inc., Armonk, N.Y.

Filed Apr. 30, 1991, Ser. No. 693,836
Int. Cl.[5] G06F *13/00, 15/16*
U.S. Cl. 395—200 **5 Claims**



1. For use in a data communication network comprising a plurality of nodes, one or more of which provide distribution services (DS) to users to enable an originating user to distribute a message to a destination user, each DS-providing node containing a user directory, said user directory having one or more entries identifying users and the nodes which provide distribution services to those users, and a routing table, said routing table having one or more entries each identifying another DS node and the next DS node on a route to the identified node, message intercepting system in at least one of the DS-providing nodes for selectively intercepting messages, said message intercepting system comprising:
an intervention list data structure having one or more entries, each said entry providing at least a partial identification of a destination DS node, at least a partial identification of one or more users, and an intervention type;
means for receiving incoming messages and for comparing destination DS node information and user information in said incoming messages to intervention list entries; and
means responsive to a match to process incoming message as a function of the contents of the associated intervention type field.

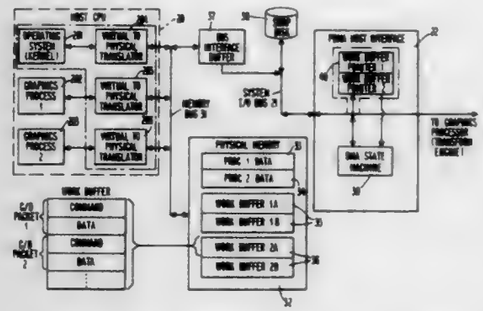
5,347,634

SYSTEM AND METHOD FOR DIRECTLY EXECUTING USER DMA INSTRUCTION FROM USER CONTROLLED PROCESS BY EMPLOYING PROCESSOR PRIVILEGED WORK BUFFER POINTERS

Russ W. Herrell; Curtis R. McAllister; Dong Y. Kuo, and Christopher G. Wilcox, all of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 15, 1990, Ser. No. 494,008
Int. Cl.[5] G06F *13/28*
U.S. Cl. 395—250 **48 Claims**

1. A device for transferring data processing commands and associated data between a user's host system, having a main memory and host processor, and an external data processing system via user controlled direct memory access (DMA) comprising:
a work buffer in said main memory which is locked for a DMA controlling user process of said host processor, said work buffer storing said data processing commands and associated data for said DMA controlling user process;
a work buffer pointer register containing a work buffer pointer to said work buffer for said DMA controlling user process, said work buffer pointer being unique to said DMA controlling user process and said host processor having privileged access to said work buffer pointer register whereby said work buffer pointer is unmodifiable by said DMA controlling user process either directly or indirectly; and
means responsive to a user DMA instruction from said DMA controlling user process for reading data processing commands and associated data specified in said user DMA instruction from said work buffer starting at the address pointed to by said work buffer pointer and for transferring, via DMA, said data processing commands and associated data from said work buffer to said external data processing system.

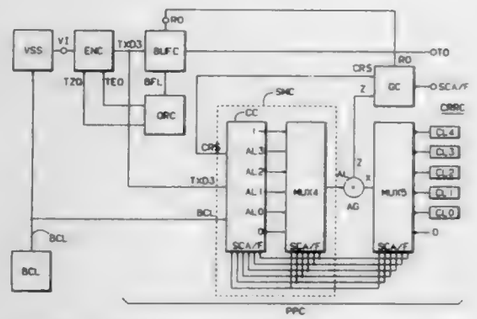


5,347,635

ENCODER ARRANGEMENT HAVING PREVENTIVE POLICING CIRCUIT (PPC) WITH STATISTICAL MEASUREMENT CIRCUIT (SMC) AND DATA OUTPUT RATE REDUCTION CIRCUIT (CRRC)

Bart F. Voeten, Beerse, and Willem J. A. Verbiest, St. Gillis Wass, both of Belgium, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Aug. 27, 1992, Ser. No. 936,133
Claims priority, application European Pat. Off., Aug. 28, 1991, 91202188.8
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—250 **13 Claims**



1. Encoder arrangement, comprising:
a data source (VSS) for providing data signals (VI);
an encoder circuit (ENC), responsive to the data signals

(VI), for providing data output signals (TXD3) at a buffer input data rate;

a buffer circuit (BUFC), responsive to the data output signals (TXD3), and further responsive to a read-out input signal (RO), for providing buffer output data at a buffer output data rate to an output T_o; and

a preventive policing circuit (PPC) for controlling the buffer output data rate as a function of a predetermined probability distribution function (CCCP/CR), having a statistical measurement circuit (SMC) and a data output rate reduction circuit (CRRC),

the statistical measurement circuit (SMC) being responsive to the data output signals (TXD3), for measuring the buffer input data rate at the end of each measurement interval, for providing interval signals (SCA/F) indicative of one of a plurality of consecutive data output rate intervals (BR10/2, 3/4, 5/6, 7/8, 9/10, 11) corresponding to the buffer input data rate for each measurement interval, for also providing a data output rate signal (CRS), and for further providing an alarm signal (AL:O/ALO/3, 1) to indicate whether the data output rate signal (CRS) has to be temporarily decreased during a following measurement interval, and

the data output rate reduction circuit (CRRC) being responsive to the interval signals (SCA/F), also being responsive to the alarm signal (A:0/AL0/3, 1) and further being responsive to the data output rate signal (CRS), for providing the readout input signal (RO) to said buffer circuit (BUFC) for reducing the buffer output data rate of the buffer output data from said buffer circuit (BUFC) to the output T_o in the following measurement interval.

5,347,636

DATA PROCESOR WHICH EFFICIENTLY ACCESSES MAIN MEMORY AND INPUT/OUTPUT DEVICES

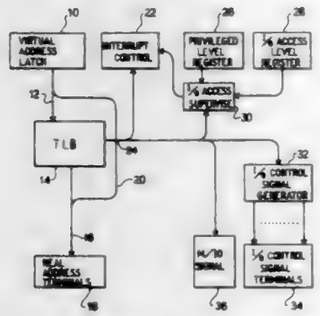
Yasushi Ooi, and Yoshiyuki Miki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 698,197, May 6, 1991, abandoned, which is a continuation of Ser. No. 517,418, May 2, 1990, abandoned, which is a continuation of Ser. No. 364,313, Jun. 2, 1989, abandoned, which is a continuation of Ser. No. 228,869, Aug. 5, 1988, abandoned, which is a continuation of Ser. No. 928,510, Nov. 10, 1986, abandoned. This application Oct. 23, 1992, Ser. No. 965,534

Claims priority, application Japan, Nov. 8, 1985, 60-250054; Nov. 8, 1985, 60-250061; May 27, 1986, 61-122658

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—275 **8 Claims**



1. A data processor with memory mapped input/output structure in which a portion of an address space is allocated to a main memory and another portion of the address space is allocated to a plurality of external input/output devices and which includes at least a central processing unit adapted to execute virtual memory management, wherein the improvement comprises:

a) address translation means, internally provided in the central processing unit, for translating a given virtual address into a corresponding real address;

b) means, associated with the address translation means and internally provided in the central processing unit, for generating a distinction signal indicating whether the translated real address designates said main memory or one of said external input/output devices, the distinction signal also directly specifying the specific one of said external input/output devices to be accessed when the translated real address designates one of said external input/output devices; and

c) means, which is internally provided in the central processing unit and which receives the distinction signal, for generating a set of input/output control signals to directly access said external input/output devices.

5,347,637

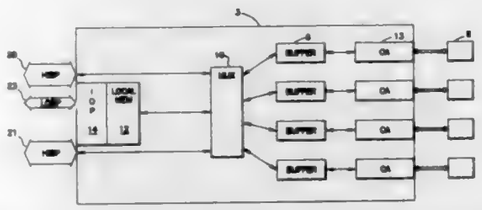
MODULAR INPUT/OUTPUT SYSTEM FOR SUPERCOMPUTERS

Robert J. Halford, Chippewa Falls, Wis., assignor to Cray Research, Inc., Eagan, Minn.

Filed Aug. 8, 1989, Ser. No. 390,722

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—325 **10 Claims**



1. An input/output module for an input/output system for sue in interfacing between a high speed vector processing supercomputer and a plurality of peripheral devices, comprising:

a) channel adapter means including a plurality of channel adapters each connected for interfacing with one of the plurality of peripheral devices wherein each of the peripheral devices has a peripheral data format, and each of said channel adapters of said channel adapter means further adapted for performing format conversion on data between said peripheral data format and a format required by the input/output system;

b) high speed data channel means for bidirectional coupling with the supercomputer and for transmitting and receiving data;

c) memory buffer means including a plurality of memory buffers each connected for storing data and each of said plurality of memory buffers being coupled in a dedicated connection to one of said channel adapters;

d) multiplexer means coupled between said high speed data channel means and said plurality of memory buffers of said memory buffer means for transferring data to said high speed data channel means;

e) I/O processor means connected to said high speed data channel means, said memory buffers means and said channel adaptor means for controlling data transfers between said high speed data channel means and said memory buffer means and further connected for controlling data transfers between said channel adapter means and said memory buffer means by permitting said channel adapter means and said high speed data channel means access to said memory buffer means on alternate memory access cycles; and

f) said I/O processor means further connected for allowing each of said channel adapters to access one of the plurality of peripheral devices to which it is attached simultaneous

with the accessing of the memory buffers by the high speed channel.

5,347,638

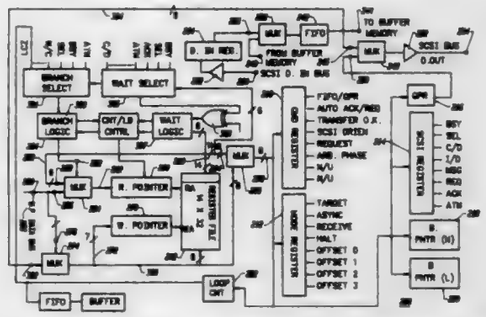
METHOD AND APPARATUS FOR RELOADING MICROINSTRUCTION CODE TO A SCSI SEQUENCER

Dhirubwai N. Desai, Santa Clara County; David M. Lewis, Santa Cruz County, and Don M. Robinson, Santa Clara County, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Apr. 15, 1991, Ser. No. 686,112

Int. Cl.[5] G06F *9/24*

U.S. Cl. 395—375 **15 Claims**



1. A sequencer for controlling interfacing between a host computer, a magnetic disk-drive, and a buffer memory, comprising:

means for receiving a plurality of blocks of SCSI data micro-instructions;

means for receiving a plurality of blocks of host computer micro-instructions;

a buffer memory for storing a plurality of blocks of micro-instructions;

means for selecting a first block of micro-instructions, said first block selected from the group of instructions consisting of said blocks of SCSI data micro-instructions and said blocks of host computer micro-instructions;

a register file for storing said first block of micro-instructions;

means for indicating a first micro-instruction of said first micro-instruction block, said first micro-instruction selected from the group consisting of branch instructions, wait instructions, macro instructions and load instructions;

said branch instructions having a first condition and a branch destination, said wait instructions having a wait time period, said macro instructions for performing custom instructions, said load instructions for loading a plurality registers in said sequencer, said load instructions including reload instructions for loading a new block of micro-instructions into said register file;

branching means whereby upon a branch instruction, said branching means checks said first condition, and if satisfied causes said indicating means to indicate said branch destination;

waiting means whereby upon a wait instruction, said waiting means loops until said wait time period indicated by said wait instruction has expired;

means for executing said first micro-instruction;

incrementing means for incrementing said indicating means to indicate a next micro-instruction if no branch has occurred; and

means for looping whereby said indicating means will be incremented upon the execution of a micro-instruction and thereby indicate a next instruction for execution, whereby said incrementing means and said executing means will continue to loop until a first reload instruction is indicated, said reload instruction for selecting a second block of micro-instructions from said selected one of said group of micro-instructions.

5,347,639

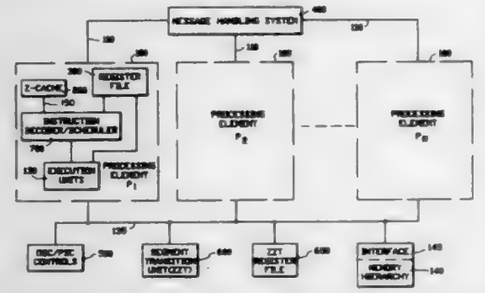
SELF-PARALLELIZING COMPUTER SYSTEM AND METHOD

Rudolph N. Rechtschaffen, Scarsdale, and Kattamuri Ekanadham, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 15, 1991, Ser. No. 731,224

Int. Cl.[5] G06F *9/30, 15/16*

U.S. Cl. 395—375 **40 Claims**



2. A self-parallelizing digital computer for parallel processing an execution sequence of instructions, comprising:

a plurality of processing elements for executing each of said instructions in said execution sequence either in a first mode of execution or in a second mode of execution;

means for assigning one of said processing elements to each instruction in said execution sequence of instructions, said instructions being distributed among said processing elements;

means in said first mode of execution for uncovering execution dependencies among pairs of said instructions assigned to different processing elements;

means for recording said uncovered execution dependencies, a first part of each said recorded execution dependency being a recorded data sending obligation associated with one of the instructions in each said pair and a second part of each said recorded execution dependency being a recorded data receiving need associated with a second instruction in each said pair;

means for terminating said first mode of execution to define an execution segment (Z-Segment) including at least a portion of the execution sequence of instructions and recorded execution dependencies associated with the portion of the execution sequence of instructions;

means for executing at least a portion of any defined Z-Segment in said second mode of execution, each of said processing elements executing in said second mode of execution only the instructions assigned to said each processing element in said first mode of execution when said executing Z-Segment was defined;

means for terminating execution of a Z-Segment in said second mode of execution after executing at least a portion of said executing Z-Segment;

means for making a determination upon termination of said first mode of execution or termination of said second mode of execution whether a Z-Segment has been defined which can be used to execute the next instruction in said execution sequence; and

means responsive to said determination means for making a transition to said second mode of execution for executing said next instruction in the event of determination that a the Z-Segment has been defined and for making a transition to said first mode of execution for executing said next instruction in the event of determination that a usable Z-Segment has not been defined.

5,347,640

CIRCUIT FOR GENERATING ADDRESSES FOR BUFFERING AND READING THE DATA FROM A CD-ROM AND METHOD THEREFOR

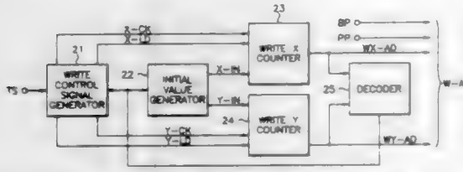
Ho-Joong You, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Jul. 18, 1991, Ser. No. 732,144

Claims priority, application Rep. of Korea, Aug. 9, 1990, 1990-12213

Int. Cl.[5] **G06F** *12/00*

U.S. Cl. 395—400 **19 Claims**



1. A circuit for generating address data for accessing a buffer memory for writing and reading parity data, said circuit comprising:

a write address generator for generator write address data in response to a received write control signal and received clock pulses, said write address generator comprising:

an initial value generator for generating a first initial value, a second initial value and an initialization control signal,

a write control signal generator for generating first clock pulses, second clock pulses, a first load signal and a second load signal in response to said initialization control signal,

a first write counter having a first clock input for receiving said first clock pulses, a first load input for receiving said first load signal, and an initialization input for receiving said first initial value, said first write counter being initialized for generating first write address data by counting said first clock pulses up from said first initial value in response to said first load signal,

a second write counter having a second clock input for receiving said second clock pulses, a second load input for receiving said second load signal, and an initialization input for receiving said second initial value, said second write counter being initialized for generating second write address data by counting said second clock pulses up from said second initial value in response to said second load signal, and

address decoder means for generating a signal for controlling said initial value generator by receiving and decoding said first and second write address data;

a read address generator for generating read address data in response to said a read control signal and said received clock pulses; and

read/write mode selection means for receiving said first and second write address data, as said write address data generated by said write address generator, for receiving said read address data generated by said read address generator and for selecting one of said write address data and said read address data for output to said buffer memory in response to one of a write mode selection signal and a read mode selection signal.

5,347,641

PAGE REGISTER WITH A DON'T CARE FUNCTION

Yoram Cedar, Cupertino; Arye Ziklik, Sunnyvale, and Alex Shubat, Fremont, all of Calif., assignors to WaferScale Integration, Inc., Fremont, Calif.

Filed Aug. 30, 1991, Ser. No. 752,380

Int. Cl.[5] **G06F** *12/02*

U.S. Cl. 395—400 **15 Claims**

1. Structure in a programmable system device for providing a page mode comprising:

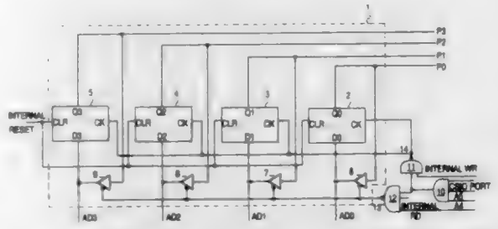
means for programmably selecting devices, said means for programmably selecting having input lines for accepting signals which indentify devices and output lines for carrying signals which enable devices;

means for selectively latching and transferring data signals to a first plurality of said input lines, said data signals indicating said page mode; and

means for providing address signals to a second plurality of said input lines,

wherein one of said output lines is coupled to said means for selectively latching and transferring data and wherein said one of said output lines carries a signal which enables reading from and writing to said means for selectively latching and transferring data in response to said address signals indicating an address corresponding to said means for selectively latching and transferring data,

whereby said means for programmably selecting provides said structure with a "don't care" function which enables reading from and writing to said means for selectively latching and transferring data, regardless of said data signals.



5,347,642

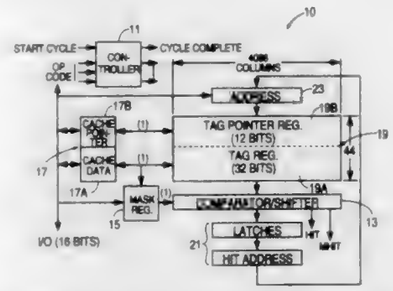
CACHE MEMORY MANAGEMENT UNIT

Peter G. Barratt, Wellesley, Mass., assignor to NEC Electronics Inc., Mountain View, Calif.

Filed Nov. 30, 1989, Ser. No. 443,996

Int. Cl.[5] **G06F** *12/00*

U.S. Cl. 395—425 **4 Claims**



1. In a digital computer, a cache memory management apparatus for a cache memory holding copies of selected data blocks of a disc memory, said apparatus comprising:

a cache tag register containing K_f tag positions, number $k=0, 1, 2, \ldots, K_f1$, where $K_f$is a positive integer, each tag position containing an N-bit disk data location tag, corresponding to the location in disk memory of a selected data block, and an M-bit tag pointer, corresponding to the location in cache memory at which a copy of said selected data block is held;

a comparator circuit, receiving from said digital computer an input disk data location tag, for comparing said input disk data location tag to said disk data location tags at said K_f positions of said cache tag register, said comparator circuit including a priority encoder which provides, as an output tag pointer, the tag pointer at the $k=p$ tag position, the $k=p$ tag position being (a) during a read operation, the lowest-numbered tag position that has a disk data location tag matching said disk data location tag from said digital computer, and (b) during a write operation, the highest numbered tag position that has a disk data location tag matching said input disk data location tag; and

means for moving (a) by one tag position the contents at each of the tag positions in said cache tag register between the $k=0$ and the $k=p-1$ positions to the respective tag positions between the $k=1$ and the $k=p$ tag positions, and (b) said input disk data location tag and said first output tag pointer to the $k=0$ tag position.

5,347,643

BUS SYSTEM FOR COORDINATING INTERNAL AND EXTERNAL DIRECT MEMORY ACCESS CONTROLLERS

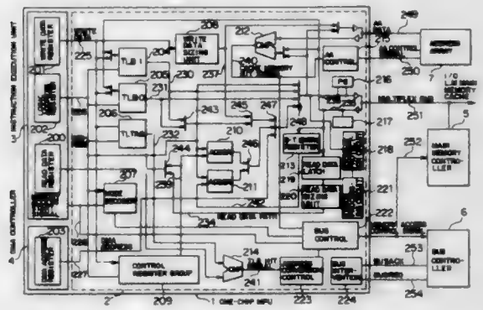
Nobukazu Kondo, Fujisawa; Takashi Maruyama, Ebina; Keiichi Isamu, Nagoya, and Hiroaki Aotsu, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 19, 1991, Ser. No. 656,676

Claims priority, application Japan, Feb. 16, 1990, 2-033723

Int. Cl.[5] **G06F** *13/368, 13/28*

U.S. Cl. 395—425 **1 Claim**



1. A microprocessor system comprising:

a main processing unit including an instruction execution unit, having a logical address register for storing a logical address to be accessed, and a DMA controller having a DMA register for storing an address for direct memory access;

hit determining means for determining whether an address hits data stored in an external cache memory;

an address array controller responsive to the results from said hit determining means for accessing an external address array connected to the cache memory, to control passage of address signals to the cache memory;

an address bus and a data bus, each said bus connected to said main processing unit and adapted for connection to an external DMA controller;

means within said hit determining means for comparing an address of said DMA register or of the external DMA controller with address signals from said address array;

invalidating means responsive to the comparison by said comparing means for invalidating the cache memory address by applying an invalid bit on said bidirectional address array to write the invalid bit at the cache memory address;

said main processing unit, said hit determining means, said address array controller, and said invalidating means being formed on a single chip as a one-chip microprocessor;

a memory controller adapted for connection to a main memory;

a multiplexed address/data bus coupling said main processing unit and said memory controller and adapted for connection to the cache memory;

an address latch coupling said address bus with said multiplexed address/data bus;

a driver coupling said data bus with said multiplexed address/data bus; and

by-pass means for passing an address from said address bus to said main processing unit; and wherein:

said invalidating means is responsive to address information from said main processing unit DMA controller and the external DMA controller for invalidating a cache memory address; whereby:

address information and data can be transferred by said multiplexed address/data bus between said main processing unit and said memory controller to permit accessing of the main memory;

address information and data can be transferred by said multiplexed address/data bus and said bus means between said main processing unit and said external DMA controller;

address information can be applied from said main processing unit DMA controller through said multiplexed address/data bus and said memory controller to the main memory to cause data to be transferred from the main memory through said memory controller onto said data bus; and

address information can be applied from the external DMA controller through said address bus, said by-pass means, said multiplexed address/data bus and said memory controller to the main memory to cause data to be transferred from the main memory through said memory controller onto said data bus, and the address information applied from the external DMA controller through said address bus can be transferred to said hit determining means for comparison with data from the external address array, for invalidating said cache memory in accordance with the result of the comparison.

5,347,644

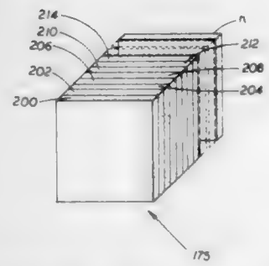
THREE-DIMENSIONAL IMAGE DISPLAY DEVICE AND SYSTEMS AND METHODS FOR IMPLEMENTATION THEREOF

Steven R. Sedlmayr, 1948 Ellis, Mesa, Ariz. 85028

Filed Jun. 11, 1992, Ser. No. 898,950

Int. Cl.[5] **G02B** *1/08, 27/10, 27/26*

U.S. Cl. 359—465 **6 Claims**



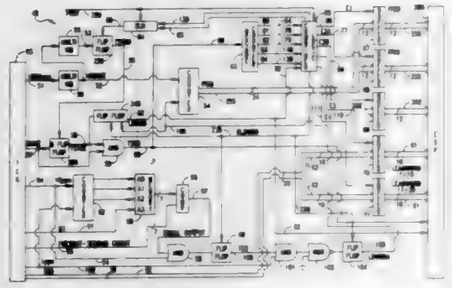
1. A three-dimensional image display device comprising three parallel elements each element forming an image plane for a projected beam of light having components of electric field vectors each element being formed from a transparent material, each element having a coating formed thereon, the coating adapted to reflect a selected portion of the projected beam of light having a predetermined orientation of a chosen component of the electric field vectors and to pass the remaining portion of the projected beam of light.

5,347,645

TIME CODE INTERFACE

James D. Perry, Tiverton, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 26, 1991, Ser. No. 813,563
Int. Cl.[5] G06F *1/04*
U.S. Cl. 395—550 5 Claims



1. An apparatus for associating a time with an event, comprising:

first counter means for receiving a first repetitive clock signal of a first frequency, said first counter means counting the first repetitive clock signal for a predetermined interval of time, said first counter means outputting a first multi-bit digital signal representing a duration of said predetermined interval of time;

buffer means having an input for receiving a second multi-bit digital signal representing a current time of day (TOD), said second multibit digital signal having a lesser degree of resolution than said first multibit digital signal;

second counter means for receiving a second repetitive clock signal of a second frequency, said second frequency being less than said first frequency;

storage means having a first plurality and a second plurality of addressable locations, said storage means having a plurality of least significant address inputs coupled to an output of said second counter means and at least one most significant bit address input coupled to a signal expressive of a repetitively reoccurring time interval having a first logic state and a second logic state, said storage means storing at each location within said first and said second plurality of addressable locations a value expressive of a time, said storage means being responsive to the state of said repetitively reoccurring time interval and to said plurality of least significant address inputs to form a multi-bit address for reading out a stored value expressive of a time;

comparison means having a first input coupled to an output of said storage means and a second input coupled to a time signal expressive of a current time, said comparison means comprising means for comparing said output of said storage means to said time signal expressive of a current time and for asserting a control signal in response to the time signal equaling said stored value being outputted by said storage means, said control signal being coupled to said buffer means for causing said output of said buffer means to be enabled, said control signal being further coupled to said first counter means for resetting said first counter means, and said control signal also being coupled to said buffer means for enabling said buffer means; and

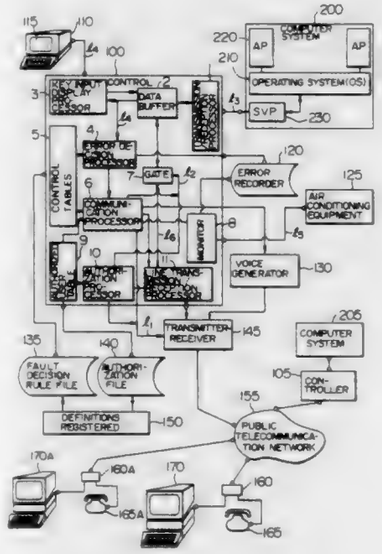
sequencing means including a counter circuit, said sequencing means serving to sequence the addresses of the storage means and having a first input coupled to said second repetitive clock signal and a second input coupled to a third repetitive clock signal wherein said third repetitive clock signal has a frequency that is less than that of said first and second repetitive clock signals.

5,347,646

REMOTE OPERATION CONTROL FOR COMPUTER SYSTEM

Toshio Hirosawa, Machida; Jun'ichi Kurihara, Mitaka, and Ikuo Kimura, Yamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 26, 1989, Ser. No. 412,928
Claims priority, application Japan, Sep. 28, 1988, 63-240981
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 77 Claims



1. A remote operation control system for a computer system, comprising:

means for receiving message data issued from the computer system for an operator of the computer system;

first storage means for storing error messages, each to be transmitted to the operator of the computer system at an occurrence of one error of a plurality of errors;

second storage means for storing telephone numbers of remote apparatuses connected to a public telephone communication network, each remote apparatus including a terminal and a telephone communicator;

error detecting means responsive to the message data received by said means for receiving for checking whether or not the received message data indicates occurrence of the one error of the plurality of errors in the computer system;

means responsive to detection of occurrence of the one error in the computer system by said error detecting means for selecting a corresponding one of a plurality of error messages for the one error;

means connected to said error detecting means and responsive to detection of the one error thereby for calling-up a telephone communicator of one of the remote apparatuses by way of the public telephone communication network, based upon one of the stored telephone numbers;

means connected to the means for calling-up for sending the selected error message to the called-up telephone communicator by way of the public telephone communication network; and

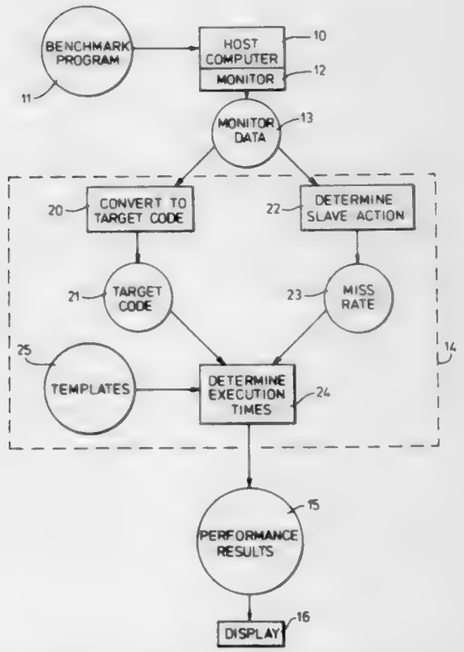
transfer control means for subsequently allowing command data and message data to be transferred between a terminal of the one of the remote apparatuses and the computer system through the public telephone communication network.

5,347,647

METHOD OF PREDICTING THE PERFORMANCE OF AN EMULATED COMPUTER SYSTEM

George Allt, Oldham, and John R. Eaton, Salford, both of United Kingdom, assignors to International Computers Limited, Putney, United Kingdom

Filed Jul. 29, 1991, Ser. No. 737,263
Claims priority, application United Kingdom, Oct. 31, 1990, 9023633
Int. Cl.[5] G06F *11/34, 1/00;* G06G *7/48*
U.S. Cl. 395—575 2 Claims



1. A method of predicting the performance of a target computer having a target instruction set, using a host computer having a host instruction set different from said target instruction set, the method comprising:

(a) running a program on the host computer,

(b) capturing data from the host computer while the host is running said program, said data including identities of instructions executed by said host computer, register usage of each of said instructions, and store activity associated with each of said instructions,

(c) evaluating captured data to identify an actual sequence of instructions in said host instruction set, and to identify a sequence of store accesses made by said actual sequence of instructions,

(d) translating said actual sequence of instructions into a corresponding sequence of instructions in said target instruction set,

(e) determining the operation of a slave store forming part of the target computer system under said sequence of store accesses, to predict miss rate information relating to the slave store and,

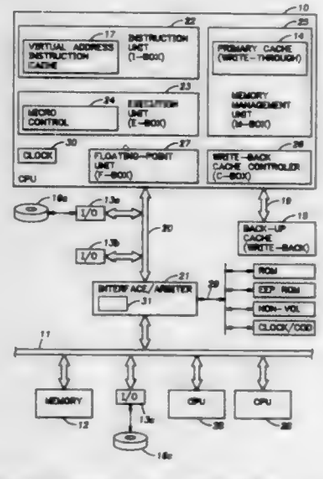
(f) determining an earliest possible time for execution of each of said corresponding sequence of instructions on said target computer, using said miss rate information and taking into account dependencies between successive instructions, thereby producing an estimate of how long the target computer would require to execute said corresponding sequence of instructions.

5,347,648

ENSURING WRITE ORDERING UNDER WRITEBACK CACHE ERROR CONDITIONS

Rebecca L. Stamm, Wellesley, Mass.; Ruth I. Bahar, Lincoln, Nebr.; Raymond L. Strouble, Charlton, Mass.; Nicholas D. Wade, Folsom, Calif., and John H. Edmondson, Cambridge, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 547,699, Jun. 29, 1990, and Ser. No. 547,597, Jun. 29, 1990, Pat. No. 5,155,843. This application Jul. 15, 1992, Ser. No. 914,777
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 20 Claims



18. A digital computer system comprising:

a processor having a cache memory, said cache memory containing ownership information in association with blocks of data in said cache memory, said ownership information indicating whether said cache memory owns each block of data contained in said cache memory;

a main memory;

a writeback queue interconnecting said processor and cache memory to said main memory for queuing writeback transactions from said cache memory to said main memory;

a non-writeback queue interconnecting said processor and cache memory to said main memory for queuing non-writeback transactions from said processor and cache memory to said main memory; and

control means coupled to said processor and cache memory, said writeback queue, and said non-writeback queue, for controlling limited use of data in said cache upon detecting erroneous data in said cache, said control means including

a) means, responsive to a memory access request for data not owned in said cache memory, for making a memory access to said main memory instead of said cache memory, even when said memory access request is for data in a block of data in said cache memory;

b) means, responsive to a memory read request for data owned by said cache memory, for making a read access to said cache memory; and

c) means, responsive to a first memory write request to a block of data not owned in said cache memory followed by a second memory write request to a block of data owned in said cache memory, for preventing write data of said first memory write request from being received by said main memory after write data of said second memory write request while permitting writeback of data from said block of data owned in said cache memory.

5,347,649

SYSTEM FOR DYNAMICALLY GENERATING, CORRELATING AND READING MULTIPROCESSING TRACE DATA IN A SHARED MEMORY

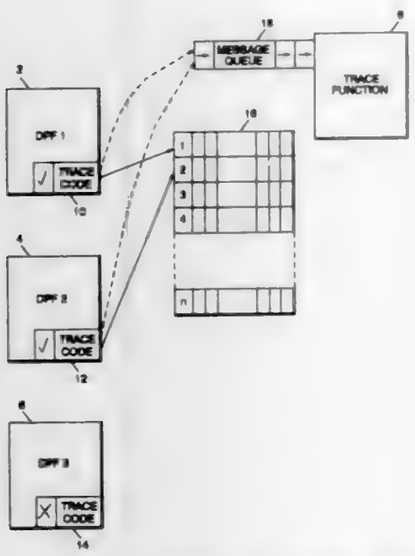
Graham R. Alderson, Eastleigh, England, assignor to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 6, 1990, Ser. No. 489,397

Claims priority, application United Kingdom, May 12, 1989, 89304815.7

Int. Cl.[5] G06F *11/30, 11/32*

U.S. Cl. 395—600 11 Claims



1. A diagnostic tracing system for a multitasking data processing system adapted to perform a plurality of interleaved data processing task functions comprising

a plurality of means for performing said data processing task functions,

a shared memory shared between said plurality of means for performing said data processing task functions,

each said means for performing said data processing task functions including selectively operative means for storing self-diagnostic trace data in said shared memory, and access means for attempting access to said shared memory and if access fails, setting a flag to disable tracing calls from said data processing task function.

trace data processing means co-operative with any or all of said means for performing said data processing task functions; said trace data processing means processing trace data stored in said shared memory by said means for performing said data processing task functions; said trace data processing means including:

trace data reading means operating in real time overlap with said means for performing said data processing task functions, for reading said trace data from said shared memory, and

means co-operative with said trace data reading means for correlating said trace data read from said shared memory into a single output, said single output showing a sequential interaction of said plurality of means for performing said data processing task functions wherein each said means for performing said data processing task functions including trace message means for placing a trace message in said shared memory and indicating to said trace data processing means that a message is waiting to be displayed.

5,347,650

DEVICE FOR TRANSFORMING A DIGITAL DATA SEQUENCE INTO A CONDENSED DIGITAL DATA BLOCK USING TABLES AND LOGIC OPERATORS

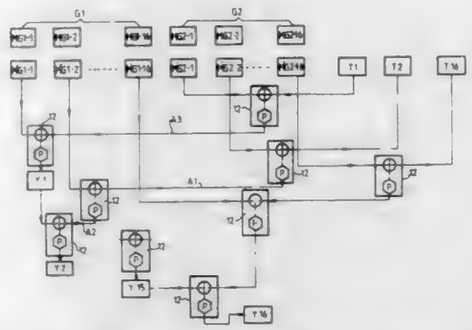
David Arditti; Mireille Campana, both of Clamart, and Henri Gilbert, Bures Sur Yvette, all of France, assignors to France Telecom, Paris, France

Filed Mar. 21, 1991, Ser. No. 672,649

Claims priority, application France, Mar. 26, 1990, 90 03831

Int. Cl.[5] G06F *7/14, 9/355, 9/42, 15/40*

U.S. Cl. 395—600 7 Claims



1. An electronic device for processing digital data, the device comprising:

an input for receiving data to be processed; and

processor means for transforming input data in a non-falsifiable manner into a result condensed data block;

wherein the processor means comprise:

means for breaking the input data into at least a first group comprising M first input words with respective ranks I lying in a range from 1 to M each of the first input words having a same number B of elementary data items, and a second group comprising M second input words of respective ranks I lying in the range 1 to M, each of the second input words having the same number B of elementary data items;

first means forming a first array having entries of sizes M and V where V is a predetermined value representing an upper limit of a processing index K, contents of cells in the first array having integer values lying in a range 1 to 2M;

second means forming a second array having entries of respective sizes M and V, the second array having cells whose contents take integer values lying in the range 1 to 2M;

third means forming a third array having entries of respective sizes V and M, the third array having cells containing integer values lying in a range 1 to 2^B to define an auxiliary table of V.M auxiliary words; and

a composite operator for providing a special function having entries of the same size B, thereby performing an EXCLUSIVE OR operation on the entries followed by a non-linear permutation on a result of said EXCLUSIVE OR operation;

and wherein the processor means are operable for:

a) initializing the processing index K to 1;

b) establishing an initial value of a current intermediate word at rank I equal to 1;

c) initializing the rank I to 2;

d) replacing the input word of the first group of rank I with the input word whose group and rank are defined by the contents of a cell in the first array whose entry address of size M is equal to the rank I, thus obtaining a first substitute word;

e) replacing the input word of the second group of rank I by the input word whose group and rank are defined by the contents of a cell of the second array whose entry address of size M is equal to the rank I, thereby obtaining a second substitute word;

f) applying the second substitute word and an auxiliary word contained in a cell of the auxiliary table whose entry address of size M has a value equal to the rank I to respective entries of the composite operator, thereby obtaining a first term word;

g) applying the first substitute word and the first term word to respective entries of the composite operator, thereby obtaining a second term word;

h) applying the current intermediate word and the second term word to respective entries of the composite operator, thereby obtaining a new current intermediate word;

i) repeating operations d) to h) selectively, and for each repetition incrementing the rank I until the value M is reached, thereby obtaining a result word of B elementary data items for a processing index of value K;

j) selectively repeating operations b) to i), and for each repetition incrementing the processing index until reaching an upper limit, thereby obtaining a result condensed data block of V result words each comprising B elementary data items.

5,347,651

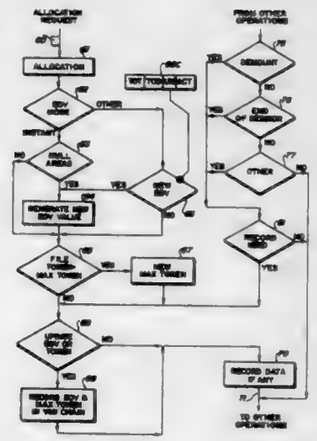
SYSTEM FOR ALLOCATING WORM OPTICAL MEDIUM FILE STORAGE IN GROUPS OF FIXED SIZE ADDRESSABLE AREAS WHILE TRACKING UNRECORDED AREAS AND END OF VOLUME

William T. Burke, Tucson, Ariz.; Larry W. Loen, and Randy K. Rolfe, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 23, 1991, Ser. No. 689,584

Int. Cl.[5] G06F *15/40, 12/06*

U.S. Cl. 395—600 32 Claims



1. A machine-effected method of recording data on a write-once read-many optical medium, the medium having a multiplicity of unallocated addressable data storing areas addressable in a range of addresses from a first low address to a second high address, including the machine-executed steps of:

automatically allocating contiguous first predetermined ones of said unallocated addressable data storing areas beginning with said first low address and proceeding sequentially in addresses toward said second high address for identifying first predetermined allocated addressable data storage areas;

automatically recording data in second predetermined ones of the allocated addressable data storing areas, a second number of said second predetermined ones of the allocated addressable areas being fewer than a first number of said first predetermined allocated addressable data storage areas;

automatically indicating the first end of volume of the medium is at an address of the unrecorded allocated data storing area having a highest address of any of the unrecorded allocated data storing areas;

repeatedly recording data in said unrecorded allocated data storage areas of said first predetermined allocated addressable data storage areas;

indicating that predetermined data are to be recorded in additional ones of said unallocated addressable data storage areas having addresses greater than said end of volume address;

allocating second predetermined ones of said unallocated addressable data storage areas having addresses greater than said end of volume address for indicating second predetermined allocated addressable data storage areas;

automatically changing said indicating the first end of volume to a second end of volume having an address of an unrecorded allocated data storage area having a greatest address of said second predetermined allocated addressable data storage areas; and

automatically recording said predetermined data in unrecorded ones of said first and second allocated data storing areas.

5,347,652

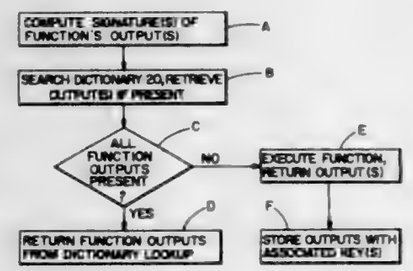
METHOD AND APPARATUS FOR SAVING AND RETRIEVING FUNCTIONAL RESULTS

David A. Epstein, Ossining, N.Y.; Glenn G. Gilley, Chapel Hill, N.C., and Kevin P. McAuliffe, Peekskill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 26, 1991, Ser. No. 721,807

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—600 28 Claims



1. For use in a digital data processing system of a type that repetitively evokes a set of Functions to process data, including one or more constants, a method comprising the steps of:

examining a constant to determine identifying characteristics thereof;

combining the characteristics with the value of the constant;

encoding the combination to obtain a Constant signature;

storing the Constant signature with a representation of the value;

for each Function of the set of Functions having input for which Constant signatures have been encoded,

examining a Function to determine identifying characteristics of an output of the Function;

combining the characteristics with an identification of the Function and with signatures of the inputs to the Function;

encoding the combination to obtain a first Function signature;

storing the first Function signature; and, prior to executing a Function, performing the steps of,

examining the Function to be executed to determine identifying characteristics of an output of the Function;

combining the characteristics with an identification of the

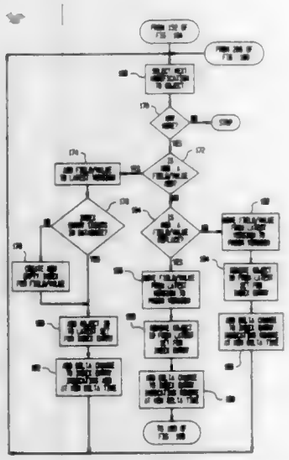
Function to be executed and with signatures of the inputs to the Function to be executed;
encoding the combination to obtain a second Function signature;
determining if there exists a stored Function signature that equals the second Function signature; and if so,
accessing a memory means to retrieve a value associated with the stored Function signature, otherwise
executing the Function and storing the value returned by the Function with the signature of the Function.

5,347,653

SYSTEM FOR RECONSTRUCTING PRIOR VERSIONS OF INDEXES USING RECORDS INDICATING CHANGES BETWEEN SUCCESSIVE VERSIONS OF THE INDEXES

Rex A. Flynn, Belmont, and Peter G. Anick, Marlboro, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 28, 1991, Ser. No. 722,696
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **13 Claims**



1. A computer implemented method for versioning a database which is stored in a memory, the database including a plurality of information objects and an index representative of the plurality of information objects, the index includes a plurality of index entries, each index entry identifying at least one of the plurality of information objects, the method comprising the steps of:

(a) maintaining a latest version of each one of the plurality of information objects in the database;

(b) maintaining a latest version of each one of the plurality of index entries in the database;

(c) maintaining in the database a prior version of each one of the plurality of information objects than has been changed, each prior version of each one of the plurality of information objects that has been changed being a representation of a portion of the prior version that represents a difference between the one of the plurality of information objects in a prior state and a later version of the one of the plurality of information objects;

(d) maintaining in the database a set of change records in each one of the plurality of index entries, each change record in the set of change records corresponding to a change that, has been made to one of the plurality of information objects, each change record in the set of change records comprising an indicator identifying a type of change made, a first identification tag identifying one of the plurality of information objects affected by the change and a second identification tag representative of a time that the change occurred; and

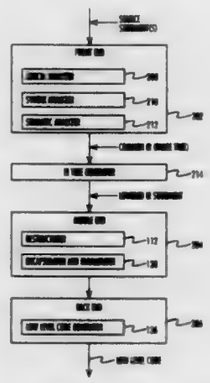
(e) processing the set of change records to create a version of the index at a pre-selected time.

5,347,654

SYSTEM AND METHOD FOR OPTIMIZING AND GENERATING COMPUTER-BASED CODE IN A PARALLEL PROCESSING ENVIRONMENT

Gary W. Sabot, Cambridge; David F. Lively, Georgetown, and Alexander D. Vasilevsky, Watertown, all of Mass., assignors to Thinking Machines Corporation, Cambridge, Mass.

Filed Feb. 3, 1992, Ser. No. 830,564
Int. Cl.[5] G06F *15/16*
U.S. Cl. 395—600 **19 Claims**



1. A computer-based method of optimizing a computer program to generate an optimized computer program, the optimized computer program to be executed in a data parallel computer comprising a plurality of processors, the computer program represented by at least one representation tree comprising a plurality of nodes, said nodes comprising non-elemental nodes which require communication among processors and elemental nodes which do not require communication among processors, the method comprising the steps of:

(1) traversing to a node of the representation tree using a predetermined traversal sequence;

(2) determining whether said node requires communication among processors and is therefore a non-elemental node; and

(3) in response to said determination, restructuring said nodes within said representation tree such that said node is grouped with other non-elemental nodes.

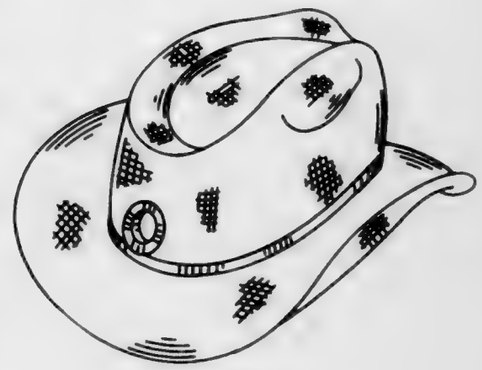
DESIGN PATENTS

GRANTED SEP. 13, 1994

ERRATA

For CLASS	See PATENT NO.
007-350	D 350,449
006-480	D 350,452
006-632	D 350,458
016-303	D 350,496
024-110	D 350,585

350,427
HAT WITH REAR CROWN OPENING FOR HAIR
Valerie Vig, 23757 E. American, Reedley, Calif. 93654-9618, and Keleen Flint, 19434 E. Goodfellow, Reedley, Calif. 93654
Filed Apr. 24, 1992, Ser. No. 874,563
Term of patent 14 years
U.S. Cl. D2—887



350,428
BOOT
John D. McAlpine, Hermitage, Tenn., assignor to Genesco Inc., Nashville, Tenn.
Filed Mar. 2, 1993, Ser. No. 5,336
Term of patent 14 years
U.S. Cl. D2—897



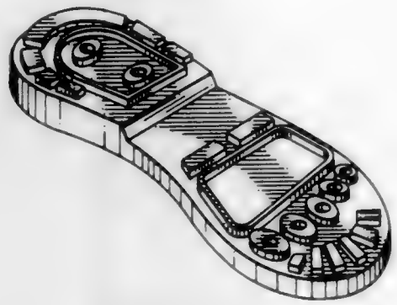
350,429
BOOT
Michael G. Bullard, Oak Grove, Ky., assignor to Genesco Inc., Nashville, Tenn.
Filed Mar. 2, 1993, Ser. No. 5,335
Term of patent 14 years
U.S. Cl. D2—910



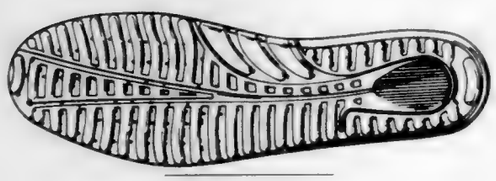
350,430
SOLE BOTTOM AND PERIPHERY
Jane Pallera, Arlington, Mass., assignor to The Keds Corporation, Cambridge, Mass.
Filed Jun. 17, 1993, Ser. No. 9,697
Term of patent 14 years
U.S. Cl. D2—952



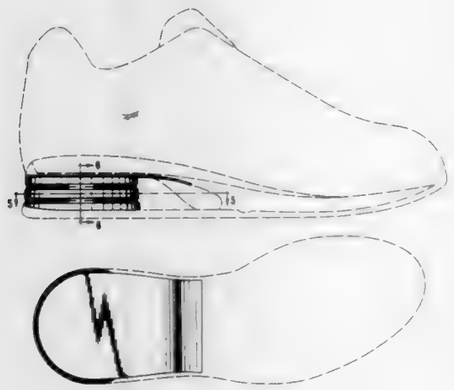
350,431
SHOE SOLE
Robert W. Morgan, P.O. Box 138, Homeworth, Ohio 44634
Filed Mar. 29, 1993, Ser. No. 6,420
Term of patent 14 years
U.S. Cl. D2—956



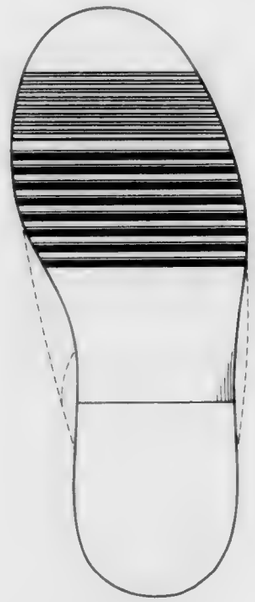
350,432
SHOE INSOLE
Eagle E. Saez, Marblehead, Mass., assignor to The Stride Rite Corporation, Cambridge, Mass.
Filed Mar. 5, 1993, Ser. No. 5,453
Term of patent 14 years
U.S. Cl. D2—961



350,433
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Nov. 1, 1991, Ser. No. 786,932
Term of patent 14 years
U.S. Cl. D2—961



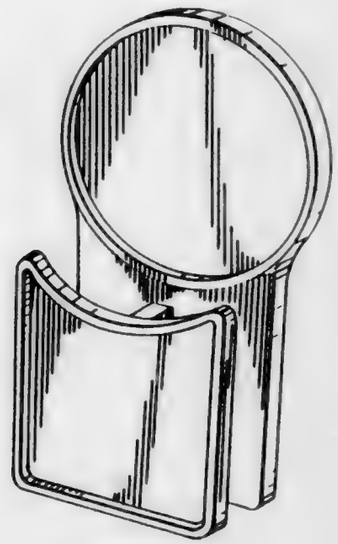
350,434
SHOE SOLE
Fred E. Goldstein, 17927 Foxborough La., Boca Raton, Fla. 33496
Filed Apr. 30, 1993, Ser. No. 7,705
Term of patent 14 years
U.S. Cl. D2—960



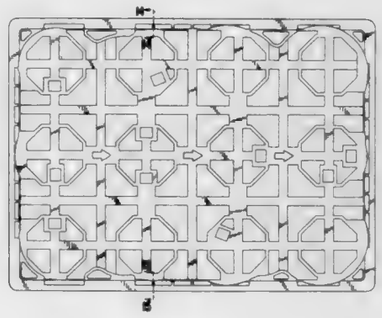
350,435
CARRYING BAG FOR FOOTWEAR
Christopher J. B. Smith, IV, Oceanport, N.J., assignor to Tech Sport, Inc., Little Silver, N.J.
Filed Jul. 14, 1993, Ser. No. 10,642
Term of patent 14 years
U.S. Cl. D3—261



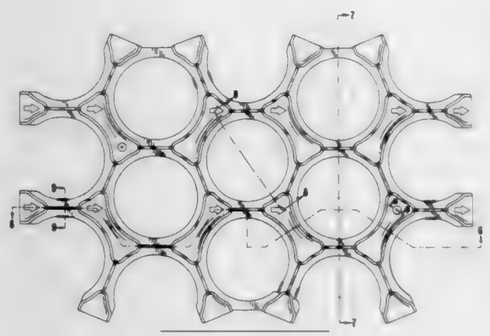
350,436
EYE GLASS HOLDER
Eugene Seach, 2379 Henn-Hyde Rd., NE., Warren, Ohio 44484
Filed Oct. 23, 1992, Ser. No. 720
Term of patent 14 years
U.S. Cl. D3—266



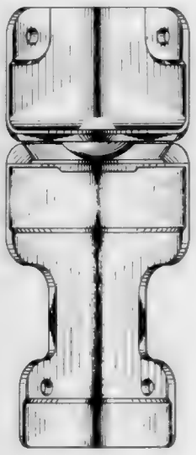
350,437
FULL DEPTH CRATE
William P. Apps, Anaheim; Gerald R. Koefelda, Seal Beach, both of Calif., and Larry E. Shermer, Atlanta, Ga., assignors to Rehrig Pacific Company, Inc., Los Angeles, Calif. and The Coca-Cola Company, Atlanta, Ga.
Filed Nov. 19, 1992, Ser. No. 1,587
Term of patent 14 years
U.S. Cl. D3—304



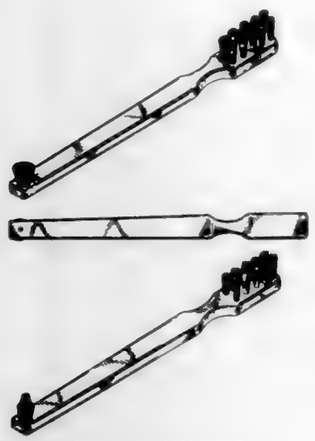
350,438
DIVIDER FOR BOTTLES
William P. Apps, Anaheim; Gerald R. Koefelda, Seal Beach, both of Calif., and Larry E. Shermer, Atlanta, Ga., assignors to Rehrig Pacific Company, Inc., Los Angeles, Calif. and The Coca-Cola Company, Atlanta, Ga.
Filed Nov. 19, 1992, Ser. No. 1,589
Term of patent 14 years
U.S. Cl. D3—313



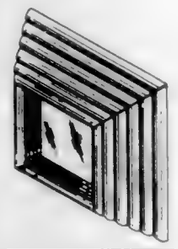
350,439
CORNER SET FOR FOOTLOCKERS AND CHESTS
Richard J. Rekuc, 8 Hilltop Ct., Pattenburg, N.J. 08802
Filed Oct. 19, 1992, Ser. No. 589
Term of patent 14 years
U.S. Cl. D3—318



350,440
TOOTHBRUSH WITH GUM STIMULATOR
J. Robert Lemon, Charlotte; William T. Evans, and Robert E. Christian, both of Batesville, all of Ark., assignors to Professional Dental Technologies, Inc., Batesville, Ark.
Filed Oct. 2, 1992, Ser. No. 82
Term of patent 14 years
U.S. Cl. D4—105



350,441
MIRROR FRAME
Erwin J. Grauert, 421 N. Broadway, Yonkers, N.Y. 10701
Filed Apr. 29, 1993, Ser. No. 7,648
Term of patent 14 years
U.S. Cl. D6—300



350,442
CHAIR
Bernie Lowsky, 1000 W. Island Blvd., Apt. #1810, North Miami Beach, Fla. 33160
Filed Jun. 1, 1992, Ser. No. 891,997
Term of patent 14 years
U.S. Cl. D6—369



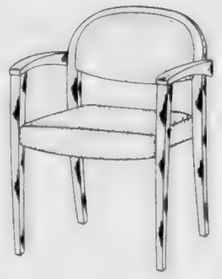
350,443
CHAIR
Bernie Lowsky, 1000 W. Island Blvd., Apt. #1810, North Miami Beach, Fla. 33160
Filed Jun. 1, 1992, Ser. No. 892,506
Term of patent 14 years
U.S. Cl. D6—369



350,444
CHAIR
Bernie Lowsky, 1000 W. Island Blvd., Apt. #1810, North Miami Beach, Fla. 33160
Filed Jun. 1, 1992, Ser. No. 891,470
Term of patent 14 years
U.S. Cl. D6—373



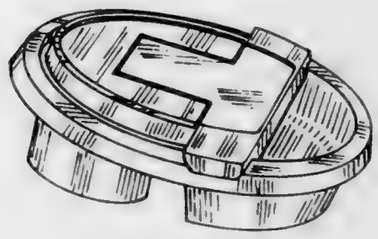
350,445
ARM CHAIR
Lawrence Chororos, and Lisa Smith, both of New York, N.Y., assignors to The Gunlocke Company, Wayland, N.Y.
Filed Feb. 5, 1993, Ser. No. 4,477
Term of patent 14 years
U.S. Cl. D6—379



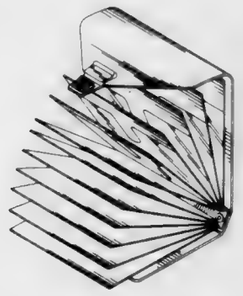
350,446
TABLE SUPPORT STAND
Thomas Sauvage, Huntersville, N.C., assignor to Rubbermaid Incorporated, Wooster, Ohio
Division of Ser. No. 820,962, Jan. 15, 1992, abandoned. This application Apr. 19, 1993, Ser. No. 49,622
Term of patent 14 years
U.S. Cl. D6—487



350,447
LEVER ACTUATOR
Gerald B. Zinnbauer, Charlotte, N.C., assignor to Technimark, Asheboro, N.C.
Filed Aug. 4, 1992, Ser. No. 898,742
Term of patent 14 years
U.S. Cl. D6—500



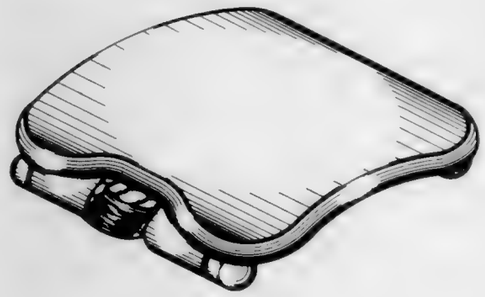
350,448
COMPACT DISK HOLDER
Michael R. Hill, 1422 SE. Johnson Creek Blvd., Milwaukie, Oreg. 97222
Filed Mar. 3, 1993, Ser. No. 5,405
Term of patent 14 years
U.S. Cl. D6—630



350,449
BREADMAKER
Takuji Kaneko, Daito, Japan, assignor to Funai Electric Co., Ltd., Osaka, Japan
Filed Nov. 20, 1992, Ser. No. 1,711
Claims priority, application Japan, May 22, 1992, 4-14679
Term of patent 14 years
U.S. Cl. D7—348



350,450
FOOTREST
H. Charles Hassel, Los Angeles; Stuart Karten, Marina Del Rey, and Dennis Schroeder, Hermosa Beach, all of Calif., assignors to MicroComputer Accessories, Inc., Inglewood, Calif.
Filed Jun. 21, 1993, Ser. No. 9,683
Term of patent 14 years
U.S. Cl. D6—349



350,451
MULTIPURPOSE FOOD MIXING AND BLENDING APPLIANCE
Thomas D. Dickson, Highland, Utah, assignor to K-Tec, Inc., Orem, Utah
Filed Aug. 28, 1992, Ser. No. 936,847
Term of patent 14 years
U.S. Cl. D7—384



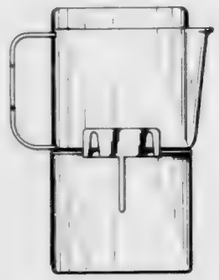
350,452
TABLE
Marshall B. Ward, High Point, N.C., assignor to Cal-Style Furniture Mfg. Co., Compton, Calif.
Filed Nov. 27, 1992, Ser. No. 1,878
Term of patent 14 years
U.S. Cl. D6—480



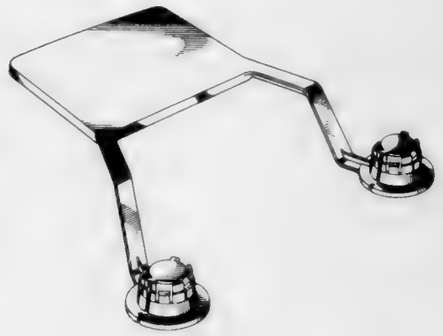
350,453
BOTTLED WATER STATION
David B. Chaney, Powell, Ohio, assignor to Ebtech, Inc., Columbus, Ohio
Filed Dec. 11, 1992, Ser. No. 2,479
Term of patent 14 years
U.S. Cl. D7—306



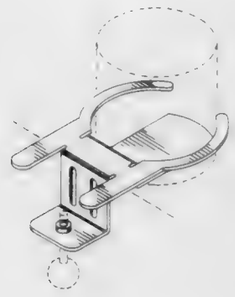
350,454
COFFEE MAKER
Joseph Fu-Keung Wong, Centre, Hong Kong, assignor to Motor Electric Manufacturing Co., Inc., Hong Kong
Filed Dec. 28, 1992, Ser. No. 3,110
Claims priority, application United Kingdom, Jun. 29, 1992, 2023919
Term of patent 14 years
U.S. Cl. D7—310



350,455
TAMPER EVIDENT DEVICE FOR SOFT DRINK SYRUP CONTAINERS
Simon J. Richter, Marietta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Jan. 15, 1993, Ser. No. 3,810
Term of patent 14 years
U.S. Cl. D7—392.1



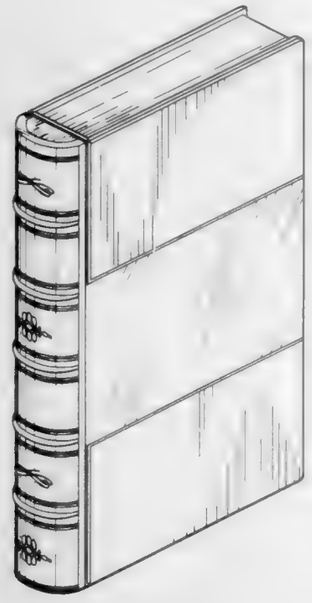
350,456
CUP HOLDER
Steven E. Linder, Portland, Oreg., assignor to Anthro Corporation, Portland, Oreg.
Filed Dec. 11, 1992, Ser. No. 2,507
Term of patent 14 years
U.S. Cl. D7—620



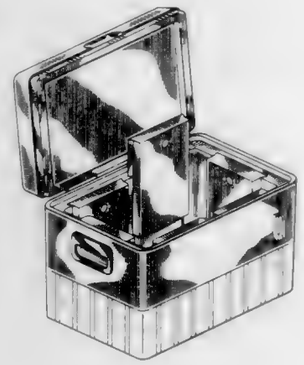
350,457
WATER GLASS HOLDER
Frederick N. Bailey, 9875 Austin Dr., Spring Valley, Calif. 91977
Filed May 20, 1993, Ser. No. 8,545
Term of patent 14 years
U.S. Cl. D7—622



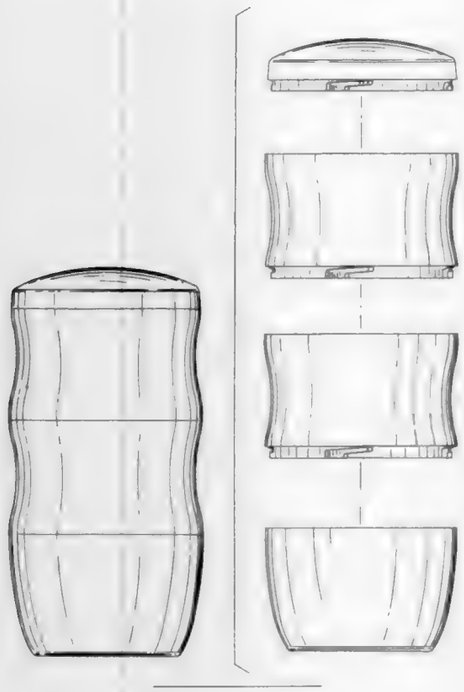
350,458
VIDEO CASSETTE TAPE CASE
Jerry V. Plath, 106 Dogwood La., Dadeville, Ala. 36853
Filed Apr. 15, 1992, Ser. No. 868,789
Term of patent 14 years
U.S. Cl. D6—632



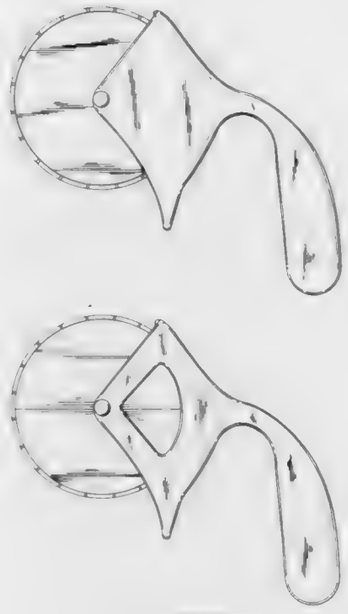
350,459
PORTABLE COOLER FOR PERISHABLE SUBSTANCES
Vicki S. Blackwell, and Brenda L. Morton, both of 24845 Federal St. E4, Centerline, Mich. 48015
Filed Mar. 29, 1993, Ser. No. 6,524
Term of patent 14 years
U.S. Cl. D7—605



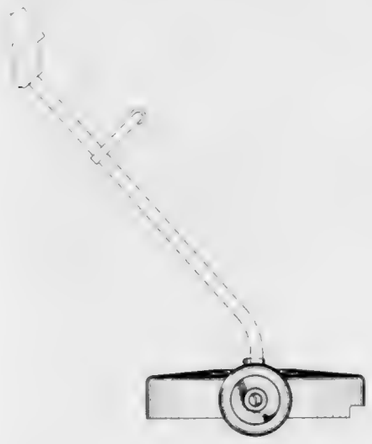
350,460
STACKING LUNCH BOX
Augusto A. Picozza, Orlando, Fla., and Takeshi Fukuda, Osaka, Japan, assignors to Dart Industries Inc., Deerfield, Ill.
Filed Mar. 31, 1993, Ser. No. 6,507
Term of patent 14 years
U.S. Cl. D7—629



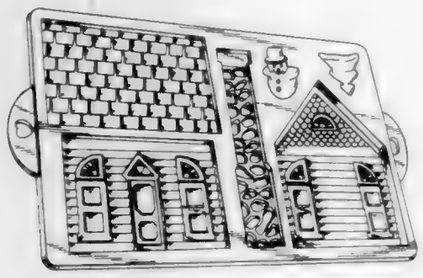
350,462
PIZZA CUTTER
Ron La Gro, Snowmass, Colo., assignor to La Gro Design, Snowmass, Colo.
Filed Feb. 19, 1993, Ser. No. 4,999
Term of patent 14 years
U.S. Cl. D7—694



350,463
LINE TRIMMER COVER WITH WHEELS
Henry A. Hardesty, Jr., 110 Kerns Ave., Fairmont, W. Va. 26554
Filed Feb. 27, 1992, Ser. No. 847,243
Term of patent 14 years
U.S. Cl. D8—8



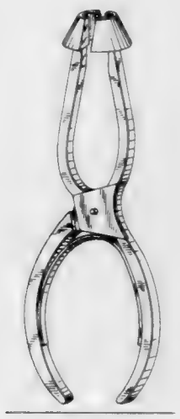
350,461
MOLD FOR A GINGERBREAD HOUSE
Doris K. Christopher, and Debbi Ernest, both of River Forest, Ill., assignors to The Pampered Chef, Ltd., Hillside, Ill.
Filed Nov. 25, 1992, Ser. No. 1,945
Term of patent 14 years
U.S. Cl. D7—675



350,464
DISC RAKE HEAD
Alexander Colonello, Winnipeg, Canada, assignor to Bay Bronze Industries, a division of Derlan Manufacturing Incorporated, Winnipeg, Canada
Filed Nov. 8, 1993, Ser. No. 15,025
Term of patent 14 years
U.S. Cl. D8—13



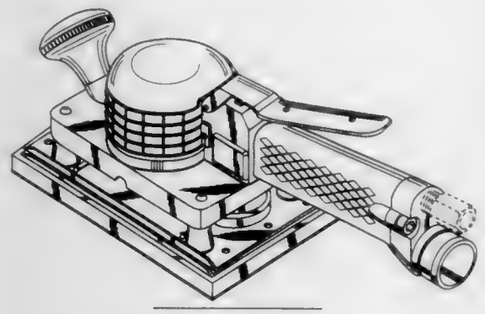
350,465
TOOL FOR REMOVING THE BASE OF A BROKEN LIGHT BULB FROM A SOCKET
Robert S. Walsky, 22 Angela Ct., Woodcliff Lake, N.J. 07675
Filed Oct. 26, 1992, Ser. No. 830
Term of patent 14 years
U.S. Cl. D8—52



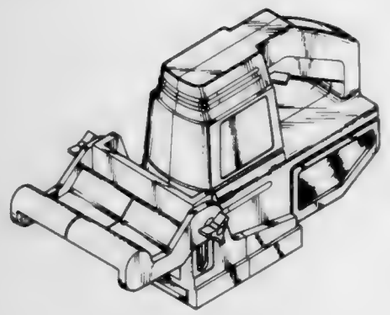
350,466
SCISSORS HANDLE
Charles S. Ramsey, Wausau, and David E. Lutzke, Madison, both of Wis., assignors to Fiskars Oy Ab, Helsinki
Continuation-in-part of Ser. No. 528,179, May 24, 1990. This application Oct. 15, 1992, Ser. No. 462
Term of patent 14 years
U.S. Cl. D8—57



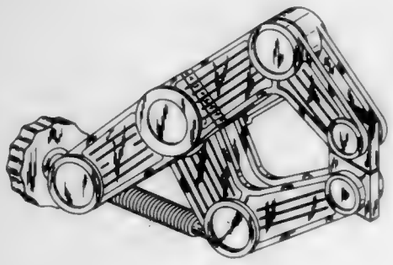
350,467
JITTERBUG SANDER
Nobuyuki Izumisawa, Tokyo, Japan, assignor to Shinano, Inc., Japan
Filed Jun. 9, 1993, Ser. No. 9,281
Term of patent 14 years
U.S. Cl. D8—62



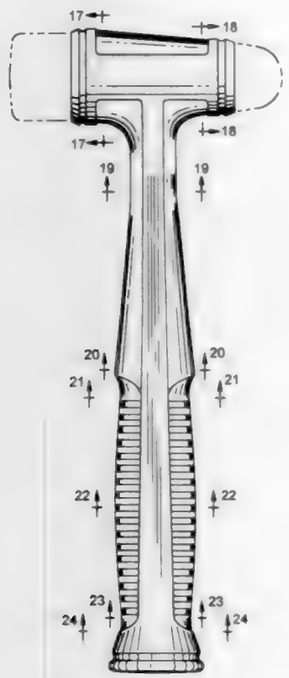
350,468
PLATE JOINER
Daniel A. Chunn, Greenville, and James A. Keith, Jr., Pickens, both of S.C., assignors to Ryobi Motor Products Corp., Easley, S.C.
Filed Mar. 26, 1993, Ser. No. 6,401
Term of patent 14 years
U.S. Cl. D8—69



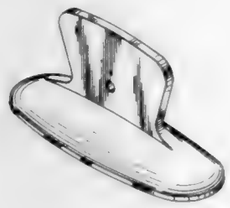
350,469
PLASTIC TOGGLE CLAMP
Edwin G. Sawden, St. Clair, Mich., assignor to BTM Corporation, Marysville, Mich.
Filed Mar. 15, 1993, Ser. No. 5,872
Term of patent 14 years
U.S. Cl. D8—72



350,470
COMBINED HANDLE AND HEAD FOR A HAMMER
Ronald O. Majors, Salem, and Joseph R. Hoepfl, Greenfield, both of Wis., assignors to Snap-On Incorporated, Kenosha, Wis.
Filed Feb. 11, 1993, Ser. No. 4,673
Term of patent 14 years
U.S. Cl. D8—80



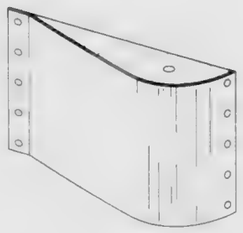
350,471
BATTERY HANDLING TOOL
Thomas C. Crawford, Jr., 1422 Denison Dr., Norman, Okla. 73069, and William T. Jones, Jr., 206 E. 15th, Irving, Tex. 75060
Filed Sep. 10, 1992, Ser. No. 943,453
Term of patent 14 years
U.S. Cl. D8—14



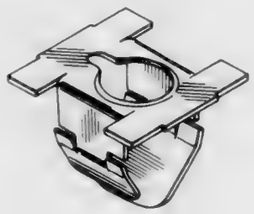
350,472
ANTI-THEFT STEERING WHEEL LOCK
John M. White, Vienna, Va.; Govelio R. Gonzalez, and You Ding, both of Miami, Fla., assignors to Rally Accessories, Inc., Miami, Fla.
Filed Mar. 25, 1993, Ser. No. 7,208
Term of patent 14 years
U.S. Cl. D8—331



350,473
SHROUD FOR A FLOOR-ENGAGING BOLT MOUNTED AT THE BOTTOM OF A PANIC-BAR LATCH EQUIPPED DOOR
Martin S. Simon, and Ira J. Simon, both of Long Beach, Calif., assignors to Triangle Brass Manufacturing Company, Los Angeles, Calif.
Filed Feb. 16, 1993, Ser. No. 4,816
Term of patent 14 years
U.S. Cl. D8—346



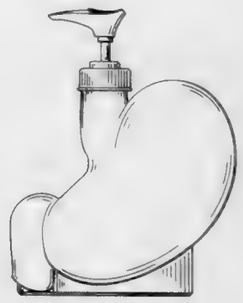
350,474
NUT FOR CONNECTING PLATES
Goro Asami, Yokohama, Japan, assignor to Nifco, Inc., Yokohama, Japan
Filed Mar. 11, 1992, Ser. No. 851,133
Term of patent 14 years
U.S. Cl. D8—397



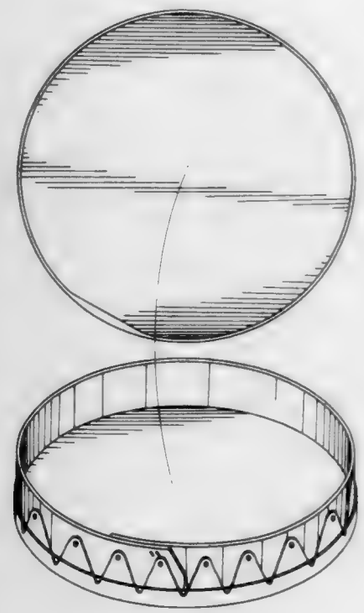
350,475
GIFT BAG
Margaret Cirelli, 15 W. Ridge Dr., Sharon, Mass. 02067
Filed Mar. 26, 1993, Ser. No. 6,387
Term of patent 14 years
U.S. Cl. D9—305



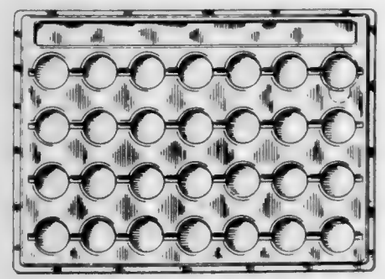
350,476
PUMP DISPENSER
Richard Costa, Piscataway, N.J., assignor to PharmaDesign, Inc., Warren, N.J.
Filed May 14, 1992, Ser. No. 882,677
Term of patent 14 years
U.S. Cl. D9—314



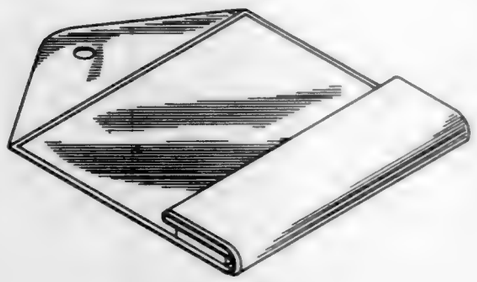
350,477
CONTAINER FOR PRESERVED SEAFOODS
David Hornblow, Vancouver, and Peter Hickey, West Vancouver, both of Canada, assignors to Pacific Salmon Industries Inc., Surrey, Canada
Filed Feb. 26, 1993, Ser. No. 5,315
Term of patent 14 years
U.S. Cl. D9—328



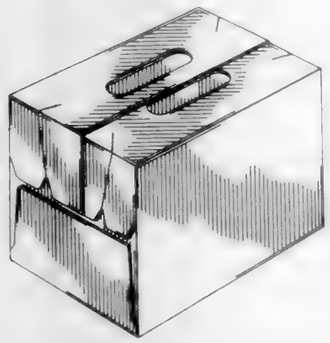
350,478
WEEKLY PILL ORGANIZER CALENDAR
Kathryn O. Fuller, 5016 W. 82nd St., Bloomington, Minn. 55437, and Timothy C. Fuller, 9601 Portland Ave. South, Bloomington, Minn. 55420
Continuation-in-part of Ser. No. 857,308, Mar. 25, 1992, Pat. No. Des. 337,046. This application Mar. 30, 1993, Ser. No. 6,451
Term of patent 14 years
U.S. Cl. D9—341



350,479
FLEXIBLE CONTAINER
Thomas G. Livezey, 109 Field La., Seffner, Fla. 33584
Filed Feb. 8, 1993, Ser. No. 4,549
Term of patent 14 years
U.S. Cl. D9—415



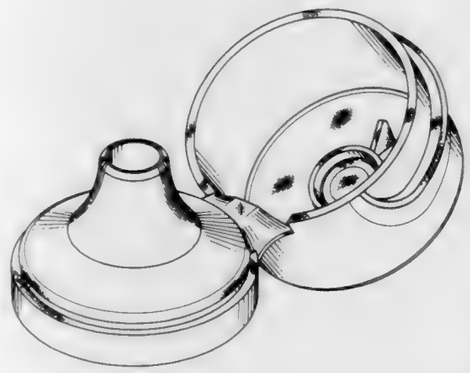
350,480
ENCLOSED ARTICLE CARRIER
Robert L. Sutherland, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.
Filed Jun. 24, 1993, Ser. No. 10,069
Term of patent 14 years
U.S. Cl. D9—416



350,481
PLASTIC LID ASHTRAY FOR BEVERAGE CANS
Robert J. DeLury, 8525 Horizon La., Hudson, Fla. 33567
Filed Jul. 6, 1992, Ser. No. 909,447
Term of patent 14 years
U.S. Cl. D9—436



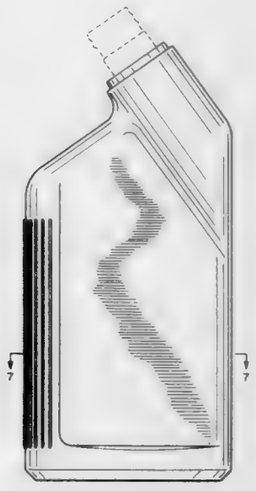
350,482
COMBINATION CAP AND NOZZLE UNIT
Antonio C. Hu, Palo Alto, Calif.; Peter W. Hamilton, Cincinnati, and Leane K. Davis, Milford, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jan. 24, 1992, Ser. No. 825,188
Term of patent 14 years
U.S. Cl. D9—448



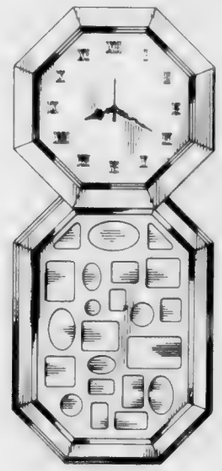
350,483
TILTABLE BOTTLE HOLDER
Francisco Escobedo, 23305 Ladeene Ave., Torrance, Calif. 90505
Filed May 18, 1992, Ser. No. 884,839
Term of patent 14 years
U.S. Cl. D9—455



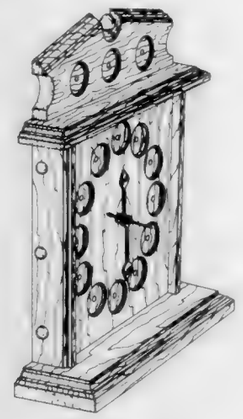
350,484
BOTTLE
Steven Addis, Oakland; John Brown, San Francisco, both of Calif.; Daniel Burnett, So. Hadley, Mass.; G. Edward Campbell, Alameda, Calif.; Derek Garvens, San Francisco, Calif.; Joanne Hom, Oakland, Calif.; P. Storey Jones; Daniel B. Klitsner, both of San Francisco, Calif.; Allan Morini, Granby, Mass.; Melvin C. O'Leary, Jr., and Larry Slezak, both of Springfield, Mass., assignors to The Clorox Company, Oakland, Calif.
Filed Oct. 9, 1992, Ser. No. 336
Term of patent 14 years
U.S. Cl. D9—526



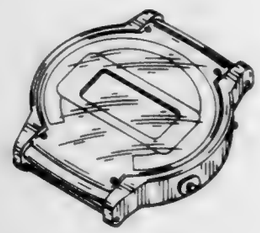
350,485
COMBINED CLOCK AND MULTI-IMAGE PICTURE FRAME
Bob Polichio, 1250 Humboldt, Reno, Nev. 89503
Filed Feb. 10, 1992, Ser. No. 833,398
Term of patent 14 years
U.S. Cl. D10—2



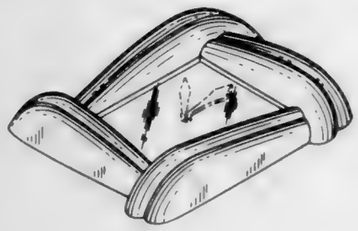
350,486
CLOCK
Gordon D. Kaldahl, 6275 Morris Lk. Rd., Elk River, Minn. 55330
Filed Nov. 25, 1991, Ser. No. 797,264
Term of patent 14 years
U.S. Cl. D10—29
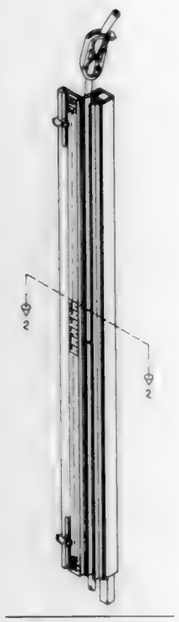


350,487
SPORTS WATCH CASING
Marc N. Schechter, Birmingham, Mich., assignor to Advance Watch Co., Inc., Southfield, Mich.
Filed Jan. 15, 1992, Ser. No. 822,552
Term of patent 14 years
U.S. Cl. D10—30



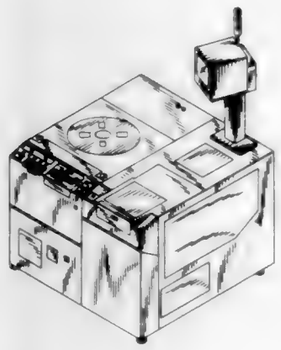
350,488
WATCH CASE
Henry Dunay, New York, N.Y., assignor to Henry Dunay Designs, Inc., New York, N.Y.
Filed Aug. 27, 1992, Ser. No. 936,814
Term of patent 14 years
U.S. Cl. D10—30



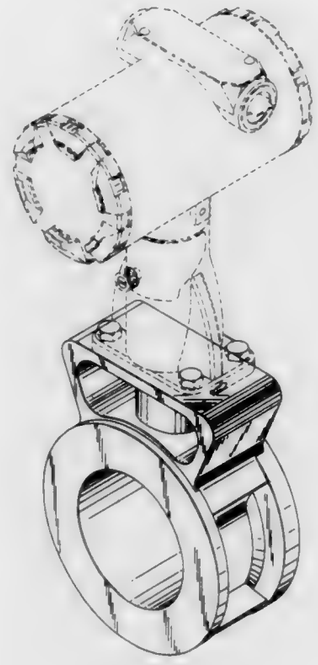
350,489
WATER LEVEL ELEVATION MEASURING DEVICE
William B. Dilbeck, 506 Crossbow Rd., Huntsville, Ark. 72740
Filed May 17, 1993, Ser. No. 8,491
Term of patent 14 years
U.S. Cl. D10—101



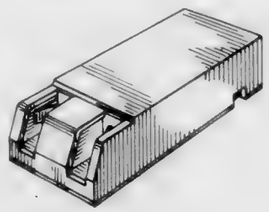
350,490
SEMICONDUCTOR WAFER TESTING APPARATUS
Itaru Takao, Nirasaki, Japan, assignor to Tokyo Electron Kabushiki Kaisha, Tokyo and Tokyo Electron Yamanashi Kabushiki Kaisha, Irasaki, both of Japan
Filed Apr. 7, 1993, Ser. No. 6,815
Claims priority, application Japan, Oct. 8, 1992, 4-29499
Term of patent 14 years
U.S. Cl. D10—46



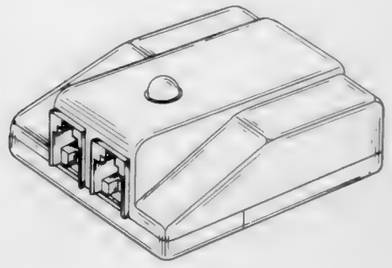
350,491
LARGE LINE SIZE WINGED FLOWMETER DESIGN
George C. Hausler, Maple Grove, and Melvin R. Beulke, Hopkins, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.
Filed Oct. 23, 1992, Ser. No. 740
Term of patent 14 years
U.S. Cl. D10—96



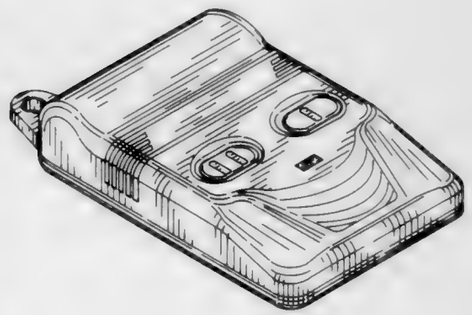
350,492
MODULE FOR COMBINING A GAS RESPONSIVE SAMPLE WITH A BATTERY PACK FOR A GAS DETECTOR
Robert W. Foster, Hinsdale, Ill., assignor to BRK Electronics, Inc., Aurora, Ill.
Filed Nov. 19, 1992, Ser. No. 1,664
Term of patent 14 years
U.S. Cl. D10—103



350,493
SIGNAL LIGHT TO INDICATE THE USAGE OF A TELEPHONE IN THE HOME
Mark Gottlieb, Annandale, Va., assignor to Design Tech International, Inc., Springfield, Va.
Filed Feb. 23, 1994, Ser. No. 19,042
Term of patent 14 years
U.S. Cl. D10—104



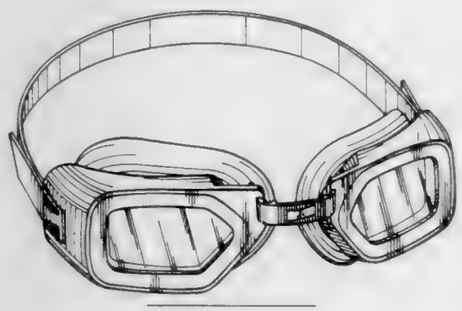
350,494
HAND-HELD REMOTE CONTROL TRANSMITTER FOR A CAR ALARM SYSTEM
Shih-Ming Hwang, 17811 Sky Park Cir., Ste. D & E, Irvine, Calif. 92714
Filed Jan. 5, 1994, Ser. No. 17,163
Term of patent 14 years
U.S. Cl. D10—106



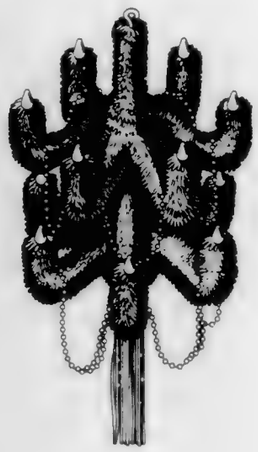
350,495
EXPANSION BRACELET
John J. McNally, Warwick, R.I., assignor to Textron Inc., Providence, R.I.
Filed Aug. 4, 1993, Ser. No. 11,409
Term of patent 14 years
U.S. Cl. D11—21



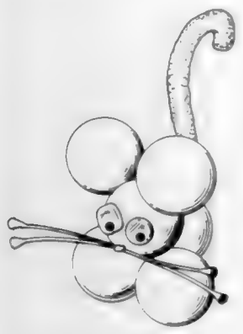
350,496
SWIM GOGGLES
Robert N. Shelton, Princeton, Mass., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed May 28, 1993, Ser. No. 8,897
Term of patent 14 years
U.S. Cl. D16—303



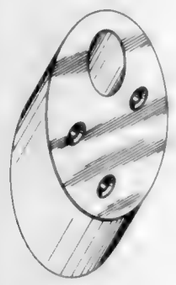
350,497
ORNAMENT
Lonna J. Lombardo, 704 Dorey St., Clearfield, Pa. 16830
Filed Jun. 14, 1993, Ser. No. 9,483
Term of patent 14 years
U.S. Cl. D11—121



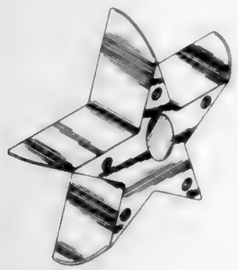
350,498
FANCIFUL FIGURINE
Charles E. Allord, 247 Bicknell Ave., Apt. B, Santa Monica, Calif. 90405
Filed Aug. 14, 1992, Ser. No. 932,031
Term of patent 14 years
U.S. Cl. D11—158



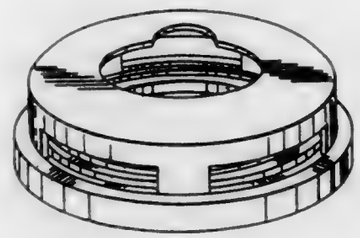
350,499
FLAG STAFF MOUNTING BASE
Tucker Willis, and James Cinquemani, Jr., both of Dallas, Tex., assignors to Chaenomeles, Inc., a Texas corporation, Dallas, Tex.
Filed Apr. 6, 1993, Ser. No. 6,753
Term of patent 14 years
U.S. Cl. D11—182



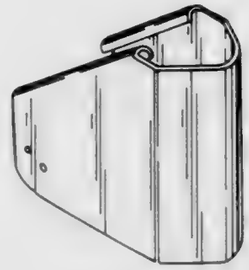
350,500
FLAG STAFF MOUNTING BASE
Tucker Willis, and James Cinquemani, Jr., both of Dallas, Tex., assignors to Chaenomeles, Inc., a Texas corporation, Dallas, Tex.
Filed Nov. 4, 1993, Ser. No. 15,055
Term of patent 14 years
U.S. Cl. D11—182



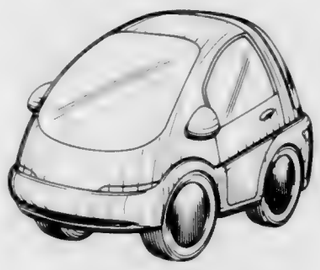
350,501
SNAP FASTENER
Frederick G. Schriever, Grosse Point Shores, Mich., assignor to Snap East Industries, Inc., Detroit, Mich.
Filed Mar. 4, 1992, Ser. No. 846,391
Term of patent 14 years
U.S. Cl. D11—220



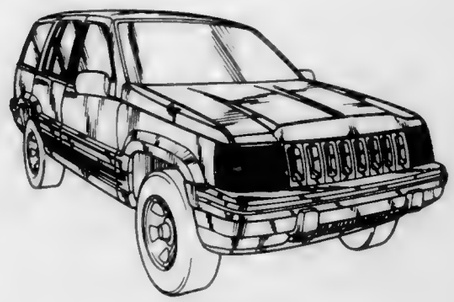
350,502
SULKY WHEEL GUARD
Howard G. Millington, 20 Perry Rd., Cable, Ohio 43009
Filed Sep. 7, 1993, Ser. No. 12,593
Term of patent 14 years
U.S. Cl. D12—20



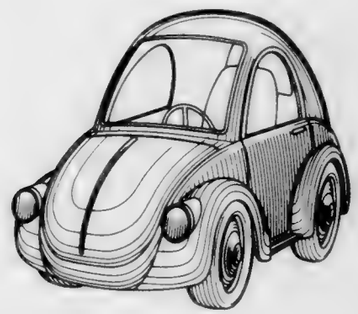
350,503
VEHICLE
Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan
Filed Jul. 28, 1993, Ser. No. 11,145
Term of patent 14 years
U.S. Cl. D12—90



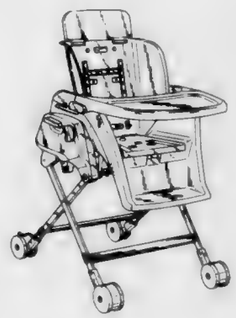
350,504
AUTOMOBILE
Robert C. Nixon, Troy, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 3, 1992, Ser. No. 868,377
Term of patent 14 years
U.S. Cl. D12—91



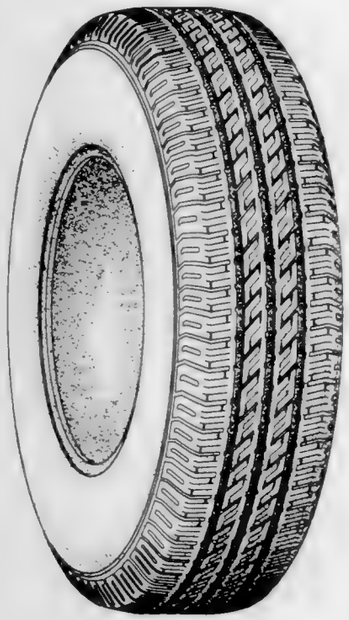
350,505
VEHICLE
Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan
Filed Jul. 28, 1993, Ser. No. 11,146
Term of patent 14 years
U.S. Cl. D12—91



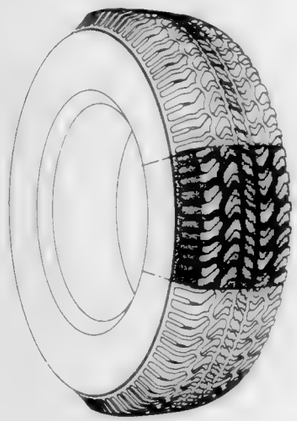
350,506
CHAIR FOR BABY
Tomihisa Kaneko, and Tomihiro Kaneko, both of Tokyo, Japan, assignors to Combi Corp., Tokyo, Japan
Filed Apr. 13, 1993, Ser. No. 6,993
Claims priority, application Japan, Oct. 23, 1992, 4-31122
Term of patent 14 years
U.S. Cl. D12—129



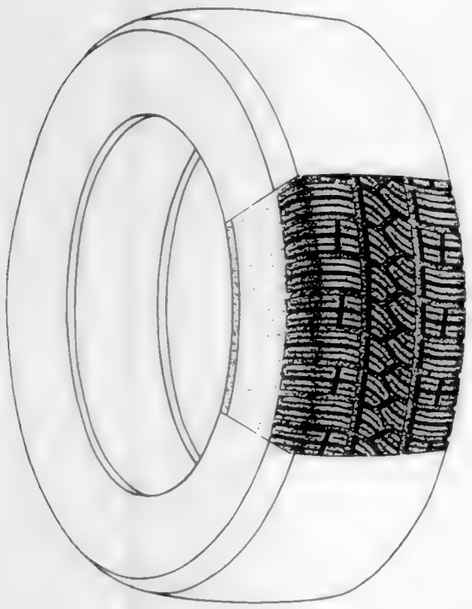
350,507
TIRE
Jean C. Helluin, Greenville, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Aug. 4, 1992, Ser. No. 925,360
Term of patent 14 years
U.S. Cl. D12—141



350,508
TIRE
Bruno Evraert, Taylors, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Feb. 19, 1993, Ser. No. 5,009
Term of patent 14 years
U.S. Cl. D12—146



350,509
TIRE
Laurie W. Killian, Louisville, Ky., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Oct. 26, 1992, Ser. No. 843
Term of patent 14 years
U.S. Cl. D12—146



350,511
TIRE TREAD
Norman D. Anderson, Uniontown; John S. Attinello, Hartsville; Dale G. Freygang, Akron, and Samuel P. Landers, Uniontown, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 5, 1993, Ser. No. 5,592
Term of patent 14 years
U.S. Cl. D12—147



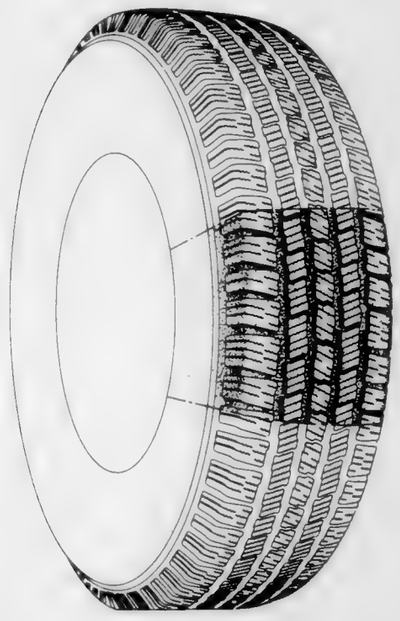
350,510
AUTOMOBILE TIRE
Sonoko Sugimoto, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Jan. 19, 1993, Ser. No. 3,827
Claims priority, application Japan, Jul. 21, 1992, 4-21893
Term of patent 14 years
U.S. Cl. D12—146



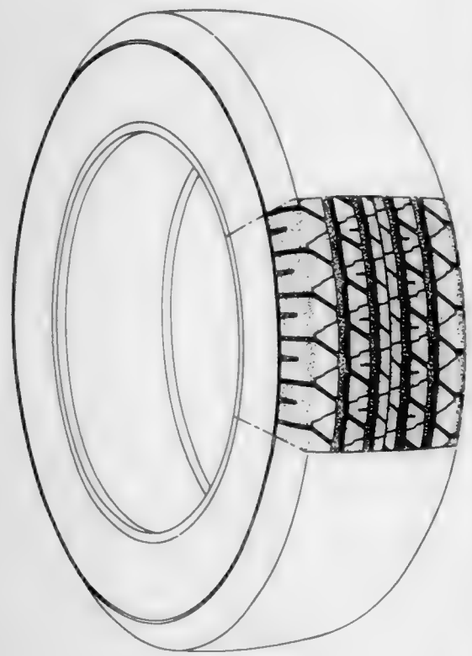
350,512
TIRE TREAD
Darrell E. Covert, North Georgetown, Ohio; Maurice Graas, Reichlange, and Paul B. Maxwell, Mamer, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 23, 1993, Ser. No. 5,108
Term of patent 14 years
U.S. Cl. D12—147



350,513
TIRE
Ajay A. Mehta, Greer, and Bruno Evraert, Taylors, both of S.C., assignors to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Jan. 25, 1993, Ser. No. 4,035
Term of patent 14 years
U.S. Cl. D12—147



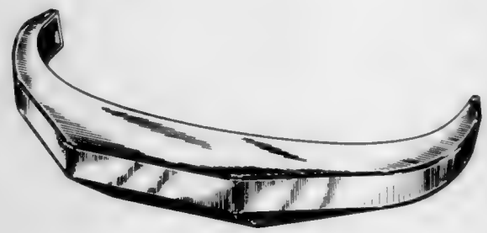
350,515
TIRE
John A. Hutz, Greer, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Feb. 11, 1993, Ser. No. 4,715
Term of patent 14 years
U.S. Cl. D12—147



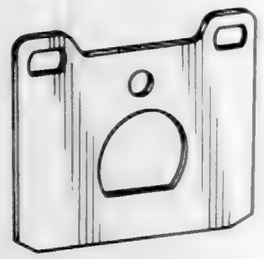
350,514
TIRE TREAD
John S. Attinello, Hartville, and William E. Glover, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 5, 1993, Ser. No. 5,589
Term of patent 14 years
U.S. Cl. D12—147



350,516
BUMPER FOR A VEHICLE
Wayne B. Hanson, 716 Cornell Ave., Salinas, Calif. 93901
Filed Nov. 22, 1993, Ser. No. 15,601
Term of patent 14 years
U.S. Cl. D12—169



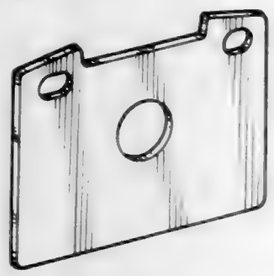
350,517
DISK BRAKE SHIM
Gustav J. Steinke, Lima, and Karl L. Placke, Delphos, both of Ohio, assignors to International Brake Industries, Inc., Lima, Ohio
Division of Ser. No. 797,265, Nov. 25, 1991, Pat. No. Des. 341,120. This application May 12, 1993, Ser. No. 8,209
Term of patent 14 years
U.S. Cl. D12—180



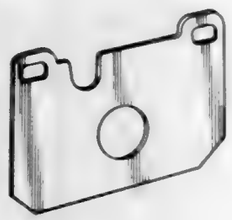
D. 350,518

Patent Not Issued For This Number

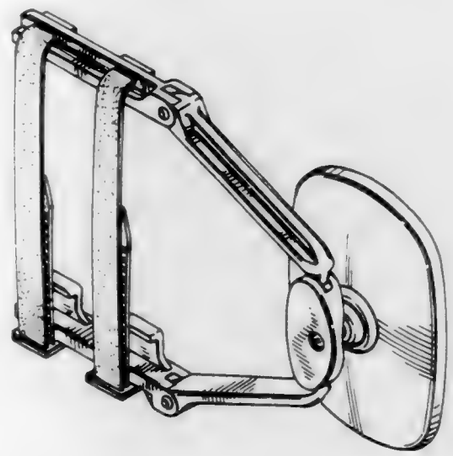
350,519
DISC BRAKE SHIM
Gustav J. Steinke, and Starla D. Huffer, both of Lima, Ohio, assignors to International Brake Industries, Inc., Lima, Ohio
Division of Ser. No. 798,407, Nov. 26, 1991, Pat. No. Des. 341,808. This application May 12, 1993, Ser. No. 8,271
Term of patent 14 years
U.S. Cl. D12—180



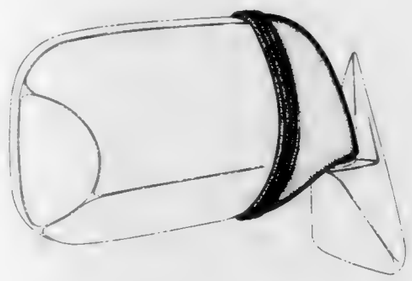
350,520
DISC BRAKE SHIM
Gustav J. Steinke, and Starla D. Huffer, both of Lima, Ohio, assignors to International Brake Industries, Inc., Lima, Ohio
Division of Ser. No. 797,261, Nov. 25, 1991, Pat. No. Des. 341,119. This application May 12, 1993, Ser. No. 8,255
Term of patent 14 years
U.S. Cl. D12—180



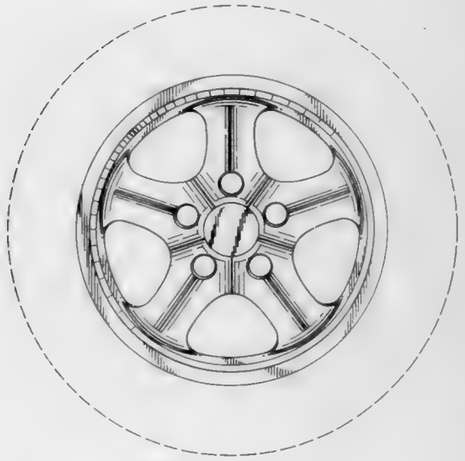
350,521
SUPPLEMENTAL REARVIEW MIRROR FOR VEHICLE
Tsai-Fu Hu, No. 200, Sec. 2, Fu-Chiang Road, Yung-Kang Shih, Tainan Hsien, Taiwan
Filed Aug. 18, 1993, Ser. No. 11,909
Term of patent 14 years
U.S. Cl. D12—187



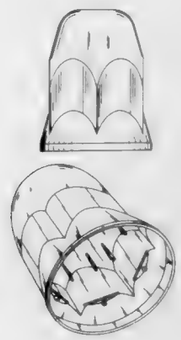
350,522
VEHICLE MIRROR BASE
Dennis Myles, W. Bloomfield; John R. Starr, Woodhaven; all of Trevor M. Creed, W. Bloomfield, Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Oct. 13, 1992, Ser. No. 377
Term of patent 14 years
U.S. Cl. D12—187



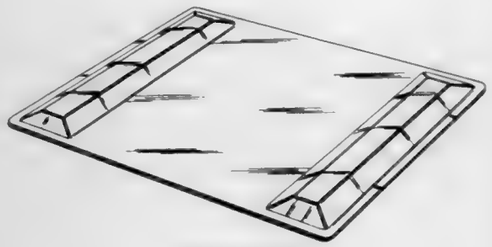
350,523
FRONT FACE OF A VEHICLE WHEEL
Wolfgang Möbius, Schwieberdingen, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany
Filed Dec. 11, 1991, Ser. No. 805,822
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1991, 9104115
Term of patent 14 years
U.S. Cl. D12—209



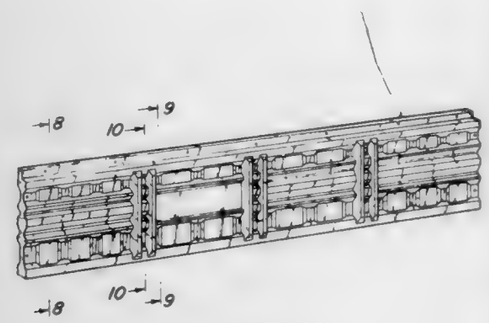
350,524
COVER FOR A VEHICLE WHEEL LUG NUT AND WASHER
Donald R. Bias, Columbia Station, Ohio, assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Oct. 21, 1992, Ser. No. 706
Term of patent 14 years
U.S. Cl. D12—213



350,525
VEHICLE PARKING MARKER MAT
Ronnie D. Robinson, 19 Calle del Sur, Rancho Santa Margarita, Calif. 92688
Filed Jul. 27, 1993, Ser. No. 11,159
Term of patent 14 years
U.S. Cl. D12—217



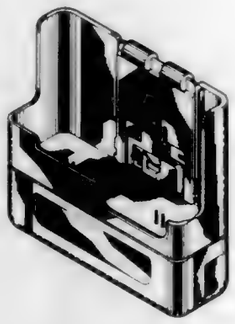
350,526
VEHICLE CARGO AREA DIVIDER
Mark Wayne, 29436 Briarbank Ct., Southfield, Mich. 48034
Filed Mar. 2, 1992, Ser. No. 843,092
Term of patent 14 years
U.S. Cl. D12—406



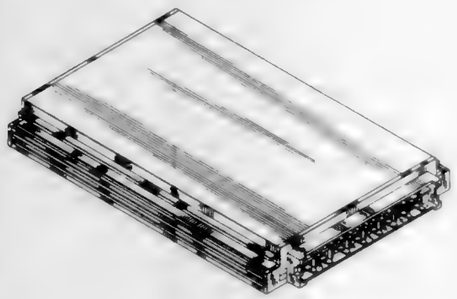
350,527
COMBINED VEHICLE MOUNTED UMBRELLA HOLDER AND WIND DEFLECTOR
Timothy Parlor, Sr., 3014 Boring Ridge Dr., Decatur, Ga. 30034
Filed May 20, 1992, Ser. No. 886,063
Term of patent 14 years
U.S. Cl. D12—413



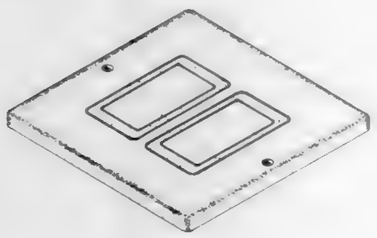
350,528
PAGER RECHARGER
Michael S. Bent, Greenacres; Eugene Fay, Delray Beach; Christopher R. Long, Boca Raton; Melvin Teitzman, Lantana, and Paul D. Giles, Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 30, 1992, Ser. No. 877,012
Term of patent 14 years
U.S. Cl. D13—108



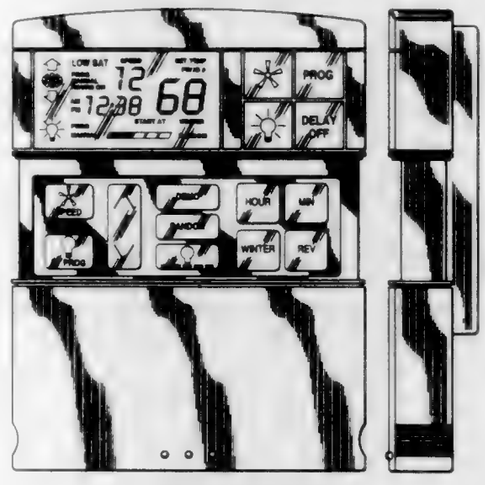
350,529
POWER CONVERTER CASING
Hansjuerg Hunziker, Embrach, Switzerland, assignor to Melcher AG, Uster, Switzerland
Filed Apr. 8, 1993, Ser. No. 6,910
Claims priority, application Hague, Oct. 15, 1992, DM/024145
Term of patent 14 years
U.S. Cl. D13—110



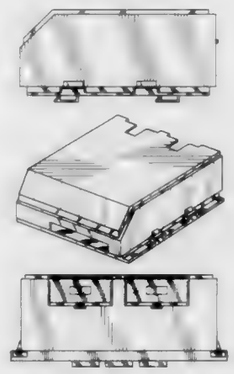
350,530
COVER PLATE FOR AN ELECTRICAL OUTLET BOX
Joseph D. Comerci, Elmhurst; Robert DeRoss, Naperville, and Dennis Stanhibel, Justice, all of Ill., assignors to Molex Incorporated, Lisle, Ill.
Filed Nov. 4, 1992, Ser. No. 1,154
Term of patent 14 years
U.S. Cl. D13—177



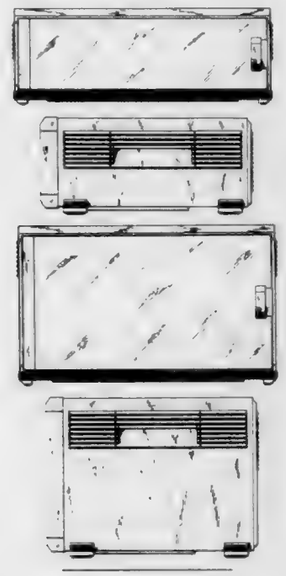
350,531
REMOTE CONTROL FOR A CEILING FAN
Masao Tsuji, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.
Filed Oct. 29, 1993, Ser. No. 14,840
Term of patent 14 years
U.S. Cl. D13—164



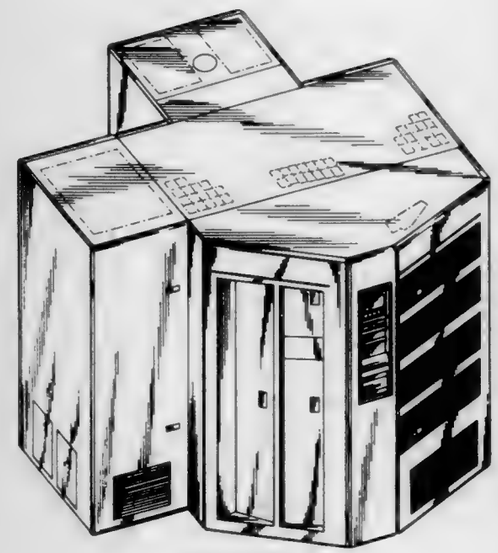
350,532
ENCLOSURE FOR THE CONTROLLER OF A UNIT VENTILATOR
Stephen L. Phelps, Chicago, Ill., assignor to Landis & Gyr Powers, Inc., Buffalo Grove, Ill.
Filed Jul. 24, 1991, Ser. No. 735,123
Term of patent 14 years
U.S. Cl. D13—184



350,533
HOUSING FOR ELECTRONIC EQUIPMENT
Norbert Grosskurth, Bad Herrenalb; Paul Mazura, Karlsbad/-Langensteinbach, and Johann Stein, Pforzheim, all of Fed. Rep. of Germany, assignors to Schroff GmbH, Straubenhardt, Fed. Rep. of Germany
Filed Nov. 23, 1992, Ser. No. 3,320
Claims priority, application Fed. Rep. of Germany, May 23, 1992, 9203906
Term of patent 14 years
U.S. Cl. D13—184



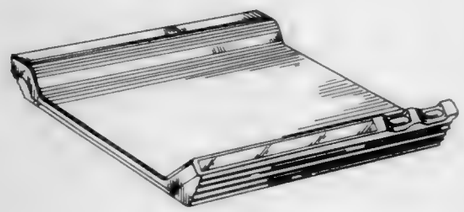
350,535
CABINET FOR ROBOTICS LIBRARY SYSTEM FOR HANDLING DATA STORAGE CARTRIDGES FOR A COMPUTER SYSTEM
John R. Anderson, Boulder; Kenneth L. Manes; Leon C. Oenes, both of Westminster, and Gregory D. Volan, Boulder, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.
Filed Jan. 13, 1993, Ser. No. 3,565
Term of patent 14 years
U.S. Cl. D14—107



350,534
ELECTRONIC COMPUTER
Masaaki Iino, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Jan. 14, 1991, Ser. No. 641,115
Claims priority, application Hague, Jul. 24, 1990, 24950/1990
The portion of the term of this patent subsequent to Nov. 6, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—106



350,536
UNDER COMPUTER MONITOR POWER CONTROLLING BASE
William J. McKnight, and Lonnie C. Pogue, both of San Diego, Calif., assignors to Proxima Corporation, San Diego, Calif.
Division of Ser. No. 714,437, Jun. 13, 1991. This application May 12, 1993, Ser. No. 8,269
Term of patent 14 years
U.S. Cl. D14—114



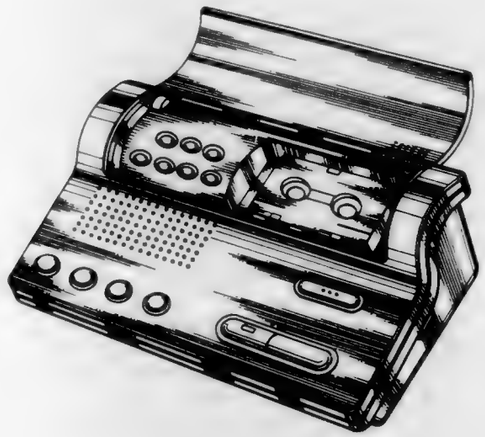
350,537
KEYBOARD FOR COMPUTERS
Ronald A. Smith, Apex, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 29, 1993, Ser. No. 7,652
Term of patent 14 years
U.S. Cl. D14—115



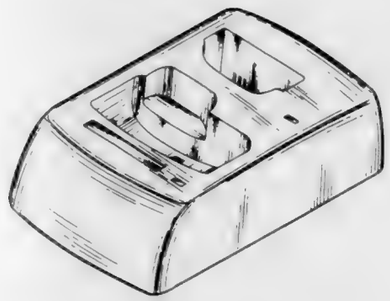
350,538
KEYBOARD
Philip Yurkonis, Campbell; Dan Harden, Palo Alto, and Nancy Aaron, San Francisco, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Filed May 19, 1992, Ser. No. 885,564
Term of patent 14 years
U.S. Cl. D14—115



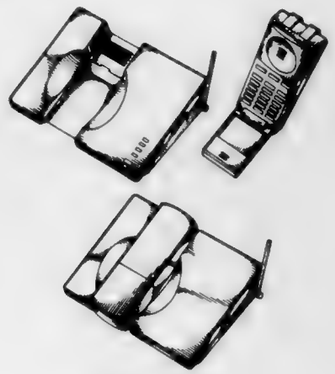
350,539
AUTOMATIC TELEPHONE MESSAGE RECORDER
Takashi Yatabe, Higashimurayama, and Isamu Yoshitake, Musashino, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed May 4, 1993, Ser. No. 7,890
Term of patent 14 years
U.S. Cl. D14—141



350,540
TABLETOP CHARGER FOR A HAND HELD TELEPHONE
Tapani Hyvönen, Turku, Finland, assignor to Nokia Mobile Phones, Ltd., Salo, Finland
Filed Apr. 14, 1992, Ser. No. 869,222
Claims priority, application Finland, Oct. 15, 1991, 837/91
Term of patent 14 years
U.S. Cl. D14—149



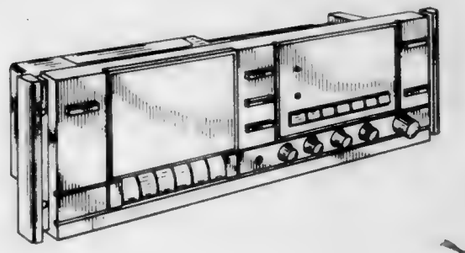
350,541
TELEPHONE HOUSING
Curly L. K. Chung, and Joseph C. K. Hung, both of Hong Kong, Hong Kong, assignors to Video Technology Engineering, Ltd., Hong Kong
Filed Feb. 28, 1992, Ser. No. 843,970
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1991, 9106392
Term of patent 14 years
U.S. Cl. D14—149



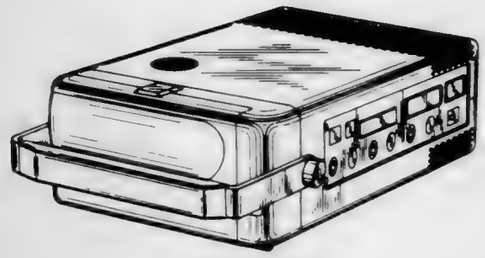
350,542
TELEPHONE
Shu-Wen Tung, Taipei, Taiwan, assignor to Hentak Limited, Taipei, Taiwan
Filed May 5, 1993, Ser. No. 7,944
Term of patent 14 years
U.S. Cl. D14—150



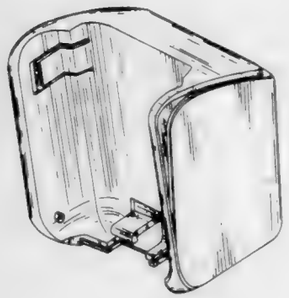
350,543
HOUSING FOR A STEREO UNIT
Marvin J. Metzler, Elkhart, and Michael H. Stock, Bristol, both of Ind., assignors to Mito Corporation, Elkhart, Ind.
Filed Nov. 30, 1992, Ser. No. 2,021
Term of patent 14 years
U.S. Cl. D14—265



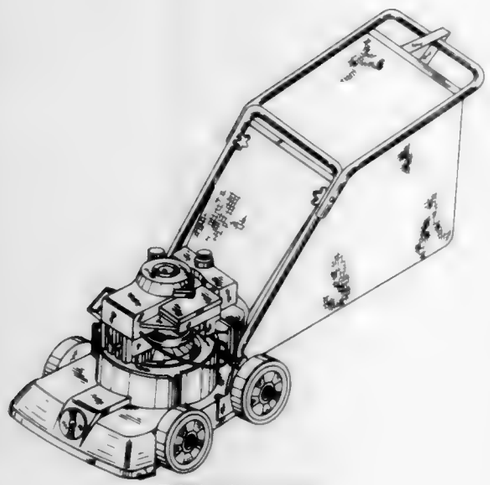
350,544
IMAGE SIGNAL CONVERTER
Kazuaki Sakuta, Komae, and Tomohiro Hoshi, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 9, 1993, Ser. No. 10,530
Claims priority, application Japan, Jan. 14, 1993, 5-769
Term of patent 14 years
U.S. Cl. D14—240



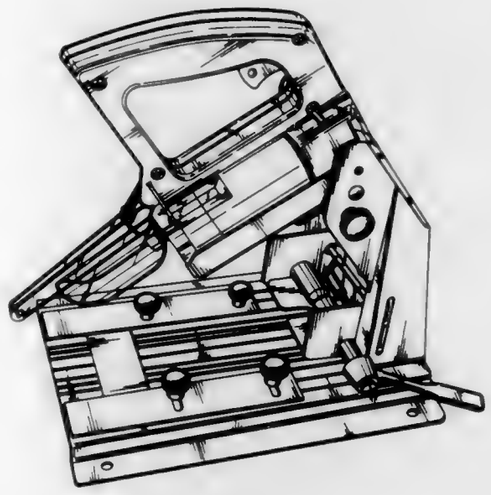
350,545
HOLDER FOR HAND TELEPHONE
Jari Olkkola, Salo; Ari Leman, Perttuli, and Tapani Hyvönen, Turku, all of Finland, assignors to Nokia Mobile Phones, Ltd., Salo, Finland
Filed Jun. 5, 1992, Ser. No. 893,696
Claims priority, application Finland, Dec. 5, 1991, 996/91
Term of patent 14 years
U.S. Cl. D14—253



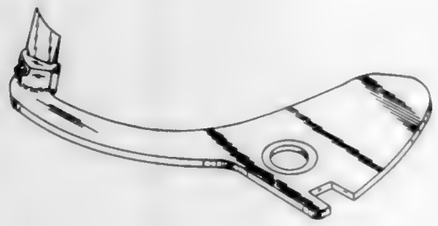
350,546
LAWN AND GARDEN CHIPPER SHREDDER VACUUM APPARATUS
Kevin J. Connolly, Ballston Lake, N.Y.; George W. Bingley, Kankakee, Ill., and Karl K. Holt, Hartland, Wis., assignors to Garden Way Incorporated, Troy, N.Y.
Filed Nov. 21, 1991, Ser. No. 795,631
Term of patent 14 years
U.S. Cl. D15—10



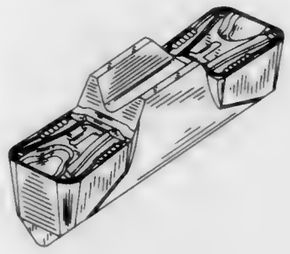
350,548
POCKET JOINT CUTTER
Donald R. Bosten; Earl R. Clowers, both of Jackson; Daniel P. Wall, Humboldt; Gary W. Barnhill, Huntingdon; Thomas O. Walls, Cedar Grove, and George W. Mitchell, Jackson, all of Tenn., assignors to Porter-Cable Corporation, Jackson, Tenn.
Filed Mar. 11, 1993, Ser. No. 7,320
Term of patent 14 years
U.S. Cl. D15—127



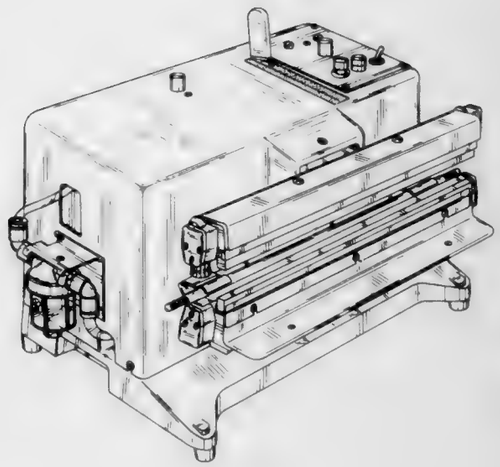
350,547
CORN COB CUTTER KNIFE
Eugene F. Felstehausen, Hoopeston, Ill., assignor to Felste Company, Inc., Hoopeston, Ill.
Continuation-in-part of Ser. No. 580,166, Sep. 10, 1990, Pat. No. 5,195,929. This application Jun. 19, 1992, Ser. No. 902,049
Term of patent 14 years
U.S. Cl. D15—28



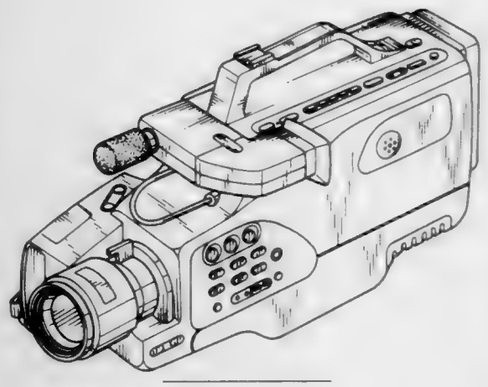
350,549
CUTTING INSERT
Lars Lindstedt, and Par Tagtstrom, both of Sandviken, Sweden, assignors to Sandvik AB, Sandviken, Sweden
Division of Ser. No. 858,773, Mar. 27, 1992, Pat. No. Des. 343,400. This application Nov. 19, 1993, Ser. No. 15,515
Term of patent 14 years
U.S. Cl. D15—139



350,550
VACUUM SEALER
Ichiro Maruyama, Osaka, Japan, assignor to Fuji Impulse Co., Ltd., Osaka, Japan
Filed May 28, 1993, Ser. No. 8,744
Term of patent 14 years
U.S. Cl. D15—146



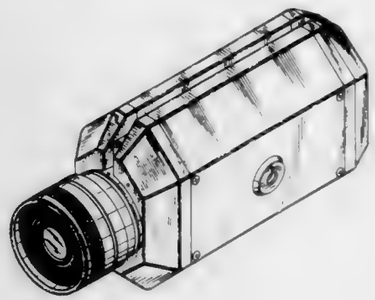
350,552
VIDEO CAMERA
Gang H. Cha, Inchon, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Feb. 26, 1993, Ser. No. 5,203
Claims priority, application Rep. of Korea, Aug. 28, 1992, 1992/14600
Term of patent 14 years
U.S. Cl. D16—202



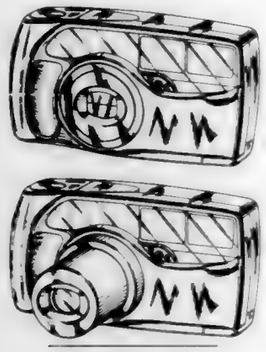
350,551
HANDHELD MAGNIFIER
Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., Ronkonkoma, N.Y.
Filed Nov. 25, 1992, Ser. No. 1,934
Term of patent 14 years
U.S. Cl. D16—135



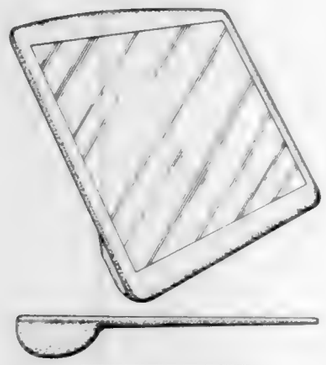
350,553
MONITOR CAMERA
Adosin Lo, Pan Chiao, Taiwan, assignor to Chiper Technology Co., Ltd., Taipei Hsien, Taiwan
Filed Sep. 8, 1993, Ser. No. 12,686
Term of patent 14 years
U.S. Cl. D16—203



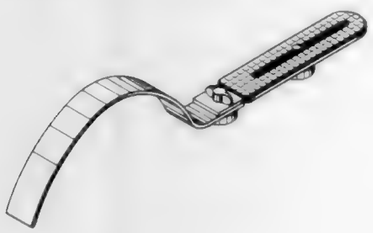
350,554
35 MM CAMERA
Yoichi Shirai, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 10, 1991, Ser. No. 774,266
Claims priority, application Japan, Apr. 10, 1991, 3-10391; Apr. 10, 1991, 3-10392
Term of patent 14 years
U.S. Cl. D16—209



350,555
ELECTROLUMINESCENT TRANSPARENCY ILLUMINATOR
John B. A. Field, 85 4th Ave., New York City, N.Y. 10003, and Donald W. Stucke, Jr., 164 Pine St., Corning, N.Y. 14830
Filed Dec. 4, 1992, Ser. No. 2,207
Term of patent 14 years
U.S. Cl. D16—221



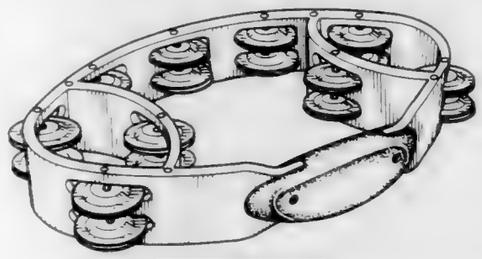
350,556
SHOULDER SUPPORT FOR A CAMCORDER
Leonard Costanza, 1040 SW. 54th Ave., Margate, Fla. 33068
Filed Jul. 23, 1992, Ser. No. 917,933
Term of patent 14 years
U.S. Cl. D16—243



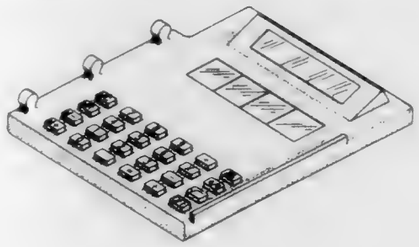
350,557
GUITAR
James R. Woods, 607 Westford St., Anaheim, Calif. 92807
Filed Feb. 22, 1993, Ser. No. 5,043
Term of patent 14 years
U.S. Cl. D17—14



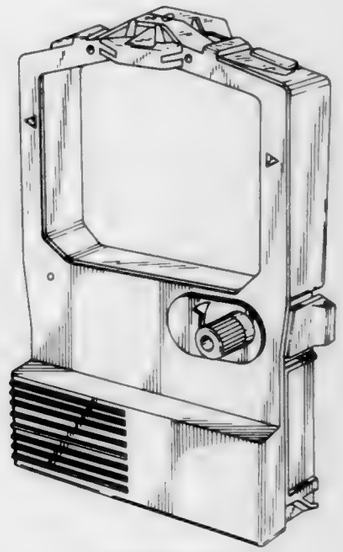
350,558
TAMBOURINE
Shu-Yao Huang, No. 1, Hsin Chuang Tzu Lane, Chung Sha Rd., Lung Ching Hsiang, Taichung Hsien, Taiwan
Filed Mar. 3, 1993, Ser. No. 5,408
Term of patent 14 years
U.S. Cl. D17—22



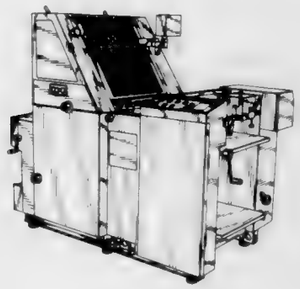
350,559
COMPUTER KEYBOARD MOUNTED CALCULATOR WITH ATTACHMENT FOR SPIRAL NOTEBOOK
Lucille E. Lassberg, 13502 Alchester Ln., Houston, Tex. 77079
Filed Dec. 14, 1992, Ser. No. 2,618
Term of patent 14 years
U.S. Cl. D18—7



350,560
INK RIBBON CARTRIDGE
Masaaki Iwamoto, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jun. 11, 1992, Ser. No. 896,963
Claims priority, application Japan, Apr. 3, 1992, 09717/1992
Term of patent 14 years
U.S. Cl. D18—12



350,561
OFFSET PRINTING MACHINE
Etsuo Hiraishi, Tokyo; Hideo Aoyama, and Katsushi Hirokawa, both of Hiroshima, all of Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Dec. 17, 1992, Ser. No. 2,716
Claims priority, application Japan, Jun. 19, 1992, 4-18227
Term of patent 14 years
U.S. Cl. D18—53



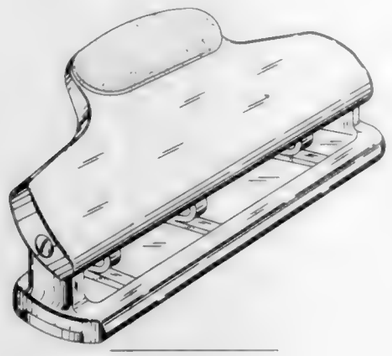
350,562
WRITING INSTRUMENT
Eduardo S. Muliterno, C/A n°2, Albacete, Spain
Continuation-in-part of Ser. No. 200,144, May 31, 1988, abandoned. This application Dec. 13, 1991, Ser. No. 806,424
Term of patent 14 years
U.S. Cl. D19—48



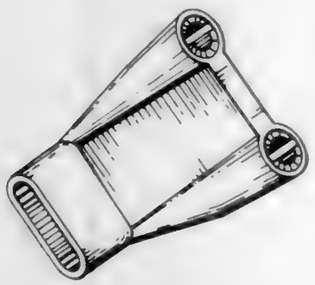
350,563
INSTRUCTIONAL TRAUMA CARE MANIKIN
John S. Eggert, Miami, Fla., assignor to Gaumard Scientific Company, Inc., Miami, Fla.
Filed Apr. 14, 1993, Ser. No. 7,215
Term of patent 14 years
U.S. Cl. D19—62



350,564
PAPER PUNCH
John W. Goodin, Coto de Caza, Calif., assignor to Master Product Manufacturing Company Inc., Los Angeles, Calif.
Filed Jan. 26, 1993, Ser. No. 4,078
Term of patent 14 years
U.S. Cl. D19—72



350,565
CORNER JOINT SUPPORT FOR A HANGING FILE FRAME
Bobby Fotioo, Helena, Ark., assignor to B & L Products, Inc., Hot Springs, Ark.
Filed Feb. 10, 1992, Ser. No. 833,410
Term of patent 14 years
U.S. Cl. D19—99



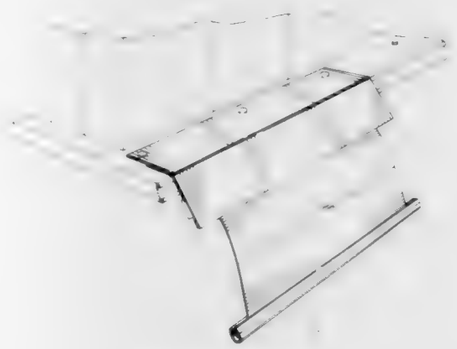
350,566
MENU HOLDER
Stephen J. Pearson, 34520 N. Hickory Ct., Ingleside, Ill. 60041
Filed Mar. 2, 1992, Ser. No. 844,688
Term of patent 14 years
U.S. Cl. D20—40



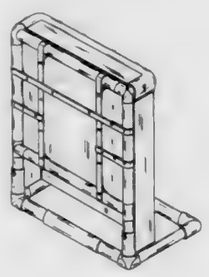
350,567
ILLUMINATED DISPLAY SIGN
George Vargish, II, Franklin Lakes, N.J., assignor to Vargish Industries, Franklin Lakes, N.J.
Continuation-in-part of Ser. No. 717,724, Jun. 19, 1991, abandoned. This application Nov. 9, 1992, Ser. No. 1,289
Term of patent 14 years
U.S. Cl. D20—41



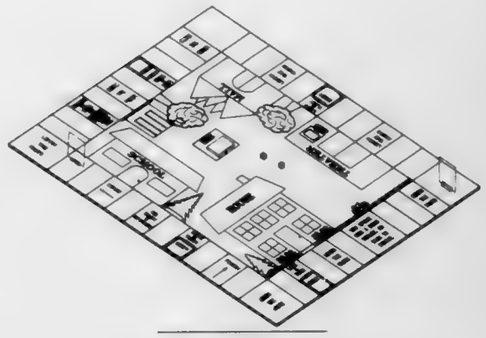
350,568
RETRACTABLE INFORMATION DISPLAY UNIT
William R. Lucarelli, Strongsville, Ohio, assignor to Lacarelli Designs and Displays, Inc., South Brunswick, Ohio
Filed Oct. 18, 1993, Ser. No. 14,283
Term of patent 14 years
U.S. Cl. D20—43



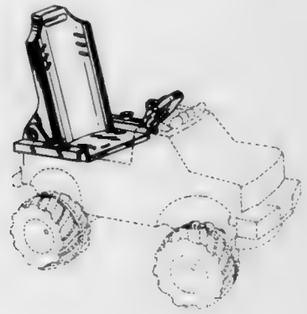
350,569
BASEBALL PITCHING TARGET
Michael Boteler, Florence, Miss., assignor to Perfect Pitcher Corporation, Florence, Miss.
Filed Jun. 28, 1993, Ser. No. 9,965
Term of patent 14 years
U.S. Cl. D21—5



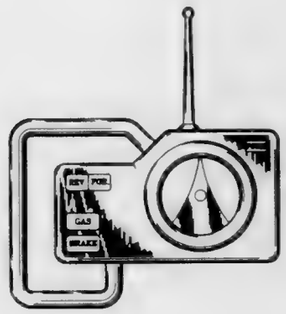
350,570
ANTI-SUBSTANCE ABUSE BOARD GAME
Tiffany L. Lambert, P.O. Box 72, West Creek, N.J. 08092
Filed Jan. 19, 1993, Ser. No. 3,726
Term of patent 14 years
U.S. Cl. D21—31



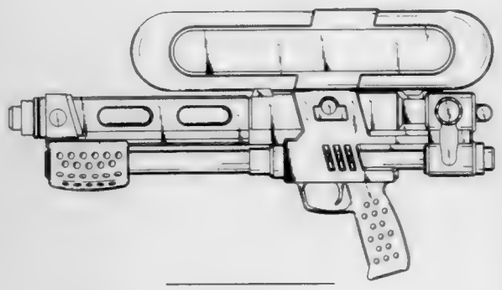
350,571
TOY VEHICLE RESTRAINT SYSTEM
James E. Steinke, Grand Forks, N. Dak., assignor to Innovative Products, Inc., Grand Forks, N. Dak.
Filed Sep. 2, 1992, Ser. No. 940,166
Term of patent 14 years
U.S. Cl. D21—71



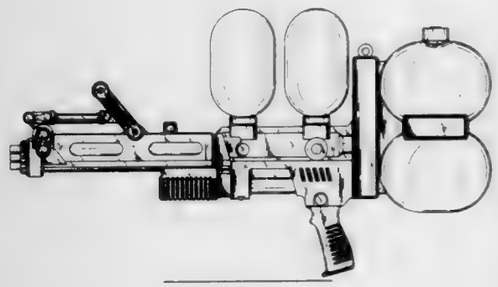
350,572
REMOTE CONTROL UNIT FOR TOY TRUCKS
Wayne A. Vashey, 90 Oak St., Keansburg, N.J. 07734-1343
Filed Dec. 9, 1992, Ser. No. 2,358
Term of patent 14 years
U.S. Cl. D21—141.1



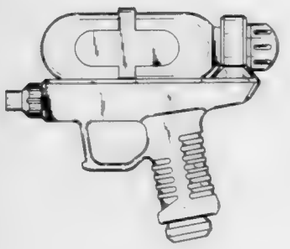
350,573
SINGLE TANK WATER GUN
Frank Caminos, 124 Christie St., Leonia, N.J. 07605, and Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Station, N.J. 08889
Filed Jul. 1, 1993, Ser. No. 10,305
Term of patent 14 years
U.S. Cl. D21—146



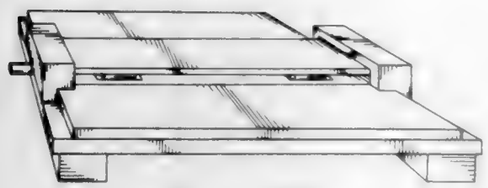
350,574
MULTIPLE TANK WATER GUN
Frank Caminos, 124 Christie St., Leonia, N.J. 07605, and Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Sta., N.J. 08889
Filed Jul. 2, 1993, Ser. No. 10,383
Term of patent 14 years
U.S. Cl. D21—146



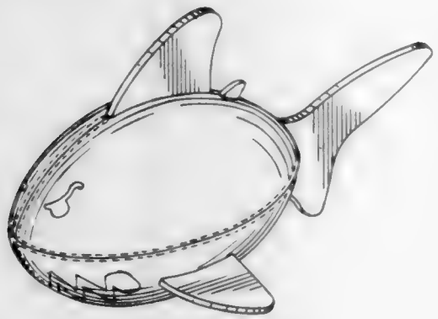
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SINGLE TANK WATER PISTOL
Frank Caminos, 124 Christie St., Leonia, N.J. 07605, and Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Sta., N.J. 08889
Filed Jul. 2, 1993, Ser. No. 10,420
Term of patent 14 years
U.S. Cl. D21—147



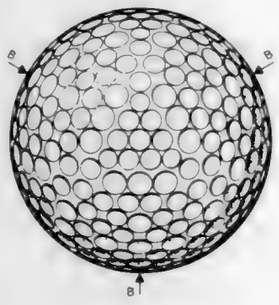
350,576
STOMACH FLATTENING EXERCISER
Paul W. Richardson, 4438 E. Mosher Dr., Stockton, Calif. 95212
Filed Mar. 16, 1993, Ser. No. 5,986
Term of patent 14 years
U.S. Cl. D21—191



350,577
SHARK BALL
Al Giudice, Chicago, Ill., assignor to Cool Products Corporation, Chicago, Ill.
Filed Aug. 17, 1992, Ser. No. 930,228
Term of patent 14 years
U.S. Cl. D21—204



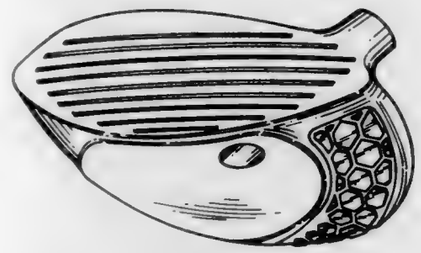
350,578
GOLF BALL
Richard R. Sanchez, Peoria, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Jul. 26, 1993, Ser. No. 11,102
Term of patent 14 years
U.S. Cl. D21—205



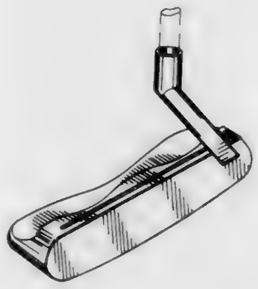
350,579
GOLF BALL RETRIEVER
R. David Lee, Springfield, Tenn., assignor to Professional Bags, Inc., Springfield, Tenn.
Filed Sep. 3, 1992, Ser. No. 939,629
Term of patent 14 years
U.S. Cl. D21—206



350,580
GOLF CLUB HEAD
Dillis V. Allen, Elk Grove Village, Ill., assignor to Vardon Golf Company, Inc., Elk Grove Village, Ill.
Filed May 13, 1992, Ser. No. 882,563
Term of patent 14 years
U.S. Cl. D21—214



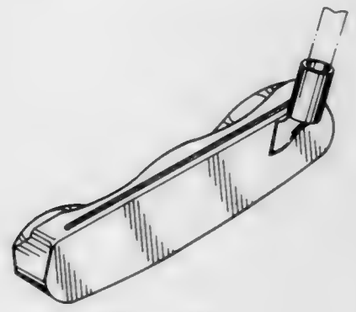
350,581
GOLF CLUB PUTTER HEAD
David D. Boone, El Toro, Calif., assignor to Lynx Golf Inc., City of Industry, Calif.
Filed Apr. 6, 1987, Ser. No. 34,261
The portion of the term of this patent subsequent to Dec. 13, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—217



350,582
GOLF CLUB HEAD
James K. Miansian, 218 Belmont #2, Long Beach, Calif. 90803, and Gary Van Dam, 2716 Third St. Apt. 9, Santa Monica, Calif. 90405
Filed Nov. 19, 1992, Ser. No. 1,667
Term of patent 14 years
U.S. Cl. D21—217



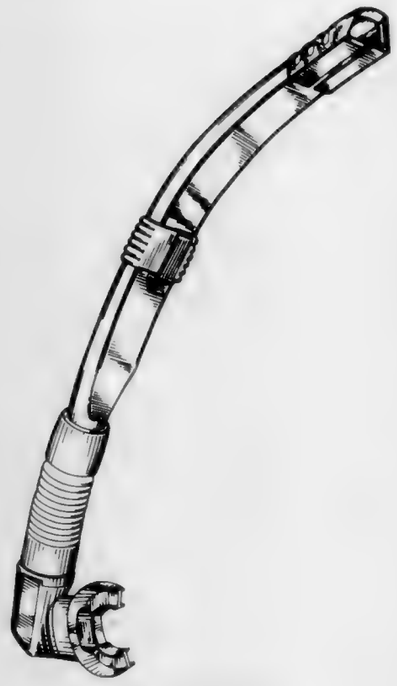
350,583
GOLF CLUB PUTTER HEAD
David D. Boone, El Toro, Calif., assignor to Lynx Golf, Inc., City of Industry, Calif.
Filed Apr. 6, 1987, Ser. No. 34,263
The portion of the term of this patent subsequent to Dec. 13, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—219



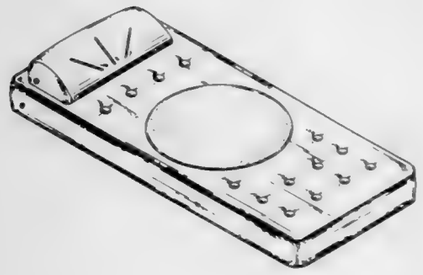
350,584
SPORTS EQUIPMENT HANDLE GRIP
James Jacobs, 3600 Rio Vista, Houston, Tex. 77221
Filed Dec. 10, 1992, Ser. No. 2,366
Term of patent 14 years
U.S. Cl. D21—222



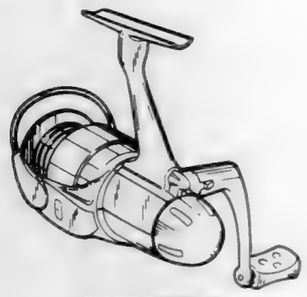
350,585
SNORKEL
Stan Rasocha, Deerfield, Ill., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Nov. 18, 1993, Ser. No. 15,475
Term of patent 14 years
U.S. Cl. D24—110.5



350,586
FLOATATION CUSHION FOR USE BY PREGNANT WOMEN
Nancy Francis, 303 W. Sunshine, Springfield, Mo. 65807
Filed Nov. 6, 1992, Ser. No. 1,206
Term of patent 14 years
U.S. Cl. D21—237



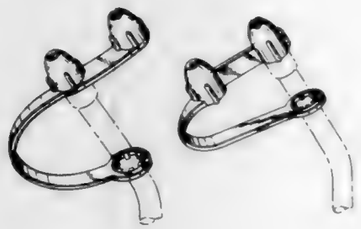
350,587
FISHING REEL
Achim Storz, Zell Am See, Austria, assignor to Abu Garcia Produktion AB, Svangsta, Sweden
Filed Mar. 19, 1993, Ser. No. 6,222
Term of patent 14 years
U.S. Cl. D22—141



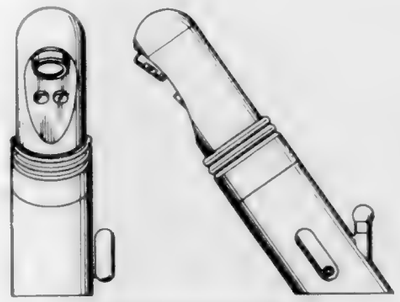
350,588
COMBINED FISHING ROD AND KNIFE HOLDER
Milton O. Onstott, 1306 Fairview Dr., Alvin, Tex. 77511
Filed Dec. 1, 1993, Ser. No. 15,862
Term of patent 14 years
U.S. Cl. D22—148



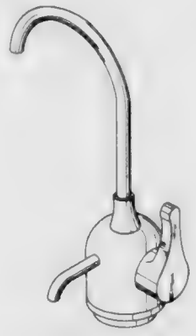
350,589
MULTIPLE NOZZLE ON A FLEXIBLE STRAP FOR A GARDEN SPRAYER
William A. Hudson, Shorewood, Wis., assignor to H.D. Hudson Manufacturing Company, Chicago, Ill.
Filed Oct. 25, 1993, Ser. No. 14,566
Term of patent 14 years
U.S. Cl. D23—213



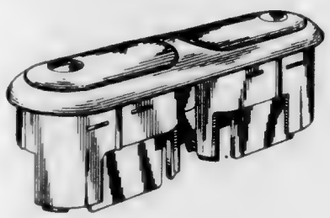
350,590
AUTOMATIC FAUCET
Gerhard Fischer, Campione, Switzerland, assignor to Cosmos Entwicklungs- und Forschungsanstalt, Vaduz, Liechtenstein
Filed Sep. 30, 1992, Ser. No. 56
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1992, 9202708
Term of patent 14 years
U.S. Cl. D23—238



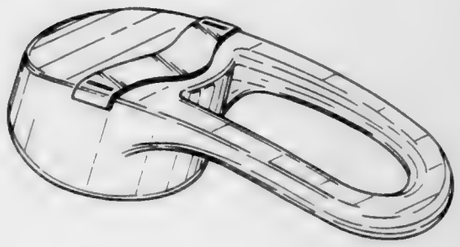
350,591
COMBINED FAUCET AND DIVERTER VALVE FOR A WATER FILTER
Keiko Kawakami, No. 1820, 1-chome, Ueshima, Hamamatsu-Shi, Shizuoka-Ken, Japan
Filed Oct. 2, 1992, Ser. No. 65
Term of patent 14 years
U.S. Cl. D23—238



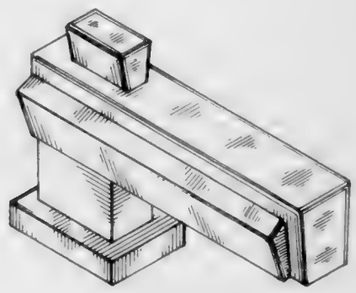
350,592
SET OF FLUSH TANK BUTTONS
Stephen J. Cummings, Newport, Australia, assignor to Caroma Industries Limited, Australia
Filed Apr. 7, 1993, Ser. No. 6,789
Claims priority, application Australia, Oct. 20, 1992, 2907/92
Term of patent 14 years
U.S. Cl. D23—252



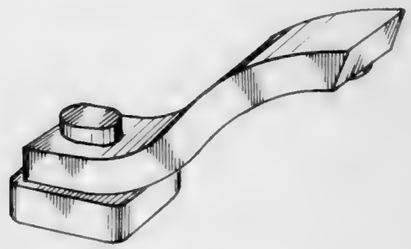
350,593
FAUCET HANDLE
Adolf Gottwald, Iserlohn, Fed. Rep. of Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Fed. Rep. of Germany
Filed May 13, 1992, Ser. No. 882,315
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1991, 9108292
Term of patent 14 years
U.S. Cl. D23—252



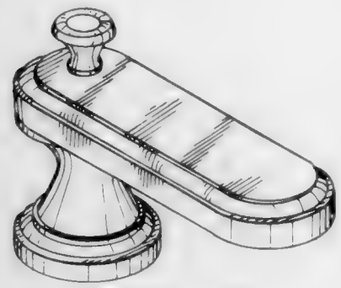
350,594
SPOUT
Stanley M. Paul, 214 Bedford Rd., Greenwich, Conn. 06831
Filed Feb. 17, 1993, Ser. No. 4,966
Term of patent 14 years
U.S. Cl. D23—257



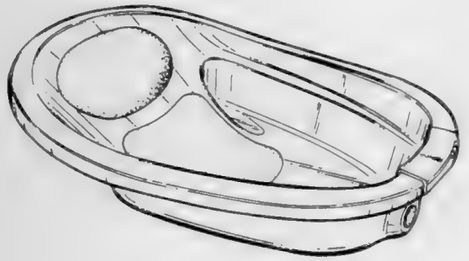
350,595
SPOUT
Stanley M. Paul, 214 Bedford Rd., Greenwich, Conn. 06831
Filed Feb. 17, 1993, Ser. No. 4,946
Term of patent 14 years
U.S. Cl. D23—257



350,596
SPOUT
Stanley M. Paul, 214 Bedford Rd., Greenwich, Conn. 06831
Filed Feb. 17, 1993, Ser. No. 4,948
Term of patent 14 years
U.S. Cl. D23—257



350,597
INFANT BATH TUB
Robert D. Wise, Akron, Ohio, assignor to Century Products Company, Macedonia, Ohio
Filed Oct. 1, 1993, Ser. No. 13,743
Term of patent 14 years
U.S. Cl. D23—278



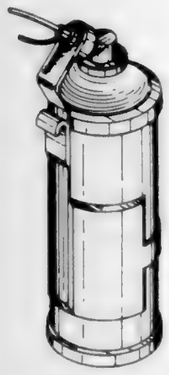
350,598
INFANT BATH TUB
Robert D. Wise; Joel W. Wennerstrom, both of Akron, Ohio; Tom V. McLinden, Woodbury, and Daniel Haberstitch, Rocky Hill, both of Conn., assignors to Century Products Company, Macedonia, Ohio
Filed Oct. 1, 1993, Ser. No. 13,756
Term of patent 14 years
U.S. Cl. D23—278



350,599
TOILET SEAT RETAINER
Don L. Silverstein, P.O. Box 558, Rancho Murieta, Calif. 95683-9998, and Jeffrey D. Silverstein, P.O. Box 2550, Citrus Heights, Calif. 95611
Filed Apr. 30, 1993, Ser. No. 7,729
Term of patent 14 years
U.S. Cl. D23—309



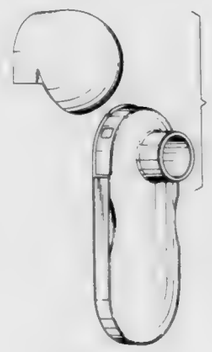
350,600
REMOTE CONTROLLED AIR FRESHENER
Jose Rivero, and Jaun J. Matturo, both of P.O. Box 720281, Houston, Tex. 77272
Filed Aug. 5, 1993, Ser. No. 11,463
Term of patent 14 years
U.S. Cl. D23—366



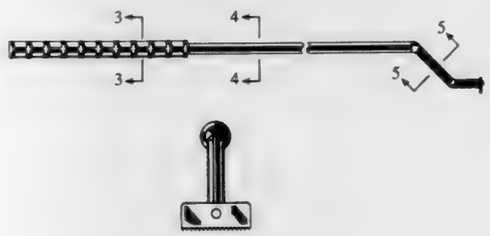
350,601
VAGINAL DRUG DELIVERY INSERT
David W. Osborne, St. Louis, Mo., and Charles R. Whitman, Augusta, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Filed Dec. 19, 1991, Ser. No. 810,815
Term of patent 14 years
U.S. Cl. D24—107



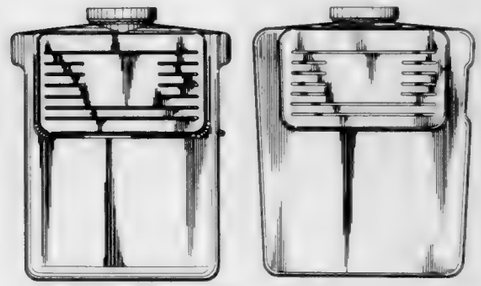
350,602
COMBINED DRY POWDER INHALER AND CAP
Michael A. Hobbs, Dagenham, United Kingdom, assignor to Rhone-Poulenc Rorer Limited, Eastbourne, United Kingdom
Filed Apr. 30, 1992, Ser. No. 876,229
Claims priority, application United Kingdom, Nov. 1, 1991, 2018720
Term of patent 14 years
U.S. Cl. D24—110



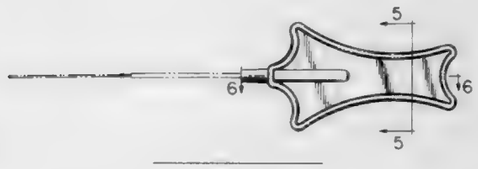
350,603
CELL CULTURE SCRAPER
Jerome T. Firlik, Oneonta, N.Y., assignor to Corning Incorporated, Corning, N.Y.
Filed Oct. 28, 1991, Ser. No. 784,039
Term of patent 14 years
U.S. Cl. D24—119



350,604
MEDICAL DISPOSAL CONTAINER
Mark E. Weiss; Eric L. Steiner, both of Denver, and Jeffrey T. Samson, Boulder, all of Colo., assignors to On Gard Systems, Inc., Denver, Colo.
Filed Dec. 22, 1992, Ser. No. 2,871
Term of patent 14 years
U.S. Cl. D24—131



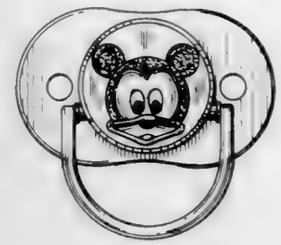
350,605
INTRODUCER HANDLE FOR MEDICAL CANNULA
Christopher R. Williams, Grand Rapids, Mich., assignor to DLP, Inc., Grand Rapids, Mich.
Filed Apr. 14, 1992, Ser. No. 869,361
Term of patent 14 years
U.S. Cl. D24—133



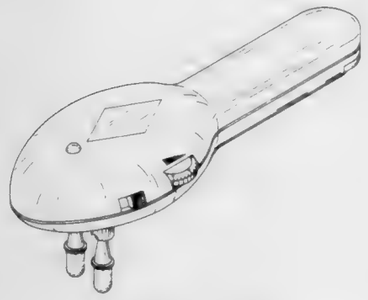
350,606
COMBINED LAPAROSCOPIC GRASPER AND CUTTER
Tibor Koros, and Gabriel Koros, both of 610 Flinn Ave., Moorpark, Calif. 93021
Filed Mar. 16, 1992, Ser. No. 853,307
Term of patent 14 years
U.S. Cl. D24—143



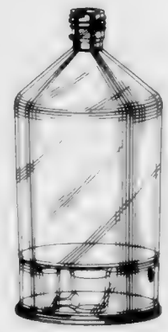
350,607
PACIFIER
Meredith Spence, Jr., Cuyahoga Falls, and James J. Keane, Aurora, both of Ohio, assignors to Lisco, Inc., Tampa, Fla.
Filed Jul. 24, 1992, Ser. No. 918,109
Term of patent 14 years
U.S. Cl. D24—195



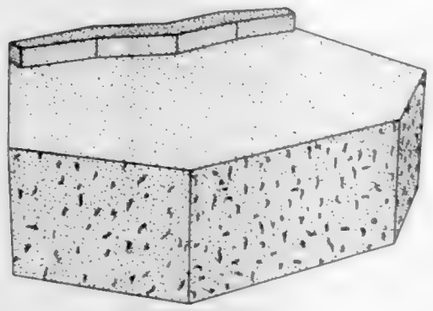
350,608
ELECTRIC MASSAGER
Tsai L. Yu, P.O. Box 82-144, Taipei, Taiwan
Filed Jul. 22, 1993, Ser. No. 10,969
Term of patent 14 years
U.S. Cl. D24—214



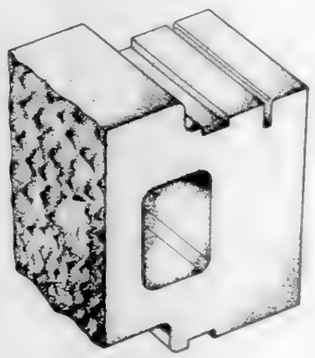
350,609
LIQUID CHIROMATOGRAPH MOBILE RESERVOIR
Larry V. Greenley, Vienna, Va., and V. Cloud Volpe, Vineland, N.J., assignors to SP Industries Limited Partnership, Miami, Fla.
Filed Jan. 8, 1992, Ser. No. 818,212
The portion of the term of this patent subsequent to Nov. 9, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—224



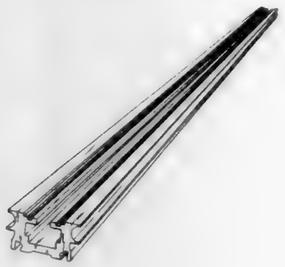
350,610
BLOCK
Jacques Rodrigue, Montreal, Canada, assignor to Transpave Inc., St-Eustache, Canada
Filed Nov. 27, 1992, Ser. No. 2,004
Claims priority, application Canada, Jun. 30, 1992, 3006924
Term of patent 14 years
U.S. Cl. D25—113



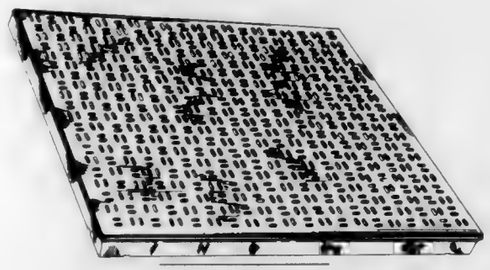
350,611
RETAINING WALL BLOCK
John M. Scales, 6347 Rosecommon Dr., Norcross, Ga. 30092
Filed Aug. 18, 1993, Ser. No. 12,031
Term of patent 14 years
U.S. Cl. D25—114



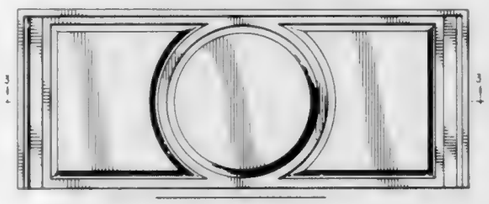
350,612
UPPER CARRIER TRACK
Leif Gullblom, Kungsgatan 10, S-736 00 Kungsör, Sweden
Filed Apr. 22, 1992, Ser. No. 873,271
Claims priority, application Sweden, Oct. 28, 1991, 91-2135
Term of patent 14 years
U.S. Cl. D25—121



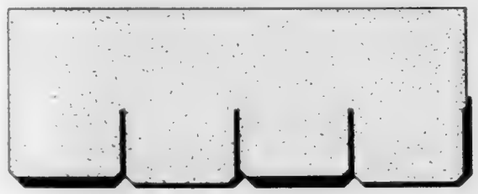
350,613
FLOOR PANEL
James H. Fahy, Jr., Lionville, Pa., assignor to Hitachi Metals America, Ltd., Purchase, N.Y.
Filed Nov. 2, 1992, Ser. No. 1,080
Term of patent 14 years
U.S. Cl. D25—138



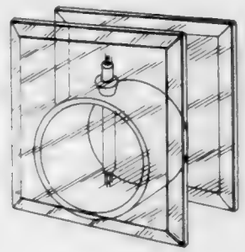
350,614
PEDIMENT FOR WALLS
Bonnie K. Poole, South York, Pa., assignor to Fypon, Inc., Stewartstown, Pa.
Filed Jan. 4, 1993, Ser. No. 3,261
The portion of the term of this patent subsequent to Mar. 16, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—138



350,615
DESIGN FOR A ROOF OR SIDING SHINGLE
John R. Klein, deceased, late of Malvern by Helen Klein, executrix ; Michael J. Noone, Wayne, and Kermit E. Stahl, North Whales, all of Pa., assignors to CertainTeed Corporation, Valley Forge, Pa.
Filed Mar. 28, 1988, Ser. No. 174,023
Term of patent 14 years
U.S. Cl. D25—139



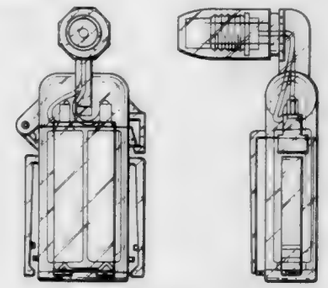
350,616
OIL LAMP
David R. Perkins, Manchester, Mass., assignor to Glass Dimensions, Inc., Essex, Mass.
Filed Feb. 16, 1993, Ser. No. 4,806
Term of patent 14 years
U.S. Cl. D26—11



D. 350,617

Patent Not Issued For This Number

350,618
VERSATILE USE FLASHLIGHT
David H. Parker, 2255 Jefferson St., Torrance, Calif. 90501
Filed Feb. 1, 1993, Ser. No. 9,834
Term of patent 14 years
U.S. Cl. D26—37



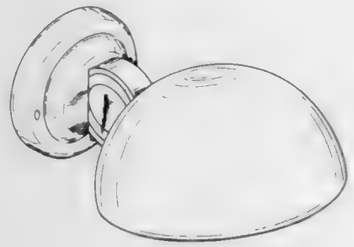
350,619
CLAMP-ON LAMP
Abraham Yu, No. 9-9, Lane 8, Sec. 1, Cheng Tai Road, Wu Ku Hsiang, Taipei Hsien, Taiwan
Filed Sep. 13, 1993, Ser. No. 12,875
Term of patent 14 years
U.S. Cl. D26—60



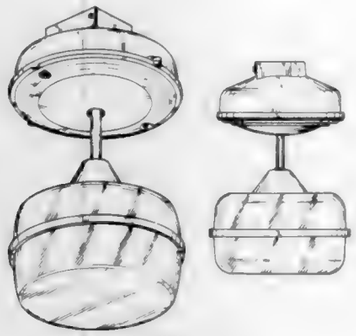
350,620
ADJUSTABLE FLUORESCENT DESK LAMP
Se K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed May 6, 1993, Ser. No. 8,060
Claims priority, application United Kingdom, Nov. 25, 1992, 2027398
Term of patent 14 years
U.S. Cl. D26—65



350,621
WALL MOUNTED LAMP
Se K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed May 6, 1993, Ser. No. 8,057
Term of patent 14 years
U.S. Cl. D26—87



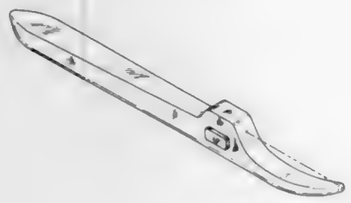
350,622
SUSPENDED LUMINAIRE
Harold T. Gruber, Summit Station; Bonnie J. Brohard, Newark; William W. Belisle, Newark, and Herbert A. Fouke, Newark, all of Ohio, assignors to Holophane Lighting, Inc., Newark, Ohio
Filed Feb. 27, 1992, Ser. No. 843,977
Term of patent 14 years
U.S. Cl. D26—88



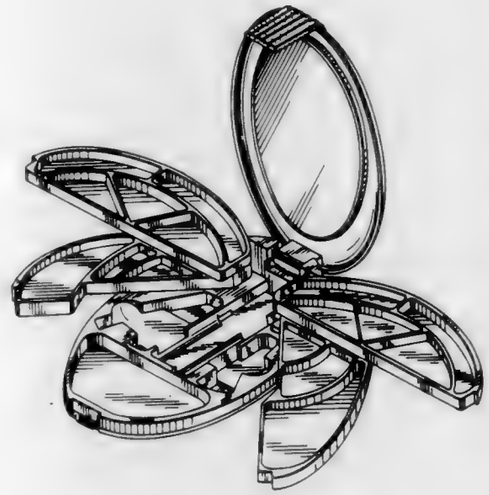
350,623
TABLE LAMP
Frank Wang, 2F, No. 3, Lane 73, Sec. 5, Hsin-Hai Rd., Taipei, Taiwan
Filed Jan. 11, 1993, Ser. No. 3,517
Term of patent 14 years
U.S. Cl. D26—106



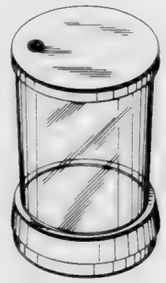
350,624
DENTAL FLOSS HOLDER
Karol Jovanovic, P.O. Box 1217, Clifton, N.J. 07012-0717
Filed Apr. 26, 1993, Ser. No. 7,519
Term of patent 14 years
U.S. Cl. D28—64



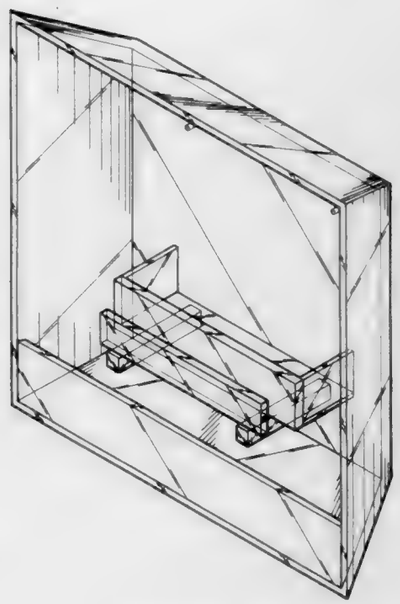
350,625
COSMETIC CASE
Wen-Chang Shen, Tainan, Taiwan, assignor to Mei Shuai Cosmetics Co., Ltd., Tainan, Taiwan
Filed Mar. 15, 1993, Ser. No. 5,937
Term of patent 14 years
U.S. Cl. D28—82



350,626
AQUARIUM
Robert M. Ross, Garland, Tex., assignor to Great Western Trading Co., Inc., Plano, Tex.
Filed May 19, 1993, Ser. No. 8,591
Term of patent 14 years
U.S. Cl. D30—101



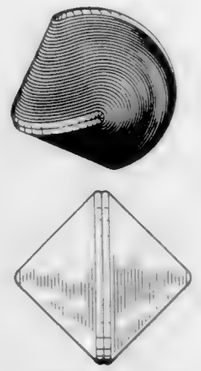
350,627
BIRD FEEDER
Lisa L. Moniak, 4465 Columbia Blvd., Juneau, Ak. 99801
Filed Oct. 12, 1993, Ser. No. 14,079
Term of patent 14 years
U.S. Cl. D30—124



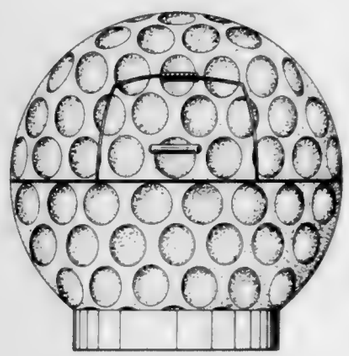
350,628
COMBINED DOG LEASH AND BELT
Paula Williams, 1632 Taylor Ave., Utica, N.Y. 13501
Filed Apr. 9, 1993, Ser. No. 6,875
Term of patent 14 years
U.S. Cl. D30—153



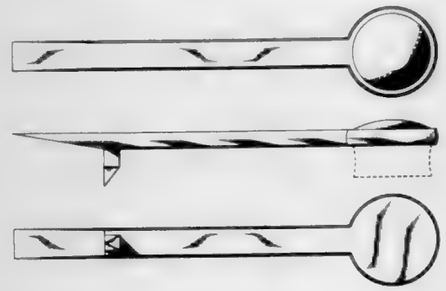
350,629
TOY FOR AN ANIMAL
David Scrani, 1412 Shoemaker Rd., Baltimore, Md. 21209
Filed Sep. 21, 1992, Ser. No. 948,896
Term of patent 14 years
U.S. Cl. D30—160



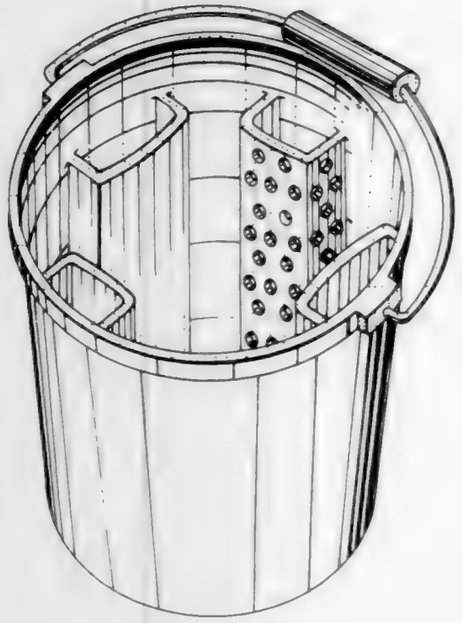
350,630
GOLF CLUB CLEANER
Eric L. Smith, 638 Potomac Ave., Hagerstown, Md. 21740
Filed Jan. 4, 1993, Ser. No. 3,249
Term of patent 14 years
U.S. Cl. D32—1



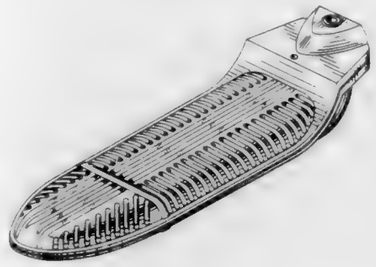
350,631
TOOL FOR CLEANING AND POLISHING FOOTGEAR
Ernest R. Sigle, Box 30A R.R. #1, Council Grove, Kans. 66846
Filed Jan. 21, 1993, Ser. No. 3,895
Term of patent 14 years
U.S. Cl. D32—42



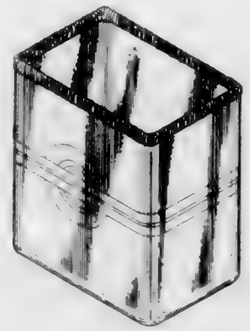
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BUCKET HAVING STORAGE RECEPTACLES
Wallace L. Cummins, 72 W. Central Ave., Paoli, Pa. 19301
Filed Oct. 6, 1992, Ser. No. 177
Term of patent 14 years
U.S. Cl. D32—53



350,633
SHOE DRYER
Joseph F. Wong, Hong Kong, Hong Kong, assignor to Motor Electric Manufacturing Co., Ltd., Hong Kong, Hong Kong
Filed Jul. 7, 1992, Ser. No. 909,769
Term of patent 14 years
U.S. Cl. D32—59



350,634
DISPOSABLE TRASH LINER WITH ELASTIC BANDS
Douglas Hawkes; Scott Sadler, and William Larson, all of P.O. Box 20224, Keizer, Oreg. 97303
Filed Jul. 9, 1992, Ser. No. 911,298
Term of patent 14 years
U.S. Cl. D34—10



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TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF SEPTEMBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Hyppanen, Timo, 5,345,896, Cl. 122-4.00D.
A.I.R., Inc.: *See*—
MacDoran, Peter F.; Call, David B.; and Gold, Kenneth L., 5,347,285, Cl. 342-357.000.
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Abefelt, Erik O.; Petersen, Lars-Goran; and Roos, Sture G., to Telefonaktiebolaget L M Ericsson. Fast operating program controlled digital uniswitch. 5,347,513, Cl. 370-58.300.
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Ando, Mitsuhiro; Mizuno, Tomokimi; Naruse, Yoshihiro; and Fujimasa, Iwao, 5,345,767, Cl. 60-721.000.
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Allan, Robert M. Connector apparatus with nesting ridges. 5,345,659, Cl. 24-442.000.

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Hallard, Alain F.; and Allard, John E., 5,346,249, Cl. 280-728.00B.

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Fooks, Elik I.; Delaney, Patrick J., III; and Johnson, Philip E., 5,347,117, Cl. 250-221.000.
Nondahl, Thomas A.; Pitsch, Robert L.; and Brod, David M., 5,347,277, Cl. 341-116.000.

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Dopson, Clive; and Allen, Jeffrey, 5,345,904, Cl. 123-198.00F.

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Allen, Robert H. Method and device for measuring squareness of ice skate blades. 5,345,688, Cl. 33-535.000.

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Chandraratna, Roshantha A. S., 5,346,895, Cl. 514-247.000.
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Allied-Signal Inc.: *See*—
Marsh, Andrew; and Latvala, Bruce E., 5,346,291, Cl. 303-28.000.

AlliedSignal Inc.: *See*—
Clemmer, Paul G.; Tung, Hsueh S.; and Smith, Addison M., 5,346,595, Cl. 203-75.000.

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Allt, George; and Eaton, John R., to International Computers Limited. Method of predicting the performance of an emulated computer system. 5,347,647, Cl. 395-575.000.

Almog, Yaacov, to Spectrum Sciences B.V. Electrically stabilized liquid toners. 5,346,796, Cl. 430-115.000.

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Toda, Osamu; Inagaki, Michio; and Ohhira, Masahiko, 5,346,650, Cl. 252-506.000.

Alspector, Benjamin. Device and method for detecting presence and extent of micro-organisms in a liquid sample or on a solid surface 5,346,829, Cl. 435-294.000.

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Patsidis, Konstantinos; Alt, H. G.; and Palackal, Syriac J., 5,347,026, Cl. 556-87.000.

Althausen, Ferdinand; Wirth, Jurgen; and Raffel, Reiner, to Maschinenfabrik Hennecke GmbH. Device and process for the production of a reaction mixture from at least two flowable reaction components. 5,346,673, Cl. 422-133.000.

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Bonner, Kurt J.; and Alvarez, Jose M., Jr., 5,346,362, Cl. 415-191.000.

Amada Company, Limited: *See*—
Sartorio, Franco; Scavino, Mario; and Vergano, Stefano, 5,345,806, Cl. 72-422.000.

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Hayashi, Tetsuji, 5,346,454, Cl. 483-29.000.

Amann, Richard W.; and Lum, Sharon W., to General Motors Corporation. Controlled fuel injection rate for optimizing diesel engine operation. 5,345,916, Cl. 123-506.000.

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Greulich, Klaus; and Amborn, Peter, 5,346,432, Cl. 464-180.000.

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White, Alec W., 5,346,565, Cl. 156-71.000
White, Alec W., 5,346,566, Cl. 156-71.000.

American Cyanamid Company: *See*—
Kameswaran, Venkataraman, 5,347,016, Cl. 548-531.000.
Trybulski, Eugene J.; and Brabander, Herbert J., 5,346,910, Cl. 514-326.000.

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Failli, Amedeo; Kao, Wenling; Steffan, Robert J.; and Vogel, Robert L., 5,346,893, Cl. 314-183.000.

American Life Support Technology: *See*—
Ferrand, Robert, 5,345,629, Cl. 5-453.000.

American Pipe & Plastics, Inc.: *See*—
Gargiulo, Joseph L., 5,346,658, Cl. 264-40.300.

American Superconductor Corporation: *See*—
Russo, Carl J., 5,347,168, Cl. 307-245.000.

Ameristar Fence Products, Inc.: *See*—
Gibbs, Edward L., 5,345,723, Cl. 49-506.000.

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Ammermann, Eberhard: *See*—
Mueller, Thomas; Eicken, Karl; Harreus, Albrecht; Koenig, Hartmann; Rentzea, Costin; Ammermann, Eberhard; and Lorenz, Gisela, 5,346,899, Cl. 514-256.000.
Sauter, Hubert; Schelberger, Klaus; Saur, Reinhold; Lorenz, Gisela; and Ammermann, Eberhard, 5,346,909, Cl. 514-317.000.

Amoco Corporation: *See*—
Clark, Frederick T.; Kukes, Simon G.; and Hopkins, P. Donald, 5,346,874, Cl. 502-207.000.
Khungar, Sohan L.; Graves, L. Martin, Jr.; and Gryziecki, Robin M., 5,346,943, Cl. 524-398.000.
Kukes, Simon G.; Clark, Frederick T.; and Hopkins, P. Donald, 5,346,612, Cl. 208-143.000.
Taylor, James L.; and Knepper, Jay C., 5,347,475, Cl. 364-571.010.

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Okamoto, Yoshio; Kanamaru, Hisanobu; Maeda, Hitoshi; Suzuki, Satoshi; Ishikawa, Tohru; Kosuge, Tokuo; Amou, Kiyoshi; Ohki, Hiroshi; Nakagawa, Koji; Tanabe, Yoshiyuki; and Yokoyama, Mizuho, 5,346,137, Cl. 239-585.400.

Amram, Roger; and Lamarche, Michael, to Fun Bunch Inc. Goal net. 5,346,227, Cl. 273-400.000.

Anai, Noriyuki: *See*—
Tanoue, Kouichi; Kitamura, Shinzi; Anai, Noriyuki; Satoh, Takami; Tomoeda, Takayuki; Iwasaki, Tatsuya; and Mizosaki, Kengo, 5,345,639, Cl. 15-88.200.

Analog Devices, Inc.: *See*—
Brokaw, A. Paul, 5,347,224, Cl. 324-522.000.
Sherman, Steven J.; Brokaw, A. Paul; Tsang, Robert W. K.; and Core, Theresa, 5,345,824, Cl. 73-517.00B.

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Voellmy, Richard W.; and Ananthan-Nair, Jayakumar, 5,346,812, Cl. 435-6.000.

Anchor Hocking Packaging Co.: *See*—
Ochs, Charles S.; and Haaser, James D., 5,346,082, Cl. 215-252.000.

Andersen, Kenneth D., to Exxon Production Research Company. Shaped-sweep technology. 5,347,494, Cl. 367-42.000.

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Van Sin, Kee; Anderson, Carter; and Erbisch, Kellie, 5,346,604, Cl. 204-415.000.

Anderson, Leonard J.: *See*—
Lombard, James H.; and Anderson, Leonard J., 5,346,720, Cl. 427-101.000.

Anderson, Richard L., to Phillips Petroleum Company. Alkylation catalyst regeneration. 5,347,065, Cl. 585-724.000.

Anderson, Rosalie M.: *See*—
Sokol, Edward W., 5,345,634, Cl. 5-658.000.

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Anderson, Steven J., to Automotive Systems Laboratory, Inc. Gas generator. 5,345,875, Cl. 102-530.000.

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Andersson, Annika: *See*—
Svensson, Maria; Nordlander, Jan; and Andersson, Annika, 5,346,085, Cl. 220-210.000.

Ando, Eiichi: *See*—
Osada, Koichi; Ando, Eiichi; and Mitsui, Akira, 5,346,770, Cl. 428-432.000.

Ando, Hirotake: *See*—
Koyama, Osamu; Kato, Tadashi; Usui, Masayuki; Watanabe, Yoshihiko; Baba, Hisatoshi; Ando, Hirotake; Nakajima, Hideo; Sakai, Shinji; and Tamaki, Kenji, 5,347,503, Cl. 369-44.320.

Ando, Ichiro: *See*—
Yokoyama, Yasuhiro; Iwata, Noriko; Ito, Eri; Ando, Ichiro; Ichinohe, Shoji; and Yamazaki, Toshio, 5,346,946, Cl. 524-547.000.

Ando, Mitsuhiro; Mizuno, Tomokimi; Naruse, Yoshihiro; and Fujimasa, Iwao, to Aisin Seiki Kabushiki Kaisha. Vibration motor. 5,345,767, Cl. 60-721.000.

Ando, Mitsuhiro: *See*—
Naruse, Yoshihiro; Ando, Mitsuhiro; Mizuno, Tomokimi; and Nakajima, Naomasa, 5,346,372, Cl. 417-379.000.

Ando, Takahiko; and Mizoe, Toshihito, to Mitsubishi Denki Kabushiki Kaisha. Fuse blowout detector circuit. 5,347,418, Cl. 361-104.000.

Andrews, Franklin T. Process for conducting biochemical reactions. 5,346,826, Cl. 435-240.241.

Aneshansley, Daniel J.: *See*—
Petersson, Lennart G.; and Aneshansley, Daniel J., 5,345,890, Cl. 119-14.540.

Anheuser, Lothar: *See*—
Glang, Siegfried; and Anheuser, Lothar, 5,346,331, Cl. 405-147.000.

Anick, Peter G.: *See*—
Flynn, Rex A.; and Anick, Peter G., 5,347,653, Cl. 395-600.000.

Annunziata, Frank A.: *See*—
Aitken, Bruce G.; Annunziata, Frank A.; Bartholomew, Roger F.; Newhouse, Mark A.; Powley, Mark L.; and Sadd, Andrea L., 5,346,865, Cl. 501-40.000.

Anshal, Inc.: *See*—
Purohit, Ankur; and Purohit, Ahnal A., 5,346,090, Cl. 220-410.000.

Ansorge, Richard E.; Hooper, Clare E.; Neale, William W.; and Stanley, Philip, to Cambridge Imaging Limited. Light transmission system with photon transfer to an optical detector and cell investigation techniques using the light transmission system. 5,347,122, Cl. 250-227.110.

Anthony, Frank H. Variable pitch lapping block for polishing lenses. 5,345,725, Cl. 451-390.000.

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Anzai, Mitsutoshi; Matsuura, Yuji; Mukudai, Osamu; Kanno, Miki; and Watanabe, Kayoko, to Hodogaya Chemical Co., Ltd. Electrophotographic toner. 5,346,794, Cl. 430-110.000.

Aoki, Tatsuya: *See*—
Yokoyama, Yoshinobu; Aoki, Tatsuya; and Shimizu, Etsuo, 5,345,836, Cl. 74-473.00R.

Aoshima, Keitaro; and Miyake, Hideo, to Fuji Photo Film Co., Ltd. Light-sensitive composition. 5,346,975, Cl. 526-263.000.

Aotsu, Hiroaki: *See*—
Kondo, Nobukazu; Maruyama, Takashi; Isamu, Keiichi; and Aotsu, Hiroaki, 5,347,643, Cl. 395-425.000.

Aoyama, Hirokaza: *See*—
Omure, Yukio; Ide, Satoshi; Matsuda, Takahiro; Aoyama, Hirokaza; and Seki, Eiji, 5,346,645, Cl. 252-194.000.

Apple Computer, Inc.: *See*—
Herron, Matt; and Blakely, David, 5,347,425, Cl. 361-683.000.

Appleman, Kenneth H.: *See*—
Filepp, Robert; Gordon, Michael L.; Bidewell, Alexander W.; Young, Francis C.; Wolf, Allan M.; Meo, Sam; Tiemann, Duane; Cohen, Robert D.; Bellar, Mel; Appleman, Kenneth H.; Abrahams, Lawrence; and Silfen, Michael J., 5,347,632, Cl. 395-200.000.

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Cathcart, Guy R.; Grossman, Paul D.; Mayrand, P. Eric; Nordman, Eric S.; and Whiteley, Norman M., 5,346,999, Cl. 536-25.410.

Applied Materials, Inc.: *See*—
Cook, Joel M.; and Trow, John R., 5,346,579, Cl. 156-345.000.
Hosokawa, Akihiro, 5,345,999, Cl. 165-80.200.

AptarGroup, Inc.: *See*—
Lay, Dieter, 5,346,100, Cl. 222-153.000.

Aqualini, Matthew: *See*—
Green, Paul A.; Rankin, Russel J.; Boyce, Phillip R.; White, Raymond M.; Buhot, John W.; Heidke, Darryl J.; Leiner, Andrew M.; Finney, Andrew L.; Aqualini, Matthew; Mills, Edward G.; Gibbons, Richard J.; Abood, John C.; Roberts, David G.; and Thomas, David P., 5,346,435, Cl. 452-160.000.

Aqui, Derek G.; and Borden, Peter G., to High Yield Technology. In situ real time particle monitor for a sputter coater chamber. 5,347,138, Cl. 250-573.000.

Arad, Avi, to Toy Biz, Inc. Kit for assembling toy weapons. 5,346,418, Cl. 446-91.000.

Arai, Fumio: *See—*
Komiyama, Yoshizo; Arai, Fumio; Hasegawa, Yutaka; Tanioka, Tetsuya; Sugiyama, Hisataka; Toyama, Yoshiyasu; and Nakanishi, Fusao, 5,346,522, Cl. 65-64.000.

Arai, Kenji: *See—*
Manabe, Akio; Mizutani, Masato; Hirata, Naonori; Uwayokote, Sachiko; Izumi, Kazuo; and Arai, Kenji, 5,346,879, Cl. 504-115.000.

Arai, Nobuichi: *See—*
Sawazaki, Yoshihiko; Okumura, Yasuo; and Arai, Nobuichi, 5,346,634, Cl. 252-30.000.

Arai, Satoshi: *See—*
Ushigami, Yoshiyuki; Arai, Satoshi; Suga, Yozo; Yoshitomi, Yasunari; Takahashi, Nobuyuki; and Senuma, Takehide, 5,346,559, Cl. 148-111.000.

Arai, Yasuo: *See—*
Nitta, Hideo; Kanai, Kunio; and Arai, Yasuo, 5,347,412, Cl. 360-103.000.

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Okuda, Kiyoshi; and Araki, Masatoshi, 5,347,462, Cl. 364-474.340.

Arbogast, Porter. Multiple mirror assembly for solar collector. 5,347,402, Cl. 359-853.000.

ARCH Development Corporation: *See—*
Horwitz, E. Philip; and Dietz, Mark L., 5,346,618, Cl. 210-198.200.
Krauss, Alan R.; Gruen, Dieter M.; and Lamich, George J., 5,347,126, Cl. 250-309.000.

Ardesson, William A. Pin router apparatus. 5,345,984, Cl. 144-145.00A.

Arditti, David; Campana, Mireille; and Gilbert, Henri, to France Telecom. Device for transforming a digital data sequence into a condensed digital data block using tables and logic operators. 5,347,650, Cl. 395-600.000.

Areo-Power Unitized Fueler Company, Inc.: *See—*
De Benedittis, Louis; and Frey, Charles A., Sr., 5,346,093, Cl. 220-565.000.

Argo, Brian P.; and Choy, Clement K., to Clorox Company, The. Thickened aqueous abrasive cleanser with improved colloidal stability. 5,346,641, Cl. 252-163.000.

Arimura, Takashi: *See—*
Kadowaki, Hisashi; and Arimura, Takashi, 5,345,911, Cl. 123-436.000.

Arisaka, Yuichi: *See—*
Chiba, Kazunobu; Sato, Kenichi; and Arisaka, Yuichi, 5,347,406, Cl. 360-33.100.

Arisman, Mark; Tomer, Mike; Jermolojevs, Terry; Eyler, Bill; Tate, Dave; Morgan, Greg; and Aldous, John, to Ryland Homes. Roof lifeline anchor. 5,346,036, Cl. 182-3.000.

Aritsuka, Makoto; Mimoto, Atsuhisa; and Harada, Isao, to Mitsui Toatsu Chemicals, Inc. Process for the preparation of partially-substituted fluorosilane. 5,346,682, Cl. 423-342.000.

Arlt, Dieter: *See—*
Grosse-Bley, Michael; Bomer, Bruno; Grosser, Rolf; Arlt, Dieter; and Lange, Walter, 5,347,042, Cl. 560-153.000.

Armstrong, Michael J.: *See—*
Nussbaum, William E.; and Armstrong, Michael J., 5,346,196, Cl. 270-54.000.

Armstrong, Ross L.; and Meiklejohn, George A., to Digital Equipment International Ltd. Semiconductor chip test jig. 5,347,215, Cl. 324-158.100.

Armstrong World Industries, Inc.: *See—*
Graham, Auston B., 5,345,695, Cl. 34-94.000.
Lewicki, Walter J., Jr.; and Bowers, John H., 5,347,296, Cl. 346-153.100.

Arnason, Orn: *See—*
King, Alan M.; and Arnason, Orn, 5,346,098, Cl. 222-146.500.

Arndt, Otto; Fuchs, Hermann; and Gilb, Walter, to Hoechst Aktiengesellschaft. Process of the preparation of 2,5-di-phenylamino-terephthalic acid and its dialkyl esters in a high purity. 5,347,038, Cl. 560-48.000.

Arnissolle, Yves: *See—*
Perouse, Eric; Richard, Thierry; and Arnissolle, Yves, 5,346,115, Cl. 227-179.000.

Arrendale, Hubert G., to Martin Marietta Corporation. Gas cooled high voltage leads for superconducting coils. 5,347,251, Cl. 335-216.000.

Arthur, William: *See—*
Guerro, Gerald J.; Arthur, William; and Singh, Balwant, 5,346,947, Cl. 524-591.000.

Asahi Glass Company Ltd.: *See—*
Osada, Koichi; Ando, Eiichi; and Mitsui, Akira, 5,346,770, Cl. 428-432.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Akiyama, Minoru; and Doi, Yoshiharu, 5,346,817, Cl. 435-135.000.
Yosuke, Honda; Tsuneaki, Tanabe; and Yoshihito, Yaginuma, 5,346,542, Cl. 106-194.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Misawa, Masayuki, 5,347,335, Cl. 354-288.000.
Takahashi, Hiroyuki, 5,347,333, Cl. 354-187.000.
Takano, Masatoshi; and Hokamura, Satoshi, 5,346,197, Cl. 271-9.000.
Yoneyama, Shuji; and Sensui, Takayuki, 5,347,399, Cl. 359-690.000.

Asanuma, Goro; and Tamai, Yoshin, to Kuraray Co., Ltd. Process for producing (±)-2,5,5,8a-tetramethyl-1-(carboxymethyl)-2-hydroxydecalin. 5,347,048, Cl. 562-501.000.

Asch, Sabine. Three-dimensional puzzle. 5,346,215, Cl. 273-155.000.

Asea Brown Boveri AB: *See—*
Isaksson, Jan, 5,347,605, Cl. 385-92.000.

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Matyscak, Kamil, 5,346,365, Cl. 415-213.100.

Asghar, Safdar M.; Bartkowiak, John G.; and Nix, Michael A., to Advanced Micro Devices, Inc. Digital signal processing apparatus. 5,347,480, Cl. 364-736.000.

Ashby, Laurin R.; and Steininger, Franz, to Motorola, Inc. Interface control logic for embedding a microprocessor in a gate array. 5,347,181, Cl. 307-465.000.

Asher, Marc A.: *See—*
Stahurski, Terrence M.; Asher, Marc A.; Carson, William L.; Stripgen, Walter E.; Heinig, Charles F.; Gaines, Robert W., Jr.; and Janson, Frank S., 5,346,493, Cl. 606-61.000.

Ashfield, James C.; Baker, Gregory D.; Nevins, Robert C.; Raynes, Jeffrey A.; Sultan, Aaron T.; Parks, Joseph K.; Rhodin, Michael D.; and Sayre, Reid L., to International Business Machines, Inc. System for selectively intercepting and rerouting data network traffic. 5,347,633, Cl. 395-200.000.

Ashley, Walter L., Jr., to Hayes Wheels International, Inc. Method for producing a full face fabricated vehicle wheel. 5,345,676, Cl. 29-894.323.

Ashtech, Inc.: *See—*
Abadi, Kamran K.; and Evans, Steven C., 5,347,546, Cl. 375-75.000.

Askin, Ronald C., to Crisafulli Pump Company, Inc. Fish mincer pump. 5,346,143, Cl. 241-46.017.

Aslakson, Joel T.: *See—*
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Associated Universities, Inc.: *See—*
Bertuccio, Giuseppe; Rehak, Pavel; and Xi, Deming, 5,347,231, Cl. 330-300.000.

Astrella, Joseph G. Guitar hanging fixture. 5,346,168, Cl. 248-278.000.

Astro Containers, Inc.: *See—*
Strawser, Harry L., 5,346,094, Cl. 220-571.000.

AT/COMM Incorporated: *See—*
Hassett, John J., 5,347,274, Cl. 340-988.000.

AT&T Bell Laboratories: *See—*
Basavanhally, Nagesh R., 5,346,583, Cl. 156-629.000.
Blyler, Lee L., Jr.; Grimes, Gary J.; and Haas, Lawrence J., 5,346,655, Cl. 264-1.280.
Bortolini, James R., 5,347,227, Cl. 328-63.000.
Byrne, Erin K.; Chakrabarti, Utpal K.; and Hayes, Todd R., 5,346,855, Cl. 437-129.000.
Degani, Yinon; Dudderar, Thomas D.; and Woods, William L., Jr., 5,346,118, Cl. 228-180.220.
Pitzele, Lennart D.; and Wilkowski, Matthew A., 5,345,670, Cl. 29-606.000.
Tsang, Won-Tien, 5,346,581, Cl. 117-97.000.

AT&T Laboratories: *See—*
Jin, Sungho; and McCormack, Mark T., 5,346,775, Cl. 428-614.000.

Atherton, Richard T.: *See—*
Oakley, Edward A.; Crow, Harry K.; Anderson, Thomas M.; Atherton, Richard T.; and Fehn, Berthold A., 5,346,368, Cl. 417-63.000.

Atlantic Research Corporation: *See—*
Rose, James; and Woods, Charles D., 5,345,876, Cl. 102-531.000.

Atlantic Richfield Company: *See—*
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Hongo, Hitoshi; Yamada, Mitsuho; Uomori, Kenya; Yoshimatsu, Hiroshi; Ueno, Keiichi; Fujii, Mitsuru; Murakami, Shinji; Miyazawa, Jiro; Nakano, Norihito; Fukatsu, Ryo; and Takahata, Naohiko, 5,345,944, Cl. 128-742.000.

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Audi AG: *See—*
Enning, Norbert; and Timm, Heinrich, 5,346,275, Cl. 296-195.000.
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Augelli-Szafran, Corinne E.; Barrett, Stephen D.; Caprathe, Bradley W.; Galan, Adam A.; Jaen, Juan C.; Lauffer, David J.; Moos, Walter H.; Pavia, Michael R.; Sanders, Kathryn B.; Tecle, Haile; and Thomas, Anthony J., to Warner-Lambert Company. Azabicyclo and azacyclo oxime and amine cholinergic agents and methods of treatment. 5,346,911, Cl. 514-339.000.

Austin, Lowell W.: *See—*
Swanson, John L.; and Austin, Lowell W., 5,346,607, Cl. 205-99.000.

Autechaud, Eric: *See—*
Bascans, Remi; Fleury, Christophe; Autechaud, Eric; and N'Guyen, Christian, 5,347,180, Cl. 307-464.000.

Auto-Shade, Inc.: *See—*
Book, Steven C., 5,346,309, Cl. 383-4.000.

Automax, Inc.: *See—*
Willoughby, Christopher H., 5,345,856, Cl. 91-386.000.

Automobiles Citroen: *See—*
Lecoco, Jean-Luc; and Magne, Pierre, 5,347,543, Cl. 375-36.000.

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Automotive Systems Laboratory, Inc.: *See—*
Anderson, Steven J., 5,345,875, Cl. 102-530.000.
Burnard, Dennis W.; Kmenta, Steven; and Hughes, Timothy E., 5,346,251, Cl. 280-737.000.

Avdel Systems Limited: *See—*
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Hand, Bryan; Mizak, Ronald D.; and Piepho, Robert R., 5,346,148, Cl. 241-293.000.

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Babitch, Daniel, to Trimble Navigation Limited. Automatic antenna pointing system based on global positioning system (GPS) attitude information. 5,347,286, Cl. 342-359.000.

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Bachmann, Walter A.; and Hale, Peggy A., to National Semiconductor Corporation. Array spreading resistance probe (ASRP) method for profile extraction from semiconductor chips of cellular construction. 5,347,226, Cl. 324-724.000.

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Baker, Gregory D.: *See—*
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Rivers, Gordon T.; and Rybacki, Richard L., 5,347,004, Cl. 544-180.000.
Ross, Richard J., 5,346,014, Cl. 166-297.000.

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Baker, Raymond; Saunders, John; Willson, Timothy M.; and Kulagowski, Janusz J., to Merck Sharpe & Dohme Ltd. Substituted pyridines, their preparation, formulations and use in dementia. 5,346,906, Cl. 514-305.000.

Baker, William J., to National-Oilwell. Pressure equalized flow control valve. 5,346,178, Cl. 251-315.0SE.

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Balloni, Riccardo; and Tsai, M. Lawrence, to Mobil Oil Corporation. Multilayer film structure. 5,346,763, Cl. 428-349.000.

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Bandyopadhyay, romode R., to United States of America, Navy. Elastic micro-fabricated surface layer for reducing turbulence and drag on an object while it moves through a fluid medium. 5,346,745, Cl. 428-156.000

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Barada, Andrew; and Hurwitt, Steven D. Sputter coating collimator with integral reactive gas distribution. 5,346,601, Cl. 204-192.150.

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Barber, Lois M., to LMB Hand Rehab Products, Inc. Adjustable tension finger or toe splint. 5,346,462, Cl. 602-22.000.

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Bascans, Remi; Fleury, Christophe; Autechaud, Eric; and N'Guyen, Christian, to Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle. Three-input signal section, application to a selector with N inputs and to a poller with N inputs. 5,347,180, Cl. 307-464.000.

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Gessner, Thomas; and Mayer, Udo, 5,347,022, Cl. 552-113.000.
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Keller, Harald; Schrepp, Wolfgang; and Fuchs, Harald, 5,347,015, Cl. 548-455.000.
Krallmann, Reinhold; Laws, Regina; and Schrott, Wolfgang, 5,346,510, Cl. 8-638.000.
Mueller, Thomas; Eicken, Karl; Harreus, Albrecht; Koenig, Hartmann; Rentzea, Costin; Ammermann, Eberhard; and Lorenz, Gisela, 5,346,899, Cl. 514-256.000.
Reichelt, Helmut; and Grund, Clemens, 5,347,032, Cl. 558-443.000.
Schneider, Reinhard; Grund, Norbert; and Hartmann, Heinrich, 5,346,986, Cl. 528-495.000.
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BASF Magnetics GmbH: *See*—
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Bass, Craig D.; Valenti, Richard D., Jr.; and Flounders, Emer C., Jr System and method of use for conducting a neutral corrosion survey 5,347,212, Cl. 324-67.000.

Bassett, H. Eugene, to Dover Resources, Inc. Fuel injection valve. 5,346,136, Cl. 239-533.200.

Bassett, James H. Forged clearing wheel for agricultural residue 5,346,020, Cl. 172-540.000.

Batani, Hassan; Temmesfeld, Axel; and Greindl, Eduard, to BMW AG. Method and apparatus for holding an assembly for mounting on structural parts. 5,346,029, Cl. 180-68.400.

Batawi, Emad; and Peters, John, to Sulzer Innotec AG. Method of production of iron aluminide materials. 5,346,562, Cl. 148-542.000.

Batliner, Rainer: *See*—
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Bauer, Wolfgang; and Koumbouris, Wassilis, to Cassella AG. Process for the preparation of 4-(2-aminophenylthio)naphthalic anhydride derivatives. 5,347,019, Cl. 549-232.000.

Bauman, Joseph H., and Nichols, Claude W., III, to Hewlett-Packard Company. Method and device for accessing shared character patterns, and resulting stored decompressible font structure. 5,347,266, Cl. 340-735.000.

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Hammen, Gunter; Schieb, Thomas; and Wershofen, Stefan, 5,347,034, Cl. 560-25.000.
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Beales, Jonathan T., to International Paper Company. Web tuck paperboard carton. 5,346,121, Cl. 229-148.000.

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Beauseigneur, Patricia A.; Lachman, Irwin M.; and Patil, Mallanagouda D., to Corning Incorporated. Method for improving the thermal shock resistance of a washcoated body. 5,346,722, Cl. 427-300.000.

Beck, Charles E. J.: *See*—
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Beck, Jeffrey S.: *See*—
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Becker, Winfried, to Hoechst Aktiengesellschaft. Molding of sintered strontium/calcium indate and the use thereof. 5,346,538, Cl. 106-38.900.

Behm, William F.; Litman, Stanley; and Walton, Bradly W., to Scientific Games, Inc. Game ticket confusion patterns. 5,346,258, Cl. 283-102.000.

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Belanger, Judy A. Mitten set. 5,345,610, Cl. 2-158.000.

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Belenkiy, Yuriy; Cheatham, Dennis; Clairadin, Xavier; Grois, Igor; and Margolin, Mark, to Molex Incorporated. Right angle cable strain relief. 5,347,603, Cl. 385-86.000.

Belie, Robert G.; and Nicolai, Leland M., to Lockheed Corporation. Cargo compartment for a lighter-than-air vehicle. 5,346,162, Cl. 244-137.100.

Bell, Andrew S.; Brown, David; and Terrett, Nicholas K., to Pfizer Inc. Pyrazolopyrimidinone antianginal agents. 5,346,901, Cl. 514-258.000.

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Filepp, Robert; Gordon, Michael L.; Bidewell, Alexander W.; Young, Francis C.; Wolf, Allan M.; Meo, Sam; Tiemann, Duane; Cohen, Robert D.; Bellar, Mel; Appleman, Kenneth H.; Abrahams, Lawrence; and Silfen, Michael J., 5,347,632, Cl. 395-200.000.

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Bentley, Robert L.; Savage, Michael P.; and Shelton, Kenneth W., to Ciba-Geigy Corporation. Thio(cyclo) alkanepolycarboxylic acids containing heterocyclic substituents. 5,347,008, Cl. 548-170.000.

Benuzzi, Piergiorgio, to Giben Impianti S.P.A. Apparatus for automatically stacking differently sized panels or packes of panels. 5,346,358, Cl. 414-790.900.

Benzing, Jeffrey C.; Broadbent, Eliot K.; and Rough, Kirkwood H., to Novellus Systems, Inc. Induction plasma source. 5,346,578, Cl. 156-345.000.

Bergemont, Albert, to National Semiconductor Corporation. Method of making alternate metal/source virtual ground flash EPROM cell array. 5,346,842, Cl. 437-52.000.

Bergman, Frederick C.: *See*—
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Berner International GmbH: *See*—
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Bernhardt, Bruno, to IEG Industrie-Engineering GmbH. Method of and arrangement for obtaining liquids and/or gases from ground or rock layers. 5,345,655, Cl. 166-370.000.

Bernhardt, Bruno, to IEG Industrie-Engineering GmbH. Method of and arrangement for determining geohydraulic permeability of ground regions through which ground water flows. 5,345,820, Cl. 73-155.000

Bernhardt, Bruno, to IEG Industrie-Engineering GmbH. Method of yielding oil residues or oil containing liquids from contaminated ground layers. 5,346,330, Cl. 405-128.000.

Bernini, Antonio: *See*—
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Berthold, Fritz, to Laboratorium Prof. Dr. Rudolf Berthold GmbH & Co., KG. Method and device for measuring the distribution of radioactivity on a flat sample. 5,347,130, Cl. 250-385.100.

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Bertrand Faure Ltd.: *See*—
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Bertrand, Jacques C.; Bayley, Denise R.; Pickering, Thomas R.; and Ciccarelli, Roger N., to Xerox Corporation. Toner compositions with aluminum charge enhancing additives. 5,346,793, Cl. 430-110.000.

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Berven, Chris: *See*—
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Betteridge, Timothy D.; and Lawler, Adrian K., to Britax Weathershields Limited. Latch for hinged panel. 5,346,267, Cl. 292-263.000.

Bettinelli, Armand, to N-Xeram. Process for obtaining insulating ceramic inserts by multilayer stacking. 5,346,749, Cl. 428-209.000.

Bettis, Peter: *See*—
Allred, Jimmie B., III; Bettis, Peter; and Decerce, Karl, 5,345,925, Cl. 128-4.000.

Beyer, Donald R.: *See*—
Kurby, Christopher N.; Beyer, Donald R.; Davies-Walsh, Anne P.; Fluharty, Kevin L.; and Miller, Matthew R., 5,347,542, Cl. 375-17.000.

BFGoodrich Company, The: *See*—
Will, Robert J., 5,346,759, Cl. 428-329.000.

Bhagwat, Anil, to Xerox Corporation. Dispensing cartridge having a resilient follower. 5,346,102, Cl. 222-206.000.

Bialo, Charles A.: *See*—
Faroudja, Yves C.; and Bialo, Charles A., 5,347,314, Cl. 348-448.000.

Bialy, Louis; and Mistry, Rajendra V., to Otis Elevator Company. Hydraulic elevator oil tank. 5,346,371, Cl. 417-312.000.

Bidewell, Alexander W.: *See*—
Filepp, Robert; Gordon, Michael L.; Bidewell, Alexander W.; Young, Francis C.; Wolf, Allan M.; Meo, Sam; Tiemann, Duane; Cohen, Robert D.; Bellar, Mel; Appleman, Kenneth H.; Abrahams, Lawrence; and Silfen, Michael J., 5,347,632, Cl. 395-200.000.

Biegel, George E., to Stocker & Yale, Inc. Varying inductances. 5,347,257, Cl. 336-134.000.

Bienvenu, Donald J. Video guide. 5,346,326, Cl. 402-79.000.

Bila, Vincent J.: *See*—
Onan, David D.; Bila, Vincent J.; Haney, James L.; Folmnsbee, Gary E.; Koch, Ronney R.; Stilley, Randall D.; and Watters, Larry T., 5,346,011, Cl. 166-291.000.

Billeb, Gilbert; and Burg, Peter, to Hoechst Aktiengesellschaft. Process for preparing aromatic aldehydes. 5,347,054, Cl. 568-437.000.

Billet, Phillipe; and Paris, Jean, to Salomon S.A. Alpine ski boot. 5,345,698, Cl. 36-117.000.

Billings, William C.: *See*—
Dillon, Patrick W.; and Billings, William C., 5,346,007, Cl. 166-254.000.

Billotte, Delmont L.: *See*—
deNeuf, Joel B.; Helms, Bruce E.; and Billotte, Delmont L., 5,347,423, Cl. 361-313.000.

Bio-Cybernetics International: *See*—
Heinz, Thomas J.; Walker, Tom; and Plambeck, Eric D., 5,346,461, Cl. 602-19.000.

Biomagnetic Technologies, Inc.: *See*—
Warden, Laurence; and Esser, Keith, 5,346,570, Cl. 156-191.000.

Bisbing, Robert H. Rack and pinion pull-up latch. 5,346,266, Cl. 292-64.000.

Bissett, Thomas D.: *See*—
Hawkins, Thomas B.; Bruckert, William; and Bissett, Thomas D., 5,347,559, Cl. 377-54.000.

Bitz, Ray. Trap for small animals. 5,345,710, Cl. 43-61.000.

Bjorkman, Mats, to RB Larmprodukter AB. Method and apparatus for automatically controlling a water supply using movement detector means. 5,347,264, Cl. 340-611.000.

Black, David D.; and Wagner, John B., to SKF USA Inc. Method of manufacturing a composite seal. 5,346,662, Cl. 264-138.000.

Black & Decker, Inc.: *See*—
Farrington, Richard I.; and Jalbert, David, 5,345,703, Cl. 38-77.500.

Black, Lawrence A.: *See*—
Dellaria, Joseph F.; Basha, Anwer; Black, Lawrence A.; Dorn, Linda J.; and Lee, Wendy, 5,346,914, Cl. 514-402.000.

Blackwell, Ray A.; and Wilk, Peter J. Lighting system and camera for operating room. 5,347,431, Cl. 362-11.000.

Blakely, David: *See*—
Herron, Matt; and Blakely, David, 5,347,425, Cl. 361-683.000.

Blalock, Guy T.: *See*—
Doan, Trung T.; and Blalock, Guy T., 5,346,585, Cl. 156-643.000.

Blandford, Robert R. Personal computer diary. 5,347,579, Cl. 380-25.000.

Block, James E., to Shotstop Target Systems, Inc. Reset target system. 5,346,226, Cl. 273-388.000.

Blommaert, Franciscus J. J.: *See*—
Van Haaren, Johannes A. M. M.; Blommaert, Franciscus J. J.; and Verhulst, Antonius G. H., 5,347,393, Cl. 359-254.000.

Bloom, Alan R., to Hewlett-Packard Company. Analog ramp generator with digital correction. 5,347,176, Cl. 307-490.000.

Bloom, Leonard: *See*—
Norment, Vincent E., 5,345,700, Cl. 36-139.000.

Bloor, Alan S., to Coal Industry (Patents) Limited. Strata movement indicator. 5,345,685, Cl. 33-308.000.

Blount, Curtis G.; Hightower, Charles M.; and Hailey, Charles D., to Atlantic Richfield Company. Method and apparatus for setting a whipstock. 5,346,017, Cl. 166-380.000.

Blumberg, Murray B.; and Hoffman, William M., to Technokantoor Limited. Method of manufacturing a paper binder. 5,346,573, Cl. 156-256.000.

Blume, George H. Valve body design for use with pumps handling abrasive fluids. 5,345,965, Cl. 137-533.250.

Blyler, Lee L., Jr.; Grimes, Gary J.; and Haas, Lawrence J., to AT&T Bell Laboratories. Method of thermoforming an optical fiber end. 5,346,655, Cl. 264-1.280.

BMW AG: *See*—
Batani, Hassan; Temmesfeld, Axel; and Greindl, Eduard, 5,346,029, Cl. 180-68.400.

Board of Regents, The University of Texas System: *See*—
Lipsky, Peter E.; and Thiele, Dwain L., 5,346,888, Cl. 514-19.000.

Board of Trustees, Leland Stanford Jr. University: *See*—
Albrecht, Thomas; Tortonese, Marco; and Barrett, Robert, 5,345,815, Cl. 73-105.000.

Bobinger, Karl J.: *See*—
Buhler, James E.; Demarest, Scott W.; and Bobinger, Karl J., 5,346,659, Cl. 264-68.000.

Bobrich, Michael: *See*—
Roller, Hermann; Engelhardt, Peter; Baur, Reinhold; Bobrich, Michael; Latzel, Werner; Lenz, Werner; and Suettinger, Rudolf, 5,346,761, Cl. 428-331.000.

BOC Group plc, The: *See*—
Westley, David R., 5,346,183, Cl. 266-197.000.

Bodenmuller, Heinz; and Dessauer, Andreas, to Boehringer Mannheim GmbH. Method of screening for small cell lung carcinoma. 5,346,813, Cl. 435-7.230.

Boeck, Leon. Folding tow bar apparatus and methods. 5,346,243, Cl. 280-478.100.

Boehringer Ingelheim GmbH: *See—*
Aigner, Michael; Dersch, Wolfgang; Reichert, Dieter; Schwall, Horst; and Warth, Werner, 5,347,020, Cl. 549-274.000.

Boehringer Mannheim GmbH: *See—*
Bodenmuller, Heinz; and Dessauer, Andreas, 5,346,813, Cl. 435-7.230

Boekelheide, Lee: *See—*
Providenza, John R.; and Boekelheide, Lee, 5,347,631, Cl. 395-164.000.

Bogner, Alan E.; Cherish, Peter; and Schamp, Scott T., to M. W. Kellogg Company, The. High temperature liquid injection apparatus. 5,346,133, Cl. 239-132.300.

Bogue, Beuford A.; and Hrubec, John A., to Fuisz Technologies Ltd Apparatus for flash flow processing having feed rate control. 5,346,377, Cl. 425-9.000.

Boidol, Werner: *See—*
Pohlenz, Hans-Dieter; Boidol, Werner; and Streber, Wolfgang, 5,347,076, Cl. 800-205.000

Boigegrain, Robert; Cecchi, Roberto; and Boveri, Sergio, to Sanofi (RR) and (RS stereoisomers of N-(7-ethoxycarbonylmethoxy-1,2,3,-tetrahydronaphth-2-yl)-2-(3-chlorophenyl)-2-hydroxyethanamine and their pharmaceutically acceptable salts. 5,347,037, Cl. 560-45.000.

Bokser, Mindy R., to Palantir Corporation (Calera Recognition Systems). Preprocessing means for use in a pattern classification system. 5,347,595, Cl. 382-36.000.

Bolongeat-Mobleu, Roger; Burnaz, Frederic; and Malkin, Peter, to Merlin Gerin. Electrical circuit breaker with two vacuum cartridges in series. 5,347,096, Cl. 200-148.00B.

Bolongeat-Mobleu, Roger; and Malkin, Peter, to Gerin, Merlin. Electrical circuit breaker with rotating arc and self-extinguishing expansion. 5,347,097, Cl. 200-148.00B.

Bomer, Bruno: *See—*
Grosse-Bley, Michael; Bomer, Bruno; Grosser, Rolf; Arlt, Dieter; and Lange, Walter, 5,347,042, Cl. 560-153.000.

Bonafini, James A., Jr.: *See—*
Ellis, Edward J.; Olson, Alfred P.; and Bonafini, James A., Jr., 5,346,976, Cl. 526-279.000.

Boner, Heinrich: *See—*
Fullemann, Jorg; and Boner, Heinrich, 5,346,391, Cl. 431-116.000.

Bonner, Kurt J.; and Alvarez, Jose M., Jr., to United Technologies Corporation. Mechanical damper. 5,346,362, Cl. 415-191.000.

Bonutti, Peter M. Arthroscopic retractors. 5,345,927, Cl. 128-20.000.

Booher, Richard N.; Flaugh, Michael E.; Lawhorn, David E.; Martinelli, Michael J.; Paget, Charles J., Jr.; and Schaus, John M., to Eli Lilly and Company. 6-Heterocyclic-4-amino-1,2,2a,3,4,5-hexahydrobenz[cd]indoles. 5,347,013, Cl. 548-436.000.

Book, Steven C., to Auto-Shade, Inc. Collapsible, portable, multiple use,insulated bag with companion attachable multiple use bag. 5,346,309, Cl. 383-4.000.

Bookbinder, Mark J.; Bellinger, Christopher M.; and Daniels, Michael E., to General Motors Corporation. Axial thrust applying structure for the scrolls of a scroll type compressor. 5,346,376, Cl. 418-55.400.

Borden, B. Michael; Borden, Brian C.; and Page, Ricky D., to Borden, B. Michael. Environmentally secure polished rod liner head. 5,346,004, Cl. 166-84.000.

Borden, Brian C.: *See—*
Borden, B. Michael; Borden, Brian C.; and Page, Ricky D., 5,346,004, Cl. 166-84.000.

Borden, Inc.: *See—*
Morse, David R., 5,346,755, Cl. 428-286.000.

Borden, Peter G.: *See—*
Aqui, Derek G.; and Borden, Peter G., 5,347,138, Cl. 250-573.000.

Boreas, Inc.: *See—*
Liepert, Anthony G.; Crunkleton, James A.; Gallagher, Gregory R.; Smith, Joseph L., Jr.; and Cogswell, Frederick J., 5,345,769, Cl. 62-6.000.

Borg-Warner Automotive Electronic & Mechanical Systems Corporation: *See—*
Naffziger, Lee A., 5,345,967, Cl. 137-614.200.

Borg-Warner Automotive, Inc.: *See—*
Hunter, Francis J.; Wigsten, Mark M.; and Kuznets, Sam A., 5,346,436, Cl. 474-110.000.

Borg-Warner Automotive, K.K.: *See—*
Okuda, Tomonori; Kotera, Tetsuji; and Morishige, Kouji, 5,345,753, Cl. 59-5.000.

Borg-Warner Automotive Transmission & Engine Components Corporation: *See—*
Puchalla, Christopher P.; Grzesiak, Anthony J.; and Slager, Douglas J., 5,346,040, Cl. 188-77.00W.

Born, Maurice: *See—*
Parc, Guy; and Born, Maurice, 5,346,636, Cl. 252-49.900.

Bornstein, Norman S.: *See—*
Allen, William P.; Bornstein, Norman S.; Chin, Stephen; DeCrescente, Michael; Duhl, David N.; Parille, Donald R.; Pike, Roscoe A.; and Smeggil, John G., 5,346,563, Cl. 148-675.000.

Borrione, Pierluigi A. V.; Morris, Gregory J. E.; Marzupio, Maurizio; and Pillet, Michel, to De Nora Permelec S.p.A. Method for bypassing a monopolar electrolyzer in series. 5,346,596, Cl. 204-1.110.

Bortnick, Newman M.: *See—*
Wu, Jiun-Chen; Work, William J.; Dunkelberger, David L.; and Bortnick, Newman M., 5,346,954, Cl. 525-85.000.

Bortolini, James R., to AT&T Bell Laboratories. Clock phase adjustment between duplicated clock circuits. 5,347,227, Cl. 328-63.000.

Bosoni, Giannino, to Schiavi Cesare Costruzioni Meccanichi S.p.A. Device for hot-air drying of a film printed in a rotogravure machine. 5,345,696, Cl. 34-638.000.

Bossi, Donald E.: *See—*
Ade, Robert W.; and Bossi, Donald E., 5,347,601, Cl. 385-3.000.

Bott, Richard R.: *See—*
Estell, David A.; Wells, James A.; and Bott, Richard R., 5,346,823, Cl. 435-222.000.

Bouix, Herve ; and de Laforcade, Vincent, to L'Oreal. Dispensing device for a receptacle containing a product of liquid to pasty consistency. 5,346,107, Cl. 222-490.000.

Bouleau, Jean-Paul A.: *See—*
Guillot, Gerard L. H.; and Bouleau, Jean-Paul A., 5,345,704, Cl. 38-77.830.

Boulos, Edward N.: *See—*
Jones, James V.; and Boulos, Edward N., 5,346,867, Cl. 501-71.000.

Boveri, Sergio: *See—*
Boigegrain, Robert; Cecchi, Roberto; and Boveri, Sergio, 5,347,037, Cl. 560-45.000

Bowell, Richard A., to Tri Dayton, Inc. Banded piston and method of making. 5,345,860, Cl. 92-192.000.

Bowen, Wayne; de Costa, Brian R.; Dominguez, Celia; He, Xiao-Shu; and Rice, Kenner C., to National Institutes of Health; and Brown University. Nitrogen-containing cyclohetero cycloheteroaminoaryl derivatives for CNS disorders. 5,346,908, Cl. 514-316.000.

Bowers, John H.: *See—*
Lewicki, Walter J., Jr.; and Bowers, John H., 5,347,296, Cl. 346-153.100.

Bowman, Brent E.: *See—*
Harris, David E.; and Bowman, Brent E., 5,347,135, Cl. 250-548.000.

Bowman, Robert L., to United States of America, Health and Human Services. Oxy-hydrogen propelled torpedo for introducing angioplasty guide wire. 5,346,473, Cl. 604-95.000.

Boyce, Phillip R.: *See—*
Green, Paul A.; Rankin, Russel J.; Boyce, Phillip R.; White, Raymond M.; Buhot, John W.; Heidke, Darryl J.; Leiner, Andrew M.; Finney, Andrew L.; Aqualini, Matthew; Mills, Edward G.; Gibbons, Richard J.; Abood, John C.; Roberts, David G.; and Thomas, David P., 5,346,435, Cl. 452-160.000.

Boyer, James A.; and Ballentine, Richard E., to General Motors Corporation. Ignition distributor drive. 5,345,899, Cl. 123-146.50A.

Bozenmayer, Kurt: *See—*
Libutti, Bruce L.; and Bozenmayer, Kurt, 5,346,624, Cl. 210-679.000.

Brabander, Herbert J.: *See—*
Trybulski, Eugene J.; and Brabander, Herbert J., 5,346,910, Cl. 514-326.000.

Bradley, Steven J.: *See—*
Miks, Kathryh F.; Fife, Dennis J.; and Bradley, Steven J., 5,346,512, Cl. 23-302.00A.

Brady, Kevin M.: *See—*
Anderson, Stephen; Brady, Kevin M.; Keyt, Bruce A.; and Presta, Leonard G., 5,346,824, Cl. 435-240.200.

Brady USA, Inc.: *See—*
Jambor, George F., 5,346,341, Cl. 409-132.000.

Braiman, Kenneth S. Process for making ceramic dental crowns. 5,346,397, Cl. 433-223.000.

Brake, Bobby G.: *See—*
Kunzi, Robert A.; Vinson, Edward F.; Totten, Patty L.; and Brake, Bobby G., 5,346,550, Cl. 106-709.000.

Branan, Mac W.: *See—*
Jackson, Gregory D.; Reiff, David E.; and Branan, Mac W., 5,347,123, Cl. 250-229.000.

Brandenburg, Larry R.: *See—*
King, Edward T.; Brandenburg, Larry R.; and Henig, Yitshak I., 5,345,761, Cl. 60-274.000.

Brandstetter, Hermann: *See—*
Toral, Jose; Brandstetter, Hermann; Lutz, Gottfried; and Thiele, Hartmut, 5,346,741, Cl. 428-65.000.

Brandt, William H. A.: *See—*
Davis, Mark F.; Glaser, Paul J.; Brandt, William H. A.; and Somwaru, Rudolph, 5,347,564, Cl. 379-12.000.

Brassard, David M.; Haas, Hans E.; and Friedel, David W., to Loctite Corporation. Two-part fast curing RTV silicone for formed-on-part automotive gasket. 5,346,940, Cl. 524-267.000.

Brassert, Walter L.; and Dahlstrand, Paul N., to Northern Research & Engineering Corporation. Absorption dynamometer and torque measurement therefor. 5,345,827, Cl. 73-862.150.

Braunlich, Mark F., to Stanley Works, The. Fastening tool having improved pressure regulator device. 5,346,021, Cl. 173-177.000.

Braunstein, Edit L.; Dostie, Robert L.; Germano, Keith H.; Lamb, Steve C.; Penet, Christopher S.; and Richards, Paul B., to Genencor International, Inc. Crystalline cellulose production. 5,346,589, Cl. 162-72.000.

Bray, Barrie A.: *See—*
Scarberry, Paul W.; and Bray, Barrie A., 5,346,301, Cl. 383-5.000.

Bredy, Thierry: *See—*
Crepin, Roger; and Bredy, Thierry, 5,345,853, Cl. 89-1.818.

Bree, Gary D.: *See—*
Priest, William L.; Bree, Gary D.; and Compeau, David E., 5,346,272, Cl. 296-146.110.

Bregen, Michael F.: *See—*
Regula, Donald W.; Bregen, Michael F.; Szabo, Zoltan; and Gardiner, Barry N., 5,346,501, Cl. 606-151.000.

Brennan, Michael J.; and Noel, Clyde D., to McDermott International, Inc. Automatic tracking system for pipeline welding. 5,347,101, Cl. 219-124.340.

Bretschneider, Joachim: *See—*
Winter, Ernst; Marwan, Friedrich; Bretschneider, Joachim; and Drexler, Hubert, 5,346,768, Cl. 428-426.000.

Brewer, Susan C.; Brink, Kathy A.; Krebs, William H., Jr.; and Welch, Robert P., to International Business Machines Corporation. Method of graphically accessing electronic data. 5,347,628, Cl. 395-159.000.

Brewer, William C.; Daniel, Edward A.; and Bergman, Frederick C., to Minater Machine Company, The. Press adjustment screw mechanism. 5,345,861, Cl. 100-257.000.

Bridgesteon Corporation: *See—*
Wilson, Paul B., 5,347,588, Cl. 382-1.000.

Bridgestone Corporation: *See—*
Siegenthaler, Karl J., 5,346,663, Cl. 264-150.000.

Bridgestone/Firestone, Inc.: *See—*
Hergenrother, William L.; and Morrow, Martin E., 5,346,962, Cl. 525-281.000.
Kassaw, Calvin M., Jr.; and Klimek, Jolanta K., 5,346,378, Cl. 425-28.100.

Brimo, Joseph, II. Reusable beverage can cap. 5,346,088, Cl. 220-357.000.

Brink, Kathy A.: *See—*
Brewer, Susan C.; Brink, Kathy A.; Krebs, William H., Jr.; and Welch, Robert P., 5,347,628, Cl. 395-159.000.

Britax Weathershields Limited: *See—*
Betteridge, Timothy D.; and Lawler, Adrian K., 5,346,267, Cl. 292-263.000.

British Gas PLC: *See—*
Elgar, Anthony D.; Sales, Brian T.; and Parkes, Adrian S., 5,345,971, Cl. 138-98.000.

British Technology Group Limited: *See—*
Leach, Martin O.; and Sharp, Jonathan C., 5,347,217, Cl. 324-309.000.

British Technology Group U.S.A. Inc.: *See—*
Renzoni, George E.; Schindele, Deborah C.; Theodore, Louis J.; Leznoff, Clifford C.; Fearon, Karen L.; and Pepich, Barry V., 5,346,670, Cl. 422-52.000.

Broad, Sherry A.: *See—*
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Broadbent, Eliot K.: *See—*
Benzing, Jeffrey C.; Broadbent, Eliot K.; and Rough, Kirkwood H., 5,346,578, Cl. 156-345.000.

Brochhagan, Thomas: *See—*
Leone, Richard J.; Cummins, Robert F.; Vitiello, Joseph; and Brochhagan, Thomas, 5,347,094, Cl. 187-140.000.

Brockman, Thomas R.; and Dillon, Mark, to Fairborn USA Inc. Truck/trailer gap fill closure for storage terminal dock. 5,345,733, Cl. 52-173.200.

Brod, David M.: *See—*
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Brody, John F.: *See—*
Robbins, John L.; Marucchi-Soos, Elise; Johnson, Jack W.; and Brody, John F., 5,346,871, Cl. 502-61.000.

Broersma, Dennis W.; and Broersma: Donna A. Portable guitar stand. 5,346,073, Cl. 211-13.000.

Broersma: Donna A.: *See—*
Broersma, Dennis W.; and Broersma: Donna A., 5,346,073, Cl. 211-13.000.

Brokaw, A. Paul, to Analog Devices, Inc. Current monitoring circuit having controlled sensitivity to temperature and supply voltage. 5,347,224, Cl. 324-522.000.

Brokaw, A. Paul: *See—*
Sherman, Steven J.; Brokaw, A. Paul; Tsang, Robert W. K.; and Core, Theresa, 5,345,824, Cl. 73-517.00B.

Brook, Richard M.: *See—*
Thomas, James R.; Nye, Larry W.; and Brook, Richard M., 5,346,858, Cl. 437-189.000.

Brooks, Clifton A.: *See—*
Hargis, Gary W.; Francis, David; and Brooks, Clifton A., 5,346,101, Cl. 222-195.000.

Brophy, Dennis M. Dust guard mounting. 5,345,989, Cl. 160-354.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Kimura, Yasuo, 5,346,457, Cl. 493-320.000.
Okamori, Shuhei, 5,346,322, Cl. 400-709.000.

Brown, Bennett W.: *See—*
Brown, Richard S.; and Brown, Bennett W., 5,346,089, Cl. 220-403.000.

Brown, Cesare W.: *See—*
Cocca, Lorraine A.; Turbeville, Gary L.; and Brown, Cesare W., 5,347,437, Cl. 362-104.000.

Brown, Charles A.: *See—*
Baseman, Robert J.; Brown, Charles A.; Eldridge, Benjamin N.; Rothman, Laura B.; Wendt, Herman R.; Yeh, James T.; and Zingher, Arthur R., 5,346,518, Cl. 55-267.000.

Brown, David: *See—*
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Brown, Dennis J.: *See—*
Vance, Ricky T.; Griffith, George L.; and Brown, Dennis J., 5,346,564, Cl. 149-109.600.

Brown, Fred: *See—*
Hargreaves, Kenneth M.; Dubner, Ronald; and Brown, Fred, 5,345,943, Cl. 128-742.000.

Brown, Keith C.: *See—*
Schultz, Thomas M.; Brown, Keith C.; Wolfram, Leszek J.; and Prota, Giuseppe, 5,346,509, Cl. 8-423.000.

Brown, Michael G., to Huntech, Inc. Firearm support. 5,345,706, Cl. 42-94.000

Brown, Richard S.; and Brown, Bennett W. Produce packaging and methods of sealing same. 5,346,089, Cl. 220-403.000.

Brown, Thomas G., III, to Brown, Thomas G., III. Adjustable shower curtain positioning arm. 5,345,624, Cl. 4-610.000.

Brown University: *See—*
Bowen, Wayne; de Costa, Brian R.; Dominguez, Celia; He, Xiao-Shu; and Rice, Kenner C., 5,346,908, Cl. 514-316.000.

Bruce, Thomas P.: *See—*
Swilik, Robert C., Jr.; Bruce, Thomas P.; Mills, Rex R.; and Larsen, Michael J., 5,346,002, Cl. 165-173.000.

Bruce, William C., Jr.: *See—*
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Bruckert, William: *See—*
Hawkins, Thomas B.; Bruckert, William; and Bissett, Thomas D., 5,347,559, Cl. 377-54.000.

Bruckner, Hermann; and Emsperger, Werner, to Siemens Aktiengesellschaft. Steam turbine plant. 5,345,755, Cl. 60-39.120.

Bruhm, Todd. Puck for use by in line roller skate hockey players. 5,346,214, Cl. 273-128.00R.

Bruker Analytische Messtechnik GmbH: *See—*
Gentsch, Ekkehard; and Schmalbein, Dieter, 5,347,219, Cl. 324-316.000.

Bruker-Franzen Analytik, GmbH: *See—*
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Brumbaugh, John A.: *See—*
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Bryan, Scott K.: *See—*
Howard, James R.; Lucas, Gregory L.; Bryan, Scott K.; and Choe, Jin S., 5,347,258, Cl. 338-333.000.

Brzezinski, Mark A.: *See—*
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Brzozowy, David J.: *See—*
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BT Industries AB: *See—*
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BTU International: *See—*
LeMieux, Pierre J., 5,347,103, Cl. 219-400.000.

Buchanan, Donald W., Jr.: *See—*
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Buchholz, Carol E.: *See—*
McDonald, Douglas B.; and Buchholz, Carol E., 5,347,556, Cl. 376-280.000.

Buchs, Willy; Cochard, Roland; and Jeannin, Pierre, to Robert Bosch GmbH. Compensation scale for measuring the weight or mass of an object. 5,347,092, Cl. 177-212.000.

Buck Werke GmbH & Co.: *See—*
Stang, Guido, 5,345,871, Cl. 102-202.000.

Budrow, Jack C.; and Eriksson, Lars E., to Barker Manufacturing Company, Inc. Portable tank with extending handle. 5,346,245, Cl. 280-655.000.

Buehler, Friedrich S.; Schmid, Eduard; and Schultze, Hans-Joachim, to EMS-Inventa AG. Starch/polymer mixture, process for the preparation thereof, and products obtainable therefrom. 5,346,936, Cl. 524-47.000.

Buese, Mark A.; and Chang, Pao-Sun, to Temple University of the Commonwealth System of Higher Education. Highly functionalized polycyclosiloxanes and their polymerization into thermally reversible living rubbers. 5,347,028, Cl. 556-460.000.

Buffalo Environmental Products Corporation: *See—*
Flessas, Dean, 5,345,813, Cl. 73-46.000.

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Kosikowski, David M., and Kane, John W., 5,345,715, Cl 49-42.000.
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Yoshida, Yasuhiko, 5,346,728, Cl. 427-569.000.
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MacDoran, Peter F.; Call, David B.; and Gold, Kenneth L., 5,347,285, Cl. 342-357.000.
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Ansorge, Richard E.; Hooper, Clare E.; Neale, William W.; and Stanley, Philip, 5,347,122, Cl. 250-227.110.
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Camras, Carl B. Method and apparatus for reducing intraocular pressure. 5,346,464, Cl. 604-9.000.
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Ebinuma, Ryuichi, 5,347,561, Cl. 378-34.000.
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Carrier Corporation: *See—*
Dudley, Kevin F., 5,345,966, Cl. 137-601.000.
Leyderman, Alexander D.; and Lu, Jiawei, 5,345,970, Cl. 137-856.000.
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Cassano, Nicola. Golf cart with adjustable steering assembly. 5,346,028, Cl. 180-19.200.
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Tweed, Lorne W.; Cross, Timothy A.; McClure, William M.; and Rolli, Brian T., 5,345,841, Cl. 477-113.000.
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Stirling, David I.; Raju, Muppala S.; and Zeitlin, Andrew L., 5,346,828, Cl. 435-280.000.
Center for Innovative Technology, The: *See—*
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Chang, Victor S. C.; Hartwig, Richard C.; Lundquist, Joseph T.; Parham, Marc E.; and Laccetti, Anthony J., to W.R. Grace & Co.-Conn. Microporous polyurethane based battery separator. 5,346,788, Cl. 429-244.000.
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Griengl, Herfried; Klempier, Norbert; and Pochlauer, Peter, 5,346,816, Cl. 435-128.000.
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Chess, Stanley, to Moore Business Forms, Inc. Certified mailer. 5,346,124, Cl. 229-305.000.
Chester, Francis B. Composting apparatus. 5,346,305, Cl. 366-233.000.
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Chin, Stephen: *See—*
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Green, Paul A.; Rankin, Russel J.; Boyce, Phillip R.; White, Raymond M.; Buhot, John W.; Heidke, Darryl J.; Leiner, Andrew M.; Finney, Andrew L.; Aqualini, Matthew; Mills, Edward G.; Gibbons, Richard J.; Abood, John C.; Roberts, David G.; and Thomas, David P., 5,346,435, Cl. 452-160.000.
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Cook, Harold T., Jr.; Furlong, Donn B.; Svendsen, Robert A.; and Rustad, Allan P., to Marco Seattle, Inc. Hauling sheave with cleats. 5,346,181, Cl. 254-374.000.
Cook, Joel M.; and Trow, John R., to Applied Materials, Inc. Magnetic field enhanced plasma processing chamber. 5,346,579, Cl. 156-345.000.
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Cooper, Randall L.; and Welch, Rodney M., to Maytag Corporation. Dishwasher filter arrangement. 5,345,957, Cl. 134-104.100.
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Cordoba, Michael V.; and Hardee, Kim C., to United Memories, Inc.; and Nippon Steel Semiconductor Corporation. Oscillatorless substrate bias generator. 5,347,172, Cl. 307-296.200.
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Costello, Burton W. Method and apparatus for purifying waste water. 5,346,617, Cl. 210-192.000.
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Counsell, Raymond E.; Meyer, Karen L.; Schwendner, Susan W.; and Haradahira, Terushi, to University of Michigan, The Board of Regents of The. Radioiodinated phospholipid ether analogues and methods of using same. 5,347,030, Cl. 558-169.000.
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Cray Research, Inc.: *See*—
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Creighton and Associates, Inc.: *See*—
Creighton, Peter G., 5,346,127, Cl. 236-13.000.
Creighton, Peter G., to Creighton and Associates, Inc. Air conditioning system with enhanced dehumidification feature. 5,346,127, Cl. 236-13.000.
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Critzer, Randolph T., Sr. Designer mailboxes with removable decorative side panels. 5,346,125, Cl. 232-17.000.
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Crowe, Benjamin S.: *See—*
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Crowley, Steven R.: *See—*
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Cullen, Steven R. Means for creating air channels in bagged compost material. 5,345,744, Cl. 53-128.100.

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Curlee, James D.; and Gandre, Jerry D., to Dell USA, L.P. Computer chassis construction. 5,347,430, Cl. 361-816.000.

Cutter, Everett A., to General Electric Company. Adjustable tube bending method and apparatus. 5,345,803, Cl. 72-157.000.

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Dahl, Jeffrey A.: *See—*
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Daido Metal Company Ltd.: *See—*
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Dearman, Timothy C. Shower curtain deflector. 5,345,623, Cl. 4-608.000.

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Dehling, Helmut, to Stewing Kunststoffbetrieb GmbH. Sealing tape for wrapping up a cable extending through a cable passageway opening. 5,346,742, Cl. 428-67.000.

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Dellaria, Joseph F.; Basha, Anwer; Black, Lawrence A.; Dorn, Linda J.; and Lee, Wendy, to Abbott Laboratories. (4-alkoxypyran-4-yl) substituted arylalkylaryl-, arylalkenylaryl-, and arylalkynylarylurea inhibitors of 5-lipoxygenase. 5,346,914, Cl. 514-402.000.

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Desai, Dhirubwai N.; Lewis, David M.; and Robinson, Don M., to Seagate Technology, Inc. Method and apparatus for reloading microinstruction code to a SCSI sequencer. 5,347,638, Cl. 395-375.000.

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Winter, Ernst; Marwan, Friedrich; Bretschneider, Joachim; and Drexler, Hubert, 5,346,768, Cl. 428-426.000.
Dreyer, Stephen F.: *See—*
Baumann, Donald D.; Berke, W. Mike; Dreyer, Stephen F.; Sinks, Rod G.; and Stoll, Kurt A., 5,347,549, Cl. 375-117.000.
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Druien, Robert H. Energy saving water and air bubble heat maximizer for swimming pools, hot tubs, and spas. 5,345,996, Cl. 165-47.000.
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Dudderar, Thomas D.: *See—*
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Dudley, Kevin F., to Carrier Corporation. Powered damper having automatic static duct pressure relief. 5,345,966, Cl. 137-601.000.
Duesman, Kevin G.: *See—*
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Duhl, David N.: *See—*
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Dunbar, William M.; and Stinson, Harold B., to Minnesota Mining and Manufacturing Company. Media shipping container. 5,346,065, Cl. 206-444.000.
Dunkelberger, David L.: *See—*
Wu, Jiun-Chen; Work, William J.; Dunkelberger, David L.; and Bortnick, Newman M., 5,346,954, Cl. 525-85.000.
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Farnham, William B., 5,347,058, Cl. 570-142.000.
Haufe, Wilfried; and Kajnath, Herbert, 5,346,067, Cl. 206-497.000.
Irwin, Robert S., 5,346,985, Cl. 528-331.000.
Kaku, Mureo, 5,346,969, Cl. 525-432.000.
Pechhold, Engelbert, 5,346,726, Cl. 427-393.400.
Reiser, Arnost; and He, Xiaohua, 5,347,040, Cl. 560-139.000.
Spinu, Maria, 5,346,966, Cl. 525-411.000.
Takahashi, Tatsu-Hiro; and Kobayashi, Toshikazu, 5,346,737, Cl. 428-36.900.
Dupuy, Ronald E., to GenCorp Inc. Glass run guide for slidable vehicle window. 5,345,718, Cl. 49-441.000.
Duquesne University of the Holy Ghost: *See—*
Gangjee, Aleem, 5,346,900, Cl. 514-258.000.
Duranel, Laurent; and Roche, Jean-Pierre, to Elf Atochem S. A. Magnesium chloride particles with a truncated structure, catalytic component supported on these particles, polyolefins obtained by employing this catalytic component, procedures for manufacturing these products. 5,346,972, Cl. 526-125.000.
Durbin, Dennis A., to Norand Corporation. Reader for decoding two-dimensional optical information. 5,347,112, Cl. 235-462.000.
Durel Corporation: *See—*
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Durfey, Lloyd W.: *See—*
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Durkopp Adler Aktiengesellschaft: *See—*
Droste, Gunter, 5,345,887, Cl. 112-255.000.
Durlich, Manfred: *See—*
Rabe, Wolfgang; Groschel, Lutz; Sowka, Karl; Scholz, Gunter; Seifert, Gunter; Durlich, Manfred; Reichl, Emil; and Polenski, Heinz, 5,347,068, Cl. 588-205.000.
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Duruz, Jean-Jacques: *See—*
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Dytel Inc.: *See—*
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E. R. Squibb & Sons, Inc.: *See—*
Das, Jagabandhu; and Kronenthal, David, 5,347,007, Cl. 546-269.000.
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Hobbs, Eamonn; Hawkins, Irvin F.; Zimmet, Arthur; Goodman, John; and Recinella, Daniel, 5,346,470, Cl. 604-24.000
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Bagrodia, Shriram; Phillips, Bobby M.; Smith, E. Phillip; Parker, Kenny R.; and Rundquist, Paul A., 5,346,422, Cl. 446-394.000.
Eastman Kodak Company: *See—*
Entz, Steven F.; Jadrich, Bradley S.; and Schoelpple, Gunther, 5,347,299, Cl. 346-76.00L.
Gage, Edward C., 5,347,297, Cl. 346-108.000.
Haboian, Mark S., 5,345,812, Cl. 73-46.000.
Hilbert, Thomas K.; and Morse, Theodore H., 5,347,347, Cl. 355-253.000.
Hung, Liang-Sun; Agostinelli, John A.; and Mir, Jose M., 5,347,157, Cl. 257-627.000.
Osterhoudt, Hans W., 5,347,345, Cl. 355-246.000.
Patton, David L.; Mainco, Joseph A.; Rosenburgh, John H.; and Piccinino, Ralph L., Jr., 5,347,337, Cl. 354-324.000.
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Smart, David C.; and Miller, Stephen H., 5,347,334, Cl. 354-275.000.
Stephenson, Stanley W., 5,347,597, Cl. 382-47.000
Eastman, Richard E., to New Venture Gear, Inc. Range shift arrangement for four-wheel drive vehicles. 5,346,442, Cl. 475-223.000.
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Caron, LaVerne A.; Handley, Edward F.; Kuo, W. Paul; and Lane, E. James, 5,347,419, Cl. 361-154.000.
Eaton, John R.: *See—*
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Onishi, Atsuhiro; Matsunami, Koichi; Ebara, Masanao; and Tanaka, Hiroaki, 5,346,927, Cl. 521-90.000.
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Ebey, Edward W., to Fulton Performance Products, Inc. Winch strap anchor. 5,346,153, Cl. 242-579.000.
Ebinuma, Ryuichi, to Canon Kabushiki Kaisha. X-ray exposure apparatus and semiconductor-device manufacturing method. 5,347,561, Cl. 378-34.000.
Ebner, Cynthia L.: *See—*
Speer, Drew V.; Roberts, William P.; Morgan, Charles R.; and Ebner, Cynthia L., 5,346,644, Cl. 252-188.280.
Echelon Corporation: *See—*
Baumann, Donald D.; Berke, W. Mike; Dreyer, Stephen F.; Sinks, Rod G.; and Stoll, Kurt A., 5,347,549, Cl. 375-117.000.
Eckels, John F. Syringe needle disposal apparatus. 5,347,078, Cl 588-258.000.
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Pawlowski, Geog; Dammel, Ralph; Roeschert, Horst; Spiess, Walter; and Eckes, Charlotte, 5,346,804, Cl. 430-281.000.
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Edmark, Tomima L. Hair pin for use in connection with a hair styling tool. 5,345,956, Cl. 132-280.000.
Edmondson, John H.: *See—*
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Edmondson, Morris S.: *See—*
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EDR Acquisition Corp.: *See—*
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Edwards, Daniel J. Method of operating a rotary internal combustion engine. 5,345,905, Cl. 123-241.000
Edwards, Floyd V.; and Strobel, Norman M., to Harmac Medical Products, Inc. Pressure gauge for regulating pressure in a disposable pressure cuff. 5,346,477, Cl. 604-141.000.
Edwards, William L. Poll and eye protection apparatus for a horse and method of manufacture thereof. 5,345,751, Cl. 54-80.200.
Efland, Taylor R.: *See—*
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Eguchi, Naoya, to Sony Corporation. Compact optical pickup head with tracking error signal generator. 5,347,500, Cl. 369-44.140
Eguchi, Shinsuke; Suzuki, Masayuki; and Fukuoka, Tetsuo, to Nissan Motor Co., Ltd. Bladed rotor and apparatus for producing same. 5,346,366, Cl. 416-180.000.
Eguchi, Tadashi, to Canon Kabushiki Kaisha. Signal processing apparatus and method, and displacement detecting apparatus using the same. 5,347,355, Cl. 356-356.000.
Ehlers, Karlheinz: *See—*
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Ehmsen, Roland: *See—*
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Ehrenfels, Alfred L.: *See—*
Hoffman, Ernest G.; and Ehrenfels, Alfred L., 5,346,406, Cl. 439-474.000.
Eichhorn, Rudolf. Arrangement for and method of producing pantyhoses. 5,345,886, Cl. 112-121.150.
Eick, J. David: *See—*
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Eicken, Karl: *See—*
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Eidsness, John L.: *See—*
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Eilenstein-Wiegmann, Wilfried; and Vogg, Guenter, to Deutsche Aerospace Airbus GmbH. Apparatus for guiding a load, especially on the loading floor of an aircraft. 5,346,161, Cl. 244-137.100.
Einaru, Kikuo; Seko, Shinsuke, deceased (by Seko, Tomio, legal representative); and Seko, Tomio, to SunEarth Co., Ltd. Apparatus for injecting soil conditioning fluid. 5,346,334, Cl. 405-269.000.
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Bakal, Abraham I.; Cash, Penny A.; and Eisenstadt, Marvin E., 5,346,716, Cl. 426-603.000.
Ejiofor, Chuka H.: *See—*
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Elf Atochem North America, Inc.: *See—*
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Elgar, Anthony D.; Sales, Brian T.; and Parkes, Adrian S., to British Gas PLC. Method of replacing branch mains. 5,345,971, Cl. 138-98.000.
Elges, Johann; and Goldschmidt, Hermann, to Citius Buerotechnik GmbH. Device for applying a possibly coated adhesive film to a substrate. 5,346,580, Cl. 156-540.000.
Elhardt, Scott T., to Honeywell, Inc. Method and device for measuring the position and orientation of objects in the presence of interfering metals. 5,347,289, Cl. 342-448.000.
Eli Lilly and Company: *See—*
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Elpatronic AG: *See—*
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Elsag International N.V.: *See—*
Christner, Kurt W.; and Thoeni, Stewart, 5,346,606, Cl. 204-433.000
Elson, Edward E., to Elson, Edward E. Fluid delivery system. 5,346,476, Cl. 604-135.000.
Emerson Electric Co.: *See—*
Sandrock, Don G., 5,345,831, Cl. 74-53.000.
Emhart Glass Machinery Investments Inc.: *See—*
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EMS-Inventa AG: *See—*
Buehler, Friedrich S.; Schmid, Eduard; and Schultze, Hans-Joachim, 5,346,936, Cl. 524-47.000.
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Endoh, Toshio; Tobita, Hiroshi; and Yamamoto, Hiroshi, to Ikegami Tsushinki Co., Ltd. Sheet arranging device and sheet sorter. 5,346,204, Cl. 271-294.000
Energiewerke Schwarze Pumpe Aktiengesellschaft: *See—*
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Energy Partners, Inc.: *See—*
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Leonhartsberger, Heinz; Eppich, Stefan; and Kappelmuller, Werner, 5,345,766, Cl. 60-545.000.
Engeler, William E.; Daft, Christopher M. W.; Pedicone, John T.; and Rhyne, Theodore L., to General Electric Company. Ultrasound imaging system with dynamic window function. 5,345,939, Cl. 128-661.010.
Engelhard Corporation: *See—*
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Enlow, David L.: *See—*
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Enning, Norbert; and Timm, Heinrich, to Audi AG. Rear end of a vehicle body. 5,346,275, Cl. 296-195.000.
Enning, Norbert; Kreis, Gundolf; Reiter, Karl; and Timm, Heinrich, to Audi AG. Bearing structure for the bodywork of a passenger car. 5,346,276, Cl. 296-203.000.
Entz, Steven F.; Jadrich, Bradley S.; and Schoelpple, Gunther, to Eastman Kodak Company. Sheet film cartridge for thermal dye printer. 5,347,299, Cl. 346-76.00L.
Environ Products, Inc.: *See—*
Webb, Michael C., 5,346,625, Cl. 210-691.000.
Epperson, Frank E., to F.M.&G., Inc. Casting reel with automatic drag and casting mechanism. 5,346,158, Cl. 242-236.000.
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Epstein, David A.; Gilley, Glenn G.; and McAuliffe, Kevin P., to International Business Machines Corporation. Method and apparatus for saving and retrieving functional results. 5,347,652, Cl. 395-600.000.
Erb, David J., to International Business Machines Corporation. Non-convex polygon identifier. 5,347,619, Cl. 395-126.000.
Erben, Hans-Georg: *See—*
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Estabrook, Brian K.; DiMatteo, Stephen; Motta, Lionel J.; and Wright, John C., to Ultracision, Inc. Laparoscopic ultrasonic surgical instrument and methods for manufacturing the instruments. 5,346,502, Cl. 606-169.000.
Estell, David A.; Wells, James A.; and Bott, Richard R., to Genencor, Inc. Subtilisin modifications to enhance oxidative stability. 5,346,823, Cl. 435-222.000.
Esterberg, Dean M., to TRW Inc. Inflator assembly. 5,346,254, Cl. 280-74,.000.
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Eudy, James R. Printer with edge strip trimmer including a downwardly extending edge surface. 5,346,321, Cl. 400-621.100.
Eurotec Surface Coating System Ltd.: *See—*
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Evans, Robert B., III; and Zimmerman, Leon S., to Staco, Inc. Adaptor plate for shielded drop-lock adjustment on an animal feeder. 5,345,894, Cl. 119-53.000.
Evans, Robert D.: *See—*
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Evans, Steven C.: *See—*
Abadi, Kamran K.; and Evans, Steven C., 5,347,546, Cl. 375-75.000.
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Terry, Patrick H., 5,346,631, Cl. 210-789.000.
Wachter, William A.; and Soled, Stuart L., 5,346,875, Cl. 502-233.000.
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Faris, Gregory W., to SRI International. Generation of multiple stabilized frequency references using a mode-coupled laser. 5,347,525, Cl. 372-19.000.
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Filepp, Robert; Gordon, Michael L.; Bidewell, Alexander W.; Young, Francis C.; Wolf, Allan M.; Meo, Sam; Tiemann, Duane; Cohen, Robert D.; Bellar, Mel; Appleman, Kenneth H.; Abrahams, Lawrence; and Silfen, Michael J., to Prodigy Services Company. Reception system for an interactive computer network and method of operation. 5,347,632, Cl. 395-200.000.

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Flaugher, Jeffrey R.; Nissen, Timothy A.; Procaccini, Vincent N.; and Deb, Sugato, to Libbey-Owens-Ford Co. Apparatus for bending glass sheets. 5,346,526, Cl. 65-273.000.

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Fletcher, Gerald M., to Xerox Corporation. Tandem high productivity color architecture using a photoconductive intermediate belt. 5,347,353, Cl. 355-326.00R.

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Flockerzi, Dieter; and Klemm, Kurt, to BYK Gulden Lomberg Chemische Fabrik GmbH. Sulphonyl compound. 5,346,904, Cl. 514-292.000.

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Foley, James A.; Hadzekyriakides, Nicholas S.; and Reardon, James J., to Polaroid Corporation. Image-receiving element for diffusion transfer photographic film products. 5,346,800, Cl. 430-213.000.

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Preslar, Donald R.; and Giordano, Raymond L., 5,347,169, Cl. 307-246.000.

Giovannetti, Antonio. Fastening device, for example for furniture components and the like. 5,346,349, Cl. 411-549.000.

Girardiere, Christian: *See—*
Barikosky, Michel; and Girardiere, Christian, 5,346,347, Cl. 411-19.000.

Girijavallabhan, Viyyoor: *See—*
Cooper, Alan B.; Saksena, Anil K.; Lovey, Raymond; Girijavallabhan, Viyyoor; and Ganguly, Ashit, 5,346,898, Cl. 514-255.000.

Gissinger, Frank; and Gheysens, Thierry, to Sollac. Method and device for the electric welding of sheets of multilayer structure. 5,347,099, Cl. 219-81.000.

Giuffrida, Anthony, to IP Holding Company. Heterogeneous ion exchange materials comprising polyethylene of linear low density or high density high molecular weight. 5,346,924, Cl. 521-28.000.

Given, William F., to Protective Technologies, Inc. Nozzle guard for blast furnace mudgun. 5,346,186, Cl. 266-270.000.

Glang, Siegfried; and Anheuser, Lothar, to Phoenix Aktiengesellschaft. Shield tail sealing. 5,346,331, Cl. 405-147.000.

Glaser, Paul J.: *See—*
Davis, Mark F.; Glaser, Paul J.; Brandt, William H. A.; and Somwaru, Rudolph, 5,347,564, Cl. 379-12.000.

Glaxo Group Limited: *See—*
Burt, Peter C. W.; and Kwok, Laurie K. H., 5,345,980, Cl. 141-3.000.

Gleichert, Marc C.; and Wang, Yun-Che, to Advanced Micro Devices, Inc. Method and apparatus for synchronizing transmitter and receiver for high speed data communication. 5,347,547, Cl. 375-114.000.

Glickman, Joel I., to Connector Set Limited Partnership. Gearing and drive mechanism for construction toy system. 5,346,420, Cl. 446-126.000.

Glicksman, Robert A.: *See—*
McReynolds, John M.; and Glicksman, Robert A., 5,347,384, Cl. 359-118.000.

Glidden Company, The: *See—*
Floyd, F. Louis; and Craun, Gary P., 5,346,948, Cl. 524-773.000.

Gnanou, Yves, to Elf Atochem S.A. Process for manufacturing multisequence star or network polycondensates by di- or multi-aldehyde coupling, and polycondensates obtained. 5,346,956, Cl. 525-24.000.

GNS Gesellschaft Fur Nuklear-Service mbH: *See—*
Diersch, Rudolf; Janberg, Klaus; Methling, Dieter; and Schroder, Karl, 5,346,096, Cl. 220-679.000.

Gnuco Technology Corporation: *See—*
Carroll, Gary T.; and Pauley, J. Donald, 5,347,263, Cl. 340-572.000.

GO Corporation: *See—*
Agulnick, Todd; Carr, Robert; Hoeber, Tony; Kaplan, S. Jerrold; Low, David R.; and Ouye, Michael, 5,347,295, Cl. 345-156.000.

Go, Hiroshi: *See—*
Nakakawaji, Takayuki; Morihara, Atsushi; Shoji, Mitsuyoshi; Sato, Koji; Ito, Yutaka; Kaji, Ryuichi; and Go, Hiroshi, 5,346,633, Cl. 252-10.000.

Go, Hisao; Nishie, Mitsuaki; and Imamura, Keiichi, to Sumitomo Electric Industries, Ltd. Transfer molding type manufacturing method of pigtail-type optical module. 5,347,604, Cl. 385-92.000.

Goans, Kip B.; and Lazes, Richard J., to Oil Stop, Inc. Floating barrier method and apparatus. 5,346,329, Cl. 405-68.000.

Gochi, Motohiro: *See—*
Mori, Masaharu; Gochi, Motohiro; and Takeuchi, Shigeru, 5,347,537, Cl. 375-1.000.

Godat, Rolf: *See—*
Nebe, Wolfgang; and Godat, Rolf, 5,347,358, Cl. 356-128.000.

Godfrey, Christopher R. A.: *See—*
Clough, John M.; Godfrey, Christopher R. A.; and de Fraine, Paul J., 5,346,902, Cl. 514-269.000

Goff, Stephen P.: *See—*
Hochleitner, Wolfgang A.; and Goff, Stephen P., 5,347,073, Cl. 588-256.000.
Hochleitner, Wolfgang A.; and Goff, Stephen P., 5,347,074, Cl. 588-256.000

Goglio, Alfeo; and Pistone, Valentino, to Snam S.p.A. Method for repairing local damage to pipelines by applying cladding with an interposed protective sheath. 5,345,972, Cl. 138-99.000

Gohda, Makoto; Yamashita, Shinichi; and Tanaka, Yasuyuki, to Canon Kabushiki Kaisha. Magnetic recording and reproducing method and apparatus with vertical magnetization component reduction. 5,347,408, Cl. 360-65.000.

Goheen, Steven: *See—*
Heath, William; Richardson, Richard; and Goheen, Steven, 5,347,070, Cl. 588-253.000.

Gohma, Takahiko: *See—*
Tamura, Yasuo; Tanaka, Ryoji; Gohma, Takahiko; and Horikawa, Mitsumasa, 5,346,574, Cl. 156-257.000.

Gokita, Masami, to Kabushiki Kaisha Toshiba. Exposure control device for use in electrophotographic printing apparatus. 5,347,298, Cl. 346-108.000.

Gold Effects, Inc.: *See—*
McLaughlin, Daniel A., 5,346,602, Cl. 204-224.00R.

Gold, Kenneth L.: *See—*
MacDoran, Peter F.; Call, David B.; and Gold, Kenneth L., 5,347,285, Cl. 342-357.000.

Gold Star Co., Ltd.: *See—*
Seo, Ho S., 5,347,195, Cl. 313-404.000.

Gold Star Electron Co., Ltd.: *See—*
Jun, Young K., 5,346,847, Cl. 437-52.000.

Goldberg, Paul R.; Mandell, Douglas E.; and Richards, Martin J., to Dolby Laboratories Licensing Corporation. Recovering digital information represented by multi-dimensionally encoded symbols carried by an information storage medium. 5,347,509, Cl. 369-275.300

Goldman, Leonard J.; and Roesch, Susan M., to Net/Tech International, Inc. Water dispersible formulations and materials and methods for influencing their water dispersibility. 5,346,541, Cl. 106-163.100.

Goldschmidt, Hermann: *See—*
Elges, Johann; and Goldschmidt, Hermann, 5,346,580, Cl. 156-540.000.

Goldstar Co., Ltd.: *See—*
Ahn, Hyung S.; and Choi, Won T., 5,346,854, Cl. 437-129.000.
Soh, Hoe S., 5,347,146, Cl. 257-59.000.

Goldstar Electron Co., Ltd.: *See—*
Jun, Young-Kwon, 5,346,845, Cl. 437-52.000.
Ryu, Do H., 5,346,302, Cl. 366-101.000.

Goldstart Co., Ltd.: *See—*
Choi, Sung U., 5,347,313, Cl. 348-445.000.

Golin, Stuart J., to Intel Corporation. Method and apparatus for unevenly encoding error images. 5,347,311, Cl. 348-416.000.

Goman (Gomez) Peter M.; Udipi, Kishore; and Stebbins, Lionel R., to Monsanto Company. Functionalized ethylene oxide antistatic agents for ABS/SMA blends. 5,346,959, Cl. 525-187.000.

Gonsior, Wolfgang, to Gulde Regelarmaturen GmbH & Co. KG. Servo valve. 5,346,172, Cl. 251-58.000.

Goodin, Mark S.: *See—*
Haworth, William S.; Olsen, Robert W.; Goodin, Mark S.; and Fuller, Larry E., 5,346,621, Cl. 210-645.000.

Goodman, John: *See—*
Hobbs, Eamonn; Hawkins, Irvin F.; Zimmet, Arthur; Goodman, John; and Recinella, Daniel, 5,346,470, Cl. 604-24.000.

Goodnick, Stephen M.: *See—*
Wybourne, Martin N.; Smith, Doran D.; Goodnick, Stephen M.; Wu, Jong-Ching; and Berven, Chris, 5,347,141, Cl. 257-24.000.

Gordon, Michael L.: *See—*
Filepp, Robert; Gordon, Michael L.; Bidewell, Alexander W.; Young, Francis C.; Wolf, Allan M.; Meo, Sam; Tiemann, Duane; Cohen, Robert D.; Bellar, Mel; Appleman, Kenneth H.; Abrahams, Lawrence; and Silfen, Michael J., 5,347,632, Cl. 395-200.000.

Goshima, Kunio: *See—*
Shibata, Tooru; Teramoto, Toshio; Hashiguchi, Yoshiharu; and Goshima, Kunio, 5,346,964, Cl. 525-314.000.

Goss, Mary A. Motorized back scrubber. 5,345,640, Cl. 15-88.200.

Gosselin, Louis; and Robichaud, Normand, to Lambert, Langis. Apparatus for inserting a spline into a frame groove. 5,345,662, Cl. 29-235.000.

Goswami, Kisholoy; Saini, Devinder P. S.; Klainer, Stanley M.; and Ejiofor, Chuka H., to FCI - FiberChem, Inc. Specific and reversible carbon monoxide sensor. 5,346,671, Cl. 422-86.000.

Goto, Toshio; Kitagawa, Yoshinori; Hayakawa, Hidenori; Shibuya, Katsuhiko; and Watanabe, Ryo, to Nihon Bayer Agrochem K.K. Herbicidally active pyrimidinylthioalkane derivatives. 5,346,880, Cl. 504-242.000.

Goto, Toshio; Hayakawa, Hidenori; Watanabe, Yukiyoshi; and Yanagi, Akihiko, to Nihon Bayer Agrochem K.K. Herbicidal 1-(3-halo-4-trifluoromethylphenyl) tetrazolinones. 5,347,009, Cl. 548-251.000.

Goto, Toshio; Hayakawa, Hidenori; Watanabe, Yukiyoshi; Narabu, Shin-ichi; and Yanagi, Akihiko, to Nihon Bayer Agrochem K.K. Tetrzolinone herbicides. 5,347,010, Cl. 548-251.000.

Gotoh, Shigeru: *See—*
Sakamoto, Toshio; Kumai, Kenichiro; and Gotoh, Shigeru, 5,346,926, Cl. 521-81.000.

Gottschild, Frank: *See—*
Illbruck, Michael; and Gottschild, Frank, 5,345,720, Cl. 49-502.000.

Gotz, Laszlo, to Texas Instruments Deutschland GmbH. Circuit arrangement for converting a voltage drop tapped from a test object from a predetermined input voltage range to a desired output voltage range. 5,347,174, Cl. 307-360.000.

Gotzinger, Gerhard: *See—*
Sixta, Herbert; Gotzinger, Gerhard; Hoglinger, Anton; Hendel, Peter; Rucki, Wilfried; Peter, Walter; Kurz, Friedrich; Schrittwieser, Alfred; and Schneeweisz, Manfred, 5,346,588, Cl. 162-65.000.

Gouge, Samuel T.; and Shue, James E., to Rhone-Poulenc Inc. Containerization system. 5,346,068, Cl. 206-524.700.

Goulds Pumps, Incorporated: *See—*
Jurgill, Daniel J.; and Wetzel, Gerald A., 5,346,361, Cl. 415-111.000.

Gove, Robert J., to Texas Instruments Incorporated. Color separator for digital television. 5,347,321, Cl. 348-663.000.

Graco Inc.: *See—*
Krohn, Duane D., 5,346,370, Cl. 417-223.000.

Ma, Yamin; Grady, Richard; Lind, Robert J.; and McCutcheon, Tera D., 5,346,134, Cl. 239-288.500.

Gradco (Japan) Ltd.: *See—*
Lawrence, Frederick J., 5,346,205, Cl. 271-297.000.

Grady, Richard: *See—*
Ma, Yamin; Grady, Richard; Lind, Robert J.; and McCutcheon, Tera D., 5,346,134, Cl. 239-288.500.

Graham, Auston B., to Armstrong World Industries, Inc. Method and apparatus for drying wood. 5,345,695, Cl. 34-94.000.

Graham, Martin H., to Tut Systems, Inc. Network monitor and test apparatus. 5,347,225, Cl. 324-523.000.

Grams, Kai-Uwe: *See—*
Schafer, Burkhard; and Grams, Kai-Uwe, 5,346,255, Cl. 280-775.000.

Granata, Samuel J., Jr.: *See—*
Dunyak, Thomas J.; and Granata, Samuel J., Jr., 5,346,661, Cl. 264-138.000.

Grandgeorge, Michel G. J.; Veron, Jean-Luc B.; and Fournier, Pierre L. J., to Pasteur Merieux Serums et Vaccins. Process for isolating human albumin from supernatant IV, in particular IV-4, or from COHN's fraction V or from an analogous supernatant or fraction. 5,346,992, Cl. 530-364.000.

Granmont, Inc.: *See—*
Vancho, Vincent M.; Wu, Hak H.; Ma, Yutao; and Jorgensen, Erik L., 5,346,747, Cl. 428-209.000.

Grant, David C. H., to Baxter International Inc. Process for treating an article with a volatile fluid. 5,346,534, Cl. 95-39.000

Graver Company, The: *See—*
Libutti, Bruce L.; and Bozenmayer, Kurt, 5,346,624, Cl. 210-679.000.

Graves, Howard, to Wooster Brush Company, The. Paint roller frame and cage assembly. 5,345,648, Cl. 15-230.110.

Graves, L. Martin, Jr.: *See—*
Khungar, Sohan L.; Graves, L. Martin, Jr.; and Gryziecki, Robin M., 5,346,943, Cl. 524-398.000.

Gray, Gladys E. Color and number game apparatus. 5,346,221, Cl. 273-243.000.

Great Lakes Chemical Corporation: *See—*
Sweval, Mark A.; Register, W. Douglas; Robin, Mark L.; and Iikubo, Yuichi, 5,346,669, Cl. 422-34.000.
Termine, Enrico J.; Favstritsky, Nicolai A.; and Taylor, Kevin G., 5,346,938, Cl. 524-117.000.

Greelis, John P.; and Tietge, Fred R., to Imagyn Medical, Inc. Controller for manipulation of instruments within a catheter. 5,346,498, Cl. 606-108.000.

Green, Malcolm L. H.; and Tsang, Shik C., to Gas Research Institute. Uncapped and thinned carbon nanotubes and process. 5,346,683, Cl. 423-447.200.

Green, Paul A.; Rankin, Russel J.; Boyce, Phillip R.; White, Raymond M.; Buhot, John W.; Heidke, Darryl J.; Leiner, Andrew M.; Finney, Andrew L.; Aqualini, Matthew; Mills, Edward G.; Gibbons, Richard J.; Abood, John C.; Roberts, David G.; and Thomas, David P., to Commonwealth Scientific and Industrial Research Organisation; and Meat Research Corporation. Carcass hide opening. 5,346,435, Cl. 452-160.000.

Greenfield Industries, Inc.: *See—*
Greenfield, Peter, 5,346,238, Cl. 280-293.000.

Greenfield, Peter, to Greenfield Industries, Inc. Portable removable bicycle stand. 5,346,238, Cl. 280-293.000.

Greenspan, Michael A.; and Burtnyk, Nestor, to National Research Council of Canada. Real time collision detection. 5,347,459, Cl. 364-461.000.

Gregorio, Edward. Single use syringe. 5,346,475, Cl. 604-110.000.

Gregory, William W.; and Kauffman, James W., to Honeywell Inc. Position dependent rate dampening in any active hand controller. 5,347,204, Cl. 318-632.000.

Greif Brothers Company: *See—*
Tendick, Richard C., 5,345,749, Cl. 53-528.000.

Greindl, Eduard: *See—*
Batani, Hassan; Temmesfeld, Axel; and Greindl, Eduard, 5,346,029, Cl. 180-68.400.

Grenn, Daniel P.; and Kubani, Ronald J., to General Motors Corporation. Misfire detection in internal combustion engines. 5,345,817, Cl. 73-117.300.

Greulich, Klaus; and Amborn, Peter. Driveshaft with additional masses. 5,346,432, Cl. 464-180.000.

Griengl, Herfried; Klempier, Norbert; and Pochlauer, Peter, to Chemie Linz Gesellschaft m.b.H. Enzymatic process for the enantioselective preparation of optically active cyanohydrins. 5,346,816, Cl. 435-128.000.

Gries, Manfred; and Klein, Roland, to PVT Piepenbrock Verpackungstechnik GmbH. Apparatus for supplying and sealing flat articles. 5,345,750, Cl. 53-553.000.

Griffin Environmental Co., Inc.: *See—*
Nadeau, Ronald P.; and Smith, Frank V., Jr., 5,345,982, Cl. 141-93.000.

Griffith, Edward J.; and Ngo, Toan M., to Monsanto Company. Glass fiber insulation and process. 5,346,575, Cl. 156-62.600.

Griffith, George L.: *See—*
Vance, Ricky T.; Griffith, George L.; and Brown, Dennis J., 5,346,564, Cl. 149-109.600.

Grigoleit Company, The: *See—*
Howie, Robert K., Jr., 5,345,838, Cl. 74-553.000.

Grimaud, Michel, to General Electric CGR. Method of image analysis. 5,347,594, Cl. 382-29.000.

Grimes, Gary J.: *See—*
Blyler, Lee L., Jr.; Grimes, Gary J.; and Haas, Lawrence J., 5,346,655, Cl. 264-1.280.

Grois, Igor: *See—*
Belenkiy, Yuriy; Cheatham, Dennis; Clairadin, Xavier; Grois, Igor; and Margolin, Mark, 5,347,603, Cl. 385-86.000.

Groschel, Lutz: *See—*
Rabe, Wolfgang; Groschel, Lutz; Sowka, Karl; Scholz, Gunter; Seifert, Gunter; Durlich, Manfred; Reichl, Emil; and Polenski, Heinz, 5,347,068, Cl. 588-205.000.

Grosse-Bley, Michael; Bomer, Bruno; Grosser, Rolf; Arlt, Dieter; and Lange, Walter, to Bayer Aktiengesellschaft. Optically active sulphur-containing amino acid derivatives, their preparation, their polymerisation to give optically active polymers and the use thereof. 5,347,042, Cl. 560-153.000.

Grosser, Rolf: *See—*
Grosse-Bley, Michael; Bomer, Bruno; Grosser, Rolf; Arlt, Dieter; and Lange, Walter, 5,347,042, Cl. 560-153.000.

Grossman, Paul D.: *See—*
Cathcart, Guy R.; Grossman, Paul D.; Mayrand, P. Eric; Nordman, Eric S.; and Whiteley, Norman M., 5,346,999, Cl. 536-25.410.

Grouls, Rene J. E.: *See—*
Ackerman, Eric W.; Grouls, Rene J. E.; and Korsten, Hendrikus H. M., 5,346,903, Cl. 514-282.000.

Group Lotus: *See—*
Dopson, Clive; and Allen, Jeffrey, 5,345,904, Cl. 123-198.00F

Gruber, Michael W.: *See—*
Luhman, Robert A.; Kuhn, Gary K.; Perrington, Kenneth J.; Kropp, Karl M.; and Gruber, Michael W., 5,346,350, Cl. 412-37.000.

Gruchalla, Michael E., to United States of America, Energy. Electro-optic component mounting device. 5,347,247, Cl. 333-245.000.

Gruen, Dieter M.: *See—*
Krauss, Alan R.; Gruen, Dieter M.; and Lamich, George J., 5,347,126, Cl. 250-309.000.

Grund, Clemens: *See—*
Reichelt, Helmut; and Grund, Clemens, 5,347,032, Cl. 558-443.000.

Grund, Norbert: *See—*
Schneider, Reinhard; Grund, Norbert; and Hartmann, Heinrich, 5,346,986, Cl. 528-495.000.

Grundmann, Steven R., to Halliburton Company. Method of stimulation of a subterranean formation. 5,346,015, Cl. 166-299.000.

Grupen-Shemansky, Melissa E.; and Cambou, Bertrand F., to Motorola, Inc. Method of bonding silicon and III-V semiconductor materials 5,346,848, Cl. 437-61.000.

Gruzdowich, Gregory J.: *See—*
Colson, Angus R., Jr.; Pinney, Linda; Gruzdowich, Gregory J.; and Steusloff, Patrick M., 5,346,297, Cl. 312-215.000

Gryziecki, Robin M.: *See—*
Khungar, Sohan L.; Graves, L. Martin, Jr.; and Gryziecki, Robin M., 5,346,943, Cl. 524-398.000.

Grzesiak, Anthony J.: *See—*
Puchalla, Christopher P.; Grzesiak, Anthony J.; and Slager, Douglas J., 5,346,040, Cl. 188-77.00W.

GS-Hydro OY: *See—*
Paakkunainen, Matti, 5,345,801, Cl. 72-117.000.

Gsellmann, Helmut, to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft. Expanding electrical insulating laminate, method for its manufacture and application. 5,346,568, Cl. 156-83.000.

GTE Control Devices Incorporated: *See—*
Bellows, Alfred H.; and Loughridge, Frederick A., 5,347,246, Cl. 333-219.100.

Guardiola, Beatrice: *See—*
Guillaumet, Gerald; and Guardiola, Beatrice, 5,346,916, Cl. 514-434.000.

Guenard, Daniel: *See—*
Pilleux, Eric; Li, Ming; Cosson, Jean-Pierre; Guenard, Daniel; Sevenet, Thierry; and Potier, Pierre, 5,346,693, Cl. 424-62.000.

Guentherberg, Norbert: *See—*
Deckers, Andreas; and Guentherberg, Norbert, 5,346,945, Cl. 524-494.000.

Gueret, Jean-Louis, to L'Oreal. Brush intended for the application of a cosmetic product, in particular to the eyelashes or the hair. 5,345,644, Cl. 15-160.000.

Guerro, Gerald J.; Arthur, William; and Singh, Balwant, to Cytec Technology Corp. Water soluble binder compositions containing beta-hydroxy urethanes and polyfunctional carboxylic acids. 5,346,947, Cl. 524-591.000.

Guest, James W.: *See—*
Johnston, William J.; Guest, James W.; and Richardson, James D., 5,347,213, Cl. 324-143.000.

Guha, Subhendu; Yang, Chi C.; and Xu, XiXiang, to United Solar Systems Corporation. Microwave energized deposition process with substrate temperature control for the fabrication of P-I-N photovoltaic devices. 5,346,853, Cl. 437-113.000.

Guiles, Joseph W.: *See—*
Miller, Theodore C.; Collins, Joseph C.; Mattes, Kenneth C.; Wentland, Mark P.; Perni, Robert B.; Corbett, Thomas H.; and Guiles, Joseph W., 5,346,917, Cl. 514-437.000.

Guillaumet, Gerald; and Guardiola, Beatrice, to Adir Et Compagnie. Alkoxy-3-[(Toluenesulfonylaminoalkyl)amino] chroman compounds. 5,346,916, Cl. 514-434.000.

Guillot, Gerard L. H.; and Bouleau, Jean-Paul A., to Moulinex (Societe Anonyme). Steam iron with removable calcification receptacle 5,345,704, Cl. 38-77.830.

Gulde Regelarmaturen GmbH & Co. KG: *See*—
Gonsior, Wolfgang, 5,346,172, Cl. 251-58.000.

Gun, Levent, to International Business Machines Corp. Traffic management in packet communications networks. 5,347,511, Cl. 370-54.000.

Gundersen, Helge G.; and Klaveness, Jo, to Nycomed Imaging AS. Composition of a superparamagnetic or ferromagnetic particle and an X-ray contrast agent for MRI. 5,346,690, Cl. 424-9.000.

Guttag, Alvin. Biodegradable plastic and articles made therefrom. 5,346,929, Cl. 523-124.000.

Guttinger, Heinrich, to Aginfor AG fur Industrielle Forschung. Rotating spiral pump with cooling between radial steps. 5,346,374, Cl. 418-6.000.

Guzeev, Valentin V.: *See*—
Fedorov, Svyatoslav N.; Linnik, Leonid F.; Shimshlashvili, Givi D.; Starshinova, Valentina S.; Zak, Pavel P.; Ostrovsky, Mikhail A.; Fedorovich, Irina B.; Roslyakova, Valentina A.; Guzeev, Valentin V.; Dyachkov, Alexandr I.; Afanasieva, Irina I.; Ljusina, Vera S.; and Degtev, Evgeny I., 5,346,507, Cl. 623-6.000.

Gysi, Peter; and Ineichen, Armin, to Elpatronic AG. Process for removing individual metal sheets from a stack and device for carrying out the process. 5,346,198, Cl. 271-11.000.

Haaks, Wilfried, to U.S. Philips Corporation. Method for peripheral angiography and arrangement for carrying out the method. 5,347,570, Cl. 378-98.120.

Haas, Hans E.: *See*—
Brassard, David M.; Haas, Hans E.; and Friedel, David W., 5,346,940, Cl. 524-267.000.

Haas, Karl-Heinz, to BASF Aktiengesellschaft. Oligosiloxanes and reinforced thermoplastic and ceramic materials obtainable therewith. 5,346,968, Cl. 525-431.000.

Haas, Lawrence J.: *See*—
Blyler, Lee L., Jr.; Grimes, Gary J.; and Haas, Lawrence J., 5,346,655, Cl. 264-1.280.

Haaser, James D.: *See*—
Ochs, Charles S.; and Haaser, James D., 5,346,082, Cl. 215-252.000.

Haberle, Friedrich: *See*—
Kress, Dieter; Haberle, Friedrich; and Hertel, G u/ nther, 5,346,344, Cl. 409-234.000.

Haboian, Mark S., to Eastman Kodak Company. Seal leakage monitoring device and method. 5,345,812, Cl. 73-46.000.

Hachiya, Mitsuru: *See*—
Tomiyoshi, Toshio; Yagi, Tetsuya; Torizuka, Masami; Hamano, Kenichi; Hachiya, Mitsuru; and Mizoguchi, Motoshi, 5,347,396, Cl. 358-479.000.

Hack, Karl-Heinz: *See*—
Operschall, Hermann; Hack, Karl-Heinz; Hengelhaupt, Klaus; and Meier-Hynek, Konrad, 5,347,557, Cl. 376-316.000.

Hackman, Lloyd E., to Ribbon Technology Corporation. Strip forming apparatus for rapid solidification. 5,345,993, Cl. 164-423.000.

Hadzekyriakides, Nicholas S.: *See*—
Foley, James A.; Hadzekyriakides, Nicholas S.; and Reardon, James J., 5,346,800, Cl. 430-213.000.

Hagar, Gar. Golf head cover. 5,345,987, Cl. 150-160.000.

Hagiwara, Hideaki: *See*—
Hagiwara, Yoshihide; and Hagiwara, Hideaki, 5,346,890, Cl. 514-27.000.

Hagiwara, Yoshihide; and Hagiwara, Hideaki, to Hagiwara, Yoshihide. Antioxidation active substance and utilization thereof. 5,346,890, Cl. 514-27.000.

Hahn, Brian K.: *See*—
Reading, Michael; Hahn, Brian K.; and Crowe, Benjamin S., 5,346,306, Cl. 374-10.000.

Hahn, Gary S.; and Williams, David R., to Hahn, Gary S. Mist generator. 5,346,132, Cl. 839-71.000.

Hahn, George M.; Saad, Alie H., and Giaccia, Amato J., to Leland Stanford Jr. University, Board of Trustees of the. Method of detecting cell response to cell-damaging energy. 5,346,814, Cl. 435-35.000.

Hahn, Lutz: *See*—
Fels, Ulrich; Windhab, Erich; Hoffmann, Ralf; von Holdt, Peter; and Hahn, Lutz, 5,345,781, Cl. 62-343.000.

Hailey, Charles D.: *See*—
Blount, Curtis G.; Hightower, Charles M.; and Hailey, Charles D., 5,346,017, Cl. 166-380.000.

Hainbuch Praezisions-Spannwerkzeugfabrik GmbH: *See*—
Weller, Hans-Michael, 5,345,847, Cl. 82-127.000.

Haka, Raymond J., to General Motors Corporation. Torque converter and viscous clutch. 5,346,043, Cl. 192-3.290.

Hakamatsuka, Yasuharu, to Olympus Optical Co., Ltd. Dental prosthesis. 5,346,396, Cl. 433-208.000.

HaL Computer Systems, Inc.: *See*—
Williams, Ted, 5,347,481, Cl. 364-748.000.
Williams, Ted, 5,347,482, Cl. 364-757.000.

Hale, Peggy A.: *See*—
Bachmann, Walter A.; and Hale, Peggy A., 5,347,226, Cl. 324-724.000.

Haley, Lawrence: *See*—
Corrigan, Colin; and Haley, Lawrence, 5,345,809, Cl. 73-23.200.

Halford, Robert J., to Cray Research, Inc. Modular input/output system for supercomputers. 5,347,637, Cl. 395-325.000.

Hall, Bertie F., Jr. Machine for forming a metal strip into a tubular form having a stop-restart displacement mechanism. 5,346,116, Cl. 228-148.000.

Hall, Thomas J., to ITT Corporation. Active compensation system. 5,346,292, Cl. 303-91.000.

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Halliburton Company: *See*—
Grundmann, Steven R., 5,346,015, Cl. 166-299.000.
Heathman, James F.; and Crook, Ronald J., 5,346,012, Cl. 166-293.000.
Himes, Ronald E.; Dahl, Jeffrey A.; Hunt, Charles V.; and Holtmyer, Marlin D., 5,346,339, Cl. 405-171.000.
Kunzi, Robert A.; Vinson, Edward F.; Totten, Patty L.; and Brake, Bobby G., 5,346,550, Cl. 106-709.000.
Onan, David D.; Bila, Vincent J.; Haney, James L.; Folmnsbee, Gary E.; Koch, Ronney R.; Stilley, Randall D.; and Watters, Larry T., 5,346,011, Cl. 166-291.000.

Hallman, Charles D.; and McElhone, Dennis P. Coin counting calculator. 5,347,473, Cl. 364-709.020.

Halstead, Gary A.; and Smith, Gregory R., to General Motors Corporation. Face plumbed condenser for automotive air conditioner. 5,346,003, Cl. 165-173.000.

Ham, Sungwoo, to Samsung Electron Devices Co., Ltd. Fixation structure of deflection yoke and focus magnet for projection cathode ray tube. 5,347,366, Cl. 348-829.000.

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Hamakawa, Wataru: *See*—
Morigami, Yuusuk; Ohhata, Akira; Hamakawa, Wataru; Matsuo, Hirokazu; Nagato, Hiroyasu; and Ishikawa, Takuma, 5,347,352, Cl. 355-321.000.

Hamana, Akinori: *See*—
Narukawa, Yasunori; and Hamana, Akinori, 5,347,124, Cl. 250-235.000.

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Tomiyoshi, Toshio; Yagi, Tetsuya; Torizuka, Masami; Hamano, Kenichi; Hachiya, Mitsuru; and Mizoguchi, Motoshi, 5,347,396, Cl. 358-479.000.

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Hamilton Beach/ Proctor-Silex, Inc.: *See*—
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Hammen, Gunter; Schieb, Thomas; and Wershofen, Stefan, to Bayer Aktiengesellschaft. Process for the production of poly(O-alkylurethanes) of the diphenyl methane series. 5,347,034, Cl. 560-25.000.

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Hutchings, Thomas J.; Kanegsberg, Edward; Hammons, Sheridan W.; Stjern, Daryl C., deceased; and Rusche, Edmund W., legal representative, 5,347,359, Cl. 356-350.000.

Han, Hyeong-Deok, to SamSung Electronics Co., Ltd. Apparatus for recording and reproducing caption information on an audio track of a video tape used in a video tape recorder. 5,347,404, Cl. 360-19.100.

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Chung, Ho-sun; and Han, Hyo-jin, 5,347,613, Cl. 395-24.000.

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Isogai, Naoki; and Hanaki, Hirohiko, 5,347,331, Cl. 354-62.000.

Hanaue, Masami: *See*—
Watanabe, Tsuneo; Yasumoto, Takeshi; Murata, Michio; Tagawa, Michito; Narushima, Hiroyuki; Furusato, Takashi; Kuwahara, Masao; Hanaue, Masami; and Seki, Tatsuya, 5,346,919, Cl. 514-468.000.

Hand, Bryan; Mizak, Ronald D.; and Piepho, Robert R., to Babcock & Wilcox Company, The. Asymmetric pulverizer tire. 5,346,148, Cl. 241-293.000.

Handley, Edward F.: *See*—
Caron, LaVerne A.; Handley, Edward F.; Kuo, W. Paul; and Lane, E. James, 5,347,419, Cl. 361-154.000.

Handschy, Mark A.; Stuart, Linden, III; and Masterson, Hugh, to Displaytech, Inc. Fast switching color filters for frame-sequential video using ferroelectric liquid crystal color-selective filters. 5,347,378, Cl. 359-53.000.

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Caveza, Martin J.; Chung, Caleb S.; and Handy, John N., 5,346,423, Cl. 446-479.000.

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Okada, Ryoji; Aizawa, Kooju; Yamada, Masayuki; Otani, Kenji; Takada, Kunio; Haneda, Mitsuaki; and Yamada, Toshihiro, 5,346,316, Cl. 384-297.000.

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Hanke, Lawrence E.; Nielsen, Dennis R.; and Koester, David D., to Seagate Technology, Inc. De-swaging technique for head gimbal assembly. 5,347,413, Cl. 360-104.000.

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Sheehan, Michael T.; Sounik, James R.; Hann, Bret F.; and Wilkison, William W., III, 5,346,983, Cl. 528-212.000.
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Narula, Anubhav P. S.; McGinnis, Matthew J.; Beck, Charles E. J.; Hanna, Marie R.; and Schiet, Franc T., 5,346,884, Cl. 512-6.000.

Hanna, Stephen D.: *See*—
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Hanson, George E.: *See*—
Sherman, Richard A.; Schultz, Darald R.; Salvay, Steven H.; Jaeger, Robert B.; Davis, Patrick H.; and Hanson, George E., 5,347,115, Cl. 235-472.000.

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Watanabe, Yasuto; Hara, Masao; Tomita, Takashi; Nakata, Tetsuya; and Moriwaki, Kenji, 5,346,665, Cl. 264-516.000.

Harada, Isao: *See*—
Aritsuka, Makoto; Mimoto, Atsuhisa; and Harada, Isao, 5,346,682, Cl. 423-342.000.

Harada, Kazuaki: *See*—
Tsuchiya, Masakazu; Takaoka, Aya; and Harada, Kazuaki, 5,346,889, Cl. 514-21.000.

Harada, Tsuneo: *See*—
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Haradahira, Terushi: *See*—
Counsell, Raymond E.; Meyer, Karen L.; Schwendner, Susan W.; and Haradahira, Terushi, 5,347,030, Cl. 558-169.000.

Harandi, Mohsen N.; Owen, Hartley; and Schipper, Paul H., to Mobil Oil Corporation. Process for producing gasoline having lower benzene content and distillation end point. 5,347,061, Cl. 585-323.000.

Hardee, Kim C.: *See*—
Cordoba, Michael V.; and Hardee, Kim C., 5,347,171, Cl. 307-296.200.
Cordoba, Michael V.; and Hardee, Kim C., 5,347,172, Cl. 307-296.200.

Hargis Container Corporation: *See*—
Hargis, Gary W.; Francis, David; and Brooks, Clifton A., 5,346,101, Cl. 222-195.000.

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Hargreaves, Kenneth M.; Dubner, Ronald; and Brown, Fred, to United States of America, Health and Human Services. Apparatus for determining in vivo response to thermal stimulation in an unrestrained subject. 5,345,943, Cl. 128-742.000.

Harigai, Masami; and Kishi, Hiroyasu, to Sanyo Electric Co., Ltd. Device for receiving closed captioned broadcasts. 5,347,365, Cl. 348-525.000.

Harker, Laurence A.: *See*—
Yafuso, Masao; and Harker, Laurence A., 5,345,932, Cl. 128-637.000.

Harland, Ronald S.: *See*—
Yarbrough, Sandra M.; Shet, Ramakant T.; and Harland, Ronald S., 5,346,485, Cl. 604-368.000.

Harmac Medical Products, Inc.: *See*—
Edwards, Floyd V.; and Strobel, Norman M., 5,346,477, Cl. 604-141.000.

Harmon, Daryl L.: *See*—
Scarola, Kenneth; Jamison, David S.; Manazir, Richard M.; Rescorl, Robert L.; and Harmon, Daryl L., 5,347,553, Cl. 376-259.000.

Harnish, Robert. Cushion with internal storage pouch. 5,345,633, Cl. 5-639.000.

Harpaz, Jacob; Wertheim, Raphael; and Betman, Benjamin, to Iscar Ltd. Metal cutting tool. 5,346,335, Cl. 407-11.000.

Harreus, Albrecht: *See*—
Mueller, Thomas; Eicken, Karl; Harreus, Albrecht; Koenig, Hartmann; Rentzea, Costin; Ammermann, Eberhard; and Lorenz, Gisela, 5,346,899, Cl. 514-256.000.

Harrington, Richard. Combination toilet and swivel urinal. 5,345,619, Cl. 4-341.000.

Harrington, Steven J., to Xerox Corporation. Printer calibration using a tone reproduction curve and requiring no measuring equipment. 5,347,369, Cl. 358-401.000.

Harris, David E.; and Bowman, Brent E., to Harris Instrument Corporation. Method and apparatus employing a linear array IR region radiation devices for locating the position of conveyor transported products. 5,347,135, Cl. 250-548.000.

Harris, Dennis; and General, Ronald, to GHS Products, Inc. Push-up package. 5,346,323, Cl. 401-82.000.

Harris Instrument Corporation: *See*—
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Harris, John, to Frontier Plastics (South Wales) Limited. Sharps disposal container with a pivoted closure door. 5,346,086, Cl. 220-254.000.

Harrod, W. Brian: *See*—
McKinnie, Bonnie G.; and Harrod, W. Brian, 5,347,053, Cl. 564-481.000

Hart & Cooley, Inc.: *See*—
Rademaker, Johan, 5,346,130, Cl. 236-49.500.

Hart, Douglas M., to OrePac Building Products. Elongated element display and retention apparatus. 5,346,076, Cl. 211-86.000.

Hartl, Engelbert: *See*—
Muller, Reinhard; Hartl, Engelbert; and Trommer, Gert, 5,347,354, Cl. 356-350.000.

Hartmann, Bruce: *See*—
Lee, Gilbert F.; and Hartmann, Bruce, 5,345,825, Cl. 73-574.000.

Hartmann, Heinrich: *See*—
Schneider, Reinhard; Grund, Norbert; and Hartmann, Heinrich, 5,346,986, Cl. 528-495.000.

Hartwig, Richard C.: *See*—
Chang, Victor S. C.; Hartwig, Richard C.; Lundquist, Joseph T.; Parham, Marc E.; and Laccetti, Anthony J., 5,346,788, Cl. 429-244.000.

Haruta, Koichi; and Terashi, Yuichiro, to Mitsui Petrochemical Industries, Ltd. Pulse laser irradiation apparatus for coated metal material. 5,347,528, Cl. 372-25.000.

Harvey, Eric A.: *See*—
Rieke, Larry D.; and Harvey, Eric A., 5,345,924, Cl. 126-110.00R.

Harwath, Frank L., to Suntec Industries Incorporated. Spring-biased valve assembly for a gear pump. 5,346,174, Cl. 251-61.300

Hasegawa, Naoki; Usuki, Arimitsu; Okada, Akane; and Kurauchi, Toshio, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Star-shaped nylons, methods for their preparation, tetrasubstituted carboxylic acids and methods for their preparation. 5,346,984, Cl. 528-323.000.

Hasegawa, Yutaka: *See*—
Komiyama, Yoshizo; Arai, Fumio; Hasegawa, Yutaka; Tanioka, Tetsuya; Sugiyama, Hisataka; Toyama, Yoshiyasu; and Nakanishi, Fusao, 5,346,522, Cl. 65-64.000.

Hashiguchi, Yoshiharu: *See*—
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Hashima, Kazuo: *See*—
Taguchi, Motohisa; Fukami, Tatsuya; Hashima, Kazuo; Toide, Yukari; Kawano, Yuji; Fujii, Yoshio; Tokunaga, Takashi; Nakaki, Yoshiyuki; Tsutsumi, Kazuhiko; Kobayashi, Hiroshi; Ohdoi, Yuzou; Tanabe, Shinji; and Shibata, Hiroshi, 5,347,485, Cl. 365-171.000.

Hashimoto, Hiroyuki; and Watanabe, Kazuo, to Dai Nippon Insatsu Kabushiki Kaisha. Apparatus for repairing defects in emulsion masks by passing laser light through a variable shaped aperture. 5,347,134, Cl. 250-492.100.

Hashimoto, Michinori: *See*—
Ichimura, Shozo; Tabei, Seikichi; and Hashimoto, Michinori, 5,346,876, Cl. 502-417.000.

Hassell, Curtis C. Self-locking parallel-motion dolly mount. 5,346,357, Cl. 414-462.000

Hassett, John J., to AT/COMM Incorporated. Hazardous waste transport management system. 5,347,274, Cl. 340-988.000.

Hastings, Roger, to SCIMED Life Systems, Inc. Apparatus and method for performing diagnostics and intravascular therapies. 5,346,508, Cl. 607-99.000.

Hata, Yoshiaki: *See*—
Shimizu, Tadafumi; Takano, Yoshiaki; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotaro; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,347,346, Cl. 355-202.000

Hatakeyama, Akihito; Sogo, Hiroshi; Kojima, Tamao; Horio, Yasuhiko; Tsukamoto, Masahide; and Fukumura, Yasushi, to Matsushita Electric Industrial Co., Ltd. Porous substrate and conductive ink filled vias for printed circuits. 5,346,750, Cl. 428-209.000.

Hatakeyama, Jun: *See*—
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Hatayama, Katsuo: *See*—
Sano, Tatsuhiko; Saijo, Keiko; Yokomori, Sadakazu; Nakashima, Yoshimoto; and Hatayama, Katsuo, 5,347,012, Cl. 548-311.400.

Hatfield, Geoff. Spray dispensed shampoo. 5,346,639, Cl. 252-90.000.

Hatta, Yoshihiko: *See*—
Shimizu, Tadafumi; Takano, Yoshiaki; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotaro; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,347,346, Cl. 355-202.000.

Hauck, Albert, to SMS Schloemann-Siemag Aktiengesellschaft. Rolling mill for wire or bar steel with a continuous light section steel or wire train. 5,345,805, Cl. 72-201.000.

Haufe, Wilfried; and Kajnath, Herbert, to Du Pont de Nemours, E. I., and Company. Package for individual objects with end pieces having tubular film attached thereto. 5,346,067, Cl. 206-497.000.

Haussecker, Walter, to Robert Bosch GmbH. Method and device for setting the short circuit moment in electric motors, particularly in servomotors. 5,347,214, Cl. 324-158.0MG

Hawkins, Irvin F.: *See*—
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Hawkins, Thomas B.; Bruckert, William; and Bissett, Thomas D., to Digital Equipment Corporation. Apparatus and method of data transfer between systems using different clocks. 5,347,559, Cl. 377-54.000.

Haworth, William S.; Olsen, Robert W.; Goodin, Mark S.; and Fuller, Larry E., to Avecor Cardiovascular, Inc. Hollow fiber blood oxygenator. 5,346,621, Cl. 210-645.000.

Hay & Forage Industries: *See*—
Pruitt, Martin E.; Case, Cecil L.; and Garrison, H. Keith, 5,345,752, Cl. 56-6.000.

Hayakawa, Hidenori: *See*—
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Hayakawa, Shigeyuki; and Yanagisawa, Leiichi, to Kabushiki Kaisha Toshiba. Semiconductor integrated circuit having a voltage step-down mechanism. 5,347,170, Cl. 307-296.100.
Hayakawa, Yoshio: *See*—
Fukaya, Haruhiko; Abe, Takashi; Hayashi, Eiji; and Hayakawa, Yoshio, 5,347,002, Cl. 540-596.000.
Hayase, Toru: *See*—
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Hayashi, Katsuhiko, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Velocity-reduced drive system. 5,345,834, Cl. 74-421.00A.
Hayashi, Katsumi: *See*—
Yamada, Minoru; and Hayashi, Katsumi, 5,347,336, Cl. 354-324.000.
Hayashi, Kinya, to Kabushiki Kaisha Toshiba. Drying machine. 5,345,694, Cl. 34-550.000.
Hayashi, Mikihito: *See*—
Nishiki, Masayuki; Fujiwara, Shigemi; Hayashi, Mikihito; Tsukamoto, Akira; Takamizawa, Kinya; Takano, Masayuki; and Nagai, Seiichiro, 5,345,938, Cl. 128-660.040.
Hayashi, Naoto, to Victor Company of Japan, Ltd. Magnetic recording correction circuit for reducing interference waves by third-degree inter-modulation distortions. 5,347,405, Cl. 360-30.000.
Hayashi, Noriaki: *See*—
Fukui, Wataru; and Hayashi, Noriaki, 5,345,909, Cl. 123-414.000.
Hayashi, Tetsuji, to Amada Manufacturing America, Inc. Turret punch press. 5,346,454, Cl. 483-29.000.
Hayashida, Haruo; Nomura, Ryoichi; and Koyama, Satoru, to Sumitomo Chemical Company, Limited. Polyolefin resin composition. 5,346,944, Cl. 524-451.000.
Hayashikoshi, Masanori: *See*—
Terada, Yasushi; Nakayama, Takeshi; Kobayashi, Shinichi; Miyawaki, Yoshikazu; and Hayashikoshi, Masanori, 5,347,490, Cl. 365-219.000.
Hayes, John, to McGrath, Robert J. Motor vehicle anti-theft device. 5,345,797, Cl. 70-218.000.
Hayes, Todd R.: *See*—
Byrne, Erin K.; Chakrabarti, Utpal K.; and Hayes, Todd R., 5,346,855, Cl. 437-129.000.
Hayes Wheels International, Inc.: *See*—
Ashley, Walter L., Jr., 5,345,676, Cl. 29-894.323.
Hayhurst, David T.: *See*—
Kuznicki, Steven M.; Dang, Dinh; Hayhurst, David T.; and Thrush, Kathleen A., 5,346,535, Cl. 95-96.000.
Hayward, Charles R.: *See*—
Serrano, Mark A.; Houghton, Kenneth S.; Lanzillotti, Harry V.; Sanders, Edward B.; Lilly, A. Clifton, Jr.; Hayward, Charles R.; Hearn, John R.; Losee, D. Bruce, Jr.; Fleischhauer, Grier S.; and Houck, Willie G., 5,345,951, Cl. 131-194.000.
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He, Xiao-Shu: *See*—
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He, Xiaohua: *See*—
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Headley, James E., to J. B. Engineering Co., Inc. Cartridge retaining means. 5,346,298, Cl. 312-348.300.
Healy, Jack. Quick inflatable air mattress. 5,345,630, Cl. 5-454.000.
Hearn, John R.: *See*—
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Heath, Jan N.: *See*—
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Heath, William; Richardson, Richard; and Goheen, Steven, to Battelle Pacific Northwest Labs. Treating of solid earthen material and a method for measuring moisture content and resistivity of solid earthen material. 5,347,070, Cl. 588-253.000.
Heathman, James F.; and Crook, Ronald J., to Halliburton Company Fine particle size cement compositions and methods. 5,346,012, Cl. 166-293.000.
Hecken, Gerd: *See*—
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Hedaya, Ezra: *See*—
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Hegler, Ralph-Peter; and Hegler, Wilhelm, 5,346,384, Cl. 425-381.000.
Heiber, Sonia J.; Ebert, Charles D.; and Dave, Sirish C., to TheraTech, Inc. Transmucosal delivery of macromolecular drugs. 5,346,701, Cl. 424-435.000.
Heidelberger Druckmaschinen AG: *See*—
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Heidke, Darryl J.: *See*—
Green, Paul A.; Rankin, Russel J.; Boyce, Phillip R.; White, Raymond M.; Buhot, John W.; Heidke, Darryl J.; Leiner, Andrew M.; Finney, Andrew L.; Aqualini, Matthew; Mills, Edward G.; Gibbons, Richard J.; Abood, John C.; Roberts, David G.; and Thomas, David P., 5,346,435, Cl. 452-160.000.
Heidsieck, Robert, to General Electric CGR S.A. Method for determining the function representing the effect of non-reciprocity of a radiographic film. 5,347,563, Cl. 378-62.000.
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Heimann, Edward W.; and Dash, Thomas E., to Wallace Computer Services, Inc. Apparatus and method for indexing sheets. 5,346,195, Cl. 270-52.500.
Heindl, Richard: *See*—
Nett, Hans-Peter; Honzek, Robert; Heindl, Richard; and Hommel, Rainer, 5,345,839, Cl. 74-606.00R.
Heinen, Calvin. Illuminated backboard. 5,346,207, Cl. 273-1.50R.
Heinig, Charles F.: *See*—
Stahurski, Terrence M.; Asher, Marc A.; Carson, William L.; Stripgen, Walter E.; Heinig, Charles F.; Gaines, Robert W., Jr.; and Janson, Frank S., 5,346,493, Cl. 606-61.000.
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Heinrich Kopp AG: *See*—
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Heinz, Thomas J.; Walker, Tom; and Plambeck, Eric D., to Bio-Cybernetics International. Electromechanical back brace apparatus. 5,346,461, Cl. 602-19.000.
Held, Uwe: *See*—
Feustel, Dieter; Held, Uwe; Hoefer, Rainer; and Engels, Thomas, 5,346,973, Cl. 526-209.000.
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Miyazono, Kohei; Heldin, Carl-Henrik; and Olofsson, Anders, 5,346,993, Cl. 530-399.000.
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Hellstrom, Nils Erik. Carriage for transferring objects. 5,346,354, Cl. 414-430.000.
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King, Edward T.; Brandenburg, Larry R.; and Henig, Yitshak I., 5,345,761, Cl. 60-274.000.
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Feustel, Dieter; Held, Uwe; Hoefer, Rainer; and Engels, Thomas, 5,346,973, Cl. 526-209.000.
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Henry, Raymond L.: *See*—
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Stroder, Ulrich; Duruz, Jean-Jacques; and Jorda, Jean-Louis, 5,346,608, Cl. 205-231.000.
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Hodge, Charles F.; Sarmast, Syed H.; Herbert, Gerald F.; and Sopko, Dennis M., 5,346,288, Cl. 301-37.370.
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Richter, Herbert, 5,346,295, Cl. 312-9.120.
Hergenrother, William L.; and Morrow, Martin E., to Bridgestone/-Firestone, Inc. Elastomers having reduced hysteresis prepared with vinyl imidazole. 5,346,962, Cl. 525-281.000.
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Mocilnikar, Anton; and Herrmann, Charles K., 5,346,259, Cl. 283-108.000.
Herrmann, Wolfgang A.; Manetsberger, Rainer; Bahrmann, Helmut; Kohlpaintner, Christian; and Lappe, Peter, to Hoechst Aktiengesellschaft. Sulfonated 2,2'-bis (diphenylphosphinomethyl)-1,1'-binaphthalenes, process for their preparation and their use in a process for the hydroformylation of olefinically unsaturated compounds. 5,347,045, Cl. 562-35.000.
Herron, Matt; and Blakely, David, to Apple Computer, Inc. Docking station for a portable computer. 5,347,425, Cl. 361-683.000.
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Kress, Dieter; Haberle, Friedrich; and Hertel, G u/ nther, 5,346,344, Cl. 409-234.000.
Hess, Charles D.; and Wickstrom, Charles W., to Q-Med, Inc. Syringe with retractable needle. 5,346,480, Cl. 604-197.000.
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Bauman, Joseph H.; and Nichols, Claude W., III, 5,347,266, Cl. 340-735.000.
Bloom, Alan R., 5,347,176, Cl. 307-490.000.
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Nguyen, Michael A., 5,346,320, Cl. 400-354.000.
Sauvage, Pierre, 5,347,182, Cl. 307-465.100.
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Law, Joseph P.; and Oehler, Robert, 5,346,264, Cl. 285-158.000.
Heynen, Antonius J. M.; and Ward, James P., to Unilever Patent Holdings B.V. Process for treating fatty acids. 5,347,023, Cl. 554-186.000.
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Ito, Hideo; Narukawa, Mitsutoshi; and Sakai, Kazuhiro, 5,346,557, Cl. 134-10.000.
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Uchida, Ken; Higashi, Michiya; and Fujieda, Shinetsu, 5,346,743, Cl. 428-76.000.
Higashi, Toshio; and Ogita, Shouichi, to Fujitsu Limited. Optical semiconductor device, method of producing the optical semiconductor device, and laser device using optical semiconductor devices. 5,347,533, Cl. 372-96.000.
Higashionji, Masaru: *See*—
Murata, Akio; Maegawa, Takaaki; Mukae, Hideaki; and Higashionji, Masaru, 5,347,415, Cl. 360-109.000.
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Okabe, Ichiro; Kawai, Satoshi; Higashira, Hideki; and Suzou, Hirakushi, 5,346,033, Cl. 180-248.000.
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Abrams, Louis B., 5,346,746, Cl. 428-195.000.
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Aqui, Derek G.; and Borden, Peter G., 5,347,138, Cl. 250-573.000.
Highe, Albert J.; and Imran, Mir A., to Physiometrix, Inc. Electrode construction and package therefor and method. 5,345,934, Cl. 128-639.000.
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Weder, Donald E., 5,345,745, Cl. 53-397.000.
Hightower, Charles M.: *See*—
Blount, Curtis G.; Hightower, Charles M.; and Hailey, Charles D., 5,346,017, Cl. 166-380.000.
Hikata, Hajime; Tanaka, Kumi; and Shindo, Kazuyoshi, to Nippon Electric Glass Co., Ltd. Low temperature sealing composition. 5,346,863, Cl. 501-17.000.
Hilbert, Thomas K.; and Morse, Theodore H., to Eastman Kodak Company. Apparatus for applying toner to an electrostatic image having improved developer flow. 5,347,347, Cl. 355-253.000.
Hill, Peter D.; and Putman, Thomas H., to Westinghouse Electric Corporation. Adaptive system for controlling noise generated by or emanating from a primary noise source. 5,347,586, Cl. 381-71.000.
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Drossler, Eckart; and Batliner, Rainer, 5,345,997, Cl. 165-47.000.
Meier, Peter; Ludwig, Ralf; and Wechselberger, Klaus, 5,346,131, Cl. 238-283.000.
Himes, Ronald E.; Dahl, Jeffrey A.; Hunt, Charles V.; and Holtmyer, Marlin D., to Halliburton Company. Pipeline cleaning process 5,346,339, Cl. 405-171.000.
Himont Incorporated: *See*—
Ogale, Kumar; and Starsinic, Michael E., 5,346,756, Cl. 428-288.000.
Hirai, Yoshihiko; Morimoto, Kiyoshi; Terui, Yasuaki; Wada, Atsuo; Okada, Kenji; Yasui, Juro; and Niwa, Masaaki, to Matsushita Electric Industrial Co., Ltd. Resonant electron transfer device. 5,347,140, Cl. 257-17.000
Hiraiwa, Atsushi: *See*—
Hisamoto, Dai; Kaga, Toru; Kimura, Shinichiro; Moniwa, Masahiro; Tanaka, Haruhiko; Hiraiwa, Atsushi; and Takeda, Eiji, 5,346,834, Cl. 437-41.000.
Hirakouchi, Yoshie; Adachi, Ikuo; and Nagai, Yoshiaki, to Lion Corporation. Deinking agent for reclaiming waste paper. 5,346,543, Cl 106-243.000.
Hiramatsu, Akira: *See*—
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Hiramatsu, Koji, to Takata Corporation. Pretensioner for vehicle seat belts. 5,346,257, Cl. 280-806.000.
Hirata, Naonori: *See*—
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Hirosawa, Toshio; Kurihara, Jun'ichi; and Kimura, Ikuo, to Hitachi, Ltd. Remote operation control for computer system. 5,347,646, Cl. 395-575.000.
Hirsch, Harold D.; Spencer, John A. D.; and Samson, Ilan Z., to Egnell Ameda Limited. Non-invasive medical probe provided with suction cup. 5,345,935, Cl. 128-642.000.
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Hitachi Device Engineering Co., Ltd.: *See*—
Horiguchi, Masashi; Itoh, Kiyoo; Kawajiri, Yoshiki; Kitsukawa, Goro; Kawahara, Takayuki; and Akiba, Takesada, 5,347,492, Cl. 365-226.000.
Hitachi Engineering & Services, Inc.: *See*—
Fukuda, Takuya; Ohue, Michio; Kanai, Fumiyuki; Koike, Atsuyoshi; Saito, Katsuaki; and Suzuki, Kazuo, 5,347,100, Cl. 219-121.430.
Hitachi Koki Company Limited: *See*—
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Fukuda, Takuya; Ohue, Michio; Kanai, Fumiyuki; Koike, Atsuyoshi; Saito, Katsuaki; and Suzuki, Kazuo, 5,347,100, Cl. 219-121.430.
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Horiguchi, Masashi; Itoh, Kiyoo; Kawajiri, Yoshiki; Kitsukawa, Goro; Kawahara, Takayuki; and Akiba, Takesada, 5,347,492, Cl. 365-226.000.
Ishihara, Yukihito; Yamakido, Kazuo; and Tamba, Yuko, 5,347,279, Cl. 341-166.000.
Kamitsuma, Yasuo; Nakagawa, Yusaku; Kobayashi, Yoshihiro; Nakashima, Shoichi; Iizuka, Tadashi; Nakamura, Keiichi; and Shikata, Hideo, 5,346,667, Cl. 419-52.000.
Kawamura, Yoshio; Sato, Kazuo; Tanaka, Shinji; Kohida, Hiroyuki; and Sakurano, Masatoshi, 5,346,825, Cl. 435-240.260.
Kohno, Ryuji; Nishimura, Asao; Kitano, Makoto; Yaguchi, Akihiro; and Yoneda, Nae, 5,347,429, Cl. 361-813.000.
Kondo, Nobukazu; Maruyama, Takashi; Isamu, Keiichi; and Aotsu, Hiroaki, 5,347,643, Cl. 395-425.000.

Momma, Naoko; Tashiro, Korefumi; and Ikeda, Masahito, 5,346,163, Cl. 246-5.000.
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Namba, Shigeaki; Sakamoto, Tatsuo; and Kahara, Toshiki, 5,346,777, Cl. 429-12.000.
Nishimura, Ryuji; Nishizawa, Akihito; Yamamoto, Mayuko; and Imaide, Takuya, 5,347,371, Cl. 358-453.000.
Okada, Ryoji; Aizawa, Kooju; Yamada, Masayuki; Otani, Kenji; Takada, Kunio; Haneda, Mitsuaki; and Yamada, Toshihiro, 5,346,316, Cl. 384-297.000.
Okamoto, Yoshio; Kanamaru, Hisanobu; Maeda, Hitoshi; Suzuki, Satoshi; Ishikawa, Tohru; Kosuge, Tokuo; Amou, Kiyoshi; Ohki, Hiroshi; Nakagawa, Koji; Tanabe, Yoshiyuki; and Yokoyama, Mizuho, 5,346,137, Cl. 239-585.400.
Sekigami, Kazuo; Oshima, Kenichi; and Takebayashi, Masahiro, 5,345,785, Cl. 62-468.000.
Takanashi, Katsuya; Nakamura, Shouji; Akaosugi, Takashi; Kojima, Tomihiko; Takahashi, Tooru; and Shirahama, Ritsuo, 5,347,624, Cl. 395-157.000.
Yamada, Naoyuki; Kasahara, Takayasu; and Kobayashi, Yasuhiro, 5,347,614, Cl. 395-75.000.
Yoda, Hiroaki; Machizawa, Kenzi; and Yamamoto, Koji, 5,345,786, Cl. 62-476.000.

Hitachi Metals, Ltd.: *See—*
Nitta, Hideo; Kanai, Kunio; and Arai, Yasuo, 5,347,412, Cl 360-103.000.
Obata, Fumio; Yasuda, Hisashi; Nagayoshi, Hideaki; Suehara, Kiyoshi; Imanishi, Kouhei; and Yoshida, Toshiki, 5,346,561, Cl 148-321.000.

Hitachi Powdered Metals Co., Ltd.: *See—*
Kamitsuma, Yasuo; Nakagawa, Yusaku; Kobayashi, Yoshihiro; Nakashima, Shoichi; Iizuka, Tadashi; Nakamura, Keiichi; and Shikata, Hideo, 5,346,667, Cl. 419-52.000.

Ho, Diana. Skate construction with pre-set buffering, shock-absorbing and the topography compliance functions. 5,346,231, Cl. 280-11.200.

Ho, Shy-Ming: *See—*
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Hoag, Carol A.; and Wilson, Steven W., to Dow Corning Corporation. Method for curing organosiloxane compositions in the presence of cure inhibiting materials. 5,346,723, Cl. 427-302.000.

Hobbs, Eamonn; Hawkins, Irvin F.; Zimmet, Arthur; Goodman, John; and Recinella, Daniel, to E-Z-EM, Inc. Contrast media injector 5,346,470, Cl. 604-24.000.

Hochleitner, Wolfgang A.; and Goff, Stephen P., to Air Products and Chemicals, Inc. Fixation of heavy metals, mercury recovery and dioxins destruction in municipal solid waste incinerator ash. 5,347,073, Cl. 588-256.000.

Hochleitner, Wolfgang A.; and Goff, Stephen P., to Air Products and Chemicals, Inc. Fixation of heavy metals, mercury recovery and dioxins destruction in scrubbed municipal solid waste incinerator ash. 5,347,074, Cl. 588-256.000.

Hodge, Charles F.; Sarmast, Syed H.; Herbert, Gerald F.; and Sopko, Dennis M., to Ford Motor Company. Automotive wheel and cover assembly with cushioning band. 5,346,288, Cl. 301-37.370.

Hodgetts, Philip J. Modular rack mounted battery system. 5,346,786, Cl. 429-159.000

Hodgson, William S.; Dhuwalia, Jagdish C.; and Pflueger, Russell, to Baxter International Inc. Dual coil guidewire with radiopaque distal tip. 5,345,945, Cl. 128-772.000

Hodogaya Chemical Co., Ltd.: *See—*
Anzai, Mitsutoshi; Matsuura, Yuji; Mukudai, Osamu; Kanno, Miki; and Watanabe, Kayoko, 5,346,794, Cl. 430-110.000.

Hoeber, Anthony; Mandler, Alan; and Cox, Norman, to Sun Microsystems, Inc. Method and apparatus for selecting and executing defaults in window based displayed system. 5,347,626, Cl. 395-156.000

Hoeber, Tony: *See—*
Agulnick, Todd; Carr, Robert; Hoeber, Tony; Kaplan, S. Jerrold; Low, David R.; and Ouye, Michael, 5,347,295, Cl. 345-156.000

Hoechst AG: *See—*
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Hoechst Aktiengesellschaft: *See—*
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Becker, Winfried, 5,346,538, Cl. 106-38.900
Billeb, Gilbert; and Burg, Peter, 5,347,054, Cl. 568-437.000.
Herrmann, Wolfgang A.; Manetsberger, Rainer; Bahrmann, Helmut; Kohlpaintner, Christian; and Lappe, Peter, 5,347,045, Cl 562-35.000
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Pawlowski, Geog; Dammel, Ralph; Roeschert, Horst; Spiess, Walter; and Eckes, Charlotte, 5,346,804, Cl. 430-281.000.
Pawlowski, Georg; Dammel, Ralph; Roeschert, Horst; Spiess, Walter; and Eckes, Charlotte, 5,346,806, Cl. 430-284.000.

Hoechst Celanese Corporation: *See—*
Sheehan, Michael T.; Sounik, James R.; Hann, Bret F.; and Wilkison, William W., III, 5,346,983, Cl. 528-212.000.
Sheehan, Michael T.; Sounik, James R.; Hann, Bret F.; and Wilkison, William W., III, 5,347,049, Cl. 564-347.000
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Hoefer, Rainer: *See—*
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Hofeldt, Albert J. System and method using the pulfrich stereo-illusion phenomenon to screen eyes and detect ocular and optic nerve disease. 5,347,330, Cl. 351-223.000.

Hoffman, Ernest G.; and Ehrenfels, Alfred L., to Hubbell Incorporated. Electrical cable and connector assembly with safety pilot line disconnect, especially for electric vehicle. 5,346,406, Cl. 439-474.000.

Hoffman-La Roche Inc.: *See—*
Carrico, Charles L., Jr.; Fox, William A.; Geyer, James W.; and Knesel, Ernest A., Jr., 5,346,831, Cl. 436-174.000.

Hoffman, William M.: *See—*
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Hoffmann, Dietrich, to BASF Aktiengesellschaft. Color former preparations. 5,346,931, Cl. 523-201.000.

Hoffmann-La Roche Inc.: *See—*
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Hoffmann, Ralf: *See—*
Fels, Ulrich; Windhab, Erich; Hoffmann, Ralf; von Holdt, Peter; and Hahn, Lutz, 5,345,781, Cl. 62-343.000.

Hoffmann, Robert P.; Malcolm, Jerry W.; Montgomery, John D.; and Stone, Steve S., to International Business Machines Corporation. Graphical user interface including dynamic sizing and spacing. 5,347,627, Cl. 395-157.000.

Hoffmann, Robert P.: *See—*
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Hogan, Dennis L.: *See—*
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Hollandse Signaalapparaten B.V.: *See—*
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Hollister Incorporated: *See—*
Metz, Michael; and Peterson, James J., 5,346,482, Cl. 604-338.000
Schneider, Barry L., 5,346,479, Cl. 604-174.000.

Holman, Michael J. Bicycle seat post seating and clearance positioning system. 5,346,235, Cl. 280-226.100.

Holmes, Glenn E.: *See—*
Ferreri, Raymond J.; Holmes, Glenn E.; and Magdo, Steven, 5,347,465, Cl. 364-488.000.

Holmes, John L.; and Mommers, Alexander A., to Fisons plc. Mass spectrometer having means for observing the radiation emitted when ions collide with a target gas. 5,347,125, Cl. 250-281.000.

Holmgren, Jan: *See—*
Vahlne, Anders; Svennerholm, Bo; Rymo, Lars; Jeansson, Stig; Horal, Peter; Czerkinsky, Cecil; and Holmgren, Jan, 5,346,989, Cl. 530-324.000.

Holobaugh, Raymond E.; and Rogers, W. Clark, to Parma Corporation. Foldable headrest mechanism. 5,346,277, Cl. 297-61.000.

Holtmyer, Marlin D.: *See—*
Himes, Ronald E.; Dahl, Jeffrey A.; Hunt, Charles V.; and Holtmyer, Marlin D., 5,346,339, Cl. 405-171.000.

Holz, Michael, to Ratheon Company. Ring laser gyro. 5,347,360, Cl. 356-350.000.

Holzman, Louis M.; Kelly, Thomas F.; and Camus, Patrick P., to Wisconsin Alumni Research Foundation. Position sensitive detector providing position information with enhanced reliability and performance. 5,347,132, Cl. 250-389.000.

Hommel, Rainer: *See—*
Nett, Hans-Peter; Honzek, Robert; Heindl, Richard; and Hommel, Rainer, 5,345,839, Cl. 74-606.00R.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Maruyama, Hiroshi; and Yamanaka, Masayoshi, 5,345,917, Cl 123-520.000.
Nakamura, Shunji; and Sakai, Toru, 5,347,463, Cl. 364-478.000.
Serizawa, Mitsuya; and Yamamoto, Yorihisa, 5,347,458, Cl 364-424.050.
Sugino, Takuya; Sakanushi, Masahiro; Kinoshita, Kenichiro; and Sando, Yasuyuki, 5,345,920, Cl. 123-564.000.
Yamanaka, Yasurou; Yamanaga, Junichi; Morizono, Akira; Miyazaki, Akira; and Unose, Noriyuki, 5,345,675, Cl. 29-894.300.

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Honda Lock Mfg. Co. Ltd.: *See—*
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Honda of America Mfg., Inc.: *See—*
Streets, Frederick T., 5,346,531, Cl. 75-582.000.

Honeywell Inc.: *See—*
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Elhardt, Scott T., 5,347,289, Cl. 342-448.000.
Gregory, William W.; and Kauffman, James W., 5,347,204, Cl. 318-632.000.
Kay, Robert M., 5,347,361, Cl. 356-350.000.
Neuharth, Steven D.; Lobsinger, James; and Janke, Dean J., 5,347,236, Cl. 331-87.000.
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Wacker, Paul C., 5,346,128, Cl. 236-44.00A.

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Nett, Hans-Peter; Honzek, Robert; Heindl, Richard; and Hommel, Rainer, 5,345,839, Cl. 74-606.00R.

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Hooper, Clare E.: *See—*
Ansorge, Richard E.; Hooper, Clare E.; Neale, William W.; and Stanley, Philip, 5,347,122, Cl. 250-227.110.

Hoover Group, Inc.: *See—*
Dabney, Upton R., 5,346,190, Cl. 267-95.000.
Rodgers, Kevin T.; and Lewis, James, 5,346,188, Cl. 267-106.000.

Hooykaas, Carel W. J.; and Newton, Jeffrey P., to Pelt & Hooykaas B.V. Toxic waste fixant and method for using same. 5,347,077, Cl. 588-257.000.

Hopewell, Richard B., to Process Systems International, Inc. Single column distillative separation employing bottom additives. 5,345,772, Cl. 62-20.000.

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Clark, Frederick T.; Kukes, Simon G.; and Hopkins, P. Donald, 5,346,874, Cl. 502-207.000.
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McEachern, Alexander; and Hord, Bryan D., 5,347,464, Cl. 364-483.000

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Horiuchi, Edward M.: *See—*
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Horng Shen Machinery Co., Ltd.: *See—*
Chiu, Yi-Chich; Wu, Hann-Yun; Chen, Su-Ming; Wu, Few-Long; and Chang, Ming-Yih, 5,346,424, Cl. 452-5.000.

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Garnier, Francis; Horowitz, Gilles; and Fichou, Denis, 5,347,144, Cl. 257-40.000.

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Hoshino, Hidekazu, to NHK Spring Co., Ltd. Authenticity identifying structure for an article. 5,347,111, Cl. 235-457.000.

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Moriya, Masafumi; Hosoda, Kazuo; Yoshida, Masatoshi; and Tsukanome, Masayoshi, 5,347,071, Cl. 588-256.000.

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Ohmura, Hiroshi; Kosaka, Masanobu; and Hosoda, Koji, 5,346,030, Cl. 180-140.000.

Hosoi, Norihiro; and Azuma, Shuji, to Sumitomo Electric Industries, Ltd. Flame-retardant adhesive. 5,346,539, Cl. 106-18.120.

Hosokawa, Akihiro, to Applied Materials, Inc. Method and apparatus for cooling semiconductor wafers. 5,345,999, Cl. 165-80.200.

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Kuno, Tadahiko, 5,346,643, Cl. 252-175.000.

Hotton, Donald J.; and Broad, Sherry A., to General Motors Corporation. Seat skinning and method. 5,345,661, Cl. 29-91.100.

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Serrano, Mark A.; Houghton, Kenneth S.; Lanzillotti, Harry V.; Sanders, Edward B.; Lilly, A. Clifton, Jr.; Hayward, Charles R.; Hearn, John R.; Losee, D. Bruce, Jr.; Fleischhauer, Grier S.; and Houck, Willie G., 5,345,951, Cl. 131-194.000.

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Serrano, Mark A.; Houghton, Kenneth S.; Lanzillotti, Harry V.; Sanders, Edward B.; Lilly, A. Clifton, Jr.; Hayward, Charles R.; Hearn, John R.; Losee, D. Bruce, Jr.; Fleischhauer, Grier S.; and Houck, Willie G., 5,345,951, Cl. 131-194.000.

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Howard, William J. Method of manufacturing a magazine of predetermined number of cartridges. 5,345,660, Cl. 29-1.300.

Howe Furniture Corporation: *See—*
Loescher, William A., 5,345,881, Cl. 108-132.000.

Howie, Robert K., Jr., to Grigoleit Company, The. Easily assembled calibratable dial. 5,345,838, Cl. 74-553.000.

Hoyte, Andrew G.: *See—*
Downham, David W.; and Hoyte, Andrew G., 5,345,650, Cl. 15-331.000.

Hrubec, John A.: *See—*
Bogue, Beuford A.; and Hrubec, John A., 5,346,377, Cl. 425-9.000.

Hsieh, Kuo C. Control valve for an exercise stair device. 5,346,444, Cl. 482-53.000.

Hsu, Adam C. T.; Shaber, Steven H.; and Michelotti, Enrique L., to Rohm and Haas Company. N-iodopropargyl hydantoin compounds, compositions, preparation, and use as antimicrobial agents. 5,346,913, Cl. 514-389.000.

Hsu, Wen-Hsiung H. Multiple tray container. 5,346,091, Cl 220-503.000.

Hsu, Yi-Hsung. Rear derailleur mechanism for a bicycle. 5,346,434, Cl. 474-82.000.

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Garofalo, Gianni, 5,345,615, Cl. 2-430.000.

Huang, Chien-Teh. Modular roof structure. 5,345,740, Cl. 52-551.000.

Hubbell Incorporated: *See—*
Hoffman, Ernest G.; and Ehrenfels, Alfred L., 5,346,406, Cl. 439-474.000.

Huber, Johann; and Lutze, Dieter, to Reiff GmbH. Rolling gate 5,345,991, Cl. 160-122.000.

Huck, Thomas: *See—*
Wiesler, Martin; Huck, Thomas; and Schiller, Herbert, 5,346,256, Cl. 280-802.000.

Huff, William W. Method and assembly for converting a mobile gas range to combination gas-electric range. 5,347,609, Cl. 392-309.000.

Hugenell, Hermann, to Hugenell, Hermann; and Karl Friedrich Angstenberger. Reflecting telescope and its production process. 5,347,401, Cl. 359-853.000.

Hughes Aircraft Company: *See—*
Cook, Lacy G.; and Wheeler, Bryce A., 5,347,391, Cl. 359-211.000.
Kich, Rolf; and Al-Bundak, Omar M., 5,347,243, Cl. 333-106.000.
Krizek, Howard J.; and Johnsen, Gordon M., 5,347,283, Cl. 342-201.000.
Nieh, Simon K.; Matossian, Jesse N.; and Krajenbrink, Frans G., 5,346,600, Cl. 204-192.300.
Nourrcier, Charles E., Jr., 5,347,357, Cl. 356-5.000
Panaretos, Steve K.; and Quan, Clifton, 5,347,241, Cl. 333-1.100.
Smith, Ronald T.; and Daiber, Andrew, 5,347,435, Cl. 362-80.100

Hughes, Daniel, to Bertrand Faure Ltd. Spring biased inertial latch for vehicle seat assemblies. 5,346,281, Cl. 297-367.000

Hughes, James T., to Indresco Inc. Removable pipe arch for dragline buckets. 5,345,702, Cl. 37-399.000.

Hughes, Karna M.: *See—*
Kadaja, Thomas P., 5,346,234, Cl. 280-216.000.

Hughes, Kevin M.: *See—*
Kadaja, Thomas P., 5,346,234, Cl. 280-216.000.

Hughes Missile Systems Company: *See—*
Speciale, Ross A., 5,347,287, Cl. 342-375.000.

Hughes, Morgan M.; Kummer, Kyle G.; Betso, Stephen R.; Rowland, Michael E.; and Edmondson, Morris S., to Dow Chemical Company, The. Graft-modified, substantially linear ethylene polymers and methods for their use. 5,346,963, Cl. 525-285.000.

Hughes, Timothy E.: *See—*
Burnard, Dennis W.; Kmenta, Steven; and Hughes, Timothy E., 5,346,251, Cl. 280-737.000.

Hume, Edward F.: *See—*
Decker, Lawrence G.; Poston, Janet R.; and Hume, Edward F., 5,347,120, Cl. 250-214.00B.

Humphris, Robert R.: *See—*
Lewis, David W.; Humphris, Robert R.; Maslen, Eric H.; Allaire, Paul E.; and Williams, Ronald D., 5,347,190, Cl. 310-90.500.
Hung, Liang-Sun; Agostinelli, John A.; and Mir, Jose M., to Eastman Kodak Company. Multilayer structure having a (111)-oriented buffer layer. 5,347,157, Cl. 257-627.000.
Hunnicutt, Harry A., to Kelsey-Hayes Company. Variable assist steering control valve. 5,346,175, Cl. 251-129.080.
Hunt, Charles V.: *See—*
Himes, Ronald E.; Dahl, Jeffrey A.; Hunt, Charles V.; and Holtmyer, Marlin D., 5,346,339, Cl. 405-171.000.
Huntech, Inc.: *See—*
Brown, Michael G., 5,345,706, Cl. 42-94.000.
Hunter, Francis J.; Wigsten, Mark M.; and Kuznets, Sam A., to Borg-Warner Automotive, Inc. Air vent for hydraulic chain tensioner. 5,346,436, Cl. 474-110.000.
Hunter, Ken. Optical system for virtual reality helmet. 5,347,400, Cl. 359-815.000.
Hunter, Willie C. Balancing stick toy having 4 extending poles with linked chains thereon. 5,346,229, Cl. 273-449.000.
Huntley, James B.; Huntley, James Brian; Huntley, Tonya M.; and Burroughs, Cornelius L. Portable, personal computer, personal communicator holder. 5,346,111, Cl. 224-265.000.
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Huntley, James B.; Huntley, James Brian; Huntley, Tonya M.; and Burroughs, Cornelius L., 5,346,111, Cl. 224-265.000.
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Huntley, James B.; Huntley, James Brian; Huntley, Tonya M.; and Burroughs, Cornelius L., 5,346,111, Cl. 224-265.000.
Hurwitt, Steven D.: *See—*
Barada, Andrew; and Hurwitt, Steven D., 5,346,601, Cl. 204-192.150.
Huss, Albin, Jr.: *See—*
Child, Jonathan E.; Del Rossi, Kenneth J.; Huss, Albin, Jr.; and Kurtas, Robert S., 5,347,064, Cl. 585-716.000.
Hussmann Corporation: *See—*
Roberts, Harold L., 5,345,778, Cl. 62-256.000.
Hutchings, Thomas J.; Kanegsberg, Edward; Hammons, Sheridan W.; Stjern, Daryl C., deceased; and Rusche, Edmund W., legal representative, to Litton Systems, Inc. Apparatus and method for correcting ring laser gyroscope phase angle errors induced by lock-in. 5,347,359, Cl. 356-350.000.
Hutchinson Personal Communications Limited: *See—*
Candy, Edwin R., 5,347,562, Cl. 379-58.000.
Huzenlaub, Peter; and Schmidt, Heinz, to IWK Regler und Kompensatoren GmbH. Flexible line element with thermal insulation. 5,346,263, Cl. 285-53.000.
Hybrid Networks, Inc.: *See—*
Moura, Eduardo J.; and Long, James C., 5,347,304, Cl. 348-12.000.
Hyppanen, Timo, to A. Ahlstrom Corporation. Method and apparatus for circulating solid material in a fluidized bed reactor. 5,345,896, Cl. 122-4.00D.
Hyundai Electronics Industries Co. Ltd.: *See—*
Park, Young J.; and Jeon Ha E., 5,346,846, Cl. 437-52.000.
Hyundai Motor Company: *See—*
Lee, Unkoo, 5,346,241, Cl. 280-691.000.
Hyzin, Peter J., to ITT Corporation. Connector grounding arrangement. 5,346,403, Cl. 439-95.000.
Iacovangelo, Charles D.: *See—*
Zarnoch, Kenneth P.; and Iacovangelo, Charles D., 5,346,719, Cl. 427-97.000.
I'Anson, Colin S.; McKee, Neil; and Galloway, James R., to Hewlett-Packard Company. Protocol analyzer. 5,347,524, Cl. 371-29.100.
Ibiden Co., Ltd.: *See—*
Nakamura, Masanori; and Sakaguchi, Yoshikazu, 5,347,608, Cl. 385-130.000.
Ichihara, Takashi, to Kabushiki Kaisha Toshiba. Scintillation camera. 5,347,455, Cl. 364-413.240.
Ichimura, Shozo; Tabei, Seikichi; and Hashimoto, Michinori, to Nippon Chemical Industrial Co., Ltd. Air purifying agent and a process for producing same. 5,346,876, Cl. 502-417.000.
Ichinohe, Shoji: *See—*
Yokoyama, Yasuhiro; Iwata, Noriko; Ito, Eri; Ando, Ichiro; Ichinohe, Shoji; and Yamazaki, Toshio, 5,346,946, Cl. 524-547.000.
Ichinose, Shiro: *See—*
Kurata, Shuichi; Ichinose, Shiro; Kusaki, Kazuo; Ishihara, Toshihiko; Ueno, Naozumi; and Morita, Toru, 5,345,863, Cl. 101-126.000.
Ide, Satoshi: *See—*
Omure, Yukio; Ide, Satoshi; Matsuda, Takahiro; Aoyama, Hirokaza; and Seki, Eiji, 5,346,645, Cl. 252-194.000.
Idemitsu Petrochemical Co., Ltd.: *See—*
Kudo, Hiroshi; and Kawamura, Shinji, 5,346,764, Cl. 428-349.000.
Kurahashi, Akihiko; and Kitayama, Masahiro, 5,346,771, Cl. 428-447.000.
Negi, Taichi; Mochizuki, Akira; Nagata, Shiro; Yamasaki, Komei; Funaki, Keisuke; and Sumitomo, Takashi, 5,346,950, Cl. 525-57.000.
Idemoto, Morito: *See—*
Ikeda, Tadaaki; and Idemoto, Morito, 5,346,469, Cl. 604-22.000
Ideno, Kyoichi: *See—*
Ishizawa, Shoichi; and Ideno, Kyoichi, 5,347,630, Cl. 395-164.000.
Ideyama, Hiroyuki: *See—*
Shimizu, Tadafumi; Takano, Yoshiaki; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotaro; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,347,346, Cl. 355-202.000.
IEG Industrie-Engineering GmbH: *See—*
Bernhardt, Bruno, 5,345,655, Cl. 166-370.000.
Bernhardt, Bruno, 5,345,820, Cl. 73-155.000.
Bernhardt, Bruno, 5,346,330, Cl. 405-128.000.
Igarashi, Masato: *See—*
Kawanishi, Toshiyuki; Morohoshi, Kunichika; and Igarashi, Masato, 5,347,301, Cl. 346-153.100.
Iguchi, Atsushi; and Iguchi, Kuniaki, to Nikko Corporation Ltd.; and Senko Denki Corporation Ltd. Low frequency electromagnetic induction heater with magnetic flux diffusing members. 5,347,107, Cl. 219-624.000.
Iguchi, Kuniaki: *See—*
Iguchi, Atsushi; and Iguchi, Kuniaki, 5,347,107, Cl. 219-624.000.
Iida, Shinobu, to Matsushita Electric Industrial Co., Ltd. Charging equipment for charging a portable apparatus and separable cell pack. 5,347,208, Cl. 320-2.000.
Iijima, Kenzaburo: *See—*
Tsuchiya, Kazuhiro; Hoshi, Toshiharu; Tsuchida, Atsushi; and Iijima, Kenzaburo, 5,346,217, Cl. 273-167.00R.
Iikubo, Yuichi: *See—*
Sweval, Mark A.; Register, W. Douglas; Robin, Mark L.; and Iikubo, Yuichi, 5,346,669, Cl. 422-34.000.
Iimura, Shinichiro, to Sony Corporation. Servo apparatus of an optical disc having calibration for gain control. 5,347,501, Cl. 369-44.250.
Iino, Yutaka; and Ohya, Junko, to Kabushiki Kaisha Toshiba. Model predictive control apparatus. 5,347,446, Cl. 364-149.000.
Iiyama, Katsuaki: *See—*
Tamai, Shoji; Iiyama, Katsuaki; and Yamaguchi, Akihiro, 5,346,982, Cl. 528-183.000.
Iizuka, Tadashi: *See—*
Kamitsuma, Yasuo; Nakagawa, Yusaku; Kobayashi, Yoshihiro; Nakashima, Shoichi; Iizuka, Tadashi; Nakamura, Keiichi; and Shikata, Hideo, 5,346,667, Cl. 419-52.000.
Ikebe, Masaru; and Shiba, Haruo, to TDK Corporation. Disc cartridge having improved shutter. 5,347,416, Cl. 360-133.000.
Ikeda, Masahito: *See—*
Momma, Naoko; Tashiro, Korefumi; and Ikeda, Masahito, 5,346,163, Cl. 246-5.000.
Ikeda, Masaki: *See—*
Sugai, Masakatsu; Mizuno, Yasuo; Ikeda, Masaki; and Yoshida, Akihiko, 5,346,523, Cl. 65-102.000.
Ikeda, Tadaaki; and Idemoto, Morito, to Sumitomo Bakelite Company Limited. Handpiece for surgical operation. 5,346,469, Cl. 604-22.000.
Ikeda, Takashi: *See—*
Suzuki, Satoshi; and Ikeda, Takashi, 5,347,083, Cl. 84-613.000.
Ikeda, Yukio: *See—*
Ozawa, Yoshio; Ikeda, Yukio; and Yoshioka, Katsuhiro, 5,346,791, Cl. 430-106.600.
Ikegami Tsushinki Co., Ltd.: *See—*
Endoh, Toshio; Tobita, Hiroshi; and Yamamoto, Hiroshi, 5,346,204, Cl. 271-294.000.
Iken, George N.: *See—*
Lawson, Jimmie B.; Faircloth, Robert J.; and Iken, George N., 5,346,009, Cl. 166-279.000.
Ikoma, Munehisa: *See—*
Yuasa, Kohji; Ikoma, Munehisa; Kawano, Hiroshi; Takahashi, Osamu; and Matsumoto, Isao, 5,346,781, Cl. 429-59.000.
Illbruck GmbH: *See—*
Illbruck, Michael; and Gottschild, Frank, 5,345,720, Cl. 49-502.000.
Illbruck, Michael; and Gottschild, Frank, to Illbruck GmbH. Insulation part. 5,345,720, Cl. 49-502.000.
Iltis, Ronald A.; and Shynk, John J., to Univ. of California, The Regents of the. Apparatus and method for utilizing a blind equalizer based on a bayesian symbol sequence estimator for use in digital communication. 5,347,541, Cl. 375-12.000.
Imada, Mitsutoshi, to Sumitomo Electric Industries, Ltd. Frequency-multiplex optical transmission apparatus. 5,347,385, Cl. 359-132.000.
Imagyn Medical, Inc.: *See—*
Greelis, John P.; and Tietge, Fred R., 5,346,498, Cl. 606-108.000.
Imai, Kunio: *See—*
Akiyama, Shuzo; Nakashima, Kenichiro; Imai, Kunio; Murayama, Ryuji; and Funaki, Jun, 5,346,772, Cl. 428-457.000.
Imaide, Takuya: *See—*
Nishimura, Ryuji; Nishizawa, Akihito; Yamamoto, Mayuko; and Imaide, Takuya, 5,347,371, Cl. 358-453.000.
Imaizumi, Hiroshi: *See—*
Murakami, Yasuo; Kashimura, Hideki; Katayama, Kiichi; Imaizumi, Hiroshi; Katou, Toshio; and Nakashima, Hideaki, 5,347,098, Cl. 219-61.000.
Imamura, Keiichi: *See—*
Go, Hisao; Nishie, Mitsuaki; and Imamura, Keiichi, 5,347,604, Cl. 385-92.000.
Imanishi, Kouhei: *See—*
Obata, Fumio; Yasuda, Hisashi; Nagayoshi, Hideaki; Suehara, Kiyoshi; Imanishi, Kouhei; and Yoshida, Toshiki, 5,346,561, Cl. 148-321.000.
Imasaki, Naoki: *See—*
Kiji, Junichi; Imasaki, Naoki; and Endo, Tsunekazu, 5,347,447, Cl. 364-152.000.
Imatronic Limited: *See—*
Street, Graham S. B., 5,347,137, Cl. 250-561.000.
Imperial Chemical Industries PLC: *See—*
Clough, John M.; Godfrey, Christopher R. A.; and de Fraine, Paul J., 5,346,902, Cl. 514-269.000.

De Vos, Rik; and Keane, N. Washington, 5,346,928, Cl. 521-166.000.
Imran, Mir A.: *See—*
Highe, Albert J.; and Imran, Mir A., 5,345,934, Cl. 128-639.000.
Pomeranz, Mark L.; and Imran, Mir A., 5,345,936, Cl. 128-642.000.
Inagaki, Michio: *See—*
Toda, Osamu; Inagaki, Michio; and Ohhira, Masahiko, 5,346,650, Cl. 252-506.000.
Inaguchi, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Low-temperature regenerative type refrigerator. 5,345,770, Cl. 62-6.000.
Indin, Ronald J.: *See—*
Carson, John C.; Indin, Ronald J.; and Shanken, Stuart N., 5,347,428, Cl. 361-760.000.
Indresco Inc.: *See—*
Hughes, James T., 5,345,702, Cl. 37-399.000.
Industrial Progress, Inc.: *See—*
Kaliski, Adam F., 5,346,546, Cl. 106-436.000.
Industrial Technology Institute: *See—*
Lee, Rong-Jer; Ho, Shy-Ming; and Wang, Tsung H., 5,346,597, Cl. 204-129.100.
Industrial Technology Research Institute: *See—*
Lin, Song-Fure, 5,346,521, Cl. 65-407.000.
Wu, Bing-Seng, 5,346,833, Cl. 437-4.000.
Ineichen, Armin: *See—*
Gysi, Peter; and Ineichen, Armin, 5,346,198, Cl. 271-11.000.
Ingenieure Mayreder, Kraus & Co. Consult Gesellschaft m.b.H.: *See—*
Wagner, Harald; and Schulter, Alfred, 5,346,332, Cl. 405-153.000.
Ingenjorsfirma Rason Aktiebolag: *See—*
Rasmusson, Bjorn, 5,346,173, Cl. 251-58 000.
Ingersoll-Rand Company: *See—*
Geiger, Robert E.; and Clapp, John M., 5,346,024, Cl. 173-221.000.
Innova Electronics Corporation: *See—*
Jakubowski, Peter J., 5,347,211, Cl. 323-351.000.
Inoue, Kenji: *See—*
Yamauchi, Yuji; and Inoue, Kenji, 5,345,829, Cl. 73-865.900.
Inoue Mfg., Inc.: *See—*
Kamiwano, Mitsuo; and Inoue, Yoshitaka, 5,346,145, Cl. 241-172.000.
Inoue, Yoshitaka: *See—*
Kamiwano, Mitsuo; and Inoue, Yoshitaka, 5,346,145, Cl. 241-172.000.
Institute Francais du Petrole: *See—*
Parc, Guy; and Born, Maurice, 5,346,636, Cl. 252-49.900.
Institute of Nuclear Energy Research: *See—*
Te-Wei, Lee; Gann, Ting; Chang-Shinn, Su; and Shyh-Yi, Chyi, 5,346,995, Cl. 534-14.000.
Instruments SA, Inc.: *See—*
Marcovecchio, Joseph; and Katzenberger, Joseph K., 5,346,381, Cl. 425-149.000.
Intel Corporation: *See—*
Golin, Stuart J., 5,347,311, Cl. 348-416.000.
Kwong, Phillip M.; Sambandan, Sachidanandan; Sweha, Sherif R. B.; and Mills, Duane R., 5,347,484, Cl. 365-49.000
Merchant, Amit; Fandrich, Mickey L.; and Mielke, Neal, 5,347,489, Cl. 365-203.000.
Nikjou, Bobby B., 5,347,558, Cl. 377-47.000.
Nugent, Steven F., 5,347,450, Cl. 395-200.000.
Inter-Source Recovery Systems, Inc.: *See—*
Nemedi, William D., 5,345,665, Cl. 29-402.150.
Interated Systems, Inc.: *See—*
Barnsley, Michael F.; and Sloan, Alan D., 5,347,600, Cl. 382-56.000.
International Business Machines Corp.: *See—*
Alderson, Graham R., 5,347,649, Cl. 395-600.000.
Bakeman, Paul E., Jr., 5,347,153, Cl. 257-345.000.
Barrett, John P.; Hoffmann, Robert P.; and Montgomery, John D., 5,347,629, Cl. 395-161.000.
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Brewer, Susan C.; Brink, Kathy A.; Krebs, William H., Jr.; and Welch, Robert P., 5,347,628, Cl. 395-159.000.
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Gersbach, John E.; and Novof, Ilya I., 5,347,234, Cl. 331-57.000.
Gibbs, Terence K.; Luck, Graham; and Wares, David, 5,347,386, Cl. 359-146.000.
Gifford, George G.; and Osborn, Brock E., 5,347,460, Cl. 364-468.000.
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Hoffmann, Robert P.; Malcolm, Jerry W.; Montgomery, John D.; and Stone, Steve S., 5,347,627, Cl. 395-157.000.
Kohn, Harold; and Lazzarini, Donald J., 5,346,117, Cl. 228-180.220.
Lee, Adrienne Y., 5,347,518, Cl. 371-19.000
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International Business Machines, Inc.: *See—*
Ashfield, James C.; Baker, Gregory D.; Nevins, Robert C.; Raynes, Jeffrey A.; Sultan, Aaron T.; Parks, Joseph K.; Rhodin, Michael D.; and Sayre, Reid L., 5,347,633, Cl. 395-200.000.
International Computers Limited: *See—*
Allt, George; and Eaton, John R., 5,347,647, Cl. 395-575.000.
Duxbury, Paul, 5,347,578, Cl. 380-4.000.
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Kaiser, Karl, 5,346,419, Cl. 441-96.000
International Flavors & Fragrances Inc.: *See—*
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Erickson, Richard W., 5,346,271, Cl. 294-87.200.
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Beales, Jonathan T., 5,346,121, Cl. 229-148.000.
Intini, Thomas D. Container. 5,346,069, Cl. 206-531.000.
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Weinreich, Steve, 5,346,433, Cl. 472-63.000.
Iovine, Carmine P.; Chandran, Rama S.; and Leighton, John C., to National Starch and Chemical Investment Holding Corporation Polyether polycarboxylate compositions useful as detergent builders. 5,346,974, Cl. 526-240.000.
IP Holding Company: *See—*
Giuffrida, Anthony, 5,346,924, Cl. 521-28.000.
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Cardinal, Pierre; Carscallen, William E.; and Ireland, Robert, 5,345,930, Cl. 128-205.240.
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Carson, John C.; Indin, Ronald J.; and Shanken, Stuart N., 5,347,428, Cl. 361-760.000.
Irwin, Guy. Conveyor belt module. 5,346,059, Cl. 198-852.000
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Sabahi, Mahmood; and Irwin, Robert G., 5,347,043, Cl. 560-190.000.
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Isaksson, Jan, to Asea Brown Boveri AB. Optoelectronic component having spherical adjusting means. 5,347,605, Cl. 385-92.000.
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Iscar Ltd.: *See—*
Harpaz, Jacob; Wertheim, Raphael; and Betman, Benjamin, 5,346,335, Cl. 407-11.000.
Iseman, Walter J.; Schneider, Michael G.; Schumacher, William; Murray, Patrick J.; and Collings, Roger J., to Sunstrand Corporation Electric machine with enhanced liquid cooling. 5,347,188, Cl. 310-68.00D
Ishibashi, Atsuhiko; Kondoh, Harufusa; and Kitao, Masaya, to Mitsubishi Denki Kabushiki Kaisha. PLL circuit apparatus and phase difference detecting circuit apparatus. 5,347,233, Cl. 331-2.000.
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Kodaka, Ichiro; Ishida, Shoji; and Plumer, Charles, 5,346,654, Cl. 264-1.330.
Ishida, Takeshi; Koyama, Kenji; Kasama, Hiroshi; Nishiumi, Kenji; and Nakajima, Kenji, to Kabushiki Kaisha Nippon Conlux. Coin processing apparatus. 5,346,047, Cl. 194-200.000.
Ishida, Tsutomu: *See—*
Yamakawa, Takeshi; and Ishida, Tsutomu, 5,347,615, Cl. 395-76.000.
Ishigami, Hidetoshi: *See—*
Motose, Hitoshi; and Ishigami, Hidetoshi, 5,345,903, Cl. 123-198.0DC.
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Yamashita, Haruo; Fukushima, Tsumoru; and Ishihara, Hideshi, 5,347,599, Cl. 382-54.000.
Ishihara, Mitsuhiro; Kubota, Mineo; Kanda, Takashi; Kitta, Toru; and Tsuchiya, Mitsuo, to NISCA Corporation. Shading correction method and apparatus. 5,347,370, Cl. 358-461.000.
Ishihara, Toshihiko: *See—*
Kurata, Shuichi; Ichinose, Shiro; Kusaki, Kazuo; Ishihara, Toshihiko; Ueno, Naozumi; and Morita, Toru, 5,345,863, Cl. 101-126.000.
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Ishii, Tomoyuki; and Kondo, Nobuyoshi, to Fujitsu Limited. Multi-terminal communication equipment for smoothly and correctly communicating data between a plurality of terminal equipments. 5,347,545, Cl. 375-37.000.
Ishikawa, Takuma: *See—*
Morigami, Yuusuk; Ohhata, Akira; Hamakawa, Wataru; Matsuo, Hirokazu; Nagato, Hiroyasu; and Ishikawa, Takuma, 5,347,352, Cl. 355-321.000
Ishikawa, Tohru: *See—*
Okamoto, Yoshio; Kanamaru, Hisanobu; Maeda, Hitoshi; Suzuki, Satoshi; Ishikawa, Tohru; Kosuge, Tokuo; Amou, Kiyoshi; Ohki, Hiroshi; Nakagawa, Koji; Tanabe, Yoshiyuki; and Yokoyama, Mizuho, 5,346,137, Cl. 239-585.400.
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Kato, Heiji; and Freeman, John, 5,345,994, Cl. 164-480.000.
Nakazawa, Kenzo, 5,346,779, Cl. 429-19.000.

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Yano, Toshikazu; and Ochi, Masao, 5,345,995, Cl. 165-46.000.
Ishizaki, Kunio: *See*—
Udagawa, Hiroshi; Ishizaki, Kunio; and Manabe, Katsunori, 5,346,114, Cl. 227-120.000.
Ishizawa, Shoichi; and Ideno, Kyoichi, to Seiko Epson Corporation. Computer system having a detachable display. 5,347,630, Cl. 395-164.000.
Isogai, Naoki; and Hanaki, Hirohiko, to Nidek Co., Ltd. Ophthalmic apparatus for photographing the anterior part of the eye with a reproducible photographing position. 5,347,331, Cl. 354-62.000.
Isogawa, Atsushi, to Yamaha Hatsudoki Kabushiki Kaisha. Exhaust gas cleaning device for outboard motor. 5,346,417, Cl. 440-89.000.
Isonage, Teruto: *See*—
Shibata, Masatoshi; Isonage, Teruto; Kamiryo, Eiji; and Shinohara, Kiyoshi, 5,346,544, Cl. 106-244.000.
Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft: *See*—
Gsellmann, Helmut, 5,346,568, Cl. 156-83.000.
ISP Investments Inc.: *See*—
Taylor, Paul D.; De Thomas, Waldo; and Buchanan, Donald W., Jr., 5,347,021, Cl. 549-325.000.
Ito, Eri: *See*—
Yokoyama, Yasuhiro; Iwata, Noriko; Ito, Eri; Ando, Ichiro; Ichinohe, Shoji; and Yamazaki, Toshio, 5,346,946, Cl. 524-547.000.
Ito, Hideo; Narukawa, Mitsutoshi; and Sakai, Kazuhiro, to Hi-Silicon, Co., Ltd. Process for cleaning silicon mass and the recovery of nitric acid. 5,346,557, Cl. 134-10.000.
Ito, Masazumi: *See*—
Shimizu, Tadafumi; Takano, Yoshiaki; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotaro; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,347,346, Cl. 355-202.000.
Ito, Michio, to Yoshida Kogyo K.K. Freight moving apparatus in carrier vehicle. 5,346,352, Cl. 414-400.000.
Ito, Noboru; Tanaka, Shinichi; Wada, Hidenori; Mizuno, Sadao; and Hayashi, Hideki, to Matsushita Electric Industrial Co., Ltd. Optical disk apparatus for optically recording or reproducing information on an optical recording medium. 5,347,504, Cl. 369-44.410.
Ito, Shinichiro: *See*—
Saitoh, Yutaka; Ito, Shinichiro; and Kinoshita, Yukiharu, 5,347,255, Cl. 336-83.000.
Ito, Yutaka: *See*—
Nakakawaji, Takayuki; Morihara, Atsushi; Shoji, Mitsuyoshi; Sato, Koji; Ito, Yutaka; Kaji, Ryuichi; and Go, Hiroshi, 5,346,633, Cl. 252-10.000.
Itoh, Akira, to Itoh Research & Development Laboratory Co., Ltd. Cooling device. 5,345,998, Cl. 165-86.000.
Itoh, Katsumi: *See*—
Momozaki, Katsuhiko; Kusunoki, Masako; Kawamura, Fumio; Ono, Hisao; Itoh, Katsumi; Shimizu, Yoshihiro; and Ono, Yuuichi, 5,346,626, Cl. 210-701.000
Itoh, Kiyoo: *See*—
Horiguchi, Masashi; Itoh, Kiyoo; Kawajiri, Yoshiki; Kitsukawa, Goro; Kawahara, Takayuki; and Akiba, Takesada, 5,347,492, Cl. 365-226.000.
Itoh Research & Development Laboratory Co., Ltd.: *See*—
Itoh, Akira, 5,345,998, Cl. 165-86.000.
Itoh, Shigeo: *See*—
Toki, Hitoshi; Yonezawa, Yoshihisa; and Itoh, Shigeo, 5,347,133, Cl. 250-492.300.
Itoh, Shinichi, to Oki Electric Industry Co., Ltd. Method for recycling an ink sheet and thermal transfer printer using the same. 5,347,344, Cl. 355-200.000.
ITT Corporation: *See*—
Hall, Thomas J., 5,346,292, Cl. 303-91.000.
Hyzin, Peter J., 5,346,403, Cl. 439-95.000.
Nelson, John C.; Vance, Gary M.; Thomas, Vincent J.; and Pifer, Thomas H., Jr., 5,347,397, Cl. 359-629.000.
Williams, Jack L., 5,346,317, Cl. 384-611.000.
Ivey, D. Mack: *See*—
Krulwich, Terry A.; and Ivey, D. Mack, 5,346,815, Cl. 435-69.100.
Iwai, Hisato: *See*—
Karasawa, Yoshio; and Iwai, Hisato, 5,347,535, Cl. 375-1.000.
Iwanaga, Takehiko, to Canon Kabushiki Kaisha. Aligning method and apparatus detecting misalignment using image signals from image pickup. 5,347,118, Cl. 250-205.000.
Iwano, Hiroshi; and Nagaishi, Hatsuo, to Nissan Motor Co., Ltd. Engine air-fuel ratio controller. 5,345,921, Cl. 123-686.000
Iwasaki, Jun, to Sony. BPSK demodulator using compound phase-locked loop. 5,347,228, Cl. 329-308.000
Iwasaki, Masaaki, to Fujitsu Limited. Network switching contorol method and system. 5,347,271, Cl. 340-827.000.
Iwasaki, Tatsuya: *See*—
Tanoue, Kouichi; Kitamura, Shinzi; Anai, Noriyuki; Satoh, Takami; Tomoeda, Takayuki; Iwasaki, Tatsuya; and Mizosaki, Kengo, 5,345,639, Cl. 15-88.200.
Iwata, Kazuya: *See*—
Oshima, Takafumi; Iwata, Kazuya; and Okayama, Tsutomu, 5,347,193, Cl. 313-141.000.
Iwata, Noriko: *See*—
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IWK Regler und Kompensatoren GmbH: *See*—
Huzenlaub, Peter; and Schmidt, Heinz, 5,346,263, Cl. 285-53.000
Iyoda, Isao: *See*—
Terada, Makoto; Furo, Isao; Suzuki, Hiroshi; and Iyoda, Isao, 5,347,441, Cl. 363-39.000.
Izukawa, Kazuhiro: *See*—
Mukohjima, Hitoshi; Hiramatsu, Akira; Izukawa, Kazuhiro; Okuno, Takuo; Okumura, Ichiro; and Tsukimoto, Takayuki, 5,347,192, Cl. 310-323.000.
Izumi, Haruhiko: *See*—
Moritsugu, Masaharu; Izumi, Haruhiko; and Taguchi, Masakazu, 5,347,505, Cl. 369-59.000.
Izumi, Kazuo: *See*—
Manabe, Akio; Mizutani, Masato; Hirata, Naonori; Uwayokote, Sachiko; Izumi, Kazuo; and Arai, Kenji, 5,346,879, Cl. 504-115.000.
Izumi, Saitoh: *See*—
Sakai, Yoshio; and Izumi, Saitoh, 5,346,977, Cl. 526-318.440.
J. B. Engineering Co., Inc.: *See*—
Headley, James E., 5,346,298, Cl. 312-348.300.
J. & H. Slater Construction Co., Inc.: *See*—
Slater, Howard O.; and Slater, James W., 5,345,741, Cl. 52-646.000.
J and N Associates, Inc.: *See*—
Krema, Jan; and Martell, Dennis, 5,347,223, Cl. 324-455.000.
Jaala, Erkki, to Tamfelt Oy Ab. Dryer screen in a paper machine. 5,346,590, Cl. 162-232.000.
Jabs, Ronald: *See*—
Pannenbecker, Heinrich; Jabs, Ronald; Schmitz, Heinrich; Dechene, Wulf; Splitt, Manfred; and Heiler, Hans-Joachim, 5,346,551, Cl. 118-63.000.
Jackson, Gregory D.; Reiff, David E.; and Branan, Mac W., to Motorola, Inc. Optical control switch device having a plurality of light receptors. 5,347,123, Cl. 250-229.000.
Jacob, Charles. Apparatus and method for moving railway cars. 5,345,878, Cl. 105-136.000.
Jadrich, Bradley S.: *See*—
Entz, Steven F.; Jadrich, Bradley S.; and Schoelpple, Gunther, 5,347,299, Cl. 346-76.00L.
Jaeger, Gerhard: *See*—
Meyer-Berg, Heinz-Ulrich; Jaeger, Gerhard; and Ehlers, Karlheinz, 5,346,260, Cl. 285-1.000.
Jaeger, Robert B.: *See*—
Sherman, Richard A.; Schultz, Darald R.; Salvay, Steven H.; Jaeger, Robert B.; Davis, Patrick H.; and Hanson, George E., 5,347,115, Cl. 235-472.000.
Jaen, Juan C.: *See*—
Augelli-Szafran, Corinne E.; Barrett, Stephen D.; Caprathe, Bradley W.; Galan, Adam A.; Jaen, Juan C.; Lauffer, David J.; Moos, Walter H.; Pavia, Michael R.; Sanders, Kathryn B.; Tecle, Haile; and Thomas, Anthony J., 5,346,911, Cl. 514-339.000.
Jahner, Frank E.: *See*—
Jahner, James F.; Jahner, Gust A.; and Jahner, Frank E., 5,345,617, Cl. 4-217.000.
Jahner, Gust A.: *See*—
Jahner, James F.; Jahner, Gust A.; and Jahner, Frank E., 5,345,617, Cl. 4-217.000.
Jahner, James F.; Jahner, Gust A.; and Jahner, Frank E. Toilet seat air freshener. 5,345,617, Cl. 4-217.000.
Jahnke, Frederick C.; Wallace, Paul S.; and Thacker, Pradeep S., to Texaco Inc. Partial oxidation process with production of power. 5,345,756, Cl. 60-39.020.
Jakubowski, Peter J., to Innova Electronics Corporation. Selectable output power converter. 5,347,211, Cl. 323-351.000.
Jalbert, David: *See*—
Farrington, Richard I.; and Jalbert, David, 5,345,703, Cl. 38-77.500.
Jambor, George F., to Brady USA, Inc. Automatic chip removal system for sign engraving machine. 5,346,341, Cl. 409-132.000.
James, Brent A.; and James, Garrick D., to Diversified Control, Inc. Lock structure. 5,345,795, Cl. 70-84.000.
James, Garrick D.: *See*—
James, Brent A.; and James, Garrick D., 5,345,795, Cl. 70-84.000.
James River Paper Company, Inc.: *See*—
Rizzuto, Jack A., 5,346,064, Cl. 206-409.000.
Jamison, David S.: *See*—
Scarola, Kenneth; Jamison, David S.; Manazir, Richard M.; Rescorl, Robert L.; and Harmon, Daryl L., 5,347,553, Cl. 376-259.000.
Janberg, Klaus: *See*—
Diersch, Rudolf; Janberg, Klaus; Methling, Dieter; and Schroder, Karl, 5,346,096, Cl. 220-679.000.
Jang, Taek-yong: *See*—
Cho, Hyun-jin; and Jang, Taek-yong, 5,346,844, Cl. 437-52.000.
Janke, Dean J.: *See*—
Neuharth, Steven D.; Lobsinger, James; and Janke, Dean J., 5,347,236, Cl. 331-87.000.
Janson, Frank S.: *See*—
Stahurski, Terrence M.; Asher, Marc A.; Carson, William L.; Stripgen, Walter E.; Heinig, Charles F.; Gaines, Robert W., Jr.; and Janson, Frank S., 5,346,493, Cl. 606-61.000.
Janssens, Francine: *See*—
Pennetreau, Pascal; Janssens, Francine; and Barthelemy, Pierre, 5,347,059, Cl. 570-166.000.
Jansson, Lars-Erik; Stoop, Hans-Ake; and Stattin, Sven E. U. Pumping device. 5,345,929, Cl. 128-205.130.
Japan Synthetic Rubber Co., Ltd.: *See*—
Momozaki, Katsuhiko; Kusunoki, Masako; Kawamura, Fumio; Ono, Hisao; Itoh, Katsumi; Shimizu, Yoshihiro; and Ono, Yuuichi, 5,346,626, Cl. 210-701.000.

Shibata, Tooru; Teramoto, Toshio; Hashiguchi, Yoshiharu; and Goshima, Kunio, 5,346,964, Cl. 525-314.000.
Jasco Corporation: *See*—
Kawasaki, Kazuhiko; and Miyazaki, Tadashi, 5,347,364, Cl. 356-445.000.
Jasper, Warren J.: *See*—
Falk, David C.; and Jasper, Warren J., 5,345,691, Cl. 33-707.000.
Jaxmar, Leif E. B.: *See*—
Fisher, Eugene B.; St. John North, Mark; Winterson, Warren D.; Jaxmar, Leif E. B.; Olsson, Lennart F.; and Selander, Nils S., 5,346,057, Cl. 198-778.000.
Jeannin, Pierre: *See*—
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Jeansson, Stig: *See*—
Vahlne, Anders; Svennerholm, Bo; Rymo, Lars; Jeansson, Stig; Horal, Peter; Czerkinsky, Cecil; and Holmgren, Jan, 5,346,989, Cl. 530-324.000.
Jeffries, Alfred T., III; and Brzozowy, David J., to OCG Microelectronic Materials, Inc. Novolak resins and their use in radiation-sensitive compositions wherein the novolak resins are made by condensing 2,6-dimethylphenol, 2,3-dimethylphenol, a para-substituted phenol and an aldehyde. 5,346,799, Cl. 430-192.000.
Jeffries, Alfred T., III, to OCG Microelectronic Materials, Inc. Positive image formation utilizing o-quinonediazide composition including selected phenolic derivatives of 4-(4-hydroxyphenyl)-cyclohexanone. 5,346,808, Cl. 430-296.000.
Jelich, Werner; Rehwinkel, Heiko; Klauke, Friedrich; Konig, Dieter; and Kalthoff, Udo, to Deutsche Babcock Energie- und Umwelttechnik Aktiengesellschaft. Method of monitoring filter components. 5,346,533, Cl. 95-20.000.
Jenks, Bruce. Shackleless padlock system. 5,345,794, Cl. 70-14.000.
Jeon Ha E.: *See*—
Park, Young J.; and Jeon Ha E., 5,346,846, Cl. 437-52.000.
Jeon, Jong Y.: *See*—
Kim, Hee Y.; Kwon, Dae H.; Song, Yong M.; Kim, Sung W.; Jeon, Jong Y.; Lee, Kang M.; and Lee, Jae S., 5,346,141, Cl. 241-5.000.
Jeong, Sang-Hyen. Discharging path open/close shifting valve for liquid storing container. 5,346,104, Cl. 222-402.190.
Jermolojevs, Terry: *See*—
Arisman, Mark; Tomer, Mike; Jermolojevs, Terry; Eyler, Bill; Tate, Dave; Morgan, Greg; and Aldous, John, 5,346,036, Cl. 182-3.000.
Jerry, Frederick L. Grass cutter and leaf blower blade. 5,345,788, Cl. 56-255.000.
Jerzycke, Charles L.; Ogletree, Richard; and Sommerhalter, Frederick A., Jr., to Ford Motor Company. High-force linear motor assembly using tandem axes. 5,346,345, Cl. 409-235.000.
Jewett, Warren R.: *See*—
Stapleton, Marilyn J.; Thorpe, Villette S.; and Jewett, Warren R., 5,346,672, Cl. 422-102.000.
JGC Corporation: *See*—
Koyama, Takeshi; Tonosaki, Masao; Yamada, Nobuhiro; and Mori, Kenji, 5,347,031, Cl. 558-260.000.
Jidosha Kiki Co., Ltd.: *See*—
Higashi, Katsumi, 5,346,293, Cl. 303-92.000.
Uyama, Shintaro, 5,345,855, Cl. 91-369.200.
Jin, Sungho; and McCormack, Mark T., to AT&T Laboratories. Article comprising solder with improved mechanical properties. 5,346,775, Cl. 428-614.000.
Jinno, Akiharu: *See*—
Yumiki, Naoto; Matsuura, Kenji; and Jinno, Akiharu, 5,347,256, Cl. 336-84.00C.
Jinotti, Walter J. Pulmonary catheter. 5,346,478, Cl. 604-171.000.
Johansen, Lars, to Televerket. Method and an arrangement for splicing optical waveguides. 5,347,606, Cl. 385-95.000.
John Labatt Limited: *See*—
Murray, Cameron R.; and Van Der Meer, William J., 5,346,706, Cl. 426-11.000.
John Lysaght (Australia) Limited: *See*—
Kato, Heiji; and Freeman, John, 5,345,994, Cl. 164-480.000.
John Wyeth & Brother, Limited: *See*—
Ward, Terence J.; and Warrellow, Graham J., 5,346,896, Cl. 514-252.000.
John Zink Company, A Division of Koch Engineering Company, Inc.: *See*—
Dinsmore, Harold L., 5,345,771, Cl. 62-18.000.
Johnsen, Gordon M.: *See*—
Krizek, Howard J.; and Johnsen, Gordon M., 5,347,283, Cl. 342-201.000.
Johnson, Alan: *See*—
Crossland, Clifford S.; Johnson, Alan; Woods, John; and Pitt, Elliot G., 5,346,676, Cl. 422-211.000.
Johnson, Jack W.: *See*—
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Johnson & Johnson Medical, Inc.: *See*—
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Nichols, Robert L.; Lindsey, Keith F.; and Patterson, William H., 5,346,075, Cl. 211-60.100.
Johnson, Larry K.: *See*—
Reidemeister, Eric P.; Johnson, Larry K.; Kawate, Keith W.; Mandeville, Raymond E.; Christensen, Douglas B.; and Southworth, Robert O., 5,345,823, Cl. 73-517.00R.
Johnson, Neil A.: *See*—
Miller, Steven A.; and Johnson, Neil A., 5,346,530, Cl. 75-331.000.
Johnson, Philip E.: *See*—
Fooks, Elik I.; Delaney, Patrick J., III; and Johnson, Philip E., 5,347,117, Cl. 250-221.000.
Johnson, Roderick D.; and Heath, Jan N., to Chromaline Corporation, The. Universal silk screen coating machine. 5,346,577, Cl. 156-308.800.
Johnson, Roy A., to Upjohn Company, The. Dialkyl (dialkoxyphosphinyl)methyl phosphates as anti-inflammatory agents. 5,347,029, Cl. 558-158.000.
Johnson, William B. Environmentally stabilized products formed from ash and papermill waste. 5,346,549, Cl. 106-708.000.
Johnston, Richard F.: *See*—
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Johnston, Roy L.: *See*—
Dashevsky, Sophia; Kim, Ki-Soo; Palmaka, Stanley W.; Johnston, Roy L.; Busscher, Leonardus A. G.; and Juijn, Johannes A., 5,346,970, Cl. 525-444.000.
Johnston, William J.; Guest, James W.; and Richardson, James D., to Delco Electronics Corp. Air core gauge method and apparatus with reduced power dissipation. 5,347,213, Cl. 324-143.000.
Jolu, Etienne: *See*—
Lehn, Jean-Marie; Mathis, Gerard; Alpha, Beatrice; Deschenaux, Robert; and Jolu, Etienne, 5,346,996, Cl. 534-15.000.
Jones, Alma M. Women's stocking and support. 5,345,613, Cl. 2-240.000
Jones, Barbara L. Light emitting diamond device. 5,347,147, Cl. 257-77.000.
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Fechalos, William A.; and Jones, Barry W., 5,347,512, Cl. 370-58.200.
Jones, James V.; and Boulos, Edward N., to Ford Motor Company. Neutral gray absorbing glass comprising manganese oxide for selenium retention during processing. 5,346,867, Cl. 501-71.000
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Jongewaard, Mark P., to Wheelock, Inc. Strobe warning light. 5,347,259, Cl. 340-331.000.
Jorda, Jean-Louis: *See*—
Stroder, Ulrich; Duruz, Jean-Jacques; and Jorda, Jean-Louis, 5,346,608, Cl. 205-231.000.
Jorgensen, Erik L.: *See*—
Vancho, Vincent M.; Wu, Hak H.; Ma, Yutao; and Jorgensen, Erik L., 5,346,747, Cl. 428-209.000.
Joseph, Rinart: *See*—
Dubinsky, Miles J.; Joseph, Rinart; Saros, Gust A.; and Locsmondy, Richard, 5,345,682, Cl. 30-102.000.
Joshi, Mahendra L.: *See*—
Slavejkov, Aleksandar G.; Zurecki, Zbigniew; Joshi, Mahendra L.; and Nabors, James K., 5,346,390, Cl. 431-8.000.
Joyce, William R.: *See*—
Gerstenberger, Roland W.; and Joyce, William R., 5,346,438, Cl 474-151.000.
Juengst, Clifford D.: *See*—
Culver, Christohper R.; and Juengst, Clifford D., 5,346,614, Cl. 208-242.000.
Juijn, Johannes A.: *See*—
Dashevsky, Sophia; Kim, Ki-Soo; Palmaka, Stanley W.; Johnston, Roy L.; Busscher, Leonardus A. G.; and Juijn, Johannes A., 5,346,970, Cl. 525-444.000.
Julian Electric, Inc.: *See*—
Julian, Kenneth A., 5,346,782, Cl. 429-65.000.
Julian, Kenneth A., to Julian Electric, Inc. Cap for covering terminal bolts of batteries. 5,346,782, Cl. 429-65.000.
Jun, Young K., to Gold Star Electron Co., Ltd. Method for fabricating a semiconductor memory device having storage node overlap with bit line. 5,346,847, Cl. 437-52.000.
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Jurgensen, Bruce A. Expandable structure and sequence of expansion. 5,345,730, Cl. 52-64.000.
Jurgevich, Howard J., to Rosby Corporation. Intermodal container with integrated interbox connectors. 5,346,084, Cl. 220-1.500.
Jurgill, Daniel J.; and Wetzel, Gerald A., to Goulds Pumps, Incorporated. Air seal for pump with vertical shaft. 5,346,361, Cl. 415-111.000.
Jurkewitz, Manfred, to Heidelberger Druckmaschinen AG. Method of monitoring the transport of print products in a printing-field machine. 5,346,202, Cl. 271-258.000.
KAB Laboratories Inc.: *See*—
Konotchick, John A., 5,347,186, Cl. 310-17.000.
Kabe, Kazuyuki; and Tomoda, Hajime, to Yokohama Rubber Co., Ltd., The. Pneumatic radial tire for heavy loads. 5,345,988, Cl. 152-209.00R.
Kabelmetal Electro GmbH: *See*—
Ziemek, Gerhard; Staschewski, Harry; and Meyer, Hermann, 5,346,112, Cl. 226-173.000.

Kabushiki Kaisha Machida Seisakusho: *See*—
Chikama, Toshio, 5,345,926, Cl. 128-9.000.
Kabushiki Kaisha Nippon Conlux: *See*—
Ishida, Takeshi; Koyama, Kenji; Kasama, Hiroshi; Nishiumi, Kenji; and Nakajima, Kenji, 5,346,047, Cl. 194-200.000.
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Hayashi, Katsuhiko, 5,345,834, Cl. 74-421.00A.
Nishikawa, Kazunori, 5,345,783, Cl. 62-345.000.
Kabushiki Kaisha Shinkawa: *See*—
Sugawara, Kenji, 5,347,362, Cl. 356-372.000.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Sugimoto, Satoshi, 5,345,833, Cl. 74-89.000.
Yokoyama, Yoshinobu; Aoki, Tatsuya; and Shimizu, Etsuo, 5,345,836, Cl. 74-473.00R.
Kabushiki Kaisha Topcon: *See*—
Sekine, Akihiko; and Ohtomo, Fumio, 5,347,327, Cl. 351-211.000.
Sekine, Akihiko; and Ohtomo, Funio, 5,347,328, Cl. 351-211.000.
Kabushiki Kaisha Toshiba: *See*—
Fox, Timothy R.; and Faehnrich, Richard J., 5,347,222, Cl. 324-322.000.
Gokita, Masami, 5,347,298, Cl. 346-108.000.
Hayakawa, Shigeyuki; and Yanagisawa, Leiichi, 5,347,170, Cl. 307-296.100.
Hayashi, Kinya, 5,345,694, Cl. 34-550.000.
Henmi, Takuma; and Yamada, Susumu, 5,347,442, Cl. 363-41.000.
Ichihara, Takashi, 5,347,455, Cl. 364-413.240.
Iino, Yutaka; and Ohya, Junko, 5,347,446, Cl. 364-149.000
Kiji, Junichi; Imasaki, Naoki; and Endo, Tsunekazu, 5,347,447, Cl. 364-152.000.
Komazaki, Megumi; Suzuki, Hideaki; Motohashi, Hideaki; and Morita, Keiichi, 5,345,776, Cl. 62-176.300.
Matsuda, Tadashi; and Tsunoda, Tetsujiro, 5,347,158, Cl. 257-691.000.
Nishiki, Masayuki; Fujiwara, Shigemi; Hayashi, Mikihito; Tsukamoto, Akira; Takamizawa, Kinya; Takano, Masayuki; and Nagai, Seiichiro, 5,345,938, Cl. 128-660.040.
Nunotani, Shinji; Takahashi, Koichi; and Miyashita, Naoto, 5,346,555, Cl. 118-724.000.
Saito, Tutomu; and Matsui, Toshikazu, 5,347,375, Cl. 359-9.000.
Sakai, Izumi; Uchino, Yukinori; Tanaka, Yasunori; and Mori, Toshiaki, 5,347,150, Cl. 259-203.000.
Suzuki, Nobukazu, 5,346,780, Cl. 429-42.000.
Suzuki, Nobuo; Tohyama, Masaki; and Onomura, Masaaki, 5,347,526, Cl. 372-20.000.
Tanabe, Akira; Yoshioka, Ritsuo; Ueda, Makoto; Sakurada, Koichi; and Watanabe, Shouichi, 5,347,550, Cl. 376-173.000
Tanaka, Hiroaki; and Koyanagi, Masaru, 5,347,145, Cl. 257-48.000
Uchida, Ken; Higashi, Michiya; and Fujieda, Shinetsu, 5,346,743, Cl. 428-76.000
Yamanaka, Kazuyuki, 5,347,363, Cl. 356-376.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Hasegawa, Naoki; Usuki, Arimitsu; Okada, Akane; and Kurauchi, Toshio, 5,346,984, Cl. 528-323.000.
Kadaja, Thomas P., to McCay, Robert D., Jr.; Sprenger, Wallace A.; Chung, Kwangsook; Hughes, Kevin M.; and Hughes, Karna M Vehicle including an hydraulic drive mechanism. 5,346,234, Cl 280-216.000
Kadowaki, Hisashi; and Arimura, Takashi, to Nippondenso Co., Ltd. Air fuel ratio control apparatus for internal combustion engine. 5,345,911, Cl. 123-436.000.
Kaga, Toru: *See*—
Hisamoto, Dai; Kaga, Toru; Kimura, Shinichiro; Moniwa, Masahiro; Tanaka, Haruhiko; Hiraiwa, Atsushi; and Takeda, Eiji, 5,346,834, Cl. 437-41.000
Kagami, Akihiko, to NEC Corporation. Dynamic random access memory device having autorefreshing unit for producing internal row address strobe signal and internal column address strobe signal 5,347,491, Cl. 365-222.000.
Kahara, Toshiki: *See*—
Namba, Shigeaki; Sakamoto, Tatsuo; and Kahara, Toshiki, 5,346,777, Cl. 429-12.000.
Kahng, Koo Y.: *See*—
Fabry, John J.; and Kahng, Koo Y., 5,345,609, Cl. 2-20.000.
Kaiser, Karl, to International Divers Inc. Buoyancy compensator device with backpack and adjustable harness. 5,346,419, Cl 441-96.000.
Kaiser, Ronald R., II. Jump rope having sprinkling apparatus. 5,346,446, Cl. 482-82.000.
Kaji, Ryuichi: *See*—
Nakakawaji, Takayuki; Morihara, Atsushi; Shoji, Mitsuyoshi; Sato, Koji; Ito, Yutaka; Kaji, Ryuichi; and Go, Hiroshi, 5,346,633, Cl. 252-10.000.
Kajimoto, Kazuo; and Nonomura, Tomoyuki, to Matsushita Electric Industrial Co., Ltd. Document display processing apparatus including means for controlling the display of plural text block groups. 5,347,625, Cl. 395-145.000.
Kajnath, Herbert: *See*—
Haufe, Wilfried; and Kajnath, Herbert, 5,346,067, Cl. 206-497.000.
Kaku, Mureo, to Du Pont de Nemours, E. I., and Company. Polyimide polymeric blends. 5,346,969, Cl. 525-432.000
Kalail, Frederick R., Sr.; and Lapidakis, Harry M., to Fuelproof Systems, Inc. Device for controlling the flow of fuel to an engine and method thereof. 5,345,902, Cl. 123-198.00B.
Kali-Chemie AG: *See*—
Kruck, Thomas; and Terfloth, Christian, 5,346,730, Cl. 427-584.000.
Kalinowski, Jorn: *See*—
Schafer, Andreas; Kalinowski, Jorn; and Puhler, Alfred, 5,346,818, Cl. 435-172.300.
Kaliski, Adam F., to Industrial Progress, Inc. Aggregate-TiO_2 pigment products. 5,346,546, Cl. 106-436.000.
Kalthoff, Udo: *See*—
Jelich, Werner; Rehwinkel, Heiko; Klauke, Friedrich; Konig, Dieter; and Kalthoff, Udo, 5,346,533, Cl. 95-20.000.
Kalwitzki, Heinrich: *See*—
Kubiak, Helmut; Schroter, Hans J.; Gappa, Gunther; Kalwitzki, Heinrich; and Knop, Klaus, 5,346,515, Cl. 48-73.000.
Kameswaran, Venkataraman, to American Cyanamid Company. N-oxygenated arylpyrrole intermediates for insecticidal, acaricidal and nematicidal agents. 5,347,016, Cl. 548-531.000.
Kamiryo, Eiji: *See*—
Shibata, Masatoshi; Isonage, Teruto; Kamiryo, Eiji; and Shinohara, Kiyoshi, 5,346,544, Cl. 106-244.000.
Kamitamari, Manabu: *See*—
Shimizu, Tadafumi; Takano, Yoshiaki; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotaro; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,347,346, Cl. 355-202.000.
Kamitsuma, Yasuo; Nakagawa, Yusaku; Kobayashi, Yoshihiro; Nakashima, Shoichi; Iizuka, Tadashi; Nakamura, Keiichi; and Shikata, Hideo, to Hitachi, Ltd.; and Hitachi Powdered Metals Co., Ltd. Method of manufacturing sintered aluminum alloy parts. 5,346,667, Cl. 419-52.000.
Kamiwano, Mitsuo; and Inoue, Yoshitaka, to Inoue Mfg., Inc. Dispersing and grinding apparatus. 5,346,145, Cl. 241-172.000.
Kamiyama, Masafumi; Maeda, Masahiro; Totsuka, Hiroki; Sano, Akihiro; and Matsushita, Toshiya, to Tomoegawa Paper Co., Ltd. Suspension polymerization method and toner for electrophotography obtained therewith. 5,346,798, Cl. 430-137.000.
Kamiyama, Misao, to Takata Corporation. Inflatable seat belt unit. 5,346,250, Cl. 280-733.000.
Kamo, Yasushi: *See*—
Takahashi, Hiroyuki; Nara, Wataru; Kamo, Yasushi; Aihara, Toshiyuki; and Tsuchiko, Seiji, 5,347,372, Cl. 358-471.000.
Kamyr, Inc.: *See*—
Henricson, Kaj, 5,346,591, Cl. 162-249.000.
Kanai, Fumiyuki: *See*—
Fukuda, Takuya; Ohue, Michio; Kanai, Fumiyuki; Koike, Atsuyoshi; Saito, Katsuaki; and Suzuki, Kazuo, 5,347,100, Cl. 219-121.430.
Kanai, Kunio: *See*—
Nitta, Hideo; Kanai, Kunio; and Arai, Yasuo, 5,347,412, Cl. 360-103.000.
Kanamaru, Hisanobu: *See*—
Okamoto, Yoshio; Kanamaru, Hisanobu; Maeda, Hitoshi; Suzuki, Satoshi; Ishikawa, Tohru; Kosuge, Tokuo; Amou, Kiyoshi; Ohki, Hiroshi; Nakagawa, Koji; Tanabe, Yoshiyuki; and Yokoyama, Mizuho, 5,346,137, Cl. 239-585.400.
Kanaya, Yoshihiro: *See*—
Morishima, Makoto; and Kanaya, Yoshihiro, 5,347,104, Cl. 219-451.000.
Kanazawa, Koichi: *See*—
Kanno, Hiroshi; Toyama, Tsugio; Kanazawa, Koichi; and Ozawa, Koichi, 5,346,382, Cl. 425-190.000.
Kanda, Takashi: *See*—
Ishihara, Mitsuhiro; Kubota, Mineo; Kanda, Takashi; Kitta, Toru; and Tsuchiya, Mitsuo, 5,347,370, Cl. 358-461.000.
Kane, John W.: *See*—
Kosikowski, David M.; and Kane, John W., 5,345,715, Cl. 49-42.000.
Kanebo Ltd.: *See*—
Kurata, Shuichi; Ichinose, Shiro; Kusaki, Kazuo; Ishihara, Toshihiko; Ueno, Naozumi; and Morita, Toru, 5,345,863, Cl. 101-126.000
Kanegsberg, Edward: *See*—
Hutchings, Thomas J.; Kanegsberg, Edward; Hammons, Sheridan W.; Stjern, Daryl C., deceased; and Rusche, Edmund W., legal representative, 5,347,359, Cl. 356-350.000.
Kaneko, Kyoichi, to Daiwa Seiko, Inc. Spinning reel for fishing. 5,346,157, Cl. 242-232.000.
Kaneko, Susumu: *See*—
Morisawa, Yasuhiro; Saito, Akio; Toyama, Toshimitsu; and Kaneko, Susumu, 5,346,918, Cl. 514-450.000.
Kaneshige, Isao; Genba, Tsuneo; Tamaru, Takeshi; and Matsuura, Tetsuhiko, to Kuraray Chemical Co., Ltd. Process for separating nitrogen gas. 5,346,536, Cl. 95-103.000.
Kang, Moon: *See*—
Song, Jin I.; and Kang, Moon, 5,347,461, Cl. 364-474.290.
Kanno, Hiroshi; Toyama, Tsugio; Kanazawa, Koichi; and Ozawa, Koichi, to Toshiba Kikai Kabushiki Kaisha. Hot runner exchange apparatus for use in an injection molding machine. 5,346,382, Cl. 425-190.000
Kanno, Miki: *See*—
Anzai, Mitsutoshi; Matsuura, Yuji; Mukudai, Osamu; Kanno, Miki; and Watanabe, Kayoko, 5,346,794, Cl. 430-110.000.
Kano, Hisashi, to Matsushita Electric Industrial Co., Ltd. Magnetic disk drive with a controllably positioned floating magnetic head 5,347,414, Cl. 360-105.000
Kanoh, Yoshiaki; Furuya, Hiroaki; and Takatori, Hiroyuki, to Ube Industries, Ltd. Blow molding process and apparatus for producing hollow plastic articles. 5,346,666, Cl. 264-521.000.

Kanou, Takahiro. Rotary cutter for mowing machine. 5,345,683, Cl. 30-276.000.
Kansai Paint Company, Limited: *See*—
Yukawa, Yoshiyuki; Yabuta, Motoshi; Nakahata, Akimasa; Miyamoto, Yuzo; Kobayashi, Masaaki; and Ueno, Naruhito, 5,346,958, Cl. 525-124.000.
Kao, Wenling: *See*—
Failli, Amedeo; Kao, Wenling; Steffan, Robert J.; and Vogel, Robert L., 5,346,893, Cl. 314-183.000.
Kapich, Davorin. Very high speed hydraulic turbine drive. 5,346,364, Cl. 415-202.000.
Kaplan, S. Jerrold: *See*—
Agulnick, Todd; Carr, Robert; Hoeber, Tony; Kaplan, S. Jerrold; Low, David R.; and Ouye, Michael, 5,347,295, Cl. 345-156.000.
Kappelmuller, Werner: *See*—
Leonhartsberger, Heinz; Eppich, Stefan; and Kappelmuller, Werner, 5,345,766, Cl. 60-545.000.
Karasawa, Yoshio; and Iwai, Hisato, to Kokusai Denshin Denwa Co., Ltd. CDMA communication system. 5,347,535, Cl. 375-1.000.
Karl Friedrich Angstenberger: *See*—
Hugeneil, Hermann, 5,347,401, Cl. 359-853.000.
Karna, Toivo; Laakso, Jukka; Levon, Kalle; and Savolainen, Esko, to Neste Oy. Conducting polymer material and method for its production. 5,346,649, Cl. 252-500.000.
Karnopp, Dean C., to Robert Bosch GmbH. Apparatus for active motor vehicle suspensions. 5,346,242, Cl. 280-707.000.
Karrick, Kevin C., to Tektronix, Inc. Dynamic storage allocation in a logic analyzer. 5,347,540, Cl. 375-10.000.
Karwande, Vijay V., to Ford Motor Company. Sealing system or movable dual pane glass. 5,345,719, Cl. 49-502.000.
Kasahara, Takayasu: *See*—
Yamada, Naoyuki; Kasahara, Takayasu; and Kobayashi, Yasuhiro, 5,347,614, Cl. 395-75.000.
Kasama, Hiroshi: *See*—
Ishida, Takeshi; Koyama, Kenji; Kasama, Hiroshi; Nishiumi, Kenji; and Nakajima, Kenji, 5,346,047, Cl. 194-200.000.
Kaschmitter, James L.; Truher, Joel B.; Weiner, Kurt H.; and Sigmon, Thomas W., to University of California, Regents of the. Crystallization and doping of amorphous silicon on low temperature plastic. 5,346,850, Cl. 437-81.000.
Kashimura, Hideki: *See*—
Murakami, Yasuo; Kashimura, Hideki; Katayama, Kiichi; Imaizumi, Hiroshi; Katou, Toshio; and Nakashima, Hideaki, 5,347,098, Cl. 219-61.000.
Kassaw, Calvin M., Jr.; and Klimek, Jolanta K., to Bridgestone/Firestone, Inc. Apparatus for forming a curing envelope. 5,346,378, Cl. 425-28.100.
Katayama, Hiroyuki: *See*—
Hirokane, Junji; Katayama, Hiroyuki; Nakayama, Junichiro; Mieda, Michinobu; and Ohta, Kenji, 5,347,510, Cl. 369-275.500.
Katayama, Kiichi: *See*—
Murakami, Yasuo; Kashimura, Hideki; Katayama, Kiichi; Imaizumi, Hiroshi; Katou, Toshio; and Nakashima, Hideaki, 5,347,098, Cl. 219-61.000.
Katayanagi, Hideyuki: *See*—
Takahashi, Kazuhiro; Abe, Yoshiharu; and Katayanagi, Hideyuki, 5,345,782, Cl. 62-344.000.
Katiraie, Kamyar. Adjustable, ultrasonic collision warning system. 5,347,273, Cl. 340-903.000.
Kato, Akira: *See*—
Hamada, Akihiko; and Kato, Akira, 5,346,223, Cl. 273-227.000.
Kato, Heiji; and Freeman, John, to Ishikawajima-Harima Heavy Industries Company Limited; and John Lysaght (Australia) Limited. Casting metal strip. 5,345,994, Cl. 164-480.000.
Kato, Hideto: *See*—
Okinoshima, Hiroshige; and Kato, Hideto, 5,346,979, Cl. 528-26.000.
Kato, Katsunori: *See*—
Watanabe, Hiroshi; Machashi, Tatsuichi; Nakatani, Koichi; Kato, Katsunori; and Komamura, Tawara, 5,346,801, Cl. 430-253.000.
Kato, Naoki: *See*—
Akuto, Keiji; Kato, Naoki; Ogata, Tsutomu; and Takeuchi, Masaaki, 5,346,785, Cl. 429-111.000.
Kato, Tadashi: *See*—
Koyama, Osamu; Kato, Tadashi; Usui, Masayuki; Watanabe, Yoshihiko; Baba, Hisatoshi; Ando, Hirotake; Nakajima, Hideo; Sakai, Shinji; and Tamaki, Kenji, 5,347,503, Cl. 369-44.320.
Katoh, Atsuyuki: *See*—
Ohtsuka, Yoshinori; Umeda, Hideki; Mori, Toyokazu; Tsuji, Masaru; and Katoh, Atsuyuki, 5,347,343, Cl. 355-200.000.
Katou, Toshio: *See*—
Murakami, Yasuo; Kashimura, Hideki; Katayama, Kiichi; Imaizumi, Hiroshi; Katou, Toshio; and Nakashima, Hideaki, 5,347,098, Cl. 219-61.000.
Katzenberger, Joseph K.: *See*—
Marcovecchio, Joseph; and Katzenberger, Joseph K., 5,346,381, Cl. 425-149.000.
Kauffman, James W.: *See*—
Gregory, William W.; and Kauffman, James W., 5,347,204, Cl. 318-632.000.
Kawabata, Junichi; Yamaoka, Hideo; Tatsuki, Yuuichirou; and Nishiyama, Shinichi, to Mitsui Petrochemical Industries, Ltd. Tetralin compound, liquid crystal material, liquid crystal composition and liquid crystal element. 5,346,646, Cl. 252-299.620.
Kawada, Haruki: *See*—
Kawagishi, Hideyuki; Takimoto, Kiyoshi; Kawada, Haruki; Matsuda, Hiroshi; and Yanagisawa, Yoshihiro, 5,347,379, Cl. 359-58.000.
Kawagishi, Hideyuki; Takimoto, Kiyoshi; Kawada, Haruki; Matsuda, Hiroshi; and Yanagisawa, Yoshihiro, to Canon Kabushiki Kaisha. Liquid crystal device with MIM insulator formed as a continuous monomolecular film. 5,347,379, Cl. 359-58.000.
Kawahara, Takayuki: *See*—
Horiguchi, Masashi; Itoh, Kiyoo; Kawajiri, Yoshiki; Kitsukawa, Goro; Kawahara, Takayuki; and Akiba, Takesada, 5,347,492, Cl. 365-226.000.
Kawai, Satoshi: *See*—
Okabe, Ichiro; Kawai, Satoshi; Higashira, Hideki; and Suzou, Hirakushi, 5,346,033, Cl. 180-248.000.
Kawai, Shingo, to Nadex Co., Ltd. Welding controller. 5,347,105, Cl. 219-110.000.
Kawajiri, Yoshiki: *See*—
Horiguchi, Masashi; Itoh, Kiyoo; Kawajiri, Yoshiki; Kitsukawa, Goro; Kawahara, Takayuki; and Akiba, Takesada, 5,347,492, Cl. 365-226.000.
Kawakami, Tetsuji: *See*—
Ozaki, Yusuke; Minemoto, Hisashi; Sonoda, Nobuo; Kawakami, Tetsuji; Kawamura, Tatsurou; and Wakita, Katsuya, 5,346,653, Cl. 252-582.000.
Wakita, Katsuya; Kawakami, Tetsuji; Sonoda, Nobuo; and Minemoto, Hisashi, 5,347,394, Cl. 359-326.000.
Kawamura, Fumio: *See*—
Momozaki, Katsuhiko; Kusunoki, Masako; Kawamura, Fumio; Ono, Hisao; Itoh, Katsumi; Shimizu, Yoshihiro; and Ono, Yuuichi, 5,346,626, Cl. 210-701.000.
Kawamura, Shinji: *See*—
Kudo, Hiroshi; and Kawamura, Shinji, 5,346,764, Cl. 428-349.000.
Kawamura, Tatsurou: *See*—
Ozaki, Yusuke; Minemoto, Hisashi; Sonoda, Nobuo; Kawakami, Tetsuji; Kawamura, Tatsurou; and Wakita, Katsuya, 5,346,653, Cl. 252-582.000.
Kawamura, Yoshio; Sato, Kazuo; Tanaka, Shinji; Kohida, Hiroyuki; and Sakurano, Masatoshi, to Hitachi, Ltd. Method for improving the rate of cell fusion. 5,346,825, Cl. 435-240.260
Kawanishi, Toshiyuki; Morohoshi, Kunichika; and Igarashi, Masato, to Ricoh Company, Ltd. Transfer-type electrothermographic recording method and recording medium for use with the same. 5,347,301, Cl. 346-153.100.
Kawano, Hiroshi: *See*—
Yuasa, Kohji; Ikoma, Munehisa; Kawano, Hiroshi; Takahashi, Osamu; and Matsumoto, Isao, 5,346,781, Cl. 429-59.000.
Kawano, Yuji: *See*—
Taguchi, Motohisa; Fukami, Tatsuya; Hashima, Kazuo; Toide, Yukari; Kawano, Yuji; Fujii, Yoshio; Tokunaga, Takashi; Nakaki, Yoshiyuki; Tsutsumi, Kazuhiko; Kobayashi, Hiroshi; Ohdoi, Yuzou; Tanabe, Shinji; and Shibata, Hiroshi, 5,347,485, Cl. 365-171.000.
Kawasaka, Shozo, to Touhaku Co., Ltd. Suspended belt-type expandable and movable part holder unit. 5,346,054, Cl. 198-465.400
Kawasaki, Kazuhiko; and Miyazaki, Tadashi, to Jasco Corporation. Total reflection measuring apparatus. 5,347,364, Cl. 356-445.000.
Kawate, Keith W.: *See*—
Reidemeister, Eric P.; Johnson, Larry K.; Kawate, Keith W.; Mandeville, Raymond E.; Christensen, Douglas B.; and Southworth, Robert O., 5,345,823, Cl. 73-517.00R.
Kawazoe, Yutaka: *See*—
Nonoyama, Meihan; Tanaka, Akiko; Lai, Patrick K.; Konno, Kunio; Kawazoe, Yutaka; and Sakagami, Hiroshi, 5,346,695, Cl. 424-78.080.
Kay, Robert M., to Honeywell Inc. Rotation sensor output signal processor. 5,347,361, Cl. 356-350.000
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Knell, Timothy A., to Cerdec Corporation. Thermoplastic/thermosettable coatings or inks for glass, ceramic and other hard surfaces. 5,346,933, Cl. 523-427.000.
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Komamura, Tawara: *See—*
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Komatsu, Kouichiro: *See—*
Ota, Kazuya; Magome, Nobutaka; Mizutani, Hideo; and Komatsu, Kouichiro, 5,347,356, Cl. 356-363.000.

Komazaki, Megumi; Suzuki, Hideaki; Motohashi, Hideaki; and Morita, Keiichi, to Kabushiki Kaisha Toshiba. Air conditioning apparatus capable of performing a dehumidifying operation. 5,345,776, Cl 62-176.300

Komerath, Narayanan M.. *See—*
Magill, John C.; and Komerath, Narayanan M., 5,345,818, Cl. 73-147.000.

Komiyama, Shinji: *See—*
Tsuji, Suguru; Numata, Hiromi; and Komiyama, Shinji, 5,346,957, Cl. 525-122.000.

Komiyama, Yoshizo; Arai, Fumio; Hasegawa, Yutaka; Tanioka, Tetsuya; Sugiyama, Hisataka; Toyama, Yoshiyasu; and Nakanishi, Fusao, to Toshiba Machine Co., Ltd. Method and apparatus for molding optical glass elements or the like. 5,346,522, Cl. 65-64.000.

Komma, Ottmar; and Steidl, Juergen, to Degussa Aktiengesellscht; and Ducera Dental Gesellschaft mbH. Dental ceramic material with a relatively low processing temperature. 5,346,866, Cl. 501-59.000.

Komoda, Michio: *See—*
Deguchi, Mitsuhiro; and Komoda, Michio, 5,347,178, Cl. 307-451.000

Kondo, Nobukazu; Maruyama, Takashi; Isamu, Keiichi; and Aotsu, Hiroaki, to Hitachi, Ltd. Bus system for coordinating internal and external direct memory access controllers. 5,347,643, Cl. 395-425.000

Kondo, Nobuyoshi: *See—*
Ishii, Tomoyuki; and Kondo, Nobuyoshi, 5,347,545, Cl. 375-37.000.

Kondo, Shigeki, to Mitsubishi Denki Kabushiki Kaisha. Control device of a transmission fluid pressure by temporary reduction in negative feedback control of speed for an electronically controlled automatic transmission. 5,345,842, Cl. 477-120.000.

Kondo, Syunichi; and Umehara, Akira, to Fuji Photo Film Co., Ltd. Photopolymerizable composition. 5,346,805, Cl. 430-281.000.

Kondoh, Harufusa: *See—*
Ishibashi, Atsuhiko; Kondoh, Harufusa; and Kitao, Masaya, 5,347,233, Cl. 331-2.000.
Matsuda, Yoshio; Kondoh, Harufusa; Hayashi, Isamu; and Notani, Hiromi, 5,347,270, Cl. 340-825.800

Konica Corporation: *See—*
Morita, Shizuo; Fukuchi, Masakazu; and Haneda, Satoshi, 5,347,351, Cl. 355-313.000
Sato, Kenji; and Honda, Hiroyuki, 5,347,349, Cl. 355-309.000.
Takada, Shun; and Masumi, Satoshi, 5,346,809, Cl. 430-393.000.
Watanabe, Hiroshi; Maehashi, Tatsuichi; Nakatani, Koichi; Kato, Katsunori; and Komamura, Tawara, 5,346,801, Cl. 430-253.000.

Konieczny-Janda, Gerhard: *See—*
Vetter, Roman; Wilke, Detlef; Moeller, Bernhard; Mueller, Martina; Muecke, Ingo; Takenberg, Meike; and Konieczny-Janda, Gerhard, 5,346,822, Cl. 435-221.000.

Konig, Dieter: *See—*
Jelich, Werner; Rehwinkel, Heiko; Klauke, Friedrich; Konig, Dieter; and Kalthoff, Udo, 5,346,533, Cl. 95-20.000.

Konno, Kunio: *See—*
Nonoyama, Meihan; Tanaka, Akiko; Lai, Patrick K.; Konno, Kunio; Kawazoe, Yutaka; and Sakagami, Hiroshi, 5,346,695, Cl. 424-78.080.

Konotchick, John A., to McQ Associates, Inc.; and KAB Laboratories Inc. Linear motion electric power generator. 5,347,186, Cl 310-17.000.

Korea Gréen Cross Corporation: *See—*
Kim, Chung Y.; and Lee, Hyo S., 5,346,696, Cl. 424-85.400.

Korea Research Institute of Chemical Technology: *See—*
Kim, Hee Y.; Kwon, Dae H.; Song, Yong M.; Kim, Sung W.; Jeon, Jong Y.; Lee, Kang M.; and Lee, Jae S., 5,346,141, Cl. 241-5.000.

Korsten, Hendrikus H. M.: *See—*
Ackerman, Eric W.; Grouls, Rene J. E.; and Korsten, Hendrikus H M., 5,346,903, Cl. 514-282.000.

Korth, Ruth. Treatment of lyso PAF-mediated diseases with PAF antagonists and procedure for determining their efficacy. 5,346,894, Cl. 514-220.000.

Kosaka, Masanobu: *See—*
Ohmura, Hiroshi; Kosaka, Masanobu; and Hosoda, Koji, 5,346,030, Cl. 180-140.000.

Koschlig, Manfred; and Krappitz, Harald, to Degussa Aktiengesellschaft. Work pieces having a wear resistant coating produced by brazing and process for producing same. 5,346,119, Cl. 228-248.100.

Kosikowski, David M.; and Kane, John W., to Burle Technologies, Inc. Serpentine structure for a turnstile. 5,345,715, Cl. 49-42.000.

Koster, Rick L. Vehicle hydraulic three-point hitch and power take-off shaft. 5,346,018, Cl. 172-47.000.

Kosuge, Tokuo: *See—*
Okamoto, Yoshio; Kanamaru, Hisanobu; Maeda, Hitoshi; Suzuki, Satoshi; Ishikawa, Tohru; Kosuge, Tokuo; Amou, Kiyoshi; Ohki, Hiroshi; Nakagawa, Koji; Tanabe, Yoshiyuki; and Yokoyama, Mizuho, 5,346,137, Cl. 239-585.400.

Kotera, Tetsuji: *See—*
Okuda, Tomonori; Kotera, Tetsuji; and Morishige, Kouji, 5,345,753, Cl. 59-5.000.

Koumbouris, Wassilis: *See—*
Bauer, Wolfgang; and Koumbouris, Wassilis, 5,347,019, Cl. 549-232.000

Kovacs, Gregory J.; and Connell, G. A. Neville, to Xerox Corporation. Full color xerographic printing system with dual wavelength, single optical system ROS and dual layer photoreceptor. 5,347,303, Cl. 346-157.000

Koyama, Kenji: *See—*
Ishida, Takeshi; Koyama, Kenji; Kasama, Hiroshi; Nishiumi, Kenji; and Nakajima, Kenji, 5,346,047, Cl. 194-200.000

Koyama, Osamu; Kato, Tadashi; Usui, Masayuki; Watanabe, Yoshihiko; Baba, Hisatoshi; Ando, Hirotake; Nakajima, Hideo; Sakai, Shinji; and Tamaki, Kenji, to Canon Kabushiki Kaisha. Optical information processing apparatus for correcting linearity of a photosensor output with respect to power of an emitted light beam. 5,347,503. Cl. 369-44.320.

Koyama, Satoru: *See—*
Hayashida, Haruo; Nomura, Ryoichi; and Koyama, Satoru, 5,346,944, Cl. 524-451.000

Koyama, Shinichi: *See—*
Kobayashi, Takashi; Takimoto, Hiroyuki; Hori, Taizou; Fukuoka, Hiroyuki; Nakatani, Yoshihiro; Makino, Jun; and Koyama, Shinichi, 5,347,318, Cl. 348-556.000

Koyama, Takeshi; Tonosaki, Masao; Yamada, Nobuhiro; and Mori, Kenji, to JGC Corporation. Catalysts used for producing carbonic acid esters and methods of producing carbonic acid esters using the same. 5,347,031, Cl. 558-260.000.

Koyanagi, Masaru: *See—*
Tanaka, Hiroaki; and Koyanagi, Masaru, 5,347,145, Cl. 257-48.000.

Koyo Sangyo Co., Ltd.: *See—*
Tamura, Yasuo; Tanaka, Ryoji; Gohma, Takahiko; and Horikawa, Mitsumasa, 5,346,574, Cl. 156-257.000.

Koyo Seiko Co., Ltd.: *See—*
Okabe, Ichiro; Kawai, Satoshi; Higashira, Hideki; and Suzou, Hirakushi, 5,346,033, Cl. 180-248.000.

Kozen, Waichiro: *See—*
Takeuchi, Akihisa; Kozen, Waichiro; and Nakabayashi, Hirohiko, 5,347,249, Cl. 335-78.000.

Kozuki, Koichi, to Yamaha Corporation. Tone generation device capable of varying delay time length at the start of tone generation. 5,347,087, Cl. 84-605.000.

Krafft, Philippe: *See—*
Lechaude, Paul; Darago, Gilles; Krafft, Philippe; and Catinat, Jean-Pierre, 5,346,594, Cl. 203-29.000.

Krajenbrink, Frans G.: *See—*
Nieh, Simon K.; Matossian, Jesse N.; and Krajenbrink, Frans G., 5,346,600, Cl. 204-192.300.

Krallmann, Reinhold; Laws, Regina; and Schrott, Wolfgang, to BASF Aktiengesellschaft. Mixtures of reactive dyes. 5,346,510, Cl. 8-638.000.

Krappitz, Harald: *See—*
Koschlig, Manfred; and Krappitz, Harald, 5,346,119, Cl. 228-248.100

Kratzer, David W.: *See—*
Ball, Richard C.; Tuttle, Elvin E.; and Kratzer, David W., 5,345,672, Cl. 29-715.000.

Kraus-Marchak, Jaye: *See—*
Dotolo, Vincent A.; Schwartz, John R.; and Kraus-Marchak, Jaye, 5,346,652, Cl. 252-542.000

Krauss, Alan R.; Gruen, Dieter M.; and Lamich, George J., to ARCH Development Corporation. Time-of-flight direct recoil ion scattering spectrometer. 5,347,126, Cl. 250-309.000.

Krcma, Jan; and Martell, Dennis, to J and N Associates, Inc. Gas leak detector sensing tip with interior concentric bores and corona current generation. 5,347,223, Cl. 324-455.000.

Krebs, William H., Jr.: *See—*
Brewer, Susan C.; Brink, Kathy A.; Krebs, William H., Jr.; and Welch, Robert P., 5,347,628, Cl. 395-159.000.

Krebs, Winfried, to Dr. Ing. h.c.F. Porsche AG. Valve operating mechanism for an internal-combustion engine. 5,345,898, Cl. 123-90.170.

Kreis, Gundolf: *See—*
Enning, Norbert; Kreis, Gundolf; Reiter, Karl; and Timm, Heinrich, 5,346,276, Cl. 296-203.000.

Kress, Dieter; Haberle, Friedrich; and Hertel, G u/ nther, to MAPAL Fabrik Fur Prazisionswerkzeuge Dr. Kress KG. Cutting area. 5,346,344, Cl. 409-234.000.

Kring, Timothy D. System for covering pool and billiards tables. 5,346,209, Cl. 473-32.000.

Krivec, Bert, to Snap-on Incorporated. Torque limiting device for air impact tool. 5,346,022, Cl. 173-178.000.

Krizek, Howard J.; and Johnsen, Gordon M., to Hughes Aircraft Company. Frequency agile radar. 5,347,283, Cl. 342-201.000.

Krohn, Duane D., to Graco Inc. Portable pumping system with generator powered clutch assembly. 5,346,370, Cl. 417-223.000.

Krohn, Randall J.: *See—*
Yerlikaya, Denis Y.; Krohn, Randall J.; Walker, Clarence L.; Wilhelm, Michael J.; and Kinghorn, Curtis D., 5,346,466, Cl. 604-253.000.

Kronenthal, David: *See—*
Das, Jagabandhu; and Kronenthal, David, 5,347,007, Cl. 546-269.000.

Kronfalt, Mats. Method and an apparatus in ventilation. 5,346,426, Cl. 454-66.000.

Kropp, Karl M.: *See—*
Luhman, Robert A.; Kuhn, Gary K.; Perrington, Kenneth J.; Kropp, Karl M.; and Gruber, Michael W., 5,346,350, Cl. 412-37.000.

Kruck, Thomas; and Terfloth, Christian, to Kali-Chemie AG. Process for depositing a copper containing layer I. 5,346,730, Cl. 427-584.000.

Krueger, James H.: *See—*
Shah, Dipak J.; Krueger, James H.; and Strand, Rolf L., 5,346,129, Cl. 236-44.00C.

Krulwich, Terry A.; and Ivey, D. Mack, to Mount Sinai School of Medicine of the City University of New York, The. Sodium ion binding proteins. 5,346,815, Cl. 435-69.100.

Krupp Corpoplast Maschinenbau GmbH: *See—*
Albrecht, Peter; Linke, Michael; and Peterko, Marek, 5,346,386, Cl. 425-541.000.

Kruse, Herman A.: *See—*
Little, Frank R.; Kruse, Herman A.; Megna, John G.; and Pidgeon, Rezin E., 5,347,388, Cl. 359-189.000.

Krutina, Gerhard: *See—*
Gekat, Frank; Klingenberg, Hans; and Krutina, Gerhard, 5,347,530, Cl. 372-82.000.

Ku, Tse-Fen. Adjustable air resistance system for fitness equipment. 5,346,452, Cl. 482-113.000.

Kubani, Ronald J.: *See—*
Grenn, Daniel P.; and Kubani, Ronald J., 5,345,817, Cl. 73-117.300.

Kubiak, Helmut; Schroter, Hans J.; Gappa, Gunther; Kalwitzki, Heinrich; and Knop, Klaus, to Bergwerksverband GmbH. Fluidized bed gas generator for allothermic gasification of coal. 5,346,515, Cl. 48-73.000.

Kubota Corporation: *See—*
Kurotobi, Manabu; and Uchida, Mutsuo, 5,346,182, Cl. 266-78.000.
Nitta, Sachihito, 5,346,146, Cl. 241-172.000.

Kubota, Hiroshi: *See—*
Nakahata, Akinobu; Kubota, Hiroshi; Migita, Kouji; Fuchi, Masami; Oda, Kenji; Makiura, Yoshinori; and Yamaguchi, Katsuhide, 5,347,350, Cl. 355-309.000.

Kubota, Mineo: *See—*
Ishihara, Mitsuhiro; Kubota, Mineo; Kanda, Takashi; Kitta, Toru; and Tsuchiya, Mitsuo, 5,347,370, Cl. 358-461.000.

Kuchler, Josef; Erben, Hans-Georg; and Seeholzer, Josef, to SKW Trostberg Aktiengesellschaft. Modifying agents for thermosetting resins and thermosetting resins prepared using these agents. 5,346,937, Cl. 524-47.000.

Kuchler, Richard: *See—*
Prahst, Douglas; Laird, Ralph H.; Kuchler, Richard; Peterson, Lester G.; and Benning, William D., 5,345,729, Cl. 52-28.000.

Kudo, Hiroshi; and Kawamura, Shinji, to Idemitsu Petrochemical Co., Ltd. Resin laminates. 5,346,764, Cl. 428-349.000.

Kuebler, Siegfried. Racket for ball games and string portion or string therefor. 5,346,212, Cl. 273-73.00D.

Kuenzel, Udo; Geiss, Friedrich; and Romeike, Arno, to Hoechst Aktiengesellschaft. Apparatus and method for filling tubular castings. 5,346,425, Cl. 452-38.000.

Kuerten, Heribert: *See—*
Zimmermann, Clifton; and Kuerten, Heribert, 5,346,151, Cl. 242-521.000.

Kuhn, Gary K.: *See—*
Luhman, Robert A.; Kuhn, Gary K.; Perrington, Kenneth J.; Kropp, Karl M.; and Gruber, Michael W., 5,346,350, Cl. 412-37.000.

Kuhn, Hans R., to Deutsche Thomson-Brandt GmbH. Apparatus with adjustable isolation resilience consumer electronics. 5,347,507, Cl. 369-263.000.

Kukes, Simon G.; Clark, Frederick T.; and Hopkins, P. Donald, to Amoco Corporation. Distillate hydrogenation utilizing a catalyst comprising platinum, palladium, and a beta zeolite support. 5,346,612, Cl. 208-143.000.

Kukes, Simon G.: *See—*
Clark, Frederick T.; Kukes, Simon G.; and Hopkins, P. Donald, 5,346,874, Cl. 502-207.000.

Kuklinski, Theodore T.: *See—*
Meeks, M. Littleton; and Kuklinski, Theodore T., 5,347,589, Cl. 382-3.000.

Kulagowski, Janusz J.: *See—*
Baker, Raymond; Saunders, John; Willson, Timothy M.; and Kulagowski, Janusz J., 5,346,906, Cl. 514-305.000.

Kumai, Kenichiro: *See—*
Sakamoto, Toshio; Kumai, Kenichiro; and Gotoh, Shigeru, 5,346,926, Cl. 521-81.000.

Kumar, Yatendra: *See—*
Khanna, Jag M.; Kumar, Yatendra; and Malhotra, Arun, 5,347,000, Cl. 540-218.000.

Kummer, Kyle G.: *See—*
Hughes, Morgan M.; Kummer, Kyle G.; Betso, Stephen R.; Rowland, Michael E.; and Edmondson, Morris S., 5,346,963, Cl. 525-285.000.

Kunii, Hitoshi: *See—*
Takahashi, Sakae; Miyazaki, Hitoshi; and Kunii, Hitoshi, 5,345,872, Cl. 102-202.200.

Kunisawa, Yukio: *See—*
Wakamatsu, Hidetoshi; Harada, Tsuneo; Kunisawa, Yukio; and Oyama, Kiyotaka, 5,347,035, Cl. 560-41.000.

Kunkel, Steven L.: *See—*
Lyle, Leon R.; and Kunkel, Steven L., 5,346,686, Cl. 424-1.410.

Kuno, Tadahiko, to Kuno, Tadahiko; Hosokawa, Jun-ichi; and Toko Abasu Co., Ltd. Polynuclear complex salt waste water clarificants and their preparation. 5,346,643, Cl. 252-175.000.

Kunz, Gerhard K.; Dimotsis, George L.; and Sampson, Richard L., to EDR Acquisition Corp. Counter-current process for the rapid regeneration of ion exchange materials in an unrestrained bed. 5,346,623, Cl. 210-678.000.

Kunze, Norbert; and Weber, Georg, to U.S. Philips Corporation. Magnetic-tape cassette apparatus comprising a deck for magnetic-tape cassettes reversing mechanism. 5,346,156, Cl. 242-340.000.

Kunzi, Robert A.; Vinson, Edward F.; Totten, Patty L.; and Brake, Bobby G., to Halliburton Company. Low temperature well cementing compositions and methods. 5,346,550, Cl. 106-709.000.

Kuo, Dong Y.: *See—*
Herrell, Russ W.; McAllister, Curtis R.; Kuo, Dong Y.; and Wilcox, Christopher G., 5,347,634, Cl. 395-250.000.

Kuo, Elizabeth A., to Roussel-Uclaf. 2-cyano-3-hydroxy-(n-pyridyl)-propenamide compounds. 5,346,912, Cl. 514-352.000.

Kuo, W. Paul: *See—*
Caron, LaVerne A.; Handley, Edward F.; Kuo, W. Paul; and Lane, E. James, 5,347,419, Cl. 361-154.000

Kuo, Youti. Dentifrice dispensing toothbrush with replaceable cartridge. 5,346,324, Cl. 401-146.000.

Kupersmith, Bertram F.: *See—*
Kezer, Jeremy B.; Kupersmith, Bertram F.; and Sirag, David J., Jr., 5,347,093, Cl. 187-131.000.

Kurahashi, Akihiko; and Kitayama, Masahiro, to Idemitsu Petrochemical Company Limited. Curable phosphazene compositions and coated articles. 5,346,771, Cl. 428-447.000.

Kuraray Chemical Co., Ltd.: *See—*
Kaneshige, Isao; Genba, Tsuneo; Tamaru, Takeshi; and Matsuura, Tetsuhiko, 5,346,536, Cl. 95-103.000.

Kuraray Co., Ltd.: *See—*
Asanuma, Goro; and Tamai, Yoshin, 5,347,048, Cl. 562-501.000.
Negi, Taichi; Mochizuki, Akira; Nagata, Shiro; Yamasaki, Komei; Funaki, Keisuke; and Sumitomo, Takashi, 5,346,950, Cl. 525-57.000.

Kurashige, Mitsuhiko: *See—*
Watanabe, Yoshihisa; and Kurashige, Mitsuhiko, 5,347,056, Cl. 568-881.000.

Kurata, Shuichi; Ichinose, Shiro; Kusaki, Kazuo; Ishihara, Toshihiko; Ueno, Naozumi; and Morita, Toru, to Kanebo Ltd.; and Tosmin Kogyo Co., Ltd. Continuous web printing apparatus. 5,345,863, Cl. 101-126.000.

Kuratate, Tomoaki: *See—*
Shinomiya, Tokihiko; Taniguchi, Tsugiko; Kuratate, Tomoaki; and Nakagawa, Kenichi, 5,347,381, Cl. 359-78.000.

Kurauchi, Toshio: *See—*
Hasegawa, Naoki; Usuki, Arimitsu; Okada, Akane; and Kurauchi, Toshio, 5,346,984, Cl. 528-323.000.

Kurby, Christopher N.; Beyer, Donald R.; Davies-Walsh, Anne P.; Fluharty, Kevin L.; and Miller, Matthew R., to Motorola, Inc. Demodulation selection for a communication signal. 5,347,542, Cl. 375-17.000.

Kurihara, Jun'ichi: *See—*
Hirosawa, Toshio; Kurihara, Jun'ichi; and Kimura, Ikuo, 5,347,646, Cl. 395-575.000.

Kurita Water Industries Ltd.: *See—*
Momozaki, Katsuhiko; Kusunoki, Masako; Kawamura, Fumio; Ono, Hisao; Itoh, Katsumi; Shimizu, Yoshihiro; and Ono, Yuuichi, 5,346,626, Cl. 210-701.000.

Kuroda, Hideaki, to Sony Corporation. Method of manufacturing a semiconductor device having a memory cell and peripheral circuit including forming a first electrode for the capacitor. 5,346,843, Cl. 437-52.000.

Kurotobi, Manabu; and Uchida, Mutsuo, to Kubota Corporation. Teeming trough. 5,346,182, Cl. 266-78.000.

Kurtas, Robert S.: *See—*
Child, Jonathan E.; Del Rossi, Kenneth J.; Huss, Albin, Jr.; and Kurtas, Robert S., 5,347,064, Cl. 585-716.000.

Kurz, Friedrich: *See—*
Sixta, Herbert; Gotzinger, Gerhard; Hoglinger, Anton; Hendel, Peter; Rucki, Wilfried; Peter, Walter; Kurz, Friedrich; Schrittwieser, Alfred; and Schneeweisz, Manfred, 5,346,588, Cl. 162-65.000.

Kurz, Walter; Deppert, Reinhard; Baier, Wolfgang; and Lutz, Manfred, to Fichtel & Sachs AG. Combination of two-stator-rotor units with a connecting gear unit therebetween. 5,346,441, Cl. 475-116.000.

Kusaki, Kazuo: *See*—
Kurata, Shuchi; Ichinose, Shiro; Kusaki, Kazuo; Ishihara, Toshihiko; Ueno, Naozumi; and Morita, Toru, 5,345,863, Cl. 101-126.000.

Kuse, Hisao, to Tsudakoma Kogyo Kabushiki Kaisha. Auto-clamper for pallets. 5,346,270, Cl. 294-81.500.

Kusunoki, Masako: *See*—
Momozaki, Katsuhiko; Kusunoki, Masako; Kawamura, Fumio; Ono, Hisao; Itoh, Katsumi; Shimizu, Yoshihiro; and Ono, Yuuichi, 5,346,626, Cl. 210-701.000.

Kuwaba, Kazuyo: *See*—
Sugano, Toshihiko; Fujita, Takashi; and Kuwaba, Kazuyo, 5,346,925, Cl. 521-54.000.

Kuwahara, Masao: *See*—
Watanabe, Tsuneo; Yasumoto, Takeshi; Murata, Michio; Tagawa, Michito; Narushima, Hiroyuki; Furusato, Takashi; Kuwahara, Masao; Hanaue, Masami; and Seki, Tatsuya, 5,346,919, Cl. 514-468.000.

Kuznets, Sam A.: *See*—
Hunter, Francis J.; Wigsten, Mark M.; and Kuznets, Sam A., 5,346,436, Cl. 474-110.000.

Kuznicki, Steven M.; Dang, Dinh; Hayhurst, David T.; and Thrush, Kathleen A., to Engelhard Corporation. Use of crystalline molecular sieves containing charged octahedral sites in removing volatile organic compounds from a mixture of the same. 5,346,535, Cl. 95-96.000

Kwok, Laurie K. H.: *See*—
Burt, Peter C. W.; and Kwok, Laurie K. H., 5,345,980, Cl 141-3.000.

Kwon, Dae H.: *See*—
Kim, Hee Y.; Kwon, Dae H.; Song, Yong M.; Kim, Sung W.; Jeon, Jong Y.; Lee, Kang M.; and Lee, Jae S., 5,346,141, Cl. 241-5.000.

Kwon, Oh-Kyong: *See*—
Malhi, Satwinder; Efland, Taylor R.; and Kwon, Oh-Kyong, 5,346,835, Cl. 437-41.000

Kwong, Phillip M.; Sambandan, Sachidanandan; Sweha, Sherif R. B.; and Mills, Duane R., to Intel Corporation. Nonvolatile memory with blocked redundant columns and corresponding content addressable memory sets. 5,347,484, Cl. 365-49.000.

Kyocera Corporation: *See*—
Ozawa, Yoshio; Ikeda, Yukio; and Yoshioka, Katsuhiro, 5,346,791, Cl. 430-106.600.

Kyoei Steel Co., Ltd.: *See*—
Takashima, Koichi; and Nakamura, Shoji, 5,346,528, Cl. 75-10.150.

L & G Rehbein, Inc.: *See*—
Rehbein, Gerald L.; and Montain, Paul D., 5,346,527, Cl. 71-12.000.

Laakso, Jukka: *See*—
Karna, Toivo; Laakso, Jukka; Levon, Kalle; and Savolainen, Esko, 5,346,649, Cl. 252-500.000

Laboratoire Perouse Implant: *See*—
Perouse, Eric; Richard, Thierry; and Arnissolle, Yves, 5,346,115, Cl. 227-179.000.

Laboratorium Prof. Dr. Rudolf Berthold GmbH & Co., KG: *See*—
Berthold, Fritz, 5,347,130, Cl. 250-385.100.

Laccetti, Anthony J.: *See*—
Chang, Victor S. C.; Hartwig, Richard C.; Lundquist, Joseph T.; Parham, Marc E.; and Laccetti, Anthony J., 5,346,788, Cl. 429-244.000

Lachman, Irwin M.: *See*—
Beauseigneur, Patricia A.; Lachman, Irwin M.; and Patil, Mallanagouda D., 5,346,722, Cl. 427-300.000

La Grange, Richard E. M. G.; and Hol, Willem A., to Hollandse Signaalapparaten B.V. Apparatus for the observation and indentification of helicopters. 5,347,282, Cl. 342-193.000.

Lai, Patrick K.: *See*—
Nonoyama, Meihan; Tanaka, Akiko; Lai, Patrick K.; Konno, Kunio; Kawazoe, Yutaka; and Sakagami, Hiroshi, 5,346,695, Cl 424-78.080
Nonoyama, Meihan; Tanaka, Akiko; and Lai, Patrick K., 5,346,988, Cl. 530-300.000.

Lai, Shih-Yaw; Hazlitt, Lonnie G.; and Chum, Pak-Wing S., to Dow Chemical Company, The. Performance super high flow ethylene polymer compositions. 5,346,732, Cl. 428-35.700.

Lai, Shin-Chang. Device for controlling heating efficiency of water heater. 5,346,126, Cl. 236-1.00G.

Laird, Ralph H.: *See*—
Prahst, Douglas; Laird, Ralph H.; Kuchler, Richard; Peterson, Lester G.; and Benning, William D., 5,345,729, Cl. 52-28.000.

Lajoie, M. Stephen, to Church & Dwight Co., Inc. Polyfunctional agrochemical bicarbonate-containing compositions. 5,346,704, Cl. 424-717.000.

Lam, Victor: *See*—
Ge, Shichao; and Lam, Victor, 5,347,292, Cl. 345-74.000

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Loescher, William A., to Howe Furniture Corporation. Folding table mechanism. 5,345,881, Cl. 108-132.000.
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Logan, Robin H.; Bekele, Solomon; Stockley, Henry W., III; and Toney, Gloria G., to W. R. Grace & Co.-Conn. Peelable barrier film for vacuum skin packages and the like. 5,346,735, Cl. 428-36.700.
Lomas, David A.; and Wegerer, David A., to UOP. FCC process with total catalyst blending. 5,346,613, Cl. 208-164.000.
Lombard, James H.; and Anderson, Leonard J., to Motorola, Inc. Palladium thick film resistor containing boron nitride. 5,346,720, Cl. 427-101.000.
Lombardi, Massimo: *See—*
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Lombardo, Leo, to Moore Business Forms, Inc. Mailer type business form and intermediate with built in reply envelope. 5,346,123, Cl. 229-305.000.
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Loral Aerospace Corp.: *See—*
McReynolds, John M.; and Glicksman, Robert A., 5,347,384, Cl. 359-118.000.
L'Oreal: *See—*
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Gueret, Jean-Louis, 5,345,644, Cl. 15-160.000.
Pilleux, Eric; Li, Ming; Cosson, Jean-Pierre; Guenard, Daniel; Sevenet, Thierry; and Potier, Pierre, 5,346,693, Cl. 424-62.000.

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Mueller, Thomas; Eicken, Karl; Harreus, Albrecht; Koenig, Hartmann; Rentzea, Costin; Ammermann, Eberhard; and Lorenz, Gisela, 5,346,899, Cl. 514-256.000.
Sauter, Hubert; Scheiberger, Klaus; Saur, Reinhold; Lorenz, Gisela; and Ammermann, Eberhard, 5,346,909, Cl. 514-317.000.
Lorrillard Tobacco Company: *See—*
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Loth, Eric; and Fray, Joseph, to Montres Rado S.A. Watch bracelet. 5,347,498, Cl. 368-282.000.
Loughridge, Frederick A.: *See—*
Bellows, Alfred H.; and Loughridge, Frederick A., 5,347,246, Cl. 333-219.100.
Louis, William J.: *See—*
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Lovestedt, Penny C., to Paragon Trade Brands, Inc. Disposable absorbent garment. 5,346,487, Cl. 604-385.100.
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Cooper, Alan B.; Saksena, Anil K.; Lovey, Raymond; Girijavallabhan, Viyyoor; and Ganguly, Ashit, 5,346,898, Cl. 514-255.000.
Low, David R.: *See—*
Agulnick, Todd; Carr, Robert; Hoeber, Tony; Kaplan, S. Jerrold; Low, David R.; and Ouye, Michael, 5,347,295, Cl. 345-156.000.
Lowell, Philip S., to Gas Research Institute. Method and system for controlling emissions from glycol dehydrators. 5,346,537, Cl. 95-161.000.
Lowrey, Tyler A.: *See—*
Manning, Monte; Cole, Steve V.; and Lowrey, Tyler A., 5,346,836, Cl. 437-46.000.
Loy, Robert E.: *See—*
Smith, Gregory A.; Foltz, Dale E.; Wisebaker, Robert E.; and Loy, Robert E., 5,345,800, Cl. 72-90.000.
Loyd, Maynard L. Fishing pole support. 5,345,708, Cl. 43-21.200.
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Pasch, Nicholas F., 5,347,162, Cl. 257-773.000.
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Luck, Graham: *See—*
Gibbs, Terence K.; Luck, Graham; and Wares, David, 5,347,386, Cl. 359-146.000.
Luczak, John R. Fuel injection apparatus. 5,345,906, Cl. 123-299.000.
Ludikhuize, Adrianus W., to U.S. Philips Corporation. Semiconductor device having a lateral DMOST with breakdown voltage raising zones and provisions for exchanging charge with the back gate region. 5,347,155, Cl. 257-492.000.
Ludwig Institute for Cancer Research: *See—*
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Ludwig, Ralf: *See—*
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Luebke, Clement J.; Sank, Gerald W.; and Slade, Frank A., to Welbilt Corporation. Commercial hot air impingement cooking apparatus. 5,345,923, Cl. 126-21.00A.
Lugli, Gabriele: *See—*
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Luhman, Robert A.; Kuhn, Gary K.; Perrington, Kenneth J.; Kropp, Karl M.; and Gruber, Michael W., to Minnesota Mining and Manufacturing Company. Hot melt adhesive applicator. 5,346,350, Cl. 412-37.000.
Luhring, Dave: *See—*
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Lummes, Stephen E.: *See—*
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Chang, Victor S. C.; Hartwig, Richard C.; Lundquist, Joseph T.; Parham, Marc E.; and Laccetti, Anthony J., 5,346,788, Cl. 429-244.000.
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Luther, Walter C., Sr. Golf ball teeing apparatus. 5,346,222, Cl. 273-201.000.
Lutz, Gottfried: *See—*
Toral, Jose; Brandstetter, Hermann; Lutz, Gottfried; and Thiele, Hartmut, 5,346,741, Cl. 428-65.000.
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Kurz, Walter; Deppert, Reinhard; Baier, Wolfgang; and Lutz, Manfred, 5,346,441, Cl. 475-116.000.
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Huber, Johann; and Lutze, Dieter, 5,345,991, Cl. 160-122.000.
Lutze, Roland, to Mercedes-Benz AG. Exhaust gas conduit of an internal combustion engine with a starting catalyser arranged near the engine. 5,345,762, Cl. 60-288.000.
Luxar Corporation: *See—*
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Lyle, Leon R.; and Kunkel, Steven L., to Mallinckrodt Medical, Inc.; and University of Michigan, Curators of the. Labelled interleukin-8 and medical uses thereof. 5,346,686, Cl. 424-1.410.
Lynch, John L.: *See—*
Thurmond, Robert C.; DiCarlo, Edward J.; Herman, Fred W.; Hogan, Dennis L.; Lynch, John L.; and Russell, Hildan B., 5,347,262, Cl. 340-572.000.
Lynch, William R., to Winfred M. Berg, Inc. Toothed transmission belt. 5,346,439, Cl. 474-205.000.
M. W. Kellogg Company, The: *See—*
Bogner, Alan E.; Cherish, Peter; and Schamp, Scott T., 5,346,133, Cl. 239-132.300.
Cialkowski, Edward J.; and Ognisty, Thomas P., 5,346,593, Cl. 203-18.000.
Ma, Yamin; Grady, Richard; Lind, Robert J.; and McCutcheon, Tera D., to Graco Inc. CO_2-assisted spray gun and nozzle. 5,346,134, Cl. 239-288.500.
Ma, Yutao: *See—*
Vancho, Vincent M.; Wu, Hak H.; Ma, Yutao; and Jorgensen, Erik L., 5,346,747, Cl. 428-209.000.
Mabry, Ronald D.; and Unger, Gerald F., to Flexo Transparent Inc.; and Unger Company, The. Bags for maintaining crispness of cooked foodstuff. 5,346,312, Cl. 383-113.000.
MacDoran, Peter F.; Call, David B.; and Gold, Kenneth L., to A.I.R., Inc. Method and apparatus for tracking the position and velocity of airborne instrumentation. 5,347,285, Cl. 342-357.000.
Machguth, Gunther; Muller, Beat; Lehmann, Rolf; and Schnyder, Eugen, to Sulzer-Escher Wyss AG. Printing cylinder of a rotary printing press and a method for use therewith. 5,345,864, Cl. 101-216.000.
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MacLean, Thomas L.; and Stickles, Richard W., to General Electric Company. Combustor apparatus for use in a gas turbine engine. 5,345,757, Cl. 60-39.141.
Madani, Anas A. Combined water purification and power of generating plant. 5,346,592, Cl. 202-176.000.
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Maeda, Hitoshi: *See—*
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Maeda, Masahiro: *See—*
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Maeda, Shigeru; and Miyamoto, Tomoharu, to Sumitono Bakelite Company Limited. Cover tape for packaging chip type electronic parts. 5,346,765, Cl. 428-354.000.
Maegawa, Takaaki: *See—*
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Maestre, Federico A. Portable programmable medication alarm device and method and apparatus for programming and using the same. 5,347,453, Cl. 364-413.000.
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Magill, John C.; and Komerath, Narayanan M., to Georgia Tech Research Corporation. Wind driven dynamic manipulator for a wind tunnel. 5,345,818, Cl. 73-147.000.
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Mahoney, Robert P.. *See—*
Sommese, Anthony G.; and Mahoney, Robert P., 5,346,628, Cl. 210-734.000.
Maillard, Gilbert. Stackable foot, particularly for the base of a container of the palette type. 5,345,879, Cl. 108-53.100.
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Malhi, Satwinder; Efland, Taylor R.; and Kwon, Oh-Kyong, to Texas Instruments Incorporated. A triple diffused lateral resurf insulated gate field effect transistor compatible with process and method 5,346,835, Cl. 437-41.000.
Malhotra, Arun: *See—*
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Malkin, Peter: *See—*
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Bolongeat-Mobleu, Roger; and Malkin, Peter, 5,347,097, Cl. 200-148.00B.
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Mallonee, Ervin J.: *See—*
Cummings, Jimmie R.; Cummings, Martha F.; Mallonee, Ervin J.; and Mallonee, Christene L., 5,345,709, Cl. 43-57.300.
Malmasson, Jacques, to Framatome. Method for using a thimble of a pressurized water nuclear reactor and device for adjusting the axial position of the thimble. 5,347,552, Cl. 376-254.000.
Maloberti, Rene; and Coutarel, Alain, to Coflexip. Process for laying flexible tubular conduits using a plurality of ships. 5,346,333, Cl. 405-168.300.
Malson, Earl E.: *See—*
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Manabe, Akio; Mizutani, Masato; Hirata, Naonori; Uwayokote, Sachiko; Izumi, Kazuo; and Arai, Kenji, to Sumitomo Chemical Company Limited. Plant growth regulator containing a phthalimide derivative. 5,346,879, Cl. 504-115.000.
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Manazir, Richard M.: *See—*
Scarola, Kenneth; Jamison, David S.; Manazir, Richard M.; Rescorl, Robert L.; and Harmon, Daryl L., 5,347,553, Cl 376-259.000
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Manning, Monte; Cole, Steve V.; and Lowrey, Tyler A., to Micron Technology, Inc. Process for forming low resistance contacts between silicide areas and upper level polysilicon interconnects. 5,346,836, Cl. 437-46.000.
MAPAL Fabrik Fur Prazisionswerkzeuge Dr. Kress KG: *See—*
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MapleTek Engineering, Inc.: *See—*
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Marathon Oil Company: *See—*
Sydansk, Robert D., 5,346,008, Cl. 166-274.000.
Marbot, Roland, to Bull S.A. Transceiver for bidirectional link, integrated circuit including the transceiver, and application to communication between units of a system. 5,347,538, Cl. 375-7.000.
Marc J. Schnedierman: *See—*
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Marco Seattle, Inc.: *See—*
Cook, Harold T., Jr.; Furlong, Donn B.; Svendsen, Robert A.; and Rustad, Allan P., 5,346,181, Cl. 254-374.000
Marcovecchio, Joseph; and Katzenberger, Joseph K., to Instruments SA, Inc. Apparatus for preparation of samples for spectrographic analysis. 5,346,381, Cl. 425-149.000.
Maresca, Louis M.: *See—*
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Margolin, Mark: *See—*
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Marino, Francis C., to Pittway Corporation. Method and apparatus for global polling having contention-based address identification. 5,347,515, Cl. 370-85.200.
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Markusch, Peter H.: *See—*
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Marrelli, John C.: *See—*
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Marsaw, Morris R. Jar lid opener apparatus. 5,345,844, Cl. 81-3.200.
Marsh, Andrew; and Latvala, Bruce E., to Allied-Signal Inc. Fluid pressure control valve with valve member mounted on guide pin slidably carried by piston. 5,346,291, Cl. 303-28.000.
Marsh, Thomas R.; and Porter, Carl R., to Tenn-Tex Plastics, Inc.; and Specialty Lighting. Electrical junction box. 5,347,088, Cl. 174-50.000.
Martell, Dennis: *See—*
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Martin, Ed R., Jr.: *See—*
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Martin, Gerald D.; and Martin, Joseph E. Cargo shoring assembly for a freight transport vehicle. 5,346,346, Cl. 410-146.000.
Martin, Joseph E.: *See—*
Martin, Gerald D.; and Martin, Joseph E., 5,346,346, Cl. 410-146.000.
Martin, Kathleen M.: *See—*
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Martin Marietta Corporation: *See—*
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Martin, Michael J.; Martin, Kathleen M.; Sokac, Russell J.; and Durfey, Lloyd W., to Xerox Corporation. Adjustable nudger roll normal force using multiple springs. 5,346,199, Cl. 271-110.000.
Martin, Philip R., to Pioneer Hi-Bred International, Inc. Inbred corn line PHK56. 5,347,081, Cl. 800-200.000.
Martin, William K., to Pioneer Hi-Bred International, Inc. Inbred corn line PHGV6. 5,347,079, Cl. 800-200.000.
Martinelli, Michael J.: *See—*
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Maruyama, Hiroshi; and Yamanaka, Masayoshi, to Honda Giken Kogyo Kabushiki Kaisha. Evaporative fuel-processing system for internal combustion engines for vehicles. 5,345,917, Cl. 123-520.000.
Maruyama, Takashi: *See—*
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Marz, Michael A.: *See—*
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Mason, Anthony: *See—*
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Mathias, Eckart, to W. R. Grace & Co.-Conn. Solderable anisotropically conductive composition and method of using same. 5,346,558, Cl. 148-23.000.
Mathieu, Laurent, to C.R.S.T. (S.A.). Tubular textile insert for strengthening material. 5,345,791, Cl. 66-190.000.
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Lehn, Jean-Marie; Mathis, Gerard; Alpha, Beatrice; Deschenaux, Robert; and Jolu, Etienne, 5,346,996, Cl. 534-15.000.
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Matsuda, Tadashi; and Tsunoda, Tetsujiro, to Kabushiki Kaisha Toshiba. Semiconductor device having a particular terminal arrangement. 5,347,158, Cl. 257-691.000.
Matsuda, Takahiro: *See—*
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Matsuura, Hitoshi; and Matsumoto, Eiji, 5,345,687, Cl. 33-503.000.
Matsumoto, Isao: *See—*
Yuasa, Kohji; Ikoma, Munehisa; Kawano, Hiroshi; Takahashi, Osamu; and Matsumoto, Isao, 5,346,781, Cl. 429-59.000.
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Matsunami, Koichi: *See—*
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Matsuo, Noritada: *See—*
Sakamoto, Noriyasu; Kisida, Hirosi; Matsuo, Noritada; Fujimoto, Hiroaki; and Umeda, Kimitoshi, 5,346,920, Cl. 514-539.000.
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Matsuoka, Toshihiro, to Mazda Motor Corporation. Engine control system. 5,345,907, Cl. 123-399.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Hatakeyama, Akihito; Sogo, Hiroshi; Kojima, Tamao; Horio, Yasuhiko; Tsukamoto, Masahide; and Fukumura, Yasushi, 5,346,750, Cl. 428-209.000.
Hirai, Yoshihiko; Morimoto, Kiyoshi; Terui, Yasuaki; Wada, Atsuo; Okada, Kenji; Yasui, Juro; and Niwa, Masaaki, 5,347,140, Cl. 257-17.000.
Iida, Shinobu, 5,347,208, Cl. 320-2.000.
Ito, Noboru; Tanaka, Shinichi; Wada, Hidenori; Mizuno, Sadao; and Hayashi, Hideki, 5,347,504, Cl. 369-44.410.
Kajimoto, Kazuo; and Nonomura, Tomoyuki, 5,347,625, Cl. 395-145.000.
Kano, Hisashi, 5,347,414, Cl. 360-105.000.
Murata, Akio; Maegawa, Takaaki; Mukae, Hideaki; and Higashionji, Masaru, 5,347,415, Cl. 360-109.000.
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Ohno, Eiji; Yamada, Noboru; Nagata, Kenichi; Nishiuchi, Kenichi; and Akahira, Nobuo, 5,346,740, Cl. 428-64.000.
Ozaki, Yusuke; Minemoto, Hisashi; Sonoda, Nobuo; Kawakami, Tetsuji; Kawamura, Tatsurou; and Wakita, Katsuya, 5,346,653, Cl. 252-582.000.
Sugai, Masakatsu; Mizuno, Yasuo; Ikeda, Masaki; and Yoshida, Akihiko, 5,346,523, Cl. 65-102.000.
Takada, Kazuyuki; and Kishi, Toru, 5,347,444, Cl. 363-98.000.
Takahashi, Toshiya, 5,347,309, Cl. 348-401.000.
Tsuzaki, Toshiaki; and Naito, Noriyoshi, 5,347,187, Cl. 310-40.0MM.
Wai, Lucas H. Y., 5,347,308, Cl. 348-394.000.
Wakita, Katsuya; Kawakami, Tetsuji; Sonoda, Nobuo; and Minemoto, Hisashi, 5,347,394, Cl. 359-326.000.
Yamada, Shinichi; and Shibano, Masayuki, 5,347,502, Cl. 369-44.290.
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Yasuho, Takeo; Tajika, Hirofumi; and Kohzu, Katsumi, 5,346,402, Cl. 439-71.000.
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Mattel, Inc.: *See—*
Caveza, Martin J.; Chung, Caleb S.; and Handy, John N., 5,346,423, Cl. 446-479.000.
Mattes, Kenneth C.: *See—*
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Matyja, Ronald M., to Culligan International Company. Method of sealing a tank having a flexible sheet liner therein. 5,345,666, Cl. 29-451.000.
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Mautner, Konrad: *See—*
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Udagawa, Hiroshi; Ishizaki, Kunio; and Manabe, Katsunori, 5,346,114, Cl. 227-120.000.
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Maytag Corporation: *See—*
Cooper, Randall L.; and Welch, Rodney M., 5,345,957, Cl. 134-104.100.
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Ohmura, Hiroshi; Kosaka, Masanobu; and Hosoda, Koji, 5,346,030, Cl. 180-140.000.
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Werkmeister, Robert L.; and McCauley, Michael J., 5,346,299, Cl. 312-405.100.

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Tweed, Lorne W.; Cross, Timothy A.; McClure, William M.; and Rolli, Brian T., 5,345,841, Cl. 477-113.000.

McCormack, Mark T.: *See*—
Jin, Sungho; and McCormack, Mark T., 5,346,775, Cl. 428-614.000.

McCormack, Ray G., to United States of America, Army. Method of making concrete electrically conductive for electromagnetic shielding purposes. 5,346,547, Cl. 106-644.000.

McCrea, Warren J. C. J-shaped trough and supporting mount 5,345,727, Cl. 52-11.000.

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Ma, Yamin; Grady, Richard; Lind, Robert J.; and McCutcheon, Tera D., 5,346,134, Cl. 239-288.500

McDaniel, David L.: *See*—
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Brennan, Michael J.; and Noel, Clyde D., 5,347,101, Cl. 219-124.340.

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Narula, Anubhav P. S.; McGinnis, Matthew J.; Beck, Charles E. J.; Hanna, Marie R.; and Schiet, Franc T., 5,346,884, Cl. 512-6.000.

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Hayes, John, 5,345,797, Cl. 70-218.000.

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Mergens, Peggy J.; and McGrew, Walter J., 5,345,608, Cl. 2-16.000.

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Waymon, Linda J.; and McGuire, Jimmy D., 5,346,415, Cl. 440-7.000.

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Sigler, James; Sprang, Richard W.; McKiernan, Edward; and Bailey, Ronald J., 5,345,618, Cl. 4-321.000

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McNary, Harry T.: *See*—
Fitt, Larry E.; and McNary, Harry T., 5,346,892, Cl. 514-60.000.

McNeff, Clayton V.: *See*—
Rupp, Steven J.; McNeff, Larry C.; and McNeff, Clayton V., 5,347,468, Cl. 364-510.000.

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McQ Associates, Inc.: *See*—
Konotchick, John A., 5,347,186, Cl. 310-17.000.

McReynolds, John M.; and Glicksman, Robert A., to Loral Aerospace Corp. Fiber optic distribution of image data. 5,347,384, Cl. 359-118.000.

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McSpadden, Douglas S., to McSpadden Development Company. Portable food tray with cup holder. 5,346,070, Cl. 206-561.000

Meabon, Joseph C.; Tuzzolo, Michelle R.; and Urruti, Eric H., to Corning Incorporated. Apparatus for applying a carbon coating to optical fibers. 5,346,520, Cl. 65-423.000.

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Green, Paul A.; Rankin, Russel J.; Boyce, Phillip R.; White, Raymond M.; Buhot, John W.; Heidke, Darryl J.; Leiner, Andrew M.; Finney, Andrew L.; Aqualini, Matthew; Mills, Edward G.; Gibbons, Richard J.; Abood, John C.; Roberts, David G.; and Thomas, David P., 5,346,435, Cl. 452-160.000.

Medicvent AB: *See*—
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Viegas, Tacey X.; Reeve, Lorraine E.; and Henry, Raymond L., 5,346,703, Cl. 424-486.000.

Meehan, Thomas K., to United States of America, National Aeronautics and Space Administration. Multipath noise reduction for spread spectrum signals. 5,347,536, Cl. 375-1.000.

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Meeks, M. Littleton; and Kuklinski, Theodore T., 5,347,589, Cl. 382-3.000.

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Lochmann, Bernhard; and Megley, Richard B., 5,346,179, Cl. 251-328.000.

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Little, Frank R.; Kruse, Herman A.; Megna, John G.; and Pidgeon, Rezin E., 5,347,388, Cl. 359-189.000

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Meier-Hynek, Konrad: *See*—
Operschall, Hermann; Hack, Karl-Heinz; Hengelhaupt, Klaus; and Meier-Hynek, Konrad, 5,347,557, Cl. 376-316.000.

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Lippert, Hans-Joachim; and Meier, Werner, 5,347,560, Cl. 376-446.000

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Armstrong, Ross L.; and Meiklejohn, George A., 5,347,215, Cl. 324-158.100.

Meinig, Manfred, to METU-System Meinig KG. Coupling sleeve for connecting thin-walled pipe ends. 5,346,265, Cl. 285-373.000.

Meiring, Robert L.: *See*—
Clearman, Jack F.; Meiring, Robert L.; Lawson, Jerry W.; and Baker, Kenneth O., 5,345,955, Cl. 131-359.000.

Melland, Tristan G.; and Gay, Clive H. Dispensing container. 5,346,097, Cl. 222-132.000.

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Yokoyama, Yasuhiro; Iwata, Noriko; Ito, Eri; Ando, Ichiro; Ichinohe, Shoji; and Yamazaki, Toshio, 5,346,946, Cl. 524-547.000.

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Merger, Franz: *See*—
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Merritt, Richard C., to Polytech Netting Industries, Inc. Elastic cord lock. 5,345,656, Cl. 24-115.00H.

Merritt, Richard F.; Wood, Kurt A.; and de la Cuesta Sheppard, Aurelia, to Rohm and Haas Company. Fatty acid hydroxyalkylamides as coreactable stabilizers and flow aids for powder coatings. 5,346,960, Cl. 525-221.000.

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Meyer, Hermann: *See*—
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Tomantschger, Klaus; and Michalowski, Christopher, 5,346,783, Cl. 429-66.000.

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Doan, Trung T.; and Blalock, Guy T., 5,346,585, Cl. 156-643.000.
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de Abreu, Alfredo F., 5,345,983, Cl. 144-116.000.

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Migita, Kouji: *See*—
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Sarpeshkar, Ashok M.; and Markusch, Peter H., 5,346,981, Cl. 528-85.000.

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Miller, Charles R.; and Berry, Haskell B., Jr., to Premier Medical Technology Inc. Continuous shredding apparatus for medical waste material and method for use thereof. 5,346,142, Cl. 241-21.000.

Miller Edge, Inc.: *See*—
Miller, Bearge D., 5,345,671, Cl. 29-622.000.

Miller, Lester: *See*—
Furbee, Avery D.; Miller, Lester; and Bauer, Carl F., 5,347,571, Cl. 378-105.000.

Miller, Matthew R.: *See*—
Kurby, Christopher N.; Beyer, Donald R.; Davies-Walsh, Anne P.; Fluharty, Kevin L.; and Miller, Matthew R., 5,347,542, Cl. 375-17.000.

Miller, Paul D.: *See*—
Tucker, Mark B.; Payne, Edward A.; and Miller, Paul D., 5,345,979, Cl. 141-1.000.

Miller, Randolph F., to Tunturi, Inc. Exercise apparatus with telescoping pole pieces. 5,346,451, Cl. 482-112.000.

Miller, Stephen H.: *See*—
Smart, David C.; and Miller, Stephen H., 5,347,334, Cl. 354-275.000.

Miller, Steven A.; and Johnson, Neil A., to General Electric Company. Method for atomizing liquid metal utilizing liquid flow rate sensor. 5,346,530, Cl. 75-331.000.

Miller, Theodore C.; Collins, Joseph C.; Mattes, Kenneth C.; Wentland, Mark P.; Perni, Robert B.; Corbett, Thomas H.; and Guiles, Joseph W., to Sterling Winthrop Inc. Thioxanthenone antitumor agents. 5,346,917, Cl. 514-437.000.

Miller, William H.; and Berliner, Ronald R., to University of Missouri-Columbia. System for determining the type of nuclear radiation from detector output pulse shape. 5,347,129, Cl. 250-336.100.

Miller, William L., Jr. Bilge pump actuated by wave motion. 5,346,369, Cl. 417-211.000.

Mills, Duane R.: *See*—
Kwong, Phillip M.; Sambandan, Sachidanandan; Sweha, Sherif R. B.; and Mills, Duane R., 5,347,484, Cl. 365-49.000.

Mills, Edward G.: *See*—
Green, Paul A.; Rankin, Russel J.; Boyce, Phillip R.; White, Raymond M.; Buhot, John W.; Heidke, Darryl J.; Leiner, Andrew M.; Finney, Andrew L.; Aqualini, Matthew; Mills, Edward G.; Gibbons, Richard J.; Abood, John C.; Roberts, David G.; and Thomas, David P., 5,346,435, Cl. 452-160.000.

Mills, Rex R.: *See*—
Swilik, Robert C., Jr.; Bruce, Thomas P.; Mills, Rex R.; and Larsen, Michael J., 5,346,002, Cl. 165-173.000.

Milltronics Ltd.: *See*—
Cherek, Bogdan; Nguyen, Son C.; and Adams, Andy, 5,347,495, Cl. 367-87.000.

Mimoto, Atsuhisa: *See*—
Aritsuka, Makoto; Mimoto, Atsuhisa; and Harada, Isao, 5,346,682, Cl. 423-342.000.

Mimoun, Hubert; Delay, Francois; and Schneider, Philippe, to Firmenich S.A. Polycyclic compounds and their use as perfuming ingredients. 5,346,885, Cl. 512-15.000.

Mimura, Masanao: *See*—
Kikuchi, Hiroyuki; Mimura, Masanao; Uno, Naoki; and Tanaka, Yasuzo, 5,347,085, Cl. 505-231.000.

Minakawa, Hiroshi; Fukui, Masatugu; Uno, Masayuki; and Kinoshita, Hiroshi, to Sharp Kabushiki Kaisha. Microwave oven having a function for matching impedance. 5,347,108, Cl. 219-696.000.

Minami, Mamoru, to Tsubakimoto Chain Co. Method of controlling position and attitude of working robot and its manipulator and apparatus thereof. 5,347,616, Cl. 395-86.000.

Minater Machine Company, The: *See*—
Brewer, William C.; Daniel, Edward A.; and Bergman, Frederick C., 5,345,861, Cl. 100-257.000.

Minemoto, Hisashi: *See*—
Ozaki, Yusuke; Minemoto, Hisashi; Sonoda, Nobuo; Kawakami, Tetsuji; Kawamura, Tatsurou; and Wakita, Katsuya, 5,346,653, Cl. 252-582.000.
Wakita, Katsuya; Kawakami, Tetsuji; Sonoda, Nobuo; and Minemoto, Hisashi, 5,347,394, Cl. 359-326.000.

Ming, Ding: *See*—
Hellekant, Bengt G.; and Ming, Ding, 5,346,998, Cl. 536-23.600.

Ministry of International Trade & Industry: *See*—
Fukaya, Haruhiko; Abe, Takashi; Hayashi, Eiji; and Hayakawa, Yoshio, 5,347,002, Cl. 540-596.000.
Osaki, Toshihiko; Taoda, Hiroshi; and Yamakita, Hiromi, 5,346,679, Cl. 423-210.000.

Minnerly, Barry H.: *See*—
Levine, Abby P.; and Minnerly, Barry H., 5,347,322, Cl. 348-718.000.

Minnesota Mining and Manufacturing Company: *See*—
Alexander, Jerry L.; Richards, Durkee B.; and Gaster, Glenn R., 5,346,155, Cl. 242-334.000.
Allen, John J., 5,346,459, Cl. 606-185.000.
Babu, Gaddam N., 5,346,980, Cl. 528-40.000.
Condon, Robert R.; Pohl, Daniel P.; and Sher, Frank T., 5,346,571, Cl. 156-212.000.
Dieken, Alan P.; and Kirschhoffer, Jon A., 5,347,583, Cl. 381-67.000.
Dunbar, William M.; and Stinson, Harold B., 5,346,065, Cl. 206-444.000.
Gerster, John F., 5,346,905, Cl. 514-293.000.

Luhman, Robert A.; Kuhn, Gary K.; Perrington, Kenneth J.; Kropp, Karl M.; and Gruber, Michael W., 5,346,350, Cl. 412-37.000.
Montbriand, David P.; and Zarembo, Peter J., 5,347,508, Cl. 369-273.000.
Moren, Dean M.; and Ersfeld, Dean A., 5,346,939, Cl. 524-176.000
Shimada, Masashi, 5,346,404, Cl. 439-108.000.
Volin, Leonard M., 5,346,150, Cl. 242-527.100
Yafuso, Masao; and Harker, Laurence A., 5,345,932, Cl. 128-637.000
Minohara, Kazuyuki: *See—*
Takato, Kenji; Yoshida, Kazuhiro; and Minohara, Kazuyuki, 5,347,577, Cl. 379-413.000.
Minolta Camera Kabushiki Kaisha: *See—*
Morigami, Yuusuk; Ohhata, Akira; Hamakawa, Wataru; Matsuo, Hirokazu; Nagato, Hiroyasu; and Ishikawa, Takuma, 5,347,352, Cl. 355-321.000.
Shimizu, Tadafumi; Takano, Yoshiaki; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotaro; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,347,346, Cl. 355-202.000.
Miodushevski, Pavel; Sosnin, Oleg; and Rajevskaya, Galina, to Aliteco AG. Method and device for forming various workpieces. 5,345,799, Cl. 72-19.000.
Mir, Jose M.: *See—*
Hung, Liang-Sun; Agostinelli, John A.; and Mir, Jose M., 5,347,157, Cl. 257-627.000
Mirsky, Saul: *See—*
Staroselsky, Naum; Mirsky, Saul; Reinke, Paul A.; Negley, Paul M.; and Sibthorp, Robert J., 5,347,467, Cl. 364-510.000.
Misawa, Masayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Lid latch device in camera. 5,347,335, Cl. 354-288.000.
Mishima, Takashi: *See—*
Nakahara, Takashi; Kimura, Toshiaki; and Mishima, Takashi, 5,346,987, Cl. 528-502.000.
Misiaszek, Steven M.: *See—*
Ewan, James M.; Misiaszek, Steven M.; and Alessi, Donald P., Jr., 5,346,778, Cl. 429-19.000.
Mistry, Rajendra V.: *See—*
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Mita Industrial Co., Ltd.: *See—*
Nakahata, Akinobu; Kubota, Hiroshi; Migita, Kouji; Fuchi, Masami; Oda, Kenji; Makiura, Yoshinori; and Yamaguchi, Katsuhide, 5,347,350, Cl. 355-309.000.
Mitchell, Donald B.: *See—*
Baker, Lester H.; and Mitchell, Donald B., 5,346,268, Cl. 294-9.000.
Mitsuba Electric Manufacturing Co., Ltd.: *See—*
Takahashi, Hidefumi; and Wakai, Akio, 5,345,852, Cl. 84-397.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Akiyama, Kazuyuki; Shirafuji, Yoshinori; and Sakaino, Keiju, 5,346,375, Cl. 418-15.000.
Ando, Takahiko; and Mizoe, Toshihito, 5,347,418, Cl. 361-104.000.
Endo, Takafumi, 5,346,318, Cl. 400-120.150.
Fukui, Wataru; and Hayashi, Noriaki, 5,345,909, Cl. 123-414.000.
Funaba, Shinji, 5,346,837, Cl. 437-3.000.
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Ishibashi, Atsuhiko; Kondoh, Harufusa; and Kitao, Masaya, 5,347,233, Cl. 331-2.000
Kinoshita, Hirotaka, 5,347,427, Cl. 361-752.000
Kobayashi, Makoto; Kodai, Syojiro; and Ochi, Katsunori, 5,346,576, Cl. 156-293.000.
Kondo, Shigeki, 5,345,842, Cl. 477-120.000.
Matsuda, Yoshio; Kondoh, Harufusa; Hayashi, Isamu; and Notani, Hiromi, 5,347,270, Cl. 340-825.800
Nakatani, Hajime; and Sugitatsu, Atsushi, 5,347,531, Cl. 372-86.000
Nishimura, Yukinobu; and Uchinami, Masanobu, 5,345,908, Cl 123-339.000.
Niwayama, Kazuhiko, 5,346,859, Cl. 437-209.000
Sakurai, Haruo, 5,347,317, Cl. 348-511.000.
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Taguchi, Motohisa; Fukami, Tatsuya; Hashima, Kazuo; Toide, Yukari; Kawano, Yuji; Fujii, Yoshio; Tokunaga, Takashi; Nakaki, Yoshiyuki; Tsutsumi, Kazuhiko; Kobayashi, Hiroshi; Ohdoi, Yuzou; Tanabe, Shinji; and Shibata, Hiroshi, 5,347,485, Cl. 365-171.000.
Taniguchi, Takao; and Satou, Hiroshi, 5,346,513, Cl. 29-25.010.
Terada, Makoto; Furo, Isao; Suzuki, Hiroshi; and Iyoda, Isao, 5,347,441, Cl. 363-39.000.
Terada, Yasushi; Nakayama, Takeshi; Kobayashi, Shinichi; Miyawaki, Yoshikazu; and Hayashikoshi, Masanori, 5,347,490, Cl. 365-219.000.
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Uchinami, Masanobu, 5,345,919, Cl. 123-533.000.
Yajima, Kotaro, 5,346,841, Cl. 437-35.000.
Mitsubishi Denki Kaisha Kitaitami Seisakusho: *See—*
Deguchi, Mitsuhiro; and Komoda, Michio, 5,347,178, Cl 307-451.000.
Mitsubishi Electric Research Laboratories, Inc.: *See—*
Nitta, Tohei, 5,347,306, Cl. 348-15.000
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Fujita, Kenjiro; and Usuki, Katsutoshi, 5,345,843, Cl. 477-98.000.
Tanaka, Tadao; Morita, Takao; Togashi, Akihiko; Kishimoto, Naohiro; and Yoshida, Hiroaki, 5,347,457, Cl. 364-424.050.
Mitsubishi Kasei Corporation: *See—*
Sawada, Tsutomu; Ohashi, Shinichi; and Yoshida, Shigenobu, 5,346,752, Cl. 428-216.000.
Mitsubishi Paper Mills Limited: *See—*
Nakatsuka, Masakatsu; Koike, Naomasa; and Okada, Akinori, 5,346,878, Cl. 503-209.000.
Mitsubishi Petrochemical Company Limited: *See—*
Sugano, Toshihiko; Fujita, Takashi; and Kuwaba, Kazuyo, 5,346,925, Cl. 521-54.000.
Watanabe, Yoshihisa; and Kurashige, Mitsuhiko, 5,347,056, Cl. 568-881.000.
Mitsubishi Rayon Company Ltd.: *See—*
Hongo, Masafumi; Yano, Hideki; and Shigemitsu, Hideyuki, 5,346,952, Cl. 525-68.000.
Mitsui, Akira: *See—*
Osada, Koichi; Ando, Eiichi; and Mitsui, Akira, 5,346,770, Cl. 428-432.000.
Mitsui Miike Kakouki Kabushiki Kaisha: *See—*
Ishikawa, Tsuyoshi; and Kinouchi, Akio, 5,346,147, Cl. 241-172.000.
Mitsui Petrochemical Industries, Ltd.: *See—*
Haruta, Koichi; and Terashi, Yuichiro, 5,347,528, Cl. 372-25.000.
Kawabata, Junichi; Yamaoka, Hideo; Tatsuki, Yuuichirou; and Nishiyama, Shinichi, 5,346,646, Cl. 252-299.620.
Nakahara, Takashi; Kimura, Toshiaki; and Mishima, Takashi, 5,346,987, Cl. 528-502.000
Mitsui Toatsu Chemicals, Inc.: *See—*
Aritsuka, Makoto; Mimoto, Atsuhisa; and Harada, Isao, 5,346,682, Cl. 423-342.000.
Nakatsuka, Masakatsu; Koike, Naomasa; and Okada, Akinori, 5,346,878, Cl. 503-209.000.
Tamai, Shoji; Iiyama, Katsuaki; and Yamaguchi, Akihiro, 5,346,982, Cl. 528-183.000.
Miwa, Shinichi: *See—*
Noguchi, Yasushi; Miwa, Shinichi; and Fukao, Kaname, 5,346,870, Cl. 501-136.000
Miyagawa, Nobuo: *See—*
Sano, Masamichi; Miyagawa, Nobuo; and Yamamoto, Kunji, 5,346,185, Cl. 266-208.000.
Miyahara, Kazuhiro: *See—*
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Miyaji, Shinichiro: *See—*
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Miyake, Hideo: *See—*
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Miyake, Masaya: *See—*
Nishioka, Takao; Yamamoto, Takehisa; Matsunuma, Kenji; Yamakawa, Akira; and Miyake, Masaya, 5,346,869, Cl. 501-98.000
Miyamoto, Kouichi; and Takahashi, Shoji, to Ryobi Limited. Fret-saw machine. 5,345,849, Cl. 83-783.000.
Miyamoto, Tomoharu: *See—*
Maeda, Shigeru; and Miyamoto, Tomoharu, 5,346,765, Cl. 428-354.000.
Miyamoto, Yuzo: *See—*
Yukawa, Yoshiyuki; Yabuta, Motoshi; Nakahata, Akimasa; Miyamoto, Yuzo; Kobayashi, Masaaki; and Ueno, Naruhito, 5,346,958, Cl. 525-124.000.
Miyashita, Naoto: *See—*
Nunotani, Shinji; Takahashi, Koichi; and Miyashita, Naoto, 5,346,555, Cl. 118-724.000.
Miyawaki, Yoshikazu: *See—*
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Miyazaki, Akira: *See—*
Yamanaka, Yasurou; Yamanaga, Junichi; Morizono, Akira; Miyazaki, Akira; and Unose, Noriyuki, 5,345,675, Cl. 29-894.300.
Miyazaki, Hitoshi: *See—*
Takahashi, Sakae; Miyazaki, Hitoshi; and Kunii, Hitoshi, 5,345,872, Cl. 102-202.200
Miyazaki, Tadashi: *See—*
Kawasaki, Kazuhiko; and Miyazaki, Tadashi, 5,347,364, Cl. 356-445.000.
Miyazaki, Takashi, to NEC Corporation. Small-size wavelet transform apparatus. 5,347,479, Cl. 364-725.000.
Miyazaki, Takashi: *See—*
Okuyama, Koshi; Shiraishi, Masahiro; and Miyazaki, Takashi, 5,346,431, Cl. 464-171.000.
Miyazawa, Jiro: *See—*
Hongo, Hitoshi; Yamada, Mitsuho; Uomori, Kenya; Yoshimatsu, Hiroshi; Ueno, Keiichi; Fujii, Mitsuru; Murakami, Shinji; Miyazawa, Jiro; Nakano, Norihito; Fukatsu, Ryo; and Takahata, Naohiko, 5,345,944, Cl. 128-742.000.
Miyazono, Kohei; Heldin, Carl-Henrik; and Olofsson, Anders, to Ludwig Institute for Cancer Research. Isolated, large latent complexes of TGF-β2 and TGF-β3, and new binding protein for latent form TGF-β1, TGF-β2 and TGF-β3 LTBP-2. 5,346,993, Cl. 530-399.000.
Miyazono, Takashi, to Nec Corporation. Redundancy system switching control system. 5,347,165, Cl. 307-85.000.
Miyoshi Yushi Kabushiki Kaisha: *See—*
Moriya, Masafumi; Hosoda, Kazuo; Yoshida, Masatoshi; and Tsukanome, Masayoshi, 5,347,071, Cl. 588-256.000.

Mizak, Ronald D.: *See—*
Hand, Bryan; Mizak, Ronald D.; and Piepho, Robert R., 5,346,148, Cl. 241-293.000.
Mizoe, Toshihito: *See—*
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Mizoguchi, Motoshi: *See—*
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Mizosaki, Kengo: *See—*
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Mizuno, Den'ichi: *See—*
Soma, Gen-Ichiro; Yoshimura, Kiyoshi; Tsukioka, Daisuke; Mizuno, Den'ichi; and Oshima, Haruyuki, 5,346,891, Cl. 514-54.000.
Mizuno, Masato; and Oishi, Kengo, to Fuji Photo Film Co., Ltd. Magnetic tape cassette. 5,346,736, Cl. 428-36.900.
Mizuno, Sadao: *See—*
Ito, Noboru; Tanaka, Shinichi; Wada, Hidenori; Mizuno, Sadao; and Hayashi, Hideki, 5,347,504, Cl. 369-44.410.
Mizuno, Tomokimi: *See—*
Ando, Mitsuhiro; Mizuno, Tomokimi; Naruse, Yoshihiro; and Fujimasa, Iwao, 5,345,767, Cl. 60-721.000.
Naruse, Yoshihiro; Ando, Mitsuhiro; Mizuno, Tomokimi; and Nakajima, Naomasa, 5,346,372, Cl. 417-379.000.
Mizuno, Yasuo: *See—*
Sugai, Masakatsu; Mizuno, Yasuo; Ikeda, Masaki; and Yoshida, Akihiko, 5,346,523, Cl. 65-102.000.
Mizushima, Hiroshi; Saito, Tadao; and Nozawa, Takamitsu, to Yoshino Kogyosho Co, Ltd. Compression sprayer for liquids. 5,346,103, Cl. 222-321.000.
Mizutani, Hideo: *See—*
Ota, Kazuya; Magome, Nobutaka; Mizutani, Hideo; and Komatsu, Kouichiro, 5,347,356, Cl. 356-363.000.
Mizutani, Masato: *See—*
Manabe, Akio; Mizutani, Masato; Hirata, Naonori; Uwayokote, Sachiko; Izumi, Kazuo; and Arai, Kenji, 5,346,879, Cl. 504-115.000.
Mobil Oil Corporation: *See—*
Balloni, Riccardo; and Tsai, M. Lawrence, 5,346,763, Cl. 428-349.000.
Child, Jonathan E.; Del Rossi, Kenneth J.; Huss, Albin, Jr.; and Kurtas, Robert S., 5,347,064, Cl. 585-716.000.
Dillon, Patrick W.; and Billings, William C., 5,346,007, Cl. 166-254.000.
Fletcher, David L.; Sarli, Michael S.; and Shih, Stuart S., 5,346,609, Cl. 208-89.000.
Harandi, Mohsen N.; Owen, Hartley; and Schipper, Paul H., 5,347,061, Cl. 585-323.000.
Hellring, Stuart D.; and Beck, Jeffrey S., 5,347,060, Cl. 570-235.000.
Horodysky, Andrew G.; and Wu, Shi-Ming, 5,346,637, Cl. 252-49.900.
Moini, Ahmad, 5,346,685, Cl. 423-718.000.
Owen, Hartley; and Schipper, Paul H., 5,346,610, Cl. 208-113.000.
Shen, Dong-Min; Chapman, Orville L.; Lin, Ling; and Ortiz, Rafael, 5,347,063, Cl. 585-352.000.
Moch, Rockie D.: *See—*
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Mochizuki, Akira: *See—*
Negi, Taichi; Mochizuki, Akira; Nagata, Shiro; Yamasaki, Komei; Funaki, Keisuke; and Sumitomo, Takashi, 5,346,950, Cl. 525-57.000.
Mochizuki, Yasuyuki, to Fuji Photo Film Co., Ltd. Image recording apparatus having a small-capacity frame memory and an image recording method. 5,347,368, Cl. 358-296.000.
Mocilnikar, Anton; and Herrmann, Charles K., to Avery Dennison Corporation. Anti-theft label construction. 5,346,259, Cl. 283-108.000.
Moeller, Bernhard: *See—*
Vetter, Roman; Wilke, Detlef; Moeller, Bernhard; Mueller, Martina; Muecke, Ingo; Takenberg, Meike; and Konieczny-Janda, Gerhard, 5,346,822, Cl. 435-221.000.
Mogamiya, Hiroyuki: *See—*
Koide, Yasuhiro; Mogamiya, Hiroyuki; and Suzuki, Yoshiichi, 5,346,648, Cl. 252-299.650.
Mohan, Sankar K.; and Stephens, Carl F., to New Venture Gear, Inc. Viscous coupling apparatus with coined plates and method of making the same. 5,346,044, Cl. 192-58.00C.
Moini, Ahmad, to Mobil Oil Corp. Synthetic porous crystalline MCM-51, its synthesis and use. 5,346,685, Cl. 423-718.000.
Mojden, Daniel R.; and Close, Thomas E., Jr., to Fleetwood Systems, Inc. Carton conveying apparatus. 5,346,050, Cl. 198-345.200.
Molecular Dynamics: *See—*
Barker, David L.; Johnston, Richard F.; and Pickett, Siobhan C., 5,347,139, Cl. 250-583.000.
Molex Incorporated: *See—*
Belenkiy, Yuriy; Cheatham, Dennis; Clairadin, Xavier; Grois, Igor; and Margolin, Mark, 5,347,603, Cl. 385-86.000.
Molnar, Charles I.; and Molnar, Judith R. Versatile plant sod mat and method for propagation. 5,346,514, Cl. 47-58.000.
Molnar, Charles J.; and Molnar, Judith R. Low cost, versatile sod mat and method for propagation. 5,345,713, Cl. 47-56.000.
Molnar, Judith R.: *See—*
Molnar, Charles I.; and Molnar, Judith R., 5,346,514, Cl. 47-58.000.
Molnar, Charles J.; and Molnar, Judith R., 5,345,713, Cl. 47-56.000.
Molnlycke AB: *See—*
Svensson, Maria; Nordlander, Jan; and Andersson, Annika, 5,346,085, Cl. 220-210.000.
Moltech Invent SA: *See—*
Stroder, Ulrich; Duruz, Jean-Jacques; and Jorda, Jean-Louis, 5,346,608, Cl. 205-231.000.
Molva, Refik; and Tsudik, Gene, to International Business Machines Corporation. Authentication method and system with a smartcard. 5,347,580, Cl. 380-25.000.
Momma, Naoko; Tashiro, Korefumi; and Ikeda, Masahito, to Hitachi, Ltd. Power supply regulation system for a railway. 5,346,163, Cl. 246-5.000.
Mommers, Alexander A.: *See—*
Holmes, John L.; and Mommers, Alexander A., 5,347,125, Cl. 250-281.000.
Momozaki, Katsuhiko; Kusunoki, Masako; Kawamura, Fumio; Ono, Hisao; Itoh, Katsumi; Shimizu, Yoshihiro; and Ono, Yuuichi, to Kurita Water Industries Ltd.; and Japan Synthetic Rubber Co., Ltd. Method of removing scale. 5,346,626, Cl. 210-701.000.
Moniwa, Masahiro: *See—*
Hisamoto, Dai; Kaga, Toru; Kimura, Shinichiro; Moniwa, Masahiro; Tanaka, Haruhiko; Hiraiwa, Atsushi; and Takeda, Eiji, 5,346,834, Cl. 437-41.000.
Monsanto Company: *See—*
Goman (Gomez) Peter M.; Udipi, Kishore; and Stebbins, Lionel R., 5,346,959, Cl. 525-187.000.
Griffith, Edward J.; and Ngo, Toan M., 5,346,575, Cl. 156-62.600.
Simon, Robert H. M., 5,346,569, Cl. 156-87.000.
Montain, Paul D.: *See—*
Rehbein, Gerald L.; and Montain, Paul D., 5,346,527, Cl. 71-12.000.
Montbriand, David P.; and Zarembo, Peter J., to Minnesota Mining and Manufacturing Company. Optical information storage disk for use with electronic article surveillance systems. 5,347,508, Cl. 369-273.000.
Montgomery, John D.: *See—*
Barrett, John P.; Hoffmann, Robert P.; and Montgomery, John D., 5,347,629, Cl. 395-161.000.
Hoffmann, Robert P.; Malcolm, Jerry W.; Montgomery, John D.; and Stone, Steve S., 5,347,627, Cl. 395-157.000.
Monti, Osvaldo, to Canadian Marconi Company. Broadband directional coupler using cables. 5,347,244, Cl. 333-115.000.
Montres Rado S.A.: *See—*
Loth, Eric; and Fray, Joseph, 5,347,498, Cl. 368-282.000.
Moody, Martin; and Osgood, Gordan, to Telident, Incorporated. Apparatus and method for identifying a calling station. 5,347,567, Cl. 379-45.000.
Moody, Martin; Madson, Donald; and Osgood, Gordan, to Telident, Incorporated. Emergency call station identification system. 5,347,568, Cl. 379-45.000.
Moore, Alston C., Jr., to Tandem Computers Incorporated. Filtered connector/adaptor for unshielded twisted pair wiring. 5,346,410, Cl. 439-607.000.
Moore Business Forms, Inc.: *See—*
Baxter, George, 5,346,430, Cl. 462-2.000.
Chess, Stanley, 5,346,124, Cl. 229-305.000.
Lombardo, Leo, 5,346,123, Cl. 229-305.000.
Nassoiy, Gary J., 5,346,739, Cl. 428-40.000.
Moore, Richard L. Capacitive-type, electrically short, broadband antenna and coupling systems. 5,347,291, Cl. 343-749.000.
Moos, Walter H.: *See—*
Augelli-Szafran, Corinne E.; Barrett, Stephen D.; Caprathe, Bradley W.; Galan, Adam A.; Jaen, Juan C.; Lauffer, David J.; Moos, Walter H.; Pavia, Michael R.; Sanders, Kathryn B.; Tecle, Haile; and Thomas, Anthony J., 5,346,911, Cl. 514-339.000.
Moosmann, Bernhard; Fischer, Jurgen; and Bauspiess, Wolfgang, to Mannesmann Aktiengesellschaft. Method of adaptive control of position-adjustable drives in which drive distances are divided into evaluation zones and drive parameters are determined by table lookup addressing. 5,347,445, Cl. 364-148.000.
Morales, Jaime R.: *See—*
Hendrix, David C.; McNabb, Andrew J.; Kim, Nguyen L.; Loden, Michael; and Morales, Jaime R., 5,346,620, Cl. 210-605.000.
Moran, John L., III: *See—*
Sridhar, Manickam R.; Mukherjee, Aniruddha; and Moran, John L., III, 5,347,539, Cl. 375-8.000.
Moran, Larry K.: *See—*
Wilson, Dennis R.; Cole, Jack H.; Moyer, Wilber R.; and Moran, Larry K., 5,346,016, Cl. 166-380.000.
Moren, Dean M.; and Ersfeld, Dean A., to Minnesota Mining and Manufacturing Company. Water curable resin compositions. 5,346,939, Cl. 524-176.000.
Morgan, Charles R.: *See—*
Speer, Drew V.; Roberts, William P.; Morgan, Charles R.; and Ebner, Cynthia L., 5,346,644, Cl. 252-188.280.
Morgan Crucible Company plc, The: *See—*
Burrow, Simon W.; and Nobile, David P., 5,346,287, Cl. 300-21.000.
Morgan, Frank H., to TiMesh, Inc. Perforated metallic panels and strips for internal fixation of bone fractures and for reconstructive surgery. 5,346,492, Cl. 606-60.000.

Morgan, Greg: *See—*
Arisman, Mark; Tomer, Mike; Jermolojevs, Terry; Eyler, Bill; Tate, Dave; Morgan, Greg; and Aldous, John, 5,346,036, Cl. 182-3.000.

Morgan, Richey. Ice axe shovel attachment. 5,345,635, Cl. 7-116.000.

Morganstein, Sanford J., to Dytel Inc. Automated call screening. 5,347,574, Cl. 379-210.000.

Mori, Akiyoshi; Sakuma, Katsuzi; and Bansho, Joichi, to Aisin Seiki Kabushiki Kaisha; and Aisin Keikinzoku Kabushiki Kaisha. Window construction for vehicles. 5,345,717, Cl. 49-404.000.

Mori, Hideki: *See—*
Usui, Minoru; Yamagishi, Kouji; Yoshino, Ken; and Mori, Hideki, 5,347,294, Cl. 345-89.000.

Mori, Kenji: *See—*
Koyama, Takeshi; Tonosaki, Masao; Yamada, Nobuhiro; and Mori, Kenji, 5,347,031, Cl. 558-260.000.

Mori, Kiyoaki, to Tsudakoma Kogyo Kabushiki Kaisha. Method of forming transfer tail and apparatus thereof. 5,346,154, Cl 242-131.000.

Mori, Masaharu; Gochi, Motohiro; and Takeuchi, Shigeru, to Clarion Co., Ltd. Spread spectrum communication device. 5,347,537, Cl. 375-1.000.

Mori, Masaharu: *See—*
Akazawa, Shigeo; Mori, Masaharu; and Hamatsu, Masahiro, 5,347,534, Cl. 375-1.000.

Mori, Masayuki: *See—*
Doi, Kazuhiko; Yamada, Koji; and Mori, Masayuki, 5,347,206, Cl 318-818.000.

Mori, Takuji: *See—*
Taki, Masao; Mori, Takuji; and Murakami, Shuntaro, 5,347,585, Cl 381-71.000.

Mori, Toshiaki: *See—*
Sakai, Izumi; Uchino, Yukinori; Tanaka, Yasunori; and Mori, Toshiaki, 5,347,150, Cl. 259-203.000.

Mori, Toyokazu: *See—*
Ohtsuka, Yoshinori; Umeda, Hideki; Mori, Toyokazu; Tsuji, Masaru; and Katoh, Atsuyuki, 5,347,343, Cl. 355-200.000.

Morigami, Yuusuk; Ohhata, Akira; Hamakawa, Wataru; Matsuo, Hirokazu; Nagato, Hiroyasu; and Ishikawa, Takuma, to Minolta Camera Kabushiki Kaisha. Copying apparatus with automatic document feeding device. 5,347,352, Cl. 355-321.000.

Morihara, Atsushi: *See—*
Nakakawaji, Takayuki; Morihara, Atsushi; Shoji, Mitsuyoshi; Sato, Koji; Ito, Yutaka; Kaji, Ryuichi; and Go, Hiroshi, 5,346,633, Cl. 252-10.000.

Morimoto, Kiyoshi: *See—*
Hirai, Yoshihiko; Morimoto, Kiyoshi; Terui, Yasuaki; Wada, Atsuo; Okada, Kenji; Yasui, Juro; and Niwa, Masaaki, 5,347,140, Cl 257-17.000.

Morin, Jean-Xavier: *See—*
Vandycke, Michel; and Morin, Jean-Xavier, 5,345,884, Cl 110-345.000.

Morisawa, Yasuhiro; Saito, Akio; Toyama, Toshimitsu; and Kaneko, Susumu, to Sankyo Company Limited. Milbemycin ether derivatives, their preparation and their therapeutic and agrochemical uses. 5,346,918, Cl. 514-450.000.

Morishige, Kouji: *See—*
Okuda, Tomonori; Kotera, Tetsuji; and Morishige, Kouji, 5,345,753, Cl. 59-5.000.

Morishima, Makoto; and Kanaya, Yoshihiro, to Rinnai Kabushiki Kaisha. Heater control circuit. 5,347,104, Cl. 219-451.000.

Morita, Keiichi: *See—*
Komazaki, Megumi; Suzuki, Hideaki; Motohashi, Hideaki; and Morita, Keiichi, 5,345,776, Cl. 62-176.300.

Morita, Shizuo; Fukuchi, Masakazu; and Haneda, Satoshi, to Konica Corporation. Image forming apparatus for copying one and two-sided documents. 5,347,351, Cl. 355-313.000

Morita, Takao: *See—*
Tanaka, Tadao; Morita, Takao; Togashi, Akihiko; Kishimoto, Naohiro; and Yoshida, Hiroaki, 5,347,457, Cl. 364-424.050.

Morita, Toru: *See—*
Kurata, Shuichi; Ichinose, Shiro; Kusaki, Kazuo; Ishihara, Toshihiko; Ueno, Naozumi; and Morita, Toru, 5,345,863, Cl. 101-126.000.

Moritsugu, Masaharu; Izumi, Haruhiko; and Taguchi, Masakazu, to Fujitsu Limited. Optical medium recording method and apparatus employing pulse width delay and/or advancement. 5,347,505, Cl. 369-59.000.

Moriwaki, Kenji: *See—*
Watanabe, Yasuto; Hara, Masao; Tomita, Takashi; Nakata, Tetsuya; and Moriwaki, Kenji, 5,346,665, Cl. 264-516.000

Moriya, Masafumi; Hosoda, Kazuo; Yoshida, Masatoshi; and Tsukanome, Masayoshi, to Miyoshi Yushi Kabushiki Kaisha. Process for the removal of heavy metals from contaminants. 5,347,071, Cl. 588-256.000.

Morizono, Akira: *See—*
Yamanaka, Yasurou; Yamanaga, Junichi; Morizono, Akira; Miyazaki, Akira; and Unose, Noriyuki, 5,345,675, Cl. 29-894.300.

Morohoshi, Kunichika: *See—*
Kawanishi, Toshiyuki; Morohoshi, Kunichika; and Igarashi, Masato, 5,347,301, Cl. 346-153.100.

Morris, Gregory J. E.: *See—*
Borrione, Pierluigi A. V.; Morris, Gregory J. E.; Marzupio, Maurizio; and Pillet, Michel, 5,346,596, Cl. 204-1.110.

Morris, J. W. Hay dispenser. 5,345,893, Cl. 119-51.110.

Morrow, Martin E.: *See—*
Hergenrother, William L.; and Morrow, Martin E., 5,346,962, Cl. 525-281.000.

Morse, David R., to Borden, Inc. Stain resistant cleanable PVC fabric. 5,346,755, Cl. 428-286.000.

Morse, Theodore H.: *See—*
Hilbert, Thomas K.; and Morse, Theodore H., 5,347,347, Cl. 355-253.000.

Morton International, Inc.: *See—*
Hallard, Alain F.; and Allard, John E., 5,346,249, Cl. 280-728.00B.
Lauritzen, Donald R.; and Crowell, Bryan P., 5,345,873, Cl. 102-290.000

Moser, Donald W. Slider for adjusting the position of the dual axles of a semi-trailer. 5,346,233, Cl. 280-149.200

Moss, C. William. Arch supported fabric structure. 5,345,962, Cl. 135-102.000.

Moss, Leslie R.: *See—*
Frean, Robert G.; and Moss, Leslie R., 5,346,165, Cl. 248-146.000.

Mosser, Benjamin H., III; Frantz, Robert H.; and Sipe, Lynn R., to Whitaker Corporation, The. Shunted connector assembly and shunt assembly therefor. 5,346,405, Cl. 439-188.000.

Motohashi, Hideaki: *See—*
Komazaki, Megumi; Suzuki, Hideaki; Motohashi, Hideaki; and Morita, Keiichi, 5,345,776, Cl. 62-176.300.

Motoori, Hideyuki, to Fujitsu Limited. Power supply protection system applied to optical subscriber network. 5,347,417, Cl. 361-64.000.

Motor Wheel Corporation: *See—*
Ball, Richard C.; Tuttle, Elvin E.; and Kratzer, David W., 5,345,672, Cl. 29-715.000.

Motorola, Inc.: *See—*
Ashby, Laurin R.; and Steininger, Franz, 5,347,181, Cl. 307-465.000
Delianides, John; and Davis, Cindy L., 5,346,401, Cl. 439-67.000.
Grupen-Shemansky, Melissa E.; and Cambou, Bertrand F., 5,346,848, Cl. 437-61.000
Jackson, Gregory D.; Reiff, David E.; and Branan, Mac W., 5,347,123, Cl. 250-229.000.
Khatri, Sunil P., Bruce, William C., Jr.; and Moyer, William C., 5,347,523, Cl. 371-22.300.
Kurby, Christopher N.; Beyer, Donald R.; Davies-Walsh, Anne P.; Fluharty, Kevin L.; and Miller, Matthew R., 5,347,542, Cl. 375-17.000
Leon, Robert; and Schneider, Christian, 5,346,413, Cl. 439-733.000.
Lombard, James H.; and Anderson, Leonard J., 5,346,720, Cl. 427-101.000.
Messerges, Thomas S.; Puhl, Larry C.; and Dabbish, Ezzat A., 5,347,548, Cl. 375-116.000
Nelson, Leonard E.; and Lockhart, Robert K., Jr., 5,347,268, Cl. 340-825.440.
Scharr, Thomas A.; Lee, Russell T.; and Subrahmanyan, Ravichandran, 5,346,857, Cl. 437-183.000.
Scheid, William J., 5,346,784, Cl. 429-98.000.
Scribner, Cliff J., 5,345,668, Cl. 29-593.000.
Vanden Heuvel, Dean P.; and Walker, Danny, 5,347,269, Cl. 340-825.440.

Motose, Hitoshi; and Ishigami, Hidetoshi, to Sanshin Kogyo Kabushiki Kaisha. Engine stop control device. 5,345,903, Cl. 123-198.0DC.

Motta, Lionel J.: *See—*
Estabrook, Brian K.; DiMatteo, Stephen; Motta, Lionel J.; and Wright, John C., 5,346,502, Cl. 606-169.000.

Moulinex (Societe Anonyme): *See—*
Guillot, Gerard L. H.; and Bouleau, Jean-Paul A., 5,345,704, Cl. 38-77.830.

Mount, Gordon L., to Carrier Corporation. Method and apparatus for zero emissions testing of a refrigerant in a closed system. 5,345,774, Cl. 62-127.000.

Mount Sinai School of Medicine of the City University of New York, The: *See—*
Krulwich, Terry A.; and Ivey, D. Mack, 5,346,815, Cl. 435-69.100.

Moura, Eduardo J.; and Long, James C., to Hybrid Networks, Inc. Remote link adapter for use in TV broadcast data transmission system. 5,347,304, Cl. 348-12.000.

Mournet, Sylvie; and Wawra, Joseph, to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement. Process for the treatment of ferrous metal parts to improve their corrosion resistance and friction properties simultaneously. 5,346,560, Cl. 148-217.000.

Mower, Morton M.; and Chen, Peng S. Method for establishing defibrillation threshold for a cardiac defibrillator. 5,346,506, Cl. 607-7.000.

Moyer, Wilber R.: *See—*
Wilson, Dennis R.; Cole, Jack H.; Moyer, Wilber R.; and Moran, Larry K., 5,346,016, Cl. 166-380.000.

Moyer, William C.: *See—*
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M'Raihi, David: *See—*
Naccache, David; and M'Raihi, David, 5,347,581, Cl. 380-30.000.

Muecke, Ingo: *See—*
Vetter, Roman; Wilke, Detlef; Moeller, Bernhard; Mueller, Martina; Muecke, Ingo; Takenberg, Meike; and Konieczny-Janda, Gerhard, 5,346,822, Cl. 435-221.000.

Mueller, Hans R.; Ulmann, Martin; Conti, Josef; and Muerdel, Gunter, to Eprova AG. Pharmaceutical compositions containing (65)-folinic acid and salts thereof. 5,347,005, Cl. 544-258.000.

Mueller, Martina: *See—*
Vetter, Roman; Wilke, Detlef; Moeller, Bernhard; Mueller, Martina; Muecke, Ingo; Takenberg, Meike; and Konieczny-Janda, Gerhard, 5,346,822, Cl. 435-221.000.

Mueller, Ronald A.: *See—*
Syamal, Pradip K.; and Mueller, Ronald A., 5,346,274, Cl. 296-180.100.

Mueller, Thomas; Eicken, Karl; Harreus, Albrecht; Koenig, Hartmann; Rentzea, Costin; Ammermann, Eberhard; and Lorenz, Gisela, to BASF Aktiengesellschaft. Substituted pyridine derivatives and pesticides containing them. 5,346,899, Cl. 514-256.000.

Muerdel, Gunter: *See—*
Mueller, Hans R.; Ulmann, Martin; Conti, Josef; and Muerdel, Gunter, 5,347,005, Cl. 544-258.000.

Mukae, Hideaki: *See—*
Murata, Akio; Maegawa, Takaaki; Mukae, Hideaki; and Higashionji, Masaru, 5,347,415, Cl. 360-109.000.

Mukherjee, Aniruddha: *See—*
Sridhar, Manickam R.; Mukherjee, Aniruddha; and Moran, John L., III, 5,347,539, Cl. 375-8.000.

Mukohjima, Hitoshi; Hiramatsu, Akira; Izukawa, Kazuhiro; Okuno, Takuo; Okumura, Ichiro; and Tsukimoto, Takayuki, to Canon Kabushiki Kaisha. Vibration wave motor. 5,347,192, Cl. 310-323.000.

Mukoyama, Shinichi: *See—*
Shimano, Takashi; Sakano, Misao; and Mukoyama, Shinichi, 5,347,242, Cl. 333-99.00S.

Mukudai, Osamu: *See—*
Anzai, Mitsutoshi; Matsuura, Yuji; Mukudai, Osamu; Kanno, Miki; and Watanabe, Kayoko, 5,346,794, Cl. 430-110.000.

Muller, Beat: *See—*
Machguth, Gunther; Muller, Beat; Lehmann, Rolf; and Schnyder, Eugen, 5,345,864, Cl. 101-216.000.

Muller, Heinz; and Schulte, Klaus, to Bayer Aktiengesellschaft. Mold for manufacturing polyurethane parts for using the rim process. 5,346,387, Cl. 425-543.000.

Muller, Horst W.: *See—*
Vajda, Vladimir; and Muller, Horst W., 5,346,525, Cl. 65-260.000.

Muller, Paul. Josephson contacts in high temperature superconductors and method of fabrication thereof. 5,346,882, Cl. 505-190.000.

Muller, Reinhard; Hartl, Engelbert; and Trommer, Gert, to Deutsch Aerospace. Sagnac-type optical fiber gyroscope having depolarizers of differing lengths. 5,347,354, Cl. 356-350.000.

Multi Electric Mfg. Inc.: *See—*
De Nardis, Nicholas F., 5,347,200, Cl. 315-241.00S.

Munnig Schmidt, Robert H.: *See—*
Garenfeld, Andreas J.; and Munnig Schmidt, Robert H., 5,346,499, Cl. 606-133.000.

Murakami, Shinji: *See—*
Hongo, Hitoshi; Yamada, Mitsuho; Uomori, Kenya; Yoshimatsu, Hiroshi; Ueno, Keiichi; Fujii, Mitsuru; Murakami, Shinji; Miyazawa, Jiro; Nakano, Norihito; Fukatsu, Ryo; and Takahata, Naohiko, 5,345,944, Cl. 128-742.000.

Murakami, Shuntaro: *See—*
Taki, Masao; Mori, Takuji; and Murakami, Shuntaro, 5,347,585, Cl. 381-71.000.

Murakami, Yasuo; Kashimura, Hideki; Katayama, Kiichi; Imaizumi, Hiroshi; Katou, Toshio; and Nakashima, Hideaki, to Nippon Steel Corporation; and Aichi Sangyo Co., Ltd. Method of welding nickel or nickel alloy products. 5,347,098, Cl. 219-61.000.

Muramatsu, Masaharu; and Fujii, Hiroshi, to Hitachi, Ltd. Inverter apparatus and a restarting method at an instantaneous power failure. 5,347,443, Cl. 363-98.000.

Murata, Akio; Maegawa, Takaaki; Mukae, Hideaki; and Higashionji, Masaru, to Matsushita Electric Industrial Co., Ltd. Head height adjustment method including a synchronized rotating laser beam optical axis. 5,347,415, Cl. 360-109.000.

Murata Erie North America, Inc.: *See—*
deNeuf, Joel B.; Helms, Bruce E.; and Billotte, Delmont L., 5,347,423, Cl. 361-313.000.

Murata Manufacturing Co., Inc.: *See—*
Kodama, Takashi; and Yoneda, Yasunobu, 5,346,638, Cl. 252-62.590.

Murata Manufacturing Co., Ltd.: *See—*
Nakamura, Takeshi; Heinouchi, Yoshiaki; and Sakashita, Yukio, 5,345,822, Cl. 73-505.000.

Murata, Michio: *See—*
Watanabe, Tsuneo; Yasumoto, Takeshi; Murata, Michio; Tagawa, Michito; Narushima, Hiroyuki; Furusato, Takashi; Kuwahara, Masao; Hanaue, Masami; and Seki, Tatsuya, 5,346,919, Cl. 514-468.000.

Murayama, Ryuji: *See—*
Akiyama, Shuzo; Nakashima, Kenichiro; Imai, Kunio; Murayama, Ryuji; and Funaki, Jun, 5,346,772, Cl. 428-457.000.

Murayama, Yoichi: *See—*
Yoshida, Yasuhiko, 5,346,728, Cl. 427-569.000.

Murphy, James G. Agents for complexing sodium under biological conditions. 5,346,997, Cl. 536-4.100.

Murphy, Jeffrey W. Tree stump removal method and apparatus. 5,345,985, Cl. 144-329.000.

Murphy, Patrick H., to Osmonics, Inc. Thermoplastic bellows and method of forming the same. 5,345,857, Cl. 92-34.000.

Murray, Cameron R.; and Van Der Meer, William J., to John Labatt Limited. Malt beverage process. 5,346,706, Cl. 426-11.000.

Murray, James S., to Stanley Home Automation. Electronic lock reset system and method. 5,347,267, Cl. 340-825.310.

Murray, Noel W.: *See—*
Knight, John K.; and Murray, Noel W., 5,345,732, Cl. 52-170.000.

Murray, Patrick J.: *See—*
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Murray, William V.: *See—*
Bandurco, Victor T.; Murray, William V.; Wachter, Michael P.; and Schwender, Charles F., 5,347,011, Cl. 548-264.200.

Mushabac, David R. Method, system and mold assembly for use in preparing a dental restoration. 5,347,454, Cl. 364-413.280.

Muske, Markus, to Klochner-Moeller Elektrizitats GmbH. Electromagnetic switching device. 5,347,250, Cl. 335-132.000.

Mussell, Robert D.: *See—*
Nickias, Peter N.; Devore, David D.; Timmers, Francis J.; Rosen, Robert K.; and Mussell, Robert D., 5,347,024, Cl. 556-11.000.

Musto, Dominick J.: *See—*
Rogers, William; Ernst, James J.; Williamson, Steven; and Musto, Dominick J., 5,345,830, Cl. 73-866.000.

Mycogen Corporation: *See—*
Abercrombie, Kenneth D., 5,346,698, Cl. 424-405.000.

Myers, Christopher A. Right angle torque transmission tool. 5,345,845, Cl. 81-57.290.

Myhre, Johan, to ScanHall A.S. Process for the production of a marine oil preparation. 5,346,709, Cl. 426-111.000.

N-Xeram: *See—*
Bettinelli, Armand, 5,346,749, Cl. 428-209.000.

Na, George C.; and Rajagopalan, Natarajan, to Sterling Winthrop Inc. Use of non-ionic cloud point modifiers to minimize nanoparticle aggregation during sterilization. 5,346,702, Cl. 424-490.000.

Nabors, James K.: *See—*
Slavejkov, Aleksandar G.; Zurecki, Zbigniew; Joshi, Mahendra L.; and Nabors, James K., 5,346,390, Cl. 431-8.000.

Naccache, David; and M'Raihi, David, to Gemplus Developpement. Verification process for a communication system. 5,347,581, Cl. 380-30.000.

Nadeau, Ronald P.; and Smith, Frank V., Jr., to Griffin Environmental Co., Inc. Adjustable hood assembly. 5,345,982, Cl. 141-93.000.

Nadex Co., Ltd.: *See—*
Kawai, Shingo, 5,347,105, Cl. 219-110.000.

Naffziger, Lee A., to Borg-Warner Automotive Electronic & Mechanical Systems Corporation. Secondary air control and check valves. 5,345,967, Cl. 137-614.200.

Nagai, Seiichiro: *See—*
Nishiki, Masayuki; Fujiwara, Shigemi; Hayashi, Mikihito; Tsukamoto, Akira; Takamizawa, Kinya; Takano, Masayuki; and Nagai, Seiichiro, 5,345,938, Cl. 128-660.040.

Nagai, Yoshiaki: *See—*
Hirakouchi, Yoshie; Adachi, Ikuo; and Nagai, Yoshiaki, 5,346,543, Cl. 106-243.000.

Nagaishi, Hatsuo: *See—*
Iwano, Hiroshi; and Nagaishi, Hatsuo, 5,345,921, Cl. 123-686.000.

Nagamura, Takashi; and Yamamoto, Takao, to Teisan Kabushiki Kaisha. Method and apparatus for the production of ultra-high purity nitrogen. 5,345,773, Cl. 62-38.000.

Nagase, Mituhiro: *See—*
Nakajima, Tohru; and Nagase, Mituhiro, 5,346,049, Cl. 194-328.000.

Nagata, Kenichi: *See—*
Ohno, Eiji; Yamada, Noboru; Nagata, Kenichi; Nishiuchi, Kenichi; and Akahira, Nobuo, 5,346,740, Cl. 428-64.000.

Nagata, Shiro: *See—*
Negi, Taichi; Mochizuki, Akira; Nagata, Shiro; Yamasaki, Komei; Funaki, Keisuke; and Sumitomo, Takashi, 5,346,950, Cl. 525-57.000.

Nagata, Tsunetoshi, to Canon Kabushiki Kaisha. Image fixing apparatus with detector for detecting movement of endless belt. 5,347,348, Cl. 355-285.000.

Nagato, Hiroyasu: *See—*
Morigami, Yuusuk; Ohhata, Akira; Hamakawa, Wataru; Matsuo, Hirokazu; Nagato, Hiroyasu; and Ishikawa, Takuma, 5,347,352, Cl. 355-321.000.

Nagayoshi, Hideaki: *See—*
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NAI Anchorlok, Inc.: *See—*
Pierce, William C., 5,345,858, Cl. 92-48.000.

Naito, Noriyoshi: *See—*
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Naka, Hisashi: *See—*
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Nakabayashi, Hirohiko: *See—*
Takeuchi, Akihisa; Kozen, Waichiro; and Nakabayashi, Hirohiko, 5,347,249, Cl. 335-78.000.

Nakabayashi, Yuji; Maehara, Naoyoshi; Bessyo, Daisuke; and Matsumoto, Takahiro, to Matsushita Electric Industrial Co., Ltd. High-frequency heating apparatus mounted on a motor vehicle. 5,347,109, Cl. 219-716.000.

Nakagawa, Kenichi: *See—*
Shinomiya, Tokihiko; Taniguchi, Tsugiko; Kuratate, Tomoaki; and Nakagawa, Kenichi, 5,347,381, Cl. 359-78.000.

Nakagawa, Koji: *See—*
Okamoto, Yoshio; Kanamaru, Hisanobu; Maeda, Hitoshi; Suzuki, Satoshi; Ishikawa, Tohru; Kosuge, Tokuo; Amou, Kiyoshi; Ohki,

Hiroshi; Nakagawa, Koji; Tanabe, Yoshiyuki; and Yokoyama, Mizuho, 5,346,137, Cl. 239-585.400.
Nakagawa, Yusaku: *See—*
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Nakahara, Takashi; Kimura, Toshiaki; and Mishima, Takashi, to Mitsui Petrochemical Industries, Ltd. Preparation of compounded rubber composition from bubble-containing ethylene/α-olefin rubber 5,346,987, Cl. 528-502.000.
Nakahata, Akimasa: *See—*
Yukawa, Yoshiyuki; Yabuta, Motoshi; Nakahata, Akimasa; Miyamoto, Yuzo; Kobayashi, Masaaki; and Ueno, Naruhito, 5,346,958, Cl. 525-124.000
Nakahata, Akinobu; Kubota, Hiroshi; Migita, Kouji; Fuchi, Masami; Oda, Kenji; Makiura, Yoshinori; and Yamaguchi, Katsuhide, to Mita Industrial Co., Ltd. Sheet feeder. 5,347,350, Cl. 355-309.000.
Nakahata, Hiroki; Satoh, Yoshinori; and Yabushita, Tatsuhisa, to Namco Ltd. Stationary game machine. 5,346,398, Cl. 434-70.000.
Nakai, Hatsuo, to Clover Co., Ltd. Code lock device. 5,345,798, Cl. 70-284.000.
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Nakajima, Kenji: *See—*
Ishida, Takeshi; Koyama, Kenji; Kasama, Hiroshi; Nishiumi, Kenji; and Nakajima, Kenji, 5,346,047, Cl. 194-200.000.
Nakajima, Naomasa: *See—*
Naruse, Yoshihiro; Ando, Mitsuhiro; Mizuno, Tomokimi; and Nakajima, Naomasa, 5,346,372, Cl. 417-379.000.
Nakajima, Tohru; and Nagase, Mituhiro, to Laurel Bank Machines Co., Ltd. Discriminator using a plurality of optical fiber groups. 5,346,049, Cl. 194-328.000.
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Nakaki, Yoshiyuki: *See—*
Taguchi, Motohisa; Fukami, Tatsuya; Hashima, Kazuo; Toide, Yukari; Kawano, Yuji; Fujii, Yoshio; Tokunaga, Takashi; Nakaki, Yoshiyuki; Tsutsumi, Kazuhiko; Kobayashi, Hiroshi; Ohdoi, Yuzou; Tanabe, Shinji; and Shibata, Hiroshi, 5,347,485, Cl. 365-171.000.
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Kamitsuma, Yasuo; Nakagawa, Yusaku; Kobayashi, Yoshihiro; Nakashima, Shoichi; Iizuka, Tadashi; Nakamura, Keiichi; and Shikata, Hideo, 5,346,667, Cl. 419-52.000.
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Nakamura, Shoji: *See—*
Takashima, Koichi; and Nakamura, Shoji, 5,346,528, Cl. 75-10.150.
Nakamura, Shouji: *See—*
Takanashi, Katsuya; Nakamura, Shouji; Akaosugi, Takashi; Kojima, Tomihiko; Takahashi, Tooru; and Shirahama, Ritsuo, 5,347,624, Cl. 395-157.000.
Nakamura, Shunji; and Sakai, Toru, to Honda Giken Kogyo Kabushiki Kaisha. System and method for line production management. 5,347,463, Cl. 364-478.000.
Nakamura, Takeshi; Heinouchi, Yoshiaki; and Sakashita, Yukio, to Murata Manufacturing Co., Ltd. Vibratory gyroscope having a support member. 5,345,822, Cl. 73-505.000.
Nakanishi, Fusao: *See—*
Komiyama, Yoshizo; Arai, Fumio; Hasegawa, Yutaka; Tanioka, Tetsuya; Sugiyama, Hisataka; Toyama, Yoshiyasu; and Nakanishi, Fusao, 5,346,522, Cl. 65-64.000.
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Nakano, Hiroshi: *See—*
Yamamoto, Hirohiko; Higashi, Keijirou; Takebe, Hiroyuki; Nakano, Hiroshi; and Ohta, Tomozo, 5,346,300, Cl. 343-895.000.
Nakano, Norihito: *See—*
Hongo, Hitoshi; Yamada, Mitsuho; Uomori, Kenya; Yoshimatsu, Hiroshi; Ueno, Keiichi; Fujii, Mitsuru; Murakami, Shinji; Miyazawa, Jiro; Nakano, Norihito; Fukatsu, Ryo; and Takahata, Naohiko, 5,345,944, Cl. 128-742.000.
Nakashima, Hideaki: *See—*
Murakami, Yasuo; Kashimura, Hideki; Katayama, Kiichi; Imaizumi, Hiroshi; Katou, Toshio; and Nakashima, Hideaki, 5,347,098, Cl. 219-61.000.
Nakashima, Kenichiro: *See—*
Akiyama, Shuzo; Nakashima, Kenichiro; Imai, Kunio; Murayama, Ryuji; and Funaki, Jun, 5,346,772, Cl. 428-457.000.
Nakashima, Shoichi: *See—*
Kamitsuma, Yasuo; Nakagawa, Yusaku; Kobayashi, Yoshihiro; Nakashima, Shoichi; Iizuka, Tadashi; Nakamura, Keiichi; and Shikata, Hideo, 5,346,667, Cl. 419-52.000.
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Sano, Tatsuhiko; Saijo, Keiko; Yokomori, Sadakazu; Nakashima, Yoshimoto; and Hatayama, Katsuo, 5,347,012, Cl. 548-311.400.
Nakata, Akira, to Yugengaisya Towa. Door mat and a method of manufacture thereof. 5,346,757, Cl. 428-296.000.
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Watanabe, Yasuto; Hara, Masao; Tomita, Takashi; Nakata, Tetsuya; and Moriwaki, Kenji, 5,346,665, Cl. 264-516.000.
Nakatani, Hajime; and Sugitatsu, Atsushi, to Mitsubishi Denki Kabushiki Kaisha. Transverse discharging excitation pulse laser oscillator apparatus. 5,347,531, Cl. 372-86.000.
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Nakatani, Yoshihiro: *See—*
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Nakatsuka, Masakatsu; Koike, Naomasa; and Okada, Akinori, to Mitsui Toatsu Chemicals, Inc.; and Mitsubishi Paper Mills Limited. Recording material. 5,346,878, Cl. 503-209.000.
Nakayama, Junichiro: *See—*
Hirokane, Junji; Katayama, Hiroyuki; Nakayama, Junichiro; Mieda, Michinobu; and Ohta, Kenji, 5,347,510, Cl. 369-275.500.
Nakayama, Takeshi: *See—*
Terada, Yasushi; Nakayama, Takeshi; Kobayashi, Shinichi; Miyawaki, Yoshikazu; and Hayashikoshi, Masanori, 5,347,490, Cl. 365-219.000.
Nakazawa, Kenzo, to Ishikawajima-Harima Heavy Industries Co., Ltd. Fuel reforming method and apparatus for power generation system using fuel cells. 5,346,779, Cl. 429-19.000.
Nalco Chemical Company: *See—*
Dimas, Peter A., 5,346,511, Cl. 23-293.00R.
Siefert, Kristine S.; Choo, Pek L.; Sparapany, John W.; and Collins, John H., 5,346,627, Cl. 210-729.000.
Sommese, Anthony G.; and Mahoney, Robert P., 5,346,628, Cl. 210-734.000.
Nam, Sang-Yop, to Samsung Heavy Industries Co., Ltd. Multiprocessor system for hydraulic excavator. 5,347,448, Cl. 364-167.010.
Namba, Shigeaki; Sakamoto, Tatsuo; and Kahara, Toshiki, to Hitachi, Ltd. Chemical reaction installation. 5,346,777, Cl. 429-12.000.
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Nakahata, Hiroki; Satoh, Yoshinori; and Yabushita, Tatsuhisa, 5,346,398, Cl. 434-70.000.
Nara Company, Ltd.: *See—*
Yoshino, Sota, 5,345,885, Cl. 112-80.550.
Nara, Wataru: *See—*
Takahashi, Hiroyuki; Nara, Wataru; Kamo, Yasushi; Aihara, Toshiyuki; and Tsuchiko, Seiji, 5,347,372, Cl. 358-471.000.
Narabu, Shin-ichi: *See—*
Goto, Toshio; Hayakawa, Hidenori; Watanabe, Yukiyoshi; Narabu, Shin-ichi; and Yanagi, Akihiko, 5,347,010, Cl. 548-251.000.
Narisawa, Yoshiyuki, to Rion Kabushiki-Kaisha. Hearing aid. 5,347,584, Cl. 381-69.200.
Narita, Teruyuki; Sato, Atsushi; Tsunekawa, Masao; and Tanaka, Hideaki, to Fujitsu Limited. Sensitivity correcting circuit of servo signal detection on data surface and offset measuring circuit in magnetic disk unit. 5,347,410, Cl. 360-77.040.
Narukawa, Mitsutoshi: *See—*
Ito, Hideo; Narukawa, Mitsutoshi; and Sakai, Kazuhiro, 5,346,557, Cl. 134-10.000.
Narukawa, Yasunori; and Hamana, Akinori, to Fuji Photo Film Co., Ltd.; and Fuji Photo Optical Co.,. Control system for oscillatory-mirror light beam deflector. 5,347,124, Cl. 250-235.000.
Narula, Anubhav P. S.; McGinnis, Matthew J.; Beck, Charles E. J.; Hanna, Marie R.; and Schiet, Franc T., to International Flavors & Fragrances Inc. Substituted 2,6-dimethylbicyclo[3,3,1]non-6-enes, processes for preparing same and organoleptic uses thereof. 5,346,884, Cl. 512-6.000.
Naruse, Yoshihiro; Ando, Mitsuhiro; Mizuno, Tomokimi; and Nakajima, Naomasa, to Aisin Seiki Kabushiki Kaisha. Fluid flow regulating device. 5,346,372, Cl. 417-379.000.
Naruse, Yoshihiro: *See—*
Ando, Mitsuhiro; Mizuno, Tomokimi; Naruse, Yoshihiro; and Fujimasa, Iwao, 5,345,767, Cl. 60-721.000.
Narushima, Hiroyuki: *See—*
Watanabe, Tsuneo; Yasumoto, Takeshi; Murata, Michio; Tagawa, Michito; Narushima, Hiroyuki; Furusato, Takashi; Kuwahara, Masao; Hanaue, Masami; and Seki, Tatsuya, 5,346,919, Cl. 514-468.000.
Naseer, Absar; Patel, Lalit O.; and Horiuchi, Edward M., to AG Communication Systems Corporation. Circuit to detect the hook status and ringing at the CPE end of a telephone network. 5,347,575, Cl. 379-377.000.
Nasr, Andre I.; and Cooperman, Steven S., to Digital Equipment Corporation. Planarization process for IC trench isolation using oxidized polysilicon filler. 5,346,584, Cl. 156-636.000.
Nassoiy, Gary J., to Moore Business Forms, Inc. Void label. 5,346,739, Cl. 428-40.000.
National Gypsum Company: *See—*
Menchetti, Robert J., 5,345,739, Cl. 52-489.200.

National Institutes of Health: *See—*
Bowen, Wayne; de Costa, Brian R.; Dominguez, Celia; He, Xiao-Shu; and Rice, Kenner C., 5,346,908, Cl. 514-316.000.
National Machinery Company, The: *See—*
Smith, Gregory A.; Foltz, Dale E.; Wisebaker, Robert E.; and Loy, Robert E., 5,345,800, Cl. 72-90.000.
National-Oilwell: *See—*
Baker, William J., 5,346,178, Cl. 251-315.0SE.
National Research Council of Canada: *See—*
Greenspan, Michael A.; and Burtnyk, Nestor, 5,347,459, Cl. 364-461.000.
National Science Council: *See—*
Wu, Shye-Lin; Lee, Chung-Len; and Lei, Tan-Fu, 5,347,161, Cl. 257-756.000.
National Semiconductor Corporation: *See—*
Bachmann, Walter A.; and Hale, Peggy A., 5,347,226, Cl. 324-724.000.
Bergemont, Albert, 5,346,842, Cl. 437-52.000.
National Starch and Chemical Investment Holding Corporation: *See—*
Iovine, Carmine P.; Chandran, Rama S.; and Leighton, John C., 5,346,974, Cl. 526-240.000.
NCR Corporation: *See—*
Simpson, David L.; and Smoak, Wilson E., III, 5,347,520, Cl. 371-22.300.
Neale, William W.: *See—*
Ansorge, Richard E.; Hooper, Clare E.; Neale, William W.; and Stanley, Philip, 5,347,122, Cl. 250-227.110.
Nebe, Wolfgang; and Godat, Rolf, to Carl Zeiss Jena GmbH. Refractometer. 5,347,358, Cl. 356-128.000.
NEC Corporation: *See—*
Kagami, Akihiko, 5,347,491, Cl. 365-222.000.
Miyazaki, Takashi, 5,347,479, Cl. 364-725.000.
Miyazono, Takashi, 5,347,165, Cl. 307-85.000.
Ooi, Yasushi; and Miki, Yoshiyuki, 5,347,636, Cl. 395-275.000.
Urai, Takahiko, 5,347,486, Cl. 365-185.000.
Yamamoto, Takeshi, 5,347,569, Cl. 375-39.000.
Yokono, Shinji, 5,346,748, Cl. 428-209.000.
Yoshida, Atsushi, 5,347,516, Cl. 370-94.100.
NEC Electronics Inc.: *See—*
Barratt, Peter G., 5,347,642, Cl. 395-425.000.
Negi, Taichi; Mochizuki, Akira; Nagata, Shiro; Yamasaki, Komei; Funaki, Keisuke; and Sumitomo, Takashi, to Kuraray Co., Ltd.; and Idemitsu Petrochemical Co., Ltd. Resin composition. 5,346,950, Cl. 525-57.000.
Negley, Paul M.: *See—*
Staroselsky, Naum; Mirsky, Saul; Reinke, Paul A.; Negley, Paul M.; and Sibthorp, Robert J., 5,347,467, Cl. 364-510.000.
Neitzell, Roger D., to S-B Power Tool Company. Belt tensioning device for band saws. 5,345,850, Cl. 83-814.000.
Nelson Brothers, Inc.: *See—*
Vance, Ricky T.; Griffith, George L.; and Brown, Dennis J., 5,346,564, Cl. 149-109.600.
Nelson, John C.; Vance, Gary M.; Thomas, Vincent J.; and Pifer, Thomas H., Jr., to ITT Corporation. Diopter cell assembly for a binocular viewing system. 5,347,397, Cl. 359-629.000.
Nelson, Leonard E.; and Lockhart, Robert K., Jr., to Motorola, Inc. Data handler for handling data having multiple data formats. 5,347,268, Cl. 340-825.440.
Nemedi, William D., to Inter-Source Recovery Systems, Inc. Replaceable wrap for scroll housing in centrifugal separator. 5,345,665, Cl. 29-402.150.
Neste Oy: *See—*
Karna, Toivo; Laakso, Jukka; Levon, Kalle; and Savolainen, Esko, 5,346,649, Cl. 252-500.000.
Net/Tech International, Inc.: *See—*
Goldman, Leonard J.; and Roesch, Susan M., 5,346,541, Cl. 106-163.100.
Nett, Hans-Peter; Honzek, Robert; Heindl, Richard; and Hommel, Rainer, to Xaver Fendt & Company. Sound-damped fitting of a drive system. 5,345,839, Cl. 74-606.00R.
Network Computing Devices, Inc.: *See—*
Providenza, John R.; and Boekelheide, Lee, 5,347,631, Cl. 395-164.000.
Neuharth, Steven D.; Lobsinger, James; and Janke, Dean J., to Honeywell Inc. Modulator for negative pulse activated oscillators. 5,347,236, Cl. 331-87.000.
Neumann, Ulrich: *See—*
Wolfl, Volkmar R.; and Neumann, Ulrich, 5,346,379, Cl. 425-67.000.
Nevins, Robert C.: *See—*
Ashfield, James C.; Baker, Gregory D.; Nevins, Robert C.; Raynes, Jeffrey A.; Sultan, Aaron T.; Parks, Joseph K.; Rhodin, Michael D.; and Sayre, Reid L., 5,347,633, Cl. 395-200.000.
New Venture Gear, Inc.: *See—*
Eastman, Richard E., 5,346,442, Cl. 475-223.000.
Frost, Barry L., 5,345,840, Cl. 74-665.0GA.
Mohan, Sankar K.; and Stephens, Carl F., 5,346,044, Cl. 192-58.00C.
Newell Operating Company: *See—*
Randall, Harold M., 5,346,077, Cl. 211-90.000.
Newhouse, Mark A.: *See—*
Aitken, Bruce G.; Annunziata, Frank A.; Bartholomew, Roger F.; Newhouse, Mark A.; Powley, Mark L.; and Sadd, Andrea L., 5,346,865, Cl. 501-40.000.
Newman, Martin H.; and Sanfilippo, Philip, to Avitar, Inc. Biostable treatment delivery system. 5,346,061, Cl. 206-221.000.
Newton, Jeffrey P.: *See—*
Hooykaas, Carel W. J.; and Newton, Jeffrey P., 5,347,077, Cl. 588-257.000.
Newton, John H., to Nordic Engineering, Inc. Futon frame. 5,345,626, Cl. 5-37.100.
Newton, John R.: *See—*
Strong, Jeffrey W.; and Newton, John R., 5,346,315, Cl. 384-192.000.
Ng, Alison, to Thomson Industries, Inc. Linear motion bearing assembly. 5,346,313, Cl. 384-43.000.
Ng, Patrick M., Jr. Sanding device for V-shaped slats. 5,345,724, Cl. 451-351.000.
NGK Insulators, Ltd.: *See—*
Noguchi, Yasushi; Miwa, Shinichi; and Fukao, Kaname, 5,346,870, Cl. 501-136.000.
Sugiura, Toshifumi; and Miyahara, Kazuhiro, 5,345,859, Cl. 92-172.000.
NGK Spark Plug Co., Ltd.: *See—*
Oshima, Takafumi; Iwata, Kazuya; and Okayama, Tsutomu, 5,347,193, Cl. 313-141.000.
Ngo, Toan M.: *See—*
Griffith, Edward J.; and Ngo, Toan M., 5,346,575, Cl. 156-62.600.
Nguyen, Baoson, to Texas Instruments Incorporated. Current switch with bipolar switching transistor and β compensating circuit. 5,347,210, Cl. 323-315.000.
N'Guyen, Christian: *See—*
Bascans, Remi; Fleury, Christophe; Autechaud, Eric; and N'Guyen, Christian, 5,347,180, Cl. 307-464.000.
Nguyen, Michael A., to Hewlett-Packard Company. Printer carriage bushing. 5,346,320, Cl. 400-354.000.
Nguyen, Son C.: *See—*
Cherek, Bogdan; Nguyen, Son C.; and Adams, Andy, 5,347,495, Cl. 367-87.000.
Nguyen, Tai H., to Advance Poly Bag, Inc. Thermoplastic bag system. 5,346,310, Cl. 383-9.000.
NHK Spring Co., Ltd.: *See—*
Hoshino, Hidekazu, 5,347,111, Cl. 235-457.000.
Nichols, Claude W., III: *See—*
Bauman, Joseph H.; and Nichols, Claude W., III, 5,347,266, Cl. 340-735.000.
Nichols, Randall K.; and Thatcher, Charles M., to University of Arkansas, The Board of Trustees of the. Method and apparatus for power plant simulation and optimization. 5,347,466, Cl. 364-492.000.
Nichols, Robert L.; Lindsey, Keith F.; and Patterson, William H., to Johnson & Johnson Medical, Inc. Apparatus and method for holding a medical instrument. 5,346,075, Cl. 211-60.100.
Nickias, Peter N.; Devore, David D.; Timmers, Francis J.; Rosen, Robert K.; and Mussell, Robert D., to Dow Chemical Company, The. Preparation of addition polymerization catalysts via Lewis acid mitigated metal center oxidation. 5,347,024, Cl. 556-11.000.
Nicolai, Leland M.: *See—*
Belie, Robert G.; and Nicolai, Leland M., 5,346,162, Cl. 244-137.100.
Nidek Co., Ltd.: *See—*
Isogai, Naoki; and Hanaki, Hirohiko, 5,347,331, Cl. 354-62.000.
Ota, Yasuo, 5,347,329, Cl. 351-221.000.
Nieh, Simon K.; Matossian, Jesse N.; and Krajenbrink, Frans G., to Hughes Aircraft Company. Plasma-enhanced magnetron-sputtered deposition of materials. 5,346,600, Cl. 204-192.300.
Nielander, Wayne J. Portable cigarette cutter, extinguisher, and conveyance apparatus. 5,345,952, Cl. 131-248.000.
Nielsen, Dennis R.: *See—*
Hanke, Lawrence E.; Nielsen, Dennis R.; and Koester, David D., 5,347,413, Cl. 360-104.000.
Nihon Bayer Agrochem K.K.: *See—*
Goto, Toshio; Kitagawa, Yoshinori; Hayakawa, Hidenori; Shibuya, Katsuhiko; and Watanabe, Ryo, 5,346,880, Cl. 504-242.000.
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Nihon Parkerizing Co., Ltd.: *See—*
Sawazaki, Yoshihiko; Okumura, Yasuo; and Arai, Nobuichi, 5,346,634, Cl. 252-30.000.
Nikjou, Bobby B., to Intel Corporation. Input frequency converter to increase input frequency range of a synchronous delay line. 5,347,558, Cl. 377-47.000.
Nikkinen, Kurt D. Tap-in blade fuse. 5,346,411, Cl. 439-621.000.
Nikko Corporation Ltd.: *See—*
Iguchi, Atsushi; and Iguchi, Kuniaki, 5,347,107, Cl. 219-624.000.
Nikon Corporation: *See—*
Ota, Kazuya; Magome, Nobutaka; Mizutani, Hideo; and Komatsu, Kouichiro, 5,347,356, Cl. 356-363.000.
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Nippon Chemical Industrial Co., Ltd.: *See—*
Ichimura, Shozo; Tabei, Seikichi; and Hashimoto, Michinori, 5,346,876, Cl. 502-417.000.
Nippon Densan Corporation: *See—*
Chuta, Masanobu; and Ogawa, Tokumon, 5,347,189, Cl. 310-90.000.
Nippon Electric Glass Co., Ltd.: *See—*
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Nippon Koki Co., Ltd.: *See—*
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Nippon Oil Company, Ltd.: *See*—
Ohgake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Shimizu, Teruo; and Yamamoto, Narihito, 5,346,724, Cl. 427-384.000.
Nippon Steel Corporation: *See*—
Murakami, Yasuo; Kashimura, Hideki; Katayama, Kiichi; Imaizumi, Hiroshi; Katou, Toshio; and Nakashima, Hideaki, 5,347,098, Cl. 219-61.000.
Ushigami, Yoshiyuki; Arai, Satoshi; Suga, Yozo; Yoshitomi, Yasunari; Takahashi, Nobuyuki; and Senuma, Takehide, 5,346,559, Cl. 148-111.000.
Nippon Steel Semiconductor Corporation: *See*—
Cordoba, Michael V.; and Hardee, Kim C., 5,347,171, Cl. 307-296.200.
Cordoba, Michael V.; and Hardee, Kim C., 5,347,172, Cl. 307-296.200
Nippon Telegraph and Telephone Corporation: *See*—
Akuto, Keiji; Kato, Naoki; Ogata, Tsutomu; and Takeuchi, Masaaki, 5,346,785, Cl. 429-111.000.
Nippon Thompson Co., Ltd.: *See*—
Takei, Seiji, 5,345,832, Cl. 74-89.000.
Nippon Unicar Company Limited: *See*—
Sakamoto, Toshio; Kumai, Kenichiro; and Gotoh, Shigeru, 5,346,926, Cl. 521-81.000
Nippon Yusen Kaisha: *See*—
Ueda, Ichiro; Suzuki, Takashi; and Sakai, Akihiko, 5,346,035, Cl. 180-329.000.
Nippon Zeon Co., Ltd.: *See*—
Tsuji, Suguru; Numata, Hiromi; and Komiyama, Shinji, 5,346,957, Cl. 525-122.000.
Nippondenso Co., Ltd.: *See*—
Kadowaki, Hisashi; and Arimura, Takashi, 5,345,911, Cl. 123-436.000.
NISCA Corporation: *See*—
Ishihara, Mitsuhiro; Kubota, Mineo; Kanda, Takashi; Kitta, Toru; and Tsuchiya, Mitsuo, 5,347,370, Cl. 358-461.000.
Nishida, Mamoru, to Tretorn AB. Process for producing a shoe-shaped part from a web of material and resulting shoe-shaped part. 5,345,638, Cl. 12-146.00C.
Nishie, Mitsuaki: *See*—
Go, Hisao; Nishie, Mitsuaki; and Imamura, Keiichi, 5,347,604, Cl. 385-92.000.
Nishikawa, Kazunori, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Vibrating device for ice making tray. 5,345,783, Cl. 62-345.000.
Nishikawa Rubber Co., Ltd.: *See*—
Takeuchi, Norio, 5,346,273, Cl. 296-146.900
Nishiki, Masayuki; Fujiwara, Shigemi; Hayashi, Mikihito; Tsukamoto, Akira; Takamizawa, Kinya; Takano, Masayuki; and Nagai, Seiichiro, to Kabushiki Kaisha Toshiba. Diagnostic apparatus for circulatory systems. 5,345,938, Cl. 128-660.040.
Nishimichi, Yoshito, to Matsushita Electric Industrial Co. Ltd. Phase locked loop clock generator. 5,347,232, Cl. 331-1.00A.
Nishimori, Kadotaro: *See*—
Shimizu, Tadafumi; Takano, Yoshiaki; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotaro; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,347,346, Cl. 355-202.000.
Nishimura, Asao: *See*—
Kohno, Ryuji; Nishimura, Asao; Kitano, Makoto; Yaguchi, Akihiro; and Yoneda, Nae, 5,347,429, Cl. 361-813.000.
Nishimura, Ryuji; Nishizawa, Akihito; Yamamoto, Mayuko; and Imaide, Takuya, to Hitachi, Ltd. Video camera with extraction unit for extracting specific portion of video signal. 5,347,371, Cl. 358-453.000.
Nishimura, Yukinobu; and Uchinami, Masanobu, to Mitsubishi Denki Kabushiki Kaisha. Electronic control device for an internal combustion engine. 5,345,908, Cl. 123-339.000.
Nishioka, Takao; Yamamoto, Takehisa; Matsunuma, Kenji; Yamakawa, Akira; and Miyake, Masaya, to Sumitomo Electric Industries, Ltd Sintered silicon nitride bodies suitable for use as high impact materials. 5,346,869, Cl. 501-98.000.
Nishiuchi, Kenichi: *See*—
Ohno, Eiji; Yamada, Noboru; Nagata, Kenichi; Nishiuchi, Kenichi; and Akahira, Nobuo, 5,346,740, Cl. 428-64.000.
Nishiumi, Kenji: *See*—
Ishida, Takeshi; Koyama, Kenji; Kasama, Hiroshi; Nishiumi, Kenji; and Nakajima, Kenji, 5,346,047, Cl. 194-200.000.
Nishiwaki Laboratory: *See*—
Taki, Masao; Mori, Takuji; and Murakami, Shuntaro, 5,347,585, Cl. 381-71.000.
Nishiyama, Shinichi: *See*—
Kawabata, Junichi; Yamaoka, Hideo; Tatsuki, Yuuichirou; and Nishiyama, Shinichi, 5,346,646, Cl. 252-299.620.
Nishizawa, Akihito: *See*—
Nishimura, Ryuji; Nishizawa, Akihito; Yamamoto, Mayuko; and Imaide, Takuya, 5,347,371, Cl. 358-453.000.
Nissan Chemical Industries, Ltd.: *See*—
Watanabe, Tsuneo; Yasumoto, Takeshi; Murata, Michio; Tagawa, Michito; Narushima, Hiroyuki; Furusato, Takashi; Kuwahara, Masao; Hanaue, Masami; and Seki, Tatsuya, 5,346,919, Cl. 514-468.000.
Nissan Motor Co., Ltd.: *See*—
Eguchi, Shinsuke; Suzuki, Masayuki; and Fukuoka, Tetsuo, 5,346,366, Cl. 416-180.000
Iwano, Hiroshi; and Nagaishi, Hatsuo, 5,345,921, Cl. 123-686.000.
Sasaki, Hiroki, 5,346,032, Cl. 180-233.000.
Sato, Kazuhiro, 5,345,763, Cl. 60-290.000.
Nissen, Timothy A.: *See*—
Flaugher, Jeffrey R.; Nissen, Timothy A.; Procaccini, Vincent N.; and Deb, Sugato, 5,346,526, Cl. 65-273.000.
Nissin Chemical Industry Co., Ltd.: *See*—
Sakai, Yoshio; and Izumi, Saitoh, 5,346,977, Cl. 526-318.440.
Nitta, Hideo; Kanai, Kunio; and Arai, Yasuo, to Hitachi Metals, Ltd. Floating magnetic head. 5,347,412, Cl. 360-103.000.
Nitta, Sachihito, to Kubota Corporation. Vertical pulverizer. 5,346,146, Cl. 241-172.000.
Nitta, Tohei, to Mitsubishi Electric Research Laboratories, Inc. Animated electronic meeting place. 5,347,306, Cl. 348-15.000.
Nitto Denko Corporation: *See*—
Tahara, Masaharu; and Yoshimura, Kiyonobu, 5,346,572, Cl. 156-244.190.
Niwa, Hitoshi: *See*—
Takahashi, Kunihiro; Kojima, Yoshikazu; Takasu, Hiroaki; Matsuyama, Nobuyoshi; Niwa, Hitoshi; Yoshino, Tomoyuki; and Yamazaki, Tsuneo, 5,347,154, Cl. 257-347.000.
Niwa, Masaaki: *See*—
Hirai, Yoshihiko; Morimoto, Kiyoshi; Terui, Yasuaki; Wada, Atsuo; Okada, Kenji; Yasui, Juro; and Niwa, Masaaki, 5,347,140, Cl. 257-17.000.
Niwayama, Kazuhiko, to Mitsubishi Denki Kabushiki Kaisha. Method for fabricating a full press-pack type semiconductor device. 5,346,859, Cl. 437-209.000.
Nix, Michael A.: *See*—
Asghar, Safdar M.; Bartkowiak, John G.; and Nix, Michael A., 5,347,480, Cl. 364-736.000.
Noakes, Derek P.: *See*—
Adebahr, Herbert F.; Noakes, Derek P.; and Coby, Mark E., 5,345,950, Cl. 131-69.000.
Nobile, David P.: *See*—
Burrow, Simon W.; and Nobile, David P., 5,346,287, Cl. 300-21.000.
Noding, Stephen A.: *See*—
Wolcott, Duane K.; and Noding, Stephen A., 5,346,605, Cl. 204-412.000.
Noe, Reinhold, to Siemens Aktiengesellschaft. Method for generating a distortion-free, frequency-modulated optical signal and apparatus for the implementation of such a method. 5,347,529, Cl. 372-28.000.
Noel, Clyde D.: *See*—
Brennan, Michael J.; and Noel, Clyde D., 5,347,101, Cl. 219-124.340.
Noguchi, Yasushi; Miwa, Shinichi; and Fukao, Kaname, to NGK Insulators, Ltd. Aluminum titanate ceramic and process for producing the same. 5,346,870, Cl. 501-136.000.
NOK Corporation: *See*—
Okuyama, Koshi; Shiraishi, Masahiro; and Miyazaki, Takashi, 5,346,431, Cl. 464-171.000.
Nomura, Ryoichi: *See*—
Hayashida, Haruo; Nomura, Ryoichi; and Koyama, Satoru, 5,346,944, Cl. 524-451.000.
Nondahl, Thomas A.; Pitsch, Robert L.; and Brod, David M., to Allen-Bradley Company, Inc. Dual phase resolver to digital converter. 5,347,277, Cl. 341-116.000.
Nonnweiler, Edward D.; and McDaniel, David L., to General Electric Company. Spatial filter for an image processing system. 5,347,590, Cl. 382-6.000.
Nonomura, Tomoyuki: *See*—
Kajimoto, Kazuo; and Nonomura, Tomoyuki, 5,347,625, Cl. 395-145.000.
Nonoyama, Meihan; Tanaka, Akiko; Lai, Patrick K.; Konno, Kunio; Kawazoe, Yutaka; and Sakagami, Hiroshi, to Tampa Bay Research Institute. Methods of inhibiting HIV replication in vitro using polymers of p-hydroxylated cinnamic acids. 5,346,695, Cl. 424-78.080.
Nonoyama, Meihan; Tanaka, Akiko; and Lai, Patrick K., to Tampa Bay Research Institute. Process for obtaining cellular protein having anti-HIV activity. 5,346,988, Cl. 530-300.000.
Norand Corporation: *See*—
Durbin, Dennis A., 5,347,112, Cl. 235-462.000.
Sherman, Richard A.; Schultz, Darald R.; Salvay, Steven H.; Jaeger, Robert B.; Davis, Patrick H.; and Hanson, George E., 5,347,115, Cl. 235-472.000.
Nordic Engineering, Inc.: *See*—
Newton, John H., 5,345,626, Cl. 5-37.100.
Nordlander, Jan: *See*—
Svensson, Maria; Nordlander, Jan; and Andersson, Annika, 5,346,085, Cl. 220-210.000.
Nordman, Eric S.: *See*—
Cathcart, Guy R.; Grossman, Paul D.; Mayrand, P. Eric; Nordman, Eric S.; and Whiteley, Norman M., 5,346,999, Cl. 536-25.410.
Nordson Corp.: *See*—
Davis, Dennis; and Beam, Harold, 5,346,139, Cl. 239-703.000.
Norkot Manufacturing Co., Inc.: *See*—
Page, James H.; and Page, Robert J., 5,346,071, Cl. 209-257.000.
Norment, Vincent E., to Bloom, Leonard, a part interest. Athletic shoe with replaceable unitary assembly for generating and broadcasting an audible signal. 5,345,700, Cl. 36-139.000.
Noro, Masao, to Yamaha Corporation. Amplification circuit. 5,347,230, Cl. 330-297.000.
Northern Research & Engineering Corporation: *See*—
Brassert, Walter L.; and Dahlstrand, Paul N., 5,345,827, Cl. 73-862.150.
Northern Telecom Limited: *See*—
Rokos, George H. S., 5,347,237, Cl. 331-116.0FE.

Norwood, Roger D.: *See*—
Stephens, Michael C., Jr.; Norwood, Roger D.; Le, Duy-Loan T.; and Poteet, Kenneth A., 5,347,184, Cl. 307-480.000.
Nose, Izuru: *See*—
Simon, Gabriel; Lee, William; Nose, Izuru; and Parel, Jean-Marie, 5,346,497, Cl. 606-107.000.
Notani, Hiromi: *See*—
Matsuda, Yoshio; Kondoh, Harufusa; Hayashi, Isamu; and Notani, Hiromi, 5,347,270, Cl. 340-825.800.
Nourrcier, Charles E., Jr., to Hughes Aircraft Company. High-voltage crystal ramp generator and integrator for FM laser radar. 5,347,357, Cl. 356-5.000.
Novellus Systems, Inc.: *See*—
Benzing, Jeffrey C.; Broadbent, Eliot K.; and Rough, Kirkwood H., 5,346,578, Cl. 156-345.000.
Novo Nordisk A/S: *See*—
Antranikian, Garabed; and Klingeberg, Michael, 5,346,820, Cl. 435-220.000.
Antranikian, Garabed; and Klingeberg, Michael, 5,346,821, Cl. 435-220.000.
Novof, Ilya I.: *See*—
Gersbach, John E.; and Novof, Ilya I., 5,347,234, Cl. 331-57.000.
Nozawa, Takamitsu: *See*—
Mizushima, Hiroshi; Saito, Tadao; and Nozawa, Takamitsu, 5,346,103, Cl. 222-321.000.
Nugent, Steven F., to Intel Corporation. Message routing in a multiprocessor computer system. 5,347,450, Cl. 395-200.000.
Numata, Hiromi: *See*—
Tsuji, Suguru; Numata, Hiromi; and Komiyama, Shinji, 5,346,957, Cl. 525-122.000.
Nunotani, Shinji; Takahashi, Koichi; and Miyashita, Naoto, to Kabushiki Kaisha Toshiba. Device for thermal treatment and film forming process. 5,346,555, Cl. 118-724.000.
Nuovopignone-Industrie Meccaniche e Foneria SpA: *See*—
Vinciguerra, Costantino, 5,345,973, Cl. 139-57.000.
Nussbaum, William E.; and Armstrong, Michael J., to U.S. News & World Report, L.P. Cycle binding line with signature replacement indicator means. 5,346,196, Cl. 270-54.000.
Nutec ApS: *See*—
Skjold, Rene , 5,345,693, Cl. 34-395.000.
Nycomed Imaging AS: *See*—
Gundersen, Helge G.; and Klaveness, Jo, 5,346,690, Cl. 424-9.000.
Nye, Larry W.: *See*—
Thomas, James R.; Nye, Larry W.; and Brook, Richard M., 5,346,858, Cl. 437-189.000.
Oakley, Edward A.; Crow, Harry K.; Anderson, Thomas M.; Atherton, Richard T.; and Fehn, Berthold A., to Schwing America, Inc. Sludge flow measuring system. 5,346,368, Cl. 417-63.000.
Obata, Fumio; Yasuda, Hisashi; Nagayoshi, Hideaki; Suehara, Kiyoshi; Imanishi, Kouhei; and Yoshida, Toshiki, to Hitachi Metals, Ltd. Spheroidal graphite cast iron member having improved mechanical strength hand method of producing same. 5,346,561, Cl. 148-321.000.
Oberle, Robert G. Material transporting hopper trailer having improved mobile support frame. 5,346,286, Cl. 298-8.00H.
Occidental Chemical Corporation: *See*—
Albright, David E., Jr., 5,347,052, Cl. 564-417.000.
OCG Microelectronic Materials, Inc.: *See*—
Jeffries, Alfred T., III; and Brzozowy, David J., 5,346,799, Cl. 430-192.000.
Jeffries, Alfred T., III, 5,346,808, Cl. 430-296.000.
Ocheltree, Robert L.: *See*—
Ritscher, James S.; Yang, Wei T.; Omietanski, George M.; Ocheltree, Robert L.; and Malson, Earl E., 5,347,027, Cl. 556-413.000.
Ochi, Katsunori: *See*—
Kobayashi, Makoto; Kodai, Syojiro; and Ochi, Katsunori, 5,346,576, Cl. 156-293.000.
Ochi, Masao: *See*—
Yano, Toshikazu; and Ochi, Masao, 5,345,995, Cl. 165-46.000.
Ochs, Charles S.; and Haaser, James D., to Anchor Hocking Packaging Co. Composite closure with sealing force indicating means and ratchet operated tamper indicating band. 5,346,082, Cl. 215-252.000.
O'Connell, Susan L.: *See*—
Butterworth, David; and O'Connell, Susan L., 5,345,946, Cl. 128-853.000.
Oda, Kenji: *See*—
Nakahata, Akinobu; Kubota, Hiroshi; Migita, Kouji; Fuchi, Masami; Oda, Kenji; Makiura, Yoshinori; and Yamaguchi, Katsuhide, 5,347,350, Cl. 355-309.000.
O'Dell, Gene W.: *See*—
Perry, Phillip G.; O'Dell, Gene W.; and Debies, Thomas P., 5,346,556, Cl. 134-2.000.
O'Donnell, Francis E., Jr. Method of performing translactrimal laser dacryocystorhinostomy. 5,345,948, Cl. 128-898.000.
Oehler, Robert: *See*—
Law, Joseph P.; and Oehler, Robert, 5,346,264, Cl. 285-158.000.
Oertli, Heinz A., to Sony Corporation. Feed device for bipolar electrodes for capsulotomy. 5,346,491, Cl. 606-37.000.
Oesterreichisches Forschungszentrum Seibersdorf GES.m.b.h.: *See*—
Garn, Heinrich; and Rasinger, Josef, 5,347,290, Cl. 343-703.000.
Offutt, James C., to Rimball Marketing and Development, Inc. Soccer goal and gaming apparatus. 5,346,228, Cl. 273-402.000.
Ogale, Kumar; and Starsinic, Michael E., to Himont Incorporated. Nonwoven textile material from blends of propylene polymer material and olefin polymer compositions. 5,346,756, Cl. 428-288.000.
Ogata, Tsutomu: *See*—
Akuto, Keiji; Kato, Naoki; Ogata, Tsutomu; and Takeuchi, Masaaki, 5,346,785, Cl. 429-111.000.
Ogawa, Masami, to Canon Kabushiki Kaisha. Image processing apparatus. 5,347,598, Cl. 382-48.000.
Ogawa, Tokumon: *See*—
Chuta, Masanobu; and Ogawa, Tokumon, 5,347,189, Cl. 310-90.000.
Ogikubo, Konomu, to MagX Co., Ltd. Attracting body utilizing magnet. 5,347,253, Cl. 335-302.000.
Ogita, Shouichi: *See*—
Higashi, Toshio; and Ogita, Shouichi, 5,347,533, Cl. 372-96.000.
Ogletree, Richard: *See*—
Jerzycke, Charles L.; Ogletree, Richard; and Sommerhalter, Frederick A., Jr., 5,346,345, Cl. 409-235.000.
Ognisty, Thomas P.: *See*—
Cialkowski, Edward J.; and Ognisty, Thomas P., 5,346,593, Cl. 203-18.000.
Ogura, Tokihiko, to Canon Kabushiki Kaisha. Image information transmission system having time base variation correcting function. 5,347,316, Cl. 348-497.000.
O'Hara, Robert J.: *See*—
Knowlton, Christopher M.; and O'Hara, Robert J., 5,346,034, Cl. 180-298.000.
Ohashi, Shinichi: *See*—
Sawada, Tsutomu; Ohashi, Shinichi; and Yoshida, Shigenobu, 5,346,752, Cl. 428-216.000.
Ohbachi, Yoshinori; and Tomita, Hisashi, to Polyplastics Co., Ltd. Process for laser-marking thermoplastic articles. 5,346,802, Cl. 430-270.000.
Ohbayashi, Kunihiko: *See*—
Takahashi, Ryutaro; Hayase, Toru; and Ohbayashi, Kunihiko, 5,347,587, Cl. 381-117.000.
Ohdoi, Yuzou: *See*—
Taguchi, Motohisa; Fukami, Tatsuya; Hashima, Kazuo; Toide, Yukari; Kawano, Yuji; Fujii, Yoshio; Tokunaga, Takashi; Nakaki, Yoshiyuki; Tsutsumi, Kazuhiko; Kobayashi, Hiroshi; Ohdoi, Yuzou; Tanabe, Shinji; and Shibata, Hiroshi, 5,347,485, Cl. 365-171.000.
Ohgake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Shimizu, Teruo; and Yamamoto, Narihito, to Nippon Oil Company, Ltd. Oil and fat composition for lubricating food processing machines and use thereof. 5,346,724, Cl. 427-384.000.
Ohhata, Akira: *See*—
Morigami, Yuusuk; Ohhata, Akira; Hamakawa, Wataru; Matsuo, Hirokazu; Nagato, Hiroyasu; and Ishikawa, Takuma, 5,347,352, Cl. 355-321.000.
Ohhira, Masahiko: *See*—
Toda, Osamu; Inagaki, Michio; and Ohhira, Masahiko, 5,346,650, Cl. 252-506.000.
Ohki, Hiroshi: *See*—
Okamoto, Yoshio; Kanamaru, Hisanobu; Maeda, Hitoshi; Suzuki, Satoshi; Ishikawa, Tohru; Kosuge, Tokuo; Amou, Kiyoshi; Ohki, Hiroshi; Nakagawa, Koji; Tanabe, Yoshiyuki; and Yokoyama, Mizuho, 5,346,137, Cl. 239-585.400.
Ohma, Toshio, to Showa Corporation. Suspension device for bicycle. 5,346,236, Cl. 280-276.000.
Ohmori, Hisakazu, to Fujitsu Limited. Method and apparatus for detecting pseudo noise pattern for remote loopback test. 5,347,522, Cl. 371-20.500.
Ohmura, Hiroshi; Kosaka, Masanobu; and Hosoda, Koji, to Mazda Motor Corporation. Rear-wheel steering apparatus for vehicles. 5,346,030, Cl. 180-140.000.
Ohno, Eiji; Yamada, Noboru; Nagata, Kenichi; Nishiuchi, Kenichi; and Akahira, Nobuo, to Matsushita Electric Industrial Co., Ltd. Optical information recording medium. 5,346,740, Cl. 428-64.000.
Ohno, Shigeru, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,346,810, Cl. 430-522.000.
Ohta, Kenji: *See*—
Hirokane, Junji; Katayama, Hiroyuki; Nakayama, Junichiro; Mieda, Michinobu; and Ohta, Kenji, 5,347,510, Cl. 369-275.500.
Ohta, Tomozo: *See*—
Yamamoto, Hirohiko; Higashi, Keijirou; Takebe, Hiroyuki; Nakano, Hiroshi; and Ohta, Tomozo, 5,346,300, Cl. 343-895.000.
Ohtomo, Fumio: *See*—
Sekine, Akihiko; and Ohtomo, Fumio, 5,347,327, Cl. 351-211.000.
Ohtomo, Funio: *See*—
Sekine, Akihiko; and Ohtomo, Funio, 5,347,328, Cl. 351-211.000.
Ohtsuka, Yoshinori; Umeda, Hideki; Mori, Toyokazu; Tauji, Masaru; and Katoh, Atsuyuki, to Sharp Kabushiki Kaisha. Photosensitive drum cartridge and an image forming apparatus using the same. 5,347,343, Cl. 355-200.000.
Ohue, Michio: *See*—
Fukuda, Takuya; Ohue, Michio; Kanai, Fumiyuki; Koike, Atsuyoshi; Saito, Katsuaki; and Suzuki, Kazuo, 5,347,100, Cl. 219-121.430.
Ohya, Junko: *See*—
Iino, Yutaka; and Ohya, Junko, 5,347,446, Cl. 364-149.000.
Oil Stop, Inc.: *See*—
Goans, Kip B.; and Lazes, Richard J., 5,346,329, Cl. 405-68.000.
Oishi, Kengo: *See*—
Mizuno, Masato; and Oishi, Kengo, 5,346,736, Cl. 428-36.900.
Ojima, Fumihiko, to Yamaha Corporation. Automatic musical playing instrument having playing order control operable during playing. 5,347,082, Cl. 84-609.000.

Okabe, Ichiro; Kawai, Satoshi; Higashira, Hideki; and Suzou, Hirakushi, to Koyo Seiko Co., Ltd. Power transmission apparatus for vehicle. 5,346,033, Cl. 180-248.000.
Okada, Akane: *See—*
Hasegawa, Naoki; Usuki, Arimitsu; Okada, Akane; and Kurauchi, Toshio, 5,346,984, Cl. 528-323.000.
Okada, Akinori: *See—*
Nakatsuka, Masakatsu; Koike, Naomasa; and Okada, Akinori, 5,346,878, Cl. 503-209.000.
Okada, Hiroshi: *See—*
Yamada, Takaaki; Okada, Hiroshi; and Yanagihara, Naofumi, 5,347,310, Cl. 348-405.000
Okada, Kenji: *See—*
Hirai, Yoshihiko; Morimoto, Kiyoshi; Terui, Yasuaki; Wada, Atsuo; Okada, Kenji; Yasui, Juro; and Niwa, Masaaki, 5,347,140, Cl. 257-17.000.
Okada, Mitsuo: *See—*
Ohgake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Shimizu, Teruo; and Yamamoto, Narihito, 5,346,724, Cl. 427-384.000.
Okada, Ryoji; Aizawa, Kooju; Yamada, Masayuki; Otani, Kenji; Takada, Kunio; Haneda, Mitsuaki; and Yamada, Toshihiro, to Hitachi, Ltd. Bearing unit, drainage pump and hydraulic turbine each incorporating the bearing unit. 5,346,316, Cl. 384-297.000.
Okafuji, Osamu; Sato, Akiyoshi; and Yamaguchi, Akio, to Yazaki Corporation. Electrical interconnection assembly, process of and apparatus for manufacturing the same and wire laying jig therefor 5,345,978, Cl. 140-92.100.
Okamori, Shuhei, to Brother Kogyo Kabushiki Kaisha. Printing device having paper feed control. 5,346,322, Cl. 400-709.000
Okamoto, Yoshio; Kanamaru, Hisanobu; Maeda, Hitoshi; Suzuki, Satoshi; Ishikawa, Tohru; Kosuge, Tokuo; Amou, Kiyoshi; Ohki, Hiroshi; Nakagawa, Koji; Tanabe, Yoshiyuki; and Yokoyama, Mizuho, to Hitachi, Ltd. Electromagnetic fuel injection valve. 5,346,137, Cl. 239-585.400.
Okamura, Kazuhisa: *See—*
Suzuki, Hideo; and Okamura, Kazuhisa, 5,347,478, Cl. 364-715.020.
Okamura, Kazuo: *See—*
Shibuya, Yoshiyuki; Daimon, Shigeo; and Okamura, Kazuo, 5,346,758, Cl. 428-328.000.
Okayama, Tsutomu: *See—*
Oshima, Takafumi; Iwata, Kazuya; and Okayama, Tsutomu, 5,347,193, Cl. 313-141.000.
Oki Electric Industry Co., Ltd.: *See—*
Itoh, Shinichi, 5,347,344, Cl. 355-200.000.
Matsushita, Yuichi, 5,347,488, Cl. 365-189.110.
Okinoshima, Hiroshige; and Kato, Hideto, to Shin-Etsu Chemical Co., Ltd. Curable resin, process for making and electronic part protective coating. 5,346,979, Cl. 528-26.000
Okuda, Kiyoshi; and Araki, Masatoshi, to Seikosha Co., Ltd. Method for machining printed circuit board. 5,347,462, Cl. 364-474.340.
Okuda, Tomonori; Kotera, Tetsuji; and Morishige, Kouji, to Borg-Warner Automotive, K.K. Silent chain. 5,345,753, Cl. 59-5.000.
Okuda, Toru: *See—*
Hara, Hitoshi; and Okuda, Toru, 5,346,657, Cl. 264-40.100.
Okumura, Ichiro: *See—*
Mukohjima, Hitoshi; Hiramatsu, Akira; Izukawa, Kazuhiro; Okuno, Takuo; Okumura, Ichiro; and Tsukimoto, Takayuki, 5,347,192, Cl. 310-323.000
Okumura, Yasuo: *See—*
Sawazaki, Yoshihiko; Okumura, Yasuo; and Arai, Nobuichi, 5,346,634, Cl. 252-30.000.
Okuno, Takuo: *See—*
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Okuyama, Koshi; Shiraishi, Masahiro; and Miyazaki, Takashi, to NOK Corporation. Sealing cover for coupling. 5,346,431, Cl. 464-171.000.
Olin, Thomas. Food and feedstuff. 5,346,707, Cl. 426-69.000
Olofsson, Anders: *See—*
Miyazono, Kohei; Heldin, Carl-Henrik; and Olofsson, Anders, 5,346,993, Cl. 530-399.000.
Olsen, Eric G.: *See—*
Doolin, Leonard J.; Olsen, Eric G.; Reinfelder, William C.; and Capowich, George, 5,346,367, Cl. 416-230.000.
Olsen, Robert W.: *See—*
Haworth, William S.; Olsen, Robert W.; Goodin, Mark S.; and Fuller, Larry E., 5,346,621, Cl. 210-645.000.
Olson, Alfred P.. *See—*
Ellis, Edward J.; Olson, Alfred P.; and Bonafini, James A., Jr., 5,346,976, Cl. 526-279.000.
Olsson, Denniver: *See—*
Sarvik, Steve; Helistrom, Gert; and Olsson, Denniver, 5,346,200, Cl. 271-102.000.
Olsson, Lennart F.: *See—*
Fisher, Eugene B.; St. John North, Mark; Winterson, Warren D.; Jaxmar, Leif E. B.; Olsson, Lennart F.; and Selander, Nils S., 5,346,057, Cl. 198-778.000.
Olympus Optical Co., Ltd.: *See—*
Hakamatsuka, Yasuharu, 5,346,396, Cl. 433-208.000
Saito, Akito; and Togawa, Tsuyoshi, 5,347,116, Cl. 239-479.000.
Tanaka, Hisakatsu, 5,347,114, Cl. 235-467.000.
Terada, Hiroshi; and Tsuchida, Kelichi, 5,347,339, Cl. 354-402.000.
Omietanski, George M.: *See—*
Ritscher, James S.; Yang, Wei T.; Omietanski, George M.; Ochel-tree, Robert L.; and Malson, Earl E., 5,347,027, Cl. 556-413.000.
Omron Tateisi Electronics Co.: *See—*
Yamakawa, Takeshi; and Ishida, Tsutomu, 5,347,615, Cl. 395-76.000.
Omure, Yukio; Ide, Satoshi; Matsuda, Takahiro; Aoyama, Hirokaza; and Seki, Eiji, to Daikin Industries, Ltd. Desiccant composition and a method of desiccating articles. 5,346,645, Cl. 252-194.000.
Onan, David D.; Bila, Vincent J.; Haney, James L.; Folmnsbee, Gary E.; Koch, Ronney R.; Stilley, Randall D.; and Watters, Larry T., to Haliburton Company. Methods of displacing liquids through pipes. 5,346,011, Cl. 166-291.000.
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Suzuki, Nobuo; Tohyama, Masaki; and Onomura, Masaaki, 5,347,526, Cl. 372-20.000.
Ooi, Yasushi; and Miki, Yoshiyuki, to NEC Corporation. Data procesor which efficiently accesses main memory and input/output devices. 5,347,636, Cl. 395-275.000.
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Orcutt, Eric D., to Dana Corporation. Structure for airbrake tubing. 5,346,290, Cl. 303-7.000.
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Hart, Douglas M., 5,346,076, Cl. 211-86.000.
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White, Thomas W.; Pulpan, Edward J.; Tsukida, Robert S.; Saxon, Edward W.; and Ortega, Frank, 5,347,554, Cl. 376-260.000.
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Osgood, Gordan: *See—*
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Ritscher, James S.; Yang, Wei T.; Omietanski, George M.; Ochel-tree, Robert L.; and Malson, Earl E., 5,347,027, Cl. 556-413.000.
Osmonics, Inc.: *See—*
Murphy, Patrick H., 5,345,857, Cl. 92-34.000.
Osterhoudt, Hans W., to Eastman Kodak Company. Method and apparatus of creating two-color images in a single pass. 5,347,345, Cl. 355-246.000.

Ostertag, Steven E.: *See—*
Crysler, Daniel E.; and Ostertag, Steven E., 5,346,443, Cl. 475-252.000.
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Ostrower, William K., to Penthouse Manufacturing Co., Inc. Powder puff. 5,346,753, Cl. 428-220.000.
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Ota, Yasuo, to Nidek Co., Ltd. Apparatus for ophthalmic treatment using a light beam. 5,347,329, Cl. 351-221.000.
Otani, Kenji: *See—*
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Bialy, Louis; and Mistry, Rajendra V., 5,346,371, Cl. 417-312.000.
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Kezer, Jeremy B.; Kupersmith, Bertram F.; and Sirag, David J., Jr., 5,347,093, Cl. 187-131.000.
Otsuka, Shigeo. Double fluid layer-type ultrasonic cleaning apparatus. 5,345,958, Cl. 134-105.000.
Otsuki, Tadashi, to Sony Corporation. Disc shaped recording medium having a zero track address and multibit opposite polarity track addresses and an address discrimination circuit for reading such recording medium. 5,347,207, Cl. 369-33.000.
Ott, Peter P. Catapult device. 5,345,922, Cl. 124-20.100.
Otter, James W.; and Watts, Gary R., to Avery International Corporation. Positionable-repositionable pressure-sensitive adhesive. 5,346,766, Cl. 428-355.000.
Otto Bock Orthopaedische Industrie Besitz-und Varwaltungs KG: *See—*
Pfisterer, Gerhard, 5,346,039, Cl. 188-2.00F.
Ou, Li-Min; and Lin, Chien-Der. Game racket. 5,346,211, Cl. 273-73.00C.
Outboard Jet - Trutol Bearings, Inc.: *See—*
Stallman, Richard C.; and Stallman, William T., 5,346,363, Cl. 415-197.000.
Outboard Marine Corporation: *See—*
Remmers, Gregry M.; Skrzypchak, Mark J.; and Enlow, David L., 5,345,910, Cl. 123-424.000.
Ouye, Michael: *See—*
Agulnick, Todd; Carr, Robert; Hoeber, Tony; Kaplan, S. Jerrold; Low, David R.; and Ouye, Michael, 5,347,295, Cl. 345-156.000.
Overholser, Jason W. Portable dispensing unit for compact disks. 5,346,074, Cl. 211-40.000.
Owen, Hartley; and Schipper, Paul H., to Mobil Oil Corporation. Multi-stage regeneration of catalyst in a bubbling bed catalyst regenerator. 5,346,610, Cl. 208-113.000.
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Harandi, Mohsen N.; Owen, Hartley; and Schipper, Paul H., 5,347,061, Cl. 585-323.000.
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Ozaki, Yusuke; Minemoto, Hisashi; Sonoda, Nobuo; Kawakami, Tetsuji; Kawamura, Tatsurou; and Wakita, Katsuya, to Matsushita Electric Industrial Co., Ltd. Non-linear optical material, method of manufacturing the same and optical wavelength converter. 5,346,653, Cl. 252-582.000.
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Kanno, Hiroshi; Toyama, Tsugio; Kanazawa, Koichi; and Ozawa, Koichi, 5,346,382, Cl. 425-190.000.
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Page, Derrick J., to Westinghouse Electric Corporation. Optical commutator. 5,347,288, Cl. 342-375.000.
Page, James H.; and Page, Robert J., to Norkot Manufacturing Co., Inc. Trommel screening apparatus. 5,346,071, Cl. 209-257.000.
Page, Lawrence R. Subgingival toothbrush. 5,345,645, Cl. 15-167.100.
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Borden, B. Michael; Borden, Brian C.; and Page, Ricky D., 5,346,004, Cl. 166-84.000.
Page, Robert J.: *See—*
Page, James H.; and Page, Robert J., 5,346,071, Cl. 209-257.000.
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Paget, Charles J., Jr.: *See—*
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Palantir Corporation (Calera Recognition Systems): *See—*
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Dashevsky, Sophia; Kim, Ki-Soo; Palmaka, Stanley W.; Johnston, Roy L.; Busscher, Leonardus A. G.; and Juijn, Johannes A., 5,346,970, Cl. 525-444.000.
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Pannenbecker, Heinrich; Jabs, Ronald; Schmitz, Heinrich; Dechene, Wulf; Splitt, Manfred; and Heiler, Hans-Joachim, to Thyssen Stahl AG. Device for blowing off coating material in the coating of metal bands. 5,346,551, Cl. 118-63.000.
PanoCorp Display Systems: *See—*
Ge, Shichao; and Lam, Victor, 5,347,292, Cl. 345-74.000.
Liang, Jemm Y.; and Ge, Shichao, 5,347,201, Cl. 315-366.000.
Panos, Paul J., to Combustion Engineering, Inc. Reactivation of sorbent in a fluid bed boiler. 5,345,883, Cl. 110-345.000.
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Paragon Trade Brands, Inc.: *See—*
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Paraschac, Joseph: *See—*
Ortiz, Mark; and Paraschac, Joseph, 5,346,504, Cl. 606-192.000.
Parc, Guy; and Born, Maurice, to Institute Francais du Petrole. Colloidal products containing boron and phosphorus, their preparation and their uses as lubricating additives. 5,346,636, Cl. 252-49.900.
Parel, Jean-Marie: *See—*
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Parham, Marc E.: *See—*
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Parille, Donald R.: *See—*
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Paris, Jean: *See—*
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Park, Eui-Keun, to SamSung Electronics Co., Ltd. Circuit and method for automatically controlling the carrier frequency of a video recording device. 5,347,240, Cl. 332-127.000.
Park, Young J.; and Jeon Ha E., to Hyundai Electronics Industries Co. Ltd. Method of manufacturing a highly integrated semiconductor device. 5,346,846, Cl. 437-52.000.
Parker Hannifin Corporation: *See—*
Alexandrovich, George, Sr.; Sporn, Stanley; and Wood, Stanley, 5,345,811, Cl. 73-32.00A.
Parker, Kenny R.: *See—*
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Parker, William R., Jr.: *See—*
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Parsons, Robert E.: *See—*
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Pasch, Nicholas F., to LSI Logic Corporation. Preformed planar structures employing embedded conductors. 5,347,162, Cl. 257-773.000.
Pascucci, Luigi, to SGS-Thomson Microelectronics, S.r.l. Row decoder for NAND-type ROM. 5,347,493, Cl. 365-230.060.
Pasinski, Arthur M. Gaged dispensing apparatus. 5,346,108, Cl. 222-494.000.
Paskus, Linas A., to Dresser Industries, Inc. Valve for setting the dampening level of suspension struts. 5,346,042, Cl. 188-322.130
Pasteur Merieux Serums et Vaccins: *See—*
Grandgeorge, Michel G. J.; Veron, Jean-Luc B.; and Fournier, Pierre L. J., 5,346,992, Cl. 530-364.000.
Pastryk, Jim J.; Singh, Devinder; and Smart, Tracy M., to Whirlpool Corporation. High performance washing system for a horizontal axis washer. 5,345,637, Cl. 8-158.000.
Patel, Amrit M.; and Robbins, Clarence R., to Colgate-Palmolive Company. Hair conditioning shampoo containing long chain alcohol component. 5,346,642, Cl. 252-174.210.

Patel, Ashok: *See—*
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Patel, Lalit O.: *See—*
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Patil, Mallanagouda D.: *See—*
Beauseigneur, Patricia A.; Lachman, Irwin M.; and Patil, Mallanagouda D., 5,346,722, Cl. 427-300.000.

Patsidis, Konstantinos; Alt, H. G.; and Palackal, Syriac J., to Phillips Petroleum Company. Fluorene compounds and methods for making 5,347,026, Cl. 556-87.000.

Patterson, William H.: *See—*
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Patton, David L.; Mainco, Joseph A.; Rosenburgh, John H.; and Piccinino, Ralph L., Jr., to Eastman Kodak Company. Vertical and horizontal positioning and coupling of automatic tray processor cells. 5,347,337, Cl. 354-324.000.

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Paulsen, R. P. Grant; Rackham, Ralph; and Thuerig, Peter J., to Fuel Maker Corporation. High pressure gas line breakaway connector. 5,346,177, Cl. 251-149.600.

Pavenick, Stanford; and Garofalow, Donald. Applicator for fluid products. 5,345,981, Cl. 141-20.500.

Pavia, Michael R.: *See—*
Augelli-Szafran, Corinne E.; Barrett, Stephen D.; Caprathe, Bradley W.; Galan, Adam A.; Jaen, Juan C.; Lauffer, David J.; Moos, Walter H.; Pavia, Michael R.; Sanders, Kathryn B.; Tecle, Haile; and Thomas, Anthony J., 5,346,911, Cl. 514-339.000.

Pawlowski, Georg; Dammel, Ralph; Roeschert, Horst; Spiess, Walter; and Eckes, Charlotte, to Hoechst Aktiengesellschaft. Acid-cleavable radiation-sensitive compounds, positive working radiation-sensitive mixture containing theses compounds, and radiation-sensitive recording material produced with this mixture. 5,346,804, Cl. 430-281.000.

Pawlowski, Georg; Dammel, Ralph; Roeschert, Horst; Spiess, Walter; and Eckes, Charlotte, to Hoechst Aktiengesellschaft. Acid-cleavable radiation-sensitive compounds, radiation-sensitive mixture containing these compounds, and radiation-sensitive recording material produced with this mixture. 5,346,806, Cl. 430-284.000.

Payne, Anthony N.; Watson, James A.; and Sampayan, Stephen E., to United States of America, Energy. Voltage control in pulsed system by predict-ahead control. 5,347,209, Cl. 323-271.000.

Payne, Edward A.: *See—*
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Pecorella, Michael N. Orthopedic appliance. 5,346,279, Cl. 297-256.100

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Peela Corporation: *See—*
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Pellet, Regis J.: *See—*
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Penet, Christopher S.: *See—*
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Pennetreau, Pascal; Janssens, Francine; and Barthelemy, Pierre, to Solvay (Societe Anonyme). Process for preparing 1,1-dichloro-1,3,3,3-tetra-fluoropropane. 5,347,059, Cl. 570-166.000.

Pennig, Dietmar. Drill-device for alignment of a bone screw driven into the neck of a femur. 5,346,496, Cl. 606-96.000.

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Pepich, Barry V.: *See—*
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Perouse, Eric; Richard, Thierry; and Arnissolle, Yves, to Perouse, Eric; Richard, Thierry; and Laboratoire Perouse Implant. Surgical staple inserter. 5,346,115, Cl. 227-179.000.

Perratone, Rene; and Tosetti, Yves, to Single Buoy Moorings, Inc. Bearing assembly and vessel turret assembly. 5,346,314, Cl. 384-97.000.

Perrington, Kenneth J.: *See—*
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Perry, James D., to United States of America, Navy. Time code interface. 5,347,645, Cl. 395-550.000.

Perry, Phillip G.; O'Dell, Gene W.; and Debies, Thomas P., to Xerox Corporation. Lathing and cleaning process for photoreceptor substrates. 5,346,556, Cl. 134-2.000.

Pessetti, Joseph A.: *See—*
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Pessier, Rudolf C. O.; and Scott, Danny E., to Baker Hughes Incorporated. Rolling cone bit with shear cutting gage. 5,346,026, Cl. 175-331.000.

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Peters, John: *See—*
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Peters, John M. Automation control with improved operator/system interface. 5,346,046, Cl. 192-142.00A

Peters, Thomas J., to SSDE Technologies Corporation. Method of recycling waste food materials into useful byproducts. 5,346,714, Cl. 426-465.000.

Petersen, Lars-Goran: *See—*
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Peterson, James J.: *See—*
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Peterson, Lars-Olof; Lindegren, Ulf; and Stroetmann, Brigitte, to Siemens Aktiengesellschaft. Implantable medical device with a protected medication layer. 5,345,933, Cl. 128-639.000.

Peterson, Lester G.: *See—*
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Peterson, Roger, to PMMI. Process plant sample collection system and method. 5,345,828, Cl. 73-863.720.

Petersson, Lennart G.; and Aneshansley, Daniel J. Milking claw ferrule aperture and sanitizing methodology. 5,345,890, Cl. 119-14.540.

Petrou, Nicolean. Garment hanger with pivotable arms. 5,346,110, Cl. 223-89.000.

Pettersson, Bjorn O. A., to Tecsyn PMP, Inc. Powdered metal mixture composition. 5,346,529, Cl. 75-252.000.

Pettit, Charles A. Fifth wheel mounting. 5,346,240, Cl. 280-438.100

Peyman, Gholam A.; and Khoobehi, Bahram. Method of performing angiography. 5,346,689, Cl. 424-7.100.

Pfisterer, Gerhard, to Otto Bock Orthopaedische Industrie Besitz-und Varwaltungs KG. Wheelchair brake. 5,346,039, Cl. 188-2.00F.

Pfizer Inc.: *See—*
Bell, Andrew S.; Brown, David; and Terrett, Nicholas K., 5,346,901, Cl. 514-258.000.

Pflueger, Russell: *See—*
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Phelan, Cathal G., to Cypress Semiconductor Corporation. Sense amplifier with limited output voltage swing and cross-coupled tail device feedback. 5,347,183, Cl. 307-530.000.

Philip Morris Incorporated: *See—*
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Serrano, Mark A.; Houghton, Kenneth S.; Lanzillotti, Harry V.; Sanders, Edward B.; Lilly, A. Clifton, Jr.; Hayward, Charles R.; Hearn, John R.; Losee, D. Bruce, Jr.; Fleischhauer, Grier S.; and Houck, Willie G., 5,345,951, Cl. 131-194.000.

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Anderson, Richard L., 5,347,065, Cl. 585-724.000.
Clark, Earl, Jr.; Efner, Howard F.; and Straw, Jimmie J., 5,347,018, Cl. 549-84.000.
Eastman, Alan D.; and Abbott, Ronald G., 5,347,067, Cl. 585-724.000.
Patsidis, Konstantinos; Alt, H. G.; and Palackal, Syriac J., 5,347,026, Cl. 556-87.000.
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Phleps, Tilman: *See—*
Steininger, Ulrich; Stoeckl, Klaus; and Phleps, Tilman, 5,346,283, Cl. 297-408.000.

Phoenix Aktiengesellschaft: *See—*
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Highe, Albert J.; and Imran, Mir A., 5,345,934, Cl. 128-639.000.

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Patton, David L.; Mainco, Joseph A.; Rosenburgh, John H.; and Piccinino, Ralph L., Jr., 5,347,337, Cl. 354-324.000.

Picker International, Inc.: *See—*
Furbee, Avery D.; Miller, Lester; and Bauer, Carl F., 5,347,571, Cl. 378-105.000.

Pickering, Thomas R.; Bayley, Denise R.; Ciccarelli, Roger N.; and Bertrand, Jacques C., to Xerox Corporation. Toner and developer compositions. 5,346,795, Cl. 430-110.000.

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Pickles, Timothy J.: *See—*
Price, Macy J., Jr.; and Pickles, Timothy J., 5,346,079, Cl. 211-131.000.

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Hand, Bryan; Mizak, Ronald D.; and Piepho, Robert R., 5,346,148, Cl. 241-293.000.

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Pike, Roscoe A.: *See—*
Allen, William P.; Bornstein, Norman S.; Chin, Stephen; DeCrescente, Michael; Duhl, David N.; Parille, Donald R.; Pike, Roscoe A.; and Smeggil, John G., 5,346,563, Cl. 148-675.000.

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Pillet, Michel: *See—*
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Carrigan, Lori L.; and Wieland, Martin L., 5,347,080, Cl. 800-200.000.
Martin, Philip R., 5,347,081, Cl. 800-200.000.
Martin, William K., 5,347,079, Cl. 800-200.000.

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Pitsch, Robert L.: *See—*
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McMurtry, David R.; Pitt, Gillies D.; Lloyd, Peter G.; and Wilson, David, 5,345,690, Cl. 33-561.000.

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Livingston, David R., 5,345,621, Cl. 4-541.100.

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Polyplastics Co., Ltd.: *See—*
Ohbachi, Yoshinori; and Tomita, Hisashi, 5,346,802, Cl. 430-270.000.

Polytech Netting Industries, Inc.: *See—*
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Porter, Carl R.: *See—*
Marsh, Thomas R.; and Porter, Carl R., 5,347,088, Cl. 174-50.000.

Poston, Janet R.: *See—*
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Poteet, Kenneth A.: *See—*
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Powers, John W.; and Choate, Daniel G., to Western Litho Plate & Supply Co. Photographic printing apparatus. 5,347,341, Cl. 355-91.000.

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Prando, Gregory: *See—*
Tong, Hua-Sou; and Prando, Gregory, 5,346,721, Cl. 427-126.200.

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Preslar, Donald R.; and Giordano, Raymond L. Inductive load dump circuit. 5,347,169, Cl. 307-246.000.

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Price, Owen D. Platform tool for moving material. 5,346,269, Cl. 294-49.000.
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Puchalla, Christopher P.; Grzesiak, Anthony J.; and Slager, Douglas J., to Borg-Warner Automotive Transmission & Engine Components Corporation. One-piece transmission band. 5,346,040, Cl. 188-77.00W
Puhl, Larry C.: *See*—
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Puram, Chith K.; Daryabeigi, Kamran; Wright, Robert; and Alderfer, David W., to Vigyan, Inc. Directional emittance surface measurement system and process. 5,347,128, Cl. 250-330.000.
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Pusch, Gunter; and Ranjbar, Mohammad, to Hoechst AG. Method for reducing or completely stopping the influx of water in boreholes for the extraction of oil and/or hydrocarbon gas. 5,346,013, Cl. 166-295.000
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Quan, Clifton: *See*—
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Qubick, Robert: *See*—
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R. G. Technical Associates, Inc.: *See*—
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R-Tech Ueno, Ltd.: *See*—
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Ramirez, Jose L.: *See*—
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Randall, Harold M., to Newell Operating Company. Wire shelving and bracket system. 5,346,077, Cl. 211-90.000.
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Levine, Abby P.; and Minnerly, Barry H., 5,347,322, Cl. 348-718.000.
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Regula, Donald W.; Bregen, Michael F.; Szabo, Zoltan; and Gardiner, Barry N., to Ethicon, Inc. Laparoscopic absorbable anastomosic fastener and means for applying. 5,346,501, Cl. 606-151.000.
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Reich, William L.; and Call, David B., to A.I.R., Inc. Relative humidity sensing apparatus. 5,345,821, Cl. 73-335.040.
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Reidemeister, Eric P.; Johnson, Larry K.; Kawate, Keith W.; Mandeville, Raymond E.; Christensen, Douglas B.; and Southworth, Robert O., to Texas Instruments Incorporated. Accelerometer. 5,345,823, Cl. 73-517.00R.
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Reiff GmbH: *See*—
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Reiser, Carl A.; and Sawyer, Richard D. Fog-resisant mirror assembly. 5,347,106, Cl. 219-219.000.
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Remus, Karl G. Penalty checkers game. 5,346,224, Cl. 273-260.000.
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Revelli, Joseph F., Jr.; Prince, Eric T.; Switalski, Steven C.; and Liu, Hsue-Yang, to Eastman Kodak Company. Planar waveguide liquid crystal variable retarder. 5,347,377, Cl. 359-42.000.
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Ricoh Company, Ltd.: *See—*
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Ridenour, Ralph G. Refrigeration system detection assembly. 5,345,775, Cl. 62-140.000.

Ridenour, Ralph G., to Universal Enterprises Inc. Seal for metering orifice. 5,346,138, Cl. 239-600.000.

Rieke, Larry D.; and Harvey, Eric A., to Carrier Corporation. Cold spot baffle for coupling box. 5,345,924, Cl. 126-110.00R.

Rieke, Larry D.; and Waterman, Timothy J., to Carrier Corporation. Primary heat exchanger having improved heat transfer and condensate drainage. 5,346,001, Cl. 165-170.000.

Riemer, Edwin. Roof top carrier. 5,346,355, Cl. 414-542.000.

Ries, Gunther, to Siemens Aktiengesellschaft. Magnetic device having a yoke member for generating a magnetic stray field. 5,347,252, Cl. 335-299.000.

Riffe, Delmar R., to White Consolidated Industries, Inc. Refrigeration compressor having a spherical discharge valve. 5,346,373, Cl. 417-415.000.

Riffe, William J.; and Carter, Jack D., to Marine Environmental Research, Inc. Method for the prevention of fouling and/or corrosion of structures in seawater, brackish water and/or fresh water. 5,346,598, Cl. 204-147.000.

Riker Laboratories, Inc.: *See—*
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Rima Enterprises, Inc.: *See—*
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Ring Can Corporation: *See—*
Ring, Carl D., 5,346,106, Cl. 222-465.100.

Ring, Carl D., to Ring Can Corporation. Container having no-glug pouring spout. 5,346,106, Cl. 222-465.100.

Rinnai Kabushiki Kaisha: *See—*
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Risk, William B. Instrument cassette. 5,346,677, Cl. 422-297.000

Ritscher, James S.; Yang, Wei T.; Omietanski, George M.; Ocheltree, Robert L.; and Malson, Earl E., to OSi Specialties, Inc. Noble metal supported on a base metal catalyst. 5,347,027, Cl. 556-413.000.

Rivera-Bottzeck, Otto. Multiple bit power drill. 5,346,453, Cl. 483-1.000.

Rivers, Gordon T.; and Rybacki, Richard L., to Baker Hughes, Inc. Mixtures of hexahydrotriazines useful as H_2S scavengers. 5,347,004, Cl. 544-180.000.

Rivetec Inc.: *See—*
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Robbins, John L.; Marucchi-Soos, Elise; Johnson, Jack W.; and Brody, John F., to Exxon Research & Engineering Co. Catalyst for dehydrogenation of paraffins. 5,346,871, Cl. 502-61.000.

Robert Bosch GmbH: *See—*
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Roberts, Harold L., to Hussmann Corporation. Low temperature display merchandiser. 5,345,778, Cl. 62-256.000.

Roberts, Jeffrey J. Nozzle brush attachment for vacuum cleaners. 5,345,651, Cl. 15-397.000.

Roberts, Leo B.: *See—*
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Robertshaw Controls Company: *See—*
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Robinson, Deborah L.: *See—*
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Robinson, Don M.: *See—*
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Rogers, William; Ernst, James J.; Williamson, Steven; and Musto, Dominick J., to Symtron Systems, Inc. Fire fighting trainer and apparatus including a temperature sensor. 5,345,830, Cl. 73-866.000.

Rogowsky, David; and Siegfried, Erwin, to VSL International AG. Force transfer body for an anchorage. 5,345,742, Cl. 52-698.000.

Rohm Co., Ltd.: *See—*
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Rohm and Haas Company: *See—*
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Wu, Jiun-Chen; Work, William J.; Dunkelberger, David L.; and Bortnick, Newman M., 5,346,954, Cl. 525-85.000.

Rokos, George H. S., to Northern Telecom Limited. Crystal oscillator. 5,347,237, Cl. 331-116.0FE.

Rolfe, Randy K.: *See—*
Burke, William T.; Loen, Larry W.; and Rolfe, Randy K., 5,347,651, Cl. 395-600.000.

Roller, Hermann; Engelhardt, Peter; Baur, Reinhold; Bobrich, Michael; Latzel, Werner; Lenz, Werner; and Suettinger, Rudolf, to BASF Magnetics GmbH. Flexible magnetic recording media having a backing coating containing a polyurethane resin having a phosphate group and precipated silica. 5,346,761, Cl. 428-331.000.

Rolli, Brian T.: *See—*
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Romeike, Arno: *See—*
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Rosen, Jay. Normalized relative humidity process. 5,345,810, Cl. 73-29.020.

Rosen, Robert K.: *See—*
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Rough, Kirkwood H.: *See—*
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Roy, Soumitra; and Vehar, Gordon A., to Genentech, Inc. Tissue factor mutants useful for the treatment of myocardial infarction and coagulopathic disorders. 5,346,991, Cl. 530-350.000.

Royal Sound Co., Inc.: *See—*
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Rubinson, Kenneth A. Truncated nuclear magnetic imaging probe. 5,347,221, Cl. 324-318.000.

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Rudeen, Robert W., to Spectra-Physics Scanning Systems, Inc. Variable focus optical system for data reading. 5,347,121, Cl. 250-235.000.

Rudolph, Axel, to Carl Freudenberg, Firma. Hydraulically damped rubber bearing. 5,346,189, Cl. 267-219.000.

Rudolph, Axel, to Carl Freudenberg, Firma. Hydraulically damping rubber engine mount. 5,346,191, Cl. 267-140.120.

Rumbaugh, Scott H. Liquid crystal cell retarder with driving beyond retardance value and two cells for high speed. 5,347,382, Cl. 359-84.000.

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Runge, Erich, to Plica Werkzeugfabrik AG. Torque transmitting device. 5,346,340, Cl. 408-226.000.

Rupp, Steven J.; McNeff, Larry C.; and McNeff, Clayton V., to SarTec Corporation. Computerized grain delivery system. 5,347,468, Cl. 364-510.000.

Rusche, Edmund W., legal representative: *See—*
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Rutledge, Gary L.; and Pitcher, Edgar R., to Marrelli, John C. Plastic film bag manufacturing apparatus and associated methods, and plastic film bags produced thereby. 5,346,456, Cl. 493-211.000.

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S-B Power Tool Company: *See—*
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S. C. Johnson & Son, Inc.: *See—*
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Saad, Alie H.: *See—*
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Sabahi, Mahmood; and Irwin, Robert G., to Albemarle Corporation. Process for preparing Michael addition products. 5,347,043, Cl. 560-190.000.

Sabot, Gary W.; Lively, David F.; and Vasilevsky, Alexander D., to Thinking Machines Corporation. System and method for optimizing and generating computer-based code in a parallel processing environment. 5,347,654, Cl. 395-600.000.

Sacripante, Guerino G.; Georges, Michael K.; Kmiecik-Lawrynowicz, Grazyna; and Fuller, Timothy J., to Xerox Corporation. Toner compositions and processes thereof. 5,346,790, Cl. 430-106.000.

Sacripante, Guerino G.: *See—*
Kmiecik-Lawrynowicz, Grazyna E.; Patel, Raj D.; and Sacripante, Guerino G., 5,346,797, Cl. 430-137.000.

Sadd, Andrea L.: *See—*
Aitken, Bruce G.; Annunziata, Frank A.; Bartholomew, Roger F.; Newhouse, Mark A.; Powley, Mark L.; and Sadd, Andrea L., 5,346,865, Cl. 501-40.000.

Saginaw Valley State University: *See—*
Chen, Hsuan S.; and Wright, Gregory A., 5,347,376, Cl. 359-28.000.

Saijo, Keiko: *See—*
Sano, Tatsuhiko; Saijo, Keiko; Yokomori, Sadakazu; Nakashima, Yoshimoto; and Hatayama, Katsuo, 5,347,012, Cl. 548-311.400.

Saini, Devinder P. S.: *See—*
Goswami, Kisholoy; Saini, Devinder P. S.; Klainer, Stanley M.; and Ejiofor, Chuka H., 5,346,671, Cl. 422-86.000.

Saint-Gobain Recherch: *See—*
Maugendre, Stephane; and Dubois, Bernard, 5,346,864, Cl. 501-35.000.

St. John North, Mark: *See—*
Fisher, Eugene B.; St. John North, Mark; Winterson, Warren D.; Jaxmar, Leif E. B.; Olsson, Lennart F.; and Selander, Nils S., 5,346,057, Cl. 198-778.000.

Saito, Akio: *See—*
Morisawa, Yasuhiro; Saito, Akio; Toyama, Toshimitsu; and Kaneko, Susumu, 5,346,918, Cl. 514-450.000.

Saito, Akito; and Togawa, Tsuyoshi, to Olympus Optical Co., Ltd. Apparatus for recording and/or reproducing information on and/or from optical record medium. 5,347,116, Cl. 239-479.000.

Saito, Katsuaki: *See—*
Fukuda, Takuya; Ohue, Michio; Kanai, Fumiyuki; Koike, Atsuyoshi; Saito, Katsuaki; and Suzuki, Kazuo, 5,347,100, Cl. 219-121.430.

Saito, Tadao: *See—*
Mizushima, Hiroshi; Saito, Tadao; and Nozawa, Takamitsu, 5,346,103, Cl. 222-321.000.

Saito, Tutomu; and Matsui, Toshikazu, to Kabushiki Kaisha Toshiba. Computer-assisted holographic image formation technique which determines interference pattern data used to form the holographic. 5,347,375, Cl. 359-9.000.

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Sakai, Hitoshi; Saitoh, Hitoshi; and Sugiyama, Osamu, 5,346,414, Cl. 439-752.000.

Saitoh, Yoshitaka. Method of manufacturing a printed wiring board. 5,345,673, Cl. 29-846.000.

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Sakagami, Hiroshi: *See—*
Nonoyama, Meihan; Tanaka, Akiko; Lai, Patrick K.; Konno, Kunio; Kawazoe, Yutaka; and Sakagami, Hiroshi, 5,346,695, Cl. 424-78.080.

Sakaguchi, Yoshikazu: *See—*
Nakamura, Masanori; and Sakaguchi, Yoshikazu, 5,347,608, Cl. 385-130.000.

Sakai, Akihiko: *See—*
Ueda, Ichiro; Suzuki, Takashi; and Sakai, Akihiko, 5,346,035, Cl. 180-329.000.

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Sakai, Kazuhiro: *See*—
Ito, Hideo; Narukawa, Mitsutoshi; and Sakai, Kazuhiro, 5,346,557, Cl. 134-10.000.

Sakai, Kenji: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Sakai, Kenji, 5,346,668, Cl. 420-485.000.

Sakai, Shinji: *See*—
Koyama, Osamu; Kato, Tadashi; Usui, Masayuki; Watanabe, Yoshihiko; Baba, Hisatoshi; Ando, Hirotake; Nakajima, Hideo; Sakai, Shinji; and Tamaki, Kenji, 5,347,503, Cl. 369-44.320.

Sakai, Toru: *See*—
Nakamura, Shunji; and Sakai, Toru, 5,347,463, Cl. 364-478.000.

Sakai, Yoshio; and Izumi, Saitoh, to Shionogi & Co., Ltd.; and Nissin Chemical Industry Co., Ltd. Method of applying a skin-protective composition. 5,346,977, Cl. 526-318.440.

Sakaino, Keiju: *See*—
Akiyama, Kazuyuki; Shirafuji, Yoshinori; and Sakaino, Keiju, 5,346,375, Cl. 418-15.000.

Sakamoto, Kiichi: *See*—
Yasuda, Hiroshi; Yamazaki, Satoru; and Sakamoto, Kiichi, 5,347,592, Cl. 382-8.000.

Sakamoto, Masaaki: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Sakai, Kenji, 5,346,668, Cl. 420-485.000.

Sakamoto, Noriyasu; Kisida, Hiroshi; Matsuo, Noritada; Fujimoto, Hiroaki; and Umeda, Kimitoshi, to Sumitomo Chemical Company, Limited. Carbamic acid derivatives, and their production and use 5,346,920, Cl. 514-539.000.

Sakamoto, Tatsuo: *See*—
Namba, Shigeaki; Sakamoto, Tatsuo; and Kahara, Toshiki, 5,346,777, Cl. 429-12.000.

Sakamoto, Toshio; Kumai, Kenichiro; and Gotoh, Shigeru, to Nippon Unicar Company Limited. Small diameter electric wire insulated with highly expanded cellular polyethylene and production thereof. 5,346,926, Cl. 521-81.000.

Sakano, Misao: *See*—
Shimano, Takashi; Sakano, Misao; and Mukoyama, Shinichi, 5,347,242, Cl. 333-99.00S.

Sakanushi, Masahiro: *See*—
Sugino, Takuya; Sakanushi, Masahiro; Kinoshita, Kenichiro; and Sando, Yasuyuki, 5,345,920, Cl. 123-564.000.

Sakashita, Yukio: *See*—
Nakamura, Takeshi; Heinouchi, Yoshiaki; and Sakashita, Yukio, 5,345,822, Cl. 73-505.000.

Sakaue, Hisashi, to Rohm Co., Ltd. Lateral bipolar transistor with a particular collector structure. 5,347,156, Cl. 257-575.000.

Sakow, Toshihiko. Educational game for children. 5,346,399, Cl. 434-201.000.

Saksena, Anil K.: *See*—
Cooper, Alan B.; Saksena, Anil K.; Lovey, Raymond; Girijavallabhan, Viyyoor; and Ganguly, Ashit, 5,346,898, Cl. 514-255.000.

Sakuma, Katsuzi: *See*—
Mori, Akiyoshi; Sakuma, Katsuzi; and Bansho, Joichi, 5,345,717, Cl. 49-404.000.

Sakurada, Koichi: *See*—
Tanabe, Akira; Yoshioka, Ritsuo; Ueda, Makoto; Sakurada, Koichi; and Watanabe, Shouichi, 5,347,550, Cl. 376-173.000.

Sakurai, Haruo, to Mitsubishi Denki Kabushiki Kaisha. Horizontal oscillation control circuit for a cathode-ray tube. 5,347,317, Cl. 348-511.000.

Sakurano, Masatoshi: *See*—
Kawamura, Yoshio; Sato, Kazuo; Tanaka, Shinji; Kohida, Hiroyuki; and Sakurano, Masatoshi, 5,346,825, Cl. 435-240.260.

Sales, Brian T.: *See*—
Elgar, Anthony D.; Sales, Brian T.; and Parkes, Adrian S., 5,345,971, Cl. 138-98.000

Salmon, Pierre; and Quigrat, Michel. Pour-through stopper with hinged lid. 5,346,099, Cl. 222-153.000.

Salomon SA: *See*—
Le Masson, Jacques, 5,346,244, Cl. 280-607.000.

Salomon S.A.: *See*—
Billet, Phillipe; and Paris, Jean, 5,345,698, Cl. 36-117.000.
Quellais, Jacques, 5,345,697, Cl. 36-50.100.

Salvay, Steven H.: *See*—
Sherman, Richard A.; Schultz, Darald R.; Salvay, Steven H.; Jaeger, Robert B.; Davis, Patrick H.; and Hanson, George E., 5,347,115, Cl. 235-472.000.

Salyards, Michael: *See*—
Alkhas, Robinette S.; and Salyards, Michael, 5,346,516, Cl. 51-296.000.

Sambandan, Sachidanandan: *See*—
Kwong, Phillip M.; Sambandan, Sachidanandan; Sweha, Sherif R. B.; and Mills, Duane R., 5,347,484, Cl. 365-49.000

Samonides, John, to X-Cal Corporation. Identification label with microencapsulated etchant. 5,346,738, Cl. 428-40.000.

Sampayan, Stephen E.: *See*—
Payne, Anthony N.; Watson, James A.; and Sampayan, Stephen E., 5,347,209, Cl. 323-271.000.

Sampson, Richard L.: *See*—
Kunz, Gerhard K.; Dimotsis, George L.; and Sampson, Richard L., 5,346,623, Cl. 210-678.000.

Samson, Ilan Z.: *See*—
Hirsch, Harold D.; Spencer, John A. D.; and Samson, Ilan Z., 5,345,935, Cl. 128-642.000.

Samsung Electron Devices Co., Ltd.: *See*—
Ham, Sungwoo, 5,347,366, Cl. 348-829.000.

Samsung Electronics Co., Ltd.: *See*—
Cho, Hyun-jin; and Jang, Taek-yong, 5,346,844, Cl. 437-52.000.
Choi, Kwang Moon, 5,347,411, Cl. 242-341.000.
Chung, Ho-sun; and Han, Hyo-jin, 5,347,613, Cl. 395-24.000.
Han, Hyeong-Deok, 5,347,404, Cl. 360-19.100.
Lee, Hong Y., 5,347,610, Cl. 392-447.000.
Lim, Jong-Gyun, 5,347,320, Cl. 348-655.000.
Park, Eui-Keun, 5,347,240, Cl. 332-127.000.
Shin, Dong-Il, 5,346,400, Cl. 439-17.000.
Song, Jin I.; and Kang, Moon, 5,347,461, Cl. 364-474.290.
Woo, Tae-jin, 5,347,499, Cl. 369-4.000.
You, Ho-Joong, 5,347,640, Cl. 395-400.000.

Samsung Heavy Industries Co., Ltd.: *See*—
Nam, Sang-Yop, 5,347,448, Cl. 364-167.010.

Sanders, Edward B.: *See*—
Serrano, Mark A.; Houghton, Kenneth S.; Lanzillotti, Harry V.; Sanders, Edward B.; Lilly, A. Clifton, Jr.; Hayward, Charles R.; Hearn, John R.; Losee, D. Bruce, Jr.; Fleischhauer, Grier S.; and Houck, Willie G., 5,345,951, Cl. 131-194.000.

Sanders, Kathryn B.: *See*—
Augelli-Szafran, Corinne E.; Barrett, Stephen D.; Caprathe, Bradley W.; Galan, Adam A.; Jaen, Juan C.; Lauffer, David J.; Moos, Walter H.; Pavia, Michael R.; Sanders, Kathryn B.; Tecle, Haile; and Thomas, Anthony J., 5,346,911, Cl. 514-339.000.

Sando, Yasuyuki: *See*—
Sugino, Takuya; Sakanushi, Masahiro; Kinoshita, Kenichiro; and Sando, Yasuyuki, 5,345,920, Cl. 123-564.000.

Sandrock, Don G., to Emerson Electric Co. Drive for linear pick-and-place assembly apparatus. 5,345,831, Cl. 74-53.000.

Sandvik AB. *See*—
Collin, Marianne, 5,346,517, Cl. 51-309.000.

Sandvik, Inc.: *See*—
Rescigno, Pasquale F., 5,346,336, Cl. 407-104.000.

Sanfilippo, Philip: *See*—
Newman, Martin H.; and Sanfilippo, Philip, 5,346,061, Cl. 206-221.000.

Sank, Gerald W.: *See*—
Luebke, Clement J.; Sank, Gerald W.; and Slade, Frank A., 5,345,923, Cl. 126-21.00A.

Sankyo Company Limited: *See*—
Morisawa, Yasuhiro; Saito, Akio; Toyama, Toshimitsu; and Kaneko, Susumu, 5,346,918, Cl. 514-450.000.

Sanleo Holdings Pty. Ltd.: *See*—
Robbins, Geoffrey, 5,346,005, Cl. 166-187.000.

Sano, Akihiro: *See*—
Kamiyama, Masafumi; Maeda, Masahiro; Totsuka, Hiroki; Sano, Akihiro; and Matsushita, Toshiya, 5,346,798, Cl. 430-137.000.

Sano, Masamichi; Miyagawa, Nobuo; and Yamamoto, Kunji, to Tokyo Yogyo Kabushiki Kaisha; and Sano, Masamichi. Vacuum-suction degassing apparatus. 5,346,185, Cl. 266-208.000.

Sano, Tatsuhiko; Saijo, Keiko; Yokomori, Sadakazu; Nakashima, Yoshimoto; and Hatayama, Katsuo, to Taisho Pharmaceutical Co., Ltd. Naphthothiopyranone derivatives. 5,347,012, Cl. 548-311.400.

Sanofi: *See*—
Boigegrain, Robert; Cecchi, Roberto; and Boveri, Sergio, 5,347,037, Cl. 560-45.000.

Sanshin Kogyo Kabushiki Kaisha: *See*—
Motose, Hitoshi; and Ishigami, Hidetoshi, 5,345,903, Cl. 123-198.0DC.

Sanshin Kogyo Kabushuki Kaisha: *See*—
Yamazaki, Susumu, 5,346,416, Cl. 440-89.000.

Santandrea, Luciano; and Lombardi, Massimo, to Axis U.S.A. Inc. Automatic adjustment of pallet workpiece support members. 5,346,058, Cl. 198-803.010.

Sanwa Supply Co., Ltd.: *See*—
Yamada, Tetsuya, 5,345,882, Cl. 108-193.000.

Sanyo Chemical Industries, Ltd.: *See*—
Suwada, Ataru, 5,346,951, Cl. 525-64.000.

Sanyo Electric Co., Ltd.: *See*—
Harigai, Masami; and Kishi, Hiroyasu, 5,347,365, Cl. 348-525.000.
Takahashi, Kazuhiro; Abe, Yoshiharu; and Katayanagi, Hideyuki, 5,345,782, Cl. 62-344.000

Sanyo Laser Products, Inc.: *See*—
Kodaka, Ichiro; Ishida, Shoji; and Plumer, Charles, 5,346,654, Cl. 264-1.330.

Saperstein, Paul; and Laughon, Thomas C., Sr., to Craft-Tex/Phase IV, Inc. Bed elevator block. 5,345,631, Cl. 5-509.100.

Sarli, Michael S.: *See*—
Fletcher, David L.; Sarli, Michael S.; and Shih, Stuart S., 5,346,609, Cl. 208-89.000.

Sarmast, Syed H.: *See*—
Hodge, Charles F.; Sarmast, Syed H.; Herbert, Gerald F.; and Sopko, Dennis M., 5,346,288, Cl. 301-37.370.

Saros, Gust A.: *See*—
Dubinsky, Miles J.; Joseph, Rinart; Saros, Gust A.; and Locsmondy, Richard, 5,345,682, Cl. 30-102.000.

Sarpeshkar, Ashok M.; and Markusch, Peter H., to Miles Inc. Radiopaque polyurethanes. 5,346,981, Cl. 528-85.000.

SarTec Corporation: *See*—
Rupp, Steven J.; McNeff, Larry C.; and McNeff, Clayton V., 5,347,468, Cl. 364-510.000.

Sartori, Michael A.: *See*—
Clark, Joseph A.; and Sartori, Michael A., 5,347,496, Cl. 367-140.000.

Sartorio, Franco; Scavino, Mario; and Vergano, Stefano, to Amada Company, Limited. Device for manipulating sheet metal pieces. 5,345,806, Cl. 72-422.000.

Sarvik, Steve; Hellstrom, Gert; and Olsson, Denniver, to BallCorporation. Converted container end bag separator. 5,346,200, Cl. 271-102.000.

Sasaki, Hidemi; and Suzuki, Shinji, to Fuji Photo Film Co., Ltd. Video projector with battery and replaceable lamp unit. 5,347,324, Cl. 348-789.000.

Sasaki, Hiroki, to Nissan Motor Co., Ltd. Torque distribution control system for four wheel drive vehicle. 5,346,032, Cl. 180-233.000.

Sasse, Philip A.; Durrance, Debra H.; and Taylor, Glenn A., to Kimberly-Clark Corporation; and Belland Aktiengesellschaft. Polymeric web compositions having improved alkaline solubility. 5,346,955, Cl. 525-92.000.

Sato, Akiyoshi: *See*—
Okafuji, Osamu; Sato, Akiyoshi; and Yamaguchi, Akio, 5,345,978, Cl. 140-92.100.

Sato, Atsushi: *See*—
Narita, Teruyuki; Sato, Atsushi; Tsunekawa, Masao; and Tanaka, Hideaki, 5,347,410, Cl. 360-77.040

Sato, Kazuhiro, to Nissan Motor Co., Ltd. Secondary air control system for internal combustion engine. 5,345,763, Cl. 60-290.000.

Sato, Kazuo: *See*—
Kawamura, Yoshio; Sato, Kazuo; Tanaka, Shinji; Kohida, Hiroyuki; and Sakurano, Masatoshi, 5,346,825, Cl. 435-240.260.

Sato, Kenichi: *See*—
Chiba, Kazunobu; Sato, Kenichi; and Arisaka, Yuichi, 5,347,406, Cl. 360-33.100.

Sato, Kenji; and Honda, Hiroyuki, to Konica Corporation. Image forming apparatus having a protective gate member. 5,347,349, Cl. 355-309.000.

Sato, Koji: *See*—
Nakakawaji, Takayuki; Morihara, Atsushi; Shoji, Mitsuyoshi; Sato, Koji; Ito, Yutaka; Kaji, Ryuichi; and Go, Hiroshi, 5,346,633, Cl. 252-10.000.

Satoh, Takami: *See*—
Tanoue, Kouichi; Kitamura, Shinzi; Anai, Noriyuki; Satoh, Takami; Tomoeda, Takayuki; Iwasaki, Tatsuya; and Mizosaki, Kengo, 5,345,639, Cl. 15-88.200.

Satoh, Yoshinori: *See*—
Nakahata, Hiroki; Satoh, Yoshinori; and Yabushita, Tatsuhisa, 5,346,398, Cl. 434-70.000.

Satomura, Seiichiro; and Takeshita, Kano, to Canon Kabushiki Kaisha. Information processing apparatus. 5,347,517, Cl. 371-55.000.

Satou, Hiroshi: *See*—
Taniguchi, Takao; and Satou, Hiroshi, 5,346,513, Cl. 29-25.010.

Saunders, John: *See*—
Baker, Raymond; Saunders, John; Willson, Timothy M.; and Kulagowski, Janusz J., 5,346,906, Cl. 514-305.000.

Saunders, Nicholas I.; Keating, Stephen M.; and Walter, Carl W., to Sony United Kingdom Limited. Motion compensated video signal processing. 5,347,312, Cl. 348-443.000.

Saur, Reinhold: *See*—
Sauter, Hubert; Schelberger, Klaus; Saur, Reinhold; Lorenz, Gisela; and Ammermann, Eberhard, 5,346,909, Cl. 514-317.000.

Sauter, Hubert; Schelberger, Klaus; Saur, Reinhold; Lorenz, Gisela; and Ammermann, Eberhard, to BASF Aktiengsellschaft. Fungicidal composition. 5,346,909, Cl. 514-317.000.

Sauvage, Pierre, to Hewlett-Packard Company. Device for indicating that an optional component is mounted on a board. 5,347,182, Cl. 307-465.100.

Savage, Michael P.: *See*—
Bentley, Robert L.; Savage, Michael P.; and Shelton, Kenneth W., 5,347,008, Cl. 548-170.000.

Savastano, Cesar, to Eniricerche S.p.A. Process for deasphalting and demetalating crude petroleum or its fractions. 5,346,615, Cl. 208-309.000.

Savolainen, Esko: *See*—
Karna, Toivo; Laakso, Jukka; Levon, Kalle; and Savolainen, Esko, 5,346,649, Cl. 252-500.000.

Sawada, Shigeharu, to Tsudakoma Kogyo Kabushiki Kaisha. Multiple weft removing devices for a loom. 5,345,975, Cl. 139-116.200.

Sawada, Tsutomu; Ohashi, Shinichi; and Yoshida, Shigenobu, to Mitsubishi Kasei Corporation. Heat-resistant moistureproof film. 5,346,752, Cl. 428-216.000.

Sawazaki, Yoshihiko; Okumura, Yasuo; and Arai, Nobuichi, to Nihon Parkerizing Co., Ltd. Lubricant composition for hot plastic working. 5,346,634, Cl. 252-30.000.

Sawyer, Richard D.: *See*—
Reiser, Carl A.; and Sawyer, Richard D., 5,347,106, Cl. 219-219.000.

Saxon, Edward W.: *See*—
White, Thomas W.; Pulpan, Edward J.; Tsukida, Robert S.; Saxon, Edward W.; and Ortega, Frank, 5,347,554, Cl. 376-260.000.

Sayre, Reid L.: *See*—
Ashfield, James C.; Baker, Gregory D.; Nevins, Robert C.; Raynes, Jeffrey A.; Sultan, Aaron T.; Parks, Joseph K.; Rhodin, Michael D.; and Sayre, Reid L., 5,347,633, Cl. 395-200.000.

ScanHall A.S.: *See*—
Myhre, Johan, 5,346,709, Cl. 426-111.000.

Scarberry, Paul W.; and Bray, Barrie A., to Scarberry, Paul W. Reclosable bag with offset end seal. 5,346,301, Cl. 383-5.000.

Scarola, Kenneth; Jamison, David S.; Manazir, Richard M.; Rescorl, Robert L.; and Harmon, Daryl L., to Combustion Engineering, Inc. Method of installing a control room console in a nuclear power plant. 5,347,553, Cl. 376-259.000.

Scavino, Mario: *See*—
Sartorio, Franco; Scavino, Mario; and Vergano, Stefano, 5,345,806, Cl. 72-422.000.

Schabert, Hans-Peter; and Laurer, Erwin, to Siemens Aktiengesellschaft. Fitting for shutting off a flow. 5,345,835, Cl. 74-424.8VA.

Schafer, Andreas; Kalinowski, Jorn; and Puhler, Alfred, to Degussa Aktiengesellschaft. Method for the conjugative transfer of mobilizable vectors for *E. coli* to gram-positive bacteria and vectors suitable for use in such a method. 5,346,818, Cl. 435-172.300.

Schafer, Burkhard; and Grams, Kai-Uwe, to Lemforder Metallwaren AG. Steering column with a safety element for a motor vehicle equipped with an inflatable air bag in the steering wheel. 5,346,255, Cl. 280-775.000.

Schamp, Scott T.: *See*—
Bogner, Alan E.; Cherish, Peter; and Schamp, Scott T., 5,346,133, Cl. 239-132.300.

Scharr, Thomas A.; Lee, Russell T.; and Subrahmanyan, Ravichandran, to Motorola, Inc. Method for forming a flip-chip bond from a gold-tin eutectic. 5,346,857, Cl. 437-183.000.

Schauder, Colin D., to Electric Power Research Institute. Apparatus and method for switching high power levels. 5,347,166, Cl. 307-113.000.

Schaus, John M.: *See*—
Booher, Richard N.; Flaugh, Michael E.; Lawhorn, David E.; Martinelli, Michael J.; Paget, Charles J., Jr.; and Schaus, John M., 5,347,013, Cl. 548-436.000.

Scheid, William J., to Motorola Inc. Electronic device having an integral battery door/belt clip element. 5,346,784, Cl. 429-98.000.

Schelberger, Klaus: *See*—
Sauter, Hubert; Schelberger, Klaus; Saur, Reinhold; Lorenz, Gisela; and Ammermann, Eberhard, 5,346,909, Cl. 514-317.000.

Scherber, Werner: *See*—
Lautenschlager, Peter; and Scherber, Werner, 5,347,395, Cl. 359-359.000.

Schering Aktiengesellschaft: *See*—
Pohlenz, Hans-Dieter; Boidol, Werner; and Streber, Wolfgang, 5,347,076, Cl. 800-205.000.

Schering Corporation: *See*—
Cooper, Alan B.; Saksena, Anil K.; Lovey, Raymond; Girijavallabhan, Viyyoor; and Ganguly, Ashit, 5,346,898, Cl. 514-255.000

Scherrer, Robert A., to Riker Laboratories, Inc. Substituted di-t-butylphenols. 5,347,036, Cl. 560-45.000.

Schiavi Cesare Costruzioni Meccanichi S.p.A.: *See*—
Bosoni, Giannino, 5,345,696, Cl. 34-638.000.

Schieb, Thomas: *See*—
Hammen, Gunter; Schieb, Thomas; and Wershofen, Stefan, 5,347,034, Cl. 560-25.000.

Schieferle, Reinhard; and Sirkis, Nehemia, to VOERE Kufsteiner Geratebau-und Handelsgesellschaft m.b.h.; and PSE Produkt-und Systementwicklungsgesellshaft m.b.h. Device to seal the cartridge chamber on hand weapons. 5,345,85[illegible], Cl. 89-26.000.

Schiet, Franc T.: *See*—
Narula, Anubhav P. S.; McGinnis, Matthew J.; Beck, Charles E. J.; Hanna, Marie R.; and Schiet, Franc T., 5,346,884, Cl. 512-6.000.

Schiller, Herbert: *See*—
Wiesler, Martin; Huck, Thomas; and Schiller, Herbert, 5,346,256, Cl. 280-802.000.

Schindele, Deborah C.: *See*—
Renzoni, George E.; Schindele, Deborah C.; Theodore, Louis J.; Leznoff, Clifford C.; Fearon, Karen L.; and Pepich, Barry V., 5,346,670, Cl. 422-52.000.

Schipper, Paul H.: *See*—
Harandi, Mohsen N.; Owen, Hartley; and Schipper, Paul H., 5,347,061, Cl. 585-323.000.
Owen, Hartley; and Schipper, Paul H., 5,346,610, Cl. 208-113.000.

Schlagel, Bruce E. Barbell system with improved locking feature. 5,346,449, Cl. 482-107.000.

Schleicher & Co. International Aktiengesellschaft: *See*—
Stangenberg, Hartmut; and Gasteier, Rolf, 5,346,144, Cl. 241-100.000.

Schleicher, Lothar; Zwicknagl, Hans-Peter; and Schoening, Elke, to Siemens Aktiengellschaft. Method for the electrical insulation of a circuit function element on a semiconductor component. 5,346,862, Cl. 437-228.000.

Schlembach, Hans: *See*—
Linder, Ernst; and Schlembach, Hans, 5,345,897, Cl. 123-65.00A.

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Schlitt, Reinhard, to ERNO Raumfahrttechnik GmbH. Heat pipe with a bubble trap. 5,346,000, Cl. 165-104.260.

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Schmid, Eduard: *See*—
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Pannenbecker, Heinrich; Jabs, Ronald; Schmitz, Heinrich; Dechene, Wulf; Splitt, Manfred; and Heiler, Hans-Joachim, 5,346,551, Cl. 118-63.000.
Schmitz-Huebsch, Axel; Koelle, Ulrich; and Flaetgen, Dietmar, to Robert Bosch GmbH. Control system for the electric fuel pump of an internal combustion engine. 5,345,915, Cl. 123-497.000.
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Sixta, Herbert; Gotzinger, Gerhard; Hoglinger, Anton; Hendel, Peter; Rucki, Wilfried; Peter, Walter; Kurz, Friedrich; Schrittwieser, Alfred; and Schneeweisz, Manfred, 5,346,588, Cl. 162-65.000.
Schneider, Barry L., to Hollister Incorporated. Retention device. 5,346,479, Cl. 604-174.000.
Schneider, Christian: *See—*
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Schneider, Georg; and Reder, Wolfgang O., to Koenig & Bauer Aktiengesellschaft. Doctor blade bar assembly. 5,345,867, Cl. 101-363.000.
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Reder, Wolfgang O.; and Schneider, Georg, 5,345,866, Cl. 101-363.000.
Schneider, Michael G.: *See—*
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Schneider, Philippe: *See—*
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Schneider, Reinhard; Grund, Norbert; and Hartmann, Heinrich, to BASF Aktiengesellschaft. Agglomerated polymer particles of finely divided, water-soluble or water-swellable polymers, the preparation thereof and the use thereof. 5,346,986, Cl. 528-495.000.
Schnyder, Eugen: *See—*
Machguth, Gunther; Muller, Beat; Lehmann, Rolf; and Schnyder, Eugen, 5,345,864, Cl. 101-216.000.
Schoelpple, Gunther: *See—*
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Schouten, Petrus C. Yarn tensioner for knitting machine. 5,345,790, Cl. 66-146.000.
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Schrittwieser, Alfred: *See—*
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Schroder, Hehrwart, to Dornier Luftfahrt GmbH. Tunnelling barrier between two non-tunnelling superconductor-insulator-controlling superconductor-insulator-superconductor structures. 5,347,143, Cl. 505-191.000.
Schroder, Karl: *See—*
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Schroeder, Donald R., to CTS Corporation. Multilayer circuit card connector. 5,347,091, Cl. 174-262.000.
Schroter, Hans J.: *See—*
Kubiak, Helmut; Schroter, Hans J.; Gappa, Gunther; Kalwitzki, Heinrich; and Knop, Klaus, 5,346,515, Cl. 48-73.000.
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Schuermann, Josef H., to Texas Instruments Deutschland GmbH. Frequency diversity transponder arrangement. 5,347,280, Cl. 342-42.000.
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Shamp, Donald E.; Stark, Thomas F.; and Swisher, Harry E., Jr., 5,346,524, Cl. 65-134.400.
Schulte, Klaus: *See—*
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Schulter, Alfred: *See—*
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Schultz, Darald R.: *See—*
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Schultz, Thomas M.; Brown, Keith C.; Wolfram, Leszek J.; and Prota, Giuseppe, to Clairol Incorporated. Process for dyeing hair by the sequential treatment of hair with metal ion-containing composition and with a dye composition containing 5,6-dihydroxyindole-2-carboxylic acid and certain derivatives thereof. 5,346,509, Cl. 8-423.000.
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Schwing America, Inc.: *See—*
Oakley, Edward A.; Crow, Harry K.; Anderson, Thomas M.; Atherton, Richard T.; and Fehn, Berthold A., 5,346,368, Cl. 417-63.000.
Scientific-Atlanta, Inc.: *See—*
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Scientific Games, Inc.: *See—*
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SCIMED Life Systems, Inc.: *See—*
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Scobbo, James J., Jr.; and Stoddard, Gregory J., to General Electric Company. Core-shell ABS copolymers and method for their preparation. 5,346,953, Cl. 525-74.000.
Scott, Danny E.: *See—*
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Scott, Hugh L.: *See—*
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Scribner, Cliff J., to Motorola, Inc. Method for detecting MIS-orientation of semiconductor packages. 5,345,668, Cl. 29-593.000.
Scruggs, Michael G., to Daniels Manufacturing Corporation. Safety cable tool. 5,345,663, Cl. 29-282.000.
Seagate Technology, Inc.: *See—*
Desai, Dhirubwai N.; Lewis, David M.; and Robinson, Don M., 5,347,638, Cl. 395-375.000.
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Sedlmayr, Steven R. Collimated beam of light and systems and methods for implementation thereof. 5,347,433, Cl. 362-32.000.
Sedlmayr, Steven R. Three-dimensional image display device and systems and methods for implementation thereof. 5,347,644, Cl. 359-465.000.
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Futagawa, Yoshikiyo, 5,347,300, Cl. 347-9.000.
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Takahashi, Kunihiro; Kojima, Yoshikazu; Takasu, Hiroaki; Matsuyama, Nobuyoshi; Niwa, Hitoshi; Yoshino, Tomoyuki; and Yamazaki, Tsuneo, 5,347,154, Cl. 257-347.000.
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Sekigami, Kazuo; Oshima, Kenichi; and Takebayashi, Masahiro, to Hitachi, Ltd. Scroll compressor and air conditioner using the same. 5,345,785, Cl. 62-468.000.

Sekine, Akihiko; and Ohtomo, Fumio, to Kabushiki Kaisha Topcon. Process and apparatus for measuring axial eye length. 5,347,327, Cl. 351-211.000.
Sekine, Akihiko; and Ohtomo, Funio, to Kabushiki Kaisha Topcon. Apparatus for measuring an intraocular length between anterior and posterior portions of an eye. 5,347,328, Cl. 351-211.000.
Sekino, Hirokazu; and Yamakoshi, Issei, to Seiko Epson Corporation. Electric automobile. 5,345,777, Cl. 62-244.000.
Seko, Shinsuke, deceased: *See—*
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Seko, Tomio: *See—*
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Seo, Ho S., to Gold Star Co., Ltd. Elastic support device for a shadow mask of a color picture tube. 5,347,195, Cl. 313-404.000.
Sequoyah Fuels Corporation: *See—*
Mestepey, James H., 5,346,684, Cl. 423-488.000.
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Serrano, Mark A.; Houghton, Kenneth S.; Lanzillotti, Harry V.; Sanders, Edward B.; Lilly, A. Clifton, Jr.; Hayward, Charles R.; Hearn, John R.; Losee, D. Bruce, Jr.; Fleischhauer, Grier S.; and Houck, Willie G., to Philip Morris Incorporated. Smoking article. 5,345,951, Cl. 131-194.000.
Sevenet, Thierry: *See—*
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Seward, James B.; and Tajik, Abdul J., to Mayo Foundation for Medical Education and Research. Transvascular ultrasound hemodynamic and interventional catheter and method. 5,345,940, Cl. 128-662.060.
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Wei, Che-Chia, 5,346,860, Cl. 437-200.000.
SGS-Thomson Microelectronics, S.r.l.: *See—*
Pascucci, Luigi, 5,347,493, Cl. 365-230.060.
SGS-Thomson Microelectronics, S.A.: *See—*
Tailliet, Francois, 5,347,185, Cl. 307-540.000.
Shaber, Steven H.: *See—*
Hsu, Adam C. T.; Shaber, Steven H.; and Michelotti, Enrique L., 5,346,913, Cl. 514-389.000.
Shafir, Grace. Process for reclaiming scraps of crayon. 5,346,656, Cl. 264-26.000.
Shah, Dipak J.; Krueger, James H.; and Strand, Rolf L., to Honeywell Inc. Indoor climate controller system adjusting both dry-bulb temperature and wet-bulb or dew point temperature in the enclosure. 5,346,129, Cl. 236-44.00C.
Shamie, Louis. Table having a pivoting support extension. 5,345,880, Cl. 108-63.000.
Shamp, Donald E.; Stark, Thomas F.; and Swisher, Harry E., Jr., to Schuller International, Inc. Oxygen/fuel firing of furnaces with massive, low velocity, turbulent flames. 5,346,524, Cl. 65-134.400.
Shanken, Stuart N.: *See—*
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Sharp, Brenner M., to Whirlpool Corporation. Drive system for an automatic washer. 5,345,793, Cl. 68-133.000.
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Minakawa, Hiroshi; Fukui, Masatugu; Uno, Masayuki; and Kinoshita, Hiroshi, 5,347,108, Cl. 219-696.000.
Ohtsuka, Yoshinori; Umeda, Hideki; Mori, Toyokazu; Tsuji, Masaru; and Katoh, Atsuyuki, 5,347,343, Cl. 355-200.000.
Shinomiya, Tokihiko; Taniguchi, Tsugiko; Kuratate, Tomoaki; and Nakagawa, Kenichi, 5,347,381, Cl. 359-78.000.
Takahashi, Ryutaro; Hayase, Toru; and Ohbayashi, Kunihiko, 5,347,587, Cl. 381-117.000.
Takano, Sakuharu; and Kita, Sumio, 5,347,623, Cl. 395-157.000.
Taniguchi, Kouji; Tanaka, Koichi; Terada, Kousuke; Mikami, Akiyoshi; and Yoshida, Masaru, 5,346,776, Cl. 428-690.000.
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Yamamoto, Hirohiko; Higashi, Keijirou; Takebe, Hiroyuki; Nakano, Hiroshi; and Ohta, Tomozo, 5,346,300, Cl. 343-895.000.
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Shaw, Richard G.; and Caronia, Paul J., to Union Carbide Chemicals & Plastics Technology Corporation. Process for crosslinking. 5,346,961, Cl. 525-281.000.
Sheehan, Michael T.; Sounik, James R.; Hann, Bret F.; and Wilkison, William W., III, to Hoechst Celanese Corporation. Substituted phenyl compounds and processes for preparing the same. 5,346,983, Cl. 528-212.000.
Sheehan, Michael T.; Sounik, James R.; Hann, Bret F.; and Wilkison, William W., III, to Hoechst Celanese Corporation. Processes for preparing diamino compounds. 5,347,049, Cl. 564-347.000.
Sheehan, Michael T.; Sounik, James R.; Hann, Bret F.; and Wilkison, William W., III, to Hoechst Celanese Corporation. Processes for preparing amines. 5,347,051, Cl. 564-389.000.
Shell Oil Company: *See—*
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Corley, Larry S., 5,346,769, Cl. 428-426.000.
Lawson, Jimmie B.; Faircloth, Robert J.; and Iken, George N., 5,346,009, Cl. 166-279.000.
Shelton, Kenneth W.: *See—*
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Shen, Dong-Min; Chapman, Orville L.; Lin, Ling; and Ortiz, Rafael, to Mobil Oil Corporation. Method for direct arylation of diamondoids. 5,347,063, Cl. 585-352.000.
Shepard, Phillip W.: *See—*
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Sher, Frank T.: *See—*
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Sherman, Richard A.; Schultz, Darald R.; Salvay, Steven H.; Jaeger, Robert B.; Davis, Patrick H.; and Hanson, George E., to Norand Corporation. Portable modular work station including printer and portable data collection terminal. 5,347,115, Cl. 235-472.000.
Sherman, Steven J.; Brokaw, A. Paul; Tsang, Robert W. K.; and Core, Theresa, to Analog Devices, Inc. Monolithic accelerometer. 5,345,824, Cl. 73-517.00B.
Sherwood Medical Company: *See—*
Yerlikaya, Denis Y.; Krohn, Randall J.; Walker, Clarence L.; Wilhelm, Michael J.; and Kinghorn, Curtis D., 5,346,466, Cl. 604-253.000.
Shet, Ramakant T.: *See—*
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Shibata, Hiroshi: *See—*
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Shibata, Masatoshi; Isonage, Teruto; Kamiryo, Eiji; and Shinohara, Kiyoshi, to Kirin Brewery Company Ltd. Coating composition for glass containers. 5,346,544, Cl. 106-244.000.
Shibata, Tooru; Teramoto, Toshio; Hashiguchi, Yoshiharu; and Goshima, Kunio, to Japan Synthetic Rubber Co., Ltd. (Modified) hydrogenated diene block copolymer and composition comprising the same. 5,346,964, Cl. 525-314.000.
Shibata, Yoshifumi: *See—*
Shimizu, Tadafumi; Takano, Yoshiaki; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotaro; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,347,346, Cl. 355-202.000.
Shibuya, Katsuhiko: *See—*
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Shibuya, Yoshiyuki; Daimon, Shigeo; and Okamura, Kazuo, to Daikin Industries, Ltd. Magnetic coating composition and magnetic recording medium. 5,346,758, Cl. 428-328.000.
Shiga, Shoji; Uno, Naoki; and Tanaka, Yasuzo, to Furukawa Electric Co., Ltd., The. Method of manufacturing superconductive products. 5,346,883, Cl. 505-100.000.
Shigemitsu, Hideyuki: *See—*
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Shih, Stuart S.: *See—*
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Shikata, Hideo: *See—*
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Shim, Sang-Yeon: *See—*
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Shimada, Masashi, to Minnesota Mining and Manufacturing Company. Surface mounting connector. 5,346,404, Cl. 439-108.000.
Shimano, Takashi; Sakano, Misao; and Mukoyama, Shinichi, to Furukawa Electric Co., Ltd., The. Superconducting accelerating tube comprised of half-cells connected by ring shaped elements. 5,347,242, Cl. 333-99.00S.
Shimizu, Etsuo: *See—*
Yokoyama, Yoshinobu; Aoki, Tatsuya; and Shimizu, Etsuo, 5,345,836, Cl. 74-473.00R.
Shimizu, Hideki, to Yoshida Kogyo K.K. Cord stopper. 5,345,657, Cl. 24-115.00G.
Shimizu, Hisayoshi: *See—*
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Shimizu, Masahiro; Yamaguchi, Takehisa; and Ajika, Natsuo, to Mitsubishi Denki Kabushiki Kaisha. DRAM with memory cells having access transistor formed on solid phase epitaxial single crystalline layer and manufacturing method thereof. 5,347,151, Cl. 257-296.000.
Shimizu, Tadafumi; Takano, Yoshiaki; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotaro; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, to Minolta Camera Kabushiki Kaisha. Image forming apparatus with improved efficiency of maintenance control. 5,347,346, Cl 355-202.000.
Shimizu, Teruo: *See—*
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Lin, Bang H., 5,346,081, Cl. 215-229.000
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Tanaka, Haruo, 5,345,614, Cl. 2-425.000.
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Block, James E., 5,346,226, Cl. 273-388.000.
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Showa Corporation: *See—*
Ohma, Toshio, 5,346,236, Cl. 280-276.000.
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Koide, Yasuhiro; Mogamiya, Hiroyuki; and Suzuki, Yoshiichi, 5,346,648, Cl. 252-299.650.
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Fedder, James L.; and Shuey, John R., 5,346,412, Cl. 439-681.000.
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Te-Wei, Lee; Gann, Ting; Chang-Shinn, Su; and Shyh-Yi, Chyi, 5,346,995, Cl. 534-14.000.
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Schleicher, Lothar; Zwicknagl, Hans-Peter; and Schoening, Elke, 5,346,862, Cl. 437-228.000.
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Knecht, Klaus; and Knaab, Heinz, 5,347,555, Cl. 376-261.000.
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Noe, Reinhold, 5,347,529, Cl. 372-28.000.
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Ries, Gunther, 5,347,252, Cl. 335-299.000.
Schabert, Hans-Peter; and Laurer, Erwin, 5,345,835, Cl. 74-424.8VA.
Schmidt, Klaus; and Stecher, Werner, 5,346,170, Cl. 248-550.000.
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Filepp, Robert; Gordon, Michael L.; Bidewell, Alexander W.; Young, Francis C.; Wolf, Allan M.; Meo, Sam; Tiemann, Duane; Cohen, Robert D.; Bellar, Mel; Appleman, Kenneth H.; Abrahams, Lawrence; and Silfen, Michael J., 5,347,632, Cl. 395-200.000.
Silicon Graphics, Inc.: *See—*
Akeley, Kurt, 5,347,618, Cl. 395-121.000.
Simco Industries, Inc.: *See—*
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Simkin, Benjamin, to Elf Atochem North America, Inc. Application of smooth PVOF-based powder coatings to substrates. 5,346,727, Cl. 427-486.000.
Simoens, Anthony, to Solvay & Cie (Societe Anonyme). Adhesive composites and articles containing compatibilized composition comprising a polyamide and a polypropylene. 5,346,773, Cl. 428-476.900.
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Singh, Balwant: *See—*
Guerro, Gerald J.; Arthur, William; and Singh, Balwant, 5,346,947, Cl. 524-591.000.
Singh, Devinder: *See—*
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Singh, Sheo S.: *See—*
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Single Buoy Moorings, Inc.: *See—*
Perratone, Rene; and Tosetti, Yves, 5,346,314, Cl. 384-97.000.
Sinks, Rod G.: *See—*
Baumann, Donald D.; Berke, W. Mike; Dreyer, Stephen F.; Sinks, Rod G.; and Stoll, Kurt A., 5,347,549, Cl. 375-117.000.
Sipe, Lynn R.: *See—*
Mosser, Benjamin H., III; Frantz, Robert H.; and Sipe, Lynn R., 5,346,405, Cl. 439-188.000.
Sirag, David J., Jr.: *See—*
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Sixta, Herbert; Gotzinger, Gerhard; Hoglinger, Anton; Hendel, Peter; Rucki, Wilfried; Peter, Walter; Kurz, Friedrich; Schrittwieser, Alfred; and Schneeweisz, Manfred, to Lenzing Aktiengesellschaft. Process for the chlorine-free bleaching of cellulosic materials with ozone. 5,346,588, Cl. 162-65.000.
SKF USA Inc.: *See—*
Black, David D.; and Wagner, John B., 5,346,662, Cl. 264-138.000.
Skjold, Rene , to Nutec ApS. Method for drying, especially waste material, such as shrimp or crayfish shell, fish offal, etc. 5,345,693, Cl. 34-395.000.
Skrobko, John, to Scientific-Atlanta, Inc. Push-pull optical receiver with cascode amplifiers. 5,347,389, Cl. 359-189.000.
Skrzypchak, Mark J.: *See—*
Remmers, Gregry M.; Skrzypchak, Mark J.; and Enlow, David L., 5,345,910, Cl. 123-424.000.
SKW Trostberg Aktiengesellschaft: *See—*
Kuchler, Josef; Erben, Hans-Georg; and Seeholzer, Josef, 5,346,937, Cl. 524-47.000.
Slade, Frank A.: *See—*
Luebke, Clement J.; Sank, Gerald W.; and Slade, Frank A., 5,345,923, Cl. 126-21.00A.
Slager, Douglas J.: *See—*
Puchalla, Christopher P.; Grzesiak, Anthony J.; and Slager, Douglas J., 5,346,040, Cl. 188-77.00W.
Slater, Howard O.; and Slater, James W., to J. & H. Slater Construction Co., Inc. Silt blockage for catch basins. 5,345,741, Cl. 52-646.000.
Slater, James W.: *See—*
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Slavejkov, Aleksandar G.; Zurecki, Zbigniew; Joshi, Mahendra L.; and Nabors, James K., to Air Products and Chemicals, Inc.; and Combustion Tech, Inc. Method and apparatus for oxy-fuel heating with lowered NO_x in high temperature corrosive environments. 5,346,390, Cl. 431-8.000.
Slawski, Barbara: *See—*
White, James F.; Slawski, Barbara; and White, Geoffrey, 5,347,046, Cl. 560-245.000.
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Kelley, James O., 5,346,296, Cl. 312-198.000.
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Barnsley, Michael F.; and Sloan, Alan D., 5,347,600, Cl. 382-56.000.
Smart, David C.; and Miller, Stephen H., to Eastman Kodak Company. Film cassette with bar-coded film spool and provision for film double exposure prevention. 5,347,334, Cl. 354-275.000.
Smart, Tracy M.: *See—*
Pastryk, Jim J.; Singh, Devinder; and Smart, Tracy M., 5,345,637, Cl. 8-158.000.
Smeets, Paul M., to Van Doorne's Transmissie B.V. Transverse element for a drive belt. 5,346,440, Cl. 474-242.000.
Smeggil, John G.: *See—*
Allen, William P.; Bornstein, Norman S.; Chin, Stephen; DeCrescente, Michael; Duhl, David N.; Parille, Donald R.; Pike, Roscoe A.; and Smeggil, John G., 5,346,563, Cl. 148-675.000.
Smialek, Darrell E. Peg board hanger. 5,346,167, Cl. 248-222.100.
Smith, Addison M.: *See—*
Clemmer, Paul G.; Tung, Hsueh S.; and Smith, Addison M., 5,346,595, Cl. 203-75.000.
Smith, Doran D.: *See—*
Wybourne, Martin N.; Smith, Doran D.; Goodnick, Stephen M.; Wu, Jong-Ching; and Berven, Chris, 5,347,141, Cl. 257-24.000.
Smith, E. Phillip: *See—*
Bagrodia, Shriram; Phillips, Bobby M.; Smith, E. Phillip; Parker, Kenny R.; and Rundquist, Paul A., 5,346,422, Cl. 446-394.000.
Smith Engineering Company: *See—*
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Smith, Frank V., Jr.: *See—*
Nadeau, Ronald P.; and Smith, Frank V., Jr., 5,345,982, Cl. 141-93.000.
Smith, Gregory A.; Foltz, Dale E.; Wisebaker, Robert E.; and Loy, Robert E., to National Machinery Company, The. Flat die thread roller. 5,345,800, Cl. 72-90.000.
Smith, Gregory R.: *See—*
Halstead, Gary A.; and Smith, Gregory R., 5,346,003, Cl. 165-173.000.
Smith, Joseph L., Jr.: *See—*
Liepert, Anthony G.; Crunkleton, James A.; Gallagher, Gregory R.; Smith, Joseph L., Jr.; and Cogswell, Frederick J., 5,345,769, Cl. 62-6.000.
Smith, Kenneth W.; Dolmovich, Bruce E.; and Frus, John R., to Unison Industries Limited Partnership. Apparatus and method for an ignition system. 5,347,422, Cl. 361-253.000.
Smith, Leland R. Adjustable orthotic. 5,345,701, Cl. 36-144.000.
Smith, Robert D., Jr. Snowball gloves. 5,345,611, Cl. 2-160.000.
Smith, Ronald T.; and Daiber, Andrew, to Hughes Aircraft Company Linear lamp holographic trapped beam center high mounted stoplight. 5,347,435, Cl. 362-80.100.
Smoak, Wilson E., III: *See—*
Simpson, David L.; and Smoak, Wilson E., III, 5,347,520, Cl. 371-22.300.
SMS Schloemann-Siemag Aktiengesellschaft: *See—*
Hauck, Albert, 5,345,805, Cl. 72-201.000.
Snam S.p.A.: *See—*
Goglio, Alfeo; and Pistone, Valentino, 5,345,972, Cl. 138-99.000.
Snap-on Incorporated: *See—*
Krivec, Bert, 5,346,022, Cl. 173-178.000.
Sneider, Andrew I.: *See—*
Clyde, Arthur C.; Sneider, Andrew I.; and Watson, Patricia L., 5,347,436, Cl. 362-102.000.
Snyder, Gary A., to Reyco Industries, Inc. Truck air ride suspension. 5,346,247, Cl. 280-712.000.
Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle: *See—*
Bascans, Remi; Fleury, Christophe; Autechaud, Eric; and N'Guyen, Christian, 5,347,180, Cl. 307-464.000.
Cerda, Leon G., 5,347,090, Cl. 174-84.00R.
Societe Des Forges De Fresnes: *See—*
Deramaux, Jean-Michel; and Caron, Bernard, 5,345,754, Cl. 59-30.000.
Soentgerath, Alfred: *See—*
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Sogo, Hiroshi: *See—*
Hatakeyama, Akihito; Sogo, Hiroshi; Kojima, Tamao; Horio, Yasuhiko; Tsukamoto, Masahide; and Fukumura, Yasushi, 5,346,750, Cl. 428-209.000.
Soh, Hoe S., to Goldstar Co., Ltd. Polysilicon thin film transistor of a liquid crystal display. 5,347,146, Cl. 257-59.000.
Sokac, Russell J.: *See—*
Martin, Michael J.; Martin, Kathleen M.; Sokac, Russell J.; and Durfey, Lloyd W., 5,346,199, Cl. 271-110.000.
Soken Co., Ltd.: *See—*
Tokuyama, Yoshie; Suzuki, Hiroshi; Matsuo, Yoshihisa; and Takeuchi, Eiko, 5,346,697, Cl. 424-195.100.
Sokol, Edward W., to Anderson, Rosalie M. Apparatus for treating and preventing development of bed sores. 5,345,634, Cl. 5-658.000.
Soled, Stuart L.: *See—*
Wachter, William A.; and Soled, Stuart L., 5,346,875, Cl. 502-233.000.
Solhjell, Erik; and Ronning, Tore, to Tandberg Data A/S. Method and system for removing particles without requiring a separate cleaning mechanism from a tape in a tape drive system. 5,347,407, Cl. 360-53.000.
Solis S.r.L.: *See—*
Gazzarrini, Vinicio, deceased; and Migliorini, Pier L., 5,345,889, Cl. 112-262.200.
Sollac: *See—*
Gissinger, Frank; and Gheysens, Thierry, 5,347,099, Cl. 219-81.000.
Sollo, Robert E. Free weight lifting system. 5,346,448, Cl. 482-104.000.
Solvay & Cie (Societe Anonyme): *See—*
Simoens, Anthony, 5,346,773, Cl. 428-476.900.
Solvay Enzymes GmbH & Co. KG: *See—*
Vetter, Roman; Wilke, Detlef; Moeller, Bernhard; Mueller, Martina; Muecke, Ingo; Takenberg, Meike; and Konieczny-Janda, Gerhard, 5,346,822, Cl. 435-221.000.
Solvay Interox GmbH: *See—*
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Solvay (Societe Anonyme): *See—*
Lechaude, Paul; Darago, Gilles; Krafft, Philippe; and Catinat, Jean-Pierre, 5,346,594, Cl. 203-29.000.
Pennetreau, Pascal; Janssens, Francine; and Barthelemy, Pierre, 5,347,059, Cl. 570-166.000.
Soma, Gen-Ichiro; Yoshimura, Kiyoshi; Tsukioka, Daisuke; Mizuno, Den'ichi; and Oshima, Haruyuki, to Soma, Gen-Ichiro; and Mizuno, Den'ichi. Lipopolysaccharide-producing bacteria, lipopolysaccha-

rides, and lipopolysaccharide-containing, medicines and veterinary medicines. 5,346,891, Cl. 514-54.000.
Somma, Herman R., to Somma Tool Company, Inc. Tool holder with resharpenable form tool insert. 5,345,846, Cl. 82-13.000.
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Somma, Herman R., 5,345,846, Cl. 82-13.000.
Sommazzi, Anna; Lugli, Gabriele; Garbassi, Fabio; and Calderazzo, Fausto, to Enichem S.p.A. Catalytic system and system for copolymerizing carbon monoxide with one or more olefins. 5,346,873, Cl. 502-165.000.
Sommerhalter, Frederick A., Jr.: *See*—
Jerzycke, Charles L.; Ogletree, Richard; and Sommerhalter, Frederick A., Jr., 5,346,345, Cl. 409-235.000.
Sommese, Anthony G.; and Mahoney, Robert P., to Nalco Chemical Company. Polymers for flocculating red mud from bayer process liquors. 5,346,628, Cl. 210-734.000.
Somwaru, Rudolph: *See*—
Davis, Mark F.; Glaser, Paul J.; Brandt, William H. A.; and Somwaru, Rudolph, 5,347,564, Cl. 379-12.000.
Song, Jin I.; and Kang, Moon, to Samsung Electronics Co., Ltd. Tool travel path creating method. 5,347,461, Cl. 364-474.290.
Song, Pill-Soon; and Parker, William R., Jr., to University of Nebraska, The Board of Regents of The. Container and/or closure therefor. 5,346,083, Cl. 215-341.000.
Song, Yong M.: *See*—
Kim, Hee Y.; Kwon, Dae H.; Song, Yong M., Kim, Sung W.; Jeon, Jong Y.; Lee, Kang M.; and Lee, Jae S., 5,346,141, Cl. 241-5.000.
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Wakita, Katsuya; Kawakami, Tetsuji; Sonoda, Nobuo; and Minemoto, Hisashi, 5,347,394, Cl. 359-326.000.
Sony: *See*—
Iwasaki, Jun, 5,347,228, Cl. 329-308.000.
Sony Corporation: *See*—
Akahane, Ryosuke, 5,347,424, Cl. 361-680.000.
Chiba, Kazunobu; Sato, Kenichi; and Arisaka, Yuichi, 5,347,406, Cl. 360-33.100.
Eguchi, Naoya, 5,347,500, Cl. 369-44.140.
Iimura, Shinichiro, 5,347,501, Cl. 369-44.250.
Kikuchi, Shuichi; and Kobayashi, Toshiro, 5,347,102, Cl. 219-243.000.
Kuroda, Hideaki, 5,346,843, Cl. 437-52.000.
Oertli, Heinz A., 5,346,491, Cl. 606-37.000.
Otsuki, Tadashi, 5,347,207, Cl. 369-33.000.
Tanaka, Kuninobu, 5,347,148, Cl. 257-173.000.
Tomiyoshi, Toshio; Yagi, Tetsuya; Torizuka, Masami; Hamano, Kenichi; Hachiya, Mitsuru; and Mizoguchi, Motoshi, 5,347,396, Cl. 358-479.000.
Yamada, Takaaki; Okada, Hiroshi; and Yanagihara, Naofumi, 5,347,310, Cl. 348-405.000.
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Saunders, Nicholas I.; Keating, Stephen M.; and Walter, Carl W., 5,347,312, Cl. 348-443.000.
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Hodge, Charles F.; Sarmast, Syed H.; Herbert, Gerald F.; and Sopko, Dennis M., 5,346,288, Cl. 301-37.370.
Sorge, Joseph A., to Stratagene. Mutagenesis testing using transgenic non-human animals carrying test DNA sequences. 5,347,075, Cl. 800-2.000.
Soricon Corporation: *See*—
Klinefelter, Gary M., 5,347,593, Cl. 382-29.000.
Sosnin, Oleg: *See*—
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Souders, T. Michael: *See*—
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Sounik, James R.: *See*—
Sheehan, Michael T.; Sounik, James R.; Hann, Bret F.; and Wilkison, William W., III, 5,346,983, Cl. 528-212.000.
Sheehan, Michael T.; Sounik, James R.; Hann, Bret F.; and Wilkison, William W., III, 5,347,049, Cl. 564-347.000
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Southern Imperial, Inc.: *See*—
Valiulis, Stanley C., 5,346,166, Cl. 248-220.400.
Southwire Company: *See*—
Starnes, Ralph E., Jr., 5,346,383, Cl. 425-197.000
Southworth, Robert O.: *See*—
Reidemeister, Eric P.; Johnson, Larry K.; Kawate, Keith W.; Mandeville, Raymond E.; Christensen, Douglas B.; and Southworth, Robert O., 5,345,823, Cl. 73-517.00R
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Strong, David J. Static load tester with I-beam support column. 5,345,826, Cl. 73-826.000.
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Sugano, Toshihiko; Fujita, Takashi; and Kuwaba, Kazuyo, to Mitsubishi Petrochemical Company Limited. Method for producing α-olefin polymers. 5,346,925, Cl. 521-54.000.
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Sakamoto, Noriyasu; Kisida, Hirosi; Matsuo, Noritada; Fujimoto, Hiroaki; and Umeda, Kimitoshi, 5,346,920, Cl. 514-539.000.
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Sundar, Parameshwaran S., to Chevron Research and Technology Company. Treating oily wastes. 5,347,069, Cl. 588-252.000.
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Sundberg, Henric. Composting toilet. 5,345,620, Cl. 4-449.000.
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Suzuki, Mizuaki; and Kishi, Matsuo, to Seiko Instruments Inc. Apparatus for forming a thin film. 5,346,554, Cl. 118-723.0EB.
Suzuki, Nobukazu, to Kabushiki Kaisha Toshiba. Fuel cell and method for producing an electrode used therefor. 5,346,780, Cl. 429-42.000.
Suzuki, Nobuo; Tohyama, Masaki; and Onomura, Masaaki, to Kabushiki Kaisha Toshiba. Wavelength-tunable semiconductor laser. 5,347,526, Cl. 372-20.000.
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Suzuki, Yasuyuki; and Shimizu, Hisayoshi, to Takeda Chemical Industries, Ltd. Hydrogel. 5,346,935, Cl. 524-18.000.
Suzuki, Yoshiichi: *See—*
Koide, Yasuhiro; Mogamiya, Hiroyuki; and Suzuki, Yoshiichi, 5,346,648, Cl. 252-299.650.
Svejda, Frank J.: *See—*
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Svendsen, Robert A.: *See—*
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Svensson, Maria; Nordlander, Jan; and Andersson, Annika, to Molnlycke AB. Lockable container. 5,346,085, Cl. 220-210.000.
Svensson, Ulf; and Strom, Hans, to Aktiebolaget Electrolux. Method and device for controlling a carburetor. 5,345,912, Cl. 123-438.000.

Swank, Harry R.; Lundvall, Carl L., II; and Keller, Raymond E., to Thomson Consumer Electronics, Inc. Cathode-ray tube having implosion protection means with openings. 5,347,367, Cl. 348-822.000.
Swanson, John L.; and Austin, Lowell W., to Weirton Steel Corporation. Electrolytic tinplating and product. 5,346,607, Cl. 205-99.000.
Sweha, Sherif R. B.: *See—*
Kwong, Phillip M.; Sambandan, Sachidanandan; Sweha, Sherif R. B.; and Mills, Duane R., 5,347,484, Cl. 365-49.000.
Sweval, Mark A.; Register, W. Douglas; Robin, Mark L.; and Iikubo, Yuichi, to Great Lakes Chemical Corporation. Ozone-friendly sterilant mixture. 5,346,669, Cl. 422-34.000.
Swilik, Robert C., Jr.; Bruce, Thomas P.; Mills, Rex R.; and Larsen, Michael J., to Carrier Corporation. Cell panel with extruded burner target plates and process for making same. 5,346,002, Cl. 165-173.000.
Swinson, Peter R., to Rank Cintel Limited. Control system, especially for film and video tape transport. 5,347,203, Cl. 318-268.000.
Swisher, Harry E., Jr.: *See—*
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Switalski, Steven C.: *See—*
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Syamal, Pradip K.; and Mueller, Ronald A., to General Motors Corporation. Spoiler to rear deck lid assembly. 5,346,274, Cl. 296-180.100.
Sydansk, Robert D., to Marathon Oil Company. Polymer enhanced foam for treating gas override or gas channeling. 5,346,008, Cl. 166-274.000.
Sykes, Jerrold. Baby walker barrier. 5,345,731, Cl. 52-102.000.
Symtron Systems, Inc.: *See—*
Rogers, William; Ernst, James J.; Williamson, Steven; and Musto, Dominick J., 5,345,830, Cl. 73-866.000.
Syntello Vaccine Development KB: *See—*
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TA Instruments, Inc.: *See—*
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Tailliet, Francois, to SGS-Thomson Microelectronics, S.A. Protection structure against latch-up in a CMOS circuit. 5,347,185, Cl. 307-540.000.
Taisho Pharmaceutical Co., Ltd.: *See—*
Sano, Tatsuhiko; Saijo, Keiko; Yokomori, Sadakazu; Nakashima, Yoshimoto; and Hatayama, Katsuo, 5,347,012, Cl. 548-311.400.
Tajik, Abdul J.: *See—*
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Tajika, Hirofumi: *See—*
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Takada, Kazuyuki; and Kishi, Toru, to Matsushita Electric Industrial Co., Ltd. Output circuit of PWM inverter. 5,347,444, Cl. 363-98.000.
Takada, Kunio: *See—*
Okada, Ryoji; Aizawa, Kooju; Yamada, Masayuki; Otani, Kenji; Takada, Kunio; Haneda, Mitsuaki; and Yamada, Toshihiro, 5,346,316, Cl. 384-297.000.
Takada, Shun; and Masumi, Satoshi, to Konica Corporation. Rapid-access method of forming a stabilized silver halide color image. 5,346,809, Cl. 430-393.000.
Takagi, Toshiaki; and Watanabe, Yoshihiko, to Hitachi Koki Company Limited. Slipping torque changing apparatus for impact tool. 5,346,023, Cl. 173-178.000.
Takahashi, Hidefumi; and Wakai, Akio, to Mitsuba Electric Manufacturing Co., Ltd. Drainage structure of a volute horn. 5,345,852, Cl. 84-397.000.
Takahashi, Hiroyuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Lens-driving device for camera. 5,347,333, Cl. 354-187.000.
Takahashi, Hiroyuki; Nara, Wataru; Kamo, Yasushi; Aihara, Toshiyuki; and Tsuchiko, Seiji, to Ricoh Company, Ltd. Image scanning and processing apparatus with error checking. 5,347,372, Cl. 358-471.000.
Takahashi, Kazuhiro; Abe, Yoshiharu; and Katayanagi, Hideyuki, to Sanyo Electric Co., Ltd. Flow-type ice manufacturing machine. 5,345,782, Cl. 62-344.000.
Takahashi, Koichi: *See—*
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Takahashi, Kunihiro; Kojima, Yoshikazu; Takasu, Hiroaki; Matsuyama, Nobuyoshi; Niwa, Hitoshi; Yoshino, Tomoyuki; and Yamazaki, Tsuneo, to Seiko Instruments Inc. Light valve device using semiconductive composite substrate. 5,347,154, Cl. 257-347.000.
Takahashi, Masaharu; and Hatakeyama, Jun, to Shin-Etsu Chemical Co., Ltd. Silicone rubber composition and method for curing the same. 5,346,932, Cl. 523-213.000.
Takahashi, Nobuyuki: *See—*
Ushigami, Yoshiyuki; Arai, Satoshi; Suga, Yozo; Yoshitomi, Yasunari; Takahashi, Nobuyuki; and Senuma, Takehide, 5,346,559, Cl. 148-111.000.
Takahashi, Osamu: *See—*
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Takahashi, Ryutaro; Hayase, Toru; and Ohbayashi, Kunihiko, to Sharp Kabushiki Kaisha. Speaker driving device. 5,347,587, Cl. 381-117.000.
Takahashi, Sakae; Miyazaki, Hitoshi; and Kunii, Hitoshi, to Nippon Koki Co., Ltd. Igniter. 5,345,872, Cl. 102-202.200.
Takahashi, Shoji: *See—*
Miyamoto, Kouichi; and Takahashi, Shoji, 5,345,849, Cl. 83-783.000.
Takahashi, Tatsu-Hiro; and Kobayashi, Toshikazu, to Du Pont de Nemours, E. I., and Company. Lubricated polyacetal compositions. 5,346,737, Cl. 428-36.900.
Takahashi, Tooru: *See—*
Takanashi, Katsuya; Nakamura, Shouji; Akaosugi, Takashi; Kojima, Tomihiko; Takahashi, Tooru; and Shirahama, Ritsuo, 5,347,624, Cl. 395-157.000.
Takahashi, Toshiya, to Matsushita Electric Industrial Co., Ltd. Image coding method and apparatus. 5,347,309, Cl. 348-401.000.
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Hongo, Hitoshi; Yamada, Mitsuho; Uomori, Kenya; Yoshimatsu, Hiroshi; Ueno, Keiichi; Fujii, Mitsuru; Murakami, Shinji; Miyazawa, Jiro; Nakano, Norihito; Fukatsu, Ryo; and Takahata, Naohiko, 5,345,944, Cl. 128-742.000.
Takamizawa, Kinya: *See—*
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Takanashi, Katsuya; Nakamura, Shouji; Akaosugi, Takashi; Kojima, Tomihiko; Takahashi, Tooru; and Shirahama, Ritsuo, to Hitachi, Ltd. Method and apparatus for display control. 5,347,624, Cl. 395-157.000.
Takano, Masatoshi; and Hokamura, Satoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Manual recording paper insertion mechanism. 5,346,197, Cl. 271-9.000.
Takano, Masayuki: *See—*
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Takano, Sakuharu; and Kita, Sumio, to Sharp Kabushiki Kaisha. Information retrieval apparatus with user interface for displaying and printing of retrieved data in different selected sequences. 5,347,623, Cl. 395-157.000.
Takano, Yoshiaki: *See—*
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Takaoka, Aya: *See—*
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Takashima, Hiroyuki: *See—*
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Takashima, Koichi; and Nakamura, Shoji, to Kyoei Steel Co., Ltd. Continuous automatic steel making method and facility. 5,346,528, Cl 75-10.150.
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Takato, Kenji; Yoshida, Kazuhiro; and Minohara, Kazuyuki, to Fujitsu Limited. Battery feed circuit for supplying feed current to telephone set. 5,347,577, Cl. 379-413.000.
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Takei, Seiji, to Nippon Thompson Co., Ltd. Drive apparatus. 5,345,832, Cl. 74-89.000.
Takemoto, Sohei; and Woodhouse, Kenneth A., to ACCOM Inc. Digital image compositing system and method. 5,347,622, Cl. 395-135.000.
Takenberg, Meike: *See*—
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Takeuchi, Eiko: *See*—
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Takeuchi, Norio, to Nishikawa Rubber Co., Ltd. Weather strip. 5,346,273, Cl. 296-146.900.
Takeuchi, Shigeru: *See*—
Mori, Masaharu; Gochi, Motohiro; and Takeuchi, Shigeru, 5,347,537, Cl. 375-1.000.
Taki, Masao; Mori, Takuji; and Murakami, Shuntaro, to Calsonic Corporation; and Nishiwaki Laboratory. Sound attenuating system. 5,347,585, Cl. 381-71.000.
Takikawa, Kazunori: *See*—
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Takimoto, Hiroyuki: *See*—
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Tamai, Shoji; Iiyama, Katsuaki; and Yamaguchi, Akihiro, to Mitsui Toatsu Chemicals, Incorporated. Heat-resistant adhesive. 5,346,982, Cl. 528-183.000.
Tamai, Yoshin: *See*—
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Tamaki, Kenji: *See*—
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Tamba, Yuko: *See*—
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Tambrands Inc.: *See*—
Campion, Terese A.; Albright, Mark D.; and Davison, Betsy A., 5,346,468, Cl. 604-13.000.
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Nonoyama, Meihan; Tanaka, Akiko; Lai, Patrick K.; Konno, Kunio; Kawazoe, Yutaka; and Sakagami, Hiroshi, 5,346,695, Cl. 424-78.080.
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Tamura, Yasuo; Tanaka, Ryoji; Gohma, Takahiko; and Horikawa, Mitsumasa, to Koyo Sangyo Co., Ltd. Process for manufacturing a laminate. 5,346,574, Cl. 156-257.000.
Tanabe, Akira; Yoshioka, Ritsuo; Ueda, Makoto; Sakurada, Koichi; and Watanabe, Shouichi, to Kabushiki Kaisha Toshiba. Core of light-water reactor. 5,347,550, Cl. 376-173.000.
Tanabe, Shinji: *See*—
Taguchi, Motohisa; Fukami, Tatsuya; Hashima, Kazuo; Toide, Yukari; Kawano, Yuji; Fujii, Yoshio; Tokunaga, Takashi; Nakaki, Yoshiyuki; Tsutsumi, Kazuhiko; Kobayashi, Hiroshi; Ohdoi, Yuzou; Tanabe, Shinji; and Shibata, Hiroshi, 5,347,485, Cl. 365-171.000.
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Tanaka, Chifuyu; and Takahashi, Koji, to Canon Kabushiki Kaisha. Portable camera having a battery compartment below the lens optical axis. 5,347,307, Cl. 348-372.000.
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Tanaka, Hiroaki; and Koyanagi, Masaru, to Kabushiki Kaisha Toshiba. Pad arrangement for a semiconductor device. 5,347,145, Cl. 257-48.000.
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Onishi, Atsuhiro; Matsunami, Koichi; Ebara, Masanao; and Tanaka, Hiroaki, 5,346,927, Cl. 521-90.000.
Tanaka, Hisakatsu, to Olympus Optical Co., Ltd. Bar code symbol reading apparatus. 5,347,114, Cl. 235-467.000.
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Tanaka, Kuninobu, to Sony Corporation. Semi-insulating compound semiconductor device. 5,347,148, Cl. 257-173.000.
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Tanaka, Tadao; Morita, Takao; Togashi, Akihiko; Kishimoto, Naohiro; and Yoshida, Hiroaki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling vehicle suspension such that suspension characteristics are changed at a point in time when a vehicle wheel reaches a road surface irregularity detected in front of the vehicle. 5,347,457, Cl. 364-424.050.
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Sakai, Kenji, to Daido Metal Company Ltd. Copper based alloy for wear resistant sliding layer and sliding member. 5,346,668, Cl. 420-485.000.
Tanaka, Yasunori: *See*—
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Tanaka, Yasuyuki: *See*—
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Tang, Dah-Lain, to General Motors Corporation. Electronic fuel injection control. 5,345,914, Cl. 123-478.000.
Taniguchi, Kouji; Tanaka, Koichi; Terada, Kousuke; Mikami, Akiyoshi; and Yoshida, Masaru, to Sharp Kabushiki Kaisha. Electroluminescent panel. 5,346,776, Cl. 428-690.000.
Taniguchi, Takao; and Satou, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Method for producing semiconductor device using a vacuum sealing mechanism having inner and outer bellows. 5,346,513, Cl. 29-25.010.
Taniguchi, Takeshi: *See*—
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Taniguchi, Tsugiko: *See*—
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Tanioka, Tetsuya: *See*—
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Tanken Seiko Kabushiki Kaisha: *See*—
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Tanner, Paul R.: *See*—
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Tanoue, Kouichi; Kitamura, Shinzi; Anai, Noriyuki; Satoh, Takami; Tomoeda, Takayuki; Iwasaki, Tatsuya; and Mizosaki, Kengo, to Tokyo Electron Limited; and Tokyo Electron Kyushu Limited. Device and method for scrubbing and cleaning substrate. 5,345,639, Cl. 15-88.200.

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Osaki, Toshihiko; Taoda, Hiroshi; and Yamakita, Hiromi, 5,346,679, Cl. 423-210.000.
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Phillips, Edward H., 5,345,764, Cl. 60-393.000.
Techniweave, Inc.: *See*—
Burgess, Keith E., 5,346,774, Cl. 428-542.800.
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Blumberg, Murray B.; and Hoffman, William M., 5,346,573, Cl. 156-256.000.
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Augelli-Szafran, Corinne E.; Barrett, Stephen D.; Caprathe, Bradley W.; Galan, Adam A.; Jaen, Juan C.; Lauffer, David J.; Moos, Walter H.; Pavia, Michael R.; Sanders, Kathryn B.; Tecle, Haile; and Thomas, Anthony J., 5,346,911, Cl. 514-339.000.
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Pettersson, Bjorn O. A., 5,346,529, Cl. 75-252.000.
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von Kaler, Roland L.; and Page, Rocky H., 5,345,837, Cl. 74-475.000.
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Teletron Ltd.: *See*—
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Johansen, Lars, 5,347,606, Cl. 385-95.000.
Telident, Incorporated: *See*—
Moody, Martin; and Osgood, Gordan, 5,347,567, Cl. 379-45.000.
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Chang, Hyokang, 5,347,611, Cl. 395-2.150.
Teltrend Inc.: *See*—
Garcia, Frank X.; and Miller, Bruce R., 5,347,544, Cl. 375-36.000.
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Marsh, Thomas R.; and Porter, Carl R., 5,347,088, Cl. 174-50.000.
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Te-Wei, Lee; Gann, Ting; Chang-Shinn, Su; and Shyh-Yi, Chyi, to Institute of Nuclear Energy Research. Preparation of copper 2-alkoxyisobutylisonitrile complexes and ^{99m}Tc labelling of 2-alkoxyisobutylisonitrile. 5,346,995, Cl. 534-14.000.
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Jahnke, Frederick C.; Wallace, Paul S.; and Thacker, Pradeep S., 5,345,756, Cl. 60-39.020.
Texas Instruments Deutschland GmbH: *See*—
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Bayraktaroglu, Burhan, 5,347,149, Cl. 257-192.000.
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Gove, Robert J., 5,347,321, Cl. 348-663.000.
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Thiokol Corporation: *See—*
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Thomas, David P.: *See—*
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Thomson Industries, Inc.: *See—*
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Thorgersen, Harold; and Daigle, Lyman, to Timex Corporation. Electroluminescent lamp contacts and method of making of same. 5,346,718, Cl. 427-66.000.

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Thurmond, Robert C.; DiCarlo, Edward J.; Herman, Fred W.; Hogan, Dennis L.; Lynch, John L.; and Russell, Hildan B., to Security Tag Systems, Inc. Theft-deterrent device providing force-sensitive tamper detection. 5,347,262, Cl. 340-572.000.

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Tilley, Mark G.; and Gallucci, Robert R., to General Electric Company. Abrasion resistant highly filled polyester compositions. 5,346,767, Cl. 428-412.000.

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Toki, Hitoshi; Yonezawa, Yoshihisa; and Itoh, Shigeo, to Futaba Denshi Kogyo K.K. Powder agitator. 5,347,133, Cl. 250-492.300.

Toko Abasu Co., Ltd.: *See—*
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Toral, Jose; Brandstetter, Hermann; Lutz, Gottfried; and Thiele, Hartmut, to BASF Magnetics GmbH. Multipack for wound rolls. 5,346,741, Cl. 428-65.000.

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Torimaru, Yasuo, to Sharp Kabushiki Kaisha. Non-volatile associative memory with low transistor count. 5,347,483, Cl. 365-49.000.

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Tosmin Kogyo Co., Ltd.: *See—*
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Page, Derrick J., 5,347,288, Cl. 342-375.000.
Westley, David R., to BOC Group plc, The. Fumeless cupolas. 5,346,183, Cl. 266-197.000.

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White, James F.; Slawski, Barbara; and White, Geoffrey, to Engelhard Corporation. Catalyst and process for using same for the preparation of unsaturated carboxylic acid esters. 5,347,046, Cl. 560-245.000.
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Wiedner, Klaus, to Uvex Safety, LLC. Pair of goggles with pad elements at the ends of the temples or at the nose piece. 5,345,616, Cl. 2-446.000.
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Wilson, Dennis R.; Cole, Jack H.; Moyer, Wilber R.; and Moran, Larry K., to Conoco Inc. Apparatus and method for centralizing pipe in a wellbore. 5,346,016, Cl. 166-380.000.
Wilson, Ken. Sunglasses. 5,347,323, Cl. 351-44.000.
Wilson, Paul B., to Bridgesteon Corporation. Method and apparatus for video imaging of tire ground contact patch. 5,347,588, Cl. 382-1.000.
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Wuller, Karl-Heinz, to Durr GmbH. Method for processing filter backwash fluid for reuse as cleaning fluid. 5,346,629, Cl. 210-739.000.
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Ishihara, Yukihito; Yamakido, Kazuo; and Tamba, Yuko, 5,347,279, Cl. 341-166.000.

Yamakita, Hiromi: *See*—
Osaki, Toshihiko; Taoda, Hiroshi; and Yamakita, Hiromi, 5,346,679, Cl. 423-210.000.

Yamakoshi, Issei: *See*—
Sekino, Hirokazu; and Yamakoshi, Issei, 5,345,777, Cl. 62-244.000

Yamamoto, Hirohiko; Higashi, Keijirou; Takebe, Hiroyuki; Nakano, Hiroshi; and Ohta, Tomozo, to Sharp Kabushiki Kaisha. Back fire helical antenna. 5,346,300, Cl. 343-895.000.

Yamamoto, Hiroshi: *See*—
Endoh, Toshio; Tobita, Hiroshi; and Yamamoto, Hiroshi, 5,346,204, Cl. 271-294.000.

Yamamoto, Koichi: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Sakai, Kenji, 5,346,668, Cl. 420-485.000

Yamamoto, Koji: *See*—
Yoda, Hiroaki; Machizawa, Kenzi; and Yamamoto, Koji, 5,345,786, Cl. 62-476.000.

Yamamoto, Kunji: *See*—
Sano, Masamichi; Miyagawa, Nobuo; and Yamamoto, Kunji, 5,346,185, Cl. 266-208.000.

Yamamoto, Mayuko: *See*—
Nishimura, Ryuji; Nishizawa, Akihito; Yamamoto, Mayuko; and Imaide, Takuya, 5,347,371, Cl. 358-453.000.

Yamamoto, Narihito: *See*—
Ohgake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Shimizu, Teruo; and Yamamoto, Narihito, 5,346,724, Cl. 427-384.000.

Yamamoto, Takao: *See*—
Nagamura, Takashi; and Yamamoto, Takao, 5,345,773, Cl. 62-38.000.

Yamamoto, Takehisa: *See*—
Nishioka, Takao; Yamamoto, Takehisa; Matsunuma, Kenji; Yamakawa, Akira; and Miyake, Masaya, 5,346,869, Cl 501-98.000.

Yamamoto, Takeshi, to NEC Corporation. Gain control circuitry for QAM demodulator. 5,347,569, Cl. 375-39.000.

Yamamoto, Yorihisa: *See*—
Serizawa, Mitsuya; and Yamamoto, Yorihisa, 5,347,458, Cl. 364-424.050.

Yamamura, Takashi; Nakamura, Ryosuke; and Kiriyama, Hiroshi, to Shinagawa Refractories Co., Ltd. Monolithic refractories. 5,346,942, Cl. 524-322.000.

Yamanaga, Junichi: *See*—
Yamanaka, Yasurou; Yamanaga, Junichi; Morizono, Akira; Miyazaki, Akira; and Unose, Noriyuki, 5,345,675, Cl. 29-894.300

Yamanaka, Kazuyuki, to Kabushiki Kaisha Toshiba. External lead shape measurement apparatus for measuring lead shape of semiconductor package by using stereoscopic vision. 5,347,363, Cl. 356-376.000.

Yamanaka, Masayoshi: *See*—
Maruyama, Hiroshi; and Yamanaka, Masayoshi, 5,345,917, Cl 123-520.000.

Yamanaka, Yasurou; Yamanaga, Junichi; Morizono, Akira; Miyazaki, Akira; and Unose, Noriyuki, to Honda Giken Kogyo Kabushiki Kaisha. Method of mounting wheel to vehicle. 5,345,675, Cl. 29-894.300.

Yamanoi, Seiichi. Paper holder having a locking device. 5,346,325, Cl. 402-38.000.

Yamaoka, Hideo: *See*—
Kawabata, Junichi; Yamaoka, Hideo; Tatsuki, Yuuichirou; and Nishiyama, Shinichi, 5,346,646, Cl. 252-299.620

Yamasaki, Komei: *See*—
Negi, Taichi; Mochizuki, Akira; Nagata, Shiro; Yamasaki, Komei; Funaki, Keisuke; and Sumitomo, Takashi, 5,346,950, Cl. 525-57.000.

Yamashita, Haruo; Fukushima, Tsumoru; and Ishihara, Hideshi, to Matsushita Electric Industrial Co., Ltd. Adaptive interpolation method and apparatus using correlation detection. 5,347,599, Cl. 382-54.000.

Yamashita, Shinichi: *See*—
Gohda, Makoto; Yamashita, Shinichi; and Tanaka, Yasuyuki, 5,347,408, Cl. 360-65.000.

Yamauchi, Yuji; and Inoue, Kenji, to Tanken Seiko Kabushiki Kaisha. Method for predicting abnormality of mechanical seal and apparatus for predicting same. 5,345,829, Cl. 73-865.900.

Yamazaki, Satoru: *See*—
Yasuda, Hiroshi; Yamazaki, Satoru; and Sakamoto, Kiichi, 5,347,592, Cl. 382-8.000

Yamazaki, Susumu, to Sanshin Kogyo Kabushuki Kaisha. Exhaust system for outboard motor. 5,346,416, Cl. 440-89.000.

Yamazaki, Toshio: *See*—
Yokoyama, Yasuhiro; Iwata, Noriko; Ito, Eri; Ando, Ichiro; Ichinohe, Shoji; and Yamazaki, Toshio, 5,346,946, Cl. 524-547.000.

Yamazaki, Tsuneo: *See*—
Takahashi, Kunihiro; Kojima, Yoshikazu; Takasu, Hiroaki; Matsuyama, Nobuyoshi; Niwa, Hitoshi; Yoshino, Tomoyuki; and Yamazaki, Tsuneo, 5,347,154, Cl. 257-347.000.

Yan, Mingdi: *See*—
Keana, John F. W.; Wybourne, Martin N.; Cai, Sui X.; and Yan, Mingdi, 5,346,807, Cl. 430-296.000.

Yanagi, Akihiko: *See*—
Goto, Toshio; Hayakawa, Hidenori; Watanabe, Yukiyoshi; and Yanagi, Akihiko, 5,347,009, Cl. 548-251.000.
Goto, Toshio; Hayakawa, Hidenori; Watanabe, Yukiyoshi; Narabu, Shin-ichi; and Yanagi, Akihiko, 5,347,010, Cl. 548-251.000.

Yanagihara, Naofumi: *See*—
Yamada, Takaaki; Okada, Hiroshi; and Yanagihara, Naofumi, 5,347,310, Cl. 348-405.000.

Yanagisawa, Leiichi: *See*—
Hayakawa, Shigeyuki; and Yanagisawa, Leiichi, 5,347,170, Cl. 307-296.100.

Yanagisawa, Yoshihiro: *See*—
Kawagishi, Hideyuki; Takimoto, Kiyoshi; Kawada, Haruki; Matsuda, Hiroshi; and Yanagisawa, Yoshihiro, 5,347,379, Cl. 359-58.000.

Yang, Chi C.: *See*—
Guha, Subhendu; Yang, Chi C.; and Xu, XiXiang, 5,346,853, Cl. 437-113.000.

Yang, Wei T.: *See*—
Ritscher, James S.; Yang, Wei T.; Omietanski, George M.; Ocheltree, Robert L.; and Malson, Earl E., 5,347,027, Cl. 556-413.000.

Yano, Akihiro: *See*—
Yamada, Satoru; and Yano, Akihiro, 5,347,025, Cl. 556-11.000.

Yano, Hideki: *See*—
Hongo, Masafumi; Yano, Hideki; and Shigemitsu, Hideyuki, 5,346,952, Cl. 525-68.000.

Yano, Toshikazu; and Ochi, Masao, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Refractory element. 5,345,995, Cl. 165-46.000.

Yarbrough, Sandra M.; Shet, Ramakant T.; and Harland, Ronald S., to Kimberly-Clark Corporation. Polymeric composition for the absorption of proteinaceous fluids. 5,346,485, Cl. 604-368.000.

Yasuda, Hiroshi; Yamazaki, Satoru; and Sakamoto, Kiichi, to Fujitsu Limited. Pattern judging method and mask producing method using the pattern judging method. 5,347,592, Cl. 382-8.000.

Yasuda, Hisashi: *See*—
Obata, Fumio; Yasuda, Hisashi; Nagayoshi, Hideaki; Suehara, Kiyoshi; Imanishi, Kouhei; and Yoshida, Toshiki, 5,346,561, Cl. 148-321.000.

Yasuda, Seigo: *See*—
Fujimoto, Junichiroh; Yasuda, Seigo; and Nakatani, Tomofumi, 5,347,612, Cl. 395-2.520.

Yasuho, Takeo; Tajika, Hirofumi; and Kohzu, Katsumi, to Matsushita Electronic Industrial Co., Ltd. Electronic circuit device and manufacturing method thereof. 5,346,402, Cl. 439-71.000.

Yasui, Juro: *See*—
Hirai, Yoshihiko; Morimoto, Kiyoshi; Terui, Yasuaki; Wada, Atsuo; Okada, Kenji; Yasui, Juro; and Niwa, Masaaki, 5,347,140, Cl. 257-17.000.

Yasumoto, Takeshi: *See*—
Watanabe, Tsuneo; Yasumoto, Takeshi; Murata, Michio; Tagawa, Michito; Narushima, Hiroyuki; Furusato, Takashi; Kuwahara, Masao; Hanaue, Masami; and Seki, Tatsuya, 5,346,919, Cl. 514-468.000.

Yazaki Corporation: *See*—
Okafuji, Osamu; Sato, Akiyoshi; and Yamaguchi, Akio, 5,345,978, Cl. 140-92.100.
Sakai, Hitoshi; Saitoh, Hitoshi; and Sugiyama, Osamu, 5,346,414, Cl. 439-752.000.

Yee, Bark Lee: *See*—
Wright, W. Andrew, Jr., 5,347,245, Cl. 333-131.000.

Yeh, James T.: *See*—
Baseman, Robert J.; Brown, Charles A.; Eldridge, Benjamin N.; Rothman, Laura B.; Wendt, Herman R.; Yeh, James T.; and Zingher, Arthur R., 5,346,518, Cl. 55-267.000.

Yeh, Thomas. Toy bird capable of drinking water and producing sound. 5,346,421, Cl. 446-199.000.

Yeh, Wen-Jen, to Accton Technology Corporation. Uninterruptible power supply having a 115V or 230V selectable AC output and power saving. 5,347,164, Cl. 307-66.000.

Yercha, N. Wayne; and Dennis, Desmond W., to Dino Pal Toys Ltd. Toy cardboard tent. 5,345,961, Cl. 435-87.000.

Yerlikaya, Denis Y.; Krohn, Randall J.; Walker, Clarence L.; Wilhelm, Michael J.; and Kinghorn, Curtis D., to Sherwood Medical Company. Drop detection method and apparatus. 5,346,466, Cl. 604-253.000.

Yoda, Hiroaki; Machizawa, Kenzi; and Yamamoto, Koji, to Hitachi, Ltd. Absorption heat pump and cogeneration system utilizing exhaust heat. 5,345,786, Cl. 62-476.000.

Yokohama Rubber Co., Ltd., The: *See*—
Kabe, Kazuyuki; and Tomoda, Hajime, 5,345,988, Cl. 152-209.00R.

Yokomori, Sadakazu: *See*—
Sano, Tatsuhiko; Saijo, Keiko; Yokomori, Sadakazu; Nakashima, Yoshimoto; and Hatayama, Katsuo, 5,347,012, Cl. 548-311.400.

Yokono, Shinji, to NEC Corporation. Fluorescent display panel containing chip of integrated circuit with discrepancy markers to aid in lead bonding. 5,346,748, Cl. 428-209.000.

Yokoyama, Mizuho: *See*—
Okamoto, Yoshio; Kanamaru, Hisanobu; Maeda, Hitoshi; Suzuki, Satoshi; Ishikawa, Tohru; Kosuge, Tokuo; Amou, Kiyoshi; Ohki, Hiroshi; Nakagawa, Koji; Tanabe, Yoshiyuki; and Yokoyama, Mizuho, 5,346,137, Cl. 239-585.400.

Yokoyama, Yasuhiro; Iwata, Noriko; Ito, Eri; Ando, Ichiro; Ichinohe, Shoji; and Yamazaki, Toshio, to Menicon Co., Ltd; and Shin-Etsu Chemical Co., Ltd. Ocular lens material. 5,346,946, Cl. 524-547.000.

Yokoyama, Yoshinobu; Aoki, Tatsuya; and Shimizu, Etsuo, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Shift lever device for automatic transmission. 5,345,836, Cl. 74-473.00R.

Yoneda, Nae: *See*—
Kohno, Ryuji; Nishimura, Asao; Kitano, Makoto; Yaguchi, Akihiro; and Yoneda, Nae, 5,347,429, Cl. 361-813.000.

Yoneda, Yasunobu: *See*—
Kodama, Takashi; and Yoneda, Yasunobu, 5,346,638, Cl. 252-62.590.

Yoneyama, Shuji; and Sensui, Takayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens system. 5,347,399, Cl. 359-690.000.

Yonezawa, Yoshihisa: *See*—
Toki, Hitoshi; Yonezawa, Yoshihisa; and Itoh, Shigeo, 5,347,133, Cl. 250-492.300.

York Products, Inc.: *See*—
Kennedy, John W., 5,345,658, Cl. 24-297.000.

Yoshida, Akihiko: *See*—
Sugai, Masakatsu; Mizuno, Yasuo; Ikeda, Masaki; and Yoshida, Akihiko, 5,346,523, Cl. 65-102.000.

Yoshida, Atsushi, to NEC Corporation. System for access from LAN to ISDN with means for changing between use of packet switch and line switch without interruption of data transmission. 5,347,516, Cl. 370-94.100.

Yoshida, Hiroaki: *See*—
Tanaka, Tadao; Morita, Takao; Togashi, Akihiko; Kishimoto, Naohiro; and Yoshida, Hiroaki, 5,347,457, Cl. 364-424.050.

Yoshida, Kazuhiro: *See*—
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Yoshida Kogyo K.K.: *See*—
Ito, Michio, 5,346,352, Cl. 414-400.000.
Shimizu, Hideki, 5,345,657, Cl. 24-115.00G.

Yoshida, Masaru: *See*—
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Yoshida, Masatoshi: *See*—
Moriya, Masafumi; Hosoda, Kazuo; Yoshida, Masatoshi; and Tsukanome, Masayoshi, 5,347,071, Cl. 588-256.000.

Yoshida, Shigenobu: *See*—
Sawada, Tsutomu; Ohashi, Shinichi; and Yoshida, Shigenobu, 5,346,752, Cl. 428-216.000.

Yoshida, Toshiki: *See*—
Obata, Fumio; Yasuda, Hisashi; Nagayoshi, Hideaki; Suehara, Kiyoshi; Imanishi, Kouhei; and Yoshida, Toshiki, 5,346,561, Cl. 148-321.000.

Yoshida, Yasuhiko, to C. Itoh Fine Chemical Co., Ltd.; Murayama, Yoichi; and Yoshida, Yasuhiko. Method for reforming surface. 5,346,728, Cl. 427-569.000.

Yoshihito, Yaginuma: *See*—
Yosuke, Honda; Tsuneaki, Tanabe; and Yoshihito, Yaginuma, 5,346,542, Cl. 106-194.000.

Yoshimatsu, Hiroshi: *See*—
Hongo, Hitoshi; Yamada, Mitsuho; Uomori, Kenya; Yoshimatsu, Hiroshi; Ueno, Keiichi; Fujii, Mitsuru; Murakami, Shinji; Miyazawa, Jiro; Nakano, Norihito; Fukatsu, Ryo; and Takahata, Naohiko, 5,345,944, Cl. 128-742.000.

Yoshimura, Kiyonobu: *See*—
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Yoshimura, Kiyoshi: *See*—
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Yoshimura, Yutaka, to Sharp Kabushiki Kaisha. Power supply backup device for use in portable electronic apparatus. 5,347,163, Cl. 307-66.000.

Yoshino, Ken: *See*—
Usui, Minoru; Yamagishi, Kouji; Yoshino, Ken; and Mori, Hideki, 5,347,294, Cl. 345-89.000.

Yoshino Kogyosho Co, Ltd.: *See*—
Mizushima, Hiroshi; Saito, Tadao; and Nozawa, Takamitsu, 5,346,103, Cl. 222-321.000.

Yoshino, Sota, to Nara Company, Ltd. Looper of tufting machine. 5,345,885, Cl. 112-80.550.

Yoshino, Tomoyuki: *See*—
Takahashi, Kunihiro; Kojima, Yoshikazu; Takasu, Hiroaki; Matsuyama, Nobuyoshi; Niwa, Hitoshi; Yoshino, Tomoyuki; and Yamazaki, Tsuneo, 5,347,154, Cl. 257-347.000.

Yoshioka, Katsuhiro: *See*—
Ozawa, Yoshio; Ikeda, Yukio; and Yoshioka, Katsuhiro, 5,346,791, Cl. 430-106.600.

Yoshioka, Ritsuo: *See*—
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Yoshitomi, Yasunari: *See*—
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Yoshiyama, Tsugihito: *See*—
Shimizu, Tadafumi; Takano, Yoshiaki; Ideyama, Hiroyuki; Kamitamari, Manabu; Nishimori, Kadotaro; Hatta, Yoshihiko; Ito, Masazumi; Yoshiyama, Tsugihito; Shibata, Yoshifumi; and Hata, Yoshiaki, 5,347,346, Cl. 355-202.000.

Yosuke, Honda; Tsuneaki, Tanabe; and Yoshihito, Yaginuma, to Asahi Kasei Kogyo Kabushiki Kaisha. Aqueous dispersion of enteric polymers and a method for producing the same. 5,346,542, Cl. 106-194.000.

You, Ho-Joong, to SamSung Electronics Co., Ltd. Circuit for generating addresses for buffering and reading the data from a CD-ROM and method therefor. 5,347,640, Cl. 395-400.000.

Young, Francis C.: *See*—
Filepp, Robert; Gordon, Michael L.; Bidewell, Alexander W.; Young, Francis C.; Wolf, Allan M.; Meo, Sam; Tiemann, Duane; Cohen, Robert D.; Bellar, Mel; Appleman, Kenneth H.; Abrahams, Lawrence; and Silfen, Michael J., 5,347,632, Cl. 395-200.000.

Yuasa, Kohji; Ikoma, Munehisa; Kawano, Hiroshi; Takahashi, Osamu; and Matsumoto, Isao, to Matsushita Electric Industrial Co., Ltd. Alkaline storage battery. 5,346,781, Cl. 429-59.000.

Yugengaisya Towa: *See*—
Nakata, Akira, 5,346,757, Cl. 428-296.000.

Yukawa, Yoshiyuki; Yabuta, Motoshi; Nakahata, Akimasa; Miyamoto, Yuzo; Kobayashi, Masaaki; and Ueno, Naruhito, to Kansai Paint Company, Limited. Curable coating compositions containing polystyrene microparticles. 5,346,958, Cl. 525-124.000.

Yumiki, Naoto; Matsuura, Kenji; and Jinno, Akiharu, to Matsushita Electric Industrial Co., Ltd. Rotary transformer. 5,347,256, Cl. 336-84.00C.

Yun, Chong S., to Atlantic Richfield Company. Fabric equipment guard. 5,346,754, Cl. 428-228.000.

Yutaka, Teiji, to Sony Corporation. Method and apparatus for processing image data. 5,347,621, Cl. 395-131.000.

Zak, Pavel P.: *See*—
Fedorov, Svyatoslav N.; Linnik, Leonid F.; Shimshlashvili, Givi D.; Starshinova, Valentina S.; Zak, Pavel P.; Ostrovsky, Mikhail A.; Fedorovich, Irina B.; Roslyakova, Valentina A.; Guzeev, Valentin V.; Dyachkov, Alexandr I.; Afanasieva, Irina I.; Ljusina, Vera S.; and Degtev, Evgeny I., 5,346,507, Cl. 623-6.000.

Zarembo, Peter J.: *See*—
Montbriand, David P.; and Zarembo, Peter J., 5,347,508, Cl. 369-273.000.

Zarnoch, Kenneth P.; and Iacovangelo, Charles D., to General Electric Company. Tungsten metallization of CVD diamond. 5,346,719, Cl. 427-97.000.

Zeder, Abraham. Electrical receptacle for use with annunciator apparatus for monitoring electrical connections. 5,347,095, Cl. 200-51.090.

Zeitlin, Andrew L.: *See*—
Stirling, David I.; Raju, Muppala S.; and Zeitlin, Andrew L., 5,346,828, Cl. 435-280.000.

Zeller, James R.: *See*—
Fedij, Victor; Suto, Mark J.; Wemple, James N.; and Zeller, James R., 5,347,017, Cl. 548-566.000.

Zemke, Steven C.: *See*—
Loehner, Henry F.; and Zemke, Steven C., 5,347,239, Cl. 333-81.00R.

Zenith Electronics Corporation: *See*—
Tong, Hua-Sou; and Prando, Gregory, 5,346,721, Cl. 427-126.200.

Zetterower, Charlie W.: *See*—
Bush, Daniel R.; Patel, Ashok; and Zetterower, Charlie W., 5,347,305, Cl. 348-14.000.

Zexel-Gleason USA, Inc.: *See*—
Crysler, Daniel E.; and Ostertag, Steven E., 5,346,443, Cl. 475-252.000.

Zhang, Wei-bin; and Parsons, Robert E., to University of California, The Regents of the. Intelligent roadway reference system for vehicle lateral guidance and control. 5,347,456, Cl. 364-424.020.
Ziemek, Gerhard; Staschewski, Harry; and Meyer, Hermann, to Kabelmetal Electro GmbH. Capstan draw apparatus for periodically gripping and drawing an elongated member. 5,346,112, Cl. 226-173.000.
Zierpka, Gunter. Machinery for discontinuously forwarding material or work past or through discontinuously operating tools. 5,346,055, Cl. 198-621.000.
Zigler, Robert V.; and Stark, William H., to General Electric Company. Method of making a permanent magnet rotor. 5,345,669, Cl. 29-598.000.
Zijderhand, Frans, to U.S. Philips Corporation. Method and arrangement for data transmission with load monitor and adaptive distribution. 5,347,521, Cl. 370-85.300.
Ziklik, Arye: *See*—
Cedar, Yoram; Ziklik, Arye; and Shubat, Alex, 5,347,641, Cl. 395-400.000.
Zimmer, Johannes. Device having a profile strip equipped with a squeeze element that is freely movable transversely to a working surface. 5,346,552, Cl. 118-126.000.
Zimmer, Mark A. System and method for digital rendering of images and printed articulation. 5,347,620, Cl. 395-129.000.
Zimmerman, Leon S.: *See*—
Evans, Robert B., III; and Zimmerman, Leon S., 5,345,894, Cl. 119-53.000.
Zimmermann, Clifton; and Kuerten, Heribert, to BASF Aktiengesellschaft. Severing a web. 5,346,151, Cl. 242-521.000.
Zimmermann, Helmut, to Stihl, Andreas. Cutting arrangement for a motor-driven chain saw. 5,345,686, Cl. 30-386.000.
Zimmet, Arthur: *See*—
Hobbs, Eamonn; Hawkins, Irvin F.; Zimmet, Arthur; Goodman, John; and Recinella, Daniel, 5,346,470, Cl. 604-24.000.
Zingher, Arthur R.: *See*—
Baseman, Robert J.; Brown, Charles A.; Eldridge, Benjamin N.; Rothman, Laura B.; Wendt, Herman R.; Yeh, James T.; and Zingher, Arthur R., 5,346,518, Cl. 55-267.000.
Zurecki, Zbigniew: *See*—
Slavejkov, Aleksandar G.; Zurecki, Zbigniew; Joshi, Mahendra L.; and Nabors, James K., 5,346,390, Cl. 431-8.000.
Zwicknagl, Hans-Peter: *See*—
Schleicher, Lothar; Zwicknagl, Hans-Peter; and Schoening, Elke, 5,346,862, Cl. 437-228.000.
ZYCON Corporation: *See*—
Howard, James R.; Lucas, Gregory L.; Bryan, Scott K.; and Choe, Jin S., 5,347,258, Cl. 338-333.000.
3V Inc.: *See*—
Raspanti, Giuseppe, 5,346,691, Cl. 424-59.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF SEPTEMBER, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aamodt, Robert A.: *See*—
Salatin, Timothy; Balch, Thomas C.; Knight, Michael C.; Shesterkin, Michael D.; Van Antwerp, John S.; Lamberty, Paul E.; and Aamodt, Robert A., Re. 34,730, Cl. 427-407.100.
Balch, Thomas C.: *See*—
Salatin, Timothy; Balch, Thomas C.; Knight, Michael C.; Shesterkin, Michael D.; Van Antwerp, John S.; Lamberty, Paul E.; and Aamodt, Robert A., Re. 34,730, Cl. 427-407.100.
BASF Corporation, Inmont Division: *See*—
Salatin, Timothy; Balch, Thomas C.; Knight, Michael C.; Shesterkin, Michael D.; Van Antwerp, John S.; Lamberty, Paul E.; and Aamodt, Robert A., Re. 34,730, Cl. 427-407.100.
Braden Industries: *See*—
Braden, Joe T., Re. 34,725, Cl. 119-18.000.
Braden, Joe T., to Braden Industries. Calf feeder bottle for dry feed *and nipple used therewith* . Re. 34,725, Cl. 119-18.000.
California Institute of Technology: *See*—
Sipes, Donald L., Jr., Re. 34,729, Cl. 372-75.000.
Canon Kabushiki Kaisha: *See*—
Hosono, Nagao; Kinoshita, Koichi; and Takahashi, Toru, Re. 34,724, Cl. 118-657.000.
Day, Gerald F.: *See*—
Robinson, Frank; and Day, Gerald F., Re. 34,723, Cl. 66-170.000.
Diafoil Company, Ltd.: *See*—
Utsumi, Shigeo; Tomitaka, Kichinojo; Kotani, Tomoyuki; and Koizumi, Masumi, Re. 34,727, Cl. 264-210.700.
Displaytech, Inc.: *See*—
Wand, Michael; Thurmes, William N.; and Walba, David, Re. 34,726, Cl. 252-299.010.
General Motors Corporation: *See*—
Robinson, Frank; and Day, Gerald F., Re. 34,723, Cl. 66-170.000.
Hall-Tipping, Justin, to Heartbeat Corp. Video game difficulty level adjuster dependent upon player's aerobic activity level during exercise. Re. 34,728, Cl. 364-413.040.
Heartbeat Corp.: *See*—
Hall-Tipping, Justin, Re. 34,728, Cl. 364-413.040.
Hosono, Nagao; Kinoshita, Koichi; and Takahashi, Toru, to Canon Kabushiki Kaisha. Developing apparatus for electrostatic image. Re. 34,724, Cl. 118-657.000.
Kinoshita, Koichi: *See*—
Hosono, Nagao; Kinoshita, Koichi; and Takahashi, Toru, Re. 34,724, Cl. 118-657.000.
Knight, Michael C.: *See*—
Salatin, Timothy; Balch, Thomas C.; Knight, Michael C.; Shesterkin, Michael D.; Van Antwerp, John S.; Lamberty, Paul E.; and Aamodt, Robert A., Re. 34,730, Cl. 427-407.100.
Koizumi, Masumi: *See*—
Utsumi, Shigeo; Tomitaka, Kichinojo; Kotani, Tomoyuki; and Koizumi, Masumi, Re. 34,727, Cl. 264-210.700.
Kotani, Tomoyuki: *See*—
Utsumi, Shigeo; Tomitaka, Kichinojo; Kotani, Tomoyuki; and Koizumi, Masumi, Re. 34,727, Cl. 264-210.700.
Lamberty, Paul E.: *See*—
Salatin, Timothy; Balch, Thomas C.; Knight, Michael C.; Shesterkin, Michael D.; Van Antwerp, John S.; Lamberty, Paul E.; and Aamodt, Robert A., Re. 34,730, Cl. 427-407.100.
Robinson, Frank; and Day, Gerald F., to General Motors Corporation. Knitting method for forming integrally formed joins for three dimension fabric. Re. 34,723, Cl. 66-170.000.
Salatin, Timothy; Balch, Thomas C.; Knight, Michael C.; Shesterkin, Michael D.; Van Antwerp, John S.; Lamberty, Paul E.; and Aamodt, Robert A., to BASF Corporation, Inmont Division. Polyurethane resins in water-dilutable basecoats having low flash and quick-drying characteristics. Re. 34,730, Cl. 427-407.100.
Shesterkin, Michael D.: *See*—
Salatin, Timothy; Balch, Thomas C.; Knight, Michael C.; Shesterkin, Michael D.; Van Antwerp, John S.; Lamberty, Paul E.; and Aamodt, Robert A., Re. 34,730, Cl. 427-407.100.
Sipes, Donald L., Jr., to California Institute of Technology. Method and apparatus for efficient operation of an optically pumped laser. Re. 34,729, Cl. 372-75.000.
Takahashi, Toru: *See*—
Hosono, Nagao; Kinoshita, Koichi; and Takahashi, Toru, Re. 34,724, Cl. 118-657.000.
Thurmes, William N.: *See*—
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Tomitaka, Kichinojo: *See*—
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Utsumi, Shigeo; Tomitaka, Kichinojo; Kotani, Tomoyuki; and Koizumi, Masumi, to Diafoil Company, Ltd. Low-shrinkage polyester film and preparation thereof. Re. 34,727, Cl. 264-210.700.
Van Antwerp, John S.: *See*—
Salatin, Timothy; Balch, Thomas C.; Knight, Michael C.; Shesterkin, Michael D.; Van Antwerp, John S.; Lamberty, Paul E.; and Aamodt, Robert A., Re. 34,730, Cl. 427-407.100.
Walba, David: *See*—
Wand, Michael; Thurmes, William N.; and Walba, David, Re. 34,726, Cl. 252-299.010.
Wand, Michael; Thurmes, William N.; and Walba, David, to Displaytech, Inc. Ferroelectric liquid crystal compositions containing chiral haloalkoxy tail units. Re. 34,726, Cl. 252-299.010.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Blythin, David J.; and Shue, Ho-Jane, to Schering Corporation. Aryl-substituted naphthyridine and pyridopyrazine derivatives. B1 4,886,061, 9-13-94, Cl. 514-250.000.
Cremonese, Joseph G. Cell culture flask utilizing membrane barrier. B1 4,839,292, 9-13-94, Cl. 435-313.000.
Davila, Dan I.; Midkiff, John A.; and Ekanayake, Dulip, to Siecor Corporation. Communication outlet. B1 4,976,510, 9-13-94, Cl. 385-135.000.
Davy McKee Aktiengesellschaft: *See*—
Rothe, Hans J.; Heinze, Helmut; Whitehead, Brian D.; and Priepke, Gunther, B1 4,064,112, Cl. 528-272.000.
Dawson, John H.: *See*—
Guilhaus, Michael; and Dawson, John H., B1 5,117,107, Cl. 250-287.000.
Eisenbraun, Kenneth D., to Eisenbraun Reiss Inc. Light assembly kit for illuminating an article of clothing. B1 5,113,325, 9-13-94, Cl. 362-103.000.
Eisenbraun Reiss Inc.: *See*—
Eisenbraun, Kenneth D., B1 5,113,325, Cl. 362-103.000.
Ekanayake, Dulip: *See*—
Davila, Dan I.; Midkiff, John A.; and Ekanayake, Dulip, B1 4,976,510, Cl. 385-135.000.
Guilhaus, Michael; and Dawson, John H., to Unisearch Limited. Mass spectrometer. B1 5,117,107, 9-13-94, Cl. 250-287.000.
Heinze, Helmut: *See*—
Rothe, Hans J.; Heinze, Helmut; Whitehead, Brian D.; and Priepke, Gunther, B1 4,064,112, Cl. 528-272.000.
Honeywell Inc.: *See*—
Levine, Michael R., B1 4,314,665, Cl. 236-46.00R.
Jayne, William. All surface image forming system. B1 4,839,666, 9-13-94, Cl. 346-75.000.
Levine, Michael R., to Honeywell Inc. Electronic thermostat. B1 4,314,665, 9-13-94, Cl. 236-46.00R.
Midkiff, John A.: *See*—
Davila, Dan I.; Midkiff, John A.; and Ekanayake, Dulip, B1 4,976,510, Cl. 385-135.000.
Petermann, Klaus; and Russer, Peter, to Telefunken Systemtechnik GmbH. Ring interferometer. B1 4,529,313, 9-13-94, Cl. 356-350.000.

Priepke, Gunther: *See—*
Rothe, Hans J.; Heinze, Helmut; Whitehead, Brian D.; and Priepke, Gunther, B1 4,064,112, Cl. 528-272.000.

Rothe, Hans J.; Heinze, Helmut; Whitehead, Brian D.; and Priepke, Gunther, to Davy McKee Aktiengesellschaft. Process for the continuous production of high molecular weight polyethylene terephthalate. B1 4,064,112, 9-13-94, Cl. 528-272.000.

Russer, Peter: *See—*
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Schlumberger Technology Corporation: *See—*
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Siecor Corporation: *See—*
Davila, Dan I.; Midkiff, John A.; and Ekanayake, Dulip, B1 4,976,510, Cl. 385-135.000.

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Unisearch Limited: *See—*
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Upchurch, James M., to Schlumberger Technology Corporation. Multiple well tool control systems in a multi-valve well testing system. B1 4,915,168, 9-13-94, Cl. 166-250.000.

Whitehead, Brian D.: *See—*
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Addis, Steven; Brown, John; Burnett, Daniel; Campbell, G. Edward; Garvens, Derek; Hom, Joanne; Jones, P. Storey; Klitsner, Daniel B.; Morini, Allan; O'Leary, Melvin C., Jr.; and Slezak, Larry, to Clorox Company, The. Bottle. 350,484, 9-13-94, Cl. D9-526.000.

Advance Watch Co., Inc.: *See—*
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Allord, Charles E. Fanciful figurine. 350,498, 9-13-94, Cl. D11-158.000.

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Anderson, John R.; Manes, Kenneth L.; Oenes, Leon C.; and Volan, Gregory D., to Storage Technology Corporation. Cabinet for robotics library system for handling data storage cartridges for a computer system. 350,535, 9-13-94, Cl. D14-107.000.

Anderson, Norman D.; Attinello, John S.; Freygang, Dale G.; and Landers, Samuel P., to Goodyear Tire & Rubber Company, The. Tire tread. 350,511, 9-13-94, Cl. D12-147.000.

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Aoyama, Hideo: *See—*
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Apps, William P.; Koefelda, Gerald R.; and Shermer, Larry E., to Rehrig Pacific Company, Inc.; and Coca-Cola Company, The. Full depth crate. 350,437, 9-13-94, Cl. D3-304.000.

Apps, William P.; Koefelda, Gerald R.; and Shermer, Larry E., to Rehrig Pacific Company, Inc.; and Coca-Cola Company, The. Divider for bottles. 350,438, 9-13-94, Cl. D3-313.000.

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Asami, Goro, to Nifco, Inc. Nut for connecting plates. 350,474, 9-13-94, Cl. D8-397.000.

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Bent, Michael S.; Fay, Eugene; Long, Christopher R.; Teitzman, Melvin; and Giles, Paul D., to Motorola, Inc. Pager recharger. 350,528, 9-13-94, Cl. D13-108.000.

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Boone, David D., to Lynx Golf, Inc. Golf club putter head. 350,583, 9-13-94, Cl. D21-219.000.

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Caminos, Frank; and D'Andrade, Bruce M. Multiple tank water gun. 350,574, 9-13-94, Cl. D21-146.000.

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Willis, Tucker; and Cinquemani, James, Jr., 350,500, Cl. D11-182.000.

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Giudice, Al, to Cool Products Corporation. Shark ball. 350,577, 9-13-94, Cl. D21-204.000.
Glass Dimensions, Inc.: *See—*
Perkins, David R., 350,616, Cl. D26-11.000.
Glover, William E.: *See—*
Attinello, John S.; and Glover, William E., 350,514, Cl. D12-147.000.
Goldstar Co., Ltd.: *See—*
Cha, Gang H., 350,552, Cl. D16-202.000.
Goldstein, Fred E. Shoe sole. 350,434, 9-13-94, Cl. D2-960.000.
Gonzalez, Govelio R.: *See—*
White, JOhn M.; Gonzalez, Govelio R.; and Ding, You, 350,472, Cl. D8-331.000.
Goodin, John W., to Master Product Manufacturing Company Inc. Paper punch. 350,564, 9-13-94, Cl. D19-72.000
Goodyear Tire & Rubber Company, The: *See—*
Anderson, Norman D.; Attinello, John S.; Freygang, Dale G.; and Landers, Samuel P., 350,511, Cl. D12-147.000.
Attinello, John S.; and Glover, William E., 350,514, Cl. D12-147.000.
Covert, Darrell E.; Graas, Maurice; and Maxwell, Paul B., 350,512, Cl. D12-147.000.
Gottlieb, Mark, to Design Tech International, Inc. Signal light to indicate the usage of a telephone in the home. 350,493, 9-13-94, Cl D10-104.000
Gottwald, Adolf, to Friedrich Grohe Aktiengesellschaft. Faucet handle. 350,593, 9-13-94, Cl. D23-252.000.
Graas, Maurice: *See—*
Covert, Darrell E.; Graas, Maurice; and Maxwell, Paul B., 350,512, Cl. D12-147.000
Grauert, Erwin J. Mirror frame. 350,441, 9-13-94, Cl. D6-300.000.
Great Western Trading Co., Inc.: *See—*
Ross, Robert M., 350,626, Cl. D30-101.000.
Greenley, Larry V.; and Volpe, V. Cloud, to SP Industries Limited Partnership. Liquid chiromatograph mobile reservoir. 350,609, 9-13-94, Cl. D24-224.000.
Grosskurth, Norbert; Mazura, Paul; and Stein, Johann, to Schroff GmbH. Housing for electronic equipment. 350,533, 9-13-94, Cl D13-184.000.
Gruber, Harold T.; Brohard, Bonnie J.; Belisle, William W.; and Fouke, Herbert A., to Holophane Lighting, Inc. Suspended luminaire. 350,622, 9-13-94, Cl. D26-88.000.
Gullblom, Leif. Upper carrier track. 350,612, 9-13-94, Cl. D25-121.000.
Gunlocke Company, The: *See—*
Chororos, Lawrence; and Smith, Lisa, 350,445, Cl. D6-379.000.
H.D. Hudson Manufacturing Company: *See—*
Hudson, William A., 350,589, Cl. D23-213.000.
Haberstitch, Daniel: *See—*
Wise, Robert D.; Wennerstrom, Joel W.; McLinden, Tom V.; and Haberstitch, Daniel, 350,598, Cl. D23-278.000.
Hamilton, Peter W.: *See—*
Hu, Antonio C.; Hamilton, Peter W.; and Davis, Leane K., 350,482, Cl. D9-448.000.
Hanson, Wayne B. Bumper for a vehicle. 350,516, 9-13-94, Cl. D12-169.000.
Harden, Dan: *See—*
Yurkonis, Philip; Harden, Dan; and Aaron, Nancy, 350,538, Cl. D14-115.000.
Hardesty, Henry A., Jr. Line trimmer cover with wheels. 350,463, 9-13-94, Cl. D8-8.000.
Hassel, H. Charles; Karten, Stuart; and Schroeder, Dennis, to MicroComputer Accessories, Inc. Footrest. 350,450, 9-13-94, Cl. D6-349.000.
Hausler, George C.; and Beulke, Melvin R., to Rosemount Inc. Large line size winged flowmeter design. 350,491, 9-13-94, Cl. D10-96.000
Hawkes, Douglas; Sadler, Scott; and Larson, William. Disposable trash liner with elastic bands. 350,634, 9-13-94, Cl. D34-10.000
Helluin, Jean C., to Michelin Recherche et Technique S.A. Tire. 350,507, 9-13-94, Cl. D12-141.000
Henry Dunay Designs, Inc.: *See—*
Dunay, Henry, 350,488, Cl. D10-30.000.
Hentak Limited: *See—*
Tung, Shu-Wen, 350,542, Cl. D14-150.000.
Hickey, Peter: *See—*
Hornblow, David; and Hickey, Peter, 350,477, Cl. D9-328.000.
Hill, Michael R. Compact disk holder. 350,448, 9-13-94, Cl. D6-630.000.
Hiraishi, Etsuo; Aoyama, Hideo; and Hirokawa, Katsushi, to Ryobi Ltd. Offset printing machine. 350,561, 9-13-94, Cl. D18-53.000.
Hirokawa, Katsushi: *See—*
Hiraishi, Etsuo; Aoyama, Hideo; and Hirokawa, Katsushi, 350,561, Cl. D18-53.000.
Hitachi Metals America, Ltd.: *See—*
Fahy, James H., Jr., 350,613, Cl. D25-138.000.
Hobbs, Michael A., to Rhone-Poulenc Rorer Limited. Combined dry powder inhaler and cap. 350,602, 9-13-94, Cl. D24-110.000
Hoepfl, Joseph R.: *See—*
Majors, Ronald O.; and Hoepfl, Joseph R., 350,470, Cl. D8-80.000.
Holophane Lighting, Inc.: *See—*
Gruber, Harold T.; Brohard, Bonnie J.; Belisle, William W.; and Fouke, Herbert A., 350,622, Cl. D26-88.000.
Holt, Karl K.: *See—*
Connolly, Kevin J.; Bingley, George W.; and Holt, Karl K., 350,546, Cl. D15-10.000.
Hom, Joanne: *See—*
Addis, Steven; Brown, John; Burnett, Daniel; Campbell, G. Edward; Garvens, Derek; Hom, Joanne; Jones, P. Storey; Klitsner, Daniel B.; Morini, Allan; O'Leary, Melvin C., Jr.; and Slezak, Larry, 350,484, Cl. D9-526.000.
Hornblow, David; and Hickey, Peter, to Pacific Salmon Industries Inc. Container for preserved seafoods. 350,477, 9-13-94, Cl. D9-328.000.
Hoshi, Tomohiro: *See—*
Sakuta, Kazuaki; and Hoshi, Tomohiro, 350,544, Cl. D14-240.000.
Hu, Antonio C.; Hamilton, Peter W.; and Davis, Leane K., to Procter & Gamble Company, The. Combination cap and nozzle unit. 350,482, 9-13-94, Cl. D9-448.000.
Hu, Tsai-Fu. Supplemental rearview mirror for vehicle. 350,521, 9-13-94, Cl. D12-187.000.
Huang, Shu-Yao. Tambourine. 350,558, 9-13-94, Cl. D17-22.000.
Hudson, William A., to H.D. Hudson Manufacturing Company. Multiple nozzle on a flexible strap for a garden sprayer. 350,589, 9-13-94, Cl. D23-213.000.
Huffer, Starla D.: *See—*
Steinke, Gustav J.; and Huffer, Starla D., 350,519, Cl. D12-180.000.
Steinke, Gustav J.; and Huffer, Starla D., 350,520, Cl. D12-180.000.
Hung, Joseph C. K.: *See—*
Chung, Curly L. K.; and Hung, Joseph C. K., 350,541, Cl. D14-149.000.
Hunter Fan Company: *See—*
Tsuji, Masao, 350,531, Cl. D13-164.000.
Hunziker, Hansjuerg, to Melcher AG. Power converter casing. 350,529, 9-13-94, Cl. D13-110.000.
Hutz, John A., to Michelin Recherche et Technique S.A. Tire. 350,515, 9-13-94, Cl. D12-147.000.
Hwang, Shih-Ming. Hand-held remote control transmitter for a car alarm system. 350,494, 9-13-94, Cl. D10-106.000.
Hyvonen, Tapani, to Nokia Mobile Phones, Ltd. Tabletop charger for a hand held telephone. 350,540, 9-13-94, Cl. D14-149.000.
Hyvonen, Tapani: *See—*
Olkkola, Jari; Leman, Ari; and Hyvonen, Tapani, 350,545, Cl. D14-253.000.
Iino, Masaaki, to Kabushiki Kaisha Toshiba. Electronic computer. 350,534, 9-13-94, Cl. D14-106.000.
Innovative Products, Inc.: *See—*
Steinke, James E., 350,571, Cl. D21-71.000.
International Brake Industries, Inc.: *See—*
Steinke, Gustav J.; and Placke, Karl L., 350,517, Cl. D12-180.000.
Steinke, Gustav J.; and Huffer, Starla D., 350,519, Cl. D12-180.000.
Steinke, Gustav J.; and Huffer, Starla D., 350,520, Cl. D12-180.000.
International Business Machines Corporation: *See—*
Smith, Ronald A., 350,537, Cl. D14-115.000.
Iwamoto, Masaaki, to Oki Electric Industry Co., Ltd. Ink ribbon cartridge. 350,560, 9-13-94, Cl. D18-12.000.
Izumisawa, Nobuyuki, to Shinano, Inc. Jitterbug sander. 350,467, 9-13-94, Cl. D8-62.000.
Jacobs, James. Sports equipment handle grip. 350,584, 9-13-94, Cl. D21-222.000.
John Manufacturing Limited: *See—*
Yuen, Se K., 350,620, Cl. D26-65.000.
Yuen, Se K., 350,621, Cl. D26-87.000.
Jones, P. Storey: *See—*
Addis, Steven; Brown, John; Burnett, Daniel; Campbell, G. Edward; Garvens, Derek; Hom, Joanne; Jones, P. Storey; Klitsner, Daniel B.; Morini, Allan; O'Leary, Melvin C., Jr.; and Slezak, Larry, 350,484, Cl. D9-526.000.
Jones, William T., Jr.: *See—*
Crawford, Thomas C., Jr.; and Jones, William T., Jr., 350,471, Cl. D8-14.000.
Jovanovic, Karol. Dental floss holder. 350,624, 9-13-94, Cl. D28-64.000.
K-Tec, Inc.: *See—*
Dickson, Thomas D., 350,451, Cl. D7-384.000.
Kabushiki Kaisha Toshiba: *See—*
Iino, Masaaki, 350,534, Cl. D14-106.000.
Kaldahl, Gordon D. Clock. 350,486, 9-13-94, Cl. D10-29.000.
Kaneko, Takuji, to Funai Electric Co., Ltd. Breadmaker. 350,449, 9-13-94, Cl. D7-348.000.
Kaneko, Tomihiro: *See—*
Kaneko, Tomihisa; and Kaneko, Tomihiro, 350,506, Cl. D12-129.000.
Kaneko, Tomihisa; and Kaneko, Tomihiro, to Combi Corp. Chair for baby. 350,506, 9-13-94, Cl. D12-129.000.
Karsten Manufacturing Corporation: *See—*
Sanchez, Richard R., 350,578, Cl. D21-205.000.
Karten, Stuart: *See—*
Hassel, H. Charles; Karten, Stuart; and Schroeder, Dennis, 350,450, Cl. D6-349.000.
Kawakami, Keiko. Combined faucet and diverter valve for a water filter. 350,591, 9-13-94, Cl. D23-238.000.
Keane, James J.: *See—*
Spence, Meredith, Jr.; and Keane, James J., 350,607, Cl. D24-195.000.
Keds Corporation, The: *See—*
Pallera, Jane, 350,430, Cl. D2-952.000.
Keith, James A., Jr.: *See—*
Chunn, Daniel A.; and Keith, James A., Jr., 350,468, Cl. D8-69.000.
Kilgore, Bruce J., to Nike, Inc. Heel insert for a shoe sole. 350,433, 9-13-94, Cl. D2-961.000.
Killian, Laurie W., to Michelin Recherche et Technique S.A. Tire. 350,509, 9-13-94, Cl. D12-146.000.
Klein, Helen, executrix: *See—*
Klein, John R., deceased; Noone, Michael J.; and Stahl, Kermit E., 350,615, Cl. D25-139.000.

Klein, John R., deceased (by Klein, Helen, executrix); Noone, Michael J.; and Stahl, Kermit E., to CertainTeed Corporation. Design for a roof or siding shingle. 350,615, 9-13-94, Cl. D25-139.000.
Klitsner, Daniel B.: *See—*
Addis, Steven; Brown, John; Burnett, Daniel; Campbell, G. Edward; Garvens, Derek; Hom, Joanne; Jones, P. Storey; Klitsner, Daniel B.; Morini, Allan; O'Leary, Melvin C., Jr.; and Slezak, Larry, 350,484, Cl. D9-526.000.
Koefelda, Gerald R.: *See—*
Apps, William P.; Koefelda, Gerald R.; and Shermer, Larry E., 350,437, Cl. D3-304.000.
Apps, William P.; Koefelda, Gerald R.; and Shermer, Larry E., 350,438, Cl. D3-313.000.
Koros, Gabriel: *See—*
Koros, Tibor; and Koros, Gabriel, 350,606, Cl. D24-143.000.
Koros, Tibor; and Koros, Gabriel. Combined laparoscopic grasper and cutter. 350,606, 9-13-94, Cl. D24-143.000.
La Gro Design: *See—*
La Gro, Ron, 350,462, Cl. D7-694.000.
Lacarelli Designs and Displays, Inc.: *See—*
Lucarelli, William R., 350,568, Cl. D20-43.000.
La Gro, Ron, to La Gro Design. Pizza cutter. 350,462, 9-13-94, Cl. D7-694.000.
Lambert, Tiffany L. Anti-substance abuse board game. 350,570, 9-13-94, Cl. D21-31.000.
Landers, Samuel P.: *See—*
Anderson, Norman D.; Attinello, John S.; Freygang, Dale G.; and Landers, Samuel P., 350,511, Cl. D12-147.000.
Landis & Gyr Powers, Inc.: *See—*
Phelps, Stephen L., 350,532, Cl. D13-184.000.
Larson, William: *See—*
Hawkes, Douglas; Sadler, Scott; and Larson, William, 350,634, Cl. D34-10.000.
Lassberg, Lucille E. Computer keyboard mounted calculator with attachment for spiral notebook. 350,559, 9-13-94, Cl. D18-7.000.
Lee, R. David, to Professional Bags, Inc. Golf ball retriever. 350,579, 9-13-94, Cl. D21-206.000.
Leman, Ari: *See—*
Olkkola, Jari; Leman, Ari; and Hyvonen, Tapani, 350,545, Cl. D14-253.000.
Lemon, J. Robert; Evans, William T.; and Christian, Robert E., to Professional Dental Technologies, Inc. Toothbrush with gum stimulator. 350,440, 9-13-94, Cl. D4-105.000.
Linder, Steven E., to Anthro Corporation. Cup holder. 350,456, 9-13-94, Cl. D7-620.000.
Lindstedt, Lars; and Tagtstrom, Par, to Sandvik AB. Cutting insert. 350,549, 9-13-94, Cl. D15-139.000.
Lisco, Inc.: *See—*
Spence, Meredith, Jr.; and Keane, James J., 350,607, Cl. D24-195.000.
Livezey, Thomas G. Flexible container. 350,479, 9-13-94, Cl. D9-415.000.
Lo, Adosin, to Chiper Technology Co., Ltd. Monitor camera. 350,553, 9-13-94, Cl. D16-203.000.
Lombardo, Lonna J. Ornament. 350,497, 9-13-94, Cl. D11-121.000.
Long, Christopher R.: *See—*
Bent, Michael S.; Fay, Eugene; Long, Christopher R.; Teitzman, Melvin; and Giles, Paul D., 350,528, Cl. D13-108.000.
Lowsky, Bernie. Chair. 350,442, 9-13-94, Cl. D6-369.000.
Lowsky, Bernie. Chair. 350,443, 9-13-94, Cl. D6-369.000.
Lowsky, Bernie. Chair. 350,444, 9-13-94, Cl. D6-373.000.
Lucarelli, William R., to Lacarelli Designs and Displays, Inc. Retractable information display unit. 350,568, 9-13-94, Cl. D20-43.000.
Lutzke, David E.: *See—*
Ramsey, Charles S.; and Lutzke, David E., 350,466, Cl. D8-57.000.
Lynx Golf Inc.: *See—*
Boone, David D., 350,581, Cl. D21-217.000.
Boone, David D., 350,583, Cl. D21-219.000.
Majors, Ronald O.; and Hoepfl, Joseph R., to Snap-On Incorporated. Combined handle and head for a hammer. 350,470, 9-13-94, Cl. D8-80.000.
Manes, Kenneth L.: *See—*
Anderson, John R.; Manes, Kenneth L.; Oenes, Leon C.; and Volan, Gregory D., 350,535, Cl. D14-107.000.
Maruyama, Ichiro, to Fuji Impulse Co., Ltd. Vacuum sealer. 350,550, 9-13-94, Cl. D15-146.000.
Master Product Manufacturing Company Inc.: *See—*
Goodin, John W., 350,564, Cl. D19-72.000.
Matturo, Jaun J.: *See—*
Rivero, Jose; and Matturo, Jaun J., 350,600, Cl. D23-366.000.
Maxwell, Paul B.: *See—*
Covert, Darrell E.; Graas, Maurice; and Maxwell, Paul B., 350,512, Cl. D12-147.000.
Mazura, Paul: *See—*
Grosskurth, Norbert; Mazura, Paul; and Stein, Johann, 350,533, Cl. D13-184.000.
McAlpine, John D., to Genesco Inc. Boot. 350,428, 9-13-94, Cl. D2-897.000.
McKnight, William J.; and Pogue, Lonnie C., to Proxima Corporation. Under computer monitor power controlling base. 350,536, 9-13-94, Cl. D14-114.000.
McLinden, Tom V.: *See—*
Wise, Robert D.; Wennerstrom, Joel W.; McLinden, Tom V.; and Haberstitch, Daniel, 350,598, Cl. D23-278.000.
McNally, John J., to Textron Inc. Expansion bracelet. 350,495, 9-13-94, Cl. D11-21.000.
Mehta, Ajay A.; and Evraert, Bruno, to Michelin Recherche et Technique S.A. Tire. 350,513, 9-13-94, Cl. D12-147.000.
Mei Shuai Cosmetics Co., Ltd.: *See—*
Shen, Wen-Chang, 350,625, Cl. D28-82.000.
Melcher AG: *See—*
Hunziker, Hansjuerg, 350,529, Cl. D13-110.000.
Metzler, Marvin J.; and Stock, Michael H., to Mito Corporation. Housing for a stereo unit. 350,543, 9-13-94, Cl. D14-265.000.
Miansian, James K.; and Van Dam, Gary. Golf club head. 350,582, 9-13-94, Cl. D21-217.000.
Michelin Recherche et Technique S.A.: *See—*
Evraert, Bruno, 350,508, Cl. D12-146.000.
Helluin, Jean C., 350,507, Cl. D12-141.000.
Hutz, John A., 350,515, Cl. D12-147.000.
Killian, Laurie W., 350,509, Cl. D12-146.000.
Mehta, Ajay A.; and Evraert, Bruno, 350,513, Cl. D12-147.000.
MicroComputer Accessories, Inc.: *See—*
Hassel, H. Charles; Karten, Stuart; and Schroeder, Dennis, 350,450, Cl. D6-349.000.
Millington, Howard G. Sulky wheel guard. 350,502, 9-13-94, Cl. D12-20.000.
Mitchell, George W.: *See—*
Bosten, Donald R.; Clowers, Earl R.; Wall, Daniel P.; Barnhill, Gary W.; Walls, Thomas O.; and Mitchell, George W., 350,548, Cl. D15-127.000.
Mito Corporation: *See—*
Metzler, Marvin J.; and Stock, Michael H., 350,543, Cl. D14-265.000.
Mobius, Wolfgang, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Front face of a vehicle wheel. 350,523, 9-13-94, Cl. D12-209.000.
Molex Incorporated: *See—*
Comerci, Joseph D.; DeRoss, Robert; and Stanhibel, Dennis, 350,530, Cl. D13-177.000.
Moniak, Lisa L. Bird feeder. 350,627, 9-13-94, Cl. D30-124.000.
Morgan, Robert W. Shoe sole. 350,431, 9-13-94, Cl. D2-956.000.
Morini, Allan: *See—*
Addis, Steven; Brown, John; Burnett, Daniel; Campbell, G. Edward; Garvens, Derek; Hom, Joanne; Jones, P. Storey; Klitsner, Daniel B.; Morini, Allan; O'Leary, Melvin C., Jr.; and Slezak, Larry, 350,484, Cl. D9-526.000.
Morton, Brenda L.: *See—*
Blackwell, Vicki S.; and Morton, Brenda L., 350,459, Cl. D7-605.000.
Motor Electric Manufacturing Co., Inc.: *See—*
Wong, Joseph Fu-Keung, 350,454, Cl. D7-310.000.
Motor Electric Manufacturing Co., Ltd.: *See—*
Wong, Joseph F., 350,633, Cl. D32-59.000.
Motorola, Inc.: *See—*
Bent, Michael S.; Fay, Eugene; Long, Christopher R.; Teitzman, Melvin; and Giles, Paul D., 350,528, Cl. D13-108.000.
Muliterno, Eduardo S. Writing instrument. 350,562, 9-13-94, Cl. D19-48.000.
Myles, Dennis; Starr, John R.; and Starr, John R., to Chrysler Corporation. Vehicle mirror base. 350,522, 9-13-94, Cl. D12-187.000.
Nifco, Inc.: *See—*
Asami, Goro, 350,474, Cl. D8-397.000.
Nike, Inc.: *See—*
Kilgore, Bruce J., 350,433, Cl. D2-961.000.
Nixon, Robert C., to Chrysler Corporation. Automobile. 350,504, 9-13-94, Cl. D12-91.000.
Nokia Mobile Phones, Ltd.: *See—*
Hyvonen, Tapani, 350,540, Cl. D14-149.000.
Olkkola, Jari; Leman, Ari; and Hyvonen, Tapani, 350,545, Cl. D14-253.000.
Noone, Michael J.: *See—*
Klein, John R., deceased; Noone, Michael J.; and Stahl, Kermit E., 350,615, Cl. D25-139.000.
Oenes, Leon C.: *See—*
Anderson, John R.; Manes, Kenneth L.; Oenes, Leon C.; and Volan, Gregory D., 350,535, Cl. D14-107.000.
Oki Electric Industry Co., Ltd.: *See—*
Iwamoto, Masaaki, 350,560, Cl. D18-12.000.
O'Leary, Melvin C., Jr.: *See—*
Addis, Steven; Brown, John; Burnett, Daniel; Campbell, G. Edward; Garvens, Derek; Hom, Joanne; Jones, P. Storey; Klitsner, Daniel B.; Morini, Allan; O'Leary, Melvin C., Jr.; and Slezak, Larry, 350,484, Cl. D9-526.000.
Olkkola, Jari; Leman, Ari; and Hyvonen, Tapani, to Nokia Mobile Phones, Ltd. Holder for hand telephone. 350,545, 9-13-94, Cl. D14-253.000.
On Gard Systems, Inc.: *See—*
Weiss, Mark E.; Steiner, Eric L.; and Samson, Jeffrey T., 350,604, Cl. D24-131.000.
Onstott, Milton O. Combined fishing rod and knife holder. 350,588, 9-13-94, Cl. D22-148.000.
Osborne, David W.; and Whitman, Charles R., to Upjohn Company, The. Vaginal drug delivery insert. 350,601, 9-13-94, Cl. D24-107.000.
Pacific Salmon Industries Inc.: *See—*
Hornblow, David; and Hickey, Peter, 350,477, Cl. D9-328.000.
Pallera, Jane, to Keds Corporation, The. Sole bottom and periphery. 350,430, 9-13-94, Cl. D2-952.000.
Pampered Chef, Ltd., The: *See—*
Christopher, Doris K.; and Ernest, Debbi, 350,461, Cl. D7-675.000.
Parker, David H. Versatile use flashlight. 350,618, 9-13-94, Cl. D26-37.000.

Parlor, Timothy, Sr. Combined vehicle mounted umbrella holder and wind deflector. 350,527, 9-13-94, Cl. D12-413.000.
Paul, Stanley M. Spout. 350,594, 9-13-94, Cl. D23-257.000.
Paul, Stanley M. Spout. 350,595, 9-13-94, Cl. D23-257.000.
Paul, Stanley M. Spout. 350,596, 9-13-94, Cl. D23-257.000.
Pearson, Stephen J. Menu holder. 350,566, 9-13-94, Cl. D20-40.000.
Perfect Pitcher Corporation: *See*—
Boteler, Michael, 350,569, Cl. D21-5.000.
Perkins, David R., to Glass Dimensions, Inc. Oil lamp. 350,616, 9-13-94, Cl. D26-11.000.
PharmaDesign, Inc.: *See*—
Costa, Richard, 350,476, Cl. D9-314.000.
Phelps, Stephen L., to Landis & Gyr Powers, Inc. Enclosure for the controller of a unit ventilator. 350,532, 9-13-94, Cl. D13-184.000
Picozza, Augusto A.; and Fukuda, Takeshi, to Dart Industries Inc. Stacking lunch box. 350,460, 9-13-94, Cl. D7-629.000.
Placke, Karl L.: *See*—
Steinke, Gustav J.; and Placke, Karl L., 350,517, Cl. D12-180.000.
Plath, Jerry V. Video cassette tape case. 350,458, 9-13-94, Cl. D6-632.000.
Pogue, Lonnie C.: *See*—
McKnight, William J.; and Pogue, Lonnie C., 350,536, Cl. D14-114.000.
Polichio, Bob. Combined clock and multi-image picture frame. 350,485, 9-13-94, Cl. D10-2.000.
Poole, Bonnie K., to Fypon, Inc. Pediment for walls. 350,614, 9-13-94, Cl. D25-138.000.
Porter-Cable Corporation: *See*—
Bosten, Donald R.; Clowers, Earl R.; Wall, Daniel P.; Barnhill, Gary W.; Walls, Thomas O.; and Mitchell, George W., 350,548, Cl. D15-127.000.
Procter & Gamble Company, The: *See*—
Hu, Antonio C.; Hamilton, Peter W.; and Davis, Leane K., 350,482, Cl. D9-448.000.
Professional Bags, Inc.: *See*—
Lee, R. David, 350,579, Cl. D21-206.000.
Professional Dental Technologies, Inc.: *See*—
Lemon, J. Robert; Evans, William T.; and Christian, Robert E., 350,440, Cl. D4-105.000.
Proxima Corporation: *See*—
McKnight, William J.; and Pogue, Lonnie C., 350,536, Cl. D14-114.000.
Rally Accessories, Inc.: *See*—
White, JOhn M.; Gonzalez, Govelio R.; and Ding, You, 350,472, Cl. D8-331.000.
Ramsey, Charles S.; and Lutzke, David E., to Fiskars Oy Ab. Scissors handle. 350,466, 9-13-94, Cl. D8-57.000
Rasocha, Stan, to Aqua-Leisure Industries, Inc. Snorkel. 350,585, 9-13-94, Cl. D24-110.500.
Rehrig Pacific Company, Inc.: *See*—
Apps, William P.; Koefelda, Gerald R.; and Shermer, Larry E., 350,437, Cl. D3-304.000.
Apps, William P.; Koefelda, Gerald R.; and Shermer, Larry E., 350,438, Cl. D3-313.000.
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CLASS 75

10.15 5,346,528
252 5,346,529
331 5,346,530
582 5,346,531
744 5,346,532

CLASS 81

3.2 5,345,844
57.29 5,345,845

CLASS 82

13 5,345,846
127 5,345,847

CLASS 83

663 5,345,848
783 5,345,849
814 5,345,850

CLASS 84

315 5,345,851
397 5,345,852
605 5,347,087
609 5,347,082
613 5,347,083

CLASS 89

1.818 5,345,853
26 5,345,854

CLASS 91

369.2 5,345,855
386 5,345,856

CLASS 92

34 5,345,857
48 5,345,858
172 5,345,859
192 5,345,860

CLASS 95

20 5,346,533
39 5,346,534
96 5,346,535
103 5,346,536
161 5,346,537

CLASS 100

257 5,345,861

CLASS 101

123 5,345,862
126 5,345,863
216 5,345,864
349 5,345,865
363 5,345,866
5,345,867
415.1 5,345,868
454 5,345,869
463.1 5,345,870

CLASS 102

202 5,345,871
202.2 5,345,872
290 5,345,873
424 5,345,874
530 5,345,875
531 5,345,876

CLASS 105

8.1 5,345,877
136 5,345,878

CLASS 106

18.12 5,346,539
19 B 5,346,540
38.9 5,346,538
163.1 5,346,541
194 5,346,542
243 5,346,543
244 5,346,544
410 5,346,545
436 5,346,546
644 5,346,547
705 5,346,548
708 5,346,549
709 5,346,550

CLASS 108

53.1 5,345,879
63 5,345,880
132 5,345,881
193 5,345,882

CLASS 110

345 5,345,883
5,345,884

CLASS 112

80.55 5,345,885
121.15 5,345,886
225 5,345,888
255 5,345,887
262.2 5,345,889

CLASS 117

97 5,346,581

CLASS 118

63 5,346,551
126 5,346,552
309 5,346,553
657 Re.34,724
723 EB 5,346,554
724 5,346,555

CLASS 119

14.54 5,345,890
18 Re.34,725
51.11 5,345,893
51.5 5,345,892
53 5,345,894
58 5,345,895

CLASS 122

4 D 5,345,896

CLASS 123

65 A 5,345,897
90.17 5,345,898
146.5 A 5,345,899
179.24 5,345,900
179.3 5,345,901
198 B 5,345,902
198 DC 5,345,903
198 F 5,345,904
241 5,345,905
299 5,345,906
339 5,345,908
399 5,345,907
414 5,345,909
424 5,345,910
436 5,345,911
438 5,345,912
470 5,345,913
478 5,345,914
497 5,345,915
506 5,345,916
520 5,345,917
527 5,345,918
533 5,345,919
564 5,345,920
686 5,345,921

CLASS 124

20.1 5,345,922

CLASS 126

21 A 5,345,923
110 R 5,345,924

CLASS 128

4 5,345,925
9 5,345,926
20 5,345,927
203.12 5,345,928
205.13 5,345,929
205.24 5,345,930
207.17 5,345,931
637 5,345,932
639 5,345,933
5,345,934
642 5,345,935
5,345,936
657 5,345,937
660.04 5,345,938
661.01 5,345,939
662.06 5,345,940
665 5,345,941
742 5,345,943
5,345,944
772 5,345,945
853 5,345,946
878 5,345,947
898 5,345,948
5,345,949

CLASS 131

69 5,345,950
194 5,345,951
248 5,345,952
256 5,345,953
280 5,345,954
359 5,345,955

CLASS 132

280 5,345,956

CLASS 134

2 5,346,556
10 5,346,557
104.1 5,345,957
105 5,345,958
201 5,345,959

CLASS 135

32 5,345,960
102 5,345,962

CLASS 137

12 5,345,963
318 5,345,964
533.25 5,345,965
601 5,345,966
614.2 5,345,967
625.46 5,345,968
853 5,345,969
856 5,345,970

CLASS 138

98 5,345,971
99 5,345,972

CLASS 139

57 5,345,973
91 5,345,974
116.2 5,345,975
435.2 5,345,976
449 5,345,977

CLASS 140

92.1 5,345,978

CLASS 141

1 5,345,979
3 5,345,980
20.5 5,345,981
93 5,345,982

CLASS 144

116 5,345,983
145 A 5,345,984
329 5,345,985
372 5,345,986

CLASS 148

23 5,346,558
111 5,346,559
217 5,346,560
321 5,346,561
542 5,346,562
675 5,346,563

CLASS 149

109.6 5,346,564

CLASS 150

160 5,345,987

CLASS 152

209 R 5,345,988

CLASS 156

62.6 5,346,575
71 5,346,565
5,346,566
78 5,346,567
83 5,346,568
87 5,346,569
191 5,346,570
212 5,346,571
244.19 5,346,572
256 5,346,573
257 5,346,574
293 5,346,576
308.8 5,346,577
345 5,346,578
5,346,579
540 5,346,580
626 5,346,582
629 5,346,583
636 5,346,584
643 5,346,585
656 5,346,586
657 5,346,587

CLASS 160

38 5,345,990
122 5,345,991
330 5,345,992
354 5,345,989

CLASS 162

65 5,346,588
72 5,346,589
232 5,346,590
249 5,346,591

CLASS 164

423 5,345,993
480 5,345,994

CLASS 165

46 5,345,995
47 5,345,996
5,345,997
80.2 5,345,999
86 5,345,998
104.26 5,346,000
170 5,346,001
173 5,346,002
5,346,003

CLASS 166

84 5,346,004
187 5,346,005
206 5,346,006
250 B1 4,915,168
254 5,346,007
274 5,346,008
279 5,346,009
5,346,010
291 5,346,011
293 5,346,012
295 5,346,013
297 5,346,014
299 5,346,015
370 5,345,655
380 5,346,016
5,346,017

CLASS 172

47 5,346,018
311 5,346,019
540 5,346,020

CLASS 173

177 5,346,021
178 5,346,022
5,346,023
221 5,346,024

CLASS 174

50 5,347,088
84 R 5,347,089
5,347,090
92 5,347,084
261 5,347,086
262 5,347,091

CLASS 175

57 5,346,025
331 5,346,026

CLASS 177

212 5,347,092

CLASS 180

8.2 5,346,027
19.2 5,346,028
68.4 5,346,029
140 5,346,030
179 5,346,031
233 5,346,032
248 5,346,033
298 5,346,034
329 5,346,035

CLASS 182

3 5,346,036

CLASS 184

24 5,346,037

CLASS 187

17 5,346,038
131 5,347,093
140 5,347,094

CLASS 188

2 F 5,346,039
77 W 5,346,040
273 5,346,041
322.13 5,346,042

CLASS 192

3.29 5,346,043
58 C 5,346,044
141 5,346,045
142 A 5,346,046

CLASS 194

200 5,346,047
205 5,346,048
328 5,346,049

CLASS 198

345.2 5,346,050
346.1 5,346,051
350 5,346,052
399 5,346,053
465.4 5,346,054
621 5,346,055
750 5,346,056
778 5,346,057
803.01 5,346,058
852 5,346,059
853 5,346,060

CLASS 200

51.09 5,347,095
148 B 5,347,096
5,347,097

CLASS 202

176 5,346,592

CLASS 203

18 5,346,593
29 5,346,594
75 5,346,595

CLASS 204

1.11 5,346,596
129.1 5,346,597
147 5,346,598
180.1 5,346,599
192.15 5,346,601
192.3 5,346,600
224 R 5,346,602
299 R 5,346,603
412 5,346,605
415 5,346,604
433 5,346,606

CLASS 205

99 5,346,607
231 5,346,608

CLASS 206

221 5,346,061
376 5,346,063
409 5,346,064
444 5,346,065
457 5,346,066
497 5,346,067
524.7 5,346,068
531 5,346,069
561 5,346,070

CLASS 208

89 5,346,609
113 5,346,610
138 5,346,611
143 5,346,612
164 5,346,613
242 5,346,614
309 5,346,615

CLASS 209

257 5,346,071
584 5,346,072

CLASS 210

179 5,346,616
192 5,346,617
198.2 5,346,618
5,346,619
605 5,346,620
645 5,346,621
659 5,346,622
678 5,346,623
679 5,346,624
691 5,346,625
701 5,346,626
729 5,346,627
734 5,346,628
739 5,346,629
770 5,346,630
789 5,346,631

CLASS 211

13 5,346,073
40 5,346,074
60.1 5,346,075
86 5,346,076
90 5,346,077
5,346,078
131 5,346,079

CLASS 215

229 5,346,081
252 5,346,082
341 5,346,083

CLASS 219

61 5,347,098
81 5,347,099
110 5,347,105
121.43 5,347,100
124.34 5,347,101
219 5,347,106
243 5,347,102
400 5,347,103
451 5,347,104
624 5,347,107
696 5,347,108
716 5,347,109

CLASS 220

1.5 5,346,084
210 5,346,085
254 5,346,086
268 5,346,087
357 5,346,088
403 5,346,089
410 5,346,090
503 5,346,091
553 5,346,092
565 5,346,093
571 5,346,094
669 5,346,095
679 5,346,096

CLASS 222

132 5,346,097
146.5 5,346,098
153 5,346,099
5,346,100
195 5,346,101
206 5,346,102
321 5,346,103
402.19 5,346,104
455 5,346,105
465.1 5,346,106
490 5,346,107
494 5,346,108

CLASS 223

89 5,346,110

CLASS 224

265 5,346,111

CLASS 226

173 5,346,112

CLASS 227

110 5,346,113
120 5,346,114
179 5,346,115

CLASS 228

148 5,346,116
180.22 5,346,117
5,346,118
248.1 5,346,119

CLASS 229

92.5 5,346,120
148 5,346,121
162 5,346,122
305 5,346,123
5,346,124

CLASS 232

17 5,346,125

CLASS 235

380 5,347,110
457 5,347,111
462 5,347,112
5,347,113
467 5,347,114
472 5,347,115

CLASS 236

1 G 5,346,126
13 5,346,127
44 A 5,346,128
44 C 5,346,129
46 R B1 4,314,665
49.5 5,346,130

CLASS 238

283 5,346,131

CLASS 239

132.3 5,346,133
288.5 5,346,134
306 5,346,135
479 5,347,116
533.2 5,346,136
585.4 5,346,137
600 5,346,138
703 5,346,139
750 5,346,140

CLASS 241

5 5,346,141
21 5,346,142
46.017 5,346,143
100 5,346,144
172 5,346,145
5,346,146
5,346,147
293 5,346,148

CLASS 242

7.22 5,346,149
131 5,346,154
232 5,346,157
236 5,346,158
334 5,346,155
340 5,346,156
341 5,347,411
371 5,346,152
521 5,346,151
527.1 5,346,150
579 5,346,153

CLASS 244

3.12 5,346,159
134 R 5,346,160
137.1 5,346,161
5,346,162

CLASS 246

5 5,346,163

CLASS 248

118 5,346,164
146 5,346,165
220.4 5,346,166
222.1 5,346,167
278 5,346,168
547 5,346,169
550 5,346,170

CLASS 249

156 5,346,171

CLASS 250

X-RAY 5,347,118
206.3 5,347,136
214 B 5,347,120
214 VT 5,347,119
221 5,347,117
227.11 5,347,122
229 5,347,123
235 5,347,121
5,347,124
281 5,347,125
287 B1 5,117,107
292 5,347,127
309 5,347,126
330 5,347,128
336.1 5,347,129
385.1 5,347,130
5,347,131
389 5,347,132
492.1 5,347,134
492.3 5,347,133
548 5,347,135
561 5,347,137
573 5,347,138
583 5,347,139

CLASS 251

58 5,346,172
5,346,173
61.3 5,346,174
129.08 5,346,175
129.15 5,346,176
149.6 5,346,177
315 SE 5,346,178
328 5,346,179

CLASS 252

10 5,346,633
30 5,346,634
33.3 5,346,635
49.9 5,346,636
5,346,637
62.59 5,346,638
90 5,346,639
162 5,346,640
163 5,346,641
174.21 5,346,642
175 5,346,643
188.28 5,346,644
194 5,346,645
299.01 Re.34,726
299.62 5,346,646
299.63 5,346,647
299.65 5,346,648
500 5,346,649
506 5,346,650
514 5,346,651
542 5,346,652
582 5,346,653

CLASS 254

126 5,346,180
374 5,346,181

CLASS 257

17 5,347,140
24 5,347,141
29 5,347,142
40 5,347,144
48 5,347,145
59 5,347,146
77 5,347,147
173 5,347,148
192 5,347,149
296 5,347,151
304 5,347,152
345 5,347,153
347 5,347,154
492 5,347,155
575 5,347,156
627 5,347,157
691 5,347,158
692 5,347,159
698 5,347,160
756 5,347,161
773 5,347,162

CLASS 259

203 5,347,150

CLASS 264

1.28 5,346,655
1.33 5,346,654
26 5,346,656
40.1 5,346,657
40.3 5,346,658
68 5,346,659
69 5,346,660
138 5,346,661
5,346,662
150 5,346,663
154 5,346,664
210.7 Re.34,727
516 5,346,665
521 5,346,666

CLASS 266

78 5,346,182
197 5,346,183
202 5,346,184
208 5,346,185
270 5,346,186

CLASS 267

64.11 5,346,187
95 5,346,190
106 5,346,188
140.12 5,346,191
140.14 5,346,192
219 5,346,189

CLASS 269

21 5,346,193
166 5,346,194

CLASS 270

52.5 5,346,195
54 5,346,196

CLASS 271

9 5,346,197
11 5,346,198
102 5,346,200
104 5,346,201
110 5,346,199
258 5,346,202
288 5,346,203
294 5,346,204
297 5,346,205
305 5,346,206

CLASS 273

1.5 R 5,346,207
26 C 5,346,208
55 R 5,346,210
73 C 5,346,211
73 D 5,346,212
78 5,346,213
128 R 5,346,214
155 5,346,215
167 H 5,346,216
167 R 5,346,217
5,346,218
168 5,346,219
191 R 5,346,220
201 5,346,222
227 5,346,223
243 5,346,221
260 5,346,224
294 5,346,225
388 5,346,226
400 5,346,227
402 5,346,228
449 5,346,229

CLASS 277

152 5,346,230

CLASS 280

11.2 5,346,231
47.31 5,346,232
149.2 5,346,233
216 5,346,234
226.1 5,346,235
276 5,346,236
281.1 5,346,237
293 5,346,238
420 5,346,239
438.1 5,346,240
478.1 5,346,243
607 5,346,244
655 5,346,245
691 5,346,241
707 5,346,242
711 5,346,246
712 5,346,247
728 B 5,346,249
728 R 5,346,248
733 5,346,250
737 5,346,251
740 5,346,252
741 5,346,254
775 5,346,255
802 5,346,256
806 5,346,257

CLASS 283

102 5,346,258
108 5,346,259

CLASS 285

1 5,346,260
22 5,346,261
23 5,346,262
53 5,346,263
158 5,346,264
373 5,346,265

CLASS 292

64 5,346,266
263 5,346,267

CLASS 294

9 5,346,268
49 5,346,269
81.5 5,346,270
87.2 5,346,271

CLASS 296

146.11 5,346,272
146.9 5,346,273
180.1 5,346,274
195 5,346,275
203 5,346,276

CLASS 297

61 5,346,277
219.1 5,346,278
256.1 5,346,279
330 5,346,280
367 5,346,281
395 5,346,282
408 5,346,283
411.36 5,346,284
452.18 5,346,285

CLASS 298

8 H 5,346,286

CLASS 300

21 5,346,287

CLASS 301

37.37 5,346,288

CLASS 303

7 5,346,289
5,346,290
28 5,346,291
91 5,346,292
92 5,346,293

CLASS 307

66 5,347,163
5,347,164
85 5,347,165
113 5,347,166
125 5,347,167
245 5,347,168
246 5,347,169
296.1 5,347,170
296.2 5,347,171
5,347,172
296.4 5,347,173
354 5,347,175
360 5,347,174
443 5,347,177
451 5,347,178
5,347,179
464 5,347,180
465 5,347,181
465.1 5,347,182
480 5,347,184
490 5,347,176
530 5,347,183
540 5,347,185

CLASS 310

17 5,347,186
40 MM 5,347,187
68 D 5,347,188
90 5,347,189
90.5 5,347,190
113 5,347,191
323 5,347,192

CLASS 312

9.12 5,346,295
198 5,346,296
215 5,346,297
348.3 5,346,298
405.1 5,346,299

CLASS 313

141 5,347,193
346 R 5,347,194
404 5,347,195

CLASS 314

183 5,346,893

CLASS 315

8 5,347,196
94 5,347,197
167 5,347,198
169.1 5,347,199
241 S 5,347,200
366 5,347,201
382 5,347,202

CLASS 318

268 5,347,203
632 5,347,204
811 5,347,205
818 5,347,206

CLASS 320

2 5,347,208

CLASS 323

271 5,347,209
315 5,347,210
351 5,347,211

CLASS 324

67 5,347,212
143 5,347,213
158 MG 5,347,214
158.1 5,347,215
309 5,347,216
5,347,217
5,347,218
316 5,347,219
318 5,347,220
5,347,221
322 5,347,222
455 5,347,223
522 5,347,224
523 5,347,225
724 5,347,226

CLASS 328

63 5,347,227

CLASS 329

308 5,347,228

CLASS 330

251 5,347,229
297 5,347,230
300 5,347,231

CLASS 331

1 A 5,347,232
2 5,347,233
57 5,347,234
66 5,347,235
87 5,347,236
116 FE 5,347,237
117 R 5,347,238

CLASS 332

127 5,347,240

CLASS 333

1.1 5,347,241
81 R 5,347,239
99 S 5,347,242
106 5,347,243
115 5,347,244
131 5,347,245
219.1 5,347,246
245 5,347,247

CLASS 335

18 5,347,248
78 5,347,249
132 5,347,250
216 5,347,251
299 5,347,252
302 5,347,253
306 5,347,254

CLASS 336

83 5,347,255
84 C 5,347,256
134 5,347,257

CLASS 338

333 5,347,258

CLASS 340

331 5,347,259
438 5,347,260
469 5,347,261
572 5,347,262
5,347,263
611 5,347,264
653 5,347,265
735 5,347,266
825.31 5,347,267
825.44 5,347,268
5,347,269
825.8 5,347,270
827 5,347,271
5,347,272
903 5,347,273
988 5,347,274

CLASS 341

20 5,347,275
59 5,347,276
116 5,347,277
143 5,347,278
166 5,347,279

CLASS 342

42 5,347,280
160 5,347,281
193 5,347,282
201 5,347,283
356 5,347,284
357 5,347,285
359 5,347,286
375 5,347,287
5,347,288
448 5,347,289

CLASS 343

703 5,347,290
749 5,347,291
895 5,346,300

CLASS 345

74 5,347,292
87 5,347,293
89 5,347,294
156 5,347,295

CLASS 346

75 B1 4,839,666
76 L 5,347,299
108 5,347,297
5,347,298
153.1 5,347,296
5,347,301
5,347,302
157 5,347,303

CLASS 347

9 5,347,300

CLASS 348

12 5,347,304
14 5,347,305
15 5,347,306
372 5,347,307
394 5,347,308
401 5,347,309
405 5,347,310
416 5,347,311
443 5,347,312
445 5,347,313
448 5,347,314
473 5,347,315
497 5,347,316
511 5,347,317
525 5,347,365
556 5,347,318
645 5,347,319
655 5,347,320
663 5,347,321
718 5,347,322
789 5,347,324
822 5,347,367
829 5,347,366

CLASS 351

44 5,347,323
118 5,347,325
160 R 5,347,326
211 5,347,327
5,347,328
221 5,347,329
223 5,347,330

CLASS 354

62 5,347,331
173.1 5,347,332
187 5,347,333
275 5,347,334
288 5,347,335
324 5,347,336
5,347,337
340 5,347,338
402 5,347,339
5,347,340

CLASS 355

91 5,347,341
113 5,347,342
200 5,347,343
5,347,344
202 5,347,346
246 5,347,345
253 5,347,347
285 5,347,348
309 5,347,349
5,347,350
313 5,347,351
321 5,347,352
326 R 5,347,353

CLASS 356

5 5,347,357
128 5,347,358
350 5,347,354
5,347,359
5,347,360
5,347,361
B1 4,529,313
356 5,347,355
363 5,347,356
372 5,347,362
376 5,347,363
445 5,347,364

CLASS 358

296 5,347,368
401 5,347,369
453 5,347,371
461 5,347,370
471 5,347,372
479 5,347,396
522 5,347,374

CLASS 359

II 5,347,375
28 5,347,376
42 5,347,377
53 5,347,378
57 5,347,380
58 5,347,379
78 5,347,381
84 5,347,382
85 5,347,383
118 5,347,384
132 5,347,385
146 5,347,386
152 5,347,387
189 5,347,388
5,347,389
211 5,347,391
254 5,347,393
279 5,347,392
326 5,347,394
359 5,347,395
465 5,347,644
629 5,347,397
648 5,347,398
690 5,347,399
815 5,347,400
853 5,347,401
5,347,402

CLASS 360

3 5,347,403
19.1 5,347,404
30 5,347,405
33.1 5,347,406
53 5,347,407
65 5,347,408
74.1 5,347,409
77.04 5,347,410
103 5,347,412
104 5,347,413
105 5,347,414
109 5,347,415
133 5,347,416

CLASS 361

64 5,347,417
104 5,347,418
154 5,347,419
155 5,347,420
156 5,347,421
253 5,347,422
313 5,347,423
680 5,347,424
683 5,347,425
708 5,347,426
752 5,347,427
760 5,347,428
813 5,347,429
816 5,347,430

CLASS 362

11 5,347,431
18 5,347,432
32 5,347,433
73 5,347,434
80.1 5,347,435
102 5,347,436
103 B1 5,113,325
104 5,347,437
186 5,347,438
190 5,347,439
200 5,347,440

CLASS 363

39 5,347,441
41 5,347,442
98 5,347,443
5,347,444

CLASS 364

148 5,347,445
149 5,347,446
152 5,347,447
167.01 5,347,448
185 5,347,449
405 5,347,451
408 5,347,452
413 5,347,453
413.04 Re.34,728
413.24 5,347,455
413.280 5,347,454
424.02 5,347,456
424.05 5,347,457
5,347,458
461 5,347,459
468 5,347,460
474.29 5,347,461
474.34 5,347,462
478 5,347,463
483 5,347,464
488 5,347,465
492 5,347,466
510 5,347,467
5,347,468
516 5,347,469
559 5,347,471
569 5,347,472
571.01 5,347,475
571.02 5,347,474
571.04 5,347,476
709.02 5,347,473
709.11 5,347,477
715.02 5,347,478
725 5,347,479
736 5,347,480
748 5,347,481
757 5,347,482

CLASS 365

49 5,347,483
5,347,484
171 5,347,485
185 5,347,486
189.05 5,347,487
189.11 5,347,488
203 5,347,489
219 5,347,490
222 5,347,491
226 5,347,492
230.06 5,347,493

CLASS 366

101 5,346,302
208 5,346,303
219 5,346,304
233 5,346,305

CLASS 367

42 5,347,494
87 5,347,495
140 5,347,496

CLASS 368

19 5,347,497
282 5,347,498

CLASS 369

4 5,347,499
33 5,347,207
44.14 5,347,500
44.25 5,347,501
44.29 5,347,502
44.32 5,347,503
44.41 5,347,504
59 5,347,505
124 5,347,506
263 5,347,507
273 5,347,508
275.3 5,347,509
275.5 5,347,510

CLASS 370

54 5,347,511
58.2 5,347,512
58.3 5,347,513
60 5,347,514
85.2 5,347,515
85.3 5,347,521
94.1 5,347,516

CLASS 371

19 5,347,518
20.5 5,347,522
22.2 5,347,519
22.3 5,347,520
5,347,523
29.1 5,347,524
55 5,347,517

CLASS 372

19 5,347,525
20 5,347,526
5,347,527
25 5,347,528
28 5,347,529
75 Re.34,729
82 5,347,530
86 5,347,531
87 5,347,532
96 5,347,533

CLASS 374

10 5,346,306
136 5,346,307

CLASS 375

1 5,347,534
5,347,535
5,347,536
5,347,537
7 5,347,538
8 5,347,539
10 5,347,540
12 5,347,541
17 5,347,542
36 5,347,543
5,347,544
37 5,347,545
39 5,347,569
75 5,347,546
114 5,347,547
116 5,347,548
117 5,347,549

CLASS 376

173 5,347,550
248 5,347,551
254 5,347,552
259 5,347,553
260 5,347,554
261 5,347,555
280 5,347,556
316 5,347,557
446 5,347,560

CLASS 377

47 5,347,558
54 5,347,559

CLASS 378

34 5,347,561
62 5,347,563
98.12 5,347,570
105 5,347,571

CLASS 379

12 5,347,564
5,347,565
27 5,347,566
45 5,347,567
5,347,568
58 5,347,562
100 5,347,572
201 5,347,573
210 5,347,574
377 5,347,575
399 5,347,576
413 5,347,577

CLASS 380

5,347,578
25 5,347,579
5,347,580
XI 5,347,581

CLASS 381

67 5,347,583
69.2 5,347,584
71 5,347,585
5,347,586
117 5,347,587

CLASS 382

1 5,347,588
II 5,347,589
6 5,347,590
8 5,347,591
5,347,592
29 5,347,593
5,347,594
36 5,347,595
46 5,347,596
47 5,347,597
48 5,347,598
54 5,347,599
56 5,347,600

CLASS 383

4 5,346,308
5,346,309
5 5,346,301
III 5,346,310
75 5,346,311
113 5,346,312

CLASS 384

43 5,346,313
97 5,346,314
192 5,346,315
297 5,346,316
611 5,346,317

CLASS 385

3 5,347,601
25 5,347,602
86 5,347,603
92 5,347,604
5,347,605
95 5,347,606
102 5,347,607
130 5,347,608
135 B1 4,976,510

CLASS 392

309 5,347,609
447 5,347,610

CLASS 395

2.15 5,347,611
2.52 5,347,612
24 5,347,613
75 5,347,614
76 5,347,615
86 5,347,616
108 5,347,617
121 5,347,618
126 5,347,619
129 5,347,620
131 5,347,621
135 5,347,622
145 5,347,625
156 5,347,626
157 5,347,623
5,347,624
5,347,627
159 5,347,628
161 5,347,629
164 5,347,630
5,347,631
200 5,347,450
5,347,632
5,347,633
250 5,347,634
5,347,635
275 5,347,636
325 5,347,637
375 5,347,638
5,347,639
400 5,347,640
5,347,641
425 5,347,642
5,347,643
550 5,347,645
575 5,347,646
5,347,647
5,347,648
600 5,347,649
5,347,650
5,347,651
5,347,652
5,347,653
5,347,654

CLASS 400

120.15 5,346,318
354 5,346,320
621.1 5,346,321
709 5,346,322

CLASS 401

82 5,346,323
146 5,346,324

CLASS 402

38 5,346,325
79 5,346,326

CLASS 403

272 5,346,327
374 5,346,328

CLASS 405

68 5,346,329
128 5,346,330
147 5,346,331
153 5,346,332
168.3 5,346,333
171 5,346,339
269 5,346,334

CLASS 407

11 5,346,335
104 5,346,336

CLASS 408

1 R 5,346,337
5,346,338
226 5,346,340

CLASS 409

132 5,346,341
134 5,346,342
201 5,346,343
234 5,346,344
235 5,346,345

CLASS 410

146 5,346,346

CLASS 411

19 5,346,347
43 5,346,348
549 5,346,349

CLASS 412

37 5,346,350

CLASS 414

277 5,346,351
400 5,346,352
401 5,346,353
430 5,346,354
462 5,346,357
542 5,346,355
631 5,346,356
790.9 5,346,358

CLASS 415

1 5,346,359
38 5,346,360
111 5,346,361
191 5,346,362
197 5,346,363
202 5,346,364
213.1 5,346,365

CLASS 416

180 5,346,366
230 5,346,367

CLASS 417

63 5,346,368
211 5,346,369
223 5,346,370
312 5,346,371
379 5,346,372
415 5,346,373

CLASS 418

6 5,346,374
15 5,346,375
55.4 5,346,376

CLASS 419

52 5,346,667

CLASS 420

485 5,346,668

CLASS 422

34 5,346,669
52 5,346,670
86 5,346,671
102 5,346,672
133 5,346,673
168 5,346,674
180 5,346,675
211 5,346,676
297 5,346,677

CLASS 423

2 5,346,678

210 5,346,679
274 5,346,680
328.1 5,346,681
342 5,346,682
447.2 5,346,683
488 5,346,684
718 5,346,685

CLASS 424

1.41 5,346,686
1.49 5,346,687
5 5,346,688
7.1 5,346,689
9 5,346,690
59 5,346,691
61 5,346,692
62 5,346,693
66 5,346,694
78.08 5,346,695
85.4 5,346,696
195.1 5,346,697
405 5,346,698
5,346,699
410 5,346,700
435 5,346,701
486 5,346,703
490 5,346,702
717 5,346,704

CLASS 425

9 5,346,377
28.1 5,346,378
67 5,346,379
87 5,346,380
149 5,346,381
190 5,346,382
197 5,346,383
363 5,346,385
381 5,346,384
541 5,346,386
543 5,346,387
549 5,346,388

CLASS 426

1 5,346,705
11 5,346,706
69 5,346,707
110 5,346,708
111 5,346,709
115 5,346,710
243 5,346,711
321 5,346,712
454 5,346,713
465 5,346,714
524 5,346,715
603 5,346,716

CLASS 427

2.27 5,346,717
66 5,346,718
97 5,346,719
101 5,346,720
126.2 5,346,721
300 5,346,722
302 5,346,723
384 5,346,724
389.9 5,346,725
393.4 5,346,726
407.1 Re.34,730
486 5,346,727
569 5,346,728
582 5,346,729
584 5,346,730

CLASS 428

34.5 5,346,731
35.7 5,346,732
5,346,733
36.5 5,346,734
36.7 5,346,735
36.9 5,346,736
5,346,737
40 5,346,738
5,346,739
64 5,346,740
65 5,346,741
67 5,346,742
76 5,346,743
156 5,346,745
195 5,346,746
209 5,346,747
5,346,748
5,346,749
5,346,750
210 5,346,751
216 5,346,752
220 5,346,753
228 5,346,754
286 5,346,755
288 5,346,756
296 5,346,757
328 5,346,758
329 5,346,759
331 5,346,760
5,346,761
336 5,346,762
349 5,346,763

5,346,764
354 5,346,765
355 5,346,766
412 5,346,767
426 5,346,768
5,346,769
432 5,346,770
447 5,346,771
457 5,346,772
476.9 5,346,773
542.8 5,346,774
614 5,346,775
690 5,346,776

CLASS 429

12 5,346,777
19 5,346,778
5,346,779
42 5,346,780
59 5,346,781
65 5,346,782
66 5,346,783
98 5,346,784
111 5,346,785
159 5,346,786
192 5,346,787
244 5,346,788

CLASS 430

19 5,346,789
106 5,346,790
106.6 5,346,791
109 5,346,792
110 5,346,793
5,346,794
5,346,795
115 5,346,796
137 5,346,797
5,346,798
192 5,346,799
213 5,346,800
253 5,346,801
270 5,346,802
5,346,803
281 5,346,804
5,346,805
284 5,346,806
296 5,346,807
5,346,808
393 5,346,809
522 5,346,810

CLASS 431

7 5,346,389
8 5,346,390
116 5,346,391
277 5,346,392

CLASS 432

179 5,346,393

CLASS 433

32 5,346,394
71 5,346,395
208 5,346,396
223 5,346,397

CLASS 434

70 5,346,398
201 5,346,399

CLASS 435

5 5,346,811
6 5,346,812
7.23 5,346,813
35 5,346,814
69.1 5,346,815
87 5,345,961
128 5,346,816
135 5,346,817
172.3 5,346,818
190 5,346,819
220 5,346,820
5,346,821
221 5,346,822
222 5,346,823
240.2 5,346,824
240.241 5,346,826
240.26 5,346,825
280 5,346,828
294 5,346,829
313 B1 4,839,292
320.1 5,346,830

CLASS 436

174 5,346,831
518 5,346,832

CLASS 437

3 5,346,837
4 5,346,833
7 5,346,838
21 5,346,839
31 5,346,840
35 5,346,841
41 5,346,834
5,346,835

46 5,346,836
52 5,346,842
5,346,843
5,346,844
5,346,845
5,346,846
5,346,847
61 5,346,848
66 5,346,849
81 5,346,850
89 5,346,851
104 5,346,852
113 5,346,853
129 5,346,854
5,346,855
132 5,346,856
183 5,346,857
189 5,346,858
200 5,346,860
209 5,346,859
5,346,861
228 5,346,862

CLASS 439

17 5,346,400
67 5,346,401
71 5,346,402
95 5,346,403
108 5,346,404
188 5,346,405
474 5,346,406
522 5,346,407
5,346,408
542 5,346,409
607 5,346,410
621 5,346,411
681 5,346,412
733 5,346,413
752 5,346,414

CLASS 440

7 5,346,415
89 5,346,416
5,346,417

CLASS 441

96 5,346,419

CLASS 446

91 5,346,418
126 5,346,420
199 5,346,421
394 5,346,422
479 5,346,423

CLASS 451

351 5,345,724
390 5,345,725
450 5,345,726

CLASS 452

5 5,346,424
38 5,346,425
118 5,346,427
160 5,346,435

CLASS 454

66 5,346,426
328 5,346,428

CLASS 460

16 5,346,429

CLASS 462

2 5,346,430

CLASS 464

171 5,346,431
180 5,346,432

CLASS 472

63 5,346,433

CLASS 473

32 5,346,209

CLASS 474

82 5,346,434
110 5,346,436
134 5,346,437
151 5,346,438
205 5,346,439
242 5,346,440

CLASS 475

116 5,346,441
223 5,346,442
252 5,346,443

CLASS 477

98 5,345,843
113 5,345,841
120 5,345,842

CLASS 482

53 5,346,444
62 5,346,445
82 5,346,446
96 5,346,447

104 5,346,448
107 5,346,449
108 5,346,450
112 5,346,451
113 5,346,452

CLASS 483

1 5,346,453
29 5,346,454

CLASS 493

5,346,456
320 5,346,457
335 5,346,455

CLASS 501

17 5,346,863
35 5,346,864
40 5,346,865
59 5,346,866
71 5,346,867
95 5,346,868
98 5,346,869
136 5,346,870

CLASS 502

61 5,346,871
116 5,346,872
165 5,346,873
207 5,346,874
233 5,346,875
417 5,346,876

CLASS 503

209 5,346,878
227 5,346,877

CLASS 504

115 5,346,879
242 5,346,880
243 5,346,881

CLASS 505

100 5,346,883
190 5,346,882
191 5,347,143
231 5,347,085

CLASS 512

6 5,346,884
15 5,346,885

CLASS 514

8 5,346,886
18 5,346,887
19 5,346,888
21 5,346,889
27 5,346,890
54 5,346,891
60 5,346,892
220 5,346,894
247 5,346,895
250 B1 4,886,061
252 5,346,896
255 5,346,898
256 5,346,899
258 5,346,900
5,346,901
269 5,346,902
282 5,346,903
290 5,346,897
292 5,346,904
293 5,346,905
305 5,346,906
312 5,346,907
316 5,346,908
317 5,346,909
326 5,346,910
339 5,346,911
352 5,346,912
389 5,346,913
402 5,346,914
432 5,346,915
434 5,346,916
437 5,346,917
450 5,346,918
468 5,346,919
539 5,346,920
573 5,346,921
703 5,346,922

CLASS 521

28 5,346,924
54 5,346,925
81 5,346,926
90 5,346,927
166 5,346,928

CLASS 523

124 5,346,929
164 5,346,930
201 5,346,931
213 5,346,932
427 5,346,933

CLASS 524

5,346,934
18 5,346,935

47 5,346,936
5,346,937
117 5,346,938
176 5,346,939
267 5,346,940
268 5,346,941
322 5,346,942
398 5,346,943
451 5,346,944
494 5,346,945
547 5,346,946
591 5,346,947
773 5,346,948
805 5,346,949

CLASS 525

24 5,346,956
57 5,346,950
64 5,346,951
68 5,346,952
74 5,346,953
85 5,346,954
92 5,346,955
122 5,346,957
124 5,346,958
187 5,346,959
221 5,346,960
281 5,346,961
5,346,962
285 5,346,963
314 5,346,964
379 5,346,965
411 5,346,966
425 5,346,967
431 5,346,968
432 5,346,969
444 5,346,970

CLASS 526

94 5,346,971
125 5,346,972
209 5,346,973
240 5,346,974
263 5,346,975
279 5,346,976
318.44 5,346,977
321 5,346,978

CLASS 528

26 5,346,979
40 5,346,980
85 5,346,981
183 5,346,982
212 5,346,983
272 B1 4,064,112
323 5,346,984
331 5,346,985
495 5,346,986
502 5,346,987

CLASS 530

300 5,346,988
324 5,346,989
350 5,346,990
5,346,991
364 5,346,992
399 5,346,993
419 5,346,994

CLASS 534

14 5,346,995
15 5,346,996

CLASS 536

4.1 5,346,997
23.6 5,346,998
25.41 5,346,999

CLASS 540

218 5,347,000
456 5,347,001
596 5,347,002

CLASS 544

8 5,347,003
180 5,347,004
258 5,347,005

CLASS 546

241 5,347,006
269 5,347,007

CLASS 548

170 5,347,008
251 5,347,009
5,347,010
264.2 5,347,011
311.4 5,347,012
436 5,347,013
453 5,347,014
455 5,347,015
531 5,347,016
566 5,347,017

CLASS 549

84 5,347,018
232 5,347,019

274 5,347,020
325 5,347,021

CLASS 552

113 5,347,022

CLASS 554

186 5,347,023

CLASS 556

11 5,347,024
5,347,025
87 5,347,026
413 5,347,027
460 5,347,028

CLASS 558

158 5,347,029
169 5,347,030
260 5,347,031
443 5,347,032
445 5,347,033

CLASS 560

25 5,347,034

41 5,347,035
45 5,347,036
5,347,037
48 5,347,038
60 5,347,039
139 5,347,040
141 5,347,041
153 5,347,042
190 5,347,043
245 5,347,046
355 5,347,044

CLASS 562

35 5,347,045
460 5,347,047
501 5,347,048

CLASS 564

347 5,347,049
349 5,347,050
389 5,347,051
417 5,347,052
481 5,347,053

CLASS 568

437 5,347,054
559 5,347,055
881 5,347,056
910 5,347,057

CLASS 570

142 5,347,058
166 5,347,059
235 5,347,060

CLASS 585

323 5,347,061
352 5,347,063
452 5,347,062
716 5,347,064
724 5,347,065
5,347,066
5,347,067

CLASS 588

205 5,347,068
252 5,347,069
253 5,347,070

256 5,347,071
5,347,072
5,347,073
5,347,074
257 5,347,077
258 5,347,078

CLASS 600

16 5,346,458

CLASS 602

19 5,346,461
22 5,346,462
23 5,346,463

CLASS 604

8 5,346,467
9 5,346,464
13 5,346,468
22 5,346,469
24 5,346,470
43 5,346,471
65 5,346,472
95 5,346,473
110 5,346,474

5,346,475
135 5,346,476
141 5,346,477
171 5,346,478
174 5,346,479
197 5,346,480
204 5,346,481
253 5,346,466
338 5,346,482
353 5,346,483
358 5,346,484
368 5,346,485
385.1 5,346,486
5,346,487

CLASS 606

7 5,346,488
15 5,346,489
37 5,346,491
60 5,346,492
61 5,346,493
92 5,346,495
96 5,346,496
107 5,346,497
108 5,346,498

133 5,346,499
138 5,346,500
151 5,346,501
169 5,346,502
170 5,346,503
185 5,346,459
192 5,346,504
194 5,346,505

CLASS 607

7 5,346,506
5,346,508

CLASS 623

6 5,346,507

CLASS 800

2 5,347,075
200 5,347,079
5,347,080
5,347,081
205 5,347,076

CLASS 839

71 5,346,132

CLASSIFICATION OF DESIGNS

D2— 887 350,427
897 350,428
910 350,429
952 350,430
956 350,431
960 350,434
961 350,432
350,433
D3— 261 350,435
266 350,436
304 350,437
313 350,438
318 350,439
D4— 105 350,440
D6— 300 350,441
349 350,450
369 350,442
350,443
373 350,444
379 350,445
480 350,452
487 350,446
500 350,447
630 350,448
632 350,458
D7— 306 350,453
310 350,454
348 350,449
384 350,451
392.1 350,455
605 350,459
620 350,456
622 350,457
629 350,460
675 350,461

694 350,462
D8— 8 350,463
13 350,464
14 350,471
52 350,465
57 350,466
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5,346,471	5,345,922	5,346,516	5,347,323	5,346,158	5,346,756
5,346,529	5,345,932	5,346,548	5,347,357	5,346,169	5,346,966
5,346,564	5,345,934	5,346,550	5,347,359	5,346,370	5,346,969
5,346,712	5,345,936	5,346,570	5,347,383	5,346,449	5,346,985
02 : 5,346,017	5,345,937	5,346,578	5,347,384	5,346,453	5,347,014
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04 : 5,345,668	5,345,963	5,346,600	5,347,392	5,346,729	11 : 5,346,111
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5,346,254	5,346,073	5,346,786	5,347,435	5,347,278	5,346,127
5,346,268	5,346,074	5,346,787	5,347,438	5,347,285	5,346,167
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5,346,500	5,346,077	5,346,823	5,347,456	5,347,378	5,346,222
5,346,725	5,346,089	5,346,842	5,347,464	5,347,634	5,346,308
5,346,747	5,346,110	5,346,850	5,347,474	09 : Re.34,728	5,346,315
5,346,848	5,346,132	5,346,852	5,347,481	5,345,680	5,346,369
5,346,857	5,346,162	5,346,895	5,347,482	5,345,703	5,346,397
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5,347,402	5,346,240	5,347,078	5,347,541	5,345,951	5,346,602
5,347,433	5,346,242	5,347,138	5,347,546	5,346,327	5,346,617
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5,347,558	5,346,287	5,347,162	5,347,549	5,346,371	5,346,695
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5,347,644	5,346,298	5,347,177	5,347,554	5,346,418	5,346,784
5,347,651	5,346,307	5,347,183	5,347,556	5,346,448	5,346,812
05 : 5,346,378	5,346,309	5,347,186	5,347,566	5,346,468	5,346,988
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5,347,053	5,346,326	5,347,209	5,347,595	5,346,563	5,347,123
06 : 5,345,612	5,346,337	5,347,211	5,347,609	5,346,601	5,347,204
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5,345,624	5,346,364	5,347,226	5,347,618	5,346,930	5,347,268
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5,345,641	5,346,410	5,347,251	5,347,638	5,347,106	5,347,452
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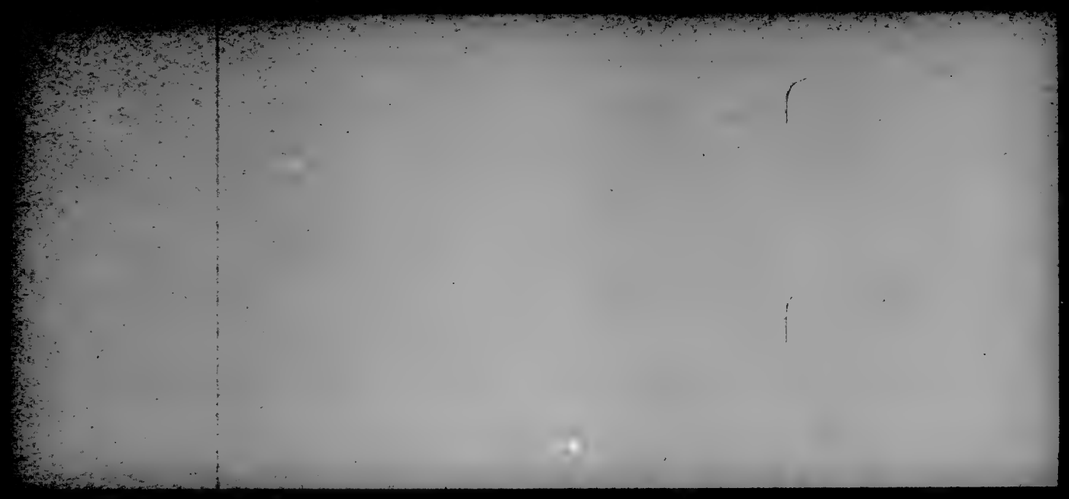
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25 on Sept. 14, 1993.

International fees were changed effective on May 1, 1993, due to a changes in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992 and were announced in the *Official Gazette* at 1141 O.G. 68 on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars) effective Oct. 1, 1993 is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation)	230.00

U.S. National Stage Fees	Small Entity	Regular
Basic National Fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3,7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on September 17, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,048,121 through 5,050,239
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on September 15, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,692,946 through 4,694,504
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on September 13, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,403,353 through 4,404,686
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, and 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amount of the surcharges for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED July 13, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,347	07/216,952	09/25/90
(4,598,632)	(06/428,889)	(07/08/86)
Re. 33,894	07/401,725	04/21/92
(Re. 32,201)	(06/638,340)	(07/08/86)
4,338,702	06/241,468	07/13/82
4,338,735	06/274,031	07/13/82
4,338,739	06/236,977	07/13/82
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4,338,812	06/217,331	07/13/82
4,338,849	06/293,273	07/13/82
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4,338,879	06/223,431	07/13/82
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4,339,246	06/278,295	07/13/82
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4,339,366	06/319,144	07/13/82
4,339,367	06/217,578	07/13/82
4,339,398	06/218,969	07/13/82
4,339,400	06/262,234	07/13/82
4,339,417	06/237,726	07/13/82
4,339,418	06/237,727	07/13/82
4,339,419	06/237,730	07/13/82
4,339,420	06/237,731	07/13/82
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4,339,430	06/221,664	07/13/82
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4,598,497	06/718,988	07/08/86
4,598,502	06/643,374	07/08/86
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4,939,988	07/262,430	07/10/90
4,939,993	07/344,803	07/10/90
4,939,996	07/239,131	07/10/90
4,939,997	07/404,117	07/10/90
4,940,000	07/044,847	07/10/90
4,940,003	07/370,183	07/10/90

Patent Number	Serial Number	Issue Date
4,940,008	07/402,816	07/10/90
4,940,009	07/098,321	07/10/90
4,940,029	07/428,007	07/10/90
4,940,033	07/266,682	07/10/90
4,940,038	07/305,415	07/10/90
4,940,056	07/271,317	07/10/90
4,940,058	07/205,085	07/10/90
4,940,059	07/170,743	07/10/90
4,940,068	07/355,297	07/10/90
4,940,070	07/321,726	07/10/90
4,940,075	07/328,175	07/10/90
4,940,082	07/286,616	07/10/90
4,940,087	07/357,528	07/10/90
4,940,097	07/283,855	07/10/90
4,940,102	07/245,437	07/10/90
4,940,109	07/381,551	07/10/90
4,940,110	07/294,065	07/10/90
4,940,114	07/403,198	07/10/90
4,940,115	07/324,751	07/10/90
4,940,121	07/202,548	07/10/90
4,940,124	07/309,278	07/10/90
4,940,138	07/472,092	07/10/90
4,940,139	07/422,521	07/10/90
4,940,141	07/344,749	07/10/90
4,940,142	07/431,436	07/10/90
4,940,147	07/311,989	07/10/90
4,940,151	07/383,524	07/10/90
4,940,152	07/371,818	07/10/90
4,940,155	07/167,880	07/10/90
4,940,158	07/100,293	07/10/90
4,940,159	07/382,398	07/10/90
4,940,166	07/258,198	07/10/90
4,940,171	07/354,125	07/10/90
4,940,172	07/307,671	07/10/90
4,940,178	07/383,191	07/10/90
4,940,179	07/368,756	07/10/90
4,940,180	07/389,613	07/10/90
4,940,182	07/427,384	07/10/90
4,940,186	07/259,274	07/10/90
4,940,189	07/226,786	07/10/90
4,940,190	07/352,565	07/10/90
4,940,191	07/330,078	07/10/90
4,940,192	07/330,627	07/10/90
4,940,199	07/371,702	07/10/90
4,940,201	07/349,206	07/10/90
4,940,206	07/310,867	07/10/90
4,940,209	07/305,070	07/10/90
4,940,210	07/172,478	07/10/90
4,940,211	06/770,351	07/10/90
4,940,220	07/317,620	07/10/90
4,940,228	07/148,217	07/10/90
4,940,231	07/255,059	07/10/90
4,940,233	07/158,260	07/10/90
4,940,237	07/422,747	07/10/90
4,940,242	07/354,736	07/10/90
4,940,245	07/253,044	07/10/90
4,940,249	07/310,356	07/10/90
4,940,251	07/191,037	07/10/90
4,940,255	07/313,167	07/10/90
4,940,261	07/193,904	07/10/90
4,940,263	07/255,491	07/10/90
4,940,268	07/434,215	07/10/90
4,940,270	07/316,038	07/10/90
4,940,272	07/269,245	07/10/90
4,940,274	07/301,070	07/10/90
4,940,276	07/299,616	07/10/90
4,940,283	07/386,775	07/10/90
4,940,284	07/384,600	07/10/90
4,940,286	07/259,263	07/10/90
4,940,287	07/370,841	07/10/90
4,940,294	07/351,580	07/10/90
4,940,296	07/308,776	07/10/90
4,940,301	07/288,946	07/10/90
4,940,305	07/327,826	07/10/90
4,940,311	07/282,055	07/10/90
4,940,323	07/253,900	07/10/90
4,940,324	07/198,333	07/10/90
4,940,327	07/262,457	07/10/90
4,940,332	07/228,588	07/10/90
4,940,336	07/357,945	07/10/90
4,940,337	07/403,796	07/10/90
4,940,341	07/393,304	07/10/90
4,940,350	07/292,323	07/10/90
4,940,351	07/381,234	07/10/90
4,940,352	07/320,524	07/10/90
4,940,354	07/207,165	07/10/90
4,940,357	07/229,442	07/10/90
4,940,365	07/353,904	07/10/90
4,940,366	07/180,106	07/10/90
4,940,368	07/187,468	07/10/90
4,940,371	07/381,807	07/10/90
4,940,376	07/256,730	07/10/90
4,940,378	07/413,993	07/10/90
4,940,380	07/311,757	07/10/90
4,940,382	07/289,206	07/10/90
4,940,387	07/347,405	07/10/90
4,940,392	07/294,999	07/10/90
4,940,397	07/307,420	07/10/90
4,940,400	07/391,455	07/10/90
4,940,407	07/346,779	07/10/90
4,940,414	07/345,094	07/10/90
4,940,415	07/248,256	07/10/90
4,940,427	07/408,520	07/10/90
4,940,438	07/351,191	07/10/90
4,940,444	07/293,622	07/10/90
4,940,445	07/413,112	07/10/90
4,940,448	07/273,413	07/10/90
4,940,451	07/281,022	07/10/90
4,940,452	07/232,753	07/10/90
4,940,455	07/337,948	07/10/90
4,940,468	07/143,652	07/10/90
4,940,469	07/303,433	07/10/90
4,940,471	07/398,483	07/10/90
4,940,473	07/367,334	07/10/90
4,940,477	07/381,813	07/10/90
4,940,481	06/468,522	07/10/90
4,940,483	07/268,913	07/10/90
4,940,487	07/333,232	07/10/90
4,940,489	07/330,612	07/10/90
4,940,493	07/251,299	07/10/90
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4,940,498	07/393,647	07/10/90
4,940,506	07/310,237	07/10/90
4,940,507	07/417,405	07/10/90
4,940,516	07/375,758	07/10/90
4,940,518	07/249,638	07/10/90
4,940,519	07/211,767	07/10/90
4,940,520	07/369,155	07/10/90
4,940,522	07/404,841	07/10/90
4,940,535	07/276,971	07/10/90
4,940,539	07/348,868	07/10/90
4,940,561	07/306,107	07/10/90
4,940,571	07/176,582	07/10/90
4,940,572	07/375,859	07/10/90
4,940,575	07/371,058	07/10/90
4,940,577	07/185,860	07/10/90
4,940,580	07/306,253	07/10/90
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4,940,584	07/207,949	07/10/90
4,940,596	07/272,076	07/10/90
4,940,606	07/456,758	07/10/90
4,940,608	07/268,051	07/10/90
4,940,609	07/288,622	07/10/90
4,940,611	07/287,488	07/10/90
4,940,615	07/313,037	07/10/90
4,940,616	07/195,416	07/10/90
4,940,619	07/399,343	07/10/90
4,940,620	07/425,602	07/10/90
4,940,631	07/225,227	07/10/90
4,940,635	07/275,442	07/10/90
4,940,638	07/245,754	07/10/90
4,940,643	07/289,673	07/10/90
4,940,645	07/300,168	07/10/90
4,940,646	07/135,316	07/10/90

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4,940,648	07/156,354	07/10/90
4,940,649	07/196,079	07/10/90
4,940,659	07/017,152	07/10/90
4,940,673	07/249,612	07/10/90
4,940,678	07/385,447	07/10/90
4,940,682	07/262,786	07/10/90
4,940,686	07/406,385	07/10/90
4,940,688	07/289,675	07/10/90
4,940,699	07/344,409	07/10/90
4,940,702	06/894,926	07/10/90
4,940,705	07/262,902	07/10/90
4,940,706	07/257,092	07/10/90
4,940,709	07/123,324	07/10/90
4,940,710	07/081,786	07/10/90
4,940,713	07/181,984	07/10/90
4,940,715	07/349,778	07/10/90
4,940,719	07/101,611	07/10/90
4,940,720	07/388,782	07/10/90
4,940,730	07/253,060	07/10/90
4,940,740	07/341,479	07/10/90
4,940,745	07/255,160	07/10/90
4,940,746	07/254,802	07/10/90
4,940,748	07/370,330	07/10/90
4,940,760	07/418,007	07/10/90
4,940,766	07/084,181	07/10/90
4,940,769	07/382,926	07/10/90
4,940,770	07/270,897	07/10/90
4,940,796	07/324,817	07/10/90
4,940,797	07/327,848	07/10/90
4,940,798	07/100,650	07/10/90
4,940,803	07/197,551	07/10/90
4,940,806	07/369,563	07/10/90
4,940,811	07/126,981	07/10/90
4,940,814	07/163,691	07/10/90
4,940,818	07/210,634	07/10/90
4,940,829	07/260,840	07/10/90
4,940,831	07/312,103	07/10/90
4,940,833	07/277,368	07/10/90
4,940,834	06/558,338	07/10/90
4,940,842	07/302,827	07/10/90
4,940,845	06/735,421	07/10/90
4,940,852	07/270,961	07/10/90
4,940,855	07/246,983	07/10/90
4,940,858	07/395,484	07/10/90
4,940,859	07/384,162	07/10/90
4,940,861	07/443,340	07/10/90
4,940,866	07/288,296	07/10/90
4,940,867	07/414,647	07/10/90
4,940,872	07/143,735	07/10/90
4,940,874	07/326,915	07/10/90
4,940,876	07/368,306	07/10/90
4,940,879	07/419,816	07/10/90
4,940,885	07/214,661	07/10/90
4,940,886	07/329,960	07/10/90
4,940,894	07/296,457	07/10/90
4,940,899	07/273,565	07/10/90
4,940,906	07/229,914	07/10/90
4,940,912	07/360,976	07/10/90
4,940,933	07/337,605	07/10/90
4,940,935	07/400,563	07/10/90
4,940,939	07/321,014	07/10/90
4,940,945	07/116,015	07/10/90
4,940,950	07/231,458	07/10/90
4,940,959	07/388,742	07/10/90
4,940,961	07/292,162	07/10/90
4,940,962	07/158,878	07/10/90
4,940,964	07/444,988	07/10/90
4,940,969	07/354,473	07/10/90
4,940,973	07/172,282	07/10/90
4,940,976	07/152,960	07/10/90
4,940,982	07/251,171	07/10/90
4,940,983	07/261,242	07/10/90
4,940,984	07/326,621	07/10/90
4,941,015	07/289,240	07/10/90
4,941,041	07/336,051	07/10/90
4,941,044	07/353,360	07/10/90
4,941,064	07/201,397	07/10/90
4,941,066	07/192,772	07/10/90
4,941,073	07/426,013	07/10/90
4,941,075	07/301,203	07/10/90
4,941,088	06/698,399	07/10/90
4,941,091	07/067,916	07/10/90
4,941,106	07/280,398	07/10/90
4,941,108	07/184,789	07/10/90
4,941,115	07/209,232	07/10/90
4,941,118	07/248,974	07/10/90
4,941,130	07/311,110	07/10/90
4,941,136	07/243,919	07/10/90
4,941,159	07/257,917	07/10/90
4,941,163	06/765,979	07/10/90
4,941,164	07/150,242	07/10/90
4,941,179	07/186,930	07/10/90
4,941,180	07/073,537	07/10/90

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,620,138, Re. S.N. 08/049,591, Apr. 20, 1993, Cl. 313/254, DRIVE ARRANGEMENT WITH COLLECTORLESS DC MOTOR, Rolf Mueller, et. al., Owner of Record: *Papst Licensing GmbH, Spaichingen, Federal Republic Germany,* Attorney or Agent: Wilford Wisner, Ex. Gp.: 2107

4,896,803, Re. S.N. 08/283,950, Aug. 1, 1994, Cl. 223, PULLING ON AID FOR COMPRESSION STOCKINGS, Claus-Dieter Wilken, Owner of Record: *Meida USA L.P., Arlington Heights, Ill.,* Attorney or Agent: James P. Hanrath, Ex. Gp.: 2407

4,907,987, Re. S.N. 08/198,387, Feb. 18, 1994, Cl. 439/571, CONNECTOR WITH BARBED BOARDLOCK, George H. Douty, et. al., Owner of Record: *AMP Incorporated, Harrisburg, Pa.,* Attorney or Agent: Kenneth L. Cage, Ex. Gp.: 3202

5,037,881, Re. S.N. 08/274,180, July 12, 1994, Cl. 524/812, EMULSIFIED MANNICH ACRYLAMIDE POLYMERS, Joseph J. Kozakiewicz, et. al., Owner of Record: *Cytec Technology Corp., Wilmington, Del.,* Attorney or Agent: Allan A. Fanucci, Ex. Gp.: 1505

5,041,330, Re. S.N. 08/124,486, Sept. 22, 1994, Cl. 428/224, WATER AND/OR OIL-IMPERMEABLE SEALING MAT CONSISTING SUBSTANTIALLY OF A SUBSTRATE LAYER, A LAYER OF SWELLABLE CLAY AND A COVER LAYER, Georg Heerten, et. al., Owner of Record: *Inventors,* Attorney or Agent: Marvin Petry, Ex. Gp.: 1504

5,057,105, Re. S.N. 08/136,414, Oct. 15, 1993, Cl. 606/28, HOT TIP CATHETER ASSEMBLY, David G. Malone, et. al., Owner of Record: *University of Kansas Medical Center, The, Kansas City, Kans.,* Attorney or Agent: Daniel D. Ryan, Ex. Gp.: 3309

5,106,058, Re. S.N. 08/228,528, Apr. 15, 1994, Cl. 256/34, FENCE SALT CONSTRUCTION, Harvey Finkelstein, Owner of Record: *Tri-Seal International, Inc., Blauvelt, N.Y.,* Attorney or Agent: Christopher W. Brody, Ex. Gp.: 3501

5,125,174, Re. S.N. 08/268,195, June 29, 1994, Cl. 37/231, REMOVABLE SNOWFLOW WITH A PIVOTABLE LIFT STAND, Gary E. Watson, et. al., Owner of Record: *Douglas Dynamics, Inc., Milwaukee, Wis.,* Attorney or Agent: Joseph A. Gemignani, Ex. Gp.: 3501

5,131,451, Re. S.N. 08/277,849, July 20, 1994, Cl. 164/46, BELT CASTING OF MOLTEN METAL, Sankaranarayanan Astiok, et. al., Owner of Record: *Olin Corp., Cheshire, Conn.,* Attorney or Agent: Gregory S. Rosenblatt, Ex. Gp.: 3205

5,131,772, Re. S.N. 08/278,078, July 20, 1994, Cl.400/621, TAPE PRINTING DEVICE HAVING TAPE CUT POSITION REGULATOR, Koshiro Yamaguchi, Owner of Record: *Brother Kogyo Kabushiki Kaisha, Aichi-Ken, Japan,* Attorney or Agent: James A. Oliff, Ex. Gp.: 3307

5,132,588, Re. S.N. 08/276,983, July 19, 1994, Cl. 313/479, VIEWING SCREEN PROTECTIVE SHIELD, William J. Warman, Owner of Record: *Inventor,* Attorney or Agent: Donald J. Lisa, Ex. Gp.: 2604

5,143,177, Re. S.N. 08/275,238, July 14, 1994, Cl. 182/187, TREE STAND, Terry B. Smith, Owner of Record: *Inventor,* Attorney or Agent: Barry C. Kane, Ex. Gp.: 3505

5,165,093, Re. S.N. 08/270,261, July 5, 1994, Cl. 378/138, INTERSTITIAL X-RAY NEEDLE, Robert Bruce Miller, et al., Owner of Record: *Titan Corp., San Diego, Calif.,* Attorney or Agent: Ellsworth R. Roston, Ex. Gp.: 2506

5,192,134, Re. S.N. 08/171,418, Dec. 22, 1993, Cl. 383/24, RE-USABLE FLEXIBLE BULK CONTAINERS, Walter J. Polett, Owner of Record: *Inventor,* Attorney or Agent: Norman E. Lehrer, Ex. Gp.: 2401

5,214,691, Re. S.N. 08/283,282, July 29, 1994, Cl. 379/157, KEY TELEPHONE SYSTEM WITH VIRTUAL PRIVATE LINES, John M. Cotton, Owner of Record: *IPC Information Systems, Inc., Stamford, Conn.,* Attorney or Agent: Thomas M. Hammond, Ex. Gp.: 2614

5,244,141, Re. S.N. 08/272,067, July 8, 1994, Cl. 378/99, FLUOROSCOPIC METHOD WITH REDUCED X-RAY DOSAGE, Fathy Fouad Yassa, et. al., Owner of Record: *General Electric Co., New York, N.Y.,* Attorney or Agent: Marvin Snyder, Ex. Gp.: 2506

5,245,718, Re. S.N. 08/276,710, July 18, 1994, Cl. 5/618, ADJUSTABLE BED WITH SINGLE ACTUATOR, Bernard J. Krauska, Owner of Record: *Joerns Healthcare, Inc., Stevens Point, Wis.,* Attorney or Agent: Dana Lozon, Ex. Gp.: 3508

5,260,967, Re. S.N. 08/277,142, July 5, 1994, Cl. 375/1. CDMA/TDMA SPREAD-SPECTRUM COMMUNICATIONS SYSTEM AND METHOD, Donald L. Schilling, Owner of Record: *SCM Mobilecom Corp., Wilmington, Del.,* Attorney or Agent: David B. Neuman, Jr., Ex. Gp.: 2202

5,294,774, Re. S.N. 08/276,556, July 18, 1994, Cl. 219/121.77, LASER MARKER SYSTEM, J. James Stone, Owner of Record: *Videojet Systems International, Inc., Wooddale, Ill.,* Attorney or Agent: Jeffrey W. Salmon, Ex. Gp.: 2106

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 32,940, Reexam. No. 90/003,487, July 11, 1994, Cl. 601/152, MEDICAL APPLIANCE, Arthur M. N. Gardner, et. al., Owner of Record: *Novamedix, Ltd., South Way, U.K.,* Attorney or Agent: Roy Hopgood & Stephen Judlowe, Hopgood, Calimafde, Kalil, Blaustein & Judlowe, New York, N.Y., Ex. Gp.: 3302, Requester: Kinetic Concepts, Inc., San Antonio, Tex.

5,130,144, Reexam. No. 90/003,402, Apr. 15, 1994, Cl. 424, HUMAN STEM CELLS AND MONOCLONAL ANTIBODIES, Curt I. Civin, et. al., Owner of Record: *The Johns Hopkins University, Baltimore, Md.,* Attorney or Agent: Banner, Birch, McKie & Beckett, Washington, D.C., Ex. Gp.: 1804, Requester: Owner

5,280,135, Reexam. No. 90/003,482, June 30, 1994, Cl. 174/067, OUTDOOR ELECTRICAL OUTLET COVER, Donald M. Berlin, et. al., Owner of Record: *Intermatic Incorporated, Spring Grove, Ill.,* Attorney or Agent: Willian, Brinks, Hofer, Gilson & Lione, Chicago, Ill., Ex. Gp.: 2103, Requester: Owner

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expi*ring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED AUGUST 01, 1994
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
93,960	71/069,938	10/28/1913
94,004	71/069,233	10/28/1913
94,027	71/071,365	10/28/1913
307,294	71/337,494	10/24/1933
307,296	71/337,182	10/24/1933
307,355	71/338,212	10/24/1933
307,363	71/338,276	10/24/1933
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307,393	71/339,170	10/24/1933
307,411	71/338,537	10/24/1933
307,436	71/339,042	10/24/1933
307,445	71/339,134	10/24/1933
307,458	71/339,253	10/24/1933
307,460	71/339,255	10/24/1933
307,461	71/339,273	10/24/1933
307,464	71/339,384	10/24/1933
307,471	71/337,864	10/24/1933
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581,454	71/600,755	10/27/1953
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581,494	71/621,061	10/27/1953
581,500	71/622,742	10/27/1953
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581,505	71/623,970	10/27/1953
581,507	71/624,505	10/27/1953
581,512	71/625,285	10/27/1953
581,517	71/626,253	10/27/1953
581,530	71/629,611	10/27/1953
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581,548	71/631,150	10/27/1953	971,206	72/446,347	10/23/1973
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581,551	71/631,413	10/27/1953	971,216	72/403,531	10/23/1973
581,552	71/631,430	10/27/1953	971,219	72/296,778	10/23/1973
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581,561	71/632,362	10/27/1953	971,223	72/393,660	10/23/1973
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581,588	71/635,910	10/27/1953	971,238	72/440,629	10/23/1973
581,590	71/636,121	10/27/1953	971,247	72/438,789	10/23/1973
581,593	71/636,431	10/27/1953	971,250	72/443,719	10/23/1973
581,594	71/636,630	10/27/1953	971,256	72/397,035	10/23/1973
581,599	71/637,363	10/27/1953	971,257	72/398,183	10/23/1973
581,603	71/637,633	10/27/1953	971,261	72/413,814	10/23/1973
581,604	71/637,634	10/27/1953	971,262	72/414,440	10/23/1973
581,608	71/638,058	10/27/1953	971,266	72/433,151	10/23/1973
581,616	71/638,542	10/27/1953	971,271	72/440,417	10/23/1973
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581,618	71/638,667	10/27/1953	971,273	72/440,581	10/23/1973
581,632	71/639,422	10/27/1953	971,274	72/440,766	10/23/1973
581,635	71/639,599	10/27/1953	971,275	72/440,767	10/23/1973
581,644	71/640,211	10/27/1953	971,278	72/398,530	10/23/1973
581,645	71/640,387	10/27/1953	971,280	72/399,501	10/23/1973
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581,660	71/641,278	10/27/1953	971,291	72/421,389	10/23/1973
581,664	71/641,378	10/27/1953	971,292	72/423,455	10/23/1973
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971,104	72/445,145	10/23/1973	971,343	72/421,670	10/23/1973
971,106	72/442,365	10/23/1973	971,352	72/422,738	10/23/1973
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971,465	72/440,422	10/23/1973
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971,524	72/418,175	10/23/1973
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971,528	72/440,546	10/23/1973
971,530	72/444,105	10/23/1973
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971,532	72/444,108	10/23/1973
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971,594	72/430,815	10/23/1973
971,596	72/434,253	10/23/1973
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971,604	72/411,375	10/23/1973
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971,608	72/424,473	10/23/1973
971,609	72/426,125	10/23/1973
971,610	72/429,648	10/23/1973
971,614	72/413,543	10/23/1973
971,615	72/414,866	10/23/1973
971,618	72/426,278	10/23/1973
971,625	72/412,808	10/23/1973
971,635	72/396,944	10/23/1973
971,636	72/424,631	10/23/1973
971,637	72/413,538	10/23/1973
971,639	72/433,009	10/23/1973
971,644	72/406,800	10/23/1973
971,645	72/417,908	10/23/1973
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Errata

All reference to Patent No. 5,341,443 to Jean-Pierre Weber of Sweden for 'TUNABLE OPTICAL FILTER' appearing in the Official Gazette of August 23, 1994 should be deleted since no patent was granted.

All reference to Patent No. 5,314,993 to Richard N. Love, et. al. of Massachusetts for 'PROCESS FOR PREPARING HIGH PURITY PROTEIN A PREPARATION' appearing in the Official Gazette of May 24, 1994 should be deleted since no patent was granted.

DEPARTMENT OF COMMERCE
Patent and Trademark Office
Notice of Public Hearings and Request for Comments on Patent Protection for Biotechnological Inventions

Agency: Patent and Trademark Office, Commerce

Action: Notice of hearings and request for public comments

Summary: The Patent and Trademark Office (PTO) requests public comments on issues associated with the patenting of and use of patent rights related to biotechnological inventions. Interested members of the public are invited to testify at public hearings and to present written comments on any of the topics outlined in the supplementary information section of this notice.

Dates: Public hearings will be held on Monday, October 17, 1994, at 9:00 a.m. Those wishing to present oral testimony at any of the hearings must request an opportunity to do so no later than October 12, 1994. Written comments on the topics presented in the supplementary information section of this notice will be accepted by the PTO until November 23, 1994.

Addresses: The public hearing will be held in the Copper Room of the San Diego Concourse, 202 C Street, San Diego, California. Those interested in presenting written comments on the topics presented in the supplementary information, or any other related topics, should address their comments to the Commissioner of Patents and Trademarks, marked to the attention of Jeff Kushan. Comments submitted by mail should be sent to Commissioner of Patents and Trademarks, Box 4, Patent and Trademark Office, Washington, DC 20231. Comments may also be submitted by telefax at (703) 305-8885 and by electronic mail through the Internet to "commentsbiotech@uspto.gov." Written comments should include the following information:

- name and affiliation of the individual responding;
- an indication of whether comments offered represent views of the organization or are the respondent's personal views; and
- if applicable, information on the respondent's organization, including the type of organization (e.g., business, trade group, university, non-profit organization) and general areas of interest.

Parties offering testimony or written comments should provide their comments in machine readable format. Such submissions may be provided by electronic mail messages sent over the Internet, or on a 3.5" floppy disk formatted for use in either a Macintosh or MS-DOS based computer. Machine-readable submissions should be provided as unformatted text (e.g., ASCII or plain text), or as formatted text in one of the following file formats: Microsoft Word (Macintosh, DOS or Windows versions) or WordPerfect (Macintosh, DOS or Windows versions).

Persons wishing to testify must request an opportunity to do so no later than October 12, 1994. Requests should be sent to Jeff Kushan by mail, phone or fax, at the addresses listed above. No requests for presenting oral testimony will be accepted through electronic mail.

Written comments and transcripts of the hearings will be available for public inspection on or about December 1, 1994, in Room 902 of Crystal Park Two, 2121 Crystal Drive, Arlington, Virginia. In addition, transcripts of the hearings and comments provided in machine readable format will be available on or around December 1, 1994, through anonymous file transfer protocol (ftp) via the Internet (address: comments@uspto.gov).

For Further Information Contact: Jeff Kushan by telephone at (703) 305-9300, by fax at (703) 305-8885, by electronic mail at kushan@uspto.gov, or by mail marked to his attention addressed to the Commissioner of Parents and Trademarks, Box 4, Washington, DC 20231.

SUPPLEMENTARY INFORMATION

I. Background

Since the Supreme Court established that non-naturally occurring organisms were eligible for patent protection, the patent system has played a crucial role in the development of the biotechnology industry. Exclusivity over novel, nonobvious biotechnology innovations through clearly identified and enforceable patent rights has greatly assisted the ability of companies to attract investments, undertake risks and devote human resources needed to develop and bring new biotechnology products to market. Patents have also facilitated the development of relationships between government, university and private sector partners by providing an impetus and a mechanism for commercializing advances at the cutting edge of biotechnology research.

With the growth of the biotechnology industry has come significant changes in the process of research, development and commercialization of biotechnology inventions. For example, instead of working from a known protein sequence, many groups are now focusing on elucidating the significance of identified but, uncharacterized cDNA sequences. Similarly, the greatly enhanced ability of scientists to identify and transfer useful genetically transmitted traits among different plant species has significantly changed the focus of modern plant breeding efforts. And the ability of scientists to discover and modify genetic links to previously untreatable illnesses is not only pushing back the frontiers of medicine, but challenging conventional assumptions regarding the feasibility of treating such illnesses.

Technological changes such as these present challenges for the patent system. They not only affect decisions as to whether an invention is new and nonobvious, but even raise questions as to whether certain inventions are "useful" and therefore eligible for patent protection. Appropriate and well-reasoned policies must be maintained to address these challenges. As the agency charged with granting patents, the PTO has a special interest in developing and implementing such policies. For this reason, the PTO is interested in obtaining public input on a number of patent-related issues currently under debate in the biotechnology community.

II. Issues for Public Comment

Interested members of the public are invited to testify and/or present written comments on issues they believe to be relevant to the discussion topics outlined below. Questions following each topic are included to identify specific issues upon which the PTO is interested in obtaining public input.

Information that is provided pursuant to this notice will be made part of a public record. In view of this, parties should not provide information that they do not wish to be publicly disclosed. Parties who would like to rely on confidential information to illustrate a point being made are requested to summarize or otherwise provide the information in a way that will permit its public disclosure. Individuals with questions regarding submission of such information may contact Jeff Kushan at the numbers listed above for further information.

References to "biotechnological inventions" in the questions below refer to inventions involving nucleotide sequences, proteins, peptides, lipids, carbohydrates, microorganisms and multicellular organisms, as well as processes for making or using these products.

A. Practical Utility for Biotechnological Inventions

Under § 101 of title 35, United State Code, an invention must be "new and useful" to be eligible to receive patent protection. This requirement, termed the utility requirement, has been part of the United States patent system for over two hundred years. The Supreme Court addressed the purpose of the modern utility requirement nearly thirty years ago in the case of *Brenner v. Manson*, 383 U.S. 519, 534-535, 148 U.S.P.Q. 689 (1966):

> [t]he basic quid pro quo contemplated by the Constitution and the Congress for granting a patent monopoly is the benefit derived by the public from an invention with substantial utility. Unless and until a process is refined and developed to this point— where specific benefit exists in currently available form— there is insufficient justification for permitting an applicant to engross what may prove to be a broad field.

Federal courts have interpreted the utility requirement to require that patent applicants identify a "substantial" or practical utility for the invention for which patent protection is sought. See, e.g., *Brenner v. Manson*, 383 U.S. at 536 ("But a patent is not a hunting license. It is not a reward for the search, but compensation for its successful conclusion."); *In re Ziegler*, 992 F.2d 1197, 26 U.S.P.Q.2d 1600 (Fed. Cir. 1993); *Cross v. Iizuka*, 753 F.2d 1040, 1044, 224 U.S.P.Q. 739 (Fed. Cir. 1985). ("It is axiomatic that an invention cannot be considered 'useful', in the sense that a patent can be granted on it, unless substantial or practical utility for the invention has been discovered and disclosed where such utility would not be obvious."); *Nelson v. Bowler*, 626 F.2d 853, 206 U.S.P.Q. 881 (C.C.P.A. 1980); *In re Kirk*, 376 F.2d 936, 153 U.S.P.Q. 48 (C.C.P.A. 1967); *In re Joly*, 376 F.2d 906, 153 U.S.P.Q. 45 (C.C.P.A. 1967); *In re Nelson*, 280 F.2d 172, 126 U.S.P.Q. 242 (C.C.P.A. 1960).

Recently, concerns have been expressed in research communities and the biotechnology industry over the role and application of the "practical utility" requirement for certain biotechnological inventions. Such questions focus primarily on the patent-eligibility of technologies or innovations whose ultimate commercial significance or application is unclear or speculative. For example, some have raised "practical utility"-type concerns over attempts by organizations to patent fragments of nucleotide sequences that are produced incident to expression of a human gene, where neither the sequence nor the gene has been characterized as to its physical, biological or physiological significance. Such concerns echo earlier concerns in the chemical arts over the patent eligibility of intermediate compounds that could be used to yield an unidentified, yet commercially promising final product, or compounds claiming therapeutic utility based only on findings of *in vitro* biological activity. See, e.g., *In re Krimmel*, 292 F.2d 948, 130 U.S.P.Q. 215 (C.C.P.A. 1961); *Carter-Wallace, Inc. v. Riverton Laboratories, Inc.*, 433 F.2d 1034, 167 U.S.P.Q. 656 (2d Cir. 1970).

The PTO is interested in ensuring that the practical utility requirement is governed by standards that promote research, development and commercialization of technological advances in the scientific fields that make up biotechnology. Public comments are invited to assist the PTO in identifying problems, if any, that exist in the law governing practical utility or its application by the PTO during examination.

1. Do you believe that the legal standards governing the requirement for identification of practical or substantial utility under 35 U.S.C. § 101, as developed by the Federal courts, are sufficiently clear and appropriate for biotechnological inventions? If not, please:
   (a) identify aspects of the law that you believe lack clarity or are inappropriate, citing relevant cases; and
   (b) identify changes to legal standards you believe would be desirable.

2. Do you believe that the PTO is correctly and uniformly applying the legal standards governing the requirement for identification of practical or substantial utility under 35 U.S.C. § 101 for biotechnological inventions? If not, please:
   (a) identify the basis for your belief that the PTO is not correctly or uniformly applying the legal standards governing practical utility;
   (b) identify changes you would like to see the PTO make in its application of this requirement during examination of patent applications; and
   (c) discuss the implications of such changes, not only with respect to patent applicants seeking protection but also for scientific research and development in general.
3. Do you believe legal standards and examining practices in foreign systems to assess the patent eligibility of biotechnological inventions (e.g., those governing industrial applicability and exclusions from patentability) provide a better framework than is available for in the United States? Please identify desirable and undesirable practices of foreign offices, particularly the Japanese Patent Office and European Patent Office, in this regard.

B. Proof of Operability for Human Therapeutic Inventions

To be eligible to receive patent protection, an invention must be operative (e.g., it must "work as claimed"). Two statutory requirements govern this requirement. First, courts have interpreted the utility requirement of 35 U.S.C. § 101 to require that an invention be operative to possess utility. See, e.g., *Raytheon Co. v. Roper Corp.*, 724 F.2d 951,956, 220 U.S.P.Q. 592 (Fed. Cir. 1983), cert. denied, 469 U.S. 835, (1984); *Stiftung v. Renishaw PLC*, 945 F.2d 1173, 20 U.S.P.Q.2d 1094 (Fed. Cir. 1991); *In re Gazave*, 379 F.2d 973, 154 U.S.P.Q. 92 (C.C.P.A. 1967); *In re Chilowsky*, 229 F.2d 457, 108 U.S.P.Q 321 (C.C.P.A. 1956). Second, 35 U.S.C. § 112, first paragraph, requires that an inventor provide a disclosure of the invention that will enable a person of skill in the art to make and use the claimed invention. Rejections that assert that an invention is inoperative and therefore lacking of utility under 35 U.S.C.§ 101 are often accompanied by rejections under § 112 that assert that the specification is not enabling. See, *In re Zeigler*, 992 F.2d 1197, 1200-1201, 26 U.S.P.Q.2d 1600 (Fed. Cir. 1993) ("[t]he how to use prong of section 112 incorporates as a matter of law the requirement of 35 U.S.C. § 101 that the specification disclose as a matter of fact a practical utility for the invention [...] If the application fails as a matter of fact to satisfy 35 U.S.C. § 101, then the application also fails as a matter of law to enable one skilled in the art to use the invention under 35 U.S.C. § 112."). See also, *In re Marzocchi*, 439 F.2d 220, 169 U.S.P.Q). 367 (C.C.P.A. 1971); *In re Bundy*, 642 F.2d 430, 209 U.S.P.Q. 48 (C.C.P.A. 1981); *In re Fouche*, 439 F.2d 1237, 169 U.S.P.Q. 429 (C.C.P.A. 1971). In assessing each of these requirements, the PTO must accept the assertions of the patent applicant that the invention is operable as true unless the PTO provides credible, scientifically based reasons to the contrary. See, e.g., *In re Jolles*, 628 F.2d 1322, 1327, 206 U.S.P.Q. 885 (C.C.P.A. 1980) ("When utility as a drug, medicament, and the like in human therapy is alleged, it is proper for the examiner to ask for substantiating evidence unless one skilled in the art would accept the allegations as obviously correct.").

The vast majority of inventions for which patent protection is sought do not raise questions related to operability. In contrast, applications drawn to inventions whose sole identified use is the treatment of human disorders frequently require consideration of operability issues, particularly for inventions drawn to treatment of disorders presently considered "incurable" (e.g., cancer, HIV). While necessarily fact dependent, resolution of questions regarding operability has been aided by a number of decisions from the Federal courts and from the PTO Board of Patent Appeals and Interferences. These holdings have addressed such issues as whether a therapeutically related invention must be shown to be safe and effective in humans, the type of evidence an applicant must provide to demonstrate that the invention will work as claimed and under what circumstances the PTO may require an applicant to provide such evidence. See, e.g., *In re Langer*, 503 F.2d 1380, 183 U.S.P.Q. 288 (C.C.P.A. 1974); *In re Anthony*, 414 F.2d 1383, 162 U.S.P.Q. 594 (C.C.P.A. 1969); *In re Hartop*, 311 F.2d 249, 135 U.S.P.Q. 419 (C.C.P.A. 1962); *In re Malachowiski*, 530 F.2d 1402, 189 U.S.P.Q. 432 (C.C.P.A. 1976), *Ex parte Balzarini*, 21 U.S.P.Q. 2d 1892 (B.P.A.I. 1991); *Ex parte Rubin*, 5 U.S.P.Q.2d 1461 (B.P.A.I. 1987). See also, Manual of Patent Examining Procedure, § 608.01(p)(A) (5th Ed., Rev. 16 1994).

Examination of patent applications claiming products and processes for treating human disorders, particularly those for which no known cure exists, can be challenging and controversial. For example, some have expressed concern over the nature or quantity of evidence required by the PTO during examination to support claims for inventions used to treat human disorders. Such requirements are cited as being an improper use of the utility or enablement requirements to assess the effectiveness or safety of a human therapeutic invention. Yet, others have identified important public policy justifications for the PTO to review operability of inventions to be used to treat human disorders. A patent provides the public with a high-quality technically accurate disclosure of a new, useful and nonobvious invention. However, with the imprimatur of the Federal Government, a patent can also affect the commercial prospects of the invention in question, and can raise or lower expectations of those afflicted with the illness the invention is designed to treat.

The PTO, therefore, seeks public input on legal standards governing the requirement of operability of inventions under 35 U.S.C. § 101 and § 112, first paragraph, and their application during patent examination.

1. Do you believe that the legal standards governing proof of operability for inventions relating to treatment of human disorders under the utility requirement of 35 U.S.C. § 101, and under the enablement requirement of 35 U.S.C. § 112, first paragraph, as developed and interpreted by the Federal courts, are sufficiently clear and appropriate? If not, please
   (a) identify aspects of the law that you believe lack clarity or are inappropriate, citing relevant cases; and
   (b) identify any changes to these legal standards you believe would be desirable.
2. Do you believe the PTO is correctly and uniformly applying the legal standards governing proof of operability under 35 U.S.C. § 101 and § 112, first paragraph, during examination of patent applications claiming inventions for treatment of human disorders? If not, please:
   (a) identify specific practices that you believe are inappropriate, particularly with respect to evidentiary requirements to establish operability, effectiveness or safety of a claimed human therapeutic product or process;
   (b) provide or summarize examples where you believe the PTO has incorrectly or inappropriately imposed or maintained an evidentiary requirement to support operability, under either § 101, § 112 or both, of an invention for use in treatment of a human disorder;
   (c) identify changes you would like to see the PTO make in examination of applications claiming inventions related to treatment of human disorders under 35 U.S.C § 101 or § 112, first paragraph; and
   (d) discuss the implications of such changes, not only for patent applicants seeking protection, but also for scientific research and development related to treatment of human disorders as well as the public health and welfare.
3. Do you believe legal standards and examining practices in foreign systems provide a better framework than is available in the United States for assessing patentability questions related to operability of inventions for treating human disorders? Please identify desirable or undesirable practices of foreign offices, particularly the Japanese Patent Office and the European Patent Office, in this regard.

C. Technical Standards Used in Measuring Nonobviousness and Enablement of Biotechnological Inventions

The law governing nonobviousness for biotechnological inventions, particularly those involving manipulation of genetic material, has been refined through a series of decisions by the Court of Appeals for the Federal Circuit, and by the PTO Board of Patent Appeals and Interferences. See, e.g., *Amgen, Inc., v. Chugai Pharmaceutical Co.*, 927 F.2d 1200, 18 U.S.P.Q.2d 1016 (Fed. Cir. 1991); *In re Bell*, 991 F.2d 781, 26 U.S.P.Q.2d 1529 (Fed. Cir. 1993); *In re O'Farrell*, 853 F.2d 894, 7 U.S.P.Q.2d 1673 (Fed. Cir. 1988); *Ex parte Anderson*, 30 U.S.P.Q. 2d 1866 (B.P.A.I. 1993); *Ex parte Deuel*, 27 U.S.P.Q.2d 1360 (B.P.A.I 1993), *appeal docketed*, No. 94-1202 (Fed. Cir. Feb. 25, 1994); *Ex parte Movva*, 31 U.S.P.Q.2d 1027 (B.P.A.I. 1993). Similarly, important questions regarding enablement of such inventions has been addressed in a number of decisions by the Federal Circuit. See, e.g., *Amgen*, 927 F.2d at 1212, 18 U.S.P.Q.2d at 1026; *In re Wright*, 999 F.2d 1557; 27 U.S.P.Q.2d 1510 (Fed. Cir. 1993); *In re Wands*, 858 F.2d 731, 8 U.S.P.Q.2d 1400 (Fed. Cir. 1988); *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); *In re Goodman*, 11 F.3d 1046, 29 U.S.P.Q.2d 2010 (Fed. Cir. 1993). This growing body of decisions has provided the patent bar and the PTO with much needed guidance on application of the statutory conditions of patentability for biotechnology inventions.

However, the state of the art in the various fields of technology that make up biotechnology is advancing rapidly. Research, development and commercialization in the field of genetic engineering, in particular, has undergone significant changes over the past decade. For example, in the early 1980s, efforts to elucidate and isolate a gene sequence typically began with work on a known protein. If possible, one would sequence all or a portion of the amino acid sequence of the protein. Then, armed with this information, a researcher could design DNA probes and eventually identify and isolate the gene encoding the protein of interest. Today, scientists can sometimes identify a fragment of an expressed gene well before they know anything about the eventual whole gene or its expression product. While this makes it possible for researchers to easily gain access to genetic information, it can also create problems for an inventor concerned about gaining meaningful patent protection for the technology under development.

Changes in the state of the art affect determinations as to the level of skill possessed by an individual working in the field of technology of an invention. And this assessment affects the PTO's application of two of the statutory requirements of patentability. Under 35 U.S.C. § 103, nonobviousness of an invention is measured through reference to knowledge and experience of one of ordinary skill in the art. Under 35 U.S.C. § 112, adequacy of disclosure of an application is measured from the perspective of one skilled in the art to which the invention pertains. Changes in the level of skill in the art thus directly affect how the PTO reaches conclusions regarding patentability of inventions, particularly where the state of the art is advancing rapidly.

Some patent practitioners and biotechnology company representatives have expressed concerns related to how the PTO assesses the skill level of individuals working in the various fields of biotechnology. For example, some argue that it is inappropriate for the PTO to reject an invention involving genetic manipulation as being obvious over prior art disclosing conventional genetic engineering techniques while at the same time rejecting the application as not being in compliance with the enablement requirement under § 112. Similarly, some have criticized the PTO for rejecting claims to monoclonal antibodies as being obvious over disclosure of the antigen that serves as the basis for making the antibody in view of conventional hybridoma technology, while at the same time requiring an applicant to deposit samples of the hybridoma pursuant to the enablement requirement of § 112. Still others suggest that the PTO is imposing a "per se" rule of obviousness for inventions involving sequencing and expression of genes once "any" sequence information has been publicly disclosed, whether that sequence information takes the form of a partial amino acid sequence of a protein or DNA sequence information derived from the expression of the gene. It has been suggested that such an approach improperly attributes a much higher level of skill to the person of "ordinary" skill in the art than is appropriate at this time.

It is difficult for the PTO to respond to these concerns, particularly when expressed anecdotally. To receive a patent, an invention for which patent protection is sought must comply with all statutory requirements of patentability. The PTO examines each patent application on its own merits and does not apply per se rules regarding obviousness, enablement or any other statutory requirement of patentability. Furthermore, the PTO strives to ensure that its examining practices reflect appropriate scientific and technological standards. The PTO thus seeks public input to help it ensure that it is properly construing and applying the statutory requirements of patentability, particularly those that depend upon evaluation of skill levels in the field of biotechnology.

1. Do you believe the legal standards governing assessment of the ordinary level of skill in the art for purposes of nonobviousness under 35 U.S.C. § 103, as developed and interpreted by the Federal courts, are sufficiently clear and appropriate for biotechnology inventions? If not,
   (a) identify aspects of the law that you believe lack clarity or are inappropriate, citing relevant cases; and
   (b) identify any changes to these legal standards you believe would be desirable.
2. Do you believe the legal standards governing assessment of the level of skill attributable to a person "skilled in the art" in determinations made under U.S.C. § 112, first paragraph, as developed and interpreted by the Federal courts, are sufficiently clear and appropriate? If not,
   (a) identify aspects of the law that you believe lack clarity or are inappropriate, citing relevant cases; and
   (b) identify any changes to these legal standards you believe would be desirable.
3. Do you believe the PTO is correctly assessing the level of skill possessed by persons working in the field of biotechnology in determinations it makes regarding nonobviousness under 35 U.S.C. § 103 and enablement under § 112, first paragraph? In particular:
   (a) Do you believe that PTO is properly assessing the level of "ordinary skill" in the art of biotechnology under 35 U.S.C. § 103? If not, please provide examples and identify specific situations where determinations have not been made that reflect the appropriate standard.
   (b) Do you believe that PTO is properly assessing the level of skill possessed by biotechnology inventors in determining compliance of an application with 35 U.S.C. § 112, first paragraph? If not, please provide examples and identify specific situations where determinations have not been made that reflect the appropriate standard.
   (c) Do you believe the PTO should equate the knowledge and experience of a person "skilled in the art to which the invention pertains" under § 112 to that possessed by a "person of ordinary skill in the art" under § 103? Please explain the basis for your conclusions.
4. Are there specific practices of the PTO with regard to determinations under 35 U.S.C. § 103 or § 112 for biotechnological inventions that you believe are inappropriate or inconsistent with legal precedent? If so,
   (a) please identify with specificity the practices in question, providing examples;
   (b) explain why the identified practices are inappropriate or inconsistent with relevant legal precedent;
   (c) suggest specific changes that would address your concerns; and
   (d) explain the implications of such changes, not only for inventors seeking patent protection, but for researchers and third parties engaged in biotechnology research and development.
5. Do you believe legal standards and examining practices in foreign systems provide a better framework for making patentability determinations that depend upon the level of skill in the relevant field of biotechnology than is utilized in the United States? Please identify desirable and undesirable practices of foreign offices, particularly the Japanese Patent Office and the European Patent Office, in this regard.

D. Implications of Pending Legislative Patent Reform on PTO Operations and Examination Procedures

Several patent reform initiatives are pending before or under consideration by the Congress. These include measures that would provide a 20-year patent term measured from the U.S. filing date of an application, establish a provisional patent application system, permit patent applicants to claim domestic priority to previously filed U.S. applications, and automatically publish patent applications 18 months after their earliest effective filing date. Implementation of these measures, should they be enacted into law, will require careful consideration of the objectives of the legislation and the special needs of users of the patent system, particularly those from the biotechnology

and related industries. For this reason, the PTO seeks public input as to how to best implement changes to patent examining procedures and its operations that may be required if these legislative reforms are enacted.

1. Do you believe there are procedural steps that the PTO could adopt to facilitate use of a provisional application filing system by biotechnology inventors, particularly with respect to filing of DNA or amino acid sequence information?
2. The PTO is spending in excess of $2 million to obtain the special computer capability for storing and searching DNA sequence information. Do you believe this cost should be recovered from all patent applicants, or only applicants who file applications which require use of these special facilities?
3. Please identify changes, if any, to current restriction practices that you believe would be appropriate in a patent system that provides for automatic publication of applications and a 20-year patent term measured from filing. In discussing this, please:
   a) indicate requirements or measures that would be appropriate for the PTO to impose on patent applicants to enable it to examine multiple patentably distinct inventions in a single application, and
   b) identify practices of foreign offices, particularly the Japanese Patent Office and the European Patent Office, with regard to unity of invention for applications claiming inventions involving genetic material that would be appropriate or inappropriate for use by the PTO.
4. Please identify changes to other aspects of PTO examining practices or operations that could be made in implementing a 20-year patent term, provisional application filing, or 18-month publication that you believe would be desirable or beneficial for the biotechnology industry. If possible, please comment on procedures available in foreign systems that you believe would be desirable for the U.S. to adopt in implementing these changes.

E. Experimental Use Defense to Patent Infringement

NOTE: The PTO has previously solicited written comments on the experimental use defense to patent infringement. See, Public Hearings and Request for Comments on Economic Aspects of the U.S. Patent System, 58 F.R. 68394 (December 27, 1993); Cancellation of Public Hearings on Economic Aspects of the U.S. Patent System, 59 F.R. 1935 (January 13, 1994). Several individuals, in responding to this earlier request for public comment, expressed a desire to present oral remarks. Those individuals interested in testifying on the topics presented in the earlier Federal Register notice are invited to do so at this public hearing. In addition, those interested in offering written comments on the topics presented in the earlier notice may provide those comments in conformance with the guidelines outlined in this notice.

F. Protection Afforded by Plant Patents

Under section 163 of title 35, United States Code, a plant patent affords its holder only the right to exclude others from asexually reproducing the plant or using the plant so reproduced. As such, protection afforded by a plant patent does not extend to parts of the protected plant, such as harvested material (e.g., table fruit, cut flowers, etc.). This has enabled growers to reproduce and use, outside the United States, plants subject to a U.S. plant patent, and subsequently import products harvested from such plants, to the detriment of the U.S. plant patent owner.

Legislation presently pending before Congress would, if enacted, permit the United States to adhere to the 1991 Act of the International Convention for the Protection of New Varieties of Plants (UPOV). In accordance with the provisions of that Convention, the United States would thus amend its laws to provide, among other things, protection for harvested material obtained from sexually reproduced plant varieties. (NOTE: The most commonly used title of protection for sexually reproduced plant varieties is the Plant Variety Protection Act, §§ 2321-2582, title 7, United States Code, which is administered by the U.S. Department of Agriculture.) As the agency charged with administration of the Plant Patent Act, the PTO is interested in obtaining public comments on the following question.

1. Do you believe that the Plant Patent Act should be amended to permit a holder of United States plant patent to exercise exclusive rights with respect to parts of a protected plant, such as material harvested from the plant

G. Other Issues

Parties may address matters not specifically identified in the above sections. If this is done, parties are requested to:

- label that portion of their response as "Other Issues";
- clearly identify the matter being addressed;
- provide examples, where appropriate, that illustrate the matter addressed;
- identify any relevant legal authorities applicable to the matter being addressed; and
- provide suggestions regarding how the matter should be addressed by the PTO.

III. Guidelines for Oral Testimony

Individuals wishing to testify must adhere to the following guidelines:

1. Anyone wishing to testify at the hearings must request an opportunity to do so no later than October 12, 1994. Requests to testify may be accepted on the date of the hearing if sufficient time is available on the schedule. No one will be permitted to testify without prior approval.
2. Requests to testify must include the speaker's name, affiliation and title, phone number, fax number, mailing address, and Internet mail address (if available). Parties may include in their request an indication as to whether the party wishes to testify during the morning or afternoon session of the hearing.
3. Speakers will be provided between 7 and 15 minutes to present their remarks. The exact amount of time allocated per speaker will be determined after the final number of parties testifying has been determined. All efforts will be made to accommodate requests for additional time for testimony presented before the day of the hearing.
4. Speakers may provide a written copy of their testimony for inclusion in the record of the proceedings. These remarks should be provided no later than October 28, 1994.
5. Speakers must adhere to guidelines established for testimony. These guidelines will be provided to all speakers on or before October 14, 1994.

A schedule providing approximate times for testimony will be provided to all speakers the morning of the day of the hearing. Speakers are advised that the schedule for testimony will be subject to change during the course of the hearings.

IV. Other Information

Questions regarding the Convention facilities or lodging in the San Diego area should be directed to the San Diego Convention Center Corporation, by phone to (619) 236-6500, or by fax to (619) 236-6849.

Aug. 25 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Erratum

In the notice of Certificate of Correction appearing at 1160 OG 61, delete Patent No. 5,238,880, the number was erroneously mentioned and should be deleted.

Certificate of Correction
For Week of September 20, 1994

B1 4,544,572	5,130,779	5,232,567	5,262,191	5,281,645	5,296,993	5,310,352	5,322,104
B1 4,922,337	5,130,863	5,232,970	5,262,209	5,281,937	5,297,104	5,310,430	5,322,121
Re. 34,384	5,133,732	5,233,880	5,262,300	5,281,949	5,297,595	5,310,547	5,322,165
Re. 34,496	5,133,755	5,234,101	5,263,017	5,282,312	5,297,854	5,310,696	5,322,256
D. 309,662	5,137,084	5,234,781	5,263,377	5,282,859	5,297,940	5,310,800	5,322,400
D. 334,024	5,140,785	5,235,421	5,264,209	5,282,998	5,298,035	5,310,878	5,322,494
D. 334,524	5,143,275	5,236,581	5,264,327	5,283,668	5,298,114	5,311,146	5,322,669
D. 343,273	5,144,466	5,236,686	5,264,370	5,284,951	5,298,503	5,311,156	5,322,676
D. 345,496	5,149,797	5,236,712	5,264,441	5,284,966	5,298,588	5,311,210	5,322,751
D. 346,333	5,150,665	5,237,591	5,264,449	5,285,131	5,298,775	5,311,445	5,322,844
D. 346,799	5,153,466	5,238,055	5,264,826	5,285,215	5,298,829	5,311,525	5,322,902
4,629,102	5,154,170	5,239,013	5,264,865	5,285,459	5,299,064	5,311,955	5,322,932
4,707,358	5,158,080	5,239,510	5,265,051	5,285,470	5,299,243	5,312,203	5,323,007
4,767,761	5,159,451	5,240,625	5,265,073	5,285,519	5,299,336	5,312,450	5,323,041
4,797,493	5,159,990	5,241,159	5,265,243	5,285,708	5,299,496	5,312,624	5,323,521
4,861,781	5,162,018	5,241,202	5,265,601	5,285,781	5,299,795	5,312,787	5,323,585
4,899,067	5,162,528	5,242,824	5,266,365	5,285,801	5,300,095	5,313,001	5,323,812
4,912,033	5,167,378	5,242,914	5,266,458	5,285,890	5,300,364	5,313,093	5,323,867
4,922,116	5,167,888	5,243,148	5,266,582	5,286,215	5,300,418	5,313,385	5,323,902
4,927,921	5,170,586	5,243,599	5,266,660	5,286,247	5,300,451	5,313,459	5,323,972
4,934,367	5,172,835	5,244,582	5,267,052	5,286,376	5,300,678	5,313,805	5,324,213
4,940,908	5,174,295	5,245,029	5,267,377	5,286,602	5,300,855	5,313,928	5,324,486
4,943,378	5,174,435	5,245,085	5,267,676	5,287,280	5,300,987	5,314,109	5,324,787
4,945,040	5,176,973	5,245,387	5,268,093	5,287,342	5,301,003	5,314,224	5,324,877
4,983,903	5,177,196	5,245,417	5,268,647	5,287,587	5,301,047	5,314,687	5,324,908
5,003,992	5,179,979	5,245,653	5,268,648	5,287,599	5,301,056	5,314,742	5,324,947
5,006,424	5,189,465	5,245,827	5,268,722	5,287,954	5,301,240	5,314,750	5,325,149
5,015,236	5,195,231	5,246,806	5,269,827	5,288,397	5,301,415	5,314,787	5,325,241
5,018,484	5,195,697	5,246,886	5,269,848	5,288,498	5,301,440	5,314,818	5,325,444
5,027,826	5,196,541	5,247,211	5,269,876	5,288,624	5,301,456	5,314,945	5,325,541
5,048,441	5,196,562	5,247,845	5,270,300	5,288,829	5,301,841	5,315,003	5,325,880
5,055,497	5,197,094	5,248,432	5,270,641	5,289,224	5,301,921	5,315,007	5,326,039
5,059,267	5,197,793	5,248,583	5,270,807	5,289,293	5,302,017	5,315,015	5,326,074
5,059,605	5,202,337	5,248,765	5,271,342	5,289,490	5,302,720	5,315,243	5,326,106
5,061,828	5,205,827	5,248,893	5,271,593	5,289,580	5,302,760	5,315,252	5,326,143
5,063,781	5,206,160	5,249,852	5,271,683	5,290,229	5,302,846	5,315,608	5,326,346
5,070,693	5,207,686	5,250,218	5,271,936	5,290,712	5,303,207	5,315,917	5,326,352
5,071,800	5,209,973	5,250,382	5,272,364	5,290,755	5,303,691	5,316,224	5,326,411
5,078,092	5,211,967	5,250,431	5,272,574	5,290,874	5,303,792	5,316,418	5,326,443
5,086,057	5,212,177	5,250,571	5,272,943	5,291,001	5,303,928	5,316,469	5,326,452
5,091,210	5,212,198	5,251,631	5,273,427	5,291,036	5,304,131	5,316,542	5,326,469
5,092,645	5,213,510	5,251,654	5,273,758	5,291,215	5,304,208	5,316,857	5,326,499
5,093,739	5,214,148	5,252,307	5,273,945	5,291,347	5,304,433	5,317,486	5,326,559
5,096,466	5,215,861	5,252,587	5,274,008	5,291,552	5,304,434	5,317,686	5,326,601
5,099,162	5,216,002	5,252,723	5,274,595	5,291,811	5,304,487	5,317,770	5,326,797
5,103,064	5,216,786	5,253,077	5,274,826	5,291,910	5,305,185	5,317,967	5,326,833
5,103,578	5,216,981	5,253,476	5,275,029	5,292,015	5,305,215	5,318,079	5,326,837
5,106,726	5,216,992	5,253,821	5,275,266	5,292,016	5,305,224	5,318,325	5,326,955
5,106,771	5,217,650	5,253,843	5,275,616	5,292,090	5,305,257	5,318,560	5,327,032
5,112,318	5,220,136	5,254,126	5,275,637	5,292,428	5,305,322	5,318,689	5,327,068
5,112,728	5,221,449	5,254,278	5,276,356	5,292,491	5,305,339	5,318,898	5,327,134
5,114,395	5,221,624	5,254,279	5,276,389	5,292,625	5,305,405	5,318,936	5,327,181
5,115,811	5,221,628	5,254,532	5,276,409	5,292,719	5,305,466	5,319,022	5,327,462
5,117,830	5,221,705	5,255,222	5,276,581	5,293,192	5,305,468	5,319,184	5,327,508
5,118,519	5,221,754	5,255,493	5,276,859	5,293,371	5,305,703	5,319,217	5,327,766
5,119,588	5,223,440	5,255,712	5,277,078	5,293,562	5,306,612	5,319,250	5,327,870
5,119,708	5,223,613	5,256,325	5,277,697	5,294,046	5,306,683	5,319,418	5,328,056
5,120,035	5,224,522	5,256,412	5,278,026	5,294,508	5,306,706	5,319,485	5,328,446
5,120,173	5,225,034	5,256,820	5,278,093	5,294,679	5,307,153	5,319,574	5,328,685
5,120,540	5,225,981	5,257,311	5,278,280	5,294,980	5,307,241	5,319,779	5,328,996
5,120,688	5,226,176	5,257,761	5,278,341	5,295,507	5,307,455	5,319,848	5,329,022
5,120,829	5,226,535	5,257,926	5,278,935	5,295,700	5,307,532	5,319,905	5,330,194
5,121,370	5,227,452	5,258,371	5,279,003	5,295,960	5,307,744	5,320,003	5,330,234
5,121,754	5,228,968	5,258,583	5,279,681	5,295,976	5,308,447	5,320,518	5,330,492
5,122,704	5,229,254	5,258,738	5,280,009	5,296,067	5,308,574	5,320,652	5,330,650
5,124,801	5,229,453	5,259,112	5,280,024	5,296,069	5,308,613	5,320,684	5,330,683
5,126,780	5,231,080	5,260,456	5,280,222	5,296,076	5,308,766	5,320,752	5,330,957
5,128,170	5,231,113	5,261,013	5,280,313	5,296,119	5,308,832	5,320,976	5,332,264
5,128,296	5,231,425	5,261,034	5,280,365	5,296,277	5,308,896	5,321,125	5,333,310
5,129,941	5,231,554	5,261,914	5,281,292	5,296,507	5,308,995	5,321,273	5,335,048
5,130,160	5,231,954	5,262,175	5,281,637	5,296,558	5,309,016	5,321,308	5,335,327
				5,296,722	5,309,326	5,321,702	5,336,138
				5,296,733	5,309,821	5,321,725	
				5,296,912	5,310,156	5,321,897	

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

August 8-12, 1994

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
8-9	OPP	83,015	American Vitamin Products, Inc. v Integrated Health, Inc	2(d)	Opposition Sustained	"SPECTRO-VITE" [vitamins and minerals]	"SPECTRO-TOX" [dietary supplement for human consumption]		No
8-9	EX	74/079,184	Mitsui Sekiyu Kagaku Kogyo Kabushiki Kaisha	2(e)(4) (surname)	Refusal Affirmed		"APH" [unprocessed synthetic resins and unprocessed plastics for use in further manufacture]		No
8-9	OPP	88,531	Dynamic Sales Co. Inc. v Dynamic Fastener Service, Inc	2(d), whether applicant is estopped to deny its pleaded mark is merely descriptive; whether application is void for entry of impermissible amendment to identification of goods	Opposition Sustained [on 2(d) ground only)]	"DYNAMIC" (and design) [supplying tools and accessories to the construction industry for cutting, drilling, welding, and fastening]	"DYNAMIC FASTENER" [retail sale of builder's and contractor's supplies, featuring power tools and accessories, hand tools, anchors, fasteners, flashings, sealants, and tapes]		No
8-9	OPP	87,692	Coca-Cola Co. v Barrie, et al	2(d); 2(e)(2) [geographic descriptiveness]	Opposition Dismissed	"COKE" [non-alcoholic maltless beverages and syrups for making such beverages; and a wide variety of collateral products	"COCACOKE LIGHT" (and lighthouse design) [beer]		No

Date Issued	Type of Case[1]	Proceeding or App'n No	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
8-9	EX	74/129,347	Van Kampen Merrit Inc.	2(d)	Refusal Affirmed		"SENTINEL" (and design) [newsletters devoted to information of interest to the unitholders of applicant's, unit investment trusts]	"SENTINEL" [money market fund services]	No
8-10	CANC	18,593	Miss Elaine, Inc. v Bentley Lingerie, Inc	2(d), abandonment	Opposition Sustained [on ground of abandonment only]	"ME" "ME2" "MISS ELAINE" [all three marks for ladies' sleep wear]	"ME MADISON EAST" [ladies', pajamas, night shirts, tank tops, and underwear]		No
8-10	EX	74/233,645	Bear Creek Gardens, Inc	whether the matter asserted for registration functions as a trademark, or is, rather, only the plant varietal name for applicant's goods	Refusal Affirmed		"FESTIVAL" [roses]		No

(1)EX EX PARTE APPEAL, OPP=OPPOSITION, C=CANCELLATION, CU=CONCURRENT USE, (R) RFQ FOR RECONSIDERATION

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Box 5	"No Fee" mail related to trademarks.
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Box 15	Mail for the Advisory Commission on Patent Law Reform.
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Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
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Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
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	Sacramento: California State Library	(916) 654-0069
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	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
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Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
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South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	Not Yet Operational
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	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
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	Milwaukee Public Library	(414) 286-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	09/20/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	07/15/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	11/30/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	09/27/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/06/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—JOSEPH J. ROLLA, JR., Director	308-1782	10/07/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	02/08/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	08/17/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	08/22/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/04/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	01/27/93
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	11/24/92
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	08/30/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	08/09/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	09/16/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	03/26/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	08/05/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during August 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151
Patents.....Numbers 4,038,697 to 4,045,823 inclusive
Plant Patents.....4,086 to 4,096

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of July 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/16/94	05/23/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/08/94	01/21/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/94	03/04/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/31/94	02/14/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/02/94	03/09/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/94	05/02/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/07/94	04/19/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/22/94	04/28/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/24/94	04/01/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/14/94	05/16/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/26/94	03/16/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/10/94	04/20/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/23/94	03/03/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	03/01/94	—0—
Renewals (All Classes)	03/24/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

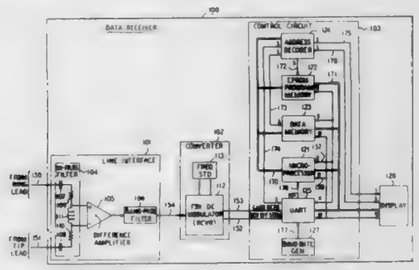
1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

SEPTEMBER 20, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,582,956 (2393rd)
METHOD AND APPARATUS FOR DISPLAYING AT A SELECTED STATION SPECIAL SERVICE INFORMATION DURING A SILENT INTERVAL BETWEEN RINGING
Carolyn A. Doughty, Wheaton, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Reexamination Request Nos. 90/002,774, Jul. 9, 1992 and 90/003,164, Aug. 16, 1993.
Reexamination Certificate for Patent No. 4,582,956, issued Apr. 15, 1986, Ser. No. 513,080, Jul. 12, 1983.
Int. Cl.[5] H04M *11/00, 15/06*
U.S. Cl. 379—94



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10** is confirmed.

1. In a continuous contact lithographic press having an inking system in continuous contact with a dampening system for feeding ink and dampening fluid continuously to a rotatable plate cylinder, a device for dampening the rotatable plate cylinder of the lithographic press of the type having drive means for rotating said plate cylinder and for rotating the other rollers in the lithographic press system comprising:

(a) a pan supply of dampening fluid,

(b) pan roller means rotating in said supply of dampening fluid,

(c) metering means in cooperative relationship with said pan roller adapted to meter the thickness of dampening fluid,

(d) a rotating dampening roller in continuous contact with said pan roller and in contact with said rotating plate cylinder and adapted to receive on its surface metered dampening fluid whereby dampening fluid is transferred from said dampening fluid supply to said rotating roller and to said plate cylinder,

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–14** is confirmed.

New claims **15–19** are added and determined to be patentable.

15. A method for displaying at a selected station special service information during a silent interval between ringing signals from a telephone switching system, said system being capable of sending to said selected station a modulated and an unmodulated signal during said silent interval, said modulated signal representing said special service information; said method comprising the steps of:

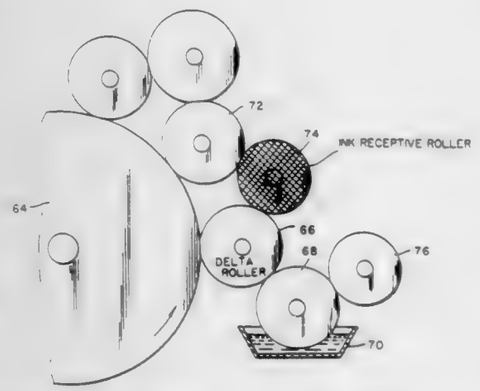
detecting said unmodulated signal after the beginning of said silent interval between said ringing signals;

responsive to the detection of said unmodulated signal, receiving said modulated signal representive of said special service information during said silent interval;

storing said special service information during said silent interval; and displaying said stored special service information at said selected station during said silent invertal.

B1 4,724,764 (2394th)
DAMPENING SYSTEM
John MacPhee, Rowayton, Conn., and Larry E. Lester, Anaheim, Calif., assignors to Baldwin Technology Corporation, Stanford, Conn.
Reexamination Request No. 90/003,156, Aug. 11, 1993.
Reexamination Certificate for Patent No. 4,724,764, issued Feb. 16, 1988, Ser. No. 58,704, Jun. 5, 1987.
Continuation of Ser. No. 797950, Nov. 14, 1985, which is a continuation-in-part of Ser. No. 560,506, Dec. 12, 1983, abandoned, which is a continuation-in-part of Ser. No. 493,440, May 11, 1983, abandoned
Int. Cl.[5] B41L *25/02;* **B41M** *1/00*
U.S. Cl. 101—451

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:



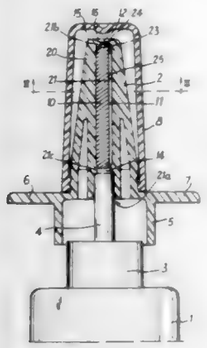
(e) an ink receptive roller and means mounting said ink receptive roller in surface contact with said rotating dampening roller;

(f) said drive means being operatively associated with said plate cylinder to cause rotation thereof said drive means being operatively associated with said rotating dampening roller to cause rotation thereof;

(g) means to remove foreign particles from said plate cylinder by said rotating dampening roller, said means to remove including means in said drive means to rotate said plate cylinder and said rotating dampening roller at different surface speeds to provide a wiping action between said plate cylinder and said rotating dampening roller, and

(h) means to control ink emulsification and reduce ghosting, said means to control and reduce including said ink receptive roller being in contact with said rotating dampening roller, and means in said drive means to rotate said ink receptive roller and said plate cylinder at different surface speeds.

B1 4,801,093 (2395th)
PUSH-NIPPLE FOR MEDICAL SPRAYER
Michel Brunet, Colombe la Commanderie, and Firmin Garcia, Evreux, both of France, assignors to Etablissements Valois, Le Neubourg, France
Reexamination Request No. 90/002,863, Oct. 23, 1992.
Reexamination Certificate for Patent No. 4,801,093, issued Jan. 31, 1989, Ser. No. 623,867, Jun. 25, 1984.
Claims priority, application France, Jun. 24, 1983, 83 10450
Int. Cl.[5] B05B *1/34*
U.S. Cl. 239—490



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2** and **3**, dependent on an amended claim, are determined to be patentable.

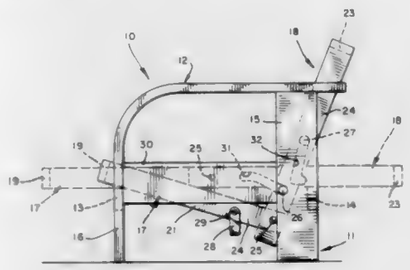
New claims **4–10** are added and determined to be patentable.

1. An elongate push-element, for spraying a liquid, in combination with a container (**1**) for holding a liquid, said container having a valve stem (**4**), said push-element fitting over said valve stem (**4**), said push-element comprising:

a one-piece molded elongate external member (**20**) having a central channel (**21**) extending vertically axially within said external member, said central channel having one end (**21a**) which is open, said external member further including a wall (**21b**) integrally formed as a part of said external member and inseparable from said external member, wherein said wall substantially closes a second, opposite end of said central channel, said wall having an opening (**12**) extending therethrough to form an inner periphery of the wall which surrounds said opening, said opening having a diameter smaller than that of said central channel and through which liquid is expelled, said wall further having at least one groove (**23**) formed therein, said at least one groove extending non-radially outwardly from the opening, wherein a swirling motion is [imported] *imparted* to the liquid as it is expelled; and

an internal member (**10**) comprising a rod having a cross-section of smaller area than said central channel and larger area than said opening and having an end section (**26**) substantially perpendicular to a longitudinal axis of said rod, said internal member being separate from said external member, said container (**1**) and said valve stem (**4**) and inserted into said central channel through said one end, wherein at least a passage (**25**) is formed, *and wherein said elongate external member (20) has an internal shoulder (21c) near said open end (21a) for limiting the insertion of said valve stem (4) into said central channel, said rod being spaced apart from said valve step (4), thus defining a dead space (14) between said valve stem and said rod, and wherein said dead space communicates with said passage (25).*

B1 4,829,611 (2396th)
SOFA BED RECLINER
Robert Fireman, 785 West End Ave., New York, N.Y. 10025, and Gary Shaffield, 220 Gillen Dr., Sparta, Tenn. 38583
Reexamination Request No. 90/003,144, Jul. 26, 1993.
Reexamination Certificate for Patent No. 4,829,611, issued May 16, 1989, Ser. No. 180,398, Apr. 12, 1988.
Int. Cl.[5] A47C *17/04*
U.S. Cl. 5—47



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **7–12** is confirmed.

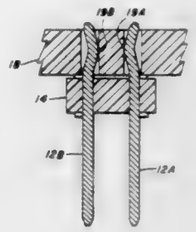
Claims **1–4** and **6** are cancelled.

Claims **5** and **13** are determined to be patentable as amended.

New claims **14–17** are added and determined to be patentable.

5. [The invention of claim **4** wherein said] *A sofa bed recliner comprising seating means, back rest means, said back rest means including a longitudinally extending portion, said seating means and said back rest means movable engaged, said back rest means' longitudinally extending portion extendable over part of said seating means, a base, said seating means and said back rest means mounted on said base, said movably engaged seating means and back rest means adapted to move forward to a longitudinal position and back to a reclining position on said base,* guide means [include] *including* a first set of grooves and bearings for substantially guiding said back rest means up and down and a second set of grooves and bearings for substantially guiding said back rest means forward and back, *the groove of said first set of grooves and bearings being substantially vertically aligned and the bearing in said groove moving downwardly during the movement of said back rest means to said horizontal position and upwardly during the movement of said back rest means to said reclining position, detent means on said seating means, said detent means including a pivot, said detent means freely movable on said pivot, said detent means adapted to freely move to override said back rest means longitudinally extending portion when said seating means is moved to a substantially vertical position above said back rest means when said back rest means is in a horizontal position, said detent means further adapted to automatically engage said back rest means' longitudinally extending portion from said seating means substantially vertical position upon downward movement of said seating means to interlock said seating means and back rest means, said interlocked seating means and back rest means adapted to be reverted to reclining position upon downward movement of said seating means, and said back rest means adapted to release said locking engagement with said detent means when said back rest means is moved to a reclining position.*

B1 4,847,588 (2397th)
ELECTRICAL CONNECTOR WITH PIN RETENTION FEATURE
Ray C. Doutrich, Lebanon, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Reexamination Request Nos. 90/002,264, Feb. 1, 1991 and 90/002,372, Jun. 21, 1991.
Reexamination Certificate for Patent No. 4,847,588, issued Jul. 11, 1989, Ser. No. 53,550, May 26, 1987.
Continuation of Ser. No. 836,534, Mar. 5, 1986, abandoned
Int. Cl.[5] H01R *13/428*
U.S. Cl. 439—751



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–6** are cancelled.

Claims **7**, **8**, **10** are determined to be patentable as amended.

Claim **9**, dependent on an amended claim, is determined to be patentable.

New claims **11–14** are added and determined to be patentable.

7. *An electrical connector with retention means for maintaining the connector in place during soldering of said connector to a printed circuit board, comprising:*

a header having a plurality of terminal pins mounted therein, said pins being relatively thick and stiff and extending from the header for insertion through respective holes of the printed circuit board;

at least one pair of said pins, but substantially less than all pins, having at the insertion end of each pin an offset in the form of a bent crimp, the crimp of one pin extending in a direction opposite to the crimp of the other pin of said pair, each said crimp being shaped so that each pin of said pair contacts the printed circuit board only within its respective hole and only on one side of the hole and only at its crimp, each said crimp thereby exerting a relatively high normal force against said board only at said one side of the hole, the rest of said plurality of pins being straight;

wherein the pins of the header are inserted through the holes of the printed circuit board and positioned for soldering and the header is retained in position for soldering solely by the normal forces exerted by each said crimp at its contact with the printed circuit board within its respective hole, said normal forces being opposite and complementary in that the crimp of one of said pair of pins exerts a normal force against said hole which is opposite to the normal force exerted by the crimp of the other pin of said pair against its respective hole, said opposite and complementary normal forces and the resulting frictional contact between each said crimp and the respective hole thereby providing the only means for retaining the header in position for soldering, the rest of said plurality of pins being free from contact with the board in said holes until soldered thereto;

wherein the header comprises two rows of pairs, each row containing one each of said pair of crimped pins and [The electrical connector of claim **5**] wherein the header comprises three rows of pins, two of said rows containing one each of said pairs of crimped pins.

B1 5,013,744 (2398th)
ACETYLENES DISTRIBUTED WITH A HETEROAROMATIC GROUP AND A SUBSTITUTED PHENYL GROUP HAVING RETINOID LIKE ACTIVITY
Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allegran, Inc., Irvine, Calif.
Reexamination Request No. 90/003,194, Sep. 15, 1994.
Reexamination Certificate for Patent No. 5,013,744, issued May 7, 1991, Ser. No. 458,963, Dec. 29, 1989.
Int. Cl.[5] A61K *31/44*; **C07D** *213/55, 213/50, 213/51*
U.S. Cl. 514—345

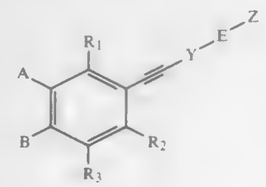
AS A RESULT OF REEXAMINATION IT HAS BEEN DETERMINED THAT:

The patentability of claims **14** to **43** is confirmed.

Claim **1** is determined to be patentable as amended.

Claims **2** to **13**, dependent on an amended claim, are determined to be patentable.

1. A compound of the formula



wherein

R_1–R_3 independently are hydrogen, lower alkyl, cycloalkyl or lower alkenyl, A and B independently are hydrogen, lower alkyl, cycloalkyl, lower alkenyl, SR_4 or OR_4 where R_4 is lower alkyl, cycloalkyl or lower alkenyl *with the proviso that one of A and B is not hydrogen;*

Y is pyridyl;

E is divalent lower alkenyl, lower alkynyl lower cycloalkyl, lower branched chain alkyl, or is characterized by the formula $(CH_2)_n$ where n is 0–5, and

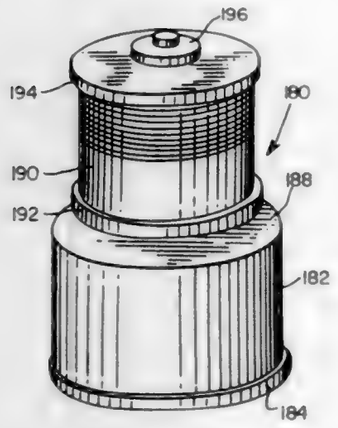
Z is H, OH, OR_5, $OCOR_5$, —COOH or a pharmaceutically acceptable salt, ester or amide thereof, $—CH_2OH$, CH_2OR_6, CH_2OCOR_6, or —CHO, $CH(OR_7)_2$, $CHOR_8O$, or COR_9 or $CR_9(OR_7)_2$, CR_9OR_8O where R_5 is lower alkyl, phenyl or lower alkylphenyl, R_6 is lower alkyl, phenyl or lower alkylphenyl, R_7 is lower alkyl, R_8 is a divalent alkyl radical of 2–5 carbons, and R_9 is an alkyl, cycloalkyl or alkenyl group containing 1 to 5 carbons.

B1 5,060,509 (2399th)

SECONDARY CONTAINMENT SYSTEM USING FLEXIBLE PIPING

Michael C. Webb, Exton, Pa., assignor to Total Containment, Inc., Exton, Pa.

Reexamination Request No. 90/003,030, Apr. 14, 1993.
Reexamination Certificate for Patent No. 5,060,509, issued Oct. 29, 1991, Ser. No. 611,435, Nov. 13, 1990.
Continuation of Ser. No. 254,021, Oct. 6, 1988, abandoned, which is a continuation-in-part of Ser. No. 103,206, Oct. 1, 1987, Pat. No. 4,805,444
The portion of the term of this patent subsequent to Aug. 20, 2008, has been disclaimed.
Int. Cl.[5] B65D *25/24*
U.S. Cl. 73—40.5 R



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **10** are cancelled.

Claims **2**, **5**, **7** and **8** are determined to be patentable as amended.

Claims **3**, **4**, **6**, **9**, dependent on an amended claim, are determined to be patentable.

New claims **11–19** are added and determined to be patentable.

11. A sump-riser apparatus for connection to a fluid storage tank in a pipeline system, said sump-riser apparatus comprising:

a) a hollow sump base having a bottom end and a top end including at least one side wall forming a substantially tubular housing extending between said bottom end and said top end;

b) a generally tubular hollow riser section located at the top end of said sump base and extending therefrom and having a hollow interior;

c) said riser section being generally smaller in width than said sump base;

d) a cover mounted over said riser section and having means for accessing the interior of said riser section and said hollow sump base;

e) said sump base including an opening in said at least one side wall so that a conduit may be inserted through said opening; and,

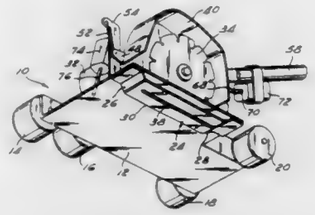
f) said riser section includes a plurality of cutting guides.

B1 5,086,750 (2400th)

SKID PLATE FOR CONCRETE SAW

Edward Chiuminatta, and Alan R. Chiuminatta, both of 6677 Columbus, Riverside, Calif. 92504

Reexamination Request No. 90/003,053, May 11, 1993.
Reexamination Certificate for Patent No. 5,086,750, issued Feb. 11, 1992, Ser. No. 608,331, Nov. 2, 1990.
Continuation of Ser. No. 539,783, Jun. 18, 1990, abandoned, which is a continuation of Ser. No. 386,814, Jul. 27, 1989, Pat. No. 4,938,201, which is a division of Ser. No. 185,055, Apr. 22, 1988, Pat. No. 4,889,675, which is a continuation of Ser. No. 843,779, Mar. 25, 1986, Pat. No. 4,769,201
Int. Cl.[5] B28D *1/04*
U.S. Cl. 125—13.01



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–30** is confirmed.

1. A depending skid plate for use with a wheeled saw having an upcutting rotating cutting blade for cutting concrete, and having a base rollably supported on wheels a predetermined distance above the surface of the concrete, comprising:

two mounting portions configured to secure the skid plate to the base so that the skid plate does not move relative to the saw during use;

a support plate having a flat portion with a longitudinal slot therein, said slot positioned relative to the mounting portion so that the cutting blade extends through the slot to permit cutting of the concrete surface, the support plate being so dimensioned that it depends from the two mounting portions a distance sufficient to place substantially all of the flat portion of the support plate in contact with the concrete surface when the skid plate is mounted on the saw so that the flat portion of the skid plate is substantially parallel to the concrete surface being cut, with the slot being so dimensioned as to in inhibit chipping, spalling, and cracking of the concrete during cutting, the slot and the support plate having corresponding leading and trailing ends, with the leading end of the support plate curving toward the adjacent mounting portion, and with the leading end of the slot ending in the flat portion of the support plate.

B1 5,110,307 (2401st)

LASER WELDABLE HERMETIC CONNECTOR

Edward J. Rapoza, West Milford, N.J., assignor to Balo Precision Parts Inc., Butler, N.J.

Reexamination Request No. 90/003,059, May 17, 1993.
Reexamination Certificate for Patent No. 5,110,307, issued May 5, 1992, Ser. No. 727,668, Jul. 9, 1991.
Int. Cl.[5] H01R *13/74*
U.S. Cl. 439—566

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

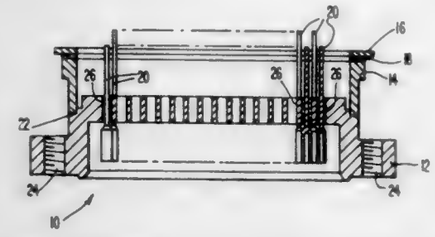
The patentability of claims **1–27** is confirmed.

1. An electrical connector suitable for providing electrical access through a sidewall of a microelectronic package housing while maintaining hermeticity, said housing having a first coefficient of thermal expansion, comprising:

a connector body having an aperture therethrough and a second coefficient of thermal expansion,

a connector pin disposed through said aperture and hermetically sealed to said connector body with an insulating composition,

flange means for joining said hermetic electrical connector to said microelectronic package housing, said flange means comprising upper and lower flanges metallurgically bonded together and comprising first and second metallic compositions respectively, said first composition being hermetically bonded to said connector body with a fusion weld having a heat-affected-zone which does not significantly affect the hermeticity provided by said insulating composition and said second composition being weldable to said microelectronic package housing.



REISSUES

SEPTEMBER 20, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,731

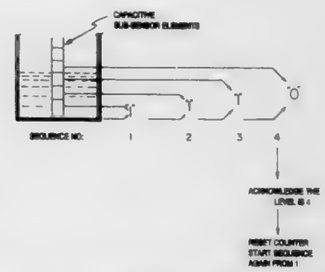
DIGITAL LEVEL SENSING PROBE SYSTEM

Calvin S. Lee, Laguna Niguel, and Eliahou Tousson, Van Nuys, both of Calif., assignors to Lee/Maatuk Engineering, Inc., Santa Ana, Calif.

Original No. 5,138,880, dated Aug. 18, 1992, Ser. No. 706,991, May 29, 1991. Application for reissue Dec. 22, 1992, Ser. No. 995,203

Int. Cl.[5] **G01F** *23/26*

U.S. Cl. 73—304 C **20 Claims**



1. Digital fluid level sensing probe system comprising digital probe fluid level sensing means constructed of a set of *isolated* capacitors arranged along an axis of measurement where each capacitor represent a discrete level increment in dielectric material fluid to be measured, switching sequence means wherein each capacitor is assigned a unique time slot for sequential comparison *to a* reference [to a first level capacitor], means for applying an AC signal in switching sequence across [each capacitor above the first level capacitor] *succeeding capacitors*, means for [applying an inverted AC signal across the first level capacitor] *establishing a reference signal*for comparison with each of said AC signals applied in switching sequence, including means for discriminating between *the* respective *compared* signals to provide a logic "1" when fluid is present and a logic "0" when fluid is absent, or vice versa, and means for decoding and converting said logic to display the appropriate quantity of fluid measured in increments corresponding to said [discrete] *isolated* capacitors.

Re. 34,732

WATERPROOF OPTICAL FIBER CABLE

Eiji Iri; Takashi Kaneko; Takeshi Shintani; Kotaro Mio, and Yasuo Ijiri, all of Hyogo, Japan, assignors to Mitsubishi Cable Industries, Ltd., Hyogo, Japan

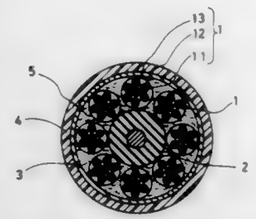
Original No. 4,711,523, dated Dec. 8, 1987, Ser. No. 39,806, Apr. 15, 1987. Continuation of Ser. No. 637,540, Aug. 3, 1984, abandoned. Application for reissue Oct. 27, 1992, Ser. No. 967,122

Claims priority, application Japan, Aug. 11, 1983, 58-147792; Aug. 11, 1983, 58-147793

Int. Cl.[5] **G02B** *6/44*

U.S. Cl. 385—109 **3 Claims**

1. An optical fiber cable comprising a water blocking layer, an optical fiber disposed inside the water blocking layer and a water blocking material filling the space between the water blocking layer and the optical fiber, the water blocking material comprising a grease having a worked penetration of [150] *300* to 450 at room temperature and of at least 85 at −30° C. as measured according to ASTM-D-217, said grease comprising an organic liquid having a viscosity at 40° C. of 6



to 5000° c.st. and 3 to 35 parts by weight per 100 parts by weight of said organic liquid of a thickener.

Re. 34,733

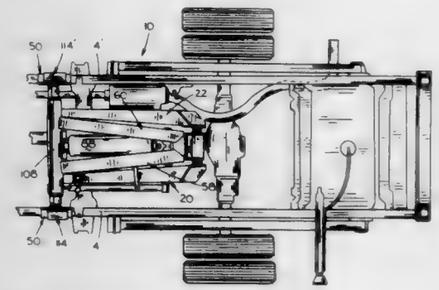
SCISSOR FRAME LIFT APPARATUS FOR DUMP TRUCKS

Glenn L. Channell, Loveland, Colo., assignor to Omaha Standard, Council Bluffs, Iowa

Original No. 5,074,622, dated Dec. 24, 1991, Ser. No. 460,407, Jan. 30, 1990. Application for reissue Aug. 5, 1992, Ser. No. 927,055

Int. Cl.[5] **B60P** *1/16*

U.S. Cl. 298—22 J **19 Claims**



18. In combination,

a truck having a frame including a pair of horizontally spaced apart and longitudinally extending frame members, each of said frame members having a mount thereon including a horizontally disposed shaft,

a dump body hingedly mounted upon the frame of the truck including a pair of longitudinally extending runsills supporting the understructure of the dump body spaced to lie over the frame members of the truck, each of said runsills having a mount thereon including a horizontally disposed shaft,

and a scissor frame lift for raising and lowering said dump body relative to said truck frame,

said scissor frame lift comprising a lower frame assembly and an upper frame assembly,

said lower frame assembly including a horizontally disposed lower mount outer cross tube having an inner cross tube mounted therein, the length of said outer cross tube being substantially less than the length of said inner cross tube,

a pair of lower frame members secured to said lower mount outer cross tube;

said upper frame assembly including an upper outer cross tube having an inner cross tube mounted therein, the length of said inner cross tube being substantially greater than the length of said outer cross tube,

a pair of upper frame members secured to said upper outer cross tube;

said lower frame members and said upper frame members respectively extending rearwardly from said lower mount and upper outer cross tubes and being operatively pivotally secured together at their rearward ends,

said inner cross tube of said lower frame assembly being rotatably secured to said shafts of said mounts on said frame members of said truck,

said inner cross tube of said upper frame assembly being rotatably secured to said shafts of said mounts on said runsills of said dump body,

said inner cross tubes having a substantially greater length than their respective outer cross tubes so that said inner cross tubes may be selectively shortened, without shortening said outer cross tubes, as desired to compensate for various widths between the frame members of various sizes of trucks.

Re. 34,734

INTEGRATED DIGITAL SIGNAL PROCESSING CIRCUIT FOR PERFORMING COSINE TRANSFORMATION

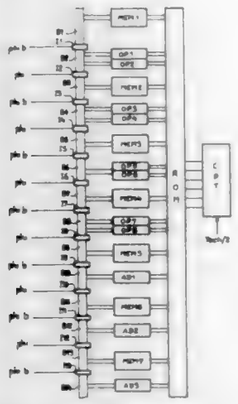
Joel Cambonie, Grenoble, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly, France

Original No. 4,873,658, dated Oct. 10, 1989, Ser. No. 135,266, Dec. 21, 1987. Application for reissue Oct. 10, 1991, Ser. No. 774,322

Claims priority, application France, Dec. 23, 1986, 86 17936

Int. Cl.[5] **G06F** *15/332*

U.S. Cl. 364—725 **23 Claims**



7. An integrated circuit for the digital processing of signals, performing a specific transformation of input signals representing n coefficients F_v so as to produce signals representing n digital values X_j wherein the relationship of F_v and X_j is of the form

$$F_v = \sum_{j=0}^{n-1} X_j f(j, v)$$

and wherein f(j,v) is a function of the indexes j and v, the circuit comprising:

a signal transmission bus for unidirectionally transmitting a signal of p bits representing a digital value;

switches spaced apart along the bus for letting the signals pass between the bus or for interrupting these signals, with any two adjacent switches along the bus being actuated in phase opposition, so as to divide the bus into sections, each bus section communicating alternately with a preceding section and a following section;

computing operators are connected to certain sections of the bus and may receive successive data of p bits therefrom, for carrying out a computation on this data and sending resulting data over this bus section;

buffer memories are connected to other bus sections so as to receive several successive data therefrom and send them over a bus in an order different from the order in which they were received; and

a sequencer for controlling said computing operators and said buffer memories.

Re. 34,735

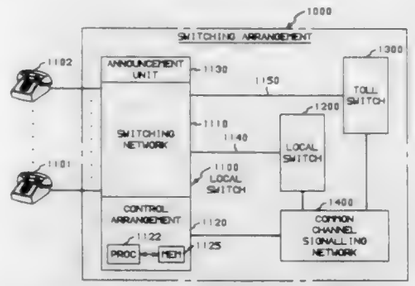
CALL WAITING ARRANGEMENT PROVIDING OPTIONS TO BOTH A SUBSEQUENT CALLING PARTY AND TO THE CALLED PARTY

Tsaul Kuabe T,, Wheaton now by change of name from Liane C. Toy, and Wing N. Toy, deceased, late of Glen Ellyn, both of Ill. by Romayne Louis Toy, executrix, assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Original No. 4,947,421, dated Aug. 7, 1990, Ser. No. 137,040, Dec. 23, 1987. Application for reissue Jun. 11, 1992, Ser. No. 898,767

Int. Cl.[5] **H04M** *3/50*

U.S. Cl. 379—67 **14 Claims**



13. A method of processing a call waiting call from a calling communication station to a called communication station comprising:

determining whether said call is a toll call;

in response to determining that said call is a toll call, signaling to said called station via a special tone, different from a call waiting tone for a local call, that a toll call is waiting; and

after said signaling, establishing a connection between said calling and said called stations only in response to receipt of a signal from said called station.

Re. 34,736

GUIDE SLEEVE GUIDE POST AND MODIFIED BALL BEARING ASSEMBLY

Ronald L. Hanaway, 30210 E. Eight Mile Rd., Farmington Hills, Mich. 48236

Original No. 5,051,002, dated Sep. 24, 1991, Ser. No. 645,745, Jan. 25, 1991. Application for reissue Aug. 18, 1992, Ser. No. 931,877

Int. Cl.[5] **F16C** *29/04*

U.S. Cl. 384—49 **11 Claims**

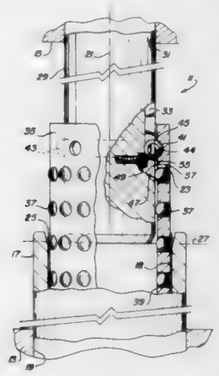
9. In combination, a guide post having a longitudinal axis and a longitudinal slot substantially throughout its length;

a cylindrical ball bearing cage having a co-axial longitudinal axis adjustably receiving said post, and adapted for relative longitudinal and rotary movements thereon;

said bearing cage mounting a plurality of spaced circularly arranged ball bearings extending substantially the length of said cage and projecting inwardly and outwardly thereof, respectively, there being an internal annular recess in said cage inwardly of one end thereof;

a roller guidably positioned within said longitudinal slot, and alternately registerable with opposed ends of said slot, limiting rectilinear movement of the ball bearing cage relative to said guide post, a portion of said roller being positioned within said cage recess;

said cage including its recess being adapted for rotary sliding movement relative to said roller upon said axis; and



fastener means within said guide post adjacent one end of its longitudinal slot, trapping said roller therein and within said ball cage.

Re. 34,737

DYE TRANSFER SHEET FOR SUBLIMATION HEAT-SENSITIVE TRANSFER RECORDING

Toshio Niwa, Yokohama; Yukichi Murata, Sagamihara, and Shuichi Maeda, Saitama, all of Japan, assignors to Mitsubishi Kasei Corporation and Matsushita Electric Industrial Co., Ltd., both of Tokyo, Japan

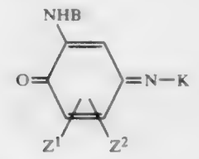
Original No. 4,829,047, dated May 9, 1989, Ser. No. 8,268, Jan. 29, 1987. Continuation-in-part of Ser. No. 749,408, Jun. 27, 1985, abandoned. Application for reissue May 8, 1991, Ser. No. 696,929

Claims priority, application Japan, Jul. 11, 1984, 59-143928; Jul. 24, 1984, 59-153742; Jul. 30, 1984, 59-160135; Aug. 16, 1984, 59-170740; Aug. 30, 1984, 59-181230; Dec. 21, 1984, 59-270495; Apr. 12, 1985, 60-78016

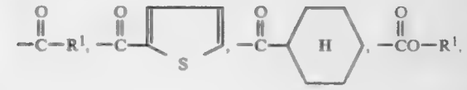
Int. Cl.[5] **B41M** *5/035, 5/38*

U.S. Cl. 503—227 **168 Claims**

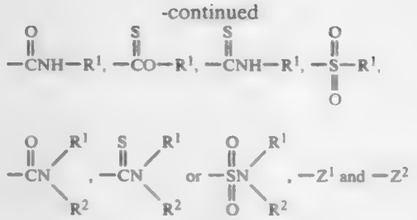
1. A dye [and a binder] transfer sheet for heat-sensitive transfer recording which has an ink layer containing a sublimable dye *and a binder* formed on a base film, said sublimable dye being of the formula:



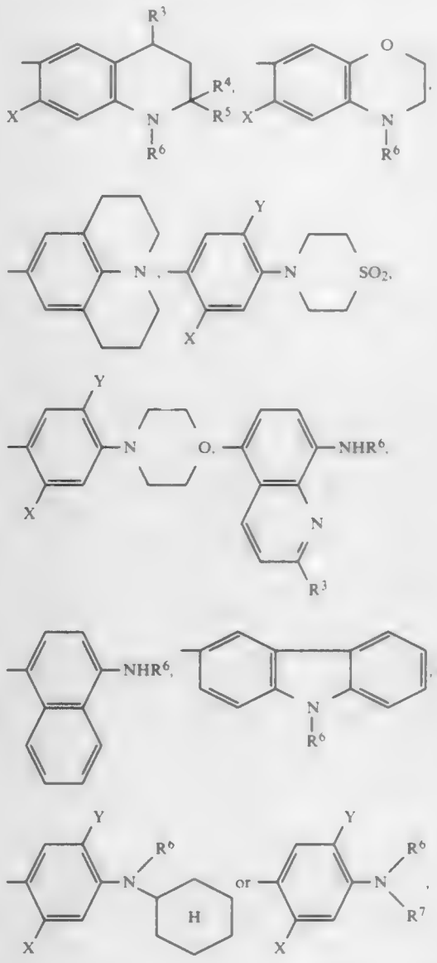
wherein —B represents



-continued



each represents hydrogen, alkyl optionally substituted by fluorine, alkoxy, halogen or —NHB, K represents



—R^1, —R^2, *and* —R^6 [and —R^7] each represents hydrogen, C_1–C_8 substituted or unsubstituted alkyl, substituted or unsubstituted vinyl, allyl or aryl, —R^3, —R^4 and —R^5 each represents hydrogen or methyl, —X represents hydrogen, alkyl optionally substituted by fluorine, alkoxy, formylamino, alkylcarbonylamino optionally substituted by fluorine, arylcarbonylamino or halogen, and —Y represents hydrogen, alkyl optionally substituted by fluorine, alkoxy or halogen.

PLANT PATENTS

GRANTED SEPTEMBER 20, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,899

MINIATURE ROSE PLANT, NAMED GRACE SEWARD

Cecilia L. D. Bennett, deceasedi, late of Chula Vista, and by Susan M. O'Brien administrator, 489 Minot Ave., Chula Vista, Calif. 91910

Filed Dec. 23, 1991, Ser. No. 812,681
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—8.1 **1 Claim**

1. A new and distinct variety of miniature rose plant, named 'Grace Seward', of hardy, dwarf, vigorous growth, well-branched and attractive in appearance, substantially as illustrated and described, characterized by its five-petaled blooms of white with flowers usually borne one to a stem but occasionally in sprays of 3 to 5 or more.

8,900

FLORIBUNDA ROSE PLANT NAMED DICQUIET

Patrick Dickson, Newtownards, Northern Ireland, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Oct. 18, 1993, Ser. No. 138,761
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—22 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by its well-formed, attractive flowers borne in large clusters; its distinctive yellow and orange colored flowers; its dark green, healthy, disease-resistant foliage; and its upright, well-branched and vigorous growth habit.

8,901

ENKIANTHUS PERULATUS CV. 'J. L. PENNOCK'

Rick J. Lewandowski; Paul W. Meyer, and Rochelle J. Dillard, all of Philadelphia, Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Aug. 3, 1993, Ser. No. 101,840
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—54.1 **1 Claim**

1. A new and distinct variety of *Enkianthus perulatus* plant named 'J. L. Pennock' as herein illustrated and described.

8,902

FICUS BENJAMINA PLANT NAMED FRANCIS

Rene G. M. A. Denis, Destelbergen, Belgium, assignor to Denis-Plants B.V.B.A., Beervelde, Belgium

Filed Sep. 14, 1993, Ser. No. 120,445
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.9 **1 Claim**

1. A new and distinct cultivar of *Ficus benjamina* named 'Francis', as illustrated and described.

8,903

IMPATIENS PLANT NAMED AMBIENCE

Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Dec. 13, 1993, Ser. No. 165,590
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of Impatiens plant named Ambience, as illustrated and described.

8,904

IMPATIENS PLANT NAMED SHADOW

Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Dec. 13, 1993, Ser. No. 165,591
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and and distinct cultivar of Impatiens plant named Shadow, as illustrated and described.

8,905

IMPATIENS PLANT NAMED LARGO

Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Dec. 9, 1993, Ser. No. 163,762
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of Impatiens plant named Largo, as illustrated and described.

8,906

IMPATIENS PLANT NAMED SONATA

Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Dec. 9, 1993, Ser. No. 163,765
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of Impatiens plant named Sonata, as illustrated and described.

8,907

IMPATIENS PLANT NAMED CANON

Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Dec. 9, 1993, Ser. No. 163,767
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of Impatiens plant named Canon, as illustrated and described.

8,908

VARIETY OF GERANIUM NAMED "BARONESS"

Ernest Walters, deceased, late of Hucknall, England by Mary Bodill, administrator , assignor to Oglevee, Ltd., Connellsville, Pa.

Filed Jan. 14, 1994, Ser. No. 182,497
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct variety of geranium plant substantially as shown and described.

8,909

VARIETY OF GERANIUM NAMED BARON

Ernest Walters, deceased, late of Hucknall, England by Mary Bodill, administratrix , assignor to Oglevee, Ltd., Connellsville, Pa.

Filed Jan. 14, 1994, Ser. No. 182,498
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct variety of geranium plant substantially as shown and described.

PATENTS

GRANTED SEP. 20, 1994

ERRATA

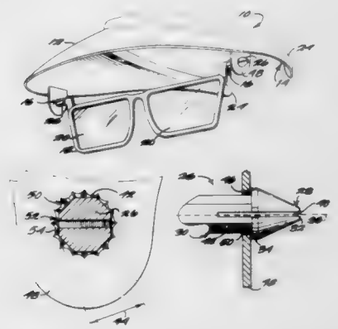
For CLASS	See PATENT NO.
451-114	5,347,760
451-364	5,347,761
451-005	5,347,762
451-241	5,347,763
451-359	5,347,764
451-028	5,347,765
451-029	5,347,766
477-161	5,347,886
601-003	5,347,997
242-035	5,348,221
269-003	5,348,274
269-048	5,348,280
252-700	5,348,690
117-091	5,348,911
502-242	5,348,987
525-408	5,349,001
428-412	5,349,002
524-761	5,349,021
524-414	5,349,022
556-054	5,349,073
558-036	5,349,101
558-274	5,349,102
558-314	5,349,103
564-005	5,349,104
564-163	5,349,105
564-282	5,349,106
568-318	5,349,107
564-340	5,349,108
564-408	5,349,109
568-678	5,349,110
568-721	5,349,111
514-532	5,349,112
117-102	5,349,154
365-207	5,349,302
348-711	5,349,444
363-081	5,323,521
363-095	5,323,522
363-097	5,323,523

PATENTS

GRANTED SEPTEMBER 20, 1994

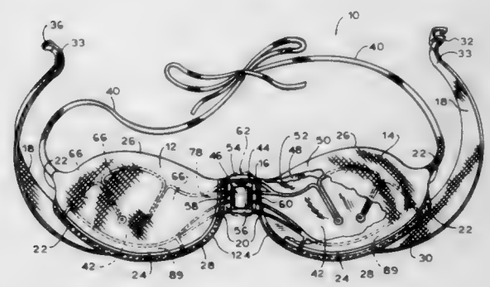
GENERAL AND MECHANICAL

5,347,655
EYEWEAR IN COMBINATION WITH A VISOR
L. A. Garrett, Columbia, S.C., assignor to I-Sha-Vi, Inc., Columbia, S.C.
Filed Jul. 9, 1993, Ser. No. 89,255
Int. Cl.[5] A42B *1/24*
U.S. Cl. 2—10 **9 Claims**



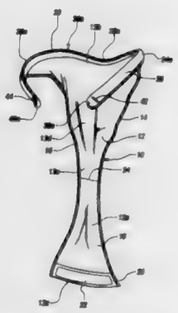
1. A device for wearing on a head of a user, comprising:
a visor having two holes formed therein, each hole of said two holes defined by an edge with a series of scallops;
means for holding said visor to said head;
a frame;
a lens secured to said frame;
means for securing said frame to said visor so that said frame has an up position against said visor and a down position away from said visor, said frame being rotatable between said up and said down positions, said securing means having two posts, each post of said two posts having a first end and a second end, said first end of said each post having a conical shape to penetrate into one hole of said two holes, said second end of said each post having a prismatic shape for rotatably engaging said edge of one hole of said two holes, said series of scallops of said each hole permitting incremental rotation of said post.

5,347,656
FIGURE-ENHANCING PNEUMATIC BATHING SUIT
Jacqueline M. B. Fabritz, Surfside; Marshall L. Barth, Los Angeles, and Anthony R. Longo, Huntington Beach, all of Calif., assignors to CCC Acquisitions Corp., Los Angeles, Calif.
Filed Jul. 10, 1992, Ser. No. 911,755
Int. Cl.[5] A41D *5/00*
U.S. Cl. 2—67 **3 Claims**



1. A bathing suit, comprising:
a top portion, comprising:
a left side cup portion for receiving the left breast of said wearer;
a right side cup portion for receiving the right breast of said wearer; and
a center portion connecting said right side cup portion and said left side cup portion;
a bladder assembly contained within said top portion, said bladder assembly defining a continuous inflatable channel extending into said right side cup portion and into said left side cup portion, comprising:
an inflatable left side bladder section having spreadable portions, said inflatable left side section being contained in said left side cup portion, said spreadable portions of said left side section fanning outward upon inflation of said assembly for lifting and shaping the left breast of said wearer;
an inflatable right side bladder section having spreadable portions, said inflatable right side section being contained in said right side cup portion, said spreadable portions of said right side section fanning outward upon inflation of said assembly for lifting and shaping the right breast of said wearer;
a center bladder section connecting said inflatable left side section and said inflatable right side section;
said spreadable portions comprising peninsular-shaped members separated by slits; and
a pump secured to said assembly, said pump communicating with said channel to adjustably inflate and deflate said assembly.

5,347,657
SWIM SUIT BOTTOM
Robert D. Unsell, 2135 Gentian Rd., Venice, Fla. 34293
Filed Nov. 8, 1993, Ser. No. 148,397
Int. Cl.[5] A41D *5/00*
U.S. Cl. 2—67 **14 Claims**



1. A swim suit bottom comprising:
a length of flexible fabric material defining a front and a back panel and having a mid section narrower in width than each end margin of said front and said back panel;
said length of material sized to extend between a user's legs at said mid section and upwardly therefrom, said front and back panels covering a pubic area and a central buttocks area of the user;
a slender resilient arcuate band connected at a central portion thereof across said end margin of said back panel and sized, when resiliently manually expanded, to biasingly engage around a lower back area and right and left lilac crest area of the user, said band extending forwardly on the user over the right and left lilac crest area toward but not to the pubic area, said band having spaced apart ends

and when so positioned on the user, holding said rear panel in position covering the central buttocks area;

an adhesive means for connection adjacent said end margin of said front panel, said adhesive means also being engagable generally horizontally against the skin of the user along an upper portion of the pubic area for holding said front panel in an upward, extended position over the pubic area.

5,347,658

OUTERWEAR GARMENT WITH FABRIC STRIPS

Harold E. Clark, 412 S. 13th St., P.O. Box 808, Sunnyside, Wash. 98944

Continuation of Ser. No. 911,763, Jul. 9, 1992, Pat. No. 5,175,888. This application Dec. 11, 1992, Ser. No. 989,081
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] A41B *1/00*
U.S. Cl. 2—69 4 Claims



1. A outerwear garment adapted to be worn by a person, comprising:

a fabric piece having an outer side and an inner side, the fabric piece being constructed in a manner to provide a horizontal fabric direction and a vertical fabric direction and being inherently differentially stretchable in the horizontal and vertical fabric directions without any externally acting forces on the fabric material;

a first visual area defined by a plurality of parallel generally horizontal slits in the fabric piece, the horizontal slits forming horizontal strips of fabric, each having a longitudinal axis.

a second visual area defined by a plurality of parallel generally vertical slits of fabric piece, the vertical slits forming vertical strips of fabric, each having a longitudinal axis;

a third visual area defined by a plurality of inclined slits in the fabric piece, the inclined slits forming inclined strips of fabric, each having a longitudinal axis;

the inherent differential stretching of the fabric piece without any externally acting forces causing the horizontal strips to curl outward toward the outer side of the fabric piece about their respective longitudinal axes and causing the vertical strips of fabric to curl inward toward the inner side of the fabric piece about their respective longitudinal axes to allow increased viewing through the slits adjacent the horizontal and vertical strips; and

the inherent differential stretching of the fabric piece without any externally acting forces causing the inclined strips to remain substantially undistorted with respect to movement about their longitudinal sloping axes to allow only limited viewing through the slits adjacent the inclined strips.

5,347,659

CAMOUFLAGE GARMENT

Edward J. Tibljas, Rte. 1, Box 62E, Granbury, Tex. 76048

Filed May 10, 1993, Ser. No. 58,139
Int. Cl.[5] A41D *3/02*
U.S. Cl. 2—84 3 Claims



1. A camouflage garment, comprising,

a torso portion, having a neck opening and a plurality of leg members extending from the torso portion, and

a plurality of arm member sleeves extending from the torso portion, and

a fastener strip extending from the neck opening along the torso portion medially of the leg members, and

the torso portion, the arm member sleeves, and the leg members are formed of a continuous base web, having a camouflage pattern coextensive therewithin, and

the base web further including a matrix of closed loop members, each of the loop members arranged in adjacency relative to one another and are coextensive with the base web, and

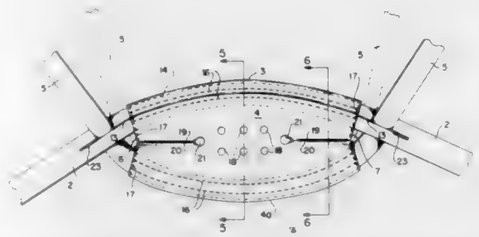
each of the loop members includes facing web segments of flexible construction, wherein each of the web segments include a securement web portion, and each securement web portion is fixedly secured to the base web, and the web segments are flexibly and pivotally mounted to the web portions, and the web segments are joined together at a fold line, wherein the fold line is spaced above the base web and is arranged in a substantially parallel relationship thereto, and the securement web portions and the web segments are each formed of a flexible material having a further camouflage pattern thereon consistent with the base web.

5,347,660

ADJUSTABLE HIGH/LOW HOOK-UP CHIN STRAP FOR ATHLETIC HELMETS

Rodney M. Zide, 7 Painters Crossing, Williamstown, W. Va. 26187, and James L. Rector, 1709 Forest Hills Dr., Vienna, W. Va. 26105

Filed Oct. 29, 1993, Ser. No. 142,956
Int. Cl.[5] A42B *7/00*
U.S. Cl. 2—421 15 Claims



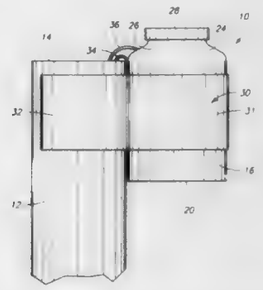
1. An adjustable high/low hook-up chin strap for a helmet having high and low hook-ups on ear protector portions of the helmet, comprising a chin cup having an upper edge, a lower edge and opposite end portions, a first strap extending along and secured to the upper edge of said chin cup, a second strap extending along and secured to the lower edge of said chin cup, the opposite end portions of each strap extending beyond the opposite end portions of the chin cup, a pair of spaced, longitudinally extending slits provided in said first strap, each slit being positioned in proximity to a respective end portion of said chin cup, the opposite end portions of the second strap extending through a respective slit, whereby the first and second straps cross over each other at each end portion of the chin cup, adjustable fasteners connected to the opposite end portions of each strap; the adjustable fasteners on said first strap being adapted to be connected to the low hook-ups on the helmet, the adjustable fasteners on said second strap being adapted to be connected to the high hook-ups on the helmet, the length of each slit being dimensioned to allow the second strap to be moveable therein, whereby the adjustable fasteners on each end of the second strap can be connected to the higher hook-up on the helmet regardless of their position relative to the lower hook-ups.

5,347,661

WATER CONDITIONER DISPENSING APPARATUS

Howard G. Fly, and Robert G. Cook, both of Box 63, Ovando, Mont. 59854

Filed Jul. 1, 1993, Ser. No. 86,234
Int. Cl.[5] E03D *9/02*
U.S. Cl. 4—225.1 21 Claims



1. A water conditioner dispensing apparatus for use with a toilet having a bowl, a bowl supply pipe, and a filler tube which emits a jet of bowl makeup water into the bowl supply pipe to fill the bowl after flushing; to selectively treat or condition only the bowl makeup water; said apparatus comprising:

a conditioner container having a reservoir for holding liquid conditioner;

a wick which extends from within the container reservoir to an exterior of the container reservoir for placement in the supply pipe to be impinged by the jet of bowl makeup water so that liquid conditioner is dispensed only into the toilet bowl;

wherein the bowl supply pipe has an upper end, the water conditioner dispensing apparatus further comprising a vertical support for engaging the bowl supply pipe to vertically support the apparatus; said vertical support including a hook which is for hooking over the upper end of the bowl supply pipe.

5,347,662

ROTATABLE TOILET SEAT

Sharon Carper-White, 2942 B Fairview Ave., Parkersburg, W. Va. 26101

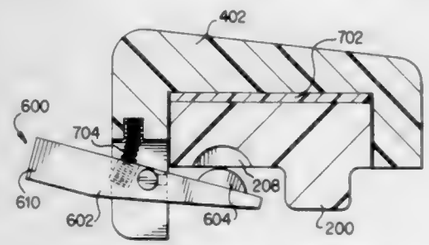
Filed Mar. 23, 1993, Ser. No. 35,810
Int. Cl.[5] A47K *13/00*
U.S. Cl. 4—237 6 Claims

1. A rotatably toilet seat apparatus for use by the physically challenged, the apparatus comprising:

a base portion adapted to be secured to a commode and having an upper surface and a lower surface substantially conforming to the shape of the bowl of the commode;

a slip disk resting upon and removable from the upper surface of the base portion, wherein the slip disk has an upper surface that comprises a low-friction bearing surface; and

a seat portion disposed upon the upper surface of the slip disk and rotatable with respect to the base portion while a user is sitting upon the seat portion, said seat portion having a top surface and a bottom surface, and a flange extending downwardly from the bottom surface, said flange having a cut-out portion with a locking latch pivotally secured therein, said locking latch having two opposite ends disposed on opposite sides of the flange such that movement of the one end of the latch in a first direction moves the other end of the latch in an opposite direction, the end of the latch disposed interior to the flange having at least one protuberance movable into and out of engagement with a plurality of slots formed in the lower surface of said base portion;



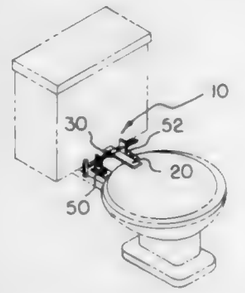
whereby the end of the locking disposed exterior to the flange can be manipulated to selectively engage the at least one protuberance with one of the plurality of slots in the lower surface of the base portion to position and lock the seat portion at any of a plurality of locations relative to the base portion.

5,347,663

CHILD SAFETY TOILET LID LOCK

Richard W. Yost, 20 Wall St., Hampton, N.H. 03842

Filed Oct. 12, 1993, Ser. No. 134,698
Int. Cl.[5] A47K *13/24*
U.S. Cl. 4—253 5 Claims



1. An improved toilet lid safety lock for use with a toilet seat and lid hingedly mounted to a toilet through a pair of holes, said toilet lid safety lock comprising:

a restraining arm of durable metal removably coupled to a threaded rotatable lock rod mechanism having a first and a threaded second end;

a repositioning handle coupled to the first end of the threaded rotatable lock rod mechanism;

an adjustable end cap operatively coupled to the threaded second end of the lock rod mechanism;

a first and second similarly shaped stanchion each respectively positioned intermediate the first and second ends of

the lock rod mechanism and the restraining arm, each stanchion comprising an upstanding support member and a base flange orthogonal thereto, each of the support members having one aperture extending therethrough, said apertures being substantially coaxial for receiving the threaded rotatable lock rod mechanism;

a compression spring positioned about the lock rod mechanism intermediate and engaging the adjustable end cap and upstanding support member of the second stanchion;

an additional aperture in the first stanchion upstanding support member passing therethrough;

a flange member positioned about the lock rod mechanism intermediate the first end thereof and the first stanchion member, the flange member having an aperture extending therethrough and further including a lock bolt positioned therein for being positioned within the additional aperture for precluding movement of the toilet lid;

each stanchion base flange including at least one aperture extending therethrough the base apertures cooperatively positioned with the mounting holes of the toilet seat and lid for coupling the toilet lid safety lock to the toilet.

5,347,664

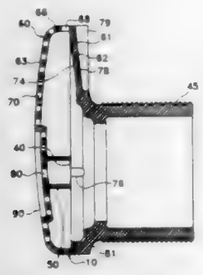
SUCTION FITTING WITH PUMP CONTROL DEVICE

Hassan Hamza; Garrett J. Burkitt, III, both of Simi Valley, and Gordon D. Olson, Rancho Palos Verdes, all of Calif., assignors to KDI American Products, Inc., Moorpark, Calif.

Continuation-in-part of Ser. No. 541,138, Jun. 20, 1990, abandoned. This application Nov. 12, 1991, Ser. No. 791,918

Int. Cl.[5] E04H *4/12*

U.S. Cl. 4—509 **10 Claims**



1. For use in conjunction with a fluid circulation pump in a tub or spa, a fluid suction fitting comprising:

a hollow body, having a perforated front wall, a perforated rear wall generally parallel with the front wall, and a circumferential wall joining the front and rear walls, for installation below fluid level in the tub or spa;

a suction tube in fluid communication with the body, for coupling the body, through a wall of the tub or spa, to a circulating pump line; and

means for mounting the hollow body such that it is held away from the wall, to permit water to flow through perforations in the rear wall, whereby the chance of complete blockage of the fitting is minimized by the presence of perforations in the rear wall.

5,347,665

CARBONATE SPRING BATH SYSTEM

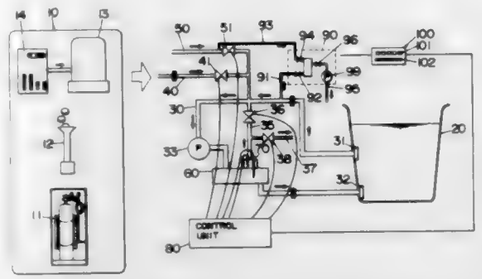
Naoki Kumon, Hirakata; Harue Kawagoe, Kobe; Shin Matsugi, Osaka; Hiroshi Kano, Shijonawate; Noriyoshi Nakaoka, Kadoma; Shoichi Morii, Hirakata; Shigekazu Kusanagi, Katano; Kenji Koi, Osaka; Takashi Hatai, and Masanori Fukui, both of Shijonawate, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 24, 1992, Ser. No. 950,172

Claims priority, application Japan, Sep. 25, 1991, 3-243932; Oct. 15, 1991, 3-265619; Jan. 27, 1992, 4-012445; Jan. 27, 1992, 4-012447

Int. Cl.[5] E03C *1/02*

U.S. Cl. 4—541.1 **18 Claims**



1. A carbonate spring bath system for creating a bath water dissolved with carbon dioxide gas and supplying the same to a bathtub, said system comprising:

a source of supplying a concentrated CO_2 gas;

a circulation path adapted to be connected to said bathtub at an inlet and an outlet and including a booster pump for circulating to introduce a bath water through said inlet from said bathtub and feeding the same back thereto through said outlet as a pressurized bath water;

a CO_2 gas supply line connected to said circulation path upstream of said booster pump to feed said concentrated CO_2 gas from said source to said bath water circulating in said circulation path;

an air supply line connected to said circulation path upstream of said booster pump to feed an outside air to said bath water circulating in said circulation path;

said CO_2 gas supply line and said air supply line being provided respectively with valves which are opened and closed so as to provide to said circulation path said CO_2 gas and said air at a suitable mixture ratio thereof such that said CO_2 and said air are forced by said booster pump to dissolve in said pressurized bath water under a pressurized condition;

an accumulator disposed in said circulation path downstream of said booster pump for separating undissolved gas involved in said bath water, said accumulator having a water chamber for temporarily storing said pressurized bath water and a gas chamber for storing the undissolved gas emanating from said pressurized water;

a recycle line connecting said gas chamber in said accumulator to said circulation path upstream of said booster pump so as to return said undissolved gas to said circulation path for recycling of said undissolved gas;

an exhaust line connected to said gas chamber for exhausting said undissolved gas outside of said circulation path;

said recycle line and exhaust line being provided respectively with valves which are selectively opened and closed such that the system is capable of selectively operating a recycle mode in which the undissolved gas is fed back to the circulating bath water and an exhaust mode in which said undissolved gas is exhausted outside of the circulation path.

5,347,666

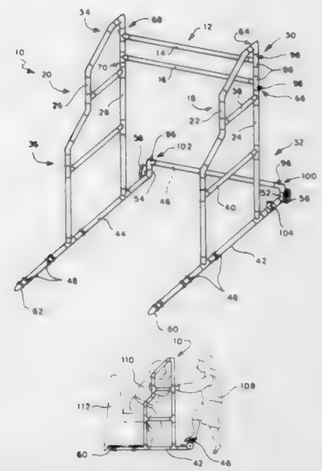
TRANSFER AID

Arlin J. Kippes, 2800 Maupin La., Topeka, Kans. 66614

Filed Feb. 4, 1994, Ser. No. 191,488

Int. Cl.[5] A61G *7/10*

U.S. Cl. 5—81.1 **13 Claims**



1. A transfer aid comprising:

an elongated base having an underside for contacting a flooring surface;

a pair of substantially identical, vertically oriented supports extended upwardly from said base;

grasping means comprising at least one shaft extended between said supports, and serving as a hand hold for a user to raise oneself from a seated position; and

means pivotally interconnecting said grasping means and at least one of said supports, whereby said at least one of said supports may be swung outwardly and away from said grasping means;

said base extending forwardly and rearwardly of said supports, thus to provide a secure, non-tiltable base for said transfer aid when in use.

5,347,667

PROTECTIVE BEACH APPLIANCE

Sam Schwarz, and Nora Schwarz, both of 8 Givin La., East Northport, N.Y. 11731

Filed Mar. 8, 1993, Ser. No. 27,891

Int. Cl.[5] A47G *9/06*

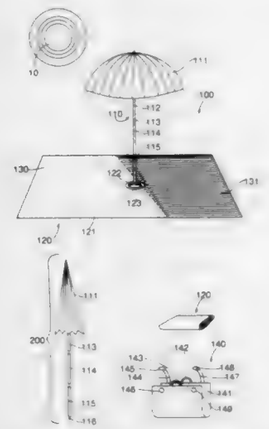
U.S. Cl. 5—418 **16 Claims**

1. A protective appliance, for providing protection from the ground and the sun, said protective appliance comprising:

covering means, for covering a portion of the ground, said covering means including opening means for creating an opening in the covering means;

shade means for providing protection from the sun's rays, said shade means having a first, support end and a second, protection end, the first, support end being adapted to removable extend downwardly through the opening in the covering means and into the ground a sufficient depth to support the shade means in a generally vertical orientation, the opening means further including constricting means for restricting the size of the opening and biasing the opening means against the portion of the support end of the shade means passing through the opening;

whereby the shade means provides protection for an object on the covering means from direct exposure to the sun and



the covering means provides protection for an object on the covering means from exposure to the ground.

5,347,668

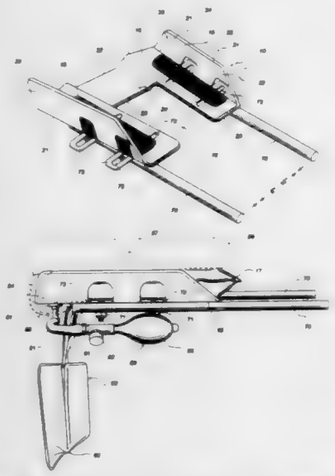
THERAPEUTIC HEADREST DEVICE

Duane B. Manning, 3050 N. 150 East, North Ogden, Utah 84414

Filed Oct. 4, 1993, Ser. No. 131,122

Int. Cl.[5] A47C *16/00;* **A61G** *7/06*

U.S. Cl. 5—622 **19 Claims**



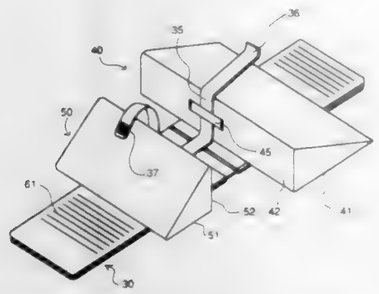
1. A head support device to be used in cooperation with a treatment table for humans such as a chiropractic or therapeutic table, said head support device to provide a comfortable support for a patient's head during therapy, said head support device comprising:

a baseplate of polygonal shape having at least four sides, including two opposing, longer sides and opposing top and bottom sides, said bottom side including an opening that allows airflow to a patient when face-down on the table;

a pair of flanges connected to the opposing longer sides of the baseplate and extending upward from the baseplate within a range of 20 to 90 degrees;

attachment means on said head support device for connecting the head support device to the treatment table.

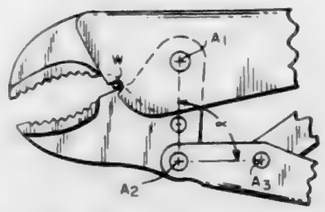
5,347,669
INFANT SLEEPING POSITION RESTRAINT
Thomas J. Neviaser; Lynn W. Neviaser, both of 10135 Wendover Dr., Vienna, Va. 22181, and Moira A. Bennett, 46546 Woodhaven Ct., Sterling, Va. 20165
Filed Dec. 31, 1992, Ser. No. 999,370
Int. Cl.[5] A47C *20/02*
U.S. Cl. 5—655 3 Claims



1. An infant position restraint device comprising:
an elongated support member having a top surface with one of a two-part separable fastening material covering at least a portion of the support;
a rear pad and front pad, each having a bottom surface covered with the other of the two-part releasable fastening material for securing the pads on the support member in an orientation that permits an infant to be positioned on its side between the pads, and each of said pads having a substantially perpendicular side wall extending upwardly from the support member, the side walls engaging the front and the back of the infant for supporting the infant in a rest position while lying on its side, wherein the front pad is oriented with respect to the rear pad so that the generally perpendicular side wall of the front pad supporting the front of the infant does not obstruct the infant's face, whereas the corresponding generally perpendicular side of the rear pad supports the back of the infant including its head; and
a strap releasably secured to each of the pads for restraining an infant on its side between the pads and having a two-part releasable fastening material at the respective ends of the strap for coupling the ends of the straps together, and wherein the strap is positioned with respect to the front and rear pads so that the strap passes under the infant's arm, and further wherein said strap is releasably secured to each of the pads along the respective generally perpendicular side walls thereof so that the strap passes around he infant without encircling the pads to secure the infant to the pads.

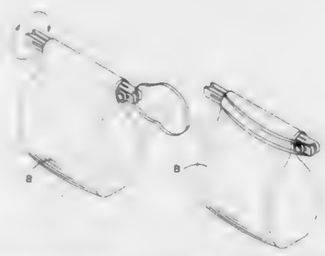
5,347,670
LOCKING PLIER WITH WIRE CUTTER
Paul J. Duguette, Dudley; Neil A. Gatto, Worcester; Ronald J. Boliver, Auburn, and Daniel J. Laforest, Bellingham, all of Mass., assignors to The Stanley Works, New Britain, Conn.
Filed Jun. 30, 1993, Ser. No. 85,635
Int. Cl.[5] B25F *1/00*
U.S. Cl. 7—107 6 Claims

1. A locking plier and wire cutter comprising:
a handle having parallel flanges with edges extending across a cutting zone, said flanges defining a space therebetween;
a notch at said cutting zone in the edge of one of said flanges, the adjacent edge of the other of said flanges defining a ramp aligned with the bottom of said notch;
a fixed jaw secured to said handle between said flanges at one end of said cutting zone;
a movable jaw connected to said handle between said flanges for pivotal movement about a first axis, said movable jaw having a cutting edge arranged to traverse said cutting zone;
spring means for yieldably biasing said movable jaw into an open position at the opposite end of said cutting zone; and
actuating means pivotally connected to said movable jaw at



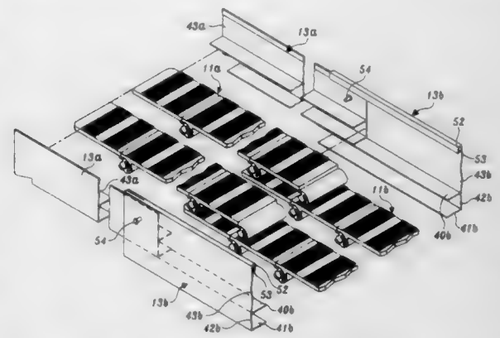
a second axis parallel to said first axis, said actuating means being coactively associated with said handle for urging said movable jaw from said open position towards said fixed jaw, thereby causing said cutting edge to shear a wire having mutually spaced segments arranged respectively in said notch and on said ramp.

5,347,671
BAG OPENING AND RECLOSING DEVICE
Larry D. Hunts, 1111 Netherlands Rd., Trail, Oreg. 97541
Filed Sep. 17, 1992, Ser. No. 947,676
Int. Cl.[5] B65P *33/16*; B67B *7/00*; B25F *1/00*
U.S. Cl. 7—156 6 Claims



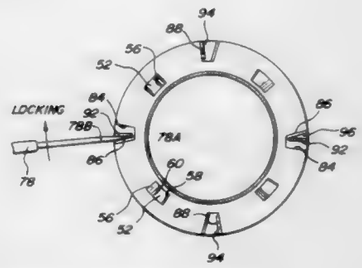
1. A sealing apparatus for releasably closing flexible bags, sacks, tubes and similar flexible containers, the sealing apparatus comprising:
a) a longitudinally elongated body member having a longitudinal bag-receiving slot therethrough, the slot extending from a point spaced inwardly of one longitudinal end of the body through the opposite terminal end of the body, thereby forming two spaced apart, opposite finger members between which a portion of a flexible bag can be received so that rotation of the body member in one direction about its longitudinal axis wraps a desired portion of the bag into a tight roll about the opposite finger members of the body member and subsequent rotation of the body member in the opposite direction unwraps the rolled portion of a bag from about the opposite finger members of the body member, and
b) securing means mounted on the body member configured to releasably engage the outermost wrapping of a bag rolled about the opposite finger members of the body member for preventing loosening and unwrapping of the roll, said securing means comprising an elongated tension member mounted on one end of the body member and configured to be drawn over the outermost wrapping of a bag rolled about the opposite finger members of the body member and be secured releasably under tension to the opposite end portion of the body member, the tension member overlying the outermost wrapping of the bag roll in tensioned engagement therewith to prevent loosening and unwrapping of the roll.

5,347,672
PORTABLE, STOWABLE KNOCK-DOWN RAMP
Donald G. Everard, Kent, and William Gorman, Gig Harbor, both of Wash., assignors to Homecare Products, Inc., Kent, Wash.
Filed Dec. 31, 1992, Ser. No. 998,958
Int. Cl.[5] E01D *15/00*
U.S. Cl. 14—69.5 18 Claims



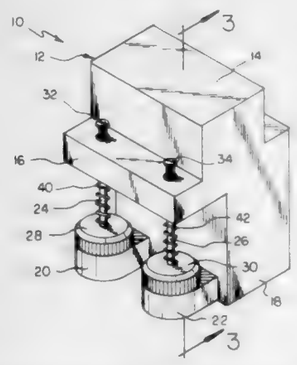
18. A portable ramp for carrying a load, said ramp comprising a portable assembly having several tread plates pivotally connected together so as to be relatively swingable from an unrolled coplanar load-bearing condition to a rolled-up compact condition, at least one portable rail connectable to said tread plate assembly for supporting said tread plate assembly in its unrolled coplanar condition, and means for normally latching said rail to said assembly for connecting said rail to said assembly, said latching means being manually releasable for disconnecting said rail from said assembly to permit said assembly to be rolled to its compact condition, said latching means including cooperating latch elements mounted on said assembly and said rail, respectively, for normally supporting said tread plate assembly by said rail.

5,347,673
QUICK CHANGE PAD ASSEMBLY FOR ORBITAL POLISHER
Richard C. Nickels, Jr., Hampstead, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Oct. 1, 1992, Ser. No. 955,335
Int. Cl.[5] A47L *11/02*
U.S. Cl. 15—97.1 17 Claims



1. A coupling arrangement comprising:
first and second plates forming respective first and second endwalls, said first plate being positionable relative to said second plate so that said endwalls are in substantially abutting relation and rotatable relative to said second plate between a first uncoupled position and a second position wherein said plates are secured together;
coupling means formed on said first and second plates for positioning said plates in said first uncoupled position and for securing said plates together when said first plate is rotated from said first position to said second position; and
manually actuable drive means formed on said first and second plates for rotatably driving said first plate between said two positions including a first pair of shoulders, one of which extending from each of said plates, and cooperating to define a first receiver when said plates are in said first position, and a second pair of shoulders, one of which extending from each of said plates, and cooperating to define a second receiver when said plates are in said second position, said first and second receivers being adapted to receive a drive tool that is driveable against each respective shoulder pair to rotatably drive said first plate between said two positions.

5,347,674
CONTACT LENS TREATMENT APPARATUS
Chuck Gabbert, 5112 Atrisco Pl. NW., Albuquerque, N. Mex. 87105-1217
Filed Jul. 9, 1993, Ser. No. 87,578
Int. Cl.[5] G02C *13/00*; B08B *11/02*
U.S. Cl. 15—97.1 3 Claims



1. A contact lens treatment apparatus comprising:
a body assembly having a motor compartment, a gear compartment, a fluid compartment, and at least one lens container, said at least one lens container being operable to support and enclose a contact lens, said at least one lens container being in fluid communication with said fluid compartment;
an electric motor mounted within said motor compartment, said electric motor having a motor shaft that partially projects through an aperture in said body assembly into said gear compartment;
a power supply means electrically connected to said electric motor for supplying electrical power to said electric motor;
at least one cap removably coupled to said at least one lens container, said cap having a shaft aperture extending therethrough;
at least one shaft having a first end and a second end, with said first end projecting at least partially into said gear compartment and said second end projecting through said shaft aperture in said cap and at least partially into said at least one lens container;
a motor gear attached to said motor shaft;
at least one gear slidably mounted to said first end of said at least one shaft, said at least one gear being mechanically engaged to said motor gear, whereby said shaft is slidably displaced relative to said at least one gear upon a removal of said cap to facilitate ingress and egress of said contact lens relative to said at least one lens container; and,
at least one probe means attached to said second end of said at least one shaft, whereby said at least one probe means is

rotated by said shaft to engage said contact lens placed within said at least one lens container for performing a surface treatment procedure.

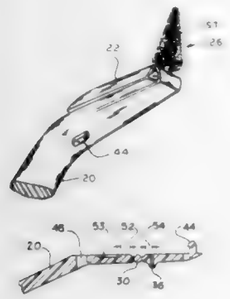
5,347,675
TOOTHBRUSH

Emanuel B. Tarrson; Dane Maric; Lew Blahuta, and Scott Koepsel, all of Chicago, Ill., assignors to John O. Butler Company, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 6,663, Jan. 19, 1993, which is a continuation of Ser. No. 875,627, Apr. 28, 1992, abandoned, which is a division of Ser. No. 575,229, Aug. 30, 1990, Pat. No. 5,201,091, which is a continuation-in-part of Ser. No. 475,724, Feb. 6, 1990, Pat. No. 5,027,467. This application Apr. 12, 1993, Ser. No. 46,596

Int. Cl.[5] A46B *9/04*

U.S. Cl. 15—167.1 **9 Claims**



1. A toothbrush for holding a twisted wire brush, said toothbrush comprising an elongated handle member having a hinged locking retainer at an end thereof, one of said locking retainer and said handle having a latch, the other of said locking retainer and handle having a keeper hole which is complementary to said latch, said latch entering said keeper hole when said locking retainer is swung on said hinge to a closed position on said handle member, said locking retainer and handle having smooth and substantially uninterrupted contours when closed, a projecting chimney having a hole formed in one of said handle and said locking retainer near said hinged end, said chimney hole having a dimension for receiving and holding a stem of a twisted wire brush, a groove formed in the other of said handle and said locking retainer, said groove having a dimension for receiving and holding said twisted wire stem, and at least one flat land area surface on a respective one of said locking retainer and said handle, said at least one land area being located between said chimney hole and said groove, said groove extending from said at least one land area and from a point near but not opposite said chimney hole when said retainer is closed, when closed said retainer and handle presenting said at least one flat land area surface between said hole and said groove in order to grip said stem.

5,347,676
SQUEEGEE

Hiroshi Saitoh, Chiba, Japan, assignor to Kabushiki Kaisha Hoky, Chiba, Japan

Filed Apr. 6, 1993, Ser. No. 43,726

Claims priority, application Japan, Apr. 17, 1992, 4-124158

Int. Cl.[5] A47L *1/06*

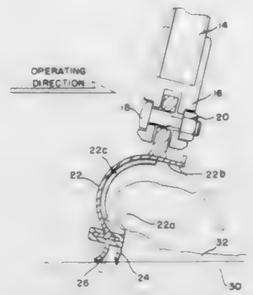
U.S. Cl. 15—245 **14 Claims**

10. A squeegee comprising:

a baseplate section extending along a surface to be cleaned;

a plurality of blades, each of the blades being disposed on a lower end portion of said baseplate section and being formed with a profile projecting outwardly from said baseplate section, said baseplate section having an open section positioned on an upper end portion of said blades, the open section extending along the blades and the open section being opened forwardly in an operating direction of said squeegee;

a curved section for accumulating liquid which is defined such that an axial length thereof extends along an upper end portion of said blades and an inner circumferential wall surface of the curved section protrudes rearwardly in the operating direction, liquid being swept up by said blades and being transferred from the lower end portion of said blades to the upper end portion thereof, whereafter the liquid is then introduced into said section for accumulating liquid; and



means for moving liquid toward a center of the curved section, the means for moving comprises at least one pair of streaks extending along the inner circumferential wall of the curved section, the pair of streaks being inclined to extend toward the center of the curved section, upper ends of the streaks being separated such that the upper ends of the streaks are out of contact with one another, liquid introduced into the section for accumulating liquid being moved toward the center of the curved section by the means for moving.

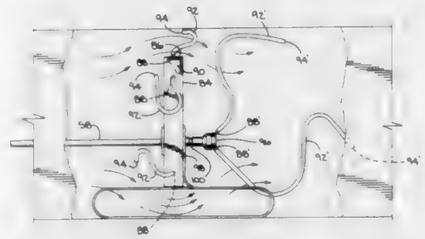
5,347,677
APPARATUS FOR CLEANING ISOLATED SURFACES

William H. Prentice, 1028 Jeannette St., Des Plaines, Ill. 60016

Filed Feb. 12, 1993, Ser. No. 16,977

Int. Cl.[5] F23J *3/02*

U.S. Cl. 15—318 **19 Claims**



1. In combination:

(a) a duct having an inside space bounded by a wall surface; and

(b) a cleaning system for said wall surface, said cleaning system comprising:

a frame;

a first scouring conduit for delivering a pressurized fluid in said duct space and against the wall surface of the duct;

first means for mounting the scouring conduit to the frame so that at least a portion of the scouring conduit can contact the wall surface of the duct with the frame at least partially in the inside duct space; and

second means for repetitively bringing the portion of the scouring conduit into and out of contact with the wall surface of the duct at high speed to dislodge foreign matter therefrom,

wherein the scouring conduit has at least a portion that is flexible and the second means comprises a pressurized fluid directed through the scouring conduit which causes the scouring conduit to whip by bending at the flexible portion thereof.

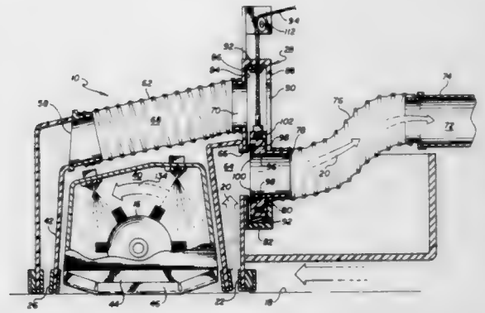
5,347,678
HEAD ASSEMBLY FOR A VACUUM CLEANING APPARATUS HAVING DUAL-INDIVIDUALLY FLOATING HEADS

William H. Williams, 4938 Golden Arrow, Palos Verdes, Calif. 90274, and Paul G. Jacobs, 9958 Amestoy Ave., Northridge, Calif. 91324

Filed Oct. 14, 1993, Ser. No. 136,546

Int. Cl.[5] A47L *5/30*

U.S. Cl. 15—331 **29 Claims**



1. A floating head assembly for a vacuum cleaning apparatus, comprising:

a stationary support within the vacuum cleaning apparatus;

dual, independently floating vacuum heads adjacent to the stationary support, each having an inlet opening at one end thereof adjacent to a surface to be cleaned, and an outlet opening spaced from the inlet opening, the vacuum heads defining a portion of respective vacuum pathways extending from the respective inlet opening to a dirt collection zone within the vacuum cleaning apparatus; and

means for attaching each vacuum head to the stationary support in a manner permitting relative movement therebetween.

5,347,679
STICK TYPE VACUUM CLEANER

Craig M. Saunders, Rocky River; Paul D. Stephens, Cleveland Heights, and Michael F. Wright, Cuyahoga Falls, all of Ohio, assignors to Royal Appliance Mfg. Co., Cleveland, Ohio

Filed Jan. 7, 1993, Ser. No. 1,458

Int. Cl.[5] A47L *9/02*

U.S. Cl. 15—416 **27 Claims**

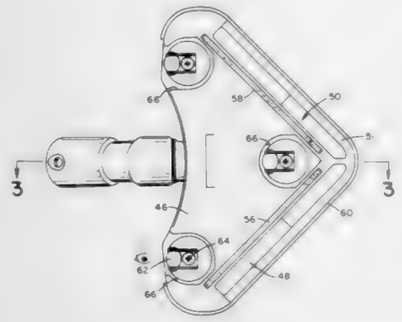
1. A nozzle for a vacuum cleaner comprising:

a housing having a bottom surface and a top surface said housing having a substantially triangular shape;

a V-shaped suction opening located on said bottom surface of said housing, said V-shaped suction opening comprising a pair of linear openings;

a pair of rear casters located on said bottom surface of said housing one adjacent a respective rear corner of said triangular housing; and,

means for pivotally mounting said pair of casters on said bottom surface of said housing whereby said casters are capable of rotating 360 degrees around a vertical axis passing through the nozzle so as to provide a swivelling action thereby enabling the nozzle to be used for cleaning



along one of said linear openings and at an acute angle to another of said linear openings.

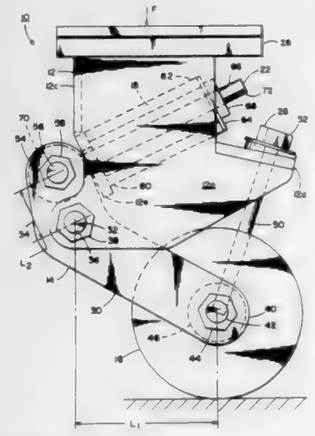
5,347,680
SPRING RETRACTING CASTER

Jeffrey A. Rippe, Cypress, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Feb. 8, 1993, Ser. No. 14,932

Int. Cl.[5] B60B *33/00*

U.S. Cl. 16—19 **17 Claims**



10. A retracting caster assembly comprising:

a frame;

a lever pivotally connected to a front end of the frame, the lever having a first relatively long section extending generally rearwardly and downwardly from a pivot point of the lever to the frame, and a second relatively short section extending generally upwardly and forwardly from the pivot point, the first section extending along substantially the entire length of the frame;

a spring connected to an end of the second section biasing the second section toward the frame;

a wheel connected to an end of the first section; and

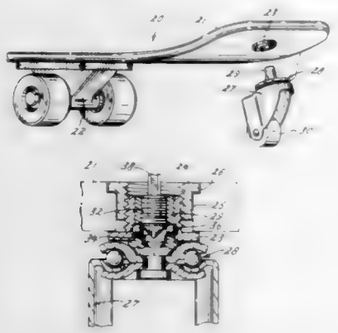
means connected to an axle of the wheel and mounted on the frame for manually moving the lever to overcome the bias of the spring.

5,347,681

RELEASABLE FIFTH WHEEL CASTER FOR SKATEBOARDS

James P. Wattron, 2000 Pine St., Apt. 10, Waukegan, Ill. 60087, and Walter E. Lisowski, Chicago, Ill., assignors to James P. Wattron, Waukegan, Ill.

Filed Feb. 3, 1993, Ser. No. 12,728
Int. Cl.[5] A63C *17/01;* **B60B** *33/00*
U.S. Cl. 16—30 **7 Claims**



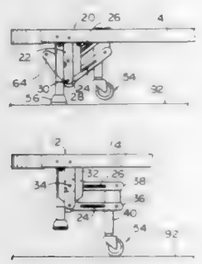
1. A releasable fifth wheel apparatus for use with a skateboard having an upwardly sloped tail portion and top and bottom surfaces, comprising:
caster means including a wheel, support yoke, swivel and mounting stem means;
inner and outer mutually engageable mounting shells adapted to be mounted together from the top and bottom surfaces in an opening provided on the skateboard tail portion;
groove means provided on the inner one of said shells;
opening means located on the stem means;
radially movable ball means positioned between the groove means and opening means;
said caster mounting stem means including manually operable means for moving said ball means radially to be engageable with said groove means so that operation of said manually operated means moves the ball means radially in the opening means to affix and release said caster with respect to said groove on the inner one of said shells.

5,347,682

TWO POSITION FLOOR LOCK AND CASTER ASSEMBLY

John L. Edgerton, Jr., Stevens Point, Wis., assignor to Joerns Healthcare Inc., Stevens Point, Wis.

Filed Feb. 2, 1993, Ser. No. 12,326
Int. Cl.[5] B60B *33/06*
U.S. Cl. 16—34 **15 Claims**



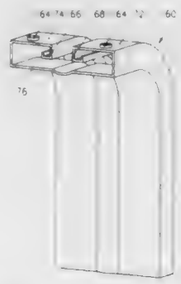
5. A floor lock and caster assembly comprising:
a bracket;
a socket;
connecting means between the bracket and socket for connecting the socket to said bracket for movement between extended and retracted positions;
a caster secured to one of said bracket and said socket;
a floor lock secured to the other of said bracket and said socket; and
actuator means connected to said connecting means for moving said socket between said positions, wherein said connecting means comprises a pair of links, each link having an end pivoted to said bracket and an end pivoted to said socket, wherein said bracket, said links and said socket define a four-bar linkage, and wherein said four-bar linkage is a parallelogram linkage.

5,347,683

CURTAIN ROD AND ATTACHMENT SYSTEM

Francis Halligan, 207 S. Dillwyn Rd., Newark, Del. 19711, and Daniel Walsh, 1456 Bronte Ct., Landsdale, Pa. 19446

Filed Aug. 11, 1992, Ser. No. 928,932
Int. Cl.[5] A47H *15/00*
U.S. Cl. 16—87.4 R **26 Claims**



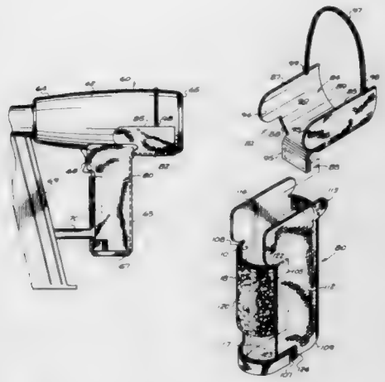
1. A curtain hanging device, said curtain hanging device comprising:
a rod, said rod having a substantially rectangular cross section having a first surface, a second surface, a third surface, a fourth surface and a fifth surface,
said first surface and said fifth surface being in the same plane and spaced opposite and parallel to the plane of said third surface, said first surface and said fifth surface having a lateral dimension less than that of said third surface and being spaced from each other, thereby forming a channel along said curtain hanging device;
at least one I shaped slide member, said at least one I shaped slide member having a first end, a second end and a web connecting said first end and said second end,
said first end having a pair of side surfaces, said first end being dimensioned to slide within and along said channel such that said pair of side surfaces remain in a constant and substantially parallel relationship to said second and forth surfaces;
said second end having a grooved surface and a pair of horizontal surfaces, said grooved surface having a concave groove extending substantially perpendicular to the direction of travel of said at least one I shaped slide member along said channel, each of said pair of horizontal surfaces abutting said grooved surface; and
an overlay, said overlay having an affixing means and a brace portion,
said affixing means being disposed to removably affix said overlay to said at least one I shaped slide member,
said brace portion having a mating surface and an attachment surface, said mating surface having a substantially convex portion dimensioned to mate with said concave groove of said second end of said at least one I shaped slide member, said attachment surface having one portion of a two portion self-adhering material affixed thereto.

5,347,684

GRIP COVER

Linda J. Jackson, 965 N. 58th St., Mesa, Ariz. 85205

Continuation-in-part of Ser. No. 959,436, Oct. 13, 1992, abandoned. This application Jun. 16, 1993, Ser. No. 78,447
Int. Cl.[5] A47J *45/00*
U.S. Cl. 16—111 R **5 Claims**



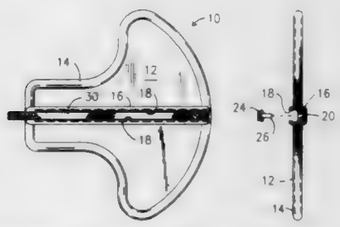
1. A grip cover for use in combination with an implement having a housing from which extends a handle with an end and for protecting the hand of a user, said grip cover comprising:
a. a first sheet of flexible material including
i. an inner surface receivable against and frictionally engaging the handle of said implement,
ii. an outer surface for receiving the hand of said user thereagainst,
iii. a first edge normally residing proximate the end of said handle, and
iv. a second edge spaced from said first edge;
b. securement means for constrictively affixing said sheet of said grip cover about said handle with a selective predetermined compressive force;
c. a second sheet of flexible material including
i. an inner surface receivable against said housing of said implement,
ii. an outer surface,
iii. a first edge normally spaced from a rearward end of said housing, and
iv. a second edge spaced from said first edge; and
d. securement means for constrictively affixing said second sheet of flexible material about said housing with a selective predetermined compressive force.

5,347,685

APPARATUS FOR INTERCONNECTING A HANDLE AND A LANYARD

Glenn H. Mackal, 2586 25th Ave. N., St. Petersburg, Fla. 33713

Filed Mar. 1, 1993, Ser. No. 24,578
Int. Cl.[5] F02N *3/02;* **A47B** *95/02*
U.S. Cl. 16—114 B **3 Claims**



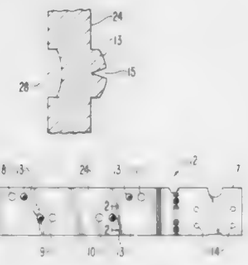
1. An apparatus for attaching a lanyard to a lanyard handle, comprising:
a lanyard handle having a flat main body;
an elongate channel of predetermined width formed in said flat main body along a longitudinal axis of symmetry of said handle;
a plurality of spike-receiving cavities formed along the extent of said channel, in the bottom thereof;
an elongate spike-carrying strip having a length and width substantially equal to the length and width of said elongate channel;
a plurality of spikes depending from said spike-carrying strip, said spikes being positioned along said strip in cooperative relation to said spike-receiving cavities;
said spikes impaling a lanyard disposed in overlying relation to said channel when said spikes are inserted into said spike-receiving cavities.

5,347,686

CONVERTIBLE HINGE PREPARATION ASSEMBLY AND METHOD

Larry Tyler, Jackson, Tenn.; Jack Burbidge, Downer's Grove, Ill.; Steve Gilliam, Lexington; Gary Hampton, Bruceton, both of Tenn.; Jim Olson, Milan, and Ron Simmons, Trezevant, both of Tenn., assignors to Ceco Door Products, Milan, Tenn.

Division of Ser. No. 929,430, Aug. 14, 1992, abandoned. This application Dec. 16, 1993, Ser. No. 167,130
Int. Cl.[5] E05D *7/04*
U.S. Cl. 16—247 **4 Claims**



1. A method of using a convertible hinge preparation assembly, comprising the steps of:
providing a hinge reinforcing member having a plurality of integrally formed pips thereon that are composed of material from said hinge reinforcing member, the pips being provided for positioning hinge leaves; and
removing at least a portion of one of the integrally formed pips from said hinge reinforcing member.

5,347,687

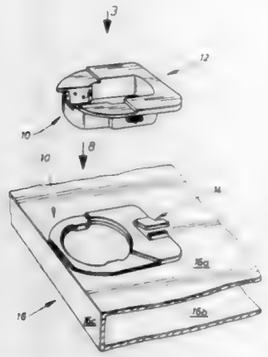
HINGE HOUSING

Gerhard W. Lautenschläger, Brensbach, Fed. Rep. of Germany, assignor to Mepla-Werke Lautenschlager GmbH & Co. KG, Reinheim, Fed. Rep. of Germany

Filed Dec. 3, 1992, Ser. No. 985,593
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1991, 4142988
Int. Cl.[5] E05D *5/00*
U.S. Cl. 16—382 **17 Claims**

1. A hinge housing for installation in an opening in a thin sheet wall of a door, the hinge housing comprising:
(a) a liner plate for installation along an underside thereof against an inside face of the wall, the liner plate having an opening which generally conforms to the opening in the wall, the liner plate comprising at least two first locking projections extending from the underside of the plate which can grip an outside face of the wall upon rotation of the liner plate, and
(b) a fastening flange for installation against the upper side of the liner plate, the fastening flange comprising a cup portion and a flange portion extending radially from a rim of

the cup portion, the outside perimeter of the cup portion generally conforming to the opening in the wall, such that when the fastening flange is installed against the liner plate, the flange portion covers the liner plate and the cup portion extends into the opening and through the wall, the fastening flange further comprising at least two second



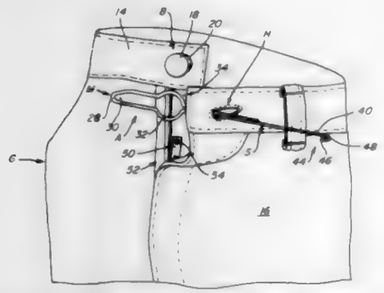
locking projections extending from the underside of the flange portion, the second locking projections corresponding in number and arrangement with the first locking projections, the second locking projections being engageable with the first locking projections upon rotation of the fastening flange to forcibly retain the first locking projections against the outside face of the wall.

5,347,688

CLOTHING FASTENER APPARATUS

James M. Ross, Rt. 3, Box 670, Brenham, Tex. 77833

Filed Sep. 21, 1993, Ser. No. 125,027
Int. Cl.[5] A47G *25/00*
U.S. Cl. 24—40 6 Claims



1. An apparatus for fastening a buttonhole and button having a unitary head portion and connecting stem on a waistband of a garment on the body of a wearer, comprising:

a nose member for fitting into the buttonhole of the garment, said nose member comprising:

a pair of leg members;

said leg members converging toward each other over their extent to inner end portions;

a nose portion connecting said inner end portions of said leg members;

said leg members and said nose portion being insertable into the buttonhole of the garment to allow connection with the button for fastening same;

said nose portion and said inner portions of said leg members of said nose member forming a notch for receiving and engaging the stem of the button;

a collar member rearward of said nose member for fitting over the button to connect with the button;

said collar member comprising a pair of diametrically spaced curved lip portions each extending outwardly at a first end and converging to a juncture with the other lip portion at an opposite end;

said curved lip portions being spaced from each other a distance defining a button passage to fit over the head portion of the button;

a neck portion connecting said collar member and said nose member and having spaced guide members for fitting between the button and the garment;

said leg members of said nose member each being formed extending upwardly from one of said spaced guide members of said neck portion;

said spaced guide members of said neck portion extending from said collar member at end portions opposite said nose member and urging the button stem between them for movement from said collar member to said leg members and notch in said nose member as the apparatus is retracted through the buttonhole in the garment;

said leg members of said neck portion contacting the garment around the buttonhole to depress the garment past the head portion of the buttonhole as the apparatus is rotated with respect to the button; and

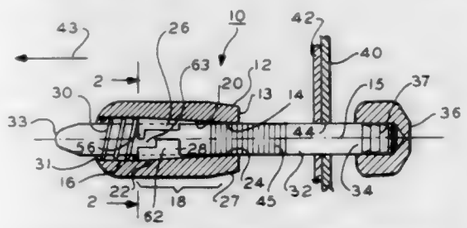
a pair of gripping shafts extending at a difficult length from said collar member for being gripped for initial retracting movement of the apparatus through the buttonhole to pull the button through the buttonhole, and subsequent rotation by an individual to rotate the apparatus with respect to the button and fasten the garment; and a hook is formed on one of said gripping shaft.

5,347,689

REUSABLE BOLT SEAL

George Georgopoulos, Pine Brooks, and Richard C. Dreisbach, North Arlington, both of N.J., assignors to E. J. Brooks Company, Newark, N.J.

Filed Jun. 8, 1993, Ser. No. 73,529
Int. Cl.[5] F16G *11/00*
U.S. Cl. 24—136 R 13 Claims



1. A device for locking a cylinder thereto comprising:

a housing having a longitudinally extending bore therethrough for receiving said cylinder, said bore having a tapered portion forming a frustro-conical surface of revolution having a distal end and a relatively wider proximal end;

a first element comprising a hollow frustro-conical segment axially extending between a first smaller diameter and a second larger diameter at respective opposing ends, said element having an external surface dimensioned to be received in a first direction and axially wedged in said bore tapered portion with said first end adjacent to and facing said distal bore end, said element having opposing shoulders axially extending between said first and second ends, a first projection upstanding a given axial extent from one of said shoulders at a given axial location and a recess in the other of said shoulders at said given axial location of at least said given axial extent;

a second element which is identical to the first element is dimensioned to form a segmented tapered frustro-conical arrangement with the projections and recesses in interengaged relation wherein the projection of one element is received in the recess of the other element, said arrangement having a hollow core for receiving said cylinder therethrough; and

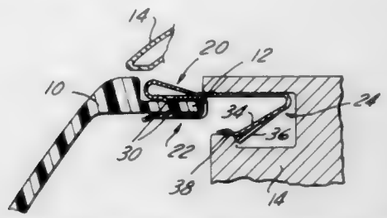
spring means in said bore for urging the elements in said first direction against said surface for causing the elements to grip and lock the cylinder in response to the cylinder being pulled through said bore in the first direction and release the cylinder in response to the cylinder being pulled in a direction opposite the first direction relative to said housing.

5,347,690

FASTENER APPARATUS FOR AN AUTOMOTIVE BODY PANEL COMPONENT

Dhafer Y. Mansoor, West Bloomfield, and Walter J. Kallenberg, Warren, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 15, 1992, Ser. No. 990,970
Int. Cl.[5] A44B *21/00*
U.S. Cl. 24—295 6 Claims



1. A one-piece fastener apparatus for fastening an automotive exterior body panel component having a tab to an automotive body having a aperture adapted to receive the tab therein, said apparatus comprising:

a first U-shaped section adapted to receive said tab therein, said first U-shaped section having a plurality of tab engaging barbs disposed therein for engaging said tab and preventing axial withdrawal of said tab therefrom;

a second U-shaped section axially aligned with said first U-shaped section and adapted to be inserted into said aperture, said second U-shaped section having a first leg portion and a second leg portion, said second leg portion being resiliently flexible relative to said first leg portion and inclined at a predetermined angle away from said first leg portion to define a ramped surface thereby;

said first U-shaped section being folded back into a contact relationship with said first leg portion of said second U-shaped section, said contact relationship being operative to increase the strength and rigidity of said apparatus;

a shoulder disposed on said second leg portion of said second U-shaped section, said shoulder being adapted to contact said body, said shoulder and said second leg portion being cooperative to prevent rattling of said apparatus in said aperture; and

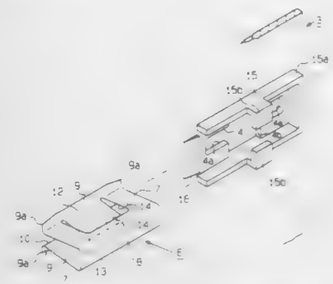
a positive locking tab member formed on said second leg portion of said second U-shaped section, said tab member being configured to resiliently compress upon insertion of said apparatus into said aperture and being operative to spring out and engage said body and provide a snap-fit retention to resist axial withdrawal of said apparatus from said aperture.

5,347,691

CLIP ASSEMBLY

Masahiko Terazoe, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jan. 7, 1993, Ser. No. 1,159
Claims priority, application Japan, Jan. 10, 1992, 4-000597[U]
Int. Cl.[5] F16B *5/00*
U.S. Cl. 24—295 19 Claims



1. A clip assembly for connecting a base member and a fitting member, the assembly comprising:

said base member including at least one projection;

said fitting member including at least one through hole for receiving said projection;

at least one clip for clamping to said projection, and for securing said fitting member to said base member; and

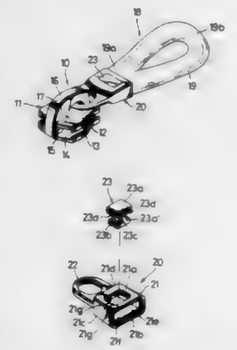
a holding member formed on said fitting member, said holding member including a pair of holding pieces formed along opposite sides of said through hole, for retaining said clip therebetween, as said projection is clamped by said clip.

5,347,692

SLIDER PULL TAB

Hirokazu Ebata, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 20, 1993, Ser. No. 169,053
Claims priority, application Japan, Dec. 22, 1992, 4-342784
Int. Cl.[5] A44B *19/00*
U.S. Cl. 24—429 7 Claims

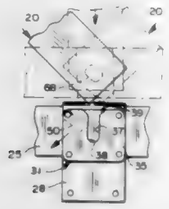


1. A slider pull tab for a slide fastener which comprises a pull tab body having a web portion formed by molding an elastic, flexible material; a connecting means made from a rigid material and having a chamber for receiving a molding material (M) to form an integral joint with one end of said pull tab body, said connecting means having a window communicating with said chamber; and an anchoring member adapted to extend through said window into said chamber and having a retainer means for anchoring said molding material (M).

5,347,693
QUICK-RELEASE CONNECTOR

Edward C. Otrusina, 8118 Nueport Drive South, Willow Springs, Ill. 60480

Continuation-in-part of Ser. No. 925,862, Aug. 7, 1992, Pat. No. 5,201,858. This application Jan. 4, 1993, Ser. No. 198
Int. Cl.[5] A45F *5/00*
U.S. Cl. 24—597 16 Claims

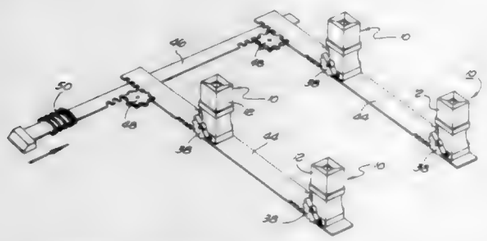


1. Apparatus for detachably interconnecting two objects including, in combination: a female structure adapted to be secured to one of the objects and defining a receptacle and an entrance leading into the receptacle, a male structure adapted to be secured to the other object and including a shank with an axis and an enlarged head on said shank adapted for movement into and out of said receptacle through said entrance and rotatable about said axis while in said receptacle, and a flexible resilient retaining member integral with said female structure and laterally offset to one side of the entrance in a first direction and normally disposed in a locking position projecting into said entrance in a second direction substantially normal to said first direction for interference with passage of said head therethrough, said retaining member being yieldably movable to a release position accommodating passage of said head through said entrance, said head being laterally truncated at one side of said axis so that while passing through said entrance in one rotational orientation thereof said head will clear said retaining member in its locking position and in all other rotational orientations it will engage said retaining member in its locking position, said retaining member being yieldably movable to its release position in response to engagement by said head during passage thereof into said receptacle and receptacle and being non-yieldably engageable by said head in said receptacle to prevent removal thereof from said receptacle in all but said one rotational orientation.

5,347,694
LOCKING MECHANISMS

Richard W. Perkins, 13800 Valerio St., Van Nuys, Calif. 91405, and Bradley I. Read, Los Angeles, Calif. 90065

Continuation of Ser. No. 724,877, Jul. 2, 1991, abandoned. This application Mar. 19, 1993, Ser. No. 33,842
Int. Cl.[5] A44B *11/25*
U.S. Cl. 24—632 47 Claims



1. A fastener, comprising:

at least two flexible spring members each having a first portion and a second portion extending at an angle from said first portion, said flexible spring members being constructed such that said second portions are biased into an open position, said second portions being constructed such that when said second portions are adjacent and in a closed position said second portions define an aperture;

a collar that contains said flexible spring members, said collar being adapted such that said flexible spring members and said collar can move relative to each other between a first position and a second position, wherein said second portions are in said open position when said collar and said flexible spring members are in said first position and said second portions are in said closed position when said collar and said flexible spring members are in said second position;

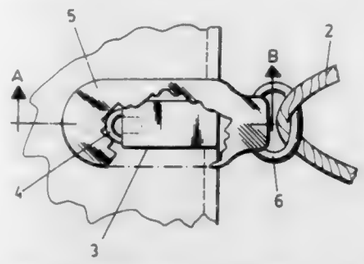
a gear assembly that induces movement between said collar and said flexible spring members such that said collar an said flexible spring members move between said first position and said second position; and,

an anchor adapted to be inserted through said aperture of said flexible spring members, said anchor having a locking portion that operatively engages said flexible spring members to prevent said anchor from being pulled through said aperture after said anchor has been inserted through said aperture, said anchor being releasable from said flexible spring members when said collar and said flexible spring members are in said first position and said second portions are in said open position.

5,347,695
DEVICE FOR ANCHORING SHOE LACES WITH A QUICK TIGHTENING AND SLACKENING

Andres Lopez Saiz, Madrid, Spain, assignor to Preview Investigacion Aplicada, S.L., Madrid, Spain

Filed Aug. 11, 1993, Ser. No. 105,854
Claims priority, application Spain, Aug. 13, 1992, 9202553
Int. Cl.[5] A43C *5/00*
U.S. Cl. 24—714.8 6 Claims



1. A device for independently connecting a plurality of eyelets together by lacing with a lace, the device comprising:

a plate having a first end and a second end;

a hook means attached to said plate and for hooking and unhooking said plate from one of the plurality of eyelets;

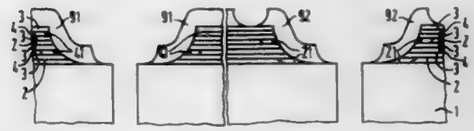
a flap connected to said plate, said flap having a first portion extending from a first side of said plate and a second portion extending from a second side of said plate, said first portion of said flap forming a handle means for using said hook means to hook and unhook said plate from the one of the plurality of eyelets;

a ring connected to said second portion of said flap, said ring defining an opening through which the lace can pass.

5,347,696
METHOD FOR MANUFACTURING A MULTI-LAYER CAPACITOR

Josef Willer, Riemerling; Hermann Wendt, Grasbrunn, and Hans Reisinger, Gruenwald, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 10, 1993, Ser. No. 164,719
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1993, P 4300808
Int. Cl.[5] H01G *4/10*
U.S. Cl. 29—25.42 17 Claims



1. A method for producing a multi-layer capacitor, comprising the steps of:

applying a layer structure of conductor layers alternating with dielectric layers on a substrate, said conductor layers alternating as a first conductive layer of a first material and a second conductive layer of a second material, first and said second materials being mutually selectively etchable relative to each other;

conducting a first etching to form a first opening completely through said layer structure using a first mask as an etching mask;

conducting a second etching of said second material in said second conductive layers by selectively removing said second material in each second layer relative to said first material thereby creating first under-etchings in each second layer in said layer structure neighboring said first opening;

conducting a third etching to form a second opening completely through in said layer structure using a second mask as a etching mask;

conducting a fourth etching of said first material in said first conductive layers by selectively removing said first material in each first layer relative to said second material thereby creating second under-etchings in each first layer in said layer structure neighboring said second opening;

forming a first contact in said first opening, said first contact contacting only said first material conductive layers due to said first under-etchings; and

forming a second contact in said second opening, said second contact contacting only said second material conductive layers due to said second under-etchings.

5,347,697
TOOL FOR ASSEMBLING A TIRE LIFT MECHANISM

Hulon D. Stallings, 8730 Sarah La., Grosse Isle, Mich. 48138

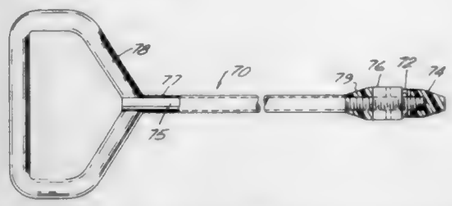
Division of Ser. No. 758,797, Sep. 12, 1991, Pat. No. 5,251,876. This application Jul. 20, 1993, Ser. No. 94,812
Int. Cl.[5] B25B *27/14*
U.S. Cl. 29—280 8 Claims

1. A tool for facilitating the assembly of a tire lift mechanism, comprising:

a generally cylindrical sleeve extending along a longitudinal axis, said sleeve having two ends;

a handle disposed at one of said ends of said sleeve;,

a lock assembly disposed at the other of said ends of said sleeve, said lock assembly including a forward end having curved portions on a first cross-section perpendicular to said longitudinal axis, a rearward end, and a lock portion received between said forward and said rearward end, said lock portion having a second cross-section perpendicular to said longitudinal axis, said second cross-section having a lesser diameter than said curved portions of said first cross-section; and

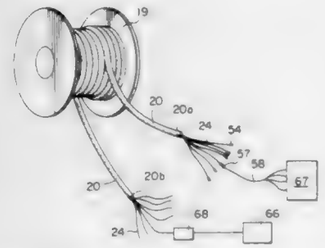


a threaded bolt extending through said sleeve and threadably receiving said rearward end, said lock portion and said forward end.

5,347,698
METHOD FOR ASSEMBLY AND INSPECTION OF OPTICAL FIBER CONNECTORS

Isamu Kinoshita; Kenji Suzuki; Nobuyuki Shibata, and Toshimitsu Nishiwaki, all of Ichihara, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1992, Ser. No. 912,333
Claims priority, application Japan, Jul. 15, 1991, 3-200077
Int. Cl.[5] B23Q *17/20*
U.S. Cl. 29—407 5 Claims



1. A method of assembly and inspection of optical fiber connectors which attaches connectors to at least one cord end of a plurality of optical fiber cords in which single or multiple optical fibers are accommodated and inspects connection characteristics due to connection of the connectors, said method of assembly and inspection of optical fiber connectors comprising:

linking steps of connecting the connectors to cord ends where the connectors are assembled, processing the other cord ends and inspecting the connection characteristics of the optical fibers due to connection of the connectors; and

continuously assembling and inspecting the connectors using the linking.

5,347,699
PARTIAL CUT SHEARING DEVICE

Thomas A. Ward, Holts Summit, Mo., assignor to ABB Power T&D Company Inc., Pa.

Filed Dec. 11, 1992, Ser. No. 989,224
Int. Cl.[5] B26D *3/00, 5/20;* B26F *3/00*
U.S. Cl. 29—413 4 Claims

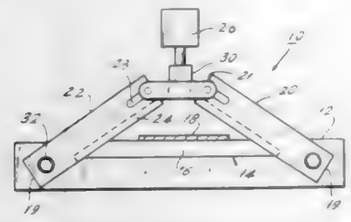
1. A method for partially shearing material into lengths, comprising the steps of:

driving a pair of movable blades, each having opposed ends, towards a lower blade fixed in a base with scissors-like action, one end of each of said movable blades being pivotally attached to said base and the other ends being free to rotate relative to said base, the free ends of said pair of movable blades being connected together by a link having first and second ends slidably disposed in respective slots in said pair of mobile blades, said link simulta-

neously rotating said pair of blades toward said base when said link is moved toward said base;

moving said link toward said base until opposite side edges of said material are simultaneously engaged by respective ones of said pairs of blades;

cutting said material inward from both sides by continuing to move said pair of movable blades toward said base for a limited distance to leave an inner uncut portion of material having a width which corresponds to said limited distance;



urging said movable blades against said lower blade so as to maintain minimal clearance therebetween when the material is being cut, one end of each of said movable blades being pivotally attached to said base by biasing means for urging the movable blades against said lower blade;

intermittently step-feeding the material into cutting position on said base between the movable blades and fixed blade to partially cut the sheet of material into a plurality of joined lengths; and

breaking the uncut portion to separate the lengths of material, after the material has been treated in a further treatment step.

5,347,700

METHOD OF ASSEMBLING VEHICLE PARTS

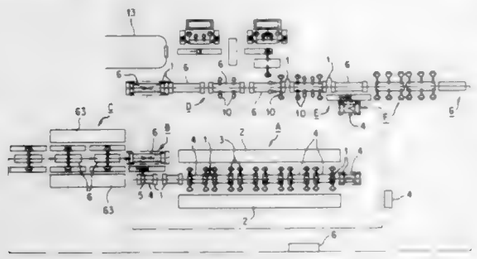
Osamu Tominaga, and Hiroshi Shimanaka, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 19, 1993, Ser. No. 34,846

Claims priority, application Japan, Mar. 19, 1992, 4-063711; Mar. 31, 1992, 4-018773[U]

Int. Cl.[5] B23P *21/00*

U.S. Cl. 29—430 **5 Claims**



1. An automobile parts assembling method in which different parts are assembled to fundamental works of different models of vehicles, said method comprising the steps of:

loading sets of parts for various vehicle models onto parts pallets placed on secondary self-running carriages lined up in a row, each said secondary self-running carriage being self-running along a parts loading station;

transferring each parts pallet from said secondary self-running carriage onto a primary self-running carriage with a fundamental work of a specific vehicle model placed thereon, for which said set of parts in said each parts pallet are assembled, at a pallet transfer station adjacent to said parts loading station;

assembling a specific said set of parts loaded on said parts pallet on said primary self-running carriage to a specific said fundamental work on said primary self-running carriage one after another while said primary self-running carriage is self-running along an assembling station;

returning said secondary self-running carriage with said parts pallet unloaded to a pallet unloading station adjacent to said assembling station;

unloading said unloaded parts pallet from said primary self-running carriage and reloading it onto said secondary self-running carriage at said pallet unloading station; and

returning said primary self-running carriage to said pallet transfer station after unloading said fundamental work with said set of parts assembled thereto.

5,347,701

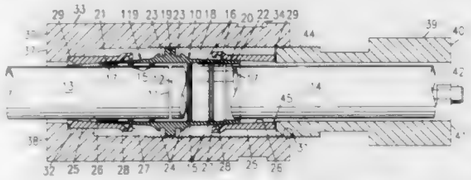
METHOD OF FORMING A TUBE UNION

Amir P. Hosseinian, Beverly Hills, and John L. Binford, Lake Elsinor, both of Calif., assignors to Sierracin Corporation, Sylmar, Calif.

Division of Ser. No. 479,648, Feb. 6, 1990, Pat. No. 5,088,771, which is a division of Ser. No. 798,537, Nov. 26, 1991, Pat. No. 5,219,186. This application Jun. 4, 1993, Sec. No. 72,491

Int. Cl.[5] B21D *39/04*

U.S. Cl. 29—508 **8 Claims**



6. A method of forming an assembly for coupling first and second elements comprising positioning a collar over the second element, the collar having a lip for engagement with a groove of the second element, locating first second housing members to collectively extend about the collar and second element, said housing members being complementarily threaded such that wrenching the housing members together effects a threading engagement, and wherein the first housing member includes separable components, the components together forming the first housing member, wrenching the first housing member together with the second housing member, and thereby causing at least one of the housing members to interengage the collar and urge the collar axially towards the second element and cause the lip of the collar to be urged into interlocking engagement with the groove in the second element with the groove in the second element, removing the housing members from the sleeve after assembly of the collar and the second element, and separating the components of the first housing member.

5,347,702

METHOD OF PRODUCING A TRANSMISSION BRAKE BAND

Anthony J. Grzesiak, Sauk Village, Ill., assignor to Borg-Warner Automotive Transmission & Engine Components Corporation, Sterling Heights, Mich.

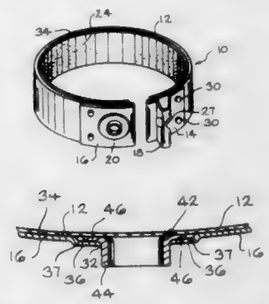
Division of Ser. No. 977,756, Nov. 19, 1992, Pat. No. 5,263,557, which is a continuation-in-part of Ser. No. 798,212, Nov. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 546,161, Jun. 28, 1990, Pat. No. 5,078,237. This application Jun. 18, 1993, Ser. No. 79,629

Int. Cl.[5] B23P *11/02, 15/18*

U.S. Cl. 29—511 **7 Claims**

1. A method of producing a transmission brake band (**1**) from an elongated strip of material, wherein the strip of material forms a friction lined strap member (**12**), having a first end (**14**) and an opposed second end (**16**), the strap member (**12**) defining a generally annular interior circumference (**34**) and having an apply bracket (**18**) located at the first end (**14**) of the strap member (**12**) and a reaction bracket (**20**) located at the opposed

second end (**16**) of the strap member (**12**), comprising the steps of: folding the first end (**14**) of the strip of material back 180° over onto the strap (**12**) to form an apply bracket (**18**); piercing the opposed end (**16**) of the strip of material to create a reaction opening (**32**) having a specified circumference; forming a prestressed dome portion (**36**) surrounding the reaction opening (**32**); positioning an insert member (**42**) having an upraised



body portion (**44**) with an outside circumference mating with the specified circumference of the reaction opening (**32**); folding the end back 180° over onto the strap (**12**) to capture the insert member (**42**) between the strap (**12**) and the folded over end (**16**); applying a friction lining (**24**) onto the interior circumference (**34**) of the strap member (**12**); and forming the strap member (**12**) into a curved band (**10**).

5,347,703

METHOD OF COUPLING A MODULE FRAMEWORK TO A SHIP STRUCTURE

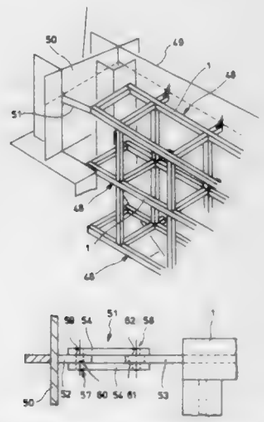
Yoshinori Imashimizu; Yoshiaki Suda; Shuichi Yamamoto, all of Kure; Toshiyuki Takada, Hiroshima; Kaoru Maeyama, Kure; Etsuro Hiramoto, Hiroshima; Toshihide Oki, Kure; Sadayuki Morita, Hyogo; Shoji Kawatani, Kure; Kunihito Morioka, Kure; Ryoichi Fujimitsu, Kure, and Kazuhisa Handa, Kure, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 745,246, Aug. 14, 1991, Pat. No. 5,226,583. This application Mar. 4, 1993, Ser. No. 26,012

Claims priority, application Japan, Aug. 21, 1990, 2-218160; Oct. 26, 1990, 2-112285; Oct. 26, 1990, 2-289678; Oct. 30, 1990, 2-292444; Oct. 31, 1990, 2-294127

Int. Cl.[5] B23P *11/00*

U.S. Cl. 29—525.1 **1 Claim**



1. A method of coupling a unitary module frame carrying parts of a complete outfitting to an inside portion of a ship structure, said frame having side portions, comprising locating said frame with its side portions spaced apart from said inside portion, fixing one each of a pair of elbow plates respectively to said inside portion of said ship structure and to said side portions of said frame, said elbow plates being spaced apart and substantially aligned with each other in a common plane and each having bolt holes therein, and bolting one each of a pair of doubling plates to opposed sides of said elbow plates through bolt holes in said doubling plates which said bolts holes align with each other in the respective doubling plates and with said bolt holes in said elbow plates to connect said ship structure with said frame, whereby the bolt holes in at least one of said elbow plates and the pair of doubling plates being defined by horizontally extending slots, and adjusting movement of said frame relative to said ship structure.

5,347,704

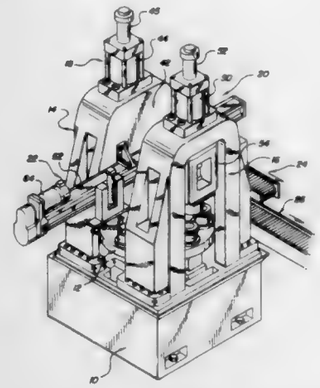
APPARATUS FOR PROGRESSIVE BROACHING

Craig Everlove, Troy, and Dale J. Garden, Warren, both of Mich., assignors to Anderson-Cook Incorporated, Fraser, Mich.

Filed Jan. 29, 1993, Ser. No. 11,234

Int. Cl.[5] B23Q *39/04, 7/04;* **B23D** *37/00*

U.S. Cl. 29—563 **22 Claims**



1. A progressive metal working apparatus comprising a plurality of circumferentially spaced work stations movable through an orbital path, first and second linear actuators defining a gap therebetween and positioned over spaced first and second portions of the orbital path for coaction with progressive metal working tools to transform an unfinished workpiece into a finished workpiece as the work stations are moved through the orbital path, and workpiece transfer means for delivering unfinished workpieces to the work stations and removing finished workpieces form the work stations, characterized in that:

the workpiece transfer means includes a transfer device defining a linear transfer path extending across one side of said orbital path and through the gap between said first and second linear actuators.

5,347,705

PLIERS FOR DRESSING CONDUCTOR ENDS

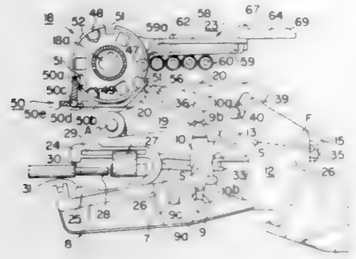
Hartmut Schmode, Blomberg; Ulrich Wiebe, Dorentrup; Siegfried Storm, Schlangen; Detlev Hetland, Detmold; Bernd David, Detmold; and Hans-Joachim Kornfeld, Vlotho, all of Fed. Rep. of Germany, assignors to Firma Weidmüller Interface GmbH & Co., Detmold, Fed. Rep. of Germany

Filed Feb. 25, 1993, Ser. No. 22,486

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1992, 4209529

Int. Cl.[5] H01R *43/04*

U.S. Cl. 29—566.4 **16 Claims**



1. Pliers for dressing conductor ends comprising two handles movable relative to one another, a plurality of dressing stations for dressing the conductor ends during dressing processes, and a drive device via which the dressing stations can be driven when the handles are operated, one of which dressing stations is constructed as a crimping drum which is displaceable axially and is supported for rotation and is couplable to the drive device is the axially displaced position over only one dressing process, and in this position can be locked via a flange projecting radially from the crimping drum, the flange extends over the overall circumference of the crimping drum, at least one recess is incorporated in the flange, and a locking tab is arranged in a fixed position on the body of the pliers, the locking tab is radially opposite the flange and engages, in the undisplaced axial position of the crimping drum, in the recess and up to a point close to the outer surface of the crimping drum, and, in the axially displaced and rotated position of the crimping drum, the locking tab comes to rest over its outer surface and is positioned behind the flange.

5,347,706

METHOD FOR MAKING PACKETS OF AMORPHOUS STEEL STRIP FOR TRANSFORMER CORE MANUFACTURE

Willi Klappert, and David R. Freeman, both of Hickory, N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 26, 1992, Ser. No. 904,428

Int. Cl.[5] H01F *41/02*

U.S. Cl. 29—609 **6 Claims**



1. A method of making packets of amorphous metal strip adapted to be wrapped about the arbor of a transformer-core-making machine, each packet comprising a plurality of groups of strips, each group comprising many thin layers of strip, each layer having two longitudinally-extending edges at opposite sides of the layer and two transversely-extending edges at opposite ends of the layer, the longitudinally-extending edges at each side of the layers of each group being substantially aligned and the transversely-extending edges at each end of the layers in each group being in near alignment, said method comprising:

(a) providing first and second composite strips, each comprising many thin layers of amorphous metal strip stacked in superposed relationship, the composite strips having leading ends that are located in initial positions that are axially spaced from each other at the start of a packet-making operation, the initial positions being at opposite ends of a stacking zone on a supporting surface where the packets are built up during a packet-making operation,

(b) advancing the leading end of said first multi-layer composite strip from its initial position in a first-strip forward direction,

(c) after the step of paragraph (b), cutting said first multi-layer composite strip at a first cutting location spaced rearwardly of the leading edge of said first composite strip, thereby detaching from said leading end of said first composite strip a first section of multi-layer amorphous metal strip and also creating a new leading end of said first composite strip just behind said first cutting location,

(d) axially advancing said first detached section in said first-strip forward direction to a position axially spaced from said first cutting location and within said stacking zone,

(e) advancing the leading end of said second multi-layer composite strip from its initial position in a second-strip forward direction that is opposite to said first-strip forward direction,

(f) after the step of paragraph (e), cutting said second multi-layer composite strip at a second cutting location spaced rearwardly of the leading edge of said second composite strip, thereby detaching from said leading end of said second composite strip a second section of multi-layer amorphous metal strip and also creating a new leading end of said second composite strip just behind said second cutting location,

(g) axially advancing said second detached section in a second-strip forward direction into a position within said stacking zone atop said first detached section,

(h) performing the steps of paragraphs (b) and (d) with first transport means that is moved from a home position in a first-strip forward direction during the steps of paragraphs (b) and (d) and thereafter is returned in an opposite direction to said home position in preparation for advancing the new leading end of said first composite strip in said first-strip forward direction, and

(i) performing the step of paragraph (e) concurrently with said return motion of said first transport means to said home position,

(j) cutting said composite strips to detach additional sections of multi-layer amorphous metal strip from said composite strips and stacking said additional sections upon said first and second sections in said stacking zone until a predetermined number of said sections have been stacked upon said first and second sections to form a packet, and in which the method is further characterized by:

(k) each group being formed from one or more of said sections with the layers of each group stacked in near alignment, and

(l) the leading edges of the stacked sections being located when stacked in positions that locate the adjacent transversely-extending edges of adjacent groups in staggered relationship with respect to each other.

5,347,707

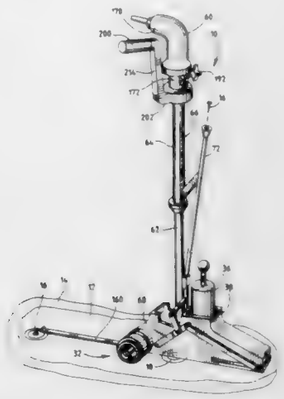
ROOFING WASHER-DISPENSING AND FASTENER-DRIVING MACHINE

John R. Beach, Elmhurst, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Apr. 21, 1993, Ser. No. 51,056

Int. Cl.[5] B23Q *7/10*

U.S. Cl. 29—809 **6 Claims**



1. In a washer-dispensing and fastener-driving machine for dispensing stackable roofing washers individually from a stack of similar washers and for driving fasteners through the washers for fastening at least one layer of roofing material to an underlayment, each washer having two straight sides and two opposite ends, the combination comprising:

(a) a base;

(b) means including a shuttle mounted movably to the base for displacing a lowermost washer from the stack and for moving the lowermost washer lengthwise to a separated position;

(c) means including a screw gun for driving a fastener rotatably and downwardly through the displaced washer in the separated position; and

(d) means including an element adjustable between an inoperative position relative to the displaced washer and an operative position relative thereto and engageable with the displaced washer when adjusted to the operative position for preventing the displaced washer from rotating when a fastener is being driven through the displaced washer, said element providing clearance for such a washer being displaced by the shuttle when adjusted to the inoperative position.

5,347,708

METHOD FOR FABRICATION OF IMPLANTABLE ELECTRODE

Thomas C. Bischoff, Minneapolis; Pedro A. Meregotte, Coon Rapids, and David P. Morell, Cambridge, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 21, 1993, Ser. No. 125,093

Int. Cl.[5] H01R *43/00*

U.S. Cl. 29—825 **8 Claims**



1. A method of fabricating a medical electrical electrode comprising the steps of:

sliding an elongated conductive coil over a length of plastic tubing;

inserting an expandable mandrel within said plastic tubing and expanding said mandrel to expand said tubing against said coil and to compress said tubing between said mandrel and said coil; and

heating the assembly of said mandrel, said tubing and said coil to cause flow of said plastic tubing between individual turns of said coil.

5,347,709

METHOD OF MAKING LEAD FRAME

Yoshihisa Maejima; Seiya Nishimura; Masayoshi Takabayashi, and Tokuyoshi Ohta, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Continuation-in-part of Ser. No. 872,014, Apr. 22, 1992, abandoned. This application Jun. 8, 1993, Ser. No. 74,044

Int. Cl.[5] H01R *43/00*

U.S. Cl. 29—827 **8 Claims**



1. A method of making a lead frame comprising the steps of:

mounting an IC chip on a semiconductor-element-mounting portion of the lead frame having a plurality of leads extending therefrom and a plurality of auxiliary leads associated with said plurality of leads;

effecting a wire-bonding process on said lead frame;

sealing said lead frame with a thermosetting plastic;

effecting a resin-cutting process on said lead frame so as to partially remove a resin plastic from said lead frame;

effecting a dambar-cutting process so as to cut down a dambar which is provided and connected among said leads;

effecting a bending process on said plurality of leads;

effecting a plating process using a predetermined material on said plurality of leads so as to form a plated layer on each of said plurality of leads after effecting said bending process; and

effecting a trimming process on said leads.

5,347,710

PARALLEL PROCESSOR AND METHOD OF FABRICATION

Thomas P. Gall, Endwell; Howard L. Heck, Endicott, and John S. Kresge, Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 27, 1993, Ser. No. 98,485

Int. Cl.[5] H05K *3/36*

U.S. Cl. 29—830 **14 Claims**

1. A method of fabricating a parallel processor structure having a plurality of processor integrated circuit chips, a plurality of memory integrated circuit chips, with signal interconnection circuitization means therebetween, wherein

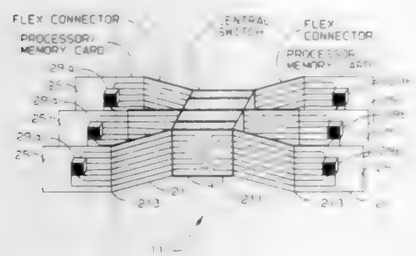
1. the processor integrated circuit chips and the memory integrated circuited chips are mounted on a plurality of printed circuit cards and boards with a first processor integrated circuit printed circuit board having a first processor integrated circuit chip mounted thereon, a second processor integrated circuit printed circuit board having a second processor integrated circuit chip mounted thereon, a first memory integrated circuit printed circuit board having a first memory integrated circuit chip mounted

thereon, and a second memory integrated circuit printed circuit board having a second memory integrated circuit chip mounted thereon;

b. said printed circuit cards and boards are mounted on a plurality of circuitized flexible strips, said circuitized flexible strips having a signal interconnection circuitization portion with X-Y planar circuitization and vias and through holes for Z-axis circuitization, a terminal portion having means for joining a printed circuit board thereto, and a flexible, circuitized portion between said signal interconnection circuitization portion and said terminal portion, and

c. said circuitized flexible strips being joined at a signal interconnection circuitization body portion having X-axis, Y-axis, and Z-axis signal interconnection between processor integrated circuit chips and memory integrated circuit chips and comprising a laminate of said circuitized flexible strips at their signal interconnection circuitization portions, whereby said circuitized flexible strips are laminated in physical and electrical connection at their signal interconnection circuitization portions and spaced apart at their terminal portions;

said process comprising



a. forming first and second laminates of copper, a dielectric, and a low coefficient of thermal expansion metal;

b. photolithographically forming patterns in said copper and said low coefficient of thermal expansion metal layers;

c. bonding the first and second laminates together;

d. thereafter forming vias and through holes in said bonded first and second laminates, and circuitizing said vias and through holes.

e. depositing joining metallurgy on said bonded laminates; and

f. aligning at least a pair of bonded laminates with a layer of a chemically compatible polymeric dielectric with a relatively low first thermal transition therebetween in areas between a pair of laminates intended to be bonded and a layer of a chemically incompatible polymeric dielectric with a relatively high first thermal transition therebetween in areas between the laminates not intended to be bonded, and thermally bonding the laminates above the eutectic temperature of the joining metallurgy and the first thermal transition temperature of the chemically compatible dielectric and below the homogenized alloy melting temperature of the joining metallurgy and the first thermal transition temperature of the joining metallurgy.

5,347,711

TERMINATION OF MULTI-CONDUCTOR ELECTRICAL CABLES

Paul A. Wheatcraft, Tualatin; Laurence A. Daane, Sherwood, and Hans A. Blom, Portland, all of Oreg., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 15, 1992, Ser. No. 914,858

Int. Cl.[5] H01R *43/02, 9/16;* **B23K** *20/12*

U.S. Cl. 29—843 **11 Claims**

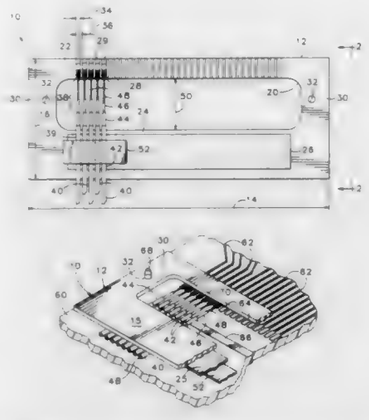
1. A method of preparing a plurality of electrical conductors of an electrical cable including multiple separately insulated mechanically separate electrical conductors for connection of said electrical conductors to a part of an electrical circuit, the method comprising:

(a) selecting a plurality of mechanically separate, separately insulated, electrical conductors from multi-conductor electrical cable;

(b) stripping an end portion of each of said plurality of electrical conductors;

(c) providing a transfer frame having abase, an array of electrically separate attachment positions located proximate one another atop said base, and a rear support portion separated from said attachment positions by an opening defined through said base;

(d) arranging said plurality of electrical conductors of said multi-conductor cable side-by-side, in a predetermined order;



(e) mechanically attaching said end portion of each of said plurality of electrical conductors to a respective one of said attachment positions located on said transfer frame, with a predetermined spacing between said electrical conductors, while maintaining said predetermined order;

(f) mechanically attaching a respective body portion of each of said plurality of electrical conductors to said rear support portion of said transfer frame in said predetermined order and at said predetermined spacing, thus supporting said plurality of electrical conductors with a part of each said end portion spanning said opening defined through said base of said transfer frame; and

(g) thereafter retaining said plurality of electrical conductors thusly attached to said transfer frame during subsequent handling of said multi-conductor cable prior to connection of all of said plurality of electrical conductors to a part of an electrical circuit.

5,347,712

METHOD FOR MANUFACTURING A MULTILAYER WIRING BOARD

Nobuyuki Yasuda; Toshio Tamura; Hiroshi Toi, and Akio Mishima, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 704,392, May 23, 1991, abandoned. This application Jun. 14, 1993, Ser. No. 76,191

Claims priority, application Japan, May 25, 1990, 2-135665

Int. Cl.[5] H01K *3/10*

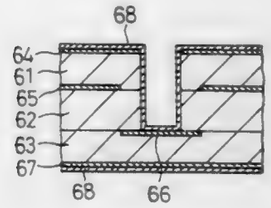
U.S. Cl. 29—852 **5 Claims**

1. A method for manufacturing a multilayer wiring board comprising the steps of;

a) forming a first conductor layer on a second major surface of an insulating substrate,

b) forming a patterned mask which is resistant to the subsequent etching on a first major surface of said insulating substrate,

c) blasting a fine abrasive powder from the side of said first major surface to selectively remove said insulating substrate until said first conductor layer is exposed at a bottom of a hole portion thus formed, and



d) forming a second conductor layer to cover side wall surface of said hole portion and said first conductor exposed at said bottom of said hole portion.

5,347,713

METHOD FOR MANUFACTURING INK JET HEAD

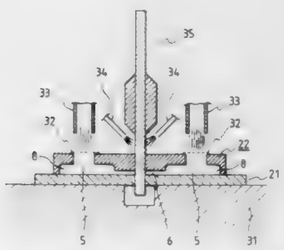
Makoto Shibata; Yukio Kawajiri, both of Yokohama; Shuji Koyama, Kawasaki; Manabu Sueoka, Yokohama; Toshio Suzuki, Inagi; Hisashi Yamamoto, Machida, and Takumi Suzuki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 964,298

Claims priority, application Japan, Oct. 22, 1991, 3-274207

Int. Cl.[5] B23P *15/00*

U.S. Cl. 29—890.1 **34 Claims**



1. A method for manufacturing an ink jet head including a process for forming a plurality of discharge openings by cutting a plate-like construction comprising a substrate on which a plurality of energy generating elements for generating energy for discharging an ink are formed, an ink path for discharging the ink corresponding to said energy generating elements on said substrate, a liquid chamber communicating with said ink path, and a member having an ink supply port for supplying the ink into said liquid chamber, said cutting taking place at a position where said discharge openings for discharging the ink are to be formed,

characterized by the steps of filling said ink path and said liquid chamber with a liquid and maintaining said liquid at a pressure which is higher than an atmospheric pressure at least during said cutting step for forming said discharge openings.

5,347,714

MOVABLE BLADE SHAVING CARTRIDGE

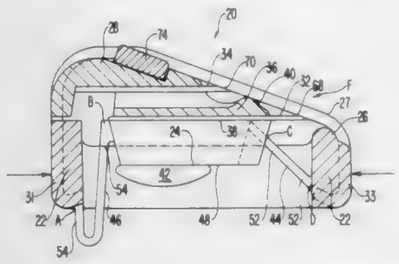
Frank H. Prochaska, Waynesboro, Va., assignor to American Safety Razor Company, Verona, Va.

Filed Feb. 18, 1993, Ser. No. 19,290

Int. Cl.[5] B26B *19/44, 21/00, 21/16*

U.S. Cl. 30—41.5 **42 Claims**

1. A razor head comprising a body portion defining a guard and a cap, and a blade assembly having a blade disposed therein, said blade assembly mounted by a first and second mounting member to said body portion in relation to said guard and cap in a manner to comprise a four-bar linkage, wherein said body portion defines a stationary member of said four-bar linkage, said first and second mounting members each having one end integrally connected to said body portion in a manner to define rotational members of said four-bar linkage about a separate axis of rotation for each of said first and second mounting members; and said blade assembly integrally connected to the other end of said first and second mounting members thereto to define a movable four-bar member responsive to rotational movement of said first and second mounting members so that shaving forces acting upon said blade assembly cause said blade assembly to move relative to said body portion.



5,347,715

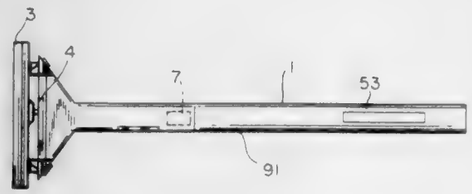
BLADE SHAVE COUNTER

Donald H. Friedland, 17 E. 31st St., New York, N.Y. 10016

Filed Sep. 14, 1993, Ser. No. 121,205

Int. Cl.[5] B26B *19/38*

U.S. Cl. 30—41.7 **18 Claims**



1. A shaving instrument comprising:

a shaving blade;

a shaving handle connected to said shaving blade;

an electronic counting means mounted within said shaving instrument for counting the number of times said blade has been utilized for shaving; and

means mounted within said shaving instrument for automatically detecting an activity performed after shaving is initiated by a user, and for automatically incrementing said counting means when said means for detecting indicates that said shaving instrument has been used to shave.

5,347,716

SAFETY RAZORS

Alan Crook, Pamber Heath Basingstoke, United Kingdom, assignor to The Gillette Company, Boston, Mass.

Filed May 27, 1993, Ser. No. 30,078

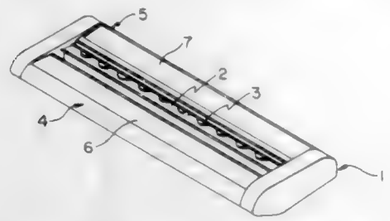
Claims priority, application United Kingdom, Oct. 11, 1990, 9022128

Int. Cl.[5] B26B *21/14*

U.S. Cl. 30—77 **4 Claims**

1. A safety razor having one or more blades and skin engaging cap and guard surfaces, in which at least part of the skin engaging surface is provided with an adherent coating com-

prising substantially spherical elastomeric particles in a polymer matrix, the size and concentration of such particles being such that the coated surface has a surface roughness of 4 to 10



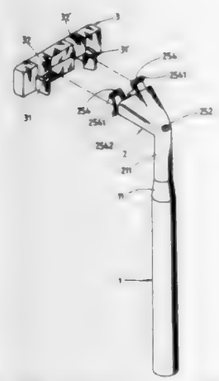
μm centre-line-average, with the spacing of the major peaks at 20 to 30 times the surface roughness and the spacing of the subsidiary peaks at 6 to 10 times the surface roughness.

5,347,717

CHUCK ASSEMBLY FOR A DISPOSABLE RAZOR

Tse-Jen Ts'ai, No. 178, Lane 415, Kuang Fu South Road, Taipei, Taiwan

Filed Nov. 5, 1993, Ser. No. 147,313
Int. Cl.[5] B26B *21/16*
U.S. Cl. 30—89 5 Claims



1. A chuck assembly fastened to a handle to hold a blade cartridge, comprising:

a housing formed of a bottom shell and a top shell covered on said bottom shell, said bottom shell comprising two mounting holes; said top shell comprising a button hole on the rear end, a front opening on a front wall thereof, a substantially U-shaped frame on the inside defining a first chamber inside said U-shaped frame and a second chamber outside said U-shaped frame, two posts disposed within said second chamber and respectively fitted into said mounting holes on said bottom shell;

a chucking device retained inside said housing to hold a blade cartridge outside said housing, said chucking device comprising a press rod extended out of said button hole, a U-shaped rod connected to said press rod and disposed inside said second chamber around said U-shaped frame, two symmetrical pawls disposed on two opposite ends of said U-shaped rod and extended out of said housing through said front opening, two bevel blocks projected from said U-shaped rod on two opposite sides and respectively stopped at said front wall of said top shell inside said housing;

first spring means fastened inside said housing to retain said chucking device in position; and

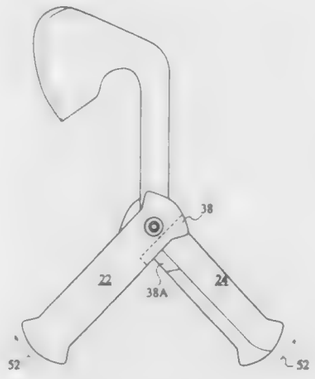
wherein when said press rod is pressed, said bevel blocks are moved forwards and rubbed against said front wall, causing said pawls moved toward each other for loading said blade cartridge on said pawls permitting said blade cartridge to be retained to said pawls after said press rod is released from the pressure and said chucking device is moved back to its former position by said first spring means.

5,347,718

FOLDING HANDLE HATCHET

Paul J. Turner, P.O. Box 143, Afton, Wyo. 83110

Filed Jun. 15, 1993, Ser. No. 78,452
Int. Cl.[5] B26B *23/00*
U.S. Cl. 30—122 13 Claims



1. A folding handle hatchet having a hatchet position and an ulu position, said hatchet comprising:

a. a pair of rotatable handle portions further comprising an obverse handle and a reverse handle pivotally attached by a pivot member; and

b. a hatchet body connected by the pivot member to the obverse and reverse handles at a pivot end of the hatchet body, said body further comprising a blade and an arcuate head section, said arcuate head connecting the blade to a shank portion;

wherein the shank portion is affixed between the handles in the hatchet position by an obverse shank retainer handle portion bearing against a trailing shank edge and a reverse shank retainer handle portion bearing against a leading shank edge and, wherein rotation of the handles about the pivot member to the ulu position affixes the shank within the handles by a reverse ulu shank retainer handle portion bearing against the trailing shank edge and the obverse shank retainer handle portion bears against the leading shank edge.

5,347,719

DEVICE FOR LIFTING AND CUTTING GLUED-DOWN CARPET

Gary Scharf, 9825 Carroll Ctr. Rd., #200, San Diego, Calif. 92126

Filed Sep. 13, 1993, Ser. No. 119,375
Int. Cl.[5] B26B *3/08*
U.S. Cl. 30—294 7 Claims

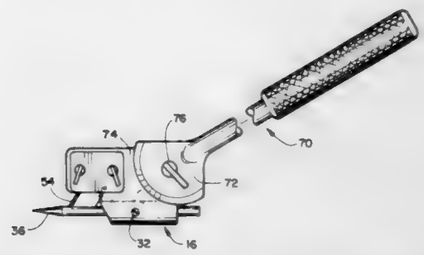
1. A device for lifting and cutting glued-down carpet comprising:

an elongated handle having a predetermined length L1, said handle having a longitudinally extending main body portion having a top end and a bottom end;

primary mounting means are secured to said handle adjacent its bottom end for holding a blade and it has a blade mounting plate having a front end, a rear end, a top edge, a bottom edge and a side wall; it also has a blade cover plate and means for detachably securing it to said blade mounting plate with said blade sandwiched therebetween;

secondary mounting means are secured to said handle adjacent its bottom end for holding a carpet lifting rod;

an elongated carpet lifting rod having a longitudinally extending axis, said carpet lifting rod having a shank portion



and pointed front end portion, said carpet lifting rod is secured to said secondary mounting means; and

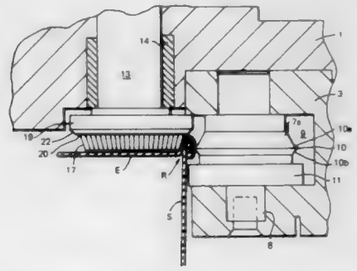
a blade having a front cutting edge, a bottom edge and a rear edge, said blade being secured to said primary mounting means with its cutting edge oriented forwardly.

5,347,720

CAN OPENER

Joseph A. T. Pereira, 388 Woodham Lane, Weybridge, Surrey, KT15 3NT, Great Britain

Filed Feb. 3, 1993, Ser. No. 14,193
Claims priority, application United Kingdom, Aug. 3, 1990, 9017098; May 31, 1991, 9111720
Int. Cl.[5] B67B *7/46, 7/54, 7/68*
U.S. Cl. 30—422 14 Claims



1. A can opener adapted to separate an end wall from a can body by cutting from the outside into the upstanding rim formed at the end of the can, the rim comprising over-lapped portions of the perimeter of the end wall and the side wall of the can, the can opener comprising two body portions, arranged for relative pivotal movement about an axis, one portion carrying a rotary cutting wheel and the other portion carrying a rotary traction wheel, the opener being arranged, in use, to receive the rim of the can between the two wheels and to orbit the can as the traction wheel is rotated while the cutting wheel makes a peripheral cut into the outside the rim, wherein the traction wheel is shaped to distort the rim while it is cut by the cutting wheel to cause the rim to move outwardly thereby to loosen the overlapping engagement between the end wall and the side wall of the can;

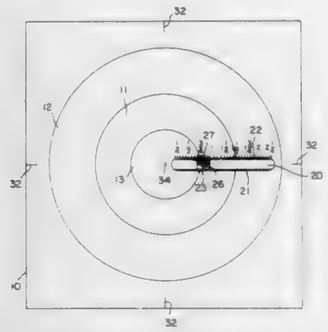
whereby the traction wheel includes a portion having a frusto-conical surface adapted to engage, in use, the inner side wall of the rim, the surface being inclined at an angle with respect to the vertical axis of the can.

5,347,721

METHOD AND DEVICE FOR DRAWING CURVED LINES

William M. Asterino, Jr., 440 Peppermill Ct., Sewell, N.J. 08080

Filed Mar. 30, 1993, Ser. No. 38,655
Int. Cl.[5] B43L *9/00*
U.S. Cl. 33—27.01 18 Claims



1. A drafting tool for drawing a curved line comprising:

a plurality of interlocked, independently rotatable concentric rings, said rings being rotatable about a center point, each of said rings having a radially extending opening, the radially extending opening in each of said rings being alignable to define a radially disposed track; and,

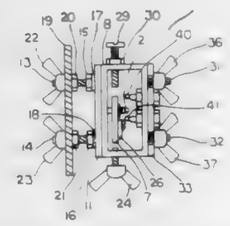
carriage means structured to carry a marking element, said carriage means being slidable on said track to a desired radial position along said track and occupying at least one of said openings, said carriage means being rotatable about said center point, whereby said marking element can draw a curved line having a desired radius.

5,347,722

ARCHERY BOWSIGHT

Stephen J. Sefsick, 6432 Angus Valley Dr., Wesley Chapel, Fla. 33544

Filed Nov. 20, 1992, Ser. No. 979,253
Int. Cl.[5] F41G *1/467*
U.S. Cl. 33—265 4 Claims



1. An archery bowsight having a series of sighting adjustments, and a pendulum controlled pin sight for consistent hitting of a target at distances from 0 to 70 yards, either from a tree stand, or from a ground shot, comprising:

a basic mounting framework having left and right spaced apart sides, a top and a bottom, to be affixed to a bow, and said mounting framework having mounting means for:

an adjusting plate, a pendulum, a moveable pin sight, and a fixed pin sight array,

said adjusting plate being affixed onto one side of said mounting framework and said adjusting plate having an elongated adjustable mounting slot, said adjustable mounting slot providing vertical upwards, or downwards adjustment of said plate on said mounting framework,

and said adjusting plate also having a smaller slot, said

smaller slot providing adjustable biasing means for partially controlling the action of said moveable pin sight,

said moveable pin sight having a central axle portion, and two radial extending arms extending a distance from said central axle portion, in diametrically opposed directions, defining a forward radial arm and a rearward radial arm, said forward radial arm having a 90 degree bend in its extreme end, and said 90 degree bend fitting slideingly into said smaller slot of said adjusting plate, said smaller slot thereby providing said adjustable biasing means to control the amount of movement of said forward radial arm of said moveable pin sight, said rearward radial arm having an amount of fluorescent, or highly visible material, affixed onto its extreme outer end,

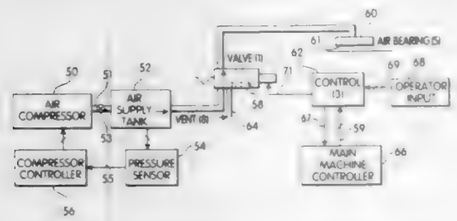
a pendulum, said pendulum being rotatably affixed onto the same side of said mounting framework as said adjusting plate, and inside the peripheral of said mounting framework, said pendulum having an adjustable counterweight attached onto its lateral surface, and said adjustable counterweight providing biasing means for biasing the swing of said pendulum from one side of its arc to the other side of its arc, said axle portion of said moveable pin sight being rotatably fitted through an accepting hole in said pendulum, whereby said pendulum provides turntable mounting means for said moveable pin sight said axle of said moveable pin sight thereby cooperating with the forward radial arm of said moveable pin sight, thereby providing more or less vertical upwardly, and vertical downwardly movement to said rearward radial arm of said moveable pin sight, and said movement of said rearward radial arm, thereby providing means for an archer to easily, and accurately follow, or, pin point a target.

5,347,723

AIR BEARING CONTROL SYSTEM

Gary W. Russell, East Greenwich, R.I., assignor to Brown & Sharpe Mfg. Co., Kingston, R.I.

Filed Dec. 10, 1992, Ser. No. 988,467
Int. Cl.[5] G01B *21/04*
U.S. Cl. 33—503 **21 Claims**



1. Apparatus for controlling air flow to an air bearing for providing support between first and second parts of a machine which are movable relative to each other, said apparatus comprising;

an air supply,

means coupling air from said air supply to the air bearing,

a valve within said coupling means, said valve being selectively positionable in a first position in which air from said air supply is coupled to the air bearing and in a second position in which said coupling means is closed in which air from said air supply is not coupled to the air bearing, and

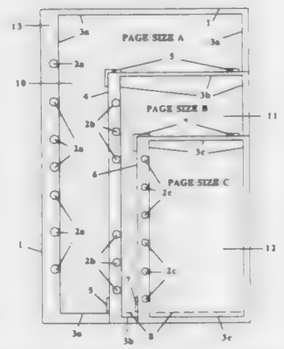
valve control means for switching said valve from the open position to the closed position when the machine has been inactive for a specified time interval.

5,347,724

CROPPING TEMPLATE

Daniel C. Hankins, 1207 Forest Wood Cove West, Collierville, Tenn. 38017

Filed Aug. 2, 1993, Ser. No. 100,674
Int. Cl.[5] B43L *13/00*
U.S. Cl. 33—563 **2 Claims**



1. A template for aligning with and marking materials to be cropped comprising

(1) a rectangular panel with a thin depth, relative to its length and width dimensions, wherein said length and width are defined by straight edges each of which corresponds to the respective dimensions of the desired cropped material size,

(2) a first plurality of circular holes defined therein and having their respective centers in alignment along an imaginary line parallel and adjacent to one side edge of the panel's length for marking holes to be punched out,

(3) lines parallel to the straight edges defining the length and width of the rectangular panel and located at a respective distance from each said edge to define margins there between, one of which margins incorporates said aligned plurality of circular holes and wherein said lines are indicated by inscription or by printing on said template,

(4) a multiple of alignments of said pluralities of circular holes at varying lengths (in addition to said first plurality) and a multiple of lines parallel to the straight edges, both said multiples corresponding to and defining varying dimensions of multiple desired cropped material sizes, wherein said multiple of lines parallel to the straight edges include lines defining the length dimension which incorporate each said multiple alignment of said pluralities of circular holes to form multiple borders, and

(5) multiple straight narrow openings defining slots located at the respective border outer edges and multiple narrow openings defining 90° angle slots located at respective border corners defined by intersections of said parallel lines located in said template.

5,347,725

METHOD AND APPARATUS FOR VACUUM DRYING COLLOIDAL SUBSTANCES

Takuya Sato, Suita, Japan, assignor to Sato Iron Works Co., Ltd., Osaka, Japan

Filed May 24, 1993, Ser. No. 67,439
Claims priority, application Japan, Jun. 9, 1992, 4-147858
Int. Cl.[5] F26B *7/00*
U.S. Cl. 34—386 **12 Claims**

1. A method of vacuum drying a colloidal substance comprising the steps of:

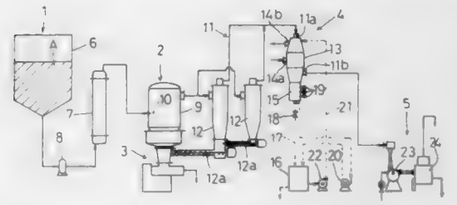
dehydrating said colloidal substance by subjecting the substance stored in a raw material tank of a raw material supplying device to a heat exchange with heating vapor in a heat exchanger disposed upstream a vacuum drying tower, and then injecting the substance into a vacuum chamber;

kneading and extracting a substance dehydrated in said vacuum chamber;

cooling a gas withdrawn from said vacuum chamber through an indirect heat exchange with a refrigerant by utilizing a surface condenser;

discharging a gas sucked and exhausted from said vacuum chamber into the atmosphere; and

carrying out said extracting step and said cooling step in parallel after said dehydrating step.

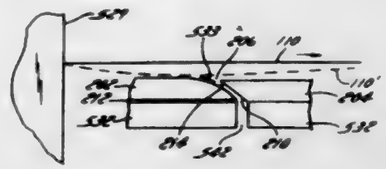


5,347,726

METHOD FOR REDUCING CHILL ROLL CONDENSATION

H. Richard Quadracci, New York, N.Y.; Karl R. Voss, Wauwatosa, and Jeffrey W. Sainio, Hartland, both of Wis., assignors to Quad/Tech Inc., Sussex, Wis.

Division of Ser. No. 759,392, Sep. 13, 1991, Pat. No. 5,184,555, which is a continuation-in-part of Ser. No. 503,711, Apr. 3, 1990, Pat. No. 5,056,431, which is a continuation-in-part of Ser. No. 340,498, Apr. 19, 1989, Pat. No. 4,913,049. This application Dec. 29, 1992, Ser. No. 997,888
Int. Cl.[5] F26B *3/00*
U.S. Cl. 34—465 **2 Claims**



1. A method for dispersing contaminants in a web processing system, said web processing system including a web processing structure, said web processing structure being in an environment having an ambient first pressure, said web approaching said web processing structure in a processing direction at a first velocity, said web being substantially planar and presenting a first surface and a second surface bounded by two edges, said first surface engaging said web processing structure before said second surface as said web moves in said processing direction, said contaminants being proximate to at least said first surface, the method comprising the steps of:

disposing a fluid exhaust means proximate said first surface at a locus within said web processing system before said first surface engages said processing structure;

connecting said fluid exhaust means to a source of fluid, said source of fluid containing a fluid at a second pressure, said second pressure being greater than said first pressure;

exhausting said fluid from said source through said fluid exhaust means to establish a stream of said fluid having a second velocity, said second velocity being greater than said first velocity; and

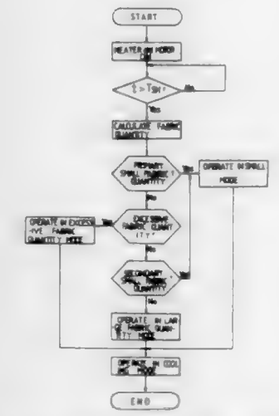
directing said stream against said first surface so that the vector sum of said first velocity and said second velocity yields a resultant velocity with respect to said web, said resultant velocity creating a zone of reduced static pressure adjacent the first surface of the web and the fluid exhaust means, the reduced static pressure urging the web toward the fluid exhaust means and being appropriate to disperse at least those of said contaminants proximate said first surface.

5,347,727

METHOD FOR CONTROLLING COMBINED SENSING TYPE CLOTHES DRYER

Sang D. Kim, Kyungsangnam-Do, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Dec. 21, 1992, Ser. No. 994,519
Claims priority, application Rep. of Korea, Dec. 23, 1991, 23993/1991
Int. Cl.[5] F26B *3/02*
U.S. Cl. 34—491 **13 Claims**



1. A method for determining a fabric quantity of clothes being dried in a drum of a dryer having a heat exchanging fan, a motor for driving said drum, a heater and a microcomputer for controlling the drying operation, comprising the steps of:

turning on said heater and said motor at the beginning of said drying operation;

checking whether a predetermined time has lapsed since the beginning of the drying operation;

obtaining a temperature variation per unit time and a humidity value of the air exhausted out of said drum by said heat exchanging fan, when said predetermined time is checked to have lapsed;

calculating an arithmetical mean of said temperature variation per unit time and said humidity value;

comparing said calculated arithmetical mean with a plurality of reference values experimentally predetermined; and

determining said fabric quantity of clothes being dried in said drum in accordance with said comparison.

5,347,728

SUCTION ROLL, ESPECIALLY FOR A PAPER WEB DRIER

Reinhard Pinter, Graz, Austria; Herbert Holik, Ravensburg, and Werner Leitenberger, Schiller-Wetzisreute, both of Fed. Rep. of Germany, assignors to Sulzer Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Jul. 14, 1992, Ser. No. 913,170
Claims priority, application Austria, Jul. 15, 1991, 1418/91-1
Int. Cl.[5] D21F *3/10;* **F26B** *13/30*
U.S. Cl. 34—115 **34 Claims**

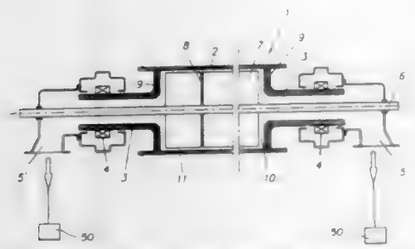
1. A suction roll having a lengthwise axis, for a paper web drier of a papermaking machine, comprising:

a perforated roll shell having an inner surface;

said perforated roll shell enclosing an internal chamber;

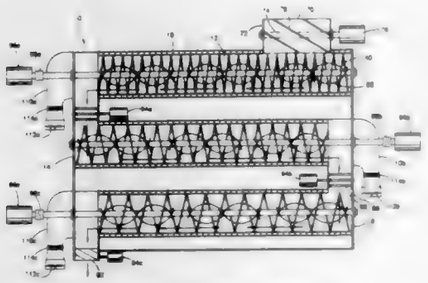
a wall member transversely arranged with respect to the

lengthwise axis of the suction roll for dividing the internal chamber;
a suction device for establishing a vacuum in said internal chamber;
means defining a connection for operatively connecting the internal chamber with the suction device;
at least one blade extending transversely with respect to the



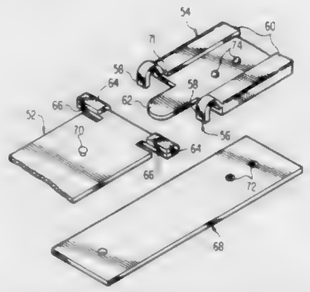
inner surface of the roll shell arranged in the internal chamber; and
said at least one blade comprising a fixedly arranged blade disposed in the internal chamber and extending transversely with respect to any possibly occurring rotational flow of suction air present in the internal chamber of the suction roll, in order to at least reduce any possibly arising rotational flow.

5,347,729
FOOD AND MATERIALS DRYER
Dennis E. Meyer, Rte. 3, Box 48, Falls City, Nebr. 68355
Continuation of Ser. No. 974,904, Nov. 12, 1992. This application Dec. 28, 1993, Ser. No. 174,378
Int. Cl.[5] F26B *11/12*
U.S. Cl. 34—180 17 Claims



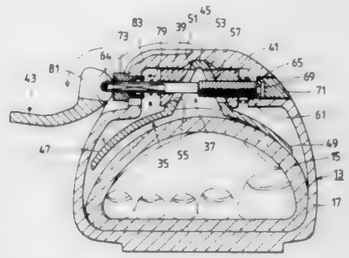
1. A food and materials drying comprising:
at least one cylindrical hollow rotary tunnel having a center longitudinal axis, comprising:
an outer cylindrical shell having an inner surface;
an inner lining cylinder having a wall with inner and outer surfaces and perforations formed in said wall of said cylinder, said inner lining cylinder mounted substantially concentrically within said outer shell, said inner lining cylinder having an outer diameter smaller than the inner diameter of said outer shell whereby air for drying may be directed between said outer shell and said inner lining cylinder and pass through said perforations in said inner lining cylinder for drying material within said inner lining cylinder;
at least one agitating auger having a central shaft and outwardly projecting helical blades mounted on said central shaft, one auger in each center rotary tunnel, each mounted coaxially with said center longitudinal axis of said rotary tunnel and within said inner lining cylinder;
said helical blades extending outwards to adjacent said inner surface of said inner lining cylinder;
agitating means mounted on each of said agitating augers, said agitating means operative to agitate food within said inner lining cylinder whereby increased drying efficiency is obtained;
means for rotating said central shaft of each of said agitating augers whereby food placed within each rotary tunnel may be moved through said inner cylinder generally parallel to said center longitudinal axis towards an end of said rotary tunnel;
means for directing air for drying through said agitating auger and between said outer shell and said inner lining cylinder of each of said rotary tunnels;
air diverting means mounted on one of said inner lining and outer cylinders, said air diverting means mounted between said inner lining and outer cylinders, said air diverting means operative to divert air directed between said outer and inner lining cylinders into and through said perforations in said inner lining cylinder and into said inner lining cylinder for drying material therein, and
said air being directed opposite the direction in which food is being moved through said inner lining cylinder whereby drying efficiency may be increased.

5,347,730
LOW HEEL SHOE CONVERTIBLE TO HIGH HEEL SHOE AND VICE VERSA WITH AN ADJUSTABLE SHANK
Jorge A. Rodriguez Colon, Rio Piedras, P.R., assignor to Commonwealth of Puerto Rico, San Juan, P.R.
Filed Feb. 2, 1993, Ser. No. 12,375
Int. Cl.[5] A43B *13/42*
U.S. Cl. 36—76 R 6 Claims



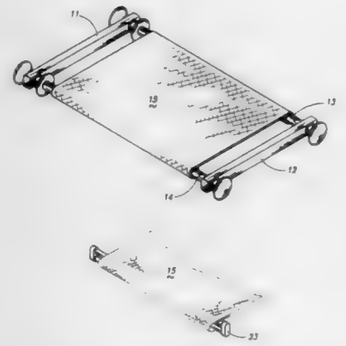
1. A shoe comprising an upper, an insole, a sole having toe and heel ends, a relatively low ground engaging heel fastened permanently to the heel end of said sole for supporting in use the heel of a wearer's foot at a first predetermined elevation above the ground, a relatively high heel, and cooperating connecting means carried by said low and high heels for releasably fastening said high heel to said low heel for supporting in use the heel of a wearer's foot at a second predetermined elevation above the ground higher than said first predetermined elevation, an adjustable shank between said sole and insole, said shank comprising a first leaf anchored in the front part of a shoe sole, a second leaf anchored in the rear part of the shoe sole, a hinge interconnecting adjacent ends of said leaves, a spring biasing said second leaf towards a raised angular position relative to said first leaf, a resilient detent strip having one end fixed to said first strip and its opposite end extending past said hinge to partly overlap said second leaf, means for guiding said strip so that upon relative angular movement of said leaves about said hinge said strip is restrained to move in close parallel relationship over said second leaf and bias it relative to the first leaf in a direction opposite to the bias of said spring, pairs of spaced detents on said strip and said second leaf, each pair comprising a protuberance on one of said strip and said second leaf and a recess on the other of said strip and said second leaf, said pairs of detents being arranged that when said second leaf is raised relative to said first leaf to a first predetermined angular position corresponding to a first condition of a shoe when worn with said high heel attached to said low heel, a first pair of spaced detents snap together to releasably retain said shoe in said first condition, said pairs of detents being arranged that when said second leaf is lowered relative to said first leaf to a second predetermined angular position corresponding to a second condition of a shoe when worn with a low heel, said first pair of detents detach from each other and a second pair of detents snap together to retain said shoe in its second condition.

5,347,731
SKI BOOT WITH AN INNER FOOT PRESSER
Shinichi Iwama, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Continuation of Ser. No. 763,615, Sep. 23, 1991, abandoned. This application Jun. 17, 1993, Ser. No. 77,499
Claims priority, application Japan, Oct. 16, 1990, 2-278892
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—119 8 Claims



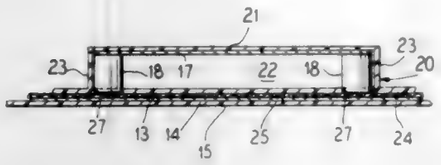
1. A ski boot comprising:
an outer shell;
an inner boot inserted into said outer shell;
a foot holding member provided between said outer shell and said inner boot, said foot holding member including a central support portion, slant surfaces provided on the horizontally opposite sides of said central support portion, and pressing portions provided at opposite end portions of said central support portion for pressing said inner boot;
an adjusting rod provided so as to horizontally penetrate said slant surfaces of said foot holding member, said adjusting rod being rotatably supported at a first and a second end portions of said adjusting rod by said outer shell;
a first pressing member slidingly disposed for translation in an axial direction without relative rotation with respect to said adjusting rod, said first pressing member is provided between said foot holding member and said first end portion of said adjusting rod,
a second pressing member threadingly engaged with said adjusting rod and provided between said foot holding member and said second end portion of said adjusting rod, and
adjusting means provided to the first end portion of said adjusting rod projected outward from said outer shell, for applying a fastening force to said foot holding member through said pressing members so as to press said inner boot and fasten a front foot portion in a first position, and for releasing said foot holding member from the fastening force through said pressing members in a second position.

5,347,732
SCROLL FRAME INCLUDING SLOTS AND FABRIC ENGAGING RODS
Robert S. Padawer, 2208 S. Elder Cir., Broken Arrow, Okla. 74012
Filed Oct. 27, 1993, Ser. No. 141,512
Int. Cl.[5] D06C *3/08*
U.S. Cl. 38—102.4 9 Claims



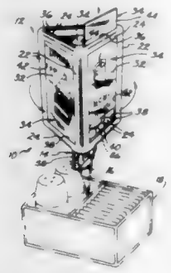
1. A needlecraft frame retaining and tensioning rods for attachment, scrolling or spooling upon, tensioning and advancement of the fabric upon which needlecraft is performed, employing a pair of identical, opposed, spaced-apart, rotatable, cylindrical wooden rods adaptable to needlecraft frames, of various design, comprising in combination:
a) a pair of spaced apart, cylindrical wooden rod means, for rotatable positioning between and at right angles to the opposed side frame members of conventional needlecraft frames, adjacent the upper and lower ends thereof, said rods being rotatably and lockably attachable in any acceptable manner, said rods being of a length greater than the width of the needlecraft base fabric and of sufficient length to traverse the distance between the opposing sides of a conventional needlework frame;
b) longitudinal slot means, of a trapezoidal configuration, having a wide base, inwardly angled walls of equal length and a narrow top opening at the periphery of said rod, situate in and along a portion of the length of each of said rods, said slot being of a length greater than the width of the needlecraft fabric and lesser than the length of said rod, said slot being accommodative of the entry thereinto of;
c) slot insertable fabric gripping means comprising a pair of parallel spaced apart wooden dowels of a longitudinal dimension slightly in excess of the width of the base needlework fabric, said dowels being conjoined by metallic ferrule means, at the opposing ends thereof, and adapted to accommodate the passage therebetween of and engagement with the ends of the fabric base cloth, whereupon on a one revolution rotation of said conjoined wooden dowels about said base fabric configures the assembly for insertion into and engagement with said longitudinal trapezoidally configured slot in said wooden cylindrical rod means, whereupon rotation of said rod means imparts a partial rotation to said conjoined dowels and causes the engagement of said base fabric with the internal surfaces of said trapezoidal slot, a short raduis at the upper extremity thereof and the oppositely urged fabric, effecting a greater gripping force as tension on said base fabric is increased, resulting in a secure, non-damaging, yet readily-releasable-on-demand gripping engagement over the entire width of said needlecraft base fabric as said cylindrical rod means are rotated to scroll on, advance and tension said base fabric as is required in the accomplishment of needlecraft.

5,347,733
MAGNETIC NAME TAG
Richard W. Whittington, 2355 Huntington Place, Cordova, Tenn. 38018
Filed Mar. 30, 1992, Ser. No. 859,906
Int. Cl.[5] A44C *3/00*
U.S. Cl. 40—1.5 9 Claims



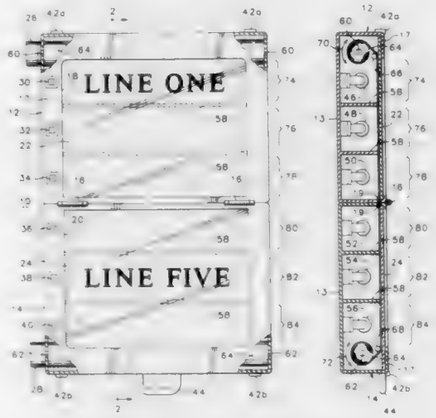
7. A wearable magnetic identifier or name tag, comprising:
a pole piece panel having opposite end portions;
a first generally button type magnet secured in positive magnetic being path relation to one end portion of the pole piece panel and a second generally button type magnet secured to the opposite end portion of the pole piece panel;
each button magnet having a complete magnetic flux path associated therewith, the respective magnetic flux paths effected by said button magnets being separate and establishing magnetic holding attraction for a keep plate assembled releasably therewith; and
a protective jacket comprising thin non-metallic material enclosing said pole piece panel and magnets.

5,347,734
MODULAR DISPLAY DEVICE
Lloyd A. Howell, 3281 Renfro Ave., Cincinnati, Ohio 45211, and Peter N. Kurlas, 5018 Cleves-Warsaw Pike, Cincinnati, Ohio 45238
Filed Mar. 8, 1993, Ser. No. 27,949
Int. Cl.[5] G09F *11/02*
U.S. Cl. 40—506 20 Claims



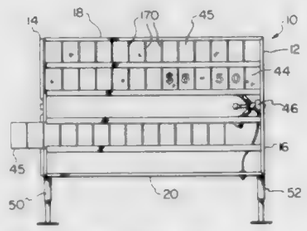
1. A display device, comprising:
a frame adapted to receive one or more display cards, said frame having a predetermined geometric cross-section; and
a support member rotatably coupled to said frame for positioning said frame in a desired display orientation, said support member including a downwardly extending tab having means for engaging a ring of a ring-top holder.

5,347,735
PRESENTATION AID HAVING MULTIPLE ILLUMINATION SOURCES
Howard A. Pratt, 8390 NW. Copeland St., Portland, Oreg. 97229
Filed Nov. 5, 1992, Ser. No. 971,941
Int. Cl.[5] G09F *11/18*
U.S. Cl. 40—518 27 Claims



1. A presentation aid for presenting information to an audience comprising:
a translucent display panel having a front surface and a back surface;
an information carrying member disposed adjacent the back surface of said translucent display panel wherein information is carried on said information carrying member;
an illumination source for illuminating a first portion of said information carrying member; said illumination source being positioned so that the information carrying member is between the illumination source and the translucent display panel; and
a shielding means for preventing illumination from said illumination source from reaching a second portion of said information carrying member,
whereby information carried on said first portion can be viewed from the front of said translucent display panel while not affecting viewing of information carried on said second portion.

5,347,736
ILLUMINATED SIGN
Kim W. Kanigan, Saskatoon, Canada, assignor to Sign-Rite Inc., Canada
Filed Mar. 15, 1991, Ser. No. 670,546
Int. Cl.[5] G09F *13/04*
U.S. Cl. 40—576 30 Claims



23. An illuminated sign comprising:
a housing having a perimeter frame defined by upright end members and perimeter cross members extending between said upright end members, each of said upright end members and said perimeter cross members defining a longitudinally extending, inwardly directed locating channel and an undercut connection channel;
corner brackets having legs for insertion in said connection channel of an upright end member and a perimeter cross member for securing said members together;
a sign face mounted on said housing having edge portions for placement in said locating channels;
a light source mounted in said housing behind said sign face, said light source being a self contained floodlight unit secured to an inner face of one of said upright end members and said perimeter cross members for directing light towards an oppositely disposed member, a tinted sheet interposed between said light unit and said sign face to provide even illumination of said sign face, said tinted sheet having a white coated face portion adjacent said floodlight and a bronze tinted back portion.

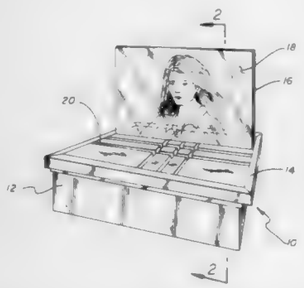
5,347,737
PORTABLE SIGN
Clarence J. Theobald, III, 2751 Graham Ave., Louisville, Ky. 40206
Filed Aug. 7, 1992, Ser. No. 926,504
Int. Cl.[5] G09F *15/00*
U.S. Cl. 40—610 17 Claims



1. A portable sign, comprising:
a sign frame, including
at least three elongated members each having a maximum width; and
a plurality of collapsible members interconnecting said elongated members in such a way that, when said collapsible members are extended, said elongated members are parallel to each other and each adjacent pair of elongated members defines a plane, such that said at least three elongated members defines at least three different planes, and when said collapsible members are collapsed, said elongated members are parallel to each other and lie adjacent to each other such that the collapsed sign frame has a narrow, elongated shape with a maximum cross-sectional dimension which is less than the total of the maximum widths of each of the elongated members,
wherein said sign, with the collapsible members in the extended position, is self-supporting, when said parallel elongated members are resting on the ground in a vertical position.

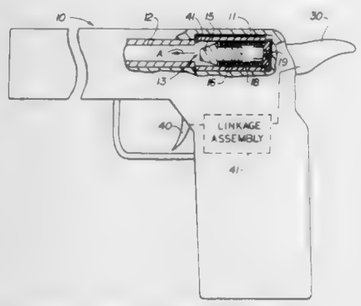
5,347,738
DISPLAY DEVICE FOR PHOTOGRAPHS AND PRINTED IMAGES
Jan B. Zweig, Playa del Rey, and Miller Y. Fong, Pasadena, both of Calif., assignors to Jan and Miller, Inc., Venice, Calif.
Filed Nov. 3, 1992, Ser. No. 970,797
Int. Cl.[5] G09F *3/18*
U.S. Cl. 40—642 3 Claims

1. A photograph display device for displaying photographs, comprising:
a display plate providing support for at least one photograph, said display plate constructed by folding a single sheet of plexiglass to form a crevice for holding said photograph;
container means including a top for storing and displaying said at least one display plate, said top attachable to said container, wherein said top includes at least one display



slot having vertical walls for holding said at least one of said display plate in an upright vertical position; and
a resilient retainer for providing force to retain said at least one display plate in said at least one display slot, wherein said resilient retainer is at least partially mounted in one of a second set of at least one intersecting slots formed at generally right angles to the at least one display slot.

5,347,739
SAFETY CARTRIDGE
John C. Stuart, Peoria, Ariz., assignor to Edward J. Krolak, Phoenix, Ariz.
Filed Nov. 25, 1992, Ser. No. 981,870
Int. Cl.[5] F41A *17/44*
U.S. Cl. 42—70.11 4 Claims



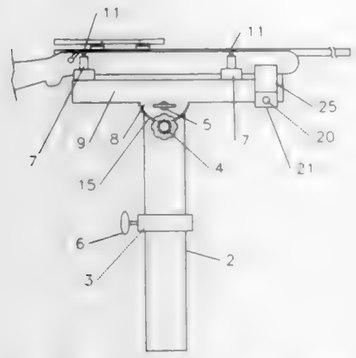
2. In combination with a firearm including
a barrel having a breech end,
a firing chamber adjacent the breech end of the barrel and in alignment with the barrel,
a firing mechanism,
the improvement comprising a safety cartridge, said cartridge being shaped and dimensioned to be inserted in the firing chamber of the firearm and including
(a) a cartridge case;
(b) propellant means mounted in said cartridge case to be activated by said firing mechanism;
(c) a projectile mounted in the cartridge case and shaped and dimensioned to be propelled toward and wedge in the breech end of the barrel when said cartridge is in the firing chamber and said propellant means is activated by the firing mechanism.

5,347,740

MULTI-FUNCTIONAL VARIABLE POSITION RIFLE AND CAMERA MOUNT

Lewis L. Rather; Brenda L. Rather, both of 6104A Parkwood Dr., Austin, Tex. 78735, and Larry W. Mobley, HCO Rt. 3 Box 81J, Spicewood, Tex. 78669

Filed Jun. 15, 1992, Ser. No. 898,830
Int. Cl.[5] F41A *23/02*
U.S. Cl. 42—94 6 Claims



1. A multi-functional variable position rifle and camera mount comprising:

a) a base plate clamp means and an inner cylindrical holder attached thereto;

b) a threaded manually operable lock pin means in said inner cylindrical holder;

c) a rifle mounting beam, a horizontal adjustment connector means and a cylindrical mounting post with said cylindrical mounting post pivotally attached to said horizontal adjustment connector means with said horizontal adjustment connector means attached to said rifle mounting beam and with said cylindrical mounting post sized to slidably fit into said inner cylindrical holder and to be movably and adjustably held at a vertical position using a threaded thumbscrew in a slidable collar on said cylindrical mounting post;

d) a locking means in said horizontal adjustment connector means to allow manual locking of said horizontal adjustment connector means in a fixed position;

e) a pair of rifle mounts and tie down means attached to said rifle mounting beam to allow fastening a rifle rigidly in said rifle mounts.

5,347,741

ILLUMINATED FISHING ROD

John V. Konrad, 194 Hardenburg La., East Brunswick, N.J. 08816

Filed Sep. 15, 1993, Ser. No. 120,954
Int. Cl.[5] A01K *97/02*
U.S. Cl. 43—17.5 1 Claim

1. A fishing rod adapted to be illuminated for fishing at night comprising:

a hollow translucent rod having an exterior surface and interior surface, a base at one end, and a tip at the other end;

a plurality of guides positioned along the exterior surface and adapted to guide a fishing line from the base to the tip of the rod;

a hollow handle having an exterior surface and an interior surface, a top end, and a bottom end, the exterior surface of the handle adapted for coupling a fishing reel thereto, the top end connected to the base of the rod;

a power source positioned within the handle, the source having a positive end and a negative end;

a reflector positioned within the handle between the top end of the handle and the positive end of the power source, the reflector having a concave reflective surface facing the top end of the handle, the reflector having a central opening;

a light source having a conductive post and insulated collar disposed around the post, the collar of the light source positioned through the central opening of the reflector and adapted to be coupled to the power source;

an aperture formed in the rod between the base and the adjacent guide in proximity to the area for coupling of a fishing reel, and with a translucent block located within the aperture, and with a coating of a reflective paint on the interior surface but not on the block whereby light may be reflected into the rod from the reel for illuminating the region exterior of the block;

an electrically conductive strip disposed between the power source and interior surface of the handle and having a front end and a rear end, the front end coupled to the post of the light source;



a contact cap having an exterior surface and interior surface, the interior surface being electrically conductive and having an electrically conductive spring attached thereto, the interior surface adapted to be attached thereto, the interior surface adapted to be coupled to the conductive strip, the cap adapted to be coupled to the bottom end of the handle, whereby when the cap is coupled to the handle, the spring urges the power source into a position such that the negative end of the power source contacts the spring and the positive end of the power source contacts the post of the light source;

a rotatable switch fixed to the exterior surface of the contact cap, whereby when the contact cap is coupled to the handle and the rotatable switch is rotated, the electrically conductive interior of contact cap engages with the conductive strip to activate the light sources; and

a magnification lens positioned between the light source and the top end of the handle to intensify the light reflected from the reflector toward the base of the rod.

5,347,742

REEL SEATS FOR USE ON FISHING RODS

Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Shizuoka, Japan

Filed Mar. 29, 1993, Ser. No. 38,222
Claims priority, application Japan, Apr. 28, 1992, 4-135914
Int. Cl.[5] A01K *87/06*
U.S. Cl. 43—22 1 Claim

1. A reel seat for use on a fishing rod comprising:

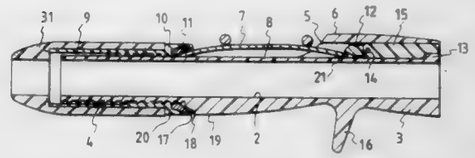
(A) a reel seat body to be mounted on the fishing rod, said reel seat body having:

(1) an external thread on one end thereof,

(2) a fixed hood for fixing a reel leg at the other end thereof, said fixed hood being open toward said external thread, and

(3) a reel leg-engaging member disposed in said fixed hood, and slidable toward or away from said slidable hood and normally biased toward said slidable hood;

(B) a slidable hood provided with an internally threaded tubular body threadedly fitted onto said external thread, said slidable hood being open toward said fixed hood to thereby receive another reel leg and to move toward said fixed hood;



(C) a step formed on said reel seat body between said external thread and said fixed hood abutting on the end of said internally threaded tubular body received in said slidable hood, whereby, when the slidable hood is moved toward said fixed hood until the first-mentioned reel leg is fixed at the leg-engaging member, said end of said internally threaded tubular body abuts said step, thereby causing the periphery of said body to be roughly contiguous to the periphery of said tubular body; and

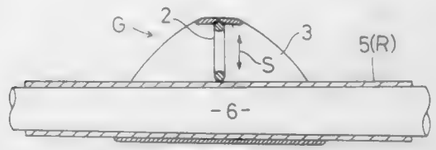
(D) the leg-engaging member is essentially completely disposed within said fixed hood.

5,347,743

GUIDE FOR USE ON A FISHING ROD

Isamu Tokuda, and Kenji Onishi, both of Sakai, Japan, assignors to Shimano Inc., Osaka, Japan

Filed Oct. 13, 1992, Ser. No. 953,659
Claims priority, application Japan, Oct. 23, 1991, 3-274415; Nov. 20, 1991, 3-304444
Int. Cl.[5] A01K *87/04*
U.S. Cl. 43—24 9 Claims



1. A guide for use on a fishing rod comprising:

a guide ring placed in contact with an outer surface of a rod stock for guiding a fishing line; and

a holder for fixing said guide ring to said rod stock,

said holder being shaped approximately trapezoidal, with a side of said guide ring remote from said rod stock forming an apex thereof, said holder, in side view, flaring axially of said rod stock progressively toward said rod stock;

an outer surface of said holder being smoothly continuous with an outer surface of said rod stock.

5,347,744

FISHING LURE

Glen Getschel, 1102 - 110th St., Amery, Wis. 54001

Filed Jul. 1, 1993, Ser. No. 86,536
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.36 15 Claims

1. A fishing lure comprising:

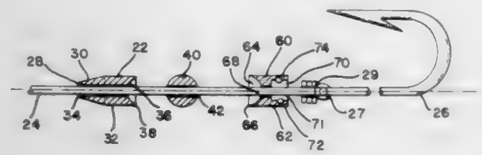
a dense body portion having a bore therethrough, the body portion being radially symmetrical with respect to the bore

a recess formed in said body portion, said recess communicating with said bore, said recess sized to accommodate and receive the eyelet of a hook, said recess having non-resilient walls and a mouth, and being radially symmetrical with respect to the bore,

an O-ring seated in a groove adjacent the mouth of the recess and resiliently obstructing the mouth of the recess, said O-ring inhibiting passage of an eyelet of a hook until a force is exerted upon said eyelet to cause the resilient O-ring to yield and allow passage of the eyelet,

a second recess facing opposite the first recess and

a generally spherical bead, having an axial bore and sized to be received into the second recess of the lure.



and resiliently obstructing the mouth of the recess, said O-ring inhibiting passage of an eyelet of a hoof until a force is exerted upon said eyelet to cause the resilient O-ring to yield and allow passage of the eyelet.

a second recess facing opposite the first recess and

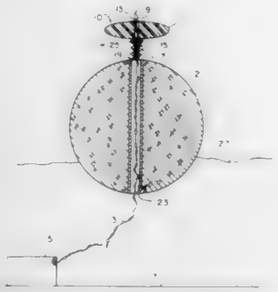
a generally spherical bead, having an axial bore and sized to be received into the second recess of the lure.

5,347,745

CRAB TRAP FLOAT ROPE STOP

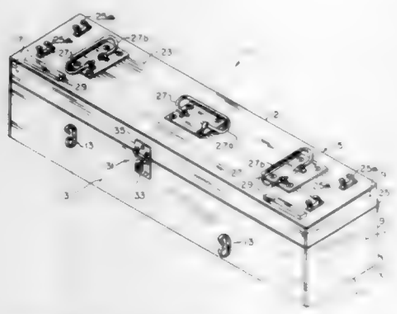
Donald J. Authement, 6053 Bayouside Dr., Chauvin, La. 70344

Filed Nov. 12, 1993, Ser. No. 150,889
Int. Cl.[5] A01K *93/00*; B63B *22/18*
U.S. Cl. 43—44.91 11 Claims



1. A crab trap float rope stop assembly, comprising a spherical crab trap float formed around a central abrasion-resistant float tube, a crab trap rope extending through the abrasion-resistant tube, a stop surrounding the rope, the stop having an enlarged upper end for abutting an upper end of the float tube and for preventing movement of the stop through the float tube, a depending tubular throat connected to and extending downward from the enlarged end, the tubular throat having plural external, generally radially extending anchors for permitting movement of the tubular throat and anchors into an upper end of the float tube and for preventing outward movement of the stop, the throat and the anchors extending from the throat into contact with the float tube for anchoring the throat, anchors and stop in the float, a plurality of rope-gripping extensions extending inward from the throat for jamming inward against a rope as the throat and anchors are deformed radially inward upon being compressed in the float tube for preventing movement of the rope through the stop.

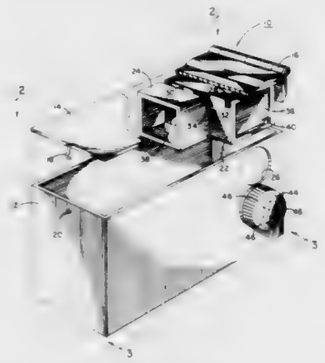
5,347,746
FISHING TACKLE BOX INCLUDING ACCESSORY HOLDERS
Marshall G. Letson, 731 Chestnut St., Mt. Carmel, Ill. 62863
Filed Jul. 20, 1993, Ser. No. 93,649
Int. Cl.[5] A01K *97/06*
U.S. Cl. 43—57.1 11 Claims



1. A fishing tackle box having:
a bottom portion having a front wall, a back wall, a bottom wall, and side walls, defining an inner space, said walls also having exterior surfaces;
a first clip secured to the exterior of the front wall for holding a fishing accessory;
said tackle box having a top portion hingedly connected to the bottom portion to cover and close the inner space of the said bottom portion, the top portion being removable between a first position in which it covers the bottom portion into closure, and a second position in which the bottom portion is opened, the top portion including a front wall, a back wall, side walls, and a top wall, said walls also having exterior surfaces;
at least one pair of second clips secured to the exterior surface of the top wall for holding a fishing rod, said second clips being aligned to be generated parallel to the front wall of the top portion;
there being two legs pivotally secured to the top portion of the top wall, said legs being pivoted into a supporting position when the top portion is pivoted about its hinge into an open portion;
a plurality of compartments housed in said inner space of the bottom portion and in which fishing equipment may be stored; and
there being a plurality of handles secured to the exterior of the top wall of the top portion to facilitate carrying of the fishing tackle box during usage.

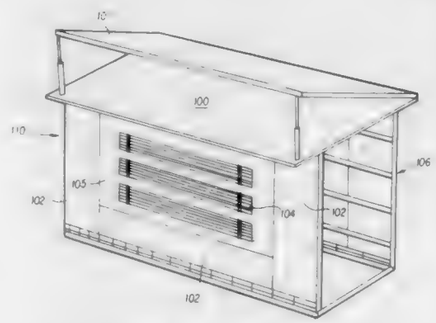
5,347,747
ANIMAL TRAP
Joseph Henriques, 17 Cove Rd., Brookfield, Conn. 06804
Filed May 10, 1993, Ser. No. 59,709
Int. Cl.[5] A01K *69/06*
U.S. Cl. 43—66 17 Claims

1. An improved animal trap, comprising:
a housing having a top, a bottom, and a peripheral sidewall which in combination form an imprisoning enclosure for confining an animal therein; said housing including a bait container for confining bait therein, and wherein said bait container has a plurality of holes formed therein so as to allow bait aroma to emanate within and around said imprisoning enclosure; wherein said bait container comprises a hollow cylinder having a thread formed thereon, the hollow cylinder for the storage of the bait therein, the cylinder attached to a portion of one of the peripheral sidewalls, said portion of the peripheral sidewall having apertures therein so as to allow aroma from bait to migrate into the imprisoning enclosure, and wherein the bait enclosure further comprises a threaded cap for removable engagement with the thread on the cylinder, the cap having apertures therein so as to allow aroma from the bait to migrate about the exterior of the trap; an entry port formed in said peripheral sidewall for providing access to said imprisoning enclosure;
a non-linear passageway disposed within said imprisoning enclosure with a first end adjoined with said entry port and a second end open to said imprisoning enclosure, said passageway having at least one slotted pivot region formed therein; and
at least one door corresponding to said at least one slotted pivot region, each said door having a pivot rod extending



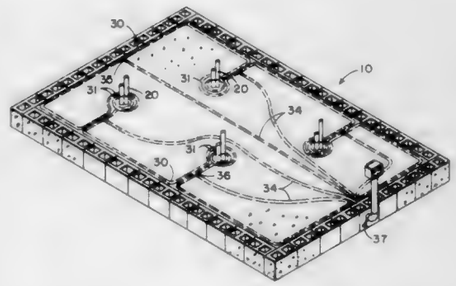
along one edge for suspending said door from said corresponding slotted pivot region so as to allow said door to pivot between an open and a closed position;
wherein said passageway with each said slotted pivot region and each said corresponding door with each said pivot rod being operatively engaged to allow each said door to open in an inward direction when an inward force is applied thereto but to substantially prevent each said door from opening in said inward direction when an upward force is applied thereto, thereby allowing an animal to enter said imprisoning enclosure but substantially preventing said animal from exiting said imprisoning enclosure.

5,347,748
LIVESTOCK WALK-THROUGH FLY TRAP
Thomas W. Moreland, Ellicott City; Lawrence G. Pickens, Laurel, and Richard W. Miller, Bowie, all of Md., assignors to The United States of America as represented by the Secretary of the Agriculture, Washington, D.C. and The University of Maryland, College Park, Md.
Filed Aug. 16, 1993, Ser. No. 106,618
Int. Cl.[5] A01M *1/22*
U.S. Cl. 43—107 8 Claims



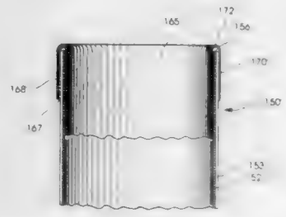
1. A walk-through fly trap comprising:
(A) a cubic rectangular steel frame of dimensions sufficient to allow the passage of livestock therethrough,
(B) a roof and sides affixed to said frame,
(C) means affixed to said frame for removal of flying insects from the body of said livestock passing through said trap,
(D) a plurality of electric grates mounted in panels supported on said sides such that said grates are accessible to flying insects on both the exterior and interior of said trap, said grates being electrified with sufficient voltage so as to kill flying insects making contact therewith, and
(E) means for attracting flying insects to said grates comprising a plurality of lights.

5,347,749
TERMITICIDE DELIVERY SYSTEM
Kenneth Chitwood, Casselberry; Richard Knipp, Winter Springs, and Richard Schmitt, Sanford, all of Fla., assignors to Pestban Pest Control of Florida, Inc., Longwood, Fla.
Filed Feb. 24, 1993, Ser. No. 21,593
Int. Cl.[5] A01M *7/00*
U.S. Cl. 43—124 3 Claims



1. An improved termiticide delivery system for delivery of termiticide to potential termite entry areas of the fill dirt underneath the foundation slab of a building at the edges and joints thereof, comprising:
an endless unbranched emitter circuit comprised of a length of flexible tubing having a plurality of apertures spaced at intervals along the wall thereof for emitting termiticide therethrough, said emitter circuit disposed atop and across the fill dirt under the foundation slab and vapor barrier of a building, at the perimeter edges of said slab and around the edges of all openings through and interruptions of said slab;
a plurality of spiraling loops of said emitter circuit disposed around openings through said slab;
a plurality of flexible open-ended trunk lines comprising unapertured tube means, each trunk line having an injection end and a delivery end, each delivery end thereof connected to and opening into said emitter circuit at spaced-apart intervals selected to provide even distribution of termiticide throughout said emitter circuit, said trunk lines running under said slab to a common location on the outside of an exterior wall of said building;
a common receptacle box attached to said building wall and having a panel therein having a plurality of openings passing therethrough, and having the injection end of each of said trunk lines attached to said panel through one said opening therein;
applicator means comprising a manifold having a plurality of open-ended delivery lines comprised of flexible tubing, each line having a first and a second end, each said first end thereof attached and opening into said manifold, and each said second end thereof having coupling means whereby it is removably connected to one of said tube end connectors and communicates through said connector with one of said trunk lines for transmittal of fluid from said manifold into said trunk line, said manifold further having an inlet for connection to a source of termiticide; and
a pressurized source of fluid termiticide; whereby injecting a termiticide substance through said inlet, manifold, and delivery lines into said injection ends of said trunk lines attached to said panel provides redundant delivery of termiticide throughout said emitter circuit to the fill dirt underlying all edges and interruptions of, and openings through, said slab in an effective amount.

5,347,750
PLANT PROTECTOR APPARATUS AND METHOD
Thomas Mills, 445 Lourdes La., Lafayette, Ind. 47906
Continuation-in-part of Ser. No. 855,220, Mar. 20, 1992. This application Jun. 10, 1993, Ser. No. 74,206
Int. Cl.[5] A01G *13/00*
U.S. Cl. 47—30 3 Claims

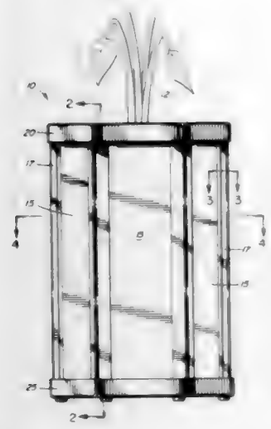


1. A plant protector apparatus comprising:
a flexible sheet having a top edge, a bottom edge and two opposite side edges, said sheet having a top portion that is folded down onto itself at said top edge, said sheet further being formed into a cylinder with said opposite overlapping;
a stake for supporting said cylindrical formed sheet on the ground; and
means for attaching said stake to said flexible sheet when said sheet is in its cylindrical form wherein said flexible sheet includes an outer corrugated layer and an inner substantially smooth layer; and, further wherein said inner layer includes a portion extending a substantial distance beyond said outer layer, said portion being folded down over said outer layer at said top portion of said sheet.

5,347,751
MODULAR PLANT STAND
Frans Carpay, #308 - 889 W. 7th Avenue, Vancouver, British Columbia, Canada V5Z 1C2
Filed Oct. 6, 1993, Ser. No. 132,576
Int. Cl.[5] A47G *7/00*
U.S. Cl. 47—39 22 Claims

1. A plant stand comprising:
a. a first collar, said first collar comprising a ring of material surrounding a central aperture, a first surface, and a first channel in said first surface, said first channel extending around said central aperture;
b. a second collar spaced apart from and parallel to said first collar, said second collar comprising a second surface facing said first surface and a second channel in said second surface, said second channel being a mirror image of said first channel;
c. at least one wall panel member having a first end engaged

in said first channel and a second end engaged in said second channel; and



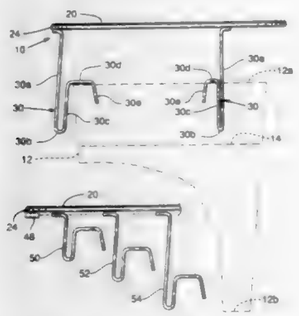
d. liner suspension means associated with said first collar for suspending a liner within said central aperture.

5,347,752

FLOWER CARE, STORAGE AND DISPLAY DEVICE

Kevin E. Black, 3129 NE. 13th #24, Gresham, Oreg. 97030

Filed Jun. 19, 1992, Ser. No. 901,425
Int. Cl.[5] A01G *5/00*
U.S. Cl. 47—41.11 8 Claims



1. A flower storage and display device in combination with a display bucket for storing and displaying flowers having a flower head and a flower stem, said display bucket having a bucket floor and a bucket rim, said device comprising:

a grid-panel corresponding approximately in size and shape to said bucket and including grid openings of sufficient size to allow passage of said flower stems therethrough but not allow passage of said flower heads therethrough whereby said flower heads may rest against said grid-panel and said flower stems may depend freely therebelow; and legs downwardly extending from said grid-panel and engaging said bucket rim and supporting said grid-panel at a predetermined position above said bucket rim, whereby the maximum length of said flower stems as positioned depending freely from said grid-panel is greater than the distance between said bucket rim and said bucket floor.

5,347,753

DEGRADATION RESISTANT MOLDED PULP HORTICULTURAL CONTAINER

Paul E. Dall, Sidney, Me., assignor to Keyes Fiber Co., Waterville, Me.

Continuation-in-part of Ser. No. 652,946, Feb. 8, 1991, abandoned. This application Oct. 7, 1991, Ser. No. 773,346
Int. Cl.[5] A01G *9/10, 13/00*
U.S. Cl. 47—66 32 Claims

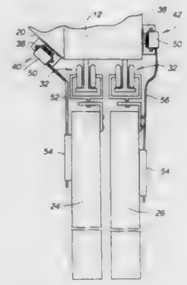
1. A horticultural container composed of molded pulp formed from an aqueous pulp fiber dispersion and containing dispersed within the molded pulp an effective amount of an organic thiocyanate selected from S-thiocyanomethyl compounds of 2-mercaptobenzothiazoles, 2-mercaptobenzoxazoles, or 2-mercaptobenzimidazoles, the organic thiocyanate being provided in the aqueous pulp fiber dispersion and retained in the molded pulp container during formation to control the degradation of said container.

5,347,754

POSITION SENSING APPARATUS

Steven D. Jacob, Roselle, Ill., assignor to Landis & Gyr Powers, Inc., Buffalo Grove, Ill.

Filed May 10, 1993, Ser. No. 60,099
Int. Cl.[5] G08B *13/08*
U.S. Cl. 49—13 25 Claims



1. Apparatus for sensing the position of at least one sash of a laboratory fume hood that is moveable along a track, said apparatus comprising:

an elongated base member adapted to be attached to the fume hood adjacent and parallel to one direction of possible movement of at least one of the sash doors;

an electrical switching means having an elongated electrical resistance means with a predetermined resistance value per unit length attached to said base member;

actuator means associated with said one sash door and being adapted to move when said sash door is moved, said actuator means including an actuator assembly positioned to operate said switching means at a switch location that varies along the length of the resistance means as said sash door is moved;

said actuator assembly being coupled to said base member and adapted to move relative thereto, said actuator means including a linkage means that extends to said sash door and attachment means for attaching said linkage means to said sash door.

5,347,755

AUTOMATICALLY ACTUATED DOOR ARRANGEMENT

Dale R. Jaster, Northlake; Russell J. Vestuto, Chicago, and Ronald S. Maruszak, Willowbrook, all of Ill., assignors to Ready Metal Manufacturing Company, Chicago, Ill.

Filed Feb. 19, 1993, Ser. No. 19,797
Int. Cl.[5] E05F *15/20;* E05C *7/06*
U.S. Cl. 49—25 8 Claims

1. An automatically actuated door arrangement comprising:

a plurality of substantially vertically disposed sliding doors, said doors arranged in substantially the same plane and slidable in a substantially horizonal direction,

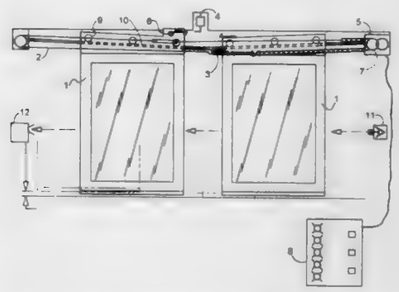
a door track for supporting said doors, said door track is arranged in a shallow "V" shape, whereby said doors are lifted slightly up as they move from a closed to an open position,

door bearings disposed on said doors, said door bearings riding in said door track,

a drive cable attached to said doors,

a reversible drive motor associated with said drive cable,

a clutch assembly associated with said drive motor, said drive motor acting through said drive cable to alternately open and close said doors,



a detector arranged and constructed to sense the entry of an operator into an area adjacent said doors,

position limiting means to control the position of said doors,

a controller arranged and constructed to control the opening the closing of said doors, said controller having a plurality of operating parameter indicators, wherein the movement of an operator into an area adjacent said doors causes the doors to open, and the movement of the operator away from said doors causes the doors to close and

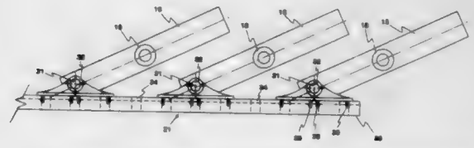
a solenoid operated latch arranged and constructed to lock the doors together when closed, and to automatically unlock as the doors begin to open.

5,347,756

PIVOTAL AND ADJUSTABLE CLOSURE VERTICAL RAIL LOUVER SYSTEM

Christopher E. Abbott, 632 Overhill Rd., Ardmore, Pa. 19003, and Glenn T. Mushrush, 98 Hemlock Dr., Concordville, Pa. 19331

Filed Apr. 12, 1993, Ser. No. 46,402
Int. Cl.[5] E05F *17/00*
U.S. Cl. 49—74.1 12 Claims



1. An adjustable closure vertical rail system, comprising:

a fixed horizontal top rail,

a fixed horizontal bottom rail,

a plurality of vertical louvers having top and bottom ends pivotally mounted in said top rail and said bottom rail,

a pivot spindle mounted in the top and bottom ends of each of the pivotally mounted louvers,

pivot bushing means in said top and bottom horizontal rails coaxially aligned for receiving the pivot spindle therein,

a link spindle mounted in the top end of each of said pivotally mounted louvers offset from said pivot spindle,

universal link bar means comprising a link bar and a plurality of link bushing adapters,

said link bar having a channel and spaced apertures within said channel,

said link bushing adapters being coupled to less than all of said apertures in said channel at variable predetermined distances along said link bar and each adapted to receive one of said link spindles, and

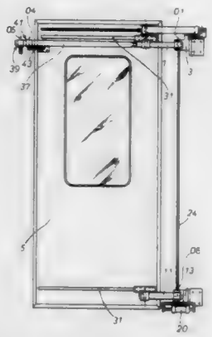
whereby said plurality of vertical louvers are pivotally connected by said universal link bar means along their top edges below said top rail so that pivotal movement of one louver imparts the same pivotal movement to the other vertical louvers so that said plurality of louvers move together as a system.

5,347,757

DEVICE FOR OPENING AND CLOSING A DOCK IN RAILWAY AND BUS CARS

Pietro Losito, Volvera, Italy, assignor to O.C.L.A.P. s.r.l., Piscina, Italy

PCT No. PCT/EP90/00456, § 371 Date Sep. 25, 1991, § 102(e) Date Sep. 26, 1991, PCT Pub. No. WO90/12184, PCT Pub. Date Oct. 18, 1990
PCT Filed Mar. 20, 1990, Ser. No. 768,070
Claims priority, application Italy, Apr. 7, 1989, 67250 A/89
Int. Cl.[5] E05F *7/02*
U.S. Cl. 49—255 17 Claims



1. A device for opening and closing a door comprising:

a. a door;

b. a frame adapted to receive the door;

c. first rotating means located adjacent to an upper portion of the door for ejecting the door away from the frame, the first rotating means comprising a first arm rotatably mounted at one end to a first hinge member that is fastened to the frame and rotatably mounted at the other end to a first bracket that slidably mounted to the door, wherein the first hinge member comprises means for adjusting the axis of rotation of the first arm;

d. second rotating means located adjacent to a lower portion of the door for ejecting the door away from the frame, the second rotating means comprising a second arm rotatably mounted at one end to a second hinge member that is fastened to the frame and rotatably mounted at the other end to a second bracket that is slidably mounted to the door, wherein the second hinge member comprises means for adjusting the axis of rotation of the second arm to substantially coincide with the axis of rotation of the first arm;

e. means for rotating the first and second arms comprising first drive means for driving a first rack that engages at least one gear that is in driving engagement with a rotating shaft to which at least one of the first and second arms are connected at their axes of rotation;

f. means for translating the door in a direction substantially parallel to the plane of the frame once the door has been ejected from the frame comprising second drive means rotatably mounted at one end to the frame and having a

movable rod at the other end fastened to a second rack that engages a gear that is in driving engagement with a third rack that is fastened to the door;

g. a slide bar rotatably mounted at one end to the frame and rotatably mounted at the other end to the first arm; and

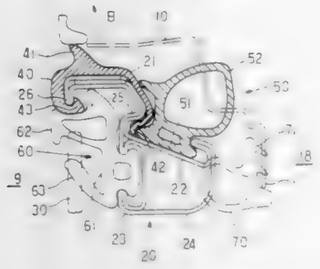
h. a sleeve slidably mounted on the slide bar and rotatably mounted on a support member that is fastened to the door.

5,347,758

DOOR SEAL DEVICE

Tadanao Yamane, Hiroshima, Japan, assignor to Nishikawa Rubber Co., Ltd., Hiroshima, Japan

Filed Mar. 5, 1993, Ser. No. 26,993
Int. Cl.[5] E06B 7/16
U.S. Cl. 49—484.1 6 Claims



1. A device for sealing a car door to a car body comprising:

an inverted groove-shaped door main frame surrounded on three sides thereof except at a lower side thereof;

a sub-seal engagingly covering the main frame, said sub-seal having a substantially S-shaped bent portion at a tip end thereof;

a main seal retainer extending aslant from the lower portion of the main frame toward an interior of the car body, an exterior end of said main seal retainer having a hook portion formed therein; and

a main seal engaging with the main seal retainer and having a base portion;

wherein the bent portion of said sub-seal is engaged in a recess formed between the hook portion of the main seal retainer and the main seal retainer so that said bent portion is retained by the hook portion, and the base portion of the main seal is engaged in the recess formed between the bent portion of said sub-seal and the main seal retainer for pressing the best portion toward the hook portion.

5,347,759

DOOR LOWER MOLDING

Masao Kobayashi; Koichi Ogiso; Shinichi Goto; Haruyasu Mizutani; Masaomi Goto, and Hiroshi Iwasaki, all of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Mar. 30, 1993, Ser. No. 40,359
Claims priority, application Japan, Apr. 23, 1992, 4-103294; Apr. 23, 1992, 4-103295
Int. Cl.[5] E06B 7/16
U.S. Cl. 49—496.1 6 Claims

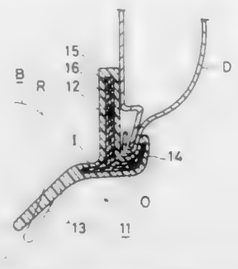
1. A door lower molding for a vehicle door, comprising:

a main body made of synthetic resin and adapted to be fixed along a lower end of a door of a vehicle;

a seal lip extending from an end of the main body for closely contacting a body of said vehicle when the door is closed;

a core made at least partially of a synthetic resin embedded longitudinally in the main body; and

a hook extending from the main body for closely contacting an outer surface of the lower end of the door;



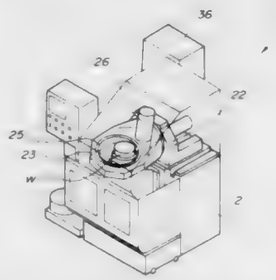
wherein the core has a cross section corresponding to a cross section of the main body and extends into the hook.

5,347,760

GEAR FINISHING APPARATUS

Masaaki Miyauch; Makoto Kawano; Takashi Kitamura; Hiromu Okunishi, and Fumio Haga, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 115,714, Sep. 3, 1993, abandoned. This application Jan. 19, 1994, Ser. No. 183,624
Claims priority, application Japan, Sep. 4, 1992, 4-311454; Oct. 27, 1992, 4-262998
Int. Cl.[5] B24B 5/36
U.S. Cl. 451—114 14 Claims



1. A gear finishing apparatus comprising:

a bed having a horizontally extending guide member and a vertically extending guide member;

a grinding wheel support unit movable along said horizontally extending guide member and having a grinding wheel head;

a ring-shaped grinding wheel in the form of an internal gear rotatably supported on said grinding wheel head for rotation about a substantially vertical axis;

said grinding wheel support unit including turning means for turning said grinding wheel head about a horizontal axis and securing the grinding wheel head after it has been turned in order to tilt said grinding wheel at a predetermined angle;

first actuating means for moving said grinding wheel support unit along said horizontally extending guide member;

a workpiece support unit movable along said vertically extending guide member, said workpiece support unit having holding means for holding a gear blank having external gear teeth for rotation about a substantially vertical axis;

second actuating means for moving said workpiece support unit along said vertically extending guide member to move said gear blank into and out of said grinding wheel; and

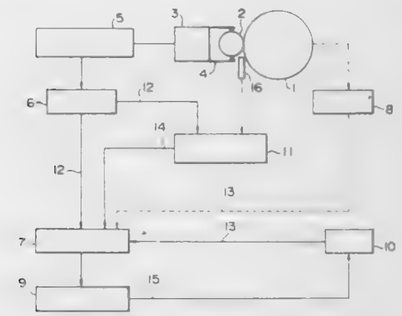
third actuating means for rotating said grinding wheel to hone the gear teeth of said gear blank while the gear blank is being positioned in said grinding wheel held by said holding means, and said grinding wheel and said gear blank are being held in mesh with each other by said first actuating means and said second actuating means.

5,347,761

METHOD FOR DETERMINING THE DEFORMATION OF WORKPIECE ON GRINDING MACHINE

Yasuhiko Murai, Kyoto, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1992, Ser. No. 945,142
Claims priority, application Japan, Sep. 18, 1991, 3-238374
Int. Cl.[5] B24B 5/00
U.S. Cl. 451—364 8 Claims



1. In a method for determining a deformation of a workpiece on a grinding machine, said grinding machine have a grinding wheel for grinding a rotating workpiece, comprising the steps of:

measuring a diameter D(s) of a selected workpiece;

measuring a position A of the grinding wheel for working on said workpiece;

determining a start time s for calculating a deformation of said selected workpiece, said start time s being the time when the diameter of said workpiece is reduced more than a predetermined value in a predetermined time interval, an initial diameter D(s) being the diameter of said selected workpiece at said start time s;

setting an initial deformation T(s) of said selected workpiece at said start time s to be zero for a first workpiece, and in case of workpieces other than said first workpiece, setting the initial deformation T(s) to be a difference between the initial deformation of an immediately prior workpiece and a deformation obtained for that prior workpiece;

calculating a deformation change of said selected workpiece after said start time s, by subtracting a radius change $(D(s)-D(t))/2$ of said selected workpiece from a shift in position ΔA of said grinding wheel; and

calculating deformation T(t) of said selected workpiece, by adding said initial deformation T(s) and said deformation change $\Delta A-(D(s)-D(t))/2$:

$$T(t)=T(s)=\Delta A-(D(s)-D(t))/2.$$

5,347,762

LENS PERIPHERY PROCESSING APPARATUS, METHOD FOR OBTAINING PROCESSING DATA, AND LENS PERIPHERY PROCESSING METHOD

Ryoji Shibata, Toyokawa; Masahiko Kobayashi, Aichi; Yukinobu Ban, Nishio, and Hirokatu Obayashi, Aichi, all of Japan, assignors to Nidek Co., Ltd., Gamagori, Japan

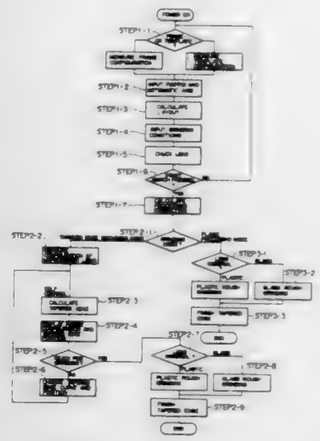
Filed Feb. 1, 1993, Ser. No. 11,759
Claims priority, application Japan, Feb. 4, 1992, 4-054214
Int. Cl.[5] B24B 49/00
U.S. Cl. 451—15 6 Claims

6. A lens periphery processing method for processing peripheries of lenses so as to fit the lenses in an eyeglasses frame, comprising:

a first step of three-dimensional measurement of the configuration of lens frame portions of said eyeglasses frame;

a second step of deriving peripheral lengths of the lens frame portions of said eyeglasses frame on the basis of the data obtained in said first step;

a third step of measuring the lens edge thickness and the lens curve of each lens to be fitted in the frame;



a fourth step of determining the curve value defined by the locus of the tapered edge on the basis of the data measured in said third step;

a fifth step of calculating control data of a lens periphery processing apparatus such that the peripheral length of the locus of the tapered edge determined in said fourth step substantially coincides with the peripheral length of the associated lens frame portion of said eyeglasses frame; and

a sixth step of controlling the lens periphery processing apparatus on the basis of the control data obtained in said fifth step.

5,347,763

POLISHING APPARATUS

Masahiko Miyamato, Tokyo; Nobuo Nakamura, Yokohama; Jyunji Takashita, Yokohama; Manabu Ando, Yokohama; Katsuo Kawano, Kawasaki; Yoshiaki Nishimura, and Satoshi Yuasa, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 942,335, Sep. 9, 1992, abandoned, which is a continuation of Ser. No. 637,827, Jan. 7, 1991, abandoned, which is a division of Ser. No. 569,386, Aug. 15, 1990, Pat. No. 4,999,954, which is a continuation of Ser. No. 414,268, Sep. 29, 1989, abandoned, which is a continuation of Ser. No. 169,060, Mar. 16, 1988, Pat. No. 4,974,368. This application Nov. 26, 1993, Ser. No. 157,440
Claims priority, application Japan, Mar. 19, 1987, 62-041158[U]; Mar. 19, 1987, 62-062587; Mar. 19, 1987, 62-062601; Mar. 19, 1987, 62-062610; Mar. 19, 1987, 62-062612; Mar. 19, 1987, 62-062613; Mar. 19, 1987, 62-066715; Mar. 19, 1987, 62-066717; Mar. 19, 1987, 62-0411157[U]
Int. Cl.[5] B24B 49/00
U.S. Cl. 451—241 3 Claims

1. A method of working a workpiece with a polishing tool, comprising the steps of:

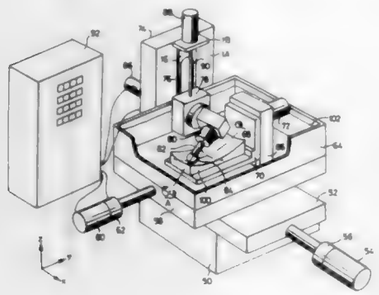
using a polishing tool having a polishing surface attached thereto;

providing the polishing tool with a closed loop electronic feedback system;

pressing the polishing tool onto a position of a surface of the workpiece to be polished using a pressing device;

detecting a pressing force acting in an axial direction of the polishing tool on the surface using a sensor mounted on the polishing tool and electronically connecting to the feedback system;

obtaining correction information by comparing a signal



corresponding to the pressing force detected by the sensor and sent through the feedback system with a signal corresponding to a predetermined pressure; and

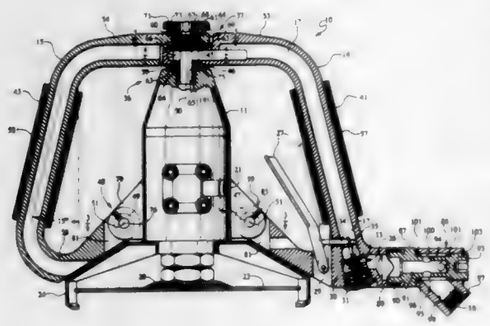
adjusting the pressing force applied from the pressing device to the polishing tool on the basis of the correction information.

5,347,764

HANDLE ARRANGEMENT FOR AIR POWER TOOL

Robert A. Pennison, Bellville, Tex., assignor to Indresco Inc., Dallas, Tex.

Filed Mar. 2, 1993, Ser. No. 24,988
Int. Cl.[5] B24B *23/00*
U.S. Cl. 451—359 29 Claims



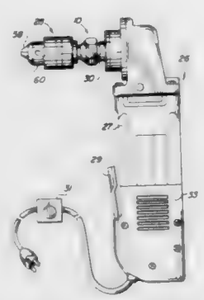
1. An air tool including a housing containing an air motor with a shaft rotatable about a longitudinal axis and connectable to an implement for working the surface of a workpiece, a power handle with upper and lower ends connected to said housing, an idle handle spaced angularly from said power handle and having top and bottom ends connected to said housing, said power handle including an air power inlet adjacent the lower end thereof, an air power outlet adjacent the upper end thereof and an air passage communicating therethrough from said inlet to said outlet, an air inlet port in said housing adjacent said upper end of said power handle, said air power outlet being aligned and communicating with said air inlet port, and a sealing element between said housing and said power handle sealing against the loss of air power between said power handle and said housing.

5,347,765

DEVICE AND METHOD FOR MULTIPLE USES OF A PORTABLE GRINDER

Harold W. Mixon, Jr., Rte. 4, Box 377, Perry, Fla. 32347

Filed Feb. 12, 1993, Ser. No. 17,001
Int. Cl.[5] B24B *1/00*
U.S. Cl. 451—28 R 14 Claims



1. A method for using a drill chuck with a grinder, the method comprising the steps of:

providing a grinder having a spindle, the spindle having threads affixed thereto;

removably affixing an adaptive member proximal end to the spindle, the proximal end having a thread for communicating with the spindle thread; and

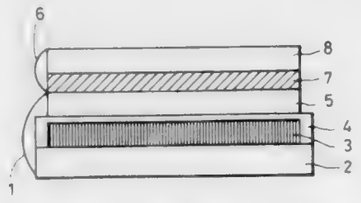
removably affixing a distal end of the member to a drill chuck the member distal end having threads communicating with drill chuck threads for affixing the drill chuck to the grinder.

5,347,766

METHOD FOR POLISHING SURFACE OF TRANSPARENT SUBSTRATE LAYER OF COLOR FILTER UNIT

Kazuyoshi Komatsu; Osamu Narimatsu; Yasuo Takemura; Yoko Takeuchi, all of Nagoya, and Susumu Waki, Tokyo, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jul. 16, 1992, Ser. No. 923,358
Claims priority, application Japan, Jul. 18, 1991, 3-178292
Int. Cl.[5] B24B *1/00*
U.S. Cl. 451—29 5 Claims



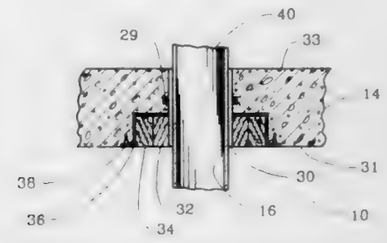
1. A method for polishing a surface of a transparent substrate layer of a color filter unit comprising a transparent substrate layer, a color filter layer, a protective film layer and a transparent electrode layer, which method comprises attaching, to a surface of the transparent electrode layer, a pressure-sensitive tape consisting of a base film layer selected from a single layer film or a multi-layer film and a pressure-sensitive adhesive layer which gives substantially no staining to the surface of the transparent electrode layer, and polishing the surface of the transparent substrate layer of the color filter unit.

5,347,767

FIRE RETARDANT SLEEVE

Rudolf Roth, 3556 Boutwell Rd., Lake Worth, Fla. 33461

Continuation of Ser. No. 827,367, Jan. 29, 1992, abandoned. This application Jun. 18, 1993, Ser. No. 80,447
Int. Cl.[5] F16K *17/38*
U.S. Cl. 52—1 9 Claims



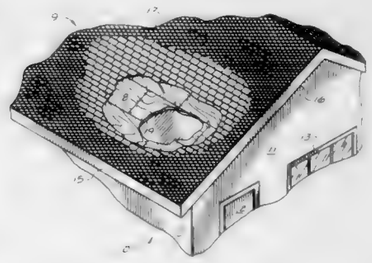
1. A smoke and fire protection assembly providing a heat sealable raceway through a concrete floor or wall mounting location, said assembly comprising: at least one intumescent thermal expansion member having a centrally disposed aperture positioned within a heat conductive shield defined by an outer side wall; a tubular sleeve defined by a wall of minimal thickness having an inner surface forming an interior chamber and an outer surface operatively associated with said aperture, said sleeve having a length sized to accommodate thickness of a mounting location; means for independently securing said tubular sleeve to the mounting location, wherein said means for independently securing said tubular sleeve is a key out integrated into said outer surface of said tubular sleeve; and a raceway formed from a pipe having an interior chamber defined by a wall of nominal thickness and an inlet and outlet demarcating a length greater than said length of said sleeve, said pipe insertable into said sleeve forming a raceway for carrying continuous line items from one room to another, said inlet and outlet of said pipe available for coupling additional raceways at a distance separate from the mounting location.

5,347,768

ROOFING SYSTEM AND METHOD

Yolanda Pineda, 12235 SW. 17th La., Unit Q105, Miami, Fla. 33175

Filed Jun. 14, 1993, Ser. No. 76,167
Int. Cl.[5] E04B *7/00*
U.S. Cl. 52—23 17 Claims



1. A method for securing roofing elements coupled to a roof against wind, said method comprising steps of:

providing a netting material having a mesh smaller than at least one dimension of said roofing elements;

covering at least a portion of a top surface of said roof including said roofing elements with said netting material; and

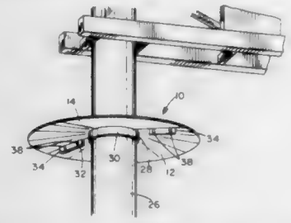
securing said netting material to said roof against and in contact with said roofing elements.

5,347,769

ANTI-GRAFFITI DEVICE

David W. Dinsmore, Solana Beach, Calif., assignor to Joyce Gangewer DBA Sea Coast Canvas & Awning Co., San Diego, Calif.

Filed Jul. 15, 1993, Ser. No. 93,264
Int. Cl.[5] E04B *1/72*
U.S. Cl. 52—101 7 Claims



1. A guard device for impeding access to signs via signposts, comprising:

a pair of guard members each comprising a semi-circular, substantially flat sheet member having a straight mating edge for engagement with the corresponding straight mating edge of the other guard member to form a substantially continuous guard surface;

each mating edge having a central recess for alignment with the central recess in the mating edge of the other guard member to form a circular opening for fitting around a signpost;

each recess having a semi-cylindrical flange projecting downwardly from said recess in a direction transverse to said guard surface, the flanges cooperating when the guard members are secured together to form a generally cylindrical collar, said collar comprising means for gripping engagement with a signpost; and

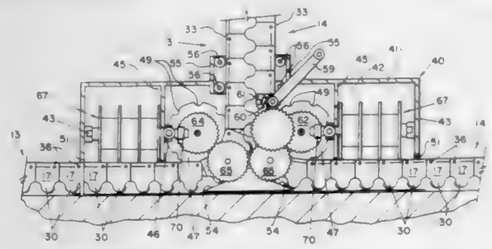
securing means for securing the guard members together with the opening and collar in gripping engagement with the signpost and the guard surface formed by the members projecting outwardly from the signpost in a generally radial direction to form a barrier against persons climbing the signpost.

5,347,770

EXTENDABLE MAST SUPPORT SYSTEM

Michael P. McDonnell, Unley Park, and Johannes J. W. Althoff, North Plympton, both of Australia, assignors to Polytech Technical Services Pty. Ltd., Australia

Filed Mar. 2, 1993, Ser. No. 961,907
Claims priority, application Australia, Jul. 16, 1990, PK 1176
Int. Cl.[5] E04H *12/18*
U.S. Cl. 52—108 13 Claims



1. A self-supportive link chain formed by a length of pivotally interconnected identical link elements which are arranged to mesh with identical link elements of a separate length of link chain, wherein each said link element comprises:

a pair of opposed side plates spaced from each other with each said side plate provided with an inwardly projecting tooth flanked by two half meshing voids;

a web interconnecting said side plates;

a pair of side flanges offset from said pair of opposed side

plates, with each said side plate attached to one said side flange wherein one end of said side plate forms a shoulder adjacent said attached side flange;

a first pivot means on said pair of side flanges; and

a second pivot means on said pair of side plates;

wherein said first pivot means is coupled to a second pivot means of an adjacent link element such that each said shoulder abuts against a top surface of a side plate of said adjacent link element to prevent rotation of said link element in a first direction about a pivot axis of said first pivot means;

wherein each said side flange abuts against an inner surface of a side plate of said adjacent link element preventing movement of said link element relative to said adjacent link element in a direction parallel to said pivot axis; and

wherein each said projecting tooth is received in a meshing void which is formed by adjacent half meshing voids of adjacent side plates of adjacent link elements of said separate length of link chain, and said meshing void is shaped complementary to said projecting tooth.

5,347,771

HIGH DAMPING DEVICE FOR SEISMIC RESPONSE CONTROLLED STRUCTURE

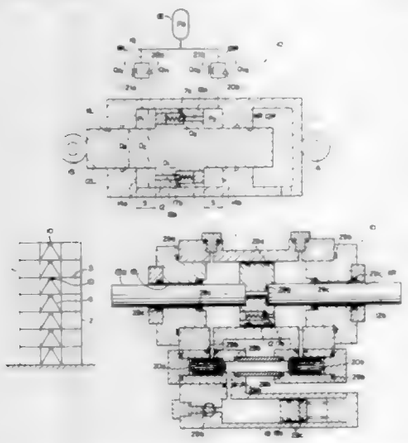
Takuji Kobori; Koji Ishii; Motoichi Takahashi; Yoshinori Matsunaga; Naoki Niwa; Jun Tagami; Takayuki Mizuno, all of Tokyo, and Kunio Furukawa, Kanagawa, all of Japan, assignors to Kajima Corporation and Kayaba Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,567

Claims priority, application Japan, Jun. 20, 1991, 3-148371; Aug. 30, 1991, 3-219963

Int. Cl.[5] E04H *9/02*

U.S. Cl. 52—167 R **14 Claims**



1. In the combination of a building vulnerable to the destructive forces of seismic vibration caused by an earthquake, having a first vertical wall support column building structure; a second horizontal floor support beam building structure interconnected to said first vertical wall support column building structure; a third rigid vibration-resisting load bearing building structure interconnected to said first and second building structures; and a passive seismic high damping hydraulic cylinder device interconnected between said first or said second building structure and said third structure to protect said building structures from the impact of said destructive forces of seismic vibration on said building, the improvement comprising: a hydraulic cylinder defining a chamber therewithin; a first piston, having a pair of opposite ends of equal surface area, shiftable within said chamber; a first piston rod secured to said first piston and in shiftable sealed engagement in an orifice in said hydraulic cylinder; hydraulic fluid; means to admit said hydraulic fluid into said hydraulic chamber at opposite ends of said first piston; first means to pass said hydraulic fluid from one of said ends of said first piston to the opposite of said ends of said first piston responsive to a first predetermined unbalance of pressures of said hydraulic fluid at said opposite ends of said first piston caused by shifting of said first piston rod and said first piston responsive to a first predetermined level of said forces of seismic vibration of said building structures; and coefficient of damping adjusting second means to pass said hydraulic fluid from one of said ends of said first piston to the opposite of said ends of said first piston responsive to a second predetermined unbalance of pressures of said hydraulic fluid at said opposite ends of said first piston caused by shifting of said first piston rod and said first piston responsive to a second predetermined level of said forces of seismic vibration of said building structures, whereby said forces of seismic vibration are damped by the passing of hydraulic fluid from one of said ends of said first piston to said opposite of said ends by said first and second means to pass said hydraulic fluid from one of said ends of said first piston to said opposite of said ends of said first piston.

5,347,772

VIBRATION SUPPRESSING STRUCTURE

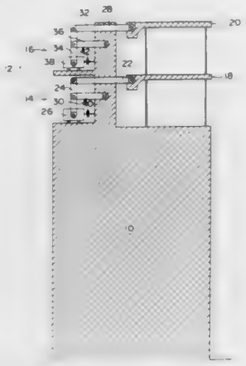
Shinji Ishimaru, Sohka; Takahiro Niiya, Funabashi, and Kazuko Ishimaru, Sohka, all of Japan, assignors to Takenaka Corporation, Osaka and Tokyu Construction Co., Ltd., Tokyo, both of Japan

Division of Ser. No. 882,013, May 13, 1992, Pat. No. 5,265,387. This application Jun. 11, 1993, Ser. No. 75,319

Claims priority, application Japan, May 30, 1991, 3-127806

Int. Cl.[5] E04B *1/98*

U.S. Cl. 52—167 R **4 Claims**



1. A vibration suppressing structure comprising:

a main structure;

a vibration suppressing section disposed in an upper portion of said main structure, wherein said vibration suppressing section is comprised of: an auxiliary structure adapted to undergo vibration in response to the vibration of said main structure occurring due to a disturbance, detecting means for detecting an amount of state variable of said auxiliary structure caused by the vibration, an auxiliary mass, an actuator for controlling said auxiliary mass by an amount of movement in which the amount of displacement of said auxiliary structure detected by said detecting means is multiplied by a predetermined proportional constant, and a damper; and

setting means for adjusting the proportional constants of said vibration suppressing section which are included in a mass matrix M_T for said vibration suppressing section, a damping matrix C_T, a stiffness matrix K_T, a location vector i_T of a disturbance, in such a manner that the relationships of

$$(\omega_T{}^j)^2 . M_T . i_T = K_T . i_T$$

$$2h_T . \omega_T{}^j . M_T . i_T = C_T . i_T$$

hold, with respect to a natural frequency $\omega_T{}^j$ of a j-th mode and a predetermined damping factor h_T.

5,347,773

RIGID COVER ASSIGNMENT FOR SWIMMING POOL OR BASIN

Albert J. Thil, 76, rue Pierre Brossolette, 92140 Clamart, France

Filed Dec. 23, 1992, Ser. No. 995,994

Claims priority, application France, Dec. 27, 1991, 91 16251

Int. Cl.[5] E04H *4/06*

U.S. Cl. 52—169.7 **19 Claims**

1. A rigid cover arrangement for a swimming pool having a basin (**1**), said cover arrangement being movable vertically inside the basin (**1**) between two extreme positions, one of said extreme positions being a bottom (**7**) and the other of said extreme positions being the surface of the pool, said rigid cover arrangement comprising:

sealing shutters (**70**) movably supported on a support structure (**9**) and means for providing for movement of said sealing shutters between an open position and a closed position;

said support structure (**9**) being planar and rigid and forming a plurality of partitions, each of said partitions being sealable by at least one of said shutters (**70**);

displacement means for positioning and maintaining the supporting structure (**9**) in at least a third position situated between said extreme positions; and

means for placing said sealing shutters (**70**) in said closed position when said supporting structure (**9**) is in said third position.

5,347,774

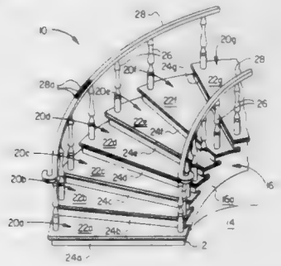
METHODS OF MANUFACTURING CURVED STAIRCASES AND STAIRCASES PRODUCED

Lynn H. Smith, Gunter, Tex., assignor to L. J. Smith, Bowerston, Ohio

Division of Ser. No. 800,064, Nov. 27, 1991, Pat. No. 5,163,491, which is a continuation-in-part of Ser. No. 468,758, Jan. 23, 1990, abandoned. This application Nov. 16, 1992, Ser. No. 977,268

Int. Cl.[5] E04F *11/00*

U.S. Cl. 52—182 **7 Claims**



1. A boxable at least partially curved staircase which employs cooperating treads and risers as a form for defining an at least partially curved path to be followed by inside and outside stringers laid up from flexible stringer strips along said curved paths to form at least a curved run of staircase of selected length, the boxable staircase comprising:

cooperating treads and risers in a plurality sufficient to form in sequential combination at least a curved run of staircase, the treads having opposite end portions, having an end portion for the inside formed to define an inside curved path and an opposite end portion for the outside formed to define an outside curved path along the outside end portions of assembled stringers;

said formed opposite end portions of said cooperating treads comprising notches formed along the underside of said treads to lie along the respective inside and outside curved paths;

said plurality of cooperating treads and risers being matable in assembled sequence with a vertically oriented riser under each tread, said risers having a length such that when assembled in sequence with the cooperating treads, opposite vertical end portions of each of the plurality of risers lie respectively in a curved plane which includes the inside and outside curved paths defined by the opposite ends of the assembled cooperating treads;

a multiplicity of flexible strips for laying up together in the form of a curved inside stringer of multiple layers, said strips being of common width and conveniently shippable length;

a multiplicity of flexible strips for laying up together in the form of a curved outside stringer of multiple layers, said strips being of common width and a conveniently shippable length which is less than the full length of the curved stringer required to extend from one end of the curved run to the other end of the curved run;

at least one first flexible strip for laying up along the outside curved surface of an inside curved stringer, said outside curved surface lying along said inside curved path, being in contact with one end of the risers under each tread, when assembled, and having sequential cutaway upper edge means for engaging the inside curved path formed on the inside end portion of sequentially assembled treads;

at least one second flexible strip for laying up along the outside curved surface of an outside curved stringer, when formed, to have its outside curved surface laying along said outside curved path, being in contact with one end of the risers under each tread, when assembled, and having sequential cutaway upper edge means for engaging said outside curved path formed on the outside end portion of sequentially assembled treads; and

wherein said upper edge means of said at least one first and second flexible strips are adapted to supportingly follow and engage the notches formed along the underside of sequential treads when assembled to form said staircase.

5,347,775

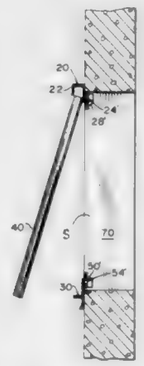
HURRICANE SHUTTERS FOR WINDOWS

Jorge Santos, 2234 W. 8th Ct., Hialeah, Fla. 33010

Filed Jul. 27, 1993, Ser. No. 97,212

Int. Cl.[5] E06B *3/26*

U.S. Cl. 52—202 **8 Claims**



1. A shutter system for protecting building apertures having opposing frame sides including:

A. an elongated top rail means including an elongated channel member having first, second and top elongated side wall members and said first and second elongated side wall members kept parallel and spaced apart from one another by said elongated top wall member, and said elongated top rail means further including an elongated first guide member rigidly mounted to said second elongated side wall member;

B. first top sliding carrier means including a first guide slot which cooperatively and slidably receives said first guide member and further including means for attaching said first top sliding carrier means to the frame side of said aperture;

C. second top sliding carrier means including a second guide slot which cooperatively and slidably receives said first

guide member and further including means for attaching said second top sliding carrier means to the frame side of said aperture;

D. elongated bottom rail means including a first elongated flat bar member having first and second sides, a second elongated flat bar member with punched holes and said second elongated flat bar member being mounted perpendicular to said first elongated flat bar member along the entire length of the first side of said first elongated flat bar member, and an elongated second guide member rigidly mounted to the second side of said first elongated flat bar member;

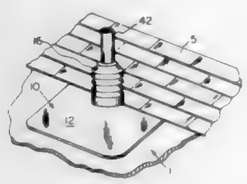
E. first bottom sliding carrier means including a third guide slot which cooperatively and slidably receives said second guide member and further including means for attaching said first bottom sliding carrier means to the frame side of said aperture;

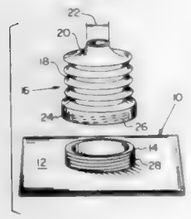
F. second bottom sliding carrier means including a fourth guide slot which cooperatively and slidably receives said second guide member and further including means for attaching said bottom sliding carrier means to the frame side of said aperture;

G. a shutter cover means mounted between said top and bottom rail means; and

H. means for securing said cover means against said bottom raft means.

5,347,776
FLEXIBLE ROOF VENT SEALING DEVICE
James M. Skoff, 1212 Chestnut St., Oakdale, Pa. 15071
Filed Apr. 6, 1993, Ser. No. 43,278
Int. Cl.[5] E04D *13/08*
U.S. Cl. 52—219 **19 Claims**





1. A flexible roof vent sealing device comprising:

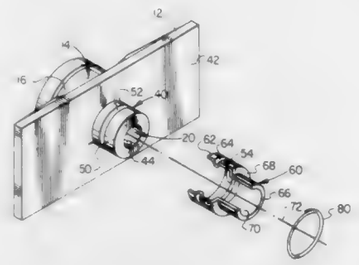
a base section adapted for attachment to a roof or wall surface including a base plate, and a substantially tubular connecting member extending from said base plate;

a separable sealing section removably coupled to said base section, said sealing section including a flexible, corrugated tubular body;

a sealing means provided at one end of said corrugated tubular body to form a watertight seal with a roof vent pipe; and

a coupling means provided at the other end of said corrugated tubular body to removably attach said sealing section to said connecting member of said base section without disturbing said attachment of said base section to said roof or wall surface, said coupling means forming a watertight seal between said separable sealing section and said base section.

5,347,777
ANCHOR PLATE ASSEMBLY
James R. Sudduth, Seagoville, Tex., assignor to Post Tension Product Mfg., Inc., Seagoville, Tex.
Filed Apr. 23, 1993, Ser. No. 52,487
Int. Cl.[5] E04C *5/12, 3/26*
U.S. Cl. 52—223.13 **6 Claims**



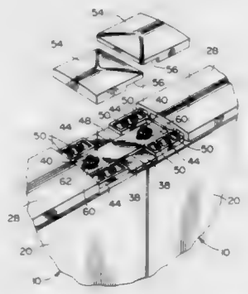
4. An improved anchor plate assembly of the type in which a plate for placement in a concrete formation includes an aperture for a tendon to pass therethrough, a first side facing away from the concrete formation, and a second side facing the concrete formation, the improvement comprising:

a mounting member mounted to the second side of the plate, said mounting member having an aperture sized for the passing of the tendon therethrough and aligned with the aperture in the plate, an outer surface extending from the plate, and a continuous groove in the outer surface which surrounds said mounting member;

a tubular adaptor having a first end with an interior for receiving the outer surface of said mounting member and a lip for engaging the groove of said mounting member, and with an exterior having a groove located sufficiently close to the lip of the interior region so that force applied to the groove will cause pressure between the lip of the interior region and the groove of said mounting member, and having a second end with an interior region for passing the tendon therethrough; and

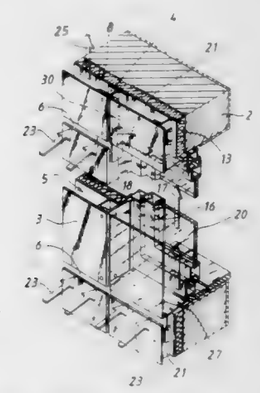
a ring for mounting within the groove of said tubular adaptor and applying force thereon, thereby causing pressure between the lip of said tubular adaptor and the groove of said mounting member.

5,347,778
PARTITION JOINING SYSTEM
James R. Bray, Hendersonville, Tenn., assignor to Globe Business Furniture, Inc., Hendersonville, Tenn.
Filed Apr. 7, 1993, Ser. No. 43,795
Int. Cl.[5] E04B *2/82*
U.S. Cl. 52—239 **20 Claims**



17. A partition joining system comprising a plurality of rectangular partitioning panels each having top and bottom edges, top and bottom corners, a first attachment fitting on each top corner, a second attachment fitting on each bottom corner, and an edging means extending along the top edge of the panel and terminating at said first attachment fittings, the system further including a plurality of plate-like top connector brackets, each top connector bracket for releasably attaching to the first attachment fittings of a pair of adjacent panels to connect the top corners of the panels together and a plurality of bottom connector brackets, each bottom connector bracket for releasably attaching to the second attachment fittings of a pair of adjacent panels to connect the bottom corners of the panels together and wherein the panels further include a removable cover for each first attachment fitting adapted to fit onto the attachment fitting over a top connector bracket and form a visual extension of said edging means when a pair of panels are connected together as aforesaid, wherein each first attachment fitting comprises a flange portion at the top edge of the panel adjacent said edging means, attachment means on said flange for a top connector bracket and connector means on said flange for the respective cover, wherein the connector means on each said flange comprises snap-in fittings and wherein the respective covers have complimentary internal snap-in fittings and a stepped peripheral wall defining a slot to accommodate a top connector bracket.

5,347,779
HIGH-RISE BUILDING
Paul Jordan, Konstanz, Fed. Rep. of Germany, assignor to RLS-Bautechnologie-AG, St. Gallen, Switzerland
Filed Jul. 11, 1991, Ser. No. 728,256
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1990, 4022441
Int. Cl.[5] E04F *17/04*
U.S. Cl. 52—302.3 **9 Claims**



1. In a high-rise building comprising

an exterior wall defining an interior space in said building,

an exterior sheath spaced in front of said wall, and

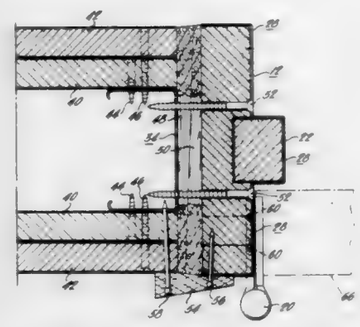
means defining between said wall and said sheath a plurality of vertically extending, juxtaposed flow passages, each of said flow passages having a lower end and an upper end, which ends communicate with the ambient air outside said building through inlet openings adjacent to the lower ends of said passages and through outlet openings adjacent to the upper ends of said passages,

the improvement comprising

a plurality of vertically spaced intake openings distributed throughout the height of said sheath and leading to said flow passages whereby the ambient air adjoining said sheath communicates with said flow passages, and

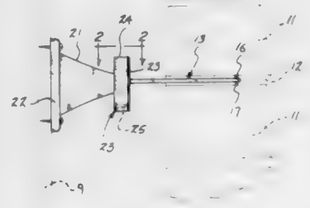
valve-controlled transverse flow passages connecting adjacent ones of said vertically extending flow passages.

5,347,780
GYPSUM FIBERBOARD DOOR FRAME
Turner W. Richards, Conyers; Hubert C. Francis, Lithonia, and George F. Fowler, Jr., Norcross, all of Ga., assignors to Georgia-Pacific Corporation, Atlanta, Ga.
Continuation-in-part of Ser. No. 420,362, Oct. 12, 1989, Pat. No. 5,171,366. This application Aug. 20, 1992, Ser. No. 932,785
Int. Cl.[5] B06B *1/08*
U.S. Cl. 52—204.1 **11 Claims**



1. A fire-resistant door frame comprising a pair of spaced vertical gypsum fiberboard side jambs connected at their upper ends by a horizontal gypsum fiberboard head jamb, said gypsum fiberboard jambs each comprising at least about 65 wt. % set gypsum dihydrate and at least about 7 wt. % reinforcing fibers substantially uniformly distributed therethrough, said gypsum fiberboard jambs having a screw-holding capacity of at least about 400 lbs.

5,347,781
MASONRY TIE
Brian J. Hanlon, 2129 E. Fairmount Ave., Baltimore, Md. 21231
Filed May 3, 1993, Ser. No. 55,288
Int. Cl.[5] E04B *1/38*
U.S. Cl. 52—379 **5 Claims**

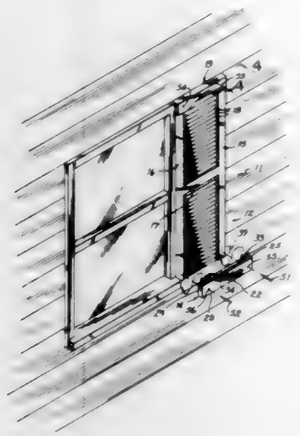


1. A masonry tie, comprising,

a first anchor plate, having a central opening to receive mortar therethrough, wherein the first anchor plate includes a base leg and a first leg and a second leg, with the first leg and the second leg extending from the base leg at an apex, with the cylindrical head mounted to the apex, with the cylindrical head orthogonally oriented relative to the first anchor plate, and

a second anchor plate, the second anchor plate orthogonally oriented relative to the first anchor plate, and including a mounting plate fixedly and orthogonally mounted at a first end of the second anchor plate, and the second anchor plate including a second anchor plate second end having a tubular sleeve, with the tubular sleeve arranged to receive the cylindrical head therewithin, and the tubular sleeve oriented in a parallel orientation relative to the mounting plate.

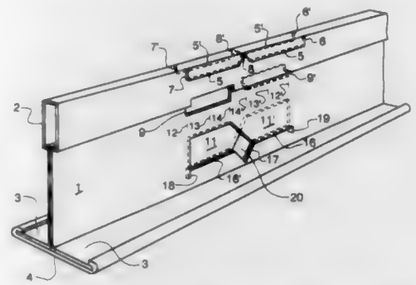
5,347,782
SHUTTER ASSEMBLY
Michael Vagedes, Florence, Ky., assignor to Richwood Building Products, Inc., Richwood, Ky.
Filed May 11, 1993, Ser. No. 60,316
Int. Cl.[5] E06B *7/08*
U.S. Cl. 52—473 8 Claims



1. A shutter assembly comprising a body portion;
an upper cap; and
a lower cap;
said body portion having an upper and lower portion and two parallel lateral stiles said upper portion having a front surface and an upper edge and two lateral sides, said lower portion having a front surface and a lower edge and two lateral sides;
wherein said upper and lower caps are fitted over said upper portion and lower portion respectively; said upper cap covering said upper edge, said lateral sides and said front surface of said upper portion and thereby permitting the length of said shutter to be adjusted by covering a selected length of said front portion and said lower cap covering said lower edge and said lateral sides and said front surface of said lower portion thereby permitting the length of the shutter to be adjusted by covering a selected length of said front portion.

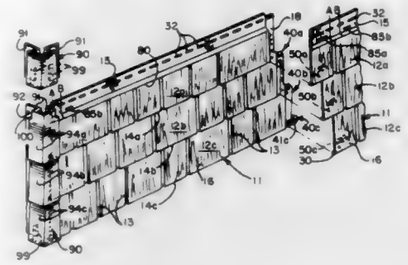
5,347,783
PRENOTCHED FIRE-RATED RUNNER
Sandor A. Frecska; Ernest B. Nute, Jr., both of Lancaster, Pa., and Gale E. Sauer, Sinclairville, N.Y., assignors to Armstrong World Industries, Inc., Lancaster, Pa.
Filed Mar. 4, 1993, Ser. No. 27,726
Int. Cl.[5] E04B *9/00*
U.S. Cl. 52—506.07 3 Claims

1. A fire expansion section for a ceiling runner wherein:
(a) the ceiling runner with longitudinal ends has a vertical web member having at its upper end a bulb-shaped element with two spaced side walls, a bottom wall and a top wall, and at its lower end oppositely positioned flanges on either side of the web to support ceiling boards, said web member consisting of two side-by-side pieces of metal, each piece connected at the bottom of the web to a flange and connected at the top of the web to the bottom wall of the bulb; and
(b) said fire expansion section being located between the longitudinal ends of the ceiling runner comprising:
(1) a lance cut in each side wall of the bulb-shaped element without the removal of metal;
(2) a web cutout in one piece of the metal of the web at the top of the web adjacent the bulb bottom wall and into the bulb bottom wall of the runners bulb near and below one end of the lance in one side wall and a corresponding cutout similarly located in the other piece of metal of the web and bulb bottom wall near and below the opposite end of the other lance in the other side wall;
(3) said bulb bottom walls being unconnected at their edges adjacent the web;
(4) three evenly spaced apart cuts in the web near the flanges, the center cut at its lower end being V-shaped with the point of the V-shape positioned near the flange



to form a notch, the center cut being cut through both pieces of metal forming the web, a cut on one side of the center notch being cut through only one piece of metal forming the web with the cut located below the web cutout in the same piece of metal, a cut on the other side of the center notch being cut through the other piece of metal forming the web and positioned in the same manner as **34** the cut on the said one side; and
(5) the upper ends of the three cuts being connected by a severance of the metal above the cuts.

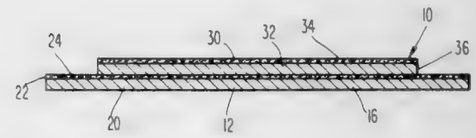
5,347,784
DECORATIVE WALL COVERING WITH IMPROVED INTERLOCK AND CORNER CONSTRUCTION
Dallas M. Crick, Pembroke Pines, and Alfred Moliere, Miami, both of Fla., assignors to Nailite International, Miami, Fla.
Filed Dec. 28, 1992, Ser. No. 997,586
Int. Cl.[5] E04D *1/34*
U.S. Cl. 52—520 26 Claims



1. A wall covering for mounting on a support surface comprising
a plurality of panels each having a body portion formed with simulated building elements, said panels each having right-side and left-side marginal edge regions,
said panels being mountable on said support surface in a plurality of horizontal courses with each of said panels having a side marginal edge region overlapping an underlying side marginal edge region of an adjacent panel,
said overlapping and underlying side marginal edge regions defining engageable sealing means therebetween,
said underlying side marginal edge region having a plurality of laterally extending interlock flanges disposed in elevated relation to the support surface upon which the panel is mounted, and

said overlapping side marginal edge region having integrally formed locking elements depending from an underside thereof for positively engaging an upper peripheral edge portion of a respective one of said interlock flanges for positively interlocking the overlapping side marginal edge region with the underlying side marginal edge region of the adjacent panel and for maintaining said side marginal edge region sealing means in an engaged relation.

5,347,785
TWO ELEMENT SHINGLE
Louis A. Terrenzio, Huntingdon Vally, and Michael J. Noone, Wayne, both of Pa., assignors to CertainTeed Corporation, Valley Forge, Pa.
Filed Jun. 15, 1992, Ser. No. 898,793
The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.
Int. Cl.[5] E04D *1/28*
U.S. Cl. 52—555 22 Claims



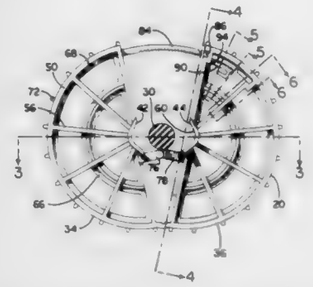
1. A shingle comprising:
a) a first element including a reinforcing web, a first asphaltic binder, and a first adherent surfacing material, and
b) a second element overlaid on the first element, the second element including a layer of second asphaltic binder and a second adherent surfacing material, the second asphaltic binder having a greater elongation than the first asphaltic binder.

5,347,786
REUSABLE CONCRETE SPACER SLEEVE
B. Eugene Hodges, Greenville, Mich., assignor to James Bruno, Ada, Mich.
Filed Oct. 7, 1992, Ser. No. 969,717
Int. Cl.[5] B28B *7/16*
U.S. Cl. 52—577 5 Claims



1. For use in conjunction with a vertical drain pipe, a reusable concrete spacer sleeve comprising:
a substantially cylindrical body having an interior surface and an upper rim, the cylindrical body being open at the top and bottom; and
substantially rectangular fins for positioning said cylindrical body about said pipe, said fins extending radially inwardly from the interior surface of the cylindrical body from one vertical edge of said fins, said fins having second vertical edges defining a substantially cylindrical space for accommodating the pipe in a snug fashion;
said substantially cylindrical body and fins being formed of a flexible thermoplastic material.

5,347,787
UNIVERSAL SPACER FOR CONCRETE REINFORCEMENT RODS
Norman W. Gavin, 2545 Ridge Rd., North Haven, Conn. 06473
Filed Aug. 25, 1993, Ser. No. 112,011
Int. Cl.[5] E04C *5/16*
U.S. Cl. 52—677 11 Claims

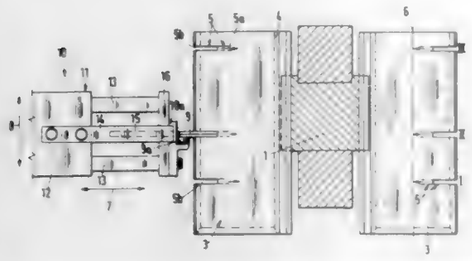


1. A spacer for mounting on a reinforcement rod used in concrete item manufacture for spacing said rod from an object, said spacer having a top, a bottom, and comprising:
a first saddle having a first front side and a first back side,
a second saddle having a second front side, a second back side,
said first and second front sides being for clamping the rod between them for said mounting of said spacer on said rod,
a first arm attached to said first saddle and extending from said first saddle to the top of said spacer,
a second arm attached to said second saddle and extending from said second saddle to the top of said spacer, and
hinge means connecting said first and second arms at the top of said spacer for pivoting said first saddle to said second saddle on said hinge means,
a third arm attached to said first saddle and extending away from said first arm,
a fourth arm attached to said second saddle and extending away from said second arm,
means for resisting separation of said third and fourth arms, spaced from said saddles and attached to a one of said third and fourth arms.

5,347,788
APPARATUS FOR ADJUSTING THE HOLDING CAPACITY OF A WORKPIECE CARRIER
Georg Petz, Griesheim, and Frank Heidenblut, Darmstadt, both of Fed. Rep. of Germany, assignors to Tetra Alfa Holdings S.A., Pully, Switzerland
Filed Nov. 10, 1992, Ser. No. 976,165
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1991, 4137098
Int. Cl.[5] B65B *43/42, 51/00;* B31B *1/00;* B65G *17/36*
U.S. Cl. 53—282 18 Claims

1. An apparatus for adjusting the holding capacity of a workpiece carrier, the apparatus comprising a workpiece carrier in the form of a sleeve open at both ends and defining a central longitudinal axis, the workpiece carrier being adapted for support on a conveyor line and having at least one substantially plane side wall adapted to mounting adjacent to the conveyor line and extending substantially parallel with the conveyor line and with a direction of conveyance of the workpiece carrier, the workpiece carrier including at least one inner surface having recesses adapted for positioning of a workpiece

in the workpiece carrier, wherein the recesses are disposed at a distance from one another in the direction of the longitudinal



axis and are adapted to receive at least one movable abutment member.

5,347,789

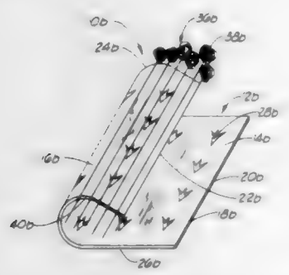
DECORATIVE MATERIAL HAVING A COLORED STICKY ELEMENT DISPOSED THEREON FORMING AT LEAST A PORTION OF A DECORATION AND METHOD

Donald E. Weder, Highland, Ill., assignor to Highland Supply Corporation, Highland, Ill.

Continuation-in-part of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 391,463, Aug. 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application Jun. 3, 1992, Ser. No. 894,705

Int. Cl.[5] B65B *11/04, 25/02*

U.S. Cl. 53—397 **19 Claims**



1. A method for wrapping a decorative material about an item, comprising the steps of:

providing a sheet of material having an upper surface and a lower surface, and an outer periphery, a colored sticky element being disposed upon at least a portion of at least one surface of the sheet of material, the co'ored sticky element comprising at least a portion of a decoration on the sheet of material, the colored sticky element blending with the decoration thereby hiding the bonding characteristics of the colored sticky element;

providing an item comprising a floral arrangement, the floral arrangement further comprising an upper end consisting of a flower end and a lower end consisting of a stem end;

disposing the floral arrangement on the sheet of material; and

wrapping the sheet of material about the floral arrangement by overlapping a portion of the sheet of material over another portion of the sheet of material and bonding the overlapping portions of the sheet of material together by contacting the colored sticky element on each overlapping portion of the sheet of material with a corresponding adjacent portion of the sheet of material wherein the colored sticky element on the sheet of material contacts the sheet of material to connect the overlapping portions of the sheet of material together, the connected sheet of material substantially encompassing and surrounding a substantial portion of the floral arrangement thereby forming a wrapper,

wherein the colored sticky element on the wrapper is visible, providing at least a portion of the decoration after the sheet of material has been wrapped about the floral arrangement to form the wrapper.

5,347,790

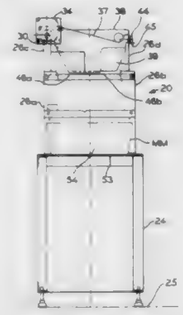
AUTOMATIC TRAYING AND AUTOMATIC SWEEPING DEVICE FOR LETTER MAIL

Michael Romanenko, South Elgin, and Gerald D. Ross, Streamwood, both of Ill., assignors to ElectroCom Gard, Ltd., Niles, Ill.

Filed Dec. 1, 1992, Ser. No. 982,976

Int. Cl.[5] B65B *23/14, 35/00*

U.S. Cl. 53—443 **22 Claims**



1. A piece sweeping device for receiving and relocating a stream of pieces, comprising:

an accumulation platform having an open side for receiving a stream of pieces and having an openable floor;

a tray platform arranged below said accumulation platform;

a means for holding said stream of pieces received onto said accumulation platform horizontally stacked, each piece of said stream of pieces held vertically upright, in a horizontal stack of select length; and

said tray platform sized for holding a tray for receiving said horizontal stack of pieces through said openable floor.

5,347,791

COMPUTER CONTROLLED HORIZONTAL WRAPPER

Jeffrey A. Ginzl, and Gregory S. Duncan, both of Green Bay, Wis., assignors to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 971,887, Nov. 5, 1992, abandoned. This application Jun. 16, 1993, Ser. No. 78,796

Int. Cl.[5] B65B *9/06, 57/00*

U.S. Cl. 53—450 **3 Claims**

1. A method of operating a horizontal wrapping machine comprising a supply drive motor for supplying a succession of regularly spaced articles from an article supply into a tubular web, means for feeding and sealing the margins of the formed web, and means for transversely sealing and cutting the web tube to produce packages having at least one article contained therein, the method comprising the steps of:

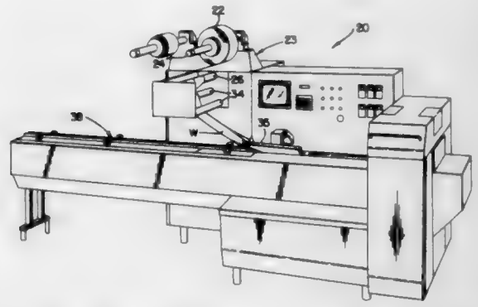
generating a signal representative of the velocity and position of the article supply drive motor;

digitizing the velocity and position signal;

generating a first cyclical velocity profile proportional to the velocity and position signal;

using the first velocity profile to control the velocity and position of the sealing and cutting means; and

adjusting the first velocity profile in order to minimize the time required for the sealing and cutting means to complete a cycle when the height of the articles exceeds a



value which is dependent upon the height and length of the articles and the dimensions of the sealing and cutting means.

5,347,792

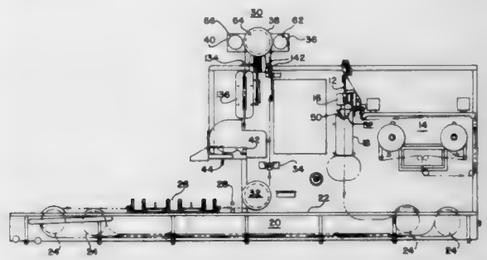
METHOD AND APPARATUS FOR FORMING A SLICE OF A FOOD ITEM HAVING A HEAT TACK SEAL

Vincent A. Meli, and David L. Shaft, both of Green Bay, Wis., assignors to Schreiber Foods, Inc., Green Bay, Wis.

Continuation of Ser. No. 843,503, Feb. 28, 1992, abandoned. This application Aug. 31, 1993, Ser. No. 114,981

Int. Cl.[5] B65B *9/12, 51/30, 51/16*

U.S. Cl. 53—450 **38 Claims**



1. A food packing device for producing individually wrapped slices of a food item from a continuous flattened tube of wrapping material with the food item therein, the flattened tube having a front face and a rear face, the device comprising:

a registration station for producing adjacent sections of said flattened tube separated from each other by registration lines, wherein each of said registration lines are formed by said registration station pressing the front face and rear face of the tube material along an area transverse to the length of the tube such that the food item is squeezed out of said area;

a conveyor to transport said continuous tube of the food item;

a heating station disposed downstream of the registration station to heat said adjacent sections of said food item from said registration station at said registration lines for a predetermined time and wherein said registration lines are not pressed during said predetermined time; and

a sealing station to receive said adjacent sections of said food item from said heating station and to heat said registration lines to form a tack seal at said registration lines.

5,347,793

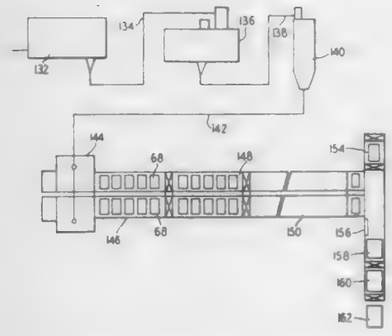
VACUUM FILLING MACHINE AND METHOD

Nihat O. Cur, Royalton Township, Berrien County; Richard W. Kruck, Sodus Township, Berrien County; Martin P. Immoos, Coloma Township, Berrien County, all of Mich., and Mohamed E. Higazy, Cool Spring Township, LaPorte County, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 23, 1993, Ser. No. 35,825

Int. Cl.[5] B65B *31/02*

U.S. Cl. 53—512 **23 Claims**



1. A vacuum filling machine for use in filling a porous pouch with microporous powder comprising:

a housing sealable in an air tight manner;

a pair of substantially parallel plates positioned within said housing, one of said plates having a plurality of perforations therethrough extending from a front side of that said plate to a back side of that said plate opening into a vacuum shroud inside said housing;

said housing being openable to receive said porous pouch between facing front sides of said plates;

a nozzle for providing a communication path between said pouch and a source of microporous powder;

a vacuum source communicatable with an interior of said housing and said back side of said plate with said perforations through said vacuum shroud; and

heat sealing means for sealing an edge of said pouch after filling with microporous powder.

5,347,794

EQUIPMENT FOR MANUFACTURING OF SUBCUTANEOUS CAPSULES

Rolf Hartzell; Timo Helle; Pekka Lankinen, all of Turku, and Pekka Nieminen, Preitiläall of Finland, assignors to Leiras Oy, Turku, Finland

Continuation of Ser. No. 721,457, Jul. 3, 1991, Pat. No. 5,230,207. This application Jul. 26, 1993, Ser. No. 96,961

The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.

Int. Cl.[5] B65B *1/02, 1/12;* **A61J** *3/07*

U.S. Cl. 53—547 **4 Claims**

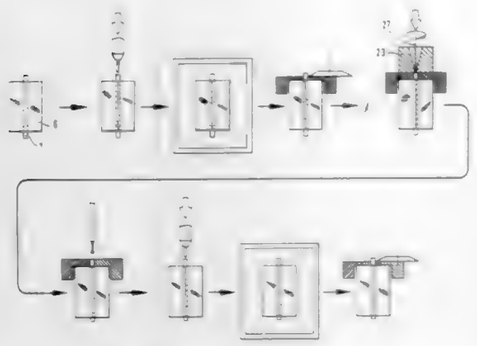
1. Apparatus for manufacturing a subcutaneous capsules filled with a selected medicine comprising:

a tube cutting mechanism which cuts a continuous length of tubing into a plurality of tubular capsules, each capsule having an open top end and an open bottom end;

a capsule support mechanism which holds the capsules in a predetermined array, the bottom open ends of the capsules being sealed by a sealing mechanism;

a plurality of spring mechanisms insertable into the open top ends of each capsule held in the array, each spring mechanism receiving a selected quantity of medicine for each capsule, each spring mechanism being rotatable and deliv-

ering the selected quantities of medicine into each capsule by insertion of the spring mechanisms into the open top



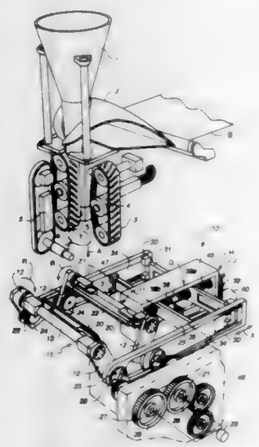
ends of each capsule and rotation of the spring mechanisms.

5,347,795

TRANSVERSE SEALER FOR PACKAGING MACHINE

Masao Fukuda, Shiga, Japan, assignor to Ishida Scales Mfg. Co., Ltd., Kyoto, Japan

PCT No. PCT/JP92/01291, § 371 Date Feb. 5, 1993, § 102(e) Date Feb. 5, 1992, PCT Pub. No. WO93/07058, PCT Pub. Date Apr. 15, 1993
PCT Filed Oct. 5, 1992, Ser. No. 983,561
Claims priority, application Japan, Oct. 3, 1991, 3-283526; Feb. 14, 1992, 4-061318; Apr. 3, 1992, 4-112242
Int. Cl.[5] B65B *9/08, 51/10*
U.S. Cl. 53—552 20 Claims



1. A transverse sealer for a packaging machine for sealing a bag in a transverse direction after said bag is filled with articles to be packaged, said bag being made from a belt-like elongated film moving on a transportation path in an film-transporting direction, said transverse direction being transverse to said film-transporting direction, said transverse sealer comprising:

a pair of transverse sealing means disposed downstream to bag-forming means for transforming said film into a specified shape for forming a bag and opposite to each other on mutually opposite sides of said transportation path of said film;

a pair of rotary driving means for causing said pair of transverse sealing means to rotate in synchronism with each other such that said transverse sealing means move along said film-transporting direction when said transverse sealing means are near each other; and

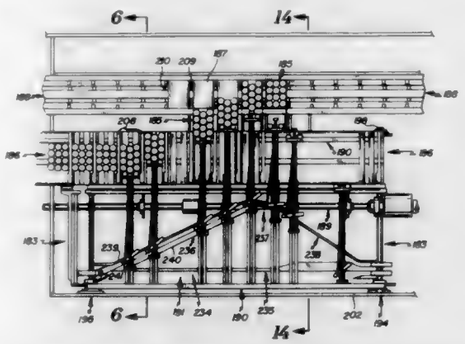
a trajectory-compression adjusting means for causing said pair of transverse sealing means to move on straight trajectories along said transportation path of said film by causing said pair of rotary driving means to move towards and away from each other and maintaining a compressive force between said pair of transverse sealing means at a specified level while said pair of rotary driving means causes said pair of transverse sealing means to sandwich and compress said film therebetween.

5,347,796

CROSS LOADING APPARATUS FOR USE WITH CARTONING SYSTEMS

Kelly W. Ziegler, Crosby; Clayton C. Alexson, Nisswa, and Curt W. Lovold, Warroad, all of Minn., assignors to Riverwood International Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 856,450, Mar. 24, 1992, Pat. No. 5,241,806. This application May 3, 1993, Ser. No. 56,669
Int. Cl.[5] B65B *35/44, 35/40, 39/14*
U.S. Cl. 53—566 37 Claims



1. A lateral transfer apparatus for use in an article processing system of the type wherein articles or article groups are transported in one or more longitudinally oriented streams, comprising:

a) a frame structure;

b) a plurality of transfer elements disposed at predetermined longitudinally spaced intervals, said transfer elements being for laterally moving articles which are being longitudinally transported in at least one stream of the article processing system, each said transfer element including a stepped contact member for moveable contact with the article, a support member connected to said contact member, and a control member for directing the lateral movement of said transfer elements, said control member including a first cam follower connected to said support member and controlling lateral movement of said transfer elements, and a second cam follower pivotally connected to said support member and further being connected to said contact member via linkage means, said second cam follower providing differential lateral movement to said stepped contact member;

c) means to longitudinally move said transfer elements, said longitudinal movement means being connected to said support member; and

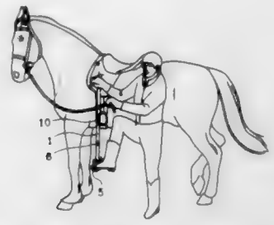
d) a cam track assembly having a predetermined configuration for laterally moving said transfer elements, said cam track assembly being cooperatively mated with said first and second cam followers.

5,347,797

MOUNTING STIRRUP

Lesley T. Seal, and Galen Seal, Jr., both of 2115 W. 14th St., Encinitas, Calif. 92024

Filed Apr. 23, 1991, Ser. No. 690,196
Int. Cl.[5] B68C *1/16*
U.S. Cl. 54—46.1 4 Claims



1. A mounting stirrup assembly comprising:

strap means of at least four feet in length when fully extended having two ends, said strap means having an attachment means at one end that cannot function as a normal riding stirrup adapted for attachment to a saddle already having riding stirrups, said strap means having a mounting stirrup attached to the other end of said strap means, said strap means having no more than a single stirrup attached thereto, and

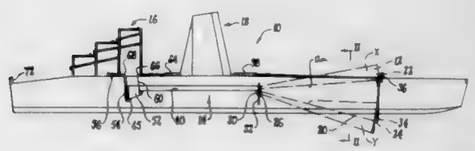
said strap means is made so that when said strap means is attached to said saddle, said mounting stirrup always hangs below the riding stirrups of said saddle when said mounting stirrup is being used to mount a horse.

5,347,798

HARVESTING APPARATUS

Bernard J. Quin, Triabunna, Australia, assignor to Frish Pty. Ltd., Tasmania, Australia

PCT No. PCT/AU91/00336, § 371 Date Apr. 2, 1993, § 102(e) Date Apr. 2, 1993, PCT Pub. No. WO92/02691, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 1, 1991, Ser. No. 976,996
Claims priority, application Australia, Aug. 3, 1990, PK1549
Int. Cl.[5] A01D *44/00*
U.S. Cl. 56—8 25 Claims



1. A harvesting apparatus including an inlet means capable of selectively engaging a body of water at or near the surface thereof;

at least a first separating stage;

said apparatus being operable to allow water to flow over the inlet means to the at least one first separating stage by relative movement between the inlet means and the body of water;

a pivotal communication between said inlet means and said first separating stage capable of independent vertical movement; and

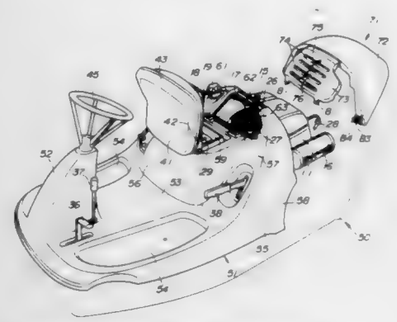
control means, able to be coordinated with the pivotal communication, and operable to control the flow rate of water over said inlet means to said first separating stage, and able to be coordinated so as to adjust the height, depth or angle of the first separating stage relative to the surface of the body of water.

5,347,799

MOTOR VEHICLE BODY PANELING

Jun Hosaka, Kanagawa; Hiroshi Moriyama, Saitama, both of Japan, and Tatsuya Tokuda, Columbus, Ohio, assignors to Honda Giken Hogyo Kabishiki Kaisha, Tokyo, Japan

Filed Jan. 6, 1993, Ser. No. 2,499
Claims priority, application Japan, Jan. 10, 1992, 4-021757
Int. Cl.[5] A01D *34/64;* B62D *29/04*
U.S. Cl. 56—15.8 17 Claims



5. A riding-type lawn mower comprising:

a frame;

front and rear wheels rotatably mounted on frame;

a cutter deck mounted on and disposed below said frame between said front and rear wheels;

a steering column mounted on a front portion of said frame;

a driver's seat mounted on a central portion of said frame;

a prime mover mounted on a rear position of said frame; and

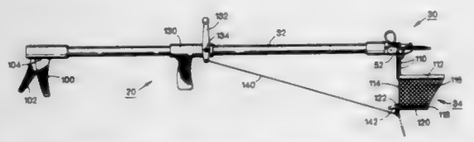
a body paneling integrally molded of a synthetic resin material and mounted on said frame, said body paneling including a steering column cover member extending around said steering column, a floor panel extending rearwardly from said steering column, a seat cowl jointed to said floor panel extending up to said driver's seat and covering said prime mover from the front of the driver's seat, and a rear cowl extending rearwardly from said floor panel and covering prime mover behind said driver's seat.

5,347,800

APPARATUS FOR HARVESTING, PRUNING, AND/OR TRIMMING

Robert K. Morgan, 42 Garden Dr., Fairfield, Conn. 06430-3330

Filed Jun. 17, 1993, Ser. No. 77,278
Int. Cl.[5] A01D *46/22*
U.S. Cl. 56—335 14 Claims



8. An apparatus for harvesting produce, pruning, trimming, or the like, comprising:

(a) an elongate tubular member having proximal and distal ends;

(b) a cutting assembly disposed at said distal end of said elongate tubular member;

(c) first actuating means spaced apart from said distal end of said tubular member such as to remotely actuate said cutting assembly;

(d) a basket assembly disposed below said cutting assembly such that material cut by said cutting assembly can fall by gravity into said basket assembly;

(e) said basket assembly having a hinged bottom rotatable from a first position closing said basket so as to retain said

material therein and a second position opening said basket so as to permit said material therein to fall therefrom; and

(f) second actuating means spaced apart from said basket assembly to remotely cause rotation of said bottom between said first and second positions.

5,347,801

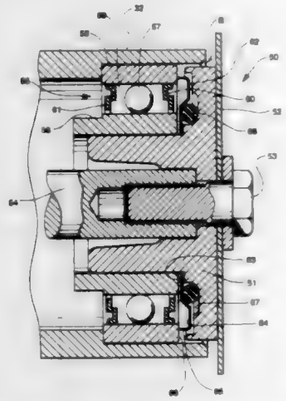
ROUND BALER BELT IDLER ROLLER MOUNTING APPARATUS

Irwin D. McIlwain, Lancaster, Pa., assignor to Ford New Holland, Inc., New Holland, Pa.

Filed Oct. 19, 1992, Ser. No. 963,181

Int. Cl.[5] A01F *15/07, 15/18;* **F16C** *33/78*

U.S. Cl. 56—341 **11 Claims**



1. In a round baler having a frame with opposing side walls; conveying means including a series of inwardly facing moving surfaces defining a baling chamber for forming cylindrical bales of crop material, means for feeding crop material into said chamber, rotatable transverse rollers mounted between said opposing side walls of said frame for operatively supporting said conveying means, and journal means having a bearing assembly for mounting at least one of said rollers, said bearing assembly including a generally cylindrical stationary first race and a concentrically disposed generally cylindrical rotatable second race between which races a bearing cavity is formed for seating a series of bearings housed between said first and second races, and said second race rotatable relative to said first race, the improvement comprising

a generally ring shaped shield enclosing said cavity,

said generally ring shaped shield includes a first edge in contact with said second race,

said generally ring shaped shield further includes a coaxially disposed flange portion terminating at said edge, and

resilient means urges said shield in a generally axial direction to maintain continuous contact between said first edge and said second race.

5,347,802

SPINNING OR TWISTING SPINDLE

Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, Fed. Rep. of Germany, and Gerd Stahlecker, Eislingen/Fils, Fed. Rep. of Germany, assignors to Fritz Stahlecker and Hans Stahlecker, Fed. Rep. of Germany

Filed Oct. 11, 1990, Ser. No. 596,029

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1989, 3934843

Int. Cl.[5] D01H *7/14, 7/22*

U.S. Cl. 57—88 **19 Claims**

1. A spinning or twisting spindle arrangement comprising:

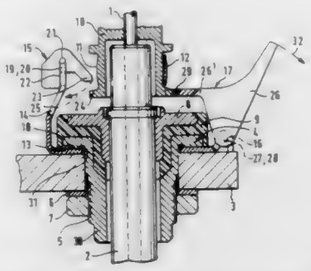
a spindle top part which includes a driving wharve,

a spindle bearing housing, the spindle bearing housing being provided with a flange which can be fastened to a spindle rail,

a spindle shaft connected to the spindle top part and extending in the spindle bearing housing,

a brake that can be applied to the driving wharve and is held in a holder which is arranged between the spindle rail and the flange,

and a securing hook which can be swivelled away and is engageable with a ring collar of the driving wharve,



wherein a single plate is provided which is clamped between the flange and the spindle rail and which is provided with the holder for the brake and with holding devices for the securing hook, whereby the brake and securing hook is separately assembled from the spindle bearing housing and is detachably connected as a unit via the single plate clamped between the flange and spindle rail.

5,347,803

SPINNING MACHINE AND A PROCESS FOR CHANGING BLOCKS OF SLIVER CANS ON A SPINNING MACHINE

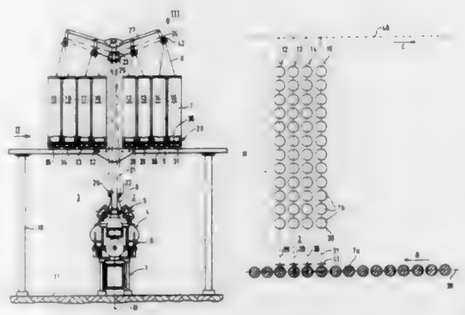
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, both of Fed. Rep. of Germany

Filed Apr. 20, 1992, Ser. No. 871,314

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1991, 4113296

Int. Cl.[5] D01H *13/02*

U.S. Cl. 57—90 **16 Claims**



1. A process for exchanging cans on a spinning machine of the type which is provided with a plurality of spinning stations on at least one side of the machine to each of which spinning stations a depositing site is assigned for a can containing a sliver to be spun, the depositing sites being arranged in several rows extending in a longitudinal direction of the machine, comprising:

stopping the spinning machine before an exchange of the cans;

exchanging all empty cans assigned to the spinning stations of at least one side of the machine for full cans during a common changing operation, said exchanging including:

a) transporting all empty cans so that all depositing sites assigned to said at least one side of the machine are vacant;

b) feeding the full cans in such a manner that at least one row of depositing sites that is closest to the spinning machine is supplied with cans first;

c) preparing the cans of the at least one closest row and the corresponding spinning stations for spinning;

d) supplying at least one next closest row of depositing sites with full cans;

e) preparing said at least one next closest row of cans and the corresponding spinning stations for spinning;

f) repeating steps d) and e) until all rows of depositing sites of said at least one side of the machine are supplied with full cans and all of the spinning stations are prepared; and

switching on the spinning machine again.

5,347,804

SPINNING MACHINE WITH DRIVABLE GUIDING BELTS FOR TRANSPORTING SLIVER

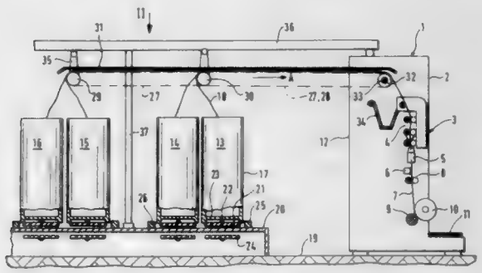
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, both of Fed. Rep. of Germany

Continuation of Ser. No. 868,228, Apr. 14, 1993, abandoned. This application Dec. 22, 1993, Ser. No. 171,859

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1991, 4113636

Int. Cl.[5] D01H *13/04*

U.S. Cl. 57—90 **18 Claims**



1. A one-sided air spinning machine comprising:

a plurality of air spinning stations arranged on one side of the machine in a row next to one another, each air spinning station including a drafting unit,

depositing sites provided on the other side of the machine for sliver supply cans, which sliver cans each contain a sliver to be spun, and

withdrawal devices for the withdrawal of the slivers from the cans and for feeding the slivers to the drafting units of the air spinning stations,

wherein the devices for the withdrawal and feeding of the slivers comprise drivable guiding belts which are approximately horizontally arranged and which extend horizontally directly from an area above the depositing sites to the area of the air spinning stations.

5,347,805

TWO-FOR-ONE-TWISTING SPINDLE WITH A COMPRESSED AIR OPERATED THREADING DEVICE

Frank Butzke, Tönisvorst; Heinz Fink, Krefeld, and Wolfgang Leupers, Mönchengladbach, all of Fed. Rep. of Germany, assignors to Palitex Project-Company GmbH, Krefeld, Fed. Rep. of Germany

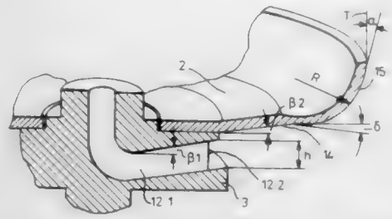
Filed Nov. 26, 1991, Ser. No. 802,067

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1990, 4037951

Int. Cl.[5] D01H *15/007*

U.S. Cl. 57—279 **10 Claims**

1. A two-for-one twisting spindle comprising a compressed air operated threading device with which a thread is fed through a thread feeding channel by a Jet of compressed air, with a first deflecting surface arranged at an underside of a turntable, that is disposed above a thread storage disk, and extending radially outwardly from an opening of a radial portion of said thread feeding channel, said first deflecting surface having a transition into a second deflecting surface which extends in an upward direction and is convex; wherein the improvement comprises:



said jet of compressed air leaving said opening of said thread feeding channel has a width h in a vertical direction and said second deflecting surface has a radius of curvature R, whereby a ratio $R/h \geqq 3$; and

wherein a ratio of a first angle $\beta 1$ of upward inclination of an upper wall of said radial portion relative to a horizontal plane to a second angle of upward inclination $\beta 2$ of said first deflecting surface relative to said horizontal plane is $\beta 1 > \beta 2$.

5,347,806

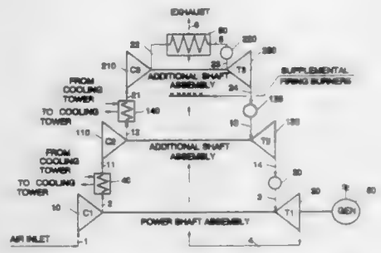
CASCADED ADVANCED HIGH EFFICIENCY MULTI-SHAFT REHEAT TURBINE WITH INTER-COOLING AND RECUPERATION

Michael Nakhamkin, Mountainside, N.J., assignor to Cascaded Advanced Turbine Limited Partnership, Mountainside, N.J.

Filed Apr. 23, 1993, Ser. No. 52,948

Int. Cl.[5] F02C *3/04, 7/10*

U.S. Cl. 60—39.161 **14 Claims**



1. An electric power generation system comprising:

a single power shaft assembly including a combustion turbine having a compressor, an expansion turbine, a combustor feeding said expansion turbine, an electrical generator, and means for coupling said expansion turbine to drive said compressor and said electrical generator;

at least one additional shaft assembly including an intercooler, a compressor, an expansion turbine, a combustor feeding said expansion turbine, and means for driving the compressor of the additional shaft assembly, said compressor of the at least one additional shaft assembly being constructed and arranged to have a pressure ratio greater than a pressure ratio of the expansion turbine of said at least one additional shaft assembly which is fluid connected to said single power shaft assembly for pressure unloading the compressor of said single power shaft assembly;

a recuperator; and

an exhaust stack,

said single power shaft assembly, said at least one additional shaft assembly and said recuperator being connected to define a thermal cycle with an air and gas path that passes through the compressor of said single power shaft assembly, through the intercooler and compressor of said at least one additional shaft assembly, through said recuperator, through the combustor and expansion turbine of said at least one additional shaft assembly and through the combustor and expansion turbine of said single power shaft assembly, and finally exhausting through said recuperator to said exhaust stack.

5,347,807

COMBINED JET ENGINE WITH RAM JET AND TURBOJET

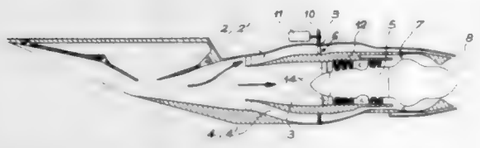
Pascal N. Brossier, Lieusaint; Georges Mazeaud, Yerres, and Pascal C. Wurniesky, Savigny Le Temple, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs d'Aviaton "SNECMA", Paris, France

Filed Jun. 14, 1993, Ser. No. 75,882

Claims priority, application France, Jun. 24, 1992, 92 07713

Int. Cl.[5] F02K *7/16*

U.S. Cl. 60—225 **2 Claims**



1. A jet engine, which comprises:

a gas turbine located in the engine;

peripheral ramjet channels located in the engine and outside said gas turbine and including burners wherein peripheral discharge channels are located in the engine and a gas circulation stream flow through the engine which is subdivided over part of the length of the stream into a central turbojet stream which flows through said gas turbine, and wherein said peripheral ramjet channels and said peripheral discharge channels terminate by issuing into a part of the gas circulation stream downstream of the turbine;

a plurality of flaps located in the engine for opening and closing the central stream;

a ring surrounding the central stream and extending in front of part of the peripheral discharge channels and the ramjet channels, and

a motor for rotating the ring wherein the ring has a plurality of slots formed therein, the peripheral discharge channels and ramjet channels being arranged such that the slots of the ring successively pass, during rotation of the ring in a continuous direction, in front of the discharge channels only, then in front of none of the channels and then in front of the ramjet channels only.

5,347,808

JET-ENGINE THRUST REVERSERS

Robert Standish, Gazeran; Joël Frank, and Pascal Meyer, both of Paris, all of France, assignors to Societe de Construction des Avions Hurel-Dubois, Meudon la Foret, France

Filed Jun. 22, 1992, Ser. No. 901,668

Claims priority, application France, Jun. 24, 1991, 91 07715

Int. Cl.[5] F02K *3/02*

U.S. Cl. 60—226.2 **7 Claims**

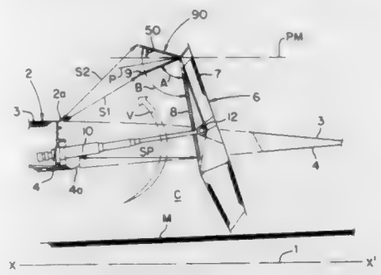
1. A thrust reverser for a dual-flow jet engine, the engine having a longitudinal axis and a forward flight direction, the engine comprising a central engine body and a peripheral cowling spaced away from the engine body to define with it an annular flow channel for cold air flow, the cowling provided with an inner air flow surface and an outer air flow surface, and defining at least one lateral vent which is lateral relative to the longitudinal axis, the thrust reverser comprising in combination:

at least one thrust reversing door having an upstream edge, a downstream edge, an inner skin and an outer skin;

attaching means for pivotally attaching the door to the cowling;

moving means for moving the door between a cruise position wherein the door closes the lateral vent and the inner skin conforms flushly with the inner air flow surface of the cowling whereby flow through the annular flow channel is unimpeded and the outer skin conforms flushly with the outer air flow surface of the cowling; and

a deployed position wherein the door shuts the annular channel and the lateral vent is opened to direct the cold air flow outwardly through the lateral vent to produce a



thrust oriented upstream toward the forward flight direction;

an overlay having a proximal edge and a distal edge,

the overlay connected along the proximal edge to the door in the vicinity of the upstream edge such that the overlay is movable with the door from the cruise position wherein the distal edge of the overlay does not extend beyond the inner skin of the door thereby allowing the inner skin to be flush with the inner air flow surface of the cowling; and

the deployed position wherein the overlay extends with its distal edge laterally beyond the inner skin so as further to orient said thrust upstream;

the overlay in it deployed position being outward relative to the longitudinal axis and making a positive angle with a line parallel to said longitudinal axis which angle is greater than zero and less then 20 degrees.

5,347,809

APPARATUS AND METHOD FOR REMOVING PARTICULATE FROM AN EXHAUST GAS FILTER

Mark D. Moeckel, Peoria, and Donald J. Waldman, Brimfield, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Mar. 12, 1993, Ser. No. 30,955

Int. Cl.[5] F01N *3/02*

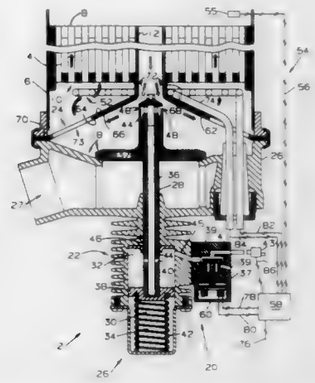
U.S. Cl. 60—274 **13 Claims**

1. Apparatus for cleaning exhaust particulate from a contaminated vehicle exhaust gas filter having walls, an inlet end, an outlet end, and a central conduit having an axis and extending through the filter and opening on each end of the filter, comprising:

first means for controllably closing the outlet end of the filter;

second means for controllably injecting pressurized air outwardly in a direction generally transverse the axis of the central conduit adjacent the outlet end of the filter;

third means for heating the injected pressurized air and gas discharging from the filter conduit, in response to flow of the injected air, prior to flow of the resultant heated gas mixture onto the outlet end of the contaminated filter and through said filter; and



fourth means for maintaining the temperature of filter regeneration at preselected temperatures sufficient for removing exhaust particulate from said contaminated filter.

5,347,810

DAMPED HEAT SHIELD

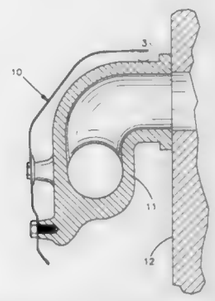
Dan T. Moore, III, Cleveland Heights, Ohio, assignor to Soundwich, Inc., Cleveland, Ohio

Continuation of Ser. No. 883,279, May 14, 1992, Pat. No. 5,233,832. This application Aug. 4, 1993, Ser. No. 102,158

The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.

Int. Cl.[5] F01N *7/10*

U.S. Cl. 60—323 **16 Claims**



1. A high temperature damped heat shield for an exhaust system of an internal combination engine, comprising two layers of sheet steel shaped to conform generally to the shape of a high temperature portion of said exhaust system while being spaced therefrom by an air gap, said layers having substantially the same shape and extending in face-to-face adjacency, one of said layers having a first predetermined thickness and having a first resonant frequency, the other of said layers having a second predetermined thickness substantially different from said first predetermined thickness and having a second resonant frequency substantially different from said first resonant frequency causing said shield to damp vibrational energy, and corrosion-resistance means protecting the exterior surfaces of said shield from corrosion at the temperatures encountered thereby.

5,347,811

LOAD-SENSING ACTIVE HYDRAULIC CONTROL DEVICE FOR MULTIPLE ACTUATORS

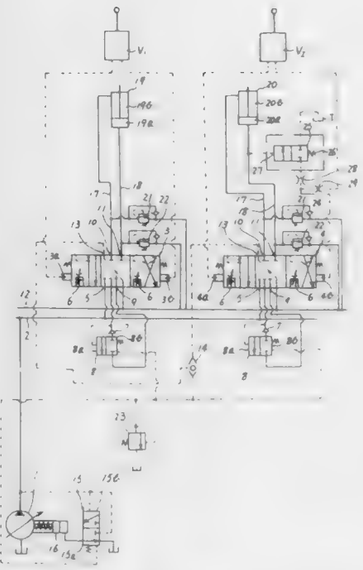
Yoshimi Hasegawa, Yachiyo; Kenichi Nishiumi, Kawasaki; Yoshitake Yonekubo, Tokyo; Hisato Naito, Sagamihara, and Hideshi Koiwai, Toda, all of Japan, assignors to Kayaba Industry Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1992, Ser. No. 997,516

Claims priority, application Japan, Dec. 25, 1991, 3-357128

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—426 **2 Claims**



1. A load-sensing active hydraulic control device, which comprises:

a plurality of actuators;

a source of pressurized fluid having a supply pressure, connected to said plurality of actuators, said pressurized fluid within said plurality of actuators having a plurality of individual load pressures;

a control valve having at least one pilot chamber, responsive to said plurality of individual load pressures, said control valve including means for controlling the supply of said pressurized fluid to said plurality of actuators;

a fluid course for communicating said plurality of individual load pressure to said at least one pilot chamber of said control valve;

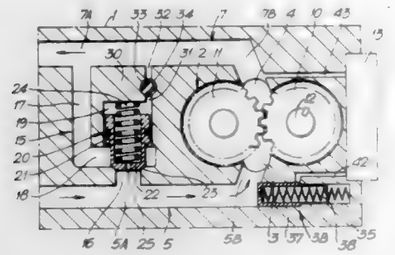
at least one switching valve having a pilot chamber, responsive to said plurality of individual load pressures;

said at least one switching valve connected in series between said fluid course and at least one of said plurality of actuators;

said at least one switching valve including means for permitting communication between said fluid course and said at least one of said plurality of actuators when at least one of said plurality of individual load pressures within said at least one of said plurality of actuators is below a threshold value; and

said at least one switching valve including means for prohibiting communication between said fluid course and said at least one of said plurality of actuators when at least one of said plurality of individual load pressures within said at least one of said plurality of actuators is above a threshold value.

5,347,812
PLUNGE VALVE
Dan Nilsson, Sjuntorp, and Ove Donnerdal, Partille, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Aug. 11, 1993, Ser. No. 105,031
Claims priority, application Sweden, Aug. 21, 1992, 9202400-9
Int. Cl.[5] F16D *31/04*; F16K *15/02*
U.S. Cl. 60—494 15 Claims



1. A hydraulic motor assembly of the type which includes an inlet port, an outlet port, and a source of pressurized hydraulic medium, said hydraulic motor comprising: a motor body containing a motor chamber; an inlet chamber and an outlet chamber connected to the motor chamber; an inlet conduit interruptably hydraulically connected to the inlet chamber of the motor chamber and an outlet conduit hydraulically connected to the outlet chamber; a bypass conduit interruptably hydraulically connected between said inlet conduit and said outlet conduit having a main valve therewithin; said main valve including a valve body which is movable from a closed position, thereby interrupting said bypass conduit and causing hydraulic medium to flow through said inlet conduit, inlet chamber, and motor chamber and driving a hydraulic motor positioned within said motor chamber, to an open position thereby opening said bypass conduit and causing hydraulic medium to flow through said bypass conduit; a plunge valve comprising a plunge which is slidably movable within a plunge chamber under the influence of the hydraulic pressure in a section of said inlet conduit located between said bypass conduit and said inlet chamber, said plunge being shiftable between first and second positions, said first position occurring when the valve body of said main valve is in its closed position thereby interrupting said bypass conduit and allowing the pressure in said section of the inlet conduit to increase to a high magnitude which then prevents said plunge from entering into the inlet conduit by forcing said plunge to remain in the plunge chamber; said second position occurring when the valve body of the main valve is in its open position thereby opening said bypass conduit and causing the pressure in said section of the inlet conduit to decrease to a low magnitude which then allows said plunge to enter into the inlet conduit thereby interrupting the flow of hydraulic medium into said inlet chamber; and a resilient biasing member which assists in displacing said plunge from said first position within said plunge chamber to said second position.

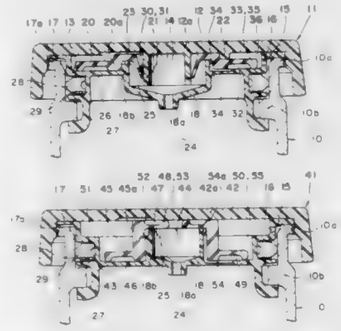
5,347,813
CAP FOR MASTER CYLINDER RESERVOIR
Kunio Yanagi, and Toshiaki Satoh, both of Higashimatsuyama, Japan, assignors to Jidoshi Kiki Co., Ltd., Tokyo, Japan
Filed Jun. 21, 1993, Ser. No. 80,089
Claims priority, application Japan, Jul. 13, 1992, 4-054852[U]
Int. Cl.[5] B60T *11/26*
U.S. Cl. 60—585 2 Claims

1. A cap for a master cylinder reservoir in which a cover cap and a body cap are connected to each other, a passage communicating with an inside and an outside of the reservoir is formed in a space formed between the cover cap and the body cap, and a diaphragm is disposed in said space to provide a valve function, wherein

said cover cap has a cylindrical portion extending downward at a center portion on a lower surface and an annular protrusion which is formed downward on an outer side of said cylindrical portion, a groove traversing said annular protrusion being formed,

said body cap has a funnel portion with a small-diameter side opening to a fluid storing chamber vertically at a center portion and a notch passage on an upper portion of a large-diameter side, a groove being formed in an outer surface and a flat surface on said large-diameter side,

said diaphragm has an annular fixed portion at a center portion in a radial direction, an annular lip portion yieldingly urged against an outer surface of said cylindrical portion of said cover cap inside of said annular fixed portion, and an annular valve portion yieldingly urged against said flat surface of said body cap outside of said annular fixed portion,



said annular fixed portion of said diaphragm is fitted between an inner periphery of said annular protrusion of said cover cap and an outer periphery of said funnel portion of said body cap,

said annular lip portion forms a suction valve together with said outer surface of said cylindrical portion of said cover cap, and

said annular valve portion forms an exhaust valve together with a lower surface of said body cap.

5,347,814
STEAM SYSTEM IN A MULTIPLE BOILER PLANT
Leif Kemmer, Lotorp, and Karl J. Nilsson, Finspong, both of Sweden, assignors to ABB Carbon AB, Finspong, Sweden
Filed Dec. 22, 1992, Ser. No. 995,082
Claims priority, application Sweden, Dec. 23, 1991, 9103835
Int. Cl.[5] F01K *13/00*
U.S. Cl. 60—676 6 Claims

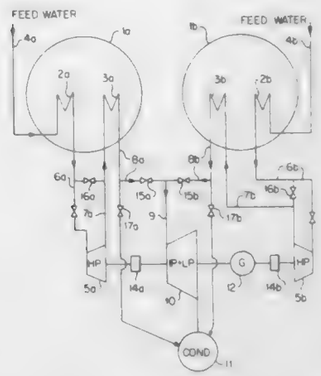
1. A boiler plant, comprising:

at least a first boiler and a second boiler, said first boiler including a first superheater and a first reheater for generation and heating of steam, said second boiler including a second superheater and a second reheater for generation and heating of steam;

a first high-pressure turbine driven by steam generated by said first superheater and fed to said first high-pressure turbine, the steam being delivered to the first reheater after having been expanded in said first high-pressure turbine;

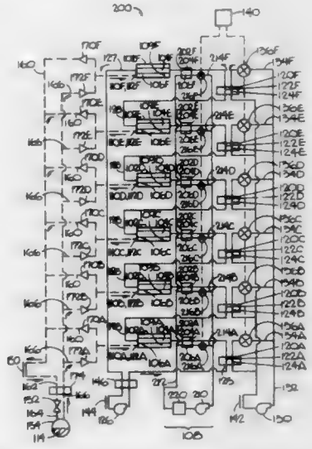
a second high-pressure turbine driven by steam generated by said second superheater and fed to said second high-pressure turbine, the steam being delivered to the second reheater after having been expanded in said second high-pressure turbine;

an intermediate-pressure/low-pressure turbine driven by reheated steam generated by the first and second reheaters fed to said intermediate-pressure/low-pressure turbine; and



at least one electric generator operated by the first and the second high pressure turbines and the intermediate-pressure/low-pressure turbine.

5,347,815
REGENERATIVE ADSORBENT HEAT PUMP
Jack A. Jones, Los Angeles, Calif., assignor to California Institute of Technology, Pasadena, Calif.
Filed Apr. 30, 1992, Ser. No. 855,624
Int. Cl.[5] F17C *11/00*
U.S. Cl. 62—46.2 59 Claims



1. A regenerative sorbent heat pump process for cooling an interior space and for simultaneously regenerating at least a portion of the heat of adsorption comprising:

(a) confining a sorbent in a plurality of compressor zones, the number of compressor zones being at least four;

(b) introducing a working fluid vapor from an evaporization zone into at least one of the number of compressor zones and sorbing the working fluid vapor on the sorbent therein over a predetermined first temperature range and a predetermined first pressure or P_L;

(c) desorbing working fluid vapor from the sorbent in at least one of the remaining number of compressor zones and removing working fluid vapor therefrom over a predetermined second temperature range which is higher than the predetermined first temperature range and at a predetermined second pressure or P_H which is larger than the predetermined first pressure, a part of the predetermined first temperature range overlapping a part of the predetermined second temperature range;

(d) condensing working fluid vapor removed from said at least one of the remaining number of the compressor zones at P_H and transferring heat from the working fluid to the environment thereby forming a working fluid liquid;

(e) evaporating the working fluid liquid and forming the working fluid vapor in the evaporation zone at P_L by transferring heat from an interior space to the evaporation zone thereby cooling the interior space;

(f) circulating a heat transfer fluid in a closed loop which comprises a heat removal zone and series flow through the compressor zones and preventing the heat transfer fluid from directly contacting the sorbent;

(g) removing heat from the heat transfer fluid in the heat removal zone and transferring it to the environment;

(h) adding heat from a heat source to a predetermined one of the compressor zones over a predetermined period of time;

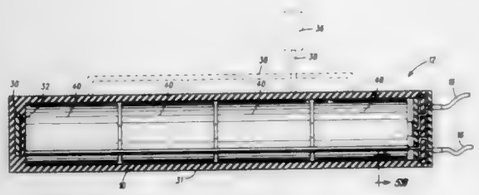
(i) cooling the coolest compressor further to a predetermined bottoming temperature;

(j) after step (i), repeating step (h) sequentially in each of the compressor zones;

(k) indirectly transferring heat from the sorbent in the compressor zones which are sorbing working fluid vapor to the heat transfer fluid and from the heat transfer fluid to the sorbent in the compressor zones which are desorbing working fluid vapor thereby regenerating heat; and,

(l) maintaining the P_H/P_L ratio sufficiently low so that at least a portion of the heat of absorption is regenerated.

5,347,816
VARIABLE PRESSURE THERMAL INSULATING JACKET
Paul A. Nelson, Wheaton; Richard F. Malecha, Naperville, and Albert A. Chilenskas, Chicago, all of Ill., assignors to University of Chicago, Chicago, Ill.
Filed Jul. 31, 1992, Ser. No. 923,375
Int. Cl.[5] F17C *11/00*
U.S. Cl. 62—46.2 20 Claims



1. A device for controlled insulation of a thermal source, comprising:

a thermal jacket having a closed volume capable of being evacuated to form an insulating jacket for control of temperature of the thermal source; and

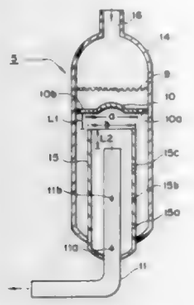
a getter material in communication with the closed volume of said thermal jacket, said getter material for absorbing and desorbing a control gas to control gas pressure in the volume of said thermal jacket, thereby enabling control of thermal conductivity of said thermal jacket and in turn the rate of heat loss from, and the temperature of, said thermal source.

5,347,817

ACCUMULATOR CONSTRUCTION OF COOLING HEATING DUAL-PURPOSE AIR CONDITIONER

Jong-Youb Kim, Suwon City, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon City, Rep. of Korea

Filed Jul. 20, 1993, Ser. No. 93,719
Claims priority, application Rep. of Korea, Jul. 22, 1992, 92-13527
Int. Cl.[5] F25B *43/00*
U.S. Cl. 62—471 | 8 Claims



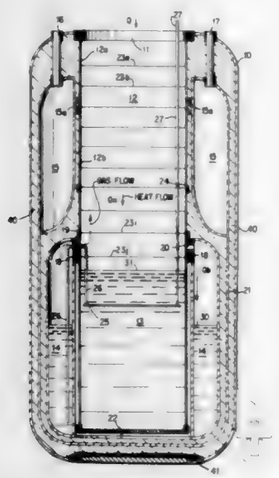
1. An accumulator for use in an air conditioning system which circulates a mixture of refrigerant fluid and lubricating oil, comprising an outer case having inlet means for receiving said mixture, an inner case disposed within said outer case, and outlet means including an upstanding pipe disposed within said inner case for discharging a gaseous component of said refrigerant fluid while oil and a liquid component of said refrigerant fluid collect outside of said pipe, an inner space being defined between said pipe and said inner case, and an outer space being defined between said inner and outer cases, at least said oil collecting in said inner space, and at least said liquid refrigerant collecting in said outer space, said inner case including at least one oil-return hole, and said pipe including at least one oil-return hole.

5,347,818

DEWAR WITH IMPROVED EFFICIENCY

Eric T. Swartz, Tucson, Ariz., assignor to Research & Manufacturing Co., Inc., Tucson, Ariz.

Filed Feb. 4, 1993, Ser. No. 13,761
Int. Cl.[5] F25B *19/00*
U.S. Cl. 62—51.1 | 14 Claims



1. In a Dewar for the containment of a volatile cryogenic liquid, the improvement, within the vacuum enclosure of the Dewar, comprising:

neck, belly and tail sections in which the tail and neck comprise adjacent sections of the same extending element;

the tail being an extended volume for containing a quantity of the liquid located centrally within the sections;

the belly comprising an annular volume capable of containing a quantity of the liquid, said belly surrounding the tail and being thermally anchored to the tail by an isothermal means at an upper section of the belly in communication with an upper section of the tail, the belly further having at the upper section thereof means between the belly and tail for permitting gas flow from the belly to the tail to the neck,

the tail further including a cooling source at a location in the tail which is beneath the level of liquid to be contained in the tail, said cooling source comprising means for absorbing the residual heat, Q_t, conducted or radiated from the ambient environment of the Dewar to the tail;

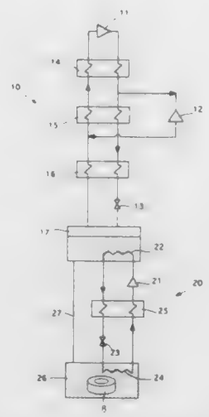
the neck section of the extending element including a terminal section open to the ambient environment of the location of the Dewar.

5,347,819

METHOD AND APPARATUS FOR MANUFACTURING SUPERFLUIDITY HELIUM

Nobuyoshi Saji, Saitama; Hiroshi Ohya, Chiba; Hiroshi Asakura, and Shunji Nagai, both of Tokyo, all of Japan, assignors to Ishikawajima-Harima Heavy Industries, Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1993, Ser. No. 141,742
Claims priority, application Japan, Nov. 5, 1992, 4-295538
Int. Cl.[5] F25B *19/00*
U.S. Cl. 62—51.3 | 30 Claims



1. A method for producing superfluidity helium comprising the steps of:

(a) providing cryogenic ^3He;

(b) providing liquid ^4He in a first container;

(c) compressing the cryogenic ^3He to produce compressed ^3He;

(d) indirectly cooling the compressed ^3He with liquid ^4He in said first container to produce cryogenic ^3He;

(e) adiabatically expanding the cryogenic ^3He to produce cryogenic ^3He having a temperature of less than 2.18° K.; and

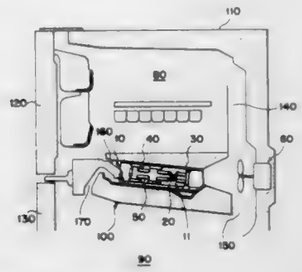
(f) indirectly cooling the liquid ^4He in a second container with the cryogenic ^3He produced by step (e) to produce superfluidity helium.

5,347,820

MOUNTING ARRANGEMENT FOR A REFRIGERATOR DEODORIZER

Kang In Gweon, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon City, Rep. of Korea

Filed Aug. 10, 1993, Ser. No. 103,664
Int. Cl.[5] F24F *3/16;* A62B *7/08;* F25D *23/00*
U.S. Cl. 62—78 | 4 Claims



1. A refrigerator comprising:

a freezing compartment;

a cooling compartment disposed in vertically spaced relationship to said freezing compartment to form a space therebetween;

a cooling system disposed in said space and defining air inlet and outlet ends, said cooling system including a refrigerant-circulating pipe arrangement having pipe sections extending transversely relative to a direction of air travel through said cooling system, and a defrosting heater;

a circulating mechanism for circulating air from said freezing and cooling compartments through said cooling system;

a deodorizer unit arranged intermediate said inlet and outlet ends of said cooling system, said deodorizer unit including an odor adsorbing element, a heater for heating said odor adsorbing element to remove odors therefrom and a longitudinally extending projection at each end of said deodorizer unit, said heater of said deodorizer unit and said defrosting heater being simultaneously operable so that both of said heaters perform a defrosting function; and

a securing mechanism including a pair of hangers for suspending opposite ends of said deodorizer unit to said pipe arrangement such that said deodorizer unit extends transversely to said direction of air travel through said cooling system, each hanger including a pair of arms having hook-shaped upper portions for hooking onto respective pipe sections, and an upwardly open slot formed between said arms of each hanger for receiving a respective one of said projections.

5,347,821

APPARATUS AND METHOD OF OIL CHARGE LOSS PROTECTION FOR COMPRESSORS

Robert L. Oltman, Stoddard, and Michael D. Carey, Holmen, both of Wis., assignors to American Standard Inc., New York, N.Y.

Filed Jul. 23, 1993, Ser. No. 96,801
Int. Cl.[5] F25B *43/02*
U.S. Cl. 62—84 | 20 Claims

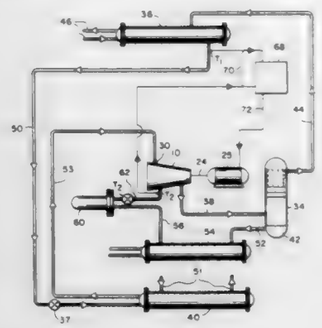
1. A method for monitoring oil charge loss in a refrigeration system having a compressor for compressing a refrigerant gas, an oil/gas separator for separating compressed refrigerant from lubricating oil, a condenser for condensing the compressed refrigerant gas, an oil cooler for cooling liquid oil separated from the refrigerant gas, the refrigerant and the liquid oil both having known and differing coefficients of heat transfer, and an injection system for injecting the cooled oil into the compressor, comprising the steps of:

a. sensing the temperature of saturated refrigerant

b. determining a temperature standard of the liquid in the oil cooler as a function of the temperature of the saturated refrigerant;

c. determining an acceptable standard of deviation from the temperature standard;

d. sensing the temperature of the liquid at the oil cooler;



e. comparing the temperature of the liquid at the oil cooler and the temperature standard; and

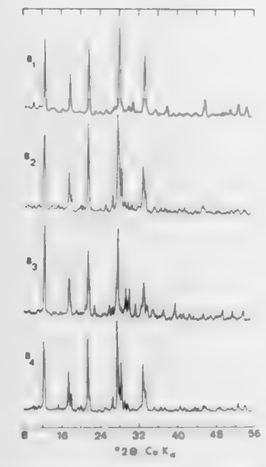
f. generating a signal to shut down the compressor when the comparison of the temperature of the liquid at the oil cooler is outside the acceptable standard of deviation from the temperature standard.

5,347,822

PROCESS FOR DRYING CH_2F_2 REFRIGERANT UTILIZING ZEOLITE

Maryellen Lavin, Tarrytown, N.Y.; Alan P. Cohen, New Fairfield, Conn.; Nanette Greenlay, Port Chester, N.Y.; Thomas R. Cannan, Congers, N.Y., and Richard J. Hinchey, Thornwood, N.Y., assignors to UOP, Des Plaines, Ill.

Filed Dec. 23, 1993, Ser. No. 171,959
Int. Cl.[5] F25B *47/00*
U.S. Cl. 62—85 | 5 Claims



1. In a refrigeration process wherein a refrigerant fluid comprising difluoromethane is cycled within a closed system and is alternately vaporized and condensed in a manner to produce cooling, the improvement which comprises incorporating within the closed system containing said difluoromethane and in contact therewith as a desiccant, an activated sodium cation form of a microporous zeolitic molecular sieve having the crystal structure of zeolite B, a framework Si/Al_2 molar ratio

of at least 2.5, and in the fully hydrated state an x-ray diffraction pattern the major d-spacings of which are

d, Å	Relative Intensity
7.10 ± 0.1	S-VS
4.97 ± 0.1	M-S
4.10 ± 0.1	S-VS
3.18 ± 0.1	S-VS.

5,347,823

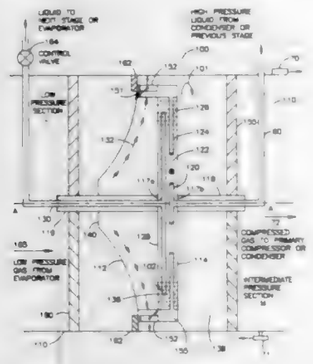
REFRIGERATION SYSTEM UTILIZING AN ENTHALPY EXPANSION JET COMPRESSOR

Richard H. Alsenz, 2402 Creek Meadows, Missouri City, Tex. 77459

Continuation-in-part of Ser. No. 665,028, Mar. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 505,557, Apr. 6, 1990, Pat. No. 5,115,644. This application Jul. 23, 1992, Ser. No. 919,043

Int. Cl.[5] F25B *1/00*

U.S. Cl. 62—116 9 Claims



1. A refrigeration method, comprising the steps of:
(a) condensing a high pressure gas refrigerant to a liquid refrigerant;
(b) discharging the liquid refrigerant into a jet compressor;
(c) expanding a portion of the liquid refrigerant to a gas within the jet compressor to an intermediate pressure:
(d) discharging Substantially all the liquid refrigerant from the jet compressor to an evaporator for evaporating the liquid refrigerant to a low pressure gas refrigerant;
(e) utilizing substantially all the gas in the jet compressor to drive the jet compressor;
(f) discharging the low pressure gas from the evaporator into the jet compressor; and
(g) compressing the low pressure gas by the jet compressor to the intermediate pressure.

5,347,824

SYSTEM FOR DETECTING THE COMPRESSION OF LIQUID REFRIGERANT IN A COMPRESSOR AND CONTROLLING THE COMPRESSOR

Yasuhiro Kato, Ama, and Hideki Suzuki, Chita, both of Japan, assignors to Nippondenso Co. Ltd., Kariya, Japan

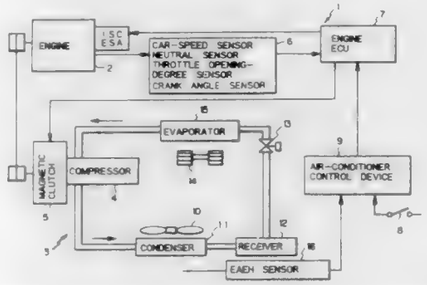
Filed Apr. 8, 1993, Ser. No. 46,863

Claims priority, application Japan, Apr. 9, 1992, 4-088461; Feb. 26, 1993, 5-038105

Int. Cl.[5] F16D *27/16*

U.S. Cl. 62—133 12 Claims

1. A device for detecting compression of a liquid refrigerant in a compressor comprising:
a refrigerating system including a condenser, an expansion valve, an evaporator, and a compressor constructed and arranged to compress a refrigerant disposed therein ;
a magnetic clutch adapted to transmit torque from an engine to said compressor when said clutch is energized;
control means for energizing said magnetic clutch; and
means for detecting a reduction in an operating rate of said



engine immediately after said magnetic clutch is energized by said control means, said detecting means being operable to detect a presence of compressed liquid refrigerant in said compressor by comparing the reduction in said operating rate of said engine with a predetermined value and by determining whether said reduction in said operating rate is larger than said predetermined value.

5,347,825

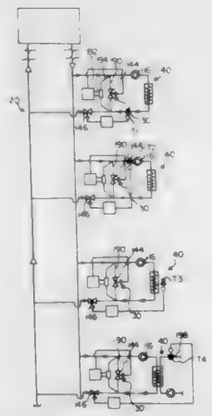
HYDRONIC INTERFACE SYSTEM, METHOD AND APPARATUS

Gene D. Krist, c/o BRDG-TNDR Corporation, 2550 NW. Fourth Ct., Ft. Lauderdale, Fla. 33311

Filed Jul. 2, 1993, Ser. No. 87,425

Int. Cl.[5] G05D *23/00*

U.S. Cl. 62—179 9 Claims



1. Apparatus for coupling a primary loop with a secondary loop for circulating processing liquid therebetween comprising in combination:
a first connection for the feed line of the primary loop and a second connection for the return line of the primary loop;
a third connection for the feed line of the secondary loop and a fourth connection for the return line of the secondary loop;
a crossover line coupling the four connections;
first valve means for controlling the flow through the primary loop;
first sensor means responsive to the temperature associated with the secondary loop to control the first valve means;

second valve means in the path of flow through the crossover line; and
second sensor means responsive to the flow of the process liquid across the crossover line to control the second valve means.

5,347,826

AIR CONDITIONER

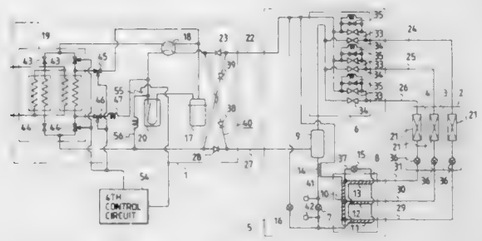
Noriaki Hayashida; Hidekazu Tani, and Takashi Nakamura, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 27, 1993, Ser. No. 67,973

Claims priority, application Japan, May 28, 1992, 4-137038

Int. Cl.[5] F25B *41/00*

U.S. Cl. 62—197 5 Claims



1. An air conditioner comprising:
a heat source unit including:
a compressor,
a four-way changeover valve,
a plurality of heat exchangers connected in parallel with each other and each having a fourth valve and a fifth valve at inlet and outlet ports thereof, and
an accumulator;
a plurality of room units, each of said room units including:
a room unit-side heat exchanger, and
a first flow-rate controller;
said heat source unit and said room units being connected to each other via a first connecting pipe and a second connecting pipe; and
a relay unit including:
a gas-liquid separator disposed in a room unit-side pipe end of said second connecting pipe;
a first branching section having a first valve and second valve for allowing one end of said room unit-side heat exchanger to communicate selectively with said first connecting pipe or a gas-side output port of said gas-liquid separator;
a second branching section in which another end of said room unit-side heat exchanger is connected to said first flow-rate controller through said second connecting pipe;
a second flow-rate controller interposed between said first and second branching sections;
a bypass pipe having one end connected to said second branching section and another end connected to said first connecting pipe through a third flow-rate controller;
a fourth flow-rate controller interposed between said second branching section and said first connecting pipe; and
a heat-exchange portion for effecting heat exchange between said bypass pipe and a pipe which connects together said second connecting pipe and said first flow-rate controller;
wherein a gas-side of one of said heat exchangers of said heat source unit-side heat exchangers and a discharge side of said compressor are connected to each other via a sixth valve, a liquid side of said one heat source unit-side heat exchanger and an inlet port of said accumulator are connected to each other via a capillary tube and a seventh valve, and
said air conditioner further comprises:
detecting means for detecting a condition of refrigerant which is circulated within the above mentioned circular system; and
control circuit means for controlling said sixth valve and said seventh valve in response to the detection result of said detecting means.

5,347,827

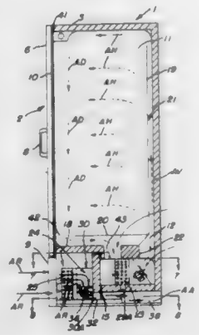
MODULAR REFRIGERATION APPARATUS

Arthur G. Rudick, Marietta; Shaun B. Gatipon, Smyrna, and Howard W. Wachenheim, Ball Ground, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Jul. 1, 1992, Ser. No. 907,501

Int. Cl.[5] F25D *11/00*

U.S. Cl. 62—440 5 Claims



1. An apparatus for converting a refrigerated coin-operated vendor to a refrigerated self-service display apparatus, said vendor having a cabinet with a front opening, said front opening formed by removal of coin-operated vending components from said cabinet, and having a refrigeration means for circulating cool air within the interior of said cabinet and venting warm air, comprising;
a front panel attached to the front opening for sealing the interior of said cabinet, said front panel having a transparent door pivotally mounted to said front panel; and
a partition positioned adjacent and parallel to the rear interior wall of said cabinet defining an air distribution plenum therebetween, said partition having a plurality of slots disposed at spaced locations along substantially the entire length of the partition for directing a plurality of layers of cool air currents flowing from the plenum toward said front panel.

5,347,828

ORGANIC HYDRIDE/METAL HYDRIDE HEAT PUMP

Arthur S. Kesten, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 35,811, Mar. 23, 1993, abandoned. This application Jun. 25, 1993, Ser. No. 83,824

Int. Cl.[5] F25B *17/00;* F17C *11/00;* F28D *15/00*

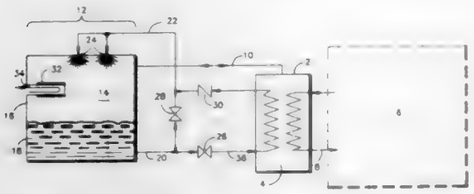
U.S. Cl. 62—46.2 31 Claims

1. A heat pump, comprising:
(a) an organic hydride system that comprises:
(i) a vessel having a liquid space and a vapor space,
(ii) a catalytic surface disposed in the vapor space, wherein the catalytic surface promotes dehydrogenation of an organic hydride to form H_2 and hydrogenation of an organic dehydrogenation product to form the organic hydride,
(iii) means for heating the catalytic surface when the catalytic surface promotes dehydrogenation, and

(iv) means for cooling the catalytic surface when the catalytic surface promotes hydrogenation,

(b) a metal hydride system that comprises:

(i) a metal hydride bed,



(ii) means for transferring heat from a heat source to the metal hydride bed, and

(c) a duct connecting the vapor space of the organic hydride system with the metal hydride system.

5,347,829

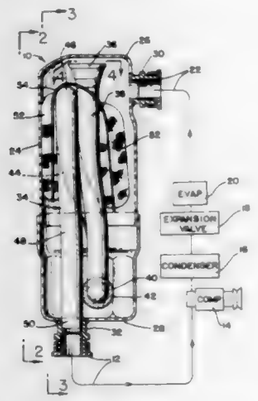
AIR CONDITIONING SYSTEM ACCUMULATOR WITH INTERNAL DRAIN DOWN PROTECTION

Kenneth B. Newman, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 8, 1993, Ser. No. 148,236

Int. Cl.[5] F25B *43/00*

U.S. Cl. 62—474 **3 Claims**



1. A bottom outlet accumulator/dehydrator for use in a vehicle air conditioning system having an inlet line from an evaporator from which a mixture of liquid and vapor refrigerant is received, and an outlet suction line to a compressor, comprising,

a generally cylindrical canister body having top and bottom circular ends and a cylindrical internal volume that is divided into four quadrants, said canister having an connection for said evaporator inlet line located substantially above said bottom end so that liquid refrigerant collects in said internal volume near said bottom end with vapor rising to said top end,

a continuous, one piece return tube internal to said canister having a first leg extending downwardly from an open inlet end near said canister top end through a first quadrant to a lower bight located near said bottom end, a second leg extending upwardly from said lower bight through said second quadrant and crossing over to said third quadrant to an upper bight located near said canister top end, and a third leg extending downwardly from said upper bight through said fourth quadrant to a lower outlet end opening through said canister bottom end and connected to said outlet suction line, and,

a liquid bleed hole assembly mounted to said lower bight, whereby, when said compressor is on, said suction line draws refrigerant vapor from said canister through said return tube inlet and aspirates collected liquid through said bleed hole assembly, and when said compressor is off, collected liquid is prevented from draining into said suction line by said return tube upper bight.

5,347,830

ADSORPTION COOLING APPARATUS

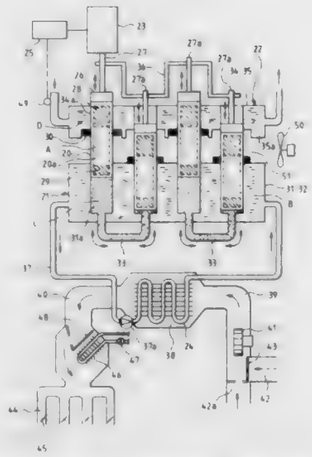
Yasuo Yamada, Isesaki, Japan, assignor to Sanden Corp., Isesaki, Japan

Filed Aug. 24, 1993, Ser. No. 111,103

Claims priority, application Japan, Aug. 25, 1992, 4-226046

Int. Cl.[5] F25B *9/14*

U.S. Cl. 62—481 **4 Claims**



1. An adsorption cooling apparatus, comprising:

(a) a hermetically sealed capsule made of a thermally conductive material, said capsule having a first side and a second side and containing a first thermal medium, a moisture absorber on said first side that can absorb said first thermal medium and an adsorbent on said second side that can adsorb said first thermal medium at a low temperature and can desorb said first thermal medium at a high temperature, between said moisture absorber and said adsorbent in said capsule being a vacant space;

(b) a cooling vessel containing a low temperature second thermal medium that is used for cooling an object to be cooled by the apparatus, aid cooling vessel having a cooling hole into which said capsule can be slidably fitted on said first side;

(c) a heating vessel containing a high temperature third thermal medium, said heating vessel having a heating hole into which said capsule can be slidably fitted on said second side;

(d) means for reciprocally and periodically moving said capsule in a manner that said capsule is moved into said cooling hole on said first side and, reversely, said capsule is moved into said heating hole on said second side; and

(e) means for cooling said capsule that has been moved into said cooling hole on said first side so that said first thermal medium adsorbed by said adsorbent within said capsule while the capsule is cooled, whereby said second thermal medium in said cooling vessel is cooled because of a latent heat of evaporation of the first thermal medium, said adsorbent being heated by said heating means when said capsule is moved into said heating hole on said second side so that said first thermal medium adsorbed in said adsorbent in the capsule is desorbed and released from said adsorbent and the so released first thermal medium is

again absorbed by said moisture absorber within said capsule;

wherein said means for cooling said capsule includes heat dissipating fins externally mounted on said capsule and a cooling fan to produce a cooling airflow so that said fins are subjected to said airflow when said capsule is moved into said cooling hole on aid first side.

5,347,831

REFRIGERATION SYSTEM CONSISTING OF A PLURALITY OF REFRIGERATING CYCLES

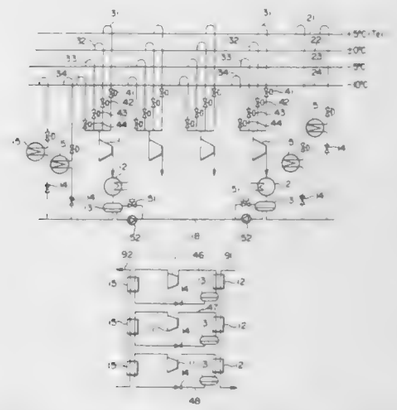
Masaru Kitaguchi, Kitasohma, and Shigeru Sakashita, Tokyo, both of Japan, assignors to Mayekawa Mfg. Co., Ltd and Asahi Breweries, Ltd., Tokyo, Japan

Division of Ser. No. 871,548, Apr. 21, 1992, Pat. No. 5,239,835. This application Jun. 16, 1993, Ser. No. 77,071

Claims priority, application Japan, Apr. 23, 1991, 3-92385; Apr. 23, 1991, 3-92386; Apr. 23, 1991, 3-92387

Int. Cl.[5] F25B *1/10*

U.S. Cl. 62—510 **2 Claims**



1. Refrigeration facilities having a plurality of refrigerating cycles, each of the refrigerating cycles comprising:

a compressor,

a condenser for condensing refrigerant discharged from the compressor,

a reservoir for holding refrigerant coming from the condenser, and

an evaporating unit consisting of an expansion means and an evaporator, where the expansion means throttles refrigerant coming from the reservoir and expands into the evaporator, and the evaporator evaporates the refrigerant into a suction line of the compressor,

the refrigerating cycles being arranged in parallel, the evaporators being connected to form a liquid path, through which a liquid stream flows in series to be chilled in the evaporators, as well as to form a refrigerant path for a refrigerant stream of each refrigerating cycle, individually, and further being arranged in order from a high evaporating temperature of refrigerant to low one along the liquid path from the upstream to the downstream, and

the condensers being connected to form a cooling water path through which a cooling water stream flows in series, said condensers being arranged in order from a low condensing temperature of refrigerant to a high one along the cooling water path from upstream to downstream, so that cooling water first passes through the condenser having the lowest condensing temperature, and the refrigerating cycle with the evaporator of the lowest evaporating temperature having a condenser with the lowest condensing temperature, and the refrigerating cycle with a condenser having the highest condensing temperature having an evaporator with the highest evaporating temperature, refrigerant passing through condensers having higher condensing temperature and connected in order to refrigerating cycles having the evaporators of increasingly higher evaporating temperatures.

5,347,832

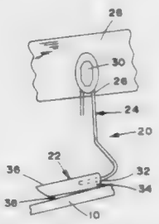
YARN BINDER APPARATUS

Richard Copenhaver, Rte. 5, Box 503, King, N.C. 27021; Larry Rainwater, 6074 Sweat Rd., Wallace, S.C. 29596; Luther Lane, Rte. 7, Box 778, Yadkinville, N.C. 27055; Roger Whittaker, Rte. 6, Box 142C, Mocksville, N.C. 27028; Kevin Boatwright, 210 Floyd St., Mullins, S.C. 29574, and Joe Lee, 125 Hickory La., King, N.C. 27021

Filed Nov. 24, 1993, Ser. No. 157,855

Int. Cl.[5] D04B *15/60*

U.S. Cl. 66—140 R **9 Claims**



1. Apparatus in a knitting machine for simultaneously holding yarns adjacent severed end portions comprising; supporting means including a dial plate having a relatively flat surface, a yarn binder mechanism including an elongated support member and an elongated elastomeric member attached thereto, fastener means for adjustably mounting one end of said elongated support member upon said supporting means, said elongated support member having a free end portion for supporting said elongated elastomeric member thereon, said elastomeric member including an elongated linear portion engageable with said relatively flat surface under slight pressure, said elongated linear portion having pliable surface means deformable for receiving simultaneously multiple yarns and for individually gripping and clamping each of such yarns positioned intermediate said elastomeric member and said relatively flat surface, said elastomeric member being of silicone rubber having a durometer hardness range of 45–70.

5,347,833

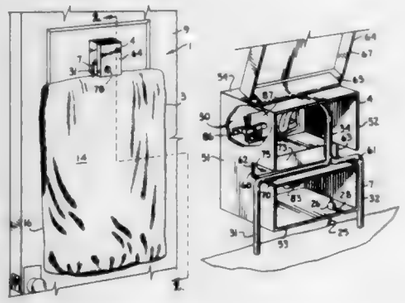
SECURE LAUNDRY AND DRY CLEANING TRANSFER STATION

Jerry D. Branscum, 12691 W. 82 Terrace, Lenexa, Kans. 66215

Filed Nov. 16, 1993, Ser. No. 152,130

Int. Cl.[5] E05B *69/00*

U.S. Cl. 70—59 **9 Claims**



1. A secure transfer station for transferring goods between two parties where one of the parties is not present; the station comprising:

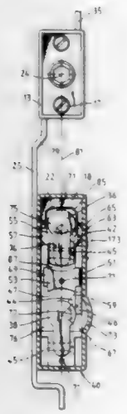
(a) a bag adapted to receive and completely enclose goods to be transferred; said bag having a handle and a bag closure;
(b) means for securing said bag closure against opening by unauthorized persons;
(c) said bag handle projecting from the bag; said handle including a crossmember having opposite ends secured to said bag such that said handle forms a substantially continuous structure;
(d) a capture box including mounting means for securely mounting said box on a surface; said box having a receiver for receiving said handle crossmember; said box including capture box closure means for selectively closing said box having a first position allowing said handle crossmember to be placed into and removed from said receiver and a second position preventing said handle crossmember from being removed from said receiver said handle being configured such that said bag except for said handle is located outside of said capture box when said handle crossmember is placed in said receiver; and locking means for selectively locking said capture box closure means in said second position thereof.

5,347,834

PIVOTING LEVER CATCH SECURABLE WITH A CYLINDER LOCK DEVICE

Dieter Ramsauer, Am Neuhauskothen 20, D-5620 Velbert 11, Fed. Rep. of Germany

PCT No. PCT/EP91/00786, § 371 Date Oct. 26, 1992, § 102(e) Date Oct. 26, 1992, PCT Pub. No. WO91/17334, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 24, 1991, Ser. No. 949,497
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1990, 90044756[U]
Int. Cl.[5] E05B *13/10*
U.S. Cl. 70—120 **19 Claims**



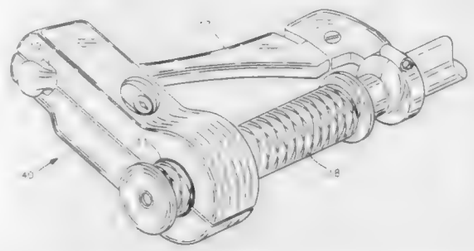
1. A swivel lever locking device for mounting in a thin wall including a pivoting hand lever having a closed state, a base plate having first and second projections penetrating through the wall, the first projection providing for the connection of door catching means to the hand lever, the hand lever being pivotable with respect to the base plate, the second projection having a recess for receiving a first cylinder lock, the first cylinder lock having an engaging position, a non-engaging position and a first tappet, the swivel lever locking device comprising:
a second cylinder lock which can be actuated independently of the first cylinder lock, the second cylinder lock having an engaging state, a non-engaging state and a second tappet, and,
a common lever locking element, the lever locking element having a locking position, the first and second tappets acting on the common locking element to independently release the hand lever from the closed state.

5,347,835

CONTROL LEVER LOCK

David L. Dewey, 30412 La Vue, Laguna Niguel, Calif. 92677

Filed Feb. 3, 1992, Ser. No. 830,068
Int. Cl.[5] B62H *5/18*
U.S. Cl. 70—202 **6 Claims**



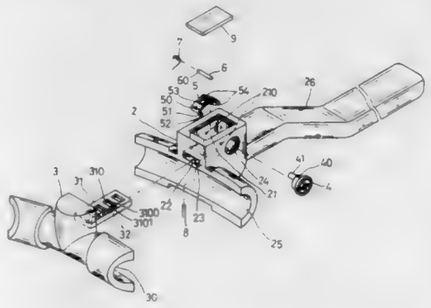
1. A device for locking a control lever on a handlebar of a cycle, comprising:
a first clamp arm and a second clamp arm, said arms being separable one from the other, and a means for locking, the locking means being fixedly mounted within the first clamp arm and having a lock mechanism extending therefrom, the second clamp arm having lock engagement means for accepting the lock mechanism of the locking means therein, such that the clamp arms may be locked together as a single unit defining a first opening therein for enclosing a portion of the handlebar, and a plurality of second openings therein for enclosing a portion of the control lever in any one of said second openings such that the arms may be separately placed over the portion of the handlebar and the control lever and then joined and locked together thereon to prevent the use of the control lever.

5,347,836

CONFIGURATION OF AUTOMOBILE STEERING WHEEL LOCKING DEVICES

Tian-Yuan Chen, No. 95-4, Min-Hsiang Street, Chung-Ho, Taipei Hsien, Taiwan

Filed Aug. 16, 1993, Ser. No. 106,847
Int. Cl.[5] B60R *25/02*
U.S. Cl. 70—209 **1 Claim**



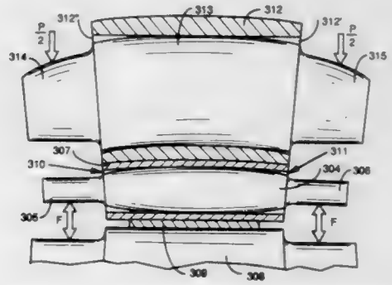
1. A locking device for an automobile steering wheel comprising:
(1) a main body equipped with a semi-circular grip section on a lower part thereof, a lock hole on a side thereof and a stopping bar welded at a rear thereof,
(2) a grip piece for forming a union with a front of said main body, including a semi-circular grip section on the lower part thereof, a cotter bar protruding from the rear thereof, multiple rabbets on the upper side of said cotter bar, a beveled surface on one side of said rabbets and a vertical flat surface on the other side thereof, and a slot way on the under side of said cotter bar,
(3) a lock placed inside the lock hole of the main body, equipped with a round rod extending from a rear of a turning piece of said lock,
(4) a holding pin inserted into a positioning hole in a slot way of the main body, and
(5) a cover placed on the upper part of the main body, characterized by the facts that;
the upper part of the main body includes a cavity, with two inner sides each including an insertion hole, the slot way on a front of said main body is at a right angle to said cavity,
said locking device including a gib which is inserted into the cavity of said main body, the front of said gib, which slopes downward, includes a stop plate, with one side being beveled and the other side being a flat surface, the top of said gib including an opening, with the lower side of a crest of said gib including two circular holes,
said locking device also including a spring, which is inserted into a holding shaft, with one end of said spring being held by said holding shaft and the other end of said spring being held by the upper surface of said gib,
and that the employment of said locking device requires only pushing the grip piece so that (a) the main body and grip piece are wrapped tightly around an automobile steering wheel by means of the semi-circular grip sections on the lower parts of the main body and grip piece forming a circular arc-shaped housing and (b) optimum anti-theft effects are achieved by means of the stopping bar at the rear of said main body being confined to a corner defined by a windshield and a dashboard, thereby preventing the steering wheel from being turned.

5,347,837

METHOD OF ROLLING USING BENDABLE SLEEVED ROLL

Vladimir B. Ginzburg, Pittsburgh, Pa., assignor to International Rolling Mill Consultants, Inc. and United Engineering, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 508,985, Apr. 12, 1990, Pat. No. 5,093,974. This application Feb. 20, 1992, Ser. No. 839,128
The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.
Int. Cl.[5] B21B *27/03, 31/18*
U.S. Cl. 72—243.6 **4 Claims**



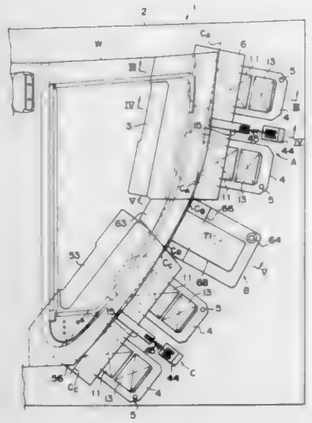
1. A method of rolling an elongated metal workpiece in the form of a sheet or strip, which method comprises passing the workpiece through at least one pair of opposed work rolls comprising an arbor and a hollow sleeve shrink-fitted over the arbor, maintaining maximum radial stresses in a central portion of a shrink-fitted zone, decreasing radial stresses between the arbor and the sleeve towards the ends of the shrink-fitted zone whereby axially spaced shrink-fitted end zones of the sleeve are adapted to slide over corresponding axially spaced shrink-fitted end zones of the arbor, providing a self-compensating roll end by radially spacing apart axial end portions of the arbor and axial end portions of the sleeve thereby preventing inducement of shear stresses between the axial end portions of the arbor and the sleeve and reducing edge drop of the workpiece, wherein a dimension of the radial spacing of the arbor and sleeve end portions transverse to an axial direction of the work roll increases toward axial ends of the work roll, and backing up each pair of work rolls by a pair of backup rolls each of which comprises an arbor and a similarly shrink-fitted hollow sleeve and having self-compensating end portions formed by radially spacing end portions of the backup roll arbor and sleeve, whereby crown variation of the workpiece is reduced during rolling.

5,347,838

FORMING DIE FOR THIN PLATE

Mitsuo Matsuoka, Hirakata, Japan, assignor to Umix Co., Ltd., Osaka Prefecture, Japan

Filed Jun. 25, 1993, Ser. No. 81,129
Int. Cl.[5] B21D *5/04*
U.S. Cl. 72—313 **2 Claims**



1. A forming die for a thin plate which produces a negative angle formed portion piece of work comprising:
a first die rotatably provided with a cylindrical rotary cam with an axially engraved slot, said slot having a slot edge;
a negative angle forming portion formed on the slot edge of the rotary cam;
a second die equipped with a slide cam having a negative angle forming portion opposing said rotary cam, the slide cam being activated toward an outside of the die and slidably equipped;
a pad activated toward the first die and hung from the second die;
an automatic return device further provided on said first die which rotates and withdraws the rotary cam to the extent that after forming, the work can be taken out from the first die;
further rotary cams each having a slot edge with a negative angle forming portion and automatic return devices in a manner that the negative angle forming portion of the work is bent toward the first die;
the negative angle forming portion of the bent work being divided into plural forming portions which are substantially straight within a range capable of processing with one rotary cam wherein a dedicated rotary cam provided for each divided portion;
an automatic return device provided in connection with each dedicated rotary cam; and
a timing plate fixed to the side face of a receiving slot lower side of each rotary cam, wherein when each separately

disposed rotary cam rotates in a junction portion with an adjacent rotary cam, interference does not occur by shifting the timing of rotation, and work supporting portions and negative angle forming portions of the rotary cams are smoothly connected so that their shapes may conform with the shape of a product after the rotations of the cams.

5,347,839

DRAW-PROCESS METHODS, SYSTEMS AND TOOLING FOR FABRICATING ONE-PIECE CAN BODIES

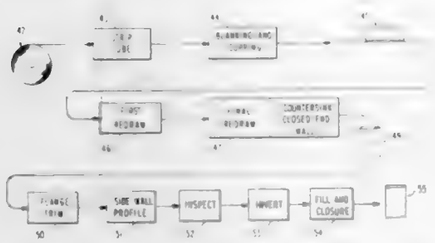
William T. Saunders, Weirton, W. Va., assignor to Weirton Steel Corporation, Weirton, W. Va.

Division of Ser. No. 490,781, Mar. 8, 1990, Pat. No. 5,209,099, which is a continuation-in-part of Ser. No. 831,624, Feb. 21, 1986, Pat. No. 5,014,536, which is a continuation-in-part of Ser. No. 712,238, Mar. 15, 1985, abandoned. This application Apr. 27, 1993, Ser. No. 53,458

The portion of the term of this patent subsequent to May 14, 2008, has been disclaimed.

Int. Cl.[5] B21D *22/00*

U.S. Cl. 72—347 **6 Claims**



1. Apparatus for draw-processing flat-rolled sheet metal, of preselected metallurgical properties precoated with an organic coating and draw lubricant, into a one-piece can body ready for direct use in the assembly of a two-piece can, comprising

A. can stock supply means providing high tensile strength flat-rolled sheet metal of preselected gage precoated on both its planar surfaces with an organic coating and draw lubricant suitable for use with canned comestibles,

B. means for cutting a blank of predetermined surface area and peripheral cut edge dimensional and configurational characteristics from such stock,

C. draw press means including

D. draw tooling members for fabricating a blank cut from such can stock solely by draw processing into

E. a cup-shaped work product which is symmetrically disposed with respect to its centrally located axis,

such draw tooling members as aligned for and during such draw processing being symmetrically disposed with relation to such centrally located axis,

such draw tooling members including

(i) a draw die disposed for and during such usage on one surface of such can stock cut blank with its centrally located axis intersecting such cut blank at its geometric center,

such draw die including

(a) an internal side wall defining a cavity which is symmetrically disposed in relation to such centrally located axis,

(b) an endwall presenting a planar clamping surface oriented in perpendicularly transverse relationship to such centrally located axis to provide for solely planar surface clamping of such can stock blank during such draw-processing, and

(c) a cavity entrance transition zone unitary with and extending between such draw die internal side wall and endwall,

such draw die planar clamping surface being symmetrically spaced from such centrally located axis in a plane surrounding such cavity which is perpendicularly transverse to such centrally located axis and disposed externally of and contiguous to such cavity entrance zone,

such cavity entrance zone presenting a curvilinear surface, surrounding such cavity, with at least a portion thereof having a compound curvature configuration so as to be curvilinear as viewed in cross section in a plane which is transverse to such centrally located axis and as viewed in a plane which includes such centrally located axis,

such cavity entrance zone as projected onto a plane which is perpendicularly transverse to such centrally located axis presenting a linear dimension which as measured in a plane which includes such centrally located axis is about five times nominal starting gage for such flat-rolled sheet metal,

such curvilinear surface of the draw cavity entrance zone being formed about a plurality of radii of curvature so as to increase its surface area without increasing its area as projected onto such plane which is perpendicularly transverse to such central longitudinal axis,

such draw die internal side wall presenting a surface which is tapered about one degree as viewed in cross section in a plane which includes such centrally located axis from its point of intersection with such curvilinear surface of the cavity entrance zone to provide a cavity of increasing cross sectional area as measured in a plane which is perpendicularly transverse to such centrally located axis with increasing penetration of such cavity;

(ii) a draw punch disposed as aligned for and during such draw processing on the remaining opposite surface of such precoated sheet metal can stock symmetrically disposed in relation to such centrally located axis for relative movement in a direction coincident with such centrally located axis into such draw die cavity,

such draw punch including

(a) an endwall symmetrically disposed in relation to such centrally located axis presenting at least a peripheral portion defining a plane which is perpendicularly transverse to such centrally located axis,

(b) a peripheral side wall which is symmetrically disposed with relation to such centrally located axis of such punch, and

(c) a draw punch transition zone unitary with and extending between such punch endwall peripheral portion and side wall,

such punch transition zone presenting a curvilinear surface surrounding such endwall with at least a portion thereof presenting a compound curvature configuration so as to be curvilinear when viewed in cross section in a plane which is transverse to such centrally located axis and as viewed in a plane which includes such centrally located axis,

the area of such punch transition zone surface as projected onto a plane which is perpendicularly transverse to such centrally located axis being selected in relation to punch diameter to be as large as possible while avoiding forming buckles in such preselected gage sheet metal during such draw processing operations; and

(iii) a unitary draw clamping member, which is symmetrically disposed in relation to such centrally located axis as aligned for and during such draw processing, including

(a) an internal side wall which is contiguous to and surrounds such draw punch side wall during usage so that when viewed in cross section in a plane which includes such centrally located axis both such punch side wall and contiguous side wall of the clamping member present a straight line in parallel relationship to each other, and

(b) an endwall presenting a planar surface for providing solely planar clamping of sheet metal in a plane which is perpendicularly transverse to such centrally located axis in an area exterior to and surrounding such draw punch, with

sheet metal clamping taking place in a plane which is perpendicularly transverse to such centrally located axis by coaction between such draw die endwall planar surface and such clamping member endwall planar surface,

such draw punch relative movement during usage being moved into such draw die cavity with such sheet metal being clamped externally of such punch and cavity entrance zone solely between such planar clamping surfaces of such draw die and clamping member;

such work product having

(i) a closed endwall presenting at least a peripheral portion defining a plane which is perpendicularly transverse to such centrally located axis with a surface area which is about 25% to 40% less than the surface area of such cut blank,

(ii) a side wall having a uniform height in extending from such closed endwall toward the axially opposite open end of such drawn work product, and, presenting

(iii) flange metal extending about the full periphery of such side wall at its open end,

such flange metal being disposed in a plane which is perpendicularly transverse or substantially perpendicularly transverse to such centrally located axis,

such closed endwall being unitary with and joined to such side wall by

(iv) a curvilinear surface juncture surrounding such side wall with at least a portion thereof having a compound curvature configuration so as to be curvilinear when viewed in cross section in a plane which includes such centrally located axis and when viewed in a plane which is perpendicularly transverse to such centrally located axis,

such juncture having an interior surface area and configuration corresponding to surface area and configuration of such draw punch transition zone.

5,347,840

PRESS COMPRISING A PRESS TABLE AND A SLIDING TABLE

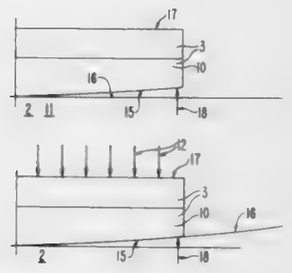
Michael Wolfgang, Göppingen; Lauke Andreas, Gruibingen, and Fritz Werner, Karlsruhe, all of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Fed. Rep. of Germany

Filed Aug. 17, 1992, Ser. No. 931,203

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1992, 4127237

Int. Cl.[5] B21J *13/04*

U.S. Cl. 72—455 **20 Claims**



1. A press comprising:

at least one upwardly and downwardly displaceable press slide adapted to hold a top tool element for forming of materials by pressing

at least one stationary press table;

at least one sliding table adapted to hold a bottom tool element for forming of materials by pressing, said at least one sliding table having first bearing walls which are supported on second bearing walls of the press table; and

contact surfaces arranged on said first and second bearing walls between said at least one press table and said at least one sliding table,

wherein at least one of the contact surfaces has a curved surface contour which conforms to a surface contour of the press table when the press table is in a loaded state.

5,347,841

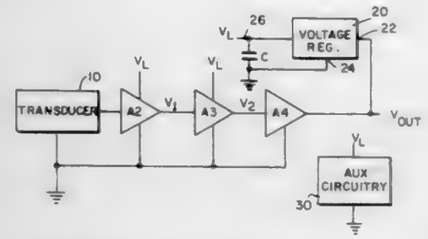
SELF-TESTING TRANSDUCER CURCUIT

Donald J. Enzinna, Lockport, N.Y., assignor to Kistler Instrument Corporation, Amherst, N.Y.

Filed Sep. 14, 1992, Ser. No. 944,319

Int. Cl.[5] G01P *21/00*

U.S. Cl. 73—1 D **26 Claims**



1. A self-testing transducer circuit comprising:

transducer means for electrically sensing a physical parameter;

driver means having an input connected to said transducer means and an output connected to a circuit output;

testing means responsive to power-up of said transducer circuit for applying test signals to said transducer means for a predetermined period; and

said self-testing transducer circuit is in a single transducer module.

5,347,842

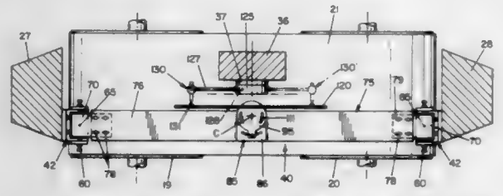
CALIBRATION APPARATUS FOR TIRE TEST SYSTEM

Marion G. Pottinger, Akron, and David M. Batdorff, Wadsworth, both of Ohio, assignors to F & M Company Limited Partnership, Akron, Ohio

Filed Oct. 19, 1993, Ser. No. 138,836

Int. Cl.[5] G01L *25/00;* **G01M** *17/02*

U.S. Cl. 73—1 R **15 Claims**



1. Calibration apparatus for a tire testing machine having an A-shaped framework formed by diverging trunions with a spindle having a face seating a wheel for mounting a test tire movably supported between the trunions comprising, a pair of beam mounting means affixed in spaced relation on the A-shaped framework, cross beam means supported by said pair of beam mounting means, calibration bar positioning means on said cross beam means supporting a calibration bar in spaced relation to the face of the spindle, angle adjusting means on said calibration bar positioning means for selectively angularly orienting said calibration bar relative to said cross beam means,

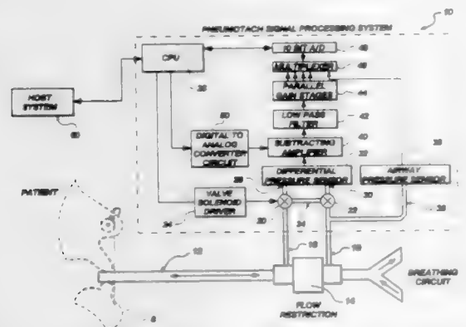
an indicator mounting rod means extending from the spindle in a direction paralleling the face of the spindle, dial indicator means extending from said indicator mounting rod for engaging said calibration bar means at spaced locations upon rotation of the spindle through approximately 180° to establish parallelism of the face of the spindle and said calibration bar at selected angular settings of the spindle and said calibration bar.

5,347,843

DIFFERENTIAL PRESSURE FLOWMETER WITH ENHANCED SIGNAL PROCESSING FOR RESPIRATORY FLOW MEASUREMENT

Joseph A. Orr, and Scott A. Kofoed, both of Salt Lake City, Utah, assignors to Korr Medical Technologies Inc., Salt Lake City, Utah

Filed Sep. 23, 1992, Ser. No. 949,573
Int. Cl.[5] G01F *1/36*
U.S. Cl. 73—3 17 Claims



1. A differential pressure flowmeter for measurement of respiratory gas flow, comprising:

a conduit for conducting said respiratory gas flow having a flow restriction therein and first and second apertures through the wall thereof on opposite sides of said flow restriction;

a pressure sensor for generating a signal responsive to pressure in said conduit;

a differential pressure sensor having first and second pressure ports for generating a signal responsive to differential pressure across said restriction;

a first pressure passage extending between said first conduit aperture and said first pressure port;

a second pressure passage extending between said second conduit aperture and said second pressure port;

a third pressure passage;

first and second valves respectively associated with said first and second pressure passages and in communication with said third pressure passage for selectively communicating said first and second pressure ports of said differential pressure sensor with said first and second apertures in a first valve mode and said first and second pressure ports with each other in isolation from said conduit in a second valve mode;

a subtracting amplifier for receiving said signal from said differential pressure sensor and for compensating said signal by a baseline signal generated by said differential pressure sensor when said first and second pressure ports are communicated in isolation from said conduit;

a plurality of amplifiers having differing gain stages for receiving said compensated signal from said subtracting amplifier and amplifying said compensated signal;

an analog-to-digital converter for receiving an amplified signal from each of said plurality of amplifiers and digitizing such amplified signals and for receiving and digitizing said pressure sensor signal; and

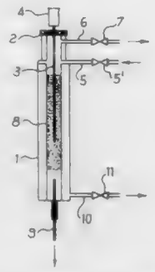
microprocessor means for selecting one of said digitized amplified signals and converting said selected digitized amplified signal and said digitized pressure sensor signal to a flow rate of said respiratory gas.

5,347,844

PROCESS & DEVICE FOR VAPORISATION INJECTIONS IN EQUIPMENTS FOR GAS CHROMATOGRAPHIC ANALYSIS

Konrad Grob, Fehraltorf, Switzerland, and Fausto Munari, Milan, Italy, assignors to Fisons Instruments, S.P.A., Italy

Filed Jan. 13, 1993, Ser. No. 4,086
Claims priority, application Italy, Jan. 14, 1992, MI92A000049
Int. Cl.[5] G01N *30/12*
U.S. Cl. 73—23.41 20 Claims



1. A process for the injection of liquid samples into a gas chromatograph comprising the steps of:

maintaining an injector of said gas chromatograph, said injector including a vaporisation chamber, at a set temperature at least exceeding the boiling point, at operating pressure, of a solvent to be injected and which is sufficiently high to allow for the transfer of a component to be analyzed into a column of said gas chromatograph;

opening an exhaust duct from said vaporisation chamber;

interrupting a flow of a carrier gas through said vaporisation chamber and into said column;

temporarily creating, inside said vaporisation chamber, a cool zone having a temperature substantially equal to said boiling point of said solvent while maintaining said injector at said set temperature;

injecting said component to be analyzed into said vaporisation chamber such that at least a part of said component to be analyzed is disposed within said cool zone as a liquid;

eliminating said cool zone while maintaining said injector at said set temperature;

closing said exhaust duct and restoring said flow of carrier gas to said column;

vaporising said component to be analysed; and

transporting said vaporised component to be analyzed to said column by means of said flow of carrier gas.

5,347,845

APPLIANCE SHIPPING CONTAINER AIR SAMPLING SYSTEM

Robert P. Kepler, Crawford County, Ark., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Feb. 19, 1993, Ser. No. 19,483
Int. Cl.[5] G01N *1/24*
U.S. Cl. 73—31.03 17 Claims

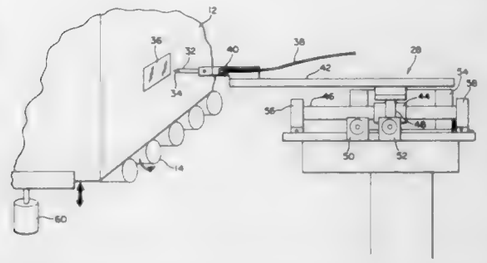
1. An apparatus for detecting the presence of a contaminant in the air within an appliance shipping container, said shipping container having at least one wall defining an enclosure surrounding an appliance, said apparatus comprising:

a probe having an insert end and conduit means;

means for positioning said shipping container adjacent said insert end of said probe;

means for inserting said insert end and said conduit means of said probe through said wall;

an air contaminant detecting means, said air contaminant detecting means interconnected with said conduit means



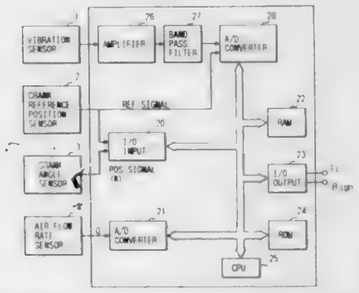
for admitting a test sample of air from within said shipping container to said air contaminant detecting means.

5,347,846

KNOCKING DETECTING DEVICE FOR INTERNAL COMBUSTION ENGINE AND METHOD THEREFOR

Kouji Kitano, Kagawa; Mitsuo Kayano, Hitachi, both of Japan; Masayoshi Kaneyasu, Farmington Hills, Mich.; Kouzou Katougi, Hitachi, Japan; Takanobu Ichihara, Katsuta, Japan, and Nobuo Kurihara, Hitachioota, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 6, 1992, Ser. No. 847,691
Claims priority, application Japan, Mar. 7, 1991, 3-65262
Int. Cl.[5] G01L *23/22*
U.S. Cl. 73—35 5 Claims



1. A knocking detecting device for an internal combustion engine, comprising:

a vibration sensor for detecting vibrations, including engine vibrations and engine cylinder internal pressure vibrations, and for producing output vibrations signals;

means for taking-in said output vibration signals from said vibration sensor in a plurality of sequential intervals during one explosion stroke of the internal combustion engine;

means for independently processing the taken-in output vibration signals in each of the respective sequential intervals using a digital frequency analysis;

means for setting a main resonance frequency component necessary for knocking occurrence judgement based upon an instant operating condition of the internal combustion engine;

means for calculating respective knocking indexes for the digital frequency-analyzed output vibration signals in the respective sequential intervals based upon the set main resonance frequency component;

means for comparing the largest calculated knocking index with a predetermined threshold value determined by a background vibration level and a slice level thereof to determine an occurrence of knocking; and

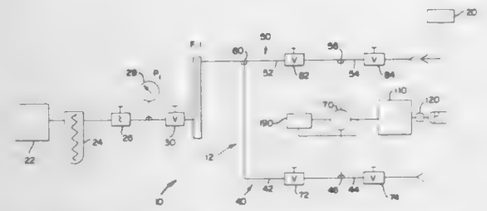
means for generating an output signal when knocking is determined by said comparing means.

5,347,847

TEST APPARATUS EMPLOYING PNEUMATIC BRIDGE FOR TESTING PNEUMATIC FLOW RESISTANCE AND RELATED METHODS

John E. Ogden; Peter L. Bryant, both of Libertyville, and Lois L. Caron, McHenry, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 18, 1992, Ser. No. 993,199
Int. Cl.[5] G01F *1/36;* G01B *13/00*
U.S. Cl. 73—37 10 Claims



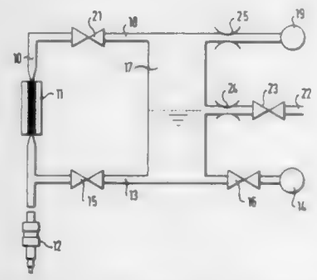
1. An apparatus for testing pneumatic flow resistance of a test component, the apparatus comprising a pneumatic bridge having two branches, each branch comprising two arms with a centerpoint between the arms, each arm comprising at least one flow restrictor, the bridge having a pressure transducer connected between the centerpoints of the branches and arranged to detect pneumatic pressure imbalances in the bridge, wherein each branch has a high pressure end and a low pressure end, the high pressure ends of the branches being connected to a common source of gas at regulated pressure, the test component being connectible in the arm between the centerpoint of one branch and the low pressure end thereof.

5,347,848

APPARATUS FOR MEASURING A HYDRAULIC FLUID FLOW RATE AND/OR LEAKAGE RATE THROUGH AN OBJECT TO BE TESTED

Eberhard Schoeffel, and Josef Ernst, both of Bamberg, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 15, 1993, Ser. No. 4,989
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1992, 4205453
Int. Cl.[5] G01M *3/02, 3/04*
U.S. Cl. 73—37 5 Claims



1. An apparatus for measurement of a hydraulic fluid flow rate through an object to be tested, said apparatus comprising an approximately vertically oriented measurement tube connectable to an objected to be tested; a capacitive sensor mounted on the measurement tube so that a hydraulic medium in the measurement tube can act on the capacitive sensor, said

hydraulic medium being pressurized with a pneumatic pressure greater than a hydraulic pressure of the hydraulic medium; an equalization vessel extending substantially vertically adjacent to the measurement tube and connected to the measurement tube to communicate with the measurement tube, the hydraulic fluid and a pneumatic medium; a connector tube; and a connector tube valve in the connector tube, said connector tube being open to the atmosphere at one end thereof and, at another end, being connected to the equalization vessel, and the connector tube valve being located at about the level of the capacitive sensor.

5,347,849

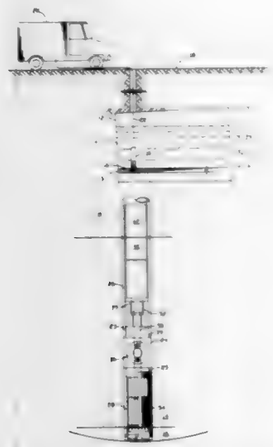
WATER SENSOR THAT DETECTS TANK OR VESSEL LEAKAGE

Mahan L. Reeme, Houston; Barry N. Williams, Rosharon, and Glenn A. Kauffman, Pasadena, all of Tex., assignors to Tanknology Corporation International, Houston, Tex.

Continuation-in-part of Ser. No. 575,089, Aug. 30, 1990, Pat. No. 5,156,047. This application Jul. 22, 1992, Ser. No. 918,559

Int. Cl.[5] **G01F** *23/30, 23/64;* **G01M** *3/32*

U.S. Cl. 73—49.2 **2 Claims**



1. An apparatus for continuously monitoring the level of water in a vessel containing hydrocarbon product, the apparatus comprising:

a magnetostrictive sensor comprised of a float slidably mounted on a rod and a means for generating an electrical signal proportional to the location of the float on the rod, the float sliding in response to the level of water in the vessel;

a cylindrical probe body having a first and a second end and a longitudinal slot therethrough, the rod of the magnetostrictive sensor extending through the slot, the slot being sealed against fluid influx when the rod extends therethrough;

a protective sleeve threadably engaged to the first end of said probe body so as to encase the float of said magnetostrictive sensor, said sleeve having openings therein to permit fluid flow therethrough;

means for processing the electrical signal generated by said magnetostrictive sensor and for transmitting the processed signal to another location for further processing; and

an external housing threadably connected to the second end of said probe body opposite the first end so as to encase said processing and transmitting means and seal said processing and transmitting means against fluid influx.

2. A method for determining the rate of hydrocarbon product leakage from the volume of water entering a liquid storage vessel whose contents are under negative pressure, comprising the steps of:

determining the longitudinal angle of inclination of the vessel with respect to the horizon;

measuring the depth of the water in the vessel at predetermined time intervals with an apparatus for continuously monitoring the level of water in the vessel,

the apparatus comprising:

a magnetostrictive sensor comprised of a float slidably mounted on a rod and a means for generating an electrical signal proportional to the location of the float on the rod, the float sliding in response the level of water in the vessel;

a cylindrical probe body having a first and a second end and a longitudinal slot therethrough, the rod of said magnetostrictive sensor extending through the slot, the slot being sealed against fluid influx when the rod extends therethrough;

a protective sleeve threadably engaged to the first end of said probe body so as to encase the float of said magnetostrictive sensor, said sleeve having openings therein to permit fluid flow therethrough;

means for processing the electrical signal generated by said magnetostrictive sensor and for transmitting the processed signal to another location for further processing; and

an external housing threadably connected to the second end of said probe body opposite the first end so as to encase said processing and transmitting means and seal said processing and transmitting means against fluid influx;

calculating the volume of water in the vessel from each depth measurement and the angle of inclination; and

ascertaining the rate of change in calculated volume of water in the vessel over time from which the rate of hydrocarbon product leakage from the vessel is determined.

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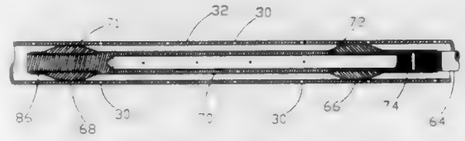
METHOD FOR DETECTING AND LOCALIZING LEAKS IN ABOVE GROUND STORAGE TANKS

John E. Tuma, Friendswood, Tex., assignor to Tanknology Corporation International, Houston, Tex.

Filed Aug. 4, 1992, Ser. No. 925,372

Int. Cl.[5] **G01M** *3/04*

U.S. Cl. 73—49.2 **7 Claims**



1. A method for isolating a longitudinal section of a horizontal bore through the stata under a liquid storage tank for detecting vapor or liquid that is entrapped in the strata after escaping through a leak in the bottom of the storage tank and for localizing the leak along the horizontal bore comprising the steps of:

(a) positioning a perforated conduit having means positioned on the outside diameter of the conduit at both ends thereof to form a conduit and seal assembly for selectively sealing against the inside diameter of the horizontal bore and the outside diameter of the conduit in the horizontal bore with an elongate member which extends outside the bore and to which the conduit and seal assembly is connected and having a passageway therethrough communicating with the inside of the conduit, the conduit being closed at the end first inserted into the bore;

(b) activating the sealing means to isolate the longitudinal section of the bore between the sealing means and surrounding the conduit;

(c) evacuating the isolated longitudinal section of the bore through the passageway in the elongate member to remove any vapor or liquid that is entrapped in the strata surrounding the isolated longitudinal section of the bore;

(d) measuring any vapor or liquid in the gases evacuated from the strata surrounding the isolated section of the bore with a sensor sensitive to the level of the vapor or liquid that has escaped from the tank that is positioned in the flow of evacuated gases; and

(e) continuing the evacuation of the gases from the strata surrounding the isolated longitudinal section of the bore until the level of any vapor or liquid being measured by the sensor either levels off at a level above background levels, indicating the presence of a leak in the bottom of the tank in the vicinity of the isolated longitudinal section of the bore, or decreases to background level, indicating the absence of a leak in the vicinity of the isolated longitudinal section of the bore.

5,347,851

CAPILLARY RHEOMETER PLUNGER PRESSURE TRANSDUCER AND MEASUREMENT TECHNIQUE

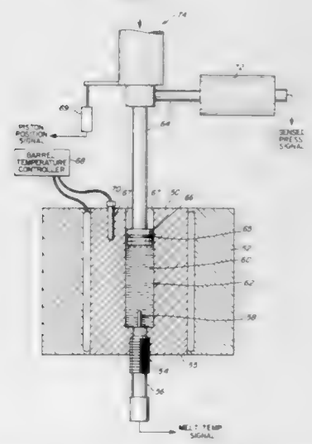
Christopher P. Grudzien, Jr., Mansfield, Mass.; Robert Malloy, Londonberry, N.H., and James F. Reilly, Shillington, Pa., assignors to Dynisco, Inc., Sharon, Mass.

Continuation-in-part of Ser. No. 680,561, Apr. 4, 1991, Pat. No. 5,209,107. This application Nov. 17, 1992, Ser. No. 977,544

The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

Int. Cl.[5] **G01N** *25/00*

U.S. Cl. 73—53.01 **22 Claims**



1. A capillary rheometer apparatus for characterizing a polymer melt's pressure-volume-temperature relationship, comprising:

a housing;

a plunger;

the housing having a reservoir for receiving the plunger and the polymer melt;

a plug for blocking flow of the melt out of the reservoir;

a driving mechanism for driving the plunger longitudinally within the reservoir;

the plunger having a liquid-filled capillary passage extending therein from one end of the plunger;

a coupler at the one end of the plunger defining within the plunger a chamber in communication with the capillary passage and for sensing melt pressure in the reservoir and transmitting the pressure to the liquid-fill; and

a pressure sensing mechanism, at a second end of and coupled to the capillary passage, responsive to pressure exerted by the liquid fill, for providing an indication of sensed pressure.

5,347,852

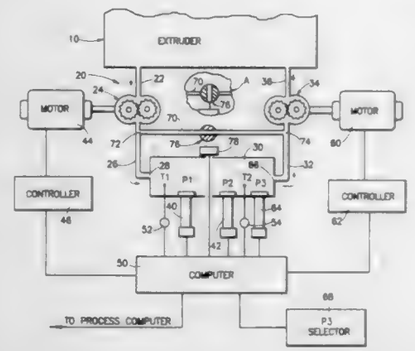
ON-LINE RHEOLOGICAL MEASUREMENTS FOR PROCESS CONTROL

Paul G. Mode, Westfield, N.J., assignor to Rheometrics, Inc., Piscataway, N.J.

Filed Mar. 11, 1993, Ser. No. 29,792

Int. Cl.[5] **G01N** *11/08*

U.S. Cl. 73—54.04 **21 Claims**



1. An improvement in an apparatus for conducting an on-line rheological measurement in a process melt in a process main stream so as to provide process control information based upon the viscosity of the process melt, utilizing a rheometer of the type in which a first metering pump delivers diverted melt from a first conduit, communicating with the process main stream and the first metering pump, to an entrance of a capillary passage and a second metering pump delivers the diverted melt from an exit of the capillary passage to a second conduit communicating with the second metering pump, and measuring means for measuring the viscosity of the diverted melt in the capillary passage, the improvement comprising:

a parallel flow passage having an inlet located between the first metering pump and the entrance to the capillary passage, in close juxtaposition with the entrance, and an outlet located between the exit of the capillary passage and the second metering pump; and

control means for controlling the flow of diverted melt through the parallel flow passage alternately to enable a volumetric flow through the parallel flow passage at a rate which attains relatively quick delivery of diverted melt from the process main stream to the first metering pump, and to discontinue the volumetric flow through the parallel flow passage at said rate during measurement of the viscosity of the diverted melt in the capillary passage.

5,347,853

METHOD OF AND APPARATUS FOR ASCERTAINING THE HARDNESS OF ROD-SHAPED ARTICLES OF THE TOBACCO PROCESSING INDUSTRY

Reinhard Hoppe, Marschacht; Rolf Lindemann, Glinde, and Henning Möller, Hamburg, all of Fed. Rep. of Germany, assignors to Hörber AG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 894,060, Jun. 5, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 127,887

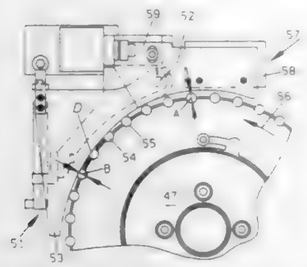
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1991, 4119821

Int. Cl.[5] **G01N** *3/48*

U.S. Cl. 73—82 **16 Claims**

7. Apparatus for ascertaining the hardness of elastically deformable elongated substantially cylindrical articles of the tobacco processing industry, the articles having different thicknesses deviating to different extents from a desired thick-

ness and each article having an external surface and a longitudinal axis, comprising means for advancing a series of articles in a predetermined direction along a predetermined path wherein the longitudinal axes of the articles are at least substantially normal to said direction; a deforming device having means for subjecting the articles of said series to elastic deformation in a first portion of said path, including means for applying to the articles a predetermined deforming force radially of the articles whereby the articles develop depressions and the extent of elastic deformation is indicative of the hard-



ness of deformed articles; means for determining the deviation of the thickness of the articles of said series from the desired thickness in a second portion of said path upstream of said first portion, including means for generating second signals denoting the extent of deviation of determined thickness from the desired thickness; and signal processing means including means for modifying said first signals in dependency on the respective second signals so that the thus modified first signals are indicative of the hardness of the respective articles irrespective of the thickness thereof.

5,347,854

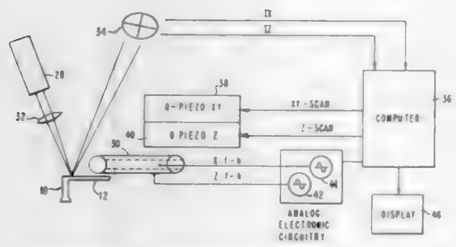
TWO DIMENSIONAL PROFILING WITH A CONTACT FORCE ATOMIC FORCE MICROSCOPE

Yves Martin, Ossining, and Hemantha K. Wickramasinghe, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 22, 1992, Ser. No. 948,503

Int. Cl.[5] G01B *5/28*

U.S. Cl. 73—105 **5 Claims**



1. A method of two dimensional profiling of a sample surface using a tip of a contact force atomic force microscope, said tip having a longitudinal axis and said tip undergoing motion in a scan direction, comprising the steps of:

maintaining the tip in contact with the surface;

determining the local slope of the surface by sensing the force of the tip in contact with surface in a first direction substantially parallel to the longitudinal axis of the tip and in a second direction substantially normal to the longitudinal axis of the tip and in the scan direction; said sensing causing the tip to undergo vibratory motion in said second direction; and

controlling the position of the tip responsive to said determining the local slope for causing the tip to follow the profile of the surface.

5,347,855

MISFIRE DETECTOR DEVICE FOR USE IN AN INTERNAL COMBUSTION ENGINE

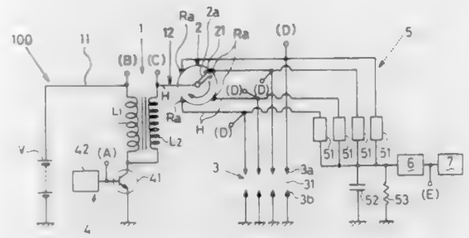
Shigeru Miyata; Yoshihiro Matsubara, and Junichi Kagawa, all of Nagoya, Japan, assignors to NGK Spark Plug Co. Ltd., Nagoya, Japan

Filed Mar. 10, 1993, Ser. No. 29,235

Claims priority, application Japan, Mar. 11, 1992, 4-052660; Mar. 25, 1992, 4-066593

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—116 **7 Claims**



1. A misfire detector device for use in an internal combustion engine comprising:

an ignition coil including a primary coil and a secondary coil;

an electrical interrupter circuit which on-off actuates a primary current flowing through a primary circuit of the ignition coil to induce a sparkplug voltage;

means provided in a secondary circuit of the ignition coil for preventing a current flowing back to the ignition coil;

a multi-electrode type spark plug which is to be energized from the ignition coil;

a voltage charging circuit which re-energizes the primary coil to induce an electromotive voltage in the secondary coil so as to electrically charge a stray capacity inherent in the spark plug at a time predetermined after the end of the spark action of the spark plug;

a voltage divider circuit which detects a divided voltage of the sparkplug voltage applied across electrodes of the spark plug;

a sparkplug voltage detector circuit which detects an attenuation time period length of an attenuation characteristic of a sparkplug voltage waveform presented subsequent to a time period predetermined after an end of a spark action of the spark plug; and

a distinction circuit which determines on the basis of the attenuation time period length of the attenuation characteristic whether or not the spark ignites an air-fuel mixture injected in a cylinder of an internal combustion engine.

5,347,856

MISFIRE DETECTOR DEVICE FOR USE IN AN INTERNAL COMBUSTION ENGINE

Shigeru Miyata; Yoshihiro Matsubara, and Junichi Kagawa, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Mar. 3, 1993, Ser. No. 25,346

Claims priority, application Japan, Mar. 3, 1992, 4-045428; Mar. 3, 1992, 4-045429

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—116 **6 Claims**

1. A misfire detector device for use in internal combustion engine comprising:

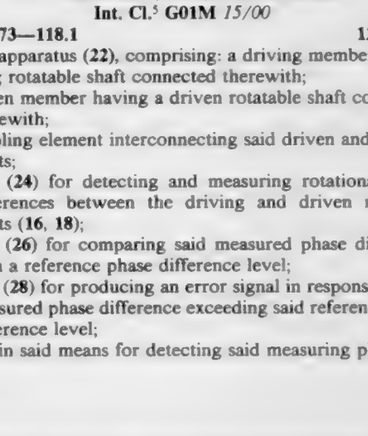
an ignition coil including a primary coil and a secondary coil;

an electrical interrupter circuit which on-off actuates a primary current flowing through a primary circuit of the ignition coil to induce a spark plug voltage;

a series gap or a check diode provided in a secondary circuit of the ignition coil so as to prevent a current flowing back to the ignition coil;

a spark plug which is to be energized from the ignition coil, the spark plug having a center electrode, a front end of which is projected from an insulator, and an outer surface area of the projected front end of the center electrode being 25 mm^2 or more;

a voltage charging circuit which re-energizes the primary coil to induce a second electromotive voltage in the secondary coil so as to electrically charge a stray capacity inherent in the spark plug at a predetermined time after the end of the spark action of the spark plug;



a voltage divider circuit which detects a divided voltage level of the spark plug voltage applied across electrodes of the spark plug;

a spark plug voltage detector circuit which detects an attenuation time period length of attenuation characteristics of a spark plug voltage waveform, produced by the second electromotive voltage, and which is presented from the voltage divider circuit subsequent to a predetermined time period after an end of a spark action of the spark plug; and

a distinction circuit which determines on the basis of the attenuation time period length of the attenuation characteristics whether or not the spark ignites an air-fuel mixture injected in a cylinder of an internal combustion engine.

5,347,857

PHASE DETECTION APPARATUS AND METHOD

Siamak Mirhakimi; Walter E. Earleson, both of Peoria, and Eric W. Ohlson, Edelstein, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

PCT No. PCT/US91/04009, § 371 Date Jun. 7, 1991, § 102(e) Date Jun. 7, 1991

PCT Filed Jun. 7, 1991, Ser. No. 859,530

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—118.1 **12 Claims**

1. An apparatus (**22**), comprising: a driving member having a driving rotatable shaft connected therewith;

a driven member having a driven rotatable shaft connected therewith;

a coupling element interconnecting said driven and driving shafts;

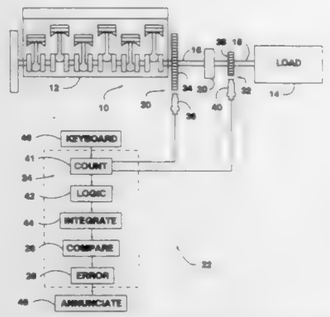
means (**24**) for detecting and measuring rotational phase differences between the driving and driven rotatable shafts (**16**, **18**);

means (**26**) for comparing said measured phase difference with a reference phase difference level;

means (**28**) for producing an error signal in response to said measured phase difference exceeding said reference phase difference level;

wherein said means for detecting said measuring phase differences includes a first transducer associated with said driving member shaft, and a second transducer associated with said driven member shaft;

wherein said first and second transducers each include a multi-toothed gear and a gear tooth detector adapted to



sense the presence and absence of the respective gear teeth;

wherein one of said multi-toothed gears includes substantially more teeth than does the other of said multi-toothed gears.

5,347,858

WEAR-DETECTION PROBE FOR A BRAKE LINING MATERIAL

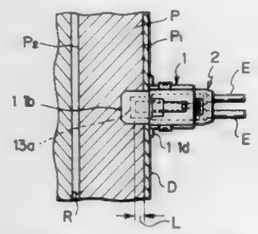
Katsuya Ito, and Fumiyoshi Tanigawa, both of Mie, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Dec. 7, 1992, Ser. No. 987,456

Claims priority, application Japan, Dec. 12, 1991, 3-110023[U]

Int. Cl.[5] G01L *5/28*

U.S. Cl. 73—129 **1 Claim**



1. A wear-detection probe for a brake lining material wherein a conductor is either contacted with a rotor or cut off by a rotor when a predetermined thickness remains in the brake lining material due to wear, comprising:

a thin, flat plate detection conductor which extends a given length toward the rotor from a side of the brake lining material facing away from the rotor;

a probe body housing supporting said detection conductor and including an insertion portion, whereby only said insertion portion is embedded in the brake lining material;

a probe connector housing detachably connected to said probe body housing; and

a pair of terminals supported in said probe connector housing, said terminals being contacted with said detection conductor when said probe connector housing is connected to said probe body housing.

5,347,859

DYNAMOMETRIC MEASURING DEVICE FOR A DRILL PIPE

Henri Henneuse, Billere; Frédéric Clayer, Jurancon; Jean-Luc Tanguy, Pau, and Jean Lutz, Jurancon, all of France, assignors to Societe Nationale Elf Aquitaine (Production), France

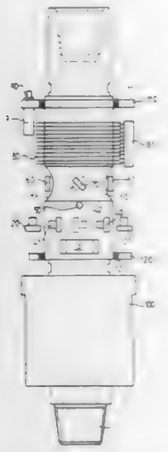
PCT No. PCT/FR90/00467, § 371 Date Mar. 18, 1991, § 102(e) Date Mar. 18, 1991, PCT Pub. No. WO91/00413, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 26, 1990, Ser. No. 655,436

Claims priority, application France, Jun. 28, 1989, 89 08649

Int. Cl.[5] E21B *47/00*

U.S. Cl. 73—151 **8 Claims**



1. Dynamometric measuring device for a rotating drill pipe comprising:

a plurality of sensors disposed in a groove in the rotation drill pipe, each of said sensors providing means for outputting a measurement signal over a respective measurement channel;

a first electronic circuit attached to the rotating drill pipe for conditioning the signals supplied by these sensors and including a stage of follower-amplifiers of very low output impedance;

a commutator-brush assembly for transmitting the signals from the first electronic circuit attached to the rotating drill pipe to a fixed part, said commutator-brush assembly including a commutator mounted on the rotating drill pipe and a fixed-brush assembly mounted on the fixed part; and

a second electronic circuit mounted on the fixed part, wherein said circuit comprises on an output side of the fixed-brush assembly, means including a stage follower-amplifiers of very high input impedance for receiving said signals transmitted to the fixed part and for thereby causing transmission of the signals from the first electronic circuit attached to the rotating drill pipe to be carried out at zero current, and, on an output side of each follower-amplifier, a separation circuit for a DC component and a separation circuit for an AC component of each of said signals.

5,347,860

BENTHIC SAMPLING EFFECTIVENESS MEASURER

J. Patton Rimer, 960 W. 19th St., Upland, Calif. 91786

Filed Sep. 21, 1993, Ser. No. 124,864

Int. Cl.[5] A01K *73/02;* **G01N** *1/00*

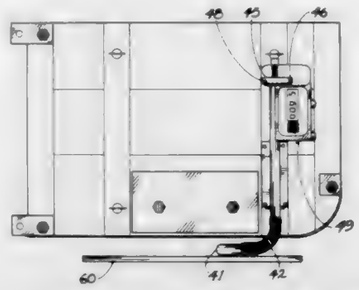
U.S. Cl. 73—170.33 **20 Claims**

18. A system for measurement of the total on-bottom time that an object with a body section having upper and lower portions thereof, being towed behind a boat is in actual contact with the water bottom, comprising:

means for mounting said time measurement system on said body section;

bottom contacting means mounted on said body section and extending below said bottom portion of said body section for indication of when said bottom portion of said body section is in proximate contact with said water bottom;

time totalizing means for measurement of time cumulation



when activated and for holding said time cummulation when deactivated; and

first switching means connected between said bottom contacting means and said time totalizing means so that a bottom contacting indication from said bottom contacting means will activate said time totalizing means and that an absence of said indication will deactivate said time totalizing means.

5,347,861

THERMAL MASS FLOW METER

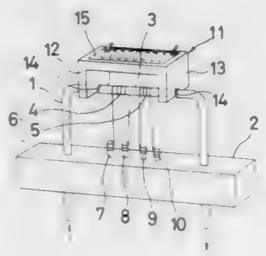
Kiyoshi Satoh, Kyoto, Japan, assignor to Stec Inc., Kyoto, Japan

Continuation of Ser. No. 737,716, Jul. 30, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 20,224

Claims priority, application Japan, Aug. 11, 1990, 2-212821

Int. Cl.[5] G01F *1/68*

U.S. Cl. 73—204.12 **13 Claims**



1. A thermal mass flow meter, comprising:

a conduit;

a fluid passing through the conduit;

a sensor portion formed by winding a first sensor coil around an outer circumferential portion of the conduit and winding a second sensor coil around the outer circumferential portion of the conduit at an interval along the conduit;

a thermal conductor for thermally connecting the first and second sensor coils by thermally contacting the conduit next to the sensor coils at points along the conduit external of the interval between the sensor coils, the thermal conductor being a bridge having first and second leg members and a horizontal member connected between the leg members, the leg members contacting the conduit at points proximate to the sensor coils external of the interval; and

a heater for heating the thermal conductor, the heater maintaining the temperature of the thermal conductor at a constant temperature.

5,347,862

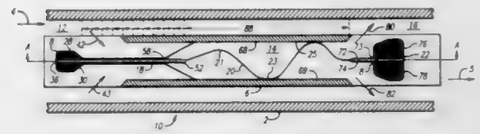
FLUID FLOW METER

Dov Ingman, 3/55 Hiam Hazaz St. Savyonei Danya, Danya 34984, Israel

Filed Nov. 23, 1992, Ser. No. 979,996

Int. Cl.[5] G01F *1/54, 3/00*

U.S. Cl. 73—269 **55 Claims**



1. A fluid flow meter, comprising:

a long, flexible membrane;

upstream clamping means for mounting a first end of said membrane in an upstream clamping region in a fluid flow path;

downstream clamping means for mounting a second end of said membrane in a downstream clamping region in said fluid flow path at a clamping span distance downstream from said upstream clamping region, the length of said membrane between said first and second ends exceeding said clamping span distance by an excess membrane length to permit an undulating motion of said flexible membrane along said clamping span distance in response to a rate of flow of fluid in said path;

sensor means responsive to said undulating motion for measuring said flow of fluid in said path; and

centering spring means within said clamping span distance adjacent a first one of said clamping regions for resiliently resisting motion of said membrane from a central plane substantially parallel to said path.

5,347,863

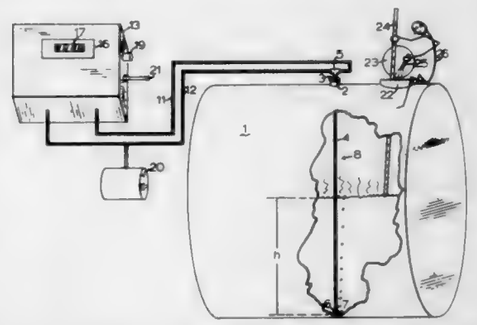
ASPHALT OIL TANK MONITOR

Clarence N. Richard, 3624 Sussex Pl., Minnetonka, Minn. 55345

Filed Jul. 2, 1993, Ser. No. 85,079

Int. Cl.[5] G01F *23/18, 23/14*

U.S. Cl. 73—301 **3 Claims**



1. An apparatus to monitor the quantity of liquid contained in a tank, comprising:

a pipe probe inserted downward into the tank, reaching near the bottom of the tank;

an air pump connected pneumatically to the probe, to pressurize the probe and to displace the liquid from the probe until air bubbles escape from the bottom end of the probe, whereupon the air pressure within the probe is proportional to the height of the liquid in the tank;

a piezoresistive pressure transducer for measuring the probe air pressure;

a pneumatic connection between the probe and the pressure transducer;

an electronic process controller, connected electrically to and working in concert with the pressure transducer, to produce a voltage whose value is proportional to the probe air pressure;

a numeric digital readout, to report the voltage, or to report the quantity of liquid directly in selected engineering units as programmed into the controller applying conversion factors and tank volumetrics to said voltage; and,

air tank means, appended pneumatically to the connection between the probe and the pressure transducer, for buffering the air pressure against insignificant variations associated with the evolution of individual air bubbles at the end of the probe, and for eliminating jittery variations in the least significant figure of the readout.

5,347,864

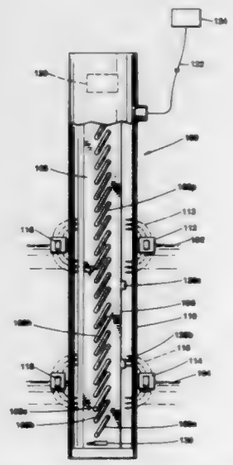
LIQUID LEVEL MEASURING APPARATUS

Karl A. Senghaas; Peter Senghaas; Jing Wang; Pete T. Kolonko, Jr., and Jerzy Michalec, all of San Antonio, Tex., assignors to Electrolab, Inc., San Antonio, Tex.

Filed Apr. 12, 1993, Ser. No. 46,063

Int. Cl.[5] G01F *23/62, 23/72;* **H01H** *35/18*

U.S. Cl. 73—313 **9 Claims**



1. In a liquid level measuring apparatus having a plurality of spaced reed switches vertically aligned for positioning in a liquid, each reed switch vertically overlapping the adjacent above and below reed switches, the longitudinal axis of said reed switches being at an angle to the vertical axis of the apparatus and a float carrying magnetic means movably positioned adjacent said plurality of switches, said magnetic means having a magnetic field for sequentially actuating switches as the float moves relative to the switches, the improvement comprising,

a microprocessor attached to the liquid level measuring apparatus,

said switches electrically connected together in parallel in a plurality of sets,

a plurality of shift registers, each register connected to one of the sets of switches, said registers connected together and to the microprocessor for supplying a parallel to serial conversion of the open or closed status of each switch, and

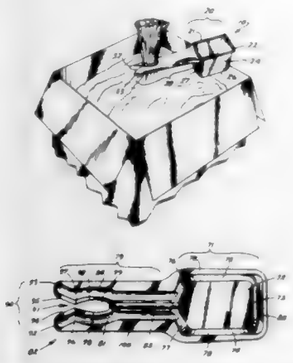
said microprocessor providing an output signal indicating the vertical position of the float relative to said switches.

5,347,865

MEASURING SCOOP WITH MOLDED REUSABLE FIT CLIP

Patrick E. Mulry; Dennis J. Kool, both of Kentwood, Mich.; Mike B. Tyberghein, Marietta, Ga.; Donald S. Gura, Decatur, Ga., and Jeffrey D. Plyler, Duluth, Ga., assignors to Amway Corporation, Ada, Mich.

Filed Nov. 5, 1992, Ser. No. 972,158
Int. Cl.[5] G01F *19/00;* **B65D** *77/10*
U.S. Cl. 73—427 **7 Claims**



1. A combination measuring scoop and bag closure apparatus comprising:

a bowl;

an elongated handle integrally mounted on said bowl on one end and said elongated handle containing a free end;

a resilient closure means on said free end of said elongated handle for locking closed a bag; and

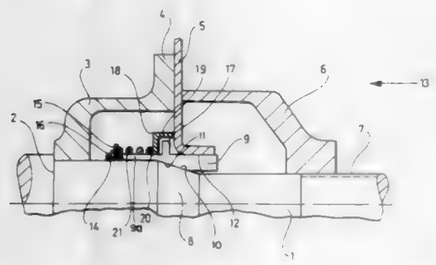
wherein said bowl is pentagonally-shaped having a rounded bottom wall integrated with a first and a second straight sidewall, a front wall and a left back wall and right back wall separated by an L-shaped ridge.

5,347,866

QUICK-CLAMPING AND CENTERING SYSTEM FOR WHEEL BALANCING APPARATUS

Ruprecht Maurer, Bad Homburg vor der Höhe, Fed. Rep. of Germany, assignor to Ringspann GmbH, Bad Homburg, Fed. Rep. of Germany

Filed Apr. 1, 1993, Ser. No. 42,083
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1992, 4212799
Int. Cl.[5] G01M *1/00*
U.S. Cl. 73—487 **6 Claims**



1. Quick-clamping and centering system for a wheel balancing apparatus, wherein the apparatus has

a shaft (**1**);

a first clamping element (**3**, **4**) secured to the shaft (**1**) and dimensioned to be frictionally engaged with a first side of a wheel (**5**) to be balanced;

clamping means (**6**, **7**) located on said shaft (**1**) and positioned and dimensioned for frictional engagement with a second side of the wheel, and for thereby clamping said wheel against the first clamping element (**4**);

a two-part centering assembly (**8**, **10**, **9**, **11**) having an inner part (**8**) with an outer conical surface (**10**), and an outer part (**9**) having an internal conical surface (**11**) surrounding said inner part, and engageable against said external conical surface,

wherein the outer part (**9**) is radially expandable and is formed with an outer, essentially cylindrical surface (**12**) for engagement within a central opening in the wheel (**5**); and

a spring means (**21**) positioned for biasing the centering assembly in a direction to radially expand the outer part (**9**) for secure seating into the central opening of the wheel (**5**), and

wherein, in accordance with the invention,

the inner part (**8**) with the outer conical surface (**10**) is fixedly located on said shaft (**1**);

the outer part (**9**) has an axial extension (**9***a*) extending beyond the first side of the wheel (**5**);

radially extending stop means (**17**, **22**) on said outer part (**9**) located beyond, and spaced from the first side of the wheel;

a hollow cylindrical portion (**14**) terminating said axial extension and surrounding said shaft;

spring abutment means (**15**, **16**) on said hollow cylindrical portion, against which said spring means (**21**) is positioned,

said axial extension extending for a distance to space said hollow cylindrical portion and said spring abutment means from said stop means (**17**, **22**) by a distance sufficient to accommodate said spring means, under pre-tension; and

an angle ring (**18**, **25**) having

an axial leg portion (**19**, **27**) overlapping said stop means (**17**, **22**), with clearance, engageable against said first side of the wheel (**5**), and

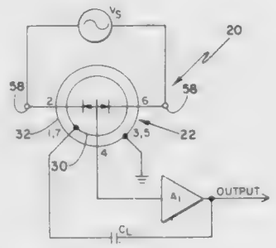
a radial leg portion (**20**, **24**) located between said spring abutment means (**15**, **16**) and said radially extending stop means (**17**, **22**), and engaged by said spring means (**21**) and forming a spring biasing surface for said spring means (**21**).

5,347,867

ACCELEROMETER INCORPORATING A DRIVEN SHIELD

Michael A. Pangerl, Crystal, Minn., assignor to Minnetonka Warehouse Supply, Inc, Minnetonka, Minn.

Filed Feb. 3, 1993, Ser. No. 12,866
Int. Cl.[5] G01P *15/125*
U.S. Cl. 73—517 R **5 Claims**



1. A capacitive accelerometer, comprising:

(a) capacitive transducer means for sensing acceleration and deceleration forces and producing electrical signals proportional to said forces, said transducer means comprising a first and second non-conductive stationary plate and a movable conductive plate disposed therebetween movable in relation to said first and second stationary plates in response to said forces, each said first and second plate having an electrode disposed on an inner surface proximate said movable conductive plate and a conductive grounded shield disposed on an opposite outer surface, said first and second plates each having a first shield disposed around said respective electrode, but electrically isolated from the respective electrode and said conductive shields, wherein the electrical signals produced are emitted from the movable conductive plate; and

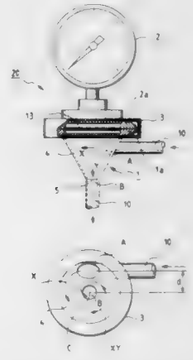
(b) amplifier means having an input coupled to said movable conductive plate for providing a gain of about unity, and an output coupled to each said first shield of said first and second stationary plates.

5,347,868

PRESSURE GAUGE FOR THIXOTROPIC LIQUIDS

Keiji Shigesada; Norio Shibata, and Syozo Akiyama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 17, 1993, Ser. No. 107,117
Claims priority, application Japan, Sep. 28, 1992, 4-072999[U]
Int. Cl.[5] G01L *7/08*
U.S. Cl. 73—715 **4 Claims**



1. In a pressure gauge comprising a pressure sensor, a holder having an inlet and an outlet to and from which fluid is let in and out, and a pressure indicator connected to said pressure sensor, the improvement wherein at least an inner space of said holder is substantially conical, said pressure sensor is provided on a base surface of said conical inner space, said outlet is formed at a vertex of said conical inner space, and said inlet is disposed in a conical surface of said conical inner space close to said base surface of said conical inner space so as to create a flow of fluid in a direction tangent to said conical surface of said conical inner space and such that the incoming fluid from said inlet flows parallel to said base surface of said pressure sensor.

5,347,869

STRUCTURE OF MICRO-PIRANI SENSOR

Jin-Shown Shie, and Ping-Kuo Weng, both of Hsinchu, Taiwan, assignors to Opto Tech Corporation, Taiwan

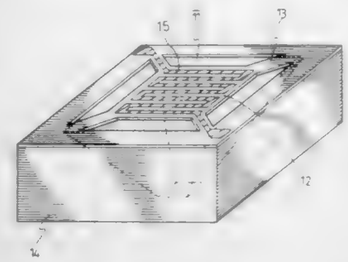
Filed Mar. 25, 1993, Ser. No. 36,938
Int. Cl.[5] G01L *21/12*
U.S. Cl. 73—755 **7 Claims**

1. A micro-Pirani vacuum meter, a structure thereof comprising:

(a) a floating plate suspended on a cavity of a silicon substrate made by a anisotropic etching technique;

(b) a plurality of suspending arms extending from said floating plate to connect to said substrate on the circumference of said cavity for supporting said floating plate suspended on said cavity; and

(c) a mixed resistor circuit for temperature compensations; said mixed resistor circuit being composed of a thermal sensitive constant resistor A with a zero temperature coefficient and a resistor B made of the same material as the thermal sensitive constant resistor A; both of said resistors being serially connected to each other on said floating plate.

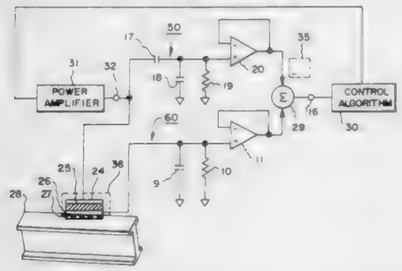


5,347,870

DUAL FUNCTION SYSTEM HAVING A PIEZOELECTRIC ELEMENT

Jeffrey J. Dosch, Buffalo; Roger W. Mayne, Williamsville, and Daniel J. Inman, Getzville, all of N.Y., assignors to State University of New York, Buffalo, N.Y.

Continuation of Ser. No. 827,673, Jan. 29, 1992, abandoned. This application Nov. 22, 1993, Ser. No. 155,347
Int. Cl.[5] G01B *7/16*
U.S. Cl. 73—769 **16 Claims**



1. A dual function system for producing a mechanical effect on a body and sensing a response thereto which comprises a piezoelectrically responsive element which both produces and senses mechanical effects, means for applying a first signal to said element for actuating said element to produce the mechanical effect on the body and for obtaining from said body via element piezoelectrically a second signal, and means for processing by additively combining said first and second signals for providing an output signal, said output signal representing the response of said element to said effect while said first signal is being applied.

5,347,871

STRAIN SENSOR

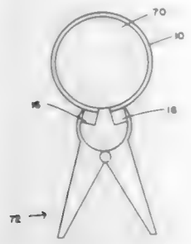
Louis A. D'Andrea, West Wareham, and Roger W. Masson, Acushnet, both of Mass., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Feb. 3, 1992, Ser. No. 831,376
Int. Cl.[5] G01B *7/16*
U.S. Cl. 73—775 **5 Claims**

1. A strain sensor comprising

a thin, flexible non-loadbearing support sheet, and

a flexible strain gauge coupon mounted on said support sheet, said coupon comprising a strain gauge circuit em-



bedded in a flexible insulating element, and said support carrying a pair of clamping means.

5,347,872

MAGNETOMECHANICAL SENSOR ATTACHMENT METHOD

Arthur E. Clark, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 25, 1986, Ser. No. 900,045
Int. Cl.[5] G01B *7/24*
U.S. Cl. 73—779 **12 Claims**

1. A method for measuring strain in a material object comprising the steps of

(1) selecting a metallic glass ribbon of the composition

$$Fe_wB_xSi_yC_z$$

wherein
$0.70 \leqq w \leqq 0.83$,
$0.10 \leqq x \leqq 0.20$,
$0.03 \leqq y \leqq 0.10$,
$0 \leqq z \leqq 0.03$, and
$w+x+y+z=1.00$
wherein the metallic glass ribbon is essentially strain free and has easy axes of magnetization which are in the plane of the ribbon transverse (at 90°) to the long axis of the ribbon;

(2) bonding the metallic glass ribbon to the material object by means of a homogeneous viscous organic liquid having a viscosity greater than 10^5 cp at 25° C.;

(3) allowing the viscous liquid to relax until the metallic glass ribbon is not stressed by the viscous liquid and is in a state of constant strain within its magnetostrictive dynamic range; and

(4) measuring the susceptibility of the metallic glass ribbon which is directly proportional to strain within the material being measured.

5,347,873

DOUBLE WING VORTEX FLOWMETER WITH STROUHAL NUMBER CORRECTOR

William H. Vander Heyden, Mequon, Wis., assignor to Badger Meter, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 46,047, Apr. 9, 1993, abandoned. This application Sep. 9, 1993, Ser. No. 119,312
Int. Cl.[5] G01F *1/32*
U.S. Cl. 73—861.22 **10 Claims**

1. A vortex flowmeter comprising:

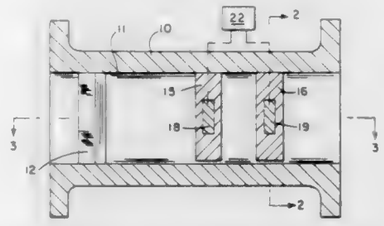
a body having a passage for flow of a fluid therethrough in a longitudinal direction;

a vortex generator positioned in the passage for transmitting vortices downstream;

a first vortex sensor located at a first sensor position downstream of the vortex generator, the first vortex sensor producing a first signal of the vortex frequency, f_m, in response to passage of vortices through the first sensor position;

a second vortex sensor located at a second sensor position downstream of the vortex generator, the second vortex sensor producing a second signal of the vortex frequency, f_m, in response to passage of vortices through the second sensor position, said second signal being phase delayed from said first signal;

means for determining a measured phase difference $\Delta\phi_m$ between the first signal and the second signal; and



means for comparing the measured phase difference $\Delta\phi_m$ to a calibration phase difference $\Delta\phi_c$ representing the phase difference between the first sensor position and the second sensor position wing under pre-operational, calibration conditions;

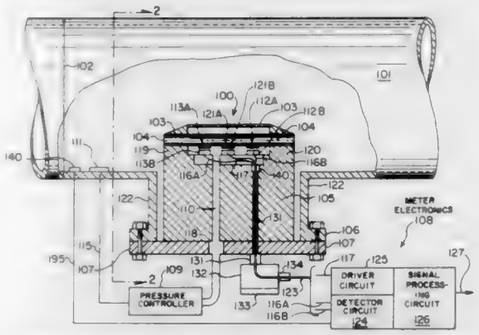
means for determining a corrected vortex frequency, f_{corr}, of said flow meter during operation in response to a ratio of the predetermined calibration phase difference $\Delta\phi_c$ to the measured phase difference $\Delta\phi_m$.

5,347,874

IN-FLOW CORIOLIS EFFECT MASS FLOWMETER

Paul Z. Kalotay, Lafayette, Colo., and Joseph D. Titlow, Palos Verdes Estates, Calif., assignors to Micro Motion, Incorporated, Boulder, Colo.

Filed Jan. 25, 1993, Ser. No. 8,773
Int. Cl.[5] G01F *1/84, 5/00*
U.S. Cl. 73—861.38 **26 Claims**



1. Apparatus for deriving mass flow information for material flowing in a conduit, said apparatus comprising:

a non-movable conduit for enabling material flow therein in a direction substantially parallel to the longitudinal axis of said conduit;

a flow tube positioned inside said conduit with the longitudinal axis of said flow tube being non-movable and substantially parallel to said longitudinal axis of said conduit for enabling the flow through said flow tube of a portion of said material flow through said conduit and the effective cross sectional area of said flow tube being relatively small compared to the effective cross sectional area of said conduit;

drive means for oscillating of said flow tube transversely with respect to its longitudinal axis;

sensor means for detecting the transverse flexing motion of portions of said flow tube caused by the Coriolis forces on said flow tube resulting from the flow of said material through said flow tube along its longitudinal axis as said flow tube is oscillated by said drive means;

signal processing means; and

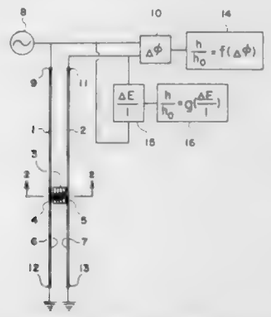
means for applying output signals from said sensor means to said signal processing means for the generation of mass flow information pertaining to said material flow through said conduit.

5,347,875

CAPACITOR-COUPLED OHMIC RESISTANCE POSITION SENSOR

Hyok Sang Lew, and Yon Sung Lew, both of 7890 Oak St., Arvada, Colo. 80005

Filed Mar. 25, 1993, Ser. No. 36,953
Int. Cl.[5] G01F *1/22, 23/68*
U.S. Cl. 73—861.56 **20 Claims**



1. An apparatus for measuring position of a target member comprising in combination:

a) at least a pair of elongated members disposed in a parallel relationship therebetween, wherein at least one of the pair of elongated members has a high ohmic resistance per unit length of the elongated member;

b) a target member providing a capacitive electrical coupling between the pair of elongated members and disposed simultaneously adjacent to the pair of elongated members in a relationship allowing movement of the target member relative to and following a length of the combination of the pair of elongated members, wherein the target member capacitively couples two alternating electrical signals respectively flowing through the pair of elongated members;

c) means for supplying a first alternating electrical signal oscillating at a frequency to at least one of two opposite extremities of one of the pair of elongated members;

d) means for taking off a second alternating electrical signal oscillating at said a frequency and associated with the first alternating electrical signal from one extremity of the other of the pair of elongated members located on one side of the target member; and

e) means for measuring a phase angle difference between the first and second alternating electrical signal as a measure of position of the target member.

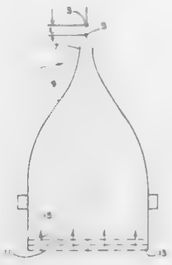
5,347,876

GAS FLOWMETER USING THERMAL TIME-OF-FLIGHT PRINCIPLE

Sukhvinder S. Kang, Rochester, Minn.; Bharatan R. Patel, Etna, N.H., and Kirankumar M. Kothari, Hoffman Estates, Ill., assignors to Gas Research Institute, Chicago, Ill.

Filed Jan. 7, 1992, Ser. No. 817,656
Int. Cl.[5] G01F *1/68, 7/00*
U.S. Cl. 73—861.95 **16 Claims**

1. A gas flowmeter, comprising a nozzle having a narrowed throat, a pulsatively heated wire positioned near the throat for heating gas flowing through the nozzle and flowing through the throat, a temperature sensor positioned at a known distance downstream from the pulsatively heated wire for sensing temperature of gas adjacent the temperature sensor, further comprising a disk positioned in the throat of the nozzle, wherein



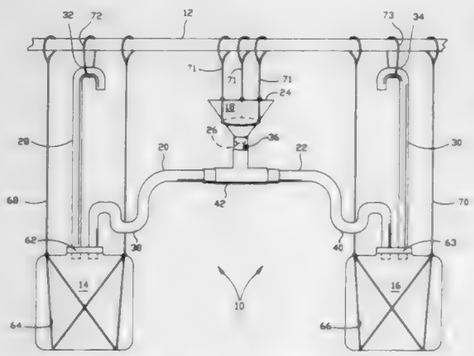
the disk has a hole commensurate with the throat, the pulsatively heated wire is connected to an upstream side of the disk and extends into the throat of the nozzle, and wherein the temperature sensor is connected to a downstream side of the disk and extends into the throat of the nozzle.

5,347,877

STORM WATER RUNOFF FIRST FLUSH SAMPLER

Laurence E. Gadbois, West Richland, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 919,350, Jul. 23, 1992, abandoned. This application Sep. 21, 1993, Ser. No. 125,008
Int. Cl.[5] G01N *1/00*
U.S. Cl. 73—863.52 **14 Claims**



1. A liquid sampler having an interior and an exterior, an upstream end near a source of fluid discharge, and a downstream end comprising:

a closed container generally positioned at the downstream end, having a top and a bottom;

liquid collection means generally positioned at the upstream end, having an inlet end for collecting liquid and an outlet end for discharging the liquid, the inlet end having an inlet opening, the outlet end having an outlet opening, the inlet opening being larger than the outlet opening;

a fluid conduit having an open inlet end for receiving the liquid from the collection means and an open outlet end for discharging the liquid into the container, said fluid conduit having a conduit sidewall, said sidewall having means for releasing kinetic pressure due to falling liquid impinging on the collection means after the container is full of the liquid, and for providing a discharge directly to the exterior of the sampler of liquid impinging on the collection means after the container is full of the liquid,

said means for releasing and providing a discharge comprising an aperture located downstream of the collection means outlet opening; and

means for venting air from the container as it is filled with liquid and discharging the vented air at a level above the top of the liquid collection means;

whereby the container takes on no more liquid after the venting means is filled with liquid to the level of the inlet of the liquid collection means.

5,347,878

PIPETTE WITH LOCKING ADJUSTMENT AND METHOD FOR USING THE SAME

Osmo Suovaniemi, Helsinki, Finland, assignor to Biohit OY, Helsinki, Finland

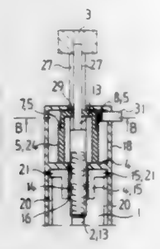
PCT No. PCT/FI91/00135, § 371 Date Dec. 30, 1992, § 102(e) Date Dec. 30, 1992, PCT Pub. No. WO91/16976, PCT Pub. Date Nov. 14, 1991

PCT Filed May 3, 1991, Ser. No. 956,897

Claims priority, application Finland, May 4, 1990, 902269

Int. Cl.[5] B01L *3/02*

U.S. Cl. 73—864.18 **5 Claims**



1. A pipette comprising: a body, a cylindrical volume formed within the body, the cylindrical volume for permitting liquid passage, a plunger housed at least in part within the cylindrical volume, the body further comprising:

a) means for adjusting the limit movement of the plunger, the adjusting means being operatively connected to the plunger; and

b) means for locking the adjusting means to limit the rotation thereof, the locking means including cooperating first and second members, the first member being elastically urged against the second member, the second member in communication with the adjusting means, and the second member being rotatable relative to the body and including means for receiving the first member in a cooperating engagement such that the adjusting means may be selectively locked and unlocked upon rotation of the second member, the locking means additionally includes a handle attached to the first member for moving the first member into and out of contact with the second member.

5,347,879

POWER TRANSMISSION

Richard A. Ordo, Greenwood, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 9, 1993, Ser. No. 15,699

Int. Cl.[5] F16H *3/097*

U.S. Cl. 74—331 **5 Claims**

1. A power transmission comprising:

an input shaft;

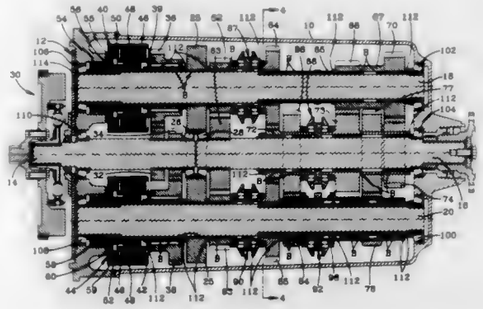
an output shaft coaxially aligned with the input shaft;

first and second countershaft means rotatably disposed in a housing in parallel relation with the input shaft and the output shaft and equally spaced therefrom;

first and second clutch and head gear means operatively connected between said input shaft and respective ones of the first and second countershaft means, said first clutch and gear means is selectively operable to provide a first gear ratio between said input shaft and said first countershaft means, and said second clutch and head gear means is selectively operable to provide a second gear ratio between said input shaft and said second countershaft means;

first ratio gear means, including a gear member on said output shaft, operatively connected between said first countershaft means and said output shaft;

second ratio gear means, including the gear member on said



output shaft, operatively connected between said second countershaft means and said output shaft;

means for selectively drivingly connecting said first and second ratio gear means to the respective countershaft means for transmission of torque therefrom when the respective first and second clutch and head gear means are independently operated, said torque being transmitted at first and second ratios dependent upon the ratios of the head gear means.

5,347,880

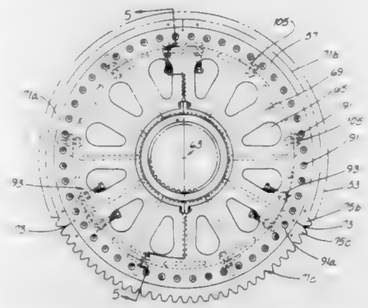
METHOD AND APPARATUS FOR SERVICING A GEAR ASSEMBLY

Harvey J. Kallenberger, Wind Lake, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Filed Nov. 23, 1992, Ser. No. 980,365

Int. Cl.[5] F16H *55/12;* **D02J** *3/14;* **B23P** *19/04*

U.S. Cl. 74—447 **15 Claims**



1. An improved method for servicing a gear assembly having a gear segment and a spider for supporting the segment, the method including the steps of:

providing a jack assembly with jacking means mounted for radial movement;

moving the jacking means radially outward to apply a separating force to the segment; and,

disengaging the segment from the spider.

12. In a gear assembly having a gear segment and a spider for supporting the segment, the improvement comprising:

a segment-attached mounting member;

a spider-mounted jack assembly with jacking means mounted for radial movement to engage the mounting member and apply radial force thereto,

whereby the segment may be disengaged from the spider.

14. In a gear assembly having a gear segment and a spider for supporting the segment, the improvement comprising:

a segment-mounted coupler;

a spider-mounted drawtight assembly including drawdown means to engage the coupler and apply radial force thereto,

whereby the segment may be engaged with the spider.

5,347,881

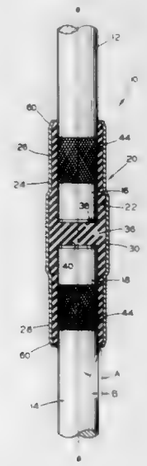
DAMPER ASSEMBLY FOR SHIFT LEVER MECHANISM

Rick D. Watson, Lambertville, Mich.; Terry L. Jester, Perrysburg, and Ernest F. Deutschman, Toledo, both of Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed Sep. 19, 1991, Ser. No. 762,709

Int. Cl.[5] B60K *20/00;* **G05G** *1/04;* **B25G** *3/00*

U.S. Cl. 74—473 R **10 Claims**



1. In a compound shift lever mechanism including a pair of shift levers fixed together along a longitudinal axis, each of said levers defining an end portion positioned along said axis in an axially spaced, coaxial alignment with respect to the other, said mechanism further including a noise and vibration damper assembly adapted to resiliently hold said levers together in said spaced, coaxial alignment for substantially unitary movement of said levers in a plurality of planes; an improvement wherein said damper assembly comprises:

(a) a cylindrical elastomeric sleeve, said sleeve directly overlying and circumferentially encapsulating each of said end portions of said levers, said sleeve having a midportion comprising means for spacing between, and prevention of direct physical contact between, radially extending axial extremities of said spaced end portions of said levers, and

(b) an exterior cylindrical metallic shell directly overlying and circumferentially encapsulating said sleeve, said shell crimped against and radially inwardly compressing said sleeve against each of said end portions only to frictionally retain said shift levers in said spaced, coaxial alignment.

5,347,882

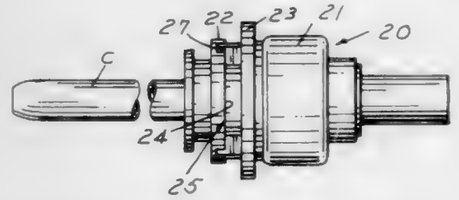
CABLE MOUNTING CONSTRUCTION

Steven H. Klotz, West Bloomfield, Mich., assignor to FKI Industries Inc., Fairfield, Conn.

Filed Sep. 7, 1993, Ser. No. 117,722

Int. Cl.[5] F16C *1/10*

U.S. Cl. 74—502.4 **7 Claims**



1. A cable mounting construction that comprises:

a cable retainer body having an axial through opening for receiving a cable, and an external surface with an annular groove having a radially facing groove base,

a snap spring having an arcuate cylindrical portion received and retained by snap fit in said groove against said base, and a pair of angularly spaced flexible tabs that extend radially outwardly from opposed ends of said arcuate cylindrical portion, and

a bracket having a slot with an open end, a closed end received in said annular groove externally of said arcuate cylindrical portion of said spring, and opposed sides having recesses in which said flexible tabs are received and retained by snap fit.

5,347,883

STEERING ROD CONNECTABLE TO THE STEERING COLUMN OF A VEHICLE

Franz Thöny, Prafatell 927, FL-9496 Balzers, Liechtenstein

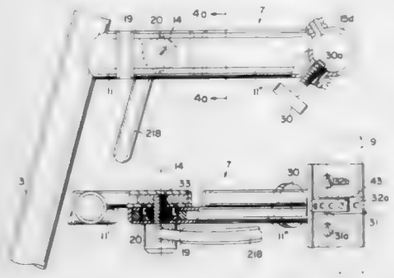
PCT No. PCT/EP91/01115, § 371 Date Feb. 18, 1992, § 102(e) Date Feb. 18, 1992, PCT Pub. No. WO91/19636, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 15, 1991, Ser. No. 835,959

Claims priority, application Switzerland, Jun. 18, 1990, 2018/90

Int. Cl.[5] B62K *21/22;* **F16C** *11/04*

U.S. Cl. 74—551.3 **12 Claims**



1. A steering rod device for bicycles comprising

a steering rod, and

a centrally located connecting arrangement for connecting said steering rod to a steering column,

said centrally located connecting arrangement comprising an articulated arm,

said articulated arm comprising at least two arm parts, said two arm pads comprising a first arm part fixedly linked to said steering column and a second arm part having at least

one tube clamp with a securing screw for connection to said steering rod,

said two arm parts being swivellable about an axis normal to the longitudinal axis of said steering column and normal to the longitudinal axis of said two arm pads by means of a hinge joining said two arm parts,

said hinge comprising opposed locking surfaces on said two arm parts, said opposed locking surfaces comprising a first locking surface having projections for engaging depressions arranged on a second locking surface opposed to said first locking surface.

said centrally located connecting arrangement further comprising fixing means for fixing said two arm parts in different locking positions that are defined by engagement of said projections and said depressions,

said fixing means having a clamping distance smaller in length than said projections, for loosening the connection of said two arm parts, but not releasing said projections from said depressions,

said centrally located connecting arrangement further comprising release means for completely releasing said projections from said depressions, and

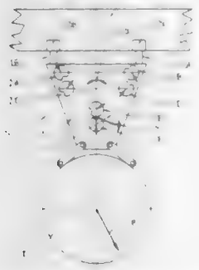
said fixing means and said release means being operable when riding the bicycle without releasing said steering rod.

5,347,884

METHOD AND APPARATUS FOR CANCELLATION OF ROTATIONAL UNBALANCE

Kenneth D. Garnjost, Buffalo, and Gonzalo J. Rey, Batavia, both of N.Y., assignors to Moog Inc., East Aurora, N.Y.

Filed Mar. 8, 1993, Ser. No. 27,809
Int. Cl.[5] F16F *15/20, 15/22*
U.S. Cl. 74—573 **9 Claims**



1. A device for generating a rotating force vector and an oscillatory couple, comprising:

a plurality of non-concentric eccentric masses co-rotating at the same angular speed;

means for individually controlling the angular position of each of said masses;

said plurality including a first pair of masses, the relative angular position of the masses of said first pair being maintained 180° apart; and

said plurality including a second pair of masses, the relative angular position of the masses of said second pair being controlled to produce an adjustable-amplitude rotating force vector such that by selectively controlling the angular position of each eccentric mass, said device will generate a desired rotating force vector and a desired oscillatory couple.

8. A method of opposing the propagation of vibration from a dynamically unbalanced rotating rotor, which reacts on a supporting structure with a rotating force vector and an oscillatory couple, comprising the steps of:

mounting a plurality of non-concentric rotatable eccentric masses on said supporting structure;

co-rotating each of said eccentric masses at the same angular speed as the rotor; and

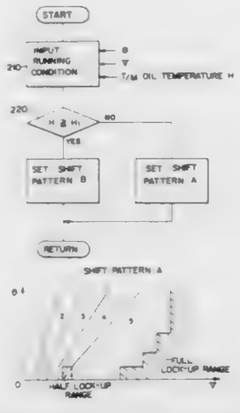
controlling the angular position of each of said masses relative to the angular position of said rotor so as to generate an opposing rotating force vector and an opposing oscillatory couple on said supporting structure.

5,347,885

SHIFT CONTROL SYSTEM FOR SELECTING BETWEEN TWO SHIFT PATTERNS BASED ON THE TRANSMISSION TEMPERATURE AND LOCK-UP CLUTCH STATE IN AN AUTOMATIC TRANSMISSION

Yutaka Taga, Aichi; Yasuo Hojo, Nagoya, and Atsushi Tabata, Okazaki, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 28, 1992, Ser. No. 889,287
Claims priority, application Japan, May 28, 1991, 3-152382
Int. Cl.[5] F16H *61/02, 61/14*
U.S. Cl. 477—65 **5 Claims**



1. A shift control system for an automatic transmission of a vehicle, the transmission including a lock-up clutch, comprising:

means for storing at least two different shift patterns for shifting the transmission as a function of vehicle conditions including vehicle speed, one of the patterns setting a higher speed stage having a lower gear ratio for the transmission and another of the patterns setting a lower speed stage having a higher gear ratio for the transmission;

means for determining whether a half-lock-up control of the lock-up clutch is to be inhibited; and

means for selecting either of said shift patterns as a shift pattern for controlling the transmission as a function of an output of said determining means, such that only said one of said shift patterns is selected when the half-lock-up control is inhibited.

5,347,886

LUBRICATION CONTROL WITH INCREASED LUBRICATION DURING SHIFT AND DURING CRUISE FOR A MULTI-PLATE FRICTION DEVICE FOR AN AUTOMATIC TRANSMISSION

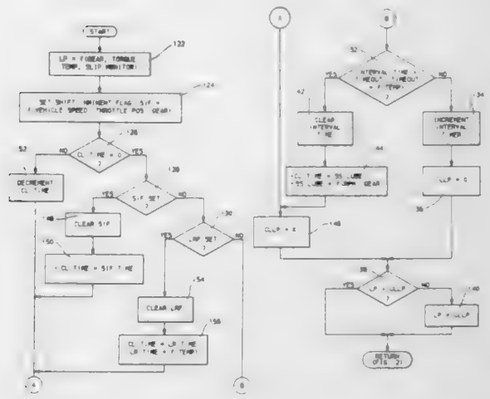
James K. Mainquist, Troy; Robert C. Downs, Clarkston; Larry T. Nitz, Troy, and Kyle K. Kinsey, Highland, all of Mich., assignors to Saturn Corporation, Troy, Mich.

Filed Aug. 10, 1992, Ser. No. 927,106
Int. Cl.[5] F16H *57/04;* **B60K** *41/10*
U.S. Cl. 477—161 **3 Claims**

1. A lube control for a power transmission having a plurality of multi-plate clutch assemblies, said control comprising:

system pressure control valve means for controlling a system pressure within a range;

lube flow control valve means for controlling fluid flow to the clutch assemblies and having a plurality of operating positions including a low lube flow position and a high lube flow position, a low pressure outlet, a lube flow outlet and control chamber means in fluid communication with said system pressure control valve means, said lube flow control valve means being responsive to the system pressure for communicating fluid to both said low pressure outlet and said lube flow outlet when the low lube flow position is established and to said lube flow outlet when said high lube flow position is established;



means for determining when a change in the amount of lube flow is required;

means for controlling the system pressure control valve means to establish a high system pressure within said range when increased lube flow is required;

means for determining if the transmission does not have a ratio interchange for a predetermined period of time;

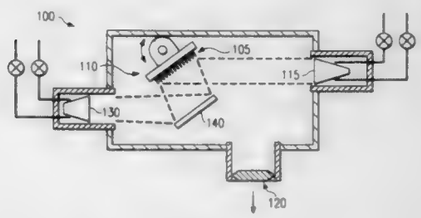
and said means for controlling the system pressure control valve means being operable to establish said high pressure if the predetermined period of time has elapsed.

5,347,887

COMPOSITE CUTTING EDGE

Richard D. Rosenthal, Boulder; Gerald L. DePoorter, Superior, both of Colo., and Ronald I. Christy, Malibu, Calif., assignors to Microsurgical Techniques, Inc., Fort Collins, Colo.

Filed Mar. 11, 1993, Ser. No. 31,230
Int. Cl.[5] B26B *21/54*
U.S. Cl. 76—104.1 **29 Claims**



1. A process for making a blade, comprising the steps of:

(a) providing a blade blank having a sharpened edge;

(b) ion etching said edge with a collimated ion beam to sharpen said edge and to remove material therefrom, wherein the crack lengths of a majority of microcracks on said edge are reduced and the crack tip radii of a majority of microcracks on said edge are increased thereby toughening and strengthening said edge; and

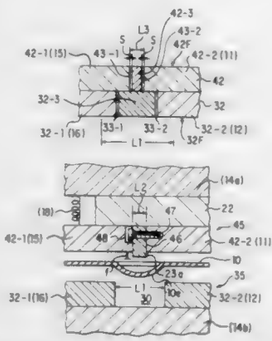
(c) depositing a coating on said edge using an ion assisted process.

5,347,888

METHOD FOR FORMING A BEAD FORMING DIE

Nobuo Yoshino, 74-4, Oaza Hakoda, Kumagaya-shi, Saitama 360, and Kuniaki Numaya, 24-11, Naritahigashi 3-chome, Suginami-ku, Tokyo 166, both of Japan

Division of Ser. No. 768,181, Oct. 11, 1991, Pat. No. 5,226,306. This application May 19, 1993, Ser. No. 63,481
Claims priority, application Japan, Feb. 15, 1990, 2-34513
Int. Cl.[5] B21K *5/20;* **B21D** *37/20*
U.S. Cl. 76—107.1 **5 Claims**



1. A method of forming a die apparatus comprising the steps of:

forming a first metal plate with two adjoining slits perpendicular to a surface of said first metal plate so as to surround an inner gasket portion;

removing a portion, between said adjoining slits, from said first metal plate so as to form an annular-like groove and provide a lower metal die;

forming a second metal plate with two adjoining slits perpendicular to a surface of said second metal plate so as to surround said inner gasket portion and be within an area corresponding to said annular-like groove;

removing a portion, between said adjoining slits, from said second metal plate so as to form an annular groove;

inserting a ring member in said annular groove so as to form an annular-like projection; and

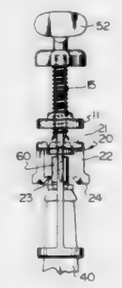
slidably receiving a stripper in said annular groove and around said ring member.

5,347,889

MULTI-PURPOSE WINE BOTTLE STOPPER DEVICE

Andrew R. St. Denis, 5331-5th Concession, Amherstburg, Ontario, Canada N9V 2Y9

Continuation-in-part of Ser. No. 46,816, Apr. 16, 1993, Pat. No. 5,275,070. This application Dec. 10, 1993, Ser. No. 164,792
Int. Cl.[5] B67B *7/02*
U.S. Cl. 81—3.29 **6 Claims**



1. A device for removing either a cork or a mushroom-shaped stopper from a bottle, comprising:

(a) a support frame having a bottom ring member adapted to

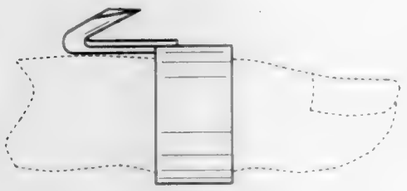
engage the neck of a wine bottle, a top cap member with a threaded hole extending therethrough and at least two circumferentially spaced longitudinal support members extending between the top cap and bottom ring,

(b) a threaded shaft having an upper end and a lower end mounted in said top cap threaded hole, this shaft having a handle mounted on the upper end thereof,

(c) a stopper gripping and pulling member for a mushroom-shaped stopper comprising a bridge member connected to the lower end of said threaded shaft such that the threaded shaft is free to rotate relative to the bridge member while being fixed against relative axial movement, guideways in said bridge member for receiving said support frame longitudinal support members thereby preventing rotation of said bridge member, a pair of opposed stopper gripping arms extending downwardly from said bridge member, said gripping arms having at the lower ends thereof inwardly extending gripper dogs adapted to slide downwardly over the top of a mushroom-shaped stopper in a bottle and grip the stopper for pulling and these gripper arms being further adapted to swing outwardly from said bridge member to release a pulled stopper, and

(d) a cork pulling member comprising a stem portion with a handle at one end and cork screw portion at the other end, said cork screw stem extending through an axial hole in said threaded shaft with the cork screw handle projecting above said threaded shaft handle, said cork screw member being adapted to be screwed into a cork in a bottle by turning the cork screw handle and being adapted to pull the cork from the bottle by turning the handle of the threaded shaft whereby the thread shaft handle engages the cork screw handle thereby lifting the cork screw and cork.

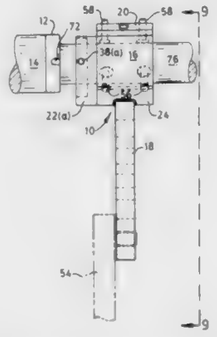
5,347,890
TOP PULLER
Bernard O. Rufkahr, 30 Old Forge, St. Charles, Mo. 63301
Filed May 28, 1993, Ser. No. 68,154
Int. Cl.[5] B67B *7/40*
U.S. Cl. 81—3.55 **1 Claim**



15

1. A one piece molded polymeric device for removing removable portions of tops from receptacles comprising a substantially cylindrical ring portion for engaging the finger of a user, the cylindrical ring being open at both ends such that the finger of the user passes completely through the ring and frictionally engages the finger past the first joint, and an integral stem and hook for engaging a ring on the removable portion of the receptacle top, the stem extending parallel to the centerline of the cylinder and back toward the hand of the user and being tangent to the ring, and the hook depending from the stem outside the cylinder formed by the ring, the hook having a reversely curved portion extending backwardly toward the ring portion and aligned with the stem, the reversely curved portion of the hook being relatively flat and terminating in a tapered flat nose, the nose being the end of the device, the ring being provided with a cutout section along its length circumferentially opposed to the stem and hook so as to be semi-cylindrical in cross section to accommodate the user's fingers of differing thickness and diameter, the end of the user's fingers being completely exposed and uncovered.

5,347,891
ADJUSTABLE SPANNER WRENCH ASSEMBLY
Michael E. Kamp, Goodfield, and Michael W. Rabe, Glasford, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Aug. 24, 1993, Ser. No. 111,324
Int. Cl.[5] B25B *13/16*
U.S. Cl. 81—175 **16 Claims**



1. An adjustable spanner wrench assembly for installing and removing components of a structure, comprising:

a head member having a circumferential surface and a generally u-shaped configuration defining first and second leg portions and an interior cavity;

a cover plate having first and second spaced apart surface portions and a plurality of first and second apertures extending through said plate from said first surface portion to said second surface portion;

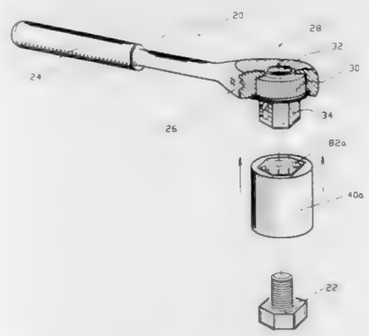
a handle member connected to said circumferential surface of said head member;

an adapter plate having a generally u-shaped configuration defining first and second leg portions and a plurality of component engagable pins, said adapter plate being adapted to be connected to said head member;

a plurality of first adjustable contact pins associated with said head member and adapted to extend into said interior cavity; and

a plurality of second adjustable contact pins associated with said cover plate and being adapted to be positioned in said first apertures.

5,347,892
SOCKET RETAINER FOR THIN-WALL DRIVE MEMBER
John B. Moetteli, 15207 McConn, Webster, Tex. 77598
Filed Mar. 11, 1993, Ser. No. 29,709
Int. Cl.[5] B25B *13/06*
U.S. Cl. 81—177.85 **18 Claims**



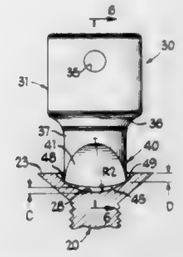
1. A spring retainer system for use in a ratchet wrench assembly of the type having a handle with a head at one end thereof and a drive member rotatably engaged in the head and having a drive portion for slidably receiving and rotating a socket to install or remove a fastener, said spring retaining system comprising:

a drive member having one end adapted to be received in and engaged with the head to rotate therewith as a unit in a clockwise or counterclockwise direction about an axis of rotation for transmitting torque while allowing relative rotation in the opposite direction, and an inner socket receiving portion and a coaxial outer socket receiving portion defining a drive portion of non-circular cross section configured to slidably receive a socket on either said inner or said outer socket receiving portion;

an elongated slot formed transversely through the wall of said drive portion; and

retaining spring means mounted in said elongated slot and having top and bottom ends secured at the top and bottom ends, respectively, of said slot and an intermediate portion with at least two protrusions, at least one of which is resiliently biased to protrude into said inner socket receiving portion, and at least one of which is resiliently biased to protrude outward from said outer socket receiving portion to frictionally engage and retain a socket on either said inner or said outer socket receiving portion when slidably received thereon.

5,347,893
ARCUATE TIP DRIVER
Frank Mikic, and Jeffrey H. Hoff, both of Kenosha, Wis., assignors to Snap-on Incorporated, Kenosha, Wis.
Filed Feb. 26, 1993, Ser. No. 23,553
Int. Cl.[5] B25B *15/00*
U.S. Cl. 81—436 **6 Claims**



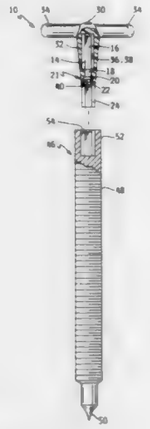
1. A driving tool comprising: a shaft having a longitudinal axis, a driving blade at one end of said shaft defined by front and rear surfaces and a pair of side surfaces and an arcuately convex distal end surface intersecting said front and rear surfaces and said side surfaces, each of said front and rear surfaces being arcuately concave about an axis of curvature which is disposed substantially parallel to said longitudinal axis of said shaft, each of said front and rear surfaces being arcuately concave about an axis of curvature which is substantially orthogonal to the longitudinal axis of the shaft, said blade having a width which is the distance between said side surfaces at their intersections with said end surface, said end surface having a radius of curvature centered on said longitudinal axis, said radius of curvature being greater than said width.

5,347,894
TORQUE LIMITING DEVICE
Paul D. Fischer, Bloomington, Minn., assignor to PMT Corporation, Chanhassen, Minn.
Filed May 28, 1993, Ser. No. 69,160
Int. Cl.[5] B25B *23/153*
U.S. Cl. 81—471 **33 Claims**

1. A torque limiting device for applying rotational force to a medical related tool, comprising:

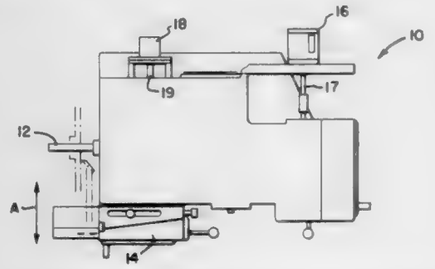
(a) a shank having a handle end portion, an intermediate shearing portion, and a tool engaging end portion, the intermediate shearing portion is adapted to shear the shank into two pieces at a determined rotational force;

(b) a handle grippable by a human hand encapsulating the handle end portion and the intermediate shearing portion to apply rotational force to the tool through the device; and



(c) a retaining interface means between the handle and the shank encapsulated by the handle adjacent the tool engaging end portion as to keep the device in one piece upon shearing of the intermediate portion of the shank.

5,347,895
BRAKE LATHE WITH ELECTRONIC FEED CONTROL
Thomas G. Bellinghausen, Conway, and David R. Coburn, II, Little Rock, both of Ark., assignors to FMC Corporation, Chicago, Ill.
Continuation of Ser. No. 763,388, Sep. 20, 1991, abandoned. This application Mar. 22, 1994, Ser. No. 216,123
Int. Cl.[5] B23B *5/02*; B23Q *5/28*
U.S. Cl. 82—112 **7 Claims**



5. In a brake lathe for truing a brake rotor, the lathe having an arbor upon which a brake rotor can be mounted to rotate with the arbor as a fixed unit about a common axis, an arbor motor for rotating the arbor at a constant speed, and a tool holder for holding a cutting tool with a cutting end of the tool in working relation to a surface of the rotor when the rotor is mounted upon the arbor, the tool holder movable translationally to move the cutting end of the tool over the surface of the rotor, the improvement comprising:

a direct current motor having a drive shaft;

a drive means for causing the tool holder to move translationally in direct proportion to rotation of the direct current motor drive shaft;

an electronic power circuit for maintaining a speed of rotation of the direct current motor drive shaft at a constant desired speed;

rheostat means for providing a reference voltage corre-

sponding to the constant desired speed, said electronic power circuit determining said constant desired speed based on said reference voltage;

a control knob connected to the rheostat means and having a scale for providing a visual indication of one or more desired speeds; and

means for calibrating the control knob to the speed of rotation of the direct current motor drive shaft;

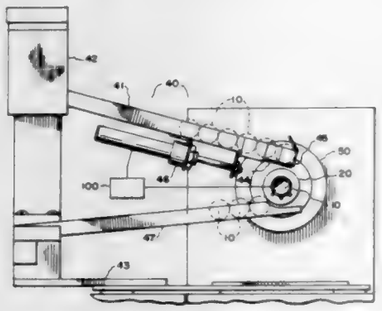
whereby the control knob may be used to select a desired speed.

5,347,896

AUTOMATED COLLET LOADING FOR THE MANUFACTURE OF CONTACT LENSES

Thomas G. Jones, Rochester, N.Y., assignor to Bausch & lomb Incorporated, Rochester, N.Y.

Filed Dec. 21, 1992, Ser. No. 994,567
Int. Cl.[5] B23B *5/00, 13/02, 31/20, 13/10*
U.S. Cl. 82—125 10 Claims



1. An apparatus for automated feeding of workpieces intermittently into a machine for lathing, comprising:

a collet for positioning and securing a workpiece for lathing, said collet being fixed at a first end thereof to a lathe spindle rotatable about an axis of rotation, and including at an opposed distal end a nosepiece having a hollow cylindrical portion,

wherein said hollow cylindrical portion is in axial alignment with said axis of rotation of said lathe spindle and rotatable with said lathe spindle, said hollow cylindrical portion including:

a distal endwall having an aperture therein to accommodate and accurately position a workpiece for lathing, said aperture being aligned axially with said axis of rotation;

a lateral cylindrical surface extending from said distal endwall towards said first end, said lateral cylindrical surface having an aperture therein forming an access opening in the nosepiece for a workpiece to enter into an interior of said hollow cylindrical portion, and

dowel means opposed to said access opening and adjacent said aperture in said distal endwall, for initially positioning a workpiece received in said interior of said hollow cylindrical portion at an initial position adjacent to said aperture in said distal endwall;

plunger means in the interior of said hollow cylindrical portion, for advancing a workpiece from said initial position and into said aperture in said distal endwall;

delivery means adjacent said collet assembly, for delivering individual workpieces to said collet assembly, said delivery means including a gate means located above and in alignment with said nosepiece, for dropping individual workpieces by gravity into said access opening; and

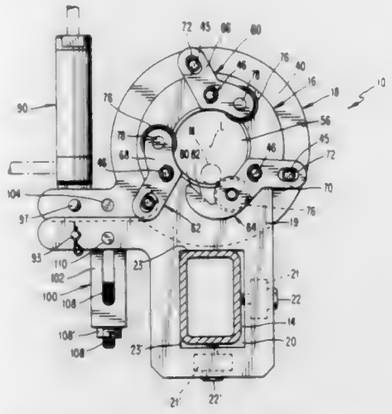
control means for orienting said access opening of the nosepiece in an upward direction to receive a workpiece from said gate means and actuating said gate means to drop by gravity a workpiece into said access opening.

5,347,897

GUIDE APPARATUS FOR AN ELONGATED WORKPIECE

Georges O. Rouleau, 14280 Westgate Dr., Redford, Mich. 48239

Division of Ser. No. 921,950, Jul. 30, 1992, Pat. No. 5,282,403.
This application Dec. 7, 1993, Ser. No. 162,657
Int. Cl.[5] B23B *13/00, 13/12*
U.S. Cl. 82—164 8 Claims



1. A guide apparatus for supporting an elongated member along a longitudinal axis of support, comprising:

a bearing assembly including

an inner race having a central passage which defines a longitudinal center axis coinciding with said longitudinal axis of support, said inner race having first and second axially spaced sides,

an outer race having an annular inner surface forming a hole in which said inner race is coaxially disposed, said inner surface being spaced radially outwardly of an annular outer surface of said inner race to form an annular space therebetween, said outer race having first and second axially spaced sides situated adjacent said first and second sides, respectively, of said inner race, and

a plurality of freely rotatable bearing elements disposed in said annular space for facilitating relative rotation between said inner and outer races about said center axis;

at least three guide fingers mounted externally of said bearing assembly so as to be situated axially outside of and adjacent said first sides of said inner and outer races, respectively, each guide finger being rotatably mounted to said inner and outer races for rotation about outer and inner secondary axes, respectively, which are oriented parallel to said center axis, said outer secondary axis being spaced farther from said center axis than said inner secondary axis;

one of said inner and outer bearing races and its associated secondary axes being rotatable relative to the other of said inner and outer bearing races and its associated secondary axes about said center axis to produce individual rotation of said guide fingers, such that inner ends of said guide fingers are movable toward said center axis and into supporting relationship with the elongated member in response to relative rotation between said inner and outer bearing races in a first direction, and are movable away from said center axis and out of said supporting relationship in response to relative rotation between said inner and outer bearing races in a second direction; and

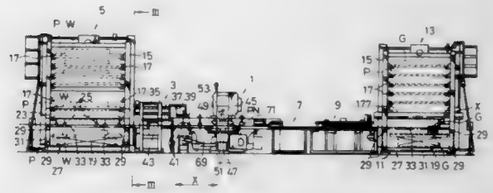
power actuating means connected to said one bearing race for rotating said one bearing race relative to said other bearing race.

5,347,898

SYSTEM FOR ASSORTING SMALL PRODUCT PIECES CUT FROM WORK PIECES

Masaoki Ito, Hadano, Japan, assignor to Amada Company, Limited, Japan

Continuation of Ser. No. 709,814, Jun. 4, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 975,975
Claims priority, application Japan, Jun. 5, 1990, 2-145383
Int. Cl.[5] B21D *28/06;* B26D *7/32*
U.S. Cl. 83—27 8 Claims



1. A method for assorting small product parts cut off from worksheets comprising the steps of:

cutting a worksheet by a cutting machine to form a plurality of and several kinds of small product parts which are connected to said worksheet through remaining small uncut parts of contour lines of said small product parts;

cutting said remaining small uncut parts of said contour lines of said small product parts one-by-one;

passing each of said small product parts cut off from said worksheet in a direction X to transportation means disposed adjacent to said cutting machine, one-by-one immediately after each of said small product parts is cut;

transporting one-by-one said small product parts in said X direction and positioning one-by-one said small product parts in desired places with respect to a Y direction perpendicular to said X direction by said transportation means thereon;

gripping one-by-one said small product parts at said desired places by movable clampers and moving said clampers towards desired positions; and

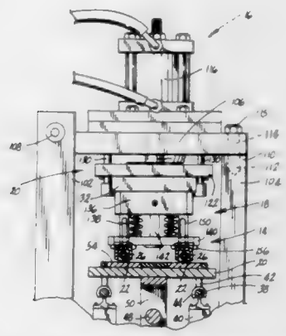
placing one-by-one said product parts onto said desired positions by moving said clampers.

5,347,899

SLOT CUTTER

David Schultz, Grand Haven, and Donald E. Heinz, West Olive, both of Mich., assignors to M & S Tool and Die Company, Grand Haven, Mich.

Filed May 11, 1993, Ser. No. 62,452
Int. Cl.[5] B26D *1/06, 7/02*
U.S. Cl. 83—50 12 Claims



11. A method of making a line of apertures in a workpiece having a channel comprising the steps of:

positioning the workpiece on a movable table;

clamping the workpiece to the table;

moving the table incrementally through a punch press while simultaneously drawing the workpiece along a mandrel with the mandrel in the channel; and

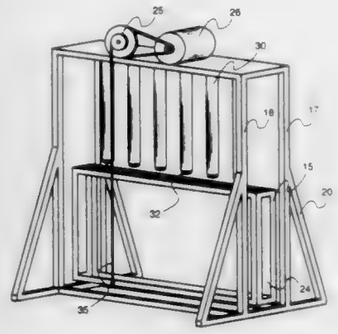
punching at least one aperture in the workpiece after each incremental movement of the table.

5,347,900

FOAM BLOCK BORE CUTTING APPARATUS

Philip N. Ceaser, P.O. Box 411, Scarborough, Me. 04070-0411, and Norman G. Ceaser, P.O. Box 247, Scarborough, Me. 04070-0247

Filed Feb. 10, 1993, Ser. No. 15,593
Int. Cl.[5] B26D *7/10*
U.S. Cl. 83—171 11 Claims



1. A bore making apparatus for a foam block comprising:

a frame;

a plurality of tubular, hollow bore forming members, each bore forming member having an open top end and an open bottom end and having a predetermined wall thickness, each said bore forming member having a defined cross-sectional shape, which is substantially uniform from the top end to the bottom end, said bore forming members being aligned in an array and attached to said frame, with each member spaced a pre-determined distance from an adjacent one of said members;

each bore forming member further comprising a resistive heating element having a predetermined heat output, attached to the bottom end, wherein said resistive heating element corresponds in cross-sectional shape and wall thickness to said bore forming member for forming a channel within said foam block corresponding to the cross-sectional shape and wall thickness of said tubular bore forming member;

foam supporting means for rigidly holding said foam block, slidably mounted within said frame;

means for sliding said foam supporting means into said array of bore forming members at a predetermined rate corresponding to said predetermined heat output, such that a plurality of bores of uniform thickness and cross-section are substantially simultaneously formed within said foam block with cores of said bores being enclosed within said tubular bore forming members.

5,347,901

MODULAR TUBE CUTTING APPARATUS

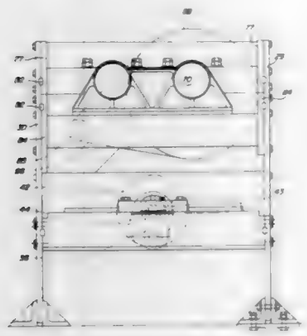
John J. Borzym, 4820 School Bell La., Birmingham, Mich. 48010

Filed Aug. 3, 1992, Ser. No. 924,185
Int. Cl.[5] B23D *21/00, 25/04*
U.S. Cl. 83—320 9 Claims

1. A modular cutting apparatus comprising:

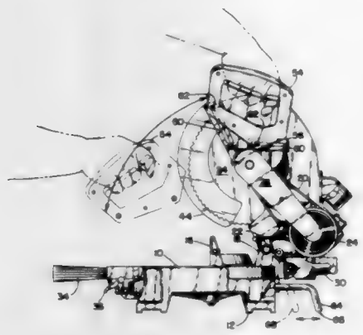
a pair of spaced plates;

a bed including a pair of spaced tracks mounted between said spaced plates;
a cutting element slidably mounted on said tracks;
an accelerator mounted to accelerate said cutting element along said tracks;
a powerhead mounted between said plates and selectively contacting said cutting element to actuate said cutting element; and



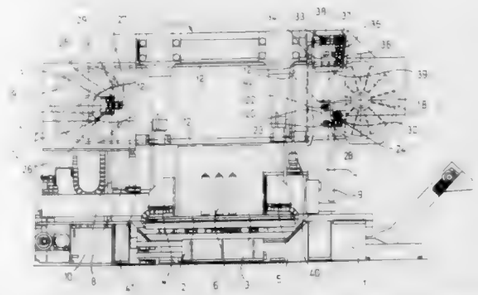
wherein said spaced plates include means to mount an adaptor plate, said adaptor plates being mounted laterally between each of said spaced plates, said adaptor plates being connected to said space plates at anyone of several vertical positions, and said powerhead being mounted to said adaptor plates, such that said adaptor plates may be changed to allow the positioning of said powerhead to be adjusted both vertically, and towards and away from said tracks.

5,347,902
MOTORIZED MITER BOX
Louis C. Brickner, Pittsburgh, and Jaime E. Garcia, Wexford, both of Pa., assignors to Delta International Machinery Corp., Pittsburgh, Pa.
Continuation of Ser. No. 854,381, Mar. 25, 1992, abandoned. This application Apr. 7, 1993, Ser. No. 44,545
Int. Cl.[5] B26D *1/16*
U.S. Cl. 83—468.3 22 Claims



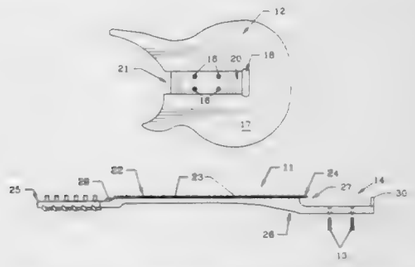
13. A motorized miter box, comprising:
(a) a base having a lower surface for supporting the base on a work surface;
(b) a turntable rotatably supported by the base;
(c) a fence disposed above the base for supporting the orientation of a workpiece located on the base;
(d) a support coupled to the turntable at a rear portion of the turntable;
(e) cuttinghead means for cutting the workpiece, the cuttinghead means being pivotally coupled to the support for positioning a motor driven saw between a raised, rest position and a lowered, operational position;
(f) cuttinghead handle means comprising a cuttinghead handle for guiding the movement of the saw between the raised, rest position and the lowered, operational position, the cuttinghead handle being adjustably coupled to the cuttinghead means so that the orientation of the cuttinghead handle with respect to a user of the saw can be selectively adjusted by the user between a first position and a second position; and
(g) carrying handle means comprising a carrying handle for use by a user in carrying the miter box between work sites, the carrying handle protruding from the rear of the base, the carrying handle comprising a support surface located in the same geometric plane as the lower surface of the base so that the carrying handle helps prevent the miter box saw from tipping backwards if the cuttinghead means is allowed to move freely from its lowered, carrying and anti-tipping position to its upper, at rest position.

5,347,903
HORIZONTAL BANDSAW WITH AUTOMATIC TILT CONTROL
Armin Stolzer, Baden-Baden, Fed. Rep. of Germany, assignor to Keuro Besitz GmbH & Co. and EDV-Dienstleistungs KG, Achern-Gamshurst, Fed. Rep. of Germany
Filed Sep. 21, 1993, Ser. No. 125,015
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1992, 9214430[U]
Int. Cl.[5] B26D *1/46*
U.S. Cl. 83—796 9 Claims



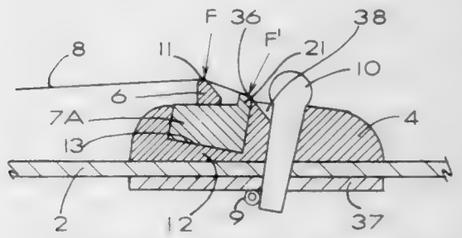
1. A horizontal bandsaw having a machine base, a workpiece table on said base with means for positioning a workpiece on said table for being sawed, a tool carrier unit housing a horizontal bandsaw having a saw band which is run on a lower straight stretch, said bandsaw being of a design for rectilinearly cutting a workpiece positioned on said workpiece table, said tool carrier being mounted above said workpiece table for vertical movement, guided by vertical guide rails on opposite sides of said workpiece table and controlled by at least one advancing vertical displacement means for said bandsaw affixed to said machine base and having movable members affixed to said tool carrier respectively near said vertical guide rails, said vertical displacement means being optionally operable for tilting the lower straight stretch out of a horizontal plane, and said tool carrier being connected to each said guide rail by a guide element which is movable on said guide rail, and wherein
said tool carrier (**11**) is pivoted at a first guide element (**20**) of said guide elements for swinging about a horizontal axis which is perpendicular to a cutting plane of the saw band (**12**) of said bandsaw and is likewise pivoted at a second guide element (**21**) of said guide elements about a horizontal axis which is perpendicular to said cutting plane of the saw band, and first (**48**) and second (**47**) stop members are provided whereby during operation of said vertical displacement means (**40**, **41**) said tool carrier can, at the beginning of a sawing operation, be lowered with the bandsaw cutting at an oblique cutting angle determined by said first stop member (**48**) and at the end of a sawing operation said tool carrier can be lowered with the bandsaw cutting with a horizontal cutting movement by being brought into abutment with said second stop member (**47**).

5,347,904
MODULAR GUITAR WITH EASILY REPLACEABLE NECK
Barry G. Lawrence, P.O. Box 846, Thomasville, N.C. 27360
Filed Aug. 18, 1993, Ser. No. 107,587
Int. Cl.[5] G10D *3/00*
U.S. Cl. 84—291 15 Claims



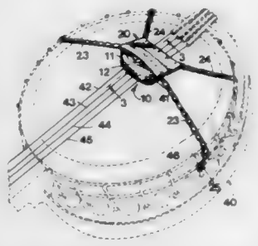
1. A guitar having a replaceable neck for attachment to the sound box comprising: a sound box having a front and a back surface, said back surface defining a neck extension groove, said sound box defining a bridge support aperture, said bridge support aperture extending from said front surface directly to said neck extension groove to provide communication therewith, a neck extension, said extension for releasable reception by said neck extension groove.

5,347,905
ADJUSTABLE BRIDGE SYSTEM FOR ACOUSTICAL STRINGED INSTRUMENTS
Thomas J. Cipriani, 2019 Jackson St., Hollywood, Fla. 33020
Continuation-in-part of Ser. No. 496,794, Mar. 21, 1990, Pat. No. 5,052,260, and a continuation-in-part of Ser. No. 446,215, Dec. 5, 1989, Pat. No. 5,092,213, which is a continuation-in-part of Ser. No. 213,157, Jun. 29, 1988, Pat. No. 4,951,543, which is a continuation-in-part of Ser. No. 39,941, Apr. 20, 1987, abandoned. This application Aug. 28, 1991, Ser. No. 751,074
Int. Cl.[5] G10D *3/04*
U.S. Cl. 84—298 27 Claims



1. A bridge assembly for a stringed musical instrument having adjustment for string length fine tuning, the musical instrument having a resonating box with a soundboard cover on which the bridge assembly is mounted, said bridge assembly comprising a bridge member fixed with respect to the soundboard cover, a block-like platform member secured to said bridge member, said bridge member including a portion of reduced thickness providing a relatively thin portion, said platform member including a lower portion supported by said thin portion of said bridge member, a saddle on which a string passes under tension, the contact of the string with the saddle providing a point of support for the string establishing a vibration length of the string, said string undergoing change of angle at said point of support to apply force thereat directed along a line of action passing through said platform and said thin portion of said bridge member to said soundboard cover and said resonating box, and means connecting the saddle to the platform member for adjustment of the saddle, longitudinally of the string, on the platform member to vary the vibration length of the string and thereby effect string length fine tuning, said means providing end positions for the longitudinal adjustment of the saddle at which, and for all positions therebetween, forces applied by the string to the bridge member will be directed to pass through said thin portion of the bridge member to said soundboard cover, said thin portion of the bridge member having an upper surface supporting said platform member, said upper surface being inclined relative to said soundboard cover at an angle related to the change of angle of the string at said point of support so that the force applied by the string to said point of support is directed substantially perpendicularly to said upper surface of the thin portion of the bridge member.

5,347,906
ADJUSTABLE STRINGED INSTRUMENT MUTE
John F. Geiger, 190 Berwick Dr. NE., Atlanta, Ga. 30328-1205
Filed Nov. 12, 1993, Ser. No. 151,276
Int. Cl.[5] G10D *1/10, 3/04*
U.S. Cl. 84—453 6 Claims

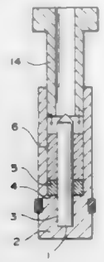


1. A muting device for stringed instruments in which sound is generated by displacing at least one string stretched across a bridge, comprising:
(a) a plurality of hard, spherically shaped solids;
(b) an elongated, sealed bag fabricated from a thin, flexible material, the bag being filled with the solids; and
(c) means for supporting the bag so that a portion of the bag can be held in contact with said at least one string in close proximity to the bridge.

5,347,907
MULTIPURPOSE PROJECTILE AND A METHOD OF MAKING IT
Kare R. Strandli; Inge M. Angard, and Einar Willassen, all of Raufoss, Norway, assignors to Raufoss A/S, Norway
Filed Jul. 31, 1992, Ser. No. 922,373
Claims priority, application Norway, Aug. 1, 1991, 912994
Int. Cl.[5] F42B *3/00*
U.S. Cl. 86—20.14 3 Claims

1. A multipurpose projectile comprising a shell which contains a penetrator and at least one incendiary charge surrounding a portion of the penetrator in front of a well in the bottom of the shell, in which the penetrator is inserted, the incendiary charge having been pressed in over its entire cross section,

whereby the cavity in the shell in which the incendiary charge is situated is cylindrical and has a constant diameter along its



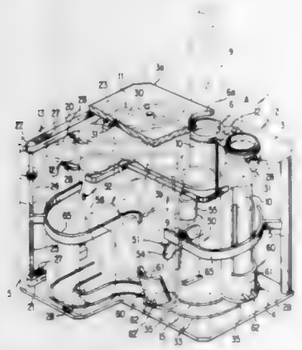
entire length, and that the front end of the cavity in a per se known manner is closed by a nose portion mounted thereon.

5,347,908

AMMUNITION MAGAZINE

Renaud Mouterde, Versailles, and Michel Bouzianne, Bose D'Arcy, both of France, assignors to Giat Industries, Versailles Cedex, France

Filed Oct. 16, 1992, Ser. No. 961,628
Claims priority, application France, Oct. 17, 1991, 91 12796
Int. Cl.[5] F41A *9/76*
U.S. Cl. 89—34 31 Claims



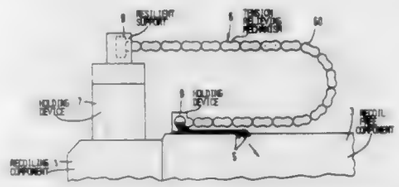
1. An ammunition magazine comprising a conveyor providing vertical storage of the ammunition so as to bring the ammunition automatically to an outlet of the magazine, and a device for withdrawing each ammunition from the magazine; the conveyor comprising a plurality of vertical tubes placed side by side to form a closed chain, a plurality of attachment devices, each of said attachment devices linking two adjacent tubes such that one of the two adjacent tubes is pivotable only about a central axis of the other of the two adjacent tubes and comprising two circular rings with parallel axes, said rings being integral with support plate and disposed respectively on either side thereof, wherein one of the rings is fixedly mounted around one of the two adjacent tubes, while the other ring is mounted with a clearance around the other of the adjacent tubes, and a device for driving the chain inside the magazine along a closed-loop rolling track.

5,347,909

DEVICE FOR TRANSMISSION OF ELECTRICAL SIGNALS

Andreas Kozlik, Hamburg, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 31, 1992, Ser. No. 922,231
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1991, 4127025
Int. Cl.[5] F41A *23/00*
U.S. Cl. 89—40.01 3 Claims



3. In a weapon system having a recoiling component and a recoil-free component, with a first electronic system disposed on the recoiling component, a second electronic system disposed on the recoil-free component and electrical communication means arranged for communicating signals between the first and second electronic systems, wherein said recoiling component comprises a breech ring of a gun barrel and said recoil-free component comprises a cradle supporting the gun barrel, and wherein said electrical communication means comprises:

a trailing cable continuously electrically connected between said first and second electronic systems;

a tension-relieving mechanism coupled between the recoiling component and the recoil-free component in a substantially tension free manner and mounting said trailing cable such that said trailing cable is substantially free of tension; and

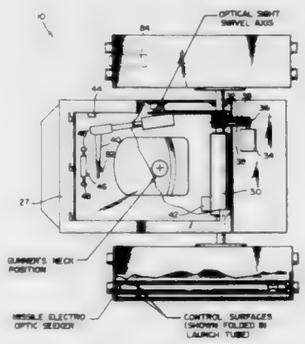
mounting means for mounting said tension relieving mechanism in a resilient manner on the recoiling component of the weapon system.

5,347,910

TARGET ACQUISITION SYSTEM

Carl A. Avila, Kent; Kenneth W. Hack, Seattle, and John A. Hibbert, Federal Way, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 15, 1985, Ser. No. 787,212
The portion of the term of this patent subsequent to Feb. 20, 2009, has been disclaimed.
Int. Cl.[5] F41G *3/22*
U.S. Cl. 89—41.22 8 Claims



1. A heads-up sighting arrangement for a light air defense system having a turret including a cabin rotatably mounted on

a base, an azimuth drive and azimuth control system for controlling a direction and speed of rotation of said cabin, a transparent canopy on said cabin and a height-adjustable seat within said cabin facing said transparent canopy for seating a gunner in a position to view airborne targets through said transparent canopy, and a munitions arm for mounting anti-aircraft munitions, said munitions arm being pivotally connected to the cabin for rotation therewith and for pivoting relative thereto about a horizontal axis so as to change an inclination of said munitions arm, a munitions arm elevation drive and elevation control system for controlling a direction and speed of pivoting of the munitions arm, such that the munitions arm may be aimed at and follow airborne targets by rotating the cabin and pivoting the munitions arm, said sight comprising:

a sight arm pivotally mounted on a pivot point inside said cabin for rotation therewith and for pivoting about a horizontal axis within said cabin relative thereto, said sight arm being linked to said munitions arm for synchronous motion therewith under control of said gunner by use of said azimuth and elevation control systems;

a transparent sight glass mounted on said sight arm between said height-adjustable seat and said transparent canopy in such a position that said gunner, sitting on said height-adjustable seat which has been adjusted to position a swivel axis of the gunner's neck in line with a swivel axis of said sight arm, looking straight ahead through said transparent sight glass, will be looking in the same direction as said munitions arm is pointed, regardless of an angle of said munitions arm from the horizontal axis;

an electro-optic sensor linked to said munitions arm to point in the same direction thereof, said electro-optic sensor producing signals indicative of targets within an angular and distance range of said electro-optic sensor; and

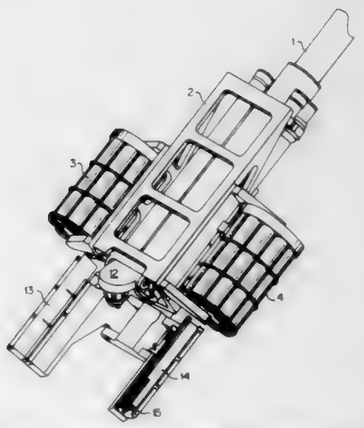
projection means for receiving said signals and for producing and projecting indicia of the target sensed by said electro-optic sensor on said transparent sight glass in a position thereon indicative of a position of said sensed target relative to an aimed direction of said transparent sight glass, to enable the gunner to ensure that the electro-optic sensor is trained on the same target which he is viewing optically through said transparent sight glass.

5,347,911

DOUBLE-ACTION RAMMER

Sten Hallqvist, Karlskoga, Sweden, assignor to Bofors AB, Karlskoga, Sweden

Filed May 6, 1993, Ser. No. 57,546
Claims priority, application Sweden, May 6, 1992, 9201433-1
Int. Cl.[5] F41A *9/14*
U.S. Cl. 89—45 5 Claims



1. A loading apparatus for separate ramming of shells and propellant charges in a gun including two magazines disposed one on each side of the barrel of the gun, and the loading apparatus for transferring shells and propellant charges to the breech of the barrel, the loading apparatus comprising:

at least one loading cradle including a first track for shells and a second track for propellant charges;

said first and second track each being provided with a free-flight rammer;

said loading cradle being inwardly pivotally mounted between a first replenishment position on a side of the gun barrel and in immediate association with a magazine from which shells are to be loaded into said first track and propellant charges into said second track, and

a second ramming position of said loading cradle in which said first and second track are alternately aligned with the main axis of the gun barrel for separately and successively throwing by said free-flight rammers said shells and propellant charges along their respective tracks into their ramming position in the gun barrel; and

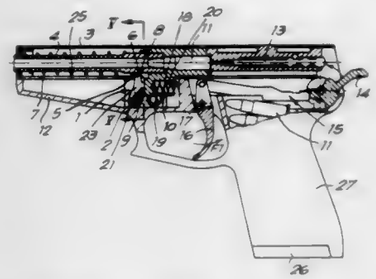
wherein said two magazines and said at least one loading cradle are connected with an elevating system of the gun to follow the movements of the elevating system and are therefore always positioned parallel with the main axis of the gun barrel.

5,347,912

ELEMENTS FOR DECELERATING THE RECOIL OF THE MOVING PARTS OF A FIRE ARM

Jean-Louis Gathoye, Argenteau, Belgium, assignor to Fabrique Nationale Nouvelle Herstal, en abrégé FNNH, société anonyme, Herstal, Belgium

Filed May 25, 1993, Ser. No. 66,217
Claims priority, application Belgium, Jun. 3, 1992, 09200508
Int. Cl.[5] F41A *5/08*
U.S. Cl. 89—169 18 Claims



1. The combination in a firearm comprising:

a casing;

a slide movably guided on the casing and having a front end and a rear end and presenting a surface directed toward the rear end, the slide having a recoil movement toward the rear end upon firing;

a barrel movably mounted along the slide and presenting a surface directed toward the front end of the slide;

a firing device comprising a striker and a kinematic chain for activating the striker, the chain comprising a trigger pivotably mounted in the casing; and

means for decelerating the slide, the means comprising a lever hingedly mounted around a hinging axis on the casing between the barrel and the slide,

the lever being provided with a first stop and a second stop on two opposite sides, the first stop being situated on a side of the lever directed toward the front end of the slide and being adapted to make contact with the surface of the slide during only a part of the recoil movement of the slide, the second stop being situated at the opposite side of the lever directed toward the rear end of the slide and being adapted to come into contact with the surface of the barrel,

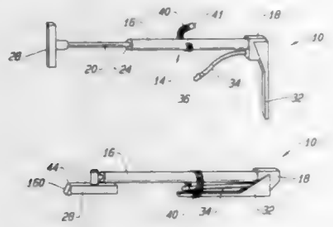
the first stop being a distance from the hinging axis which is greater than a distance between the second stop and the hinging axis.

5,347,913

PORTABLE BICYCLE PUMP HAVING COLLAPSIBLE HANDLE AND FOOTSTAND

David E. Stepner, 12553 Parker Ranch Ct., Saratoga, Calif. 95070

Filed Aug. 23, 1993, Ser. No. 110,581
Int. Cl.[5] F03B 39/12
U.S. Cl. 92—58.1 16 Claims



1. A bicycle pump for attachment to a bicycle frame, said frame having a horizontal tube and two non-horizontal tubes, said pump comprising:

(a) a main body including,

(1) a barrel having a top and a bottom,

(2) a base connected to the bottom of said barrel,

(3) a first cylindrical indentation connected to said main body adapted to fit said horizontal tube, and

(4) a second cylindrical indentation located on said base adapted to fit one of said two non-horizontal tubes;

(b) a shaft having a top and a bottom, the bottom of said shaft inserted into the top of said barrel;

(c) a handle pivotally attached to the top of said shaft and moveable between a first position perpendicular to said shaft and a second position parallel to said shaft, said handle including

(1) spring means located inside said handle for forcing an outer end of said handle away from the top of said shaft, and

(2) a third cylindrical indentation adapted to fit another one of said two non-horizontal tubes located at the outermost end of said handle;

(d) a hose connected to said base;

(e) means for forcing air through said hose as said shaft slides in said barrel; and

a footpeg pivotally attached to said main body.

5,347,914

TRAVERSE APPARATUS

Toshio Kinoshita; Youichi Nakamura, both of Katano; Kiyoshi Sawamura, Neyagawa, and Tsutomu Yanagimoto, Fujiidera, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 21, 1992, Ser. No. 964,396
Claims priority, application Japan, Oct. 21, 1991, 3-272248
Int. Cl.[5] F01B 29/00
U.S. Cl. 92—88 2 Claims

1. A traverse apparatus comprising:

a main base having an end;

a rail guide affixed to said main base;

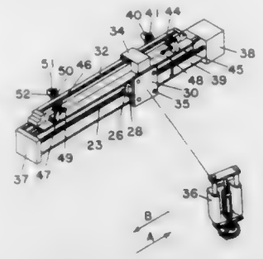
a sliding base having a linear bearing which slides while contacting said rail guide;

a head mounting base affixed to said sliding base for disposing a working hear;

a cylinder, arranged separately of said rail guide, having a movable body connected to said sliding base via a connecting panel;

a detector disposed on said main base;

stopper bolts and shock absorbers disposed at both ends of said main base; and



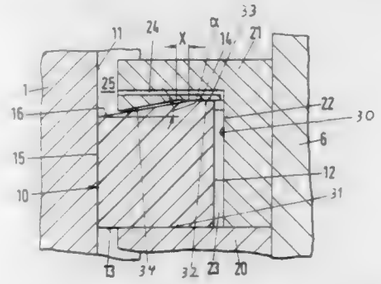
a control box, located at said end of said main base, said control box having electromagnetic valves, relief valves and a manifold.

5,347,915

PISTON COMPRESSOR FOR THE OILFREE COMPRESSION OF GASES

Norbert Feistel, Winterthur, Switzerland, assignor to Maschinenfabrik Sulzer-Burckhardt AG, Basle, Switzerland

Filed Sep. 30, 1992, Ser. No. 954,443
Claims priority, application Switzerland, Nov. 6, 1991, 03237/91-5
Int. Cl.[5] F16J 1/00, 9/00
U.S. Cl. 92—258 15 Claims



1. A piston compressor for the oilfree compression of gases comprising a cylinder having an axially extending, inwardly oriented cylinder face and defining a compression space; a piston reciprocally disposed within the cylinder; first and second adjoining chamber rings mounted on the piston terminating short of the cylinder face and forming a radially outwardly open ring groove defined by first and second, axially spaced apart, annular ring groove sides and a radially outwardly facing ring groove base extending axially between the ring groove sides; and a one-piece, split piston ring disposed in the ring groove forming an inner circumferential face opposite to and spaced from the ring groove base, an outer circumferential face in sliding and sealing contact with the cylinder face, and first and second axial end surfaces opposite the first and second ring groove sides, respectively, and extending between the circumferential faces of the piston ring, the end surfaces including parallel surface portions extending from the inner circumferential face towards the outer circumferential face of the piston ring, at least the first end surface further including a wedged surface section extending from a radially outermost end of the surface portion to the outer circumferential face at an angle in the range from 5° to 15° so that an axial thickness of the piston ring at the outer circumferential face is less than an axial thickness of the piston ring at the inner circumferential face; at least the first ring groove side opposite the first end surface of the piston ring including a ring-shaped, tapered surface which is parallel to the wedged surface section; and the

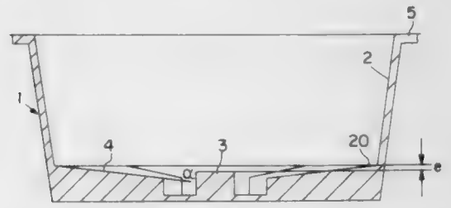
first chamber ring defining a passage that extends through the first chamber ring and fluidly couples the compression space with an annular space between the inner circumferential face of the piston ring and the ring groove base to subject the annular space to fluid pressure prevailing in the compression space so that the fluid pressure biases the piston ring radially outwardly to establish sealing contact between the outer circumferential face of the piston ring and the cylinder face.

5,347,916

DEVICE TO ASSIST EXTRACTION OF BEVERAGE MATERIAL IN CARTRIDGES

Olivier Fond, Yverdon; Mario Pasquali, Vallorbe, and Bernard Pierre, Yverdon, all of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Jul. 2, 1991, Ser. No. 724,606
Claims priority, application European Pat. Off., Jul. 27, 1990, 90114403
Int. Cl.[5] A47J 31/24
U.S. Cl. 99—295 12 Claims



1. A device for assisting extraction of a material contained in a cartridge for preparation of a beverage comprising:

a wall which forms a hollowed enclosure and which has an interior surface which defines a frustoconically-shaped cavity for containing a cartridge containing a material to be extracted for preparation of a beverage;

a rim which intersects and extends laterally from the interior surface of the wall to form a peripheral rim base surface for supporting a cartridge contained by the interior wall surface;

a plurality of fins, an area of fin convergence and a finger, wherein the fins are integral with and extend from the rim laterally, with respect to the interior wall surface, and have edges facing the cavity which extend from the rim base surface and converge and connect at an area of fin convergence so that the area of fin convergence is centrally disposed with respect to the interior wall surface and rim and displaced at a distance away from a plane defined by the intersection of the interior wall surface and rim base surface and wherein the finger extends from the area of fin convergence towards the plane to a finger surface located below the plane and being displaced a distance away from a portion of the fin edges adjacent the area of fin convergence.

5,347,917

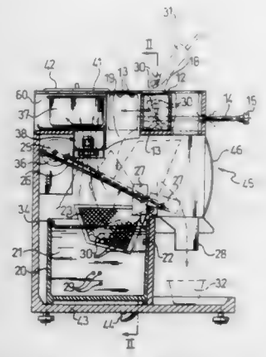
MACHINE FOR PREPARING PASTA BASED DISHES

Enrico Vezzani, Milan, and Mario Caliari, Cassano Magnago, both of Italy, assignors to Zini Prodotti Alimentari S.r.l., Milan, Italy

Filed Apr. 29, 1992, Ser. No. 875,781
Claims priority, application Italy, Apr. 30, 1991, MI 91 A 001179
Int. Cl.[5] A47J 27/12, 27/18
U.S. Cl. 99—335 19 Claims

1. A machine for preparing pasta-based dishes for direct consumption starting from precooked deep-frozen pasta products, comprising at least one basket adapted to receive dosages of precooked deep-frozen pasta, a vat containing heated water, a means for moving the basket between an immersed position where the basket is submerged under the heated water contained in the vat for heating the precooked deep-frozen pasta and a removed position where the basket is removed from the vat;

loading means for loading precooked deep-frozen pasta dosages into said basket comprising at least one chest slidable in a box-type seat within a body of the machine, the chest having at least a first opening which, in one



operational position of the chest, overlies a first opening in the seat for introducing the precooked deep-frozen pasta into the chest, the chest also having at least a second opening which, in a successive operational position of the chest, overlies a second opening in the seat for unloading the precooked deep-frozen pasta into the basket; and

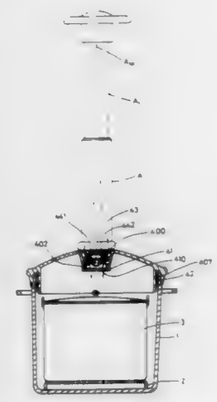
external drive means for driving said loading means.

5,347,918

VACUUM THERMAL COOKER

Po-Hung Chen, No. 2, Lane 242, Chung-Cheng S. Road, Yung-Kan Shian, Tainan Shien, Taiwan

Filed Apr. 6, 1994, Ser. No. 223,718
Int. Cl.[5] A47J 27/00; B65B 31/04; B65D 51/16, 81/20
U.S. Cl. 99—472 1 Claim



1. A vacuum thermal cooker comprising:

an outer cooker having two opposite grips at an upper circumference;

a separating disc made of heat non-conductive material and being placed on a bottom of the outer cooker;

an inner cooker used for boiling food, being placed on the separating disc and having a lid, two semi-circular projections with a hole for two ends of a semi-circular handle for carrying this inner cooker;

a sealing lid unit closing on top of the outer cooker and consisting of

a lid having a recess in a center portion, a through hole in the center of the recess, four air holes equally spaced around said through hole in a bottom of the recess, an annular fitting wall extending down from the bottom of the recess, an outer circumferential projecting edge, two annular walls extending down from the outer projecting edge and forming an annular groove between them;

a lower cap provided to engage the annular fitting wall from below, having air holes in its bottom;

an annular sealing gasket provided to engage the annular groove of the sealing lid, having a flange in an intermediate portion;

an air seal provided to fit in the recess of the sealing lid, having an inverted mushroom-shaped block under its bottom to fit through said through hole of the recess and two inclined connecting rods extending upward;

a top cap provided to fit in recess and to close on the air seal, having two opposite slots for the two connecting rods to pass through up and an outer surface for fitting with said recess; and

air in said outer cooker being sucked out by means of a separate air sucking pump, which is placed on said recess of said sealing lid, the inner pressure of said outer cooker getting lower than that of open air by operating said air sucking pump to force said sealing lid unit tightly to close up the outer cooker, said outer cooker becoming a vacuum with open air prevented from flowing inside, said inner cooker being not in direct contact with the outer cooker by the insulating disc so that the heat of the food therein can be kept from conducted to disperse out of the outer cooker for a period of time long enough for cooking the food therein well-done or for keeping the food warm.

5,347,919

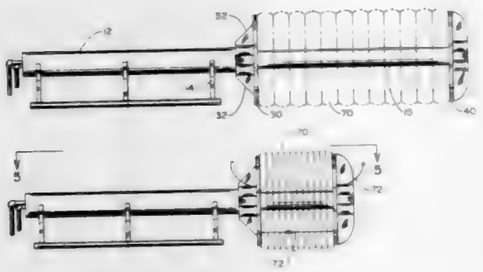
TRACTIVE TIRE COMPACTOR

Henry T. Nordberg, 510 Lake Rd., Oneida, N.Y. 13421

Filed Jun. 16, 1993, Ser. No. 78,936

Int. Cl.[5] B65B *27/06;* **B30B** *1/00*

U.S. Cl. 100—12 **9 Claims**



1. A machine for compacting a row of tires in side-by-side relationship, comprising:

a housing for supporting an elongated hydraulic cylinder/-piston combination;

hydraulic means for reciprocating a piston of said cylinder/-piston combination between an extended position and a retracted position, said extended comprising a probe that extends through said row of tires, said probe passing through a first compactor plate that is disposed on said housing and contacts a first tire of said row;

a second compactor plate, contacting a last tire of said row and attachable to said probe for movement therewith; and

an end plate disposed at an end of said probe, said end plate having an axial post and a plurality of end bolts that align with a central aperture and a plurality of keyholes in said second compactor plate for detachably securing said second compactor plate to said end plate;

whereby said row of tires is compacted between said first compactor plate and said second compactor plate when said probe is retracted by said hydraulic means.

5,347,920

TWINE FORCE SENSING APPARATUS FOR USE ON A RECTANGULAR BALER

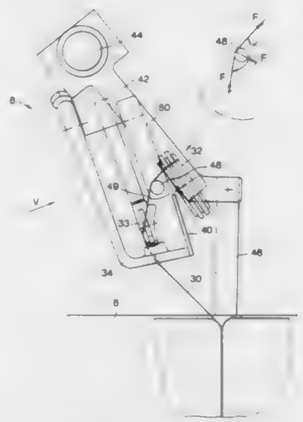
Marc G. Vansteelant, Zedelgem, and Marnix J. Schoonheere, Ichtegem, both of Belgium, assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Mar. 16, 1993, Ser. No. 33,664

Claims priority, application European Pat. Off., Mar. 16, 1992, 92200743.0

Int. Cl.[5] B65B *57/10, 13/26*

U.S. Cl. 100—4 **5 Claims**



1. In a rectangular baler comprising

a bale case (**6**) into which successive charges of crop material are introduced and having at least one wall portion (**14**) which is generally laterally thereof to vary the cross-section sectional area (**18**) of said bale case (**6**),

plunger means (**7**) disposed for reciprocating movement in said bale case (**6**) to thereby compact said charges and advance such compacted charges toward an exit opening therein,

knotter means (**8**) for tying twine in a form-stabilizing manner around successive increments of compacted crop material while they advance in said bale case (**6**) to form bales of which the density at least partially is determined by the dimensions of said variable cross-sectional area (**18**),

sensor means (**48**) for detecting the tensile forces occurring in said twine during bale formation and producing signals representative of said tensile forces,

control means coupled to said sensor means,

positioning means operatively associated with said wall portion,

said signals produced by said sensor means (**48**) are transmitted to said control means (**24**), which control means is operable to control said positioning means (**16**, **20**) to move said at least one wall portion (**14**) to thereby vary said cross-sectional area (**18**) of said bale case (**6**) in a manner to control the density of the crop material compacted by said plunger means (**7**), the improvement wherein

said control means (**24**) comprises a micro-processor (**24**) in which the values of the sensor signals are compared with a predetermined threshold value entered into said micro-processor (**24**) through an operator panel (**28**); said micro-processor (**24**) being programmed in a manner such that, when the force values exceed said predetermined threshold value, said positioning means (**16**, **20**) move said at least one wall portion (**14**) in a direction to enlarge said cross-sectional area (**18**) of said bale case (**6**) for correspondingly decreasing the bale density and thereby reducing said tensile forces experienced in said twine.

5,347,921

PRESS FOR TREATING WASTE PRODUCTS

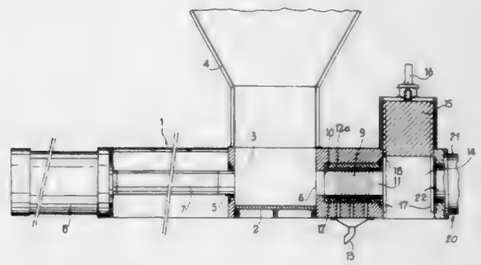
Jacques Gourdol, Varces-Allieres-Risset, France, assignor to Neyrpic Framatome Mecanique, Courbevoie, France

Filed Jul. 24, 1991, Ser. No. 735,309

Claims priority, application France, Jul. 26, 1990, 90 09578

Int. Cl.[5] B30B *9/06*

U.S. Cl. 100—98 R **4 Claims**



1. A press for treating heterogeneous waste products comprising a solid phase and a liquid phase, said press comprising

(a) a frame;

(b) means defining a feed zone for receiving said water products, said feed zone having a feed axis and being open adjacent an upper end thereof and defining two opposed lateral openings, a compression piston movable between one of said openings and a position located beyond the other of said openings, said lateral openings having a section adapted to a corresponding section of said piston;

(c) a press chamber having a pressing axis and comprising an inlet opening and an outlet opening which are in opposed relation to each other and disposed coaxially relative to said feed axis and pressing axis, said chamber having a section equal to a section of said compression piston, means for recovering said liquid phase, said press chamber comprising calibrated passages connecting said press chamber with said liquid phase recovering means;

(d) a chamber for discharging said solid phase located downstream of said press chamber relative to a direction of flow of said waste products through said press chamber;

(e) a closing and sealing element having a shape complementary to a shape of said discharging chamber and movable transversely relative to said axis of said press chamber between a lower position for closing said outlet opening of said press chamber during compression of waste products, and an upper position for opening said outlet opening for extracting said solid phase from said press chamber, said closing and sealing element being further movable along said axis of said press chamber; and

(f) and means cooperating with said closing and sealing element for moving said closing and sealing element along said axis of said press chamber and applying said closing and sealing element against said outlet opening and thus sealing said press chamber.

5,347,922

SHELF SUPPORT SYSTEM

Derek N. G. Metcalf, LaGrange Park, Ill., assignor to Athena Industries, Inc., LaGrange, Ill.

Filed Sep. 14, 1993, Ser. No. 121,165

Int. Cl.[5] A47B *9/00*

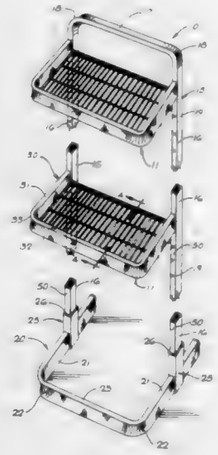
U.S. Cl. 108—108 **7 Claims**

1. A support system for cantilever mounted shelves, comprising:

a pair of laterally spaced, vertically upright, tubular supports of quadrangular cross section formed with a plurality of spaced connector openings in corresponding co-planar front walls thereof;

a cantilevered shelf structure extending between and detachably secured to said front walls at selected vertical position comprising a planar shelf and a generally U-shaped tubular railing fixed to and bordering front and side margins of said shelf;

said railing comprising a pair of like, laterally spaced tubular side rails having co-planar aligned ends disposed transversely adjacent a rear margin of said shelf for confronting said front walls of said supports;



a pair of rigid, generally L-shaped connector pins, one associated with each of said side rails; each of said pins comprising an arm and a transversely related leg at one end of said arm, said arm being fixed to one of said ends of said rails so that the leg thereof is spaced axially outwardly of said one of said ends and extends transversely past a top wall of an associated said side rail for insertion into a selected one of said connector openings whereby said shelf structure is pivotally coupled to said vertical supports and is moveable about said pins until said co-planar ends of said side rails abut the exterior of said front walls and said connector pins engage the interior thereof to effect vertically and laterally stable cantilever support of said shelf structure.

5,347,923

APPARATUS FOR COLLAPSING CONTAINERS

Paul Villiger, Bahnhofstrasse 13, CH-5647 Oberrüti, Switzerland

Filed Jul. 23, 1993, Ser. No. 96,680

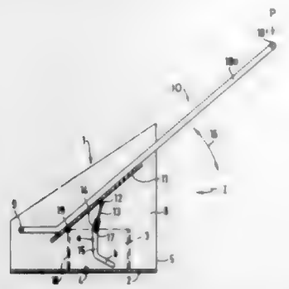
Claims priority, application Switzerland, Aug. 13, 1992, 2531/92-7

Int. Cl.[5] B30B *9/32, 1/02*

U.S. Cl. 100—137 **10 Claims**

1. Apparatus for crushing tubular containers of the type having a peripheral wall constituting a first portion and an end wall constituting a second portion thereof, comprising a container-supporting first crushing unit; a second crushing unit movable with reference to the first crushing unit from a starting position in which said units define a compartment for a container to be crushed, said first unit including a support having a bottom wall adjacent to and disposed beneath said compartment and said bottom wall having an upper side which supports the first portion of a container in said compartment, said second unit comprising a first section engageable with the first portion of a container in said compartment and a second

section engageable with the second portion of the container in said compartment; means for moving said second unit from and back to said starting position, said sections being disposed above said bottom wall and moving toward said bottom wall in response to movement of said second unit from said starting position, said moving means including a device for moving said second section during a first stage of movement of said second unit from said starting position and for moving said first section during a second stage of movement of said second unit from said starting position not later than during said first stage, said device including a carrier and means for pivotably connecting said carrier to said support, at least one of said sections being mounted directly on said carrier; and means for guiding said first and second sections along first and second paths, respectively, in response to movement of said second unit from said starting position to thereby deform the first and second portions of the container in said compartment, said first path being configurated to cause said first section to impart to the first portion of the container in said compartment a fold line for pivoting of the second portion of the container in said compartment along the fold line in response to movement of the second section of the second unit along said second path, said first path including a first portion wherein said first section moves toward the bottom wall of said support and a second portion wherein said first section moves away from said second path, said first section moving along said first portion and thereupon along said second portion of said first path in response to movement of said second unit from said starting position.



5,347,924

DEVICE FOR PRINTING ENDORSEMENTS ON DOCUMENTS

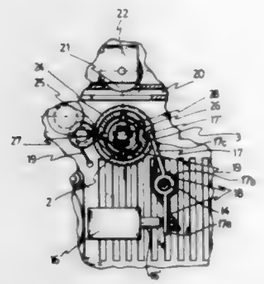
Emilio B. Martin, Madrid, Spain, assignor to Amper, S.A., Spain

Continuation-in-part of Ser. No. 347,499, May 4, 1989, Pat. No. 5,012,734. This application May 6, 1991, Ser. No. 696,207

The portion of the term of this patent subsequent to May 7, 2008, has been disclaimed.

Int. Cl.[5] B41L *47/46*

U.S. Cl. 101—91 13 Claims



1. In a document processing system of the type which reads characters from and prints characters onto documents and which includes a document guide and means for driving documents through said document guide, an apparatus for printing endorsements on documents passing through said document guide comprising:

a rotatable cylindrical body having a lower end with an exterior surface and an indentation on said exterior surface;

print means attached to said rotatable cylindrical body;

a circular ring gear attached to said lower end of said rotatable cylindrical body, said ring gear having teeth along a portion only of its circumference;

a rotatable pinion for engaging the teeth along said portion only of said ring gear's circumference to rotate said rotatable cylindrical body, said rotatable pinion mounted on a shaft;

means for lockedly engaging said indentation on said exterior surface of said rotatable cylindrical body, said means for lockedly engaging comprising a locking arm; and

means for moving said locking arm into and out of locked engagement with said indentation on said exterior surface of said rotatable cylindrical body,

whereby said locking arm may be moved out of said locked engagement when a document is passing through said document guide, thereby permitting said rotatable cylindrical body to rotate and print an endorsement on said document, and thereupon said locking arm may be moved back into locked engagement with said indentation on said exterior surface of said rotatable cylindrical body.

5,347,925

SOLDER OR CONDUCTIVE PASTE PRINTING STENCIL HOLDER

Jürg Holderegger, Dätwil/Adlikon, Switzerland, assignor to PRSS - Maschinen AG, Winterthur, Switzerland

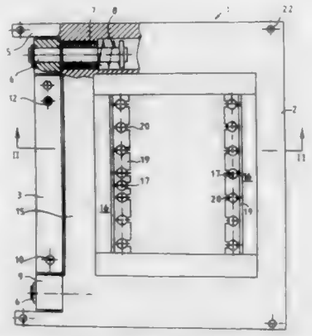
PCT No. PCT/CH91/00224, § 371 Date Jul. 9, 1992, § 102(e) Date Jul. 9, 1992, PCT Pub. No. WO92/08616, PCT Pub. Date May 29, 1992

PCT Filed Nov. 1, 1991, Ser. No. 910,016

Claims priority, application Switzerland, Nov. 19, 1990, 03664/90-6; Fed. Rep. of Germany, Dec. 31, 1990, 9017591[U]

Int. Cl.[5] B05C *17/00*

U.S. Cl. 101—127 20 Claims



1. An apparatus for solder or conductive paste printing including a frame defining a working plane and enclosing a space for mounting one of an etched, milled and laser-cut printing plate made of one of metal and plastic, said frame having two opposite sides, a plurality of mounting bolts and a plurality of apertures the printing plate being secured to at least said two opposite sides of the frame with said plurality of mounting apertures and said plurality of mounting bolts,

characterized in that,

one of the two sides of the frame is a tie beam and includes means for moving the tie beam with respect to the other one of two sides, the tie beam being guided by resiliently mounted guide bolts and pivotally connected to said guide bolts, an abutment is secured to and located at a fixed distance from the other side of the frame said tie beam being displaceable with respect to said abutment, a support band for the plate provided along each of the two frame sides for the plate, the support band being in the working plane of the frame which receives the plate, there being, distributed along the support band, a plurality of said mounting bolts provided with heads for releaseably securing plates of differing thicknesses in the working plane, said mounting bolts being fixedly secured to the respective frame side, the mounting bolts extending inwardly from the working plane into the space enclosed by the frame, the plate being removable from said frame via said mounting bolts.

5,347,926

PRINTING ELEMENT FOR A ROTARY PRINTING MACHINE HAVING A PLURALITY OF RECEIVING CARRIAGES FOR AN IMPRESSION CYLINDER

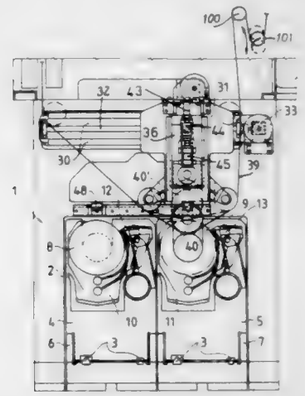
Giuseppe Fantoni, Ozzano Monferrato; Mario Forno, Casale Monferrato; Gianfranco Gibellino, Trino Vercellese, and Giampiero Miglietta, Casale Monferrato, all of Italy, assignors to Officine Meccaniche Giovanni Cerutti S.p.A., Italy

Filed Jul. 7, 1993, Ser. No. 88,262

Claims priority, application Italy, Jul. 10, 1992, MI92 A 001684

Int. Cl.[5] B41F *5/04*

U.S. Cl. 101—219 9 Claims



1. An arrangement for changing impression cylinders in a rotary printing machine through which a web is guided, comprising:

a first carriage having a first impression cylinder mounted thereon for rotary movement about a first axis;

a second carriage having a second impression cylinder mounted thereon for rotary movement about a second axis that is generally parallel to, and spaced transversely along a longitudinal direction away from, the first axis;

a slide mounted on the machine for movement along the longitudinal direction, and also for movement along an elevation direction that is generally perpendicular to the longitudinal direction and said axes;

a pressure roller mounted on the slide for joint movement therewith;

elevation drive means for reciprocally and linearly moving the slide and the pressure roller along the elevation direction between working positions in each of which the pressure roller presses the web into engagement with a respective impression cylinder, and transit positions in each of which the pressure roller is spaced away from the respective impression cylinder; and

longitudinal drive means for reciprocally and linearly moving the slide and the pressure roller along the longitudinal direction between the transit positions.

5,347,927

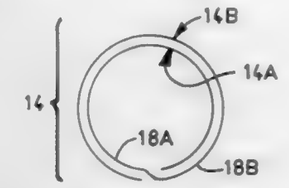
ANISOTROPIC ENDLESS PRINTING ELEMENT AND METHOD FOR MAKING THE SAME

Claude Berna, Moosch, France; Dennis O'Rell, Boxboro, Mass.; Herve Praet, Mulhouse; Gerard Rich, Orschwihr, both of France; Richard Rodgers, Hudson, Mass., and Jean P. Stutz, Vieux Thann, France, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed May 4, 1993, Ser. No. 58,067

Int. Cl.[5] B41N *1/12*

U.S. Cl. 101—401.1 39 Claims



1. An anisotropic endless printing element comprising:

a seamless outer printing surface layer; and

a spirally-integrated reinforced compressible tubular structure located beneath said outer layer, said spirally-integrated tubular structure comprising a sheet having synthetic fibers, said sheet being spirally wrapped at least two complete turns circumferentially around the longitudinal axis of said tubular structure, said spiral wrapping thereby defining an inner tubular surface on a radially inward wrapped portion of said sheet and defining an outer tubular surface on a radially outward wrapped portion of said sheet; and said tubular structure further comprising an elastomer having voids, said void-containing elastomer disposed between said inner and outer tubular surfaces defined by said wrapped sheet portions, said void-containing elastomer thereby being spirally-integrated within and providing radial compressibility to said tubular structure.

5,347,928

PLATE CLAMPING UNIT FOR OFFSET PRESS

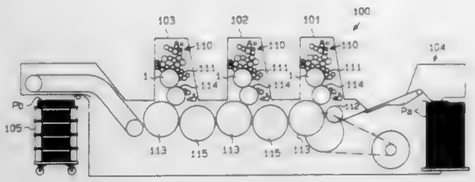
Mineyuki Ito, Gifu, Japan, assignor to Sakurai Graphic Systems Corporation, Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 35,635

Claims priority, application Japan, Oct. 29, 1992, 4-291827; Oct. 29, 1992, 4-291828; Oct. 29, 1992, 4-291829

Int. Cl.[5] B41F *1/28*

U.S. Cl. 101—415.1 28 Claims



1. A plate clamping unit for use in an offset press machine comprising:

a printing plate having a first end and a second end;

a plate cylinder for carrying the printing plate;

a first clamping mechanism movable in the radial direction of the plate cylinder for the opening and closing motions, said first mechanism being arranged to clamp the first end of the printing plate when closed;

a second clamping mechanism movable in the radial direction of the plate cylinder for the opening and closing motions, said second mechanism being arranged to clamp the second end of the printing plate when closed;

said plate cylinder having a groove extending in the axial direction on the outer periphery of the cylinder for accommodating the first and second clamping mechanism and allowing the entire second clamping mechanism to move between a waiting position in a vicinity of the first clamping mechanism and a working position away from the first clamping mechanism, said groove having an inner wall surface facing towards the outer periphery of the cylinder; and

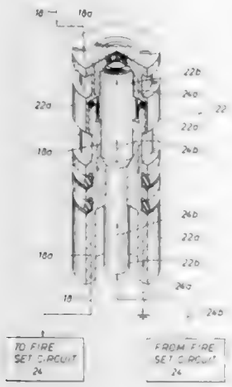
a moving mechanism for moving the second clamping mechanism between the waiting position and the working position.

5,347,929

FIRING SYSTEM FOR A PERFORATING GUN INCLUDING AN EXPLODING FOIL INITIATOR AND AN OUTER HOUSING FOR CONDUCTING WIRELINE CURRENT AND EFI CURRENT

Nolan C. Lerche, Stafford; Clifford L. Aseltine, Houston, both of Tex., and Wallace E. Voreck, Jr., Sparta, N.J., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Sep. 1, 1993, Ser. No. 116,082
Int. Cl.[5] F42C *11/00*
U.S. Cl. 102—202.14 **22 Claims**



1. A firing system adapted to be disposed in a wellbore tool for detonating an apparatus, said wellbore tool adapted to be disposed in a wellbore, comprising:

discharge signal generating means responsive to a first energizing signal for generating a second discharge signal;

firing means responsive to the second discharge signal for generating a return signal and detonating an explosive, said firing means including outer housing means for conducting said first energizing signal to said discharge signal generating means and for conducting said return signal to a ground potential; and

detonation means responsive to the detonation of said explosive for detonating said apparatus.

5,347,930

METHOD AND INSTALLATION FOR THE DESTRUCTION OF LABORATORY WASTE

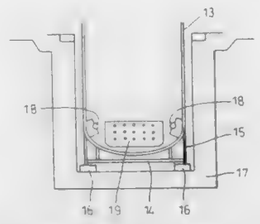
Pierre Baronquel, Mantes le Jolie, and Jean-Louis Biros, Acheres, both of France, assignors to SARP Industries, Limay, France

Filed Feb. 24, 1992, Ser. No. 840,231
Claims priority, application France, Feb. 25, 1991, 91 02203
Int. Cl.[5] F42D *3/00*
U.S. Cl. 102—302 **9 Claims**

1. An apparatus for destroying containers containing wastes comprising:

(a) at least one basin or pool filled with water to a depth of at least two meters;

(b) means for automatically conveying and submerging containers of wastes into the water of said basin; and



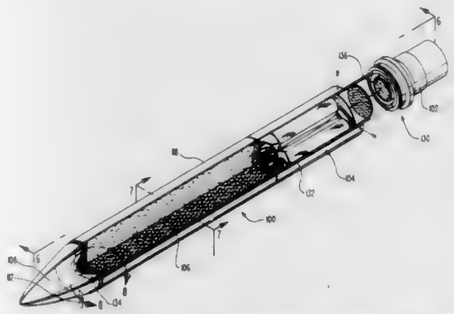
(c) means, associated with said means for conveying and submerging, for bringing about the explosion to destroy the containers at a predetermined instant.

5,347,931

COMBUSTIBLE FLARE IGNITION SYSTEM

Evan E. Day, Brigham City, Utah, assignor to Thiokol Corporation, Ogden, Utah

Filed Nov. 12, 1992, Ser. No. 974,746
Int. Cl.[5] F42B *10/56, 12/42*
U.S. Cl. 102—340 **32 Claims**



30. An ignition system for an illuminant containing warhead, comprising:

an ignition initiator;

a combustible train positioned in communication with the ignition initiator such that the firing of the ignition initiator triggers combustion of the combustible train, the combustible train comprising a continuous combustible composition positioned within a meltable tubing; and

an illuminant igniter positioned in communication with the combustible train such that the firing of the combustible train triggers the firing of the illuminant igniter, thereby permitting the illuminant to be ignited.

5,347,932

SHOT WAD WITH HIGHLY COLLAPSIBLE HINGE PORTION

Robert J. Gardner, Bethalto, Ill., and Morris C. Buenemann, Jr., Florissant, Mo., assignors to Olin Corporation, East Alton, Ill.

Filed May 21, 1993, Ser. No. 66,353
Int. Cl.[5] F42B *7/08*
U.S. Cl. 102—451 **17 Claims**

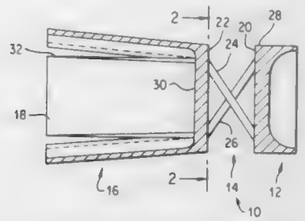
1. An axially collapsible shot wad comprising:

a first transverse wall;

a second transverse wall coaxially with and axially spaced from the first transverse wall;

a first radially deformable radially arched resistance member attached to an opposite edge of each of the transverse walls and extending diagonally between the transverse walls; and

a second radially deformable radially arched resistance member radially spaced from the first resistance member and attached to an opposite edge of each of the transverse walls and extending diagonally between the transverse walls in a direction opposite the first member to form a spaced axially crossing x-shape configuration, said first resistance member and said second resistance member having a generally side by side nested configuration when viewed from a transverse wall.



5,347,933

RAILWAY BALLAST CLEANING MACHINE WITH INTEGRATED HOPPER CAR

Dennis R. Mathison, Hamel, and James H. Perkins, Northfield, both of Minn., assignors to Loram Maintenance of Way, Inc., Hamel, Minn.

Filed Jan. 5, 1993, Ser. No. 840
Int. Cl.[5] E01B *27/06*
U.S. Cl. 104—2 **1 Claim**



1. A ready ballast holding and distribution system for a railway shoulder ballast cleaning machine having a first digger portion including a plurality of digger buckets for scooping up fouled ballast having dirt and debris imbedded therein from along a railway shoulder and depositing said fouled ballast within said machine and a second cleaning portion including ballast cleaning means operably positioned to receive said fouled ballast for separating said debris from said fouled ballast to provide cleaned ballast and separated debris, said ready ballast holding and distribution system comprising:

a hopper car having rail engaging wheels interposed between and operably coupled to the first portion of the ballast cleaning machine and the second portion of the ballast cleaning machine for selectively retaining a quantity of clean ballast ready for selective distribution on the track shoulder and having a plurality of downwardly directed chute doors adapted for deployment of clean ballast along the railway shoulders, said chute doors being selectively variably openable for controlling the quantity of ballast being deployed and being selectively positionable to deploy ballast on either railway shoulder;

first conveyor means for transporting fouled ballast from the digger portion to the cleaner portion and having a span terminating in a first end and an opposed second end, the first end operably positioned adjacent to the digger portion for receiving fouled ballast therefrom and the second end operably positioned adjacent to the cleaning portion for delivering fouled ballast thereto, the span of the first conveyor means being generally coextensive longitudinally with and overlying said hopper car;

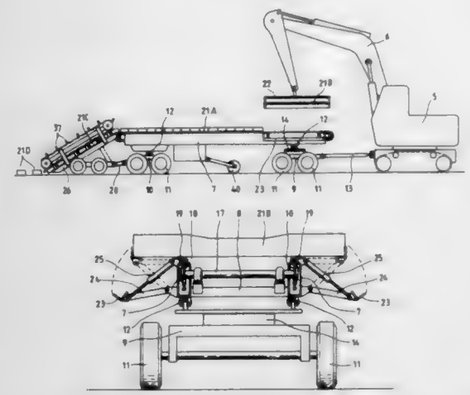
second conveyor means for conveying the cleaned ballast from the cleaning means to the hopper car and having a first end and an opposed second end, the first end being disposed to receive cleaned ballast from the ballast cleaning means and the second end being disposed to discharge the cleaned ballast into the hopper car.

5,347,934

SLEEPER LAYING APPARATUS

Graeme S. Dunnett, Balgownie, Australia, assignor to Macbon Pty. Ltd., Australia

Filed Jun. 8, 1993, Ser. No. 74,128
Claims priority, application Australia, Dec. 22, 1992, 30383/92
Int. Cl.[5] E01B *29/00*
U.S. Cl. 104—6 **8 Claims**



1. A sleeper laying apparatus comprising a mobile chassis furnished with road wheels permitting it to travel along a bare rail bed, a storage conveyor on said chassis adapted to hold a file of sleepers and feed those sleepers towards the rear of the chassis, an inclined gravity conveyor at the rear of the chassis able to receive sleepers from said storage conveyor and allow them to gravitate onto the track bed, a hold back escapement means disposed above said gravity conveyor to control the movement of sleepers thereon, and control means, responsive to the forward movement of the chassis, controlling the actuation of said escapement means, whereby sleepers are discharged from said gravity conveyor at predetermined intervals of chassis movement, wherein the escapement means comprises at least two laterally spaced head sprockets, at least to laterally spaces tail sprockets in respective alignment with the head sprockets, at least two endless chains trained around respective pairs of said head and tail sprockets and having lower flights above and substantially parallel to said gravity conveyor with equally spaced apart abutment arms projecting from said chains extending from the lower flights into the path of the sleepers on the gravity conveyor, and a motor unit controlling rotation of said head sprockets.

5,347,935

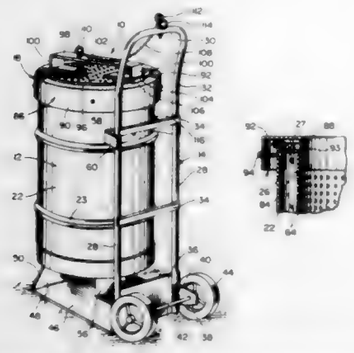
YARD TRASH BURNER

William W. Whitaker, 1705 Michigan Dr., Evansdale, Iowa 50707

Filed Mar. 30, 1993, Ser. No. 40,269
Int. Cl.[5] F23D *3/00;* **F23G** *5/00*
U.S. Cl. 110—240 **16 Claims**

1. A trash burner comprising a barrel defined by a peripheral wall disposed generally vertically and including an upper end having an open area, a perforated inner burner defined by a peripheral perforated wall disposed within said barrel in spaced relation to the peripheral wall, said perforated inner burner having an upper end with an upwardly facing opening to receive trash to be burned and discharge combustion prod-

ucts, means interconnecting the upper end of the inner burner with the upper end of the barrel to position the inner burner in the barrel and admit combustion supporting air downwardly between the peripheral wall of the barrel and the peripheral



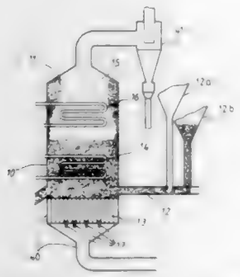
wall of the inner burner to supply combustion supporting air to trash being burned in the inner burner and a perforated plate forming a spark arrester and a closure for the upper end of the burner to prevent egress of sparks into the atmosphere.

5,347,936

METHOD AND A DEVICE FOR PREHEATING A FLUIDIZED BED

Svante Thorhuus, Finspong, Sweden, assignor to ABB Stal AB, Finspong, Sweden

PCT No. PCT/SE90/00604, § 371 Date Mar. 11, 1992, § 102(e) Date Mar. 11, 1992, PCT Pub. No. WO91/04444, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 21, 1990, Ser. No. 838,308
Claims priority, application Sweden, Sep. 22, 1989, 8903123
Int. Cl.[5] F23C *1/02*
U.S. Cl. 110—260 10 Claims



1. An apparatus for supplying air to a fluidized bed and for preheating the fluidized bed prior to the supply thereto of a main fuel, said apparatus comprising

gas path means for supplying air to the fluidized bed for fluidization of said fluidized bed and for combustion of a main fuel supplied to the fluidized bed,

a plurality of fluidization members in said gas path means for injection and distribution of said air over said fluidized bed,

combustion members positioned adjacent said fluidization members for combustion of a starting fuel, said combustion members including fuel injectors, and

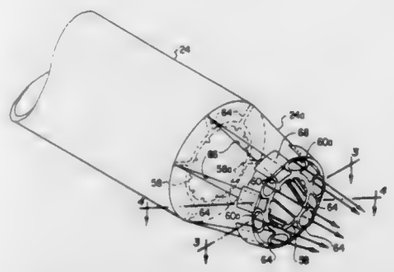
flow-directing members for splitting up air flow passing said fuel injectors into a turbulent subflow adjacent said fuel injectors and a main flow which is conducted past said flow-directing members to enable combustion of said starting fuel with a minimum disturbance and minimum pressure drop.

5,347,937

SPLIT STREAM BURNER ASSEMBLY

Joel Vatsky, West Orange, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Continuation of Ser. No. 826,557, Jan. 27, 1992, abandoned. This application Jul. 26, 1993, Ser. No. 97,547
Int. Cl.[5] F23D *1/02*
U.S. Cl. 110—261 7 Claims



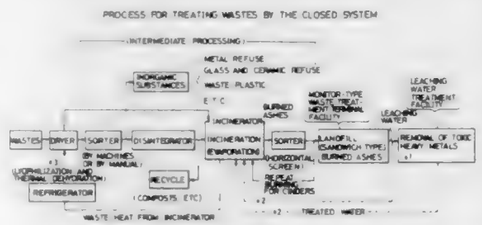
1. A burner assembly comprising an inner tubular member, and outer tubular member extending around said inner tubular member in a coaxial relation thereto to define an annular passage, a conical divider member extending between said inner tubular member and said outer tubular member for defining an inner annular passage and an outer annular passage each having an inlet and an outlet, means for introducing a mixture of air and particulate fuel into said annular passage in a tangential direction relative to said annular passage so that a majority of the fuel enters said outer annular passage by centrifugal forces, means for forming a plurality of angularly-spaced, discrete passages in said outer annular passage, each of said discrete passages having an inlet for receiving said mixture and an outlet for discharging said mixture, the cross-sectional area of each of said discrete passages gradually decreasing from its inlet to its outlet so that, upon discharging from said outlets of said discrete passages, said mixture forms discrete flame patterns upon ignition, and a plurality of ribs formed on the inner surface of said conical divider member for concentrating the fuel particles in said inner annular passage so that, upon discharge from said outlet said inner annular passage, said mixture forms an additional flame pattern upon ignition.

5,347,938

METHODS FOR PROCESSING WASTES USING POTENTIAL HEAT OF WASTE GAS PRIOR TO INCINERATION

Hidenao Takazawa, 4-6-18, Chuou, Kuki-city, Saitama, Japan

Filed Oct. 22, 1992, Ser. No. 964,710
Claims priority, application Japan, Apr. 2, 1992, 4-081178; May 21, 1992, 4-129120
Int. Cl.[5] F23G *5/12*
U.S. Cl. 110—346 23 Claims



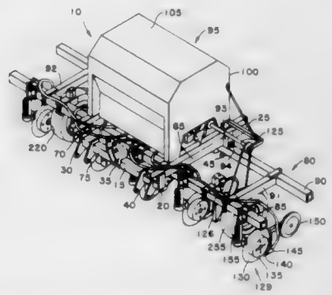
1. A method for processing wastes containing a large amount of water prior to incineration, comprising feeding wastes in a dryer equipped with a stirring means in which reduced pressure is maintained, stirring the wastes while blowing refrigerated air at −20° C.±5° C. into the dryer, and drying the wastes by sublimation.

5,347,939

AGRICULTURAL APPARATUS

Clarence E. Hood, Jr., Clemson, and Charles R. Dubose, Westminster, both of S.C., assignors to Clemson University, Clemson, S.C.

Filed Oct. 14, 1992, Ser. No. 961,163
Int. Cl.[5] A01B *59/043;* A01C *7/18*
U.S. Cl. 111—36 47 Claims



1. An agricultural apparatus, said apparatus comprising:

a) a three-point hitch frame with a front end and a rear end, said hitch frame including means for attaching to a vehicle and means for removably retaining a tool bar assembly, said means for retaining a tool bar assembly including a plurality of L-shaped retaining members respectively defining an opening directed toward said means for attaching to a vehicle; and

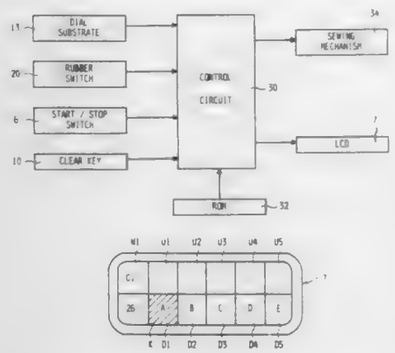
b) a removable tool bar assembly structurally independent of said three-point hitch frame, said tool bar assembly including front and rear tool bar members connected by cross support members including an integral portion configured to be bar members including an integral portion configured to be received within respective openings of said plurality of L-shaped retaining members, whereby said hitch frame can be disengaged from said tool bar assembly and other tool bar assemblies carrying varying configurations of tools can be engaged.

5,347,940

SEWING MACHINE AND PATTERN SELECTION APPARATUS

Masayuki Hori, Gifu, and Yoshiyuki Uyama, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 7, 1993, Ser. No. 87,077
Claims priority, application Japan, Aug. 28, 1992, 4-229929
Int. Cl.[5] D05B *19/00*
U.S. Cl. 112—121.11 21 Claims



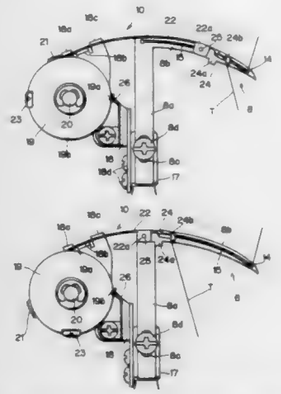
position indicating means for indicating a location of one of the subset of patterns displayed on the display means relative to the plurality of patterns stored in the storage means.

5,347,941

LOOPER THREAD GUIDING MECHANISM FOR FACILITATING THE LOOPER THREAD SETTING TO A LOOPER

Yasuo Mizuno, Toki, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 9, 1993, Ser. No. 44,499
Claims priority, application Japan, May 26, 1992, 4-133335
Int. Cl.[5] D05B *57/00*
U.S. Cl. 112—199 10 Claims



1. A looper thread guiding mechanism for guiding a looper thread to a looper of a sewing machine, the looper including a base portion and an arm portion extending from the base portion and having a thread hole at its tip end portion, a stitch being formed in a workpiece by a swinging motion of the looper in synchronism with a vertical motion of a sewing needle, the mechanism comprising;

a movable segment slidably and substantially linearly movable along the arm portion between a thread hooking position adjacent the thread hole and a stitching position adjacent to the base portion, the movable segment having a thread holding portion;

a drum rotatably supported on the base portion and positioned away from the arm portion; and

a linking member connected between the drum and the movable segment, the linking member being unwound from the drum upon angular rotation thereof in one direc-

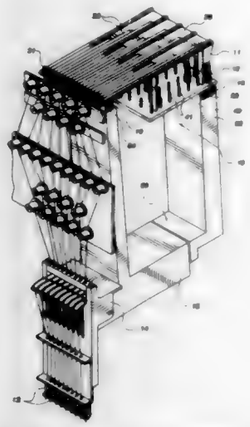
tion for positioning the movable segment adjacent to the thread hole, and being partly wound over the drum upon angular rotation thereof in an opposite direction for positioning the movable segment adjacent to the base portion so as to guide the looper thread to the base portion.

5,347,942

THREAD GUIDE AND RETAINING DEVICE

Charles D. Thomas, 7545 Butler Hills Dr., Salt Lake City, Utah 84121

Filed Mar. 22, 1993, Ser. No. 34,074
Int. Cl.[5] B65H *57/00*
U.S. Cl. 112—302 **6 Claims**



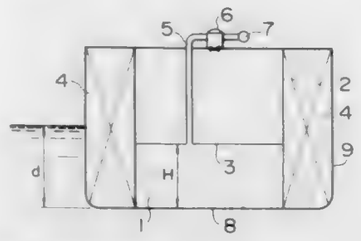
1. A thread feeding device for use with a sewing machine, said device comprising:
an array of guide channels having first openings at one end for receiving threads from rows of supply spools, and second openings at opposing ends for dispensing the threads for feeding to the sewing machine, said opposing ends of said guide channels facing in substantially the same direction to thereby cause said second openings to be positioned in substantial adjacent relation in front of the spools;
support means coupled to the array of guide channels for positioning the guide channels above the sewing machines with the second openings oriented toward a user; and
retaining means positioned in close, substantially equivalent proximity to each of the second openings to receive threads from the array of guide channels when not in use and to thereby retain the dispensed portions of the threads in spatial isolation from each other and in substantial adjacent relation in an accessible condition for ready grasp of the user when in a seated position;
wherein the support means comprises a support plate for supporting the array of guide channels in parallel relationship;
wherein the support means further comprises vertical positioning means for positioning the support plate and guide channels in a substantial horizontal orientation above the sewing machine;
wherein the guide channels are in a linear array and common plane in the horizontal orientation; and
further comprising a base plate which includes a plurality of spool supports for positioning supply spools in a convenient location for feeding threads to the first end of the guide channels, said support means being coupled to the base plate to form an integral unit which can be transported between different locations without disturbing thread supply through the guide channels or displacing retained threads from the retaining means.

5,347,943

TANKER FOR THE PREVENTION OF CARGO OIL SPILLAGE

Shigetomo Fujita; Tsukasa Hasegawa; Tomoe Hayashi, and Osamu Suzuki, all of Tokyo, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1991, Ser. No. 696,575
Claims priority, application Japan, May 23, 1990, 2-133611; Jun. 30, 1990, 2-173101; Feb. 26, 1991, 3-053951
Int. Cl.[5] B63B *25/08*
U.S. Cl. 114—74 R **1 Claim**



1. A tanker comprising:
a ship body having side walls and a bottom;
a plurality of cargo oil tanks arranged in an interior of said ship body;
double-sidewall hull constructions arranged on opposite sides of said cargo oil tanks to prevent outflow of cargo oil from said cargo oil tanks to outside of said side walls;
each double-sidewall hull construction comprising an inner hull formed by said tank side walls and a horizontal flat portion connected between said lower ends of said side walls of said upper cargo oil tanks and said upper ends of said side walls of said lower cargo oil tanks, said flat portion being disposed at substantially the same height from said bottom as said mid-height deck, so that each double sidewall has a width at said lower ends of said side walls of said upper cargo tanks less than the width of each double sidewall at said upper ends of said sidewalls of said lower cargo tanks; and
a mid-height deck arranged to divide said cargo oil tanks into upper cargo oil tanks and lower cargo oil tanks;
said mid-height deck having a highest position in a direction of height measured from said bottom determined to be lower than a position at which the following two pressures are equalized:
pressure of cargo oil exerted on said bottom when each lower cargo oil tank is filled with cargo oil from said bottom to the position of said mid-height deck under a condition of minimum ship draft as the tanker cruises with a cargo oil in said cargo oil tanks, and
pressure of sea water exerted on said bottom.

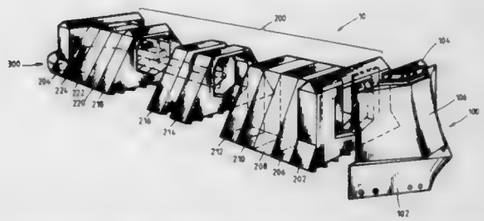
5,347,944

DEEP SEA SUPER PORT

Joseph K. Dupré, La Porte, and William Lamb, Houston, both of Tex.

Filed Aug. 14, 1991, Ser. No. 745,463
Int. Cl.[5] B63B *3/02*
U.S. Cl. 114—77 R **3 Claims**

1. A multi-purpose modularly constructed vessel comprising:
(A) a center section comprising:
(1) at least one containment unit where each comprises:
(a) a means for maneuvering disposed inside the containment unit;
(b) a means for controlling buoyancy disposed inside the containment unit;
(c) a means for handling cargo disposed inside the containment unit;
(d) a means for connecting the containment unit with another containment unit disposed in the sides of the containment unit;
(e) a means for cooling disposed inside the containment unit; and
(f) a means for controlling fires disposed inside the containment unit;
(2) at least one door section disposed at at least one end of the center section comprising:
(a) a means for maneuvering disposed inside the door section;
(b) a means for controlling buoyancy disposed inside the door section;
(c) a means for connecting a containment unit disposed on each side of the door section; and
(d) a means for cooling disposed inside the door section;



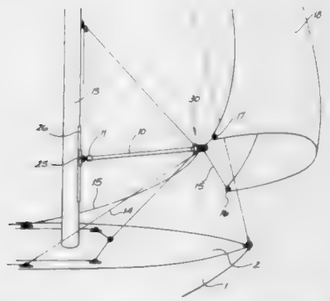
(B) a stern section disposed at one end of the center section comprising a means for steering and aligning; and
(C) a bow section disposed at the end of the center section opposite the stern section comprising:
(1) means for propelling the vessel disposed inside the bow section;
(2) means for navigating the vessel disposed inside the bow section;
(3) means for controlling the containment units disposed inside the bow section;
(4) means for controlling each door section disposed inside the bow section; and
(5) means for accommodating the needs of a crew disposed inside the bow section.

5,347,945

SPINNAKER POLE CONTROL SYSTEM AND SPINNAKER POLE END THEREFOR

Peter M. McAlpine, 8 Holt Avenue, Mosman, New South Wales, 2088, Australia

PCT No. PCT/AU91/00493, § 371 Date Oct. 5, 1993, § 102(e) Date Oct. 5, 1993, PCT Pub. No. WO92/07753, PCT Pub. Date May 14, 1992
PCT Filed Oct. 28, 1991, Ser. No. 70,413
Claims priority, application Australia, Oct. 26, 1990, PK3026
Int. Cl.[5] B63H *9/10*
U.S. Cl. 114—89 **10 Claims**



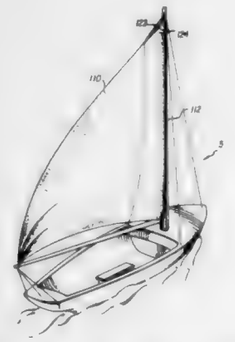
1. A spinnaker pole end for use with a spinnaker sail having port and starboard spinnaker pole brace lines extending from respective lower side corners thereof, the pole end comprising:
a body having an inner end adapted to be mounted to an end of a spinnaker pole;
first and second anchor means for attachment to a topping lift line and a kicker line respectively, the first and second anchor means being provided on opposite sides of the body;
a first brace line aperture adapted to feedably receive one of the port or starboard brace lines of the spinnaker sail, and a second brace line aperture adapted to feedably receive the other one of the port or starboard brace lines of the spinnaker sail, such that the pole end is selectively slidable along both of the brace lines towards or away from the respective lower corners of the spinnaker;
wherein the first and second brace line apertures are spaced further from the inner end of the body than the first and second anchor means, and extend through the body; and
wherein the body tapers in the direction away from the inner end of the body from a part thereof proximate the anchor means.

5,347,946

STRUCTURE FOR AERODYNAMIC TRANSITION BETWEEN MAST AND SAIL IN A SAILCRAFT

Lawrence J. Puckett, Churchville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 26, 1993, Ser. No. 157,457
Int. Cl.[5] B63B *15/00*
U.S. Cl. 114—90 **8 Claims**



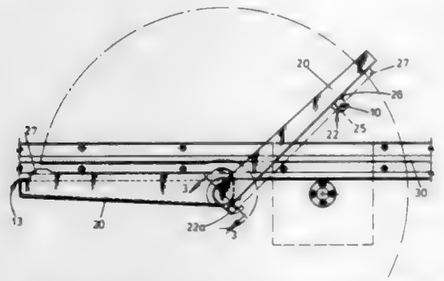
1. A sail structure for a sailcraft with a mast having a leading edge, a trailing edge and a transverse dimension, said trailing edge having a vertical arranged bolt rope groove for receiving a bolt rope, said sail structure comprising:
a sail having at least two luff panels extending from said mast and converging at a distance from said mast,
at least one insert for engaging said luff panels and said mast bolt rope groove so as to maintain a separation between said luff panels, and said separation corresponding substantially to said mast transverse dimensions,
a central sail membrane to which said luff panels are attached, said insert comprising at last a pair of inflatable tubes each disposed between said central sail membrane and a respective luff panel,
wherein, each luff panel is formed into a sleeve for receiving an inflatable tube,
whereby an aerodynamic airflow is maintained along said mast and said luff panel.

5,347,947

APPARATUS FOR CONTROLLING AIRCRAFT ON SHIPS OR THE LIKE

Thomas M. Craig, "Belmont" , Loanhead, Midlothian, United Kingdom EH2O 9SD

Continuation of Ser. No. 699,845, May 14, 1991, abandoned. This application Aug. 9, 1993, Ser. No. 103,833
Int. Cl.[5] B64F *1/22*
U.S. Cl. 114—261 19 Claims



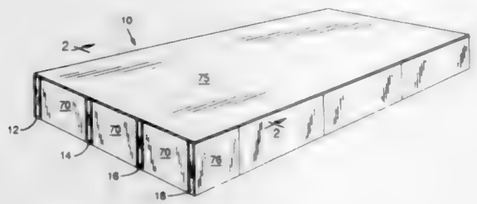
1. Aircraft securing apparatus for securing an aircraft against toppling on the deck of a ship comprising:
- a rotatable arm, rotatable about a fixed axis, for rotation in a plane substantially parallel to said deck to rotatably engage a downwardly projecting probe of an aircraft, said arm being mounted for rotation but not translation in said plane with respect to said axis;
- a releasable clamp on said arm for clamping onto said probe, said clamp slidable from a stored position to a plurality of probe-clamping positions relative to said rotatable arm;
- means disposed on said arm for sensing engagement of the probe with the arm and for actuating said clamp for movement to any one of said plurality of probe clamping positions; and
- drive means for rotating the arm to rotatably engage said probe.

5,347,948

PANELIZED FLOAT SYSTEM

David H. Rytand, P.O. Box 546, Bellevue, Wash. 98009-0546

Filed Aug. 13, 1993, Ser. No. 106,116
Int. Cl.[5] B63B *35/44*
U.S. Cl. 114—263 2 Claims



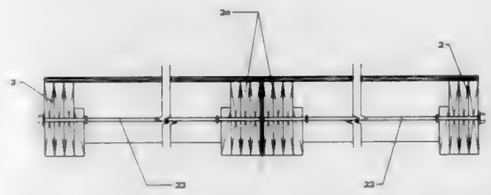
1. A floating dock comprising:
- a rectangular, box-like float element having opposite elongate sidewalls defined by a pair of elongate, substantially rigid beams extending substantially the length of the dock, compression-resistant means extending between said sidewalls adjacent the bottom edges of said beams, a substantially watertight wall extending between the bottom edges of said beams, and a compression-resistant top plate extending between said sidewalls the length thereof adjacent the top edges of said beams, a pair of end walls positioned one adjacent each of the opposite ends of said side walls, and extending therebetween;
- a first set of compression means extending through said beams beneath said top plate and acting on said beams such that said beams are engaged snugly with said top plate and said end walls, a second set of compression means extending through said beams adjacent said bottom wall and acting on said beams such that said beams are engaged snugly with said compression-resistant means and said end walls whereby said float element provides a hollow, substantially stable box beam defining a chamber;
- a buoyant material partially filling a predetermined upper portion of said chamber and providing a predetermined space therebeneath into which water may flow to provide a ballast;
- said walls defining a means for limited ingress and egress of water into the interior of said float element when the same is positioned in a body of water.

5,347,949

LANDLOCKED FLOATING HOUSE

Paul K. Winston, 9401 E. Chenango, Englewood, Colo. 80111

Filed Nov. 8, 1993, Ser. No. 148,580
Int. Cl.[5] B63B *38/00*
U.S. Cl. 114—264 1 Claim



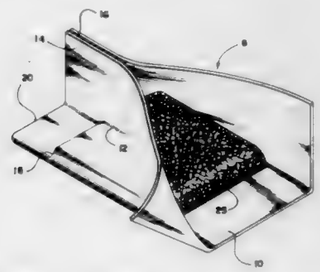
1. An improved modular housing unit of the type employing post tension frame construction, intended solely for building use on flood plain land areas, bays, and estuaries, and the said modular housing unit is floatable in its entirety, and is slidably moored and anchored to the building site, to permit substantially unrestricted independent movement of the housing unit in a direction substantially perpendicular to a body of impinging floodwater, comprised of:
- a factory built modular housing unit, available in many differing floor plans, which modular housing unit is built in two or more linear portions for later joining; with
- multi-ply, laminated lower perimeter framework with floor joists interspersed and connected therewith;
- a steel threaded clamping rod which secures and strengthens the perimeter framework of the linear portions and holds the portions together to form a complete modular housing unit assembly; and
- a flattened, expanded foam-type rigid floatation element which resides below the flooring of the modular housing unit assembly, and completely extends to the outermost perimeter of said housing unit flooring, and projects downwardly therefrom, in separate, truncated, U shaped pontoons placed below the flooring and lower perimeter framework of said modular housing unit assembly;
- a membrane which contains and defines the outward shape and positioning of the foam floatation element, and the membrane anchors the foam floatation element onto the housing unit;
- a plurality of inflatable and deflatable air bladders, adjoining the floatation element, the air bladders are positioned at the four comers of the housing unit, to provide additional floatation leveling and fine tuning during housing unit floatation and occupancy;
- a plurality of rot-proofed wooden piers which reside in the earth at the building site, and project upwardly from the earth, providing a stable dryland foundation resting means for the housing unit perimeter;
- a plurality of tubular, segmented, telescoping piers which reside in the earth at the building site, and project upwardly from the earth, and which uppermostly are attached to the housing unit assembly, at the housing unit perimeter, to provide a vertically moveable and height adjustable anchor means for permanently anchoring the housing unit on dry land, and during housing unit floatation on floodwaters;
- a shock absorbing, oscillation damping means contained internal to the plurality of said telescoping piers;
- a building site excavation sized to receive the said floatation element in its entirety, the site excavation is dug out and located under the housing unit assembly;
- a flexible, removable skirting, located between grade level and the housing unit lower perimeter framework, and connected only to the housing unit lower perimeter framework, not connected to any portion of any said pier pluralities;
- a plurality of flexible city utility connectors, which allow for a preset degree of housing unit upward movement before utility disconnect;
- a series of backup systems to provide utilities and water supply to the housing unit during extended floodwater presence, including;
- a plurality of holding tanks, for fresh water supply and septic holding, residing below the flooring of said housing unit;
- a intake pump with a filtered intake means directed toward the floodwater, and which intake pump serves to feed a greywater filtration and recycling system, which operates in conjunction with the said holding tanks;
- a electric generation means, gasoline, propane or solar powered, with utility interface means;
- a septic system ejector pump, releasably connected to the primary city sewer system that primarily serves the housing unit.

5,347,950

ANIMAL LITTER COMPOSITION AND PACKAGE

Loyd G. Kasbo, deceased, late of Norcross by Barbara A. Kasbo, executrix ; James D. Cotton, Marietta; Michael T. Morman, Alpharetta, and Gabriel H. Adam, Roswell, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 22, 1992, Ser. No. 887,726
Int. Cl.[5] A01K *1/015*
U.S. Cl. 119—171 12 Claims



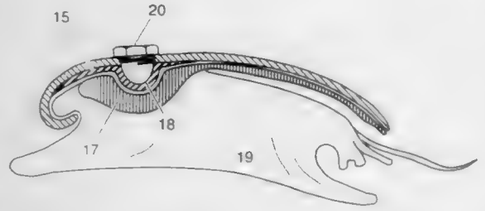
1. Animal litter comprising:
- a. ground and uncompacted agricultural biproduct selected from the group consisting of decorticated flax straw and flax shive which has particles sizes between about 10 and 22 U.S. Screen Mesh; and
- b. a virucidal composition.

5,347,951

PROCESS FOR PRODUCING PEARLS IN ABALONE AND OTHER SHELL-BEARING MOLLUSKA AND NUCLEUS USED THEREWITH

Peter V. Fankboner, Coquitlam, Canada, assignor to Pacific Pearl Culture Ltd., Port Coquitlam, Canada

Continuation-in-part of Ser. No. 836,161, Feb. 14, 1992, abandoned, Continuation-in-part of Ser. No. 614,303, Nov. 15, 1990, abandoned. This application Jun. 28, 1993, Ser. No. 82,496
Int. Cl.[5] A01K *61/00*
U.S. Cl. 119—244 56 Claims



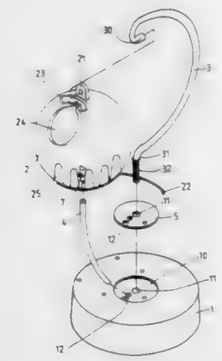
17. A pearl nucleus for use in nucleating shell-bearing molluska including abalone, said nucleus comprising:
- (a) a first portion around which nacre forms upon insertion of said pearl nucleus into the interior of a host mollusk through an opening formed in the shell thereof, said opening having a peripheral edge extending between an outer an inner surface of said shell; and
- (b) a plug-like second portion securely connected to said first portion, wherein said second portion comprises securing means formed on an external surface thereof for physically engaging said peripheral edge of said opening with a sufficient degree of force to prevent expulsion of said nucleus by said host mollusk or other molluska.

5,347,952

MINI TYPE AQUARIUM

Yung C. Tsai, 39, Shin Shing Lane, Dong Shan Rd., Ching Shui, Tiachung County, Taiwan

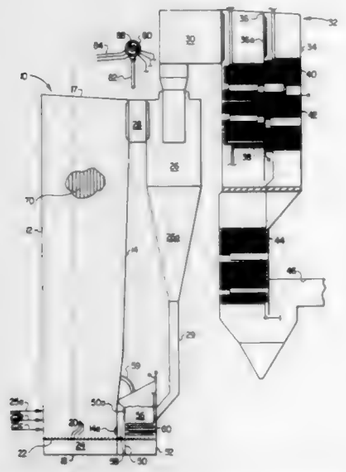
Filed Oct. 4, 1993, Ser. No. 130,998
Int. Cl.[5] A01K *63/00*
U.S. Cl. 119—246 1 Claim



1. An aquarium comprising a base, an air pump received in said base, a support including a lower end engaged in said base and including an upper end, a container including an upper portion coupled to said upper end of said support and including a bottom portion having at least one cavity formed therein, at least one light bulb received in said cavity of said container, a hole formed in said upper portion of said container, a check valve disposed in said bottom portion of said container and extended upward into said container and including a lower end

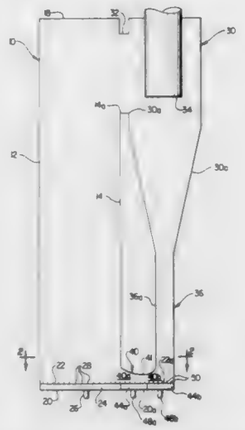
connected to said air pump for supplying air into said container.

5,347,953
FLUIDIZED BED COMBUSTION METHOD UTILIZING FINE AND COARSE SORBENT FEED
Igbal F. Adbulally, Randolph, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.
Filed Jun. 3, 1991, Ser. No. 709,243
Int. Cl.[5] B09B *3/00*; F23G *5/00*
U.S. Cl. 122—4 D 22 Claims



1. A fluidized bed combustion method comprising:
(a) forming a furnace section and a recycle heat exchange section;
(b) introducing fuel particles into said furnace section;
(c) combusting said fuel particles to form gaseous and solid products of combustion;
(d) introducing relatively fine and relatively coarse sorbent material into said furnace section at a ratio of said fine to said coarse sorbent material;
(e) fluidizing said furnace section with a fluidizing gas so that said fluidizing gas combines with said gaseous products of combustion to form flue gases which entrain portions of said fuel particles, said solid products of combustion, and said fine and said coarse sorbent materials;
(f) passing said flue gases and said entrained material from said furnace section;
(g) separating said entrained material from said flue gases;
(h) passing said separated entrained material to said recycle heat exchange section to cool said separated entrained material;
(i) passing said cooled entrained material to said furnace section;
(j) establishing a fluid flow circuit to transfer heat from said separated entrained material in said recycle heat exchange section to a fluid passing through said circuit, thereby heating said fluid; and
(k) varying said heat transfer to said fluid;
(l) adjusting said ratio of fine to coarse sorbent feed in response to said variation in said heat transfer to offset said variation in said heat transfer.

5,347,954
FLUIDIZED BED COMBUSTION SYSTEM HAVING AN IMPROVED PRESSURE SEAL
David H. Dietz, Hampton, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.
Filed Jul. 6, 1993, Ser. No. 89,982
Int. Cl.[5] F22B *1/00*
U.S. Cl. 122—4 D 17 Claims

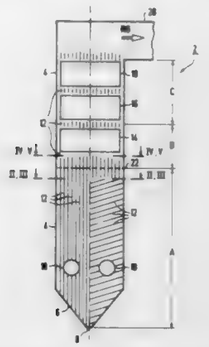


1. A fluidized bed combustion system comprising:
a furnace;
means for establishing a fluidized bed of combustible particulate material in said furnace;
separating means for receiving a mixture of flue gases and entrained particulate material from said fluidized bed in said furnace and separating said particulate material from said flue gases;
first duct means extending from said separating means for receiving said separated particulate material;
second duct means connecting said first duct means to said furnace, at least a portion of said second duct means increasing in cross-sectional area in a direction towards said furnace to promote the flow of said particulate material from said second duct means to said first duct means and to allow said particulate material to build up in said first duct means for establishing a pressure seal for preventing the backflow of said separated particulate material from said furnace to said separating means; and
means for establishing a relative dense fluidized bed and a relatively dilute fluidized bed in said second duct means for dampening pressure fluctuation from said furnace and promoting said flow of fluid particulate material through said second duct means.

5,347,955
STEAM GENERATOR
Eberhard Wittchow, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Sep. 30, 1993, Ser. No. 129,979
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1992, 4232880
Int. Cl.[5] F22B *37/00*
U.S. Cl. 122—6 A 9 Claims

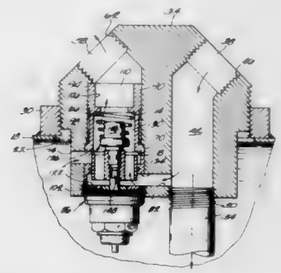
1. A fossil-fueled steam generator, comprising:
a vertical gas flue including a lower region being near a flame location, a region above said lower region being remote from the flame location, and an encompassing wall having tubes through which a medium can flow;

said tubes being gas-tightly connected together in said lower region, and said tubes being disposed next to one another



defining gaps between said tubes in said region above said lower region.

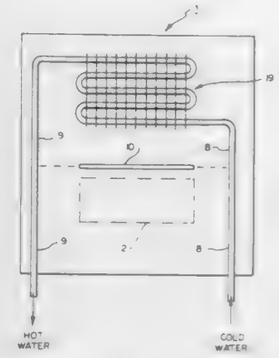
5,347,956
WATER HEATER WITH INTEGRAL MIXING VALVE
Dennis R. Hughes, Germantown, Wis., assignor to AOS Holding Company, Milwaukee, Wis.
Filed May 5, 1993, Ser. No. 57,726
Int. Cl.[5] F22B *5/00*
U.S. Cl. 122—13.1 17 Claims



1. A water heater comprising
a tank adapted to hold water,
means forming a water outlet communicating with said tank,
means forming a water inlet communicating with said tank and communicable with said outlet independently of said tank,
heating means for heating water in said tank, and
temperature responsive means in said tank for permitting unrestricted communication of heated water in said tank with said water outlet when the water temperature in said tank is below a predetermined value, and for restricting communication of heated water in said tank with said water outlet and providing communication of said inlet with said outlet independently of said tank when the water temperature in said tank is above said predetermined value.

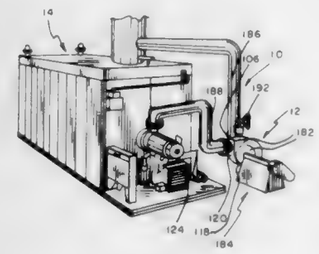
5,347,957
WATER HEATER WITH REDUCED NO_x OUTPUT
Tatsuya Sugahara, Tokyo, Japan, assignor to Tokyo Gas Company Ltd., Tokyo, Japan
Filed Jul. 23, 1992, Ser. No. 919,098
Claims priority, application Japan, Jul. 26, 1991, 3-209943; Oct. 24, 1991, 3-305496
Int. Cl.[5] F22B *5/02*
U.S. Cl. 122—18 15 Claims

1. A water heater with reduced nitrogen oxides output, having a partially aerated burner producing a laminar flame using partially premixed combustion constituents above a plurality of serially aligned flame ports, comprising:
a plurality of NO_x reducing water conduits disposed at a downstream side of said partially aerated burner in such a manner that one of cold water or hot water is supplied from one of cold water conduit or hot water conduit of said water heater into said plurality of NO_x reducing



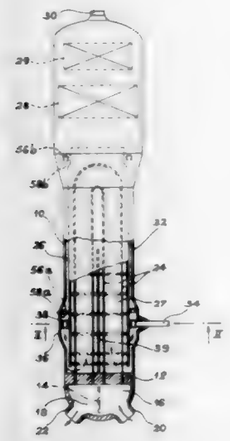
water conduits by means of a water introducing portion through one of a branching connection or a serial connection; and
said one of said hot water or said cold water being heated by absorbing heat through said plurality of NO_x reducing water conduits and returned to said cold water conduit or said hot water conduit through a water receiving portion.

5,347,958
HEAT RECOVERY APPARATUS AND AN IMPROVED HEAT RECOVERY METHOD
Merrill K. Gordon, Jr., P.O. Box 841, Winfield, Kans. 67156
Filed Dec. 31, 1992, Ser. No. 998,954
Int. Cl.[5] F22B *33/00*
U.S. Cl. 122—20 B 33 Claims



1. A flue gas recovery and/or recirculation and/or induced draft apparatus comprising a generally hollow housing; a fan rotatably secured to and within said housing; a motor secured to said housing for rotatably driving the fan; at least one flue gas damper pivotally mounted within the housing; a flue gas damper actuator connected to the housing for controlling and moving the flue gas damper; a diverter member adjustably secured to and within the housing for controlling and adjusting the quantity of flue gas to be emitted into a flue and to be recirculated to a burner; at least one recirculated gas damper pivotally mounted within the housing; and a recirculated gas damper actuator connected to the housing for controlling and moving the recirculated gas damper.

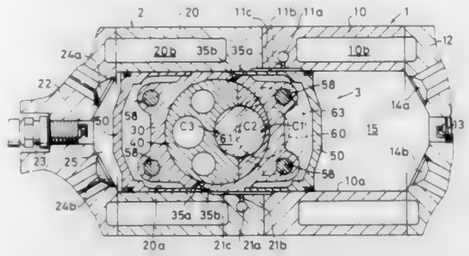
5,347,959
STEAM GENERATOR SUPPLIED WITH SECONDARY WATER FROM THE BOTTOM PART
Georges Slama, Saint-Maur; Thierry Daffos, Maurecourt; Henri Ayme, Suresnes; Yves Pascal, Nanterre; Bernard Cornu, Les Clayes Bas, and Philippe Denis, Puteaux, all of France, assignors to Framatome, France
Filed Feb. 16, 1993, Ser. No. 18,242
Claims priority, application France, Feb. 17, 1992, 92 01765; Mar. 5, 1992, 92 02650
Int. Cl.[5] F22B *1/02*
U.S. Cl. 122—32 16 Claims



1. Steam generator comprising a vertically axed outer envelope, a horizontal tube plate tightly fixed to the interior of the outer envelope, a bundle of inverted U-tubes, each having two ends fixed to the tube plate and issuing below the tube plate, respectively into an admission collector and into a discharge collector for the primary fluid, an inner envelope covering the tube bundle and having a lower edge spaced from the tube plate and forming with the outer envelope an annular recirculation space, secondary water supply means incorporating a main supply collector and secondary steam extraction means through upper parts of the inner and outer envelopes, wherein the main supply collector is disposed in the bottom part of the annular recirculation space and has holes ensuring a substantially vertical mean flow of the secondary water into said annular space, said holes having a maximum size smaller than a minimum distance separating the tubes of the bundle.

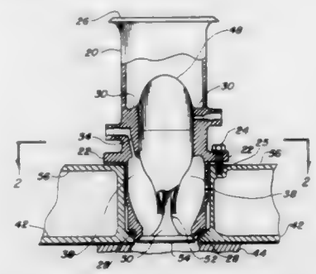
5,347,960
DOUBLE-ACTING PISTON ENGINE
Jyoji Tokumi, 3-3 2-chome, Hachiman, Kawashima-cho, Hiki-gun, Saitama, Japan
Filed Jul. 30, 1993, Ser. No. 100,089
Int. Cl.[5] F02B *75/32*
U.S. Cl. 123—63 4 Claims

1. A double-acting piston engine comprising:
a crankshaft rotatable about a first central axis and having a crankpin having a second central axis which is spaced a distance from said first central axis;
a cylinder assembly having a pair of cylinder chambers confronting each other along an axial line perpendicular to said first central axis, with said crankpin being disposed substantially between said cylinder chambers; and
a piston assembly slidably disposed in said cylinder chambers and coupled to said crankpin;
said piston assembly comprising:
a pair of pistons slidably fitted in said cylinder chambers, respectively;
a joint disposed in said cylinder chambers and having opposite ends coupled to said pistons, respectively, said joint having a cylindrical opening defined therein; and
a rotor rotatably fitted in said cylindrical opening for rotation about a third central axis, said rotor having an eccentric hole defined therein and spaced from said



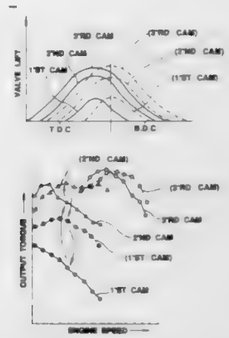
third central axis by a distance which is the same as said distance by which said second central axis is spaced from said first central axis, said crankpin being fitted in said eccentric hole thereby connecting said piston assembly to said crankpin.

5,347,961
ENGINE VALVE ACTUATING DEVICE
Harry W. Buehrle, II, 14 Alegria, Irvine, Calif. 92720; Lance E. Nist, 2824 S. Willis T., Santa Ana, Calif. 92705, and Raymond C. Clark, 5861 Woodboro, Huntington Beach, Calif. 92649
Filed Oct. 27, 1993, Ser. No. 141,647
Int. Cl.[5] F01L *9/04*
U.S. Cl. 123—90.11 18 Claims



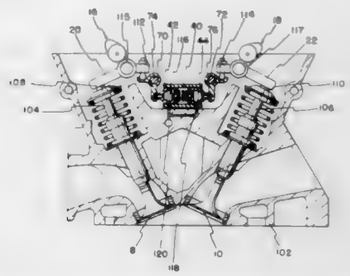
1. A reciprocating internal combustion engine valve actuating device disposed above each cylinder in an engine, the device comprising;
a cylindrical venturi duct having attaching means for securement to the engine, the duct is coaxial with a poppet valve;
a plurality of inwardly facing vanes within the venturi duct having fuel injection means therein, and
an electromechanical valve actuator centrally disposed within the duct supported by the vanes, said actuator having the poppet valve with a stem disposed within the valve actuator substantially parallel with the duct, the valve being reciprocated by electrical impulses creating an entrance from the duct to the engine cylinder for controlled induction.

5,347,962
VALVE MECHANISM OF INTERNAL COMBUSTION ENGINE
Makoto Nakamura; Shigeru Sakuragi, and Hiroshi Komatsu, all of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Jun. 24, 1992, Ser. No. 903,336
Claims priority, application Japan, Jul. 1, 1991, 3-160652
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.16 24 Claims



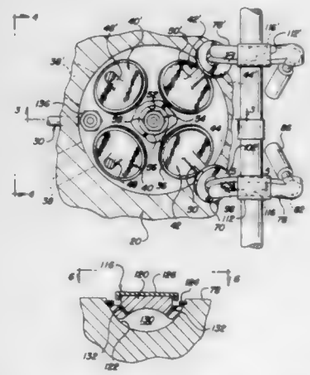
1. A valve mechanism of an internal combustion engine comprising:
first and second cams which are shaped to allow the engine to produce lower and higher output torques respectively;
switching means for switching between the first and second cams in accordance with an operating condition of the engine; and
phase changing means for changing the phase of at least one of said first and second cams one of just before and just after the cam switching is made by said switching means.

5,347,963
LASH ADJUSTMENT SYSTEM FOR AN INTERNAL COMBUSTION ENGINE
Inhwa Chung, Kyungki-do, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea
Filed Nov. 30, 1993, Ser. No. 159,362
Claims priority, application Rep. of Korea, Jul. 23, 1993, 93-14035
Int. Cl.[5] F01L *1/24*
U.S. Cl. 123—90.46 12 Claims



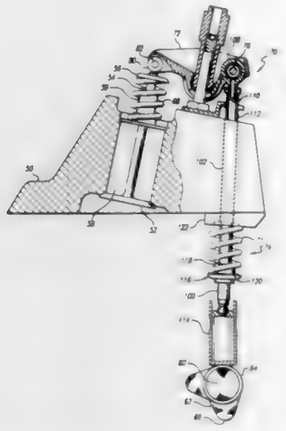
1. A lash adjustment system for a combustion engine having a cylinder head and a valve train for opening and closing an intake valve and an exhaust valve, the combination thereof comprising:
a guide member fixed on the cylinder head and having openings at opposing ends thereof;
a pair of plungers slidably disposed in said guide member, the plungers applying a force in opposite directions from each other, respectively;
a pair of levers respectively receiving a force from one of the plungers and selectively forcing a front end of a rocker arm into contact with a stem of the respective intake and exhaust valve;
a common chamber for receiving a hydraulic fluid and applying a pressure to one of the plungers to maintain a contacting force of the rocker arm and the valve stem;
a pair of independent chambers communicating with a hydraulic pressure passage and receiving the hydraulic fluid to supply again the hydraulic fluid exhausted from the common chamber when the valve is lifted; and
check ball means disposed between each independent chamber and the common chamber to supply the hydraulic fluid of the independent chamber to the common chamber.

5,347,964
VALVE TRAIN FOR INTERNAL COMBUSTION ENGINES
Jose F. Reguiero, Rochester Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Sep. 7, 1993, Ser. No. 116,629
Int. Cl.[5] F01L *1/02, 1/18*
U.S. Cl. 123—90.22 2 Claims



1. A valve train for opening and closing combustion chambers of a spark ignition internal combustion engine having an engine block with cylinders therein and a piston operatively mounted in each of said cylinders to define one end portion of a respective combustion chamber therein, a cylinder head operatively mounted on said block and having curved recesses therein aligned with said cylinders to define respective second end portions of said combustion chambers, and air intake and gas exhaust valves provided in said head, including at least first and second intake valves and first and second exhaust valves, valve seats for each of said valves, each of said valves having an enlarged sealing head portion fir operative engagement with an associated one of said valve seats and having an elongated stem portion extending from connection with said sealing head portion through associated stem openings in said cylinder head, each of said stem portions defining an axis and each being inclined so as to diverge away from the axis of any other of said stem portions to thereby define space therebetween to accommodate sparking plugs for said combustion chambers, an elongated finger follower for each of said valves, a cam associated with each of said finger followers which are mounted for movement in a plane angulated with respect to the axis of said associated valve, a contact pad for each of said cams and mounting means supporting said contact pads in said associated finger follower to permit rocking movement of said contact pad relative to said finger follower in response to a loading of said contact pad by an associated cam.

5,347,965
VALVE CONTROL DEVICE AND METHOD
Alex J. Decuir, Moreno Valley, Calif., assignor to Decuir Development Company, Riverside, Calif.
Filed May 28, 1993, Ser. No. 69,079
Int. Cl.[5] F01L *3/10, 1/14*
U.S. Cl. 123—90.61 41 Claims



1. A valve control device for controlling an engine valve in response to movement of a camshaft associated with the engine, the valve being contained within a cylinder head of the engine, and being movable between open and closed positions, comprising:

first valve closure means, associated with the valve, for resiliently resisting movement of the valve in response to movement of the camshaft; and

a valve engagement assembly, including

(a) a push rod which is reciprocable in response to the movement of the camshaft and is movable downward in response to actuation by the first valve closure means, and is movable upward from a neutral position occupied when the valve is closed,

(b) a rocker arm occupying a neutral position when the valve is closed and pivotally connected to the engine and associated with the push rod and engageable with the valve so as to open the valve when the push rod moves upward; and,

(c) second valve closure means, associated with the push rod, for actuating downward movement of the push rod when the valve is in an open position, the first and second valve closure means cooperating together to substantially simultaneously actuate the push rod downward and thereby return the valve to its closed position, the second valve closure means being adapted to itself substantially actuate the push rod and rocker arm into their respective neutral positions.

5,347,966
SPEED-DEPENDENT AIR INTAKE SYSTEM AND METHOD FOR INTERNAL COMBUSTION ENGINES
Jeff A. Mahon, Columbus, and Ross C. Berryhill, Nashville, both of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.
Filed Jun. 25, 1993, Ser. No. 81,944
Int. Cl.[5] F02N *17/02*
U.S. Cl. 123—179.21 25 Claims

1. An air intake heating system for use with an internal combustion engine having a battery and an alternator, comprising:

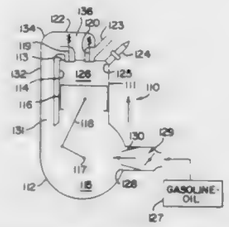
an electrically powered heater assembly for heating air that flows into an air intake of said engine to reduce white smoke emissions from said engine;

a power regulation circuit electrically connected between a power output of said battery and said alternator and said heater assembly for regulating the amount of electrical power conducted to said heater assembly from said battery and alternator;

means for sensing the rotational speed of the engine and for producing an electrical signal indicative of said engine speed, and

a control circuit means in communication with both the signal produced by said speed sensing means and said power regulation circuit for admitting different levels of power to the heater assembly dependent upon whether the engine speed sensed indicates that said battery or said alternator is to be the primary contributor of electrical power to the heater assembly.

5,347,967
FOUR-STROKE INTERNAL COMBUSTION ENGINE
Giuseppe P. I. Todero, Mandello del Lario, Italy, and Rodney L. Harms, Tucson, Ariz., assignors to McCulloch Corporation, Tucson, Ariz.
Filed Jun. 25, 1993, Ser. No. 82,677
Int. Cl.[5] F02B *75/02*
U.S. Cl. 123—317 22 Claims



1. A four-stroke internal-combustion engine fueled by a combustible mixture of fuel, oil and air, comprising:

a) an engine frame including a block portion, a head portion and a crankcase portion;

b) said head portion forming a valve enclosure and an intake valve and a valve actuating mechanism being mounted in said valve enclosure;

c) said block portion forming at least one cylinder and a piston mounted for reciprocation in said cylinder;

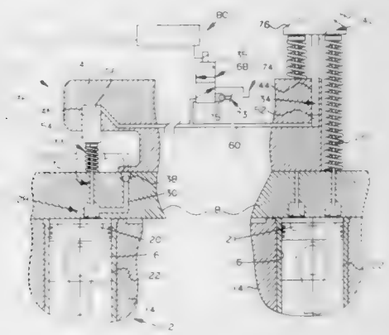
d) said frame forming a crankcase chamber and reciprocation of said piston alternately increasing and decreasing the volume of said chamber;

e) said frame having first and second ports therein communicating with said chamber, and first valve means associated with said first port for allowing flow into said chamber when said volume of said chamber is increasing;

f) a duct connecting said second port to said head portion for communicating said chamber with said valve enclosure; and

g) means for feeding said combustible mixture to said first port, said chamber and said enclosure being arranged to flow said mixture around and through said chamber and said enclosure and around said valve actuating mechanism for lubricating engine parts in said chamber and said valve actuating mechanism.

5,347,968
INTEGRAL AIR COMPRESSION SYSTEM
John L. Johnson, Jr., Brimfield, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed May 24, 1993, Ser. No. 65,729
Int. Cl.[5] F02D *13/04*
U.S. Cl. 123—320 12 Claims



1. An integral air compression system for an internal combustion engine having a block defining a plurality of cylinders, a head mounted in closing relation to the cylinder block to define a plurality of combustion chambers, a piston reciprocally disposed within each of the cylinders and movable between top dead center and bottom dead center positions sequentially defining an intake stroke, a compression stroke, an expansion stroke, and an exhaust stroke, and exhaust means operatively associated with each combustion chamber for permitting a flow of gas out of the combustion chamber during the exhaust stroke, comprising:

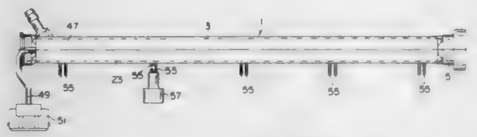
means defining a passage in the head in communication with one of the plurality of combustion chambers;

valve means for controlling communication between the one combustion chamber and the passage, the valve means being movable between closed and open positions;

means for selectively moving the valve means to the open position to permit a flow of air out of the one combustion chamber during the compression stroke; and

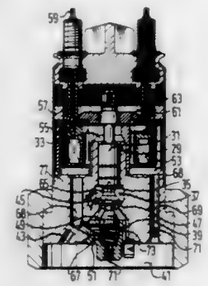
means connected to the passage for storing the flow of air expelled from the one combustion chamber.

5,347,969
CONTACT STRIP FOR PROVIDING COMMON ELECTRICAL CONNECTION OF SEVERAL ELECTRICALLY OPERATED FUEL INJECTION VALVES
Karl Gmelin, Flein, and Thomas Gregorius, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE92/00120, § 371 Date Nov. 23, 1992, § 102(e) Date Nov. 23, 1992, PCT Pub. No. WO92/16736, PCT Pub. Date Oct. 1, 1992
PCT Filed Feb. 20, 1992, Ser. No. 952,727
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1991, 4109653
Int. Cl.[5] F02M *55/02;* H01R *23/02*
U.S. Cl. 123—456 16 Claims



1. A contact strip that provides a common electrical connection to several electromagnetically operated fuel injection valves, which comprises a contact strip housing and at least two electrical connection leads which are arranged in at least one conductor channel, the contact strip (**1**) has at least one support part (**21**) which has at least one conductor channel (**39**), said at least one support part (**21**) and said contact strip housing are separate individual parts and said at least one support part (**21**) is connected to the contact strip housing (**3**), and at least two electrical connection leads in a lead line (**55**) project from the contact strip (**1**) and which serve to provide a connection to the electrically operated fuel injection valves (**11**).

5,347,970
FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINES
Werner Pape, East Grand Rapids, Mich., and Pierre Dronier, Meyzieu, France, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Dec. 16, 1993, Ser. No. 167,289
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1992, 4243665
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—506 8 Claims



1. A fuel injection device for internal combustion engines, having a pump piston (**1**) guided in a cylinder bore (**3**) of a pump housing (**5**), the piston being driven axially back and forth by a cam drive (**7**) and with one face end (**11**), remote from the cam drive (**7**), defining a pump work chamber (**13**), which communicates via a pressure conduit (**15**) with an injection valve (**17**) that protrudes into the combustion chamber of the engine to be supplied, and which is supplied with fuel from

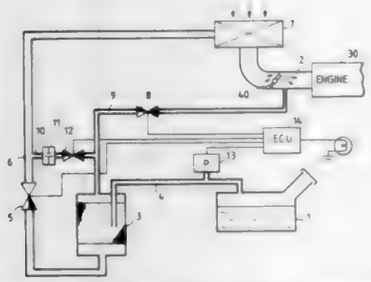
a fuel source (21) via a fuel line (19), which for controlling the high-pressure phase includes an electrically triggered magnet valve (25), whose valve member (31) is actuated by an electric actuator (33), divides a high-pressure chamber (43), formed by the pump work chamber (13) and the adjacent part of the fuel line (19) leading to the fuel source (21), by the contact of a sealing face (45) with a valve seat (47), or opens the communication between the two upon lifting up from the valve seat (47), wherein the valve member (31) has an annular cross-sectional constriction (65) in the region of a pressure chamber (37) that communicates with the high-pressure chamber (43), the valve member (31) has a bore that communicates continuously with the low-pressure chamber (41) and that in the event that the valve member (31) fractures in the region of the cross-sectional constriction connects the high-pressure chamber (43) to the low-pressure chamber (41).

5,347,971

APPARATUS FOR MONITORING AIR LEAKAGE INTO FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINE

Yasunori Kobayashi; Tsuguo Sugiura, both of Anjo, and Yoshiyuki Morita, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 7, 1993, Ser. No. 72,757
Claims priority, application Japan, Jun. 8, 1992, 4-147089
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—520 8 Claims



1. An apparatus for monitoring a degree of airtightness of a fuel supply system of an internal combustion engine comprising:

a purge control valve which modifies a purge flow rate of fuel vapor from a fuel tank into an intake passage of the engine;

orifice means for allowing ambient air to be introduced into the fuel supply system at a preselected flow restriction;

air leakage control valve means arranged in series with said orifice means to selectively establish fluid communication through said orifice means;

pressure detecting means for detecting pressure in the fuel supply system to provide a signal indicative thereof; and

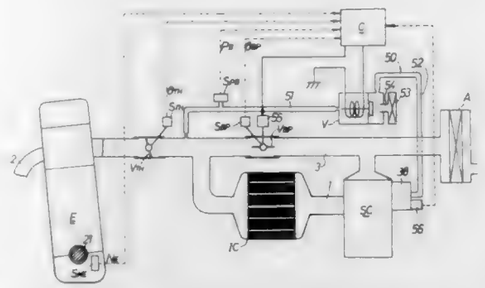
air leakage detecting means for determining a first pressure variation in the fuel supply system after said purge control valve is closed while the air leakage control valve means is closed and a second pressure variation in the fuel supply system after the purge control valve is closed while said air leakage control valve means is opened to allow the orifice to introduce the ambient air into the fuel supply system, said leakage detecting means determining a degree of airtightness of the fuel supply system based on a difference between the first and second pressure variations.

5,347,972

SUPERCHARGE PRESSURE CONTROL SYSTEM IN INTERNAL COMBUSTION ENGINE

Yasuyuki Sandou, and Nobu Takahashi, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1992, Ser. No. 997,359
Claims priority, application Japan, Dec. 26, 1991, 3-345464; Oct. 1, 1992, 4-263282
Int. Cl.[5] F02B *33/36*
U.S. Cl. 123—564 12 Claims



1. A system for controlling the supercharge pressure in an internal combustion engine having a mechanical supercharger which is connected to a crankshaft of the engine and includes a variable compressing means capable of varying an internal compression ratio, said system comprising:

a supercharge pressure varying means for varying a supercharge pressure which is fed through a passage to the engine

a detector for detecting the operational condition of the variable compressing means, and

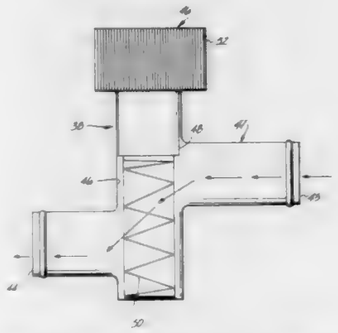
a control means for operating the supercharge pressure varying means towards a supercharge pressure reducing position in response to the operational condition of the variable compressing means being detected, by the detector, as establishing a low level compressing state in an operational condition of the engine in which the mechanical supercharger should be brought into a high level compressing state.

5,347,973

VACUUM RELIEF VALVE

Robert A. Walker, Jr., Northridge, Calif., assignor to Walker Design Inc., Van Nuys, Calif.

Filed Jun. 25, 1993, Ser. No. 82,750
Int. Cl.[5] F02M *25/06*
U.S. Cl. 123—574 13 Claims



1. A vacuum limiting valve for use in cooperation with an air-oil separator comprising

a housing having a passageway extending therethrough,

a conduit extending transversely of the passageway communicating with the passageway, said conduit being open at one end and closed at the opposite end;

a piston located within the conduit, said piston being movable between a plurality of positions within the conduit for adjusting the effective size of the passageway; and

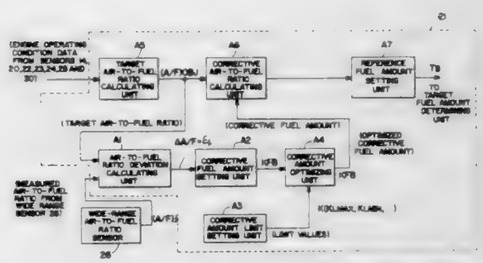
means for biasing the piston in a first open position adjacent the open end whereby a decrease in air pressure of a pre-determined magnitude in the passageway pulls the piston toward the closed end of the conduit thereby limiting the size of or completely closing the passageway and opening a pathway to atmosphere through said open end.

5,347,974

AIR-TO-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Kazuhide Togai, Osaka; Tetsurou Ishida, and Katsunori Ueda, both of Kyoto, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushi Kaisha, Tokyo, Japan

PCT No. PCT/JP92/00390, § 371 Date Dec. 31, 1992, § 102(e) Date Dec. 31, 1992, PCT Pub. No. WO92/17697, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 30, 1992, Ser. No. 949,881
Claims priority, application Japan, Mar. 28, 1991, 3-64681; Apr. 17, 1991, 3-85298
Int. Cl.[5] F02M *51/00;* F02D *9/06*
U.S. Cl. 123—682 22 Claims



1. An air-to-fuel ratio control system for an internal combustion engine, comprising:

a wide-range air-to-fuel ratio sensor located in an exhaust passage of the internal combustion engine for measuring an air-to-fuel ratio;

target air-to-fuel ratio calculating means for calculating a target air-to-fuel ratio which is determined according to operating conditions of the internal combustion engine;

air-to-fuel ratio deviation calculating means, operatively communicative with said wide-range air-to-fuel ratio sensor and said target air-to-fuel ratio calculating means, for calculating a deviation between the measured air-to-fuel ratio by said wide-range air-to-fuel ratio sensor and said target air-to-fuel ratio for setting a deviation signal;

corrective fuel amount setting means, operatively communicative with said air-to-fuel ratio deviation calculating means for changing the amount of fuel to be supplied from said deviation signal calculated by said air-to-fuel ratio deviation calculating means;

corrective amount limit setting means for setting at least one maximum corrective limit value according to said target air-to-fuel ratio; and

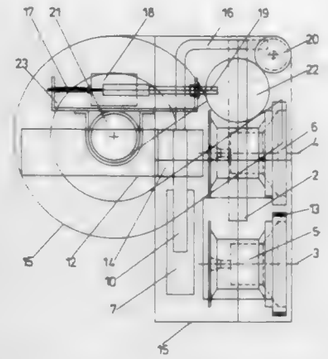
corrective amount optimizing means, operatively communicative with said corrective amount limit setting means and said corrective fuel amount setting means, for determining an optimum amount of fuel to be supplied within said corrective limit value based on the amount of fuel set by said corrective fuel amount setting means.

5,347,975

BALL THROWING DEVICE FOR TENNIS BALLS

Werner Salansky, Reinlgasse 5-9, A-1140 Vienna, Austria

Filed Dec. 1, 1992, Ser. No. 952,638
Claims priority, application Australia, Apr. 16, 1991, A801/91
Int. Cl.[5] F41B *4/00*
U.S. Cl. 124—78 9 Claims



1. A ball throwing device capable of automatically accommodating and throwing balls of different diameters, said device comprising:

a carrier member supporting a first roller for rotation about a first axis;

a rocking lever pivoted to said carrier member about a pivot axis parallel to said first axis and supporting a second roller for rotation about a second axis parallel to said first axis;

a motor mounted to directly drive only one said roller;

a spring mounted to urge said rocking lever to pivot about said pivot axis in a first direction to urge said second roller toward and into friction contact with said first roller such that drive of said one roller is transferred to the other said roller due to said friction contact therebetween;

a ball feeder to feed a ball to a region between said rollers such that rotation of said rollers throws the ball; and

the passage of the ball between said rollers urging said second roller away from said first roller and pivoting said rocking lever against the force of said spring in a second direction opposite to said first direction, during which said drive of said one roller is transferred to said other roller by the ball therebetween.

5,347,976

PEEP SIGHT WITH FIELD-VIEWING FRAME

Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Company, Columbus, Nebr.

Filed Jan. 15, 1993, Ser. No. 5,110
Int. Cl.[5] F41B *5/00*
U.S. Cl. 124—87 2 Claims

1. A dual-field sighting device for archery use, said device comprising frame means having bounding walls defining open window means for viewing broadly therethrough a sighting field delineated thereby,

a peep sight having a restricted, through sighting aperture, and vane means attached to and extending inwardly of said walls of said frame means for supporting said peep sight,

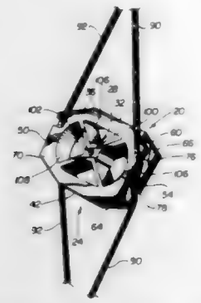
said peep sight being centered in said window means for target sighting through said restricted, through, sighting aperture formed in said peep sight,

guide means integrally formed with said frame means at lateral walls thereof for receiving divided strands of a bowstring therewithin for attaching said device to the bowstring,

said guide means including spaced parallel flanges extending

normally of and outwardly of each of a pair of opposed side walls of said frame means to define an open-ended passage within forward and rearward planar bounds of said frame means,

said passage constituting channel means for receiving bowstring strands trained and restricted therewithin,



staggered string slots being formed in said spaced parallel flanges and extending transversely through said flanges for receiving strands of the bowstring therethrough in a distorted configuration and in frictionally gripping, tensioned, and stressing engagement with bounding walls of said slots in in said flanges to obviate any need to employ other mechanical means for securing said sighting device in selectable positions along the bowstring.

5,347,977

COMBINATION OF A BAKING OVEN AND A STOVE

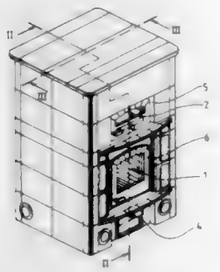
Antti Lehikoinen, Juuka, and Kyösti Nuutinen, Nunnanlahti, both of Finland, assignors to Suomen Voulukivi OY, Nunnanlahti, Finland

Filed Apr. 8, 1993, Ser. No. 39,071

Claims priority, application Finland, Oct. 26, 1990, 905306

Int. Cl.[5] A21B *1/00*

U.S. Cl. 126—19 R **7 Claims**



1. Combination of a baking oven and a stove, comprising means forming a stove for burning wood, means forming an ash chest under the stove, means forming a baking oven above the stove, means forming a secondary combustion chamber above the baking oven, means forming a fire cover above the secondary combustion chamber, and means forming a flue, wherein a first conduit for combustion and flue gases extends from the stove into said secondary combustion chamber, wherein a second conduit for combustion and flue gases extends from said baking oven to said secondary combustion chamber, wherein cheek conduits extend downwardly from the secondary combustion chamber on both sides of the combination into said flue, and wherein the first and second conduits are substantially separate from each other.

5,347,978

ECO-GRILL PAN

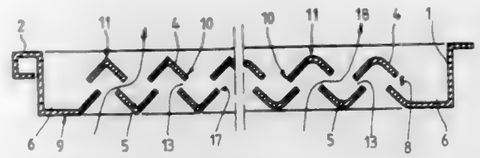
Johann Zuran, Köpenicker Strasse 161, D-1000 Berlin 47, Fed. Rep. of Germany

Filed Feb. 5, 1993, Ser. No. 13,782

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1992, 4203726

Int. Cl.[5] F24C *3/00*

U.S. Cl. 126—41 R **4 Claims**



1. A grill pan comprising:

a grill surface (**3**) of one-piece casting having an edge (**2**) at a periphery of the grill surface (**3**) and a collecting channel (**6**) at an inner side of the edge (**2**) and having a plurality of grill rods (**4**) spaced apart from one another and a drain channel (**5**) positioned beneath each space between the grill rods (**4**), each grill rod (**4**) and each drain channel (**5**) defining a ventilation slit (**13**) therebetween, each grill rod (**4**) having an upper edge (**11**) and at least one drip edge (**10**) lower than the upper edge (**11**), the grill surface (**3**) also having a collecting channel (**7**) transverse to the drain channels (**8**).

5,347,979

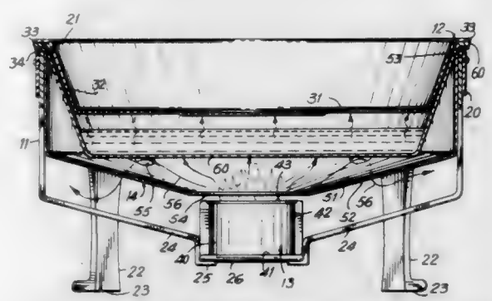
CHAFING DISH FOR OUTDOOR USE

Robert H. Haber, Woodcliff Lake, N.J., assignor to D. W. Haber & Son, Inc., Bronx, N.Y.

Filed Oct. 29, 1993, Ser. No. 142,977

Int. Cl.[5] F24C *5/00*

U.S. Cl. 126—43 **1 Claim**



1. In a chafing dish of a type including a main frame, a food serving pan supporting by said main frame, and a cylindrical combustible heat source element having a diameter also supported by said main frame disposed beneath said pan, the improvement comprising: a flame shield element carried by said main frame and positioned beneath said pan, said flame shield element being of frusto-conical configuration and tapering in a downward direction to define a centrally disposed planar opening of size corresponding to the diameter of said heat source element, said flame shield element having an outer peripheral edge and having through openings therein adjacent said peripheral edge to provide even distribution of heated air emanating from said heat source element; said opening in said flame shield element being positioned immediately above said heat source element a distance sufficient to provide air for combustion of fuel in said heat source element, while preventing excess air flow to said heat source element upon the occurrence of horizontally directed wind flow.

5,347,980

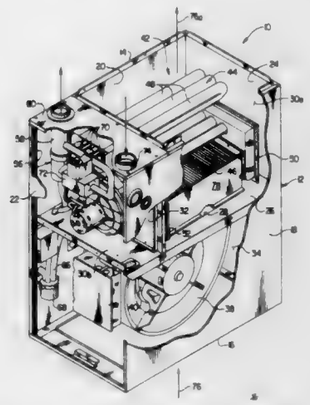
DUAL DRAINAGE SLOPE RECUPERATIVE HEAT EXCHANGER ASSEMBLY FOR FUEL-FIRED CONDENSING FURNACES

Timothy J. Shellenberger, Fort Smith, Ark., assignor to Rheem Manufacturing Company, New York, N.Y.

Filed Feb. 3, 1994, Ser. No. 190,917

Int. Cl.[5] F24H *3/02*

U.S. Cl. 126—110 R **14 Claims**



1. A recuperative heat exchanger assembly operatively mountable in a fuel fired condensing furnace in the path of air flowing therethrough, said recuperative heat exchanger assembly being positionable in a vertical air flow orientation and rotatable therefrom ninety degrees about a horizontal axis to a horizontal air flow orientation, said recuperative heat exchanger assembly comprising:

an inlet collector box structure for receiving hot combustion gas generated by the furnace during operation thereof;

an outlet collector box structure, said outlet collector box structure being spaced apart from said inlet collector box structure in a horizontal direction parallel to said horizontal axis when said recuperative heat exchanger assembly is in said vertical air flow orientation thereof, and having a combustion gas outlet opening and a condensate drain outlet opening therein; and

a secondary heat exchange structure interconnected between said inlet and outlet box structures and having a combustion gas passage through which the interiors of said inlet and outlet collector boxes communicate, said secondary heat exchange structure being canted relative to said inlet and outlet collector box structures, in two mutually perpendicular directions, in a manner such that when said recuperative heat exchanger assembly is in either of said vertical and horizontal air flow orientations thereof said secondary heat exchange structure slopes downwardly toward said outlet collector box structure.

5,347,981

PILOT PRESSURE SWITCH AND METHOD FOR CONTROLLING THE OPERATION OF A FURNACE

Malcolm Southern, and Walter Wolenski, both of Houston, Tex., assignors to Goodman Manufacturing Company, L.P., Houston, Tex.

Filed Sep. 7, 1993, Ser. No. 117,308

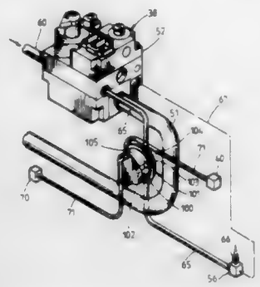
Int. Cl.[5] F24H *3/00*

U.S. Cl. 126—116 A **9 Claims**

1. A pilot pressure switch for a furnace having a continuously burning pilot flame in fluid communication with a furnace gas valve by a pilot line disposed between the pilot flame and the gas valve, the furnace also including a thermostat and a blower control with at least one wire disposed between the thermostat and the blower control, comprising:

a means for detecting the fluid pressure within the pilot line, the fluid pressure detecting means being disposed in fluid communication with the pilot line; and

a means for controlling the passage of an electrical signal through the at least one wire in response to the fluid



pressure detected in the pilot line, whereby if the fluid pressure detected in the pilot line exceeds a predetermined fluid pressure, the electrical signal from the thermostat passes through the at least one wire to the blower control.

5,347,982

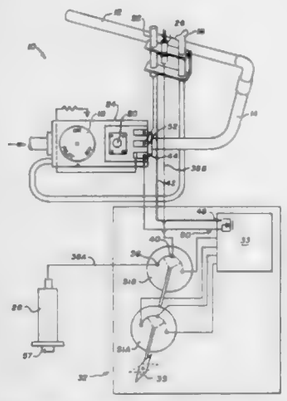
FLAME MONITOR SAFEGUARD SYSTEM

Lothar Binzer, Surrey; Didace E. Morrissette, Union Bay, and Ronald Toth, Burnaby, all of Canada, assignors to Canadian Heating Products Inc., Surrey, Canada

Continuation-in-part of Ser. No. 995,361, Dec. 21, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 120,165

Int. Cl.[5] F24B *1/187*

U.S. Cl. 126—503 **5 Claims**



1. In a gas burning fireplace having a burner for producing a flame, a rod in the vicinity of the burner, a gap between the burner and the rod and wherein the flame is produced in said gap, apparatus for monitoring the presence of a flame comprising battery means for applying a DC voltage derived from said battery between the rod and the burner, and electronic circuit means for sensing a DC current between the rod and the burner.

5,347,983

DRAFT HOOD ATTACHMENT DEVICE

Ronald J. Shimek, 6665 West Hwy. 13, Savage, Minn. 55378

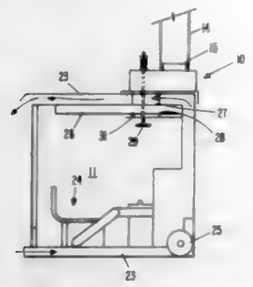
Filed Mar. 25, 1993, Ser. No. 36,956

Int. Cl.[5] F24B *1/188*

U.S. Cl. 126—529 **9 Claims**

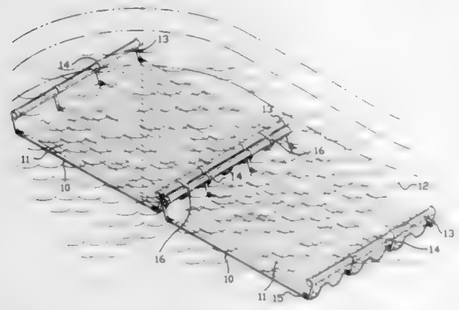
1. A draft hood device for mounting on top of a gas conversion unit in a fireplace enclosure, comprising:

a box having an exhaust inlet in the bottom and an exhaust outlet adaptor in the top,
positioning means on the sides of said box for aligning and positioning said box on the top of said gas conversion unit,
down draft diverter means mounted inside of said box in between said exhaust inlet and exhaust outlet, and



means for connecting and aligning said draft hood device to the top of said gas conversion unit which includes spring means for applying a coupling force between said box and the top of said gas conversion unit.

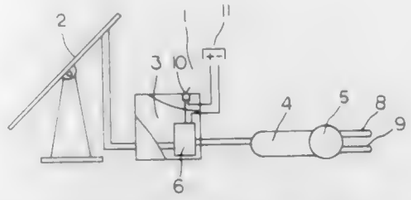
5,347,984
SOLAR POOL HEATER
Johannes A. Klaren, 3520 W. Cogwood Cir., Beverly Hills, Fla. 34465
Filed Feb. 19, 1994, Ser. No. 194,858
Int. Cl.[5] F24J *2/42*
U.S. Cl. 126—564 **2 Claims**



1. A new and improved solar pool heater comprises:
a flexible corrugated plastic sheet having a black upper surface and a white lower surface; a pair of floatable tubular plastic floats disposed on opposite parallel edges of said sheet; a plurality of rigid hook members releasably suspended from said plastic floats; clips on the lower ends of said hook members releasably engaging and supporting said plastic sheet below the surface of water on which said plastic floats are to be supported.

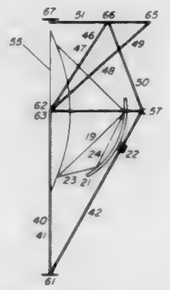
5,347,985
CONSTANT TEMPERATURE SOLAR WATER HEATER SWITCH
Douglas A. Bucciarelli, 515 Leffingwell #210, Ellenton, Fla. 34222
Filed Mar. 3, 1993, Ser. No. 25,620
Int. Cl.[5] F24J *2/40*
U.S. Cl. 126—572 **3 Claims**

1. A constant temperature solar water heater switch control apparatus, for using the solar rays of the sun to control a relay, said relay directing 110 V commercial power to a motor-pump apparatus, and said motor-pump apparatus pumping water through a solar PV water heating system, said water to be solar heated, and pumped through a using apparatus, comprising:
a substantially square box type enclosure, said enclosure having at least one side open,
a substantially square cover, said cover removeably covering the open side of said enclosure,
a solar PV panel



a relay, said relay having sufficient contacts to switch 110 V commercial power to a motor-pump apparatus,
a variable resistor, said resistor having capability to compensate for various 110V load requirements of said relay,
a manual over-ride test switch, said over-ride switch to provide commercial power to said motor-pump apparatus for maintenance use.

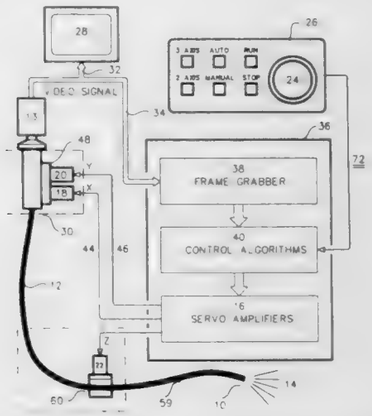
5,347,986
SOLAR POWERED HIGH PRESSURE STEAM GENERATOR
Clifford B. Cordy, 2134 Beall La., Central Point, Oreg. 97502-1555
Filed Feb. 2, 1993, Ser. No. 13,811
Int. Cl.[5] F24J *2/38*
U.S. Cl. 126—574 **16 Claims**



1. A system for generating steam using solar energy, the system comprising:
a concentrator dish for receiving, concentrating and focusing the solar energy on a first focal area, the dish having a reflective front surface and bracing members extending a predetermined distance behind the reflective surface of the dish;
a receiver mounted on the concentrator dish at the first focal area for receiving the solar energy focused by the concentrator dish and for transferring the solar energy to a working fluid;
a cradle forming a gimbal mount for mounting the concentrator dish and the receiver, the cradle being movable around a polar axis and permitting the concentrator dish and its bracing members to move around both a polar axis and a declination axis within the cradle, the cradle delivering all forces along the polar axis to the earth at the end of the cradle nearest the equator, the cradle comprising 12 members, one of which may comprise the concentration dish and only one of which experiences flexural forces;
a solar tracking system to maintain a solar image upon the receiver;

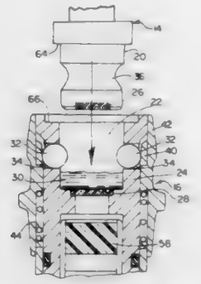
a computer controlled positioning system to maintain the dish's position in the absence of the solar image;
a first reversible drive system coupled to the concentrator dish for driving the concentrator dish around the declination axis;
a second reversible drive system coupled to the concentrator dish for driving the concentrator dish around the polar axis; and
a plumbing system mounted on the cradle and concentrator dish and coupled to the receiver for carrying a working fluid to the receiver and for carrying heated working fluid from the receiver to a load.

5,347,987
SELF-CENTERING ENDOSCOPE SYSTEM
David A. Feldstein, 101 Broadway, Creskill, N.J. 07626, and Kenneth A. Altman, 38 Homestead Rd., Tenafly, N.J. 07670
Continuation-in-part of Ser. No. 682,082, Apr. 8, 1991, abandoned. This application May 4, 1992, Ser. No. 876,628
Int. Cl.[5] A61B *1/04*
U.S. Cl. 128—4 **5 Claims**



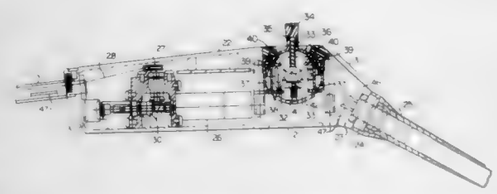
1. A system for centering a head of an endoscope within a lumen to be examined, as said head is advanced longitudinally within said lumen, the system comprising:
(a) an endoscope including a head and a light source, said head including a video camera in optical communication with said light source, said endoscope light source and said video camera comprising means for generating a sequence of video frames;
(b) means for acquiring, freezing and digitizing individual frames of said sequence of frames, and storing each digitized frame in a memory location group;
(c) means for establishing a pre-set gray scale parameter corresponding in reflectivity to the center of the lumen to be examined, said pre-set parameter being particularly established for each endoscope make and model;
(d) means, in said memory location group, for applying a co-ordinate sector mask over each stored video frame, each sector of said mask having a digital set of memory addresses equal in number to every other stored sector sets.
(e) means for assigning a gray scale value for each of said sectors within said sector mask, in which an average value of the gray scale values of the digital set of each sector in memory is taken;
(f) means for establishing computer memory location for each assigned gray scale sector value;
(g) means for obtaining the darkest sector in said memory locations.
(h) means for determining if said gray scale value of said darkest sector is less than said pre-set parameter;
(i) means for determining if an average gray scale value of sectors contiguous to said darkest sector is less than said pre-set parameter;
(j) means for utilizing further search patterns if said darkest sector is greater than the pre-set parameter, said means comprising means for angularly advancing a tip of said head of said endoscope in discreet circular search patterns of successively increasing radii until a sector is located which is less than the pre-set parameter;
(k) means for calculating a vector between said located sector and the origin of the sector mask; and
(l) feedback means for servo-mechanically re-positioning said endoscope head in accordance with said calculated vector.

5,347,988
ENDOSCOPE COUPLER WITH LIQUID INTERFACE
Koichiro Hori, Framingham, Mass., assignor to Linvatec Corporation, Largo, Fla.
Filed May 13, 1992, Ser. No. 882,395
Int. Cl.[5] A61B *1/00*
U.S. Cl. 126—4 **20 Claims**



1. An endoscope assembly, consisting essentially of:
an elongated endoscope having a distal end and a proximal end with a first transparent window disposed in said proximal end;
a coupler having a distal end with a second transparent window disposed therein, and a proximal end adapted for connection to apparatus for forming a visible image; and
joining means for connecting said endoscope to said coupler with a predetermined space between said first and second windows, the size of said space being selected to permit substantially unimpeded transmission of light therethrough when the space is filled with a transparent liquid.

5,347,989
CONTROL MECHANISM FOR STEERABLE ELONGATED PROBE HAVING A SEALED JOYSTICK
Richard A. Monroe, Liverpool; Jeffrey Perkins, Tully, and Robert J. Wood, Syracuse, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.
Filed Sep. 11, 1992, Ser. No. 943,929
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **7 Claims**



1. A video probe comprising an elongated insertion tube that includes an articulated bending section at its distal end, which

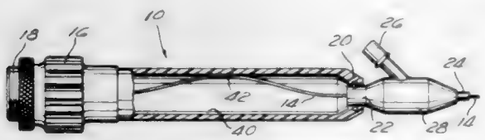
includes a cable-driven bending mechanism in which at least one pair of cables is moved differentially to bend the articulated bending section, and a control handle which is attached onto a proximal end of the insertion tube, said video probe receiving the at least one pair of cables which pass from the bending mechanism through the insertion tube; said video probe including a housing in which a proximal end of the insertion tube is affixed, actuator means within the housing for differentially moving said at least one pair of control cables, and a joystick control member having a joystick handle protruding from said housing and coupled to said actuator means for moving said control cables in response to manipulation by an operator of said joystick handle; wherein said joystick handle includes a wineglass member having a generally hemispherical bowl portion and a stem portion projecting from said bowl portion; wherein said housing includes an opening through which said stem portion projects and annular sealing means in contact with said bowl portion permitting movement of said wineglass member in two dimensions while sealing said bowl member against infiltration; and an annular resilient ring seal positioned against an underside of said bowl portion opposite said annular sealing means to urge the bowl portion against said sealing means.

5,347,990

ENDOSCOPE WITH STERILE SLEEVE

Wendell V. Ebling, 21131 Kensington La., Lake Forest, Calif. 92630, and J. Charles Elmore, Mission Viejo, Calif., assignors to Wendell V. Ebling, Lake Forest, Calif.

Filed Oct. 8, 1992, Ser. No. 959,272
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **28 Claims**



1. An endoscope comprising:
a) a fiber optic image bundle;
b) a sleeve having proximal and distal ends and having a bore formed therein, said bore having a diameter sized greater than said fiber optic image bundle such that said fiber optic image bundle is freely insertable through the proximal end into said bore;
c) a window formed proximate the distal end of said sleeve;
d) means for axially biasing the fiber optic image bundle toward said window such that said fiber optic image bundle is maintained in abutment with said window; and
e) wherein said sleeve and said window isolate said fiber optic image bundle from a patient such that said fiber optic image bundle need not be sterilized prior to use.

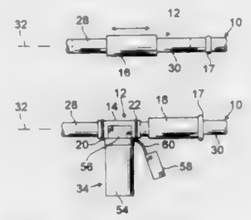
5,347,991

ENDOSCOPE SUCTION TRAP AND ASSOCIATED METHOD

Naomi L. Nakao, 303 E. 57th St., New York, N.Y. 10022; Michael A. Nakao, 284 Hudson Ave., Albany, N.Y. 12210, and John V. Mizzi, 30 Cramer Rd., R.F.D. #3, Poughkeepsie, N.Y. 12603

Filed Oct. 20, 1992, Ser. No. 963,846
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **27 Claims**

1. A method for use in endoscopic investigations, comprising the steps of:
providing an endoscopic insertion member with a suction line;
inserting said endoscopic insertion member with said suction line into a patient;
visually inspecting organic tissues inside said patient with said endoscopic insertion member;
moving a generally cylindrical port cover mounted externally on said suction line to open a port in said line;
rigidly coupling a specimen vial to said suction line at the opened port so that said suction line communicates with said vial;



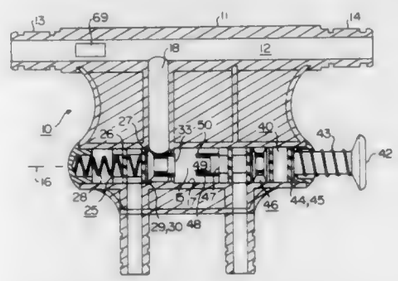
applying a vacuum to said suction line to draw a fluid specimen into said vial;
detaching said vial from said suction line; and
moving said port cover back into position to again cover said port.

5,347,992

SINGLE AXIS THREE WAY SELECTOR VALVE FOR ENDOSCOPES

Marshall B. Pearlman, and Eric M. Jones, both of Los Angeles, Calif., assignors to Karl Storz Endoscopy America, Inc., Culver City, Calif.

Filed Jan. 22, 1993, Ser. No. 8,788
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **9 Claims**



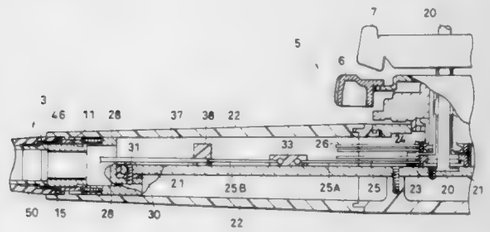
1. A single axis three way selector valve for connecting a common channel to one or the other of two sources, or to neither source, comprising:
a valve body having said common channel, and a valve bore having a linear axis and a cylindrical wall;
a common port interconnecting said valve bore and said common channel, a first source port and a second source port both passing into the body and opening into said valve bore, one on each axial side of the common port;
a first valve spool on the same axial side of the common port as the first source port, a pair of peripheral sliding seals around said first valve spool axially spaced apart so as to span said first source port in the rest position of said first valve spool, first spring bias means pressing said first valve spool toward said rest position, and stop means on said body and said first valve spool limiting the movement of said first valve spool toward said common port to said rest position, and contact means on said first valve spool;
a second valve spool on the same side of the common port as the second source port, two pairs of peripheral sliding seals around said second valve spool axially spaced apart from one another, a peripheral inlet relief in the surface of said second valve spool between the adjacent seals, one from each pair, said seals being so disposed and arranged that adjacent ones of said seals can span said second source port, a flow passage in said second valve spool interconnecting said peripheral inlet relief and the valve bore, by-passing one of said pairs of seals, a second spring bias means pressing said second valve body toward a rest position farthest removed from said common port where it closes said second source port, and stop means on said body and said second valve spool limiting the movement of said second valve spool away from said common port to said rest position, and contact means on said second valve spool, said contact means being spaced apart sufficiently to permit said second valve spool to more from its rest position to open said second source port, thereafter to engage and upon further axial movement also to move said first valve spool to open said first source port and close said second source port, said common port always being open.

5,347,993

BODY CAVITY DIAGNOSTIC APPARATUS

Toshizumi Tanaka, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Feb. 18, 1993, Ser. No. 19,254
Claims priority, application Japan, Feb. 20, 1992, 4-070349; Feb. 20, 1992, 4-070350
Int. Cl.[5] A61B *8/12*
U.S. Cl. 128—4 **11 Claims**



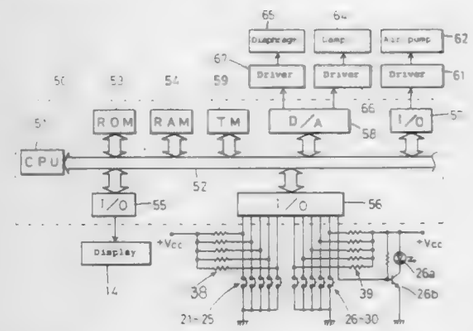
1. A body cavity diagnostic apparatus comprising in combination:
a main body;
an inner electrically insulating cover made of an elastic rubber material;
an outer electrically insulating cover made of synthetic resin;
members having outsides and which constitute a structural part of said main body;
wherein said inner and outer insulating covers are connected in such a manner as to overlap each other on said metal member outsides, said apparatus further comprising a bent portion connected to an insert portion, a control portion and a connecting portion for said insert and control portions,
wherein said inner and outer insulating covers and said annular airtight member are applied to said connecting portion for an operating portion and said bent portion connected to an insert portion which is inserted into a cavity of an object of inspection; and
an annular airtight member which is disposed between said insulating covers.

5,347,994

ENDOSCOPE LIGHT SOURCE APPARATUS WITH SETTING ENABLE AND DISABLE MODES

Tadashi Takahashi, and Katsuhiko Furuya, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1992, Ser. No. 903,576
Claims priority, application Japan, Jun. 27, 1991, 3-156527
Int. Cl.[5] A61B *1/04*; G03B *29/00*
U.S. Cl. 128—6 **8 Claims**



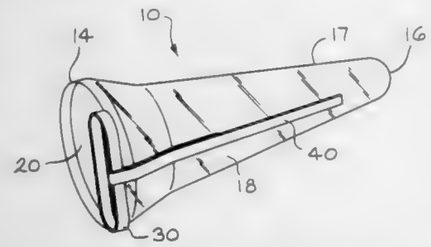
1. A light source apparatus for an endoscope having a light source for supplying illuminating light to said endoscope, said light source apparatus comprising:
setting control means operable from the outside of said light source apparatus for making or changing a setting of said light source apparatus;
operation mode changeover means operable from outside of said light source apparatus for switching from a first mode, wherein said first mode allows said setting control means to operate, to a second mode, wherein said second mode prevents said setting control means from operating; and
said operation changeover means including a plurality of switches provided on said light source apparatus, and further including means for determining when said switches are operated in a specific combination such that said first and second modes are changed over from one to another.

5,347,995

LARYNGOSCOPE BLADE COVER

William M. Slater, 3221 Fairway Dr., Las Cruces, N. Mex. 88001; Anthony M. Chiasson, 4056 Knob Hill Dr., Muskegon, Mich. 49441-4187, and Thomas A. Denny, 3609 Crescent Ave., Farmington, N. Mex. 87401

Filed Mar. 25, 1993, Ser. No. 37,615
Int. Cl.[5] A61B *1/26*
U.S. Cl. 128—10 **8 Claims**



1. A laryngoscope blade cover comprising, in combination: a tapered, elongated, flexible sleeve having an open end and a closed end, wherein said open end is larger than said

closed end, and an exterior surface and an interior surface, said open end adapted to be received by the blade of a laryngoscope and the handle of a laryngoscope, said sleeve adapted for covering completely said bland and at least a portion of said handle, and

a resilient circular slide band fixedly attached to said sleeve adjacent said open end, by adhesive tape looped through said band and adhered to said exterior and interior surfaces of said sleeve, said band adatped to guide said sleeve over said blade and engage said handle to maintain said sleeve on said laryngoscope, said band allowing for disengagement from said handle for removal of said sleeve from said laryngoscope.

5,347,996

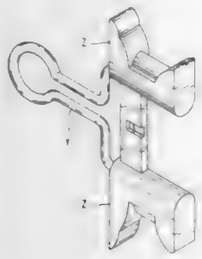
MOUTH OPENER

Lee C. Huan, Fl. 12, No. 25, Lane 175, Sec. 1, Kienkwo S. Rd., Taipei, Taiwan

Filed Dec. 17, 1992, Ser. No. 992,022

Int. Cl.[5] A61B *1/24*

U.S. Cl. 128—12 | **1 Claim**



1. A mouth opener comprising:

a planar substantially Y-shaped frame member having a handle and two spaced apart legs extending from said handle;

a twin cup body having a pair of spaced apart U-shaped members affixed on respective legs of, and lying in substantially the same plane as, said substantially Y-shaped frame member, wherein said handle and said U-shaped members generally form an angle which allows said U-shaped members to be moved relative to each other, each of said U-shaped members having a proximal shoulder adapted to fit between a lip and a row of teeth of a user of said mouth opener for steadying said mouth opener in the oral cavity of the user;

a bevel disposed in each of said U-shaped members for inserting between adjacent teeth to insure steadiness and fixation of said mouth opener in the oral cavity of the user; and,

a resilient support wall extending between and connected to said U-shaped members, said support wall having a recess formed therein for allowing said support wall to be compressed so that said U-shaped members move with respect to each other.

5,347,997

CURVED GUIDING OF A LITHOTRIPSY HEAD

Herbert Weiler, Alling, Fed. Rep. of Germany; Ulrich Hagelauer, Bottighofen, Switzerland, and Michael Weingart, Munich, Fed. Rep. of Germany, assignors to Dornier Medizintechnik GmbH, München, Fed. Rep. of Germany

Filed Jan. 6, 1989, Ser. No. 294,464

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1988, 8800986[U]

Int. Cl.[5] A61B *17/22*

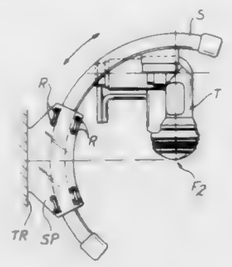
U.S. Cl. 601—3 | **4 Claims**

1. Medical treatments apparatus including a therapeutic head which includes a shockwave generator, further including structure for guiding the therapeutic head and the medical shockwave generator therein, the guiding structure comprising:

a curved rail element;

support means for the plurality of rollers;

said rail element being provided with a plurality of grooves;



wires respectively inserted in said grooves and projecting therefrom for serving as a rail track, said rollers running on said wires; and

said therapeutic head being mounted to one of (i) the roller support means and (ii) the rail element, the respective other one being stationarily mounted and fixed.

5,347,998

BREATH ACTUATED INHALER HAVING AN ELECTROMECHANICAL PRIMING MECHANISM

Peter D. Hodson, Trowell; Eric A. Baum; David K. Smith, both of Loughborough, all of Great Britain; Anton Kuepper, Kaarst, Fed. Rep. of Germany, and Matthew J. Wilby, Loughborough, Great Britain, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

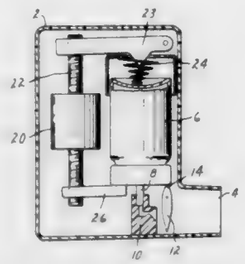
PCT No. PCT/GB91/01116, § 371 Date Dec. 23, 1992, § 102(e) Date Dec. 23, 1992, PCT Pub. No. WO92/00770, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 8, 1991, Ser. No. 965,406

Claims priority, application United Kingdom, Jul. 9, 1990, 9015077.2

Int. Cl.[5] A61M *11/00*

U.S. Cl. 128—200.23 **13 Claims**



1. An inhalation device comprising: a pressurized aerosol canister comprising a metered dose dispensing vale movable between a closed position and a dispensing position; a housing for supporting said canister in communication with a patient port; electromechanical means for generating and storing a priming force, prior to or at the start of inhalation through the patient port, and applying said priming force to said canister, said priming force being sufficient for actuation of the dispensing valve; and blocking means to prevent said priming force from actuating the dispensing valve prior to patient inspiration through the patient port, wherein said electromechanical means further comprises an electric motor or solenoid, a drive arrangement, a load applicator, and a resilient biasing means, wherein the drive arrangement communicates between the electric motor or solenoid and the load applicator, and wherein the resilient biasing means is positioned between the load applicator and the canister.

5,347,999

INHALATION DEVICE FREE FROM PROPELLANT GAS HAVING BRUSH ABRADING POWDER FROM TABLET

Gerhard Poss, Schriesheim, and Jurgen Wittekind, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

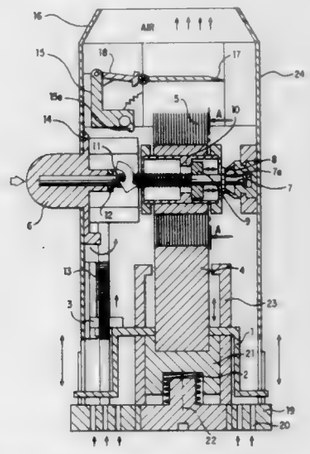
PCT No. PCT/EP91/01531, § 371 Date Apr. 23, 1993, § 102(e) Date Apr. 23, 1993, PCT Pub. No. WO92/04067, PCT Pub. Date Mar. 19, 1992

PCT Filed Aug. 13, 1991, Ser. No. 977,449

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1990, 4027390

Int. Cl.[5] A61M *15/08, 16/00, 31/00;* **B67D** *5/64*

U.S. Cl. 128—203.15 **19 Claims**



1. A propellant free inhalation device for use with a solid tablet of a medicinal substance, comprising:

a housing;

a holder for containing the tablet;

a manually operated means for dispensing and metering a dose from the tablet for inhalation by a user, said means for dispensing and metering the dose comprising a shaft and a brush having means for mechanically abrading the tablet, said means for mechanically abrading the tablet including a plurality of bristles, said bristles, responsive to manual operation of said dispensing and metering means by a user, mechanically abrading the tablet and generating the dose for inhalation;

an air chamber within said housing, said air chamber receiving the dose upon manual operation of said dispensing and metering means by a user; and

a mouthpiece adapted to be engaged by a user's mouth wherein inhalation by a user through said mouthpiece causes air to flow through said air chamber and to entrain the dose.

5,348,000

APPARATUS AND METHOD FOR DISPENSING OXYGEN AND ANESTHESIA VIA INTERCHANGEABLE FACEMASK AND NASAL CATHETER

Leonides Y. Teves, 623 39th St. W., Bradenton, Fla. 34205

Filed Jul. 19, 1993, Ser. No. 93,425

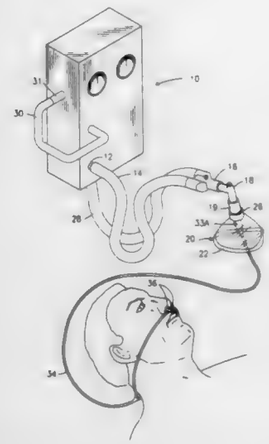
Int. Cl.[5] A61M *15/08, 11/00;* **A62B** *7/00, 18/02*

U.S. Cl. 128—204.18 **2 Claims**

2. A method for delivering anesthesia, a mixture of anesthesia and oxygen, or oxygen to at patient, comprising the steps of:

providing an elongate nasal catheter having nasal prongs at a distal end thereof and a connector at a proximal end thereof;

providing a facemask having a peripheral rim for engaging a patients face, a sidewall of frustoconical configuration extending up from said peripheral rim to a small diameter opening, and a facemask coupler connected to said sidewall at said small diameter opening;



inserting said nasal prongs into the nostrils of a patient;

inserting said connector into said facemask coupler; and

employing an anesthesia machine to supply anesthesia, a mixture of anesthesia and oxygen, or oxygen to said elongate nasal catheter.

5,348,001

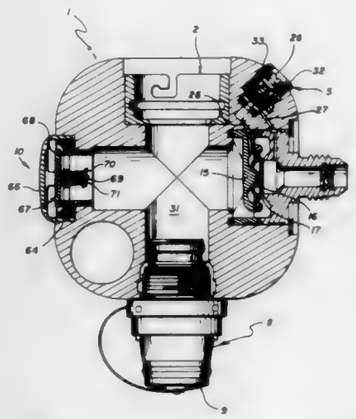
OXYGEN BREATHING CONTROLS

Joseph S. Danon, Los Angeles, Calif., assignor to American Safety Flight Systems, Inc., Glendale, Calif.

Filed Aug. 12, 1992, Ser. No. 929,701

Int. Cl.[5] A62B *9/02*

U.S. Cl. 128—205.24 **10 Claims**



1. An oxygen breathing control for supplying an oxygen containing fluid comprising:

a) a first inlet regulator having:

an inlet housing having an inlet opening;

an inlet valve disposed inside the inlet housing near the inlet opening;

a piston disposed inside the inlet housing downstream of the inlet valve and having a piston chamber; and

means for opening the inlet valve during inhalation of a user to allow the fluid through to the piston chamber; and

b) a second inlet regulator coupled with the first inlet regulator and disposed downstream thereof, having:

an inlet chamber;

a control chamber disposed downstream of the inlet chamber;

a valve liner separating the inlet chamber and the control chamber, the valve liner being flexible; and

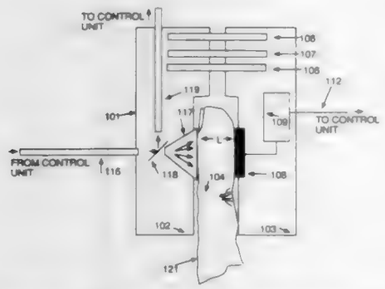
means for creating a pressure differential across the inlet chamber and the control chamber and for flexing the valve liner to permit fluid flow upon inhalation.

5,348,002

METHOD AND APPARATUS FOR MATERIAL ANALYSIS

Richard G. Caro, San Francisco County, Calif., assignor to Sirraya, Inc., San Francisco, Calif.

Filed Apr. 23, 1992, Ser. No. 872,926
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **31 Claims**



1. The method of determining the concentration of a chemical species in condensed that scatters and absorbs electromagnetic energy comprising the steps of

exciting a volume of said matter with electromagnetic energy of predetermined wavelength to cause said volume to generate acoustic energy,

detecting said acoustic energy and generating a signal representative of the amplitude of the acoustic energy;

developing a relationship between the amplitude of the acoustic energy generated in said condensed matter and the degree of absorption of said electromagnetic energy by said matter and chemical species; and

analyzing the amplitude of said acoustic energy, making use of said relationship to determine the concentration of said species.

5,348,003

METHOD AND APPARATUS FOR CHEMICAL ANALYSIS

Richard G. Caro, San Francisco, Calif., assignor to Sirraya, Inc., San Francisco, Calif.

Filed Sep. 3, 1992, Ser. No. 940,188
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **44 Claims**

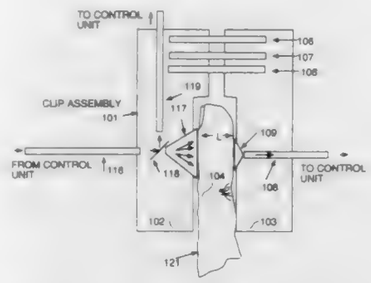
1. The method of determining a measure of absorbance of electromagnetic energy per unit path length by chemical species within a medium that scatters and absorbs electromagnetic energy, comprising the steps of

irradiating the medium with electromagnetic energy containing at least two components of different frequency, at least one of which is amplitude modulated;

detecting electromagnetic energy emerging from said medium;

measuring the intensity of the detected energy at each of said frequencies and comparing it to a measure of the irradiating intensity at each of said frequencies to provide a measure of absorbance of said energy at said different frequencies;

determining from said at least one amplitude modulated component of the electromagnetic energy information



relating to the path length travelled by said component; and

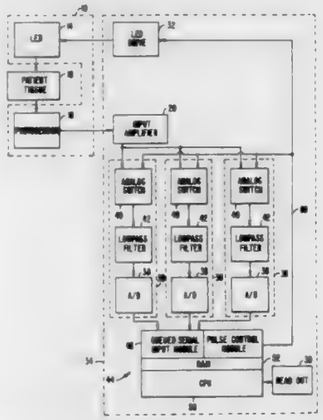
deducing, from the measure of absorbance and the information relating to the path length travelled, a measure of absorbance per unit path length travelled by the radiation for each of said frequencies.

5,348,004

ELECTRONIC PROCESSOR FOR PULSE OXIMETER

Seth D. Hollub, Overland Park, Kans., assignor to Nellcor Incorporated, Pleasanton, Calif.

Filed Mar. 31, 1993, Ser. No. 40,839
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **23 Claims**



1. An oximeter including a light emitting means and a photosensor means for converting received pulses of light from said light emitting means to an electrical signal having a dynamic range directly related to amplitudes of received pulses of light, said oximeter further comprising:

an analog-to-digital converter means for providing digitized signals accurately representative of amplitudes of received pulses of light; and,

filter means; and

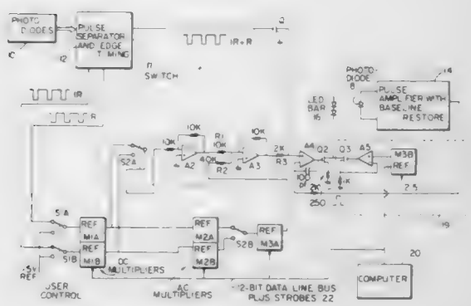
an oversampling demodulator means for providing a switched and filtered electrical signal from said photosensor means to said analog-to-digital converter means, said oversampling demodulator means including switching means for alternately connecting said electrical signal from said photosensor means to ground and to said filter means, said filter means having a cutoff frequency below both cycle rates for said electrical signal from photosensor means and switching rates of said switching means.

5,348,005

SIMULATION FOR PULSE OXIMETER

Edwin B. Merrick, Stow, Mass., and Peter Haas, East Fairfield, Vt., assignors to Bio-Tek Instruments, Inc., Winooski, Vt.

Filed May 7, 1993, Ser. No. 57,752
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **8 Claims**



1. A method for simulating living tissue which is to be monitored by a pulse oximeter that provides red and infrared light flashes, the method comprising:

a. converting the red and infrared light flashes of the pulse oximeter into electrical signals;

b. modulating the converted electrical signals to provide modulated electrical signals; and

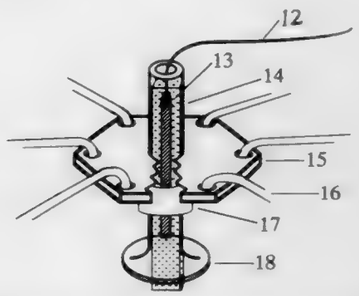
c. converting the modulated electrical signals to light flashes and transmitting the converted light flashes to the pulse oximeter for detection so that the pulse oximeter responds to the converted light flashes as it would to light flashes modulated by a living tissue.

5,348,006

HEAD SENSOR POSITIONING PEDESTAL

Don M. Tucker, Eugene, Oreg., assignor to Electrical Geodesics, Inc., Eugene, Oreg.

Filed Aug. 26, 1991, Ser. No. 750,108
Int. Cl.[5] A61B *5/0478*
U.S. Cl. 128—639 **2 Claims**



1. An apparatus for positioning a sensor against a human head comprising:

(a) an elongate tubular member with a flared end at a foot of said elongate member;

(b) an electrode within said tubular member and adapted at the foot of the tubular member for electrical connection to the scalp of the human head; and

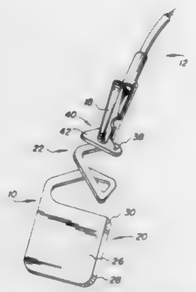
(c) means for positioning said elongate member perpendicular to the surface of the scalp such that the flared end is adjacent to the surface of the scalp.

5,348,007

BIOMEDICAL ELECTRODE

Raja Hitti, Utica, N.Y., assignor to Conmed Corporation, Utica, N.Y.

Filed Mar. 24, 1993, Ser. No. 36,336
Int. Cl.[5] A61B *5/0402*
U.S. Cl. 128—640 **20 Claims**



1. An electrode for establishing electrical connection between a leadwire and a surface comprising:

a contact portion including a conductive layer, an insulator layer on one side of said conductive layer, and an anchor means on the other side of said conductive layer for anchoring said contact portion to the surface; and

a conductive bridge portion extending from said contact portion and electrically connected with said conductive layer, said bridge portion including a receptor to which the leadwire is attachable and a breakaway means for allowing said bridge portion to be partially pulled apart when applied to the surface and hence for said receptor to move relative to said contact portion while still maintaining electrical connection with said conductive layer such that when a pulling force is exerted on the contact portion by the surface or the leadwire, the exerted force is relieved by movement of said bridge portion without pulling said contact portion from the surface.

5,348,008

CARDIORESPIRATORY ALERT SYSTEM

Robert Bornn, Los Altos; Jeff L. Levinsky, Palo Alto; Robert D. Ricks, Newark, and Laura A. Worth, Los Altos, all of Calif., assignors to Somnus Corporation, Burlingame, Calif.

Continuation-in-part of Ser. No. 797,538, Nov. 25, 1991. This application Mar. 19, 1992, Ser. No. 853,962
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—642 **40 Claims**

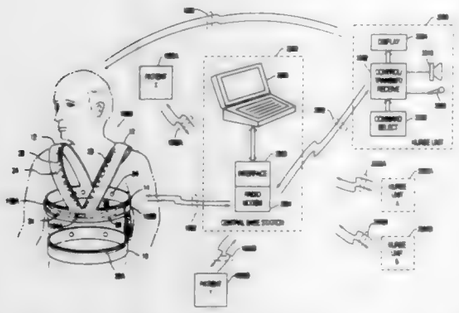
1. An apparatus for use in a system which monitors the physiological condition of a patient in which information is transmitted from the patient to a base station and from the base station to a caregiver, the apparatus comprising

a first plurality of sensor means for sensing and providing information about at least a first physiological parameter of the patient, wherein said sensor means are positioned on and cushioned by a torso band which provides resilient tension to maintain the sensor means in proper physical orientation at different locations on the patient's body; and

processing means positioned on and supported by the torso band for acquiring and evaluating the information from the first plurality of sensor means and for transmitting and receiving information to and from the base station, the processing means including

means for screening the information received from each of the plurality of sensor means using a first predetermined criteria, which received information relates to the first

physiological parameter, and for rejecting received information from a particular sensor means when such received information differs from corresponding received information from others of the sensor means by a predetermined degree; and



means for evaluating the received information which survives the screening performed by the screening means and for issuing an alert to the base station when an out-of-limits condition is detected in the screened information.

5,348,009

BONE ASSESSMENT APPARATUS

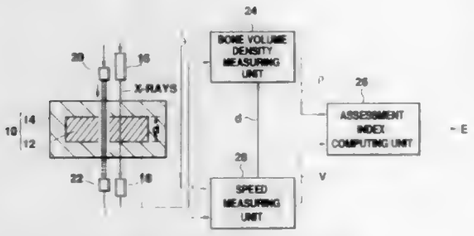
Naoki Ohtomo, and Shigeo Kimura, both of Tokyo, Japan, assignors to Aloka Co., Ltd., Tokyo, Japan

Filed May 20, 1993, Ser. No. 63,779

Claims priority, application Japan, May 20, 1992, 4-127551; Feb. 22, 1993, 5-031672

Int. Cl.[5] A61B *5/00, 6/00, 8/00*

U.S. Cl. 128—653.1 **15 Claims**



1. A bone assessment apparatus comprising:

means for measuring the propagation speed of sound in bone by passing ultrasonic waves through a test part of a subject's bone,

means for measuring bone volume density by passing an X-ray beam of X-ray through said test part, and

means for computing an assessment index for the bone based on said measured sound propagation speed and said measured bone volume density.

5,348,010

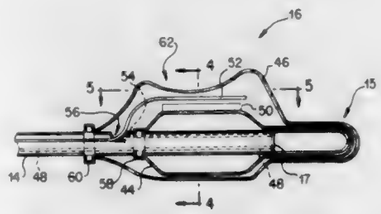
INTRACAVITY PROBE AND INTERFACE DEVICE FOR MRI IMAGING AND SPECTROSCOPY

Mitchell D. Schnall, Lansdowne; Robert E. Lenkinski, Drexel Hill; Herbert Y. Kressel, Wynnewood; Howard M. Pollack, Cheltenham; Theodore C. Claiborne, Gibsonia. all of Pa.; George J. Misic, Novelty, Ohio; Thomas R. Welch, Gibsonia, and Edward J. Rhinehart, Monroeville, both of Pa., assignors to Medrea, Inc., Pennsylvania Corp., Pa. and Trustees of the University of Pennsylvania, Not-For-Profit Pennsylvania Corp., Pa., a part interest

Division of Ser. No. 875,216, Apr. 28, 1992, abandoned, which is a continuation of Ser. No. 315,749, Feb. 27, 1989, abandoned, and a continuation-in-part of Ser. No. 884,470, May 14, 1992, abandoned, which is a continuation of Ser. No. 314,809, Feb. 24, 1989, abandoned. This application Sep. 24, 1992, Ser. No. 949,918

Int. Cl.[5] A61B *5/55*

U.S. Cl. 128—653.2 **5 Claims**



1. A method for obtaining magnetic resonance information from a region of interest within a cavity of a patient using an insertable probe having a RF receiving coil between an inner and outer balloon, the method comprising the steps of:

inserting the probe into a predetermined position in the cavity of the patient;

inflating the inner balloon and controlling the inflation of the inner balloon with a non-stretchable substantially planar member covering a surface on the inner balloon, thereby inflating the outer balloon against the cavity and positioning the coil proximate the region of interest;

inducing magnetic resonance RF signals in the region of interest; and

receiving the RF signals with the coil.

5,348,011

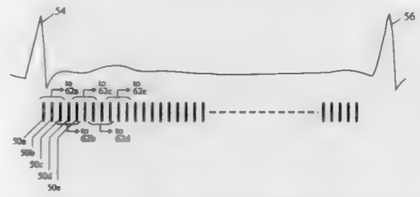
SHARED EXCITATION PHASE ENCODE GROUPING FOR IMPROVED THROUGHPUT CARDIAC GATED MRI CINE IMAGING

Moriel S. NessAiver, Cleveland Heights, Ohio, assignor to Picker International, Inc., Highland Hts., Ohio

Continuation-in-part of Ser. No. 874,807, Apr. 28, 1992, and Ser. No. 859,153, Mar. 27, 1992, which is a continuation-in-part of Ser. No. 791,855, Nov. 14, 1991, Pat. No. 5,273,040. This application Nov. 27, 1992, Ser. No. 982,569

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.2 **10 Claims**



1. A cine magnetic resonance imaging method in which k-space is segmented into at least (i) a central, lowest frequency phase encoding segment and (ii) a higher frequency phase encoding segment, the method comprising:

(a) monitoring cardiac cycles of a subject in a magnetic resonance imaging region;

(b) in coordination with each monitored cardiac cycle, generating a series of repetitions of a field echo sequence to cause a corresponding series of magnetic resonance echoes and receiving a corresponding plurality of echo signals, each echo signal corresponding to a view of k-space, the magnetic resonance echoes being phase encoded to produce views of a lowest frequency view component from the central lowest frequency phase encoding segment and two higher frequency view components from the higher frequency phase encoding segment;

(c) sorting the echo signals such that each lower frequency encoded view component is grouped between immediately preceding the subsequent higher frequency view components and such that each of the two higher frequency view componets are grouped with the two most temporal contiguous lowest frequency view components;

(d) repeating steps (b) and (c) and stepping phase encoding of the views such that views in the lower frequency view components which are phase encoded with different phase encodings are collected at substantially the same point in time in each of a plurality of monitored cardiac cycles;

(e) reconstructing a frame image representation from each lowest frequency view component and the immediately preceding and subsequent higher frequency view components.

5,348,012

MAGNETIC RESONANCE IMAGING APPARATUS AND METHOD FOR FORMING AN IMAGE OF AN ARTERY

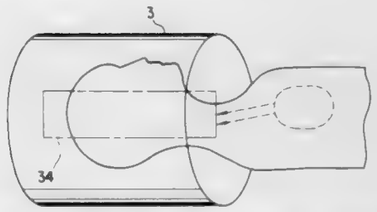
Fumitoshi Kojima, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 23, 1993, Ser. No. 21,516

Claims priority, application Japan, Feb. 26, 1992, 4-039011

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.3 **9 Claims**



1. A magnetic resonance imaging apparatus comprising:

means for setting a slice region along a direction of an artery as an imaging region;

means for exciting only spins in the imaging region so that spins outside the imaging region and in a region including the artery through which blood flows toward the imaging region is not excited;

means for receiving a magnetic resonance signal generated by the spin in the imaging region; and

means for providing a magnetic resonance image in accordance with the magnetic resonance signal received by said receiving means.

5,348,013

ULTRASONIC DIAGNOSTIC APPARATUS CAPABLE OF ACQUIRING HIGH QUALITY IMAGE BY CORRECTING PHASE DISTORTION CONTAINED IN ULTRASONIC PULSES

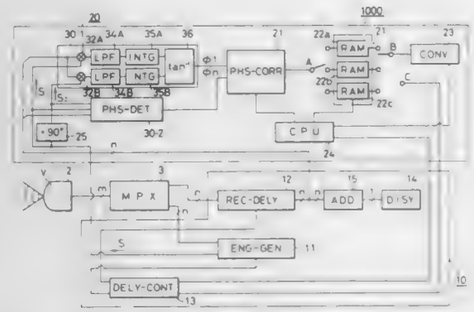
Ryoichi Kanda, Ootawara, and Yoichi Sumino, Nishinasuno, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Aug. 28, 1991, Ser. No. 750,599

Claims priority, application Japan, Aug. 29, 1990, 2-225227; Aug. 30, 1990, 2-228843; Sep. 10, 1990, 2-237131; Nov. 9, 1990, 2-305633; Aug. 12, 1991, 3-201010; Aug. 14, 1991, 3-204284

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—660.07 **22 Claims**



1. An ultrasonic diagnostic apparatus comprising:

ultrasonic transducer means having a plurality of ultrasonic transducer elements for transmitting ultrasonic pulses to an object under medical examination in response to energizing signals, and for receiving echoes therefrom to produce echo signals;

quadrature phase detecting means for quadrature-phase-detecting the echo signals derived from the transducer means with reference to a reference signal to obtain as phase data a quadrature signal component and an in-phase signal component;

phase-difference calculating means for processing said quadrature signal component and said in-phase signal component to obtain a phase difference between said quadrature signal component and said in phase signal component with reference to said reference signal;

delay-time correcting value calculating means for processing said phase difference to obtain a delay time correcting value; and

delay time controlling means for controlling said ultrasonic transducer means in such a manner that at least one delay time initially given to both of said energizing signals and said echo signals is corrected based on said delay-time correction value.

5,348,014

ULTRASONIC DIAGNOSTIC APPARATUS

Takeshi Okado, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 26, 1993, Ser. No. 111,899

Claims priority, application Japan, Aug. 27, 1992, 4-228463

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—660.09 **12 Claims**

1. An ultrasonic diagnostic apparatus comprising:

an ultrasonic diagnostic apparatus main body;

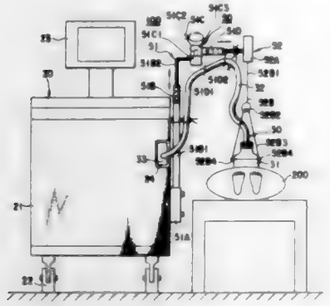
a cable, one end of which is attached to the ultrasonic diagnostic apparatus main body;

an ultrasonic probe attached to the other end of the cable;

an arm unit fixed to the ultrasonic diagnostic apparatus; and

a balancer unit provided at one end of the arm unit, so as to

substantially balance the weight of the ultrasonic probe, the balancer unit comprising a rotational mechanism using



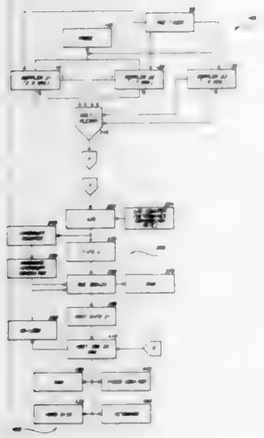
a constant force spring for generating a winding force of a constant torque.

5,348,015

METHOD AND APPARATUS FOR ULTRASONICALLY DETECTING, COUNTING AND/OR CHARACTERIZING EMBOLI

Mark A. Moehring; Mark A. Curry; Merrill P. Spencer, and John R. Klepper, all of Seattle, Wash., assignors to Applied Physiology and Medicine, Seattle, Wash.

Filed Sep. 17, 1992, Ser. No. 947,038
Int. Cl.[5] A61B *8/06*
U.S. Cl. 128—661.07 **112 Claims**



1. A system for ultrasonically detecting an embolus in blood flow, comprising:

an ultrasound transducer positioned in ultrasound communication with said blood flow;

a Doppler ultrasound unit electrically connected to said ultrasound transducer, said Doppler ultrasound unit generating an output signal having a frequency spectrum indicative of the velocity of ultrasound scatters in said blood flow; and

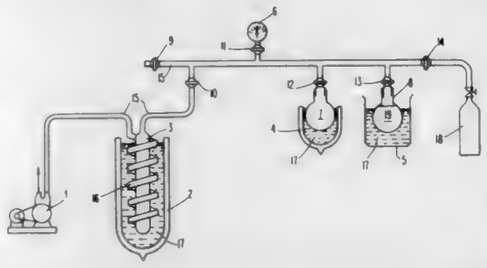
signal processing means receiving said output signal from said Doppler ultrasound unit and determining at least one frequency spectrum corresponding to said output signal, each frequency spectrum containing a plurality of frequency components, said signal processing means further detecting the presence of an embolus in said blood as a function of the amplitude of a frequency component obtained at a first time and the amplitude of a a frequency component obtained at a time different from said first time.

5,348,016

APPARATUS FOR PREPARING GAS FILLED LIPOSOMES FOR USE AS ULTRASONIC CONTRAST AGENTS

Evan C. Unger, 13365 E. Camino La Cebadilla, and Guanli Wu, 2602 W. Aiden St., both of Tucson, Ariz. 85749

Division of Ser. No. 17,683, Feb. 12, 1993, which is a division of Ser. No. 717,084, Jun. 18, 1991, and a continuation-in-part of Ser. No. 569,828, Aug. 26, 1990, Pat. No. 5,088,499, which is a continuation-in-part of Ser. No. 455,707, Dec. 22, 1989, abandoned. This application Jul. 7, 1993, Ser. No. 88,268
Int. Cl.[5] A61B *8/00;* **B01J** *13/02*
U.S. Cl. 128—662.02 **14 Claims**



1. An apparatus for preparing contrast agents for ultrasonic imaging by drying liposomes and instilling gas therein comprising:

(i) a vessel for containing liposomes;

(ii) means for sequentially applying a negative pressure to the vessel for a first pre-determined period of time to draw liquid from liposomes contained in the vessel and then subsequently applying a gas to the vessel to gradually eliminate the negative pressure therein over a second pre-determined period of time, the means for sequentially applying the negative pressure and then the gas to gradually eliminate the negative pressure including (a) a vacuum source, (b) a source of pressurized gas, and (c) a conduit having means for selectively placing the vacuum source and the pressurized gas in flow communication with the vessel.

5,348,017

DRIVE SHAFT FOR AN INTRAVASCULAR CATHETER SYSTEM

Peter Thornton, Cupertino, and Stephen M. Salmon, Sunnyvale, both of Calif., assignors to Cardiovascular Imaging Systems, Inc., Sunnyvale, Calif.

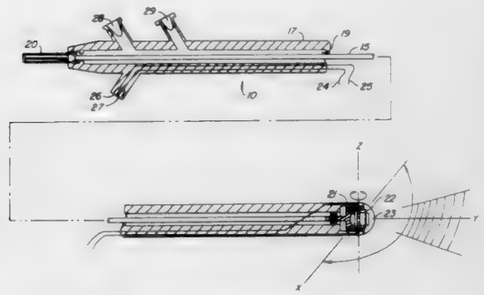
Filed Jan. 19, 1993, Ser. No. 6,226
Int. Cl.[5] A61B *8/12*
U.S. Cl. 128—662.06 **18 Claims**

5. A catheter system comprising:

a catheter body comprising a flexible member having a lumen extending therethrough;

a drive shaft comprised at least in part of a material having superelastic properties and having a proximal end and a distal end and comprising an elongate tubular member rotatably disposed within the lumen of the catheter body;

a work element coupled to the drive shaft and;



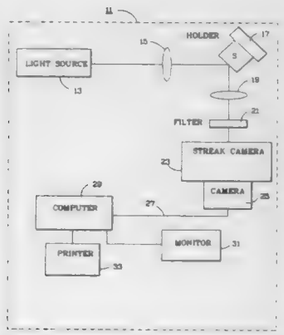
means for coupling to a drive motor at the proximal end of the drive shaft.

5,348,018

METHOD FOR DETERMINING IF TISSUE IS MALIGNANT AS OPPOSED TO NON-MALIGNANT USING TIME-RESOLVED FLUORESCENCE SPECTROSCOPY

Robert R. Alfano, 3777 Independence Ave., Bronx, N.Y. 10463; Asima Pradhan, 5554 Decelles, Apt. 5, Montreal, Canada; Guichen C. Tang, 2670 Valentine Ave., Apt. 9, Bronx, N.Y. 10458; Leming Wang, 142-19 Cherry Ave., Flushing, N.Y. 11355; Yury Budansky, 736 Ramapo Valley Rd., Oakland, N.J. 07436, and Bidyut Baran Das, 477 W. 140 St., Apt. 62, New York, N.Y. 10031

Filed Nov. 25, 1991, Ser. No. 797,723
Int. Cl.[5] A61B *6/00*
U.S. Cl. 128—665 **16 Claims**



1. A method for determining if a human breast tissue sample is malignant as opposed to non-malignant comprising:

a) irradiating the human breast tissue sample with a pulse of light at a wavelength of about 310 nm;

b) measuring a native time-resolved fluorescence emitted therefrom at a wavelength of about 340 nm; and

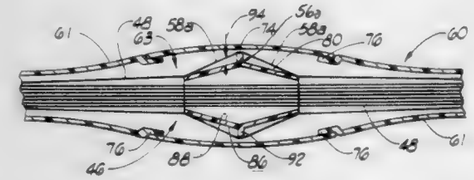
c) determining the condition of the human breast tissue sample in accordance with said measurement.

5,348,019

OPTICAL FIBER PRESSURE SENSING CATHETER

James J. Sluss, Jr., Norman; James C. Duke, Oklahoma City; Kevin R. Lewelling, Noble, all of Okla., and Shaun L. Harris, Allen, Tex., assignors to The Board of Regents of the University of Oklahoma, Norman, Okla.

Filed Sep. 18, 1992, Ser. No. 947,209
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—667 **49 Claims**



1. An optical fiber pressure sensing catheter for detecting a discrete pressure within an organ, the catheter comprising:

an elongated hollow body, comprising a wall, an internal diameter, an external diameter, a closed proximal end, a closed distal end, a lumen therebetween, an a discrete opening in the wall between the distal end and the proximal end, the wall generally noncompressible by pressure exerted thereupon by the organ within which the catheter is inserted;

a flexible sleeve encompassing the opening and sealingly secured to the body around the opening thereby sealing the opening, the flexible sleeve having sufficient flexibility so as to be compressible by pressure exerted thereupon by the organ within which the catheter is inserted;

a sensing optical fiber disposed within the lumen, the optical fiber extending from the proximal end wherein the fiber is connectable to both a means for providing a light input and a means for receiving a light signal from the optical fiber;

means for measuring pressure comprising a sensing portion of the sensing optical fiber, the sensing portion adjacent the flexible sleeve and deformable in response to compression of the flexible sleeve, whereby the light signal is attenuated; and

a positioning means disposed within the lumen of the body adjacent the flexible sleeve for positioning the sensing portion of the sensing optical fiber in a sensing position, the positioning means further comprising:

a ferrule having a first end, a second end, an external surface, an internal surface, and a longitudinal axis extending from the first end to the second end,

an annular fulcrum positioned circumferentially on the midline of the length of the external surface of the ferrule, and

a stabilizing means for stably holding the sensing optical fiber, and wherein the sensing portion is disposed adjacent the external surface of the ferrule in an orientation generally parallel to the longitudinal axis of the ferrule and supported by the fulcrum of the ferrule, the fulcrum serving to position the sensing portion a distance beyond the external surface of the ferrule.

5,348,020

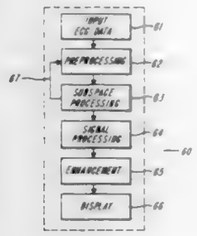
METHOD AND SYSTEM FOR NEAR REAL-TIME ANALYSIS AND DISPLAY OF ELECTROCARDIOGRAPHIC SIGNALS

William H. Hutson, 47 Grange Ave., P.O. Box 0221, Little Compton, R.I. 02837

Continuation-in-part of Ser. No. 978,245, Nov. 18, 1992, Pat. No. 5,245,587, which is a continuation-in-part of Ser. No. 628,337, Dec. 14, 1990, Pat. No. 5,175,710. This application Dec. 15, 1992, Ser. No. 991,291

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—696 **54 Claims**



1. A method of analyzing an electrocardiographic (ECG) signal, for determining diagnostic information comprising:

analyzing the ECG signal to determine enhanced predetermined characteristics of the ECG signal according to the steps of,

extracting data relating to said signals as received by an ECG monitoring system;

embedding said data into a data matrix;

compressing said data matrix into a compressed-data-form;

modifying selected data values in said compressed-data-form based on a function of said data values in said compressed-data-form;

expanding said compressed-data-form to an enhanced data matrix that contains data representing said enhanced predetermined characteristics.

determining from said enhanced data matrix said diagnostic information.

5,348,021

APPARATUS AND METHOD FOR RELIABLY DETECTING A DEPOLARIZATION ACTIVATION WAVE OF THE HEART AND ATRIAL DEFIBRILLATOR UTILIZING SAME

John M. Adams, Issaquah; Clifton A. Alferness, and Kenneth R. Infinger, both of Redmond, all of Wash., assignors to InControl, Inc., Redmond, Wash.

Filed Mar. 31, 1992, Ser. No. 861,184

Int. Cl.[5] A61B *5/046*

U.S. Cl. 128—708 **58 Claims**

1. An apparatus for reliably detecting a depolarization activation wave of the heart, said apparatus comprising:

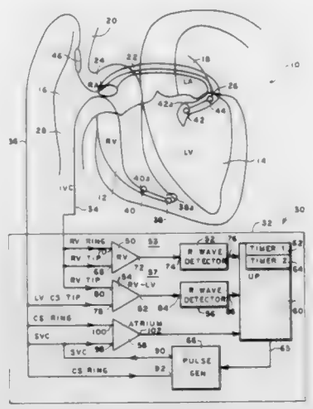
first sensing means for electrical contact with the heart for between a first pair of spaced apart locations for sensing said depolarization activation wave;

first output means coupled to said first sensing means for producing a first electrical output having a first predetermined characteristic corresponding to said depolarization activation wave sensed by said first sensing means;

second sensing means for electrical contact with the heart between a second pair of spaced apart locations for sensing said depolarization activation wave;

second output means coupled to said second sensing means for producing a second electrical output having a second predetermined characteristic corresponding to said depolarization activation wave sensed by said second sensing means; and

discriminating means coupled to said first and second output means and being responsive to said first and second electrical outputs for discriminating between said first and second predetermined characteristics and including indicating means for indicating the occurrence of said depolarization activation wave when said first and second predetermined characteristics are different.



5,348,022

SINGLE USE AUTOMATED SOFT TISSUE ASPIRATION BIOPSY DEVICE

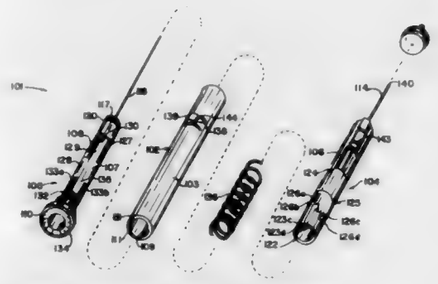
Harold G. Leigh, and James D. Taylor, both of St. Louis, Mo., assignors to Medical Device Technologies, Inc., Gainesville, Fla.

PCT No. PCT/US91/01319, § 371 Date Aug. 28, 1992, § 102(e) Date Aug. 28, 1992, PCT Pub. No. WO91/12769, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 26, 1991, Ser. No. 923,945

Int. Cl.[5] A61B *10/00*

U.S. Cl. 128—753 **20 Claims**



1. A biopsy aspiration device comprising:

a hollow cannula having a proximal end and a distal end;

a stylet having a proximal end and a distal end and positioned within said cannula for axial movement relative thereto;

a housing providing a sealed chamber and means for holding the operative components of the biopsy aspiration device;

slide means movably associated with said housing in cooperative relationship with said sealed chamber, said slide means being movable from a cocked actuated position wherein the volume of said sealed chamber is minimized, to a released at rest position wherein the volume of said sealed chamber is maximized, with said movement of said slide means from said actuated position to said released at rest position resulting in a displacement between said cannula and said stylet;

biasing means engageable with said slide means when said slide means is in said cocked position to urge said slide means to said at rest position;

cocking and releasing means associated with said slide means and said housing for moving said slide means against force of said biasing means to the cocked actuated position and for releasing said slide means to be moved to said released at rest position by said biasing means;

said hollow cannula being communicated with said sealed chamber, and one of said stylet or said cannula having its proximal end fixedly anchored to said slide means and the other one of said stylet or said cannula having its proximal end anchored to said housing;

whereby upon release of said slide means the resultant volume increase in said sealed chamber creates a pressure reduction, and the pressure reduction generated within said chamber is translated to the distal end of said cannula to effect aspiration of a biopsy specimen into the cannula during actuation of the device; and

displacement selector means for selecting the amount of displacement between said cannula and said stylet.

5,348,023

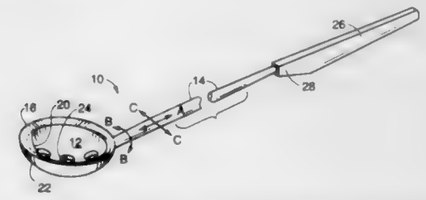
CURETTING INSTRUMENT AND METHOD

Bruce McLucas, 100 UCLA Medical Plz., Suite 310, Los Angeles, Calif. 90024-6970

Filed Apr. 16, 1992, Ser. No. 869,739

Int. Cl.[5] A61B *17/00*

U.S. Cl. 128—757 **3 Claims**



1. A method of obtaining tissue from inside a living body, the method comprising the steps of:

inserting a curette inside the body, said curette comprising a handle, an oval spoon-shaped member connected to said handle for collecting the tissue, a sharp edge formed on substantially the entire upper perimeter of said spoon-shaped member, and an overhanging sharp edge formed on an inside edge of said upper perimeter on a forward end of said collection means for removing the tissue from the body;

moving said inserted curette to cause one or more cutting edges on said curette to cut tissue and place said tissue in the spoon-shaped member;

removing tissue from the inside of the body with said curette;

collecting the removed tissue in said spoon-shaped member of said curette; and

withdrawing said curette and said collected tissue from the body.

5,348,024

Patent Not Issued For This Number

5,348,025

APPARATUS AND METHOD FOR MEASURING MOBILITY OF THE SCAPHOID

Scott W. Wolfe, Fairfield, and Joseph J. Crisco, Cheshire, both of Conn., assignors to Yale University, New Haven, Conn.

Filed Feb. 22, 1993, Ser. No. 20,773

Int. Cl.[5] A61B *5/103*

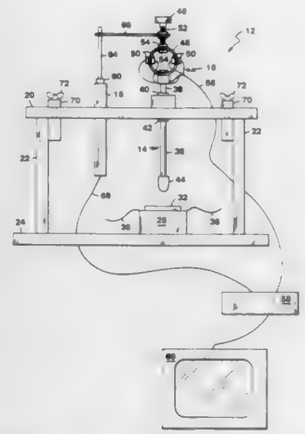
U.S. Cl. 128—782 **21 Claims**

1. Apparatus for measuring mobility of a free-floating bone in a subject's wrist, said apparatus comprising:

a support structure designed to support the subject's hand and to permit unobstructed movement of the free-floating bone when supporting the subject's hand,

a force applicator positioned over and applying a variable force to said free-floating bone while the subject's hand is being supported by the support structure,

a load cell generating a first signal corresponding to the magnitude of said variable force, and



a displacement sensor generating a second signal corresponding to a displacement of said free-floating bone in response to said variable force.

5,348,026

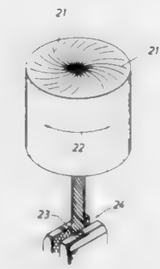
OSTEOINDUCTIVE BONE SCREW

James A. Davidson, Germantown, Tenn., assignor to Smith & Nephew Richards Inc., Memphis, Tenn.

Filed Sep. 29, 1992, Ser. No. 953,475

Int. Cl.[5] A61B *19/00;* **A61F** *2/02, 2/28, 2/30*

U.S. Cl. 128—898 **22 Claims**



1. A method of manufacturing a low modulus bone screw with a high resistance to insertion torque, comprising the steps of:

a) pre-torquing a plurality of reinforcing fibers;

b) molding a bone screw shaped polymer matrix that includes a shank portion with a helical thread thereon to bond with the pre-torqued fibers;

c) wherein the fibers are wound in a direction that orients the fibers to resist insertion torque applied to the bone screw; and

d) wherein in step b) a body is formed having a size and shape of a bone screw.

5,348,027

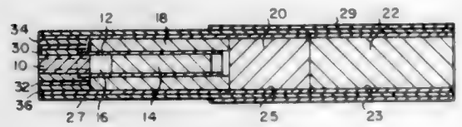
CIGARETTE WITH IMPROVED SUBSTRATE

Russell D. Barnes, Belews Creek; Chandra K. Banerjee, Pfafftown; Evon L. Crooks, Winston-Salem, all of N.C., and Jack F. Clearman, Blakely, Ga., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation-in-part of Ser. No. 655,706, Feb. 14, 1991, Pat. No. 5,203,355. This application May 13, 1992, Ser. No. 882,209

Int. Cl.[5] A24B *15/00;* A24D *3/06*

U.S. Cl. 131—194 24 Claims



1. A substrate for smoking articles comprising an overwrapped rod of gathered cellulose-based paper;

said overwrapped rod having an outer diameter of from about 4 mm to about 8 mm, and wherein;

said cellulose-based paper has a basis weight in the range of about 10 g/m^2 to about 90 g/m^2; and

said cellulose-based paper including up to about 50 weight percent of one or more burn retardant hydrated salts.

5,348,028

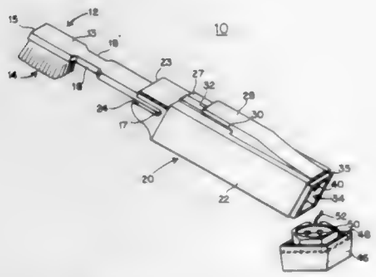
COMPACT MULTI-USE ORAL HYGIENE DEVICE

Terry L. Gustavel, 5532 Randolph Dr., Boise, Id. 83709

Filed Oct. 5, 1993, Ser. No. 132,049

Int. Cl.[5] A45D *44/18*

U.S. Cl. 132—309 12 Claims



1. A dental hygiene kit having an operative and a stowed position, comprising:

a brush section formed from a flat shaft having a longitudinal axis having bristles attached perpendicular to a surface of said shaft and proximate to a first end of said shaft;

said surface further defining a groove extending from a second end of said shaft opposite said first end and parallel to the longitudinal axis for a predetermined distance;

an elongated handle defining a rectangular cross-section cavity with an open end and a closed end, said closed end defining a first slot external to said cavity and operative to receive in mated configuration the second end of said brush section and including a first raised portion formed on the interior of said first slot, said first raised portion configured to receive said groove of said brush section so as to place the kit in an operative position;

a second raised portion formed on the surface of said elongated handle, said second raised portion being larger than said first raised portion and said second raised portion defining a second slot having formed therein a third raised portion having the same dimensions as said first raised portion, said second slot and third raised portion operative to receive said second end of said shaft when disengaged from said first slot and placed in said second slot, placing said kit in a stowed position; and

an end cap dimensioned to fit snugly over the open end of said handle, enclosing said cavity.

5,348,029

NAIL VARNISH APPLICATOR HAVING PINCERS

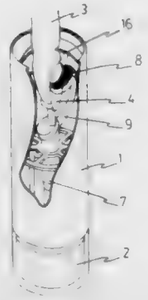
Manuel Garcia Rodriguez, Urbanizacion Jaizkibel, Villa Arit-Alde, Fuenterrabia (Guipuzcoa), Spain 20280

Filed Feb. 27, 1992, Ser. No. 842,877

Claims priority, application Spain, Mar. 8, 1991, 9100612

Int. Cl.[5] A45D *29/18*

U.S. Cl. 132—74.5 15 Claims



1. A fingernail varnish applicator, comprising:

a cylindrical body having one end shaped to connect to a source of nail varnish and an opposite end dimensioned to receive a user's finger;

a brush fitted with bristles with an adjustable spread for applying a dose of nail varnish from the source of nail varnish to a fingernail of the user's finger, the fingernail having a contour;

a pair of pincers positioned to contact the user's received finger, said pincers having a portion which compresses the spread of said bristles in accordance with the contour of the fingernail;

a hingeably mounted door for obstructing said opposite end of said cylindrical body;

a locking device for normally biasing said door to obstruct said opposite end of said cylindrical body, said locking device being released by the user's finger that is to be varnished;

a pumping device positioned to engage the user's received finger and mounted to move with the finger as it is inserted for advancing the dose of nail varnish to said bristles, said pumping device being coupled to said brush so as to orient said brush with respect to the user's received finger; and

a casing for covering said bristles when the nail varnish applicator is not in use comprising one of a stub and a complementary helical slot and a displaceable casing having a hingeably mounted cap, said casing being displaced in response to the insertion of the user's finger by one of rotation and axial displacement, said casing returning to an undisplaced state in response to the withdrawal of the user's finger.

5,348,030

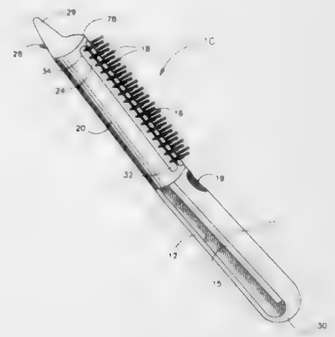
RETRACTABLE BRUSH WITH UPWARDLY ANGLED TEETH

Suzy C. Hirzel, 933 Shellwood Way, Sacramento, Calif. 95831

Continuation-in-part of Ser. No. 960,859, Oct. 14, 1992, abandoned. This application Dec. 17, 1993, Ser. No. 168,136

Int. Cl.[5] A45D *24/10*

U.S. Cl. 132—123 5 Claims



1. A retractable brush comprising:

a brushing base, said brushing base having first and second panels, said first panel having at least one row of teeth theron, said first panel having a first portion and a second portion;

an elongated tube, said tube having a hollow cavity, said tube having first and second ends and an exterior surface therebetween, said second end having an opening, said elongated tube having a hollow cavity and said hollow cavity having a first inner surface and a second inner surface, said first inner surface having a first face and a second face, said tube having a series of openings positioned along the exterior surface, said at least one row of teeth being positioned in said series of openings when said tube and brushing base are connected;

a first handle section and a second handle section, said first and second handle sections being joined together at one end to form a single unit and having a spring force therebetween, said spring force holding said first handle section at an acute angle relative to the second handle section when said handle sections are in an untensioned state, said first handle section being positioned adjacent said brushing base, said spring force being strong enough to push said first panel to contact said first inner surface as soon as said first portion contacts said first face of said tube, said at least one row of teeth being generally perpendicular to said base when said brushing base is not within said tube, said at least one row of teeth being slightly pointing upwardly toward said second face of said inner surface of said tube to allow for the equal length protrusion of said at least one row of teeth through said series of openings,

said second handle section being connected to said tube adjacent said second end whereby when said first handle section is compressed toward said second handle section, said teeth will retract into said hollow cavity and when compression is released from said first handle section, said spring force will automatically return said teeth to a protruding position extending outwardly from the tube.

5,348,031

COSMETIC APPARATUS

Linda D. Cloud, 202 Village Way, Brick, N.J. 08724

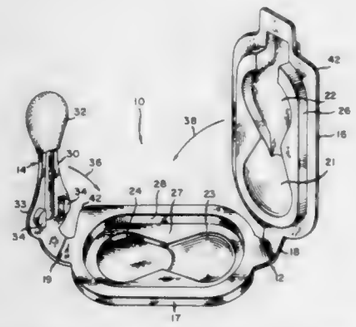
Filed Sep. 20, 1993, Ser. No. 123,056

Int. Cl.[5] A45D *40/24*

U.S. Cl. 132—317 5 Claims

1. Cosmetic apparatus, comprising:

a pair of pivotally interconnected members, each of said members provided with at least one recess, an applicator for supporting a cosmetic interconnected pivotally to one of said members, said members provided with cooperative interconnecting means, upon said applicator supporting a cosmetic and being pivoted over said one member and upon said members being pivoted towards and into engagement with each other said interconnecting means being engaged to temporarily secure said members to each other and said recesses being placed in opposition to each other and cooperatively providing a compartment for



receiving said cosmetic, and upon said interconnecting means being disengaged and said members pivoted away from each other and upon said applicator being pivoted away from and extending outwardly from said one member, said members for being pivoted towards and into engagement with each other and said interconnecting means for being engaged to temporarily secure said members to each other to cause said members to cooperatively provide a handle for using said applicator to apply said cosmetic to a person.

5,348,032

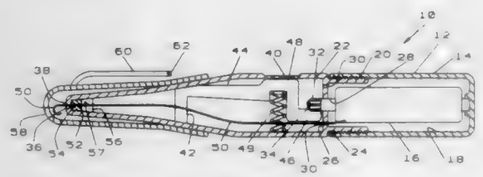
ANTI-WICKING FLOSSING TOOL

Robert F. Mason, 10763 Hedda Pl., Cerritos, Calif. 90701

Filed Aug. 2, 1993, Ser. No. 100,282

Int. Cl.[5] A61C *15/00*

U.S. Cl. 132—325 20 Claims



1. A dental flossing tool comprising:

a hollow handle containing a floss storage area therein and formed with a rigid tip having an opening and having a strand of floss entending from said storage area and exiting through said opening of said tip, and

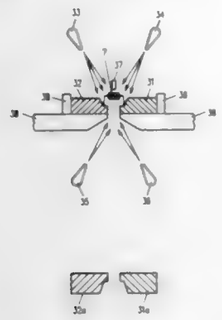
a resilient member mounted adjacent said opening at the extreme end of said tip where said floss makes it's final exit from said tool and having an opening having a fixed lateral dimension no greater than that of said floss strand extending through said resilient member to cause said resilient member to clamp said strand of floss extending through said resilient member and to prevent moisture from entering said tool.

5,348,033

METHOD AND APPARATUS FOR HANDLING SINGULATED ELECTRONIC COMPONENTS

Boris Levit, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 1, 1991, Ser. No. 770,973
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—64 R **18 Claims**



10. An apparatus for processing parts in processing tanks arranged along a path, including:

a housing having partitions which separate the processing tanks;

a pair of horizontally separated, substantially parallel, endless belts dimensioned and profiled for supporting the parts;

a drive means for translating the belts around a loop, thereby translating the parts supported by the belts along the path sequentially through the processing tanks with top, bottom, and side surfaces of each part supported by the belts exposed to regions of the processing tanks located above and below the belts, wherein each of the belts has a continuous, constant cross-section around the loop, and wherein the cross-section includes an inner shelf surface oriented substantially horizontally, an outer top surface oriented substantially horizontally, and a third surface between the inner shelf surface and the outer top surface, said third surface having a sloping portion, and;

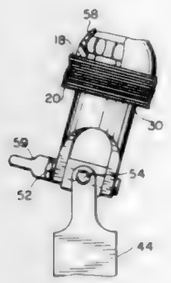
at least one of the parts supported by the belts, wherein said at least one of the parts is a singulated electronic component having a first row of leads and a second row of leads, and wherein the first row rests on the shelf portion of a first one of the belts and the second row rests on the shelf portion of a second one of the belts.

5,348,034

WIND RESISTANT UMBRELLA

Joseph Bulgatz, 109 Manhattan Ave., New York, N.Y. 10025

Filed Jun. 28, 1993, Ser. No. 83,549
Int. Cl.[5] A45B *13/00*
U.S. Cl. 135—19.5 **9 Claims**



7. A wind resistant umbrella, which comprises;

A. a canopy, which comprises

1. a plurality of independent, elongate sheets assembled together movably in the plane of a vertical stack, each sheet having

(a) a first end having a first predetermined width;

(b) a second end having a second predetermined width;

(c) a sheet body extending between the first and second ends;

(d) a body upper surface,

(e) a body lower surface;

(f) a peripheral edge defining the outer boundary of the body and the first and second ends together, said peripheral edge including a leading edge and a trailing edge, said peripheral leading and trailing edges extending between the first and second ends at opposite outer boundaries of the body; and

(g) an axial line perpendicular to the plane of the vertical stack, passing through a point adjacent to the first ends and distal to the second ends of the assembled sheets;

said assembled sheets being fixed together along the axial line, in a first position wherein the respective leading edges and trailing edges of the stacked sheets are in substantial vertical alignment; a plurality of sheets in the first position being free to pivot around the axial line to a second position wherein the respective leading edges of each sheet adjacent the second ends substantially covers the trailing edge of an adjacent sheet in the stack;

B. a rod positioned on the axial line, for supporting the canopy, and having

(a) a first end adjacent to the first ends of the stacked sheets;

(b) a second end distal to the first ends of the stacked sheets; and

C. means for attaching the rod to the first ends of the stacked sheet assembly, whereby the sheets are movable between the first and second positions; and

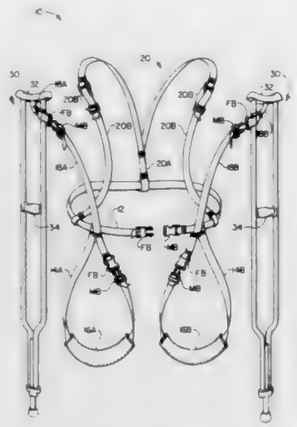
wherein the means for attaching the rod comprises a pin upon which a plurality of the sheets is free to pivot.

5,348,035

HARNESS ASSEMBLY FOR A CRUTCH USER

Jerry Porter, Charlottesville, Va., assignor to John S. Fisher, Raleigh, N.C., a part interest

Filed Apr. 14, 1993, Ser. No. 48,278
Int. Cl.[5] A61H *3/02*
U.S. Cl. 135—66 **12 Claims**



1. A crutch harness system adapted to engage the waist, and upper leg portion and gluteal fold of each leg of a harness user for supporting at least a portion of the harness user's body weight to reduce forces applied to the hands and underarm areas, and comprising:

a pair of crutches wherein each crutch comprises an upper end and a lower end;

a belt element adapted to be secured around the waist of the harness user;

two or more loop-like strap elements cooperatively connected to said belt element and each being adapted to surround and engage the upper leg portion of a corresponding leg of the harness user so that the upper leg portion of each leg of the harness user has one or more loop-like strap elements positioned therearound; and

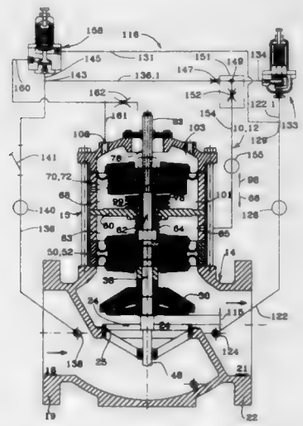
strap means cooperatively connected to each of said loop-like strap elements and each of said strap means engaging a corresponding one of said pair of crutches adjacent the upper end of said crutch and for transmitting at least a portion of the body weight to said loop-like strap elements so as to reduce the force applied to said pair of crutches by the hands and underarm areas of the harness user.

5,348,036

AUTOMATIC CONTROL VALVE

Kari J. Oksanen, Vancouver, and Grant V. LaBar, Surrey, both of Canada, assignors to Singer Valve Inc., Surrey, Canada

Filed May 4, 1993, Ser. No. 56,403
Int. Cl.[5] F16K *31/365*
U.S. Cl. 137—1 **20 Claims**



1. An automatic control valve comprising:

(a) a valve body having an inlet port, an outlet port, and a valve seat disposed between the ports, the valve seat defining a valve opening to permit communication between the ports,

(b) a main valve member moveable between a closed position against the seat to close the valve, and an open position spaced from the seat to control flow of liquid through the valve opening to maintain a desired flow condition through the valve,

(c) a first partition means moveable between extended and retracted positions thereof to reflect the two positions of the main valve member, the first partition means cooperating with the valve body to define in part a variable volume first control chamber, the first control chamber being exposed to a first control pressure which reflects the liquid flow condition through the valve, the control pressure acting on the first partition means to move the first partition means, the first partition means cooperating with the valve member so that the valve member moves in response to changes in the first control pressure to attempt to position the valve member to maintain the desired liquid flow condition through the valve,

(d) a second partition means being moveable between inactive and active positions thereof, the second partition means cooperating with the valve body to define in part a variable volume second control chamber, the second control chamber being exposed to a second control pressure which reflects an unacceptable deviation of liquid flow through the valve from the desired flow condition, the second partition means being retained in the retracted position thereof when deviations of the liquid flow conditions through the valve are acceptable, and

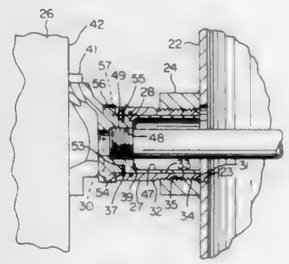
(e) second partition coupling means for selectively coupling the second partition means with the valve member should the deviation of the flow conditions through the valve become unacceptable, which increases the second control pressure to become sufficiently high to position the valve member in response to the second control pressure.

5,348,037

HOT WATER TANK CONSTRUCTION, PARTS THEREFOR AND METHODS OF MAKING THE SAME

Jay R. Katchka, Cypress, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation of Ser. No. 28,990, Mar. 10, 1993, Pat. No. 5,261,438. This application Aug. 23, 1993, Ser. No. 110,532
The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.
Int. Cl.[5] F16L *55/18;* **F24H** *1/00*
U.S. Cl. 137—15 **20 Claims**



1. In a method of making a hot water tank construction comprising a hot water tank having a wall means provided with an opening therethrough and a spud carried by said wall means and having an opening means therethrough that is disposed in aligned relation with said opening, and a fuel control valve unit having a shank provided with a portion thereof disposed in said opening means of said spud and being interconnected to said opening means so as to be carried by said wall means, the improvement comprising the steps of forming said opening means of said spud to have axial securing means therein, forming said portion of said shank to have axial securing means thereon, forming said unit and said spud to respectively have sealing means, and pushing said portion of said shank axially into said opening means of said spud until said portion is in a predetermined position thereof whereby said axial securing means cooperate together to interconnect said fuel control valve unit to said spud and whereby said sealing means cooperate together to seal said unit to said spud while said unit is in said predetermined position thereof to tend to prevent leakage of liquid from said tank through said opening means.

5,348,038

FOAM INLET DEVICE FOR LIQUID TANKS

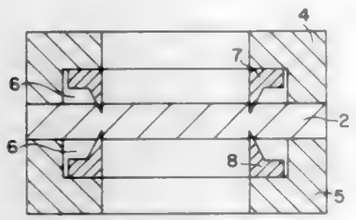
Alexander Krimm, Oberhausen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 16, 1992, Ser. No. 992,854

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142562

Int. Cl.[5] A62C *3/06*

U.S. Cl. 137—68.1 12 Claims



1. A device for controlling flow of fluid into or out of a tank comprising a frame having a first part and a second part, said first part and said second part having an opening therethrough and securing a sheet therebetween, a first peripheral groove in said first part, a second peripheral groove in said second part and facing said first groove, a first peripheral cutter having a cutting edge in said first groove, a first bore fluidly connecting said opening and said second groove, said cutting edge adapted to cut said sheet peripherally, thereby to permit said fluid to pass through said opening.

5,348,039

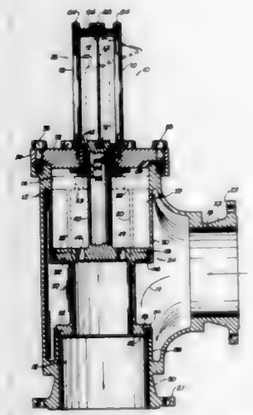
LARGE DIAMETER AND RELATIVELY HIGH PRESSURE RELIEF VALVE

Julian S. Taylor, 8300 SW. 8th St., Oklahoma City, Okla. 73128, and C. Dean Couch, Oklahoma City, Okla., assignors to Julian S. Taylor, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 35,766, Mar. 23, 1993, Pat. No. 5,273,065. This application Dec. 20, 1993, Ser. No. 169,242

Int. Cl.[5] F16K *17/40*

U.S. Cl. 137—70 15 Claims



1. A relief valve for connection with a large diameter conductor containing several thousand atmospheres of fluid pressure, comprising:

a valve body having axially spaced longitudinally aligned openings,

one said aligned opening forming an outlet port of smaller diameter than the other said aligned opening,

said body having a lateral opening forming the inlet port of a fluid passageway through the body;

sleeve means projecting axially inward from each said aligned opening including a guide sleeve having a centrally bored cap for closing the said other aligned opening;

piston means including spaced-apart pistons having unequal end surface areas exposed to upstream fluid pressure and having other equal end surface areas exposed to downstream fluid pressure and supported by the sleeve means for normally closing the fluid passageway and balancing downstream fluid pressure;

a piston rod projecting outwardly through the sleeve cap opposite the outlet port; and,

collapsible pin means including a pin having a predetermined buckling point axially supported by the outwardly projecting end of the piston rod for maintaining said piston means in fluid passageway closed position while the upstream fluid pressure differential on said pistons is less than the buckling point of the pin in accordance with Euler's law.

5,348,040

FLUIDIC VALVE MECHANISM

Ronald L. Shellhause, Vandalia, Ohio, assignor to RMS Engineering, Inc., Vandalia, Ohio

Filed Nov. 2, 1992, Ser. No. 975,643

Int. Cl.[5] B60T *11/22*

U.S. Cl. 137—118 23 Claims

1. A fluid flow sensitive valve assembly comprising:

a housing having a valve mechanism received in a valve chamber formed in said housing;

said valve chamber having a cylindrical side wall and axially spaced first and second end walls and first and second ports respectively opening through said first and second end walls and a third port opening through a valve seat formed in said cylindrical side wall at a point axially intermediate said end walls, said axially spaced first end wall including an annular section through which said first port is axially formed, said annular section being frusto-conically formed to define a frusto-conical surface thereof, said annular section frusto-conical surface extending axially toward said second end wall of said valve chamber;

said valve mechanism including a valve member located partially within said valve seat and movable relative thereto into seated and unseated positions to respectively close and open said third port, said valve member having a substantially planar body section defined by upper and lower sides and first and second ends, said valve member also having a main valve body section extending outwardly from said planar body section upper side intermediate said first and second ends of said planar body section, said main valve body section including a surface portion selectively engageable in seated relation with said valve seat and disengageable from said valve seat in unseated relation therewith and a portion extending into said third port about which fluid may flow into and out of said third port when said valve seat is not closed by said valve member main valve body section surface portion;

valve member positioning means mounted on said valve member and movable with said valve member as said valve member moves between its seated and unseated positions relative to said valve seat;

said valve member positioning means having a maximum width less than the diameter of said valve chamber between said end walls and having one end thereof positioned near said second port and including a valve mechanism position location point thereon engageable with said valve chamber side wall intermediate said second and third ports;

said valve member having only first and second position location points, said first position location points being only on said planar body section first end, said second valve position location points being a pair of such points laterally opposite each other and formed on a defined portion of said planar body section defined as that part of said planar body section from and including said planar body section second end to that intermediate part of said planar body section intersected by a lateral plane extending at a right angle from said planar body section and touching the part of said main valve body section furthermost from said planar body section second end, said first valve position location points being engageable with at least one part of said first valve chamber end wall including said annular section frusto-conical surface and said second valve position location points being engageable with said valve chamber side wall intermediate said valve chamber end walls for locating said valve mechanism in said valve chamber so that said valve member is unseated from said valve seat when there is no fluid flow through said valve chamber and also when there is fluid flow from said second port to said first port through said valve chamber, and said valve member is seated on said valve seat to close said valve seat and said third port when there is fluid flow from said first port to said second port through said valve chamber;

and fluid flow-impinging surfaces on said valve mechanism acting when fluid flow impinges thereon from said first port to said second port to move said valve mechanism from the valve member unseated position to the valve member seated position relative to said valve seat and acting when fluid flow impinges thereon as fluid flows toward said first port in said valve chamber from at least one of said second and third ports to move said valve mechanism from the valve member seated position to the valve member unseated position relative to said valve seat.

5,348,041

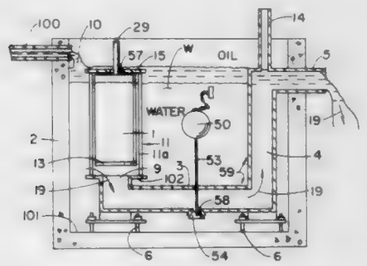
SEPARATOR VALVE

Stephen E. Clark, 1344 Monterey Ave., Norfolk, Va. 23508

Filed May 21, 1993, Ser. No. 65,592

Int. Cl.[5] F16K *31/22*

U.S. Cl. 137—172 8 Claims



1. A flow control device adapted to separate a mixture of two liquids of different densities, and for controlling the discharge therefrom of said two liquids, comprising:

a vessel;

inlet means through which said fluid mixture enters said vessel;

a conduit operationally disposed within said vessel provided with an upwardly opening first orifice adapted to be closed by first valve means;

said conduit further being in fluid communication with a first discharge outlet;

an operationally vertically movable first float positioned within said vessel, said first float being vertically movable within a finite first range of travel;

first orifice closing means situated beneath the lowermost extremity of said first float adapted to close said upwardly opening first orifice when said first float is at the lowermost extremity of said first range of travel to prevent the flow of fluid into said conduit through said first orifice;

said conduit having a first portion disposed intermediately between said first orifice and said first discharge outlet, said first portion of said conduit being substantially at a first elevation wherein said first elevation is higher than said upwardly opening first orifice;

an operationally vertically movable second float positioned within said vessel, said second float being vertically movable within a finite second range of travel;

a second orifice disposed in said conduit between said first orifice and said first discharge outlet adapted to be closed by second valve means; and,

second orifice closing means in communication with said second float adapted to close said second orifice when said second float is at the uppermost extremity of said second range of travel to prevent the flow of fluid into said conduit through said second orifice.

5,348,042

CERAMIC-PLATE FLOW-CONTROL VALVE

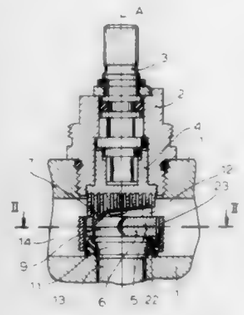
Friedrich Wagner, Endingen, and Walter Grau, Malhberg, both of Fed. Rep. of Germany, assignors to Friedrich Grohe Aktiengesellschaft, Hemer, Fed. Rep. of Germany

Filed Apr. 9, 1993, Ser. No. 46,005

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1992, 4212236

Int. Cl.[5] F16K *3/02, 25/00, 51/00*

U.S. Cl. 137—237 11 Claims



1. In a flow-control valve comprising:

a housing having a chamber into which opens a port;

a ceramic valve plate fixed in the chamber over the port, formed with a throughgoing aperture aligned with the port, and having a substantially planar face;

a ceramic control plate having a substantially planar face lying flatly on the valve-plate face and formed with a throughgoing aperture; and

means for pivoting the control plate relative to the valve plate about an axis substantially perpendicular to and traversing the surfaces between

an open position with the control-plate aperture overlapping the valve-plate aperture and

a closed position with the control-plate aperture aligned axially with a portion of the valve-plate face and offset angularly from the valve-plate aperture and with the valve-plate aperture aligned axially with a portion of the control-plate face and offset angularly from the control-plate aperture,

the improvement wherein

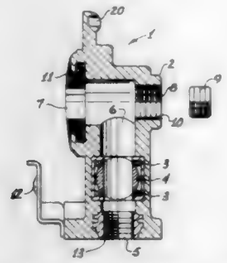
one of the faces is formed in a region offset from the respective face portion with a shallow recess open toward the other face, the recess being located such that in the open position of the valve it opens parallel to the faces into the aperture of the plate of the other face and in the closed position of the valve it is axially closed by the face of the other plate.

5,348,043

UNIVERSAL VALVE COUPLING MEMBER

Cynthia M. Chimera, 3612 Straight Rd., Fredonia, N.Y. 14063

Filed Nov. 5, 1993, Ser. No. 147,407
Int. Cl.[5] F16K *37/00*
U.S. Cl. 137—269 7 Claims



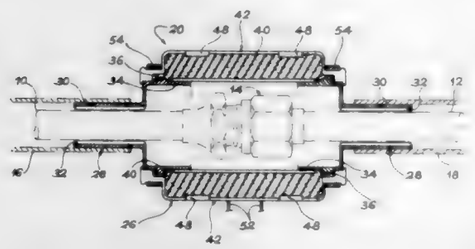
1. A universal valve coupling member comprising in combination a valve housing, an air chamber in said valve housing, a valve handle movably positioned on the exterior of said valve housing, control means extending from said handle to said air chamber, and valve mounting means for air connecting said universal valve from a rear portion of a first trailer to an adjacent surface of a front portion of a second trailer, said valve housing having at a first terminal end an air inlet port, and having at a second terminal end two air outlet ports, one of said two air outlet ports having a removable plug to prevent the escape of air therethrough, when said removable plug is in place in said air outlet said universal valve is used as a service valve, when said removable plug is removed from said air outlet said universal valve is used as an emergency valve, said control means and said handle means controlling the amount of air to enter said air chamber.

5,348,044

SEALED DRAINAGE UNIT FOR A HYDRAULIC CIRCUIT

Michel Eugene, Colomiers; Jean-Claude Rodriguez, Toulouse, and René Debons, Aussonne, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Mar. 17, 1993, Ser. No. 32,506
Claims priority, application France, Mar. 20, 1992, 92 03383
Int. Cl.[5] F16L *55/168*
U.S. Cl. 137—312 6 Claims



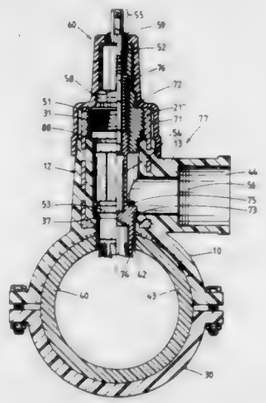
1. Drainage unit adapted to be placed on an enlarged portion of a hydraulic circuit and connecting at least two pipes of this circuit, said drainage unit including a drainage joining piece able to be mounted on each pipe close to the enlarged portion, at least two complementary half-shells, means for closing the half-shells, and imperviousness means inserted between the half-shells and between the joining pieces and the half-shells, wherein the imperviousness means include receptacles containing a humidity-repellent stabilized gel impervious to hydraulic fluid, and projecting portions arranged on said drainage joining pieces and at least one of said half-shells and able to become incrusted inside the stabilized gel by cooperating with said receptacles when said half-shells are closed to prevent any fluid from said hydraulic circuit escaping outside of said drainage unit.

5,348,045

PIPE CLAMP FOR PLASTIC SUPPLY PIPELINES, PARTICULARLY A TAPPING CLAMP

Klaus Servé, Radevormwald, Fed. Rep. of Germany, assignor to Manibs Spezialarmaturen GmbH & Co. KG, Remscheid, Fed. Rep. of Germany

PCT No. PCT/EP93/00340, § 371 Date Oct. 15, 1993, § 102(e) Date Oct. 15, 1993, PCT Pub. No. WO93/16319, PCT Pub. Date Aug. 19, 1993
PCT Filed Feb. 15, 1992, Ser. No. 137,076
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1992, 4204620
Int. Cl.[5] F16K *43/00*; F16L *41/06*
U.S. Cl. 137—318 17 Claims



1. A pipe clamp, particularly a tapping claim for tapping and closing off plastic supply pipelines for any one of gaseous and aqueous material under pressure

having an upper clamp upper shell of plastic, which has a one-piece pipe socket, and can be welded to the desired position of a supply pipeline,

and having a one-piece coaxial, tubular metal insert of the pipe socket, which has connection elements, such as an internal thread accessible from the interior of the pipeline, for connecting various functional tapping elements, wherein

the one-piece metal insert is organized in two axial sections of different shape, including a head section having the connecting elements for the functional tapping elements and a foot section adjacent to the head section and being free of such connecting elements,

wherein only the foot section is embedded in the midst of the pipe wall of the pipe socket in the plastic material and forms a reinforcing sleeve for the pipe socket,

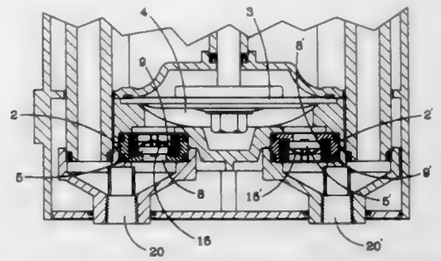
while the head section protrudes freely from the front end of the pipe socket for positioning the connection elements outside of the pipe socket to allow the various tapping elements to be attached thereto.

5,348,046

SPRING CHECK VALVE CARTRIDGE

Nicholas Kozumplik, Jr., and Gerald M. Distel, both of Bryan, Ohio, assignors to The Aro Corporation, Bryan, Ohio

Filed May 13, 1993, Ser. No. 60,916
Int. Cl.[5] F16K *15/02, 15/12*
U.S. Cl. 137—454.4 3 Claims



1. A spring check valve cartridge for a fluid pumping device comprising:

a reversible cylindrical housing having a bore forming a chamber including an inlet orifice and an outlet to said chamber;

a valve means disposed within said bore between said inlet orifice and said outlet for permitting flow of fluid in one direction therebetween;

spring biasing means operable within said bore for biasing said valve means towards a flow stopping position;

said spring biasing means being formed and positioned so as to exert a balanced force on said valve means while permitting travel of said valve means within said bore;

a cage means for retaining said spring biasing means within said bore and for receiving said spring biasing means within a cavity formed therefor in said cage means; and

said spring biasing means further comprises a plurality of umbrella like fingers retained within said bore by said cage means.

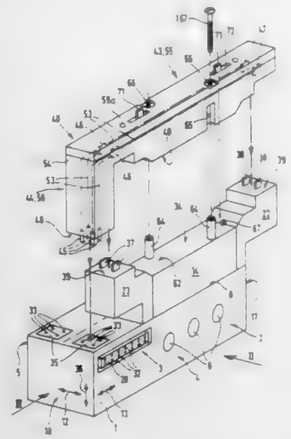
5,348,047

VALVE ARRANGEMENT

Kurt Stoll, Esslingen; Stefan Demuth, Benningen, and Magnus Henzler, Grossbettlingen, all of Fed. Rep. of Germany, assignors to Festo KG, Esslingen, Fed. Rep. of Germany

Filed Jun. 22, 1993, Ser. No. 80,753
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1992, 4222637
Int. Cl.[5] F16K *37/00, 31/11*
U.S. Cl. 137—554 19 Claims

1. A valve arrangement comprising a fluid distributor and a signal distributor arranged adjacent to the fluid distributor for distributing electrical signals, at least one main valve arranged on a component mounting area of the fluid distributor which communicates with fluid ducts of the fluid distributor, and at least one electrically operated control unit arranged adjacent to the main valve, said control unit having a first set of electrical plug connectors electrically connected to an upwardly directed second set of electrical plug connectors of the signal distributor through an L-shaped intermediate part, the intermediate part forming a connection bridge with a first leg having a third set of electrical plug connectors associated with the first leg and a second leg extending from an end of the first leg and having a fourth set of electrical plug connectors associated with the second leg, the third and fourth sets of plug connectors being electrically connected with each other, the control unit being aligned so that the first set of electrical plug connectors is directed upwards and is at a higher level than the second set of electrical plug connectors of the signal distributor, the first leg extending over the control unit with the third set of plug connectors being in plugged connection with the first set of plug connectors of the control unit and the second leg extending past the control unit toward the signal distributor with the fourth set of plug connectors being in plugged connection with the second set of plug connectors, the second set



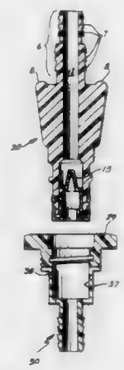
of plugged connectors being arranged clear of the component mounting area of the fluid distributor.

5,348,048

QUICK CONNECT COUPLING SYSTEM

Lowell C. Schirado, 1902 Forest Lake, SE., Grand Rapids, Mich. 49546; James L. Chambers, 3205 Giddings, SE., Grand Rapids, Mich. 49508, and Richard H. Whitaker, 2192 Lamont, NW., Grand Rapids, Mich. 49504

Filed Jan. 8, 1993, Ser. No. 2,441
Int. Cl.[5] F16K *24/00*
U.S. Cl. 137—588 9 Claims



1. In a dispensing system for the dispensing of liquid chemicals that are unsuitable for contact with a user, the combination comprising:

a coupling device comprising a male component and a female component, both generally cylindrical in shape;

said male and female components having a common passage sharing a common axis extending coaxially therethrough;

said female component comprising a female tip disposed in a coaxial relationship with said passage and in fluid communication therewith;

said female tip being adapted to receive a standpipe means thereon in airtight fashion for fluid communication with a liquid to be dispensed;

said female component further comprising internal threads

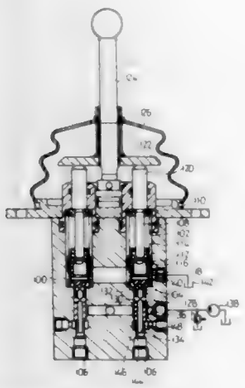
disposed on an annular wall which defines a chamber disposed within said female component in coaxial relationship with said passage;
said chamber comprising an annular sealing surface disposed adjacent to said internal threads;
said male component comprising an annular groove circumferentially disposed about a distal end thereof;
said annular groove having an annular elastomeric seal disposed therein;
said male component further comprising external threads which correspond with said internal threads of said female component whereby said male component is threadingly received within said chamber causing said elastomeric seal to sealingly engage said sealing surface in fluid-tight fashion;
said internal and said external threads being multiple start, coarse pitch discontinuous threads providing a high ratio of axial movement to rotational movement whereby a 90° rotation will fully thread and fully unthread said male component from said female component;
said male component further comprising a male tip disposed at a proximate end adapted to receive a liquid dispensing tube in a fluid-tight fashion;
said male component further comprising a one-way check valve disposed within said passage;
venting means disposed in said female component in air communication with said chamber for equalizing pressure within the container during dispensing of fluid;
said dispensing system further comprising an externally threaded shipping plug for sealingly engaging said female component during shipping of the container; and
said shipping plug comprising a shaft having coarse pitch, discontinuous external threads disposed thereon adapted to threadingly couple with said internal threads of said female component in fluid-tight fashion thereby sealing the container from the outside atmosphere.

5,348,049

INPUT APPARATUS

Yoshitake Yonekubo, Tokyo; Hideshi Koiwai, Toda, and Susumu Narita, Sagamihara, all of Japan, assignors to Kayaba Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 875,642, Apr. 29, 1992, Pat. No. 5,251,534. This application Dec. 16, 1992, Ser. No. 991,567
Int. Cl.[5] F15B *13/02*
U.S. Cl. 137—636.2 **2 Claims**



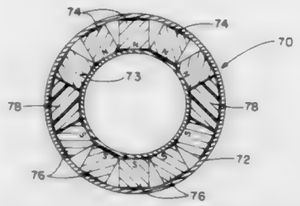
1. An input apparatus comprising:
a control section,
a body formed with a pump passage and an output port,
push rods arranged in said body and operatively connected to said control section,
elastic means arranged in said body and operatively connected to each of said push rods,
a shuttle arranged in said body and operatively connected to an individual one of said push rods,
said shuttle having a pressure receiving surface and being formed with a passage,
pressing operation of said control section causing said shuttle to be moved through said individual one of said push rods in a one direction against said elastic means to communicate said shuttle passage with said pump passage of said body, resulting in feeding hydraulic oil from a hydraulic pump through said shuttle to said output port of said body and balancing a back pressure acting on said pressure receiving surface of said shuttle through said output port with elastic force of said elastic means to determine a position of said shuttle and a hydraulic pressure output through said output port depending on the amount of operation of said control section, and
said body including a pilot section having a hydraulic signal passage communicating with said shuttle pressure receiving surface through which an external hydraulic signal can be fed to exert a force on said shuttle pressure receiving surface to move said shuttle in a second direction opposing said one direction against said elastic means and therewith provide a control of a hydraulic pressure output through said output port counteractive to that otherwise determined by a position of said individual one of said push rods.

5,348,050

MAGNETIC FLUID TREATMENT DEVICE

Thomas E. Ashton, 8215 Crudele Dr., Garfield Heights, Ohio 44125

Filed Jul. 19, 1993, Ser. No. 93,476
Int. Cl.[5] F15C *1/04*
U.S. Cl. 137—827 **6 Claims**



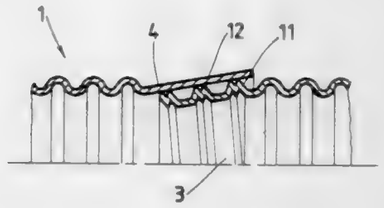
1. A magnetic fluid treatment device, comprising:
first and second elongated cup shaped members positionally aligned to form a tube;
a plurality of magnets received by said elongated cup shaped members, said magnets being arranged in diametrically opposed pairs, within said tube;
a fluid conducting conduit extending axially through said tube, said magnets being interposed between said elongated cup shaped members and said conduit;
a tubular housing receiving said elongated cup shaped members, said tubular housing being capped at opposite ends thereof with caps extending between said tubular housing and said conduit; and
further comprising a plurality of said tubular housings, each receiving said first and second elongated cup shaped members and said plurality of magnets, and each having a conduit extending axially therethrough, said conduits being interconnected at opposite ends thereof to respective inlet and outlet conduits, said conduits having an aggregate cross sectional area substantially equal to the cross sectional area of the inlet and outlet conduits to which they are connected.

5,348,051

FLEXIBLE SWIMMING POOL CLEANER HOSE

Dieter H. F. Kallenbach, Plot 8, 9th Street, Chartwell, Transvaal Province, South Africa

Continuation-in-part of Ser. No. 825,009, Jan. 24, 1992, abandoned. This application Feb. 12, 1993, Ser. No. 17,144
Int. Cl.[5] F16L *9/18, 9/00*
U.S. Cl. 138—109 **9 Claims**



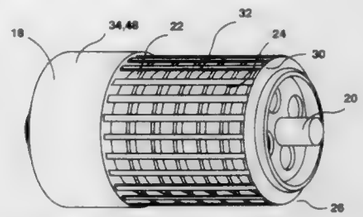
1. A length of flexible hose of corrugated form with walls of generally constant thickness connected to an integral male coupling component at one end and a female coupling component at the other end, the male coupling component having a plurality of outwardly extending rings spaced apart along the length thereof of decreasing diameter towards the free end and the female coupling component providing a sleeve to extend over the male coupling component and the male coupling component is more rigid than the female coupling component defining a means allowing said female coupling component to deflect inwardly in response to reduced fluid pressure to provide a seal between said female coupling component and said male coupling component.

5,348,052

MULTI-LAYERED TRANSLATED RIB-STIFFENED COMPOSITE HOLLOW CYLINDER ASSEMBLY

Roger M. Crane, Arnold, and D. Michael Bergen, Grasonville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 836,895, Feb. 19, 1992, Pat. No. 5,261,616. This application Sep. 30, 1993, Ser. No. 128,785
Int. Cl.[5] F16L *11/08*
U.S. Cl. 138—174 **14 Claims**



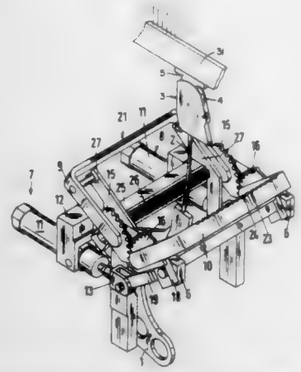
1. A translated multiple rib-stiffened composite cylinder having a hollow core, said composite cylinder comprising:
a cylindrical inner skin;
a plurality of inner circumferential ribs located radially outwardly adjacent to said inner skin and spaced apart longitudinally;
a pair of inner pin rings located at the axial ends of said composite cylinder, one said inner pin ring at each axial end, each said inner pin ring having a ring portion and a plurality of pins spaced apart circumferentially and projecting radially from said ring portion;
a plurality of inner longitudinal stringers located radially outwardly adjacent to said inner circumferential ribs, said inner longitudinal stringers engaged with said pins of said inner pin rings and spaced apart circumferentially and correspondingly with said pins of said inner pin rings;
a pair of inner bands located radially outwardly adjacent to said inner longitudinal stringers and longitudinally inwardly adjacent to said first pin rings;
an intermediate skin located radially outwardly adjacent to said inner bands and said inner longitudinal stringers;
a plurality of outer circumferential ribs located radially outwardly adjacent to said intermediate skin, said outer circumferential ribs spaced apart longitudinally and staggeringly with respect to said inner circumferential ribs;
a pair of outer pin rings located at the axial ends of said composite cylinder, one said outer pin ring at each axial end, each said outer pin ring having a ring portion and a plurality of pins spaced apart circumferentially and projecting radially from said ring portion;
a plurality of outer longitudinal stringers located radially outwardly adjacent to said outer circumferential ribs, said outer longitudinal stringers engaged with said pins of said outer pin rings and spaced apart circumferentially and correspondingly with said pins of said outer pin ring;
a pair of outer bands located radially outwardly adjacent to said outer longitudinal stringers and longitudinally inwardly adjacent to said outer pin rings;
an outer skin located radially outwardly adjacent to said outer bands and said outer longitudinal stringers.

5,348,053

DEVICE FOR COUPLING AND UNCOUPLING HEALD SHAFTS

Gustav Oertli, Brütten, Switzerland, assignor to Sulzer Rueti AG, Rueti, Switzerland

Filed Sep. 2, 1993, Ser. No. 116,142
Claims priority, application European Pat. Off., Nov. 13, 1992, 92810884.4
Int. Cl.[5] D03C *9/00, 1/14*
U.S. Cl. 139—57 **9 Claims**



1. In a heald shaft drive a device for coupling and uncoupling heald shafts associated with a plurality of shaft rods to and from a shaft drive, the device including a first coupling part adapted to be connected to each heald shaft, a second coupling part adapted to be connected to each shaft rod and a locking element mounted to one of the coupling parts for locking said coupling parts together, wherein the improvement comprises:
first and second pivotally mounted stabilizing members, the stabilizing members being configured to move between an open position and a closed position, the stabilizing members unlocking each locking element and maintaining each second coupling part positionally stable when moved into the closed position;
a drive coupled to the first and second members for moving the members in opposite directions with respect to each other between the open and closed position; and

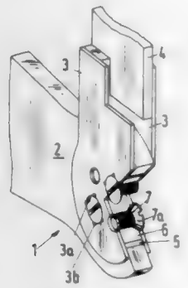
the stabilizing members having a plurality of recesses for receiving each second coupling part.

5,348,054

DEVICE FOR MAKING A HINGED CONNECTION BETWEEN TWO PARTS IN A LOOM

Gustav Oertli, Brütten, Switzerland, assignor to Sulzer Ruti AG, Ruti, Switzerland

Filed Sep. 21, 1993, Ser. No. 125,041
Claims priority, application European Pat. Off., Nov. 13, 1992, 92810887.7
Int. Cl.[5] D03C *1/14*
U.S. Cl. 139—57 18 Claims



4. A device for coupling first and second parallel parts to a third part therebetween, the device comprising:

at least one fastener removably mounted to the bearing part and the parallel parts, the fastener having a head with a frustoconical profile;

the third part having a recess with an outer conical portion, the conical portion having an outer diameter;

at least one of the parallel parts having an opening with an inner diameter and a circumference, the inner diameter being smaller than the outer diameter of the conical portion so that the head of the fastener rests against said parallel part;

means for transmitting force coupled to the parallel parts; and

a cylindrical rod fitted within the force transmitting means.

5,348,055

HEDDLE EYELET STRUCTURE

Charles F. Kramer, Greenville, S.C., assignor to Steel Heddle Mfg. Co., Greenville, S.C.

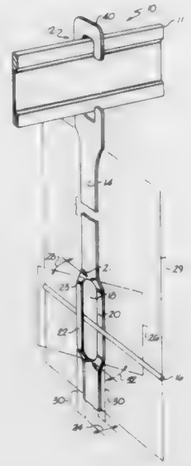
Filed May 6, 1993, Ser. No. 57,578
Int. Cl.[5] D03C *9/04*
U.S. Cl. 139—93 12 Claims

1. A heddle for use in a weaving loom, the heddle having an end-loop configured at one or both ends thereof for mounting said heddle on a slide bar of a harness frame, said heddle comprising:

a substantially flat width section, said width section configured to be substantially parallel to the warp threads in a loom upon said heddle being mounted on the slide bar of the harness frame;

an eye disposed through said width section intermediate the ends of said heddle, said eye defined by a first side segment and a second side segment, said segments being oppositely laterally disposed in different but parallel planes a predetermined distance from said width section so that a plane through said eye forms a predetermined non zero angle with a plane through said width section; and

wherein said side segments are formed so that a plane through each said side segment forms a predetermined



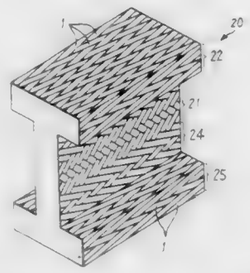
angle with the plane of said eye which is substantially equal to said non zero angle.

5,348,056

THREE-DIMENSIONAL WOVEN FABRIC WITH VARIED THREAD ORIENTATIONS

Makoto Tsuzuki, Tsukuba, Japan, assignor to Three-D Composites Research Corporation, Tsukuba, Japan

PCT No. PCT/JP92/00524, § 371 Date Jan. 21, 1993, § 102(e) Date Jan. 21, 1993, PCT Pub. No. WO92/18674, PCT Pub. Date Nov. 29, 1992
PCT Filed Apr. 23, 1992, Ser. No. 958,345
Claims priority, application Japan, Apr. 23, 1991, 3-119343
Int. Cl.[5] D03D *13/00, 41/00*
U.S. Cl. 139—384 R 4 Claims



1. A three-dimensional fabric which is formed in a desired cross-sectional shape, which comprises:

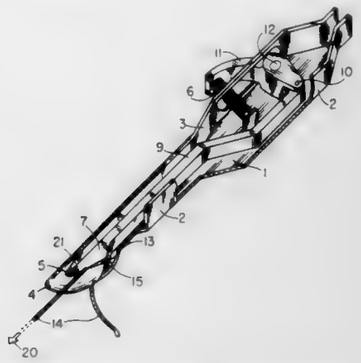
a plurality of interwoven threads oriented with an angle of inclination from the longitudinal direction of the three-dimensional fabric, the threads being folded back at the surface of the fabric as said threads are interwoven with each other continuously in the longitudinal direction, wherein said three-dimensional fabric comprises a thread portion with a varied orientation angle formed in part of a sectional area of said fabric by an altered orientation angle, relative to the longitudinal direction of the fabric, of thread portions extending continuously between two adjacent weave portions of said fabric.

5,348,057

TAKER GRIPPER IN WHICH THE WEDGE MOVES AXIALLY WITHIN THE HOOK

Luciano Corain, Vicenza, and Giulio Bortoli, Schio, both of Italy, assignors to Nuovopignone Industrie Meccahniche E Fonderia S.p.A., Florence, Italy

Filed Jun. 11, 1993, Ser. No. 75,027
Claims priority, application Italy, Jun. 23, 1992, MI92A001534
Int. Cl.[5] D03D *47/20*
U.S. Cl. 139—448 3 Claims



1. A taker gripper for drawing a weft in loom use, comprising a gripper body provided at one end with a horizontally positioned movable hook having an outer lower surface and an inner surface within which an axially movable wedge having a free edge is maintained elastically pressed by a spring to form on one side of said hook a narrow V recess into which the weft to be drawn is inserted and wedged, said spring acting on that end of a lever extending externally to the gripper body, the lever being hinged at its center to said gripper body and having the free end of said wedge hinged to its other end, characterized in that said weft is also maintained elastically pressed by an elastic blade that has a rear end against a shallow recess provided in the outer lower surface of the hook, and that inner surface of the hook on the side opposite the side of said hook that forms said narrow V recess is formed so that it diverges from the corresponding surface of the wedge and from the direction of wedge axial movement.

5,348,058

CLEAN-IN-PLACE FILLING MACHINE

Mark A. Ruhl, Baltimore, Md., assignor to National Instrument Company, Inc., Baltimore, Md.

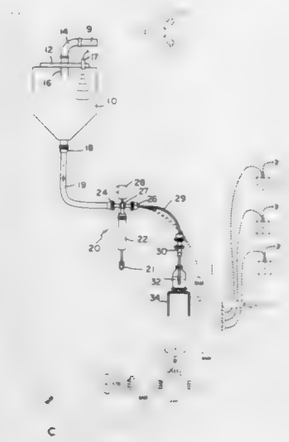
Filed Nov. 6, 1992, Ser. No. 972,808
Int. Cl.[5] B65B *3/04*
U.S. Cl. 141—1 23 Claims

1. A method of cleaning-in-place a filling machine including a supply tank connected to a filling nozzle by a filling unit and a flush tank connected to a pump by a valve which also has a drain outlet comprising the steps of:

a) initially rinsing said supply tank, said filling unit and said nozzle with rinsing fluid exiting said drain outlet via said flush tank and said valve;

b) filling said flush tank with water and mixing with cleaning fluid from a cleaning fluid source subsequently introduced into said flush tank;

c) washing with mixed cleaning fluid from said flush tank via said valve, said pump, said supply tank, said filling unit and said nozzle back to said flush tank; and



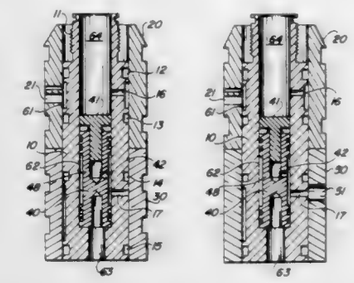
d) finally rinsing said supply tank, said filling unit and said nozzle with rinsing fluid exiting said drain outlet via said flush tank and said valve.

5,348,059

MULTI FUNCTION REFILL ADAPTOR FOR GAS OPERATED AIRGUNS

Kent L. Carroll, Bolingbrook, Ill., assignor to Air America, Glenview, Ill.

Filed Sep. 7, 1993, Ser. No. 117,527
Int. Cl.[5] F17C *5/00;* F41B *11/00*
U.S. Cl. 141—21 14 Claims



1. A multi function adaptor for use with a gas operated airgun facilitating use of a compressed gas propellant and the refilling of a gas supply vessel connected to said airgun from an external bulk gas supply source, said adaptor comprising:

a strut comprising a hollow cylinder including external and internal walls;

a threaded section at one end of said strut adapted to be connected to said airgun;

a first sleeve comprising a hollow cylinder positioned over an upper section of said strut;

a first sump;

said first sleeve including a first orifice connected to said first sump, said orifice adapted to be connected to said gas supply vessel;

a second sump;

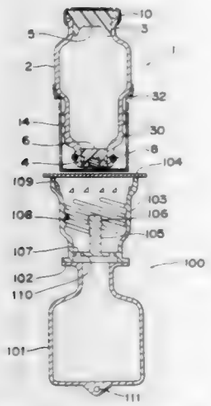
a second orifice connecting said first sump to said second sump;

a reverse check valve internal to said strut;

a third sump;

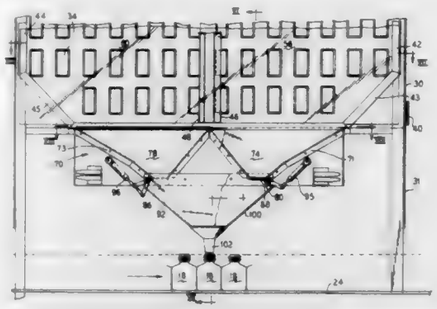
a third orifice connecting said third sump to said strut external walls;
a second sleeve positioned over the lower portion of said strut, sealing said third orifice facilitating the flow of gas from said gas supply vessel through said adaptor to said airgun;
and as a replacement for said second sleeve, a third sleeve, positioned over the lower portion of said strut;
said third sleeve including an orifice in connection with said strut third orifice extending to said third sump;
facilitating the flow of gas from an external bulk supply source through said adaptor to said gas supply vessel.

5,348,060
DRUG VESSEL
Hitoshi Futagawa, Kusatsu; Koji Ikeda, Osaka, and Toshihiro Kikuchi, Suita, all of Japan, assignors to Nissho Corporation, Osaka, Japan
Filed Jul. 24, 1992, Ser. No. 917,942
Claims priority, application Japan, Aug. 8, 1991, 3-223466
Int. Cl.[5] B65B *1/04, 3/04*
U.S. Cl. 141—100 **28 Claims**



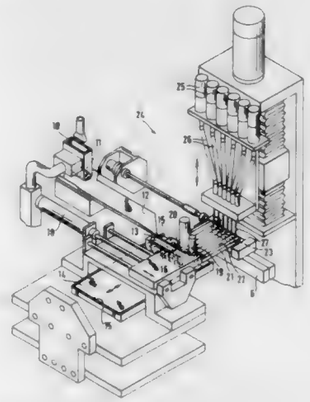
1. A drug vessel for use in combination with a solvent containers, comprising:
a cylindrical vessel body having upper and lower mouth portions reduced in diameter, said lower mouth portion being provided on its outer periphery with a male screw thread for complementary engagement with a solvent container and a circumferential groove for receiving a sealing ring;
upper and lower sealing members for closing said upper and lower mouth portions, said lower sealing member being provided in its lower end with a recess for engagement with a pushing rod of a solvent container; to prevent the lower sealing member from falling into the solvent container upon engagement of said vessel with said container;
clamping means for retaining said upper sealing member within the vessel and for keeping said upper mouth portion in an aseptic condition; and
a cap removably attached to said lower mouth for keeping said lower mouth portion in an aseptic condition.

5,348,061
TABLET ACCUMULATOR FOR AN AUTOMATED PRESCRIPTION VIAL FILLING SYSTEM
Archie Riley, Athens, Ga., and Keith Goodale, Park City, Ill., assignors to Baxter International Inc., Deerfield, Ill.
Filed Dec. 1, 1992, Ser. No. 984,048
Int. Cl.[5] G01G *19/00*
U.S. Cl. 141—104 **7 Claims**



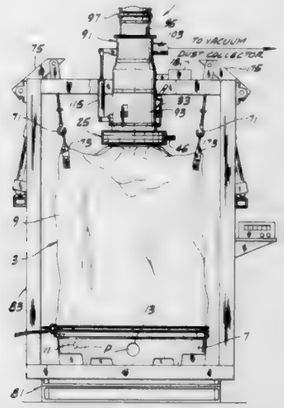
1. An apparatus for staging drugs prior to dispensing into a container, comprising:
means for receiving a drug falling under the influence of gravity and for storing the drug;
a plurality of means for releasably retaining the drug, the plurality of means for releasably retaining within the means for receiving; and
a plurality of means for releasing said plurality of means for releasably retaining and allowing the drug to again fall under the influence of gravity.

5,348,062
EQUIPMENT FOR MANUFACTURING OF SUBCUTANEOUS CAPSULES
Rolf Hartzell; Timo Helle; Pekka Lankinen, all of Turku, and Pekka Nieminen, Preitilä all of Finland, assignors to Leiras Oy, Turku, Finland
Continuation of Ser. No. 721,457, Jul. 3, 1991, Pat. No. 5,230,207. This application Jul. 26, 1993, Ser. No. 96,869
The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.
Int. Cl.[5] B65B *1/02, 1/12;* **A61J** *3/07*
U.S. Cl. 141—186 **9 Claims**



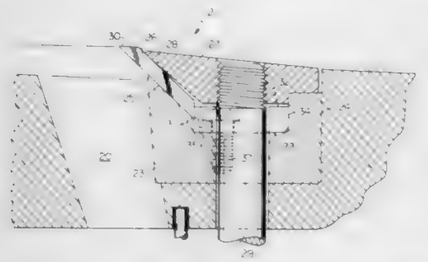
1. Apparatus for filling a plurality of capsules with a selected medicine, the capsules each having a closed lower end and an open top end and being mounted in the apparatus for filling the medicine into the capsules through the open top end, the apparatus comprising:
a dosing mechanism which separately measures a selected quantity of the medicine for input into each capsule;
a capsule filling mechanism comprising a plurality of funnels each having an axis, the funnels each receiving a measured quantity of medicine and funneling the received medicine to an open delivery end of the funnels;
the capsules being mounted such that the open top ends of the capsules are disposed at the open delivery ends of the funnels for receipt of the measured quantities of medicine;
the filling mechanism further comprising a plurality of spiral spring mechanisms, the spiral spring mechanisms being insertable through the open top ends and removable from the capsules, the spiral spring mechanisms further being rotatable simultaneously with insertion into the capsules for filling the capsules with the measured quantities of medicine.

5,348,063
MATERIAL HANDLING SYSTEM
Avrom R. Handleman, Webster Groves, Mo., assignor to Semi-Bulk Systems, Inc., St. Louis, Mo.
Continuation of Ser. No. 402, Jan. 4, 1993, abandoned. This application Oct. 29, 1993, Ser. No. 144,806
Int. Cl.[5] B65B *1/04, 3/04*
U.S. Cl. 141—314 **27 Claims**



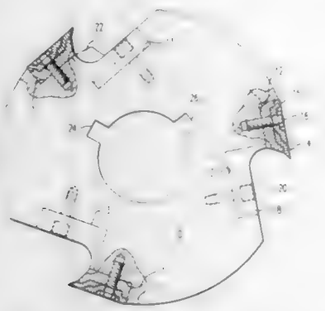
1. A material handling system for effecting the transfer of powdered or granular fluent material with respect to a container while preventing the escape of such material to a surrounding work environment, said system comprising
a container defining a volume for containing a load of said material and having an opening in the top of the container in communication with said volume,
a lower closure device secured to the container at the top thereof, said closure device being movable between a closed position closing said opening and an open position for permitting access to said volume via said container opening,
an upper closure device on the container above the lower closure device, at least part of said upper closure device being adapted for removal from the container to permit access to the container opening when said lower closure device is in its open position,
a tubular head comprising an outer sleeve, and inner tube means inside the outer sleeve and generally coaxial therewith,
the container being adapted to be sealingly connected to said tubular head with the outer sleeve in sealing engagement with respect to the container when at least part of said upper closure device is removed from the container,
actuator means for moving said inner tube means axially relative to the outer sleeve between a raised position and a lowered position in which said inner tube means extends endwise down beyond the outer sleeve,
said actuator means being operable to move said inner tube means from its raised position to its lowered position after said container has been connected to said tubular head with the outer sleeve in sealing engagement with respect to the container and with at least part of said upper closure device removed from the container, and after said lower closure device has been opened to permit passage of said inner tube means down through said container opening, and
said actuator means being further operable to move said inner tube means back to its raised position whereby said lower closure device may be closed prior to disconnection of the container from the tubular head.

5,348,064
REVERSIBLE KNIFE HOLDER FOR CHIPPER
Timothy P. Nettles, Carthage; Scott J. Boliver, Croghan, and Mark D. Robinson, Black River, all of N.Y., assignors to Carthage Machine Company, Carthage, N.Y.
Filed Sep. 7, 1993, Ser. No. 116,612
Int. Cl.[5] B27C *1/00;* **B02C** *18/18*
U.S. Cl. 144—176 **10 Claims**



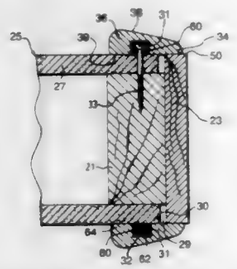
1. Apparatus for cutting logs into wood chips, including a rotary cutting disk having a rotational plane, a plurality of radially disposed knife assemblies secured into elongated cutouts in a proximal face of said rotary disk, each knife assembly being situated adjacent an entrance to a respective chip slot that passes axially through the disk, each of said knife assemblies comprising:
a reversible double-edge knife blade having a nonrectangular cross section with upper and lower parallel surfaces and first and second sloping surfaces each leading to a respective cutting edge;
a knife holder base that is secured into a respective one of the cutouts in said disk, having a ramp surface adjacent the chip slot on which the lower surface of the knife blade is supported, and a recess that extends from the ramp surface to a shoulder;
a load bar positioned in said recess having one edge surface abutting the shoulder of said knife holder base an opposite edge surface supporting one of the sloping surfaces of said knife blade, said opposite edge surface being disposed at a high angle relative to the rotational plane of the disk; and
a knife holder clamp that removably secures onto said knife holder base over said load bar and that has a portion thereof biasing against the upper surface of said blade.

5,348,065
CUTTER BLADE ARRANGEMENT
Scott W. Meyer, Tampa, Fla., assignor to Iggesund Tools AB, Iggesund, Sweden
Filed Sep. 22, 1992, Ser. No. 948,283
Claims priority, application Sweden, Sep. 25, 1991, 9102796-1
Int. Cl.[5] B26D *1/12*; B27G *13/00*
U.S. Cl. 144—231 9 Claims



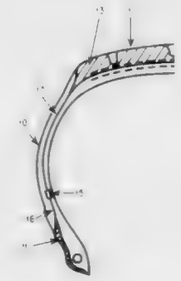
1. In a cutting blade for cutting logs to timber form, wherein the cutting blade includes an outer periphery having a first recess formed therein, at least one knife means mounted in the first recess in the periphery of the cutting blade, a second recess in the periphery of the cutting blade adjacent the first recess formed therein which functions to accommodate chips removed by the knife means, the improvement comprising, the knife means being secured to the cutting blade by a screw-threaded bolt means which passes through the knife means and into the cutting blade, a separate wear insert mounted with the second recess, said wear insert being removably connected to the cutting blade, each of said knife means and said wear insert having outer surfaces, said wear insert being secured to the cutting blade by second bolt means which extends through said wear insert and into the cutting blade, and each of said knife means and said wear insert having outer surfaces with a countersunk opening for said bolt means so as to provide smooth outer surfaces on said knife means and said wear insert whereby said bolt means and said second bolt means are substantially flush with said outer surfaces of said knife means and said wear insert, respectively.

5,348,066
WOOD TRIM SYSTEM
Bryan A. Wilson, Box 1886, Espanola, Ontario, Canada P0P 1C0
Filed Mar. 23, 1992, Ser. No. 855,587
Int. Cl.[5] B27F *7/00*
U.S. Cl. 144—344 20 Claims



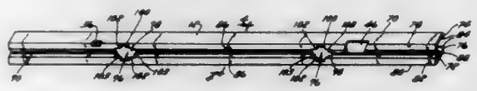
20. Procedure for attaching solid wood door and window trim, baseboard trim, or other trim, to a wall, wherein:
the procedure includes the step of providing a lengths of solid wood trim, and lengths of spline;
the procedure includes the step of providing a groove in the trim which is complementary in cross-sectional size and shape to the cross-section of the spline;
the procedure includes the step of fixing the spline solidly to the wall by means of fasteners;
the procedure includes the step of applying the trim over the spline, whereby the groove in the trim engages the spline;
the procedure includes the step of so dimensioning the groove and the spline that, upon engagement, the sides of the groove are in contact with the sides of the spline, thereby creating a frictional resistance to the dislodgement of the trim from the spline.

5,348,067
ELECTRONIC CIRCUIT UTILIZING ELECTRICALLY CONDUCTIVE AREAS OF A TIRE
David Myatt, Chateaugay, France, assignor to Compagnie Generale des Etablissements Michelin - Michelin & Cie, Clermont-Ferand Cedex, France
Filed Oct. 15, 1992, Ser. No. 961,383
Claims priority, application France, Oct. 15, 1991, 91 12791
Int. Cl.[5] B60C *19/00*
U.S. Cl. 152—152.1 10 Claims



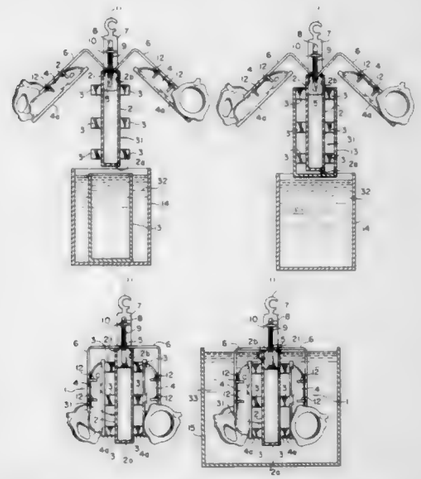
1. A tire comprising:
at least two areas of electrically conductive rubber separated from one another by an area of nonconductive rubber, said at least two areas of electrically conductive rubber being electrically insulated from one another; and
an integrated circuit embedded within a thickness of the tire, said circuit having a first electric pole electrically connected to a first one of said electrically conductive areas such that said first one of said electrically conductive areas comprises an electrode for galvanic contact with said circuit, and a second electric pole electrically connected to a second one of said electrically conductive areas such that said second one of said electrically conductive areas comprises another electrode for galvanic contact with said circuit.

5,348,068
MINI BLIND HEAD RAIL
John A. Elsenheimer, and Timothy K. Riddle, both of Freeport, Ill., assignors to Newell Operating Co., Freeport, Ill.
Filed Jan. 21, 1993, Ser. No. 6,638
Int. Cl.[5] E06B *9/26*
U.S. Cl. 160—176.1 27 Claims



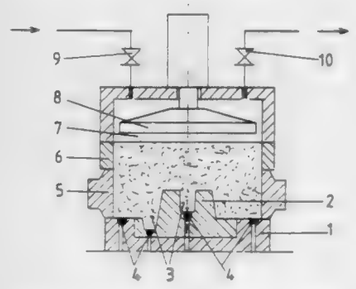
1. A mini blind system, comprising:
a head rail including a pair of side walls and a bottom wall, wherein the bottom wall includes a recessed channel extending along its length, the bottom wall further including at least two ladder apertures extending therethrough;
a basket assembly mounted in each ladder aperture and including a rotator element and a flexible ladder having a plurality of support strings;
a plurality of slats supported by the respective ladders whereby the slats may be pivoted between a substantially open position and a substantially closed position in response to rotation of the rotator element; and
a rotator assembly configured to selectively rotate the rotator element, wherein each ladder aperture comprises an opening extending sufficiently inward along the bottom wall to prevent contact of the bottom wall with any Of the support strings when the plurality of slats is pivoted to the substantially closed position.

5,348,069
LOST FOAM PATTERN FOR MOLDING AND METHOD OF MAKING SAME
Masahiko Shibahara; Nobuhide Takeshige; Hiroshi Asai, and Motofumi Omori, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Nov. 13, 1992, Ser. No. 976,069
Claims priority, application Japan, Nov. 15, 1991, 3-328139
Int. Cl.[5] B22C *9/04*
U.S. Cl. 164—34 5 Claims



1. A method of manufacturing a molding product by using an evaporative foam pattern, made out of synthetic resin which is decomposed and gasified by molten metal, comprising the steps of:
providing a runner portion foam pattern so as to extend vertically, said runner portion foam pattern including a hollow portion and a base portion;
providing a plurality of short-sized gate portion foam patterns integrally on external surfaces of the hollow portion of the runner portion foam pattern;
providing a product portion foam pattern;
positioning and fixing a jig member to an upper opening portion of the runner portion foam pattern;
attaching a handling device to the product portion foam pattern, said handling device being movably mounted to the jig member at its end;
coating an adhesive on edge surfaces of said short-sized gate portion foam pattern;
adhering the product portion foam pattern to the external surfaces of the hollow portion through the plurality of short-sized gate portion foam patterns so as to provide the evaporative foam pattern by closing the handling device;
burying the evaporative foam pattern in a sand mold; and
pouring molten metal into the evaporative foam pattern through the upper opening portion of the runner portion foam pattern.

5,348,070
PROCESS FOR THE COMPRESSION OF MOLDING SAND FOR CASTING MOLDS
Kurt Fischer, and Hans Leutwiler, both of Schaffhausen, Switzerland, assignors to Georg Fischer AG, Schaffhausen, Switzerland
Filed Mar. 8, 1993, Ser. No. 27,359
Claims priority, application Switzerland, Mar. 10, 1992, 759/92
Int. Cl.[5] B22C *15/28*
U.S. Cl. 164—38 5 Claims



1. A process for compressing molding sand in a molding apparatus having a pattern plate, a casting pattern arranged on the pattern plate and a molding box mounted on the pattern plate so as to define therewith a molding space around the pattern, the process comprising the steps of:
(a) providing a source of compressed air;
(b) feeding molding sand into the molding space such that the molding sand covers the casting pattern thereby forming a surface layer of the molding sand on the pattern plate;
(c) precompacting the molding sand on the pattern plate by (1) applying a surge of compressed air to the molding sand at a first pressure-rise gradient of between 0.3 bar/sec. to 18 bar/sec. to produce a first pressure P_1 and thereafter (2) increasing the first pressure-rise gradient to a second pressure-rise gradient of between 18 bar/sec. to 95 bar/-sec. to produce a second pressure P_2 where $P_1 < P_2 \leqq 20$ bar; and
(d) final compacting the molding sand on the pattern plate by mechanically pressing the molding sand while reducing the pressure P_2 in a controlled manner at a pressure-reduction gradient of at least 3 bar/sec.

5,348,071
TOP FILL CASTING
Arnold J. Cook, Pittsburgh, Pa., assignor to PCC Composites, Inc., Pittsburgh, Pa.
Continuation of Ser. No. 880,228, May 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 596,062, Oct. 11, 1990, Pat. No. 5,111,870. This application Jun. 15, 1993, Ser. No. 77,886
The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.
Int. Cl.[5] B22D *18/00, 19/14*
U.S. Cl. 164—61 10 Claims

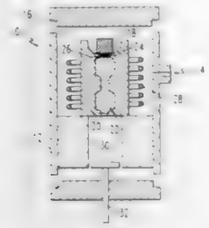
1. An apparatus for casting comprising:
a pressure vessel;
means for pressurizing the vessel, said pressurizing means fluidically connected to the vessel;
a chamber disposed in the pressure vessel within which material is melted;
a mold adapted to contain a preform disposed in the pressure

vessel and in fluidic connection with the chamber by a passage such that melted material in the chamber can be forced down into the mold through the passage as the pressurizing means pressurizes the vessel, said passage contains a filter such that the melted material is prevented from entering the interior of the mold prior to pressurization but passes through the filter upon a desired pressurization;

means for heating material in the chamber and the mold such that material is melted in the chamber and stays melted as it is forced down into the mold while the pressurizing means pressurizes the vessel, said heating means disposed in the vessel; and

means for directionally solidifying the material in the mold.

6. A method for casting comprising the steps of:



loading a pressure vessel by disposed a material within a chamber whereby the material is in fluidic connection with a mold adapted to contain a preform through a passage, said passage having a filter disposed therein;

melting the material in the chamber with heating means disposed in the chamber whereby the melted material fluidically seals the passage thereby isolating the interior of the mold from the interior of the vessel, said filter prevents melted material from entering the interior of the mold;

pressurizing the vessel such that the melted material is forced past said filter and down into the interior of the mold; and

directionally solidifying the material in the mold.

5,348,072

CONTINUOUS CASTING PLANT FOR THE CONTINUOUS HORIZONTAL CASTING OF METALS

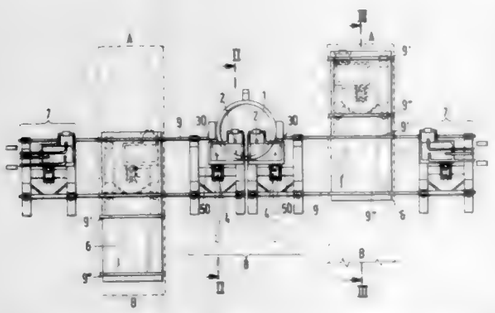
Franz Keutgen; Heinz-Josef Leuwer, both of Lissendorf; Dieter Perings, Büdesheim; Peter Stadler, Netphen, and Rüdiger Winterhager, Freudenberg, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Feb. 22, 1993, Ser. No. 23,772

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1992, 4205772

Int. Cl.[5] B22D *11/04, 47/00*

U.S. Cl. 164—420 **5 Claims**



1. A continuous casting plant for the horizontal casting of steel in a plurality of strands and with horizontal drawing-off of the strands, comprising a casting ladle having a bottom, two discharge openings defined in the bottom, a closure device for each discharge opening, tundish cars movable on rails extending horizontally and transversely to the casting direction between a preparation position and a casting position underneath the casting ladle, each tundish car having at least one tundish channel aligned with the discharge opening when in the casting position and each tundish channel having at least one outlet opening, a mold arranged in axial alignment with each outlet opening, and means for fixedly connecting the mold to the tundish channel, the rails extending in a travel direction, having rail sections between the preparation position and the casting position and means for displacing the rail sections out of the travel direction, wherein the rail sections have a length sufficient for receiving one of the tundish

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5,348,073

METHOD AND APPARATUS FOR PRODUCING CAST STEEL ARTICLE

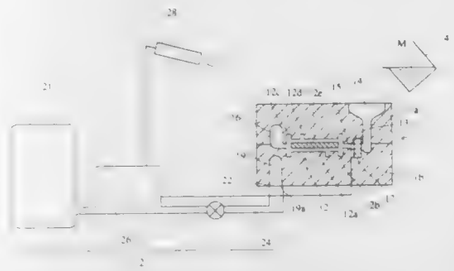
Kimio Kubo, Tochigi, and Naotaka Deki, Mooka, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Apr. 1, 1993, Ser. No. 43,382

Claims priority, application Japan, Apr. 2, 1992, 4-80748; Sep. 24, 1992, 4-254398; Feb. 3, 1993, 5-16226

Int. Cl.[5] B22D *18/06*

U.S. Cl. 164—457 **22 Claims**



1. A method of producing a cast steel article in a permeable mold having a sprue, a cavity in communication with the sprue, and a rise/run-off portion in communication with the cavity, the method comprising the steps of:

forming a hole in a surface of the mold, the hole terminating at a location in the mold and spaced from the rise/run-off portion, the hole terminating closer to the rise/run-off portion than the sprue;

pouring a steel melt into the sprue to fill the cavity; and

evacuating the formed hole to reduce the pressure in the rise/run-off portion and the cavity in a direction from the sprue toward the rise/run-off portion.

5. An apparatus for producing a cast steel article, said apparatus comprising:

a permeable mold having a sprue, a cavity in communication with the sprue, and at least one rise/run-off portion in communication with the cavity, said permeable mold being provided with a hole having an opening on a mold surface, said hole terminating at a location in said mold and spaced from and adjacent to said rise/run-off portion; and

a vacuum apparatus having a suction pipe with an opening which is brought into contact with said hole of said permeable mold, wherein the air is sucked from said hole by said vacuum apparatus drawing the air from said rise/run portion through said permeable mold and into said hole, in order to conduct the casting of said article at reduced pressure.

5,348,074

PROCESS AND A DEVICE FOR CONTINUOUS CASTING OF SLABS OR INGOTS

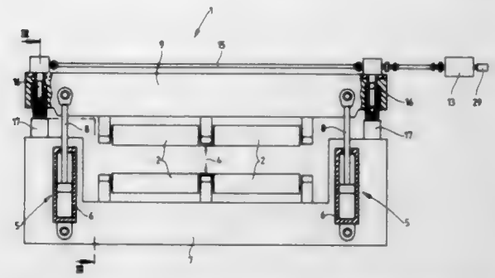
Hans Streubel, Erkrath, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag Aktiengesellshaft, Deutschland, Fed. Rep. of Germany

Filed Nov. 20, 1992, Ser. No. 979,596

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1991, 4138740

Int. Cl.[5] B22D *11/128*

U.S. Cl. 164—476 **7 Claims**



1. A process for continuous casting of slabs and blooms in a casting machine by means of a soft-reduction area including at least a pair of movable rollers arranged in a plane perpendicular to the casting direction, a hydraulic cylinder for driving the rollers towards each other and an adjustable spindle for holding the rollers apart by a desired gap, the process comprising the steps of:

A. measuring a force applied to the spindle which keeps the rollers separated;

B. using the force measured in step A to control the hydraulic cylinder to reduce the force to a predetermined value, the predetermined value being substantially less than a value of the force measured in step A; and

C. adjusting the spindle respectively to locate the rollers at the desired gap when the force has been reduced to the predetermined value.

5,348,075

THE MANUFACTURE OF THIN METAL SLAB

Robert M. Perry, Hensingham; Timothy Reynolds, Tallentire; Thomas Hope, Tickhill, and Kenneth T. Lawson, Hathersage, all of England, assignors to Davy (Distington) Limited, United Kingdom

PCT No. PCT/GB89/00676, § 371 Date Jan. 29, 1991, § 102(e) Date Jan. 29, 1991, PCT Pub. No. WO89/12517, PCT Pub. Date Dec. 28, 1989

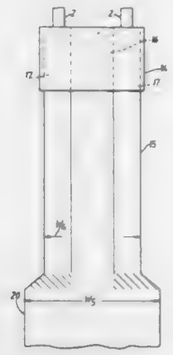
Continuation of Ser. No. 623,755, Jan. 29, 1991, abandoned. This PCT application Jun. 16, 1989, Ser. No. 33,051

Claims priority, application United Kingdom, Jun. 16, 1988, 8814331; Nov. 25, 1988, 8827570

Int. Cl.[5] B22D *11/12*

U.S. Cl. 164—476 **3 Claims**

1. A method of manufacturing a thin metal slab comprising the steps of providing a continuous casting mould having a mould passage therethrough extending from an inlet end to an outlet end, said mould passage having a longitudinally extending central region which is between, and is of a different thickness from, longitudinally extending edge regions; pouring molten metal into the inlet end of the mould passage and, from the outlet end of the mould passage, drawing a cast slab comprising a solid shell surrounding a non-solid core, said slab having a pair of opposite faces of a width which has a longitudinally extending central region which is of a different thickness from its longitudinally extending edge regions; and downstream of the mould at a position where the core of the slab is solid, subjecting the pair of opposite faces of a solid portion of the slab while it is still connected to the portion thereof in the mould to a rolling process between parallel cylindrical rolls to produce a metal slab of uniform thickness and having a width



which is different from the width of the cast slab which is drawn from the outlet end of the mould passage.

5,348,076

COOLING APPARATUS FOR ELECTRONIC SYSTEM

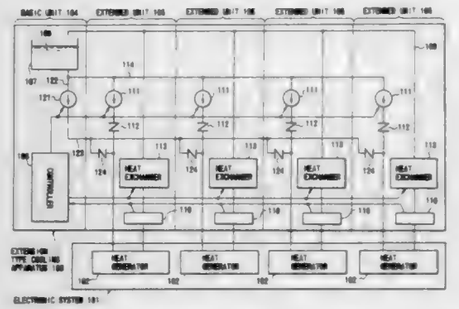
Kyoichi Asakawa, Yamana, Japan, assignor to NEC Corporation, Japan

Filed Feb. 3, 1993, Ser. No. 12,741

Claims priority, application Japan, Feb. 6, 1992, 4-054197

Int. Cl.[5] F28F *27/00;* **H01L** *23/473*

U.S. Cl. 165—13 **4 Claims**



1. A cooling apparatus for an electronic system, comprising:

a coolant tank for temporarily storing a coolant;

a plurality of main pumps, respectively, arranged in a plurality of heat generators in said electronic system, for supplying said coolant from said coolant tank to said heat generators, each of said main pumps having an outlet port;

a plurality of heat exchangers individually associated with said heat generators for cooling said coolant from each of said heat generators and for returning said coolant to said coolant tank;

a common supplementary pump, operated in response to a failure of any one of said main pumps, for supplying said coolant from said coolant tank, said common supplementary pump having an outlet port; and

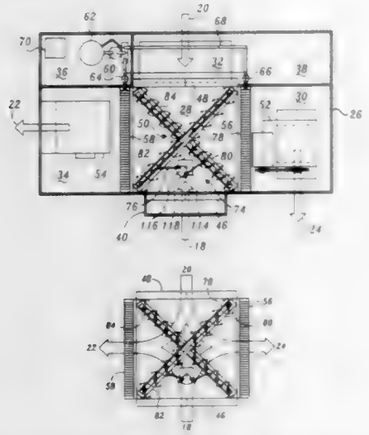
a plurality of supplementary check valves, each each of said check valves having an upstream side connected to said outlet port of said supplementary pump and having downstream sides connected to said outlet port of an individually associated one of said main pumps, each of said supplementary check valves being opened in response to a pressure difference larger than a predetermined value, said pressure difference being between the upstream side and the downstream side of each of said supplementary check valves.

5,348,077

INTEGRATED AIR EXCHANGER

Chris F. Hillman, 1422 Madrona Point Dr., Bremerton, Wash. 98312

Filed Mar. 29, 1991, Ser. No. 677,396
Int. Cl.[5] F25B *29/00*
U.S. Cl. 165—16 7 Claims



1. An air exchanger, for controlling the flow of air between a supplied environment and an external environment, comprising:

housing means for defining an air exchange chamber, an external air path and exhaust air path between said air exchange chamber and the external environment, and a return air path and supply air path between said air exchange chamber and the supplied environment;

supply energy transfer means, at least partially positioned in said supply air path, for influencing the temperature of air flowing through said supply air path to the supplied environment;

exhaust energy transfer means, at least partially positioned in said exhaust air path, for influencing the temperature of air flowing through said exhaust air path to the external environment;

supply air blower means for inducing airflow through said supply air path;

exhaust air blower means for introducing airflow through said exhaust air path;

an airflow control damper, positioned in said air exchange chamber, having first, second, third, and fourth arms, the flow of air from said return air path and said external air path to said supply air path being controlled solely by cooperation between the first and second arms, the flow of air from said return air path and said external air path to said exhaust air path being controlled solely by cooperation between the third and fourth arms; and

damper control means for controlling the operation of said first, second, third, and fourth damper arms.

5,348,078

DWELLING HEATING AND AIR CONDITIONING SYSTEM

Steven D. Dushane, 17170 Los Alamos St., Granada Hills, Calif. 91344; Kenneth K. Anderson, Simi Valley, Calif.; Grant E. Bohm, Redding, Calif., and Wayne Simoni, West Hill, Calif., assignors to Steven D. Dushane, Granada Hills, Calif.

Filed Jul. 8, 1993, Ser. No. 88,767
Int. Cl.[5] F24F *13/00*; G05D *23/00*
U.S. Cl. 165—22 21 Claims

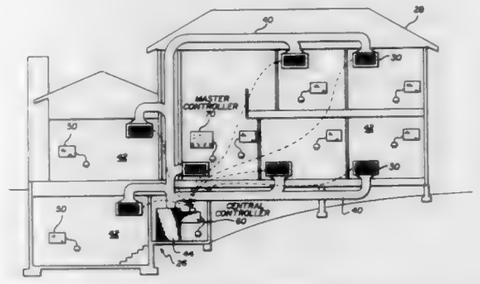
1. A retrofittable, single family home, room-by-room temperature controlling system comprising:

a hot air and air conditioning furnace system with a plurality of output ducts extending to rooms of a building;

controllable output register assemblies or vent assemblies at the outlet of each duct into the room, said registers including, as a part of the register assembly, electrically operable means for selectively opening and sealing the output from the register;

a central controller for controlling the furnace system and for operating the registers in each room to control the heating and cooling of each room individually;

a master controller for selecting temperature conditions remotely for each room and for sending signals to the central controller indicating the selected temperature conditions;



thermostat units in each room indicating for each room, the actual temperature, the set temperature, and the desired mode, including (a) heat, (b) air conditioning, (c) fan, and (d) off, conditions, and said thermostat units further including switch controls for setting locally the mode and the desired temperature;

said master controller and said thermostat units being electrically coupled to said central controller; and

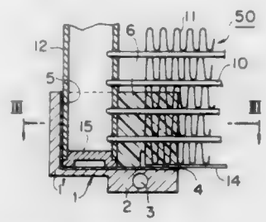
said central controller including means responsive to signals from said master controller and from said thermostat units for controlling the heating and air conditioning furnace unit, and for opening and closing the registers and/or vents in each room.

5,348,079

HEAT EXCHANGER AND METHOD FOR FIXING A BRACKET THERETO

Hiroshi Tanaka, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Oct. 12, 1993, Ser. No. 133,930
Claims priority, application Japan, Oct. 15, 1992, 4-277022
Int. Cl.[5] F28F *9/00*
U.S. Cl. 165—67 21 Claims



1. A heat exchanger comprising:

a heat exchanger body; and

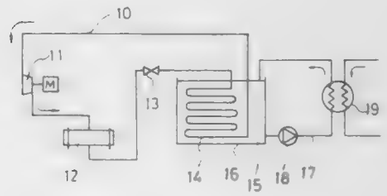
at least one bracket, said at least one bracket attached to said heat exchanger body, said at least one bracket comprising a bracket body formed from a metal; a resin layer provided at least on a surface of said bracket body facing said heat exchanger body; and a resin portion provided between said heat exchanger body and said resin layer, so that said resin portion is mechanically joined with said heat exchanger body and chemically combined with said resin layer.

5,348,080

LATENT HEAT STORAGE APPARATUS AND LATENT HEAT STORAGE SOLUTION THEREFOR

Syoichi Kuroda; Soichiro Shibata; Nonyuki Shimamura, all of Tokyo; Shigetake Kawasaki, Isehara; Keisuke Kasahara, Tokyo; Seiichi Sakuma, Tokyo; Fujio Komatsu, Tokyo; Masaya Ishikawa, Tokyo; Kunio Sugiyama, Tokyo; Mitsuo Mashimo, Tokyo; Yuzuru Shindo, Tokyo, and Kuniaki Kawamura, Ibaragi, all of Japan, assignors to Tokyo Electric Power Company; Maekawa Mfg. Co., Ltd. and Asahi Denka Kogyo K. K., all of Tokyo, Japan

Filed Dec. 17, 1991, Ser. No. 808,718
Claims priority, application Japan, Dec. 19, 1990, 2-403766; Apr. 25, 1991, 3-095645
Int. Cl.[5] F25D *17/02*; F28D *21/00*
U.S. Cl. 165—104.13 3 Claims



1. A freezing cycle latent heat storage apparatus, comprising a compressor, a condenser operatively connected with said condenser, a heat storage tank, expansion valve operatively arranged between said condenser and said heat storage tank and an evaporator operatively arranged as a heat exchanger in said heat storage tank wherein said heat storage tank is communicated with a load via a circulation path, and a latent heat storage material in the form of an aqueous solution is stored in said heat storage tank, said latent heat storage material being an N (N≧3) component system consisting of (N−1) inorganic salts with an eutectic point of no greater than −10° C., and water, the eutectic concentration of one of said inorganic salts being in a range of 60 to 98%.

5,348,081

HIGH CAPACITY AUTOMOTIVE CONDENSER

Gary A. Halstead; Brian L. Barten, and Gregory R. Smith, all of Lockport, N.Y., assignors to General Motors Corporation, Detroit, Mich.

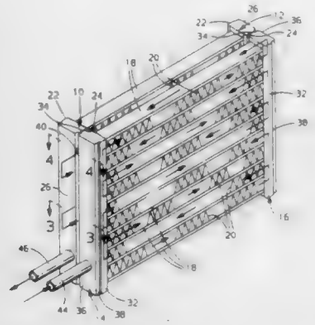
Filed Oct. 12, 1993, Ser. No. 134,716
Int. Cl.[5] F28D *21/00*
U.S. Cl. 165—144 2 Claims

1. A high capacity condenser for use in an automotive air conditioning system, comprising,

a first and second condenser module, said first condenser module including a pair of parallel tanks that are generally rectangular in cross section, each of which tanks has at least one generally flat face wall, at least one of said face walls in each of said tanks also having a continuous clearance notch of predetermined depth formed therein along the length of said tank,

said second condenser module also including a respective pair of similarly sized parallel tanks that are generally rectangular in cross section, each of which tanks also has at least one generally flat face wall opposed to said first module face walls and also including a stand-off flange along the length thereof and secured into said clearance notch and having a height slightly greater than said predetermined depth, so as to keep said pairs of opposed face walls slightly spaced apart, and,

a cross-over pipe extending through one of said pairs of slightly spaced face walls so as to fluid connect one of said respective pairs of tanks,



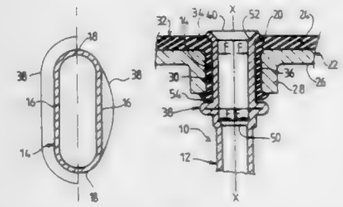
whereby refrigerant may enter one of said respective pair of tanks, run through one condenser module and then into the other module through said cross-over pipe.

5,348,082

HEAT EXCHANGER WITH TUBES OF OBLONG CROSS SECTION, IN PARTICULAR FOR MOTOR VEHICLES

Pascal Velluet, Cernay la Ville, and Jacques Hoffnung, Ile Saint Denis, both of France, assignors to Valeo Thermique Moteur, Saint-Oden Cedex, France

Filed Apr. 22, 1993, Ser. No. 51,485
Claims priority, application France, Apr. 24, 1992, 92 05111
Int. Cl.[5] F28F *9/02*
U.S. Cl. 165—173 10 Claims



1. A heat exchanger comprising: a header plate defining a multiplicity of oblong through holes therein, each defining an internal surface of the hole; a set of tubes of oblong cross section, each having an end portion engaged in a corresponding one of the holes in the header plate; and a sealing gasket having a multiplicity of tubular gasket portions, each interposed between the internal surface of a corresponding said hole and the corresponding tube end portion so as to be compressed, wherein each tube end portion has a free terminal edge and a wall reinforced by a bead spaced away from the terminal edge, wherein the bead extends over part of the periphery of the corresponding end portion.

5,348,083

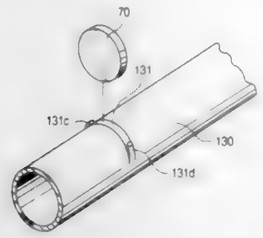
HEAT EXCHANGER

Kazuki Hosoya, Sawa, and Hirotaka Kado, Isesaki, both of Japan, assignors to Sanden Corporation, Isesaki, Japan

Filed Dec. 21, 1992, Ser. No. 994,357
Claims priority, application Japan, Dec. 20, 1991, 3-338779
Int. Cl.[5] F28F *9/22*
U.S. Cl. 165—174 7 Claims

4. A header pipe for use in a heat exchanger, said header comprising;

at least one slit formed in a side surface of said header pipe;
a partition plate inserted in said at least one slit;



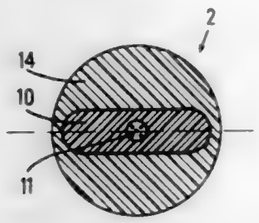
at least one projection extending from said at least one of said header pipes, for fixedly securing said partition plate within said at least one slit.

5,348,084

DEVICE FOR CARRYING OUT MEASURING AND SERVICING OPERATIONS IN A WELL BORE AND USE IN AN OIL WELL

Jean-Baptiste Fay, Paris, and Michel Huvey, Bougival, both of France, assignors to Institut Francais du Petrole, Rueil Malmaison Cedex, France

Filed Nov. 13, 1992, Ser. No. 976,509
Claims priority, application France, Nov. 13, 1991, 9114065
Int. Cl.[5] E21B *17/00, 19/00*
U.S. Cl. 166—65.1 **13 Claims**



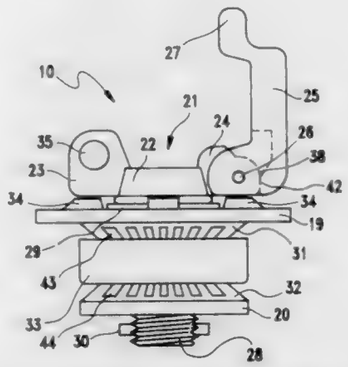
1. A device for carrying out at least one of measurement or servicing in a well bore inclined with respect to one of a vertical and a horizontal direction, the device comprising a rod and an instrument for at least one of measuring or servicing arranged at a lower end of said rod, said rod, being elastic in flexure and stiff against compression and being adapted to be coiled and uncoiled around a drum for enabling a displacement of the instrument in the well bore, the rod comprises a solid core made of a polymeric material comprising reinforcing fibers, wherein, over, at least one length of said rod, the shape of a profile of the solid core along a cross-section of the rod is adapted so that the stresses induced by the flexure of the rod in a first plane passing through a center of gravity of said profile are lower as compared with stresses induced by a flexure in a plane substantially orthogonal to the first plane, and wherein at least one transfer line for transferring at least one of energy or information is, during manufacturing, embedded in the respective material of said core, and wherein, upon a coiling on the drum, a widest dimension of the solid core of said rod is parallel to an axis of the drum and a buckling deformation of the rod while being inserted into the well bore is controlled.

5,348,085

MECHANICAL PLUG DEVICE

Bryan R. Benson, North Branch, Minn., assignor to Cherne Industries Incorporated, Minneapolis, Minn.

Filed Feb. 1, 1993, Ser. No. 11,799
Int. Cl.[5] E21B *34/02*
U.S. Cl. 166—92 **18 Claims**



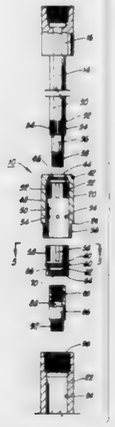
1. A unitary well monitor plug device for sealing a subwell casing comprising:
a) an upper plate member having a top portion and a bottom portion and an aperture therethrough, a plurality of stop members positioned on said top portion and being spaced from said aperture and a frustoconical ramp member extending from said bottom portion,
b) a bottom plate member having a threaded aperture therethrough and having an upwardly extending frustoconical ramp member,
c) an expandable O-ring having an outwardly extending peripheral sealing surface and an inwardly extending generally V-shaped inner surface for slidingly engaging said frustoconical ramp members of said upper and bottom plate members, and
d) a generally T-shaped bolt member having a horizontally extending top member and a vertically extending hollow threaded cylinder for passing through said upper plate member aperture and for threadingly engaging said bottom plate member threaded aperture, said hollow threaded cylinder further having a bottom end having stop means extending outwardly therefrom, said horizontally extending top member further comprising:
i) an axially disposed cap member mounted to said hollow threaded cylinder and having a monitor port therethrough for communication with said hollow threaded cylinder and further having removable plug means in said cap member monitor port,
ii) first and second outwardly extending and aligned ear members mounted to said cap member,
iii) said first ear member having an aperture therethrough being axially disposed spacially parallel to said upper plate member top portion, and
iv) said second ear member having a latch member with a bifurcated base portion pivotably mounted thereto, said latch member having a downwardly extending bifurcated frontal portion having first and second outwardly extending members constructed and arranged to rest on said cap member and to extend adjacent and below said aperture of said first ear member when said latch member is pivoted in a downward configuration, said bifurcated base portion being constructed and arranged to straddle a stop member or to be positioned between adjacent stop members when said latch member is in a downward configuration.

5,348,086

COMBINATION DOWNHOLE TOOL

Randall L. Trout, Rte. 5, Box 131, Weatherford, Okla. 73096

Filed Oct. 5, 1992, Ser. No. 956,164
Int. Cl.[5] E21B *31/00*
U.S. Cl. 166—99 **7 Claims**



1. A combined clean out and fishing tool for downhole use with a rotational drill string, comprising:
an elongated, tubular connector sub having a threaded box end on the upper end and threads on the lower end with said box end axially secured to said drill string;
a cylindrical sleeve having an inner sidewall and upper end wall having an axial hole receiving said connector sub lower end slidingly therethrough;
a generally cylindrical hub having a central bore and being slidably secured up within said cylindrical sleeve and receiving said connector sub lower end downward therethrough;
a circumferential array of shear pins retained in said cylindrical sleeve and securing said cylindrical hub;
an extension sub secured beneath the hub to the connector sub threaded lower end;
a selected fishing tool connected to extend axially down from said extension sub;
an extension sleeve connected to the cylindrical sleeve and extending down over the fishing tool; and
a selected clean out tool connected in axial alignment to said extension sleeve;
whereby a predetermined increase in drill string weight causes separation of the cylindrical hub from the cylindrical sleeve to allow the connector sub, cylindrical hub, extension sub and fishing tool to move downward into rotational engagement.

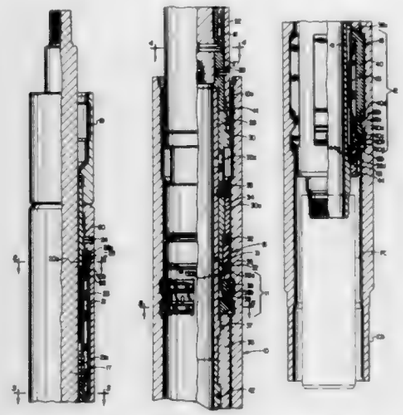
5,348,087

FULL BORE LOCK SYSTEM

Jimmie R. Williamson, Jr., Carrollton, Tex., assignor to Halliburton Company, Houston, Tex.

Filed Aug. 24, 1992, Ser. No. 933,668
Int. Cl.[5] E21B *23/00*
U.S. Cl. 166—115 **12 Claims**

1. A locking system comprising:
(a) a landing nipple connectable in a well flow conduit, said landing nipple having an unrestricted longitudinal flow passage therethrough and profiled locking and locating recesses in said flow passage, said flow passage having the same minimum inside diameter as the well conduit; and
(b) a lock mandrel to which flow control devices are connectable, said lock mandrel including: an upper mandrel and a lower mandrel,
means on said upper mandrel for locking in said nipple locking recesses, said locking means having profiled locking keys,
sealing system means on said upper mandrel for expanding into sealing engagement with said landing nipple,
locating means on said lower mandrel for automatically engaging said nipple locating recesses, said locating means having profiled locating keys and operable to disengage said nipple locating recesses,
means therein for retaining said lock mandrel locked and sealed in said landing nipple including a ratchet mandrel engageable by a ratchet collet, and releasable means for releasing said lock mandrel to unlock and permit said sealing system means to contract.

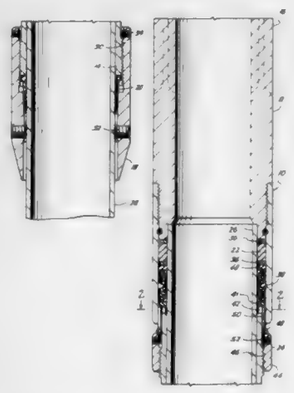


5,348,088

COILED TUBING EXTERNAL CONNECTOR WITH PACKING ELEMENT

Walter J. Laflin, Houston, and Arthur J. Morris, Magnolia, both of Tex., assignors to Camco International Inc., Houston, Tex.

Filed Jul. 13, 1993, Ser. No. 91,483
Int. Cl.[5] E21B *33/129*
U.S. Cl. 166—134 **9 Claims**



1. A well connector connectable to the outside of one end of well coiled tubing for coupling the coiled tubing to another member comprising,
a tubular body having first and second ends, the first end sized to externally enclose the one end of the coiled tub-

ing, said second end including connecting means for connecting to the other member,

a slip housing connected to the first end of the body,

slip means positioned in the slip housing and engagable with the first end of the body and positioned to engage and grip the outside of the coiled tubing on movement of the slip housing and the first end of the body together for actuation of the slips,

actuating means for moving the slip housing and the first end of the body together for actuation of the slips,

said tubular body including a packing element positioned to engage the exterior of the coiled tubing, said packing element spaced out of contact with the slip means, and

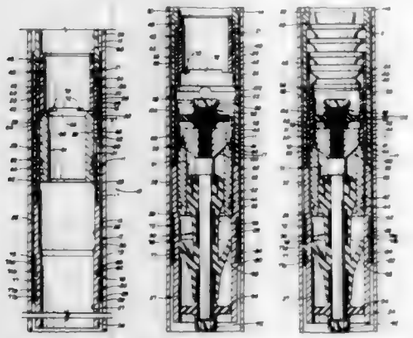
threaded actuated energizing means threadably engaging the body, separate from the slip actuating means, for energizing the packing element into a sealing engagement with the exterior of the coiled tubing.

5,348,089

METHOD AND APPARATUS FOR THE MULTIPLE STAGE CEMENTING OF A CASING STRING IN A WELL

John T. Brandell; Alan B. Duell, both of Duncan, and Lee W. Stepp, Comanche, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 17, 1993, Ser. No. 107,486
Int. Cl.[5] E21B *33/14, 34/14*
U.S. Cl. 166—154 9 Claims



1. An apparatus for cementing multiple stages within a well, comprising:

a housing assembly, said housing assembly having at least one port therein;

a first sleeve retained within said housing, said sleeve movable from a first position covering said port to a second position opening said port;

a second sleeve assembly, said sleeve assembly movable from a first position away from said port to a second position covering said port;

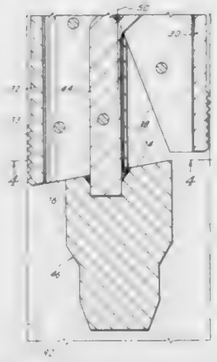
said housing assembly further comprising an inwardly extending tapered shoulder, and said first sleeve comprising a tapered surface, said tapered shoulder and said tapered surface cooperatively engageable such that engagement of said tapered surface with said tapered shoulder establishes said second position of said first sleeve and such that said engagement of said tapered surface with said tapered shoulder inhibits rotation of said first sleeve relative to said housing assembly.

5,348,090

EXPANDED SLIP WELL ANCHOR

Dwayne D. Leismer, Pearland, Tex., assignor to Camco International Inc., Houston, Tex.

Filed May 18, 1993, Ser. No. 63,619
Int. Cl.[5] E21B *23/08*
U.S. Cl. 166—211 13 Claims



1. An expanded slip well anchor for anchoring in a well comprising,

a body,

a mandrel extending through the body and longitudinally movable relative to the body,

first and second slip means connected to the mandrel, said slip means each including a wedge surface, said wedge surfaces engaging each other whereby movement of the first and second slip means toward each other will expand the first and second slip means outwardly, and

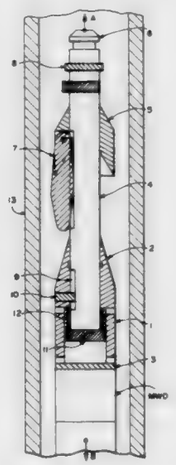
said wedge surfaces being at an angle to and extending across the longitudinal axis of the body.

5,348,091

SELF-ADJUSTING CENTRALIZER

Borislav J. Tchakarov, and Leon Earl, both of Lafayette, La., assignors to The Bob Fournet Company, Lafayette, La.

Filed Aug. 16, 1993, Ser. No. 107,092
Int. Cl.[5] E21B *17/10*
U.S. Cl. 166—217 19 Claims



1. A self-adjusting centralizer, for use in combination with a MWD tool, comprising:

(a) an extended housing having a longitudinal bore, a first end having a tapering nose, and a second end having means for attachment of said housing to a MWD tool;

(b) an extended shaft comprised of a first portion slidably disposed in the longitudinal bore of the first end of the extended housing and a second portion, having an end means for releasable attachment of the shaft to a workstring, disposed externally of said longitudinal bore, and;

(c) a plurality of fingers having a first end pivotally attached to the second portion of the extended shaft, and a second end slidably overriding the tapering nose of the extended housing.

5,348,092

GRAVEL PACK ASSEMBLY WITH TUBING SEAL

H. Mitchell Cornette; Stephen E. Morrison, both of Houston, and Michael J. Barton, Angleton, all of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 26, 1993, Ser. No. 38,436
Int. Cl.[5] E21B *43/08*
U.S. Cl. 166—227 10 Claims



1. A sand control screen assembly for installation in a well comprising:

a sand control screen operably connected to an elongated tubing;

a tubing seal support sub including means for securing said sub in a predetermined position in a wellbore, said seal support sub including at least one circumferential seal member operably engaged with said tubing to permit reciprocation and rotation of said tubing relative to said seal support sub while maintaining a substantially fluid tight seal between spaced-apart portions of a wellbore; and

frangible coupling means interconnecting said tubing and said seal support sub in such a way that said tubing, said sand control screen and said seal support sub may be run into a wellbore and said tubing disconnected from said seal support sub to permit reciprocation of said tubing relative to said seal support sub while maintaining a fluid tight seal therebetween.

5,348,093

CEMENTING SYSTEMS FOR OIL WELLS

Edward T. Wood, Kingwood; George O. Suman, Jr., and Robert T. Brooks, both of Houston, all of Tex., assignors to CTC International, Houston, Tex.

Filed Aug. 19, 1992, Ser. No. 932,252
Int. Cl.[5] E21B *33/14, 47/06*
U.S. Cl. 166—250 11 Claims

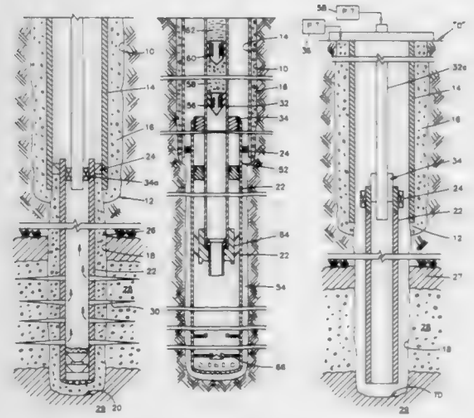
9. A method for determining the cementing parameters for cementing a liner in a wellbore to effect a seal with a borehole wall in a wellbore traversing each formations, where the wellbore has a disturbed temperature condition relative to an existing temperature condition which define temperature differential values as a function of depth; said method including the steps of:

selecting at least one depth in said wellbore where a fluid isolation seal is desired between a cement annulus and the borehole wall and where the liner, the cement annulus and the earth formations define layers of different materials extending radially outward from the center line of the wellbore;

obtaining temperature differential values for said one depth;

selecting a pressure value for application to the cement annulus prior to the initial set point of the cement slurry;

determining a cement slurry contact stress value on the borehole wall where the cement annulus is between the liner and the borehole wall prior to the cement slurry reaching its initial set point where such cement slurry contact stress value is derived from aximetric plane strain equations for radial stress and radial displacement in a



radial plane by matching common stress values at the interfaces of said layers for each interface of said layers with use of the temperature differential values at said depth and a pressure value on the cement annulus prior to the initial set point of the cement slurry together with established physical parameters for strain and displacement of said layers;

determining a final contact stress value on the borehole wall at a time after the cement slurry would be past its initial set point where such final contact stress value is derived from aximetric plane strain equations for radial stress and radial displacement in a radial plane by matching common stress values at the interfaces of said layers for each interface of said layers with use of the temperature differential values at said depth together with the volume change of the cement slurry upon setting and with the established physical parameters for strain and displacement of said layers; and

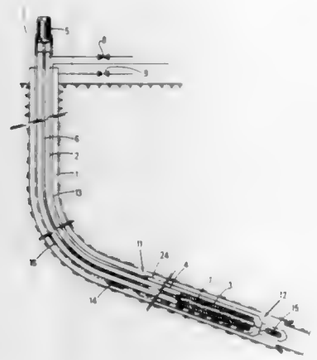
adjusting the pressure value and the differential temperature value relative to one another to derive a positive final contact stress if the final contact stress is not positive.

5,348,094

DEVICE AND METHOD FOR PUMPING A VISCOUS LIQUID COMPRISING INJECTING A THINNING PRODUCT, APPLICATION TO HORIZONTAL WELLS

Henri Cholet, Le Pecq, and Jacques Lessi, Maule, both of France, assignors to Institut Francais du Petrole, Rueil Maimaison, France

Filed Jun. 14, 1993, Ser. No. 75,796
Claims priority, application France, Jun. 12, 1992, 92 07141
Int. Cl.[5] E21B *43/12*
U.S. Cl. 166—371 11 Claims



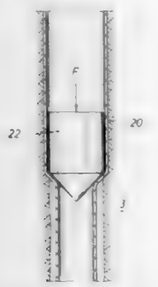
1. A device for pumping a fluid of high viscosity containing a certain proportion of gas, comprising a pump connected to the lower end of a tubular string at the bottom of a well, a fluid inlet device whose lower end is sealed and whose upper end comprises fluid inlet ports the suction of said pump taking place from the lower end of the inlet device, further said pumping device comprising means for injecting a thinner for thinning said fluid of high viscosity, said thinner being injected from the surface, wherein injection of the thinner into said fluid occurs close to the inlet ports.

5,348,095

METHOD OF CREATING A WELLBORE IN AN UNDERGROUND FORMATION

Robert N. Worrall; Wilhelmus C. M. Lohbeck; Paul R. Choate, all of Rijswijk, and Martin Donnelly, Arnhem, all of Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 7, 1993, Ser. No. 72,288
Claims priority, application European Pat. Off., Jun. 9, 1992, 92201670.4
Int. Cl.[5] E21B *17/00*
U.S. Cl. 166—380 8 Claims



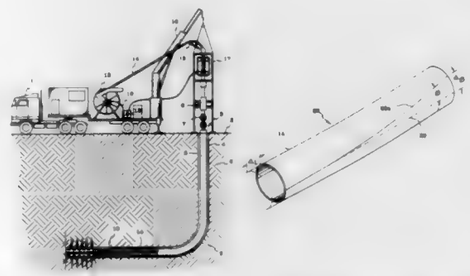
1. A method of creating a wellbore in an underground formation, the method comprising the steps of: drilling a borehole in the underground formation; lowering a casing of a ductile material into the borehole, the casing having a smaller elastic radial deformation than the surrounding formation when the casing is radially expanded against the borehole wall by application of a radial force to the casing; applying the radial force to the casing so as to radially expand the casing against the borehole wall thereby inducing a plastic radial deformation of the casing and an elastic radial deformation of the surrounding underground formation; and removing said radial force from the casing.

5,348,096

ANISOTROPIC COMPOSITE TUBULAR EMPLACEMENT

Jerry G. Williams, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Apr. 29, 1993, Ser. No. 56,267
Int. Cl.[5] E21B *43/112*
U.S. Cl. 166—384 16 Claims



1. A method for extending an anisotropically tailored tubular (fabricated of a composite having an unsymmetrical bias of the reinforcing components of the composite and an elasticity of the matrix thereof such that at least one of compression stress along the long axis of the tubular or tension stress along the long axis of the tubular or pressure on the interior of the tubular will cause localized twisting and/or bending and/or extension of the tubular along its long axis) into a depth extended aperture comprising:

(a) running the tubular into the depth extended aperture, and

(b) impressing at least one of compression stress along the long axis of the tubular or tension stress along the long axis of the tubular or pressure on the interior of the tubular during the course of the running such that localized twisting, and/or bending and/or extension is imparted to the tubular along its length during the course of the running, thus decreasing frictional resistance to the running.

5,348,097

DEVICE FOR CARRYING OUT MEASURING AND SERVICING OPERATIONS IN A WELL BORE, COMPRISING TUBING HAVING A ROD CENTERED THEREIN, PROCESS FOR ASSEMBLING THE DEVICE AND USE OF THE DEVICE IN AN OIL WELL

Jean-Francois Giannesini, Saint Cloud, and Jean-Baptiste Fay, Paris, both of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

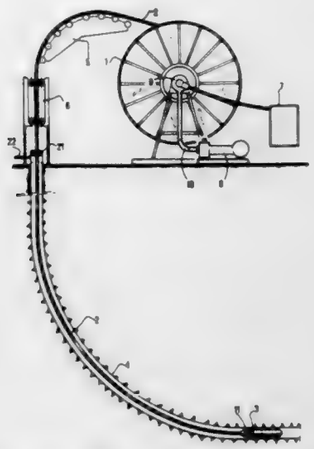
Filed Nov. 13, 1992, Ser. No. 975,887
Claims priority, application France, Nov. 13, 1991, 91 14064
Int. Cl.[5] E21B *19/00*
U.S. Cl. 166—385 12 Claims

11. A process for assembling a device for carrying out measuring and/or servicing in a well bore, said tubing having a rod arranged centrally therein, which process comprises the following steps:

uncoiling the tubing from a storage drum and arranging the tubing in a linear path;

forming said rod by extrusion and/or pultrusion of polymeric material and incorporating a transfer line for transferring energy or information within said rod during said formation;

pushing said rod into said tubing by means of a thrust imparting means adapted to engage said rod, said rod being



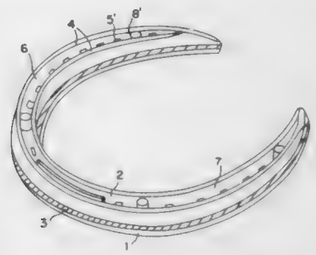
centered within said tubing; and coiling the tubing containing the rod arranged therein around a drum.

5,348,098

SHOCK-ABSORBING HORSE-SHOE WITH THREE LAYERS

Benedetto Di Giulio, via F. Stilicone 10, Rome 00175, Italy

PCT No. PCT/IT91/00054, § 371 Date Aug. 18, 1992, § 102(e) Date Aug. 18, 1992, PCT Pub. No. WO92/17059, PCT Pub. Date Oct. 15, 1992
PCT Filed Jul. 1, 1991, Ser. No. 916,987
Claims priority, application Italy, Apr. 5, 1991, 91/A 000223
Int. Cl.[5] A01L *1/04, 5/00*
U.S. Cl. 168—12 20 Claims



1. A horse-shoe, comprising:

an upper layer designed for contact with a hoof of a horse, said upper layer having nail holes;

a lower layer adapted for ground contact, said lower layer being U-shaped and having a recessed area which is defined by side edge walls and a substantially continuous recess bottom surface extending from one end of said U-shaped lower layer to the opposite end, said recess bottom surface having nail holes formed therein, and said horse-shoe being arranged such that nail holes in said upper and lower layers are in alignment so that horse-shoe nails are adapted to pass through said upper and lower layers when said horse-shoe is being secured to a horse;

an intermediate layer sandwiched between said upper and lower layers and formed of an elastic material so as to provide an added shock-absorbing function to the horse-shoe; and

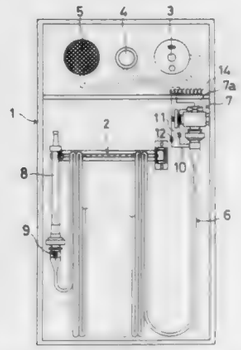
securement means which is separate and distinct from said intermediate layer for securing said upper and lower layers together such that said intermediate layer is sandwiched therebetween, and said securement means providing a preassembled multi-layer horse-shoe ready for securement to a hoof of a horse.

5,348,099

INDOOR FIRE HYDRANT APPARATUS

Shin Yokoi, Osaka, Japan, assignor to Yokoi Manufacturing Co., Ltd., Osaka, Japan

Filed Feb. 23, 1993, Ser. No. 21,459
Claims priority, application Japan, Nov. 2, 1992, 4-75720
Int. Cl.[5] A62C *35/20*
U.S. Cl. 169—51 1 Claim



1. An indoor fire hydrant apparatus comprising:

a fire hose with a discharge nozzle connected to a first end thereof;

an electrically operated discharge valve having an input port connected to a source of water under pressure and an output port connected to a second end of said first hose;

a discharge control switch located near said first end of said fire hose;

a relay having a first set of contacts connected in a series circuit with said electrically operated discharge valve across a supply voltage;

first and second electrical conductors extending along said fire hose, said conductors, said relay, and said discharge control switch being connected in a series circuit across said supply voltage whereby actuation of said discharge control switch causes energization of said relay and, in turn, energization of said discharge control valve to thereby permit water under pressure to flow into said fire hose,

and a pump start switch and a second set of relay contacts connected in parallel with said pump start switch, said second set of relay contacts being controlled by said relay.

5,348,100

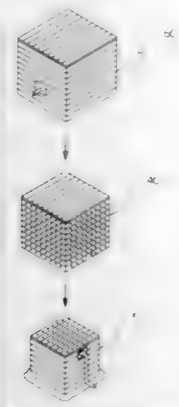
APPARATUS AND METHOD FOR CONTROLLING OILWELL FIRE

Larry E. Ramey, 4612 Amesbury Dr., #284, Dallas, Tex. 75206

Filed Apr. 16, 1992, Ser. No. 868,959
Int. Cl.[5] A62C *3/06*
U.S. Cl. 169—69 1 Claim

1. An apparatus for extinguishing a well fire at a well comprising a box formed of autoclave cellular concrete having four sides and a top, the box being placed over the well to control

the fire, and a second box formed of autoclave cellular concrete, said second box having four sides and top, the second



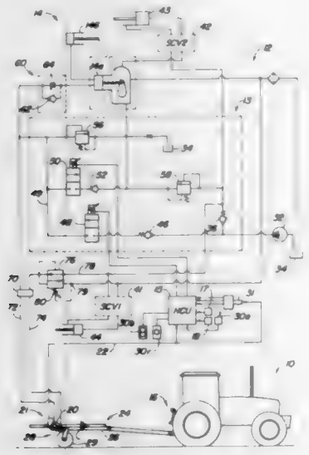
box sized to fit over the first box to provide additional control of the well fire.

5,348,101

HYDRAULIC SYSTEM FOR A TOWED IMPLEMENT

Robert E. Fox; William L. Smith, Jr., both of Des Moines, and Thomas E. Boe, Cedar Falls, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jan. 8, 1993, Ser. No. 1,973
Int. Cl.[5] A01B *63/10*
U.S. Cl. 172—2 17 Claims



1. In a hydraulic system for a tractor having a source of hydraulic fluid under pressure with a reservoir, at least one selective control valve (SCV) for controlling a remote hydraulic function, a rockshaft with a rockshaft cylinder, a hydraulic control circuit including control valve structure connected between the source and the rockshaft a hitch control unit for one-way operation of the rockshaft cylinder, an implement position control for an implement connected to the tractor, the implement having a remote cylinder with first and second ends and a rod moveable in first and second directions, the position control comprising:

means connecting the control valve structure to the first end of the remote cylinder for providing a fluid path between the control valve structure and the remote cylinder for controlling the remote cylinder from the hitch control unit to move the cylinder rod in the first direction;

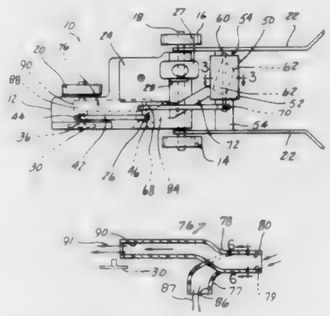
means connecting a pressure responsive valve between the source and the second end of the remote cylinder for moving the cylinder rod in the second direction and thereby providing two-way operation of the remote cylinder from the hydraulic control circuit independently of an SCV.

5,348,102

LAWN EDGER WITH MULTI-DIRECTIONAL FORCED AIR STREAMS

Henry C. Roberson, 4844 Maxwell, Detroit, Mich. 48214

Filed May 10, 1993, Ser. No. 59,499
Int. Cl.[5] A01D *34/84, 34/62*
U.S. Cl. 172—15 11 Claims



1. An edger comprising:

a wheeled frame movable in a first operating direction over a surface;

drive means mounted on the frame and having a rotatable drive shaft;

a cutter blade rotatably mounted on the frame for rotation about an axis transverse to the first direction of movement of the frame;

means for coupling the drive shaft of the drive means to the cutter blade for rotating the cutter blade;

means, coupled to the drive means, for generating a forced air stream; and

means, mounted on the frame and disposed in fluid flow communication with the air stream generating means, for directing the air stream into a first flow path located rearward of and projecting transversely outward from the cutter blade, and in a second flow path generally in the first direction of movement of the frame forwardly of the cutter blade.

5,348,103

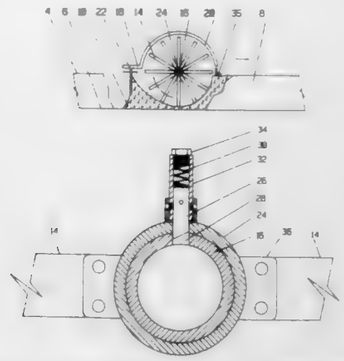
COMPOSTING MACHINE

Gordon A. J. Chiddicks, Bluevale, and Christopher C. Lee, Walton, both of Canada, assignors to LH Resource Management Inc., Ontario, Canada

Filed Aug. 19, 1992, Ser. No. 931,956
Int. Cl.[5] A01B *33/02*
U.S. Cl. 172—45 28 Claims

1. A composting machine for use with an alongated reactor in agitating organic material to said aerobic decomposition in a composting process, said reactor having a base and two parallel side walls, said reactor having a starting end and a finishing end, said composting machine comprising a flail mechanism having a plurality of flails radially mounted on a shaft, said shaft being rotatably mounted in a suitable frame and being substantially perpendicular to said side walls, said frame being mounted on said reactor and being movable longitudinally relative thereto, said flails being mounted on said shaft by mounting means so that said flails have a first position and a second position, in said first position the flails being rotatable with said shaft and being spaced circumferentially about said shaft, said flails being mounted to contact part of any material

in the reactor as said flails rotate to move the material contacted along said reactor toward said finishing end, and in said second position said flails being rotatably uninhibited for a



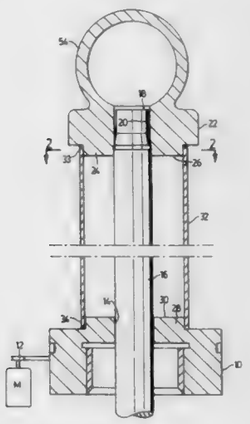
limited degree of rotation relative to said shaft, with power means to rotate said shaft and to move said frame longitudinally.

5,348,104

ROTARY DRIVE ASSEMBLIES

Walter F. Torfs, R.R. #2, Uxbridge, Ontario, Canada L9P 1R2

Filed May 7, 1993, Ser. No. 57,899
Int. Cl.[5] E21B *3/04*
U.S. Cl. 173—151 10 Claims



1. In a well assembly that includes

a drive string having a threaded upper end,

a stationary frame,

a spindle rotatably mounted on the frame and having an axial bore through which the drive string extends,

first means for rotating the spindle, and

second means for suspending the drive string from the spindle,

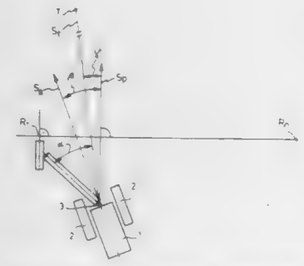
the improvement wherein said second means includes a nut member threadably engaged with said threaded upper end on the drive string, the nut member having a non-circular, downwardly projecting first protuberance, and the spindle having a non-circular, upwardly projecting second protuberance, and a tail bar in the form of a sleeve member having a non-circular second end for snugly receiving said second protuberance, the tail bar surrounding said drive string, whereby the non-circularity of the protuberance and the ends of the tail bar ensure that the string, the threaded member, the tail bar and the spindle all rotate together.

5,348,105

METHOD FOR ALIGNING A FEEDING BEAM IN A ROCK DRILLING EQUIPMENT AND A ROCK DRILLING EQUIPMENT AND A MEASURING DEVICE

Juhani Lappalainen; Heikki Rinnemaa; Ari Tuunanen, all of Tampere, and Pertti Saarelainen, Lieksa, all of Finland, assignors to Tamrock Oy, Tampere, Finland

Filed May 7, 1993, Ser. No. 50,248
Claims priority, application Finland, Nov. 30, 1990, 905920
Int. Cl.[5] E21B *7/00*
U.S. Cl. 175—24 13 Claims



1. A method for aligning a feeding beam attached to the end of a boom turnable with respect to a carrier of rock drilling equipment, the feeding beam being turnable with respect to the boom when drilling holes in rock surfaces of the earth substantially in line and in the same plane comprising the steps of:

determining a first angle between a longitudinal direction S_a of the rock drilling equipment and a drilling direction S_p;

aligning the feeding beam with the drilling direction S_p in parallel with said plane by turning the boom with respect to the carrier and the feeding beam with respect to the end of the boom such that turning angles of said feeding beam with respect to said boom are determined on the basis of a second angle between the boom and the longitudinal direction S_a of the carrier and the first angle between the longitudinal direction S_a of said carrier and the drilling direction S_p;

determining a reference direction S_f independent of a magnetic field for each drilling position of the carrier;

determining a third angle between the reference direction S_f and the drilling direction S_p;

determining the drilling direction S_p at least after the first drilling position of the drilling equipment on the basis of the reference direction S_f and the third angle;

determining the first angle between the longitudinal direction S_a of said carrier and the drilling direction S_p on the basis of the determined drilling direction S_p; and

aligning the feeding beam on the basis of the determined first angle so that it is parallel with the drilling direction S_p and the drilling plane.

5,348,106

METHOD OF DRILLING A HOLE IN A ROCK

Unto Mattero, Helsinki, Finland, assignor to Tamrock Oy, Tampere, Finland

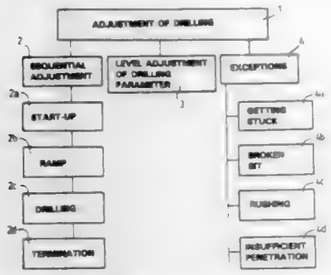
PCT No. PCT/FI92/00002, § 371 Date Jun. 22, 1993, § 102(e) Date Jun. 22, 1993, PCT Pub. No. WO92/12329, PCT Pub. Date Jul. 23, 1992
PCT Filed Jan. 2, 1992, Ser. No. 81,316
Claims priority, application Finland, Jan. 3, 1991, 910039
Int. Cl.[5] E21B *44/00*
U.S. Cl. 175—27 4 Claims

1. A method of controlling a rock drilling process, wherein a drilling machine has percussion power (P_p) and feed force (f_t)

adjustable to optimize the drilling process so that the rotation power of the drill is no more than a preset limit value, comprising the steps of:

controlling the drilling automatically in sequential stages;

establishing at least three successive drilling stages including a first drilling stage for start-up drilling, a second stage comprising a transition stage from start-up drilling to a



normal hole drilling stage, and a third stage comprising the normal hole drilling wherein appropriate values are set for drilling at each drilling stage to carry out the drilling;

setting parameters affecting the percussion power (P_p) and the feed force (f_c) at each drilling stage so that the percussion power (P_p) and the feed force (f_c) are optimal for each drilling stage.

5,348,107

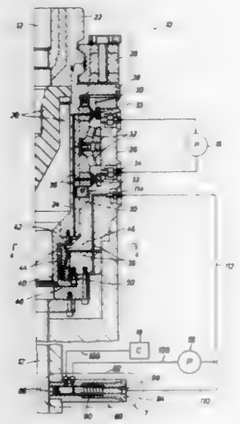
PRESSURE BALANCED INNER CHAMBER OF A DRILLING HEAD

Thomas F. Bailey; Larry F. Moeller, and John E. Campbell, all of Houston, Tex., assignors to Smith International, Inc., Houston, Tex.

Filed Feb. 26, 1993, Ser. No. 23,499

Int. Cl.[5] E21B *19/08*

U.S. Cl. 175—162 **15 Claims**



1. A system for maintaining a predetermined fluid pressure differential within a chamber of a drilling head in relation to the downhole fluid pressure within a wellbore associated with said drilling head, said system comprising:

means for relieving fluid pressure from said chamber in response to an increase in said fluid pressure differential above a predetermined value; and

means for increasing fluid pressure within said chamber in response to a decrease in said fluid pressure differential below a predetermined value, said means for increasing fluid pressure includes a fluid pump in fluid communication with said chamber to inject fluid until said fluid pressure differential increases to said predetermined value, said fluid pump having means for detecting said fluid pressure differential, said means for detecting said fluid pressure differential comprises a pressure compensator valve in fluid communication with the wellbore for detecting downhole fluid pressure and with said chamber for detecting fluid pressure within said chamber, said compensator valve opening and closing to operate said fluid pump in response to variations in said fluid pressure differential.

5,348,108

ROLLING CONE BIT WITH IMPROVED WEAR RESISTANT INSERTS

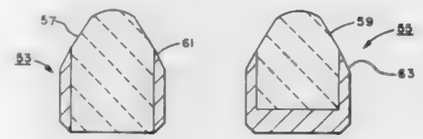
Danny E. Scott, Houston, Tex.; Redd H. Smith, and Gordon A. Tibbitts, both of Salt Lake City, Utah, assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 662,935, Mar. 1, 1991, Pat. No. 5,119,714. This application Jun. 8, 1992, Ser. No. 895,594

The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.

Int. Cl.[5] E21B *10/46*

U.S. Cl. 175—432 **43 Claims**



1. An insert for use in an earth-boring bit having a body and at least one bearing shaft depending downwardly and inwardly therefrom, at least one cutter cone mounted for rotation on the bearing shaft, the cutter cone having a plurality of sockets formed therein to receive the insert by fit, the insert comprising:

a hard metal jacket formed of fracture-tough material, the hard metal jacket having at least one opening formed in an upper end thereof to define a receptacle cavity; and

at least one superabrasive element secured in the receptacle cavity to form at least a portion of an exposed, wear-resistant working surface on the upper end of the insert, the wear-resistant working surface being surrounded at a peripheral edge thereof by the fracture-tough material of the hard metal jacket, wherein a majority of the wear-resistant working surface is formed of superabrasive and the fracture-tough material insulates the superabrasive element from shock loads encountered in operation.

5,348,109

CUTTER ASSEMBLIES AND CUTTING ELEMENTS FOR ROTARY DRILL BITS

Nigel D. Griffin, Whitminster, England, assignor to Camco Drilling Group Ltd., Gloucestershire, England

Filed Oct. 5, 1993, Ser. No. 131,716

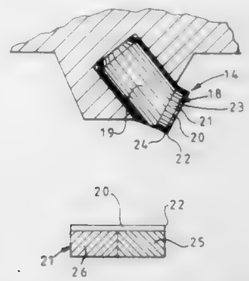
Claims priority, application United Kingdom, Oct. 7, 1992, 9221082; May 18, 1993, 9310159

Int. Cl.[5] E21B *10/46*

U.S. Cl. 175—434 **25 Claims**

1. A cutting element for a rotary drill bit comprising a thin superhard cutting table of polycrystalline diamond material, defining a front cutting face and a cutting edge, bonded to a less hard substrate, wherein the substrate comprises at least a

first portion of high erosion resistance and a second portion of lower erosion resistance, the portion of lower erosion resis-



tance having at least a part thereof located adjacent the cutting edge of the superhard cutting table.

5,348,110

DEVICE FOR ACTUATING THE CONTROL VALVE OF A HYDRAULIC POWER STEERING SYSTEM

Hans-Christof Klein, Hofhimer Strasse 22, 6234 Hattersheim; Manfred Kahrs, Auf der Ahl 93, 6200 Wiesbaden; Peter Drott, Am Kunzengarten 43, 6230 Frankfurt am Main; Wilhelm Beer, Merowinger Ring 23, 6090 Ruesselsheim 7; Joachim Baier, Dahlienweg 4 - 6, 6450 Hanau 8; Peter Kraft, Im Nesselbornfeld 49, 6380 Bad Homberg, and Andreas Lang, Liebknechtstrasse 2, 6072 Dreieich, all of Fed. Rep. of Germany

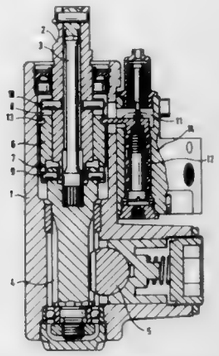
PCT No. PCT/EP91/01041, § 371 Date Apr. 23, 1992, § 102(e) Date Apr. 23, 1992, PCT Pub. No. WO92/03325, PCT Pub. Date Mar. 5, 1992

PCT Filed Jun. 6, 1991, Ser. No. 849,048

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1990, 4026983; Nov. 5, 1990, 4035065

Int. Cl.[5] B62D *5/09*

U.S. Cl. 180—132 **19 Claims**



1. Apparatus for actuating a linear slide control valve of a hydraulic power steering system in response to rotation of a steering wheel of an automotive vehicle, said apparatus comprising:

a pinion shaft having a longitudinal axis;

a steering shaft having a longitudinal axis aligned with said longitudinal axis of said pinion shaft and adapted to be coupled to a steering wheel of an automotive vehicle, said steering shaft mounted for rotation about its longitudinal axis relative to said pinion shaft in response to rotation of said steering wheel;

a sleeve having a longitudinal axis aligned with said longitudinal axes of said pinion shaft and said steering shaft and extending over a portion of said steering shaft and a portion of said pinion shaft;

means extending between said steering shaft and said sleeve and between said pinion shaft and said sleeve for converting relative rotational movement between said steering shaft and said pinion shaft into (a) rotational movement of said sleeve about said longitudinal axis of said sleeve, and (b) linear displacement of said sleeve along said longitudinal axis of said sleeve; and

means connected at a first end to said sleeve and adapted to be connected at a second end to a linear slide control valve of a hydraulic power steering system for transmitting linear displacement of said sleeve to said linear slide control valve.

5,348,111

WHEELED VEHICLE STEERING SYSTEM

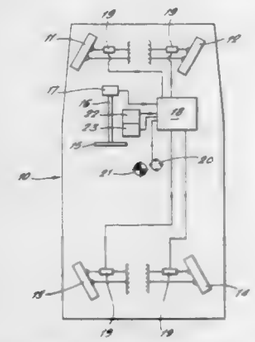
David A. Williams, Milton Keynes; Peter G. Wright, Wymondham, and David Burke, Carleton Rise, all of United Kingdom, assignors to Group Lotus PLC, Norwich, England

Continuation of Ser. No. 834,323, Dec. 9, 1991, abandoned. This application Dec. 17, 1993, Ser. No. 169,742

Claims priority, application United Kingdom, Jun. 8, 1989, 8913212

Int. Cl.[5] B62D *6/00, 7/15*

U.S. Cl. 180—140 **13 Claims**



1. A wheeled vehicle steering system comprising:

adjustable steering means;

means for generating a first electrical signal proportional to the demanded input of the steering input means;

means for steering a vehicle wheel in response to said first electrical signal;

sensing means for detecting the response of the vehicle;

means for producing a second electrical signal proportional to said detected response;

wherein the means for steering the vehicle wheel in response to said first electrical signal comprises:

an input filter for filtering the first electrical signal;.

comparator means for comparing the filtered first electrical signal and the second electrical signal and for producing a difference signal from comparison of the filtered first electrical signal and the second electrical signal; and

means for steering the first vehicle wheel in response to said difference signal.

5,348,112

MOTORCYCLE HEIGHT ADJUSTER

Gil J. Vaillancourt, Winnetka, Calif., assignor to Works Performance Products, Inc., Northridge, Calif.

Filed Feb. 19, 1993, Ser. No. 20,069

Int. Cl.[5] B62D *61/02*

U.S. Cl. 180—227 **2 Claims**

1. A motorcycle height adjuster comprising:

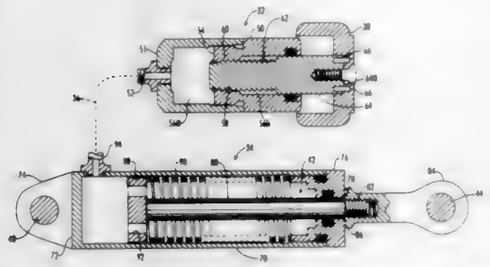
a height adjustment cylinder having a first end adapted to be connected to a motorcycle frame and a second end defining an opening;

a rod guide disposed within the cylinder for movement therein;

a rod having an inner end and an outer end, the inner end being connected to the rod guide, the rod extending from said rod guide through the opening in the cylinder to the outer end of the rod, the outer end of the rod being adapted to be coupled to a rear suspension swing arm;

a compression spring disposed within the cylinder about the rod and extending between the rod guide and the second end of the cylinder, the compression spring tending to bias the rod guide toward the first end of the height adjustment cylinder;

a height control unit adapted to be mounted on the motorcycle frame within reach of the rider, said height control unit including a reservoir having a first end in hydraulic fluid communication with the first end of the hydraulic adjust-



ment cylinder, the height control unit including a fluid displacement member received by said unit, said fluid displacement member having a portion adapted to be advanced into the reservoir, and an outer end;

hydraulic fluid Substantially completely filling said height control unit reservoir and said height adjustment cylinder; and

actuatable means connected to the outer end of the fluid displacement member portion for advancing or retracting the fluid displacement member whereby actuation of the actuatable means in one direction causes the rod to extend from the height adjustment cylinder under the urging of said hydraulic fluid to lower the height of the motorcycle, and actuation of the actuatable means in the other direction causes retraction of the fluid displacement member under the urging of the compression spring to restore the height of the motorcycle.

5,348,113

PROCESS OF AND DEVICE FOR MORE EFFECTIVE USE OF THE DEFORMATION ZONE OF MOTOR VEHICLE BODIES

Jirí Drvota, Karla Capka 607, 252 30 Revnice, and Milan Bursík, Steffánikova 28, 1500 00 Praha 5, Czechoslovakia

Filed Aug. 12, 1993, Ser. No. 105,592

Claims priority, application Czechoslovakia, Aug. 13, 1992, 2496-92

Int. Cl.[5] B60D *1/28*

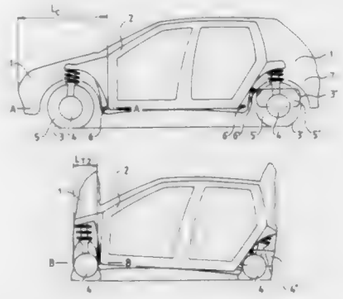
U.S. Cl. 180—271 **12 Claims**

1. A device for effective use of a deformation zone of a motor vehicle body having a passenger compartment, the device comprising:

at least one deformation zone attached to the passenger compartment;

at least one vehicle wheel having a rim surrounded by an inflated pneumatic tire, the wheel being located in the deformation zone near the passenger compartment;

at least one destruction member fixed between the passenger compartment and the inflated pneumatic tire of the wheel



for puncturing and deflating the tire upon deformation of the deformation zone.

5,348,114

FRONT CHASSIS FRAME FOR AUTOMOBILE

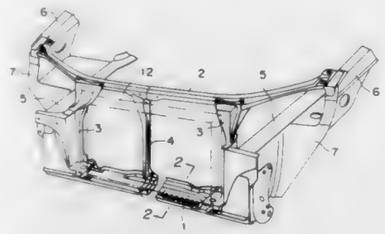
Makoto Yamauchi, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 21, 1992, Ser. No. 933,169

Claims priority, application Japan, Sep. 6, 1991, 3-78135[U]

Int. Cl.[5] B62D *25/08*

U.S. Cl. 180—291 **10 Claims**



1. In an automobile having a front chassis frame, including an elongated closed cross section front cross member disposed at a lower front end of an automobile and extending in a transverse direction of the automobile and in front of a power plant, and a side frame, extending in a longitudinal direction of the automobile, at each end of said front cross member and on opposite sides of said power plant, said front cross member having a leading edge, a trailing edge and upper and lower surfaces, the improvement comprising said cross member having a corrugation, extending in said transverse direction, formed on at least one of its upper surface and lower surface and in a location on said at least one of its upper surface and lower surface in front of said power plant, said corrugation weakening said cross member so that impact force acting in said longitudinal direction of said automobile deforms said cross member and is attenuated by deformation of said cross member.

5,348,115

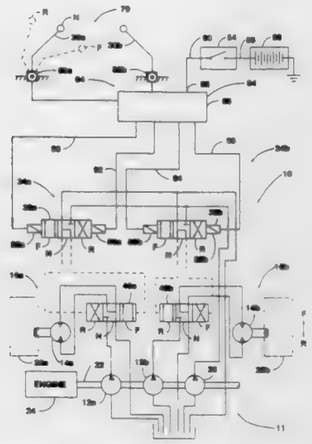
CRUISE CONTROL FOR HYDRAULICALLY DRIVEN VEHICLE

Lonnie J. Devier; John J. Krone, both of Dunlap; Stephen V. Lunzman, Chillicothe, and Howard A. Marsden, Pekin, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 821,100, Jan. 15, 1992, abandoned. This application Jul. 19, 1993, Ser. No. 95,567

Int. Cl.[5] B60K *7/00*

U.S. Cl. 180—308 **15 Claims**



1. An apparatus for use in a vehicle having a source of pressurized fluid, first and second hydraulic drive motors connected to the pressurized fluid source and powered thereby, and first and second ground engaging devices connected to and driven by the first and second motors respectively, comprising:

first and second control members positionable at a plurality of locations for selecting a desired speed and direction for a respective drive motor;

first and second sensors connected to said first and second control members, wherein said first and second sensors produce a first and second control member position signal;

first and second actuators connected to the first and second drive motors to responsively control fluid flow to the respective drive motor;

a set switch being movable between first and second positions, wherein said set switch produces a set speed signal in the second position; and

set speed means connected to the first and second sensors and the first and second actuators, said set speed means for receiving the set speed signal and causing the first and second actuators to operate the drive motors at a constant speed in response to the set speed signal, the speed of the motors being responsive to the value of the first and second control member position signals upon reception of the set speed signal.

5,348,116

RESCUE SYSTEM

Gregory R. Pickering, 362 Jack Rettie Ct., New Market, Ontario, Canada L3Y 7X8

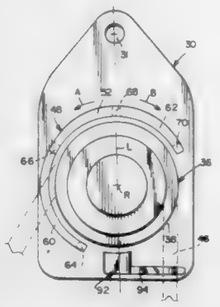
Filed Aug. 12, 1992, Ser. No. 928,009

Int. Cl.[5] A62B *1/08*

U.S. Cl. 182—5 **35 Claims**

1. A rescue system comprising:

a hoist including a backplate; a rope drum mounted on the backplate, said rope drum having a rope engaging surface located between a pair of circular end flanges, said rope drum capable of rotation in a first direction in response to a pulling force applied to a control end of a rope wound around said rope drum at least one and one half times, and said drum being blocked against rotation in a second, opposite direction such that a frictional braking force is applied to the rope when a pulling force is applied to a load end of the rope in a second direction opposite said one direction; and a rope guide fixed to said backplate, said rope guide formed by a pair of elongated laterally



spaced legs connected at opposite ends of said rope guide and at one location between said opposite ends to define therebetween a pair of rope slots, said rope guide having an arcuate shape conforming substantially to said circular end flanges of said rope drum, wherein said rope guide extends circumferentially at least 200° about said end flange.

5,348,117

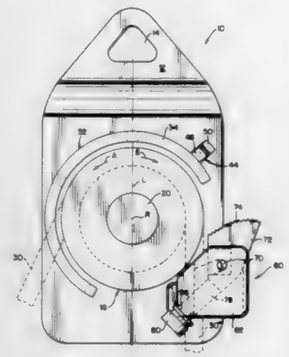
RESCUE SYSTEM

Gregory R. Pickering, 362 Jack Rettie Court, New Market, Ontario, Canada L3Y 7X8

Continuation-in-part of Ser. No. 928,009, Aug. 12, 1992. This application Apr. 2, 1993, Ser. No. 42,266

Int. Cl.[5] B66D *5/00;* **A62B** *1/14*

U.S. Cl. 182—5 **18 Claims**



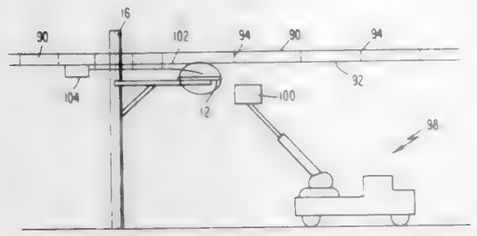
1. A rescue system comprising a hoist including a backplate; a rope drum mounted on said backplate, said rope drum capable of rotation in one direction only; said rope drum having a front and rear end flanges on either side of a rope engaging surface; an arcuate rope guide including a thru slot fixed to said backplate and extending partially about said drum; a substantially T-shaped rope lock bar mounted on said rope guide adjacent said slot and extending substantially transverse to said rope guide and substantially between said front and rear end flanges of said rope drum to permit a rope extending through said rope guide and partially about said drum to be wrapped about said lock bar.

5,348,118

METHOD AND APPARATUS FOR INSTALLING FIBER OPTIC CABLE

William H. Franklin, III, Cranbury, and John H. Samolyk, Forked River, both of N.J., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed Sep. 4, 1992, Ser. No. 938,840
Int. Cl.[5] H01R *43/00*
U.S. Cl. 182—187 **9 Claims**



1. A method of aerially splicing communications cable comprising the steps of:

(a) mounting on a utility pole a work platform comprising:

a work platform having a generally planar work surface; and

means for temporarily attaching said platform to a pole including:

elongated support means having a longitudinal axis having said platform attached at one end thereof and pole engaging means attached at the other end thereof; and

elongated brace means pivotally attached to said support means intermediate the ends of said support means and having pole engaging means at an end of said brace means distal to said pivotal attachment;

said work surface having a dimension along said longitudinal axis less than the distance between the most proximate portions of said pole and said work surface when said work platform is attached to a pole in a working position;

(b) mounting a worker support platform adjacent to said work platform;

(c) assembling at least two cables or cable ends to be spliced on said work platform in a splicing means; and

(d) from said worker support platform completing said splice and disengaging said cable from said splicing means.

5,348,119

TREE STAND AND ADAPTOR COMPRISING THE SAME

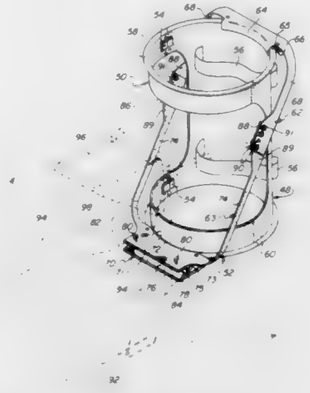
James S. Filkins, P.O. Box 122, North Egremont, Mass. 01252

Filed May 21, 1993, Ser. No. 64,379
Int. Cl.[5] A01M *31/02*
U.S. Cl. 182—187 **10 Claims**

1. A tree stand having a rotatable platform member, comprising:

mounting structure, including at least a first circular track member, having an outside surface portion thereon for circumscribing a supporting tree trunk at a first level, and fastening means for disengageably fastening said mounting structure to a tree trunk with said first track member extending thereabout; and

a platform member having first and second engagement components operatively joined to one another at axially and transversely spaced positions, for receiving a tree trunk axially therebetween and for operative engagement on transversely opposite sides thereof at different levels, said first engagement component slidably engaging said outside surface portion of said first track member, and said second engagement component being disposed to slidably engage a surface below said first track member, to permit



rotation of said platform member to positions angularly displaced about said mounting structure.

5,348,120

RAIL LUBRICATION APPARATUS

Ronald K. Junk, Cabot; William T. Urmson, Jr., Valencia, and Thomas R. Walker, Mars, all of Pa., assignors to Portec Inc., Oak Brook, Ill.

Continuation of Ser. No. 687,360, Apr. 18, 1991, abandoned.
This application Dec. 22, 1992, Ser. No. 995,546
Int. Cl.[5] B61K *3/00*
U.S. Cl. 184—3.1 **2 Claims**

1. A clamp in combination with a wiping bar, said clamp for use in maintaining the wiping bar in position with respect to various sized rails of the type having a base with outwardly extending flanges and a web, said clamp comprising:

a rigid base section having first and second oppositely positioned ends;

a rigid hook extending from said first end of said base section and sized to receive any one of the plurality of variously sized rail based flanges;

a hold-down screw; and

a rigid projection extending substantially vertically upwardly from said second end of said base section, said rigid projection being displaced along said base section a sufficient distance from said hook to enable said hook to be slid under a rail and to engage the rail base flange on the side of the rial opposite of the side on which said projection is positioned, said projection having a threaded bore therethrough for receiving said hold-down screw, said bore and said projection cooperating to orient said hold-down screw at an angle with respect to said base section whereby said hold-down screw extends downwardly toward the web such that said screw is oriented to contact the wiping bar and develop a force for holding the wiping bar in position with respect to the rial and a counterforce is developed for holding said hook in contact with the rail base flange and a moment is developed for holding said base section in contact with the underside of the rail,

said projection, base section, and hook being integrally formed;

said wiping bar having:

a first pair of brackets, each of said brackets of said first pair of brackets having an angled surface acting as a bearing surface for said hold-down screw;

a second pair of brackets having a horizontal portion and a vertical portion, each of said second pair of said brackets being connected along its vertical portion to said wiping bar, said vertical portion of each of said second pair of said brackets having a head for engaging an underside of the head of the rail, said horizontal portion of each of said second pair of said brackets having a threaded aperture therethrough for receiving an elevation screw,

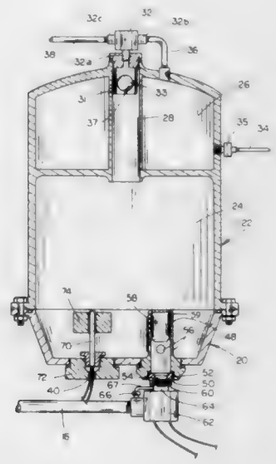
a pair of elevation screws, one screw being positioned within each of said threaded apertures, said screws being of sufficient length to facilitate contact with the rail base flange when said heads are engaging the underside of the head of the rail, whereby upon engagement of said hold-down screws with said angled surfaces, said wiping bar is wedged firmly between the underside of the rail head and the rail base flange.

5,348,121

ENGINE PRE-OILER

Norman L. McLaughlin, 106 Bellevue Blvd. N., Bellevue, Nebr. 68005

Continuation-in-part of Ser. No. 871,937, Apr. 21, 1992, Pat. No. 5,244,059. This application Aug. 16, 1993, Ser. No. 106,537
Int. Cl.[5] F01M *9/00, 1/00*
U.S. Cl. 184—6.3 **6 Claims**



1. A pre-oiler assembly for pre-oiling an engine, comprising,

a hollow body portion having upper and lower ends;

a hollow float body assembly secured to the lower end of said hollow body portion and having upper and lower ends;

an operable air valve having first, second and third ports, secured to said body portion adjacent the upper end thereof, said air valve operable between an activated position wherein the first and third ports are open to permit fluid flow and the second port is closed, and a deactivated position wherein the first and second ports are open to permit fluid flow and the third port is closed;

said hollow body portion and said hollow float body assembly having a fluidly connected interior forming an oil chamber;

an upper interior of said oil chamber being in fluid communication with said air valve first port;

said air valve third port being in communication with a source of air under pressure,

said float body assembly having an oil line extending therefrom to the engine being pre-oiled;

an operable oil valve imposed in said oil line and operable between open and closed positions;

means for operating the oil valve to the open position when the air valve is in the activated position, and for operating the oil valve to the closed position when the air valve is in the deactivated position;

said float body assembly having an oil inlet in communication with the interior thereof;

said oil inlet being in communication with a source of oil under pressure within the engine;

a float switch means in said float body assembly which is connected to the air valve and operable to operate the air valve to the deactivated position when the oil in said oil chamber drops to a predetermined level;

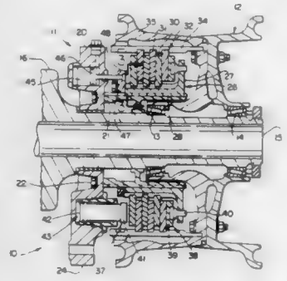
and control means for actuating the air valve to the activated position when it is desired to pre-oil the engine.

5,348,122

SLIDING BACK LEG BRAKE

Robert L. Brundrett, Troy, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 1, 1993, Ser. No. 12,019
Int. Cl.[5] F16D *55/36, 55/40*
U.S. Cl. 188—71.5 **17 Claims**



1. A wheel and brake assembly for aircraft landing gear comprising

a non-rotatable wheel support including an axle,

a wheel mounted to said wheel support for rotation,

a torque tube mounted on said axle,

a disk pack having front and rear axial ends and including alternating rotor and stator disks mounted with respect to said wheel support and wheel for relative axial movement, each rotor disk being coupled to said wheel for rotation therewith and each stator disk being coupled to said wheel support against rotation,

a back leg structure mounted for axial movement relative to said wheel support, said back leg structure having a back pressure member for applying force to the back end of said disk pack and an axial extension extending axially from said back pressure member to the front end of said disk pack, said back leg structure including a sliding torque tube back leg having an axially extending hub portion forming said axial extension and radial flange portion extending radially outwardly from said hub portion and forming said back pressure member, said stator disks being splined to said hub portion of said back leg

structure, and said hub portion of said back leg structure being splined to said torque tube,

a front pressure member mounted for axial movement relative to said wheel support for applying force to the front end of said disk pack, and

fluid actuator means located at the front end of said disk pack and connected to said front pressure member and said axial extension for urging said front pressure member rearwardly and said back pressure member forwardly to squeeze the rotor and stator disks together thereby to apply braking force to the wheel.

5,348,123

BRAKE ACTUATING APPARATUS FOR A VEHICLE

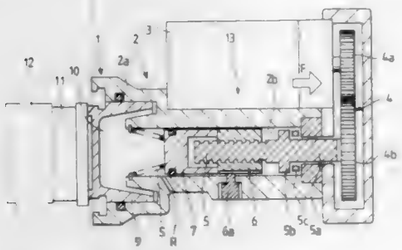
Kimio Takahashi; Katsuya Miyake, both of Saitama; Takashi Kunimi, Tokyo; Tatsuo Ogawahara; Tadashi Kobayashi, both of Saitama, all of Japan, and Kunio Fukaya, Neuilly sur Seine, France, assignors to Akebono Brake Industry Co., Ltd., Tokyo and Akebono Research and Development Centre Ltd., Saitama, both of Japan

Filed Aug. 28, 1992, Ser. No. 935,888

Claims priority, application Japan, Sep. 2, 1991, 3-221872; Sep. 5, 1991, 3-79430[U]

Int. Cl.[5] F16D *55/08*

U.S. Cl. 188—72.1 **26 Claims**



1. A brake actuating apparatus, comprising:

a brake caliper comprising a frame body and a cylindrical portion;

a brake pad held by said brake caliper for urging against a brake wheel cylinder for braking;

an electric motor fixed onto said frame body of said brake caliper, said electric motor being controlled to rotate by a drive signal of an electronic control unit;

a drive piston slidably held in said cylindrical portion of said caliper, said drive piston having a first piston head;

means for converting a rotary motion of said electric motor into a linear motion of said drive piston so that said drive piston linearly and non-rotatably slides within said cylindrical portion, said converting means being held in said cylindrical portion of said brake caliper;

a pad urging piston held in said frame body of said caliper beyond said cylindrical portion and proximate to said brake pad, said pad urging piston for urging said brake pad when said drive piston linearly slides toward said pad urging piston, said pad urging piston having a second piston head; and

a fluid chamber defined between said pad urging piston and said drive piston, the fluid chamber for transmitting pressure to urge said pad urging piston when said drive piston linearly slides toward said pad urging piston.

5,348,124

ACTIVE CONTROL OF VIBRATION

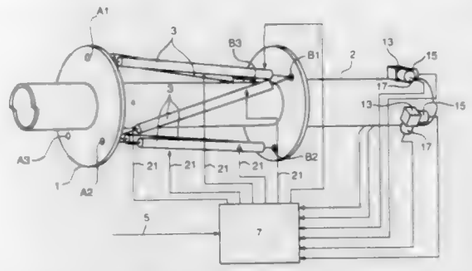
Mark F. L. Harper, Cambridge, United Kingdom, assignor to Active Noise and Vibration Technologies, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 492,817, Mar. 13, 1990, abandoned. This application Dec. 17, 1991, Ser. No. 809,704

Claims priority, application United Kingdom, Mar. 16, 1989, 8906070

Int. Cl.[5] F16F *7/10*

U.S. Cl. 188—378 **27 Claims**



1. An active vibration control system for preventing the transmission of vibrations from a source of vibrations along an elongate member, comprising:

sensing means for sensing vibrations in the elongate member;

a length-changing actuator;

means for attaching the actuator between two attachment points spaced longitudinally apart along the elongate member; and

an electronic controller,

wherein the electronic controller is responsive to a signal from the sensor means to control the actuator to apply forces to the elongate member so as to create a reflection region in the elongate member from which vibrations, propagating along the elongate member, are reflected to thereby isolate a region of the elongate member, separated from the source of vibrations by the length-changing actuator.

5,348,125

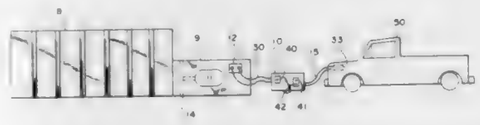
SELF-CONTAINED HYDRAULIC POWER UNIT FOR WASTE COMPACTOR CONTAINERS

Robert Stribling, Monroe, Ga., assignor to Stribling Systems, Inc., Stone Mountain, Ga.

Filed Feb. 26, 1993, Ser. No. 23,126

Int. Cl.[5] B30B *15/16;* **B65F** *3/14*

U.S. Cl. 191—12.2 R **11 Claims**



1. An apparatus for providing hydraulic power to plural portable waste compaction containers comprising:

a portable hydraulic system;

means for providing external DC electrical power to said portable hydraulic system;

means for providing internal DC electrical power to said portable hydraulic system in parallel with said means for providing external DC electrical power;

means for converting said electrical power to hydraulic power, and

means for transferring said hydraulic power from said portable hydraulic system to a waste compaction container.

5,348,126

MULTIFUNCTIONAL ENERGY-SAVING SYSTEM FOR VEHICLES INCLUDING AN AUTOMATIC CLUTCH UNIT WITH BOTH DIFFERENTIAL AND ANTI-SLIP CAPABILITIES

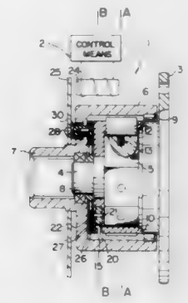
Xinglong Gao, Guangdong, China, assignor to Hitop Science Technology Co., Ltd., Shenzhen, China

Filed Jan. 13, 1993, Ser. No. 3,599

Claims priority, application China, Jan. 25, 1992, 92100525.3

Int. Cl.[5] B60K *17/00, 23/00;* **F16D** *41/00*

U.S. Cl. 192—7 **14 Claims**



1. A device for transmitting torque between a drive member and a driven member for vehicles, said system consisting of automatic clutch means (**1**) disposed within a drive-system and control means (**2**) operable in a driver's cab,

said automatic clutch means (**1**) comprising:

a drive member (**3**);

a driven member (**7**);

a shaft (**4**) rigidly connected to or integrally formed with the drive member (**3**) and having a substantially regular prismatic section (**5**) concentric therewith;

a hub (**6**) connected to or integrally formed with the driven member (**7**) and mounted concentrically on said shaft (**4**) by means of bearings (**8,9**), said regular prismatic section (**5**) being positioned within the hub (**6**);

a synchronous cage (**10**) rotatably supported at its axial ends on the shaft (**4**) between an inner surface of the hub (**6**) and said regular prismatic section (**5**), and having openings (**11**) evenly distributed around a circumference of the synchronous cage (**10**), the number of said openings (**11**) being the same as that of side surfaces of said regular prismatic section (**5**);

a torque-transmitting element (**12**) provided in each said opening (**11**) with a clearance therebetween, and movable on a respective side surface of said regular prismatic section (**5**) between a first position (I) near one end of respective arched space defined between the inner surface of the hub (**6**) and the side surface of said regular prismatic section (**5**) and a second position (II) near the other end of said arched space, each torque-transmitting element (**12**) being dimensioned so that when it is in a middle position (III) between said first position (I) and second position (II), the hub (**6**) is in disengagement with the shaft (**4**) and no torque is transmitted between the shaft (**4**) and the hub (**6**), and when it is in said first position (I) or said second position (II), the hub (**6**) is in engagement with the shaft (**4**) and torque is transmitted between the shaft (**4**) and the hub (**6**) through the torque-transmitting element (**12**);

means for holding each torque-transmitting element (**12**) in said middle position (III) when said shaft (**4**) rotates at a speed lower than its idle speed or does not rotate, each said torque-transmitting element (**12**) entering said first position (I) due to inertia lag behind the shaft (**4**) when the drive member (**3**) starts to rotate in a positive direction (**14**);

means for restricting each torque-transmitting element (**12**) in said middle position (III) when the speed of the drive member (**3**) becomes lower than that of the driven member (**7**) only in said positive direction; and

means for enforcing the synchronous cage (**10**) to temporarily rotate along with said hub (**6**) so as to force each torque-transmitting element (**12**) to move from said middle position (III) to one of said first position (I) or said second position (II);

wherein said control means (**2**) controls the operation of said enforcing means.

5,348,127

FLUID COUPLING POWER TRANSMISSION WITH LOCKUP CLUTCH

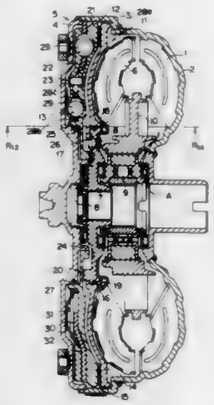
Kiyohito Murata, Susono; Yoshio Shindo, Numazu, and Hajime Arai, Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 17, 1992, Ser. No. 945,947

Claims priority, application Japan, Sep. 20, 1991, 3-268854; Sep. 22, 1991, 3-270090; Oct. 29, 1991, 3-309835; Jan. 30, 1992, 4-040295; Jan. 30, 1992, 4-040296; Jun. 25, 1992, 4-191494; Jul. 15, 1992, 4-210840; Jul. 15, 1992, 4-210841

Int. Cl.[5] F16D *33/00*

U.S. Cl. 192—3.3 **49 Claims**



1. A fluid coupling power transmission comprising: a pump impeller and a turbine runner arranged to face each other in a housing, to which torque is inputted; and a lockup clutch disposed in said housing for transmitting the torque from said housing to said turbine runner, wherein the improvement comprises:

a damper mass made rotatable relative to said housing and arranged at the side of said turbine runner opposite a side of said turbine runner facing said pump impeller;

an elastic member adapted to be compressed by the revolution of said damper mass relative to said housing;

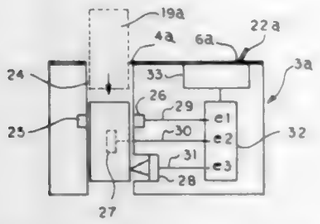
a lockup piston interposed between said damper mass and said turbine runner and pushed by oil pressure toward said damper mass into selective engagement with said damper mass;

a first oil pressure chamber adapted to be fed with the oil pressure for pushing said lockup piston toward said damper mass;

a second oil pressure chamber formed between said lockup piston and said damper mass when said lockup piston engages with said damper mass, and adapted to be fed with oil under pressure for separating said lockup piston from said damper mass; and

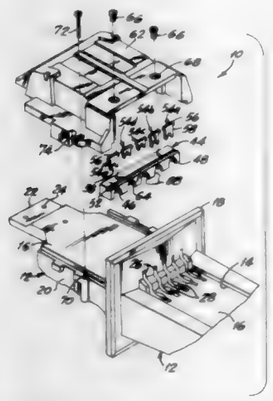
reaction means for applying a reaction to said damper mass in a direction to separate said damper mass from said housing.

5,348,128
APPARATUS FOR THE COLLECTION, IDENTIFICATION AND RECLAMATION OF RECYCLABLE WASTE
Francoise Dru, 16, rue Gambetta, 92320 Chatillon, France
PCT No. PCT/FR90/00616, § 371 Date Mar. 4, 1993, § 102(e) Date Mar. 4, 1993, PCT Pub. No. WO92/03360, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 20, 1990, Ser. No. 971,839
Int. Cl.[5] G07F *7/06*
U.S. Cl. 194—209 **14 Claims**



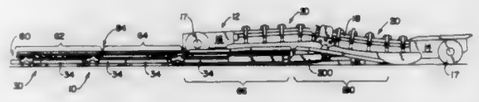
1. Collection unit for collecting and identifying waste for recycling, said collection unit comprising:
a bag adapted to enclose the waste, wherein said bag includes a waste deposit slip;
an access orifice for accepting the waste enclosed in said bag;
means for the identification of the waste introduced to said access orifice;
means of conveying the waste away from said access orifice; and,
means for issuing said waste deposit slip, following positive identification, by said means of identification.

5,348,129
COIN CHUTE ASSEMBLY HAVING REMOVABLE SIZING INSERTS FOR SIZING COINS
Arkady Zirkiev, Forest Hills, N.Y., assignor to Greenwald Industries, Inc., Brooklyn, N.Y.
Filed Apr. 19, 1993, Ser. No. 49,839
Int. Cl.[5] G07F *5/06*
U.S. Cl. 194—235 **16 Claims**



1. In a coin chute assembly having a housing and a coin slide mounted for reciprocal movement within said housing, the improvement comprising:
a sizing block and a plurality of removable sizing inserts held within said sizing block for sizing coins;
said sizing block having an upper surface formed with a groove portion extending across said surface, and further having a plurality of slot portions in communication with said groove portion;
each of said sizing inserts having a flange portion and a stem portion extending downwardly therefrom;
the groove portion of said sizing block adapted to receive the flange portion of each sizing insert and the respective slot portions of said block adapted to receive the stem portion of a separate one of said inserts;
each of the stem portions of said sizing inserts being dimensioned to define an upper edge of a predetermined sized coin for said coin slide when said inserts are positioned within said sizing block; and
each of said sizing inserts having a slip fit relationship with the associated one of said slot portions in said sizing block to provide positioning of said inserts in said block.

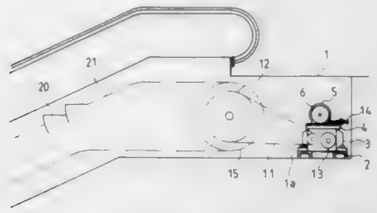
5,348,130
ADVANCEABLE AUXILIARY CONVEYING APPARATUS
Terry M. Thomas, Franklin, Pa., assignor to Joy MM Delaware, Inc., Wilmington, Del.
Filed Jul. 30, 1993, Ser. No. 99,704
Int. Cl.[5] B65G *21/10*
U.S. Cl. 198—312 **11 Claims**



1. Apparatus for receiving and conveying material from a mobile conveyor adapted for travel on a surface comprising:
a trackway mountable on the surface;
elevated roadway and conveyor means for supporting the mobile conveyor thereon and receiving and conveying discharged material therefrom, said elevated roadway and conveyor means movably communicating with said trackway for travel thereon and being movable between a first elevated position wherein said elevated roadway and conveying means is supported on the surface and said trackway is movably supported on said elevated roadway and conveying means above the surface such that said trackway may be advanced to a first advanced position relative to said elevated roadway and conveying means and a second elevated position wherein said elevated roadway and conveying means is movably supported above the surface on said trackway for travel thereon such that said elevated roadway and conveying means may be advanced to a second advanced position on said trackway;
elevation means coupled between said elevated roadway and conveying means and said trackway, said elevation means selectively moving said elevated roadway and conveying means between said first and second elevated positions; and
ramp means communicating with said elevated roadway and conveying means, said ramp means permitting the mobile conveying means to access said elevated roadway and conveying means.

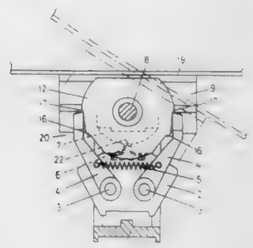
5,348,131
DRIVE UNIT OF CONVEYOR
Yukihiro Yamaguchi; Chuichi Saito, both of Katsuta; Tatsuhiko Takahashi, Naka, and Tomomi Haraguchi, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 3, 1993, Ser. No. 115,659
Claims priority, application Japan, Oct. 9, 1992, 4-242144
Int. Cl.[5] B66B *23/02*
U.S. Cl. 198—330 **10 Claims**

1. A drive unit of a conveyor having a frame structure extending from one place to another place, a step chain having a plurality of step treads mounted thereon and arranged in said frame structure and a step chain sprocket for driving said step chain, said drive unit comprising a reduction gear mechanism and a motor for driving and controlling said step chain sprocket through said reduction gear mechanism, an upper side



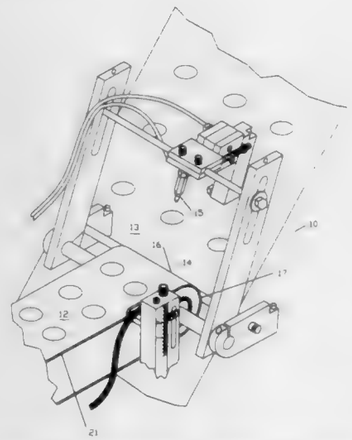
of said reduction gear being formed as an opening covered with a base plate, said base plate being formed by unifying a top cover for said opening of said reduction gear mechanism and a motor base through reinforcing ribs disposed therebetween in parallel relation to each other.

5,348,132
CARRIAGE FOR A CONVEYOR FOR PIECE GOODS
Willy Maier, Kloten, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland
Filed Jul. 29, 1993, Ser. No. 98,897
Claims priority, application Switzerland, Jul. 30, 1992, 02397/92
Int. Cl.[5] B65G *47/38*
U.S. Cl. 198—365 **11 Claims**



1. A carriage for a conveyor for piece goods, the carriage including a transporting tray mounted on the frame of the carriage and a tilting device for tilting the transporting tray, wherein the transporting tray is automatically locked in the oblique position intended for the discharge of a piece of goods and adjustment means are provided for unlocking said oblique position by means of the tilting device, and wherein, in order to produce a lock on a horizontal shaft, there are provided a locking disc that is connected with the transporting tray and an adjustment disc that is connected with the tilting device, there being further provided at least one pivotal detent pawl that is connected with the frame of the carriage so as to be in engagement with the locking disc in said oblique position.

5,348,133
METHOD AND APPARATUS FOR ORIENTING PREDOMINATELY FLAT ARTICLES
Donald L. Powell, Fort Collins; Daniel W. Buehler, Windsor, and David E. Carson, Fort Collins, all of Colo., assignors to CBW Automation, Inc., Fort Collins, Colo.
Continuation-in-part of Ser. No. 715,570, Jun. 14, 1991, Pat. No. 5,197,584. This application Mar. 29, 1993, Ser. No. 38,908
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—380 **18 Claims**



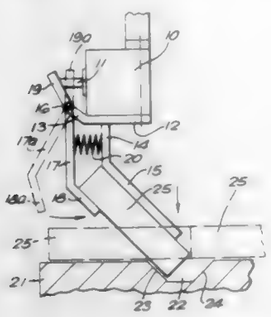
1. A method of automatically orienting a plurality of predominately flat lids comprising the steps of:
a. supplying a plurality of semi-rigid, predominately flat, randomly oriented lids;
b. determining the desired orientation for said lids; then
c. automatically feeding each lid onto a first surface; then
d. detecting improperly oriented lids; then
e. moving each said lid to a second surface; while
f. selectively changing the orientation of each said lid which is improperly oriented by issuing an air flow which is directed only from above said lid.

5,348,134
GRIPPING DEVICE
Lars G. A. Wadell, Aengelholm, Sweden, assignor to Nestec S.A., Vevey, Switzerland
Filed Nov. 3, 1993, Ser. No. 146,954
Claims priority, application European Pat. Off., Dec. 1, 1992, 92120460.8
Int. Cl.[5] B65G *47/22*
U.S. Cl. 198—409 **10 Claims**

1. A gripping device comprising:
first and second matable jaw members;
a cylinder adapted to reciprocate vertically;
means connecting the first jaw member to the cylinder such that, in operation, the cylinder and connecting means urge the first jaw member to open and close the jaws;
means for maintaining the second jaw member in a fixed position relative to the cylinder;
a fixed table positioned beneath the jaw members, provided with at least one transverse groove;
means for transporting a product downstream on the fixed table to locate it with its upstream or downstream edge overlying the transverse groove;
means for advancing the cylinder downwardly with the jaws in the open position to enable the lower end of the second jaw member to contact the product at its upstream

or downstream end above the groove causing the product to tilt in the groove;

means for activating the cylinder to close the jaws to grip the tilted product at its upper end;



means for retracting the cylinder upwardly with the closed jaws gripping the product; and

means for deactivating the cylinder to open the jaws to release the product.

5,348,135

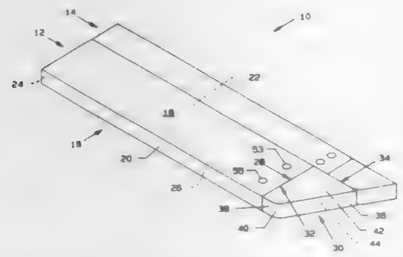
CAN SELECTOR BAR ASSEMBLY

Gregory M. Fulkerson, Maple Plain, and Melvin Allrich, Chanhassen, both of Minn., assignors to Thiele Engineering Company, Minneapolis, Minn.

Filed Feb. 22, 1993, Ser. No. 20,410

Int. Cl.[5] B65G *47/26*

U.S. Cl. 198—419.3 **9 Claims**



1. A flight selector bar for a packaging machine comprising:

a. a flight selector bar of a rectangular configuration for insertion in a flowing line of products for separating the products; and,

b. a tip secured by securing means to said flight selector bar for contacting the products, the tip being made of soft material for minimizing damage to product.

5,348,136

SINGULATION SYSTEM FOR RECYCLABLE MATERIAL

Garry R. Kenny, College Grove, Tenn.; Hugh R. Rhys, Woodland Hills, Calif., and Michael A. Skeen, Antioch, Tenn., assignors to Magnetic Separation Systems, Inc., Nashville, Tenn.

Continuation of Ser. No. 866,882, Apr. 7, 1992, abandoned. This application Jun. 24, 1993, Ser. No. 82,270

Int. Cl.[5] B65G *47/12*

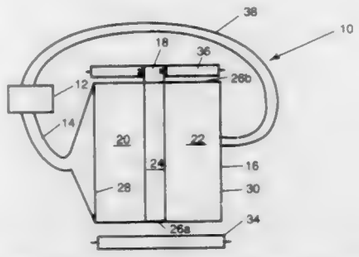
U.S. Cl. 198—443 **12 Claims**

1. A system for singulating containers varying in size comprising:

a. a vacuum chamber;

b. means for pulling air through said vacuum chamber comprising a vacuum and an inlet hose connecting said vacuum to said vacuum chamber;

c. a continuous belt passing across said vacuum chamber, said belt having a hole array arranged to engage on container; and



d. an outlet hose attached to said vacuum for blowing air across said belt.

5,348,137

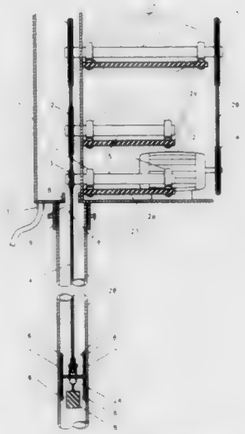
VERTICAL TENSIONING AND ANTI-ROTATIONAL DEVICE FOR USE WITH SINGLE CONTINUOUS ROPE CONVEYOR LIFTING SYSTEM

R. Gary Palmer, 5202 Dow Rd., Houston, Tex. 77040

Filed Nov. 9, 1993, Ser. No. 149,079

Int. Cl.[5] B65G *15/00*

U.S. Cl. 198—643 **9 Claims**



1. A vertical tensioning and anti-rotational device for use with a single continuous rope conveyor lifting system, the lifting system having a series of powered pulleys disposed at the top of a well for continuously driving a rope in a closed loop into the well, into and out of downhole fluids, and back to the top of the well, carrying a portion of such fluids out of the well, comprising:

a tubular body open at a first end, said tubular body having a longitudinal axis;

means rotatably affixed to said tubular body for receiving said rope and for permitting said rope to loop around said tubular body on its way into and then out of the well bore;

a tension bar member having a first end telescopingly received in said open first end of said tubular body;

said tubular body and said tension bar member being adapted for placement diametrically into the well bore;

means for biasing said tension bar member away from said tubular body in a longitudinally axial direction;

a first extension bar member having upper and lower ends and disposed on a second end of said tubular body opposite said first end, and extending longitudinally axially of said well bore when said tubular body is diametrically disposed in said well bore, said first extension bar member extending above and below said tubular body;

a second extension bar member having upper and lower ends and disposed on a second end of said tension bar member opposite said first end thereof, and extending longitudinally axially of said well bore when said tension bar member is diametrically disposed in said well bore, said second extension bar member extending above and below said tension bar member; and

anti-rotational means disposed on said upper and lower ends of said extension bar members for engaging the walls of the well bore and substantially preventing rotation of said device with respect to said well bore, said means for biasing said tension bar member away from said tubular body biasing said anti-rotational means against the well bore walls.

5,348,138

NO-NEST BIRD GATE

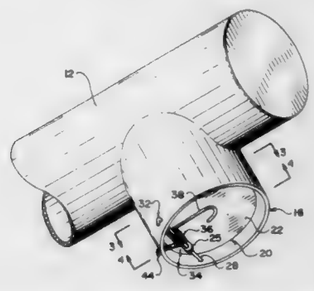
Karl F. Seemann, Box 238, Dalmeny, Saskatchewan, Canada S0K 1E0

Filed Aug. 23, 1993, Ser. No. 110,697

Claims priority, application Canada, Jul. 20, 1993, 2,100,907

Int. Cl.[5] B65G *33/00*

U.S. Cl. 198—671 **14 Claims**



1. A bird gate for a grain auger outlet comprising:

panel means configured to extend across the inside of the auger outlet;

mounting means for mounting the panel means in the auger outlet for movement between a closed position extending across the outlet and an open position extending along the outlet; and

biasing means for biasing the panel means toward the closed position.

5,348,139

COUNTER-BALANCED PRESSURE SENSOR FOR CONVEYOR ACCUMULATION ZONE

Stephen D. Szarkowski; Steven K. Beeny, and Arthur D. May, all of Wichita, Kans., assignors to Uniflo Conveyor, Inc., Wichita, Kans.

Filed Oct. 14, 1992, Ser. No. 960,718

Int. Cl.[5] B65G *13/06*

U.S. Cl. 198—781 **33 Claims**

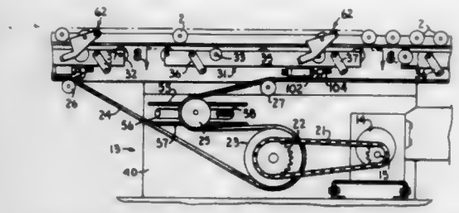
1. A pressure sensing apparatus for sensing an object on a conveyor comprising:

(a) a two-sided support means which is pivotable about an axis which is positioned below the top surface of said conveyor;

(b) a first carrying roller rotatable about a shaft suspended between said two sides of said support means;

(c) a sensor means attached to said support means;

(d) biasing means for causing said support means to pivot to a position in which said sensor means is positioned just above said top surface of said conveyor, said biasing means comprising a counter balance which is threadably attached to a threaded rod at an opposite end of said support means from said sensor means, said counter balance being longitudinally adjustable along said threaded rod to thereby adjust the sensitivity of said sensor means; and,



(e) said first carrying roller shaft also provides said pivot axis for said support means.

5,348,140

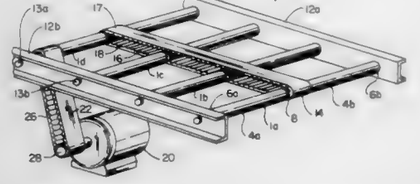
CONVEYOR ROLLER SYSTEM AND METHOD

Jeffrey P. Clos, Crescent Springs, Ky., assignor to T.K.F. Inc., Cincinnati, Ohio

Continuation of Ser. No. 891,758, Jun. 1, 1992, abandoned. This application May 12, 1993, Ser. No. 62,048

Int. Cl.[5] B65G *13/07*

U.S. Cl. 198—790 **21 Claims**



1. A roller comprising:

(a) a cylindrical barrel portion of a given lengthwise extent; and

(b) a plurality of parallel, radially-disposed recessed splines integrally-formed about said barrel portion intermediate the ends of said barrel portion, said splines configured to receive a drive belt for imparting rotational motion to said roller.

5,348,141

MATERIAL HANDLING SYSTEM

Bruce J. Campbell, Arden, and Mark D. Campbell, Asheville, both of N.C., assignors to Campbell Machines Company, Swannanoa, N.C.

Continuation of Ser. No. 889,489, May 27, 1992, abandoned. This application Nov. 29, 1993, Ser. No. 160,357

Int. Cl.[5] B65G *17/12*

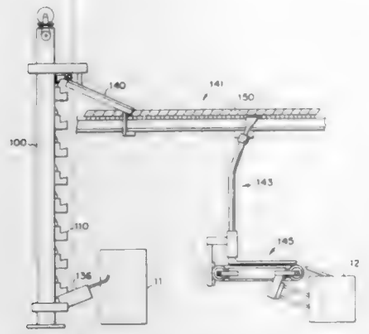
U.S. Cl. 198—801 **11 Claims**

1. A material handling system comprising:

a conveyor including an endless belt for moving workpieces;

a plurality of pick-ups attached to said endless belt; each of said pick-ups including a pair of adjacent substantially L-shaped members for holding the workpieces; each L-shaped member being integrally constructed; said conveyor including a plurality of bars; said L-shaped members of a pair being mounted to a single one of said bars; each pair of said L-shaped members formed by a pair of substantially parallel plates; a gap formed between said adjacent parallel plates; each of said substantially parallel

plates having a substantially vertically upwardly extending leg and a substantially horizontally extending leg



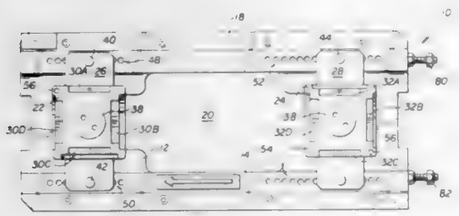
which, together with said gap, forms a cradle for receiving said workpieces.

5,348,142

ADJUSTABLE PALLET

Masaaki Nishimura, and Takahashi Ochiyama, both of Kanagawa, Japan, assignors to Odawara Engineering Co., Ltd., Kanagawa, Japan

Filed Jul. 26, 1993, Ser. No. 97,446
Int. Cl.[5] B65G *47/00*
U.S. Cl. 198—803.01 **17 Claims**



1. An adjustable pallet for supporting work pieces comprising:

a pallet;

a pair of spaced work piece support blocks mounted on said pallet, at least one of said blocks being rotatable; and

the rotatable block presenting a plurality of support surfaces each of the surfaces being of a different depth such that by rotation of the rotatable block with respect to the other, work pieces of differing lengths can be adjustably supported on the pallet between the blocks.

5,348,143

SPLICE ASSEMBLY FOR CONNECTING BELT ENDS

Edward C. Musil, and William J. Daniels, both of Orland Park, Ill., assignors to Flexible Steel Lacing Company, Downers Grove, Ill.

Filed May 13, 1993, Ser. No. 61,163
Int. Cl.[5] B65G *15/30*
U.S. Cl. 198—844.2 **22 Claims**

1. In a conveyor belt, the combination comprising:

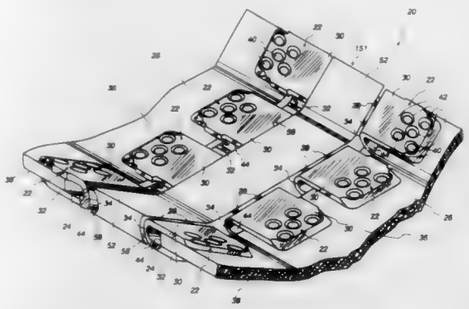
a belt having first and second ends spliced together into an endless belt;

first belt fasteners secured across the first belt end and being spaced to allow troughing of the belt between the first belt fasteners;

second belt fasteners secured across the second belt end and being spaced to allow troughing of the belt between the second belt fasteners;

a plurality of belt splices each extending between a pair of first and second belt fasteners and interconnecting the belt fasteners to form therewith the splice to form the endless belt;

cables in the belt splices extending between the respective first and second belt fasteners and having opposite ends connected to the first and second belt fasteners with the



cables taking tension loads between the respective belt ends;

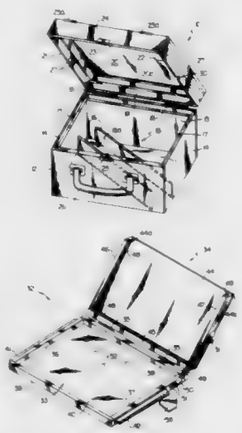
and covers for the belt splices covering the cables to protect the cables from abrasion or snagging and for reducing the amount of sifting of material from the conveyor belt and through the belt splices.

5,348,144

ARTIST SKETCH BOX

Michael L. Maier, 1392 Southfork Rd., Cody, Wyo. 82604

Filed May 11, 1993, Ser. No. 60,356
Int. Cl.[5] B05C *17/00;* **B44D** *3/00*
U.S. Cl. 206—1.7 **17 Claims**



17. An artist sketch box, comprising:

a substantially planar bottom having a length and a width and a thickness;

a front upstanding wall, a rear upstanding wall, and two side upstanding walls attached generally about the perimeter of said planar bottom to form a compartment having an open top;

said compartment including a plurality of diagonal members affixed to said planar bottom, further defining said area within said compartment to include at least one diagonal compartment attached to said planar bottom;

a substantially planar lid having a front edge, a rear edge, and two side edges and having a length and a width approximating said length and said width of said planar bottom;

a first upstanding lid wall attached to said rear edge, a second upstanding lid wall attached to one of said two side edges, a third upstanding lid wall attached to the remainder of said two side edges;

a panel board member hinged at a first end to said front edge by a first means for providing a hinge and having attached a first part of a means for providing a latch at an end of said panel board member opposite to said first end;

said first upstanding lid wall hinged to said rear upstanding wall at a side opposite to where said first upstanding lid wall is attached to said rear edge by a second means for providing a hinge;

a second part of a means for providing a latch attached to said front upstanding wall at an end opposite where said front upstanding wall is attached to said planar bottom;

an easel and palette assembly including a palette base assembly and an easel assembly;

said palette base assembly hinged to said easel assembly by a palette hinge;

said easel and palette assembly removable separate and apart from said compartment during use and capable of being stored generally in said compartment during transportation; and

said compartment being adapted for receiving said easel and palette assembly;

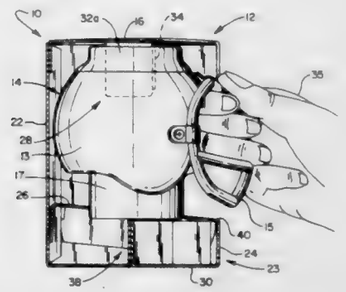
whereby upon said panel board member being pivoted about said first means for providing a hinge to a position that is generally closest to one end each of said second upstanding lid wall and of said third upstanding lid wall and upon said first upstanding lid wall being pivoted about said second means for providing a hinge to a position where said first upstanding lid wall is generally in planar alignment with said rear upstanding wall, said first upstanding lid wall, said second upstanding lid wall, and said third upstanding lid wall cooperate with said rear upstanding wall, said two side upstanding walls, and said panel board member also cooperates with said front upstanding wall to form, generally, a box.

5,348,145

PRODUCT ACCESSIBLE DISPLAY CONTAINER

Victor E. Steinfels, III, Dublin, Ohio, assignor to Joan Steinfels, Dublin, Ohio

Filed Sep. 22, 1993, Ser. No. 125,648
Int. Cl.[5] B65D *85/44*
U.S. Cl. 206—45.19 **26 Claims**



1. A container for accessibly displaying an article having an article base and a generally annular wall extending therefrom, said container comprising:

a lid;

an oppositely disposed bottom;

a pair of oppositely disposed side walls extending between said lid and said bottom;

a rear wall extending between said lid and said bottom adjacent said side walls;

a retainer assembly extending downwardly from said lid into said article for retaining the top of said article laterally within said container;

a spacer assembly extending upwardly from said bottom for spacing said article a preselected vertical distance from said bottom; and

a base assembly having:

a floating deck portion disposed generally parallel to said bottom intermediate said spacer assembly and said lid, said floating deck portion having an opening therethrough configured to receive said article base; and

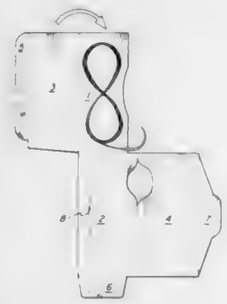
a front wall portion extending generally orthogonally from said floating deck portion to said bottom to locate said floating deck portion a predetermined distance above said spacer assembly, said floating deck being inwardly folded about said front wall portion to be generally upwardly biased for retaining said article base laterally within said floating deck portion opening.

5,348,146

SUTURE PACKAGE

Michael Sterling, Danbury, and Susan Critzer, Brookfield, both of Conn., assignors to American Cyanamid Co., Wayne, N.J.

Filed Feb. 11, 1993, Ser. No. 16,363
Int. Cl.[5] A61L *17/02*
U.S. Cl. 206—63.3 **1 Claim**



1. A two part, self-contained package, the package having a first part capable of dispensing a sterile surgical suture, the first part comprising:

a first rectangular panel **1**;

a second rectangular panel **2** foldably connected at a short side thereof to a short side of the first rectangular panel, the second panel containing a first slit;

a first rectangular flap **3** foldably connected to a long side of said first rectangular panel;

a second rectangular flap **4** foldably connected to a long side of the second rectangular panel;

a third flap **5** foldably connected to a long side of the first rectangular flap, the third flap containing a plurality of second slits for retaining a surgical needle;

a fourth flap **7** foldably connected to a long side of the second rectangular flap;

a tuck tab **8** foldably connected to the other short side of said second rectangular panel; and

a recess between said second rectangular panel and said second rectangular flap, for accessing a surgical needle;

and a second part comprising:

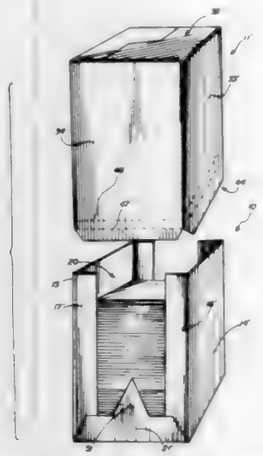
an envelope capable of being peeled opened, said first part contained within said envelope.

5,348,147

CARTON FOR BULK PACK CUT SINGLE PAPER

Thomas M. Gottfreid, Warsaw, Ind., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Sep. 8, 1993, Ser. No. 117,600
Int. Cl.[5] B65D *5/32, 5/54, 17/34*
U.S. Cl. 206—215 14 Claims



1. A combination of cut paper sheets packaged in a cardboard carton, comprising:

at least one thousand cut unwrapped sheets of paper of the same length and width provided in a stack having a stack height; and

a cardboard carton packaging said sheets and allowing ready dispensing therefrom, said carton comprising: first and second channel shaped side walls, each side wall having a channel formed by a base and a pair of channel legs substantially perpendicular to said base, the channel legs facing each other, and said channels each having a first height greater than the stack height; a bottom panel; first and second end flaps having a second height less than half of said first height; said bases of said channel shaped side walls and said end flaps integral with said bottom panel; and fastener means for holding said end flaps to said channel legs to form a carton with an open top and primarily open ends and substantially closed sides.

5,348,148

CONTAINER FOR A HANGER-SUPPORTED GARMENT

Gary D. Lancaster, Lewisburg, Tenn., assignor to The Mead Corporation, Dayton, Ohio

Filed Sep. 4, 1992, Ser. No. 941,030
Int. Cl.[5] B65D *5/08, 85/18*
U.S. Cl. 206—288 12 Claims

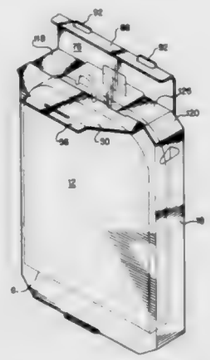
1. A container for a hanger-supported article, comprising:

front and rear opposed walls interconnected by a pair of opposed side walls along generally parallel fold lines to form an upright tubular enclosure;

a pair of beveled shoulder walls joined to said tubular enclosure, said shoulder walls being arranged adjacent to tops of said side walls and being dimensioned such that said shoulder walls extend between said front and rear walls, each of said beveled shoulder walls having upper and lower edges and being disposed at an obtuse angle with respect to the adjacent one of said side walls, the distance between said upper edges of said shoulder walls being less than the distance between said lower edges of said shoulder walls; and

a hanger support panel including means for foldably joining said support panel to a top edge of said rear wall, said support panel when folded being disposed at a generally right angle with respect to said front and rear walls, said support panel being dimensioned such that said support panel extends between and is supported at two spaced portions thereof by said upper edges of said shoulder walls, said support panel having hanger-engaging means for engagement with a hanger, whereby a hanger-supported article placed in said tubular enclosure can hang from said hanger support panel,

wherein each of said front and rear walls has a tapered upper portion defined by a pair of upper corner edges, a corner flap is provided for each of said corner edges of said front



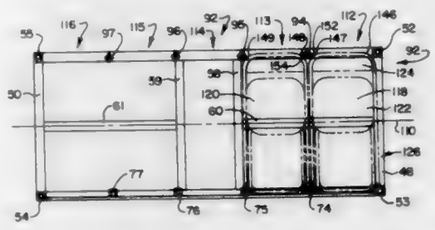
and rear walls, said corner flap including means for foldably joining said corner flap to said each corner edge, said corner flap when folded being disposed generally perpendicularly to said front and rear walls, and each of said shoulder walls includes means for foldably joining said lower edge of said each shoulder wall to the adjacent one of said tops of said side walls, said each shoulder wall being dimensioned such that said each shoulder wall is disposed over the adjacent ones of said corner flaps to thereby be supported in a position where the respective shoulder wall extends between said front and rear walls.

5,348,149

RACK APPARATUS FOR FOLDING CHAIRS

Timothy P. McCarthy, 348 Muirwood Dr., London, Ohio 43140

Filed Jun. 17, 1992, Ser. No. 900,166
Int. Cl.[5] B65D *90/16*
U.S. Cl. 206—326 22 Claims



1. A system for retaining and transporting chairs, comprising:

a plurality of foldable, stackable chairs, each having a back with mutually oppositely disposed upper curved corners and, when folded, two, oppositely disposed, paired front and rear leg ends positioned in adjacent, offset relationship to define an outwardly opening notch, said chairs generally exhibiting constant widthwise, lengthwise and stack height dimension when folded; and

a rack apparatus including:

a base component having a widthwise base extent of dimension corresponding substantially with said the chair lengthwise dimension and extending between substantially parallel first and second longitudinal edges and having a select lengthwise base extent along a longitudinal axis;

a first linear array of paired, upstanding chair leg alignment stanchions of predetermined height, each having a base portion fixed to said base component at said first longitudinal edge and extending from said base portion to a top portion, each pair thereof having inwardly disposed first alignment surfaces along said predetermined height slidably receiving a corresponding oppositely disposed said outwardly opening notch of a given said chair when folded to effect one retention of said given chair in alignment for stacking; and

a second linear array of paired, upstanding chair back alignment stanchions of said predetermined height, each having a base portion fixed to said base component at said second longitudinal edge and extending from said base portion to a top portion, each said pair thereof being located in symmetrical alignment with each said pair of said first linear array and each said pair thereof having at least one inwardly disposed second alignment surface configured and located to slidably align for stacking said back upper curved corners of said given chair when a said outwardly opening notch thereof is slidably received at one of said first alignment surfaces.

21. The method for transporting a multitude of foldable, stackable chairs to the location of a public gathering, each said chair having a back with mutually oppositely disposed upper curved corners and, when folded, oppositely disposed, paired front and rear leg ends positioned in adjacent, offset relationship to define an outwardly opening notch, said chairs generally exhibiting two principal dimensions when folded including widthwise and lengthwise dimensions and having a stack height dimension when folded, comprising the steps of:

providing a rack apparatus including:

a base frame formed as a rectangle with four corners, having a lengthwise side extent and a widthwise side extent, each said side extent corresponding with an integer multiple of a unique one of said chair principal dimensions;

four upstanding posts of predetermined height, each having a post base portion fixed to said base frame at one said corner and extending upwardly to a top portion and defining with said base frame a volume providing for a predetermined number of mutually adjacent stacked chair retaining bays of bay height corresponding with said predetermined height and bay widthwise extent corresponding with said chair widthwise principal dimension;

a first plurality of upstanding chair leg alignment stanchions of predetermined height, having base portions fixed to said base frame at spaced bay defining positions and extending from said base portions to top portions, each having inwardly disposed first alignment surfaces along said predetermined height configured to slidably receive said outwardly opening notches of chairs, when folded and stacked in two, mutually adjacent said bays to effect a retention of said chairs in stacked alignment within said bays, and

a second plurality of upstanding chair back alignment stanchions of said predetermined height, having base portions fixed to said base frame at spaced, bay defining positions, said chair back alignment stanchions extending from said base portions to top portions, each being symmetrically aligned with a corresponding one of said chair leg alignment stanchions to define said bay, and each having inwardly disposed second alignment surfaces configured and located to slidably align for stacking said back upper curved corners of said chairs, when folded;

stacking a plurality of said chairs within each said adjacent bay in a manner wherein said outwardly opening notch of each said chair is in slidable engagement with one of said first alignment surfaces, and each said chair back upper curved corner is in slidable engagement with one of said second alignment surfaces;

loading said rack apparatus upon a vehicle;

transporting said loaded rack apparatus to the vicinity of said location with said vehicle and unloading said rack apparatus thereat; and

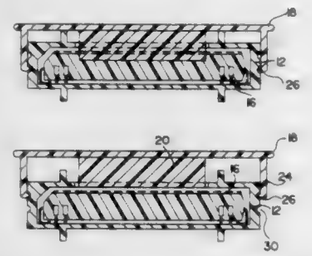
transporting said unloaded rack apparatus to said location and removing said stacked chairs therefrom.

5,348,150

COMPARTMENTALIZED CARRIER FOR INTEGRATED CIRCUITS

Joseph H. Brenner, P.O. Box 66868, Scotts Valley, Calif. 95067, and Suhail Katrib, 5087 Elester Dr., San Jose, Calif. 95124

Filed Mar. 23, 1993, Ser. No. 35,632
Int. Cl.[5] B65D *73/02*
U.S. Cl. 206—328 15 Claims



1. A carrier for transporting devices while maintaining each device out of contact with any other device which comprises:

a tube means adapted for retaining said devices and having an elongated tube wall extending in a direction mid at least one open end in said robe means;

said tube wall having a plurality of openings, said plurality of openings arranged in a row in said tube wall extending in said direction;

a plurality of separators adapted for maintaining said devices out of contact with one another;

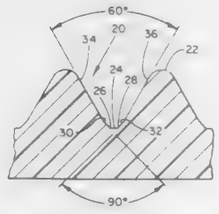
a means for supporting said plurality of separators, arranged in operable combination with said tube and said plurality of separators to permit inserting each separator through one of said openings respectively thereby defining a plurality of regions inside said tube wherein a device may be located in each said region out of contact with any other of said devices and permitting withdrawal of said plurality of separators from inside said tube by withdrawing said means for supporting said plurality of separators such as to permit said devices to slide out of said at least one open end.

5,348,151

LOW PROFILE DISK CARRIER

Larry G. Dressen, Waconia, Minn., assignor to Empak, Inc., Chanhassen, Minn.

Filed Dec. 20, 1993, Ser. No. 170,389
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—334 6 Claims



1. A low profile processing cassette for holding disks comprising:

a. opposing mirror image side walls each including a base member, and outwardly canted disk supporting member, and a handle member, said outwardly canted disk supporting member having a plurality of disk dividers each comprising a disk supporting notch having a base curved along its length to conform to the outside diameter of the disk, a pair of shorter wall segments projecting from opposite edges of the base at approximately a 90° angle with respect to each other, and a pair of longer wall segments projecting from the ends of the shorter wall segments opposite the base at approximately a 60° angle with respect to each other; and

b. a pair of opposing mirror image end walls.

5,348,152

SPARE BLADE STORAGE CASE FOR BARBER'S RAZOR

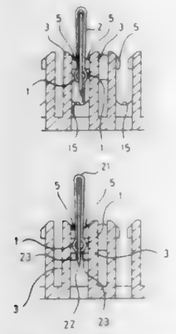
Ido Kiyoshi, and Fujii Hideo, both of Seki, Japan, assignors to Feather Safety Razor Co., Ltd., Osaka, Japan

Filed Feb. 16, 1993, Ser. No. 17,737

Claims priority, application Japan, Feb. 18, 1992, 4-061045

Int. Cl.[5] A45C *11/26*

U.S. Cl. 206—354 | **2 Claims**



1. A case for storing at least one spare blade of a type having a thin blade portion, a back support formed onto the thin blade portion, side plates for supporting the thin blade portion therebetween, and a pair of longitudinal protrusions formed on said side plates, said case having an interior bottom surface, a front end wall, and a rear end wall, said case further comprising:

a pair of parallel adjacent sidewalls extending upwardly from said interior bottom surface of said case, laterally defining therebetween a space for storage of a said spare blade, said sidewalls each having an inner facing surface;

a pair of projections provided on each of said inner facing surfaces of said pair of sidewalls, said sidewalls being yieldable away from a said spare blade as the spare blade is inserted into said space; and

a plurality of spaced walls, each extending upwardly from said front end wall to define recesses therebetween serving as guides along which a blade holder may be thrust forwardly, whereby a spare blade held between the sidewalls may be easily inserted into the blade holder.

5,348,153

DISPOSABLE INDIVIDUAL GELLED INSTANT TOOTHBRUSH

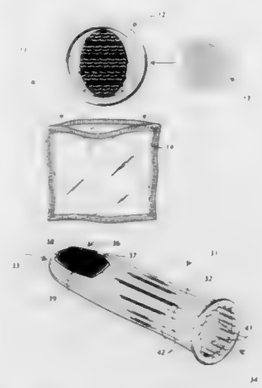
William L. Cole, 1015 Canter Rd., Atlanta, Ga. 30324

Continuation-in-part of Ser. No. 936,941, Aug. 28, 1992. This application Oct. 4, 1993, Ser. No. 130,890

Int. Cl.[5] A46B *3/00, 17/04*

U.S. Cl. 206—361 | **11 Claims**

1. A disposable finger mounted toothbrush comprising a substantially cylindrical sheath having an open end and a closed end and being adapted to be furled from said open end toward said closed end into a compact storage configuration wherein the furled portion of said sheath forms a substantially annular peripheral rim having a predetermined thickness, said closed end portion of said sheath being provided with brush means adapted to clean the teeth of a user when applied with a brushing motion thereto, said brush means having a thickness less than the thickness of said peripheral rim and being sized and positioned on said sheath so that said brush means is surrounded by said peripheral rim when said sheath is in its furled storage configuration, said sheath being sized and configured to be unfurled onto and fit snugly about a user's finger with the closed end of said sheath positioned adjacent the tip of the finger and the open end of said sheath positioned adjacent the base of the finger, and a removable protective cover positioned



about said brush means for protecting said brush means against contamination, said cover having a thickness less than the thickness of said peripheral rim so that the cover is protected by the rim during storage, whereby, during storage, the brush means and the protective cover are protected against compressive forces by the surrounding peripheral rim and, once unfurled onto a finger, the protective cover can be removed and the brush means can be applied with a brushing motion to the teeth of a user by appropriate manipulation of the sheath bearing finger to clean the user's teeth, whereupon the sheath can be refurled to remove the toothbrush from the finger for appropriate disposal.

5,348,154

PACKAGING CURABLE MATERIALS

Dwight W. Jacobs, St. Paul, Minn.; Kenneth E. Hoevel, Monrovia, and Bruce E. Chester, Irvine, both of Calif., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 615,702, Nov. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 350,609, May 10, 1989, Pat. No. 4,978,007. This application Jun. 2, 1993, Ser. No. 71,037

Int. Cl.[5] B65D *83/10*

U.S. Cl. 206—369 | **6 Claims**

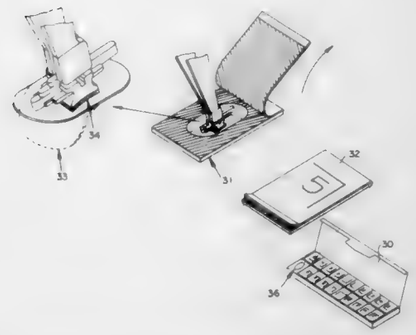
1. An article comprising:

(a) a tray having at least two holes;

(b) at least two substrates each having a top surface and a single well opening only at the top surface and being removably retained in one of the holes in the tray;

(c) a lid releasably attached to the top surface so as to cover the well opening in a manner such that the substrate is removable from the hole with the lid attached to the top surface thereof;

(d) an orthodontic appliance having a tacky substance on an exterior surface thereof that is positioned in the well such



that the tacky substance does not separate from the appliance upon removal from the well.

5,348,155

PLASTIC FILM BAG WITH AN INFLATED PATTERN

Takuzo Ishiwa, Tokyo, Japan, assignor to Ringston Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/00710, § 371 Date Apr. 7, 1993, § 102(e) Date Apr. 7, 1993, PCT Pub. No. WO92/21264, PCT Pub. Date Dec. 10, 1992

PCT Filed May 28, 1991, Ser. No. 43,801

Int. Cl.[5] B65D *73/00, 30/10*

U.S. Cl. 206—457 | **8 Claims**



1. A plastic film bag with an inflated pattern comprising:

a bag section for retaining an article therein and having an outer surface;

an inflating portion of a pattern sealingly attached to said bag section for allowing the inflating portion to substantially project outwardly from the outer surface of the bag section; and

an inflating device attached to said inflating portion of the pattern so that when the inflating portion is inflated by fluid through the inflating device, the inflating portion becomes three-dimensional and projects outwardly from said outer surface of the bag section without substantially reducing a space inside the bag section.

5,348,156

DISPLAY HOLDER

Raymond V. Maroszek, Neenah, and Daniel R. Coots, Appleton, both of Wis., assignors to Outlook Graphics Corporation, Neenah, Wis.

Filed Apr. 21, 1993, Ser. No. 50,936

Int. Cl.[5] B65D *5/42*

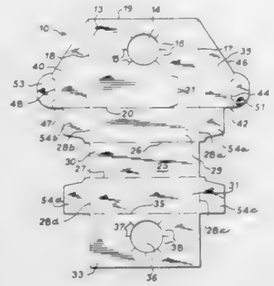
U.S. Cl. 206—491 | **4 Claims**

1. A blank sheet of foldable material for use in forming a box having a header piece, the blank sheet comprising:

a header panel having lateral sides, upper and lower sides, an upper portion extendable at least partially above a top wall of the box when the box is formed, an aperture through the upper portion, and a lower portion that can form a wall of the box;

a brace panel integrally attached to the header panel by a fold line at a lateral side of the header panel, an upper portion of the brace panel being attached to the upper portion of the header panel, the brace panel also being connected to an integral end flap along a fold line;

a generally rectangular carton panel attached to the header panel at a fold line along the lower side of the header panel, the carton panel having at least two internal fold lines that are both generally parallel to a fold at a junction



of the header panel and the carton panel, so as to define three other wall panels of the box that can be formed from the carton panel; and

a tab panel connected to the blank sheet by a fold line to facilitate attachment of an end of the carton panel opposite said junction to the header panel when the box is formed;

whereby, the panels of the blank sheet are juxtaposed such that when the box is assembled by folding the sheet along fold lines and the end flap is positioned inside the box, a lower portion of the brace panel also forms a cover for a lateral end of the box.

5,348,157

INFLATABLE PACKAGING CUSHION

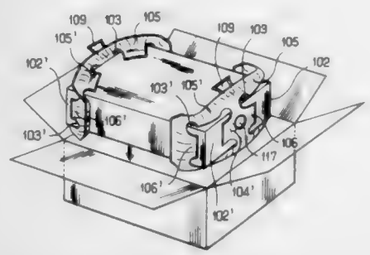
Michel Pozzo, Neuilly S/Seine, France, assignor to Ateliers de Conceptions et D'Innovations Industrielles, Courbevoie, France

Filed Jan. 22, 1993, Ser. No. 7,857

Claims priority, application France, Jan. 22, 1993, 92 00656

Int. Cl.[5] B65D *81/02, 85/30*

U.S. Cl. 206—522 | **16 Claims**



1. Inflatable packaging cushion comprising:

an external peripheral edge adapted to the shape and to the dimension of a packing receptacle,

at least one internal opening capable of receiving at least one object to be packaged such that a side of said at least one object is completely encircled by the perimeter of said at least one internal opening,

a plurality of recesses extending from each internal opening towards the peripheral edge, said recesses delimiting in pairs wedging parts capable of coming into contact with said at least one object, zones for pivoting of the wedging

parts being defined between the recesses and the peripheral edge, said wedging parts being arranged so as to automatically pivot during inflation of the inflatable packaging cushion about a line extending generally between two successive recesses in order to vary the size and the shape of each internal opening and to adapt it to objects of different sizes, whilst exerting a holding pressure on said at least one object, said internal opening being completely encircled by said wedging parts.

8. A packaging item comprising a box, at least one inflatable cushion placed above or below at least one object to be packaged, and at least one other inflatable cushion comprising:

an external peripheral edge adapted to the shape and dimension of the box;

at least one internal opening, each of which is capable of receiving said at least one object to be packaged such that a side of said at least one object is completely encircled by the perimeter of the opening; and

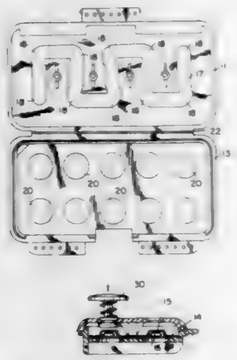
a plurality of recesses extending from each internal opening towards the peripheral edge, said recesses delimiting in pairs wedging parts for each internal opening, each of said wedging parts being capable of coming into contact with said at least one object, zones for pivoting being defined between each of said recesses and the peripheral edge, each of said wedging parts being arranged so as to automatically pivot during inflation of said at least one other inflatable cushion about a line extending generally between two successive recesses in order to vary the size and the shape of each internal opening and to adapt each internal opening to objects of different sizes, whilst exerting a holding pressure on said at least one object, said at least one internal opening being completely encircled by said wedging parts.

5,348,158

DISPENSER PACK FOR THE SUCCESSIVE DISPENSING OF A DRUG

David G. Honan, Somerville, Mass.; Gregory W. Lantz, Wheaton, Ill., and Thomas E. Salisbury, Wayland, Mass., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Dec. 19, 1991, Ser. No. 810,233
Int. Cl.[5] B65D *83/04*
U.S. Cl. 206—531 6 Claims



1. A reusable dispensing package for dispensing medication in the form of tablets, pills, capsules in a predetermined sequence, said package comprising a reusable container having a cover and base portion, the cover being engageable with the base to form the container; the base portion being adapted to receive a blister package, the blister package including a plurality of spaced apart blisters for receiving and containing said medication, the base portion including a plurality of spaced apart openings coextensive with the blisters in the blister package;

the cover portion including a race;

a plunger positioned in the race and moveable therein;

the race having a plurality of intersecting tracks including intersections in substantial alignment with the spaced apart blisters in the blister package;

the plunger being moveable successively to each intersection of the tracks in the race whereby when the plunger is depressed, the plunger releases the medicament in the blister in alignment with the intersection and the opening in the base portion.

5,348,159

ENHANCEMENT OF POLYCYANOACRYLATE-DEVELOPED FINGERPRINTS

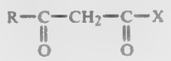
John E. Watkin, and Della A. Wilkinson, both of Ottawa, Canada, assignors to Her Majesty the Queen in Right of Canada as represented by the Solicitor General of Canada, Ottawa, Canada

Filed Jun. 29, 1992, Ser. No. 905,325
Int. Cl.[5] B65D *69/00, 71/00*
U.S. Cl. 206—568 21 Claims



12. A kit for enhancing the contrast of polycyanoacrylate-developed fingerprints, comprising in combination

(a) an organic compound of the structural formula



wherein R is an aromatic UV absorbing group and X is an electron attracting group,

(b) a suitable europium III salt, dissolved in an aqueous solution adjusted to a pH of about 8 by a suitable mineral acid and a suitable buffer pH 8, and

(c) kit means to separately contain and maintain apart until use, predetermined amounts of (a) (b).

5,348,160

COAL CLEANING PROCESS

James K. Kindig, Boulder, Colo., assignor to Genesis Research Corporation, Carefree, Ariz.

Division of Ser. No. 775,860, Oct. 15, 1991, which is a continuation-in-part of Ser. No. 492,312, Mar. 6, 1990, Pat. No. 5,096,066, which is a continuation of Ser. No. 126,419, Nov. 30, 1987, abandoned. This application Dec. 9, 1992, Ser. No. 988,417
Int. Cl.[5] B03B *5/34*; B04C *5/00*; C01G *49/02*
U.S. Cl. 209—17 12 Claims

1. A process for beneficiating coal comprising:

(a) providing a coal feed comprising particulate solids;

(b) dividing the coal feed into at least three fractions based on particle size;

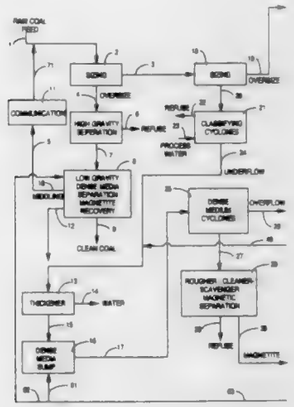
(c) discarding as refuse a first of said fractions from step (b), which first fraction contains the smallest-size particles;

(d) separately processing the remaining fractions from step (b) in dense medium separation units, with dense medium comprising liquid and magnetic particles, to separate each fraction into a clean coal overflow and a refuse underflow;

(e) separately recovering magnetic particles from each of the overflow and underflow following dense medium separation of a second fraction from (b), which contains larger-size particles processed in step (d), by draining and then

rinsing with water on a screen or sieve followed by removal of dense medium magnetic particles from the rinse water by magnetic separation; and

(f) separately recovering magnetic particles from each of the overflow and underflow following dense medium separation of a third fraction from (b), which contains smaller-size particles processed in step (d), by magnetic separation;



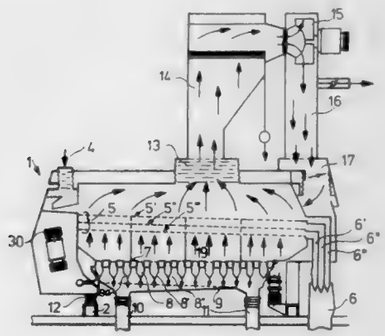
wherein said first fraction from step (b), which is discarded in step (c), comprises the overflow from a classifying cyclone comprising an inlet orifice and a feed chamber, and wherein the average velocity of the coal feed through the inlet orifice by which the feed enters the cyclone feed chamber is at least 60 feet per second.

5,348,161

PROCESS FOR GUIDING AIR FOR CLEANING SEMOLINA, AS WELL AS SEMOLINA CLEANING APPARATUS

Roman Mueller, Niedeuzwil, Switzerland, assignor to Buehler AG, Uzwil, Switzerland

PCT No. PCT/CH92/00071, § 371 Date Dec. 11, 1992, § 102(e) Date Dec. 11, 1992, PCT Pub. No. WO92/18257, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 4, 1992, Ser. No. 960,426
Claims priority, application Switzerland, Apr. 15, 1991, 0123/91
Int. Cl.[5] B07B *9/00*
U.S. Cl. 209—29 15 Claims



1. In a process for guiding air for cleaning semolina, wherein the product is cleaned via a plurality of vibrationably supported sieve layers forming a cleaning section and via product discharges for the sieve tailings and is divided into desired fractions below the sieve layers with a plurality of adjustable outlet sleeves for guiding the sieve siftings into two or more collecting troughs, the improvement comprising the steps of:

collecting exhaust air from at least two cleaning sections in an air discharge line;

sucking off the collected exhaust air via a separately arranged aspirator;

cleaning said sucked-off air and guiding said cleaned air back as feed air via a feed duct below the sieve layers;

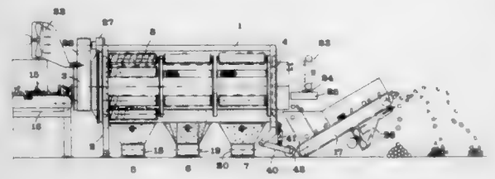
and forming said product cleaning and air feeding elements in outwardly closed passages.

5,348,162

MACHINE FOR PROCESSING GOODS, ESPECIALLY REFUSE, FOR SORTING IT

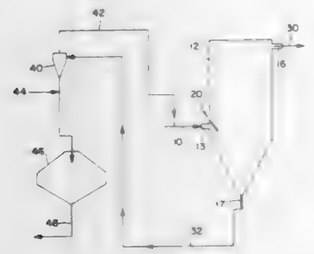
Franz Wroblewski, Granitvägen 8, S-826 00 Söderhamn, Sweden

Continuation-in-part of Ser. No. 720,845, Jul. 15, 1991, abandoned. This application Mar. 23, 1993, Ser. No. 48,334
Claims priority, application Sweden, Jan. 24, 1989, 8900240-6
Int. Cl.[5] B07B *9/00*
U.S. Cl. 209—35 12 Claims



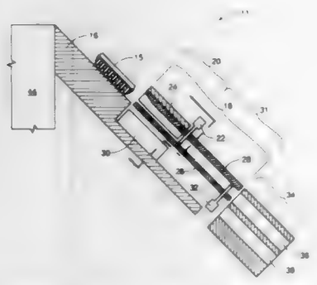
1. In an apparatus for processing and sorting goods in which the apparatus includes at least one rotatable, horizontal drum having an inlet, a spaced apart outlet and at least two successive processing stations between said inlet and said outlet and wherein each of said processing stations includes at least one rotatable shaft means having a circumferential surface provided with projecting processing means for processing said goods, said shaft means having centre axes located outside said drum, said drum having a plurality of openings, said openings having edge portions, said processing means being mounted adjacent said openings and projecting into said drum through said openings whereby said processing means cooperates with said edge portions for exerting an action selected from cutting, shearing and clipping on goods fed through the drum from said inlet towards said outlet, the improvement wherein said drum includes means for rotating said drum, each shaft means being rotatably mounted relative to said drum by mounting means therefor, said mounting means comprising a first toothed wheel non-rotatably connected to a journal on said shaft, a ring gear, a pair of annular gear means associated with said ring gear, said shaft meshing with one of said annular gear means, said ring gear mounted in a bearing relative to said drum, a drive unit having break means associated therewith such that when operated in a normal state, said ring gear is stationary while permitting each of said shafts to rotate at a given speed exceeding the speed at which the drum is rotated, a second toothed wheel, the other of said pair of gear means meshing with said second toothed wheel of said drive unit, and said processing means of a first of said stations located closest to said inlet of said drum is dimensionally smaller relative to the dimensions of successive processing means associated with a succeeding station located in a downstream direction in the direction of the feed of the goods towards said outlet, to thereby facilitate removal of finely-sized goods at said first station while permitting coarser-sized goods to be removed at succeeding stations.

5,348,163
METHOD AND APPARATUS FOR SEPARATING FINE PARTICLES
Donald E. Tunison, III, Tuscola; Stephanie E. Church, Champaign; Gregory W. Leman, Savoy, and Carl L. Troike, Jr., Tuscola, all of Ill., assignors to Cabot Corporation, Boston, Mass.
Filed Jan. 19, 1993, Ser. No. 6,359
Int. Cl.[5] B07B *4/00*
U.S. Cl. 209—135 31 Claims



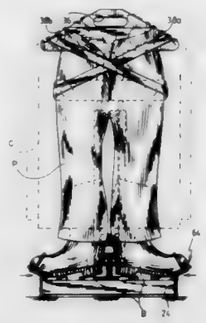
1. A method for separating fumed silica having a nominal particle diameter of less than about 45.0 microns and a bulk density of less than about 10.0 lbs/ft^3 from contaminant particles, having a particle diameter and bulk density greater than said fumed silica, suspended in a gas stream comprising:
introducing said gas stream at a predetermined velocity into a vessel having a top and bottom portion, each said portion having a discharge outlet;
directing said gas stream into an impingement plate, said plate arranged within said vessel at a predetermined angle, said angle being such that said gas stream is uniformly distributed within said vessel after impact with said plate;
wherein said fumed silica rises to said vessel top portion, and said contaminant particles and residual fumed silica settles to said vessel bottom portion;
removing said fumed silica through said top discharge outlet; and
removing said contaminant particles and residual fumed silica through said bottom discharge outlet.

5,348,164
METHOD AND APPARATUS FOR TESTING INTEGRATED CIRCUITS
Steve W. Heppler, Kuna, Id., assignor to Micron Semiconductor, Inc., Boise, Id.
Filed Apr. 13, 1993, Ser. No. 46,246
Int. Cl.[5] B07C *5/344*
U.S. Cl. 209—573 6 Claims



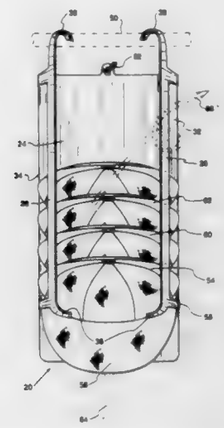
1. An integrated circuit testing apparatus for testing an integrated circuit leaving an IC singulation station, comprising:
a) a receiving means positioned in a pre test position for receiving the integrated circuit from the IC singulation station;
b) a testing site, positioned to secure the integrated circuit after a displacement of said receiving means to a test position, the displacement positioning said integrated circuit in said testing site said test site having a test connection for making physical contact with said integrated circuit when it is secured in said testing site, a circuit test performed on said integrated circuit when it is secured in said testing site; and
c) a holding station having a first post test position and a second post test position, said holding station receiving the integrated circuit in said first post test position from the receiving means following a return of the receiving means to said pre test position subsequent to the performing of the circuit test the integrated circuit;
d) a first track for receiving the integrated circuit from the holding station when the holding station is in said first post test position and when the circuit test determines that the integrated circuit has a first test condition: and
e) a second track for receiving the integrated circuit from the holding station when the holding station is in said second post test position, said second test position attained when said receiving means returns to said test position, said second track receiving the integrated circuit when the circuit test determines that the integrated circuit has a second test condition.

5,348,165
SELF-STANDING UPRIGHT COAT HANGER
Jocelyn Pomerleau, 4860 Blvd des Cimes, Montchatel, Québec, Canada G2A 4C1
Filed Mar. 1, 1993, Ser. No. 24,214
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—13 5 Claims



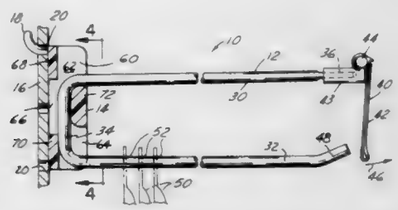
1. A self-standing coat hanger device, for use in supporting the suit of a firefighter and the like both before and after use during fire containing and extinguishing operations, and alternately for use in constituting a boundary mark for establishing a security control area in firefighting conditions, said coat hanger device consisting of:
(a) a ground-engageable base;
(b) a post, integrally mounted at its bottom end to said base in upright condition, and defining a triangular support member at its top free end, said triangular support member for supporting a firefighter's coat;
(c) means for telescopingly extending said post and for locking same at selected telescoped increments
(d) bridle means, for releasably securing firefighter's boots to said ground base.

5,348,166
BALL CAP STORAGE RACK
Greg Lema, 4022 Glendale Ct., Merced, Calif. 95348
Filed Apr. 22, 1993, Ser. No. 51,623
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—30 10 Claims



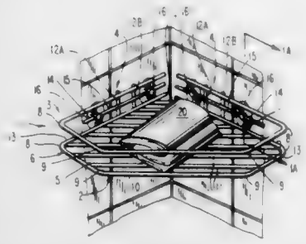
1. A rack for storing baseball caps and the like having a visor extending forwardly from a head cover, comprising:
means forming a generally planar back piece elongated in one direction and having a width in the direction transverse to said one direction slightly less than the width of a standard baseball cap, said width being the distance between two elongated side edges of said planar back piece;
means forming side rails extending along the elongated side edges of said generally planar back piece, each said rail defining an elongated opening formed therebeneath, adjacent said generally planar back piece and extending substantially the length of the rail;
cap capture means extending inwardly from one set of corresponding ends of said rails to be engaged by a cap placed in said rack with the lateral extremities of its visor extending through said openings; and
means disposed at the end of said rack opposite said capture means for hanging said rack.

5,348,167
MERCHANDISING HOOK
Palle L. Jensen, Backersvej 142, DK-2300 Copenhagen S., Denmark
Filed Jun. 11, 1993, Ser. No. 76,241
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—57.1 2 Claims



1. A merchandising device for mounting on a display panel, said device comprising:
a continuous wire-like member shaped into a generally U-shaped configuration, said member having a first leg portion, a second leg portion and a third connecting leg portion, said third leg portion having two ends and connecting together said first and second leg portions forming said U-shaped configuration,
a base member for supporting said wire-like member on said display panel, said base member comprising at least one pin member for attachment to said display panel, a stop member for holding said wire-like member in its display position on said display panel, and a recess means for allowing rotation of said wire-like member relative to said base member,
said stop member having a first surface for supporting said first leg portion and a second surface for supporting said third connecting leg portion,
said recess means positioned adjacent said stop member and allowing entry of the end of said third leg portion connected to said second leg portion when said wire-like member is displaced vertically upwards relative to said base member and said base member is then rotated relative to said wire-like member,
whereby said wire-like member is held securely in said base member without any components or members affixed thereto.

5,348,168
RELEASABLY MOUNTABLE CADDY DEVICES
William W. Emery, Berkeley Heights, N.J., assignor to Better Sleep Mfg., Berkeley Heights, N.J.
Continuation of Ser. No. 681,153, Apr. 5, 1991, Pat. No. 5,289,927, which is a continuation-in-part of Ser. No. 388,236, Aug. 1, 1989, Pat. No. 5,014,860. This application May 11, 1993, Ser. No. 60,340
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—106 3 Claims



1. A corner caddy for repositionable attachment to a corner having a first substantially planar mounting surface and a second substantially planar mounting surface, said corner caddy comprising:
a corner frame portion having first and second planar regions;
a caddy portion attached to said corner frame portion for supporting one or more objects; and
at least first and second suction cups releasably attached to said corner frame portion, said first suction cup having a first wall engageable portion extending within a first plane, and a first mounting portion disposed substantially in the first planar region of said corner frame portion so that said first planar region is substantially parallel to the first plane within which the first wall engageable portion extends, and said second suction cup having a first wall engageable portion extending within a second plane, and a second mounting portion disposed substantially in the second planar region of said corner frame portion so that said second planar region is substantially parallel to the second plane within which the second wall engageable portion extends, whereby when said first wall engageable portion engages said first substantially planar mounting surface and said second wall engageable wall portion engages said second substantially planar mounting surface, said corner frame portion is attached to said corner solely by said at least first and second suction cups, with

said first planar region being substantially parallel and close to the first plane within which the first wall engageable portion extends, and said second planar region being substantially parallel and close to the second plane within which the second wall engageable portion extends.

5,348,169

STORAGE RACK SYSTEMS

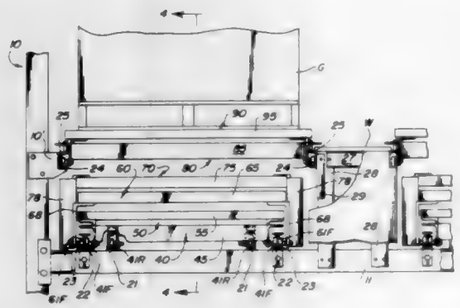
Donald R. Allen, Frenchtown, N.J., assignor to Frazier Industrial Company, Long Valley, N.J.

Filed Jul. 8, 1992, Ser. No. 910,496

The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.

Int. Cl.[5] A47F *5/08*

U.S. Cl. 211—151 **17 Claims**



1. A storage rack for supporting pallet loads multiple pallets deep having a framework providing a plurality of storage bays, wherein at least one of said storage bays comprises:

a first set of carts,

first track means extending along the depth of said storage bay for supporting said first set of carts for movement along said track means from forward positions to back positions thereof,

said first set of carts including

a first cart whose forward position is located at the entry end of the storage bay and whose back position is located two pallets deep from the entry end of the storage bay,

a second cart whose forward position is located at the entry end of the storage bay overlying said first cart and whose back position is located three pallets deep from the entry end of the storage bay,

a third cart whose forward position is located at the entry end of the storage bay overlying said second cart and whose back position is located four pallets deep from the entry end of the storage bay, and

a fourth cart whose forward position is located at the entry end of the storage bay overlying said third cart and whose back position is located five pallets deep from the entry end of the storage bay,

a second set of carts, and

second track means extending along the depth of said storage bay for supporting said second set of carts for movement along said track means from forward positions to back positions thereof,

said second set of carts including

a fifth cart whose forward position is located at the entry end of the storage bay overlying said fourth cart and whose back position is located six pallets deep from the entry end of the storage bay, and

a sixth cart whose forward position is located at the entry end of the storage bay overlying said fifth cart and whose back position is located seven pallets deep from the entry end of the storage bay,

said second track means being located above said first track means,

said first and second track means each being mounted on the storage bay framework so as to be inclined forwardly toward the entry end of said storage bay, whereby said carts are supported so that they tend to roll along said associated track means thereof toward the entry end of the storage bay.

5,348,170

FREE-STANDING SHELVING SYSTEM

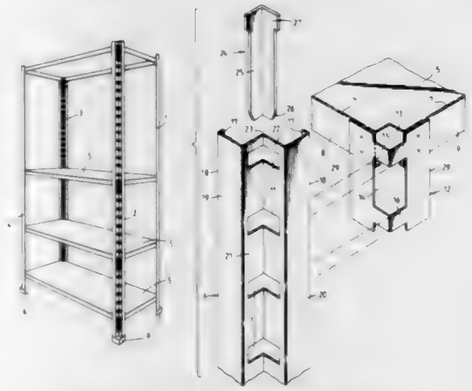
Robert S. Thornley, Watford, and Christos Papadopoulos, Tickhill, both of England, assignors to McKechnie (UK) Limited, West Midlands, United Kingdom

Filed Oct. 19, 1992, Ser. No. 963,291

Claims priority, application United Kingdom, Oct. 17, 1991, 9122087

Int. Cl.[5] A47F *5/00*

U.S. Cl. 211—187 **10 Claims**



1. A free-standing shelving system, comprising:

a plurality of uprights having spaced holes therealong;

a plurality of shelves having exterior surfaces;

an attachment arrangement attaching said shelves to said uprights so that said shelves can extend approximately horizontally between said uprights and be supported thereby, said attachment arrangement comprising a separate corner piece attached at each corner of each said shelf on the exterior surface thereof such that said corner piece projects outwardly from the exterior surface of said shelf, and each said corner piece extending longitudinally in a direction substantially perpendicular to said shelf and having a protrusion protruding through one of said holes in said uprights; and

locking members locking said protrusion in said holes of said uprights;

wherein said uprights have exterior edges with longitudinal flanges thereon, said longitudinal flanges being positioned about said separate corner pieces projecting outwardly from the exterior surfaces of said shelves such that said corner pieces are held substantially rigid with respect to said uprights.

5,348,171

REMOVABLE OUTRIGGER FOR MOBILE CRANE

Alan H. Haman, Versailles, Ky., and Timothy L. Wolles, Fairmont, Minn., assignors to Link-Belt Construction Equip. Co., Ky. and Sumitomo Construction Machinery, Japan, a part interest

Filed Dec. 8, 1992, Ser. No. 986,795

Int. Cl.[5] B66C *23/78*

U.S. Cl. 212—189 **15 Claims**

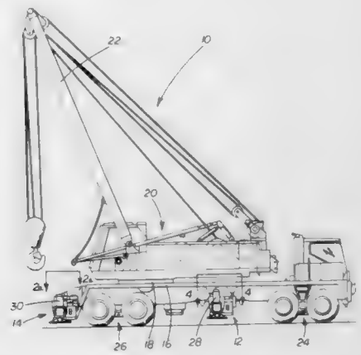
5. A removable outrigger for attachment to a crane vehicle frame comprising:

a box frame with extendable support beams;

means for securing said box frame to said vehicle frame;

cam means for proper horizontal alignment of said outrigger during movement into engagement with said vehicle frame, said cam means including at least a pair of spaced rotary eccentric cams;

means of preadjusting said rotary eccentric cams for selected point contact with mounting lugs on said vehicle frame to effect said proper horizontal alignment; and



hangers for supporting guide pins and connected to said box frame, said mounting lugs having open hooks on said vehicle frame, said guide pins being received in said hooks to provide proper vertical alignment of said outrigger with said vehicle frame;

whereby said securing means can be implemented without manual manipulation of said outrigger to assure rapid attachment and removal.

5,348,172

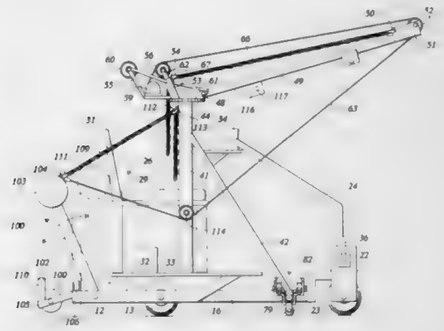
INDUSTRIAL CARRYING MACHINE

Frederick F. K. Wilson, 52 Dickerson Rd., Griffin, Ga. 30223

Filed Mar. 2, 1993, Ser. No. 25,562

Int. Cl.[5] B66C *23/76*

U.S. Cl. 212—196 **5 Claims**



1. A mobile crane comprising:

a frame having a longitudinal axis and front and rear ends lying in a first plane,

a platform mounted on said frame,

a plurality of wheels rotatably mounted of said frame, and least one of said wheels being swivelly mounted to said frame,

a support member on said platform,

an elongated boom having a longitudinal axis,

mounting means for swivelly mounting said boom to said support member for movement above a vertical axis, said boom being swivelly mounted to said mounting means for movement in a vertical plane,

a counterweight assembly pivotally mounted at the rear end of said frame on axis vertically and horizontally displaced from said mounting means and lying substantially in said first plane, said counterweight assembly comprising an elongated support arm having a proximal end pivotally mounted to said frame and a weight member mounted to its distal end, said support arm being movable through the arc independently of said elongated boom,

said means for moving said counterweight assembly including a lifting cable extending said boom having a free, distal end, and means for coupling said distal end to said weight member.

5,348,173

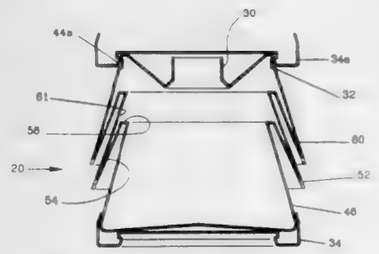
COLLAPSIBLE-STACKABLE PLASTIC CONTAINER

Peter M. Norwood, 600 Plaza Middlesex, Middletown, Conn. 06457

Filed Sep. 20, 1991, Ser. No. 763,255

Int. Cl.[5] B65D *1/02, 21/08, 23/00*

U.S. Cl. 215—10 **6 Claims**



1. A collapsible container made of resilient plastic material comprising a top having an opening and a bottom spaced apart along a longitudinal axis, joined by a sidewall comprised of a plurality of substantially circular bellows;

the top having at its periphery a circumscribing top groove, the groove having a groove minor diameter, a groove major diameter, and a groove width, where the top joins the sidewall;

the top having an upwardly projecting truncated conical section surmounted by a neck with the top opening at the end thereof, the neck having a longitudinal axis length;

the top conical section inverting when the neck is pressed downwardly toward the base with sufficient longitudinal axis force, the extent of inversion being sufficient to cause the neck to move along the longitudinal axis toward the base a distance at least equal to the said neck longitudinal axis length, to cause the neck and inverted top conical section to become recessed within the confines of the sidewall;

the sidewall being collapsible when the container top is pressed toward the base with sufficient longitudinal axis force;

the bottom closing the end of the sidewall and having a base facing oppositely to the top and neck, the base having in its center a substantially circular shallow recess, the open end of the recess facing downwardly; the recess shaped to snugly receive the top of an identical container of which the top conical section and surmounting neck have been inverted as aforesaid; the recess having an integral ring circumscribing the opening thereof; the ring having a width, as measured along the said longitudinal container axis, less than the said groove width, and a diameter greater than said groove minor diameter and less than said groove major diameter, the ring having a smaller inside dimension than the rest of the recess, the ring dimensionally shaped to engage and fit resiliently into the top groove of an identical container, when the top of said identical container with an inverted top conical section is inserted into the recess;

wherein two identical containers are held together when the

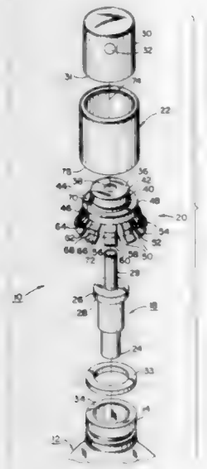
top end of a first container is pushed into the recess of the base of a second container.

5,348,174

METAL FLEXIBLE FINGER FERRULE FOR FLANGED CONTAINER CLOSURE

Alvydas Velicka, Watertown, Conn., assignor to Eyelematic Manufacturing Co., Inc., Watertown, Conn.

Filed Jan. 14, 1993, Ser. No. 4,550
Int. Cl.[5] B65D *51/18*
U.S. Cl. 215—277 **5 Claims**



1. A metal flexible finger ferrule for clamping a dispensing device to a container having a flanged opening, said ferrule comprising:

a metal workpiece having:

a circular shaped flat surface having a central aperture therein and an outer diameter;

a cylindrical skirt, said skirt extending perpendicularly downward from said outer diameter of said circular surface, said skirt having a wall defined by an inside and outside diameter;

a plurality of flexible fingers formed by a plurality of circumferentially distributed longitudinal slots cut into said cylindrical skirt, each of said flexible fingers further including:

a terminal end, a first edge and a second edge;

a first transverse bend proximal to said terminal end, said first transverse crease extending from said first edge to said second edge;

a second transverse bend proximal to said cylindrical skirt, said second transverse bend extending from said first edge to said second edge;

a third transverse bend between said first and second transverse bends, said third transverse bend extending from said first edge to said second edge;

an upper portion, said upper portion being defined by said second transverse bend, said first edge, said second edge and said third transverse bend, said upper portion having an inclined orientation with respect to said wall of said cylindrical skirt so as to place said first and third transverse bends at a greater radial distance from a central axis of said cylindrical skirt than the wall of said cylindrical skirt;

a middle portion, said middle portion being define by said third transverse bend, said first edge, said second edge and said first transverse bend, said middle portion having a substantially parallel orientation with respect to said wall of said cylindrical skirt; and

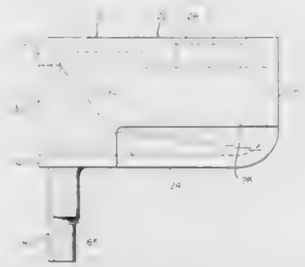
a lower portion, said lower portion being defined by said first transverse bend, said first edge, said second edge and said terminal end, said lower portion having a substantially perpendicular orientation with respect to said wall of said cylindrical skirt so as to place said terminal end at a greater radial distance from said central axis than said first and third transverse bends.

5,348,175

LIFT FITTING FOR CARGO CONTAINERS

Kenneth Reynard, 13D Croft Heads, Sowerby, Thirsk, N/Yorks Y07 1NY, Great Britain

Filed Dec. 5, 1991, Ser. No. 802,612
Int. Cl.[5] B65D *33/00*
U.S. Cl. 220—1.5 **9 Claims**



1. A lift fitting casting for long body cargo containers where said lift fitting is positioned inboard from the corners of said container, said lift fitting casting permitting the lifting and positioning of said long body containers by existing, standardized cranes, said lift fitting casting comprising:

a body member defined by an upper surface, lower surface, inner end surface, outer end surface and parallel sidewalls, said body member having a chamber defined therein, said chamber in communication with said upper surface by means of an aperture communicating between said chamber and said upper surface, said body member having a depending spigot positioned on said lower surface proximate to said outer end wall, said spigot having an interior facing surface and an exterior facing surface, said interior facing surface of said spigot is stepped, said step for engagement with a vertical support, said exterior facing surface of said spigot is planar and recessed from said outer end surface of said body member;

means for securing said body member to horizontal supports of said cargo container;

means for securing said downwardly-depending spigot of said body member to said vertical support of said cargo container.

5,348,176

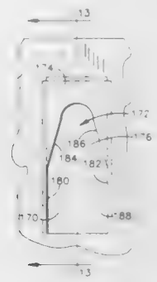
HIGH-CUBE TOP LIFT CARGO CARRIER STRUCTURE

Howard J. Yurgevich, and Thomas J. Rosby, both of Monticello, Ind., assignors to Rosby Corporation, Monon, Ind.

Continuation-in-part of Ser. No. 792,950, Nov. 15, 1991, and a continuation-in-part of Ser. No. 17,786, Feb. 16, 1993, Pat. No. 5,248,051, which is a continuation of Ser. No. 839,811, Feb. 21, 1992, Pat. No. 5,205,428. This application Sep. 27, 1993, Ser. No. 127,307
Int. Cl.[5] B65D *88/00*
U.S. Cl. 220—1.5 **20 Claims**

1. A cargo carrier liftable by a lift element of a vertical mover, the cargo carrier comprising a floor, a roof, a pair of parallel side walls, and first and second end walls, at least one of the side walls and end walls including a opening to permit the entry and exit of cargo, and a plurality of lift pockets fixed to said pair of parallel side walls, each lift pocket comprising a back plate positioned between the pair of sidewalls and attached to one of the sidewalls, a guide plate attached to lie in parallel contiguous relationship to the side wall in spaced apart

parallel relationship to the back plate to define a cavity therebetween, the guide plate having a guide plate aperture therethrough to allow acceptance of the lift element, the guide plate aperture including opposing edges having upwardly converging linear segments for guiding the lift element into engagement with the lift pocket, the back plate further comprising a lower, outwardly inclined portion for encouraging disengagement of the lift element from the guide plate aperture upon downward movement of the lift element with respect to the cargo carrier.

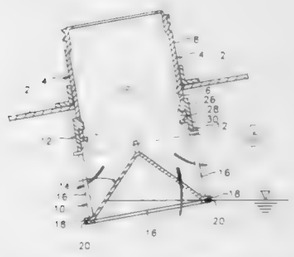


5,348,177

FUEL BACKWARD FLOW-PREVENTING DEVICE FOR USE IN AN AUTOMOTIVE VEHICLE

Younkwan Sung, Ulsan, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Dec. 10, 1993, Ser. No. 164,942
Claims priority, application Rep. of Korea, Dec. 12, 1992, 92-252773[U]
Int. Cl.[5] F16K *17/00*
U.S. Cl. 220—86.2 **8 Claims**



1. A fuel backward flow-preventing device for use in an automotive vehicle, comprising:

a fuel filler and a fuel tank;

a guide member connected to an inside portion of said fuel filler and having a plurality of slits and a plurality of passages;

a floater member having projections slidably combined to said slits and ascending according to a fuel volume to block said passages; and

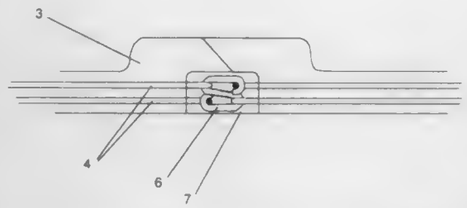
a coupling means for connecting said inside portion of said fuel filler to said guide member lengthwise.

5,348,178

CONTAINER SYSTEMS FOR HIGH EXPLOSIVE TEST AGENTS

Clifford E. McLain, Fairfax Station, Va., assignor to ARES Corporation, Arlington, Va.

Filed Jan. 25, 1993, Ser. No. 986,513
Int. Cl.[5] F42B *37/00*
U.S. Cl. 220—88.1 **9 Claims**



1. An explosive container system, for the containment of liquid, unconsolidated, or granular explosive agents, comprising:

a. one or more consumable container wall segments, which combine a suitable rubber or polymer based explosive with inert internal or external reinforcing cords or fabric, to form a container whose walls can support both tensile and sheer forces,

b. a set of loops or other attachment means formed by extension of the reinforcing cord or fabric from the edges of said wall segments,

c. a locking cord for securing the container wall segments to each other,

d. an air-curing cross-linked polymer based explosive or otherwise consumable filler to seal the securing joints formed by said attachment means and said cord between said consumable container wall segments,

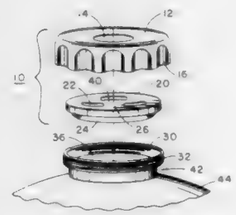
e. a filling port, said port providing an entry port for the introduction of the explosive agent used to fill the container and a valve controlled means of pressuring the assembled container to facilitate the filling process.

5,348,179

VENTING CAP ASSEMBLY

Lynn M. Walker, Leesburg, Fla., assignor to Walker Stainless Equipment Company, Inc., Tavares, Fla.

Filed May 11, 1992, Ser. No. 881,347
Int. Cl.[5] B65D *51/16*
U.S. Cl. 220—209 **1 Claim**



1. A vent cap assembly for attachment to a ferrule of a manhole assembly on a liquid holding tank in a tanker truck, said cap assembly comprising:

a cap having a central air vent aperture for venting air and including first securing means for securing the cap to the ferrule;

a diaphragm having a flexible non-porous central sealing member larger than said aperture in said cap, said diaphragm having an outer circumferential band foraged integrally therewith, said band having a generally rectangular cross-section substantially thicker than said central

member, a radially outer corner of said band having a seating surface for mating with a corresponding beveled surface on a ferrule extending from a liquid holding tank to center said diaphragm on the ferrule, said diaphragm further including a plurality of circumferentially spaced supporting strips extending between said band and said central sealing member for supporting said central member in a generally planar orientation within said band, said diaphragm further including a plurality, of air passageway apertures situated between said supporting strips for passing air through said diaphragm, said diaphragm being substantially flat when pressure inside said tank is less than or equal to air pressure outside said tank such that air vents freely from inside said tank through the air passageway apertures in said diaphragm and the air vent aperture in said cap, said diaphragm dishing toward said cap and assuming a substantially convex shape such that the central sealing member of said diaphragm seals with said central aperture to minimize liquid spillage through said cap when a liquid in said tank sloshes against said diaphragm, and

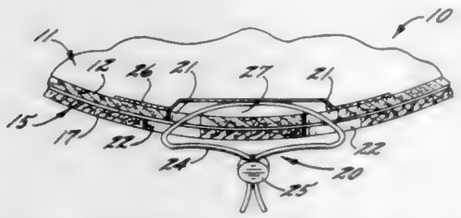
second securing means in said cap for securing said diaphragm on the ferrule when said cap is secured to the ferrule.

5,348,180

CONTAINER HAVING A TAMPER-EVIDENT SEAL

John K. Shepard, Bolingbrook, Ill., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Nov. 12, 1993, Ser. No. 150,839
Int. Cl.[5] B65D *53/00*
U.S. Cl. 220—214 **4 Claims**



1. In a container suitable for receiving and shipping various products and which includes a hollow body member having a side wall and a bottom wall connected together, and a removable cover means having a top wall and a side wall positioned on an open upper end of said body member so that said side wall of said cover means is superimposed on said side wall of said body member; the improvement of:

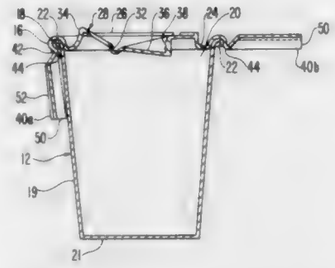
tamper-evident seal means connected between said body member and said cover means for sealing said body member and said cover means together and for evidencing any premature removal of said cover means and comprising two sets of superimposed apertures extending through said side walls of said body member and said cover means, a closed sealing wire extending through said sets of superimposed apertures and around respective inside and outside portions of said side walls of said body member and said cover member between said sets of apertures and being sealed to form a closed loop, and a patch means secured to an inside surface of said body member and covering said apertures in said body member to prevent contaminants from entering said container through said apertures and to strengthen the area of said body member having said apertures therethrough.

5,348,181

WINGED CUP LID

Bruce R. Smith, Fairfield, Conn., and Reinhold Gerber, Easton, Pa., assignors to James River Corporation of Virginia, Richmond, Va.

Filed Dec. 30, 1992, Ser. No. 998,589
Int. Cl.[5] B65D *51/18*
U.S. Cl. 220—254 **23 Claims**



1. A closure for a drinking cup having sidewalls which terminate at a rim to form an opening, comprising:

a cover portion for covering the opening of the cup, said cover portion having an outer circumferential extent;

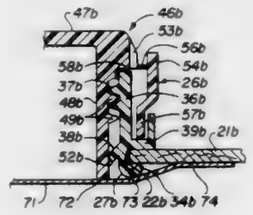
at least one tab extending from said cover portion around less than said outer circumferential extent, said at least one tab including a proximal end attached to said cover portion, a distal end free of circumferential support and a retaining means for engaging the rim of the cup, said at least one tab movable into a retaining position adjacent the cup causing said retaining means to engage the rim of the cup to retain said closure on the cup, wherein said at least one tab includes a gripping portion extending adjacent to the sidewalls of the cup when said at least one tab is in said retaining position, said gripping portion including a gripping surface facing outwardly from the sidewalls of the cup when said at least one tab is in said retaining position for gripping by a user's fingers while grasping the cup.

5,348,182

MEANS FOR ATTACHING FITMENT AND METHOD OF APPLYING FITMENT

Daniel Luch, Los Gatos, Calif., assignor to Portola Packaging, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 664,658, Mar. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 771,057, Oct. 2, 1991, abandoned. This application Feb. 5, 1992, Ser. No. 831,806
The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.
Int. Cl.[5] B65D *51/18*
U.S. Cl. 220—256 **10 Claims**



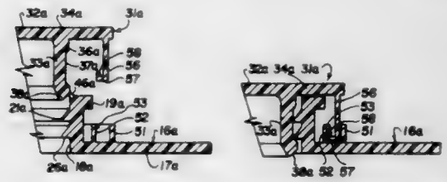
1. An initially unitary fitment and closure combination, said fitment having a spout having upper and lower ends, a flange, said flange having a flat smooth surface facing said lower end of said spout, extending outwardly and downwardly from a line on said spout located intermediate said upper and lower ends, and attachment means on said spout for attaching said fitment to a container panel formed with an aperture, said closure having a top and a skirt depending from said top dimensioned to fit within said spout and having a lower end, cooperating seal means on said spout and skirt to seal said spout to said skirt when said skirt is within said spout and frangible means initially joining an outer surface of said skirt to said upper end of said spout, said attachment means comprising a thin cylindrical wall comprising part of said spout initially depending vertically downward below said flange, said cylindrical wall being formed of curlable material, said cylindrical wall being curled outwardly and upwardly in a curl located adjacent but spaced from said flange and engaging said container panel on a first side of said panel spaced outward from said aperture, said flange engaging said panel on a second side opposite said first side.

5,348,183

TAMPER-EVIDENT, INITIALLY UNITARY, FITMENT AND CLOSURE

Daniel Luch, Los Gatos; Brian M. Adams, and Rawson Chenault, both of Newark, all of Calif., assignors to Portola Packaging, Inc., San Jose, Calif.

Continuation of Ser. No. 771,057, Oct. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 664,658, Mar. 5, 1991, abandoned. This application Sep. 2, 1992, Ser. No. 939,838
The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.
Int. Cl.[5] B65D *51/18*
U.S. Cl. 220—256 **14 Claims**



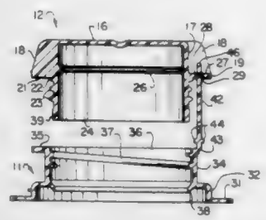
1. An intermediate product comprising an initially unitary fitment and closure combination, said fitment having a spout having an interior and an exterior and a peripheral attachment means extending outward from vicinal a lower end of said spout, said attachment means comprising an annular flange for attaching said fitment to an apertured container, said closure having a top and a cylindrical skirt having an interior and an exterior depending from said top dimensioned to fit within said spout, cooperating seal means on said spout and said skirt to seal said spout and said skirt to each other in assembled condition and frangible means joining said skirt to an upper end of said spout, a first tamper-evidencing means on said attachment means and second tamper-evidencing means on said closure engageable with said first tamper-evidencing means, said first and second tamper-evidencing means having first and second inter-engaging means, respectively, which interengage so that said fitment and said closure cannot be separated after assembly without rupturing one of said tamper-evidencing means to provide visual evidence of tampering.

5,348,184

UNITARY TAMPER-EVIDENT FITMENT AND CLOSURE ASSEMBLY

Brian M. Adams, Newark; Daniel Luch, Los Gatos, and Rawson Chenault, Newark, all of Calif., assignors to Portola Packaging, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 823,200, Jan. 21, 1992, Pat. No. 5,303,837, and a continuation-in-part of Ser. No. 780,774, Oct. 22, 1991, Pat. No. 5,174,465, which is a continuation of Ser. No. 13,258, Feb. 3, 1993, Pat. No. 5,249,695, which is a continuation of Ser. No. 664,658, Mar. 5, 1991, abandoned. This application Oct. 14, 1992, Ser. No. 961,088
Int. Cl.[5] B65D *41/32, 41/62*
U.S. Cl. 220—266 **22 Claims**



1. An intermediate product comprising in combination, a cap and a fitment,

said cap comprising a top, a skirt depending from said top, means forming an aperture extending outward from said skirt, and first engagement means on said skirt, said skirt having an interior and an exterior,

said fitment comprising fastening means for fastening said fitment to a container surrounding a hole formed in said container, a spout defining an orifice extending upward from said fastening means shaped when said cap and fitment are assembled to receive a portion of said skirt and having second engagement means cooperable with said first engagement means to detachably secure said cap and fitment together, said spout having an interior and an exterior, an elongated tab attached to said fitment extending up to at least a bottom edge of said means forming an aperture and located directly beneath and initially attached to said means forming an aperture with a frangible connection,

said tab being spaced outwardly of said orifice,

said tab comprising a runner for flow of molten plastic from said cap to said fitment during molding of said combination,

said skirt being axially aligned with and spaced from said spout prior to assembly of said cap and fitment.

5,348,185

CASSETTE FOR STERILIZING ARTICLES AND LATCH THEREFOR

Charles A. Buckner, III, Raleigh, and Stephen B. Leonard, Fuguay-Varina, both of N.C., assignors to American Sterilizer Company, Erie, Pa.

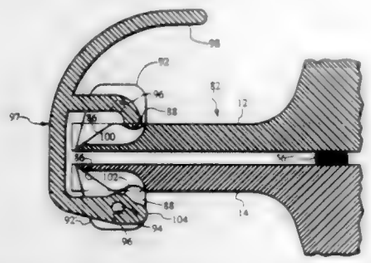
Division of Ser. No. 851,487, Mar. 13, 1992, Pat. No. 5,234,124. This application Mar. 31, 1993, Ser. No. 40,668
Int. Cl.[5] B65D *45/22*
U.S. Cl. 220—326 **20 Claims**

1. A latch to close a container, the container having first and second sections with at least one handle portion on one container section facing the other in superimposed relationship to form a container handle with first and second handle portions, the latch comprising:

a generally C-shaped body portion having an arcuate section extending above, from the back of and curved toward the front of the C to form a grip for the latch; and

a spaced projection on each end of the C generally facing

each other, the projections being sufficiently spaced apart to engage a corresponding one of first and second handle



portions to hold the first and second container sections in a latched relationship to each other.

5,348,186

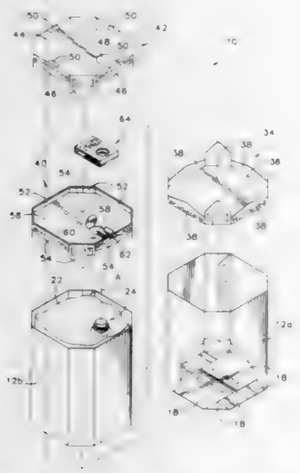
PAPERBOARD CONTAINER FOR FLUIDS HAVING TOP OPENING FITMENT AND EXPOSED LIP FOR ENGAGEMENT BY HANDLING IMPLEMENTS

Harold L. Baker, Longview, Wash., assignor to Longview Fibre Company, Longview, Wash.

Filed Apr. 2, 1993, Ser. No. 41,756

Int. Cl.[5] B65D *5/56, 5/72*

U.S. Cl. 220—465 **18 Claims**



1. A container for a fluid material comprising:

(a) an upright tubular shell, having a sidewall, a top end and a bottom end;

(b) means for closing said bottom end of said shell;

(c) an inner cap which fits within said shell proximate said top end but downwardly offset therefrom;

(d) an outer cap which covers said top end, said outer cap having at least one access opening defined therein adjacent to said side wall of said shell; wherein

(e) said inner cap is sufficiently offset from said outer cap so that a drum handling implement can be inserted through said opening and engage said side wall.

5,348,187

DOUBLE-WALLED COOKING POT

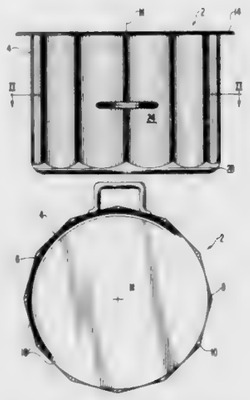
Horst Schultz, Massenheim, Fed. Rep. of Germany, assignor to ALFA Institut fur hauswirtschaftliche Produkt- and Verfahrens- Entwicklung GmbH, Eltville am Rhein, Fed. Rep. of Germany

Filed Apr. 23, 1990, Ser. No. 513,088

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1989, 3913707

Int. Cl.[5] B65D *25/28*

U.S. Cl. 220—752 **21 Claims**



1. A double-walled cooking pot comprising:

an outer pot having a side wall defining an outer side surface of the cooking pot, a bottom portion and an upper portion;

an inner pot disposed within said outer port, said inner pot having a side wall defining a continuous inner side surface of the cooking pot, a bottom portion and an upper portion;

a bottom plate of thermally conductive material connecting said inner pot to said outer pot at the bottom portions thereof;

a discharge rim connecting said inner pot to said outer pot at the upper portions thereof;

the side wall of said outer pot having a portion thereof spaced from the side wall of said inner pot so as to define an enclosed insulating space therebetween facilitating thermal insulation of the side wall of said outer pot and the side wall of said inner pot;

at least one handle being fastened to the side wall of said outer pot; and

wherein between the bottom and the upper portions of said inner and said outer pots, the side walls of said inner and said outer pots making only point or line contact with one another, and

wherein said at least one handle is fastened to the side wall of said outer pot directly at a location or locations thereon at which the side walls of said inner and said outer pots make only point or line contact with one another.

5,348,188

MICRO-DOSING DEVICE FOR POWDERY AND GRANULATE SUBSTANCES

Lorenz Bohler, Rüttenweg 61, 4313 Mölin Schweiz, Switzerland

PCT No. PCT/CH92/00032, § 371 Date Nov. 4, 1992, § 102(e) Date Nov. 4, 1992, PCT Pub. No. WO92/15275, PCT Pub. Date Sep. 17, 1992

PCT Filed Feb. 19, 1992, Ser. No. 946,308

Claims priority, application Switzerland, Mar. 5, 1991, 749/91-6

Int. Cl.[5] B65D *83/06*

U.S. Cl. 222—1 **10 Claims**

1. A micro-dosing device for dispensing small doses of powdery and granulate substances, said micro-dosing device comprising:

a substantially nipple-shaped body consisting of a reservoir and a deformable downwardly tapering tip, formed integrally with said reservoir and having a bottom and a dispensing slit-shaped opening extending substantially horizontally in said bottom, wherein said slit-shaped opening opens upon application of lateral pressure to a periphery of said tip in a direction substantially parallel to longi-



tudinal sides of said slit-shaped opening to dispense a microdose of a substance under the applied pressure and closes upon the applied pressure on said tip being removed; and

means for inducing flow of the substance upon opening of said slit-shaped opening, said inducing means comprising a needle insertable through said tip at a location above said slit-shaped opening and having an end portion extending through said slit-shaped opening outside of said tip.

5,348,189

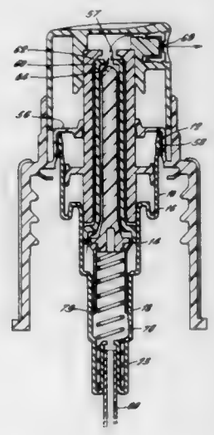
AIR PURGE PUMP DISPENSER

Miro S. Cater, Newtown, Conn., assignor to Bespak plc, Norfolk, United Kingdom

Continuation-in-part of Ser. No. 805,659, Dec. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 682,936, Apr. 10, 1991, Pat. No. 5,163,588. This application Feb. 26, 1993, Ser. No. 25,407

Int. Cl.[5] G01F *11/00*

U.S. Cl. 222—1 **28 Claims**



1. Dispensing apparatus for dispensing liquid by pump action as an atomized spray, the apparatus comprising a body defining a first cylinder within which a first piston is reciprocatably located to define a first chamber of variable volume and which in use contains a quantity of liquid to be dispensed;

the body further defining a second cylinder within which a second piston is reciprocatably located to define a second chamber of variable volume and which in use contains a quantity of air;

actuating means operable during an actuating stroke to move the respective pistons in tandem in a direction such that the volumes of the respective chambers are reduced and during a return stroke to return the pistons to respective rest positions in which the respective chambers are expanded;

liquid valve means operable to admit liquid to the first chamber during at least part of the return stroke and release pressurized liquid therefrom during at least part of the actuating stroke, the liquid valve means including a liquid exit port for the release of liquid from the first chamber;

channel means defining a discharge orifice and a dispensing channel communicating between the liquid exit port and the discharge orifice; and

air conduit means defining an air conduit communicating between the second chamber and the dispensing channel during at least part of the actuating stroke, whereby in use, air pressurized in the second chamber is conducted via the channel through the discharge orifice, wherein the liquid valve means is operable to close the liquid exit port before completion of the actuating stroke such that during a terminal part of the actuating stroke, the release of liquid from the first chamber is arrested.

5,348,190

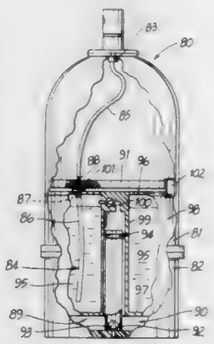
INSERT MODULE AEROSOL CONTAINER

John V. Mizzi, and Donald A. Merte, both of Poughkeepsie, N.Y., assignors to Omnific International Ltd., Poughkeepsie, N.Y.

Filed Aug. 24, 1992, Ser. No. 934,780

Int. Cl.[5] B05B *9/00*

U.S. Cl. 222—82 **6 Claims**



1. An improved apparatus for discharging liquids in a spray, wherein the improvement comprises:

a. a separable exterior housing, comprising an upper part and a lower part, the upper and lower parts, being attachable and separable;

b. the upper part further comprising a discharge valve and conduit for conveying liquid to be sprayed to the discharge valve, the conduit having an upper end and a lower end, the upper end being connected to the discharge valve;

c. a piercing connector, comprising a pointed tubular member for mechanical piercing, the piercing connector being attached to the lower end of the conduit;

d. a removable and replaceable liquid module disposed within both the upper and lower exterior housing parts, the liquid module being reciprocally and slidably movable within the exterior housing when the upper and lower

exterior housing parts are attached, the reciprocal slidable motion of the liquid module further providing an inertial impulse for compressing air in response to agitation of the exterior housing; and

e. a pump module having a weight moving reciprocally in register with the slidable reciprocal motion of the liquid module.

5,348,191

DEVICE FOR STORAGE AND DISPENSATION OF MEASURED QUANTITIES OF PASTY MATERIALS AND PROCESS FOR ITS EMBODIMENT

Michel Dekeyser, Kestergat 9, B-1670, Pepingen, Belgium

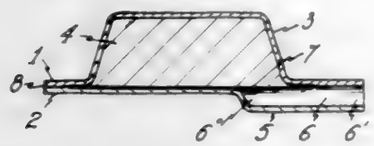
PCT No. PCT/BE90/00073, § 371 Date Jun. 26, 1992, § 102(e) Date Jun. 26, 1992, PCT Pub. No. WO91/11371, PCT Pub. Date Aug. 8, 1991

PCT Filed Dec. 28, 1990, Ser. No. 863,297

Claims priority, application Belgium, Jan. 26, 1990, 090 00100

Int. Cl.[5] B65D *47/10*

U.S. Cl. 222—107 **7 Claims**



1. Device for storage and dispensation of measured quantities of a pasty material, including a housing for the measured quantity of the material and a mechanism for sealing the housing, which is openable for each action of the measured quantity of material, wherein the device comprises:

first and second juxtaposed formable sheets having first and second deformations, respectively, extending away from a connection surface joining the first and second sheets wherein the first deformation comprises a compartment forming a volume which houses the measured quantity of the pasty material, and the second deformation in the second sheet comprises a duct for the ejection of the measured quantity of pasty material, wherein the ejection duct is continuously opened at one end thereof and terminates at another end thereof at a position next to the compartment; and

said sealing mechanism includes a deformable membrane which separates the compartment from the duct wherein the first and second formable sheets are assembled in at least the peripheral area of the compartment for holding the membrane in place.

5,348,192

DISPENSER VALVE

Gary F. Sardynski, Medford; Paul E. Cox, Brighton, and Gilbert R. Pacheco, Plymouth, all of Mass., assignors to Jet Spray Corp., Norwood, Mass.

Filed May 12, 1993, Ser. No. 60,604

Int. Cl.[5] B67D *5/56*

U.S. Cl. 222—129.1 **12 Claims**

1. A beverage dispenser for use with a container for holding concentrated juice, the container having an adapter with a ball valve which is at the bottom of the container when the container is inserted in the dispenser, the dispenser comprising:

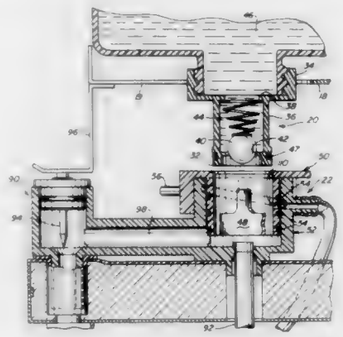
a housing having a chamber for holding a container in a stationary position when inserted;

a dispenser valve mounted in the housing, the dispensor valve including:

a pin which is vertically actuatable to a first position in which the pin is spaced from the ball valve so that the juice is contained and a second position in which the pin engages the ball valve to allow the concentrated juice to flow from the container, and

a switch for moving the pin between the first and second positions;

a conduit for providing water from a water supply;



means for combining the water and the concentrated juice; and

a tap for providing the combined water and concentrated juice.

5,348,193

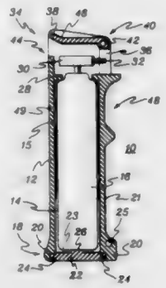
HOLDER FOR AEROSOL CAN

James V. Bruckner, Conway, and Tony A. Bruckner, Clinton, both of Ark., assignors to Mace Security International, Inc., Bennington, Vt.

Filed May 28, 1993, Ser. No. 69,551

Int. Cl.[5] B67D *5/64*

U.S. Cl. 222—175 **14 Claims**



1. An aerosol dispenser, comprising:

a body having an interior for holding an aerosol can, a bottom portion and a discharge portion, said aerosol can having a nozzle disposed thereon, said body having an opening proximate to said bottom portion for insertion of said aerosol can in a first direction into said interior and said bottom portion formed with means for slidably receiving an end piece, said discharge portion of said body including a top protective flap connected to said body for preventing accidental discharge of said aerosol can and an opening, disposed below said flap on said body, sized for said nozzle so that said nozzle is directed substantially orthogonal to said first direction; and

an end piece configured for holding said aerosol can within said interior of said body, said end piece formed for installation on said body by engaging the receiving means and sliding in a second direction substantially orthogonal to said first direction, said end piece including a positioning lug protruding away from said end piece and designed to engage said body for securely positioning said end piece on said bottom portion of said body, wherein said positioning lug is a one-way locking lug with an inclined surface with a height that increases moving in a direction away from the center of said end piece.

14. A method for encapsulating an aerosol canister into an aerosol dispenser, comprising the steps:

inserting an aerosol canister axially in a first direction tin an interior of an aerosol dispenser, said aerosol dispenser having a substantially cylindrical body, a discharge portion, and a bottom portion disposed distal from said discharge portion;

aligning a spray nozzle of said aerosol canister so that said spray nozzle fits within a spray nozzle opening of said discharge portion; and

sliding an end piece into a pair of engagement lugs of said bottom portion of said aerosol dispenser in a second direction substantially orthogonal to said first direction.

5,348,194

ATOMIZER BOTTLE WITH PUMP OPERABLE BY SQUEEZING

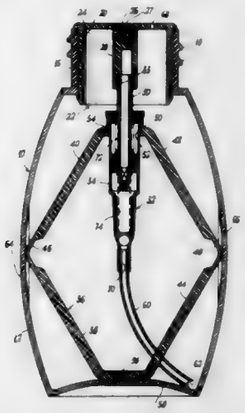
Francesco Mascitelli, Pescara, and Enrico Bonelli, Chieti, both of Italy, assignors to SAR S.p.A., Italy

Filed Feb. 19, 1993, Ser. No. 20,146

Claims priority, application Italy, Feb. 28, 1992, MI92 A 000452

Int. Cl.[5] B65D *37/00*

U.S. Cl. 222—209 **12 Claims**



5. A manually squeezeable atomizer bottle comprising:

an elastically deformable bottle containing liquid to be atomized, said bottle having a hollow body, a mouth, a base and side walls;

an atomizer capsule closing said mouth of said bottle;

an atomization insert located within said capsule, said atomization insert comprising a nozzle through which the atomized liquid emerges;

a pump having a hollow shaft and a dip tube, said pump being enclosed within said bottle, said hollow shaft of said pump being rigid with said capsule and having an interior, said interior of said hollow shaft communicating with said nozzle of said atomization insert, said dip tube having a free end adjacent to said base of said bottle; and

an elastically deformable frame structure for operating said pump by squeezing said bottle, said frame structure being enclosed within said bottle.

5,348,195

APPARATUS FOR EXTRACTING A SUBSTANCE STORED IN THE DIVIDED STATE IN A SILO

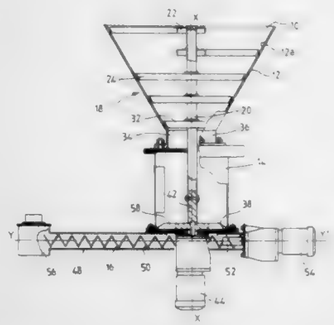
Alain D. Pajot, Puteaux, France, assignor to Symac, Rueil Malmaison, France

Filed Oct. 27, 1992, Ser. No. 966,881

Claims priority, application France, Oct. 28, 1991, 91 13277

Int. Cl.[5] G01F *11/00*

U.S. Cl. 222—227 **6 Claims**



1. An apparatus for extracting a substance stored in the divided state in a silo including a converging bottom portion having a terminal horizontal opening, said silo having a vertical axis, said apparatus comprising:

de-bridging means rotatingly mounted about the vertical axis of said silo, within said bottom portion of the silo for de-bridging the substance stored in the silo;

a decompression enclosure disposed under the bottom portion of the silo and communicating therewith by said terminal horizontal opening, the horizontal cross-section of said decompression enclosure being greater than the horizontal cross-section of said terminal opening wherein divided substance delivered to the decompression enclosure is not subjected to the influence of divided substance in the silo, said decompression enclosure having a bottom end;

a driving means for driving said substance along a direction substantially perpendicular to the vertical axis of the silo, said driving means communicating with the bottom end of said decompression enclosure and having an outlet; and

rotating means for keeping said driving means loaded with said substance while said substance is flowing, said rotating means being disposed in the bottom end of the decompression enclosure in a zone in communication with the driving means, whereby the substance delivered at the outlet of said driving means has a substantially constant density.

5,348,196

DISPENSING CANISTER

Ernest L. Smith, Kansas City, Mo., and Joseph A. Panelleria, Overland Park, Kans., assignors to Sealright Co., Inc., Kansas City, Mo.

Filed Jun. 7, 1993, Ser. No. 71,966

Int. Cl.[5] B67D *5/42*

U.S. Cl. 222—386 **6 Claims**

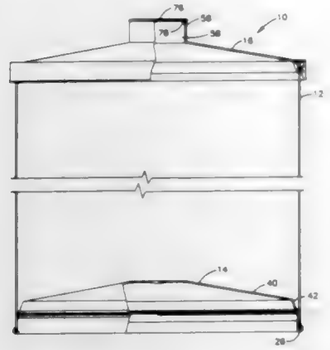
1. A dispensing container, comprising:

at least one peripheral side wall;

a plunger located at a first end of said at least one side wall, said plunger having a skirt and having an outer periphery in close sliding contact with an interior face of said at least one side wall and being capable of movement toward a second end of said at least one side wall, said plunger including at least one peripheral rib extending peripherally outward, said plunger and rib being a monolithic unit;

a first end ring mounted upon and extending about the pe-

riphery of said first end, said plunger skirt being located intermediate a portion of said end ring and said at least one side wall in an initial position prior to said movement of said plunger;



a second end ring mounted upon and extending about the periphery of said second end of said at least one side wall; and

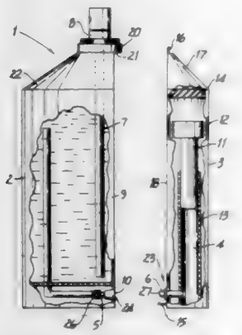
a cap connected to said second end ring and including an opening for the contents of the container to pass therethrough during said movement of said plunger.

5,348,197

AEROSOL CONTAINER HAVING A SIDE COUPLED PUMP MODULE

John V. Mizzi, and Donald A. Merte, both of Poughkeepsie, N.Y., assignors to Omnific International Inc., Poughkeepsie, N.Y.

Filed Aug. 24, 1992, Ser. No. 934,779
Int. Cl.[5] B05B *9/00*
U.S. Cl. 222—401 **15 Claims**



1. An improved apparatus for discharging liquid in spray, wherein the improvement comprises:

a. a liquid module containing a liquid to be sprayed;

b. a pump module containing weight activated pumping means, said pumping means being capable of supplying compressed air wherein said weight activated pumping means is responsive to agitation of said pump module, the agitation causing a weight impart sequential impulses to said pumping means to provide pumping action;

c. said pump module and said liquid module being attachable and detachable through coupling means, said liquid module further comprising a stand alone apparatus for discharging liquids in a spray when said liquid module has been first pressurized by being attached to said pump module and then detached from said pump module after transfer of compressed air from the pumping means of said pump module to said liquid module;

d. a first conduit disposed within said liquid module and a coupling extension attached to said pump module, said coupling extension providing a connection between said pump module and said liquid module for the transfer of compressed air to the liquid module;

e. a second conduit and an outlet valve, said second conduit conducting the liquid to be sprayed from said liquid module to the outlet valve for discharge, said liquid to be sprayed flowing in response to urging by said compressed air;

f. said coupling extension of said pump module having an insertion member projecting therefrom, said insertion member being positionally disposed such that when said pump module and said liquid module are attached, said insertion member is in positional register with a liquid module sealable receiving means;

wherein said liquid module and said pump module have said coupling means comprising:

g. a finger-operated spring-loaded latch disposed in a bottom portion of said pump module;

h. an upper extension coupling tab protruding from a top portion of said pump module;

i. said latch releasable at a bottom portion of said pump module, wherein;

j. said finger-operated latch releases a bottom portion of said pump module and said liquid module from each other; thus permitting the release of the upper extension tab from a collar with a tab coupling recess, said collar being disposed at a top portion of said liquid module, the release further comprising separation of said pump module from said liquid module;

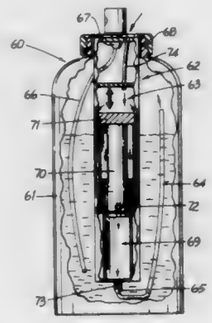
k. said extension coupling tab engages said tab coupling recess, said extension coupling tab there upon being securely held in place.

5,348,198

REFILLABLE AEROSOL CONTAINER

John V. Mizzi, and Donald A. Merte, both of Poughkeepsie, N.Y., assignors to Omnific International Ltd., Poughkeepsie, N.Y.

Filed Aug. 24, 1992, Ser. No. 934,781
Int. Cl.[5] B05B *9/00*
U.S. Cl. 222—401 **13 Claims**



1. An improved apparatus for discharging liquids in a spray, wherein the improvement comprises:

a. a pump module containing a pumping means, said pumping means being capable of supplying compressed air;

b. a liquid module containing a liquid to be sprayed, wherein said liquid module contains said pump module within the confines of said liquid module;

c. a first conduit disposed within said liquid module and a coupling extension attached to said pump module, said coupling extension providing a connection between said pump module and said liquid module for the transfer of compressed air to said liquid module; and,

d. a second conduit and an outlet valve, said second conduit conducting the liquid to be sprayed from said liquid module to said outlet valve for discharge, the liquid to be sprayed flowing in response to urging by said compressed air,

wherein said liquid module comprises a refillable dispenser provided with a threaded sealing cap;

e. said threaded sealing cap being attached to said pump module;

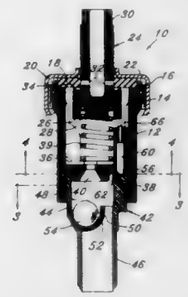
f. said pump module being insertable and removable with respect to said liquid module when said sealing cap is respectively applied to and removed from said liquid module, thus permitting use of a variety of liquid module shapes and sizes as may be commercially available.

5,348,199

AEROSOL VALVE HAVING MEANS TO SHUT OFF FLOW IF VALVE IS TIPPED BEYOND A CERTAIN INCLINATION FROM VERTICAL

Jeremy P. Smith, Louden, N.H., assignor to Summit Packaging Systems, Inc., Manchester, N.H.

Filed Sep. 13, 1993, Ser. No. 119,623
Int. Cl.[5] B65D *83/00*
U.S. Cl. 222—402.19 **11 Claims**



1. In an aerosol valve comprising:

a. a cup-shaped valve body adapted to be installed facing outward in the mouth of an aerosol can,

b. an annular resilient gasket sealingly disposed in the open end of the valve body,

c. a valve stem comprising a tubular element snugly disposed in the gasket and having a lateral opening therein normally closed by the gasket and an enlarged head normally disposed against the underside of the gasket,

d. spring means compressively disposed between the valve element and the valve body urging the valve element with the enlargement against the underside of the gasket

e. a dispensing bead on the valve stem and having a discharge passage therein and an outlet orifice,

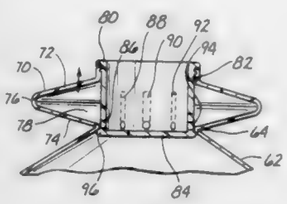
f. dip tube means operatively connected to the valve body so that the dip tube, the valve body, the lateral openings in the valve stem, the tubular element and the dispensing bead constitute a flow path for the product through the valve, the improvement comprising a flow shutoff compartment fixed in position with respect to the valve body and disposed in the flow and normally permitting flow therethrough, the compartment including a generally vertical passage and a gravity-sensitive element to one side of the vertical passage, the compartment having a first opening in its lower end and an upper generally horizontal wall having a second opening therein, the and second openings comprising elements of the flow path, whereby when the aerosol valve is on and the aerosol valve is tipped beyond a certain angle from the vertical, the blocking element will become entrained in the product flow and move up to block off the second opening to shut off the aerosol valve.

5,348,200

AUTOMATIC CLOSURE FOR A CONTAINER

Al Van Den Berghe, 5313 Monterey Rd., Los Angeles, Calif. 90042

Continuation of Ser. No. 715,574, Jun. 14, 1991, Pat. No. 5,240,154. This application May 28, 1993, Ser. No. 68,765
Int. Cl.[5] B67D *3/00*
U.S. Cl. 222—514 **14 Claims**



1. A closure system for a container comprising:

a bellows member having a first end area integrally formed with the wall of said container and a second end area; the inside wall of said container at said first end area defining a throat element;

a closure member axially movable within said throat element; said closure member contacting said second end area; said closure member having a plug portion preventing the flow of fluid material through said throat element when said plug portion is in a closed portion within said throat element; said closure member further having outlet means for permitting the flow of fluid material between the inside of said container and the outside environment when said plug portion is not in said closed position;

said bellows member biased to support said closure member in said closed position when said bellows member is in its relaxed state;

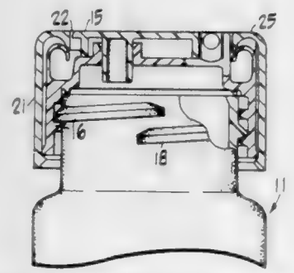
said bellows member allowing said closure member to be moved out of said closed position.

5,348,201

FLIP TOP CLOSURE

James Y. C. Koo, Strasburg, Pa., assignor to Kerr Group, Inc., Lancaster, Pa.

Filed Apr. 20, 1993, Ser. No. 49,914
Int. Cl.[5] B65D *55/02*
U.S. Cl. 222—556 **8 Claims**



1. A flip top closure device for a dispensing opening of a container, comprising a first body member with a flip top adapted to be mounted on the container and an aperture providing access to the dispensing opening of the container, and a second body member mounted on the first body member and having a part which in its normal position is in overlapping relation with the flip top to prevent opening thereof, which part is displaceable from said overlapping relation to expose an edge of the flip top for opening thereof, and which part is returned to overlapping position with the flip top without need

for external physical manipulation by virtue of spring members located on one of sad body members which produce a restorative force on the second body member.

5,348,202
TUBULAR REFRACTORY PRODUCT

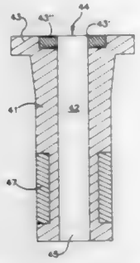
Stephen J. Lee, Cardross, Great Britain, assignor to Thor Ceramics Limited, Clydebank, Scotland

Continuation-in-part of Ser. No. 399,453, Oct. 27, 1989, abandoned, and a continuation of Ser. No. 667,985, Mar. 30, 1993, Pat. No. 5,198,126. This application Mar. 25, 1993, Ser. No. 37,997

Claims priority, application United Kingdom, Feb. 28, 1987, 8704764

Int. Cl.[5] B22D *41/22*

U.S. Cl. 222—606 **13 Claims**



1. A refractory pouring assembly component constructed for use with a tube changer mechanism in the continuous casting of steel, said component having a throughbore and being formed of varying refractory compositions exhibiting different wear and thermal shock-resisting properties which are pressed together and co-molded to form a one-piece composite member, said member including an end portion defining a flat plate surface having an opening from said throughbore and a tubular main body portion, the member having a joint free transition from said end portion to said main body portion, said end portion having a peripheral edge around said opening formed of a first wear-resistant refractory composition which is comparatively harder than said tubular main body portion, and said tubular main body portion being formed throughout its length from another refractory composition which is more thermal shock-resistant and softer than said peripheral edge formed from said first composition.

5,348,203
MOLTEN STEEL POURING NOZZLE

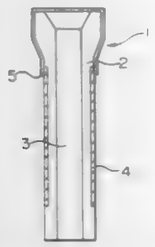
Mitsuru Andoh, and Noriaki Yamauchi, both of Ena, Japan, assignors to Akechi Ceramics Co., Ltd., Ena, Japan

Filed Aug. 20, 1993, Ser. No. 110,088

Claims priority, application Japan, Sep. 18, 1992, 4-275447

Int. Cl.[5] B22D *41/54*

U.S. Cl. 222—606 **11 Claims**



1. A molten steel pouring nozzle which comprises:
a nozzle body comprising an alumina-graphite refractory, having, along the axis thereof, a bore through which molten steel flows; and
an outer refractory layer arranged on an outside portion of said nozzle body so as to be integral with said nozzle body and to be flush with an outer surface thereof, said outer refractory layer being arranged on a portion of said outside portion of said nozzle body, which portion is in contact, when a lower portion of said molten steel pouring nozzle is immersed into molten steel, with the open air without being immersed into said molten steel, and said outer refractory layer consisting essentially of:

alumina (Al_2O_3)	from 40 to 75 wt. %
carbon (C)	from 10 to 30 wt. %,
silica (SiO_2)	from 1 to 30 wt. %,
silicon carbide (SiC)	from 1 to 20 wt. %,
and	
low-melting glass	from 1 to 10 wt. %; and
said low-melting glass consisting essentially of:	
alumina (Al_2O_3)	from 1.5 to 8.0 wt. %,
silica (SiO_2)	from 20.0 to 56.0 wt. %,
calcium oxide (CaO)	from 2.5 to 14.4 wt. %,
magnesia (MgO)	from 0.05 to 1.60 wt. %,
potassium oxide (K_2O)	from 0.25 to 6.40 wt. %,
sodium oxide (Na_2O)	from 0.5 to 8.0 wt. %,
boric acid (B_2O_3)	from 2.5 to 24.0 wt. %,
and	
boron carbide (B_4C)	from 20.0 to 50.0 wt. %.

5,348,204
MORTAR SPREADING APPARATUS FOR THE LAYING OF BRICKS

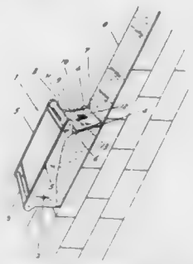
Rafael M. Acedo, Espirall, 58, 08720 Vilafranca del Penedes, Barcelona, Spain

Filed Mar. 22, 1993, Ser. No. 34,714

Claims priority, application Spain, Mar. 27, 1992, 9200984

Int. Cl.[5] B67D *5/64*

U.S. Cl. 222—611.1 **8 Claims**



1. A mortar spreading apparatus for the laying of bricks comprising a bottomless box having a top and a plurality of sides, one of said sides extending from said top outwardly of said box such that when the box is placed atop a row of bricks being laid, a predetermined gap is formed between a lower edge of said one side and the top of the row of bricks for dispensing a desired thickness of mortar and at least one lateral side of the box having an indentation formed on an outer surface thereof, said indentation extending horizontally along the length of said at least one lateral side so that the apparatus can be moved for the laying of bricks without displacing the position of an alignment cord used for aligning the bricks being laid.

5,348,205
GOLF DUAL SHOULDER STRAP

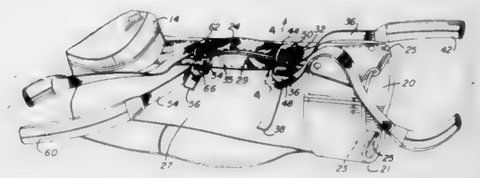
Steven T. Steurer, Louisville, Ky., assignor to Brunswick Bowling & Billards, Lake Forest, Ill.

Filed Apr. 27, 1993, Ser. No. 54,767

Int. Cl.[5] A45C *13/00*

U.S. Cl. 224—209 **11 Claims**

1. In a golf bag having a tubular receptacle with a closed lower end and an open upper end for receiving golf equipment, the receptacle having a handle extending longitudinally between the receptacle ends, the improvement comprising a shoulder strap for carrying the receptacle comprising:
a first elongated belt having mutually opposed belt ends, one of said first belt ends being connected to a first connection point on the receptacle and the other of said first belt ends being connected to a second connection point on the receptacle whereby the first belt defines a first loop;



a second elongated belt having mutually opposed belt ends; and
means for connecting each of the second belt ends to the receptacle between the first and second connection points whereby the second belt defines a second loop on the receptacle.

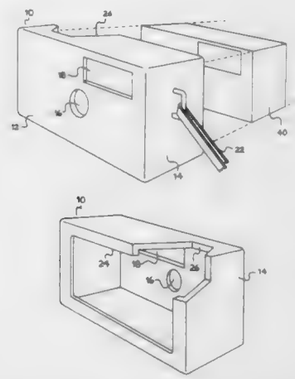
5,348,206
CARRYING SLEEVE FOR CAMERA

Stephen J. Scherer, 39 Warder Dr., Pittsford, N.Y. 14534

Filed Jun. 23, 1993, Ser. No. 81,808

Int. Cl.[5] A45C *11/38;* **B65D** *85/30*

U.S. Cl. 224—220 **15 Claims**



1. A removable sleeve for operatively receiving a camera, the camera having an object side and a user side connected by a body wall which defines a periphery of the camera, wherein the object side includes a lens and a viewfinder, the sleeve comprising:
(a) a resilient foam object panel having a lens aperture and a viewfinder aperture; and
(b) a resilient foam peripheral wall connected to the object panel and defined by an inner perimeter, wherein the inner perimeter is sized to receive the object side and a portion of the body wall, whereby a frictional force between the peripheral wall and the body wall is sufficient to preclude unintended separation of the camera from the sleeve.

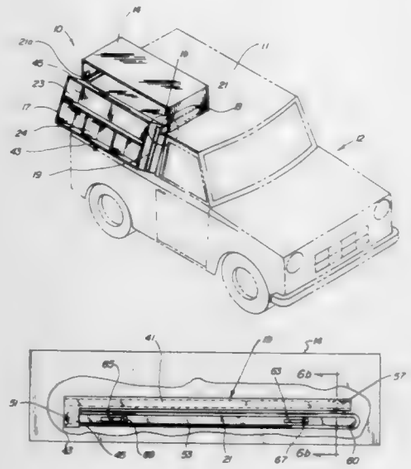
5,348,207
VEHICLE TOP CARRIER

Sylvester H. Frank, 407 Hilltop Ave., Kalispell, Mont. 59901

Filed Jun. 4, 1993, Ser. No. 71,063

Int. Cl.[5] B60R *9/00*

U.S. Cl. 224—310 **2 Claims**



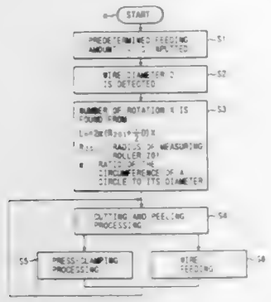
1. A carrier apparatus for mounting on the roof of a vehicle, said apparatus comprising:
a housing;
means for connecting said housing to said roof of said vehicle and for supporting said housing in a horizontal orientation;
drawer means for sliding in and out of the interior space defined by said housing; and
means for connecting said drawer means to said housing,
said connecting means further including pivoting means, located within said interior space between said drawer means and said housing, for pivoting said drawer means with respect to said housing when said drawer means is pulled out from said housing, said pivoting means permitting said drawer means to hang down vertically from said horizontally oriented housing and rest against the side of said vehicle,
wherein said pivoting means comprises a first channel rail fixed to said drawer means, and a second channel rail slidably fixed to said housing within said interior space adjacent to said first channel rail, said first channel rail having first roller means connected to the end of said first channel rail extending furthest into said interior space when said drawer means is contained in said housing, said first roller means being engaged with the channel defined by said second channel rail, and
wherein said second channel rail having second roller means connected to the end of said second channel rail proximal to the opening through which said drawer means extends into said housing interior space, said second roller means being engaged with the channel defined by said first channel rail, said second channel rail having stop means at said proximal end adapted to engage said first roller means sliding in said channel defined by said second channel rail when said drawer means is withdrawn form said housing interior space to thereby cause said second channel rail to slidably displace out from said housing through said opening and permit said first channel rail to disengage form said second roller means and said drawer means to pivot about a pivot axis defined by said first roller means.

5,348,208

WIRE FEEDING AND MEASURING DEVICE

Yoshikazu Tamura, Kanagawa, Japan, assignor to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Jul. 8, 1993, Ser. No. 87,276
Claims priority, application Japan, Jul. 8, 1992, 4-206045
Int. Cl.[5] B65H *51/10*; H01B *13/00*
U.S. Cl. 226—24 15 Claims



1. A wire feeding device for feeding a covered wire wound around a measuring roller, the wire feeding device comprising:

input means for inputting a feeding amount of the covered wire;

sensor means for measuring a diameter of the covered wire; and

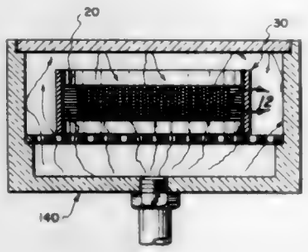
control means connected to said input means and said sensor means comprising determining means for determining a number of revolutions for the measuring roller based on a radius of curvature of the center of the covered wire wound around the measuring roller and a feeding amount inputted by the input means, said determining means further determining the radius of curvature based on a diameter of the covered wire measured by the sensor and a diameter of the measuring roller, said control means for controlling the rotation of the measuring roller so that the measuring roller can be rotated by the number of revolutions determined by the determining means.

5,348,209

APPARATUS FOR BRAZING AND INSTALLING HONEYCOMB CORE SEALS

James R. Campbell, 31301 Camel Point Dr., South Laguna, Calif. 92677

Division of Ser. No. 807,497, Dec. 16, 1991, Pat. No. 5,224,644. This application Jul. 6, 1993, Ser. No. 63,037
Int. Cl.[5] B23K *1/20*
U.S. Cl. 228—43 13 Claims



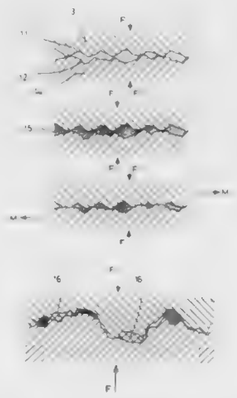
1. In an apparatus for mounting a honeycomb core seal having a plurality of cells in a corresponding mounting ring, the combination of: a support for said seal; an applicator of brazing alloy located adjacent the perimeter of said seal for uniformly distributing brazing alloy in said cells at said perimeter; and means for causing relative rotation between said support and said applicator.

5,348,210

JOINTS

Geoffrey R. Linzell, Hatfield, England, assignor to Ball Burnishing Machine Tools Limited, Hatfield, England

PCT No. PCT/GB91/00950, § 371 Date Dec. 11, 1992, § 102(e) Date Dec. 11, 1992, PCT Pub. No. WO91/19589, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 13, 1991, Ser. No. 960,430
Claims priority, application United Kingdom, Jun. 14, 1990, 9013331.5; Mar. 1, 1991, 9104408.1
Int. Cl.[5] B23P *11/00*
U.S. Cl. 228—115 17 Claims



1. A method of securing against lateral motion two bodies held in face-to-face asperity contact, thereby to make a joint between the two bodies, which method is characterised in that there is inserted into the interface between the two bodies a material that on minimal initial lateral relative motion of the two surfaces promotes rapid but controllable "galling" between the two surfaces, this galling binding the surfaces against further such motion.

11. A joint between two bodies constrained in face-to-face contact and binded against lateral motion by the method as claimed in claim 1.

5,348,211

JOINING OF METALLIC PIPE LINED WITH THERMOPLASTIC POLYMER

George White, Glenburnie, and David C. King, Bath, both of Canada, assignors to Du Pont Canada Inc., Mississauga, Canada

PCT No. PCT/CA91/00146, § 371 Date Dec. 3, 1992, § 102(e) Date Dec. 3, 1992, PCT Pub. No. WO91/17362, PCT Pub. Date Nov. 14, 1991
PCT Filed May 1, 1991, Ser. No. 938,162
Claims priority, application United Kingdom, May 2, 1990, 9009860
Int. Cl.[5] B21K *29/00*
U.S. Cl. 228—120 11 Claims

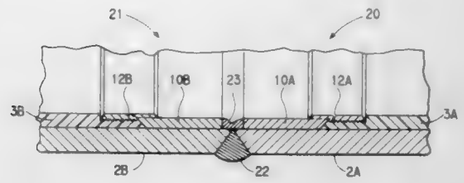
1. A method of joining two sections of metallic pipe having a liner of a thermoplastic polymer, the ends of each section of the pipe extending beyond the end of the liner, characterized by comprising the steps of:

(a) inserting a sleeve formed from a corrosion-resistant material into the first section of the pipe so as to form a fluid-tight seal between the sleeve and the liner;

(b) inserting a sleeve formed from a corrosion-resistant material into the second section of the pipe so as to form a fluid-tight seal between the sleeve and the liner;

(c) bevelling the end of the pipe section; and

(d) welding two sections of such pipe together using corrosion resistant material so as to form a continuous weld



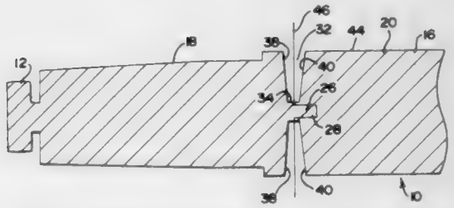
between the sleeves in each section of the pipe and between each sleeve and the metallic pipe, thereby joining said sections together.

5,348,212

WELDING METHOD FOR ROTATABLE SHAFTS

George W. Galanes, Wheaton, Ill., assignor to Commonwealth Edison, Chicago, Ill.

Continuation-in-part of Ser. No. 957,225, Oct. 6, 1992, Pat. No. 5,280,849. This application Jan. 14, 1994, Ser. No. 181,992
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—135 36 Claims



1. A method of joining first and second shaft pieces together, comprising the steps of:

attaching a pilot stub to an end surface of the first shaft piece;

forming a pilot hole in an opposing end surface of the second shaft piece;

positioning the first and second shaft pieces end to end with the pilot stub inside the pilot hole;

forming a narrow groove in the region of the opposing end surfaces having a sufficient length, width and depth to substantially remove the opposing end surfaces without affecting the pilot stub or pilot hole;

preheating the groove;

filling the groove using a ferrous-based welding filler metal and a narrow groove welding technique; and

postheating the filled groove.

5,348,213

METHOD FOR THE MANUFACTURE OF INTERNALLY ENHANCED WELDED TUBING

Myron R. Randlett, and Jerome M. Dupy, both of Cuba, Mo., assignors to Olin Corporation, Cuba, Mo.

Filed Dec. 28, 1992, Ser. No. 997,387
Int. Cl.[5] B23K *33/00*
U.S. Cl. 228—146 7 Claims

1. A method for the manufacture of a heat exchange tube formed from a metallic strip having opposing first and second surfaces and opposing longitudinal edges joined by a longitudinally running weld bead, comprising the steps of:

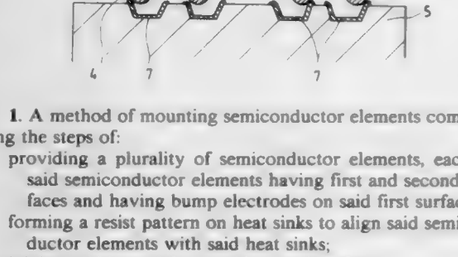
a) forming a pattern on said second surface of said metallic strip;

b) forming said metallic strip into an ellipse with said second surface forming an inner wall;

c) shaping. with a fin insert, the opposing longitudinal edges of said metallic strip to:

(i) a first angle adjacent said first surface,

(ii) a second angle adjacent said second surface, said first angle and said second angle being measured relative to a center line axis which runs perpendicular to said longitudinally running weld bead, and



(iii) an inflection zone connecting said first angle and said second angle wherein said inflection zone is closer to said center line axis than said shaped opposing longitudinally edges;

d) contacting said shaped opposing longitudinal edges of said metallic strip; and

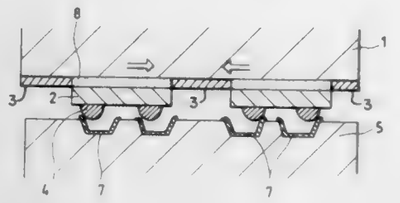
e) welding said shaped opposing longitudinal edges together.

5,348,214

METHOD OF MOUNTING SEMICONDUCTOR ELEMENTS

Masanori Nishiguchi, and Atsushi Miki, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 794,869, Nov. 19, 1991, Pat. No. 5,244,142. This application Feb. 2, 1993, Ser. No. 12,369
Claims priority, application Japan, Nov. 20, 1990, 2-312665; Nov. 20, 1990, 2-312666; Nov. 20, 1990, 2-312667
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] B23K *31/02*; H05K *3/34*
U.S. Cl. 228—180.22 2 Claims



1. A method of mounting semiconductor elements comprising the steps of:

providing a plurality of semiconductor elements, each of said semiconductor elements having first and second surfaces and having bump electrodes on said first surface;

forming a resist pattern on heat sinks to align said semiconductor elements with said heat sinks;

joining said heat sinks to said second surfaces;

pressing said semiconductor elements, with said heat sinks joined thereon to a wiring board having electrodes, while aligning said bump electrodes to correspond with the wiring board electrodes;

heating said bump electrodes and said wiring board to mount said semiconductor elements on said wiring board; and

applying a molding resin to said wiring board, said semiconductor elements and said heat sinks.

5,348,215

METHOD OF BONDING HARD METAL OBJECTS

Kevin Rafferty, 193 Countryview Dr., Harrison, Ohio 45030, and Bruce Rowe, 3043 Wold Ave., Cincinnati, Ohio 45206

Filed Nov. 4, 1992, Ser. No. 971,458
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—181 12 Claims

6. A method of bonding a first surface of a first metal object to a second surface of a second metal object wherein said first and second metal objects are nickel-based supper alloys containing at least one oxygen-sensitive metal selected from the group consisting of aluminum, titanium, hafnium and chromium wherein said surfaces are not nickel plated prior to bonding;

comprising placing a brazing composite on said first surface wherein said brazing composite comprises a brazing alloy held together by fibrillated polytetrafluoroethylene; and

positioning said second surface against said brazing composite; and

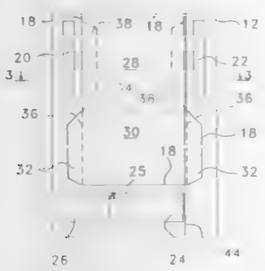
heating said first object and said second object and said brazing composite in an inert environment to a temperature effective to melt the braze alloy held in said composite and evaporate said fibrillated polytetrafluoroethylene, thereby causing said first surface to be bonded to said second surface.

5,348,216

PRINTABLE DISKETTE ENVELOPE FORM

John C. Scott, P.O. Box 1066, Greenwich, Conn. 06830

Division of Ser. No. 15,410, Feb. 9, 1993. This application Feb. 7, 1994, Ser. No. 192,560
Int. Cl.[5] B65D *27/00*
U.S. Cl. 229—75 7 Claims



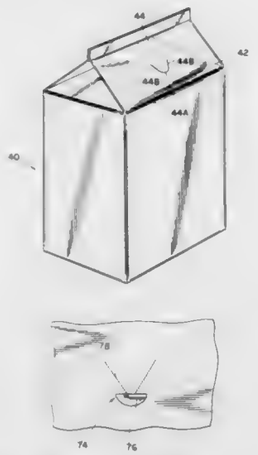
1. A printable diskette envelope form capable of being processed by standard computer printers and comprising a flat sheet of printable material, said sheet being imperforated or scored to define an envelope pattern manually separable from said form, said envelope pattern having a larger back panel, a smaller front panel of shape corresponding with that of the back panel and tab means to secure said back panel to said front panel to be manually assemblable into a pocket for a diskette said envelope form presenting a print area within said envelope pattern to receive a directory listing of files stored on said diskette, wherein said front and back panels have tapered shapes which provide a pocket with a wide opening to receive said diskette, said pocket tapering away from said opening, to fit the diskette closely.

5,348,217

BEVERAGE CONTAINER WITH NOVEL DISPENSING MEANS

Griscom Bettle, Jr.; Griscom Bettle, III, and Patricia Jeruzal, all of Bradenton, Fla., assignors to Tropicana Products, Inc., Bradenton, Fla.

Continuation of Ser. No. 794,300, Nov. 14, 1991, Pat. No. 5,201,459, which is a continuation of Ser. No. 570,211, Aug. 21, 1990, abandoned. This application Oct. 26, 1992, Ser. No. 966,729
Int. Cl.[5] B65D *5/72*
U.S. Cl. 229—103.1 8 Claims



1. A beverage container comprising:

sidewall means and a top wall cooperating to form an enclosure for a beverage; and

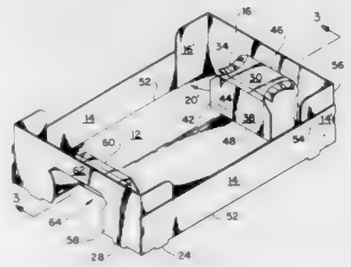
dispensing means formed on said top wall for dispensing said beverage through a straw having a circular cross section, said dispensing means being defined by a cut made in said top wall, said cut including an arcuate section in the shape of an arc of circle conforming in radius to said circular cross section and extending over no more than 180°, and two straight sections extending away from said arcuate section.

5,348,218

CONCESSION TRAY

James P. Haire, Fallston, and Steven Attman, Owings Mills, both of Md., assignors to Alpha Products, Inc., Savage, Md.

Filed May 19, 1993, Ser. No. 63,293
Int. Cl.[5] B65D *5/36, 5/48*
U.S. Cl. 229—117.07 20 Claims



1. A concession tray for carrying food items and cups, comprising:

a base panel, side panels hinged to said base panel about fold lines, and end panels hinged to said base panel about fold lines; said end panels intersecting said side panels and forming a folding structure at the intersections whereby said tray may be selectively set in a folded configuration wherein said tray is substantially flat with said side and end panels lying substantially adjacent to said base panel or in an erected configuration with said side panels and end panels substantially perpendicular to said base panel;

a cup holder associated with at least one of said end panels, said cup holder comprising a first part formed of a portion of said one end panel and hinged to said one end panel about a fold line, and a second part formed of a portion of said base panel and hinged to said base panel about a fold line, whereby said cup holder may be selectively set in a retracted position with said first part substantially coplanar with said one end panel and said second part substantially coplanar with said base panel or an extended position with said first part substantially perpendicular to said one end panel and substantially parallel to said base panel and said second part substantially perpendicular to said base panel and substantially parallel to said one end panel;

wherein said end panels are higher than said side panels in said erected configuration and said second part of said cup holder is substantially as high, in said extended position, as said side panels;

said end panels comprising extended portions which are attached to said side panels, whereby said end panels form relatively high portions on each side of the intersections of said end panels and adjacent side panels, whereby said relatively high portions on each side of the intersections may engage at two points a cup placed in said cup holder;

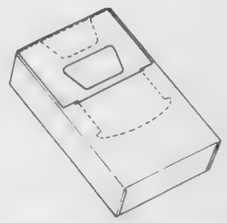
wherein said tray is constructed of paperboard having a minimum thickness of 0.026 inches and the length and width of said base panel of said tray each does not exceed about 13.5 inches.

5,348,219

BOX WITH A SEALED CLOSURE AND WITH A RECLOSABLE PRODUCT DELIVERY SPOUT

Renato Brintazzoli, Pianoro, Italy, assignor to O.A.M. S.p.a., Rastignano, Italy

Filed Sep. 14, 1993, Ser. No. 121,286
Claims priority, application Italy, Sep. 25, 1992, B092A000330
Int. Cl.[5] B65D *5/08*
U.S. Cl. 229—131.1 13 Claims



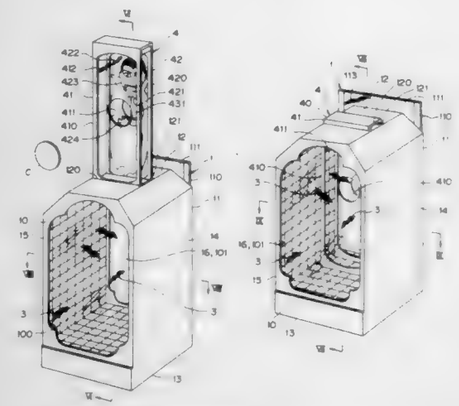
1. In a box having a sealed closure guaranteeing the product contained therein, and having a reclosable product delivery spout, said box comprising a box-like body with a product delivery spout, a sliding plate hinged to said box-like body so tat said plate faces said spout, the sliding plate having an opening which covers or reveals said spout, said plate cooperates with the spout outside said box-like body and is shiftable towards two prefixed configurations, a first non-use configuration wherein said plate hinged to said box-like body covers said product delivery spout to define a sealed closure guaranteeing the product contained in the box, and a second in-use configuration wherein said plate, or a part thereof, is inserted into a slit made in said box-like body to define a guide for the sliding of the said plate upon the outer surface of the box-like body along a stroke so limited as to cover or to reveal the product delivery spout, and thus to bring said opening into or out of correspondence with the product delivery spout.

5,348,220

SAVINGS BOX

Mark Setteducati, New York, N.Y., assignor to Tenyo Co., Ltd., Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 34,725
Int. Cl.[5] A45C *1/12*
U.S. Cl. 232—1 D 30 Claims



1. A savings box, comprising:

a box-like housing including a front panel having a transparent window and an opaque rear panel, opaque side panels extending from the front panel to the rear panel and;

a partition extending between the side panels with the front and rear panels being disposed symmetrically on respective opposite sides of the partition so that the partition divides the housing into front and rear spaces located forwardly and rearward of the partition, respectively;

a mirror surface formed on a side of the partition which faces the front panel so as to extend over substantially the entire area of the side; and

a slide assembly consisting of front and rear slides receivable in front and rear spaces, respectively, and mounted on the housing for sliding movement between a first, coin receiving position, in which the slide assembly is withdrawn from the housing enabling a coin to be set on the slide assembly and, a second, coin depositing position in which the slides are received in the front and rear spaces, respectively, with the coin deposited by the rear slide concealed behind the mirror surface so that it cannot be seen through the window.

5,348,221

TEXTILE MACHINE APPARATUS FOR HANDLING TUBES HAVING REMAINING YARN

Hans Grecksch; Ulrich Wirtz, both of Monchengladbach; Helmut Kohlen, Erkelenz; Paul Surkamp, Kempen, and Helmuth Hensen, Monchengladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Moenchengladbach, Fed. Rep. of Germany

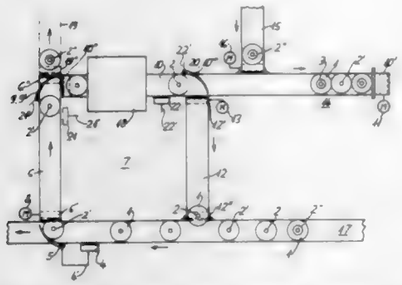
Filed Jun. 15, 1990, Ser. No. 539,008
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1989, 3919527; Mar. 23, 1990, 4009318
Int. Cl.[5] B65H *67/06;* D01H *9/18*
U.S. Cl. 242—35.5 A 17 Claims

1. In a textile winding machine of the type having a plurality of winding stations at which yarn is unwound from yarn packages, a delivery assembly for transporting tube support members on which yarn packages are individually supported for transport to the winding stations, and a discharge assembly for

transporting tube support members with tubes supported thereon from the winding stations, an apparatus for handling tubes received by the discharge assembly from the winding stations with yarn remaining thereon comprising:

branch path means defining a branch path for supporting tube support members for travel therealong having an entrance end operatively connected to the discharge assembly for the passage of tube support members from the discharge assembly to said branch path and an exit end operatively connected to the discharge assembly for the passage of tube support members from said branch path to the discharge assembly at a location upstream from said entrance end relative to the direction of transport of tube support members by the discharge assembly, the tube support members exiting said branch path through said exit end mixing with other tube support members being transported by the discharge assembly;

a tube stripping device disposed along said branch path for performing a yarn stripping operation on those tubes having remaining yarn thereon while the tubes are supported upright on the tube support members on said branch path;



discriminating means disposed along said discharge assembly for discriminating among tubes supported on tube support members being transported by the discharge assembly past a discriminating location upstream of said entrance end of said branch path and downstream of said exit end of said branch path, said discriminating means being operable to discriminate between empty tubes having no yarn thereon and tubes having remaining yarn thereon during the passage therepast of tubes supported both on tube support members which have not been previously handled by said tube stripping device and on tube support members which have previously been handled by said tube stripping device; and

guiding means, operatively connected to said discriminating means, for guiding those tube support members supporting tubes having remaining yarn thereon from the discharge assembly to said branch path at said entrance end thereof in response to the identification of the tubes on such tube support members by said discriminating means.

5,348,222

GARBAGE CONTAINER

Roy Patey, 174 Berkindale Drive, Stoney Creek, Ontario, Canada L8E 1M5

Filed Feb. 9, 1993, Ser. No. 15,102

Int. Cl.[5] B65D *91/00*

U.S. Cl. 232—43.2 **2 Claims**

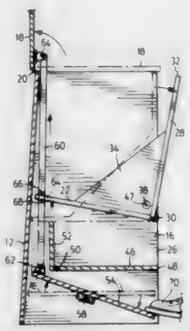
1. A garbage container comprising:

a housing having a rear wall, opposite side walls extending forwardly therefrom and a lid hingedly connected to the top of the rear wall and extending forwardly therefrom so as to rest on the top of the side walls in a closed position,

a waste supporting platform within the housing and pivotally connected adjacent its front edge to the opposite side walls for pivotal movement about a horizontal axis,

a front wall extending upwardly from the front edge of the platform and having a top edge level with the top of the side walls in the closed position, and

a connecting member pivotally connected to a rear portion of the platform and to a rear portion of the underside of



the lid to cause upward opening movement of the lid to pivot the platform upwardly about its pivotal connection to the side walls with resultant forward pivotal movement of the front wall to facilitate access to the interior of the container.

5,348,223

METHOD AND APPARATUS FOR CONTROLLING TEMPERATURE OF A LIQUID

Leif Sonesson, Eslöv, and Jörgen Olsson, Malmö, both of Sweden, assignors to Arjo Hospital Equipment AB, Eslöv, Sweden

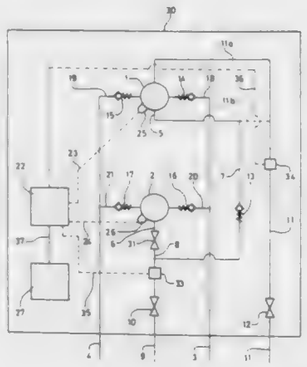
PCT No. PCT/SE91/00716, § 371 Date Jun. 29, 1992, § 102(e) Date Jun. 29, 1992, PCT Pub. No. WO92/08178, PCT Pub. Date May 14, 1992

PCT Filed Oct. 25, 1991, Ser. No. 867,092

Claims priority, application Sweden, Oct. 29, 1990, 9003459

Int. Cl.[5] G05D *23/13*

U.S. Cl. 236—12.12 **9 Claims**



1. Apparatus for supplying liquid at a controller temperature comprising first and second mixers, a supply conduit for hot liquid under pressure connected to each of said mixers, a supply conduit for cold liquid under pressure connected to each of said mixers, central operating means connected to said mixers for controlling said mixers to supply mixed liquid at determined temperatures at respective outlets of said mixers, first and second outlet conduits respectively connected to the outlets of said first and second mixers, a common conduit connected to said first and second outlet conduits to supply mixed liquid from both said mixers as a combined liquid outflow externally of the apparatus through said common conduit as a first discharge conduit, temperature sensing means in said common conduit connected to said central operating means for control of the mixers, and a tap in said common conduit.

5,348,224

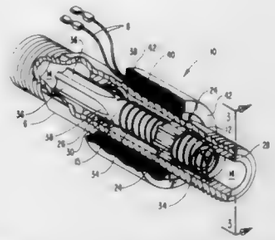
GAS FLOW MODULATOR

Franco Consadori, Salt Lake City, Utah, and Richard Slamka, Vancouver, Canada, assignors to Hydro Flame Corporation, Salt Lake City, Utah

Filed Nov. 24, 1992, Ser. No. 982,078

Int. Cl.[5] F16K *31/06*

U.S. Cl. 236—20 R **7 Claims**



1. A controlled flow gas heating system comprising:

a source of combustible gas;

a gas flow modulator receiving a flow of gas from said source of combustible gas and comprising:

a tubular member having an interior surface defining a gas flow passage extending through the tubular member;

a slide member disposed in the gas flow passage and having an exterior surface with a plurality of ridges projecting therefrom, said plurality of ridges being axially slidable along the interior surface of the gas flow passage and separating the exterior surface of the slide member from contact with the interior surface of the tubular member;

means for biassing said slide member towards a predetermined position in the gas flow passage and comprising a pair of compression springs within said tubular member seated on opposite sides of said plurality of ridges, said compression springs acting in opposite directions on said slide member;

flow constrictor means, fixedly positioned within and extending from the interior surface of the gas flow passage, for constricting gas flow along the gas flow passage and comprising one of a pair of annular inserts in said tubular member, said exterior surface of said slide member having slots formed therein and extending slidably through said one of said pair of annular inserts to control gas flow along said gas flow passage in dependence on the position of said slots relative to said one of said pair of annular inserts, said compression springs being seated on respective ones of said pair of annular inserts;

said slide member and said flow constrictor means being shaped to adjust the flow of gas along the gas flow passage upon displacement of said slide member in a first direction from the predetermined position; and

electromagnetic means for effecting the displacement of said slide member from the exterior of the tubular member;

a power source in electrical communication with and for providing power to said electromagnetic means;

a burner orifice receiving an output of said combustible gas from said gas flow passage.

5,348,225

COOLING/WARMING CONTROL SYSTEM FOR AN AIR-CONDITIONER

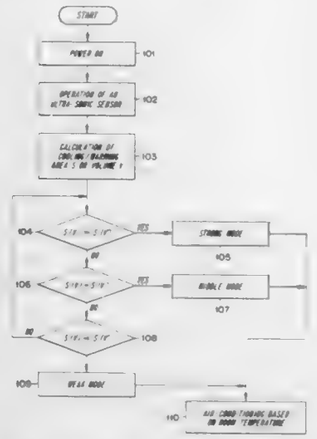
Eui K. Hwang, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 29, 1993, Ser. No. 98,723

Claims priority, application Rep. of Korea, Jul. 30, 1992, 92-13677

Int. Cl.[5] B43L *5/00;* **G05D** *23/00*

U.S. Cl. 236—51 **12 Claims**



1. A cooling/warming control system of an air-conditioner comprising:

at least one ultrasonic wave sensor for radiating ultrasonic waves to a room wall surface and receiving reflected waves;

a transmitting portion for generating pulse signals so that said ultrasonic sensor can radiate said ultrasonic waves;

a receiving portion for receiving said reflected signals, amplifying said reflected signals and converting said reflected signals into digital signals;

a microcomputer for calculating the time interval between the receipt of said pulse signals at said receiving portion until the sampling of said reflected signals, measuring the corresponding radiating distances of said ultrasensors, computing the room area from the measured distances, determining the magnitude of a cooling/warming load in accordance with the computed room area and generating control signals based on the determined magnitude; and

a load operating system for operating the loads of the air conditioner according to the control signals of said microcomputer.

5,348,226

SPRAY BOOM SYSTEM WITH AUTOMATIC BOOM END HEIGHT CONTROL

Richard W. Heiniger; Troy C. Kolb, both of Hiawatha, and Kent D. Funk, Manhattan, all of Kans., assignors to RHS Fertilizing/Spraying Systems, Hiawatha, Kans.

Continuation-in-part of Ser. No. 791,012, Nov. 12, 1992, abandoned. This application Sep. 23, 1993, Ser. No. 125,708

Int. Cl.[5] B05B *15/08, 15/10*

U.S. Cl. 239—1 **14 Claims**

1. A control system for a boom sprayer including a center frame mounted for vertical movement on a mobile support, a pair of laterally extending opposite cantilever sprayer booms with a plurality of sprayer means spaced therealong and pivotally connected to said center frame for vertical movement of said booms with said center frame and for pivoting relative to said center frame about respective horizontal boom axes sub-

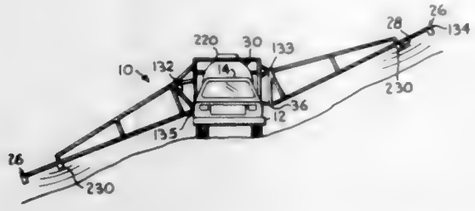
stantially parallel to a direction of travel of said mobile support, said control system comprising:

(a) reversible center frame motor means engaged between said center frame and said mobile support and operable to set a height of said center frame relative to said mobile support;

(b) a pair of boom motor means associated respectively with said booms, each boom motor means being engaged between the associated boom and said center frame and operable to cause said pivoting movement therebetween; and

(c) automatic boom control means including:

(1) energy transducer means mounted on each sprayer boom in spaced radial relation to the associated boom axis and operative to transmit an energy toward a



sprayer target and receive reflections of said energy from said target;

(2) boom end height set means operable to position each boom to a desired boom end height between an end of said boom and said target; and

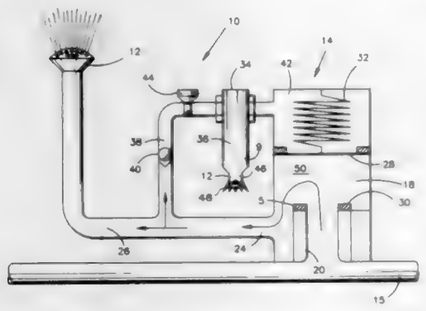
(3) boom end height control circuit means coupled to said transducer means, said boom end height set means, and the associated boom motor means; said control circuit means being operative to measure an echo time interval between transmitting and receiving said energy which is proportional to an actual boom end height, to compare said echo time interval with a set time interval proportional to said desired boom end height, and to activate the associated boom motor means in such a direction as to minimize a difference between said echo time interval and said set time interval.

5,348,227

IRRIGATION SYSTEM HAVING GROUND MOISTURE RESPONSIVE CONTROL JAR VALVE REGULATION

Eli Polonsky, 1608 S. Kenton St., Aurora, Colo. 80012

Filed Apr. 20, 1993, Ser. No. 48,504
Int. Cl.[5] B05B *12/08*
U.S. Cl. 239—63 12 Claims



1. An irrigation control system for regulating fluid flow to a plurality of individual spray heads; wherein the improvement comprises:

a source of irrigation fluid;

a plurality of spray heads in fluid communication with said source of irrigation fluid;

an irrigation fluid flow controller for each individual spray head, said controller including an individual control valve for regulating the flow of irrigation fluid to the spray head and a ground moisture regulated control means for closing said individual control valve when sufficient ground moisture is present in the vicinity of the controller to shut off the flow of irrigation fluid to the spray head;

said individual control valve having a fluid inlet fluid communication with said source of irrigation fluid;

a fluid outlet in fluid communication with at least one of said spray heads;

a valve seat formed at a distal end of said fluid inlet;

a valve chamber;

a valve closure member in said chamber biased in a normally open position away from said valve seat whereby in said open position irrigation fluid is permitted to flow through the valve between said fluid inlet and said fluid outlet;

a fluid conduit between said fluid outlet and said ground moisture regulated control means;

said ground moisture regulated control means including a fluid chamber in fluid communication with said fluid conduit and said valve chamber, said fluid chamber having a slow release outlet for regulating the amount of fluid in said fluid chamber; the rate of release of said slow release outlet being controlled by the moisture content of the surrounding soil;

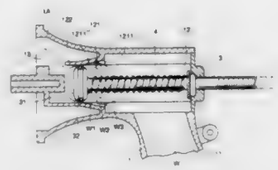
said fluid chamber, when filled with fluid from said fluid outlet through said fluid conduit by being in fluid communication with said valve chamber, creates a pressure, causing said valve closure member to engage the valve seat and close the valve, cutting off the flow of irrigation fluid to the spray heads.

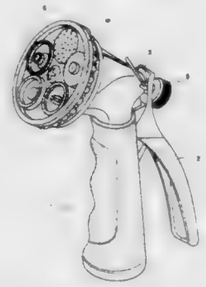
5,348,228

WATER SPRAYER WITH FLOW RATE CONTROL

Chin-Yuan Wang, No. 1, Lane 288, Sec. 1, Lu Ho Rd., Lukang Chen, Changhua, Taiwan

Filed Mar. 26, 1992, Ser. No. 858,331
Int. Cl.[5] B05B *1/16*
U.S. Cl. 239—394 1 Claim





1. A water sprayer comprising a body, a fluid control rod, a compression spring, a trigger and a nozzle cap, said body having a chamber at and in a top portion of said body and having an outlet hole connected to said chamber through an exit cone, said nozzle cap covering said outlet hole, said fluid control rod being inserted in said chamber and controlled by said trigger to open said exit cone for the passing therethrough

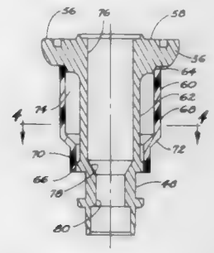
of a flow of water from said chamber to said nozzle cap, and characterized in that said exit cone comprises a plurality of tapered grooves longitudinally formed around an inside surface thereof at one end, and a smooth circular orifice at an opposite end releasably sealed by an expanded tip of said fluid control rod; said expanded tip of said fluid control rod having an annular groove around a peripheral edge thereof attached with an O-ring to seal said exit cone.

5,348,229

FUEL INJECTOR LOW MASS VALVE BODY

Ross W. Wood, Yorktown, and Gregory R. Stanfield, Charles City, both of Va., assignors to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Apr. 13, 1993, Ser. No. 46,822
Int. Cl.[5] F02M *53/04*
U.S. Cl. 239—397.5 8 Claims



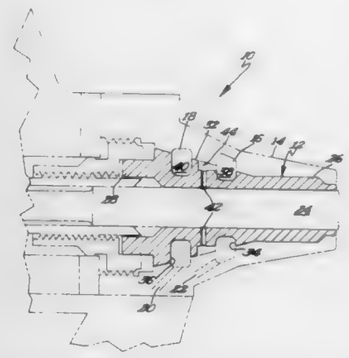
1. An electrically operated fuel injector having a main longitudinal axis and comprising a top inlet, a bottom outlet, a fuel passage extending axially between said inlet and said outlet, a portion of said passage that extends from said outlet toward said inlet being an axially extending through-bore of a cylindrical one-piece valve body of a metal having good thermal conductivity, said through-bore containing a valve seat, a selectively operable electric actuator disposed between said valve body and the top of the fuel injector, means operatively coupling said electric actuator with a valve element that is disposed in association with said valve seat such that said valve element is caused to seat on and unseat from said valve seat in accordance with operation of said electric actuator, characterized in that said valve body comprises means defining a radially outwardly open groove in its radially outer cylindrical face, and there is also provided a tubular cylindrical, poorly thermally conductive, non-metallic sleeve fitted onto said radially outer cylindrical face of said valve body to enclose said groove and define in cooperation therewith an assembly comprising a totally enclosed, poorly thermally conductive space that is disposed circumferentially around said valve body to provide thermal insulation of fuel in said through-bore, said assembly having both a certain mass in air and a certain volume of particular shape that would displace a given volume of water if totally submerged in a body of water, said certain mass in air being at least 25% less than the mass in air of another valve body both of said metal and of said same certain volume of particular shape, and characterized further in that said sleeve comprises a smaller diameter cylindrical portion and a larger diameter cylindrical portion that are joined by a frusto-conical portion having a radially inner surface that extends between radially inner surfaces of said smaller and larger diameter cylindrical portions, said radially inner surface of said smaller diameter cylindrical portion being parallel with said main longitudinal axis, in that said larger diameter portion is disposed nearer the top of the fuel injector than is said smaller diameter portion, in that the entirety of said radially inner surface of said frusto-conical portion between said radially inner surfaces of said smaller and larger diameter cylindrical portions is exposed to said space, in that portions of said radially inner surface of said smaller and larger diameter cylindrical portions that are immediately contiguous said radially inner surface of said frusto-conical portion are also exposed to said space.

5,348,230

PLANAR FOAM NOZZLE

Timothy L. Mullen, Champlin; Thomas J. Schaefer, Buffalo, and Tera D. McCutcheon, Coon Rapids, all of Minn., assignors to Graco, Inc., Minneapolis, Minn.

Filed Feb. 8, 1993, Ser. No. 15,617
Int. Cl.[5] B05B *7/04*
U.S. Cl. 239—428 5 Claims



1. A nozzle for use in a foam gun, said foam gun having an axial passage and first and second material passages for receiving first and second reactive materials, said material passages intersecting at axially spaced locations with said axial passage, said nozzle comprising:

a central passage;

a first end;

a second end;

a divider member having a circumference, said divider member and said nozzle first end defining a first material chamber in combination with said axial passage and said divider and said nozzle second end defining a second material chamber in combination with said axial passage, said divider member circumference sealing against said axial passage;

first and second sets of impinger ports extending inwardly from said divider circumference to said central passage; said first and second sets of ports being substantially coplanar to each other; and

means connecting said first set of impinger ports to said first material chamber and said second set of ports to said second material chamber, said connecting means comprising recesses in said circumference communicating with said ports and said chambers.

5,348,231

TWO-STAGE AERATOR

Don C. Arnold, 1184 Windbrooke Dr. #202, Buffalo Grove, Ill. 60089, and G. Michael Fravala, 7350 Old Lantern Dr., Caledonia, Mich. 49316

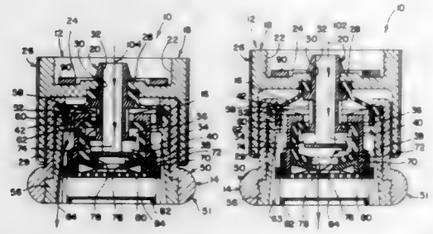
Filed Oct. 5, 1993, Ser. No. 132,142
Int. Cl.[5] E03C *1/084*
U.S. Cl. 239—428.5 14 Claims

1. A two-stage faucet spout device comprising:

attachment means for attaching said device to a faucet spout;

a body manually movable between a default position wherein water flows through said device at a default rate and a selectable position wherein water flows through said device at a selectable rate higher than the default rate;

means for retaining said body in the selected position while water is flowing through said device; and



bias means for biasing said body to the default position, whereby said body returns to said default position when water flow is terminated.

5,348,232

ELECTROMAGNETICALLY ACTUATED FUEL ATOMISING AND METERING VALVE FOR A HEAT ENGINE FUEL SUPPLY DEVICE

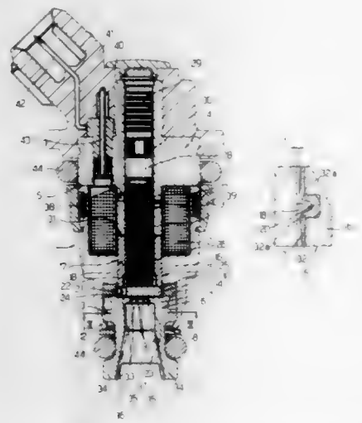
Rudolf Babitzka, Savigno, and Marcello Cristiani, Imola, both of Italy, assignors to Weber S.r.l., Turin, Italy

Filed Oct. 13, 1992, Ser. No. 960,536

Claims priority, application Italy, Oct. 11, 1991, TO91A000771

Int. Cl.[5] **F02M** *51/00*

U.S. Cl. 239—585.4 **11 Claims**



1. An electromagnetically actuated fuel atomising and metering valve for a heat engine fuel supply device, comprising a metal body in which is housed an annular electromagnet and a core disposed within the electromagnet, an injection nozzle which is provided with at least one fuel injection orifice and which is fixed to said body, and a shutter member movable between a first position in which said shutter member closes a fuel passage through said at least one injection orifice and a second position in which said shutter member leaves said fuel passage open, said shutter member being fixed to a tubular armature which can be attracted by said core and being provided with a cylindrical outer lateral surface adapted to slide on a corresponding surface of a bore in said body, said shutter member including a disc delimited by a cylindrical outer lateral surface having substantially the same diameter as said outer surface of said armature, and by a pair of upper and lower flat circular surfaces, said disc being connected to said armature by laser welding formed between the circular edge of said upper surface of the disc and the corresponding edge of a lower surface of the armature, and said disc being provided with at least one axial hole passing through the disc, said armature having an internal annular groove formed close to said edge of the lower surface of the armature and communicating with said axial hole in the disc, and at least one annular groove formed on said outer cylindrical surface of said armature, said at least one annular groove having a depth between 0.1 and 0.2 mms, and said outer cylindrical surface of the armature and the annular surface which delimits the top of the armature are coated in a layer of galvanically deposited hard metal, the thickness of said layer of hard metal being between 15 and 25 microns.

5,348,233

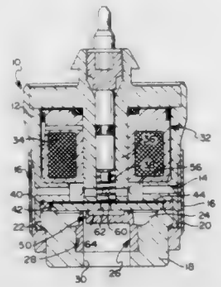
HIGH VOLUME GASEOUS FUEL INJECTOR

Roman J. Press, Rochester, and James O. Wilson, Perry, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 1, 1993, Ser. No. 25,048

Int. Cl.[5] **F16K** *31/06;* **B05B** *1/30*

U.S. Cl. 239—585.3 **2 Claims**



1. A gaseous fuel injector comprising a body and a base fixed together and defining a fuel cavity therebetween, said fuel cavity having a fuel inlet terminating therein and a fuel outlet connecting said fuel cavity to a fuel outlet passage, said fuel outlet having an armature/valve seat disposed therein, said valve seat comprising an annular land having a substantially annular opening extending therethrough for the passage of fuel from said fuel cavity to said fuel outlet passage, an armature/-valve biased to engage said valve seat to interrupt fuel delivery through said substantially annular opening, a valve actuator in said injector body adapted to displace said armature/valve from said valve seat to allow fuel delivery from said fuel cavity through said substantially annular opening to said fuel outlet passage.

5,348,234

CLEANING LANCE MACHINE

Meino J. v.d. Woude, Drachten, Netherlands, assignor to Stork Nedserv B.V., Netherlands

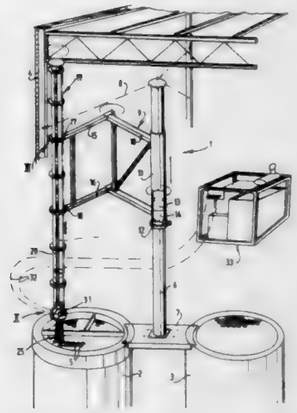
Filed Apr. 30, 1993, Ser. No. 55,835

Claims priority, application Netherlands, May 4, 1992, 9200799

Int. Cl.[5] **F28G** *1/16, 15/02*

U.S. Cl. 239—753 **8 Claims**

1. Device for cleaning heat exchanger pipe bundles comprising a guide column supported by a support construction for displacement parallel to itself, wherein the guide column defines a guide path for a slide piece guided slidably along the column, a number of lances connected to the slide piece parallel to the guide column, means connected to the slide piece for supplying liquid under high pressure to the lances, and drive means engaging on the slide piece for reciprocally moving the slide piece with the lances connected thereto along the guide column, wherein the guide column is assembled in lengthwise direction from a number of column portions, the drive means comprise an endless flexible member engaging on the slide piece and extending round guide wheels on each end of the guide column, wherein one of the guide wheels is arranged on the output shaft of a drive gear and wherein the endless flexible



member is assembled from a number of detachable portions having double the length of a column portion.

5,348,235

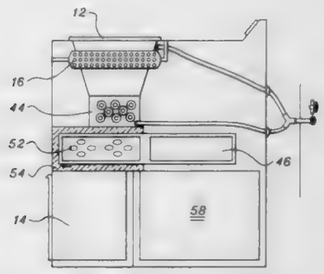
MEDICAL WASTE DISPOSAL SYSTEM

Charles A. Pappas, 105 Brigham St., Marlboro, Mass. 01752

Filed Jul. 6, 1992, Ser. No. 908,246

Int. Cl.[5] **B02C** *23/40*

U.S. Cl. 241—41 **8 Claims**



1. A medical waste disposal system, comprising:

(a) fluid-tight means for superheating a quantity of untreated medical waste that has been at least partially water saturated to a temperature of at least 275 degrees Fahrenheit for a period of at least thirty minutes, said fluid-tight superheating means having selectably openable and closeable inputs and outputs;

(b) means for substantially cooling said fluid-tight means after super-heating of said medical waste has been completed;

(c) a matrix of grinding elements having input surfaces thereof located proximately to said output of said fluid-tight means and having surfaces of respectively different grinding dimensions proportioned to dimensions of medical waste to be processed; and

(d) means for uniformly exposing to microwave energies ground waste output of said matrix of grinding elements, said exposing means including fluid-misting means directed to said ground waste output prior or during microwaving by said microwave exposing means.

5,348,236

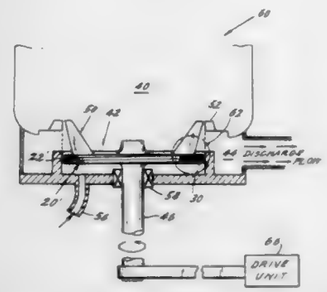
IMPELLER ASSEMBLY FOR PROCESSING DEVICE

John D. Spargo, Annapolis, and John L. Drake, Jr., Arnold, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 28, 1993, Ser. No. 127,545

Int. Cl.[5] **B02C** *18/12, 18/22*

U.S. Cl. 241—46.17 **14 Claims**



1. An impeller assembly for use in a material processing device of the type capable of processing both paper and plastic materials and having a material receiving area for receiving a material to be processed and an outlet for distance of the material after processing, the impeller assembly being structured and arranged for mounting in the processing device so as to be rotatable therein by driving means, wherein upon being mounted in a material processing device the impeller assembly functions to move the material from the receiving area toward the outlet when the impeller assembly is rotated, the impeller assembly comprising:

(a) connecting means for being connected with the driving means of the material processing device; and

(b) an impeller member attached for rotation with said connecting means, said impeller member being generally circular in shape and having a circumferential face extending between a top and a bottom face of said impeller member and a plurality of radially extending blades projecting axially from said top face, said circumferential face of said impeller member having a continuous spiral groove formed thereon, wherein upon being mounted in the material processing device said circumferential face is spaced from an inner circumferential wall of the processing device so as to define a clearance space therebetween,

said continuous spiral groove being a thread formed such that upon being mounted in the material processing device and being placed in rotation, material in the clearance space is guided upward out of the clearance space by the action of said thread,

whereby said continuous spiral groove functions as a screw-type pump to urge material in the clearance space out of the clearance space when said impeller member is rotated.

5,348,237

APPARATUS FOR REDUCING, DISPERSING WETTING AND MIXING PUMPABLE, NON-MAGNETIC MULTIPHASE MIXTURES

Bernd Halbedel, Ilmenau; Walter Mueller, Leipzig; Rolf Baudrich, Rueckmarsdorf, and Dagmar Huelsenberg, Ilmenau, all of Fed. Rep. of Germany, assignors to Herberts Industrielacke GmbH, Leipzig, Fed. Rep. of Germany

Filed Dec. 19, 1991, Ser. No. 809,441

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1991, 4113490

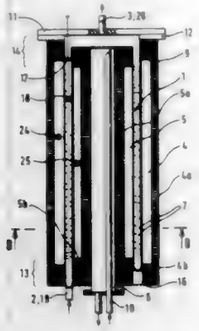
Int. Cl.[5] **B02C** *17/10*

U.S. Cl. 241—67 **27 Claims**

1. An apparatus for reducing, dispersing, wetting and mixing pumpable, non-magnetic multiphase mixtures, comprising:

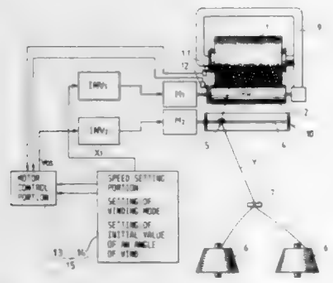
(a) an inner tube and an outer tube, said tubes being non-ferromagnetic and arranged so as to form an annular-gap

chamber with an inflow zone and an outflow zone, an inlet and outlet, and a top and bottom, said chamber being hermetically sealed except for said inlet and said outlet;
(b) an outer exciter system surrounding said outer tube;
(c) an inner exciter system disposed within said inner tube;



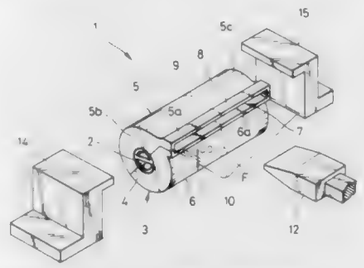
(d) said inner and outer exciter systems being configured so as to create a plurality of electromagnetic fields which rotate in a common direction; and
(e) a plurality of freely mobile magnetic working media contained in said annular-gap chamber and excluded from said inflow zone and said outflow zone.

5,348,238
DOUBLER WINDER
Toshio Yamauchi, Kyoto, and Hiroshi Uchida, Omihachiman, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed Jul. 28, 1992, Ser. No. 920,998
Claims priority, application Japan, Jul. 30, 1991, 3-189998; Aug. 27, 1991, 3-75735[U]
Int. Cl.[5] B65H *54/06*
U.S. Cl. 242—18 R **4 Claims**



1. A driving control device for a winder having a motor for driving a package and a motor for driving a traverse mechanism, comprising:
a friction roller for driving a package;
a first motor for driving the friction roller;
a second motor for driving a traverse cam of a traverse mechanism;
a first rotational sensor provided on a package support mechanism to know rotation of the package;
a second rotational sensor provided on an output shaft of the first motor to know a rotational speed of the friction roller;
a first and a second inverters for controlling the speeds of the motors;
a motor control portion for giving a speed command to these inverters; and
a speed setting portion for setting a yarn speed, setting of winding mode and setting of initial value of an winding angle.

5,348,239
PHOTOGRAPHIC FILM CASSETTE
Masahiro Enomoto, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 735,742, Jul. 25, 1991, abandoned. This application Jun. 22, 1993, Ser. No. 79,846
Claims priority, application Japan, Jul. 26, 1990, 2-198639
Int. Cl.[5] G03B *17/26*
U.S. Cl. 242—348.4 **23 Claims**



1. A photographic film cassette comprising:
a spool for winding photographic film thereon in a roll;
a cassette shell being molded from resin and having a circumferential surface, said spool and said film being rotatably contained in said cassette shell in light-tight fashion;
a portion of said cassette shell having a mechanical strength which is lower than other portions of said cassette shell to define a circumferential breaking line so as to allow said cassette shell to be broken along said braking line for the purpose of removing said film from said cassette shell after exposure, said breaking line is a weld line formed substantially on a middle portion of said cassette shell by injecting molten resin from both lateral sides of said cassette shell when molding said cassette shell.

5,348,240
DEVICE FOR WINDING AND STORAGE OF CORDS
Robert A. Carmo, Placentia, and George A. Gilbert, Jr., Bellflower, both of Calif., assignors to Pacific Electricord Company, Gardena, Calif.
Continuation of Ser. No. 890,310, May 27, 1992, abandoned, which is a continuation of Ser. No. 577,964, Sep. 5, 1990, abandoned. This application Aug. 2, 1993, Ser. No. 101,338
Int. Cl.[5] B65H *75/18, 75/28*
U.S. Cl. 242—401 **1 Claim**

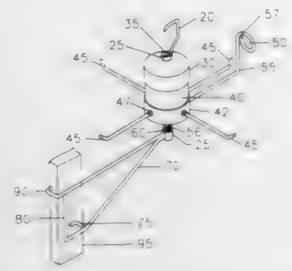
1. A device for winding and storage of elongate objects, said device comprising:
a rigid, elongate, hollow, tubular member having first and second ends, one of said first and second ends of said member being open to permit objects to pass therethrough into the interior of said member, and a central longitudinal axis extending between said first end and said second end of said member, and at least one protrusion on the external surface of said member extending substantially along the member length from said first end to said second end in the direction of said longitudinal axis;
a first end support rigidly mounted to said elongate member proximate said first end of said elongate member, said first end support having a first winding arm integral therewith and extending outwardly therefrom to permit an elongate object to be wound about said first winding arm;
a second end support rigidly mounted to said elongate member proximate said second end of said elongate member, said second end support having a second winding arm integral therewith and extending outwardly therefrom to permit said elongate object to be wound about said second winding arm, said elongate object forming one continuous loop as it is successively wound about said first and second winding arms;
first and second clamping means, each of said clamping means for clamping a distinct portion of said elongate object, each of said clamping means comprising a ring having at least one axially extending groove therein to mate with said at least one protrusion on the external surface of said member to prevent rotational movement of each of said clamping means with respect to said member while permitting each of said clamping means to be moved along substantially the entire length of said member and a clamping member attached to said ring;
an attachment means rotatably coupled to one of said first and second ends of said elongate member so as to permit said member to be rotated about its longitudinal axis;
an aperture in said attachment means to receive a support member therein to permit said device to be suspended from said support member;



a support means, having a first end and a second end, mounted adjacent the other one of said first and second ends of said member; said support means first end extending through said other end of said member into said interior of said member, said support means supporting said device when said support means second end is made to contact a supporting surface during winding and unwinding of said elongate objects about said first and second winding arms, said support means being movable relative to said elongate member such that more or less of its length is positioned within said elongated member; and
lock means, attached to said support means first end for engagement with the inner surface of said other end of said member, which is brought into or out of contact with the inner surface of said elongated member by rotatably twisting said support means, thereby locking or unlocking the support means within the elongated member.

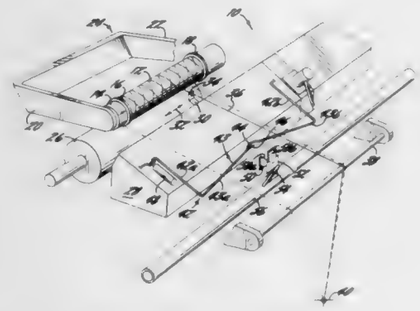
5,348,241
ROMEX WIRE DISPENSER
Dennis M. Huette, 916 S. Linden, Normal, Ill. 61761
Filed May 27, 1993, Ser. No. 68,656
Int. Cl.[5] B65H *49/00, 75/30*
U.S. Cl. 242—597.5 **2 Claims**

1. A Romex wire dispenser comprising,
a pair of spaced apart U-shaped members, a cantilever arm and rotatable radius bars,
said pair of spaced apart U-shaped members fixedly attached to each other by said cantilever arm and each adapted to fit over opposite sides of at least one-half of a building stud member,
a spindle mounting assembly fixedly attached at one end to said cantilever arm and at the other end adapted to pivotally support said rotatable radius bars,
said spindle mounting assembly having a specific shape for holding said rotatable radius bars in a preferred position,
a cable guide assembly having a length greater than the diameter of said rotatable radius bars is pivotably mounted at one end on said spindle mounting assembly below said rotatable radius bars,



said cable guide assembly being freely pivotable in all directions for dispensing cable below and above said rotatable radius bars, and
a hub assembly centrally located on said rotatable radius bars for holding and controlling the positioning of a coiled spool of cable on said rotatable radius bars.

5,348,242
YARN WINDING APPARATUS WITH YARN CUTTING CAPABILITY
Karl Bauer; Peter Dammann, and Friedrich Urbahn, all of Remscheid, Fed. Rep. of Germany, assignors to Barmag AG, Remscheid, Fed. Rep. of Germany
Filed Apr. 12, 1993, Ser. No. 46,014
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1992, 4212241
Int. Cl.[5] B65H *54/02 54/71*
U.S. Cl. 242—18 EW **14 Claims**



1. A yarn winding apparatus, comprising
means for rotatably mounting a tubular yarn bobbin for rotation about a laterally directed rotational axis,
drive means for rotating said bobbin about said rotational axis,
means for advancing a yarn to the bobbin so as to be wound thereupon and including a yarn traverse guide, means for laterally reciprocating said yarn traverse guide and so as to form a cross wound package, and a fixed yarn guide mounted upstream of said reciprocating yarn traverse guide so that the advancing yarn defines a traversing plane,
a yarn cutting blade mounted on one side of said traversing plane,
yarn lifting and catching means for selectively lifting the advancing yarn from said traversing plane in a direction

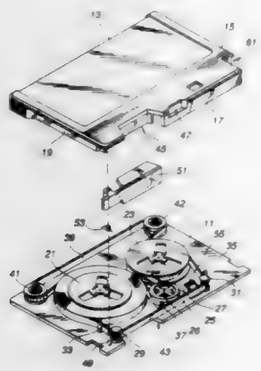
away from said yarn cutting blade, then capturing and retaining the lifted advancing yarn in a laterally fixed position which is aligned with said yarn cutting blade when viewed in a direction perpendicular to said traversing plane, and then moving the advancing yarn in a direction opposite the lifting direction and into contact with said yarn cutting blade so as to sever the advancing yarn.

5,348,243

TAPE CARTRIDGE WITH CORNER CASE NOTCH TO PREVENT INADVERTENT WRITING OF DATA ON TAPE

Junya Ohmachi; Kengo Saitou, and Kazuo Sasaki, all of Miyagi, Japan, assignors to Sony Corporation, Japan

Filed Feb. 17, 1993, Ser. No. 18,569
Claims priority, application Japan, Feb. 24, 1992, 4-035494
Int. Cl.[5] G11B *23/087*
U.S. Cl. 242—342 **3 Claims**



1. A tape cartridge including a housing accommodating therein two rotatable tape reels, a magnetic recording tape wound on the tape reels, a plurality of tape guides, an endless drive belt engaging the tape, a belt driving roller around which the drive belt is wrapped, said housing comprising:

a base plate;

a cover secured to said base plate, said cover having an open-ended box shape and including therein first, second and third plane walls which extend substantially perpendicular to each other to define a corner portion of said cover; and

means for preventing inadvertent writing on the magnetic recording tape by a tape recording/reproducing apparatus comprising a notch defined at the corner portion of said cover by:

a first wall portion which is mutually perpendicular to said first and second plane walls, and

a second wall portion which is mutually perpendicular to said first and third plane walls, said second wall portion intersecting said first wall portion at a predetermined angle to form a corner line of said notch which is normal to said first plane wall and parallel with said second and third plane walls.

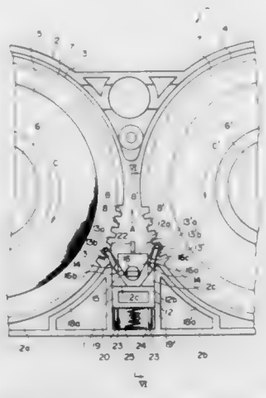
5,348,244

TAPE CASSETTE CASE HAVING RIDGES BEARING A SLIDING REEL LOCK MEMBER

Tomihiro Nakagawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 5, 1991, Ser. No. 680,828
Claims priority, application Japan, Apr. 6, 1990, 2-91503
Int. Cl.[5] G11B *23/087*
U.S. Cl. 242—338.3 **1 Claim**

1. In a tape cassette including a cassette case having an internal surface, a tape reel rotatably accommodated in said cassette case and having a toothed flange adjacent said internal surface, a recording tape wound around said tape reel, a slidable reel lock member having a main body with a bottom surface at which said main body is supported and a lock portion extending from a front end of said main body for locking engagement with said toothed flange of the tape reel, and spring means acting against a rear end of said main body for biasing the reel lock member in a direction for engagement of said lock portion with said toothed flange of the tape reel, said cassette case having a through-hole opening at said internal surface for allowing insertion into engagement with said reel lock member of a lock release pin provided in a recording and



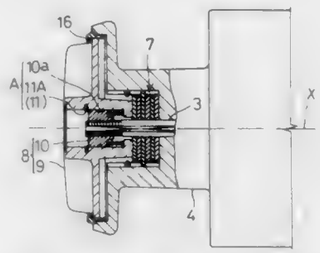
reproducing apparatus, and said internal surface having an indentation generated upon molding of said cassette case and being substantially aligned with said through-hole in a sliding direction of said reel lock member; the improvement comprising a plurality of spaced apart ridges projecting from said internal surface and extending parallel to said sliding direction of the reel lock member at opposite sides of said through-hole and indentation for defining respective elongated bearing surface portions elevated relative to said internal surface of said cassette case and having said bottom surface of said main body of the reel lock member supported by said bearing surface portions and in sliding contact relationship therewith at respective limited portions of said bottom surface.

5,348,245

DRAG STRUCTURE FOR FISHING REEL

Kenichi Sugawara, Junpu-ryo 408-go, Haze-cho 1600, Sakai-shi, Osaka, Japan

Filed Nov. 25, 1991, Ser. No. 796,832
Claims priority, application Japan, Nov. 27, 1990, 2-126113[U]
Int. Cl.[5] A01K *89/027*
U.S. Cl. 242—246 **4 Claims**



1. A drag structure for a fishing reel comprising:

a drag assembly; and

a drag control element for contacting said drag assembly to produce a drag force, said drag control element being adjustably movable toward and away from said drag assembly to switch between an operational position in which to vary the drag force and an inoperational position in which not to produce the drag force;

wherein said drag control element includes means for informing the angler that the drag control element is switched to the inoperational position; and

wherein said drag control element further includes a drag knob for pressingly contacting said drag assembly to produce the drag force, and a drag movable element mounted inside the drag knob; and

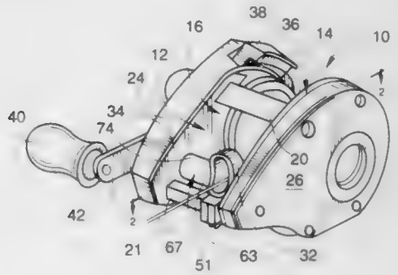
wherein said informing means includes a click spring and an engaged groove defined in an outer periphery of said drag movable element, said click spring having opposite ends shrunk to snap into said engaged groove when the drag knob moves away from the drag assembly, thereby to produce a click sound.

5,348,246

LINE GUIDE FOR BAIT CAST REEL

Hyunkyu Kim, Incheon, Rep. of Korea, assignor to Zebco Corporation, Tulsa, Okla.

Filed Jul. 15, 1992, Ser. No. 914,262
Int. Cl.[5] A01K *89/015*
U.S. Cl. 242—279 **11 Claims**



1. An improved bait cast fishing reel of the type having a reel frame including opposing side plates and a plurality of spacer posts for supporting said side plates in a fixed spaced apart relationship, a line-carrying spool and means for retaining said spool between said side plates, a rotatable crank handle with an associated crank shaft for rotating the spool so that line is wound thereon, a line guide, and rotating means for moving the line guide in a reciprocative manner axially adjacent to the spool between said side plates to distribute line evenly thereover as the spool is rotated, the improvement comprising:

guide means for supporting the line guide in relation to said rotating means for moving the line guide;

said line guide slidingly engaged upon said guide means and in cooperative contact with said rotating means for moving the line guide;

said guide means being comprised of

sleeve means for covering a portion of said rotating means for moving the line guide, the sleeve having a longitudinal axis,

a spacer means for supporting said side plates in fixed spaced apart relationship, the spacer means having a longitudinal axis substantially parallel to and spaced apart from the longitudinal axis of the sleeve, and

web means for integrally connecting said spacer means to said sleeve means,

means for supporting said guide means within the reel frame with the spacer means between the side plates and the longitudinal axis of the sleeve generally aligned with the longitudinal axis of the rotating means for moving the line guide, an aperture in each of the side plates adapted to receive the guide means therein wherein

one of the apertures is configured to have a shape matching the cross-section of the guide means to permit passage of the guide means there-through with the longitudinal axis of the sleeve generally aligned with the longitudinal axis of the rotating means for moving the line guide, and

means for fixedly retaining the guide means in an operating position

whereby said aperture enables the insertion and assembly of the guide means to its operating position in the reel frame.

5,348,247

BRAKING APPARATUS FOR FISHING REEL

Kyoichi Kaneko, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Dec. 1, 1992, Ser. No. 983,738
Claims priority, application Japan, Dec. 12, 1991, 3-109481[U]
Int. Cl.[5] A01K *89/033*
U.S. Cl. 242—303 **9 Claims**



1. A braking apparatus for a double bearing type fishing reel having two side plates, including a braking force adjusting lever turnably arranged on one of said side plates for adjusting a braking force applied to a spool rotatably supported between both said side plates, said braking apparatus comprising:

an arc-shaped defining member slidably arranged on said one side plate, said defining member having a first engaging portion engaging said braking force adjusting lever for regulating the turnable movement of said braking force adjusting lever relative to said one side plate, thereby defining a first braking force applied to said spool;

said braking force adjusting lever including means for contiguously engaging said arc-shaped defining member, said means for contiguously engaging is relatively movable with respect to said braking force adjusting lever; and

means for adjustably fixing said arc-shaped defining member onto said one side plate to selectively vary the location of said first engaging portion.

5,348,248

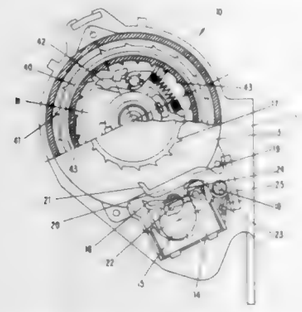
SAFETY BELT REELING DEVICE WITH LOCKING DEVICE DEACTIVATION IN RESPONSE TO COIL DIAMETER

Klaus Butenop, Herzhorn, Fed. Rep. of Germany, assignor to Autoflug GmbH & Co. Fahrzeugtechnik, Rellingen, Fed. Rep. of Germany

PCT No. PCT/DE90/00283, § 371 Date Oct. 25, 1991, § 102(e) Date Oct. 25, 1991, PCT Pub. No. WO90/12709, PCT Pub. Date Nov. 1, 1990
PCT Filed Apr. 11, 1990, Ser. No. 773,890
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1989, 3913631
Int. Cl.[5] B60R *22/38, 22/40*
U.S. Cl. 242—383.2 **2 Claims**

1. A safety belt locking system comprising a casing, a belt reeling shaft supported in the casing for winding and unwinding the safety belt, a belt-sensitive locking device for the reel to prevent unwinding rotation and including a control disc mounted on the shaft, which control disc operates a locking

element mounted on the shaft, a pivotable spring-loaded inertia mass mounted on the control disc for moving the locking element to engage with inner toothing mounted on the casing to prevent unwinding rotation of the reel above a predetermined belt unwinding speed; a vehicle-sensitive locking device for the reel to prevent unwinding rotation and including an inertia mass sensor mounted on the casing, and a sensor lever movable by the inertia mass sensor to engage toothing formed on the outside of the control disc to actuate the locking element to prevent reel unwinding rotation in an emergency situation of the vehicle; means to render the belt-sensitive and vehicle sensitive locking devices operable and inoperable comprising a bearing cup fixedly mounted to the casing, the inner toothing formed on a member rotatably mounted on the bearing cup, said member also having outer toothing formed thereon, a further lever mounted on the casing for pivoting movement to an engagement position, a spring for biassing the



further lever to said position, said further lever including a first arm movable to engage the toothing on the member to prevent rotation thereof, a second arm mounted on the further lever for sensing the diameter of the belt on the reel, and a projection on the further lever for engaging the sensor lever to prevent movement thereof, wherein when the belt is wound to said predetermined diameter the first arm of the further lever is moved to a position out of engagement with the outer toothing of the member and the projection engages the sensor lever to keep the sensor lever out of engagement with the outer toothing of the control disc to render the vehicle-sensitive and belt-sensitive locking systems inoperable, and when the belt is unwound beyond said predetermined diameter the further lever is biassed toward its engagement position in which the first arm engages the second outer toothing of the member and the sensor lever is allowed to move to render the vehicle-sensitive and belt-sensitive locking systems operable.

5,348,249

RETRO REFLECTION GUIDANCE AND CONTROL APPARATUS AND METHOD

James R. Gallivan, Pomona, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Jan. 11, 1993, Ser. No. 4,163

Int. Cl.[5] F41G *7/00*

U.S. Cl. 244—3.11 **7 Claims**

1. Apparatus for obtaining flight characteristics of and controlling a rolling projectile, said apparatus comprising:

a transmitter/receiver located on a platform and adapted to transmit signals and to receive signals;

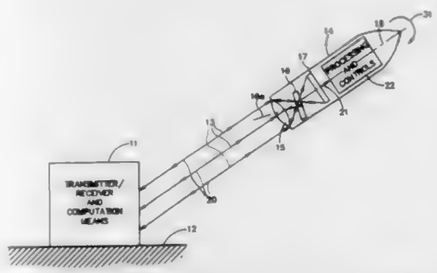
guidance command signal computation means on said platform and coupled to said transmitter/receiver; and

signal receiving means on said projectile, said signal receiving means being accessible to transmitted signals from said transmitter/receiver, said signal receiving means comprising:

collecting lens means at one end of said projectile;

a reticle having normally reflective and normally transmissive segments in a predetermined pattern, said reticle being positioned inwardly from the externally exposed surface of said lens means;

said reticle being positioned off of the projectile roll axis, with its optical centerline positioned at an angle with respect to the projectile roll axis; and



detector means positioned inwardly of the exposed surface of said lens means and adapted to detect signals transmitted through said lens means and not reflected by said reflective segments of said reticle;

whereby said computation means provided information as to roll rate, roll phase and pitch attitude of said projectile.

5,348,250

ARRANGEMENT FOR CONTROLLING THE COOLANT SUPPLY TO A COOLER FOR THE DETECTOR OF AN OPTICAL SEEKER IN A MISSLE

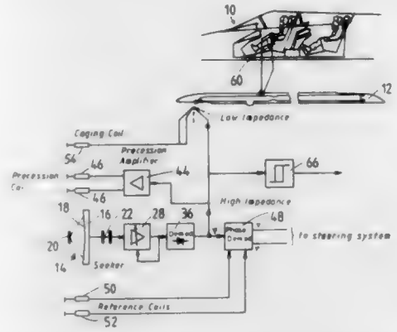
Gerd Semler, Frickingen, and Winfried Zeischke, Steisslingen, both of Fed. Rep. of Germany, assignors to Bodenseewerk Gerätetechnik GmbH, Bodensee, Fed. Rep. of Germany

Filed Jul. 15, 1993, Ser. No. 91,571

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1992, 4226024

Int. Cl.[5] F41G *7/26*; **F41D** *5/00*; **F25B** *19/02*

U.S. Cl. 244—3.16 **5 Claims**



1. A device for controlling the coolant supply from a reservoir to a cooler for a detector (**24**) of an optical seeker (**14**) in a missile, which is arranged in a launcher (**12**) attached to an aircraft, comprising

coolant control means governing the coolant supply from said reservoir to said cooler, and

caging means (**54**, **46**) for caging the movable seeker optical system (**18**, **20**) of the seeker (**14**), which are releasable for target tracking before the operation of the missile by a release signal through a control line extending from the cockpit (**10**) of the aircraft to the launcher (**12**), said control line having an aicraft end and a launcher end

characterized in that

(a) a bistable circuit (**80**) is provided on said missile end of said control line,

(b) said coolant control means being controlled by said bistable circuit (**80**) to release or shut off the coolant supply depending setting or resetting of said bistable circuit (**80**),

(c) the setting and resetting of the bistable circuit (**80**) being determined by a predetermined variation in time of said release signal.

5,348,251

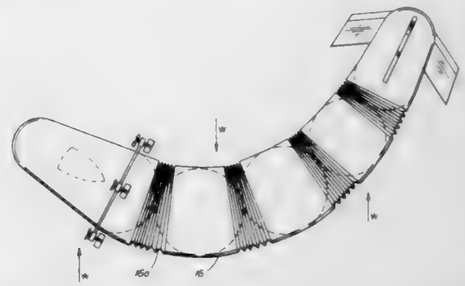
DIRIGIBLE AIRSHIP

Frederick D. Ferguson, P.O. Box 599, Station B, Ottawa, Ontario, Canada K1P 5P7

Continuation of Ser. No. 757,059, Sep. 9, 1991, abandoned. This application Apr. 5, 1993, Ser. No. 43,158

Int. Cl.[5] B64B *1/02*

U.S. Cl. 244—30 **21 Claims**



13. An airship in the form of a self-powered, elongated dirigible, which comprises at least four buoyant gas containing sections, each section having a fore-and-aft central axis, the sections being connected by articulated joints including extensible means joining the peripheries of adjacent sections and allowing limited articulation in any plane between adjacent sections up to at least 10° from the co-axial state, under gust conditions; the sections including front and rear tapered sections and at least two intermediate cylindrical sections, the ends of adjacent sections having reinforcing rim elements which resist primarily axial compression forces between said sections and which prevent substantial relative rotation between sections, said rim elements being such as to mate together to provide a generally streamline transition between the two sections when the sections are co-axial; said extensible means being pretensioned to prevent any articulation of the sections until a predetermined bending force is exceeded.

5,348,252

VECTORABLE NOZZLE MOUNTING

Julian G. Balsdon, Bristol, Great Britain, assignor to Rolls-Royce plc, London, Great Britain

Filed Mar. 25, 1993, Ser. No. 36,873

Claims priority, application United Kingdom, May 16, 1992, 9210547

Int. Cl.[5] B64D *33/04*

U.S. Cl. 244—52 **19 Claims**

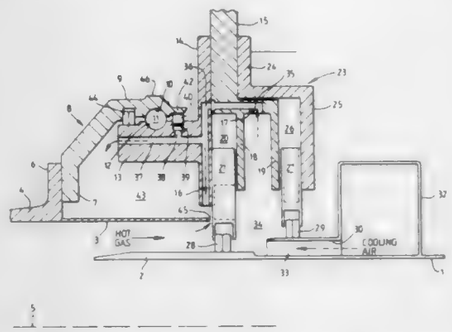
1. A mounting arrangement for a vectorable nozzle in a gas turbine engine installation comprising:

a nozzle,

a duct having an outlet for discharging gas from the engine into the nozzle,

a support member formed with an aperture therein and carrying bearing means which rotatably mounts the nozzle coaxially with said aperture,

the duct outlet being received into the aperture formed in said support member, said aperture being formed with a periphery which is spaced apart from the duct to define an annular gap therebetween, and



sealing means for sealing the annular gap to prevent incursion of engine exhaust gases between the duct and support member.

5,348,253

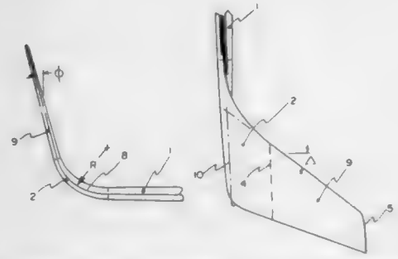
BLENDED WINGLET

Louis B. Gratzer, 2201 3rd Ave. #2004, Seattle, Wash. 98121

Filed Feb. 1, 1993, Ser. No. 11,770

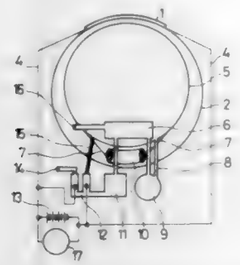
Int. Cl.[5] B64C *5/08*

U.S. Cl. 244—91 **5 Claims**



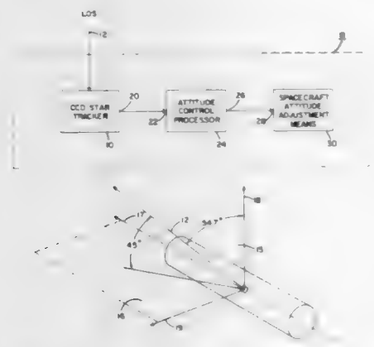
1. A blended wiglet attachable to a tip of a wing; said wing having an upper and a lower surface, a leading edge and a trailing edge; said wing leading edge and trailing edge being the fore and aft intersections of said upper and lower surfaces; said blended winglet comprising a curved transition section and a near-planar section contiguous with said transition section; said near-planar section having a cant angle measured from the normal to said wing and prescribed within limits to provide a desired drag reduction for minimal structural weight; said winglet projecting at an angle to the wing plane and having an upper surface and a lower surface, a leading edge and a trailing edge; said winglet leading edge and trailing edge being the fore and aft intersections of said upper and lower surfaces of said winglet; said wing and winglet upper and lower surfaces defining a solid having streamwise cross sections of airfoil shape; said airfoils having thickness camber and twist variations to provide optimum aerodynamic loading of said surfaces; said winglet leading edge and trailing edge having a varying streamwise spacing and varying monotonically within prescribed limits whereby the formation of vortices and areas of flow separation are prevented; said winglet transition section having prescribed curvature limits whereby practical achievement of surface aerodynamic loadings required for minimum drag are permitted.

5,348,254
LONG PERIOD FLOATING AIRSHIP
Kazuo Nakada, 318, Hazawa-cho, Kanagawa-ku, Yokohama-shi, Kanagawa-ken, Japan
Filed Jun. 29, 1993, Ser. No. 84,796
Claims priority, application Japan, Jul. 1, 1992, 4-211943
Int. Cl.[5] B64B *1/58*
U.S. Cl. 244—97 3 Claims



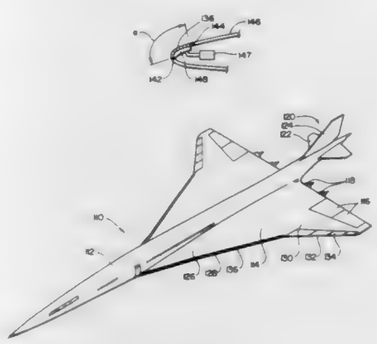
1. A semirigid airship including hydrogen, comprising:
a hydrogen engine;
an envelope;
an outlet means attached to said envelope;
a keel enclosed in said envelope;
a frame disposed on an end of said keel;
at least two elevators fixed to the external surface of said envelop;
a rudder fixed to the external surface of said envelope, whereby the fixed portions of said at least two elevators and said rudder are secured to said frame; and
a cell supported by said keel through a cord for providing a buoyant force for said airship,
characterized in that the engine exhaust gas is disposed between said envelope and said cell, and said exhaust gas is dischargeable through said outlet.

5,348,255
SYSTEM AND METHOD FOR SENSING ATTITUDE OF A SPACECRAFT WITH EQUILIZED STAR TRACKER ERRORS ALONG THREE ORTHOGONAL AXES
Rene Abreu, New Fairfield, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jun. 2, 1992, Ser. No. 892,461
Int. Cl.[5] B64G *1/36*
U.S. Cl. 244—171 11 Claims



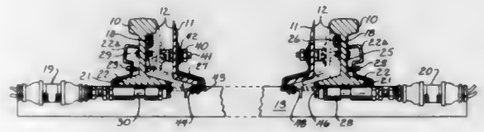
1. A tracker for an attitude control system of an object having a set of reference axes that define the reference coordinate system of the object, said tracker comprising:
a planar light detecting array having a line-of-sight vector normal to said array and a data output for outputting data;
means for positioning said light detecting array on said object, such that said line-of-sight vector intersects the origin of the reference axes and is askew from each reference axis of said object.

5,348,256
SUPERSONIC AIRCRAFT AND METHOD
Pradip G. Parikh, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed May 13, 1992, Ser. No. 883,590
Int. Cl.[5] B64C *21/06, 21/04*
U.S. Cl. 244—208 25 Claims



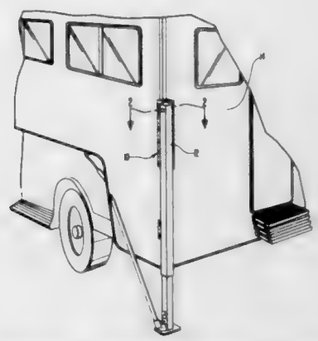
1. A supersonic aircraft comprising:
a. an airfoil having an upper surface and a highly swept subsonic leading edge portion which is arranged to develop at high angles of attack separated flow that develops into a vortex that travels over the upper surface of the airfoil;
b. said leading edge portion having an outer surface and having at said outer surface a boundary layer control suction strip means extending along said leading edge portion;
c. suction means to draw in outside air through said suction strip means; and
d. said suction means being arranged and said suction strip means being positioned, such that the operation of said suction means to draw in said outside air through said suction strip means alleviates separated air flow so as to alleviate developing of said vortex in a manner to decrease drag caused by said vortex.
e. said suction strip means eliminating the need for mechanical high lift leading edge devices.

5,348,257
RAILROAD SWITCH HEATING CONTROL
Salvador C. Ocampo, 4715 W. Wrightwood Ave., Chicago, Ill. 60639
Continuation-in-part of Ser. No. 889,061, May 26, 1992, Pat. No. 5,192,038, which is a continuation-in-part of Ser. No. 776,725, Oct. 15, 1991, Pat. No. 5,116,006, which is a continuation of Ser. No. 405,659, Sep. 11, 1989, abandoned. This application Mar. 8, 1993, Ser. No. 27,357
Int. Cl.[5] E01B *7/24*
U.S. Cl. 246—220 30 Claims



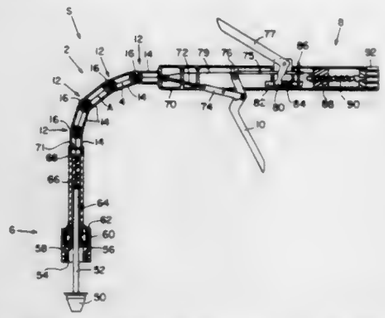
13. A control and detector apparatus for a rail road switch point where a switch rail is intended to contact a stock rail in a given plane, said apparatus comprising
a detector mechanism secured to said stock rail at said point,
said detector mechanism having a plunger assembly biased in the direction of said switch rail reciprocally secured in transverse horizontal alignment with said switch rail at said point and electrical contact means associated said plunger assembly for reporting contact or the lack of contact between said switchrail and said stockrail,
adjustable means on said switch rail at said point for reciprocating said plunger assembly, causing said electrical contact means to report when said switchrail is in physical contact with said stockrail at said point,
said detector mechanism having a closed housing containing said electrical contact means,
said plunger assembly having a contact end adjacent said stock rail and a remote end
said electrical contact means comprising electrical contact members secured in said housing and a male contact element on said remote end for contacting said electrical contact members when said plunger assembly is reciprocated, and
heating means associated with said switchpoint and adapted to disseminate heat in response to contact between said rails as detected by said detector mechanism.

5,348,258
Z-BRACKET CAMPER JACK MOUNTING ASSEMBLY
C. Martin Rasmussen, 374 S. Stirling Dr., Fruit Heights, Utah 84037
Filed Nov. 30, 1992, Ser. No. 983,073
Int. Cl.[5] B66F *13/00*
U.S. Cl. 248—218.4 6 Claims



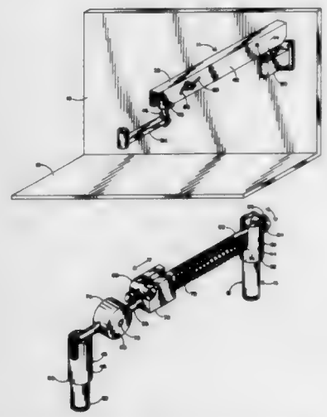
1. An apparatus for mounting a camper jack onto a camper body comprising a mounting bracket securely attachable to the camper body, said mounting bracket consisting of a first flat portion, a second flat portion, and a third flat portion, said three flat portions being formed integrally into a generally Z-shaped configuration capable of supporting the weight of the camper body, wherein the second portion forms the middle of the mounting bracket and the first and third portions extend perpendicularly from opposite ends of the second portion and in opposite directions, such that when said mounting bracket is attached to the camper body, the first and second portions are secured to a corner edge of the camper body, and the third portion projects outwardly from the camper body, said third portion providing an attachment site for a camper jack.

5,348,259
FLEXIBLE, ARTICULABLE COLUMN
Ernesto E. Blanco, Belmont, Mass., and William Schnorr, Houston, Tex., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Feb. 10, 1992, Ser. No. 833,237
Int. Cl.[5] E04G *3/00*
U.S. Cl. 248—276 16 Claims



1. A flexible, articulable column having an axis defined by a cable tensioning member comprising:
a series of balls and socket members slidably strung along the cable tensioning member to form articulable joints;
each socket member having at least one generally conical opening with internal "V" shaped teeth engagable with one of said balls;
the ball being softer than the socket such that when the cable applies tension, pulling the balls and sockets together, the teeth indent the balls and the column becomes rigid.

5,348,260
MOVABLE SUPPORTING ARM
Rodolfo J. Acevedo, Alta Loma, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Feb. 8, 1993, Ser. No. 15,955
Int. Cl.[5] E04G *3/00*
U.S. Cl. 248—280.1 18 Claims



1. A positionable supporting arm comprising:
a pivot post, means for engaging said pivot post for supporting said arm;
an arm housing adjacent said pivot post, a pivot pin engaging said pivot post and said arm housing;
a mounting post, a pivot pin engaging said arm housing and said mounting post;
a connecting rod, a pivot pin interconnecting said connect-

ing rod and said pivot post, a pivot pin interconnecting said connecting rod and said mounting post, said pivot pins being positioned so that said mounting post always lies substantially parallel to said pivot post;

a counter-balance spring engaged between said connecting rod and one of said posts so as to urge said mounting post upward when said pivot posts and said mounting posts are in an upright position, wherein said counter-balance spring includes a spring block movably mounted with respect to said connecting rod, and further includes means to position said spring block at a selected position with respect to said pivot post, and wherein said spring block comprises a threaded screw engaged between said pivot post and said tension block and said spring is a compression spring; and

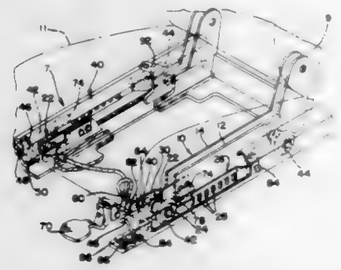
means interconnecting said connecting rod and said arm housing to claim said connecting rod to said arm housing to position said mounting post in a selected position.

5,348,261

LOW MASS MANUAL TWO-WAY SEAT ADJUSTER

James P. Nini, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 21, 1992, Ser. No. 993,546
Int. Cl.[5] B60N *2/00*
U.S. Cl. 248—430 **10 Claims**



10. An adjuster for fore and aft positioning of a vehicle seat frame, the adjuster comprising:

a pair of parallel elongate channels secured to the floor of the vehicle, both channels having an inner space generally defined by vertical, upper and lower inner surfaces, the lower inner surface being concave upwardly;

at least one tubular axle;

a plurality of independent rollers, at least one of the rollers being mounted on at least one tubular axle, each of the rollers being secured to and supporting opposite sides of the seat frame and being aligned for rolling along the channel lower surfaces, the roller cross-sectional profile being generally aligned with the channel lower inner surface;

independent guide means secured to the seat frame, at least one guide means separately extending into each channel's inner spaces and continually contacting and sliding against the upper surface of the channel's inner space;

locking means to selectively secure the seat frame to at least one of the channels at a plurality of predetermined positions, the locking means extending through the tubular axle; and

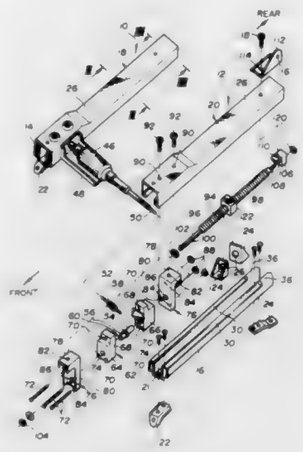
stop means to limit fore and aft travel of said seat to a predetermined distance.

5,348,262

POWER SEAT SLIDE DEVICE

Tohru Isomura, Kanagawa, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan

Continuation of Ser. No. 708,703, May 31, 1991, Pat. No. 5,267,717. This application Sep. 17, 1993, Ser. No. 122,665
Claims priority, application Japan, Sep. 26, 1990, 2-100611[U]
Int. Cl.[5] B60N *1/08*
U.S. Cl. 248—430 **5 Claims**



1. A seat slide device comprising:

a stationary rail including

a first bottom wall portion, first and second inside wall portions vertically upwardly extending from respective side ends of said first bottom wall portion, first and second upper wall portions outwardly extending from upper ends of said first and second inside wall portions, respectively, and first and second outside wall portions vertically downwardly extending from outer ends of said first and second upper wall portions, respectively,

each of said first and second upper wall portions being grooved at a major portion thereof for receiving ball bearings thereon and being convexly curved at a rear end portion thereof in a plane perpendicular to a longitudinal axis of said stationary rail, said major portion and said rear end portion being united,

said rear end portion being higher than said major portion such that said rear end portion overlaps with one of said ball bearings with respect to a direction along said longitudinal axis of said stationary rail and serves as a stopper of the sliding movement of said one of said ball bearings on said major portion;

a movable rail axially slidably engaged with said stationary rail, said movable rail including

an upper wall portion, first and second movable rail outside wall portions vertically downwardly extending from respective side ends of said upper wall portion, first and second movable rail bottom wall portions inwardly horizontally extending from lower ends of said first and second movable rail outside wall portions, respectively, and first and second movable rail inside wall portions vertically upwardly extending from inner ends of said first and second movable rail bottom wall portions, respectively;

a front bracket secured to a front end portion of said bottom wall portion of said stationary rail; and

a rear bracket secured to a rear end portion of said bottom wall portion of said stationary rail through at least one bolt;

wherein said stationary and movable rails are so assembled that said first movable rail inside wall portion is disposed between said first inside wall portion of said stationary rail and said first outside wall portion of said stationary rail, and said second movable rail inside wall portion is disposed between said second inside wall portion of said stationary rail and said second outside wall portion of said stationary rail;

wherein a front end of said convexly curved rear end portion is positioned ahead of said at least one bolt with respect to said direction along said longitudinal axis of said stationary rail.

5,348,263

PORTABLE EXPANDABLE LAP DESK

Frank M. Hubbard, 118 Wig Hill Rd., Chester, Conn. 06412

Filed Oct. 18, 1993, Ser. No. 138,347
Int. Cl.[5] A47B *97/04*
U.S. Cl. 248—444 **12 Claims**



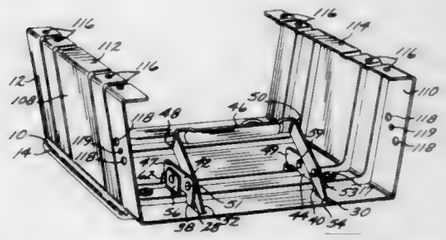
1. A portable expandable desk article comprising a first substantially rigid flat surface member; a second substantially rigid flat surface member; a means for hingedly attaching the first surface member to the second surface member so that the first and second surface members are capable of folding together; and a means for bracing the first surface member and the second surface member in an unfolded position wherein the bracing means comprises a gripping means to prevent the bracing means from inadvertently disengaging from the first or second surface member wherein the width of the second surface member is greater than the width of the first surface member to provide a storage surface for storing the bracing means when the first and second surface members are in a folded position.

5,348,264

QUICK RELEASE SEAT PEDESTAL

Jeffrey P. Few, West Hills, Calif., and William B. Leftwich, Elkhart, Ind., assignors to Norco Industries, Inc., Compton, Calif.

Filed May 28, 1993, Ser. No. 68,849
Int. Cl.[5] A47B *97/00*
U.S. Cl. 248—503.1 **25 Claims**



1. A quick release pedestal seat mount to support a passenger seat from the floor of a recreational vehicle of the type designed to travel in a forwardly longitudinal direction and comprising:

a base plate for mounting on .said floor and including a pair of laterally spaced apart fastening slots and a plurality of hold down openings;

a seat mounting box to be disposed in a locking position over said base plate and including a bottom wall disposed over said base plate and formed with a pair of clearance slots aligned over said base plate fastening slots, said box further including upstanding side walls formed at their upper extremities with seat mount flanges;

a plurality of hold down cleats carried from said bottom wall and engageable when said box is in said locking position, with the respective said hold down openings to hold said box down on said plate;

a pair of ears mounted on said bottom wall forwardly of said clearance slots;

a pair of longitudinally extending rocker arms pivotally mounted on said ears and formed on their rearward extremities with downwardly projecting dogs configured to project through the respective said clearance slots to engage said base plate fastening slots;

bias means interposed between said rocker arms and said bottom wall to bias said rocker arms in a predetermined rotary direction to urge said dogs into engagement with said base plate fastening slots;

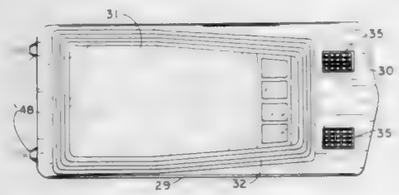
a pair of elongated kicker arms for pivotal mounting from the respective rearward extremities of the respective said rocker arms adjacent the respective said ears, joined on their respective one extremities by a transverse handle and formed on the respective opposite ends with respective nose cams for engagement with said base plate, said kicker arms being operative upon rotation thereof in one direction of rotation from a retracted position to engage the respective said nose cams with said base plate and upon continued rotation in said one direction to a disengagement position, to rotate said kicker arms in the direction opposite said predetermined direction against said bias means to raise the respective said dogs clear of the respective said fastening slots; and pivot pins mounting the respective said kicker arms from said rocker arms.

5,348,265

AIR CUSHION SUPPORTED SECONDARY STRUCTURE

Donald E. Burg, 15840 SW. 84 Ave., Miami, Fla. 33157

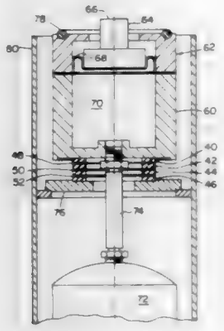
Continuation-in-part of Ser. No. 180,246, Apr. 11, 1988, abandoned, which is a continuation-in-part of Ser. No. 514,123, Apr. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 804,235, Dec. 5, 1991, Pat. No. 5,207,408. This application Apr. 27, 1993, Ser. No. 53,910
Int. Cl.[5] B63B *17/00*
U.S. Cl. 248—550 **25 Claims**



1. Apparatus to provide support for a secondary structure relative to a parent structure comprising:

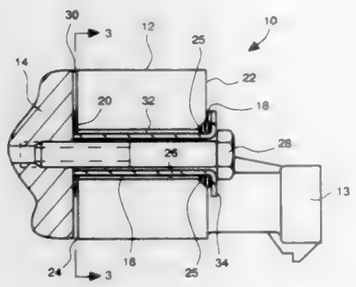
multiple secondary structure supporting gas cushions disposed, at least in part, between the secondary structure and the parent structure with a sum of upper surface areas of said secondary structure supporting gas cushions equaling a majority of a secondary structure lower surface area, a gas pressurization means for supplying pressurized gas to said secondary structure supporting gas cushions, and a gas pressure regulating device to control gas pressures in at least one of said secondary structure supporting gas cushions to thereby provide orientation control of the secondary structure relative to the parent structure.

5,348,266
REDUCED HORIZONTAL STIFFNESS VIBRATION ISOLATION SYSTEM
Maurice Gertel, Chestnut Hill, and Robert G. Haynes, Woburn, both of Mass., assignors to Kinetic Systems, Inc., Boston, Mass.
Filed Mar. 27, 1992, Ser. No. 858,569
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—562 12 Claims



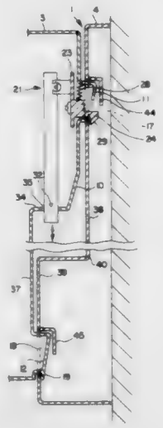
1. A reduced horizontal stiffness vibration isolation system comprising:
a gas spring assembly having a vertical axis and including a load support interface portion and a rolling convolution type flexible gas seal and a piston receivable by said seal; and
pivot means, externally coupled to said gas spring assembly, for allowing said gas spring assembly to pivot when at least one of said load support interface portion and said pivot means is displaced in a direction other than along said vertical axis, to reduce the horizontal stiffness of the gas spring assembly.

5,348,267
APPARATUS FOR ISOLATING A SENSOR
Mark L. Lanting, Portage; Alan R. Davis, Plainwell, and Stephen A. Edelen, Battle Creek, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio
Filed Sep. 18, 1992, Ser. No. 947,148
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—635 14 Claims



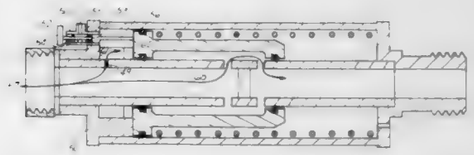
1. Apparatus for isolating a sensor from a vibrating surface, the sensor having first and second spaced surfaces, a bore extending between the surfaces and a groove in the second surface, the apparatus comprising:
a sleeve extending through the bore to the vibrating surface, the sleeve being sufficiently long when extending through the bore to provide a first gap between the vibrating surface and the second surface of the sensor and sufficiently narrow when extending through the bore to provide a second gap between the sleeve and the sensor in the bore, washer means cooperating with said sleeve and overlaying the first surface of the sensor and the second gap;
means for fixedly attaching the sleeve and said washer means to the vibrating surface, the attaching means extending through the bore and into engagement with the vibrating surface;
a first elastomeric isolation means positioned between the first surface of the sensor and the washer means where it overlays the first surface and the second gap, the first elastomeric isolation means spacing the sensor from the sleeve and the washer means; and
a second elastomeric isolation means positioned in the groove of the second surface and abutting the vibrating surface and space the sensor from the vibrating surface and the sleeve, such that the sensor floats between the first and second elastomeric isolation means in isolation from the sleeve, the washer means and the vibrating surface.

5,348,268
HOUSING HOLDER FOR A MEDICAL MONITOR
Traugott Klein, Herrenberg, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Nov. 9, 1992, Ser. No. 973,783
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1992, 9210835[U]
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—681 10 Claims



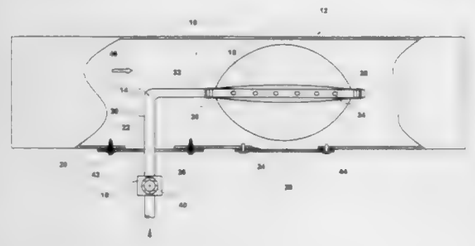
1. A medical apparatus comprising:
a housing reception unit having at least two recesses;
a medical monitor having a monitor housing with at least two protrusions which are provided on a back wall thereof and which are arranged such that they are adapted to be inserted into the recesses of the housing reception unit;
at least one of said protrusions having a stationary, essentially downwardly directed projection for engagement with a side of the housing reception unit facing away from the monitor housing, the engagement being effected in the area of at least one the recesses;
at least one additional of said protrusions being equipped with a snap means for engagement with the side of the housing reception unit facing away from the monitor housing, such engagement being effected in the area of another one of the recesses, the snap means including a downwardly directed hook which is provided with a ramp surface for an edge of a complementary recess of the housing reception unit, the ramp surface being arranged such that it extends at an angle to a plane of the back wall of the monitor housing, the snap means further including a spring which is arranged between the hook and the monitor housing and by means of which said hook is spring loaded in the downward direction;
the back wall of the monitor housing defining between its upper area and its lower area a receding step extending in the direction of an inner side of the monitor housing;
the housing reception unit defining between its upper area and its lower area a projecting step which extends in the direction of the monitor housing and which is located below the receding step in the back wall of the monitor housing in spaced relationship therewith; and
an actuating member connected to the snap means in an area of said snap means located within the monitor housing and extending through an opening in the step in the back wall of the monitor housing, said actuating member being arranged for unlocking the snap means against its spring loading.

5,348,269
INLINE PNEUMATIC/MECHANICAL FLOW CONTROL VALVE SYSTEM
Brian Moseley, P.O. Box 2534 Gardist St., Duarte, Calif. 91010
Filed Jul. 23, 1993, Ser. No. 96,609
Int. Cl.[5] F16K *31/122*
U.S. Cl. 251—33 7 Claims



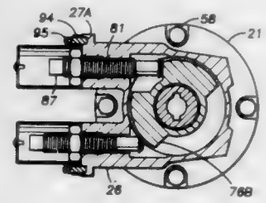
1. A fluid actuated, timer valve system for providing a flow of fluid for a predetermined flow time, comprising:
a housing having first and second ends containing a longitudinal flow piece, said longitudinal flow piece having first and second ends wherein there are provided fluid ingress and egress apertures, respectively, and a passage therebetween, said longitudinal flow piece having formed generally medially therein a blocking member, forming first and second main flow chambers, said first main flow chamber having formed therein a sample flow passage and a first fluid transfer port formed therein, said second main flow chamber having formed therein a second transfer port, said longitudinal flow piece having formed thereabout a piston chamber;
a piston situated in said piston chamber, said piston having first and second ends and a secondary flow chamber formed therebetween, said piston slidingly enveloping said longitudinal flow piece such that said secondary flow chamber communicates with said first transfer port and said second transfer port when said piston is disposed near the first end of said housing, allowing the free flow of fluid from said first transfer port to said second transfer port, allowing for indirect fluid flow from said first main flow chamber to said second main flow chamber via said first transfer port and said second transfer port, said piston further slidingly enveloping said longitudinal flow piece such that said flow between said first transfer port and said second transfer port is blocked when said piston is disposed near the second end of said housing;
bias means directed generally from said second end of said housing against said piston, for urging said piston away from said second end;
said sample flow passage formed in said first main flow chamber configured to provide a metered flow of fluid from said first main flow chamber into said piston chamber, providing bias generally against the first end of said piston, such that said piston is slidingly directed towards said second end of said housing with the application of a predetermined degree of bias, interrupting fluid from said first transfer port to said second transfer port when said piston is disposed near the second end of said housing.

5,348,270
BLADDER DAMPER
Khanh Dinh, 1618 SW. 76th Terr., Gainesville, Fla. 32607
Filed Oct. 20, 1992, Ser. No. 963,662
Int. Cl.[5] F16K *31/145*
U.S. Cl. 251—61.1 17 Claims



1. An apparatus comprising:
(A) a ventilation duct having a sidewall; and
(B) a normally open damper provided in said ventilation duct, said damper comprising
(1) a support element which is generally L-shaped and which has first and second legs, said first leg being attached to said sidewall of said ventilation duct and said second leg being positioned in said ventilation duct; and
(2) an inflatable bladder which is attached to and surrounds said second leg of said support element, which permits virtually unobstructed airflow through said ventilation duct when deflated, and which restricts airflow through said ventilation duct when inflated, said bladder presenting an aerodynamic profile in both a deflated, open state and a partially inflated, partially closed state, said aerodynamic profile facilitating airflow past said bladder.

5,348,271
LOCKING DEVICE
Charles D. Owen, Houston; Michael E. Rembert, Cypress, and Albert S. Davis, Richmond, all of Tex., assignors to Bettis Corporation, Waller, Tex.
Division of Ser. No. 968,364, Oct. 29, 1992, Pat. No. 5,329,959.
This application Mar. 17, 1994, Ser. No. 214,779
Int. Cl.[5] F16K *35/06*
U.S. Cl. 251—95 2 Claims



1. A valve locking device, wherein the opening and closing of said valve is controlled by a valve actuator, said locking device comprising:
housing member releasably secured to both said valve and said actuator, said housing member having a central cavity for receiving an oscillatable hub member;

said oscillatable hub member having means engageable with both said actuator and said valve's stem for translating actuator motion into valve motion between an open and a closed position;

lug means carried by said hub member, and movable therewith, said lug means presenting a plurality of stop surfaces engageable with a stop member;

said housing member further including a pair of threaded, stop member receiving, aperture means in communicating relationship with said housing cavity, said pair of aperture means being parallel to, on opposite sides of, and substantially equidistant from the axis of said hub;

at least one said stop member being threadedly adjustably received by one of said threaded aperture means, each said stop member including means for substantially orthogonally engaging one of said lug means' stop surfaces whereby the reactive force exerted by said stop surface against said stop member is substantially axial of said stop member to reduce bending stress in said stop member; and

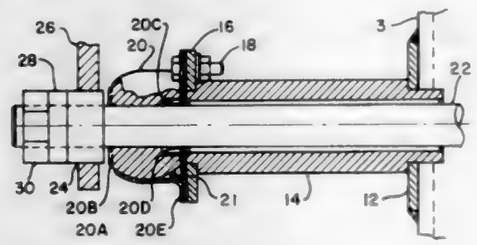
threaded means carried by each stop member for adjustably and releasably locking each respective stop member against its respective stop surface when said respective stop members and surfaces are so substantially orthogonally engaging.

5,348,272

DAMPER WITH IMPROVED DRIVE SHAFT BEARING ASSEMBLY

Edward Lukstas, Windsor; Jeffrey S. Mann, Broad Brook, both of Conn., and Ronald J. Tenerowicz, Agawam, Mass., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 31, 1993, Ser. No. 40,765
Int. Cl.[5] F16K *41/00*
U.S. Cl. 251—214 **15 Claims**



1. A damper assembly which comprises:

a damper blade;

a housing having a passageway therein dimensioned and configured for receiving said damper blade;

a shaft carrying said damper for rotational movement in said passageway in said housing;

a bearing disposed at a first axial extremity of said shaft, said bearing including a bearing housing member having an interior cavity therein which is spherical section shaped and a bearing member disposed in said cavity having an outer surface that is a spherical section dimensioned and configured for cooperation with said interior cavity of said bearing housing member, said bearing member having a bore tightly engaging said shaft, said bore having inboard and outboard ends, said inboard end including a counterbore disposed in concentric relationship with said shaft and said bore at the inboard end thereof;

a loaded seal disposed in said counterbores intermediate said shaft and said bearing member; and

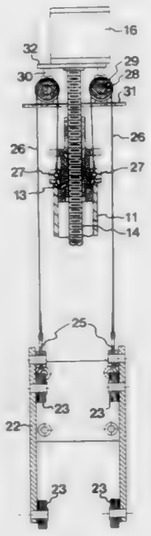
means for supporting said bearing on one side of said passageway of said housing.

5,348,273

LIFTING APPLIANCE, ESPECIALLY FOR A PATIENT LIFTING DEVICE

Anders L. Sandell, Landskrona; Leif B. Sonesson, Eslöv, and Bo G. Persson, Löddeköpinge, all of Sweden, assignors to Arjo Hospital Equipment AB, Eslöv, Sweden

Continuation of Ser. No. 597,697, Oct. 17, 1990, abandoned.
This application Jul. 20, 1993, Ser. No. 93,631
Claims priority, application Sweden, Oct. 17, 1989, 8903411-0
Int. Cl.[5] B66F *11/00, 17/00*
U.S. Cl. 254—385 **12 Claims**



1. Lifting appliance, especially for a patient lifting device, said lifting appliance comprising:

a column made up of two telescopically cooperating column elements,

means for adjusting the position of said column elements relative to each other in order to change the length of said column, said adjusting means including a driving motor mounted on one of said column elements,

a carriage movably mounted on one of said column elements,

moving means for moving said carriage, said moving means including two belts each having a first end and a second end, said belts being attached to said carriage at said first ends,

two belt attachments located on one of said column elements,

said second ends of said belts attached to one of said belt attachments,

belt tension sensing means for stopping said driving motor in case of insufficient belt tension in at least one of the belts, said belt tension sensing means comprises a belt tensioning element yieldably mounted on one of said column elements to yieldably engage both of said belts between said first ends and said second ends, and

driving motor control means for controlling said driving motor in response to the position of said belt tensioning element of said belt tension sensing means,

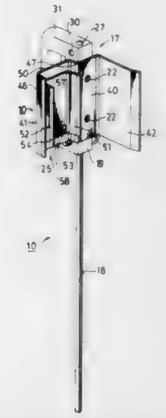
the belt tension sensing means further comprising a connecting arm operatively connected to both of the belts, the connecting arm being shifted in response to sufficient belt tension and the driving motor control means being responsive to shifting of the connecting arm to thereby stop driving of the driving motor.

5,348,274

ELECTRICAL OUTLET BOX LOCATOR

Thomas Breen, R.D. #1, Wiley Rd., Savannah, N.Y. 13146

Filed Jul. 15, 1993, Ser. No. 92,396
Int. Cl.[5] B25B *1/20*
U.S. Cl. 269—3 **6 Claims**



1. An apparatus for locating and positioning an electrical outlet box adjacent a vertical wall stud having an exposed front surface upon which wall board is to be affixed, said apparatus comprising:

handle means having a flat vertically disposed front face and hand grippable means,

a plate having a vertically disposed flat section being secured to the front face of said handle means;

said plate including a channel shaped section rearwardly extended from one side of said flat section having parallel inner and outer side walls each being perpendicularly aligned with said flat section and a back wall being in parallel alignment with said flat section;

said plate further including a stud engaging wall section extending forwardly from the other side of said plate and being in parallel alignment with the inner wall of said channel section and separated therefrom a distance about equal to the width of the wall stud;

clamping means mounted inside said channel section having parallel arms supported by a back plate with a top and bottom edge extending between the arms, said parallel arms being arranged to move into biasing contact against the interior side wall surfaces of an electrical outlet box, said clamping means for releasably retaining the side walls of said electrical outlet box between said parallel arms so that the interior top and bottom wall surfaces of the box come into registration, respectively, with the top and bottom edges of said back plate when the box is fully inserted into said clamping means; and

elongated support means of a predetermined length being removably attached to said handle means and vertically disposed thereto for locating said fully inserted electrical outlet box in a predetermined location relative to said vertical wall stud.

5,348,275

TUNDISH NOZZLE ASSEMBLY BLOCK

Madjid Soofi, St. Charles, Ill., assignor to Magneco/Metrel, Inc., Addison, Ill.

Filed Jul. 26, 1993, Ser. No. 97,155
Int. Cl.[5] B22D *41/50*
U.S. Cl. 266—236 **20 Claims**

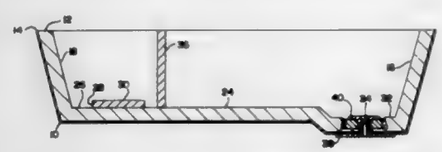
1. A tundish vessel comprising:

a floor, a back wall, a front wall, a pouring region, and at least one drain region;

a nozzle assembly block in the drain region, the nozzle assembly block including:

a lower main block including an inner wall defining a hollow portion, an outer wall, and top and bottom walls extending between the inner and outer walls; and

a selectively removable top sleeve including a horizontal extension adjacent to the tundish floor which covers the top wall of the lower main block, a vertical extension intersecting the horizontal extension which covers the



inner wall of the lower main block, and an inner hollow portion defined by the vertical extension for receiving a drain nozzle;

the horizontal extension including an upper surface which is at least as high as the tundish floor adjacent to the tundish floor; and

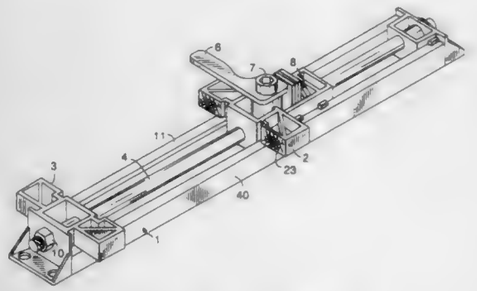
a drain nozzle at least partially inside the inner hollow portion of the top sleeve and separate from the lower main block.

5,348,276

SLIDE BAR CLAMP AND STRAIGHT EDGE

Paul N. Blacker, Tewksbury, Mass., assignor to Trend-Lines, Inc., Chelsea, Mass.

Filed Mar. 31, 1993, Ser. No. 40,556
Int. Cl.[5] B25B *1/10*
U.S. Cl. 269—88 **18 Claims**



1. A mountable straight edge comprising:

a base having a channel and a straight surface running longitudinally along and adjacent to the channel;

a rod fixed within the channel;

a first clamp surface, perpendicular to the straight surface, fixedly mounted to said base; and

a movable lock and clamp structure, mounted within the channel so as to be longitudinally movable along said rod, including a second clamp surface facing said first clamp surface and a lock having a locked position in which said rod is engaged by said lock to prevent said lock and clamp structure from moving in a direction away from said first clamp surface wherein the lock comprises a housing, a plurality of lock plates arranged face to face and located within the housing with each lock plate having a hole through which said of extends and a handle rotatably mounted to a pivot point on the housing, the handle having a narrowed portion relative to the pivot point and a transition portion that increasingly widens into a cam portion, said movable lock and clamp structure being freely movable along said rod when the handle is in an unlocked position with the lock plates leaning on the narrowed portion and said lock and clamp structure being

prevented from moving in a direction away from said first clamp surface as the handle is rotated to engage the lock plates with the transition portion and then the cam portion and wherein movement of the handle from the unlocked position to the locked position pushes the second clamp surface toward said first clamp surface.

5,348,277

APPARATUS FOR FOLDING WEB MATERIAL

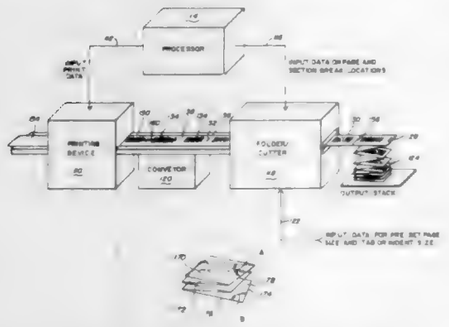
H. W. Crowley, Newton, Mass., assignor to Roll Systems, Inc., Burlington, Mass.

Continuation of Ser. No. 761,692, Sep. 18, 1991, Pat. No. 5,131,640, which is a continuation of Ser. No. 534,724, Jun. 7, 1990, Pat. No. 5,065,992. This application Jul. 13, 1992, Ser. No. 912,822

The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.

Int. Cl.[5] B41L *1/32*; B31B *1/26*

U.S. Cl. 270—39 4 Claims



1. A stack of zig-zag folded web sections comprising:

a stack of zig-zag folded web defining a plurality of pages interconnected in a zig-zag pattern, the stack comprising at least three sections of pages adjacent each other, adjacent sections having adjacent pages, wherein at least one of the adjacent pages in the adjacent sections includes a page length unequal to the length of other pages in the section that includes the unequal length page and wherein the pages and the unequal length page of each section are unequal in length to respective pages and unequal length pages of other pages in the stack so as to form a tiered stack.

5,348,278

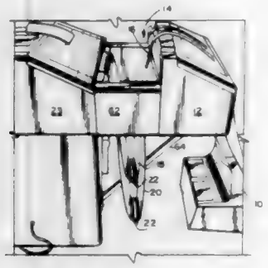
PAPER WEB SEPARATOR AND GUIDING APPARATUS

Robert S. Ring, Rochester, N.H., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Feb. 16, 1993, Ser. No. 18,302

Int. Cl.[5] B65H *39/06*

U.S. Cl. 270—52 11 Claims



1. A web handling device comprising:

web splitter cutting a moving web along a centerline into at least two split web sections;

web deflector downstream of said moving web and receiving said split web sections, said web deflector having a first and second elements, said deflector having a first position wherein said first element displaces a right web section of said split web sections over a left web section of said split web sections, and said deflector having a second position wherein said second element displaces the left web section over the right web section;

tension device receiving said split web sections downstream from said web deflector, said split web sections being substantially superimposed when received by said tension device, said tension device comprising first and second web guide surfaces oriented to untwist said split web sections, and

web processing device receiving said split sections downstream of said tension device.

5,348,279

METHOD AND DEVICE FOR STAPLING STACKS OF SHEETS

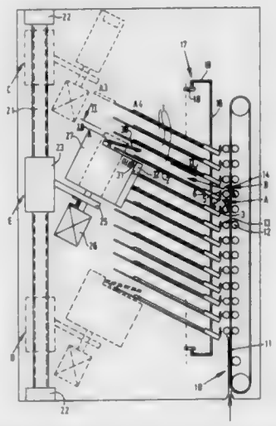
Augustines W. M. Lambregts; Johannes H. P. Remmen, and Hubertus G. A. Deckers, all of Venlo, Netherlands, assignors to Oce-Nederland, B.V., Ma Venlo, Netherlands

Filed Mar. 11, 1993, Ser. No. 29,587

Claims priority, application Netherlands, Mar. 27, 1992, 9200570

Int. Cl.[5] B42C *1/12*

U.S. Cl. 270—53 5 Claims



1. An apparatus for stapling stacks of sheets in parallel bins, comprising:

a plurality of bins having a surface for storing stacks of sheets, and

a stapler movable in a vertical direction with respect to said bins to a position adjacent to two of said bins, said stapler at said adjacent position being rotatable about an axis perpendicular to said surface of said bins between an inoperative position and an operative position, said stapler being provided with a pressure surface such that when said stapler is in said operative position, a stack of sheets in one of said adjacent bins is displaced by said pressure surface in a direction along said bin surface while a stack of sheets in the other of said adjacent bins is stapled by said stapler.

5. A method of stapling stacks of sheets in parallel bins of a sheet stacking apparatus with a stapler which can be moved into a stapling position relative to each bin, the method comprising:

positioning said stapler into a stapling position adjacent to two of said bins,

rotating said stapler about an axis perpendicular to a sheet support surface of said bins between an inoperative position and an operative position,

placing a staple in a stack of sheets in one of said adjacent bins while said stapler is in said operative position, and

displacing a stack of sheets in the other of said adjacent bins along said support surface while rotating said stapler to said operative position.

5,348,280

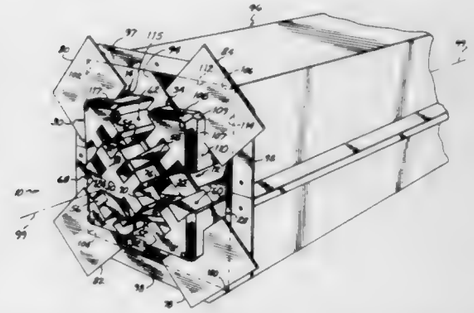
APPARATUS FOR ALIGNING MULTILATERAL TUBE SECTIONS

Victor J. Vogel, Oak Ridge, N.J., assignor to Mosler, Inc., Wayne, N.J.

Filed Mar. 26, 1993, Ser. No. 37,251

Int. Cl.[5] B23Q *3/14*

U.S. Cl. 269—48.1 10 Claims



1. An alignment tool for aligning internal surfaces of multilateral tube sections preparatory to the tube sections being joined, each of the multilateral tube section shaving a number of internal surfaces forming a like number of included corners therebetween, the alignment tool comprising:

a frame;

a toggle actuator;

at least two toggle links, each of said toggle links having one end pivotally connected to said toggle actuator at a first pivot point; and

at least two aligning members slidably mounted on one side of said frame, each of said aligning members being pivotally connected to an opposite end of one of said toggle links at a second pivot point, said aligning members adapted to move in a first direction toward the internal surfaces of the multilateral tube section in response to motion of said toggle actuator, each of said aligning members having two outwardly facing nonparallel bearing surface areas oblique with said first direction and adapted to contact two of the internal surface forming one of the included corners;

5,348,281

SHEET REFEEDING DEVICE FOR USE IN PRINTING APPARATUS HAVING A TIMED PRESSING MEMBER

Yasushi Yamada; Tsuyoshi Mizubata, and Masaru Ushio, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 885,317, May 18, 1992, abandoned. This application Jun. 7, 1993, Ser. No. 73,963

Claims priority, application Japan, May 22, 1991, 3-146764; May 22, 1991, 3-146765; May 22, 1991, 3-146766; Jun. 20, 1991, 3-176233; Jun. 20, 1991, 3-176234

Int. Cl.[5] B65H *5/22*

U.S. Cl. 271—3.1 11 Claims

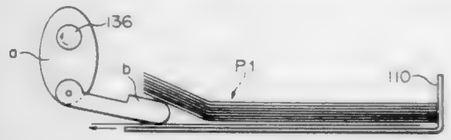
1. A sheet feeding device for an image forming apparatus including processing means for recording images onto recording sheets, comprising:

(a) stacking means for sequentially stacking at least two groups totaling a set number of recording sheets on which a first image has been formed by the processing means;

(b) feeding means for sequentially feeding each of said sheets of said groups stacked on said stacking means to the processing means for a second image to be formed, said feeding means coming into contact with the lowermost sheet of each of said groups of said stacked sheets;

(c) sheet pressing means for respectively pressing said groups of stacked sheets toward said feeding means;

(d) feeding start control means for controlling said feeding



means to start feeding the lowermost sheet of a first of said groups when a predetermined number of recording sheets is stacked in said stacking means, said predetermined number being less than said set number; and

(e) pressing control means for controlling said sheet pressing means to apply pressure on a first group of said groups of stacked sheets before said feeding start control means controls the feeding means to start feeding, and to apply pressure to a second group of said groups of recording sheets when such second group is stacked in said stacking means.

5,348,282

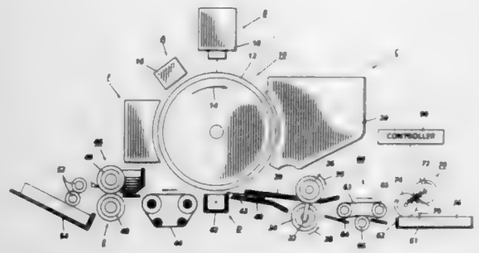
SELF ADJUSTING FEED ROLL

Injae Choi, and Joseph J. Ferrara, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 4, 1993, Ser. No. 131,249

Int. Cl.[5] B65H *3/06*

U.S. Cl. 271—117 17 Claims



1. An automatically self-adjusting nudger roll system for use in a friction retard feeder for feeding substrates from a stack to a retard mechanism, comprising:

a drive roll mounted on a rotatable, fixed first shaft;

an idler roll mounted on a rotatable, movable second shaft;

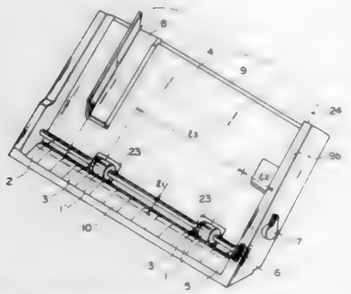
a spring attached to both of said first and second shafts for contactedly connecting outer surfaces of said drive roll and said idler roll, said second shaft being adapted for movement with respect to said first shaft in order to move the outer surface of said idler around the outer surface of said drive roll such that the normal force of said idler roll against the stack is automatically adjusted to an optimum value according to the characteristics of substrates being fed.

5,348,283

SHEET FEEDING APPARATUS HAVING SHEET SEPARATING MEANS WITH ADJUSTABLE FEEDING FORCE

Haruyuki Yanagi; Tetsuo Suzuki; Soichi Hiramatsu, all of Yokohama; Takashi Nojima, Tokyo, and Satoshi Saikawa, Inagi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 28, 1992, Ser. No. 920,917
Claims priority, application Japan, Jul. 30, 1991, 3-190351
Int. Cl.[5] B65H *1/08*
U.S. Cl. 271—127 25 Claims



1. A sheet feeding apparatus, comprising:
sheet supporting means for supporting sheets thereon;
a plurality of rotary sheet supply means for feeding out the sheets from said sheet supporting means by sheet feeding force;
separating means for separating the sheets one by one by regulating a front corner of a sheet to be fed out by said plurality of rotary sheet supply means; and
a pair of guide members for regulating both lateral edges of the sheets supported by said sheet supporting means, wherein one guide member of said pair of guide members is located near said separating means and is fixed and the other one guide member of said pair of guide members is movable in accordance with the sizes of the sheets.
wherein a sheet feeding force of one of said plurality of rotary sheet supply means located closest to said separating means is greater than a sheet feeding force of the remainder of said plurality of rotary sheet supply means.

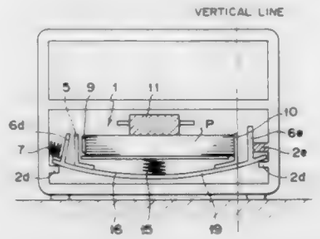
5,348,284

SHEET SUPPLY APPARATUS

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Claims priority, application Japan, Aug. 31, 1992, 4-255468; Jul. 29, 1993, 5-188437
Int. Cl.[5] B65H *1/12*
U.S. Cl. 271—160 16 Claims

1. A sheet supply apparatus, comprising:
sheet containing means for containing a plurality of sheets;
a sheet positioning member provided in said sheet containing means for positioning the sheets in a widthwise direction thereof by abutting against a side edge of the contained sheets; and
supply means for feeding out the sheets positioned by said sheet positioning member;
wherein said sheet positioning member is previously inclined at a predetermined angle toward a direction opposite to a direction where said sheet positioning member may be inclined by deflection of said sheet containing means due



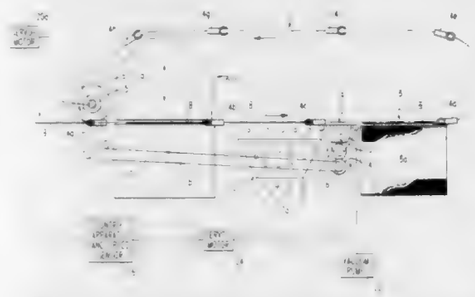
to a weight of the sheets contained in said sheet containing means.

5,348,285

HOLD-DOWN DEVICE ON HANDLING MACHINES, IN PARTICULAR PUNCHING MACHINES, FOR THIN, FLAT OBJECTS IN PARTICULAR SHEETS OF PAPER

Peter Hüser, Ellerau, Fed. Rep. of Germany, assignor to Blohm & Voss AG, Hamburg, Fed. Rep. of Germany

Filed Jan. 21, 1993, Ser. No. 6,329
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1992, 4201411
Int. Cl.[5] B65H *29/68, 29/32*
U.S. Cl. 271—183 6 Claims



1. Sheet punching apparatus for punching a series of sheets and subsequently delivering the punched sheets, said apparatus comprising:
means for punching the sheets;
means for stacking the punched sheets;
means for conveying the punched sheets from said punching means to said stacking means;
means for holding the sheets down prior to the sheets being stacked;
said holding means being disposed between said punching means and said stacking means with respect to a direction of travel of said conveying means;
said hold means comprising:
means for receiving the sheets, said receiving means being separate from said conveying means, for supporting the sheets prior to being stacked;
suction means for holding the sheets on said receiving means;
means for driving said receiving means;
means for driving said conveying means;
means for coordinating driven movement of said receiving means and said conveying means;
said coordinating means comprising means for synchronizing the driven movement of said receiving means and said conveying means;
said means for driving said conveying means being configured for driving said conveying means to convey the sheets through at least an acceleration phase and a deceleration phase;
said synchronizing means comprising means for synchronizing the driven movement of said receiving means with the acceleration and deceleration phases of said conveying means and decreasing the speed of said receiving means by a small amount with respect to that of said conveying means;
said synchronizing means being configured for providing a tension on each of the sheets as a result of the delay of the driven movement of said receiving means with respect to the acceleration and deceleration phases of said conveying means, the provided tension for being significantly less than a tear strength of each of the sheets;
said receiving means comprising at least one driven endless belt;
said at least one driven endless belt having an upper run, said upper run of said at least one driven endless belt for receiving the sheets thereupon and supporting the sheets;
said suction means being disposed below said upper run of said at least one driven endless belt;
said at least one driven endless belt comprising at least one opening for permitting the application of a suction force from said suction means onto an underside of the sheets to hold the sheets on said at least one driven endless belt;
said suction means comprising a suction box, said suction box being disposed below said upper run of said at least one driven endless belt;
said suction box comprising an upper portion disposed parallel to said upper run of said at least one driven endless belt;
said suction box being configured to provide the suction force through the at least one opening of said at least one driven endless belt to hold the sheets on said at least one driven endless belt;
said suction box comprising at least one opening, said at least one opening of said suction box being configured for being aligned with said at least one opening of said at least one driven endless belt to provide the suction force through said at least one opening of said at least one driven endless belt;
said at least one opening of said at least one driven endless belt comprising a plurality of openings;
said at least one opening of said suction box comprising a plurality of openings;
said plurality of openings of said suction box being configured for being aligned with said plurality of openings of said at least one driven endless belt;
a delivery station, said delivery station for being positioned adjacent said receiving means and being configured for receiving sheets from said receiving means;
said conveying mans comprises an endless feed chain, said feed chain comprising a plurality of grippers for successively gripping the sheets and releasing the sheets at said receiving means;
said feed chain having an upper run and a lower run, said lower run running in a direction parallel to said upper run of said at least one driven endless belt in the vicinity of said upper run of said at least one driven endless belt;
said means for driving said conveying means comprising first drive wheel means and a drive motor for driving said first drive wheel means;
said first drive wheel means being configured for transferring a driving force from said drive motor to said feed chain;
said means for driving said receiving means comprising:
second drive wheel means;
drive belt means extending from said first drive wheel means to said second drive wheel means, said drive belt means being configured for transferring a driving force from said first drive wheel means to said second drive wheel means;
said second drive wheel means being configured for transferring the driving force from said drive belt means to said at least one driven endless belt;
said synchronizing means comprising said drive belt means, said drive belt means being configured for decreasing the speed of said receiving means by a small amount with respect to that of said conveying means;
said first drive wheel means comprising a first drive wheel;
said second drive wheel means comprising a second drive wheel;
each of said first drive wheel and said second drive wheel being toothed;
said drive belt means comprising a toothed belt for being engaged with the teeth of said first drive wheel and the teeth of said second drive wheel;
said at least one driven endless belt having a total length defined along the travel of said at least one driven endless belt;
said plurality of openings of said at least one driven endless belt being disposed over a minor portion of the total length of said at least one driven endless belt;
said plurality of openings of said suction box for being aligned with said plurality of openings of said at least one driven endless belt such that a suction force is provided on each sheet only during a deceleration phase;
said second drive wheel being a drive pinion;
said second drive wheel means further comprising a pinion gear;
said drive pinion being engaged with said pinion gear to drive said pinion gear;
said at least one driven endless belt being at least one toothed belt;
said pinion gear being engaged with the teeth of said at least one driven endless belt to drive said at least one driven endless belt;
said at least one driven endless belt comprising at least two driven endless belts;
said at least two driven endless belts being disposed parallel to one another;
each of said at least two driven endless belts being configured to pass over a corresponding zone of said suction box;
said plurality of openings of said suction box being disposed solely in said zones over which said at least two driven endless belts pass;
each of said at least two driven endless belts being mounted on a generally triangular loop;
said second drive wheel constituting an apex of said generally triangular loop;
a pair of guide rollers, each of said pair of guide rollers being disposed in the vicinity of said feed chain;
said pair of guide rollers being disposed to carry said upper strand of said at least one driven endless belt therebetween; and
each of said pair of guide rollers constituting another corresponding apex of said generally triangular loop.

5,348,286

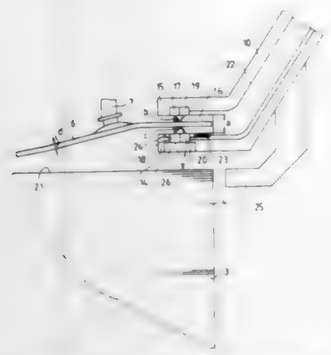
DEVICE FOR CONTROLLING AN INDIVIDUAL SEPARATION OF SHEETS INCORRECTLY SEPARATED FROM A SHEET PILE

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Filed Sep. 20, 1993, Ser. No. 124,168
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1992, 4231261
Int. Cl.[5] B65H *7/12*
U.S. Cl. 271—263 6 Claims

1. Device for controlling an individual separation of sheets incorrectly separated from a sheet pile, including a lifting device for lifting an uppermost sheet of the sheet pile so as to feed it to a machine associated therewith, and comprising means including first and second sets of parts of a contactless

measuring arrangement, the first set of parts being insertable between the lifted sheet and a remainder of the sheet pile, for measuring a thickness of the lifted sheet, and a circuit arrangement connected to the lifting device and said measuring arrangement for evaluating signals of the measuring arrangement regarding a presence of double or multiple sheets and generating a switching signal for starting or stopping the operation of the lifting device, said means being constructed as a bifurcated



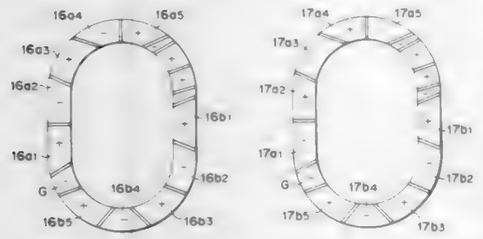
contact foot having two legs and a scanning gap defined therebetween, each of said legs, respectively, including one of said first and second sets of parts of said measuring arrangement for measuring the sheet thickness and, in a measuring position of said measuring arrangement, one of said legs being inserted between the lifted uppermost sheet, at a marginal region thereof, and the sheet pile remainder, the other of said legs being disposed above the lifted sheet, and the sheet being received in the scanning gap.

5,348,287

SHEET FEEDING APPARATUS USING A VIBRATION WAVE TO CONVEY SHEETS

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Filed Oct. 27, 1992, Ser. No. 966,827
Claims priority, application Japan, Oct. 29, 1991, 3-282924
Int. Cl.[5] B65H *5/12*
U.S. Cl. 271—267 **3 Claims**



1. A sheet feeding apparatus comprising:

(a) a first vibration member for feeding a sheet which is in contact therewith, said first vibration member including a first group of polarized electromechanical energy converting devices and a second group of polarized electromechanical energy converting devices; and

(b) a second vibration member for feeding a sheet which is in contact therewith, said second vibration member including a first group of polarized electromechanical energy converting devices, each of which correspond in location within said second vibration member to an electromechanical converting device in the first group of said first vibration member, and a second group of polarized electromechanical energy converting devices,

wherein the polarities of the converting devices of the first group of said first vibration member are opposite to the polarities of the corresponding converting devices of the first group of said second vibration member, and

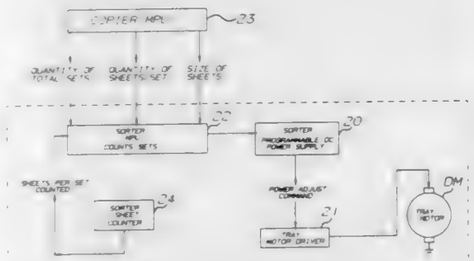
wherein each electromechanical energy converting device in the second group of said second vibration member corresponds in location within said second vibration member to an electromechanical energy converting device in the second group of said first vibration member, and wherein the polarities of the converting devices of the second group of said first vibration member are the same as the polarities of the corresponding converting devices in the second group of said second vibration member.

5,348,288

MOVING TRAY SORTER WITH VARIABLE TRAY SHIFTING MOTOR CONTROLLER

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Filed Sep. 27, 1993, Ser. No. 126,852
Int. Cl.[5] B65H *39/10*
U.S. Cl. 271—288 **6 Claims**



1. In a sheet sorting or collating apparatus having a number of trays extended horizontally in vertically spaced relation for receiving a number of sets of sheets of a varying number of sheets of variable sizes, tray shifting means for successively vertically moving said trays, whereby the force required to move said trays and sheets therein varies depending upon the number of trays, the number of sets, the number of sheets per set and the size of the sheets, the improvement wherein said tray shifting means includes a DC electric motor, motor control means for varying the power applied to said motor, and means for adjusting said motor control means responsive to the selection of a number of trays into which a corresponding number of sets are to be fed, the number of sheets per such set and the size of such sheets to increase or decrease the voltage to said motor as a function of the combined load thereon.

5,348,289

BREAKAWAY BASKETBALL RIM

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Continuation-in-part of Ser. No. 472,323, Jan. 30, 1990, Pat. No. 5,106,084. This application Feb. 18, 1992, Ser. No. 837,324
The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.
Int. Cl.[5] A63B *63/08*
U.S. Cl. 273—1.5 R **15 Claims**

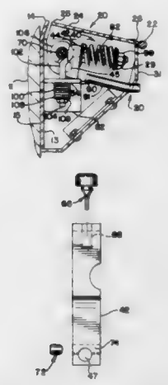
1. A basketball goal comprising:

support structure adapted to be mounted to a backboard;

a rim structure, including a rim, mounted to said support structure; and

a rim support structure including a shaft, a clamp including a mating portion and a shock absorber, said clamp having a clamped position engaged with said shaft in said mating portion of said clamp for maintaining said rim in a horizontal position, and an unclamped position wherein said mating portion of said clamp is disengaged from said shaft enabling said rim to swing downwardly in an arcuate path;

a coiled spring, operatively mounted to said clamp, for maintaining said clamp in said clamped position, and for



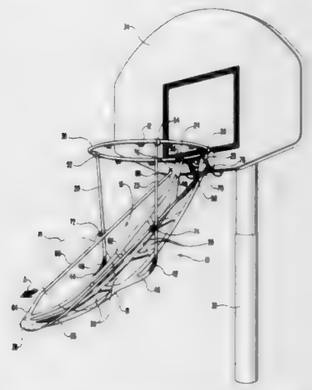
permitting said clamp to assume said unclamped position and move in said arcuate path upon application of a predetermined force to said rim; and a rigid member, extending through said spring, having a looped end surrounding said shaft mounted for swinging movement along another arcuate path upon application of said predetermined force, thereby preventing damage to said spring when said clamp assumes said unclamped position.

5,348,290

BALL RETURN APPARATUS AND METHOD

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Filed Jul. 30, 1993, Ser. No. 100,568
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—1.5 A **11 Claims**



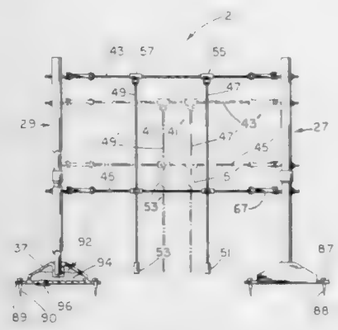
1. A ball return apparatus which is releasably attachable to a basketball hoop mounted on a backboard, comprising a plurality of supports secured to a runway, said ball return apparatus formed of a single continuous piece of flexible material, and said ball return apparatus being capable of selective configuration between an active mode and a passive mode; in said active mode, said supports being attached to the basketball hoop and said supports and said runway forming a channel leading generally downward and away from the basketball hoop; in said passive mode, said ball return apparatus being detached from the basketball hoop and being disposed substantially flat.

5,348,291

BALL PITCHING TRAINER

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Continuation of Ser. No. 665,009, Mar. 5, 1991, abandoned. This application Aug. 31, 1992, Ser. No. 938,884
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—26 A **3 Claims**



1. A portable baseball training device for ball pitching practice, comprising:

a first support comprising a first stabilizing base holding up a first upright member;

a second support comprising a second stabilizing base holding up a second upright member, wherein said first stabilizing base and said second stabilizing base are separate from each other and each provide free-standing support of their respective upright above a generally horizontal floor surface;

target means suspended between said first upright member and said second upright member for providing a target for a pitched ball, wherein said target means defines an open pitching target to allow the ball to pass through the target to be caught by a catcher, wherein said target means is selectively adjustable to allow selective positioning of the open pitching target with respect to said uprights; and

suspension means for suspending said target means between said first and second upright members, wherein said suspension means includes spring means located between said target means and said first and second upright members for dampening shock caused by an errant ball striking said target means peripherally around said open pitching target;

wherein said suspension means consists essentially of:

(a) said spring means; and

(b) a first generally horizontal cord suspended between said first and second uprights, partially defining said open target area, wherein said horizontal cord provides a small profile to reduce the incidence of an errant ball striking said cord;

wherein said first support and said second support are free of any rigid cross-brace support therebetween, wherein said first upright member and said second upright member are spaced apart from each other not more than about six feet, and further wherein said target means include a left generally vertical cord hung from said first cord and further includes a right generally vertical cord hung from said first cord to partially define the open pitching target between said left cord and said right cord, wherein said left and right vertical cords are narrow, brightly colored cord;

wherein said left cord is attached to said suspension means by a left fitting, and wherein said right cord is attached to said suspension means by a right fitting, and wherein said

left fitting and said right fitting are selectively slidable horizontally along said first horizontal cord to allow selective horizontal positioning of the open pitching target with respect to said uprights;

wherein said right cord and said left cord have a weight secured thereto to pull said right and left cords taut;

wherein said first stabilizing base and said second stabilizing base each define a separate hollow interior therein for holding ballast and each stabilizing base has a closure and opening to allow addition and removal of ballast;

wherein said target means includes a lower generally horizontal cord suspended on between said first and second uprights and below said suspension means;

wherein said lower generally horizontal cord has a lower right fitting attached thereto and securing said right generally vertical cord, and

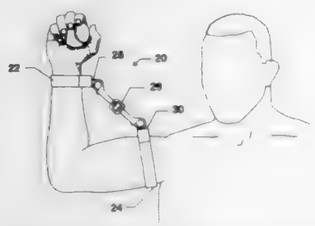
wherein said lower generally horizontal cord has a lower left fitting attached thereto and securing said left generally vertical cord, and wherein said lower left fitting and said lower right fitting are selectively horizontally slidable along said lower cord.

5,348,292

TRAINING AID FOR IMPROVING THE THROW OF AN ATHLETE

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Filed Dec. 23, 1993, Ser. No. 172,532
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—26 C **13 Claims**



1. A training aid for improving the throw of an individual comprising:

an adjustable bicep strap to fit securely around the bicep of an arm;

said adjustable bicep strap includes an upper surface and a bottom surface;

said adjustable bicep strap includes a first end portion, a middle portion and a second end portion;

said first end portion and said second end portion being equal in length;

said middle portion being about ⅓ the length or less of said first end portion;

a first loop secured to said upper surface at said middle portion;

a first means for attaching and detaching said first end portion in adjusted overlapped position with respect to said second end portion;

said first means comprises a first hook and a first loop material;

said first hook material is attached at said first end portion on said upper surface and said first loop material is attached at said second end portion on said bottom surface;

an adjustable wrist strap to fit securely around the wrist of said arm;

said adjustable wrist strap includes a top surface and an underside surface;

said adjustable wrist strap includes a first end section, a middle section, and a second end section;

said first end section and said second end section being equal in length;

said middle section being about ⅓ the length of said first end section;

a second loop secured to said top surface at said middle section;

a second means for attaching and detaching said first end section in adjusted overlapped position with respect to said second end section;

said second means comprises a second hook and a second loop material;

said second hook material is attached to said top surface at said first end section and said second loop material is attached to said underside surface at said second end section; and

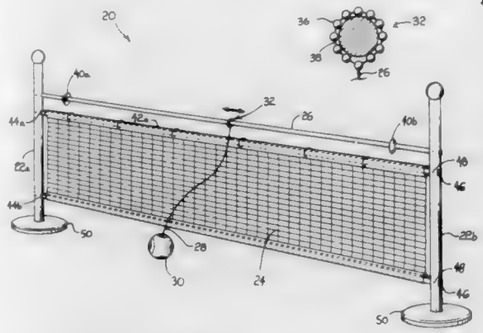
a rigid link member having opposite hook end portions respectively connectable to said first loop and said second loop in order to restrain movement of an elbow of said arm when said adjustable bicep strap and said adjustable wrist strap are utilized.

5,348,293

TETHERED TENNIS GAME

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Filed Feb. 17, 1994, Ser. No. 197,758
Int. Cl.[5] A63B *61/00*
U.S. Cl. 273—29 A **5 Claims**



1. A net game, comprising:

a pair of spaced apart vertically extending posts having anchors at their lower ends;

at least one horizontal rod extending between the posts and supporting a net above a support surface;

a horizontal tube supported by the posts above the net;

a tether having a ball firmly attached on a free end and secured to a loop at itsother end, said loop being mounted on said tube and being adapted to slide longitudinally along the tube, the ball thus being capable of transversely crossing over the net while said loop slides longitudinally along said tube when said ball is hit.

5,348,294

STRING PROTECTING JACKET OF GAME RACKET

Walter Shen, 5Fl., No. 412-12, 2 Sec., Chung Shan Rd., Tai Peiping, Tachung, Taiwan

Filed Jan. 24, 1994, Ser. No. 185,209
Int. Cl.[5] A63B *49/00*
U.S. Cl. 273—73 D **1 Claim**

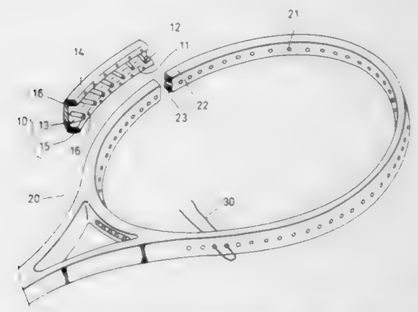
1. A string protecting jacket of a game racket frame comprising a jacket base body with a horizontal center line;

said jacket body including a plurality of string protecting projections spaced in intervals to fit securely into the string holes of a game racket frame;

wherein each of said string protecting projections is provided axially with a through hole to receive therein a string to be strung in said game racket frame;

wherein said jacket base body is provided on the upper and the lower sides thereof with an upper seat and a lower seat, respectively, which are arranged at a distance from said horizontal centerline of said jacket body;

each of said upper seat and said lower seat having a plurality of horizontal through holes spaced in intervals throughout the seats such that said horizontal through holes match said through holes of said string protecting projections so that the game racket frame can be strung in various manners.

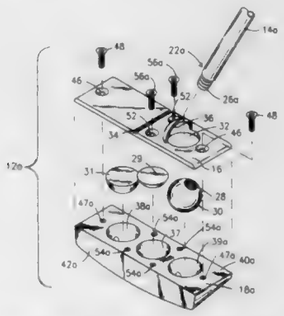


5,348,295

GOLF PUTTER WITH ADJUSTABLE SHAFT

James W. Phillips, 3087 Landmark Blvd., #1804, Palm Harbor, Fla. 34684

Continuation-in-part of Ser. No. 74,129, Jun. 8, 1993, Pat. No. 5,320,346. This application Nov. 4, 1993, Ser. No. 147,718
The portion of the term of this patent subsequent to Jun. 14, 2011, has been disclaimed.
Int. Cl.[5] A63B *53/02, 53/06*
U.S. Cl. 273—79 **15 Claims**



11. A golf putter with a shaft attached to a weighted putter head comprising,

the putter head having a top and bottom portion, the bottom portion containing a first, second, and middle cavity in a top surface,

a plurality of bores in the putter head top and bottom portions axially aligned for receipt of screws to join the top and bottom portions together,

a removable sphere having a threaded bore, the shaft having a threaded shank at a first end portion engaging the threaded bore of the sphere, the sphere movably mounted within a pocket of the putter head top portion and seated in the first cavity of the putter head bottom portion when the top and bottom portions are joined,

the pocket in the top portion formed by an arcuate raised surface of the top portion together with an aperture therein, the aperture having a diameter smaller than the diameter of the removable sphere,

a first removable half sphere resting in the second cavity and a second removable half sphere resting in the middle cavity so that a balance of weight distribution is achieved in the putter head, the first removable half sphere being reversible with the removable sphere in their respective cavities to permit the golf putter to be used by either a right handed or left handed golfer, and

a plurality of set screws mounted within a bottom surface of the bottom portion of the putter head fixedly seating the sphere and half spheres in place within their respective cavities.

5,348,296

POLYURETHANE CLUB WITH CYLINDRICAL CORE

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Filed Jul. 23, 1993, Ser. No. 97,452
Int. Cl.[5] A63B *67/00*
U.S. Cl. 273—84 R **4 Claims**



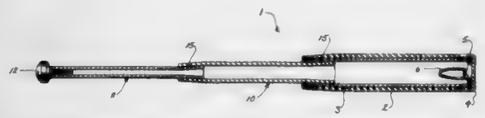
1. A composite bat comprising in combination: a stiff core rod of ovoid cross section, said core rod extending 90 to 95 percent of the end to end length of the bat and having a first portion supporting a handle and a second portion supporting a striking section, said first handle portion forming 20 to 40 percent of the length of the bat, said handle comprising a separable plastic cover of oval shape tightly embracing said ovoid core rod forming a hand grip of oval shape, said striking section comprising a cylindrical elastomer sleeve encasing and bonded to said ovoid core rod.

5,348,297

EXPANDABLE BATON WITH LOCKING JOINTS

Kevin L. Parsons, 16 Wagon Wheel Dr., Appleton, Wis. 54915

Continuation of Ser. No. 753,006, Aug. 23, 1991, abandoned, which is a continuation of Ser. No. 587,488, Sep. 20, 1990, abandoned, which is a continuation of Ser. No. 255,0'8, Oct. 7, 1988, abandoned. This application Jul. 26, 1993, Ser. No. 100,873
The portion of the term of this patent subsequent to Jun. 21, 2005, has been disclaimed.
Int. Cl.[5] F41B *15/02*
U.S. Cl. 273—84 R **4 Claims**



1. An expandable baton formed of an annealed material and subsequently heat treated after forming for strengthening the baton for use as an impact intermediate force weapon, comprising:

a. a main member including a hollow cylindrical tube having opposite open ends, the main member having a wall thickness and an inner diameter and an outer diameter, a por-

tion of the cylinder adjacent one of said ends formed into a swaged end portion of predetermined length for defining a reduced section of the main member wherein both the inner diameter and the outer diameter of the main member are continuously decreasing such that the wall thickness is substantially constant throughout the reduced section;

b. a removable cap adapted to close the other open end of the main member;

c. a substantially cylindrical telescoping member including a hollow cylindrical tube having opposite open ends, the telescoping member having a wall thickness and an outer diameter which is smaller than the inner diameter of the main section and an inner diameter, the telescoping member adapted to be received in the other open end of the main section and slidably carried in the main section, a portion of the cylindrical tube adjacent one open end of the telescoping section formed into a flare portion of predetermined length for defining an expanded section wherein both the outer diameter and the inner diameter of the telescoping member are continuously increasing throughout the expanded section such that the wall thickness is substantially constant throughout the expanded section, said telescoping member movable between a retracted position wherein the telescoping member is housed in the main member and an extended position wherein the telescoping member is extended outwardly through the end adjacent the reduced section of the main member, with the expanded section of the telescoping member engaging the reduced section of the main member with the flare portion of the telescoping member jammed tightly into the swaged portion of the main member.

5,348,298

COMBINATION ROLLER BALL AND HOCKEY PUCK

Robert D. Montgomery, 1685 W. 12th St., Reno, Nev. 89503

Filed Dec. 3, 1993, Ser. No. 161,885
Int. Cl.[5] A63B *71/00*
U.S. Cl. 273—128 R **5 Claims**



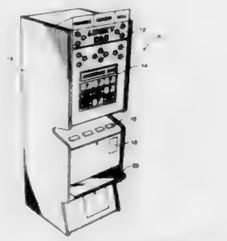
1. A combination roller ball and hockey puck comprising: a hollow cylindrical puck housing having an interior chamber, said puck housing having a bottom, said bottom having an arcuate shaped external surface and a flat shaped interior surface, said bottom having multiple diagonal weep holes, said housing having a circumfused sidewall, said side wall having a height, said sidewall having multiple weep holes, said side wall being substantially vertically opposed to said bottom, a top, said top having means to engage and form a junction with said side wall, said junction forming an arcuate outer rim, said top having a filler hole for introducing a quantity of powder into said chamber, a plug, said plug being of a size and shape to mate with said filler hole, said plug having an outer exposed surface, said exposed surface when in an inserted position within said filler hole being spaced apart from a plane formed across said outer rim, a weight, said weight being of a shape and size to mate with said flat shaped interior surface, means to attach said weight, said weight including a bore centrally located which is of a size to allow passage of said powder through said diagonal weep holes, a replaceable rubber band, said band having a height less than said height of said sidewall, said band being of a size to longitudinally surround and capture said sidewall in a secure manner and said band having multiple horizontal weep holes which align with said weep holes of said sidewall.

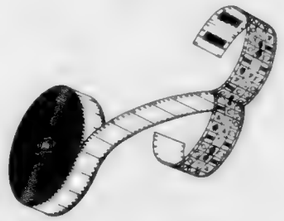
5,348,299

ELECTRONIC GAMING APPARATUS

Ronald C. Clapper, Jr., Chatsworth, Calif., assignor to LTB Game Enterprises, Chatsworth, Calif.

Filed May 6, 1992, Ser. No. 879,747
Int. Cl.[5] A63F *9/24*
U.S. Cl. 273—138 A **11 Claims**





1. An electronic gaming apparatus capable of dispensing a segment of a strip containing indicia thereon upon actuating the apparatus and which maintains a duplicate record copy, said apparatus comprising:

a) a primary strip containing indicia thereon;

b) a duplicate strip containing indicia thereon and in essentially the same locations as on said primary strip and wherein the primary and duplicate strips are in juxtaposed relationship to one another;

c) means for severing a segment of the primary strip and dispensing same upon actuation of the apparatus and storing a corresponding portion of the duplicate strip.

5,348,300

COSMIC COMMUNICATION CUBES

Melvin R. Jennings, P.O. Box 11291, Jackson, Miss. 39213

Continuation-in-part of Ser. No. 970,184, Nov. 2, 1992, abandoned. This application Jul. 21, 1993, Ser. No. 94,212
Int. Cl.[5] A63F *9/04*
U.S. Cl. 273—146 **12 Claims**

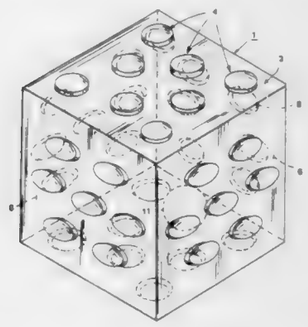
1. A die having a hollow interior, comprising:

a transparent body having a plurality of outer surfaces, a plurality of inner surfaces, and a space within said inner surfaces defining said hollow interior;

a plurality of marking indicia disposed on each of said outer surfaces;

a plurality of impressions in each of said inner surfaces located at positions directly opposite to said marking indicia on said outer surfaces; and

a spherical member freely movable in the hollow interior, said spherical member having a weight equal to the weight of said hollow die without said spherical member;



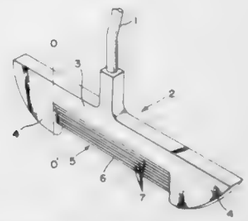
whereby, upon being rolled, said die will come to rest on an outer surface, and said spherical member will come to rest in one of the impressions.

5,348,301

HEAD FOR USE WITH A GOLF PUTTER

Jong-Nam Ma, 3-505, Seonkyung, Apt., #592, Seongpo-Dong, Ansan-Si, Kyungki-Do, Rep. of Korea

Filed Jun. 10, 1993, Ser. No. 74,468
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 B **4 Claims**



1. A head for use with a golf club which is used as a putter comprising:

a front hitting portion;

a rear, weight decreasing recess;

side portions positioned on opposing ends of said front hitting portion; and

a weight balancing portion extending downwardly from each side of the front hitting portion, wherein a downwardly extending distance of said weight balancing portion from a bottom face of said hitting portion to a lower end of said weight balancing portion is approximately two-thirds the radius of the golf ball so that the head may have a recess at a lower end thereof, thus assuming an inverse U-shape.

5,348,302

GOLF CLUB HEAD

Akinori Sasamoto, and Yuichi Aizawa, both of Tokyo, Japan, assignors to Daiwa Golf Co., Ltd., Tokyo, Japan

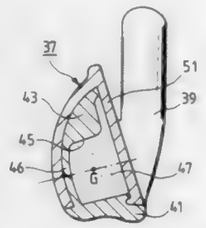
Filed Dec. 1, 1992, Ser. No. 983,737
Claims priority, application Japan, Dec. 9, 1991, 3-101146[U]
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—169 **14 Claims**

1. A golf club head comprising:

a one-piece base metal body including an integral hosel portion adapted to be connected to a shaft of a golf club, an integral sole portion and an integral top portion, said base metal body defining a space between said sole portion and said top portion; and

a filling member filled in said space, and wherein:

said sole portion and said top portion are substantially equal in weight to each other;



the center of gravity of the golf club head is positioned at a substantially middle portion between said sole portion and said top portion within said space; and

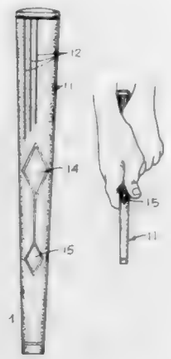
said filling member is formed of a material smaller in specific gravity than said base metal body.

5,348,303

GOLF CLUB GRIP

Charles T. Swissheim, Tustin, Calif., assignor to Bullet Golf Ball, Inc., Santa Ana, Calif.

Filed Feb. 12, 1993, Ser. No. 16,994
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187.5 **1 Claim**



1. A grip for a golf club comprising:

an elongated tubular elastic member adapted to be fitted on the shaft of said golf club and including elongated vertical grooves in the upper portion thereof,

a first diamond-shaped marker on the outer wall of said tubular elastic member, said marker having long and short diagonals and being located in a predetermined position on the circumference of said outer wall with its long diagonal parallel to the longitudinal axis of said tubular member and spaced a predetermined distance from the top end of said tubular member, said first marker defining a position where it is desired that the thumb of one hand of the user lie when the grip is gripped by said one hand, and

a second diamond-shaped marker, smaller than said first marker and having long and short diagonals on the outer wall of said tubular elastic member positioned a predetermined distance from and directly below said first marker and at substantially the same position circumferentially on said grip as said first marker having its long diagonal aligned with the long diagonal of said first marker, said second marker defining a predetermined location on opposite sides of which the thumb and forefinger of the user's other hand may lie when the grip is gripped by said other hand and placed over said first hand when the thumb of said first hand is positioned on said first marker.

5,348,304

GOLF CLUB SWING TRAINING METHOD

John C. Meade, 620 S. Saxon Blvd., Deltona, Fla. 32725

Filed Jul. 12, 1993, Ser. No. 89,478
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187.6 **9 Claims**



8. A method of improving a swing of a golf club having a head and held by a golfer, comprising:

providing a golf training device, comprising:

a planar reflecting surface having a proximal edge, a forward and back side edge, a distal edge that describes a convex arc, the perpendicular distance to which from the center of the proximal edge is dimensioned to fit between the feet of the golfer and the head of the golf club, the golfer in position to take a swing, the reflecting surface dimensioned to provide a view of the golfer from the head to the knees; and

support means disposed beneath the distal edge of the reflecting surface of a height sufficient to tilt the reflecting surface toward the golfer to provide a view of the golfer from the head to the knees;

positioning the device so that the support means and proximal edge of the reflecting surface rest on the ground;

positioning the feet of the golfer on the ground adjacent the proximal edge of the reflecting surface;

positioning the head of the golf club on the ground adjacent the forward end of the top edge;

viewing the golfer's image in the reflecting surface;

determining a correct alignment of the knees, hips, and shoulders of the golfer;

assuming the correct alignment of the knees, hips, and shoulders;

swinging the golf club backward along the top edge of the reflecting surface, using the hands and wrists;

continuing to view the golfer's image in the reflecting surface;

rotating the hips and shoulders to take the golf club back so that no portion of the reflecting surface is contacted by the golf club;

continuing to view the golfer's image in the reflecting surface; and

completing the golf swing.

5,348,305

GOLF BALL TEEING APPARATUS

Richard D. Lowe, 3 West St., Windsor Locks, Conn. 06096

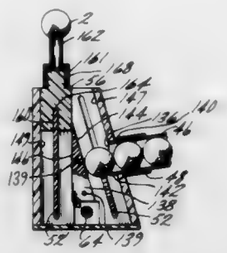
Filed Dec. 17, 1992, Ser. No. 991,728
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—201 **27 Claims**

1. A device for teeing a golf ball comprising:

tee means for supporting a golf ball;

housing guide means having first guide means wherein said tee means is slidably disposed and having second guide means for receiving a golf ball;

lateral sliding reciprocating means guided by third guide means of said housing guide means, said sliding reciprocating means for reciprocating said tee means and a golf ball in a cooperating manner to transfer the golf ball onto said tee means, said third guide means of said housing guide means comprises first and second slot means, said sliding reciprocating means includes a first camming plate having a first camming surface, said first camming plate adapted for passing through said slot means, said sliding reciprocating means also includes a second camming plate having a second camming surface adapted for passing



through said second slot means, said tee means includes a first piston having a tee, said first piston having means for engaging said second camming surface; and

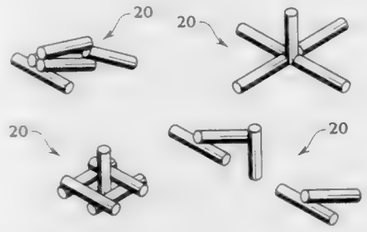
actuator means for actuating said sliding reciprocating means, said actuator means reciprocates said first camming plate and said second camming plate in a generally recilinear manner.

5,348,306

GAME APPARATUS AND METHOD FOR PLAYING SAME

Anatole Strishak, 124 Whistler Rd., Manhasset, N.Y. 11030, and Andre Strishak, 201 E. 87th St., Apt. 30F, New York, N.Y. 10128

Filed Aug. 20, 1993, Ser. No. 109,629
Int. Cl.[5] A63B *67/00*
U.S. Cl. 273—317 **11 Claims**



1. A game apparatus for play by two opposing teams, comprising:

a playing surface including two target receiving regions located in spaced distance relation, each region being assigned to a corresponding one of said teams;

two sets of target members, each set of target members being assigned to a corresponding one of said two target receiving regions;

a plurality of different target member configurations, each configuration constituting a round of the game, the teams choosing a selected number of configurations to determine the length of the game;

each set of target members being arranged in each of said plurality of different target member configurations within its respective target receiving region; and

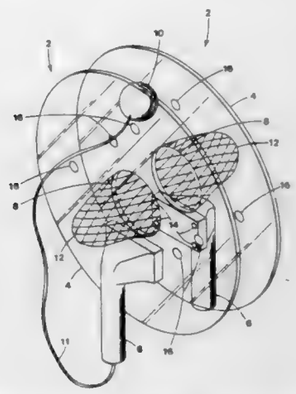
a set of tossing devices, wherein the teams alternate throwing said tossing devices by flinging said tossing devices at the opposite team's target members to knock all of said target members for all of said plurality of configurations completely out of their respective target receiving region in advance of the opposing team.

5,348,307

PADDLE GAME APPARATUS

Matthew S. Duggan, 2061 Lewisville-Clemmons Rd., Apt. 109-1, Lewisville, N.C. 27012

Filed Oct. 12, 1993, Ser. No. 134,639
Int. Cl.[5] A63B *67/10*
U.S. Cl. 273—320 **13 Claims**



1. In a paddle ball game, a method of controlling the motion of a ball by the movement of two paddles with apertures therein comprising the steps of: positioning a resilient ball between the surfaces of two parallel paddles; maintaining the ball in position with slight pressure from each paddle surface; moving each surface in an attempt to roll the ball through an aperture on the opposite surface; and securing the ball when it is passed through an aperture to determine the score.

5,348,308

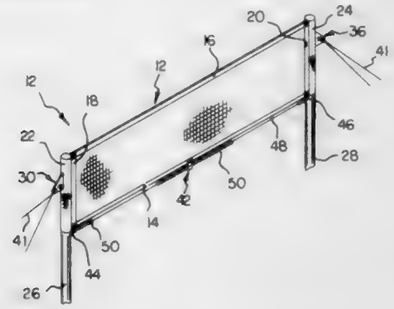
Patent Not Issued For This Number

5,348,309

SPORT NET

Robert E. Queiros, 21 South St. Apt. 31, Westboro, Mass. 01581

Filed Aug. 23, 1993, Ser. No. 110,016
Int. Cl.[5] A63B *61/00*
U.S. Cl. 273—411 **8 Claims**



1. A new and improved sport net, comprising:

a net assembly which includes two long sides, a first short side, and a second short side,

a first sleeve member connected to said first short side of said net assembly, and

a second sleeve member connected to said second short side of said net assembly,

wherein said first sleeve member and said second sleeve member are capable of slipping over a top portion of respective support poles,

further including:

a first ear assembly connected to said first sleeve member, said first ear assembly including a flap portion and a first aperture located within said flap portion, and

a second ear assembly connected to said second sleeve member, said second ear assembly including a flap portion and a second aperture located with said flap portion,

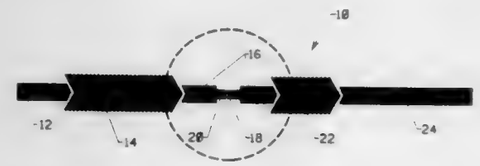
such that guy wires can be passed through said respective first aperture and said second aperture for reinforcing stability of the poles supporting said apparatus.

5,348,310

DOUBLE SPIRAL-WOUND GASKET ASSEMBLY WITH LEAK DETECTION

Calvin J. Browning; Carl D. Mercer, and William S. Milligan, all of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 28, 1992, Ser. No. 997,437
Int. Cl.[5] F16T *15/32*
U.S. Cl. 277—1 **8 Claims**



1. A gasket assembly, comprising from an inner to an outer diameter:

a) an inner compression gauge ring having an inner and outer edge;

b) a first spiral-wound gasket having an inner and an outer winding, said inner winding wrappingly abutting the outer edge of said inner compression gauge ring;

c) a middle compression and gauge ring having an inner and an outer edge, said inner edge abutting the outer winding of said first spiral-wound gasket and having a centrally located groove in both an upper face and a lower face of said middle compression ring for collecting fluid leakage past said first spiral-wound gasket said centrally located grooves having drawoff ports therethrough whereby fluid collected in said grooves can be monitored by a sensing device;

d) a second spiral-wound gasket having an inner and an outer winding, said inner winding wrappingly abutting the outer edge of said middle compression ring; and

e) an outer compression gauge ring having an inner and an outer edge, said inner edge abutting the outer winding of said second spiral-wound gasket.

5,348,311

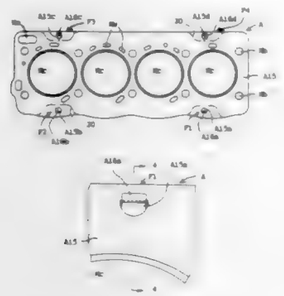
METAL LAMINATE GASKET WITH FIXING DEVICES

Yoshio Miyaoh, and Katsuji Aoki, both of Tokyo, Japan, assignors to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 827,980, Jan. 31, 1992, abandoned. This application Aug. 23, 1993, Ser. No. 110,759
Claims priority, application Japan, Feb. 19, 1991, 3-031722[U]; Feb. 19, 1991, 3-031723[U]
Int. Cl.[5] F16J *15/08*
U.S. Cl. 277—9 **8 Claims**

1. A metal laminate gasket with fixing devices, comprising, first and second metal plates extending substantially throughout an entire area to be sealed, said first and second metal plates laminating with each other for constituting the metal laminate gasket having four side edges, and four fixing means for connecting the first and second metal plates formed inside the side edges of the metal laminate gasket at portions where sealing ability of the gasket is not affected, each fixing means consisting of a hole formed inside the first plate and a bending strip formed inside the

second plate, said bending strip being located under the hole of the first plate and formed of a part of the second plate so that when the first and second plates are assembled, the bending strip extends through the hole of the first plate and is located above the first plate, said four fixing



means being situated near the side edges of the gasket and disposed away from each other, said bending strips of the four fixing means being oriented in four directions different at 90 degrees with each other to thereby immovably connect the first and second plates together.

5,348,312

CASSETTE SEAL

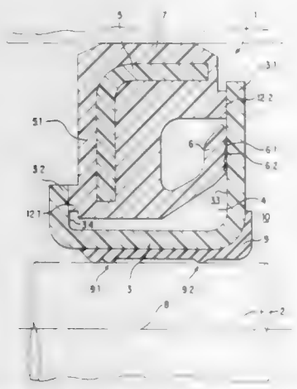
David E. Johnston, Weinheim, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Jun. 18, 1992, Ser. No. 900,989

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1991, 4125183

Int. Cl.[5] F16J *15/32*

U.S. Cl. 277—39 **12 Claims**



1. A cassette seal for sealing off a gap appearing between a bore hole and a shaft, comprising:

an inner ring secured to the shaft and having a groove opening radially in an outward direction, said inner ring being designed as one piece and having first and second ring projections at axial ends of the inner ring, said ring projections being formed from a plastic deformation of said inner ring and projecting in an outward direction;

an outer ring secured in the bore hole having a flange-type radial projection engaging with the groove, said groove being defined in an axial direction by first and second end faces of said inner ring turned toward each other, said outer ring being limited in an axial direction on both sides by a plurality of range spacers being formed of a polymer material, said range spacers being set apart in a circumferential direction and abutting onto said first and second end faces of said inner ring when said cassette seal is new and unused;

a sealing lip secured proximately to an inner circumference of said radial projection, said sealing lip being formed from a polymer material, said sealing lip sealingly contacting said inner ring on an area of said first end face; and

at least said inner ring being formed from a plastically deformed sheet metal.

5,348,313

RADIAL SHAFT SEALING RING

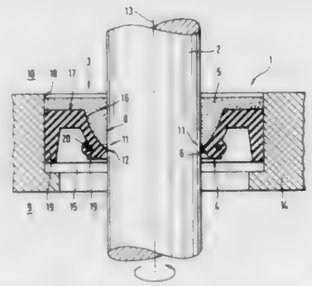
Anton Pawlakowitsch, Alzenau, Fed. Rep. of Germany, assignor to Leybold AG, Hanau, Fed. Rep. of Germany

Continuation of Ser. No. 770,855, Oct. 3, 1991, abandoned. This application Feb. 19, 1993, Ser. No. 20,851

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1991, 4125498

Int. Cl.[5] F16J *15/40*

U.S. Cl. 277—135 **6 Claims**



1. A shaft seal for sealing a passage accommodating a rotary shaft in vacuum apparatus having a housing part, comprising:

at least one annular sealing member having a lower high pressure side and an upper low pressure side and disposed in a housing part, the sealing member forming with the rotary shaft an upper annular chamber for accommodating a blocking liquid as a pool;

the sealing member having between the low pressure side and the high pressure side a single sealing lip adjoining the annular chamber which is upwardly open to a vacuum chamber while the shaft is rotating normally;

the sealing member and the rotary shaft having a central axis which runs in a vertical direction; and

a blocking liquid of high molecular weight disposed in the annular chamber as a pool and having a total upper pool surface upwardly open to the vacuum chamber while the shaft is rotating normally, the blocking liquid of the annular chamber being pooled against the sealing member in contact with the vacuum chamber in such manner that the total upper surface of the pool of the blocking liquid has a direct contact with the vacuum chamber and is fully exposed thereto while the shaft is rotating normally.

5,348,314

SEALS WITH INDICIA AND METHOD OF MOLDING SEALS WITH INDICIA TO ALLOW INSPECTION AFTER TRIMMING

Joseph Antonini, Chicago, Ill., assignor to Dana Corporation, Toledo, Ohio

Filed Mar. 12, 1993, Ser. No. 30,949

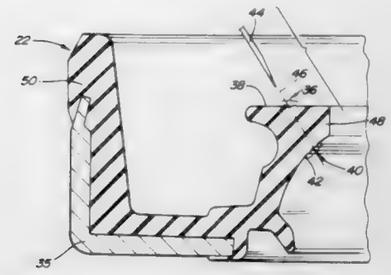
Int. Cl.[5] B29C *37/00;* **F16J** *15/32*

U.S. Cl. 277—152 **16 Claims**

4. A trimmed lip seal formed by the process of:

forming a seal body having first indicia on a first indicia on a trimming entry surface and second indicia on a trimming exit surface, each of said indicia including an inner boundary and an outer boundary representing an acceptable trimming path;

preparing said seal body by positioning a cutting element with respect to said first and second indicia of said seal body, said cutting element guided to be between said inner and outer boundary of both said first and second indicia; and



cutting between said first and second indicia to separate a waste portion from said seal body, leaving a finished seal wherein said trimmed lip seal includes a remnant, but not the entirety of said first or second indicia.

5,348,315

METALLIC GASKET

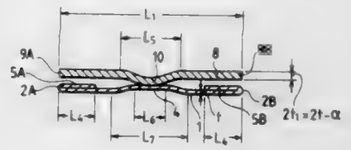
Shigeru Kawaguchi, Daitou; Kenji Kubouchi, Hirakata; Hiroshi Uemura, and Kunitoshi Inoue, both of Higashiosaka, all of Japan, assignors to Nippon Gasket Co., Ltd., Osaka, Japan

Filed Jul. 16, 1992, Ser. No. 913,657

Claims priority, application Japan, Jul. 17, 1991, 3-201207; Aug. 1, 1991, 3-214129

Int. Cl.[5] F16J *15/08*

U.S. Cl. 277—235 B **10 Claims**



1. A metallic gasket consisting of:

a first elastic metallic plate provided with a plurality of first beads, each of said plurality of first beads respectively formed along a circumference of each of a plurality of first cylinder bore holes, each of said plurality of first beads being formed so as to have a projecting portion extending from a first surface of said first elastic metallic plate and a recessed portion corresponding with said projecting portion set back from a second surface of said first elastic metallic plate,

a plurality of folded portions bent back onto said first surface to respectively extend along said circumference of each of said plurality of first cylinder bore holes, each of said plurality of folded portions formed to a thickness smaller than a height of said plurality of first beads, and

a second elastic metallic plate provided with a plurality of second beads respectively oppositely abutting against said plurality of first beads on said first elastic metallic plate, said second elastic metallic plate being further provided with a plurality of second cylinder bore holes each having a circumference respectively aligned and substantially equal to said circumference of said plurality of first cylinder bore holes, each of said plurality of second beads respectively formed along said circumference of each of said plurality of second cylinder bore holes,

said plurality of folded portions formed on said first elastic metallic plate functioning as stoppers to prevent said plurality of first beads on said first elastic metallic plate and said plurality of second beads on said second elastic metallic plate from being fully compressed.

5,348,316

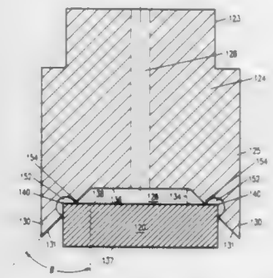
DIE COLLET WITH CAVITY WALL RECESS

Peng-Cheng Lin, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 16, 1992, Ser. No. 914,950

Int. Cl.[5] H05K *13/04;* **B25B** *11/00*

U.S. Cl. 279—3 **14 Claims**



1. A collet for placing a prefabricated electronic sub-assembly on an attachment surface, said subassembly comprising a substrate having a bottom side for attaching to said attachment surface and a top side opposite said bottom side, and at least one die mounted on said top side of said substrate, said collet comprising:

a body having a proximal end and a distal end;

a first surface recessed in said distal end, said first surface having a configuration to receive said top surface of said substrate, whereby said bottom side of said substrate is maintained in a plane parallel to said attachment surface;

a second surface recessed in said distal end spaced from and parallel with said first surface to accommodate said die mounted on said substrate;

at least one pair of spaced-apart walls extending from said distal end of said body, said walls having opposing faces defining an aperture into which said top surface of said substrate extends, whereby said sub-assembly is maintained in a position relative to said body in at least one direction parallel to said attachment surface; and

means disposed at said distal end of said body for holding said subassembly.

5,348,317

CHUCK

Stephen W. Steadings, and Christopher B. Barton, both of Seneca, S.C., assignors to Jacobs Chuck Technology Corporation, Wilmington, Del.

Filed Aug. 13, 1993, Ser. No. 106,063

Int. Cl.[5] B23B *13/12*

U.S. Cl. 279—62 **31 Claims**

1. A chuck for use with a manual or powered driver having a rotatable drive shaft, said chuck comprising:

a) a generally cylindrical body member having a nose section and a tail section, said tail section having an axial bore formed therein to mate with said drive shaft of said driver and said nose section having an axial bore formed therein and a plurality of angularly disposed passageways formed therethrough and intersecting said axial bore;

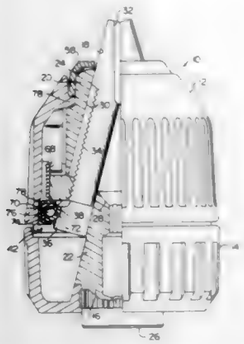
b) a plurality of jaws slidably positioned in each of said angularly disposed passageways, each of said jaws having a jaw face formed on one side thereof and threads formed on the opposite side thereof;

c) a nut rotatably mounted on said body and in engagement with said threads on said jaws;

d) a bearing thrust ring fixed on said body member;

e) a self-contained anti-friction bearing assembly disposed

between said nut and thrust ring, said bearing assembly hving an inner race, an outer race and bearing elements cooperating together; and



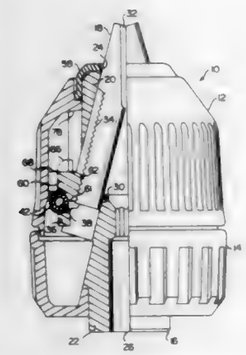
f) a generally cylindrical front sleeve member in driving engagement with said nut and overlying said nose section of said body member whereb y when said front sleeve member is rotated with respect to said body member, said jaws will be moved thereby.

5,348,318

CHUCK

Stephen W. Steadings, and Christopher B. Barton, both of Seneca, S.C., assignors to Jacobs Chuck Technology Corporation, Wilmington, Del.

Filed Aug. 13, 1993, Ser. No. 106,390
Int. Cl.[5] B23B *13/12*
U.S. Cl. 279—62 **17 Claims**



1. A chuck for use with a manual or powered driver having a rotatable drive shaft, said chuck comprising:

a) a generally cylindrical body member having a nose section and a tail section, said tail section having an axial bore formed therein to mate with said drive shaft of said driver and said nose section having an axial bore formed therein and a plurality of angularly disposed passageways formed therethrough and intersecting said axial bore;

b) a plurality of jaws slidably positioned in each of said angularly disposed passageways, each of said jaws having a jaw face formed on one side thereof and threads formed on the opposite side thereof;

c) a bearing thrust ring fixed on said body member;

d) a self-contained anti-friction bearing assembly disposed adjacent said thrust ring, said bearing assembly having an inner race, an outer race and bearing elements cooperating together;

e) a nut rotatably mounted on said bearing assembly and in engagement with said threads on said jaws; and

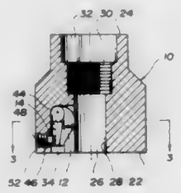
f) a generally cylindrical front sleeve member in driving engagement with said nut and overlying said nose section of said body member whereby when said front sleeve member is rotated with respect to said body member, said jaws will be moved thereby.

5,348,319

CHUCK UTILIZING CAM

J. Timothy Stolzer, Pickens, S.C., assignor to Ryobi Motor Products Corporation, Easley, S.C.

Filed Jun. 25, 1993, Ser. No. 83,369
Int. Cl.[5] B23B *31/103*
U.S. Cl. 279—77 **20 Claims**



1. A chuck for holding a tool having a shank while being rotated by a driving apparatus, the chuck comprising:

a chuck body having an outer surface, a drive and for attaching the chuck body to the driving apparatus, and a tool end defining a tool bore into which the tool shank may be inserted, the tool bore having an inner surface;

a cam pivotally mounted to the chuck body and having a cam surface operably extending to the tool bore; and

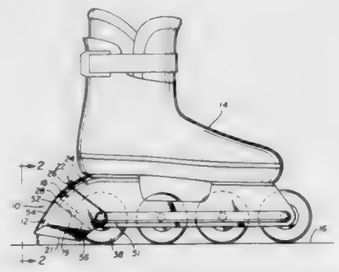
a threaded actuator cooperating with the chuck body and rotatably positionable to operate the cam such that only the force of the cam surface against the tool shank will secure or release the tool within the tool bore.

5,348,320

ADJUSTABLE SKATE BRAKE

Howard Gay, West Brookfield, Mass., assignor to Hyde Athletic Industries, Inc., Peabody, Mass.

Filed Oct. 23, 1992, Ser. No. 965,883
Int. Cl.[5] A63C *17/14*
U.S. Cl. 280—11.2 **3 Claims**



1. An adjustable brake assembly for a shoe skate, comprising:

a brake pad;

means for mounting said brake pad on said shoe skate, and means for adjusting the position of said brake pad relative to said shoe skate;

means coaxially supporting said mounting means with the axle of a wheel of said skate and said adjusting means including means for radially securing said mounting means in one of a selected number of positions for engagement of said brake pad with a riding surface on rotation of said wheels about said axle;

wherein said means for radially securing said mounting means includes a tongue projecting from said mounting means with a surface adapted to engage in one of several positions to a complementary surface on said brake; and

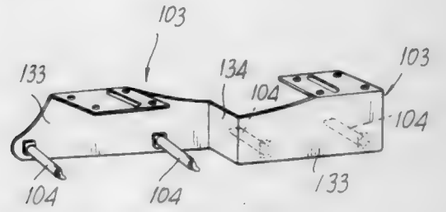
wherein said tongue has a slot and a means passing through said slot for releasably securing said tongue to the skate in one of said several selected positions.

5,348,321

SKATE WITH ALIGNED WHEELS

Franco Sbrilli, Marghera, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed Jun. 1, 1993, Ser. No. 69,799
Claims priority, application Italy, Jun. 10, 1992, VE92A000022
Int. Cl.[5] A63C *17/04*
U.S. Cl. 280—11.22 **5 Claims**



1. A skate with aligned wheels, comprising:

a single wheel supporting plate;

a plurality of cantilever pivots connected to said supporting plate;

a plurality of wheels rotatably supported by said cantilever pivots;

said single supporting plate comprising a first section and a second section, said first section and said second section being substantially mutually parallel, said single supporting plate furthermore comprising a transverse section disposed in a vertical plane, interconnected between said first section and said second section, a first pair of said pivots being connected to said first section at a first side of said supporting plate, and a second pair of said pivots being connected to said second section at a second side of said supporting plate which is opposite to said first side thereof.

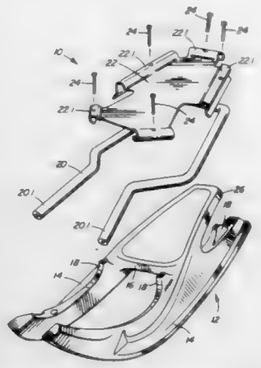
5,348,322

SNOW LUGE

Wally Rauf, and Derek Gratz, both of Calgary, Canada, assignors to Canadian Luge Association, Gloucester, Canada

Continuation of Ser. No. 969,873, Oct. 30, 1992, abandoned. This application Nov. 24, 1993, Ser. No. 156,997
Int. Cl.[5] B62B *13/06*
U.S. Cl. 280—18 **19 Claims**

1. A luge for tobogganing on snow comprising a pair of spaced runners having spaced forward ends and spaced rearward ends, a single bridge portion extending between said runners and connecting the runners together and a seat portion located between said runners and extending generally rearwardly of said bridge portion wherein said bridge portion is spaced at a first predetermined distance rearwardly of the



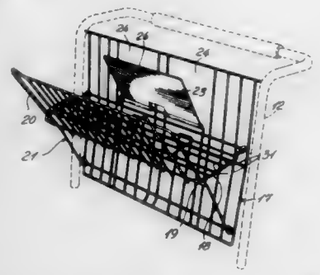
forward ends of said runners and spaced at a second predetermined distance forwardly of the rearward ends of said runners.

5,348,323

INFANT SEAT PLATE FOR SHOPPING CART

Antoine Trubiano, Montreal, Canada, assignor to Cari-All Inc., Montreal, Canada

Filed Mar. 30, 1993, Ser. No. 39,739
Int. Cl.[5] B62B *3/02*
U.S. Cl. 280—33.993 **12 Claims**



1. An infant seat plate for hinge securement adjacent a rear wall of a shopping cart for blocking leg holes in said rear wall and for positioning over a wire seat frame positionable adjacent said leg holes in a rear basket area of said shopping cart, said seat plate having a hinge connecting edge, biasing means for urging said seat plate against said rear wall to obstruct said leg holes, and releasable retention means secured to said seat plate for retention engagement of said seat plate with said wire seat frame when positioned thereto in a position of use to arrest said seat plate over said seat frame, said releasable retention means exerting an engaging retention force with a wire rod of said wire seat frame, said retention force being greater than a restoring force acting on said seat plate by said biasing means for urging said plate towards said rear wall.

5,348,324

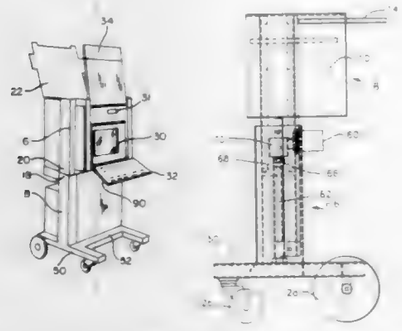
TRANSPORTABLE COMPONENT STAND

Frank A. Trotta, Maplewood, N.J., assignor to Electronic Voting Systems, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 782,744, Oct. 17, 1991, Pat. No. 5,190,302, which is a continuation of Ser. No. 518,164, May 3, 1990, abandoned. This application Oct. 6, 1992, Ser. No. 957,210
Int. Cl.[5] B62B *3/02*
U.S. Cl. 280—35 **17 Claims**

1. A transportable stand comprising two interactive frame members, an upper frame member and a lower frame member,

wherein the upper frame member has mounted thereon components for user interaction, said upper frame member being adapted to be selectively raised and lowered on the lower frame member by means for varying component height comprising an electric motor which cooperates with a threaded



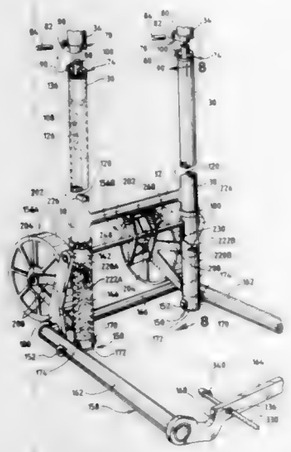
shaft, and means for enabling movement of the stand comprising wheels attached to the lower frame member, said stand further comprising a three position front cover for enclosing at least one of the components pivotable between a closed position, an open stowed position and an open display position.

5,348,325

PORTABLE, COLLAPSIBLE LUGGAGE CARRIER

Martin Abrams, 4408 Morse Ave., Lincolnwood, Ill. 60646

Continuation of Ser. No. 775,801, Oct. 11, 1991, abandoned.
This application Mar. 8, 1993, Ser. No. 29,349
Int. Cl.[5] B62B *1/04*
U.S. Cl. 280—40 **11 Claims**



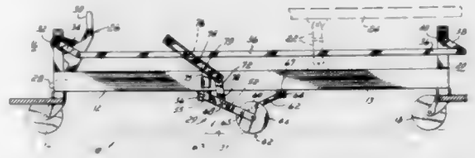
1. A portable, collapsible, luggage carrier comprising:
a frame and a handle carried thereon;
a luggage support platform pivotally mounted to said frame for movement between a collapsed, inoperative, storage position adjacent said frame in an overlapping relationship therewith and an extended, operative position projecting outwardly from said frame;
a pair of wheel carriages on said frame which each have a rotatable wheel for transporting said luggage carrier;
a pair of spaced-apart carriage mounting means for mounting said carriages on said frame for pivoting movement between a collapsed, inoperative, storage position in which said wheels overlap each other adjacent said frame and an extended, operative position in which said wheels are disposed generally parallel to each other for rotation about a common axis; and
cam actuation means for effecting said pivoting movement of said carriages in response to pivoting movement of said platform relative to frame;
said cam actuation means including (1) a first cam element on one of said carriage mounting means, (2) a second cam element on the other of said carriage mounting means, and (3) a third cam element connected with said platform and engaged with both of said first and second cam element;
said first cam element being different than said second cam element whereby the pivoting movement of said platform initiates the pivoting of said one of said carriages prior to the initiation of the pivoting of the other of said carriages.

5,348,326

CARRIER WITH DEPLOYABLE CENTER WHEELS

Eugene H. Fullenkamp, Batesville, Ind.; Richard H. Heimbrock, Cincinnati, Ohio; David Hensley, Milan, and David W. Hornbach, Brookville, both of Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed Mar. 2, 1993, Ser. No. 25,169
Int. Cl.[5] B62D *61/12*
U.S. Cl. 280—43.17 **28 Claims**



1. A carrier for transporting an object over a surface comprising:
a frame for supporting the object, said frame having a longitudinal axis;
a plurality of castors connected to opposite ends of said frame and in contact with the surface for moving the carrier over the surface;
a pair of spaced steering wheels having a spacing therebetween which improves tracking of the carrier and which permits the carrier to more easily turn corners with a minimum turning radius; and
wheel support means pivotally connected to said frame for rotatably supporting said pair of steering wheels relative to an axis of rotation approximately perpendicular to said longitudinal axis of said frame and for maintaining said pair of steering wheels in contact with the surface simultaneously with said plurality of castors.

5,348,327

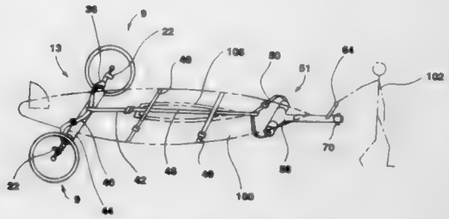
COLLAPSIBLE MANUALLY TOWED OR BICYCLE TRAILERED SAILBOARD DOLLY

Juergen W. Gieske, 6232 W. Lloyd, Wauwatosa, Wis. 53213

Filed Feb. 26, 1993, Ser. No. 23,119
Int. Cl.[5] B60P *3/10*
U.S. Cl. 280—47.331 **4 Claims**

1. A collapsible manually towed and bicycle trailered sailboard dolly comprising:
a horizontally orientated main tube support structure adaptable to support an end of a sailboard;
a pair of independent ground engaging wheel assemblies comprising a means to attach and detach said wheel assemblies at the ends of said main tube support;
a means for strapping a board end to said main tube support wherein each end of a main tube strap has a loop which slides over said main tube support with one of said loops on either side of a board, the center of said main tube strap

comprising an adjustable separable buckle connectable over said board;
a generally tee shaped rigid arm structure adaptable to support the opposite end of a board, said arm structure being used for both manually towing said board dolly and trailering said board dolly behind a bicycle;
a means for strapping the opposite board end to the top of said arm structure, wherein an arm structure strap passes through a top horizontal tube of said arm structure tee wrapping around the opposite board end, said arm structure strap having an adjustable buckle used to tighten said arm structure strap around the opposite board end with the bottom end of a vertical tube of said arm structure tee extending an adequate distance out past the opposite end of the board to allow for a means to manually tow said board dolly or trailer said board dolly behind a bicycle, said vertical tube of said arm structure tee having two holes, the first hole near the bottom end of said vertical tube is drilled through perpendicular to the plane of said arm structure tee, said first hole accepting a connection hitch pin for trailering said board dolly behind a bicycle, the second hole is approximately 1" up said vertical tube from said first hole and is drilled through in the plane of said arm structure tee, said second hole accepting a handle device for manually grasping said arm structure for manual towing of said board dolly;
a means for wedging said main tube strap and said arm structure strap over the respective ends of the board, wherein, a coupling strap with one end looped around said main tube strap and centered over the board and the other



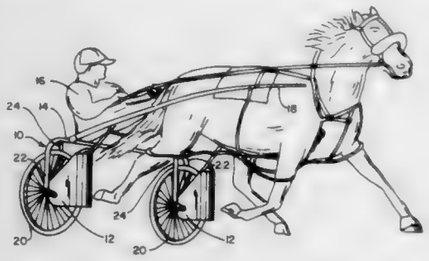
end of said coupling strap looped around said arm structure strap and centered over the board, said coupling strap having a separable and adjustable buckle approximately centered between said main support tube strap and said arm structure strap, said coupling strap is firmly tightened wedging said main tube strap and said arm structure strap onto the board, hence, firmly holding said main tube support and said arm structure to both ends of the board, transporting said board on said board dolly whereby said board on said board dolly can be transported;
a means for trailering said board dolly behind a bicycle, wherein, a u-shaped hitch bar is secured to a bicycle, the u-shaped hitch bar comprising a multitude of holes for adjustably mounting said hitch bar to many bicycle frame geometries, said hitch bar mounted in a generally horizontal orientation with the sides of said u-shape hitch bar extending on either side of the rear wheel of a bicycle, two of said holes in said hitch bar are arranged to accept bolting through frame accessory holes found in a bicycle frame, two of the frame accessory holes generally exist on a bicycle frame and are located above the rear axle of the bicycle and, hence, accommodate the bolting of two of said holes in said sides of said hitch bar, the two hitch accessory holes are located in said hitch bar such that the bottom or radius of said u-shaped hitch bar clears the rear of the bicycle tire, two additional holes for mounting said hitch bar to the bicycle frame are provided, one at each of the two ends of said u-shaped hitch bar to eliminate said hitch bar from rotatably moving about said hitch bar accessory holes when said board dolly is attached to said hitch bar, a clamping means wherein the clamps' inside diameter sized to fit over the bicycle chainstay tubes is secured over the chainstay tubes using a nut and bolt arrangement, said clamps grasp around the chainstay tubes and bolt to the hitch bar end holes firmly securing said hitch bar to the bicycle frame, an eye bolt is attached to said hitch bar through a hole located in the center of said radius of said u-shaped hitch bar, the eye bolt is bolted to said hitch bar, said eye bolt allows for a hitch pin to pass through the opening of said eye bolt, said eye bolt is allowed to rotate freely to prevent damage to said bicycle, arm structure, hitch bar, or board when the bicycle is in a non-perpendicular towing position relative to said board;
a means for connecting said hitch bar to said board dolly for trailering, wherein said eye bolt is inserted into said end of said vertical tube of said arm structure tee, said hitch pin is inserted into said first hole in said arm structure and through said eye bolt to join said eye bolt to said arm structure enabling said board dolly to be towed behind a bicycle, said hitch pin is stored in said first hole of said arm structure for both manually towing said board dolly and trailering said board dolly behind a bicycle, said hitch pin is held in place with a safety retainer clip.

5,348,328

SULKY WHEEL GUARD

Howard G. Millington, 20 Perry Rd., Cable, Ohio 43009

Filed Sep. 7, 1993, Ser. No. 116,698
Int. Cl.[5] B62C *1/02*
U.S. Cl. 280—63 **3 Claims**



1. A sulky wheel guard assembly in combination with a race sulky having an axle arch, a pair of shaft attached to said axle arch, a wheel rotatably mounted on a wheel axle, attaching means for attaching said wheel axle to said axle arch, a wheel fork having a pair of spaced inclined arms attached to said wheel axle and to one of said shafts which overlies the front of said wheel, and comprising:
a pair of spaced-apart and opposed side shield surfaces;
a nose shield surface joining said pair of side shield surfaces into a U-shaped plan configuration and situated forwardly of the sulky wheel and overlying said wheel fork; and
securing means securing said joined side shield and nose shield surfaces to the wheel axle and to the wheel fork such that said nose and side shield surfaces overlie said wheel fork and the front portion of said wheel, wherein said means securing said joined side shield and nose shield surfaces to the wheel fork includes a compound flange at an upper margin of each one of said pair of side shield surfaces for engaging respective ones of the pair of spaced inclined arms of the wheel fork such that the fork lies between said pair of side shield surfaces.

5,348,329

TRAILER WITH COMBINED TOWING AND CENTERING DEVICES

Andre Morin; Nicole Morin, both of Louverne; Patricia Morin, Tours; Tony Morin, Bron, all of France; Christophe Morin, San Anselmo, Calif., and Nathalie Loizeau, Paris, France, assignors to Clipcar Industrie, Charlemagne, France

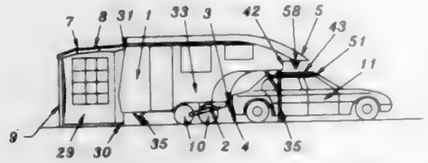
PCT No. PCT/FR90/00883, § 371 Date Apr. 20, 1992, § 102(e) Date Apr. 20, 1992, PCT Pub. No. WO91/08940, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 6, 1990, Ser. No. 849,015

Claims priority, application France, Dec. 2, 1989, 89 16367; Sep. 27, 1990, 90 12086; Nov. 20, 1990, 90 14401

Int. Cl.[5] B60D *1/173, 1/36*

U.S. Cl. 280—461.1 **10 Claims**



1. An apparatus for pulling a trailer with a motor vehicle, said apparatus comprising main towing device for coupling the lower part of the trailer to the rear of the motor vehicle and a flexible fixing device for fastening the front part of the trailer to the roof of the motor vehicle,

said main towing device including at least one arm which is hinged at one end to a rotating shaft and fastened at the other end to a body that carries a towing head,

a sliding device carried by said rotating shaft, said sliding device being moveable forward and backward allowing the towing head to shift vertically and longitudinally along a vertically and longitudinally oriented midplane of the trailer, and allowing the towing head to shift to the left and to the right of said midplane, whereby an operator can position the towing head onto a ball hitch on the motor vehicle,

a locking device for said rotating shaft effectively limiting movement of the shaft when the trailer is coupled onto the vehicle for driving,

said flexible fixing device comprising a roof-rack mountable to said motor vehicle and a centering device including a centering head mountable to the front of the trailer, said centering head being removeably attachable to said roof-rack to form an upper connection,

said roof-rack including a bearing plate having a hole which receives and holds the centering head,

a slide assembly adjacent to said upper connection allowing forward and backward movement of the trailer relative to the motor vehicle, and said slide assembly allowing manual alignment of the centering head with the bearing plate hole while the trailer is coupled to the motor vehicle.

5,348,330

INTEGRATED STABILIZER JACK APPARATUS

Jeffrey P. Few, West Hills, Calif., and Thomas Rumler, Bristol, Ind., assignors to Norco Industries, Inc., Compton, Calif.

Filed Aug. 25, 1993, Ser. No. 111,410

Int. Cl.[5] B60S *9/02*

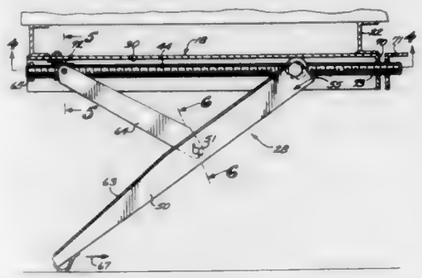
U.S. Cl. 280—475 **5 Claims**

1. Integrated recreational vehicle stabilizer apparatus to be driven by a manual driver comprising;

a floor support structure including a floor support framework and supported floor, having lateral sides and front and rear ends, said floor support framework forming two pairs of integrated elongated forward and rearward, downwardly opening channel shaped jack housings at said forward and rearward ends and formed with respective top walls having respective downwardly facing bearing surfaces, each said housing projecting from an inboard end to an open outboard end;

support wheels for supporting said weight of said support structure;

two pairs of forward and rearward stabilizer jack assemblies mounted from the respective said jack housings and including respective inboard and outboard mounting brackets mounted to the respective said jack housings at the respective said inboard and outboard ends, jack screws carried on their opposite ends by the respective said mounting brackets and including at their respective outer ends respective drive heads disposed at the respective said open outboard ends to be accessible by said manual driver, trunions formed with respective through threaded bores receiving the respective said jack screws and bearing against the respective said bearing surfaces, elongated upwardly opening channel support legs received in a respective said downwardly opening housing when the respective jack assemblies are in respective retracted positions and carried on their respective one extremities



from the respective said trunions and formed on their respective opposite extremities with respective feet, and respective elongated jack links formed with upwardly opening channels configured to, when the respective jack assemblies are in their respective retracted positions, be received in the respective channel leg, said links being pivotally connected between said outboard mounting brackets and the respective intermediate portion of the respective support legs, said jack screws being operative in response to rotation in respective said one direction to draw the respective said trunions in respective outboard directions to lower the respective said legs from respective retracted positions to extended positions to engage the respective said feet with a support surface supporting said recreational vehicle and to, upon continued rotation in the respective said one direction, draw said trunions further outboard causing the respective said trunion to act directly upwardly on the respective said bearing surfaces to resist downward movement of said framework and take part of the weight off said support wheels.

5,348,331

TRAILER STABILIZER AND METHOD

Wallace H. Hawkins, Greenville, S.C., assignor to Delta Estates, Inc., Greenville, S.C.

Filed Feb. 21, 1992, Ser. No. 839,622

Int. Cl.[5] B60D *1/22*

U.S. Cl. 280—476.1 **25 Claims**

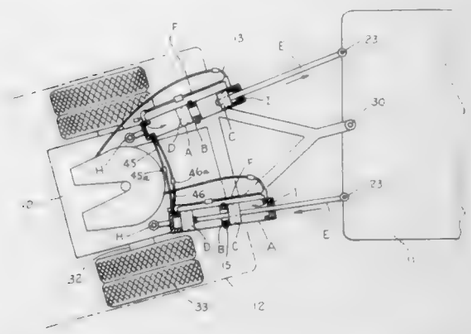
1. A stabilizer for trailers attached to a tractor wherein a wheeled dolly has a pivotal connection on a first trailer and a pivotal connection by a king pin to a second trailer for highway use comprising:

a pair of transversely spaced pneumatic cylinder assemblies each pivotally connected on one end to said first trailer and respectively having a first piston rod and a second piston rod;

a pivotal connection between the other end of said cylinder assemblies and said wheeled dolly;

one of said assemblies exerting a pulling force at all times during which a respective side of a back end of said first trailer is too far apart from a respective side of a front end of said second trailer urging a respective piston rod toward a predetermined position to urge a respective side of the dolly into alignment;

said predetermined position being a neutral position of said



respective first and second piston rods wherein said dolly is in alignment with said first trailer; and

pneumatic means in said cylinder assemblies maintaining said first and second piston rods in said neutral position except when overcome by movement of said first trailer out of alignment;

whereby tracking is improved through such alignment and any tendency to fishtail is reduced.

5,348,332

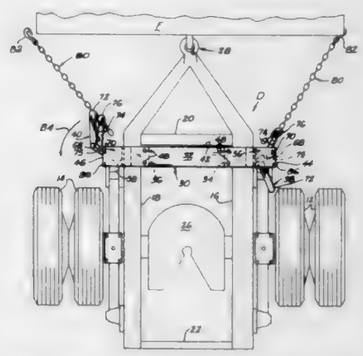
PUP TRAILER DOLLY BACK-UP DIRECTION GUIDE

David Hamilton, 111 N. 5th, Weatherford, Okla. 73096

Filed Jun. 11, 1993, Ser. No. 74,649

Int. Cl.[5] B60D *1/167, 1/58*

U.S. Cl. 280—476.1 **3 Claims**



1. A backup direction guide for a pup trailer dolly having a horizontal frame having side beams sprung from a wheel equipped axle having a semitrailer supporting fifth wheel and having a forward end portion characterized by an A-frame pintle hook equipped tongue connected with a towing vehicle, the improvement comprising: means for temporarily connecting said pup trailer dolly against any lateral movement relative to said towing vehicle, said means including:

an elongated rigid plate transversely overlying and projecting laterally outward from a forward end of said frame side beams,

clamp jaws cooperating with said plate for gripping intermediate portions of said frame side beams;

an L-shaped member underlying and cooperatively secured to each end portion of said plate for forming an outwardly open slot having a side wall and a bottom wall;

a load binder secured to each bottom wall of the respective slot; and,

an elongated flexible member tautly extending between each load binder and a respective rearward lowermost lateral limit of a pup trailer dolly towing vehicle.

5,348,333

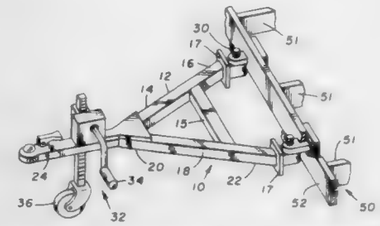
PORTABLE TONGUE FOR TRAILERS

Calvin J. Gee, Somerville, Ala., assignor to GMT, Inc., Boaz, Ala.

Filed Jan. 19, 1993, Ser. No. 5,789

Int. Cl.[5] B60D *1/52*

U.S. Cl. 280—491.5 **4 Claims**



1. A detachable hitch apparatus adapted for connection to an elongated frame having a plurality of longitudinal, load bearing, main members extending substantially the length of the frame in a common plane and at least one cross member arranged transverse to the longitudinal, load bearing, main members, said at least one cross member including a pair of spaced openings therein; said detachable hitch apparatus comprising vehicular securing means for releasably securing said hitch apparatus to a vehicle, a pair of arms extending in a direction opposed to said vehicular securing means, each of said arms having a first end and a second end, said first end of each said arm being secured to said vehicular securing means, and releasable attachment means associated with each said second end of said arms for releasably securing said pair of arms to the said at least one cross member, said releasable attachment means comprises a pair of female coupling members, each including a base plate adapted to be secured to a back side of the said at least one cross member, a projection fixed to said base plate adapted to pass through said spaced openings in the said at least one cross member, a vertically disposed opening in each of said projections, and a plate secured to each said second end of said arms and a male coupling member secured to each of said plates, each of said male coupling members including an enlarged base and a bar extending upwardly from said enlarged base and having a transverse bore therein.

5,348,334

SUSPENSION APPARATUS FOR A MOTOR VEHICLE

Paul J. Giltinan, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 6, 1993, Ser. No. 102,936

Int. Cl.[5] B60G *3/00*

U.S. Cl. 280—691 **18 Claims**

1. A suspension apparatus for a motor vehicle having a longitudinal axis, a vertical axis and a transverse axis, each being mutually orthogonal, said apparatus being interposed and connecting a chassis to a steerable wheel and tire assembly, said suspension apparatus comprising:

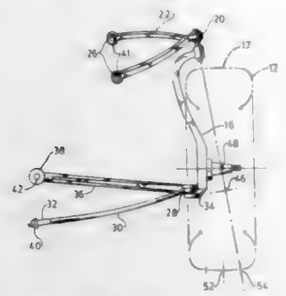
a tall knuckle having an upper end and a lower end said knuckle being operative to rotatably support said wheel and tire assembly;

a single upper control arm pivotally interposed between said chassis and said upper end of said knuckle and having an outer arm end and an inner arm end;

a tension strut pivotally interposed between said chassis and

said lower end of said knuckle and having an outer strut end and an inner strut end, said strut extending laterally and rearwardly from said chassis to said knuckle so as to form a predetermined angle between said strut and said longitudinal axis of said vehicle; and

a lateral link pivotally interposed between said chassis and



said lower end of said knuckle and having an outer link end and an inner link end, said link extending from said chassis to said knuckle substantially parallel to the transverse axis of said vehicle as projected both in the horizontal and transverse planes whereby said apparatus is arranged to establish a zero kingpin offset and a negative scrub radius.

5,348,335

DEVICE FOR ADJUSTMENT OF THE LONGITUDINAL POSITION OF AN ALPINE BINDING

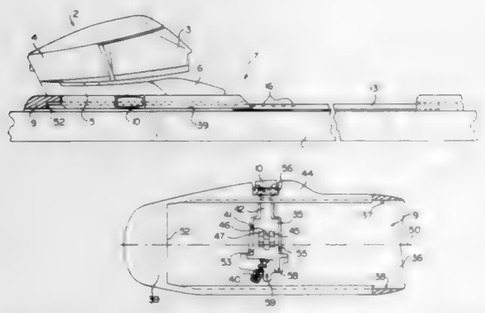
Pierre Dasarmaux, Evires; Vincent Dogat, Annecy, and Pascal Thomas, Chambery, all of France, assignors to Salomon S.A., Annecy, France

Filed Nov. 9, 1992, Ser. No. 973,715

Claims priority, application France, Nov. 8, 1991, 91 14028; Mar. 30, 1992, 92 03973

Int. Cl.[5] A63C *9/22*

U.S. Cl. 280—633 **15 Claims**



1. Device for longitudinal adjustment of an alpine ski binding, designed to hold a boot supported on a ski, said binding comprising a position-retention device (**3**) for holding an end of a boot, a body (**4**), and a base (**5**) supporting said body by which said binding may be assembled to said ski, said adjustment device further comprising a longitudinal slide-rail (**8**) attached to said ski and along which said binding can slide, and means for blocking said binding on said slide-rail in at least two different longitudinal positions, said device comprising a base plate (**9**) with an upper surface for supporting said base (**5**) of said binding, said base plate (**9**) being mounted so as to slide on said slide-rail (**8**) and incorporating a longitudinally-positioned locking mechanism (**35**), spring means (**40**) being housed in said base (**5**) for elastically returning said locking mechanism (**35**) to locking position, and a transversely movable control button (**10**) operatively connected to said locking mechanism (**35**) for controlling opening of said locking mechanism, wherein said slide-rail (**8**) comprises a central portion having longitudinally aligned teeth (**23–31**) delimiting between said teeth at least two tooth spaces, and wherein locking mechanism (**35**) having a free end equipped with a control button (**10**) accessible on a lateral edge of said base plate, said locking mechanism incorporating three juxtaposed teeth (**45, 46, 47**) distributed in a longitudinal direction, including two longitudinally aligned end teeth (**45, 47**) and a central tooth (**46**) set back transversely, said end teeth engaging in two successive tooth spaces of said slide-rail under the elastic force of a blocking mechanism return spring (**40**), said central tooth (**46**) coming into abutment against a tooth of said slide-rail adjacent to said two tooth spaces, cooperating with said tooth spaces on said slide-rail by transverse engagement, so as to immobilize said base plate (**9**) longitudinally.

5,348,336

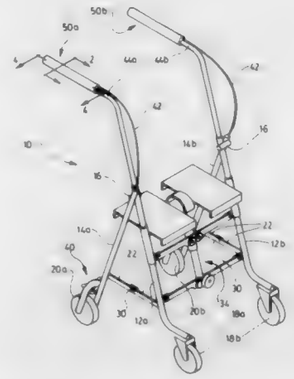
WALKING AID

Geoffrey R. Fernie, 29 Blaketon Road, Etobicoke, Ontario, Canada M9B 4W4; Brian P. Doyle, 36 High Park Avenue, Toronto, Ontario, Canada M6P 2R9, and Gerald T. Griggs, 77 Shrewbury Square, Scarborough, Ontario, Canada M1T 1L4

Filed Feb. 9, 1993, Ser. No. 15,443

Int. Cl.[5] B62B *3/02*

U.S. Cl. 280—641 **15 Claims**



1. A walking aid for a handicapped person and which comprises;

a frame;

wheels on said frame for engaging a walking surface;

brake means for engaging at least one of said wheels;

handle means attached to said frame, and being oriented at a suitable height for a person, who is thereby enabled to push the walking aid along the walking surface;

two fixed handbar portions fixed to said handle means oriented for gripping by respective hands of the person each said fixed handbar portion defining a predetermined longitudinal axis;

at least one brake operating moveable member movably secured to a said fixed handbar portion in alignment with its said predetermined axis whereby said moveable member may be swung relative to said one fixed handbar portion, said moveable member being normally aligned with and substantially coaxial with said fixed handbar portion, movement of said moveable member moving the same out of such alignment, and,

brake connection means extending between said fixed handbar portion and said moveable member, whereby movement of said moveable member out of alignment with said fixed handbar portion will cause movement of said brake connection means thereby applying said brake means, and retarding said walking aid.

5,348,337

AUTOMOBILE SUSPENSION

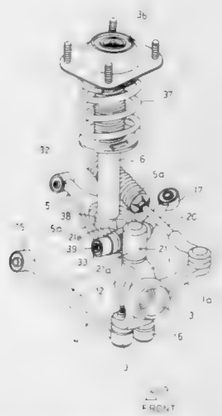
Fumitaka Ando, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 23, 1992, Ser. No. 996,788

Claims priority, application Japan, Dec. 27, 1991, 3-346215; Mar. 18, 1992, 4-062185; Mar. 31, 1992, 4-077778

Int. Cl.[5] B60G *3/20*

U.S. Cl. 280—672 **18 Claims**



1. An automobile suspension, comprising:

a wheel support member for rotatably supporting a wheel;

a lower arm pivotally fitted at one end thereof to a lower end of the wheel support member and pivotally fitted at an other end thereof to a vehicle body so as to be swingable around an axis extending in a substantially longitudinal direction of a vehicle;

a damper device, elastically fitted at an upper end thereof to the vehicle body, for damping a vertical vibration of the wheel;

a connecting member pivotally fitted to the lower end of the damper device so as to be swingable around an axis extending in substantially the longitudinal direction of the vehicle and pivotally fitted to the upper end of the wheel support member as to be swingable around an axis extending in a substantially vertical direction; and

an upper arm pivotally fitted at one end thereof to the vehicle body and pivotally fitted at an other end thereof by a connection part to at least one of the damper device and the connecting member as to be swingable around an axis extending in substantially the longitudinal direction of the vehicle;

wherein said connection part extends substantially in the longitudinal direction of the vehicle and is of a longitudinal length for inhibiting non-longitudinal pivotal movement.

5,348,338

ACTIVE VEHICLE SUSPENSION SYSTEM

Nobuharu Kuriki; Seiji Ohsaki; Hideaki Shibue, and Yoshiki Noro, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1992, Ser. No. 857,666

Claims priority, application Japan, Jun. 25, 1991, 180254

Int. Cl.[5] B60G *17/015*

U.S. Cl. 280—707 **15 Claims**

1. An active vehicle suspension system, comprising:

a hydraulic actuator disposed between a wheel and a vehicle body, said actuator including a cylinder and a piston slidably received therein, said piston dividing an interior of said cylinder into first and second chambers which are defined by first and second pressure receiving surfaces of said piston, respectively, in cooperation with said cylinder;

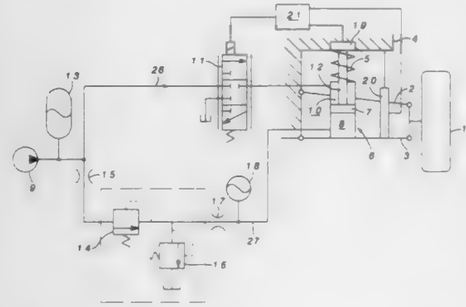
a pressure source;

a first line connecting said pressure source to said first chamber;

a control valve for controlling a pressure supplied from said pressure source to said first chamber of said cylinder;

a second line connecting said pressure source to said second chamber;

pressure reducing means provided in said second line for reducing a level of pressure supplied from said pressure



source to said second chamber during all normal operations of the active vehicle suspension system to a level lower than a maximum pressure which said control valve can supply to said first chamber; and

an accumulator connected to said second line;

said first pressure receiving surface being substantially smaller than said second pressure receiving surface; and

said control valve being adapted to control said pressure applied to said first chamber of said cylinder over a range defined between an output pressure of said pressure source anti a zero pressure.

5,348,339

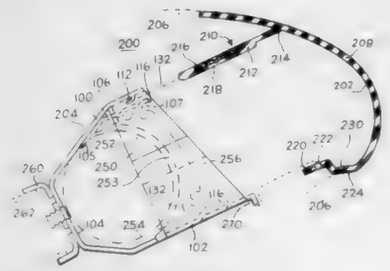
AIR BAG MODULE WITH COVER

Darin J. Turner, Warren, Mich., assignor to AlliedSignal Inc., Morristown, N.J.

Continuation-in-part of Ser. No. 968,751, Oct. 30, 1992. This application Dec. 23, 1992, Ser. No. 996,231

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—728 B **4 Claims**



1. An air bag module (**200**) comprising:

a housing (**204**) having an open top and a plurality of tabs (**270**) extending from an outer wall (**102**) proximate the open top, each tab including a bent over three sided member (**272**) formed of part of the outer wall (**102**), including a first and a second part extending from the outer wall and a center member (**272**) joining the first and second part, the first second part and center member defining a slot (**280**) with the center member spaced from the outer wall.

a deployment door (**202**) including a top portion (**208**) for enclosing the open top of the housing, a flange portion

(220) engageable with the tabs and a hinge portion (210) securely fastened to the housing 204;

the flange portion including openings (222) for receiving a corresponding one of the tabs, and a boss (290) that extends into each opening narrowing a portion of each opening, such that upon full insertion of a tab within a corresponding narrowed portion of each opening the boss is positioned with a corresponding slot (280) securing the flange portion to the housing and;

tear seam means (230), formed on the top of the door which when torn, upon inflation of an air bag, permit portions of the top to rotate about the hinge portion (210).

5,348,340

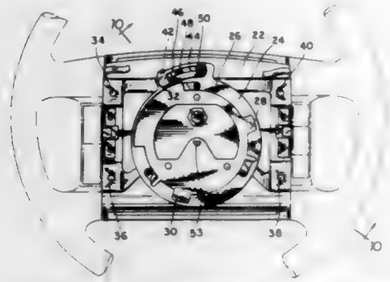
AIR BAG ASSEMBLY FOR MOTOR VEHICLES

Gerard J. Humphreys, Boonton Township, Morris County, N.J.; Allen K. Breed, South Padre Island, Tex., and Torbjorn Thuen, Lakeland, Fla., assignors to Breed Automotive Technology, Inc., Lakeland, Fla.

Continuation-in-part of Ser. No. 715,493, Jun. 14, 1991, Pat. No. 5,197,757. This application Jan. 25, 1993, Ser. No. 8,689

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—728 A **26 Claims**



1. An air bag system for mounting on a motor vehicle comprising:

an air bag assembly including a gas generator having an armed and a disarmed state;

housing means disposed in said motor vehicle for housing said gas generator, said housing means including mounting means for mounting said gas generator and securing said gas generator to said housing means, said mounting means cooperating with said gas generator for automatically arming said gas generator when said gas generator is secured to said housing means;

cover means for closing said housing means; and

cover prevention means for preventing said cover means from being installed on said housing means if said gas generator is in said disarmed state.

5,348,341

METHOD OF FOLDING AN AIR BAG

James L. Webber, Spring Valley, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 1, 1993, Ser. No. 143,889

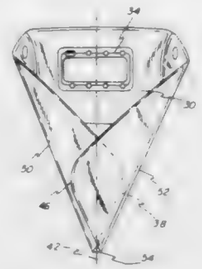
Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—728 R **14 Claims**

1. A method of folding an air bag for a vehicle supplemental restraint system comprising the steps of:

(a) providing an air bag in a substantially flattened position, said air bag having a front edge and a rear edge at longitudinally spaced ends thereof;

(b) folding said air bag along lines extending between said front and rear edges to form a point adjacent to said rear edge; and



(c) forming said air bag into a roll, starting at said point and rolling said air bag toward said front edge.

5,348,342

AIR BAG SYSTEM FOR SIDE COLLISION PROTECTION

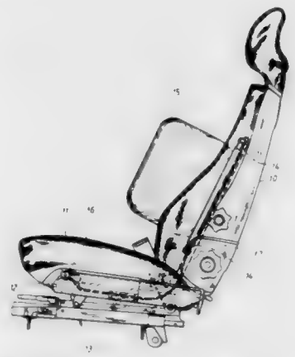
Yngve Haland, Vargarda, and Stig Pilhall, Trollhättan, both of Sweden, assignors to AB Volvo, Sweden

Filed Mar. 31, 1993, Ser. No. 40,919

Claims priority, application Sweden, Apr. 10, 1992, 9201154-3

Int. Cl.[5] B60R *21/22*

U.S. Cl. 280—730 A **5 Claims**



1. Apparatus for protecting occupants of a vehicle during side collisions, said vehicle having a vehicle body including sides and at least one adjustable vehicle seat including a frame mounted on said vehicle body, said apparatus comprising at least one air bag mounted in said vehicle seat, sensor means for initiating inflation of said at least one air bag, said sensor means mounted on said vehicle seat frame, and compression load transfer means mounted between at least one side of said vehicle body and said sensor means whereby deformation of said vehicle side causes activation of said sensor means by a direct transfer of energy through said compression load transfer means, said adjustable vehicle seat being adjustable within a predetermined range of adjustment, and said compression load transfer means having an extent of coverage corresponding at least to said predetermined range of adjustment of said adjustable vehicle seat.

5,348,343

AIR BAG DEPLOYMENT BIAS APPARATUS

Laura A. Hawthorn, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 1, 1993, Ser. No. 143,888

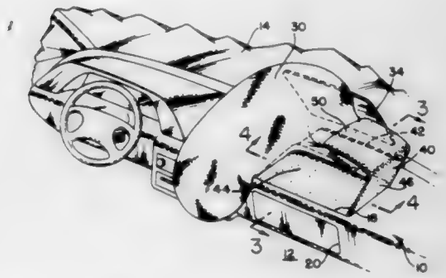
Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—730 R **4 Claims**

1. In a vehicle having an air bag stored in a folded condition forwardly of a seated occupant and deployable by the introduction of pressurized inflation gas into the air bag to an occupant restraining position relative the seated occupant, the improvement comprising,

apparatus for selectively initiating the deployment of the air bag laterally of the occupant,

said apparatus including a deployment guide member having a normal stored position overlying the folded air bag and deployable toward the occupant by the deploying air bag,



said guide member having at least an end wall pleated inwardly to lie on top of the folded air bag, and a top flap hingedly connected to the end wall and folded to lie on top of the pleated end wall in a closed top position so that initial deployment of the air bag unpleats the end wall and permits the top flap to shift toward the occupant and then bias initial deployment of the air bag laterally of the occupant when the top flap is held in the folded position until the eventual unfolding of the top flap permits subsequent unbiased deployment of the air bag toward the occupant.

5,348,344

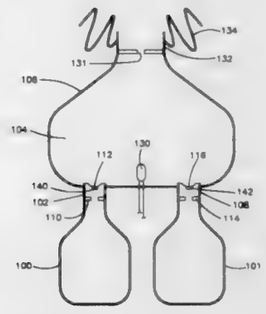
APPARATUS FOR INFLATING A VEHICLE OCCUPANT RESTRAINT USING A MIXTURE OF GASES

Jack L. Blumenthal, Los Angeles; Nahum Gat, Manhattan Beach, both of Calif.; Ernst M. Faigle, Imlay City, Mich.; John H. Semchena, Royal Oak, Mich., and Richard J. Thompson, Imlay City, Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Continuation-in-part of Ser. No. 761,685, Sep. 18, 1991, abandoned. This application Sep. 18, 1992, Ser. No. 947,147

Int. Cl.[5] B60R *21/26*

U.S. Cl. 280—737 **49 Claims**



44. An apparatus for inflating a vehicle occupant restraint, said apparatus comprising:

first and second separate containers for containing gas;

a fuel gas in said first container;

an oxidizer gas in said second container;

a containing means for receiving said fuel gas and said oxidizer gas from said first and second separate containers when said fuel gas and said oxidizer gas are released from said first and second containers;

means for releasing said fuel gas and said oxidizer gas from said first and second containers for flow into said containing means and providing a combustible mixture of gases said containing means;

igniter means for igniting the combustible mixture of gases in said containing means; and

directing means for directing the ignited combustible mixture of gases from said containing means to said vehicle occupant restraint to inflate the vehicle occupant restraint.

5,348,345

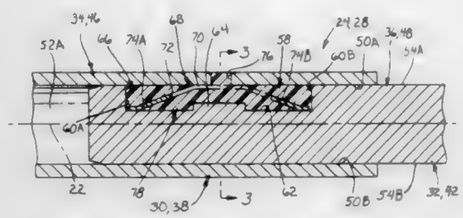
VARIABLE LENGTH SHAFT ASSEMBLY

Michael A. Dykema, Birch Run, and Terry E. Burkhard, Bay City, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 27, 1993, Ser. No. 68,519

Int. Cl.[5] B62D *1/19*

U.S. Cl. 280—777 **9 Claims**



1. In a variable length shaft assembly including

a first shaft,

a second shaft,

means defining a tubular polygonal end on said first shaft having a planar wall,

means defining a correspondingly polygonal solid end on said second shaft disposed in said polygonal tubular end for telescopic bodily movement relative thereto and for limited rotation relative thereto through an angular interval corresponding to linear clearances between said solid polygonal end and said tubular polygonal end,

means defining a spring chamber in said solid polygonal end having a side open to said planar wall of said tubular polygonal end, and

a spring in said spring chamber having a flat body portion bearing in sliding engagement against said planar wall of said tubular polygonal end and biasing said solid polygonal end and said tubular polygonal end in opposite directions to a substantially zero clearance relationship in which linear clearance between said solid polygonal end and said tubular polygonal end is reduced to substantially zero,

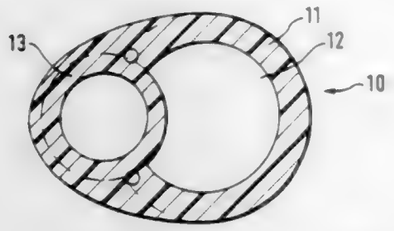
the combination comprising:

means defining an injection port in said polygonal tubular end,

means defining a passage from said injection port to said spring chamber behind said flat body portion of said spring, and

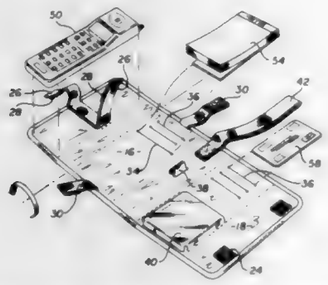
a monolithic plastic block molded in situ in said spring chamber by introduction of liquid plastic through said passage capturing said zero linear clearance relationship between said solid polygonal end and said tubular polygonal end and defining a slide bearing therebetween and encasing said spring such that said flat body portion thereof defines a reinforced wear plate on said plastic block in sliding engagement on said planar wall of said tubular polygonal end.

5,348,346
SKI STICK
Michael Unger, Mäntyharju, Finland, assignor to Neste OY, Finland
Filed Jul. 20, 1993, Ser. No. 94,053
Claims priority, application Finland, Dec. 18, 1991, 915982
Int. Cl.[5] A63B *53/12*
U.S. Cl. 280—819 19 Claims



11. A ski stick comprising a hollow reinforced-plastic profile (10) having a profile wall (11) and at least one reinforcement element (13) extending in the longitudinal direction, said at least one reinforcement element (13) being at least partially embedded in the manufacturing step of the profile (10) in the profile wall (11) as an integral part thereof, said profile having an elliptic cross-section, said at least one reinforcement element being arranged on a longer axis line of the elliptical cross-section.

5,348,347
PORTABLE PHONE ORGANIZER
Joe Shink, Valencia, Calif., assignor to Auto-Shade, Inc., Moorpark, Calif.
Filed Jul. 26, 1993, Ser. No. 97,459
Int. Cl.[5] B42D *1/00*
U.S. Cl. 281—31 9 Claims

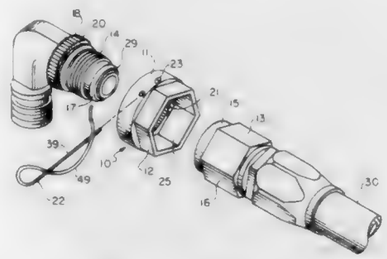


1. A portable phone organizer book that can hold a portable phone, a calculator and a note pad, comprising:
a flexible book which has a first cover portion that can fold onto a center cover portion and a second cover portion that can fold onto said first cover portion, said flexible book having a first slit that is adapted to capture the note pad;
a phone strap attached to said flexible book and adapted to secure the portable phone to said flexible book;
a pocket attached to said flexible book and adapted to secure the calculator to said flexible book; and,
fastening means for attaching said second cover portion to said first cover portion.

5,348,348
DATA-WRITTEN MEDIUM
Koji Hanada; Makiko Hamuro; Takeshi Yoshikawa; Toru Ohmura, and Motohiko Kashioka, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 587,784, Sep. 26, 1990, abandoned. This application Feb. 24, 1992, Ser. No. 840,479
Claims priority, application Japan, Sep. 26, 1989, 250174; Dec. 8, 1989, 317682
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—91 16 Claims

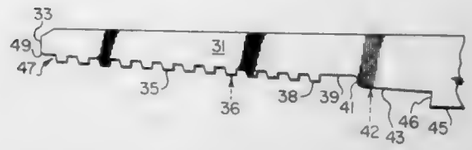
1. A data-written medium in which the data is readable with a device having a light source emitting light in a wavelength of 600 to 700 nm, the medium comprising a substrate and an ink layer containing not more than 0.1 g/m^2 of a chromatic color dyestuff having absorption substantially at 600 to 700 nm and at least one other color dyestuff which does not have a main absorption in the wavelength of 600 to 700 nm, said ink layer being formed on said substrate and having a form constituting the data.

5,348,349
SPLINED SAFETY LOCK
Norman S. Sloane, 14633 Leahy Ave., Bellflower, Calif. 90706
Filed Nov. 22, 1993, Ser. No. 155,148
Int. Cl.[5] F16L *55/00*
U.S. Cl. 285—92 5 Claims



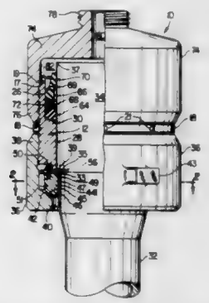
1. In a safety retainer ring assembly in combination with a shaped nut threadably carried on a coupling and engageable with a threaded nipple, the improvement which comprises:
a retainer ring having an annular body with an open-ended bore configured at one internal end to conform with said shape of said shaped nut and raised shoulders projecting into said bore;
a supporting structure;
said nipple having an external collar provided with a plurality of splines arranged in parallel spaced-apart relationship;
said retainer ring having a plurality of parallel internal splines disposed in said bore at said bore end opposite to said bore end carrying said shaped end;
said bore splines and said collar splines selectively mateable to prevent rotation of said ring;
a plurality of apertures provided in said ring at its shaped end;
a resilient clip adapted to be inserted through selected ones of said plurality of apertures disposed between said collar and said nut;
said ring is slideably carried on said coupling; and
said ring includes, internal shoulders engageable with said collar to prevent said ring from sliding on said collar after threaded engagement of said nut with said threaded nipple.

5,348,350
PIPE COUPLING
Thomas L. Blose, Houston, Tex., and David L. Britten, Calgary, Canada, assignors to Ipsco Enterprises Inc., Wilmington, Del.
Continuation-in-part of Ser. No. 467,620, Jan. 19, 1980, abandoned. This application Oct. 3, 1991, Ser. No. 770,567
Int. Cl.[5] F16L *25/00*
U.S. Cl. 285—94 30 Claims



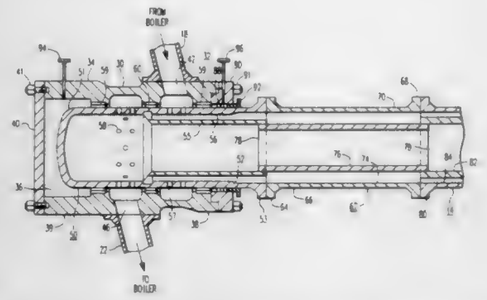
1. A pipe connection of the type having a female component and a mating male component, each matingly threaded for connection therebetween, and each provided with a sealing area adjacent the threaded area, the sealing area of the coupling components being formed as mating frusto-conical surfaces each having a preselected gauge point intermediate the axial ends of the sealing area, at least one of said frusto-conical surfaces having controlled surface roughness; the respective sealing areas of the components being in axially aligned sealing engagement when the pipe connection has been assembled; characterized in that:

5,348,351
COUPLING APPARATUS
Karl K. LaFleur, and Donald R. Wade, both of Weatherford, Tex., assignors to LaFleur Petroleum Services, Inc., Weatherford, Tex.
Continuation of Ser. No. 809,755, Dec. 18, 1991, Pat. No. 5,282,653, which is a continuation-in-part of Ser. No. 629,542, Dec. 18, 1990, Pat. No. 5,152,554. This application Jan. 31, 1994, Ser. No. 189,203
Int. Cl.[5] F16L *17/03*
U.S. Cl. 285—110 11 Claims



1. A coupling apparatus for connection to a cylindrical member, comprising:
(a) an annular body member having a plurality of teeth extending within said body member for engagement with said cylindrical member and an annular housing extending within said body member and spaced apart from said plurality of teeth, said annular body member and said cylindrical member being coaxially arranged; and
(b) a sealing assembly for sealing against fluid flow through a space defined between said coaxial annular body member and said cylindrical member, said annular body member having support means for supporting and retaining said sealing assembly in said space, said sealing assembly engaging said support means and comprising first sealing means, preventing means and second sealing means, said first sealing means being engaged with said annular body member and being spaced radially from said cylindrical member, said second sealing means being engaged with said cylindrical member, and, said preventing means being intermediate said first sealing means and said second sealing means and spaced radially from said cylindrical member, wherein said fluid deforms said first sealing means into sealing engagement with said annular body member at a first predetermined fluid pressure, said second sealing means extends at an acute angle to said direction of said fluid flow that said fluid deforms said second sealing means into sealing engagement with said cylindrical member at a second predetermined fluid pressure, and said preventing means and the radial extent said radial space prevent said second sealing means from deforming into said radial space.

5,348,352
ROTARY CONNECTOR WITH REMOVABLE SPOOL
Albert P. Ciez, Murrysville Boro; George A. Blasiole, Greensburg, and William A. Bencloski, Herminie, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sep. 16, 1992, Ser. No. 945,458
Int. Cl.[5] F16L *39/04*
U.S. Cl. 285—136 20 Claims

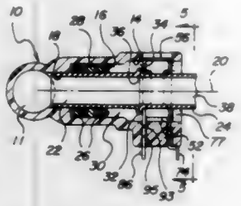


1. A rotary connector for coupling a rotating pipe to at least one stationary pipe, comprising:
a casing having an inboard end, an outboard end, a cylindrical passage extending between said ends of said casing, and a passage from each stationary pipe communicating with said cylindrical passage;
a rotary stem, positioned within said cylindrical passage of said casing, having a closed end, an open end, and a fluid flow path between each stationary pipe and said rotating pipe;
a removable spool having a first end removably connected to said rotary stem and a second end removably connected to said rotating pipe, said removable spool having a fluid flow path between each stationary pipe and said rotating pipe; and
a seal attached to said casing and positioned adjacent to said rotary stem for sealing said rotary stem within said casing said seal being located proximate the inboard end of the casing with no dynamic seal being located between said casing and said rotary stem outboard thereof.

5,348,353
POSITIVE QUICK-CONNECT TUBE LOCKING CONSTRUCTION WITH PREASSEMBLY RETENTION OF SPRING KEEPER
Kevin R. Deweerdt, Walled Lake, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Dec. 2, 1993, Ser. No. 160,137
Int. Cl.[5] F16L *37/12, 41/00*
U.S. Cl. 285—305 4 Claims

1. Quick connect locking and fluid sealing construction for connecting fluid tubing to a primary member having a main

fluid conducting passage therein, said primary member having an extension with an open end receptacle therein operatively communicating with said main passage, said tubing having an axis, a cylindrical connector portion, and a collared end extending outwardly of the diameter of said connector portion and spaced from the terminal end thereof, said connector portion of said tube having a head portion with an opening therein generally transverse to said axis, said opening in said head portion defined by wall means, a spring keeper having laterally spaced front and rear pairs of laterally spaced legs and defining an entrance opening at the lower end thereof and a large width opening communicating with said



large width opening, at least one of said legs having a detent associated therewith, track means in at least one of said wall means for receiving said detent means and for guiding said spring keeper to a detent stop position in which said large width opening is aligned with said opening in said head portion so that said collared end of said tubing can be inserted into said receptacle, said spring clip having an upper end for connecting said pairs of legs and for providing a contact to receive and installation force to displace said clip from said detent position to a fully installed and locked position in which said small width opening receives a portion of said tubing and said collar in said receptacle as said legs lock onto said head portion to prevent removal of said spring keeper and withdrawal of said tubing from said extension.

5,348,354

PRONGED FITTING

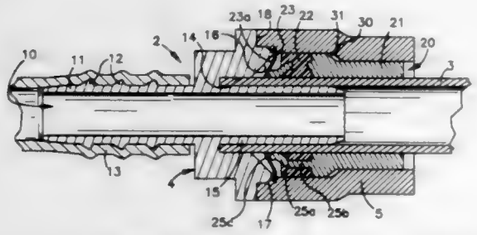
Jean-Pierre Badoureaux, Fillinges, France, assignor to Parker Hannifin RAK S.A., Ville La Grand, France

Filed Mar. 23, 1992, Ser. No. 856,014

Claims priority, application France, Mar. 22, 1991, 91 03927

Int. Cl.[5] F16L *37/084*

U.S. Cl. 285—308 **4 Claims**



1. A pronged fitting for connection with a tube, comprising:

a) a body with a cross bore therethrough having one end through which said cross bore extends and with cross bore connection means for connecting said cross bore for fluid flow, and another end having:

a tubular nozzle on which a tube can be received and through which said cross bore extends, and

a bushing connection surface;

b) a bushing sealingly connected to said bushing connection surface and forming, together with said tubular nozzle, an annular chamber coaxial to said cross bore;

c) a retainer ring fitting radially closely within and able to slide axially in said annular chamber;

d) an annular seal disposed in said annular chamber and extending between and engaging said bushing and a tube received on said tubular nozzle for providing a fluid seal therebetween;

e) a pronged washer connected within said bushing and disposed in said annular chamber and having prongs extending radially inwardly to engage and hold a tube received on said tubular nozzle; and means for limiting the sliding movement of said retainer ring away from said pronged washer;

f) said retainer ring having an extension with holes therethrough which faces said prongs of said washer so that sliding movement of said retainer ring within and axially along said annular chamber toward said prongs causes said extension to engage said prongs so as to release the hold of said prongs on a tube received on said tubular nozzle and held by said prongs and wherein said annular seal extends about said extension and through said holes with a portion of the extension extending beyond said annular seal toward said prongs of said washer for said engagement with said prongs.

5,348,355

AUTOMOTIVE ENGINE HOOD LATCH MECHANISM

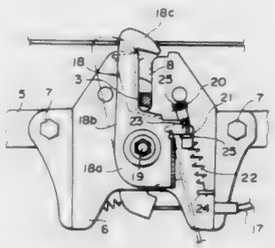
Takeji Oyha, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 9, 1992, Ser. No. 988,166

Claims priority, application Japan, Dec. 11, 1991, 3-109854[U]; Dec. 11, 1991, 3-109855[U]; Dec. 12, 1991, 3-110166[U]

Int. Cl.[5] E05C *19/12*

U.S. Cl. 292—11 **11 Claims**



1. An engine hood latch mechanism for a vehicle for locking an engine hood of the vehicle in a closed position comprising

a striker fixed to the lower surface of the engine hood,

a base member having a vertical slit into which the striker is dropped in response to closure of the engine hood,

a locking means which engages with the striker in response to drop of the striker into the vertical slit and locks the striker in a closing position where it holds the engine hood in the closed position,

a hook lever which has a hook at one end thereof and is mounted for rotation on the base member at the other end thereof by a bearing means, the hook lever being urged by a spring means toward a closing position where the intermediate portion of the hook lever extends along the vertical slit and abuts against the striker in the vertical slit and the hook closes the entrance of the vertical slit, and

a stopper means which determines the closing position of the hook lever and limits rotation of the hook lever away from the vertical slit,

wherein the improvement comprises that

said base member and said hook lever are stamped out from sheet metals,

said spring means is connected to the hook lever at a spring connecting portion which is formed on the hook lever such that the spring connecting portion protrudes from the hook lever,

said spring connecting portion is formed by bending a part of the hook lever substantially at right angle to the surface of the hook lever, and each of said stoppers is formed by cutting a part of the base member and bending the part substantially at right angle to the surface of the base member, and

said stopper means comprises the spring connecting portion and a pair of stoppers which are formed on the base member on opposite sides of the spring connecting portion of the hook lever and are adapted to abut against the spring connecting portion in response to rotation of the hook lever.

5,348,356

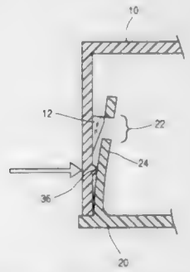
HIDDEN, RELEASABLE LATCH FOR A MOLDED PLASTIC ENCLOSURE

James I. Moulton, Sunnyvale, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Apr. 2, 1993, Ser. No. 42,301

Int. Cl.[5] E05C *19/06*

U.S. Cl. 292—80 **13 Claims**



1. A hidden, releasable latch for a molded plastic enclosure comprising:

a first panel abutting a second panel along a seam;

said first panel having a pressure bump on an inside surface a first distance from the seam, and a projecting tang on the inside surface at a further distance from the seam;

said second panel having a tab on an inside surface projecting inside, parallel and spaced from said inside surface of said first panel, said tab contacting said pressure bump, and capturing said tang in a hole within said tab; and

said tab being flexible for deflection movement during the capturing of said tang during an assembly process, and the releasing of said tang by pressure from said pressure bump during a disassembly process.

5,348,357

VEHICLE CLOSURE LATCH HAVING PLASTIC COATED RATCHET

Jeffrey L. Konchan, Shelby Township, Macomb County; Alfred L. Portelli, Waterford, and Rita M. Paulik, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 24, 1992, Ser. No. 999,497

Int. Cl.[5] E05C *3/06*

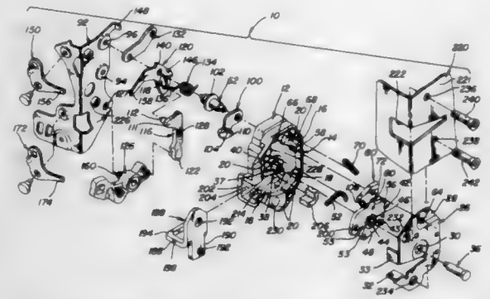
U.S. Cl. 292—216 **5 Claims**

1. A ratchet for a vehicle closure latch that mounts on a vehicle closure so as to engage and retain a striker mounted on a vehicle body when the vehicle closure is closed, the ratchet comprising:

a metal substrate and a plastic covering,

the metal substrate having a primary latching tooth for engaging a pawl to retain the ratchet in a latched position and a striker tooth for engaging a striker when the ratchet is in an unlatched position, and

the plastic covering having a chord shaped area between the primary latching tooth and the striker tooth that excludes



the metal substrate so as to reduce the size and weight of the metal substrate.

5,348,358

CONTACT LENS INSERTION TOOL

David A. Selick, 76 Leroy St., Tenafly, N.J. 07670

Filed Feb. 22, 1993, Ser. No. 20,796

Int. Cl.[5] A61F *9/00*

U.S. Cl. 294—1.2 **22 Claims**



1. A tool for viscously engaging a contact lens on a distal end thereof and for placing said contact lens in intimate contact with an eye of a contact lens user, comprising:

an elongated handle section having a bottom surface;

said bottom surface having a substantially flat surface along at least a portion of the length thereof;

an intermediate section angularly displaced from said elongated handle section;

a lens supporting section angularly displaced from said intermediate section; and

said handle section enabling said tool to be self-supported in an upright position such that when said bottom surface of said handle section is placed on a flat surface, said lens supporting section is adapted to receive and hold a contact lens thereon.

5,348,359

RETRIEVER TOOL WITH INTERCHANGEABLE ACCESSORIES

James J. Boozer, Phoenix, Ariz., assignor to Sportlite/Powermag, Phoenix, Ariz.

Filed Jan. 29, 1993, Ser. No. 10,882

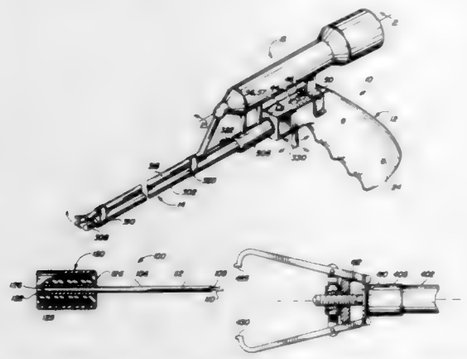
Int. Cl.[5] B25J *1/02, 15/04*

U.S. Cl. 294—24 **18 Claims**

1. A mechanics retriever for locating and retrieving objects, said tool comprising:

(a) a handle defining an internal compartment including a receptacle and a power circuit operatively connected to said receptacle;

(b) a plurality of interchangeable accessory tools including at least an accessory tool having an elongate flexible and deformable and reformable wand member with a jack at its inner end detachably securable in said receptacle and having electrically operated retriever means at its oppo-



site outer end, said accessory tool member extending axially from said receptacle in a non-deformed position; and

(c) said handle including a grip adapted to be manually grasped by the user, said grip being disposed at an angle with respect to the non-deformable section of the wand whereby said retriever means may be selectively engaged in said receptacle at said jack and energized to assist the mechanic in manually locating and retrieving objects.

5,348,360

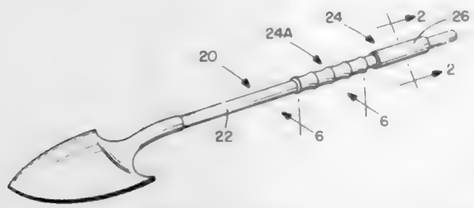
REPLACEABLE CUSHIONED CONTOURED GRIPPING DEVICE FOR THE HANDLE OF A TOOL

Albert E. Mencarelli, and Richard A. Mencarelli, both of 1050 E. Lake Rd., Oakdale, Conn. 06370

Filed Aug. 17, 1993, Ser. No. 107,915

Int. Cl.[5] B25G *1/10*

U.S. Cl. 294—57 **10 Claims**



1. A replaceable cushioned gripping device for releasable attachment to the elongated handle of a tool comprising:

a pad of foam-like resilient material dimensioned to substantially encircle the handle of the tool and being elongated to extend along a substantial length of the handle thereof, said pad having a continuously contoured outer surface such that when applied to the handle of the tool has a plurality of undulations which are longitudinally spaced along the length of the handle of the tool, each said undulation extending circumferentially of the handle of the tool, said undulations generally conforming to the fingers of a person's hand to improve the ability of the person to maintain a grip thereon when said pad is attached to the handle of the tool; and

substantially planar attachment means including at least one additional layered component for selectively releasably mounting said pad to the handle of the tool.

5,348,361

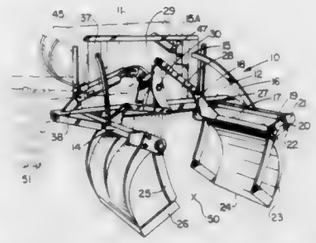
TREE MOVER

John Ilchuk, P.O. Box 852, Vermilion, Alberta, Canada T0B 4M0

Continuation-in-part of Ser. No. 766,277, Sep. 27, 1991, Pat. No. 5,217,274. This application May 13, 1993, Ser. No. 60,061

Int. Cl.[5] B66C *3/16*

U.S. Cl. 294—68.23 **4 Claims**



1. A tree mover comprising a supporting frame, a pair of loader buckets having concave inner surfaces mounted on said frame for pivotal movement about substantially horizontal axes between an open position for digging and closed position for lifting, means for pivotally moving said loader buckets about said horizontal axes, a generally U-shaped pusher blade, including a blade portion and supporting arms at each end of the blade portion, pivotally mounted on each of said buckets so as to be movable between a raised position and a lowered position with the pusher blade being closely spaced from the inner surface of the bucket throughout such movement, a first bracket mounted on one of said supporting arms and a second bracket mounted on a loader bucket and in which a double acting hydraulic cylinder is pivotally connected to the first and second brackets to bias the pusher blade between its raised and lowered position and means for moving said pusher blade.

5,348,362

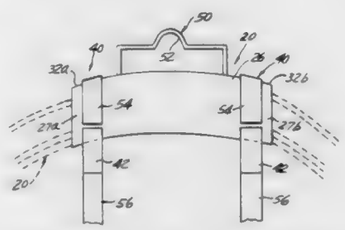
PORTABLE CARRIER FOR WIRES, HOSES AND THE LIKE

James B. Rolls, 9201 Mabley Hill Rd., Fenton, Mich. 48430

Filed Sep. 28, 1992, Ser. No. 967,416

Int. Cl.[5] A45F *5/10*

U.S. Cl. 294—151 **13 Claims**



1. A carrier (**20**) for supporting a coil (**22**) wound in a predetermined direction, the carrier comprising:

a support member (**26**) comprising a first and second open ends, extending along the predetermined direction, a bottom surface and a center portion, a first side member (**27***a*) curved convex downward from the center portion and terminating at a first side edge, a second side member (**27***b*) curved convex downward from the center portion and terminating at a second side edge, the first and second side members extending between the first and second opens ends and further curved convex downward therebetween to form an open ended trough (**29**) between the first and second open ends and first and second side edges for receipt Of the coil;

fastener means (**40**), for holding the coil (**22**) in the trough, against the bottom surface (**30**) of the support member (**26**), including a first lock means (**54**) proximate each end (**32***a,b*) of the support member (**26**), and first loop means (**42**) for being looped under the coil (**22**) for supporting the coil and engagable with the first lock means.

5,348,363

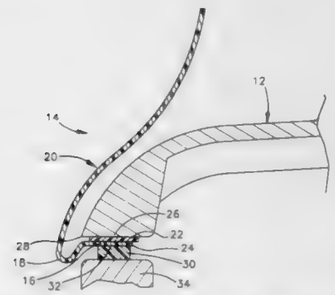
VEHICLE WINDSHIELD BUG AND DEBRIS DEFLECTOR

Raymond W. Fink, Elkhart, Ind., assignor to Kenco/Williams, Middlebury, Ohio

Filed Mar. 12, 1993, Ser. No. 30,583

Int. Cl.[5] B60J *1/20*

U.S. Cl. 296—91 **10 Claims**



1. A vehicle windshield bug and debris deflector for mounting on a vehicle hood comprising:

a) a shield, which when in use extends substantially the full width of such vehicle hood, the shield having, in cross section, a linear portion, a sharply curved portion, and an upstanding bug deflection portion;

b) at least one attachment strip, said strip having adhesive means on opposite surfaces, the adhesive means on one of the surfaces for engaging the upper surface of said linear portion of said shield and the adhesive means on the opposed surface for engaging a rearwardly extending flange portion underlying a front portion of such vehicle hood;

c) at least one resiliently deformable stabilizer, said stabilizer having adhesive means on one surface attaching said stabilizer to the lower surface of said linear portion of said shield.

5,348,364

STRIP-SHAPED FASTENER FOR MOUNTING STRIP-SHAPED MEMBER TO AUTOMOBILE BODY AND DEVICE FOR MANUFACTURING THE SAME

Yukihiko Yada, Nagoya, Japan, assignor to Tokai Kogyo Kabushiki Kaisha, Ohbu, Japan

Continuation of Ser. No. 753,232, Aug. 30, 1991, abandoned. This application Jun. 11, 1993, Ser. No. 75,018

Claims priority, application Japan, Aug. 31, 1990, 2-231435

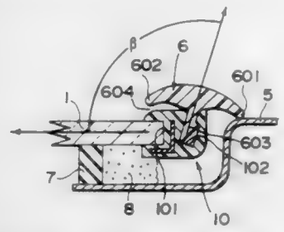
Int. Cl.[5] B60J *10/02*

U.S. Cl. 296—93 **9 Claims**

2. A strip-shaped fastener for coupling an article having a long side positioned within a window opening to a body panel of a motor vehicle which comprises:

a first long hollow portion which opens in a first direction towards the window opening for receiving said article having a long side; and

a second long hollow portion for receiving a leg portion of a fastener member, in a second direction, along a respective depth and length dimension thereof, which forms an angle with said first direction so as to be variable from an angle of substantially 90° along portions of the article to an



angle substantially less than 90° along other portions of the article.

5,348,365

DEFORMING VEHICLE DOOR

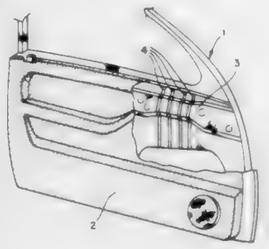
Willi Elsenheimer, Florsheim, and Hans-Dieter Zentgraf, Trebur, both of Fed. Rep. of Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 24, 1993, Ser. No. 125,726

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1992, 4234799

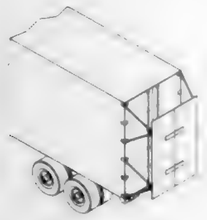
Int. Cl.[5] B60R *27/00*

U.S. Cl. 296—146.6 **1 Claim**



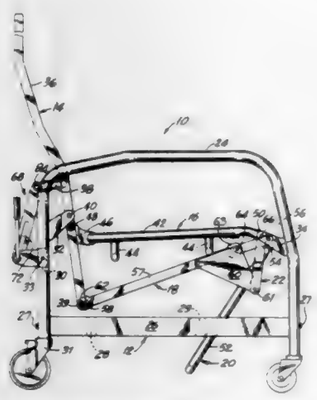
1. A motor vehicle door which is designed for arrangement on a longitudinal side of the vehicle between two supporting vertical pillars and which, in the case of front-end or rear-end collision of the motor vehicle, serves as bracing means supplying a longitudinal bracing force in the longitudinal direction between the pillars, characterized in that the motor vehicle door having a latch adjacent a rear end and the door has a structural member extending generally along the length of the door, the door also having a forward region remote from the latch, the door also having a door channel reinforcement extending in the longitudinal direction approximately at the level of a waistline of a door, the structural member and the channel reinforcement having vertical crimps in the forward region of the door, to be compressible in the longitudinal direction of the vehicle in such a way that a deformation in the longitudinal direction of the door takes place only at slightly below a predetermined maximum longitudinal force occurring on the door in a very serious accident and at the same time the longitudinal bracing force of the motor vehicle door remains as high as possible and wherein longitudinal deformation of the door is exclusively in the front region remote from the door latch.

5,348,366
DRAG REDUCING DEVICE FOR LAND VEHICLES
Myles L. Baker, 20084 Rimrock Rd. E., Apple Valley, Calif. 92307, and David J. Levitt, 867 Arcturus Cir., Foster City, Calif. 94404
Filed Aug. 25, 1993, Ser. No. 111,659
Int. Cl.[5] B60R *27/00*
U.S. Cl. 296—180.4 6 Claims



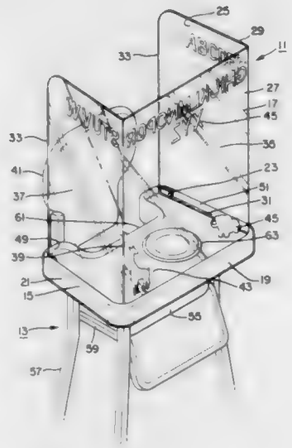
1. Means to reduce the drag on a land operating vehicle when said vehicle is moving on a land surface at a predetermined speed, said vehicle comprising a body having a forward end and an after end disposed about an axis parallel to the land surface over which said vehicle is moved, said after-end of the body having a polygonal cross-section and lying in a first plane normal to said axis, the area of the after-end being of a first predetermined square footage, said means comprising:
A. a rigid polygonal plate, said plate having an area of a second predetermined square footage, said second predetermined square footage being less than the first said square footage, and said plate having a configuration similar to the polygonal configuration of the after end of the body; and
B. strut support means secured to the after-end of the body to secure said plate in a predetermined spaced relationship congruently parallel to said after-end of the body.

5,348,367
RECLINING CHAIR MECHANISM
Ned W. Mizelle, High Point, N.C., assignor to Lumex, Inc., Bay Shore, N.Y.
Continuation of Ser. No. 923,023, Jul. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 723,925, Jul. 1, 1991, abandoned. This application Jul. 29, 1993, Ser. No. 99,260
Int. Cl.[5] A47C *1/035*
U.S. Cl. 297—83 25 Claims



1. A reclining chair comprising:
a back frame;
a seat frame having a front end and a back end, the back end being pivotally attached to the back frame;
a legrest pivotally attached directly to the front end of the seat frame, and positioned at an acute angle from vertical under the seat frame when the chair is in an upright position, whereby the legrest effectively is a continuous extension of the seat;
a base frame to which the back frame is pivotally attached;
a drive link pivotally attached at a first end to the back frame and at a second end to the legrest;
and a carrier link pivotally attached at a first end to the base frame and at a second end to an offset point on the second end of the drive link.

5,348,368
SHIELD FOR HIGH CHAIR
Brent E. Garcia; Mary L. Garcia, and John A. Garcia, all of 5107 Dufferin St., Arlington, Tex. 76016
Filed Jan. 4, 1993, Ser. No. 380
Int. Cl.[5] A47B *83/02*
U.S. Cl. 297—148 10 Claims

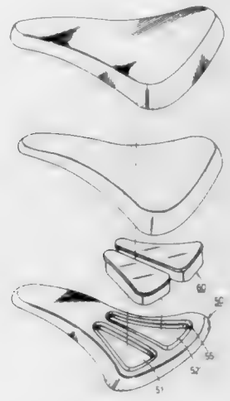


1. An apparatus, comprising:
a) a high chair having a seat;
b) a tray having an eating surface, and a perimeter around said eating surface, said tray being coupled to said high chair;
c) a wall having inner and outer sides, a top edge portion, a bottom edge portion, and side edges, said wall being located partially about said eating surface with said top edge portion being located above said tray and said side edges being located near rear portions of said tray, said bottom edge portion being in contact with said tray;
d) securing means for securely coupling said wall to said high chair tray, said securing means being coupled to said wall.

5,348,369
SADDLE FOR A BICYCLE
Tsai-Yun Yu, No. 1012, Sec. 1, Chung-Shan Rd., Ta-Chia Chen, Taichung Hsien, Taiwan
Filed Mar. 1, 1993, Ser. No. 27,609
Int. Cl.[5] B62J *1/18*
U.S. Cl. 297—214 3 Claims

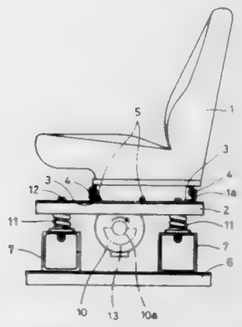
2. A saddle for a bicycle, comprising:
a saddle body made of a hard elastic material;
a foam material adjacent said saddle body; and
a covering adjacent said foam material, wherein:
said saddle body defining two accommodating holes therein, said accommodating holes being located at two positions in said saddle body under a portion of said covering on which a user normally sits; and
two elastic bodies, made of a soft elastic material, being

respectively retained within said accommodating holes, said elastic bodies having top ends that extend from said accommodating holes;
said saddle body having two retaining units for retaining said elastic bodies on said saddle body, each of said retaining units including an annular groove defined in said saddle body around a corresponding accommodating hole, each



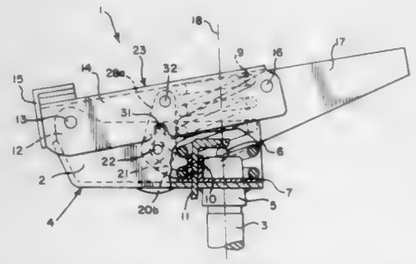
of said elastic bodies havig an upper end portion with a flange projecting outward from a periphery thereof and extending over an upper surface of said saddle body, and an annular fastening portion extending downward from said flange to fit in said annular groove of said saddle body;
whereby said elastic bodies can absorb shock of two portions of said foam material located above said elastic bodies.

5,348,370
APPARATUS FOR VIBRATING SEATS
Masahiro Fukuoka, Aichi, Japan, assignor to Fukuoka Kagaku Ltd., Aichi, Japan
Filed Dec. 4, 1992, Ser. No. 987,481
Int. Cl.[5] A47C *31/00*
U.S. Cl. 297—217 5 Claims



1. An apparatus for vibrating a seat, comprising:
a driver's seat;
base means for supporting said driver's seat;
fastener means for supporting said seat onto said base means, said fastener means being positioned between said seat and said base means;
vibrating means for vibrating said driver's seat, said vibrating means being mounted underneath said base means;
spring means for resiliently supporting said base means onto a bed member; and
control means for controlling said vibrating means in vibrating the seat,

5,348,371
MECHANICAL DEVICE FOR USE PARTICULARLY FOR THE SYNCHRONOUS MOVEMENT OF THE SEAT AND BACKREST OF A CHAIR
Loris Miotto, Roncade, Italy, assignor to Shepherd Products U.S., Inc., St. Joseph, Mich.
Continuation of Ser. No. 622,860, Dec. 6, 1990, abandoned. This application May 19, 1993, Ser. No. 64,739
Claims priority, application Italy, Dec. 14, 1989, 82624 A/89
Int. Cl.[5] A47C *3/00*
U.S. Cl. 297—301 5 Claims



1. A mechanical device connectable to an upper end of a central column extending from a chair base for use particularly for synchronous movement of a seat and backrest of a chair, including
a first support bracket connectable to the upper end of the central column, said first support bracket including an enclosed lower flat surface and a pair of vertical walls extending upwardly from opposite sides of said lower surface,
a second fastening bracket including an upper flat surface and a pair of vertical walls extending downwardly from opposite sides of said upper surface, said downwardly extending walls of said second bracket being located outwardly from and overlapping the entire length of said upwardly extending walls of said first bracket, said second bracket adapted to be connected to the seat,
a first axis extending through said upwardly extending walls of said first bracket and through said downwardly extending walls of said second bracket, said first axis pivotally connecting said second bracket to said first bracket for pivotal rotation of said second bracket about said first axis, said first axis being transversely spaced with respect to the central column,
a third bracket having a first end adapted to be secured to the backrest and a second end including a pair of slotted apertures, said third bracket being located between said upwardly extending walls of said first bracket,
a second axis extending through said downwardly extending walls of said second bracket and through said third bracket, said second axis pivotally connecting said third bracket to said second bracket for pivotal rotation of said third bracket with respect to said second bracket about said second axis,
means connected between said first and third brackets for limiting pivotal movement of said third bracket with respect to said first bracket including a third axis extending through said upwardly extending walls of said first bracket and through said slotted apertures of said third bracket,
means for the selective locking of said second bracket and said third bracket in a stationary position relative to said first bracket including a plurality of adjacent lamellae covers located between said upwardly extending walls of said first bracket, each cover including an aperture at a first end and a slotted aperture at a second end, and a

fourth axis extending through said downwardly extending walls of said second bracket and through said apertures in said first end of said covers, said third axis extending through said slotted apertures in said covers, said third axis being operative to selectively lock said second and third brackets in said stationary position relative to said first bracket, and

means for resiliently exerting force against said first and second brackets, said means for exerting force extending between said first and second brackets and located between said second axis and said fourth axis,

whereby pivotal movement of said third bracket with respect to said second bracket causes synchronous pivotal movement of said second bracket with respect to said first bracket.

5,348,372

TILTING CONTROL ASSEMBLY FOR CHAIR

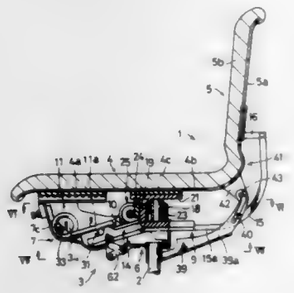
Shunichi Takamatsu; Hirozi Kubo; Katsunori Hama, and Hiroshi Iwabuchi, all of Osaka, Japan, assignors to Itoki Crebio Corporation, Osaka, Japan

Filed Oct. 13, 1992, Ser. No. 959,628

Claims priority, application Japan, Oct. 22, 1991, 3-086141[U]; Jul. 28, 1992, 4-201490

Int. Cl.[5] A47C *1/02*

U.S. Cl. 297—306 **10 Claims**



1. A tilting control assembly for a chair, the chair comprising: support means; a seat supported above the support means; and a seat back arranged behind the seat to tilt rearwardly with a tiltable member which is pivotally connected to the support means; the tilting control assembly comprising:

tilting control spring means for elastically supporting the seat back against rearward tilting thereof via load applying means; and displacing means responsive to a downward load applied to the seat for causing relative displacement between the tilting control spring means and the load applying means in a manner such that the tilting control spring means provides a progressively larger supportive force as the downward load increases; and

lock means for preventing reverse relative movement between the tilting control spring means and the load applying means at least while the seat back is rearwardly tilted;

wherein the lock means comprises ratchet gear means mounted on the tiltable member for rotation in response to the relative movement between the tilting control spring means and the load applying means, and ratchet pawl means releasably engageable with the ratchet gear means.

5,348,373

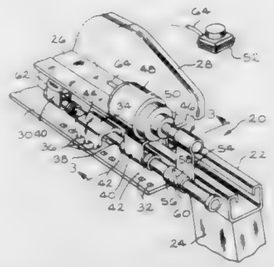
ELECROMECHANICAL RELEASE MECHANISM FOR A SEAT ASSEMBLY

Richard D. Stiennon, Southfield, Mich., assignor to Hoover Universal, Inc., Plymouth, Mich.

Filed Mar. 27, 1992, Ser. No. 858,957

Int. Cl.[5] B60N *2/02*

U.S. Cl. 297—344.1 **7 Claims**



1. In a seat assembly for a motor vehicle having a seat cushion, a seat back and a support for said seat cushion and seat back for mounting said seat assembly in a motor vehicle;

means for moving one of said seat cushion or seat back relative to said support, said moving means including a fixed member mounted to said support and a moving member mounted to said one of said seat cushion or seat back for movement along with said one of said seat cushion or seat back;

a pawl having teeth mounted to one of said fixed and moving members and a latch plate coupled to the other of said fixed and moving members and engagable with said pawl teeth for interlocking engagement to prevent movement of one of said seat cushion or seat back relative to said support, said pawl being selectively disengagable from said latch plate to permit movement of one of said seat cushion or seat back relative to said support; and

electromechanical means for moving said pawl to disengage said pawl from said latch plate, said electromechanical means including a solenoid having a plunger movable linearly in one direction upon energization of said solenoid, switch means for energizing said solenoid when closed and means for coupling said plunger to said pawl for moving said pawl to disengage said pawl from said latch plate upon linear movement of said plunger in said one direction.

5,348,374

HIGH CHAIR

Tzu-Yu Kuo, Tainan, Taiwan, assignor to Baby Trend, Inc., Pomona, Calif.

Filed Oct. 9, 1992, Ser. No. 960,476

Claims priority, application Taiwan, Aug. 6, 1992, 81210919; Fed. Rep. of Germany, Sep. 9, 1992, 9212161[U]

Int. Cl.[5] A47D *1/00*

U.S. Cl. 297—344.18 **11 Claims**

1. A high chair comprising:

a frame means;

chair means;

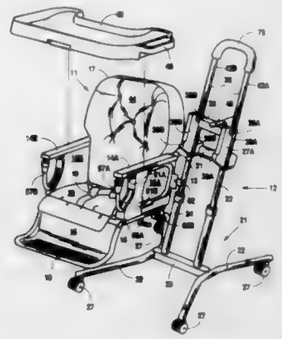
tray means mounted on said chair means; and

means for mounting said chair means on said frame means wherein said means for mounting is adjustably positionable along said frame means to provide height adjustment of said chair means, said means for mounting, comprising:

a coupling member mounted about said frame means for facilitating slidable motion of said means for mounting,

a flange member formed integrally with said coupling member wherein said flange member is provided with notch means for receiving said chair means and protuberances for engaging said chair means,

locking means connected to said coupling member for preventing the slidable motion of said means for mounting wherein said locking means is capable of engaging said frame means at a plurality of points.



5,348,375

DENTAL PATIENT CHAIR WITH A PIVOTABLE BACKREST

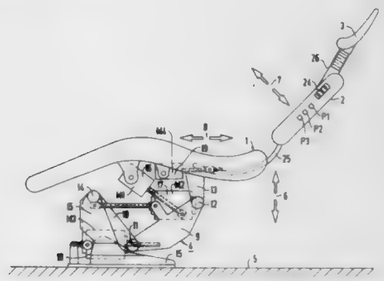
Ulrich Steininger, Darmstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 1, 1992, Ser. No. 890,809

Claims priority, application European Pat. Off., Jun. 10, 1991, 91109501.6

Int. Cl.[5] B60N *2/02*

U.S. Cl. 297—362.11 **10 Claims**



1. A dental patient chair comprising a seat, a backrest, means for mounting the backrest for inclination on the seat, said means for mounting including a curved guideway with a first curved path for the seat and a backrest carrier adjustably moved toward and away from the seat, said backrest carrier being provided with a curved portion having a second curved path spaced from and discontinuous from said first curved path, approximate guide means on the seat and being allocated to the curved portion, the curved portion, curved guideway and guide means coacting so that the backrest carrier will be introduced under the seat when the backrest is inclined backward and is withdrawable from the seat when the backrest is inclined forward, the first curved path of the curved pathway of the seat and the second curved path of the curved portion of the backrest carrier being shaped and spaced from each other so that a momentary pole around which the backrest moves when being inclined is not constant but moves along a section of a curve forming a spiral that proceeds in the same direction as the inclined motion of the backrest.

5,348,376

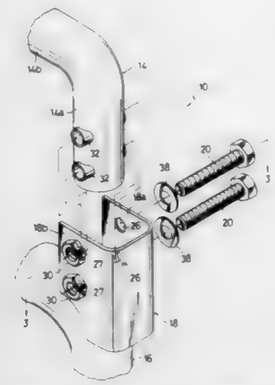
ARRANGEMENT OF HEADREST ON A SEAT

Takashi Natori, Akishima, Japan, assignor to Tachi-S Co., Ltd., Akishima, Japan

Filed Apr. 21, 1992, Ser. No. 871,396

Int. Cl.[5] A47C *7/38*

U.S. Cl. 297—391 **3 Claims**



1. An arrangement of a headrest on a seat, in which the seat includes a Seat back, and one single headrest stay extending from said headrest down to an upper end of a seat back, said headrest stay being formed from a tubular material, and said headrest is, via said stay, mounted on said seat back upper end, said arrangement comprising:

at least one sleeve means having two ends which is fixed in said headrest stay, such that said sleeve means passes through said stay in a diameter-wise direction thereof, the ends of the sleeve extending outwardly of said stay;

a bracket means having a generally U-shaped cross-section, which thus includes a pair of opposed lateral walls, said bracket means being fixed to said seat back;

at least one pair of holes, each being formed in the respective said pair of opposed lateral walls of said bracket means; and

at least one bolt which is inserted through said sleeve means and pair of holes, and fastened firmly to said bracket means, such that said sleeve means is retained between said pair of opposed lateral walls of said bracket means under a fastening force given from said bolt, thereby fixedly securing said headrest stay to said bracket means.

5,348,377

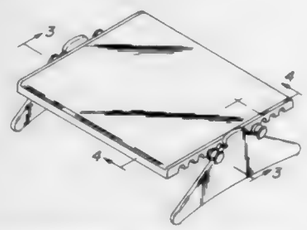
ADJUSTABLE HEIGHT TILTABLE FOOTREST

Peter T. Grosch, 1456 Rockwell Rd., Abington, Pa. 19001

Filed Oct. 21, 1993, Ser. No. 140,789

Int. Cl.[5] A47C *7/50*

U.S. Cl. 297—423.45 **11 Claims**



1. An adjustable height, tiltable footrest comprising:

a plate having upper and lower surfaces, the upper surface being adapted to support the feet of a human user; base means comprising track means with front and rear guide

surfaces, the front guide surface being in non-parallel relationship to the rear guide surface;

first support means on said plate for engaging, and moving on, the front guide surface, and second support means on said plate for engaging, and moving on, the rear guide surface; and

means, on the plate, for mounting said first and second support means on the plate in any selected one of multiple, fixed, spaced, relationships to each other;

said plate being free to tilt as the first and second support means move on said front and rear guide surfaces while being mounted on the plate in fixed relationship to each other;

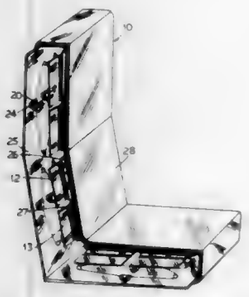
whereby concurrent movement of the first support means on the front guide surface, and the second support means on the rear guide surface, results in a change in the pitch of the and alteration of the spacing between the first and second support means adjusts the height of the plate.

5,348,378

PRESSURE BALANCED TORSION SYSTEM FOR A BACKREST AND THE LIKE

Yun H. Zhang, 52 Oak Avenue, Richmond Hill, Canada L4C 6R7

Filed Jan. 14, 1992, Ser. No. 820,338
Claims priority, application Canada, Aug. 20, 1991, 2049580
Int. Cl.[5] A47C *7/35*
U.S. Cl. 297—452.49 **9 Claims**



1. A pressure balanced torsion system for use in a backrest and the like, comprising

a first pressure bearing plate means and a second pressure bearing plate means, each of said first pressure bearing plate means and second pressure bearing plate means having a front surface and a rear surface opposite to said front surface,

an elongated torsion spring means including a first arm portion having a free end mounted to said rear surface of said first pressure bearing plate means, and a second end mounted to one side of a rocker member, said torsion spring means including a second arm portion having a free end mounted to said rear surface of said second pressure bearing plate means, and a second end mounted to a second side of said rocker member, said second side of said rocker member being directly located opposite to said one side,

said rocker member being pivotally mounted on a support plate.

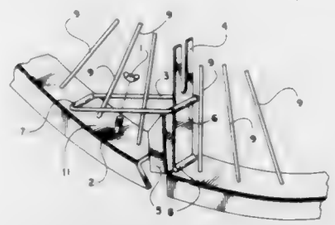
5,348,379

EXPANDING AND CONTRACTING BICYCLE RIM

John E. Renko, 605 Alabama Ave., Bremen, Ga. 30110

Filed Aug. 3, 1993, Ser. No. 101,015
Int. Cl.[5] B60B *21/00*
U.S. Cl. 301—32 **8 Claims**

1. In a wheel comprising a rim extending through a first circular path, a hub centrally of said rim, a plurality of flexible spokes connecting said rim to said hub, and a tire mountable on said rim, the improvement comprising a segment of said rim selectively removable from said first circular path for defining a gap in said rim, means for urging said rim without said segment into a second circular path that is smaller than said first circular path, and a tongue extending across said gap for maintaining alignment of said rim adjacent to said gap.

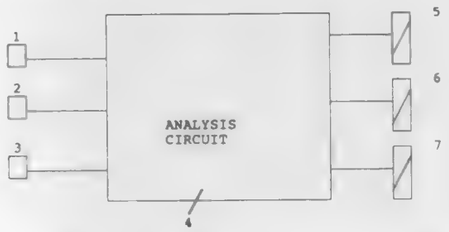


5,348,380

ANTI-LOCK BRAKE SYSTEM WHICH CALCULATES EXPONENTIAL CHANGES IN WHEEL BRAKE PRESSURE

Wolfgang Korasiak, Bietigheim; Elmar Müller, Markgröningen; Jost Brachert, Ditzingen, and Karl-Heinz Herzmansky, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/EP91/00810, § 371 Date Jun. 10, 1992, § 102(e) Date Jun. 10, 1992, PCT Pub. No. WO92/19477, PCT Pub. Date Nov. 12, 1992
PCT Filed Jun. 10, 1991, Ser. No. 861,793
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1990, 4012167
Int. Cl.[5] B60T *8/42*
U.S. Cl. 303—103 **3 Claims**



2. A method for controlling an anti-lock brake system for brakes of a wheeled vehicle, comprising the steps of:

measuring wheel speeds for wheels of the wheeled vehicle to produce respective wheel speed signals;

evaluating vehicle deceleration to produce an instantaneous vehicle deceleration signal;

deriving an initial wheel brake pressure $p_R(t_0)$ and an initial admission pressure $p_V(t_0)$ from the instantaneous vehicle deceleration and constants specific to the wheeled vehicle, where t_0 is a starting time for a control cycle;

determining an instantaneous wheel brake pressure $p_R(t)$ during each control cycle, in response to brake pressure control signals and stored data and curves characterizing particular hydraulics of the brakes of the wheeled vehicle, in accordance with the relationship

$$p_R(t)=p_R(t_0)+\{p_V(t_0)-p_R(t_0)\}(1-e^{-(t-t_0)/T2})$$

during a pressure reduction phase, and

$$p_R(t)=p_R(t_0)-p_R(t_0)(1-e^{-(t-t_0)/T1})$$

during a pressure build-up phase, where T_1 and T_2 are stored time constants specific to the wheeled vehicle;

generating, in response to the wheel speed signals and the instantaneous wheel brake pressure, respective brake pressure control signals; and

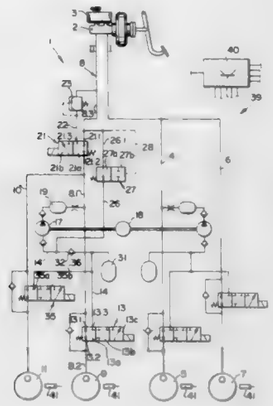
activating brake pressure control devices, in response to the respective brake pressure control signals, to vary a respective brake pressure of each wheel to prevent wheel lock.

5,348,381

HYDRAULIC BRAKE UNIT WITH ANTI-LOCK AND TRACTION CONTROL SYSTEM FOR MOTOR VEHICLES

Wolfgang Bernhardt, Korntal, and Guenther Schmidt, Tamm-Hohenstange, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE92/00445, § 371 Date Sep. 9, 1993, § 102(e) Date Sep. 9, 1993, PCT Pub. No. WO93/00241, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 2, 1992, Ser. No. 117,059
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1991, 4121602
Int. Cl.[5] B60T *8/32*
U.S. Cl. 303—113.2 **1 Claim**



1. A hydraulic brake unit (1) with anti-locking and traction control system (39) for motor vehicles including front and rear wheel brakes,

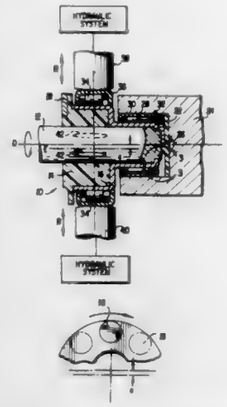
a master brake cylinder (2), a storage tank 3 on said master cylinder, a brake line (8) connected to said master cylinder, a valve arrangement (13) in said brake line (8) for brake pressure modulation in a wheel brake, extends between said master brake cylinder (2) and at least one wheel brake (9) of a brake circuit (II), a return line (14) runs from the valve arrangement (13) for the pressure medium taken from the wheel brake (9) to the suction side of a high-pressure pump (17), a feed line (19) is connected on the pressure side to the brake line (8) between the master brake cylinder (2) and the valve arrangement (13), between a connection of the feed line (19) and the master brake cylinder (2), a changeover valve (21) is arranged in the brake line (8), an overflow line (22) extends from said changeover valve (21) and includes a pressure limiting valve (23) which terminates on the master brake cylinder side in the brake line (8), the return line (14) has a suction line (26) connected to it for a pressure media with a pressure in the brake line (8) between the master brake cylinder (2) and a check valve (27) in suction line (26) which is switched by the change over valve (21), the return line (14) is connected, between the valve arrangement (13) and the connection of the suction line (26), to a storage chamber (31) for the pressure media, the suction line (26) starts from the brake line (8) between the master brake cylinder (2) and the changeover valve (21), and a non-return valve (32) is arranged in the return line (14) between the connection of the suction line (26) and the storage chamber (31).

5,348,382

ANTI-LOCK BRAKE SYSTEM ECCENTRIC BEARING ARRANGEMENT INCLUDING COUNTERWEIGHT

Roger L. Ebaugh, Charlotte, N.C., and Richard J. Janssens, Canton, Mich., assignors to INA Bearing Company, Inc., Fort Mill, S.C.

Filed Sep. 30, 1991, Ser. No. 767,415
Int. Cl.[5] B60T *8/40*
U.S. Cl. 303—116.4 **36 Claims**



1. Apparatus for imparting an eccentric motion to the periphery thereof, comprising:

a. means for imparting reciprocatable motion to a component located at the periphery of said apparatus, said reciprocatable motion imparting means rotatable about an axis of rotation and having a centerline axis eccentrically aligned parallel to said axis of rotation, and

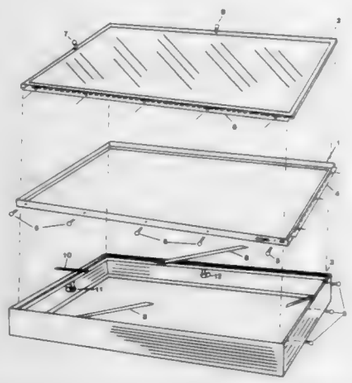
b. counterbalancing means integrally formed so as to be disposed within said reciprocatable motion imparting means.

5,348,383

TWO WAY OPENING DISPLAY CASE

K. Thomas Ritt, P.O. Box 430, Sunland Park, N. Mex. 88063

Filed Oct. 30, 1992, Ser. No. 969,118
Int. Cl.[5] A47F *3/00;* **E06B** *11/00*
U.S. Cl. 312—138.1 **7 Claims**



1. A two way opening display case which includes;

a main frame, consisting of a planar bottom and a plurality of walls, each having an inner side facing the inside of the frame and an outer side facing the outside of the frame and each wall extending upwardly from said bottom wherein the inner sides of the walls define and inner perimeter and wherein an opening is defined at the top of the main frame sides, a subframe having an opening in the top is fittedly positioned inside the main frame wherein the subframe has subframe walls which are correspondingly sized and shaped to permit the subframe to fit inside and adjacent the inner perimeter of the main frame along the inner side of each of the main frame walls

a lid,

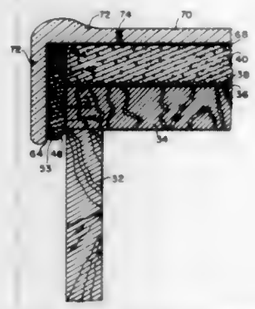
wherein the first hinge means is positioned along a wall of the main frame and connected thereto and is also connected to a first edge of the lid such that the lid may pivot along the axis of the hinge on its first edge, and wherein the second hinge means is positioned along a subframe wall of the subframe and connected thereto and is also connected to an adjacent second edge of the lid wherein the first edge and second edge are perpendicular to one another, such that the lid may pivot along the axis of the second hinge on its second edge.

5,348,384

APPARATUS FOR SUPPORTING A TITLE COUNTER CAP

Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434, and Eugene M. Peterson, 1405 Pass Dr., Reno, Nev. 89509

Filed Dec. 31, 1992, Ser. No. 999,364
Int. Cl.[5] A47B *96/18*
U.S. Cl. 312—140.3 **6 Claims**



1. In a tile covered structure having a horizontal and vertical surface meeting to form a structure corner and having a plurality of tiles covering at least part of said horizontal surface, and a plurality of corner tiles each formed of substantially horizontal and vertical leg sections positioned at said corner, said tiles being secured to said structure by adhesive material between the tiles and structure, the improvement comprising: a corner tile support strip attached between the vertical surface and the vertical leg sections of said corner tiles, said corner tile support strip having first, second and third members, said first member being a substantially elongated strip having an upper edge, said elongated strip forming a main body screed, a lower edge and first and second sides, said first member being formed of a substantially rigid material, said first and second edges of said first member being parallel, said upper edge of said first member forming a rib which in cross section, is in a shape of an off-centered, upside-down teardrop, said lower edge having a lip, said lip orientated away from said first side, said first side being flat, said second side having a contour formed by said rib of said upper edge and said lip of said lower edge, said first member having multiple vertical slots, said slots being of a size and shape to accept fastening means, said second member being a substantially elongated strip having a thickness greater than said first member, said second member being made of a porous non-rigid material, said second member having upper and lower edges and first and second sides, said upper edge terminating no further than said upper edge of said first member, a portion of said lower edge terminating within confines of said lip of said lower edge, said first side of said second member conforming in size and shape to said contour of said second side of said first member, adhesive means between said first side of said second member and said second side of said first member, said third member being a substantially elongated strip having upper and lower parallel edges, said third member having first and second sides, said first side having means to be bonded to said second side of said second member, said second side of said third member being flat

whereby,

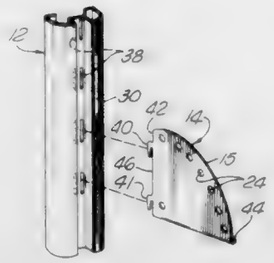
a sandwiched structure is formed which performs as an isolation barrier to prevent stresses from said structure to transfer to said corner tiles.

5,348,385

MODULAR WALL FURNITURE SYSTEM

Israel Berg, Raanan, Israel, assignor to Berg Jacob and Sons (Furniture), Ltd., Raanan, Israel

Filed Jul. 22, 1992, Ser. No. 918,545
Claims priority, application Israel, Sep. 16, 1991, 090502
Int. Cl.[5] A47F *5/08*
U.S. Cl. 312—247 **11 Claims**



1. A modular wall furniture system comprising:

a furniture unit comprising at least one of a shelf, a desktop and a storage cabinet;

at least a pair of vertically extending posts having formed therein a plurality of slots spaced apart vertically; and

at least one pair of multi-function support brackets each having a vertical edge formed with at lest one clip to engage at least one of said slots, and a horizontal edge, a pair of opposing support brackets supporting said furniture unit at the ends thereof by said horizontal edges, said support brackets each having a planar surface defining an outer edge, said planar surface extending above said horizontal edge and being integrally formed therewith and with said vertical edge;

said planar surfaces of said opposing support brackets having holes formed therein along their outer edges, for supporting the ends of at least one rod extending between said edge holes on opposing brackets.

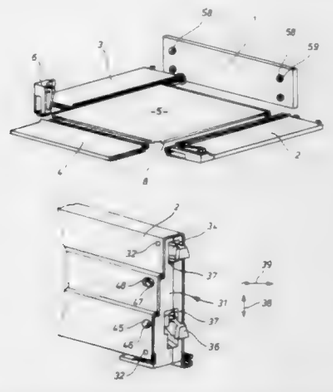
5,348,386

DRAWER

Alfred Grass, Höchst/Vlbg., Austria, assignor to Grass AG, Hochst Vlbg., Austria

Continuation of Ser. No. 599,623, Oct. 18, 1990, Pat. No. 5,221,134. This application May 10, 1993, Ser. No. 59,646
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1989, 3942897
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—348 **2 Claims**

1. Drawer comprising sidewalls, a back wall, a front panel, and a drawer bottom, wherein the sidewalls and the back wall are coupled in a hinged manner to the drawer bottom and the front panel is detachably connected to the sidewalls, wherein the side and back walls are coupled to the drawer bottom by a hinge-like connection comprising two semi-circular grooved portions which engage in one another and may be twisted through 90° relative to one another, wherein a front panel connector is provided on a face of each of the sidewalls and is disposed in a fixed manner in the interior of said sidewall, wherein the front panel connector comprises an element which is fastened with rivets in the interior of the sidewall, an adjustable part being adjustably supported in the element and having in plain view an approximately U-shaped profile and two front projections, and wherein a vertical adjustment of the front panel over the front panel connector is provided with the aid of an adjusting screw which is connected in a portion-resistant manner at its front face to an eccentric pin, the eccentric pin engaging in a groove of the adjustable part and being pressed by means of a spring into the groove.

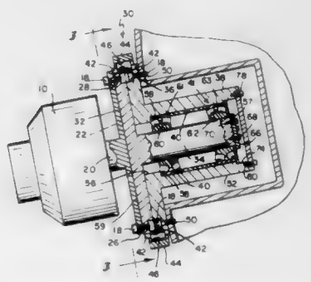


5,348,387

AUXILIARY BEARING AND DRIVE MECHANISM FOR A CONCRETE MIXER

Dale F. Gordon, 1356 N. 700 E., Avilla, Ind. 46710, and William B. Benson, 1900 Eby Ave., Fort Wayne, Ind. 46802

Filed Nov. 18, 1992, Ser. No. 977,674
Int. Cl.[5] F16D *1/04;* **B28C** *5/20*
U.S. Cl. 366—63 **19 Claims**



1. A drive and bearing arrangement for a concrete mixing drum, the arrangement comprising in combination:

a rotatably supported mixing drum, drive means for providing drive forces to the mixing drum;

first bearing means, coupled to the drive means and the mixing drum, for rotatably supporting an end of the mixing drum; and

second bearing means for selectively and alternatively supporting the end of the mixing drum;

wherein the second bearing means is initially fixedly coupled to the mixing drum and to the first bearing means; and

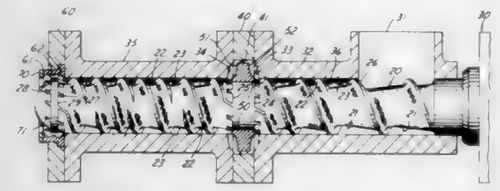
wherein the second bearing means includes means for selectively decoupling the second bearing means from the first bearing means to allow the second bearing means to alternatively support the end of the mixing drum and provide for rotation of said mixing drum.

5,348,388

EXTRUSION APPARATUS FOR MIXING AND EXTRUDING THERMO-PLASTIC MATERIALS

Paul Geyer, 210 B. North Lindell Rd., Greensboro, N.C. 27403

Filed Sep. 15, 1992, Ser. No. 945,065
Int. Cl.[5] B01F *7/08;* **B29B** *7/42*
U.S. Cl. 366—80 **8 Claims**



1. An apparatus having a hopper with an opening for the warming, mixing and extrusion of thermo-plastic and rubber like materials encompassed in air which comprises:

an elongated generally cylindrical barrel member having a barrel bore and an elongated rotor member disposed coaxially in the interior of said barrel member;

means provided for relative rotational movement between said rotor and barrel members in the treating and axial advancing of the material to be processed along said members;

said rotor and barrel members having a feed end and a discharge end, a pressurizing section, a mixing stage and an end extrusion section interposed between said feed and discharge ends;

said pressurizing section being provided with at least one helical groove on the rotor to provide a means of displacing the process material longitudinally in relation to said mixing stage;

said at least one helical groove having a wide tooth top which when co-acting with said barrel bore provides a spiral path for the encompassed air to leak back to the hopper opening;

said mixing stage having six member to member process material transfers including;

a first transfer, from said rotor member to said barrel member wherein said rotor member has multiple down-stream extending grooves co-acting with multiple outward extending barrel grooves of said barrel member which pass said process material through a shear area generated between said rotor and barrel members and into said outward extending barrel grooves;

a second transfer, from said barrel member to the up-stream side of an enlarged section of said rotor member, which provides said barrel member with said multiple outward extending barrel grooves which taper to zero capacity and which pass said process material through a shear area generated between said members and into co-acting multiple outward extending rotor grooves of said enlarged rotor member;

a third transfer, from said enlarged rotor member to an enlarged section of said barrel member, which provides said enlarged rotor member with said multiple outward extending rotor grooves tapering to maximum capacity and which pass said process material through a shear area generated between said members and into multiple downstream extending barrel grooves of said enlarged barrel member;

a fourth transfer, from said enlarged barrel member to the down-stream side of said enlarged rotor member, which provides said enlarged barrel member with said multiple

down-stream extending barrel grooves which pass said process material to and through a shear area generated between said members and to co-acting multiple inward extending rotor grooves of a trailing side of said enlarged rotor member;

a fifth transfer, from said trailing side of said enlarged rotor member to an adjacent section of said barrel member, which provides said trailing side of the enlarged rotor member with said multiple inward extending rotor grooves which taper to zero capacity and which pass said process material to co-acting multiple inward extending barrel grooves of said adjacent section of said barrel member; and

a sixth transfer, from said multiple inward extending barrel grooves to said rotor, said multiple inward extending barrel grooves increasing to maximum in extrusion capacity and passing said process material to and through a shear area generated between said members to multiple receiving grooves provided in said rotor; and

said mixing stage being following by said end extrusion section wherein said rotor member is provided with a helical groove to generate the required extrusion pressure.

5,348,389

SYSTEM FOR THE PREPARATION OF A FLUID CONCENTRATE INTENDED FOR MEDICAL USE

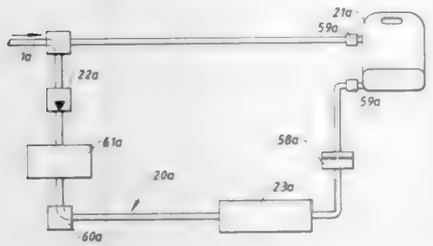
Lennart Jönsson, Furulund, and Stefan Knutsson, Bjärred, both of Sweden, assignors to Gambro, AB, Sweden

Division of Ser. No. 643,468, Jan. 22, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 966,686

Claims priority, application Sweden, Feb. 19, 1990, 90.00586-9

Int. Cl.[5] B01F *15/02*

U.S. Cl. 366—136 **11 Claims**



1. Apparatus for the preparation of a concentrate solution for use as a medical solution from water and undissolved powder comprising water supply means for supplying said water, dissolution means for dissolving said undissolved powder in said water, said dissolution means comprising a container initially retaining a predetermined amount of said undissolved powder therein whereby said water supply means is adapted to supply said water to said container and at least a portion of said predetermined amount of undissolved powder can be initially dissolved in said water so as to provide a partially prepared concentrate solution in said container, withdrawal means for withdrawing said partially prepared concentrate solution from said container, and recirculation means including pump means for recirculating said partially prepared concentrate solution in a recirculating path including said container for further dissolution of said predetermined amount of undissolved powder until all of said predetermined amount of undissolved powder becomes dissolved in said partially prepared concentrate solution to further concentrate said partially prepared concentrate solution to a predetermined final concentration, said recirculation means further including at least one conduit for providing a flow path for said concentrate solution during said recirculation, said at least one conduit being connected between said pump means and said container so as to form said recirculation path therebetween, and connector means arranged between said container and said at least one conduit for permitting said container to be selectively connected and disconnected from said at least one conduit whereby said container is adapted to be subsequently connected to a medical treatment apparatus.

5,348,390

METHOD AND APPARATUS FOR MIXING PULVEROUS SOLIDS INTO A LIQUID PHASE

Peter Schertenleib, Rehau, Fed. Rep. of Germany, assignor to Erich Netzsch GmbH & Co. Holding KG, Fed. Rep. of Germany

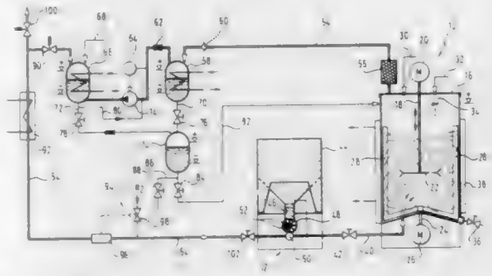
PCT No. PCT/EP92/02426, § 371 Date Jun. 21, 1993, § 102(e) Date Jun. 21, 1993, PCT Pub. No. WO92/11266, PCT Pub. Date Jul. 9, 1992

PCT Filed Oct. 22, 1992, Ser. No. 78,226

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1991, 4135648

Int. Cl.[5] B01F *15/02, 15/06, 13/06*

U.S. Cl. 366—136 **21 Claims**



1. A method of mixing pulverous solids into a liquid phase, wherein the solid material is metered pneumatically into a mixing vessel (**10**) containing the liquid phase, and a gas phase located above the liquid phase is aspired by a pumping means (**14**), characterized in that liquid contained in the gas phase is condensed off, at least partly, at a location remote from the pumping means, and the gas phase is recycled into the mixing vessel (**10**) in a closed gas circuit through a solid metering means.

5,348,391

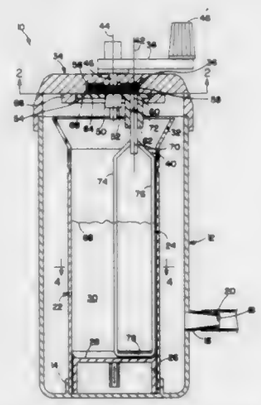
MANUAL BONE CEMENT MIXING METHOD

William M. Murray, 2650 Spring Hill La., Enola, Pa. 17025

Filed Nov. 16, 1993, Ser. No. 153,435

Int. Cl.[5] B01F *13/06*

U.S. Cl. 366—139 **18 Claims**



1. The method of mixing bone cement comprising the steps of:

a) placing dry bone cement powder and bone cement liquid in mixing chamber having a sidewall and a bottom;

b) positioning a first mixer arm in the chamber with the arm extending from the bottom of the chamber up through the top of the bone cement powder and bone cement liquid in the chamber;

c) moving the mixer arm repetitively along a first continuous path in the chamber, the path including a plurality of loops located adjacent the chamber sidewall and portions extending across the chamber and joining adjacent loops to mix the powder and liquid together and form a body of viscous bone cement in the chamber, sweeping the arm sufficiently close past the sidewall at each loop to mix cement and liquid adhered to the arm and to the sidewall with the body of cement, and passing the arm sufficiently close to gas bubbles in the bone cement adjacent the path to break the gas bubbles; and

d) vacuum flowing the released gas from broken bubbles up and out of the body of bone cement.

5,348,392

APPARATUS FOR MIXING AND DISPENSING A MULTICOMPONENT COMPOSITION

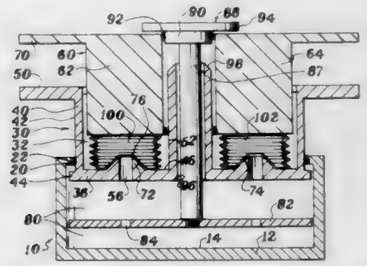
Philippe L. Bouquet, Mouans Sartoux, France; David Pocknell, Rhoose, Scotland; Werner Bruning, Engelskirchen, Fed. Rep. of Germany; Martina Dittrich-Duster, Engelskirchen, Fed. Rep. of Germany, and Gunter Lamers, Engelskirchen, Fed. Rep. of Germany, assignors to Dow Corning France S.A., Valbonne, France

Continuation-in-part of Ser. No. 849,851, Mar. 12, 1992. This application Oct. 7, 1993, Ser. No. 133,538

Claims priority, application France, Mar. 13, 1991, 91 03016

Int. Cl.[5] B67D *5/52;* **G05D** *11/00*

U.S. Cl. 366—162 **7 Claims**



1. A mixing and dispensing device for mixing together the components of a silicone composition packaged in the form of two or more individually stable components of substantially equal volume and viscosity each in a separate receptacle, and to dispense the mixed composition by a manual operation, the device comprising in combination:

a housing having a bottom, side walls, and an open top;

a unitary support means, said support means having a bottom, an essentially circular exterior side wall and an essentially circular interior side wall and being comprised generally of two separate chambers each having a bottom, an open top, a single perforation through said bottom and an open port having a top end and a bottom end, and essentially aligned with the single perforation in each said chamber and which leads into the interior of the housing via said bottom end of said port, said port terminating at an upper end of said port in a piercing component, said support means being slidably contained in said housing through the housing top, said support means having a bore through a center of said support in the sliding direction, essentially separating the two separate chambers;

said support means having adapted thereto, a mixer rod, said mixer rod having an enlarged upper end; said mixer rod projecting through the center bore and slidable therein, said mixer rod terminating in a threaded end opposite the enlarged upper end;

said mixer rod having attached to said threaded end, a mixing element, said mixing element being located beneath the support means, but contained in the housing;

the bottom and side wall of the housing, in combination with the bottom and side walls of the support means forming a mixing chamber located beneath said support means and contained in said housing;

a plunger means comprising two adjacent, parallel plungers each having a flanged top which plungers are rigidly connected to each other at their tops and are adaptable for insertion into the tops, respectively, of the two separate chambers of the support means, said plungers containing slidably therebetween, the mixer rod;

the interior wall of said support means being elongated such that said support forms a nozzle for exiting composition after said composition is mixed, and after the mixer rod has been removed from the mixing element.

5,348,393

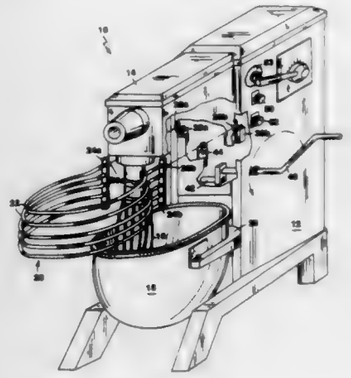
SAFETY GUARD SYSTEM FOR FOOD MIXER

Phillip M. Pappas, Jr., Danville, N.H., assignor to Univex Corporation, Salem, N.H.

Filed Jul. 24, 1992, Ser. No. 919,039

Int. Cl.[5] B01F *7/00*

U.S. Cl. 366—207 **14 Claims**



1. A food mixer, comprising:

a housing;

a drive train enclosure mounted to and extending from an upper portion of the housing;

a removable bowl for holding ingredients to be blended;

a bowl support to support the removable bowl below the drive train enclosure:

a motor;

at least two mounts positioned on the housing more than a hand width apart from each other so that said two mounts cannot be contacted simultaneously by the same hand;

a detachable protective guard, positioned between the drive train enclosure and the removable bowl, the guard having a structure for blocking hand access to said bowl when supported within the bowl support, and having at least two support members each arranged to engage an associated one of said mounts such that the guard is cantilevered from said mounts over said bowl, said protective guard being capable of manual detachment from said mounts solely by manipulating the detachable guard itself;

a mixing attachment driven by said motor, said attachment extending downward from the drive train enclosure, through said protective guard, and into the removable bowl to blend the ingredients in the bowl;

at least two sensors, each sensor associated with a respective

one of said at least two mounts, to detect the engagement of said support members and said mounts; and

a controller responsive to said sensors for deactivating said motor when either of said support members is disengaged from the associated one of said mounts.

5,348,394

METHOD AND APPARATUS FOR MEASURING FLUID THERMAL CONDUCTIVITY

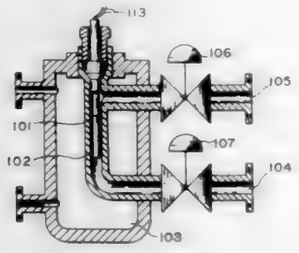
Tomoshige Hori, Kitamoto; Yasuhiko Shiinoki, Tokyo, and Kensuke Ito, Kodaira, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

Filed Jun. 21, 1993, Ser. No. 78,833

Claims priority, application Japan, Jun. 22, 1992, 4-187531; Sep. 24, 1992, 4-279340

Int. Cl.[5] G01N *25/18;* **G01K** *1/14*

U.S. Cl. 374—44 **11 Claims**



1. Method for measuring a thermal conductivity of a fluid comprising the steps of:

disposing a heating sensor, having heating means for heating the heating sensor and measuring means for measuring the temperature of the heating sensor, in a container for the fluid and heating the heating sensor with the heating means at a steady state of heating and measuring the temperature of the heating sensor with the measuring means, and wherein a clearance between an inner wall of the container and an outer wall of the heating sensor is dimensioned so that the measurement of thermal conductivity is free from any influence of a convective heat transfer due to a convection caused by heat generation from the heating sensor;

measuring a temperature of the fluid;

determining a differential temperature between the measured temperature of the heating sensor and the measured temperature of the fluid; and

determining the thermal conductivity of the fluid on a basis of a correlation between the differential temperature and the thermal conductivity.

9. An apparatus for measuring a thermal conductivity of a fluid, comprising:

a heating sensor having heating means for heating the heating sensor with the heating means at a steady state of heating and measuring means for measuring the temperature of the heating sensor and being disposable in a container for the fluid wherein a clearance between an inner wall of the container and an outer wall of the heating sensor is dimensioned so that the measurement of thermal conductivity is free from any influence of convective heat transfer due to convection caused by heat generation from the heating sensor;

means for measuring the temperature of the fluid;

means for determining a differential temperature between the measured temperature of the fluid and the heating sensor; and

means for determining the thermal conductivity of the fluid on a basis of a correlation between the differential temperature and the thermal conductivity.

5,348,395

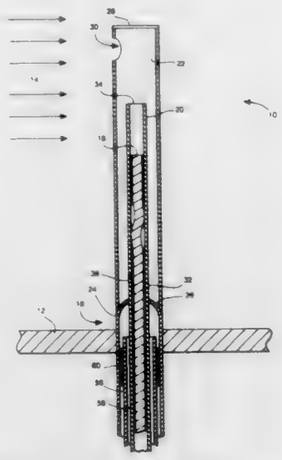
ASPIRATING PYROMETER WITH PLATINUM THERMOCOUPLE AND RADIATION SHIELDS

Robert A. Corr, II, Scotia, and Joseph Citeno, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 11, 1992, Ser. No. 987,964

Int. Cl.[5] G01K *13/02, 1/08*

U.S. Cl. 374—135 **6 Claims**



1. An aspirating pyrometer comprising:

a thermocouple having a temperature sensitive junction formed of noble metal alloys; and

a radiation shield formed of a substantially similar noble metal alloy as the alloys forming said junction, said thermocouple being enclosed within said shield, and said shield having an opening through which hot gases are drawn.

5,348,396

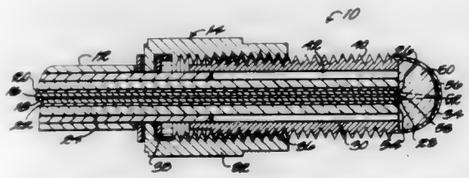
METHOD AND APPARATUS FOR OPTICAL TEMPERATURE MEASUREMENT

Patrick E. O'Rourke, Martinez, Ga.; Ronald R. Livingston, Aiken, S.C., and William S. Prather, Augusta, Ga., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 20, 1992, Ser. No. 979,672

Int. Cl.[5] G01K *11/00*

U.S. Cl. 374—161 **20 Claims**



1. A method for measuring temperature, said method for use with a source of light, a detector, and a temperature sensor having at least one isobestic wavelength, said sensor absorbing light in a temperature-dependent manner within a characteristic wavelength range, said method comprising the steps of:

transmitting light from said light source through said temperature sensor to said detector;

measuring the intensity I_b of light transmitted through said sensor at a first wavelength, said first wavelength being outside said characteristic wavelength range;

measuring the intensity I_I of light transmitted through said sensor at said isobestic wavelength;

measuring the intensity I_A of light transmitted through said sensor at an analytic wavelength, said analytic wavelength being within said characteristic wavelength range;

computing the quantities $A_I = -\ln (I_I/I_b)$ and $A_A = -\ln (I_A/I_b)$;

computing the ratio $R_{AI} = A_A/A_I$; and

computing said temperature, whereby said temperature may be determined from a function of said ratio, said function formed by

(a) while maintaining said sensor at a known temperature, measuring said intensity I_b, measuring said intensity I_I, and measuring said intensity I_A,

(b) computing said quantities A_I and A_A from said measurement at said known temperature.

(c) computing said ratio R_{AI},

(d) repeating steps (a) through (c) with said sensor maintained at different known temperatures to produce a plurality of temperature measurements and a plurality of ratio measurements, and

(e) obtaining said function by correlating said pluralities of temperature and ratio measurements.

5,348,397

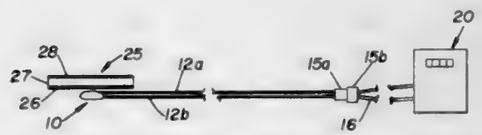
MEDICAL TEMPERATURE SENSING PROBE

R. Keith Ferrari, 6525 Radcliff Dr., Nashville, Tenn. 37221

Filed Mar. 29, 1993, Ser. No. 38,291

Int. Cl.[5] G01K *7/22;* **H01B** *5/08, 1/04, 7/00, 7/20*

U.S. Cl. 374—185 **11 Claims**



1. A medical temperature sensing probe including a temperature responsive device having electric contacts and insulated electric conductors having one end electrically connected to a respective one of the electric contacts, the improvement wherein each conductor comprises a carbon-fiber tow having low thermal conductivity and less than two thousand fibers and plated with an electrically conductive metal in an amount such that the metal plated tow is at least X-ray translucent, the metal plating being 20% to 40% by weight of the metal plated carbon fiber tow.

5,348,398

CONTAINER

Jerry E. Buchanan, Alpharetta, Ga., assignor to Jebco Packaging Systems, Inc., Tucker, Ga.

Continuation of Ser. No. 34,600, Mar. 23, 1993, abandoned, which is a continuation of Ser. No. 846,805, Mar. 5, 1992, abandoned, which is a division of Ser. No. 517,787, May 2, 1990, Pat. No. 5,135,464. This application Jan. 4, 1994, Ser. No. 177,706

Int. Cl.[5] B65D *30/16*

U.S. Cl. 383—122 **2 Claims**

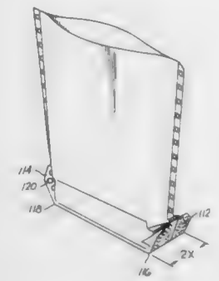
1. A container produced according to the method that comprises the steps of:

forming material into an intermediate structure having a first subsection having an upper edge and a lower edge, a second subsection underlying said first subsection and having an upper edge and a lower edge, and a folded section intermediate the first and second subsections having a first fold attached to the lower edge of the first subsection, a second fold attached to the lower edge of the second subsection and an uncreased middle member extending between and joined to the first and second folds along fold lines,

welding side edges of the intermediate structure together along first and second side edge weld lines thereby welding the first and second subsections to respective first and second folds of the intermediate folded section to form first and second legs;

placing on the intermediate structure first and second legs a first oblique weld line interconnecting the first side edge weld line and the lower edge of the first and second subsections to weld the first subsection to the first fold and the second subsection to the second fold thereby defining endmost portions of said legs bounded by said first side edge weld, said lower edges and said first oblique weld line;

placing on the intermediate structure first and second legs a second oblique weld line interconnecting the second side edge weld line and the lower edge of the first and second subsections to weld the first subsection to the first fold and



the second subsection to the second fold thereby defining other endmost portions of said legs bounded by said second side edge, and said lower edges and said second oblique weld line;

folding the first and second legs inwardly so as to overlay said middle member; and

separating the first subsection from the second subsection to form an interior space between the first and second side edge weld lines so as to cause said endmost and other endmost portions of the legs to pivot upwardly towards the first side edge weld line and the second side edge weld line respectively to form said container having a front wall, a rear wall, a pair of opposing sidewalls interconnecting the front wall and rear wall, and an uncreased bottom wall reinforced by said first and second legs wherein the uncreased bottom wall is the uncreased middle member.

5,348,399

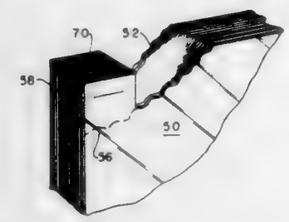
PLASTIC BAGS WITH WAVEFORM EDGE CONFIGURATIONS

Robert B. DeMatteis, 800 E. Washington, Colton, Calif. 92324

Filed Dec. 23, 1992, Ser. No. 995,369

Int. Cl.[5] B65D *30/00*

U.S. Cl. 383—209 **4 Claims**



1. A plastic bag comprising:

a body having a mouth, a tail end, and opposite sides extending between the mouth and the tail end, the body being

composed of a plastic material and opening at the mouth; and

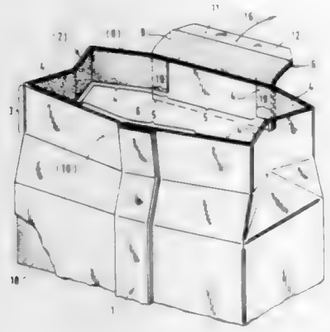
edge configurations each extending from a mouth edge to a respective one of the sides such that the mouth edge extends by a distance which is less than a width of the body between the opposite sides, the edge configurations each having a wave pattern comprising a plurality of peaks and valleys, at least some of said peaks and valleys being closer to said tail end than are at least some neighboring ones of said peaks and valleys.

5,348,400

TUBE-POUCH WITH OPENING ACCESSORY

Manfred Haiss, Waldenbuch, Fed. Rep. of Germany, and Wilfried Jud, St. Pölten, Austria, assignors to Teich Aktiengesellschaft, Austria

Filed Sep. 30, 1993, Ser. No. 129,306
Claims priority, application Austria, Sep. 30, 1992, 1928/92
Int. Cl.[5] B65D *33/16, 65/10, 65/32*
U.S. Cl. 383—210 **4 Claims**



1. A tube-pouch wrap with an opening accessory for piece goods, comprising an envelope comprised of a planar, foldable wrapping material having a fin in which two edge strips of the wrapping material are bonded to each other by a peelable cold seal at their inner sides within a junction area, said junction area comprising a sub-section at each end of the edge strips separated by an unsealed middle zone on said edge strips between said sub-sections and an adhesive label folded about the fin so as to cover the unsealed middle zone and overlap the two sub-sections of the junction area and sealed on both sides of the fin, said adhesive label comprising an unsealed edge strip forming a grip on one side of the fin.

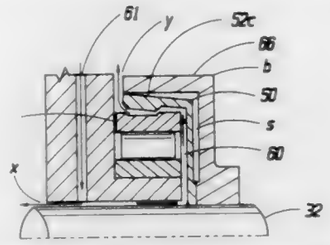
5,348,401

HYBRID BEARINGS FOR TURBOPUMPS

John F. Justak, Stuart, Fla., and Gregg R. Owens, South Windsor, Conn., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 27, 1993, Ser. No. 10,030
Int. Cl.[5] F16C *21/00*
U.S. Cl. 384—101 **5 Claims**

1. A hybrid bearing having a rolling element bearing engaged during startup and shutdown, and a hydrostatic bearing engaged during operating speeds, the hybrid bearing comprising a stationary bearing housing having a housing portion adapted to receive a circular bearing race, the stationary bearing housing also having a rotating journal passing therethrough, a rolling element bearing having circular inner and outer races, means for seating the inner race of said bearing on the stationary bearing housing portion so that the outer race rotates freely, a transient support ring so disposed that the journal passes through its center, means keying the transient support ring center to the journal so that the ring outer periphery rotates therewith, latch means adapted to lock the outer periphery of the transient support ring to the rolling element bearing outer race so that the rolling element bearing supports radial loads during startup, initial acceleration, deceleration



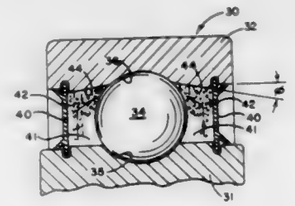
and shut down, and to unlock and disengage at operating speeds, and a hydrostatic bearing in the form of a fluid lubricated bearing adapted to carry the radial loads at said operating speeds during the disengagement of the latch means and the rolling element bearing outer race.

5,348,402

BEARING WITH SPECIALLY SHAPED LANDS

James S. Porter, Valparaiso, Ind., assignor to McGill Manufacturing Co., Inc., Valparaiso, Ind.

Continuation-in-part of Ser. No. 825,950, Jan. 27, 1992, Pat. No. 5,199,798. This application Apr. 2, 1993, Ser. No. 42,413
The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.
Int. Cl.[5] F16C *33/66*
U.S. Cl. 384—462 **14 Claims**



1. A bearing assembly comprising

inner and outer bearing races disposed in co-axial relation to each other for relative rotational movement,

a plurality of rolling elements interposed between said inner and outer races,

said bearing races each being formed with lands extending outwardly from opposite axial sides of said rolling elements,

annular sealing means between said inner and outer races on opposite axial sides thereof,

said lands and annular sealing means defining annular chambers on opposite axial sides of said rolling elements,

a quantity of lubricant within said chambers for lubricating said rolling elements and said inner and outer bearing races for facilitating relative movement, and

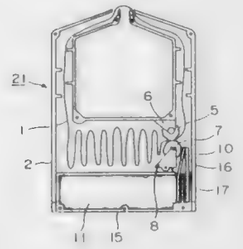
said lands of at least one of said bearing races extending axially outwardly from said rolling elements in similarly generally tapered relation to the axis of said inner and outer races for facilitating circulation of said lubricant during relative movement of said inner and outer races, said generally tapered lands being formed with similar convexly curved contours.

5,348,403

INK RIBBON CASSETTE

Minoru Mizutani, and Norihisa Isaka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01723, § 371 Date Jun. 8, 1993, § 102(e) Date Jun. 8, 1993, PCT Pub. No. WO92/11140, PCT Pub. Date Sep. 7, 1992
PCT Filed Dec. 17, 1991, Ser. No. 70,427
Claims priority, application Japan, Dec. 25, 1990, 2-401623[U]
Int. Cl.[5] B41J *32/02, 31/14*
U.S. Cl. 400—196 **2 Claims**



1. An ink ribbon cassette comprising:

an endless ink ribbon;

an ink ribbon cassette composed of an ink ribbon containing portion for folding and containing the ink ribbon therein and ribbon guide portions each having a forward end for exposing the ink ribbon outside of the ink ribbon cassette from the forward ends;

a ribbon feeding mechanism for feeding the ink ribbon from the ribbon guide portions to the ribbon containing portion;

an ink occluding body for storing a replenishing ink therein;

an ink supplier having a forward end, said ink supplier contacting the ink occluding body and extending therefrom to contact the ribbon feeding mechanism at the forward end for supplying the replenishing ink to the ink ribbon by way of the ribbon feeding mechanism; and

an auxiliary ink supplying member which is impregnated beforehand with ink and contacts the ink supplier only at the forward end of the ink supplier whereby the auxiliary ink supplying member supplies ink, to the ink supplier or the ribbon feeding mechanism.

5,348,404

SPLIT BUSHING MOUNTING OF A PRINTER CARRIAGE WITH PRE-LOAD

Abdolreza Movaghar, San Diego; W. Wistar Rhoads, Escondido, both of Calif., and Michael A. Nguyen, Singapore, Singapore, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 965,480, Oct. 23, 1992. This application Apr. 30, 1993, Ser. No. 56,335
Int. Cl.[5] B41J *11/22*
U.S. Cl. 400—354 **21 Claims**

1. A printer carriage comprising:

a plurality of print cartridge receptacles;

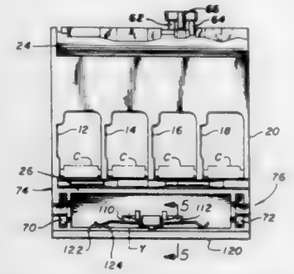
a support system including a slider rod receptacle;

a pair of bearings in said slider rod receptacle for supporting the carriage for sliding movement on at least one carriage support rod;

said support system further comprising a carriage pre-load pad in said slider rod receptacle, said pad centrally positioned between said bearings and engageable with said support rod at a location between said pair of bearings;

a spring supported on the carriage for biasing said pad into sliding engagement with said support rod; and

wherein said spring comprises an elongate flat bar having a pair of ends bent toward one side of said bar, and said pad



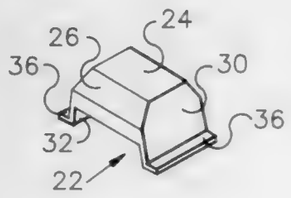
is mounted on the side of said bar opposite said bends and intermediate said ends.

5,348,405

COMPUTER KEYBOARD KEY DEPRESSION INHIBITOR DEVICE

Raymond R. Lupkas, Trumbull, Conn., assignor to Jacqueline M. Lupkas, Trumbull, Conn.

Filed Aug. 12, 1993, Ser. No. 105,143
Int. Cl.[5] B41J *5/26*
U.S. Cl. 400—472 **8 Claims**



1. A key depression inhibitor device for preventing accidental or inadvertent manual depression of a key or combination of keys on a computer keyboard, the computer keyboard having a frame plate provided with openings therein through which discrete sections of keys protrude and which define longitudinally extending border and intermediate portions of the frame laterally adjacent the discrete keyboard sections, said device comprising:

A. a relatively flat top wall adapted to overlie the top surface of a key when the device is installed on a keyboard,

B. a pair of opposed side walls attached to and depending from first opposite edges of said top wall and a pair of opposed end walls attached to and depending from second opposite edges of said top wall, said top wall, side walls and end walls defining a generally hollow cover adapted to fit over a selected key or combination of keys on the keyboard, and

C. means formed only on the distal end of said opposed end walls for supporting said device on the computer keyboard frame plate in the laterally adjacent longitudinally extending border and intermediate portions of the frame plate over said selected key or combination of keys,

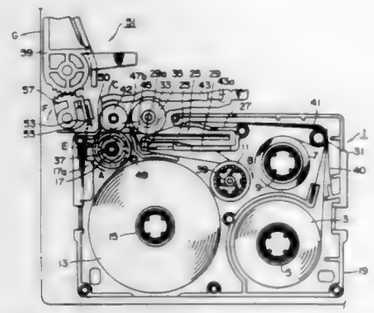
whereby any key covered by said device cannot be accidentally or inadvertently depressed during normal operation of the keyboard.

5,348,406

TAPE FEED MECHANISM WITH TAPE CUTTER AND GUIDE

Nagao Yoshiaki, Tsushima; Kobayashi Atsuhiro, Nagoya, and Mikio Sakuma, Ichinomiya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 737,927, Jul. 29, 1991, Pat. No. 5,188,469, which is a continuation of Ser. No. 421,976, Oct. 16, 1989, abandoned. This application Jun. 1, 1992, Ser. No. 891,698
Claims priority, application Japan, Oct. 14, 1988, 63-260173
The portion of the term of this patent subsequent to May 22, 2007, has been disclaimed.
Int. Cl.[5] B41J *15/24*
U.S. Cl. 400—615.2 9 Claims



1. A printing device for executing printing operation onto a recording medium, said printing device comprising:
- a housing;
- a cassette case member for accommodating said recording medium in a wound state and having a wall member and means for detachably mounting said case member to said housing;
- print member means for printing desired character and/or symbol data onto a predetermined surface of said recording medium;
- feeding means for feeding said recording medium on which printing operations have been executed;
- a supporting member attached to said housing;
- a cutter blade movably supported by said support member for cutting said recording medium, said cutter blade being disposed to contact said wall member through said recording medium upon movement of said support member whereby said recording medium is cut by said cutter blade as said support member is moved.

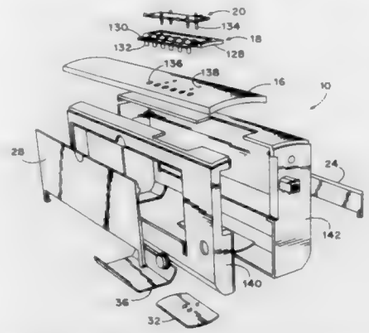
5,348,407

SNAP-ON CONTROL PANEL

Ng L. Hock, Singapore, Singapore; James J. Girard, Boise, Id.; Lee G. Keen, Singapore, Singapore; James L. K. Chan, Singapore, Singapore, and Chuin K. Lim, Singapore, Singapore, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 887,517, May 19, 1992, abandoned. This application Oct. 7, 1992, Ser. No. 957,934
Int. Cl.[5] B41J *29/00*
U.S. Cl. 400—711 2 Claims

1. Apparatus for controlling an electrical circuit contained within a printer case consisting of:
- a panel mountable to a printer case, said panel having a first and second plurality of openings formed therethrough;
- a polymeric frame having a plurality of tabs extending laterally therefrom coupled to an interior surface of the panel;
- a plurality of buttons, each of said buttons being integrally formed with a respective one of said tabs and extending upwardly through a respective one of said first openings;
- a plurality of actuators, each of said actuators being integrally formed with a respective one of said tabs and extending downwardly therefrom, each of said actuators being aligned with a respective switch in said circuit and being operable to operate said respective switch when said button is depressed; and
- a plurality of light pipes integrally formed in a single polymeric member, the polymeric member being fixed to the said interior surface of the panel, each of said light pipes associated with a respective one of said buttons and extending upwardly through a respective one of said second



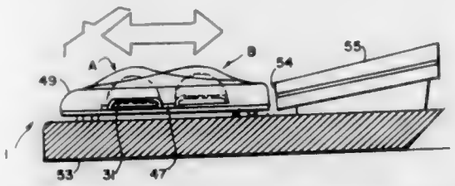
openings, each of said light pipes being aligned with a respective light-emitting diode in said circuit for transmitting light into said light pipe to provide a visual indication to an operator of said apparatus of the status of the function controlled by the respective one of said buttons, whereby the apparatus is formed of only three pans for low-cost production.

5,348,408

WRIST PAD FOR USE WITH KEYBOARDS

John A. Gelardi, P.O. Box 714, Kennebunkport, Me. 04046; Anthony Gelardi, P.O. Box 213, Cape Porpoise, Me. 04014, and Leonard Goldman, P.O. Box 1491, Kennebunkport, Me. 04046

Filed Sep. 4, 1992, Ser. No. 940,840
Int. Cl.[5] B41J *29/00*
U.S. Cl. 400—715 19 Claims



1. A wrist pad for use with keyboards comprising a base, a movable wrist support member which is movable with respect to the base and extends upwards therefrom, a flexible overlay, an attachment means for attaching the flexible overlay peripherally to the base to at least partially envelop the movable support member, the support member being mounted for movement with respect to the overlay.

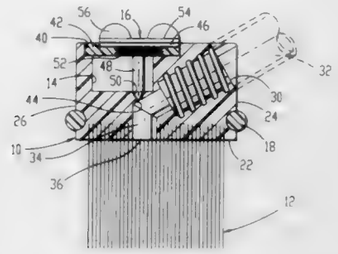
5,348,409

LIQUID RESERVOIR BRUSH

Robert D. Newman, Sr., and Robert D. Newman, Jr., both of P.O. Box 377, Greenwood, Mo. 64034

Filed Jul. 12, 1993, Ser. No. 89,778
Int. Cl.[5] A46B *11/02, 11/06*
U.S. Cl. 401—42 4 Claims

1. A liquid reservoir brush apparatus comprising:
- an elongated body including opposed upper and lower surfaces, a reservoir formed in the upper surface, a fluid inlet, a fluid outlet in the lower surface, a fluid passageway connecting the inlet and the outlet, and a restricted passageway connecting the reservoir with the fluid passageway;
- a plurality of bristles attached to the body and extending from the lower surface;
- a cover secured to the upper surface of the body and enclosing the reservoir, the cover including a threaded opening in communication with the reservoir; and
- a valve including an elongated stem, a threaded neck from



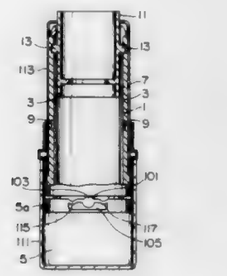
which the stem extends, and a gripping means for gripping the valve and threading the valve into and out of the threaded opening between a detached position in which the valve is completely unthreaded from the opening to permit filling of the reservoir, a first sealed position in which the valve seals the opening and the stem is spaced from the restricted passageway to allow fluid flow between the reservoir and the fluid passageway, and a second sealed position in which the valve seals the opening and the stem closes off the restricted passageway to block fluid flow between the reservoir and the fluid passageway.

5,348,410

CYLINDRICAL COSMETIC CONTAINER WITH FLEXIBLE BRAKE

Yukio Shozi, and Satoru Naramoto, both of Kashiwa, Japan, assignors to Hidan Co., Chiba, Japan

Filed May 18, 1993, Ser. No. 63,150
Claims priority, application Japan, Oct. 30, 1992, 4-081052[U]
Int. Cl.[5] A45D *40/06, 40/12*
U.S. Cl. 401—78 5 Claims



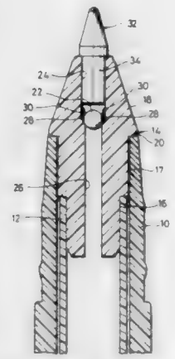
1. A cylindrical cosmetic container including:
- an inner tubular member formed with axially extending slots and having an outer circumferential surface and a base end portion;
- an outer tubular member formed with a spiral groove and rotatably fitted to the outer circumferential surface of said inner tubular member, said outer tubular member having a lower edge; and
- a movable cup member for mounting thereon a cylindrical cosmetic to be accommodated within said inner tubular member, the movable cup member having projection pins attached on an outer circumferential surface thereof and engaged with the spiral groove of the outer tubular member through the slots of said inner tubular member, said movable cup member being moved by rotating said inner and outer tubular members relative to each other; and
- wherein said inner tubular member is formed with a bridge portion at the base end portion of said inner tubular member; and said bridge portion is further formed with a projection portion which is brought into elastic contact with the lower edge of said outer tubular member, said bridge portion being further formed with two bent portions on both sides of said projection portion.

5,348,411

WRITING IMPLEMENT AND A FABRICATING METHOD THEREOF

Tatsuya Ozu, Kadoma; Masahiro Yasunaga, Osaka, and Shigeyasu Inoue, Kashiwara, all of Japan, assignors to Kabushiki Kaisha Sakura Kurepasu, Osaka, Japan

Filed Feb. 1, 1994, Ser. No. 189,839
Claims priority, application Japan, Feb. 16, 1993, 5-4752[U]; Feb. 16, 1993, 5-26834; Feb. 16, 1993, 5-26835
Int. Cl.[5] B43K *7/10, 8/04, 5/18*
U.S. Cl. 401—219 11 Claims



1. A writing implement comprising:
- valve means provided at a specified position along a liquid passage along which liquid to be applied flows, the valve means including:
- a valve member in the form of a ball;
- a chamber portion in which the ball valve member is placed, the chamber portion having a cross-section in the form of a non-circular substantially circumscribing the ball valve member;
- a sealing portion defined on a bottom end of the chamber portion, the seal portion being operable to come to contact with the ball valve member entirely along a circumference of the ball valve member to interrupt the flow of liquid; and
- a restricting portion defined on a leading end of the chamber portion, the restricting portion being operable to come to contact with a circumferential portion of the ball valve member to restrict the movement of the ball valve member toward a leading end of the writing implement.

5,348,412

RELEASABLE ATTACHMENT FOR A RING METAL TO A RING BINDER

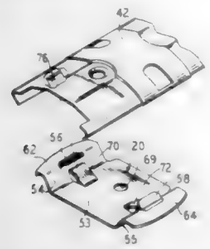
Luke Fuller, Acushnet, Mass., assignor to U.S. Ring Binder, New Bedford, Mass.

Filed Sep. 29, 1992, Ser. No. 953,511
Int. Cl.[5] B42F *13/00*
U.S. Cl. 402—75 14 Claims

1. A spring clip for holding a ring metal to a panel of a ring binder, The spring clip comprising:

opposite side wall portions arranged for connecting to and extending away from said panel;

clip portions extending inwardly from said side wall portions arranged and adapted to for overlying portions of said ring metal once installed; and



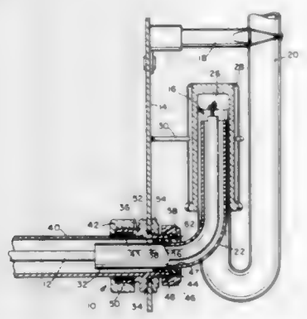
lever means for spreading apart said clip portions said lever means comprising at least one release lever mounted to one of said side wall portions for releasing said metal ring from said spring clip.

5,348,413

CONDUIT SEALING ASSEMBLY FOR NEON LIGHTING DISPLAYS

Albert Sklar, 3513 Villa Terrace, San Diego, Calif. 92104

Filed Jan. 19, 1993, Ser. No. 5,809
Int. Cl.[5] F21V *19/00, 31/02, 33/00*
U.S. Cl. 403—24 **6 Claims**



1. An assembly for sealing a conduit carrying high voltage wiring through a wall or letter back of a neon lighting display, comprising:

a connector member having a through bore and first securing means for securing the connector member to project through an opening in a backing of a neon lighting display;

the connector member having opposite front and rear ends for location on front and rear sides, respectively, of the backing;

a first conduit having a first end for securing to the rear end of the connector member for guiding electrical wiring from the backing for connection to a high voltage. Supply;

second securing means for securing the first end of the first conduit to the rear end of the connector member;

a sealing plug of resilient, waterproof material mounted at the front end of the connector member and projecting into the connector member through bore, the sealing plug having a through bore;

third securing means for securing the sealing plug to the front end of the connector member;

a hollow tube of insulating material having opposite first and second ends, the first end of the tube projecting into the connector member through said sealing plug, the sealing plug being in sealing engagement with the tube where it projects into the connector member; and

the sealing plug comprising a hollow cylindrical sleeve having an annular, radially outwardly projecting rim at one end for locating against the front end of the connector member, the third securing means comprising a nut member for securing said rim between the nut member and front end of the connector member.

6. A method of sealing an insulating tube for carrying electrical wiring through an opening in a neon display backing plate, comprising the steps of:

securing a connector member having a through bore through an opening in a neon display backing plate;

securing a conduit to one end of the connector member on the rear side of the backing plate;

inserting a sealing plug having a through bore into the opposite, second end of the connector member;

securing the sealing plug to the connector member;

extending electrical wiring through the conduit and connector member out of the second end of the connector member, and through a hollow tube of insulating material; and

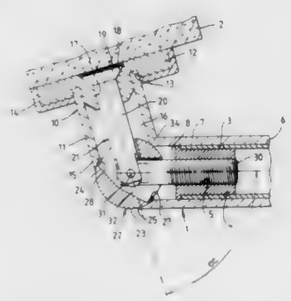
inserting the end of the hollow tube through the sealing plug into the connector member to locate an O-ring seal inside the sealing plug between the plug and tube.

5,348,414

CONNECTION SYSTEM FOR TWO STRUCTURAL COMPONENT PARTS CONSTRUCTED AS PIPE OR ROD AND/OR NODAL ELEMENTS

Richard Dziuk, Arolsen, and Karl-Ludwig Wulfert, Waldeck, both of Fed. Rep. of Germany, assignors to Hewi Heinrich Wilke GmbH, Arolsen, Fed. Rep. of Germany

Filed Feb. 21, 1992, Ser. No. 839,949
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1991, 9102252.5[U]
Int. Cl.[5] F16C *11/06*
U.S. Cl. 403—90 **13 Claims**



1. Connection system for connection of two structural component parts containing connection ends having front recesses, axes and cylindrical outer surfaces, comprising:

an articulated connection element serving for connecting said structural component parts in selected ones of a plurality of possible angular positions between said axes and having connection means determined for being anchored with the structural component parts and for being inserted into the connection ends thereof;

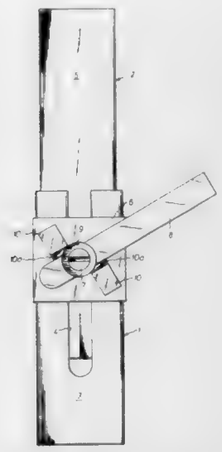
and an angle element having a spherical surface and a through-passage receiving said connection element in said plurality of angular positions, said through passage having two ends ending at said spherical surface, and said angle element being mountable between said connection ends under a formation of joint faces with said spherical surface, wherein the connection ends are provided with concave curved contact surfaces for contacting said spherical surface in such a manner that said cylindrical outer surfaces open into said spherical surface substantially tangential when said structural component parts and said angle element are connected with each other by means of said connection element.

5,348,415

LOCKING DEVICE

Dicky Carlsson, Norrahammar, Sweden, assignor to Ergonomiprodukter I Bodafors AB, Nassjo, Sweden

Filed Apr. 7, 1993, Ser. No. 39,157
Claims priority, application Sweden, Aug. 17, 1990, 9002678-2
Int. Cl.[5] B25G *3/20;* **F16B** *7/10*
U.S. Cl. 403—374 **3 Claims**



1. A device for releasably locking, in an arbitrary position of displacement in a tubular first member (1), a second member (2) which is displaceable in the longitudinal direction of said first member, characterized by a slide (6) mounted on said tubular first member (1) and displaceable in the longitudinal direction thereof, a transverse driver pin (7) connected to said second member (2) and extending through a longitudinal slot (4) in the tubular first member (1), and through a hole in the slide in order, upon displacement of the second member relative to the first member, to entrain the slide in said displacement, an operating lever (8) rotatably mounted on the driver pin (7) outside the slide (6) and adapted to be rotated between a free position, in which the second member (2) is freely displaceable relative to the first member (1), and a locking position, in which the second member is locked in its position of displacement, and compression spring means (9) mounted between said operating lever (8) and an abutment formed on the driver pin (7), to urge the operating lever towards the slide (6) which is provided with at least one cam means (10) adapted to cooperate with the operating lever (8) in a manner to urge this lever, when being rotated from its free position to its locking position, out from the slide (6) against the action of said spring means (9), such that the spring means, via said abutment, urges the driver pin (7) outwards, thus resiliently urging the second member (2) against the tubular first member which is thereby clamped between the slide (6) and the second member (2), thus locking the latter in its position of displacement.

5,348,416

GANDY DANCER: END PIECE FOR CRASH CUSHION OR RAIL END TREATMENT

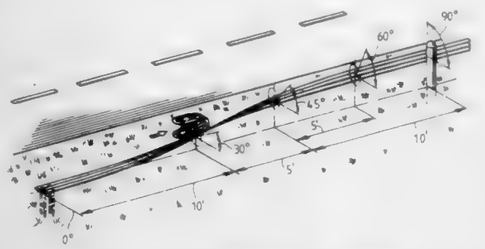
Don L. Ivey, Bryan, and King K. Mak, San Antonio, both of Tex., assignors to The Texas A&M University System, College Station, Tex.

Filed Apr. 7, 1992, Ser. No. 864,848
Int. Cl.[5] E01F *15/00*
U.S. Cl. 404—6 **10 Claims**

7. An end piece for a road barrier extending longitudinally alongside a road, comprising:

(a) an upper portion comprising a metal frame including a leading end configured to engage forward elements of a vehicle impacting the leading end; and

(b) a base portion below and attached to the upper portion and configured to engage the road barrier in moveable relation along the road barrier, wherein said base portion



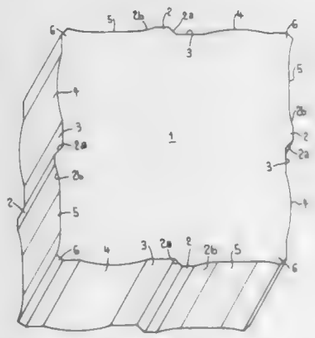
comprises a pair of longitudinally corrugated base members positionable on opposite sides of a longitudinally corrugated guard rail.

5,348,417

COMPOUND PAVEMENT STONE

René Scheiwiller, Hergiswil, Switzerland, assignor to Rolf Scheiwiller, Hergiswil, Switzerland, a part interest

Filed Nov. 30, 1992, Ser. No. 982,852
Int. Cl.[5] E01C *5/00*
U.S. Cl. 404—41 **13 Claims**



1. A compound pavement stone, comprising:

a generally planar top surface;

a plurality of side surfaces extending substantially at a right angle to said planar top surface and having a predetermined complementary pattern cut into said side surfaces;

wherein said predetermined complementary pattern allows said compound pavement stone to interlock with another compound pavement stone also having said predetermined complementary pattern and provides a clearance between said compound pavement stone and said another compound pavement stone to thereby allow a mutual tilting of said compound pavement stone relative to said another compound pavement stone;

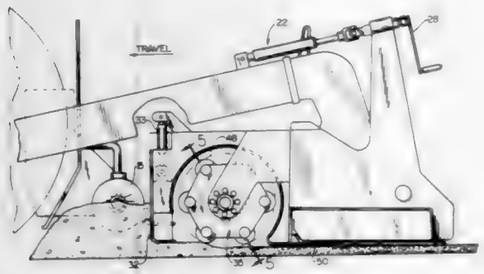
wherein said predetermined complementary pattern is formed at least once on each of said plurality of side surfaces, said predetermined pattern comprising in sequence a convex portion, a recessed portion, a tooth, and a concave portion.

5,348,418

ASPHALT FINISHING SCREED HAVING ROTARY COMPACTOR

Thomas R. Campbell, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Filed May 5, 1992, Ser. No. 878,732
Int. Cl.[5] E01C *19/48, 19/26*
U.S. Cl. 404—103 19 Claims



1. A paving machine comprising:
a tractor;
a screed support assembly mounted on said tractor; and
an asphalt screed for compacting and smoothing an asphalt mix which is deposited on the ground in front of said screed as said screed is drawn along the ground by said tractor, said asphalt screed including
a strike off bar, mounted on said screed support assembly and extending across the width of said screed, for spreading the mix delivered in front thereof to a predetermined thickness,
rotary compaction means, mounted on said screed support assembly, positioned behind said strike off bar, and extending transversely across the width of said screed, for compacting the mix which has been spread by said strike off bar, and comprising a rotor mounted for rotation about a transverse axis, and drive means for rotating said rotor about said transverse axis, and
a screed plate mounted on said screed support assembly, positioned behind said rotary compaction means, and extending transversely across the width of said screed and having a horizontal bottom surface for engaging the compacted mix, wherein
said screed support assembly and said strike off bar, said rotary compaction means, and said screed plate float freely as a unit with respect to said tractor, and wherein
said strike off bar is vertically adjustable with respect to said screed support assembly so as to control the thickness of the mix being metered to said rotary compaction means.

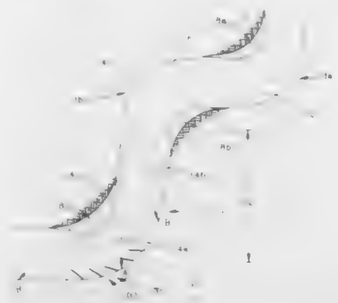
5,348,419

SYSTEM FOR EROSION CONTROL

Bert E. Bailey, New Braunfels; W. Al Pollock, Rosenberg, and W. Les Thompson, Kemah, all of Tex., assignors to Ercon Development Co., Houston, Tex.

Division of Ser. No. 705,745, Sep. 3, 1991, Pat. No. 5,255,997.
This application Jun. 21, 1993, Ser. No. 80,552
Int. Cl.[5] F02B *3/04*
U.S. Cl. 405—21 21 Claims

1. A system for preventing and repairing scour or erosion in a control zone associated with a river or shoreline having a bank and a bed associated with a moving fluid, said apparatus comprising:
(a) spatial property measuring means for determining one or more spatial properties of the river or shoreline;
(b) physical parameter measuring means for determining one or more physical parameters of the river or shoreline; and
(c) permeator means for controlling the moving fluid prior to contacting the bank in the control zone such that said permeator means employs the spatial property determinations and the physical parameter determinations for eliciting one or more permeability effective for preventing and



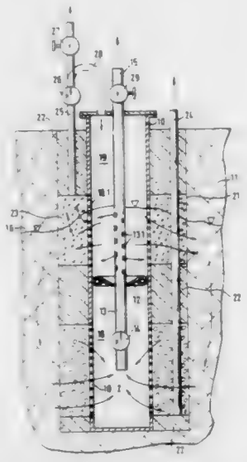
repairing scour or erosion in the control zone associated with the river or shoreline.

5,348,420

METHOD AND ARRANGEMENT FOR INFLUENCING LIQUID IN GROUND

Bruno Bernhardt, Reutlingen, Fed. Rep. of Germany, assignor to IEG Industrie-Engineering GmbH, Reutlingenll-Betzingen, Fed. Rep. of Germany

Filed Dec. 24, 1992, Ser. No. 996,658
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1991, 4142917; Feb. 19, 1992, 4204991
Int. Cl.[5] E03B *3/12*
U.S. Cl. 405—52 25 Claims



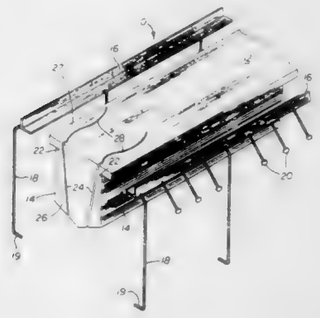
1. A method of circulating liquid in the ground without causing a drop in the level of such liquid in the ground, comprising:
forming a shaft in the ground which extends down to a desired region occupied by said liquid, said shaft having liquid permeable portions at a lower and an upper region thereof;
placing a conduit within said shaft which extends from said lower region of said shaft, upward to a location outside of said shaft; said conduit also having an outlet in said upper region of said shaft;
pumping liquid up through said conduit from said shaft lower region, and pumping part of the liquid out of said outlet into said shaft upper region, and pumping part of said liquid to said location outside of said shaft.
7. An arrangement for influencing flow of liquid in ground, comprising a shaft arranged in the ground which extends down to a desired region occupied by said liquid, said shaft having liquid permeable portions at a lower and an upper region thereof;
a transverse wall in said shaft between said lower and upper regions, with a throughgoing passage;
a conduit in said wall throughgoing passage;
said conduit extending from said lower region of said shaft, through said wall throughgoing passage, and upward to a location outside of said shaft; said conduit also having an outlet in said upper region of said shaft;
a pump arranged in said conduit for pumping liquid from said lower region of said shaft through said conduit;
means to allow part of the pumped liquid to exit through said outlet into said shaft upper region, and to allow part of the pumped liquid to be delivered to a treatment device at said location outside of said shaft.

5,348,421

TRENCH FORMING ASSEMBLY AND METHOD

Lannie L. Stegall, Versailles, Ky., assignor to ABT, Inc., Troutman, N.C.

Continuation of Ser. No. 768,610, Sep. 26, 1991, Pat. No. 5,281,051. This application Jan. 24, 1994, Ser. No. 184,911
The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.
Int. Cl.[5] E02B *5/00*
U.S. Cl. 405—119 22 Claims



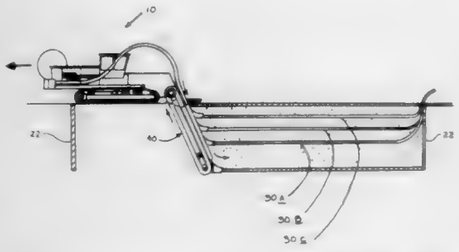
1. An assembly for forming a trench of predetermined shape comprising:
a pair of elongate members defining a support surface for supporting a trench cover, each of said members comprising an elongate horizontal leg;
anchoring means attached to each of said elongate members for anchoring said elongate members in a predetermined location;
a removable form body for shaping a moldable trench forming composition poured around said form body comprising a lightweight, buoyant body having opposed side surfaces and a bottom surface defining said predetermined shape of said trench, said form body including coplanar, substantially horizontal, upwardly facing surfaces formed along upper portions of said opposed side surfaces and extending substantially the entire length thereof, said coplanar, substantially horizontal surfaces of said form body being engaged against bottom surfaces of the elongate horizontal legs of said elongate members substantially along the entire length of said form body;
whereby said elongate horizontal legs of said elongate members cooperate with said form body to counterbalance buoyant forces resulting from moldable trench forming composition poured around said form body during forming of said trench and thereby prevent said form body from shifting upwardly as said trench forming composition sets to form a completed trench.

5,348,422

METHODS FOR THE FORMATION AND OPERATION OF AN IN SITU PROCESS REACTOR

Frank E. Manchak, III; Michael E. Manchak, and Peter J. Manchak, all of Santa Barbara, Calif., assignors to Terranalysis Corporation, Santa Barbara, Calif.

Filed Feb. 25, 1993, Ser. No. 22,189
Int. Cl.[5] B09B *3/00*
U.S. Cl. 405—128 16 Claims



1. A process for the conversion of a hazardous waste disposal site to an in situ process reactor and operating same to remediate the site comprising the steps of:
a) establishing an essentially impervious contaminant containment wall around the site;
b) placing a liner forming material inside of said wall on the bottom of said site to form an essentially impervious bottom contaminant containment liner in said site which extends to said containment wall while simultaneously excavating and processing contaminated soil excavated from said site at a location above the surface of said site and returning the processed soil into said site above said bottom liner;
c) placing a network of perforated feed conduits and a network of perforated contaminant removal conduits in said reactor, said contaminant removal conduits leading to a contaminant removal location in said reactor;
d) forming an essentially impervious contaminant containment barrier on top of said site whereby said wall, bottom liner and top barrier completely enclose the contaminated soil in said site thereby converting said site to a self contained reactor;
e) operating said reactor to volatilize volatile contaminants therein;
f) moving a fluid stream containing volatiolized contaminants to said collection location in said reactor; and
g) removing said fluid stream of volatized contaminants from said collection location.

5,348,423

DEVICE AND PROCESS FOR UNROLLING FLEXIBLE TUBULAR CONDUITS ESSENTIALLY VERTICALLY

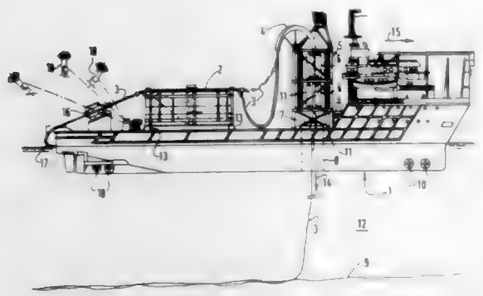
René Maloberti, Champigny; Alain Coutarel, Paris, both of France, and Philippe F. Espinasse, Rio de Janerio, Brazil, assignors to Coflexip, Boulogne-Billancourt, France

PCT No. PCT/FR91/00264, § 371 Date Jan. 29, 1992, § 102(e) Date Jan. 29, 1992, PCT Pub. No. WO91/15699, PCT Pub. Date Oct. 17, 1991
PCT Filed Apr. 2, 1991, Ser. No. 776,394
Claims priority, application France, Mar. 30, 1990, 90 04105
Int. Cl.[5] F16L *1/18*
U.S. Cl. 405—166 14 Claims

1. Device for laying, from a floating support, flexible conduits comprising rigid accessories, whose outer dimension is greater than the outer diameter of the conduit, comprising:
first linear winch-type tensioning means (6) for lowering said flexible conduit (3) and supporting the weight of said flexible conduit, said first linear winch-type tensioning means having an approximately vertical axis and compris-

ing guiding means for guiding said flexible conduit at a substantially vertical position at a of said floating support (**1**),

auxiliary holding means (**19**) for holding said flexible conduit to lower said flexible conduit and support the weight of



said flexible conduit during passage of an accessory (**21**) mounted on said flexible conduit within the first tensioning means, said [auxiliary holding]first tensioning means being in an open position during passage of said accessory mounted on said flexible conduit within the first tensioning means.

5,348,424

REINFORCING BLOCK FOR EXCAVATION WORK AND METHOD OF CONSTRUCTION THEREOF

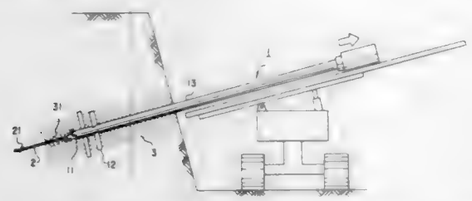
Masaru Tateyama, Kokubunji; Yukihiko Tamura, Yokohama; Kosei Fukuda, Tokyo; Shigeru Yoshida, Tokyo, and Chikashi Kami, Tokyo, all of Japan, assignors to Railway Technical Research Institute; Tokyu Construction Co., Ltd. and Tenox Corp., all of Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,148

Claims priority, application Japan, Feb. 7, 1992, 4-085892; Feb. 10, 1992, 4-056541; Feb. 10, 1992, 4-056542; Oct. 20, 1992, 4-306281

Int. Cl.[5] E02D *5/74*

U.S. Cl. 405—262 **15 Claims**



1. A method of stabilizing ground comprising a ground surface, which comprises:

providing a boring tool comprising:

a substantially open ended hollow shaft means having a first end adapted to be directed toward the ground and a second end remote therefrom;

ground cutting means of a first diameter on said hollow shaft means proximate to said first end;

ground mixing means, of a larger diameter than the diameter of said cutting means, on said shaft means disposed between said cutting means and said second end;

rod means adapted to be disposed through said hollow shaft means, which rod means comprises a first end which is adapted to extend through said first end of said hollow shaft means, a second end remote therefrom, and screw means on said first end of said rod means adapted to extend through said first end of said hollow shaft means into engaging relationship with said ground;

means to turn said hollow shaft means;

means to turn said rod means; and

means to supply fixing means into said hollow shaft means;

said method comprising:

positioning said boring tool on said ground;

turning and thereby driving said hollow shaft means into said ground, under conditions sufficient to cause said ground cutting means to form a hole in said ground, and said mixing means to agitate the ground around said hollow shaft means, for a time sufficient to form a hole in said ground of a predetermined depth;

during the forming of said hole in said ground, passing said fixing composition through said hollow shaft means and out said first end into admixture with said agitated ground, thereby forming an outer column comprising a mixture of agitated ground and fixing material about said hollow shaft means;

passing said rod means through said hollow shaft means and screwing said screw means into said ground at the bottom of said hole;

while leaving said rod screwed into said ground at the bottom of said hole, extricating said hollow shaft means from said hole while passing additional fixing composition through said first end around said rod in an amount sufficient to form an intermediate column comprising predominantly fixing agent about said rod, and substantially within said outer column;

setting up said fixing material; and

connecting said rod second end to said ground

5,348,425

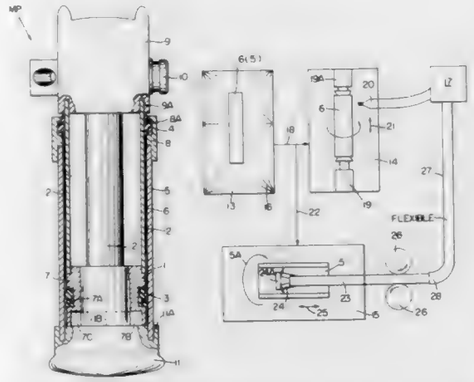
PISTON CYLINDER DEVICE WITH A PROTECTIVE COATING AND METHOD OF PRODUCING SUCH A COATING

Robert W. Heiliger, Hochkoppel 11, 5166 Kreuzau-Untermaubach, Fed. Rep. of Germany

Filed Nov. 10, 1992, Ser. No. 974,270

Int. Cl.[5] E21D *15/52*; **E02D** *5/60*

U.S. Cl. 405—297 **26 Claims**



1. A method for producing a protective thermoset coating at least on one surface that cooperates with a sealing device in a piston cylinder unit wherein said at least one surface is in sliding contact with said sealing device, comprising the following steps:

(a) preparing a powder mixture of a three-dimensionally cross-linking thermosetting uncured powder material and a lubricant additive in powder form,

(b) roughly preparing said at least one surface to provide a prepared surface for a powder coating operation,

(c) applying a layer of said powder mixture to said prepared surface to form a powder coating layer on said prepared surface, and

(d) heating said powder coating layer sufficiently for curing said thermosetting powder material to cause a three-dimensional cross-linking to form said protective thermoset coating with a coating thickness of about 500 μm at the most.

5,348,426

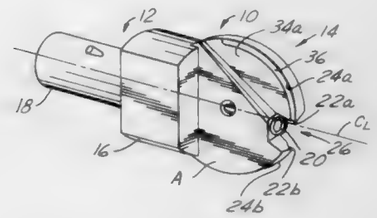
BALL NOSE CUTTER HAVING A SINGLE CUTTER INSERT

Ernest E. Krupp, 38940 Moravian, Clinton Township, Macomb County, Mich. 48036

Filed Jan. 8, 1993, Ser. No. 1,859

Int. Cl.[5] B23C *5/10, 5/22, 5/20*

U.S. Cl. 407—40 **9 Claims**



1. A ball nose cutter for being connected with a torque transmitting machine, said ball nose cutter comprising:

a cutter body comprising:

shank means for connecting with the torque transmitting machine, said shank means defining a centerline of rotation, said centerline of rotation defining an axis of said cutter body; and

an insert holder connected with said shank means, said insert holder being provided with a groove having a first predetermined shape;

a generally disc shaped cutter insert having a first portion and an opposite second portion, said second portion having a second predetermined shape that is reciprocal to that of said first predetermined shape so that said second portion is seatable within said groove in at least two relative orientations with respect thereto, said at least two relative orientations comprising a first relative orientation and a second relative orientation, said cutter insert having a center, a first side, a second side and a central plane bisecting said cutter insert between said first and second sides thereof, said cutter insert further comprising:

cutting edge means located on said first portion for cutting a workpiece in response to rotation of said shank by the torque generating machine; and

a pair of cutting tips connected with said cutting edge means, each cutting tip of said pair of cutting tips being located at said a central plane of said cutter insert, said pair of cutting tips being mutually nondiametrically opposed in said central plane with respect to said center; and

means for releasably connecting said cutter insert to said cutter body when said second portion of said cutter insert is seated in said groove at a selected one of said first and second relative orientations;

wherein when said second portion of siad cutter insert is at said first orientation said first and second sides thereof have a first relative placement with respect to said groove and a selected one of said cutting tips is located at said centerline of rotation, and when said second portion of said cutter insert is at said second orientation said first and second sides thereof have a second relative placement with respect to said groove that is reversed with respect to said first relative placement and the other of said cutting tips is located at said centerline of rotation; and

wherein said means for releasably connecting comprises:

said insert holder having a threaded holder bore oriented at an oblique angle with respect to said cutter body axis, said holder bore communicating with said groove;

an insert bore located in said central plane, passing through said center of said cutter insert and extending along a diameter of said cutter insert, said insert bore being aligned with respect to said center and a medial location between said pair of cutting tips, said insert bore being aligned with said holder bore at each of said first and second relative orientations, said insert bore being located substantially adjacent each cutting tip of said pair of cutting tips; and

a holding screw dimensioned to pass through said insert bore and threadably engage with the threads of said holder bore.

5,348,427

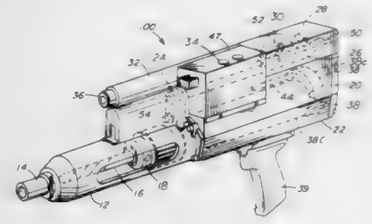
AIRFEED PECK DRILL CONFIGURATION

Edwin J. Deremo, Lexington, S.C., assignor to Cooper Industries, Inc., Houston, Tex.

Division of Ser. No. 873,639, Apr. 23, 1992, abandoned, which is a continuation of Ser. No. 114,954, Oct. 30, 1987, abandoned. This application Jul. 2, 1992, Ser. No. 907,714

Int. Cl.[5] B23B *47/22*

U.S. Cl. 408—17 **8 Claims**



1. An air feed peck drill for drilling holes in a work surface, comprising:

a drill housing;

a drill quill reciprocally disposed within said housing and moveable forwardly and rearwardly therein and having a reaction bracket connected thereto;

a dampening means for controlling the rate of forward motion of said quill outward said housing said dampening means including a rearwardly projecting piston rod member terminating in a rearwardly disposed piston rod engagement surface;

a connection bracket interconnecting said dampening means and said reaction bracket;

said reaction bracket disposed between the interconnection of said connection bracket with said dampening means and the work surface; and,

said connection bracket selectively engageable with said engagement surface of said piston rod during forward movement of said quill in said housing.

5,348,428

UNDERFLOOR DRILLING JIG AND FRAME

Gordon H. Turner, 15 Aylesham Way, Yateley, Surrey, Great Britain

PCT No. PCT/GB91/00399, § 371 Date Sep. 11, 1992, § 102(e) Date Sep. 11, 1992, PCT Pub. No. WO91/13728, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 13, 1991, Ser. No. 934,463

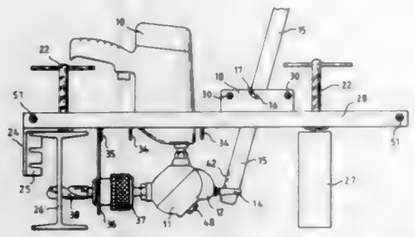
Claims priority, application United Kingdom, Mar. 13, 1990, 9005678

Int. Cl.[5] B23B *45/14*

U.S. Cl. 408—99 **5 Claims**

1. An underfloor drilling jig and frame comprising a stationary fixed frame (**28**) with a sliding inner frame (**33**) slidable in a direction of drilling, and a variable speed electric drill (**10**) fitted in the sliding frame (**33**), wherein the drill (**10**) is mounted with its body extending out of the plane of movement of the sliding frame (**33**), an angled gear box (**11**) is coupled to the body and carries a chuck (**37**) whose axis extends in the

direction of drilling and a lever (**15**) pivotally mounted on the stationary frame (**28**) and arranged to bear along said chuck



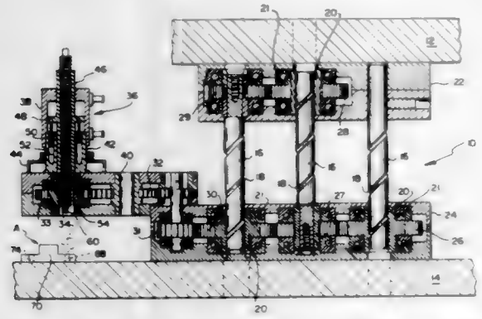
axis on the gear box (**11**), drill (**10**) and sliding frame (**33**) in the direction of drilling.

5,348,429

TAPPING APPARATUS WITH RAPID TAP ADVANCE/RETRACTION

William R. Pfister, 22 Davos Rd., Brick, N.J. 08724

Filed Oct. 25, 1993, Ser. No. 142,720
Int. Cl.[5] B23B *47/18*; B23G *3/00*
U.S. Cl. 408—129 **8 Claims**



1. Tapping apparatus for cutting threads in workpiece holes comprising,

a top plate and a bottom plate, the top plate being vertically movable downwardly toward and upwardly away from the bottom plate,

a tap assembly supported on the bottom plate at a tapping station location thereon and spaced a distance above said bottom plate so that a workpiece to be tapped can be positioned below the tap assembly at the tapping station, the tap assembly including a threading tap carried at a lower tip end of a vertical lead screw, the tap assembly including a rotatably driveable means operably connected to the lead screw for rotating the lead screw, the lead screw being received in a companionly threaded bushing so that rotation of the lead screw results in vertical movement of the lead screw towards and away from a workpiece positioned at the tapping station in correspondence to a rotation direction of the lead screw, the top and bottom plate mounting

drive means operable when said top plate is moved downwardly and upwardly in a straight line movement thereof for producing rotary drive in a drive means gear train, an output from said gear train being coupled with said tap assembly rotatably driveable means, and,

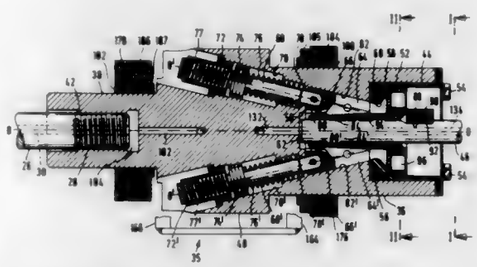
the tap assembly embodying power operating means for effecting rapid downward advance-upward retraction vertical movement of the threaded bushing and correspondingly the lead screw independently of lead screw vertical movement incident lead screw rotation so as to position the threading tap proximal a workpiece hole to be tapped prior to lead screw rotation in one direction effects tapping entry of the tap into said workpiece hole and to move the threading tap to a point distal the workpiece hole upon a counter directional lead screw rotation withdrawal of the tap from the tapped hole.

5,348,430

UNIVERSAL CHUCK FOR A MACHINE FOR PIERCING A TAP HOLE OF A SHAFT FURNACE

Jean Metz, Luxembourg; Patrick Millen, Fennange; Henri Radoux, Bereldange, and Fernand Roemen, Luxembourg-Cents, all of Luxembourg, assignors to Paul Wurth S.A., Luxembourg

Filed Jun. 10, 1993, Ser. No. 76,350
Claims priority, application Luxembourg, Jun. 10, 1992, 88 129
Int. Cl.[5] B23B *31/10*
U.S. Cl. 408—239 R **13 Claims**



1. A universal chuck for a machine for piercing a tap hole of a shaft furnace, the piercing machine comprising a working member equipped with a spindle defining a longitudinal axis "**0**", said working member being mounted on a sliding carriage of the piercing machine and being capable of generating at least a rotational moment about the axis "**0**" and a percussive/-tensile force along the axis "**0**", said universal chuck comprising:

an oblong body equipped at one end with means for making the oblong body axially integral with the spindle and at the opposite end, equipped with a front cavity arranged about the axis "**0**" for the insertion therein of one end of a drill bit or a piercing rod;

first gripping means for gripping the end of a piercing rod in said cavity, said first gripping means enabling said percussive/tensile force to be transmitted to a piercing rod;

immobilizing means for immobilizing the end of a drill bit in said cavity, said immobilizing means enabling a rotational moment to be transmitted from the chuck to a drill bit;

said first gripping means and said immobilizing means being arranged in said oblong body about said front cavity;

a rigid support structure rigidly attached to said sliding carriage and extending along said oblong body; and

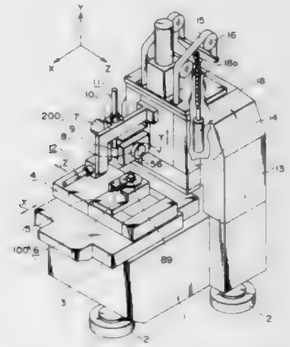
said support structure having at least one bearing which supports and guides said oblong body radially, permitting at the same time a rotational movement about the axis "**0**" and a relative sliding movement of said oblong body.

5,348,431

PRECISION CUTTING PROCESS MACHINE AND PRECISION CUTTING PROCESS METHOD

Haruyuki Kusunoki, Tsukuba; Kikuo Yasutome, Tsuchiura; Shigeo Yamazaki, Ushiku; Koji Furukawa, Ushiku, and Takeshi Sasaki, Ushiku, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 957,821
Claims priority, application Japan, Oct. 9, 1991, 3-261842; Oct. 9, 1991, 3-261843; Oct. 15, 1991, 3-266028; Oct. 15, 1991, 3-266029; Oct. 15, 1991, 3-266030; Oct. 16, 1991, 3-267374; Oct. 16, 1991, 3-267375; Oct. 16, 1991, 3-267376; Oct. 16, 1991, 3-267377
Int. Cl.[5] B23C *1/027*
U.S. Cl. 409—132 **25 Claims**



1. A precision cutting process method for a precision cutting process machine for aligning a workpiece relative to a continuously rotating cutting tool and cutting the workpiece in a predetermined pattern, with the precision cutting processing machine comprising:

a main body base portion;

an up-and-down moving table driven in an up-and-down direction with respect to the main body base portion;

a cutting tool arranged on the up-and-down moving table, sets a plane formed upon rotation of the cutting tool on a plane along a back-and-forth direction of the main body base portion, and is continuously rotated when cutting the workpiece;

a back-and-forth moving table driven in the back-and-forth direction with respect to the main body base portion;

a right-and-left moving table fixed on the back-and-forth moving table, and driven in a right-and-left direction with respect to main body base portion;

holding means, arranged on the right-and-left moving table, for detachably holding the workpiece;

measurement means, arranged on the up-and-down moving table, for measuring dimensions of the workpiece in the up-and-down and right-and-left directions; and

control means connected to the measurement means and the up-and-down, right-and-left, and back-and-forth moving tables,

said method comprising the steps of:

inputting in advance a desired pattern after a cutting process of the workpiece to the control means;

measuring the dimensions after a trial cutting process of a portion of the workpiece within a cutting range by the cutting tool, and inputting a measurement result to the control means;

calculating a correction value from data input in the inputting and measuring steps;

driving the right-and-left moving table and the up-and-down moving table so as to perform the precision alignment on the basis of the correction value; and

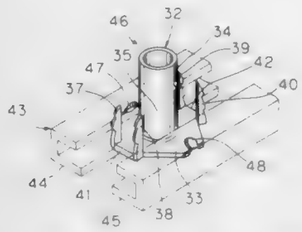
cutting the workpiece to form the desired pattern.

5,348,432

TEE NUT

Yutaka Nagayama, Osaka, Japan, assignor to Nagayama Electronic Industry Co., Ltd., Wakayama, Japan

Filed Sep. 24, 1993, Ser. No. 126,239
Claims priority, application Japan, May 14, 1993, 5-112641
Int. Cl.[5] F16B *37/00, 37/04*
U.S. Cl. 411—183 **15 Claims**



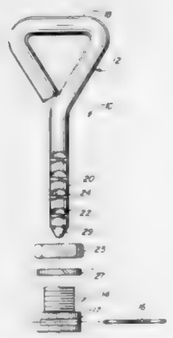
1. A tee nut being made of an integral metal material and comprising a shaft and a flange outwardly extending from a first end of said shaft and comprising an outer peripheral edge, said shaft being in the form of a hollow cylinder and having a relatively thin-walled flarable portion at a second end being opposite to said first end, and a relatively thicker-walled threaded portion at said first end having a female screw threading formed on an inner surface of said threaded portion, said screw threading not extending into said flarable portion, two pairs of pawls being arranged on said outer peripheral edge of said flange in opposite positions along a radial direction of said flange, wherein each of said pawls extends substantially from said first end toward said second end, said outer peripheral edge of said flange having such a shape that the pawls of each pair of said two pairs of pawls are coupled with each other by a respective linear edge of said outer peripheral edge.

5,348,433

QUICK-RELEASE CARGO NET SECURING DEVICE

Peter Watson, Vancouver, Canada, assignor to Skytainer Services, Inc., Vancouver, Canada

Filed Mar. 25, 1992, Ser. No. 857,375
Int. Cl.[5] F16B *21/00*; B61D *45/00*
U.S. Cl. 411—347 **13 Claims**



1. A fastener, comprising:

(a) a probe having a shaft portion and a head to which is attachable a flexible strap, said shaft portion having a pair of notches on either side thereof, each notch having a flat shoulder face perpendicular to an axis of the shaft portion and being nearest an anterior end of said shaft portion and a shoulder inclined outwardly and rearwardly of said anterior end;

(b) a bolt affixable to a panel, said bolt having a hole there-

through and having slots formed on either side of said bolt intersecting the hole; and

(c) a spring couplable to said bolt and having parallel arms which pass through the slots so as to intersect the hole and lock said probe in place when said probe is inserted into the hole;

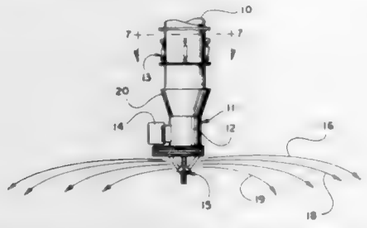
whereby upon insertion of said probe into or twisting of said probe in the hole of said bolt, said spring is opened thereby permitting further insertion or withdrawal of said probe.

5,348,434

CARGO LOADING SYSTEM

Frank K. Peeples, Savannah; David Raith, Statesboro, and Charles E. Donnelly, Savannah, all of Ga., assignors to East Coast Terminal Assoc., Ltd., Savannah, Ga.

Filed Oct. 21, 1992, Ser. No. 964,388
Int. Cl.[5] B65G *65/30*
U.S. Cl. 414—301 **9 Claims**



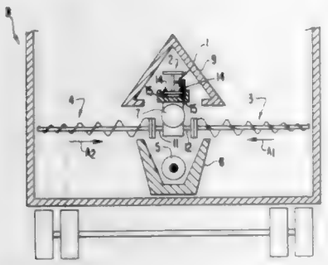
7. Apparatus for orienting and distributing pieces of plate-like material in a cargo space, said apparatus including propelling means disposed within said cargo space for propelling said plurality of pieces laterally in said cargo space, means for feeding said plurality of pieces to said propelling means, the arrangement being such that said propelling means will propel said pieces through the air away from said propelling means in a generally horizontal direction, said propelling means including a plurality of paddles disposed about an axis, and means for rotating said plurality of paddles about said axis, each paddle of said plurality of paddles having a first end spaced from said axis and a second end adjacent to said axis so that said first end moves at a high linear speed while said second end moves at a lower linear speed and further including limiting means disposed centrally of said plurality of paddles, said limiting means including a frustoconical surface for diverting said pieces towards said paddles, so that the pieces are engaged by only the upper portions of said plurality of paddles.

5,348,435

BIN UNLOADING APPARATUS

Karl A. Bissex, Plainfield, Vt., assignor to DMS, Inc., Barre, Vt.

Filed Jul. 8, 1991, Ser. No. 726,919
Int. Cl.[5] B65G *3/04*
U.S. Cl. 414—310 **12 Claims**



12. A bin unloading apparatus comprising:

a substantially rectangular bin for accommodating a material to be unloaded;

a discharge conveyor means provided at a floor level of the bin for receiving and discharging material from the bin;

feed conveyor means for feeding the material to the discharge conveyor means including a head assembly, a pair of screw conveyor means for feeding material from respective sides of said bin toward a center thereof, and a means mounted on said head assembly for driving said pair of screw conveyor means; and

means disposed substantially centrally of the bin and extending in a longitudinal direction thereof for solely supporting said head assembly said pair of screw conveyor means and said drive means in said bin;

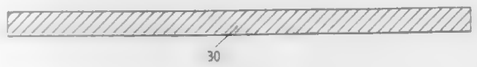
wherein said means for solely supporting includes means for supporting said pair of screw conveyors on respective sides of said head assembly in a cantilevered manner.

5,348,436

STORE FOR INDIVIDUAL PRODUCTS

Wilhelm Hogenkamp, Hanover, and Werner Hamberger, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Klockner Hansel GmbH, Hanover, Fed. Rep. of Germany

Filed Oct. 26, 1992, Ser. No. 966,560
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1991, 4135241
Int. Cl.[5] B65G *1/127*
U.S. Cl. 414—331 **8 Claims**



1. Storage apparatus for storing individual products and having an input station and an output station and storage means extending therebetween, comprising:

carrier plates for receiving and supporting individual products thereon;

means for placing a product on each carrier plate at said input station;

first elevator means, adjacent said input station, for forming a stack of said carrier plates;

a plurality of spaced slideways forming said storage means and for receiving said stack of carrier plates;

first transfer means for transferring said stack of carrier plates as a stack from said first elevator means to said plurality of spaced slideways;

stack moving means for moving said stack of carrier plates as a stack towards said output station;

second elevator means independently operable with respect to said first elevator means, adjacent said output station, for receiving said stack of carrier plates from said slideway;

second transfer means independently operable with respect to said first transfer means for removing said stack of carrier plates as a stack from said slideways and placing them on said second elevator means;

means for removing a product from each carrier plate on said second elevator means at said output station; and

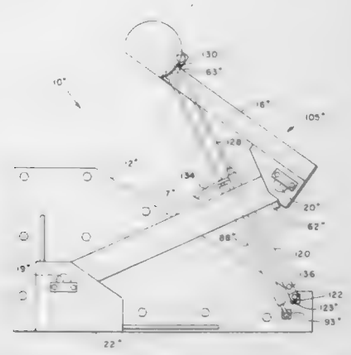
a second stack of said carrier plates, wherein said stack moving means moves said stack of carrier plates independently of said second stack of carrier plates.

5,348,437

VEHICLE RESTRAINING APPARATUS

Leroy G. Krupke, Carrollton; James L. Grisham, Denison, and David S. Boucher, Rowlett, all of Tex., assignors to Overhead Door Corporation, Dallas, Tex.

Continuation of Ser. No. 63,144, May 17, 1993, abandoned. This application Mar. 23, 1994, Ser. No. 217,010
Int. Cl.[5] B65G *67/02*
U.S. Cl. 414—401 **18 Claims**



1. A vehicle restraining apparatus for restraining a vehicle adjacent a structure having an upright surface, comprising:

a supporting structure adapted for mounting adjacent the upright surface;

substantially vertically aligned upper and lower pivot arms each having respective first and second end portions;

first means for pivotally associating the first end portion of the lower pivot arm to and symmetrical with respect to the said structure and for permitting pivotal movement of the lower pivot arm about a first pivot axis substantially perpendicular to the upright surf,ace, and second means, pivotally associating the second end portion of the lower pivot arm to the first end portion of the upper pivot arm, for permitting pivotal movement of the upper pivot arm, relative to the lower pivot arm, about a second pivot axis spaced from said first pivot axis, the pivot arms comprising an articulated structure positionable in a first, folded, retracted position in which the lower pivot arm extends in a first, substantially horizontal direction and the upper pivot arm extends over the lower pivot arm in a substantially opposite direction, and a second, vehicle-engaging position;

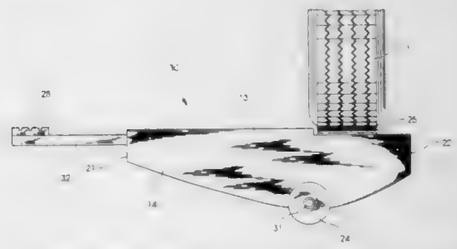
actuating means for deploying the articulated structure to its vehicle-engaging position.

5,348,438

VEHICLE WHEEL CHANGING AID

Robert V. Roberts, R.R. 1, Box 79, Waskom, Tex. 75692

Filed Jul. 7, 1993, Ser. No. 88,826
Int. Cl.[5] B60B *29/00*
U.S. Cl. 414—426 **11 Claims**



1. A vehicle wheel changing aid for mounting and removing a vehicle wheel to and from a mounted position on a wheel axle of a vehicle, said vehicle wheel changing aid comprising:

a rocker base including an operator end, a wheel receiving end located remote from said operator end, and a bottom facing pivot surface adapted to contact the ground as said rocker base is pivoted, said bottom facing pivot surface having a lowermost portion located directly below said rollers;

a plurality of spaced apart rollers mounted on said base proximate to said wheel receiving end and adapted to rotatably support a vehicle wheel positioned thereon;

a knee/foot bearing surface positioned towards the operator end of said rocker base, said knee/foot bearing surface opposing said bottom facing pivot surface; and

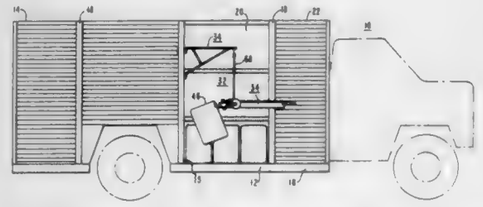
a pair of wheels rotatably mounted to said base on an axis transverse to said rollers, said wheels positioned proximate to said wheel receiving end of said rocker base, said wheels further positioned so as not to extend below the lowermost portion of said bottom facing pivot surface.

5,348,439

PORTABLE UNLOADING DEVICE

George F. Kuhn, Jr., 721 Harrison City Rd., Trafford, Pa. 15085

Filed Sep. 14, 1993, Ser. No. 121,604
Int. Cl.[5] B60P *1/00*
U.S. Cl. 414—543 **11 Claims**



1. In combination with a truck including a frame, a load containing body means affixed to said frame, said body means including a truck bed affixed to said frame, transverse partition wall means disposed in predetermined position within said body means, said partition wall means forming a plurality of outwardly opening bays, slidable door means for engaging said partition wall means and covering said outwardly opening bays, said partition wall means having vertical U-shaped channel means therein disposed on opposite sides thereof, said channel means for receiving said slidable door means, the improvement which comprises:

(a) said partition wall means having wall aperture means passing therethrough opening into said oppositely disposed U-shaped channel means;

(b) a portable unloading device comprising a removable rotatable jib frame means including vertical extension means, a first rotatable aperture engaging means rotatably mounted proximate a first of said vertical extension means, said first aperture engaging means slidably engaging a first of said wall aperture means, a second rotatable aperture engaging means rotatably mounted proximate a second of said vertical extension means, said second aperture engaging means slidably engaging a second of said wall aperture means, said first vertical extension means and said second vertical extension means in coaxial alignment with one another, said jib frame including a first hook means for carrying a load;

(c) an elongated hollow lever arm men%bet including means for engaging said load affixed proximate one end thereof, said hollow lever arm member further includes retraction means for retracting said first hook engaging means automatically when said hollow lever arm member is not supporting a load, lever arm handle means affixed proximate the other end of said hollow lever arm member, controlled lever arm lowering means for engaging said

first hook means of said rotatable jib frame means and for lowering said load in a controlled manner, said controlled lever arm lowering means comprises extendable first hook engaging means for engaging said first hook means, brake means for controlling the descent of said hollow lever arm member when lowering a load.

5,348,440

APPARATUS FOR LOADING CARTONS ONTO PALLETS

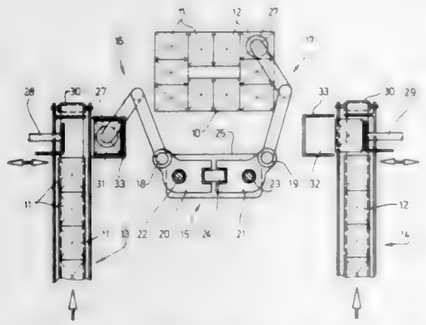
Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed May 1, 1992, Ser. No. 877,079

Claims priority, application Fed. Rep. of Germany, May 1, 1991, 4114215

Int. Cl.[5] B65G *57/02*

U.S. Cl. 414—792.9 **8 Claims**



1. An apparatus for loading cuboid articles onto a pallet by means of a palletizer (**15**), said palletizer comprising:

two articulated arms (**16, 17**);

two guide blocks (**20, 21**);

a vertically extending supporting column (**24**);

a pair of joints (**18, 19**); and

a pair of vertically extending posts (**22, 23**);

wherein each joint (**18, 19**) pivotally mounts one of said articulated arms (**16, 17**) on a respective one of said guide blocks (**20, 21**) for pivotal movement of the articulate arm in a horizontal plane;

wherein each guide block (**20, 21**) is movable up and down on a respective one of said posts (**22, 23**);

wherein both guide blocks (**20, 21**) are mounted on said supporting column (**24**) for up and down vertical movement therealong; and

wherein said supporting column (**24**) has a cross-sectional configuration which prevents pivoting movements of said guide blocks in the horizontal plane.

5,348,441

PARTS TRAY CONVEYING SYSTEM

Kazuo Takemasa, Tokyo; Shoichi Hayashi, Chiba; Tsuyoshi Inoue, and Hideo Tanaami, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 10, 1991, Ser. No. 683,189

Claims priority, application Japan, Apr. 13, 1990, 2-98254

Int. Cl.[5] B65G *60/00*

U.S. Cl. 414—796.7 **8 Claims**

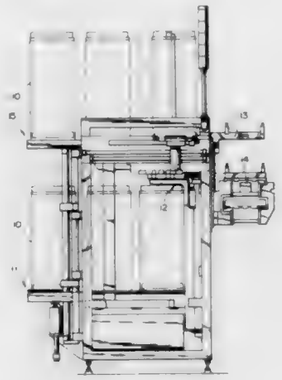
1. A parts tray conveying system comprising:

a first station for supplying a plurality of occupied trays under a stacked condition each containing parts;

a second station for separating an uppermost one of said occupied trays under the stacked condition one by one and including elevator means for vertically moving said separated uppermost one of said occupied trays, said elevator means having a vertically movable member, an elevating member attached to said vertically movable member, a plurality of mounting brackets attached to said elevating member, a plurality of rotatable plates mounted to said mounting brackets, a sensing member projecting from one of said plurality of rotatable plates, and a light emitting element and a sensor provided at an upper and lower portion, respectively, of said elevator means so as to form a light path therebetween for detecting rotation of said sensing member;

a third station for conveying said separated uppermost one of said occupied trays to a predetermined position;

means for moving said occupied trays under the stacked condition from said first station to said second station;



means for taking said uppermost one of said occupied trays under the stacked condition from said second station to said third station;

a fourth station for removing and discharging a plurality of empty trays each containing no parts one by one from said third station;

a fifth station for stacking said empty trays discharged by said fourth station; and

means for carrying said empty trays under a stacked condition from said fifth station.

5,348,442

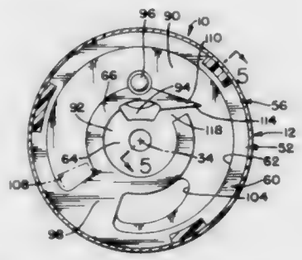
TURBINE PUMP

David E. Harris, Bridgeport; Brian J. Christopher, Clio, and Cary W. Rackett, Goodrich, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 18, 1993, Ser. No. 107,879

Int. Cl.[5] F04D *5/00*

U.S. Cl. 415—55.1 **4 Claims**



1. In an open-vane regenerative turbine pump including

a housing,

an impeller having a body and a plurality of paddle-like open-vane type vanes extending radially out from said body,

means rotatably mounting said impeller on said housing,

means on said housing defining an annular pump channel around the periphery of said impeller and around said vanes,

means on said housing defining a stripper in said pump channel closely adjacent said impeller,

means on said housing defining an inlet port to said pump channel closely adjacent a first side of said stripper and a discharge port from said pump channel closely adjacent a second side of said stripper, and

means on said housing defining a vapor collection chamber radially inboard of said pump channel,

the improvement comprising:

means defining a pair of bosses on said housing in said pump channel on opposite sides of said impeller each having an edge obstructing a radially inner fraction of said pump channel for intercepting vapor in said radially inner fraction of said pump channel having a velocity component in the direction of rotation of said impeller, and

means defining a pair of notches in said housing each in flow communication with said vapor collection chamber and with a radially innermost extremity of said pump channel and each located closely adjacent a respective one of said pair of bosses on said housing whereby the momentum of said intercepted vapor induces flow of said intercepted vapor through said notches to said vapor collection chamber.

5,348,443

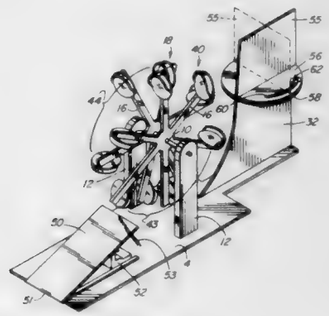
WIND IMPELLER

Victor N. Roberts, 74-8490 King George Hwy., Surrey, B.C., Canada V3W 5B7

Continuation-in-part of Ser. No. 922,449, Jul. 30, 1992, abandoned. This application Aug. 10, 1993, Ser. No. 104,973

Int. Cl.[5] F03D *7/04*

U.S. Cl. 416—9 **14 Claims**



1. A wind impeller comprising:

a base having a windward end and a leeward end;

at least two rotor assemblies mounted to the base for rotation, each rotor assembly having a plurality of spaced arms extending radially from a rotation axis with a vane attached at the end of each arm, the at least two rotor assemblies being mounted such that the rotors are rotatable through a first region in which the arms of the rotor assemblies converge and intermesh to travel along the same path and a second region in which the arms of the rotor assemblies diverge to travel along separate paths;

a baffle member pivotally mounted to the base on a windward side of the rotor assembly for directing a wind blowing in a direction from the windward end of the base toward the leeward end of the base against the vanes when the vanes are in the second region and deflecting the wind away from the vanes when the vanes are in the first region; and,

bias means for urging the baffle member, against the wind, into an inclined position with respect to said base such that, at higher wind speeds, the force of the wind pivots the baffle member into a position where less wind is deflected from the vanes in the first region in which the arms of each rotor assemblies extend in a plane and at least two rotor assemblies are mounted such that the planes of the rotors are at angles to each other and intersect in the first region.

5,348,444

SINGLE-BLADE IMPELLER FOR CENTRIFUGAL PUMPS

Wolfgang Metzinger, Pegnitz, and Rolf Witzel, Lambsheim, both of Fed. Rep. of Germany, assignors to KSB Aktiengesellschaft, Frankenthal/Pfalz, Fed. Rep. of Germany

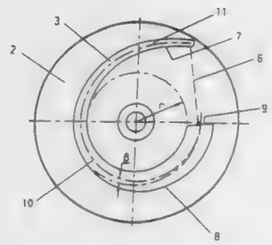
PCT No. PCT/EP91/00833, § 371 Date Nov. 12, 1992, § 102(e) Date Nov. 12, 1992, PCT Pub. No. WO91/18210, PCT Pub. Date Nov. 28, 1991

PCT Filed May 2, 1991, Ser. No. 945,966

Claims priority, application Fed. Rep. of Germany, May 12, 1990, 4015331

Int. Cl.[5] F04D *29/38*

U.S. Cl. 416—179 **10 Claims**



1. An impeller, particularly for use in a centrifugal pump designed to convey solids-containing fluids, comprising a rotational axis, an arcuate guiding blade for fluid which rotates about said rotational axis, said blade having a front cover plate, a rear cover plate, a suction side, and a pressure side which define a channel having an intake and an outlet, said channel having a cross-sectional area that decreases from said intake to said outlet, and said blade further having a median line, and a blade angle, as measured at said median line, which is positive adjacent to said outlet and is less than 0 degrees adjacent to said inlet.

5,348,445

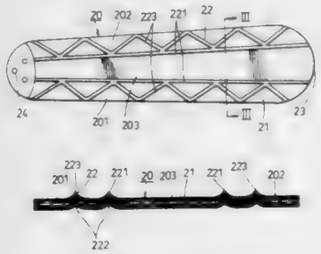
FAN BLADE

Chin-Tsaw Jwd, Fengyuan City, Taiwan, assignor to Cheng-Chi Hung, Fengyuan City, Taiwan

Filed Dec. 8, 1993, Ser. No. 162,946

Int. Cl.[5] F04D *29/38*

U.S. Cl. 416—229 R **3 Claims**



1. A fan blade for a ceiling fan, comprising an elongated laminated plate body which includes several layers of thin wooden plates that are bonded together, and which has a top face that is formed with projecting strips and a bottom face that is formed with recessed strips corresponding to said projecting strips, wherein said laminated plate body has a rear end, a front end and opposite longitudinal edges, said projecting strips extending from said rear end to said front end of said

laminated plate body and including a pair of spaced elongated projections that divide said top face of said laminated plate body into an intermediate region and two side regions disposed on two sides of said intermediate region, and a zigzag projection that is formed in each of said side regions between one of said longitudinal edges of said laminated plate body and one of said elongated projections.

5,348,446

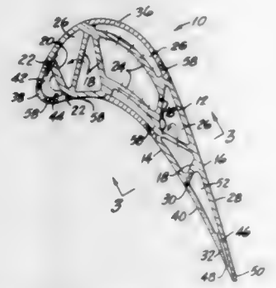
BIMETALLIC TURBINE AIRFOIL

Ching-Pang Lee, Cincinnati; Anne M. Isburgh, Loveland, and Paul S. Wilson, Sharonville, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 28, 1993, Ser. No. 54,381

Int. Cl.[5] F01D *5/28*

U.S. Cl. 416—241 R **11 Claims**



1. An airfoil for a gas turbine engine, comprising:

a core body formed of a nickel-based superalloy;

a leading edge component formed of a nickel aluminide alloy; and

a trailing edge component formed of a nickel aluminide alloy;

wherein said leading edge component and said trailing edge component are fabricated separately and apart from said core body and from one another and wherein each of said leading edge and trailing edge components is subsequently bonded to said core body.

5,348,447

IMPROVED FAN HOUSING WITH EASY ACCESS

Donovan A. Redetzke, Altoona, Wis., assignor to J & D Sales, Eau Claire, Wis.

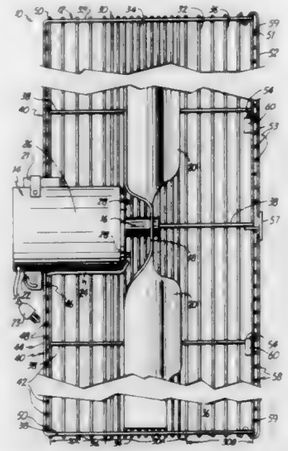
Filed Dec. 30, 1992, Ser. No. 999,146

Int. Cl.[5] F04D *29/64*

U.S. Cl. 416—247 R **14 Claims**

1. A fan housing for allowing air to circulate through a fan having rotating fan blades which extend radially from a center point, the rotating fan blades forming a blade path, the housing serving as a safety guard, comprising:

a circumferential wall located about the fan blades wherein the wall has a relatively open part and a relatively more open part, the relatively open part being located adjacent the fan blades and shielded to a degree sufficient to inhibit the insertion of fingers or the like into the path of the



blades and, the relatively more open part being located along other parts of the wall not adjacent the blade path.

5,348,448

FLUID ROTATING APPARATUS WITH PLURAL DRIVE MOTOR SYNCHRONIZATION SYSTEM

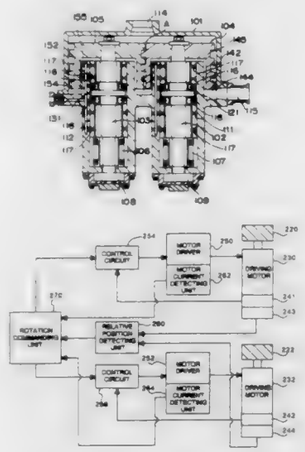
Yoshihiro Ikemoto, Katano, and Teruo Maruyama, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 18, 1993, Ser. No. 33,755

Claims priority, application Japan, Mar. 19, 1992, 4-062989

Int. Cl.[5] F04B *49/00;* **H02P** *5/46*

U.S. Cl. 417—17 **13 Claims**



1. A fluid rotating apparatus provided with a plurality of rotors accommodated in a housing, a plurality of rotary shafts connected to the rotors, bearings for rotatably supporting the plurality of rotary shafts, a fluid suction port and a fluid discharge port formed in the housing, a positive displacement pump section formed of combination of the housing and the plurality of rotors, and a plurality of gears connected with the rotary shafts having a backlash set smaller than a backlash between the plurality of rotors,

the fluid rotating apparatus characterized by further comprising:

motors for independently driving the plurality of rotary shafts;

a rotation detecting means for detecting one of a rotating angle and speed of rotation of the motors;

a motor controlling unit for controlling the motors to synchronously rotate;

a motor current detecting unit for detecting a current running in the motors;

a relative position detecting unit for detecting a relative position of the plurality of rotary shafts; and

a rotation commanding unit, to which outputs from the motor current detecting unit and the relative position detecting unit are inputted, for deciding whether or not a shift amount of the synchronous rotation of the plurality of rotary shafts is larger than a specified value based on the outputs of the motor current detecting unit and/or the relative position detecting unit, and outputting to the motor controlling unit a signal to decelerate one of the plurality of rotary shafts when the rotation command unit decides that the shift amount of the synchronous rotation of the plurality of rotary shafts is larger than the specified value.

5,348,449

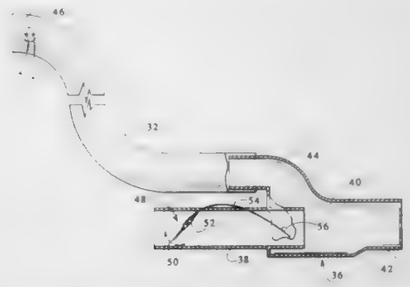
AIRFLOW REGULATOR

Robert A. Wilke, Winona, Minn., and James M. Grupa, Dodge, Wis., assignors to Lake Center Industries, Inc., Winona, Minn.

Filed Nov. 19, 1992, Ser. No. 978,716

Int. Cl.[5] F04F *5/48*

U.S. Cl. 417—54 **6 Claims**



6. A method of regulating air flow through a passive aspirator of the type having first and second air passages, the first passage having an inlet in communication with a positive air pressure source, an outlet and a throat between the inlet and outlet, the second passage joining the first at the throat, the throat being sized to produce a Venturi effect and aspirate air into the second passage, the method comprising the steps of:

pivotably mounting a flap in the inlet portion of the first passage for rotation between open and closed positions;

biasing the flap with a biasing means toward the open position while permitting it to move toward the closed position in the presence of increased positive air pressure in the inlet portion, thereby restricting the air flow through the aspirator when the pressure increases; and

increasing the biasing force non-linearly as the positive air pressure increases.

5,348,450

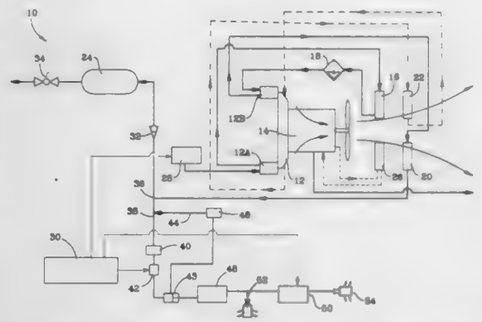
BOOTSTRAP METHOD OF LOADING A COMPRESSOR HAVING A SPRING LOADED BLOWOFF VALVE

Daniel T. Martin, Clemmons, and William H. Harden, III, Yadkinville, both of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation-in-part of Ser. No. 74,089, Jun. 9, 1993, abandoned. This application Feb. 24, 1994, Ser. No. 200,972

Int. Cl.[5] F04B *49/00*

U.S. Cl. 417—299 **4 Claims**



1. An apparatus for loading a compressor, the apparatus comprising:

a microprocessor based electronic controller;

a first, pneumatically driven, spring loaded open valve;

a second, electrically driven valve flow connected in series with the first valve, and disposed in signal receiving relation to the controller; and

an orifice means, flow connected intermediate the first pneumatically driven spring loaded open valve and the second electrically driven valve, for restricting the flow of a compressible fluid to produce a predetermined pressure signal, the orifice means having a predetermined inside diameter dimension suitably sized to produce a pressure signal of sufficient magnitude to close the first valve, at a predetermined time, to thereby load the compressor.

5,348,451

PUMP APPARATUS

Frank Mohn, London, Great Britain, assignor to Framo Developments (UK) Limited, London, United Kingdom

PCT No. PCT/GB90/01592, § 371 Date May 15, 1992. § 102(e) Date May 15, 1992, PCT Pub. No. WO91/05954, PCT Pub. Date May 2, 1991

PCT Filed Oct. 15, 1990, Ser. No. 847,038

Claims priority, application United Kingdom, Oct. 16, 1989, 8923280.5

Int. Cl.[5] F04B *9/08*

U.S. Cl. 417—390 **21 Claims**

1. A pump apparatus comprising:

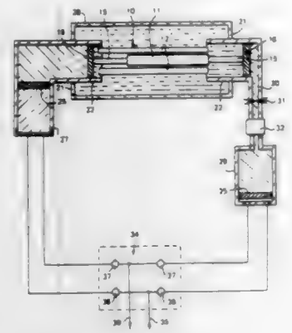
a pump piston reciprocably movable within a pump cylinder to increase and decrease a first drive space within the pump cylinder and to decrease and increase a pump space within the pump cylinder,

check valve means controlling the inflow into the pump space and discharge therefrom of a fluid to be pumped,

a drive piston reciprocably movable within a drive cylinder to increase and decrease the volume of a second drive space within the drive cylinder,

motor means reciprocably driving the drive piston, a duct communication the first and second drive spaces,

an hydraulic fluid filling said first and second drive spaces and said duct, and



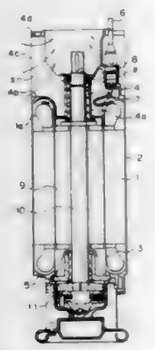
means in said duct permitting selective hydraulic separation of said drive and pump cylinders.

5,348,452

PUMP MOUNTING STRUCTURE OF CANNED SUBMERSIBLE MOTOR FOR DEEP WELL PUMP

Masakazu Yamamoto; Hiromi Sakacho, and Seiichirou Yamada, all of Tokyo, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Continuation of Ser. No. 728,214, Jul. 12, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 89,631
Claims priority, application Japan, Jul. 13, 1990, 2-73883
Int. Cl.[5] F04B *17/00, 39/06*
U.S. Cl. 417—422 **7 Claims**



1. In a pump mounting structure of a canned submersible motor for a deep well pump, said motor comprising a stator chamber and bearing brackets provided on opposite sides of said stator chamber, one of said bearing brackets disposed on a load side of said motor includes a pump mounting flange for supporting said pump thereon; said stator chamber comprises a stator core, an outside can, an inside can, a load side end plate, and a counter load side end plate which are constructed integrally with each other,

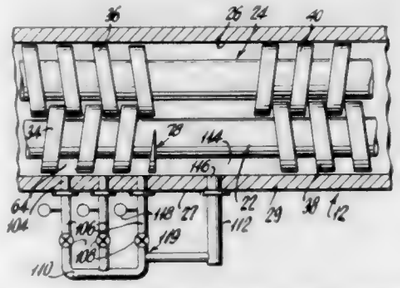
wherein said load side end plate comprises a single shell structure covering around a winding of said stator core, said load side bearing bracket comprises a bearing boss extending from a radially inner end of said load side end plate toward said pump mounting flange defining a water channel between said end plate and said bearing boss, and wherein said load side end plate and said pump mounting flange are integrally formed with said bearing boss of said load side bearing bracket whereby said end plate, said pump mounting flange, and said bearing boss serve as a pump suction casing defining a pump suction port, and wherein said pump mounting flange is constituted as a pump body mounting flange.

5,348,453

POSITIVE DISPLACEMENT SCREW PUMP HAVING PRESSURE FEEDBACK CONTROL

Mark E. Baran, Neenah; David P. Phibbs; Vern W. Couch, both of Appleton, all of Wis., and George W. Michalec, Pleasantville, N.Y., assignors to James River Corporation of Virginia, Richmond, Va.

Division of Ser. No. 928,655, Aug. 17, 1992, abandoned, which is a continuation of Ser. No. 634,455, Dec. 24, 1990, abandoned. This application Jan. 25, 1993, Ser. No. 8,871
Int. Cl.[5] F04B *21/02;* **F04C** *2/16, 15/04*
U.S. Cl. 417—440 **5 Claims**



1. A screw type positive displacement pump comprising:

(a) an outer casing, said outer casing comprising an inlet, an outlet, and internal passage means adapted for conveying material between said inlet and said outlet;

(b) interengaging pumping screws, each screw having (i) a minor circumference defined by a shaft, and (ii) a major circumference defined by at least one screw flight, said screw flight having an inlet end and an outlet end, and extending radially about said shaft and longitudinally along said shaft, and outwardly from said shaft, to an outer surface of said flight, a portion of said outer surface being defined in said major circumference; said passage means comprising a bore, adapted to receive a portion of said pumping screw, said bore comprising an inner surface, an outer surface, and a wall therebetween; a first portion of said flight being received in said bore over a length of said screw wherein said bore and said flight are coexistent; clearance between said outer surface of said flight and said inner surface of said bore being sufficiently small for providing an operative pumping seal for pumping material through said bore by said screw; and

(c) a fluid pressure feedback control system, said control system comprising;

(i) fluid sending port, said sending port being disposed at said outlet end of said flight and extending through said wall of said bore from a first portion of said outer surface of said bore to said inner surface thereof,

(ii) a plurality of fluid receiving ports, said receiving ports extending from a second portion of said outer surface of said bore through said wall of said bore to said inner surface of said bore and being disposed at said inner surface of said bore between said inlet end of said flight and said outlet end of said flight, each said receiving port having an inner end thereof at said inner surface of said bore, said receiving ports being spaced such that portions of said flight adjacent said inner surface of said bore are disposed between said inner ends of said receiving ports;

(iii) conduits connecting said receiving ports to said sending port; and

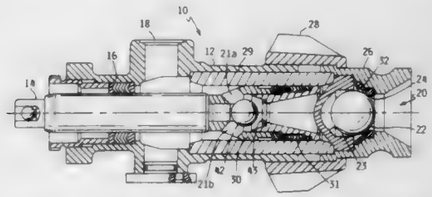
(iv) valve means adapted to distribute flow of fluid from said sending port among said receiving ports, said valve means being adapted to control the pressure at each of said receiving ports whereby pressure in the fluid being pumped can be increased progressively during traverse along the length of said flight such that the pressure change experienced by the fluid upon expression of the fluid from said flight at the outlet end thereof is substantially less than the pressure differential between said pump outlet and said inlet end of said screw of the fluid being pumped.

5,348,454

LIQUID PUMP RESILIENT INLET INSERT FOR PUMPING HIGH SOLIDS CONTENT LIQUIDS

Edward P. Murphy, Blaine, Minn., assignor to Graco Inc., Golden Valley, Minn.

Filed May 26, 1993, Ser. No. 67,726
Int. Cl.[5] F04B *21/02*
U.S. Cl. 417—554 **6 Claims**



1. A liquid pump adapted for pumping liquids having high solids content, comprising:

a) a pump housing having an inlet and an outlet, and a piston within a cylinder inside said housing;

b) a pumping chamber inside said housing between said cylinder and said inlet, said pumping chamber having walls having a predetermined maximum first diameter and an inward taper toward said inlet;

c) a ball valve element in said pumping chamber and a valve seat element positioned at said inlet, said ball valve element having a second diameter, less than said first diameter, said seat element having an inside third diameter less than said second diameter; and

d) a resilient insert in said chamber, said insert affixed against said pumping chamber walls and extending from said first diameter, along said inward taper, and to said valve seat element about a circumferential line having a diameter greater than said third diameter.

5,348,455

ROTARY COMPRESSOR WITH ROTATION PREVENTING PIN

Todd W. Herrick, Tecumseh, and Edwin L. Gannaway, Adrian, both of Mich., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed May 24, 1993, Ser. No. 67,426
Int. Cl.[5] F01C *1/02*
U.S. Cl. 418—63 **9 Claims**

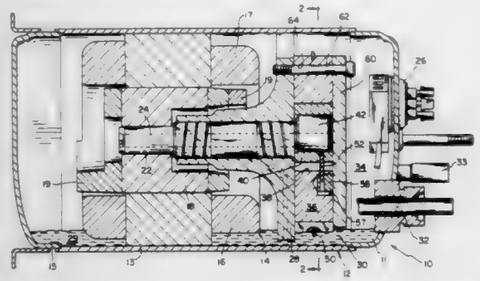
1. A rotary compressor comprising:

a housing;

a cylinder block disposed with said housing, said cylinder block having a cylinder bore with a sidewall, said cylinder bore having an area at suction pressure and an area at discharge pressure, a piston located within and engaging the sidewall of said cylinder bore to compress fluid and separate said areas at discharge pressure and suction pressure areas, said cylinder block including a vane slidable therein to further separate said discharge pressure area from said suction pressure area, said vane is biased contact with said piston, said cylinder block having a recess open to said cylinder bore;

a drive mechanism disposed within said housing for actuation of said piston within said cylinder bore to compress fluid;

a pinion disposed within said recess, said pinion having an attachment pin slidable in one of said pinion and said piston, said pin attached to the other of said pinion and said piston whereby rotation of said piston is prevented;



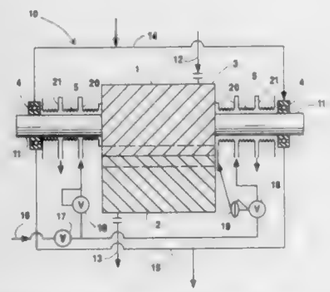
and a suction port in communication with said cylinder bore. said recess located between said vane and said suction port whereby re-expansion volume is reduced.

5,348,456

HELICAL DRY SCREW EXPANDER WITH SEALING GAS TO THE SHAFT SEAL SYSTEM

Leslie C. Kun, and Neno T. Nenov, both of Williamsville, N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Division of Ser. No. 868,869, Apr. 16, 1992, Pat. No. 5,228,298. This application Apr. 26, 1993, Ser. No. 51,923
Int. Cl.[5] F01C *1/16, 19/00, 21/02, 21/04*
U.S. Cl. 418—95 **1 Claim**



1. A helical dry screw expander comprising:

(A) a pair of helical screw rotors, each of said rotors mounted on a shaft, both of said rotors housed in a casing having a process fluid inlet and a process fluid outlet, each said shaft extending through the casing and outside the casing;

(B) a bearing on each shaft spaced from and outside of the casing and means for providing lubricant to the bearing and from the bearing;

(C) a seal system around each shaft between the bearing and the casing;

(D) means for providing sealing gas to each seal system proximate the casing, said seal gas provision means not communicating with said process fluid outlet, and means for withdrawing sealing gas from each seal system proximate the bearing, thereby keeping process fluid from migrating out of the casing along the shafts and keeping lubricant from migrating into the casing along the shafts; and

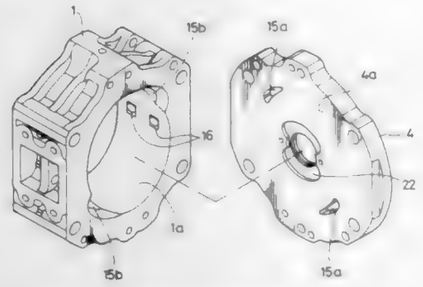
(E) a regulator for sensing the pressure near the casing regulating the sealing gas flow to the seal systems.

5,348,457

VANE-TYPE COMPRESSOR WITH AT LEAST ONE SUCTION HOLE

Hiroyuki Suzuki; Shinichi Hara, and Mitsuya Ono, all of Saitama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Aug. 18, 1993, Ser. No. 108,888
Claims priority, application Japan, Sep. 1, 1992, 4-257356
Int. Cl.[5] F01C *1/00*
U.S. Cl. 418—259 4 Claims



1. A vane-type compressor comprising:
a cylinder having opposite ends, and at least one notch portion formed at an opening edge of one end thereof;
a rotor rotatably received within said cylinder and having a plurality of vane grooves formed substantially in the radial direction thereof;
a pair of side blocks arranged to close respective opposite ends of said cylinder, each of said side blocks having an end face facing said rotor;
a plurality of vanes slidably fitted in said vane grooves of said rotor, said vanes each having side faces which are slidable in a vane sliding zone on each of said end faces of said side blocks, and said vanes cooperating with said cylinder and said rotor to define at least one compression chamber;
a head fixed to one of said side blocks to define a suction chamber therebetween; and
at least one suction hole formed through one of said side blocks, said at least one suction hole being always in communication with said at least one notch portion and said suction chamber, so that a refrigerant in said suction chamber is sucked into said compression chamber through said at least one suction hole and said at least one notch portion; and
wherein said at least one suction hole is located outside of said vane sliding zone on said end face of said one of said side blocks.

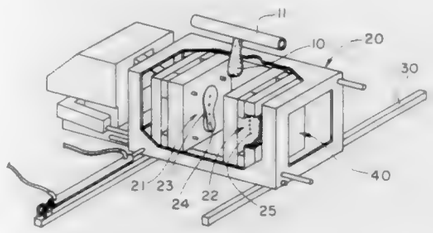
5,348,458

APPARATUS FOR PRODUCING FOAMED, MOLDED THERMOPLASTIC ARTICLES AND ARTICLES PRODUCED THEREBY

Thomas M. Pontiff, Gansevoort, N.Y., assignor to Astro-Valcour, Inc., Glens Falls, N.Y.

Division of Ser. No. 19,825, Feb. 19, 1993, Pat. No. 5,246,976, which is a division of Ser. No. 689,533, Apr. 23, 1991, Pat. No. 5,202,069. This application Jun. 28, 1993, Ser. No. 82,479
Int. Cl.[5] B28B *1/50*; C08F *2/00*
U.S. Cl. 425—4 R 8 Claims

1. An apparatus for producing a foamed, molded article comprising:
(a) means for preparing foamable melt comprising a molten mass of a foamable thermoplastic resin at a temperature and a pressure at which said foamable melt is prevented from foaming, said preparing means including a die orifice whereby when said orifice is opened, a portion of said foamable melt is extruded and whereby said extruded material is suspended from said preparing means and said foamable melt becomes almost fully foamed essentially immediately after said extrusion;
(b) means for capturing and compressing at least a portion of the extruded foamable melt, said means for capturing and compressing comprising an openable and closeable mold, said mold including at least two substantially vertically-oriented mold sections movable relatively to one another, and when said mold is closed, said mold



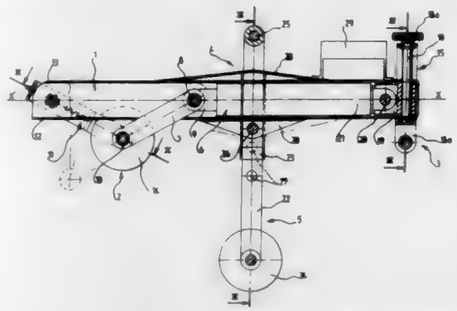
(c) a plurality of jets disposed in at least one of said mold sections for emitting a pressurized gas, whereby the tendency of said foam to fill cavities within the other mold section or sections is augmented; and
(d) said mold cavity being positionable adjacent to at least a portion of said suspended foam and said mold cavity being in the shape of said foamed, molded article.

5,348,459

PORTABLE DEVICE FOR STRAIGHTENING OUT TUBES

Jean Sauron, Draveil, and Jean-Jacques Thomas, Paris, both of France, assignors to Societe Joseph Sauron Materiel Industriel and Gaz de France, France

Filed Jul. 2, 1992, Ser. No. 907,668
Claims priority, application France, Jul. 5, 1991, 91 08492
Int. Cl.[5] B21D *3/05*; B29C *53/20*
U.S. Cl. 425—11 10 Claims



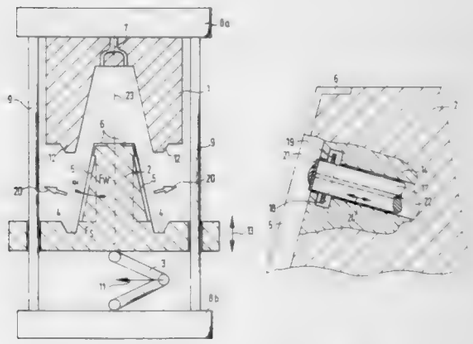
1. A portable device for straightening out tubes, said device comprising:
a beam having a first end and a second end;
a first bearing member pivotally mounted onto said first end of said beam and movable relative to said beam;
a second bearing member mounted onto said second end of said beam and movable in a transverse direction relative to a center line axis of said beam;
a third bearing member;
a handle transversely movably mounted onto said beam between said first and second ends, said handle having a top portion and a base portion, said base portion of said handle carrying said third bearing member, said top portion of said handle being located on said beam opposite said first, second and third bearing members, said first, second and third bearing members being arranged so as to allow a tube to be contacted on a first side by said first and second bearing members and to be contacted on a second side opposite to said first side by said third bearing member; and
a jack fastened to said beam for actuating said first bearing member to be movable with respect to said beam, said jack controlling the motion of said first bearing member in removing the curvature of the tube while said second and third bearing members retain the tube, said jack comprising a rod movable in a direction parallel to said center line axis,
said first bearing member comprising a roller which contacts the tube, a tie-rod and a link, said link having a first end pivotally connected with said rod of said jack and a second end opposite to said first end of said link being pivotally connected to a first end of said tie-rod at a pivot point, said tie-rod being pivotally connected to said beam at a second end of said tie-rod opposite to said first end of said tie-rod and carrying said roller at the pivot point at said first end of said tie-rod.

5,348,460

APPARATUS FOR PRODUCING FLAT PLASTIC MOLDINGS, FOR EXAMPLE IDENTITY CARDS

Helmut Baader, Nabburg, Fed. Rep. of Germany, assignor to GAO Gesellschaft fur Automation and Organisation mbH, Munich, Fed. Rep. of Germany

Filed Dec. 18, 1992, Ser. No. 992,727
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 4142410
Int. Cl.[5] B29C *45/14, 45/33, 45/36*
U.S. Cl. 425—121 8 Claims



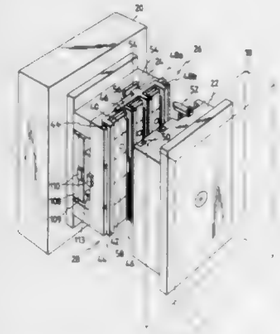
1. An apparatus for producing flat plastic cards with an integrated circuit embedded therein, comprising:
two mold parts that are supported for movement relative to each other and which enclose between them at least one mold space;
a closing means connected with the mold parts to close them toward one another with a locking pressure which acts against the opening direction of the mold parts;
said mold parts including a wedge-shaped core member having mold surfaces inclined to the direction of opening movement of the mold parts, and a die-block member shaped complementally to the core member and having surfaces respectively opposed to the mold surfaces on the core member so as to define at least two approximately two-dimensional mold spaces on respective sides of said core member when the mold is closed;
interfitting means on the core member and die-block member which engage one another when the mold is closed, whereby the core member and die-block member brace each other when the mold is closed; and
means providing for an integrated circuit module to be embedded into a flat plastic card produced by said apparatus, said providing means including a movable element provided in said core member for each of said mold spaces, each of said movable elements being shiftable substantially perpendicular to a respective side of said core member to a position within a respective one of said mold spaces so as to control the volume of the mold space.

5,348,461

APPARATUS FOR ASSEMBLING MOLDED PRODUCTS

Shoso Nishida, Hiroshima, and Yusuke Shiotani, Aichi, both of Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Feb. 5, 1993, Ser. No. 14,134
Claims priority, application Japan, Feb. 5, 1992, 4-054305; Feb. 5, 1992, 4-054306
Int. Cl.[5] B29C *45/40*
U.S. Cl. 425—129.1 4 Claims



1. An apparatus for assembling molded products comprising:
an injection molding machine including:
an injecting unit and a die tightening unit arranged on a bed;
an injection molding die mounted on said die tightening unit to simultaneously mold at least two molded products each having a different configuration, said injection molding die including a movable die half;
a mechanism for dropping said at least two molded products by their own tare while said at least two molded products are aligned with each other through guide rails;
an assembling mechanism for assembling said at least molded products together immediately after said at least two molded products are delivered from said mechanism; and
a conveying unit for conveying assembled products assembled by said assembling mechanism,
wherein said assembling mechanism is arranged below said injection molding die, said conveying unit being arranged in said bed, and a discharging section for discharging said assembled products from said conveying unit is disposed at one end of said bed in the longitudinal direction of said bed.

5,348,462

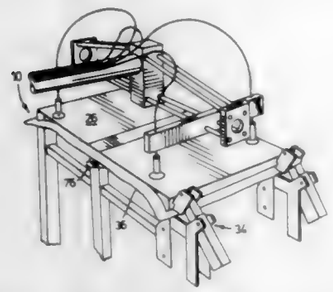
APPARATUS FOR REMOVING A FLASHING FROM A MANUFACTURED ARTICLE

Lewis Cohen, Don Mills, and Leonel Henriques Machado, Toronto, both of Canada, assignors to Double W. Stationery Corp., Weston, Canada

Filed Sep. 30, 1992, Ser. No. 953,663
Int. Cl.[5] B29C *37/00*
U.S. Cl. 425—142 12 Claims

1. An apparatus for removing a flashing from a manufactured article, said apparatus comprising:
(a) a support surface for supporting said manufactured article;
(b) at least one gripping unit for gripping a portion of said flashing, said gripping unit being switchable between an open configuration and a clamping configuration;

(c) a switching means located upon said gripping unit for switching said gripping unit between said open and clamping configurations;
(d) a support on which each gripping unit is movably mounted;
(e) an indexing actuator for indexing each gripping unit relative to said support between a rest position displaced from said support surface, and a clamping position adjacent said support surface;
(f) a control unit for controlling the operation of said switching means and said indexing actuator to effect removal of



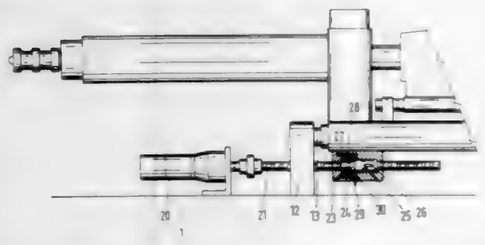
the flashing, the control unit causing each gripping unit, when in the clamping position, to switch from the open configuration to the clamping configuration to grip the flashing, and to return from said clamping position to said rest position so that the flashing is removed from said article, said gripping unit subsequently being switched to said open configuration to release said flashing; and
(g) a plurality of proximity sensors located adjacent said support for sensing the position of said gripping unit, said proximity sensors being electrically connected to said control unit.

5,348,463

INJECTION UNIT HAVING ADJUSTABLE AND SETTABLE NOZZLE CONTACT PRESSURE

Ralph Keitel, Kenzingen, Fed. Rep. of Germany, and Bruno Stillhard, St. Gallen, Switzerland, assignors to Klockner Ferromatik Desma GmbH, Malterdingen, Fed. Rep. of Germany

Filed Jun. 11, 1993, Ser. No. 74,619
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1992, 4219081; Sep. 29, 1992, 4232533
Int. Cl.[5] B29C *45/07, 45/20, 45/76*
U.S. Cl. 425—145 **7 Claims**



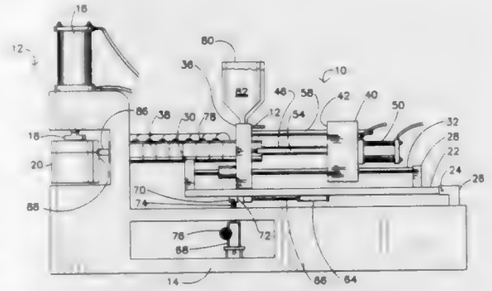
1. A device to generate the contact pressure of a nozzle of a displaceable plasticizing and injection unit against a mold half provided on a stationary platen, said device comprising:
a compression spring, a housing assembly for said compression spring connected to said plasticizing and injection unit, a spindle disposed through said compression spring, a spindle drive connected to said spindle for rotating same, and a switch on said housing assembly having a measuring sensor to generate a signal used to control compression of the compression spring,
said spindle drive being arranged between the stationary platen and the displaceable plasticizing and injection unit,
said housing assembly comprising a hollow housing, a face plate covering one end of the hollow housing, an axially displaceable cup-shaped element which opens in the direction of the face plate and which has a base wall having an inner surface and an outer surface, and an axially displaceable nut,
said spindle passing through said face plate, passing through said cup-shaped element, and threadably engaging said nut,
said axially displaceable nut capable of being locked against rotation by an adjusting spring within the nut,
said cup-shaped element being axially displaceable along said spindle within said hollow housing, wherein
a relative distance between the outer surface of the base wall and the measuring sensor changes upon compression of said spring, and the switch generates a signal to drive said spindle and compress the spring until a predetermined distance between the outer surface and the measuring sensor is achieved, at which point said switch ceases to generate said signal.

5,348,464

PIVOTING BARREL INJECTION MOLDING MACHINE

James B. Rogers, Dublin, Ohio, assignor to PH Hydraulics, Inc., Columbus, Ohio

Filed May 14, 1993, Ser. No. 61,432
Int. Cl.[5] B29C *45/18*
U.S. Cl. 425—190 **15 Claims**



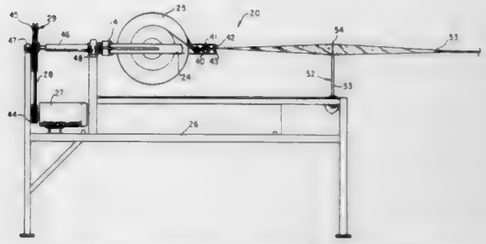
1. An injection molding apparatus, comprising:
a) an undercarriage;
b) at least two spaced, parallel lower guide rods mounted to the undercarriage;
c) a barrel carriage which is slidably mounted on the lower guide rods, and to which a cylindrical barrel having a plastic extrusion tunnel formed through its length is mounted;
d) a ram carriage which is slidably mounted on the lower guide rods, and to which a cylindrical feedscrew ram is mounted extending into the tunnel of the barrel;
e) at least two spaced, parallel upper guide rods, mounted to both the ram and barrel carriages, slidably mounted to at least one of the carriages;
f) at least one ram linear actuator attached to both the ram and barrel carriages for displacing one carriage with respect to the other; and
g) at least one barrel linear actuator, attached to the barrel carriage and the undercarriage for displacing the barrel carriage with respect to the undercarriage.

5,348,465

APPARATUS FOR PRODUCING PELLETS FROM FILM

James L. Stuart, Booneville, Ind., assignor to Replas Incorporated, Evansville, Ind.

Continuation-in-part of Ser. No. 890,917, May 29, 1992, which is a division of Ser. No. 674,164, Mar. 25, 1991, Pat. No. 5,139,403.
This application Sep. 15, 1992, Ser. No. 945,017
The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.
Int. Cl.[5] B29B *9/02;* **B29C** *53/14*
U.S. Cl. 425—505 **12 Claims**



7. A device for producing a plastic film strand comprising:
frame means for mounting components thereon;
first holding means operable to rotatably hold a first roll of film, said first holding means having a longitudinal axis extending through said first roll to allow film to be unwound therefrom in a first direction;
second holding means operable to rotatably hold a second roll of film, said second holding means having a longitudinal axis extending through said second roll to allow film to be unwound therefrom in said first direction;
a cradle rotatably mounted to said frame memos operable to twist film as it is unwound from said first roll, said cradle having a cradle axis of rotation extending in said first direction, and having said first holding means mounted on said cradle with said longitudinal axis of said first holding means perpendicular to said cradle axis of rotation;
guide means for feeding film from said second roll of film into said cradle in said first direction, said guide means directing said film from said second roll to a position adjacent and parallel to film unwound from said first roll; and
first drive means for rotating said cradle wherein said film from said first roll of film is twisted about said film from said second roll of film to form a film strand.

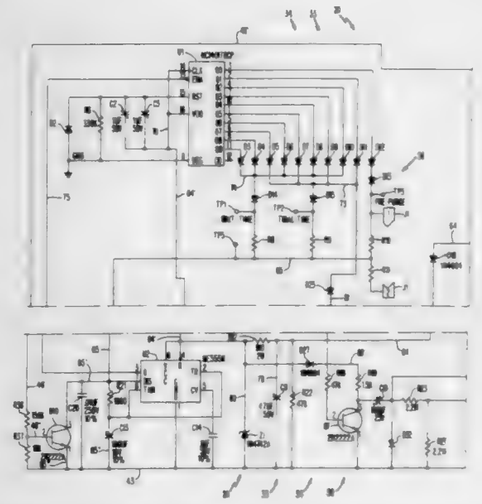
5,348,466

HEAT EXCHANGER SYSTEM, FUEL CONTROL SYSTEM THEREFOR AND METHODS OF MAKING THE SAME

Gregory J. Momber, Grand Rapids, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jun. 9, 1993, Ser. No. 73,960
Int. Cl.[5] F23N *5/20*
U.S. Cl. 431—6 **20 Claims**

1. In a fuel control system for a heat exchanger system that comprises a thermostat, burner means, and electrically operated igniter means for igniting fuel that issues from said burner means, said fuel control system comprising electrical circuit means that comprises an ignition trial portion for operating said igniter means, a flame sense control portion for operating said burner means, and a timer portion adapted on each cycle of a closing of said thermostat and before the next opening thereof to cause said ignition trial portion to tend to operate said igniter means for a first certain period of trial time, said flame sense control portion being adapted to terminate said operation of said igniter means during said first certain period of trial time if said flame sense portion senses that fuel issuing from said burner means has been ignited, said timer portion being adapted to terminate the operation of said igniter means upon the termination of said first certain period of trial time if no flames appear at said burner means and to provide a first certain period of wait time before causing said ignition trial portion to tend to operate said igniter means for a second certain period of trial time during that said cycle, said flame sense control portion being adapted to terminate said operation of said igniter means during said second certain period of trial time if said flame sense control portion senses that fuel issuing from said burner means has been ignited, said timer portion comprising a counter having a plurality of outputs and a timer that clocks the output of said counter on each discharge of said timer, a capacitor for causing said timer to discharge and discharge said capacitor to a discharged condition thereof upon each charging of said capacitor to a certain voltage, trial time resistor means, and wait time resistor means, said counter when clocked to a first output thereof by said timer being adapted to place said trial time resistor means and said capacitor in series at the start of said first trial time period so that said trial time resistor means determines the time period said capacitor charges from its said discharged condition to said certain voltage thereof and that time period comprises said first certain trial time period, said counter when clocked to a second output thereof by said timer being adapted to place said wait time



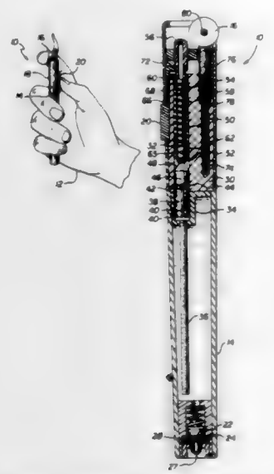
resistor means and said capacitor in series at the start of said wait time period so that said wait time resistor means determines the time period said capacitor charges from said discharged condition thereof to said certain voltage thereof and that time period comprises said wait time period, said counter when clocked to a third output thereof by said timer being adapted to place said trial time resistor means and said capacitor in series at the start of said second trial time period so that said trial time resistor means determines the time period said capacitor charges from its said discharged condition to said certain voltage thereof and that time period comprises said second certain trial time period, the improvement wherein said timer portion comprises a transistor operatively interconnected to said capacitor to discharge said capacitor and maintain said capacitor in said discharged condition thereof so that said counter cannot be clocked to the next output thereof as long as said transistor has electrical power supplied to the base thereof and wherein said flame sense control portion has means to continuously supply electrical power to said base of said transistor as long as said flame sense control portion senses flame at said burner means before the lapsing of a respective trial time period and said thermostat remains closed during that said cycle.

5,348,467

CHILD RESISTANT CIGARETTE LIGHTER

Rodney S. Piffath, 10124 McBroom St., Sunland, Calif. 91040, and John J. Cole, 20-76 33rd St., LIC Astoria, N.Y. 11105

Filed Mar. 26, 1993, Ser. No. 37,234
Int. Cl.[5] F23D *11/36*
U.S. Cl. 431—153 14 Claims



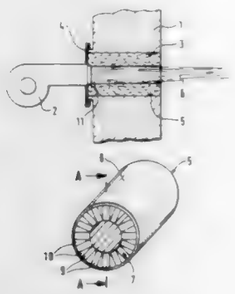
1. A child resistant butane lighter for operation by an adult sized hand, said lighter having a long generally cylindrical tubular housing including a fuel reservoir at one end, a flint and friction wheel at the opposite end, a burner adjacent said friction wheel and a fuel conduit communicating said reservoir with said burner, valve means in said fuel conduit, resilient means urging said valve means in a direction to interrupt flow to said burner, and thumb operated means movable axially upwardly to open said valve means against the force of said resilient means, said thumb operated means being displaced both longitudinally and radially from said friction wheel for simultaneous operation of said thumb-operated means with a thumb to open said valve means and for rotation of the friction wheel with a forefinger of said hand.

5,348,468

FIBER BRICK AND BURNER WITH SUCH FIBER BRICK

Konrad Graf, Gansbach, and Gunter Lasselsberger, Petzenkirchen, both of Austria, assignors to Chamottewaren-und Thonofenfabrick Aug. Rath Jun. Aktiengesellschaft, Vienna, Austria

Filed Nov. 4, 1991, Ser. No. 787,079
Claims priority, application Austria, Nov. 2, 1990, 2205/90
Int. Cl.[5] F23M *9/06*
U.S. Cl. 431—171 20 Claims



1. A fiber burner-brick, comprising:

a) a plurality of juxtaposed fiber strips forming an axially extending apertured fiber part, each strip formed from relatively displaceable intrinsically cohesive refractory fibers; and,

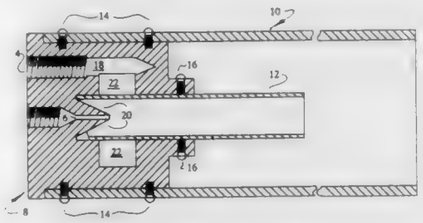
b) an axially extending compression system operably associated with said fiber part and operably engaged with each of said strips for compressing said strips against each other so that the gross density of said strips over the cross-section of said fiber part is essentially constant.

5,348,469

AIR, PROPANE AND OXYGEN BURNER WITH NO EXIT FLAME

Arv M. Sestrap, Calgary, Canada, assignor to Sharjan Limited, Whiterock, Canada

Filed Jan. 22, 1993, Ser. No. 7,760
Int. Cl.[5] F23D *14/62*
U.S. Cl. 431—353 3 Claims



1. An apparatus for the delivery of a directed stream of flame free hot air to a work site comprising:

a body section having at one end an axial bore, the bore radially enlarged along part of its length to form a plenum chamber the innermost surface of which is frusto-conical;

mixing tube means sidably insertable into said axial bore and adjustable lengthwise therein so that a gap between an end of said mixing tube means and said frusto-conical surface may be set to predetermined distances;

means for locking said mixing tube means within the confines of said axial bore;

means for directing a stream of at least two combustible gases through said frusto-conical surface and into said end of said mixing tube means;

means for directing a stream of compressed air into said plenum chamber wherein said stream of compressed air is imparted with swirl before flowing into said end of said mixing tube means via said gap between said mixing tube means and said frusto-conical surface;

means for igniting the total mixture of said premix of combustible gases and said compressed air as said total mixture exits the other end of said mixing tube means; and

outer burner tube means removably insertable at one end over said body section and secured thereon so that the heat generated by the combustion of said total mixture is conveyed through the bore of said outer burner tube and exits at the other end of said outer burner tube means.

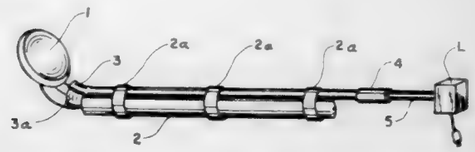
5,348,470

FIBER-OPTIC ILLUMINATED DENTAL MIRROR

Nancy J. McGowan, and Robert A. McGowan, both of 204 Sweetbriar St., Pittsburgh, Pa. 15211

Filed Jan. 29, 1993, Ser. No. 11,232
Int. Cl.[5] A61C *1/00, 3/00;* A61B *1/24*
U.S. Cl. 433—30 2 Claims

1. A fiber optic cable, a dental mirror located at one end of said cable for providing a source of illumination for said dental mirror, together with a handle for supporting said dental mirror at one end of aid handle and for supporting said cable along the length of said handle, said dental mirror being attached to said one end of said handle, together with a lens attached to the other end of said cable, which other end is surrounded by an elastomeric coupling, and a second flexible fiber-optic cable



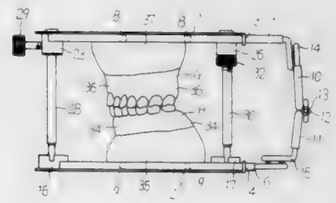
having one end surrounded by said elastomeric coupling and the other end illuminated by said light source.

5,348,471

LOWER JAW MOVING FUNCTION READJUSTING APPARATUS AND POSITION DETERMINATION SETTING APPARATUS

Tetsuo Notomi, 1-14-15, Kakinokizaka, Meguroku, Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 966,012
Int. Cl.[5] A61C *11/00*
U.S. Cl. 433—57 6 Claims



1. A lower jaw moving function readjusting apparatus, which comprises:

an upper and lower triangular shaped support plate;

a front receiving tray and two rear receiving trays fixedly mounted on said lower triangular shaped plate, each of said trays having a hardenable material located therein,

a front scribing needle and two rear scribing needles, each of which has a lower end which is positioned in said hardenable material located in each of said front and rear receiving trays, said needles being suspended from said upper support plate wherein the height of at least one of said needles is adjustable, and

upper springs and lower springs which are hinged together so as to be pivotably opened or closed wherein said upper springs and lower springs are secured, respectively, to said upper and lower support plates.

5,348,472

VERSATILE DENTAL DELIVERY SYSTEM

Klaus H. Joeckel, and Duronnie L. Harrell, both of Charlotte, N.C., assignors to The Pelton & Crane Company, Charlotte, N.C.

Filed Apr. 28, 1993, Ser. No. 54,702
Int. Cl.[5] A61G *15/00*
U.S. Cl. 433—79 18 Claims

1. A station assembly for use with a patient chair, comprising:

a mounting plate attachable to the patient chair;

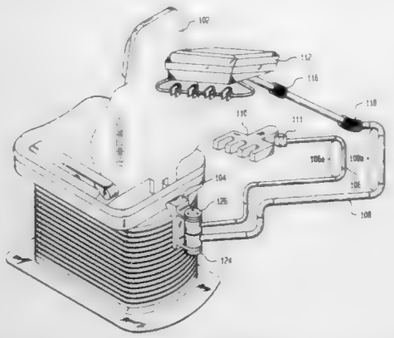
a first station arm pivotally mounted to the mounting plate;

a second station arm pivotally mounted to the mounting plate, the first station arm and the second station arm being shaped such that they have nested translational paths when pivoted

a first instrument station mounted to the first station arm; and,

a second instrument station mounted to the second station arm;

wherein the first station arm has a first generally "C" shaped portion and wherein the second station arm has a second generally "C" shaped portion, the first generally "C"



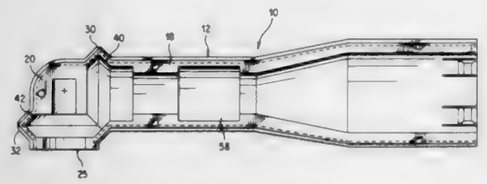
shaped portion having a translational path within the second generally "C" shaped portion when the first station arm is pivoted from the mounting plate.

5,348,473

MEDICAL TOOL

Michael F. Kivlighan, Jr., 1116 Twelfth St., Waynesboro, Va. 22980

Filed Feb. 17, 1993, Ser. No. 18,396
Int. Cl.[5] A61C *1/10, 3/00, 1/12*
U.S. Cl. 433—114 3 Claims



1. A medical tool, comprising:

a housing including an elongated cylindrical body and a substantially cylindrical head portion transverse to an axis of said cylindrical body;

a drive gear; and

a driven gear;

wherein at least one of said drive gear and said driven gear have a diameter greater than an inside diameter of one of said cylindrical body and said head portion, respectively,

said drive gear being disposed in said cylindrical body and said driven gear being disposed in said substantially cylindrical head portion, and

further comprising protrusions extending from said elongated cylindrical body and said cylindrical head portion, said protrusions accommodating said drive gear and said driven gear, respectively.

5,348,474

METHODS OF RECORDING DYNAMICO-FUNCTIONAL DENTAL IMPRESSIONS

Giovanni Pasini, via Giuseppe Giusti 2/2, 20059 Vimercate, Italy

Continuation-in-part of Ser. No. 764,770, Sep. 24, 1991, abandoned, which is a division of Ser. No. 574,642, Aug. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 420,365, Oct. 12, 1989, abandoned. This application Feb. 26, 1993, Ser. No. 23,849

Claims priority, application Italy, Nov. 4, 1988, 22507 A/88

Int. Cl.[5] A61C *9/00*

U.S. Cl. 433—214 8 Claims

1. A method of recording a mucodynamic impression of the dental arches of a patient or of the peripheral areas of said arches onto the base or peripheral borders of a prosthetic denture utilizing a non-ionic, non-hydrophilic impression-forming composition comprising:

Polyvinyl acetate (PVAc)	50–85% by weight
C_3 to C_6 aliphatic ketones	2–25% by weight
C_3 to C_8 aliphatic esters	1–25% by weight
C_2 to C_{10} aliphatic alcohols or aliphatic ethers	1–25% by weight
Non-toxic, non-aromatic, plasticizing oils selected from the group consisting of dioctyl adipate, glycerol triacetate and polyglycols	0.5–10% by weight
Non-toxic and non-extractable black, yellow, red or white organic pigments	0–2% by weight,

and is free of any gel-forming components, peroxide-based catalysts, aromatic amine-based inhibitors, aromatic plasticizing oils or compounds and incompatible plasticizers, said method including the steps of:

(a) heating said composition to about 50° C. and spreading the heated composition on the base or peripheral borders of the denture;

(b) inserting the denture into the patient's mouth and allowing it to remain in the mouth for about 3–4 days; and

(c) removing the denture from the patient's mouth.

5,348,475

TRIMODAL METHOD OF CURING DENTAL RESTORATIVE COMPOSITIONS

Samuel Waknine, Branford; Arun Prasad, Cheshire, and Weitao Jia, Wallingford, all of Conn., assignors to Jeneric/Pentron Inc., Wallingford, Conn.

Continuation of Ser. No. 697,063, May 8, 1991, abandoned. This application Apr. 22, 1993, Ser. No. 51,444

Int. Cl.[5] A61C *5/00, 13/00*

U.S. Cl. 433—215 7 Claims

1. A method for preparing a composite dental restoration exhibiting improved toughness and fracture resistance comprising the steps of:

(A) forming a dental restoration from at least one layer of a composite resin, said composite resin comprising

(i) at least one binder resin,

(ii) a diluent monomer,

(iii) a photopolymerization system comprising an initiator for initiating polymerization of the composite resin upon exposure to visible light and an accelerator,

(iv) an initiator for initiating polymerization of the composite resin upon application of heat, and

(v) at least one filler, wherein each layer of the composite resin is exposed to a source of visible light to partially cure each layer of said composite resin to provide sufficient hardening to enable building up of additional layers of composite resin thereon;

(B) subjecting the thus prepared restoration to a combination of dry heat and vacuum sufficient to remove residual monomeric surface layers and anaerobically complete polymerization of said composite resin.

5,348,476

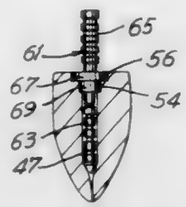
SYSTEM FOR FABRICATION OF DENTAL CAST POST AND CORE USING A BURN-OUT POST

Brett I. Cohen, Nanuet, and Allan S. Deutsch, New York, both of N.Y., assignors to Essential Dental Systems, Inc., South Hackensack, N.J.

Filed Nov. 24, 1993, Ser. No. 157,813

Int. Cl.[5] A61C *5/08*

U.S. Cl. 433—220 17 Claims



1. A method for preparing a post and core adduct in a dental root canal procedure comprising:

removing root canal filling material from the tooth;

cutting out a post-hole in said tooth having a substantially uniform width along the length thereof;

cutting out at least one annular tier along said hole at a selected axial location;

placing a burn-out post having at least one flange into said tooth hole such that said at least one flange is seated on said at least one annular tier;

applying a resin composition onto said tooth and over said burn-out post in order to form a core; and

removing the core with the burn-out post from the tooth in order to form a casting.

5,348,477

HIGH DEFINITION TELEVISION HEAD MOUNTED DISPLAY UNIT

Brian L. Welch, Westmount, Canada, and Paul Weissman, Brewster, N.Y., assignors to CAE Electronics Ltd, St. Laurent, Canada

Filed Apr. 10, 1992, Ser. No. 866,420

Int. Cl.[5] G09B *9/00*

U.S. Cl. 434—43 9 Claims

1. A display system for producing a replica of an image for viewing by an observer, comprising:

A) means for generating said image;

B) an optical assembly comprising:

i) a rear projection screen means;

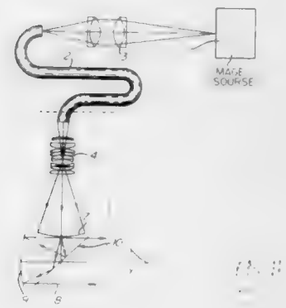
ii) eyepiece means disposed in front of the eyes of said observer;

C) fiber optic cable means for transmitting said image from said means for generating to said projection screen means; and

projection lens means between said fiber optic cable means and said projection screen means;

said projection screen means transmitting said image to said eyepiece means;

said projection lens means and said projection screen means being arranged to form a coaxial optical system;



whereby a non-pupil forming display of a replica of said image, which appears to originate from a great distance, is viewable by said observer.

5,348,478

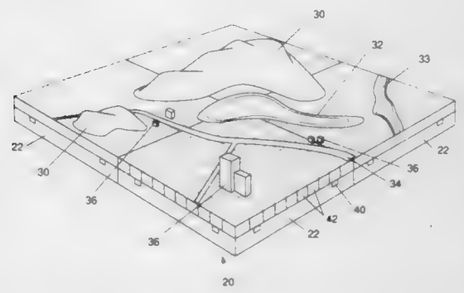
MODULAR TERRAIN BOARD

Michael Bradshaw, 5990 Richmond Hwy., Apt. # 606, Alexandria, Va. 22303

Filed Oct. 2, 1992, Ser. No. 955,423

Int. Cl.[5] G09B *29/00, 29/12, 19/00*

U.S. Cl. 434—150 12 Claims



1. A three dimensional model landscape apparatus, the apparatus being representative of an actual landscape including surface area and capable of supporting a plurality of structures, the apparatus comprising:

a baseboard assembly having a plurality of apertures;

a plurality of terrain cell units adapted for mounting within said apertures, each of said terrain cell units being representative of a section of surface area, said terrain cell units selectively having depressions formed therein;

fastening means for securing structures to said baseboard assembly, said fastening means adapted for mounting within the apertures.

5,348,479

Patent Not Issued For This Number

5,348,480

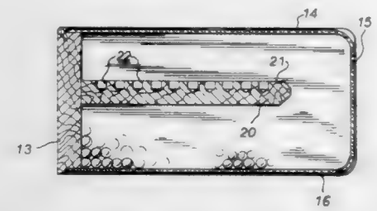
STATISTICAL SAMPLING APPARATUS

Harold E. Vickerman, 3116 Joliet Ct., Mequon, Wis. 53092

Continuation of Ser. No. 39,712, Apr. 1, 1993, abandoned, which is a continuation of Ser. No. 911,359, Jul. 9, 1992, abandoned, which is a continuation of Ser. No. 758,703, Sep. 9, 1991, abandoned, which is a continuation of Ser. No. 468,301, Jan. 22, 1990, abandoned. This application Dec. 10, 1993, Ser. No. 165,069

Int. Cl.[5] G09B *23/02*

U.S. Cl. 434—188 2 Claims



1. A statistical sampling apparatus comprising:

a box-like enclosure having a top, a bottom, a front wall, a rear wall, and two side walls, said top being transparent;

a stationary ledge disposed between the top and the bottom and extending between the side walls and from the rear wall towards the front wall, a front edge of said ledge being spaced from the front wall to define a passageway connecting the volume underneath the ledge with the volume above the ledge,

an upper surface of said ledge having a plurality of identical recesses formed in a regular array,

said array of recesses being sub-divided into smaller arrays of recesses with the smaller arrays being distinguishable from each other by color; and

a plurality of groups of identical objects disposed within the enclosure and each adapted to be received in any one of said recesses, the number of objects being greater than the number of recesses, each group being visually distinguishable from every other group.

5,348,481

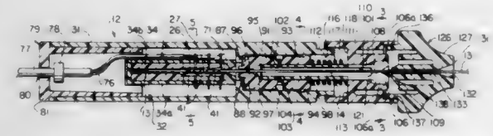
ROTARY CONNECTOR FOR USE WITH SMALL DIAMETER FLEXIBLE ELONGATE MEMBER HAVING ELECTRICAL CAPABILITIES

John E. Ortiz, East Palo Alto, Calif., assignor to Cardiometrics, Inc., Mountain View, Calif.

Filed Sep. 29, 1993, Ser. No. 128,835

Int. Cl.[5] H01R *17/18*

U.S. Cl. 439—25 8 Claims



1. A rotary connector for use with a small diameter flexible elongate member having electrical capabilities and having a proximal extremity with at least first and second spaced-apart conductive sleeves thereon comprising a housing, at least first and second spaced-apart contact members mounted in the housing, said housing and said first and second contact members having passages therein through which the proximal extremity of the flexible elongate member can extend to place the first and second conductive sleeves in contact with the contact members, means carried by the housing for retaining said proximal extremity of the flexible elongate member in the housing while permitting rotation of the flexible elongate

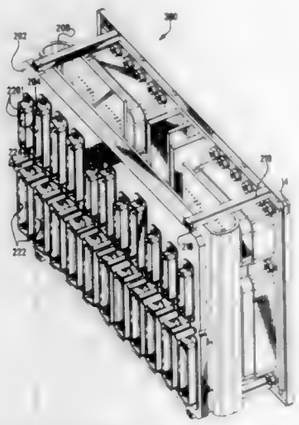
member with respect to the housing, said first and second contact members each having a base portion having proximal- and distal sides, said base portion being provided with a hole therein through which the proximal extremity of the flexible elongate member can extend, first and second sidewardly extending curved spring portions curved in opposite directions on one side of the base portion, said first and second curved spring portions being in contact with each other along a line which is in general in alignment with the hole in the base portion and being adapted to frictionally engage one of the conductive sleeves.

5,348,482

HIGH DENSITY INTEGRATED BACKPLANE ASSEMBLY

William J. Rudy, Jr., Annville; Howard R. Shaffer, Millersburg, and Daniel E. Stahl, Hummelstown, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 11, 1993, Ser. No. 76,656
Int. Cl.[5] H05K *5/02*
U.S. Cl. 439—61 **7 Claims**



1. A backplane assembly for a card cage for a plurality of electrical interconnections of circuits of circuit cards with electrical conductors extending into the card cage at an input-/output interface, the circuit cards being receivable into a card-receiving region of the card cage along pairs of card guides extending through the card-receiving region from a card-receiving opening of the card cage, the input/output interface including an array of electrical input/output connectors, the backplane assembly positioned between the card-receiving region and the input/output interface and comprising:

a forward wall member dimensioned to traverse the rearward end of the card-receiving region within the card cage and including an array of card connectors mounted thereon to mate with corresponding connectors of a plurality of circuit cards, with said card connectors so positioned with respect to respective said pairs of card guides to mate with complementary connectors along leading ends of respective said circuit cards during card insertion;

a rearward wall section at least supporting said array of input/output connectors thereon and joined to said forward wall section by a plurality of struts being affixable proximate peripheral edges of said forward and rearward wall sections and spacing them a selected distance apart; and

interconnection circuitry disposed between said forward and rearward wall sections defining an array of circuits, with said interconnection circuitry affixed therebetween to define a subassembly manipulatable as a unit during card cage assembly,

said card connectors each containing an array of first terminals extending from outer contact sections exposed to be mated with terminals of said connectors of said circuit cards to pin-shaped first inner contact sections connected with corresponding circuits of said interconnection circuitry at connection arrays of a first region, and said input/output connectors each containing an array of second terminals therein extending from outer contact sections exposed to be connected with external input/output conductors to pin-shaped second inner contact sections connected to respective circuits of said interconnection circuitry at connection arrays of a second region;

said interconnection circuitry being defined by a plurality of flexible circuit elements adjacent one another, each said flexible circuit element including pin-receiving holes for all first inner contact sections in a first portion thereof and including pin-receiving holes for all second inner contact sections in a second portion thereof, with all said first and second inner contact sections extending through said pin-receiving holes of all said flexible circuit elements aligned therewith;

each said flexible circuit element at least including selected circuits defined thereon extending from termini at selected pin-receiving holes of said first portion to termini at selected pin-receiving holes of said second portion, whereby selected said pin-shaped first and second inner contact sections extending through said selected pin-receiving holes are electrically connected to said selected circuits upon soldering, and others of said pin-shaped first and second inner contact sections remain isolated from said selected circuits, and whereby all said first and second inner contact sections are terminated to associated circuits on said flexible circuit members,

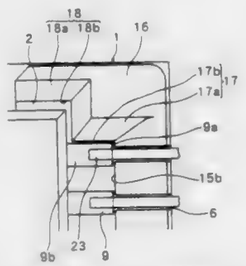
whereby many said first terminals of said card connectors are electrically connected to corresponding second terminals of said input/output connectors by discrete circuits in a compact interconnection arrangement having high circuit density and with said first terminals and corresponding second terminals free of any need to be physically aligned with each other.

5,348,483

IC SOCKET

Hideki Sagano, Kawasaki, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan

Filed Jan. 11, 1994, Ser. No. 179,669
Claims priority, application Japan, Jan. 12, 1993, 5-019635
Int. Cl.[5] H01R *23/72*
U.S. Cl. 439—72 **2 Claims**



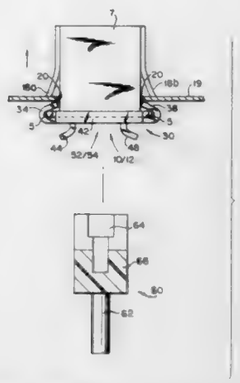
1. An IC socket comprising a plurality of partition walls disposed along an IC platform and contacts which are to be brought into pressure contact with leads of an IC package mounted on said IC platform, said contacts being inserted into corresponding slits formed between adjacent said partition walls so that said contacts are orderly arranged with respect to the leads of said IC package, a foremost end face of each of the leads of said IC package being restricted by wall surfaces of a pair of adjacent partition walls for isolating said slits so that the leads are correctly positioned.

5,348,484

GROUNDING SPRING CLIP FOR MODULAR JACKS

Gregory L. Sorrentino, Brewster, N.Y., assignor to General DataComm, Inc., Middlebury, Conn.

Filed Jun. 17, 1993, Ser. No. 78,582
Int. Cl.[5] H01R *4/66*
U.S. Cl. 439—101 **20 Claims**



1. A grounding coupling for use with a modular jack to couple the conductive sheath of a shielded modular plug with an electrical ground, the modular jack having a plug receiving opening, said coupling comprising:

a) a jack engaging means embracing at least a portion of an outer surface of the modular jack;

b) a conductive plug engaging means coupled to said jack engaging means and extending from said jack engaging means in a direction which does not enter the plug receiving opening when said coupling is attached to the jack and such that when the shielded plug is inserted into the jack, the plug engaging means makes a biased contact with the conductive sheath of the plug; and

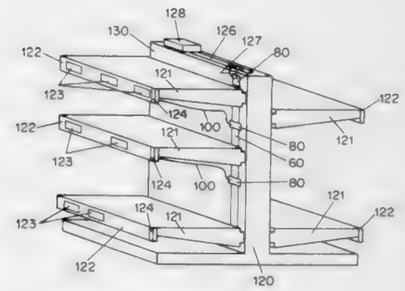
c) ground connecting means electrically coupled to said jack engaging means and electrically coupled to electrical ground.

5,348,485

ELECTRONIC PRICE DISPLAY SYSTEM WITH VERTICAL RAIL

George T. Briechle, New Canaan; David H. Lubowe, Westport, and Alfred D. Dobras, Trumbull, all of Conn., assignors to Electronic Retailing Systems Int'l Inc., Wilton, Conn.

Filed Apr. 12, 1993, Ser. No. 45,910
Int. Cl.[5] H01R *25/14*
U.S. Cl. 439—110 **27 Claims**



1. A wiring system comprising:

a gondola;

a horizontal bus disposed along the length of the gondola, said bus having a plurality of wires;

a plurality of vertical rails, each vertical rail of an insulating material, each vertical rail being of substantially constant cross section along its extent, each vertical rail having a front face and a back, each vertical rail having first and second edges along its extent and a ridge along each edge, each vertical rail having a channel in the front face and a plurality of exposed conductors within the channel corresponding in number with the wires of the horizontal bus, the first and second edges further comprising first keying means rendering the first and second edges nonsymmetrical with respect to reflection in the plane lying therebetween;

connection means connecting the conductors of each vertical rail with corresponding wires of the horizontal bus; and

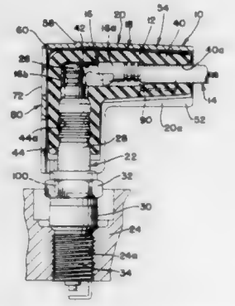
a multiplicity of snap-on connectors with a plurality of the snap-on connectors mated to each vertical rail, each connector having first and second members engaged with the ridges of the first and second edges of its vertical rail, each connector further comprising springy contacts corresponding in number with the plurality of exposed conductors and disposed in tensioned mechanical contact therewith, each connector having a cable with wires corresponding in number with the springy contacts and electrically bonded therewith, each connector shaped between its first and second members so as to define second keying means mating with the first keying means.

5,348,486

HEAT SHIELDED SPARK PLUG BOOT ASSEMBLY

Vincent J. Turu, Jr., and Kenneth B. Germ, both of Niles, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 11, 1993, Ser. No. 104,697
Int. Cl.[5] H01R *13/533*
U.S. Cl. 439—125 **5 Claims**



1. A heat shielded, spark plug boot assembly for an ignition cable connector comprising:

an L-shaped, tubular elastomeric boot having a cable end portion for receiving an ignition cable, a seal end portion for receiving a spark plug and sealing around its outer insulator part, and an intermediate cavity portion for housing a terminal having one end secured to one end of the ignition cable and its other end connectable to a terminal on a spark plug,

an L-shaped heat shield mounted on said elastomeric boot and which surrounds said elastomeric boot for approximately 270° of its circumference,

said heat shield being stamped from flat sheet metal stock and then bent and formed to provide a pair of spaced apart, generally parallel L-shaped sides and a back between the sides and having a semicircular shaped upper end, said sides at upper end portions thereof being rolled toward and into engagement with each other to form said semi-circular shaped upper end and a longitudinal seam at their adjacent edges, said upper end portion of one side having a tab whose free end is wider than its base and the upper end portion of the other side having a complementary shaped recess whose bottom is wider than its mouth,

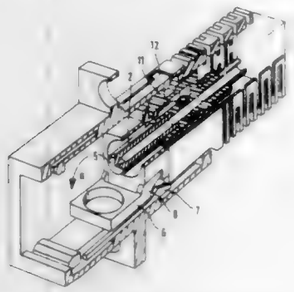
said tab being received within said recess when said upper end portions of said sides are rolled toward each other to form said semi-circular shaped upper end to lock the sides together.

5,348,487

PLUG CONNECTOR FOR OPTICAL FIBERS

Silvio Marazzi, Cavigliano, and Silverio De Marchi, Contra, both of Switzerland, assignors to Diamond SA, Losone, Switzerland

Filed May 11, 1993, Ser. No. 59,359
Claims priority, application Switzerland, May 20, 1992, 1625/92-0; European Pat. Off., Dec. 8, 1992, 92810963.6
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—138 12 Claims



1. In an optical fiber connector comprising a plug (1) having at least one connector pin with an optical end surface and a receptacle (3) having at least one sleeve for receiving the connector pin, the plug portion including a shield for protecting the end surface of the connector pin, said shield having a hinge connection with the plug so that it can swing from a closed position covering said end surface to an open position exposing said end surface, the improvement wherein

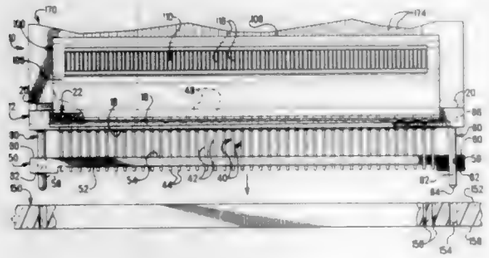
said hinge connection includes an element which is slidably mounted in the plug, and the cover has a guide piece, extending beyond the hinge connection, which engages a protrusion in said receptacle as the plug is inserted, causing the cover to pivot, exposing the pin, and to move rearward.

5,348,488

ELECTRICAL CONNECTOR WITH BOARD-MOUNTING ALIGNMENT SYSTEM

Eric T. Green, Hummelstown; David T. Shaffer, Mechanicsburg, and Charles F. Staley, Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Apr. 9, 1993, Ser. No. 46,046
Int. Cl.[5] H01R *23/72*
U.S. Cl. 439—140 10 Claims



1. An electrical connector assembly for being mounted to a circuit board for pin sections of contacts thereof to be interconnected to circuits of the circuit board, comprising:

a dielectric housing having an array of contact members affixed thereto, each of said contact members including an elongate pin section extending orthogonally from a board-proximate face of said housing to a leading end for receipt into a through-hole of said circuit board upon board mounting for interconnection to a corresponding circuit thereof, and further including an interconnection section at least exposed along a board-remote face of said housing for electrical interconnection with a corresponding conductor;

an alignment plate of dielectric material initially disposed adjacent said leading ends of said elongate pin sections, said alignment plate including an array of pin-receiving apertures therethrough from a housing-proximate surface to a board-proximate surface thereof, each said pin-receiving aperture having a diameter just slightly larger than the diameter of a corresponding said pin section; and

a guide post at each end of said housing extending orthogonally from said board-proximate face thereof to a leading end and having a length greater than the length of said elongate pin sections;

said alignment plate including at each end a post-receiving aperture in which a first section of a respective said guide post is disposed with a leading portion of said guide post extending at least initially beyond said board-proximate surface of said alignment plate to a leading end, and each said guide post including a second section which is disposed within a corresponding post-receiving aperture of said housing through a corresponding said end thereof, and said guide post being at least immovably affixed to one of said housing and said alignment plate with a corresponding said post-receiving aperture of the other of said housing and said alignment plate having a diameter just slightly greater than the diameter of said guide post, all defining a connector assembly,

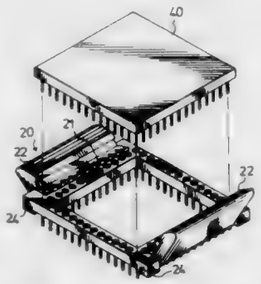
whereby upon mounting to said circuit board, leading ends of said guide posts are received into corresponding holes of said circuit board at ends of the array of through-holes assuring precise positioning of said connector assembly with respect to said array of through-holes and alignment of said pin sections with said through-holes prior to receipt of said leading ends of said pin sections into corresponding said through-holes, and as said connector assembly is pressed onto said mounting surface of said circuit board and said board-proximate surface of said alignment plate engages and abuts said circuit board, said housing is moved toward and against said housing-proximate surface of said alignment plate with one of said housing and said alignment plate moving relatively along said guide posts.

5,348,489

SOCKET ASSEMBLY FOR AN INTEGRATED CIRCUIT CHIP

Saint Yeh, Taipei, Taiwan, assignor to Nextronics Engineering Co., Ltd., Taipei, Taiwan

Filed Nov. 9, 1993, Ser. No. 149,281
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—153 3 Claims



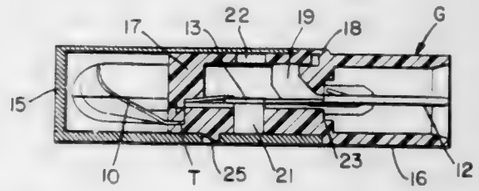
1. A socket assembly for an integrated circuit chip, said socket assembly including a rectangular socket body having two opposed sides, a top surface, a bottom surface, a row of terminal-receiving holes formed in said top surface on at least said two opposed sides for receiving terminal pins of said integrated circuit chip therein, and a plurality of terminal pins extending from said bottom surface and corresponding to said terminal-receiving holes, said socket assembly further comprising two ejector mechanisms, each of said ejector mechanisms including an elongated pivot plate, each of said pivot plates having a lower end mounted pivotally on a corresponding one of said two opposed sides of said socket body and further having a levering rib extending transversely from an inner surface thereof and extending normally above said top surface, said levering rib having a longitudinal distal edge formed with a row of terminal-receiving notches aligned with a corresponding one of said rows of terminal-receiving holes in said socket body.

5,348,490

DEVICE FOR TRANSFERRING CURRENT BETWEEN TWO END POINTS

Friedrich Schauer, Heroldsberg, and Andreas Neuner, Nürnberg, both of Fed. Rep. of Germany, assignors to Kabelmetal Electro Gesellschaft mit beschränkter Haftung, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 957,735, Oct. 7, 1992, abandoned. This application Jan. 14, 1994, Ser. No. 183,103
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1991, 4133172
Int. Cl.[5] H01R *13/58, 35/02*
U.S. Cl. 439—164 7 Claims



1. A device for transferring electric current between two end points via a ribbon cable connected between the two end points, the device comprising;

a cassette containing the ribbon cable which extends in coiled form within the cassette, the cable having at least two electric wires the length of which is substantially greater than a distance between the two end points, at least one of the two end points being movable relative to the other;

plug pins connected in electrically conductive manner to bared wires of the ribbon cable at at least one end;

a prefabricated housing of insulating material with an opening to receive mating contacts, the plug pins and the end of the ribbon cable being disposed within the housing;

wherein the cassette includes a receiver with an opening, the receiver being configured for receiving the housing, the wires of the cable extending into the receiver;

the housing comprises a base body and a cover which are locked to each other in a closed position of the housing and upon an insertion of the housing into the receiver via the receiver opening;

projections are provided on the cover of the housing to serve for fixing positions of the plug pins while pressing the plug pins firmly against the base body of the housing in the closed position of the housing and thus protecting the plug pins from mechanical forces which act axially on the plug pins upon the placing on the plug pins of mating contacts, the pins extending in a direction perpendicular to said opening upon insertion of the housing into the receiver; and

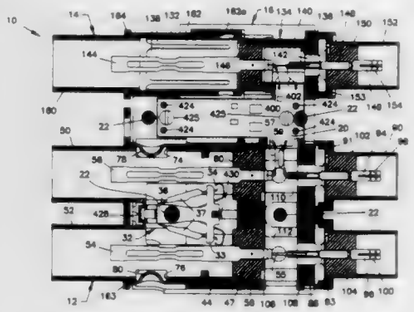
there is a separating joint between the base body and the cover of the housing which is opened by a movement of the cover away from the base body, and the ribbon cable passes through the separating joint to be clamped therein in the closed position of the housing, the connecting points between the wires of the ribbon cable and the plug pins thus also being relieved from strain from the side of the housing on which the ribbon cable is located.

5,348,491

JACK MODULE

Dominic J. Louwagie, Eden Prairie, and John M. Field, Edina, both of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.

Filed Oct. 29, 1993, Ser. No. 141,218
Int. Cl.[5] H01P *1/10*
U.S. Cl. 439—188 7 Claims



1. A jack module comprising:

(a) a first jack subassembly including:

i. a first and a second coax center conductor each extending from a first end to a second end;

ii. first support means for supporting said first and second coax center conductors in spaced apart alignment and including a first electrically grounded support casing at least partially surrounding each of said first and second coax conductors with insulation supports maintaining said first and second coax conductors within said first support casing; said first support casing including first and second ports associated with first ends of said first and second conductors, respectively, and first and second connectors associated with second ends of said first and second, respectively, conductors;

iii. a jack switch having first spring means biased against each of said first and second coax center conductors to electrically connect said first and second center conductors and means for breaking electrical connection between said first and second center conductors upon insertion of a plug into either of said first and second ports;

(b) a second jack subassembly including:

i. a third coax center conductor extending from a first end to a second end;

ii. second support means including a second electrically grounded support casing at least partially surrounding said third coax center conductor and insulation support for supporting said third coax center conductor within said second support casing;

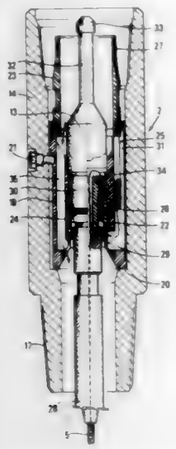
(c) a common housing surrounding said first and second jack subassemblies and having means for interlocking with said first and second support casings to retain said first and second jack subassemblies in spaced-apart alignment with said jack assemblies spaced-apart by a predetermined dimension and with said housing hollow within said dimension to define a cavity therein.

5,348,492

BRACKET AND CONNECTOR FOR A CABLE INSERTED INTO A PIPE FOR ENABLING A MEASUREMENT IN THE CABLE

Alain Sonnet, Rueil Malmaison, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Filed Feb. 26, 1993, Ser. No. 23,563
Claims priority, application France, Feb. 27, 1992, 92 02272
Int. Cl.[5] E21B *47/12*
U.S. Cl. 439—194 9 Claims



1. A bracket for a cable adapted to be inserted into a tubular pipe, and divide the tubular pipe into a lower part and an upper part, said cable being disposed internally in said lower part, said tubular pipe comprising at least one electric conductor, wherein:

said bracket comprises a body assembled between said upper and lower parts and a cable head to which one end of said cable is fastened,

said body comprises a stop ring limiting, in one direction, the displacement of said cable head,

said cable head comprises at least one electric contact connected to said at least one electric conductor, and wherein

said at least one contact electrically co-operates with a connection means when said cable head cooperates with said stop ring, said connection means being integral with said body.

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LOCK DEVICE FOR CONNECTOR

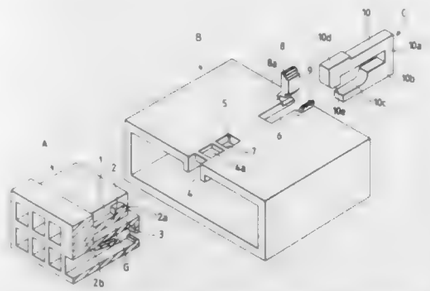
Michael M. Power, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Nov. 6, 1992, Ser. No. 972,629
Claims priority, application Japan, Nov. 11, 1991, 3-294167
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—352 8 Claims

1. A connector, comprising:

a pair of connector housings adapted to be engaged with each other, one of said connector housings including a flexible lock arm extending forwardly therefrom and the other connector housing having lock engaging means which is engaged by said lock arm when said connector housing are in a completely fitted condition; and

a lock release member slidably disposable in said other connector housing, said lock release member including a lock release arm for disengaging said lock arm of said one connector housing from said lock engaging means of said other connector housing to allow for said connector housings to be disengaged from each other, wherein when said connector housings are in an incompletely-fitted condition where said lock arm is not engaged with said engaging means, a portion of said lock release member abuts against said lock arm so as to be prevented from moving to a



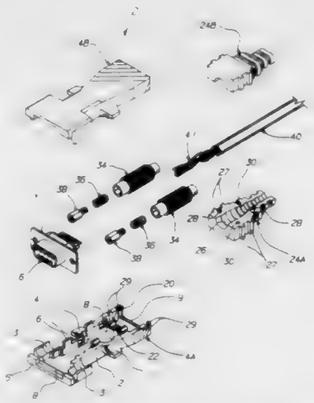
predetermined position indicating said incompletely-fitted condition.

5,348,494

ADAPTER/CONNECTOR SHELL ASSEMBLY WITH UNISEX HARDWARE

Aldo Falossi, 22496 Caminito Grande, Laguna Hills, Calif. 92653, and Paul Thomas, 1257 W. O'Farrell St., San Pedro, Calif. 90731

Filed May 3, 1993, Ser. No. 55,980
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—362 36 Claims



1. A connector shell assembly for a 9-pin connector and a cable having a multiplicity of wires, the multiplicity of wires connected to the 9-pin connector, the connector shell assembly comprising:

a. an elongated rigid connector shell, an elongated flexible strain relief, and a first and a second unisex spring-loaded turn wheel mechanisms;

b. said connector shell having a first half and an identical second half, each half having a longitudinal slot with a front portion for housing said 9-pin connector, and a rear portion for housing said strain relief, a transverse slot on a front end for receiving a transverse plate of said 9-pin connector, a first and second transverse slots on an extended rear end for receiving a first and second lateral ribs of said strain relief, a first lateral side and a second lateral side;

c. means for interlocking said first and second halves of said connector shell together for receiving and partially enclosing said 9-pin connector and said strain relief;

d. said first and second unisex spring-loaded turn wheel mechanisms each having a spring, a reversible member and a base;

e. said reversible member having a first end and a second end, the first end has a male screw post and the second end has a female screw nut;

f. said base of said first and second unisex spring-loaded turn wheel mechanisms having a first end and a second end, the first end has an opening for accommodating said spring and said reversible member respectively, and the second end has a cross shaped slot for accommodating a driving tool;

g. means for retaining said first and second unisex spring-loaded turn wheel mechanisms to said first and second lateral sides of said connector shell respectively;

h. said elongated flexible strain relief having a first half and an identical second half, each half having a front end, a rear end, a longitudinal channel with different cross-sectional dimensions and said lateral ribs which prevent said strain relief from longitudinal movement within said connector shell; and

i. means for interlocking said first and second halves of said elongated flexible strain relief together to form an internal channel with different internal diameter for securely retaining said cable such that said two halves of said strain relief engage against opposite sides of said cable for relieving any strain transmitted on said cable;

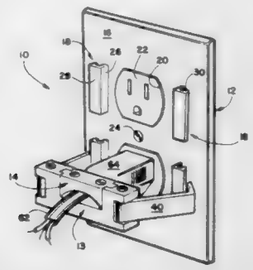
j. whereby prior to snapping together said two halves of said connector shell, said 9-pin connector is placed in said longitudinal slot at said front portion of said first half of said connector shell and said transverse plate of said 9-pin connector is retained in said transverse slot of said front end of said first half of said connector shell, and said strain relief is placed in said longitudinal slot at said rear portion of said first half of said connector shell and said two lateral ribs of said strain relief is retained in said two transverse slots of said extended rear end of said first half of said connector shell, said springs and said reversible members are placed in said bases respectively of said unisex spring-loaded turn wheel mechanisms which show said male screw posts for adapting an opposite said female screw nuts, said connector shell is snapped together to retain said 9-pin connector and said strain relief.

5,348,495

ELECTRICAL CORD PLUG LOCK ASSEMBLY

Larry R. Kasden, 1212 Andover Rd., El Cajon, Calif. 92019

Filed Oct. 26, 1993, Ser. No. 141,044
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—371 8 Claims



1. An electrical cord plug lock assembly comprising:

an elongated base clamp member having a top surface, a bottom surface, a left end and a right end;

a top clamp member having a top surface, a bottom surface, a left end and a right end;

means for detachably securing an electrical cord between the bottom surface of said top clamp member and the top surface of said base clamp member;

a pair of elongated locking arms each having a front end and a rear end;

means for pivotally securing the rear ends of said locking arms to the respective left and right ends of said base clamp member;

an electrical socket face plate having a front surface and at least one socket aperture; and

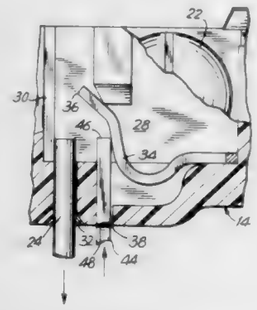
means for detachably securing the front ends of said locking arms to the front surface of said electrical socket face plate.

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BREAK-OFF KEY FOR RELEASING PUSH-WIRE CONNECTION IN WIRING DEVICE

Melvin Ludwig, Great Neck, N.Y., assignor to Eagle Electric Manufacturing Co., Inc., New York, N.Y.

Filed Apr. 29, 1993, Ser. No. 53,476
Int. Cl.[5] H01R *4/48*
U.S. Cl. 439—441 17 Claims



1. A wiring device for push-wire connection with an uninsulated end portion of an electrical conductor, comprising:

(a) a housing having an electrical terminal therein, an opening through which the uninsulated end portion is insertable, and a release passage adjacent to the opening;

(b) locking means within the housing for locking the uninsulated end portion inserted through the opening in electrically-conductive contact with the terminal; and

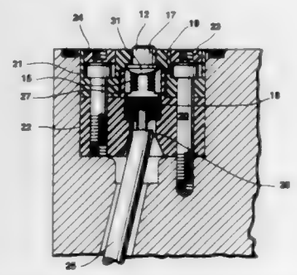
(c) release means detachably connected to the wiring device and, after detachment from the wiring device, being insertable into the release passage, for unlocking, and enabling removal of, the uninsulated end portion from the terminal.

5,348,497

HIGH VOLTAGE VACCUM FEED-THROUGH ELECTRICAL CONNECTOR

Petru N. Nitescu, Fremont, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Aug. 14, 1992, Ser. No. 931,096
Int. Cl.[5] H01R *13/24*
U.S. Cl. 439—824 10 Claims



1. A high voltage vacuum feed-through connector assembly comprising:

a) a first conductor member inserted into a dielectric first housing member;

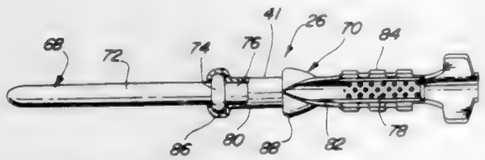
b) a second conductor member inserted into a dielectric second housing member;
c) a conductive spring sandwiched between the first and second conductor members;
d) a high voltage cable fastened to said second conductor member;
e) two or more fasteners for joining said first and second housing members together so that, when fastened, said first conductor member extends above the surface of the first housing member, wherein said dielectric second housing member has a cone-shaped opening for said high voltage cable.

5,348,498

SEALED PASS THROUGH ELECTRICAL CONNECTOR

John R. Morello, Lake Milton; James A. Okrucky, Warren, and Frank T. Neale, Fowler, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 956,217, Oct. 5, 1992, Pat. No. 5,252,088.
This application Jun. 17, 1993, Ser. No. 77,589
Int. Cl.[5] H01R *4/10*
U.S. Cl. 439—877 **2 Claims**



1. A two-piece male pin terminal comprising:
a contact member that is made of an electrically conductive material and an attachment member;
the contact member having a round solid pin at one end that has a round point to facilitate insertion of the male pin terminal into terminal cavities and through an elastomeric seal so that it seals around the round solid pin;
the medial portion of the contact member having an integral collar; and
the opposite end of the contact member having a round clamping section behind the collar and a flattened end, and
the attachment member having a cylindrical attachment portion at one end that has a hollow circular rib at one end that is formed around the collar and a section that is clamped around the clamping section of the contact member tightly,
the attachment member having a cable attachment means at the other end, and
the flattened end of the contact member being disposed in the cable attachment means of the attachment member so that it engages the core of the electric cable when the two-piece terminal is attached to the electric cable by the attachment member.

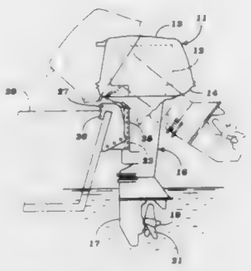
5,348,499

OUTBOARD MOTOR

Katsumi Torigai; Masanori Takahashi, and Yoshihide Hirano, all of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jul. 1, 1992, Ser. No. 907,387
Claims priority, application Japan, Sep. 3, 1991, 3-248486
Int. Cl.[5] B63H *21/26*
U.S. Cl. 440—76 **24 Claims**

1. An outboard motor adapted to be affixed for tilt and trim movement about a horizontal axis at a forward point of said outboard motor relative to the hull of an associated watercraft, said outboard motor including a power head disposed generally above said horizontal axis and containing a two cycle, crankcase compression, internal combustion engine, said engine comprising a crankcase positioned forwardly in said power head and adapted to rotatably support a crankshaft, a cylinder extending generally rearwardly from said crankcase and containing a piston for driving a crankshaft, an intake port for admitting a charge to said crankcase, and an intake pipe



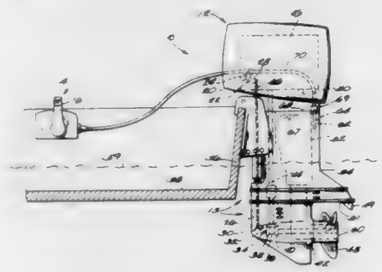
connected at its outlet end to said intake port and extending generally rearwardly therefrom for delivering a charge flowing in a generally forward direction to said intake port and to said crankcase.

5,348,500

MARINE PROPULSION DEVICE WITH SELECTIVELY OPERABLE SECONDARY EXHAUST DISCHARGE

George G. Lassanske, Nashotah, Wis., assignor to Outboard Marine Corporation, Waukegan, Wis.

Filed Jun. 28, 1993, Ser. No. 83,998
Int. Cl.[5] B63H *21/00*
U.S. Cl. 440—89 **26 Claims**



1. A marine propulsion device comprising a powerhead including an internal combustion engine having an output shaft and an exhaust port, a propeller shaft adapted to hold a propeller, means for selectively coupling said engine output shaft to said propeller shaft, an exhaust passage communicating with said engine exhaust port and comprising a first exhaust outlet and a second exhaust outlet, and means operable in response to operation of said selective coupling means to open and close said second exhaust outlet.

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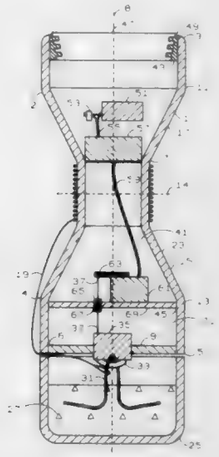
COMPACT RETRIEVABLE MARKER BUOY

Steven J. Brown, 1805 Fredith La., Topeka, Kans. 66618

Filed Jan. 22, 1993, Ser. No. 7,618
Int. Cl.[5] B63B *21/52*
U.S. Cl. 441—2 **5 Claims**

1. A submersible, retrievable, fishing marker buoy having a base portion and a marker portion, for marking a desired location in a body of water, such that the marker portion can sit on the floor of a body of water prior to receiving an external command signal, said buoy comprised of:
a primary housing comprised of a tubular rigid casing having a top end and a bottom end, a waterproof chamber within the casing, and a watertight wall separating the waterproof chamber from the external non-waterproof areas;

a removable lid that allows access to the waterproof chamber;
electrical/mechanical receiver/actuator means having an electrical receiver portion and a mechanical/actuator portion, located in the waterproof chamber for receiving external command signals and such that upon receiving said signals an internal control signal is generated to energize the mechanical actuator so as to physically move the actuator;
a separate mooring base sufficiently heavy to retain the housing at the floor when the housing is connected to the base;



releasable connecting means connected to the bottom end of the marker portion and to the mooring base such that the housing is releasably connected to the mooring base;
coupling means through the watertight wall and physically connecting the receiver/actuator means within the waterproof chamber to the releasable connecting means such that the housing is released from the mooring base in response to the internal control electrical signal;
tethering means attached from the base to the primary housing;
battery means within the watertight chamber for electrically powering the receiver/actuator means;
corresponding transmitter means for transmitting the command signal to the receiver/actuator means.

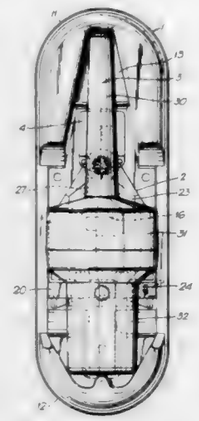
5,348,502

MOUNTS FOR BUOYS

Richard I. Wigram, Fleet, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Nov. 23, 1993, Ser. No. 155,768
Claims priority, application United Kingdom, Dec. 1, 1992, 9225093
Int. Cl.[5] B63B *22/14*
U.S. Cl. 441—7 **9 Claims**

1. A mount for a buoy comprising a housing having a portion overhanging a part of the buoy, said overhanging portions being operative to prevent upward displacement of the buoy; means for securing the housing to a part of a marine vessel; a support frame adapted to support and retain the buoy in a first position against movement out of said housing, said frame having a first member arranged to engage beneath a part of the buoy to prevent downward displacement of the buoy; means mounting the support frame with the housing for pivotal movement between the first and a second position; means for displacing the support frame away from the housing to the second position; and a release mechanism for retaining the support frame in the first position against the action of the displacing means such that the buoy is normally retained with the mount but when the release mechanism is actuated the frame is displaced away from the housing to the second position such that the buoy is displaced away from the housing and can float free.

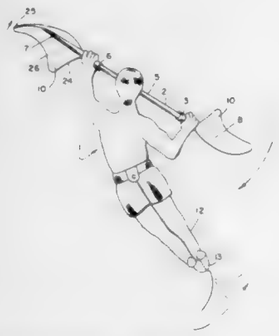


5,348,503

UNDERWATER PADDLE AND VERTICAL FIN FOR SWIMMER

Ryszard Fechtner, 8748 Jade Ct., Boynton Beach, Fla. 33437

Filed Oct. 22, 1993, Ser. No. 140,321
Int. Cl.[5] A63B *31/10*
U.S. Cl. 441—56 **20 Claims**



1. A swimming apparatus comprising:
A) a paddle assembly for completely immersed operation, said paddle assembly comprising a shaft having a long axis, and an intermediate portion connecting two end portions, said intermediate portion arranged for gripping along said long axis by two hands of a swimmer and a pair of blades, one of said blades attached to each of said end portions, each of said blades having a thin resilient trailing portion extending rearward from said shaft in a single plane and a rigid leading edge portion coplanar with said trailing portion with both of said blades lying in a common plane when not exposed to external forces, said blades so constructed that forward, or return swimming stroke motion of one of said pair of blades, with said leading edge advancing, causes said trailing portion to remain flat in said plane for minimal hydrodynamic resistance, while the other of said pair of blades is in rearward or thrust swimming motion with said leading edge retreating which forces water against the trailing portion causing the trailing portion to bend the blade away from said single plane

to only one side of said single plane for increased hydrodynamic resistance to enhance the effectiveness of alternating arm strokes; and

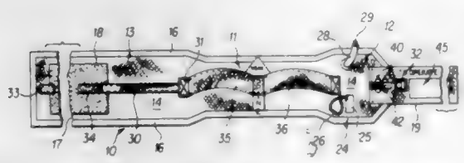
B) a fin assembly comprising a pair of foot attaching elements for attaching to the feet of a swimmer and a thin, flat, resilient fin member directly connected to said foot attaching elements at a narrow, forward portion of said member, said fin member increasing in size as it extends rearward in the manner of a fish tail fin, said fin member lying in a vertical plane with said foot attaching elements closely juxtaposed on opposed sides of said vertical plane, said vertical swimmer into left and right halves when said foot attaching elements hold said swimmer's feet, said fin assembly arranged to maintain the feet of said swimmer in fixed, juxtaposed relationship while said feet are held in said foot attaching elements, and said fin member arranged to move from side to side for additional thrust by muscle action associated with operation of said paddle assembly additional thrust by muscle action associated with operation of said paddle assembly.

5,348,504

INFLATABLE LIFESAVING BELT

William D. Pierce, 3217 Parkwood Ter., Falls Church, Va. 22042, and Kenney J. Pierce, Jr., 136 Ridgeland Dr., Columbus, Miss. 39701

Filed Sep. 1, 1992, Ser. No. 937,697
Int. Cl.[5] B63C *9/08*
U.S. Cl. 441—113 **7 Claims**



1. A lifesaving apparatus suitable for being applied about the upper torso and under the arms of an individual in the water comprising an elongated belt having a central inflatable portion and first and second inflatable end portions, an elongated inflatable chamber defined continuously between said first and second end portions and said central portion, said first and second inflatable end portions being of a greater diameter than said central portion to create a relatively greater buoyancy when inflated than said central portion, a first means extending from said first end portion for fastening said first end portion proximate to said second end portion prior to inflation to form a ring in circling engagement about the individual, inflation means for selectively inflating said chamber, an alignment indicia means on said central portion of said belt for selectively aligning said central portion of said belt relative to a specific portion of the backside of the individual so that when said apparatus is applied and said chamber is inflated, said central portion extends substantially along the back portion of the shoulders of the individual and said first and second end portions provide primary buoyancy relative to the frontside of the individual, and handle means mounted along said central portion of said belt and extending outwardly therefrom for being engaged from the backside of the individual when the apparatus is applied.

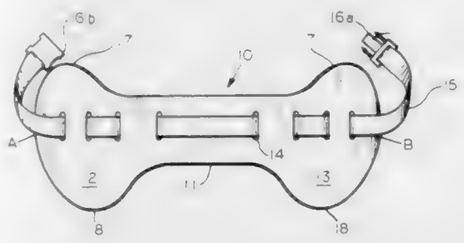
5,348,505

SWIMMING AID DEVICE

Reed Rothhammer, 2635 Edgeview La., Arroyo Grande, Calif. 93420

Continuation of Ser. No. 822,206, Jan. 16, 1992, abandoned. This application Mar. 19, 1993, Ser. No. 33,459
Int. Cl.[5] B63C *9/08*
U.S. Cl. 441—117 **4 Claims**

1. A water exercise device to be worn by a wearer to increase buoyancy thereof comprising, in combination, an elongate waist-encircling band of flexible buoyant material and an inextensible flexible belt coextensive therewith for strapping about the wearer's waist, said buoyant band having a minimum uniform vertical extent surrounding the waist of the wearer, said buoyant band terminating at each end just forward of the



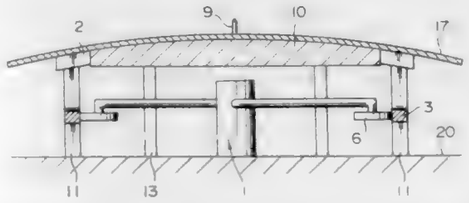
hip on each side of the wearer, said each end having an enlarged lobe portion, said lobe portion comprising an upper part extending above said uniform minimum vertical extent and a lower part extending below said uniform minimum vertical extent, said upper part being located nearer said each end of said elongate band such that, when worn, said upper part is positioned further forward of said lower part.

5,348,506

METHOD OF ASSEMBLING A SHADOW MASK AND AN APPARATUS FOR CARRYING OUT THE SAME

Takahiro Kawamura, Kanagawa, and Tetsuo Uehira, Chiba, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 9, 1993, Ser. No. 44,477
Claims priority, application Japan, Apr. 10, 1992, 4-091159
Int. Cl.[5] H01J *9/20*
U.S. Cl. 445—30 **14 Claims**



1. A method of assembling an electron beam selection mask formed of a mask sheet for a color cathode ray tube, comprising the steps of:

providing a frame formed by a pair of spaced apart parallel support members each having an upper curved mask sheet support surface, said parallel support members each having a longitudinal extent along the mask sheet;

providing a mask sheet having parallel slits;

providing a mask sheet support plate extending from the one parallel support member to the opposite parallel support member and which fits between the two support members, said mask sheet support plate having an upper surface which is curved in a same curvature as said upper curved mask sheet support surfaces;

setting the frame with the mask sheet support surfaces facing upward and positioning the frame;

positioning the mask sheet support plate between the two parallel support members so that said upper curved surface of said mask sheet support plate coincides with the parallel support member mask sheet upper support surfaces;

placing the mask sheet on the curved upper surfaces of the parallel support members and plate;

fixedly positioning the mask sheet on the frame; and

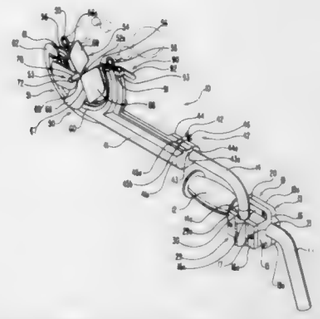
attaching the mask sheet to the support members.

5,348,507

BICYCLE BUBBLE TOY

John R. McGhie, St. George, Utah, and Kole D. Johnson, Winnemucca, Nev., assignors to Dreams Come True Enterprises International, Inc., Midvale, Utah

Filed Aug. 18, 1993, Ser. No. 107,584
Int. Cl.[5] A63H *33/28*
U.S. Cl. 446—16 **14 Claims**



1. A bicycle bubble toy comprising, a reservoir housing formed from opposing arcuate front and rear sections that are joined together along a common lower edge and are open between upper edges providing an open slot, said reservoir housing further including a straight upright standard that is secured at a lower end to said rear arcuate section, with a point on a forward face of a standard upper end at a center of arc of the joined arcuate sections, and a post is secured to said standard upper end at said center of arc that extends outwardly at approximately a right angle therefrom and is open longitudinally to receive a pin means fitted therein; a propeller means that includes a plurality of blades that extend at equally spaced intervals from around a hub, that is a cylinder that is open therethrough for axial mounting onto said post, and each said blade is canted at a like blade angle from a right angle plane across said hub, and each said blade includes an edge that, when said blade is turned, travels above approximately the longitudinal center of said slot; a pin means that includes a cylindrical body for fitting into said post longitudinal opening and has a broad flat head whose edge extends above a hub end for maintaining said hub onto said post; a bar means is mounted to each said blade edge to extend outwardly therefrom and travel along said slot as said propeller means turns, and each said bar means mounts a bubble ring across an outer end thereof to travel through said reservoir housing interior as said bar means is moved along said slot; and means for mounting said reservoir housing to extend outwardly from a handle bar of a bicycle, tricycle, or the like.

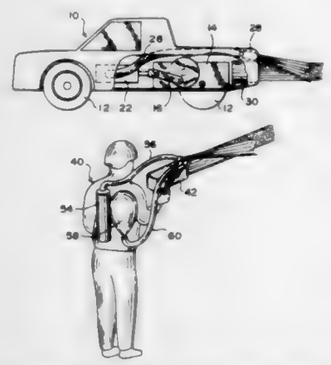
5,348,508

TOY WITH SIMULATED FORCE DISCHARGE

Henry A. Garfinkel, 31 Dogwood Rd., Searingtown, N.Y. 11507

Filed Aug. 2, 1993, Ser. No. 100,310
Int. Cl.[5] A63H *33/28, 33/30*
U.S. Cl. 446—24 **6 Claims**

1. A toy representative of an item normally incorporating means for emitting a discharge, said toy including a system for the simulation of a force discharge as a realism enhancing display for said toy, said toy including a body, discharge port means on and outwardly directed relative to said body, said system for simulation of a force discharge comprising light emitting means mounted within said toy and aligned with said discharge port means for the emission of a linear light beam longitudinally outward of said body, means for electrically energizing said light emitting means, a discharge nozzle for liquid mounted to said toy laterally of said discharge port and outwardly directed relative to said body for emission of a liquid mist discharge, a liquid supply, pump means for pressurizing liquid from said supply and for discharging said pressurized liquid to define said liquid discharge, said discharge nozzle being positioned at an intersecting angle relative to said light emitting means and said discharge port wherein said liquid discharge is directed along a path intersecting and crossing said



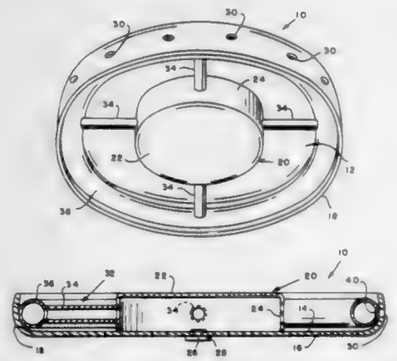
light beam outward of said toy body and wherein said liquid discharge is coincident with only a portion of said light beam outward of said toy body to partially diffuse and reflect said light beam and combine therewith to define said simulation of a force discharge.

5,348,509

FLYING DISK TOY

Victor Riccardi, 251 Knickerbocker Ave., Stamford, Conn. 06907, and Arnold Fassman, 40 Oak St., Westport, Conn. 06880

Filed Jun. 22, 1993, Ser. No. 79,898
Int. Cl.[5] A63H *27/00*
U.S. Cl. 446—46 **4 Claims**



1. A flying disk toy adapted to spray a stored liquid into the air as the toy traverses a flight pattern after having been vigorously thrown with a spinning motion imparted thereto, said toy comprising:

A. a relatively flat, circular, disk shaped body member having opposite faces,

B. an axially curved annulus surrounding said body member and defining a peripheral space therewith,

C. means defining a reservoir for holding a quantity of liquid, said reservoir having a peripheral boundary substantially smaller than said body member and being disposed centrally on the face of said body member surrounded by said annulus,

D. a plurality of outlet means disposed in spaced relationship substantially continuously around said curved annulus and extending through said annulus for permitting liquid to pass through said curved annulus in response to centrifu-

gal force imposed on the liquid in said reservoir defining means from the spinning motion of said body member, and

E. conduit means disposed on said face of said body member and defining a liquid distribution system for permitting liquid to flow unimpeded from said reservoir defining means to said outlet means in response to said centrifugal force generated by rotation of the disk toy, thereby distributing liquid stored in said reservoir defining means to said outlet means,

whereby liquid is expelled from said outlet means in a circular pattern while the disk toy traverses the flight pattern.

5,348,510

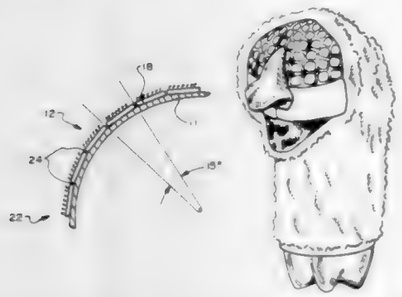
TOY WITH FANCIFUL INTRA-CHANGEABLE PARTS

Paul DuPont, and Brian W. Grosvenor, both of Malden, Mass., assignors to Hatsoff? Development, Inc., Malden, Mass.

Continuation of Ser. No. 686,249, Apr. 16, 1991, abandoned. This application Jan. 5, 1993, Ser. No. 816

Int. Cl.[5] A63H *3/16;* **A42B** *1/24*

U.S. Cl. 446—100 | **5 Claims**



1. A toy comprising a base support on which fanciful animal, human or monster faces can be created by attaching facsimiles of discrete facial elements comprising an ear, nose, mouth or tongue to a "hook" fastening surface on said base support, said base support including a face and a scalp portion, and said toy comprising a plurality of discrete, removably attachable facsimiles of such facial elements, at least some of said facial elements each being made of a plurality of layers of material fastened to each other at the edges thereof, said layers being movable with respect to each other and in their normal condition being in contact with each other, said layers being freely separable from each other throughout most of their area so that they can be temporarily deformed into concave and convex surfaces representing at least two different facial elements, such as an ear or a nose, the outer surface of the temporarily deformable layers being formed of "loop" material which can be held in its deformed concave and convex positions by the hook fastening surface and being held by said hook surface in the appropriate position to represent said formed facial element.

5,348,511

BEEHIVE-MOUNTED DEVICE FOR UTILIZING HONEYBEES (HYMENOPTERA: APIDAE) IN THE DISSEMINATION OF BIOCONTROL AGENTS

Harry R. Gross, Tifton; Raydene Johnson, Lenox, and J. C. Walters, Tifton, all of Ga., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 12, 1993, Ser. No. 62,516

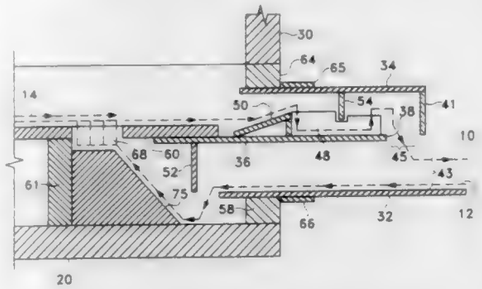
Int. Cl.[5] A01K *47/06*

U.S. Cl. 449—2 | **18 Claims**

1. A beehive-mounted device comprising

a structure which frictionally fits into the opening of a downsized super,

said structure having a floor member, a ceiling member, and a dividing member wherein said dividing member is positioned rearward relative to the front ends of said floor and ceiling members and taken together said floor, ceiling and



dividing members define separate arrival and departure pathways for bees entering and exiting said beehive.

5,348,512

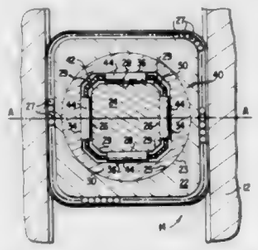
FRICTION REDUCED CONSTANT VELOCITY UNIVERSAL JOINT

Bobby L. Hodge, Charlotte, N.C., assignor to Ina Bearing Company, Inc., Fort Mill, S.C.

Filed Nov. 12, 1992, Ser. No. 974,468

Int. Cl.[5] F16D *3/26*

U.S. Cl. 464—111 **10 Claims**



1.A constant velocity universal joint comprising:

a housing having a plurality of channels extending longitudinally therein;

an inner rotatable member having a plurality of trunnions with radially disposed axes, each of said trunnions extending into a respective one of said channels and being longitudinally movable along such channel, each trunnion having a polygonal outer surface;

a respective ball and socket joint located between each trunnion and the channel into which such trunnion extends for permitting rotational movement of such trunnion about the axis thereof;

a first bearing means operatively positioned between each trunnion and a respective ball member of said ball and socket joint for permitting relatively frictionless movement between said trunnion and said respective ball member along the axis of said trunnion, an inner surface of the ball member having a polygonal shape corresponding to the polygonal outer surface of the trunnion and forming an outer race for the first bearing means, the polygonal outer surface of trunnion forming an inner race for the first bearing means; and

a second bearing means operatively engaged between a respective socket member of said ball and socket joint and said channel for permitting relatively frictionless movement of such socket member longitudinally along the channel in which such socket member is located.

5,348,513

METHOD FOR COUPLING EXISTING WOOD APPROACH PANEL IN A BOWLING LANE WITH A NEW, SYNTHETIC BOWLING LANE PANEL

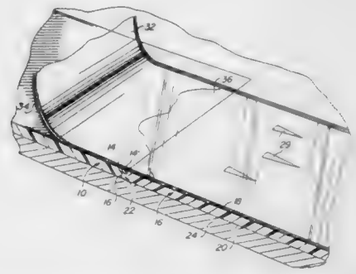
Will Heddon, 1422 Chamberlain Loop, Lake Wales, Fla. 33853

Continuation of Ser. No. 12,166, Jan. 29, 1993, Pat. No. 5,275,397, which is a continuation-in-part of Ser. No. 681,052, Apr. 5, 1991, Pat. No. 5,183,262. This application Dec. 22, 1993, Ser. No. 172,609

The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.

Int. Cl.[5] A63D *1/00*

U.S. Cl. 473—117 **12 Claims**



1. A method for coupling the foul line end of a wood approach panel for a bowling lane with a synthetic bowling lane panel, the method comprising the steps of:

providing a flat, synthetic bowling lane panel having a predetermined thickness and a first end;

forming a horizontal step in the foul line end of the wood approach panel below an upper surface thereof, and with a dimension between the upper surface and the horizontal step corresponding to the predetermined thickness of the synthetic lane panel;

installing the synthetic lane panel in abutting relation with the wood approach panel and with the first end thereof overlying the horizontal step; and

securing the synthetic lane panel together in fixed relation to the foul line end of the wood approach panel.

5,348,514

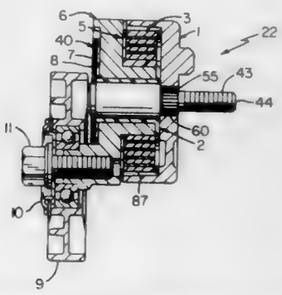
BELT TENSIONER, COMPONENTS THEREFOR AND METHODS OF MAKING THE SAME

Mark P. Foley, Springfield, Mo., assignor to Dayco Products, Inc., Dayton, Ohio

Filed Sep. 21, 1993, Ser. No. 124,749

Int. Cl.[5] F16H *7/08*

U.S. Cl. 474—135 **33 Claims**



1. In a tensioner for a power transmission belt that is adapted to be operated in an endless path, said tensioner comprising a support means for being fixed relative to said belt, a belt engaging means carried by said support means and being movable relative thereto, mechanical spring means operatively associated with said support means and said belt engaging means for urging said belt engaging means relative to said support means and against said belt with a force to tension said belt, and frictional dampening means operatively associated with said support means and said belt engaging means to dampen the movement of said belt engaging means relative to said support means in at least one direction of movement thereof, said dampening means having a longitudinal axis, said support means comprising a shaft means having a longitudinal axis and being fixed from movement relative to said belt engaging means, said belt engaging means having a portion thereof being rotatably carried by said shaft means so as to rotate relative to said shaft means, said dampening means comprises at least one pair of frictionally engaging first and second surfaces, the improvement wherein said mechanical spring means provides said force for urging said belt engaging means relative to said support means and against said belt to tension said belt and provides a certain force for urging said first surface against said second surface to dampen the movement of said belt engaging means thereof.

5,348,515

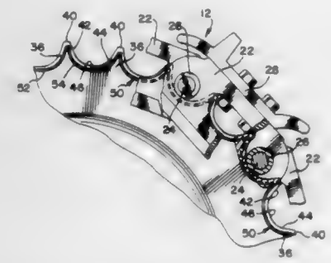
SPROCKET WEAR INDICATOR

Larry E. Miller, Wausau, Wis., assignor to Case Corporation, Racine, Wis.

Filed Jan. 13, 1993, Ser. No. 3,742

Int. Cl.[5] F16H *55/30*

U.S. Cl. 474—152 **9 Claims**



1. A sprocket comprised of a body with opposite side surfaces and a series of equally spaced teeth about an outer surface thereof between the side surfaces, each tooth comprising a tip with opposite flanks extending radially from said tip toward a root to define a tooth profile, and an indicator provided on at least one of said side surfaces at a predetermined distance from a relatively wornless tooth profile of least one of said sprocket teeth to provide a visual indication of wear of the sprocket teeth.

5,348,516

TRANSAXLE FOR MIDSHIP TRANSVERSELY MOUNTED ENGINE

Masanori Shibata, Shizuoka, Japan, assignor to JATCO Corporation, Fuji, Japan

Filed Sep. 2, 1992, Ser. No. 937,603

Claims priority, application Japan, Sep. 2, 1991, 3-248261

Int. Cl.[5] F16H *1/00;* **B60K** *17/16, 17/28*

U.S. Cl. 475—206 **8 Claims**

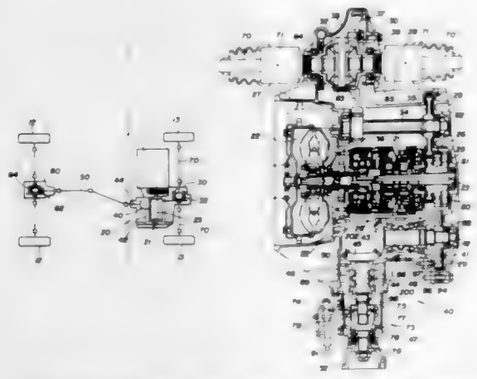
1. A transaxle for a drive system of a vehicle, the vehicle having a set of front wheels and a set of rear wheels adapted to be driven from a midship engine transversely mounted with respect to a longitudinal direction of the vehicle, said transaxle comprising:

transmission means, connected to the engine and having a main shaft, for transferring drive torque to said main shaft, said main shaft extending transversely with respect to the longitudinal direction of the vehicle, said main shaft having first and second gears fixed thereto;

a differential mechanism connected to said main shaft to receive drive torque for differential action between each of the rear wheels, said differential mechanism being

disposed rearwardly of said main shaft with respect to the longitudinal direction of the vehicle, said differential mechanism including a differential case fixedly carrying an externally toothed ring gear;

a transfer case disposed forwardly of said main shaft with respect to the longitudinal direction of the vehicle, said transfer case including a transfer input shaft and a transfer output shaft, said transfer input shaft extending in parallel



with said main shaft and having a fifth gear fixed thereto and engaged in mesh with said second gear of said main shaft, said transfer output shaft extending in the longitudinal directions; and

an idler shaft extending in parallel with said main shaft, said idler shaft having a third gear fixed thereto and engaged in mesh with said first gear and a fourth gear fixed thereto and engaged in mesh with said externally toothed ring gear.

5,348,517

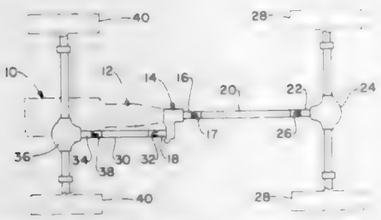
TORQUE TRANSFER CASE FOR A FULL TIME FOUR-WHEEL DRIVE SYSTEM

Wesley M. Dick, 8220 Fawncrest Pl., Fort Wayne, Ind. 46835

Filed Dec. 29, 1992, Ser. No. 997,859

Int. Cl.[5] F16H *37/06*

U.S. Cl. 475—210 **17 Claims**



1. A full time four-wheel-drive system for a vehicle having front and rear drive axles, comprising,

a transfer case assembly including an input shaft for receiving output torque from the transmission of a vehicle, and front and rear output shafts,

said transfer case assembly including means connecting said input shaft to one of said front or rear output shafts comprising a continuously variable belt drive having at least a drive pulley mounted on said input shaft and driven thereby and a driven pulley mounted on said one of said front or rear output shafts, each pulley comprising a pair of sheaves with at least one sheave being axially moveable in relation to the other sheave of said pair, said pulleys carrying a belt therebetween,

means drivingly connecting said input shaft with the other of said front or rear output shafts,

means for shifting said at least one sheave axially in response to the torque applied to each of said front and rear output shafts, wherein said means for shifting is responsive to divide torque from said input shaft between said front and rear output shafts in a predetermined relationship.

5,348,518

AUTOMATIC TRANSMISSION

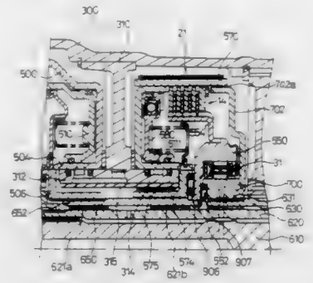
Takao Taniguchi; Kazumasa Tsukamoto; Masahiro Hayabuchi, and Koji Noda, all of Anjo, Japan, assignors to Aisin A W Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, both of Aichi, Japan

Filed May 3, 1990, Ser. No. 518,210

Claims priority, application Japan, May 10, 1989, 1-115107

Int. Cl.[5] F16H *57/10*

U.S. Cl. 475—285 **4 Claims**



1. An automatic transmission having a change-speed transmission using a plurality of planetary gearsets and friction elements, said automatic transmission comprising: a central supporting member fixed to a transmission case having a cylindrical section; a drum having an outer cylinder and an inner cylinder, said inner cylinder being rotatably mounted on the cylindrical section and supported by the central supporting member; clutch components having a clutch piston, friction plates, separate plates and a clutch hub disposed in the drum; a band brake mounted on the outer cylinder of the drum; and a one-way clutch having an outer race connected to the clutch hub, and an inner race connected to the outer cylinder of the drum.

5,348,519

EXERCISE AND DIAGNOSTIC APPARATUS AND METHOD

Jeffrey T. Prince, Grass Valley; Robert L. Rawls, Davis; Philip T. Dempster, St. Helena, and Jody Ono, Davis, all of Calif., assignors to Loredan Biomedical, Inc., West Sacramento, Calif.

Continuation of Ser. No. 478,098, Feb. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 152,259, Feb. 4, 1988, abandoned. This application Aug. 24, 1992, Ser. No. 934,293

Int. Cl.[5] A63B *21/005*

U.S. Cl. 482—6 **64 Claims**

1. An apparatus for performing a lift task comprising:

interface means adapted to be grasped and lifted by a human subject and having an actual mass value;

means for setting a simulated mass value for said interface means independent of said actual mass value;

force measuring means for measuring the value of vertical force exerted by said human subject upon said interface means, said force measuring means comprising:

load measuring means for measuring total vertical force applied to said interface means;

acceleration measuring means for measuring the actual vertical acceleration of said interface means;

weight calculating means for calculating an actual mass value of said interface means;

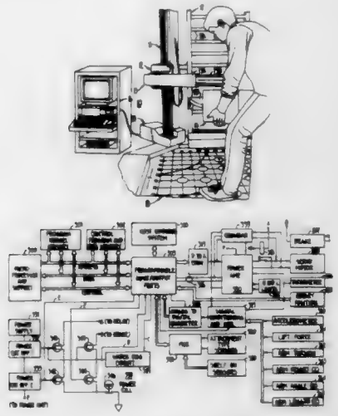
inertia calculating means for calculating an inertia calibration factor for said interface means; and

force calculating means for calculating the actual force applied by said human subject as a function of the current output of said load measuring means, said actual mass value, the current output of said acceleration measuring means and said inertia calibration factor; and

exercise control means, coupled to said interface means and responsive to said force measuring means, for providing a controlled vertical movement of said interface means as a function of said simulated mass value such that said interface means responds to a lifting force by said human subject in a manner that simulates the inertia of an object having a mass value equal to said simulated mass value in a gravitational field.

14. An apparatus for performing a lift task comprising:

an interface device adapted to be grasped and lifted by a human subject;



mounting means for mounting said interface device for combined movement within a range of z, r, and theta coordinates of a cylindrical coordinate system with said z coordinate having a vertical orientation;

force measuring means for measuring the amount of vertical force applied to said interface device by said human subject and for producing an output force signal;

acceleration measuring means for directly measuring the amount of linear vertical acceleration of said interface device and for producing an output acceleration signal for simulating an inertia of the interface device in a gravitational field; and

movement control means, operatively associated with said mounting means and responsive to at least one of said output force signal and said output acceleration signal for controlling movement of said interface device along said z coordinate and for controlling z coordinate velocity and acceleration of said interface device in accordance with a preselected lift task function.

5,348,520

EXERCISE STEPPER

Shao-Ying Chang, No. 764, Chung Shan South. Road, Yang Mei, Taoyuan, Taiwan

Filed Nov. 15, 1993, Ser. No. 151,818

Int. Cl.[5] A63B *22/04*

U.S. Cl. 482—52 **4 Claims**

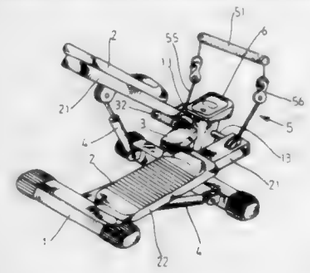
1. An exercise stepper, comprising:

a base,

a pair of treadle pedals pivotally connected by the front ends thereof to either side on a supporting portion of the front end of said base,

a lever device longitudinally swingably pivoted to said base, and

a pair of oil pressure cylinders extensibly and swingably mounted on the front portion of said base and the bottoms of said pair of treadle pedals; characterized in that said pair of treadle pedals are provided in their interiors each



with an extensible-type flexible rope pulling device formed by the free end thereof extending to the outside in front of the respective treadle pedal, and the rope pulling device being supported by a set of pulley wheels located within said interiors.

5,348,521

Patent Not Issued For This Number

5,348,522

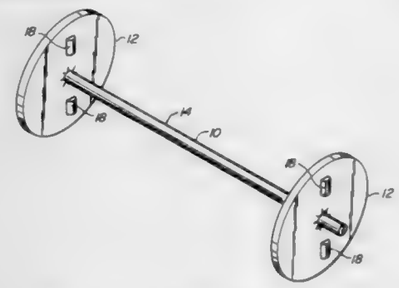
AUTOMATIC MAGNETIC WEIGHTS AND METHOD OF USING SAME

Eric M. Brotman, Box 1061, Nevada City, Calif. 95959

Division of Ser. No. 747,759, Aug. 19, 1991, Pat. No. 5,256,121, which is a continuation-in-part of Ser. No. 471,421, Jan. 29, 1990, Pat. No. 5,040,787, which is a continuation of Ser. No. 306,894, Feb. 6, 1989, abandoned. This application Dec. 4, 1992, Ser. No. 985,886

Int. Cl.[5] A63B *21/062*

U.S. Cl. 482—98 **2 Claims**

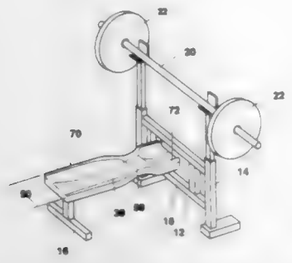


1. A method for incrementally modifying the weight of weight exercise apparatus for use in systematic muscle exercise by raising and lowering weights in graduated amounts, wherein said weight exercise apparatus is provided by a free weight having a horizontal bar and first and second generally disk-shaped weights mounted on said bar so as to present vertical surfaces at opposite extremities of said bar, said vertical surfaces having a portion subject to magnetic attraction, wherein said method comprises the steps of:

providing first and second auxiliary weights of the same incremental weight value, each including a magnet; and

magnetically affixing said first and second auxiliary weights to the vertical surfaces of said first and second generally disk-shaped weights solely with said magnets while said free weight and auxiliary weights are raised and lowered during muscle exercise.

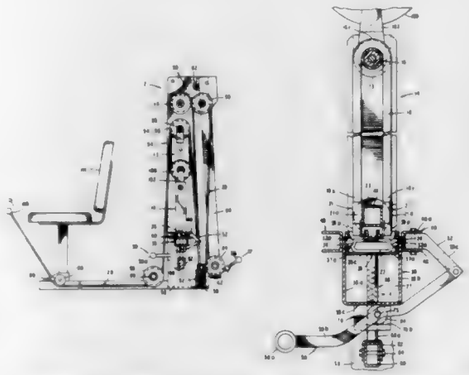
5,348,523
WEIGHT LIFTER'S BENCH PAD
Gregory M. Blount, 12 Crestwood Dr., Cabot, Ark. 72023
Filed Dec. 21, 1992, Ser. No. 994,504
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—104 13 Claims



1. A bench pad for a weight lifter's bench comprising:
a first elongate portion of a first substantially uniform predetermined width;
a second portion disposed longitudinally of said first elongate portion and having a second substantially uniform predetermined width;
a third portion disposed between said first elongate portion and said second portion and connected to each of them to form an integrated bench pad having a relatively smooth continuous top surface and having opposed lateral edges lying along opposed continuous curves and said third portion positioned to be located under and to resiliently support the shoulders and neck of a person lying supine on said bench pad;
a first end of said third portion being connected to said first elongate portion and having a width substantially equal to the width of the adjoining end of said first elongate portion to which it is attached and said first elongate portion extending from the point of connection to said third portion to the lower end of said bench pad;
a second end of said third portion being connected to said second portion and having a width substantially equal to the width of the adjoining end of said second portion;
said third portion having a middle portion of a width substantially reduced from the width of each of its ends;
said third portion having a gradually reducing width from each of its ends toward said middle portion;
said second portion and the adjacent portion of said third portion having formed therein a depression having an arcuate cross section in a direction transverse to the longitudinal centerline of the bench pad and the maximum width of said arcuate cross section being such that the sides of such depression will at least partially engage the sides of the head of a person lying supine on said bench pad whereby said third portion of said bench pad will provide substantial vertical support to the shoulders and neck of a person lying supine on said bench pad with the shoulders substantially centered vertical on said middle portion and the body of such person substantially centered on the longitudinal centerline of the bench pad, the head of such person will lie in said depression and the sides of said depression will provide lateral stability the head of such person.

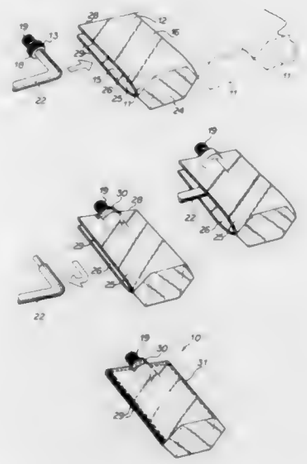
5,348,524
EXERCISE APPARATUS
Eugene J. P. Grant, 1104 San Jose, Costa Mesa, Calif. 92626
Filed Dec. 20, 1993, Ser. No. 169,071
Int. Cl.[5] A63B *21/04*
U.S. Cl. 482—130 20 Claims

1. An exercise apparatus for use by a trainee in the performance of exercises comprising:
(a) body engaging means for engagement by the trainee in the performance of exercises, said body engaging means being movable from a first to a second position;
(b) resistance means for yieldably resisting movement of said body engaging means from said first to said second position, said resistance means comprising a plurality of stretchable cords and a plurality of connector elements connected to said cords;
(c) connector means for selectively interconnecting said



resistance means with said body engaging means, said connector means comprising:
(i) a housing having a chamber for receiving said connector elements and a plurality of rollers movable relative to said chamber between a first, retracted position and a second connector element engagement position; and
(ii) selector means movable relative to said housing for selectively moving said rollers between said first and second positions.

5,348,525
METHOD OF CONSTRUCTING FLEXIBLE CONTAINERS WITH TUBULAR FITMENTS
Jerry E. Buchanan, Alpharetta, Ga., assignor to Jebco Packaging Systems, Inc., Tucker, Ga.
Filed Aug. 9, 1993, Ser. No. 103,569
Int. Cl.[5] B31B *1/84*
U.S. Cl. 493—213 4 Claims



1. A method of constructing a container made from a sheet of flexible material with a fitment of the type having a relatively wide tubular base from which a relatively narrow tubular neck extends, and with the method comprising the steps of
(a) forming the sheet into a generally U-shape having a bottom from which two sides extend that have sealable side edges and a sealable top edge,
(b) placing the fitment upon a mandrel,
(c) positioning the fitment base supported on the mandrel between the top edges of the sides,
(d) sealing the top edges to the fitment base,
(e) removing the mandrel from the fitment base by moving it towards the sheet bottom and then from between the sides, and
(f) sealing the sheet along the side edges and top edges, thereby constructing the container.

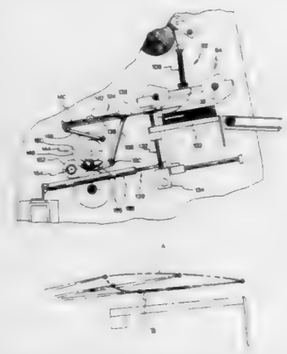
5,348,526
HAND HELD PAPER SHEET FOLDING DEVICE
Ilya Feygin, 853 Hillside Ave., Mountainside, N.J. 07092
Filed Aug. 25, 1993, Ser. No. 111,549
Int. Cl.[5] B65H *45/20*
U.S. Cl. 493—405 4 Claims



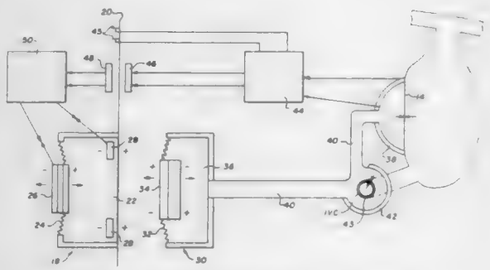
1. A pre-mailing hand held paper sheet folding device for the uniform triple folding of at least one standard size paper sheet, comprising:
at least four rectangular adjacent sections made of flat thin rigid material, aligned along their short sides and attached to each other along their elongated sides by means of flexible joints, whereas three folding sections of said adjacent four sections are being of identical size and the length of their short side being equal to one third of a standard paper sheet and
a fourth holding section being about $\frac{1}{8}$" narrower than the adjacent third folding section, allowing said fourth holding section to be folded upon said adjacent third folding section, providing means to accommodate and align at least one of the standard size paper sheet inserted between said third folding section and said fourth holding section, along short sides of all folding sections and against the flexible joint between said third folding section and said fourth holding section, thereby allowing said third folding section and fourth holding section to be further folded in a zig zag pattern with the first two folding sections, while in the process causing the formation of two creases and the uniform triple folding of said at least one standard size paper sheet.

5,348,527
APPARATUS FOR CUTTING AND STACKING A MULTI-FORM WEB
Glenn Beckwith, Cambridge, Canada, assignor to RDP Marathon Inc., Laval, Canada
Division of Ser. No. 938,617, Sep. 1, 1992, abandoned. This application Aug. 11, 1993, Ser. No. 104,797
Int. Cl.[5] B65H *45/103*
U.S. Cl. 493—413 10 Claims

1. A web handling device for forming a continuous multi-form web into a stack, said web handling device comprising:
a folder assembly for laying successive forms of the web in a superposed relationship to form a stack;
a table beneath said folder assembly for receiving and supporting the stack, said table being movable away from said folder assembly at a speed correlated to a build-up rate of the stack in order to prevent a top of the stack from interfering with said folder assembly;
a temporary stack support assembly capable of moving with relation to said table between extended and retracted positions, in said extended position said temporary stack support assembly extending between said folder assembly and said table, whereby successive forms of the web are laid in a superposed relationship on said temporary stack support assembly, in said retracted position said temporary stack support assembly being in a spaced apart relationship with said table to allow said folder assembly to lay the web in a folded condition on said table, said temporary stack support assembly being movable toward said extended position along a descending path; and
a stack ejector operating in a timed relationship with said folder assembly for ejecting from said table a completed stack of forms when said temporary stack support assembly is in said extended position.



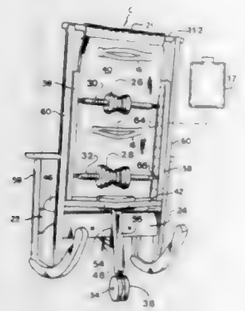
5,348,528
CARDIAC ASSIST DEVICE
Dennis J. Vince, Vancouver, Canada, assignor to Vince Medical Company Limited, Vancouver, Canada
Filed Apr. 26, 1993, Ser. No. 53,059
Int. Cl.[5] A61N *1/362;* A61M *1/12*
U.S. Cl. 600—16 14 Claims



1. Apparatus to assist a patient's heart comprising:
a main pump adapted to be mounted to a patient's chest wall and including a pump chamber containing a fluid, the main pump having means for generating a compression stroke and an expansion stroke;
an atrial pump adapted to be attached to an atrium of the patient's heart, said atrial pump having means for compressing the atrium;
means for coupling the atrial pump to the main pump so that the compressing means compresses the atrium when the generating means generates the compression stroke thereby pumping blood towards the patient's pulmonary artery; and

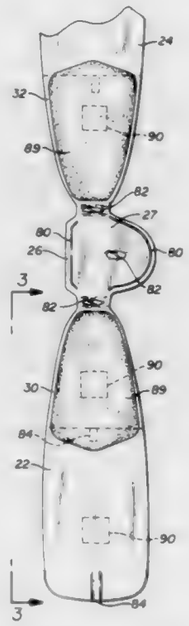
a bypass adapted to surround the patient's inferior vena cava, said bypass having means for restricting the inferior vena cava when the generating means generates the compression stroke thereby pumping blood towards the patient's pulmonary artery.

5,348,529
ROCKING-ACTUATED MASSAGE APPARATUS
Wayne R. Veltri, P.O. Box 538, Stevensville, Mont. 59870
Continuation of Ser. No. 841,835, Feb. 25, 1992, abandoned. This application Nov. 9, 1992, Ser. No. 972,996
Int. Cl.[5] A61H *1/00*
U.S. Cl. 601—99 **11 Claims**



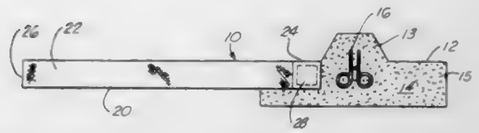
1. A chair comprising a seat and a backrest wherein the backrest is pivotable back and forth relative to a floor surface, the backrest being comprised of: backrest frame means extending above the seat, massage frame means mounted to and carried by said backrest frame means and adapted to reciprocally-slide longitudinally of said backrest frame means, massage roller means mounted by said massage frame means and positioned so as to protrude beyond said backrest frame means into the space occupied by a sitter's back, and cover means on said backrest frame means covering said massage frame means in front of said massage roller means whereby said cover means will be interposed between a sitter's back and said massage roller means; and actuating means mounted to said massage frame means and being so constructed and arranged whereby pivoting movement of said backrest will effect relative movement between said massage frame means and said backrest frame means, thereby causing said massage roller means to move longitudinally of said backrest frame means in a reciprocative manner as said backrest pivots back and forth; said backrest frame means comprising a pair of upright side rails extending above said seat; and said massage frame means comprises a pair of elongated side members and a bottom cross member, said side members being cooperatively constructed and arranged with respect to said side rails whereby said side members are confined to track upward and downward along said side rails, said massage roller means being mounted by said side members between said side rails; and said actuating means comprising an elongated arm member and wheel means, said arm elongated member having first and second ends with said first end being rigidly mounted to said bottom cross member and said wheel means being mounted to said second end, and said elongated arm member extending downwardly from said cross member so as to engage said wheel means with a stationary support surface, said elongated arm member and said wheel means being so constructed and arranged to maintain said wheel means in constant bearing contact with its support surface whereby the pivoting backwardly of said backrest will cause said elongated arm member to move backwardly in unison with said backrest, and will cause said wheel means to roll backwardly on its support surface so as to effect an upward movement of said massage frame means relative to said backrest.

5,348,530
PNEUMATIC ANKLE BRACE WITH BLADDER AND PUMP ARRANGEMENT
Tracy E. Grim, Broken Arrow, Okla.; William K. Arnold, Longmeadow, Mass., and Joseph M. Iglesias, Agoura, Calif., assignors to Royce Medical Company, Camarillo, Calif.
Filed Jul. 29, 1993, Ser. No. 99,190
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—13 **18 Claims**



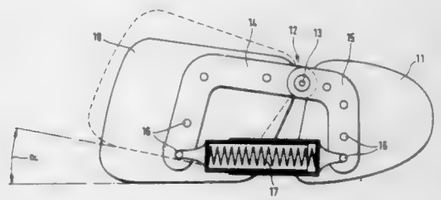
1. A pneumatic ankle brace, comprising:
first and second substantially rigid side supports configured for fitting about the lower leg of a user and for supporting both sides of the user's ankle;
securing means for securing said side supports relative to the user to firmly encase the ankle; and
a bladder-pump assembly including a first bladder, a second bladder, a resilient foot pump, first channel means for providing fluid communication back-and-forth between said first bladder and said foot pump, and second channel means for providing fluid communication back-and-forth between said second bladder and said foot pump, said first bladder being positioned to provide a cushion between one side of the ankle and said first side support, said second bladder being positioned to provide a cushion between the other side of the ankle and said second side support, said bladders at least in part supporting the user's foot and ankle against inversion and eversion, said bladder-pump assembly having a preinflated constant fluid volume during operation of said ankle brace, said foot pump being positioned under the foot and thereby subject to foot pressure during the user's foot impact activity;
wherein said foot pump when subjected to repeated foot pressure and release thereof causes a pulsing action of fluid in said bladder-pump assembly back-and-forth between said first bladder and said pump through said first channel means and back-and-forth between said second bladder and said pump through said second channel means, the fluid pulsing action providing a massaging compression effect to the foot and the ankle to reduce swelling thereof.

5,348,531
WRAP-ON FINGER HOOKS
Nancy M. Brown, Milwaukee; Debra A. Reina, Menomonee Falls, and Carl E. Krippendorf, Milwaukee, all of Wis., assignors to Smith & Nephew Rolyan, Inc., Menomonee Falls, Wis.
Filed Dec. 11, 1992, Ser. No. 989,152
Int. Cl.[5] A61F *5/04*
U.S. Cl. 602—22 **5 Claims**



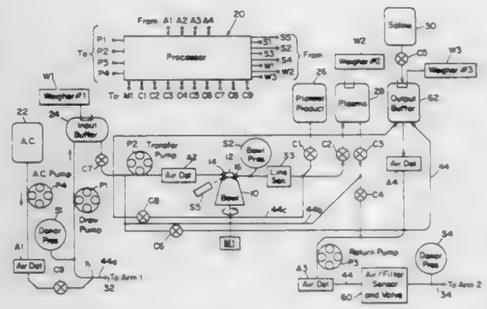
5. A wrap-on finger hook for use with hand splinting devices used in finger rehabilitation programs, comprising:
a) a finger hook portion formed of an ultra thin strapping material with a high tensile strength having the loop gender of a hook and loop fastening system, said finger hook portion being generally in the shape of a quadrangle centrally positioned above a larger rectangle having an exterior and an interior side;
b) a non-slip surface applied to the interior side of the finger hook portion for providing a counter force to the shear force created by a tensioning device, said non-slip surface formed from a pure PVC compound with a non-migratory plasticizer;
c) a hook centrally secured to the exterior side of the finger hook portion, said hook for use in selectively attaching tensioning devices to an end portion of a finger of a human hand;
d) a fastening strap attached to the finger hook portion for releasably fastening the finger hook portion around the end portion of a finger of a human hand, said fastening strap being formed of a material having the hook gender of a hook and loop fastening system;
wherein the wrap-on finger hook releasably attaches to the end portion of a finger of a human hand for use in a finger rehabilitation program.

5,348,532
ORTHOPEDIC REDRESSMENT SPLINT
Jan Prahl, Rullstorf, Fed. Rep. of Germany, assignor to IPOS GmbH & Co. KG, Lueneburg, Fed. Rep. of Germany
Filed Feb. 6, 1992, Ser. No. 832,130
Claims priority, application European Pat. Off., Sep. 24, 1991, 91116200.6
Int. Cl.[5] A61F *5/00;* **A43B** *7/24*
U.S. Cl. 602—24 **17 Claims**



1. Orthopedic redressment splint for correcting an adduction of a forefoot and metatarsus comprising:
an anterior half sole enclosing at least laterally a deformed foot portion;
a posterior half sole for enclosing at least part of a remaining foot portion;
pivot means flexibly and swivelably interconnected through a vertical to a half sole plane defined by means of a pivot pin disposed on a lateral edge of the two half soles;
a spring whose elastic force acts in a lateral direction upon the half soles for spring-loading the half soles relative to each other on a medial side, wherein each of the two half soles has at least one prepared pivotal point adapted for the pressure spring.

5,348,533
PHERESIS APPARATUS
Jean Papillon, St. Germaine-en-laye, France, and Frederick J. York, Arlington, Mass., assignors to Haemoentics Corporation, Braintree, Mass.
Filed Aug. 27, 1992, Ser. No. 936,569
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—4 **30 Claims**



1. Apparatus comprising:
a) a draw needle for drawing whole blood from a donor;
b) an input buffer in fluid communication with said draw needle via a first conduit;
c) a second conduit for fluidly coupling anticoagulant fluid to said first conduit for mixing with said drawn blood;
d) a separator for separating drawn blood into at least two fractional components, said separator having an input port and an output port;
e) a third conduit for fluidly coupling the input buffer to the input port;
f) a component container;
g) a fourth conduit for fluidly coupling the output port to said container;
h) an output buffer;
i) a fifth conduit in fluid communication with said output buffer and said fourth conduit;
j) a sixth conduit in fluid communication between said output buffer and said third conduit;
k) a return needle in fluid communication with one or more of said output buffer or said component container for transferring fluid therefrom to said donor; and
l) a seventh conduit for fluidly coupling said output buffer to a source of physiological solution.

5,348,534
TAMPON APPLICATOR
Gina M. Tomaszewski, Monson, and Garrett Cavanaugh, Three Rivers, both of Mass., assignors to Tambrands Inc., White Plains, N.Y.
Filed Nov. 6, 1992, Ser. No. 973,156
Int. Cl.[5] A61F *13/20*
U.S. Cl. 604—14 **17 Claims**

1. A tampon applicator for insertion of a tampon into a body cavity, comprising
a tampon holder tube having a longitudinal axis and an expulsion end dimensioned for insertion into the body cavity, said tampon holder tube including
interior and exterior surfaces.
a plurality of segments integral with and extending from

the expulsion end, each segment having a width and thickness, with slits separating the segments, and

a circumferentially-extending weakening formation on the exterior of the holder tube, the formation defining a circumferential hinge at which said segments bend open during expulsion;

a plunger, telescopically and slidably mounted in said holder and adapted to expel said tampon from said holder when pushed manually into said holder;

said tampon holder tube further including



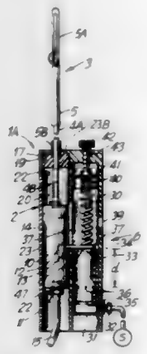
a plurality of circumferentially-extending score lines, defining a zone of indentation extending along said longitudinal axis, the score lines being disposed on the inside surface of the tampon holder tube and the zone axially overlapping the weakening formation on the exterior surface of the holder tube, thereby weakening the holder tube at the circumferential hinge and reducing the force required to push the plunger into the holder to expel the tampon.

5,348,535

POWER-ASSISTED LIPOSUCTION INSTRUMENT AND CANNULA ASSEMBLY THEREFOR

Robert L. Cucin, New York, N.Y., assignor to Rocin Laboratories, Inc., New York, N.Y.

Filed Dec. 14, 1990, Ser. No. 627,240
Int. Cl.[5] A61B *17/00*
U.S. Cl. 604—35 **27 Claims**



1. A powered liposuction device comprising a hand-holdable housing and a cannula assembly, the housing having provided with a longitudinal extent, first and second end openings, a cannula cavity extending along a substantial portion of said longitudinal extent, and a reciprocation means reciprocatable within said hand-holdable housing, said cannula assembly being operably connectable to said hand-holdable housing and the cannula assembly having:

a hollow inner cannula having a distal end and a proximal end and at least one inner suction aperture about said inner cannula distal end, said inner cannula proximal end further including an outlet port and a continuous passageway which communicates said inner suction aperture with said outlet port, said inner cannula having an inner cannula base portion extending from said inner cannula proximal end and being releasably supportable and retainable within said cannula cavity;

a hollow outer cannula having a distal end and a proximal end and at least one outer suction aperture about said outer cannula distal end, said outer cannula having an outer cannula base extending from said outer cannula proximal end and being releasably connectable to said hand-holdable housing, said hollow inner cannula being disposed within at least a portion of said hollow outer cannula so as to enable sliding movement between said hollow outer and inner cannulas while permitting aspiration through said outer and inner suction apertures, along said continuous passageway and out of said outlet port;

means operably associated with said hollow inner and outer cannulas, for maintaining said hollow inner and outer cannulas in a predetermined axial alignment so that said inner suction aperture is in registration with at least a portion of said outer elongated suction aperture as said hollow inner and outer cannulas are caused to undergo said sliding movement; and

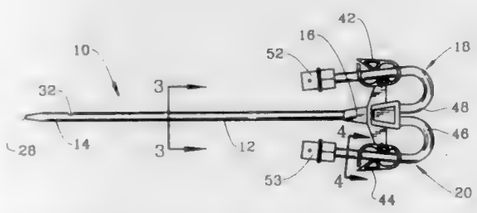
said hollow inner cannula being operably associable with said reciprocation means, and said hollow outer cannula being supportable in an essentially stationary position with respect to said hand-holdable housing so that said reciprocation means can effectuate relative sliding movement between said hollow inner and outer cannulas when said reciprocation means reciprocates, and that the location of said aspiration is periodically displaceable a distance equal to a substantial portion of the longitudinal extent of said hand-holdable housing.

5,348,536

COEXTRUDED CATHETER AND METHOD OF FORMING

Pauline R. Young; Timothy A. Abrahamson, both of Seattle, and Richard K. Sommercorn, Renton, all of Wash., assignors to Quinton Instrument Company, Seattle, Wash.

Filed Aug. 2, 1993, Ser. No. 101,517
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—43 **40 Claims**



1. A multiple lumen catheter comprising:

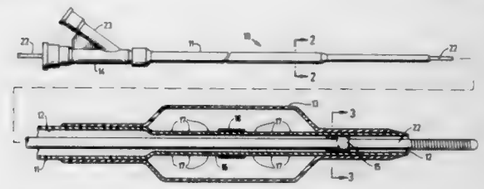
an elongated cylindrical body portion having distal and proximal end portions with one or more internal septums therein to form a plurality of lumens therebetween, and said body portion being formed of a plurality of materials having different durometers to form at least first, second and third layers thereon wherein said first layer has a lower durometer than said third layer.

5,348,537

CATHETER WITH INTRALUMINAL SEALING ELEMENT

Steven P. Wiesner, and Ketan P. Muni, both of San Jose, Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Jul. 15, 1992, Ser. No. 913,859
Int. Cl.[5] A61M *29/02*
U.S. Cl. 604—96 **11 Claims**



1. An intravascular catheter assembly comprising:

a) an elongated catheter shaft having an inner lumen extending therein and a distal end for vascular insertion

b) a movable guiding member disposed within the inner lumen in the catheter shaft; and

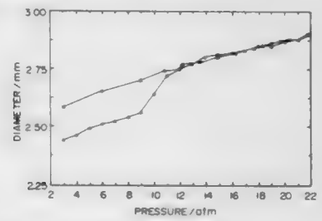
c) a sealing element disposed within a distal portion of the catheter shaft between the inner lumen and the movable guiding member which has a bearing surface configured to slidably receive the movable member, the portion of the sealing element forming the bearing surface having incorporated therein a lubricous material which swells upon contact with an aqueous based liquid so as to cause the bearing surface to sealingly engage the movable guiding member and which facilitates relative movement between the surface of the movable member and the bearing surface when there is sealing engagement therebetween.

5,348,538

SHRINKING BALLOON CATHETER HAVING NONLINEAR OR HYBRID COMPLIANCE CURVE

Lixiao Wang, St. Paul, and The Thomas T. Tran, Coon Rapids, both of Minn., assignors to Scimed Life Systems, Inc., Maple Grove, Minn.

Filed Sep. 29, 1992, Ser. No. 953,677
Int. Cl.[5] A61M *29/02*
U.S. Cl. 604—96 **21 Claims**



1. A catheter comprising:

an elongated catheter tube having a proximal and a distal end,

a single layered dilating element secured to the distal end of said elongated catheter tube, said single layered dilating element having a hybrid compliance curve that includes compliant and non compliant portions,

said elongated catheter tube having an inflation lumen extending from its proximal to its distal end, the distal end of said inflation lumen communicating with the interior of said single layered dilating element,

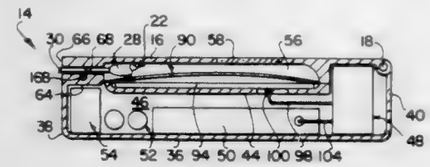
inflation means in communication with the proximal end of said inflation lumen for metering inflation fluid into the inflation lumen and the interior of said single layered dilating element to cause the dilating element to expand in the diametric direction in conformance with its hybrid compliance curve.

5,348,539

INFUSION PUMP FOR USE WITH PREPACKAGED IV BAGS

Glenn Herskowitz, 425 Divisadero, Suite 200, San Francisco, Calif. 94117

Filed Jun. 29, 1993, Ser. No. 84,527
Int. Cl.[5] A61M *5/142*
U.S. Cl. 604—141 **17 Claims**



1. An infusion pump for use with a flexible bag containing a charge of prepackaged intravenous solution, said bag having a pair of sidewalls and a dispensing port adapted for discharging the solution along a flow path through intravenous tubing for delivery to a patient, the pump comprising the combination of a housing; a compartment within the housing for receiving said bag; an inflatable chamber having a diaphragm which at least partially envelopes the chamber; pressurizing means operable in a delivery mode for directing fluid under pressure into said inflatable chamber for causing said diaphragm to expand, said pressurizing means further being operable in a recovery mode for directing fluid from the inflatable chamber for enabling said diaphragm to contract; and means for positioning the flexible bag at a position within the compartment at which the bag sidewalls are caused to be compressed together responsive to said expansion of the diaphragm for pressurizing said charge of intravenous solution with the pressurized intravenous solution being discharged through the dispensing port.

5,348,540

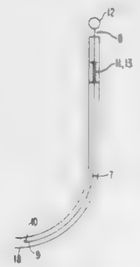
Patent Not Issued For This Number

5,348,541

SUPRAPUBIC CATHETER PLACEMENT APPARATUS (LYELL SOUND)

Mark S. Lyell, 1304 Roswell, Pascagoula, Miss. 39581

Filed May 5, 1993, Ser. No. 56,532
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—164 **7 Claims**



1. A surgical apparatus for placement of a suprapubic catheter within the bladder of a patient by a surgical procedure which involves inserting an end of the surgical apparatus through the urethra of the patient into the bladder, making an incision through the abdomen and bladder, pushing the end of the apparatus out through the incision, releasably coupling the end of the apparatus to a catheter, pulling the coupled apparatus and catheter into the bladder, releasing the catheter from the apparatus in the bladder and withdrawing the apparatus out of the patient, said apparatus, comprising:

an elongate element defining a hollow tube having a grip-

ping portion for gripping and manipulating the apparatus and a curved portion for insertion through the urethra into the bladder of the patient, said gripping portion terminating in a first end and said insertion portion terminating in a second end,

a flexible wire disposed within said elongate element, said flexible wire having first and second ends corresponding to said first and said second ends of said elongate element and having a length substantially extending from said first end to said second end of said elongate element, said second end of said flexible wire including a coupling portion which can be inserted through an opening in a catheter tip to releasably couple said flexible wire to the catheter tip, and

a means for reciprocating said flexible wire within said elongate element, said reciprocating means including a handle operatively connected to said first end of said flexible wire, so that when said handle is in a first position, said second end of said flexible wire projects from said second end of said elongate element for coupling with the catheter tip, and when said handle is in a second position, said second end of said flexible wire and the catheter tip are retracted within said second end of said elongate element.

5,348,542

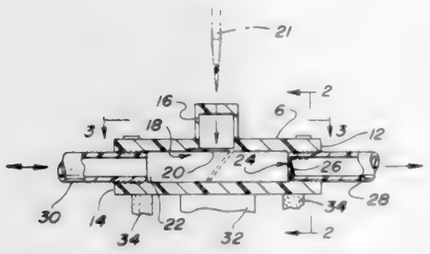
HOLDER FOR PERCUTANEOUSLY INTRODUCED TUBES

David W. Ellis, Toms River, N.J., assignor to Joseph P. Padula, Spring Lake Heights, N.J., a part interest

Continuation of Ser. No. 58,112, May 5, 1993, abandoned. This application Feb. 28, 1994, Ser. No. 203,839

Int. Cl.[5] A61M *5/32, 1/00*

U.S. Cl. 604—173 **6 Claims**



1. A holder for a percutaneously introduced tube into the body of a patient, said holder comprising:

(a) connecting means for connecting said tube to said holder;

(b) entry means for infusing at least one of a medicant and irrigating fluid into said body via said holder;

(c) exit means for draining fluids from said body via said holder;

(d) a first, selectively operable valve for blocking fluid communication from said entry means to said tube when in a first orientation and for providing fluid communication from said entry means to said tube when in a second orientation, said first valve being normally in said first orientation and being moved to said second orientation in response to at least one of said medicant and irrigating fluid being injected into said entry means, whereupon said at least one of said fluids is enabled to enter into said body said first valve when in said second orientation blocking fluid communication from said tube to said exit means;

(e) a second, selectively operable valve for blocking fluid communication from said tube to said exit means when in a first blocking orientation and for providing fluid communication from said tube to said exit means when in a second drainage orientation, said second valve being normally in said first blocking orientation and movable to said second drainage orientation in response to the application of suction to said exit means, whereupon fluid from the interior of the body of said patient is enabled to drain therefrom via said exit means; and

(f) means for securely anchoring said holder to said body.

5,348,543

HYPODERMIC NEEDLE GUARD SYSTEM

John Talley, 1550 Valencia, Newport Beach, Calif. 92660

Filed Apr. 28, 1993, Ser. No. 53,799

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—192 **6 Claims**



1. A holder for a hypodermic syringe comprising: a resilient tubular sleeve having an open accessible end with an internal cross section that receives the needle of a hypodermic syringe therewithin and an opposite end and a hollow interior extending between said ends, a resilient suction cup located at said opposite end of said sleeve and directed away from said open end thereof, so as to be engageable by suction with a flat surface to support said tube in an upright disposition directed outwardly away from said flat surface, and wherein said suction cup includes structure that extends transversely across said opposite end of said tubular sleeve so as to close said opposite end and isolate said hollow interior of said sleeve from said flat surface beneath said suction cup, thereby preventing the flow of air therebetween, and an elastic loop secured relative to said sleeve and elastically stretchable for releasable engagement with a hypodermic syringe inserted into said sleeve.

5,348,544

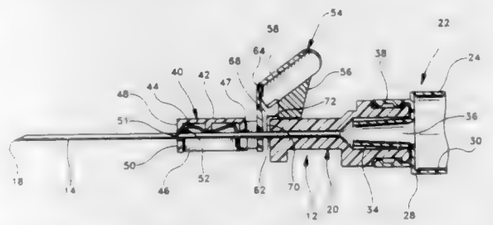
SINGLE-HANDEDLY ACTUATABLE SAFETY SHIELD FOR NEEDLES

Niall Sweeney, Rutherford, N.J.; Peter W. Bressler, Philadelphia, Pa., and Richard J. Caizza, Barry Lakes, N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Nov. 24, 1993, Ser. No. 157,780

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—192 **27 Claims**



1. A shieldable needle assembly comprising:

a needle cannula having a proximal end and a distal tip;

a guard having a proximal end, an opposed distal end and a side wall extending therebetween, said guard being slidably movable along said needle cannula from a first position substantially adjacent said proximal end of said needle cannula to a second position where said distal tip of said needle cannula is intermediate said opposed proximal and distal ends of said guard;

a hinged am having proximal and distal segments articulated to one another for movement between a first position where said segments are substantially collapsed onto one another and a second position where said segments are extended from one another, said proximal segment of said hinged arm being articulated to a portion of said needle assembly adjacent said proximal end of said needle cannula, said distal segment of said hinged arm being articulated to said guard, said proximal and distal segments of said hinged am having respective lengths for permitting said guard to move from said first position to said second position on said needle cannula, and for preventing said guard from moving distally beyond said second position; and

spring means connected to said hinged arm for urging said guard along said needle cannula toward said second position.

5,348,545

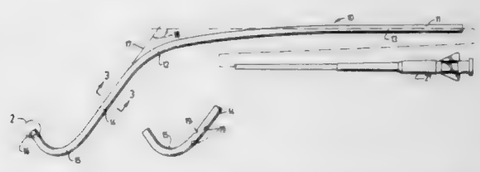
GUIDING CATHETER FOR THE RIGHT CORONARY ARTERY

Jacob Shani, Brooklyn, N.Y.; Gurpal Paintal, and Bruce Wand, both of San Jose, Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Continuation of Ser. No. 571,079, Aug. 21, 1990, abandoned. This application Aug. 6, 1991, Ser. No. 742,216

Int. Cl.[5] A61M *25/00*

U.S. Cl. 604—281 **10 Claims**



1. A torqueable guiding catheter adapted to guide a dilatation catheter in a patient's right coronary artery which has an elongated catheter body with an inner lumen having a lubricous coating thereon extending along essentially the entire length of the guiding catheter, the catheter body comprising:

a) a main, essentially straight tubular section having a proximal end which provides access to the inner lumen therein;

b) a second tubular section which is distal and adjacent to the main section, which is much shorter than the main tubular section and which is preformed so as to curve away from an extension of the longitudinal axis of the main tubular section;

c) a third relatively straight tubular section which is distal and adjacent to the second tubular section and which forms an included angle with the extension of the longitudial axis of the main tubular section from 100° to 160° so that the main tubular section and the third tubular section form an obtuse angle;

d) a fourth tubular section which is distal and adjacent to the third tubular section, which is much shorter than the second tubular section and which is preformed so as to have a smaller radius of curvature than the second tubular section and to curve toward and to have a distal end spaced 3 to 15 cm from the extension of the longitudinal axis of the main tubular section; and

e) at least three perfusion ports in the fourth tubular section having diameter of about 0.03 to about 0.04 inch, with the most distal perfusion port being spaced between 2 cm to 6 cm from the distal end of the fourth tubular section and the individual perfusion ports being spaced 0.1 to about 1 cm from each other.

5,348,546

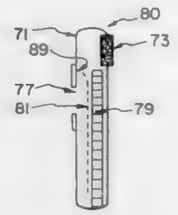
OSTOMY BAG WITH LIQUID-GAS SEPARATION DEVICE

Walter L. Norton, 208 State St., Newburgh, Ind. 47630

Filed May 21, 1993, Ser. No. 65,341

Int. Cl.[5] A61F *5/44*

U.S. Cl. 604—333 **13 Claims**



1. An ostomy bag comprising:

a) a flexible film pouch forming a lumen therein, said flexible film pouch including a stomal opening through one wall thereof and a filter for venting gases entering said flexible film pouch through said stomal opening, said filter arranged in a first plane; and

b) a liquid-gas separator arranged within said lumen in a second plane generally parallel to said first plane, at least a portion thereof laterally positioned between said filter and said stomal opening, said filter being spaced laterally from said liquid-gas separator in a direction parallel to said first plane so that said filter and said liquid-gas separator lack coincidence in a direction generally perpendicular to said first plane, said liquid-gas separator made of an absorbent material for absorbing liquids entering said lumen through said stomal opening and separating said liquids from said gas wherein said lack of coincidence facilitates simultaneous venting of gases and storage of high volumes of liquids and said portion defeats capillary action of fluid toward said filter.

5,348,547

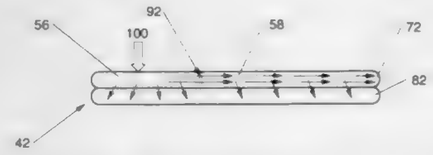
ABSORBENT MEMBERS HAVING IMPROVED FLUID DISTRIBUTION VIA LOW DENSITY AND BASIS WEIGHT ACQUISITION ZONES

Michael Payne, Forest Park; Robert W. Perkins, Hamilton, and Danny R. Moore, West Chester, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 5, 1993, Ser. No. 42,950

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—378 **20 Claims**



1. A multi-layer absorbent member having a back section and a front section contiguous with said back section, said front section having an end region and a deposition region contiguous with said end region and said back section so that said deposition region is positioned between said end region and said back section, the absorbent member comprising:

(a) at least one storage layer comprising a mixture of hydrophilic fibrous material and discrete particles of absorbent gelling material, said storage layer having a first top surface area; and

(b) at least one acquisition layer positioend in fluid communication with said storage layer, said acquisition layer havinq a front edqe at least partially overlying said front section and a back edqe at least pattially overlying said back section, said acquisition layer further having two opposed side edqes extendinq between said front edge and said back edge, said acquisition layer comprising a homogeneous composition of hydrophilic fibrous material, said homogeneous composition comprising stiffened, twisted, and curled cellulose fibers, said acquisition layer comprising an acquisition zone for acquiring fluids having a first density and a first average basis weight, said acquisition zone being positioned at least pattially within said deposition region, said acquisition layer further comprising a densified distribution zone for distributing fluids in liquid communication with said acquisition zone at a density interface, said density interface extending generally transversely across said acquisition layer from one side edge to the opposite side edge, said distribution zone having a second average density which is at least about 2.0 times said first average density and a second average basis weight which is at least about 2.0 times said first average basis weight, and said acquisition layer having a second top surface area which is between about 0.7 and about 1.0 times said first top surface area;

whereby fluid introuduced into siad acquisiton layer via said acquisition zone is drawn across said density interface and into said distribution zone via capillary action and subsequently distributed to said storage layer.

5,348,548

TWO-COMPARTMENT STORAGE AND TRANSFER FLASK

Gabriel Meyer, Vesenaz, and Joseph Meyer, Borex, both of Switzerland, assignors to Becton Dickinson France S.A., Le Pont de Claix, France

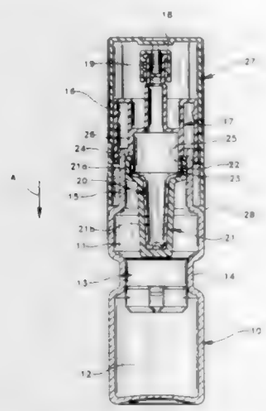
PCT No. PCT/EP90/02332, § 371 Date Aug. 28, 1991, § 102(e) Date Aug. 28, 1991, PCT Pub. No. WO91/10417, PCT Pub. Date Jul. 25, 1991

PCT Filed Dec. 30, 1990, Ser. No. 752,640

Claims priority, application Switzerland, Jan. 8, 1990, 45/90-7

Int. Cl.[5] A61J *1/00*

U.S. Cl. 604—403 **8 Claims**



1. A storage and transfer bottle for storing two components of a medicinal substance, at least one of which is in liquid state, and transferring this substance, directly or after mixture, into a medical device comprising:

a generally cylindrical bottle member, said bottle member being closed at one end, having a narrow open neck at an opposite end, and a sealing device engaged in said neck;

said bottle member having a centrally located narrow region separating the bottle member into upper and lower compartments and a moveable intermediate seal that seals the narrow region during a storage phase, thereby, isolating the two components from each other, one in each compartment;

said sealing device having an elastomeric sealing portion engaged in the narrow neck, said sealing device being displaceable between a first storage position during a storage phase in which said elastomeric sealing portion tightly seals the narrow neck, and a second utility position during a utility phase for allowing said medicinal substance to be transferred;

said sealing device having a rigid capsule partially engaged inside the narrow neck and attached to said sealing portion;

wherein, said elastomeric sealing portion has an outside diameter essentially equal to the inside diameter of the narrow neck to ensure sealing of the bottle at neck level during the storage phase, and an extension of said elastomeric sealing portion that extends through a compartment of the bottle that is defined by said sealing portion and said intermediate seal;

said sealing device has a rigid extension that is coextensive with the extension of said elastomeric sealing portion, such that an end of the rigid extension rests on said intermediate seal forming a rigid pushing member for moving the intermediate seal out of engagement with said narrow region during the utility phase.

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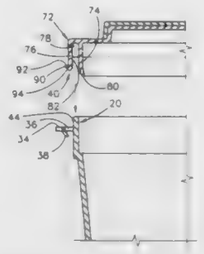
FLUID TIGHT MEDICAL APPARATUS DISPOSAL RECEPTACLE

Daniel R. Brown, 16593 Nina Cir., Omaha, Nebr. 68130, and Rodney Laible, R.R. 1, Box 37, Bennington, Nebr. 68007

Filed Mar. 29, 1993, Ser. No. 38,827

Int. Cl.[5] A61B *19/00;* **B65D** *51/18*

U.S. Cl. 604—403 **16 Claims**



1. A medical apparatus disposal container, comprising,

an open topped container having a bottom wall and peripheral side wall interconnected to define a receptacle for fluids, said peripheral sidewall having an upper portion, having interior and exterior surfaces

a lid for said container, said lid having a periphery and comprising,

a top wall having an opening through which medical apparatus may be disposed into said container;

means for closing said opening upon filling said container with medical apparatus;

sealing means for sealing said lid onto the upper portion of said sidewall;

coacting fasteners on said lid and container sidewall, said fasteners being operative to secure said lid in sealed relation on the upper portion of said sidewall in a fully installed position,

said sealing means comprising a pair of generally parallel spaced apart interior and exterior flanges depending from said lid to wall and defining an open bottom channel around the periphery of said lid, said channel being of a size and shape to receive the upper portion of said container sidewall in fluid tight sealed relation therein with said interior flange extending downwardly into said container,

said interior flange having a vertical depth greater than that of said exterior flange whereby insertion of said interior flange into said upper portion of said container sidewall is greatly facilitated.

5,348,550

DRUG VESSEL

Koji Ikeda, Osaka; Hitoshi Futagawa, Kusatsu, and Toshihiro Kikuchi, Suita, all of Japan, assignors to Nissho Corporation, Osaka, Japan

Filed Nov. 13, 1992, Ser. No. 976,430

Claims priority, application Japan, Nov. 15, 1991, 3-328100

Int. Cl.[5] B65D *39/00;* **A61M** *5/32*

U.S. Cl. 604—411 **10 Claims**



1. An intravenous drip infusion set comprising:

a drug vessel containing a drug and being composed of a vessel body having a mouth at one end thereof, a stopper of an elastomeric material fitted in said mouth, said stopper comprising a stopper body having a through-hole passing therethrough, and a spherical closing body press-fitted in said through-hole, said vessel body being provided in a lower portion of its outer wall with a pair of recesses and including a hanger attached to said pair of recesses, said stopper having a bottom surface with a semispherical recess coaxial with said through-hole; and

a fluid administration set separated from said drug vessel but adapted to be combined therewith just before use, said fluid administration set comprising a drip chamber having, at one end thereof, a flexible tube connected thereto and, at the ether end, a tubular connecting member adapted to be forced into said through-hole of said stopper to push the closing body into the vessel body just before use.

5,348,551

METHOD FOR CORRECTING REFRACTIVE DISORDERS

Kenneth G. Spears, Skokie, and Gerald Horn, Northfield, both of Ill., assignors to Kerus Medical Systems, San Bruno, Calif.

Continuation-in-part of Ser. No. 512,023, Apr. 16, 1990, Pat. No. 5,263,951, which is a continuation-in-part of Ser. No. 342,202, Apr. 21, 1989, abandoned. This application Mar. 23, 1993, Ser. No. 35,468

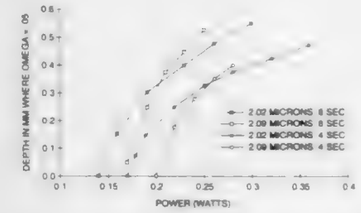
Int. Cl.[5] A61B *5/06*

U.S. Cl. 606—5 **23 Claims**

1. A method for changing the shape of a cornea having a central optical axis, comprising the steps of:

positioning a laser to irradiate said cornea; and

irradiating said cornea with a laser beam from said laser, said laser beam having a power density profile in a treatment pattern, said laser beam having a wavelength such that the absorption coefficient of said wavelength in water ranges from 5 cm^{-1} to 114 cm^{-1}, with an energy sufficient to and for a time sufficient to necrotize stromal keratocytes



in a selected treatment volume without substantially shrinking collagen in said cornea, said treatment depth having a posterior boundary of at least 50% of the stromal depth.

5,348,552

LASER SURGICAL UNIT

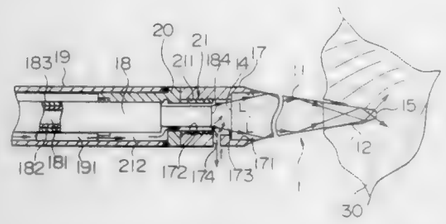
Sadahiro Nakajima; Naoshi Endoh, both of Tokyo; Kenzo Kataoka, and Masaki Odaka, both of Kyoto, all of Japan, assignors to Hoya Corporation, Tokyo and Kabushiki Kaisha Morita Seisakusho, Kyoto, both of Japan

Filed Aug. 26, 1992, Ser. No. 936,047

Claims priority, application Japan, Aug. 30, 1991, 3-219484

Int. Cl.[5] A61B *17/36*

U.S. Cl. 606—13 **7 Claims**



1. A laser surgical unit for use in a surgical operation to perform vaporization and incision of a living tissue, said laser surgical unit comprising:

a laser generator for generating a laser beam of a predetermined wavelength;

an optical guide which has a first end optically coupled to said laser generator and a second end opposite said first end for guiding said laser beam from said first end to said second end; and

a contact laser probe which is connected to said second end of the optical guide to emit said laser beam on living tissue and which includes a specific portion comprising a hydroxyl group in an amount between 0.5 and 10 ppm.

5,348,553

METHOD FOR PROMOTING BLOOD VESSEL HEALING

Douglass G. Whitney, 11200 Bowen Rd., Roswell, Ga. 30075

Filed Dec. 18, 1991, Ser. No. 809,334

Int. Cl.[5] A61B *17/36*

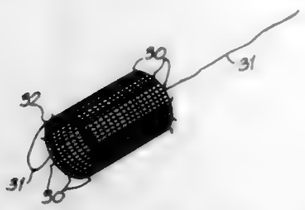
U.S. Cl. 606—41 **9 Claims**

1. A method of repairing a blood vessel having a narrowed portion therein comprising the steps of:

(a) expanding the narrowed portion of the blood vessel so that the diameter of the blood vessel after expansion is enlarged;

(b) maintaining an electronegative potential on the interior

surface of the expanded narrowed portion of the blood vessel to at least as great as any electropositive potential



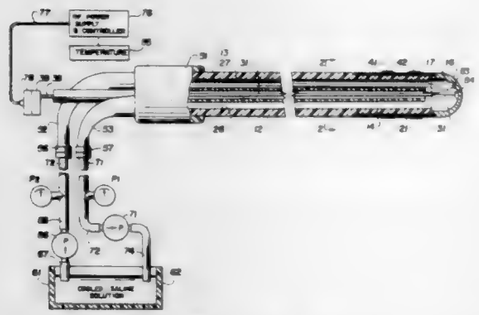
generated by the blood vessel as a result of an injury to the blood vessel caused by the expansion thereof.

5,348,554

CATHETER FOR RF ABLATION WITH COOLED ELECTRODE

Mir A. Imran, Palo Alto, and Mark L. Pomeranz, Los Gatos, both of Calif., assignors to Cardiac Pathways Corporation, Sunnyvale, Calif.

Filed Dec. 1, 1992, Ser. No. 983,732
Int. Cl.[5] A61B *17/39;* A61N *1/05*
U.S. Cl. 606—41 11 Claims



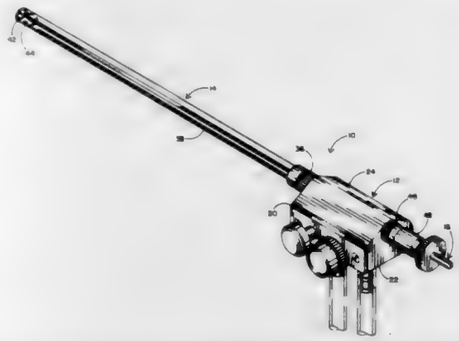
1. In a catheter for radio frequency ablation with a cooled electrode for use in tissue having a surface, an elongate member having proximal and distal extremities, a metal conducting electrode secured to the distal extremity of the elongate member and having a chamber therein and adapted to make contact with the tissue, conductor means extending through the elongate member from the proximal to the distal extremity for supplying radio frequency energy to the electrode, said elongate member having a lumen in the distal extremity in communication with the chamber, cooling means disposed in said chamber and in contact with the electrode for dissipating heat created in the electrode by the application of radio frequency energy thereto, means for measuring the temperature of the tissue in contact with the electrode and means responsive to the temperature measured to control the amount of radio frequency energy supplied to the electrode so that temperature at the surface of the tissue does not exceed 50° C. and the temperature within the tissue does not exceed 90° C. whereby deeper and wider lesions can be formed in the tissue than would be formed without the use of the cooling means.

5,348,555

ENDOSCOPIC SUCTION, IRRIGATION AND CAUTERY INSTRUMENT

William J. Zinnanti, 2508 Vista Wood Cir. No. 36, Thousands Oaks, Calif. 91362

Filed Apr. 26, 1993, Ser. No. 51,546
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—49 23 Claims



1. An endoscopic suction, irrigation and cautery instrument comprising:

a transparent valve body having two ends, a main passage in said valve body extending through said body from end to end, attachment means at each end of said passage;

a transparent tubular cannula detachably attached to said valve body at either of said attachment means on said valve body so that it may be attached at either end thereof, both said valve body and said cannula being made substantially transparent synthetic polymer composition material, said body having a suction connection thereon and having an irrigation connection thereon, passages in said body respectively connecting said suction passage to said main passage and said irrigation passage to said main passage; and

a suction valve in said suction passage for controlling connection of said suction connection to said main passage, an irrigation valve in said irrigation passage for controlling connection of said irrigation connection to said main passage so that when suctioning, suction material can be observed through said cannula and through said valve body, said valve body being sized and said suction valve and irrigation valves being positioned so that said valve body can be held in the hand to position said cannula and the fingers of the same size can actuate said valve.

5,348,556

VOLATILE CARPET SANITIZING SHAMPOO CONTAINING HYDROGEN PEROXIDE

Charles R. Minns, Williamsburg; Timothy W. Blount, Poquoson, and Thomas L. Varner, Jr., Williamsburg, all of Va., assignors to BASF Corporation, Parsippany, N.J.

Continuation of Ser. No. 887,446, May 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 650,353, Feb. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 462,919, Jan. 8, 1990, Pat. No. 5,252,243, which is a continuation of Ser. No. 206,531, Jun. 14, 1988, abandoned. This application Oct. 27, 1993, Ser. No. 145,053
Int. Cl.[5] A61L *2/16;* C11D *7/18, 7/50;* D06L *1/12*
U.S. Cl. 8—137 6 Claims

1. The use of an aqueous solution composition for cleaning and sanitizing synthetic carpets and upholstery comprising:

(a) combining just prior to use two separate parts to make said aqueous solution composition wherein said parts consist essentially of:

a first part comprising from about 5 to about 29 percent peroxide, and the balance water; and

a second part comprising up to about 10% of volatile ammoniated substance, up to about 60% of a lower aliphatic monohydric alcohol selected from the group consisting of methyl alcohol; ethyl alcohol; n-propyl alcohol; isopropyl alcohol; sec-butyl alcohol; tert-butyl alcohol: and mixtures thereof, and the balance water, said solution being substantially completely volatile;

wherein said combining is such that said aqueous solution composition contains from about 3 to about 15 percent peroxide, from about 2 to 30% of a lower aliphatic monohydric alcohol and from about 0.1 to 5% volatile ammoniated substance;

(b) contacting said synthetic carpet or upholstery with said aqueous solution composition; and

(c) allowing the carpet or upholstery so contacted to dry substantially without deposition of a residue from said solution.

5,348,557

PRODUCTION OF DYEINGS BY THE INKJET PRINTING TECHNIQUE ON MODIFIED FIBER MATERIALS USING ANIONIC TEXTILE DYES

Andreas von der Eltz; Andreas Schrell, both of Frankfurt am Main, and Werner H. Russ, Flösheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 23, 1993, Ser. No. 125,939
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1992, 4232331
Int. Cl.[5] D06P *1/39, 1/38;* D06M *13/342, 13/35*
U.S. Cl. 8—188 8 Claims

1. A process for dyeing a sheetlike fiber material with anionic dyes, which comprises applying an alkali-free aqueous solution of the anionic dye by the inkjet printing spray technique to a fiber material which has been pretreated and modified with a compound that contains one or more primary, secondary or tertiary amino groups or quaternary ammonium groups, which amino or ammonium groups are optionally part of a heterocycle.

5,348,558

LAYOUT PATTERN GENERATING APPARATUS

Yoshihiro Ito, and Hideyuki Fukaya, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

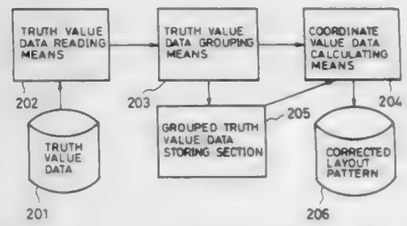
Filed Apr. 12, 1993, Ser. No. 46,610
Claims priority, application Japan, Apr. 23, 1992, 4-130173
Int. Cl.[5] G06F *15/00*
U.S. Cl. 29—25.01 4 Claims

1. A layout pattern generating apparatus for generating a layout pattern to be used in creating a light-cutting pattern on a mask utilized for writing ROM data, corresponding to a selected truth table, in the form of a mask ROM comprising an array of rectangular memory cells, with the location on the layout pattern of the corners of each memory cell specified by coordinate data, and with the mask ROM fabricated on a large scale integrated circuit, said pattern generating apparatus comprising:

truth table storage means for storing said selected truth table;

truth value data reading means, coupled to said truth table storage means, for successively reading truth value data having a value of either logic "1" or "0" and for arranging the truth table data so that each truth value read corresponds to a memory cell in said layout pattern,

truth value data grouping means for, coupled to said truth value data reading means to receive said truth value data successively read by said truth value reading means, for



determining whether a received truth value corresponding to a particular memory cell is adjacent to a memory cell corresponding to a previously read truth value having the same logic value as the received truth value to form a group of adjacent memory cells of data having the same logic value, and

coordinate value data calculating means, coupled to said truth value data grouping means, for extracting circumferential coordinate data locating a boundary on said layout pattern of said group of adjacent memory cells, with said boundary representing the boundary of a light-cutting pattern on said layout pattern, and with said circumferential coordinate data used to manufacture a mask for writing ROM data corresponding to said selected truth table to a mask ROM fabricated on a large scale integrated circuit.

5,348,559

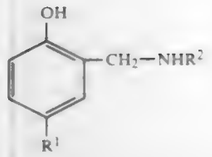
COPPER-CONTAINING AROMATIC MANNICH COMPLEXES AND CONCENTRATES AND DIESEL FUELS CONTAINING SAME

Nai Z. Huang, Mayfield Hts.; Christopher I. Kolp, Euclid, and Christopher R. Sgarlata, Cleveland, all of Ohio, assignors to The Lubrizol Corporation, Cleveland, Ohio

Division of Ser. No. 973,135, Nov. 6, 1992, Pat. No. 5,279,627. This application Oct. 26, 1993, Ser. No. 143,320
Int. Cl.[5] C10L *1/30*
U.S. Cl. 44—367 13 Claims

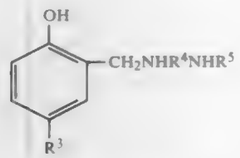
1. A method of operating a diesel engine equipped with an exhaust system particulate trap to reduce build-up of exhaust particles collected in said trap comprising operating said diesel engine with a diesel fuel containing an effective amount of at least one copper-containing complex to lower the ignition temperature of the exhaust particulates collected in said trap, said copper-containing complex being made by contacting either component (A) or component (B) with component (C);

component (A) being at least one compound represented by the formula

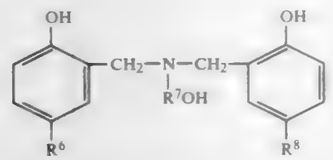


wherein R^1 is an alkyl group of 1 to about 6 carbon atoms, and R^2 is a saturated or unsaturated aliphatic hydrocarbyl group of about 16 to about 20 carbon atoms:

component (B) being a mixture of (B)(I) and (B)(II), component (B)(I) being at least one compound represented by the formula



wherein R^3 is an alkyl group of about 9 to about 18 carbon atoms, R^4 is an alkylene group of 1 to about 4 carbon atoms, and R^5 is a saturated or unsaturated aliphatic hydrocarbyl group of about 16 to about 20 carbon atoms: and component (B)(II) is at least one compound represented by the formula



wherein R^6 and R^8 are independently alkyl groups of about 9 to about 18 carbon atoms, and R^7 is an alkylene group of 1 to about 4 carbon atoms; and

component (C) is at least one copper reactant.

5,348,560

CARBAMATES, THEIR PREPARATION AND FUELS AND LUBRICANTS CONTAINING THE CARBAMATES

Juergen Mohr, Gruenstadt; Knut Oppenlaender; Wolf-Dieter Balzer, both of Ludwigshafen; Juergen Thomas, Fussgoenheim, and Peter Schreyer, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

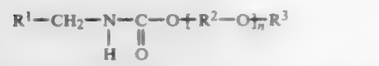
Filed Nov. 13, 1992, Ser. No. 975,732

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1991, 4137852

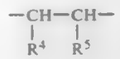
Int. Cl.[5] C10L *1/10*

U.S. Cl. 44—387 **5 Claims**

1. A carbamate of the following formula I



where R^1 is a polybutyl or polyisobutyl radical derived from isobutene and from 0 to 30% by weight of n-butene and having a molecular weight of from 250 to 5,000 R^2 is of the following formula II



where R^4 and R^5 are independently hydrogen, methyl or ethyl, R^3 is hydrogen and n is 1.

5,348,561

FUEL OIL COMPOSITIONS

Michael D. Sexton, Didcot, and Rosalind H. Strange, Bath, both of England, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 486,959, Mar. 1, 1990, abandoned. This application Apr. 26, 1993, Ser. No. 53,936

Int. Cl.[5] C10L *1/22*

U.S. Cl. 44—422 **17 Claims**

1. A fuel composition comprising a fuel oil obtained by the cracking of heavy oil and a fuel-soluble quaternary ammonium compound having a cation and an anion, said cation being selected from the group consisting of unsubstituted hydrocarbyl cations and tertiary amino nitrogen-bearing hydrocarbyl cations, said cation having a ratio of carbon atoms to quaternary nitrogen atoms of at most 10:1, said anion being selected from the group consisting of carboxylic acids, carboxylic acid anhydrides, phenols, sulphurized phenols, and sulphonic acids.

5,348,562

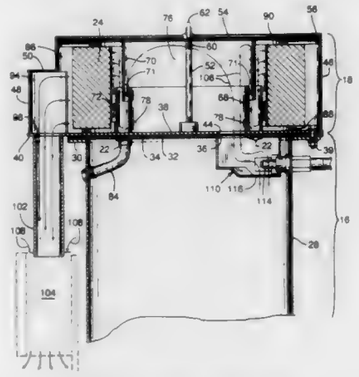
EXHAUST GAS SCRUBBER AND FILTER ASSEMBLY

Richard A. Burrous, Portland, Oreg.; Theodore E. Vanderheyden, Vancouver, Wash.; James W. Haase, and Todd D. Segna, both of Portland, Oreg., assignors to Wagner Mining and Construction Equipment Co., Portland, Oreg.

Continuation-in-part of Ser. No. 899,655, Jun. 16, 1992, abandoned. This application Jan. 29, 1993, Ser. No. 11,320

Int. Cl.[5] B01D *47/00, 45/06*

U.S. Cl. 55—235 **40 Claims**



1. A vehicle exhaust treatment apparatus for use with an exhaust gas water scrubber, the apparatus comprising:

a water trap wall encompassing and defining a water trap chamber oriented on a chamber axis, the wall having at least one flared portion offset at an angle from the chamber axis;

inlet means in communication with the chamber for directing exhaust into the chamber against the at least one flared portion, circulating exhaust within the chamber;

a drain in communication with the chamber and defining a passage for flow of fluid from the chamber; and

an outlet in communication with the chamber to exhaust gas from the chamber.

5,348,563

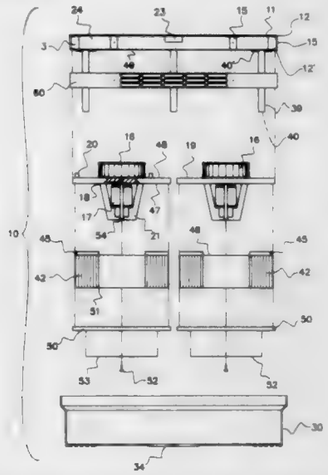
AIR PURIFYING APPARATUS

George B. Davis, Frederick, Md., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 29, 1993, Ser. No. 82,941

Int. Cl.[5] B01D *46/02, 53/04*

U.S. Cl. 55—385.2 **15 Claims**



1. An air purifier apparatus providing a multi-directional air exhaust pattern so as to circulate and filter the air within a room, comprising:

a base defining a plenum region and having a plurality of air inlet openings;

a plurality of fan means for drawing air into said apparatus being located within said plenum region adjacent said air inlet openings;

motor means for driving said fan means;

relaying means for relaying electrical power to said motor means;

baffles substantially surrounding each said fan means and defining an air channel therebetween including an air exhaust outlet, said air exhaust outlets being substantially equally spaced with respect to each other;

a housing releasably secured to said base and having air intake openings;

a plurality of filtering means for filtering the room air being mounted within said housing and exterior to said plenum region;

means for sealing said filter means in surrounding relationship to said air inlet openings;

wherein air being drawn through said air intake openings and said filtering means by said fan means is exhausted to the room through said air exhaust outlets.

5,348,564

METHOD FOR MANUFACTURING A HERMETICALLY COATED OPTICAL FIBER

Haruhiko Aikawa; Katsuya Nagayama; Yoichi Ishiguro; Ichiro Yoshimura, all of Yokohama; Yutaka Katsuyama, and Nobuyuki Yoshizawa, both of Mito, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Nippon Telegraph and Telephone Corporation, Tokyo, both of Japan

Filed Feb. 14, 1992, Ser. No. 835,892

Claims priority, application Japan, Feb. 14, 1991, 3-21042

Int. Cl.[5] C03B *37/025*

U.S. Cl. 65—413 **11 Claims**

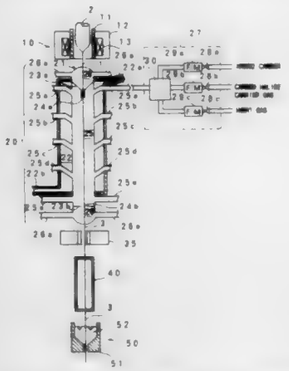
1. A method of manufacturing a hermetically coated optical fiber comprising the steps of:

passing a bare optical fiber through a single reaction chamber;

introducing a first raw material gas into an upstream portion of the reaction chamber through a first inlet tube;

introducing a second raw material gas into a downstream portion of the reaction chamber through a second inlet tube; and

controlling at least one of flow rate, composition, concentration and temperature of the first and second raw material gasses before they are introduced into the reaction chamber, wherein the first raw material gas is different from the second raw material gas in at least one of flow rate, composition, concentration and temperature before the raw material gasses are introduced into the reaction chamber, whereby at least one of the flow rate, the composition, the concentration and the temperature of the raw material gas in the reaction chamber varies continuously from the upstream portion to the downstream portion.



5,348,565

Patent Not Issued For This Number

5,348,566

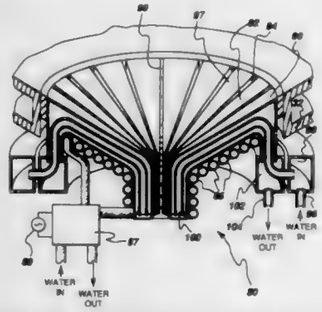
METHOD AND APPARATUS FOR FLOW CONTROL IN ELECTROSLAG REFINING PROCESS

Thomas F. Sawyer, Stillwater; Mark G. Benz, Burnt Hills; William T. Carter, Jr., Ballston Lake, and Robert J. Zabala, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 2, 1992, Ser. No. 969,905

Int. Cl.[5] B22D *23/00*

U.S. Cl. 75—10.24 **6 Claims**



1. A method of controlling the flow of melt from a cold wall induction guide tube during electroslag refining comprising the steps of:

providing a cold wall induction guide tube mechanism;

providing a reservoir for the melt;

providing a flow of the melt to and through the mechanism to form a stream exiting the mechanism; and

directing a jet of gas, relative cooler than the melt, at the mechanism such that the melt stream is frozen in the

mechanism whereby the flow of melt from the mechanism is stopped.

5,348,567

DECONTAMINATION METHOD

David J. Chappell, Symington, Scotland, assignor to Clyde Shaw Limited, United Kingdom

Filed Apr. 29, 1993, Ser. No. 54,678

Claims priority, application United Kingdom, Nov. 17, 1992, 9224074.6

Int. Cl.[5] C22B *9/20, 60/00*

U.S. Cl. 75—10.66 11 Claims

1. A method for decontamination of steel components contaminated with radioactive material, the method comprising the steps:

(a) providing a mass of material including:

(i) a proportion of steel components contaminated by one of adhering naturally occurring radioactive material (N.O.R.M.) and low specific activity (L.S.A.) scale; and

(ii) a mass of slag forming material;

(b) melting said mass of material, to provide a volume of molten steel and a volume of slag, the radioactive material originally present in the adhering (N.O.R.M.) and L.S.A. scale on the steel migrating to the slag; and

(c) separating said slag from the molten steel, wherein said mass of slag forming material is selected to provide a predetermined concentration of radioactive material in said slag.

5,348,568

FILTERING METHOD OF FLUE GAS OF A BOILER AND A FILTER APPARATUS FOR HOT GAS

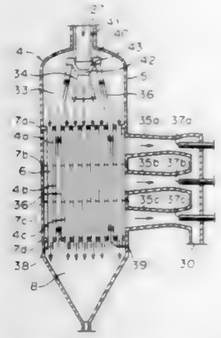
Noriyuki Oda, Tokyo; Hiroshi Maeno; Katsumi Higashi, both of Kawasaki; Akira Toriyama, and Hiromi Shimoda, both of Tokyo, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Feb. 4, 1993, Ser. No. 13,381

Claims priority, application Japan, Feb. 5, 1992, 4-054415; Jun. 3, 1992, 4-168415

Int. Cl.[5] B01D *29/31, 29/66*

U.S. Cl. 95—14 19 Claims



1. A filtering method of flue gas of a boiler employing a filter apparatus integrated with ceramic filters and provided with control means for regenerating the ceramic filters by reverse cleaning, the method comprising the steps of:

detecting directly or indirectly, by use of a detecting means, an unburnt component and flue gas accompanying said unburnt component introduced into the filter apparatus when combustion in the boiler is incomplete;

opening and closing valves of a compressed gas by a signal transmitted from the control means when flying-over of the unburnt component to the filter apparatus is detected; and

performing a reverse cleaning by blowing the compressed gas into spaces of a cleaned gas side of said filter apparatus, wherein said reverse cleaning is frequently performed in intervals shorter than four minutes and continues until the flying-over of the unburnt component decreases to a small quantity.

5,348,569

MODIFIED POLY(PHENYLENE OXIDE) BASED MEMBRANES FOR ENHANCED FLUID SEPARATION

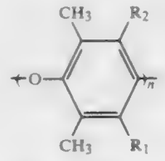
Benjamin Bikson; Gertrud Gotz, both of Brookline, Mass.; Yurdagul Ozcayir, Nashua, N.H., and Joyce K. Nelson, Lexington, Mass., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Jun. 30, 1993, Ser. No. 83,594

Int. Cl.[5] B01D *53/22, 69/12*

U.S. Cl. 95—45 30 Claims

1. A process for separating at least one gas component from a gas mixture, said process comprising bringing said gas mixture into contact with a composite membrane at a pressure sufficient to permeate said at least one gas component from said gas mixture, said composite membrane comprising a porous substrate coated with modified poly(phenylene oxide) polymer, said modified poly(phenylene oxide) polymer being prepared with poly(phenylene oxide) precursor having a number average molecular weight above 25,000, said modified poly(phenylene oxide) polymer defined by having a chemical structure with at least 10% of the polymer backbone comprised of the following recurring unit:



wherein R_1 and R_2 are selected from the group consisting of H, SO_3H, SO_3M, sulfonyl SO_2R_3, sulfonamide $SO_2N(R_3)_2$, carbonyl COR_3 and amide $COHNR_3$, with R_3 being a C_1 to C_4 aliphatic radical or aryl radical, and M being alkali metal, alkaline earth metal, transition metal, NH^+_4 or organic base, provided that at least one of R_1 and R_2 is not H.

5,348,570

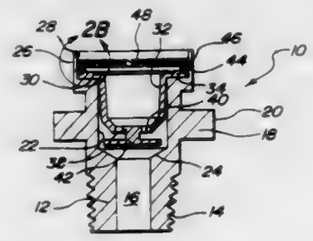
AXLE HOUSING BREATHER

Malcolm F. Ruppert, Jr., Clarkston, and Eric C. Liu, Richmond, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Apr. 5, 1993, Ser. No. 42,934

Int. Cl.[5] B01D *53/22, 19/00, 29/05*

U.S. Cl. 96—6 1 Claim



1. A venting mechanism comprising:

an axially extending cylindrical member defining three axially displaced continuously connected portions:

a first portion having a thread defined on an outermost surface thereof and having a first bore defined therein;

a second portion having a hexagonally shaped structure defined on an outermost surface thereof and having a second bore defined therein;

said first bore and said second bore intersecting to define a first annular surface between said first and said second bores;

a third portion having a third bore defined therein which defines an annular surface between said second and said third bores;

said second portion defining a chamber including a baffle disposed therein;

said baffle having a first radially extending annular portion continuously connected with a first axially extending cylindrical portion continuously connected with a second radially extending portion defining at least one opening therein;

said second radially extending portion including an axially extending portion connected to a third radially extending portion which extends radially proximate said opening defined on said second radially extending portion;

said first radially extending annular portion of said baffle disposed in supporting relation with said annular surface between said second and said third bores of said third portion of said tubular member;

said third portion including an axially extending cylindrical portion defining said third bore including an O-ring disposed on an outermost surface of said first radially extending portion of said baffle;

a film which allows gases to pass therethrough while restricting flow of liquids extending continuously across said third bore and disposed in contact with said O-ring;

a wire mesh extending continuously across said third bore and disposed in contact with said film; and

said third portion having a radially inwardly turned lip which at least partially distorts said O-ring and provides retention for said film, mesh and O-ring in said third bore.

5,348,571

APPARATUS FOR DEDUSTING A GAS AT HIGH TEMPERATURE

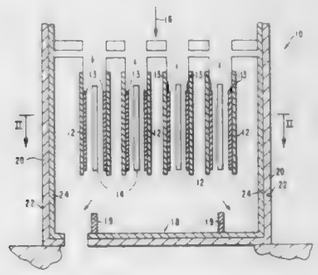
Ekkehard Weber, Essen, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 8, 1993, Ser. No. 1,791

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1992, 4200343

Int. Cl.[5] B03C *3/08, 3/47, 3/49, 3/62*

U.S. Cl. 96—68 7 Claims



1. Apparatus for dedusting a gas by electrostatic precipitation, said apparatus comprising:

a housing; and

a plurality of discharge electrodes and collecting electrodes arranged in said housing, said electrodes being made of a ceramic material and having an electrically conducting layer on at least one side thereof, said electrically conducting layer comprising a material selected from the group consisting of copper, nickel, bronze and iron-chromium-nickel alloy and having a thickness of 0.1 to 2 mm, and

wherein said ceramic material has a porosity of 25 to 90%, consists of fibers compacted with an inorganic binder and contains 30 to 70% by weight Al_2O_3, 15 to 50% by weight SiO_2 and 1 to 10% by weight of the inorganic binder.

5,348,572

DEVICE FOR FILTERING HOT AND DUSTY GASES

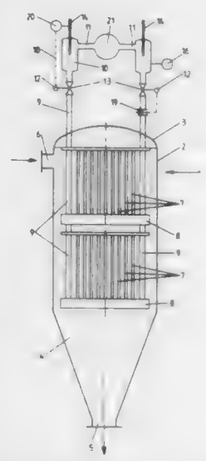
Werner Jelich, Bochum; Heiko Rehwinkel, Bottrop; Friedrich Klauke, Ratingen; Dieter König, Hattingen, and Udo Kalthoff, Mülheim/Ruhr, all of Fed. Rep. of Germany, assignors to Deutsche Babcock Energie- und Umwelttechnik Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Jul. 28, 1993, Ser. No. 98,592

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1992, 4226146

Int. Cl.[5] B01D *35/143*

U.S. Cl. 96—113 7 Claims



1. An arrangement for filtering hot and dusty gases, comprising: a filter housing; hollow filter elements positioned in groups in said filter housing; a filtered-gas manifold outside said housing and communicating with each of said groups through a supply line and a filtered-gas line, said supply line extending individually out of said housing; a valve positioned outside said housing in each said supply line; and measuring means positioned in at least one of said supply line and said filtered-gas line for determining the condition of the filtered gas, whereby a defective filter element can be isolated and penetration of unfiltered gas into filtered gas is avoided; a defective filter element being detected from changes in conditions of the filtered gas, said valve switching off the group of filter elements containing the defective filter element and leaving the remaining groups of filter elements operative.

5,348,573

ANNULAR SCRUBBER

Edward Tomassian, Glendale, and Nelson N. T. Young, Brea, both of Calif., assignors to County Sanitation Districts of Los Angeles County, Whittier, Calif.

Continuation-in-part of Ser. No. 819,038, Jan. 10, 1992, abandoned. This application May 24, 1993, Ser. No. 67,452

Int. Cl.[5] B01D *53/04*

U.S. Cl. 96—151 34 Claims

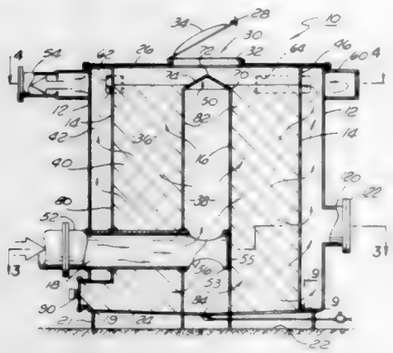
1. A scrubber for holding a treatment media that removes contaminants from exhaust air, comprising:

a housing defining a horizontal, removable inflow port and a horizontal, removable outflow port;

a removable outer casing disposed inside the housing, the outer casing having perforations around its perimeter along a substantial portion of its surface, the outer casing and the housing defining a voidspace between them;

a removable inner casing disposed inside the outer casing,

the inner casing having perforations around its perimeter along a substantial portion of its surface, the inner casing enclosing a corespace and the inner casing and outer casing defining a fillspace between them for receiving the treatment media;



the inner casing and the outer casing being structurally unattached to the housing; and

means for directing a stream of exhaust air through the treatment media between the corespace and the voidspace.

5,348,574

METAL-COATED POLYIMIDE

Edward F. Tokas; Raafat M. Shaltout, both of St. Louis, and Ken S. Chen, Grover, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

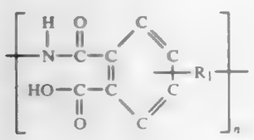
Filed Jul. 2, 1993, Ser. No. 87,228

Int. Cl.[5] C23C *18/18*

U.S. Cl. 106—1.11 **8 Claims**

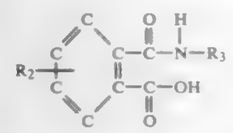
1. An electroless deposition-catalyzing film-forming solution comprising:

(A) 0.1 to 15 weight percent of a polyamic acid of the structural formula



where n is greater than 10;

where R_1 is a carbon-carbon bond, —C(O)—, a C_1–C_{12} alkyl group, a C_1–C_{12} alkylene group, a polyakylene oxide, or



where R_2 is a carbon-carbon bond, —C(O)—, —SO_2—, —CH_2—, —$CH(CH_3)$—, —$C(CH_3)_2$—, —$C(CF_3)_2$—, or —O—; where R_3 is a C_1–C_{12} alkyl group, a C_1–C_{12} alkylene group, a polyakylene oxide, —phenyl—, —phenyl—R_4—phenyl— or —phenyl—O—phenyl—R_4—phenyl—O—phenyl—; and where R_4 is a carbon-carbon bond, —C(O)—, —SO_2—, —CH_2—, —CH (CH_3)—, —$C(CH_3)_2$—, —$C(CF_3)$— or —O—;

(B) 0.1 to 15 parts per hundred parts of polyamic acid of a noble metal selected from the group consisting of palladium, platinum, rhodium, iridium, ruthenium, silver and gold;

(C) 60 to 95 weight percent of an aprotic solvent selected from the group consisting of acetone, dimethylacetamide, dimethylformamide, dimethylsulfoxide, ethylene dichloride, methyl ethyl ketone, methyl isobutyl ketone, tetrahydrofuran, N-methyl-2-pyrrolidone, toluene, xylene, mixtures thereof and mixtures thereof with water; and

(D) 0 to 10 weight percent of an anionic or non-ionic surfactant.

5,348,575

CORROSION PROTECTION COMPOSITION FOR METAL WORKPIECES

Hans-Joachim Müller, Remscheid, and Hans-Wilhelm Plankert, Leverkusen, both of Fed. Rep. of Germany, assignors to Goetz E. AG, Burscheid, Fed. Rep. of Germany

Filed Jul. 9, 1993, Ser. No. 88,549

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1992, 4222894

Int. Cl.[5] C09D *5/08*

U.S. Cl. 106—14.35 **11 Claims**

1. A corrosion protection composition for the production of anticorrosion coatings on metal workpieces for storage until the metal workpieces are installed, comprising:

a. from about 5 to about 10 parts by weight of a mineral wax mixture containing n-paraffins and iso-paraffins, the mineral wax mixture having an average molecular weight ranging between about 400 to about 600, a solidification point ranging between about 60° C. to about 70° C., and a ratio of n-paraffins to iso-paraffins ranging from 0.5:2 to 2:0.5; and

b. from about 70 to about 85 parts by weight of at least one liquid monocarboxylic acid ester having a boiling point above about 340° C., a flash point above 180° C. and a density ranging from about 0.8 to about 0.9 c/cm^3,

wherein the corrosion protection composition is a solution of the mineral wax mixture in the at least one liquid monocarboxylic acid ester.

5,348,576

ANTIFOULING COMPOSITION

Junji Yokoi, and Akio Harada, both of Nara, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Mar. 11, 1992, Ser. No. 849,607

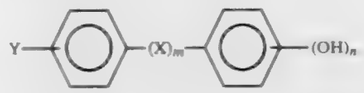
Claims priority, application Japan, Mar. 12, 1991, 3-127025

Int. Cl.[5] C09D *5/14*

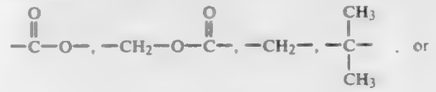
U.S. Cl. 106—15.05 **1 Claim**

1. An antifouling composition consisting essentially of

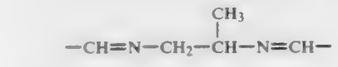
(A) at least one phenol compound represented by the formula:



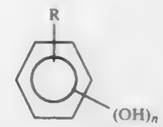
(in which X is —C(=O)—, —N(H)—, —CH_2—O—, —N(H)—C(=O)—.



. or



group; m is 0 or 1 ; Y is hydrogen atom or hydroxyl group; and n is an integer of 1 to 5) or the formula:



in which R is a linear or branched alkyl having 4 to 21 carbon atoms and n is an integer of 1–5.

(B) at least one water-repellent organic compound selected from group consisting of silicone oil, petroleum wax, and liquid paraffin, and

(C) at least one antifouling agent selected from the group consisting of fluorodichloromethyl thiophthalimide, dimethyl phenyl fluorodichloromethyl thiosulfamide and dichlorophenyl dimethyl urea, the amount of said antifouling agent being 1–12% by weight of the total of said (A)+(B)+(C).

5,348,577

ANTIBACTERIAL CALCIUM TERTIARY PHOSPHATE

Kiminori Atsumi; Tomoki Saito, and Masaaki Komori, all of Tokyo, Japan, assignors to Kabushiki Kaisha Sangi, Tokyo, Japan

Filed Oct. 28, 1992, Ser. No. 967,067

Claims priority, application Japan, Oct. 31, 1991, 3-311417

The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.

Int. Cl.[5] A61K *33/38, 33/30, 33/34*

U.S. Cl. 106—18.31 **4 Claims**

1. An antibacterial composition of calcium tertiary phosphate having adsorbed silver, zinc thereon and/or ions thereof, wherein the amount of silver adsorbed on said calcium tertiary phosphate is from 0.0001 to 10% by weight with respect to said calcium tertiary phosphate and the amount of zinc adsorbed on said calcium tertiary phosphate is more than 5% by weight with respect to the amount of silver adsorbed on said calcium tertiary phosphate to prevent discoloration of said antibacterial composition.

5,348,578

PRODUCTS OBTAINED FROM THE REACTION OF AMINE-DIOL AND A POLYFUNCTIONAL SUBSTANCE AND APPLICATION OF SUCH PRODUCTS TO ELECTROAPPLICABLE CATIONIC PAINT COMPOSITIONS

Yves Le Disert, Drancy; Jean Roue, Bussy Saint Georges, both of France; Thomas Moriarity, Wexford, Pa., and Philippe Faucher, Paris, France, assignors to PPG Industries (France) S.A., Valenciennes Cedex, France

Filed Jun. 23, 1993, Ser. No. 78,229

Claims priority, application France, Oct. 23, 1991, 91 13118

Int. Cl.[5] C09D *175/08*

U.S. Cl. 106—287.2 **16 Claims**

1. An electrodepositable cationic paint composition comprising the reaction product of:

(a) an amine-diol obtained from the reaction product of:

(i) a primary amine of the formula R-NH_2 where R represents an aliphatic or aromatic radical, with

(ii) at least one alkylene oxide comprising predominantly propylene oxide;

(b) a polyfunctional material capable of reaction with hydroxyl group of said amine-diol.

5,348,579

WATER RESISTANT METAL PIGMENT-CONTAINING PASTE AND METHOD FOR MAKING

William G. Jenkins, Plymouth; Craig Keemer; H. Taylor Lamborn, both of Reading, and Michael Curcio, Pen Argyl, all of Pa., assignors to Silberline Manufacturing Co., Inc., Tamaqua, Pa.

Filed Aug. 11, 1993, Ser. No. 104,550

Int. Cl.[5] C09C *1/62*

U.S. Cl. 106—404 **13 Claims**

1. A metal pigment-containing paste suitable for formation of a coating composition, comprising:

metal pigment particles;

a solvent;

and at least one phosphosilicate compound

wherein the metal pigment particles comprise aluminum.

5,348,580

STABILIZATION OF ORGANIC PIGMENTS

Laurent Chassot, Praroman, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 25, 1993, Ser. No. 111,530

Claims priority, application Switzerland, Sep. 3, 1992, 2763/92

Int. Cl.[5] C09B *67/50*

U.S. Cl. 106—410 **24 Claims**

1. A light-stabilized pigment composition comprising

a) at least one organic pigment selected from the group consisting of diketopyrrolopyrroles, azo pigments quinacridones, quinophthalones, phthalocyanines, indanthrones, flavanthrones, pyranthrones, anthraquinones, perylenes, dioxazines, perinones, thioindigo, isoindolines, isoindolinones and metal complexes and

b) 0.01 to 100% by weight, based on the pigment, of a condensation or addition polymer, the recurring molecular unit of which contains at least one radical containing a nitroxyl or hydroxylamino group or is substituted by a side group containing a nitroxyl or hydroxylamino group, or a copolymer thereof with other such compounds or with nitroxyl- or hydroxylamine-free components.

5,348,581

RARE EARTH SESQUISULFIDE COMPOSITIONS COMPRISING ALKALI/ALKALINE EARTH METAL VALUES

Thierry Chopin, Saint Denis; Herve Guichon, La Courneuve, and Olivier Touret, Aubervilliers, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Filed Dec. 4, 1992, Ser. No. 985,859

Claims priority, application France, Dec. 4, 1991, 91 14988

Int. Cl.[5] C09C *1/02*

U.S. Cl. 106—461 **38 Claims**

1. A composition of matter comprising (1) at least one crystalline rare earth sesquisulfide having the formula M_2S_3, in which M is at least one element selected from among the lanthanides and yttrium, and (2) a dopant amount of at least one alkali and/or alkaline earth metal, at least a fraction of said at least one alkali and/or alkaline earth metal being included within the crystal lattice of said at least one rare earth sesquisulfide and said sesquisulfide having a Th_3P_4 crystallographic structure.

5,348,582

MINERAL BUILDING MATERIALS WITH ADDITIVES

Joachim Herzig, Leichlingen; Kurt Bredtmann, Leverkusen; Birger Knickel, Odenthal, and Cornelia Dörzbach-Lange, Kürten-Bechen, all of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

Filed May 20, 1993, Ser. No. 63,716

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1992, 4218183

Int. Cl.[5] C04B *24/00, 24/22*

U.S. Cl. 106—696 3 Claims

1. Mineral building materials which contain inorganic binders, optionally aggregates and at least one additive, wherein the additives used are condensation products of a) substituted or unsubstituted diphenyl sulphones, b) formaldehyde and c) compounds from the group consisting of mononuclear or polynuclear, substituted or unsubstituted aromatic compounds, acid amides, urea, urea derivatives, substituted or unsubstituted aromatic ethers and amines, further wherein the components a) and c) are used in a molar ratio of 1:5 to 5:1, with formaldehyde in a molar ratio of 1:0.8 to 1:2, based on the component a or c) that is present in the larger molar amount.

5,348,583

HYDRAULIC CEMENT SET-ACCELERATING ADMIXTURES INCORPORATING GLYCOLS

Ahmad Arfaei; Neal S. Berke; Ara A. Jeknavorian, all of Chelmsford, Mass.; Ellis M. Gartner, Silver Spring, Md.; JudithAnn R. Hartman, and David F. Myers, both of Columbia, Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 46,110, Apr. 9, 1993, which is a continuation of Ser. No. 827,196, Jan. 28, 1992, abandoned. This application Sep. 24, 1993, Ser. No. 125,905

Int. Cl.[5] C04B *24/00*

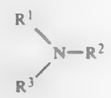
U.S. Cl. 106—696 9 Claims

1. A cement composition comprising a hydraulic cement binder and

a) a set-accelerator component selected from the group consisting of alkali or alkaline earth metal nitrate, nitrite, and formate; alkali or alkaline earth metal salts of Group VII halogen and pseudohalogen acids; alkali or alkaline earth metal thiosulfate and perchlorate; alkali or alkaline earth metal aluminates, silicates, and hydroxides; and mixtures thereof;

b) a C_2 to C_6 glycol component which is defined as a two to six carbon aliphatic di- and trihydric alcohol, present in an amount effective to increase the set acceleration properties of the set-accelerator component; and

c) a component selected from the group consisting of alkanolamines and mixtures thereof, said alkanolamines having the formula



(I)

where R^1 and R^2 are hydroxyalkyl groups, and R^3 is either hydrogen, a hydroxyalkyl group, or an alkyl group.

5,348,584

HYDROCARBON LIQUID AND WATER DISPERSIBLE PARTICULATE CEMENT COMPOSITIONS

Lance E. Brothers, Ninnekah, and Jeffrey A. Dahl, Duncan, both of Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 85,530, Jun. 30, 1993, abandoned. This application Nov. 23, 1993, Ser. No. 156,149

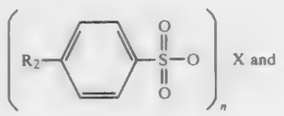
Int. Cl.[5] C04B *24/20*

U.S. Cl. 106—725 16 Claims

1. A dry, fine particle size particulate hydraulic cement composition which is directly dispersable in water and in a hydrocarbon liquid comprising:

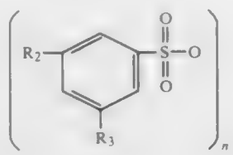
a fine particle size particulate hydraulic cement having deposited thereon a surfactant selected from the group consisting of:

an aromatic sulfonate having the formula



X and

an aromatic sulfonate having the formula



X,

wherein R_1 is a linear alkyl group having 12 carbon atoms or a linear alkyl group having from 16 to 24 carbon atoms, R_2 and R_3 are linear alkyl groups having 12 carbon atoms, X is an alkali or alkaline earth metal and n is 1 or 2,

and further wherein the particles of said hydraulic cement have diameters no larger than about 30 microns and a Blaine Fineness no less than about 6000 square centimeters per gram.

and still further wherein said surfactant is deposited on said hydraulic cement in an amount in the range of from about 0.2% to about 1% by weight of said cement composition.

5,348,585

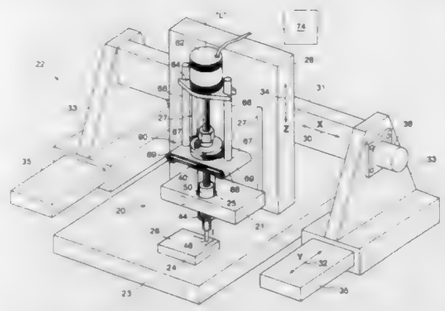
LIQUID DISPENSING APPARATUS

Colin K. Weston, 1265 Ludbrook Cres., Mississauga, Ontario L5J 3P1, Canada

Filed Jan. 7, 1993, Ser. No. 1,632

Int. Cl.[5] B05C *21/00*

U.S. Cl. 118—305 27 Claims



1. A liquid dispensing apparatus to accurately dispense known volumes of liquid onto a receiving surface of a workpiece, for use in conjunction with a two axis of movement robotic table that is configured to hold a workpiece in a given position on a table member, with said robotic table having motor means for moving said table member with respect to said liquid dispensing apparatus, said apparatus comprising:

a cartridge having a longitudinal axis and defining a reservoir for containing an amount of liquid therein, said cartridge having an outlet of known cross sectional area and an inlet for allowing said liquid to be deposited into said cartridge;

a piston positioned within said cartridge along said longitudinal axis, the displacement of said piston with said cartridge, with respect to said outlet, defining the volume of said reservoir;

driving means for effecting translational movement of said piston with respect to said cartridge so as to cause a change in the volume of said reservoir;

control means for operating said driving means; and

interconnection means for mechanically interconnecting said piston and said driving means, such that said driving means may rotatably drive said piston with said cartridge, said interconnection means having a threaded portion thereon;

a first retaining means for retaining said interconnection means in threadibly engaged relation thereto;

a second retaining means for retaining said interconnection means in freely rotatable substantially non-translatable relation thereto;

wherein one of said first and second retaining means is securely connected to said piston and the other of said first and second retaining means is securely connected to said cartridge;

wherein said interconnection means is longitudinally rigid between said first retaining means and said second retaining means thereby to preclude unwanted relative movement along said longitudinal axis of said piston with respect to said cartridge;

whereby, when said piston is advanced long said cartridge towards said outlet by way of a known degree of rotation of said interconnection means, a known volume of said liquid is dispensed from said reservoir through said outlet; and

wherein the rate of liquid dispensing from said reservoir is substantially proportional to the rate of change in displacement of said outlet with respect to said workpiece, in a direction substantially perpendicular to said receiving surface of said workpiece, and further varies proportionally as said rate of change in displacement varies.

5,348,586

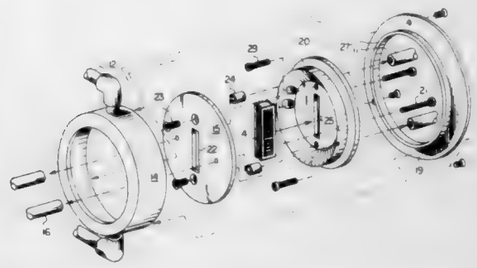
RIBBON PREWET SYSTEM

Kenneth D. Temple, Jr., Newton, and Keith D. Church, Catawba, both of N.C., assignors to Siecor Corporation, Hickory, N.C.

Filed Oct. 29, 1993, Ser. No. 143,012

Int. Cl.[5] B05C *3/02;* B29D *11/00*

U.S. Cl. 118—405 2 Claims



1. Apparatus for applying a viscous substance to a group of rotating optical ribbons, comprising:

a stationary bearing having at least one opening through which a viscous substance is supplied under pressure;

a rotatable journal held within the bearing, said journal having means for securing a ribbon wiping die inserted in the journal;

means for rotating the journal; and,

a ribbon wiping die secured within the journal, the wiping die having a plurality of passages therein through each of which a fight waveguide ribbon may be passed.

5,348,587

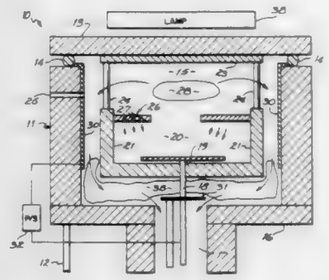
APPARATUS FOR ELIMINATION OF LOW TEMPERATURE AMMONIA SALTS IN $TICL_4$ NH_3 CVD REACTION

Eric C. Eichman; Bruce A. Sommer, both of Phoenix; Michael J. Churley, and W. Chuck Ramsey, both of Tempe, all of Ariz., assignors to Materials Research Corporation, Orangeburg, N.Y.

Continuation of Ser. No. 976,516, Nov. 16, 1992, Pat. No. 5,271,963. This application Oct. 7, 1993, Ser. No. 133,582

Int. Cl.[5] C23C *16/50*

U.S. Cl. 118—723 MP 8 Claims



1. An apparatus for processing semiconductor wafers comprising:

a CVD reaction chamber bounded by a sealable cold wall and having a wafer supporting susceptor contained therein, a heater positioned to heat a wafer supported on the susceptor to a primary reaction temperature, a reaction gas inlet, and a gas outlet, the susceptor, inlet and outlet being positioned such that reaction gases from the inlet flow in a path from the inlet, against the susceptor, and downstream to the outlet;

a surface liner on the cold wall partially thermally insulated therefrom, along the path downstream from the susceptor, on internal surfaces of the chamber where undesirable particulate contaminants tend to form when unspent reaction gases contact the cold reactor wall;

a secondary electrode in the path downstream of the susceptor;

an electrical potential source, connected to the secondary electrode, sufficient to form a low energy plasma in gas between the secondary electrode and at least a portion of the reactor surfaces that are in contact with gases flowing downstream of the susceptor to raise the temperature of gas downstream of the susceptor to a temperature above that at which undesirable contaminants will form but below the primary reaction temperature.

5,348,588

EVAPORATIVE TREATMENT OF INORGANIC SAPONIFIER WASH WATER

Anthony E. Winston, East Brunswick, N.J., assignor to Church & Dwight Co., Inc., Princeton, N.J.

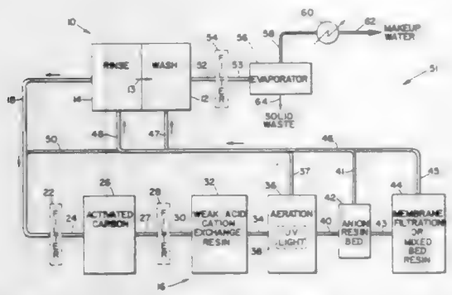
Continuation-in-part of Ser. No. 85,005, Jun. 29, 1993, Continuation-in-part of Ser. No. 85,006, Jun. 29, 1993, Pat. No. 5,320,756. This application Sep. 30, 1993, Ser. No. 129,430

Int. Cl.[5] B08B *7/04;* B01D *1/00*

U.S. Cl. 134—10 15 Claims

1. A process for treating an aqueous cleaning effluent derived from the wash cycle of a process for cleaning electronic circuit assemblies with an aqueous alkaline cleaning solution having a pH from about 10 to about 13 and containing rosin

flux residues, and inorganic alkaline salt residues and substantially no volatile organic compounds comprises: evaporating



said effluent to form an aqueous vapor phase and a solid residue comprising said rosin flux and said inorganic alkaline salt.

5,348,589

SOLAR CELL AND METHOD OF FORMING THE SAME

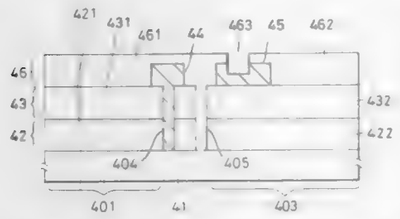
Yasuyuki Arai, and Setsuo Nakajima, both of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, 243, Japan

Filed Dec. 23, 1992, Ser. No. 996,399

Claims priority, application Japan, Dec. 27, 1991, 3-360116

Int. Cl.[5] H01L *31/05, 31/20*

U.S. Cl. 136—244 **26 Claims**



9. In a photovoltaic cell having a plurality of photoelectric conversion units connected in series on a substrate, each photoelectric conversion unit comprising a laminate of a first electrode, a photoelectric conversion layer, and a second electrode, wherein

a first unit of said photoelectric conversion units is connected with a second unit of said photoelectric conversion units adjacent to said first unit through a connection structure having a first groove and a second groove formed in a laminate of said first electrode and said photoelectric conversion layer and a third groove formed through said second electrode,

said first groove is filled with an insulator, said second groove is filled with a conductive material through which the first electrode of said second unit is connected to the second electrode of said first unit, the second electrode of said second unit is separated from the second electrode of said first unit by said third groove, and said third groove is located on an insulator formed on said photoelectric conversion layer.

5,348,590

SURFACE TREATING AGENT FOR COPPER OR COPPER ALLOYS

Seizi Shigemura, Hadano; Hitoshi Oka, Yokohama, and Motokazu Shindo, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Computer Electronics, Hando, both of Japan

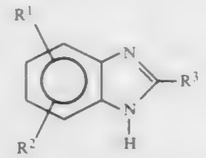
Filed Aug. 31, 1993, Ser. No. 113,705

Claims priority, application Japan, Aug. 31, 1992, 4-230933

Int. Cl.[5] B23K *35/34*

U.S. Cl. 148—23 **4 Claims**

1. A surface treating agent for copper or a copper alloy, which comprises a preflux comprised predominantly of a 2-alkylbenzimidazole derivative having the general formula of



wherein R^1 and R^2 may be identical with or different form each other and are hydrogen atom, a lower alkyl group or a halogen atom, and R^3 is an alkyl group of three or more carbon atoms, and contains one or more chelating agents for reacting with copper ions, added thereto, said chelating agent being selected from the group consisting of aminocarboxylic acids and metal salts thereof; said chelating agent being added to said surface treating agent in an amount of by at most 3×10^{-3} mol/l larger than the content of copper ions released in said preflux from the copper or copper alloy during the treatment of the copper or copper alloy with the surface treating agent.

5,348,591

HIGH-STRENGTH AMORPHOUS MAGNESIUM ALLOY

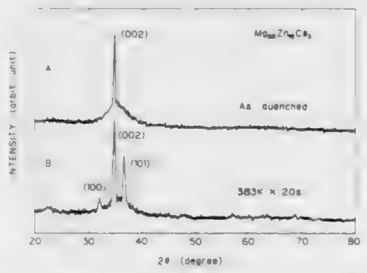
Tsuyoshi Masumoto, 8-22, Kamisugi 3-chome, Aoba-ku, Sendai-shi, Miyagi-ken, Japan; Akihisa Inoue, Miyagi; Akira Kato, Miyagi; Toshisuke Shibata, Miyagi, and Nobuyuki Nishiyama, Tokyo, all of Japan, assignors to Tsuyoshi Masumoto, Miyagi, Japan; Toyota Jidosha Kabushiki Kaisha, Aichi, Japan; Yoshida Kogyo K.K., Chiyoda, Japan and Teikoku Piston Ring Co., Ltd., Chuo, Japan

Filed Sep. 2, 1992, Ser. No. 937,602

Claims priority, application Japan, Sep. 6, 1991, 3-254143

Int. Cl.[5] C22C *95/00*

U.S. Cl. 148—403 **3 Claims**



1. A high-strength amorphous magnesium alloy, comprising $Mg_dM_eX_FT_g$ wherein M is at least one element selected from the group consisting of Zn and Ga, X is at least one element selected from a group consisting of La, Ce, Y, Nd, Pr, Sm and Gd, T is at least one element selected from a group consisting of Ag, Zr, Ti and Hf, d is from 65 to 96.5 atomic %, e is from 2 to 30 atomic %, f is from 0.2 to 8 atomic %, and g is from 0.5 to 10 atomic %, and has at least 50% amorphous phase.

5,348,592

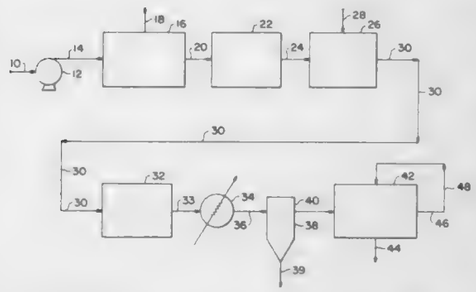
METHOD OF PRODUCING NITROGEN-HYDROGEN ATMOSPHERES FOR METALS PROCESSING

Diwakar Garg, Macungie; Brian B. Bonner, Nesquehoning; Paul T. Kilhefner, Wescosville; Paul A. Mattiola, and David L. Mitchell, both of Coopersburg, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 1, 1993, Ser. No. 12,065

Int. Cl.[5] C21D *1/00, 9/00*

U.S. Cl. 148—208 **7 Claims**



1. A process of generating a gas mixture having a fixed amount of hydrogen mixed with nitrogen for injecting into a single heat treating furnace or multiple heat treating furnaces comprising the steps of:

mixing non-cryogenically produced nitrogen gas containing up to five percent by volume oxygen with hydrogen, said hydrogen being present in an amount equal to that required to convert residual oxygen in the nitrogen to moisture plus an amount to result in more than 0.1 percent by volume hydrogen in the final gas mixture;

passing said non-cryogenically produced nitrogen and hydrogen through a catalytic reactor for conversion of said oxygen to moisture resulting in a mixture of nitrogen, hydrogen and moisture;

removing moisture from said mixture of nitrogen, hydrogen and moisture by passing said mixture of nitrogen, hydrogen and moisture through a phase separator followed by a regenerative sorbent dryer; and

injecting said nitrogen-hydrogen mixture into said heat treating furnace.

5,348,593

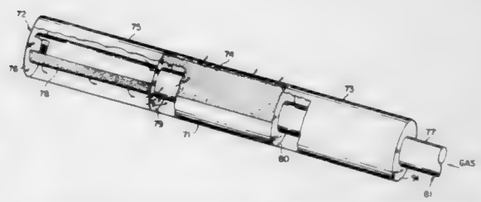
METHOD OF HEAT TREATING GOLD OR GOLD ALLOY PARTS

Donald J. Bowe, Macungie; Brian B. Bonner, Nesquehoning, and Diwakar Garg, Macungie, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 966,258, Oct. 26, 1992, which is a division of Ser. No. 727,806, Jul. 8, 1991, Pat. No. 5,221,369. This application Nov. 23, 1993, Ser. No. 156,533

Int. Cl.[5] C22C *5/00*

U.S. Cl. 148—208 **11 Claims**



1. A method for annealing gold or gold alloy parts comprising the steps of:

heating said parts in a furnace having a hot zone maintained at a temperature of 600° C. or above;

injecting into said furnace gaseous nitrogen containing up to 5% by volume oxygen together with a reducing gas, said reducing gas injected into said furnace with a flow rate of about 3.0 times or more the stoichiometric amount required for the complete conversion of residual oxygen in a manner to permit said reaction of oxygen and said reducing gas to be essentially complete prior to said mixture contacting said part; and

moving said part through said furnace for a time sufficient to achieve the desired heat treated properties in said part.

5,348,594

TI-AL INTERMETALLIC COMPOUND WITH SE

Toshihiro Hanamura; Ryuji Uemori; Mitsuru Tanino, and Jinichi Takamura, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 758,379, Sep. 3, 1991, abandoned, which is a continuation of Ser. No. 349,255, May 9, 1989, abandoned. This application May 6, 1993, Ser. No. 58,840

Claims priority, application Japan, May 13, 1988, 63-116244; Dec. 16, 1988, 63-317687

Int. Cl.[5] C22C *14/00*

U.S. Cl. 148—421 **5 Claims**

1. An annealed, solidified Ti—Al intermetallic compound having a uniform microstructure and compressibility of at least 25% at room temperature formed by annealing of the solidified compound, and further having a superior high temperature oxidation resistance, said annealed, solidified compound consisting essentially of about 40 to 52 atomic % of Ti and about 48 to 60 atomic % of Al and contains 10 to 1000 atomic ppm of Se.

5,348,595

PROCESS FOR THE PREAPARATION OF A TI-AL INTERMETALLIC COMPOUND

Toshihiro Hanamura; Ryuji Uemori; Mitsuru Tanino, and Jinichi Takamura, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 758,379, Sep. 3, 1991, abandoned, which is a continuation of Ser. No. 349,255, May 9, 1989, abandoned. This application Apr. 22, 1993, Ser. No. 52,413

Claims priority, application Japan, May 13, 1988, 63-116244; Dec. 16, 1988, 63-317687

Int. Cl.[5] C21D *1/26*

U.S. Cl. 148—538 **14 Claims**

1. A process for the preparation of Ti-Al intermetallic compound comprising:

forming a mixture consisting essentially of about 40 to 52 atomic % Ti, about 48 to 60 atomic % Al, and 10 to 3000 atomic ppm of at least one element selected from a group consisting of P, As, Se and Te;

melting said mixture to form a molten mixture;

solidifying said molten mixture to form a solidified product; and

annealing said solidified product in an inert gas atmosphere at a temperature between 900° C. and 1000° C. to form a uniform microstructure.

5,348,596

SOLID PROPELLANT WITH NON-CRYSTALLINE POLYETHER/INERT PLASTICIZER BINDER

John R. Goleniewski, and James A. Roberts, both of Salt Lake County, Utah, assignors to Hercules Incorporated, Wilmington, Del.

Filed Aug. 25, 1989, Ser. No. 398,210

Int. Cl.[5] C06B *45/10*

U.S. Cl. 149—19.6 **18 Claims**

1. A solid propellant composition comprising an oxidizer, a fuel, a binder, wherein the binder comprises, based on the weight of the total propellant composition:

(a) 3–12% of a non-crystalline polyether having a molecular weight of 1000–9000, and
(b) 1–12% of an inert plasticizer.

5,348,597

PROPELLANT FORMULATION AND PROCESS CONTAINING BI-METALLIC METAL MIXTURE

James Wong, Wayland, Mass., assignor to Composite Materials Technology, Inc., Shrewbury, Mass.

Continuation-in-part of Ser. No. 431,166, Oct. 24, 1989, and a continuation-in-part of Ser. No. 415,926, Sep. 21, 1989, and a continuation-in-part of Ser. No. 269,884, Nov. 10, 1988. This application Nov. 7, 1989, Ser. No. 440,397
Int. Cl.[5] C06B *27/00, 33/12;* D03D *23/00*
U.S. Cl. 149—87 6 Claims

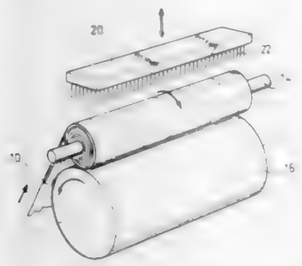
1. An explosive device such as a propellant comprising a normal organic propellant and oxidizer and a controlled amount of metal filaments from the group consisting of Aluminum, Zirconium, Titanium, and Niobium and alloys thereof having a predetermined substantially uniform surface to volume ratios, the metallic filament including a bi-metallic mixture of two additional metals having a high heat of solution.

5,348,598

METHOD OF MANUFACTURING A GUN BARREL PROVIDED WITH A LINING

Michel Vives, Eysines; Pierre Taveau; Georges Habarou, both of Le Bouscat, and Francois Bognandi, Gradignan, all of France, assignors to Societe Europeenne De Propulsion, Suresnes, France

Filed Jun. 2, 1992, Ser. No. 892,179
Claims priority, application France, Jun. 6, 1991, 9106890
Int. Cl.[5] B65H *81/00*
U.S. Cl. 156—93 10 Claims



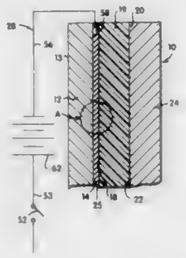
1. A method of manufacturing a gun barrel lining in a composite material by forming a cylindrical fibrous reinforcement and densifying the reinforcement by a ceramic matrix, said method comprising the steps of:
providing a first fibrous texture;
winding said first fibrous texture in superposed layers and binding said superposed layers by causing fibers to extend transversely through said superposed layers, to form a cylindrical and three-dimensional inner portion of said reinforcement;
providing a second fibrous texture made of refractory fibers;
winding said second fibrous texture onto said inner portion of said reinforcement, to form a cylindrical outer portion of said reinforcement;
said inner portion of said reinforcement is made by winding and bonding together layers of fibers of a precursor of refractory fibers and the precursor is transformed into refractory fibers by heat treatment prior to winding of the second texture; and
simultaneously densifying said inner portion of said reinforcement and said outer portion of said reinforcement with a ceramic matrix.

5,348,599

METHOD OF MAKING LAMINATING GLAZING UNIT

Kenneth E. Nietering, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 751,377, Aug. 28, 1991, Pat. No. 5,229,205, which is a division of Ser. No. 631,112, Dec. 20, 1990, Pat. No. 5,069,968. This application May 5, 1993, Ser. No. 59,088
Int. Cl.[5] B32B *31/12;* C23C *14/08, 14/18, 14/34*
U.S. Cl. 156—100 4 Claims



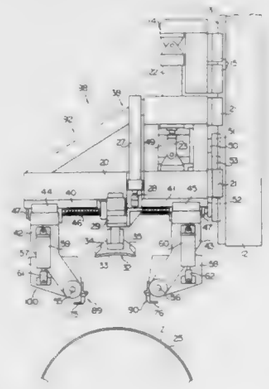
1. A method of making a laminated glazing unit comprising:
sputter coating a surface of a substrate ply with a first film of dielectric material and then sputter coating thereover a substantially transparent, electrically conductive coating by sputter deposition of an electrically conductive film of silver metal over the first film of dielectric material in a non-oxidizing atmosphere, then sputter deposition of an adhesion film selected from the group consisting of copper or zinc over the film of silver metal in a non-oxidizing atmosphere and then sputter depositing a film of tantalum pentoxide over the adhesion film; and
then laminating the coated surface of the substrate ply to a laminating ply of polymeric material.

5,348,600

METHOD AND APPARATUS FOR FORMING A CYLINDRICAL MEMBER

Ryutaro Ishii, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 30,872, Mar. 12, 1993, abandoned. This application Dec. 21, 1993, Ser. No. 170,631
Claims priority, application Japan, Mar. 17, 1992, 4-091676
Int. Cl.[5] B29D *30/26*
U.S. Cl. 156—134 20 Claims



1. A method of forming a cylindrical member, comprising the steps of:
attaching an auxiliary bar having a shape of a substantially triangular prism to a forming drum in such a manner that said auxiliary bar becomes parallel with an axis of said forming drum;
supplying a belt-shaped member cut to a predetermined length toward said forming drum in such a manner as to cause a leading end of the belt-shaped member to be attached to one of side surfaces of said auxiliary bar;
supplying the belt-shaped member onto said forming drum while said forming drum is being rotated so as to wind the belt-shaped member around said forming drum, and attaching a trailing end of the belt-shaped member to another side surface of said auxiliary bar;
separating the leading end and the trailing end of the belt-shaped member from said auxiliary bar;
removing said auxiliary bar off said forming drum; and
causing the leading end and the trailing end of the belt-shaped member to butt against each other on said forming drum.

8. An apparatus for forming a cylindrical member comprising:
a forming drum for forming a belt-shaped member cut to a predetermined length by winding the belt-shaped member therearound;
an auxiliary bar having a shape of a substantially triangular prism and capable of being attached to or removed from said forming drum in parallel with an axis of said forming drum;
transfer means for transferring said auxiliary bar to and away from a surface of said forming drum;
belt-shaped member supplying means for supplying the belt-shaped member toward said forming drum with said auxiliary bar attached thereto to cause a leading end of the belt-shaped member to be attached to one of side surfaces of said auxiliary bar, and for further supplying the belt-shaped member onto said forming drum being rotated to cause the belt-shaped member to be wound around said forming drum and to cause a trailing end of the belt-shaped member to be attached to another side surface of said auxiliary bar;
belt-shaped member gripping means for holding and releasing the leading end and the trailing end of the belt-shaped member attached to said auxiliary bar; and
moving means for moving said belt-shaped member gripping means in such a manner as to move the leading end and the trailing end of the belt-shaped member away from said auxiliary bar and to cause the leading end and the trailing end to butt against each other after said auxiliary bar is removed from said forming drum.

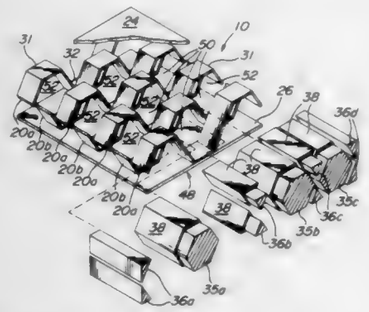
5,348,601

METHOD OF MAKING AN OFFSET CORRUGATED SANDWICH CONSTRUCTION

Hemen Ray, Perkasie, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 23, 1993, Ser. No. 82,068
Int. Cl.[5] B29C *53/22*
U.S. Cl. 156—155 2 Claims

1. A method for making an off-set corrugated core sandwich construction comprising the steps of:
placing shaping mandrels into a prearranged pattern wherein each mandrel has an exterior surface;
wrapping a release film over the exterior surface of each of said mandrels;
arranging a first strip of pliable composite material to bend over and around said mandrels to from alternating crests and troughs;
arranging subsequent strips of pliable composite material to form alternating crests and troughs wherein each strip is approximately 180° out of phase with an adjacent strip;
attaching a face sheet to the crests of the strips and attaching a face sheet to the troughs of the strips to form an off-set corrugated core sandwich construction;
replacing selected of said mandrels with a granular mixture;



curing the construction; and
removing the granular mixture and release films.

5,348,602

METHOD FOR MAKING A BONDED LAMINATED ARTICLE BEND PORTION

Peter Makarenko; Stacy E. Harris, both of Albuquerque, and Robert R. Martin, Tijeras, all of N. Mex., assignors to General Electric Company, Cincinnati, Ohio

Filed Jun. 8, 1993, Ser. No. 73,395
Int. Cl.[5] B32B *31/16*
U.S. Cl. 156—161 6 Claims

1. In a method for making a fiber reinforced bonded laminated article bend portion from an article preform defined by a plurality of superimposed fiber reinforced non-fully cured layers disposed about and extending beyond a bend in an article, the bend portion including a radially outer portion defined by at least one of the superimposed layers, and a radially inner portion, the radially outer portion prior to bonding extending farther from the bend than does the radially inner portion, the steps of:
applying tension to the radially outer portion of said article perform relative to the radially inner portion in a direction away from the bend during bonding together of the superimposed layers,
while holding the article preform on rigid support tooling.

5,348,603

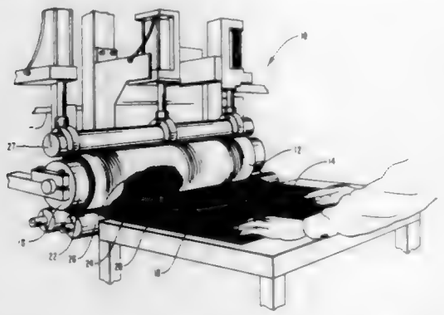
COMPOSITE/METAL HYBRID ROCKET MOTOR CASE AND METHODS FOR MANUFACTURING

James A. Yorgason, Ogden, Utah, assignor to Thiokol Corporation, Ogden, Utah

Division of Ser. No. 903,852, Jun. 25, 1992, Pat. No. 5,280,706. This application May 27, 1993, Ser. No. 67,849
Int. Cl.[5] B31C *1/00*
U.S. Cl. 156—191 17 Claims

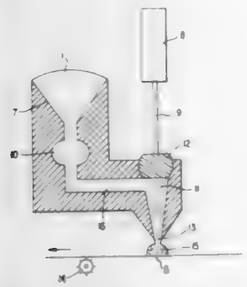
1. A process for manufacturing a case for a rocket motor, comprising the steps of:

obtaining a sheet of uncured fiber reinforced plastic and a generally cylindrically shaped metal shell;
configuring the sheet of uncured fiber reinforced plastic into a generally cylindrical shape;
forming a plurality of apertures in the metal shell;
inserting the cylindrically shaped sheet of plastic into the metal shell;



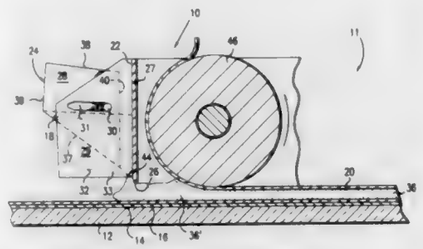
attaching the cylindrically shaped sheet of plastic to the metal shell; inserting a cylindrically shaped layer of insulation inside the cylindrically shaped sheet of plastic; and
curing the cylindrically shaped sheet of plastic such that it attaches to the cylindrically shaped layer of insulation.

5,348,604
METHOD AND APPARATUS FOR APPLYING A HEATED COMPOSITION TO A SUBSTRATE
Craig A. Neff, 13950 W. 20th Ave., Suite 109, Golden, Colo. 80401
Filed Jan. 29, 1993, Ser. No. 10,859
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—272.8 **21 Claims**



1. A method for applying a heat activatable polymer composition to a substrate comprising supplying said composition in an extrudable state to a flow path for receiving said composition and directing said composition onto said substrate and simultaneously irradiating said composition in said flow path with an energy beam, wherein said composition substantially fills said flow path and said energy beam is shaped to be substantially the shape of said flow path and is directed through said composition in said flow path for transmitting energy from said beam to said composition and onto the substrate for heating the substrate as said composition is applied thereto.

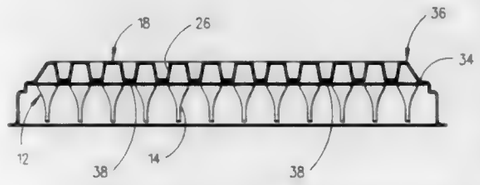
5,348,605
TILTING BUCKET ASSEMBLY FOR PHOTOPOLYMER PLATEMAKING
Norman E. Hughes, Landenberg, Pa., and Richard B. Schroeder, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.
Filed Sep. 15, 1993, Ser. No. 120,839
Int. Cl.[5] B32B *31/00;* **B67D** *5/64;* **B05C** *19/02*
U.S. Cl. 156—275.5 **35 Claims**



1. A tilting bucket assembly, comprising:
a tilting bucket having a lip thereon;
a substantially vertical wall associated with said tilting bucket;
positioning means for maintaining said lip in contact with said substantially vertical wall during tilting of said tilting bucket from an upright position to a pre-pouring position, and for separating said lip from said substantially vertical wall as said tilting bucket tilts from said pre-pouring position to a pouring position.

18. A process for preparing a photopolymeric printing plate from a photosensitive liquid resin, comprising:
tilting a tilting bucket containing the photosensitive liquid resin, said tilting bucket having a lip thereon, while maintaining said lip in contact with a substantially vertical wall during tilting of said tilting bucket from an upright position to a pre-pouring position;
separating said lip from said substantially vertical wall as said tilting bucket is further tilted from said pre-pouring position to a pouring position; and
maintaining said tilting bucket in said pouring position during pouring of the photosensitive liquid resin onto a supporting surface.

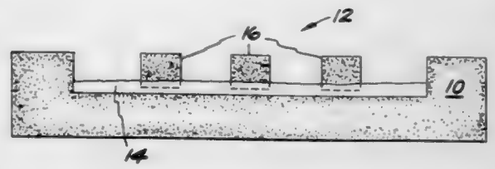
5,348,606
METHOD OF MAKING A MULTIPLE PIPETTE SAMPLER SYSTEM
Richard W. Hanaway, 1780 Pfe Rd., Roseville, Calif. 95678, and James Hrudicka, Star Rt. 89031 Box 3120, Las Vegas, Nev. 89124
Continuation of Ser. No. 666,630, Mar. 8, 1991, abandoned, which is a division of Ser. No. 490,162, Feb. 8, 1990, Pat. No. 5,000,921, which is a continuation of Ser. No. 923,117, Oct. 24, 1986, abandoned. This application Sep. 23, 1992, Ser. No. 950,967
Int. Cl.[5] B29C *51/00;* **B29D** *22/00;* **B01L** *3/02;* **B65D** *47/18*
U.S. Cl. 156—292 **10 Claims**



1. A method of making a multiple pipette sampler device comprising the steps of:

forming a plurality of pipettes in a rectangular array in a thin plastic pipette sheet;
forming a concavely-shaped housing including an interiorly formed step from a thin plastic sheet; forming a plurality of stiffening depressions in a top surface of said housing;
joining said housing to said pipette sheet by substantially permanently sealing a peripheral edge of said pipette sheet to said step, creating a manifold in fluid communication with each of said pipettes and also creating a rigid monocoque structure for maintaining said pipette sheet in a substantially planar configuration;
disposing a bottom portion of at least one of said stiffening depressions in abutment with said pipette sheet; and
substantially permanently securing said bottom portion of said at least one of said stiffening depressions to said pipette sheet.

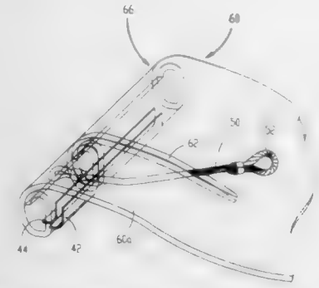
5,348,607
HIGH DENSITY INTERCONNECT THERMOPLASTIC DIE ATTACH MATERIAL AND SOLVENT DIE ATTACH PROCESSING
Robert J. Wojnarowski, Ballston Lake, and Charles W. Eichelberger, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Division of Ser. No. 745,982, Aug. 5, 1991, Pat. No. 5,225,023, which is a continuation of Ser. No. 312,798, Feb. 21, 1989, abandoned. This application Feb. 22, 1993, Ser. No. 20,913
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—298 **2 Claims**



1. A method of attaching a plurality of dice to a substrate, to allow subsequent removal of said dice, comprising the steps of:
attaching each respective one of said plurality of dice to a surface of said substrate with an associated one of a like plurality of dots of glue, respectively;
coating said surface of said substrate with a solvented thermoplastic polymer solution comprising between 5% and 10% of a polymer in a solvent therefor, said thermoplastic polymer being a polyetherimide comprised of bisphenol-A-dianhydride condensed with metaphenylene diamine, said solvent comprising meta-cresol and a selected one of orthodichlorobenzene and acetophenone; and
drying said solvented polymer solution coated on said surface of said substrate so as to gang-bond said plurality of die in place.

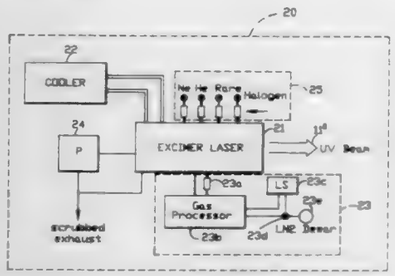
5,348,608
CARPET STRIPPING DEVICE
Joe Glenn, Willard, Mo., and Roger McGuire, 514 S. Airwood, Springfield, Mo. 65802, assignors to Roger McGuire, Springfield, Mo.
Filed Apr. 28, 1993, Ser. No. 54,729
Int. Cl.[5] B32B *35/00*
U.S. Cl. 156—344 **1 Claim**

1. A method of stripping carpet from a substrate, comprising the steps of:
pulling a margin of said carpet away from said substrate to present a pair of opposed faces, and forming a slit in the margin;
providing a carpet connection assembly including a stretch of flexible cable and a pair of elongated, spaced apart, carpet margin-engaging jaw members positioned on said cable and movable along the length thereof;
positioning said jaw members adjacent respective faces of said pulled carpet margin in spanning relationship to said slit, with said cable passing through said slit;
moving each of said jaw members into engagement with the adjacent face of said margin, and rolling said jaw members in unison with said margin to form a convolution of carpet



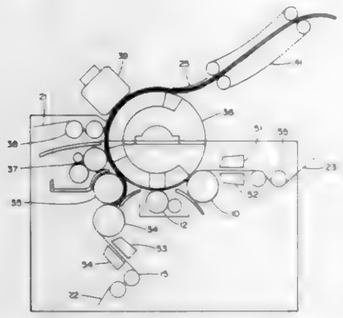
with said jaw members within the confines of said convolution, and pulling an end of said cable through said slit;
connecting said end of said cable to means for pulling the cable and said jaw members; and
operating said pulling means to strip the remainder of said carpeting from said substrate.

5,348,609
METHOD FOR LASER-ASSISTED SILICON ETCHING USING HALOCARBON AMBIENTS
Stephen D. Russell; Douglas A. Sexton, and Richard J. Orazi, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Division of Ser. No. 501,707, Mar. 29, 1990, and Ser. No. 807,015, Dec. 12, 1990, Pat. No. 5,266,532. This application May 25, 1993, Ser. No. 66,745
Int. Cl.[5] C23F *1/02*
U.S. Cl. 156—345 **15 Claims**



1. An apparatus for maskless laser-assisted etching of silicon in a gaseous chlorofluorocarbon ambient comprising:
a source of said gaseous chlorofluorocarbon ambient;
a chamber sized to contain said silicon therein and coupled to said source of said gaseous chlorofluorocarbon ambient to receive said gaseous chlorofluorocarbon ambient therein to provide said gaseous chlorofluorocarbon ambient in contact with said sample;
an emitter of radiant energy oriented to direct said radiant energy into said chamber and onto said silicon in contact with said gaseous chlorofluorocarbon ambient, said radiant energy being emitted at a sufficient level to create a melted portion of said silicon where the radiant energy impinges to etch away only said melted portion of said silicon in contact with said gaseous chlorofluorocarbon ambient which has said radiant energy impinging thereon.

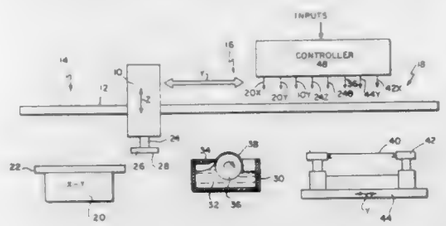
5,348,610
APPARATUS FOR MANUFACTURING CORRUGATED BOARD
Peter R. McKinlay, Doncaster, and Neil W. Shaw, Ivanhoe, both of Australia, assignors to Amcor Limited, South Melbourne, Australia
Continuation-in-part of Ser. No. 585,091, Oct. 31, 1990, abandoned. This application Jul. 12, 1993, Ser. No. 90,412
Claims priority, application Australia, Mar. 31, 1988, PI7541; Apr. 22, 1988, PI7878
Int. Cl.[5] B31F *1/28*
U.S. Cl. 156—472 2 Claims



1. A single face corrugated board making apparatus capable of forming corrugated boards having two fluted mediums bonded together at the flute tips comprising:
(a) mill roll stands for two mediums and one liner;
(b) a carrier roll fluted to support a first fluted medium;
(c) a single corrugating roll of diameter no larger than the carrier roll engaging with the carrier roll to corrugate the first fluted medium;
(d) a pair of corrugating rolls of diameter no larger than the carrier roll adapted to produce a second fluted medium said pair being located and driven relative to the carrier roll to enable the first and second fluted mediums to be brought into flute tip to flute tip contact and to be conveyed by the carrier roll, the axes of the corrugating rolls not lying in a plane common with the single corrugating roll or the carrier roll;
(e) a first adhesive application station to apply adhesive to one of said fluted mediums prior to the flute tips of the said first and second fluted mediums coming into contact
(f) a second adhesive application station to apply adhesive to the exposed flute tips of the bonded mediums or to a liner board;
(g) a liner applicator roll located adjacent to said carrier roll downstream of said second adhesive applicator positioned to lead a liner board into contact with said bonded fluted mediums without application of pressure;
(h) an energy radiator unit located adjacent said carrier roll downstream of said liner applicator to accelerate curing of the adhesive bond between the liner and the mediums;
(i) the diameter of said carrier roll and the positioning of said pair of corrugating rolls being arranged to ensure there is sufficient remaining circumference on said carrier roll to enable the fluted mediums to be retained until after they have passed the curing zone of the said energy radiator.

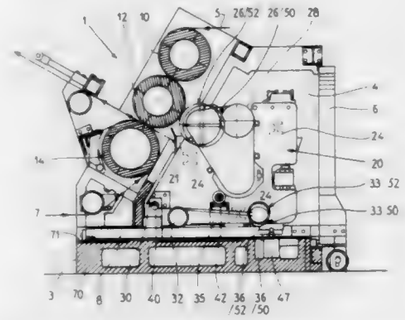
5,348,611
DIE PASTE TRANSFER SYSTEM AND METHOD
Edward T. Lavrenge, North Wales, Pa., and Dane C. Scott, Fairfield, Conn., assignors to General Signal Corporation, Stamford, Conn.
Filed May 20, 1992, Ser. No. 885,847
Int. Cl.[5] B05C *1/00*; B32B *31/00*
U.S. Cl. 156—571 13 Claims

1. An apparatus for bonding an electronic die to a substrate comprising:
transport means for transporting a die from a supply location past a paste station to a bonding site on a substrate;
a paste station for applying a first layer of bonding paste on a surface of said die as said dies moves through a second layer of bonding paste in said paste station;
control means for controlling said transport means to pick up a die at said supply location, to move said die through



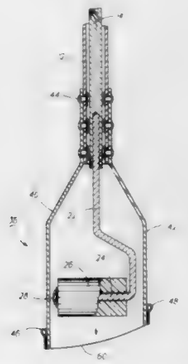
said paste station and said second layer of bonding paste to provide said first layer of bonding paste on said surface of said die and to position said die surface having said first layer of bonding paste on said bonding site on said substrate; and
wherein said control means controls the rotational orientation at which said die passes through said paste station and the rotational orientation of said die at said bonding site.

5,348,612
DEVICE FOR ADJUSTING THE DISTANCE BETWEEN A GLUE APPLYING ROLL AND A WEB LEADING ROLL
Peter Buetikofer, Horst-Hostein; Martin Hoffmann, Tangstedt, and Jens Schulz, Hamburg, all of Fed. Rep. of Germany, assignors to Peters Maschinenfabrik, Hamburg, Fed. Rep. of Germany
Filed Jun. 18, 1993, Ser. No. 78,043
Claims priority, application Switzerland, Jun. 19, 1992, 01935/92
Int. Cl.[5] B32B *31/04*; B31F *1/28*
U.S. Cl. 156—578 8 Claims



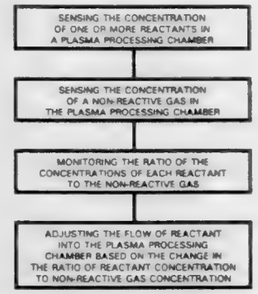
1. In a device for adjusting the distance between a glue application roll provided in a subframe of a gluing unit and a web leading roll mounted in a main frame of a machine, the improvements comprising a shaft extending transverse across the main frame and parallel to the axis of the web leading roll, a subframe of the gluing unit engaging said shaft and enabling rotation thereon, means for lifting the subframe of the gluing unit to rotate around said shaft to move a glue application roll between a position spaced from the web leading roll to a position closely adjacent the web leading roll, at least one cam, means for mounting the cam on one of the main frame and subframe, a stop being mounted on the other of said subframe and main frame, said means for mounting the cam enabling adjustments in the orientation of the cam, said cam coacting with the stop to limit the amount of elevation of the gluing unit to determine the second position with the glue application roll close to the web leading roll.

5,348,613
PATCHING TOOL AND METHOD
Normand D. Blais, 26 Chestnut St., Johnston, R.I. 02919
Filed Nov. 15, 1993, Ser. No. 151,742
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—579 6 Claims



1. A tool for applying a piece of patching material to an area, said tool comprising:
(a) an elongate member comprising:
a hollow outer tube having distal and proximal ends; an inner tube, having distal and proximal ends, disposed in said outer tube for axial and rotational movement within said outer tube; and
said outer tube further comprising a plurality of ports, said plurality of ports allowing water into said outer tube when said tool is placed in water, and said ports allowing water out of said outer tube when said tool is brought out of water;
(b) a securing means to releasably secure said patching material to said distal end comprising a bracket disposed at said distal end;
said bracket comprising an outwardly open U-shaped member formed by two arms lying in a plane, said arms being attached to and extending from said distal end of said hollow outer tube, and said patching material can be releasably attached across said open U-shaped member;
(c) releasing means, operable from said proximal end, to release said patching material and to place the same on said area, comprising said distal end of said inner tube, which distal end can be extended from said distal end of said outer tube so as to release said patching material from said bracket and to place said patching material on said area;
(d) finishing means disposed at said distal end to smooth and secure said patching material on said area after said patching material is placed thereon; and
(e) a roller disposed on a shaft extending from said distal end of said inner tube, said roller having a major axis disposed orthogonally to a major axis of said inner tube, said roller being extendable, by axial movement of said inner tube within said outer tube, from a first position within said U-shaped member to a second position spaced from said U-shaped member, said axial movement of said roller releasing said patching material from said bracket and placing said patching material on said area.

5,348,614
PROCESS FOR DYNAMIC CONTROL OF THE CONCENTRATION OF ONE OR MORE REACTANTS IN A PLASMA-ENHANCED PROCESS FOR FORMATION OF INTEGRATED CIRCUIT STRUCTURES
Chris Jerbic, Cupertino, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.
Filed Jun. 22, 1993, Ser. No. 80,896
Int. Cl.[5] H01L *21/00*; G01N *21/00*
U.S. Cl. 156—626 6 Claims



1. In a plasma etch process for etching various aluminum patterns on integrated circuit structures on semiconductor wafers in a plasma etching chamber, wherein the amount of aluminum to be removed will vary from wafer to wafer, depending upon the particular aluminum pattern to be etched, resulting in the need for a change in flow rate of etchant gas into said etching chamber from wafer to wafer, to thereby control the concentration of said etchant gas in said etching chamber, the improvement which comprises:
a) loading into a plasma etch chamber a semiconductor wafer having an integrated circuit structure formed thereon including an aluminum layer having a mask thereon to define a desired pattern of aluminum on said structure;
b) flowing into said plasma etch chamber a mixture of an etchant gas capable of plasma etching aluminum and a non-reactive gas;
c) igniting a plasma in said chamber to plasma etch said masked aluminum layer;
d) monitoring the respective optical emissions of said non-reactive gas and said aluminum etchant gas during said etch to determine the amount of said aluminum etchant gas being consumed by said aluminum; and
e) changing the flow of said aluminum etchant gas into said plasma etch chamber to match the amount of etchant gas being consumed by the portions of said aluminum exposed by said mask;
whereby the concentration of aluminum etchant gas in said chamber will remain constant during said etch regardless of the amount of aluminum being etched to provide the particular aluminum pattern desired for a particular integrated circuit structure.

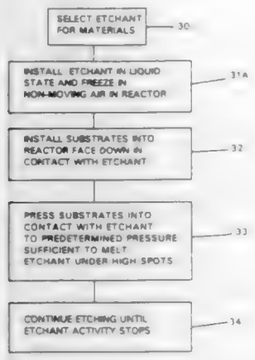
5,348,615
SELECTIVE PLANARIZATION METHOD USING REGELATION
Subhash Gupta, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Continuation of Ser. No. 964,587, Oct. 21, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 119,903
Int. Cl.[5] H01L *21/306*
U.S. Cl. 156—635 11 Claims

1. A method for smoothing a selected surface area of a substrate comprising the steps of,
selecting a material which is a liquid at room temperatures and which will etch said substrate;
creating a frozen layer of said selected material, said frozen

layer having a surface which is smooth over an area larger than said area of said selected surface of said substrate;

causing a portion of the surface of said substrate to come into contact with said frozen layer;

applying a compressive force to squeeze said portion of said selected surface of said substrate against the surface of said frozen layer;



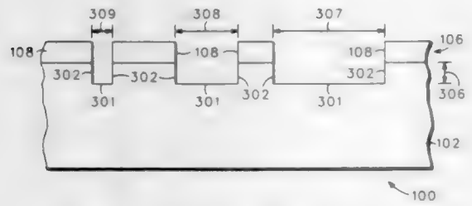
causing said compressive force to be at least the amount of force for the temperature and pressure of said frozen layer which causes melting of said frozen layer in those regions where protruding points or edges on said substrate come into contact with said frozen layer.

5,348,616

METHOD FOR PATTERNING A MOLD

Davis H. Hartman, Phoenix, and Michael S. Lebby, Apache Junction, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 3, 1993, Ser. No. 55,579
Int. Cl.[5] B44C *1/22*; C23F *1/00*
U.S. Cl. 156—643 **18 Claims**



1. A method for patterning a mold comprising the steps of:

providing a mold substrate having a major surface;

applying a radiation sensitive film onto the major surface of the mold substrate;

exposing the radiation sensitive film on the mold substrate to a pattern of light having areas of illumination and areas of non illumination, thereby generating exposed areas where the radiation sensitive film has been illuminated and generating unexposed areas where the radiation sensitive film has not been illuminated;

developing the radiation sensitive film on the major surface of the mold substrate, wherein the developing removes the exposed areas of the radiation sensitive film and the unexposed areas of the radiation sensitive film remain on the major surface of the mold substrate, thereby generating a pattern with open portions on the major surface of the mold substrate and with covered portions on the major surface of the mold substrate; and

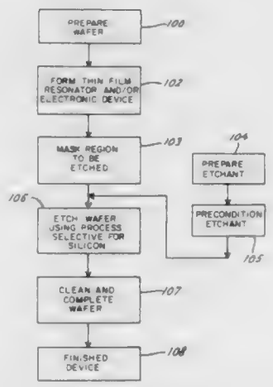
etching the major surface of the mold substrate by dry etching, thereby removing material from the open portions of the major surface and transferring the pattern to the major surface of the mold substrate.

5,348,617

SELECTIVE ETCHING PROCESS

Steve D. Braymen, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Dec. 23, 1991, Ser. No. 813,152
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—644 **15 Claims**



1. A process for selectively etching silicon comprising the steps of:

preparing a solution of etchant which is a non-selective etch for at least silicon and aluminum;

preconditioning the prepared solution by adding atomic silicon to the solution and aging the solution after the addition of silicon for at least 30 minutes; and

immersing silicon substrates carrying aluminum in the preconditioned solution to etch the silicon while leaving the aluminum substantially unetched.

5,348,618

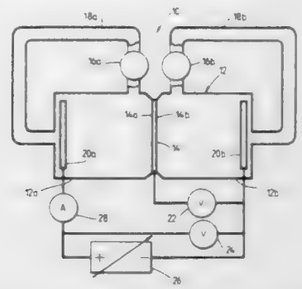
METHOD OF MAKING SILICON QUANTUM WIRES

Leigh-Trevor Canham; John M. Keen, and Weng Y. Leong, all of Worcestershire, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

PCT No. PCT/GB90/01901, § 371 Date Jun. 4, 1992, § 102(e) Date Jun. 4, 1992, PCT Pub. No. WO91/09420, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 6, 1990, Ser. No. 852,208
Claims priority, application United Kingdom, Dec. 7, 1989, 8927709.9
Int. Cl.[5] B05D *5/00*
U.S. Cl. 156—644 **10 Claims**

1. A method of producing silicon quantum wires comprising the steps of:

(1) anodizing crystalline silicon material (**14**) to produce a porous layer therein, and



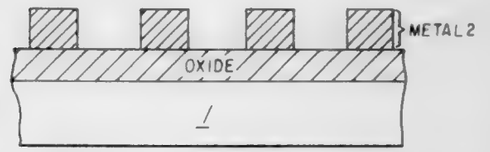
(2) etching the porous layer to widen the pores sufficiently to produce pore overlap thereby defining discrete quantum wires.

5,348,619

METAL SELECTIVE POLYMER REMOVAL

Brynne K. Bohannon, Sachse, Tex., and Daniel J. Syverson, Chaska, Minn., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 3, 1992, Ser. No. 940,101
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—664 **14 Claims**



1. A process for removal of metal etch byproducts from a semiconductor wafer comprising the following steps:

introducing HF into a chamber containing said wafer which includes non-water soluble byproducts thereon,

introducing N_2+xH_2O, where x is a real number, into said chamber;

and removing soluble byproduct from said wafer after performing the above steps.

5,348,620

METHOD OF TREATING PAPERMAKING FIBERS FOR MAKING TISSUE

Michael A. Hermans; Robert J. Makolin, both of Neenah; Kristin A. Goerg, and Fung-Jou Chen, both of Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 870,648, Apr. 17, 1992, abandoned. This application Dec. 18, 1992, Ser. No. 993,190
Int. Cl.[5] D21C *9/00*
U.S. Cl. 162—9 **18 Claims**

1. A method for making tissue comprising (a) forming an aqueous suspension comprising papermaking fibers having a consistency of from about 30 to about 50 percent; (b) passing the aqueous suspension through a shaft disperger having a rotating shaft with a multiplicity of arms which work the fibers substantially by fiber-to-fiber contact, wherein the temperature of the aqueous suspension is about 150° F. or greater and the power input is about 1 horsepower-day per ton of dry fiber or greater, wherein the TD Index of the fibers is increased about 25 percent or greater; (c) feeding the fibers through a tissue making headbox to form a wet web; and (d) drying the web to form a dried tissue.

5,348,621

LOW BULK AND LIGHT-WEIGHT PRODUCTS

Norbert J. Rudy, deceased, represented by Christopher J. Rudy, late of Midland, Mich., assignor to Coalition Technologies, Limited, Birmingham & Midland, Mich.

Continuation of Ser. No. 569,517, Aug. 20, 1990, abandoned, which is a division of Ser. No. 668,709, Nov. 6, 1984, abandoned, which is a continuation-in-part of Ser. No. 464,925, Feb. 8, 1983, abandoned, and a continuation-in-part of Ser. No. 440,036, Nov. 8, 1982, abandoned, which is a continuation-in-part of Ser. No. 399,681, Jul. 16, 1982, Pat. No. 4,496,718, and a continuation-in-part of Ser. No. 212,110, Dec. 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 90,829, Nov. 1, 1979, abandoned. This application Mar. 29, 1993, Ser. No. 39509
U.S. Cl. 162—100 **20 Claims**

1. An article of manufacture comprising a fabricated, shaped and integrally-bonded, cured article having a matrix built up from oxidation of at least a part of a cellulosic mass prepared by subjection to curing and bonding conditions of a basic fabrication composition comprising, in admixture, components of:

(a) the cellulosic mass, useful for chemical conversion by strong oxidation into a curved, essentially reticulated resinous material portion of the intractable fabricated article, which contains, based on the total weight of components (i) and (ii) of said cellulosic mass, as follows: (i) at least about 1 weight percent of a coarse cellulosic paper stock selected from the group consisting of a newsprint, a kraft paper, a cardboard, and mixtures thereof, which has retained a substantial remnant of a lignin and which has retained some of at least one remnant selected from the group consisting of a hemicellulosic, a starch, and a sugar; (ii) from 0 to about 99 weight percent of an at least substantially undried, particulated, fibrous plant cellulosic material, plus (iii) from 0 to about 75 weight percent, based on the total weight of the fabrication composition, of a lower carbohydrate constituent in addition to any in components (i) and (ii) of said cellulosic mass, selected from the group consisting of a starch, a sugar, and mixtures thereof;

(b) an effective quantity from about 0.001 to about 1 mole for each carbohydrate unit in said cellulosic mass of a strong, non-azotizing, non-alkali oxidizing reagent for said chemical conversion, and for at least partial water-solubilization of at least a portion, of components (i) and (ii) of said cellulosic mass and all of component (iii) of said cellulosic mass, said strong oxidizing reagent capable of destructive attack upon at least some of components (i) and (ii) of said cellulosic mass when subjected to article-fabricating conditions and also upon all of component (iii) of said cellulosic mass, and said strong oxidizing reagent being nascent-oxidation-reactant-forming and selected from the group consisting of a chlorine-releasing material, a bromine-releasing material, an oxygen-releasing material, chlorine, bromine and mixtures thereof, adapted for suitably providing chlorine, bromine and/or oxygen for said chemical conversion;

(c) which water, in addition to any in said cellulosic mass and any in components (a) and (b), is present in an amount from 0 weight percent, based on the total weight of the fabrication composition, to that amount which is adequate to furnish sufficient moisture to the fabrication composition in order to facilitate physical handling and said chemical conversion, and

(d) from about 1 to about 75 weight percent, based on the total weight of dry solids contents of the fabrication composition, of a finely divided filler inclusion selected from the group consisting of particulated mica, fillibrated asbestos, and mixtures thereof, uniformly incorporated throughout the admixture;

provided that the basic fabrication composition excludes added resin-forming adduct feedstocks of a non-cellulosic and of other non-carbohydrate nature, and

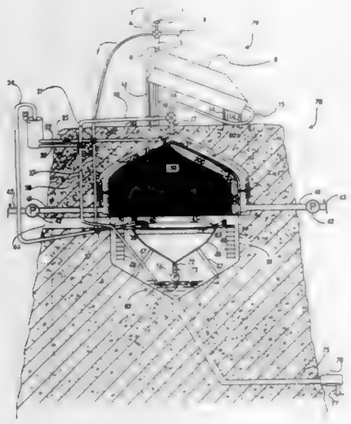
wherein the basic fabrication composition components are present in an amount sufficient to substantially prevent shrinking and swelling of the matrix of the fabricated article, after contact of the fabricated article, dry, with water for three days at room temperature followed by re-drying.

5,348,622

SOLAR WATER PURIFICATION DEVICE

David Deutsch, and Thomas C. Flores, both of c/o Allen Dempster; 200 California St.; Third Floor, San Francisco, Calif. 94111

Filed Sep. 14, 1993, Ser. No. 120,413
Int. Cl.[5] B01D *3/42*; C02F *1/14*
U.S. Cl. 202—176 12 Claims



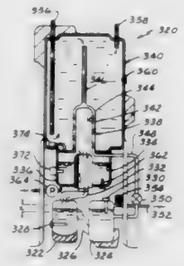
1. An improved solar water purification system comprising: upper domed structure means and distillate collecting means positioned below said domed upper structure means; load tank means centrally located within said distillate collecting means and spaced a predetermined distance therefrom; load supply means including first, second and third preheater means with appropriately positioned temperature and load level sensors, valves, pumps and conduits for selectively adding heat to said load prior to or after its delivery to said load tank means; said second preheater means comprising a solar energized preheater; said upper domed structure and distillate collecting means located beneath the earth's surface while said second and third preheater means are located externally of said earth's surface; and control means for determining and controlling the flow path and quantity of said load relative to said first, second and third preheater means and said load tank means whereby maximum advantage is taken of said second preheater means under optimum solar conditions allowing sufficient heat to be added to said load to permit evaporation in said load tank, followed by condensing on the inner surfaces of said upper domed structure with subsequent gravitational flow of the condensate down said inner surfaces of said upper domed structure into said distillate collecting means.

5,348,623

WATER HEATING AND DISTILLING APPARATUS

Michael E. Salmon, Spartanburg, S.C., assignor to Terrill Designs, Inc., Spartanburg, S.C.

Continuation of Ser. No. 541,043, Jun. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 282,026, Dec. 9, 1988, Pat. No. 4,946,558. This application Sep. 30, 1992, Ser. No. 954,692
Int. Cl.[5] B01D *3/42*
U.S. Cl. 203—1 17 Claims



1. An automatic water heating and distilling apparatus comprising:
an enclosed hot water reservoir for storing hot water, and having a water inlet and a hot water outlet;
an evaporator tank having a water inlet, a steam outlet, and a heating means for boiling water therein;
condenser means for condensing the steam provided by the evaporator to form distilled water and to transfer the heat rejected during condensation to the water within the hot water reservoir;
a distilled water reservoir for storing distilled water and having an inlet coupled to the condenser means, an outlet for distilled water, and means for automatically returning excess distilled water which cannot be stored within the distilled water reservoir to the evaporator tank to be reboiled;
temperature sensor means for sensing the temperature of the water in the hot water reservoir;
control means for regulating the operation of the heating means in response to the temperature sensor means to boil additional water thereby heating the water within the hot water reservoir to maintain the water above a selected low operating temperature limit; and
wherein said distilled water reservoir is located below the condenser means and said evaporator tank is located sufficiently below the distilled water reservoir so that gravity will naturally cause condensation formed in the condenser to flow into the distilled water reservoir and to cause excess distilled water to flow from the reservoir back to the evaporator tank.

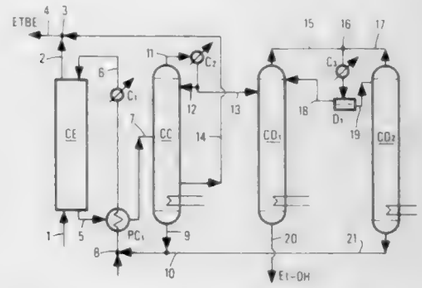
14. A water heating and distilling apparatus comprising:
an enclosed cyclindrical hot water reservoir for storing pressurized water, having a pressurized water inlet and an outlet for pressurized hot water;
an evaporator tank having a water inlet; a steam outlet and heating means for boiling water therein;
said cylindrical hot water reservoir having a lower wall which is provided with an upwardly extending recessed cavity having a common inlet and outlet for steam and distilled water, said recessed cavity forming a condenser for condensing the steam provided by the evaporator tank steam outlet to form distilled water and to transfer the heat rejected during condensation into the water within the hot water reservoir; and
a distilled water reservoir for storing distilled water having an inlet coupled to the condenser and an outlet for distilled water, said distilled water reservoir being affixed to the lower wall of the hot water reservoir which forms the upper wall of the distilled water reservoir.

5,348,624

PROCESS FOR SEPARATING ETHYL TERT-BUTYL ETHER AND ETHANOL

Annick Pucci, Croissy sur Seine; Paul Mikitenko, Noisy le Roi, and Massimo Zuliani, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Nov. 12, 1992, Ser. No. 974,763
Claims priority, application France, Nov. 12, 1991, 91 14062
Int. Cl.[5] B01D *3/34*
U.S. Cl. 203—14 21 Claims



1. A process for separating ethyl tert-butyl ether and ethanol, which comprises:
(1) an extraction stage comprising introducing a charge, consisting essentially of a mixture of ethyl tert-butyl ether and ethanol, into an extraction zone, introducing water as an extraction solvent into the extraction zone and therefrom collecting a raffinate, consisting essentially of ethyl tert-butyl ether saturated in water, and an extract comprising an ethanol and water mixture containing ethyl tert-butyl ether;
(2) a concentration stage comprising passing the extract from stage (1) into a concentration zone, withdrawing therefrom an overhead product having a composition close to that of an azeotropic ethanol and water composition at the head, a residue consisting essentially of water at the base, and a phase consisting essentially of ethyl tert-butyl ether at a withdrawal point between the head and the base and condensing said overhead product to obtain a distillate; and
(3) a heteroazeotropic distillation stage having first and second distillation zones using ethyl tert-butyl ether as an azeotroping agent, comprising passing the distillate from the concentration stage into a first distillation zone and collecting therefrom a residue at the base consisting essentially of ethanol and an overhead vapor at the head, combining the overhead vapor with vapor from the head of the second distillation zone, condensing the resultant combined vapor, and passing the resultant condensate into a decanter, separating said condensate into an upper phase, rich in ethyl tert-butyl ether, and a lower phase, rich in water, passing the upper phase as reflux to the head of the first distillation zone as the azeotroping agent, passing the lower phase as reflux to the head of the second distillation zone, and collecting from the second distillation zone a residue consisting essentially of water.

19. A process for producing ethyl tert-butyl ether through etherification by ethanol of the isobutene contained in a steam-cracking, catalytic cracking or isobutane dehydrogenation C_4 cut, comprising contacting ethanol and the isobutene-containing cut, in a reaction zone A, under reaction conditions such that the product from the reaction zone A, contains ethyl tert-butyl ether, ethanol and C_4 hydrocarbons including non-reacted isobutene; sending the product from reaction zone A into a reactive distillation zone B[1], introducing ethanol into the reactive distillation zone under reaction conditions such that the ethanol reacts with the non-reacted isobutene, collecting the C_4 hydrocarbons including the non-reacted isobutene overhead and a mixture of ethyl tert-butyl ether and ethanol at the base; sending the mixture into a separating zone C and conducting therein a process for separating ethyl tert-butyl ether and ethanol, which comprises:
(1) an extraction stage comprising introducing a charge, consisting essentially of a mixture of ethyl tert-butyl ether and ethanol, into an extraction zone, introducing water as an extraction solvent into the extraction zone and therefrom collecting a raffinate, consisting essentially of ethyl tert-butyl ether saturated in water, and an extract comprising an ethanol and water mixture containing of ethyl tert-butyl ether;
(2) a concentration stage comprising passing the extract from stage (1) into a concentration zone, withdrawing therefrom an overhead product having a composition close to that of an azeotropic ethanol and water composition at the head, a residue consisting essentially of water at the base, and a phase consisting essentially of ethyl tert-butyl ether at a withdrawal point between the head and the base and condensing said overhead product to obtain a distillate; and
(3) a heteroazeotropic distillation stage having first and second distillation zones using ethyl tert-butyl ether as azeotroping agent, comprising passing the distillate from the concentration stage into a first distillation zone and collecting therefrom a residue at the base consisting essentially of ethanol and overhead vapor combining the overhead vapor at the head, with the vapor from the head of a second distillation zone, condensing the resultant combined vapor, and passing the resultant condensate into a decanter, separating the condensate into an upper phase, rich in ethyl ether and a lower phase, rich in water, passing the upper phase in reflux to the head of the first distillation zone as the azeotroping agent, passing the lower phase as reflux to the head of the second distillation zone, and collecting from the second distillation zone a residue consisting essentially of water.

5,348,625

SEPARATION OF ETHANOL FROM ISOPROPANOL BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg, Bozeman, Mont.

Filed Jan. 14, 1994, Ser. No. 180,985
Int. Cl.[5] B01D *3/40*; C07C *29/84*
U.S. Cl. 203—57 1 Claim

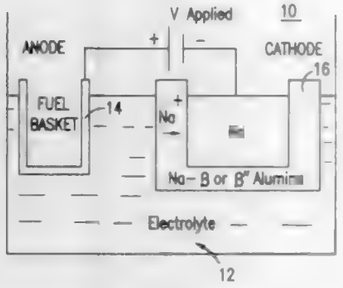
1. A method for recovering ethanol from a mixture of ethanol and isopropanol which comprises distilling a mixture of ethanol and isopropanol in the presence of about one part by weight of an extractive agent per part of ethanol—isopropanol mixture, recovering the ethanol as overhead product and obtaining the isopropanol and the extractive agent as bottoms product, wherein said extractive agent consists of one material selected from the group consisting of dimethyl sulfoxide, dimethylformamide, sulfolane, isophorone, 2-pyrrolidinone, 1-methyl-2-pyrrolidinone, isodecyl alcohol, cyclododecanol, benzyl alcohol, 1-dodecanol, tridecyl alcohol, 1-decanol, phenethyl alcohol, cyclohexanol, cyclopentanol, 2-nitropropane, 1-nitropropane, nitroethane, nitromethane, 3-nitrotoluene, 2-nitrotoluene, triacetin, 3-nitro-o-xylene, 1,4-dioxane, isobutyl acetate, ethylbutyrate, isoamyl formate, methyl caproate, ethyl caproate, propyl caproate, 1-methoxy-2-propanol acetate, isobutyl isobutyrate, hexyl acetate, ethyl isobutyrate, propyl butyrate, isobutyl butyrate, isobornyl acetate, 1,3-dioxolane, nitrobenzene and butyl butyrate.

5,348,626

ELECTROLYTIC RECOVERY OF REACTOR METAL FUEL

William E. Miller, Naperville, and Zygmunt Tomczuk, Lockport, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 3, 1993, Ser. No. 12,713
Int. Cl.[5] C25C *3/34*; G21C *19/42*
U.S. Cl. 204—1.5 16 Claims



9. An electrolytic process of recovering a nuclear reactor metal fuel comprising the steps of:

providing an electrolytic cell including a fused salt electrolyte, an anode electrode and a cathode electrode in contact with the electrolyte, and a source of electrical voltage to said electrodes;

operating the cell during an anodic dissolution step with a metal fuel basket containing said metal fuel being anode wherein said basket being of a metal which will not undergo oxidation during said anodic dissolution step and with an active metal alloy electrode being said cathode to transfer nuclear reactor metal fuel contained in said metal fuel basket into said electrolyte; and

operating the cell during a cathode deposition step by limiting a cell current generated during said cathode deposition with said active metal alloy electrode being said anode, said active metal capable of displacing nuclear reactor metal fuel from said electrolyte, and with an inert metal cathode to selectively deposit metals from said nuclear reactor metal fuel transferred into said electrolyte at said cathode electrode, said cathode being inert when in contact with the deposited metals.

5,348,627

PROCESS AND SYSTEM FOR THE PHOTOELECTROCHEMICAL ETCHING OF SILICON IN AN ANHYDROUS ENVIRONMENT

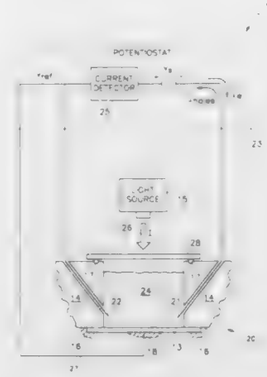
Eric K. Propst, and Paul A. Kohl, both of Atlanta, Ga., assignors to Georgia Tech Reserach Corporation, Atlanta, Ga.

Filed May 12, 1993, Ser. No. 61,090
Int. Cl.[5] B23H *3/00*
U.S. Cl. 204—129.3 21 Claims

1. A photoelectric etching process for high speed etching of silicon which is proportional to light intensity, comprising the steps of:

placing a silicon semiconductor in an electrolytic solution having fluoride, said electrolytic solution being substantially devoid of oxygen-containing species that react with said silicon semiconductor to form oxide compounds;

applying a potential to said semiconductor which is between the maximum potential of the valence band of said semiconductor and the minimum potential of the conductor band of said semiconductor;



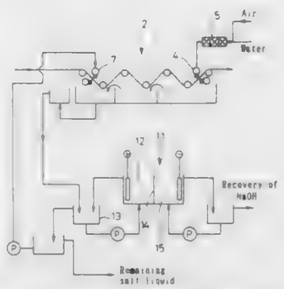
illuminating a surface part of said semiconductor to be etched with radiation of sufficient energy to produce holes in said valence band.

5,348,628

METHOD OF TREATING SALT BATH LIQUID

Tadaya Ishibashi, Suita; Masanori Sasaki, Okazaki; Hideto Obara, Uji; Hiroshi Kano, Uji, and Shintaro Yamashita, Uji, all of Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed Dec. 23, 1991, Ser. No. 812,627
Claims priority, application Japan, Apr. 2, 1991, 3-68649; May 31, 1991, 3-128069
Int. Cl.[5] C23G *1/19*; C02F *1/469, 9/00*
U.S. Cl. 204—153 3 Claims



1. In a method of treating salt bath liquid used for surface treatment of steel, said surface treatment of steel comprising the steps of:

providing a salt bath furnace containing salt bath liquid, said salt bath liquid containing sodium hydroxide held at a high temperature and also containing oxidative salt such as sodium nitrate;

immersing steel in said salt bath liquid for oxidizing surfaces of said steel so as to form soluble alkaline metallic oxide salt on said surfaces of said steel;

withdrawing said steel, having been heated to a high temperature, from said salt bath liquid;

allowing said steel to pass into a rinsing tank adjacent said salt bath furnace, said rinsing tank being partitioned into a plurality of compartments;

rinsing said steel in said rinsing tank so as to wash off salts sticking to said surfaces of said steel and metallic oxide salt formed on said surfaces of said steel, said rinsing tank being of counter-flow multiwash type such that fresh rinsing water is added to an extreme downstream one of said compartments;

the improvement comprising:

drawing rinsing water out of furthest upstream one of said compartments, said ringing water containing said salts and said metallic oxide salt;

isolating and recovering free alkalis from said salts and said metallic oxide salt contained in said rinsing water drawn out of said furthest upstream one of said compartments;

removing, during said isolation and said recovery, insolubly dispersed phases from said rinsing water drawn out of said furthest upstream one of said compartments;

feeding said rinsing water, from which said insolubly dispersed phases have been removed, to an anode compartment of an electrolyzer, said anode compartment being separated from a cathode compartment by means of a cation exchange membrane having high oxidation resistance, resistance to high temperatures, and high selective permeability for cations;

isolating free sodium hydroxide from said rinsing water and enriching said free sodium hydroxide by subjecting it to ion selective electrophoresis from said anode compartment to said cathode compartment;

allowing said free sodium hydroxide in said rinsing water to decrease to such an extent that an increase in electric resistance results therefrom;

discharging said ringing water, which has been fed to said anode compartment, from said anode compartment through a discharge port; and

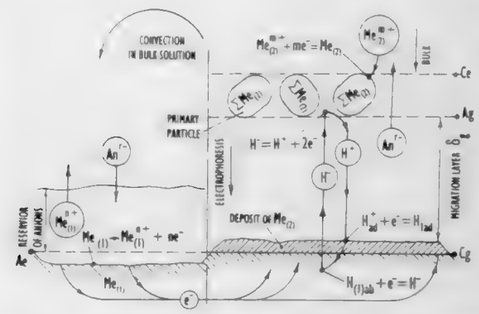
introducing said rinsing water, which has been discharged from said anode compartment, into said ringing tank so as to make up for a loss of rinsing water therein due to vaporization and control the concentration of salts in rinsing water therein, said concentration being apt to increase because of salts removed from said surfaces of said steel.

5,348,629

METHOD AND APPARATUS FOR ELECTROLYTIC PROCESSING OF MATERIALS

Boris M. Khudenko, 744 Moores Mill Rd., Atlanta, Ga. 30327

Continuation-in-part of Ser. No. 437,655, Nov. 17, 1989, abandoned, and Ser. No. 492,651, Mar. 13, 1990. This application Feb. 5, 1991, Ser. No. 650,936
Int. Cl.[5] C02F *1/46*
U.S. Cl. 204—130 48 Claims



1. A method for the electrochemical processing of materials which comprises the steps of:

a) contacting an electrolyte containing the material to be processed with an electrode system comprising at least one anode and at least one cathode, wherein said material to be processed comprises an aqueous solution or emulsion or suspension: and

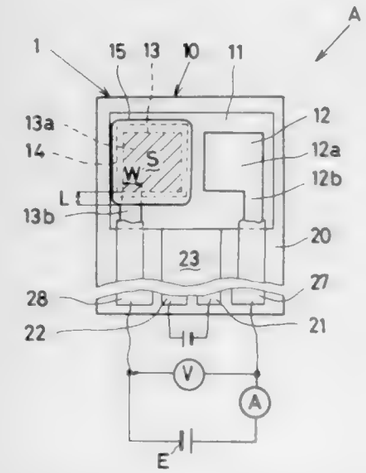
b) inducing a migrational regime such that a migrational transport layer is formed at said at least one cathode to provide a local electromagnetic field, wherein said local electromagnetic field is capable of producing electromagnetic and electrokinetic forces to effect said processing of material.

5,348,630

METHOD OF MEASURING HUMIDITY USING AN ELECTROCHEMICAL CELL

Hideaki Yagi, and Katsuhiko Horii, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 439,092, Nov. 20, 1989, abandoned. This application Jun. 2, 1992, Ser. No. 896,503
Claims priority, application Japan, Nov. 29, 1988, 63-155024[U]; Nov. 29, 1988, 63-301908; Nov. 29, 1988, 63-301909
The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.
Int. Cl.[5] G01N *27/406*
U.S. Cl. 204—153.22 8 Claims



1. In a method of measuring humidity by using an electrochemical cell which includes an oxygen-ion conductive solid electrolyte, a porous negative electrode and a porous positive electrode tightly placed on a surface of the electrolyte, the negative electrode being arranged to be partly exposed to a humidity laden gas so that an oxygen component in the gas is transferred from the negative electrode to the positive electrode by a pumping action according to a voltage applied across the pair of electrodes;

the method comprising:

applying a voltage across the pair of electrodes to obtain a characteristic curve between an intensity of the voltage applied and that of an electrical current, the characteristic curve continuously originating from a first flat portion in which a first diffusion limit current remains generally constant with a predetermined voltage range and always passes through a point of inflection with the increase of the applied voltage in which a second differential derivative of the characteristic curve falls on zero at a certain voltage, and ends up with a second flat portion in which a second diffusion limit current remains generally constant with a predetermined voltage range, the point of the inflection being uniquely determined regardless of a humidity level in the gas at constant temperature and oxygen concentration;

reading the point of the inflection, and at the same time, finding the intensity of the first diffusion limit current and the second diffusion limit current; and

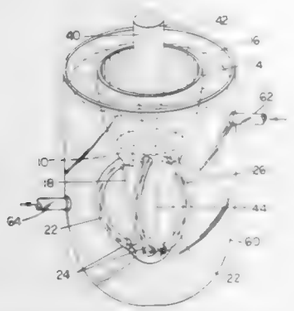
determining the humidity level in the gas from the fact that the humidity corresponds to a differential value either between the first diffusion limit current and the point of inflection or between the second diffusion limit current and the point of inflection.

5,348,631

METHOD AND APPARATUS FOR SYNTHESIZING LEAD β-DIKETONATES

Seshu B. Desu, Blackburg, Va.; May Nyman, Albuquerque, N. Mex., and Pradyot A. Agaskar, Lawrenceville, N.J., assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 7, 1993, Ser. No. 73,113
Int. Cl.[5] C01G *21/00*
U.S. Cl. 204—157.4 10 Claims



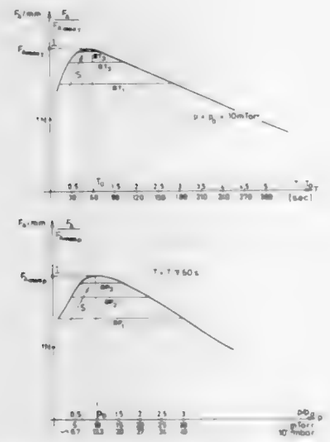
1. A method of producing a lead β-diketonate, comprising: combining lead oxide with a medium; subjecting the combined lead oxide and medium to ultrasonic waves, and recovering said lead β-diketonate.

5,348,632

METHOD OF PLASMA TREATING A SURFACE OF A WORKPIECE, VACUUM TREATMENT APPARATUS AND PREVIOUSLY PLASMA TREATED PLASTIC ARTICLE

Stephan Jost, Trubbach, Switzerland, assignor to Balzers Aktiengesellschaft, Balzers, Switzerland

Filed Dec. 2, 1992, Ser. No. 984,531
Claims priority, application Switzerland, Dec. 23, 1991, 03 837/91-7
Int. Cl.[5] B05D *3/06*
U.S. Cl. 204—165 29 Claims



1. A method for plasma treating a surface of a workpiece during a treatment duration and in an environment of reactive gas at a gas pressure, in order to increase an adherence of a lacquer to the surface, the surface consisting essentially of at least one synthetic, organic polymer, the method comprising:

selecting at least one of, the duration for the treatment, and the gas pressure for the reactive gas, such that if the duration is selected, the selected duration is within a range corresponding to a substantially flat region of an adherence maximum of a lacquer in a lacquer adherence-treatment duration diagram, and such that if the gas pressure is selected, the selected gas pressure is within a range corresponding to a substantially flat range of an adherence maximum of a lacquer in a lacquer adherence-gas pressure diagram; and

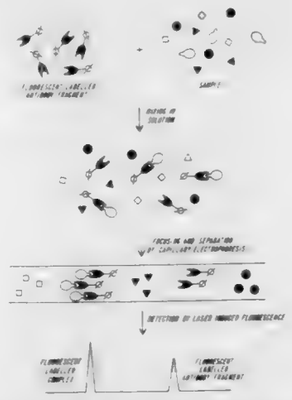
plasma treating the surface of a workpiece following the at least one of the selected duration and selected gas pressure.

5,348,633

METHOD FOR QUANTITATING TRACE AMOUNTS OF AN ANALYTE IN A SAMPLE BY AFFINITY CAPILLARY ELECTROPHORESIS

Barry L. Karger, Newton, and Kiyohito Shimura, Newtonville, both of Mass., assignors to Northeastern University, Boston, Mass.

Filed Jan. 22, 1993, Ser. No. 6,922
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—180.1 23 Claims



1. A method for quantitatively detecting trace amounts of an analyte in a sample comprising the steps of:

providing an Fab' fragment of an immunoglobulin labelled at a reactive sulfhydryl group with a detectable reporter group, said labelled Fab' fragment being capable of binding to said analyte to form an analyte-Fab' fragment complex;

combining said labelled Fab' fragment in a mixture with a sample that may contain said analyte;

separating elements of said mixture by capillary electrophoresis; and

detecting said reporter group on said analyte-Fab' complex as an indication of the presence of said analyte in said sample.

5,348,634

METHOD FOR COATING METAL PLATES

Katsuhiko Matsuo, Ibaraki, and Kuninori Takeshi, Sakai, both of Japan, assignors to Shinto Paint Co., Ltd., Amagasaki, Japan

Filed Mar. 5, 1991, Ser. No. 665,214
Claims priority, application Japan, Mar. 14, 1990, 2-63685
Int. Cl.[5] C25D *13/12*
U.S. Cl. 204—181.1 3 Claims

1. A coating method for coating a metal plate, which comprises

providing an organic coating composition which contains from 5 to 70% by weight of molybdenum disulfide, said composition forming a coating film which has a varistor property,

applying the organic coating composition on a metal plate, without being surface treated or after surface preparation or chromate treatment, in a dry film thickness of from 0.5 to 20μ,

drying the applied composition to form a coating film which has a varistor property,

subjecting the resultant coated metal plate to forming processing, and then

conducting electrodeposition coating on the metal plate.

5,348,635

FLEXIBLE ARYL ALKYL EPOXY RESINS, THEIR AMINE RESIN DERIVATIVES AND THEIR USE IN ELECTRODEPOSITION COATINGS

James A. Laugal, Union Lake; Glenn E. Martin, Farmington Hills; Donald L. St. Aubin, Westland, and Gerald G. Wold, Brighton, all of Mich., assignors to BASF Corporation

Division of Ser. No. 672,975, Mar. 21, 1991, Pat. No. 5,194,560, which is a division of Ser. No. 327,751, Mar. 23, 1989, Pat. No. 5,021,470, which is a division of Ser. No. 77,492, Jul. 24, 1987, Pat. No. 4,857,567. This application Feb. 3, 1993, Ser. No. 13,522
Int. Cl.[5] C25D *13/06*
U.S. Cl. 204—181.7 18 Claims

1. A 2D3E epoxide compound comprising the addition reaction oligomer of monomers Diol D1, Diol D2, Diepoxide E1, Diepoxide E2 and Diepoxide E3 wherein:

Diol D1 has at least two aryl groups between the hydroxyls,

Diol D2 has only one aryl group between the hydroxyls,

Diepoxide E1 is a bis(glycidyl ether) of Diol D1,

Diepoxide E2 is a bis(glycidyl ether) of a bis (labile hydrogen functionalized alkoxy) arylene, and

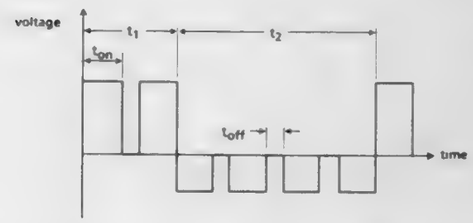
Diepoxide E3 is a bis(glycidyl ether) of Diol D2.

5,348,636

PROCESSES FOR THE PREPARATION AND SEPARATION OF MACROMOLECULES

Gary Slater, Ottowa; Jaan Noolandi, Ontario, and Chantal Turmel, Quebec, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 783,967, Oct. 29, 1991, Pat. No. 5,286,434, which is a continuation of Ser. No. 342,261, Apr. 24, 1989, abandoned. This application Nov. 8, 1993, Ser. No. 148,239
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—182.8 29 Claims



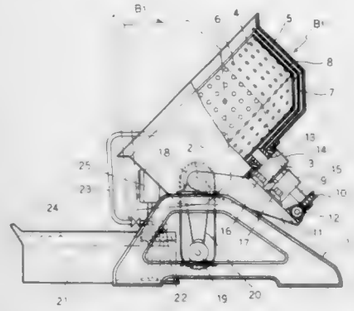
1. A process for the electrophoretic separation of charged macromolecules which comprises applying to said macromolecules a periodic sequence of pulses with each period comprising a multiplicity of electric field pulses of negative polarities and positive polarities, wherein the negative polarity pulses are applied for a longer total time duration than the positive polarity pulses within each period, and the average intensity of the negative polarity pulses is less than the average intensity of the positive polarity pulses.

5,348,637

SURFACE TREATMENT APPARATUS FOR WORKPIECES

Hisamine Kobayashi; Takeo Suzuki, and Katsuhiro Izuhara, all of Nagoya, Japan, assignors to Tipton Corp., Nagoya, Japan

Filed Sep. 22, 1993, Ser. No. 124,641
Int. Cl.[5] C25D *17/26, 17/10*
U.S. Cl. 204—213 12 Claims



1. A surface treatment apparatus for workpieces, comprising:

a) an electrically conductive inner container for containing workpieces, the inner container having a number of holes formed in a circumferential wall thereof so that an electrolyte supplied to the workpieces passes through the holes;

b) an electrically conductive outer container disposed to surround the inner container coaxially therewith with a small gap therebetween;

c) a pair of electrode terminals connected to the inner and outer containers respectively so that the containers serve as electrodes with polarity opposite each other, respectively;

d) an insulator interposed between the inner and outer containers with a gap between the same and each container; and

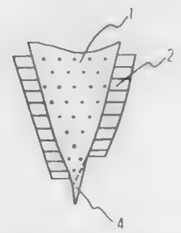
e) a drive source supplying a rotational or vibratory force to the inner container.

5,348,638

METHOD OF MANUFACTURING A PROBE FOR A SCANNING TUNNELING MICROSCOPE

Tohru Nakagawa, Kusatsu, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 7, 1993, Ser. No. 1,753
Claims priority, application Japan, Jan. 16, 1992, 4-005609
Int. Cl.[5] C25D *5/02;* G01N *27/00*
U.S. Cl. 205—122 6 Claims



1. A method of manufacturing a probe for use in a scanning tunneling microscope, comprising placing active hydrogen groups on a surface of a metal wire, forming a chemically adsorbed film on the surface of the metal wire using a silane based chemical adsorbent to bring about a condensation reaction, removing from several nm^2 to about 100 nm^2 of the chem-

ically adsorbed film from one end of the metal wire, and forming a sharp metal tip on the end of the wire by electrodeposition or vacuum deposition.

5,348,639

SURFACE TREATMENT FOR IRON-BASED PERMANENT MAGNET INCLUDING RARE-EARTH ELEMENT

Katsuo Mitsuji, Alma, Mich., assignor to Hitachi Magnetics Corporation, Edmore, Mich.

Filed Aug. 6, 1991, Ser. No. 740,999

The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.

Int. Cl.[5] C25D *5/34*

U.S. Cl. 205—181 | **5 Claims**

1. A surface treatment for R-TM-X permanent magnet material comprising the following steps after mechanical working and degreasing treatment,

(1) etching the magnet material in a first solution comprising nitric acid having a concentration of 0.2 to 10 vol %,

(2) etching the magnet material in a second solution comprising a mixture of oxygenated water having a hydrogen peroxide concentration of 0.2 to 10 vol %, and acetic acid having a concentration of 10 to 30 vol %,

(3) copper plating to form a 0.5 to 15 μm thick copper layer on the magnet material, and

(4) nickel plating to form a 1 to 100 μm thick nickel layer on the copper layer,

where the magnet material consists essentially of 5–40% by weight of R, 50–90% by weight of TM and 0.2 to 8.0% by weight of X, and

where R consists of yttrium or one or more rare earth elements or mixtures thereof, TM consists of iron as its main component and one or more transition metals other than iron, said one or more transition metals being partially replaceable with one or more other elements, and X consists of at least one non-metallic element or metalloid element or mixture thereof to enhance the coercive force of the magnet material.

5,348,640

CHEMICAL CONVERSION METHOD AND AQUEOUS CHEMICAL CONVERSION SOLUTION USED THEREFOR

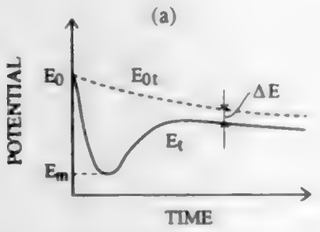
Toshiaki Shimakura, Ichikawa; Yutaka Ishida, Tokyo, and Tomomi Watanabe, Kawasaki, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Apr. 2, 1993, Ser. No. 42,628

Claims priority, application Japan, Apr. 3, 1992, 4-110729

Int. Cl.[5] C25D *9/08*

U.S. Cl. 205—318 | **13 Claims**



1. A method for forming a chemical conversion coating on a member made of aluminum or its alloy comprising the steps of:

(a) etching a surface of said member with an aqueous solution of acid or alkali;

(b) immersing the etched member in a phosphate-based chemical conversion treatment solution which is substantially free from fluoride ions; and

(c) applying a negative voltage, V_t, to said member during at least a part of said immersion step, so that the potential, E_t, of said member defined by the formula: $E_t = E_{0t} + V_t$ reaches a minimum potential, E_m, satisfying the following formula:

$$E_0 - 1.5V \leqq E_m \leqq E_0 - 0.8V,$$

wherein E_0 represents an initial value of said natural electrode potential of said member, and E_{0t} is said natural electrode potential of said member at a time when a certain period of time, "t", has passed.

5,348,641

GASOLINE UPGRADING PROCESS

Stuart S. Shih, Cherry Hill, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 850,106, Mar. 12, 1992, and a continuation-in-part of Ser. No. 745,311, Aug. 15, 1991. This application May 8, 1992, Ser. No. 880,373

Int. Cl.[5] C10G *69/02*

U.S. Cl. 208—89 | **6 Claims**

1. A process of upgrading a sulfur-containing feed fraction boiling in the gasoline boiling range in an upgrading process in which hydrogen is supplied to a hydrodesulfurization zone and a second reaction zone in a hydrogen circuit including a scrubber for removing hydrogen sulfide and ammonia from hydrogen from the reaction zones to provide recycle hydrogen for the hydrodesulfurization zone, and to supply make-up hydrogen to the hydrogen circuit, which process comprises:

hydrodesulfurizing a catalytically cracked, olefinic, sulfur-containing gasoline feed having a sulfur content of at least 50 ppmw, an olefin content of at least 5 percent and a 95 percent point of at least 325° F. with a hydrodesulfurization catalyst in the hydrodesulfurization zone to which the recycle hydrogen is fed, operating under a combination of elevated temperature, elevated pressure and an atmosphere comprising hydrogen, to produce an intermediate product comprising a normally liquid fraction which has a reduced sulfur content and a reduced octane number as compared to the feed;

contacting at least the gasoline boiling range portion of the intermediate product in a second reaction zone to which the make-up hydrogen is fed, with an acidic zeolite catalyst in an atmosphere of hydrogen at a hydrogen sulfide partial pressure of not more than 5 psia and an ammonia partial pressure of not more than 0.1 psia, to convert the gasoline boiling range portion of the intermediate product to a product comprising a fraction boiling in the gasoline boiling range having a higher octane number than the gasoline boiling range fraction of the intermediate product.

5,348,642

CATALYTIC CRACKING PROCESS WITH CIRCULATION OF HOT, REGENERATED CATALYST TO THE STRIPPING ZONE

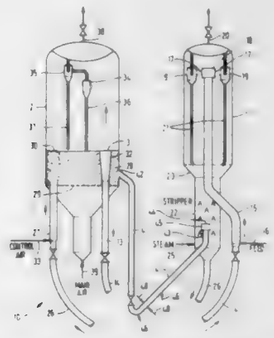
Willibald Serrand, Buxheim, Fed. Rep. of Germany; Philip Holmes, West Horsley, United Kingdom; Todd R. Steffens, Randolph; Patrick H. Terry, Middletown, both of N.J., and Paul E. Eberly, Baton Rouge, La., assignors to Exxon Research Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 694,737, May 2, 1991, abandoned. This application Feb. 11, 1993, Ser. No. 16,398

Int. Cl.[5] C10G *11/00*

U.S. Cl. 208—113 | **8 Claims**

1. In a catalytic cracking process comprising contacting a hydrocarbon feedstock in a reactor with particles of hot regenerated cracking catalyst under fluid catalytic cracking conditions to form vaporous cracked products and used catalyst particles having hydrocarbonaceous material and coke deposited thereon; stripping the used catalyst particles with a stripping fluid in a stripping zone to remove some hydrocarbonaceous material therefrom; recovering stripped hydrocarbonaceous material from the stripping zone and circulating stripped used catalyst particles to a regeneration zone; contacting stripped used catalyst particles in the regeneration zone with an oxygen-containing gas to remove unstripped hydrocarbonaceous material and coke therefrom by oxidation thereby raising the temperature of the catalyst particles; and circulating hot regenerated catalyst particles to the reactor for contact with further amounts of hydrocarbon feedstock; the improvement which comprises (a) separately circulating hot regenerated catalyst particles from the regenerator into the stripping zone whereby the hot regenerated particles mix with and raise the



temperature of used catalyst particles in the stripping zone, (b) passing into contact with the separately circulating hot regenerated catalyst particles in step (a) a hydrocarbon-containing stream, said hydrocarbon-containing stream being contacted with the separately circulating hot regenerated particles before they enter the stripping zone and said hydrocarbon-containing stream containing an amount of hydrocarbon in excess of that required to effect aeration of the separately circulating hot regenerated catalyst and to combust all the oxygen present therewith so that the hydrocarbons are catalytically and thermally cracked into more desirable products and (c) recovering the cracked hydrocarbon products produced in step (b).

5,348,643

CATALYTIC CONVERSION WITH IMPROVED CATALYST

Robert P. L. Absil, Mantua, and Joseph A. Herbst, Turnersville, both of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation-in-part of Ser. No. 667,854, Mar. 12, 1991, Pat. No. 5,231,064. This application Jul. 13, 1993, Ser. No. 90,872

Int. Cl.[5] C01G *11/05*

U.S. Cl. 208—114 | **27 Claims**

21. A process for cracking feedstock hydrocarbon compounds to product comprising gasoline and olefins of 3 to 4 carbon atoms which comprises contacting said feedstock at cracking conditions including a temperature of from about 400° C. to about 650° C. with a catalyst composition comprising catalyst manufactured by the method comprising the steps of:

forming a first slurry comprising clay and a source of phosphorus;

mixing said first slurry with an acid stable zeolite component to form a second slurry; and

spray drying said second slurry at a pH of below 3.

5,348,644

PROCESS AND APPARATUS FOR CONTACTING A HYDROCARBON FEEDSTOCK WITH HOT SOLID PARTICLES IN A TUBULAR REACTOR WITH A RISING FLUIDIZED BED

Pierre Maroy, Versailles; Roben Loutaty, Le Havre, and Thierry Patureaux, Montivilliers, all of France, assignors to Compagnie de Raffinage et de Distribution Total France, Levallois-Perret, France

Filed Nov. 13, 1990, Ser. No. 612,322

Claims priority, application France, Nov. 10, 1989, 89 14787

Int. Cl.[5] C10G *11/18*

U.S. Cl. 208—153 | **15 Claims**

1. A process for contacting a hydrocarbon feedstock with hot solid particles in a centrally-open substantially vertical tubular reactor operated with a rising dilute fluidized bed having an injection zone for the hydrocarbon feedstock, said process comprising introducing the particles into the tubular reactor in an uprising, vertical flow direction, fluidizing the particles so as to provide a vertically rising, axially moving fluidized bed, injecting feedstock into the injection zone and, at a point in the tubular reactor downstream from the introducing and fluidizing steps, imparting at the outer periphery of said bed a rotational motion about the axis of the reactor effective to counteract backmixing and reduce the residence time of particles at least at the periphery of said bed and also reduce particle density at the periphery of said bed for more uniform particle distribution so that at the injection zone the speed of rotation of the fluidized bed at the periphery of the reactor, in a plane normal to this axis, is from approximately 0.5 to approximately 1.5 times the velocity of the fluids flowing vertically along the axis of the reactor.

5,348,645

DETERMINATION OF AROMATICS IN HYDROCARBONS BY NEAR INFRARED SPECTROSCOPY

Steven M. Maggard, Barboursville, W. Va., and William T. Welch, Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 839,982, Feb. 20, 1992, which is a division of Ser. No. 626,132, Dec. 11, 1990, Pat. No. 5,145,785. This application Sep. 8, 1992, Ser. No. 942,117

The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.

Int. Cl.[5] C10G *45/00*

U.S. Cl. 208—209 | **36 Claims**

1. A process for controlling organic sulfur content of a hydrocarbon product comprising in combination:

a. measuring the near infrared absorbance of a hydrocarbon in the range of 1600–1650, 1100–1150, 850–950 or 2050–2200 nm, and providing a signal indicative of said absorbance or a mathematical function thereof;

b. controlling a sulfur-removal process or a blending process by operating control means responsive to said signal for varying the organic sulfur content of said hydrocarbon product by said sulfur-removal process or by said blending process with additional hydrocarbons having a different organic sulfur content.

5,348,646

FLUID FILTER ASSEMBLY

John R. Costello, Jr., 3169 Gove Dr., Tecumseh, Mich. 49286; Leonard F. Knoedler, 5119 Pontiac Trail, Ann Arbor, Mich. 48105; Monty E. Vincent, 3575 Miller Rd., Ann Arbor, Mich. 48103, and Mary K. Boomus, 13829 Riker Rd., Chelsea, Mich. 48108

Filed Nov. 16, 1992, Ser. No. 976,964

Int. Cl.[5] B01D *65/10*

U.S. Cl. 210—94 | **9 Claims**

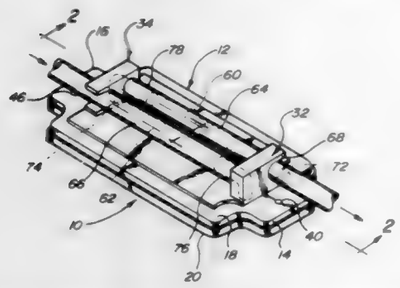
1. A filter assembly (10) comprising:

a hollow housing (**12**) having a length and first and second ends (**14**, **16**);

membrane means (**22**) contained within and extending along said length of said housing (**12**) and separating said housing (**12**) into first and second chambers (**24**,**26**);

inlet means (**32**) proximate to said first end (**14**) and in fluid communication with said first chamber (**24**) for allowing a flow of fluid into said first chamber (**24**); and

outlet means (**34**) proximate to said second end (**16**) and in fluid communication with said second chamber (**26**) for allowing a flow of fluid from said second chamber, (**26**) said membrane means (**22**) being air permeable when dry and air impermeable when wet, whereby a wetting fluid entering said first chamber (**24**) at said first end of said housing (**12**) forces air from said first and second chambers (**24**, **26**) along said length of said membrane means (**22**) and out said outlet means (**34**) as the fluid wets said membrane means (**22**) thereby de-airing said first and second chambers (**24**, **26**) from one end to the other end along the length of said membrane means (**22**) on both sides thereof, said inlet and outlet means (**32**, **34**) each including an L-shaped passageway including a first portion (**52**, **54**) extending perpendicular to the length of said membrane means and a second portion (**56**, **58**) extending along said length of said housing (**12**), said second portion (**56**) of said inlet means **32** opening towards said opening of said second portion (**58**) of said outlet means (**34**), each of said second portions (**56**, **58**) defining a line (**60**, **62**) extending along the length thereof and each of said lines (**60**, **62**) being spaced from and parallel to the other of said lines (**60**, **62**).



5,348,647

WATER FILTER WITH BACK WASH FUNCTION

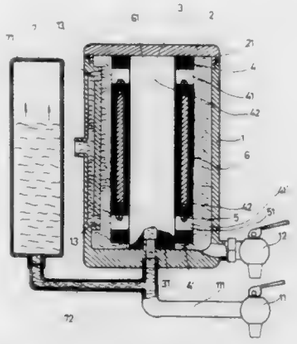
T. H. Chen, 3F, No. 73, Chien Kwo Road, Hsinten, Taipei Hsien, Taiwan

Filed Mar. 16, 1993, Ser. No. 31,968
Int. Cl.[5] B01D *41/04*
U.S. Cl. 210—411 **1 Claim**

1. An apparatus for cleaning water, comprising:

means for filtering water, said water filtering means including, (1) a first housing having at least one housing wall and a pair of opposing end members, one of said pair of end members having an orifice formed therethrough, (2) a porous ceramic core filter element disposed within said housing and having a longitudinally directed bore formed therein for passage of filtrate therethrough, said longitudinally directed bore of said porous ceramic core filter element being coupled in fluid communication with said orifice, (3) a water inlet formed in said housing wall for entry of raw water therethrough, (4) a conduit extending from said orifice external to said first housing, (5) a drinking water control valve coupled to a distal end of said conduit, said conduit providing fluid communication between said drinking water control valve and said longitudinally directed bore of said porous ceramic core filter element, and (6) a washing water control valve coupled to said housing wall and in fluid communication with an inlet chamber defined between said housing wall and an external surface of said porous ceramic core filter element, said filtrate being defined by water passing through said porous ceramic core filter element from said external surface thereof to said longitudinally directed bore; and

(7) means for back washing said porous ceramic core filter element with filtrate simultaneous with providing a flow of said raw water past said external surface thereof responsive to opening of said washing water control valve, said back washing means including means for storage of said filtrate and compressed air, said storage means including, (a) a second housing having a plurality of wall members for defining a closed cavity space therein, and (b) an inlet/outlet port formed on one end of said second housing, said back washing means further including means for conveying said filtrate from said storage means via said inlet/outlet port to said conduit disposed external to said first and second housings, wherein said compressed air within said storage means produces a flow of said filtrate through said porous ceramic core filter element from said longitudinally directed bore to said inlet chamber responsive to said washing water control valve being in an open condition for removing dirt particles from pores of said porous ceramic core filter element.

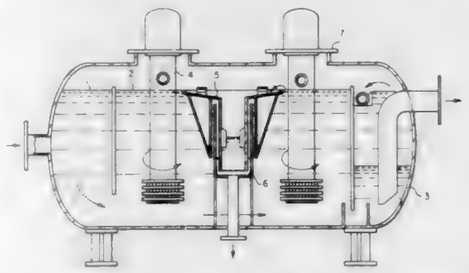


5,348,648

FLOTATION DEVICE FOR THE TREATMENT OF WATER POLLUTED BY HYDROCARBONS

Adnan Hamdan, Pau, France, assignor to CECA, S.A., France

Filed Oct. 2, 1992, Ser. No. 956,734
Claims priority, application France, Oct. 3, 1991, 91 12197
Int. Cl.[5] B01D *21/24*
U.S. Cl. 210—109 **2 Claims**



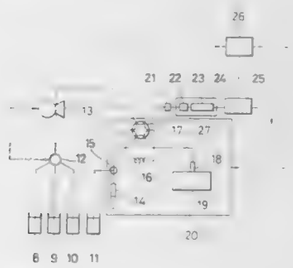
1. A flotation device for the separation of oils, creams, or froths floating on the surface of aqueous liquids, comprising a cylindrical tank divided by partitions into a feed-flow rate homogenization compartment, at least one flotation cell equipped with (a) a cyclone-turbine comprising a rotor with mobile blades housed in a stator cage and a stack positioned above the cyclone-turbine and (b) a skimming chamber with a self-stabilizing chute, and a tranquilization compartment, said cyclone-turbine having a throttling disk positioned between said stator cage and said stack and vortex stabilization baffles attached to the inside wall of said stack, said skimming chute being displaced vertically with respect to the surface of the aqueous liquid in said at least one flotation cell, and said skimming chute being self-stabilizing and comprising an exterior skirt having attached thereto two counterweights, two lateral floats, and two vertical floats which act to maintain said skimming chute at the surface of the aqueous liquids.

5,348,649

APPARATUS FOR MEASURING GLYCOHEMOGLOBIN

Masako Mizuno, Mito; Kenji Tochigi, Tokyo, and Yutaka Misawa, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 733,808, Jul. 22, 1991, abandoned. This application May 11, 1993, Ser. No. 59,931
Claims priority, application Japan, Jul. 20, 1990, 2-192423
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.2 **6 Claims**



4. An apparatus for measuring glycohemoglobin to measure stable-type hemoglobin in blood by high-performance liquid chromatography, comprising a separation column for separating glycohemoglobin in blood, a means for injecting a diluted blood sample into the separation column, a means for passing eluents into the separation column and a means for detecting stable-type hemoglobin in an eluate from the separation column, wherein a filler consisting of an inorganic or organic porous substance having carboxyalkyl group and a filler consisting of an inorganic or organic porous substance having dihydroxyboronyl group are separated in two layers and packed individually in the separation column.

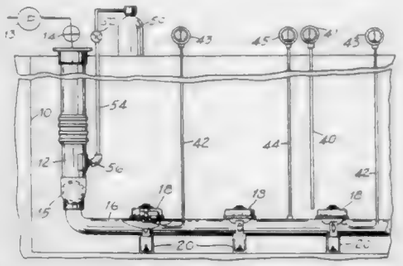
5,348,650

WASTE WATER TREATMENT APPARATUS

Paul W. Cummings, Jr., Worcester, Mass., assignor to Aeration Engineering Resources Corporation, Worcester, Mass.

Continuation of Ser. No. 550,613, Jul. 9, 1990, Pat. No. 5,051,193, which is a continuation of Ser. No. 246,446, Sep. 19, 1988, abandoned, which is a continuation-in-part of Ser. No. 836,947, Mar. 6, 1986, abandoned. This application Jun. 14, 1991, Ser. No. 715,390
The portion of the term of this patent subsequent to Sep. 24, 2008, has been disclaimed.
Int. Cl.[5] C02F *3/20*
U.S. Cl. 210—199 **7 Claims**

1. An apparatus for cleaning accumulated deposits from the pores in the domes mounted in an activated sludge aeration sewage treatment pond in a system that includes in combination a concentrated liquid acid supply; and air pump; a drop leg; a main header; branch headers; plenum chambers and a plurality of diffuser domes each mounted on its respective plenum chamber wherein a dilute liquid acid is filled into and pumped through at least certain of said branch headers, said plenum chambers and the pores of their respective diffuser domes; said apparatus comprising a mixing means; means for feeding said concentrated liquid acid supply to said mixing means to produce said dilute liquid acid solution which is operative to react with the deposits in the pores of said domes; means to supply water under pressure to said mixing means for dissolving the concentrated liquid acid in the water to form said dilute acid; means to feed said dilute acid cleaning solution into said drop leg, said branch header, said plenum chambers and the pores of their respective domes; and means to force said dilute acid through said system whereby to react said dilute acid with said deposits and force the reaction products from the pores of said domes.

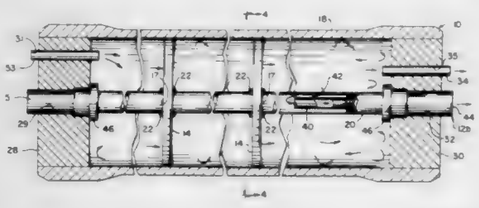


5,348,651

MEMBRANE SIMULATOR

Timothy J. Carlson, Litchfield, Conn.; Richard D. Geiger, Cedarburg, Wis.; Gerald A. Karls, Greenfield, Wis., and Bruce A. Meysembourg, Adell, Wis., assignors to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Mar. 23, 1993, Ser. No. 35,670
Int. Cl.[5] B01D *35/12*
U.S. Cl. 210—321.6 **6 Claims**



1. In a reverse osmosis water purification unit comprising an elongated, tubular pressure vessel arranged to contain at least one reverse osmosis membrane element, wherein the improvement comprises a membrane simulator for temporary substitution of said membrane element, said simulator comprising a tube member coaxially disposed and extending substantially the length of the pressure vessel and interior support means arranged to position and support the tube member in substantial coaxial alignment with the pressure vessel, wherein said tube member comprises means for lowering hydrostatic pressure of a liquid passing through the pressure vessel, which means simulates, in the absence of said membrane element, the decrease in hydrostatic pressure normally present when liquid passes through a reverse osmosis membrane element when said membrane element is normally disposed in the pressure vessel.

5,348,652

SEMIPERMEABLE COMPOSITE MEMBRANE

Raymond J. M. Creusen, Amersfoort, and Franky F. Vercauteren, Zeist, both of Netherlands, assignors to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Tno, Delft, Netherlands

PCT No. PCT/NL91/00090, § 371 Date Dec. 3, 1992, § 102(e) Date Dec. 3, 1992, PCT Pub. No. WO91/18666, PCT Pub. Date Dec. 12, 1991

PCT Filed Jun. 5, 1991, Ser. No. 955,737

Claims priority, application Netherlands, Jun. 6, 1990, 9001273

Int. Cl.[5] B01D *61/18*

U.S. Cl. 210—490 11 Claims

1. Semipermeable composite membrane having a high sucrose retention and a low salt retention, comprising a porous support substrate and a polymer film applied to the support and comprising ampholytic groups, wherein the polymer film is formed from film forming reagents and contains ampholytic polymer in an amount of about 20–95% by weight of the polymer film, wherein the ampholytic polymer comprises repeating units containing at least one anionic group and at least one cationic group and no group reactive to the film forming reagents, whereby the ampholytic polymer is present in the polymer in an unbonded state.

5,348,653

PROCESS FOR THE BIOLOGICAL PURIFICATION OF EFFLUENT

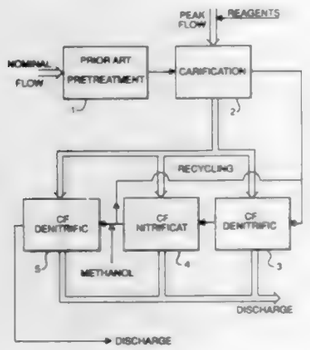
Jean-Marie Rovel, Rueil Malmaison, France, assignor to S.A. Degremont, Rueil Malmaison, France

Filed Sep. 25, 1992, Ser. No. 951,012

Claims priority, application France, Oct. 2, 1991, 91 12133

Int. Cl.[5] C02F *3/30*

U.S. Cl. 210—605 2 Claims



1. A process for biological treatment of waste water, comprising the steps:

normally subjecting the waste water to serially connected biofilters for producing sequential fixed culture anoxic denitrification, oxic nitrification, and anoxic denitrification which removes carbon and nitrogen pollution from the waste water, the biofilters each containing fixed cultures having autotrophic and heterotrophic flora;

detecting a substantial increase of waste water flow;

subsequently subjecting parallel flows of waste water to the biofilters, instead of serially when said increased flow is detected;

subjecting the denitrification biofilters to a supply of air for combining oxygen in the air with carbon in the waste water to perpetuate heterotrophic flora in the biofilters, and consequently reducing biochemical oxygen demand;

detecting return of normal flow rates of the waste water;

subsequently subjecting the waste water to the biofilters connected once again in series when normal flow rate is detected;

discontinuing the air supply to the denitrification biofilters; and

washing the nitrification biofilter to remove heterotrophic flora, allowing return of initial autotrophic flora levels, thus restoring sequential nitrification.

5,348,654

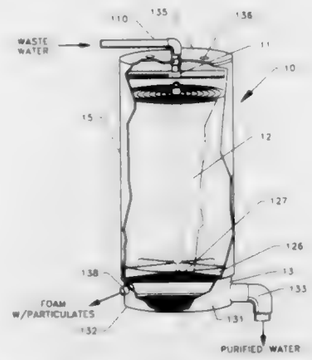
CO-CURRENT PACKED TOWER BIO-REACTOR

Harry C. Fischer, Box 14, Moon, Va. 23119

Filed Aug. 26, 1993, Ser. No. 112,118

Int. Cl.[5] C02F *3/04*

U.S. Cl. 210—615 8 Claims



8. A method for purifying contaminated water comprising the steps of:

providing a pressurized source of contaminated waste water;

distributing the contaminated waste water in intermittent columns to a plurality of vertical tubes providing a bacterial reaction surface;

entraining columns of air between the intermittent columns of water whereby said air is drawn through the vertical tubes by siphon action;

discharging accumulated foam from water exiting said vertical tubes using air pressure generated by said siphon action; and

collecting purified water.

5,348,655

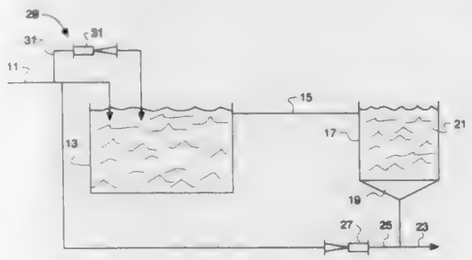
METHOD FOR INCREASING THE CAPACITY OF SEWAGE TREATMENT PLANT

Luis E. D. Simas, Palos Park, Ill., and Jesus F. Gaztambide, Madrid, Spain, assignors to Liquid Carbonic Corporation, Oak Brook, Ill.

Filed Jul. 2, 1993, Ser. No. 86,692

Int. Cl.[5] C02F *3/12*

U.S. Cl. 210—625 2 Claims



1. A method for increasing the capacity of a sewage treatment plant comprising a secondary waste water treatment tank, a settling tank downstream from the secondary waste water tank and a recycle sludge line for the transmission of a recycle sludge from the settling tank to the secondary waste water treatment tank, the method comprising injecting oxygen into the recycle sludge having an oxygen level of less than about 0.5 ppm in the recycle sludge line during transmission of the recycle sludge from the settling tank, the injection made in amounts over a period of from about three to about seven days at a rate effective for bringing the oxygen level to about 2 ppm to about 5 ppm in the recycle sludge in the recycle sludge line prior to introducing said recycle sludge into the secondary waste water treatment tank, thereby increasing the capacity of the sewage treatment plant by about 30% relative to the same plant wherein oxygen is not injected into said recycle sludge line.

5,348,656

OPTICALLY ACTIVE BEAD POLYMERS CONTAINING FILLERS

Wolfgang Podszun, Cologne; Bruno Bömer, Bergisch Gladbach; Rolf Grosser, Leverkusen; Walter Lange, Cologne, and Michael Grosse-Bley, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 979,746, Nov. 23, 1992, abandoned. This application Nov. 23, 1992, Ser. No. 156,517

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1991, 4139747

Int. Cl.[5] B01D *15/08;* C07B *57/00*

U.S. Cl. 210—635 10 Claims

1. Optically active crosslinked bead polymers made of water-dispersible monomers, characterised in that they contain an amount of 2 to 60% by weight of inorganic filler.

9. Method for the preparation of optically active crosslinked bead polymers according to claim 1, characterised in that the inorganic filler, if appropriate treated with adhesion promoters, is suspended in a mixture of optically active polymerisable compounds, a crosslinking agent and a diluent, the mixture obtained is activated with a free-radical promoter and dispersed in an aqueous medium using a protective colloid and the dispersion obtained is then polymerised by heating to the decomposition temperature of the free-radical promoter.

5,348,657

PROCESS FOR THE SEPARATION OF CATALYST-FREE WORKING SOLUTION FROM THE HYDROGENATION CIRCUIT OF THE ANTHRAQUINONE PROCESS FOR THE PRODUCTION OF HYDROGEN PEROXIDE

Hubert Eickhoff, Alzenau; Rüdiger Schirrmacher, Hanau; Karl-Heinz Mangartz, Rheinfelden; Hans-Martin Huber, Kirchlinteln-Hohenaverbergen, and Ralf Godecke, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 17, 1993, Ser. No. 61,513

Claims priority, application Fed. Rep. of Germany, May 25, 1992, 4217245

Int. Cl.[5] B01D *61/00*

U.S. Cl. 210—636 10 Claims

1. A process for the removal of catalyst-free working solution from working solution containing palladium black of the hydrogenation circuit of the anthraquinone process for the production of hydrogen peroxide using a microfiltration filter, the differential pressure between the retentate side and the permeate side being briefly reversed on a periodic basis, said process comprising passing said working solution containing palladium black through a microfilter operated on the cross-flow principle with a filter membrane of ceramic material or polyolefin having an average pore diameter of 0.1 to 3 μm.

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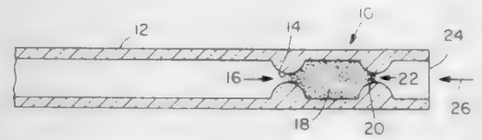
PROCESS FOR EFFECTING CAPILLARY ELECTROPHORESIS

Martin Fuchs, Uxbridge, and Michael Merion, Upton, both of Mass., assignors to Waters Investments Limited, Wilmington, Del.

Division of Ser. No. 911,997, Jul. 10, 1992, Pat. No. 5,246,577, which is a continuation of Ser. No. 530,121, May 29, 1990, abandoned. This application Feb. 17, 1993, Ser. No. 18,647

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—656 4 Claims



1. The process for effecting capillary separation in the apparatus which comprises a first capillary tube section comprising a capillary tube having an inner diameter between about 1 and 500 micrometers and containing a packing capable of retaining a solute sample from a first solvent and subsequently releasing said sample into a second solvent, said first tube section including means for retaining said packing within said first tube section while permitting fluid flow through said first tube section, said first tube section having an inlet and an outlet, said outlet being in fluid communication with a second capillary tube section, said second capillary tube section, having an inner diameter between about 1 and 500 micrometers and free of a packing material, and means for effecting said capillary separation process in said second capillary tube section, which comprises introducing a solution comprising a first solvent and a solute sample into said first tube section to effect retention of said solute sample by said packing while permitting said first solvent to pass through said first tube section, passing a second solvent through said first tube section to release said solute sample from said particulate packing and into said second capillary tube section and analyzing said solute sample in said second capillary tube section by a capillary separation process selected from the group consisting of capillary electrophoresis and micellar electrokinetic capillary chromatography.

5,348,659

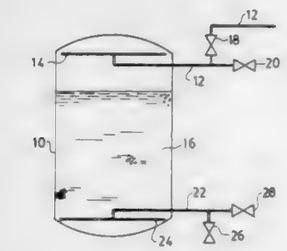
COUNTERCURRENT REGENERATION PROCESS

Gerhard Kunz, Heiligenhaus, Fed. Rep. of Germany; George L. Dimotsis, Lansdale, Pa., and Richard L. Sampson, Trumbull, Conn., assignors to EDR Acquisition Corp., Plantsville, Conn.

Filed Mar. 18, 1992, Ser. No. 853,272

Int. Cl.[5] C02F *1/42*

U.S. Cl. 210—678 12 Claims



1. A method of regenerating an ion exchanger which comprises:

(a) providing an ion exchanger having a non-constrained bed of ion exchange material in the form of ion exchange granules;

(b) passing a solution to be treated in a downward charging

direction through said bed of ion exchange material resulting in the formation of a concentration profile of ions that have been exchanged from the top to the bottom of said bed through said ion exchange material with said profile exhibiting a higher concentration of ions at the top of said bed;

(c) followed by passing a regenerating solution upwardly through the non-constrained bed of ion exchange material in a controlled intermittent pulsed flow comprising a pulsed up flow of regenerating solution, a subsequent non-flow pause time, followed by a down flow pulse in a direction opposite to the up flow, the duration and velocity of said pulsed up flow of regenerating solution being sufficient to hydrodynamically lift said ion exchange granules a controlled distance through all of the ion exchange granules without causing significant mixing of ion exchange granules throughout the concentration profile of said ion exchange material, the duration of said subsequent non-flow pause time being in the range of about 3 to 15 seconds to allow for some perceptible settling of the ion exchange granules, with said down flow pulse being sufficient to reduce the sedimentation time of said ion exchange granules to a fraction of the normal gravitational settling time for said granules in the absence of said down flow pulse.

5,348,660

FILTER APPARATUS AND METHOD WITH FILTER EVALUATION BY SAMPLE SOLUTIONS

Shingo Fujikata, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 3, 1993, Ser. No. 12,778
Claims priority, application Japan, Feb. 5, 1992, 4-047745
Int. Cl.[5] B01D *37/00;* **G01N** *19/00*
U.S. Cl. 210—767 **3 Claims**



2. A method for filtering a thixotropic fluid using a filter apparatus having a housing with an interior volume V, a filter provided within the interior of the housing in such a way that the filter divides the interior into a primary region and a secondary region having a dead space, said filter apparatus having an index $\Theta/H > 0.95$, which is determined by:

providing a first solution;

providing a second solution which differs from the first solution in one characteristic so that the first solution can be distinguished from the second solution;

placing said first solution in every part of said housing;

displacing said first solution in every part of said housing with said second solution;

recovering a filtered solution from said secondary region;

measuring a duration of time, Θ, required for said filtered solution to change from consisting of only said first solution to consisting of only said second solution;

calculating a mean residence time H, where $H=V/v$ and where v is a flow velocity in the filter apparatus for said first and second solutions;

calculating the index Θ/H;

supplying said thixotropic fluid to said filter apparatus; and

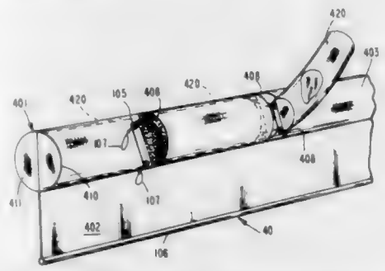
passing said thixotropic fluid from said primary region through said filter into said secondary region.

5,348,661

OIL ABSORPTION METHOD AND APPARATUS UTILIZING A REPLACEABLE BLADDER

Alan Hill, P.O. Box 11, Hermosa Beach, Calif. 90254

Continuation-in-part of Ser. No. 594,045, Oct. 9, 1990, abandoned. This application Mar. 25, 1992, Ser. No. 858,249
Int. Cl.[5] C02F *1/28*
U.S. Cl. 210—680 **43 Claims**



1. The method of removing hazardous fluid waste from a body of water that includes:

a) providing a flexible mesh carrier having a plurality of cells;

b) providing a porous bladder filled with sorbent material;

c) spray coating of said bladder with an adhesive to contain said sorbent material within said bladder:

d) inserting said porous bladder filled with sorbent material into each of said cells;

e) introducing said bladder filled, flexible mesh carrier into contact with the hazardous waste near or at the surface of the water body;

f) allowing absorption of the hazardous waste through the flexible mesh carrier and into the sorbent material within the porous bladder within each said cell; and,

g) removing said flexible mesh carrier from the body of water, for removal of said bladder from each said cell for disposition of the absorbed hazardous material.

5,348,662

PROCESS FOR REMOVING HEAVY METALS FROM AQUEOUS SOLUTIONS

Jeffrey H. Yen, Gloucester, N.J., and Richard C. Spung, Crosby, Tex., assignors to Elf Atochem North America, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 882,777, May 14, 1992, abandoned. This application May 13, 1993, Ser. No. 61,790
Int. Cl.[5] C02F *1/62*
U.S. Cl. 210—717 **16 Claims**

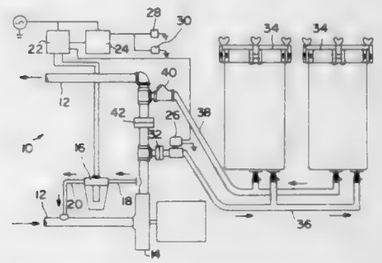
1. A process for the removal of at least one heavy metal selected from the group consisting of arsenic, tin and lead from ground water initially substantially free of sulfuric acid and contaminated with dissolved said heavy metal, said process comprising forming a water-soluble salt of said heavy metal in solution at an acid pH by the addition to said groundwater of an inorganic water-soluble salt of a metal from Group Ib, IIb or VIII of the Periodic Table, and then adjusting the pH upward to precipitate said salt of said heavy metal, the salt formation and precipitation carried out at a temperature within the range from above 30° C. to below the boiling point of the reaction solution, optionally, prior to forming the heavy metal salt, treating said groundwater with an oxidizing agent in an amount sufficient to convert any low valence said heavy metal to a higher valency and to oxidize any organic contaminants therein, before, during or after forming said water-soluble salt of said heavy metal adding a precipitation-enhancing agent selected from the group consisting of calcium sulfate, arsenic trioxide, calcium arsenate and cupric oxide to said groundwater in an amount sufficient to enlarge the average particle size of the heavy metal salt when precipitated, said precipitation-enhancing agent being present in the groundwater in crystalline form during the precipitation of said heavy metal salt, and separating the precipitate from said groundwater.

5,348,663

CONTROL OF BROMINATION OF DRINKING WATER

Gary L. Miers, Poland Springs; David G. Allen, Raymond, and Bruce G. Merrill, Windham, all of Me., assignors to Howell Laboratories, Inc., Bridgton, Me.

Filed Aug. 23, 1993, Ser. No. 110,566
Int. Cl.[5] C02F *1/50, 1/76*
U.S. Cl. 210—739 **4 Claims**



1. A method for determining completion of a life cycle of at least one cartridge containing a polybromide impregnated resin used for introducing bromine into water for disinfection of the water comprising:

placing a cartridge containing a polybromide impregnated resin in fluid flow communication with a supply of water to be disinfected;

measuring the content of bromine in the water;

initiating a timing cycle when the bromine content in the water is below a desired level;

measuring the bromine content of the water during the duration of the timing cycle,

discontinuing the timing cycle if the bromine content rises above the desired level; and

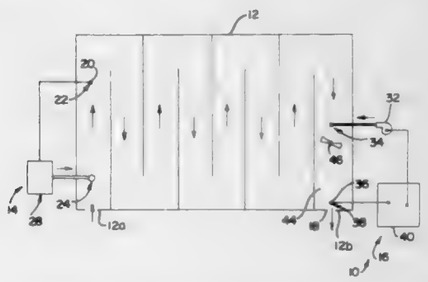
outputting an alarm signal if the bromine content remains below the desired level during the timing cycle, said alarm signal indicating that the life cycle of the cartridge containing the polybromide impregnated resin is completed.

5,348,664

PROCESS FOR DISINFECTING WATER BY CONTROLLING OXIDATION/REDUCTION POTENTIAL

Yong H. Kim, Flossmoor, and Roger L. Strand, Bourbonnais, both of Ill., assignors to Stranco, Inc., Bradley, Ill.

Filed Oct. 28, 1992, Ser. No. 967,804
Int. Cl.[5] C02F *1/70, 1/76, 1/78*
U.S. Cl. 210—746 **11 Claims**



1. A method for the treatment of wastewater containing an oxidizing agent selected from the group consisting of bromine, chlorine dioxide, ozone and chlorine, said method substantially completely neutralizing the oxidizing agent in the wastewater, the wastewater flowing through a conduit, said method comprising the steps of:

(a) establishing a relationship between the measured oxidation reduction potential of the wastewater and the level of reducing agent in the wastewater;

(b) measuring the oxidation/reduction potential at a sensing position in the conduit;

(c) controlling the addition of a reducing agent to the wastewater at an additional location, said reducing agent being a compound which forms sulfite upon introduction into the wastewater, and added in response to the measured oxidation/reduction potential of the wastewater at said sensing position; and

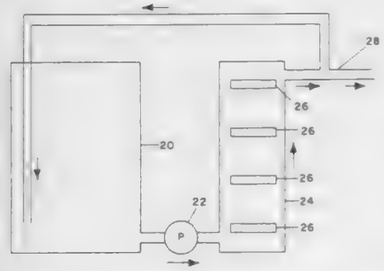
(d) repeating steps b and c until, according to the relationship established in step a, the measured oxidation reduction potential indicates a residual concentration of reducing agent in the wastewater at said sensing position.

5,348,665

METHOD FOR THE DEGRADATION OF HARMFUL SUBSTANCES IN WATER BY MEANS OF HYDROGEN PEROXIDE UNDER UV IRRADIATION

Peter Schulte, Alzenau-Hoerstein; Michael Volkmer, Hanau, and Frank Kuhn, Gelhausen, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 20, 1992, Ser. No. 979,538
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1991, 4138421
Int. Cl.[5] C02F *1/30, 1/72*
U.S. Cl. 210—748 **15 Claims**



11. A method for degradation of a harmful substance in water, comprising:

adding a sufficient quantity of hydrogen peroxide to the water, wherein the hydrogen peroxide provides a source of hydroxyl radicals, so as to achieve a desired degree of degradation of the harmful substance contained in the water;

passing the water and hydrogen peroxide through a reaction zone;

irradiating the water and hydrogen peroxide in the reaction zone with ultraviolet radiation from at least one ultraviolet radiator, such that the hydrogen peroxide forms hydroxyl radicals which oxidize the harmful substance in the water, and wherein a ratio of the non-irradiated volume to the irradiated volume, as determined at a wavelength of 265 nm, is greater than 2;

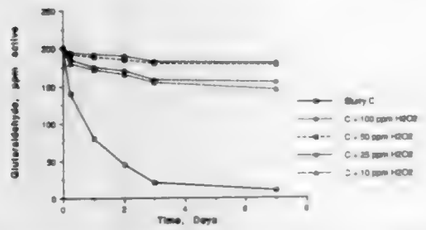
wherein the reaction zone has a specific volume of at least 40 liters per kilowatt of electric power of the at least one ultraviolet radiator, and wherein an amount of water treated per hour is equivalent to 0.5 to 5 times an intrinsic volume of the reaction zone.

5,348,666

METHOD FOR STABILIZING GLUTARALDEHYDE IN AQUEOUS SYSTEMS

Lawrence A. Grab, New Milford, N.J., assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Mar. 31, 1993, Ser. No. 40,899
Int. Cl.[5] C09C *1/42*
U.S. Cl. 210—754 | 16 Claims



1. A method for stabilizing glutaraldehyde in a kaolin slurry containing an effective amount of glutaraldehyde to substantially kill or inhibit the growth of microorganisms in said slurry, which comprises providing an oxidizing agent to the kaolin slurry in an amount at least sufficient to substantially prevent the reaction of glutaraldehyde to delta-valerolactone.

5,348,667

PROCESS FOR PRODUCING DRYER-ADDED FABRIC SOFTENER SHEETS CONTAINING CYCLODEXTRIN COMPLEXES

Dennis R. Bacon, Milford; Thomas A. Borcher, Sr., Cincinnati; Alessandro Corona, III, Maineville; Clyde D. Palmer, Cincinnati, and Toan Trinh, Maineville, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 8, 1993, Ser. No. 134,163
Int. Cl.[5] D06M *15/11*
U.S. Cl. 252—8.6 | 23 Claims

1. Solid dryer-adder fabric conditioning composition comprising an effective amount of active/cyclodextrin inclusion complex reaction mixture having an actual particle size of less than about 200 microns, said composition being prepared by a process in which said complex is prepared by a concentrated process with mechanical working and the resulting reaction mix is added directly to at least a portion of said fabric conditioning composition with mechanical working to reduce particle size of the complex to less than about 200 microns.

5,348,668

COATING AND BONDING COMPOSITION

Donald A. Oldiges, Cypress, and Anthony W. Joseph, Houston, both of Tex., assignors to Jet-Lube, Inc., Houston, Tex.

Division of Ser. No. 870,132, Apr. 15, 1992, Pat. No. 5,286,393. This application Nov. 23, 1993, Ser. No. 156,889
Int. Cl.[5] C10M *113/08, 111/04*
U.S. Cl. 252—26 | 3 Claims

1. An environmentally friendly lubricating system comprising:

a coating and bonding composition comprising:

about 0.1–5.0% by weight of a suspending agent selected from the group consisting of cellulose, clay and silica;

about 2.0–10.0% by weight of a bonding agent selected from the group consisting of an acrylic, a silicone, a urethane, an alkyd, a hydrocarbon, an epoxy, and a lacquer;

about 65–90% by weight of a thinning agent selected from the group consisting of aliphatic, aromatic, ketone, aldehyde, ester, acetate, ether, terpene, chlorinated hydrocarbon and cyclopentasiloxane solvents; and

about 5.0–17% by weight of a metallic flake selected from the group consisting of copper, aluminum, tin, brass, bronze, nickel and stainless steel;

and wherein the environmentally friendly lubricating composition is selected from the group consisting of synthetic and petroleum based fluids.

5,348,669

CABLE GREASE COMPOSITION AND ARTICLES INCORPORATING SAME

Melvin Brauer, E. Brunswick, and Yuan C. Chu, East Windsor, both of N.J., assignors to CasChem, Inc., Bayonne, N.J.

Continuation of Ser. No. 542,388, Jun. 22, 1990, abandoned. This application Jun. 4, 1993, Ser. No. 72,649
Int. Cl.[5] C10M *107/32, 113/10, 113/12;* H02G *15/00*
U.S. Cl. 252—28 | 21 Claims

1. A cable filling material of a grease composition consisting essentially of about 75 to 95 parts by weight of a polyol comprising a polybutadiene diol, triol or tetrol and having a molecular weight of at least about 3000; and about 2 to 15 parts by weight of colloidal particles of silica, clay or mixtures thereof.

7. A cable filling material of a grease composition consisting essentially of about 75 to 95 parts by weight of a polyester polyol having a hydroxy functionality of at least 2 and a molecular weight of at least about 3000; and about 2 to 15 parts by weight of colloidal particles of silica, clay or mixtures thereof.

14. A cable filling material of a grease composition consisting essentially of about 75 to 95 parts by weight of a polyol having a hydroxy functionality of at least 2 and a molecular weight of at least about 3000; about 2 to 15 parts by weight of colloidal particles of silica, clay or mixtures thereof; and about 2 to about 5 parts by weight of an antioxidant of a sterically hindered phenolic compound so that the composition has an oxidative induction time of at least about 10 minutes at 190° C. in a pure oxygen environment.

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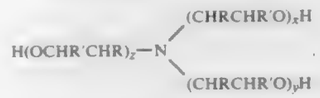
PHOSPHOROUS AMINE LUBRICANT ADDITIVES

Randolph A. McDonald, Berea, and Gerald D. Burt, Moreland Hills, both of Ohio, assignors to The Elco Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 911,839, Jul. 10, 1992, Pat. No. 5,194,166, which is a division of Ser. No. 526,080, May 18, 1990, Pat. No. 5,130,036. This application Feb. 4, 1993, Ser. No. 13,510
Int. Cl.[5] C10M *137/02;* C07F *9/02*
U.S. Cl. 252—32.5 | 14 Claims

1. A lubricant additive comprising the reaction product of:

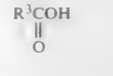
(a) an alkanolamine of the formula:



(I)

wherein each of R and R' are independently selected from the group consisting of hydrogen and a C_1 to C_6 alkyl group and x, y and z are each integers of from 0 to 10, at least one of which is not 0;

(b) an aliphatic carboxylic acid of the formula:



(II)

wherein R^3 is a C_1 to C_{30} hydrocarbon group; and

(c) phosphorous acid;

wherein said reaction is carried out at a temperature of about 50° to about 250° C. and the molar ratio of said alkanolamine to said phosphorous acid is about 0.1:1 to about 10:1.

5,348,671

LUBRICANT COMPOSITIONS CONTAINING ARYLSULFONIC ACIDS, AND ORGANO PHOSPHITES AND REACTION PRODUCTS THEREOF

Andrew G. Horodysky, Cherry Hill, N.J.; Derek A. Law, Yardley, and Shi-Ming Wu, Newtown, both of Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 771,281, Oct. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 471,913, Jan. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 292,800, Jan. 3, 1989, Pat. No. 4,897,209. This application Jan. 22, 1993, Ser. No. 7,904
Int. Cl.[5] C10M *135/10, 137/04*
U.S. Cl. 252—32.7 E | 12 Claims

1. An additive composition for lubricating oils comprising an inorganic acid and a reaction product resulting from reacting a non-metallic dihydrocarbylaromatic sulfonate compound having a nitrogen containing moiety selected from the group consisting of alkanolamine salts, polyalkenylene diamines, etheral diamines, aryldiamines, diaryldiamines, and alkylated diamines or a monohydrocarbylaromatic sulfonate compound having a nitrogen containing moiety selected from the group consisting of ammonium, amines, alkanolamine salts, and alkylated amines and a dihydrocarbyl or trihydrocarbyl phosphite in a mole ratio of sulfonate compound to phosphite compound of between about 10:1 and about 1:10 at a temperature between about 60° C. and about 200°.

cant and between about 0.01% and about 10% by weight of the total composition of the reaction product of claim 1.

5,348,672

WATER-SOLUBLE LUBRICANTS FOR HOT PLASTIC WORKING

Tadao Ohkura, and Mamoru Ashida, both of Ohtsu, Japan, assignors to Nippon Graphite Industries Ltd., Ohtsu, Japan

Filed Feb. 3, 1993, Ser. No. 12,744
Claims priority, application Japan, Apr. 2, 1992, 4-080852
Int. Cl.[5] C01M *129/48*
U.S. Cl. 252—42 | 8 Claims

1. A water-soluble lubricant for hot plastic working consisting essentially of (a) 0.1–30% by weight of a resin powder having a particle size distribution that an average particle size is 0.1–10 μm and an amount of particles having a particle size of not more than 0.1 μm is not more than 5% by weight and an amount of particles having a particle size of not less than 10 μm is not more than 5% by weight, (b) 0.1–30% by weight in total of alkali metal salts of isophthalic acid and adipic acid, (c) 0.1–10% by weight of a water-soluble high polymer, and (d) the balance being water.

5,348,673

MULTIFUNCTIONAL VISCOSITY INDEX IMPROVER DERIVED FROM AMIDO-AMINE AND DEGRADED ETHYLENE COPOLYMER EXHIBITING IMPROVED LOW TEMPERATURE VISCOMETRIC PROPERTIES

David Y. Chung, Edison; Antonio Gutierrez, Mercerville, and Mark J. Struglinski, Bridgewater, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

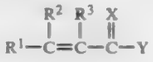
Division of Ser. No. 848,817, Mar. 10, 1992, Pat. No. 5,290,461. This application Dec. 8, 1993, Ser. No. 163,601
Int. Cl.[5] C10M *149/06*
U.S. Cl. 252—47 | 7 Claims

1. A composition of matter comprising reaction product of:

(i) (a) molecular weight degraded ethylene-alpha-olefin copolymer obtained by degrading copolymer of ethylene and at least one other alpha-olefin monomer, said copolymer comprising intramolecularly heterogeneous copolymer chains containing at least one crystallizable segment of methylene units and at least one low crystallinity ethylene-alpha-olefin copolymer segment, wherein said at least one crystallizable segment comprises at least 10 weight percent of said copolymer chain and contains at least about 57 weight percent ethylene, wherein said low crystallinity segment contains not greater than about 53 weight percent ethylene, and wherein said copolymer has a molecular weight distribution characterized by at least one of a ratio of $\overline{M}_w/\overline{M}_n$ of less than 2 and a ratio of $\overline{M}_z/\overline{M}_w$ of less than 1.8, and wherein at least two portions of an individual intramolecularly heterogeneous chain, each portion comprising at least 5 weight percent of said chain, differ in composition from one another by at least 7 weight percent ethylene; said degraded copolymer grafted with (b) ethylenically monounsaturated carboxylic acid material having 1 to 2 carboxylic acid groups or anhydride group to form grafted ethylene copolymer,

(ii) about C_{50} to about C_{400} hydrocarbyl substituted carboxylic acid component containing 1 to 2 carboxylic acid groups or anhydride group;

(iii) thioamido-amine comprising reaction product of (a) polyalkylene polyamine, and (b) alpha, beta-unsaturated compound represented by the formula



wherein X is sulfur, Y is —OR^4, —SR^4 or



and R^1, R^2, R^3, R^4, and R^5 are independently selected from hydrogen, hydrocarbyl, and substituted hydrocarbyl; and

(iv) C_{12} to about C_{18} hydrocarbyl substituted dicarboxylic anhydride.

5,348,674

AMIDE/ESTER HETEROCYCLIC DERIVATIVES OF HYDROCARBYLSUCCINIC ANHYDRIDES AS RUST/CORROSION INHIBITING ADDITIVES FOR LUBRICANTS

David A. Blain, Notre Damede, France; Andrew G. Horodysky, Cherry Hill; Ronald J. Poole, Mullica Hill, both of N.J., and Shi-Ming Wu, Newtown, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 12, 1993, Ser. No. 44,724
Int. Cl.[5] C10M *135/00*
U.S. Cl. 252—51.5 R | 15 Claims

1. An improved lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease prepared therefrom and a minor multifunctional antiwear, corrosion inhibiting, rust inhibiting, thermal color stabilizing, antioxidant, dispersant and detergent proportion of an additive product of reaction prepared by reacting (1) a hydrocarbylsuccinic anhydride or its acid equivalent with (2) a hydroxyl-containing amine and (3) an aryltriazole wherein the reaction is carried out in molar ratios of said anhydride to amine to triazole varying from about 100/80/80 to 100/10/1 at temperatures varying from ambient to about 250° C., under pressures varying from ambient to about 100 psi for a time sufficient to obtain the desired additive product of reaction.

5,348,675

HETEROPOLYSACCHARIDE BM07

Gabriel Ullmann, Ruffec, and Alain Jarry, Poitiers, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Division of Ser. No. 379,478, Jul. 13, 1989, Pat. No. 5,252,727. This application Jan. 19, 1993, Ser. No. 5,572

Claims priority, application France, Jul. 13, 1988, 88 09529

Int. Cl.[5] C07G *17/00;* C12P *19/06, 19/04;* C11D *7/60*

U.S. Cl. 252—82 31 Claims

1. A process for the preparation of heteropolysaccharide BM07, comprising fermenting a nutrient medium containing at least one source of assimilable carbon by a strain of *Agrobacterium tumefaciens* I-736, or one of the mutants thereof and recovering said heteropolysaccharide BM07 from said medium.

5,348,676

LUBRICATING OIL COMPOSITION FOR FOOD PROCESSING MACHINERIES

Hiroyuki Takashima; Mitsuo Okada, both of Yokohama, and Teruo Shimizu, Omiya, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed May 25, 1993, Ser. No. 67,326

Claims priority, application Japan, May 25, 1992, 4-157523

Int. Cl.[5] C10M *105/32*

U.S. Cl. 252—56 R 5 Claims

1. A lubricating oil composition useful for lubricating food processing machineries and implements comprising a mixture of (a) a first ester of glycerol and a medium-chain saturated fatty acid, where the medium-chain saturated fatty acid has carbon number of 6–10, and (b) a second ester of sucrose and a carboxylic acid, where the carboxylic acid has a carbon number of 2–12.

5,348,677

ELECTRO-OPTICAL LIQUID CRYSTAL DISPLAY ELEMENT

Eike Poetsch, Mühtal; Hans A. Kurmeier, Seeheim-Jugenheim; Rudolf Eidenschink, Bodenheim; Georg Weber, Erzhausen, and Andreas Wächtler, Griesheim, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 294,630, Dec. 23, 1988, Pat. No. 5,196,140. This application Oct. 20, 1992, Ser. No. 963,369

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1987, 3714043

Int. Cl.[5] C09K *19/06, 19/34, 19/32;* G02F *1/13*

U.S. Cl. 252—299.6 5 Claims

1. An electrooptical liquid crystal display element, containing a dielectric with at least two liquid crystalline components, which dielectric comprises at least one fluorine-containing compound of the formula I

$$R^1-(A^1-Z^1)_m-A^2-R^2 \qquad I$$

wherein

R^1 is H, F, Cl, Br, —CN, —NCS or an unsubstituted straight-chain alkyl group having 1–15 C atoms, in which one or two CH_2 groups are optionally replaced by —O—, —CO—, —O—CO—, —CO—O—, —C≡C—, or —CH=CH—, no 2 heteroatoms being linked to one another;

R^2 is perfluoroalkoxy of not more than 15 carbon atoms, and having at least 2 CF2 groups in which one or more CF_2 groups are optionally replaced by —CF=CF—,

A^1 is 1,4-phenylene which is unsubstituted or substituted by one or two F or Cl atoms or CH_3 groups or CN groups, and in which one or two CH groups are optionally replaced by N atoms; 1,4-cyclohexylene in which one or two non-adjacent CH_2 groups are optionally replaced by O atoms or S atoms; piperidine-1,4-diyl; 1,4-bicyclo[2.2.2]octylene, unsubstituted or CN— substituted decahydronaphthaline-2,6-diyl or 1,2,3,4-tetrahydronaphthaline-2,6-diyl;

A^2 is 1,4-phenylene which is substituted by one or two F atoms;

m is 1, 2, or 3; and

Z^1 is —CO—O—, —O—CO—, —OCH_2—, —CH_2O—, —CH_2CH_2— or a single bond,

it being possible for multiple groups A^1 to be identical or different and for multiple groups Z^1 to be identical or different in the case where M=2 or 3, whereby said element is based on the twisted cell, guest-host, deformation of aligned phase, dynamic scattering, SBE or STN effects.

5,348,678

POLYMER-BASED CLEANING AND LUBRICATING COMPOSITION

Robert H. Hodam, Jr., Austin, Tex., and Marvin H. Gold, Sacramento, Calif., assignors to Medical Polymers Technologies, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 793,596, Nov. 18, 1991. This application Nov. 17, 1992, Ser. No. 977,608

Int. Cl.[5] C11D *3/48*

U.S. Cl. 252—106 6 Claims

1. A composition having lubricating and cleaning properties, comprising, in solution:

polyethylene oxide having a molecular weight of about 2,000,000 daltons;

methyl paraben;

propylene glycol;

a mixture of surfactants comprising dodecyl benzene sulfonic acid, ethoxylated nonylphenol phosphate ester, and ethoxylated alkyl acetylenic glycol;

isopropanol; and

water.

5,348,679

AQUEOUS MULTIPURPOSE CLEANING COMPOSITION CONTAINING SULFITES AND GLYCOL ETHERS

Dennis G. Weinhold, Gilbert; Allen C. Hieatt, Mesa, and Jerome H. Ludwig, Paradise Valley, all of Ariz., assignors to h.e.r.c. Incorporated, Phoenix, Ariz.

Filed Dec. 9, 1993, Ser. No. 164,379

Int. Cl.[5] C11D *7/54, 7/50, 1/12, 3/26;* C23G *5/02*

U.S. Cl. 252—105 1 Claim

1. A multipurpose cleaning composition comprising:

from about 5% to about 20% by weight of sodium sulfite;

from about 0.5% to about 1.5% by weight of sodium meta bisulfite;

from about 0.5% to about 1.5% by weight of mono-normal-butoxy propanol;

from about 0.5% to about 1.5% by weight of mono-tertiary-butoxy propanol;

from about 0.5% to about 1.5% by weight of sodium xylene sulfonate;

from about 0.5% to about 1.5% by weight of the tetrasodium salt of ethylene-diamine tetraacetic acid;

from about 2% to about 5% by weight of the monosodium salt of isodecyloxypropyliminodipropionic acid;

said components in admixture with water and present in said composition in amounts sufficient to provide an essentially neutral composition with broad cleaning capabilities for a broad range of surface applications.

5,348,680

CLEANING COMPOSITION FOR REMOVING REACTIVE POLYURETHANE HOT MELT ADHESIVES

Franz Maitz, Bruckmühl, Fed. Rep. of Germany, assignor to H. B. Fuller Licensing & Financing, Inc., Wilmington, Del.

Filed Nov. 23, 1992, Ser. No. 980,606

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1991, 9114780[U]

Int. Cl.[5] C11D *7/26, 7/50*

U.S. Cl. 252—162 12 Claims

1. A cleaning composition for removing reactive polyurethane (PUR) hot melt adhesives having reactive isocyanate (NCO) groups therein from production and processing devices, machines and equipment, said cleaning composition consisting essentially of at least one monofunctional hydroxyl containing compound selected from the group consisting of hydroxy functional ether or alcohol compounds which can react with the reactive isocyanate groups of the hot melt adhesive when applied to a substrate to be cleaned, said monofunctional hydroxyl containing compound being the sole compound of the composition capable of reacting with the NCO groups and a plastically deformable material which in conditions of use in removing reactive polyurethane (PUR) hot melt adhesives from production and processing devices, machines and equipment, does not react with the isocyanate groups of the PUR hot melt adhesive.

5,348,681

COMPOSITION BASED ON 1,1,1,3,3-PENTAFLUOROBUTANE AND METHYLENE CHLORIDE, FOR THE CLEANING AND/OR DRYING OF SOLID SURFACES

Daniel Desbiendras, Villetaneuse, and Pascal Michaud, Saint-Gratien, both of France, assignors to Elf Atochem S.A., Puteaux, France

Filed Jul. 7, 1993, Ser. No. 87,099

Claims priority, application France, Aug. 21, 1992, 92 10199

Int. Cl.[5] C11D *7/32, 7/50;* C23G *5/028;* B08B *3/00*

U.S. Cl. 252—172 8 Claims

1. An azeotropic composition or a composition which has about the same composition in vapor phase as in liquid phase when employed at reflux, consisting essentially of, on a weight basis, from 30 to 70% 1,1,1,3,3-pentafluorobutane and from 70 to 30% methylene chloride and optionally an effective amount of at least one stabilizer, said composition boiling at about 33.6° C. at normal atmospheric pressure.

5,348,682

STABLE THICKENED AQUEOUS BLEACH COMPOSITIONS

Lisa M. Finley, and Stephen H. Iding, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 284,961, Dec. 15, 1988, abandoned. This application May 30, 1991, Ser. No. 709,082

Int. Cl.[5] C01B *11/06*

U.S. Cl. 252—186.36 12 Claims

1. A stable, thickened, aqueous cleaning and bleaching composition consisting essentially of:

A. hypochlorite bleach to provide from about 0.4% to about 1.2% available chlorine;

B. from about 0.4% to about 1.5% polycarboxylate polymer having a molecular weight from about 500,000 to about 4,000,000;

C. from about 0.1% to about 1% of an amine oxide detergent surfactant;

D. from 0% to about 1% of fatty acid soap containing from about 12 to about 18 carbon atoms; and

E. the balance water; the viscosity being adjusted to within the range of from about 150 to about 3,000 centipoises and the pH being from about 10.4 to about 12.

5,348,683

CHLORIC ACID - ALKALI METAL CHLORATE MIXTURES AND CHLORINE DIOXIDE GENERATION

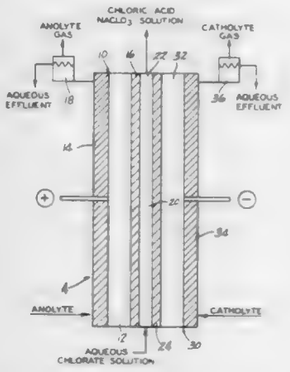
Jerry J. Kaczur; David W. Cawlfield; Kenneth E. Woodard, Jr., all of Cleveland, and Budd L. Duncan, Athens, all of Tenn., assignors to Olin Corporation, Stamford, Conn.

Division of Ser. No. 786,155, Oct. 31, 1991, Pat. No. 5,258,105, which is a continuation-in-part of Ser. No. 475,603, Feb. 6, 1990, Pat. No. 5,084,148. This application Apr. 5, 1993, Ser. No. 42,436

The portion of the term of this patent subsequent to Apr. 5, 2010, has been disclaimed.

Int. Cl.[5] C25B *1/24;* A62D *3/00*

U.S. Cl. 252—187.31 14 Claims



1. An aqueous solution of chloric acid and an alkali metal chlorate in which the concentration of chloric acid is about 30% or greater by weight of $HClO_3$ and the molar ratio of chloric acid to alkali metal chlorate is no more than 250:1.

5,348,684

ORGANOSILYLALKYL OR ORGANOSILYLALKENYL COMPOUNDS, PROCESS FOR PREPARING THEM AND THEIR USE IN LIQUID-CRYSTALLINE MIXTURES

Wolfgang Hemmerling, Sulzbach; Hans-Rolf Dübal, Königstein/Taunus; Claus Escher, Mühltal; Gerhard Illian, Frankfurt am Main, all of Fed. Rep. of Germany; Yoshio Inoguchi, Tokyo, Japan; Ingrid Müller, Hofheim am Taunus, Fed. Rep. of Germany; Mikio Murakami, Königstein/Taunus, Fed. Rep. of Germany; Dieter Ohlendorf, Liederbach, Fed. Rep. of Germany, and Rainer Wingen, Hattersheim am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 393,386, Aug. 11, 1989, abandoned. This application Aug. 20, 1992, Ser. No. 932,644

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1988, 3827600

Int. Cl.[5] C09K *19/34, 19/52, 19/20;* C07F *7/04*

U.S. Cl. 252—299.61 11 Claims

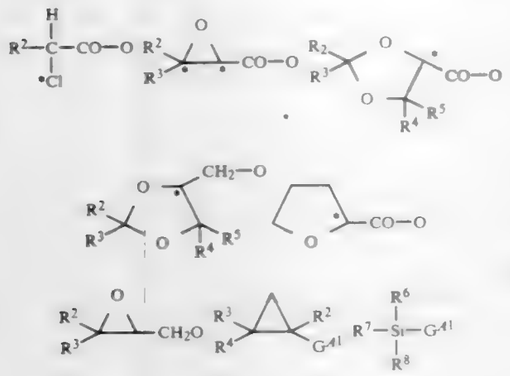
1. A liquid-crystalline silyalkyl or silyalkenyl compound of the general formula (I)

$$R^1(-A^1)_j(-M^1)_k(-A^2)_l(-M^2)_m(-A^3)_n-G-\underset{\displaystyle R^8}{\overset{\displaystyle R^6}{\overset{|}{\underset{|}{Si}}}}-R^7 \qquad (I)$$

in which

R^1 denotes straight-chain or branched alkyl or alkenyl (with or without asymmetrical carbon atom) containing 2 to 16 carbon atoms, it also being possible for one or two nonadjacent —CH_2— groups to be substituted by —O—, —S—,

—CO—O—, or —O—CO— and for hydrogen to be replaced by fluorine, or one of the following radicals



A^1,A^2,A^3 denote, identically or differently, 1, 4-phenylene in which 1 or 2 hydrogens may be replaced by fluorine, trans-1,4-cyclohexylene pyridine-2,5-diyl, pyrimidine-2,5-diyl, 1,3,4-thiadiazol-2,5-diyl, 1,3-dioxane-2,5-diyl,

M^1, M^2 denote, identically or differently, CO—O, O—CO, CH_2—O, O—CH_2,

G, G^1 denotes straight-chain alkylene containing 1 to 16 carbon atoms in which one or two nonadjacent —CH_2— groups may also be replaced by —O—, —O—CO—, or —CO—O—, with the proviso that Si is bound only to a carbon which has hydrogen and/or carbon as adjacent atoms,

R^2, R^3, R^4, R^5 denote hydrogen or a straight-chain alkyl containing 1 to 16, in which a —CH_2— group may also be replaced by cyclic alkyl containing 3 to 8 carbon atoms,

R^6, R^7, R^8 denote straight-chain alkyl containing 1 to 16 carbon atoms or cyclic alkyl containing 3 to 8 carbon atoms,

j, k, l, m, n denote 0 or 1,

with the proviso that j+l+n=2 or 3.

5,348,685

FERROELECTRIC LIQUID CRYSTAL COMPOSITION

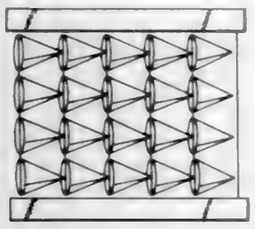
Akihiro Mochizuki; Shigeo Kasahara; Tetsuya Makino; Masashi Watanabe, all of Kawasaki; Masakatsu Nakatsuka, Tokyo; Kunikiyo Yoshio, Kyoto; Masahiro Satoh, Kyoto; Tetsuya Watanabe, Kyoto; Naoko Sugita, Kyoto, and Tatsuroh Yanagi, Kyoto, all of Japan, assignors to Fujitsu Limited, Kawasaki; Mitsui Toatsu Chemicals, Inc., Tokyo and Sanyo Chemical Industries, Ltd., Kyoto, all of Japan

Filed Aug. 17, 1993, Ser. No. 107,191

Claims priority, application Japan, Oct. 9, 1992, 4-271990

Int. Cl.[5] C09K *19/32, 19/06, 19/34, 19/52*

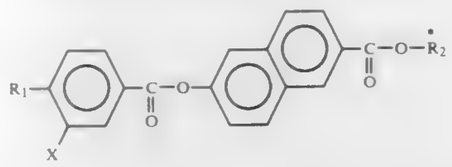
U.S. Cl. 252—299.62 **6 Claims**



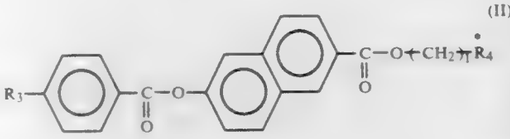
1. A ferroelectric liquid crystal composition comprising:

70 to 97 parts by weight of a naphthalene base mixed liquid crystal containing at least three kinds of liquid crystals selected from the following five kinds of liquid crystals expressed by the general formulas I to V:

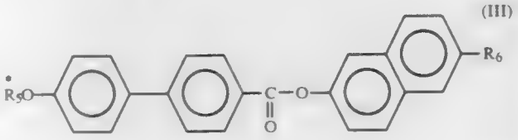
(I)



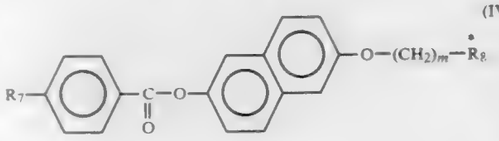
(II)



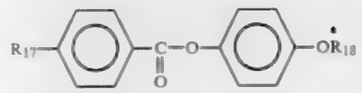
(III)



(IV)



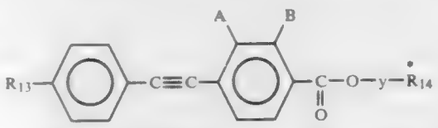
(V)



wherein each of R_1, R_3, R_6, R_7 and R_{17} independently represents mutually a C_{6-16} alkyl group or a C_{6-16} alkoxy group; each of R_2*, R_4*, R_5*, R_8* and R_{18}* independently represents a C_{4-16} alkyl group having asymmetric carbon at the connecting bond thereof; X represents a hydrogen atom or a fluorine atom; and l and m represent an integer of 1 to 5, respectively; and

3 to 30 parts by weight of a tolan type liquid crystal expressed by the following general formula VI:

(VI)



wherein R_{13} represents a C_{6-16} alkyl group or a C_{6-16} alkoxy group; R_{14}* represents a C_{4-16} alkyl group having asymmetric carbon; each of A and B independently represents a hydrogen atom or a fluorine atom; and y represents —$(CH_2)_i$—, with the proviso that i represents an integer of 0 to 5.

5,348,686

ELECTRICALLY CONDUCTIVE GEL

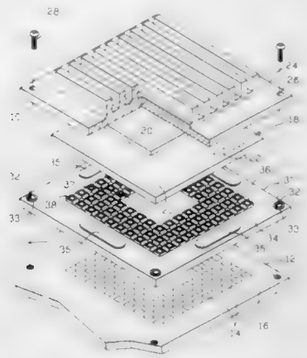
Navin N. Vyas, Winston-Salem, N.C., assignor to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 902,255, Jun. 22, 1992, abandoned. This application Sep. 20, 1993, Ser. No. 123,595

Int. Cl.[5] H01B *1/00, 1/20, /22*

U.S. Cl. 252—514 **7 Claims**

1. An electrically conductive silicone gel having a combination of conductive particles comprising silver coated mica and silver flakes uniformly dispersed therethrough, where said particles are present, by weight, in an amount between 60 and 75%, and gel is characterized as non-flowing, self-healing, and thermally stable, with a volume resistivity of less than about 2.0 milliohm-cm.



5,348,687

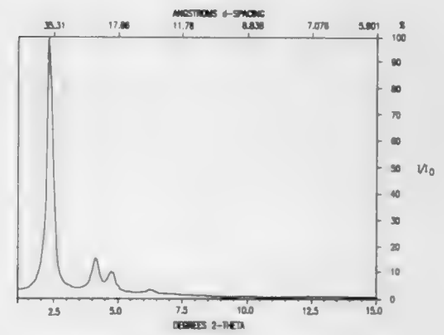
M41S MATERIALS HAVING NONLINEAR OPTICAL PROPERTIES

Jeffrey S. Beck, Princeton; Guenter H. Kuehl, Cherry Hill; David H. Olson; John L. Schlenker, both of Pennington, all of N.J.; Galen D. Stucky, Santa Barbara, Calif., and James C. Vartuli, West Chester, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Nov. 26, 1993, Ser. No. 157,549

Int. Cl.[5] G02B *1/02;* **H01L** *31/0264, 31/0344*

U.S. Cl. 252—582 **16 Claims**



1. A composition exhibiting third order nonlinear optical properties, comprising:

a host material comprising an inorganic, porous, non-layered crystalline phase material exhibiting, after calcination, an arrangement of uniformly sized pores adapted in size, shape and chemical stereospecificity to fix an inorganic, semiconducting guest material therein in an arrangement to provide nonlinear optical properties, said pores having diameters of at least about 13 Angstrom units, said phase material exhibiting an X-ray diffraction pattern with at least one peak at a position greater than about 18 Angstrom units d-spacing and exhibiting a benzene adsorption capacity of greater than about 15 grams benzene per 100 grams of said phase material at 50 torr and 25° C., and

quantum size clusters of said guest material incorporated into the pores of said host material.

5,348,688

OPTICAL POWER LIMITERS AND MATERIALS THEREIN

Edward J. Sharp, Fort Washington, Md.; Gary L. Wood, Lorton, Va.; Richard R. Shurtz, II, Oakton, Va., and Juergen L. W. Pohlmann, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 17, 1984, Ser. No. 700,995

Int. Cl.[5] F21V *9/00;* **G02F** *1/13;* **C09K** *19/06*

U.S. Cl. 252—582 **1 Claim**

1. An optical power limiter for protecting a photodetector from high-power optical radiations, including at least a substantially transparent non-linear optical material whose index of refraction is responsive both to wavelength and to optical power of incident radiation, wherein said material is a nematic liquid crystal with a dye dissolved therein, whereby said dye enhances the index-of-refraction response of said liquid crystal to the wavelengths of said high-power optical radiation; additionally including a linear optical material having a surface in intimate contact at a planar interface with a surface of said nonlinear optical material, and means for directing incident radiation into said nonlinear material toward said photodetector and onto said interface at an angle for total reflection of said high-power optical radiations when the index of refraction of said nonlinear optical material changes in response to said high-power radiation, whereby said high-power optical radiations are self-focussing in said material and totally reflect at said interface to protect said photodetector, and other incident radiation is not self focussing, and is not totally reflected, but freely passes to said photo-detector.

5,348,689

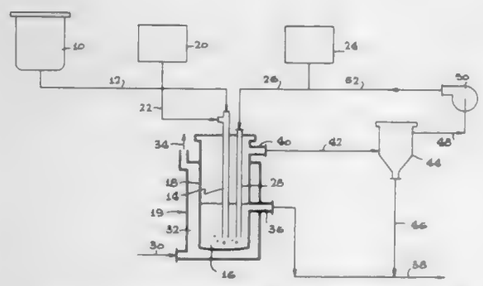
MOLTEN SALT DESTRUCTION OF ALKALI AND ALKALINE EARTH METALS

Ricahard L. Gay, Chatsworth; Jerold Guon, Woodland Hills, and John C. Newcomb, Simi Valley, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Jul. 13, 1993, Ser. No. 90,458

Int. Cl.[5] G21F *9/00*

U.S. Cl. 588—18 **18 Claims**



1. A process for destroying alkali metal and alkaline earth metal hazardous waste and converting it into non-hazardous salt which comprises

feeding said alkali metal or alkaline earth metal containing hazardous waste into a molten salt bath containing a molten salt selected from the group consisting of an alkali metal carbonate, an alkali metal halide, an alkaline earth halide, and mixtures thereof,

feeding a mixture of carbon dioxide and oxygen into said molten salt bath, the proportions of carbon dioxide and oxygen being at least sufficient to react stoichiometrically with the alkali metal or alkaline earth metal in said waste, and

reacting said alkali metal or said alkaline earth metal with said carbon dioxide and oxygen in said molten salt bath at a temperature above the melting point of the salt in said molten salt bath, and converting said alkali metal or said

alkaline earth metal into a non-hazardous carbonate salt in said bath.

5,348,690

PREPARATION OF CHEMILUMINESCENT VINYL HALIDE OR VINYLIDENE HALIDE POLYMER STRUCTURES

Martin L. Cohen, White Plains, N.Y.; William E. Bay, Ridgefield, Conn., and Lynn E. Errigo, Port Chester, N.Y., assignors to Omniglow Corporation, Novato, Calif.

Division of Ser. No. 632,844, Dec. 24, 1990, Pat. No. 5,173,218. This application Sep. 14, 1992, Ser. No. 944,572

Int. Cl.[5] C09K *3/00;* **F21K** *2/00*

U.S. Cl. 252—700 **11 Claims**

1. A method of producing a porous, flexible structure, comprising: (1) adding a first component and a second component to a solvent solution of a chemiluminescent compound and, optionally, a fluorescer, to form a uniform slurry, (2) shaping said slurry, and (3) heating said shaped slurry to a temperature of from about 80° C. to about 150° C. for from about 5 minutes to about 50 minutes wherein the first component comprises a non-particulate phase comprising a vinyl halide or vinylidene halide polymer having a molecular weight of about 100,000 to about 500,000 which constitutes about 0.5 to about 15.0 weight percent of total polymer, and the second component comprises an agglomerated particle phase comprising either (1) about 85.0 to about 99.5 weight percent of total polymer of vinyl halide or vinylidene halide polymer particles having a diameter of from about 25 to about 125 microns and a molecular weight of from about 50,000 to about 120,000, or mixtures of said particles, or (2) about 45 to about 98.5 weight percent of total polymer of vinyl halide or vinylidene halide polymer particles having a diameter of from about 25 to about 125 microns and a molecular weight of from about 50,000 to about 120,000 or mixtures of said particles, and about 1 to about 40 weight percent of total polymer of vinyl halide or vinylidene halide polymer particles having a diameter of from about 130 to about 225 microns and a molecular weight of from about 100,000 to about 225,000.

5,348,691

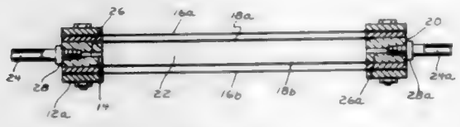
ATMOSPHERE MEMBRANE HUMIDIFIER AND METHOD AND SYSTEM FOR PRODUCING HUMIDIFIED AIR

James F. McElroy; William F. Smith, both of Suffield, and Joseph E. Genovese, East Granby, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 11, 1993, Ser. No. 76,459

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—36.1 **15 Claims**



1. A membrane humidifying device that comprises at least one membrane cell and a means for introducing water into said cell wherein said membrane cell comprises:

a. at least one sheet of a hydrophilic membrane, having a first side and a second side, capable of osmotically transporting water from said first side to said second side; and

b. at least one screen for providing structural integrity to said hydrophilic membrane(s), wherein each screen is located adjacent to said first side of at least one membrane and wherein said screen(s) has a mesh side of about 2/0 to about 6/0 and a thickness of about 0.05 to about 0.5 millimeters;

wherein said means for introducing water into said cell directs water to said first side(s) of said hydrophilic membrane(s).

5,348,692

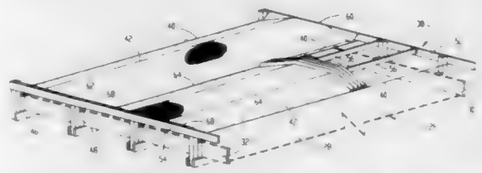
RETRACTABLE COVER UNIT FOR HOT WATER BASIN OF CROSSFLOW COOLING TOWER

David M. Bickerstaff, Baytown, Tex., assignor to The Marley Cooling Tower Company, Mission Woods, Kans.

Filed Feb. 24, 1993, Ser. No. 23,066

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—111 **10 Claims**



1. A cover unit for use on a distribution basin of a water cooling tower, wherein the distribution basin includes a floor and opposed first and second side walls, the cover unit comprising:

a frame secured to the basin and including first and second framing members overlying the side walls of the basin;

a pair of connectors secured between the framing members and spaced laterally from one another;

a flaccid cover having first and second end edges and laterally spaced side edges;

a means for presenting a plurality of grommets along the lateral sides of the cover through which the connectors are threaded;

a means for attaching the end edges of the cover to the framing members for holding the cover over the basin; and

a means for detaching at least one of the end edges of the cover to permit the cover to be moved along the connectors allowing access to the basin.

5,348,693

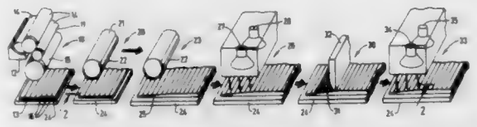
FORMATION OF THREE DIMENSIONAL OBJECTS AND ASSEMBLIES

Charles S. Taylor, San Francisco; William B. Tiffany, Palo Alto; Paul Cherkas, Saratoga; John J. Frantzen, San Jose; Hilary J. Hampton, Santa Clara; Leonard Nanis, Palo Alto, and Bhupendra O. Shah, Cupertino, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Nov. 12, 1991, Ser. No. 791,044

Int. Cl.[5] B29C *35/08, 41/02*

U.S. Cl. 264—22 **28 Claims**



1. A method for forming a three dimensional object having a desired size and shape, comprising:

a) developing shapes and dimensions for a group of individual cross-sectional segments which, when put together in a particular sequence, form the desired shape of the three dimensional object in the desired size;

b) providing a plurality of formation sites for forming three dimensional objects in a linear array;

c) forming by suitable means out of suitable material each segment of a first group of individual cross-sectional segments on the individual formation sites in the developed shapes and dimensions and in the aforesaid particular sequence along the linear array;

d) adjusting relative positions between the formation sites on which the first group of individual cross-sectional segments have been formed and the means employed to form the cross-sectional segments thereon to align the means to form the cross-sectional segments with the appropriate formation sites so that next individual layers in proper sequence may be formed on previously formed cross-sectional segments; and

e) repeating the steps c) and d) for sufficient number of additional cycles to form at least one three dimensional object in the desired size and shape.

5,348,694

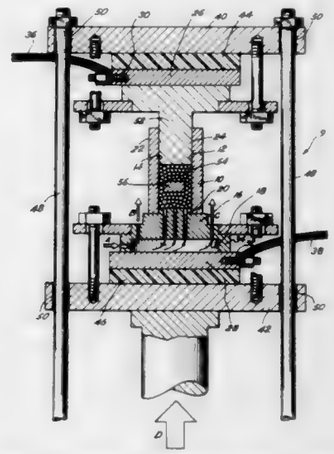
METHOD FOR ELECTROCONSOLIDATION OF A PREFORMED PARTICULATE WORKPIECE

William M. Goldberger, Columbus, Ohio, assignor to Superior Graphite Co., Chicago, Ill.

Continuation-in-part of Ser. No. 841,584, Feb. 24, 1992, Pat. No. 5,246,638, which is a continuation-in-part of Ser. No. 544,046, Dec. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 286,980, Dec. 20, 1988, abandoned. This application Mar. 17, 1993, Ser. No. 32,628

Int. Cl.[5] B29C *43/02, 67/00*

U.S. Cl. 264—27 **27 Claims**



1. An improved method of consolidating a workpiece preformed from particulate, powdered, sintered, fibrous, spongiose, or other solid containing material capable of consolidation, said method including the steps of:

providing at a temperature insufficient to effectuate any substantial consolidation of the workpiece a bed comprising a bed material of electrically conductive, flowable particles within a contained zone;

positioning the preformed workpiece in the bed;

applying a first pressure to the bed material for sufficient compaction to the bed material to provide suitable electrical contact of such bed material;

thereafter applying electrical energy to said electrically conductive, flowable particles within the bed while the bed contains the workpiece, and in sufficient amount to heat the bed to the consolidation temperature for the workpiece, substantially all of the heat for consolidation provided to the bed while the preformed workpiece is positioned therein;

applying a second pressure to such bed of electrically conductive, flowable particles to transmit a compressive force to the workpiece sufficient effectuate substantial consolidation of the workpiece; and

purging the bed with an inert gas at least during the application of electrical energy to such bed.

5,348,695

PROCESS FOR THE PREPARATION OF SALT GRANULATES

Jan J. H. Ploumen, Roermond, Netherlands, and Christiane Thomas, Hürtgenwald, Fed. Rep. of Germany, assignors to Akzo Nobel N.V., Netherlands

Filed Nov. 10, 1992, Ser. No. 974,050

Claims priority, application European Pat. Off., Nov. 11, 1991, 91202921.2

Int. Cl.[5] B29C *67/20*

U.S. Cl. 264—42 **12 Claims**

1. A process for the preparation of solid, porous water-soluble salt granulates, which comprises processing under pressure powder or powder mixtures of salts having a content of water of crystallization of at least 10% and an average particle size of 1 to 500 μm to form granulates having an average granule size of 0.300 to 3 mm, and thereafter, wholly or partially extracting the water of crystallization from the granulate in a fluidized bed wherein the temperature of the bed is maintained below the melting point of the granulate.

5,348,696

INTEGRATED LUNAR MATERIALS MANUFACTURING PROCESS

Michael A. Gibson, and Christian W. Knudsen, both of Houston, Tex., assignors to Carbotek Inc., Houston, Tex.

Division of Ser. No. 118,414, Nov. 6, 1987, Pat. No. 4,948,477. This application Feb. 12, 1990, Ser. No. 479,419

The portion of the term of this patent subsequent to Mar. 20, 2010, has been disclaimed.

Int. Cl.[5] C04B *35/64, 35/46*

U.S. Cl. 264—65 **2 Claims**

1. A process for producing structural, radiation-shielding construction blocks or bricks which comprises

providing a feed material comprising a particulate material consisting essentially of a mixture of chemically reduced lunar ilmenite and lunar agglutinates having a particle size in the range from 20–200 microns produced by hydrogen reduction in a fine particulate state,

compacting said feed material into a shape and sintering to produce structural, radiation-shielding construction blocks or bricks.

5,348,697

METHOD AND APPARATUS FOR THE PRODUCTION OF REINFORCED PLASTIC OBJECTS

Göran Palmers, Askim, and Max Maupoix, Goteborg, both of Sweden, assignors to Institutet For Verkstadsteknisk Forskning, Goteborg, Sweden

PCT No. PCT/SE91/00663, § 371 Date Apr. 2, 1993, § 102(e) Date Apr. 2, 1993, PCT Pub. No. WO92/05937, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 3, 1991, Ser. No. 30,471

Claims priority, application Sweden, Oct. 4, 1990, 9003184.0

Int. Cl.[5] B29C *39/02, 39/42*

U.S. Cl. 264—102 **13 Claims**

1. A method for production of large objects of plastic material with minimal escape of harmful substances to the environment, the method comprising:

positioning a cover above a plastic application area, the cover including two cover units movable with respect to the plastic application area and each other to define an opening therebetween of an adjustable size and position,

connecting exhaust air terminal devices below the cover,

adjusting the size of the opening of the cover by manipulating the cover units,

applying a plastic material to a body form in the application area through the opening in the cover, and simultaneously

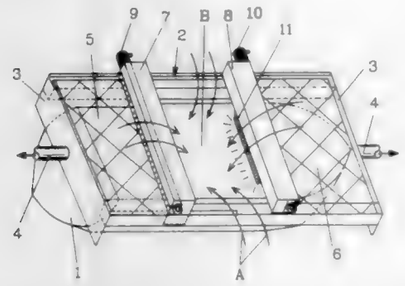
providing moderate air flow through the exhaust air terminal devices, and

manipulating the cover units to adjust the size and position of the opening defined therebetween during the applying of the plastic material to minimize the size of the opening and thereby the escape of harmful substances to the environment.

3. An apparatus for production of large objects of plastic material with minimal escape of harmful substances to the environment comprising:

a body form;

a casing mountable on the body form;



a cover placed on a top side of the casing, the cover having two cover units movable with respect to the casing and each other to define an opening therebetween of an adjustable size and position; and

application means for applying a plastic material to the body form through the opening, said body form located in a reinforced plastic material application area, the casing having an exhaust air terminal device ending in an interior of the casing, and with the cover sealing against upper edges of the casing, the two cover units being individually movable on the top side of the casing and the opening being freely adjustable to size and position.

5,348,698

METHOD FOR MANUFACTURING PRESSURE CONTAINER HAVING OPPOSITE DOME ENDS WITH DIFFERENT OPENING DIAMETERS

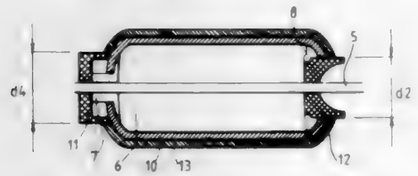
Byeong Yeol Park; Sang Ki Chung; Bal Jung, all of Daejon; Keun Choon Jeong, and Jong Sik Kim, both of Kyungsangnam, all of Rep. of Korea, assignors to Agency of Defense Development, Rep. of Korea

Filed Mar. 11, 1993, Ser. No. 29,677

Claims priority, application Rep. of Korea, Mar. 17, 1992, 4370

Int. Cl.[5] B29C *63/04*

U.S. Cl. 264—154 1 Claim



1. A method for manufacturing a pressure container having a dome end with a first opening diameter and an opposite dome end with a second opening diameter, said second opening diameter larger than said first opening diameter, said method comprising the steps of:

(a) preparing a mandrel having a shape identical to the shape of an inner surface of the pressure container and having opposite ends thereof, said mandrel being provided at each respective opposite end with a first and second boss, said first and second bosses having respective smaller and larger outer diameters such that first boss is mounted to said mandrel end corresponding to said container dome end having said first opening diameter and said second boss is mounted to said opposite mandrel end corresponding to said container dome end having said second opening diameter;

(b) fitting a first metal insert within said second boss, said first metal insert having a portion protruding axially outwardly of said second boss and having an outer diameter equal to or larger than said diameter of said first boss and smaller than said outer diameter of said second boss;

(c) winding a first band of fibers on said mandrel in a polar winding manner to form a primary layer of a first predetermined thickness on said mandrel, said first band of fibers contained in a liquid phase thermosetting resin;

(d) heating said primary layer to thereby thermally set said first band of fibers;

(e) removing an end portion of said primary layer formed on said second boss to enable removal of said first metal insert;

(f) removing said first metal insert from said second boss;

(g) mounting a second insert externally of said first boss and fitting a third insert within said second boss, said second and third inserts each having respective outer diameters substantially similar to said second opening diameter of said dome end of said pressure container, said second insert having a portion protruding axially outwardly of said first boss;

(h) winding a second band of fibers on said primary layer in a helical winding manner to form a secondary layer of a second predetermined thickness on said primary layer, said second band of fibers contained in a liquid phase thermosetting resin;

(i) heating said secondary layer to thereby thermally set said second band of fibers; and,

(j) removing said second and third inserts from said respective first and second bosses.

5,348,699

FIBERS FROM COPOLYESTER BLENDS

August K. Meyer, Jonesborough; Johnny W. Shadden, Kingsport; Candace M. Stipe, Kingsport, and Leron R. Dean, Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Mar. 2, 1994, Ser. No. 205,014

Int. Cl.[5] B29C *47/00*

U.S. Cl. 264—176.1 3 Claims

1. A process for preparing copolyester fibers having reduced spinning defects comprising the steps of:

(I) blending

(A) 85–99 weight percent of a copolyester, Copolyester (A), having an inherent viscosity of 0.4 to 1.5 dl/g which consists essentially of

(1) a dicarboxylic acid component consisting essentially of repeat units from terephthalic acid, and

(2) a diol component consisting essentially of repeat units from 88 to 99.9 mole percent ethylene glycol and 0.1 to 12 mole percent 1,4-cyclohexanedimethanol, based on 100 mole percent dicarboxylic acid and 100 mole percent diol, and

(B) 1 to 15 weight percent of a copolyester, Copolyester (B), having an inherent viscosity of 0.4 to 1.5 dl/g which consists essentially of

(1) a dicarboxylic acid component consisting essentially of repeat units from terephthalic acid, and

(2) a diol component consisting essentially of repeat units from 40 to 82 mole percent ethylene glycol and 18 to 60 mole 1,4-cyclohexanedimethanol, based on 100 mole percent dicarboxylic and 100 mole percent diol; the combined weights of Copolyesters (A) and (B) total 100 percent;

(II) melt spinning said blend of Copolyester (A) and (B) at temperatures of 275° C. to 325° C. into fiber.

5,348,700

POLYESTER FLAT AND SPLIT YARN

Akira Nakamura; Ryosuke Kamei; Takeshi Takahashi; Tetuya Takahashi; Shigenori Terazono, all of Kawasaki, and Eiichiro Takiyama, Kamakura, all of Japan, assignors to Showa Highpolymer Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 48,182

Claims priority, application Japan, May 12, 1992, 4-119199; May 13, 1992, 4-120783

Int. Cl.[5] B29C *47/00*

U.S. Cl. 264—177.17 7 Claims

1. A polyester flat and split yarn comprising an aliphatic polyester having a melt viscosity of 2.0×10^3–4.0×10^4 poises at a temperature of 190° C. and a shear rate of 100 sec^{-1} and having a melting point of 70°–190° C.,

wherein said aliphatic polyester is obtained from ingredients consisting essentially of diisocyanate and a prepolymer in a molten state by adding from 0.1 to 5 parts by weight of diisocyanate to 100 parts by weight of a prepolymer in a molten state,

wherein said prepolymer

is obtained from a reaction of at least an aliphatic glycol and an aliphatic dicarboxylic acid, wherein the reaction includes (a) succinic acid, or its anhydride, reacted with 1,4-butanediol, (b) succinic acid, adipic acid, or their anhydride, reacted with 1,4-butanediol, or (c) succinic acid, or its anhydride, reacted with ethylene glycol, and has a number-average molecular weight of at least 10,000.

5,348,701

VIBRATION-DAMPING ALLOY

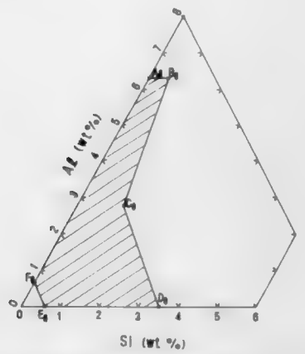
Takayuki Ohdake; Toshimichi Ohmori; Toshihiro Takamura; Takemi Yamada, and Tetsuya Sampei, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Apr. 2, 1992, Ser. No. 847,058

Claims priority, application Japan, Aug. 4, 1990, 2-207104

Int. Cl.[5] C22C *38/06, 38/02*

U.S. Cl. 420—73 5 Claims



1. A vibration-damping alloy containing not more than 0.01 wt. % C, not more than 0.01 wt. % N, not more than 0.01 wt. % O, not more than 0.01 wt. % P, not more than 0.01 wt. % S, those proportions of Al and Si which fall within the range defined in FIG. 3 by the lines connecting points A_8(Al: 6.30 wt. %; Si: 0 wt. %), B_8(Al: 6.30 wt. %; Si: 0.50 wt. %), C_8(Al: 2.75 wt. %; Si: 1.20 wt. %), D_8(Al: 0 wt. %; Si: 3.50 wt. %), E_8(Al: 0 wt. %; Si: 0.60 wt. %), and F_8(Al: 0.70 wt. %; Si: 0 wt. %), and less than 0.1 wt. % Mn, the balance of its composition being Fe and unavoidable impurities.

5,348,702

PROCESS FOR PRODUCING γ AND β DUAL PHASE TIAL BASED INTERMETALLIC COMPOUND ALLOY

Munetsugu Matsuo; Naoya Masahashi; Keizo Hashimoto; Toshihiro Hanamura; Hideki Fujii, Kawasaki; Masao Kimura; Youji Mizuhara, all of Kawasaki, and Hiroo Suzuki, Sagamihara, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

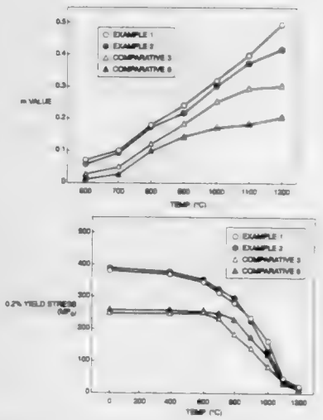
Division of Ser. No. 742,846, Aug. 8, 1991, Pat. No. 5,232,661.

This application Mar. 5, 1993, Ser. No. 26,707

Claims priority, application Japan, Jan. 31, 1991, 3-98322

Int. Cl.[5] C22C *14/00*

U.S. Cl. 420—421 3 Claims



1. A process for producing γ and β dual phase TiAl based intermetallic compound alloy, which comprises basic compositions in the atomic rate:

Ti_pAlCr_x

wherein

$1\% \leqq X \leqq 5\%$,

$47.5\% \leqq Y \leqq 52\%$,

and

$X + 2Y \geqq 100\%$

which is subjected to homogeneous heat treatment at a temperature between 1000° C. and the solids temperature (°C) for 2 to 100 hours and then applying thermochemical treatment at a temperature of more than 1100° C.

5,348,703

VAPOR DEPOSITION APPARATUS AND METHOD

Alan W. Bishop; David J. Bray, both of Farnborough; Robert W. Gardiner, Farnham, and Brian W. Viney, Farnborough, all of United Kingdom, assignors to The Secretary of the State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Hants, England

PCT No. PCT/GB91/01771, § 371 Date Apr. 21, 1993, § 102(e) Date Apr. 21, 1993, PCT Pub. No. WO92/07103, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 11, 1991, Ser. No. 39,409

Claims priority, application United Kingdom, Oct. 16, 1990, 9022449

Int. Cl.[5] C22C *1/00;* C21B *11/10*

U.S. Cl. 420—590 10 Claims

5. A method of producing an alloy by a process of evaporat-

ing the alloy constituents under vacuum and condensing the constituent vapours on a collector, the method comprising the steps of:

evaporating a charge of a first alloy constituent or constituents from a first evaporation crucible,

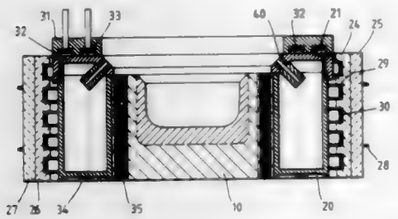
allowing the vapour flux from the first evaporation crucible to rise towards the collector,

evaporating a charge of a further alloy constituent or constituents from a second evaporation crucible, and

maintaining the flow of constituent vapours from the respective evaporation crucibles by continued heating of the charges in order to ensure that the vapour which is captured by the collector is made up of vapours from the first and second evaporation crucibles,

wherein prior to said first alloy evaporation step, there are included the additional steps of:

loading the first evaporation crucible with a charge of a constituent or constituents of relatively low volatility; and



heating the charge in the first evaporation crucible with an electron beam;

wherein prior to said further alloy evaporating step, there are included the additional steps of:

loading the second evaporation crucible with a charge of a constituent or constituents of relatively high volatility; and

heating the charge in the second evaporation crucible with radiant heating means, and

wherein said maintaining step includes the step of directing the vapour from the second evaporation crucible in streams through a series of convergently-directed nozzles arranged in an array around the first evaporation crucible such that these streams are caused to flow towards the collector along pathways which intersect the rising vapour flux from the first evaporation crucible to facilitate mixing between the respective vapours before they are captured by the collector.

5,348,704

APPARATUS AND METHOD FOR WASTE DISPOSAL

Damien R. Tanaka, Redding, Conn., assignor to Medifor-X Company, Shelton, Conn.

Filed Oct. 21, 1992, Ser. No. 964,407

Int. Cl.[5] A61L *2/08*; B30B *15/06*

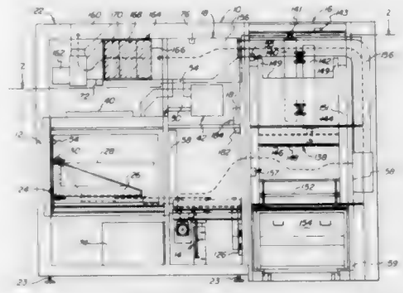
U.S. Cl. 422—22 **26 Claims**

1. An apparatus for disposing of waste, comprising:

a decontamination chamber adapted to receive waste and for decontaminating said waste therein:

compacting means for reducing the volume of the waste subsequent to decontamination wherein said compacting means comprises a pair of collapsible loading trays for supporting the waste prior to compaction and a waste bin in the bottom of the compactor, said loading trays adapted to collapse against the compactor walls upon compaction enabling the waste to be crushed and compacted into said waste bin; and

robot assembling means communicating between the decontamination chamber and said compactor means for automatically retrieving the waste from the decontamination chamber upon being decontaminated and transporting the waste to the compactor means for volume reduction prior to disposal, said robot assembling means comprising at least one plate and means for driving said plate in a first direction from a home position into the decontamination chamber to retrieve waste and in a second direction from



the home position, into the compactor to deliver the waste, the second direction differs from said first direction.

5,348,705

AUTOMATIC CLINICAL SAMPLE DISPENSING SYSTEM

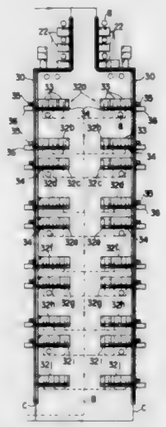
Toshiyuki Koreyasu, Tokikawa, and Shoji Maruyama, Kawagoe, both of Japan, assignors to B.M.L., Inc., Tokyo, Japan

Division of Ser. No. 913,527, Jul. 15, 1992. This application Apr. 23, 1993, Ser. No. 51,615

Claims priority, application Japan, Apr. 10, 1992, 4-118161

Int. Cl.[5] G01N *37/00*

U.S. Cl. 422—67 **1 Claim**



1. An automatic sample dispensing system, comprising:

a main line for conveying original container racks containing a plurality of original containers for which sample numbers have been memorized in association with pre-dispensing sample positional information of said original containers in said original container racks and a rack number on each of said rack, said main line having upstream and downstream portions;

a plurality of dispensing lines branching from said main line at branching portions thereof;

automatic dispensing machines respectively disposed in said dispensing lines;

reading units disposed at said branching portions for reading rack numbers of said original container racks;

determining means fix determining whether or not a sample to be dispensed in one of said dispensing lines exists in an original container rack based on said rack number thereof

read by one of said reading units at the branching portion of said one dispensing line;

means for enabling the original container rack containing said sample to be conveyed on said one dispensing line when said determining means has determined that there is a sample to be dispensed in said original container rack; and

means for disposing in said upstream portion of said main line, dispensing lines each for dispensing a first number of samples with each sample being subject to a second number of test items, and for disposing, in said downstream portion of said main line, dispensing lines for dispensing a third number of samples with each sample being subject to a fourth number of test items including manually tested samples, wherein the first number is greater than the third number and the second number is smaller than the fourth number.

5,348,706

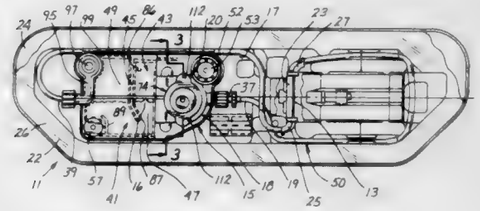
CALIBRATION SYSTEM AND METHOD FOR MAKING

Roxanne E. Abul-Haj, El Toro, and Jacob J. Norman, Huntington Beach, both of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 849,753, Mar. 12, 1992, Pat. No. 5,278,072, which is a continuation-in-part of Ser. No. 747,533, Aug. 20, 1991, Pat. No. 5,171,029, which is a division of Ser. No. 514,704, Apr. 26, 1990, Pat. No. 5,057,278. This application May 24, 1993, Ser. No. 67,422

Int. Cl.[5] G01N *21/00*

U.S. Cl. 422—100 **11 Claims**



1. An apparatus comprising:

a housing having an inlet, an outlet, and a passage extending through said housing between said inlet and said outlet;

a curved wall surface on said housing;

a tube compressor;

a compressible tube carried by said housing and defining at least a portion of said passage, said compressible tube being between said curved wall surface and said tube compressor and being wrapped in a circumferential direction at least part way around said tube compressor;

said tube compressor being mounted on said housing for movement relative to said curved wall surface to squeeze said compressible tube in a region which moves along said compressible tube to thereby pump fluid in said compressible tube;

a sensor device having a flow-through passage and including at least one sensor to be calibrated, said flow-through passage being in fluid communication with said passage extending through said housing so as to form an endless loop therewith;

a calibration liquid located in said endless loop so as to wet said sensor; and

means for keeping said sensor relatively wet during storage of said apparatus, said means comprising an element carried by said housing for urging said tube compressor to squeeze a zone of said compressible tube sufficiently to prevent said calibration liquid from flowing in said compressible tube across said zone.

5,348,707

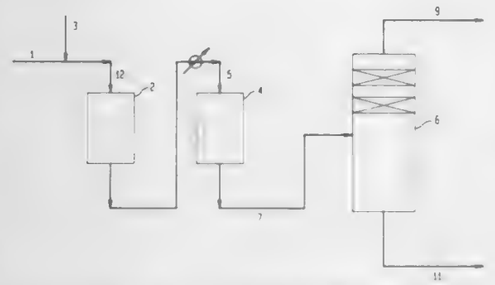
APPARATUS FOR ETHER PRODUCTION

Mohsen N. Harandi, Lawrenceville, and Hartley Owen, Belle Mead, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 495,667, Mar. 19, 1990, Pat. No. 5,015,782. This application Jan. 22, 1991, Ser. No. 644,141

Int. Cl.[5] B01J *8/04*

U.S. Cl. 422—129 **10 Claims**



1. An apparatus for catalytically preparing ethers from olefins and alcohols comprising:

a first reaction zone comprising an inlet means for receiving a mixed feedstock comprising olefins and alcohols, a reactor system containing solid acid medium-pore zeolite catalyst particles, the reactor system comprising a plurality of fixed bed catalyst zones operatively connected for swing from production mode to regeneration mode in alternating sequence, and an outlet means for withdrawing intermediate product comprising ethers and unreacted feedstock;

a second reaction zone comprising an inlet means for receiving withdrawn intermediate product, a catalytic distillation column containing solid acid resin etherification catalyst in a plurality of fixed bed catalysis-distillation zones, and outlet means for withdrawing a final etherification product; and

means for transferring intermediate product from the first reaction zone to the second reaction zone.

5,348,708

POLYMERIZING APPARATUS

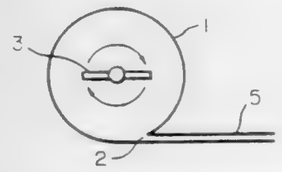
Tadashi Amano, Kamisu, and Shuji Ohnishi, Hasaki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1992, Ser. No. 989,569

Claims priority, application Japan, Dec. 11, 1991, 3-350797

Int. Cl.[5] B01F *7/00*; F28D *7/00*

U.S. Cl. 422—132 **8 Claims**



7. A polymerizing method for polymerizing a monomer having an ethylenically unsaturated double bond which comprises:

providing a polymerization vessel having an agitator and which includes upper and lower portions, such that the upper portion contains a gaseous phase part and the lower portion contains a liquid phase part, the step of providing a polymerization vessel including providing a polymerization vessel having a generally circular horizontal cross

section and an external circulating system which includes a circulating pipeline extending from the lower portion of said polymerization vessel through a heat exchanger and connected to the upper portion of said polymerization vessel in series;

providing a reaction mixture within said polymerizing apparatus such that the liquid phase part is contained within said lower portion and the gaseous phase part is contained in said upper portion;

removing a reaction mixture from said liquid phase part and circulating said reaction mixture through said heat exchanger utilizing a circulation pipeline and thereafter returning said reaction mixture to said polymerization vessel with a return nozzle which discharges said reaction mixture in a tangential direction to said circular horizontal cross section and along an inner wall surface of said polymerization vessel.

5,348,709

APPARATUS FOR GENERATING OZONE

James Wheatley, Glasgow, Scotland, assignor to Triogen Limited, Scotland, United Kingdom

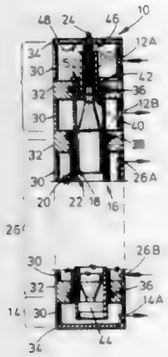
PCT No. PCT/GB91/01911, § 371 Date May 26, 1993, § 102(e) Date May 26, 1993, PCT Pub. No. WO92/09524, PCT Pub. Date Jun. 11, 1992

PCT Filed Oct. 31, 1991, Ser. No. 66,073

Claims priority, application United Kingdom, Dec. 1, 1990, 9026180.1

Int. Cl.[5] **B01J** *19/12*

U.S. Cl. 422—186.18 **7 Claims**



1. Apparatus for generating ozone comprising top and bottom chambers interconnected by an elongate tubular assembly the axis of said assembly being generally vertical, wherein said assembly includes an elongate electrode concentrically located within but spaced apart from an annular elongate conductive member, a concentric elongate annular dielectric being disposed in and partly filling the space between the electrode and the conductive member so as to define annular passageway means for flow of gas between said top and bottom chambers, said elongate annular dielectric being mounted only by being suspended on a resilient member at its upper end within the top chamber whereby the electric field established, in use, between the electrode and the conductive member tends to center the dielectric, the dielectric being dimensioned diametrically so that when centered it is free from contact with both the electrode and the conductive member, whereby the dielectric is free to expand and contract under thermal and vibration stresses and is relatively easily replaced, and said passageway means is formed by radially inner and outer annular passageways respectively formed between the electrode and the dielectric and between the dielectric and the conductive member.

5,348,710

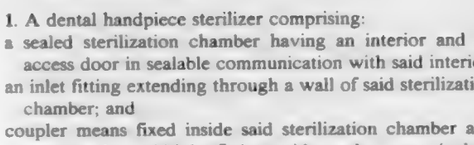
CATALYTIC DISTILLATION STRUCTURE

Kenneth H. Johnson, P.O. Box 630708, Houston, Tex. 77263, and Albert B. Dallas, 5309 Ashby #33A, Houston, both of Tex. 77005

Filed Jun. 11, 1993, Ser. No. 75,328

Int. Cl.[5] **B01J** *8/02*; **B01D** *50/00*

U.S. Cl. 422—211 **16 Claims**



1. A catalytic distillation structure for disposition in a distillation column reactor, comprising:

(a) plurality of catalytic elements aligned along a common axis and each comprising:

(i) a first and second layer of gas permeable wire mesh material joined together at intervals to form a corrugated sheet having a plurality of pockets disposed thereon; and

(ii) particulate catalyst disposed within said pockets; and

(b) an inert spacing element disposed between at least two adjacent of said plurality of catalytic elements wherein said inert spacing element comprises a corrugated sheet comprising a third and fourth layer of gas permeable wire mesh material joined together to form a plurality of empty pockets disposed on said sheet.

5,348,711

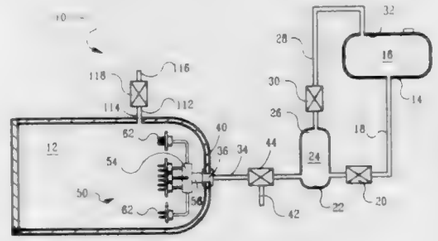
DENTAL HANDPIECE STERILIZER

Kenneth A. Johnson, Walworth, and Steven W. White, Victor, both of N.Y., assignors to MDT Corporation, Torrance, Calif.

Filed Jul. 21, 1993, Ser. No. 95,321

Int. Cl.[5] **A61L** *2/00, 9/00*

U.S. Cl. 422—300 **11 Claims**



1. A dental handpiece sterilizer comprising:

a sealed sterilization chamber having an interior and an access door in sealable communication with said interior;

an inlet fitting extending through a wall of said sterilization chamber; and

coupler means fixed inside said sterilization chamber and connected to said inlet fitting, said coupler means including a rigid outlet connector, said outlet connector being structured and arranged for releasably coupling to a plurality of dental handpieces, said coupler means further including fluid pathways between said inlet fitting and said connecter and through said connector to the interior of each connected dental handpiece; sterilant supply means constructed and arranged to introduce vaporized sterilant to said inlet fitting; whereby sterilant introduced to said inlet fitting flows through said coupler means, through each dental handpiece coupled to said coupler means and throughout said interior of said sealed sterilization chamber, thereby to contact substantially the entire outer surface of each dental handpiece within said sterilization chamber;

and valve controlled vacuum means opening into said chamber.

5,348,712

USE OF CARBONATES IN METAL ION EXTRACTION

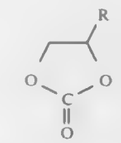
Edward T. Marquis, and Martin J. Plishka, both of Austin, Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Feb. 9, 1993, Ser. No. 15,017

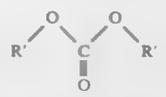
Int. Cl.[5] **C22B** *11/00, 43/00*

U.S. Cl. 423—22 **7 Claims**

4. A process for extracting metal ions from aqueous solutions comprising contacting an aqueous solution containing metal ions with at least 5 wt. % of an organic carbonate based on the weight of the aqueous solution, the organic carbonate being selected from the group consisting of cyclic 1,2-alkane carbonates having the formula:



where R is a straight or branched alkyl group of 8 to 20 carbon atoms, and open chain carbonates having the formula:



where each R' is independently a straight or branched alkyl of at least 10 carbon atoms and where the total number of carbon atoms in both R' groups is between 20 to 36, in the absence of an organic solvent and in the absence of an alkali metal salt, where the metal ions are selected from the group consisting of gold, silver, platinum, mercury and mixtures thereof, and they are extracted in a proportion of at least 95%.

5,348,713

RECOVERY OF METAL VALUES FROM ZINC PLANT RESIDUES

Derek E. Kerfoot, St. Albert; Michael J. Collins, Fort Saskatchewan, and Michael E. Chalkley, St. Albert, all of Canada, assignors to Sherritt Gordon Limited, Edmonton, Canada

Filed Aug. 14, 1992, Ser. No. 929,927

Claims priority, application United Kingdom, Dec. 15, 1989, 8928368

Int. Cl.[5] **C22B** *7/00, 3/08, 19/30*

U.S. Cl. 423—26 **9 Claims**

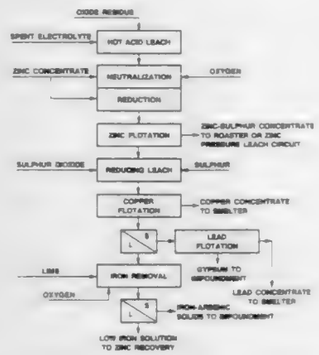
1. A process for the recovery of zinc, lead, copper and precious metals from zinc plant residues containing ferrites comprising the steps of:

leaching said zinc plant residues with an aqueous acid solution containing H_2SO_4 in an amount effective to dissolve the ferrites and to maintain at least 50 g/L H_2SO_4 in a hot acid leach at a temperature in the range of 70° to 100° C. and at atmospheric pressure to partially dissolve zinc, copper, iron and impurity elements and to essentially leach sulphide copper;

treating the resulting leach slurry with zinc concentrate under oxidizing conditions at atmospheric pressure at a temperature in the range of 70° to 100° C. to consume excess acid from said hot acid leach and to increase the concentration of zinc in the leach solution and continuing said treatment with zinc concentrate under reducing conditions to reduce ferric iron in solution to ferrous iron;

recovering excess zinc concentrate and elemental sulphur produced in the reaction of zinc concentrate with acid and ferric iron by zinc flotation as a flotation concentrate;

subjecting zinc flotation tailings to a reducing leach in the presence of gaseous sulphur dioxide and elemental sulphur at a temperature in the range of 70° to 120° C. with a sulphur dioxide overpressure of at least 30 kPa to extract zinc, copper, iron and impurity elements, to reprecipitate copper as copper sulphide, and to convert lead in jarosite to lead sulphate;



recovering copper sulphide by copper flotation as a flotation concentrate;

subjecting the copper flotation tailings to a liquid-solid separation;

recovering lead sulphate as a flotation concentrate by lead flotation of the separated solids from the liquid-solid separation of the copper flotation tailings; and

recovering and treating the reducing leach solution from the liquid-solid separation for the recovery of contained zinc values.

5,348,714

LIQUID ABSORBING ACIDIC GASES AND USE THEREOF IN DIACIDIFICATION OF GASES

Jean-Louis Peytavy; Philippe Le Coz, and Olivier Oliveau, all of Lescar, France, assignors to Elf Aquitaine Production, Paris, France

Division of Ser. No. 460,958, Jan. 18, 1990, Pat. No. 5,209,914, and a continuation-in-part of Ser. No. 917,758, Jul. 21, 1992. This application May 6, 1993, Ser. No. 58,096

Claims priority, application France, May 24, 1989, 88 06880; May 24, 1989, 88 06881; Dec. 8, 1989, 88 16130

Int. Cl.[5] **C01B** *3/20*; **C09K** *3/00*

U.S. Cl. 423—228 **26 Claims**

1. A process for improved CO_2 absorption from a gas by an absorbent liquid which has an improved absorption capacity for CO_2 which process comprises contacting said gas and the absorbent liquid in an absorption zone having an upper and lower part, thereby obtaining a treated gas with a reduced content of CO_2 and the absorbent liquid with increased CO_2 content, and regenerating the absorbent liquid which has an increased CO_2 content, thereby releasing the CO_2 and producing at least one gaseous fraction containing the released CO_2 and at least one portion of the regenerated absorbent liquid and recycling said regenerated absorbent liquid to the absorption zone, the absorbent liquid being a mixture of one or more tertiary alkanolamines and an activator of improved CO_2 absorption by said tertiary alkanolamines, the activator having the general formula

$$Y—(C_pH_{2p})—NHZ$$

wherein Y is a monovalent radical selected from the group consisting of piperazyl, piperidinyl, furyl, tetrahydrofuryl, thienyl, tetrahydrothienyl and —OR_2 radicals, Z is an —R_2

radical or hydrogen, R_2 is a monovalent hydrocarbon residue, and p is an integer from 1 to 6.

14. An absorbent liquid for improved absorption capacity for CO_2 in a gas due the presence of an activator for CO_2 absorbent from said gas, the absorption liquid comprising a mixture of one or more tertiary alkanolamines and an activator of CO_2 absorption by said tertiary alkanolamine, which activator has the general formula

$$Y-(C_pH_{2p})-NHZ$$

wherein Y is a monovalent radical selected from the group consisting of piperazyl, piperidinyl, furyl, tetrahydrofuryl, thienyl, tetrahydrothienyl and $-OR_2$ radicals, Z is an $-R_2$ radical or hydrogen, R_2 is a monovalent hydrocarbon residue, and p is an integer from 1 to 6.

5,348,715

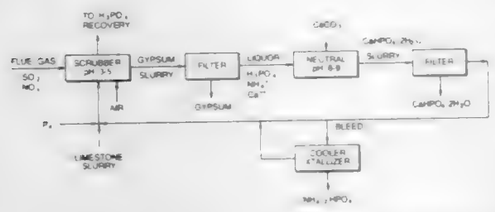
PROCESSES TO REMOVE ACID FORMING GASES FROM EXHAUST GASES

Shih-Ger Chang, El Cerrito, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 819,758, Jan. 13, 1992, which is a continuation-in-part of Ser. No. 518,722, May 4, 1990, Pat. No. 5,106,601, which is a continuation-in-part of Ser. No. 261,229, Oct. 24, 1988, Pat. No. 5,164,167. This application Mar. 19, 1992, Ser. No. 853,904

Int. Cl.[5] C01B *21/00*

U.S. Cl. 423—235 **29 Claims**



1. An improved process for reducing the concentration of NO in a gas, which process comprises:

(A) contacting a gas containing NO and SO_2 with a gaseous oxidizing agent to oxidize the NO to NO_2; and

(B) contacting the oxidized gas of step (A) comprising NO_2 with

an aqueous reagent of bisulfite in admixture with sulfite formed by the reaction of SO_2 and water and

a compound selected from urea, sulfamic acid, hydrazinium ion, hydrazoic acid, nitroaniline, sulfanilamide, sulfanilic acid, mercaptopropanoic acid, mercaptosuccinic acid, cysteine or combinations thereof to reduce the formation of any compounds comprising both nitrogen and sulfur

at between about 0° and 100° C. at a pH of between about 1 and 7 for between about 0.01 and 60 sec to reduce the concentration of NO in the gas.

5,348,716

PROCESS FOR PURIFYING A GAS CONTAINING NITRIC OXIDE

Gérard De Soete, Colombes; Léon Ninane, Dombasle-Sur-Meurthe, and Jean-Marie Blondel, Villers Les Nancy, all of France, assignors to Solvay (Société Anonyme), Brussels, Belgium

Filed Nov. 9, 1992, Ser. No. 972,783

Claims priority, application France, Nov. 8, 1991, 91 13974

Int. Cl.[5] C01D *9/06, 5/06*

U.S. Cl. 423—239.1 **16 Claims**

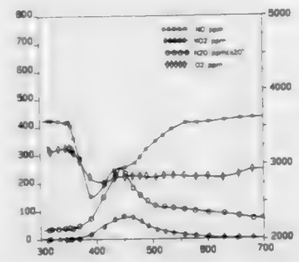
1. A process for purifying a gas to remove nitric oxide, comprising:

adjusting an oxygen and sulphur dioxide content of a gas containing nitric oxide to provide the following molar ratios relative to nitric oxide:

O_2/NO greater than 2.5;

SO_2/NO greater than 0.1;

contacting said gas containing nitric oxide, oxygen and sulphur dioxide with an alkali metal compound comprising sodium carbonate hydrate of the formula $Na_2CO_3.nH_2O$ where $0.5<n<10$ at a temperature of the gas controlled between about 320 and 500 K; and



removing nitric oxide and sulphur dioxide from said gas by forming sodium nitrite, sodium nitrate, and sodium sulphate.

5,348,717

SYNTHESIS GAS FROM PARTICULATE CATALYSTS, AND ADMIXTURES OF PARTICULATE CATALYSTS AND HEAT TRANSFER SOLIDS

LeRoy R. Clavenna; Stephen M. Davis; Geoffrey R. Say, all of Baton Rouge, La., and Rocco A. Fiato, Basking Ridge, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 11, 1993, Ser. No. 60,332

Int. Cl.[5] C01B *3/02, 3/26, 31/18*

U.S. Cl. 423—418.2 **12 Claims**

1. In a process for the production of hydrogen and carbon monoxide from a low molecular weight hydrocarbon by contact with a fluidized bed of catalyst at elevated temperature in the presence of oxygen, or both steam and oxygen, the improvement wherein the fluidized bed is comprised of

an admixture of

a particulate consisting essentially of non-leachable barium hexaluminate solids of fluidizable particle diameter in concentration ranging from about 10 percent to about 99.9 percent, based on the weight of the admixture, and

a catalyst comprised of a carrier component composited with a metal, or metals, component catalytic for the production of hydrogen and carbon monoxide from low molecular weight hydrocarbons when contacted with a fluidized bed of the catalyst, in concentration ranging from about 0.1 percent to about 90 percent, based on the weight of the admixture.

5,348,718

METHOD AND APPARATUS FOR PRODUCING CARBRIDE PRODUCTS

Michael C. Carter, and Bruce W. Gerhold, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 4, 1990, Ser. No. 504,450

Int. Cl.[5] C01B *31/36, 31/34, 31/32*

U.S. Cl. 423—291 **25 Claims**

1. A method comprising the steps of:

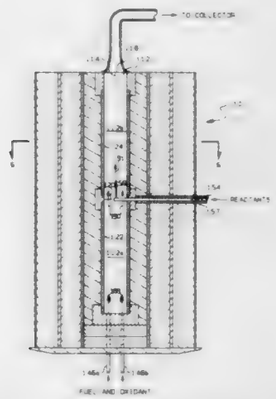
providing a reactor having a chamber defined therein which has a longitudinal axis and longitudinally separated upstream and downstream ends, wherein the chamber comprises a combustion zone and a reaction zone such that the combustion zone longitudinally extends from said upstream end to a surface boundary between the zones and

such that the reaction zone longitudinally extends from said surface boundary to said downstream end;

establishing a flow of a combustible mixture in the combustion zone so as to generally flow in a direction generally toward the reaction zone, wherein the combustible mixture comprises a mixture of a fuel and an oxidant;

combusting the combustibel mixture in the combustion zone to produce hot combustion products which flow generally toward and into the reaction zone;

injecting at least one reactant into the chamber from at least one outlet of at least one reactant nozzle such that said at



least one reactant exits said at least one reactant nozzle outlet at said surface boundary in a direction generally parallel to said longitudinal axis, wherein temperature conditions in at least a portion of the reaction zone are at least about 1400° C. and wherein the elemental molar ratio of carbon to oxygen for the combination of the combustible mixture and said at least one reactant is at least about 0.8:1, said at least one reactant being capable of reacting in the reaction zone to form a carbide compound;

whereby a product powder comprising the carbide compound is produced in the reaction zone.

5,348,719

PROCESS FOR PRODUCING CARBON FIBERS HAVING HIGH STRAND STRENGTH

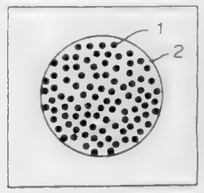
Iwao Yamamoto; Akihiko Yoshiya, both of Yokohama, and Akira Nakagoshi, Kagawa, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Nov. 21, 1991, Ser. No. 795,376

Claims priority, application Japan, Nov. 21, 1990, 1-317426; Nov. 21, 1990, 1-317427

Int. Cl.[5] D01F *9/145*

U.S. Cl. 423—447.4 **9 Claims**



1. A process for producing carbon fibers, which consists essentially of:

preparing pitch fibers by melt-spinning pitch, at least 40% of which is of an optically anisotropic structure;

gathering the resulting fibers;

infusibilizing the gathered fibers;

carbonizing the infusibilized fibers at a temperature of 400° to 1800° C. in an inert gas;

if necessary, graphitizing said carbonized fibers; and

heat treating said infusibilized fibers or carbonized fibers at a temperature of from 500°–1800° C. in an atmosphere consisting essentially of an inert gas with an effective amount of at least one of steam and carbon dioxide to enhance the tensile strength of the carbon strand product to a level of at least 210 kg/mm^2.

5,348,720

BASIC ALUMINUM ANTIPERSPIRANT ACTIVE MATERIAL HAVING ENHANCED ACTIVITY, ANTIPERSPIRANT ACTIVE COMPOSITION CONTAINING SUCH MATERIAL, AND METHODS FOR PREPARATION OF SUCH MATERIAL AND COMPOSITION

Paul J. Vincenti, Jefferson, and Morton L. Barr, Rockaway, both of N.J., assignors to The Mennen Company, Morristown, N.J.

Division of Ser. No. 518,516, May 2, 1990, Pat. No. 5,202,115, which is a continuation-in-part of Ser. No. 233,008, Aug. 17, 1988, abandoned. This application Feb. 23, 1993, Ser. No. 21,136

Int. Cl.[5] C01B *9/02;* **C01F** *7/56*

U.S. Cl. 423—462 **38 Claims**

1. A basic aluminum material, with enhanced antiperspirant activity, having the empirical formula:

$$Al_2(OH)_{6-a}X_a,$$

where $0.5 \leqq a \leqq 5.0$; and X is an anion that is a univalent complex oxoanion of nitrogen or a halogen, which anion forms salts with Al^{3+} in aqueous solution so that these salts are substantially completely dissociated, which anion is readily soluble in water with metallic ions in the solutions, and which anion forms conjugate acids that are strong acids; wherein said material is characterized by:

(a) size exclusion high performance liquid chromatography peaks corresponding to peak **3** and peak **4** of size exclusion chromatograms formed by HPLC technique;

(b) a peak **4** relative area of at least 25%, a peak **3** relative area of less than 60%, the sum of the relative peak **3** and peak **4** areas being at least 50%; and

(c) less than 10% chromatographic peaks eluting at shorter retention times than peak **3**, corresponding to peaks **1** and **2**.

5,348,721

POLYALUMINUMCHLOROSULFATES AND PREPARATION AND USES THEREOF

J. D. Murphy; R. Schuffenecker, both of Lyons, and H. Suty, Champigny S/Marne, all of France, assignors to Elf Atochem S.A., Puteaux, France

Filed Feb. 18, 1993, Ser. No. 18,959

Claims priority, application France, Feb. 18, 1992, 92 01807

Int. Cl.[5] C01B *9/00;* **C01F** *7/74;* **B01D** *21/00*

U.S. Cl. 423—463 **21 Claims**

11. A process for prepartin a high basicity water-soluble polyaluminumchlorosulfate, yielding a content of polymeric aluminum as Al_{13} of at least 1 mol % when said polyaluminimchlorosulfate is dissolved in water to form a solution which has an aluminum concentration of 0.01M and having the formula:

$$Al(OH)_aCl_b(SO_4)_cM_dN_e$$

in which:

M is an alkaline-earth metal;

N is an alkali metal;

a, b, c, d and e are numbers such that:

$1.95<a<2.4$; $0<c<0.15$; $0<d<0.16$;

$0.4<e<1.7$; and $a+b+2c=3+2d+e$;

comprising reacting, at a temperature of 50° to 70 ° C. an

alkaline-earth metal compound M and an alkali metal compound N with a polyaluminumchlorosulfate of the formula:

$$Al(OH)_a.Cl_b.(SO_4)_c$$

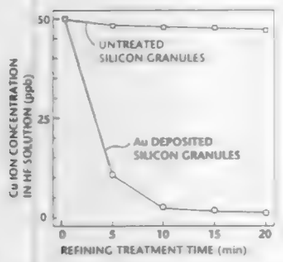
in which:
$1<a'<1.95$; $0<c'<0.15$;
$a'+b'+2c'=3$;
in the following proportion, calculated in molecular equivalents:
$0<M/Al<0.16$ and $0.4<N/Al<1.7$.

5,348,722

REMOVAL OF DETRIMENTAL METAL IONS FROM HYDROFLUORIC ACID SOLUTION FOR CLEANING SILICON SURFACES

Tsugio Shimono, and Kenichi Yamamoto, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 17, 1993, Ser. No. 77,440
Claims priority, application Japan, Jun. 17, 1992, 4-157199; Jan. 22, 1993, 5-008740
Int. Cl.[5] C01B 7/07
U.S. Cl. 423—488 28 Claims



1. In a method of refining a hydrofluoric acid solution for use in the manufacturing of semiconductor devices to clean silicon surfaces by removing at least one detrimental metal ion from the acid solution by bringing the acid solution into contact with silicon granules for adsorption of the detrimental metal ion or ions on the surfaces of the silicon granules,

the improvement comprising depositing a metal which is lower in ionization tendency than silicon on said silicon granules so as to partly cover the surface of each silicon granule by the deposited metal in advance of placing said partly covered silicon granules in either an adsorption column or a filter unit for the contact of the silicon granules with the hydrofluoric acid solution.

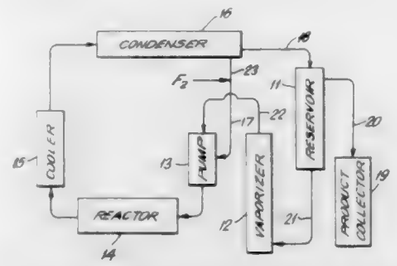
5,348,723

SYNTHESIS OF SEMICONDUCTOR GRADE TUNGSTEN HEXAFLUORIDE

Bruce J. Sabacky, Westminster, and Robert E. Doane, Idaho Springs, both of Colo., assignors to Bandgap Technology Corporation, Broomfield, Colo.

Filed Feb. 7, 1990, Ser. No. 476,232
The portion of the term of this patent subsequent to Jan. 20, 2009, has been disclaimed.
Int. Cl.[5] C01G 41/04, 41/02
U.S. Cl. 423—489 8 Claims

1. The process for producing tungsten hexafluoride having a purity sufficient for use in semiconductor application which comprises placing tungsten metal in a closed reactor and reacting said tungsten metal with a gas stream consisting essentially



of a major proportion of gaseous tungsten hexafluoride and a minor proportion of fluorine.

5,348,724

METHOD OF DECOMPOSING HYDROGEN PEROXIDE

Kenji Hagimori, Kawaguchi; Yuzuru Abe, Hanyu, and Tetsuo Kanke, Misato, all of Japan, assignors to Toshin Chemical Industry Co., Ltd., Tokyo, Japan

Filed May 18, 1993, Ser. No. 64,962
Claims priority, application Japan, Jun. 11, 1992, 4-177347
Int. Cl.[5] C01B 17/90; C02F 1/68
U.S. Cl. 423—531 5 Claims

3. A method of decomposing hydrogen peroxide contained in a waste sulfuric acid, which comprises preheating a waste sulfuric acid containing hydrogen peroxide produced in the process of semiconductor fabrication, to a temperature in the range of 60° C. to less than the boiling point of said waste sulfuric acid, and passing the preheated sulfuric acid through a column or columns each packed with coke to thereby obtain purified sulfuric acid whose content of the remaining hydrogen peroxide is 1 ppm or below.

5. A method of decomposing residual hydrogen peroxide contained in a wastewater having pH in the acidic range not higher than 2.6, said wastewater containing hydrogen peroxide, which comprises contacting said wastewater hydrogen peroxide with coke at an elevated temperature in the range from 60° C. to less than the boiling point of said wastewater thereby reductively and catalytically decomposing the hydrogen peroxide in said wastewater.

5,348,725

METHOD OF MAKING PILLARED HYDROTALCITES AND ASSOCIATED PRODUCTS

Chanakya Misra, Pittsburgh, and Anthony J. Perrotta, Monroeville, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 496,444, Mar. 20, 1990, Pat. No. 5,075,089.
This application Sep. 4, 1991, Ser. No. 754,770
Int. Cl.[5] C01B 33/26; C01F 7/04
U.S. Cl. 423—594 21 Claims

1. A method of making a pillared derivative of a compound having the formula $A_wB_x(OH)_y[C]_z \cdot nH_2O$, wherein A represents a divalent metal cation, B represents a trivalent metal cation, C represents a mono- to tetravalent anion, and w, x, y, z and n satisfy the following:

$$0<z\leqq x\leqq 4\leqq w\leqq \tfrac{1}{2}y \text{ and } 12\geqq n\geqq \tfrac{1}{2}(w-x).$$

said method comprising:

(a) calcining the compound;

(b) combining said calcined compound with a salt solution of an anion to make a pillared derivative of said compound; and

(c) separating said pillared derivative from said salt solution.

5,348,726

PROCESS FOR PRODUCING MANGANESE DIOXIDE

Enoch I. Wang, Attleboro; Lifun Lin, Lincoln, both of Mass., and William L. Bowden, Nashua, N.H., assignors to Duracell Inc., Bethel, Conn.

Division of Ser. No. 952,034, Sep. 28, 1992, Pat. No. 5,277,890.
This application Sep. 20, 1993, Ser. No. 122,966
Int. Cl.[5] C01G 45/02
U.S. Cl. 423—605 11 Claims



1. A particulate MnO_2 material wherein at least the majority of the particles have filament-like protrusions of gamma MnO_2 radiating outwardly from the surfaces of said particles, and wherein said protrusions are visible at a magnification between about 200 and 2,000 times actual size.

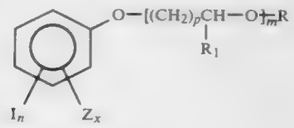
5,348,727

COMPOSITIONS OF IODOPHENOXY ALKYLENE ETHERS FOR VISUALIZATION OF THE GASTROINTESTINAL TRACT

Edward R. Bacon, East Greenbush, N.Y.; Carl R. Illig, Phoenixville, Pa.; Thomas J. Caulfield, Audubon, Pa.; Brent D. Douty, Coatesville, Pa., and Kurt A. Josef, Clifton Park, N.Y., assignors to Sterling Winthrop Inc., Malvern, Pa.

Filed Mar. 11, 1993, Ser. No. 29,485
Int. Cl.[5] A61B 5/055; C07C 41/00; A61K 31/075
U.S. Cl. 424—5 6 Claims

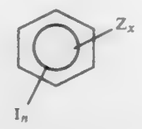
1. An orally or rectally administerable x-ray contrast composition for visualization of the gastrointestinal tract comprising a contrast agent having the formula, or a pharmaceutically acceptable salt thereof:



wherein

Z=H, halo, C_1-C_{20} alkyl, cycloalkyl, lower alkoxy, alkoxycarbonyl, cyano, where the alkyl and cycloalkyl groups can be substituted with halogen or halo-lower-alkyl groups;

R=C_1-C_{25} alkyl, cycloalkyl,



or halo-lower-alkyl; each of which may be optionally substituted with halo, fluoro-lower-alkyl, lower-alkoxy, lower-alkoxy carbonyl or lower-alkoxy-carbonyloxy, $(CR_1R_2)_p$-$(CR_3{=}CR_4)_mQ$, or $(CR_1R_2)_p{-}C{\equiv}C\text{-}Q$;

R_1, R_2, R_3 and R_4 are independently H or lower-alkyl, optionally substituted with halo;

x is 1–4;

n is 1–4;

m is 1–15;

p is 1–20; and

Q is H, lower-alkyl, lower-alkenyl, lower-alkynyl, lower-alkylene, aryl, or aryl-lower alkyl,

in an aqueous, pharmaceutically acceptable carrier, said pharmaceutically acceptable carrier comprises a surface active agent selected from the group consisting of cetyl trimethylammonium bromide, sodium lauryl sulfate, sodium heptadecyl sulphate, an alkyl benzenesulphonic acid, sodium butylnaphthalene sulfonate, sulphosuccinate, carboxylic esters, carboxylic amides, ethoxylated alkylphenols, ethoxylated aliphatic alcohols, sorbitan esters, polyoxyethylene alkyl ethers and polyoxyethylene sorbitan fatty acid esters.

5,348,728

Patent Not Issued For This Number

5,348,729

EVALUATIVE MEANS FOR DETECTING INFLAMMATORY REACTIVITY

Esther M. Sternberg, Chevy Chase, Md.; Philip W. Gold, Washington, D.C., and Samuel W. Page, Silver Spring, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 412,294, Sep. 25, 1989, Pat. No. 5,209,920, which is a continuation-in-part of Ser. No. 365,735, Jun. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 277,708, Nov. 30, 1988, Pat. No. 5,006,330. This application May 5, 1992, Ser. No. 878,608
Int. Cl.[5] G01N 1/00, 33/48; A61K 37/60, 45/05
U.S. Cl. 424—9 27 Claims

1. A method for testing the susceptibility of a mammal to inflammatory diseases which comprises the steps of:

administering to a mammal a compound selected from the group consisting of Type I mineralocorticoid receptor antagonists, opiate antagonists, estrogen antagonists or mixed estrogen agonists/antagonists, progesterone agonists; or a combination of an estrogen antagonist with one or a combination of a Type I glucocorticoid receptor antagonist, a Type II glucocorticoid agonist or a progesterone agonist which is effective in stimulating the hypothalamic-pituitary-adrenal (HPA) axis; and

measuring the level of at least one hormone secreted by the hypothalamus, pituitary or adrenal glands of said mammal.

5,348,730

METHOD FOR PREPARING MEDICINAL AEROSOL FORMULATION CONTAINING COATED MEDICAMENT

David J. Greenleaf, Loughborough; Tarlochan S. Purewal, Leamington Spa, and Philip A. Jinks, Mount Sorrel, all of Great Britain, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

PCT No. PCT/GB90/01454, § 371 Date Mar. 17, 1992, § 102(e) Date Mar. 17, 1992, PCT Pub. No. WO90/07333, PCT Pub. Date Jul. 12, 1990

PCT Filed Sep. 20, 1990, Ser. No. 838,747

Claims priority, application United Kingdom, Sep. 20, 1989, 8921222

Int. Cl.[5] A61K *9/12, 9/72*

U.S. Cl. 424—45 8 Claims

1. A method for preparing an aerosol composition comprising:

(a) coating a finely divided solid drug with non-perfluorinated surface-active dispersing agent in a solvent in which the finely divided solid drug is substantially insoluble to afford a coated solid medicament,

(b) separating the coated solid medicament from the solvent,

(c) drying the coated solid medicament,

(d) dispersing the coated solid medicament in an aerosol propellant substantially free of chlorofluorocarbons and in which the surface active dispersing agent is substantially insoluble such that the aerosol composition comprises from 0,001% to 20% by weight of said coated solid medicament and 0,001% to 50% by weight of the coated solid medicament is the non-perfluorinated surface-active dispersing agent.

5,348,731

AEROSOL SPRAY STEEL CAN DISPENSERS WITH CORROSION INHIBITORS

Anthony L. Patti, Trumbull; Susan K. Hentrich, Fairfield, and Joseph R. Faryniarz, Oxford, all of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed May 19, 1993, Ser. No. 64,612

Int. Cl.[5] A61K *7/11, 9/12*

U.S. Cl. 424—47 12 Claims

1. An aerosol composition packaged in a steel can comprising:

(i) from about 0.01 to about 99% water;

(ii) from about 1 to about 60% propellant; and

(iii) from about 0.1 to about 5% of a corrosion inhibitor which is a combination of ammonium benzoate and ammonium hydroxide in molar ratio from about 10:1 to about 1:10.

5,348,732

TOOTHPASTE COMPOSITION

Jonathan E. Creeth, Cheshire; Paul I. Riley, Wirral, and Mark E. Laing, Cheshire, all of United Kingdom, assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Oct. 26, 1992, Ser. No. 966,212

Claims priority, application United Kingdom, Oct. 29, 1991, 9122909.6

Int. Cl.[5] A61K *7/16*

U.S. Cl. 424—49 7 Claims

1. A method for preventing a packaged toothpaste formulation containing at least one air sensitive component from degrading through contact with air, said formulation held within packaging comprising a laminated tube with an air permeable collar, said method comprising placing adjacent to said air permeable collar a plug or layer of said formulation absent said at least one air sensitive component.

5,348,733

ORAL COMPOSITION

Seiji Morishima, Odawara; Miwako Oka, Yokohama, and Yamazaki Yoji, Hiratsuka, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Nov. 5, 1992, Ser. No. 971,593

Claims priority, application Japan, Nov. 6, 1991, 3-318534

Int. Cl.[5] A61K *7/16, 7/18*

U.S. Cl. 424—52 10 Claims

1. An oral composition consisting essentially of:

0.001 to 1.0% by weight of the total weight of the oral composition of triclosan;

0.01 to 10% by weight of the total weight of the oral composition of an alkyl sulfate;

0.01 to 10% by weight of the total weight of the oral composition of a water-soluble tin salt selected from the group consisting of stannous fluoride, stannous chloride, stannous fluoride chloride, stannous acetate, stannous sulfate, stannous tartrate, stannous gluconate and stannous citrate; and

one or more optional effective ingredients in an amount not impeding the germicidal effect of triclosan selected from the group consisting of abrasives, binders, humectants and flavors.

5,348,734

ORAL HEALTH PREPARATION AND METHOD

Perry Ratcliff, Scottsdale, Ariz., assignor to Micropure Inc., Scottsdale, Ariz.

Division of Ser. No. 615,989, Nov. 20, 1990, Pat. No. 5,200,171. This application Jan. 28, 1993, Ser. No. 11,401

Int. Cl.[5] A61K *7/16, 7/20*

U.S. Cl. 424—53 15 Claims

1. A composition for preventing and treating dental disease by reducing the number of micro-organisms in the mouth, said composition comprising a non sudsing dentifrice, wherein the dentifrice contains stabilized chlorine dioxide in the concentration range of between about 0.005%–0.5% and a phosphate compound selected from the group consisting of disodium hydrogen phosphate, sodium dihydrogen phosphate, and trisodium phosphate in a concentration in the range of between about 0.02%–3.0% to retard escape of chlorine dioxide from said composition at a pH in the range of 6.0 to 7.4, thereby increasing the shelf life and efficacy of said composition.

5,348,735

LIQUID CRYSTAL DEODORANT

Dennis Harris, Scottsdale, and Ronald General, Phoenix, both of Ariz., assignors to GHS Products, Inc., Scottsdale, Ariz.

Filed Jun. 14, 1993, Ser. No. 76,422

Int. Cl.[5] A61K *7/32, 7/38, 33/06*

U.S. Cl. 424—65 4 Claims

1. A liquid crystal deodorant including in combination:

powdered crystalline double sulfate of aluminum selected from the group consisting of potassium aluminum sulfate and ammonium aluminum sulfate dissolved in a saturated solution comprising between 2.5 grams and 7.0 grams of crystalline double sulfate of aluminum per 100 milliliters of liquid, said liquid consisting of between thirty-five percent and eighty percent of distilled water, between five percent and fifteen percent propylene glycol and forty percent to fifty percent of denatured alcohol, one percent to two percent dimethicone copolyol phosphate, and 0.12 percent to 2 percent of a bactericide selected from the group of triclosan and hexachlorophene.

5,348,736

STABILIZED HAIR-TREATING COMPOSITIONS

Amrit M. Patel, Dayton, and Clarence R. Robbins, Martinsville, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 507,328, Apr. 9, 1990, Pat. No. 4,997,641, which is a continuation-in-part of Ser. No. 507,335, Apr. 9, 1990, Pat. No. 5,213,716, which is a continuation-in-part of Ser. No. 369,361, Jun. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 369,389, Jun. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 432,644, Nov. 7, 1989, Pat. No. 5,051,250, which is a continuation-in-part of Ser. No. 432,952, Nov. 7, 1989, abandoned. This application Aug. 16, 1990, Ser. No. 568,283

Int. Cl.[5] A61K *7/075*

U.S. Cl. 424—70 12 Claims

1. A hair treating composition which is a stable aqueous emulsion, suspension or dispersion of a water insoluble hair treating material, said material being selected from the group consisting of beeswax, petrolatum, paraffin wax, isoparaffin, mineral oil, microcrystalline wax, silicone, perfume, quaternary ammonium salt, amine antistatic agent, polyethylene, C_{18-36} triglyceride, higher fatty alcohol ester of higher fatty acid, and sunscreening compound, and mixtures thereof, said composition comprising 0.3–10% of said water insoluble hair treating material, 0.3–35% of anionic surface active agent, and 0.5–10% of a stabilizing agent for the composition, said stabilizing agent being selected from the group consisting of long chain primary alcohols, of a weighted average number of carbon atones in the range of 26 to 43, alkoxylated such alcohols fatty acids of a weighted average number of carbon atoms in the range of 26 to 43 and primary lower alcohol esters of said fatty acids in which the alcohol is of 1 to 4 carbon atoms, and mixtures thereof.

5,348,737

COMPOSITION AND PROCESS FOR DECREASING HAIR FIBER SWELLING

Ali N. Syed, Orland Park, and Kaleem Ahmad, Chicago, both of Ill., assignors to Avlon Industries, Inc., Chicago, Ill.

Filed Jul. 21, 1993, Ser. No. 95,614

Int. Cl.[5] A61K *7/09, 7/11*

U.S. Cl. 424—71 9 Claims

1. A process for relaxing hair fibers comprising the steps of:

(a) lanthionizing hair fibers with a non-reducing base; and

(b) applying to the hair fibers a deswelling composition selected from the group consisting of starch, sugar and salt and further comprising a pH- decreasing agent selected from the group consisting of lactic acid and phosphoric acid.

5,348,738

ORAL COMPOSITION WITH ACTIVE WATER INSOLUBLE POLYMER

Tsutomu Takatsuka; Shigeki Mori, and Chiho Makino, all of Osaka, Japan, assignors to Sunstar Kabushiki Kaisha, Japan

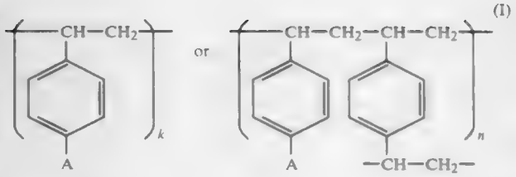
Filed Jan. 22, 1993, Ser. No. 6,308

Claims priority, application Japan, Jan. 27, 1992, 4-011887

Int. Cl.[5] A61K *31/785, 7/16, 7/22*

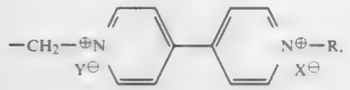
U.S. Cl. 424—78.37 14 Claims

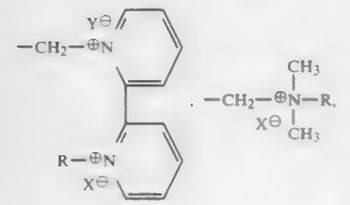
1. An oral composition comprising as an active component a water-insoluble polymer having quaternary nitrogen atoms and as a stabilizing agent for the polymer a polyoxyethylene-polyoxypropylene block copolymer surfactant, wherein the repeating unit of the water-insoluble polymer having quaternary nitrogen atoms is represented by the general formula (I):

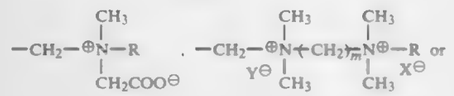


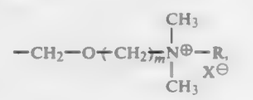
(I)

wherein A is

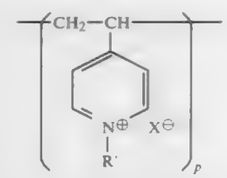






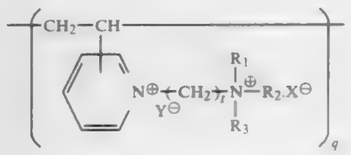


k is an integer of 20 to 2,000, n is an integer of not less than 1,000, X and Y are the same or different and are an anion such as a chloride ion or bromide ion, R_1 is alkyl having 6 to 18 carbon atoms and m is an integer of 2 to 10; vinylpyridinium-type quaternary nitrogen-containing polymers having a repeating unit represented by the formula (II):



(II)

wherein R′ is a compound selected from the group consisting of benzyl, phenethyl, alkyl having 1 to 12 carbon atoms and pentafluorophenylmethyl, X ia an anion such as a chloride ion or bromide ion and p is an integer of 20 to 3,000; or the general formula (III):



(III)

wherein R_1, R_2 and R_3 are the same or different and are selected from the group consisting of a hydrogen atom, a C_{1-20}

straight or branched chain saturated or unsaturated aliphatic hydrocarbon group, hydroxyalkyl, alkoxyalkyl, aryloxyalkyl and trialkoxysilylalkyl, X and Y are the same or different and an anion such as a chloride ion or bromide ion, q is an integer of 20 to 2,500 and t is an integer of 1 to 20.

5,348,739

COMBINED ANTI-TUMOR THERAPY WITH INTERLEUKIN-2 AND HISTAMINE, ANALOGS THEREOF OR H_2-RECEPTOR AGONISTS

Jan U. K. Hellstrand, Molndal, and Svante H. Hermodsson, Bergsbdgaban, both of Sweden, assignors to Suntello, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 409,357, Sep. 19, 1989, abandoned. This application Mar. 2, 1992, Ser. No. 843,052

Int. Cl.[5] A61K *45/05; C07K 3/00*

U.S. Cl. 424—85.2 **23 Claims**

1. A method of augmenting natural killer cell cytotoxicity in a subject carrying malignant tumor cells, comprising administering to the subject:

a first composition comprising an agent selected from the group consisting of histamine, a histamine structural analog having H_2-receptor activities, an endogenous histamine releasing preparation and a non-histamine derivative H_2-receptor agonist; and

a second composition comprising interleukin-2;

said agent and said interleukin-2 being administered in amounts and for a period of time effective to augment natural killer cell cytotoxicity.

5,348,740

ANTIGENIC POLYPEPTIDES OF *TAENIA OVIS*

Gavin B. L. Harrison; Robert P. Dempster, both of Upper Hutt, New Zealand; Michael D. Rickard, Werribee, Australia; Marshall W. Lightowlers, Williamstown, Australia; Kim L. O'Hoy, Melbourne, Australia; Kevin S. Johnson, Godmanchester, United Kingdom; David D. Heath, Upper Hutt, New Zealand; Stephen B. Lawrence, Upper Hutt, New Zealand, and Jennifer G. Vinton, Lower Hutt, New Zealand, assignors to Coopers Animal Health NZ Ltd., Upper Hut, New Zealand; University of Melbourne, Victoria, Australia and Ministry of Agriculture & Fisheries, Wellington, New Zealand

Continuation of Ser. No. 349,723, May 9, 1989, abandoned. This application Mar. 16, 1992, Ser. No. 851,112

Claims priority, application New Zealand, May 12, 1988, 224597; Jun. 1, 1988, 224862

The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.

Int. Cl.[5] A61K *39/00; C07K 15/08, 9/00*

U.S. Cl. 424—191.1 **15 Claims**

1. An antigenic *T. ovis* polypeptide essentially free from *T. ovis* components occurring in nature and running as a 47–52 kDa doublet on SDS-PAGE, which reduces the severity of *T. ovis* infection in a ruminant.

5,348,741

VECTOR FOR RECOMBINANT POXVIRUS EXPRESSING RABIES VIRUS GLYCOPROTEIN

Joseph J. Esposito, Atlanta, Ga.; Bernard Moss, Bethesda, Md., and Kathleen Brechling, Raleigh, N.C., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 445,131, Nov. 30, 1989, abandoned, which is a continuation of Ser. No. 10,424, Feb. 3, 1987, abandoned. This application Sep. 14, 1992, Ser. No. 944,743

The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.

Int. Cl.[5] A61K *31/12*

U.S. Cl. 424—199.1 **20 Claims**

1. A plasmid having recombinant DNA comprising a rabies virus glycoprotein G gene operatively linked to a vaccinia P_{11} late promoter.

5,348,742

ANTI-PATHOGENIC BACTERIAL STRAINS OF *PSEUDOMONAS FLUORESCENS*

Charles R. Howell, Bryan, Tex.; J. Ole Becker, Inzlingen, Fed. Rep. of Germany; Stephen T. Lam, Raleigh, and James M. Ligon, Cary, both of N.C., assignors to Ciba-Geigy Corporation, Ardsley, N.Y. and The United States of America as represented by the United States Department of Agriculture, Washington, D.C.

Continuation of Ser. No. 705,424, May 24, 1991, abandoned. This application Apr. 13, 1993, Ser. No. 46,464

Int. Cl.[5] A01N *63/00;* **C12N** *1/20, 1/00;* **C05F** *11/08*

U.S. Cl. 424—93.47 **5 Claims**

1. A biologically pure strain of *Pseudomonas fluorescens* selected from ATCC 55171, ATCC 55170, ATCC 55169, ATCC 55175, ATCC 55174, and ATCC 55168.

5,348,743

ANTI-PATHOGENICALLY EFFECTIVE COMPOSITIONS COMPRISING LYTIC PEPTIDES AND HYDROLYTIC ENZYMES

John A. Ryals, Durham, N.C.; Philippe B. Gay, Mulhouse, France, and Patricia A. Ahl-Goy, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 491,801, Mar. 12, 1990, abandoned. This application Jun. 25, 1993, Ser. No. 82,310

Int. Cl.[5] A61K *37/54*

U.S. Cl. 424—94.61 **12 Claims**

1. A composition for controlling plant pathogens, comprising an antipathogenically effective amount of an active ingredient and one or more agriculturally acceptable carriers, wherein said active ingredient comprises a) a lytic peptide which is a mellitin or a magainin; b) a chitinase; and c) a beta-1,3-glucanase.

5,348,744

ANTIDIARRHEAL COMPOSITIONS CONTAINING LOPERAMIDE HYDROCHLORIDE AND A SACCHARIDE

Toshiaki Kurazumi, Narita; Hiroyuki Mizuno, Chiba; Katsumi Imamori, and Akira Iwasa, both of Yotsukaido, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 780,931, Oct. 23, 1991, Pat. No. 5,182,112. This application Sept. 14, 1992, Ser. No. 944,232

Claims priority, application Japan, Oct. 24, 1990, 2-286458

The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.

Int. Cl.[5] A61K *31/445, 9/14*

U.S. Cl. 424—439 **6 Claims**

1. An antidiarrheal composition, comprising an amount of a mixture of loperamide hydrochloride and a saccharide selected from the group consisting of fructose, glucose, sucrose, sorbitol, xylitol, mannitol and mixtures thereof effective for the control of diarrhea, said loperamide hydrochloride being present in an amount of from 0.0003 to 0.001 wt. % of said composition and said saccharide being present in an amount of from 9 to about 98 wt. % of said composition and from 20,000 times to 50,000 times the weight of said loperamide hydrochloride.

5,348,745

AQUEOUS GRANULATION SOLUTION AND A METHOD OF TABLET GRANULATION

Lawrence J. Daher, Elkhart, Ind., assignor to Miles Inc., Elkhart, Ind.

Continuation of Ser. No. 639,908, Jan. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 349,060, May 9, 1989, abandoned. This application May 5, 1992, Ser. No. 879,696

Int. Cl.[5] A61K *9/46, 9/16*

U.S. Cl. 424—466 **4 Claims**

1. A method of granulating a finely divided solid material, comprising the steps of:

a. preparing an aqueous granulating solution by dissolving an alkali metal salt of an edible organic acid selected from the group consisting of trisodium citrate, tripotassium citrate, dipotassium fumarate and sodium potassium tartrate in water;

b. mixing an amount of the aqueous granulating solution effective to produce a moist mass on mixing with a finely divided solid material requiring granulation, the solid material selected from the group consisting of potassium bicarbonate, acetaminophen, calcium carbonate, sodium bicarbonate, ketoprofen and a combination thereof; and

c. granulating and drying the mixture.

5,348,746

METHOD FOR ADMINISTERING DRUG

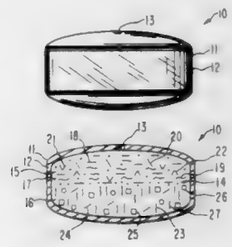
Liang C. Dong, Mountain View; Michael H. Dealey, San Francisco; Terry L. Burkoth; Patrick S. L. Wong, both of Palo Alto; Jerry D. Childers, and Brian L. Barclay, both of Sunnyvale, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 804,137, Dec. 6, 1991, Pat. No. 5,200,195. This application Oct. 21, 1992, Ser. No. 964,538

The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.

Int. Cl.[5] A61K *9/24*

U.S. Cl. 424—473 **12 Claims**



1. A method for administering a drug to a patient in need of drug therapy, wherein the method comprises:

(a) admitting into the patient a dosage form comprising:

(1) a wall comprising at least in part a composition permeable to the passage of fluid, which wall surrounds:

(2) a compartment;

(3) a drug layer in the compartment comprising 10 ng to 1200 mg of drug, a hydrophilic polymer that exhibits a lower critical solution temperature below the temperature of the patient, and a dehydrating agent that exhibits an affinity for fluid present in the patient;

(4) a hydrogel push layer in the compartment that absorbs fluid, expands and thereby displaces the first composition from the dosage form;

(5) at least one passageway in the wall that connects the exterior with the interior of the dosage form for delivering the drug from the dosage form;

(b) imbibing fluid into the dosage form causing the hydrophilic polymer to precipitate in situ above the lower critical solution temperature in the presence of the dehydrating agent, which precipitate comprises the drug; and,

(c) administering the drug to the patient by the push layer pushing the drug precipitated from the dosage form.

5,348,747

PHARMACEUTICAL COATING SUGARS

Giustino Bianco, Newfield, N.J., assignor to American Home Products Corporation, Madison, N.J.

Continuation of Ser. No. 847,151, Mar. 5, 1992, abandoned. This application Feb. 1, 1993, Ser. No. 11,844

Int. Cl.[5] A61K *9/16*

U.S. Cl. 424—490 **11 Claims**

1. A finely divided water soluble solid pharmaceutical dosage form having a particle size smaller than 10 mesh for immediate release of the pharmaceutical by oral administration of a pharmaceutically acceptable liquid having the water-soluble solid pharmaceutical dosage form dissolved therein, the pharmaceutical dosage form consisting of a pharmaceutical coating on a sugar core wherein:

a) the sugar core consists essentially of about 90% to 100% by weight of sugar based on the weight of the sugar core, the sugar having a particle size of 30–60 mesh and the sugar core comprising about 90% to about 99% by weight of the pharmaceutical dosage form;

b) the pharmaceutical coating consists essentially of about 25% to about 50% by weight of sugar based on the dry weight of the coating and about 50% to about 75% by weight of at least one water-soluble pharmaceutical based on the dry weight of the coating and the coating comprising about 1% to about 5% by weight of the pharmaceutical dosage form; and

c) the pharmaceutical coating having been applied to the sugar core from an aqueous solution of the sugar and the water-soluble pharmaceutical containing about 50% to 80% by weight of water by pan coating such that the surface of the sugar core is dissolved and intimately admixed with the coating solution thereby forming an intimate bond between the sugar core and the water-soluble pharmaceutical.

5,348,748

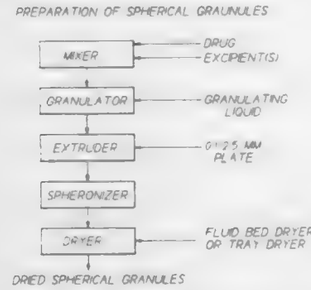
PULSATILE ONCE-A-DAY DELIVERY SYSTEMS FOR MINOCYCLINE

Nitin V. Sheth, Middletown; Joseph J. Valorose, Jr., Montgomery, both of N.Y.; Keith A. Ellway, Shirrell Heath, United Kingdom; MaduraiGurusamy Ganesan, Suffern, N.Y.; Kieran G. Mooney, Whitstable, United Kingdom, and Jerry B. Johnson, Upper Saddle River, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 844,109, Mar. 2, 1992, Pat. No. 5,262,173. This application Jun. 23, 1993, Ser. No. 81,632

Int. Cl.[5] A61K *9/54, 9/56, 9/58*

U.S. Cl. 424—494 **24 Claims**



1. An improved pharmaceutical delivery system adapted to provide a therapeutically effective blood concentration level of 7-dimethylamino-6-deoxy-6-demethyltetracycline or a nontoxic acid addition salt thereof for a sustained period of time of up to about twenty-four hours comprising:

(A) from 51 to 80 parts by weight per 100 parts by weight of (A) and (B) combined of an initial loading therapeutically effective number of quick release granules which comprise

(a) (i) an effective amount of at least one pharmaceutically acceptable excipient; and

(ii) an effective antibacterial amount of 7-dimethylamino-6-deoxy-6-demethyltetracycline or a nontoxic acid addition salt thereof, on or in said quick release granules;

said quick release granules being adapted to release substantially completely said tetracycline or salt thereof in a medium having a pH of less than about 3.9; and

(B) from 20 to 49 parts by weight per 100 parts by weight of

(A) and (B) combined of a secondary loading therapeutically effective number of blended polymer coated spherical granules which comprise

(a) (i) an independent effective amount of at least one pharmaceutically acceptable excipient which may be the same as or different than (A)(a)(i); and

(ii) an independent effective antibacterial amount of 7-dimethylamino-6-deoxy-6-demethyltetracycline or a non-toxic acid addition salt thereof, on or in said coated spherical granules; and

(b) a substantially uniform pH sensitive coating comprising a blend of at least two polymers on said coated spherical granules (B) one of which is non pH-sensitive and rapidly erodible in water and the other of which is pH-sensitive and erodible in a medium having a pH in the range of from about 4.5 to about 6.5; said coated spherical granules thereby being adapted to release some of said tetracycline or salt thereof in a medium having a pH in the range of from about 1.0 to about 3.0 and the remainder rapidly in a medium having a pH in the range of from about 4.5 to about 6.5.

5,348,749

METHOD FOR TREATING PANIC DISORDER

Andras Sikter, Budapest, Hungary, assignor to S+V Engineering Kft., Budapest, Hungary

Filed Nov. 5, 1992, Ser. No. 972,322

Claims priority, application Hungary, May 10, 1990, 2980/90

Int. Cl.[5] A61K *33/42*

U.S. Cl. 424—604 **1 Claim**

1. A method for treating panic disorder, which comprises administering to a human suffering from panic disorder 0.03 to 1.5 mmoles of zinc and 2 to 100 mmoles of magnesium and 2 to 60 mmoles of phosphorus and 3 to 90 mmoles of potassium as a daily dose in a composition consisting essentially of zinc, magnesium, phosphorus and potassium, in a weight ratio of 1–15:25–200:50–200:100–500, respectively.

5,348,750

ENHANCED FLAVORS USING MENTHONE KETALS

Michael J. Greenberg, Northbrook, Ill., assignor to Wm. Wrigley Jr. Company, Chicago, Ill.

Continuation of Ser. No. 845,344, Mar. 4, 1992, abandoned, which is a continuation of Ser. No. 609,879, Nov. 6, 1990, abandoned. This application Mar. 26, 1993, Ser. No. 37,724

Int. Cl.[5] A23G *3/30*

U.S. Cl. 426—3 **17 Claims**

1. A method of preparing a chewing gum having enhanced flavor, comprising the following steps:

providing gum ingredients, comprising gum base, softener, and sweetener ingredients,

providing flavor ingredients comprising a menthone ketal, that is free of attachment to a polymer, and

mixing the flavor ingredients with the gum ingredients so that the flavor ingredients comprise about 0.25% to about 5% by weight of the gum and the menthone ketal comprises about 0.1% to about 50.0% by weight of the flavor ingredients, said menthone ketal providing enhanced flavor in said gum.

5,348,751

DOUGH PRODUCT

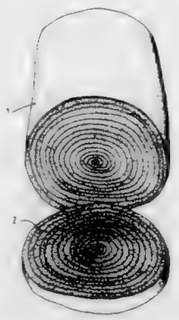
Allan Packer, deceased, late of Bedford, England by Vivien Packer, legal representative, and Richard W. F. Yoell, Bedford, England, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Continuation of Ser. No. 277,934, Nov. 30, 1988, abandoned. This application May 30, 1990, Ser. No. 530,443

Claims priority, application United Kingdom, Nov. 30, 1987, 8727971

Int. Cl.[5] A21D *6/00*

U.S. Cl. 426—94 **5 Claims**



1. Method of preparing a dough product comprising the steps of:

(a) preparing a laminated, farinaceous dough, wherein said laminated farinaceous dough comprises less than 10 fat layers between farinaceous dough layers;

(b) forming one or more sheets of said laminated farinaceous dough into a layered body;

(c) slicing said layered body at an acute angle of 25° or greater with respect to said laminated farinaceous dough layers to obtain a formed slice having its layers in a direction substantially perpendicular to the surface produced by the slice; and

(d) pressing said formed slice such that planes of weakness are maintained between individual layers.

5,348,752

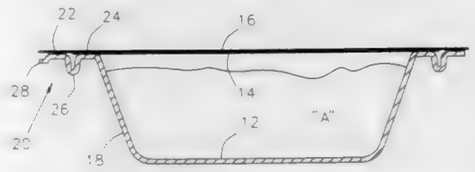
DUAL STATE FOOD PACKAGING

Michael P. Gorlich, Hilton Head Island, S.C., assignor to World Class Packaging Systems, Inc., Hilton Head Island, S.C.

Filed May 20, 1993, Ser. No. 64,700

Int. Cl.[5] B65D *81/20, 1/34*

U.S. Cl. 426—129 **9 Claims**



1. A package for selectively permitting gaseous communication with the atmosphere comprising:

a tray having sidewalls defining a cavity;

a product to be exposed to varying gaseous conditions contained in said cavity of said tray;

said tray comprising an outwardly directed flange extending around the perimeter of said tray;

said flange comprising an inner flange portion adjacent said sidewalls and an outer flange portion that is further away from said sidewalls than said inner flange portion;

said flange further comprising a depressed portion between said inner and outer flange portions, said depressed portion extending downwardly from and connected to both said inner and outer flange portions to form a depression in said flange, said inner and outer flange portions and said depression extending completely around the perimeter of said tray;

said package further comprising an upper membrane and a lower membrane;

said lower membrane being more gas permeable than said upper membrane;

said lower membrane extending entirely across the cavity of said tray and secured to said inner flange portion completely around its perimeter to enclose said product in said tray cavity;

said upper membrane, being less gas permeable than said lower membrane, completely coveting said lower membrane but being unsecured to said lower membrane;

said upper membrane being secured to said outer flange portion to completely seal and enclose the lower membrane and the product in the tray cavity;

said lower membrane not extending outwardly beyond said depression and onto said outer flange portion; and

said lower membrane being obtained from a larger web of material, and said depression is designed to facilitate the cutting of said lower membrane from said web after said web is placed on said tray during manufacture of said package.

5,348,753

FOOD PROCESSING APPARATUS AND METHOD

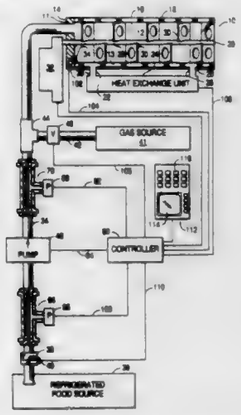
Edward E. Ahnell, and Ernest W. Curry, both of Wycoff, N.J., assignors to Besst Frozen Products, Inc., Hackensack, N.J.

Continuation of Ser. No. 882,155, May 13, 1992, Pat. No. 5,229,150, which is a continuation-in-part of Ser. No. 671,026, Mar. 18, 1991, Pat. No. 5,151,288, which is a continuation of Ser. No. 598,431, Oct. 16, 1990, Pat. No. 5,030,465. This application Apr. 16, 1993, Ser. No. 47,186

The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.

Int. Cl.[5] A23G *9/00*; **G05D** *16/00*

U.S. Cl. 426—231 **17 Claims**



17. A method for processing food substance in a system using a heat exchanger, the method comprising the steps of:

supplying a food substance to the heat exchanger;

detecting a system pressure;

controlling the step of supplying in accordance with the detected system pressure; and

processing the food substance in the heat exchanger.

5,348,754

Patent Not Issued For This Number

5,348,755

EXTENSION OF EDIBLE OIL LIFETIME USING ACTIVATED CARBONS

Glenn M. Roy, Oakdale, Pa., assignor to Calgon Carbon Corporation, Pittsburgh, Pa.

Filed Mar. 4, 1992, Ser. No. 847,781

Int. Cl.[5] A23D *9/06*

U.S. Cl. 426—541 **23 Claims**

1. An edible oil adsorbent comprising an activated carbon, effective for extending the life of the edible oil during substantially continuous use in a process at a temperature of at least 120° C. said adsorbent comprising an activated carbon impregnated with at least one food grade antioxidant selected from the group of amino acids consisting of histidine and valine.

5,348,756

GELATIN GELS AND POWDERED MIXES THEREFOR

Thomas D. Lee, Scarsdale; Robert W. Wood, Brewster, both of N.Y., and Anne M. Addesso, Ringwood, N.J., assignors to Kraft General Foods, Inc., Northfield, Ill.

Filed Aug. 19, 1993, Ser. No. 109,280

Int. Cl.[5] A23L *1/0562*

U.S. Cl. 426—576 **8 Claims**

1. A fruit-flavored, gelatin dessert or gelatin dessert mix comprising sweetening agent, gelatin, food acids, soluble buffer salts, flavor agents and color agents wherein the food acids are selected from the group consisting of adipic, fumaric and citric, wherein the ratio of adipic acid to fumaric and/or citric acids is from 15–21:1, wherein the buffer salts are selected from the group consisting of phosphate salts and citrate salts and wherein the ratio of phosphate salts to citrate salts is 0.9–2:1.

5,348,757

METHOD FOR PREPARING A FATTY AND SEMI-FATTY BLUE FISH FOOD PRODUCT

Jose J. Almendres Martinez, Oviedo, Spain, assignor to Tunimar S.A., Spain

Filed Apr. 30, 1993, Ser. No. 55,540

Claims priority, application Spain, Apr. 30, 1992, 9200909

Int. Cl.[5] A23B *4/06*

U.S. Cl. 426—646 **11 Claims**

1. A method for producing a fatty and semi-fatty blue fish food product, comprising the steps of:

a) filleting the blue fish;

b) grinding the filleted blue fish to produce a uniform mass;

c) adding an herb to the uniform mass to form a mixture of fish and herb;

d) homogenizing the mixture of fish and herb to form a product mass;

e) covering the product mass with fish gelatine; and

f) freezing the fish gelatine covered product mass.

5,348,758

CONTROLLED MELTING POINT MATRIX FORMED WITH ADMIXTURES OF A SHEARFORM MATRIX MATERIAL AND AN OLEAGINOUS MATERIAL

Richard C. Fuisz, Great Falls; Gerald E. Battist, Reston, both of Va.; Richard C. Appl, Downers Grove, and Anthony P. Richards, Chicago, both of Ill., assignors to Fuisz Technologies Ltd., Chantilly, Va.

Filed Oct. 20, 1992, Ser. No. 964,022

Int. Cl.[5] A23G *3/00*

U.S. Cl. 426—660 **41 Claims**

1. A controlled melting point matrix which comprises an admixture of a substantially solid amorphous material processed by subjecting a feedstock to conditions of temperature and pressure which induce flash flow of said feedstock, and a hydrophobic material, said admixture subjected to conditions of temperature, pressure, and humidity which induce at least partial crystallization of said substantially amorphous material, whereby said hydrophobic material is captured during said

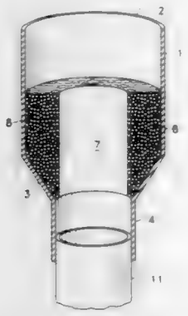
partial crystallization to provide said matrix, said matrix having a slip point or flow point temperature higher than the respective slip point or flow point temperature of a mixture of said feedstock in a non-processed condition and said hydrophobic material.

5,348,759

APPARATUS FOR CYANOACRYLATE FINGERPRINT DEVELOPING AND METHOD OF USE THEREFORE

David E. Weaver; Everett Clary; Robert Shem, and George Taft, all of Anchorage, Ak., assignors to State of Alaska, Anchorage, Ak.

Filed Jun. 3, 1993, Ser. No. 70,772
Int. Cl.[5] A61B 5/117
U.S. Cl. 427—1 5 Claims



1. A device for developing latent fingerprints on objects using cured cyanoacrylate comprising:

a) a cylindrical housing having an open top and an open bottom and a solid wall, said cylindrical housing also having a quantity of granulated, cured cyanoacrylate packed against said wall such that said cyanoacrylate forms a cylinder within the cylindrical housing having an open area in its center;

b) heating means having sufficient temperature to sublimate the cured cyanoacrylate, said heating means also producing an exhaust gas having a forward velocity that projects the sublimated cyanoacrylate from said housing in an outward direction; and

c) means to removably attach said heating means to the bottom of said housing such that said exhaust gases pass through said housing and exit therefrom through said top of said housing.

5. The method of developing latent fingerprints on an object, using cured cyanoacrylate, comprising the steps of:

a) attaching a housing containing a cured, granulated form of cyanoacrylate to the exhaust port of a propane torch;

b) lighting said torch, thereby producing a relatively high temperature exhaust gas, having a forward velocity, that is projected from said exhaust port;

c) through said cyanoacrylate in said housing attached to said exhaust port, causing said cyanoacrylate to sublimate into a vapor;

d) having said exhaust gas project said cyanoacrylate vapor in a forward direction onto said object for testing.

5,348,760

SURFACE TREATED CERAMIC POWDERS

Anthony A. Parker, Toledo, Ohio; Edward M. Anderson, Roland, Ark., and Todd T. Stanzione, Sarver, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 12, 1993, Ser. No. 134,777
Int. Cl.[5] B05D 7/00
U.S. Cl. 427—9 18 Claims

1. A method of reducing the agglomeration of ceramic powder materials, the method comprising:

(a) providing a ceramic powder comprising ceramic particles;

(b) coating said ceramic particles with an oligomer of a trialkoxysiloxane having the structure

wherein R' represents a lower C_1–C_4 alkoxy group selected from the group consisting of methoxy, ethoxy, isopropoxy and n-butoxy; and, wherein said oligomer has chains having a number average distribution with a number average degree of polymerization X_n in the range above 2 but below the gel point; and

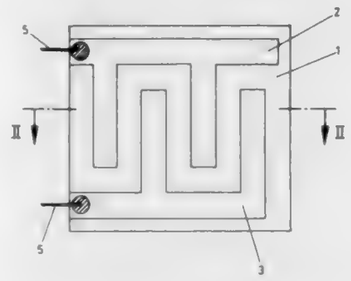
(c) drying said ceramic powder.

5,348,761

USE OF A SWELLABLE PLASTIC AND PROCESS FOR MAKING A RESISTIVE MOISTURE SENSOR

Helmut Mitter, Hellmansödt; Walter Scharizer, Gallneukirchen, both of Austria; Herbert Söllradl, Emmerting, Fed. Rep. of Germany, and Norbert Rossak, Neukirchen a.d. Vöckla, Austria, assignors to E + E Elektronik Gesellschaft m.b.H., Langwiesen and Lenzing Aktiengesellschaft, Werkstrasse, both of Austria

PCT No. PCT/AT90/00084, § 371 Date Feb. 28, 1992, § 102(e) Date Feb. 28, 1992, PCT Pub. No. WO91/03734, PCT Pub. Date Mar. 21, 1991
PCT Filed Aug. 29, 1990, Ser. No. 835,471
Claims priority, application Austria, Aug. 29, 1989, 2033/89; Mar. 9, 1990, 571/90
Int. Cl.[5] B05D 5/12
U.S. Cl. 427—101 10 Claims



1. A process for producing a swellable plastic resistive moisture sensor comprising dispersing an additive selected from the group consisting of carbon in a powder, dust or soot physical state, carbon black, graphite, a metal in a powder or dust physical state, and mixtures thereof, into a plastic comprising a polyimide or a copolyimide or both formed from diisocyanate and dianhydride reactants.

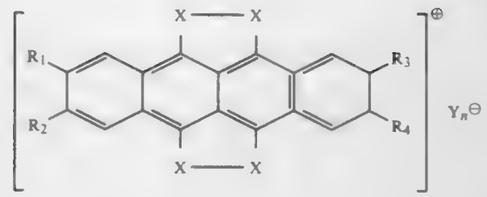
5,348,762

PROCESS FOR THE PRODUCTION OF CONDUCTIVE LAYERS

Walther Hofherr, Kirchzarten, Fed. Rep. of Germany; Ernst Minder, Sissach, Switzerland; Bruno Hilti, Basle, Switzerland, and Jean-Philippe Ansermet, Morges, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 906,073, Jun. 29, 1992, abandoned.
This application May 14, 1993, Ser. No. 62,038
Claims priority, application Switzerland, Jul. 2, 1991, 1951/91-6
Int. Cl.[5] B05D 5/12
U.S. Cl. 427—121 20 Claims

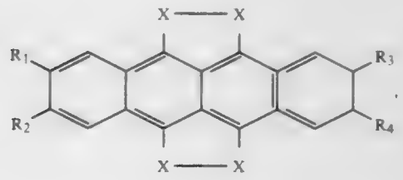
1. A process for preparing a conductive layer on a substrate wherein said conductive layer is a network of crystal needles embedded in a polymer matrix and said crystal needles consist essentially of a conductive radial cation salt of formula (I)



(I)

wherein X is S, Se or Te, n is a value from 0.3 to 0.9, R_1 is H, F, Cl or CH_3, and R_2, R_3 and R_4 are H, or R_1, R_2, R_3 and R_4 are each F or CH_3, or R_1 and R_2 are each F, Cl or $CH_3$and R_3 and R_4 are each H, or R_1 and R_3 or R_1 and R_4 are each H, or R_1 and R_3 or R_1 and R_4 are each F and R_2 and R_4 or R_2 and R_3 are each H, and Y is Cl, Br, I or $CuCl_2$, which process comprises

(1) spraying a solution onto said substrate, wherein the solution comprises an inert solvent and (b1) a compound of formula II



(II)

(b2) anhydrous $CuCl_2$, a $CuCl_2$ aquo complex, a $CuCl_2$ solvent complex or a monomeric, oligomeric or polymeric halogenated aromatic compound containing chlorine, bromine or iodine, which forms the radical cation salt of formula I when heated with a compound of formula II, and (b3) a thermoplastic polymer or at least one starting compound for a thermosetting polymer, wherein the solution is heated to a temperature of from 50° to 350° C. before, during or after the spraying step, and

(2) subsequently evaporating the solvent.

5,348,763

METHOD OF FORMING A POLYMERIC MATRIX CONTAINING FILLER MATERIAL

Pierre Laroche, Nalinnes, Belgium, assignor to Glaverbel, Brussels, Belgium

Division of Ser. No. 899,041, Jun. 16, 1992, Pat. No. 5,258,071, which is a continuation of Ser. No. 471,007, Jan. 25, 1990, abandoned, which is a continuation of Ser. No. 194,289, May 16, 1988, abandoned. This application Jun. 23, 1993, Ser. No. 80,309
Claims priority, application Luxembourg, May 14, 1987, 86880
Int. Cl.[5] B05C 1/16
U.S. Cl. 427—137 20 Claims

1. A method of forming a polymeric matrix containing inorganic filler material, comprising:

(a) adhering a layer of fixing agent to the surface of filler material;

(b) fixing catalyst to the surface of filler material to provide catalyst-bearing filler material by adsorbing the catalyst in the layer of fixing agent;

(c) bringing together the catalyst-bearing filler material and polymerizable material; and

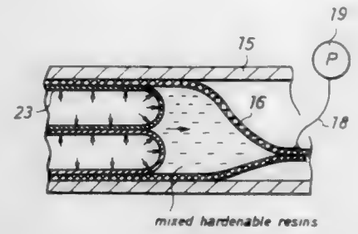
(d) polymerizing the polymerizable material, under conditions effective therefor, to form the polymeric matrix.

5,348,764

METHOD FOR IMPREGNATING A LINING MATERIAL WITH A HARDENABLE RESIN

Yasuhiro Yokoshima, 175-3 Ooaza-shinoyama, Ishige-cho, Yuki-gun, Ibaraki-ken, Japan, assignor to Yasuhiro Yokoshima, Ibaraki and Minoru Kamiyama, Kanagawa, both of Japan

Filed Oct. 6, 1992, Ser. No. 957,285
Int. Cl.[5] B32B 35/00
U.S. Cl. 427—140 6 Claims



1. A method for pipe repair comprising the steps of

(a) supplying about the same amounts of the same hardenable resin to two mixing baths from a resin tank,

(b) mixing said hardenable liquid resin with an agent to retard hardening, at least one catalyst to facilitate hardening and hardener in one of said mixing baths to form a first mixture, and, at the same time, mixing said hardenable liquid resin with a hardening accelerator in another one of said mixing baths to form a second mixture,

(c) supplying amounts of said first mixture and said second mixture to a static mixer from the respective mixing baths,

(d) mixing said first mixture and said second mixture together in a static mixer simultaneously as the first and second mixtures are supplied to the static mixer, to obtain a final mixture of hardenable resin,

(e) supplying said final mixture to tubular lining material which has been placed within a pipe to be repaired, and

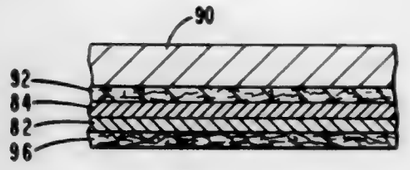
(f) impregnating the tubular lining material with the final mixture.

5,348,765

METHOD OF FORMING COMPOSITE ARTICLES FROM CVD GAS STREAMS AND SOLID PARTICLES OR FIBERS

Peter Reagan, Carlisle; Ann N. Scoville, and Rebecca Leaf, both of Winchester, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Division of Ser. No. 837,113, Mar. 7, 1986, Pat. No. 5,154,862.
This application Sep. 4, 1992, Ser. No. 941,290
Int. Cl.[5] B05D 1/12; C23C 16/44
U.S. Cl. 427—180 10 Claims



1. A method of forming a composite article comprising:

forming a mixture of a solid phase material and a reactant gas, said reactant gas being thermally activatable to produce chemical vapor deposition (CVD) vapors and other reaction products;

providing a substrate compatible with said reactant gas, said CVD vapors, said other reaction products, and said solid phase material;

thermally activating said reactant gas such that said gas reacts to produce said CVD vapors; and

codepositing said solid phase material and material from said CVD vapors onto said substrate to form a composite article consisting essentially of (i) a solid matrix formed by chemical vapor deposition of said material from said CVD vapors and (ii) said solid phase material dispersed within said solid matrix.

5,348,766

METHOD FOR MARBLEIZING AN OBJECT BY DIPPING THE OBJECT INTO PAINT FLOATING ON BORAX-CONDITIONED WATER

Elaine Latham, 308 Glyndon Dr., Reisterstown, Md. 21136-2139

Filed Jan. 5, 1993, Ser. No. 615
Int. Cl.[5] B05D *5/06*
U.S. Cl. 427—202 **16 Claims**

15. A method for coating a surface of an object with a design, comprising

conditioning water with borax so that paint will spread on a surface of said water and be acceptable for transferring to an article dipped into the water,

adding a drop of paint to the surface of the so-conditioned water,

determining whether the paint spreads on the water surface,

adding additional borax to the water if needed until a drop of paint spreads on the water surface in a layer sufficiently thin so that said drop of paint appears to disappear, then

floating a plurality of different colored paints on the surface of the conditioned water so that the paint spreads over the surface,

dipping an object into the water so that the surface of the object contacts the layer of floating paint on the water surface, and

removing the object from the water and drying the object.

5,348,767

METHODS FOR PRODUCTION OF FAUX EFFECTS USING SELECT COLOR MIXTURES AND BLENDING SOLVENTS

Raymond P. Sandor, 1613 10th Ave., Vero Beach, Fla. 32960

Filed Sep. 2, 1993, Ser. No. 114,986
Int. Cl.[5] B05D *5/00*
U.S. Cl. 427—273 **5 Claims**

1. The method of production of a faux finish on a substrate which comprises:

providing a color mixture which consists essentially of the following ingredients in the stated percentages by weight:

acrylic latex	20%–60%
propylene glycol	20%–60%
colorant	1%–60%,

forming a layer of said color mixture on the surface of a substrate,

providing a blending solvent mixture which consists essentially of the following ingredients in the stated percentages by weight:

isopropyl alcohol	10%–30%
ethylene glycol monobutyl ether	10%–30%
water	30%–60%
acrylic latex	5%–30%,

applying random portions of said blending solvent mixture to said layer of color mixture,

allowing said random portions of said blending solvent mixture to act upon said layer of color mixture to form a faux finish pattern on said surface and

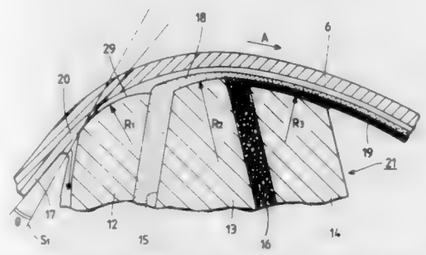
allowing the resulting faux finish pattern to dry.

5,348,768

METHOD OF APPLYING A LIQUID COATING TO A FLEXIBLE WEB

Norio Shibata, and Akihiro Suzuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 684,724, Apr. 15, 1991, abandoned.
This application Oct. 23, 1992, Ser. No. 965,523
Claims priority, application Japan, Apr. 20, 1990, 2-103098
Int. Cl.[5] B05D *3/12*
U.S. Cl. 427—356 **12 Claims**



1. A method of applying a liquid (**8**) to a surface of a flexible carrier (**6**), said method comprising the steps of:

providing an extrusion application head (**1**) comprising a back edge portion (**4**) and a doctor edge portion (**5**), said portions (**4** and **5**) being separated by a slot (**3**) including an outlet portion, said back edge portion (**4**) including a front, angled, planar surface adjacent to a curved, upper surface so as to form a scraping edge (**9**), said doctor edge portion (**5**) including an application surface;

providing said curved, upper surface of said back edge portion of said extrusion application head with a radius of curvature of 0.5 to 10 mm, so that a relief angle of said carrier to a tangent on said curved, upper surface of said back edge portion at said scraping edge is 0° to 15°;

pushing said extrusion application head toward said surface of said carrier such that said curved, upper surface of said back edge portion (**4**), including said scraping edge (**9**), said application surface and said slot outlet portion are urged against said carrier and enveloped by said carrier to deflect said carrier, said carrier having a tension of 5 to 30 kg/m;

continuously conveying said carrier;

applying a liquid undercoating (**17**) in excess to said surface of said carrier upstream and in advance of said extrusion application head relative to a conveyance direction (A) of said carrier so as to form a liquid undercoating layer on said surface of said carrier;

scraping the excess liquid undercoating from said carrier by conveying said carrier along a surface of said back edge portion of said head such that said scraping edge (**9**) scrapes off the excess undercoating liquid to prevent air from entering between said application surface and said carrier;

removing said excess undercoating, said excess undercoating flowing down said front, angled, planar surface of said back edge portion; and

continuously jetting out said liquid from said slot so that said liquid is applied over said liquid undercoating layer.

5,348,769

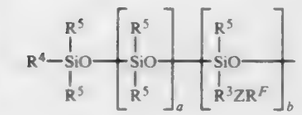
FLUOROSILICONE COMPOSITIONS AS WASH DURABLE SOIL AND STAIN REPELLENT FINISHES

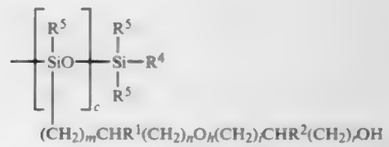
Ronald J. Gambale, Croton-on-Hudson, and Bruce C. J. Barbera, Wappinger Falls, both of N.Y., assignors to OSi Specialties, Inc., Danbury, Conn.

Filed Mar. 31, 1993, Ser. No. 40,872
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—387 **9 Claims**

1. A method for imparting wash durable soil and stain repellency to a fibrous substrate, which method comprises contacting a fibrous substrate with durable press resin, a catalyst, and a perfluoroalkyl hydroxyalkyl siloxane selected from the group consisting of

(i) linear siloxanes having the general formula:





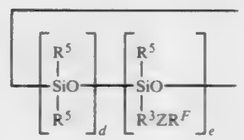
wherein

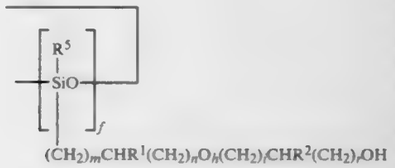
a=0 to 100;

b=1 to 100;

c=1 to 100; and

(ii) cyclic siloxanes having the general formula:





wherein

d=0 to 10;

e=1 to 10;

f=1 to 10

with the proviso that d+e+f is greater than or equal to 3; and wherein in the formulae

each R^1 and R^2 is selected from the group consisting of hydrogen, hydroxy, and an alkyl group having 1 to 6 carbon atoms;

R^3 is selected from the group consisting of $(CH_2)_y$-$CHOHCHR^2$ and $(CH_2)_gQ_i$, wherein Q is selected from the group consisting of —NH—, —S—, and —O—; i is 0 or 1; y is 2 to 4; and g is 1 to 6;

R^4 is selected from the group consisting of CH_3, $(CH_2)_mCHR^1(CH_2)_nO_h(CH_2)_iCHR^2(CH_2)_rOH$, and R^3ZR^F;

Z is selected from the group consisting of —NHCO—, —$NHSO_2$—, —O_2C—, —O_3S—, —OCH_2CH_2—, —$NHCH_2CH_2$—, and —$CH_2CHOHCH_2$—;

m is 1 to 6;

n is 0 to 6;

R^F is a perfluoro alkyl group, C_pF_{2p+1}, wherein p is 1 to 20;

h is 0 or 1;

i is 0 to 6;

r is 0 to 4; and

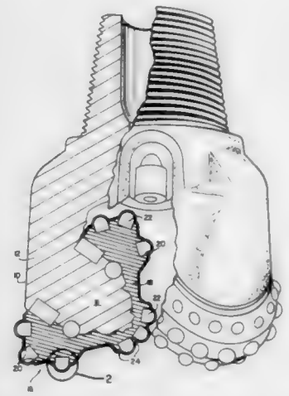
each R^5 is independently selected from the group consisting of methyl group, ethyl group, and a phenyl group.

5,348,770

METHOD OF FORMING AN UNINTERRUPTED REFRACTORY COATING ON A DOWNHOLE DRILL BIT CONE

G. Kelly Sievers, 24232 Creekside Dr., Santa Clarita, Calif. 91321, and Rajan K. Bamola, 509 E. San Jose Ave., Apt. No. 14, Burbank, Calif. 91501

Continuation of Ser. No. 569,186, Aug. 17, 1990, abandoned.
This application May 4, 1992, Ser. No. 878,202
Int. Cl.[5] C23C *4/00*
U.S. Cl. 427—422 **16 Claims**



1. Method of coating a drill bit having refractory inserts projecting therefrom out of supporting pockets having edge margins surrounding said inserts, including thermally spraying refractory particles comprising binder and refractory particulate against the bit and inserts under conditions such that said refractory particles penetrate said inserts and do not bounce back from said inserts so as to leave said edge margins about said inserts uncoated, whereby said thermally sprayed refractory particle coating on said inserts and on said bit join in a bridge coating on said pocket edge margins to form a continuous, uninterrupted coating over said bit and said inserts which protects said edge margins.

5,348,771

METHOD OF PRODUCING AN OXYGEN BARRIER COATING CONTAINING TRIMETHOXYSILYL FUNCTIONAL PENTADIENOATE

Chi-Long Lee, and Ming-Hsiung Yeh, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Nov. 19, 1993, Ser. No. 155,039
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—515 **8 Claims**

1. A method for producing a silane coated substrate, comprising:

(I) coating a plastic substrate with a silane solution comprising

(A) an organosilicon compound selected from the group consisting of silanes corresponding to the molecular formula

$Q(R^1O)_3Si$

where Q represents the radical

$$R^2(CH{=}CH)_n{-}CH{=}CR^3C(O)R^5{-},$$

each R^1 is individually selected from the group consisting of unsubstituted monovalent. hydrocarbon radicals, R^2 represents an aryl, alkoxyaryl or alkaryl radical, R^3 is —C≡N or —C-(O)OR^4 where R^4 is hydrogen or an unsubstituted monovalent hydrocarbon radical selected from the same group as R^1, R^5 is $O(CH_2)_aCH{=}CH$— or —NR^6—$(CH_2)_b$—, R^6 is a hydrogen or hydrocarbon radical having from 1 to 6 carbon atoms, a is 1 to 5, b is 3 to 6, and n is 0 or a positive integer, with the proviso that n can be 0 only when R^2 represents a naphthyl radical;

(B) itaconic acid;

(C) water; and

(D) a solvent; and

(II) curing the silane solution to a silicone resin with ultraviolet light.

5,348,772

USE OF AMINO GROUPS, OBTAINED ON A POLYMER MATERIAL BY AN ELECTRIC TREATMENT UNDER NITROGEN ATMOSPHERE, FOR ACCELERATING A GRAFTING REACTION

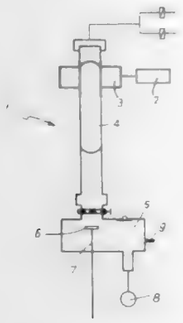
Odile Demuth, Ecully; Daniel Wattiez, Rouffac; Jacques Maguin, Lyon; Jean C. Brosse, Connerre; Fabienne Poncin-Epaillard, and Bruno Chevet, both of Le Mans, all of France, assignors to Institut Textile de France, France

Filed Jun. 2, 1992, Ser. No. 892,185

Claims priority, application France, Jun. 10, 1991, 91 06829

Int. Cl.[5] B05D *3/06, 3/02, 1/36*

U.S. Cl. 427—536 **6 Claims**



1. A process for accelerating grafting of a polymeric material by impregnating said polymeric material in a bath containing an unsaturated monomer, said unsaturated monomer containing a vinyl functionality and comprising a carbonyl group in a position α to the double bond of said vinyl functionality, wherein said polymeric material is electrically treated in a nitrogen atmosphere at a frequency of 433 MHz in order to create amino groups on the surface of said polymeric material.

5,348,773

THRESHOLD SWITCHING DEVICE

Keith W. Michael, and Udo C. Pernisz, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

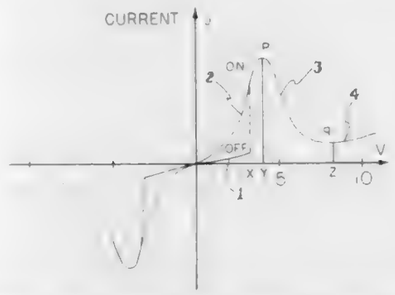
Division of Ser. No. 694,721, May 2, 1991, Pat. No. 5,312,684. This application Jun. 28, 1993, Ser. No. 82,112

Int. Cl.[5] B05D *3/06, 5/12, 3/02*

U.S. Cl. 427—540 **19 Claims**

10. A method of forming a threshold switching device having negative differential resistance comprising

depositing a film comprising silicon dioxide and one or more modifying ceramic oxides between at least two electrodes and applying a direct current voltage above a threshold voltage for the film across the electrodes, wherein the silicon oxide and a modifying ceramic oxide film is derived from hydrogen silsesquioxane resin and a modifying



ceramic oxide precursor and wherein the film has a density between about 40 and about 95% of its theoretical density.

5,348,774

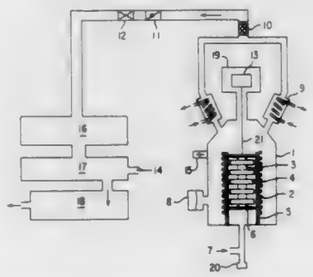
METHOD OF RAPIDLY DENSIFYING A POROUS STRUCTURE

Ilan Golecki, Parsippany; Robert C. Morris, Ledgewood, and Dave Narasimhan, Flemington, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Aug. 11, 1993, Ser. No. 104,703

Int. Cl.[5] C23C *16/00*

U.S. Cl. 427—543 **10 Claims**



1. In the method for densifying a porous solid structure by infiltration with a gaseous compound which upon thermal decomposition forms a conducting solid residue, and thermally decomposing said compound within the pores of said structure, the steps comprising:

a) establishing a thermal gradient within and across said porous structure;

b) infiltrating said porous structure with a gas comprising said thermally decomposable compound, to affect deposition of solid conducting residue predominantly at the higher temperature zone within said porous structure; and

c) progressively shifting said higher temperature zone toward the lower temperature zone as deposition of said solid residue proceeds, while maintaining the thermal gradient, by subjecting the densified zone to electromagnetic radiation at a frequency which inductively couples to the densified zone of said porous solid body.

5,348,775

PRODUCTION OF PT/PZT/PLZT LASER 'DIRECT WRITE' PATTERNS

Chhiu-Tsu Lin, DeKalb, Ill., assignor to Northern Illinois University, DeKalb, Ill.

Division of Ser. No. 707,800, May 30, 1991, Pat. No. 5,188,902. This application Feb. 8, 1993, Ser. No. 14,778

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—555 **5 Claims**



1. A method for forming a design of a thin ferroelectric film on a solid surface comprising:

(a) providing a solution of about 15 to 25 percent by weight of lead titanate, lead zirconate titanate or lead lanthanum zirconate titanate in about 5–10% aqueous acetic acid solution having an effective wetting amount of a surfactant, wherein the titanium component of the solution is in the form of titanium acetate;

(b) spin-coating the solid surface with the solution of (a);

(c) drying the coating;

(d) annealing a portion of the lead titanate, lead zirconate titanate or lead lanthanum zirconate titanate to the solid surface by irradiating the dried spin-coated solid surface with a laser in the desired pattern; and

(e) washing the solid surface with a strong acid to remove lead titanate, lead zirconate titanate or lead lanthanum zirconate titanate not annealed by irradiation with the laser thereby leaving a pattern of the laser annealed lead titanate, lead zirconate titanate or lead lanthanum zirconate titanate on the solid surface.

5,348,776

METHOD OF PRODUCING INTERCONNECTORS FOR SOLID OXIDE ELECTROLYTE FUEL CELLS

Masamichi Ippommatsu, Hyogo; Hirokazu Sasaki, Osaka; Shoji Otoshi, Osaka; Minoru Suzuki, Osaka, and Atsuko Kajimura, Osaka, all of Japan, assignors to Osaka Gas Company Limited, Osaka, Japan

Filed Apr. 13, 1992, Ser. No. 867,933

Claims priority, application Japan, Apr. 23, 1991, 3-092353

Int. Cl.[5] B05D *5/12*

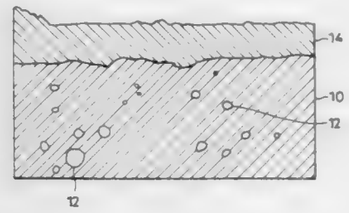
U.S. Cl. 427—586 **7 Claims**

1. A method of producing interconnectors for solid oxide electrolyte fuel cells comprising:

placing a target made of an alkaline earth metal-doped $LaCrO_3$ oxide face to face with a substrate, said alkaline earth metal-doped $LaCrO_3$ oxide having an A site-to-B site composition ratio of 1:1 to 0.9:1;

heating said substrate to a temperature between 700° and 1,050° C.; and

focusing strong pulse laser beams on said target, thereby depositing elements of said target on said substrate for



forming a thin film of an alkaline earth metal-doped $LaCrO_3$ oxide on said substrate.

5,348,777

STRUCTURAL MEMBER OF PIPE SHAPE

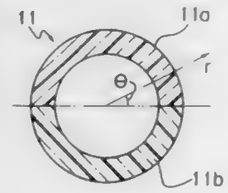
Masahide Oonuki, Miki; Tetsuo Yamaguchi, Nishinomiya; Akihiro Nakahara, Ibaraki, and Mitsunori Miki, Nishinomiya, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Division of Ser. No. 617,877, Nov. 26, 1990, Pat. No. 5,242,721. This application Apr. 29, 1993, Ser. No. 53,707

Claims priority, application Japan, Nov. 27, 1989, 1-307050; Apr. 23, 1990, 2-106716; Aug. 8, 1990, 2-210982; Oct. 19, 1990, 2-282419; Oct. 25, 1990, 2-289771

Int. Cl.[5] F16L *9/22, 11/08;* **A63B** *53/00;* **B25J** *18/06*

U.S. Cl. 428—34.5 **20 Claims**



1. A pipe-shaped structural member made of an elongated cylindrical shaped orientated rubber having a predetermined thickness measured in the radial direction thereof, comprising:

a first part of said cylindrical shape rubber extending in an arc along a circumferential direction at an angle greater than 0° and less than 360° and having a unidirectional orientation in a first direction;

a second part of said cylindrical shape rubber extending in an arc along a circumferential direction at an angle which complements the angle of the first part to equal 360° having a unidirectional orientation in a second direction which is different from said first direction,

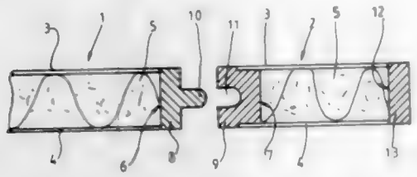
said first part being located at a position different from said second part in the circumferential direction of said member, and each of said first and second parts being formed as, at least, a portion of said member in the radial direction.

5,348,778

SANDWICH ELEMENTS IN THE FORM OF SLABS, SHELLS AND THE LIKE

Ulrich Knipp, Bergisch, and Dieter Skoupi, Lindlar, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 864,117, Apr. 6, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 143,279
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1991, 4111909; Jul. 4, 1991, 4122099
Int. Cl.[5] B32B *1/08*; B65D *90/02*; E04B *2/32*; E04C *2/34, 2/38*
U.S. Cl. 428—35.8 8 Claims



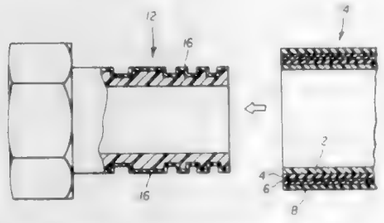
1. A sandwich element comprising a rigid polyurethane foam core having sides and edges, facings covering said sides and edge profiles covering said edges, wherein said edge profiles are cast directly onto said edges from flexible polyurethane foam-forming materials and wherein said profiles have grooves and tongues.

5,348,779

REFRIGERANT TRANSPORTING HOSE HAVING INNER TUBE INCLUDING RESIN LAYER, AND CONNECTOR FOR THE SAME

Ichiro Igarashi, Komaki, Japan, assignor to Tokai Rubber Industries, Ltd., Japan

Division of Ser. No. 752,030, Aug. 29, 1991, Pat. No. 5,264,262. This application Aug. 6, 1993, Ser. No. 102,716
Int. Cl.[5] F16L *11/08*
U.S. Cl. 428—36.7 3 Claims



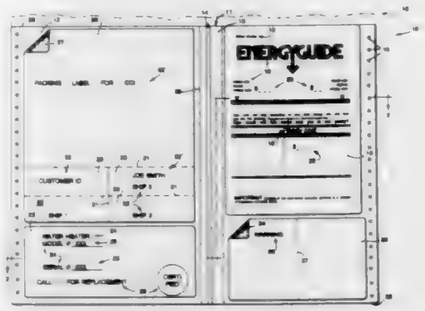
1. A hose-connector combination consisting of
a refrigerant transporting hose having an end portion and a laminar structure including an inner tube consisting of at least one layer, an outer tube disposed radially outwardly of and coaxially with the inner tube, and a reinforcing fiber layer interposed between the inner and outer tubes, said inner tube including a resin layer formed of a resin composition which consists essentially of a blend of modified polyolefin and polyamide resin, and 1–10% by weight of ϵ-caprolactam, the proportion by weight of said modified polyolefin to said polyamide resin being within a range between 40/60 and 10/90 and
a connector having a nipple on which the end portion of the hose is fitted, wherein the improvement comprises:
a sealing layer interposed between an outer circumferential surface of said nipple and an inner surface of said inner tube of said hose, said sealing layer formed of a chlorinated elastomer containing a dispersion of an acid receptive agent.

5,348,780

MULTIPURPOSE LABEL CONSTRUCTION

Steven W. Boggs, Florence, S.C., and Richard L. Moor, Angola, Ind., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Aug. 28, 1992, Ser. No. 936,049
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—42 11 Claims



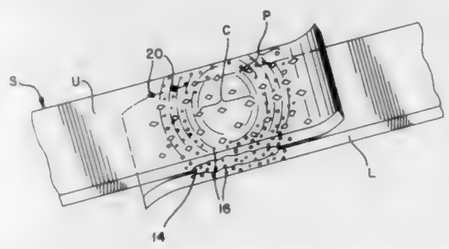
1. A composite label assembly of substantially uniform thickness comprising:
a release sheet base having parallel side edges and a mid line parallel to said side edges dividing the base into first and second sides;
a first paper label, with repositionable pressure sensitive adhesive, disposed on said first side of said base, and having first indicia printed thereon relating to an appliance; and
a second polyester label, with pressure sensitive adhesive, disposed on said second side of said base, said pressure sensitive adhesive directly securing said second label to said base, and second indicia, relating to the appliance, printed on said second label; said second label is capable of withstanding high temperature conditions substantially better than cellulose paper, so that when applied to said appliance said second indicia thereon will remain readable for years.

5,348,781

METHOD AND APPARATUS FOR PRODUCING A WELDED JOINT IN THERMOPLASTIC STRAP WITH DIFFERENTIAL PRESSURE

Robert J. Koblella, Rolling Meadows, Ill., assignor to Signode Corporation, Glenview, Ill.

Division of Ser. No. 969,584, Oct. 30, 1992, abandoned. This application Oct. 8, 1993, Ser. No. 131,941
Int. Cl.[5] B32B *5/18*
U.S. Cl. 428—57 20 Claims



1. A welded joint defined between two lengths of thermoplastic strap, comprising:
said two lengths of thermoplastic strap being disposed in a face-to-face overlapping relationship with respect to each other at a location at which said welded joint is to be defined;

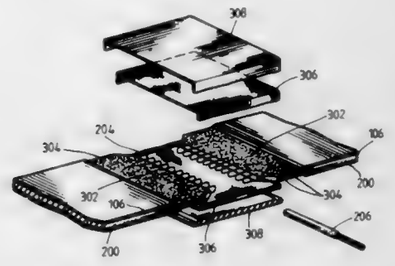
at least part of the thickness of each one of said two strap lengths being resolidified from a fused state during which said two lengths of said strap disposed at said location at which said welded joint is to be defined were subjected to above-ambient pressure;
said resolidified thickness part of one of said two strap lengths being merged with the resolidified thickness part of the other one of said two strap lengths so as to define a continuous resolidified region; and
said resolidified region including a peripheral region, and an adjacent central region having a substantially disc-like configuration, wherein said above-ambient pressure was maintained, during said fused state, for a longer period of time within said central region than within said peripheral region.

5,348,782

MEANS AND METHOD OF ENCAPSULATING MECHANICALLY FASTENED BELT SPLICE FOR AGRICULTURAL BELT

Dale B. Arnold, Anthony, Kans., assignor to Morrison Company, Inc., Anthony, Kans.

Filed May 24, 1993, Ser. No. 66,995
Int. Cl.[5] B32B *7/08, 3/06*
U.S. Cl. 428—60 9 Claims



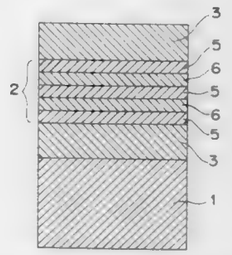
1. Machinery belting comprising:
a length of belt having at least one ply layer and mechanical fasteners splicing opposite ends of the belt; and
a band of protective material bonded, along the splice, to the mechanical fasteners and the belt so as to seal and encapsulate the splice.

5,348,783

OPTICAL INFORMATION RECORDING MEDIUM

Eiji Ohno; Noboru Yamada, both of Hirakata; Kenichi Nagata, Minoo; Kenichi Nishiuchi, Moriguchi, and Nobuo Akahira, Yawata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 765,514, Sep. 19, 1991. This application May 26, 1993, Ser. No. 67,146
Claims priority, application Japan, Sep. 25, 1990, 2-255829; Sep. 25, 1990, 2-255831; Sep. 25, 1990, 2-255832
Int. Cl.[5] B32B *3/02*
U.S. Cl. 428—64 15 Claims



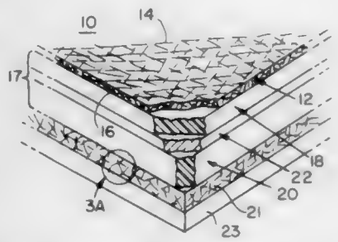
1. An optical information recording medium comprising a substrate, and a dielectric layer, a recording layer and a dielectric layer which are laminated on said substrate in this order, or a dielectric layer,a recording layer, a dielectric layer and a reflective layer which are laminated on said substrate in this order, or a reflective layer, a dielectric layer, a recording layer and a dielectric layer which are laminated on said substrate in this order, wherein said recording layer comprises alternately laminated at least two optically active layers the state of each of which is reversibly changed between optically recognizable states by irradiation and at least one amorphous-acceleration layer comprising a dielectric material, each of said optically active layers having a thickness of from 1 nm to 10 nm, and wherein the thickness d_1 of each of said optically active layers and the thickness d_2 of said amorphous-acceleration layer satisfy the equation: $\frac{1}{3} \leqq d_1/d_2 \leqq 3$.

5,348,784

ANTISTATIC AND CONDUCTIVE CARPET TILE SYSTEM

Bruce G. Lampert, Easton, Mass., assignor to United Technical Products, Inc., Canton, Mass.

Continuation-in-part of Ser. No. 787,372, Nov. 4, 1991, Pat. No. 5,262,229. This application Jul. 2, 1992, Ser. No. 908,180
Int. Cl.[5] D03D *27/00*; B32B *7/12, 15/04*
U.S. Cl. 428—92 30 Claims



1. A modular antistatic and conductive carpet tile floor covering that comprises in combination: (a) a plurality of antistatic and conductive carpet tiles for ESD control for being releasably adhered on a floor and (b) a conductive releasable adhesive wherein:
each carpet tile includes a primary backing layer having conductive filaments, a conductive support strata disposed below said primary backing layer, and tufting woven through said primary backing layer and extending at least partially into said conductive support strata forming a carpet pile above said primary backing layer; and
the conductive releasable adhesive includes a pressure sensitive acrylic releasable adhesional substance and means for rendering said substance conductive including a multiplicity of conductive fibers suspended in said adhesional substance forming a conductive matrix throughout the volume of said adhesional substance for releasably securing said each tile to said floor.

5,348,785

METHOD FOR MANUFACTURING A CARPET HAVING A SECONDARY BACKING SUBSTANTIALLY IMPERVIOUS TO AQUEOUS SOLUTIONS AND THE RESULTANT CARPET

Yashavant V. Vinod, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 7, 1994, Ser. No. 178,992
Int. Cl.[5] B32B *5/26, 33/00*
U.S. Cl. 428—95 10 Claims

1. A method for constructing a carpet having a secondary backing which is substantially impervious to aqueous solutions, comprising the steps of:
a) forming a carpet comprising a primary backing having a

surface with projecting tufts of yarn and an underside and a secondary backing, said secondary backing having a surface and an underside, wherein the underside of the primary backing is adhered to the surface of the secondary backing;

b) applying a fluorochemical onto the underside of the secondary backing; and

c) drying and curing the fluorochemical to render the secondary backing substantially impervious to aqueous solutions.

9. A tufted pile carpet having a secondary backing substantially impervious to aqueous solutions, comprising:

a) a primary backing having a surface tufted with pile yarns and an underside; and

b) a secondary backing having a surface and an underside, wherein the surface of the secondary backing is adhered to the underside of the primary backing, and the underside of the secondary backing is coated with a sufficient amount of fluorochemical to render the secondary backing substantially impervious to aqueous solutions.

5,348,786

METHOD AND COMPOSITION TO ENHANCE ACID DYE STAIN RESISTANCE OF POLYAMIDES BY IMPROVING RESISTANCE TO DETERGENT WASHINGS AND PRODUCTS THEREOF

Lidia T. Calcaterra, Arlington Heights; Mathias P. Koljack, Schaumburg, both of Ill., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 868,930, Jun. 4, 1992, Pat. No. 5,232,760, which is a division of Ser. No. 649,501, Feb. 1, 1991, Pat. No. 5,232,743. This application Apr. 2, 1993, Ser. No. 42,176

Int. Cl.[5] B05D *3/02;* **B32B** *27/12, 27/30, 27/34;* **C08L** *35/00;* **C08F** *222/08*

U.S. Cl. 428—96 | **9 Claims**

1. A composition useful in imparting acid dye stain resistance with improved durability to detergent washings, to polyamide substrates, said composition comprising a) the mixture of phenyl vinyl ether/maleic diacid copolymer and 2-(4-hydroxymethyl-phenoxy)-ethyl vinyl ether/maleic diacid copolymer, b) a copolymer obtained by the reaction of phenyl vinyl ether, 2-(4-hydroxymethyl-phenoxy)-ethyl vinyl ether and maleic anhydride, and c) mixtures thereof.

5. The composition of claim 1 in association with a polyamide substrate.

5,348,787

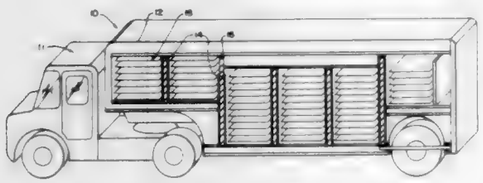
PROTECTIVE SHIELD FOR VERTICAL TRACKS

David R. Gosnell, 8707 Watterson Trail, Louisville, Ky. 40299, and Ernest E. Riney, 4216 Flintlock Dr. #9, Louisville, Ky. 40216

Filed Jul. 9, 1991, Ser. No. 727,102

Int. Cl.[5] B32B *3/04;* **B60J** *7/00;* **A47B** *95/00*

U.S. Cl. 428—121 | **8 Claims**



1. An improvement in a truck having a truck bed attached thereto, the improvement comprising: said truck bed including a plurality of spaced vertical door tracks positioned a pre-selected distance apart along the outer perimeter of said truck, and a plurality of elongated flexible, substantially C-shaped protective members circumscribing and abutting said door tracks at pre-selected positions along said door tracks.

5,348,788

MESH SHEET WITH MICROSCOPIC PROJECTIONS AND HOLES

Eugene W. White, Rossiter, Pa., assignor to Interpore Orthopaedics, Inc., West Caldwell, N.J.

Filed Jan. 30, 1991, Ser. No. 647,999

Int. Cl.[5] B32B *3/24*

U.S. Cl. 428—131 | **4 Claims**



1. A non-woven porous mesh in sheet form, said mesh comprising: a continuous sheet having a substantially uniform thickness between opposite sides; a series of openings extending through and from one to the other side of the sheet, said openings being distributed in a substantially uniform pattern throughout a two-dimensional area of the sheet; and a series of raised protrusions extending substantially normal to and outwardly away from one side of said sheet, wherein the protrusions are of substantially uniform height and are distributed in a substantially uniform pattern corresponding to said pattern of openings but offset therefrom forming a topographical surface wherein said openings have an effective diameter of about 25 to 1000 μm, said openings have essentially the same effective diameter of said protrusions and are respectively centered within a rectangle defined by four adjacent protrusions within the body of said mesh.

5,348,789

CAMOUFLAGE NET

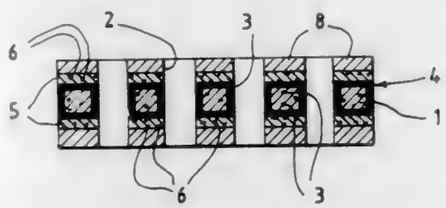
Manfred Hellwig, Öhringen, Fed. Rep. of Germany, assignor to C. F. Ploucquet GmbH & Co., Fed. Rep. of Germany

Filed Jul. 11, 1991, Ser. No. 728,496

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1990, 4023287

Int. Cl.[5] B32B *3/10, 7/00;* **D04B** *1/00*

U.S. Cl. 428—135 | **15 Claims**



1. A camouflage net comprising: a flame-retardant material having a support material consisting of a knitted fabric of polyester fibers into which a plurality of metal fibers are woven, said knitted support material being configured with a plurality of apertures having a predetermined size and having a plurality of exposed surfaces including a top surface, a bottom surface, and exposed surfaces which define said apertures, a flame proofing coating covering said knitted support material on all of said plurality of exposed surfaces including said exposed surfaces which define said apertures, said knitted support material being further coated with a flame-retardant polymer including a radar absorbent pigment effective in the microwave range of approximately 10–100 GHz, wherein said predetermined size of said apertures is substantially unaffected by said flame proofing coating and said flame retardant polymer.

5,348,790

EXTRUDED PANEL UNIT FOR CONSTRUCTIONAL PURPOSES

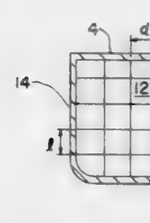
Nir Ben-Zvi, and Shaul Givoni, both of Upper Galilee, Israel, assignors to DAN-PAL, Upper Galilee, Israel

Filed Jan. 19, 1993, Ser. No. 5,805

Claims priority, application Israel, Jan. 24, 1992, 100758

Int. Cl.[5] B32B *1/00;* **E04C** *2/34*

U.S. Cl. 428—178 | **14 Claims**



1. An extruded, panel unit for constructional purposes, comprising

at least two sheets forming major surfaces interconnected and spaced apart by a plurality of ribs and

intermediate surfaces which divide a space defined between said major surfaces into a plurality of sub-spaces, wherein, in cross-section, said major surfaces and said ribs and intermediate surfaces form a truss structure and wherein there are provided more than three sub-spaces across a plane extending substantially normal to and connecting said major surfaces.

5,348,791

FOLDABLE WATERPROOFING STRUCTURE

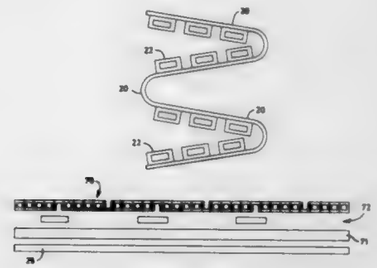
Peter J. Thompson, Purley, and Timothy J. Martin, Loxwood, both of England, assignors to W. R. Grace Limited, London, England

Continuation of Ser. No. 766,894, Sep. 26, 1991, abandoned, which is a continuation of Ser. No. 343,478, Apr. 26, 1989, abandoned. This application Jun. 2, 1993, Ser. No. 71,212

Claims priority, application United Kingdom, May 4, 1988, 8810489.8

Int. Cl.[5] B32B *3/16, 3/30, 5/18, 7/12*

U.S. Cl. 428—184 | **6 Claims**



1. A foldable waterproofing structure, comprising:

a continuous pressure-sensitive waterproofing adhesive membrane layer comprising bitumen and rubber; and

a plurality of segments contiguous with said waterproofing membrane and spaced apart from each other so as to permit folding, in the manner of a concertina of the waterproofing structure between said segments, each of said segments comprising a material of such stiffness that it does not buckle or bend under its own weight and having a first wall contiguous with said waterproofing membrane, a second wall spaced apart from said first wall, and transverse ribs connecting said first wall to said second wall and forming a channel between said walls; and

mesh, scrim, or film contiguous with or embedded within said continuous pressure-sensitive waterproofing adhesive membrane layer between said spaced-apart segments.

5,348,792

MULTILAYERED WIRING BOARD WITH WIRING CONFIGURATIONS TO REDUCE CROSSTALK

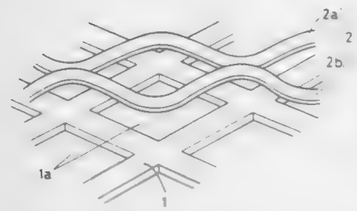
Hisao Hattori; Tomohiko Ihara; Hiroshi Yoshino, and Shosaku Yamanaka, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 19, 1993, Ser. No. 47,492

Claims priority, application Japan, Apr. 20, 1992, 4-099427; Apr. 20, 1992, 4-099579; Feb. 4, 1993, 5-017517

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—209 | **7 Claims**



1. A multilayered wiring board having a multilayered wiring structure, said wiring board comprising: a first mesh wiring layer having a plurality of holes therein; and a second wiring layer having a plurality of wirings; said wirings of said second wiring layer undulating up and down toward and away from said first layer and having portions descending toward said holes in said first wiring layer.

5,348,793

PAPER WEB SPLICE TAPE

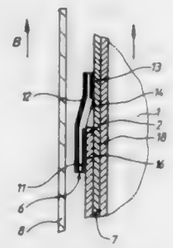
Gerd Erich Stettner, Stadtlauringen, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Mar. 26, 1993, Ser. No. 37,589

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1992, 4210329

Int. Cl.[5] C09J *7/02*

U.S. Cl. 428—211 | **3 Claims**



1. A paper web splice tape usable to splice a leading edge of a new paper web roll to a depleting paper web, said paper web splice tape comprising:

a central elongated continuous carrier tape having a first outwardly facing surface and a second inwardly facing surface, said first and second surfaces being opposing;

first and second spaced longitudinally extending, inwardly facing zones on said second surface of said carrier tape, said first and second zones being spaced by a central, longitudinally extending zone, said first, second and central zones extending continuously along the length of said carrier tape;

a high strength continuous adhesive layer applied directly to and completely covering said first outwardly facing sur-

face of said carrier tape and having an outwardly facing high strength adhesive surface, said outwardly facing high strength adhesive surface being directly securely adherable to a depleting paper web;

a high strength adhesive band applied directly to and completely covering said longitudinally extending, inwardly facing first zone of said second surface of said carrier tape and having an inwardly facing high strength adhesive surface, said inwardly facing high strength adhesive surface being directly engageable with an outer surface of a free end of a first layer of a new paper roll;

an easily releasable adhesive band applied directly to and completely covering said longitudinally extending, inwardly facing second zone of said second surface of said carrier tape and having an inwardly facing easily releasable adhesive surface, said inwardly facing easily releasable adhesive surface being directly releasably engageable with an outer surface of a second layer of a new paper web roll adjacent a free end of a new paper roll; and

an adhesive free inwardly facing area formed by said central zone on said second surface of said carrier tape, said adhesive free area separating said high strength adhesive band applied to said first zone from said easily releasable adhesive band applied to said second zone and overlying an edge of a free end of a first layer of a new paper roll when said paper web splicing tape is applied to a new paper roll.

5,348,794

MONOAXIALLY ORIENTED MULTILAYERED PACKAGING MATERIAL

Tomonori Takahashi, Chigasaki; Masato Kimura; Masataka Oka, both of Fujisawa, and Isamu Ogasawara, Kawasaki, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Continuation of Ser. No. 768,604, Sep. 30, 1991, abandoned. This application Aug. 23, 1993, Ser. No. 110,492

Claims priority, application Japan, Jan. 30, 1990, 2-20307

Int. Cl.[5] B29C *55/18;* **B32B** *27/34*

U.S. Cl. 428—213 **6 Claims**

1. A monoaxially oriented multilayered packaging material obtained by the steps comprising passing a multilayered structure including one polyamide resin layer and another thermoplastic layer through at least one pair of rolls such that the ratio of the thickness of said structure before rolling to the thickness after rolling is 1.5:1 to 7.0:1, wherein the thickness of the polyamide resin layer is 3 to 30 μm and the thickness of the other thermoplastic resin layer is at least twice that of the polyamide resin layer.

5,348,795

PROCESS FOR MAKING A DIMENSIONALLY-STABLE OPEN-CELL POLYPROPYLENE FOAM WITH ORGANIC BLOWING AGENTS

Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 988,057, Dec. 9, 1992, abandoned. This application Jan. 7, 1994, Ser. No. 178,582

Int. Cl.[5] B32B *5/20*

U.S. Cl. 428—220 **9 Claims**

1. A dimensionally-stable, extruded, open-cell, propylene polymer foam, comprising: a propylene polymer material comprising greater than 50 percent by weight of propylene monomeric units, the foam having a density about 96 kilograms per cubic meter or less, the foam being greater than 20 percent open cell, the foam being in plank form, the foam having a major dimension in cross-section of about 5 centimeters or more, the foam have a cross-sectional area of about 10 square centimeters or more.

5,348,796

FLAME-RETARDED COMPOSITE FIBER

Keiji Ichibori, Akashi; Takaharu Matsumoto, Takasago, and Youchi Kanbara, Kobe, all of Japan, assignors to Kanegafuchi Kogaku Kogyo Kabushiki Kaisha, Osaka, Japan

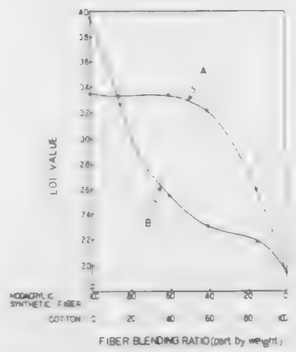
Division of Ser. No. 771,900, Oct. 8, 1991, Pat. No. 5,208,105, which is a continuation of Ser. No. 385,620, Jul. 26, 1989, abandoned, which is a division of Ser. No. 147,089, Jan. 20, 1988, Pat. No. 4,863,797, which is a continuation of Ser. No. 783,502, Oct. 3, 1985, abandoned. This application Apr. 2, 1993, Ser. No. 42,192

Claims priority, application Japan, Oct. 5, 1984, 59-209967; Nov. 19, 1984, 59-244130

The portion of the term of this patent subsequent to Sep. 5, 2006, has been disclaimed.

Int. Cl.[5] D03D *3/00, 15/00*

U.S. Cl. 428—224 **13 Claims**



1. A textile fabric comprising

(A) 85-15 parts by weight of a fiber consisting essentially of (1) a polymer having a halogen content of 17 to 86% by weight and (2) a flame retardant comprising 8 to 40% by weight of an Sb compound based on said polymer, and

(B) 15-85 parts by weight of at least one fiber selected from the group consisting of natural fibers and chemical fibers,

wherein the total amount of fibers (A) and (B) is 100 parts by weight, and said polymer is at least one polymer selected from the group consisting of a polymer of a halogen-containing vinyl monomer, and a polymer to which a halogen-containing compound is added, said fibers being formed into a fabric.

5,348,797

COPPER OXIDE COATED SUBSTRATES

Thomas J. Clough, Santa Monica; Victor L. Grosvenor, Topanga, and Naum Pinsky, Thousand Oaks, all of Calif., assignors to Ensci, Inc., Pismo Beach, Calif.

Division of Ser. No. 743,719, Aug. 12, 1991, Pat. No. 5,279,852, which is a continuation of Ser. No. 621,660, Dec. 3, 1990, Pat. No. 5,204,140, which is a continuation-in-part of Ser. No. 348,789, May 8, 1989, Pat. No. 5,167,820, which is a continuation-in-part of Ser. No. 348,788, May 8, 1989, Pat. No. 5,039,845, which is a continuation-in-part of Ser. No. 348,787, May 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 348,786, May 8, 1989, Pat. No. 5,182,165, Continuation-in-part of Ser. No. 272,517, Nov. 17, 1988, abandoned, and a continuation-in-part of Ser. No. 272,539, Nov. 17, 1988, abandoned, which is a continuation-in-part of Ser. No. 82,277, Aug. 6, 1987, Pat. No. 4,787,125, which is a division of Ser. No. 843,047, Mar. 24, 1986, Pat. No. 4,713,306. This application Jan. 18, 1994, Ser. No. 183,993

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—283 **22 Claims**

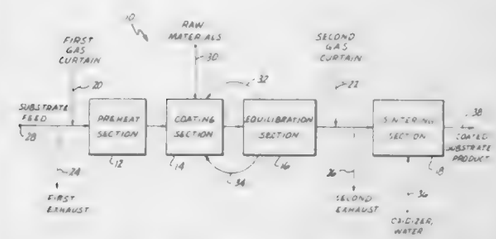
1. An article comprising a three dimensional inorganic substrate other than magnetic or electrically conductive copper

oxide having at least one coating containing magnetic or electrically conductive copper oxide on at least a portion of all three dimensions thereof produced by a process comprising:

contacting an inorganic three dimensional substrate which includes external surfaces and shielded surfaces which are at least partially shielded by other portions of said substrate with a composition comprising a copper oxide forming compound other than copper oxide at conditions effective to form a copper oxide-forming compound containing coating on at least a portion of said substrate;

forming a liquidus copper oxide forming compound containing coating on at least a portion of the three dimensions of said substrate including the shielded surfaces of said substrate;

contacting said substrate with at least one additional magnetic or conductivity interacting component at conditions



effective to form a component-containing coating on at least a portion of said substrate including at least a portion of the three dimensions of said substrate including the shielded surfaces of said substrate; said contacting being initiated at least prior to the substantially complete oxidation of said copper oxide forming compound to copper oxide and;

contacting said substrate having said copper oxide forming compound containing coating and said additional component-containing coating thereon with an oxidizing agent at conditions effective to convert said copper oxide forming compound to copper oxide and form a copper oxide coating with additional magnetic or conductivity interacting component on at least a portion of said three dimensions of said substrate including the shielded surfaces of said substrate.

5,348,798

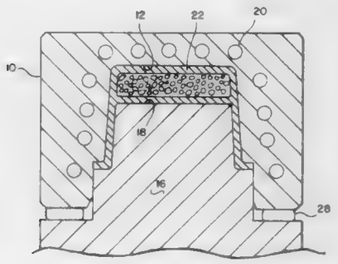
METHOD OF MAKING A HOLLOW CORE STRUCTURAL MEMBER

Albert H. Berghuis, Shelby, N.C.; Richard C. McKechnie, Bergen op Zoom, and Albert Drenth, Tholen, both of Netherlands, assignors to Azdel, Inc., Shelby, N.C.

Filed Oct. 30, 1992, Ser. No. 968,887

Int. Cl.[5] B32B *15/00*

U.S. Cl. 428—285 **13 Claims**



1. A method for making a lightweight hollow core structural member, comprising:

providing a mold having opposed mold tools, each having a desired configuration;

heating two composite, fiber-reinforced stampable sheets selected from the group consisting of thermoplastic and thermosetting resins;

placing the sheets in the mold with a meltable material between them;

pressing the sheets together in the mold by pressing the opposed mold tools together to form a structural member with the meltable material between the sheets;

removing the structural member from the mold; and

melting and removing the meltable material to form the hollow core member.

5,348,799

ANTISTATIC COATINGS COMPRISING CHITOSAN ACID SALT AND METAL OXIDE PARTICLES

David R. Boston, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 3, 1991, Ser. No. 753,863

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—323 **10 Claims**

1. An organic polymeric substrate having an antistatic protective coating thereon, said coating comprising an optically transparent layer of chitosan acid salt and anionic inorganic metal oxide colloidal particles.

5,348,800

COMPOSITE SOFT MAGNETIC MATERIAL

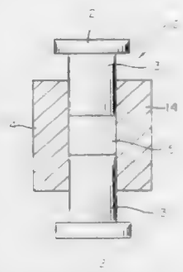
Hideharu Moro, and Yasuharu Miyauchi, both of Chiba, Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 828,102, Jan. 30, 1992, abandoned. This application Feb. 1, 1993, Ser. No. 13,210

Claims priority, application Japan, Aug. 19, 1991, 3-231019; Nov. 22, 1991, 3-333899

Int. Cl.[5] B32B *5/16;* **B22F** *1/00, 1/02;* **H01F** *1/22*

U.S. Cl. 428—328 **16 Claims**



1. A composite soft magnetic material comprising

soft magnetic metal particles having a mean particle diameter of 5–100 μm and a coercive force of up to about 0.5 Oe as measured in bulk form,

a layer of high resistance soft magnetic substance having an electric resistivity of about 10^2 Ω-cm or higher intervening between the particles, and

a layer of non-magnetic metal oxide intervening between each soft magnetic metal particle and the high resistance soft magnetic substance layer;

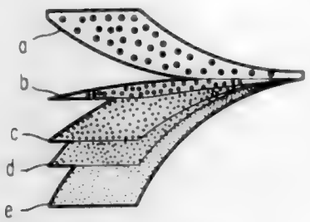
wherein said material has a core loss of about 350–3,000 kW/m^3 at 0.1 mT, 100 kHz and about 5–100 kW/m^3 at 0.1 mT, 10 kHz.

5,348,801

TAPE FOR REINFORCING PRESSURE-SUPPORTING HOLLOW BODIES AND A METHOD FOR REPAIRING DETERIORATED PIPES

Stefano Venzi, Rome, and Adalberto Colombo, Paullo, both of Italy, assignors to SNAM S.P.A., Milan, Italy

Filed May 18, 1993, Ser. No. 62,546
Claims priority, application Italy, May 22, 1992, MI92 A 001243
Int. Cl.[5] B32B *7/12;* B65H *81/06*
U.S. Cl. 428—354 11 Claims



1. A multi-layer tape which maintains its structure in an apparatus which applies a tension of between 50 and 250 kg to the tape, for reinforcing pressure-supporting hollow bodies, comprising:

a) a first layer of profiled strips composed of continuous unidirectional fibers embedded in a thermoplastic resin, said fibers having a softening point exceeding that of the thermoplastic resin;

b) a second adhesive layer comprising rubber based compositions;

c) a third layer comprising a thermoplastic polymeric composition; and

d) a fourth adhesive layer comprising rubber based compositions.

11. A method for repairing and reinforcing hollow, pressurized bodies which have deteriorated and which have been installed either on land or in water, comprising:

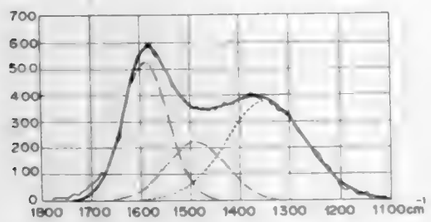
wrapping said bodies with partially superposed layers of a pretension tape as described in claim 1 or 2.

5,348,802

CARBON FIBER MADE FROM ACRYLIC FIBER AND PROCESS FOR PRODUCTION THEREOF

Yoji Matsuhisa, Iyo; Toru Hiramatsu, Matsuyama; Kazuo Yoshida, Akigawa, and Gen Katagiri, Otsu, all of Japan, assignors to Toray Industries, Inc. and Toray Research Center, Inc., Japan

Continuation of Ser. No. 456,317, Dec. 26, 1989, abandoned. This application Jun. 17, 1992, Ser. No. 899,952
Claims priority, application Japan, Dec. 26, 1988, 63-329940; Sep. 27, 1989, 1-256024
Int. Cl.[5] B32B *9/00;* D02G *3/00*
U.S. Cl. 428—367 9 Claims



1. A carbon fiber made from an acrylic fiber, having improved compressive strength, having a crystal size L_c of 15 to 65 angstroms as determined by wide angle X-ray diffractometry, and having regions which have a lower crystallinity in the surface layer portion thereof than in the central portion thereof and whose compressive strength (σ_{cf}) of a single filament of said carbon fiber, determined by the loop method, satisfies the following formula (I):

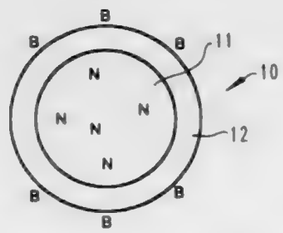
$$\sigma_{cf} \geqq 10.78 - 0.1176 \times L_c \quad \text{(I)}$$

5,348,803

MICROCAPSULES AND METHOD FOR DEGRADING HYDROCARBONS

Herman W. Schlaemus; Mary C. Marshall; Michael G. MacNaughton; Matthew L. Alexander, and James R. Scott, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Aug. 12, 1991, Ser. No. 744,093
Int. Cl.[5] B01J *13/02;* C12N *11/02;* C02F *3/00*
U.S. Cl. 428—402.2 11 Claims



1. A microcapsule for use in degrading a hydrocarbon consisting essentially of, a coating material, and at least one microorganism capable of degrading said hydrocarbon, said core material comprising a lipophilic material containing nutrients necessary for the sustenance of said microorganism, said coating material being water-insoluble, and said capsule having a density and/or surface chemistry such that said microcapsule is kept at the oil-water interface in close proximity to said hydrocarbon to be degraded when said microcapsule is applied thereto, said at least one microorganism being on the outer surface of said coating, included in said coating, or both.

5,348,804

SKI STRUCTURE OBTAINED FROM A POLYAMIDE BASED THERMOPLASTIC ELASTOMER AND GRAFTED COPOLYOLEFIN BASED FILM ADAPTED FOR ADHESION

Thierry Vasselin, Evreux; Michel Vuachet, Bron, and Gilles Recher, Marcq en Bareuil, all of France, assignors to Salomon S.A., Annecy Cedex, France

Continuation-in-part of Ser. No. 708,016, Jun. 3, 1991, abandoned, and a continuation-in-part of Ser. No. 708,017, Jun. 3, 1991. This application Jun. 14, 1991, Ser. No. 714,183
Claims priority, application France, Jun. 1, 1990, 90 06869; Jun. 1, 1990, 90 07044; Jun. 14, 1990, 90 07420; Jun. 14, 1990, 90 07600
Int. Cl.[5] B32B *27/00*
U.S. Cl. 428—423.1 12 Claims

1. A ski produced by a process comprising the steps of:

adhering a first element having a junction surface to at least a second element having a junction surface by placing at least one adhesive layer between junction surfaces of said first element and said second element, and placing at least one thermoplastic film having a composition comprising

A. At least 50 percent by weight of a polyamide-based thermoplastic elastomer selected from the group consisting of polymether amides and polyetherester amides, and

B. An olefin copolymer comprising at least two different olefin monomers grafted with a member selected from the group consisting of carboxylic acid, an anhydride of carboxylic acid or a salt of carboxylic acid, between said adhesive layer and the junction surface of said first element, to result in a ski structure.

5,348,805

FORMATION OF A LAYER OF ALUMINUM AND TIN OR TITANIUM OXIDES ON A GLASS SUBSTRATE

Georges Zagdoun, La Garenne Colombes, and Bruno Cordier, Nanteuil les Meaux, both of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Continuation-in-part of Ser. No. 724,048, Jul. 1, 1991, abandoned. This application Feb. 5, 1993, Ser. No. 14,100
Claims priority, application France, Jul. 5, 1990, 90 08530; Jul. 5, 1990, 90 08531
Int. Cl.[5] B32B *15/04*
U.S. Cl. 428—432 14 Claims

1. A coated glass structure for use as a glazing, comprising:

a glass substrate; and

a layer of aluminum oxide and titanium oxide upon at least a portion of said glass substrate and a semiconductive layer upon at least a portion of said layer of aluminum oxide and titanium oxide;

wherein said layer of aluminum oxide and titanium oxide has an index of refraction of between about 1.73 and 1.80, an absorption percentage over the visible spectrum of less than or equal to about 3%, and a thickness between about 40 nm and 150 nm with a thickness variation of less than or equal to about 5%, and wherein said layer of aluminum oxide and titanium oxide is formed on said glass substrate by heating said glass substrate to a temperature less than its softening temperature, forming a solution of a non-hydrolyzable aluminum chelate and at least two heat decomposable titanium compounds to form a solution having a weight ratio of Al:Ti of not greater than about 2:1, and spraying said solution onto said heated glass substrate to thermally decompose and oxidize said solution on said heated glass substrate to form a layer of aluminum oxide and titanium oxide on said glass substrate.

5,348,806

CERMET ALLOY AND PROCESS FOR ITS PRODUCTION

Katsuhiko Kojo, Fukaya; Akibumi Negishi, and Masayuki Gonda, both of Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Sep. 18, 1992, Ser. No. 946,849
Claims priority, application Japan, Sep. 21, 1991, 3-270291
Int. Cl.[5] B22F *3/00*
U.S. Cl. 428—552 18 Claims

1. In a cermet alloy having a structure comprising a hard phase and a bonding phase, said hard phase comprising (1) at least one of MC, MN and MCN, where M is at least one element selected from Ti, Zr, Hf, V, Nb, Ta, Cr, Mo and W and (2) at least one Mo—Co—B compound, said bonding phase comprising Co, wherein the cermet alloy is characterized in that said hard phase further comprises at least one compound selected from (M,Mo)(B,C), (M,Mo)(B,N) and (M,Mo)(B,CN).

5,348,807

POLYMERIC RETAN FATLIQUOR FOR LOW FOGGING UPHOLSTERY LEATHER

James J. Hodder, Doylestown; Patricia M. Lesko, Lansdale, and Thomas Stewart, Doylestown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Feb. 5, 1991, Ser. No. 650,524
Int. Cl.[5] B32B *9/02, 9/04*
U.S. Cl. 428—473 9 Claims

1. A method for imparting low fogging characteristics to leather which has been tanned and not previously subjected to a fatliquor comprising subjecting tanned leather to at least one weight percent copolymer solids, based on the weight of the leather of a dispersion of an amphiphilic copolymer, substantially free from organic solvent, formed from greater than 10 percent by weight to less than 50 percent by weight of at least one water-soluble ethylenically unsaturated acidic or basic hydrophilic comonomer selected from the group consisting of acrylic acid, methacrylic acid, itaconic add, fumaric acid, maleic acid, and anhydrides of such acids; acid substituted (meth)acrylates, acid substituted (meth)acrylamides and basic substituted (meth)acrylates and (meth)acrylamides and greater than 50 percent by weight to less than 90 weight percent of at least one hydrophobic comonomer selected from the group consisting of C_4 to C_{12} alkyl acrylates, C_4 to C_{12} alkyl methacrylates, C_4 to C_{12} 1-alkenes, and vinyl esters of C_4 to C_{12} alkyl carboxylic acids, where said amphiphilic copolymer has a weight average molecular weight of from about 2500 to about 100,000 and where the leather so treated has a gravimetric fogging value not more than 2 mg greater than the gravimetric fogging value of the leather after tanning but before any subsequent treatment.

5,348,808

HARD SINTERED BODY CUTTING TOOL

Mitsuhiro Goto, and Tetsuo Nakai, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 25, 1993, Ser. No. 67,424
Claims priority, application Japan, Jan. 7, 1993, 5-1323
Int. Cl.[5] B22F *7/06*
U.S. Cl. 428—552 4 Claims

1. A hard sintered body cutting tool comprising:

a first sintered body layer containing at least 80 percent by volume and less than 98 percent by volume of diamond with a remainder being a first binder containing a metal of group VIII of the periodic table and containing at least one material selected from a group of carbides, nitrides and borides of transition metals belonging to the groups IVb, Vb and VIb of the periodic table and solid solutions and mixtures thereof; and

a second sintered body layer containing at least 30 percent by volume and less than 75 percent by volume of cubic boron nitride with a remainder being a second binder containing at least 5 percent by weight and less than 40 percent by weight of Al and at least one Ti compound being selected from a group of TiC, TiN, TiCN, (Ti, any of transition metals, excluding Ti, belonging to the groups IVb, Vb and VIb of the periodic table)C, (Ti, any of transition metals, excluding Ti, belonging to the groups IVb, Vb and VIb of the periodic table)N and (Ti, any of transition metals, excluding Ti, belonging to the groups IVb, Vb and VIb of the periodic table)CN,

said first and second sintered body layers defining an edge portion, a major surface of said first sintered body layer forming a rake face, said second sintered body layer forming a flank,

said first sintered body layer being at least 0.02 mm and less than 0.1 mm in thickness,

said first sintered body layer being in a thickness ratio of at least 1:5 to said second sintered body layer.

5,348,809

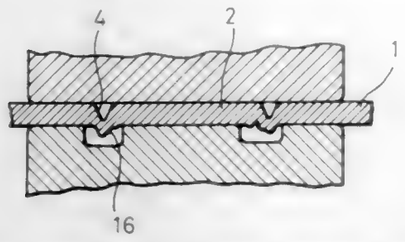
SHEET STEEL EASY OPEN CAN LID SUPERIOR IN CAN OPENABILITY AND NOT REQUIRING REPAIR COATING OF INNER AND OUTER SURFACES

Yashichi Oyagi, Futtsu; Kiyonori Nakamura, and Keiji Taniuchi, both of Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 5, 1992, Ser. No. 971,797
Claims priority, application Japan, Nov. 8, 1991, 3-293417; Nov. 8, 1991, 3-293418; Nov. 8, 1991, 3-293419; Nov. 8, 1991, 3-293420
Int. Cl.[5] B65D *17/28;* B21D *51/44*
U.S. Cl. 428—622 8 Claims

1. A sheet steel easy open can lid containing an opening piece not requiring repair coating of the inner and outer surfaces, wherein a resin-laminated sheet steel, having resin lami-

nated on inner and outer surfaces, is used as a substrate a tear-along groove at the peripheral edge of the opening piece is



formed, without cutting the laminated resin sheet on the inner and outer surfaces, by composite cold-forming.

5,348,810

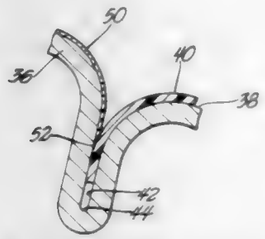
ELASTOMERIC LAMINATED SHEET METAL PARTS

Michael C. Page, Richmond, Mich., assignor to LTC Roll & Engineering, Mt. Clemens, Mich.

Filed Aug. 29, 1991, Ser. No. 751,559

Int. Cl.[5] B32B *15/06, 15/18*

U.S. Cl. 428—625 **4 Claims**



1. A composite contoured strip comprising:
a sheet of malleable stainless steel substrate having an upper surface;
a sheet of elastomeric material laminated to a portion of said upper surface with a generally linear boundary line along said upper surface dividing said elastomeric layer from an unlaminated portion of said upper surface, and a layer of metallic plate disposed over said unlaminated portion of said upper surface;
and characterized by a fold in said substrate extending adjacent and parallel to said boundary line and bending said unlaminated portion to overlie and compress said elastomeric layer into compression against the laminated portion of said upper surface to seal said fold against lateral moisture penetration.

5,348,811

RECORDING MEDIUM AND METHOD OF PERFORMING RECORDING/PRODUCING ON THE RECORDING MEDIUM

Makoto Nagao, and Goro Akashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

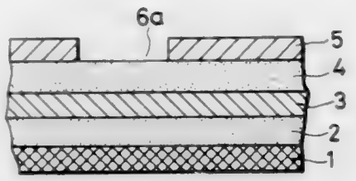
Continuation of Ser. No. 78,085, Jul. 27, 1987, abandoned. This application Apr. 14, 1989, Ser. No. 338,509

Claims priority, application Japan, Jul. 25, 1986, 61-173867; Jul. 25, 1986, 61-173868

Int. Cl.[5] B32B *9/00;* **G11B** *3/70*

U.S. Cl. 428—699 **13 Claims**

1. A multi-layer recording medium, comprising:
a support;
at least one first metal layer; and
at least two second metal layers having secondary electron emission characteristics different from said first metal layer, with one of said second metal layers being formed on said support, said first metal layer being laminated between said second metal layers with respective adjacent layers being made of different kinds of metal from one another, and the other of said second metal layers having



portions thereof selectively removed to expose said first metal layer to thereby represent information recorded in said recording medium.

5,348,812

CARBON-ION FUEL CELL FOR THE FLAMELESS OXIDATION OF COAL

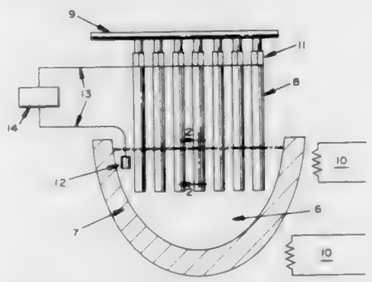
Franklin H. Cocks, 5 Learned Pl., Durham, N.C. 27705, and Henry LaViers, P.O. Box 90302 Duke U, Durham, N.C. 27708

Filed Sep. 30, 1993, Ser. No. 129,996

The portion of the term of this patent subsequent to Mar. 29, 2011, has been disclaimed.

Int. Cl.[5] H01M *8/12*

U.S. Cl. 429—13 **5 Claims**



1. An improved process for flameless oxidation of carbon to produce electric power in which carbon is dissolved into a molten metal, said metal acting as an anode by converting part of said carbon to an ionized state to produce carbon-ions and electrons, the passage of a current of said electrons through a power generating circuit to a cathode where said electrons react with oxygen to produce oxygen-ions, diffusion of said carbon-ions through a solid carbon-ion electrolyte having a fluorite crystal structure to said cathode, where said carbon-ions react with said oxygen-ions to produce oxidized carbon, wherein the improvement comprises use of a molten metal selected the lanthanide group consisting of: La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu, said fluorite crystal structure containing at element selected from said lanthanide group.

5,348,813

BATTERY CHARGE INDICATOR

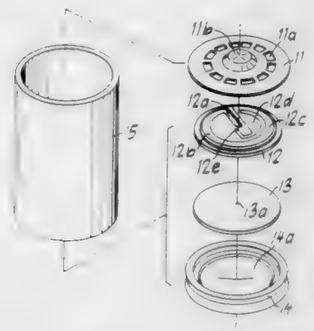
William Bohmer, Succasunna, and Clark F. Bow, Newton, both of N.J., assignors to Display Matrix Corporation, Randolph, N.J.

Continuation-in-part of Ser. No. 709,859, Jun. 4, 1991, Pat. No. 5,244,754. This application Sep. 16, 1991, Ser. No. 760,200

The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.

Int. Cl.[5] H01M *10/48*

U.S. Cl. 429—91 **16 Claims**



1. In combination,
an alkaline battery including a housing having a closed end wall and a deformable end wall, an internally contained chemical cathode in said housing and an internally contained anode for generating an electrical current with said cathode while causing said cathode to expand against said deformable end wall;
first means in contact with said deformable end wall for movement therewith; and
second means for measuring the amount of movement of said first means to provide a visual indication of the remaining amount of expected expansion of said cathode.

5,348,814

INTERNAL REFORMING TYPE MOLTEN CARBONATE FUEL CELL

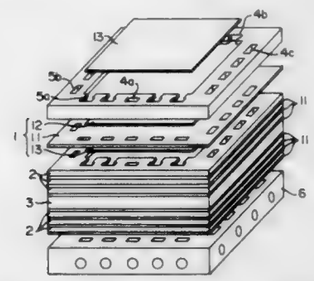
Junji Niikura, Hirakata; Eiichi Yasumoto, Kadoma; Kazuhito Hatoh, Daito, and Takaharu Gamo, Fujiidera, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 10, 1993, Ser. No. 28,976

Claims priority, application Japan, Mar. 11, 1992, 4-052369; May 22, 1992, 4-130402

Int. Cl.[5] H01M *8/06*

U.S. Cl. 429—19 **8 Claims**



1. An internal reforming type molten carbonate fuel cell comprising unit cells, bipolar plates and a plate-like reformer stacked to form a cell stack, said unit cells, bipolar plates and reformer being penetrated by internal manifolds for raw fuel, fuel gas and oxidant gas with openings to the unit cells, bipolar plates and reformer, said reformer being provided with reforming catalyst, wherein said reformer is provided with two parting strips parallely crossing the interior of the reformer to divide it into three parts, an inside space and two outside spaces, and being connected at one end of each to an inside wall of the frame but being separated at the other ends of the inside wall of the frame to form notches; an inside manifold for the raw fuel is provided with an opening to inside parts and inside manifolds for the fuel gas arranged at both sides of the inside manifold for the raw fuel are provided with openings to the outside spaces; and the inside space only is filled with reforming catalyst.

5,348,815

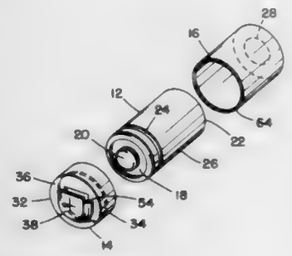
PROTECTIVE BATTERY CAP

Ronald S. Barker, Brewster, N.Y., assignor to Black & Decker Inc., Newark, Del.

Filed Jun. 10, 1993, Ser. No. 74,648

Int. Cl.[5] H01M *2/04, 2/06*

U.S. Cl. 429—65 **20 Claims**



1. A battery cap comprising:
a first section having a top surface disposed generally parallel to a top end of a battery and having a rim for contacting the top end of the battery and a raised contact receiving section with a single aperture through the first section into an area beneath the raised contact receiving section, the aperture being generally perpendicular to the top surface of the first section; and
a second section integral with the first section, the second section extending generally perpendicular to the top surface of the first section for fixedly mounting the first and second sections to a battery.

5,348,816

ALKALINE BATTERY

Kenichi Shinoda, Toyohashi; Akihide Izumi; Kiyohide Tsutsui, both of Kosai; Katsuhiro Yamashita, Toyohashi; Hidenori Tsuzuki, Gamogouri, and Takashi Matsuo, Kosai, all of Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1992, Ser. No. 896,969

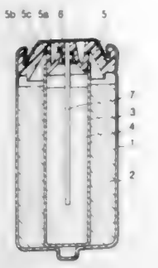
Claims priority, application Japan, Jun. 11, 1991, 3-165178; Oct. 31, 1991, 3-311432

Int. Cl.[5] H01M *10/26, 4/58*

U.S. Cl. 429—206 **9 Claims**

1. A method for producing a gel form negative electrode for an alkaline battery, said method comprising the steps of:
preparing by dry mixing a dry mixture of one or more of an oxide or hydroxide of indium, lead, gallium and bismuth and zinc or zinc alloy powder;

putting said dry mixture into a gel form alkaline electrolyte; and



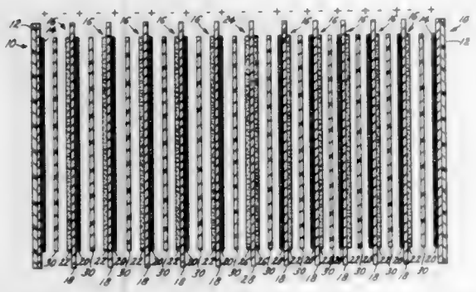
mixing and dispersing said dry mixture in the gel form alkaline electrolyte.

5,348,817

BIPOLAR LEAD-ACID BATTERY

Purushothama Rao, and Jing-Yih Cherng, both of Eagan, Minn., assignors to GNB Battery Technologies Inc., Mendota Heights, Minn.

Filed Jun. 2, 1993, Ser. No. 72,414
Int. Cl.[5] H01M *10/18*
U.S. Cl. 429—210 **13 Claims**



1. A bipolar lead-acid battery having bipolar plates comprising a multi-layered metallic substrate defined as C/A/B/D, layer C having a layer of positive active material adhered thereto and layer D having a layer of negative material adhered thereto, C being a member selected from the group consisting of lead, a lead alloy and a conductive tin, titanium or ruthenium oxide, A being a member selected from the group consisting of titanium and tin, B being a member selected from the group consisting of copper and tin, and D being a member selected from the group consisting of lead, a lead alloy and tin.

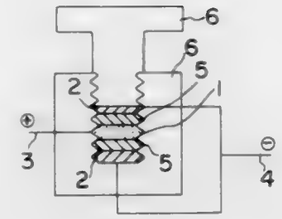
5,348,818

CARBONACEOUS MATERIAL AND A CELL USING THE SAME

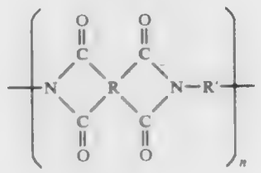
Keiichi Asami; Hideki Takahashi; Katsuo Inoue; Yoshiaki Echigo, all of Uji; Toshiyuki Ohsawa, and Toshiyuki Kabata, both of Tokyo, all of Japan, assignors to Unitika Ltd., Hyogo and Ricoh Company, Ltd., Tokyo, both of Japan

Filed Jan. 21, 1993, Ser. No. 6,498
Claims priority, application Japan, Jan. 20, 1992, 4-007386; Feb. 18, 1992, 4-030729; Aug. 6, 1992, 4-210133; Aug. 6, 1992, 4-210134
Int. Cl.[5] H01M *4/60, 4/58;* **C01B** *31/02*
U.S. Cl. 429—213 **15 Claims**

1. A carbonaceous material having a specific surface area by BET method of at least 10 m^2/g and a nitrogen/carbon atom weight ratio of 0.15 to 0.01, obtained by heat-treating a polyimide polymer having repeating units represented by:



(1)



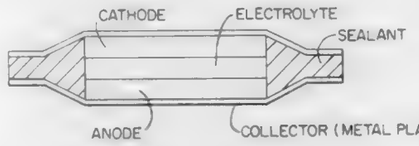
wherein R represents a 4 valent aromatic residue having at least one aromatic ring, of which each 2 valences are bonded with an adjacent carbon atom in the aromatic ring, R′ represents a divalent aromatic residue having 1 to 4 aromatic rings and n is an integer of at least 2.

5,348,819

REVERSIBLE ELECTRODE

Hiroshi Uemachi; Yoshiko Sato; Tadashi Sotomura, and Kenichi Takeyama, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 30, 1993, Ser. No. 55,858
Claims priority, application Japan, May 7, 1992, 4-114515
Int. Cl.[5] H01M *4/60*
U.S. Cl. 429—213 **12 Claims**



1. A reversible electrode comprising an organic sulfur aromatic compound represented by the formula $R(SX)_y$ (where R is an aromatic group, S is sulfur, X is a metal atom or hydrogen, and y is an integer of 2 or more) as a main component so as to utilize the reversible electrochemical oxidation-reduction of sulfur atoms of the organic sulfur aromatic compound for an electrode reaction; and an electrolyte.

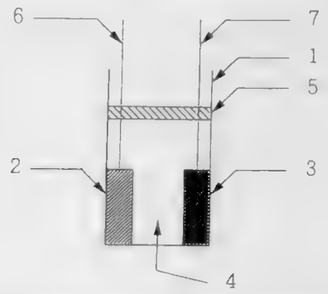
5,348,820

ZINC ELECTRODE FOR ALKALINE STORAGE BATTERY

Masanobu Suga, Yokohama; Seiichi Akita, Fujisawa, and Nobuyuki Kuroda, Yokohama, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Jul. 9, 1993, Ser. No. 89,750
Claims priority, application Japan, Jul. 10, 1992, 4-223147; Aug. 10, 1992, 4-253395
Int. Cl.[5] H01M *4/24*
U.S. Cl. 429—216 **8 Claims**

1. A negative zinc electrode for an alkaline storage battery, comprising an electrode using zinc as an active material and a polymer layer coated on said electrode, said polymer layer



comprising a polymer having an oxygen permeability constant of not less than 1×10^{-10} cm^3 (STP) $cm^{-1}s^{-1}cmHg^{-1}$.

5,348,821

Patent Not Issued For This Number

5,348,822

CHEMICALLY AND COMPOSITIONALLY MODIFIED SOLID SOLUTION DISORDERED MULTIPHASE NICKEL HYDROXIDE POSITIVE ELECTRODE FOR ALKALINE RECHARGEABLE ELECTROCHEMICAL CELLS

Stanford R. Ovshinsky, Bloomfield Hills; Dennis Corrigan, Troy; Srini Venkatesan, Southfield; Rosa Young; Christian Fierro, both of Troy, and Michael A. Fetcenko, Rochester Hills, all of Mich., assignors to Ovonic Battery Company, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 975,031, Nov. 12, 1992. This application Mar. 8, 1993, Ser. No. 27,973
Int. Cl.[5] H01M *4/32;* **B22F** *1/00*
U.S. Cl. 429—223 **22 Claims**

1. A high capacity, long cycle life positive electrode for use in an alkaline rechargeable electrochemical cell comprising:

a solid solution nickel hydroxide material having

a multiphase structure that comprises at least one polycrystalline γ-phase including a polycrystalline γ-phase unit cell comprising spacedly disposed plates with at least one chemical modifier incorporated around said plates, said plates having a range of stable intersheet distances corresponding to a 2^+ oxidation state and a 3.5^+, or greater, oxidation state; and

at least three compositional modifiers incorporated into said solid solution nickel hydroxide material to promote said multiphase structure.

14. A high capacity, long cycle life nickel metal hydride cell comprising

a positive electrode comprising a solid solution nickel hydroxide electrode material having a multiphase structure that comprises a polycrystalline γ-phase including a polycrystalline γ-phase unit cell comprising spacedly disposed plates with at least one ion chemical modifier incorporated around said plates, said plates having a range of stable intersheet distances corresponding to a 2^+ oxidation state and a 3.5^+, or greater, oxidation state; and at least three compositional modifiers substituted for nickel to promote said multiphase structure; and

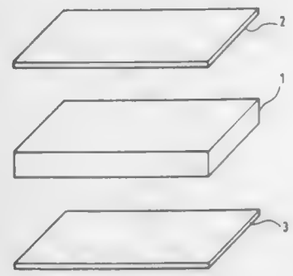
an electrolyte.

5,348,823

PROCESS OF PREPARING AN ELECTRODE FOR AN ELECTROCHEMICAL CELL WITH A POROUS SUPPORT AND AN ELECTRODE OBTAINED BY SAID PROCESS

Georges Caillon, Bruges, and Cyrille Lebarbier, Bordeaux-Cauderan, both of France, assignors to Saft S.A., Romainville, France

Continuation of Ser. No. 2,095, Jan. 8, 1993, abandoned, which is a continuation of Ser. No. 725,929, Jul. 2, 1991, abandoned, which is a continuation of Ser. No. 489,522, Mar. 7, 1990, abandoned. This application Dec. 23, 1993, Ser. No. 173,263
Claims priority, application France, Nov. 7, 1989, 89 14588
Int. Cl.[5] H01M *4/04*
U.S. Cl. 429—246 **6 Claims**



1. A process of preparing an electrode for an electrochemical generator comprising the following steps:

loading a porous metallic sponge support having a porosity greater than 90% with an active material;

placing on each face of said loaded support a separator layer consisting of polyolefin fibers, the fibers having diameters less than 5 μm and the mass of said separator layer being between 5 and 50 g/m^2; and

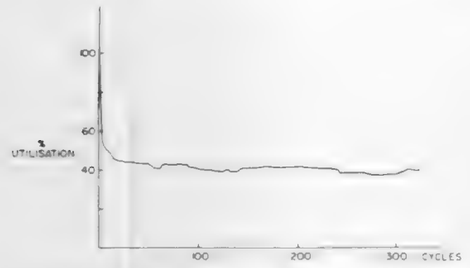
compressing the assembly obtained in the previous step sufficiently to obtain an embedment of the fibers into the metallic support and a consequent adherence of the separator layers over the entire surface of the support.

5,348,824

PROCESS OF COATING BY MELT EXTRUSION A SOLID POLYMER ELECTROLYTE ON POSITIVE ELECTRODE OF LITHIUM BATTERY

Michel Duval, Montreal, Canada, assignor to Hydro-Quebec, Montreal, Canada

Filed Oct. 25, 1993, Ser. No. 140,536
Int. Cl.[5] H01M 6/18
U.S. Cl. 429—192 20 Claims



1. Process for coating a solid polymer electrolyte on a positive electrode of an all solid lithium battery, which comprises introducing an at least partially amorphous homopolymer, copolymer or terpolymer base composition into an extruder, extruding said composition in the form of thin film and directly depositing said thin film, at the outlet of the extruder, on a previously prepared positive electrode film.

5,348,825

METHOD FOR MANUFACTURING SHADOW MASK AND SHADOW MASK MANUFACTURED BY SAID METHOD

Osamu Nakamura, and Takeshi Ikegami, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1992, Ser. No. 908,194
Claims priority, application Japan, Jul. 2, 1991, 3-161578; Jul. 19, 1991, 3-179108
Int. Cl.[5] G03F 9/00
U.S. Cl. 430—5 13 Claims

1. A method for manufacturing a shadow mask of 20–80 μm in thickness, said method comprising the steps of:
providing an electrode base material of 20–80 μm thickness with resist coating,
patterning in accordance with a predetermined shadow mask pattern the resist layer on one side of the resist coated electrode base material
covering the resist layer of the other side of the electrode base material with a reinforcing resin layer having anti-etching property, and
etching the electrode base material from the side where the resist layer is patterned opposite the reinforced side so as to penetrate the electrode base material.

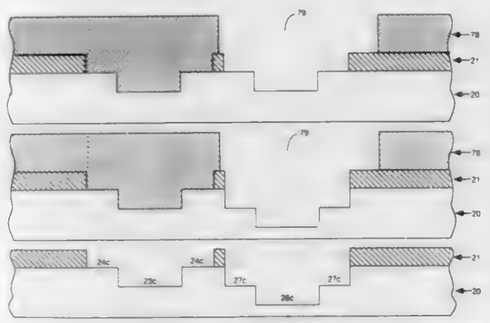
5,348,826

RETICLE WITH STRUCTURALLY IDENTICAL INVERTED PHASE-SHIFTED FEATURES

Giang T. Dao, Fremont; Qi De Qian, Santa Clara; Nelson N. Tam, Foster City; Eng T. Gaw, San Jose, and Harry H. Fujimoto, Sunnyvale, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 933,400, Aug. 21, 1992, Pat. No. 5,302,477, and a continuation-in-part of Ser. No. 933,341, Aug. 21, 1992, Pat. No. 5,300,379. This application Feb. 2, 1993, Ser. No. 12,564
Int. Cl.[5] G03F 9/00
U.S. Cl. 430—5 23 Claims

1. A reticle for use in patterning a radiation sensitive layer comprising:
a first region, said first region transmitting at least a portion of radiation incident thereon;
a second region proximate said first region, said second region transmitting at least a portion of radiation incident thereon, wherein radiation transmitted through said second region is phase-shifted approximately 160–200 degrees relative to radiation transmitted through said first region;
a third region proximate said second region, said third region transmitting at least a portion of radiation incident thereon, wherein radiation transmitted through said third



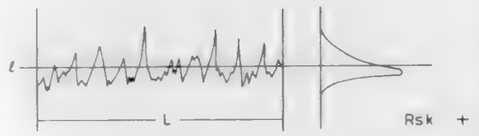
region is phase-shifted approximately 160–200 degrees relative to said second region; and,
a fourth region proximate said third region, said fourth region transmitting at least a portion of radiation incident thereon, wherein radiation transmitted through said fourth region is phase-shifted approximately 160–200 degrees relative to said third region, wherein if there is any phase error between said first and said second regions, and said fourth and said third regions, said phase error between said first and second region is in the same direction as said phase error between said fourth and said third region.

5,348,827

PLATE MATERIAL FOR SHADOW MASK

Tsutomu Hatano, Tokyo, Japan, assignor to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1991, Ser. No. 692,454
Claims priority, application Japan, Apr. 26, 1990, 2-111560
Int. Cl.[5] G03C 3/00
U.S. Cl. 430—11 8 Claims



1. A plate material for a shadow mask used in a color picture tube, having a surface roughness Ra and a surface roughness projection condition Rsk, which are defined as follows:
Ra: from 0.3 to 0.8μm
Rsk: +0.1 or more
where Ra is the surface roughness specified in JIS B 0601, and Rsk is a value representative of the relativity of an amplitude distribution curve to a mean line, i.e., the projection condition expressed by

$$Rsk = \frac{1}{n \times jRq^3}\left(\sum_{i=1}^{i=n\times j} Y(i)^3\right)$$

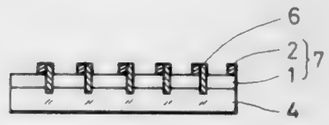
where Y(i) is a roughness curve obtained within a reference length of a sectional curve when the mean line and the direction of vertical magnification are assumed to be the X-axis and the Y-axis, respectively; Rq is a quadratic mean roughness; n=230; and j=2 to 5.

5,348,828

PROCESS FOR PRODUCING ELECTRODE SUBSTRATE

Tatsuo Murata, Hiratsuka; Kazuya Ishiwata, Yokosuka, and Toshifumi Yoshioka, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1991, Ser. No. 660,861
Claims priority, application Japan, Feb. 26, 1990, 2-42613
Int. Cl.[5] C09K 19/02; G02F 1/03
U.S. Cl. 430—20 6 Claims



1. A process for producing an electrode substrate for use in a chiral smectic liquid crystal device comprising the steps of:
(a) forming a laminate film comprising a transparent conductive film and a metal film on a first side of a glass substrate, which is transparent;
(b) pattern-etching the laminate film for forming islands of the laminate film in a predetermined pattern;
(c) etching portions of the glass substrate at portions between adjacent islands of the laminate film, for forming grooves in the portions of the glass substrate;
(d) applying a photosensitive anaerobic colored resin having a thickness of 1 μm or more coated by a spin-coating process on the first side of the glass substrate on which the islands of laminated film are arranged in the predetermined pattern;
(e) uniformly exposing the glass substrate to a light from a second side of the substrate, opposite to the first side, in an oxygen-containing atmosphere, a cured film thickness of said photosensitive resin formed by the exposure being determined to have a value substantially the same as the thickness of the laminate film in accordance with an amount of the exposure;
(f) removing unexposed portions and uncured portions of the photosensitive anaerobic resin so as to leave the photosensitive anaerobic resin only in spaces between adjacent islands of the laminate film, for forming a light-shielding film in each of the spaces; and
(g) etching the metal film of each of the laminate film islands to remove unnecessary portions of the metal film, so as to form electrodes along the edges of the transparent conductive film.

5,348,829

MONOCOMPONENT-TYPE DEVELOPER FOR DEVELOPING ELECTROSTATIC IMAGE AND IMAGE FORMING METHOD

Masaki Uchiyama, Ichikawa; Yasutaka Akashi, Yokohama; Masaaki Taya, Kawasaki, and Makoto Unno, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1992, Ser. No. 972,540
Claims priority, application Japan, Nov. 8, 1991, 3-293034
Int. Cl.[5] G03G 9/083
U.S. Cl. 430—106.6 37 Claims

1. A monocomponent-type developer for developing electrostatic images, comprising: a magnetic toner containing at least a binder resin and magnetic powder, and 0.5–10 wt. % (based on the magnetic toner) of inorganic fine powder having a length-average particle size of 0.1–5 μm;
wherein the developer has a number-basis particle size distribution such that particles of 2.00–2.52 μm are contained in a larger proportion than particles of 2.52–3.17 μm, particles of 4 μm or smaller are contained at 5–18% by number and particles of 4–10 μm are contained at at least 60% by number;
the developer has a volume basis particle size distribution such that particles of 12.7 μm or larger are contained at at most 10% by volume; and
the developer has a weight-average particle size of 7–11 μm.

5,348,830

POLIYMIDE TONER AND DEVELOPER COMPOSITIONS

Guerino G. Sacripante, Oakville, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 20, 1993, Ser. No. 144,455
Int. Cl.[5] G03G 9/087
U.S. Cl. 430—109 23 Claims

1. A toner comprised of a pigment, and a thermotropic liquid crystalline polyimide of the formula

wherein m represents the number of monomer segments present; X is a symmetrical moiety independently selected from the group consisting of phenyl, naphthyl, cyclohexyl, or bicycloaliphatic; and R is independently selected from the group consisting of alkyl, oxyalkylene and polyoxyalkylene.

5,348,831

POLYESTER-IMIDE TONER AND DEVELOPER COMPOSITIONS

Guerino G. Sacripante, Oakville; Melvin D. Croucher, St. Catharines, and Stephan V. Drappel, Toronto, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 28, 1993, Ser. No. 144,964
Int. Cl.[5] G03G 9/087
U.S. Cl. 430—109 16 Claims

1. A toner comprised of pigment, and a polyester-imide resin of the formula

wherein n represents the number of segments present and is a number of from about 10 to about 10,000; R' is alkyl or alkylene; and R is independently selected from the group consisting of an oxyalkylene and polyoxyalkylene.

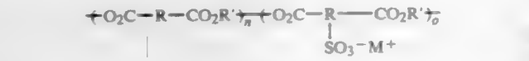
5,348,832

TONER COMPOSITIONS

Guerino G. Sacripante; Raj D. Patel, both of Oakville, and Grazyna E. Kmiecik-Lawrynowicz, Burlington, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 1, 1993, Ser. No. 69,792
Int. Cl.[5] G03G *9/087*
U.S. Cl. 430—109 28 Claims

1. A toner composition consisting essentially of pigment, and a sulfonated polyester of the formula or as essentially represented by the formula



wherein M is an ion independently selected from the group consisting of hydrogen, ammonium, an alkali metal ion, an alkaline earth metal ion and a metal ion; R is independently selected from the group consisting of aryl and alkyl; R′ is independently selected from the group consisting of alkyl and oxyalkylene; and wherein n and o represent random segments; and wherein the sum of n and o are equal to 100 mole percent.

5,348,833

COLORED POSITIVE-WORKING QUINONE DIAZIDE PHOTOSENSITIVE RECORDING MATERIAL FOR THE PRODUCTION OF A COLOR TEST IMAGE UTILIZING ADHESIVE LAYER CONTAINING ALKALI-INSOLUBLE ORGANIC POLYMER AND ALKALI-SOLUBLE POLYESTER

Dieter Mohr, Budenheim; Martin Benzing, Biebelnheim; Juergen Mertes, Ingelheim; Guenter Hultzsch, Wiesbaden; Ine Gramm, Wiesbaden; Manfred Michel, Wiesbaden; Andreas Elsaesser, Idstein, all of Fed. Rep. of Germany; Shane Hsieh, Bridgewater, N.J., and David L. Siegfried, Langhorne, Pa., assignors to Hoechst Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 664,753, Mar. 5, 1991, abandoned. This application Sep. 4, 1992, Ser. No. 939,909
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1990, 4006856
Int. Cl.[5] G03F *7/105, 7/11*
U.S. Cl. 430—143 20 Claims

1. A positive-working colored photosensitive recording material for the production of a color test image comprising:

(a) a temporary layer carrier,

(b) a release layer comprising polyvinyl alcohol on the surface of said temporary layer carrier,

(c) a photosensitive layer, with a layer weight of about 0.5–5.0 g/m^2, said layer comprising, in an admixture;

(i) a dyestuff or pigment,

(ii) a binder in an amount of about 20–75 weight percent based on the non-volatile contents of said photosensitive layer, said binder comprising a novolak-free phenolic polymer resin, a reaction product of said phenolic polymer resin with a monoisocyanate or a mixture thereof, and

(iii) an esterification product of a compound containing at least one phenolic hydroxyl group and o-quinonediazide-4-sulfonyl chloride, said esterification product being present in an amount of about 10-30 weight percent based on the nonvolatile constituents of said photosensitive layer, and

(d) an adhesive layer activatable by means of heat which comprises an alkali-insoluble organic polymer and an alkali-soluble polyester, wherein said alkali-insoluble organic polymer is present in about 70–99 weight percent and said alkali-soluble polyester is present in about 1–30 weight percent in said adhesive layer.

5,348,834

WATER DEVELOPABLE, NEGATIVE WORKING OVERLAY COLOR PROOFING SYSTEM UTILIZING WATER SOLUBLE POLYMERIC DIAZONIUM COMPOUND; WATER INSOLUBLE, WATER SWELLABLE BINDER RESIN; AND A COLORANT

Stanley F. Wanat, Scotch Plains, N.J., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 679,361, Apr. 2, 1991, Pat. No. 5,212,041, which is a continuation-in-part of Ser. No. 431,257, Feb. 12, 1990, abandoned, which is a division of Ser. No. 183,841, Apr. 20, 1988, Pat. No. 4,914,039. This application Feb. 2, 1993, Ser. No. 12,198
Claims priority, application Canada, Mar. 17, 1989, 594151; European Pat. Off., Apr. 19, 1989, 89303861.3; Japan, Apr. 20, 1989, 1-101537
Int. Cl.[5] G03F *7/021, 7/105*
U.S. Cl. 430—143 8 Claims

1. A negative working, photosensitive, overlay color proofing film which comprises, in order:

i) a transparent substrate; and

ii) a photosensitive layer on said substrate, which photosensitive layer comprises a light sensitive, water soluble, negative working, polymeric diazonium compound, which diazonium compound is present in sufficient amount to photosensitize said layer; and a water insoluble, water swellable binder resin in sufficient amount to bind the layer components in a uniform film; and at least one colorant in sufficient amount to uniformly color said layer;

wherein upon imagewise exposure of said photosensitive layer to sufficient actinic radiation said film is capable of being developed with water alone.

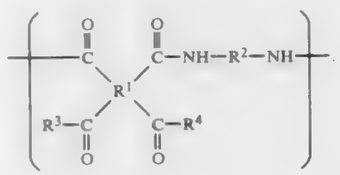
5,348,835

PHOTOSENSITIVE RESIN COMPOSITION FOR FORMING POLYIMIDE FILM PATTERN COMPRISING AN O-QUINONE DIAZIDE PHOTOSENSITIVE AGENT

Masayuki Oba, Yokohama; Rumiko Hayase, Kawasaki; Naoko Kihara, Matsudo; Shuzi Hayase, Kawasaki; Yukihiro Mikogami, Yokohama; Yoshihiko Nakano, Tokyo; Naohiko Oyasato, Kawaguchi; Shigeru Matake, and Kei Takano, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 27, 1991, Ser. No. 766,334
Claims priority, application Japan, Sep. 28, 1990, 2-259032; Jan. 17, 1991, 3-003962; Mar. 6, 1991, 3-039854; Mar. 28, 1991, 3-090001
Int. Cl.[5] G03F *7/023, 7/30*
U.S. Cl. 430—192 7 Claims

1. A photosensitive resin composition for forming a polyimide film pattern, comprising in admixture a polyamic acid derivative having a repeating unit represented by general formula (1), and a photosensitizing amount of an o-quinone diazide compound photosensitive agent:



where, R^1 represents a tetravalent organic group, R^2 represents a divalent organic group, and R^3 and R^4 represent a monovalent organic group or hydroxyl group, at least one of R^3 and R^4 being an organic group having at least one hydroxyl group bonded to an aromatic ring.

5,348,836

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Ludo Van Rompuy, Destelbergen, and Jean-Marie Dewanckele, Drongen, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Apr. 22, 1993, Ser. No. 50,672
Claims priority, application European Pat. Off., May 13, 1992, 92201365.1
Int. Cl.[5] G03C *5/54, 1/06*
U.S. Cl. 430—204 32 Claims

1. A photographic material comprising on a support photosensitive silver halide particles, and substantially light insensitive silver salt particles having a speed at least a factor 10 less under the same conditions of exposure and development of said photosensitive silver halide particles than said photosensitive silver halide particles and a releasing compound of formula (I) or (II) capable of image-wise releasing a sulphide or sulphide under conditions for image-wise development of said photosensitive silver halide particles to silver:

CARRIER—(TIME)$_n$—S—A (I)

CARRIERS (II)

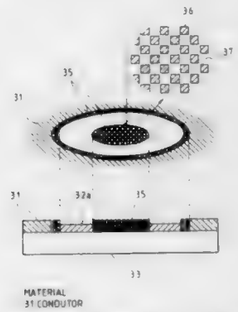
wherein CARRIER represents a carrier moiety that upon reaction with either the reduced or oxidized form of a developing agent or upon reaction with silver ions is capable of releasing under the conditions of development of said photosensitive silver halide the moiety -(TIME)$_n$-S-A, -S-A or sulphide, TIME represents a timing group which releases -S-A or sulphide subsequent to the release of -(TIME)$_n$-S-A from CARRIER, A represents an organic group that renders the bond between S and A readily splittable under the development conditions of said photosensitive silver halide and n represents 0 or 1.

5,348,837

PROJECTION EXPOSURE APPARATUS AND PATTERN FORMING METHOD FOR USE THEREWITH

Hiroshi Fukuda, Kodaira; Ryoko Yamanaka, Kokubunji; Tsutomu Tawa, Katsuta; Tsuneo Terasawa, Ome, and Seiji Yonezawa, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 765,060, Sep. 24, 1991. This application Feb. 2, 1993, Ser. No. 12,479
Claims priority, application Japan, Feb. 3, 1992, 4-017454; Mar. 11, 1992, 4-052750
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—269 15 Claims



1. A projection exposure apparatus comprising:

a light source;

shaping means for making the illumination distribution of light beams from said light source annular on the plane of an effective source relative to an optical axis;

illumination optics for irradiating the light from the plane of said effective source onto a mask having a predetermined pattern;

projection lens means for projecting said pattern onto a resist film; and

transmittance reducing means for making the transmittance of a first region on the pupil plane of said projection lens means lower than that of a second region on the pupil plane of said projection lens means, said first region being inside of the outer periphery of an annular region substantially conjugate with said effective source, and said second region being outside of said outer periphery.

5,348,838

PHOTOSENSITIVE COMPOSITION COMPRISING ALKALI SOLUBLE BINDER AND PHOTOACID GENERATOR HAVING SULFONYL GROUP

Toru Ushirogouchi, Yokohama; Naoko Kihara, Matsudo; Osamu Sasaki, Sagamihara; Tsukasa Tada; Takuya Naito, both of Tokyo, and Satoshi Saito, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 30, 1992, Ser. No. 921,692
Claims priority, application Japan, Jul. 31, 1991, 3-213198; Mar. 12, 1992, 4-053729
Int. Cl.[5] G03C *1/492*
U.S. Cl. 430—270 32 Claims

1. A photosensitive composition comprising:

an alkali-soluble resin;

a compound which has a substituent group decomposable by an acid and generates an alkali-soluble group upon decomposition of the substituent group, or an aminoplast resin which has a substituent group capable of crosslinking the alkali-soluble resin in the presence of an acid; and

a compound which generates an acid upon exposure, which is represented by formula (I) given below:

 (I)

wherein R_{11} represents a monovalent organic group, or a monovalent organic group into which at least one substituent selected from the group consisting of a halogen atom, a nitro group, and a cyano group is introduced, each of the R_{12}, R_{13}, and R_{14} independently represents hydrogen, a halogen atom, a nitro group, a cyano group, a monovalent organic group, or a monovalent organic group into which at least one substituent selected from the group consisting of a halogen atom, a nitro group, and a cyano group is introduced.

5,348,839

PHOTODELINEABLE COATINGS FROM HYDROGEN SILSESQUIOXANE RESIN

Loren A. Haluska, and Keith W. Michael, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 688,418, Apr. 22, 1991, Pat. No. 5,238,787. This application Mar. 22, 1993, Ser. No. 34,958
Int. Cl.[5] G03C *1/72*; C08J *3/28*; B05D *3/02*
U.S. Cl. 430—270 7 Claims

1. A liquid composition comprising a solvent, hydrogen silsesquioxane resin and an initiator which generates free radicals upon exposure to radiation.

5,348,840

OPTICAL RECORDING MEDIUM

Makoto Sakamoto, and Michiko Tamano, both of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed May 5, 1993, Ser. No. 56,537
Int. Cl.[5] G03C *1/72*
U.S. Cl. 430—270 4 Claims

1. An optical recording medium comprising a transparent substrate and a recording layer formed on the substrate, the recording layer being formed of an organic thin layer containing at least one phthalocyanine compound of the formula [1],

5,348,841

ORGANIC DYE-IN-POLYMER (DIP) MEDIUM FOR WRITE-ONCE-READ-MANY (WORM) OPTICAL DISCS

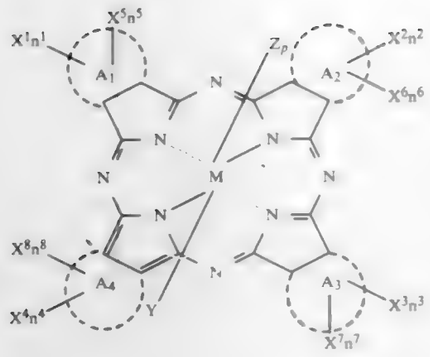
Hun-Jan Tao, Taichung, and Hwa-Fu Chen, Hsinchu, both of Taiwan, assignors to Industrial Technology Research Institute, Chutung, Taiwan

Continuation of Ser. No. 615,616, Nov. 19, 1990, abandoned. This application Apr. 6, 1993, Ser. No. 42,754

Int. Cl.[5] G03C *1/72*; G11B *7/24*

U.S. Cl. 430—270 **15 Claims**

[1]



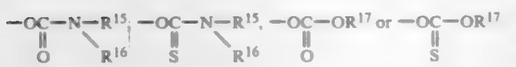
wherein:

each of rings A^1 to A^4 is independently a benzene ring or a naphthalene ring,

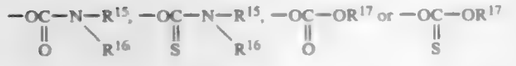
M is Al, Ca, In, Si, Ge or Sn,

each of X^1 to X^8 is independently a hydrogen atom, an optionally substituted alkyl group, an optionally substituted aryl group, an optionally substituted aralkyl group, an optionally substituted heterocyclic ring residue, an optionally substituted phthalimidemethyl group, a halogen atom, a nitro group, a cyano group, a sulfonic acid group, $-OR^1$, $-SR^2$, $-COOR^3$, $-NR^4R^5$, $-SO_2NR^6R^7$, $-CONR^8R^9$, $-CH_2NHCOCH_2NR^{10}R^{11}$, $-NHCOR^{12}$, $-N{=}NR^{13}$ or $-N{-}CHR^{14}$, in which each of R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10} and R^{11} is independently a hydrogen atom, an optionally substituted alkyl group, an optionally substituted aryl group, an optionally substituted acyl group, an optionally substituted cycloalkyl group or an optionally substituted polyether group, provided that a combination of R^6 and R^7, a combination of R^8 and R^9 or a combination of R^{10} and R^{11} may form a four to seven-membered ring which may contain a nitrogen atom as a heteroatom, and each of R^{12}, R^{13} and R^{14} is an optionally substituted alkyl group, an optionally substituted cycloalkyl group or an optionally substituted aryl group,

Y is



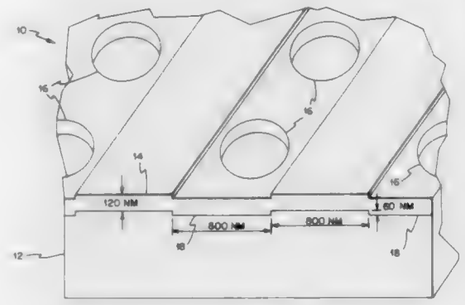
Z is a hydrogen atom, a halogen atom, a hydroxyl group, an optionally substituted alkyl group,



in which each of R^{15}, R^{16} and R^{17} is independently a hydrogen atom, an optionally substituted linear, branched or cyclic alkyl group, an optionally substituted aryl group or an optionally substituted aralkyl group, provided that a combination of R^{15} and R^{16} may form a heterocyclic group containing a heteroatom,

each of n^1 to n^8 is independently an integer of 0 to 8, and

p is 0 or 1.



1. A dye-in-polymer composition for use in forming an optical recording layer comprising:

a cyanine dye;

polyvinyl acetate; and

a co-solvent solution including a first solvent comprising 2-ethoxyethanol for wetting a surface of a substrate and about 10 to about 50 percent-by-weight of a second solvent for increasing an evaporation rate of the composition, wherein the second solvent is an alcohol which has a boiling point less than 100° C.

5,348,842

METHOD FOR PRODUCING POSITIVE PHOTORESIST IMAGE UTILIZING DIAZO ESTER OF BENZOLACTONE RING COMPOUND AND DIAZO SULFONYL CHLORIDE

Dinesh N. Khanna, E. Greenwich; Douglas McKenzie, W. Greenwich; Chester J. Sobodacha, and Ralph R. Dammel, both of Coventry, all of R.I., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 847,527, Mar. 6, 1992, Pat. No. 5,221,592. This application Apr. 2, 1993, Ser. No. 42,362

Int. Cl.[5] G03F *7/32, 7/38, 7/40*

U.S. Cl. 430—272 **14 Claims**

1. A method for producing a photoresist image on a substrate commensurate in scope with the developing step wherein the imagewise exposed areas of the positive working photosensitive composition are removed with an aqueous alkaline developer, which comprises coating a substrate with a positive working photosensitive composition which composition comprises in admixture:

(a) a photosensitive component comprising a diazo ester of a benzolactone ring compound, where the diazo ester is a compound containing at least one hydroxy group on the benzolactone ring have been esterified with diazo sulfonyl chloride consisting of 60 to 100 mole % 2,1,4 or 2,1,5 diazo sulfonyl chloride or a mixture thereof, said photosensitive component being present in the photoresist composition in an amount sufficient to uniformly photosensitize the photoresist composition; and

(b) a water insoluble, aqueous alkali soluble novolak resin; said novolak resin being present in the photoresist composition in an amount sufficient to form a substantially uniform photoresist composition; and (c) a solvent composition; and heat treating said coated substrate until substantially all of said solvent composition is removed; imagewise exposing said photosensitive composition to actinic radiation; and removing the imagewise exposed areas of said composition with an aqueous alkaline developer.

5,348,843

METHOD FOR MAKING PORCELAIN TAGS AND SIGNS BY SELECTIVELY RADIATING A FRIT CONTAINING-EMULSION COATING APPLIED THERETO

Edward W. Beck, Ontario; Blair M. Brewster, Brooklyn Heights, and Andrew M. Walker, Pittsford, all of N.Y., assignors to Permar Systems, Inc., Wolcott, N.Y.

Filed Jun. 12, 1992, Ser. No. 898,011

Int. Cl.[5] G03C *1/492, 11/00*

U.S. Cl. 430—275 **23 Claims**

1. A method of making a porcelain enamel coated sign which consists essentially of:

(a) providing a metal backing having at least one clean surface;

(b) applying a solid colored background base coating containing a frit to the clean surface of said backing, followed by firing for a time and temperature sufficient to form a porcelain enamel coated metal blank;

(c) coating the porcelain surface of the blank formed by step (b) with a photographic emulsion which contains a colored frit and allowing the emulsion mixture to dry;

(d) affixing a print or film containing the desired image to the porcelain enamel coated surface of said blank;

(e) exposing the blank containing the image to a source of activating radiation;

(f) developing the exposed blank in a warm aqueous solution whereby the water serves to develop the emulsion mixture; and

(g) firing said blank to burn off the remaining emulsion mixture whereby the colored frit in the form of the desired image melts and is fused to the base coat.

5,348,844

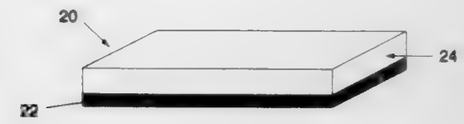
PHOTOSENSITIVE POLYMERIC PRINTING MEDIUM AND WATER DEVELOPABLE PRINTING PLATES

Gregory O. Garmong, Escondido, Calif., assignor to Napp Systems, Inc., San Marcos, Calif.

Filed Dec. 3, 1990, Ser. No. 621,640

Int. Cl.[5] G03C *1/725*

U.S. Cl. 430—286 **20 Claims**



1. A water-developable photosensitive printing medium having a composite structure, comprising discrete domains of water-dispersible latex copolymer, said copolymer comprising the polymerization product of an aliphatic diene monomer, an α,β-ethylenically unsaturated carboxylic acid, and a polyfunctional α,β-ethylenically unsaturated vinyl monomer, discrete domains of a linear elastomeric block copolymer, and a photopolymerizable interstitial phase that binds the domains of latex copolymer and elastomer copolymer together, said interstitial phase containing a photopolymerizable compound, a basic nitrogen atom containing compound having a tertiary basic nitrogen atom and a photoinitiator, said photopolymerizable compound being an ethylenically unsaturated compound containing at least one ethylenically unsaturated group and being capable of forming a polymer by free-radical polymerization.

5,348,845

COLOR IMAGE-STABILIZATION PROCESSING SOLUTION USED FOR PROCESSING A SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL AND A PROCESSING METHOD USING THE SAME

Masakazu Morigaki; Hiroshi Kawamoto; Yoshihiro Fujita; Shigeru Nakamura; Hiroyuki Watanabe, and Morio Yagihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 802,565, Dec. 5, 1991, Pat. No. 5,217,852. This application Mar. 18, 1993, Ser. No. 34,121

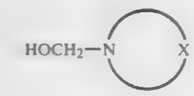
Claims priority, application Japan, Dec. 7, 1990, 2-400906; Feb. 12, 1991, 3-38969; Feb. 12, 1991, 3-38995

Int. Cl.[5] G03C *7/40*

U.S. Cl. 430—372 **23 Claims**

1. A method for processing an image-wise exposed silver halide color photographic material, which comprises processing the photographic material with a color image-stabilization processing solution containing at least one of (a) an N-methylol compound represented by the following formula (I):

(I)



wherein X represents a group of non-metallic atoms necessary to form a 1H-pyrazole ring or 1H-1,2,4-triazole ring together with the nitrogen atom;

and (b) an N-methylol compound satisfying the condition that an equilibrium constant in water at room temperature is 1.5×10^{-2} mol/liter or less and a formaldehyde-releasing rate constant is 1×10^{-4} sec $^{-1}$ or more;

wherein said processing solution is a conditioning solution.

5,348,846

SILVER HALIDE PHOTOGRAPHIC PHOTOSENSITIVE MATERIAL

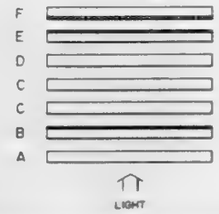
Kunihiro Nakagawa; Seiichi Sumi, and Hideaki Baba, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Continuation of Ser. No. 654,579, Feb. 13, 1991, abandoned. This application Aug. 21, 1992, Ser. No. 931,491

Claims priority, application Japan, Feb. 15, 1990, 2-35839; Apr. 5, 1990, 2-91881

Int. Cl.[5] G03C *1/815*

U.S. Cl. 430—512 **4 Claims**



1. A silver halide photographic photosensitive element comprising:

a transparent support;

a silver halide emulsion photosensitive layer provided on one side of said transparent support, said photosensitive layer including a first dye in an amount sufficient to provide a transmission density of said photosensitive layer ranging from 0.05 to 0.15 at 350–400 nm; and

a non-photosensitive colloid layer provided on another side of said transparent support, said non-photosensitive layer including a second dye in an amount sufficient to provide a transmission density of said nonphotosensitive layer of 0.40 or more at 350–400 nm.

5,348,847

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Makoto Suzuki; Osamu Takahashi; Yasuhiro Shimada; Koushin Matsuoka, and Yasuhiro Yoshioka, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 27, 1992, Ser. No. 982,445

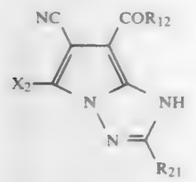
Claims priority, application Japan, Nov. 27, 1991, 3-311212; Nov. 27, 1991, 3-335861; Feb. 21, 1992, 4-70002

The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.

Int. Cl.[5] G03C *7/38*

U.S. Cl. 430—558 **18 Claims**

1. A silver halide color photographic material, comprising a support having thereon at least one red-sensitive silver halide emulsion layer containing at least one cyan coupler of the following general formula (I):



(I)

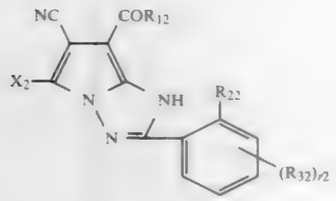
wherein R_{11} represents a branched or cyclic alkyl group, a branched or cyclic alkoxy group, a substituted aryl group, or a substituted aryloxy group;

R_{21} represents a substituent;

X_1 represents a hydrogen atom or a group which is capable of splitting off from the formula by a coupling reaction with an oxidation product of an aromatic primary amine color developing agent; and

a group represented by R_{11}, R_{21} or X_1 may be divalent and form a dimer or a higher polymer or bond to a polymer chain to form a homopolymer of copolymer.

12. A silver halide color photographic material, comprising a support having thereon at least one red-sensitive silver halide emulsion layer containing at least one cyan coupler of the following general formula (II):



(II)

wherein R_{12} represents an aliphatic group, an aryl group, a heterocyclic group, an alkoxy group, an aryloxy group, an alkylamino group, an anilino group, a heterocyclic oxy group, or a heterocyclic amino group;

R_{22} and R_{32} each represents a substituent;

r_2 represent an integer of from 0 to 4; provided that when r_2 is a plural number, the plurality of R_{32} groups may be the same or different;

X_2 represents a hydrogen atom or a group which is capable of splitting off from the formula by a coupling reaction with an oxidation product of an aromatic primary amine color developing agent; and a group represented by R_{12}, R_{22}, R_{32} or X_2, may be divalent and form a dimer or a higher polymer or bond to a polymer chain to form a homopolymer of copolymer.

5,348,848

METHOD OF MANUFACTURING SILVER HALIDE PHOTOGRAPHIC EMULSION AND SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL COMPRISING THE SILVER HALIDE PHOTOGRAPHIC EMULSION

Shuji Murakami, and Shigeo Tanaka, both of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Mar. 26, 1993, Ser. No. 37,236

Claims priority, application Japan, Apr. 3, 1992, 4-82250

Int. Cl.[5] G03C *1/015, 1/09*

U.S. Cl. 430—569 **16 Claims**

1. A silver halide photographic light-sensitive material comprising a support and provided thereon, a silver halide emulsion layer comprising sliver halide grains containing silver bromochloride having a silver chloride content of 95 mol % or more and wherein said grains contain at least one substance selected from the group consisting of gallium, germanium, and compounds thereof.

11. A method for manufacturing a silver halide photographic light-sensitive material comprising a support and provided thereon, a silver halide emulsion layer comprising silver bromochloride grains having a silver chloride content of 95 mol % or more, comprising the step of forming the grains in the presence of at least one substance selected from the group consisting of gallium, germanium and compounds thereof.

5,348,849

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Tadashi Ito, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 781,837, Oct. 24, 1991, abandoned. This application Jun. 16, 1993, Ser. No. 77,329

Claims priority, application Japan, Oct. 26, 1990, 2-288898

Int. Cl.[5] G03C *1/14*

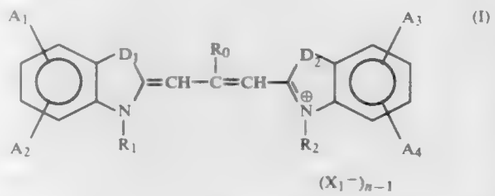
U.S. Cl. 430—574 **9 Claims**

1. A silver halide photographic material comprising a support and at least one light-sensitive silver halide emulsion layer coated on at least one side of the support; wherein,

the silver halide grains contained in the silver halide emulsion layer have been subjected to reduction-sensitization,

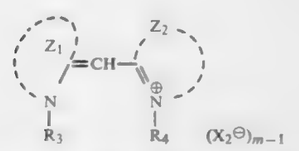
the silver halide emulsion contains at least one spectral sensitizer represented by the following Formula (I), and further

at least one of the dyes represented by the following Formula (II) is added to the silver halide emulsion after chemical sensitization or reduction sensitization, but before coating:



(I)

wherein A_1, A_2, A_3 and A_4 each represents a hydrogen atom, a lower alkyl group, an alkoxy group, a halogen atom, a hydroxyl group, an aryl group, a carboxyl group, an alkoxycarbonyl group, a cyano group, a trifluoromethyl group, an amino group, an acylamide group, an acyl group, an acyloxyl group, an alkoxycarbonylamino group, and a carboalkoxy group, wherein A_1 and A_2, and A_3 and A_4 may combine with each other to form a naphthoxazole nucleus; R_0 represents a hydrogen atom, a lower alkyl group, or an aryl group; D_1 and D_2 each represents an oxygen atom or a sulfur atom; R_1 and R_2 each represents an alkyl group, provided that at least one of R_1 and R_2 is an alkyl group having a sulfo radical; X_1 represents an anion; and n is 1 or 2, provided that n is 1 when the dye forms an inner salt;



(II)

wherein Z_1 and Z_2 each represents the group of non-metallic atoms necessary to complete a thiazole nucleus, a thiazoline nucleus, an oxazole nucleus, a selenazole nucleus, a 3,3 -dialkylindolenine nucleus, an imidazole nucleus, or a pyridine nucleus; R_3 and R_4 each represents an alkyl group; X_2 represents an anion; and m is 1 or 2, provided that m is 1 when the dye forms an inner salt; and

wherein the addition amount of the dye of Formula (I) is 5×10^{-4} to 3×10^{-3} tool per tool of silver halide and the addition amount of the dye of Formula (II) is 1×10^{-5} to 1×10^{-3} mol per mol of silver halide, provided that the addition amount of the dye of Formula (I) is more than that of the dye of Formula (II).

5,348,850

SILVER HALIDE PHOTOGRAPHIC MATERIAL AND METHOD OF PROCESSING THE SAME

Tetsuo Yoshida, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

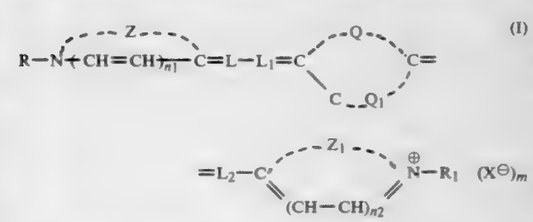
Filed Aug. 27, 1993, Ser. No. 112,342

Claims priority, application Japan, Aug. 27, 1992, 4-228745

Int. Cl.[5] G03C *1/12, 1/09*

U.S. Cl. 430—575 **16 Claims**

1. A silver halide photographic material which has on a support at least one layer of a light-sensitive silver halide emulsion comprising silver halide grains having a chloride content of at least 50 mole % and containing a metal selected from rhodium, ruthenium and rhenium in an amount of at least 10^{-8} mole per mole of silver, said silver halide emulsion being spectrally sensitized with a compound having a structure represented by the following general formula (I) and being chemically sensitized with a selenium or tellurium compound:



(I)

wherein Z and Z_1 each represents a group of nonmetallic atoms necessary to complete a 5- or 6-membered nitrogen-containing heterocyclic nucleus; R and R_1 each represents an unsubstituted or substituted alkyl group, or an unsubstituted aryl group; Q and Q_1 each represents a group of atoms necessary to complete a 4-thiazolidinone, 5-thiazolidinone or 4-imidazolidinone nucleus; L, L_1 and L_2 each represents an unsubstituted or substituted methine group; n_1 and n_2 each represents 0 or 1; X represents an anion; and m represents 0 or 1, wherein m=0 indicates that the dye forms an inner salt.

5,348,851

METHOD AND DEVICE FOR THE DETECTION OF VESSEL DILATATION COMPONENTS

Svante Ödman; Jan-Olof Karlsson, both of Linköping, and Krister Axelsson, deceased, late of Linköping, all of Sweden by Martin Axelsson, heir , assignors to Forsvarets Forskningsanstalt, Sundbyberg, Sweden

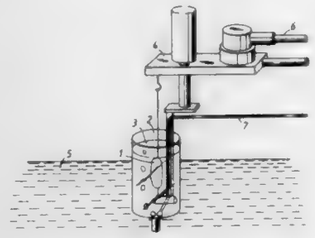
PCT No. PCT/SE90/00451, § 371 Date Feb. 21, 1992, § 102(e) Date Feb. 21, 1992, PCT Pub. No. WO90/15991, PCT Pub. Date Dec. 27, 1990

PCT Filed Jun. 21, 1990, Ser. No. 834,227

Claims priority, application Sweden, Jun. 22, 1989, 8902294

Int. Cl.[5] C12Q *1/00;* **G01N** *33/48, 31/00*

U.S. Cl. 435—4 **17 Claims**



1. A method for determining the activity of vessel dilatation components, said method comprising:

causing contraction of a blood vessel preparation by exposing it to an alpha-adrenoceptor agonist,

exposing the contracted blood vessel preparation to a vessel dilatation component, and

determining the relaxation effect on the blood vessel preparation caused by the exposure to the vessel dilatation component.

5,348,852

DIAGNOSTIC AND THERAPEUTIC COMPOSITIONS

Ruby P. Bonderman, Noblesville, Ind., assignor to Analytical Control Systems Inc., Fishers, Ind.

Continuation of Ser. No. 565,948, Aug. 10, 1990, abandoned. This application Apr. 27, 1992, Ser. No. 875,206

Int. Cl.[5] C12Q *1/32, 1/42, 1/48;* **C12N** *9/96*

U.S. Cl. 435—4 **12 Claims**

1. A liquid diagnostic control composition suitable for reproducibly monitoring the concentration of an enzyme in a biological fluid from a patient wherein said enzyme has a predetermined stability in said fluid, said diagnostic composition comprising between about 0.5 and about 10% on a per weight basis of gelatin from a cold water fish and an amount of said enzyme, said enzyme being of greater stability in said control than in said fluid and wherein said composition is substantially ungelled at a temperature of about 10° C.

5,348,853

METHOD FOR REDUCING NON-SPECIFIC PRIMING IN DNA AMPLIFICATION

Chang-Ning J. Wang, Chelmsford, and Kai-Wuan Wu, Lowell, both of Mass., assignors to Biotronics Corporation, Lowell, Mass.

Filed Dec. 16, 1991, Ser. No. 808,463

Int. Cl.[5] C12Q *1/68;* **C12P** *19/34*

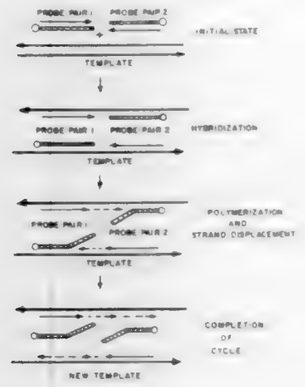
U.S. Cl. 435—6 **16 Claims**

1. In a method for a polymerase dependent extension reaction for synthesizing an extension product complementary to a target nucleic acid within a larger nucleic acid template comprising:

combining a pair of primers with said nucleic acid template; and performing said polymerase dependent extension reac-

tion under conditions sufficient to synthesize said extension product, the improvement comprising:

combining said pair of primers with the nucleic acid template in the presence of at least one energy sink oligonucleotide that is incapable of acting as a primer in an extension reaction, wherein each of said at least one energy sink oligonucleotides has sufficient complementarity to at least one of said primers and is present in sufficient concentration so as to competitively inhibit binding of said primer to a non-target nucleic acid via hybridization of said energy sink oligonucleotide to said primer.



5,348,854

METHOD FOR DETECTING PROKARYOTIC ORGANISMS

John A. Webster, Jr., 5 Kenmar Dr., Bldg. 5, Apt. 21, Billerica, Mass. 01821

Continuation of Ser. No. 695,223, Jan. 25, 1985, abandoned, Continuation-in-part of Ser. No. 305,498, Sep. 25, 1981, Pat. No. 4,717,653. This application Mar. 2, 1987, Ser. No. 21,551

Int. Cl.[5] C12Q *1/68*

U.S. Cl. 435—6 **20 Claims**

1. A method for detecting a prokaryotic organism, which comprises:

selectively hybridizing a ribosomal sequence-containing nucleic acid of a prokaryotic organism which is in the presence of or associated with a eukaryotic organism in a sample, with a detectably labeled prokaryotic rRNA information-containing hybridization probe; and

detecting said label on said probe.

5,348,855

ASSAY FOR NUCLEIC ACID SEQUENCES IN AN UNPURIFIED SAMPLE

Nanibhushan Dattagupta, West Haven; Peter M. M. Rae, Hamden; Daniel U. Rabin, Branford, and Edward D. Huguenel, Guilford, all of Conn., assignors to Miles Inc., Elkhart, Ind.

Continuation of Ser. No. 24,643, Mar. 19, 1987, abandoned, which is a continuation-in-part of Ser. No. 943,006, Dec. 19, 1986, abandoned, which is a continuation-in-part of Ser. No. 836,378, Mar. 5, 1986, abandoned. This application Oct. 4, 1991, Ser. No. 772,625

Int. Cl.[5] C12Q *1/68*

U.S. Cl. 435—6 **11 Claims**

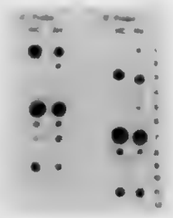
1. A method for detecting at least one polynucleotide sequence from a microorganism or eucaryotic source in a biological test sample, comprising the steps of:

(a) without prior centrifugation or filtration treating said biological test sample to lyse cells and to release nucleic acids therefrom,

(b) without purification or isolation of specific nucleic acid sequences, photochemically labeling released sample nucleic acids directly in the lysate produced in step (a),

(c) contacting the resulting labeled nucleic acids, under hybridization conditions, with at least one immobilized oligonucleotide or nucleic acid probe hybridizable with the sequence or sequence to be detected, thereby to form hybridized labeled nucleic acids, and

(d) assaying for the hybridized nucleic acids by detecting the label.



5,348,856

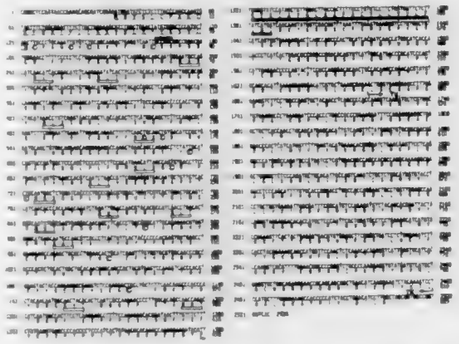
DNA ENCODING TRKC PROTEIN

Mariano Barbacid, Lawrenceville, and Fabienne Lamballe, Plainsboro, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 726,466, Jul. 8, 1991, abandoned. This application Jul. 7, 1992, Ser. No. 912,952

Int. Cl.[5] C07K *13/00;* **C12N** *15/12, 15/63*

U.S. Cl. 435—6 **18 Claims**



1. An isolated nucleic acid molecule coding for a trkC protein wherein said nucleic acid is selected from the group consisting of:

(a) a nucleic acid comprising a nucleic acid sequence coding for the amino acid sequence of FIGS 1B and 1C (SEQ. ID. NO.:2) and

(b) a nucleic acid capable of hybridizing to the complement of a nucleic acid according to (a) above under stringent conditions.

5,348,857

PROBES AND METHOD FOR IDENTIFYING SPECIES AND BIOVARS OF BRUCELLA

Thomas A. Ficht, and L. Garry Adams, both of College Station, Tex., assignors to Texas A & M University, College Station, Tex.

Continuation-in-part of Ser. No. 527,017, May 22, 1990. This application Nov. 6, 1992, Ser. No. 972,791

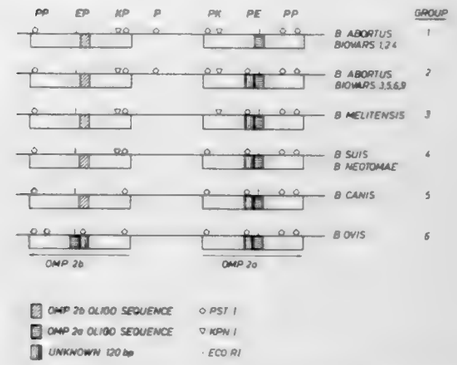
Int. Cl.[5] C12P *19/34*

U.S. Cl. 435—6 **13 Claims**

1. A method for identifying a species or biovar of Brucella comprising the steps of:

releasing DNA from a test sample;

amplifying a gene sequence of a Brucella omp2 gene locus as defined in FIGS. 2A–O from the released DNA, said gene sequence having sufficient diversity to distinguish species of Brucella;



analyzing the hybridization of the amplified gene sequence with a panel of DNA probes to identify a species or biovar of Brucella.

5,348,858

MONOCLONAL ANTIBODY SPECIFIC FOR HUMAN INTERLEUKIN-1β AND METHOD FOR DETECTION OF BIOLOGICALLY ACTIVE HUMAN INTERLEUKIN-1β

Setsuyoshi Uetsuki; Osamu Sato; Yasuo Nakayama, and Yoshikatsu Hirai, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 414,336, Sep. 29, 1989, abandoned. This application Jan. 6, 1992, Ser. No. 815,875

Claims priority, application Japan, Oct. 1, 1988, 63-248535

Int. Cl.[5] G01N *33/53;* **C12N** *5/20;* **C07K** *15/28;* **C12P** *21/08*

U.S. Cl. 435—7.1 **3 Claims**

1. Monoclonal antibody 1β GOM43-4 produced by hybridoma cell line FERM BP-2565.

3. An immunoassay method for detecting biologically active human interleukin-1β which comprises the steps of:

(a) contacting a sample suspected of containing human interleukin-1β with a monoclonal antibody as defined in claim 1 in order to form an immune complex; and

(b) determining the presence of said immune complex.

5,348,859

METHOD AND APPARATUS FOR OBTAINING AN ABSOLUTE WHITE BLOOD CELL SUBSET COUNT AND WHITE BLOOD CELL MULTIPART DIFFERENTIAL

Robert F. Brunhouse, Coral Gables; Constance M. Hajek, Miami Lakes; Thomas Russell, Miami, and Wallace H. Coulter, Miami Springs, all of Fla., assignors to Coulter Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 617,096, Nov. 23, 1990. This application May 20, 1991, Ser. No. 703,163

Int. Cl.[5] G01N *33/53, 33/48;* **G06M** *11/02*

U.S. Cl. 435—7.24 **20 Claims**

1. A method of optically screening and counting microscopic cells, comprising:

providing a complete whole blood sample with an anticoagulating agent or a portion thereof including a plurality of cells and including at least one WBC population;

combining at least a first portion of said cells with at least a first set of microspheres having at least a first reactant bound thereto specific to at least a first specific molecule which can exist on at least one type of cell to form a sample mixture, said first reactant being a CD4 specific molecule antibody specific to at least said first specific molecule which is a first cell antigen;

combining said first portion of said cells with at least a second set of microspheres having at least a second CD14 antibody bound thereto specific to at least a second specific antigen which can exist on at least one type of cell, said second set of microspheres having a different optical characteristic from said first set of microspheres;

deleting the RBC population from said sample prior to forming said sample mixture on a slide;

forming a specific volume of said sample mixture on a slide;



optically viewing at least some of said cells with a microscope to at least identify and count at least the presence of cells to which said first set of microspheres are bound including said cells to which said CD4 microspheres are bound and obtaining a CD4 absolute count and to at least identify the presence or absence of cells to which said second set of microspheres are bound; and

relating said cell count to said specific volume to obtain an absolute CD4 cell count.

5,348,860

SCREENING TEST AND KIT FOR CANCEROUS AND PRECANCEROUS CONDITIONS

Abulkalam M. Shamsuddin, 2916 Old Court Rd., Baltimore, Md. 21208

Continuation-in-part of Ser. No. 228,268, Aug. 4, 1988, abandoned, and a continuation-in-part of Ser. No. 449,269, Dec. 12, 1989, Pat. No. 5,162,202. This application Oct. 15, 1991, Ser. No. 776,786

Int. Cl.[5] C12Q *1/26, 1/54, 1/00*

U.S. Cl. 435—25 **25 Claims**

1. A screening method for rapidly testing a human being for a cancerous or precancerous condition and as part of the same testing eliminating the possibility of a false negative, whereby the individual can be immediately retested if a negative assay is due to procedural error, which comprises the steps of (a) obtaining a sample of rectal mucus from an individual; (b) assaying a portion of the sample for the presence therein of glycoprotein containing at least one carbohydrate selected from the group consisting of beta-D-Gal-(1->3)-D-GalNAc, Fuc-alpha-1->2 Gal-Beta(1->4)-Fuc-alpha-1->3-GlcNAc, Fuc-Alpha-1->2 Gal-beta-(1->4)-Fuc-alpha-1->3-GlcNAc-beta-(1->3)-Gal-beta-(1>4)-GlcNAc and Fuc-alpha-1->2-Gal-beta-(1->4)-Fuc-alpha-1->3-GlcNAc-beta-(1->3)-Gal-beta-(1->4)-Fuc-alpha-1->3-GlcNAc, by briefly subjecting the sample to oxidizing conditions which are capable of selectively oxidizing only the cyclic sugar moieties of any said marker carbohydrate present in the glycoprotein in the sample at a hydroxy group-bearing ring carbon atom thereof to form an aldehydic sugar moiety and then visualizing any aldehydic saccharide groups thus formed with a Schiff's base decolorized dye; (c) also assaying a portion of the sample for the presence therein of any glycoprotein by subjecting the sample to the oxidizing action of an oxidizing agent which oxidizes the saccharide moieties of any glycoprotein therein to aldehydic sugar moieties and then visualizing any thus-produced aldehydic sugar moieties, the presence of thereby formed aldehydic sugar moieties confirming the adequacy of the mucus sampling and the absence therein of thereby formed aldehyde sugar moieties establishing that the negative test results were due to mucus sampling error; and (d) either retesting the individual in the same manner with a fresh sample of rectal mucus, if the first

sample assays negative in steps (b) and (c), or examining another proteinaceous fluid associated with another organ of the individual in the same manner, if the rectal mucus sample tests positive and no abnormality of the rectum or colon is found.

5,348,861

DEVICE AND METHOD FOR THE DETECTION OF MICROORGANISMS WHICH PRODUCE LOW-MOLECULAR-WEIGHT METABOLITES

Hans Kulla, Visperterminen, Canton, Valais, Switzerland, assignor to Lonza Ltd., Basel, Switzerland

Filed Oct. 18, 1991, Ser. No. 781,023

Claims priority, application Switzerland, Oct. 23, 1990, 3391/90

Int. Cl.[5] **C12M** *1/34, 1/00;* **C12N** *11/00;* **C12Q** *1/02*

U.S. Cl. 435—35 | **8 Claims**

1. A method for detecting microorganisms which produce a low-molecular-weight metabolite having a molecular weight less than or equal to 500 from a substance capable of being metabolized by the microorganisms being detected comprising the steps of:

growing microorganisms on a support;

applying to the microorganisms grown on the support the substance in radioactively labeled form;

covering the support having the grown microorganisms and the labeled substance with a semipermeable medium, the semipermeable medium being permeable to the low molecular weight metabolite but not to the labeled substance;

positioning an adsorption medium adjacent the semipermeable medium so as to be exposed to the metabolite passing therethrough, the adsorption medium being able to effectively absorb the metabolite;

incubating in combination the support having the grown microorganisms and the labeled substance, the semipermeable medium, and the adsorption medium to produce from the labeled substance a detectable amount of radioactively labeled metabolite if the microorganisms which produce the metabolite are present on the support; and

analyzing the adsorption medium to detect the presence of the radioactively labeled metabolite.

5,348,862

METHOD FOR THE RAPID DETERMINATION OF THE MICROORGANISM CONTENT OF LIQUIDS AND FLUID SOLUTIONS, AND APPARATUS FOR IMPLEMENTING THIS METHOD

Edoardo Pasero, Genoa; Carlo Rossetti, and Franco Aiolfi, both of Milan, all of Italy, assignors to Biosensori S.p.A., Italy

Filed Sep. 21, 1992, Ser. No. 947,477

Claims priority, application Italy, Nov. 20, 1991, 91 A 000150

Int. Cl.[5] **C12Q** *1/06;* **G01N** *21/00*

U.S. Cl. 435—39 | **8 Claims**

1. Method for measuring the bacterial content of liquids using amperometric means in a bioelectrochemical cell comprising initially oxidizing an electron transfer mediator in the cell, then bringing the mediator into contact with a filter containing the bacteria of a liquid sample, to produce a first response at the electrodes, and finally bringing the mediator into contact again with the filter after the bacteria present have been killed by chemical means to produce a second response due to interfering substances, which is subtracted from the first response to produce data representative of the bacterial content of the sample.

5,348,863

PROCESS FOR THE ENZYMATIC PREPARATION OF BASIC FIBROBLAST GROWTH FACTOR

Pierre Monsan, Mondonville; Francois Paul; Didier Betbeder, both of Toulouse, all of France, and Paolo Sarmientos, Milan, Italy, assignors to Farmitalia Carlo Erba S.R.L., Milan, Italy

PCT No. PCT/EP91/01428, § 371 Date Apr. 2, 1992, § 102(e) Date Apr. 2, 1992, PCT Pub. No. WO92/02539, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 30, 1991, Ser. No. 842,177

Claims priority, application United Kingdom, Aug. 2, 1990, 9017008

Int. Cl.[5] **C12P** *21/00;* **A61K** *37/36;* **C07K** *3/10, 13/00*

U.S. Cl. 435—68.1 | **15 Claims**

1. A process for the preparation of a basic fibroblast growth factor (bFGF) having the formula H_2N-Pro-Y-COOH, wherein Y is the amino acid sequence of (11–155)bFGF as recited in SEQ ID NO:1, comprising:

(i) forming an adduct between heparin or heparan sulphate and a bFGF having the formula H_2N-$(AA)_x$-Leu-Pro-Y-COOH, wherein $(AA)_x$ is a sequence selected from the group consisting of SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, Ile-Thr-Thr, Thr-Thr or Thr;

(ii) treating the adduct with pepsin A or cathepsin D; and

(iii) releasing said bFGF of the formula H_2N-Pro-Y-COOH from the adduct and recovering said bFGF of the formula H_2N-Pro-Y-COOH.

5,348,864

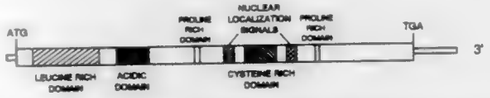
MOUSE VAV PROTO-ONCOGENE DNA AND PROTEIN SEQUENCES

Mariano Barbacid, Lawrenceville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jan. 25, 1991, Ser. No. 646,537

Int. Cl.[5] **C12P** *21/06;* **C12N** *5/00, 15/70;* **C07K** *13/00*

U.S. Cl. 435—69.1 | **11 Claims**



1. An isolated nucleic acid molecule consisting of nucleic acid sequence coding for a mouse vav proto-oncogene protein having the sequence of SEQ ID NO: 2.

5,348,865

GENOME CODING PHYTOLACCA ANTIVIRAL PROTEIN AND A RECOMBINANT EXPRESSION VECTOR THEREFOR

Young-Ho Moon, Kyunggi-Do; Hong-Seob Jeon, Seoul; Kyu-Whan Choi, Seoul; Kwan-Ho Lee, Seoul, and Man-Keun Kim, Seoul, all of Rep. of Korea, assignors to Jinro Limited, Seocho-ku, Rep. of Korea

Filed Oct. 15, 1993, Ser. No. 138,636

Claims priority, application Rep. of Korea, Aug. 28, 1993, 93-16938

Int. Cl.[5] **C12N** *15/55, 15/29, 15/70, 1/21*

U.S. Cl. 435—69.1 | **5 Claims**

1. A nucleotide sequence coding *Phytolacca insularis* antiviral protein isolated from *Phytolacca insularis* Nakai SEQ ID No. 1 presented as:

ATG AAG TTG ATG CTT GTG GTG ACA ATA TCA GTA

TGG CTC ATT CTT GCA

CCA ACA TCT ACT TGG GCC GTG AAT ACC ATC ATC

TAC CAT GTT GGA AGT

-continued

ACC ACC ATT AGA AAC TAT GCA ACT TTT GGA TAC

TTC GTA CTG AAG GCG

AAG ATC CAA GTT ATG TGC TAT GGA ATA CCA ATG

CTG CCC AAT ATT GGA

TCA AAT CCA AAA TAC ATA TTG GTT GAG CTC CAA

GGT TCA AAT GAA GAA

GGC ATC ACA CTA ATG CTA AGA CGA AAC AAT TTA

TAT GTG ATG GGC TAT

TCT GAT CCC TAC AAC AAT AGG TGT CGT TTC CAT

CTC TTT AAG GCT ATC

TCA GGT ACT GAA CGC GAA GAT GTA GAG ACT ACT

CTT TGC CCA AAT GCC

GAT TCT CGT GTT GGT AAA AAC ATA AAC TAT GAT

AGT CGA TAT CCA ACA

TTC GAA TCA AAA GCA GGA GTA AAT TCA AGA AGT

CGA GTC CAA CTG GGA

ATT CGA ATA CTC GAC AGT GGC ATT GGA AGG ATT

TCT GGA GTG ACG TCA

TTC ACT GAG AGA ACC GAA GCT GAA TTC CTA CTG

GTA GCC ATA CAA ATG

GTA TCA GAG GCA GCA AGA TTC AAG TAC ATA GAG

GAT CAA GTG AAA ACT

AAT TTT AAC AGA CCA TTC AAC CCT AAT CCC AAA

GTA CTT ATA TTG CAG

GAG ACA TGG GGT AAG ATT TCT TCA GCA ATT CAT

GGT GCC AGG AAT GGA

GTT TTA CCC AAT CCT CTA CAG CTA GTG CAT GCC

AAT GGT GCA AAT TGG

ATA GTG TTG AGA GTG GAT GAA ATC AAG CCT GAT

GTG TCA CTC TTA AAC

TAC GTT ATT GGG AGC TGC CAG AGA ACT TAT AAC

CAA AAT GCC ATG TTT

TCT CAA CTT ATA ATG TCT ACT TAT TAT AAT TAC

ATG GCT AAT CTT GGT

GAT TAG.

5,348,866

GENES ENCODING PORCINE ZONA PELLUCIDA PROTEIN PZP-4, EXPRESSION THEREOF AND CONTRACEPTIVE VACCINES COMPRISING EXPRESSED (POLY) PEPTIDES

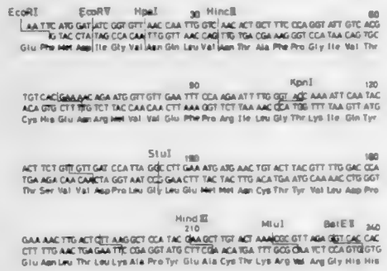
Shinzo Isojima, 9-12 Kendani-cho, Nishinomiya-shi, Hyogo-ken; Akiko Akatani, Nishyinomiya; Yuichi Okazaki, Chiba, and Masanobu Sugimoto, Shiki, all of Japan, assignors to Shinzo Isojima, Nishinomiya and Tonen Corporation, Chiyoda, both of Japan

Filed Mar. 20, 1992, Ser. No. 855,411

Claims priority, application Japan, Jan. 10, 1992, 4-21818

Int. Cl.[5] **A61K** *37/00, 39/00;* **C12N** *15/12*

U.S. Cl. 435—673 | **10 Claims**



1. DNA encoding PZP-4α having SEQ ID NO: 3.

5,348,867

EXPRESSION OF PROTEINS ON BACTERIAL SURFACE

George Georgiou, 11501 Juniper Ridge Dr., Austin, Tex. 78759; Joseph A. Francisco, and Charles F. Earhart, both of Austin, Tex., assignors to George Georgiou, Austin, Tex.

Filed Nov. 15, 1991, Ser. No. 794,731

Int. Cl.[5] **C12P** *21/06, 21/04;* **C12N** *15/00, 1/20*

U.S. Cl. 435—69.7 | **19 Claims**

1. A recombinant DNA for expressing a polypeptide stably anchored on the external surface of the outer membrane of *E. coli* or Salmonella comprising:

(A) A Salmonella or *E. coli* lipoprotein 5′ gene segment which encodes at least the signal peptide and at least the first three amino acids of the mature protein;

(B) A DNA segment encoding a transmembrane outer membrane protein selected from the group consisting of OmpA, OmpC, OmpF and OmpT of *E. coli* or Salmonella; and

(C) A DNA segment encoding a desired soluble heterologous or homologous polypeptide not normally found in the outer membrane of gram negative bacteria wherein DNA (A) is linked 5′ to DNA (B) and DNA (B) is linked 5′ to DNA (C), all operatively linked with a promoter sequence to express and anchor the desired polypeptide on the external bacterial surface.

2. A recombinant DNA vector comprising:

An *E. coli* or Salmonella lipoprotein 5′ gene segment which encodes the signal peptide and at least the first three amino acids of the mature protein;

A DNA segment encoding a transmembrane outer membrane protein selected from the group consisting of OmpA, OmpT, OmpF and OmpC of *E. coli* or Salmonella; and

A polylinker DNA segment into which a DNA encoding soluble heterologous or homologous polypeptide not normally found in the outer membrane of gram-negative bacteria may be inserted, all being operatively linked 5′ to 3′ with a promoter sequence to express and stably anchor the polypeptide to the external bacterial surface.

5,348,868

METHODS AND REAGENTS FOR CLEAVING AND DEPROTECTING OLIGONUCLEOTIDES

Parameswara M. Reddy, Brea, and Naeem B. Hanna, Fullerton, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 24, 1992, Ser. No. 873,915
Int. Cl.[5] C12P *19/34;* **C07H** *19/10, 19/06, 19/00*
U.S. Cl. 435—91.1 **14 Claims**

1. A method for cleaving a support-bound oligonucleotide and/or removing at least one protecting group from a protected oligonucleotide, the method comprising the steps of:

a) introducing an oligonucleotide selected from the group consisting of

i) at least one insoluble, protected oligonucleotide;

ii) at least one soluble, protected oligonucleotide; and

iii) at least one insoluble oligonucleotide,

to a reagent to form a mixture, said reagent comprising methylamine; and

b) incubating said mixture for a sufficient time period at a sufficient temperature to obtain at least one biologically useful oligonucleotide.

5,348,869

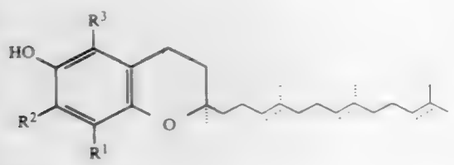
PROCESS FOR PRODUCING TOCOPHEROLS WITH SPHEROPLASTS OF ALGAE

Achim Stocker, Zurich, and Wolf D. Woggon, Benglen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 466,360, Mar. 21, 1990, abandoned. This application Jul. 1, 1992, Ser. No. 908,762
Claims priority, application European Pat. Off., Aug. 2, 1988, 810529.3
Int. Cl.[5] C12P *17/06;* **C12N** *1/12*
U.S. Cl. 435—125 **7 Claims**

1. A process for producing a compound of formula:

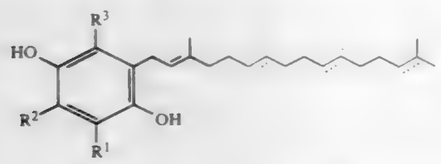
A



wherein R^1 is methyl and R^2 and R^3 are hydrogen; R^1 and R^2 are methyl and R^3 is hydrogen; R^1 and R^3 are methyl and R^2 is hydrogen; or R^1, R^2 and R^3 are all hydrogen or all methyl, and --- indicates a single or a double bond, with the proviso that all ---- within the compound must be the same, which process comprises:

(a) reacting a compound of formula

B



wherein R^1, R^2, R^3 and ---- are respectively the same as in the compound of formula A, with β-cyclodextrin or 2,6-di-O-methyl-β-cyclodextrin to form a complex;

(b) treating the complex, in an effective amount of a reducing agent, with (i) spheroplasts of *Anabaena variabilis* SAG 1403-4b or *Chlorogloeopsis* SAG 1411-1, or (ii) spheroplasts of *Anabaena variabilis* SAG 1403-4b or *Chlorogloeopsis* SAG 1411-1 solubilized in a non-ionic detergent; and

(c) recovering the compeund of formula A.

5,348,870

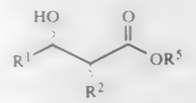
OPTICALLY ACTIVE COMPOUNDS HAVING PLURAL CHIRAL CENTERS AND PRODUCTION THEREOF

Kazutoshi Miyazawa, and Naoyuki Yoshida, both of Ichihara, Japan, assignors to Chisso Corporation, Osaka, Japan

Division of Ser. No. 612,146, Nov. 13, 1990, abandoned. This application Mar. 23, 1993, Ser. No. 35,889
Claims priority, application Japan, Nov. 14, 1989, 1-295816
Int. Cl.[5] C12P *17/06*
U.S. Cl. 435—125 **6 Claims**

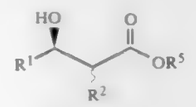
1. A process for producing an optically active compound having plural chiral centers which comprises causing an ester to act on a 2-substituted-3-hydroxy-carboxylic acid ester as a racemate of the general formula (8)

(8)

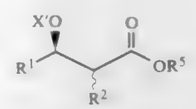


in the presence of a hydrolase under substantially anhydrous conditions to effect transesterification and resolving into a compound of formula (6-1) and a compound of formula (7-2), or a compound of formula (6-2) and a compound of formula (7-1),

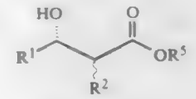
(6-1)



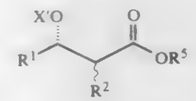
(6-2)



(7-1)

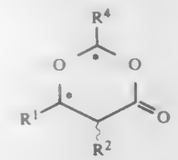


(7-2)



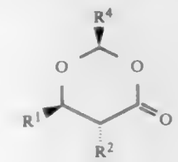
and subjecting said compounds to alcoholysis, or hydrolysis and then dehydration, to produce an optically active 2,6-cis-2,5,6-substituted-1,3-dioxan-4-one of the general formula (9),

(9)



followed by recrystallization to produce the following 2,5,6-substituted-1,3-dioxan-4-one compound having absolute configuration,

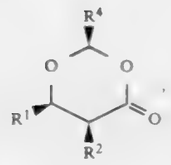
(12)



-continued

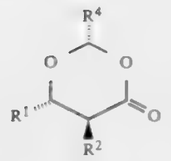
and

(14)



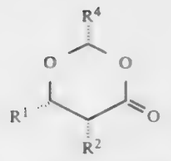
or

(13)



and

(15)



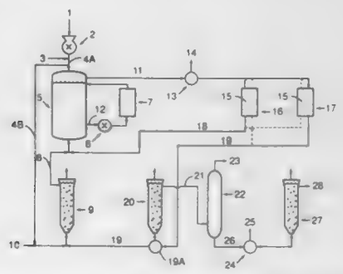
where formula 9 represents a mixture of compounds of formula 12 and formula 14, or a mixture of compounds of formula 13 and formula 15; R^1, $R^2$and R^4 are independently selected from the group consisting of alkyl, alkenyl, and alkynyl, having 1–40 carbon atoms, the carbon chain may contain at least one member selected from the group consisting of halogen, cyano, oxygen, nitrogen, silicon, sulfur, benzene ring, cyclohexane ring, pyridine ring, pyrimidine ring, pyridazine ring, pyrazine ring, dioxane ring, bicyclooctane ring, and the rings with at least one substituent; R^5 is selected from the group consisting of alkyl, alkenyl and alkynyl, having 1–40 carbon atoms, X′ is alkanoyl having 2–40 carbon atoms, and the carbon atoms with a sign, *, is an asymmetric carbon.

5,348,871

PROCESS FOR CONVERTING CELLULOSIC MATERIALS INTO FUELS AND CHEMICALS

Charles D. Scott, Oak Ridge; Brendlyn D. Faison; Brian H. Davison, both of Knoxville, and Jonathan Woodward, Oak Ridge, all of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed May 15, 1992, Ser. No. 884,506
Int. Cl.[5] C12S *1/00;* **C12P** *7/10, 7/06;* **C12N** *9/42*
U.S. Cl. 435—165 **9 Claims**



1. A process for converting cellulosic material into glucose and ethanol comprising the steps of:

shredding a cellulosic material to increase the surface area of the cellulosic material;

mixing the shredded cellulosic material with a sufficient amount of water to form a slurry;

introducing the slurry into a first reaction vessel;

introducing cellulase into the first reaction vessel under conditions suitable to cause a hydrolysis reaction of the cellulose, the hydrolysis reaction forming glucose and cellobiose from the cellulose;

circulating the slurry from the first reaction vessel through an attritor and then through a cellobiase reactor and back to the first reaction vessel, the attritor comprising a centrifugal pump, the attritor being in fluid communication with the first reaction vessel, the cellobiase reactor comprising a fixed bed of immobilized cellobiase, the cellobiase reactor being in fluid communication with the attritor and the first reaction vessel, the attritor providing increased surface area to the cellulosic material, the cellobiase reactor providing continuous removal of cellobiose from the first reaction vessel;

recovering from the first reaction vessel a first hydrolysis product stream, the first hydrolysis product stream containing glucose, cellulase and particulate matter;

filtering the first hydrolysis product stream to remove particulate matter and to form a second hydrolysis product stream, the second hydrolysis product stream containing cellulase and glucose;

contacting a first sorbent with the second hydrolysis product stream at a basic pH to sorb the cellulase to form a cellulase-sorbent complex;

contacting the cellulase-sorbent complex with a solution having an acidic pH to separate the cellulase from the cellulase-sorbent complex;

returning the cellulase to the first reaction vessel;

fermenting the glucose of the second hydrolysis product stream to ethanol by action of a biocatalyst in a biparticle fluidized-bed bioreactor, the biparticle fluidized-bed bioreactor containing the biocatalyst and a second sorbent, the biocatalyst being *Zymomonas mobilis,* the ethanol being sorbed by the second sorbent to form an ethanol-sorbent complex; and

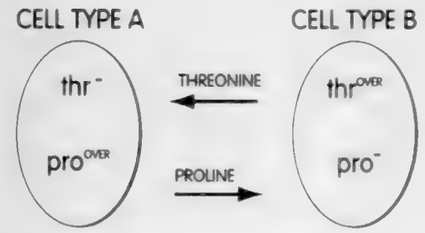
desorbing the ethanol from the ethanol-sorbent complex.

5,348,872

METHOD FOR ISOLATING MUTANT CELLS

Edmund Lin, Boston, and Bryan L. Ray, Burlington, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Continuation-in-part of Ser. No. 856,876, Mar. 24, 1992, abandoned, which is a continuation of Ser. No. 541,895, Jun. 21, 1990, abandoned. This application Dec. 16, 1992, Ser. No. 991,115
Int. Cl.[5] C12N *15/00, 5/00, 1/12, 1/14*
U.S. Cl. 435—172.1 **15 Claims**



1. A method for isolating a mutant cell that secretes a desired compound at a level greater than that secreted by a starter cell from which said mutant cell is derived, said method comprising the steps of:

(a) providing a starter cell selected from the group consisting of bacterial, fungi, and animal cells, which:

(i) is an auxotroph that has a requirement for a metabolite for survival or division of the starter cell in a solid growth medium, the metabolite being selected from the group consisting of nutrients, amino acids, growth factors, cofactors, interleukins, vitamins, and carbohydrates, the metabolite being other than the desired compound;

(ii) mutating to lack the requirement at a frequency of less than 10^{-10} per cell division;

(iii) has a rate of mutation at least 10^{-6} per nucleotide base per cell division, the rate resulting from the presence of a mutator gene or mutation resulting from mutagenesis in the DNA of the starter cell; and

(iv) secretes the desired compound into the solid growth medium;

(b) providing a feeder cell selected from the group consisting of bacterial, fungi, and animal cells, which:

(i) is an auxotroph that requires the desired compound for its survival or division in the solid growth medium, the desired compound being selected from the group consisting of nutrients, amino acids, growth factors, interleukins, cofactors, vitamins, and carbohydrates, the desired compound being other than the metabolite; and

(ii) secretes the metabolite into solid growth medium;

(c) contacting a plurality of the feeder cells and the starter cells together in or on the surface of the solid growth medium to allow the starter cells to produce the desired compound and the feeder cells to produce the metabolite; and

(d) culturing the feeder and starter cells to grow, divide, produce a plurality of primary colonies,

wherein the primary colonies which are the largest include at least one of the mutant cells.

5,348,873

IMMOBILIZATION OF AN ANTI-THROMBOGENIC SUBSTANCE WITH A PHOTO-REACTIVE AZIDE AND A PHOTO-CROSSLINKING MATERIAL

Takehisa Matsuda; Yasuhide Nakayama, both of Minou, and Takashi Sugawara, Ikeda, all of Japan, assignors to K.K. Vayu, Japan

Filed Oct. 19, 1992, Ser. No. 963,089

Claims priority, application Japan, Nov. 1, 1991, 3-288062

Int. Cl.[5] C12N *11/04, 11/06, 11/08;* **A61F** *13/00*

U.S. Cl. 435—182 **19 Claims**

1. A method for immobilizing an anti-thrombogenic substance comprising the steps of:

coating a surface of a base with a bonding layer comprising a photo-reactive azide derivative macromolecular material which provides covalent bonding when exposed to light;

applying an aqueous solution onto the bonding layer coated base to coat the bonding layer with a macromolecular layer, the aqueous solution including a water-soluble photo-crosslinking macromolecular material and the anti-thrombogenic substance; and

irradiating the base with both the bonding layer and the macromolecular layer formed thereon with light to fix chemically the macromolecular layer on the base via the bonding layer, the water-soluble photo-crosslinking macromolecular material becoming insoluble and maintaining a gel-condition thereof after being crosslinked by said irradiation;

wherein the anti-thrombogenic substance is retained in the macromolecular layer.

5,348,874

EUKARYOTIC TRANSPOSABLE ELEMENT

Charalambos Savakis, Heraklion, Greece; Gerald H. Franz, Baden, Austria, and Athanasios Loukeris, Athens, Greece, assignors to Institute for Molecular Biology and Biotechnology/FORTH, Heraklion, Greece

Filed Sep. 14, 1992, Ser. No. 946,237

Int. Cl.[5] C12N *9/16, 5/00;* **C07H** *19/00, 17/00*

U.S. Cl. 435—196 **12 Claims**

1. An isolated transposable element having a DNA sequence which hybridizes to the DNA sequence of SEQ ID NO:1 in a buffered solution of 0.9 M NaCl, at a temperature of 55° C.

5,348,875

PRODUCTION OF ALGINASE FROM *ENTEROBACTER CLOACAE* M-1 (FERM BP-2577)

Katsumi Murata, Tokyo; Kazuo Murakami, Ibaraki; Isao Kusakabe, Chiba, and Toshihide Satoh, Ibaraki, all of Japan, assignors to Kabushikikaisha Kibun Shokuhin and Kabushikikaisha Kibun Foodchemifa, both of Tokyo, Japan

Division of Ser. No. 860,601, Mar. 30, 1992, abandoned, which is a division of Ser. No. 445,296, Dec. 4, 1989, abandoned. This application Oct. 6, 1993, Ser. No. 132,223

Claims priority, application Japan, Sep. 7, 1989, 1-230511

Int. Cl.[5] C12N *9/24, 1/12, 1/00*

U.S. Cl. 435—200 **1 Claim**

1. A method for producing alginase which comprises culturing *Enterobacter cloacae* M-1, FERM BP-2577 in a medium for twelve hours, obtaining the supernatant by removing the cells by centrifugation and then purifying the supernatant, thereby obtaining alginase.

5,348,876

IGG3 ANTIBODIES WITH SHORTENED HINGE REGION AND A COMPLEMENT ACTIVATION TEST

Terje Michaelsen, Hagan, and Inger Sandlie, Oslo, both of Norway, assignors to Dynal AS, Oslo, Norway

PCT No. PCT/EP90/01172, § 371 Date Mar. 12, 1992, § 102(e) Date Mar. 12, 1992, PCT Pub. No. WO91/01335, PCT Pub. Date Feb. 7, 1991

PCT Filed Jul. 17, 1990, Ser. No. 838,264

Claims priority, application United Kingdom, Jul. 18, 1989, 8916400.8

Int. Cl.[5] C12N *5/10, 15/13;* **C12P** *21/08;* **C07K** *15/28*

U.S. Cl. 435—240.2 **14 Claims**

1. A modified IgG3 antibody containing a human IgG3 constant region, wherein a hinge region of said modified IgG3 antibody contains a deletion of the 17 amino acid sequence of exon 1.

6. A recombinant DNA molecule encoding modified IgG3 as claimed in claim 1.

8. A mammalian cell line transfected with a recombinant DNA molecule as claimed in claim 6.

5,348,877

METHOD OF ADAPTING ANCHORAGE-DEPENDENT CELL LINES TO SUSPENSION CONDITIONS

Kevin A. McKenna, Spencer, and Robert R. Granados, Ithaca, both of N.Y., assignors to Boyce Thompson Institute for Plant Research, Inc., Ithaca, N.Y.

Filed Mar. 12, 1993, Ser. No. 29,274

Int. Cl.[5] C12N *5/00, 5/02*

U.S. Cl. 435—240.21 **14 Claims**

1. The method of establishing a suspended cell line from an anchorage-dependent insect cell line comprising the steps of:

a) providing a culture of normally anchorage-dependent cells in a culture medium,

b) adding heparin to the culture medium of said anchorage dependent cell line,

c) selecting the cells which are in suspension after the addition of heparin,

d) subculturing the cells which were selected in step c) to a fresh culture medium containing heparin,

e) repeating steps c) and d) until a suspended cell line is established.

5,348,878

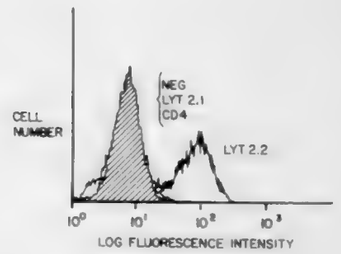
CLASS I MHC-RESTRICTED T-T HYBRIDOMAS, AND A CD8-TRANSFECTED BW5147, FUSION PARTNER THEREFOR

Kenneth L. Rock, Chestnut Hill, Mass., assignor to Dana-Farber Cancer Institute, Boston, Mass.

Continuation-in-part of Ser. No. 521,838, May 10, 1990, abandoned. This application Dec. 24, 1991, Ser. No. 814,069

Int. Cl.[5] C12N *5/16*

U.S. Cl. 435—240.26 **14 Claims**



1. An alloreactive, lymphokine-producing, MHC class 1-restricted T-T hybrid comprising the fusion product of:

(1) BW5147 cells transformed or transfected with a CD8 gene, said cell expressing the CD8 gene product, and

(2) alloreative T lymphocytes,

wherein the T-T hybrid expresses the CD8 gene product and exhibits the ability to produce lymphokines in response to antigenic stimulation with target cells bearing allogeneic class I molecules shared by lymphocytes against which the alloreactive lymphocytes were developed but not in response to antigenic stimulation with allogeneic cells bearing only class H molecules.

5,348,879

CELL STRETCHING METHOD

Alan R. Shapiro, Sharon; Martha L. Gray, Cambridge; Luis A. Melendez, Norwood; Jonathan L. Schaffer, Newton, all of Mass.; Wright John D., Sandown, N.H., and Jose G. Venegas, Swampscott, Mass., assignors to The General Hospital Corporation, Cambridge and Massachusetts Institute of Technology, Boston, both of Mass.

Division of Ser. No. 572,683, Aug. 24, 1990, Pat. No. 5,217,899. This application Feb. 19, 1993, Ser. No. 20,267

Int. Cl.[5] C12N *5/06;* **C12Q** *1/02*

U.S. Cl. 435—240.241 **3 Claims**

1. A method of imparting biaxial strain to a culture of living cells, comprising the steps of:

providing one or more biocompatible membranes, each being secured about its entire periphery to provide each membrane with exposed upper and lower membrane surfaces;

disposing a cell culture having living cells upon the upper, exposed surface of each membrane;

providing an applicator means for applying a stretching force to the upper, exposed surface of each membrane, said applicator means having a membrane facing surface with a diameter slightly less than that of said exposed, lower membrane surface and having an irregular membrane-contacting surface such that raised areas of the membrane-contacting surface of the applicator means exclusively contact said exposed, lower membrane surface; and

cyclically raising and lowering said applicator means, in a predetermined cycle, to apply a biaxial strain to each membrane and to the cells within the cell culture mounted thereon, the biaxial strain being applied in a uniform or selectively non-uniform profile.

5,348,880

TUMOR ASSOCIATED MONOCLONAL ANTIBODY 81AV/78

Michael G. Hanna, Jr., Frederick; Martin V. Haspel, Silver Spring, both of Md., and Herbert C. Hoover, Jr., Hingham, Mass., assignors to Akzo N.V., Arnhem, Netherlands

Continuation of Ser. No. 701,281, May 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 636,179, Dec. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 302,155, Jan. 25, 1989, Pat. No. 5,106,738, which is a continuation-in-part of Ser. No. 697,078, Jan. 31, 1985, Pat. No. 4,828,991, which is a continuation-in-part of Ser. No. 575,533, Jan. 31, 1984, abandoned. This application Jul. 20, 1993, Ser. No. 94,589

The portion of the term of this patent subsequent to May 9, 2006, has been disclaimed.

Int. Cl.[5] C12N *5/22;* **C07K** *15/28*

U.S. Cl. 435—240.27 **2 Claims**

1. Transformed human B-cell line 81AV78, having ATCC accession number CRL 10750.

5,348,881

MULTIPLE BACTERIOCIN PRODUCING LACTOCOCCUS AND COMPOSITIONS

Ebenezer R. Vedamuthu; James T. Henderson, both of Bradenton, and Peter A. Vandenbergh, Sarasota, all of Fla., assignors to Quest International Flavors & Good Ingredients Company, division of Indopco, Inc., Bridgewater, N.J.

Continuation-in-part of Ser. No. 840,503, Feb. 24, 1992, which is a continuation-in-part of Ser. No. 492,969, Mar. 13, 1990, abandoned, and Ser. No. 721,774, Jul. 1, 1991, Pat. No. 5,173,297. This application May 8, 1992, Ser. No. 880,003

Int. Cl.[5] C12N *1/12*

U.S. Cl. 435—252.1 **2 Claims**

1. A bacterial composition which comprises:

(a) cells of a *Lactococcus lactis* NRRL-B-18535 and cells of *Lactococcus lactis* NRRL-B-18809 in amounts together which are sufficient to inhibit growth of *Lactococcus casei* NRRL-B-15972 in a food.

5,348,882

METHOD OF PRODUCING ENANTIOMERICALLY PURE, OPEN-CHAIN N-ALKYL-L OR D-AMINO ACIDS USING COMAMONAS TESTOSTERONI

Ulrich Groeger, Aschaffenburg, and Karlheinz Drauz, Freigericht, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Fed. Rep. of Germany

Filed May 20, 1992, Ser. No. 885,878

Claims priority, application Fed. Rep. of Germany, May 24, 1991, 4116980

Int. Cl.[5] C12P *41/00;* **C12N** *9/80*

U.S. Cl. 435—280 **3 Claims**

1. A method of separating enantiomers of N-acyl-N-alkyl-amino acids comprising:

subjecting an enantiomeric mixture of open-chain N-acyl-N-alkyl amino acids to the action of a stereospecific N-acyl-L-proline acylase derived from *Comamonas testosteroni* and

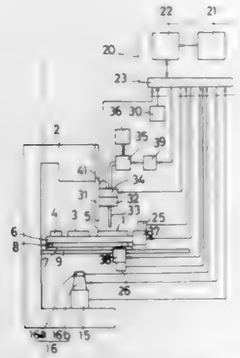
separating the enantiomerically enriched, open-chain N-alkyl-L-amino acid obtained or the remaining enantiomerically enriched N-acyl-N-alkyl-D-amino acid.

5,348,883

SELECTING DEVICE FOR CELLS AND THE LIKE

Yoshiyuki Togawa, Osaka, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Oct. 29, 1992, Ser. No. 968,530
Claims priority, application Japan, Oct. 30, 1991, 3-313955
Int. Cl.[5] C12M *1/34, 1/26*
U.S. Cl. 435—291 5 Claims



1. A device for selecting cells, microorganisms, or gel beads comprising: a support member capable of arranging cells, microorganisms, or gel beads thereon;

means for detecting a specified optical property of cells, microorganisms, or gel beads on said support member and identifying the position of cells microorganisms or gel beads possessing such optical property by means of two-dimensional coordinates relative to the support member;

a memory device for storing the two-dimensional coordinates of the cells, microorganisms, or gel beads to be selected;

an adhesive in a container;

a capillary pickup member;

a driving means for moving a bottom end of the capillary pickup member into contact with said adhesive, and further capable of moving said capillary pickup member three-dimensionally relative to the support member;

a control device for controlling the driving means in accordance with said stored coordinates so that the adhesive on the bottom end of the capillary pickup member picks up the cells, microorganisms, or gel beads having the specified optical property; and

said capillary pickup member is connected to a pressurized gas source such that gas is blown through the capillary pickup member to release the cells, microorganisms., or gel beads adhering to the bottom end of the capillary pickup member.

5,348,884

DEVICE AND METHOD FOR THE DETECTION OF MICROORGANISMS WHICH PRODUCE LOW-MOLECULAR-WEIGHT METABOLITES

Hans Kulla, Visperterminen, Switzerland, assignor to Lonza Ltd., Basel, Switzerland

Division of Ser. No. 781,023, Oct. 18, 1991. This application Aug. 4, 1993, Ser. No. 101,931
Claims priority, application Switzerland, Oct. 23, 1990, 3391/90
Int. Cl.[5] C12M *1/34, 1/00;* C12N *11/00;* C12Q *1/02*
U.S. Cl. 435—291 7 Claims

1. A device for the detection of microorganisms which produce a low-molecular-weight metabolite comprising:

a semipermeable medium having a pore size in the range from 0.01 to 2 micrometers which is permeable to the low-molecular weight metabolite;

a support for growing microorganisms thereon and for holding a radioactively labeled substance from which the metabolite can be produced by the microorganisms being detected, the support being positioned at a first side of the semipermeable medium; and

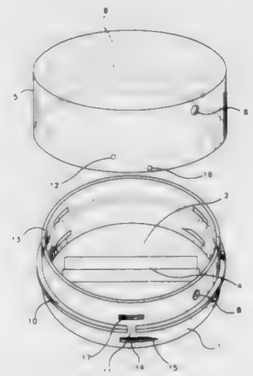
an adsorption medium positioned at a second side of the semipermeable medium opposite to the first side, the adsorption medium being able to effectively adsorb the metabolite and being transferable for analysis to detect the presence of radioactively labeled metabolite.

5,348,885

CULTURE DISH

Jean-Christophe Labarthe, 1, rue Godard, 72000 Le Mans, France

Filed Jan. 19, 1993, Ser. No. 6,031
Claims priority, application France, Jan. 30, 1992, 92 01013
Int. Cl.[5] C12M *1/28, 1/22, 1/16*
U.S. Cl. 435—294 7 Claims



1. A culture dish, comprising

an axisymmetric receptacle having an axis, an external lateral face, an upper rim and a bottom on which is disposed a layer of culture medium,

a movable lid covering the receptacle and having an upper part, an internal lateral face, and an internal face from which projects a spreader,

means to transfer the lid from a depositing position to a spreading position and to an opening position,

said means including a peripheral rib on the external lateral face of the receptacle and interrupted by at least two notches angularly distributed in a regular manner and, associated respectively with each notch, a lowering stud emerging from the internal lateral face of the lid, at a distance from the upper part of the lid which is greater than the distance between the upper rim of the receptacle and the rib, said rib, notches and lowering studs being arranged to transfer the lid from the depositing position in which the spreader is spaced from the layer to a spreading position in which the spreader touches the layer in a manner such that the transfer requires at least a first movement and a second movement, in different directions, with respect to the receptacle, to be imparted to the lid,

said means also including, associated respectively with each notch, a raising stud emerging from the internal lateral face of the lid, said raising stud being further away than the lowering stud associated with the same notch from the upper part of the lid by a distance at least equal to the dimension, along the axis of the receptacle, of the rib, said rib, notches and raising studs being arranged to transfer said lid from the depositing position to the opening position in which the lid can be removed in a manner such that the transfer requires at least a first movement and a second movement, in different directions, with respect to the receptacle, to be imparted to the lid.

5,348,886

METHOD OF PRODUCING RECOMBINANT EUKARYOTIC VIRUSES IN BACTERIA

Stephen C. Lee, St. Louis; Mark S. Leusch, Manchester; Verne A. Luckow, Chesterfield, and Peter O. Olins, Glencoe, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 4, 1992, Ser. No. 941,363
Int. Cl.[5] C12N *15/00, 15/86, 15/11*
U.S. Cl. 435—320.1 42 Claims

1. a Bacmid, comprising;

a. a nuclear polyhedrosis virus DNA which includes the elements required for said nuclear polyhedrosis virus DNA propagation in insect cells;

b. a low copy number bacterial replicon, inserted into a nonessential locus of said nuclear polyhedrosis virus DNA, which drives the replication of said nuclear polyhedrosis virus DNA in bacteria;

c. a bacterial genetic marker inserted into nonessential locus of said nuclear polyhedrosis virus DNA; and

d. a preferential target site for the insertion of a transposon inserted into a nonessential locus of said nuclear polyhedrosis virus DNA.

5,348,887

VECTORS AND DNAS FOR EXPRESSION OF A HUMAN ADENOCARCINOMA ANTIGEN

Thomas F. Bumol, Carmel; Robert A. Gadski; Amy E. Hamilton, both of Indianapolis, all of Ind.; J. Richard Sportsman, Palo Alto, Calif., and Joann Strnad, Yardley, Pa., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 13, 1992, Ser. No. 976,301
Continuation of Ser. No. 184,569, Apr. 21, 1988, abandoned, which is a continuation-in-part of Ser. No. 150,252, Jan. 29, 1988, abandoned.
Int. Cl.[5] C12N *15/12, 15/70*
U.S. Cl. 435—320.1 27 Claims

1. A recombinant DNA encoding mature KSA wherein the coding strand is:

5'-GCA AAA CCT GAA GGG GCC

CTC CAG AAC AAT GAT GGG CTT TAT GAT

CCT GAC TGC GAT GAG AGC GGG

CTC TTT AAG GCC AAG CAG TGC AAC

GGC ACC TCC ACG TGC TGG TGT

GTG AAC ACT GCT GGG GTC AGA AGA

ACA GAC AAG GAC ACT GAA ATA

ACC TGC TCT GAG CGA GTG AGA ACC

TAC TGG ATC ATC ATT GAA CTA

AAA CAC AAA GCA AGA GAA AAA CCT

TAT GAT AGT AAA AGT TTG CGG

ACT GCA CTT CAG AAG GAG ATC ACA

ACG CGT TAT CAA CTG GAT CCA

AAA TTT ATC ACG AGT ATT TTG TAT

GAG AAT AAT GTT ATC ACT ATT

GAT CTG GTT CAA AAT TCT TCT CAA

AAA ACT CAG AAT GAT GTG GAC

ATA GCT GAT GTG GCT TAT TAT TTT

GAA AAA GAT GTT AAA GGT GAA

TCC TTG TTT CAT TCT AAG AAA ATG

GAC CTG ACA GTA AAT GGG GAA

-continued

CAA CTG GAT CTG GAT CCT GGT CAA

ACT TTA ATT TAT TAT GTT GAT

GAA AAA GCA CCT GAA TTC TCA ATG

CAG GGT CTA AAA GCT GGT GTT

ATT GCT GTT ATT GTG GTT GTG GTG

ATG GCA GTT GTT GCT GGA ATT

GTT GTG CTG GTT ATT TCC AGA AAG

AAG AGA ATG GCA AAG TAT GAG

AAG GCT GAG ATA AAG GAG ATG GGT

GAG ATG CAT AGG GAA CTC AAT GCA-3'

wherein A is deoxyadenyl, G is deoxyguanyl, C is deoxycytidyl, and T is thymidyl.

5,348,888

DNA FRAGMENT CODING FOR MERCURIC REDUCTASE OF THIOBACILLUS, AND RECOMBINANT PLASMID

Toshikazu Shiratori, Chiba; Chihiro Inoue, Tokyo; Yoshichika Kitagawa, and Tomonobu Kusano, both of Akita, all of Japan, assignors to Dowa Mining Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 966,610, Oct. 26, 1992, abandoned, which is a continuation of Ser. No. 396,900, Aug. 22, 1989, abandoned. This application Oct. 8, 1993, Ser. No. 133,347
Claims priority, application Japan, Aug. 26, 1988, 63-211984
Int. Cl.[5] C12N *15/00, 9/02*
U.S. Cl. 435—320.1 15 Claims

7. A plasmid which comprises an *E. coli* plasmid together with a 4.8 kb SalI-SalI DNA fragment isolated from genomic DNA of a *Thiobacillus ferrooxidans* mercury resistant strain, or a shorter fragment thereof having a size at least 2.3 kb and containing a 2.1 kb HindIII-HindIII segment, wherein

said DNA fragment contains the 56 kDa mercuric reductase gene (merA) and the 16 kDa protein gene (merC),

said DNA fragment hybridizes with the mercuric resistance gene of Pseudomonas transposon Tn501, and

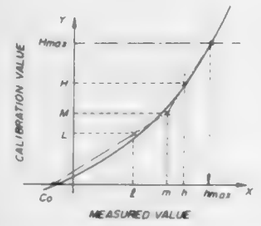
said DNA fragment provides mercury resistance with *Escherichia coli* cells when said cells are transformed with *E. coli* plasmid carrying said DNA fragment.

5,348,889

METHOD FOR CORRECTING A CALIBRATION CURVE

Masaaki Terashima, and Hajime Makiuchi, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 598,903, Oct. 11, 1990, abandoned. This application Sep. 4, 1992, Ser. No. 940,770
Claims priority, application Japan, Oct. 13, 1989, 1-265281
Int. Cl.[5] G01N *31/00, 25/00*
U.S. Cl. 436—8 26 Claims



1. A method for determining a corrected measured value of

an analyte in a liquid sample utilizing a calibration curve comprising the steps of:

providing a liquid sample of an analyte;

analyzing the sample to determine a measured value of the analyte;

preparing a corrected calibration curve by:

a) subjecting n calibrators, n is an integer and is greater than 2, containing varying known amounts of the analyte to assay in the same process for the quantitative analysis of the analyte so as to obtain the measured values of said n calibrators, said varying known amounts of analyte being referred as the calibration values of said calibrator;

b) determining a linear function of an uncorrected calibration curve using pairs of coordinates of the calibration values and the measured values of said n calibrators;

c) estimating a point having a coordinate of a calibration value and a measured value, wherein the calibration value is selected to be;

i) greater than the uppermost value of said calibration values of said n calibrators but not above the upper limit of a determination range for said analyte,

ii) less than the lowermost value of said calibration values of said n calibrators but not below the lower limit of the determination range of said analyte; or

iii) zero value; and

d) determining a non-linear function of the corrected calibration curve by plotting said estimated point with the coordinates of said calibrators; comparing the measured value of the analyte to the calibration curve; and,

obtaining a corrected measured value of the analyte.

5,348,890

TRIOXANE DERIVATIVES, AND METHOD FOR THE CHEMILUMINESCENCE

Shuji Ichikawa; Motohiro Mitani; Yuko Yokoyama, all of Ibaraki; Hideo Sawada, Kanagawa, and Takeo Matsumoto, Ibaraki, all of Japan, assignors to NOF Corporation, Japan

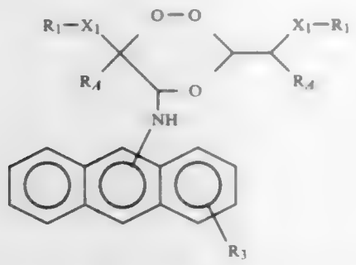
Filed Dec. 4, 1992, Ser. No. 986,040

Claims priority, application Japan, Dec. 4, 1991, 3-347761; Mar. 31, 1992, 4-104005

Int. Cl.[5] G01N *21/76;* **C07D** *323/04*

U.S. Cl. 436—172 **4 Claims**

3. A method for producing chemiluminescence, wherein the chemiluminescence is effected by mixing trioxane derivative represented by the formula (1):



(1)

wherein RA is methyl or $R_2—X_2—$, and wherein X_1 and X_2 represent independently $—(CH_2)_m—$, $—(CH_2)_m—(O—Z)_n—$or

$$—(CH_2)_m—\overset{O}{\overset{\|}{C}}NH—(CH_2)_n—,$$

where m and n represent an integer of from 1–10 and Z represents a lower alkylene, R_1 and R_2 represent independently carboxyl, amino, hydroxyl or mercapto; and R_3 represents hydrogenor methyl; and a base.

5,348,891

METHOD FOR AN INCREASED VISUALIZATION OF THE REACTION PRODUCT OF A SPECIFICALLY BINDING SUBSTANCE AND A CORRESPONDING BINDABLE SUBSTANCE AND TEST KIT THEREFOR

Remco M. van Es, Nr Koog Aan de Zaan; Gerrit D. Keizer, Zoeterwoude Rijndijk, and Albert W. J. van Doorn, Arnhem, all of Netherlands, assignors to H.B.T. Holland Biotechnology, Leiden, Netherlands

Continuation of Ser. No. 436,900, Nov. 15, 1989, abandoned. This application Jun. 12, 1992, Ser. No. 898,186

Claims priority, application Australia, Nov. 15, 1988, 25180/88

Int. Cl.[5] G01N *33/553, 21/00;* **B01D** *17/04;* **B01J** *13/00*

U.S. Cl. 436—525 **14 Claims**

1. A method for determining presence or amount of an analyte in a sample, comprising contacting said sample with a binding component capable of specifically recognizing and binding said analyte, said binding component being labelled with colloidal particles of an element selected from the group consisting of selenium and tellurium and determining the presence or absence or the amount of the resulting labelled complexes comprising said analyte, said binding component and said colloidal particles as an indication of the presence or absence of said analyte in said sample and the amount of said resulting labelled complex serving as a measure of the amount of said analyte in said sample, said determination of said labelled complexes consisting of said analyte and said binding component be carried out by physical development of said labelled complex by contacting said labelled complex with a metal compound and a reducing agent capable of liberating the metal from said metal compound in the presence of said colloidal particles for deposition of said metal onto said colloidal particles making up said labelled complex.

5,348,892

IMAGE SENSOR AND METHOD OF MANUFACTURING THE SAME

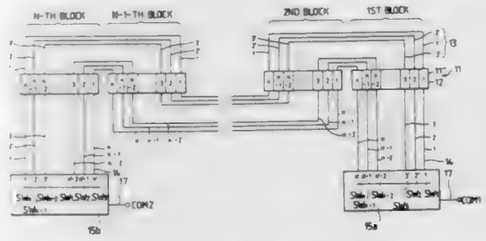
Hiroyuki Miyake; Tsutomu Abe; Hisao Ito; Hiroyuki Hotta; Yasumoto Shimizu, and Yoshihiko Sakai, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Division of Ser. No. 691,517, Apr. 25, 1991, Pat. No. 5,182,625. This application Aug. 28, 1992, Ser. No. 936,837

Claims priority, application Japan, Apr. 26, 1990, 2-108920; Apr. 26, 1990, 2-108921; May 8, 1990, 2-116870; May 26, 1990, 2-125746

Int. Cl.[5] H01L *31/18*

U.S. Cl. 437—3 **1 Claim**



1. A method of manufacturing an image sensor of the type having photodetecting elements, each with a multilayered structure comprising a metal electrode, a photoconductive layer, and a transparent electrode; thin film transistor switching elements, each including a gate electrode, a source electrode, and a drain electrode; capacitors, each with a conductive layer sandwiched between an upper metal layer and a lower metal layer and each capacitor positioned between the photodetecting element and the thin film transistor switching element; and a group of wires, each passing between adjacent photodetecting elements, and meandering through a photodetecting element array in which the photodetecting elements are arrayed in lines in a main scan direction, where the photodetecting elements, thin film transistor switching elements, capacitors, and a groups of wires are formed on a single substrate, said method comprising the steps of:

forming the gate electrodes of the thin film transistors and the lower metal layers of the capacitors with a metal layer;

forming the metal electrodes of the photodetecting elements, the conductive layers of the capacitors, and the source and drain electrodes of the thin film transistor switching elements with a metal layer; and

forming the upper metal layers of the capacitors and the wire portions of the wire group with a metal layer.

5,348,893

METHOD FOR TREATMENT OF SEMICONDUCTOR WAFER

Hirotoshi Yamagishi, Gunma, Japan, assignor to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1993, Ser. No. 31,119

Claims priority, application Japan, Mar. 17, 1992, 4-091771

Int. Cl.[5] H01L *21/322*

U.S. Cl. 437—10 **6 Claims**

1. A method for the treatment of a semiconductor wafer by the collision of particles against said semiconductor wafer for intentional impartation of a lattice distortion to the surface of said semiconductor wafer, which method is characterized by forming an organic substance possessing a melting point of not higher than 30° C. and exhibiting solubility in water into particles of a diameter in the range of from 0.001 to 1 mm and causing said particles to collide against the surface of said semiconductor wafer thereby effecting said impartation of a lattice distortion to the surface of said semiconductor wafer; and

wherein said semiconductor wafer whose surface has sustained a lattice distortion in consequence of said collision of particles is washed in water or an aqueous solution capable of dissolving the substance forming said particles at a temperature in the range of from 50° to 100° C. thereby to obtain dissolution of said substance adhering to said semiconductor wafer.

5,348,894

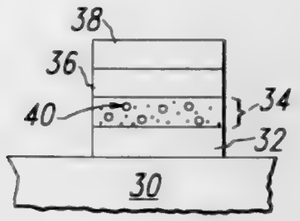
METHOD OF FORMING ELECTRICAL CONNECTIONS TO HIGH DIELECTRIC CONSTANT MATERIALS

Bruce E. Gnade, Rowlett, and Scott R. Summerfelt, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 27, 1993, Ser. No. 9,521

Int. Cl.[5] H01G *4/06*

U.S. Cl. 437—12 **18 Claims**



1. A method of forming a microelectronic structure, said method comprising:

(a) forming an oxidizable layer;

(b) forming an oxygen gettering layer on said oxidizable layer, said oxygen gettering layer comprising a mixture of at least one noble metal and at least one reactive component;

(c) forming a noble metal layer on said oxygen gettering layer; and

(d) forming a layer of a high-dielectric-constant material on said noble metal layer, whereby said oxygen gettering layer getters diffusing oxygen, thus minimizing the formation of a oxidized resistive layer either in or on said oxidizable layer.

5,348,895

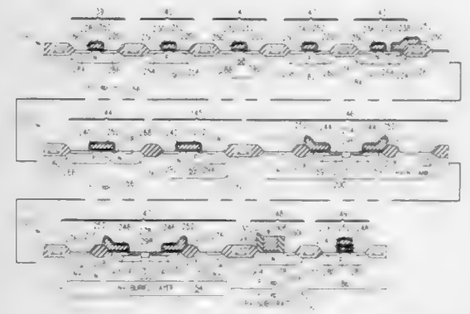
LDMOS TRANSISTOR WITH SELF-ALIGNED SOURCE/BACKGATE AND PHOTO-ALIGNED GATE

Michael C. Smayling, Missouri City, Tex.; Manuel J. Torreno, Jr. deceased, late of Houston, Tex. by Arlene Torreno, executrix , and George Falessi, Villeneuve-Loubet, France, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 857,360, Mar. 25, 1992, Pat. No. 5,242,841. This application Jun. 2, 1993, Ser. No. 71,156

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—54 **19 Claims**



1. A method of forming a plurality of circuit devices on a single semiconductor substrate, comprising the steps of:

exposing a plurality of regions said substrate;

implanting p-type dopants into each said exposed regions, said p-type dopants having a first diffusion rate;

implanting n-type dopants into each said exposed regions, said n-type dopants having a diffusion rate different than said first diffusion rate; and

heating each said exposed regions to such that a first doped region is formed within a second doped region of an opposite conductivity type within each exposed region, said first and second doped regions forming region of a first device in a first one of said exposed regions and a region of a second device in a second one of said exposed regions, wherein said first device is a different device type than said second device.

5,348,896

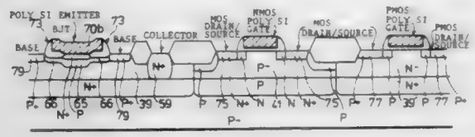
METHOD FOR FABRICATING A BICMOS DEVICE

Wen-Yueh Jang, and Wen-Chung Ko, both of Hsinchu, Taiwan, assignors to Winbond Electronic Corp., Hsinchu, Taiwan

Continuation-in-part of Ser. No. 982,452, Nov. 27, 1992, abandoned. This application Sep. 28, 1993, Ser. No. 128,380

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—31 **4 Claims**



1. A method for fabricating a BiCMOS device with a bipolar transistor and NMOS and PMOS transistors, said method comprising the steps of:

(a) implanting first and second conductivity-type impurity

into a substrate to form adjacent first, second and third buried regions therein;
(b) depositing an epitaxial layer over the substrate after the first, second and third buried regions have been formed;
(c) implanting first and second conductivity-type impurity into the epitaxial layer at regions overlying the first, second and third buried regions to form a bipolar transistor well, an NMOS transistor well and a PMOS transistor well, one of the NMOS and PMOS transistor wells being disposed between the bipolar transistor well and the other one of the NMOS and PMOS transistor wells;
(d) growing a silicon dioxide layer over surfaces of the bipolar, NMOS and PMOS transistor wells;
(e) depositing a silicon nitride layer on the silicon dioxide layer;
(f) etching the silicon nitride layer in order to expose first isolation regions overlying junctions of the bipolar, NMOS and PMOS transistor wells, and a second isolation region on the surface of the bipolar transistor well adjacent to one of the first isolation regions;
(g) growing field oxide layers on the first and second isolation regions;
(h) etching the silicon nitride layer to expose adjacent base oxide regions on the surface of the bipolar transistor well;
(i) growing base oxide layers on the base oxide regions to define range of an emitter of the bipolar transistor;
(j) removing the silicon nitride layer and the silicon dioxide layer;
(k) forming a sacrificial oxide layer over the bipolar, NMOS and PMOS transistor wells;
(l) forming a deep collector contact of the bipolar transistor in the bipolar transistor well between the second isolation region and the adjacent one of the first isolation regions;
(m) stripping the sacrificial oxide layer;
(n) growing a gate oxide layer overlying the surfaces of the bipolar, NMOS and PMOS transistor wells;
(o) etching the gate oxide layer to expose an intrinsic base region between the base oxide layers on the bipolar transistor well and to reduce thicknesses of opposite portions of the base oxide layers that face one another;
(p) implanting an impurity into the intrinsic base region so as to form an intrinsic base of the bipolar transistor, the intrinsic base having a base portion between the base oxide layers and a base link portion connected to the base portion and disposed underneath the opposite portions of the base oxide layers;
(q) depositing a polysilicon layer on the gate oxide layer, and on the intrinsic base region;
(r) implanting an impurity into the polysilicon layer, and driving in the impurity in the polysilicon layer by high temperature treatment to enable the impurity to diffuse through the polysilicon layer to form an emitter region on the surface of the base portion of the intrinsic base.

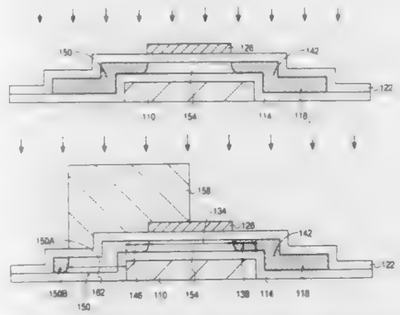
5,348,897

TRANSISTOR FABRICATION METHODS USING OVERLAPPING MASKS

Ting-Pwu Yen, Fremont, Calif., assignor to Paradigm Technology, Inc., San Jose, Calif.

Filed Dec. 1, 1992, Ser. No. 984,666
Int. Cl.[5] H01L *21/266*
U.S. Cl. 437—40 **29 Claims**

1. A method for fabricating a transistor, said method comprising the steps of:
forming a gate of said transistor in or over a semiconductor substrate;
after said gate forming step, forming a semiconductor layer over said substrate, said semiconductor layer including a first region and a second region spaced from said first region, wherein one of said first and second regions is a source region of said transistor and the other one of said first and second regions is a drain region of said transistor, said semiconductor layer further comprising a channel region separating said first and second regions;
forming a first mask over said channel region;
introducing a dopant into said first and second regions;



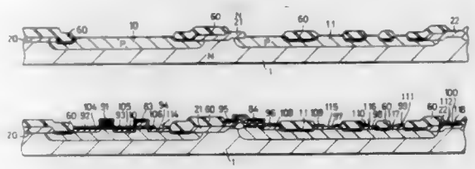
forming a second mask over a portion of said first region which portion is adjacent said channel region; and
introducing a dopant into said second region and into a portion of said first region which portion is not overlain by said first and second masks.

5,348,898

SEMICONDUCTOR DEVICE AND METHOD FOR MANUFACTURING THE SAME

Yuji Yatsuda, Hachiohji, Japan; Takaaki Hagiwara, Stanford, Calif.; Ryuji Kondo, Kodaira, Japan; Shinichi Minami, Kokubunji, Japan, and Yokichi Itoh, Hachiohji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 820,933, Jan. 15, 1992, Pat. No. 5,252,505, which is a continuation of Ser. No. 351,847, May 15, 1989, Pat. No. 5,114,870, which is a division of Ser. No. 850,037, Apr. 10, 1986, Pat. No. 4,851,364, which is a continuation of Ser. No. 487,085, Apr. 21, 1983, Pat. No. 4,586,238, which is a division of Ser. No. 148,481, May 9, 1980, abandoned. This application Jan. 26, 1993, Ser. No. 9,061
Claims priority, application Japan, May 25, 1979, 54-63941
The portion of the term of this patent subsequent to May 6, 2003, has been disclaimed.
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 **14 Claims**



1. A method of manufacturing semiconductor devices at a major surface of a semiconductor substrate, comprising:
(a) locally forming a first mask layer on said major surface of said semiconductor substrate;
(b) introducing impurities of a first type of conductivity into said major surface of said semiconductor substrate not covered with said first mask layer, in a self-aligned manner with said first mask layer, in order to form a first semiconductor region of said first type of conductivity;
(c) oxidizing said major surface of said semiconductor substrate not covered with said first mask layer, so as to form an oxide film in a self-aligned manner with said first mask layer;
(d) introducing impurities of a second type of conductivity into said major surface of said semiconductor substrate not covered with said oxide film, in a self-aligned manner with said oxide film, in order to form a second semiconductor region;

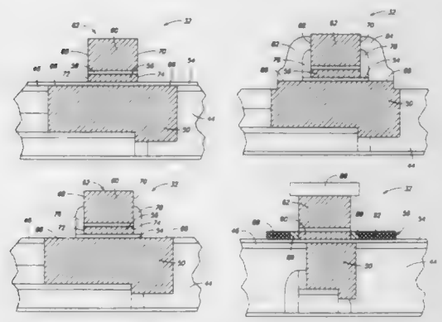
(e) locally forming a second mask layer on said first semiconductor region;
(f) introducing impurities of said first type of conductivity into said first semiconductor region not covered with said second mask layer, in a self-aligned manner with said second mask layer;
(g) oxidizing said major surface of said semiconductor substrate not covered with said second mask layer, so as to form a field insulating film in a self-aligned manner with said second mask layer;
(h) forming a gate electrode on said first semiconductor region; and
(i) introducing impurities of said second type of conductivity into said first semiconductor region, in order to form a source or a drain region in a self-aligned manner with said gate electrode and said field insulating film.

5,348,899

METHOD OF FABRICATING A BOTTOM AND TOP GATED THIN FILM TRANSISTOR

Charles H. Dennison, and Monte Manning, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Continuation-in-part of Ser. No. 61,402, May 12, 1993. This application Jun. 10, 1993, Ser. No. 75,035
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 **9 Claims**



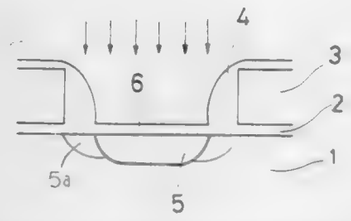
1. A method of fabricating a bottom and top gated thin film transistor comprising the following steps:
providing an electrically conductive bottom thin film transistor gate electrode layer on a semiconductor substrate, the bottom gate electrode layer having a planar outer surface, the outer surface having a surface area;
providing a bottom gate dielectric layer over the bottom gate electrode layer;
providing a thin film transistor body layer over the bottom gate layer;
defining source, drain and channel regions within the thin film body layer;
providing a top gate dielectric layer over the thin film transistor body layer;
providing an electrically conductive top transistor gate electrode layer over the top gate dielectric layer;
etching the composite top gate electrode, top gate dielectric, and body layers in a pattern which defines a top gate electrode, top gate dielectric and body outline which is received only partially within the bottom gate electrode outer surface area, the bottom gate electrode outer surface area including a portion extending outwardly beyond the outline, the etching outwardly exposing top gate electrode and body sidewalls;
providing a layer of insulating dielectric over the etched top gate electrode and outwardly exposed sidewalls;
anisotropically etching the insulating dielectric layer to define an insulating sidewall spacer, the sidewall spacer leaving the top gate electrode sidewall outwardly exposed;
outwardly exposing bottom gate electrode surface area extending outwardly beyond the outline;
providing a layer of electrically conductive material over the outwardly exposed top gate electrode sidewall and outwardly exposed bottom gate electrode surface area; and
anisotropically etching the layer of conducting material to define an electrically conductive sidewall link electrically interconnecting the top gate electrode sidewall and bottom gate electrode outer surface.

5,348,900

PROCESS FOR MANUFACTURING A SEMICONDUCTOR DEVICE INCLUDING HEAT TREATMENT IN AMMONIA OR OXYGEN

Akitsu Ayukawa, and Shigeo Onishi, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 21, 1992, Ser. No. 932,943
Claims priority, application Japan, Oct. 11, 1991, 3-264020; Nov. 1, 1991, 3-287804
Int. Cl.[5] H01L *21/336*
U.S. Cl. 437—44 **7 Claims**



1. A process for manufacturing a semiconductor device, comprising the steps of:
forming a gate oxide film over the entire surface of a semiconductor substrate;
forming a gate electrode on the gate oxide film;
forming an oxide film over the entire surface of the semiconductor substrate including the gate electrode;
using at least the gate electrode as a mask for implanting an impurity through the oxide film into a source/drain region;
subjecting the substrate to a first heat treatment;
removing the oxide film existing above the source/drain region; and
subjecting the substrate to a second heat treatment in an ammonia or oxygen gas atmosphere.

5,348,901

INTERCONNECT AND RESISTOR FOR INTEGRATED CIRCUITS

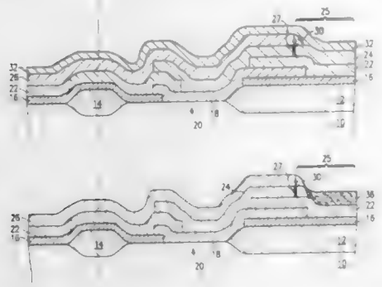
Fusen E. Chen, Milpitas, Calif.; Girish A. Dixit, Dallas; and Robert O. Miller, Carrollton, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 769,171, Sep. 30, 1991, Pat. No. 5,182,627. This application Jul. 9, 1992, Ser. No. 911,167
Int. Cl.[5] H01L *21/205, 21/285*
U.S. Cl. 437—47 **28 Claims**

1. A method for forming a polycrystalline silicon resistive load element in a semiconductor integrated circuit, comprising the steps of:
forming a first conductive layer wherein the first conductive layer has a first region of a first conductivity type and a second region of a second conductivity type wherein a junction is formed between the first and the second regions;
forming a first oxide region over the second region of the first conductive layer and the junction;

depositing an undoped oxide layer over the integrated circuit;

performing an etchback of the undoped oxide layer to form sidewall oxide spacers on the sidewalls of the first oxide region covering the junction and a portion of the first



region of the first conductive layer adjacent to the junction; and

forming a silicide region over the first region of the first conductive layer not covered by the sidewall oxide spacer.

5,348,902

METHOD OF DESIGNING CELLS APPLICABLE TO DIFFERENT DESIGN AUTOMATION SYSTEMS

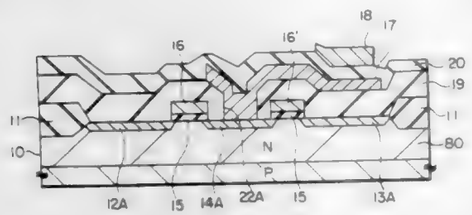
Shigeru Shimada, Hoya; Ryuji Shibata, Higashiyamato, both of Japan, and Atsushi Kurosawa, San Jose, Calif., assignors to Hitachi, Ltd., Tokyo, Japan and VSLI Technology Incorporated, San Jose, Calif.

Filed Jan. 19, 1993, Ser. No. 5,998

Claims priority, application Japan, Jan. 21, 1992, 4-031563

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—51 **8 Claims**



1. A method of designing first and second cells applicable to different first and second design automation systems as a part of a circuit design, comprising:

preparing the first cells circuit-designed by the first design automation system and the second cells circuit-designed by the second design automation system;

demarcating each of said first and second cells into a logic function portion and an input/output portion, wherein said logic function portion is responsible for a logic function of the circuit design and said input/output portion is responsible for an arrangement of input/output conductors for electrical connection of the circuit design;

determining a plurality of sets of common lithography patterns for the logic function portions of said first and second cells such that each common lithography pattern set is shared by those of said first and second cells which have same logic function in said first and second design automation systems;

determining a first set of lithography patterns for the input-/output portions of said first cells in said first design automation system and a second set of lithography patterns for the input/output portions of said second cells in said second design automation system, respectively, such that said first and second sets of lithography patterns are, at their external ends, in an arrangement satisfying requirements of said first and second design automation systems, respectively; and

combining the logic function portion of at least one of said first cells in said first design automation system having said determined set of common lithography pattern, with the input/output portion of said second cells having said second set of lithography pattern in said second design automation system.

5,348,903

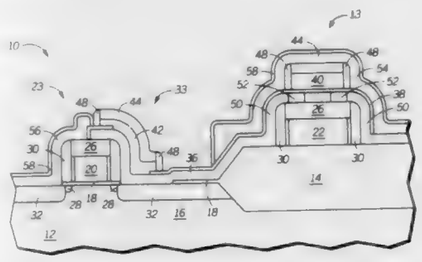
PROCESS FOR FABRICATING A SEMICONDUCTOR MEMORY CELL HAVING THIN-FILM DRIVER TRANSISTORS OVERLAPPING DUAL WORDLINES

James R. Pfiester, and James D. Hayden, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Sep. 3, 1992, Ser. No. 940,143

Int. Cl.[5] H01L *21/70, 27/00*

U.S. Cl. 437—52 **12 Claims**



1. A process for fabricating a semiconductor memory cell comprising:

providing a single-crystal semiconductor substrate;

forming first and second parallel opposed wordlines overlying the substrate; and

forming first and second cross-coupled thin-film driver transistors overlying the first and second wordlines respectively,

wherein each thin-film driver transistor includes a thin-film layer having a source-drain region and a channel region formed therein, and

wherein the channel region overlies a portion of the wordline and a portion of the thin-film layer contacts the single-crystal substrate.

5,348,904

METHOD OF FABRICATING SEMICONDUCTOR MEMORY DEVICE INCLUDING AN IMPROVED SUBSTRATE STRUCTURE

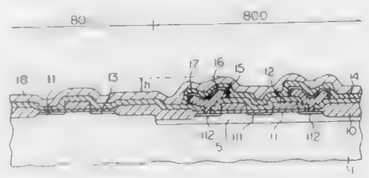
Kuniaki Koyama, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 18, 1992, Ser. No. 993,382

Claims priority, application Japan, Dec. 20, 1991, 3-356070

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **4 Claims**



1. A method of forming a semiconductor substrate for a semiconductor integrated circuit device including a first multi-

layer structure having a thickness formed in an array area and a second multi-layer structure formed in a peripheral area, said first structure being thicker than said second multi-layer structure, said method comprising the steps of:

forming a first insulation film over an entire surface of a semiconductor substrate having an impurity concentration of a first conductivity type, said substrate having an array area and a peripheral area;

selectively forming a second insulation film on said first insulation film in said peripheral area;

forming a well region in the surface of said substarate and in said array area by a selective ion-implantation of an impurity of a conductivity type which is opposite to the conductivity type of said substrate;

forming a high impurity concentration planar region in said well region by a selective ion-implantation of an impurity of a conductivity type which is the same conductivity type as the impurity as said substrate; and

forming a thick insulation film in said array area portion of said first insulation film so as to depress said high impurity concentration planar region; and

removing said first and second insulation films and said thick insulation film to form a recessed portion in said array area.

5,348,905

METHOD OF MAKING DIFFUSED BURIED PLATE TRENCH DRAM CELL ARRAY

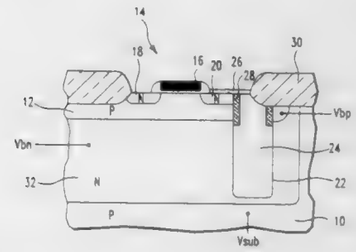
Donald M. Kenney, Shelburne, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 819,148, Jan. 9, 1992, Pat. No. 5,264,716.

This application Aug. 26, 1993, Ser. No. 112,406

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **7 Claims**



1. The method of making a dynamic random access memory device comprising the steps of:

providing a semiconductor substrate of a first conductivity type;

forming a plurality of deep trenches in a matrix pattern on a top surface of said substrate;

diffusing a second conductivity type impurity from the lower portion of the depth of said deep trenches into said substrate to form a continuous buried diffused region of a second conductivity type across the entire extent of the matrix pattern;

forming a dielectric layer on the inside of said deep trenches and filling said trenches with a conductive electrode material;

forming around the perimeter of said matrix pattern a diffused surface region of said second conductivity type having a depth so as to physically and electrically isolate a portion of the substrate within the matrix pattern above said continuous buried diffused region; and

forming within the isolated portion of the matrix pattern a plurality of semiconductor devices for coupling signals to and from said conductive electrode material within at least some of said deep trenches.

5,348,906

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

Shuichi Harajiri, Kawasaki, Japan, assignor to Fujitsu Ltd., Kawasaki, Japan

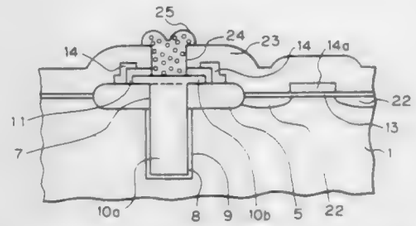
Continuation of Ser. No. 751,808, Aug. 20, 1991, abandoned.

This application Mar. 4, 1993, Ser. No. 26,098

Claims priority, application Japan, Aug. 31, 1990, 2-231517

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—54 **15 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

forming a first film having first stepped portions formed on a semiconductor substrate;

forming an insulating film having second stepped portions covering the surface of the first film to extend over the first stepped portions;

forming a conductive film completely covering the first stepped portions of the first film and the second stepped portions of the insulating film by extending from an upper part to a lower part of the second stepped portions;

forming a first resist mask for forming gate electrodes on the conductive film and simultaneously forming a second resist mask wholly covering the conductive film corresponding to the second stepped portions of the insulating film, the first and second resist masks being simultaneously formed;

dry-etching the conductive film through the first and second resist masks; and

removing the first and second resist masks, leaving a portion of the conductive film to cover the first stepped portions of the first film and the second stepped portions of the insulating film.

5,348,907

METHOD OF FABRICATING OF SEMICONDUCTOR DEVICE BY FORMING TWO ELECTRICALLY INSULATED WELLS OF THE SAME TYPE ELECTROCONDUCTIVITY ON SEMICONDUCTOR SUBSTRATE

Takahisa Migita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 28, 1993, Ser. No. 54,335

Claims priority, application Japan, Apr. 28, 1992, 4-109415

Int. Cl.[5] H01L *21/70, 27/00*

U.S. Cl. 437—59 **8 Claims**

1. A fabrication method of a semiconductor device comprising the steps of:

forming a first well of a first electroconductive type on one main surface of a semiconductor substrate of said first electroconductive type which is surrounded by a semiconductor layer of a second electroconductive type opposite to said first electroconductive type;

forming a second well of said first electroconductive type on the main surface of said substrate which is electrically insulated from said first well and is electrically connected to said substrate;

forming an electroconductive layer which connects said first well and said second well to each other on an insulator layer between said first and second wells; and



partially removing said electroconductive layer to electrically insulate said first and second well from each other after finishing a process which generates electric charges on the substrate.

5,348,908

Patent Not Issued For This Number

5,348,909

MANUFACTURE OF PRINTHEAD WITH DIAMOND RESISTORS

James W. Stasiak, Longmont, Colo., assignor to Lexmark International, Inc., Greenwich, Conn.

Filed Mar. 26, 1993, Ser. No. 38,205

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—60 **4 Claims**

1. The method of fabrication of a thermal printhead comprising applying a resist mask on a substrate, said substrate having locations for forming multiple cavities of said thermal printhead and having an outer layer of diamond, said mask having openings at said locations for forming said cavities to form resistors for expelling ink from said printhead, and bombarding said masked substrate with ions to dope at the areas defined by the openings of said mask to form said resistors, said doping being substantially all in said outer layer of diamond.

5,348,910

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE AND THE PRODUCT THEREBY

Isamu Namose, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Dec. 21, 1992, Ser. No. 994,312

Claims priority, application Japan, Dec. 24, 1991, 3-341339; Nov. 11, 1992, 4-326136

Int. Cl.[5] H01L *21/76*

U.S. Cl. 437—70 **18 Claims**

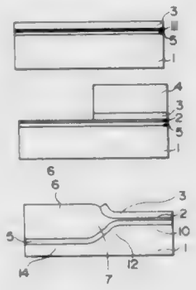
1. A method of manufacturing a MOS-FET semiconductor device having a device isolation layer formed on a semiconductor substrate isolating a device region from a device isolation region, said method comprising the steps of:

(a) forming an oxidation layer on the semiconductor substrate having a predetermined conductivity;

(b) after step a, introducing impurities having the same conductivity as the semiconductor substrate into the semiconductor substrate, said impurities forming a channel stopper in the device isolation region and controlling a threshold voltage of the MOS-FET device in the device region;

(c) after step b, forming an anti-oxidation layer on said oxidation layer;

(d) after step c, removing an arbitrary portion of said anti-oxidation layer;



(e) after step d, thermally oxidizing the semiconductor substrate to grow a portion of said oxidation layer from which the anti-oxidation layer was removed in step d, to form the device isolation layer;

(f) after step e, removing said anti-oxidation layer; and

(g) after step f, providing a gate electrode in the device region to form a MOS-FET transistor region, wherein performing step (b) prior to step (c) assures that no peak in a concentration profile of said impurities is formed in the border region between said device region and said device isolation region, thereby preventing the impurities from diffusing into said transistor region and avoiding a narrow channel effect in the MOS-FET device.

5,348,911

MATERIAL-SAVING PROCESS FOR FABRICATING MIXED CRYSTALS

Holger Jürgensen; Klaus Grüter, both of Aachen; Marc Deschler, Hauset, and Pieter Balk, Aachen, all of Fed. Rep. of Germany, assignors to Aixtron GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 751,639, Aug. 26, 1991, abandoned, which is a continuation of Ser. No. 563,688, Aug. 3, 1990, abandoned, which is a continuation of Ser. No. 334,108, Feb. 24, 1989, abandoned. This application Apr. 26, 1993, Ser. No. 51,792

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1987, 3721638

Int. Cl.[5] H01L *21/205*

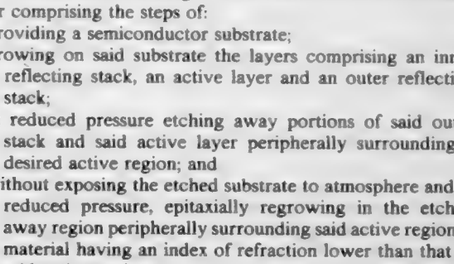
U.S. Cl. 117—91 **13 Claims**

1. A process for fabricating mixed crystals comprising:

transferring at least one component of a composition of the mixed crystal in a reactor from a source into a vapor phase containing hydrogen and chloride compounds, said chloride compounds comprising at least HCl, a carrier gas, and said component;

transporting the vapor phase to a substrate;

precipitating the vapor phase on said substrate; and varying



a growth rate between 1 μm/h and 500 μm/h, wherein the step of varying the growth rate includes the steps of varying the overall pressure of the vapor phase between 80 mbar and 1 mbar, and varying the HCl partial pressure in the vapor phase between $5*10^{-6}$ bar and $5*10^{-3}$ bar.

5,348,912

SEMICONDUCTOR SURFACE EMITTING LASER HAVING ENHANCED OPTICAL CONFINEMENT

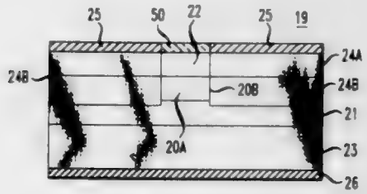
Kent D. Choquette, New Providence; Robert S. Freund, Livingston, and Minghwei Hong, Berkeley Heights, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 857,350, Mar. 25, 1992, Pat. No. 5,212,701.

This application Feb. 11, 1993, Ser. No. 16,339

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—129 **4 Claims**



1. A method for making a semiconductor surface emitting laser comprising the steps of:

providing a semiconductor substrate;

growing on said substrate the layers comprising an inner reflecting stack, an active layer and an outer reflecting stack;

at reduced pressure etching away portions of said outer stack and said active layer peripherally surrounding a desired active region; and

without exposing the etched substrate to atmosphere and at reduced pressure, epitaxially regrowing in the etched away region peripherally surrounding said active region, a material having an index of refraction lower than that of said active region.

5,348,913

METHODS FOR ENCAPSULATING ELECTRONIC DEVICES

Richard McBride, Trenton, and Ching-Ping Wong, Lawrenceville, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 6, 1993, Ser. No. 102,926

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **15 Claims**

1. A method for encapsulating an electronic device supported on a substrate comprising the steps of:

cleaning the substrate;

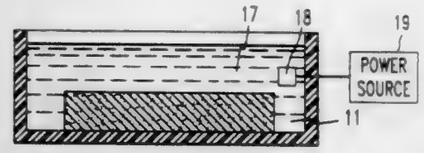
mounting an electronic device on one surface of the substrate;

encasing the electronic device in a fluid encapsulant; and

causing the encapsulant to harden and to adhere to both the substrate and the device;

wherein the cleaning step comprises the steps of:

immersing the substrate in an organic solvent;



subjecting the immersed substrate to acoustic energy;

removing the organic solvent from the substrate; and

exposing the substrate to ultraviolet light in an environment containing ozone to provide to the substrate a relatively low contact angle, thereby to increase wetting of the substrate by the fluid encapsulant.

5,348,914

GRANULAR MATERIALS, A PROCESS FOR THEIR PRODUCTION AND THEIR USE

Peter Thometzek, Krefeld, Fed. Rep. of Germany, and Heinrich Christ, San Vito, Italy, assignors to Ferro Corporation, Cleveland, Ohio

Filed Jun. 7, 1993, Ser. No. 73,393

Claims priority, application Italy, Jun. 17, 1992, MI 92A 001488

Int. Cl.[5] C03C *8/20*

U.S. Cl. 501—18 **12 Claims**

1. White, black or coloured granular materials for the production of white, black, or coloured coatings of high abrasion-resistance, wherein the granular materials have the following composition:

2 to 40 weight %	of inorganic pigments,
20 to 97 weight %	of one or more inorganic elements, inorganic compounds or mixtures thereof, said inorganic elements or inorganic compounds having a Mohs hardness of at least 7,
1 to 25 weight %	of one or more inorganic binders, organic binders, or mixtures thereof,
0 to 50 weight %	of one or more frits, glasses or mixtures thereof, and
0 to 40 weight %	of one or more inorganic fillers;

wherein the granular material components excluding the binder or binders are dry- or wet-milled jointly or separately or in any combination to produce grain sizes from >0 to 100 microns, dried in the case of wet-milling, subsequently pulverized, granulated in a granulation unit with said one or more inorganic binders, organic binders, or mixtures thereof, in an amount from 1 to 25 weight %, based on the solids content of said binder or binders optionally with the addition of water or other suitable liquids, and then heat-treated between 150° C. and 500° C. for up to 24 hours.

5,348,915

HIGH-GLOSS CERAMIC FRITS

Peter Thometzek, Spezzano di Fiorano, Italy, assignor to Ferro Corporation, Cleveland, Ohio

Filed Mar. 19, 1993, Ser. No. 34,488
Claims priority, application Italy, Mar. 31, 1992, MI92 A 000771
Int. Cl.[5] C03C *3/105, 8/02*
U.S. Cl. 501—24 **6 Claims**

1. Lead-free ceramic frits for producing glazes with intrinsic opacity, wherein the ceramic frits have the following composition:

SiO_2	48–60 wt. %
B_2O_3	3–8 wt. %
Al_2O_3	4–8 wt. %
Na_2O	0.2–2.0 wt. %
K_2O	4–8 wt. %
MgO	1–2 wt. %
CaO	7.5–13 wt. %
BaO	0–5 wt. %
ZnO	7–12 wt. %
ZrO_2	0.3–2.5 wt. %
TiO_2	3.5–5.5 wt. %
P_2O_5	.1–3 wt. % and
$Na_2O + K_2O$	4.5–8.5 wt. %

5,348,916

ALKALI FREE GLASS

Hideki Kushitani; Manabu Nishizawa, and Yasumasa Nakao, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 873,205, Apr. 24, 1992, abandoned. This application Nov. 16, 1993, Ser. No. 152,927
Claims priority, application Japan, Apr. 26, 1991, 3-124946
Int. Cl.[5] C03C *3/091*
U.S. Cl. 501—66 **4 Claims**

1. An alkali free glass prepared by a float method consisting essentially of from 53 to 57 wt % of SiO_2, from 10 to 14 wt % of Al_2O_3, from 5.5 to 8.5 wt % of B_2O_3, from 2 to 4.5 wt % of MgO, from 2 to 5 wt % of CaO, from 2 to 8 wt % of SrO, from 12 to 18 wt % of BaO and from 0 to 2 wt % of ZnO and essentially free from alkali metal oxides.

5,348,917

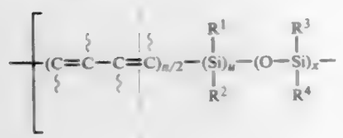
CERAMICS FORMED BY PYROLYSIS OF EITHER LINEAR OR THERMOSETTING CARBORANE (SILOXANE OR SILANE) ACETYLENE BASED PRECURSOR POLYMERS

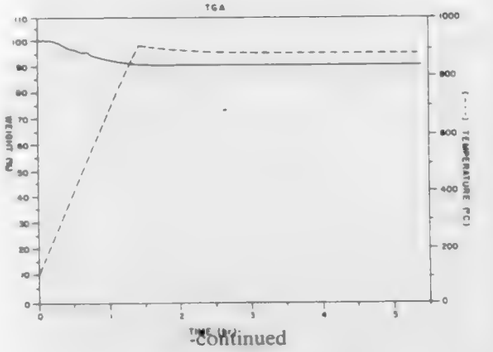
Teddy M. Keller, and Leslie J. Henderson, Jr., both of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 991,940, Dec. 17, 1992, Pat. No. 5,292,779, which is a continuation-in-part of Ser. No. 983,194, Nov. 30, 1992, Pat. No. 5,272,237. This application Feb. 8, 1993, Ser. No. 14,928
Int. Cl.[5] C04B *33/56*
U.S. Cl. 501—92 **30 Claims**

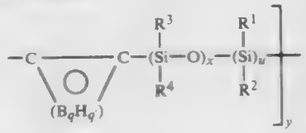
1. A boron-carbon-silicon ceramic made by a method comprising the step of:

pyrolyzing an organoboron thermoset polymer having a repeating unit of the formula:





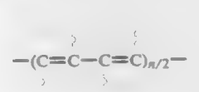
-continued



wherein:

(1) n is an integer from 1 to 12 and u and y are positive integers;

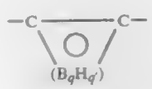
(2)



represents said unsaturated cross-linked moiety;

(3) R^1, R^2, R^3 and R^4 represent hydrocarbon or aromatic moieties:

(4)



represents said carboranyl group;

(5) q and q' are integers from 3 to 16;

(6) x represents an integer greater than or equal to zero ($x \geq 0$); and wherein said thermoset has a ceramic yield of at least 82% by weight.

5,348,918

YTTRIA-ALUMINA FIBERS

Kenton D. Budd, Woodbury, and David M. Wilson, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 709,377, Jun. 3, 1991, Pat. No. 5,217,933. This application Apr. 8, 1993, Ser. No. 44,417
Int. Cl.[5] C04B *35/50, 35/44*
U.S. Cl. 501—95 **24 Claims**

1. A method of making a continuous ceramic oxide fiber, said method comprising the steps of

1) providing a stable, spinnable aqueous-based mixture comprising

a) a solution comprising an alumina precursor salt dissolved in water, wherein said alumina precursor salt is represented by $Al(OH)_{3-x}(D)_x$, wherein x is a number in the range from about 0.5 to about 2.0 and D is a counter-ion selected from the group consisting of chloride, nitrate, carboxylate, and combinations thereof; and

b) a colloidal yttria precursor dispersion,

wherein said alumina precursor salt and said colloidal yttria precursor dispersion are each present in an amount sufficient to provide, after step (3), said ceramic oxide fiber having an Y_2O_3 content in the range from 28.5 to 90.7 percent by weight and an Al_2O_3 content in the range from 71.5 to 9.3 percent by weight, the sum of the total Y_2O_3 content and the total Al_2O_3 content being at least 80.0 percent by weight, based on the total oxide content of the fiber;

2) forming said aqueous-based mixture into a green continuous fiber; and

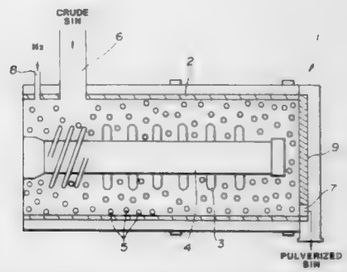
3) heat-treating said green continuous fiber to a temperature and for a time sufficient to provide a continuous ceramic oxide fiber comprising Al, Y, and O, wherein said fiber comprises at least one of amorphous regions and polycrystalline regions, wherein said fiber has a Y_2O_3 content in the range from 28.5 to 90.7 percent by weight and a total Al_2O_3 content in the range from 71.5 to 9.3 percent by weight, and wherein the sum of said Y_2O_3 content and said Al_2O_3 content is at least 80.0 percent by weight, based on the total oxide content of the fiber.

5,348,919

HIGH-PACKING SILICON NITRIDE POWDER AND METHOD FOR MAKING

Haruyoshi Kuwabara; Akio Otsuka, both of Gunma; Yasuyuki Maki, and Meguru Kashida, both of Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 15, 1993, Ser. No. 77,425
Claims priority, application Japan, Jul. 14, 1992, 4-209562
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—97 **3 Claims**



1. A silicon nitride powder having a tap density of at least 0.9 g/cm^3 and a mean particle size of 0.4 to 0.6 μm,

said powder containing at least 95% by weight of particles having an aspect ratio of up to 3 and up to 5% by weight of coarse particles having a particle size of at least 2 μm and having a BET specific surface area of 12 to 15 m^2/g.

5,348,920

θ-ALUMINA POWDER, PREPARATION THEREOF AND MAGNETIC RECORDING MEDIUM

Shoji Sugimoto; Yoshiaki Takeuchi, and Hiroshi Umezaki, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 909,208, Jul. 6, 1992, abandoned. This application Oct. 14, 1993, Ser. No. 135,549
Claims priority, application Japan, Jul. 8, 1991, 3-166568
Int. Cl.[5] C04B *35/10*
U.S. Cl. 501—153 **8 Claims**

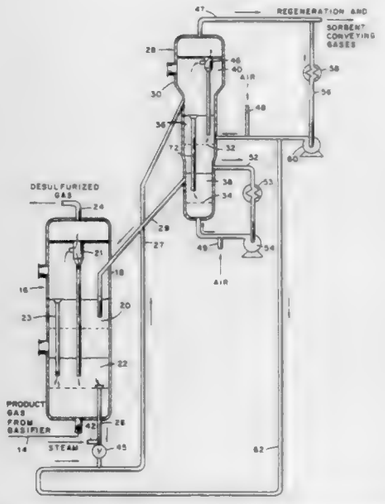
1. θ-Alumina powder having a θ-alumina content of at least 70% by weight and an average primary particle size of at least 0.1 μm and containing a tungsten compound in an amount of 0.1 to 5% by weight in terms of tungsten oxide based on alumina.

5,348,921

METHOD FOR REDUCING SULFATE FORMATION DURING REGENERATION OF HOT-GAS DESULFURIZATION SORBENTS

Larry A. Bissett; Larry D. Strickland, both of Morgantown, and John M. Rockey, Westover, all of W. Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 14, 1993, Ser. No. 76,060
Int. Cl.[5] B01J *38/34, 38/16, 23/92;* **C01B** *17/00*
U.S. Cl. 502—43 **11 Claims**



1. A method for regenerating hot-gas desulfurization sorbents with sulfating tendencies to minimize the concentration of sulfates in the regenerated sorbent, comprising the steps of partially regenerating a bed of particulate sorbent containing sulfur species substantially formed of sulfides in a first region of a sorbent regenerator by contacting the bed of particulate sorbent at an elevated temperature with a first stream of oxygen-containing gases at a sufficient volume and velocity for fluidizing the bed of particulate sorbent in said first region and for promoting a first exothermic reaction in said first region between the oxygen and the sulfur species for substantially regenerating the particulate sorbent in said first region to about 56% to substantially 100% of full regeneration without sulfate formation, said first stream having therein a quantity of oxygen corresponding to about 50% to 85% of the stoichiometric amount required for fully regenerating the sorbent by the exothermic reaction between the available oxygen and sulfur species, moving the resulting partially regenerated sorbent from an uppermost portion of the fluidized bed of particulate sorbent in said first region into a second region of the regenerator, and contacting a bed of the partially regenerated sorbent at an elevated temperature in said second region with a second stream of oxygen-containing gases at a sufficient volume and velocity for fluidizing the bed of partially regenerated sorbent in said second region with said second stream containing a quantity of oxygen substantially corresponding to greater than 100% to about 105% of a stoichiometric amount required to regenerate the sorbent to 100% of full regeneration by promoting an exothermic reaction in said second region between the oxygen in said second stream and any sulfur species remaining in the partially regenerated sorbent introduced in said second region of the regenerator, whereby any sulfate formation in the particulate sorbent essentially occurs only during the regeneration of the partially regenerated sorbent in the second region of the regenerator.

5,348,922

GAS ADSORBING ELEMENT AND METHOD FOR FORMING SAME

Toshimi Kuma, Fukuoka, Japan, assignor to Kabushiki Kaisha Seibu Giken, Fukuoka, Japan

PCT No. PCT/JP91/00592, § 371 Date Jul. 14, 1992, § 102(e) Date Jul. 14, 1992, PCT Pub. No. WO91/16971, PCT Pub. Date Nov. 14, 1991

PCT Filed Apr. 30, 1991, Ser. No. 793,372

Claims priority, application Japan, May 2, 1990, 2-116632

Int. Cl.[5] B01J *20/18, 35/04*

U.S. Cl. 502—60 **14 Claims**

1. A gas adsorbing element comprising:

a honeycomb-shaped laminate having many small channels penetrating from a first end surface to a second end surface, including a hydrophobic high silica zeolite powder placed on walls of said small channels, said high silica zeolite having the composition of $xM_{2/n}O—Al_2O_3.ySi_O_2.zH_2O$, where M is an alkaki metal or alkaline-earth metal, n is its valence, and y is a mol ratio of silica and aluminum which is greater than approximately 8.

5,348,923

SILICA-BASED SUBSTRATES MODIFIED BY GRAFTING OF POLYALKYLGUANIDINIUM GROUPS, THEIR PROCESS OF MANUFACTURE AND THEIR USE AS CATALYSTS

Patricia Gauthier, La Ferte Alais; Philippe Gros, Saint Etienne; Pierre Le Perchec, Lyon, and Jean-Pierre Senet, La Chapelle la Reine, all of France, assignors to Societe Nationale des Poudres et Explosifs - S.N.P.E., Paris, France

Filed Nov. 30, 1992, Ser. No. 982,953

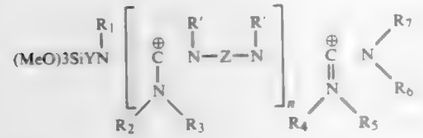
Claims priority, application France, Nov. 29, 1991, 91 14847

Int. Cl.[5] B01J *21/08*

U.S. Cl. 502—62 **14 Claims**

7. A trimethoxylsilane polyalkylguanidinium ion of the formula (II):

(II)



wherein

Y represents a C_2–C_{10} bivalent alkyl radical, branched or not, having at least two carbon atoms in a linear chain between silicon and nitrogen atoms;

Z represents a C_2–C_{10} bivalent aliphatic radical;

R′ represents a C_1–C_4 alkyl radical;

each of R_1, R_2, R_3, R_4, R_5, R_6, and R_7 is, independently, a C_1–C_6 alkyl radical;

n is 0 or an integer; and

Me is methyl.

5,348,924

ZEOLITE AGGREGATES AND CATALYSTS

Mark J. Potter, League City; Jar-Lin Kao; Virginia R. Cross, both of Houston, all of Tex.; Thomas H. Vanderspurt, Stockton, N.J.; Edward K. Dienes, Louisville, Ky.; Robert E. Riley, Elizabeth; Freddie L. Tungate, Georgetown, both of Ind., and Arie Bortinger, Ridgewood, N.J., assignors to Exxon Research & Engineering, Linden, N.J.

Continuation of Ser. No. 414,285, Sep. 29, 1989, abandoned. This application Feb. 23, 1993, Ser. No. 23,733

Int. Cl.[5] B01J *29/04, 20/18, 37/00*

U.S. Cl. 502—66 **247 Claims**

1. A process for producing hardened zeolite aggregates from aggregates made from a formable paste comprising zeolite, an inorganic oxide containing aluminum, a peptizing agent and water, said process comprising the following steps in sequence:

a) curing said aggregate under a humid atmosphere at a temperature between about 180° F. and about 250° F. to induce initial hardening phase transitions in said aggregate to result in a cured aggregate;

b) hydro-thermally calcining said cured aggregate under a humid atmosphere at temperatures between about 400° F. and about 1400° F. for a time to complete the hardening phase transitions to result in a hydro-thermally calcined aggregate; and

c) washing said hydro-thermally calcined aggregate with an aqueous solution of base to remove detritus and neutralize acidity followed by rinsing said washed aggregate with water.

199. The product produced by the process of claim 1.

5,348,925

CATALYST FOR THE POLYMERIZATION OF OLEFINS

Federico Milani, Santa Maria Maddalena; Luciano Luciani, Ferrara, and Antonio Labianco, Stienta, all of Italy, assignors to ECP Enichem Polimeri S.r.l., Milan, Italy

Filed Feb. 22, 1993, Ser. No. 20,990

Claims priority, application Italy, Feb. 26, 1992, MI.92-A/000414

Int. Cl.[5] B01J *31/00*

U.S. Cl. 502—115 **20 Claims**

1. Process for the preparation of a solid component of catalyst, active in the polymerization of propylene and other α-olefins in stereoregular polymers, said solid component containing silica, magnesium, halogen, titanium and a Lewis base, said process comprising:

(i) treating a non-activated particulate silica support, by contacting said silica with a solution, in an inert hydrocarbon solvent, of a tin tetrahalide, operating with a weight ratio between the tin tetrahalide and the silica of between 1:1 and 20:1, at a temperature ranging from −30° C. to 30° C., for a time which is sufficient to at least partially block the hydroxylic groups of the silica, to obtain a blocked silica;

(ii) impregnating said blocked silica with a solution, in an inert hydrocarbon solvent, of a magnesium dialkyl or magnesium alkyl halide, operating with a weight ratio between the magnesium compound and the blocked silica of between 0.1:1 and 10:1, at a temperature ranging from 20° C. to the boiling point of the liquid phase, for a time which is sufficient to interact the magnesium compound with the tin compound and with any possible residual hydroxylic groups of the silica, to obtain a support;

(iii) halogenating said support by contacting said support with a solution, in an inert hydrocarbon solvent, of a halogenating agent selected from the halides of tin, antimony or silicon, operating with a molar ratio between the halogenating agent and the magnesium compound introduced in step (ii) ranging from 0.1:1 to 100:1, at a temperature ranging from −20° to 100° C. and for a period of 0.5 to 5.0 hours, to obtain a halogenated support;

(iv) titanating said halogenated support by contacting said halogenated support with an excess of a titanium tetrahalide, in the form of either a liquid or as a solution in an inert hydrocarbon solvent, operating at a temperature ranging from 20° to 120° C. and for a period of 0.5 to 5.0 hours, to obtain a titanated support;

(v) contacting said titanated support with a Lewis base, in the from of either a liquid or as a solution in an inert hydrocarbon solvent, operating with a molar ratio between said Lewis base and the magnesium compound introduced in step (ii) ranging from 0.05:1 to 0.5:1, at a temperature ranging from 80° to 120° C. and for a period of 0.5 to 5.0 hours, to obtain a solid component of catalyst; and

(vi) recovering said solid component of catalyst from the reaction products of step (v).

5,348,926

CATALYST FOR POLYMERIZATION OF VINYL COMPOUND

Satoru Yamada, Mie, and Akihiro Yano, Yokkaichi, both of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Division of Ser. No. 117,290, Sep. 7, 1993. This application Mar. 10, 1994, Ser. No. 208,220

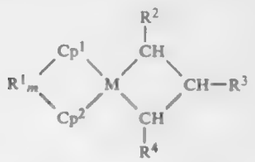
Claims priority, application Japan, Sep. 9, 1992, 4-265527

Int. Cl.[5] C08F *4/64*

U.S. Cl. 502—117 **3 Claims**

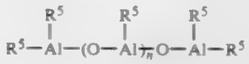
1. A catalyst for polymerization of a vinyl compound, comprising a catalyst component (A) represented by General Formula (1) below:

(1)

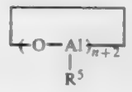


where Cp^1 and Cp^2 are independently a substituted or unsubstituted cyclopentadienyl group; R^1 is a group selected from alkylene groups or arylalkylene groups having 1 to 20 carbons, dialkylsilylene groups, dialkylgermanylene groups, alkylphosphinediyl groups, or alkylimino groups, and R^1 crosslinking Cp^1 and Cp^2 together; m is 0 or 1; M is titanium, zirconium, or hafnium; and R^2, R^3, and R^4 are independently hydrogen, a hydrocarbon group of 1 to 12 carbons, an alkoxy group, or an aryloxy; and a catalyst component (B) represented by the general formula (2) or (3)

(2)



(3)



where n is an integer of from 4 to 60, and R^5 is a hydrocarbon group.

5,348,927

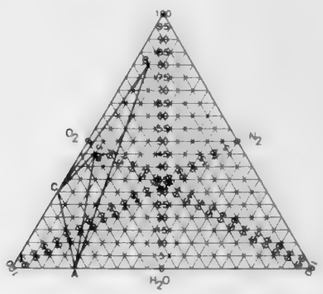
TREATMENT FOR VIRGIN PHOSPHOROUS/VANADIUM OXIDATION CATALYSTS

Arie Bortinger, Ridgewood, N.J., assignor to Scientific Design Company, Inc., Little Ferry, N.J.

Filed Mar. 1, 1993, Ser. No. 24,320

Int. Cl.[5] B01J *27/198, 38/16;* **C07D** *307/60;* **C07C** *55/00*

U.S. Cl. 502—209 **6 Claims**



1. A method of removing chloride from phosphorus/vanadium/oxygen mixed oxide oxidation catalysts comprising treating a chloride containing virgin catalyst of the formula:

$$VP_aZn_bMo_cLi_dO_x$$

wherein a is 0.90 to 1.3, b is 0.001 to 0.15, c is 0.005 to 0.10 and d is 0.001 to 0.15 and x is a determinate number wherein HCl is used as the reducing agent for the vanadium and said catalyst containing up to 1.0 wt % chloride with a stream of gas comprising oxygen, steam and nitrogen and having the composition in the area defined by A-B′-C of FIG. 1 at a temperature in the range of from 250° to 420° C. for 0.5 to 24 hours and to reduce the amount of chloride in the catalyst by at least 75%.

5,348,928

SELECTIVE HYDROTREATING CATALYST

Simon G. Kukes, Naperville; P. Donald Hopkins, St. Charles; Riitta L. A. Olleandorff, Wilmette; Pablo D. Hendler, Chicago; Cynthia D. Ontiveros, West Chicago, and Don M. Washecheck, Naperville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 803,131, Dec. 5, 1991, Pat. No. 5,266,188, which is a continuation-in-part of Ser. No. 689,191, Apr. 22, 1991, abandoned. This application May 6, 1993, Ser. No. 59,234

Int. Cl.[5] B01J *21/04, 23/78, 23/88, 37/04*

U.S. Cl. 502—306 **15 Claims**

1. A selective hydrotreating catalyst suitable for hydrotreating cracked naphtha comprising a hydrogenation component and a support component, said hydrogenation component comprising a molybdenum component and a cobalt component wherein the molybdenum component is present in an amount ranging from about 4 wt % to about 10 wt % and the cobalt component is present in an amount ranging from about 0.5 wt % to about 3 wt %, both calculated as oxides and based on the total catalyst weight, and said support component comprising from about 0.5 wt % to about 50 wt % of a magnesium component and from about 0.3 wt % to about 10 wt % of a sodium component, both calculated as oxides and based on the total catalyst weight, said catalyst having a surface area of not less than 268 m^2/gm.

5,348,929

FUEL ABSORBENT

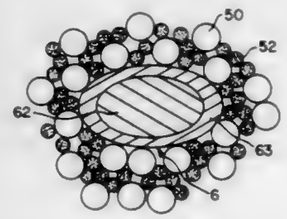
Hiroshi Ito, Ichinomiya; Koji Sasaki, Nagoya; Tadaoki Okumoto, Inazawa; Takashi Ohta, Nagoya; Mitsumasa Matsushita, Nagoya, and Norio Sato, Nagoya, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Division of Ser. No. 687,470, Apr. 19, 1991, Pat. No. 5,174,938. This application Nov. 2, 1992, Ser. No. 953,805

Claims priority, application Japan, Apr. 28, 1990, 2-113256; Apr. 28, 1990, 2-113257; Apr. 28, 1990, 2-113258; Apr. 30, 1990, 2-114372; Apr. 30, 1990, 2-114373

Int. Cl.[5] B01J *20/26, 20/24;* **B01D** *53/02*

U.S. Cl. 502—402 **4 Claims**



1. A porous fuel absorbent comprising:

a cross-linked organic polymer formed into particles, said cross-linked polymer being selected from the group consisting of polypropylenes, polyethylenes, polyisoprenes, polybutadienes, polyisobutylenes, polystyrenes, polynorbornenes, silicon polymers, ethylene-propylene-diene

copolymers, styrene-butadiene copolymers, ethylene-propylene copolymers, isobutyleneisoprene copolymers, butadiene-acrylonitrile copolymers, ethylene-vinyl acetate copolymers, acrylic polymers, styrene-isoprene copolymers, epoxy polymers, and epichlorohydrin polymers:

a dispersant coated on an outer surface of said particles, said dispersant being selected from the group consisting of polyvinyl alcohols, gelatins, tragacanth gum, gum arabic starch, methyl celluloses, carboxymethyl amino soaps, sulfates of higher alcohols, synthetic surface active agents, proteins, vegetable gums, alginates and saponin; and

a reactive substance coated on said dispersant coating said reactive substance having a network structure which prevents pores in said particles from being clogged by coating materials on said outer surface of said particles, and said reactive substance is a material selected from the group consisting of urethane resins, epoxy resins, silicone resins and amino resins.

5,348,930

HEAT SENSITIVE RECORDING MATERIAL

Norio Kobayashi; Toshiaki Takahashi; Masahiro Makino, all of Sabae, and Masaaki Hosoda, Hukui, all of Japan, assignors to Nicca Chemical Co., Ltd., Hukui, Japan

Filed Apr. 2, 1993, Ser. No. 42,109

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—209 **10 Claims**

1. A heat sensitive recording material comprising, as a coating on a support, a heat sensitive color forming layer containing a color former of colorless or light color leuco dyestuff, a developer which develops color by reaction with the color former upon heating and is a mixture of 97–70% by weight of 2,4'-dihydroxydiphenylsulfone and 3–30% by weight of 4,4'-dihydroxydiphenylsulfone and at least one sensitizer selected from the group consisting of p-benzyldiphenyl, di(p-methylbenzyl) oxalate, β-benzyl-oxynaphthalene, 1,2-di(methylphenoxy)ethane, m-terphenyl, diphenylsulfone and phenyl 2,4,6-mesitylenesulfonate.

5,348,931

SUBLIMATION-TYPE THERMAL IMAGE TRANSFER RECORDING MEDIUM

Hidehiro Mochizuki, Numazu; Yutaka Ariga, Fuji; Hiroki Kuboyama, Mishima; Hiroyuki Uemura, Numazu, and Chiharu Nogawa, Shizuoka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,304

Claims priority, application Japan, Jan. 28, 1992, 4-037331; Aug. 25, 1992, 4-248680

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **34 Claims**

1. A sublimation thermal image transfer recording medium comprising:

a support;

a dye-containing layer formed on said support, which comprises a sublimable dye; and

a top layer formed on said dye-containing layer, consisting essentially of a hydrolyzed product of a silane coupling agent.

5,348,932

SYNERGISTIC HERBICIDAL COMPOSITION COMPRISING TRIAZINE HERBICIDES AND EITHER DICLOFOP OR FENOXAPROP WITH FENCHLORAZOLE

Toshihiro Hirata, and Shin-ichiro Ogawa, both of Sodegaura, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

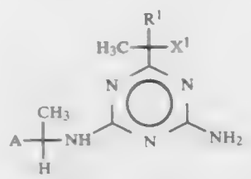
Filed Jun. 1, 1993, Ser. No. 70,549

Claims priority, application Japan, Jun. 8, 1992, 4-171529

Int. Cl.[5] A01N *25/32, 43/68*

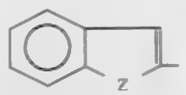
U.S. Cl. 504—106 **13 Claims**

1. A herbicidal composition comprising, as active ingredients, a triazine compound of a formula (I):



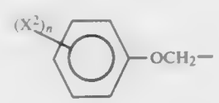
(I)

where A represents a group of a formula (a):



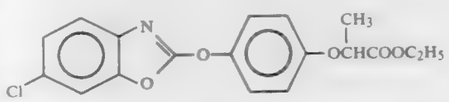
(a)

where Z represents an oxygen atom or a sulfur atom, or represents a group of a formula (b):



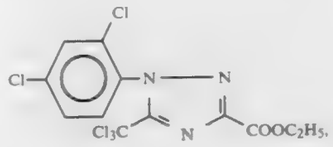
(b)

where X^2 represents a methyl group or a fluorine atom; and n represents an integer of from 0 to 2; R^1 represents a hydrogen atom or a methyl group; and X^1 represents a fluorine atom or a chlorine atom; and a mixture of an aryloxyphenoxy herbicide or, an optical isomer thereof, of a formula (II):



(II)

and a safener for crop injury of a formula (III):



(III)

wherein the weight ratio of said triazine to said mixture is 10:1 to 1:10.

5,348,933

SUBSTITUTED PYRIDINESULFONAMIDE COMPOUND OR ITS SALT, PROCESS FOR PREPARING THE SAME, AND HERBICIDE CONTAINING THE SAME

Nobuyuki Sakashita, Shiga, Japan; Toshio Nakajima, Sunnyvale, Calif.; Shigeo Murai, Shiga, Japan; Kazuyuki Maeda, Shiga, Japan; Yuji Nakamura, Shiga, Japan; Tsunezo Yoshida, Shiga, Japan; Shooichi Honzawa, Shiga, Japan, and Fumio Kanamori, Shiga, Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

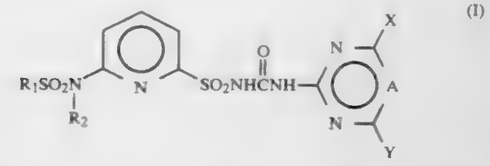
Continuation-in-part of Ser. No. 821,582, Jan. 15, 1992, abandoned. This application Mar. 9, 1993, Ser. No. 28,165

Claims priority, application Japan, Jan. 24, 1991, 3-85718; Jul. 12, 1991, 3-265553; Mar. 10, 1992, 4-101549; Jul. 24, 1992, 4-239931

Int. Cl.[5] C07D *401/12;* **A01N** *43/66*

U.S. Cl. 504—213 **11 Claims**

1. A pyridinesulfonamide compound or its salt represented by the following formula (I):



(I)

wherein A is N; R_1 is a C_{1-4} alkyl group which is optionally substituted with one or more substituents selected from the group consisting of halogen atoms and C_{1-4} alkoxy groups; R_2 is a C_{1-4} alkyl group which is optionally substituted with one or more substituents selected from the group consisting of halogen atoms and C_{1-4} alkoxy groups, or a C_{1-4} alkoxy group which is optionally substituted with one or more substituents selected from the group consisting of halogen atoms and C_{1-4} alkoxy groups; and X and Y are each independently a member selected from the group consisting of C_{1-4} alkyl groups and C_{1-4} alkoxy groups.

5,348,934

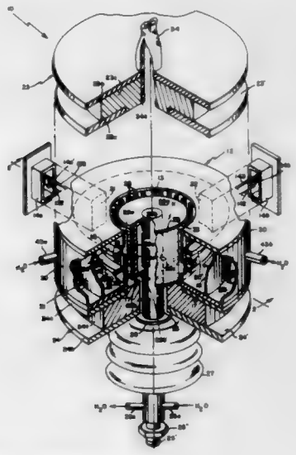
SECONDARY EMISSION CATHODE HAVING SUPECONDUCTIVE OXIDE MATERIAL

Beverley A. Shaw, North Reading, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Sep. 9, 1991, Ser. No. 756,407

Int. Cl.[5] H01J *23/05, 25/42, 19/06;* **H01L** *39/12*

U.S. Cl. 505—125 **10 Claims**



8. A vacuum tube comprising:

a cathode comprised of a superconducting material having a secondary emission ratio greater than 1;

an anode having a slow wave structure disposed adjacent said cathode for providing an interaction space between said slow wave structure and said cathode; and

a waveguide means coupled to said slow wave structure.

5,348,935

HIGHLY OXIDIZED SUPERCONDUCTORS

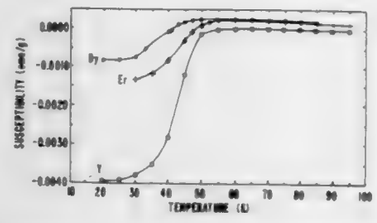
Donald E. Morris, Kensington, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 560,475, Jul. 27, 1990, abandoned, Division of Ser. No. 385,608, Jul. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 263,750, Oct. 28, 1988, abandoned. This application May 22, 1992, Ser. No. 890,346

The portion of the term of this patent subsequent to Jun. 18, 2008, has been disclaimed.

Int. Cl.[5] H01B *1/08, 12/00*

U.S. Cl. 505—482 **16 Claims**



1. A method for producing an oxide, high temperature superconductor material by a solid state method under production conditions comprising reacting a plurality of starting materials in an oxygen partial pressure exceeding 2 atm., said starting materials consisting essentially of a mixture of compounds which are themselves not high-temperature superconductors which combine to form said high temperature superconductor at said production conditions.

5,348,936

METAL-DOPED FULLERENES AND SYNTHETIC METHODS THEREFOR

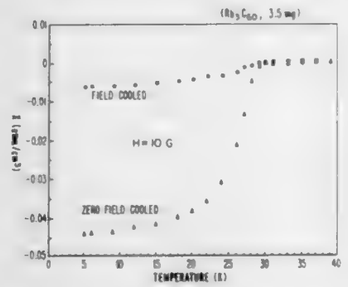
John P. McCauley, Jr., Folscroft; Qing Zhu, Philadelphia; Gavin Vaughan, Philadelphia, and Nicole Coustel, Philadelphia, all of Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Division of Ser. No. 738,888, Aug. 1, 1991, Pat. No. 5,223,479. This application Apr. 16, 1993, Ser. No. 48,651

The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.

Int. Cl.[5] H01L *39/24, 39/12;* **C01B** *31/00*

U.S. Cl. 505—460 **20 Claims**



4. A process for preparing a compound having the formula M_xC_q where M is metal, x is greater than 0 and less than about 10, and q is greater than about 60, comprising the steps of:

contacting C_q with metal in an amount and under reaction

conditions effective to produce a compound having the formula M_yC_q, where y is greater than x; and

contacting said M_yC_q with C_q in an amount and under reaction conditions effective to produce said M_xC_q.

5,348,937

ALIGNED BISMUTH, STRONTIUM, CALCIUM CUPRATE COATINGS ON POLYCRYSTALLINE SUBSTRATES

Louis E. Toth, Washington, D.C., and J. Richard Spann, McLean, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 497,175, Mar. 21, 1990, Pat. No. 5,272,131. This application Dec. 21, 1993, Ser. No. 170,962

Int. Cl.[5] B32B *9/00;* **B05D** *3/02*

U.S. Cl. 505—238 **18 Claims**

1. An article comprising an oriented thick film superconducting coating on a polycrystalline substrate of MgO, alumina, mullite, $SrTiO_3$, ZrO_2, $ZrTiO_4$, $BaTiO_3$ or mixtures thereof, the coating comprising at least two highly oriented platelet components of

$$Bi_aSr_bCa_cCu_dO_x \text{ (BSCCO)}$$

wherein in one component a is 2, b is 2, c is 1, d is 2, and x = 8 and, in another components a is 2, b is 2, c is 9, d is 1, and x is ≈6, oriented such that said BSCCO platelets are essentially parallel to said substrate, said coating having been produced by a process comprising the steps of:

applying a powdered mixture prepared from Bi_2O_3, $SrCO_3$, $CaCO_3$, and CuO onto a polycrystalline substrate, in amount sufficient to provide, upon melting, a coating of 75 μm to about 250 μm thickness upon said substrate;

rapidly heating the resultant coated substrate to a temperature ranging from about 1000°–1100° C. for a period of from about 5–30 minutes to completely melt said powder coating and thus form a molten, thick film coating of about 75 μm to about 250 μm thickness;

rapidly quenching the coated substrate at a rate of at least 50° C./minute to a temperature below about 500° C., which is below that temperature at which phase transition occurs; and

annealing the resultant coated substrate, by heating in an atmosphere of an oxygen-containing gas to a temperature of from about 850°–870° C.

5,348,938

OLEOPHILIC ALCOHOLS AS A CONSTITUENT OF INVERT DRILLING FLUIDS

Heinz Mueller, Monheim; Claus-Peter Herold, Mettmann, and Stephan von Tapavicza, Erkrath, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Fed. Rep. of Germany

PCT No. PCT/EP90/00499, § 371 Date Oct. 7, 1991, § 102(e) Date Oct. 7, 1991, PCT Pub. No. WO90/12070, PCT Pub. Date Oct. 18, 1990

Continuation of Ser. No. 768,937, Oct. 7, 1991, abandoned. This PCT application Mar. 29, 1990, Ser. No. 54,462

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1989, 3911238

The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.

Int. Cl.[5] C09K *7/02*

U.S. Cl. 507—139 **13 Claims**

1. An invert emulsion drilling mud composition suitable for environmentally-compatible development of petroleum and natural gas deposits, consisting essentially of

(a) a continuous oil phase consisting essentially of at least about 50 percent by weight, based on the weight of said oil phase, of a substantially water-insoluble mono- or polyfunctional alcohol having at least 6 carbon atoms, with the remainder being up to 50% by weight of a water-insoluble ester oil, said oil phase being free of aromatic molecular constituents, basic amino and carboxyl groups, said oil phase being fluid and pumpable at a temperature of about 0° to about 5° C. and having a flash point above 80° C.,

(b) an aqueous phase dispersed in said oil phase,

(c) a water-in-oil emulsifier,

(d) a weighting agent,

(e) a viscosifier,

(f) a fluid loss additive,

(g) an alkali reserve, and

(h) an optional component selected from the group consisting of a partial ether of a polyfunctional alcohol, an oleophilic diol having a hydroxyl group in the alpha and omega position or on adjacent carbon atoms or a partial ether thereof, a substantially water-insoluble polyalkyleneglycol ether, and mixtures thereof.

10. The process of developing sources of oil and gas by drilling using a drilling mud, comprising circulating the invert emulsion drilling mud composition of claim **1** as the drilling mud.

5,348,939

FIBRONECTIN-CONTAINING OPHTHALMIC SOLUTION, METHOD OF PRESERVING AN OPHTHALMIC SOLUTION, AND METHOD OF TREATMENT OF OPHTHALMIC WOUNDS

Bernard Horowitz, New Rochelle; Richard W. Shulman; Adrianne J. Setton, both of New York, all of N.Y.; Toyohiko Nishimura, Hyogo, and Yoichi Kawashima, Kyoto, both of Japan, assignors to New York Blood Center, Inc., New York, N.Y.; JCR Pharmaceuticals Co., Ltd., Ashiya and Santen Pharmaceutical Co., Ltd., Osaka, both of Japan

Continuation of Ser. No. 800,060, Nov. 27, 1991, abandoned. This application May 11, 1993, Ser. No. 60,224

Int. Cl.[5] A61K *37/10*

U.S. Cl. 514—8 **16 Claims**

1. A stable and soluble multi-dose ophthalmic solution comprising a therapeutically effective amount Of fibronectin, an amino acid selected from the group consisting of water-soluble hydrophilic amino acids and mixtures thereof, a sugar selected from the group consisting of a monosaccharide, a disaccharide, a trisaccharide, a polysaccharide, derivatives thereof, and mixtures thereof, and a lower alkyl p-hydroxybenzoate preservative, said ophthalmic solution being free of albumin.

5,348,940

CYCLOHEXAPEPTIDYL HYDROXYPROPIONITRILE COMPOUNDS

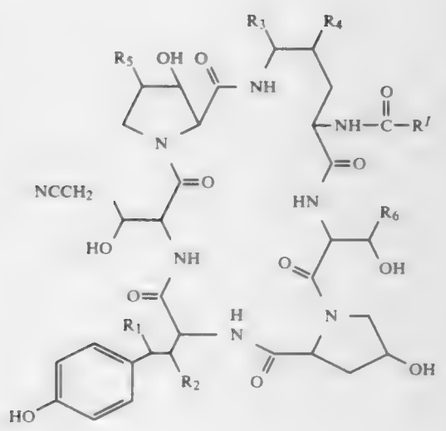
James M. Balkovec, North Plainfield, and Robert A. Zambias, Springfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 771,018, Oct. 1, 1991, abandoned. This application Sep. 3, 1992, Ser. No. 936,434

Int. Cl.[5] A61K *37/02;* **C07K** *7/50*

U.S. Cl. 514—11 **9 Claims**

1. A compound having the formula:



wherein

R_1 is H or OH

R_2 is H or OH

R_3 is H, OH or OR where R is C_1–C_4 alkyl or benzyl

R_4 is H or OH

R_5 is H, OH or CH_3

R_6 is H or CH_3, and

R^1 is C_9–C_{21} alkyl, C_9–C_{21} alkenyl, C_1–C_{10} alkoxyphenyl, or C_1–C_{10} alkoxynaphthyl.

5,348,943

COSMETIC AND SKIN TREATMENT COMPOSITIONS

Loren R. Pickart, Bellevue, Wash., assignor to ProCyte Corporation, Redmond, Wash.

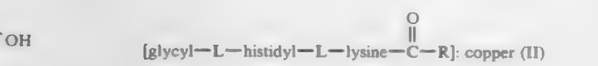
Division of Ser. No. 207,698, Jun. 16, 1988, Pat. No. 5,135,913, which is a continuation-in-part of Ser. No. 48,444, May 11, 1987, abandoned, which is a continuation-in-part of Ser. No. 699,824, Feb. 8, 1985, Pat. No. 4,665,054. This application Aug. 3, 1992, Ser. No. 924,324

The portion of the term of this patent subsequent to May 12, 2004, has been disclaimed.

Int. Cl.[5] A61K *37/02;* **C07K** *5/08, 5/10, 7/06*

U.S. Cl. 514—18 **6 Claims**

1. A skin treatment composition, comprising GHL—Cu or a derivative of GHL—Cu having the formula:



[glycyl—L—histidyl—L—lysine—C(=O)—R]: copper (II)

wherein R is selected from the group consisting of alkyl moieties containing from 1 to 18 carbon atoms, aryl moieties containing from 6 to 12 carbon atoms, alkoxy moieties containing from 1 to 12 carbon atoms, and aryloxy moieties containing from 6 to 18 carbon atoms, or where R is L-prolyl-L-valyl-L-phenylalanyl-L-valine or L-valyl-L-phenylalanyl-L-valine, in combination with a cosmetically and dermatologically acceptable carrier or diluent.

5,348,941

STABILIZERS FOR FIBROBLAST GROWTH FACTORS

C. Russell Middaugh, Quakertown; Pei-Kuo Tsai, Blue Bell, and David B. Volkin, Doylestown, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 1, 1992, Ser. No. 861,060

Int. Cl.[5] A61K *37/02, 37/36*

U.S. Cl. 514—12 **1 Claim**

1. A stable aqueous medicinal composition comprising acidic fibroblast growth factor combined with a stabilizing amount of a compound selected from the group consisting of ATP, AT4P, Ap_3A, Ap_4A, Ap_5A and Ap_6A said compound stabilizing acidic fibroblast growth factor against loss of biological activity.

5,348,942

THERAPEUTIC USES OF BACTERICIDAL/PERMEABILITY INCREASING PROTEIN PRODUCTS

Roger G. Little, II, Benicia; Hélene Gazzano-Santoro, San Bruno, and James B. Parent, Oakland, all of Calif., assignors to Xoma Corporation, Berkeley, Calif.

Filed Mar. 12, 1993, Ser. No. 30,644

Int. Cl.[5] A61K *37/02*

U.S. Cl. 514—12 **2 Claims**

1. A method for neutralizing the anti-coagulant effect of heparin comprising administering to a subject suffering from heparin-mediated lengthening of clotting time an effective amount of a heparin binding bactericidal/permeability-increasing (BPI) protein product.

5,348,944

CARBOXYALKYL DIPEPTIDES

Elijah H. Gold; Bernard R. Neustadt, both of West Orange, and Elizabeth M. Smith, Verona, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 258,484, Apr. 28, 1981, abandoned, which is a continuation-in-part of Ser. No. 201,649, Oct. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 199,886, Oct. 23, 1980, abandoned. This application Apr. 4, 1988, Ser. No. 261,815

The portion of the term of this patent subsequent to May 6, 2003, has been disclaimed.

Int. Cl.[5] A61K *37/02;* **C07K** *5/06*

U.S. Cl. 514—19 **4 Claims**

1. 1-[N-(1-carboethoxy-3-phenylpropyl)-(S)-alanyl]octahydrocyclopenta [b]pyrrole-2(S)-carboxylic acid.

5,348,945

METHOD OF TREATMENT WITH HSP70

Paul A. Berberian; Michael Tytell, both of Winston-Salem, N.C., and David J. Gower, Oklahoma City, Okla., assignors to Wake Forest University, Winston-Salem, N.C.

Continuation of Ser. No. 680,209, Apr. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 505,934, Apr. 6, 1990, abandoned. This application Jun. 11, 1993, Ser. No. 76,279

Int. Cl.[5] A61K *37/02*

U.S. Cl. 514—21 **32 Claims**

1. A method of combatting mortality in a tissue under stress, which stress induces an endogenous HSP70 response in said tissue, said method comprising contacting exogenous HSP70 to the tissue in an amount effective to enhance the survival of cells in that tissue.

5,348,946

HETEROANTHRACYCLINE ANTITUMOR ANALOGS

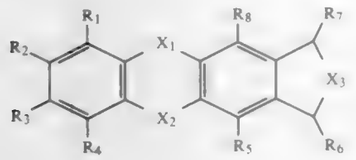
Giorgio G. Attardo, St. Leonard, and Bernard Belleau, deceased, late of Westmount, both of Canada by Pierrette Belleau executrix , assignors to Biochem Immunosystems, Inc., Montreal, Canada

Continuation of Ser. No. 661,376, Feb. 28, 1991, abandoned. This application Aug. 28, 1991, Ser. No. 751,092

Int. Cl.[5] A61K *31/70*; C07H *15/24*

U.S. Cl. 514—34 22 Claims

1. A compound of the formula



X_1 is C═O;

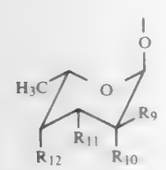
X_2 is S;

X_3 is selected from the group consisting of
S and
SO_2

R_1, R_2, R_3, R_4, R_5 and R_8 are independently selected from group consisting of
hydrogen,
$C_{1\text{-}16}$ alkyl, and
$C_{1\text{-}16}$ alkoxy,

R_7 is hydrogen;

R_6 is a monosaccharide of the formula



wherein R_9 and R_{10} are each hydrogen

R_{11} is selected from the group consisting of
amino, and
trifluoro $C_{1\text{-}16}$ acylated amino; and

R_{12} is selected from the group consisting of
hydrogen,
hydroxyl or its tetrahydropranyl ether,
halogen, and
benzoate which may be unsubstituted or substituted by nitro,

inclusive of the 1S and 1R isomers and the pharmaceutically acceptable salts thereof.

12. A pharmaceutical composition, comprising an effective amount of at least one compound according to claim 1 and a pharmaceutically acceptable carrier.

5,348,947

DIARYLBORON ESTER AND THIOESTER FUNGICIDAL AGENTS

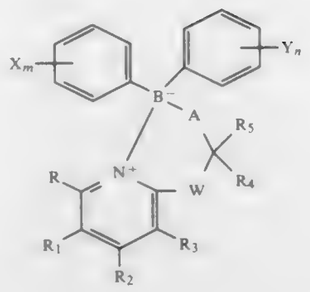
Bomi P. Patel, Philadelphia, Pa., assignor to American Cyanamid Company, Wayne, N.J.

Filed May 7, 1993, Ser. No. 59,155

Int. Cl.[5] A01N *55/08*

U.S. Cl. 514—64 7 Claims

1. A method for the prevention, control or amelioration of a disease caused by a phytopathogenic fungus which comprises contacting said fungus with a fungicidally effective amount of a compound having the structural formula



wherein

X and Y are each independently hydrogen, halogen, or C_1-C_6 alkyl;

m and n are each independently an integer of 0, 1, 2 or 3;

A is O or S;

R, R_1, R_2 and R_3 are each independently hydrogen, halogen, C_1-C_4 alkyl, C_1-C_4 hydroxyalkyl, nitro, NR_6R_7 or SO_3R_8, and when taken together, R and R_1 or R_1 and R_2 may form a ring in which RR_1 or R_1R_2 is represented by the structure: —CH═CH—CH═CH—;

R_4 is hydrogen, halogen, C_1-C_8 alkoxy or C_1-C_8 alkyl;

R_5 is hydrogen, halogen, C_1-C_8 alkoxy, C_1-C_8 alkyl, NR_6R_7, SO_3R_8, hydroxy, oxo or phenyl optionally substituted with one or more halogen, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkoxy or C_1-C_4 haloalkoxy groups, provided that when R_5 is oxo, R_4 is not present;

W is $(CH_2)_p$;

p is an integer of 0 or 1; and

R_6, R_7 and R_8 are each independently hydrogen or C_1-C_4 alkyl.

5,348,948

2,2-DIARYL-1-(OXA AND THIA)-2A-AZONIA-2-BORATAACENAPHTHENE FUNGICIDAL

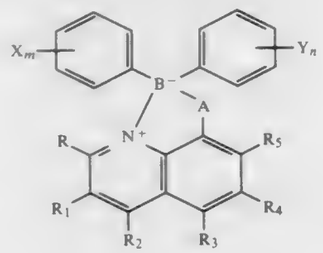
Bomi P. Patel, Philadelphia, Pa., assignor to American Cyanamid Company, Wayne, N.J.

Filed May 7, 1993, Ser. No. 59,940

Int. Cl.[5] A01N *55/08*

U.S. Cl. 514—64 10 Claims

1. A method for the prevention, control or amelioration of a disease caused by a phytopathogenic fungus which comprises contacting said fungus with a fungicidally effective amount of a compound having the structural formula



wherein

X and Y are each independently hydrogen, halogen, C_1-C_6 alkoxy, C_1-C_6 haloalkoxy, C_1-C_6 alkyl or C_1-C_6 haloalkyl;

m and n are each independently an integer of 0, 1, 2 or 3;

A is O or S;

R, R_1, R_2, R_3, R_4 and R_5 are each independently hydrogen, halogen, C_1-C_4 alkoxy, C_1-C_4 haloalkoxy, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 hydroxyalkyl, cyano, nitro, CH_2CN, hydroxy, NR_6R_7, SO_3R_8 or COR_9;

R_6, R_7 and R_8 are each independently hydrogen or C_1-C4alkyl; and

R_9 is C_1-C_4 alkyl.

5,348,949

METHOD OF PREPARING N-OXO-TETRAHYDRO-β-CARBOLINES

Peter H. H. Hermkens; Johan H. Van Maarseveen; Johan W. Scheeren, and Cornelis G. Kruse, all of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Continuation of Ser. No. 851,507, Mar. 16, 1992, abandoned, which is a division of Ser. No. 533,415, Jun. 5, 1990, Pat. No. 5,106,840. This application Feb. 12, 1993, Ser. No. 16,675

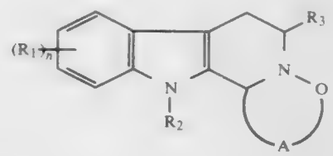
Claims priority, application Netherlands, Jun. 8, 1989, 8901458

The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.

Int. Cl.[5] C07D *209/14, 209/24, 498/14*; A61K *31/535*

U.S. Cl. 514—183 13 Claims

1. A method of preparing an N-oxo-tetrahydro-β-carboline of formula (1):



(1)

wherein

R_1 is a lower alkyl, lower alkoxy, halogen, trifluoromethyl, lower alkylthio, or hydroxy;

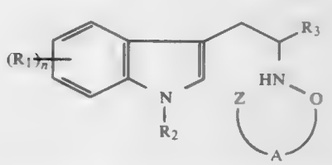
n has the value 0, 1 or 2 and if n is 0, R_1 is hydrogen;

R_2 is hydrogen, lower alkyl or acyl having 1–4 carbon atoms, said acyl being derived from carboxylic acid only;

R_3 is hydrogen, lower alkyl, alkoxycarbonyl having 1–4 carbon atoms or phenyl which is unsubstituted or substituted by a group R_1; and

A is $—(CH_2)_p—Y—CH_2—$ which is unsubstituted or substituted by one or more of the substituents: alkyl having 1–4 carbon atoms, alkoxycarbonyl having 1–4 carbon atoms, alkanoyl having 1–4 carbon atoms, alkoxy having 1–4 carbon atoms, hydroxy, oxo, amino, mono- or dialkylamino having 1–4 carbon atoms, or alkanoyl- or alkoxycarbonylamino having 1–4 carbon atoms, wherein p is 1–3, $—Y—CH_2—$ is connected to the —O— present in the compound of formula (1), and Y is $—CH_2—$;

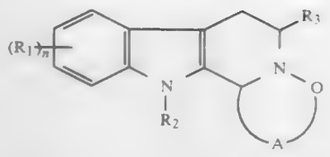
comprising intramolecular ring closing a compound of formula (2):



(2)

wherein R_1, n, R_2, R_3 and A are as defined above and Z is a group which is capable of performing a double electrophilic attack on both the aliphatic nitrogen atom and the carbon atom of the indole ring, said group being selected from an aldehyde function, an acetal function, an ester function and a group which can be converted to such a function during the ring closure reaction.

11. An N-oxo-tetrahydro-β-carboline of formula (1):



(1)

wherein

R_1 is a member selected from the group consisting of lower alkyl, lower alkoxy, halogen, trifluoromethyl, lower alkylthio and hydroxy;

n has the value 0, 1 or 2 and if n is 0, R_1 is hydrogen;

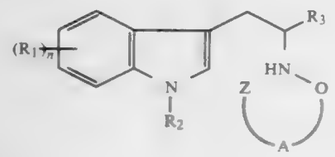
R_2 is hydrogen, lower alkyl or acyl having 1–4 carbon atoms, the acyl being derived from carboxylic acid only;

R_3 is hydrogen, lower alkyl, alkoxycarbonyl having 1–4 carbon atoms or phenyl which is unsubstituted or substituted by a group R_1, and

A is $—(CH_2)_p—Y—CH_2$ which is unsubstituted or substituted by one or more of the substituents: alkyl having 1–4 carbon atoms, alkoxycarbonyl having 1–4 carbon atoms, alkanoyl having 1–4 carbon atoms, alkoxy having 1–4 carbon atoms, hydroxy, oxo, amino, mono- or dialkylamino having 1–4 carbon atoms, or alkanoyl- or alkoxycarbonylamino having 1–4 carbon atoms, wherein p is 1–3, $—Y—CH_2—$ is connected to the —O— present in the compound of formula (1), and Y is $—CH_2—$;

or a therapeutically acceptable salt thereof.

13. An intermediate compound of formula (2)



(2)

wherein

R_1 is a member selected from the group consisting of lower alkyl, lower alkoxy, halogen, trifluoromethyl, lower alkylthio hydroxy;

n has the value 0, 1 or 2 and when n is 0, R_1 is hydrogen;

R_2 is hydrogen, lower alkyl or acyl having 1–4 carbon atoms, the acyl being derived from carboxylic acid only;

R_3 is hydrogen, lower alkyl, alkoxycarbonyl having 1–4 carbon atoms or phenyl which is unsubstituted or substituted by a group R_1;

A is $—(CH_2)_p—Y—CH_2$ which is unsubstituted or substituted by one or more of the substituents: alkyl having 1–4 carbon atoms, alkoxycarbonyl having 1–4 carbon atoms, alkanoyl having 1–4 carbon atoms, alkoxy having 1–4 carbon atoms, hydroxy, oxo-, amino, mono- or dialkylamino having 1–4 carbon atoms, or alkanoyl- or alkoxycarbonylamino having 1–4 carbon atoms, wherein p is 1–3, $—Y—CH_2—$ is connected to the —O— present in the compound of formula (2), and Y is $—CH_2—$; and

Z is an aldehyde function, an acetal function or a group which can be converted into such function.

5,348,950

PLATINUM(II) COMPLEX AND ANTITUMOR AGENT

Go Hata, Fujisawa; Tatsuya Kaneko; Hideki Kawai, both of Kamakura; Masato Mutoh, Yokohama, and Hideyuki Hashimoto, Otsu, all of Japan, assignors to Toray Industries, Inc., Japan

Filed Jun. 5, 1992, Ser. No. 894,779

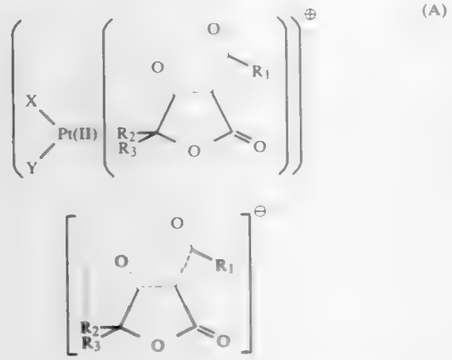
Claims priority, application Japan, Jun. 10, 1991, 3-138029

The portion of the term of this patent subsequent to Apr. 12, 2011, has been disclaimed.

Int. Cl.[5] A61K *33/24;* C07F *15/00*

U.S. Cl. 514—186 13 Claims

1. A platinum(II) complex represented by the general formula (A),



(A)

in which R_1 represents an aliphatic hydrocarbon radical having 1 to 10 carbon atoms, R_2 and R_3 each represent a hydrogen atom or an aliphatic hydrocarbon radical having 1 to 10 carbon atoms, or R_2 and R_3, together, may form $-(CH_2)_4-$ or $-(CH_2)_5-$, and X and Y each represent an ammonia molecule or an aliphatic primary amine having 1 to 10 carbon atoms or X and Y, together, may form a diamine selected from the group consisting of unsubstituted 1,2-diaminoethane, 1,3-diaminopropane, 1,4-diaminobutane and 2-aminomethylpyridine, and 1,2-diaminoethane, 1,3-diaminopropane, 1,4-diaminobutane and 2-aminomethylpyridine substituted by an aliphatic hydrocarbon radical or aliphatic hydrocarbon ether radical having 1 to 10 carbon atoms.

5,348,951

CEPHALOSPORINS

Frederic H. Jung, Rilly la Montagne, France, assignor to ICI Pharma, Cergy Cedex, France

Division of Ser. No. 124,213, Nov. 23, 1987, Pat. No. 5,114,933.

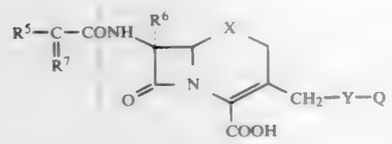
This application Sep. 5, 1991, Ser. No. 755,618

Claims priority, application European Pat. Off., Nov. 21, 1986, 86402592.9

Int. Cl.[5] C07D *501/24;* A61K *31/545*

U.S. Cl. 514—202 4 Claims

1. A cephalosporin compound of the formula (IV):



IV

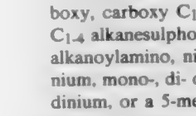
or a salt or ester thereof; wherein,

X is sulphur or sulphinyl;

R^6 is hydrogen, methoxy or formamido;

R^5 is 2-aminothiazol-4-yl or 2-aminooxazol-4-yl each unsubstituted or substituted in the 5-position by fluorine, chlorine or bromine, or R^5 is 5-aminoisothiazol-3-yl, 5-amino-1,2,4-thiadiazol-3-yl, 3-aminopyrazol-5-yl, 3-aminopyrazol-4-yl, 2-aminopyrimidin-5-yl, 2-aminopyrid-6-yl, 4-aminopyrimidin-2-yl, 2-amino-1,3,4-thiadiazol-5-yl or 5-amino-1-methyl-1,2,4-triazol-3-yl;

R^7 is of the formula $=N.O.R^8$ (having the syn configuration about the double bond) wherein R^8 is hydrogen, (1–6C)alkyl, (3–8C)cycloalkyl, (1–3C)alkyl(3–6C)cycloalkyl, (3–6C)cycloalkyl(1–3C)alkyl, (3–6C)alkenyl, carboxy(-3–6C)alkenyl, (5–8C)cycloalkenyl, (3–6C)alkynyl, (2–5C-)alkylcarbamoyl, phenylcarbamoyl, benzylcarbamoyl, (1–4C)alkylcarbamoyl (1–4C)alkyl, di(1–4C)alkylcarbamoyl(1–4C)alkyl, (1–4C)haloalkylcarbamoyl(1–4C)alkyl, (1–3C)haloalkyl, (2–6C)hydroxyalkyl, (1–4C)alkoxy(-2–4C)alkyl, (1–4C)alkylthio (2–4C)alkyl, (1–4C)alkanesulphinyl(1–4C)alkyl, (1–4C)alkanesulphonyl(1–4C)alkyl, (2–6C)aminoalkyl, (1– 4C)alkylamino(1–6C)alkyl, (2–8C-)dialkylamino(2–6C)alkyl, (1–5C)cyanoalkyl, 3-amino-3-carboxypropyl, 2-(amidinothio)ethyl, 2-(N-aminoamidinothio)ethyl, tetrahydropyran-2-yl, thietan-3-yl, 2-oxopyrrolidinyl, or 2-oxotetrahydrofuranyl, or R^8 is of the formula V:



V

wherein q is one or two and R^9 and R^{10} are independently hydrogen or C_{1-4}alkyl; or R^8 is of the formula VI:

$$-CR^{11}R^{12}-(CH_2)_r-COR^{13} \qquad VI$$

wherein r is 0–3, R^{11} is hydrogen, (1–3C)alkyl or methylthio, R^{12} is hydrogen (1–3C)alkyl, (3–7C)cycloalkyl, cyano, carboxy, (2–5C)carboxyalkyl or methanesulphonylamino, or R^{11} and R^{12} are joined to form, together with the carbon to which they are attached, a (3–7C)carbocyclic ring, and R^{13} is hydroxy, amino, (1–4C)alkoxy, (1– 4C) alkylamino or of the formula $NHOR^{14}$ in which R^{14} is hydrogen or (1–4C)alkyl;

or R^7 may be of the formula $=CH.R^{15}$ wherein R^{15} is hydrogen, halogen, (1–6C)alkyl, (3–7C)cycloalkyl, (2–6C)alkenyl, (3–7C)cycloalkenyl, phenyl or benzyl;

wherein Q is:

a benzene ring (optionally fused to a further benzene ring so forming a naphthyl group or optionally fused to a 5 or 6 membered heterocyclic aromatic group containing 1, 2 or 3 heteroatoms selected from the nitrogen, oxygen and sulphur), said benzene ring being substituted by groups R^1 and R^2 which are ortho with respect to one another, wherein R^1 is hydroxy or a C_{1-4} alkanoyloxy and R^2 is hydroxy, or a C_{1-4} alkanoyloxy,

wherein ring Q (or, in the case wherein ring Q is a benzene ring fused to another benzene ring, either benzene ring) is optionally substituted by C_{1-4} alkyl, halo, hydroxy, hydroxy C_{1-4} alkyl, cyano, trifluoromethyl, nitro, amino, C_{1-4} alkylamino, di-C_{1-4} alkylamino, amino C_{1-4} alkyl, C_{1-4}alkylamino C_{1-4} alkyl, di-C_{1-4} alkylamino C_{1-4} alkyl, C_{1-4} alkanoyl, C_{1-4} alkoxy, C_{1-4} alkylthio, C_{1-4} alkanoyloxy, carbamoyl, C_{1-4} alkylcarbamoyl, di-C_{1-4} alkyl carbamoyl, carboxy, carboxy C_{1-4} alkyl, sulpho, sulpho C_{1-4} alkyl, C_{1-4} alkanesulphonamido, C_{1-4} alkoxycarbonyl, C_{1-4} alkanoylamino, nitroso, thioureido, amidino, ammonium, mono-, di- or tri- C_{1-4} alkylammonium or pyridinium, or a 5-membered heterocyclic ring containing 1 to 4 heteroatoms selected from oxygen, nitrogen and sulphur which is optionally substituted by 1, 2 or 3 C_{1-4} alkyl or C_{1-4} alkoxy groups;

Y, which links into the benzene ring, is a covalent bond.

5,348,952

β-LACTAM DERIVATIVES OF THE CEPHEM SULPHONE TYPE

Pierluigi Bissolino, Lomellina; Marco Alpegiani, Milan; Ettore Perrone, Boffalora Ticino; Piergiuseppe Orezzi, Milan; Giuseppe Cassinelli, Voghera, and Giovanni Franceschi, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.R.L., Milan, Italy

PCT No. PCT/EP90/02189, § 371 Date Jun. 12, 1992, § 102(e) Date Jun. 12, 1992, PCT Pub. No. WO91/09036, PCT Pub. Date Jun. 27, 1991

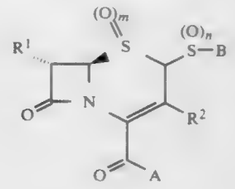
PCT Filed Dec. 14, 1990, Ser. No. 853,745

Claims priority, application United Kingdom, Dec. 15, 1989, 8928373

Int. Cl.[5] C07D *501/20;* A61K *31/545*

U.S. Cl. 514—202 5 Claims

1. A compound of the formula (I')



(I')

wherein

n is zero, one or two; m is one or two;

A is methyl or C_2–C_{10} straight or branched alkyl, alkenyl, alkynyl; C_3–C_8 cycloalkyl; dimethylphenyl, diphenylmethyl; phenyl or benzyl; wherein the alkyl, alkenyl, alkynyl, cycloalkyl, phenyl and benzyl groups are either unsubstituted or substituted by fluoro, chloro, carboxy, C_1–C_4 alkoxycarbonyl, carbamoyl, carbamoyloxy, methylsulphonyl, diazo, hydroxy, methoxy, ethoxy, tertbutoxy, benzyloxy, acetoxy, pivaloyloxy, benzoxy or phenylacetoxy;

B is

(1') optionally substituted C_1–C_5 straight or branched alkyl or alkenyl or C_1–C_5 cycloalkyl;

(2') optionally substituted phenyl;

(3') optionally substituted aralkyl; or

(4') an optionally substituted 5- or 6-membered saturated or unsaturated heterocyclic ring, containing one or more heteroatoms selected from O, S, N, optionally fused to a second said 5- or 6-membered carbocyclic or heterocyclic ring, the substituents for the groups defined under (1')–(4') being selected from hydroxy, C_1–C_3 alkoxy, phenoxy, benzyloxy, benzhydryloxy, methylthio, carboxy, carboxymethyl, carboxyethyl, carbamoylmethyl, amino, acetamido, formamido, dimethylamino, diethylamino, dimethylaminoethyl, nitro, cyano, sulpho, sulphamoyl, tetrazolyl, formimidoyl, ureido, chloro, fluoro, bromo, oxo, C_1–C_5 alkyl, vinyl and allyl;

R^1 is hydrogen or

(1') chloro, fluoro or bromo;

(2') C_1–C_4 alkyl, 1-(hydroxyl)ethyl, 1-(benzyloxy)-ethyl, 1-(benzyloxycarbonyloxy)ethyl, 1-(phenylacetoxy)ethyl, isopropyl phenyl, benzyl or allyl;

(3') methoxy, ethoxy, isopropoxy, phenoxy or benzyloxy;

(4') methylthio;

(5') formyloxy, acetoxy or phenylacetoxy;

(6') mesyloxy or tosyloxy;

(7') formamido, acetamido, fluoroacetamido, trifluoroacetamido or chloroacetamido;

(8') R^v-Ala-NH, wherein R^v is either acetyl, tert-butoxycarbonyl, benzoxycarbonyl or $HOOC-CH_2CH_2C(O)-$;

(9') R^v-Val-NH wherein R^v is as defined above;

(10') Val-Pro-NH, Lys-NH or Ala-Ala-Pro-NH, wherein the terminal amino group of Val, Lys or Ala respectively or the α-amino group of Lys is either free or acylated with a group R^v as defined above;

R^2 is either hydrogen or

(1') methyl, chloromethyl, bromomethyl, benzyl, ethyl, propyl or phenyl;

(2') chloro;

(3') methoxy or benzyloxy;

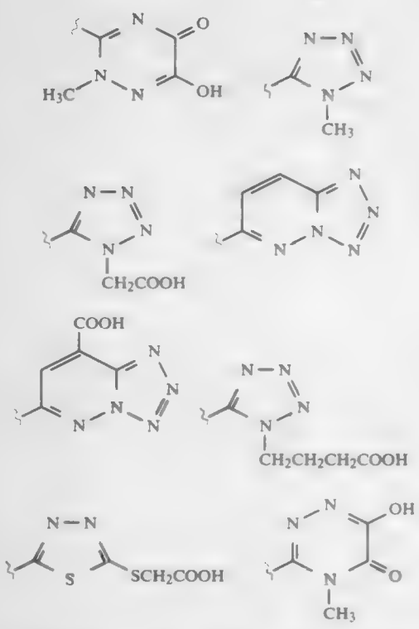
(4') methylthio;

(5') formyl, acetyl, benzoyl, carboxy, methoxycarbonyl, ethoxycarbonyl, tert-butoxycarbonyl or benzyloxycarbonyl;

(6') methoxymethyl, ethoxymethyl, isopropoxymethyl, benzyloxymethyl, phenoxymethyl or 3-pyridyloxy-methyl, wherein the phenyl and pyridyl rings are either unsubstituted or substituted by one group or two groups which are the same or different, the said group or groups being chosen from hydroxy, carboxy, amino and C_1–C_4 alkoxycarbonyl;

(7') methylthiomethyl, phenylthiomethyl, methylsulphonylmethyl, phenylsulphynylmethyl or phenylsulphonylmethyl;

(8') $-CH_2-S$-Het wherein Het is a heterocyclic ring, preferably chosen from



(9') acetoxymethyl, benzoxymethyl, phenylacetoxymethyl or C_3–C_6 alkanoyloxymethyl, each of which is either unsubstituted or substituted by one or more groups selected from carboxy, hydroxy and C_1–C_3 alkoxy;

(10') trialkylammoniomethyl, wherein the alkyl group is chosen from methyl, ethyl, propyl, N-methylpyrrolidiniomethyl, N-methylpiperidiniomethyl and N-methylmorpholiniomethyl;

(11') pyridiniomethyl which is either unsubstituted or substituted on the heterocyclic ring by fluoro, chloro, methoxy, hydroxy, carboxy or carbamoyl; or a pharmaceutically or veterinarily acceptable salt thereof.

5,348,953

SUBSTITUTED AZETIDINONES AS ANTI-INFLAMMATORY AND ANTIDEGENERATIVE AGENTS

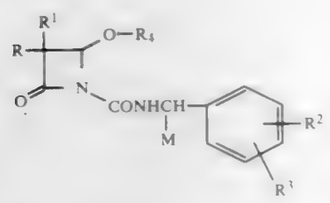
James B. Doherty, Montvale; Paul E. Finke, Milltown; William K. Hagmann, Westfield, all of N.J.; Amy L. Kissinger, Pittsburgh, Pa.; Malcolm MacCoss, Freehold, and Shrenik K. Shah, Metuchen, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 891,614, Jun. 1, 1992, abandoned, which is a continuation-in-part of Ser. No. 720,976, Jun. 25, 1991, abandoned, Ser. No. 720,977, Jun. 25, 1991, abandoned, and Ser. No. 852,854, Mar. 17, 1992. This application Dec. 17, 1992, Ser. No. 992,414

Int. Cl.[5] **A61K** *31/395;* **C07D** *205/08, 403/12, 413/12*

U.S. Cl. 514—210 27 Claims

1. A compound of formula I



I

wherein

R is C_{1-6} alkyl;

R^1 is C_{1-6} alkyl or C_{1-6} alkoxy-C_{1-6} alkyl;

M is

(1) hydrogen,

(2) C_{1-6} alkyl,

(3) hydroxy C_{1-16} alkyl

(4) halo C_{1-6} alkyl,

(5) C_{2-6} alkenyl, or

(6) C_{1-6} alkoxy-C_{1-6} alkyl

R^2 and R^3 are each independently

(1) hydrogen,

(2) C_{1-6} alkyl,

(3) halo,

(4) carboxy,

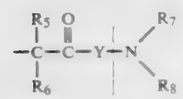
(5) C_{1-6} alkoxy,

(6) phenyl,

(7) C_{1-6} alkylcarbonyl,

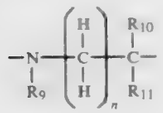
(8) di-(C_{1-6} alkyl)amino, or

R^2 and R^3 are joined together to form the group 3,4-methylenedioxy or a furan ring;



wherein

R_5 and R_6 are each individually hydrogen or C_{1-3} alkyl;



R_7 and R_8 are each individually

(a) hydrogen,

(b) C_{1-6} alkyl,

(c) hydroxy C_{2-6} alkyl

(d) C_{3-5} cycloalkyl,

(e) C_{1-6} alkylcarbonyl,

(f) C_{1-6} alkyloxy carbonyl,

(g) amino carbonyl C_{1-6} akyl, wherein the amino is optionally mono or di substituted with C_{1-6} alkyl, or

(h) carboxy C_{1-6} alkyl,

(i) C_{1-6} alkoxycarbonyl C_{1-6} alkyl,

(j) mono or di substituted benzyl or mono or di substituted pyridylmethyl, wherein the substitutents are X_1 and X_2.

wherein

X_1 is

(1) hydrogen,

(2) halo,

(3) C_{1-6} alkyl,

(4) halo-C_{1-6} alkyl,

(5) C_{2-6} alkenyl,

(6) hydroxy-C_{1-6} alkyl,

(7) C_{1-6} alkylcarbonyl, or

(8) C_{1-6} alkylcarbonylamino; and

X_2 is hydrogen, halo or C_{1-6} alkyl;

n is 1, 2 or 3; and

R_9, R_{10} and R_{11} are each independently selected from hydrogen, C_{1-4} alkyl, and C_{1-3} alkoxy C_{1-3} alkyl; or

wherein R_7 and R_8 are joined together to form mono or di substituted ring of 5, 6, or 7 atoms selected from

(1) piperidinyl,

(2) piperazinyl,

(3) morpholinyl,

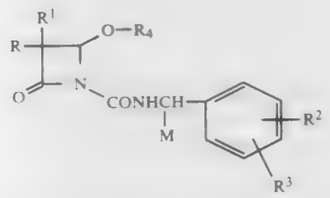
(4) pyrroylidinyl,

(5) pyrryl, and

(6) imidazolyl,

wherein the substituents are each selected from the group consisting of hydrogen and C_{1-3} alkyl; or R_8 and R_9 are joined together with the nitrogens to which they are attached there is formed a saturated monocyclic ring of 6 to 7 atoms having two hetero atoms; or R_9 and R_{10} are joined together with the nitrogen to which R_9 is attached there is formed a saturated monocyclic ring of 5 to 7 atoms having one hetero atom.

9. A compound of the Formula (I)



I

or a pharmaceutically acceptable salt thereof wherein:

R is C_{1-6} alkyl;

R^1 is C_{1-6} alkyl or C_{1-6} alkoxy-C_{1-6} alkyl;

M is

(1) hydrogen,

(2) C_{1-6} alkyl,

(3) hydroxy C_{1-6} alkyl,

(4) halo C_{1-6} alkyl,

(5) C_{2-6} *alkenyl, or*

(6) C_{1-6} alkoxy-C_{1-6} alkyl;

R^2 and R^3 are each independently

(1) hydrogen,

(2) C_{1-6} alkyl,

(3) halo,

(4) carboxy,

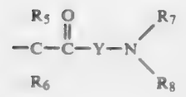
(5) C_{1-6} alkoxy,

(6) phenyl,

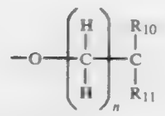
(7) C_{1-6} alkylcarbonyl,

(8) di-(C_{1-6} alkyl)amino, or

R^2 and R^3 are joined together to form the group 3,4-methylenedioxy or a furan ring;



R_5 and R_6 are each individually hydrogen or C_{1-3} alkyl;



R_7 and R_8 are each individually

(a) hydrogen,

(b) C_{1-6} alkyl,

(c) C_{1-6} alkyloxy C_{2-6} alkyl;

n is 1, 2 or 3; and

R_{10} and R_{11} are each independently selected from hydrogen, C_{1-4} alkyl, and C_{1-3} alkoxy C_{1-3} alkyl; or

wherein

R_7 and R_8 are joined together to form mon or di substituted ring of 5, 6, or 7 atoms selected from

(1) piperidinyl,

(2) piperazinyl,

(3) morpholinyl,

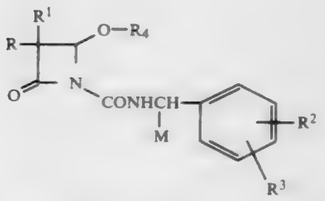
(4) pyrroylidinyl,

(5) pyrryl, and

(6) imidazolyl,

wherein the substituents are each selected from the group consisting of hydrogen and C_{1-3} alkyl.

13. A compound of the Formula (I)



I

or a pharmaceutically acceptable salt thereof wherein:

R is C_{1-6} alkyl;

R^1 is C_{1-6} alkyl or C_{1-6} alkoxy-C_{1-6} alkyl;

M is

(1) hydrogen,

(2) C_{1-6} alkyl,

(3) hydroxy C_{1-6} alkyl,

(4) halo C_{1-6} alkyl,

(5) C_{2-6} alkenyl, or

(6) C_{1-6} alkoxy-C_{1-6} alkyl;

R^2 and R^3 are each independently

(1) hydrogen,

(2) C_{1-6} alkyl,

(3) halo,

(4) carboxy,

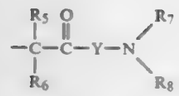
(5) C_{1-6} alkoxy,

(6) phenyl,

(7) C_{1-6} alkylcarbonyl,

(8) di-(C_{1-6} alkyl)amino, or

R_2 and R_3 are joined together to form the group 3,4-methylenedioxy or a furan ring;



R_5 and R_6 are each individually hydrogen or C_{1-6} alkyl;



(b) a co-valent bond;

R_7 and R_8 are each individually

(a) hydrogen,

(b) C_{1-6} alkyl,

(c) C_{1-6} alkyloxy C_{2-3} alkyl,

or wherein

R_7 and R_8 are joined together to form mono or di substituted ring of 5, 6, or 7 atoms selected from

(1) piperidinyl,

(2) piperazinyl,

(3) morpholinyl,

(4) pyrroylidinyl,

(5) pyrryl, and

(6) imidazolyl,

wherein the substituents are each selected from the group consisting of hydrogen and C_{1-3} alkyl; and

wherein n is 0, 1, 2 or 3 and wherein R_{10} and R_{11} are each independently selected from hydrogen, C_{1-3} alkyl, and C_{1-3} alkoxy C_{1-3} alkyl.

5,348,954

HETEROCYCLIC CHELATING AGENTS

Torsten Almén, Malmö, Sweden; Arne Berg, Blommenholm, Norway; Harald Dugstad; Jo Klaveness, both of Oslo, Norway; Klaus D. Krautwurst, Stabekk, and Pal Rongved, Hellvik, both of Norway, assignors to Nycomed Imaging AS, Oslo, Norway

PCT No. PCT/EP90/00079, § 371 Date Jul. 24, 1991, § 102(e) Date Jul. 24, 1991, PCT Pub. No. WO90/08138, PCT Pub. Date Jul. 26, 1990

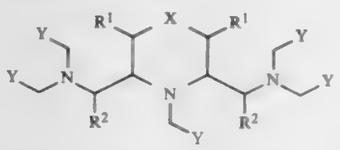
PCT Filed Jan. 15, 1990, Ser. No. 690,975

Claims priority, application United Kingdom, Jan. 13, 1989, 8900719

Int. Cl.[5] **A61K** *31/15;* **C07D** *211/08, 241/04, 279/12, 265/30*

U.S. Cl. 514—227.5 8 Claims

1. A compound of formula I



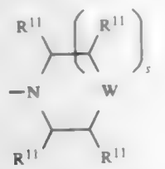
(I)

wherein X represents a bond, an oxygen or sulphur atom or a group of formula CHR^1 or NR^3;

each R^1 which may be same or different represents a hydrogen atom, a group of formula OR^3 or NR^3R^3 or a C_{1-8}alkyl or (C_{1-8}alkoxy)-C_{1-8}alkyl group optionally substituted by a hydroxyl group or by a group of formula NR^3R^3 or $CONR^3R^3$;

each R^2 which may be the same or different represents a hydrogen atom or a C_{1-8}alkyl or C_{1-8}alkoxy group optionally mono- or poly-substituted by hydroxyl or C_{1-8}alkoxy groups;

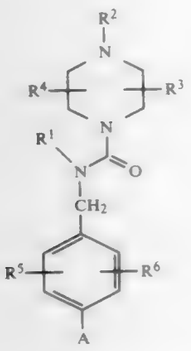
each R^3 which may be the same or different represents a hydrogen atom, an optionally mono-or poly-hydroxylated C_{1-8}alkyl group or a group of formula CH_2Y;
Y represents a group of formula COZ, $CON(OH)R^4$, POZ_2 or SO_2Z;
Z represents a group of formula OR^4, NR^4R^4, or



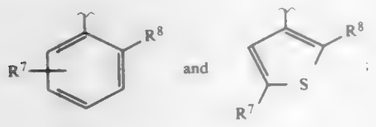
where each R^{11} which may the same or different is a hydrogen atom, a hydroxyl group or an optionally hydroxylated C_{1-8}alkyl group,
s is 0, 1 or 2, and
W is a group CHR^{11}, NR^{11} or an oxygen atom; and
each R^4 which may bet he same or different represents a hydrogen atom or an optionally mono- or poly-hydroxylated C_{1-8}alkyl, (C_{1-8})alkoxy)-C_{1-8}alkyl or poly-(C_{1-8}alkoxy)-C_{1-8}alkyl group; with the provisos that where is O then in the resultant 5 membered heterocyclic ring W is a CHR^{11} group, and that where X represents a bond or a group CHR^1 at least one group R^1 or R^2 represents other than a hydrogen atom or an unsubstituted C_{1-8}-alkyl group, or a salt thereof.

5,348,955
N,N-DIACYLPIPERAZINES
William J. Greenlee, Teaneck, and Mu T. Wu, Clark, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Jun. 22, 1993, Ser. No. 80,893
Int. Cl.[5] A61K *31/495, 31/54;* **C07D** *403/12, 409/14*
U.S. Cl. 514—227.8 **5 Claims**

1. A compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein:
A is selected from:

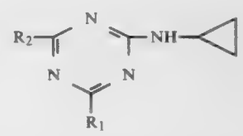


R^1 is selected from the group consisting of:
1) H,
2) C_{1-8} alkyl,
3) C_{3-7} cycloalkyl,
4) phenyl, either unsubstituted or substituted with one or two substituents selected from:
a) C_{1-4} alkyl,
b) -halo,
c) —OH
d) $—CF_3$
e) $—NH_2$,
f) $—NH(C_{1-4}$ alkyl),
g) $—N(C_{1-4}$ alkyl)$_2$,
h) $—CO_2H$,
i) $—CO_2(C_{1-4}$ alkyl), and
j) $—C_{1-4}$ alkoxy; or
5) C_{1-4} alkyl-aryl, wherein the aryl is phenyl or naphthyl, either unsubstituted or substituted with one or two substituents selected from:
a) $—C_{1-4}$ alkyl,
b) -halo,
c) —OH,
d) $—CF_3$,
e) $—NH_2$,
f) $—NH(C_{1-4}$ alkyl),
g) $—N(C_{1-4}$ alkyl)$_2$,
h) $—CO_2H$,
i) $—CO_2(C_{1-4}$ alkyl), and
j) $—C_{1-4}$ alkoxy;
R^2 is selected from the group consisting of:
1) $—C_{1-6}$ alkyl,
2) $—CH_2$-aryl, wherein aryl is as defined in R^1,
3) $—CH_2—C_{3-7}$ cycloalkyl,
4) $—CO_2R^{2a}$, wherein R^{2a} is as defined below,
5) $—CON(R^{2a}R^{2b})$, wherein R^{2a} and R^{2b} are as defined below,
6) $—SO_2N(R^{2a}R^{2b})$, wherein R^{2a} and R^{2b} are as defined below,
7) -aryl, wherein aryl is as defined in R^1,
8) —CO-aryl, wherein aryl is as defined in R^1, and
9) $—CO—C_{1-4}$ alkyl;
R^{2a} and R^{2b} are independently selected from the group consisting of:
1) hydrogen,
2) $—C_{1-8}$ alkyl,
3) $—C_{1-8}$ alkyl-$NH(C_{1-8}$ alkyl),
4) $—C_{1-8}$ alkyl-$N(C_{1-8}$ alkyl)$_2$,
5) -aryl, wherein aryl is as defined in R^1,
6) $—CH_2$-aryl wherein aryl is as defined in R^1, or
7) wherein $—NR^{2a}R^{2b}$may formula heterocyclic ring of the form $—N(CH_2CH_2)_2L$, wherein L is selected from the group consisting of O, S, N—C_{1-4} alkyl, N-aryl, wherein aryl is as defined in R^1, and N—CO—C_{1-4} alkyl;
R^3 is selected from the group consisting of:
1) $—CO_2R^{2a}$, wherein R^{2a} is as defined above,
2) $—CON(R^{2a}R^{2b})$, wherein R^{2a} and R^{2b} are as defined above,
3) $—CH_2S—C_{1-4}$alkyl, and
4) $—CH_2O—C_{1-4}$alkyl;
R^4 is independently selected from:
1) —H,
2) $—C_{1-6}$alkyl, and
3) $—R^3$;
R^5 is selected from the group consisting of:
1) hydrogen,
2) $—C_{1-6}$alkyl,
3) $—C_{2-6}$alkenyl,
4) $—C_{2-4}$alkynyl,
5) halo,
6) $—O—C_{1-4}$alkyl,
7) $—CF_3$,
8) —CN, and
9) $—CH_2O—C_{1-4}$alkyl,
R^6 is independently selected from:
1) H, and
2) R^5;
R^7 is selected from the group consisting of:

1) $—C_{1-6}$alkyl
2) $—C_{2-6}$alkenyl,
3) $—C_{2-4}$alkynyl,
4) halo,
5) aryl, wherein aryl is as defined in R^1,
6) CH_2-aryl, wherein aryl is as defined in R^1,
7) $—O—C_{1-4}$alkyl,
8) $—CF_3$,
9) —CN, and
10) $—CH_2O—C_{1-4}$alkyl;
R^8 is selected from the group consisting of:
1) $—CO_2R^9$, wherein R^9 is hydrogen or C_6alkyl,
2) 1H-tetrazol-5-yl.
3) $—CONHSO_2R^{10}$, wherein R^{10} is selected from:
a) C_{1-6} alkyl,
b) $—C_{1-6}$ alkoxy,
c) aryl, wherein aryl is as defined in R^1,
d) $—CH_2$aryl, wherein aryl is as defined in R^1, and
e) $CH(aryl)_2$,
4) $—SO_2NHR^{10}$,
5) $—NHSO_2R^{10}$,
6) $—SO_2NHCOR^{10}$,
7) $—NHSO_2CF_3$, and
8) $—SO_2NHCO_2R^{10}$.

5,348,956
SUBSTITUTED CYCLOPROPYLAMINO-1,3,5-TRIAZINES
Berend J. Van Keulen, Tubize, Belgium; Solo Goldstein, Montreal, Canada; Eric Cossement, Bruxelles, Belgium; Jean Gobert, Bruxelles, Belgium, and Ernst Wülfert, Bruxelles, Belgium, assignors to UCB S.A., Bruxelles, Belgium
Division of Ser. No. 914,583, Jul. 20, 1992, Pat. No. 5,258,513. This application Aug. 9, 1993, Ser. No. 103,119
Claims priority, application United Kingdom, Jul. 25, 1991, 9116039
Int. Cl.[5] A61K *31/535, 31/53*
U.S. Cl. 514—232.2 **7 Claims**

1. A pharmaceutical composition comprising a therapeutically effective amount of a cyclopropylamino-1,3,5-triazine, its optically active isomers or racemic mixtures thereof of the formula

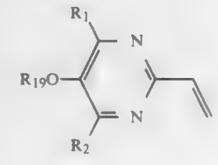


(I)

wherein
R_1 represents an alkyl radical, an unsubstituted cycloalkyl radical or a cycloalkyl radical substituted by at least one alkyl radical, the alkyl radicals having 1 to 3 carbon atoms and the cycloalkyl radicals having 3 to 5 carbon atoms, and
R_2 represents a bis(2-hydroxyethyl)amino, 3-hydroxy-1-azetidinyl, 3-methoxy-1-azetidinyl, 3-oxo-1-azetidinyl, morpholino, 4-hydroxypiperidino, thiomorpholino, thiomorpholino S-oxide, thiomorpholino S,S-dioxide, 3-thiazolidinyl, 3-thiazolidinyl S-oxide, 3-thiazolidinyl S,S-dioxide or 8-oxa-3-azabicyclo[3,2,1]oct-3-yl radical,
or a non-toxic pharmaceutically acceptable acid addition salt thereof, and a pharmaceutically acceptable solid or liquid diluent or carrier therefor.

5,348,957
5-HYDROXY-2-PYRIMIDINYLMETHYLENE DERIVATIVES USEFUL AS ANTIINFLAMMATORY AGENTS
Thomas R. Belliotti, Ypsilanti; David T. Connor, Ann Arbor, and Catherine R. Kostlan, Saline, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.
Division of Ser. No. 909,850, Jul. 7, 1992, Pat. No. 5,270,319, which is a continuation-in-part of Ser. No. 756,400, Sep. 9, 1991, abandoned. This application Aug. 6, 1993, Ser. No. 103,462
The portion of the term of this patent subsequent to Feb. 11, 2010, has been disclaimed.
Int. Cl.[5] A61K *31/535, 31/495, 31/505*
U.S. Cl. 514—235.8 **2 Claims**

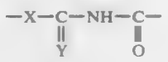
1. A method of treating inflammation in a human in need of such treatment which comprises administering a compound of the formula



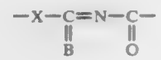
I

A

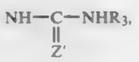
or a pharmaceutically acceptable acid addition or base salt thereof; wherein
R_1 and R_2 are tertiarybutyl;
R_{19} is H;
A is
1)



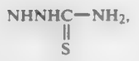
wherein
X is S, O, NH, or CH_2; and
Y is S, O, or NH;
2)



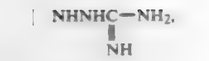
wherein
X is as defined above; and
B is
i) SR_7,
ii) SOR_7,
iii) SO_2R_7,
iv) $NR_{15}R_{16}$,
v) NHCN,
vi)



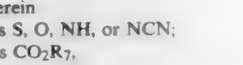
vii)



viii)



ix) $N(OR_6)R_4$,
x) $N(OH)COR_5$,
xi) NR_4W,
xii) $S(CH_2)_nCO_2R_6$, or
xiii) NR_7COR_6
wherein
Z' is S, O, NH, or NCN;
W is CO_2R_7,

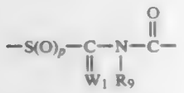


n is 1, 2, or 3;
m is 1, 2, 3, 4, or 5;
R_{15} and R_{16} are independently H, lower alkyl, aralkyl, or $(CH_2)_nNR_6R_7$ wherein n is as defined above;
R_3 is H, alkyl, or aryl;
R_4 is H or alkyl;
R_5 is alkyl, aryl, or CF_3;
R_6 is H or lower alkyl; and
R_7 is lower alkyl;

3)

wherein Z is CH_2, S, O, or NR_8
wherein R_8 is H, lower alkyl, OH, or OMe; or

4)



wherein
p is 0, 1, or 2;
W_1 is H_2, O, or S;
R_9 is
i) lower alkyl,
ii) lower alkenyl,
iii) SO_2CH_3,
iv) OR_{10},
v)

vi) $NR_{12}R_{13}$, or
vii) $-(CH_2)_nY_1$
wherein
n is as defined above;
R_{10} is H, lower alkyl, tosyl, or



Y_1 is —CN, $—OR_{10}$, SH, SR_7,

$NR_{12}R_{13}$ wherein R_{12} and R_{13} are as defined herein,
wherein
R_7 and R_{10} are as defined above;
R_{11} is lower alkyl, lower alkoxy, or NH_2
R_{14} is -OH, lower alkyl, lower alkoxy, or NH_2
R_{12} and R_{13} are each independently H, lower alkyl, lower alkenyl, $(CH_2)_qOH$, $(CH_2)_qNR_{17}R_{18}$, or $(CH_2)_qSR_7$, or R_{12} and R_{13} taken together form a morpholinyl, piperidinyl, piperazinyl, or an N-methyl piperazinyl ring,
wherein
R_7 is as defined above;
q is an integer of 1–6;
R_{17} and R_{18} are independently lower alkyl, in unit dosage form.

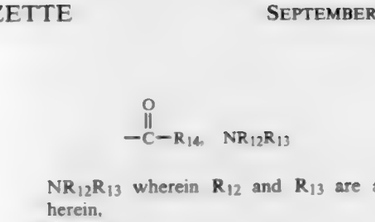
5,348,958

HETARYLOXY-β-CARBOLINES, AND USE AS PHARMACEUTICAL AGENTS FOR TREATING EPILEPSY AND ANXIETY

Martin Krüger; Andreas Huth; Dieter Seidelmann; Herbert Schneider; Lechoslaw Turski, and David N. Stephens, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

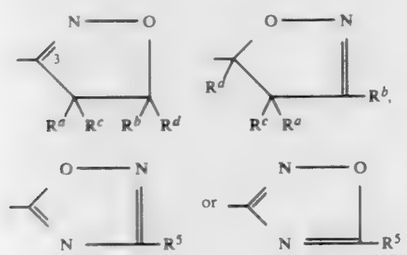
Filed Jun. 5, 1992, Ser. No. 892,819
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1991, 4118741
Int. Cl.[5] **C07D** *471/04, 417/12;* **A61K** *31/44, 31/495*
U.S. Cl. 514—249 **6 Claims**

1. A compound of formula I



I

in which
R^A is an isoquinoline, quenoline, or quinoxaline, each optionally substituted with 1 or 2 of halogen, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkylthio, trifluoromethyl or $SO_2—R^1$,
R^1 is C_{1-4} alkyl or phenyl optionally substituted 1–2 times with C_{1-4} alkyl,
wherein the substituent on R^A is not halogen when R^A is pyridine,
R^4 is hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy-C_{1-2} alkyl,
R^3 is $—CO_2—C_{1-6}$ alkyl, $—CO-R^2$, $—CO_2H$,



and
R^2 is C_{1-4} alkyl, C_{3-7} cycloalkyl, C_{7-9} bicycloalkyl or a monocyclic or bicyclic C_{6-12} aryl radical optionally substituted with C_{1-4} alkyl, C_{1-4} alkoxy or amino,
R^a and R^b are the same or different and each is hydrogen, C_{1-6} alkoxy, C_{1-6} alkyl, $—CH_2—C_{1-4}$ alkyl, phenyl or benzyl,
R^c and R^d each is hydrogen or together form a bond and
R^5 is hydrogen, C_{1-4} alkyl or C_{3-7} cycloalkyl, or an isomer thereof or an acid addition salt thereof.

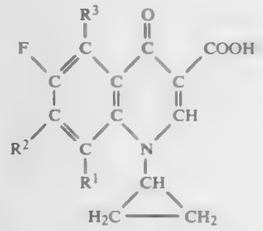
5,348,961

4-OXOQUINOLINE-3-CARBOXYLIC ACID DERIVATIVES AND THEIR USE

Masayuki Iwata, Tokyo; Tomio Kimura, Ube; Teruhiko Inoue, Ube; Yoshimi Fujihara, Ube, and Tetsushi Katsube, Ube, all of Japan, assignors to Sankyo Company Limited, Tokyo, Japan

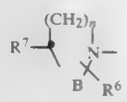
Division of Ser. No. 381,025, Jul. 17, 1989, abandoned. This application Oct. 9, 1990, Ser. No. 594,283
Claims priority, application Japan, Jul. 20, 1988, 63-180557; Sep. 7, 1988, 63-224220
Int. Cl.[5] **A61K** *31/47;* **C07D** *215/56*
U.S. Cl. 514—312 **14 Claims**

1. A compound of formula (I):



(I)

in which
R^1 represents a methoxy group having at least one fluorine substituent;
R^2 represents groups of formula (III):



(III)

in which:
R^6 represents a hydrogen atom; a C_1–C_6 alkyl group; a substituted C_1–C_6 alkyl group having at least one substituent selected from the group consisting of substituents (b), defined below; a hydroxy group; a C_1–C_6 alkoxy group; or a C_1–C_6 alkoxy group having at least one fluorine substituent;
R^7 represents a group of formula $R^8R^9N-(CH_2)_q-$. in which R^8 and R^9 are independently selected from the group consisting of hydrogen atoms, C_1–C_6 alkyl groups and aralkyl groups, and q represents 0 or 1; a hydroxy group; or a C_1–C_6 alkoxy group;
B represents a methylene group, an ethylene group, a trimethylene group, or a tetramethylene group; and
n represents 1 or 2;
substituents (b) are selected from the group consisting of:
hydroxy groups, C_1–C_6 alkoxy groups, and halogen atoms; and
said aralkyl groups have from 1 to 4 carbon atoms in the alkyl part and have an aryl part which has from 6 to 10 carbon atoms and which is unsubstituted or has at least one substituent selected from the group consisting of substituents (c), defined below;
substituents (c) are selected from the group consisting of:
hydroxy groups, C_1–C_6 alkyl groups, C_1–C_6 alkoxy groups, C_2–C_6 aliphatic acyloxy groups, C_2–C_6 aliphatic acyl groups, carboxy groups, C_2–C_6 alkoxycarbonyl groups, sulfo groups, nitor groups, cyano groups, amino groups, C_2–C_6 aliphatic acylamino groups, and mono- and di-(C_1–C_6 alkyl) substituted amino groups;
or a pharmaceutically acceptable salt, ester or amide thereof.

5,348,959

USE OF DICENTRINE AND ITS DERIVATIVES FOR THE TREATMENT OF HYPERTENSION, ARRHYTHMIA, THROMBOSIS AND ATHEROSCLEROSIS

Che-Ming Teng; Chien-Chih Chen, and Sheu-Meei Yu, all of Taipei, Taiwan, assignors to National Science Council, Taipei, Taiwan

Division of Ser. No. 801,275, Dec. 2, 1991, abandoned. This application Apr. 29, 1993, Ser. No. 53,665
Int. Cl.[5] **A61K** *31/21, 35/78*
U.S. Cl. 514—280 **4 Claims**

1. A method for treating atherosclerosis in a subject in need thereof, comprising administering to said subject a pharmaceutical composition which comprises an effective amount of dicentrine or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier.

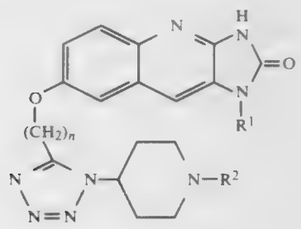
5,348,960

IMIDAZO[4,5-B]QUINOLINYL OXY ALKYL TETRAZOLYL PIPERIDINE DERIVATIVES

Piyasena Hewawasam, Middletown, and Nicholas A. Meanwell, East Hampton, both of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation of Ser. No. 862,682, Apr. 3, 1992, abandoned. This application Aug. 30, 1993, Ser. No. 114,262
Int. Cl.[5] **C07D** *471/04;* **A61K** *31/445*
U.S. Cl. 514—293 **22 Claims**

1. A compound of the formula



wherein
R^1 is H, or C_1–C_4 lower alkyl;
R^2 is H, or $(CH_2)_mR^3$;
R^3 is tetrahydro-2H-pyranyl, C_1–C_8 alkyl, C_4–C_8 cycloalkyl, or substituted or unsubstituted phenyl, wherein the substituents are halogen, alkoxy, or trifluoromethyl;
m is an integer of 1–3; and
n is an integer of 1–5;
or pharmaceutically acceptable salt thereof.

5,348,962

HYDROXYQUINOLONE DERIVATIVES COMPOUNDS WHICH HAVE PHARMACEUTICAL UTILITY

Janusz J. Kulagowski; Ian M. Mawer, both of Bishops Stortford; Paul D. Leeson, Cambridge, and Michael Rowley, Harlow, all of England, assignors to Merck Sharpe & Dohme Ltd., Hoddesdon

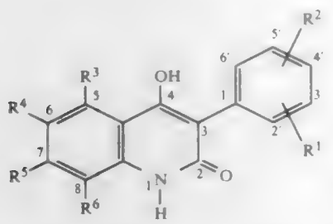
Continuation of Ser. No. 52,237, Apr. 22, 1993, abandoned, which is a continuation of Ser. No. 776,121, Oct. 15, 1991, abandoned. This application Nov. 18, 1993, Ser. No. 154,141

Claims priority, application United Kingdom, Oct. 19, 1990, 9022785

Int. Cl.[5] **A61K** *31/47;* **C07D** *215/48*

U.S. Cl. 514—312 **16 Claims**

1. A method for the treatment and/or prevention of conditions which require the administration of a selective non-competitive antagonist of NMDA receptors which comprises administering to a patient in need of such treatment an effective amount of a compound of formula I:



(I)

pharmaceutically acceptable salt or prodrug thereof wherein

R^1 and R^2 are independently selected from the group consisting of hydrogen, hydrocarbon, halogen, cyano, trifluoromethyl, nitro, $—OR^a$, $—SR^a$, $—SOR^a$, $—SO_2R^a$, $—SO_2NR^aR^b$, $—NR^aR^b$, $—NR^aCOR^b$, $—NR^aCO_2R^b$, $—COR^a$, $—CO_2R^a$ and $—CONR^aR^b$; or R^1 and R^2 together represent the residue of a carbocyclic ring;

R^3, R^4, R^5 and R^6 are independently selected from the group consisting of hydrogen, hydrocarbon, halogen, cyano, trifluoromethyl, nitro, $—OR^a$, $—SR^a$, $—SOR^a$, $—SO_2R^a$, $—SO_2NR^aR^b$, $—NR^aR^b$, 13 NR^aCOR^b, $—NR^aCO_2R^b$, $—COR^a$, $—CO_2R^a$ and $—CONR^aR^b$; and

R^a and R^b are independently represent hydrogen or hydrocarbon.

5,348,963

METHOD OF SCREENING FOR MODULATORS OF AMYLOID FORMATION

Samuel E. Gandy; Gregg L. Caporaso, and Paul Greengard, all of New York, N.Y., assignors to The Rockefeller University, New York, N.Y.

Division of Ser. No. 809,174, Dec. 17, 1991, Pat. No. 5,242,932. This application May 26, 1993, Ser. No. 53,415

Int. Cl.[5] **A01N** *43/16, 43/42;* **A61K** *31/47*

U.S. Cl. 514—313 **1 Claim**

1. An in vitro assay method for screening for agents that modulate amyloid formation which comprises;

(a) metabolically labeling mammalian cells in culture to produce metabolically labeled mammalian cells;

(b) contacting the metabolically labeled mammalian cells with an agent suspected of being capable of modulating the trafficking and processing of APP in the mammalian cell during cell metabolism;

(c) lysing the mammalian cells;

(d) immunoprecipitating labeled protein of aid cells with an antibody against amyloid precursor protein; add

(e) examining the immunoprecipated APP of said cells for alterations in the trafficking and processing of APP.

5,348,964

PIPERIDYL ETHERS AND THIOETHERS AS INHIBITORS OF CHOLESTEROL BIOSYNTHESIS

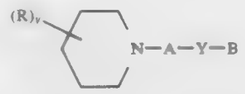
Charlotte L. Barney, Cincinnati; James R. McCarthy, West Chester, and Marion W. Wannamaker, Cincinnati, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 919,993, Jul. 27, 1992, abandoned, which is a continuation of Ser. No. 851,454, Mar. 16, 1992, abandoned, which is a continuation of Ser. No. 557,877, Jul. 25, 1990, abandoned. This application Jul. 15, 1993, Ser. No. 92,278

Int. Cl.[5] **H01N** *43/40;* **C07D** *211/20*

U.S. Cl. 514—315 **13 Claims**

1. A method of inhibiting the biosynthesis of cholesterol in a patient in need thereof comprising administering to said patient an effective cholesterol biosynthesis inhibiting amount of a compound of the formula



wherein

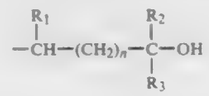
Y is oxygen, sulfur, sulfinyl or sulfonyl;

A is a C_2–C_{15} alkylene having 0 to 3 double bonds;

B is a C_2–C_{15} alkyl having 0 to 3 double bonds;

v is a integer 0, 1 or 2; and

R is hydroxy, C_1–C_4 alkyl or a radical of the formula



wherein

n is an integer 0, 1, 2 or 3; and

R_1, R_2 and R_3 are each independently hydrogen or a C_1–C_4 alkyl.

5,348,965

N-SUBSTITUTED AZAHETEROCYCLIC CARBOXYLIC ACIDS

Knud E. Andersen, Smorum; Lars J. S. Knutsen, Vedbaek; Per O. Sorensen, Frederiksberg; Behrend F. Lundt, Kokkedal; Jesper Lau, Farum, and Hans Petersen, Vanlose, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

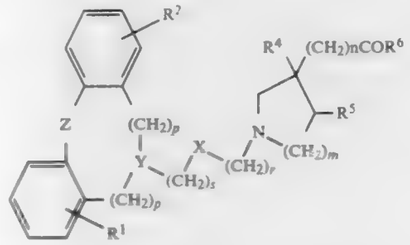
Filed May 14, 1992, Ser. No. 882,788

Claims priority, application Fed. Rep. of Germany, May 17, 1991, 0937/91

Int. Cl.[5] **C07D** *211/14, 211/70;* **A61K** *31/445*

U.S. Cl. 514—325 **16 Claims**

1. A compound of formula I



(I)

wherein

R^1 and R^2 independently are hydrogen, halogen, trifluoromethyl, C_{1-6}-alkyl or C_{1-6}-alkoxy;

Y is $>CH—CH_2—$ or $>C═CH—$ when s is 0, 1 or 2 or Y is $>CH—CH═NH—$ or $>C═N—$ when s is 0, wherein the underscored atom is part of the ring system;

X is —O—;

Z is $—CH_2—$, $—CH_2—CH_2—$, $CH═CH—CH_2—$, $—CH_2—CH═CH—$, $—CH_2—CH_2—CH_2—$ or $—CH═CH—$;

R^4 and R^5 independently are hydrogen or together represent a bond;

R^6 is OH or C_{1-8}-alkoxy;

p is 0 or 1;

q is 0 or 1;

s is 0, 1 or 2;

r is 2, 3 or 4;

m is 2; and

n is 0; or

a pharmaceutically acceptable salt thereof.

5,348,966

METHOD FOR TREATING PYODERMA AND SEZARY'S SYNDROME USING FK 506 AND RELATED COMPOUNDS

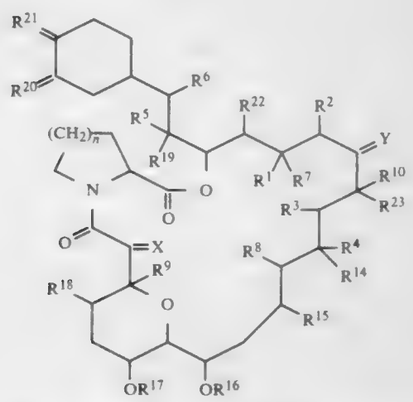
Thomas E. Starzl, and Satoru Todo, both of Pittsburgh, Pa., assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 15,880, Feb. 10, 1993, abandoned, which is a continuation of Ser. No. 899,945, Jun. 17, 1992, abandoned, which is a continuation of Ser. No. 602,638, Oct. 24, 1990, abandoned. This application Nov. 22, 1993, Ser. No. 155,533

Int. Cl.[5] **A61K** *31/445, 31/33, 31/40*

U.S. Cl. 514—326 **15 Claims**

1. A method for treating pyoderma, comprising administering, to a patient in need thereof, an effective amount of a compound of the formula (I)



I

wherein each vicinal pair of substituents (R^1 and R^2), (R^3 and R^4), (R^5 and R^6) independently

a) represent two vicinal hydrogen atoms, or

b) form a second bond between the vicinal carbon atoms to which they are attached;

in addition to its significance above, R^2 may represent an alkyl group;

R^7 represents H, OH, protected hydroxy or O-alkyl, or in conjunction with R^1 it may represent =O;

R^8 and R^9 independently represent H or OH;

R^{10} represents H, alkyl, alkyl substituted by one or more hydroxyl groups, alkenyl, alkenyl substituted by one or more hydroxyl groups, or alkyl substituted by =O;

X represents O, (H,OH), (H,H) or $—CH_2O—$;

Y represents O, (H,OH), (H,H), $N—NR^{11}R^{12}$ or $N—OR^{13}$;

R^{11} and R^{12} independently represent H, alkyl, aryl or tosyl;

R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, R^{18}, R^{19}, R^{22} and R^{23} independently represent H or alkyl;

R^{20} and R^{21} independently represent O, or they may independently represent (R^{20}a,H) and (R^{21}a,H) respectively;

R^{20}a and R^{21}a independently represent OH, O-alkyl or $OCH_2OCH_2CH_2OCH_3$ or R^{21}a is protected hydroxy;

in addition, R^{20}a and R^{21}a may together represent an oxygen atom in an epoxide ring;

n is 1, 2 or 3;

in addition to their significances above, Y, R^{10} and R^{23}, together with the carbon atoms to which they are attached, may represent a 5- or 6- membered N-, S- or O-containing heterocyclic ring, which may be saturated or unsaturated, and which may be substituted by one or more groups selected from alkyl, hydroxy, alkyl substituted by one or more hydroxyl groups, O-alkyl, benzyl and $—CH_2Se(C_6H_5)$;

and pharmaceutically acceptable salts thereof.

5,348,967

DIAMINOTRIFLUOROMETHYLPYRIDINE DERIVATIVES, PROCESS FOR THEIR PRODUCTION AND PHOSPHOLIPASE A_2 INHIBITOR CONTAINING THEM

Takahiro Haga; Hideo Sugi; Itaru Shigehara; Shinji Odawara; Syuichi Yotsuya; Hirohiko Kimura, and Kazuhiro Yamamoto, all of Kusatsu, Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

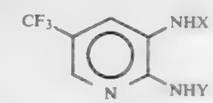
Division of Ser. No. 723,377, Jun. 28, 1991, Pat. No. 5,229,403. This application Mar. 23, 1993, Ser. No. 35,622

Claims priority, application Japan, Jul. 10, 1990, 2-181999; May 24, 1991, 3-222530

Int. Cl.[5] **A61K** *31/44;* **C07D** *213/75*

U.S. Cl. 514—352 **5 Claims**

1. A diaminotrifluoromethylpyridine derivative of the formula (I) or its salt:



(I)

wherein X is $—CW^1R^1$ and Y is C_{1-18} alkyl, $—CW^3R^6$, $—COCOR^7$, $—NHCOR^7$, $—C(═W^3)W^4R^8$, $—(NH)_mSO_2OR^{10}$ or $—(NH)_mSO_2N(R^{11})R^{12}$, wherein each of R^1 and R^6, which are independent from one another, is a chain hydrocarbon group which is optionally substituted, a monocyclic hydrocarbon group which is optionally substituted, or a polycyclic hydrocarbon group which is optionally substituted, R^7 is C_{1-18} alkyl which is optionally substituted, C_{1-18} alkoxy which is optionally substituted, phenyl which is optionally substituted or phenoxy which is optionally substituted, each of R^8 and R^{10}, which are independent from one another, is C_{1-18} alkyl which is optionally substituted, C_{2-18} alkenyl which is optionally substituted, C_{2-18} alkynyl which is optionally substituted, C_{3-18} cycloalkyl which is optionally substituted, phenyl which is optionally substituted or benzyl which is optionally substituted, each of R^{11} and R^{12}, which are independent from one another, is C_{1-18} alkyl which is optionally substituted, each of W^1, W^3 and W^4, which are independent from one another, is an oxygen atom or a sulfur atom, and m is 0 or 1, provided that a combination wherein one of X and Y is $—COCF_2X^1$ wherein X^1 is a hydrogen atom, a halogen atom, alkyl or haloalkyl, and the other is $—COCF_2X^2$ wherein X^2 is a hydrogen atom, a halogen atom, alkyl, haloalkyl or alkylcarbonyl, or $—COOX^3$ wherein X^3 is alkyl which is optionally substituted or phenyl which is optionally substituted, is excluded;

wherein said chain hydrocarbon group for each of R^1 and R^6 is selected from the group consisting of C_{1-18} alkyl, C_{2-18} alkenyl and C_{2-18} alkynyl; said monocyclic hydrocarbon group for each of R^1 and R^6 is selected from the group consisting of C_{3-8} cycloalkyl, C_{5-8} cycloalkenyl, and phenyl; said polycyclic hydrocarbon group for each of R^1 and R^6 is a condensed polycyclic hydrocarbon group selected from the group consisting of naphthyl, tetrahydronaphthyl and indanyl, or a bridged polycyclic

hydrocarbon group selected from the group consisting of adamantyl, noradamantyl, norbornanyl and norbornanonyl;

wherein the substituent for each of the chain hydrocarbon group which is optionally substituted for each of R^1 and R^6, the alkyl which is optionally substituted and the alkoxy which is optionally substituted for R^7, the alkyl which is optionally substituted, the alkenyl which is optionally substituted and the alkynyl which is optionally substituted for each of R^8 and R^{10}, the alkyl which is optionally substituted for each of R^{11} and R^{12}, and the alkyl which is optionally substituted for X^3, is a halogen atom, alkoxy, haloalkoxy, alkylthio, cycloalkyl, cycloalkoxy, cycloalkenyl, cycloalkenyloxy, alkoxycarbonyl, alkylcarbonyl, alkylcarbonyloxy, aryl, aryloxy, arylthio, amino or alkyl-substituted amino; and

wherein the substituent for each of the monocyclic hydrocarbon group which is optionally substituted and the polycyclic hydrocarbon group which is optionally substituted for each of R^1 and R^6, the phenyl which is optionally substituted and the phenoxy which is optionally substituted for R^7, the cycloalkyl which is optionally substituted, the phenyl which is optionally substituted and the benzyl which is optionally substituted for each of R^8 and R^{10}, and the phenyl which is optionally substituted for X^3, is a halogen atom, alkyl, haloalkyl, alkoxy, haloalkoxy, alkylthio, cycloalkyl, cycloalkoxy, cycloalkenyl, cycloalkenyloxy, alkylcarbonyl, alkylcarbonyloxy, aryl, aryloxy, arylthio, amino, alkyl-substituted amino, cyano or nitro.

5,348,968

INDOLE, INDAZOLE AND BENZISOXAZOLE COMPOUNDS

Gilbert Lavielle, La Celle Saint Cloud; Philippe Maillos, Villejuif; Olivier Muller, Ennery; Michel Laubie, Vaucresson; Tony Verbeuren, Vernouillet, and Jean-Jacques Descombes, Neuilly-Plaisance, all of France, assignors to Adir et Compagnie, Courbevoie, France

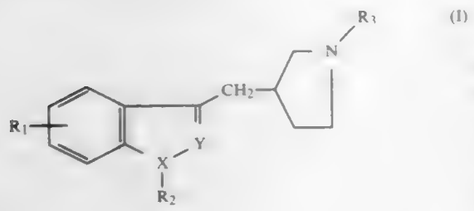
Filed Feb. 1, 1994, Ser. No. 189,798

Claims priority, application France, Feb. 2, 1993, 93 01054

Int. Cl.[5] A61K *31/41, 31/415;* **C07D** *209/08, 231/56*

U.S. Cl. 514—360 **11 Claims**

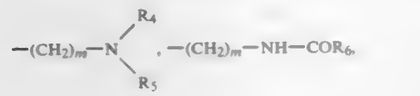
1. A compound of formula (I):

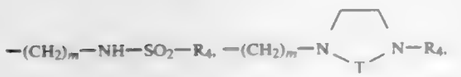


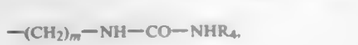
(I)

in which:

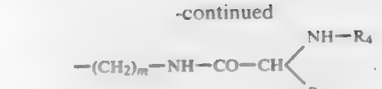
R_1 represents hydrogen, halogen, linear or branched (C_1–C_6)alkyl, linear or branched (C_1–C_6)-alkoxy, cyano, or aminocarbonyl, or any one of the following groups:

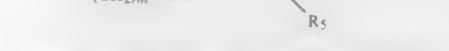


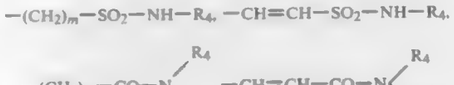


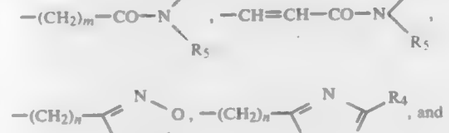


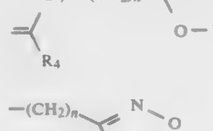
-continued











in which

m is equal to 1, 2 or 3,

n is equal to 0, 1 or 2,

T represents CO or SO_2,

R_4or R_5, which are identical or different, represent hydrogen, linear or branched (C_1–C_6)alkyl, or phenyl (unsubstituted or substituted by one or a number of halogen, alkyl, alkoxy, or trihalomethyl),

R_2 represents hydrogen, linear or branched (C_1–C_6)alkyl, phenyl (unsubstituted or substituted by one or a number of halogen, alkyl, alkoxy, or trihalomethyl) or acyl,

R_3represents hydrogen, linear or branched (C_1–C_6)alkyl (optionally substituted by hydroxyl or phenyl (itself unsubstituted or substituted by one or a number of halogen, alkyl, alkoxy, or trihalomethyl)), or linear or branched (C_1–C_6)alkoxycarbonyl, —X—Y= represents —N—C=, —N—N= or else



represents —O—N=;

its enantiomers, diastereoisomers and epimers, and its addition salts with a pharmaceutically-acceptable acid.

5,348,969

DIPHENYLOXAZOLYL-OXAZOLES AS PLATELET AGGREGATION INHIBITORS

Jeffrey L. Romine, Meriden, and Nicholas A. Meanwell, East Hampton, both of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Apr. 3, 1992, Ser. No. 862,902

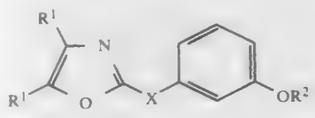
The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.

Int. Cl.[5] A61K *31/42*

U.S. Cl. 514—376 **30 Claims**

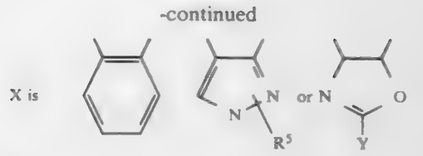
1. A compound of the formula

FORMULA I

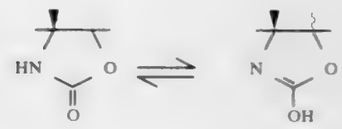


wherein

-continued



Y is CH_3, Ph, or OH, provided that when Y is OH, the compound exists in the keto-enol tautaumerism form



R^1 is Ph or Th;

R^2 is H or CH_2R^3;

R^3 is H, OCH_3, C_1–C_5 lower alkyl, or CO_2R^4;

R^4 is H or C_1–C_5 lower alkyl;

R^5 is H or CH_3;

or pharmaceutically acceptable salt thereof.

5,348,970

ANTIFUNGAL COMPOUND AND COMPOSITIONS CONTAINING THE COMPOUND

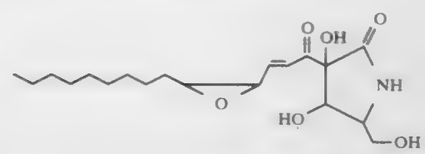
Robert E. Schwartz, Scotch Plains; Janet C. Onishi, Westfield; Gerald F. Bills, Cranford; Robert A. Giacobbe, Lavallette, all of N.J.; Fernando Pelaez, Madrid, Spain; Maria T. Diez, Madrid, Spain; Francisca Vicente, Madrid; Julian Gorrochategui, Madrid, Spain; Gregory L. Helms, Fanwood, and Barnali Pramanik, Somerset, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 22, 1993, Ser. No. 125,432

Int. Cl.[5] A61K *31/40;* **C07D** *405/06*

U.S. Cl. 514—422 **5 Claims**

1. A compound represented by formula I:



I

or a pharmaceutically acceptable ester or hydrate thereof.

5,348,971

INDANES USEFUL AS ANALGESICS

Francois Clemence; Michel Fortin, both of Paris; Gilles Hamon, Le Raincy; Odile Le Martret, and Anne-Marie Moura, both of Paris, all of France, assignors to Roussel Uclaf, France

Continuation of Ser. No. 954,332, Sep. 30, 1992, abandoned, which is a continuation of Ser. No. 450,630, Dec. 14, 1989, abandoned. This application Aug. 9, 1993, Ser. No. 105,329

Claims priority, application France, Dec. 16, 1988, 88 10605

The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.

Int. Cl.[5] A61K *31/40;* **C07D** *295/073*

U.S. Cl. 514—428 **3 Claims**

1. A compound selected from the group consisting of (1S,2S)N-[2,3-dihydro-2-(1-pyrrolidinyl)-1H-inden-1-yl]-N-methyl-3-nitro-benzene-acetamide and its anhydrous hydrochloride, trans (±)N-[5,6-dichloro-2,3-dihydro-2-(1-pyrrolidinyl)-1H-inden-1-yl]-N-methyl-3-nitro-benzene-acetamide and its hydrochloride, 1S, trans N-[5-chloro-2,3-dihydro-2-(1-pyrrolidinyl)-1H-inden-1-yl]-N-methyl-3-nitro-benzene-acetamide and its methane-sulfonate, trans (±) N-[5-chloro-2,3-dihydro-2-(1-pyrrolidinyl)-1H-inden-1-yl]-N-methyl-3-nitro-benzene-acetamide and its hydrochloride, (1R, 2R) N-[3,3-dihydro-2-(1-pyrrolidinyl)-1H-inden-1-yl]-N-methyl-3-nitro-benzene-acetamide and its sequihydrate or anhydrous hydrochloride and 1R, trans N-[5-chloro-2,3-dihydro-2-(1-pyrrolidinyl)-1H-inden-1-yl]-N-methyl-3-nitro-benzene-acetamide and its methane sulfonate.

5,348,972

DISUBSTITUTED ACETYLENES BEARING HETEROAROMATIC AND HETEROBICYCLIC GROUPS HAVING RETINOID LIKE ACTIVITY

Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allergan, Inc., Irvine, Calif.

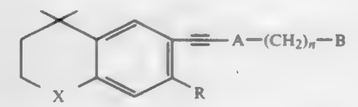
Division of Ser. No. 792,832, Nov. 15, 1991, Pat. No. 5,234,926, which is a division of Ser. No. 326,191, Mar. 20, 1989, Pat. No. 5,089,509, which is a continuation-in-part of Ser. No. 246,037, Sep. 15, 1988, abandoned, which is a continuation of Ser. No. 28,279, Mar. 20, 1987, abandoned. This application Mar. 8, 1993, Ser. No. 27,624

The portion of the term of this patent subsequent to Feb. 3, 2010, has been disclaimed.

Int. Cl.[5] A61K *31/38;* **C07D** *409/06*

U.S. Cl. 514—432 **22 Claims**

1. A compound of the formula



where X is S; R is hydrogen or lower alkyl; A is thienyl or furyl; n is 0–4; and B is H, —COOH or a pharmaceutically acceptable salt thereof, or an ester thereof with a saturated aliphatic alcohol of ten or fewer carbon atoms, or with a cyclic or saturated aliphatic cyclic alcohol of 5 to 10 carbon atoms, or with phenol or with a lower alkylphenol, or an amide or a mono or di-substituted amide thereof, the substituents on the amide being selected from a group consisting of saturated aliphatic radicals of ten or fewer carbon atoms, cyclic or saturated aliphatic cyclic radicals of 5 to 10 carbon atoms, and phenyl or lower alkylphenyl radicals, or B is CH_2OH or an ester derivative thereof derived from a saturated aliphatic acid of ten or fewer carbon atoms, or from a cyclic or saturated aliphatic cyclic acid of 5 to 10 carbon atoms, or from benzoic acid, or an ether derivative thereof derived from a saturated aliphatic radical of ten or fewer carbon atoms, or from a cyclic or saturated aliphatic cyclic radical of 5 to 10 carbon atoms, or from phenyl or lower alkylphenyl radical, or B is —CHO or a lower alkyl acetal derivative thereof, or an acetal derivative thereof formed with a lower alkyl diol, or B is —COR_1 or a lower alkyl ketal derivative thereof, or a ketal derivative thereof formed with a lower alkyl diol, where R_1 is —$(CH_2)_mCH_3$ where m is 0–4, or a pharmaceutically acceptable salt of the compound defined in said formula.

5,348,973

RESOLUTION OF HYDROXYCHROMAN-2-CARBOXYLIC ACID ESTERS BY ENANTIOMERIC HYDROLYSIS

Muppala S. Raju, Bridgewater, N.J., and Namdol Huh, Ellicott City, Md., assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Oct. 9, 1990, Ser. No. 594,317

Int. Cl.[5] A01N *43/16;* **C07D** *311/04*

U.S. Cl. 514—456 **44 Claims**

1. A process for resolving by enantiospecific hydrolysis carboxylic acid esters which are the methyl or ethyl esters of 6-hydroxy-2,5,7,8-tetramethyl-chroman-2-carboxylic acid comprising the step of

hydrolyzing said esters with an animal liver enzyme derived

from an animal selected from the group consisting of calf, cat, dog, eel, goat, lungfish, mouse, rat and seal;

wherein percent acid produced upon hydrolysis is at least about 26% and percent enantiomeric excess of said resolved acid is at least about 8%.

5,348,974

TOCOTRIENOLS IN THE TREATMENT OF HYPERCHOLESTEROLEMIA, HYPERLIPIDEMIA AND THROMBOEMBOLIC DISORDERS

John J. Wright, North Guilford; Bradley C. Pearce, East Hampton; Rex Parker, Branford, all of Conn., and Asaf A. Qureshi, Madison, Wis., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation of Ser. No. 583,907, Sep. 17, 1990, Pat. No. 5,217,992, which is a continuation-in-part of Ser. No. 416,910, Oct. 4, 1989, abandoned. This application Feb. 10, 1993, Ser. No. 15,778

Int. Cl.[5] A61K *31/35, 31/44, 31/355*

U.S. Cl. 514—456 **6 Claims**

1. A method of reducing, in a bird or a mammal, the platelet aggregation to adenosine diphosphate, epinephrine or Collagen in platelet rich plasma and whole blood which comprises administering to such bird or mammal a safe and effective amount of substantially pure gamma-tocotrienol, substantially pure delta-tocotrienol, substantially pure tocotrienol, or mixtures thereof.

5,348,975

7-CHROMANYL ESTERS OF PHENOLS AND BENZOIC ACIDS HAVING RETINOID-LIKE ACTIVITY

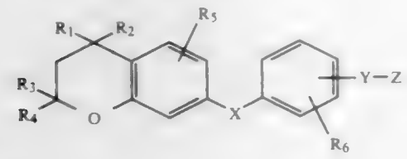
Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 918,538, Jul. 22, 1992, which is a division of Ser. No. 676,152, Mar. 26, 1991, Pat. No. 5,134,159. This application Oct. 27, 1993, Ser. No. 143,682

Int. Cl.[5] A61K *31/35;* **C07D** *311/04*

U.S. Cl. 514—456 **18 Claims**

1. A compound of the formula



wherein

the R_1–R_6 groups are independently H or straight chain or branched chain lower alkyl or cycloalkyl groups of up to 6 carbons;

X is —COS—;

Y is cycloalkyl or branched chain alkyl group of 3 to 6 carbons, or is $(CH_2)_n$ where n is an integer between 0 to 6, and

Z is H, OH, OR', OCOR', —COOH or a pharmaceutically acceptable salt, $COOR_8$, $CONR_9R_{10}$, $—CH_2OH$, CH_2OR_{11}, CH_2OCOR_{11}, CHO, $CH(OR_{12})_2$, $CHOR_{13}O$, —COR', $CR'(OR_{12})_2$, or $CR'OR_{13}O$ where R' is an alkyl, cycloalkyl or alkenyl group containing up to 5 carbons, R_8 is an alkyl group of 1–10 carbons, or a cycloalkyl group of 5–10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R10 independently are hydrogen, an alkyl group of 1–10 carbons, or a cycloalkyl group of 5–10 carbons or phenyl or lower alkyl phenyl, R_{11} is lower alkyl, R_{12} is lower alkyl R_{13} is divalent alkyl radical of 2 to 5 carbons.

5,348,976

CONDENSED HETEROCYCLIC DERIVATIVES AND AGRICULTURAL OR HORTICULTURAL FUNGICIDES CONTAINING THE SAME

Masaru Shibata; Shigekazu Ito; Jun-etsu Sakai, and Shigeru Hayashi, all of Shizuoka, Japan, assignors to Kumai Chemical Industry Co., Ltd. and Ihara Chemical Industry Co., Ltd., both of Tokyo, Japan

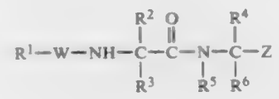
Filed Sep. 7, 1993, Ser. No. 117,284

Claims priority, application Japan, Sep. 7, 1992, 4-262718; Jan. 28, 1993, 5-31117; Jul. 30, 1993, 5-208258

Int. Cl.[5] A01N *43/10*

U.S. Cl. 514—469 **6 Claims**

1. A condensed heterocyclic derivative represented by a formula:



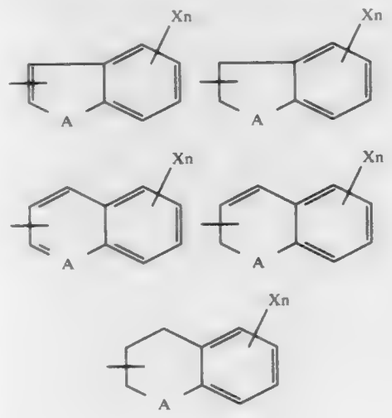
wherein

R^1 represents a C1–C6 alkyl group optionally having at least one substituent selected from the group consisting of a halogen atom, a cyano group, and a methoxy group, a C2–C6 alkenyl group, a C2–C6 alkynyl group, a C3–C8 cycloalkyl group optionally having at least one methyl group, a C3–C8 cycloalkenyl group optionally having at least one methyl group, a C2–C6 cyclic ether group optionally having at least one methyl group, a C7–C10 aralkyl group optionally having at least one substituent selected from the group consisting of a methyl group, a methoxy group, and a nitro group, a phenyl group optionally having at least one substituent selected from the group consisting of a halogen atom, a methyl group, a methoxy group, a nitro group, and a methoxycarbonyl group, a dimethylamino group, or an ethoxy carbonyl group,

R^2, R^3, R^4, R^5, and R^6 independently represent a hydrogen atom, a C1–C6 alkyl group optionally having at least one halogen group, a C3–C6 cycloalkyl group, a C7–C10 aralkyl group; a phenyl group, a cyano group, an acyl group, a C1–C6 alkoxy group, or a C1–C6 alkoxycarbonyl group,

R^2 may form a C3–C6 alkylic ring with R^3;

Z is represented by the following formulae:



wherein

X represents a hydrogen atom, a halogen atom, a C1–C6 alkyl group optionally having at least one halogen atom, a C2–C6 alkynyl group, a methoxy group, a trifluoromethoxy group, a hydroxyl group, a methoxycarbonyl group, a methylcarbonyloxy group, an amino group, a dimethylamino group, a nitro group, a methylthio group, a methylsulfinyl group, a methylsulfonyl group, a phenyl group, an acetyl group, a formyl group, or a cyano group;

n is an integer of 1, 2, or 3;

A is O, S, N, or represented by the formula:



wherein

R^7 represents a hydrogen atom, a methyl group, an acetyl group, or a benzoyl group; and

W is represented by —C(O)—, —SO_2—, —NHC(O)—, —$N(CH_3)$C(O)—, —OC(O)—, —SC(O)—, —OC(S)—, or —SC(S)—.

5,348,977

COBALT COMPLEXES AS ANTI-CANCER AGENTS

William A. Denny; Brian D. Palmer; David C. Ware, and William P. Wilson, all of Auckland, New Zealand, assignors to Warner Lambert Company, Morris Plains, N.J.

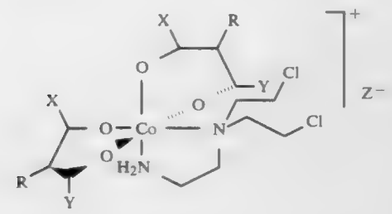
Continuation-in-part of Ser. No. 83,862, Jun. 28, 1993, abandoned, which is a continuation of Ser. No. 825,228, Jan. 24, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 184,413

Claims priority, application New Zealand, Jan. 25, 1991, 236906

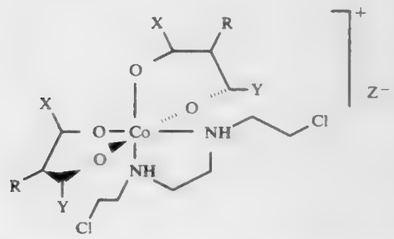
Int. Cl.[5] A61K *31/295;* **C07F** *15/06*

U.S. Cl. 514—501 **11 Claims**

1. A compound represented by either of the general formulae (I) and (II):



(I)



(II)

where X and Y separately represent H, lower alkyl (optionally substituted with hydroxy and/or amino functions) containing from 1 to 6 carbon atoms, or phenyl; R represents H, lower alkyl (optionally substituted with hydroxy and/or amino functions), phenyl (optionally substituted with Me, OQ, CONHQ and/or NHCOQ, where Q is lower alkyl optionally substituted with hydroxy and/or amino functions and containing from 1 to 6 carbon atoms) or halogen, and Z^- is Cl^-, Br^-, I^-, ClO_4^-, NO_3^-, HCO_3^- or any other pharmaceutically-acceptable organic or inorganic counterion.

5,348,978

ANGIOTENSIN CONVERTING ENZYME INHIBITORS

Andrew J. G. Baxter, Nottingham, and Premji Meghani, Leicestershire, both of England, assignors to Fisons plc, Ipswich, England

PCT No. PCT/GB91/00980, § 371 Date Dec. 10, 1992, § 102(e) Date Dec. 10, 1992, PCT Pub. No. WO92/00276, PCT Pub. Date Jan. 9, 1992

PCT Filed Jun. 18, 1991, Ser. No. 956,877

Claims priority, application United Kingdom, Jun. 22, 1990, 9013994; Oct. 2, 1990, 9021411; Apr. 6, 1991, 9107237

Int. Cl.[5] A61K *31/25, 31/38;* **C07C** *321/08;* **C07D** *333/34*

U.S. Cl. 514—547 **7 Claims**

1. Compounds of formula I,

$Z(CH_2)_nCHR_1COOCHR_2COOH$

in which Z is $—SR_3$,

R_1 is hydrogen, alkyl C_{1-6}, NHR_8 or $(CH_2)_pR_9$,

R_2 is $(CH_2)_mXR_{10}$,

X is O, $S(O)_q$, C=O or NR_{11}, and

R_{10} is alkyl C_{1-6}, alkylhalo C_{1-6}, alkoxy C_{1-6}, alkoxy C_{1-6} substituted by halogen, alkanoyl C_{1-6}, $S(O)_rR_{12}$, $NR_{13}R_{14}$, phenyl, alkylphenyl C_{7-12}, naphthalenyl or a 5-membered unsaturated heterocyclic ring,

n is an integer from 0 to 6,

m and p, which may be the same or different, are each an integer from 1 to 6,

R_9 is hydrogen, SR_{15} or phenyl optionally substituted by OR_{16},

R_3 and R_{15}, which may be the same or different, are each hydrogen or alkanoyl C_{1-6},

R_8 is hydrogen or $COOR_{17}$,

q and r, which may be the same or different, are each 0, 1, or 2,

R_{11}, R_{13}, R_{14}, R_{16}, and R_{17}, which may be the same or different, are each hydrogen or alkyl C_{1-6}, and

R_{12} is hydrogen, alkyl C_{1-6} or phenyl,

and pharmaceutically acceptable salts thereof.

5,348,979

METHOD OF PROMOTING NITROGEN RETENTION IN HUMANS

Steven L. Nissen, Ames, Iowa; Paul J. Flakoll, Old Hickory, Tenn., and Naji N. Abumrad, Old Field, N.Y., assignors to Iowa State University Research Foundation Inc., Ames, Iowa and Vanderbilt University, Nashville, Tenn.

Filed Dec. 23, 1992, Ser. No. 996,187

Int. Cl.[5] A61K *31/19, 31/335;* **A23L** *1/03*

U.S. Cl. 514—557 **14 Claims**

1. The method of protein sparing, comprising orally or intravenously administering to a human subject an effective amount of β-hydroxy-β-methylbutyric acid (HMB) for increasing the retention of nitrogen, said HMB being in an edible or intravenously-administrable form selected from (i) its free acid form, (ii) its sodium, potassium, or calcium salt, (iii) its methyl or ethyl ester, or (iv) its lactone, and continuing the said administration of HMB until the amount of nitrogen in the patient's urine has substantially decreased.

5,348,980

ENANTIOMERS DERIVED FROM (S)-2-AMINO-2-(3,4-DICHLOROBENZYL)-1-PROPANOL, THEIR USE AND METHOD OF PREPARATION

Gilbert Aubard, Palaiseau; Jacques Bure, Neuilly-sur-Seine; Alain Calvet, L'Hay-les-Roses; Claude J. Gouret; Agnès Grouhel, both of Meudon, and Jean-Louis Junien, Sevres, all of France, assignors to Institute de Recherche Jouveinal, Fresnes, France

Filed May 3, 1993, Ser. No. 58,698

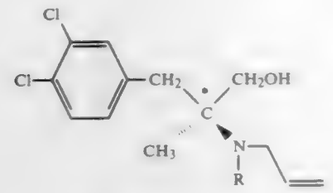
Claims priority, application France, May 5, 1992, 92 005519

Int. Cl.[5] A61K *31/135;* **C07C** *215/00*

U.S. Cl. 514—653 **26 Claims**

1. (S)-(+)-N-allyl-2-methylamino-2-(3,4-dichlorobenzyl)-1-propanol hydrochloride.

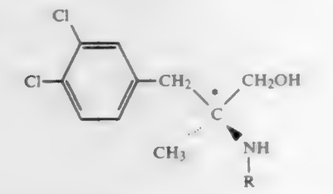
2. A method of treating a human suffering from allergic or histamine-mediated diseases which comprises administering an anti-allergic effective amount of an enantiomer of (S) absolute configuration defined according to the Cahn-Ingold-Prelog rule and by formula (I):



(I)

in which R is hydrogen or a methyl radical, or one of its addition salts with non-toxic acids.

10. A process for preparing (S)-(−)-2-amino-2(3,4-dichlorobenzyl)-1-propanol of formula (II)



(II)

in which R is hydrogen, which comprises reacting 3,4-dichlorophenylacetone with a potassium cyanide and an ammonium carbonate to obtain (+/−)-5-3,4-dichlorobenzyl)-5-hydantoin; forming an addition salt by stereospecific salification of (+/−)-5-3,4-dichlorobenzyl)-5-hydantoin with (R)-(+)-α-methyl-benzylamine; treating the addition salt with acid to obtain (S)-(−)-5-(3,4-dichlorobenzyl)-5-methyl hydantoin in an alkaline aqueous solution to obtain (S)-(−)-2-amino-2-(3,4-dichlorobenzyl)alanine; and reducing the (S)-(−)-2-amino-2-(3,4-dichlorobenzyl) alanine with a borane-dimethyl sulfide complex to obtain the compound of formula (II).

5,348,981

ANTIHERPETIC TREATMENT

Lillie B. T. Moore, 515 London House Rd., Montgomery, Ala. 36110

Filed Sep. 23, 1993, Ser. No. 125,242

Int. Cl.[5] A61K *47/00*

U.S. Cl. 514—788 **14 Claims**

1. A method of treating herpetic lesions in a patient in need of such treatment comprising topically administering a composition consisting essentially of about 39% by weight Potassium nitrate, about 34.5% by weight sulfur, about 27.5% by weight carbon black in an aqueous carrier and optionally containing formulating agents at about 4% by weight.

5,348,982

SLURRY BUBBLE COLUMN (C-2391)

Eric Herbolzheimer, Annandale, and Enrique Iglesia, Clinton, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 929,084, Aug. 12, 1992, abandoned, which is a continuation of Ser. No. 732,244, Jul. 18, 1991, abandoned, which is a continuation of Ser. No. 504,746, Apr. 4, 1990, abandoned. This application May 20, 1993, Ser. No. 63,969

Int. Cl.[5] C07C *1/04*

U.S. Cl. 518—700 **16 Claims**

1. A method for optimally operating a large diameter three phase (gas, liquid, solid) slurry bubble column having a diameter greater than 15 cm for Fischer-Tropsch synthesis over a supported cobalt catalyst in which solid particles are fluidized in the liquid phase by bubbles of the gas phase, comprising:

(a) injecting the gas phase into said column at an average gas velocity along said column, $U_g > 2$ cm/sec, such that the flow regime is in the substantial absence of slug flow;

(b) fluidizing the solid supported cobalt catalyst particles of average diameter, $d_p > 5$ μm, to the height, $H > 3$m, of the expanded liquid in the column by operating with a catalyst settling velocity, U_s, and dispersion coefficient, D, such that

$$0.5\,(U_s - U_L) \leqq \frac{D}{H}\text{, where } H > 3 \text{ m}$$

where

$$U_s = \frac{1}{18}\, d_p{}^2\, \frac{\rho_s - \rho_l}{\mu}\, g\, f(C_p)\text{, where } d_p > 5\ \mu\text{m}$$

and

(c) maintaining plug flow in said column by operating with a gas phase velocity, U_g, expanded liquid height, H, and dispersion coefficient, D, such that

$$U_g \geqq 0.2D/H\text{, where } H > 3\text{m, } U_g > 2 \text{ cm/sec}$$

wherein

ρ_s = effective density of the particles

ρ_l = density of the liquid

μ = viscosity of the liquid

$f(C_p)$ = hindered settling function

= volume fraction of solids in the slurry (liquid plus solids)

U_L = liquid velocity along the column

H = height of the expanded liquid in said reactor

g = gravitational constant

d_p = diameter of particles

m = meters.

5,348,983

FOAMED POLYLACTIDE MOLDINGS AND PRODUCTION THEREOF

Hans-Josef Sterzel, Dannstadt-Schauernheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 22, 1993, Ser. No. 155,146

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1992, 4239781

Int. Cl.[5] C08J *9/232, 9/236*

U.S. Cl. 521—54 **3 Claims**

1. A process for producing foamed polylactide articles by which is at least 90% by weight either L- or D-enantiomer heating and foaming a mixture of amorphous polylactide which polylactide is at least 90% by weight either L- or D-enantiomer granules which contain a blowing agent and of a finely divided polylactide which does not contain a blowing agent in a mold.

5,348,984

EXPANDABLE COMPOSITION AND PROCESS FOR EXTRUDED THERMOPLASTIC FOAMS

Shau-Tarng Lee, Oakland, N.J., assignor to Sealed Air Corporation, Saddle Brook, N.J.

Filed Jan. 28, 1993, Ser. No. 10,275

Int. Cl.[5] C08J *9/08, 9/14*

U.S. Cl. 521—79 **28 Claims**

1. An extrudable, expandable composition for producing stable, low density polyolefin foam products having a stable foam density of from about 20 kg/m^3 to 40 kg/m^3, said composition comprising:

a) a plasticized polyolefin resin; and

b) a blowing agent for expanding the composition comprising carbon dioxide and a hydrocarbon selected from the group consisting of n-butane, isobutane, propane, and mixtures thereof, wherein said carbon dioxide and said hydrocarbon are present in a ratio by weight of from about 1:3 to 3:1, whereby said hydrocarbon is present in an amount sufficient to reduce the viscosity of the resin and to produce a stable foam with a decreased density and desirable surface texture over that of carbon dioxide alone, without substantially increasing the flammability of the blowing agent.

5,348,985

PROCESS FOR MAKING THERMOPLASTIC POLYESTER FOAMS

Eric J. Pearce, Ballston Lake, and John W. Carbone, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 18, 1994, Ser. No. 181,944

Int. Cl.[5] C08G *63/00, 63/78;* **C08J** *9/06, 9/12*

U.S. Cl. 521—124 **14 Claims**

1. A process for making thermoplastic polyester foam comprising the steps of:

(a) heating to an operating temperature macrocyclic polyester oligomer precursors to produce free flowing precursors;

(b) subjecting said free flowing precursors to a blowing agent and an initiator; and

(c) recovering said thermoplastic polyester foam.

5,348,986

PHOTOCURABLE SILICONE COMPOSITION, AND METHOD OF MAKING SAME

Hsien-Kun Chu, Wethersfield; Robert P. Cross, West Simsbury; David I. Crossan, Hebron, and Edward K. Welch, II, Bristol, all of Conn., assignors to Loctite Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 615,185, Nov. 19, 1990, Pat. No. 5,212,211, and Ser. No. 615,186, Nov. 19, 1990, Pat. No. 5,182,315. This application Jan. 25, 1993, Ser. No. 7,946

Int. Cl.[5] C08F *2/50;* **C08G** *77/20, 77/26*

U.S. Cl. 522—37 **16 Claims**

1. A silicone:

(i) capped, by a non-hydrolysis capping reaction, with acryloxy functional moieties of a silyl diacrylate caper of the formula:



wherein:

R_1, R_2, R_3, R_4, R_5, R_6R_7, R_8, R_9, and R_{10} are independently selected from hydrogen, halo, and organo radicals; and n is an integer having a value of from 1 to 4;

whereby said silicone is partially curable under radiation exposure conditions curingly effective therefor, optionally including the presence therewith of a photoinitiator, and

(ii) having additional functionality imparting to the silicone at least one partial curing modality different from the partially curingly effective radiation exposure conditions constituting a first partial curing modality therefor, or being present with another material which is curable by curing conditions other than actinic radiation exposure curingly effective for the silicone by virtue of the acryloxy-functional moieties thereof.

5,348,987

NOX REMOVAL CATALYST CONTAINING AN INORGANIC FIBER

Yasuyoshi Kato, and Kunihiko Konishi, both of Kure, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Japan

Filed Jan. 12, 1993, Ser. No. 3,446

Claims priority, application Japan, Jan. 21, 1992, 4-008649

Int. Cl.[5] B01J *21/08*

U.S. Cl. 502—242 **4 Claims**

1. A process for producing a NOx removal catalyst containing an inorganic fiber, which comprises:

kneading water containing a surfactant and a hydrophobic inorganic fiber until the hydrophobic nature of the inorganic fiber is changed to hydrophilic, to disperse the fiber in a pulp-like admixture; and then

adding a catalytic component to said pulp-like admixture and further kneading the resultant mixture to make a uniform dispersion of said fiber in a paste-like mixture and shaping the paste-like mixture to obtain a shaped catalytic material.

5,348,988

DENTIN BONDING SYSTEM

Byoung Suh, Oak Brook, and Martin Hamer, Skokie, both of Ill., assignors to Bisco, Inc., Downers Grove, Ill.

Continuation of Ser. No. 924,398, Aug. 3, 1992, abandoned, which is a continuation of Ser. No. 766,967, Sep. 26, 1991, abandoned, which is a continuation of Ser. No. 508,925, Apr. 12, 1990, abandoned. This application Oct. 29, 1993, Ser. No. 144,998

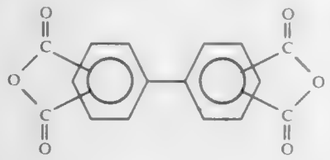
Int. Cl.[5] C08K *5/09*

U.S. Cl. 523—118 **5 Claims**

1. A primer for improving the bond strength between a dental composite and dentin or a metal, sail primer comprising:

(1) the reaction product of N-tolylglycine or N-phenylglycine with glycidyl methacrylate, and

(2) a bonding agent comprising the reaction product of an ethylenically unsaturated alcohol having 3 to 12 carbon atoms with a cyclic anhydride having the formula



(I)

5,348,989

INK VOLATILIZATION PREVENTING COMPOSITION FOR AQUEOUS BALL POINT PEN

Katsuhiko Shiraishi, Yokohama, Japan, assignor to Mitsubishi Pencil Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1993, Ser. No. 36,476

Claims priority, application Japan, Mar. 25, 1992, 4-097466

Int. Cl.[5] C09D *5/00, 11/00*

U.S. Cl. 523—161 **5 Claims**

1. An ink volatilization preventing composition for an aque-

ous ball point pen which is to be put onto the upper surface of an aqueous ink having a viscosity of from 10^{-3} to 2 Pa sec (25° C.) in an ink tank of the aqueous ball point pen, said composition being obtained by blending a gelling agent and a polyether-modified silicone with a slightly volatile organic liquid.

5,348,990

LOW DIELECTRIC MATERIALS

Lakshaman M. Walpita, Bedminister; James B. Stamatoff, Westfield, and George Lundberg, Long Valley, all of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Mar. 2, 1993, Ser. No. 25,205
Int. Cl.[5] C08J *9/32*
U.S. Cl. 523—219 **20 Claims**

1. A low dielectric material comprising at least about 30% by weight of a liquid crystal polymer, at least about 10% by weight polytetrafluoroethylene, and at least about 5% by weight hollow glass spheres, wherein said material has dielectric constant in the approximate range of from 1.1 to 3.4.

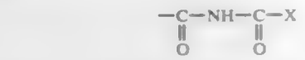
5,348,991

AQUEOUS DISPERSION COATING COMPOSITION

Motoyoshi Yoshikawa, Yamatotakada; Hideyoshi Noda, Nishinomiya; Shinsuke Shirakawa, Suita; Noriyuki Tsuboniwa, Higashiosaka; Eiji Yamanaka, Suita; Satoshi Urano, Tsuzuki, and Kazunori Kanda, Yao, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 567,294, Aug. 14, 1990, abandoned. This application Jun. 5, 1992, Ser. No. 895,427
Claims priority, application Japan, Aug. 17, 1989, 1-213227
Int. Cl.[5] C08L *55/00*
U.S. Cl. 523—402 **8 Claims**

1. An aqueous coating composition comprising at least one kind of resin, wherein each of said resin(s) has at least one (1) hydroxyl group as an active hydrogen containing group, (2) substituted acylamide group represented by the formula



wherein X represents an alkoxy group, an amino group, an amide group, an iminooxy group, a sulfide group, or a mixture thereof, or (3) water-dispersible or water-soluble group selected from the group consisting of a carboxyl anion group, a sulfonic anion group, and a phosphoric anion group,

wherein said coating composition contains all of the three functional groups in the resin(s) present therein,

wherein said active hydrogen of said hydroxyl group is present in the resin composition in an equivalence of 1×10^{-5} or more based on 1 g of all resin components, and

wherein said water-dispersible or water-soluble group is present in the resin composition in an equivalence of 1×10^{-4} to 40×10^{-4} based on 1 g of all resin components.

2. The aqueous dispersion coating composition according to claim 1 wherein said resins are selected from the group consisting of epoxy resins, polybutadiene resins, acryl resins, polyester resin, polyamide resins, polyether resin, and silicone resins.

5,348,992

AEROSOL COMPOSITIONS CONTAINING NON-AQUEOUS DISPERSIONS

Paul D. Pearson, Diamond; Madhukar Rao, Brecksville, and Richard F. Tomko, North Olmsted, all of Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Jan. 29, 1993, Ser. No. 11,037
Int. Cl.[5] C08F *242/00;* **C08G** *63/50*
U.S. Cl. 523—523 **9 Claims**

1. A composition suitable for being dispensed from a pressurized aerosol container comprising a non-aqueous dispersion of addition polymers in an alkyd medium and a propellant.

5,348,993

AQUEOUS POLYMER DISPERSIONS

Bernd Daeumer, Deidesheim; Andree Dragon, Speyer; Wilhelm F. Beckerle, Bobenheim-Roxheim; Gernot Franzmann, Bobenheim; Josef Neutzner, Neustadt; Eckehardt Wistuba, Bad Duerkheim; Joachim Pakusch, Ludwigshafen, and Maximilian Angel, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 9, 1993, Ser. No. 15,426
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1992, 4206429; Aug. 5, 1992, 4225864
Int. Cl.[5] C08L *1/26*
U.S. Cl. 524—44 **11 Claims**

1. An aqueous polymer dispersion which contains one or more polymers obtained by free radical polymerization and, based on the one or more polymers,

a) from 0.5 to 3% by weight of at least one polyether (dispersant a) composed of ethylene oxide and propylene oxide,

b) from 0.5 to 4% by weight of at least one ethoxylated alkylphenol or ethoxylated fatty alcohol (dispersant b),

c) from 0.5 to 3% by weight of at least one ethoxylated polysaccharide (dispersant c) and

d) from 0 to 4% by weight of one or more compounds selected from the group consisting of sulfuric half-esters of ethoxylated alkylphenols and ethoxylated fatty alcohols and water-soluble salts thereof (dispersant d).

5,348,994

NEW POLYMER-MODIFIED FUNCTIONALIZED ASPHALT COMPOSITIONS AND METHODS OF PREPARATION (C-2747)

Martin L. Gorbaty, Westfield; Dennis G. Peiffer, Annandale, and Daniel J. McHugh, Edison, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 846,365, Mar. 5, 1992, abandoned. This application Apr. 1, 1993, Ser. No. 41,079
Int. Cl.[5] C08L *95/00*
U.S. Cl. 524—68 **16 Claims**

1. A method of making a road paving binder composition, which comprises combining a basic neutralizing agent, a sulfonated asphalt, and a sulfonated polymer selected from the group consisting of styrene-butadiene styrene linear and radial triblock polymers, styrene-butadiene linear diblock polymers sulfonated at the sites of olefinic unsaturation, sulfonated butyl rubbers and sulfonated EPDM and mixtures thereof, wherein the sulfonation is from.1 to 100 meq SO_3H per 100g of polymer, wherein the polymer is present in an amount by weight percent of total composition that is sufficient to maintain the viscosity of the composition in the range from about 150 to about 2000 cPs or from about 3000 to about 8000 cPs measured at 135° C., wherein said amount is equal to or less than about 7 wt % when the polymer is sulfonated styrene-butadiene or sulfonated styrene-butadiene-styrene, and from greater than zero to 4 wt % when the polymer is sulfonated EPDM or sulfonated butyl rubber, to form a blend of asphalt and polymer having the asphalt and polymer interdispersed in at least one continuous phase such that the blend is storage stable and substantially phase compatible having a softening point variation between a sample of the top third and bottom third of the blend stored at elevated temperature equal to or less than about 4° C.

5,348,995

AMINE-FREE INTERNAL ANTISTATIC AGENT

Barbara J. Anderson, Saltsburg, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 29, 1993, Ser. No. 38,328
Int. Cl.[5] C08K *5/20*
U.S. Cl. 524—157 **12 Claims**

7. A composition having antistatic properties comprising an organic polymer and the diethanolamide reaction product of a fatty acid or fatty acid ester and diethanolamine, neutralized with a strong acid, wherein the fatty acid or fatty acid ester has the general formula RCOOH or RCOOR′, wherein R is an aliphatic hydrocarbon radical or mixture of aliphatic hydrocarbon radicals comprising from 5 to 23 carbon atoms, and R′ is alkyl radical.

5,348,996

RESIN COMPOSITION

Shinji Takeshita, Mihara, Japan, assignor to Teijin Chemicals, Ltd., Tokyo, Japan

Filed Apr. 24, 1992, Ser. No. 873,110
Claims priority, application Japan, Apr. 26, 1991, 3-122795
Int. Cl.[5] C08K *5/54*
U.S. Cl. 524—188 **8 Claims**

1. A resin composition comprising:

(I) a resin component composed of an aromatic polycarbonate resin, or a mixture of 30% by weight or more of an aromatic polycarbonate resin and 70% by weight or less of another thermoplastic resin; and

(II) a compounding component including:

(A) potassium titanate in an amount of 1 part by weight or more per 100 parts by weight of said resin component,

(B) an organic acid in an amount of 0.1 to 10% by weight based on the weight of said potassium titanate, and

(C) N-phenyl-γ-aminopropyltrimethoxysilane in an amount of 0.01 to 5% by weight based on the weight of said potassium titanate.

5,348,997

CROSSLINKING AQUEOUS PIGMENT DISPERSION

Yoshinori Kato; Ryutaro Hayashi; Takeo Tsukamoto, and Masahiro Aoki, all of Mie, Japan, assignors to Mitsubishi Yuka Badische Co., Ltd., Yokkaichi, Japan

Filed Apr. 22, 1993, Ser. No. 51,180
Claims priority, application Japan, Apr. 24, 1992, 4-129861
Int. Cl.[5] C08K *5/24*
U.S. Cl. 524—189 **14 Claims**

1. An aqueous composition containing a pigment comprising (A) an aqueous resin dispersion, (B) a pigment, (C) a carbonyl-containing copolymer resin having an aldo group or a keto group, and (D) a hydrazine derivative having at least two hydrazino groups (—$NHNH_2$) per molecule, in which said carbonyl-containing copolymer resin (C) is a copolymer resin having a degree of solubilization of less than 90% by weight obtained by copolymerization of a monomer mixture consisting of (a) from 1 to 30% by weight of a carbonyl-containing unsaturated monomer having an aldo group or a keto group, (b) from 10 to 65% by weight of an ethylenically unsaturated carboxylic acid monomer, (c) from 5 to 89% by weight of at least one unsaturated monomer selected from the group consisting of an alkyl acrylate or alkyl methacrylate having from 1 to 10 carbon atoms in the alkyl moiety thereof, an aromatic vinyl monomer, acrylonitrile, methacrylonitrile, vinyl acetate, vinyl propionate, a vinyl halide, a vinylidene halide, butadiene, and ethylene, and (d) not more than 50% by weight of an unsaturated monomer other than the unsaturated monomers (a) to (c), and said carbonyl-containing copolymer resin (C) is present in an amount of from 0.1 to 10% by weight based on said pigment (B) and has been solubilized to a degree of at least 90% by weight by addition of an alkali and/or organic solvent.

5,348,998

COATING COMPOSITION COMPRISING PARTICLES OF AN EMULSION POLYMERIZED GELLED POLYMER

Satoru Ito; Takao Matoba; Kenji Yamamoto, and Shinji Sugiura, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Continuation-in-part of Ser. No. 563,557, Aug. 6, 1990, abandoned. This application Sep. 11, 1992, Ser. No. 944,032
Claims priority, application Japan, Aug. 4, 1989, 1-201322
Int. Cl.[5] C08K *5/23*
U.S. Cl. 524—190 **17 Claims**

1. A coating composition comprising

(A) a film-forming binder resin,

(B) a volatile organic liquid diluent in an amount sufficient for dissolving the film-forming binder resin (A) and

(C) fine particles of a polymer which does not dissolve in a solution of the binder resin (A) in the diluent (B) but are dispersed stably in said solution the amount of said fine polymer particles (C) being 0.1 to 30 parts by weight per 100 parts by weight of said binder resin (A), and

the fine polymer particles (C) being fine particles of gelled polymer obtained by emulsion polymerization of

(a) a polymerization monomer having at least two radical-polymerizable unsaturated groups in the molecule, and

(b) a radical polymerizable unsaturated monomer other than the monomer (a),

in the presence of a reactive emulsifier having an allyl group in the molecule.

5,348,999

POLYMER MIXTURE COMPRISING AROMATIC POLYCARBONATE, POLYBUTYLENE TEREPHTHALATE AND POLYALKYLENE GLYCOL

Robertus E. de Jong; Torben P. Kempers, both of Bergen op Zoom, and Gerrit de Wit, Ossendrecht, all of Netherlands, assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 580,454, Sep. 11, 1990, abandoned. This application Apr. 9, 1992, Ser. No. 866,957
Claims priority, application Netherlands, Sep. 15, 1989, 8902313
Int. Cl.[5] C08L *67/02, 69/00, 71/02*
U.S. Cl. 524—377 **11 Claims**

1. A polymer mixture which comprises (A) a polybutylene terephthalate and (B) an aromatic polycarbonate, characterised in that the polymer mixture comprises (C) 0.1–5 parts by weight of a polyalkylene glycol selected from the group consisting of polyalkylene glycol polymers and polyalkylene glycol copolymers per 100 parts by weight of A+B, said polyalkylene glycol having a molecular weight between 200 and 20,000 g/mol, said polyalkylene glycol being present in an amount sufficient to improve lacquer bonding to injection molded articles formed from said polymer mixture.

5,349,000

EXTRUDABLE POLYVINYL ALCOHOL COMPOSITIONS CONTAINING POLYESTER-POLYETHER BLOCK COPOLYMERS

Lloyd M. Robeson, Macungie, Pa.; Jeffrey A. Kuphal, Flemington, N.J., and Amir Famili, Orefield, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 25, 1993, Ser. No. 23,031
Int. Cl.[5] C08K *5/05*
U.S. Cl. 524—388 **19 Claims**

1. In a melt extrudable polyvinyl alcohol composition comprising polyvinyl alcohol and plasticizer, the improvement for providing good impact efficiency which comprises 8 to 25 wt % thermoplastic polyester-polyether block copolymer, based on total composition.

5,349,001

CYCLIC IMIDE THIONE ACTIVATED POLYALKYLENE OXIDES

Richard B. Greenwald, Somerset, and Anthony J. Martinez, Hamilton Square, both of N.J., assignors to Enzon, Inc., Piscataway, N.J.

Filed Jan. 19, 1993, Ser. No. 6,247
Int. Cl.[5] C08G *65/32;* **C08L** *67/00, 71/02, 77/00*
U.S. Cl. 525—408 **10 Claims**

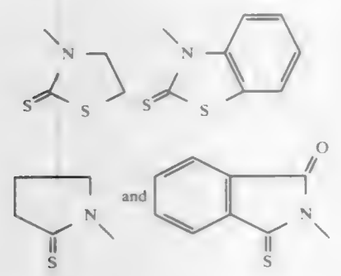
1. A water-soluble cyclic imide thione activated polyalkylene oxide, comprising a structure represented by:

X—R—L—CO—R_3

wherein:

R is a polyalkylene oxide residue having a number average molecular weight between 600 and 100,000 daltons;

R_3 is selected from the group consisting of:



L is a moiety forming a covalent linkage between R and the carbonyl carbon, said moiety being hydrolytically stable at physiologic pH and temperatures up to 27° C.; and

X is a terminal moiety of said polyalkylene oxide selected from the group consisting of alkoxy moieties containing up to four carbon atoms and —L—CO—R_3.

5,349,002

HEAT CURABLE PRIMERLESS SILICONE HARDCOAT COMPOSITIONS, AND THERMOPLASTIC COMPOSITES

Gautam A. Patel, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 2, 1992, Ser. No. 984,612
Int. Cl.[5] B32B *9/04*
U.S. Cl. 428—412 **6 Claims**

5. A composite of a thermoplastic sheet having a cured coating resulting from the thermal cure of a heat curable primerless silicone hardcoat composition comprising by weight,

(A) 100 parts of an aqueous/organic solvent dispersion having 10∝50% by weight of solids and consisting essentially of 10–70% by weight of colloidal silica and 30–90% by weight of a partial condensate of an organoalkoxysilane, and

(B) 1 to 10 parts of an adhesion promoter consisting essentially of a caprolactone based polyester polyol.

5,349,003

AQUEOUS FLUORINE-CONTAINING POLYMER DISPERSION AND AQUEOUS DISPERSION CONTAINING FLUORINE-CONTAINING POLYMER AND WATER-SOLUBLE RESIN AND/OR WATER DISPERSIBLE RESIN

Minoru Kato; Teruo Hiraharu; Koichi Nishiwaki, and Hiroshi Tadenuma, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 737,601, Jul. 25, 1991, abandoned, which is a continuation of Ser. No. 408,300, Sep. 18, 1989, abandoned. This application Feb. 9, 1993, Ser. No. 15,671
Claims priority, application Japan, Sep. 20, 1988, 63-235573; Mar. 13, 1989, 1-59998; Aug. 7, 1989, 1-204088
Int. Cl.[5] C08F *2/16*
U.S. Cl. 524—458 **25 Claims**

1. An aqueous fluorine-containing polymer dispersion having average particle diameters of 0.05–3 μm, which is obtained by emulsion-polymerizing 5–95 parts by weight of a monomer mixture of at least one monomer selected from the group consisting of alkyl acrylates whose alkyl groups have 1–8 carbon atoms and alkyl methacrylates whose alkyl groups have 1–8 carbon atoms in an aqueous medium in the presence of 100 parts by weight of particles of a vinylidene fluoride polymer, said monomer mixture being absorbed into the vinylidene fluoride polymer particles and the proportion of the alkyl acrylate in the monomer mixture being less than 80% by weight, wherein the vinylidene fluoride polymer is obtained by emulsion polymerization and is a vinylidene fluoride/tetrafluoroethylene copolymer or a vinylidene fluoride/tetrafluoroethylene/hexafluoropropylene copolymer.

5,349,004

FLUOROALKYL SILOXANE/VINYL COPOLYMER DISPERSIONS AND PRESSURE-SENSITIVE ADHESIVES HAVING IMPROVED SOLVENT RESISTANCE PREPARED THEREFROM

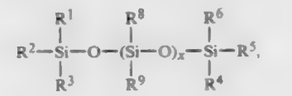
Ramesh C. Kumar, Maplewood; Albert I. Everaerts, Oakdale, both of Minn., and Yvan A. Bogaert, Gent, Belgium, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 18, 1992, Ser. No. 947,141
Int. Cl.[5] C08K *3/20*
U.S. Cl. 524—461 **9 Claims**

1. An adhesive composition comprising:

a dispersion comprising the polymerization product of a mixture comprising:

(a) about 5 to about 40 parts by weight of a fluoroalkyl siloxane of the formula



(I)

wherein:

R^9 is independently selected from the group consisting of $—CH_2CH_2R_f$ and $—R^7$,

R_f is a fluoroalkyl group independently selected from the group consisting of C_mF_{2m-1} and $C_nF_{(2n+1)-q}H_q$;

m is an integer ranging from about 1 to about 20;

n is an integer ranging from about 1 to about 20;

q is an integer ranging from about 0 to about 2n;

x is an integer of about 11 or greater;

the fluoroalkylsiloxane comprises 10 or greater $—CH_2CH_2R_f$ groups;

the fluoroalkylsiloxane comprises at least 1 R^7 group;

wherein R^1, R^2, R^3, R^4, R^5, R^6, and R^8 are each independently selected from the group consisting of alkyl groups comprising about 1 to about 12 carbon atoms, aralkyl, alkaryl, alkoxy, alkylamino, hydroxyl, fluoroalkyl, and hydrogen; and R^7 is an organic group having at least two carbon atoms wherein at least 1 olefinic moiety is contained within R^7;

wherein the ratio of R^7 to $—CH_2CH_2R_f$ is such that the mole percent of the olefinic moiety content contributed by R^7 of the fluoroalkyl siloxane is between about 0.1 and about 4;

(b) about 60 to about 95 parts by weight of free radically polymerizable monomer, wherein the free-radically polymerizable monomer comprises:

(i) about 1 to about 20 percent by weight of free radically polymerizable non-polar monomer;

wherein the weight percentages of (i) and (ii) are based upon the total weight of (i) plus (ii); and wherein the total weight of (a) plus (b) equals 100 parts by weight total;

(c) about 0.1 to about 1 part by weight of a free radical initiator based upon 100 parts by weight total of (a) plus (b);

(d) about 2 to about 10 parts by weight of a stabilizer based upon 100 parts by weight of total of (a) plus (b) wherein said stabilizer has a number average molecular weight ranging from about 8000 to about 25,000 and wherein said stabilizer is selected from the group consisting of:

(i) a copolymer comprising (A) about 40 to about 60 parts by weight of monomer selected from the group consisting of vinyl esters of C_1 to C_8 monocarboxylic acids and C_1 to C_{12} alkyl (meth)acrylates, and (B) about 60 to about 40 parts by weight of monomer selected from the group consisting of N-vinylpyrrolidone, acrylamide, N,N-dimethylacrylamide, N-vinylcaprolactam, and mixtures thereof wherein said copolymer stabilizer comprises 100 parts by weight total of the monomers of (i) (A) plus (i) (B); and (C) about 0.5 to about 5 weight percent of a chain transfer agent based upon the weight of the monomers of (i) (A) plus (i) (B);

(ii) a macromonomer comprising the reaction product of the copolymer of (d) (i) wherein said chain transfer agent selected provides said copolymer with at least one functional group selected from the group consisting of $—NH_2$, —COOH, —OH, and combinations thereof, with an endcapping agent selected from the group consisting of isocyanatoethyl methacrylate, alpha, alphadimethyl-meta-isopropenyl benzylisocyanate, vinyl azlactone, para(chloromethyl) styrene, glycidyl methacrylate, and mixtures thereof, wherein at least about 95% of the functional groups selected from the group consisting of $—HN_2$, —COOH, —OH, and combinations thereof, of the copolymer are reacted with the endcapping agent; and

(iii) mixtures thereof; and

(e) about 30 to about 95 percent by weight of an organic solvent based upon the total weight of (a) plus (b) plus (c) plus (d) plus (e).

5,349,005

THERMOPLASTIC ELASTOMER COMPOSITION

Terutaka Tanaka, Yokkaichi, Japan, assignor to Advanced Elastomer Systems, L.P., St. Louis, Mo.

PCT No. PCT/JP91/00779, § 371 Date Feb. 6, 1992, § 102(e) Date Feb. 6, 1992, PCT Pub. No. WO91/19764, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 11, 1991, Ser. No. 828,941
Claims priority, application Japan, Jun. 12, 1990, 2-153784; Jun. 12, 1990, 2-153785
Int. Cl.[5] C08L *23/16, 23/26*
U.S. Cl. 524—490 **9 Claims**

1. An olefin thermoplastic elastomer composition prepared by subjecting a composition comprising

(a) 100 parts by weight of an ethylene-α-olefin-non-conjugated diene copolymer rubber having a high molecular weight, the Mooney viscosity (ML 1+4, at 125° C.) of a composition consisting of 100 parts by weight of the copolymer rubber and 75 parts by weight of a mineral oil-type softening agent being 40 or more,

(b) from 10 to 500 parts by weight of a crystalline ethylene-propylene block copolymer resin having a melt flow rate of 10 to 50,

(c) from 3 to 300 parts by weight of a mineral oil-type softening agent, and

(d) from 5 to 100 parts by weight of a low-molecular-weight propylene homopolymer resin having a number-average molecular weight of 2000 to 20000,

the weight ratio of the low-molecular-weight propylene homopolymer resin to the crystalline ethylene-propylene block copolymer resin being 0.8 or less, to dynamic vulcanization using, as a vulcanizing agent, from 0.5 to 15 parts by weight of a reactive alkylphenol-formaldehyde resin to vulcanize the ethylene-α-olefin-non-conjugated diene copolymer rubber to a high degree so that the amount of non-vulcanized rubber in the composition is less than 5 weight percent, as determined by hot xylene extraction.

5,349,006

AZETIDINOL REACTION PRODUCTS USED AS PIGMENT GRIND AND FILM FORMING VEHICLES

Shanti Swarup, Gibsonia; Padmanabhan Sundararaman, Allison Park; Gregory J. McCollum, Gibsonia; Charles M. Kania, Natrona Heights, and James A. Claar, Mars, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 814,656, Dec. 30, 1991. This application Feb. 3, 1994, Ser. No. 190,967
Int. Cl.[5] C08F *8/30*
U.S. Cl. 524—507 **13 Claims**

1. A pigment grind composition comprising pigment and as a grind vehicle, an ungelled aminoester group-containing reaction product obtained by reacting carboxyl groups of a carboxylic acid group containing polymeric material with azetidinol groups of an azetidinol containing material having one azetidinol moiety per molecule.

5,349,007

LIGHTWEIGHT THERMOPLASTIC POLYESTER MOLDING COMPOSITIONS, METHODS OF MAKING THE SAME AND MOLDED ARTICLES FORMED THEREOF

Hajime Serizawa; Masaru Kubota; Hiroyuki Sano, and Yoshihisa Tajima, all of Shizuoka, Japan, assignors to Polyplastics Co., Ltd. and Takeda Chemical Industries, Ltd., both of Osaka, Japan

Continuation of Ser. No. 813,270, Dec. 24, 1991, abandoned. This application Jul. 1, 1993, Ser. No. 84,439
Claims priority, application Japan, Dec. 26, 1990, 2-406692
Int. Cl.[5] C08L *23/02, 67/02*
U.S. Cl. 524—513 **16 Claims**

1. A polyester resin molding composition comprising:

(A) between 97 to 20 parts by weight, based on 100 parts by weight of the total composition weight, of a polyester base resin;

(B) between 3 to 80 parts by weight, based on 100 parts by weight of the total composition weight, of a polyolefin resin which is at least one selected from the group consisting of polyethylene, polypropylene, polymethylpentene, polybutylene and copolymers mainly comprised of the same;

(C) between 0.1 to 15 parts by weight, based on 100 parts by weight of the total composition weight, of a compatibilizing compound which is at least one selected from the group consisting of N-(4-(2,3-epoxypropoxy)3-5-dimethylbenzyl)acrylamides and N-diallylaminoepoxy-propanes; and

(D) between 0.1 to 20% by weight, based on the weight of the compatibilizing compound, of a free radical initiator.

5,349,008

PROCESS FOR SUSPENSION POLYMERIZATION OF VINYL COMPOUND

Shigeki Takada; Ken Yuki; Hitoshi Maruyama, all of Kurashiki; Taku Tanaka, and Kazunari Igarashi, both of Nakajo, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

PCT No. PCT/JP91/00420, § 371 Date Dec. 4, 1991, § 102(e) Date Dec. 4, 1991, PCT Pub. No. WO91/15518, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 29, 1991, Ser. No. 778,125

Claims priority, application Japan, Apr. 5, 1990, 2-91514; Apr. 5, 1990, 2-91515; Oct. 19, 1990, 2-282690

Int. Cl.[5] C08L *29/04*

U.S. Cl. 524—557 **9 Claims**

1. A process for suspension polymerization of vinyl chloride which comprises using as the secondary suspending agent a self-emulsifiable vinyl ester polymer having an ionic group at an end thereof or a self-emulsifiable vinyl alcohol polymer having a degree of hydrolysis of 60 mol % or less which is obtained by hydrolysis of said vinyl ester polymer, said ionic group being selected from the group consisting of amino group, ammonium group, carboxyl group and sulfonic group.

5,349,009

WATER-BASED CONSTRUCTION ADHESIVE MASTIC

Wayne R. Furlan, Hellertown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 8, 1992, Ser. No. 986,957

Int. Cl.[5] C08L *31/04*

U.S. Cl. 524—563 **19 Claims**

1. In a water based construction adhesive mastic composition comprising polymer binder, plasticizer, filler and thixotrope in an aqueous medium, the improvement which comprises as the polymer binder 25 to 75 wt % (polymer solids) of an aqueous vinyl acetate/ethylene copolymer emulsion and 75 to 25 wt % (polymer solids) of an aqueous vinyl acetate homopolymer emulsion, based on 100 parts by weight polymer binder.

5,349,010

WATER-DISPERSIBLE POLYESTER RESINS AND PROCESS FOR THEIR PREPARATION

Thauming Kuo, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed Sep. 30, 1992, Ser. No. 954,857

Int. Cl.[5] C08L *67/00*

U.S. Cl. 524—600 **25 Claims**

1. A water-dispersible composition comprising the polyester made of the moieties of reaction products:

(a) at least one difunctional dicarboxylic acid which is not a sulfomonomer;

(b) about 1 to 20 mol % of at least one monocarboxylic acid sulfomonomer containing at least one metallic sulfonate group or nitrogen-containing non-metallic sulfonate group attached to an aromatic or cycloaliphatic nucleus;

(c) at least one difunctional reactant selected from a glycol or a mixture of a glycol and diamine having two —NRH groups, the glycol containing two —$C(R^1)_2$—OH groups wherein R in the reactant is hydrogen or an alkyl group of 1 to 6 carbon atoms, and R^1 in the reactant is a hydrogen atom, an alkyl of 1 to 5 carbon atoms, or an aryl group of 6 to 10 carbon atoms;

(d) about 0 to 40 mol % of difunctional reactant selected from hydroxycarboxylic acids having one —$C(R)_2$—OH group, aminocarboxylic acids having one —NRH group, amino-alcohols having one —$C(R)_2$—OH group and one —NRH group, or mixtures of said difunctional reactants wherein R in the reactant is hydrogen or an alkyl group of 1 to 6 carbon atoms; and

(e) up to 40 mol % of a multifunctional reactant containing at least three functional groups selected from hydroxyl, carboxyl, and mixtures thereof wherein at least a portion of the multifunctional reactant contains at least three hydroxyl groups,

wherein all stated mol percentages are based on the total of all acid, hydroxyl and amino group containing reactants being equal to 200 mol %, and wherein the polymer is no longer acidic, having an acid number less than 20 and contains proportions of acid-group containing reactants (100 mol % acid) to hydroxy- and amino-group containing reactants (100 mol % base) such that the value of EQ (base) divided by EQ (acid) is between about 0.5 and 2.

5,349,011

POLYAMIDE ESTER RHEOLOGICAL ADDITIVE, A SOLUTION CONTAINING THE ADDITIVE AND THICKENED COMPOSITIONS CONTAINING THE ADDITIVE

William W. Reichert, Freehold, and Murray C. Cooperman, Woodbridge, both of N.J., assignors to Rheox, Inc., Hightstown, N.J.

Continuation of Ser. No. 745,716, Aug. 16, 1991, abandoned. This application Jul. 30, 1993, Ser. No. 99,400

Int. Cl.[5] C08G *63/02*

U.S. Cl. 524—602 **14 Claims**

1. A rheological additive comprising the reaction product of:

a) polycarboxylic acid having at least 5 carbon atoms per acid group

b) a first active hydrogen compound having the formula X_m—R—Y_n, wherein R represents a group containing from 2 to 12 carbon atoms, X and Y are groups independently selected from primary amino, secondary amino and hydroxyl, m and n are at least 1 and the sum of (m+n) is at least 2 and at least 90% of the X and Y groups participating in the reaction being primary amino, secondary amino and a mixture thereof;

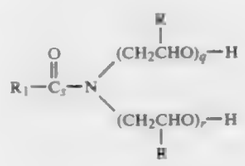
c) a second active hydrogen compound containing two active hydrogen functionalities wherein the hydrogen compound is represented by one of the following formulas:

$$H-(OCH_2CH_2)_n-OH$$

wherein

n=8—50 or

(I)



wherein

q+r=2—50, R_1 is a long chain alkyl group C_{12}–C_{22}, s is zero or one, and R is one of hydrogen, methyl and ethyl; and

(d) capping agent.

5,349,012

PROCESS FOR PREPARING RUBBER-MODIFIED STYRENE RESINS

Toshio Fujita, Kitakyushu; Masanari Fujita, Kimitsu; Naoto Takeda, Kimitsu, and Koji Hirashima, Kimitsu, all of Japan, assignors to Nippon Steel Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 663,526, Mar. 4, 1991, abandoned. This application Jun. 25, 1993, Ser. No. 82,506

Claims priority, application Japan, Mar. 2, 1990, 2-49548; Sep. 20, 1990, 2-248784

Int. Cl.[5] C08F *279/021*

U.S. Cl. 525—52 **6 Claims**

1. A process for preparing rubber-modified styrene resins with excellent impact resistance which comprises:

preheating in a complete mixing tank, under conditions sufficient to support up to 10% conversion and under conditions prevailing prior to rubber phase inversion, a feed formulated from:

100 parts by weight of reactants consisting of:

98 to 88% by weight of styrene-monomer, and

2 to 12% by weight of a high-viscosity rubber including polybutadiene and styrene-butadiene copolymer, wherein said rubber has a viscosity of 500 to 2,000 centipoises, wherein this viscosity is measured in a 5% by weight solution in styrene at 25° C.,

0.01 by 0.2 part by weight of an inert organic solvent;

converting up to 10% of said monomer during said preheating to form a preheated feed comprising a continuous phase of said rubber dissolved in said monomer and a discontinuous phase of polymer particles;;

continuously supplying said preheated feed to one end of first reaction zone consisting of a plug flow tower equipped with an agitator or a plurality of such reaction zones connected in series;

effecting preliminary polymerization, in said first reaction zone with agitation, of said preheated feed to a conversion sufficient for transformation of said continuous phase of rubber dissolved in said monomer and discontinuous phase of polymer particles into a discontinuous phase of rubber dissolved in said monomer in a continuous phase of said polymer;

controlling the conditions of preliminary polymerization in said first reaction zone effective to cause rubber phase inversion and to limit the weight average particle diameter of said rubber particles in said reaction zone to 0.8 to 5 μm to thereby form a prepolymerized product;

withdrawing said prepolymerized product, comprising said discontinuous phase of rubber and unconverted styrene monomer in said continuous phase comprising said styrene polymer, from another end of said reaction zone different from the feed end thereof;

supplying said prepolymerized product to a following plug flow reaction zone, that includes static mixing means therein;

increasing conversion of said prepolymerized product within said following plug flow type reaction zone; and

recovering rubber modified styrene resin from said following plug flow reaction zone.

5,349,013

PROCESS FOR PRODUCTION OF STYRENE-BASED RESIN COMPOSITION

Takashi Ashida, and Yoshinori Sato, both of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 603,894, Oct. 25, 1990, abandoned. This application Sep. 17, 1993, Ser. No. 123,589

Claims priority, application Japan, Nov. 20, 1989, 1-301292

Int. Cl.[5] C08L *51/04*

U.S. Cl. 525—53 **16 Claims**

1. A process for producing a rubber-modified styrene-based resin which comprises supplying a styrene-based monomer solution containing 5 to 20% by weight of a rubber component comprising a styrene-butadiene-based block polymer rubber with a styrene content of 20 to 50% by weight to a first polymerization zone where initial polymerization is conducted to a conversion of 10 to 30%, and then supplying the resulting initial polymerization solution to a second polymerization zone where polymerization is conducted to a conversion of 30 to 70% while at the same time phase inversion is caused, thereby controlling a rubber particle diameter to a range of 0.2 to 1.5 μm and area average rubber particle diameter/number average rubber particle diameter ratio (Ds/Dn) to not more than 2.5.

5,349,014

PROCESS FOR THE PRODUCTION OF POLYVINYL BUTYRAL HAVING IMPROVED PROPERTIES

Robert Degeilh, Le Port Marly, France, assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 835,058, Feb. 11, 1992, abandoned, which is a continuation of Ser. No. 760,447, Jul. 30, 1985, abandoned. This application Mar. 1, 1993, Ser. No. 24,871

Claims priority, application France, Aug. 2, 1984, 84 12248

Int. Cl.[5] C08F *8/00*

U.S. Cl. 525—61 **16 Claims**

1. A process for producing polyvinyl butyral which comprises treating polyvinyl alcohol in an aqueous medium in the presence of an acid catalyst and an emulsifier of ethoxylated alkylphenol sulfate with butyraldehyde to form a reaction mixture,

neutralizing the reaction mixture to raise the pH of the mixture to about 5,

recovering polyvinyl butyral from the reaction mixture, and

washing the polyvinyl butyral with water at ambient temperature to obtain polyvinyl butyral,

wherein said emulsifier is an ethoxylated alkylphenol sulfate having the formula

$$C_9H_{19}—C_6H_4—O—(CH_2—CH_2—O)_n—SO_3Na$$

where n=6 or 7,

said sulfate being present in an amount of between about 0.1 and 0.3 percent by weight of said polyvinyl alcohol,

whereby said neutralizing step and recovery of polyvinyl butyral is performed in about 5 to 10 minutes.

5,349,015

MELT BLENDING ACID OR ANHYDRIDE-CRAFTED BLOCK COPOLYMER PELLETS WITH EPOXY RESIN

Lorelle A. Pottick, and David J. St. Clair, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 8, 1989, Ser. No. 448,192

Int. Cl.[5] C08L *33/14, 63/02, 63/04*

U.S. Cl. 525—65 **15 Claims**

1. A process to produce an epoxy resin composition comprising the steps of:

a) providing from 1 to about 100 parts by weight of pellets having an average particle size within the range of 0.05 in. to 0.3 in. of modified hydrogenated block copolymer comprising at least one block comprising predominantly polymerized monoalkenyl aromatic hydrocarbon monomer units, and at least one block comprising predominantly, before hydrogenation, polymerized conjugated diolefin monomer units, the hydrogenated block copolymer having been modified by grafting substantially to the blocks of polymerized conjugated diolefin monomer units, on the average, between about 2 and about 200 maleic anhydride functional groups for each polymer molecule of modified hydrogenated block copolymer;

b) melt blending the modified hydrogenated block copolymer with 100 parts by weight of an epoxy resin;

c) agitating the blend by high shear mixing under conditions sufficient to react an amount of the maleic anhydride functional groups with epoxy groups of the epoxy resin effective to provide a stable dispersion of modified hydrogenated block copolymer in the epoxy resin; and

d) recovering an epoxy resin composition.

5,349,016

FIBERS OF GRAFT COPOLYMERS HAVING A PROPYLENE POLYMER MATERIAL BACKBONE

Anthony J. DeNicola, Jr., and Rosemary C. Sams, both of Newark, Del., assignors to Himont Incorporated, Wilmington, Del.

Filed Jul. 30, 1991, Ser. No. 737,952

Int. Cl.[5] C08G *63/91*

U.S. Cl. 525—71 **20 Claims**

1. A fiber consisting essentially of a graft copolymer consisting of a propylene polymer material backbone having graft polymerized thereto 20 to 85 parts per hundred part propylene polymer material of at least one ethylenically unsaturated monomer or a blend of at least two of said graft copolymers, wherein either the backbone or monomer(s) or both are different.

5,349,017

POLYVINYL CHLORIDE RESIN COMPOSITION

Koji Matsumoto; Masaru Morimoto; Masahiro Osuka, and Naomi Uno, all of Otake, Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Continuation of Ser. No. 728,364, Jul. 11, 1991, abandoned. This application Dec. 1, 1992, Ser. No. 984,238

Claims priority, application Japan, Jul. 24, 1990, 2-195266

Int. Cl.[5] C08L *9/04;* **C08F** *265/04*

U.S. Cl. 525—84 **9 Claims**

1. A polyvinyl chloride resin composition having a high falling weight impact resistance, stress-whitening resistance and optical characteristics, comprising:

100 parts by weight of a polyvinyl chloride resin and

2 to 40 parts by weight of a multi-stage copolymer obtained by polymerizing resin component formable monomers in the range of from more than 30 parts by weight to 50 parts by weight, said resin component formable monomer being composed of 25 to 55% by weight of methyl methacrylate, 2 to 15% by weight of an alkyl acrylate having a C_1–C_8 alkyl group and 30 to 60% by weight of an aromatic vinyl monomer in the presence of from 50 parts by weight to less than 70 parts by weight of a butadiene elastomer having a glass transition temperature of from −40° C. to 5° C. obtained by copolymerization of a monomer mixture of 70 to 90% by weight of butadiene, 10 to 30% by weight of an aromatic vinyl monomer and a polyfunctional monomer added in an amount corresponding to 3 to 10 parts by weight per 100 parts by weight of total amount of said butadiene and aromatic vinyl monomer, wherein a polymerization of the resin component formable monomer is conducted by polymerizing in the first stage methyl methacrylate in an amount corresponding to 45 to 85% by weight of the total amount of methyl methacrylate and the alkyl acrylate in an amount in the range specified above, subsequently polymerizing in the second stage the aromatic vinyl monomer in an amount in the range specified above in the presence of the polymer obtained in the previous stage, and further polymerizing in the third stage the remainder of methyl methacrylate in the presence of the polymers obtained in said first and second stages.

5,349,018

POLYAMIDE-HYDROGENATED POLYBUTADIENE-ACRYLONITRILE COPOLYMERS

Toshio Tagami, and Osamu Kiyohara, both of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan

Filed Jan. 15, 1992, Ser. No. 820,817

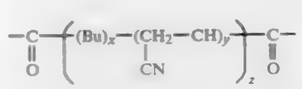
Claims priority, application Japan, Jan. 17, 1991, 3-015631; Jan. 21, 1991, 3-019181; Feb. 5, 1991, 3-035255

The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.

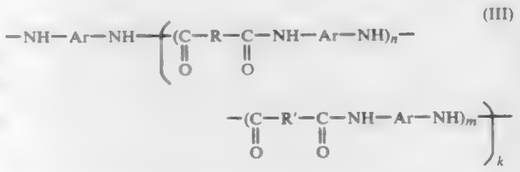
Int. Cl.[5] C08L *77/00*

U.S. Cl. 525—92 **4 Claims**

1. A polyamide-hydrogenated polybutadiene-acrylonitrile block copolymer formed by polycondensation between a polyamide having aminoaryl groups at both its terminals and having a phenolic hydroxyl group, and a hydrogenated polybutadiene-acrylonitrile copolymer having carboxyl groups at both its terminals, the copolymer being characterized by comprising block units (A) represented by the following formula (I) and block units (B) represented by the following formula (III):

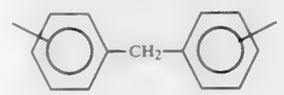


(I)

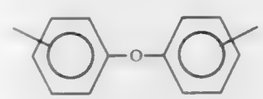


(III)

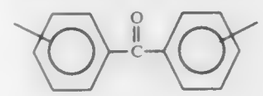
wherein Bu is a hydrogenated butadiene radical, R is a divalent organic radical, R′ is a divalent aromatic group having a hydroxyl group, Ar is a divalent aromatic group represented by the following formulae (1)–(6):



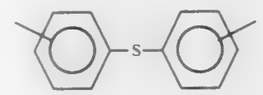
(1)



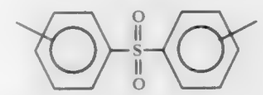
(2)



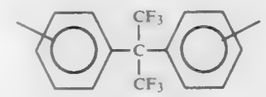
(3)



(4)



(5)



(6)

each of k and z is an average polymerization degree, where k is an integer of 2–400, and z is an integer of 5–100, m and n are molar fractions in the copolycondensation, where $m \geqq 0.04$, and $m+n=1$, and x and y are molar fractions in the polymerization, where $x:y=0.95:0.05$ to $0.6:0.4$, and $x+y=1$,

and block units (A) and (B) are contained in the range of 2 to 20 respectively.

5,349,019

NEW COPOLYMERS, MIXTURES THEREOF WITH POLY(METH)ACRYLATE ESTERS AND THE USE THEREOF FOR IMPROVING THE COLD FLUIDITY OF CRUDE OILS

Herbert Wirtz, Eppstein/Taunus; Sigmar-Peter von Halasz, Liederbach; Michael Feustel, Kelkheim, and Juliane Balzer, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst, Frankfurt am Main, Fed. Rep. of Germany

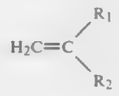
Continuation of Ser. No. 879,504, May 1, 1992, abandoned, which is a continuation of Ser. No. 454,164, Dec. 21, 1989, abandoned. This application Sep. 2, 1993, Ser. No. 116,204

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1988, 3843922

Int. Cl.[5] C08L *33/08, 33/10;* **C10N** *30/02;* **C10L** *1/18*

U.S. Cl. 525—217 **7 Claims**

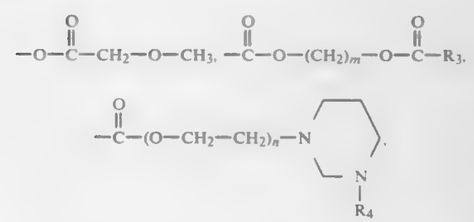
1. A mixture of: a) 10 to 90% by weight of a copolymer consisting of 50 to 99.9% by weight of only one C_{14}–C_{22}-alkyl methacrylate or only one C_{14}–C_{22}-alkyl acrylate and 50 to 0.1% by weight of only one comonomer selected from the group consisting of comonomers of the formula I



(I)

in which R_1 is hydrogen or methyl,

R_2 is a group of the formulae



R_3 is C_1–C_{80}-alkyl, C_6–C_{36}-alkenyl, C_5- or C_6-cycloalkyl or -cycloalkenyl which can each be substituted by alkyl groups, or is aralkyl, alkaryl or the radical of a dimeric fatty acid, or maleic acid, or succinic acid or of a C_6–C_{22}-alkenylsuccinic acid, R_4 is C_1–C_{80}-alkyl, C_1–C_{80}-alkenyl, C_5- or C_6-cycloalkyl or -cycloalkenyl which can each be substituted by alkyl groups, or is aryl, aralkyl or alkaryl,

m is 2 or 3,

n is a number from 1 to 30 and X is a number from 12 to 20, and; b) 90 to 10% by weight of a poly-C_{14}-C_{22}-alkyl methacrylate or poly-C_{14}-C_{22}-alkylacrylate.

5,349,020

VULCANIZABLE RUBBER COMPOSITION

Keiji Okada; Kazuhiko Murata; Tetsuo Tojo, all of Ichihara; Masaaki Kawasaki, and Toshimasa Takata, both of Yamaguchi, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Mar. 5, 1993, Ser. No. 26,783

Claims priority, application Japan, Mar. 6, 1992, 4-050007; Mar. 6, 1992, 4-050008; Mar. 6, 1992, 4-050009; Apr. 6, 1992, 4-083990; Apr. 6, 1992, 4-083991

Int. Cl.[5] C08L *23/18, 23/16, 7/00, 9/00*

U.S. Cl. 525—237 **13 Claims**

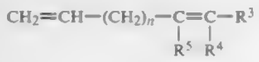
1. A vulcanizable rubber composition comprising:

a higher α-olefin (1) consisting of a higher α-olefin having 6–20 carbon atoms, and an α,ω-diene represented by the following general formula (I)



(I)

wherein n is an integer of 1–3, and R^1 and R^2 each represent independently a hydrogen atom or an alkyl group of 1–8 carbon atoms, and a non-conjugated diene represented by the following general formula (II)



(II)

wherein n is an integer of 1–5, R^3 represents an alkyl group of 1–4 carbon atoms, and R^4 and R^5 each represent a hydrogen atom or an alkyl group of 1–8 carbon atoms, provided that both R^4 and R^5 are not hydrogen atoms simultaneously, and

at least one rubber (2) selected from the group consisting of an ethylene/α-olefin copolymer rubber, a nitrile rubber and a hydrogenated nitrile rubber, which composition has a weight ratio ((1)/(2)) of said higher α-olefin copolymer (1) to said rubber (2) in the range of from 5/95 to 95/5.

5,349,021

THERMOSETTING PRINTING INK COMPOSITION

John M. Rooney, Basking Ridge, N.J.; Narendra M. Patel, Mt. Pocono, Pa.; Albert A. Kveglis, Pine Brook, N.J.; Robert J. Catena; Leonard Di Leo, both of Belleville, N.J., and Selcuk Avci, Clifton, N.J., assignors to Sun Chemical Corporation, Fort Lee, N.J.

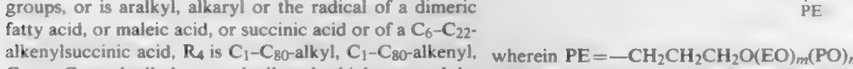
Filed Jun. 2, 1993, Ser. No. 71,802

Int. Cl.[5] C08K *5/06*

U.S. Cl. 524—761 **11 Claims**

1. A thermosetting printing ink composition comprising:

(a) a copolymer of a thermosettable polyester and a polysiloxane comprising a hydrogen-terminated polyalkylene oxide-modified polymethylsiloxane having a number average molecular weight of about 3,000 to 5,000 and the general formula:



wherein PE=—$CH_2CH_2CH_2O(EO)_m(PO)_n(BO)_qH$ in which EO=ethyleneoxy, PO=propyleneoxy and BO=butyleneoxy, and m, n and q are independently integers of 0 to 10, and the sum of m, n and q is at least 1, x is an integer having a value of 0 to about 250 and y is an integer having a value of 1 to about 500, and the polysiloxane content of the copolymer is in the range of 1.9 to 5 wt. %, based on the weight of the copolymer;

(b) a pigment;
(c) a crosslinking agent; and
(d) a curing catalyst comprising a strong acid or metal salt thereof.

5,349,022

MANUFACTURE OF THE EMULSION OF SYNTHETIC RESIN COMPOSITES

Teruaki Ashihara; Shingo Tone; Toshimitsu Saito, and Ryozo Orita, all of Takasago, Japan, assignors to Toyo Kasei Kogyo Company Limited, Osaka, Japan

Filed Mar. 6, 1992, Ser. No. 847,307
Claims priority, application Japan, Mar. 27, 1991, 3-106334
Int. Cl.[5] C08K *3/26;* **C08L** *13/02*
U.S. Cl. 524—414 **4 Claims**

1. A method of manufacturing an emulsion which comprises copolymerizing, in an aqueous medium, optionally in the presence of a catalyst, a chain transfer moderator or both the catalyst and moderator, the following components:
(a) one or more chlorinated polyolefins containing from 5 to 70 weight % chlorine,
(b) one or more acrylic or methacrylic acid monomers which have the ability to dissolve (a), and
(c) one or more acrylate or methacrylate oligomers selected from the group consisting of macromers and macromonomers which have a molecular weight from several hundred to ten thousands and which have a double bond at at least one terminal of their molecule or have a hydroxyl or carboxyl radical at both terminals of the molecule.

5,349,023

VINYL ALCOHOL COPOLYMER HAVING TERMINAL AMINO GROUP

Kaoru Ikeda, and Toshiaki Sato, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Dec. 10, 1992, Ser. No. 988,479
Claims priority, application Japan, Dec. 12, 1991, 3-351953
Int. Cl.[5] C08F *8/00*
U.S. Cl. 525—61 **10 Claims**

1. A vinyl alcohol copolymer having a terminal amino group comprising 1–90 mol % vinyl alcohol units 0–89 mol % vinyl ester units and 10–90 mol % vinyl monomers selected from the group consisting of allyl acetate, allyl chloride, vinyl trimethoxysilane, isopropanyl acetate, N-methylpyrrolidone, olefins, acrylamides, methacrylamides, vinyl ethers, nitriles, vinyl halides, and vinylidene halides, said copolymer having at least one terminal amino group.

5,349,024

ELASTOMERS HAVING REDUCED HYSTERESIS PREPARED WITH VINYL POLYCYCLIC AROMATIC HYDROCARBON

William L. Hergenrother, Akron, Ohio, and Martin E. Morrow, Muscatine, Iowa, assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Filed Nov. 3, 1993, Ser. No. 145,113
Int. Cl.[5] C08F *255/06*
U.S. Cl. 525—289 **20 Claims**

1. An endcapped polymer prepared by reacting a living polymer having at least one functional site with about 2.2 to about 15 equivalents of an endcapping agent, said endcapping agent being a vinyl substituted bicyclic or tricyclic aromatic hydrocarbon,
wherein said living polymer is formed by polymerization of a monomer or mixture thereof in solution in the present of a polymerization initiator, said monomer or mixture thereof being selected from the group consisting of conjugated dienes having from 4 to about 12 carbon atoms and mixtures of one or more said conjugated dienes with one or more monovinyl aromatic monomers having from 8 to about 18 carbon atoms.

5,349,025

HEAT SEALABLE PLASTIC FILM

Werner Siol, Darmstadt-Eberstadt, and Ulrich Terbrack, Reinheim, both of Fed. Rep. of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

Filed Dec. 17, 1992, Ser. No. 992,097
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142691
The portion of the term of this patent subsequent to Sep. 6, 2011, has been disclaimed.
Int. Cl.[5] C08F *255/02, 265/06, 279/02, 283/12*
U.S. Cl. 525—309 **8 Claims**

1. A heat-sealable plastic film PF with at least a two-phased structure in the thickness range up to 400 μm that is suitable for the tight sealing of plastic containers, comprising
a) a high molecular weight or crosslinked polymer P with a molecular weight Mw greater than 50,000 and a glass transition temperature Tg below 10° C.; and
b) a copolymer CP with a glass transition temperature Tg above 20° C. comprising
α) 0–85 wt. % methyl methacrylate
β) 0–100 wt. % ethyl methacrylate
γ) 0–100 wt. % cyclohexyl methacrylate, cyclopentyl methacrylate, or a mixture thereof; and
δ) 0–20 wt. % of a monomer copolymerizable with the monomer α) to γ) wherein the sum of monomers α), β), γ) and δ) is 100 wt. %.
wherein at least 2 wt. % of copolymer CP is covalently bound to polymer P.

5,349,026

REACTIVE COALESCENTS

William D. Emmons, Huntingdon Valley; Daniel A. Bors, Warminster, and Andrew J. Kielbania, Jr., Chalfont, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 20, 1992, Ser. No. 979,118
Int. Cl.[5] C08F *116/36, 216/36, 8/14, 8/32*
U.S. Cl. 525—328.6 **8 Claims**

1. A composition adapted to coat or impregnate a substrate comprising an aqueous dispersion of a vinyl addition polymer and about 1% to about 200% by weight, based on the weight of said polymer, of a reactive coalescent of formula II,

$$[(CH_3COCH_2CO_2)_xR] \quad [I]$$

$$\begin{array}{l} R^1NH \\ | \\ (CH_3C{=}CHCO_2)_xR \end{array} \quad II$$

wherein R is a monovalent or polyvalent organic radical, X is an integer from 1 to 6 whose value is equal to the valence of the organic radical R and R^1 is hydrogen or C_1–C_{22} alkyl.

5,349,027

MODIFIED POLYOLEFIN RESIN COMPOSITIONS

Toru Ueki; Masaji Yoshimura; Kazuharu Kanezaki, all of Kanagawa; Susumu Kishi, Chiba; Takashi Satoh, and Minoru Takiguchi, both of Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

PCT No. PCT/JP91/00393, § 371 Date Sep. 16, 1992, § 102(e) Date Sep. 16, 1992, PCT Pub. No. WO91/14717, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 27, 1991, Ser. No. 927,530
Claims priority, application Japan, Mar. 28, 1990, 2-76580; Mar. 28, 1990, 2-76581; Jun. 25, 1990, 2-164037; Aug. 7, 1990, 2-207515
Int. Cl.[5] C08F *236/10*
U.S. Cl. 525—331.7 **12 Claims**

1. A modified polyolefin resin obtained by reacting a polyolefin resin with an epoxy group-containing acrylamide monomer represented by the following general formula I:

$$H_2C{=}CR{-}CO{-}NH{-}CH_2{-}Ar \quad I$$

wherein Ar represents an aromatic hydrocarbon group having 6 to 24 carbon atoms which is substituted with at least one glycidyloxy group and R represents a hydrogen atom or a methyl group in the presence of a free-radical initiator.

5,349,028

POLYESTER FIBERS

Tetuya Takahashi; Hitoshi Uda; Akira Nakamura; Ryosuke Kamei, all of Kawasaki, and Eiichiro Takiyama, Kamakura, all of Japan, assignors to Showa Highpolymer Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 48,194
Claims priority, application Japan, May 11, 1992, 4-117653; May 11, 1992, 4-117654; May 11, 1992, 4-117655; May 11, 1992, 4-117656; May 11, 1992, 4-117657; May 12, 1992, 4-119197
Int. Cl.[5] C08F *20/00*
U.S. Cl. 525—440 **11 Claims**

1. Polyester fiber comprising an aliphatic polyester having a melt viscosity of $1.0\times10^2-1.0\times10^4$ poises at a temperature of 190° C. and a shear rate of 100 sec^{-1}, and having a melting point of 70–190° C.
wherein said aliphatic polyester is obtained from ingredients consisting essentially of diisocyanate and a prepolymer in a molten state by adding from 0.1 to 5 parts by weight of diisocyanate to 100 parts by weight of the prepolymer in a molten state,
wherein said prepolymer
is obtained from a reaction of at least an aliphatic glycol and an aliphatic dicarboxylic acid, wherein the reaction includes (a) succinic acid, or its anhydride, reacted with 1,4-butanediol, (b) succinic acid, adipic acid, or their anhydride, reacted with 1,4-butanediol, or (c) succinic acid, or its anhydride, reacted with ethylene glycol, and
has a number-average molecular weight of at least 10,000.

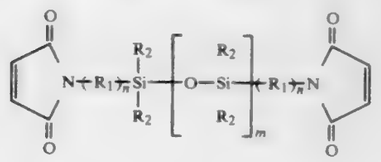
5,349,029

EPOXY RESIN COMPOSITIONS WITH IMPROVED HEAT RESISTANCE

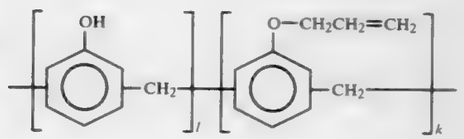
Tai Y. Nam, Suwon, Rep. of Korea, assignor to Cheil Industries, Inc., Rep. of Korea

Filed Jul. 10, 1992, Ser. No. 911,762
Claims priority, application Rep. of Korea, Jul. 11, 1991, 91-11808
Int. Cl.[5] C08G *59/02*
U.S. Cl. 525—476 **2 Claims**

1. An epoxy resin composition for sealing a semi-conductor element, comprising:
an o-cresol-novolac epoxy resin, a curing agent, a modifier, an organophosphine-based curing promotor, an inorganic filler, wherein the modifier comprises a maleimide-modified siloxane-based compound of the formula (1), and the curing agent comprises an allyl-etherified phenol-novolac resin of the formula (2), as follows:



(1)



(2)

wherein
R_1 denotes a methylene group, a phenylene group or a substituted phenylene group,
R_2 denotes a methyl group, a phenyl group or a substituted phenyl group,
n denoted 1 when R_1 is a phenylene or a substituted phenylene group, or 3 or 4 when R_1 is a methylene group,
m denotes an integer of from 1 to 100,
l denotes an integer of from 1 to 100, and
κ denotes an integer of from 1 to 100.

5,349,030

EASY TO DISPERSE POLYCARBOXYLIC ACID THICKENERS

Carl J. Long, II, Elyria; Zahid Amjad, Brecksville; William F. Masler, III, Hinckley, and William H. Wingo, North Royalton, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 935,616, Aug. 26, 1992, Pat. No. 5,288,814. This application Nov. 23, 1993, Ser. No. 156,158
Int. Cl.[5] C08F *2/26, 2/08*
U.S. Cl. 525—450 **19 Claims**

1. A method of making an interpolymer comprising interpolymerizing at least one olefinically unsaturated carboxylic acid or anhydride monomer containing at least one activated carbon to carbon olefinic double bond and at least one carboxyl group, and at least steric stabilizer having at least one hydrophilic moiety and at least one hydrophobic moiety and selected from the group consisting of:
linear block copolymeric steric stabilizers having a hydrophobic moiety having a length of more than 50 Angstroms, random copolymeric comb steric stabilizers, and mixtures thereof,
in an organic media consisting essentially of organic liquids, in the presence of free radical forming catalysts, wherein said carboxylic acid or anhydride is present in an amount of more than 15% by weight based upon the weight of the interpolymer.

5,349,031

FLUORINE-CONTAINING COATING COMPOSITION

Shun-ichi Kodama; Yasuyuki Sasao, and Ryuichi Miura, all of Kawasaki, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Apr. 22, 1993, Ser. No. 50,648
Claims priority, application Japan, Apr. 24, 1992, 4-154053
Int. Cl.[5] C08F *8/00*
U.S. Cl. 525—386 **5 Claims**

1. A fluorine-containing coating composition comprising:
i) 30 to 90 wt. % of a fluorine-containing copolymer obtained by copolymerizing monomers comprising
a) a fluoroolefin;
b) a vinyl ether;
c) an ethylenically unsaturated monomer having a hydroxy group; and
d) an ethylenically unsaturated monomer having an epoxy group;
wherein said copolymer has a hydroxyl value of from 30 to 150 (mgKOH/g) and an epoxy equivalent of from 300 to 2,000 (g/eq); and
(ii) 10 to 70 wt. % of a curing agent selected from the group consisting of a polybasic carboxylic acid, a polybasic carboxylic anhydride, a blocked polybasic carboxylic acid and a mixture thereof.

5,349,032

METALLOCENE AND PROCESS FOR PRODUCING POLYOLEFIN USING THE SAME

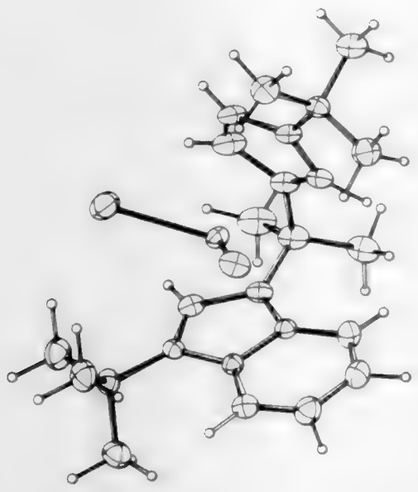
Shigenobu Miyake; Nobuyuki Kibino; Takashi Monoi; Hiroyuki Ohira, and Shintaro Inazawa, all of Oita, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Division of Ser. No. 982,894, Nov. 30, 1992. This application Mar. 15, 1994, Ser. No. 212,931

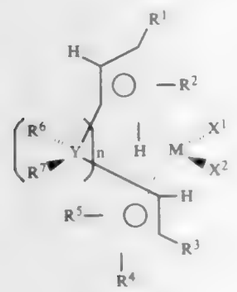
Claims priority, application Japan, Nov. 28, 1991, 3-314978; Dec. 3, 1991, 3-319275; May 7, 1992, 4-114985; Sep. 4, 1992, 4-237393

Int. Cl.[5] C08F *4/64*

U.S. Cl. 526—127 11 Claims



1. A process for producing a polyolefin comprising using, as a catalyst component, a metallocene represented by formula (I) or its enantiomer:



(I)

wherein M represents a transition metal selected from Ti, Zr, and Hf, X^1 and X^2, which may be the same or different, each represents a hydrogen atom, a hydrocarbon group containing from 1 to 10 carbon atoms, an alkylsilyl group, an arylsilyl group, or a halogen atom; R^1, R^2, R^3, R^6, and R^7 each represents a hydrogen atom, a hydrocarbon group containing from 1 to 10 carbon atoms, an alkylsilyl group, or an arylsilyl group, provided that either one of R^1 and R^2 is not a hydrogen atom; R^4 and R^5 each represents a hydrocarbon group containing from 1 to 10 carbon atoms, an alkylsilyl group, or an arylsilyl group, or they are connected together to form a ring; Y represents a carbon atom, a silicon atom, or a germanium atom; and n represents an integer of from 1 to 3.

5,349,033

PROCESS FOR THE PREPARATION OF POLYOLEFIN

Gerhard Thum, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 946,816, Sep. 17, 1992, abandoned, which is a continuation of Ser. No. 780,423, Oct. 22, 1991, abandoned, which is a continuation of Ser. No. 270,407, Nov. 7, 1988, abandoned, which is a continuation of Ser. No. 63,502, Jun. 11, 1987, abandoned. This application Sep. 7, 1993, Ser. No. 117,634

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1986, 3620060

Int. Cl.[5] C08F *4/654, 10/00*

U.S. Cl. 526—140 18 Claims

1. A process for the preparation of polyolefin by polymerization of alpha-olefins at a temperature from 50° to 100° C. and under a pressure of 3 to 12 bar in the presence of a catalyst composed of a spherical transition metal component (component A) and an organometallic compound (component B) in which the component A has been formed by reacting an organomagnesium compound with an organoaluminum compound, an electron donor, an organic chlorine compound and a transition metal compound, which comprises carrying out the polymerization in the presence of a catalyst in which the component A has been prepared by

a) forming a solid composed of spherical particles having an average diameter of 20 to 110 μm, a ratio of the mass average diameter D_m, to the number average diameter D_n is from 1.01 to 1.15 and a ratio of largest to smallest diameters ranging from 1.05 to 1.15 by reacting an organomagnesium compound of the formula R^1MgR^2 in which R^1 an R^2 are identical or different alkyl radicals having 2 to 12 carbon atoms with an organoaluminum compound of the formula $AlR^3_n(OR^4)_{3-n}$ in which R^3 and R^4 are identical or different alkyl radicals having 1 to 8 carbon atoms and n denotes 0, 1, 2 or 3, or with the product from the reaction of aluminum trialkyls or aluminum dialkyl hydrides with diolefins containing 4 to 20 carbon atoms, and a primary, aliphatic chlorinated hydrocarbon, in an amount of 0.01 to 0.1 mol of the organoaluminum compound an 0.5 to 2.5 mol of the chlorinated hydrocarbon, relative to 1 mol of the organomagnesium compound, at a temperature from 30° to 110° C.,

b) treating the resulting solid with an electron donor consisting essentially of

i) oxygen-containing compounds of aluminum, silicon, phosphorus or sulfur, or

ii) nitrogen or silicon compounds having alkyl or aryl radicals containing 1 to 8 carbon atoms, or

iii) aliphatic ethers, in an amount of 0.1 to 1 mol per gram atom of the magnesium present in the solid, at a temperature from 0° to 100° C., and

c) reacting the supporting material thus obtained with a compound of the formula $MeXm(OR^5)$ 4-m in which Me is Ti or Zr, R^5 is an alkyl radical having 2 to 10 carbon atoms, X is a halogen atom and m is an integer from 0 to 4, added dropwise to said supporting material in an amount of 0.1 to 2 mol per gram atom of the magnesium present in the supporting material, and at a temperature from 30° to 120° C.

5,349,034

PROCESS FOR SELECTIVE PRODUCTION OF TRANS-1,4-POLYBUTADIENE

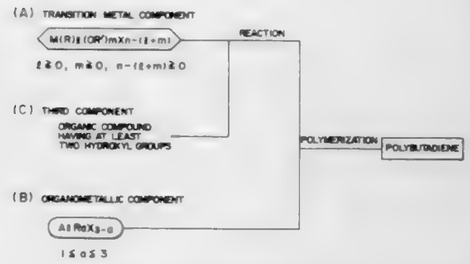
Masahiro Kakugo, Narashino; Tatsuya Miyatake, Ichihara; Koozi Mizunuma, Ichihara; Yoshio Yagi, Ichihara, and Kazuhiro Watanabe, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 625,442, Dec. 11, 1990, abandoned. This application Jul. 22, 1993, Ser. No. 95,050

Claims priority, application Japan, Dec. 18, 1989, 1-329081; Jan. 19, 1990, 2-11642

Int. Cl.[5] C08F *4/649, 136/06*

U.S. Cl. 526—143 5 Claims

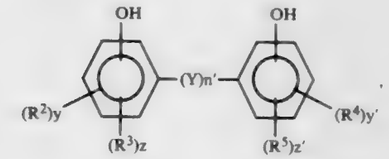


1. A process for selective production of trans-1,4-polybutadiene which comprises using a catalyst system consisting essentially of:

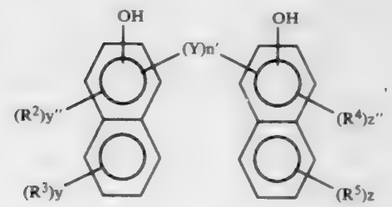
as the catalyst component (A), a titanium compound represented by the general formula $Ti(R)_l(OR')_mX_{4-(l+m)}$, wherein R and R' independently denote a hydrocarbon group of 1–20 carbon atoms, X denotes a halogen atom, and l and m denote numerals satisfying the inequalities $l \geqq 0$, $m \geqq 0$ and $l+m \leqq 4$,

as the catalyst component (B), an organoaluminum compound represented by the general formula $AlR^1_aZ_{3-a}$, wherein R^1 denotes a hydrocarbon group of 1–20 carbon atoms, Z denotes a halogen atom, and a denotes a numeral satisfying the inequality $1 \leqq a \leqq 3$, wherein catalyst component (B) is used relative to the catalyst component (A) in the range of 1 to 100,000 in terms of the ratio of aluminum to titanium atom, and

as the catalyst component (C), all organic compound having at least two hydroxyl groups represented by the general formula V or VI

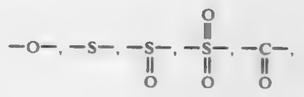


(V)

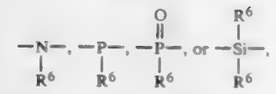


(VI)

wherein Y denotes



-continued



R^6 being hydrogen or a hydrocarbon group of 1–6 carbon atoms; R^2, R^3, R^4 and R^5 must be the same or different from one another and independently denote a hydrocarbon group of 1–20 carbon atoms, hydroxyl group, nitro group, nitrile group, hydrocarbyloxy group or halogen atom; n' denotes 0 or an integer of 1 or more and represents the number of times of repetition of the unit Y; y, y', y'', z, z' and z'' independently denote the number of substituents bonded to the aromatic ring, y, y', z and z' being independently 0 or an integer of from 1 to 2, y'' and z'' being independently 0 or an integer of from 1 to 3;

for polymerization including reacting catalyst component (C) with catalyst component (A) prior to using said system for polymerization.

5,349,035

COPOLYMERIZATION PROCESS AND OPTICAL COPOLYMER PRODUCED THEREFROM

Johannes Brand, Schalkhaar, and Wilfridus M. Brouwer, Nijmegen, both of Netherlands, assignors to Akzo Nobel N.V., Netherlands

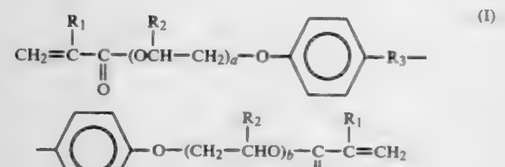
Filed Apr. 16, 1993, Ser. No. 30,037

Claims priority, application European Pat. Off., Sep. 18, 1990, 90202484.3

Int. Cl.[5] C08F *2/38, 220/20*

U.S. Cl. 526—284 10 Claims

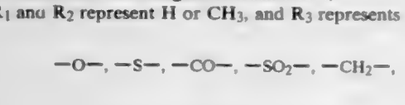
5. A copolymer suitable for use in an optical element obtained by the radical polymerization of a composition which comprises at least 45% by weight, of the weight of the polymerizable composition, of at least one first monomer represented by the formula (I):



(I)

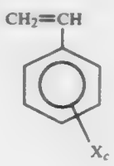
wherein a and b are integers of from 0 to 4,

R_1 and R_2 represent H or CH_3, and R_3 represents



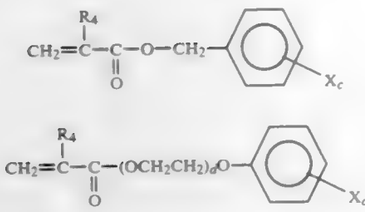
and

5–40 weight percent, of the weight of the polymerizable composition, of at least one second monomer represented by any one of the formulas (II), (III) or (IV):



(II)

-continued



wherein R_4 represents H or CH_3, X represents C_1–C_4 alkyl or halogen other than fluorine, c represents an integer of from 0 to 5, and d represents an integer of from 0 to 5; in the presence of and 0.005 to 1.0 weight percent, based on the polymerizable composition of an organic chain transfer agent having a chain transfer coefficient at 50°–60° C. greater than 0.5 with acrylic monomer or styrenic monomer; and 0.05–2.0% by weight, based in the weight of the polymerizable composition, of a radical polymerization initiator.

6. The copolymer of claim **5** wherein said chain transfer agent is employed in an amount of 0.05 to 0.5 wt %, based on said polymerizable composition.

8. The copolymer of claim **6** wherein said chain transfer agent is selected from α-bromomethylstyrene, ethyl-2-bromomethylpropenoate, tetrabromomethane and trichlorobromomethane.

9. The copolymer of claim **6** wherein said polymerizable composition further comprises up to 50% by weight of the polymerizable composition of a third monomer selected from naphthylmethacrylates, vinylnaphthanlenes, 4-vinylbiphenyl, divinylbenzene, vinylphenylsulphide and alkyl(meth)acrylic acid esters.

5,349,036

AMPHIPATHIC COPOLYMER PIGMENT DISPERSANTS

Michael A. D. Simpson, Burham, and Trevor S. B. Sayer, Wokingham, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Apr. 16, 1993, Ser. No. 48,227

Claims priority, application United Kingdom, Apr. 21, 1992, 9208535

Int. Cl.[5] C08F *220/20*

U.S. Cl. 526—320 **14 Claims**

1. An amphipathic co-polymer pigment dispersant having a weight average molecular weight of from 2,500 to 20,000 inclusive and comprising:

an addition polymer backbone having at least one stabilizer unit selected from the group consisting of:

C_{1-4} alkoxy polyethylene glycol acrylate,

C_{1-4} alkoxy polyethylene glycol methacrylate,

C_{1-4} alkoxy polyethylene co-propylene acrylate ester, and

C_{1-4} alkoxy polyethylene co-propylene methacrylate ester;

where the backbone comprises up to 30% by weight of non-functional structural units and at least 70% by weight in total of said stabilizer units and functional unit, where the functional units are:

(a) styrene units where the styrene is substituted or unsubstituted styrene;

(b) hydroxy group-containing units, and

(c) carboxyl group-containing units, such that the molar proportion per one mole of hydroxy units are from 0.1 to 26.1 moles of carboxyl units, from 0.28 to 25 moles of styrene units, and from 0.8 to 66.1 moles propylene-oxy or ethylene-oxy groups, respectively.

5,349,037

ADHESIVE COMPOSITION

(III) **Hironao Fujiki; Kaoru Michimata, both of Takasaki, and Takehide Okami, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan**

Filed Mar. 3, 1993, Ser. No. 25,862

Claims priority, application Japan, Mar. 3, 1992, 4-081663

Int. Cl.[5] C08G *77/06*

(IV) **U.S. Cl. 528—15** **9 Claims**

1. An adhesion composition comprising:

(A) a fluorosilicone polymer containing the unit having the following formula (1):

$$RfCH_2CH_2(CH_3)SiO— \quad (1)$$

wherein Rf is a perfluoroalkyl group containing 1 to 8 carbon atoms, in an amount of 30 mol % or more on average in the molecule, blocked with the vinyl group at both ends of the molecular chain, and having a viscosity at 25° C. of 1,000 to 100,000 cSt,

(B) a fluorosilicone polymer containing the unit having the formula (1) in an amount of 30 mol % or more on average in the molecule, containing an average of 3 or more units having the following formula (2):

$$CH_2=CH(CH_3)SiO— \quad (2),$$

having an average polymerization degree of 10 or more, the average polymerization degree being defined as the number of SiO units contained in the molecule, and having a viscosity at 25° C. of 10 cSt or more but less than 1,000 cSt,

(C) an organohydrogenpolysiloxane other than (D) having an average of 2 or more of silicon-bonded hydrogen atoms,

(D) an organosilane or organopolysiloxane having at least one hydrogen atom or alkenyl group bonded to a silicon atom and having at least one group selected from the group consisting of the oxirane group, dialkoxysilyl groups and trialkoxysilyl groups in the molecule, and

(E) platinum or a platinum compound.

5,349,038

STAINBLOCKERS FOR NYLON FIBERS

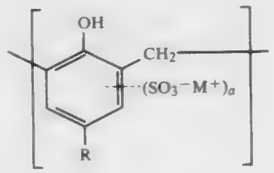
Le Moyne W. Plischke, Lillian, Ala., and Rupert J. Snooks, Jr., Gulf Breeze, Fla., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 891,069, Jun. 1, 1992, abandoned. This application Oct. 15, 1993, Ser. No. 136,187

Int. Cl.[5] C08G *8/04*

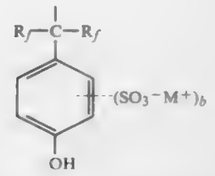
U.S. Cl. 528—150 **7 Claims**

1. An oligomer comprising at least 10 mole %, based on the total number of moles of aryl hydroxide units of said oligomer, repeat units of the formula



wherein

M^+ is a monovalent metal cation; and wherein a=1 or 2 and R is $C(R_f)_3$, with each R_f group being independently selected from the group consisting of Fluorine or a perfluoroalkyl group; or wherein a=0, 1 or 2 and R is



wherein

each R_f group is independently selected from the group consisting of Fluorine (F) or a perfluoroalkyl group;

b=0, 1 or 2; and

a+b=0, 1 or 2; with the proviso that

a+b=1 or 2 for at least about half of said repeat units in said oligomer.

5,349,039

SOLUBLE POLYESTERIMIDE

Chien-Hui Li, Hsinchu; Tzong-Ming Lee, Tainan, and Jyh-Chien Chen, Chayi, all of Taiwan, assignors to Industrial Technology Research Institute, Chutung, Japan

Filed Oct. 20, 1992, Ser. No. 963,464

Int. Cl.[5] C08G *73/10*

U.S. Cl. 528—170 **8 Claims**

1. An amide and phenol series solvents soluble polyesterimide, having a carboxy to hydroxy equivalent molar ratio of 0.9:1 to 1.1:1 produced from:

(a) aromatic diacid selected from the group consisting of

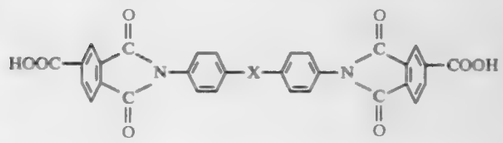
(a_1) terephthalic acid(TPA),

(a_2) isophthalic acid(IPA), and

mixture thereof, and having a ratio of TPA:EPA of 1:0 to 0:1 and comprising 0–49 molar percent of the total ingredients;

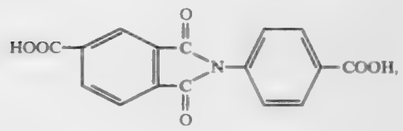
(b) an imide diacid selected from the group consisting of

(b_1) a diimide diacid having the formula as follows:



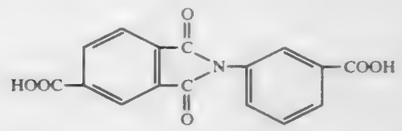
wherein x is selected from the group consisting of O, S, SO_2, CO, and CH_2,

(b_2) a monoimide having the formula as follows:



and

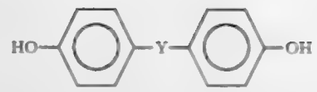
(b_3) a monoimide having the formula as follows:



and mixtures thereof, and comprising 1–50 molar percent of the total ingredients; and

(c) aryl diol selected from the group consisting of

(c_1) having the formula as follows:



wherein Y is selected from the group consisting of $C(CH_3)_2$, SO_2, and S, and

(c_2) a mixture of hydroquinone(HQ) and resorcinol(RC) with a mixing molar ratio of 1:0 to 1:1,

and comprising 50 molar percent of the total ingredients.

5,349,040

TWO-COMPONENT POLYURETHANE ADHESIVES

Rainer Trinks, Dormagen; Heinrich Königshofen, Bergisch Gladbach; Otto Ganster, Odenthal; Horst Stepanski, Leverkusen, and Jose Colinas-Martinez, Wermelskirchen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 11, 1991, Ser. No. 776,517

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1990, 4033221

Int. Cl.[5] C08G *18/67*

U.S. Cl. 528—75 **4 Claims**

1. A two-component polyurethane consisting essentially of an isocyanate component a), an active hydrogen containing component which is stable against demixing b), optionally a catalyst for the reaction of a) with b) and optionally an auxiliary agent and an additive, characterized in that the active hydrogen containing component which is stable against demixing b) contains a hydroxyl group-containing low molecular weight chain lengthening agent having a C—C double bond or C—C triple bond and having a molecular weight of at least 86 to 400 and a functionality of at least 2 and containing no carboxyl groups.

5,349,041

WATER DILUTABLE, POLYESTER POLYOLS AND THEIR USE IN COATING COMPOSITIONS

Harald Blum, Wachtendonk; Lothar Kahl, Bergisch Gladbach; Nusret Yuva, Leichlingen, and Manfred Bock, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 12, 1993, Ser. No. 61,640

Claims priority, application Fed. Rep. of Germany, May 19, 1992, 4216536

Int. Cl.[5] C08G *18/32, 18/38, 18/40*

U.S. Cl. 528—85 **8 Claims**

1. A water dilutable, urethane group-containing polyester polyol having an acid number of 6 to 45 mg KOH/g, wherein 25 to 100% of the acid groups are neutralized by bases, a hydroxyl number of 20 to 250 mg KOH/g, a molecular weight (M_w) of 2,000 to 150,000 and a urethane content (—N-H—CO—O—) of 2 to 16% by weight, wherein the polyester polyol comprises the at least partly neutralized reaction product of

a) 35 to 90% by weight of one or more branched polyester polyols having a hydroxyl number of 40 to 600 and comprising the reaction product of

a1) 0 to 60% by weight of one or more monocarboxylic acids having 6 to 22 carbon atoms,

a2) 6 to 65% by weight of one or more di- and/or tricarboxylic acids or their anhydrides,

a3) 10 to 70% by weight of one or more alcohols having two and/or more hydroxyl groups,

a4) 0 to 35% by weight of one or more monoalcohols,

a5) 0 to 30% by weight of one or more hydroxycarboxylic acids, aminocarboxylic acids, lactones, lactams and aminoalcohols and

a6) 0 to 45% by weight of one or more polycarbonate polyols having a molecular weight of 450 to 16,000,

b) 0.5 to 8.5% by weight of one or more hydroxycarboxylic acids

c) 0 to 15% by weight of one or more compounds containing at least one OH, NH and/or NH_2 group and having a molecular weight of 32 to 500,

d) 3 to 33% by weight of one or more compounds containing at least two isocyanate groups and having a molecular weight of 168 to 2,000 and

e) 0 to 45% by weight of one or more polycarbonate polyols having a molecular weight of 450 to 16,000,

wherein the percentages of a) to e) and a1) to a6) add up to 100% and wherein the urethane group-containing polyester polyols contain 1 to 25% by weight of carbonate groups (—O—CO—O—) incorporated through components e) and/or a6).

5,349,042

PROCESS FOR PRODUCING POLYCARBONATE

Shigeki Kuze; Ryozo Okumura, and Yoshinobu Suwabe, all of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1993, Ser. No. 31,828
Claims priority, application Japan, Mar. 17, 1992, 4-060079
Int. Cl.[5] C08G *64/00, 63/68*
U.S. Cl. 528—196 13 Claims

1. A process for producing a polycarbonate, which comprises transesterifying (A) a dihydroxy compound and (B) a carbonic acid diester having, as an impurity, a chlorine content derived from chloroformate group of at most 30 ppm, which is obtained by subtracting the chlorine content extracted with water using ion chromatography from the total chlorine content contained in said carbonic acid diester determined by potentiometric titration.

5,349,043

POLYCARBONATE AND PROCESS FOR PRODUCING THE SAME

Shigeki Kuze; Ryozo Okumura, and Noriyuki Kunishi, all of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1993, Ser. No. 69,598
Claims priority, application Japan, Jun. 22, 1992, 4-162748
Int. Cl.[5] C08G *64/00*
U.S. Cl. 528—200 19 Claims

1. A polycarbonate which is obtained by transesterification of (A) a dihydroxy compound and (B) a carbonic diester in a reactor made of a metallic material comprising at least one metal selected from the group consisting of Fe, Cr, Mo, Ni, and Cu, the amount of residual metals in the resultant polycarbonate being (i) 10 ppm or less in total of Fe, Cr and Mo, and (ii) 50 ppm or leas in total of Ni and Cu.

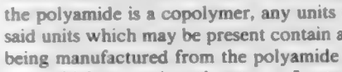
5,349,044

POLYAMIDE MONOFILAMENT SUTURE MANUFACTURED FROM HIGHER ORDER POLYAMIDE

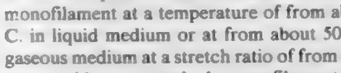
Cheng-Kung Liu, Norwalk, and John C. Brewer, Bristol, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 828,005, Jan. 30, 1992, abandoned. This application Sep. 24, 1993, Ser. No. 126,679
The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.
Int. Cl.[5] C08G *69/26*
U.S. Cl. 528—310 18 Claims

1. A polyamide monofilament suture manufactured from a fiber-forming polyamide homopolymer or copolymer possessing a substantial number of units selected from the group consisting of units of the structure in which n is at



at least about 7 and units of the structure



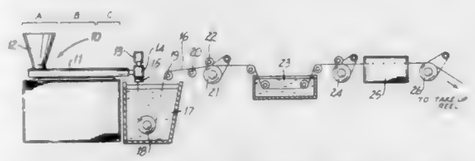
in which R^1 is an aliphatic group of from about 4 to about 20 carbon atoms, a cycloaliphatic group of from about 6 to about 20 carbon atoms or an aromatic group of from about 6 to about 20 carbon atoms and R^2 is an aliphatic, cycloaliphatic or aromatic group of from about 6 to about 20 carbon atoms, provided, R^1 contains at least 6 carbon atoms when R^2 is an aliphatic group of 6 carbon atoms or R^2 contains at least 8 carbon atoms when R^1 contains 4 carbon atoms, provided, that where the polyamide is a copolymer, any units other than the aforesaid units which may be present contain a carbonyl, the suture being manufactured from the polyamide by an extrusion process which comprises the steps of extruding the polyamide resin at an extrusion temperature of from about 180° to about 290° C. to provide a monofilament, stretching the solidified monofilament at a temperature of from about 40° to about 98° C. in liquid medium or at from about 50° to about 185° C. in gaseous medium at a stretch ratio of from about 3:1 to about 5:1 to provide a stretched monofilament and annealing the stretched monofilament at a temperature of from about 100° to about 240° C. to provide the finished suture, the annealing resulting in shrinkage of the stretched monofilament for a recovery to within about 80% to about 97% of the length of the monofilament prior to annealing, said monofilament having a decreased 0–5% energy compared to a cold-drawn monofilament of the same size and composition.

5,349,045

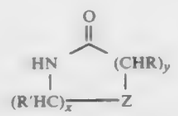
POLYMER DERIVED FROM CYCLIC AMIDE AND MEDICAL DEVICES MANUFACTURED THEREFROM

Ying Jiang, North Haven, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Jan. 26, 1993, Ser. No. 9,122
Int. Cl.[5] C08G *69/14*
U.S. Cl. 528—323 6 Claims



1. A copolymer suitable for fabrication into a useful article by at least one fabrication method selected from the group consisting of molding and extruding, the copolymer possessing structural units derived from a cyclic amide monomer of the general formula:



wherein Z is O, S or NR''; each of R, R' and R'' individually is the same or different and is hydrogen or methyl; and, x is 1 to 5, y is 1 to 5 and the sum of x and y is at least 3, and structural units derived from at least one other monomer selected from the group consisting of caprolactam, ϵ-caprolactone, glycolide, glycolic acid, lactide, lactic acid, p-dioxanone and trimethylene carbonate.

5,349,046

POLYMERIZATION OF β-LACTONES UNDER RIM CONDITIONS

Sharon M. Beshouri; Pui K. Wong, and Dale L. Handlin, Jr., all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 1, 1992, Ser. No. 984,127
Int. Cl.[5] C08G *63/08*
U.S. Cl. 528—354 19 Claims

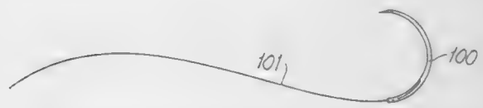
1. A method for making a molded article of manufacture comprising polymerized β-lactone which method comprises injecting into a mold at least one β-lactone monomer and from about 1.0×10^{-8} to about 1.0×10^{-1} by weight basis monomer of at least one nucleophilic initiator, polymerizing said β-lactone in said mold and removing the resultant polymerized article from the mold.

5,349,047

POLYESTERS HAVING PREDETERMINED MONOMERIC SEQUENCE

Matthew E. Hermes, Steamboat Springs, Colo., and Bin Huang, Laramie, Wyo., assignors to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 914,179, Jul. 14, 1992, Pat. No. 5,256,762, and a continuation-in-part of Ser. No. 914,179, Jul. 14, 1992, Pat. No. 5,256,762. This application Jun. 16, 1993, Ser. No. 75,692
The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.
Int. Cl.[5] C08G *69/00*
U.S. Cl. 528—361 29 Claims



1. A process for making a polyester having a predetermined monomeric sequence comprising:

(i) providing an aliphatic ester of a first hydroxyacid;

(ii) protecting a hydroxyl group on said aliphatic ester of a first hydroxyacid with a hydroxyl protecting group;

(iii) subjecting said hydroxyl-protected aliphatic ester of a first hydroxyacid to hydrolysis to remove the aliphatic ester substituent;

(iv) protecting a carboxyl group on a next hydroxyacid with a carboxyl protecting group;

(v) reacting said first hydroxyl-protected hydroxyacid with said next carboxyl-protected hydroxyacid; and

(vi) forming a product having an ester bond between said first hydroxyl-protected hydroxyacid and said next carboxyl-protected hydroxyacid.

5,349,048

PREPARATION OF POLYCARBONATE PRODUCTS

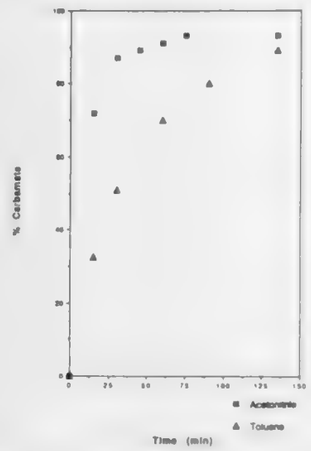
William D. McGhee, Bridgeton, and Dennis P. Riley, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 976,746, Nov. 16, 1992, which is a division of Ser. No. 692,857, Apr. 29, 1991, Pat. No. 5,223,638. This application Dec. 27, 1993, Ser. No. 173,233
Int. Cl.[5] C08G *65/34, 67/02*
U.S. Cl. 528—425 14 Claims

1. A process for preparing polycarbonate comprising:

(a) bringing CO_2 and alcohol into reactive contact in a suitable solvent and in the presence of a sterically hindered amidine or guanidine base to form the corresponding carbonate salt;

(b) reacting, in a polar aprotic solvent, the salt with a hydrocarbyl halide; and



(c) reacting the product of Step (b) with a polymerization initiator under polymerization conditions.

5,349,049

METHOD OF PRODUCTION OF POLYVINYL CHLORIDE RESIN FOR PASTE PROCESSING

Masaaki Nishina, Yokohama, and Osamu Ozaki, Himi, both of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 40,192
Claims priority, application Japan, Mar. 31, 1992, 4-105770
Int. Cl.[5] C08F *6/16*
U.S. Cl. 528—485 16 Claims

1. In a method for the production of particulate polyvinyl chloride resin suitable for paste processing in which an aqueous polyvinyl chloride resin dispersion containing 10 to 70 parts of the polyvinyl chloride resin per 100 parts of the aqueous dispersion is separated from the aqueous phase and recovered, the improvement which comprises adding to the aqueous dispersion and mixing therewith at a temperature from 20° to 50° C. (a) an amount from 0.5 to less than 15 weight parts per 100 weight parts of resin in the aqueous dispersion of an organic fluid which is at most barely soluble in water and does not dissolve or swell the polyvinyl chloride resin and has a boiling point of at least 200° C. and (b) an aggregating agent, prior to separating the particulate polyvinyl chloride resin from the aqueous phase of the aqueous dispersion.

5,349,050

PEPTIDES, AND ANTIDEMENTIA AGENTS CONTAINING THE SAME

Mitsuo Masaki, Chiba; Masaki Uehara; Kenji Hirate, both of Saitama; Yoshikazu Isowa, Tokyo; Yoshiaki Sato, Tokyo, and Yoshiharu Nakashima, Tokyo, all of Japan, assignors to Nippon Chemiphar Co., Ltd. and Fujirebio Kabushiki Kaisha, both of Tokyo, Japan

Division of Ser. No. 509,950, Apr. 16, 1990, Pat. No. 5,112,947. This application Feb. 18, 1992, Ser. No. 838,140
Claims priority, application Japan, Apr. 15, 1989, 1-95917; Apr. 15, 1989, 1-95918; Apr. 15, 1989, 1-95919; Apr. 15, 1989, 1-95920; Apr. 15, 1989, 1-95921; Apr. 15, 1989, 1-95922
The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.
Int. Cl.[5] A61K *31/34, 31/02;* C07K *5/10, 7/06*
U.S. Cl. 530—330 2 Claims

1. A peptide selected from the group consisting of:

H—Asn—Ser—Pro—Arg—OH

-continued

H—Asn—Thr—Pro—Arg—OH
H—Asn—Ala—Pro—Arg—OH
H—Asn—Ser—D—Pro—Arg—OH
H—Asn—Ser—Pro—Arg—Gly—NH_2
H—Asn—Ser—Pip—Arg—OH
H—Pro—Ser—Pip—Arg—OH
H—Pro—Asn—Ser—Pip—Arg—OH

H—Cys—OH
|
pGlu—Cys—Pro—Arg—Gly—NH_2

H—Cys—OH
|
cyPent —CO—Cys—pro—Arg—Gly—NH_2
(cyPent: cyclopentyl group)

H—Cys—OH
|
H—Pro—Cys—Pro—Arg—Gly—NH_2

H—Cys—OH
|
pGlu—Cys—Pro—Arg-β-Ala—OH

H—Pro—Cys—Pro—Arg—Gly—NH_2
|
(H—Pro—Cys—Pro—Arg—Gly—NH_2)$_2$

H—Pro—Asn—Ser—Pro—Arg—OH
H—Pro—Ser—Pro—Arg—OH
H—Pro—Ser—Pro—Arg—Gly—NH_2,

and a pharmaceutically acceptable salt thereof.

5,349,051

MODIFIED INTERLUEKIN-1β

Balasubramanian Veerapandian, Rockville, Md., assignor to University of Maryland, College Park, Md.

Continuation of Ser. No. 649,568, Feb. 5, 1991, abandoned. This application Feb. 4, 1993, Ser. No. 13,663

Int. Cl.[5] C07K *13/00*

U.S. Cl. 530—351 **3 Claims**

1. A modified interleukin-1β polypeptide antagonist which inhibits the biological activity of interleukin-1β, said polypeptide having the same amino acid sequence as IL-1β but having an aliphatic chain amino acid at the 25 position of the amino acid sequence.

5,349,052

PROCESS FOR FRACTIONATING POLYETHYLENE GLYCOL (PEG)-PROTEIN ADDUCTS AND AN ADDUCT FOR PEG AND GRANULOCYTE-MACROPHAGE COLONY STIMULATING FACTOR

Cristina Delgado; Gillian E. Francis, and Derek Fisher, all of London, United Kingdom, assignors to Royal Free Hospital School of Medicine, London, United Kingdom

Continuation of Ser. No. 678,954, Apr. 19, 1991, abandoned. This application May 12, 1993, Ser. No. 60,889

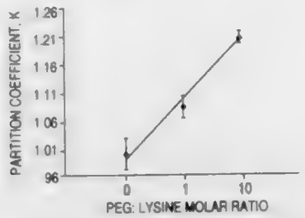
Claims priority, application United Kingdom, Oct. 20, 1988, 8824591

Int. Cl.[5] C07K *3/08, 3/12, 15/06*

U.S. Cl. 530—351 **9 Claims**

1. A process for fractionating a mixture of polyethylene glycol (PEG)-protein adducts having different degrees of PEG substitution comprising:

(a) partitioning the PEG-protein adducts in a PEG-containing aqueous biphasic system according to the degree of PEG substitution, and



(b) recovering a PEG-protein adduct of predetermined degree of PEG substitution from one phase of the biphasic system.

5,349,053

CHIMERIC LIGAND/IMMUNOGLOBULIN MOLECULES AND THEIR USES

Nicholas F. Landolfi, Mountain View, Calif., assignor to Protein Design Labs, Inc., Mountain View, Calif.

Continuation of Ser. No. 532,267, Jun. 1, 1990, abandoned. This application Jun. 10, 1993, Ser. No. 76,263

Int. Cl.[5] C07K *13/00;* **A61K** *39/00, 37/02*

U.S. Cl. 530—351 **12 Claims**

1. A chimeric immunoligand comprising:

an interleukin-2 ligand component comprising an interleukin-2 amino acid sequence capable of binding an interleukin-2 receptor; and

an immunoglobulin constant region component comprising an immunoglobulin constant region domain without an immunoglobulin variable region domain;

wherein the ligand component and the constant region component are in peptide linkage, the immunoligand is capable of binding to an interleukin-2 cell surface receptor through the ligand component, and the immunoligand is capable of fixing complement and/or mediating antibody dependent cell cytotoxicity through the constant region component, due to binding of the immunoligand to the cell surface receptor.

5,349,054

ACTIVATED BENZENEPENTACARBOXYLATE-CROSSLINKED LOW OXYGEN AFFINITY HEMOGLOBIN

Joseph Bonaventura; Marius Brouwer, and Robert E. Cashon, all of Beaufort, N.C., assignors to Duke University, Durham, N.C.

Filed Aug. 15, 1991, Ser. No. 745,587

Int. Cl.[5] A61K *37/00, 35/14, 37/02;* **C07K** *13/00*

U.S. Cl. 530—385 **17 Claims**

1. Stroma-free tetrameric mammalian hemoglobin having an affinity for oxygen which is lower than that of non-crosslinked hemoglobin A, and which is crosslinked with benzenepentacarboxylate, in which at least two carboxylate groups have been activated with an activating agent prior to reaction with the hemoglobin.

5,349,055

NERVE GROWTH FACTOR HAVING ALTERED RECEPTOR BINDING SPECIFICITIES

Hakan B. Persson, Vreta Gard, S-14743 Tumba, Sweden, and Carlos F. I. Moliner, Tangvagen 29, S-12638 Hagersten, Sweden

Filed Mar. 6, 1992, Ser. No. 847,369

Int. Cl.[5] C07K *13/00*

U.S. Cl. 530—399 **8 Claims**

1. Mutant nerve growth factor having essentially the same biological activity as wild-type nerve growth factor, wherein

at least one positively charged amino acid in amino acids 30 through 34 or amino acids 93 to 98 of wild-type nerve growth factor is replaced with an uncharged or negatively charged amino acid, wherein said replacement reduces the ability of the mutant nerve growth factor to bind $p75^{NGFR}$ as compared to wild-type nerve growth factor.

5,349,056

MODIFIED CILIARY NEUROTROPHIC FACTORS

Nikos Panayotatos, Orangeburg, N.Y., assignor to Regeneron Pharmaceuticals, Tarrytown, N.Y.

Filed Oct. 9, 1992, Ser. No. 959,284

Int. Cl.[5] A61K *37/36, 37/10;* **C12P** *21/06*

U.S. Cl. 530—399 **3 Claims**

1. Modified human ciliary neurotrophic factor comprising human ciliary neurotrophic factor having the modification Gln63→Arg.

5,349,057

WATER SOLUBLE AZO DYES CONTAINING A CYANOAMINO-TRIAZINYL-AMINO GROUP AND A FIBER-REACTIVE OF THE SULFONE SERIES

Holger M. Büch, Hofheim am Taunus, and Hartmut Springer, Königstein/Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP90/00716, § 371 Date Jan. 10, 1992, § 102(e) Date Jan. 10, 1992, PCT Pub. No. WO90/13603, PCT Pub. Date Nov. 15, 1990

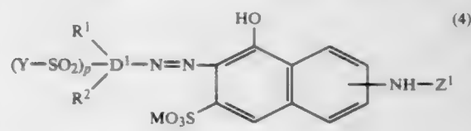
PCT Filed May 4, 1990, Ser. No. 772,375

Claims priority, application Fed. Rep. of Germany, May 10, 1989, 3915305; Oct. 17, 1989, 3934514

Int. Cl.[5] C09B *62/08;* **D06P** *1/38*

U.S. Cl. 534—637 **16 Claims**

1. A water-soluble azo dye of the general formula (4)


(4)

in which

Y is vinyl, β-sulfatoethyl, β-thiosulfatoethyl, β-phosphatoethyl, β-alkanoyloxyethyl of 2 to 5 carbon atoms in the alkanoyl radical, β-benzoyloxyethyl, β-(sulfobenzyoxyloxy)ethyl, β-(p-toluenesulfonyloxy)ethyl or β-halogenoethyl;

P is the number 1 or 2

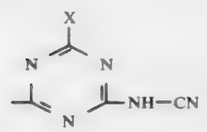
M is hydrogen or an alkali metal,

R^1 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen, trifluoromethyl, carboxyl or sulfo,

R^2 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen or sulfo,

D^1 is a benzene or naphthalene ring and

Z^1 is a group of the general formula (3a)


(3a)

in which X is chlorine, bromine, sulfo, alkoxysulfonyl of 1 to 4 carbon atoms or phenylsulfonyl.

5,349,058

NUCLEIC ACID ENCODING HUMAN MEVALONATE KINASE

Richard D. Tanaka, Yardley, Pa.; Beverly S. Ricci, Cranbury, N.J., and Stephen T. Mosley, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 6, 1990, Ser. No. 475,577

The portion of the term of this patent subsequent to Apr. 10, 2007, has been disclaimed.

Int. Cl.[5] C07H *17/00*

U.S. Cl. 536—23.2 **1 Claim**

1. An isolated and purified nucleic acid selected from the group consisting of the nucleic acid of FIGS. 1A and 1B and a nucleic acid that is 100% complementary to the nucleic acid of FIGS. 1A and 1B.

5,349,059

HYBRID PROMOTER CONTRUCTS OF GLYCERALDEHYDE-3-PHOSPHATE DEHYDROGENASE PROMOTER

Steven Rosenberg, Oakland, and Patricia Tekamp-Olson, San Francisco, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 635,048, Dec. 28, 1990, abandoned, which is a continuation of Ser. No. 380,783, Jul. 18, 1989, Pat. No. 5,089,398, which is a continuation of Ser. No. 609,540, May 11, 1984, abandoned, which is a continuation-in-part of Ser. No. 468,589, Feb. 22, 1983, abandoned. This application Apr. 2, 1993, Ser. No. 42,134

The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.

Int. Cl.[5] C12P *19/34;* **C12N** *15/11*

U.S. Cl. 536—24.1 **3 Claims**

1. A DNA construct for expression of heterologous proteins, wherein said construct comprises:

a structural gene encoding said heterologous protein, wherein said structural gene is under the regulatory control of a first domain; and

a first domain proximal to said structural gene, said first domain comprising about 200–500 bp, and including the RNA polymerase binding site and transcription initiation site of the yeast Saccharomyces glyceraldehyde-3-phosphate dehydrogenase gene.

5,349,060

RAPAMYCIN 31-ESTER WITH N,N-DIMETHYLGLYCINE DERIVATIVES USEFUL AS IMMUNOSUPPRESSIVE AGENTS

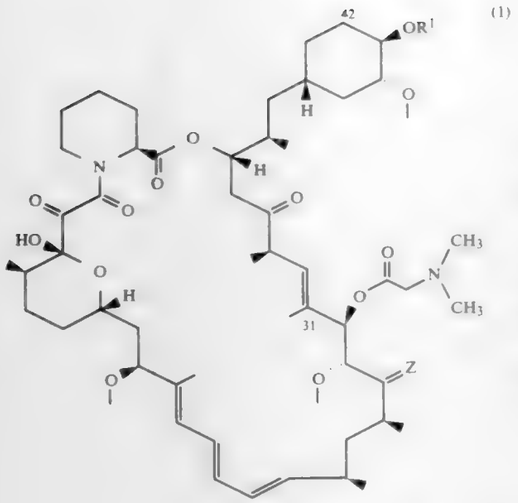
Wenling Kao, Paoli, Pa., and Robert L. Vogel, Stratford, N.J., assignors to American Home Products Corporation, Madison, N.J.

Continuation-in-part of Ser. No. 1,359, Jan. 7, 1993, abandoned. This application May 6, 1993, Ser. No. 58,918

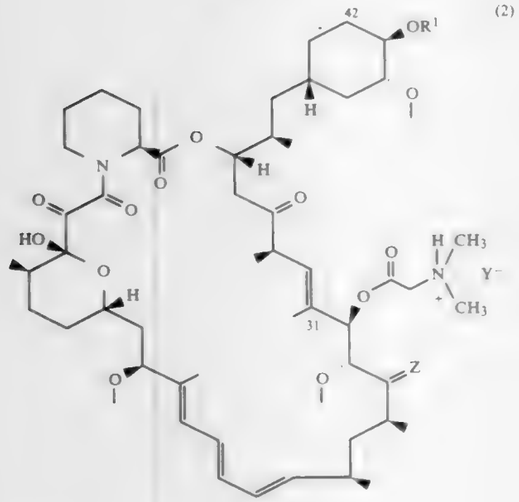
Int. Cl.[5] C07D *491/16;* **A61K** *31/395*

U.S. Cl. 540—456 **10 Claims**

1. A compound of general formula (1) and (2)

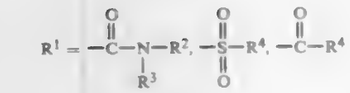


(1)



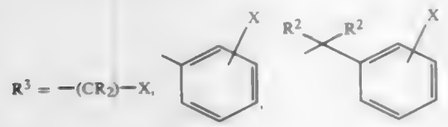
(2)

wherein



or hydrogen;

R^2=hydrogen, or lower alkyl having 1 to 6 carbon atoms;



wherein X=hydrogen, lower alkyl having 1 to 6 carbon atoms, $-CF_3$, $-NO_2$, $-OR^2$, NR^2, SR^2, or halogen;

R^4=lower alkyl, alkenyl or alkynyl having 1 to 6 carbon atoms or an aromatic or heterocyclic moiety selected from the group consisting of phenyl, naphthyl, thiophenyl and quinolinyl;

Y−=halide, methanesulfonate, toluene sulfonate or maleate; and

Z=oxygen or OH and H.

5,349,061

O-HETEROARYL, O-ALKYLHETEROARYL, O-ALKENYLHETEROARYL AND O-ALKYNYLHETEROARYLMACROLIDES HAVING IMMUNOSUPPRESSIVE ACTIVITY

Peter J. Sinclair, Highland Park; Joung Goulet, Westfield; Frederick Wong, Glen Ridge; Mark Goulet, Westfield; William H. Parsons, Rahway, and Matthew J. Wyvratt, Mountainside, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 921,851, Aug. 5, 1992, Pat. No. 5,252,732, which is a continuation-in-part of Ser. No. 756,946, Sep. 9, 1991, abandoned. This application Oct. 12, 1993, Ser. No. 135,200

Int. Cl.[5] **A61K** *31/345;* **C07D** *491/16*

U.S. Cl. 540—45.6 **1 Claim**

1. A compound selected from the group consisting of:

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(3-pyridyl) -2‴-hydroxyethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,25-dimethoxy-13,19,21,27-tetramethyl-11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]-octacos-18-ene-2,3, 10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(3-pyridyl) -2‴-oxoethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,25-dimethoxy-13,19,21,27-tetramethyl-11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]-octacos-18-ene-2,3, 10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(2-thienyl) -2‴-hydroxyethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl-11,28 -dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene-2,3, 10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(3-thienyl) -2‴-hydroxyethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl-11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene-2,3, 10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(2-thienyl) -2‴-oxoethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl-11,28 -dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene-2,3, 10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(3-thienyl) -2‴-oxoethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl-11,28 -dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene-2,3, 10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(benzothien -2-yl)-2‴-hydroxyethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl -11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene -2,3,10,16-tetraone;

17Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(benzothien -3-yl)-2‴-hydroxyethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl -11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene -2,3,10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(benzothien -5-yl)-2‴-hydzoxyethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl -11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene -2,3,10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(benzothien -6-yl)-2‴-hydroxyethyloxy)-3″-methoxycyclohexyl)-1′methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl -11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene -2,3,10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(benzothien -2-yl)-2‴-oxoethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl -11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene -2,3,10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(benzothien -3-yl)-2‴-oxoethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl -11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene -2,3,10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(benzothien -5-yl)-2‴-oxoethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl -11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene -2,3,10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(benzothien -6-yl)-2‴-oxoethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl -11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene -2,3,10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(benzofuran -2-yl)-2‴-hydroxyethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl -11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene -2,3,10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(benzofuran -3-yl)-2‴-hydroxyethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl -11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene -2,3,10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(benzofuran -5-yl)-2‴-hydroxyethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl -11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene -2,3,10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(benzofuran -6-yl)-2‴-hydroxyethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl -11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene -2,3,10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(benzofuran -2-yl)-2‴-oxoethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl -11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene -2,3,10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(benzofuran -3-yl)-2‴-oxoethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl -11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene -2,3,10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(benzofuran -5-yl)-2‴-oxoethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl -11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene -2,3,10,16-tetraone;

17-Ethyl-1,14-dihydroxy-12-[2′-(4″-(2‴-(benzofuran -6-yl)-2‴-oxoethyloxy)-3″-methoxycyclohexyl)-1′-methylvinyl]-23,23-dimethoxy-13,19,21,27-tetramethyl -11,28-dioxa-4-azatricyclo[22.3.1.0^{4,9}]octacos-18-ene -2,3,10,16-tetraone;

or a pharmaceutically acceptable salt thereof.

5,349,062

SUBSTITUTED NAPHTHO[1,8-DE:5,4-D′E′]BIS[1,3]THIAZINES, PROCESS FOR THEIR PREPARATION AND THE USE THEREOF

John Zambounis, Murten, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

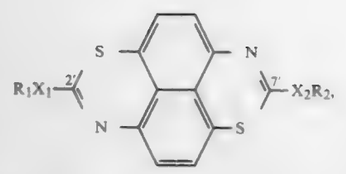
Filed Jun. 28, 1993, Ser. No. 83,814

Claims priority, application Switzerland, Jul. 2, 1992, 2087/92-3

Int. Cl.[5] **C07D** *279/08;* **C07C** *331/30*

U.S. Cl. 544—4 **15 Claims**

1. A compound of formula I



(I)

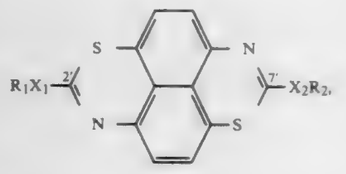
wherein

X_1 and X_2 are each independently of the other O, S or Se, and R_1 and R_2 are each independently of the other a monovalent radical of an aliphatic or aromatic hydrocarbon, wherein the aliphatic hydrocarbon radicals are selected from the group consisting of C_1–C_{18}alkyl, C_3–C_8cycloalkyl and C_7–C_{12}aralkyl, which aliphatic hydrocarbon radicals are unsubstituted or substituted by NH_2, C_1–C_6alkoxy or phenyl, and the aromatic hydrocarbon radicals are selected from the group consisting of C_6–C_{18}aryl, which aromatic hydrocarbon radicals are substituted by NH_2, C_1–C_6alkyl, C_1–C_6alkoxy or C_3–C_8cycloalkyl.

5. A charge transfer complex of formula IV

$$Z_xA_y \qquad \text{(IV)}$$

wherein Z is the radical cation of a compound of formula I



(I)

wherein

X_1 and X_2 are each independently of the other O, S or Se, and R_1 and R_2 are each independently of the other a monovalent radical of an aliphatic or aromatic hydrocarbon, wherein the aliphatic hydrocarbon radicals are selected from the group consisting of C_1–C_{18}alkyl, C_3–C_8cycloalkyl and C_7–C_{12}aralkyl, which aliphatic hydrocarbon radicals are unsubstituted or substituted by NH_2, C_1–C_6alkoxy or phenyl, and the aromatic hydrocarbon radicals are selected from the group consisting of C_6–C_{18}aryl, which aromatic hydrocarbon radicals are substituted by NH_2, C_1–C_6alkyl, C_1–C_6alkoxy or C_3–C_8cycloalkyl, and A is the anion of an inorganic acid, and $1 \leqq x/y \leqq 3$.

5,349,063

PANCREATIC IMAGING AGENTS

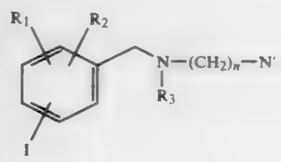
Alummoottil V. Joshua, Edmonton, and John R. Scott, Ardrossan, both of Canada, assignors to Alberta Cancer Board, Edmonton, Canada

Continuation of Ser. No. 673,228, Mar. 21, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 546

Int. Cl.[5] **C07D** *265/30, 211/26, 207/30*

U.S. Cl. 544—162 **12 Claims**

1. A compound effective for pancreatic imaging having the general formula:



wherein n is 3 to 10; R_1 and R_2 are the same or different and are hydroxyl or lower alkyl having 1 to 6 carbon atoms; R_3 is lower alkyl having 1 to 6 carbon atoms; and N' is a nitrogen atom forming part of a 4- to 8-membered heterocyclic ring containing one or two hetero atoms, one of which is said nitrogen, said heterocyclic ring being unsubstituted or substituted with one or more lower alkyl groups and pharmaceutically acceptable acid addition salts thereof.

5,349,064

PRODUCTION OF PYRROLOPYRIMIDINES

Hiroshi Akimoto, Kobe; Takenori Hitaka, Takarazuka, and Tetsuo Miwa, Kobe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

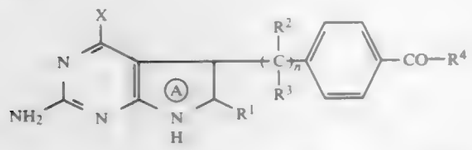
Continuation of Ser. No. 537,807, Jun. 14, 1990, abandoned. This application Mar. 8, 1993, Ser. No. 29,310

Claims priority, application Japan, Jun. 14, 1989, 1-150910; Sep. 18, 1989, 1-242975; Apr. 6, 1990, 2-92391

Int. Cl.[5] C07D *487/04*

U.S. Cl. 544—280 **7 Claims**

1. A process for producing a compound represented by the formula:



The ring A represents a pyrrole ring which may be hydrogenated;

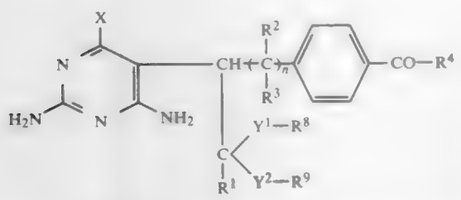
X represents an amino, hydroxyl or mercapto group;

R^1 represents hydrogen or a $C_{1\text{-}6}$ alkyl group which may be substituted; $R^2$and R^3 each, being the same or different, represents hydrogen or a $C_{1\text{-}6}$ alkyl, $C_{2\text{-}6}$ alkenyl or $C_{2\text{-}6}$ alkynyl group which may be substituted;

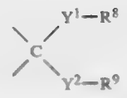
R^4 represents OR^5 wherein R^5 represents hydrogen or a hydrocarbon group selected from the group consisting of $C_{1\text{-}5}$ alkyl, benzyl and phenyl which may be substituted or $NHCH(COOR^6)CH_2CH_2COOR^7$ wherein R^6 and R^7 each represents hydrogen or a hydrocarbon group selected from the group consisting of $C_{1\text{-}5}$ alkyl, benzyl and phenyl which may be substituted; and n represents an integer of i to 4,

or a nontoxic salt thereof,

said process comprising contacting a compound of the formula:



wherein X, R^1, R^2, R^3, R^4 and n are the same as defined above; Y^1 and Y^2 each represents oxygen or sulfur atom; R^8 and R^9 each, being the same or different, represents a hydrocarbon group selected from the group consisting of $C_{1\text{-}5}$ alkyl, benzyl and phenyl which may be substituted, or a salt thereof, with an acid in a water-containing organic solvent to undergo a ring-closure reaction, wherein during said ring-closure reaction the group



is converted to a carbonyl, hemiacetal or hemiketal group, said carbonyl, hemiacetal or hemiketal group condensing with the amino group on the pyrimidine ring to form the pyrrolo(2,3-d)pyrimidine ring, and optionally, reducing the pyrrole ring of ring A into a pyrroline ring, or converting OR^5 of R^4, where R^5 is the same as defined above, into, $NHCH(COOR^6)CH_2CH_2COOR^7$ where R^6 and R^7 are the same as defined above,

wherein in the above formulae, the substituted alkyl, substituted alkenyl and substituted alkynyl groups of R^1, R^2, R^3, R^5, R^6, R^7, R^8 and R^9 are substituted with one to three substituents selected from the group consisting of halogen, nitro, cyano, alkoxy of 1 to 4 carbon atoms, alkanoyl of 1 to 4 carbon atoms, alkanoyloxy of 1 to 4 carbon atoms, alkoxycarbonyl of 2 to 4 carbon atoms, trifluoromethyl, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms and alkylsulfonyl of 1 to 4 carbon atoms; and wherein the substituted phenyl and substituted benzyl groups of R^5, R^6, R^7, R^8 and R^9 are substituted with one to three substituents selected from the group consisting of halogen, nitro, cyano, alkoxy of 1 to 4 carbon atoms, alkanoyl of 1 to 4 carbon atoms, alkanoyloxy of 1 to 4 carbon atoms, alkoxycarbonyl of 2 to 4 carbon atoms, trifluoromethyl, alkythio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 3 carbon atoms and alkynyl of 2 to 3 carbon atoms.

5,349,065

PHOTOCHROMIC COMPOUND

Takashi Tanaka, Shin-nanyo; Satoshi Imura; Kenji Tanaka, both of Tokuyama, and Yasuji Kida, Kudamatsu, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Tokuyama, Japan

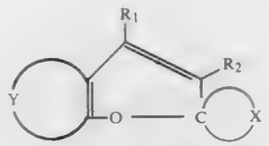
Division of Ser. No. 806,324, Dec. 13, 1991, abandoned, which is a division of Ser. No. 491,157, Mar. 9, 1990, Pat. No. 5,106,998. This application Nov. 17, 1992, Ser. No. 977,882

Claims priority, application Japan, Jun. 5, 1989, 1-141206; Jun. 7, 1989, 1-143011

Int. Cl.[5] C07D *311/68*

U.S. Cl. 546—15 **10 Claims**

1. A photochromic compound represented by the following general formula (II):



(II)

wherein R_1 and R_2, which may be the same or different, represent a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, a phenyl group, a benzyl group, a phenethyl group, an alkylamino group having 1 to 4 carbon atoms, or a dialkylamino group having 2 to 8 carbon atoms,



represents a norbornylidene group or a bicyclo [3.3.1]9-nonylidene group which may be substituted with at least one member

selected from the group consisting of a halogen atom, a cyano group, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, a halogenoalkyl group having 1 to 4 carbon atoms, a phenyl group, a benzyl group, and a dialkylamino group having 2 to 8 carbon atoms, a phenyl group, a benzyl group and a dialkylamino group having 2 to 8 carbon atoms;



represents a divalent unsaturated heterocyclic group selected from the group consisting of a pyridine ring, and a quinoline ring, which may be substituted with at least one member selected from the group consisting of a halogen atom, a hydroxyl group, a cyano group, a nitro group, an alkyl group having 1 to 20 carbon atoms, an alkoxy group having 1 to 20 carbon atoms, a phenyl group, an alkylamino group having 1 to 4 carbon atoms, a dialkylamino group having 2 to 8 carbon atoms, and a halogenalkyl group having 1 to 4 carbon atoms.

5,349,066

BIFUNCTIONAL LINKING COMPOUNDS, CONJUGATES AND METHODS FOR THEIR PRODUCTION

Takushi Kaneko, Guilford; David Willner, Hamden; Ivo Monkovic, Durham; Robert S. Greenfield, Wallingford, and Gary R. Braslawsky, Glastonbury, all of Conn., assignors to Bristol-Myers Squibb Company, N.Y.

Division of Ser. No. 522,996, May 14, 1990, Pat. No. 5,137,877. This application Apr. 8, 1992, Ser. No. 865,062

Int. Cl.[5] C07D *211/72*; C07C *229/00, 241/00*

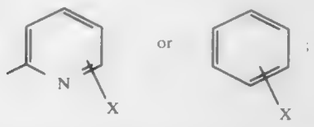
U.S. Cl. 546—294 **8 Claims**

1. A conjugate formed by combining at least one molecule containing a free carbonyl group and at least one molecule containing a sulfhydryl group with at lease one of the following compounds:

(a) a bifunctional N-substituted hydrazine compound having the formula:

$H_2NNHCONH(CH_2)_nSSR^8$

wherein n is an integer from 1 to 10; and R^8 is

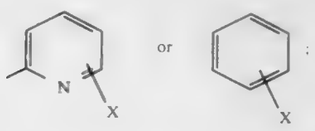


wherein X is NO_2 or halogen;

(b) a N-substituted hydrazine bifunctional compound having the formula:

$H_2NNHCONHNHCONH(CH_2)_nSSR^8$

wherein n is an integer from 1 to 10; and R^8 is

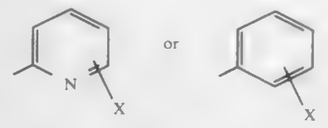


wherein X is H, NO_2 or halogen;

(c) a N-substituted hydrazine bifunctional compound having the formula:

$H_2NNHCSNH(CH_2)_mCH{=}CH(CH_2)_nSSR^8$

wherein m, n are integers from 1 to 10, which are the same or different; and R^8 is

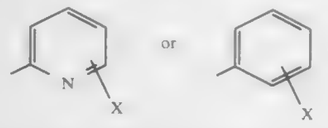


wherein X is H, NO_2 or halogen; or

(d) a N-substituted hydrazine bifunctional compound having the formula:

$H_2NNHCOO(CH_2)_nSSR^8$

wherein n is an integer from 1 to 10; and R^8 is

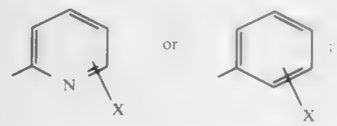


wherein X is H, NO_2 or halogen; or

(e) a N-substituted hydrazine bifunctional compound having the formula:

$H_2NNH{-}Ar{-}CONH(CH_2)_nSSR^8$

wherein n is an integer from 1 to 10; and R^8 is



wherein X is NO_2 or halogen and Ar is



5,349,067

METHOD FOR THE SYNTHESIS OF QUATERNARY AMMONIUM SALTS

Shinji Nakano, Takatsuki; Takao Morimoto, Katano, and Takeshi Endo, Yokohama, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

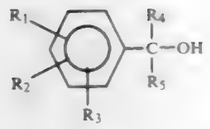
Filed Apr. 9, 1993, Ser. No. 45,540

Claims priority, application Japan, Apr. 10, 1992, 4-117929

Int. Cl.[5] C07D *211/10, 211/18, 211/26*

U.S. Cl. 546—347 **8 Claims**

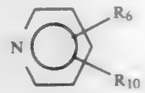
1. A method for synthesizing an N-benzylpyridinium sulfonate which comprises reacting in one step a benzyl alcohol of the formula:



wherein R_1, R_2 and R_3 independently of one another denote hydrogen, hydroxyl, halogen, alkyl, alkoxy, nitro, amino, alkylamino, acyl, cyano, alkoxycarbonyl or carbamoyl, and R_4 and R_5 independently of one another denote hydrogen, halogen or alkyl,

with a benzene- or naphthalenesulfonyl chloride optionally substituted with one or more alkyl groups, and

a pyridine of the formula:



wherein R_6 and R_{10} independently of one another denote hydrogen, hydroxyl, halogen, alkyl, alkoxy, nitro, amino, alkylamino, acyl, cyano, alkoxycarbonyl or carbamoyl,

in the presence of an acid-binding agent to produce an N-benzylpyridinium sulfonate.

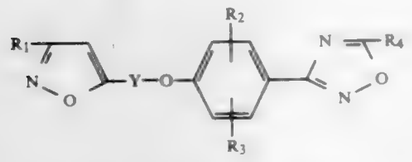
5,349,068

1,2,4-OXADIAZOLYL-PHENOXYALKYLISOXAZOLES AND THEIR USE AS ANTIVIRAL AGENTS

Guy D. Diana, Stephentown, and Theodore J. Nitz, Schodack, both of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Apr. 15, 1992, Ser. No. 869,287
Int. Cl.[5] C07D *271/06*
U.S. Cl. 548—131 **1 Claim**

1. A process for preparing a compound of formula;



wherein;

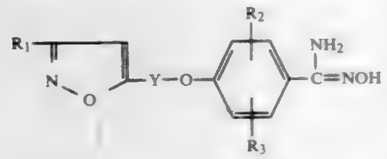
R_1 is alkyl, alkoxy, cycloalkyl or alkoxyalkyl;

Y is alkylene of 3 to 9 carbon atoms,

R_2 and R_3 independently are hydrogen, alkyl, alkoxy, halo, trifluoromethyl or nitro;

R_4 is 2,2,2-trifluoroethyl,

which comprises reacting a compound of formula



wherein R1, R2 and R3 are as described above with 2-trifluoroethylidene-1,3-dithiane in the presence of silver trifluoroacetate.

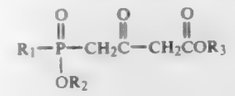
5,349,069

PROCESS FOR THE PREPARATION OF 4-PHOSPHINYL-3-KETO-CARBOXYLATE AND 4-PHOSPHONYL-3-KETO-CARBOXYLATE INTERMEDIATES USEFUL IN THE PREPARATION OF PHOSPHORUS CONTAINING HMG-COA REDUCTASE INHIBITORS

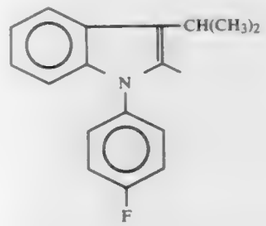
John K. Thottathil, Robbinsville, and Wen S. Li, Lincroft, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 987,514, Dec. 7, 1992, Pat. No. 5,298,625.
This application Dec. 21, 1993, Ser. No. 171,284
Int. Cl.[5] C07D *209/12;* C07F *9/02*
U.S. Cl. 548—406 **2 Claims**

1. A compound of the formula



where R_1 is —X—Z or —OR_2', where X is —CH_2—, —CH_2CH_2—, —$CH_2CH_2CH_2$—, —CH=CH—, —C≡C— or —CH_2O—, (where O is linked to Z), and Z is



R_2 and R_2' are independently hydrogen, alkyl or trialkylsilyl and R_3 is hydrogen or alkyl.

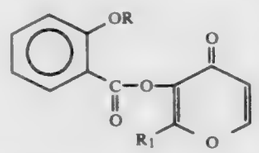
5,349,070

SALICYLIC ACID-MALTOL CONJUGATES

Byung H. Han, 31-34, Jongam-dong, Seungbuck-ku, Seoul 136-090, Rep. of Korea

PCT No. PCT/KR91/00015, § 371 Date Feb. 19, 1993, § 102(e) Date Feb. 19, 1993, PCT Pub. No. WO93/00339, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 21, 1991, Ser. No. 971,832
Int. Cl.[5] C07D *309/40*
U.S. Cl. 549—417 **1 Claim**

1. A compound of the following formula I



(I)

wherein R represents H, alkyl group containing C_{1-5} carbon atoms or alkanoyl group containing C_{1-5} carbon atoms, R_1 represents H or alkyl group containing C_{1-5} carbon atoms.

5,349,071

PROCESS FOR PREPARING TERTIARY ALKYNOLS

James H. Babler, Chicago, Ill., assignor to Loyola University of Chicago, Chicago, Ill.

Filed Nov. 25, 1992, Ser. No. 976,219
Int. Cl.[5] C07C *41/26, 41/30, 43/30;* C07D *315/00*
U.S. Cl. 549—423 **33 Claims**

1. A process for synthesizing a tertiary alkynol comprising:

a) forming a reaction mixture in a non-hydroxylic organic solvent containing:

i) a carbonyl-group-containing compound of the formula $RCH_2COCH_2R^1$;

ii) an alkyne having the formula $R^{11}C{=}CH$; and

iii) a catalytic amount of a base stronger than an alkali-metal carbonate;

wherein R and R^1 are alkyl or H or form part of an alicyclic ring; and R^{11} is an alkyl, alkenyl, alkoxyalkyl, hydroxyalkyl or the alkali-metal salt thereof, aryl or arylalkyl group, provided that when either R or R^1 is H, said carbonyl-group-containing compound is slowly added to said reaction mixture, and when R or R^{11} contains a carbon-carbon double bond, the double bond is not conjugated with the carbonyl group of said carbonyl-group containing compound; and

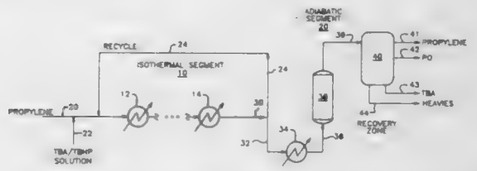
b) maintaining said reaction mixture until said tertiary alkynol is formed.

5,349,072

STAGED EPOXIDATION OF PROPYLENE WITH RECYCLE

Kyle L. Preston, Port Arthur; Chung-Nan T. Wu, Houston; Mark E. Taylor, Orange, and Mark A. Mueller, Austin, all of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Jul. 6, 1993, Ser. No. 85,805
Int. Cl.[5] C07D *301/19, 303/04*
U.S. Cl. 549—529 **15 Claims**



1. In a process for preparing propylene oxide and tertiary butyl alcohol by reacting propylene with tertiary butyl hydroperoxide in solution in tertiary butyl alcohol in the presence of a soluble peroxidation catalyst, the improvement which comprises:

conducting said process in a reactor system comprising a first isothermal segment and a second adiabatic segment,

charging to said isothermal segment a feed mixture comprising a recycle stream, propylene and a tertiary butyl alcohol solution of tertiary butyl hydroperoxide and molybdenum catalyst,

converting about 50 to 80 wt. % of the tertiary butyl hydroperoxide in the isothermal segment to provide an intermediate reaction mixture,

removing a recycle stream from the intermediate reaction mixture and recycling it to the first isothermal segment as said recycle stream, and

passing the remainder of the intermediate reaction mixture through the adiabatic segment and converting therein an additional 20 to 40 wt. % of the tertiary butyl hydroperoxide charged thereto,

said recycle stream being about 25 to about 100 wt. % of the initial feed mixture.

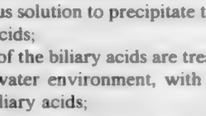
5,349,073

LOW-TEMPERATURE-STABLE TITANIUM CHELATES AND METHOD FOR THEIR PREPARATION

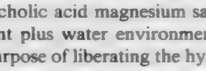
Michael Horn, and Hans-Joachim Kötzsch, both of Rheinfelden, Fed. Rep. of Germany, assignors to Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Division of Ser. No. 993,975, Dec. 15, 1992, abandoned, which is a continuation of Ser. No. 734,271, Jul. 22, 1991, abandoned.
This application Sep. 14, 1993, Ser. No. 121,307
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1990, 4023851
Int. Cl.[5] C07F *7/28*
U.S. Cl. 556—54 **3 Claims**

1. The method of preparing a compound of the formula



wherein X is



and R is ethyl, n-propyl, n-butyl, isobutyl or tert.-butyl, which comprises admixing a compound of the formula $(isopropoxy)_2TiX_2$ with a compound of the formula $(RO)_2TiX_2$, wherein R and X have the meanings defined above, in a molar ratio of 1:1 in the liquid phase, and allowing the mixture to react at a temperature between 20° and 100° C. above the melting point of the higher-melting-point reactant for 0 to 60 minutes.

5,349,074

PROCESS FOR PHARMACEUTICAL GRADE HIGH PURITY HYODEOXYCHOLIC ACID PREPARATION

Antonio Bonaldi, Chiuduno, Italy, assignor to Erregierre Industria Chimica S.p.A., S. Paola D'Argon, Italy

Filed Jan. 28, 1993, Ser. No. 10,149
Claims priority, application Italy, Mar. 11, 1992, MI92 A 0560
Int. Cl.[5] C07C *35/44, 29/92*
U.S. Cl. 552—551 **14 Claims**

1. Process for the preparation of high purity hyodeoxycholic acid starting from swine bile, wherein:

a) swine bile is made to react with an NaOH aqueous solution;

b) the reaction mixture is added with an organic solvent plus water and treated with a mineral acid to liberate biliary acids and remove the other bile components;

c) the biliary acids solution is treated with an ammonium zincate aqueous solution to precipitate the zinc salts of the same biliary acids;

d) the zinc salts of the biliary acids are treated, in an organic solvent plus water environment, with a mineral acid to liberate the biliary acids;

e) the biliary acid solution is treated with a magnesium salt to selectively precipitate the magnesium salt of the hyodeoxycholic acid and remove the other biliary acids;

f) the hyodeoxycholic acid magnesium salt is treated, in an organic solvent plus water environment, with a mineral acid for the purpose of liberating the hyodeoxycholic acid and removing magnesium as a salt of said mineral acid;

g) hyodeoxycholic acid is recovered at high purity, by crystallization.

5,349,075

CONTINOUS ESTERIFICATION OF CARBOXYLIC AND FATTY ACIDS IN THE ABSENCE OF A CATALYST

Hendrikus J. van den Berg, Doetinchen, and Robbert Klok, Vlaardingen, both of Netherlands, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Filed Dec. 21, 1990, Ser. No. 630,990

Claims priority, application European Pat. Off., Dec. 22, 1989, 89203343.2; United Kingdom, Nov. 19, 1990, 9025081

Int. Cl.[5] C11C *3/00*

U.S. Cl. 554—170 **8 Claims**

1. In a process for the esterification of a carboxylic acid with an alcohol in which the reaction temperature is between 200° and 260° C. and the pressure is between 0.5 and 1.5 Mpa, the improvement wherein the reaction takes place in a reactor in the absence of a catalyst by continuously feeding one reactant in the gaseous phase and the other reactant in the liquid phase to the reactor and continuously removing therefrom a gaseous mixture comprising the more volatile reactant and water.

5,349,076

METHYL BIS(TRIFLUOROMETHYLTHIO)ARSINE

Shekar Munavalli, Bel Air, and David I. Rossman, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 961,962, Oct. 16, 1992, abandoned. This application Sep. 17, 1993, Ser. No. 146,722

Int. Cl.[5] C07F *9/70, 1/08*

U.S. Cl. 556—72 **1 Claim**

1. Methyl bis(trifluoromethylthio)arsine.

5,349,077

PROCESS FOR PRODUCING ALKYLENE CARBONATES

Masaharu Doya; Takashi Ohkawa; Yutaka Kanbara; Akisushi Okamoto, and Kenichi Kimizuka, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jul. 30, 1993, Ser. No. 99,461

Claims priority, application Japan, Jul. 31, 1992, 4-205362; Jul. 31, 1992, 4-205363; Jul. 31, 1992, 4-205364; Jun. 30, 1993, 5-161857

Int. Cl.[5] C07C *69/96*

U.S. Cl. 558—260 **6 Claims**

1. A process for producing alkylene carbonates which comprises reacting urea and glycols described by the general formula RCH(OH) CH_2 OH; where R represents hydrogen or an alkyl group containing 1 to 4 carbons, using a catalyst containing at least one metal selected from zinc, magnesium, lead and calcium.

5,349,078

Patent Not Issued For This Number

5,349,079

PROCESS FOR FORMING α-AMINONITRILES FROM CARBONYL COMPOUND AND FATTY AMINE HYDROHALIDE

Alison A. Fleming, Mohegan Lake, and Meiylin F. Antezzo, Carmel, both of N.Y., assignors to Akzo Nobel nv, Arnhem, Netherlands

Continuation of Ser. No. 989,618, Dec. 14, 1992, abandoned. This application Oct. 13, 1993, Ser. No. 136,489

Int. Cl.[5] C07C *253/30*

U.S. Cl. 558—346 **12 Claims**

1. A process for forming an α-aminonitrile compound which comprises reacting a carbonyl compound selected from the group consisting of an aldehyde and a ketone with a fatty amine hydrohalide reagent, comprising a fatty alkyl group of from ten to twenty-two carbon atoms, selected from the group consisting of a primary amine hydrohalide, a secondary amine hydrohalide, and a fatty alkyl alkylene diamine of the formula R'NHR''NH(R'''), where R' is fatty alkyl of from ten to twenty-two carbon atoms, R'' is alkylene of from one to six carbon atoms, and R''' is hydrogen or alkyl of from one to twenty-two carbon atoms in the presence of a cyanide source to form said α-aminonitrile compound.

5,349,080

ESTER-FUNCTIONAL MONOMERS AND POLYMERS PREPARED FROM SAME

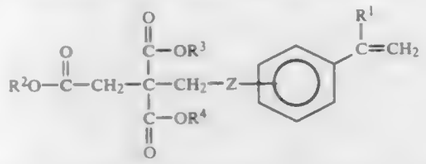
Rodney M. Harris, Chicago, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Jan. 3, 1994, Ser. No. 176,609

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—81 **6 Claims**

1. An unsaturated ester monomer having the structure:



wherein R^1 is hydrogen or methyl; R^2, R^3 and R^4 are each independently lower alkyl of 1 to about 4 carbons; and Z is nothing or is a divalent radical having 1 to about 20 carbons.

5,349,081

PROCESS FOR PREPARING ISOCYANATES

William D. McGhee, Bridgeton, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 21, 1993, Ser. No. 6,409

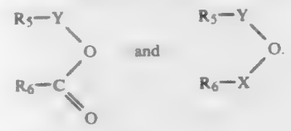
Int. Cl.[5] C07C *263/04*

U.S. Cl. 560—345 **24 Claims**

1. A process for preparing an isocyanate comprising:

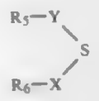
(a) contacting CO_2 and a primary amine in the presence of an aprotic organic solvent and a base selected from the group consisting of a phosphazene compound, an organic, nitrogenous base and mixtures thereof, wherein said organic, nitrogenous base is selected from the group consisting of guanidine compounds, amidine compounds, tertiary amines, pyridine and mixtures thereof, under reaction conditions of time and temperature sufficient to produce the corresponding ammonium carbamate salt, and

(b) reacting said ammonium carbamate salt with an electrophilic or oxophilic dehydrating agent selected from the group consisting of anhydrides having the formulas:



and

thioanhydrides having the formula:



and mixtures thereof wherein X and Y are independently selected from the group consisting of



and



R_5 and R_6 are independently selected from the group consisting of alkyl, fluoroalkyl, aryl, alkaryl and aralkyl radicals having 1 to about 22 carbon atoms, or R_5 and R_6 together form a cyclic anhydride or cyclic thioanhydride containing a fused aromatic or cycloaliphatic ring at a temperature of −78° C. to 100° C. and a time sufficient to produce the corresponding isocyanate.

5,349,082

TOLUENE DIISOCYANATE RESIDUE

William E. Slack, Moundsville; Kenneth L. Dunlap, New Martinsville, both of W. Va.; Larry W. Arndt, Pasadena, Tex., and Louis Renbaum, Richmond Hill, Ga., assignors to Miles Inc., Pittsburgh, Pa.

Filed Mar. 19, 1993, Ser. No. 33,935

Int. Cl.[5] C07C *263/20*

U.S. Cl. 560—352 **5 Claims**

1. A process for recovering toluene diisocyanate (TDI) from a TDI residue solution, comprising

(a) mixing the TDI residue solution with a polyisocyanate consisting essentially of methylenediphenyl diisocyanate (MDI) or MDI in combination with its higher ring oligomers,

(b) heating the resulting mixture over a temperature range from 130° to 250° C. at reduced pressure for a period of time sufficient to remove free TDI,

(c) recovering free TDI removed in (b),

(d) maintaining or increasing the temperature of the mixture of (b) for a period of time sufficient for equilibration of the TDI residue and MDI and any MDI oligomer to occur, and

(e) recovering TDI which is thermally split during (d) by either a batch or continuous process.

5,349,083

SOLUTIONS OF PERACIDS

Paul Brougham, Rainhill; William R. Sanderson, Penketh, and Timothy Pearce, High Legh, all of England, assignors to Solvay Interox Limited, Warrington, England

PCT No. PCT/GB91/00241, § 371 Date Aug. 24, 1992, § 102(e) Date Aug. 24, 1992, PCT Pub. No. WO91/13058, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 18, 1991, Ser. No. 920,480

Claims priority, application United Kingdom, Feb. 23, 1990, 9004080.9

Int. Cl.[5] C07C *279/10*

U.S. Cl. 562—6 **16 Claims**

1. A process for the production of a dilute solution of a lower aliphatic peracid having an equilibrium composition by contacting hydrogen peroxide with a lower aliphatic acid each at initial high concentrations in an aqueous reaction mixture thereby to rapidly form a reaction mixture rich in the lower aliphatic peracid and diluting the reaction mixture with water and with any required quantities of lower aliphatic acid and/or hydrogen peroxide to reproduce the equilibrium composition of the dilute solution, the process being characterised in that the reaction mixture rich in lower aliphatic peracid is diluted before it has itself reached equilibrium.

5,349,084

PROCESS FOR RECOVERING HIGH-PURITY ORGANIC ACID

Akihiro Shishikura, Sodegaura; Hiroshi Kimbara, Tokyo; Katsuhisa Yamaguchi, Sodegaura, and Kunio Arai, Sendai, all of Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Sep. 25, 1991, Ser. No. 765,582

Claims priority, application Japan, Sep. 28, 1990, 2-259828

Int. Cl.[5] C07C *51/42*

U.S. Cl. 562—580 **19 Claims**

1. A process for recovering a high-purity organic acid, which comprises

(a) subjecting a crude organic acid mixture comprising an organic acid, said organic acid comprising a carboxylic acid having 3 to 20 carbon atoms which is a product of a fermentation process, to an extraction treatment with an organic solvent selected from the group consisting of alcohols, ketones and ethers to obtain an organic solvent extract containing the organic acid;

(b) mixing the organic solvent extract with a high-pressure gas, said high pressure gas having a pressure not higher than critical pressure, said high pressure gas being selected from the group consisting of CO_2, ethylene, propylene, N_2O and fluoromethane to precipitate and separate impurities, thereby obtaining a solution containing a high-purity organic acid; and

(c) separating the organic acid from the solution.

5,349,085

X-RAY CONTRAST AGENTS

Per-Egil Hansen, Dalbo; Hugo Holtermann, Hovik, Baerum, and Knut Wille, Osterås, all of Norway, assignors to Nycomed Imaging AS, Oslo, Norway

Continuation of Ser. No. 800,980, Dec. 2, 1991, abandoned, which is a continuation of Ser. No. 568,727, Aug. 17, 1990, abandoned, which is a continuation of Ser. No. 924,925, Oct. 30, 1986, abandoned, which is a continuation of Ser. No. 549,463, Nov. 7, 1983, abandoned. This application Oct. 13, 1992, Ser. No. 960,231

Claims priority, application United Kingdom, Nov. 8, 1982, 8231796

Int. Cl.[5] C07C *233/64*

U.S. Cl. 564—153 **1 Claim**

1. 1,3-bis(acetylamino)-N,N'-bis[3,5-bis(2,3-dihydroxypropylaminocarbonyl)-2,4,6-triiodophenyl]-2-hydroxypropane.

5,349,086

METHOD FOR THE PREPARATION OF 4-PHENYL-1,3-BENZODIAZEPINS AND PRECURSORS THEREOF

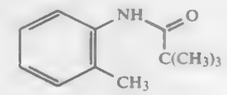
Thomas B. K. Lee, Whitehouse Station, and George E. Lee, Somerville, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Continuation of Ser. No. 870,772, Apr. 21, 1992, abandoned, which is a continuation of Ser. No. 737,610, Jul. 29, 1991, abandoned, which is a continuation of Ser. No. 579,262, Sep. 7, 1990, abandoned, which is a continuation of Ser. No. 384,115, Jul. 21, 1989, abandoned, which is a continuation of Ser. No. 98,210, Sep. 18, 1987, abandoned, which is a division of Ser. No. 757,765, Jul. 23, 1985, Pat. No. 4,709,093, which is a continuation of Ser. No. 267,990, May 28, 1981, abandoned. This application Nov. 23, 1992, Ser. No. 980,449

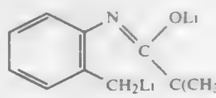
Int. Cl.[5] C07C *231/08*

U.S. Cl. 564—220 **10 Claims**

1. A process for preparing N-[2-(2-methylamino-2-phenylethyl)phenyl]-2,2-dimethylpropanamide, wherein the process comprises reacting an N-acylated-o-toluidine of the formula



with n-alkyllithium to provide a dilithio intermediate of the formula



and quenching the dilithio intermediate with N-benzylidenemethylamine.

5,349,087

CARBODIIMIDES AND PROCESSES THEREFOR

Michael W. J. West, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 875,886, Apr. 29, 1992. This application Jul. 13, 1993, Ser. No. 89,030

Int. Cl.[5] C07C *267/00;* C08G *18/16*

U.S. Cl. 564—252 3 Claims

1. An alternating polycarbodiimide in which a first alternating unit is directly connected to two adjacent carbodiimide groups through aromatic carbon atoms, and a second alternating unit is directly connected to two adjacent carbodiimide units through tertiary alkyl carbon atoms.

5,349,088

OXIMATION PROCESS

Leroy O. Krbechek, Santa Rosa, Calif., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Filed Jul. 7, 1993, Ser. No. 87,828

Int. Cl.[5] C07C *249/08*

U.S. Cl. 564—259 21 Claims

1. In a method of preparing aromatic oximes by reaction of an aromatic ketone or aldehyde carbonyl compound with hydroxylamine the improvement which comprises conducting the reaction in the presence of a catalytic amount of an alkyl phenol, and an alkali metal or alkaline earth metal hydroxide, carbonate or bicarbonate, the alkyl phenol being present in an amount effective to act as a phase transfer catalyst.

5,349,089

REAGENT FOR PREPARING POLYCATIONIC POLYSACCHARIDES

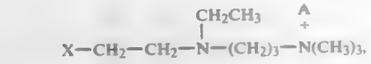
Peter T. Trzasko; Michael T. Philbin, both of Plainsboro, N.J.; assignors to National Starch and Chemical Investment Holding Corporation, Bridgewater, N.J.

Division of Ser. No. 683,483, Apr. 9, 1991, Pat. No. 5,227,481, which is a continuation of Ser. No. 516,024, Apr. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 376,779, Jul. 7, 1989, abandoned. This application Jan. 11, 1993, Ser. No. 4,161

Int. Cl.[5] C07C *211/63;* C07H *15/12;* C08B *1/00, 37/00*

U.S. Cl. 564—291 1 Claim

1. A polycationic, polysaccharide reactive, diamine, 3-[(2-haloethyl)ethylamino]-N,N,N-trimethyl-1-propanaminium salt, having the structure:



wherein X is a halogen; and A^- is an anion.

5,349,090

PROCESS FOR PREPARING ARYLKETOAMINES

Ahmed M. Tafesh; George Kvakovszky, both of Corpus Christi, and Charlet R. Lindley, Portland, all of Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Feb. 4, 1994, Ser. No. 191,849

Int. Cl.[5] C07C *221/00*

U.S. Cl. 564—343 15 Claims

1. In a process for the preparation of arylketoamines from arylisonitrosoalkanones by a catalytic hydrogenation reaction, the improvement which comprises conducting said catalytic hydrogenation reaction at a temperature of less than about 60° C. in a reaction medium consisting essentially of a liquid carboxylic acid.

5,349,091

PROCESS FOR RECYCLING CURED POLYSULFIDE SEALANTS

Michael J. Hallisy, Woodstock; John R. Gilmore, Crystal Lake; Steven J. Hobbs, Woodstock, and Warren G. Duncan, Crystal Lake, all of Ill., assignors to Morton International, Inc., Chicago, Ill.

Filed Apr. 27, 1993, Ser. No. 53,642

Int. Cl.[5] C07C *321/14, 321/12*

U.S. Cl. 568—22 5 Claims

1. A method for reclaiming a cured polysulfide sealant comprising mixing the sealant in a non-aqueous system at a temperature of from about 50° C. to about 100° C. with an amount of a mercapto-group terminated liquid polysulfide sufficient to provide from about 1.0% to about 3% by weight of mercapto groups in the reclaimed sealant.

5,349,092

PROCESS FOR PRODUCING CATALYSTS FOR SYNTHESIS OF UNSATURATED ALDEHYDES AND UNSATURATED CARBOXYLIC ACIDS

Seigo Watanabe, Otake, and Motomu Oh-Kita, Tokyo, both of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 22,648

Claims priority, application Japan, Feb. 27, 1992, 4-076076

Int. Cl.[5] C07C *45/34;* B01J *27/28*

U.S. Cl. 568—480 1 Claim

1. A process for preparing a molybdenum and bismuth containing catalyst for synthesizing meth(acrolein) and meth(acrylic) acid from propylene, isobutylene or tertiary butanol, which comprises drying a solution or a slurry containing a molybdenum compound and a bismuth compound to obtain a dried product, and calcining the dried product at 200°–600° C. for at least 2 minutes in atmosphere containing 1 vol % or more of a nitrogen oxide and 0.5 vol % or more of oxygen.

5,349,093

FLUOROVINYL ETHER

Masabiko Oka, Ohtsu; Mitsuru Kishine; Hideya Saito, both of Osaka, and Masuo Kokumai, Hyogo, all of Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 879,454, May 4, 1992, abandoned, which is a continuation of Ser. No. 600,248, Oct. 22, 1990, abandoned, which is a continuation of Ser. No. 465,609, Jan. 18, 1990, abandoned, which is a continuation of Ser. No. 185,916, Apr. 25, 1988, abandoned. This application Mar. 11, 1993, Ser. No. 31,024

Claims priority, application Japan, Apr. 25, 1987, 62-102930

Int. Cl.[5] C07C *43/14*

U.S. Cl. 568—615 2 Claims

1. A fluorovinyl ether of the formula:

$$R_f\text{—}(OCF_2CF_2CF_2)_n\text{—}OCF\text{=}CF_2 \qquad (I)$$

wherein R_f is C_1–C_5 perfluoroalkyl group, n is an integer of 2 to 4.

5,349,094

PROCESS FOR THE PRODUCTION OF OLIGOGLYCEROL MIXTURES OF INCREASED DIGLYCEROL CONTENT

Eugene G. Harris, West Chester, Ohio; Udo Hees, Mayen, Fed. Rep. of Germany; Reinhard Bunte, Dormagen, Fed. Rep. of Germany; Johannes W. Hachgenei, Duesseldorf, Fed. Rep. of Germany, and Peter Kuhm, Hilden, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jun. 12, 1992, Ser. No. 898,061

Int. Cl.[5] C07C *41/09*

U.S. Cl. 568—619 10 Claims

1. A process for the production of oligoglycerol mixtures of increased diglycerol content which comprises condensing glycerol in the presence of zeolites having the formula (I)

$$M_{2/z}O \cdot Al_2O_3 \cdot x\,SiO_2 \cdot y\,H_2O \qquad (I)$$

in which M is an alkali metal or alkaline earth metal having a valency of z, x is a number of 1.8 to 12 and y is a number of 0 to 8, removing continuously the water of condensation, which is formed during the reaction, from the reaction mixture and terminating the reaction when the quantity of water theoretically necessary for the formation of diglycerol has been separated.

5,349,095

PROCESS FOR PREPARING HYDROXYALKYLBENZOCYCLOBUTENES

P. J. Thomas, and R. Garth Pews, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 861,693, Apr. 1, 1992, abandoned. This application Nov. 25, 1992, Ser. No. 982,213

Int. Cl.[5] C07C *29/14*

U.S. Cl. 568—814 11 Claims

1. A process for preparing a substituted or unsubstituted 3- or 4-hydroxymethylbenzocyclobutene compound, comprising reducing a corresponding 3-or 4-formylbenzocyclobutene compound with a hydride selected from the group consisting of lithium aluminum hydride, sodium borohydride and $NaBH_3CN$ at a temperature below that at which dimerization or oligomerization of the formylbenzocyclobutene compound or the thus-produced hydroxymethylbenzocyclobutene compound is a significant side reaction, for a time sufficient to convert the formylbenzocyclobutene compound to the hydroxymethylbenzocyclobutene compound, including the prior step of preparing a 3- or 4-formylbenzocyclobutene by reacting a substituted or unsubstituted 3- or 4-bromobenzocyclobutene compound with magnesium to produce a corresponding 3- or 4-benzocyclobutenyl magnesium bromide and treating the thus-formed 3- or 4-benzocyclobutenyl magnesium bromide with dimethylformamide to produce a corresponding 3- or 4-formylbenzocyclobutene compound.

5,349,096

OLEFIN HYDRATION PROCESS

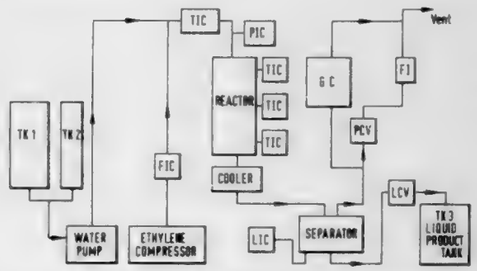
Russell W. Cockman, Linlithgow; Gordon J. Haining; Philip Lusman, both of Stirlingshire, and Archibald D. Melville, Falkirk, all of Scotland, assignors to BP Chemicals Limited, London, England

Filed Jul. 8, 1993, Ser. No. 88,799

Claims priority, application United Kingdom, Jul. 10, 1992, 9214688.5

Int. Cl.[5] C07C *29/04, 31/08, 31/10*

U.S. Cl. 568—896 10 Claims



1. A method of hydrating olefins to the corresponding alcohols in the presence of a phosphoric acid catalyst supported on a siliceous support characterized in that

(a) the mole ratio of water to olefin passing through the reactor is in the range from 0.15–0.50,

(b) the space velocity of the water/olefin mixture is from 0.010 to 0.100 g/min/cm^3 of the catalyst system,

(c) the phosphoric acid concentration is from 5 to 55% w/w based on the total weight of the catalyst system,

(d) the said siliceous support is derived from a non-porous silica and the siliceous support has a porosity of at least 0.8 ml/g and an average crush strength of at least 5.5 Kg and has a purity of at least 99% w/w,

(e) the olefin hydration reaction is carried out at a temperature from 170°–300° C., and

(f) the said reaction is carried out at a pressure from 2000–24,000 Kpa.

5,349,097

CATALYTIC ISOMERIZATION OF α-ALKENOLS

Alfred Thome, Ludwigshafen; Michael Roeper, Wachenheim, and Heinz-Josef Kneuper, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

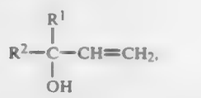
Filed Jul. 29, 1993, Ser. No. 99,236

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1992, 4228887

Int. Cl.[5] C07C *29/56, 33/02, 35/17*

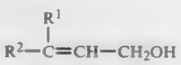
U.S. Cl. 568—906 11 Claims

1. In a process for the catalytic isomerization of a secondary α-alkenol of the formula



I

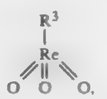
in which R^1 is a C_1–C_{20}-alkyl group or a C_2–C_{20}-alkenyl group and in which R^2 stands for hydrogen, halogen or a C_1–C_{20}-alkyl group and in which R^1 and R^2 can be joined together to complete a five-membered or six-membered carbocyclic ring, to form a primary α-alkenol of the formula



II

or for the isomerization of said primary α-alkenol of the formula II to said secondary α-alkenol of the formula I, the improvement which comprises:

carrying out the isomerization in the presence of a catalyst selected from the group consisting of organotrioxorhenium(VII) compounds of the formula



III

in which R^3 is a C_1–C_{10}-alkyl group, a cyclopentadienyl group substituted by from one to five C_1–C_4-alkyl groups, an unsubstituted cyclopentadienyl group, a C_6–C_{10}-aryl group, or a C_7–C_{11}-aralkyl group, and said organotrioxorhenium(VII) compounds of the formula III attached to a support.

5,349,098

PROCESS FOR PRODUCING CHLOROFLUOROBENZENES

Seisaku Kumai, Fujisawa; Akihiro Wada, and Shinsuke Morikawa, both of Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

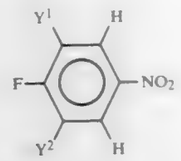
Division of Ser. No. 924,790, Aug. 6, 1992, Pat. No. 5,208,394, which is a continuation of Ser. No. 675,064, Mar. 26, 1991, abandoned, which is a continuation of Ser. No. 394,805, Aug. 17, 1989, abandoned. This application Dec. 15, 1992, Ser. No. 990,749

Claims priority, application Japan, Aug. 26, 1988, 63-210805

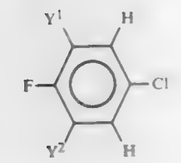
Int. Cl.[5] C07C *17/20, 17/22, 25/13*

U.S. Cl. 570—141 3 Claims

1. A continuous process for producing chlorofluorobenzenes, which comprises reacting the nitrobenzene of formula (6) in the vapor phase with 0.1 to 20 mols per mol of the nitrobenzene of formula (6) chlorine gas at 380°–450° C. for 5–20 seconds to obtain a chlorofluorobenzene of formula (7):



(6)



(7)

wherein Y^1 is Cl and Y^2 is H, or Cl.

5,349,099

PROCESS FOR PREPARING INTERMEDIATES FOR THE SYNTHESIS OF ANTIFUNGAL AGENTS

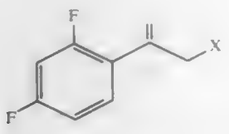
Shen-Chun Kuo, Union; Donald Hou, Verona, and Zheng-Yun Zhan, Hillside, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Dec. 13, 1993, Ser. No. 166,332

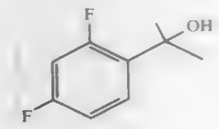
Int. Cl.[5] C07C *25/13, 22/00*

U.S. Cl. 570—147 11 Claims

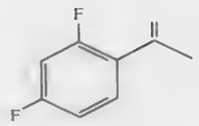
1. A process for preparing allylic halide compounds of the formula



wherein X is Cl, Br or I, comprising dehydrating a tertiary alcohol of the formula



by heating in the presence of an acid to form an olefin of the formula



and treating the olefin with a halogenating agent to form the allylic halide.

5,349,100

CHIRAL METALLOCENE COMPOUNDS AND PREPARATION THEREOF BY CREATION OF A CHIRAL CENTER BY ENANTIOSELECTIVE HYDRIDE TRANSFER

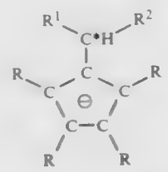
Eric A. Mintz, Dorravile, Ga., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Jan. 2, 1991, Ser. No. 636,598

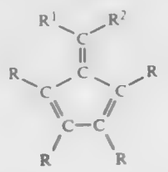
Int. Cl.[5] C07C *13/00, 2/02*

U.S. Cl. 585—350 17 Claims

1. A method of making enantiomcrically enhanced chiral optionally substituted cyclopentadienyl ligand represented by the general formula III:

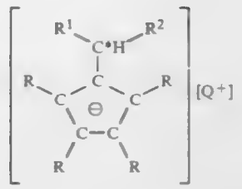


comprising contacting an optionally substituted fulvene having a prochiral carbon at the carbor 6 position represented by the general formula 1:



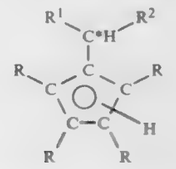
with a lithium salt under suitable reaction conditions so as to form the enantiomerically enhanced cyciopentadienyl ligand of general formula III, wherein C* is a chiral carbon center: each R is independently selected from the group consisting of H or C_{1-12} substituted aliphatic, unsubstituted aliphatic, substituted cyclic, unsubstituted cyclic, substituted heterocyclic, and unsubstituted heterocyclic radicals or two neighboring R groups are joined to provide a ring of five or more carbon atoms; R^1 and R^2 are not the same and are each independently selected from the group consisting of II or a C_{1-8} substituted aliphatic, unsubstituted aliphatic, substituted cyclic, unsubstituted cyclic, substituted heterocyclic, and unsubstituted heterocyclic radicals; and the lithium salt is a lithium salt of at least one selected from the group consisting of chiral amines, chiral amides, and chiral amino acids, all of which have a hydrogen on a carbon alpha to the nitrogen, wherein the chiral amines are selected from the group or chiral primary and secondary cyclic, acyclic, heterocyclic, open chain and functionalized amines, and the chiral amide are selected from the group consisting of chiral cyclic, acyclic, and heterocyclic amides.

16. An enantiomerically enhanced composition comprising at least an enantiomeric excess of 5 percent, said enantiomerically enhanced composition comprising chiral optionally substituted cyclopentadienyl compounds of the general formula IIIb:



wherein C* is a chiral carbon center; each R is independently selected from the group consisting of H, or a C_{1-12} alkyl, substituted aliphatic, unsubstituted aliphatic, substituted cyclic, unsubstituted cyclic, substituted heterocyclic, and unsubstituted heterocyclic radicals or two neighboring R groups are joined to provide a ring of 5 or more carbon atoms; R^1 and R^2 are not be the same and each is independently selected from the group consisting of alkyl. aryl, phenyl, H or a C_{1-8} substituted aliphatic, unsubstituted aliphatic, substituted aromatic, unsubstituted aromatic, substituted cyclic, unsubstituted cyclic, substituted heterocyclic and unsubstituted heterocyclic radicals, and Q is selected from the group consisting of thallium, potassium, lithium, sodium, and MgX wherein X is selected from the group consisting of Cl, Br, and I.

17. An enantiomerically enhanced composition, comprising an enantiomeric excess of at least 5 percent, said enantiomerically enhanced composition having chiral optionally substituted cyclopentadienyl compounds of the general formula IIIc:



wherein C* is a chiral carbon center; each R is independently selected from the group consisting of H, alkyl, C_{1-12} substituted aliphalic, unsubstituted aliphatic, unsubstituted aromatic, substituted aromatic, substituted cyclic, unsubstituted cyclic, substituted heterocyclic, and unsubstituted heterocyclic radicals or two neighboring R groups are joined to provide a ring of 5 or more carbon atoms; R^1 and R^2 are not be the same and each is independently selected from the group consisting of alkyl, aryl, phenyl, C_{1-8} substituted aliphatic, unsubstituted aliphatic, substituted aromatic, unsubstituted aromatic, substituted cyclic, unsubstituted cyclic, substituted heterocyclic, and unsubstituted heterocyclic radicals.

5,349,101

PROCESS FOR THE PREPARATION OF SECONDARY ALKYL SULFATE-CONTAINING SURFACTANT COMPOSITIONS

Eugene F. Lutz; David K. Schisla; Robert S. Tomaskovic, all of Houston, and Timothy D. Hoewing, Richmond, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 890,056, May 28, 1992, abandoned. This application Dec. 21, 1992, Ser. No. 994,022

Int. Cl.[5] C07C *305/12;* C11D *1/14, 1/29, 11/04;* C06M *13/262*

U.S. Cl. 558—36 32 Claims

1. A process for preparing a solid secondary alkyl sulfate-containing surface active composition which comprises:

a) preparing a detergent range alkyl sulfuric acid-containing solution,

b) contacting said detergent range alkyl sulfuric acid-containing solution with a base in aqueous solution,

c) heating the product of step b) to saponify dialkyl sulfate and to remove substantially all of the water from the mixture,

d) cooling the product of step c) in the presence of a non-ionic organic liquid diluent to crystallize a solid secondary alkyl sulfate-containing surface active composition from the mixture, and

e) recovering and drying the crystallized solid secondary alkyl sulfate-containing surface active composition.

5,349,102

PROCESS FOR THE PREPARATION OF PHENYL CARBONATES OR POLYCARBONATES

Hendrik Tuinstra, Midland, and Cynthia L. Rand, Sanford, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 577,423, Sep. 4, 1990, Pat. No. 5,276,134. This application Jan. 3, 1994, Ser. No. 176,814

Int. Cl.[5] C07C *69/96;* C08G *64/38*

U.S. Cl. 558—274 6 Claims

1. A process for producing a phenyl carbonate comprising the steps of:

A. reacting acetic anhydride with a phenol to produce a phenyl acetate and acetic acid;

B. reacting dimethyl carbonate with at least a portion of the phenyl acetate from step A to produce a phenyl carbonate and methyl acetate;

C. separating the phenyl carbonate and methyl acetate;

D. reacting the methyl acetate with carbon monoxide in the presence of a catalyst to prepare acetic anhydride; and

E. recycling the acetic anhydride from step D as a least a portion of the acetic anhydride reactant of step A.

5,349,103

PREPARATION OF AROMATIC NITRILES

Bilge Gülec, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

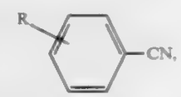
Filed Jan. 21, 1994, Ser. No. 184,617

Claims priority, application Switzerland, Jan. 28, 1993, 238/93

Int. Cl.[5] C07C *253/00*

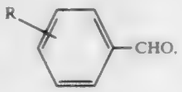
U.S. Cl. 558—314 7 Claims

1. A process for the preparation of a nitrile of formula



(I)

wherein R is hydrogen, C_1–C_4alkyl or phenyl, by reaction of an aldehyde of formula



(II)

wherein R is as defined above, with hydroxylamine sulfate and subsequent dehydration, which process comprises carrying out the reaction in propionic acid in the presence of a salt of propionic acid by heating to an external temperature in the range from 140° to 165° C. for 2 to 6 hours, under atmospheric pressure and simultaneously distilling the mixture of propionic acid and water from the system until a solution forms, and thereafter removing the mixture of propionic acid and water at 100°–130° C. by vacuum distillation, and then isolating the resultant nitrile by standard procedures.

5,349,104

STABILIZED AMINOBENZOTRIFLUORIDES

Gilbert Billeb, and Günther Semler, both of Kelkheim/Ts, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 4, 1993, Ser. No. 58,281

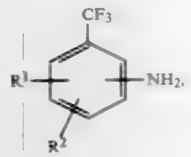
Claims priority, application Fed. Rep. of Germany, May 5, 1992, 4214849

Int. Cl.[5] C07C *209/82*

U.S. Cl. 564—5 15 Claims

1. A stabilized aminobenzotrifluoride, composition consisting essentially of

a) an aminobenzotrifluoride of the formula (I),



(I)

in which

R^1 and R^2, independently of each other, are hydrogen, C_1–C_6-alkyl, C_2–C_6-alkenyl, substituted or unsubstituted aryl, halogen, CF_3, nitro, amino, methoxy, hydroxyl or NR^3R^4, where R^3 and R^4 independently of each other, are hydrogen or C_1–C_5-alkyl radicals, and the NH_2 group can be located in the 2-, 3- or 4-position in relation to the CF_3 group, and

b) at least one base.

5,349,105

ALKYL, ALKOXY AND THIOALKOXY SUBSTITUTED DIPHENYL ACETYLENES HAVING RETINOID LIKE ACTIVITY

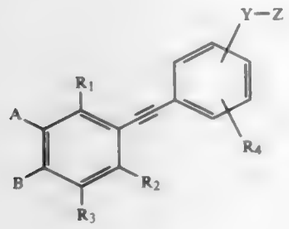
Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allergan, Inc., Irvine, Calif.

Continuation of Ser. No. 475,690, Feb. 6, 1990, Pat. No. 5,202,471. This application Mar. 17, 1993, Ser. No. 32,945

Int. Cl.[5] C07C *233/00*

U.S. Cl. 564—163 36 Claims

1. A compound of the formula



wherein

R_1–R_4 independently are hydrogen, lower alkyl, cycloalkyl or lower alkenyl, A and B independently are hydrogen, lower alkyl, cycloalkyl, lower alkenyl, SR^* or OR^* where R^* is lower alkyl, cycloalkyl or lower alkenyl with the proviso that one of A and B is not hydrogen;

Y is lower alkenyl, lower alkynyl lower cycloalkyl, lower branched chain alkyl, or $(CH_2)_n$ where n is 0–6; and

Z is H, a carboxylic acid amide, $—CH_2OH$ or an ether or ester derivative, or —CHO or an acetal derivative, or —COR′ or a ketal derivative where R′ is an alkyl, cycloalkyl or alkenyl group containing 1 to 5 carbons.

5,349,106

PROCESS FOR REDUCING THE RESIDUAL CONTENT OF FREE ALKYLATING AGENT IN AQUEOUS SOLUTIONS OF CATIONIC SURFACTANTS

Ansgar Behler, Bottrop; Uwe Ploog; Hermann Hensen, both of Haan, and Guenter Uphues, Monheim, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/01526, § 371 Date Feb. 18, 1993, § 102(e) Date Feb. 18, 1993, PCT Pub. No. WO92/03406, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 10, 1991, Ser. No. 971,963

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1990, 4026184

Int. Cl.[5] C07C *209/84*

U.S. Cl. 564—282 15 Claims

1. A process for reducing the residual content of free alkylating agent in an aqueous solution of a cationic surfactant comprising aftertreating said aqueous solution at a temperature above about 60° C. with at least one amine compound selected from the group consisting of

a) an amino acid containing 2 to 8 carbon atoms; and

b) an oligopeptide having an average molecular weight of about 500 to about 5000.

5,349,107

PROCESS FOR PRODUCING OPTICALLY ACTIVE γ-HYDROXYKETONES

Seiji Watanabe; Shigeru Mitsuhashi, and Hidenori Kumobayashi, all of Hiratsuka, Japan, assignors to Takasago International Corporation, Tokyo, Japan

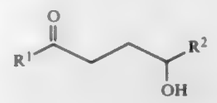
Filed Oct. 1, 1993, Ser. No. 130,173

Claims priority, application Japan, Oct. 5, 1992, 4-265879

Int. Cl.[5] C07C *45/64*

U.S. Cl. 568—318 14 Claims

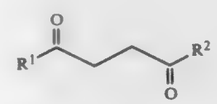
1. A process for producing a γ-hydroxyketone having the formula (2)



(2)

wherein R^1 and R^2 are, individually, $C_{1\text{-}8}$-alkyl, $C_{1\text{-}8}$alkyl substituted with phenyl, halogen or alkoxy groups, phenyl, or phenyl substituted with halogen, lower alkyl or lower alkoxy groups, comprising:

asymmetrically hydrogenating a γ-diketone having the formula (1)

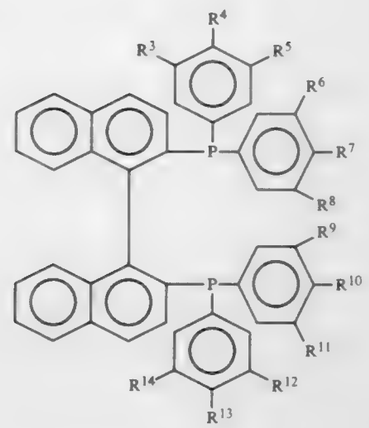


(1)

wherein R^1 and R^2 have the same meaning as defined above, in the presence of a ruthenium-optically active phosphine complex catalyst, said catalyst having the formula (4)

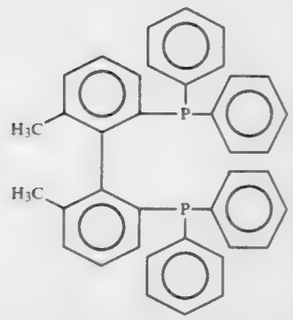
$$\{RuA_k(B)_m(BIPHOS)\}Yn \quad (4)$$

wherein BIPHOS is a tertiary phosphine having the formula (a), (b) or (c)





(c)



wherein R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11}, R^{12}, R^{13} and R^{14}, individually, are a hydrogen atom, a halogen atom, a $C_{1\text{-}4}$ alkyl group or a $C_{1\text{-}4}$ alkoxy group, A is a halogen atom, B is acetonitrile, benzene or methylbenzoate, Y is a halogen atom, ClO_4, PF_6, BPh_4 or BF_4; where k, m and n are 1,1 and 1, respectively, when B is benzene or methylbenzoate; m and n are 2 and 1, respectively, when B is acetonitrile and k is 1; and m and n are 4 and 2, respectively, when B is acetonitrile and k is 0;

or a catalyst having the formula (5)

$$\{RuI(p\text{-cymene})\ (BIPHOS)\}I_3 \quad (5)$$

wherein BIPHOS is a tertiary phosphine having said formula (a), (b) or (c) defined above;

or a catalyst having the formula (6)

$$Ru(OCO\text{-}R^{15})_2(BIPHOS) \quad (6)$$

wherein R^{15} is a hydrogen atom, trifluoromethyl, or a lower alkyl group, and BIPHOS is a tertiary phosphine having said formula (b) or (c) defined above,

(a) or a catalyst having formula (3)

$$Ru_xH_yCl_z(BIPHOS)_2(S)_p \quad (3)$$

wherein BIPHOS is a tertiary phosphine having said formula (b) or (c), (S) is a tertiary amine; where x, z and p are 2,4 are 1, respectively, when y is zero; and x, z and p are 1,1 and 0, respectively, when y is 1.

5,349,108

5-SUBSTITUTED-2,4-DIPHENYLPYRIMIDINE DERIVATIVES, THEIR PRODUCTION AND USE

Junichi Sato, Osaka; Yuzuru Sanemitsu, Hyogo; Shinichi Kawamura, Osaka; Nobuaki Mito, Hyogo; Tatsuhiro Hamada, Genlis, and Ryo Yoshida, Hyogo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

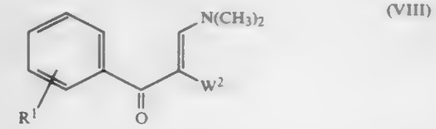
Division of Ser. No. 972,806, Nov. 6, 1992, Pat. No. 5,270,467, which is a division of Ser. No. 809,649, Dec. 17, 1991, Pat. No. 5,190,575, which is a continuation of Ser. No. 602,833, Oct. 23, 1990, which is a continuation-in-part of Ser. No. 544,089, Jun. 22, 1990, abandoned, and a continuation-in-part of Ser. No. 508,446, Apr. 13, 1990, abandoned, which is a division of Ser. No. 391,016, Aug. 9, 1989, said Ser. No. 544,089, is a continuation of Ser. No. 391,016, Aug. 9, 1989. This application Aug. 16, 1993, Ser. No. 106,604

Claims priority, application Japan, Oct. 23, 1989, 1-276593; Oct. 23, 1989, 1-276594; Oct. 23, 1989, 1-276595; Oct. 23, 1989, 1-276596

Int. Cl.[5] C07C *321/10, 225/04*

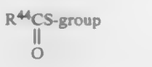
U.S. Cl. 564—340 4 Claims

1. A compound of the formula (VIII):



(VIII)

wherein R^1 represents a halo-(C_1 to C_6)-alkoxy group at the ortho or meta position; and W^2 represent a methanesulfonyl group, a methylthio group or



wherein R^{44} is a (C_1 to C_3)-alkoxy group.

5,349,109

MOLYBDENUM-CATALYZED AMINATION OF OLEFINS

Kenneth M. Nicholas, Norman, Okla., and Anurag S. Srivastava, Newark, Del., assignors to The Board of Regents of the University of Oklahoma, Norman, Okla.

Continuation of Ser. No. 710,219, Jun. 4, 1991, abandoned. This application Aug. 26, 1993, Ser. No. 112,908

Int. Cl.[5] C07C *209/60*

U.S. Cl. 564—408 15 Claims

1. A process for making unsaturated α-amines from olefins wherein the α-amines have a base chain of carbon atoms having the same number of carbon atoms as the olefin, comprising: placing a liquid olefin having at least three carbons and an α-hydrogen; a catalyst having the general formula LL′MoO(X-Y) wherein L is selected from a group consisting of monoanionic ligands, and dianionic ligands, L′ is a neutral oxygen, nitrogen, or sulfur neutral donor and X-Y is selected from a group consisting of, a peroxo ligand or a

nitroso ligand; and an aminating agent having the general formula RNHZ wherein Z is selected from a group consisting of,
a hydroxyl,
an alkoxy,
a halo, and
a sulfonate ester, and
wherein R is selected from a group consisting of,
a hydrogen,
an alkyl,
an aryl,
a carbonyl
a carboalkoxy or
a carboxamido,
in a reaction vessel.

5,349,110

SYNTHESIS OF LOW MOLECULAR WEIGHT GLYCOL ETHERS FROM OXIRANES PLUS OLEFINS

John F. Knifton, Austin, Tex., assignor to Texaco Chemical Company, White Plains, N.Y.

Division of Ser. No. 569,308, Aug. 20, 1990, abandoned. This application Aug. 2, 1993, Ser. No. 100,792
Int. Cl.[5] C07C *41/02*
U.S. Cl. 568—678 **1 Claim**

1. A process for the synthesis of propylene glycol mono-t-butyl ethers from isobutylene and propylene oxide which comprises:
contacting said isobutylene and propylene oxide in the presence of sufficient water to satisfy the stoichiometry of the reaction and a catalyst consisting essentially of 12-tungstophosphoric acid, and heating to 100° C. with mixing at a pressure of from 100 to 400 psig.

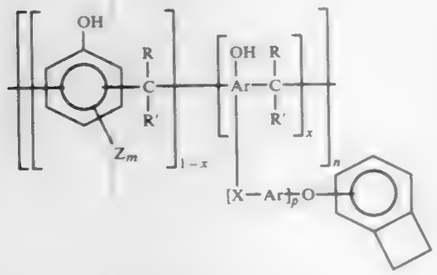
5,349,111

BENZOCYCLOBUTENE NOVOLAC RESIN COMPOSITIONS

Daniel M. Scheck, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 23, 1993, Ser. No. 52,794
Int. Cl.[5] C07C *39/17*
U.S. Cl. 568—721 **12 Claims**

1. A compound represented by the formula



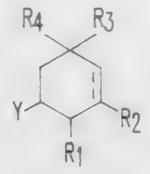
wherein:
R is independently at each occurrence hydrogen, aliphatic hydrocarbyl, aryl, aralkyl, or cycloaliphatic hydrocarbyl;
R′ is independently at each occurrence hydrogen, aliphatic hydrocarbyl, aryl, aralkyl, or cycloaliphatic hydrocarbyl;
m is 0, 1, 2 or 3;
p is 0, 1, or 2;
x is 0.02 to 1.0;
n is 2 to 100;
X is a divalent organic or inorganic moiety;
Z is alkyl, aryl or halogeno; and
Ar is independently at each occurrence a C_6–C_{10} aromatic moiety.

5,349,112

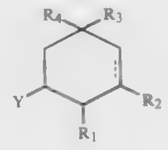
CYCLIC ANTI-TUMOR PROMOTER COMPOUNDS, COMPOSITIONS AND METHODS FOR PRODUCTION AND USE

Marcus A. Tius, Kailua, Hi., assignor to University of Hawaii, Honolulu, Hi.

Continuation of Ser. No. 854,414, Mar. 19, 1992, Pat. No. 5,276,217. This application Nov. 26, 1993, Ser. No. 157,425
Int. Cl.[5] C07C *35/205, 63/64, 69/76;* **A01N** *31/00*
U.S. Cl. 514—532 **25 Claims**



1. A cyclic compound of formula



wherein:
the bond between C_2 and C_3 is a single or a double bond;
R_1 is OR_5, wherein R_5 is H, an alkyl or acyl group having one to six carbon atoms or CO_2R_6 wherein R_6 is H or an alkyl group having one to six carbon atoms;
R_2 is an alkenyl group having one to six carbon atoms;
each of R_3 and R_4 is independently H, an alkyl or alkenyl group having one to six carbon atoms, or a phenyl group which may be attached via an alkyl or alkenyl group having one to six carbon atoms or a halogen atom, or R_3 and R_4 may be taken together to form a methylidene, an alkylidene having one to six carbon atoms or an arylidene group; and
Y is H or an O-acyl substituted group.

5,349,113

SHAPE SELECTIVE HYDROCARBON CONVERSION OVER PRE-SELECTIVATED, ACTIVATED CATALYST

Clarence D. Chang, Princeton, and Paul G. Rodewald, Rocky Hill, both of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Feb. 25, 1993, Ser. No. 22,205
Int. Cl.[5] C07C *5/52*
U.S. Cl. 585—475 **28 Claims**

1. A process for a shape selective hydrocarbon conversion comprises contacting a reaction stream comprising hydrocarbon to be converted, under conversion conditions, with a molecular sieve catalyst which has been preselectivated and activated by treating with a substantially aqueous solution of a water-soluble organosilicon compound.

5,349,114

SHAPE SELECTIVE HYDROCARBON CONVERSIONS OVER MODIFIED CATALYST

Rudolph M. Lago, Yardley, Pa.; David O. Marler, Deptford, N.J., and Sharon B. McCullen, Newtown, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Apr. 5, 1993, Ser. No. 42,431
Int. Cl.[5] C07C *5/52*
U.S. Cl. 585—475 **24 Claims**

1. A process for a shape selective hydrocarbon conversion comprises contacting a reaction stream comprising hydrocarbon to be converted, under conversion conditions, with a catalytic molecular sieve comprising ZSM-5 which has been modified by being (i) pre-selectivated with a first silicon-containing compound selected from the group consisting of silicones and propylamine silane polymers and (ii) subsequently steamed at about 280° C. to 400° C.

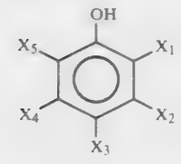
5,349,115

DIMERIZATION OF LOW α-OLEFINS

Kotohiro Nomura, Osaka; Masaru Ishino, Chiba; Michio Yamamoto, Shiga; Gohfu Suzukamo, and Makoto Itagaki, both of Osaka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed May 7, 1993, Ser. No. 57,843
Claims priority, application Japan, May 8, 1992, 4-116044; May 8, 1992, 4-136730; Jun. 8, 1992, 4-147202; Oct. 8, 1992, 4-270087; Dec. 25, 1992, 4-346027
Int. Cl.[5] C07C *2/24*
U.S. Cl. 585—513 **20 Claims**

1. A process for preparing a dimer of a lower α-olefin comprising dimerizing an α-olefin in the presence of a catalyst system A which consists essentially of:
(1) at least one nickel (II) compound selected from the group consisting of organic acid salts, inorganic acid salts and complex compounds of nickel,
(2) a trialkylaluminum,
(3) at least one compound selected from the group consisting of halogenated phenols of the general formula:



(I)

wherein X_1 to X_5 independently represent a halogen atom, a hydrogen atom, or a hydroxyl group, with the proviso that at least one of them is a halogen atom, and a fluorinated isopropyl alcohol,
(4) at least one phosphorous compound selected from the group consisting of compounds of the formulae:

$$PR^1R^2R^3 \quad (II)$$

$$P(NR^4{}_2)_3 \quad (III)$$

$$P(OR^5)_3 \quad (IV)$$

and

$$PR^6R^7(CH_2)_nPR^6R^7 \quad (V)$$

wherein R^1, R^2, R^3, R^4, R^5, R^6 and R^7 independently represent an alkyl group, a cycloalkyl group, an aralkyl group or a phenyl group optionally substituted by alkyl groups or alkoxy groups and n is an integer from 1 to 6, and
(5) at least one sulfur compound selected from the group consisting of sulfonic acids and dialkylsulfates; a catalyst system B which comprises:
(1) at least one nickel (II) compound selected from the group consisting of organic acid salts, inorganic acid salts and complex compounds of nickel,
(2) a trialkylaluminum,
(3) a fluorinated isopropyl alcohol,
(4) at least one phosphorous compound selected from the group consisting of compounds of the formulae:

$$PR^1R^2R^3 \quad (II)$$

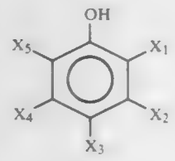
$$P(NR^4{}_2)_3 \quad (III)$$

$$P(OR^5)_3 \quad (IV)$$

and

$$PR^6R^7(CH_2)_nPR^6R^7 \quad (V)$$

wherein R^1, R^2, R^3, R^4, R^5, R^6 and R^7 independently represent at alkyl group, a cycloalkyl group, an aralkyl group or a phenyl group optionally substituted by alkyl groups or alkoxy groups and n is an integer from 1 to 6,
(5) a sulfonic acid and
(6) water; or a catalyst system C which comprises:
(1) at least one nickel (II) compound selected from the group consisting of organic acid salts, inorganic acid salts and complex compounds of nickel,
(2) a trialkylaluminum,
(3) a halogenated phenol represented by the general formula:



(I)

wherein X_1 to X_5 independently represent a halogen atom, a hydrogen atom, or a hydroxyl group, with the proviso that at least one of them is a halogen atom,
(4) at least one phosphorous compound selected from the group consisting of compounds of the formulae:

$$PR^1R^2R^3 \quad (II)$$

$$P(NR^4{}_2)_3 \quad (III)$$

and

$$P(OR^5)_3 \quad (IV)$$

wherein R^1,R^2, R^3, R^4 and R^5 independently represent an alkyl group, a cycloalkyl group, an aralkyl group, or a phenyl group optionally substituted by alkyl groups or alkoxy groups,
(5) a sulfonic acid and
(6) water.

5,349,116

ALKANE ALKYLATION AND CATALYST THEREFOR

Lyle R. Kallenbach, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 25, 1993, Ser. No. 82,586
Int. Cl.[5] C07C *2/62*
U.S. Cl. 585—730 **20 Claims**

1. A process for alkylating alkanes which comprises contacting at least one feed alkane containing about 4–8 carbon atoms per molecule with at least one feed alkene containing about 4–6 carbon atoms per molecule in the presence of a catalyst composition which consists essentially of (a) trifluoromethanesulfonic acid and (b) a solid inorganic material consisting essentially of aluminum borate and aluminum oxide, at effective alkylation conditions comprising a reaction temperature of up to about 100° C., so as to obtain a product in which the weight percentage of product alkanes boiling in a temperature range of about 310° F. to about 500° F. at atmospheric pressure conditions exceeds the weight percentage of product hydrocarbons boiling at a temperature above 500° F. at atmospheric pressure conditions.

5,349,117
PROCESS FOR SORPTION SEPARATION

Robert K. Grasselli, Chadds Ford; Rudolph M. Lago, Yardley; Richard F. Socha, Newtown, all of Pa., and John G. Tsikoyiannis, Princeton, N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation-in-part of Ser. No. 910,861, Jul. 8, 1992, Pat. No. 5,310,714. This application Nov. 8, 1993, Ser. No. 148,946

Int. Cl.[5] **C07C** *7/13*

U.S. Cl. 585—820 **19 Claims**

1. A process for separating at least one component from a mixture of components in the vapor or liquid phase having differential sorption characteristics with respect to a sorbent structure, wherein said at least one component is selectively adsorbed on said sorbent in preference to at least one other component in said mixture of components said sorbent structure comprising a film of interconnected zeolite crystals bonded to a substrate surface, said structure having been manufactured by the method comprising

contacting the substrate with a chemical reaction mixture capable of forming the zeolite film under crystallization conditions, wherein said reaction mixture comprises a H_2O/YO_2 molar ratio of at least about 25 when the YO_2/X_2O_3 molar ratio is greater than about 400, a H_2O/YO_2 ratio of at least about 35 when the YO_2/X_2O_3 ratio is greater than about 150 and less than about 400, and a H_2O/YO_2 ratio of at least about 45 when the XO_2/X_2O_3 ratio is less than about 150; and wherein Y is a tetravalent element and X is a trivalent element.

5,349,118
METHOD FOR OBTAINING A GEOPOLYMERIC BINDER ALLOWING TO STABILIZE, SOLIDIFY AND CONSOLIDATE TOXIC OR WASTE MATERIALS

Joseph Davidovits, 16 rue Galilée, Saint Quentin, France F-02100

Division of Ser. No. 855,633, May 1, 1992, abandoned. This application Jul. 13, 1993, Ser. No. 90,950

Claims priority, application France, Sep. 4, 1990, 90 10958

Int. Cl.[5] **B09B** *1/00;* **C01B** *33/26*

U.S. Cl. 588—252 **5 Claims**

1. In a method of consolidating toxic wastes for long-term disposal thereof, comprising reacting said wastes with a binder, the improvement wherein

said binder is a geopolymeric compound in powder form comprising

(a) 100 parts by weight of alumino-silicate oxide (Si_2O_5,Al_2O_2) having the Al cation in (IV–V) coordination as determined by MAS-NMR analytical spectroscopy for ^{27}Al,

(b) 42–64 parts of sodium disilicate $Na_2(H_3SiO_4)_2$ and

(c) 50–70 parts of vitreous basic silicate, composed partly of at least one of gehlinite, akermanite and wollastonite,

said geopolymeric compound providing a compressive strength greater than 15 MPa after only four hours at 20° C. when tested in a standard mortar with a binder/sand ratio of 0.38, in the substantial absence of Portland cement, and

mixing of said toxic waste with said geopolymeric compound is carried out in the absence of water, followed by adding water so as to provide a water/binder ratio lower than 0.27, thereby obtaining hardening and capture of said toxic waste within a resultant geopolymeric matrix in the substantial absence of Portland cement.

2. In a method of consolidating toxic wastes for long-term disposal thereof, comprising reacting said wastes with a binder, the improvement wherein

said binder is a geopolymeric compound in powder form comprising

(a) 100 parts by weight of alumino-silicate oxide (Si_2O_5,Al_2O_2) having the Al cation in (IV–V) coordination as determined by MAS-NMR analytical spectroscopy for ^{27}Al,

(b) 48–72 parts by weight of potassium disilicate $K_2(H_3SiO_4)_2$ or a mixture of (i) 35–40 parts of potassium silicate $K_2O, 3SiO_2, 3H_2O$, (ii) 7–15 parts of potassium hydroxide KOH which is at least 90% anhydrous, and (iii) an amount of amorphous silica up to 65 parts, and

(c) 50–70 parts of vitreous basic silicate, composed partly of at least one of gehlinite, akermanite and wollastonite,

said geopolymeric compound providing a compressive strength greater than 15 MPa after only four hours at 20° C. when tested in a standard mortar with a binder/sand ratio of 0.38, in the substantial absence of Portland cement, and

mixing of said toxic waste with said geopolymeric compound is carried out in the absence of water, followed by adding water so as to provide a water/binder ratio lower than 0.27, thereby obtaining hardening and capture of said toxic waste within a resultant geopolymeric matrix in the substantial absence of Portland cement.

3. In a method of consolidating toxic wastes for long-term disposal thereof, comprising reacting said wastes with a binder, the improvement wherein

said binder is a geopolymeric compound in powder form comprising the following reactive constituents:

(a) an alumino-silicate oxide (Si_2O_5,Al_2O_2) in which the Al cation is in (IV–V) coordination as determined by MAS-NMR analytical spectroscopy for ^{27}Al,

(b) a disilicate of sodium and/or potassium $(Na_2,K_2)(H_3SiO_4)_2$;

(c) a silicate of calcium

the molar ratios between the three reactive constituents being equal to or between

$$\frac{(Na_2,K_2)\,(H_3SiO_4)_2}{Si_2O_5,Al_2O_2)} \quad 0.40 \text{ and } 0.60$$

$$\frac{Ca^{++}}{Si_2O_5,Al_2O_2} \quad 0.60 \text{ and } 0.40$$

such that

$$\frac{(Na_2,K_2)\,(H_3SiO_4)_2}{Si_2O_5,Al_2O_2)} + Ca^{++} = 1.0$$

where Ca^{++} designates the calcium ion belonging to a weakly basic silicate of calcium whose atomic ratio Ca/Si is lower than 1,

said geopolymeric compound providing a compressive strength greater than 15 MPa after only four hours at 20° C. when tested in a standard mortar with a binder/sand ratio of 0.38, in the substantial absence of Portland cement, and

mixing of said toxic waste with said geopolymeric compound is carried out in the absence of water, followed by adding water so as to provide a water/binder ratio lower than 0.27, thereby obtaining hardening and capture of said toxic waste within a resultant geopolymeric matrix in the substantial absence of Portland cement.

5,349,119
INBRED CORN LINE PHTM9

Vladimir Puskaric, Ontario, Canada, assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Feb. 3, 1992, Ser. No. 831,235

Int. Cl.[5] **A01H** *5/00, 4/00;* **C12N** *5/04*

U.S. Cl. 800—200 **7 Claims**

1. Inbred corn seed designated PHTM9, and having ATCC Accession No. 75749.

5,349,120
WHITE MUSHROOM

Noriyasu Kubota, Nagano; Yoshihiro Miyagawa, Iiyama, and Yukita Kawano, Otsu, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto and Nagano Prefectural Economic Federation of Agricultural Co-operatives, Nagano, both of Japan

Continuation of Ser. No. 707,803, May 30, 1991, abandoned. This application Mar. 11, 1993, Ser. No. 29,918

Claims priority, application Japan, Jul. 6, 1990, 2-177573

Int. Cl.[5] **A01H** *15/00;* **A01G** *1/04*

U.S. Cl. 800—200 **6 Claims**

2. A biologically pure culture of a strain belonging to *Lyophyllum ulmarium* selected from the group consisting of *Lyophyllum ulmarium* KW-8171 (FERM BP-3302) and *Lyophyllum ulmarium* IW-8171 (FERM BP-3303).

5,349,121
BIOLOGICALLY PURE MUSHROOM CULTURE AND METHOD FOR MUSHROOM CULTIVATION

Yoshio Yoshihama, Muko; Katsuhiko Kusakabe, Otsu; Susumu Matsui, Otsu, and Hideo Morita, Otsu, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 769,640, Oct. 1, 1990, abandoned. This application Jul. 12, 1993, Ser. No. 89,593

Claims priority, application Japan, Mar. 7, 1991, 3-065261

Int. Cl.[5] **A01H** *15/00;* **A01G** *1/04*

U.S. Cl. 800—200 **2 Claims**

1. A biologically pure culture of a strain belonging to *Lyophyllum decastes* capable of forming a fruiting body of about 140 grams or more per 550 grams of artificial medium containing sawdust, rice bran, and leaf mold or composted bark, for about 90 days cultivation and having all the identifying characteristics of *Lyophyllum decastes*, selected from the group consisting of *Lyophyllum decastes* K-3303 (FERM P-11320; FERM BP 4347), *Lyophyllum decastes* K-3304 (FERM P-11321; FERM BP4348), and *Lyophyllum decastes* K-3305 (FERM P-11322; FERM BP4349).

5,349,122
USE OF LYSOZYME GENE STRUCTURES IN PLANTS TO INCREASE RESISTANCE

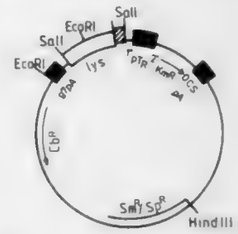
Rüdiger Hain, Langenfeld, and Klaus Stenzel, Duesseldorf, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 19, 1990, Ser. No. 555,557

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1989, 3926390

Int. Cl.[5] **A01H** *1/04, 5/10;* **C12N** *15/00, 5/00, 5/02*

U.S. Cl. 800—205 **22 Claims**



10. Transformed whole plants, said transformed whole plants having an increased resistance to fungi, said transformed whole plants comprising in their genome one or more lysozyme gene structures, said lysozyme gene structures expressing lysozyme, said lysozyme gene structures comprising a chimeric gene fusion of the TR promoter, the signal peptide-encoding sequence of barley alpha-amylase, and one or more lysozyme genes, and said plants being selected from the group consisting of potato, and tomato.

5,349,123
GLYCOGEN BIOSYNTHETIC ENZYMES IN PLANTS

Christine K. Shewmaker, Woodland, and David M. Stalker, Davis, both of Calif., assignors to Calgene, Inc., Davis, Calif.

Continuation-in-part of Ser. No. 632,383, Dec. 21, 1990, abandoned, and a continuation-in-part of Ser. No. 731,226, Jul. 16, 1991, abandoned. This application Jul. 24, 1991, Ser. No. 735,065

Int. Cl.[5] **A01H** *1/04;* **C12N** *15/00;* **C07H** *21/04;* **C12P** *21/04*

U.S. Cl. 800—205 **16 Claims**

6. A plant cell comprising *E. coli* glycogen synthase.

10. A plant comprising a cell of any one of claims 6, 7, 8, or 9.

5,349,124
INSECT-RESISTANT LETTUCE PLANTS

David A. Fischhoff, Webster Groves, and Stephen G. Rogers, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 185,753, Apr. 25, 1988, abandoned. This application Feb. 13, 1992, Ser. No. 836,149

Int. Cl.[5] **A01H** *4/00;* **C12N** *5/14*

U.S. Cl. 800—205 **10 Claims**

1. A plant of the genus Lactuca which has been regenerated from a plant cell transformed to comprise a full length *Bacillus thuringiensis* crystal protein gene capable of encoding a *Bacillus thuringiensis* crystal protein of approximately 130–135 kD under control of a promoter such that said gene is expressible in said plant in amounts insecticidal to Lepidopteran insects.

5,349,125
GENETIC SEQUENCES ENCODING A 3',5'-HYDROXYLASE AND USES THEREFOR

Timothy A. Holton, Northcote; Edwina C. Cornish, Upper Beaconsfield; Filippa Kovacic, Preston; Yoshikazu Tanaka, Rosanna, and Diane R. Lester, Triabunna, all of Australia, assignors to International Flower Developments Pty. Ltd., Australia

Filed Jul. 13, 1992, Ser. No. 912,900

Claims priority, application Australia, Jul. 11, 1991, PK7173/91; Feb. 17, 1992, PL0923/92

Int. Cl.[5] **A01H** *4/00;* **C12N** *15/29, 15/82*

U.S. Cl. 800—205 **16 Claims**

1. An isolated nucleic acid encoding a 3',5'-hydroxylase capable of hydroxylating dihydrokaempferol (DHK).

5,349,126
PROCESS AND COMPOSITION FOR INCREASING SQUALENE AND STEROL ACCUMULATION IN HIGHER PLANTS

Joseph Chappell, Lexington, Ky.; Court A. Saunders, Clarendon Hills, and Fred R. Wolf, Naperville, both of Ill., assignors to Amoco Corporation, Naperville, Ill.

Continuation-in-part of Ser. No. 596,467, Oct. 12, 1990. This application Aug. 14, 1992, Ser. No. 934,374

Int. Cl.[5] **A01H** *1/04, 5/10;* **C12N** *15/00;* **C12P** *21/04*

U.S. Cl. 800—205 **11 Claims**

1. A process of increasing insect resistance in a transgenic plant said process comprising:

(a) transforming a plant cell with a recombinant DNA molecule comprising a vector operatively linked to a DNA segment that encodes a polypeptide having HMG-CoA reductase activity, and a promoter suitable for driving the expression of said polypeptide in said plant cell to form a transformed plant cell; and

(b) regenerating said transformed plant cell into said transgenic plant wherein said plant exhibits increased insect resistance.

6. A transgenic plant produced in accordance with the process of claim 1.

5,349,127

EXPRESSION OF HERBICIDE METABOLIZING CYTOCHROMES P450

Caroline Dean, Norwich, United Kingdom; Patricia A. Harder, Wilmington, Del.; Kenneth J. Leto, Wilmington, Del.; Daniel P. O'Keefe, Ridley Park, Pa.; Charles A. Omer, Downingtown, Pa.; James A. Romesser, Wilmington, Del., and James M. Tepperman, Oakland, Calif., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 569,781, Aug. 23, 1990, Pat. No. 5,212,296, which is a continuation-in-part of Ser. No. 464,499, Jan. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 405,605, Sep. 11, 1989, abandoned. This application Oct. 26, 1992, Ser. No. 967,093

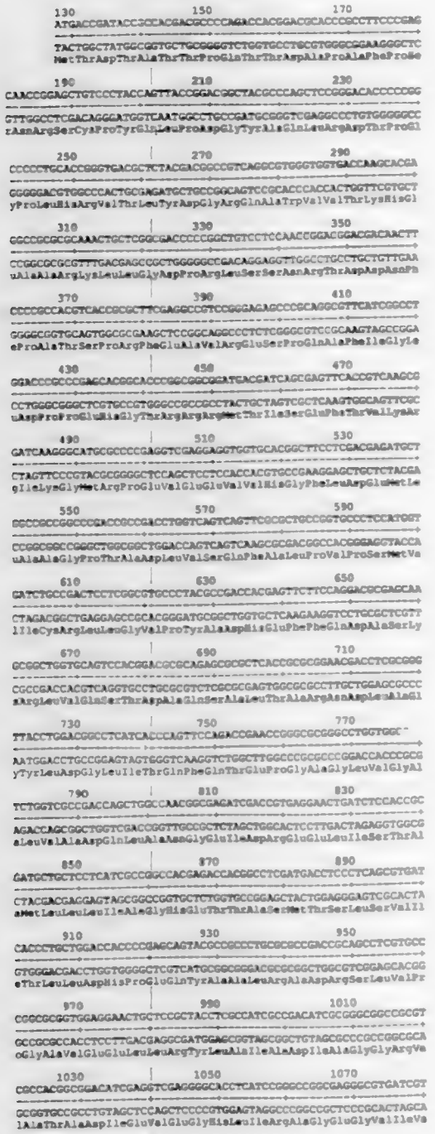
Int. Cl.[5] **A01H** *4/00*; **C12N** *15/82*

U.S. Cl. 800—205 **66 Claims**

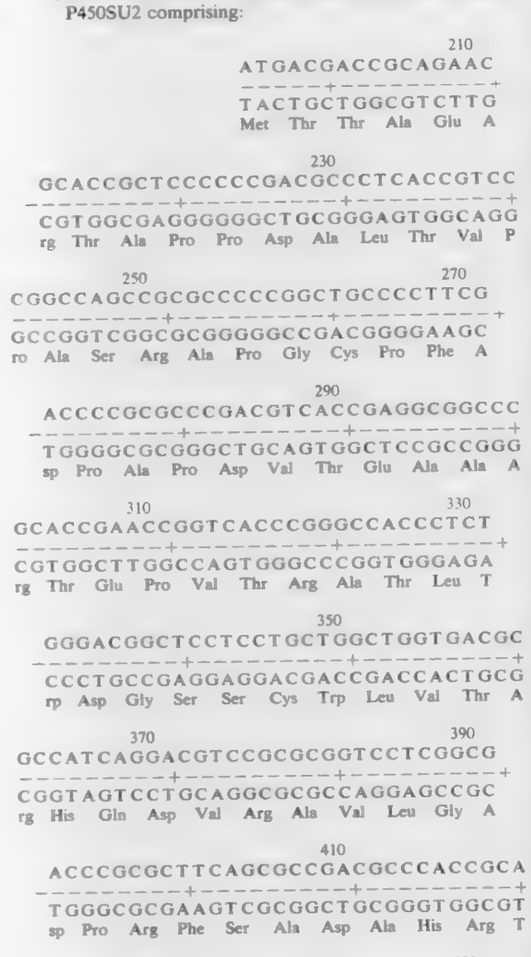
1. A recombinant plasmid comprising

A) functional segments selected from the group consisting of

i) the DNA sequence encoding cytochrome P450 enzyme P450SU1 comprising:



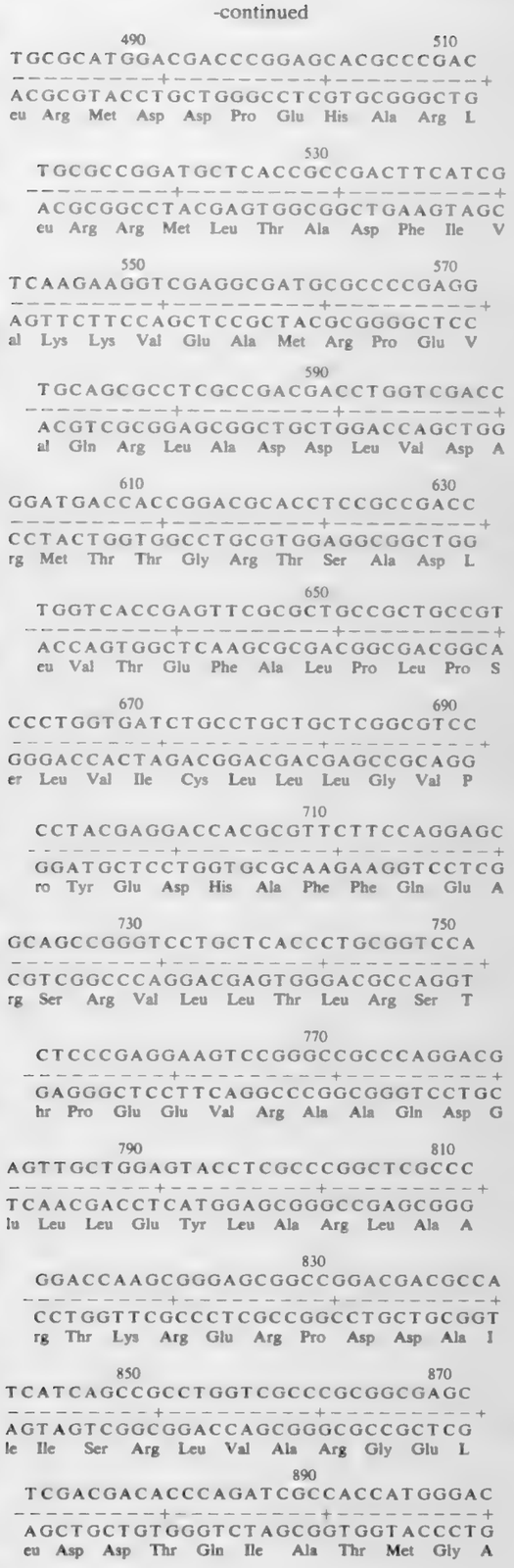
ii) the DNA sequence encoding cytochrome P450 enzyme P450SU2 comprising:



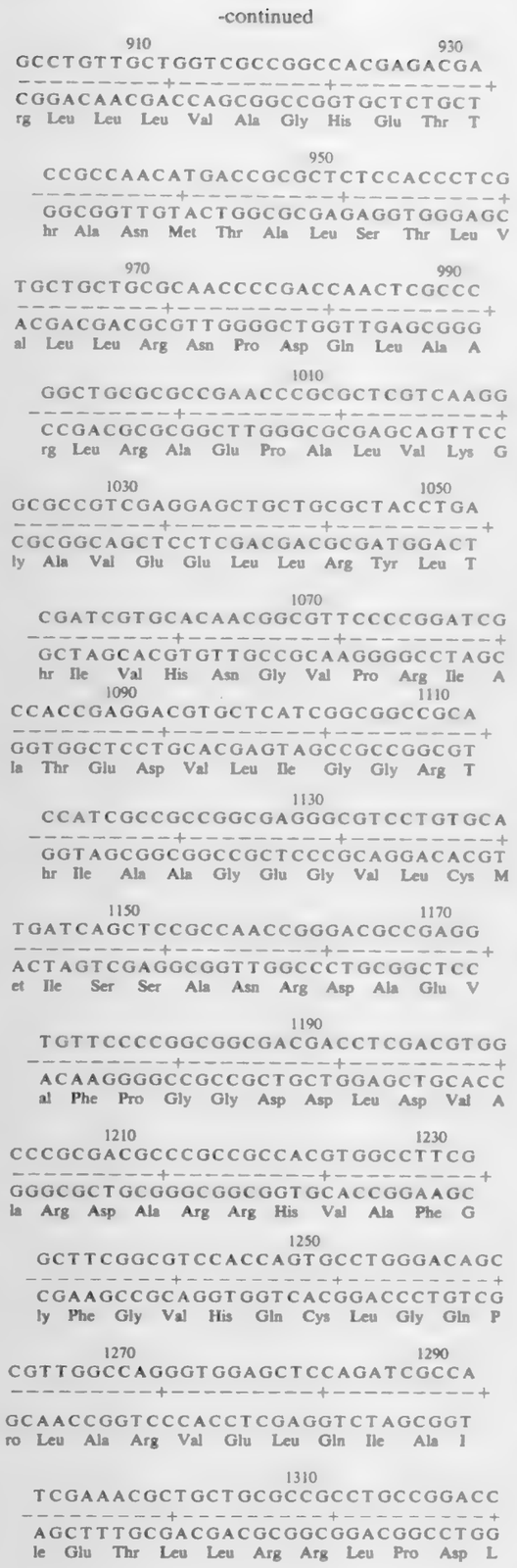
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-continued



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                1330                                          1350
TGCGGCTGGCCGTGCCCCACGAGGAGATCC
----------+---------+---------+---------+---------+---------+-
ACGCCGACCGGCACGGGGTGCTCCTCTAGG
eu Arg Leu Ala Val Pro His Glu Glu Ile P

                          1370
  CGTTCCGCGGCGACATGGCGATCTACGGGG
  ---------+---------+---------+---------+
  GCAAGGCGCCGCTGTACCGCTAGATGCCCC
  ro Phe Arg Gly Asp Met Ala Ile Tyr Gly V

          1390
TCCACTCGCTGCCGATCGCCTGGTAG
----------+---------+-------
AGGTGAGCGACGGCTAGCGGACCATC
al His Ser Leu Pro Ile Ala Trp End ;
```

iii) either of the DNA sequence encoding cytochrome P450 enzyme P450SU1 of i) or the DNA sequence encoding cytochrome P450 enzyme P450SU2 of ii) in combination with the DNA sequence encoding iron sulfur protein FeS-B comprising:

```
                1370
  ATGACCATGCGG
  ---+---------+
  TACTGGTACGCC
  Met Thr Met Arg

          1390                                          1410
GTGAGTGCGGATCGGACGGTCTGCGTCGGT
----------+---------+---------+---------+---------+---------+
CACTCACGCCTAGCCTGCCAGACGCAGCCA
Val Ser Ala Asp Arg Thr Val Cys Val Gly

                1430
  GCCGGGCTGTGTGCGCTGACGGCGCCGGGC
  ---------+---------+---------+---------+---------+
  CGGCCCGACACACGCGACTGCCGCGGCCCG
  Ala Gly Leu Cys Ala Leu Thr Ala Pro Gly

          1450                                          1470
GTCTTCGACCAGGACGACGACGGGATCGTC
----------+---------+---------+---------+---------+---------+
CAGAAGCTGGTCCTGCTGCTGCCCTAGCAG
Val Phe Asp Gln Asp Asp Asp Gly Ile Val

                1490
  ACGGTGCTGACGGCCGAACCCGCCGCCGAC
  ---------+---------+---------+---------+---------+
  TGCCACGACTGCCGGCTTGGGCGGCGGCTG
  Thr Val Leu Thr Ala Gly Pro Ala Ala Asp

          1510                                          1530
GACGACCGGCGCACCGCGCGCGAGGCCGGC
----------+---------+---------+---------+---------+---------+
CTGCTGGCCGCGTGGCGCGCGCTCCGGCCG
Asp Asp Arg Arg Thr Ala Arg Glu Ala Gly

                1550
  CATCTCTGTCCGTCCGGTGCGGTCCGCGTC
  ---------+---------+---------+---------+---------+
  GTAGAGACAGGCAGGCCACGCCAGGCGCAG
  His Leu Cys Pro Ser Gly Ala Val Arg Val

          1570
GTCGAGGACACGGAA
----------+-----
CAGCTCCTGTGCCTT
Val Glu Asp Thr Glu ;
```

and iv) either of the DNA sequence encoding cytochrome P450 enzyme P450SU1 of i) or the DNA sequence encoding cytochrome P450 enzyme P450SU2 of ii) in combination with the DNA sequence encoding iron sulfur protein FeS-A comprising:

-continued

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                1470
ATGCGCATCCACGTCGACCAGGACAAGTGC
----------+---------+---------+---------+---------+-
TACGCGTAGGTGCAGCTGGTCCTGTTCACG
Met Arg Ile His Val Asp Gln Asp Lys Cys

                          1490
  TGCGGCGCCGGCAGTTGCG
  ---------+---------+
  ACGCCGCGGCCGTCAACGC
  Cys Gly Ala Gly Ser Cys V

          1510                                          1530
TCCTCGCCGCGCCCGACGTCTTCGACCAGC
----------+---------+---------+---------+---------+---------+
AGGAGCGGCGCGGGCTGCAGAAGCTGGTCG
al Leu Ala Ala Pro Asp Val Phe Asp Gln A

                1550
  GGGAGGAGGACGGCATCGTGGTCCTCCTCG
  ---------+---------+---------+---------+---------+
  CCCTCCTCCTGCCGTAGCACCAGGAGGAGC
  rg Glu Glu Asp Gly Ile Val Val Leu Leu A

          1570                                          1590
ACACCGCGCCGCCCGCCGCGCTGCACGACG
----------+---------+---------+---------+---------+---------+
TGTGGCGCGGCGGGCGGCGCGACGTGCTGC
sp Thr Ala Pro Pro Ala Ala Leu His Asp A

                1610
  CGGTCCGTGAGGCGGCGACCATCTGCCCCG
  ---------+---------+---------+---------+---------+
  GCCAGGCACTCCGCCGCTGGTAGACGGGGC
  la Val Arg Glu Ala Ala Thr Ile Cys Pro A

          1630
CCGCCGCGATCACGGTGACCGAC
----------+---------+---
GGCGGCGCTAGTGCCACTGGCTG
la Ala Ala Ile Thr Val Thr Asp ;
```

B) a plant promoter sequence upstream and operably linked to each said DNA sequence,

C) a 5'-untranslated sequence upstream and operably linked to each said DNA sequence, and

D) a 3'-untranslated sequence which enables the mRNA transcribed from the plasmids to be polyadenylated on its 3' end downstream and operably linked to each said DNA sequence.

5,349,128

CUCUMBER MOSAIC VIRUS COAT PROTEIN GENE

Hector D. Quemada; Jerry L. Slightom, both of Kalamazoo, Mich.; Dennis Gonsalves, Geneva, N.Y., and Chris Kearney, Lake Alfred, Fla., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 655,435, Feb. 19, 1991, abandoned, which is a continuation of Ser. No. 234,404, Aug. 19, 1988, abandoned. This application Jan. 28, 1993, Ser. No. 10,423

Int. Cl.[5] A01H *1/04;* **C12N** *15/00, 5/00;* **C07H** *21/04*

U.S. Cl. 800—205 **6 Claims**

1. The coat protein gene from the WL strain of cucumber mosaic virus and having the sequence shown in Chart 1.

2. A plant transformation vector comprising the coat protein gene according to claim 1, the 35S promoter of califlower mosaic virus and the polyadenylation signal of the califlower mosaic 35S gene, wherein said promoter is upstream from said CMV-WL coat protein gene 5' untranslated region; and said CMV-WL coat protein gene 5' untranslated region is upstream from a link to said polyadenylation signal of the califlower mosaic 35S gene.

5,349,129

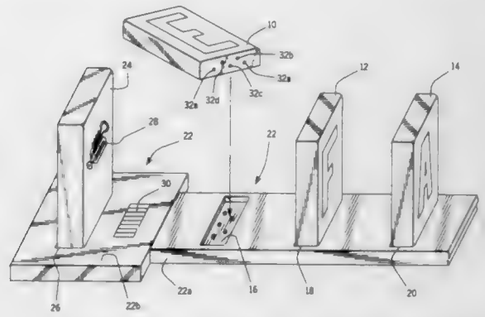
ELECTRONIC SOUND GENERATING TOY

John M. Wisniewski, 1809 North Arlington Pl., Milwaukee, Wis. 53202, and William W. Shier, Watertown, Wis., assignors to John M. Wisniewski, Milwaukee, Wis.

Filed May 28, 1993, Ser. No. 69,555

Int. Cl.[5] G10H *1/34*

U.S. Cl. 84—600 **9 Claims**



1. An electronic device that generates a plurality of audible sounds in a selected sequence, comprising:

a plurality of sound elements, each sound element corresponding to an audible sound, and each of said sound elements having an upper end and a lower end, the distance between said upper ends and said respective lower ends defining a length of each of said sound elements;

a first support member having a plurality of spaced areas, each of said areas receiving one of said sound elements, and wherein the distance between two adjacent spaced areas is less than the length of one of the sound elements received on one of said adjacent spaced areas, so that the sound elements may be successively moved in a domino manner, and wherein each of said spaced areas includes a sensor that senses whether the sound element received by that spaced area is being moved away from said spaced area; and

sound generating means for generating said audible sounds in said selected sequence, said selected sequence corresponding to the order in which said sound elements are moved away from their respective spaced areas.

5,349,130

PITCH EXTRACTING APPARATUS HAVING MEANS FOR MEASURING INTERVAL BETWEEN ZERO-CROSSING POINTS OF A WAVEFORM

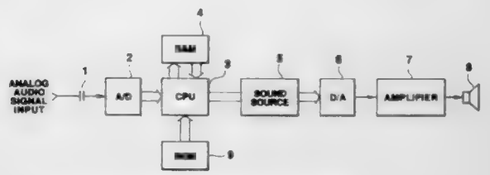
Makoto Iwaooji, Hamura, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 874,813, Apr. 28, 1992, abandoned. This application Nov. 17, 1993, Ser. No. 154,157

Claims priority, application Japan, May 2, 1991, 3-100803; May 2, 1991, 3-100985; May 2, 1991, 3-100986; May 24, 1991, 3-120291

Int. Cl.[5] G10H *7/02*

U.S. Cl. 84—616 **16 Claims**



7. A pitch extracting apparatus comprising:

means for receiving an input waveform signal;

measuring means for measuring time intervals between zero-crossing points of said input waveform signal;

detecting means for sequentially obtaining time intervals, of the time intervals between a plurality of zero-crossing points sequentially measured by said measuring means, which are defined by zero-crossing points having a first characteristic and next adjacent zero-crossing points having a second characteristic, and for detecting substantial coincidence between two time intervals;

pitch data output means for, when the substantial coincidence is detected by said detecting means, outputting a time interval between the zero-crossing points having the first characteristic and belonging to the two time intervals between which the substantial coincidence is detected, as pitch data;

waveform area calculating means for obtaining areas of waveform elements between consecutive zero-crossing points of the input waveform signal; and

waveform area coincidence detecting means for, when said detecting means sequentially obtains time intervals between zero-crossing points having the first characteristic and next adjacent zero-crossing points having the second characteristic, and detects substantial coincidence between two time intervals, detecting substantial coincidence between corresponding waveform areas obtained by said waveform area calculating means, and

wherein said pitch data output means comprises means for, only when said waveform area coincident detecting means detects the substantial coincidence between the corresponding waveform areas, outputting a time interval between the zero-crossing points having the first characteristic and belonging to the two time intervals between which the coincidence is detected, as pitch data.

5,349,131

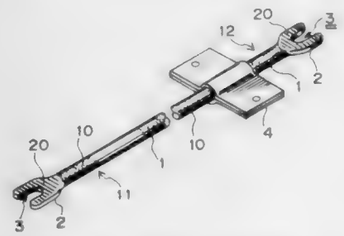
ELECTRICAL WIRING MATERIAL AND TRANSFORMER

Junji Sotani, Yokohama; Kuniyoshi Satoh, Tokyo, and Hajima Noda, Icihara, all of Japan, assignors to Furukawa Electric Co., Ltd, Tokyo, Japan

Filed Jun. 30, 1992, Ser. No. 906,375

Int. Cl.[5] H01B *5/00;* **H01F** *27/28*

U.S. Cl. 174—24 **14 Claims**



1. An electrical wiring material, comprising:

a hollow conductive body having an elongated length;

an operating fluid confined within said hollow conductive body;

said hollow conductive body being deformed at at least one location along said length therewith to define in said hollow conductive body a flattened electrical connection piece at said at least one location; and

a remainder of said hollow conductive body including at least one hollow segment, said at least one hollow segment being bounded on at least one side by said electrical connection piece.

9. A transformer, comprising:

a hollow conductive body having an elongated length;

an operating fluid confined within said hollow conductive body;

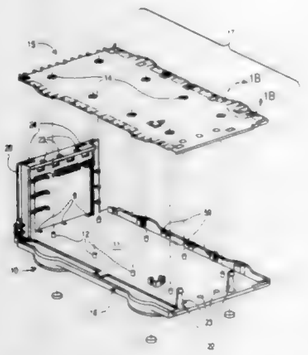
said transformer including a low voltage side wound with said hollow conductive body.

5,349,132

METHODS AND APPARATUS FOR MODULAR COMPUTER CONSTRUCTION

Wayne H. Miller, Mountain View; Bradley C. Helm, Cupertino; Wayman M. Lee, Santa Clara; Braxton L. Lathrop, San Mateo; Jimmy A. Melton, and Robert D. Chapman, both of San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Feb. 8, 1993, Ser. No. 14,983
Int. Cl.[5] H05K *9/00*
U.S. Cl. 174—35 R **6 Claims**



1. In a personal computer system including a main processor board intercommunicating with a plurality of internal peripheral and functional subassemblies, a modular enclosure comprising:

a base assembly further comprising:

a base comprising a first interior surface having a first plurality of pin members disposed thereon;

a base electromagnetic interference (EMI) shield mounted to said base, said base EMI shield comprising a first plurality of shield mounting openings receiving and retaining said first plurality of pin members;

a first plurality of grooved board guides to receive and locate a first edge of said main processor board;

a first plurality of frame mounting snaps,

a first plurality of frame mounting openings,

a first plurality of cruciform receiving openings;

an upwardly extending frame support member having a second plurality of cruciform receiving openings; and,

a first plurality of hook receiving openings;

a unitary, internal frame mounted to said base assembly, said internal frame comprising:

at least one bay designed to receive said internal peripheral and functional subassemblies;

at least one subassembly retaining snap having a latch head;

an integrally formed finger guard;

first and second pluralities of cruciforms received and seated in said first and second pluralities of cruciform openings in said base assembly;

a second plurality of frame mounting snaps received into said first plurality of frame mounting openings in said base assembly; and,

a second plurality of frame mounting openings receiving said first plurality of frame mounting snaps in said base assembly;

a rear panel assembly mounted to said base assembly and said internal frame, comprising:

a rear panel further comprising a second interior surface having a second plurality of pin members disposed thereon;

a rear EMI shield mounted to said rear panel and comprising a second plurality of shield mounting openings receiving and retaining said second plurality of pin members;

a first plurality of panel mounting hooks received into said first plurality of hook receiving openings in said base; and,

a second plurality of grooved board guides to receive and locate a second edge of said main processor board; and,

a top cover assembly, comprising a U-shaped top cover and a front panel assembly, mounted to said base assembly, said internal frame, and said rear panel assembly:

said U-shaped top cover comprising left, right, and top surfaces, and having open front, rear, and bottom regions disposed between said left, right, and top surfaces, said top cover further comprising: a second plurality of hook receiving openings; and,

a plurality of front panel retaining tabs;

said front panel assembly comprising:

a front panel further comprising a third plurality of pin members;

a front EMI shield mounted to said front panel and comprising a third plurality of shield mounting openings receiving and retaining said third plurality of pin members;

a second plurality of panel mounting hooks received into said second plurality of hook openings in said top cover; and,

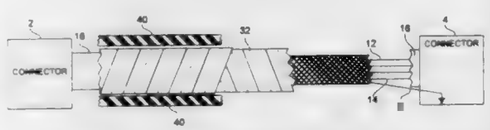
a plurality of panel mounting posts received and retained against said front panel retaining tabs on said front panel assembly.

5,349,133

MAGNETIC AND ELECTRIC FIELD SHIELD

Wesley A. Rogers, Grosse Pointe Park, Mich., assignor to Electronic Development, Inc., Grosse Pointe Park, Mich.

Filed Oct. 19, 1992, Ser. No. 962,892
Int. Cl.[5] H01B *7/34*
U.S. Cl. 174—36 **32 Claims**



1. A magnetic and electric field shielded electrical structure comprising:

an electrical structure having a longitudinal axis;

a first layer of electrically conductive material surrounding the electrical structure in electrical isolation therewith;

a first layer of magnetic material surrounding the electrical structure, the first magnetic material layer being wrapped around the electrical structure in one of a clockwise and counter-clockwise direction with overlapped edges to form a helical path along the longitudinal axis of the structure; and

a second layer of magnetic material wrapped around the first layer of magnetic material in the other of the clockwise and counter-clockwise directions with overlapped edges to form a helical path along the longitudinal axis of the structure, the first and second layers being connected at one end.

18. A method of forming an electric and magnetic field shield for an electrical structure having a longitudinal axis comprising the steps of:

a) wrapping a first layer of magnetic material in one of a clockwise and counter-clockwise directions along the longitudinal axis of an electrical structure to form a first helical wrap with overlapping edges;

b) wrapping a second layerof magnetic material over the first layer of magnetic material in the other of a clockwise and counter-clockwise directions along the longitudinal axis of the electrical structure to form a second helical wrap with overlapping edges, the first and second helical wraps being in opposite directions and forming a magnetic field shield; and

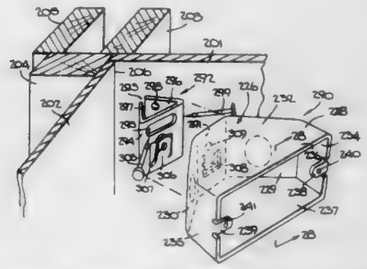
c) providing the electrical structure with a first layer of electrically conductive material in electrical isolation therewith and connected to ground forming an electric field shield.

5,349,134

CORNER MOUNTED WIRING DEVICES

James P. Russell, Claridge House II - Apt. 2IW, Verona, N.J. 07044

Continuation-in-part of Ser. No. 484,822, Feb. 26, 1990, Pat. No. 5,057,980. This application Oct. 11, 1991, Ser. No. 775,781
Int. Cl.[5] H02G *3/10*
U.S. Cl. 174—48 **16 Claims**



9. A mounting system for mounting an electrical component in a corner of a room between two intersecting walls, comprising mounting adapter means having an outer perimeter configured and dimensioned to fit in said room corner between said corner and said component, said mounting adapter means having means for receiving fasteners in one or more locations in sufficient proximity to the room corner for securing the adapter means to room corner studs, the construction of said mounting adapter means and said component being such as to provide tool access for driving said fasteners and for positioning said component catercorner to said intersecting walls substantially symmetrically about the corner bisecting plane, said adapter means being in the form of a solid isosceles trapezoidal prism with the non-parallel opposing sides orthogonally related, and the widest of the parallel sides provided with means for enabling one of said components to be attached contiguous thereto.

5,349,135

FASTENER FOR ELECTRICAL POWER DISTRIBUTION IN DIVIDER PANELS

Lloyd C. Mollenkopf, Apple Valley, and Russsell J. Rein, St. Louis Park, both of Minn., assignors to Rosemount Office Systems, Inc., Lakeville, Minn.

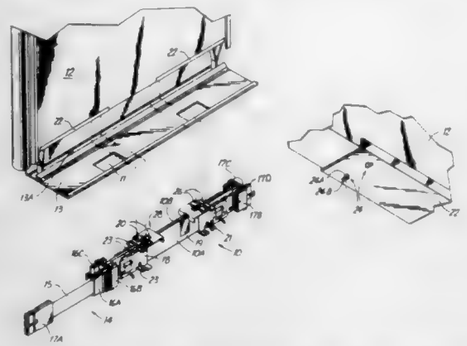
Filed Jun. 8, 1992, Ser. No. 895,349
Int. Cl.[5] H02G *3/28;* **H01R** *9/22;* **E04B** *2/46*
U.S. Cl. 174—48 **20 Claims**

1. An apparatus for fastening separable utility distribution units on divider panels comprising:

a bracket adapted to be mounted to a bottom of a divider panel and having a depending tab with an outer end that forms a lock;

movable slide locking means carried on a panel distribution unit and having first a tab receiving opening;

fixed receiving means mounted to the panel distribution unit mounted adjacent to the movable slide locking means and having at least one second opening aligning with the tab receiving opening for receiving the depending tab and the outer end, the movable locking means being movable from a position permitting the outer end to pass through the first and second openings to a locked position to prevent the outer end from passing out of the first tab receiving opening to thereby retain the tab in the opening; and



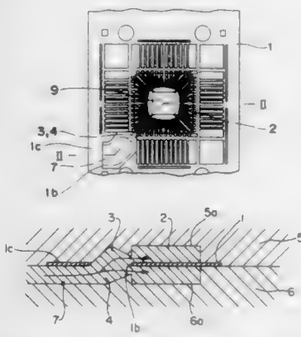
a detent to retain the movable slide locking means in locked position.

5,349,136

MOLD TOOL ASSEMBLY

Mitsuhiro Abe, Hirakata; Nakanishi Itsuto, Neyagawa; Ariyoshi Hideho, and Asao Iguchi, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 841,764, Feb. 28, 1992, abandoned, which is a division of Ser. No. 561,907, Jul. 31, 1990, abandoned. This application Feb. 10, 1993, Ser. No. 17,418
Claims priority, application Japan, Aug. 2, 1989, 1-201925
Int. Cl.[5] H01L *23/28;* **B22D** *41/08*
U.S. Cl. 174—52.2 **8 Claims**



1. A molding arrangement for forming an electronic component, comprising:

a mold tool having an upper mold and a lower mold defining respective upper and lower cavities and upper and lower gates arranged symmetrically with respect to a parting face between said upper and lower molds at opposite surfaces of said upper and lower molds, said gates connecting directly with said cavities; and

a lead frame for supporting a semiconductor chip in said mold tool for sealing the chip with resin, said lead frame having upper and lower sides and a vacant cutout portion therein at a position corresponding to said gates, wherein said gates are connected to each other through said vacant cutout portion;

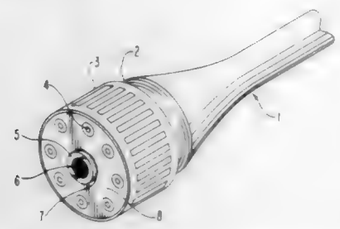
wherein said mold tool further comprises a runner connected to said gates for providing molten resin thereto, said runner being disposed on only one of said upper and said lower sides of said lead frame.

5,349,137

STERILIZABLE CABLE ASSEMBLIES

Alfredo Cedrone, Austin, Tex., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed May 17, 1993, Ser. No. 63,387
Int. Cl.[5] H02G *3/02*
U.S. Cl. 174—76 8 Claims



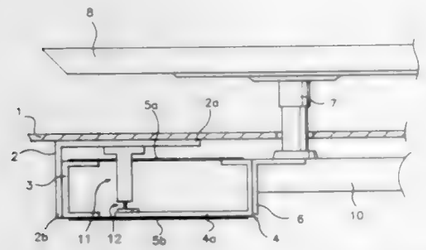
1. A steam and liquid sterilizable assembly of electrical and optical fiber cables comprising:
(a) at least one optical fiber cable sealed into a metal ferrule by an organic resin, said ferrule being sealed by solder into an aperture in a
(b) laminated, multilayer organic polymer disc, having metal-plated apertures therethrough and conductive metal traces layer to layer;
(c) at least one electrical cable soldered to one surface of said disc to a conductive trace which connects through and between the layers of said disc to a conductive electrical contact on the opposite surface of said disc; and
(d) wherein said at least one optical fiber cable, said at least one electrical cable, and said laminated, multilayer organic polymer disc are imbedded in a molded polymer housing which has no entry points for steam or liquids during sterilization.

5,349,138

FOOD WEIGHT SENSING DEVICE FOR MICROWAVE OVEN

Eun S. Dong, Busan, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 16, 1993, Ser. No. 47,208
Claims priority, application Rep. of Korea, Apr. 21, 1992, 6616/1992
Int. Cl.[5] G01G *19/52, 3/14*
U.S. Cl. 177—144 6 Claims



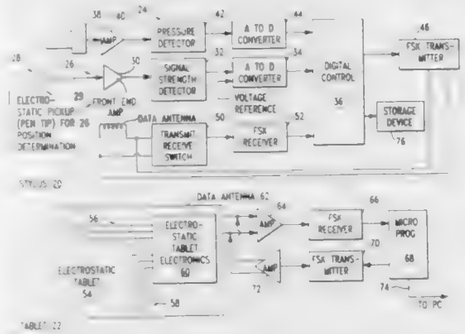
1. A food weight sensing device for a microwave oven comprising:
a fixed spacer fixedly mounted beneath a base plate of said microwave oven at one side of said base plate, by a bracket fixed to the base plate;
a movable spacer fixedly mounted to a load supporting bracket supporting a tray of the microwave oven such that it is horizontally spaced a predetermined distance from said fixed spacer, to face the fixed spacer, said movable spacer being vertically movable due to the weight of an object laid on said tray for measuring the weight and having a horizontal supporting member extending from its lower portion;
resilience means disposed between the fixed spacer and the movable spacer and adapted to apply a resilience force to the movable spacer against said vertical movement of the movable spacer; and
variable weight sensing means having a pair of overlapping electrode plates, one of which is attached to said bracket for supporting the fixed spacer and the other one being attached to said horizontal supporting member such that an overlapping area between said electrode plates is varied, depending on the vertical movement of the movable spacer, said variable weight sensing means being adapted to sense the weight of said object, based on a capacitance value obtained by the variation in overlapping area.

5,349,139

ARCHITECTURE FOR COMMUNICATION OF REMOTE DEVICES TO A DIGITIZING DISPLAY

Guy F. Verrier, Boca Raton, Fla.; Frank L. Stein, Vienna, Va., and Robert L. Donaldson, Annapolis, Md., assignors to International Business Machines, Armonk, N.Y.

Filed Oct. 30, 1992, Ser. No. 969,864
Int. Cl.[5] G08C *21/00*
U.S. Cl. 178—19 11 Claims



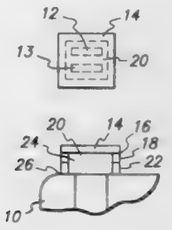
1. A data processing architecture for a pen-based computing system comprising: a stylus which includes a pressure sensing transducer and a X-Y position sensing transducer;
said pressure sensing transducer coupled to a multiplexer and said X-Y position sensing transducer also connected to said multiplexer;
a transmitter in said stylus having an input connected to said multiplexer, for transmitting a multiplexed data stream of information representing contact pressure applied to said pressure transducer and X-Y information representing the position of the stylus;
said system further comprising a digitizing display which includes an electrostatic tablet which radiates electromagnetic radiation which is detected by said X-Y position sensing transducer in said stylus;
a receiver located proximate said electrostatic tablet in said pen-based computer system, for receiving a multiplexed data stream transmitted from said stylus;
whereby an event of contacting said pressure transducer on the surface of said electrostatic tablet and establishing an X-Y position of said stylus with respect to said electrostatic tablet are transmitted from said stylus to said receiver;
a second transmitter in said digitizing display, in said pen-based computer system, for transmitting information to said stylus;
a second receiver in said stylus, for receiving information from said second transmitter in said digitizing display; and
a utilization device in said stylus, coupled to said second receiver, for using information received from said digitizing display.

5,349,140

MICROPHONE WINDSCREEN

Lawrence R. Valenzin, 3130 Berkshire Ct., Pleasanton, Calif. 94588

Filed Aug. 7, 1992, Ser. No. 926,911
Int. Cl.[5] G10K *13/00*
U.S. Cl. 181—158 4 Claims



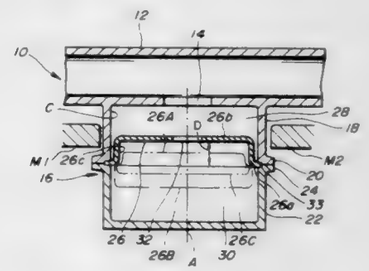
1. A windscreen for a remote microphone used for a mobile two-way radio in which said microphone is imbedded in a microphone housing having an exterior surface, a microphone located within said housing, and a channel between said microphone and the exterior surface of said housing said channel thereby forming an opening in said exterior surface of the housing which windscreen comprises the combination of a sound absorbent material which is a foamed plastic, a Velcro affixed to said sound absorbent material and a mating Velcro fastener affixed to the exterior surface of a microphone housing surrounding the opening in the exterior surface of a microphone housing, said Velcro and said mating Velcro fastener cooperating to retain the sound absorbent material in a demountable fashion over the opening in the exterior surface of a microphone housing formed by the channel leading from the exterior surface of the housing to the microphone.

5,349,141

RESONATOR TYPE SILENCER HAVING PLURAL RESONANCE CHAMBERS

Hidehiko Horibe, Asaka, and Yuuta Usui, Sakado, both of Japan, assignors to Tsuchiya Mfg. Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1993, Ser. No. 110,828
Claims priority, application Japan, Aug. 31, 1992, 4-066735[U]
Int. Cl.[5] E04F *17/04*
U.S. Cl. 181—224 9 Claims



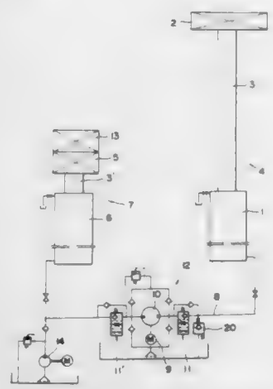
1. A resonator type silencer, comprising:
a duct member through which a gas passes, said duct member having an opening formed through a wall thereof;
a base member securely and sealingly connected with said duct member and formed of a plastic, said base member being formed generally cup-shaped and having an end peripheral portion defining an opening, an inside of said base member being communicated with an inside of said duct member through the opening of said duct member;
a generally cup-shaped cover member formed of a plastic and having an end peripheral portion defining an opening, the end peripheral portion of said cover member being in tight contact with the end peripheral portion of said base member to form a sealed chamber; and
a partition plate disposed between said base member and cover member to divide said sealed chamber into a first resonance chamber defined by said base member and a second resonance chamber defined by said cover member, said partition plate having a central section, and a peripheral section integrally connected with said central section, said central section being axially separate from said peripheral section, said peripheral section being securely put between the end peripheral portions of the said base member and said cover member, said partition plate being formed at its central section with an opening through which said first and second resonance chambers are in communication with each other.

5,349,142

ENERGY CONSERVATION TYPE HYDRAULIC ELEVATOR AND SPEED CONTROL METHOD OF HYDRAULIC ELEVATOR

Fuminori Hasegawa, Tokyo, Japan, assignor to Kaisei Kogyo K.K., Tokyo, Japan

Division of Ser. No. 584,044, Sep. 18, 1990, abandoned. This application Nov. 19, 1992, Ser. No. 978,462
Claims priority, application Japan, Apr. 25, 1990, 2-109803
Int. Cl.[5] B66B *9/04*
U.S. Cl. 187—110 12 Claims



2. An energy conservation type hydraulic elevator comprising:
a main elevator having a main cylinder and a main ram mounted with a cage for carrying a load;
a balance elevator having a subcylinder and a subram;
a fluid path in communication with both of said main cylinder and said subcylinder;
a first pump located along said fluid path, wherein said first pump can be driven by a motor and by fluid pressure in said fluid path, wherein when said first pump is driven by a motor, said first pump increases hydraulic pressure in at least a portion of said fluid path;
wherein when said first pump is driven by fluid in said fluid path, said pump extracts power from said fluid;
wherein a three-phase motor is connected to said first pump, said three-phase motor acting as driving means driving said first pump to increase hydraulic pressure in at least a portion of said fluid path, said three-phase motor also acting as power generating means for generating power such that when said first pump is driven by fluid in said

fluid path, said first pump drives said three-phase motor as a generator; and

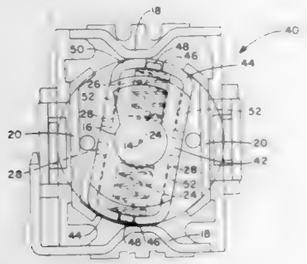
the energy conservation elevator further including a second pump communicating with said fluid path, said second pump connected to said fluid path at a location between the first pump and the subcylinder.

5,349,143

REVERSIBLE ELECTRICAL SWITCH

John M. Houser, Stow, Ohio, assignor to Lucerne Products, Inc., Hudson, Ohio

Filed Jan. 19, 1993, Ser. No. 5,618
Int. Cl.[5] H01H *1/12, 19/54, 21/76*
U.S. Cl. 200—11 J **13 Claims**



4. A switch, comprising:

first and second stationary contacts;

a rotor reciprocatingly maintained between said stationary contacts;

a U-shaped contact received on an end of said rotor, said U-shaped contact having an arcuate member between two legs;

springs means interposed between said rotor and U-shaped contact for urging said U-shaped contact into engagement with said stationary contacts; and

drive means interengaging said rotor and U-shaped contact for inhibiting relative movement between said U-shaped contact and said rotor when said rotor moves said U-shaped member across said stationary contacts, said drive means comprising a pair of slots on opposite sides of said arcuate member and a pair of pins extending from said rotor, said pins mating with said slots.

5,349,144

TRANSFORMER CONNECTOR

James B. Baragar, Mississauga, Canada, assignor to Marglass Industries Limited, Ontario, Canada

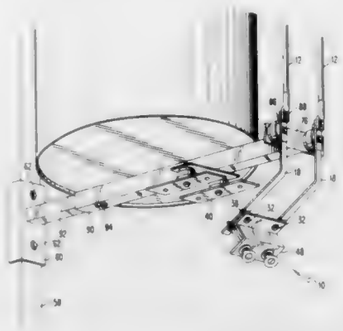
Filed Oct. 22, 1992, Ser. No. 965,846
Int. Cl.[5] H01R *13/00;* **H01H** *3/00, 9/26*
U.S. Cl. 200—18 **33 Claims**

1. A connector for installation between secondary leads of a pole-mounted transformer and service leads, comprising:

a pair of spaced apart switches, each switch having open and closed positions for electrical connection of paired secondary and service leads when in the closed position and for electrical isolation of the paired secondary and service leads when in the open position; and wherein:

each switch comprises a rigid conductive member paired with a flexible conductive cable and a releasable fastener for electrical connection of the cables to maintain the switch in the close position; and

further comprising:



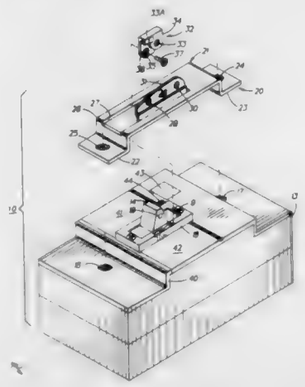
a spacer secured between the flexible cables to preclude electrical connection therebetween when each switch is in the open position.

5,349,145

CIRCUIT BREAKER OPERATING HANDLE INTERLOCK

Joseph B. Kelaita, Jr., Bristol; Roger N. Castonguay, Terryville, and Edwin J. Collin, Southington, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Aug. 2, 1993, Ser. No. 100,400
Int. Cl.[5] H01H *9/28*
U.S. Cl. 200—43.15 **19 Claims**



1. A handle locking unit for a molded case circuit breaker comprising:

a base plate adapted for positioning on a top surface of a circuit breaker cover;

an elongated rectangular slot formed in said base for receiving a circuit breaker operating handle;

an arcuate ramp upstanding from said base and having a top surface configured to conform to a radial path traversed by a circuit breaker operating handle; and

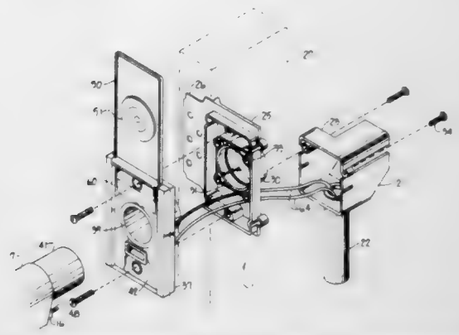
fastening means on said arcuate ramp arranged for attachment to a circuit breaker operating handle, said fastening means moving along said arcuate ramp when a circuit breaker operating handle is moved from ON and OFF positions.

5,349,146

COMBINATION ELECTRICAL AND SUCTION HOSE WALL OUTLET

Kurtis R. Radabaugh, Ponca City, Okla., assignor to Lindsay Manufacturing, Inc., Ponca City, Okla.

Filed Feb. 11, 1992, Ser. No. 833,979
Int. Cl.[5] H01H *3/20;* **A47L** *5/38;* **H01R** *4/60*
U.S. Cl. 200—61.6 **21 Claims**



1. A combination electrical and suction hose outlet assembly for a central vacuum cleaning system comprising:

a) wall valve means for connecting a remote vacuum cleaner suction hose to a central vacuum system fixed suction hose conduit and having an open ended outlet tube;

b) a high voltage outlet plug receptacle connected to high voltage building power supply line leads and for connection to a remote vacuum cleaner suction hose power supply line; and

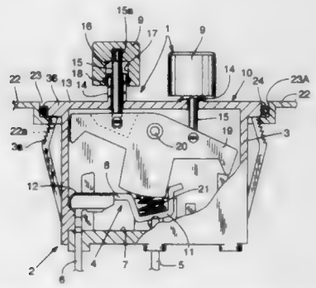
c) circuit means in said assembly for connection to said high voltage building power supply line leads and to low voltage power control lines extending to a central vacuum system motor controller, said circuit means sensing an initiation of current flow through a high voltage hose power supply line and having a rectifier means for providing a start signal to said low voltage power control lines for start of said motor controller.

5,349,147

PROTECTION DEVICE AGAINST WATER SPLASHES FOR ELECTRIC SWITCHES AND THE LIKE

Cesare Gallone, Via Milano 27, 20010 Cornaredo (MI), Italy

Filed Jul. 19, 1993, Ser. No. 93,470
Claims priority, application Italy, Feb. 26, 1993, MI93U000159
Int. Cl.[5] H01H *19/06*
U.S. Cl. 200—302.3 **3 Claims**



1. A water-splash protected electric switch apparatus comprising:

a casing of insulating material and fixed contacts housed within the casing and a movable contact element within the casing, movable between opening and closure conditions in order to respectively break and restore electrical continuity between said contacts;

a pair of control push buttons disposed externally of the casing for controlling displacement of the movable contact element;

a sealing structure for preventing external agents from penetrating into the casing;

said sealing structure comprising a closure wall in sealed relation with a front side of the casing, said closure wall having a pair of guide collars projecting externally of the wall;

a pair of transmission rods secured within and mounted for reciprocation within respective ones of said guide collars;

a rocking element within the casing operatively connected to the contact element for controlling movement of the contact element between closure and opening conditions, said transmission rods being operatively connected to said rocking element; and

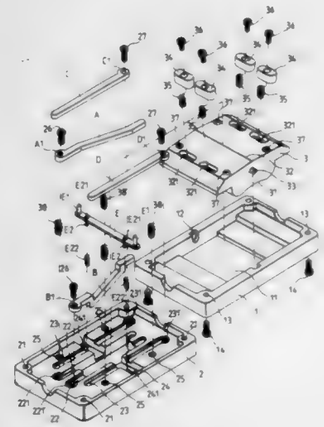
said pair of control push buttons being operatively connected to respective ones of said transmission rods and each push button including a perimetric wall which fits about a guide collar receiving the transmission rod and a seal sealing the perimetric wall to its associated collar.

5,349,148

CONTROL SWITCH FOR ELECTRIC WINCH CABLE

Michael Hung, 9-16, Nan Kan Hsia, Nan Kan, Lu Chu Hsiang, Tao Yuan County, Taiwan

Filed Aug. 19, 1993, Ser. No. 109,056
Int. Cl.[5] H01H *13/14*
U.S. Cl. 200—562 **5 Claims**



1. A control switch, comprising:

a top cover having a central hole, said central hole having an inner wall defining two opposite edges, said two opposite edges having respective positioning grooves;

a bottom cover mating with said top cover, said bottom cover having an inside surface, and said inside surface having edges, two central elongated grooves extending longitudinally at the center of said bottom cover, two side elongated grooves extending longitudinally at respective sides said central elongated grooves, a lateral groove extending laterally at the center of said bottom cover, a screw hole at one end of each of said central and side elongated grooves, a plurality of spring positioning holes along said edges of said inside surface, and a spring positioning hole at each end of said lateral groove;

a control button in said central hole of said top cover having a top button surface, a V-shaped bottom surface having opposite sides, opposite button sides each having a retaining pin, a plurality of first conducting plates securely mounted on said opposite sides of said V-shaped bottom

surface, and a plurality of spring positioning holes in said V-shaped bottom surface corresponding to said plurality of spring positioning holes along said edges of said inside surface of said bottom cover;

a spring disposed in each of said spring positioning holes along said edges of said inside surface of said bottom cover and the corresponding said spring positioning holes of said V-shaped bottom surface;

two second conducting plates for connection to a DC voltage source, a first one of said second conducting plates having a lateral bend therein and one end provided with a lock hole, and a second one of said second conducting plates having a lateral bend therein, a downward bend therein and one end provided with a lock hole, wherein said second conducting plates are disposed in said two central elongated grooves so as to cross and are secured therein by screws engaging said lock holes thereof with said screw holes of said central elongated grooves;

two third conducting plates for connection to a motor, wherein each of said third conducting plates is substantially flat, has one end provided with a lock hole, is disposed in a respective one of said side elongated grooves parallel with the other of said third conducting plates and secured by a screw engaging said lock hole thereof with one of said screw holes of said side elongated grooves;

a contacting plate located in between said two second conducting plates and disposed in said lateral groove in said bottom cover, said contacting plate having a top having a supporting post at each end of said contacting plate and a bottom having two retaining posts, each said retaining post further protruding upwardly from said top, and each said retaining post having a spring thereon positioned in a said spring positioning hole of said lateral groove;

wherein said retaining pins on said button sides butt against said supporting posts on said contacting plate, and said control button is movable between an off position wherein said retaining posts of said contacting plate engage said third conducting plates and two on positions wherein said retaining posts are disengaged from said third conducting plates and said first conducting plates contact and connect each of said second conducting plates with a respective one of said third conducting plates.

5,349,149

DUAL-PURPOSE FLUID FOR CUTTING AND ELECTRICAL DISCHARGE MACHINING

Harumitsu Shiraki; Hiroyasu Sohtome; Kiyoshi Suzuki, all of Kanagawa; Tetsutaro Uematsu, Toyama, all of Japan, and Lao-Sou Su, Racine, Wis., assignors to Castrol Limited Burmah Castrol House, Swindon, England

Filed Apr. 1, 1992, Ser. No. 844,648

Claims priority, application Japan, Oct. 4, 1989, 1-259772

Int. Cl.[5] B23H *1/08*

U.S. Cl. 219—69.14 **12 Claims**

1. A machining fluid comprising:

from 10 to 80% by weight of a water soluble organic compound selected from the group consisting of ethylene glycols having the formula

$$HO—(CH_2—CH_2—O)_n—H$$

where n=1 to 24, propylene glycols having the formula

$$HO—(CH_2—CH(CH_3)_n—H$$

where n=1 to 24, glycol monoethers having the formula

$$RO—(CH_2—CH_2—O)_n—H$$

where R is an alkyl group having from 1 to 8 carbon atoms or an aryl group and n=1 to 10, and polyoxyethylene fatty acid esters having the formula

$$R_2—COO—(CH_2CH_2)_m—H$$

where R_2 is selected from the group consisting of aryl and C_{17} to C_{22} alkyl, and m=9 to 20; and

the balance of the composition comprising deionized water having an electrical resistivity of at least 1×10^6 ohm cm.

5,349,150

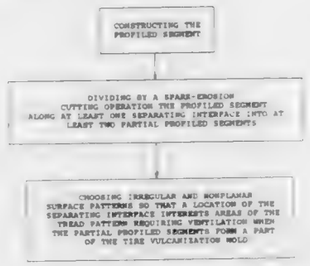
METHOD OF MANUFACTURE OF A PROFILED SEGMENT

Norbert Jachowsky, Huenfeld, Fed. Rep. of Germany, assignor to Maschinenbau Herbert GmbH & Co., Huenfeld, Fed. Rep. of Germany

Division of Ser. No. 736,297, Jul. 29, 1991, Pat. No. 5,261,804. This application Jul. 30, 1993, Ser. No. 100,614

Int. Cl.[5] B23H *9/00*; **B29C** *33/00*

U.S. Cl. 219—69.17 **3 Claims**



1. A method for the manufacture of a profiled segment which forms a part of a tire-vulcanization mold, comprising the steps of constructing a one piece, annular, profiled segment having a tread pattern formed on a radially inner surface thereof; and, thereafter, dividing the one piece, annular, profiled segment along at least one separating interface having conforming irregular and nonplanar opposing surface patterns extending generally parallel to a plane of rotation of the tire vulcanization mold into at least two partial profiled segments so that said partial profiled segments will fit together only when said irregular and nonplanar surface patterns directly oppose one another.

5,349,151

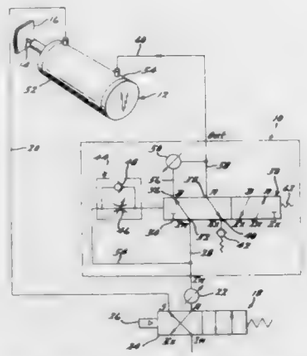
LOW IMPACT FLOW CONTROL DEVICE

Ronald J. Eisbrenner, Shelby Township, Macomb County, and George V. Fantazian, Farmington Hills, both of Mich., assignors to Savair Inc., St. Clair Shores, Mich.

Filed Feb. 8, 1993, Ser. No. 14,613

Int. Cl.[5] B23K *11/00*

U.S. Cl. 219—89 **20 Claims**



1. A pressure control system for regulating a pressurized fluid between a supply source and a predetermined lower second pressure level, said pressurized fluid being supplied by said supply source to a cylinder that actuates a work performing device into engagement with a workpiece, said pressure control system comprising:

regulating means in fluidic communication with said supply source and said cylinder for regulating fluid flow from said supply source to said cylinder, said supply source having a first supply source pressure level, said regulating means being operable between a first position and a second position such that said cylinder is selectively in fluidic communication with said supply source when said regulating means is in both said first and second positions;

first means in fluidic communication with said regulating means and said cylinder for reducing the pressure of said pressurized fluid supplied to said cylinder from said first supply source pressure level to said second predetermined lower pressure level when said regulating means is in said first position, such that said pressurized fluid is delivered to said cylinder at said second predetermined lower pressure level; and

second means in fluidic communication with said regulating means for urging said regulating means from said first position to said second position once said work performing device engages said workpiece, such that said pressurized fluid is delivered to said cylinder at said first supply source pressure level;

whereby said pressurized fluid is at said second predetermined lower pressure level when said regulating means is in said first position so as to stroke said work performing device into low impact engagement with said workpiece, and said pressurized fluid is at said first supply source pressure level when said regulating means is in said second position so as to increase an output load generated by said cylinder on said workpiece, said first supply source pressure level being higher than said second predetermined lower pressure level.

5,349,152

PROCESS FOR THE ELECTRIC WELDING OF TWO WELD PARTS

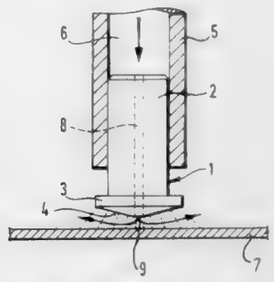
Wolf Renner, Giessen, Fed. Rep. of Germany, assignor to Emhart, Inc., Newark, Del.

Filed Jan. 7, 1993, Ser. No. 1,364

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1992, 4200199

Int. Cl.[5] B23K *9/20, 11/00*

U.S. Cl. 219—99 **9 Claims**



1. A method of supplying a protective fluid to a welding gap between two metal parts for displacing contaminants therefrom during welding comprising the steps of:

providing an electrode having a bore centrally located therein;

providing a supply of protective fluid communicated with said bore;

providing a first weld part comprising a solid stud having a generally cylindrical body with an end surface, said body having an axial bore therethrough opening into said end surface, and said end surface having an arc-focusing portion surrounding said bore, said portion extending outwardly from said cylindrical body further than the circumferential extremity of said end surface;

providing a second weld part having a substantially flat surface to which said first weld part is to be attached;

applying said electrode to said first weld part to hold said first and second weld parts in proximity, the bore in said electrode being aligned with the bore in said first weld part and said arc-focusing portion being disposed in close proximity to said surface of said second weld part; and

supplying said protective fluid through said aligned bores to flush contaminants from the gap between said weld parts as the welding arc is drawn therebetween, said fluid being directed by said portion into the region of arc ignition between said portion and said second weld part.

5,349,153

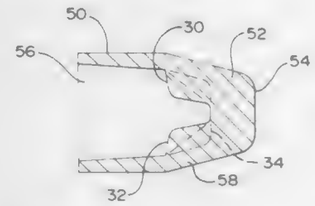
SPOT WELDING ELECTRODE AND METHOD FOR WELDING COATED METALS THEREWITH

Bryan Prucher, 32 N. Main, Clarkston, Mich. 48016

Filed Sep. 28, 1992, Ser. No. 952,051

Int. Cl.[5] B23K *11/11, 11/30*

U.S. Cl. 219—120 **12 Claims**



1. A spot welding electrode comprising:

(a) a housing having an open end and a closed end the housing having a cavity formed therein partially extending from the open end toward the closed end;

(b) a mounting portion for mounting to an electrode adaptor, the mounting portion being disposed proximate the open end of the housing;

(c) a tip portion, the tip portion being integral with the mounting portion and being disposed proximate the closed end of the housing, the tip portion having a cooling wall and an integral end wall surrounding and defining the cavity within the tip portion, the tip portion having an outer surface and an inner surface, the inner surface being substantially parallel to the outer surface; and

wherein the cavity, the cooling wall, the end wall and the parallel surfaces of the tip portion cooperate to define a non-alloying contact surface.

5,349,154

DIAMOND GROWTH BY MICROWAVE GENERATED PLASMA FLAME

Alan B. Harker, and Ira B. Goldberg, both of Thousand Oaks, Calif., assignors to Rockwell International Corporatoin, Seal Beach, Calif.

Division of Ser. No. 778,045, Oct. 16, 1991, abandoned. This application Dec. 17, 1992, Ser. No. 994,060

Int. Cl.[5] B23K *10/00*

U.S. Cl. 117—102 **13 Claims**

1. A method of growing a high quality diamond film, comprising the steps of:

providing a tuned microwave cavity;

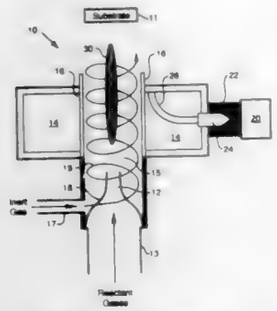
extending a gas flow tube through said tuned microwave cavity, said flow tube having an inner wall;

injecting a flow of reactant gases into said flow tube;

injecting a helical swirl of inert gas into said flow tube, said swirl of inert gas surrounding said flow of reactant gases

and providing a barrier layer between said reactant gases and said flow tube wall;

directing microwave energy into said tuned microwave cavity to generate a reactant gas plasma in said flow tube, said swirl of inert gas preventing migration of said plasma to said flow tube wall;



producing a plasma flame extending from said flow tube without contacting said flow tube wall; and

impinging said plasma flame on a substrate for growing said high quality diamond film on said substrate.

5,349,155

INSULATING MATERIAL FOR WIRING SUBSTRATE AND METHOD OF PRODUCING MULTI-LAYERED WIRING SUBSTRATE

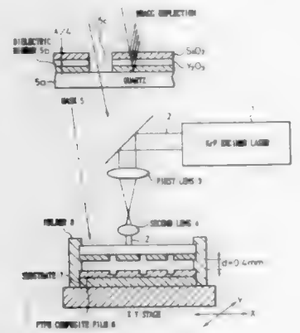
Yasuo Yamagishi, and Tamotsu Owada, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 15, 1993, Ser. No. 5,105

Claims priority, application Japan, Jan. 17, 1992, 4-006105; Jan. 20, 1992, 4-007926

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.71 **5 Claims**



1. A method of producing a multi-layered wiring substrate comprising alternately laminating a wiring layer and an insulating layer made of insulating material on a rigid support substrate, said insulating material being a porous perfluorocarbon polymer film having void portion impregnated with a thermally set resin having a benzocyclobutene ring.

5,349,156

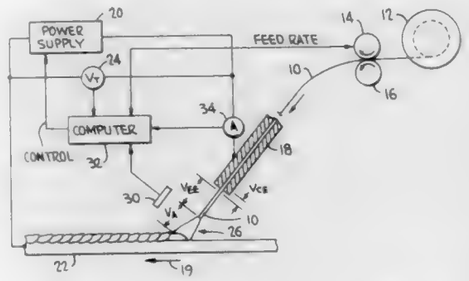
SENSING OF GAS METAL ARC WELDING PROCESS CHARACTERISTICS FOR WELDING PROCESS CONTROL

R. Bruce Madigan, Longmont, and Timothy P. Quinn, Boulder, both of Colo., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Continuation-in-part of Ser. No. 891,840, Jun. 1, 1992, Pat. No. 5,221,825. This application May 21, 1993, Ser. No. 65,393

Int. Cl.[5] B23K *9/095*

U.S. Cl. 219—130.01 **16 Claims**



1. A method for analyzing an electric arc welding process employing a consumable electrode, said welding process comprising the steps of:

advancing a continuous consumable electrode to a welding location on a workpiece; and

connecting an output of a welding power supply providing a nominal output welding voltage and welding current between an electrode contact member in electrical contact with the electrode and the workpiece, such that a light-emitting arc exists between the electrode and the workpiece and the metal of the electrode is deposited on the workpiece as the electrode is advanced toward the welding location;

wherein said method of analyzing comprises the steps of:

disposing a light-sensitive sensor in the vicinity of the arc, such that light from the arc is incident on the sensor, and whereby the sensor provides an output signal responsive to the intensity Ψ of light from the arc;

monitoring one or both of the welding current supplied to the arc and the welding voltage across the electrode contact member and the workpiece; and

analyzing said output signal from said sensor and said one or both of said monitored current and/or voltage to determine the mode of metal transfer from said electrode to said workpiece.

5,349,157

INVERTER POWER SUPPLY FOR WELDING

George D. Blankenship, Chardon, Ohio, assignor to The Lincoln Electric Company, Cleveland, Ohio

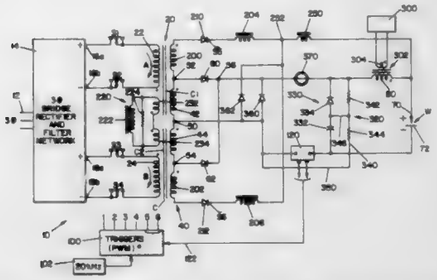
Filed Jan. 4, 1993, Ser. No. 132

Int. Cl.[5] B23K *9/10*

U.S. Cl. 219—130.32 **28 Claims**

1. In a high frequency power supply for supplying a welding current through a choke to a welding station including an electrode element and a workpiece element, said power supply including a transformer means for creating a first current pulse in a first secondary winding and a second current pulse in a second secondary winding and means for connecting said secondary windings to pass said current pulses through said choke and across said elements, the improvement comprising: said transformer means including a first transformer with a first core and means for receiving on said first core said first secondary winding with said first core being magnetized in a first flux direction upon creation of said first pulse, a second transformer with a second core: and means for receiving on said second core said second secondary winding with said second

core being magnetized in a second flux direction upon creation of said second pulse and core reset means for magnetizing said



second core in the flux direction opposite to said second direction when said first core is magnetized in said first direction.

5,349,158

TORCH FOR CONTINUOUS-WIRE ELECTRIC WELDING MACHINES, GAS- OR WATER-COOLED

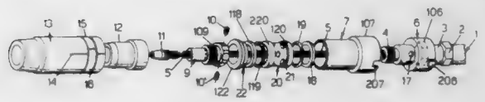
Antonio Mari, Via del Fresatore 1, Bologna, Italy

Filed Sep. 21, 1992, Ser. No. 947,476

Claims priority, application Italy, Sep. 25, 1991, GE91U000043

Int. Cl.[5] B23K *9/173*

U.S. Cl. 219—137.62 **11 Claims**



1. A torch for continuous-wire electric welding machines, either gas- or water-cooled, comprising:

a torch body terminating in a stepped outwardly-decreasing configuration which, beginning from the innermost maximum cross-section portion, comprises;

a collar of polygonal shape,

a cylindrical portion of round cross section, and

a threaded end portion;

a gas-diffusing nozzle screwed onto said threaded end portion of said torch body;

a wire-guiding outlet spout screwed to said gas-diffusing nozzle;

a protecting bush firmly mounted on said nozzle for protecting said nozzle and a portion of said spout; and

surrounding portions surrounding said intermediate and said cylindrical portion of said torch body, said cylindrical portion being cooled in any suitable manner by at least one of forced circulation of water and the circulation of gas required for welding, wherein an outer one of said surrounding portions, composed of a material which is a good thermal conductor and wear-resistant, being coupled at one end to said collar with the interposition of an insert and having frictionally fitted thereon an end portion, constructed as an elastic clamp, of a housing which encloses and protects said nozzle and said spout, heat induced by welding operation into said housing being rapidly dissipated from said outer one.

5,349,159

CONSUMABLE-ELECTRODE AC GAS SHIELD ARC WELDING METHOD AND APPARATUS THEREFOR

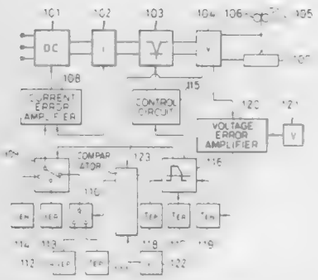
Tsuneo Mita, Hiratsuka; Tsuneo Shinada, Yokosuka, and Takayuki Kashima, Fujisawa, all of Japan, assignors to Hitachi Seiko, Ltd., Japan

Division of Ser. No. 556,096, Jul. 23, 1990, Pat. No. 5,225,660. This application May 24, 1993, Ser. No. 64,987

Claims priority, application Japan, Jul. 21, 1989, 1-187377; Apr. 17, 1990, 2-101401; Apr. 17, 1990, 2-101402; Apr. 17, 1990, 2-101403

Int. Cl.[5] B23K *9/09*

U.S. Cl. 219—137 PS **4 Claims**



1. A consumable electrode gas shield AC arc welding method that applies AC power across the consumable electrode and a base metal, comprising steps of repeating periodically a sequence of a first period through which the electrode is kept positive and a current of a first level higher than a specified critical level is furnished, a second period through which the electrode is kept positive and a current of said first level is reduced to a second lower level, and a third period through which the electrode is kept negative and a current at a third level is furnished; and furnishing a current of fourth level higher than said first level until the arc voltage exceeds a predetermined level if the arc voltage between said consumable electrode and the base metal drops below the predetermined voltage during said first period.

5,349,160

IRON COMPRISING A HUMIDITY DETECTOR FOR CONTROLLING THE HEATING ELEMENT AND ALSO PROVIDING A MOTION INDICATION

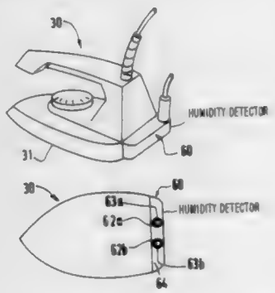
Jean-Pierre Hazan, Sucy En Brie; Rémy Polaert, Villecresnes, and Jean-Louis Nagel, Limeil Brevannes, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 16, 1992, Ser. No. 914,987

Claims priority, application France, Jul. 19, 1991, 91 09132

Int. Cl.[5] H05B *1/02*; **D06F** *75/08*

U.S. Cl. 219—250 **10 Claims**



1. An iron comprising a heating element (97), heating-control means (96) for the heating element, and a substantially flat

soleplate (**31**) adapted to slide on a fabric, wherein the iron has a humidity detector (**60**) comprising:

means (**62***a*, **62***b*) for measuring a resistivity of the fabric, which means are flush with the soleplate of the iron to enable it to be brought into contact with the fabric and produce an electric signal (I) in response to movement of the said means (**62***a*, **62***b*) on the surface of the fabric,

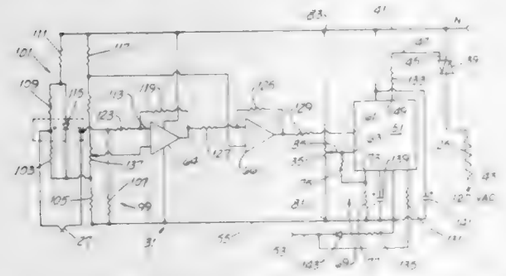
means (**99**), operatively associated with said heating control means (**96**), for determining an average degree of humidity of the fabric by measuring said electric signal (I) produced by said means (**62***a*, **62***b*) resulting from variations of the resistivity caused by a movement of the iron over the fabric.

5,349,161

HEAT GUN WITH IMPROVED TEMPERATURE REGULATOR

Karl H. Bockholt, Delavan, Wis., assignor to Master Appliance Corporation, Racine, Wis.

Filed Sep. 30, 1992, Ser. No. 954,649
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—385 **13 Claims**



1. In a gun-like device emitting heated air at a variable temperature selected by the user and having a temperature regulator including (a) an amplifier, (b) a thyristor for controlling electrical power to a heater assembly and (c) a variable resistor for selecting an air temperature to be maintained by the regulator, the improvement wherein:

the regulator includes an integrated circuit emitting gating pulses controlling the thyristor;

the amplifier is a constant gain reference amplifier;

the variable resistor is a three-terminal potentiometer having a pair of fixed terminals and an adjustment terminal having a control voltage thereon, the adjustment terminal being connected to the integrated circuit;

the fixed terminals are connected between a neutral bus and a voltage bus having a substantially constant voltage therebetween;

the integrated circuit has a voltage-modulated pin;

the adjustment terminal is connected to the voltage-modulated pin, thereby applying the control voltage to the pin; and

the control voltage is a function of the percentage of the potentiometer resistance connected between the voltage bus and the pin.

5,349,162

FAULT DETECTION METHOD AND APPARATUS FOR A DOMESTIC APPLIANCE

Ronald W. Holling, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 5, 1993, Ser. No. 43,949
Int. Cl.[5] H05B *3/00*
U.S. Cl. 219—453 **16 Claims**

1. A cooking appliance, comprising:

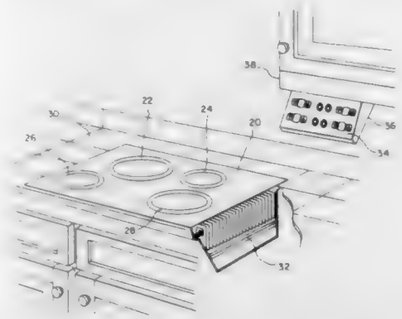
a heating element; and

an appliance control unit having an element switch means operatively connected to said heating element for activating and deactivating said heating element of said cooking appliance, said element switch means including:

a first power switching device,

a second power switching device connected in series with said first power switching device, and

detection means for continuously detecting a failure of one of said first and second power switching devices



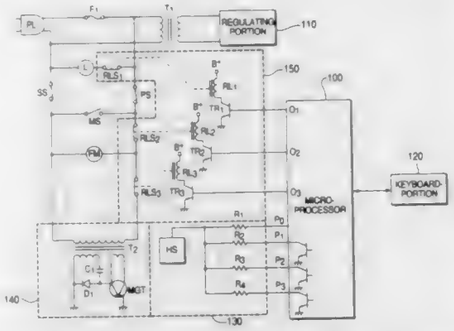
during the time when said element switch means is set to deactivate said heating element, said detection means being operatively connected to to said first and second power switching devices, whereby the detection of a failure of one of said first and second power switching devices causes said element switch means to disable said heating element during the period of such failure.

5,349,163

METHOD OF AUTOMATICALLY COOKING FOOD BY DETECTING THE AMOUNT OF GAS OR SMOKE BEING EXHAUSTED FROM A COOKING DEVICE DURING COOKING

Seong-Wan An, Suweon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation-in-part of Ser. No. 744,927, Aug. 14, 1991, Pat. No. 5,155,339. This application Jul. 14, 1992, Ser. No. 913,160
Claims priority, application Rep. of Korea, Aug. 17, 1990, 90-12692
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—492 **18 Claims**



1. A method for automatically cooking food in a cooker comprising a cooking chamber, an exhaust duct discharging gas generated in said cooking chamber and a gas sensor disposed in said exhaust duct, the method comprising the steps of:

setting an initialization operation upon applying electric power to the cooker and preselecting a cooking mode according to data received from a keyboard equipped in the cooker,

detecting a quantity of said gas sensed by said gas sensor every predetermined sampling time and storing said quantity in a microprocessor as a quantity value, when said cooking mode is in an automatic cooking mode;

determining a quantity value difference between the quantity value of a current sampling time and the quantity value of a sampling time immediately preceding said current sampling time;

determining whether said quantity value difference is less than a predetermined minimum value and cooking in a first heating mode when said quantity value difference is not less than said predetermined minimum value;

determining whether said quantity value difference is less than a predetermined maximum value and cooking in said first heating mode until said quantity value difference is not less than said predetermined maximum value;

detecting time taken for said quantity value difference to vary from said predetermined minimum value to said predetermined maximum value;

setting a first heating time period to equal the time taken for the quantity value difference to vary from said predetermined minimum value to said predetermined maximum value;

calculating a second heating time period by multiplying said first heating time period by a predetermined coefficient determined by certain parameters; and

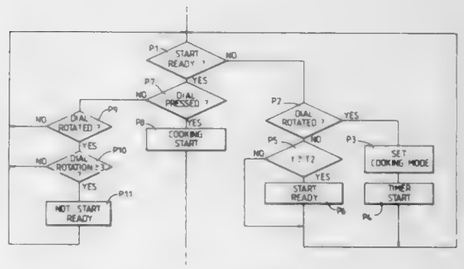
cooking in a second heating mode for said second heating time period.

5,349,164

COOKING APPLIANCE WITH MULTIFUNCTION KNOBS

Nobuaki Ohta, Aichi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 10, 1993, Ser. No. 58,267
Claims priority, application Japan, May 27, 1992, 4-134934; May 29, 1992, 4-138559
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—506 **8 Claims**



1. A cooking appliance comprising:

a) heating means for heating food;

b) an actuator having at least two kinds of function of actuation, a first actuation selecting a cooking mode among plural kinds of cooking modes in a menu, and a second actuation commanding that the selected cooking mode be started; and

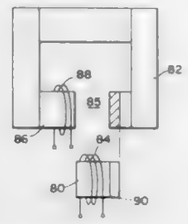
c) means, responsive to the first and second actuations of the actuator, for setting the cooking modes in plural kinds of menus based on the first actuation of the actuator, for determining the set cooking mode only when the second actuation being maintained for a first predetermined period greater than a shortest possible actuation duration unless the first actuation is performed again during the first predetermined period, in which case the controlling means setting a second cooking mode which is again set by the first actuation, the controlling means determining the second cooking set mode based on the second actuation being maintained for a second predetermined period from a point when the first actuation is performed again, for controlling the heating means based on the second determined cooking mode.

5,349,165

INDUCTION HEATER SYSTEM FOR FUSING PLASTICS

Frank A. Doljack, Pleasanton, Calif., assignor to Gas Research Institute, Chicago, Ill.

Filed Apr. 16, 1992, Ser. No. 868,876
Int. Cl.[5] H05B *6/10*
U.S. Cl. 219—633 **14 Claims**



1. A heater system comprising

a coupling member for producing fusion of members one to the other,

an eddy current, temperature self-regulating heater incorporated with said coupling member and having a regulated temperature to heat said member to fusion temperature below a temperature damaging to said coupling member,

said heater being comprised of a metallic structure which provides substantial resistance heating from skin effect when operated at high frequency,

a transformer having a soft magnetic core and primary and secondary windings disposable on said core,

means coupling said secondary winding to said heater structure,

said heater structure alone having a Q of between 0.5 and 5, said secondary winding having a reactance such that the ratio of its reactance to the resistance of the heater structure is between 1 and 20

a tool for applying heat to a load including at least said transformer core and said primary winding, and

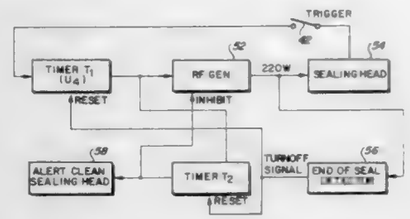
means for connecting said primary winding to a source of high frequency current.

5,349,166

RF GENERATOR FOR PLASTIC TUBING SEALERS

Junius E. Taylor, Phoenix, Ariz., assignor to Engineering & Research Associates, Inc., Tucson, Ariz.

Filed Oct. 31, 1991, Ser. No. 785,405
Int. Cl.[5] H05B *6/10*
U.S. Cl. 219—643 **18 Claims**



1. Apparatus for melting and sealing tubing placed between a pair of electrically conducting jaws movable to compress the tubing therebetween, said apparatus comprising in combination:

a) means for generating a radio frequency signal in response to compression of the tubing by a pair of electrically conducting jaws;

b) means for amplifying said radio frequency signal to a predetermined power level;

c) means for applying the amplified radio frequency signal across said pair of electrically conducting jaws;

d) means for regulating the operation of said generating

means to selectively apply a predeterminable level of power across said pair of electrically conducting jaws, said regulating means including means for detecting a predetermined impedance across said pair of electrically conducting jaws; and

e) means for automatically terminating operation of said generating means upon detection of said predetermined impedance across said pair of electrically conducting jaws in response to collapsing of the tubing due to melting of the tubing.

5,349,167

INDUCTION HEATING APPARATUS WITH PWM MULTIPLE ZONE HEATING CONTROL

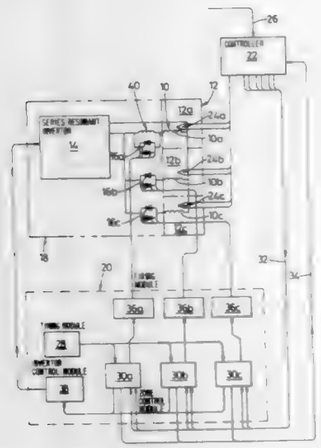
John H. Simcock, Worcestershire, Great Britain, assignor to Indecctotherm Europe Limited, Hereford, United Kingdom

Filed Aug. 2, 1993, Ser. No. 102,073

Claims priority, application United Kingdom, Aug. 6, 1992, 9216709.7

Int. Cl.[5] H05B *6/08*

U.S. Cl. 219—662 8 Claims



1. Induction heating apparatus including induction coil means operatively associated with a melt or other workload to be heated, said coil means being divided into a plurality of defined sections each associated with a respective zone of the workload in use; single power supply means for providing power input to said coil means with each said section being supplied in parallel; and control means for regulating the power applied to each said section for automatic regulation of the operating temperature in the respective associated zone: characterised in that the power supply means is a series resonant invertor operating to provide a medium frequency from approximately 50 Hz to approximately 10 kHz pulsed power output to the coil means at an instantaneously selected level which is the sum of the power requirements for all said zones at any instant of time; and in that the control means includes means operating to control the average power applied in each zone by pulse width modulation, said means switching from a nil or low power level to a high power level for a proportion of each successive preselected time periods, said proportion being determined by the power requirement in that zone as a function of its temperature.

5,349,168

MICROWAVEABLE PACKAGING COMPOSITION

Allan S. Wilen, Kernersville, N.C., assignor to Zeneca Inc., Wilmington, Del.

Continuation of Ser. No. 545,330, Jun. 27, 1990, abandoned. This application Aug. 3, 1993, Ser. No. 101,807

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—730 25 Claims

1. A microwaveable package comprising:

(A) a dielectric substrate substantially transparent to microwave radiation; and

(B) a coating on at least a portion of at least one surface of the substrate, said coating comprising a matrix comprised of a dielectric material having dispersed therein:

(i) a sufficient amount of particles of a microwave susceptor material whereby heat is generated when the coating is exposed to microwave radiation; and

(ii) a sufficient amount of particles of a blocking agent selected from the group consisting of calcium salts, lithopone, silica and titanium dioxide whereby when said coating composition is exposed to a preselected dosage of microwave radiation, the heat generated by the susceptor material is controlled within a preselected range.

5,349,169

MICROWAVE OVEN USING A PRECOATED SHEET STEEL AS WALLS OF AN INTERNAL CHAMBER THEREOF

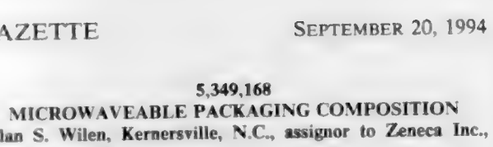
Yoshiharu Ueno, Neyagawa, and Masahiro Inoue, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 9, 1992, Ser. No. 942,177

Claims priority, application Japan, Dec. 27, 1991, 3-346171

Int. Cl.[5] H05B *6/64*

U.S. Cl. 219—756 4 Claims



1. A microwave oven comprising:

an internal chamber having walls comprised of a precoated sheet steel, wherein the precoated sheet steel includes

a sheet steel,

a first paint comprising strontium chromate dispersion-mixed with a resin and being applied to only one side of the sheet steel as a primer, said one side of the precoated sheet steel constitutes exterior surfaces of the walls of the internal chamber,

a second paint applied over the primer, and

a paint which is different than said first paint, applied over the other side of the sheet steel, said other side of the precoated sheet steel constitutes interior surfaces of the walls of the internal chamber; whereby the paints preventing corrosion of the microwave oven walls.

5,349,170

IMAGE-BASED DOCUMENT PROCESSING SYSTEM PROVIDING ENHANCED TRANSACTION BALANCING

Norman P. Kern, Birmingham, Mich., assignor to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 799,749, Nov. 22, 1991, abandoned, which is a continuation of Ser. No. 420,089, Oct. 10, 1989, abandoned. This application Feb. 17, 1993, Ser. No. 21,633

Int. Cl.[5] G06F *15/30*

U.S. Cl. 235—379 11 Claims

4. In an image-based transaction processing system, wherein each transaction includes debit and credit documents containing amounts, the method comprising:

capturing images of said documents;

extracting document data from said documents including document amounts;

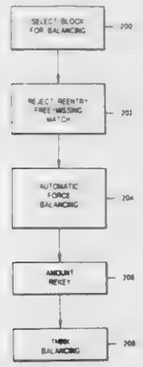
storing extracted document data in a data base;

processing extracted amounts from said documents in said data base to identify out-of-balance transactions;

transmitting the document images of a particular out-of-balance transaction along with corresponding extracted document data to a balancing workstation having a display;

providing a multi-window display of said particular out-of-balance transaction on the workstation display;

displaying in a first window of said multi-window display at



least a partial image of a selected credit document of said particular out-of-balance transaction;

displaying in a second window of said multi-window display at least a partial image of a selected debit document of said particular out-of-balance transaction;

displaying in at least one additional window of said multi-window display amounts from documents of said particular out-of-balance transaction;

providing a dialogue window as one of the windows of said multi-window display via which an operator can communicate with said system using said keyboard, and via which said system can communicate with an operator by displaying data in said dialogue window.

5,349,171

BAR CODE READER

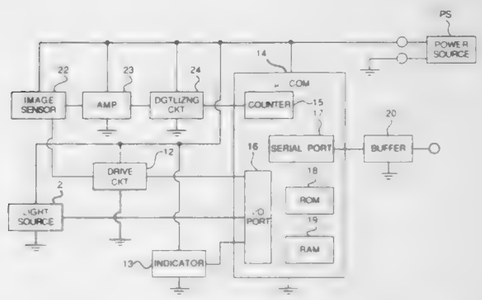
Seiichiro Tamai, Toyono; Keiichi Kobayashi, Higashiosaka; Hideki Imai, Minoo, and Takahiro Yamao, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 27, 1992, Ser. No. 919,906

Claims priority, application Japan, Jul. 26, 1991, 3-187357

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—462 9 Claims



1. In a bar code reader having a light source for lighting the bar code, an image sensor for receiving the reflected light from the bar code and producing an image signal, a drive circuit for driving the image sensor, an amplifier for amplifying the image signal, and a digitalizing circuit for digitalizing the amplified image signal and producing a digital signal representing the bar code, an improvement comprising:

said image sensor comprising light receiving elements formed in a CCD array which operates with an operating voltage (Vcc) less than 8 V;

said amplifier comprising first and second operational amplifiers each having one voltage source terminal connected to Vcc of 5 V and the other voltage source terminal connected to ground; and

said digitalizing circuit comprising a third operational amplifier having one voltage source terminal connected to Vcc of 5 V and the other voltage source terminal connected to ground.

5,349,172

OPTICAL SCANNING HEAD

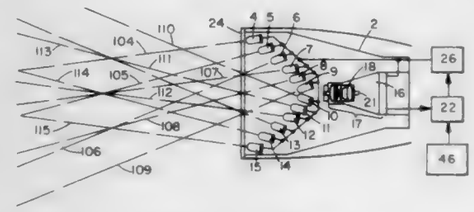
Alex Roustaei, 1696 Via Inspirar, San Marcos, Calif. 92069

Continuation-in-part of Ser. No. 843,266, Feb. 27, 1992, Pat. No. 5,291,009. This application Oct. 2, 1992, Ser. No. 956,646

The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 19 Claims



1. An optical scanning device comprising:

a printed circuit board having a front, a center and a rear portion;

an LED array having at least one trio of LEDs disposed at said front portion of said printed circuit board wherein each LED of said at least one trio is oriented to emit light at an angle different than other LEDs of said trio, said LED array projecting a reference fan of light for illuminating a bar code within a field of view to be read so that light is reflected therefrom;

a CCD detector disposed at said center of said printed circuit board for detecting a portion of reflected light from said bar code and generating an electrical signal in response thereto wherein said electrical signal is an analog representation of said bar code;

an optical assembly for receiving said reflected light and directing said reflecting light onto said CCD detector;

a conversion assembly for converting said electrical signal into â digital signal corresponding to said bar code; and

a voltage source for providing a driving voltage to said LED array, said CCD detector and said conversion assembly.

5,349,173

APPARATUS FOR CONTACTLESS DATA AND ENERGY TRANSMISSION

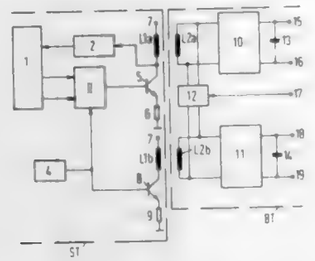
Bruno Scheckel, Ebersberg, and Robert Reiner, Unterhaching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 23, 1992, Ser. No. 872,825

Claims priority, application European Pat. Off., Apr. 23, 1991, 91106526.6

Int. Cl.[5] G06K *19/06*

U.S. Cl. 235—492 **15 Claims**



1. An apparatus for contactless data and energy transmission, comprising:

a stationary part having at least one coil for data and energy transmission, and an oscillator connected to said at least one coil for energy transmission;

a movable part having at least one coil for data and energy transmission, at least one rectifier means connected downstream of said at least one coil, and at least one charge capacitor connected to said at least one rectifier means for carrying a pulsating operating voltage;

one pair of said coils being used for energy transmission and one pair of said coils being used for data transmission;

said coils of said movable part being interchangeably operable by a modulator to permit either of said coils of said moveable part to be utilized for one of data and energy transmission; and

means disposed in said movable part for transmitting data from said movable part to said stationary part, by returning a portion of energy received through an applicable one of said coils of said movable part, modulated in accordance with a data signal, through another of said coils of said movable part.

5,349,174

IMAGE SENSOR WITH TRANSPARENT CAPACITIVE REGIONS

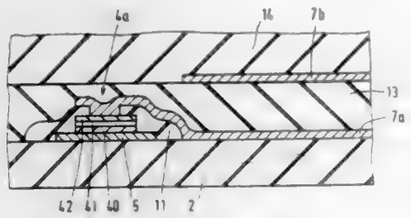
Cornelis Van Berkel, Brighton; Neil C. Bird, Horley; Oliver S. Davies, Reigate; Martin J. Edwards, Crawley; John M. Shannon, Whyteleafe, and Alan G. Knapp, Crawley, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 12, 1993, Ser. No. 46,415

Claims priority, application United Kingdom, May 6, 1992, 9209734.4

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.1 **14 Claims**



1. An image sensor comprising a transparent substrate supporting a two dimensional array of photosensitive and switching elements with switching signal conductors and data signal conductors connected to the photosensitive and switching elements for enabling individual photosensitive elements to be accessed, the photosensitive and switching elements and conductors being arranged such that at least half of the area of the image sensor is transparent during operation, characterized in that each photosensitive element is electrically coupled to a respective capacitor for storing charge generated as a result of light being incident on the photosensitive element, the capacitors being formed so as to be transparent and so as to occupy a significant part of the entire area of the array.

5,349,175

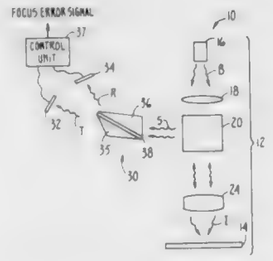
FOCUS SENSING APPARATUS USING ELECTRICAL AGC TO ENHANCE DIFFERENTIAL FOCUS ERROR SIGNAL

Ivan Prikryl, Colorado Springs, Colo., assignor to Applied Magnetics Corporation, Goleta, Calif.

Continuation-in-part of Ser. No. 597,428, Oct. 15, 1990, abandoned. This application Oct. 30, 1991, Ser. No. 785,302

Int. Cl.[5] G11B *7/00*

U.S. Cl. 250—201.5 **23 Claims**



1. A focus sensing apparatus comprising:

a source of radiation energy;

means for focusing radiation from said source upon an object to be reflected therefrom;

means for separating at least a portion of radiation reflected by said object into transmitted and reflected beams;

means for detecting the respective intensities of said transmitted and reflected beams;

means for producing a transmitted focus error signal based at least in part on said detected intensity of said transmitted beam;

means for producing a reflected focus error signal based at least in part on said detected intensity of said reflected beam;

means for adjusting said transmitted focus error signal to compensate for disturbances in said optical system;

means for adjusting said reflected error signal to compensate for disturbances in said optical system; and

means for combining said transmitted focus error signal and said reflected focus error signal to produce a differential focus error signal.

5,349,176

DEVICE FOR ACQUIRING DATA FROM A LIGHT BEAM AND A COMMUNICATION SYSTEM INCLUDING THE DEVICE WITH DUAL SENSOR FASTENED ON A STIFF FRAME

Reinhard H. Czichy, Noordwijkerhout, Netherlands, assignor to Agence Spatiale Europeenne, Paris Cedex, France

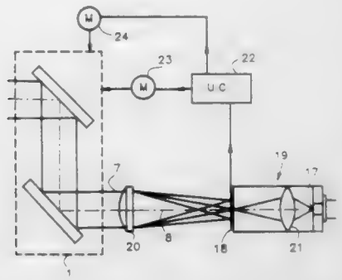
Filed Apr. 27, 1993, Ser. No. 52,753

Claims priority, application France, Apr. 27, 1992, 92 05193

Int. Cl.[5] H04B *10/00*

U.S. Cl. 250—206.2 **12 Claims**

1. A data acquisition device for acquiring data from a light beam, the device comprising a lens system, a stiff frame, a first sensor, and a second sensor, said first and second sensors being fastened on said frame in successive alignment on a common axis of the beam, the first sensor including, on the axis of the beam, a transparent zone, in particular an opening, that is transparent to at least a portion of the beam, thereby enabling the second sensor to be illuminated.



5,349,177

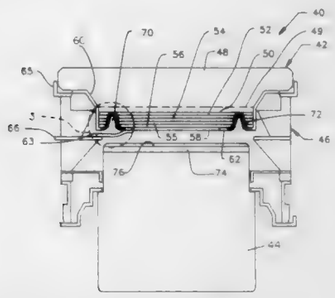
IMAGE INTENSIFIER TUBE HAVING A SOLID STATE ELECTRON AMPLIFIER

Nils I. Thomas, Roanoke, and Robert J. Field, Fincastle, both of Va., assignors to ITT Corporation, New York, N.Y.

Filed Feb. 22, 1993, Ser. No. 20,650

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214 VT **29 Claims**



1. An image intensifier tube, comprising:

photocathode means for producing electrons in response to received electromagnetic radiation, said photocathode means including absorptive means for absorbing said received electromagnetic radiation and a separate emissive means for emitting electrons;

solid state electron amplifier means for multiplying electrons produced by said photocathode means, wherein said solid state electron amplifier means is interposed between said absorptive means and said emissive means; and

imaging means for creating a visible image in response to electrons emitted from said emissive means.

5,349,178

IMAGE INTENSIFIER WITH PROTECTED IMAGE SENSOR

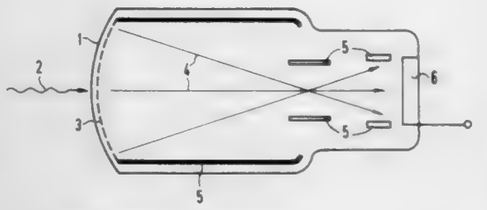
Detlef Mattern, Erlangen; Arnulf Oppelt, Spardorf, and Hartmut Sklebitz, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 22, 1993, Ser. No. 81,826

Claims priority, application European Pat. Off., Jun. 22, 1992, 92110505.2

Int. Cl.[5] H01J *31/50*

U.S. Cl. 250—214 VT **9 Claims**



1. An image intensifier comprising:

an evacuated housing;

an input luminescent screen disposed in said housing which produces electrons corresponding to radiation incident thereon;

means for focusing said electrons to produce a focused electron stream;

an image sensor disposed inside said housing at a side of said housing disposed opposite said input luminescent screen, said image sensor being damageable by electrons; and

a protective layer disposed on a side of said image sensor facing toward said input luminescent screen consisting of a material which decelerates electrons incident on said protective layer.

5,349,179

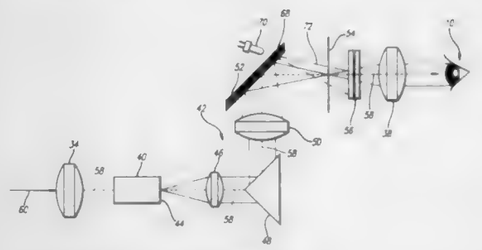
NIGHT VISION DEVICE WITH HOLOGRAPHIC RETICLE WHICH IS TRANSPARENT IN A FIRST CONDITION AND VISIBLY SUPERIMPOSED IN A SECOND CONDITION

Roland M. Morley, Tempe, Ariz., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Jul. 1, 1993, Ser. No. 86,522

Int. Cl.[5] G02B *23/10, 27/34*

U.S. Cl. 250—214 VT **24 Claims**



1. A viewing device comprising:

an objective lens through which light from a scene is received;

an eye piece through which an image of the scene is provided to a user of the device;

and an optical pathway extending between said objective lens and said eye piece;

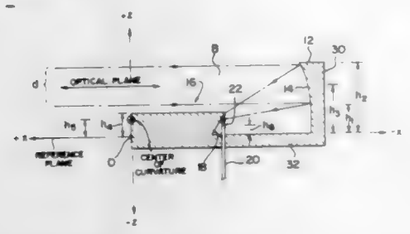
a holographic reticle disposed in said optical pathway and being substantially completely transparent in a first condition, in a second condition said holographic reticle providing a holographic reticle pattern visible in said eye piece and superimposed on the scene image.

5,349,180

WIDE FIELD STRIP-IMAGING OPTICAL SYSTEM

Arthur H. Vaughan, Sierra Madre, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 786,618, Nov. 1, 1991, Pat. No. 5,266,795.
This application Jul. 21, 1993, Ser. No. 89,460
The portion of the term of this patent subsequent to Nov. 24, 2010, has been disclaimed.
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.2 16 Claims



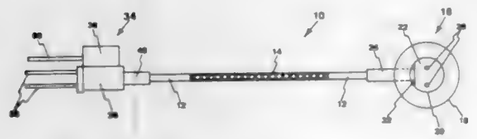
1. An optical system comprising:
a wide angle imaging means for imaging an object; and
virtual material stop means for eliminating aberrational effects of the wide angle imaging means.

5,349,181

FIBER OPTIC CHEMICAL SENSOR HAVING SPECIFIC CHANNEL CONNECTING DESIGN

Devinder P. Saini, Henderson, Nev., and Tommy J. Law, Tempe, Ariz., assignors to FCI-FiberChem, Inc., Las Vegas, Nev.

Filed Jul. 26, 1993, Ser. No. 98,125
Int. Cl.[5] N01J *5/16*
U.S. Cl. 250—227.14 10 Claims



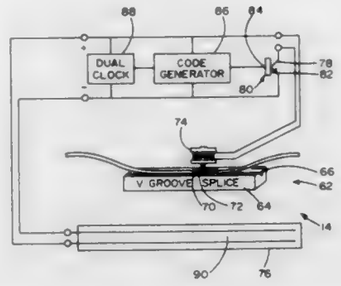
1. A fiber optic chemical sensor, comprising:
an optical fiber having a sensing region formed on a portion thereof;
a sensing detector housing defining a channel therein;
a sensing detector mounted in said sensing detector housing channel;
a first fiber guide tube extending into said sensing detector housing and communicating with said channel formed therein; wherein one end of said fiber extends into said first tube and is optically aligned with said sensing detector;
a light source having a channel formed therein and a light emitting region aligned with said channel;
a second fiber guide tube extending into said source channel; wherein the opposed end of said fiber extends into said second tube and is optically aligned with said source;
a reference detector mounted laterally on said source for receiving a portion of light emitted from said source.

5,349,182

FIBER OPTIC CABLE MOISTURE MONITORING SYSTEM

David E. Vokey, Bellingham, Wash.; Kenneth N. Sontag, Springfield, Canada, and Heinrich Kraft, Rodental, Fed. Rep. of Germany, assignors to Norscan Instruments Ltd., Winnipeg, Canada

Division of Ser. No. 868,658, Apr. 15, 1992, Pat. No. 5,262,639.
This application Nov. 16, 1993, Ser. No. 152,368
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—227.21 13 Claims



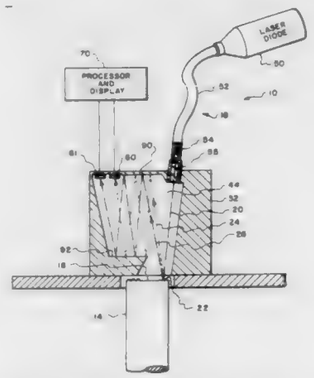
1. A moisture sensing signal generator comprising: an electrically operated code signal generating means for generating a fault signal in response to receipt of electrical energy, optical modulator means coupled to the code signal generating means for generating a coded optical signal in response to generation of the fault signal, and electrolytic cell means connected electrically to the code signal generating means, the cell means being inactive when dry and being activated in response to contact with water to generate electrical energy and to supply electrical energy to the code signal generating means.

5,349,183

DIFFRACTION GRATING ROTARY SPEED SENSOR HAVING A CIRCUMFERENTIALLY VARIABLE PITCH DIFFRACTION GRATING

Sarkis Barkhoudarian, Canoga Park, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Jul. 12, 1993, Ser. No. 89,468
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—231.13 6 Claims



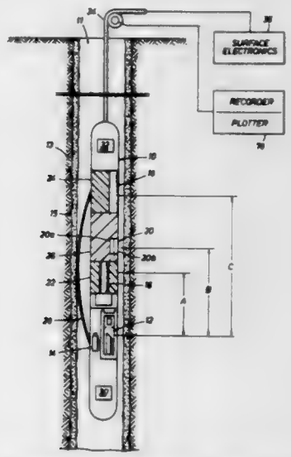
1. A diffraction grating rotary speed sensor, comprising:
a circumferentially variable pitch diffraction grating on a rotating object;
means for generating a monochromatic light beam which is incident on the diffraction grating at a constant angle, for producing a first diffracted beam having a first diffraction angle which varies as a function of the pitch on the diffraction grating as the object rotates;
a first position detector which generates signals which vary with the position of an incident beam, wherein the first diffracted beam is incident on the first position detector, which yields a signal proportional to the position of the first diffracted beam on the first position detector;
a means for calculating the angular position and rate of rotation of the object from the first position detector signals.

5,349,184

METHOD AND APPARATUS FOR REDUCING MATRIX DENSITY EFFECTS ON POROSITY MEASUREMENTS DURING EPITHERMAL NEUTRON POROSITY WELL LOGGING

Peter D. Wraight, Missouri City, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jan. 21, 1993, Ser. No. 6,903
Int. Cl.[5] G01V *5/10*
U.S. Cl. 250—266 50 Claims



1. A pulsed neutron porosity logging method comprising the steps of:
(a) repetitively irradiating a subsurface formation with bursts of neutrons from a neutron source;
(b) measuring, by means of a first detector spaced from the source at a first given distance, a count of epithermal neutrons indicative of epithermal neutrons within the irradiated subsurface formation as a measure of matrix density neutral porosity of subsurface formation; and
(c) combining the measurements of epithermal neutron counts from step (b) for a succession of the bursts to provide an indication of subsurface formation porosity.

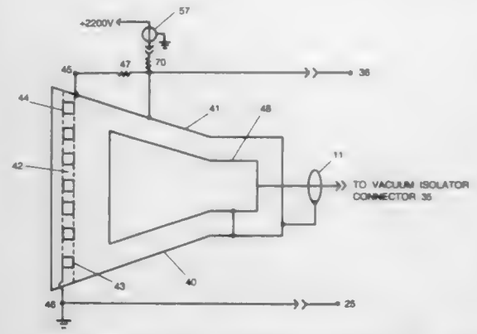
5,349,185

HIGH RESOLUTION DETECTOR DEVICE FOR A PARTICLE TIME-OF-FLIGHT MEASUREMENT SYSTEM

Marcus H. Mendenhall, Nashville, Tenn., assignor to Vanderbilt University, Nashville, Tenn.

Filed Jun. 25, 1993, Ser. No. 83,675
Int. Cl.[5] H01J *49/40, 49/44*
U.S. Cl. 250—287 5 Claims

1. A detector device for a particle time-of-flight measurement system, said device comprising:
a. a microchannel plate detector assembly, including a microchannel plate having a cathode electrically isolated from an anode;
b. means to supply an electron accelerating DC bias voltage to said anode;
c. means for coupling pulse signals from said microchannel plate detector assembly to a time-of-flight measurement signal processor; and



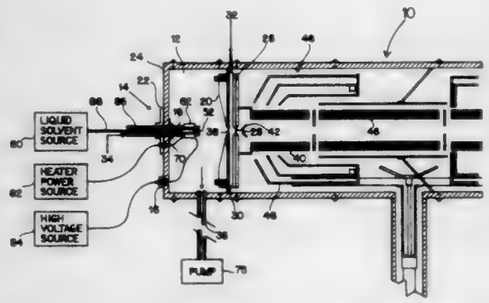
d. said coupling means comprising a pulse signal output connector having a signal side and a shield side, and further comprising means for electrically isolating said shield side and said signal side from said DC bias voltage, whereby said anode and said cathode can be biased at DC electric potentials which are substantially different from ground.

5,349,186

ELECTROSPRAY INTERFACE FOR MASS SPECTROMETER AND METHOD OF SUPPLYING ANALYTE TO A MASS SPECTROMETER

Michael G. Ikonomou, Victoria, and Paul Kebarle, Edmonton, both of Canada, assignors to The Governors of the University of Alberta, Edmonton, Canada

Filed Jun. 25, 1993, Ser. No. 83,714
Int. Cl.[5] H01J *49/10*
U.S. Cl. 250—288 20 Claims



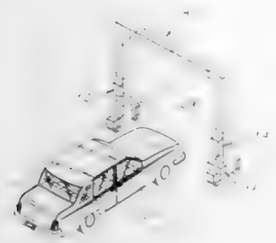
1. An electrospray interface for use with a mass analyzer requiring an ion source, the mass analyzer having an ionization chamber, the interface comprising:
a conducting capillary source having a free end for spraying a liquid solvent spray into the ionization chamber, the liquid solvent having a temperature T_s lower than the boiling point of the liquid solvent; and
heated gas flow discharge means for discharging a spray entraining flow of gas into the ionization chamber adjacent to the liquid solvent stream, the flow of gas having a temperature T_g higher than T_s.

5,349,187

METHOD AND APPARATUS FOR DETECTING VEHICLE OCCUPANTS UNDER THE INFLUENCE OF ALCOHOL

Medhat T. Azzazy, Laguna Niguel, and Ali Dabiri, San Diego, both of Calif., assignors to Science Applications International Corporation, San Diego, Calif.

Filed Nov. 1, 1993, Ser. No. 146,352
Int. Cl.[5] G01N *21/01, 21/17*
U.S. Cl. 250—338.5 **18 Claims**



1. A non-intrusive method of detecting the sobriety of a person in a vehicle, comprising:

generating and transmitting a beam of electromagnetic energy through an interior compartment of a vehicle containing airborne alcohol molecules emitted by a person in the vehicle;

detecting the beam after it has passed through the compartment;

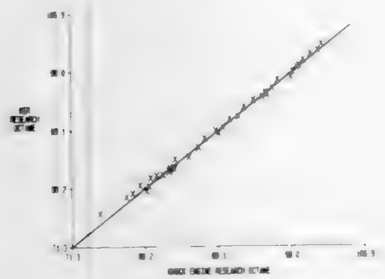
processing the detected beam to determine the concentration of the airborne alcohol molecules in the compartment and hence the sobriety of a person in the vehicle.

5,349,188

NEAR INFRARED ANALYSIS OF PIANO CONSTITUENTS AND OCTANE NUMBER OF HYDROCARBONS

Steven M. Maggard, Huntington, W. Va., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Apr. 9, 1990, Ser. No. 506,391
The portion of the term of this patent subsequent to Oct. 16, 2007, has been disclaimed.
Int. Cl.[5] G01N *21/35*
U.S. Cl. 250—339 **36 Claims**



1. In a process for the control of octane number, or cetane number, of a complex mixture comprising hydrocarbons and/or substituted hydrocarbons, by near infrared spectroscopy, the improvement comprising predicting said octane number, or cetane number by:

a. measuring the near infrared absorbance at at least one wavelength in one or more bands selected from the group consisting essentially of:

1672–1698, 1700–1726, 1622–1650, 1092–1156, 824–884, 1656–1692, 880–974, 1152–1230, 1320–1380, 1470–1578, 1614–1644, 1746–1810, 1940–2000, and/or 2058–2130 nanometers (nm);

b. outputting a periodic or continuous signal indicative of a derivative of said absorbance in said wavelength, or wavelengths in said one or more bands or a combination of mathematical functions comprising a derivative thereof;

c. mathematically converting said signal to an output signal indicative of the octane number or cetane number of said mixture; and

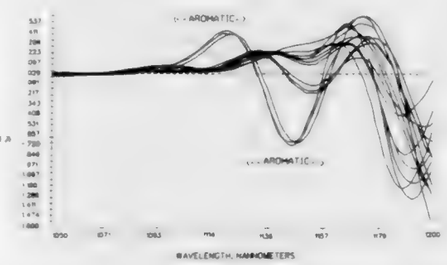
d. controlling a blending or other process which correlates with octane number or cetane number by apparatus responsive to said output signal.

5,349,189

PROCESS AND APPARATUS FOR ANALYSIS OF HYDROCARBONS BY NEAR-INFRARED SPECTROSCOPY

Steven M. Maggard, Huntington, W. Va., assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 506,391, Apr. 9, 1990. This application Nov. 5, 1992, Ser. No. 972,259
Int. Cl.[5] G01N *21/35*
U.S. Cl. 250—339.07 **34 Claims**



1. In a process for the control of hydrocarbons and substituted hydrocarbons in a complex mixture comprising as components; paraffins, isoparaffins, aromatics, naphthenes, or olefins to determine component concentration, the improvement comprising in combination:

a. measuring the near infrared absorbance at at least three wavelengths comprising at least one wavelength in any of the following bands: 1672–1698, 1700–1726, 1622–1650, 1092–1156, 824–884, 1656–1692, 880–974, 1152–1230, 1320–1380, 1470–1578, 1614–1644, 1746–1810, 1940–2000, and/or 2058–2130 nanometers (nm),

b. taking each of the absorbances measured, or a mathematical function thereof,

c. performing statistical treatment using said absorbances or functions as the individual independent variables,

d. assigning and applying weighting constants or their equivalents to said independent variables,

applying the above steps using known compositions in a calibration step to calibrate the instrument and determine said weighting constants or equivalents,

repeating said steps a. and b. with unknown compositions, applying the weighting constants or equivalents determined during said calibration with known compositions to output a signal or signals indicative of a paraffin, is oparaffin, aromatic, or naththene component or components concentration,

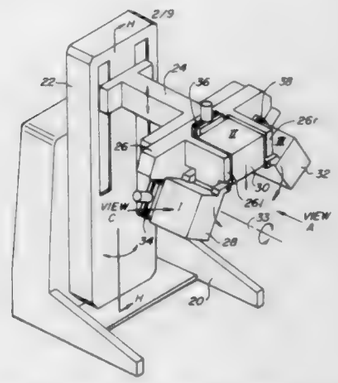
controlling blending, hydrocarbon refining or chemical process by means of apparatus responsive to said signal or signals.

5,349,190

ADJUSTABLE TRIPLE-DETECTOR IMAGE DATA ACQUISITION SYSTEM

Horace Hines, San Jose; Paul Hug, Saratoga, and Mark L. Lamp, San Jose, all of Calif., assignors to ADAC Laboratories, Milpitas, Calif.

Filed Dec. 2, 1991, Ser. No. 801,551
Int. Cl.[5] G01T *1/166*
U.S. Cl. 250—363.05 **11 Claims**



1. An imaging system for acquiring image data required to generate an image of an object, said system comprising:

a detector support structure having a major face and a right and a left detector support, each protruding along a lateral axis perpendicular to said major face of said support structure;

first, second, and third detectors, each housed in a rectangular detector support frame coupled to said support structure and characterized by a substantially planar collimator surface for receiving incident radiation and with said surface disposed perpendicular to the direction the detector is pointed;

a first angular displacement mechanism, coupled to a first corner mechanical interface of the first and second detector support frames, providing a range of relative angular displacement about an axis passing through said first corner and parallel to the lateral axis of 60° to 120° between said collimator surfaces of said first and second detectors;

a second angular displacement mechanism, coupled to a second corner mechanical interface of the second and third detector support frames, providing a range of relative angular displacement about an axis passing through said second corner and parallel to the lateral axis of 60° to 120° between said collimator surfaces of said second and third detectors;

a first radial displacement mechanism, coupled to said first detector for displacing said first detector toward or away from the object;

a second radial displacement mechanism, coupled to said second detector for displacing said second detector toward or away from the object;

a third radial displacement mechanism, coupled to said third detector for displacing said third detector toward or away from the object, where said first, second, and third detectors, said detector support frames, said first and second angular displacement mechanisms and said first, second, and third radial displacement mechanisms comprise a detector assembly;

means, coupled to said detector assembly, for displacing said detector assembly toward or away from the lateral axis; and

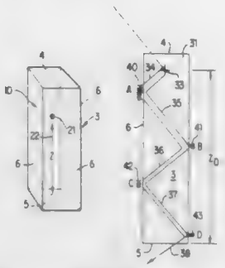
means, coupled to said means for displacing, for rotating said detector assembly about the lateral axis.

5,349,191

GAMMA RAY DETECTOR FOR THREE-DIMENSIONAL POSITION ENCODING

Joel G. Rogers, Vancouver, Canada, assignor to Triumf, Vancouver, Canada

Filed Nov. 3, 1993, Ser. No. 145,143
Int. Cl.[5] G01T *1/20, 1/202*
U.S. Cl. 250—367 **26 Claims**



1. An apparatus for determining the X, Y and Z positions of a point of gamma ray induced light emission in a pattern of a plurality of scintillating light guides, comprising:

(1) a plurality of spatially separated, closely adjacent, elongated, scintillating, crystal, light guides arrayed in a pattern having known X and Y positions for each light guide, each of said light guides having a gamma ray receiving end, a light transmitting end, and walls therebetween;

(2) a light reflective surface on at least a portion of the walls of each of the light guides having light reflectivity such that the fraction of gamma ray induced light passing through the transmitting end is substantially greater for gamma ray induced light emissions closer to the transmitting end and substantially less for emissions closer to the receiving end;

(3) at least one photodetector disposed in register with the transmitting ends such that the said fraction of gamma ray induced light transmitted through the transmitting ends is intercepted by the at least one photodetector;

(4) detector means responsive to gamma ray induced light emitted in the said light guides for determining an excited light guide from which gamma ray induced light was emitted to thereby establish the X and Y positions of the gamma ray induced light within the pattern of light guides; and

(5) measuring means responsive to light intercepted by the at least one photodetector for determining the amount of emitted light received by the at least one photodetector and from that determined amount of emitted light determining the distance from the transmitting end to the point of gamma ray induced light emission in the excited light guide, to thereby establish the Z position of the gamma ray induced light within the pattern of light guides.

5,349,192

SOLID STATE DETECTOR FOR POLARIZED X-RAYS

James F. Mackay, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

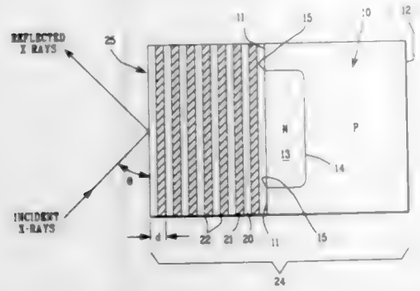
Filed May 20, 1993, Ser. No. 65,127
Int. Cl.[5] G01T *1/32, 1/24;* **H01L** *31/0232*
U.S. Cl. 250—370.01 **4 Claims**

1. A solid state polarized x-ray detector which comprises:

a solid state x-ray detector for producing an electric current which is indicative of the flux density of x-rays impinging on a substantially flat surface;

a bilayer formed on the flat surface and including a spacing layer of a first material and an absorbing layer of a second material said first and second materials having substantially different indexes of refraction and a front surface on the bilayer being oriented at an angle θ with respect to the direction of the impinging x-rays such that a substantial

portion of the impinging x-rays polarized in the direction in the plane of the front surface are reflected while a



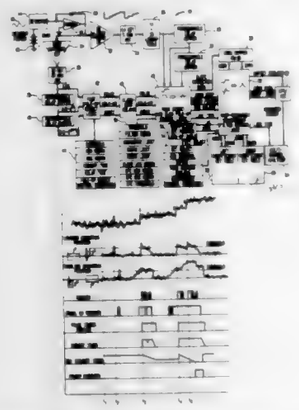
substantial portion of the impinging x-rays polarized in direction orthogonal thereto pass through the bilayer to impinge the flat surface of the solid state x-ray detector.

5,349,193

HIGHLY SENSITIVE NUCLEAR SPECTROMETER APPARATUS AND METHOD

Richard B. Mott, Ringoes, N.J.; Charles G. Waldman, Allston, Mass., and Daniel E. Ungar, Blauvelt, N.Y., assignors to Princeton Gamma Tech, Inc., Princeton, N.J.

Filed May 20, 1993, Ser. No. 64,859
Int. Cl.[5] G01T *1/36*
U.S. Cl. 250—370.06 **28 Claims**



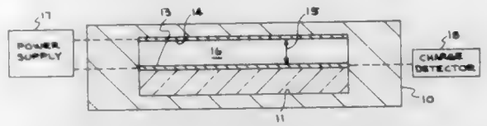
15. A method for analyzing the composition of a substance which releases photons, said method comprising the steps of:
detecting said photons with a photon detector and producing an output indicative thereof;
storing the output from said photon detector as a data stream in a storage means;
detecting the presence of photon events with a peak detector attached to said photon detector which locates said photon events in said stream of data;
logically multiplying and summing the data stream in said storage means by an asymmetrical weighting function whose shape is determined by the time interval of the immediately preceding and immediately following photon events when said peak detector detects a photon event; and,
producing an output indicative of the result of said logically multiplying and summing step which output is proportional to the energy of said photon.

5,349,194

MICROGAP ULTRA-VIOLET DETECTOR

Craig R. Wuest, Danville, and Richard M. Bionta, Livermore, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 1, 1993, Ser. No. 11,636
Int. Cl.[5] G01J *5/28;* **H01J** *40/06*
U.S. Cl. 250—372 **23 Claims**



1. A detector for ultra-violet photons comprising:
a cathode composed of material that expels electrons when impinged on by ultra-violet photons;
an anode composed of material that collects electrons;
one of said cathode and anode being constructed of a layer of material which is semitransparent to ultra-violet photons;
said layer of material semitransparent to ultra-violet photons extending over an entire surface of said one of said cathode and anode constructed thereof;
a window composed of material transparent to ultra-violet photons;
one of said cathode and anode being located adjacent to said window;
aid cathode and said anode being located in spaced relation to form a gap therebetween;
said gap being filled with a gas;
means for applying an electric potential between said anode and said cathode for producing an electrical field in said gap; and
means for detecting electron avalanches on said anode.

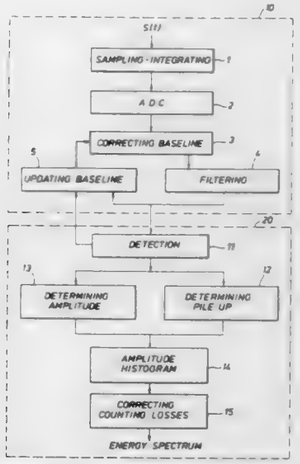
5,349,195

SPECTROSCOPY METHOD FOR HIGH COUNT RATE NUCLEAR PULSES

Alain M. G. Dumont, Machida, Japan, assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jan. 26, 1993, Ser. No. 8,920
Claims priority, application France, Jan. 30, 1992, 92 00999
Int. Cl.[5] G01T *1/17*
U.S. Cl. 250—395 **8 Claims**

1. A spectroscopy method for analyzing high count rate pulses in an electrical signal emitted by a radiation detector, said pulses representing nuclear radiation, the amplitude of said pulses being a representation of the energy of particles in the radiation, the method comprising the steps of:
analogically sampling said electrical signal with a sampling period and integrating the sampled signal over a duration equal to said sampling period;
converting the integrated sampled signal to digital samples;



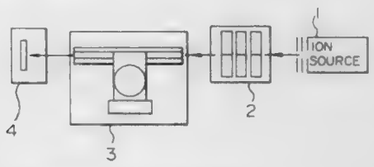
detecting pulses from said digital samples; and
determining an energy spectrum from said pulses.

5,349,196

ION IMPLANTING APPARATUS

Kensuke Amemiya, Katsuta; Yoshimi Hakamata, Hitachi; Katsumi Tokiguchi, Mito, and Noriyuki Sakudo, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 7, 1993, Ser. No. 43,794
Claims priority, application Japan, Apr. 10, 1992, 4-090734
Int. Cl.[5] H01J *37/317*
U.S. Cl. 250—492.21 **7 Claims**



1. An ion implanting unit comprising:
an ion source for generating a beam including various kinds of ions,
a multipole lens for carrying out mass spectrometry of a beam including various kinds of ions from said ion source while converging the beam,
a radio frequency accelerator for accelerating an ion beam from said multipole lens to a predetermined energy level with a radio frequency field, and
an ion implanting chamber for implanting an ion beam from said radio frequency accelerator into a material to be processed.

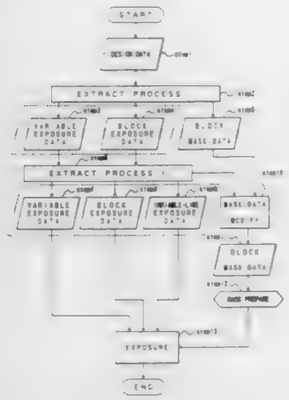
5,349,197

METHOD FOR EXPOSING A PATTERN ON AN OBJECT BY A CHARGED PARTICLE BEAM

Kiichi Sakamoto, and Hiroshi Yasuda, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 29, 1992, Ser. No. 953,073
Claims priority, application Japan, Sep. 30, 1991, 3-250847
Int. Cl.[5] H01J *37/302*
U.S. Cl. 250—492.22 **16 Claims**

1. A method for exposing, on an object, a device pattern comprising a plurality of different elemental patterns by selectively deflecting a beam of charged particles through a plurality of exposure apertures in a mask, the exposure apertures being of respective, different sizes and shapes corresponding to the plurality of different elemental patterns and being formed at respective, different locations in the mask, the beam being selectively deflected in accordance with design data representing the device pattern and the plurality of elemental patterns thereof and the design data further comprising mask data defining the plurality of apertures, the respective, different sizes and shapes thereof and the different locations thereof in the mask, said method comprising the steps of:
extracting, from said design data, block exposure data corresponding to and defining a set of selected elemental patterns of said plurality of elemental patterns, each selected elemental pattern corresponding to a block exposure aperture to be formed in the mask and through which the selectively deflected beam passes and is shaped, thereby to expose the corresponding elemental pattern on the object in accordance with the device pattern;
extracting, from said design data, variable exposure data corresponding to and defining the remaining elemental patterns, other than said set of selected elemental patterns, to be exposed on the object in accordance with the device pattern;
defining a minimum size threshold of the remaining elemental patterns;



separating said variable exposure data into fine exposure data corresponding to and defining fine elemental patterns having a size smaller than said minimum size threshold and coarse exposure data corresponding to and defining coarse elemental patterns having a size larger than said minimum size threshold, the fine elemental patterns corresponding to fine exposure apertures and the coarse elemental patterns corresponding to coarse exposure apertures to be formed in the mask and through which the selectively deflected beam passes thereby to expose the corresponding elemental pattern on the object in accordance with the device pattern, each coarse exposure aperture having two intersecting edges and the beam being selectively deflected for passing therethrough and for adjusting the extent of overlapping of the beam and the coarse exposure aperture, relatively to the respective two intersecting edges thereof, for shaping of the beam;
extracting, from said design data, mask data indicative of the locations, the sizes and the shapes, respectively, of the block exposure apertures, the coarse exposure apertures and the fine exposure apertures to be formed in said beam shaping mask, respectively corresponding to, and to be used shaping said beam of charged particles thereby to expose, the selected elemental patterns, the coarse elemental patterns and the fine elemental patterns;
fabricating the beam shaping mask including forming at the

respective locations therein, said block exposure apertures, said coarse exposure apertures and said fine exposure apertures of the respective sizes and shapes thereof, based upon said extracted mask data; and

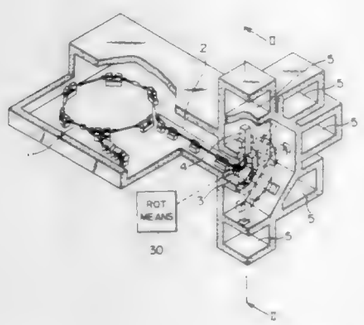
exposing said device pattern on the object by selectively passing said beam through said block exposure apertures, said coarse exposure apertures and said fine exposure apertures, based upon said corresponding and extracted block exposure data, coarse exposure data and fine exposure data, respectively, and said corresponding and extracted mask data indicating the respective locations thereof.

5,349,198

BEAM SUPPLY DEVICE

Masao Takanaka, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 12, 1993, Ser. No. 90,306
Claims priority, application Japan, Jul. 15, 1992, 4-188124
Int. Cl.[5] A61N *5/00*; H01J *37/147*
U.S. Cl. 250—492.3 **3 Claims**



1. A beam supply device for supplying a particle or radiation beam to a therapy or experiment equipment comprising:

beam generation means for generating a beam;

a pre-branching beam transportation device coupled to said beam generation means for transporting said beam generated by said beam generation means to a predetermined point;

a rotatable deflection electromagnet disposed at said predetermined point for deflecting said beam by a predetermined angle;

a plurality of beam utilization rooms disposed around said rotational axis of said rotatable deflection electromagnet at a predetermined distance therefrom;

a rotatable beam transportation device for guiding said beam deflected by said rotatable deflection electromagnet to one of said beam utilization rooms; and

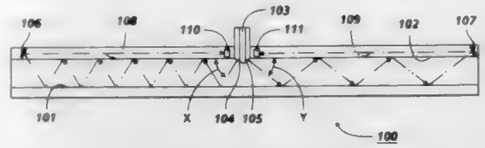
rotation means for rotating said rotatable deflection electromagnet and said rotatable beam transportation device around a rotational axis of said rotatable deflection electromagnet to a predetermined rotational angle, thereby selectively guiding said beam generated by said beam generation means to a selected one of said beam utilization rooms.

5,349,199

SENSING APPARATUS FOR REDUCING SHEET DETECTION AND REGISTRATION ERRORS BY USING MULTIPLE LIGHT BEAM REFLECTIONS

Douglas T. Rabjohns, and Gary W. Roscoe, both of Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 29, 1993, Ser. No. 53,745
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—561 **14 Claims**



1. An apparatus for detecting a sheet moving along a path, comprising:

an emitter adapted to project a light beam;

a detector adapted to transmit a signal in response to receiving the light beam; and

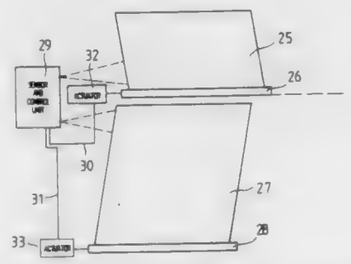
means for reflecting the light beam between said emitter and said detector along a light path having a repeating wave form in a plane intersecting the sheet path, said detector transmitting a signal indicating the absence of the sheet in response to receiving the light beam and presence of the sheet in response to the sheet intersecting the light path.

5,349,200

METHOD AND APPARATUS FOR THE ALIGNMENT OF PAPER STACKS IN A PRINTING PRESS

Helmut Buck, Schriesheim, and Ludwig Bergann, Berlin, both of Fed. Rep. of Germany, assignors to Heidelberger Drukmaschinen AG, Heidelberg, Fed. Rep. of Germany

Division of Ser. No. 857,517, Mar. 25, 1992, Pat. No. 5,256,884. This application Jul. 7, 1993, Ser. No. 88,166
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1991, 4110187; Sep. 6, 1991, 4129702
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—561 **21 Claims**



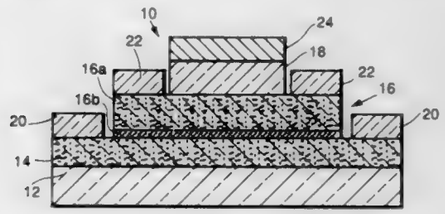
1. A method, for measuring the distance of objects and for relatively positioning at least one of the objects, said method comprising the steps of: directing a first beam of electromagnetic radiation onto a first object, and directing a second beam of electromagnetic radiation onto at least one additional object; reflecting the first beam of electromagnetic radiation off of the first object, and reflecting the second beam of electromagnetic radiation off of the at least one additional object; detecting each of the reflected first and second beams of electromagnetic radiation with single detector means, said detector means comprising a position sensitive receiver for detecting beams of electromagnetic radiation; generating a signal with said detector means for each of the reflected first beam of electromagnetic radiation and the reflected second beam of electromagnetic radiation, said signal for each of the reflected first and second beams of electromagnetic radiation corresponds to both: the distance of the first and the at least one additional object from said detector means, and the relative position of each of the first object and the at least one additional object; and said method further comprises the step of: positioning at least one of the first object and the at least one additional object in response to said signal to relatively position the at least one of the first object and the at least one additional object with respect to the other of the first object and the at least one additional object.

5,349,201

NPN HETEROJUNCTION BIPOLAR TRANSISTOR INCLUDING ANTIMONIDE BASE FORMED ON SEMI-INSULATING INDIUM PHOSPHIDE SUBSTRATE

William E. Stanchina, Thousand Oaks, and Thomas C. Hasenberg, Agoura Hills, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 28, 1992, Ser. No. 889,864
Int. Cl.[5] H01L *29/161, 29/205, 27/12*
U.S. Cl. 257—18 **20 Claims**



1. An NPN type heterojunction bipolar transistor (HBT) including a substrate; and emitter, base and collector layers formed over the substrate such that the base layer is disposed between the emitter and collector layers, characterized by:

the emitter layer comprises a material selected from the group consisting of aluminum-indium-arsenide (AlInAs) and indium phosphide (InP) and is doped N-type;

the base layer comprises gallium-arsenide-antimonide ($GaAs_ySb_{1-y}$) and is doped P-type at a doping concentration of about $3–6\times10^{19}/cm^3$, with the value of y and thickness of the base layer selected so that the base layer is lattice matched with the substrate; and

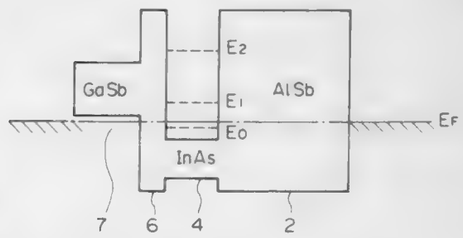
the collector layer comprises a material selected from the group consisting of indium-gallium-arsenide (InGaAs), InP and AlInAs and is doped N-type.

5,349,202

TUNNELING TRANSISTOR

Tetsuya Uemura, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 25, 1992, Ser. No. 981,248
Claims priority, application Japan, Dec. 2, 1991, 3-318174
Int. Cl.[5] H01L *31/072, 31/109*
U.S. Cl. 257—25 **3 Claims**



1. A tunneling transistor comprising:

an emitter layer forming a first semiconductor:

a barrier layer forming a second semiconductor, and having a conduction band higher in energy than a conduction band of said emitter layer and a valence band lower in energy than a valence band of said emitter layer, and further having a thickness with which electrons can tunnel the barrier layer;

a collector layer forming of a third semiconductor, and having a conduction band lower in energy than the valence band of said emitter layer and a conductivity type opposite to said emitter layer, and further having a thickness with which quantum levels are formed;

a gate layer having a conduction band higher in energy than the conduction band of said emitter layer and a valence band lower in energy than the valence band of emitter layer, and further having a thickness with which the probability of electron tunneling is greatly reduced, layers being laminated in this order;

electrodes which form ohmic junctions on emitter layer and said collector layer, respectively;

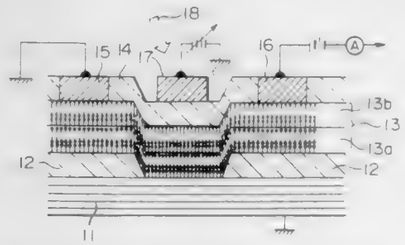
and an electrode which forms a Schottky junction on gate layer.

5,349,203

ORGANIC ELECTRIC-FIELD SWITCHING DEVICE

Yoshio Hanazato; Satoru Isoda; Satoshi Ueyama, and Satoshi Nishikawa, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1992, Ser. No. 963,139
Claims priority, application Japan, Dec. 9, 1991, 3-324739; Jun. 12, 1992, 4-153798
Int. Cl.[5] H01L *29/28*
U.S. Cl. 257—40 **12 Claims**



1. An organic field switching device comprising:

a lower electrode;

a first insulation film formed locally on said lower electrode;

an organic hetero-junction membrane formed on said first insulating film and said electrode;

a second insulating and transparent or semitransparent film formed on said hetero-junction membrane;

a source electrode formed on said hetero-junction membrane, penetrating said second insulating film;

a drain electrode formed on said hetero-junction membrane, penetrating said second insulating film; and

a transparent or semitransparent upper electrode formed on said second insulating film.

5,349,204

PHOTOELECTRIC CONVERSION DEVICE

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory, Co., Ltd., Tokyo, Japan

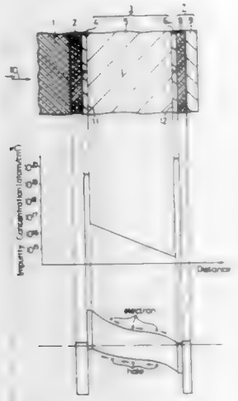
Continuation of Ser. No. 804,736, Dec. 3, 1991, abandoned, which is a division of Ser. No. 748,421, Aug. 22, 1991, abandoned, which is a division of Ser. No. 443,015, Nov. 29, 1989, Pat. No. 5,077,223, which is a continuation of Ser. No. 785,586, Oct. 9, 1985, abandoned, which is a division of Ser. No. 564,213, Dec. 22, 1983, Pat. No. 4,581,476. This application Dec. 7, 1993, Ser. No. 162,374

Claims priority, application Japan, Dec. 23, 1982, 57-228158

The portion of the term of this patent subsequent to Apr. 8, 2003, has been disclaimed.

Int. Cl.[5] H01L *27/14, 31/00*

U.S. Cl. 257—53 20 Claims



1. A semiconductor device comprising::

a substrate having a conductive surface;

a non-single-crystal semiconductor laminate member formed on said conductive surface of said substrate, including at least one I-type non-single-crystal semiconductor layer and having formed therein at least one junction selected from the group consisting of PI, NI, PIN and NIP junctions; and

a second conductive layer formed on said non-single-crystal semiconductor laminated member;

wherein said I-type non-single-crystal semiconductor layer of the non-single-crystal semiconductor laminate member contains oxygen in a low concentration of only 5×10^{19} atoms/cm^3 or less.

5,349,205

THIN-FILM TRANSISTOR ARRAY WITH ANODIC OXIDE FOR USE IN A LIQUID CRYSTAL DISPLAY

Ikunori Kobayashi, Sakai; Kazuyoshi Nakamura, Kadoma; Koji Matsunaga, Katano; Mamoru Takeda, Hirakata, and Tomizo Matsuoka, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 1, 1992, Ser. No. 983,826

Claims priority, application Japan, Dec. 2, 1991, 3-317699; Dec. 27, 1991, 3-347182; Sep. 22, 1992, 4-252593

Int. Cl.[5] H01L *27/01*

U.S. Cl. 257—59 15 Claims

1. A thin-film transistor array suited for use in a liquid crystal display, said thin-film transistor array comprising:

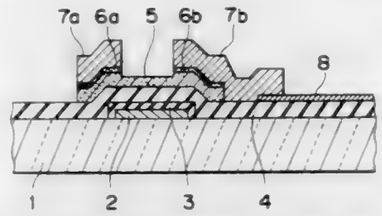
a substrate;

a first electrically conductive layer made principally of aluminum and selectively formed on one surface of said substrate, said first electrically conductive layer containing, as an impurity, a high-melting point metal which can be anodized;

an oxide layer formed by an anodization process on said first electrically conductive layer;

a first insulating layer formed on said oxide layer so as to overlay said substrate;

a first non-monocrystalline semiconductor layer made principally of silicon and selectively formed on said insulating layer, a portion of said first non-monocrystalline semiconductor layer being positioned above said first electrically conductive layer;



a pair of second non-monocrystalline semiconductor layers made principally of silicon containing phosphorus, said second non-monocrystalline semiconductor layers being formed on said first non-monocrystalline semiconductor layer; and

a pair of second electrically conductive layers formed on said pair of second non-monocrystalline semiconductor layers, respectively, at least a portion of each of said second electrically conductive layers being positioned above said first non-monocrystalline semiconductor layer.

5,349,206

INTEGRATED MEMORY CIRCUIT WITH HIGH DENSITY LOAD ELEMENTS

Masakazu Kimura, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

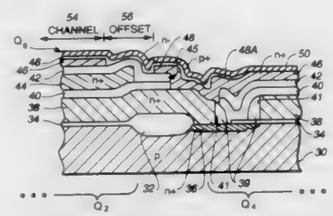
Continuation-in-part of Ser. No. 410,936, Sep. 22, 1989, Pat. No. 5,107,322. This application Apr. 20, 1992, Ser. No. 871,871

Claims priority, application Japan, Nov. 10, 1988, 63-284686

The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.

Int. Cl.[5] H01L *27/01*

U.S. Cl. 257—67 23 Claims



1. An integrated circuit comprising a plurality of circuit cells each having load elements and transistors formed relative to a semiconductor substrate, said transistors having source/drain domains with some of said domains electrically connected through a plurality of conductive and insulating layers formed on said substrate to said load elements comprising a load connection path, said load connection path relative to each of said cells comprising an insulating layer formed on said substrate, a first conductive layer formed on said insulating layer and electrically connected at a first region to at least one of said domains, said first conductive layer extending laterally away from said first region in a first direction to a second region in proximity to an edge of said circuit cell laterally spaced from said first region, a second conductive layer spatially insulated from and substantially parallel with said first conductive layer and connected to said first conductive layer at an interconnect formed at said second region between said first and second conductive layers, said second conductive layer having a planar extent extending substantially across said cell in a second direction opposite to said first direction, each of said load elements formed in said second conductive layer in a region along said planar extent spaced in said second direction from said interconnect so that said load elements are shielded from contamination by impurity migration from said one domain along said first conductive layer, said planar extent of said second conductive layer increased due to the extension of said first conductive layer to said cell edge permitting an extended length of said load elements to include a correspondingly extended resistance level reducing operational current consumption of said cell while increasing the length of said load connection path to make allowance for said impurity migration, each of said load elements comprises a TFT having a TFT channel formed in said second conductive layer having an extended length and resistance value due, in part, to said extended length to said load connection path.

5,349,207

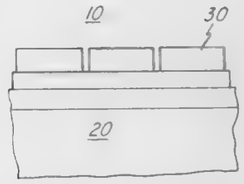
SILICON CARBIDE WAFER BONDED TO A SILICON WAFER

Satwinder Malhi, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 22, 1993, Ser. No. 20,820

Int. Cl.[5] H01L *29/161*

U.S. Cl. 257—76 20 Claims



1. A silicon carbide structure capable of using existing silicon wafer fabrication facilities comprising:

a. a silicon wafer having a first diameter;

b. at least one silicon carbide wafer having a predetermined maximum width and a predetermined maximum length, wherein said predetermined maximum width and predetermined maximum length are smaller than said first diameter; and

c. a bonding layer located between said silicon wafer and said at least one silicon carbide wafer.

5,349,208

GAP LIGHT EMITTING ELEMENT SUBSTRATE WITH OXYGEN DOPED BUFFER

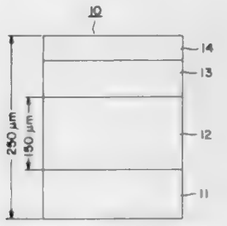
Munehisa Yanagisawa, Takasaki; Susumu Higuchi, and Yuuki Tamura, both of Annaka, all of Japan, assignors to Shin Etsu Handotai Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1993, Ser. No. 147,480

Claims priority, application Japan, Nov. 7, 1992, 4-322381

Int. Cl.[5] H01L *33/00*

U.S. Cl. 257—79 1 Claim



1. A GaP light emitting element substrate comprising an n-type GaP buffer layer, an n-type GaP layer and a p-type GaP layer layered one after another on an n-type GaP single crystal substrate, wherein the oxygen concentration in said n-type GaP buffer layer is 6×10^{15} [atoms/cc] or less.

5,349,209

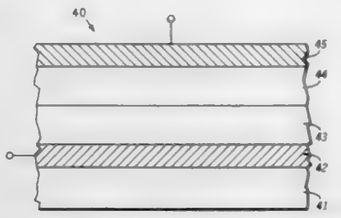
DIAMOND/ORGANIC LED

Curtis D. Moyer, Phoenix; Thomas B. Harvey, III, and James E. Jaskie, both of Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 30, 1992, Ser. No. 921,773

Int. Cl.[5] H01L *33/00, 31/12, 27/14, 29/34*

U.S. Cl. 257—80 7 Claims



1. A diamond/organic light emitting diode comprising:

a layer of polycrystalline diamond; and

a layer of electroluminescent organic material positioned on a surface of the layer of polycrystalline diamond and forming a junction therebetween, the layer of polycrystalline diamond serving as a carrier injection layer and the layer of electroluminescent organic material emitting light in response to injection of carriers therein.

5,349,210

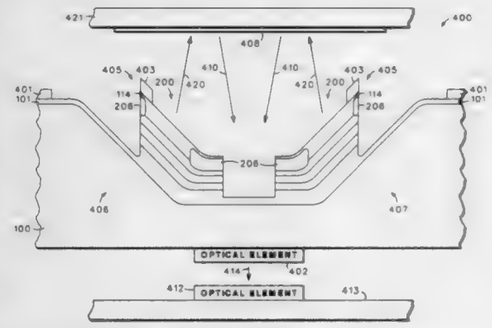
OPTICAL READING HEAD WITH ANGLED ARRAY

Donald E. Ackley, Lambertville, N.J.; Michael S. Lebby, Apache Junction, and Gary F. Witting, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 2, 1993, Ser. No. 12,488

Int. Cl.[5] H01L *33/00*

U.S. Cl. 257—84 7 Claims



1. An optical reading head comprising:

a plurality of light emitting devices comprising an array formed on an optically transparent substrate, the substrate having a first surface and a second surface, wherein the first surface and the second surface are joined, and wherein the first surface of the optically transparent substrate defines a normal plane and the second surface of the optically transparent substrate defines another plane set at an angle at which the plurality of light emitting devices are positioned, thereby positioning the plurality of light emitting devices for emitting of light toward an image that

reflects a portion of the emitted light back towards the optically transparent substrate; and

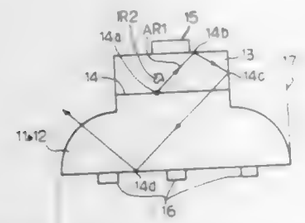
a detecting device located in a plane normal to the angled light emitting array that captures light reflected from the image toward the optically transparent substrate, thereby sensing the reflected light.

5,349,211

SEMICONDUCTOR INFRARED EMITTING DEVICE WITH OBLIQUE SIDE SURFACE WITH RESPECT TO THE CLEAVAGE

Tetsuro Kato, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 24, 1993, Ser. No. 36,232
Claims priority, application Japan, Mar. 26, 1992, 4-067855
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—90 **9 Claims**



1. A semiconductor infrared emitting device comprises:

a) a substrate of one conductivity type formed of a first compound semiconductor, and having a reverse surface, a top surface substantially parallel to said reverse surface and side surfaces obliquely extending from said top surface at a predetermined angle;

b) a first film of said one conductivity type formed of a second compound semiconductor, and provided on said top surface of said substrate;

c) a second film of the opposite conductivity type formed of a third compound semiconductor, and provided on said first film for forming a p-n junction therebetween;

d) a first electrode formed on said second film, biased for producing said infrared light around said p-n junction; and

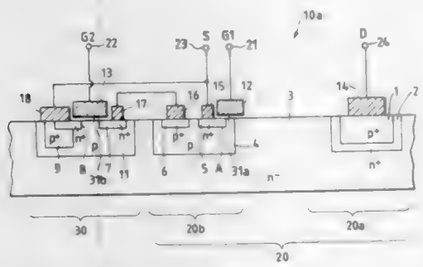
e) a second electrode formed on said reverse surface of said substrate.

5,349,212

SEMICONDUCTOR DEVICE HAVING THYRISTOR STRUCTURE

Yasukazu Seki, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed May 28, 1993, Ser. No. 69,003
Claims priority, application Japan, Jun. 1, 1992, 4-140359; Jun. 1, 1992, 4-140360; Jun. 1, 1992, 4-140361
Int. Cl.[5] H01L *29/74, 27/02*
U.S. Cl. 257—133 **10 Claims**



4. A semiconductor device, comprising:

a second conductive type base region;

a first conductive type drain region to which a drain electric potential is applied;

a thyristor portion including, at a position over said second conductive type base region and facing said first conductive type drain region, a first conductive type base region, a source region formed in said first conductive type base region and to which a source electric potential is applied, and a first gate electrode disposed over said source region, said first conductive type base region and said second conductive type base region; and

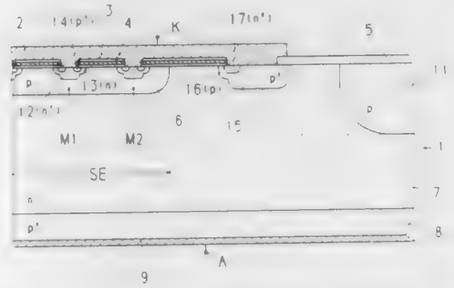
a control MISFET including a second gate electrode capable of controlling a connection of said first conductive type base region with said source region.

5,349,213

TURN-OFF POWER SEMICONDUCTOR DEVICE

Friedhelm Bauer, Baden, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Oct. 16, 1992, Ser. No. 961,880
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1991, 4135411
Int. Cl.[5] H01L *29/74, 29/06*
U.S. Cl. 257—147 **11 Claims**



1. A turn-off power semiconductor device comprising:

(a) a semiconductor substrate having two oppositely situated anode and cathode principal faces respectively defining an anode surface and a cathode surface, said cathode surface including a cathode metallization and said anode surface including an anode metallization;

(b) between the anode and cathode surfaces inside the semiconductor substrate, plural active unit cells each including a layer sequence comprising, from the anode surface to the cathode surface, an emitter layer of a first conductivity type, a first base layer of a second conductivity type opposite to the first conductivity type, and a second base layer of the first conductivity type, and a second base layer of the first conductivity type; and

(c) between the anode and the cathode surfaces inside the semiconductor substrate, plural adjacently disposed turn-off unit cells each comprising a cathode contact and an anode contact, said turn-off unit cells connected in parallel by means of said anode and cathode contacts being connected to respective of said anode and cathode metallizations;

wherein:

(d) said plural active unit cells are arranged into plural segments, each segment comprising more than two of said plural active unit cells;

(e) each segment is surrounded at its periphery in a lateral direction by respective peripheral short-circuit regions of the first conductivity type which extract charge from the semiconductor substrate;

(f) the peripheral short-circuit regions extend from the cathode surface into the semiconductor substrate and are conductively connected to the cathode metallization disposed on the cathode surface;

(g) the second base layer extends laterally only to one segment and, outside the segments, the first base layer emerges at the cathode surface; and

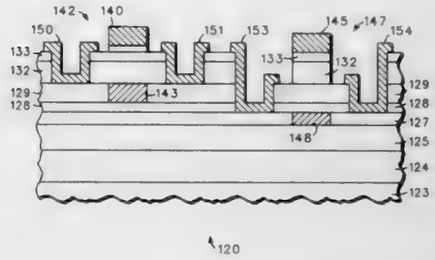
(h) the peripheral short-circuit regions are embedded in the first base layer.

5,349,214

COMPLEMENTARY HETEROJUNCTION DEVICE

Saied N. Tehrani, Scottsdale; X. Theodore Zhu, Chandler; Herbert Goronkin, Tempe, and Jun Shen, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 13, 1993, Ser. No. 119,554
Int. Cl.[5] H01L *27/088, 27/105, 31/06*
U.S. Cl. 257—192 **16 Claims**



1. A heterojunction device comprising:

a supporting substrate structure defining a supporting surface;

a first semiconductive layer of material having a conduction band and a valence band, each with a predetermined energy level, and with a Fermi level, the first semiconductive layer being positioned on the supporting surface of the substrate structure;

a first barrier layer positioned on the first semiconductive layer;

a second semiconductive layer of material having a conduction band and a valence band, each with a predetermined energy level, and with a Fermi level, the second semiconductive layer being positioned on the first barrier layer;

a cap structure positioned on the second semiconductive layer and including a plurality of layers of selected semiconductor materials; and

a first transistor having a conduction channel in the second semiconductive layer and a second transistor having a conduction channel in the first semiconductive layer, each of the first and second transistors including gate, source and drain electrodes, the cap structure being selected and etched to pin the Fermi level in the conduction channel of the first transistor such that carriers in the conduction channel of the first transistor are substantially less than carriers in surrounding portions of the second semiconductive layer and to pin the Fermi level in the conduction channel of the second transistor such that carriers in the conduction channel of the second transistor are substantially less than carriers in surrounding portions of the first semiconductive layer.

5,349,215

ANTIBLOOMING STRUCTURE FOR SOLID-STATE IMAGE SENSOR

Constantine N. Anagnostopoulos, Mendon; Win-Chyi Chang, Penfield; Eric G. Stevens, Rochester, and Georgia R. Torok, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 23, 1993, Ser. No. 95,504
Int. Cl.[5] H01L *27/14*
U.S. Cl. 257—223 **4 Claims**

1. A solid-state image sensor comprising:

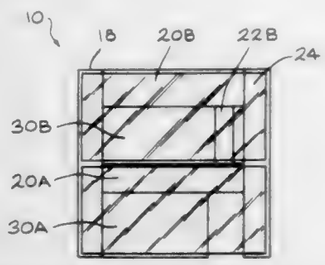
(a) a substrate of a semiconductor material of one conductivity type having a top surface;

(b) at least one photodetector in the top surface of the substrate, the photodetector having first and second storage areas, respectively;

(c) a first barrier between said first and second storage areas;

(d) a second barrier between the second storage areas and an adjacent photodetector wherein the second barrier is shallower than the first;

(e) a lateral overflow drain (LOD) adjacent to the photodetector; and



(f) an antiblooming overflow barrier between the LOD and only the second storage area, wherein the antiblooming barrier

(i) has a potential deeper than the second barrier; and

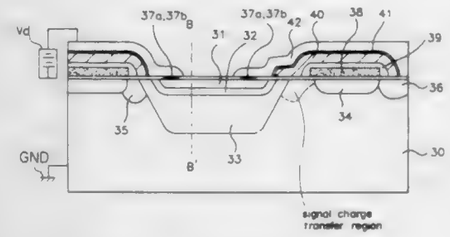
(ii) is a primary antiblooming path between the photodetector and the LOD.

5,349,216

CHARGE COUPLED DEVICE IMAGE SENSOR

Seo K. Lee, Sungnam, and Uja Shinji, Kwacheon, both of Rep. of Korea, assignors to Gold Star Electron Co., Ltd., Chungcheongbuk, Rep. of Korea

Filed Jun. 11, 1993, Ser. No. 76,336
Claims priority, application Rep. of Korea, Jun. 12, 1992, 10236/1992
Int. Cl.[5] H01L *29/78, 27/14, 31/00*
U.S. Cl. 257—230 **5 Claims**



1. A CCD image sensor comprising:

a semiconductor substrate of a first conductivity type connected to a ground;

an impurity region of a second conductivity type formed in a surface of the semiconductor substrate of the first conductivity type, to serve as a blooming prevention layer;

an impurity region of the first conductivity type formed in the surface of the semiconductor substrate, so that it encloses the impurity region of the second conductivity type serving as a blooming prevention layer, to serve as a potential barrier layer;

an impurity region of the second conductivity type formed in the surface of the semiconductor substrate of the first conductivity type, so that it encloses the impurity region of the first conductivity type serving as a potential barrier layer, to serve as a light receiving region;

an insulation film which is formed on the surface of the semiconductor substrate of the first conductivity type and has contact holes at both edges of the impurity region of

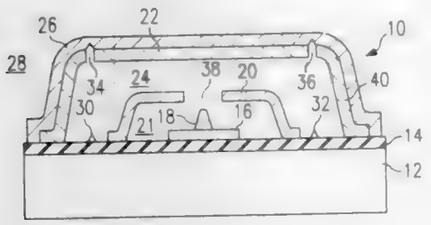
the second conductivity type, serving as a blooming prevention layer;
silicide films filled in the contact holes; and
a light shield conductor film which is formed on a surface of the insulation film, except for a portion between the silicide films and the surfaces of the silicide films, and is connected to a voltage source.

5,349,217

VACUUM MICROELECTRONICS DEVICE

R. Mark Boysel, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 739,268, Aug. 1, 1991, abandoned. This application Oct. 27, 1993, Ser. No. 144,159
Int. Cl.[5] H01L *23/48, 29/44;* H01J *1/46;* B23P *15/00*
U.S. Cl. 257—266 **6 Claims**



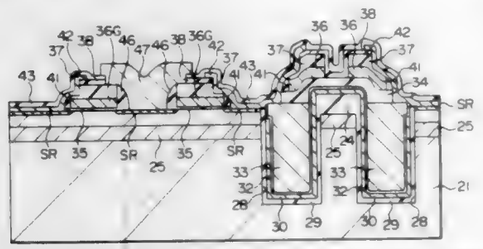
1. A microelectronics device on a semiconductor substrate, comprising:
a semiconductor substrate;
an insulating layer on said substrate;
an electrode base on said insulating layer;
an emitter point on said electrode base;
a grid metal separated from said emitter point and said electrode base; and
an anode metal on said insulating layer, said anode metal separated from said grid metal, emitter point and electrode base, said anode metal and said insulating layer forming a chamber enclosing said emitter point and having apertures allowing access to said chamber.

5,349,218

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE INCLUDING MEMORY CELLS HAVING A STRUCTURE EFFECTIVE IN SUPPRESSION OF LEAK CURRENT

Yoshitaka Tadaki, Hamura; Toshihiro Sekiguchi, Ome; Hiroyuki Uchiyama, Kodaira, all of Japan; Toru Kaga, Albany, Calif.; Jun Murata, Kunitachi, and Osaomi Enomoto, Tsuchiura, both of Japan, assignors to Hitachi, Ltd. and Texas Instruments Japan, Inc., both of Tokyo, Japan

Filed Apr. 29, 1992, Ser. No. 875,653
Claims priority, application Japan, Apr. 30, 1991, 3-098868
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—296 **21 Claims**



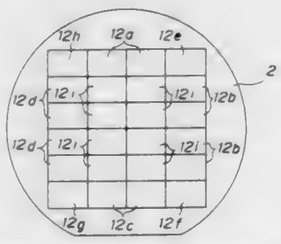
1. A semiconductor integrated circuit device having a semiconductor memory cell array, said cell array including word lines each extending in a first direction and data lines each extending in a second direction substantially perpendicular to the first direction and a plurality of memory cells each provided at a cross point between one of said word lines and one of said data lines and having a cell selection transistor and an information storage capacitor connected in series with each other;
wherein the device comprises a semiconductor substrate having a main surface in which a plurality of trenches are formed, each of said trenches having an inner wall;
wherein the cell selection transistor in one cell includes
first and second doped regions formed in said main surface of said semiconductor substrate, said first doped region being connected with one of said data lines,
a first insulating film formed on said main surface of said semiconductor substrate between said first and second doped regions, and
a control electrode layer formed on said first insulating film between said first and second doped regions and connected with one of said word lines;
wherein the information storage capacitor connected in series with the transistor to comprise said one cell includes
a second insulating film formed on the inner wall and bottom of one of said trenches, said second doped region of said transistor terminating at said inner wall of said one trench,
an electrode layer formed on said second insulating film and serving as a first electrode of said capacitor,
a dielectric film formed on said electrode layer, and
a conducting material provided to fill a space defined by said dielectric film in said one trench and serving as a second electrode of said capacitor;
wherein the device further comprises a conducting layer extending both on said second doped region and said conducting material in said one cell to electrically interconnect them in a series connection, and a plurality of transverse conducting layers extending in a third direction not parallel with said first and second directions to traverse said word lines and said data lines, each of said transverse conducting layers interconnecting first electrodes for different plural ones of said capacitors.

5,349,219

WAFER-SCALE SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND METHOD OF FORMING INTERCONNECTION LINES ARRANGED BETWEEN CHIPS OF WAFER-SCALE SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Toshiaki Murao, Kawasaki; Takeo Kikuchi, Choufu; Toshihiko Iryu, Kawasaki; Hidenori Nomura, Kasugai, and Hiroyuki Sugamoto, Nishikasugai, all of Japan, assignors to Fujitsu Limited, Kawasaki and Fujitsu VLSI Limited, Kasugai, both of Japan

Continuation of Ser. No. 821,876, Jan. 16, 1992, abandoned, which is a continuation of Ser. No. 536,130, Jun. 11, 1990, abandoned. This application Dec. 30, 1993, Ser. No. 175,674
Claims priority, application Japan, Jun. 15, 1989, 1-155145; Jun. 29, 1989, 1-167861
Int. Cl.[5] H01L *27/02, 27/10, 27/15*
U.S. Cl. 257—208 **16 Claims**



1. A wafer-scale semiconductor integrated circuit device comprising:

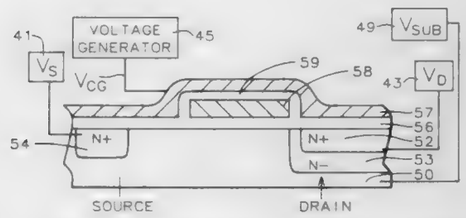
a wafer;
a plurality of function blocks formed on said wafer, each of said function blocks having an internal logic circuit;
interconnection lines mutually connecting said function blocks; and
means, provided for said function blocks which are located at a periphery of an arrangement of said function blocks, for preventing said interconnection lines related to said function blocks located at the periphery from being in a floating state, said means including a predetermined pattern of said interconnection lines whereby said interconnection lines extend to adjacent function blocks, said predetermined pattern being dependent on the location of each corresponding function block at said periphery and dependent on said function blocks adjacent thereto.

5,349,220

FLASH MEMORY CELL AND ITS OPERATION

Gary Hong, Hsin-Chu, Taiwan, assignor to United Microelectronics Corporation, Hsin Chu, Taiwan

Filed Aug. 10, 1993, Ser. No. 104,010
Int. Cl.[5] H01L *29/68;* G11C *16/04*
U.S. Cl. 257—322 **18 Claims**



1. A split gate semiconductor device formed on a substrate lightly doped with a dopant, comprising
a source region and a drain region in said substrate on the surface thereof,
a dielectric layer deposited upon said substrate, a floating gate electrode formed on said dielectric layer proximate to at least the edge of said drain region with said source region spaced away from said floating gate structure while in proximity thereto in accordance with a split gate arrangement,
additional dielectric material deposited upon the surface of said floating gate electrode, and a control gate electrode deposited upon the surface of said additional dielectric material, and
high voltage generator means for applying a programming voltage to said control gate electrode,
means for providing programming of said device with said drain region at a relatively low voltage, said source region at an intermediate positive voltage, said control gate electrode at a relatively high voltage, and said substrate at a relatively negative voltage.

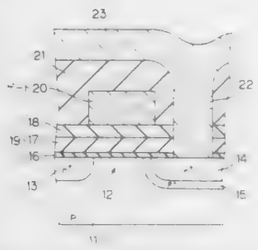
5,349,221

SEMICONDUCTOR MEMORY DEVICE AND METHOD OF READING OUT INFORMATION FOR THE SAME

Noriyuki Shimoji, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Oct. 20, 1992, Ser. No. 963,632
Claims priority, application Japan, Oct. 25, 1991, 3-279829
Int. Cl.[5] H01L *29/68;* G11C *11/40*
U.S. Cl. 257—324 **21 Claims**

1. A semiconductor memory device comprising:
a memory cell comprising a transistor having a source region and a drain region formed on a semiconductor substrate, a channel region so formed as to be interposed between said source region and said drain region, an insulation film formed above the channel region, and a gate formed on the insulation film;
writing operation control means for applying a first voltage across the area between said drain region and said source region so that a potential in the drain region is relatively higher than a potential in the source region and applying a predetermined write control voltage to said gate so as to write information to said memory cell, thereby to allow conduction between said drain region and said source region as well as produce hot electrons or hot holes in the boundary between said drain region and said channel region and locally trap the hot electrons or hot holes produced in said insulation film in the vicinity of the drain region;



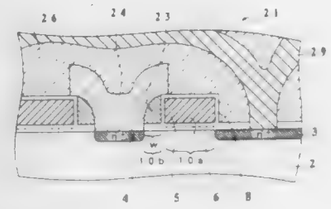
reading operation control means for applying a second voltage across the area between said drain region and said source region so that the potential in the source region is relatively higher than the potential in the drain region and applying a predetermined sense voltage to said gate so as to read out the information written in said memory cell, wherein the second voltage is opposite in polarity to and lower in magnitude than the first voltage; and
information detecting means for detecting the information written in said memory cell by detecting a potential appearing in said drain region or in said source region in a case where the second voltage and the sense voltage are applied by said reading operation control means.

5,349,222

SINGLE GATE MOS TYPE NONVOLATILE MEMORY AND OPERATING METHOD THEREOF

Noriyuki Shimoji, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

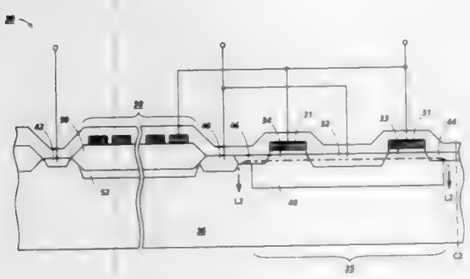
Filed Feb. 3, 1993, Ser. No. 12,882
Claims priority, application Japan, Feb. 19, 1992, 4-032164
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—326 **13 Claims**



1. A semiconductor device including nonvolatile memories comprising:
a substrate of semiconductor;
a first region formed in the surface of the substrate;
a second region formed in the surface of the substrate and defining a space between the first region and the second region, the surface of the space comprising a first portion and a second portion;

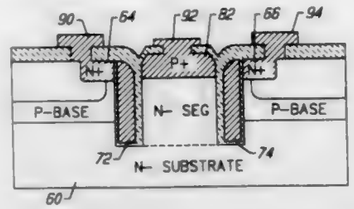
an insulating layer for holding electrons spanning the first portion;
an insulating layer spanning the second portion;
a control electrode on the insulating layer, spanning the first portion, and having a side surface;
a conductive body, on the insulating layer, spanning the second portion, and lying adjacent to the side surface of the control electrode;
the conductive body being electrically isolated from the control electrode; and
a first region electrode contacting the first region and the conductive body.

5,349,223
HIGH CURRENT HIGH VOLTAGE VERTICAL PMOS IN ULTRA HIGH VOLTAGE CMOS
Mohamad M. Mojaradi, Los Angeles; Tuan A. Vo, Hawthorne, and Steven A. Buhler, Redondo Beach, all of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 14, 1993, Ser. No. 166,400
Int. Cl.[5] H01L *29/68, 29/78, 29/40*
U.S. Cl. 257—329 **5 Claims**



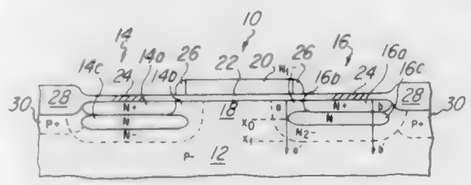
1. A vertical transistor comprising:
a) a substrate of a given first carrier type having an upper area and a lower area,
b) at least one combination gate/source area with a center wherein said combination gate/source area comprises a well region of a second carrier type, a source region of said first carrier type, first and second gate regions of said second carrier type, and first and second pinchoff regions of said first carrier type, wherein:
i) said first pinchoff region is in the center,
ii) said first gate region is adjacent to and surrounds said first pinchoff region,
iii) said source region is adjacent to and surrounds said first gate region,
iv) said second gate region is adjacent to and surrounds said source region,
v) said second pinchoff region is adjacent to and surrounds said second gate region, and
vi) said well region extends underneath said source region and said first and second gate regions and extends at least partially underneath said first and second pinchoff regions,
c) a drain area,
d) said combination gate/source area built in the upper area of said substrate such that the remaining lower portion of said substrate underneath said combination gate/source area is said drain area.

5,349,224
INTEGRABLE MOS AND IGBT DEVICES HAVING TRENCH GATE STRUCTURE
Percy V. Gilbert, Austin, Tex., and Gerold W. Neudeck, West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.
Filed Jun. 30, 1993, Ser. No. 85,845
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—333 **24 Claims**



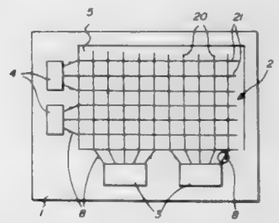
1. A power semiconductor device which is integrable in an integrated circuit comprising
a semiconductor body having first and second major opposing surfaces with a first doped region of a first conductivity type therebetween,
second and third doped regions of a second conductivity type formed in said first doped region, said second and third doped regions being spaced apart and abutting said first surface,
fourth and fifth doped regions of said first conductivity type respectively formed in said second and third doped regions and abutting said first surface,
sixth and seventh doped regions extending from said first surface into said first region, said sixth region being adjacent to said second and fourth regions and spaced therefrom by an electrically insulative gate layer, said seventh region being adjacent to said third and fifth regions and spaced therefrom by an electrically insulative gate layer,
said first doped region extending toward said first surface between said sixth and seventh regions and separated from said sixth and seventh regions by an electrically insulative layer of suitable thickness for voltage blocking, and
an eighth doped region in said first doped region between said sixth and seventh regions and abutting said first surface.

5,349,225
FIELD EFFECT TRANSISTOR WITH A LIGHTLY DOPED DRAIN
Donald J. Redwine, Houston; Mousumi Bhat, Austin, and Michael Smayling, Missouri City, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Apr. 12, 1993, Ser. No. 46,571
Int. Cl.[5] H01L *29/06, 21/268*
U.S. Cl. 257—336 **35 Claims**



1. A transistor device comprising:
a semiconductor layer, including a top surface;
a first source/drain region of a first conductivity type formed in said semiconductor layer;
a second source/drain region of said first conductivity type formed in said semiconductor layer spaced from said first source/drain region by a channel region, said second source/drain region comprising:
a lightly doped portion of said first conductivity type adjacent said channel region and abutting said top surface, said lightly doped portion having a first doping concentration;
a main portion of said first conductivity type abutting said top surface and spaced from said channel region by said lightly doped portion said main portion having a second doping concentration which is greater than said first doping concentration;
a deep portion of said first conductivity type formed within said layer and spaced from said top surface by said lightly doped portion and said main portion said deep portion having a third doping concentration which is greater than said first doping concentration but less than said second doping concentration; and
a gate electrode formed over at least a portion of said channel region and insulated therefrom.

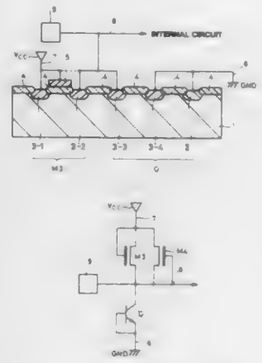
5,349,226
ACTIVE MATRIX SUBSTRATE HAVING A CONTACT PAD FOR DETECTING BUS LINE SIGNALS
Takafumi Kawaguchi, Yamatotakada, and Shiro Takeda, Tenri, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 24, 1991, Ser. No. 813,268
Claims priority, application Japan, Dec. 28, 1990, 2-409176
Int. Cl.[5] G02F *1/13*
U.S. Cl. 257—347 **4 Claims**



1. An active matrix substrate comprising an array of thin film transistors arranged in a matrix on an insulating substrate, at least two groups of gate buses, and at least two groups of source buses,
wherein the gate buses and the source buses comprise a contact pad for probing formed thereon such that a metal portion thereof is exposed,
wherein one group of the gate buses are connected to a first gate bus driver IC and the other group thereof to a second gate bus driver IC, and one group of the source buses are connected to a first source bus driver IC and the other group thereof to a second source bus driver IC, and the contact pad is formed on each of the outermost gate buses and source buses of each group, and
wherein the contact pad includes a triangle contact portion and a circle contact pad area formed in the center of the contact portion by removing an insulating film covering the gate bus and the source bus to have a metal exposed portion.

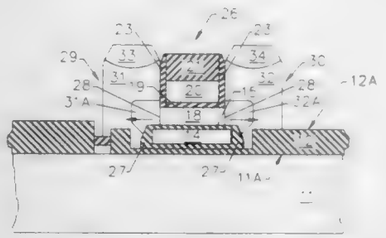
5,349,227
SEMICONDUCTOR INPUT PROTECTIVE DEVICE AGAINST EXTERNAL SURGE VOLTAGE
Motoaki Murayama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Oct. 15, 1992, Ser. No. 961,863
Claims priority, application Japan, Oct. 25, 1991, 3-279522
Int. Cl.[5] H01L *29/06, 29/78, 27/02*
U.S. Cl. 257—361 **3 Claims**

1. A semiconductor input protective device formed between a power source line and a ground line and connected to an internal circuit, said device comprising:
an NPN type bipolar transistor having a collector connected to a signal line extending to a pad, and an emitter and a base commonly connected to a ground line;
a first N-channel MIS transistor in which one of a drain and a source thereof is connected to said signal line and the other one of the drain and the source is connected to said power source line, said first N-channel MIS transistor



having a threshold voltage higher than a power source voltage supplied to said power source line and having a gate insulation film thicker than a gate insulation film of a MIS transistor constituting said internal circuit; and
a second N-channel MIS transistor connected in parallel with said first N-channel MIS transistor, with a gate of one of said first and second N-channel MIS transistors being connected to the signal line and a gate of the other one of said first and second N-channel MIS transistors being connected to the power source line.

5,349,228
DUAL-GATED SEMICONDUCTOR-ON-INSULATOR FIELD EFFECT TRANSISTOR
Gerold W. Neudeck, and Suresh Venkatesan, both of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.
Division of Ser. No. 815,121, Dec. 27, 1991, Pat. No. 5,273,921.
This application Dec. 7, 1993, Ser. No. 163,322
Int. Cl.[5] H01L *29/78, 27/01, 27/13*
U.S. Cl. 257—365 **12 Claims**



1. A dual-gate field effect transistor having self-aligned first and second gate electrodes, comprising:
a semiconductor substrate having a gate electrode insulating layer on one face thereof;
a first gate electrode on said gate electrode insulating layer, said first gate electrode having first and second ends which define a first length of said first gate electrode;
a first insulating layer on said first gate electrode;
a sidewall insulating region on said first and second ends of said first gate electrode, so that said gate electrode insulat-

ing layer, said first insulating layer and said sidewall insulating region surround and electrically isolate said first gate electrode;

a monocrystalline semiconductor channel region on said first insulating layer, having first and second ends which overlap said first gate electrode and define a second length of said channel region which is less than the first length;

a second insulating layer on said monocrystalline semiconductor channel region;

a second gate electrode on said second insulating layer, said second gate electrode having first and second ends which overlap said channel region and define a third length of said second gate electrode which is less than the second length; and

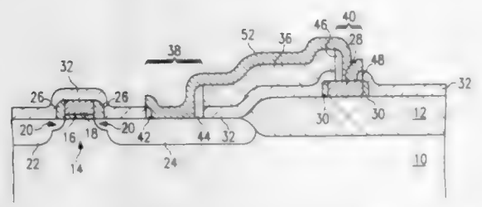
a source and a drain electrically contacting said first and second ends of said monocrystalline semiconductor channel region, respectively.

5,349,229

LOCAL INTERCONNECT FOR INTEGRATED CIRCUITS

Che-Chia Wei, Plano, and Fu-Tai Liou, Carrollton, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 648,554, Jan. 31, 1991, Pat. No. 5,124,280.
This application Jan. 31, 1992, Ser. No. 830,129
Int. Cl.[5] H01L *23/48*
U.S. Cl. 257—383 **4 Claims**



1. A conductive local interconnect structure for a semiconductor integrated circuit, comprising:

a substrate;

a first polycrystalline interconnect layer over said substrate and separated therefrom by a thin gate oxide layer;

an insulating layer over said substrate and said first polycrystalline silicon interconnect layer, said insulating layer being relatively thicker than the thin gate oxide layer and having openings therethrough to conductive regions within said substrate and to a second underlying conductive structure, wherein said second underlying conductive structure comprises a portion of said first polycrystalline silicon interconnect layer;

a first patterned polycrystalline silicon layer overlying a portion of said insulating layer, a portion of the second underlying conductive structure, and a portion of a selected conductive region within said substrate; and

first and second connecting polycrystalline silicon regions connected to said first patterned polycrystalline silicon layer and extending to contact the selected conductive substrate region and the second underlying conductive structure, respectively;

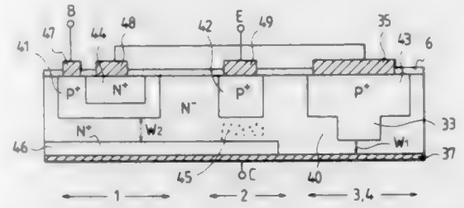
at least a portion of said first patterned polycrystalline silicon layer and said first and second connecting polycrystalline silicon regions containing a refractory metal forming a refractory metal silicide, whereby a refractory metal silicide conductor extends from the selected conductive substrate region to said second underlying conductive structure.

5,349,230

DIODE CIRCUIT FOR HIGH SPEED SWITCHING TRANSISTOR

Hisao Shigekane, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Oct. 28, 1991, Ser. No. 783,333
Claims priority, application Japan, Dec. 28, 1990, 2-408533
Int. Cl.[5] H01L *29/48, 29/56, 29/64;* **H03K** *17/60*
U.S. Cl. 257—474 **7 Claims**



5. A high speed switching transistor circuit, comprising: a transistor;

a constant voltage diode having a first end of a first conductivity type connected to an emitter of said transistor and a second end of a second conductivity type;

a reverse current preventive diode having a first end of said first conductivity type connected to a collector of said transistor and a second end of said second conductivity type connected to said second end of said constant voltage diode; and

a high speed diode reverse-bias connected between said transistor collector and said transistor emitter,

wherein said transistor includes a first region being of said second conductivity type, a second region diffused in said first region and being of said first conductivity type, and a third region diffused in said second region and being of said second conductivity type,

wherein said high speed diode includes a fourth region diffused in said first region and being of said first conductivity type, and a lifetime killer for controlling carrier rebinding within said high speed diode,

wherein said constant voltage diode includes a fifth region diffused in said first region and being of said first conductivity type, and

wherein said reverse current preventive diode includes a Schottky barrier electrode formed on said first region.

5,349,231

APPARATUS AND METHOD FOR BIDIRECTIONAL CURRENT CONDUCTION

Fernando D. Carvajal, McKinney, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 796,299, Nov. 22, 1991, Pat. No. 5,221,889.
This application Jun. 18, 1993, Ser. No. 79,187
Int. Cl.[5] H01L *29/72*
U.S. Cl. 257—566 **16 Claims**

1. A bilateral bipolar transistor device for bidirectional current conduction between first and second nodes of an electronic circuit, comprising:

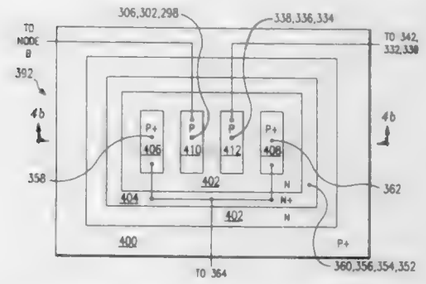
a semiconductor layer having a first conductivity type;

a first region formed in said semiconductor layer, having a second conductivity type;

a second region formed in said semiconductor layer, spaced from said first region, and having said second conductivity type;

a third region formed in said semiconductor layer, spaced from and interposed between said first and second regions, having said second conductivity type and coupled to the first node; and

a fourth region formed in said semiconductor layer, spaced from and interposed between said third and second regions, having said second conductivity type and coupled to the second node, said first and second regions being coupled to a bias current source.

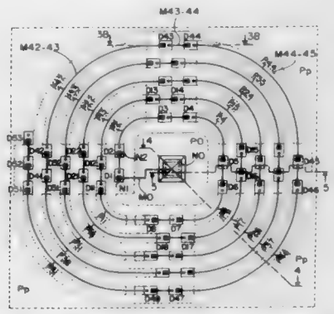


5,349,232

PROTECTION DIODE FOR A VERTICAL SEMICONDUCTOR COMPONENT

Jacques Mille, and Philippe Meunier, both of Aix-en-Provence, France, assignors to SGS-Thomson Microelectronics S.A., Saint-Genis Pouilly, France

Filed Jun. 29, 1993, Ser. No. 85,310
Claims priority, application France, Jun. 30, 1992, 92 08483
Int. Cl.[5] H01L *23/60, 23/62, 29/90*
U.S. Cl. 257—603 **13 Claims**



1. A high voltage avalanche diode formed in an integrated circuit including at least one vertical power component, the integrated circuit being made in a semiconductor substrate of a first conductivity type having a rear surface contact that corresponds to a first main electrode of the power component, at least one contact region formed in at least one region of a second conductivity type formed in a front surface of the substrate that corresponds to a second main electrode, said diode including:

a region of the second conductivity type wound substantially as a spiral, formed in the front surface of the substrate;

non-overlapping regions of the first conductivity type formed in the spiral in equal number per turn and forming elemental avalanche diodes with the spiral;

metallizations connecting the elemental diodes in series; and

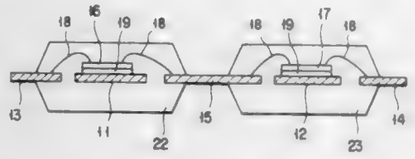
a connection between an extremity of the spiral and the first electrode.

5,349,233

LEAD FRAME AND SEMICONDUCTOR MODULE USING THE SAME HAVING FIRST AND SECOND ISLANDS AND THREE DISTINCT PLURALITIES OF LEADS AND SEMICONDUCTOR MODULE USING THE LEAD FRAME

Akira Sasaki, Toda, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 19, 1993, Ser. No. 47,399
Claims priority, application Japan, Apr. 20, 1992, 4-099591
Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—666 **5 Claims**



1. A semiconductor module, comprising:

a lead frame member having an axis, said lead frame member including:

first and second islands spaced apart from each other; and

first, second, and third pluralities of leads extending parallel to said axis,

said first and second pluralities of leads extending outward from, said first and second islands; and

all of said third plurality of leads extending between said first and second islands;

first and second semiconductor chips mounted on said first and second islands, respectively, at least one of said chips being connected to at least one of said third plurality of leads; and

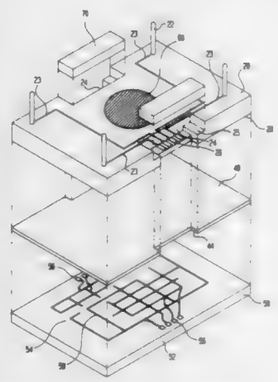
first and second resin bodies separately encapsulating said first and second semiconductor chips, respectively, and exposing said third plurality of leads.

5,349,234

PACKAGE AND METHOD FOR ASSEMBLY OF INFRA-RED IMAGING DEVICES

William F. DesJardin, Rochester; Edward J. Ozimek, Penfield; Luis A. Rivera, Rochester, and Terry Tarn, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 29, 1992, Ser. No. 890,451
Int. Cl.[5] H01L *23/02, 21/44*
U.S. Cl. 257—684 **29 Claims**



1. A packaged energy sensor comprising:

a device for sensing incident energy, said device having a first surface for exposure to said energy and a second

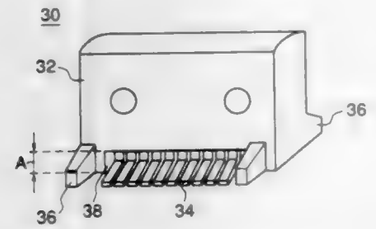
surface comprising a plurality of bond pads disposed at a peripheral portion of the second surface;
a body having an upper surface, a lower surface for holding the device, and a recess portion in general alignment with said bond pads;
electrical leads supported by said body in said recess body portion at a location proximate said bond pads;
said body having external electrical connectors extending from the body and electrically connected to the electrical leads supported by said body; and wire connecting the bond pads on the chip to the electrical leads in the recess of the body.

5,349,235

HIGH DENSITY VERTICALLY MOUNTED SEMICONDUCTOR PACKAGE

Joon K. Lee, Seoul; Hyeon J. Jeong, Inchon; Kyung S. Kim, and Oh-Sik Kwon, both of Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do

Filed Aug. 25, 1993, Ser. No. 111,518
Claims priority, application Rep. of Korea, Sep. 8, 1992, 92-16337
Int. Cl.[5] H01L *23/16*
U.S. Cl. 257—693 **8 Claims**



1. A vertically mounted semiconductor chip package comprising:
(a) a body having first and second substantially parallel planar faces and a perimeter edge extending between first and second corners along which leads extend;
(b) first and second supports formed on the first face near the edge, the first support near the first corner and the second support near the second corner; and
(c) third and fourth supports formed on said second face near the edge, the third support near the first corner and the fourth support near the second corner, wherein the first support is staggered along the edge from the third support and the second support is staggered along the edge from the fourth support.

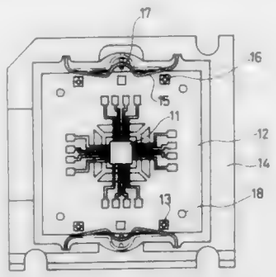
5,349,236

REUSABLE FIXTURE FOR CARRIER TAPE

Fumio Oshino, and Masahiko Yamaki, both of Nagoya, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Jul. 16, 1993, Ser. No. 92,524
Claims priority, application Japan, Jul. 21, 1992, 4-194170
Int. Cl.[5] H01L *23/48, 21/00*
U.S. Cl. 257—701 **4 Claims**

1. A resuable fixture for a carrier tape, comprising a bottom element for receiving one of a carrier tape to which a semiconductor chip is bonded and a carrier tape to which a semiconductor chip is be bonded, a frame extending around an outer periphery of said bottom element in order to protect the carrier tape, said frame having inner side faces, and at least a pair of resilient tape holding members for holding the carrier tape on said bottom element, each tape holding member having two ends, said tape holding members being temporarily deformed by at least a pair of engaging members that are engageable with said tape holding members and movable in an opposing relationship along a common straight line so as to allow the carrier tape to be mounted on the bottom element, the two ends of each tape holding member being joined and fixed at the inner



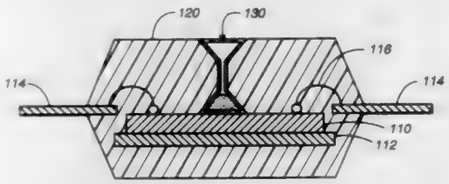
side faces of said frame at a position so as to allow at least a portion of each tape holding member to overlie an edge of the carrier tape mounted on said bottom element.

5,349,237

INTEGRATED CIRCUIT PACKAGE INCLUDING A HEAT PIPE

Anthony Sayka, and Mohammad A. Siddiqui, both of San Antonio, Tex., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Mar. 20, 1992, Ser. No. 854,486
Int. Cl.[5] H01L *23/28*
U.S. Cl. 257—715 **9 Claims**



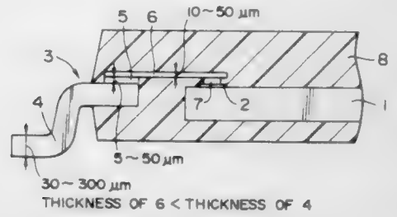
1. A plastic-encapsulated integrated circuit comprising:
a package formed of plastic,
an integrated circuit embedded in the package, and
heat-dissipating means for conducting heat from the integrated circuit, including:
a hermetically sealed container formed of a heat conductive material embedded in the package and extending from the integrated circuit to at least an outer surface of the package, the container having first and second portions disposed adjacent the integrated circuit and the outer surface of the package, respectively, and an intermediate portion interconnecting the first and second portions, the intermediate portion being of smaller cross-sectional area than the first and second portions; and
a volatile fluid disposed in the container, for absorbing heat from the integrated circuit by converting the fluid from a liquid state to a vapor state without directly contacting the integrated circuit, and for evaporatively dissipating heat by converting the fluid from a vapor state to a liquid state.

5,349,238

SEMICONDUCTOR DEVICE

Kenji Ohsawa; Mutsumi Nagano; Akira Kojima, and Hideyuki Takahashi, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 23, 1992, Ser. No. 950,659
Claims priority, application Japan, Sep. 25, 1991, 3-274843
Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—736 **6 Claims**



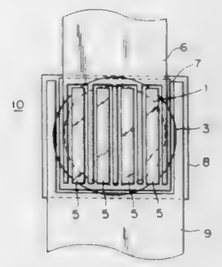
1. A lead frame made by the following process comprising, the steps of etching with a first etchant, a three layer metal structure wherein first and second outer metal layers are made of a material which is etched by said first etchant and a third intermediate metal layer is not etched by said first etchant so as to form a relatively thick outer lead from said first outer metal layer which extends in a first direction and so as to form a relatively thin inner lead from said second outer metal layer which overlaps said first outer metal layer and extends in a direction opposite to said first direction, and etching said third intermediate metal layer with a second etchant to form an electrical path area between said first and second outer metal layers in an overlap area and to also form a bump on said second outer metal layer which is remote from said overlap area, and, wherein said first outer metal layer comprises 42 alloy or copper, said second outer metal layer comprises copper and said third intermediate metal layer comprises aluminum.

5,349,239

VERTICAL TYPE CONSTRUCTION TRANSISTOR

Hiroya Sato, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 2, 1992, Ser. No. 907,614
Claims priority, application Japan, Jul. 4, 1991, 3-164262
Int. Cl.[5] H01L *29/44, 29/70*
U.S. Cl. 257—737 **4 Claims**



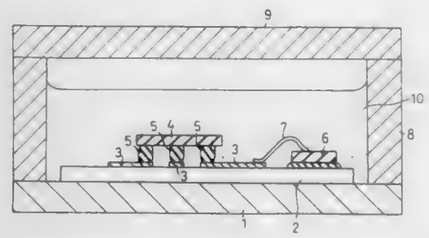
1. A vertical type construction transistor comprising:
a semiconductor basic plate;
a junction portion formed on a surface of said semiconductor basic plate, said junction portion including a boundary of an emitter region provided within a base region; and
a bump electrode provided immediately on said junction portion, said emitter region being of a size in approximate conformity with a width of said bump electrode and said emitter region being divided into a plurality of short strips of finger portions arranged in parallel with a size in a longitudinal direction of said finger portions and said width of said bump electrode in said longitudinal direction being set in a range of 5 μm–40 μm.

5,349,240

SEMICONDUCTOR DEVICE PACKAGE HAVING A SEALING SILICONE GEL WITH SPHERICAL FILLERS

Ryoichi Narita, Obu, and Yutaka Fukuda, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 26, 1992, Ser. No. 965,919
Claims priority, application Japan, Oct. 30, 1991, 3-285197
Int. Cl.[5] H01L *23/28, 23/02*
U.S. Cl. 257—791 **7 Claims**



1. A resin-sealed semiconductor device comprising:
a board having a conductor pattern formed thereon;
a semiconductor element including at least one soldering bump having a predetermined height facing said board and electrically bonded to said conductor pattern through said soldering bump; and
a sealing resin entering a space between said semiconductor element and said board and sealing said semiconductor element;
wherein said sealing resin includes
a silicone gel as a base resin; and
a spherical filler filled into said silicone gel, a diameter of said filler being at most a distance between said semiconductor element and said board, and volume percentage of said filler in said silicone gel being adjusted in such a way that a relationship between a coefficient α of linear expansion of said sealing resin and complex modulus of elasticity G^* (dyn/cm^2, at 1H_z, 30° C.) of said sealing resin meets retirement of following formula:

$$\alpha \leqq 0.033(G^* - 451)^{-0.56}$$

5,349,241

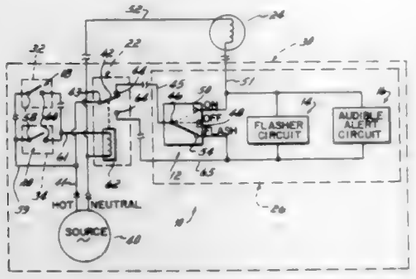
MULTIPLE POINT CONTROLLED FLASHING LOCATOR SYSTEM

Michael P. Gilmartin, Hamilton; Bryan W. Gilmartin, and Frank J. Gilmartin, both of Cincinnati, all of Ohio, assignors to CPX Industries, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 959,741, Oct. 13, 1992, abandoned. This application Dec. 22, 1992, Ser. No. 995,199
Int. Cl.[5] G08B *5/00*
U.S. Cl. 307—114 **14 Claims**

1. A method of providing multiple point control of a flashing locator system comprising:
providing a main switch having an input and at least two selectable output positions including an on position and a flash position, and providing a flasher circuit coupled to said main switch to be interconnected to a source of power and a light outside a dwelling when the main switch is in the flash position, the flasher circuit, when so interconnected, causing the outside light to repeatedly flash on and off;
providing a control circuit having a power input coupled to the source of power and at least two power outputs, a first of the power outputs being coupled to the main switch input and a second of the power outputs coupled to the

flasher circuit, the control circuit having a first state in which the power input is coupled to the first power output whereby to provide power from the power source to the main switch and a second state in which the power input is coupled to the second power output whereby to provide power from the power source directly to the flasher circuit bypassing the main switch;



coupling a plurality of remote switches, each at a respective location within the dwelling, to the control circuit; and

bypassing the main switch and causing the flasher circuit to be so interconnected directly to the power source by placing the control circuit in the second state in response to actuation of any one of the remote switches to flash the outside light from remote locations regardless of the position of the main switch.

5,349,242

BIDIRECTIONAL SWITCH CIRCUIT WITH AUTOMATIC RETURN-CURRENT PATH SELECTOR

Minoru Tanaka, Yokohama, and Hiroshi Tanimoto, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

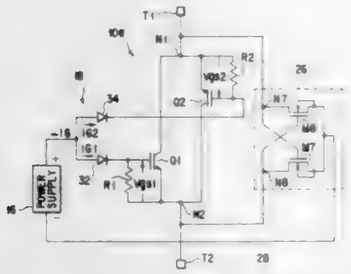
Continuation-in-part of Ser. No. 792,926, Nov. 15, 1991, Pat. No. 5,237,211. This application Feb. 25, 1993, Ser. No. 22,266

Claims priority, application Japan, Nov. 15, 1990, 2-307310; May 14, 1991, 3-107881

The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.

Int. Cl.[5] H03K *17/56*

U.S. Cl. 307—249 **9 Claims**



1. An integrated circuit for connection to a first and a second external terminal, said circuit comprising:

a first unidirectional switch device coupled between the first and second terminals, said first switch device being turned on or off in accordance with a potential difference between said first and second terminals;

a second unidirectional switch device connected in parallel with the first switch device, said second switch device being turned on or off in accordance with said potential difference between said first and second terminals, the first and second switch devices being connected reverse to each other in a current-forwarding direction thereof;

return-path selector means connected to said first and second terminals and having an output connected to a power supply device, for providing, in accordance with said potential difference between said first and second terminals, a return-path by which a return-current thereof is fed back from said output to the power supply device, said return-path selector means including a third switch device and a fourth switch device which are turned on selectively such that while one of the third and fourth switch devices is turned on, the other of said third and fourth switch devices is turned off;

current-flow selector means connected to said first and second switch devices, for receiving an output current of said power supply device, and for causing the output current to be provided unidirectionally to said first and second switch devices; and

bias means connected to said first and second switch devices, for providing said first and second switch devices with bias voltages respectively in response to said output current of said power supply device,

wherein said first and second switch devices include transistors, and said third and fourth switch devices include transistors which are connected with each other to form a flipflop circuit.

5,349,243

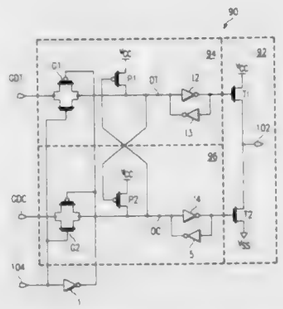
LATCH CONTROLLED OUTPUT DRIVER

David C. McClure, Carrollton, Tex., assignor to SGS-THOMSON Microelectronics, Inc., Carrollton, Tex.

Filed Jun. 30, 1993, Ser. No. 85,760

Int. Cl.[5] H03K *3/284, 3/01*

U.S. Cl. 307—272.1 **21 Claims**



1. A latch controlled output driver circuit comprising:

an output driver circuit including a pull-up transistor and a pull-down transistor, wherein the pull-up transistor has a drain connected to an upper power supply voltage and a source connected to a drain of the pull-down transistor and the pull-down transistor has a source connected to a lower power supply voltage;

a first latch circuit having an input and an output, wherein the output of the first latch circuit is connected to a gate of the pull-up transistor;

a second latch circuit having an input and an output, wherein the output of the second latch circuit is connected to a gate of the pull-down transistor;

a first gate having an output connected to the input of the first latch circuit;

a second gate having an output connected to the input of the second latch circuit;

a first control transistor having a source connected to the upper power supply voltage, a drain connected to the input of the first latch circuit, and a gate connected to the input of the second latch circuit; and

a second control transistor having a source connected to the upper power supply voltage, a drain connected to the input of the second latch circuit, and a gate connected to the input of the first latch circuit.

5,349,244

INITIALIZATION CIRCUIT FOR MEMORY REGISTERS

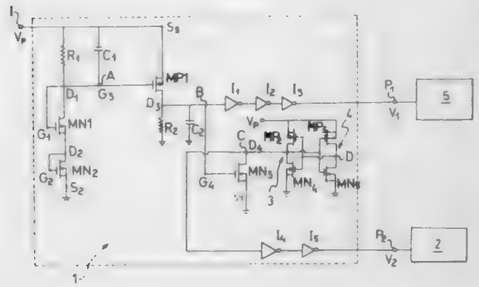
Pierangelo Confalonieri, Via Bergamo 6, I-24040 Canonica D'Adda (BG), Italy

Filed Nov. 25, 1992, Ser. No. 982,288

Claims priority, application Italy, Nov. 26, 1991, M191A 003145

Int. Cl.[5] H03K *3/01*

U.S. Cl. 307—296.4 **20 Claims**



1. An initialization circuit for memory registers, comprising:

a signal input terminal for receiving a supply voltage, the supply voltage increasing from a null voltage upon initialization;

a first initialization circuit portion connected to the signal input terminal, the first initialization circuit portion producing a first initialization voltage in response to the supply voltage, the first initialization voltage being proportional to the supply voltage when the supply voltage is below a predetermined tripping value and being a null voltage when the supply voltage exceeds the tripping value;

a second initialization circuit portion for producing a second initialization voltage in response to the supply voltage, the second initialization voltage being proportional to the supply voltage until the supply voltage exceeds a second tripping value, the second initialization voltage being equal to a null voltage thereafter;

a first output terminal connected to the first initialization circuit portion for providing a first output voltage corresponding to the first initialization voltage; and

a second output terminal connected to the second initialization circuit portion for providing a second output voltage corresponding to the second initialization voltage.

5,349,245

SIGNAL PROCESSING ARRANGEMENTS

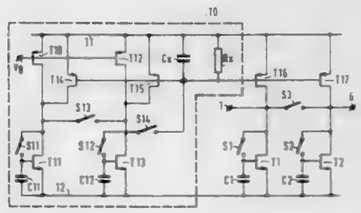
John B. Hughes, Hove, and Kenneth W. Moulding, Horley, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 1, 1993, Ser. No. 24,597

Claims priority, application United Kingdom, Mar. 5, 1992, 9204763.8

Int. Cl.[5] G11C *27/02;* **G06G** *7/12*

U.S. Cl. 307—353 **6 Claims**



1. A circuit arrangement for processing electrical signals in the form of sampled analogue currents, the circuit arrangement comprising: a first current memory cell having a current input for receiving an input analogue current and a current output for producing a stored analogue current and comprising a first field effect transistor having its drain and gate electrodes coupled via a first switch which is controlled by means of a clock signal such that it is closed during a first portion of a clock period, means for coupling the current input to the drain electrode of the first transistor during the first portion of the clock period, means for coupling the current output to the drain electrode of the first transistor during a second portion of the clock period, and means for feeding a first bias current to the drain electrode of the first transistor, a second current memory cell connected in cascade with said first current memory cell, said second current memory cell having a current input for receiving an input analogue current and a current output for producing a stored analogue current and comprising a second field effect transistor having its drain and gate electrodes coupled via a first switch which is controlled by means of a clock signal such that it is closed during a second portion of the clock period, means for coupling the current input to the drain electrode of the second transistor during the second portion of the clock period, means for coupling the current output to the drain electrode of the second transistor during the first portion of the clock period, and means for feeding a second bias current to the drain electrode of the second transistor, and means for causing the magnitude of the first and second bias currents to be such that errors due to charge injection in the first current memory cell are substantially cancelled by oppositely signed errors in the second current memory cell.

5,349,246

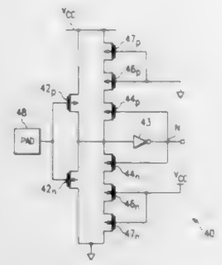
INPUT BUFFER WITH HYSTERESIS CHARACTERISTICS

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 21, 1992, Ser. No. 995,666

Int. Cl.[5] H03K *17/16*

U.S. Cl. 307—443 **21 Claims**



1. A buffer circuit, comprising:

a first drive transistor of the field-effect type, having a gate for receiving an input signal, having a source biased by a first reference voltage, and having a drain;

a driver circuit having an input coupled to the drain of said first drive transistor, and having an output;

a first plurality of hysteresis transistors of the field-effect type, said first plurality of hysteresis transistors having their source-drain paths connected in series between the input of the driver circuit and a second reference voltage, a first one of said first plurality of hysteresis transistors having its gate coupled to the output of said driver circuit, and a second one of said first plurality of hysteresis transistors has its gate biased to a voltage sufficient to place it in a conductive state, so that the source-drain paths of said first plurality of hysteresis transistors are conductive responsive to the output of said driver circuit being at a first logic state;

wherein the logic state corresponding to said first reference voltage, when presented to the input of said driver circuit,

causes said driver circuit to place its output at a second logic state;

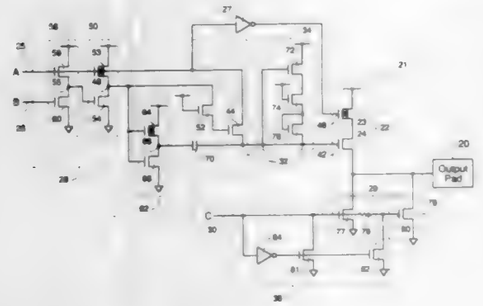
and wherein the channel length of each of said first plurality of hysteresis transistors is approximately the same as that of said first drive transistor.

5,349,247

ENHANCEMENT CIRCUIT AND METHOD FOR ENSURING DIACTUATION OF A SWITCHING DEVICE

Glen Hush, and Mark R. Thomann, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 618,164, Nov. 28, 1990, Pat. No. 5,128,563. This application Jun. 5, 1992, Ser. No. 893,880
The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.
Int. Cl.[5] H03K *14/20*
U.S. Cl. 307—451 11 Claims



1. The output driver circuit, comprising:

a) an output node;

b) a reference node capable of being connected to a reference potential;

c) a first switching device operatively interposed between said output node and said reference node and actuated at a control input in response to a first signal thereby driving a potential of said output node toward a potential of said reference node, and said first switching device deactuated at said control input in response to a second signal thereby interrupting a current between said output node and the reference node;

d) a second switching device operatively interposed between said output node and said reference node and actuated at a control input in response to said first signal thereby driving a potential of said output node toward a potential of said reference node, and said second switching device deactuated at said control input in response to said second signal thereby interrupting a current between said output node and the reference node;

e) a first enhancement switching device electrically interposed between said control input of said first switching device and said reference node, said first enhancement switching device actuated in response to said second signal thereby driving a potential of said control input of said first switching device to a value capable of deactuating said first switching device thereby ensuring the deactuation of said first switching device; and

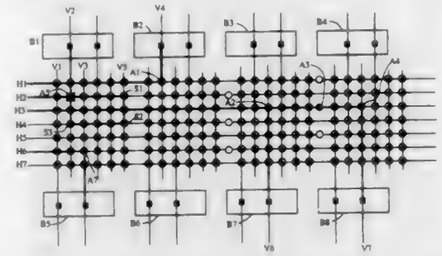
f) a second enhancement switching device electrically interposed between said control input of said second switching device and said reference node, said second enhancement switching device actuated in response to said second signal thereby driving a potential of said control input of said second enhancement switching device to a value capable of deactuating said second switching device, thereby ensuring the deactuation of said second switching device.

5,349,248

ADAPTIVE PROGRAMMING METHOD FOR ANTIFUSE TECHNOLOGY

David B. Parlour, Pittsburgh, Pa.; F. Erich Goetting, Cupertino, and Stephen M. Trimberger, San Jose, both of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Sep. 3, 1992, Ser. No. 940,125
Int. Cl.[5] H03K *19/177;* H01H *37/76*
U.S. Cl. 307—465 16 Claims



1. A method of programming an antifuse programmable logic device having interconnect wiring segments, and antifuses which programmably connect said wiring segments to each other, said method comprising the steps of:

providing a design in machine readable form, said design comprising connections between selected nodes in said device;

for each of said connections, selecting active wiring segments and active antifuses in said antifuse programmable logic device to implement said connection, thereby to form a route for said connection;

programming at least some of said active antifuses;

if during programming any of said active antifuses fails to become conductive, selecting from those antifuses not yet programmed an alternative set of antifuses to complete said connections;

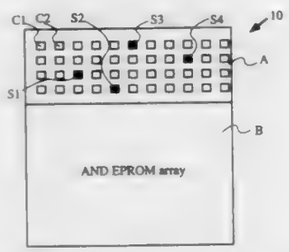
programming said alternative set of antifuses, thereby to form an implementation of said design.

5,349,249

PROGRAMMABLE LOGIC DEVICE HAVING SECURITY ELEMENTS LOCATED AMONGST CONFIGURATION BIT LOCATION TO PREVENT UNAUTHORIZED READING

David Chiang, Saratoga; Thomas Y. Ho, Milpitas; Wei-Yi Ku, Cupertino; George H. Simmons, Sunnyvale, and Robert W. Barker, San Jose, all of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Apr. 7, 1993, Ser. No. 43,882
Int. Cl.[5] H04L *9/00;* H03K *19/177*
U.S. Cl. 307—465 14 Claims



1. A method for improving design security in a programmable logic device on an integrated circuit die, comprising:

providing on the integrated circuit die an array of programmable configuration elements;

providing on the integrated circuit die a plurality of programmable security elements, each having a state which allows readback and a state which does not allow readback, and wherein each programmable security element is distributed among programmable configured elements of said array;

connecting said plurality of programmable security elements to the integrated circuit, wherein said plurality of programmable security elements enables data to be read out from the programmable logic device only when each of said plurality of programmable security elements is set to its state which allows readback; and said plurality of programmable security elements disables the reading of data when at least one of said programmable security elements is set to its state which does not allow readback; and

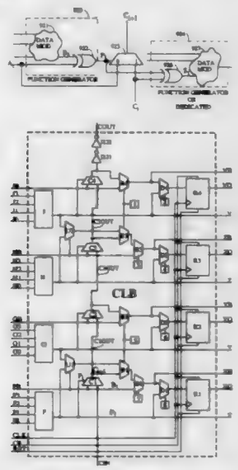
setting at least one of said programmable security elements to its state which does not allow readback.

5,349,250

LOGIC STRUCTURE AND CIRCUIT FOR FAST CARRY

Bernard J. New, Los Gatos, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Sep. 2, 1993, Ser. No. 116,659
Int. Cl.[5] H03K *19/00, 17/693*
U.S. Cl. 307—465 6 Claims



1. A programmable logic device comprising an array of logic blocks, each logic block having at least one circuit comprising:

means for generating a first input value (B_i);

an input terminal for providing a second input value (A_i);

a carry-in terminal (C_i) and a carry-out terminal (C_{i+1});

a multiplexer (**923**) for connecting one of said input terminal and said carry-in terminal to said carry-out terminal; and

a lookup table (**903**) for generating a propagate signal causing said multiplexer to connect said input terminal to said carry-out terminal when and only when said first input value is equal to said second input value ($A_i = B_i$), and to connect said carry-in terminal to said carry-out terminal when and only when said first input value is not equal to said second input value ($A_i \neq B_i$).

5,349,251

Patent Not Issued For This Number

5,349,252

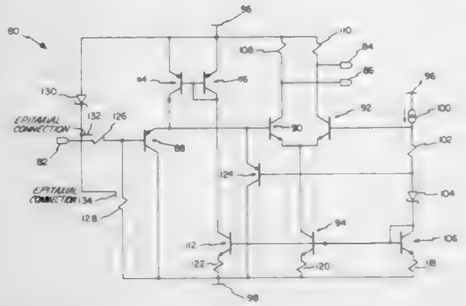
Patent Not Issued For This Number

5,349,253

LOGIC TRANSLATOR INTERFACING BETWEEN FIVE-VOLT TTL/CMOS AND THREE-VOLT CML

Tuan V. Ngo, Eden Prairie, and John J. Price, Jr., Edina, both of Minn., assignors to VTC Inc., Bloomington, Minn.

Filed Dec. 17, 1992, Ser. No. 992,544
Int. Cl.[5] H03K *19/018*
U.S. Cl. 307—475 30 Claims



1. A logic translator suited for low voltage operation comprising:

a first input terminal for receiving an input signal having an input signal voltage relative to a common reference terminal;

voltage reference means for providing a reference voltage relative to the common reference terminal at a first reference voltage terminal with the reference voltage having a magnitude that is less than a voltage equivalent to three times a magnitude of one diode drop;

first and second transistors connected in a common emitter configuration between a supply terminal and the common reference terminal with the base of the first transistor connected to the first reference voltage terminal;

current source means having a third transistor connected between the supply terminal and the base of the second transistor, a fourth transistor connected to the supply terminal, and a fifth transistor connected between the fourth transistor and the common reference terminal, the third and fourth transistors being arranged as a current mirror with the current in the third transistor being related to the current in the fourth transistor, the base of the fifth transistor being connected to the voltage reference means with the current in the fifth transistor being related to the current in the voltage reference means;

switching means connected to the first input terminal and the base of the second transistor for allowing current to pass between the current source means and the common reference terminal based on the first input terminal voltage; and

at least one output terminal for providing an output voltage based on one of the first and second transistor currents.

5,349,254

CALL PROGRESS DETECTION CIRCUIT

Dursun Sakarya, Dover, N.J., assignor to Matsushita Electric Corporation of America, Secaucus, N.J.

Continuation-in-part of Ser. No. 926,844, Aug. 6, 1992, abandoned. This application Nov. 24, 1993, Ser. No. 158,148
Int. Cl.[5] H03D *13/00*
U.S. Cl. 307—525 38 Claims

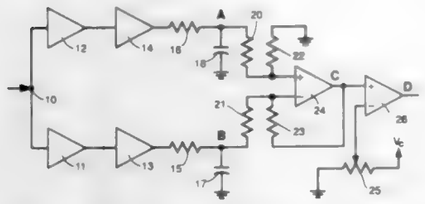
1. A signal detection system comprising:

at least one first filter means for allowing transmission of signals having energy in a first range of frequencies;

at least one second filter means for allowing transmission of signals having energy which is not is said first range of frequencies;

means for converting the output of said at least one first and

said at least one second filter means from alternating current to direct current; and



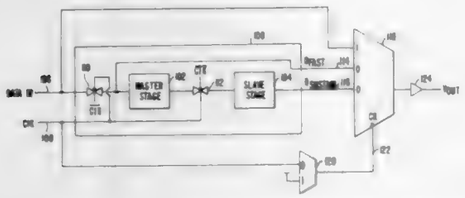
at least one first means for comparing the output of said at least one first filter means to the output of said at least one second filter means.

5,349,255

PROGRAMMABLE T_{co} CIRCUIT

Rakesh H. Patel, Santa Clara, Calif., assignor to Altera Corporation, San Jose, Calif.

Filed Mar. 8, 1993, Ser. No. 28,092
Int. Cl.[5] H03K *5/135*
U.S. Cl. 307—593 **4 Claims**



1. A circuit having a data path with a programmable clock-to-output delay time (t_{co}), the circuit comprising:

a flip-flop circuit having a first and a second stage, with a data input, a clock input, a first output from the first stage, and a second output at an output of the second stage, the flip-flop comprising:

a first clocked gate having an input coupled to the data input, and an output coupled to the flip-flop first output, the first clocked gate coupling the data input to the flip-flop first output upon a first state of the clock signal.

a first latch with an input coupled to the first clocked gate output, and an output;

a second clocked gate having an input coupled to the first latch output, and an output, the second clocked gate coupling the first latch output to the second clocked gate output upon a second state of the clock signal; and

a second latch with an input coupled to the second clocked gate output, and an output coupled to the flip-flop second output; and

selection/predriver logic having a first input coupled to the flip-flop first output, a second input coupled to the flip-flop second output, a plurality of select inputs and an output,

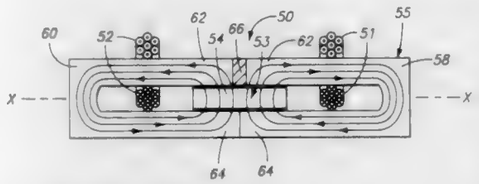
wherein the selection/predriver logic receives a plurality of select signals at the plurality of select inputs for selecting a fast mode and connecting the flip-flop first output to the selection/predriver logic output during a first state of a clock signal at the clock input.

5,349,256

LINEAR TRANSDUCER

Jeffrey C. Holliday, 19524 Young Rd., Guysville, Ohio 45735

Filed Apr. 23, 1993, Ser. No. 52,472
Int. Cl.[5] H02K *41/00*
U.S. Cl. 310—12 **52 Claims**



1. A transducer comprising:

a pair of electrical conductors spaced longitudinally from each other;

first and second magnetically permeable transducer members positioned transversely adjacent to each other for relative longitudinal movement, the transducer members forming two magnetic paths of high permeance, wherein each such magnetic path links a single one of the electrical conductors;

the first transducer member comprising a longitudinally-extending magnetic flux source having a transversely-oriented internal magnetic field vector, the flux source being positioned to complete two variable magnetic flux circuits, one such flux circuit being completed through each of the magnetic paths;

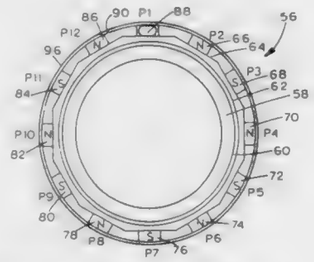
the second transducer member having a flux dividing separator of low magnetic permeability which is positioned transversely adjacent the flux source to variably apportion magnetic flux from the flux source between the two magnetic flux circuits depending on the relative longitudinal positions of the transducer members.

5,349,257

PERMANENT MAGNET GENERATOR WITH A POSITION SENSING COIL

Michael R. Hernden, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Apr. 6, 1993, Ser. No. 43,510
Int. Cl.[5] H02K *11/00;* **H02P** *6/02*
U.S. Cl. 310—68 B **18 Claims**



1. An electromagnetic device comprising:

a housing;

a rotor within the housing, the rotor having poles, wherein at least some of the poles of the rotor are magnetic, and wherein one of the poles of the rotor is a non-magnetic poles;

a stator within the housing, the stator having stator windings wound in cooperation with the poles of the rotor; and,

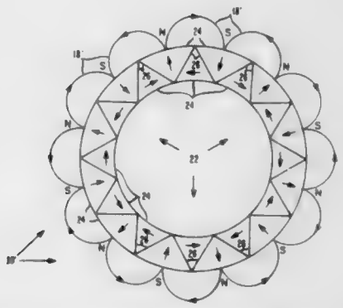
position determining means for determining a pre determined position of the rotor, the position determining means including a sensing coil within the housing wherein the sensing coil is wound with respect to the poles of the rotor so as to produce an electrical pulse when the non-magnetic pole is in the vicinity of the sensing coil and so as to produce substantially no electrical signal when the non-magnetic pole is not in the vicinity of the sensing coil.

5,349,258

PERMANENT MAGNET STRUCTURE FOR USE IN ELECTRIC MACHINERY

Herbert A. Leupold, Eatontown, and Ernest Potenziani, II, Ocean, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 436,406, Nov. 14, 1989, Pat. No. 5,280,209. This application Sep. 30, 1993, Ser. No. 129,883
Int. Cl.[5] H02K *21/12, 23/04, 21/26*
U.S. Cl. 310—154 **38 Claims**



1. A permanent magnet structure for avoiding magnetic losses incurred from unutilized magnetic fields in electric machinery, comprising:

at least one hollow cylinder of magnetic material having inner and outer cylindrical surfaces and constructed from a plurality of adjacently disposed and contiguous segments, each such segment having a substantially triangular cross section that includes a base on one cylindrical surface and a vertex on the other cylindrical surface, with the base and vertex respectively of any specific segment being located on the cylindrical surface opposite to that on which the base and vertex respectively of its adjacent segments are located, each said cylinder being magnetized to sustain a plurality of magnetic circuits, with each of said circuits including north and south pole faces and said pole faces for each said cylinder being disposed on only one cylindrical surface thereof.

5,349,259

ROTOR FOR A PRINTED MOTOR

Toru Kaneko, and Osamu Nakamura, both of Shizuoka, Japan, assignors to Minebea Co., Ltd., Nagano, Japan

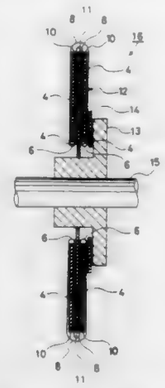
Filed Aug. 9, 1993, Ser. No. 103,220
Claims priority, application Japan, Sep. 29, 1992, 4-284061
Int. Cl.[5] H02K *1/22*
U.S. Cl. 310—261 **2 Claims**

1. In a rotor for a printed motor comprising:

an armature formed by electrically connecting an outer end and an inner end of a sheet coil that is formed by heat-pressure bonding sheet coils having a coil pattern respectively on both sides of an insulating board including a glass fabric impregnated with an electrically insulating cyanate resin;

a hub fitted in the center of said armature;

a rotating shaft supported by said hub; and



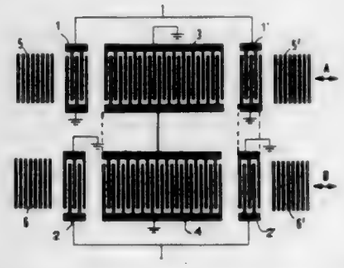
an insulator located between said armature and said hub, said insulator including a glass fabric impregnated with cyanate resin.

5,349,260

TWO TRACK SURFACE WAVE ARRANGEMENT WITH IMPROVED SELECTION PROPERTY

Kimon Anemogiannis, Munich, and Giuliano Visintini, Unterhaching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 20, 1993, Ser. No. 48,505
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1992, 4214122
Int. Cl.[5] H03H *9/25, 9/64;* **H01L** *41/04*
U.S. Cl. 310—313 D **6 Claims**



1. A two track surface wave arrangement, whereby 2N transducer structures, N being a whole number, belonging to an input side are present in a first track in a predetermined geometrical arrangement relative to one another and whereby 2N transducer structures, N being a whole number, belonging to an output side are arranged in a second track, whereby each of the transducer structures of the input and output sides has a reference plane, the arrangement having coupling of the first and second tracks, comprising: a first arrangement having transducer structures of the first track and a second arrangement having transducer structures of the second track positioned, said first and second arrangements being offset relative to one another parallel to a direction of the first and second tracks and being positioned offset by a dimension x_0 according to

$$|[(x_{11'} - x_0)^2 + (y_{12})^2]^{\frac{1}{2}} - [(x_{22'} + x_0)^2 + (y_{12})^2]^{\frac{1}{2}}| = \frac{\lambda_0}{2}$$

-continued

$$or = (2N - 1)\frac{\lambda_0}{2}$$

where:

x_{11}, and x_{22}, are respective spacings of the transducer structures of the first and second tracks from one another, y_{12} is a spacing of the first and second tracks from one another, and λ_0 is the wavelength of a center frequency of a signal in substrate material of the two track surface wave arrangement.

5,349,261

VIBRATOR

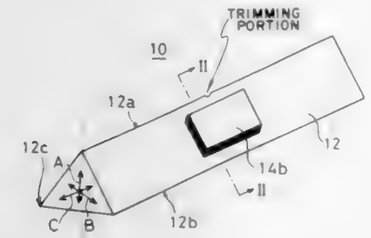
Katsumi Fujimoto; Kazuhiro Yoshitani; Akira Mori, and Takeshi Nakamura, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Mar. 25, 1993, Ser. No. 36,723

Claims priority, application Japan, Mar. 30, 1992, 4-105539; Dec. 9, 1992, 4-352643

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—321 **6 Claims**



1. A vibrator comprising:

a polygonal prism-shaped vibrating body; and

a piezoelectric element formed on a side face of said vibrating body;

wherein an intermediate portion of a ledge-line portion of said vibrating body, only where said piezoelectric element is formed, is trimmed.

5,349,262

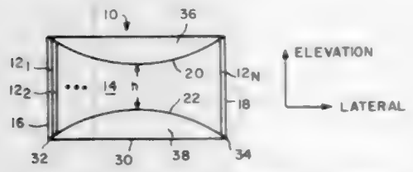
PHASED ARRAY ULTRASOUND IMAGING SYSTEM WITH DYNAMIC ELEVATION FOCUSING

Stephen M. Grenon, Manchester, and Gregory G. Vogel, Londonderry, both of N.H., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 22, 1994, Ser. No. 199,918

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—334 **20 Claims**



1. A phased array ultrasound transducer comprising:

a plurality of transducer elements disposed along a lateral axis, said transducer having an aperture with an elevation dimension parallel to an elevation axis that increases between a midpoint of the aperture along said lateral axis and each end of the aperture along said lateral axis.

5,349,263

POINTING DEVICE SUITABLE FOR MINIATURIZATION

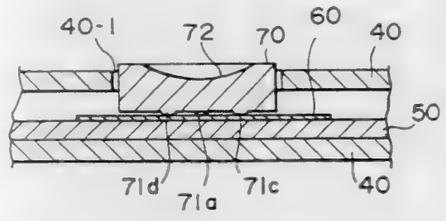
Sumio Katayama; Junichi Iwasaki; Shuichi Toi; Ichiro Usui, and Takashi Yanase, all of Chofu, Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1992, Ser. No. 957,249

Claims priority, application Japan, Oct. 9, 1991, 3-090681[U]; Dec. 27, 1991, 3-107722[U]; Dec. 27, 1991, 3-107930[U]; Sep. 22, 1992, 4-065917[U]; Sep. 22, 1992, 4-065918[U]; Sep. 22, 1992, 4-065919[U]

Int. Cl.[5] G06K *11/18;* **H01L** *41/08*

U.S. Cl. 310—338 **18 Claims**



1. A pointing device for use in moving a cursor displayed on a display, comprising:

a pressure sensing sheet including first through fourth pressure detection elements;

a base member mounted on said pressure sensing sheet and provided with first through fourth protrusions formed on an under surface opposite to said pressure sensing sheet and in facing relation to said first through said fourth pressure detection elements, respectively, said base member being provided with an operation shaft formed on an upper surface of said base member and which projects upwardly therefrom; and

a cap member coupled to said operation shaft of said base member.

5,349,264

ELECTRIC LAMP CONSTRUCTION HAVING A CONTACT TONGUE SECURELY FIXED BY AN INSULATOR BODY IN A SLEEVE

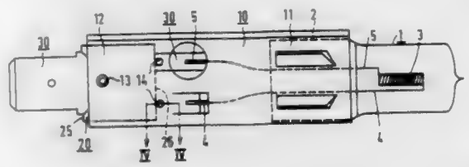
Wilfried H. Krings, Wurselen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 8, 1992, Ser. No. 911,560

Claims priority, application European Pat. Off., Nov. 11, 1991, 91202923.8

Int. Cl.[5] H01J *5/48, 5/50;* **H01R** *13/64*

U.S. Cl. 313—318 **10 Claims**



1. An electric lamp structure comprising

(a) a lamp vessel enclosing an electric element, said lamp vessel being sealed in a gastight manner with a seal, said electric element being connected to first and second current conductors, each extending through said seal to an exterior of said lamp vessel;

(b) a substantially rectangular metal sleeve having a first end portion fixed about said seal, said rectangular sleeve being electrically connected to said first current conductor;

(c) a substantially rectangular insulator body having four side faces and a first and a second end face, said insulator body being fixed in a second end portion of said substantially rectangular metal sleeve, said insulator body having a recess in at least one side face extending from said first end face;

(d) a contact tongue fixed in said insulator body and extending from outside said metal sleeve beyond said first end face through said insulator body into said metal sleeve beyond said second end face, said contact tongue being electrically connected to said second current conductor inside said metal sleeve;

wherein a corresponding inward projection of said rectangular metal sleeve is accommodated in said recess and said metal sleeve has at lest one inward constriction cooperating with said second end face of said insulator body so as to securely fix said insulator body within said metal sleeve by said inward projection in said recess in one direction and by said inward constriction at said second end face in an opposite direction.

5,349,265

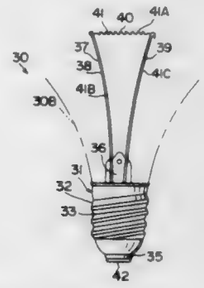
SYNTHETIC DIAMOND COATED ELECTRODES AND FILAMENTS

Jerome H. Lemelson, 868 Tyner Way, Incline Village, Nev. 89450

Continuation-in-part of Ser. No. 494,690, Mar. 16, 1990, Pat. No. 5,132,587. This application Mar. 16, 1992, Ser. No. 852,308

Int. Cl.[5] H01J *19/06*

U.S. Cl. 313—345 **18 Claims**



1. An electrical device comprising:

a) a support,

b) a filament having a metal core portion,

c) a light transmitting envelope secured to said support and forming a closure therewith,

d) input means for electrical energy secured to said support and connected to said filament,

e) said metal core portion of said filament being coated with a synthetic diamond material which is operable to protect the metal of said filament from heat corrosion during the resistance heating of said filament when electrical energy is conducted to said input means and to said metal of said filament.

5,349,266

Patent Not Issued For This Number

5,349,267

LIGHTING AND/OR INDICATING APPARATUS FOR USE IN FOGGY CONDITIONS

Marc Brassier, Vincennes; Charles Rydel, Paris, and Omar Medjaoui, Villemomble, all of France, assignors to Valeo Vision, Bobigny Cedex, France

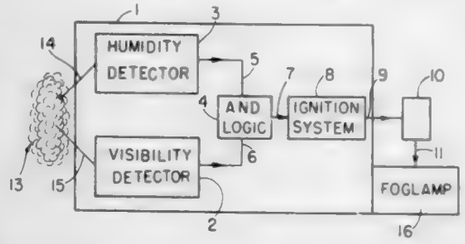
Filed Mar. 31, 1993, Ser. No. 40,496

Claims priority, application France, Mar. 31, 1992, 92 03886

Int. Cl.[5] B60Q *1/02*

U.S. Cl. 315—82 **9 Claims**

1. A fog lamp unit in a vehicle, comprising a combining circuit having a first input and a second input, a relative humidity detecting device having an output connected to said first input of the combining circuit, and a visibility detecting device having an output connected to said second input of the combining circuit, said combining circuit having an output for connection to at least one fog lamp unit of the vehicle, whereby the combining circuit combines signals received from



said detecting devices so as to produce command signals for illumination and extinction of said at least one fog lamp unit of the vehicle.

5,349,268

HIGH VOLTAGE DISCHARGE LAMP DEVICE

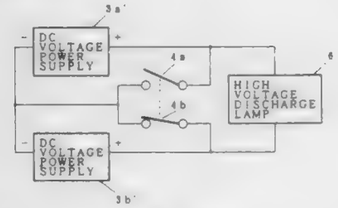
Satoshi Nagai; Hiroyasu Kisaichi, and Hiroyoshi Yamazaki, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 889,975, May 29, 1992, abandoned. This application Oct. 6, 1993, Ser. No. 132,227

Claims priority, application Japan, Jan. 27, 1992, 4-012044

Int. Cl.[5] H05B *37/00*

U.S. Cl. 395—160 **8 Claims**



1. A device for a high voltage discharge lamp comprising:

first and second step-up DC-DC converters connected to a power switch for supplying a first electric voltage and a second electric voltage, respectively;

relay contact switch means for alternatively switching between said first electric voltage and said second electric voltage, said first electric voltage having a polarity opposite to said second electric voltage; and

control means for changing a switched state of said relay contact switch means independent of said power switch being turned on and off.

5,349,269

POWER SUPPLY HAVING DUAL INVERTERS FOR ELECTROLUMINESCENT LAMPS

Robert A. Kimball, Scottsdale, Ariz., assignor to Durel Corporation, Tempe, Ariz.

Filed Mar. 29, 1993, Ser. No. 38,220

Int. Cl.[5] G09G *3/10*

U.S. Cl. 315—169.3 **16 Claims**

1. A power supply for driving an electroluminescent lamp from a direct current source having a low voltage, said electroluminescent lamp having a first terminal and a second terminal, said power supply comprising:

a first inverter producing high voltage, high frequency pulses from direct current, said first inverter having

(i) an input terminal for connection to said direct current source;

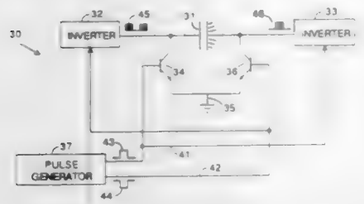
(ii) an output terminal for connection to said first terminal of said electroluminescent lamp,

(iii) a control input for enabling said first inverter to produce said high voltage, high frequency pulses in response to an enabling pulse on said control input;

a second inverter producing high voltage, high frequency pulses from direct current, said second inverter having

(i) an input terminal for connection to said direct current source;

(ii) an output terminal for connection to said first terminal of said electroluminescent lamp,



(iii) a control input for enabling said second inverter to produce high voltage, high frequency pulses from said direct current in response to an enabling pulse on said control input;

a pulse generator

(i) having a first output connected to the control input of said first inverter,

(ii) having a second output connected to the control input of said second inverter, and

(iii) producing enabling pulses on said first and second outputs for causing said first and second inverters to alternately apply high voltage, high frequency pulses to said electroluminescent lamp.

5,349,270

TRANSFORMERLESS FLUORESCENT LAMP OPERATING CIRCUIT, PARTICULARLY FOR A COMPACT FLUORESCENT LAMP, WITH PHASE-SHIFTED INVERTER CONTROL

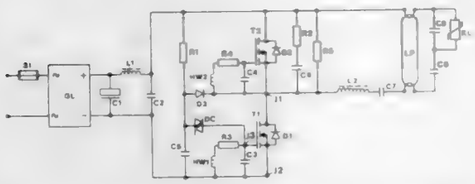
Ulrich Roll; Werner Bernhard, both of Augsburg, and Ludwig Reiser, Gersthofen, all of Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen mbH, Munich, Fed. Rep. of Germany

Filed Aug. 25, 1992, Ser. No. 935,004

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1991, 4129430

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—209 R **18 Claims**



1. For combination with a low-pressure discharge lamp (LP),

an operating circuit for high-frequency operation of the lamp, said operating circuit comprising

a power network rectifier (GL including a filter (C1) for providing d-c output electrical energy, and connected thereto;

a self-excited osillator circuit connected to said rectifier having at least one active switching element (T1, T2);

and a lamp supply circuit including

a resonance circuit coupled to the lamp and having at least one resonance inductance (L2) and at least one capacitive element (C8, C9) connected to said oscillator circuit, and

wherein the oscillator circuit includes, in accordance with the invention,

a feedback circuit which comprises at least one auxiliary winding (HW1, HW2, . . . HW11) inductively coupled to the resonance inductance (L2); and

a pulse shaping - phase shifting network (R3, C3; R4, C4; R10, C10, R11, C11; R12, C12) devoid of inherent resonance, coupling the auxiliary winding to the active switching element.

5,349,271

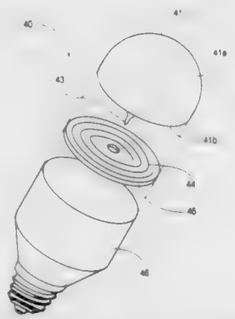
ELECTRODELESS DISCHARGE LAMP WITH SPIRAL INDUCTION COIL

Ron van Os, Sunnyvale, and Derek Bray, Los Altos, both of Calif., assignors to Diablo Research Corporation, Sunnyvale, Calif.

Filed Mar. 24, 1993, Ser. No. 36,303

Int. Cl.[5] H05B *41/16*

U.S. Cl. 315—248 **16 Claims**



1. An electrodeless discharge lamp comprising:

a discharge vessel containing an ionizable vapor; and

a generator for providing a high-frequency signal to an induction coil;

the induction coil connected to the generator and disposed adjacent the discharge vessel, the induction coil comprising a conductive path shaped in the form of a substantially planar spiral.

5,349,272

MULTIPLE OUTPUT BALLAST CIRCUIT

Robert E. Rector, Richardson, Tex., assignor to Gulton Industries, Inc., Plano, Tex.

Filed Jan. 22, 1993, Ser. No. 8,130

Int. Cl.[5] G05F *1/00*

U.S. Cl. 315—294 **10 Claims**

1. A ballast arrangement for coupling a plurality of fluorescent lamps to a common voltage source, comprising:

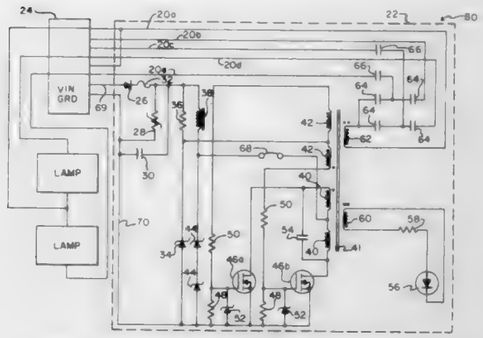
a source of alternating voltage;

a transformer coupled to said source to be energized thereby and having an output voltage suitable for driving the plurality of fluorescent lamps;

at least first and second impedance networks connected to the transformer output, each of said impedance networks having a first output terminal and a second output terminal, each of said first terminals being commonly connected to said transformer output:

each of the second output terminals being adapted to be coupled to a respective fluorescent lamp: and

at least two of said impedance networks having impedances different from one another, so that when one of the fluorescent lamps is coupled to one of said impedance networks having one impedance and when another of the fluorescent lamps is coupled to another of said impedance networks having another impedance, a first current flowing through the one fluorescent lamp will differ from a second current flowing through said other fluorescent lamp which results in differing luminosity level outputs of said fluorescent lamps, one of said first and second currents being no more than about 250 mA at a voltage necessary to maintain discharge in the fluorescent lamps and the other current being less than said one current level.



5,349,273

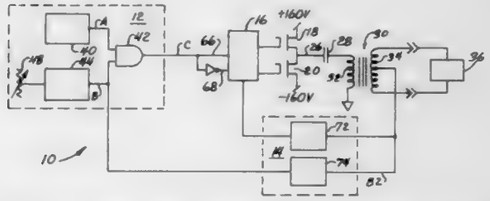
DIMMER AND GROUND FAULT INTERRUPTION FOR SOLID STATE NEON SUPPLY

David Pacholok, Sleepy Hollow, Ill., assignor to Everbrite, Inc., Greenfield, Wis.

Filed Nov. 23, 1992, Ser. No. 980,539

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—307 **5 Claims**



1. A dimmable power supply for neon and other gaseous luminous tubes including means for generating substantially periodic pulse groups, each pulse group comprising one or more high frequency pulses, the amplitude of the pulses being that required to produce substantially full illumination of a gaseous tube load during said pulses, the pulse groups having a repetition rate lower in frequency than that of the high frequency pulses; the means for generating pulse groups including a high frequency, high voltage step-up transformer having a secondary for connection to a gaseous luminous tube and a primary, dc power supply means, switch means for connecting the dc power supply to the transformer primary and for reversing the polarity of such connection in response to signals on the inputs of the switch means, a high frequency oscillator, digital gate means for selectively connecting the high frequency oscillator to the switch means inputs whereby full amplitude high frequency pulses are applied to the luminous tube when the high frequency oscillator is thus connected and whereby no output pulses are applied to the luminous tube when the digital gate means disconnects the high frequency oscillator from the switch means input; low frequency oscillator means having a periodic output between first and second output states, the output thereof being operatively connected to the digital gate means whereby the high frequency oscillator is gated to the switch means input in correspondence with one of said low frequency oscillator output states; control means for varying the relative durations of the first and second low frequency output states whereby luminous tube intensity may be adjusted by selectively adjusting the relative duration of full intensity high frequency pulse groups applied to the luminous tube.

5,349,274

BI-DIRECTIONAL SCAN CIRCUIT

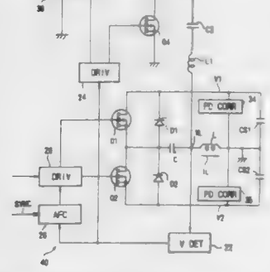
Junzo Watanabe, Kanagawa; Akihiro Ueyama, Tokyo, and Ban Kawamura, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 21, 1993, Ser. No. 65,156

Claims priority, application Japan, May 25, 1992, 4-158719; May 29, 1992, 4-163864; May 29, 1992, 4-163865

Int. Cl.[5] G09G *1/04;* **H01J** *29/70*

U.S. Cl. 315—395 **11 Claims**



1. A bi-directional scan circuit comprising:

a first resonance circuit comprising a series resonance circuit which comprises a first switching circuit switching on and off repeatedly at a predetermined timing, a resonance capacitor, a horizontal deflection coil, and a first capacitor forming a DC power source, and which supplies a going scan deflecting current to said horizontal deflection coil; and

a second resonance circuit comprising a series resonance circuit which comprises a second switching circuit switching on and off repeating with said first switching circuit complementarily, said resonance capacitor, said horizontal deflection coil and a second capacitor forming a DC power source, and which supplies a returning scan deflecting current to said horizontal deflection coil; wherein:

said first capacitor for forming a DC power source and said second capacitor for forming a DC power source are substantially set to an equal value; and

said first switching circuit is set to repeat the on-off operation with less than ½ cycle with respect to one cycle of the resonance frequency of said first and second resonance circuits.

5,349,275

BRUSHLESS DIRECT CURRENT MOTOR

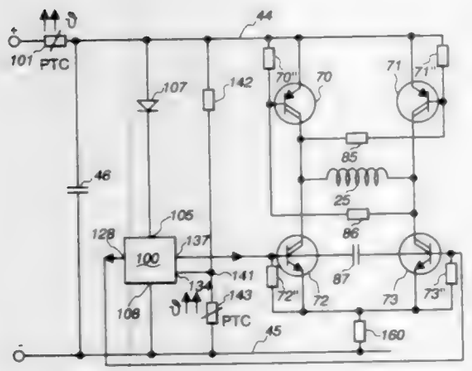
Rolf Müller, St. Georgen, Fed. Rep. of Germany, assignor to Papst Licensing GmbH, Spaichingen, Fed. Rep. of Germany

Continuation of Ser. No. 928,976, Aug. 12, 1992, abandoned, which is a continuation of Ser. No. 448,760, Dec. 11, 1989, abandoned, which is a continuation of Ser. No. 177,692, Apr. 5, 1988, abandoned, which is a continuation of Ser. No. 79,100, Jul. 29, 1987, abandoned, which is a continuation of Ser. No. 635,251, Jul. 27, 1984, abandoned, which is a continuation-in-part of Ser. No. 447,688, Dec. 7, 1982, Pat. No. 4,535,275. This application Sep. 24, 1993, Ser. No. 126,677

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1991, 3150922; Dec. 23, 1991, 3150923

Int. Cl.[5] H02P *6/02*

U.S. Cl. 318—254 9 Claims



1. A brushless direct current motor having a stator provided with at least one stator winding producing an alternating field, the stator winding comprising at least one independently energizable winding path, a permanent magnet rotor, and means for sensing rotor position and generating rotor position signals, the motor furthermore comprising

first and second power transistor means connected to the stator winding and so connected to the rotor-position-signal-generating means as to be rendered alternately conductive by the latter in order to cause the field from the stator winding to alternate between its two different field orientations,

the first and second power transistor means having like output electrodes each connected to a common line, and furthermore having like control electrodes; and

capacitor means connecting the control electrode of the first power transistor means to the control electrode of the second power transistor means in such a fashion that when either one of the power transistor means is in conductive state with the other in non-conductive state, the capacitor means develops across itself a voltage of magnitude and polarity such that when said one and said other power transistor means are thereafter to become, respectively, non-conductive and conductive, said capacitor means voltage acts to initially reverse bias said other power transistor means, thereby delaying assumption by the latter of its conductive state until after said one power transistor means has been non-conductive for a predetermined period of time, whereby to prevent the alternately conductive first and second power transistor means from becoming briefly conductive simultaneously with each other during their interchange of conduction states.

5,349,276

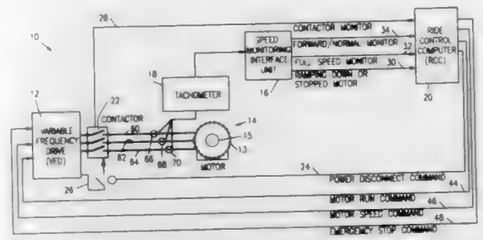
CONTROL SYSTEM FOR REGULATING MOTOR SPEED

Frank Mezzatesta, Jr., Glendale, and Donald M. Young, Los Angeles, both of Calif., assignors to The Walt Disney Company, Burbank, Calif.

Division of Ser. No. 843,604, Feb. 28, 1992. This application Apr. 27, 1993, Ser. No. 54,541

Int. Cl.[5] H02P *5/00;* H02H *7/08;* G01P *3/48*

U.S. Cl. 318—268 20 Claims



1. A control system for regulating the speed of a motor having a rotatable rotor and windings that define poles of the motor, the control system comprising:

a variable frequency drive that produces a drive signal that is provided to the windings of the motor to cause rotation of the rotor;

speed means for providing a speed signal that indicates the actual speed of the rotor;

monitor means for receiving the speed

signal and generating monitor signals that indicate motor performance relative to a speed profile of desired :motor speed during operation of the motor; and

control means for receiving the monitor signals and comparing the monitor signals with predetermined expected values, and for indicating a failure condition if an unexpected value is obtained and if the unexpected value persists for greater than a predetermined time interval.

5,349,277

CONTROL SYSTEM FOR LEGGED MOBILE ROBOT

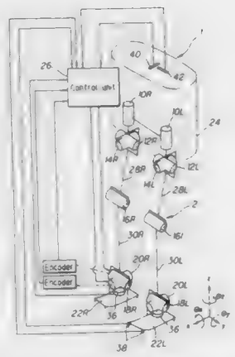
Hideo Takahashi, and Ryutaro Yoshino, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,895

Claims priority, application Japan, Mar. 12, 1992, 4-088109; Mar. 12, 1992, 4-088110

Int. Cl.[5] B25J *11/00, 9/00*

U.S. Cl. 318—568.12 20 Claims



1. A system for controlling locomotion of a biped walking robot having a body and two articulated legs each connected to the body through a hip joint and each having at least an ankle joint, comprising:

servo motor means provided at individual joints of the robot;

first means for establishing a walking pattern of the robot in terms of angles with respect to the direction of gravity;

second means for determining a target angle of each joint from the established walking pattern;

third means for detecting an actual angle of each joint;

fourth means for determining a basic control amount for each joint in response to a deviation between the target angle and the detected actual angle of each joint;

fifth means for detecting a differential of n-th order of an actual inclination angle of the body with respect to the direction of gravity;

sixth means for determining a first control correction amount for at least one of the hip joint and the ankle leg which supports the robot's weight in response to the detected differential of n-th order of the actual inclination angle of the body; and

control means for correcting the basic control amount by the first control correction amount to determine a control value for each servo motor means and for providing the determined control value to the servo motor means.

5,349,278

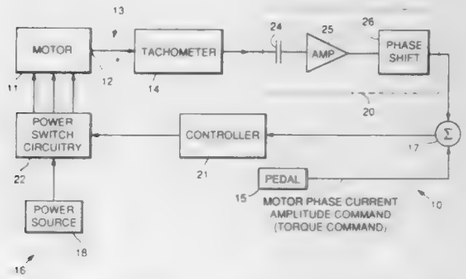
TORQUE OSCILLATION COMPENSATION UTILIZING VELOCITY FEEDBACK

Robert S. Wedeen, Manhattan Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 13, 1993, Ser. No. 61,414

Int. Cl.[5] G05B *5/00*

U.S. Cl. 318—632 5 Claims



1. A torque oscillation compensation system for use with a power source, an electric motor having an output shaft, power switching circuit coupled between the power source and the motor, and a controller coupled to the power switching circuit for controlling the motor by way of the power switching circuit, said system comprising:

an input source for providing a motor phase current amplitude command input signal for causing the controller to drive the motor;

a summing device having a first input coupled to the input source for receiving the motor phase current amplitude command input signal and having an output coupled to the controller;

speed sensing means coupled to the motor for sensing the speed of the output shaft thereof;

a low pass filter coupled to the speed sensing means for coupling a DC component of the speed signal from the motor that is used as a reference signal;

an error amplifier having a first input coupled to the low pass filter for receiving the reference signal and having a second input and having an output coupled to a second input of the summing device and wherein the error amplifier generates a compensation signal that is combined with the motor phase current amplitude command input signal that stabilizes the speed of the motor to a DC level and thus compensates for torque oscillations present in the electric motor and thereby eliminate motor torque fluctuations;

a resistor coupled to the speed sensing means for coupling the speed signal from the motor to the error amplifier; and

an impedance coupled in a feedback manner between the output of the error amplifier and a selected input of the error amplifier that determines a complex gain for the error amplifier.

5,349,279

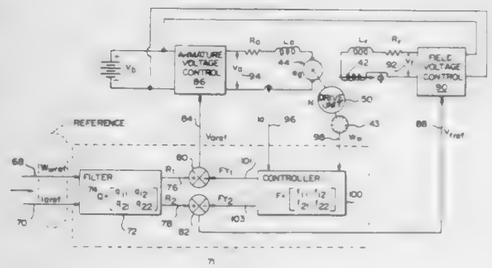
SPEED-DEPENDENT TRACTION MOTOR CONTROLLER FOR VEHICLES

Isaac Avitan, P.O. Box 2065, Sioux City, Iowa 51104

Filed Oct. 29, 1992, Ser. No. 968,138

Int. Cl.[5] H02P *5/34*

U.S. Cl. 318—803 11 Claims



5,349,280

BATTERY PROTECTIVE CIRCUIT

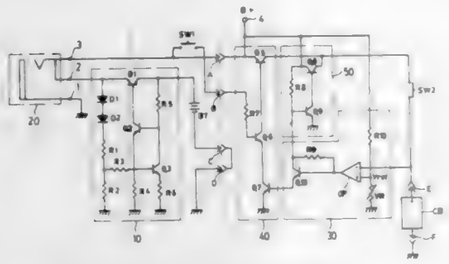
Ik-Sun Kim, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 3, 1992, Ser. No. 940,971

Claims priority, application Rep. of Korea, Sep. 18, 1991, 91-15303

Int. Cl.[5] H02J *7/00*

U.S. Cl. 320—13 **17 Claims**



1. A battery protective circuit, comprising:

comparison means for comparing a voltage of a re-charger with a second voltage provided by one of a battery supply voltage and an external supply voltage supplied to a main power terminal from adapter coupling means;

first switching means for cutting off battery current being applied to the re-charger when current is supplied by a battery, said re-charger being charged by connecting an external source of power to the re-charger when said comparison means determines that the re-charger voltage is lower than said second voltage; and

second switching means for causing power provided by the re-charger to be applied to the main power terminal when said comparison means determines that the re-charger voltage is higher than said second voltage.

5,349,281

BATTERY CHARGING SYSTEM AND METHOD OF USING SAME

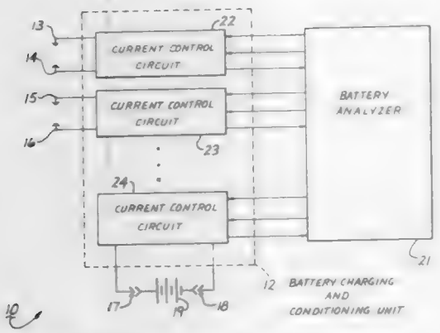
Julian J. Bugaj, Escondido, Calif., assignor to HM Electronics, Inc., San Diego, Calif.

Continuation of Ser. No. 673,939, Mar. 22, 1991, Pat. No. 5,177,427. This application Sep. 28, 1992, Ser. No. 952,304

The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.

Int. Cl.[5] H02J *7/00*

U.S. Cl. 320—14 **20 Claims**



1. A method of conditioning a battery, comprising:

applying a high discharge current to the battery;

generating a conditioned signal continuously;

converting said conditioned signal into a digital signal indicative of a present potential value of the battery;

responding to said digital value by calculating periodically a derived battery potential value indicative of an averaged present potential value of the battery;

determining whether said averaged present potential value is a predetermined discharged battery potential value;

applying a high charge current to the battery when said averaged present potential value is substantially equal to said predetermined discharged battery potential value;

determining whether said averaged present potential value is a peak potential value;

storing said derived battery potential value when said averaged present potential value is the peak potential value;

responding to said digital signal by calculating periodically an incremental derived battery potential value relative to the stored peak potential value;

determining whether said incremental derived battery potential value is greater than or equal to a predetermined incremental battery potential value;

starting a timer in response to said incremental derived battery potential value being greater than or equal to said predetermined incremental battery potential value;

repeating said steps of generating, converting, responding, determining, applying, determining, storing, responding and determining;

resetting said timer if said derived battery potential value is the peak potential value;

resetting said timer in response to said incremental derived potential value having a potential value less than said predetermined incremental battery potential value; and

switching from applying said high charge current to the battery to applying a trickle charge current when said timer completes a predetermined counting sequence.

5,349,282

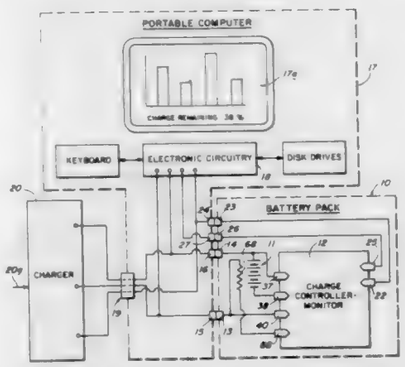
BATTERY CHARGING AND MONITORING SYSTEM

Malcolm S. McClure, Indianapolis, Ind., assignor to Span, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 625,346, Dec. 11, 1990, Pat. No. 5,198,743. This application Apr. 23, 1991, Ser. No. 690,203

Int. Cl.[5] H02J *7/04*

U.S. Cl. 320—32 **15 Claims**



1. A rechargeable battery pack comprising: housing means, battery means disposed within said housing means and providing a pair of battery terminals, terminal means on said housing means for connecting said pair of battery terminals to a load and to a charging current source, monitoring means within said housing means connected to said pair of battery terminals and operative to monitor operation of said battery means to determine the state of charge of said battery means, data output terminal means on said housing means, and transmitting means associated with said monitoring means for transmitting through said data output terminal means digital data indicating the state of charge of said battery means, further including charge done output terminal means on said housing means, and transmitting means associated with said monitoring means for transmitting through said charge done output terminal means a signal indicating a full state of charge of said battery means.

5,349,283

AUTOMATIC VOLTAGE CONTROL CIRCUIT BY USING REACTIVE POWER

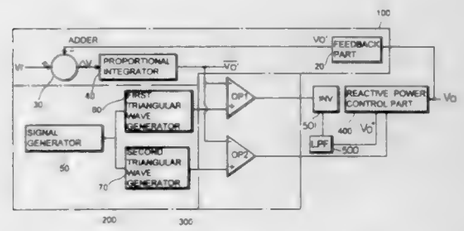
Kyung H. Jee, Daejeon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suweon, Rep. of Korea

Filed Jun. 2, 1992, Ser. No. 892,156

Claims priority, application Rep. of Korea, Jul. 3, 1991, 91-11258

Int. Cl.[5] G05F *1/70*

U.S. Cl. 323—207 **10 Claims**



1. An automatic voltage control circuit by using reactive power including inverter output adjusting means having a low-pass filter for filtering output voltage of said inverter to supply to a load, said automatic voltage control circuit comprising:

proportional integrator means for proportionally integrating difference between an output voltage and a reference voltage;

triangular wave generator means for generating a first triangular wave and a second triangular wave with a difference of a phase angle 90° ;

comparing means having a first comparator and a second comparator for comparing an output from said proportional integrator means with said first and second triangular waves;

inverter means for controlling effective power according to an output from said second first comparator; and

reactive power control means connected to said comparing means for controlling reactive power due to variations of said load according to an output from said comparator.

5,349,284

POWER FACTOR BOOST CONVERTER POWER SUPPLY

Rex W. J. Whittle, Kowloon, Hong Kong, assignor to Astec International, Ltd., Hong Kong

Continuation of Ser. No. 841,702, Feb. 26, 1992, abandoned. This application Sep. 24, 1993, Ser. No. 126,423

Claims priority, application United Kingdom, Feb. 27, 1991, 9104070

Int. Cl.[5] G05F *1/70*

U.S. Cl. 323—207 **11 Claims**

1. A boost-type power factor correction circuit having input for receiving an input voltage and an input current, and an output for providing an output voltage, comprising:

a boost inductor coupled to said input to receive said input voltage and input current,

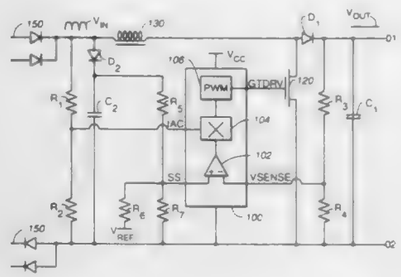
an electronic switch controlling the current through the inductor,

a capacitor coupled to said output, said output voltage being generated across said capacitor,

rectifier means connecting the inductor to the capacitor such that energy stored in the inductor is transferable to the capacitor,

means for cyclically switching the electronic switch such that said switch has a controllable duty cycle,

means for controlling the switch duty cycle to cause the input current of said correction circuit to follow the input voltage applied to said correction circuit and to regulate the output voltage of said correction circuit to be linearly proportional to a peak value of the input voltage, said controlling means comprising means for comparing the



output voltage with a variable reference voltage which is proportional to the peak value of the input voltage and for generating an error signal, and means for generating a control signal for the switch in dependence upon the error signal.

5,349,285

POWER SUPPLY CIRCUIT

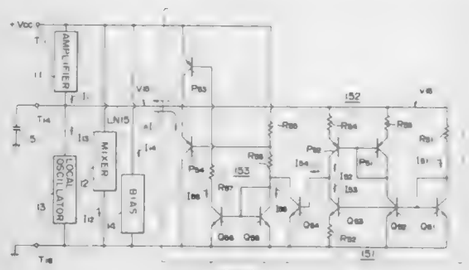
Taiwa Okanobu, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 26, 1993, Ser. No. 51,787

Claims priority, application Japan, May 8, 1992, 4-143208

Int. Cl.[5] G05F *3/26*

U.S. Cl. 323—312 **5 Claims**



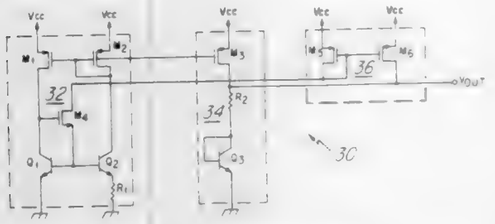
1. A power supply circuit comprising a first circuit having an operating current line, a second circuit having an operating current line, said operating current lines being connected in series between a power source and ground and forming a middle junction, and a constant voltage regulator connected to said power source, ground and said middle junction and including a plurality of current mirror circuits for detecting operating currents flowing in said first and second circuits, so that any difference between the operating currents of said first and second circuits is delivered or absorbed by said constant voltage regulator.

5,349,286

COMPENSATION FOR LOW GAIN BIPOLAR TRANSISTORS IN VOLTAGE AND CURRENT REFERENCE CIRCUITS

Andrew Marshall; Thomas A. Schmidt, and Ross E. Teggatz, all of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 18, 1993, Ser. No. 79,665
Int. Cl.[5] G05F 3/16
U.S. Cl. 323—315 13 Claims



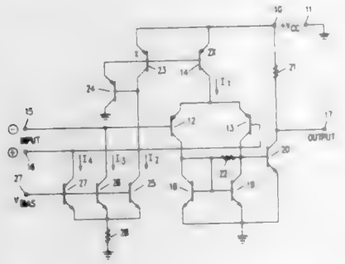
1. A bandgap reference circuit, comprising:
a current generation circuit having a bipolar transistor;
a voltage generation circuit connected to the current generation circuit; and
a compensation circuit connected to the current generation circuit and the voltage generation circuit, wherein the compensation circuit monitors a current magnitude of the current generation circuit and provides a supplemental current to the voltage generation circuit in response to the current magnitude of the current generation circuit, the supplemental current creating a supplemental voltage in the voltage generation circuit, the supplemental voltage having a magnitude that cancels an error associated with a finite gain of the bipolar transistor.

5,349,287

LOW POWER COMPARATOR HAVING A NON-SATURATING CURRENT MIRROR LOAD

Perry S. Lorenz, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 8, 1992, Ser. No. 958,380
Int. Cl.[5] G05F 3/26
U.S. Cl. 323—316 5 Claims



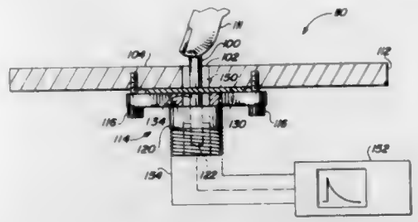
1. An ECL to TTL converter employing a differential driver input responsive to ECL signals, said driver being coupled to current mirror load comprising:
an input transistor having its collector coupled to its base thereby to operate as a diode;
an output transistor having a collector and having its base coupled to said input transistor base;
a resistor connected between said output transistor collector and base whereby saturation is avoided in said output transistor; and
output buffer means coupled to said collector of said output transistor whereby TTL output signals are developed.

5,349,288

RADIAL PLANAR CURRENT DETECTION DEVICE HAVING AN EXTENDED FREQUENCY RANGE OF RESPONSE

John S. Miller, 8023 Naylor Ave., Los Angeles, Calif. 90045, and Hugh M. Hyatt, 1655 Riente St., Camarillo, Calif. 93010

Filed Sep. 4, 1992, Ser. No. 940,643
Int. Cl.[5] G01R 1/04
U.S. Cl. 324—126 23 Claims



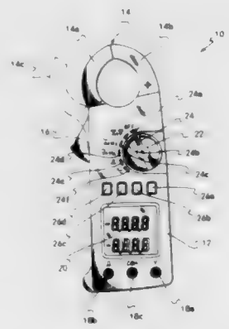
1. A coaxial termination, current detection device for providing an output signal corresponding to sensed input signals within a frequency range from D.C. to 10 gigahertz comprising:
a metal plate with means defining a transverse circular opening aligned with a selected transverse axis;
a metal member of predetermined thickness located adjacent one side of said metal plate and extending across said opening and beyond the periphery thereof;
a coaxial connector positioned with its central axis in alignment with said plate transverse axis and mounted to said plate while compressing said metal member against said plate in a sandwich configuration, said connector having a shell conductor and a central conductor with dielectric between them; and
a matching resistor mounted in line with said central conductor along said axis and connecting the central conductor with said metal member at said axis.

5,349,289

CLAMP-ON MULTIMETER HAVING A DISPLAY FOR INDICATING THE RESULTS OF A PLURALITY OF MEASUREMENTS

Etsuo Shirai, Ueda, Japan, assignor to Kaise Kabushiki Kaisha, Nagano, Japan

Filed Sep. 9, 1992, Ser. No. 942,545
Claims priority, application Japan, Apr. 27, 1992, 4-134143
Int. Cl.[5] G01R 33/00
U.S. Cl. 324—127 13 Claims



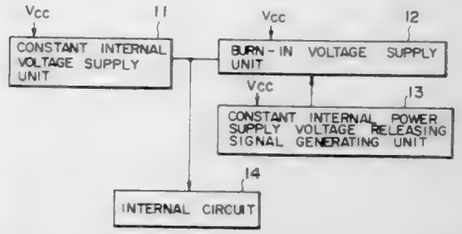
1. A clamp-on multimeter, comprising:
a body section accommodating electric circuits;
a clamp section having a pair of arcuate clamp cores on said body section, for clamping a conductor to be measured, said clamp cores being made of a magnetizable material, said clamp cores having front ends capable of being closed and opened with respect to one another;
an input section for receiving signals to be measured from a conductor, said input section being in said body section;
a display section in said body section, said display section comprising means for simultaneously displaying a first parameter corresponding to an induction voltage induced in said clamp section, and a second parameter corresponding to measured signals input via said input section; and
a control section measuring said induction voltage in said clamp section and the measured signals input via said input section and, in response thereto, simultaneously providing the first parameter and the second parameter to said display section.

5,349,290

METHOD FOR TESTING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE, VOLTAGE DROP POWER SUPPLY CIRCUIT SUITABLE FOR THE METHOD, AND SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING THE VOLTAGE DROP CIRCUIT

Toyonobu Yamada, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 27, 1993, Ser. No. 52,620
Claims priority, application Japan, Apr. 27, 1992, 4-107753
Int. Cl.[5] G01R 31/28
U.S. Cl. 324—158.1 17 Claims



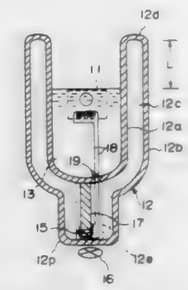
1. A method of testing a semiconductor integrated circuit device in which internal circuits of the semiconductor integrated circuit device are supplied, in a normal operation, with a constant internal power supply voltage generated from an external power supply voltage in accordance with a first characteristic line defining a relationship between the external power supply voltage and the internal power supply voltage, said method comprising the steps of:
generating a burn-in voltage from the external power supply voltage having a level higher than that used in the normal operation in accordance with a second characteristic line defining a relationship between the external power supply voltage and the internal power supply line, the second characteristic line crossing the first characteristic line at an intermediate point between lower and upper limit voltages defined by the first characteristic line, the burn-in voltage being greater than the internal power supply voltage used in the normal operation; and
applying the burn-in voltage to the internal circuits of the semiconductor integrated circuit device.

5,349,291

SUPERCONDUCTING MAGNETIC SENSOR HAVING A CRYOSTAT FOR IMPROVED SENSITIVITY OF MAGNETIC DETECTION

Seigo Kotani, and Takeshi Imamura, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 16, 1993, Ser. No. 77,413
Claims priority, application Japan, Jun. 23, 1992, 4-165041
Int. Cl.[5] G01R 33/035, 33/02
U.S. Cl. 324—248 13 Claims



1. A superconducting magnetic sensor for detecting an unknown magnetic field produced from an object, comprising:
an adiabatic vessel having an outer wall and an inner wall separated from said outer wall by an evacuated space, said inner wall forming a depression for holding a cooling medium therein;
a thermal insulation of a thermally insulating material, provided to fill said evacuated space for insulating thermally said inner wall and said outer wall from each other;
a cooling member having a first end physically fixed upon said inner wall of said adiabatic vessel and extending toward said outer wall, said cooling member having a second, opposite end facing said outer wall with a separation therefrom;
a superconducting pickup coil of a superconducting material for interlinking with an external magnetic flux, said superconducting pickup coil being provided in said evacuated space in physical contact with said cooling member so as to be cooled by said cooling medium via said cooling member;
a superconducting magnetic detection unit provided in said depression so as to be immersed in said cooling medium, said superconducting magnetic detection unit detecting said external magnetic flux that has caused interlinking with said superconducting pickup coil upon cooling to a superconducting state by said cooling medium; and
superconducting strip means of a superconducting material connecting said superconducting pickup coil and said superconducting magnetic detection unit, said superconducting strip means penetrating through said inner wall of said adiabatic vessel.

5,349,292

MAGNETIC RESONANCE IMAGING APPARATUS

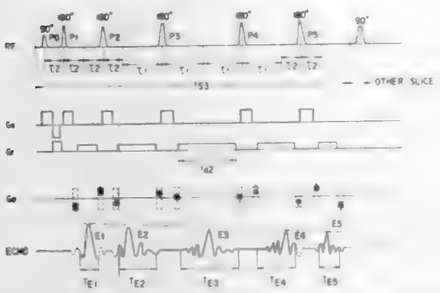
Satoshi Sugiura, Ootawara, Japan, assignor to Kubushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 26, 1993, Ser. No. 23,571
Claims priority, application Japan, Feb. 27, 1992, 4-040886
Int. Cl.[5] G01R 33/20
U.S. Cl. 324—309 10 Claims

1. A magnetic resonance imaging apparatus comprising:
means for applying an excitation pulse to an object to excite spins within the object for generating a magnetic resonance;
means for generating multiple echo signals from the spins excited by said excitation pulse;
means for phase-encoding the multiple echo signal generated by said generating means;

means for assigning a different phase encoding amount to each of the multiple echo signals;

acquisition means for acquiring at least a part of the multiple echo signals assigned different phase encoding amounts in a predetermined time shorter than an acquisition time which ensures a desired signal-to-noise ratio with the



multiple echo signals other than said part being not acquired during the predetermined time;

obtaining means for obtaining the multiple echo signals not acquired by said acquisition means; and

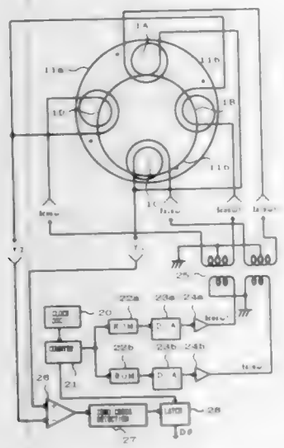
reconstructing means for reconstructing a magnetic resonance image using echo signals acquired by said acquisition means and by said obtaining means.

5,349,293

CONDUCTIVE ROTATIONAL POSITION DETECTION DEVICE HAVING STATOR AND ROTOR

Shuichi Tanaka, and Wataru Ichikawa, both of Tokyo, Japan, assignors to Kabushiki Kaisha SG, Tokyo, Japan

Filed Aug. 25, 1992, Ser. No. 934,960
Claims priority, application Japan, Aug. 27, 1991, 3-238861
Int. Cl.[5] G01B *7/30*
U.S. Cl. 324—207.16 **9 Claims**



1. A rotational position detection device comprising:

stator means of a generally plate-like shape, having a plurality of coil means excitable by a predetermined ac signal, said plurality of coil means being provided separately from one another in a circumferential direction of the stator means so that a flux of each of the coil means is generated in the direction of the axis of rotation;

rotor means of a generally plate-like shape, having such a configuration that it opposed said plurality of the coil means, moves relative to said stator means according to a rotational movement of an object to be detected and changes reluctance of magnetic paths formed by the flux generated by said coil means in accordance with a rotational position relative to said stator means so as to induce from each of said coil means an ac output signal corresponding to the reluctance wherein said rotor means comprises a disc made of magnetic substance which is disposed eccentrically with respect to the axis of rotation; and

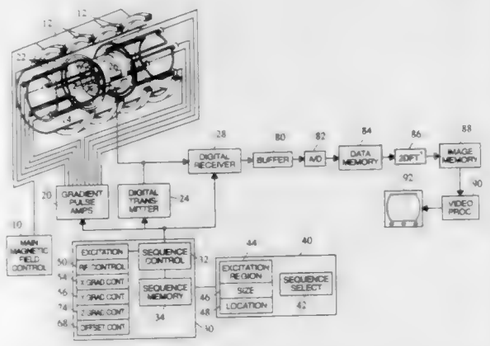
output means for outputting a position detection signal representative of the rotational position on the basis of said ac output signals from said coil means.

5,349,294

TWO AND THREE-DIMENSIONALLY SELECTIVE RF PULSES FOR MAGNETIC RESONANCE IMAGING

Larry Kasuboski, Solon, Ohio, assignor to Picker International Inc., Highland Hts., Ohio

Filed May 12, 1993, Ser. No. 60,860
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **21 Claims**



1. A method of exciting magnetic resonance in a limited subregion of an examination region, the method comprising:

creating a static magnetic field through an examination region;

concurrently transmitting a series of temporally contiguous radio frequency pulses and excitation select gradient pulses into the examination region, the series of contiguous radio frequency pulses taken together control a magnetic resonance excitation tip angle, the excitation select gradient pulse and the radio frequency pulses interact to cause magnetic resonance to be excited along a k-space trajectory that follows a piecewise linear spiral.

5,349,295

MAGNETIC RESONANCE IMAGING METHOD AND APPARATUS

Yu Tokunaga, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 23, 1992, Ser. No. 949,700
Claims priority, application Japan, Sep. 25, 1991, 3-245705
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **15 Claims**

1. A magnetic resonance imaging apparatus for generating three-dimensional image of a selected three-dimensional region of a subject on the basis of magnetic resonance phenomena exhibited by hydrogen atomic nuclei, comprising:

means for applying a plurality of RF pulses spaced apart in time to said three-dimensional region of said subject at a pulse repetition time to generate a plurality of steady-state free precession magnetic resonance signals;

means for applying a dephasing gradient magnetic field and a rephasing gradient magnetic field between consecutive RF pulses to cause a plurality of echo signals to be generated from the plurality of steady-state free precession

magnetic resonance signals of said three-dimensional region;

means for acquiring said echo signals;

image reconstruction means for reconstructing a plurality of relatively thin slice images on the basis of said plurality of echo signals from the plurality of steady-state free precession magnetic resonance signals of said three-dimensional region acquired by said signal acquiring means;

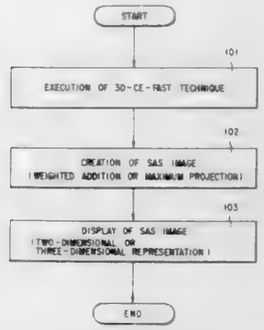


image producing means for producing a surface anatomy scan image on the basis of said plurality of images of relative thin slices obtained by said image reconstruction means; and

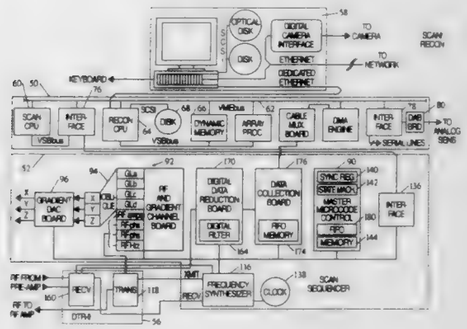
image display means for displaying said surface anatomy image obtained by said image producing means.

5,349,296

MAGNETIC RESONANCE SCAN SEQUENCER

Leonard J. Cikotte, Solon; Wayne R. Dannels, Richmond Heights, and Thomas R. McBride, Newbury, all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Filed Jul. 9, 1993, Ser. No. 89,247
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **26 Claims**



1. A magnetic resonance imaging system comprising:

a magnetic field means for generating a temporally constant magnetic field through an examination region;

gradient field coils for generating gradient magnetic fields across the examination region;

a radio frequency coil disposed adjacent the magnetic field region for transmitting radio frequency signals into and receiving radio frequency signals from the examination region;

a display means for displaying human-readable images reconstructed from magnetic resonance data collected from the examination region;

a central processor means for providing waveform information and timing programs;

a scan sequencer means including:

a master sequencer means into which the timing programs from the central processor are loaded,

a plurality of waveform channel means each having channel memory means for holding at least the waveform information, the channel means are controlled by the master sequencer means to generate a series of radio frequency control signals and a series of gradient control signals in accordance with the waveform information in the channel memory means and the timing program loaded in the master sequencer device,

a gradient digital-to-analog converter means for converting the gradient control signals into current pulses which are supplied to the gradient field coils,

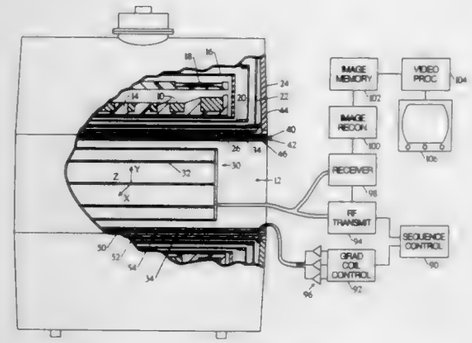
a radio frequency synthesizer for converting the radio frequency control signals into radio frequency signals.

5,349,297

COMBINED SELF SHIELDED GRADIENT COIL AND SHIMSET

Gordon D. DeMeester, Wickliffe; Michael A. Morich, Mentor, and William H. Amor, Chagrin Falls, all of Ohio, assignors to Picker International Inc., Highland Hts., Ohio

Continuation-in-part of Ser. No. 942,521, Sep. 9, 1992, Pat. No. 5,296,810, and a continuation-in-part of Ser. No. 859,152, Mar. 27, 1992, Pat. No. 5,289,128, and a continuation-in-part of Ser. No. 859,154, Mar. 27, 1992, Pat. No. 5,280,247. This application Jun. 21, 1993, Ser. No. 80,566
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **14 Claims**



1. A magnetic resonance imaging apparatus comprising:

a superconducting magnet assembly for generating a temporally constant primary magnetic field through an examination region, the superconducting magnet assembly including:

a generally toroidal vacuum chamber including a cylindrical member which defines a bore therethrough, the bore extending around the examination region,

an annular superconducting magnet disposed within the toroidal vacuum chamber for generating the primary magnetic field longitudinally through the bore and the examination region,

a helium vessel disposed within the toroidal vacuum vessel and surrounding the annular superconducting magnet for maintaining the superconducting magnet chilled to a temperature at which it is superconducting;

a self shielded gradient coil assembly for causing magnetic field gradients within the bore along first, second, and third mutually orthogonal axes, the gradient coil assembly including:

a cylindrical, dielectric former which is smaller in diameter than the cylindrical member,

primary gradient coils wrapped around the former,

secondary gradient coils supported by the cylindrical member, the primary and secondary gradient coils

being coupled to cause the magnetic field gradients along the first, second, and third axes within the examination region and shield at least selected regions outside of the bore from magnetic field gradients,

a mounting means for mounting the former within the bore displaced from the vacuum vessel cylindrical member, such that an annular gap is defined between the primary gradient coils and the secondary gradient coils;

a shim means mounted in the annular gap between the primary and secondary gradient coils for shimming magnetic fields v ithin the bore;

a radio frequency coil assembly disposed within the bore for transmitting radio frequency pulses into the examination region for inducing and manipulating magnetic resonance of selected dipoles within the examination region;

a sequence control means for controlling the gradient coil assembly and the radio frequency coil assembly for generating magnetic resonance imaging gradient and RF pulse sequences;

an image reconstruction means for reconstructing image representations from magnetic resonance signals emanating from the examination region.

5,349,299

FUEL SUPPLY MISFIRE-DETECTING SYSTEM FOR INTERNAL COMBUSTION ENGINES

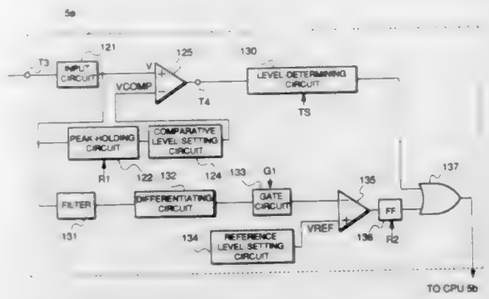
Masaki Kanehiro; Yuichi Shimasaki; Takuji Ishioka; Shigeki Baba; Takashi Hisaki; Shigeru Maruyama; Masataka Chikamatsu; Shukoh Terata; Kenichi Maeda, and Kazuhito Kakimoto, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaishi, Tokyo, Japan

Filed Dec. 11, 1992, Ser. No. 989,438

Claims priority, application Japan, Dec. 13, 1991, 3-352021

Int. Cl.[5] F02P *17/00;* **F02M** *65/00;* **G01M** *15/00*

U.S. Cl. 324—399 **5 Claims**



5,349,298

RF COIL SYSTEM FOR MRI

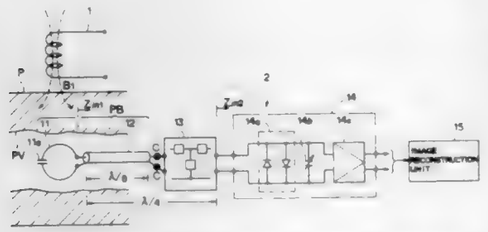
Kazuto Nakabayashi, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 11, 1993, Ser. No. 16,684

Claims priority, application Japan, Feb. 14, 1992, 4-028320

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—322 **20 Claims**



1. An RF coil system for magnetic resonance imaging of an object, the system comprising:

a coil unit for transmitting a radio frequency signal to the object and receiving a magnetic resonance signal from the object;

a distributed constant electrical line electrically connected to the coil unit and formed into a length less than n . (λ/4) (n is a positive integer of one or more), where λ is a wavelength of at least one of the radio frequency signal and the magnetic resonance signal; and

a lumped constant electrical circuit being electrically connected in series to the distributed constant electrical line and virtually forming the length of a n . (λ/4) (n is a positive integer of one or more) in cooperation operatively with the distributed constant electrical line.

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1. In a misfire-detecting system for detecting a misfire occurring in an internal combustion engine having an ignition system including at least one spark plug, engine operating condition-detecting means for detecting values of operating parameters of said engine, signal-generating means for determining ignition timing of said engine, based upon values of operating parameters of said engine detected by said engine operating condition-detecting means and generating an ignition command signal indicative of said determined ignition timing, and sparking voltage-generating means responsive to said ignition command signal for generating sparking voltage for discharging said at least one spark plug, and voltage value-detecting means for detecting a value of said sparking voltage generated by said sparking voltage-generating means after generation of said ignition command signal, the improvement comprising:

differentiating means, connected to said voltage value-detecting means, for differentiating a value of said sparking voltage detected by said voltage value-detecting means;

misfire-determining means, connected to said differentiating means, for comparing a differential value of said sparking voltage obtained by said differentiating means with a predetermined value, and for determining, based upon a result of said comparison, whether a misfire has occurred in said engine; and

time period-limiting means, inserted into a path from said voltage value-detecting means to said misfire-determining means and connected to said signal generating means, for setting a comparison period of time upon which said comparison, of said differential value of said sparking voltage with said predetermined value, is to be made, and wherein said misfire-determining means compares said differential value of said sparking voltage with said predetermined value to determine occurrence of a misfire solely during said comparison period of time set by said time period-setting means.

5,349,300

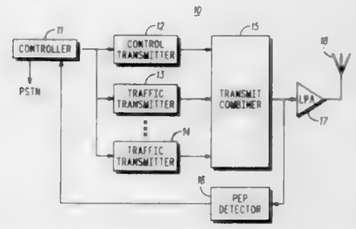
METHOD AND APPARATUS FOR CONTROLLING A PEAK ENVELOPE POWER OF A PA

John E. Matz, Hanover Park, and James E. Mitzlaff, Arlington Heights, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 10, 1993, Ser. No. 104,868

Int. Cl.[5] H03G *3/20*

U.S. Cl. 330—129 **11 Claims**



1. A method of controlling a peak envelope power level in a power amplifier (PA), such method comprising the steps of: measuring a first peak envelope power value of an input of the PA during a first time period; comparing the first peak envelope power value with a threshold value; introducing a phase change into a selected signal of a plurality of signals being amplified by the PA when the first peak envelope power value exceeds the threshold; measuring a second peak envelope power value during a second time period; comparing the first and second peak envelope power values; and reversing the phase change to the selected signal when the second peak envelope power value exceeds the first peak envelope power value.

5,349,301

MULTIPLE AMPLIFIER SYSTEM FOR A CAR

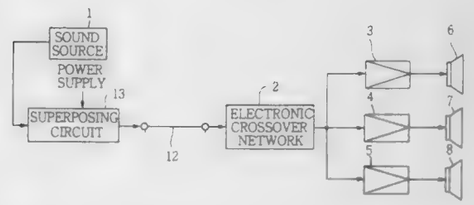
Hiroshi Kaiwa, Yamagata, Japan, assignor to Pioneer Electronic Corporation, Tokyo and Tohoku Pioneer Electronic Corporation, Tendo, both of Japan

Filed Nov. 9, 1993, Ser. No. 149,272

Claims priority, application Japan, Nov. 10, 1992, 4-324962

Int. Cl.[5] H03F *3/68*

U.S. Cl. 330—126 **3 Claims**



1. A multiple amplifier system for a car having a sound source, a power source, an electronic crossover network for dividing an audio signal from the sound source into a plurality of frequency ranges, a plurality of power amplifiers for separately amplifying the divided audio signals, and a plurality of speakers each of which is connected to the corresponding power amplifier, the system comprising:

a superposing circuit connected to the sound source and the power source for superposing the audio signal from the sound source and power from the power source on an output; and

lead means connecting the output of the superposing circuit to the electronic crossover network.

5,349,302

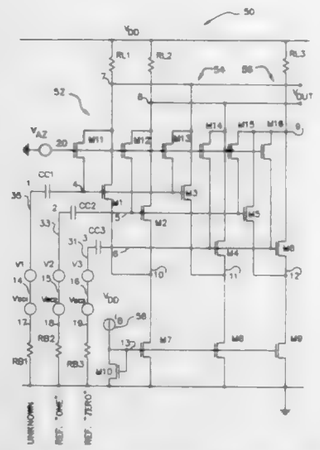
SENSE AMPLIFIER INPUT STAGE FOR SINGLE ARRAY MEMORY

Lavon K. Cooper, Mound, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 13, 1993, Ser. No. 61,603

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—207 **14 Claims**



1. A sense amplifier input stage for single array memory, comprising:

a first reference line coupled to a first reference signal representing a first memory state;

a second reference line coupled to a second reference signal representing a second memory state;

an unknown line coupled to an unknown signal representing an unknown memory state;

a first differential amplifier having a first input coupled to said unknown line and a second input coupled to said first reference line, said first differential amplifier having a first output connected to said first load and a second output load connected to said second load;

a second differential amplifier having a first input coupled to said unknown line and a second input coupled to said second reference line, said second differential amplifier having a first output lead connected to said first load and a second output lead connected to said second load;

means for compensating for offset voltages existing within said single array memory and within said sense amplifier input stage; and

means for momentarily introducing said unknown signal, said first reference signal, and said second reference signal simultaneously to cause an output of said input stage between said first load and said second load, said output having a first polarity when said unknown signal corresponds to said first reference signal and a second polarity when said unknown signal corresponds to said second reference signal.

5,349,303

ELECTRICAL CHARGE TRANSFER APPARATUS

George E. Gerpheide, Salt Lake City, Utah, assignor to Cirque Corporation, Salt Lake City, Utah

Filed Jul. 2, 1993, Ser. No. 87,500

Int. Cl.[5] H01L *29/00;* **H03K** *5/08;* **G05F** *1/00*

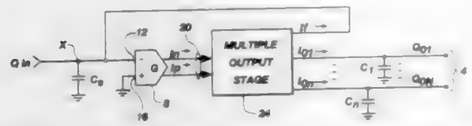
U.S. Cl. 330—257 **8 Claims**

1. A charge transfer circuit comprising

an input terminal for receiving an input electrical charge,

transconductance amplifier means having at least an inverting input, and at least one differential current output, the input being coupled to the input terminal,

means responsive to the differential current output for producing two or more electrical current output signals whose values are linearly related to the value of the differential current output and to each other, and



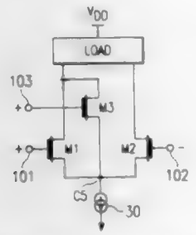
feedback means for delivering one of the electrical current output signals to the input of the amplifier means.

5,349,304

OPERATIONAL AMPLIFIER HAVING MULTIPLE POSITIVE INPUTS

Marc H. Ryat, Fort Collins, Colo., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Feb. 12, 1993, Ser. No. 17,672
Int. Cl.[5] H03F *3/45, 3/50, 3/345;* **H03K** *5/00*
U.S. Cl. 330—253 **26 Claims**



1. An operational amplifier, comprising:
a load;
a constant current source;
at least two positive input transistors, each having a conduction path connected on a first end in common with one another and to a first side of said load, and connected on a second end in common with one another and to said constant current source, each of said at least two positive input transistors having a control electrode for receiving a positive input signal; and
a negative input transistor having a conduction path connected on a first end to a second side of said load and connected on a second end in common with the second ends of said at least two positive input transistors and to said constant current source, and having a control electrode for receiving a negative input signal.

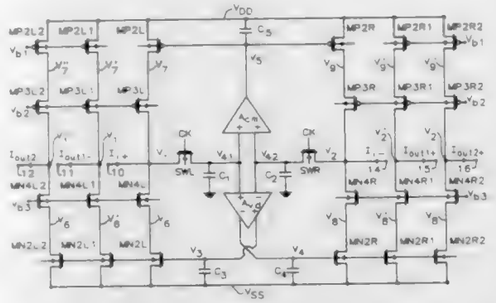
5,349,305

FULLY DIFFERENTIAL CURRENT SAMPLE/HOLD CIRCUIT

Chun-Fang Hsiao; Chung-Yu Wu, and Chin-Cheng Chen, all of Hsin, Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Jul. 22, 1993, Ser. No. 94,975
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—253 **19 Claims**

1. An electronic system comprising
a) a pair of input nodes,
b) common mode amplifier means having a pair of input lines with each one connected to one of said input nodes, said common mode amplifier means having a single output,
c) differential voltage amplifier means having a pair of input lines each being connected to one of said input nodes, said differential amplifier means having a first output line with a negative polarity and a second output line with a positive polarity,
d) a first pair of current circuits including a first current source circuit and a second current source circuit with said output of said common mode amplifier means being connected to a corresponding input of each of said first and second current circuits, a second pair of current circuits including a third current source circuit and a fourth source current circuit,



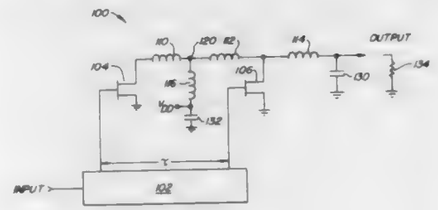
e) said first output line of said differential amplifier means with a negative polarity being connected to said third current source circuit, and
f) said second output line of said differential amplifier means with a positive polarity being connected to said fourth current source circuit, whereby the common mode signal is rejected at said input nodes.

5,349,306

APPARATUS AND METHOD FOR HIGH PERFORMANCE WIDE-BAND POWER AMPLIFIER MONOLITHIC MICROWAVE INTEGRATED CIRCUITS

Thomas R. Apel, Sunnyvale, Calif., assignor to Teledyne Monolithic Microwave, Mountain View, Calif.

Filed Oct. 25, 1993, Ser. No. 143,314
Int. Cl.[5] H03F *3/16*
U.S. Cl. 330—277 **2 Claims**



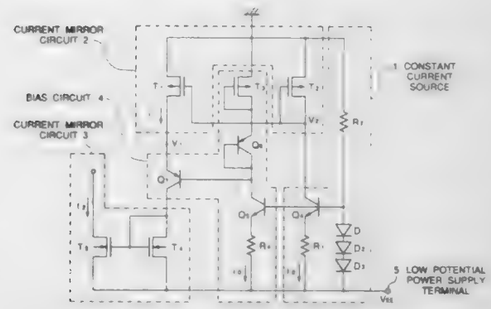
1. A distributed amplifier, comprising:
an integrated circuit substrate;
an input transmission line formed on said integrated circuit substrate, said input line having a first tap, a second tap and a signal propagation delay from said first tap to said second tap;
a bandpass filter having first and second bandpass input ports and a bandpass output port, characterized by upper and lower cut-off frequencies, and connected to receive a drain bias DC voltage signal;
a first FET and a second FET , each FET including a source, a gate and a drain formed on said substrate wherein said gate of said first FET is coupled to said first tap, said gate of said second FET is coupled to said second tap, said drain of first FET coupled to said first bandpass input port and said drain of said second FET coupled to said second bandpass input port to introduce a delay between signals generated at the drains of said first and second FETs and to bias the drains of the FETs with said drain bias DC voltage signal.

5,349,307

CONSTANT CURRENT GENERATION CIRCUIT OF CURRENT MIRROR TYPE HAVING EQUAL INPUT AND OUTPUT CURRENTS

Kiyoshi Inagaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 19, 1993, Ser. No. 21,750
Claims priority, application Japan, Feb. 19, 1992, 4-031202
Int. Cl.[5] H03F *3/16*
U.S. Cl. 330—288 **14 Claims**



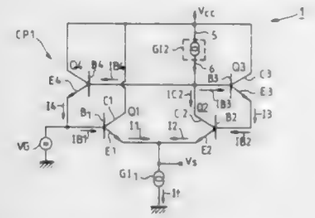
1. A constant current generation circuit comprising:
a constant current source having a first end connected to a first voltage supply line, and a second end, and so configured to allow a first constant current to flow through said constant current source between said first end and said second end;
a first current mirror circuit composed of a first input transistor and a first output transistors having their control electrode interconnected to each other, one end of a main current path of said first input transistor and one end of a main current path of said first output transistor being connected in common to a second voltage supply line, the other end of said main current path of said first input transistor being connected to said control electrode of said first input transistor and said second end of said constant current source so that said first constant current flows through said first input transistor;
a PNP transistor having an emitter connected to the other end of said main current path of said first output transistor, a base of said PNP transistor being biased with an appropriate voltage, and a collector of said PNP transistor supplying a constant output current;
wherein said constant current source includes a first constant current transistor having its control electrode biased with a fixed bias voltage, one end of a main current path of said first constant current transistor being connected to the other end of said main current path of said first input transistor, and the other end of said main current path of said first constant current transistor being connected through a first resistor to said first voltage supply line, and further including a bias circuit which comprises:
a second constant current transistor having its control electrode biased with said fixed bias voltage, one end of a main current path of said second constant current transistor being connected to said base of said PNP transistor, and the other end of said main current path of said second constant current transistor being connected through a second resistor to said first voltage supply line, and
an active load having its one end connected to said base of said PNP transistor and its other end connected to said second voltage supply line, said active load giving a voltage drop which substantially equals to a volume drop across said main current path of said first input transistor plus a base-emitter voltage of said PNP transistor.

5,349,308

AMPLIFIER USING A FOLLOWER TRANSISTOR

Jean-Charles Grasset, Fontaine, France, assignor to Thomson-CSF Semiconducteurs Specifiques, Puteaux, France

Filed Jan. 29, 1993, Ser. No. 10,866
Claims priority, application France, Jan. 31, 1992, 92 01091
Int. Cl.[5] H03F *3/04*
U.S. Cl. 330—296 **14 Claims**



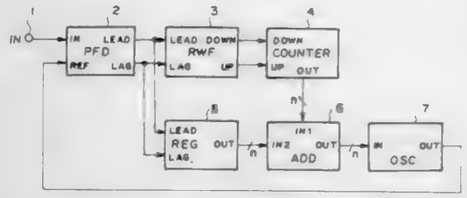
1. An amplifier for receiving an input signal and delivering an output signal, comprising:
a biasing circuit;
a transistor called a follower transistor, having its collector connected to a first supply potential and its emitter connected to a second supply potential by a current generator, the follower transistor delivering, at its emitter, said output signal that corresponds to said input signal applied to its base, the follower transistor being biased by the biasing circuit;
wherein the biasing circuit includes:
a transistor called an image transistor, the emitter current of which, called an image current, is a replica of the emitter current called the emitter bias current of the follower transistor, the emitter bias current and the image current going through the current generator;
means for injecting into the base of the follower transistor a current constituting a replica of the base current of the image transistor; and
means for setting the emitter current of the image transistor to the difference between the total current imposed by the current generator and the emitter bias current of the follower transistor.

5,349,309

SECOND ORDER PHASE LOCKED LOOP

Takashi Fujii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

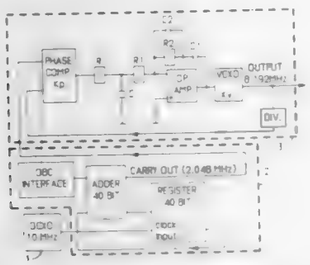
Filed Mar. 31, 1993, Ser. No. 41,317
Claims priority, application Japan, Mar. 31, 1992, 4-077880
Int. Cl.[5] H03L *7/089*
U.S. Cl. 331—17 **4 Claims**



1. A phase locked loop comprising:
a voltage control oscillating circuit;
a phase/frequency detector for comparing an input signal input to a first input terminal of said detector and an output signal of said voltage control oscillating circuit input to a second input terminal of said detector to determine a difference in phase and frequency between said input and output signals, and outputting a detector output signal indicative thereof;

a random walk filter for selectively providing one of an up pulse and down pulse in response to the detector output signal;
a counter for counting occurrences of said up pulse and down pulse and outputting a count value signal;
a register for providing a value signal in response to said detector output signal; and
an adder for adding said count value signal and said value signal and outputting and adder output signal,
said voltage control oscillating circuit outputting said output signal having a frequency based on said adder output signal.

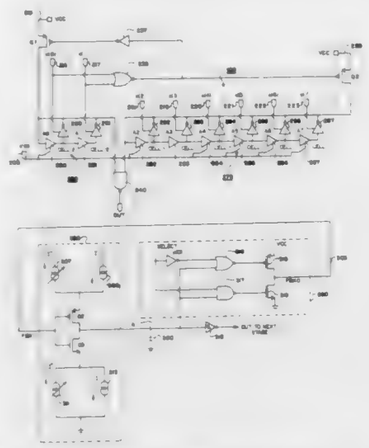
5,349,310
DIGITALLY CONTROLLED FRACTIONAL FREQUENCY SYNTHESIZER
Klaus-Hartwig Rieder, Stuttgart; Gunter Horsch, Weil der Stadt, both of Fed. Rep. of Germany, and William E. Powell, Raleigh, N.C., assignors to Alcatel Network Systems, Inc., Richardson, Tex.
Filed Jun. 9, 1993, Ser. No. 74,060
Int. Cl.[5] H03L *7/06*
U.S. Cl. 331—18 **4 Claims**



1. A controllable oscillator, comprising a fixed frequency generator (**1**) connected to a frequency divider (**2**) with an adjustable divider ratio, wherein the output of the frequency divider (**2**) is connected to the input of a phase detector of an analog phase control circuit (**3**), wherein the frequency divider (**2**) comprises a register, whose output is connected to a first input of an adder, wherein a second input of the adder is connected to a microprocessor (OBC), and wherein an output of the adder is connected to a nominal frequency input of the phase detector of the analog phase control circuit (**3**).

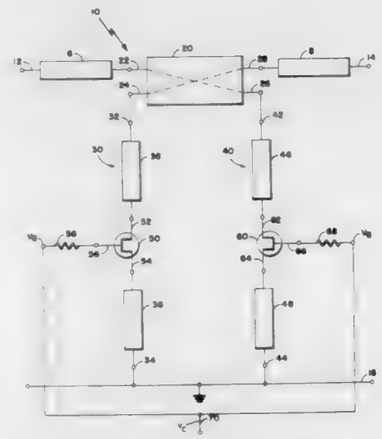
5,349,311
CURRENT STARVED INVERTER VOLTAGE CONTROLLED OSCILLATOR
Ray A. Mentzer, Portland, Me., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Nov. 23, 1992, Ser. No. 980,508
Int. Cl.[5] H03B *5/00;* **H03L** *7/099*
U.S. Cl. 331—57 **16 Claims**

4. A ring oscillator comprising a plurality of stages connected in tandem, each stage of said plurality of stages providing a frequency response and having:
i. a digital input terminal,
ii. an inverter having an input, an output and a feedback connection from said output to said input, and
iii. an anti-high-gain circuit coupled to said inverter,
wherein one of said plurality of stages is actuated in response to a digital control signal at said digital input terminal and said



frequency response of the actuated stage is adjusted in response to an analog control signal.

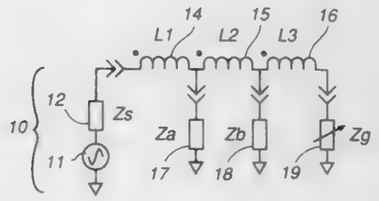
5,349,312
VOLTAGE VARIABLE ATTENUATOR
Steven E. Huettner, Billerica, Mass.; Maureen A. Daly, Pelham, N.H., and Derek J. Fitzgerald, Lincoln, Mass., assignors to Raytheon Company, Lexington, Mass.
Filed May 28, 1993, Ser. No. 68,911
Int. Cl.[5] H01P *1/22*
U.S. Cl. 333—81 A **13 Claims**



1. A voltage variable attenuator comprising:
(a) a quadrature hybrid coupler having an input port, an output port, a first reflective port and a second reflective port; and
(b) an impedance network coupled to the first reflective port, the impedance network comprising:
(i) a first RF propagation network having a first end coupled to the first reflective port of the quadrature hybrid coupler and a second end;
(ii) a field effect transistor having a source electrode, a drain electrode and a gate electrode, the drain electrode coupled to the second end of the first RF propagation network; and
(iii) a second RF propagation network having a first end

coupled to the source electrode and a second electrode coupled to a ground.

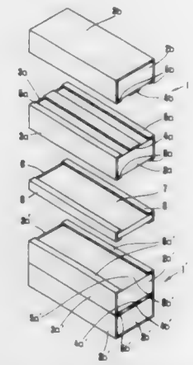
5,349,313
VARIABLE RF POWER SPLITTER
Kenneth S. Collins; John R. Trow; Craig A. Roderick, all of San Jose, Calif., assignors to Applied Maetrials Inc., Santa Clara, Calif.
1992, Pat. No. 5,187,454. This application Oct. 22, 1993, Ser. No. 140,338
Int. Cl.[5] H03H *7/38*
U.S. Cl. 333—131 **15 Claims**



1. An adjustable RF power splitter for coupling power received at an input terminal to two output terminals, wherein the ratio of RF voltage to the two outputs is adjustable, comprising:
first, second, and third mutually coupled inductors connected in series so that the first inductor is connected between a first electrical junction and a second junction, the second inductor is connected between the second junction and a third junction, and the third inductor is connected between the third junction and a fourth junction;
an input terminal and a reference terminal adapted for receiving an RF power input signal therebetween, the input terminal being connected to one of the four junctions;
a variable reactance whose impedance is adjustable over a range, the variable reactance being connected between one of the other three junctions and the reference terminal;
a first output terminal connected t one of the other two junctions; and
a second output terminal connected to the remaining junction;
whereby first and second output voltages are produced between the first and second output terminals, respectively, and the reference terminal, and whereby adjusting the variable reactance operates to vary the ratio between the first and second voltages.

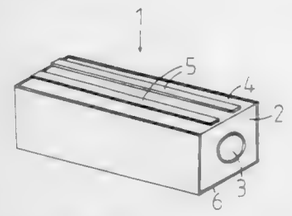
5,349,314
STRIPLINE FILTER DEVICE HAVING A COUPLING DIELECTRIC LAYER BETWEEN TWO STRIPLINE RESONATORS
Hiroyuki Shimizu, and Kenji Ito, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan
Filed Apr. 26, 1993, Ser. No. 51,767
Claims priority, application Japan, Apr. 30, 1992, 4-139864
Int. Cl.[5] H01P *1/203*
U.S. Cl. 333—204 **4 Claims**

1. A stripline filter device comprising at least two dielectric substrate assemblies stacked to each other, each dielectric substrate assembly including:
a pair of superimposed dielectric substrates, the substrates being superimposed at facing surfaces thereof and each substrate also including outer surfaces different from the associated facing surface,
at least one stripline resonator of a predetermined pattern interposed between the facing surfaces of the paired substrates,
a ground conductor provided at least on the outer surfaces of each dielectric substrate, and



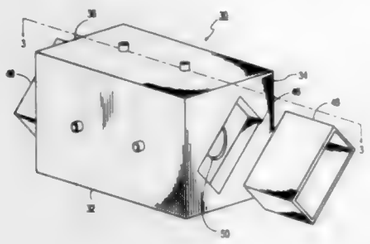
an intermediate dielectric layer having a dielectric constant smaller than that of each of the dielectric substrates, the intermediate dielectric layer being interposed between the dielectric substrate assemblies for adjusting a coupling quantity between the stripline resonators in the stacked dielectric substrate assemblies.

5,349,315
DIELECTRIC FILTER
Jouni Ala-Kojola, Oulu, Finland, assignor to LK-Products OY, Kempele, Finland
Continuation of Ser. No. 906,215, Jun. 25, 1992, abandoned. This application Dec. 21, 1993, Ser. No. 171,209
Claims priority, application Finland, Jun. 25, 1991, 913089
Int. Cl.[5] H01P *1/20*
U.S. Cl. 333—202 **10 Claims**



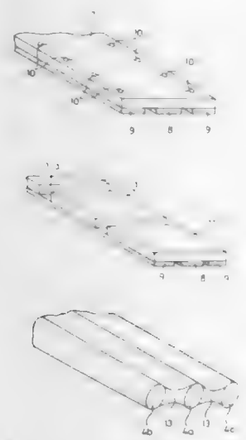
1. A filter (**1**) comprising
a body of dielectric material having upper and lower surfaces, two side surfaces, two end surfaces, and a hole (**3**) extending from said upper surface (**2**) towards said lower surface,
an electrically conductive layer (**6**) covering major portions of the lower surface, one side face, both end faces and the surface of said hole thereby forming a transmission line resonator, and
an electrically conductive strip (**5**) disposed on a portion of the other side surface (**4**) forming a strip-line resonator, said transmission line resonator and said strip-line resonator being coupled with each other via an electrical and magnetic field.

5,349,316
DUAL BANDPASS MICROWAVE FILTER
William G. Sterns, West Hills, Calif., assignor to ITT Corporation, New York, N.Y.
Filed Apr. 8, 1993, Ser. No. 44,409
Int. Cl.[5] H01P *1/208*
U.S. Cl. 333—208 20 Claims



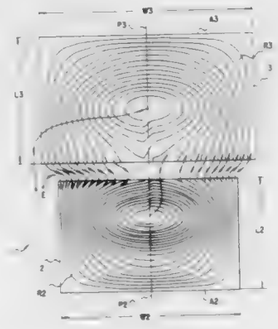
1. A microwave passband filter having first and second passbands, said filter comprising:
input and output waveguide means for propagating a band of microwave frequencies; and
filter means coupled to said input and output waveguide means, said filter means resonating at a first microwave frequency in a first electromagnetic mode and a second microwave frequency in a second electromagnetic mode, said first and second filter passbands determined by said first and second resonant frequencies, whereby only those frequencies within said filter passbands can propagate within said output waveguide.

5,349,317
HIGH FREQUENCY SIGNAL TRANSMISSION TAPE
Yoshihiro Notani, and Takayuki Katoh, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 31, 1993, Ser. No. 40,599
Claims priority, application Japan, Apr. 3, 1992, 4-112234
Int. Cl.[5] H01P *3/00, 3/08*
U.S. Cl. 333—236 6 Claims



1. A high frequency signal transmission tape for making an electrical connection to a high frequency IC chip comprising:
an insulating film having opposite first and second surfaces;
a conductive signal line disposed on said first surface; and
two conductive grounding lines disposed on said first surface on opposite sides of, parallel to, and spaced apart from said signal line wherein said insulating film includes a plurality of slits transverse to said signal line, said signal line and said grounding lines being exposed in and by the slits.

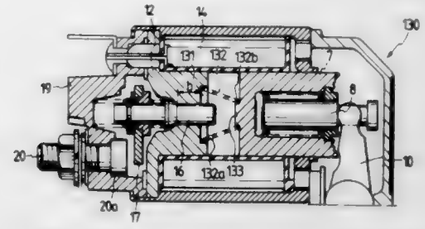
5,349,318
DOUBLE TYPE COIL FOR GENERATING SLANT MAGNETIC FIELD FOR MRI
Yuji Inoue, Tokyo, Japan, assignor to GE Yokogawa Medical Systems, Limited, Tokyo, Japan
PCT No. PCT/JP91/01344, § 371 Date Mar. 26, 1993, § 102(e) Date Mar. 26, 1993, PCT Pub. No. WO92/05737, PCT Pub. Date Apr. 16, 1992
PCT Filed Oct. 3, 1991, Ser. No. 39,013
Int. Cl.[5] G01R *33/20*
U.S. Cl. 335—299 3 Claims



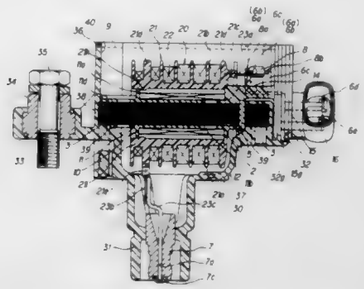
1. A double type coil comprising:
a first coil with a current path formed on a substantially semi-circular cylinder surface, said current path being constituted by a path in spiral shape and a plurality of paths in horseshoe shape surrounding the outside of the spiral path, one end of the spiral and both ends of the plural horeseshoe-shaped paths being aligned at one end of the semi-cylinder;
a second coil with a current path formed on a semi-cylinder surface formed coaxial to the outside of the first coil, said current path being constituted by a path in spiral shape wound in opposite direction to the spiral of the current path of said first coil and a plurality of paths in horseshoe shape surrounding the outside of the spiral path, one end of the spiral path and both ends of the plural horseshoe-shaped paths being aligned at one end of the semi-cylinder; and
connection means for connecting all current paths in series over the first coil and the second coil and for forming one current path.

5,349,319
STARTER
Shuzoo Isozumi, and Akira Morishita, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 554,646, Jul. 19, 1990, which is a division of Ser. No. 331,131, Mar. 31, 1989. This application Mar. 8, 1993, Ser. No. 28,611
Claims priority, application Japan, Apr. 1, 1988, 63-44921; May 12, 1988, 63-63781
Int. Cl.[5] H01F *7/08, 7/13*
U.S. Cl. 335—274 5 Claims

1. An electromagnetic attracting unit comprising:
a casing;
a stationary iron core fixed inside said casing;
a rod slidably set in said stationary iron core and mounted for movement with respect to said stationary iron core, said rod protruding from said stationary iron core and said stationary iron core supporting said rod;
an electromagnet;
a movable iron core slidably supported in said casing with respect to said stationary iron core and mounted for movement with respect to said rod, said movable iron core being confronted coaxially with said stationary iron core and moved toward said stationary iron core by electromagnetic force generated by said electromagnet; and
a conically coiled spring interposed between said stationary iron core and said movable iron core, said conically coiled spring being substantially coaxial with said stationary iron core and said movable iron core.

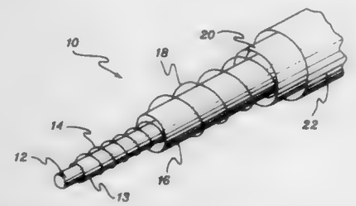


5,349,320
IGNITION COIL FOR INTERNAL COMBUSTION ENGINES
Nobuo Suzuki; Koji Yoshikawa, and Hitoshi Takeuchi, all of Oobu, Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Aichi, Japan
Filed Aug. 17, 1993, Ser. No. 108,058
Claims priority, application Japan, Aug. 27, 1992, 4-252235
Int. Cl.[5] H01F *27/02, 27/30*
U.S. Cl. 336—92 7 Claims



1. An ignition coil for internal combustion engines, comprising:
a casing molded of an insulating synthetic resin having a bottom wall with a step portion formed on the inside wall surface fixing a primary core, a side wall formed in a cylindrical shape surrounding said bottom wall, and a first opening portion surrounded with a free edge of said side wall;
said primary core secured on said step portion formed on said bottom wall of said casing;
a primary winding assembly including: a secondary core contacting said primary core at its both end face portions to form a closed magnetic circuit together with said primary core; a primary bobbin having a bobbin main portion formed cylindrical of an insulating synthetic resin surrounding the outer peripheral surface of a main portion of said secondary core, and at least one extended connecting portion extended from said bobbin main portion in a position offset in relation to said bobbin main portion, and extended to the upper surface of said primary core, for positioning said end face portion of said secondary core in relation to said primary core; and a primary winding with both ends of insulated wire constituting said winding electrically connected to first and second conductive terminals protrusively installed on said bobbin main portion;
a secondary winding assembly including: a secondary bobbin formed cylindrical of an insulating synthetic resin, surrounding the outer periphery of said primary winding of said primary winding assembly; and a secondary winding wound on the outer peripheral surface of said secondary bobbin, with one end of an insulated wire constituting said winding electrically connected to said first terminal protrusively provided on said primary bobbin and with the other end of said insulated wire electrically connected to a conductive lead member protrusively provided on said secondary bobbin in a direction perpendicular to the axial direction of said secondary bobbin; and
a conductive terminal member for closing a second opening portion formed in a part of a bottom wall of said casing, said terminal member being fixed with the peripheral surface thereof on the inside wall of said second opening portion and electrically connected with said lead member protruding from said secondary bobbin of said secondary winding assembly;
whereby, said terminal member is to be connected to said spark plug of said internal combustion engine, said first terminal is to be connected to a power source battery of an electric circuit for ignition for said spark plug, and said second terminal is to be connected to a control circuit of said electric circuit for ignition.

5,349,321
POWERCORD TRANSFORMER
Edwin J. Selker, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 14, 1993, Ser. No. 4,381
Int. Cl.[5] H01F *19/00*
U.S. Cl. 336—221 6 Claims



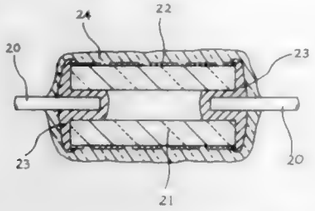
1. A powercord transformer, comprising:
an elongated core comprising ferromagnetic material;
a first winding surrounding said core;
a second winding surrounding said core, wherein said first winding and said second winding are stationary relative to one another and wherein said first winding surrounds a first portion of said core and said second winding surrounds a second portion of said core;
a sheath comprising ferromagnetic material surrounding said core, said first winding and said second winding; and
means for connecting said sheath to said core, such that a complete magnetic circuit is created.

5,349,322

RESISTORS FOR THERMAL FLOWMETERS

Yasuhito Yajima; Fujio Ishiguro, and Horoshi Nakajima, all of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 1, 1993, Ser. No. 25,426
Claims priority, application Japan, Mar. 27, 1992, 4-071249; Feb. 2, 1993, 5-015145
Int. Cl.[5] H01C *3/04*
U.S. Cl. 338—25 16 Claims



1. A resistor for a thermal flowmeter which includes a ceramic substrate, a thin platinum film formed on the surface of the ceramic substrate, and lead wires for connecting the thin platinum film with an external circuit, and is located in a fluid to detect its flow rate, wherein:

when the resistance value, R (Ω), of said resistor is expressed in terms of a function of temperature, T (°C.):

$$R = R_0(1+\alpha T+\beta T^2)$$

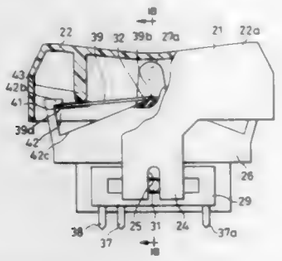
where R_0 is the resistance value in Ω of the resistor at 0° C., α is the first-order term coefficient of the temperature coefficient of resistance, and β is the second-order term coefficient of the temperature coefficient of resistance, the value of the first-order term coefficient, α, of the temperature coefficient of resistance is at least 3,650 ppm/°C.

5,349,323

SEESAW MANIPULATION-TYPE VARIABLE RESISTOR

Hideki Shigemoto, Moriguchi, and Hiroshi Matsui, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 10, 1993, Ser. No. 73,941
Claims priority, application Japan, Jun. 11, 1992, 4-151722
Int. Cl.[5] H01C *10/38*
U.S. Cl. 338—176 6 Claims



1. A seesaw manipulation-type variable resistor comprising:

a base frame;

a manipulation key pivotally supported, at a midpoint, on said base frame and has an integrally-formed arm below said midpoint;

a linear sliding-type variable resistor unit provided under said base frame and having a coupling member which engages with said arm;

a leaf spring accommodated in a space formed between said base frame and said manipulation key, said leaf spring having two lengthwise ends resiliently fitting in confronting rectangular recesses provided in each of two lateral ends of said base frame;

said leaf spring touching under surfaces of said two lateral ends of said manipulation key for urging said manipulation key to return to a neutral position; and

at least one anti-vibration piece provided on at least one of said touching parts of said leaf spring between the leaf spring and the manipulation key.

5,349,324

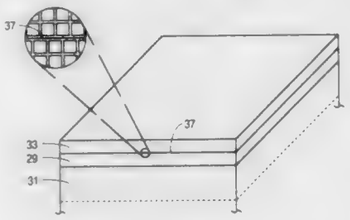
Patent Not Issued For This Number

5,349,325

MULTI-LAYER LOW MODULATION POLYCRYSTALLINE SEMICONDUCTOR RESISTOR

Kenneth McAllister, Hollister, Calif., assignor to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed May 18, 1993, Ser. No. 63,586
Int. Cl.[5] H01C *1/012*
U.S. Cl. 338—307 18 Claims



1. A layered semiconductor resistor comprising:

a first layer of substantially intrinsic semiconductor material having an upper surface and a polycrystalline structure that has grain boundaries, and

a second layer of substantially intrinsic semiconductor material having an upper surface and said polycrystalline structure,

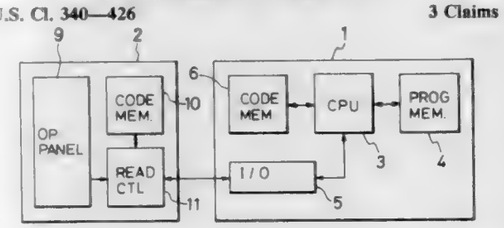
wherein said second layer is formed over the upper surface of said first layer, and an interruption in said polycrystalline structure exists between said first and second layers.

5,349,326

CAR AUDIO APPARATUS

Morito Yamada, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Jun. 30, 1992, Ser. No. 906,690
Claims priority, application Japan, Jul. 3, 1991, 3-163117
Int. Cl.[5] B60R *25/10*; G08B *13/14*
U.S. Cl. 340—426 3 Claims



1. A car audio apparatus mounted on an automobile comprising:

a main body portion fixed to the automobile, the main body portion having a first storage means for storing a first secret code;

a front panel detachably mounted to the main body portion of the audio apparatus, the front panel having a second storage means for storing a second secret code; and

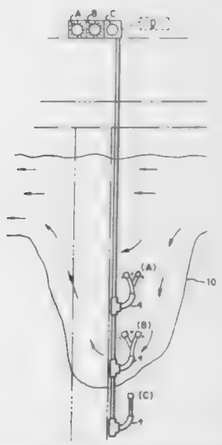
a control means for respectively reading out the first and second secret codes from the first storage means and second storage means and comparing the first secret code with the second secret code so that when both secret codes agree, the control means enables the operation of the car audio apparatus and when both of the secret codes do not agree, the control means inhibits the operation of the car audio apparatus.

5,349,327

MONITOR APPARATUS FOR A BED UNDERLYING WATER

Colin B. Waters, Reading, England, assignor to Hydraulics Research Limited, Oxfordshire, England

Filed May 20, 1991, Ser. No. 703,085
Claims priority, application United Kingdom, May 30, 1990, 9012070
Int. Cl.[5] G08B *21/00*; H01H *35/02*
U.S. Cl. 340—540 8 Claims



1. Monitor apparatus for a bed underlying water comprising one or more electrical sensors each assuming an enabled or a disabled mode of operation, depending upon the status of at least one physical condition of said bed, such that sufficient flow of water over said bed to induce scouring thereof will cause at least one of said one or more sensors to be in the enabled mode and to output an alarm signal in response to corresponding erosion of said bed, said one or more sensors being adapted to be in the disabled mode during normal flow conditions corresponding to insufficient flow of water over said bed to induce scouring thereof, circuitry means connected to said one or more sensors for receiving said alarm signal, and a support structure for said one or more sensors, and wherein said one or more sensors each comprise an arm oscillated by the flow of said water and having first and second end portions, each arm being supported at its first end portion by the support structure and the second end portion of each arm comprising at least one sensor cell.

5,349,328

DASHBOARD MOUNTED TIRE PRESSURE INDICATOR

Pete S. Lonzame, 4451 W. Rosecrans Ave., Hawthorne, Calif. 90205

Filed Sep. 13, 1993, Ser. No. 120,076
Int. Cl.[5] B60C *23/00*
U.S. Cl. 340—442 5 Claims

1. A dashboard mounted tire pressure indicator apparatus arranged for securement and mounting within a vehicle, the vehicle having a plurality of vehicular tires, with each said of vehicular tires rotatively directed about a backing plate, the apparatus comprising,

a plurality pressure sensors mounted on respective said vehicular tires wherein each of said sensors comprising,

a mounting bracket mounted to a respective said backing plate, wherein said mounting bracket includes a sensor housing, the sensor housing having a front wall spaced from a rear wall, the rear wall mounted to said bracket; and

a sensor rod reciprocatably directed through the front wall arranged for adjacency to a respective vehicular tire; and

the sensor rod including a mounting plate positioned within the sensor housing between the front wall and the rear wall reciprocatably mounted within the sensor housing, with the sensor rod fixedly mounted to said mounting

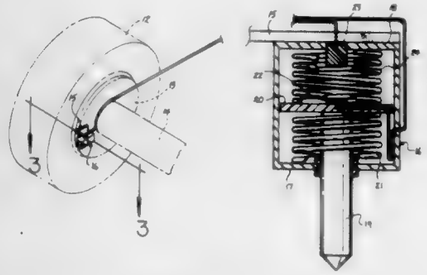


plate and the mounting plate having a first contact and the rear wall having a second contact, whereupon displacement of the sensor rod within the sensor housing effects engagement of the first contact with the second contact; the apparatus further comprising:

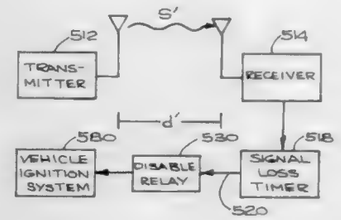
an indicator housing mounted within said vehicle, with the indicator housing including at least one illumination bulb in operative communication with said first contact and said second contact, Whereupon engagement of said first contact with said second contact effects illumination of said illumination bulb.

5,349,329

VEHICLE SECURITY APPARATUS AND METHOD

Jerry R. Smith, Littleton, Colo., assignor to Ideaz International, Inc., Englewood, Colo.

Filed May 7, 1993, Ser. No. 59,448
Int. Cl.[5] B60R *25/10*; G08B *1/08*
U.S. Cl. 340—539 26 Claims



1. Anti-theft apparatus adapted to interconnect with an electronic control circuit of a motor-powered vehicle and operative to selectively disrupt the control circuit to disable said vehicle, comprising:

(a) a transmitter adapted to be carried by a driver of the vehicle and operative to produce a broadcast signal of selected frequency;

(b) a receiver adapted to be carried by said vehicle and operative to receive the broadcast signal when said transmitter is within a communication range, said receiver including timer circuitry and operative to produce an out-of-range signal when said receiver fails to receive the broadcast signal only after said receiver fails to receive said broadcast signal for a selected time duration; and

(c) a switch circuit including a switch element interposed in the control circuit of said vehicle, said switch element

having a switch active state wherein the control circuit of said vehicle is operative and a switch inactive state wherein the control circuit of said vehicle is disrupted, said switch circuit operative in response to said out-of-range signal to cause said switch element to change from the switch active state to the switch inactive state thereby disrupting said control circuit to disable said vehicle.

5,349,330

TOUCH PROGRAMMABLE ILLUMINATION MEANS

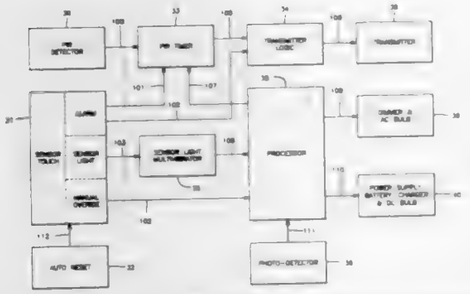
Choong K. Diong, 29, Jalan Chelagi, Damansara Heights, Kuala Lumpur, Malaysia 50490 , and Kian T. Choong, 6 Cantonment Close, Pulau Pinang, Malaysia 10350

Filed Mar. 30, 1993, Ser. No. 40,271

Claims priority, application Malaysia, Jan. 29, 1993, P1 9300148

Int. Cl.[5] G08B *13/19*

U.S. Cl. 340—567 **18 Claims**



1. A touch programmable illumination means having a plurality of operation modes and comprising:

(a) means for receiving manual inputs by way of touch;

(b) means for receiving automatic inputs by detecting the presence of moving infrared radiation sources, ambient light level, and the presence of an alternating current power source;

(c) output means including a first light source which can provide illumination when supplied with a source of alternating current electrical power and a second light source which can provide illumination in the absence of alternating current electrical power;

(d) transmitter means for transmitting an electromagnetic signal when a moving infrared radiation source is detected;

(e) means for conditioning said output means in response to signals received from said manual input means and said automatic input means;

(f) a remote receiver for receiving and decoding said electromagnetic signal;

(g) means to arm and disarm said remote receiver;

(h) a battery backup power source for operating the said second light source in the absence of alternating current electrical power; and

(i) means to provide an electrical connection to a source of alternating current electrical power.

5,349,331

SECURING DEVICE FOR PREVENTING AN ATTEMPTED THEFT AND UNLOCKING DEVICE

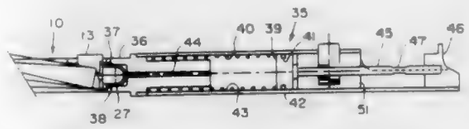
Heinrich Sieber, Marbach, and Roland Wolf, Schonenberg Ander. Thur., both of Switzerland, assignors to Veronica Murray, Flagler Beach, Fla.

Filed Sep. 4, 1992, Ser. No. 941,261

Int. Cl.[5] A47G *29/00*; **B65D** *50/14*; **G08B** *13/00*

U.S. Cl. 340—572 **50 Claims**

1. Securing device designed to prevent an attempted theft, having a locking device including a closing element which is movable relative to a basic part and a catch element holding the closing element in a locking position, which catch element can be unlocked by a separate unlocking device, wherein the basic part is a housing part or frame part for receiving an article to be secured, and wherein the closing element is configured such that it retains the article in the locking position in



the housing part or frame part and further wherein the catch element functioning as a latch-type or snap-in catch interacts with a pressure responsive element serving to move the said catch element from the locking position into a release position or is itself configured as such an element.

5,349,332

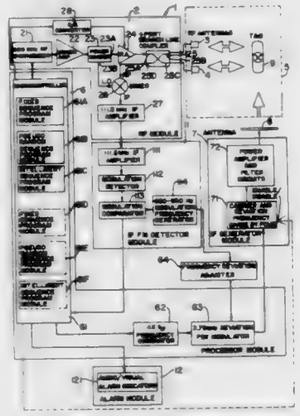
EAS SYSTEM WITH REQUENCY HOPPING

David B. Ferguson, Delary Beach; LeRoy A. Booker, Pompano Beach, and Craig R. Szklany, Boyton Beach, all of Fla., assignors to Sensormatic Electronics Corportion, Deerfield Beach, Fla.

Filed Oct. 13, 1992, Ser. No. 959,685

Int. Cl.[5] G08B *13/187*

U.S. Cl. 340—572 **35 Claims**



1. An EAS system for use with a tag, said EAS system comprising:

transmitting means for transmitting an RF transmitter signal into an interrogation zone, said RF transmitter signal having a RF carrier which is controlled by said transmitting means to have a plurality of different values each occurring over a different one of a plurality of finite dwell time periods of said RF transmitter signal, each finite dwell time period being spaced by a finite time interval from the preceding finite dwell time period;

and receiving means adapted to be responsive to RF signals for making a determination and providing an indication that an RF tag signal has been received, said RF tag signal being produced by said tag in response to said RF transmitter signal and having a RF carrier frequency whose value is related to the value of the RF carrier of said RF transmitter signal.

5,349,333

THREAT SECTOR INDICATING WARNER

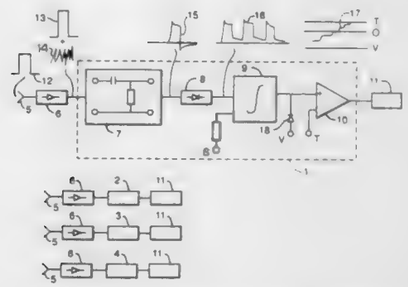
Bengt Björkman, Järfälla, Sweden, assignor to Nobeltech Electronics AB, Jarfalla, Sweden

Filed Dec. 21, 1992, Ser. No. 992,633

Claims priority, application Sweden, Dec. 20, 1991, 9103793

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—600 **3 Claims**



1. A warning apparatus for monitoring a plurality of threat sectors comprising;

a receiving antenna for each threat sector for receiving electromagnetic radiation;

an alarm channel for each respective threat sector;

an amplifier interconnected between an output of said each antenna and an input of each corresponding alarm channel, said alarm channel including connected in series a high pass filter, a rectifier, an integrator and a comparator;

an input of said filter constituting said input of said alarm channel, an output of said comparator constituting an output of said alarm channel; and

a threat sector indicating means connected to said output of said comparator of each alarm channel and activated by an output signal from said comparator in response to an input signal applied to said comparator from said integrator exceeding a reference level, said activated threat sector indicating means of said respective alarm channel indicating the threatened sector.

5,349,334

WIND VELOCITY SIGNALLING APPARATUS

Ronald W. Parson, 4185 Hutcheson Ferry Rd., Whitesburg, Ga. 30185

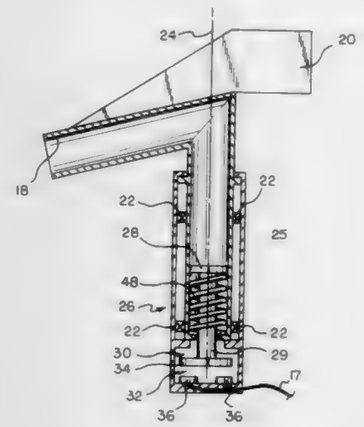
Filed May 14, 1993, Ser. No. 61,293

Int. Cl.[5] G01W *1/00*

U.S. Cl. 340—601 **4 Claims**

1. A new and improved wind velocity signalling apparatus, comprising:

first wind velocity sensing and signalling assembly means, connected to a support structure, for sensing and signalling wind of a predetermined velocity, wherein said first wind velocity sensing and signalling assembly means include a wind scoop assembly for receiving wind, a wind vane fixed onto said wind scoop assembly for directing said wind scoop assembly into the wind, bearing assembly means, connected between said wind scoop assembly and the support structure, for permitting said wind scoop assembly to rotate on a first rotational axis with respect to the support structure, and a wind velocity sensor assembly mounted along said first rotational axis, receiving wind pressure from wind scooped up by said wind scoop assembly, for sensing a predetermined wind velocity, said wind velocity sensor assembly including a wind-pressure-responsive member in communication with wind scooped up by said wind scoop assembly and responsive to a first force exerted by the wind pressure, said wind velocity sensor assembly also including counterforce assembly means for exerting a predetermined counterforce on said wind-pressure-responsive member against said first force exerted by the wind pressure, said wind velocity sensor assembly also including electric circuit completion assembly means, connected to said counterforce assembly means, for signalling said alarm assembly means when the first force exerted by the wind pressure on the wind-pressure-responsive member exceeds the predetermined counterforce exerted by the counterforce assembly means on said wind-pressure-responsive member, wherein said counterforce assembly means include a spring for exerting a predetermined counterforce on said wind-pressure-responsive member against said first force exerted by the wind pressure on said wind-pressure-responsive member, wherein said electric circuit completion assembly means include a conductive member and a pair of electrical contacts that are capable of being contacted by said conductive member and sending a signal to said alarm assembly means when the first force exerted by the wind pressure on the wind-pressure-responsive member exceeds the predetermined counterforce exerted by the counterforce assembly means on said wind-pressure-responsive member, wherein said counterforce assembly means, said wind-pressure-responsive member, said spring, said shaft, and said conductive member rotate along with said wind scoop assembly and said wind vane around a first rotational axis, and



alarm assembly means, connected to said first wind velocity sensing and signalling assembly means, for sounding an alarm upon receiving a signal from said first wind velocity sensing and signalling assembly means, upon occurrence of said predetermined wind velocity.

5,349,335

AUTOMATIC GAS SPRAY DEVICE

Der-Song Lin, 2F, No. 9-1, Alley 18, Lane 410, Jingshin Street, Chung-Ho City, Taipei, Taiwan

Filed Apr. 23, 1993, Ser. No. 51,342

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—636 **1 Claim**

1. An automatic gas spray device for discharge of an irritative gas to deter crime, comprising:

an enclosed housing having a pair of opposing longitudinally displaced end walls, a first of said end walls having a pair of through openings formed therethrough to provide access to a cavity interior to said enclosed housing;

a gas tank seat member having a longitudinally V-shaped groove is disposed within said cavity in longitudinal alignment with a first of said pair of through openings formed in said first end wall, said first through opening having a predetermined open area dimension;

a gas storage tank having a cross-sectional area dimension less than said predetermined open area dimension for

insertion of said gas storage tank through said first through opening, said gas storage tank having a closed end and an outlet pipe coupled to an opposing end thereof, said outlet pipe being in fluid communication with a pressurized irritative gas contained within said gas storage tank;

a female fluid coupling secured to a distal end of said outlet pipe;

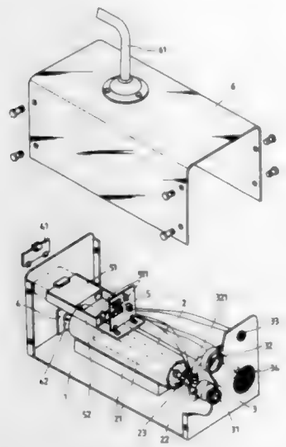
a nozzle extending through an opening formed through a second of said housing end walls;

a solenoid valve having a outlet in fluid communication with said nozzle, said solenoid valve having an electrical input for opening a fluid path therethrough responsive to an electrical control signal;

a male fluid coupling secured to an inlet of said solenoid valve and disposed in alignment with said female coupling for detachable connection therewith;

a pressure gage having an inlet in fluid communication with said solenoid valve inlet and an indicator viewable through an opening formed said second housing end wall;

cover means coupled to said first through opening for forming a closure therefore, said cover means including (1) a first closure member having a front and a rear surface and being releasably securable to said first through opening, and (2) a spring member having one end affixed to said



rear surface of said first closure member and an opposing end in contact with said closed end of said gas storage tank for providing a retention bias force thereto, said retention bias force being removed from said storage tank by displacement of said first closure member from said first through opening;

alarm means disposed adjacent an opening formed through said housing and having a signal input connection for generating an audio alarm responsive to an audio signal coupled to said input connection:

electronic control means disposed within said enclosed housing, said electronic control means including circuit means for generating (1) said audio signal for a predetermined time period, and (2) said electrical control signal subsequent to said predetermined time period responsive to a sensor signal input to said electronic control means, said electronic control means further including (1) a battery releasably coupled to said circuit means, (2) a battery case disposed within said enclosed housing and aligned with a second of said through openings formed in said first housing end wall for passage of said battery therethrough, and a lamp disposed in an opening formed through said second housing end wall and coupled to said electronic control means for indicating a battery voltage level below a predetermined voltage value; and,

a second closure member releasably secured to said second through opening, whereby both said gas storage tank and said battery are replaceable through said respective first and second through openings formed in said first housing end wall of said enclosed housing.

5,349,336

OVERHEATING DETECTION CIRCUIT FOR DETECTING OVERHEATING OF A POWER DEVICE

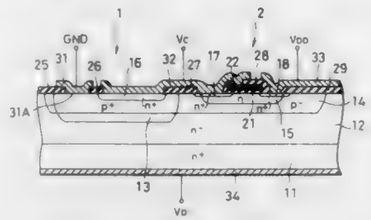
Masaharu Nishiura, and Tatsuhiko Fujihira, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 796,266, Nov. 21, 1991, which is a continuation-in-part of Ser. No. 553,340, Jul. 17, 1990, Pat. No. 5,070,322. This application Nov. 24, 1993, Ser. No. 156,700

Claims priority, application Japan, Nov. 26, 1990, 2-322143; Sep. 10, 1991, 3-229238; Nov. 8, 1991, 3-292581

Int. Cl.[5] G08B *17/06*

U.S. Cl. 340—653 **14 Claims**



1. An overheating detection arrangement for detecting overheating of a power integrated circuit, including:

a power device integrated in a semiconductor substrate; and an overheating detection circuit, including:

a reverse biased pn junction formed in the same semiconductor substrate as said power device and having a reverse leakage current flow which is temperature dependent;

voltage means formed in said semiconductor substrate as said power device and coupled to said pn junction for producing a voltage depending on the reverse leakage current flow; and

threshold means connected for receiving the voltage and producing a signal when the voltage exceeds a threshold voltage to indicate that said power device is overheated;

wherein said semiconductor substrate includes a low impurity concentration layer on one side of said pn junction which has an impurity concentration of not less than $5\times10^{13}/cm^2$.

5,349,337

APPARATUS AND METHOD FOR CONTROLLING PECK DRILLING

Peter E. McCormick, Dallas, Tex., assignor to EOA Systems, Inc., Dallas, Tex.

Filed Dec. 15, 1992, Ser. No. 990,501

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—680 **13 Claims**

1. Apparatus for controlling peck drilling using a drill with a rotatable bit, said apparatus comprising:

first motive means for feeding the bit into a workpiece;

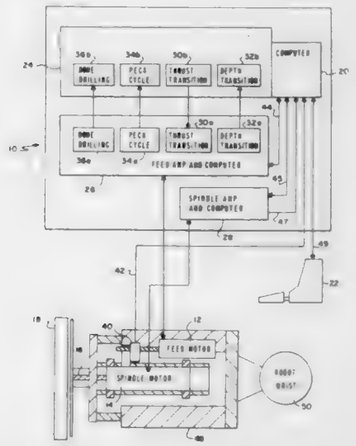
second motive means for rotating the bit;

control means for controlling said first motive means to feed the bit at a predetermined feed rate and said second motive means to rotate the bit at a predetermined rotational rate in accordance with a predetermined set of control parameters;

first monitoring means for monitoring thrust applied to the bit and for generating a first electrical signal indicative thereof;

second monitoring means for monitoring torque applied to the bit and for generating a second electrical signal indicative thereof;

said control means being operable to ignore said first and second electrical signals when the bit is in a peck cycle,



wherein feeding movement of the bit is temporarily interrupted, said control means being responsive to either or both of said first and second electrical signals when the bit is not in a peck cycle for detecting a predetermined condition.

5,349,338

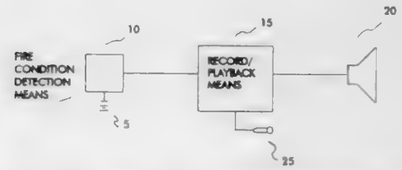
FIRE DETECTOR AND ALARM SYSTEM

Brent E. Routman, 106 McNutts Creek Ct., Athens, Ga. 30606, and Larry W. Stults, 2565 Cardinal Lake Cir., Duluth, Ga. 30136

Filed Feb. 2, 1993, Ser. No. 12,497

Int. Cl.[5] G08B *17/00, 3/00*

U.S. Cl. 340—692 **7 Claims**



1. A fire alarm system for recording and playing back to a first person a message recorded by a second person who is familiar to said first person, said message being at least one of a verbal warning or verbal instructions comprising:

fire condition detector means responsive to fire conditions, for generating an activating signal;

recorder and playback means connected to said fire condition detector means, for recording said message from said familiar second person in the voice of said familiar second person, and playing back said message for said first person when said activating signal is received from said fire condition detector means;

a microphone connected to said recorder and playback means for recording said message from said familiar second person in said voice of said familiar second person; and

a speaker connected to said recorder and playback means for transmitting to said first person said message played back by said recorder and playback means.

5,349,339

APPARATUS FOR THE DETECTION OF LABELS EMPLOYING SUBTRACTION OF BACKGROUND SIGNALS

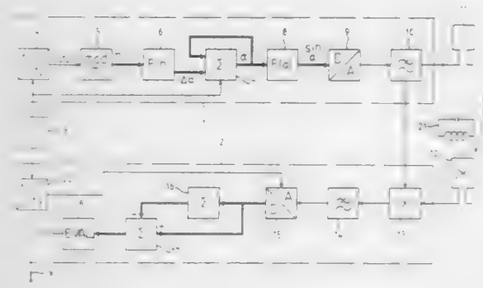
Burckart Kind, Zurich, Switzerland, assignor to Actron Entwicklungs Ag, Rotkreuz, Switzerland

Filed Feb. 3, 1993, Ser. No. 13,825

Claims priority, application Switzerland, Apr. 7, 1992, 1132/92

Int. Cl.[5] G08B *13/187*

U.S. Cl. 340—572 **8 Claims**



1. An apparatus for the detection of labels which are used for preventing the theft of goods and which have an electric resonant circuit with a resonant frequency in the MHz range, comprising:

a transmitter having a transmitting antenna, the transmitter digitally generating a transmitting signal sequence, the transmitting signal sequence having a frequency wobbled in wobble cycles and having a phase position coinciding relative to each wobble cycle, the wobble cycles exceeding the resonant frequency, the transmitting antenna radiating the transmitting signal sequence; and

a receiver having a receiving antenna for receiving the transmitting signal sequence, the receiver detecting the presence of a label between the transmitting and receiving antennas by evaluating the transmitting signal sequence, the receiver demodulating the transmitting signal and then scanning and digitizing the demodulated sequence synchronously with the generation of the transmitting signal sequence by the transmitter, the receiver subtracting a background signal from a portion of the digitized signal values, the background signal being formed from n wobble cycles of the digitized signal values.

5,349,340

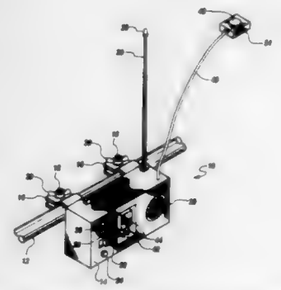
PORTABLE PATIENT ALERTING APPARATUS

Herbert E. Blumenthal, Cordova, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.

Filed Jan. 29, 1993, Ser. No. 11,185

Int. Cl.[5] G08B *7/00*

U.S. Cl. 341—574 **20 Claims**



13. A portable alerting device for use by medical patients

confined to a gurney, wheelchair, or other transport apparatus, comprising:

a housing, removably securable to the transport apparatus, having a plurality of side portions and a top portion;

signalling means mounted to said housing, comprising electronically activated visual and audible indicators; and

actuating means, selectively operable by the patient, for controlling the operation of said signalling means in response to input from the patient, said actuating means comprising

a battery for providing electrical power;

electronic circuitry connected to said battery for controlling the operation of said visual and audible indicators; and

a switch operatively connected to said circuitry and selectively moveable by the patient from an off position to an on position, said switch serving to activate said visual and audible indicators when moved to said on position by establishing an electrical connection between said circuitry and said indicators; and

a reset switch, manually operable to de-activate said visual and audible indicators.

5,349,341

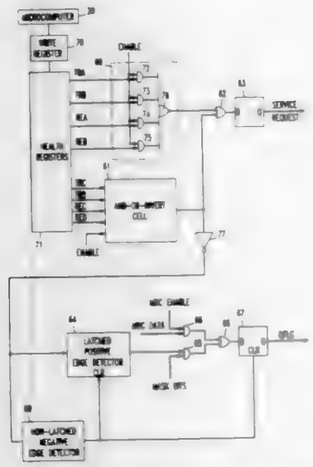
QUAD CHANNEL UNIT HEALTH REGISTERS WITH "OR" FUNCTION MEANS

Mark E. Hauschild, Parsippany Township, Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 30, 1991, Ser. No. 814,948

Int. Cl.[5] H04M *3/08*

U.S. Cl. 340—825.03 **10 Claims**



1. A channel unit for providing service to four channels in a digital loop carrier transmission system comprising:

a first register a portion of which is adapted to include bits of information related exclusively to a first and second channel;

a second register a portion of which is adapted to include bits of information related exclusively to a third and fourth channel; and

means for taking a logical OR function of the plurality of bits in the second register related exclusively to the third and fourth channel and writing the result into another portion of the first register.

5,349,342

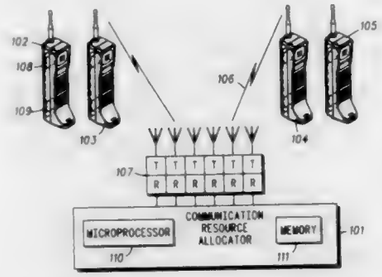
METHOD FOR RECLAIMING UNUSED SYSTEM RESOURCES

Robert B. Nilles, Algonquin; Craig J. Collins, Carpentersville; James J. Killigrew, Palantine, and Michael D. Sasuta, Mundelein, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 30, 1992, Ser. No. 828,325

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 340—825.08 **8 Claims**



1. In a network of communication systems, wherein each communication system includes a plurality of communication units, a limited number of communication resources that are transceived via a predetermined number of repeaters, and a communication resource allocator that allocates the limited number of communication resources among the plurality of communication units, wherein a communication unit of one communication system functions in any of the other communication systems in the network, and when a communication unit's registration request is granted, the communication resource allocator temporarily assigns the communication unit at least one system resource, wherein the at least one system resource is either an identification code for the communication unit, a talk group or an access code that allows the communication unit to participate in services supported by any communication system in the network, a method for the communication resource allocator to reclaim the at least one system resource when the communication unit is inactive, the method comprises the steps of:

a) transmitting at least one polling message to the communication unit to determine whether the communication unit is no longer in need of the at least one system resource;

b) determining that the communication unit is inactive; and

c) reclaiming the at least one system resource when the communication unit does not respond to the at least one polling message in a predetermined manner.

5,349,343

FLEXIBLE MODULE INTERCONNECT SYSTEM

Christopher J. Oliver, Rochester, N.H., assignor to Cabletron Systems, Inc., Rochester, N.H.

Continuation of Ser. No. 412,091, Sep. 25, 1989, Pat. No. 5,115,235. This application Apr. 21, 1992, Ser. No. 871,827

The portion of the term of this patent subsequeht to May 19, 2009, has been disclaimed.

Int. Cl.[5] H04Q *1/00*

U.S. Cl. 340—825.52 **21 Claims**

1. A module interconnect system comprising:

a backplane having a plurality of module-receiving slots and means for interconnecting said module-receiving slots; and

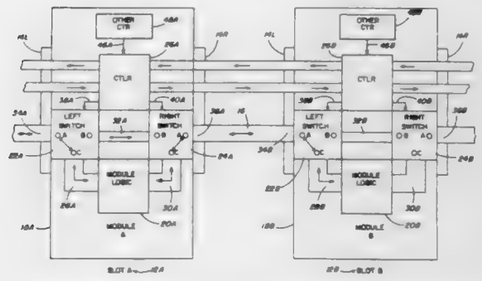
two or more modules mounted in selected ones of said module-receiving slots, at least one of said modules comprising:

a module circuit having a first group of module circuit lines and a second group of module circuit lines;

a first group of module I/O lines for connecting said module to a first adjacent module through said backplane;

a second group of module I/O lines for connecting said module to a second adjacent module through said backplane; and

a switching mechanism selectably connecting said first group of module circuit lines to neither, one or both of said groups of module I/O lines and for selectably



connecting said second group of module circuit lines to neither, one or both of said groups of module I/O lines, said switching mechanism being responsive to a control signal representative of a desired interconnection between said module circuit and said first and second adjacent modules.

5,349,344

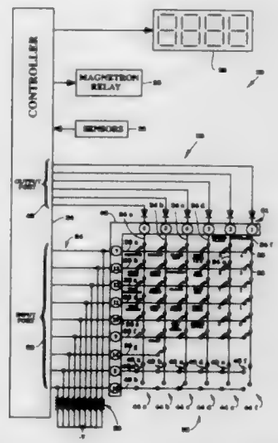
APPLIANCE MODE INDENTIFICATION ENCODING

Jesse S. Head, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 26, 1991, Ser. No. 813,573

Int. Cl.[5] G05B *19/02;* **H03M** *11/00*

U.S. Cl. 340—825.23 **3 Claims**



1. An appliance control system which is automatically adaptable to particular ones of a plurality of appliance models, said control system comprising:

an appliance user control panel unique to a particular one of the plurality of appliance models, said user control panel including a scanned keyboard having:

a set of drive lines,

a set of sense lines,

a plurality of switch elements electrically organized as a matrix, each switch element arranged to selectively electrically connect a particular one of said set of sense lines to a particular one of said set of drive lines,

at least one additional sense line establishing a coding selected from an encoding set including a possible electrical connection of said additional sense line to a particular one of said set of drive lines and including possibly no electrical connection of said additional sense line to any of said set of drive lines, depending on the particular appliance model, and

a connector facilitating connection to said drive lines and said sense lines; and

a controller connected to said keyboard drive limes and sense lines through said connector, said controller including elements for implementing appliance functions for each of the plurality of appliance models and for determining the particular appliance model by applying signals to at least one of said drive lines while monitoring said at least one additional sense line to recognize the coding indicating the particular appliance model.

5,349,345

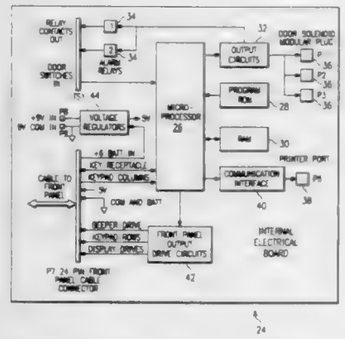
ELECTRONIC LOCK

David J. Vanderschel, Austin, Tex., assignor to Vindicator Corporation, Austin, Tex.

Filed Jun. 30, 1992, Ser. No. 906,795

Int. Cl.[5] G06F *7/04*

U.S. Cl. 340—825.31 **9 Claims**



1. An electronic lock system comprising:

a key having a first memory for storing a first parameter comprising a plurality of fields and a second parameter indicative of a number of said fields; and

a lock comprising:

a receptacle for reading said first and second parameters from said first memory;

a second memory for storing a third parameter associated with the lock and comprising a plurality of fields;

compare circuitry for comparing respective fields of said first and third parameters, the number of fields compared based on said second parameter; and

circuitry for providing access to said lock responsive to said compare circuitry, such that a single key may access a predetermined set of locks.

5,349,346

REFLECTOR-WARNING TRIANGLE

Shin-Chyuan Wu, 3F., No. 6, Lane 12, Chung Ching Road, Baan Chyau City, Taipei Hsien, Taiwan

Filed Jul. 1, 1993, Ser. No. 87,621

Int. Cl.[5] E01F *9/00;* **G09F** *13/16*

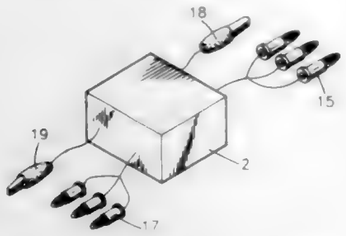
U.S. Cl. 340—908 **2 Claims**

1. A reflective warning triangle comprising:

multiple bright red LED's fixed in and protruding from holes in legs of the triangle so as to allow greater dispersal of the light emitted therefrom, the connecting points of the LED's and the triangle being sealed by multiple washers;

the legs of the triangle comprise a reflective plate and a transparent plate, with several sets of circumferential protuberances in differing heights and a scoop channel

being provided on a back of the transparent plate and a front of the reflective plate, said protuberances and channel serving as the means to join the transparent plate and the reflective plate to form the leg of the triangle, a gasket



being provided intermediate the two plates to ensure proper sealing; and wherein

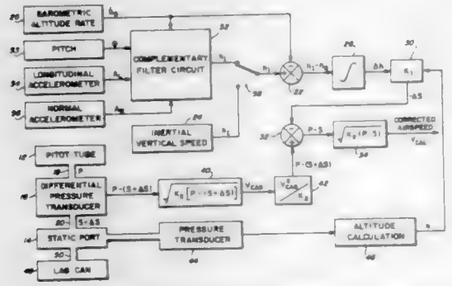
said LED's are series-parallel connected to each other six by six.

5,349,347

METHOD AND APPARATUS FOR CORRECTING DYNAMICALLY INDUCED ERRORS IN STATIC PRESSURE, AIRSPEED AND AIRSPEED RATE

Hans R. Muller, Redmond, Wash., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Mar. 29, 1993, Ser. No. 38,117
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—969 **20 Claims**



1. A rate of change of airspeed correction system for aircraft, comprising:

means for providing an airmass derived signal representative of the vertical velocity of the aircraft;

means for providing an inertially-derived signal representative of the vertical velocity of the aircraft;

means for comparing the airmass derived and inertially-derived vertical velocity signals and providing a vertical velocity difference signal in response to the difference between the airmass and inertially-derived vertical velocity signals; and

means responsive to said difference signal for providing an airspeed rate correction signal in response to the magnitude of the difference signal.

5,349,348

MULTI-MODE DATA STREAM GENERATOR

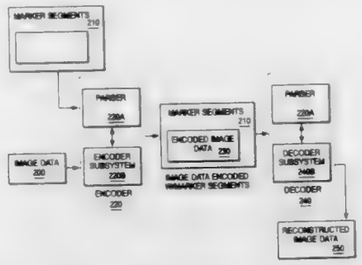
Karen L. Anderson, Mohegan Lake, N.Y.; Ian R. Finlay, Ontario, Canada; Joan L. Mitchell, Ossining, N.Y., and Davey S. Thornton, Germantown, Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 15, 1991, Ser. No. 745,640
Int. Cl.[5] H03M *7/30*
U.S. Cl. 341—51 **33 Claims**

1. Apparatus for controlling a data stream generator in a memory, comprising:

(a) means for transmitting information including data and a plurality of marker segments to an encoder;

(b) processor means for analyzing the plurality of marker segments to determine an encoding operation;



(c) processor means for encoding the data in said information in response to said encoding operation; and

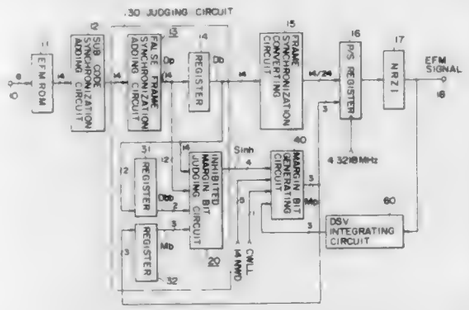
(d) processor means for merging the marker segments to the encoded data.

5,349,349

MODULATOR CIRCUIT FOR A RECORDING FOR A DIGITAL RECORDING MEDIUM

Kazutoshi Shimizume, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Sep. 17, 1992, Ser. No. 946,963
Claims priority, application Japan, Sep. 30, 1991, 3-250654; Sep. 30, 1991, 3-250698; Sep. 30, 1991, 3-250708
Int. Cl.[5] H03M *7/00*
U.S. Cl. 341—58 **4 Claims**



1. A modulator circuit wherein each input m-bit code is modulated into an n-channel bit pattern, n being greater than m, and two adjacent ones of such n-channel bit patterns are coupled to each other using one of a plurality of margin bit patterns to limit the longest and shortest recording wavelengths while suppressing low band components of a recording waveform, comprising:

a first logic circuit for adding an n-bit false frame synchronizing signal having a bit pattern at least part of which is the same as part of a frame synchronizing signal in order to achieve unified judgment of an inhibited margin bit patterns out of said plurality of margin bit patterns; and

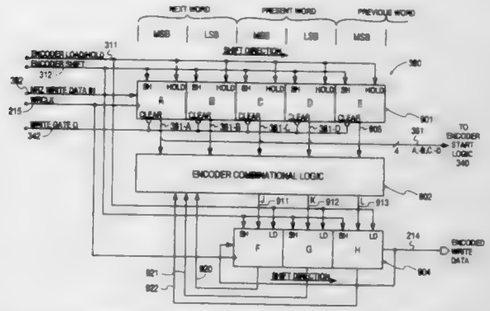
a second logic circuit for referring to the second last, the last and present n-channel bit patterns and the last margin bit pattern to judge an inhibited margin bit patterns in accordance with a predetermined algorithm and outputting an inhibition signal representative of the thus judged margin bit pattern out of said plurality of margin bit patterns.

5,349,350

RUN LENGTH LIMITED ENCODING/DECODING SYSTEM FOR LOW POWER DISK DRIVES

John H. Blagaila, Boulder, Colo., assignor to Integral Peripherals, Inc., Boulder, Colo.

Filed Oct. 31, 1991, Ser. No. 786,334
Int. Cl.[5] H03M *7/46, 7/20*
U.S. Cl. 341—59 **34 Claims**



1. A run length limited encoding/decoding system comprising:

deserializer circuit means operatively coupled to a serial data stream and having a plurality of parallel output terminals and a clock terminal wherein said deserializer circuit means blocks said serial data stream into m bit data words;

encoding logic circuit means connected to said plurality of parallel output terminals of said deserializer means and having a plurality of parallel output terminals wherein said encoding logic circuit means converts an m bit data word into an n bit code word; and

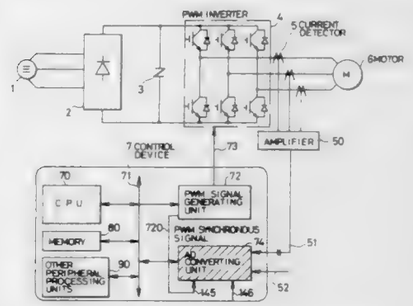
an n bit serializer circuit means connected to said plurality of parallel output terminals of said encoding logic circuit means and having a clock terminal and a serial output terminal wherein said serializer circuit means converts said n bit code word to a serial data stream that is supplied to said serial output terminal.

5,349,351

ANALOG-DIGITAL CONVERTING DEVICE

Sanshiro Obara, Tokaimura; Mitsuru Watabe, Ibaraki; Rika Minami, and Shigeki Morinaga, both of Hitachi, all of Japan, assignors to Hitachi, LTD, Tokyo, Japan

Filed Sep. 3, 1992, Ser. No. 940,332
Claims priority, application Japan, Sep. 3, 1991, 3-222952
Int. Cl.[5] H03M *1/12;* **G05B** *11/28*
U.S. Cl. 341—141 **12 Claims**



1. An analog-digital converting device comprising:

a multiplexer having a main channel and a sub channel as analog signal input channels, said multiplexer selecting a designated channel in said channel group and putting out the analog signal of the selected channel;

a sample holder for sampling and holding the output signal of said multiplexer;

an analog-digital converter for converting the output signal of said sample holder into a digital signal;

a memory having a plurality of storage areas each storing the output signal of said analog-digital converter;

main channel selection instruction means for giving a main channel selection instruction to said multiplexer when it receives a synchronous signal associated with the generation of the analog signal input to the main channel;

sub channel selection instruction means for giving a sub channel selection instruction to said multiplexer during a time other than the main channel selection period when it receives a signal which instructs selection of the analog signal input to the sub channel; and

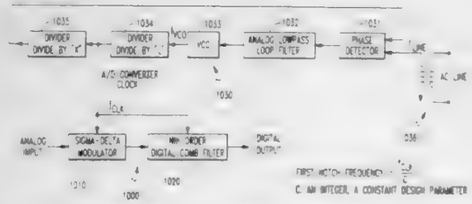
memory control means for designating a storage area corresponding to the selected channel as the storage area for storing the output signal of said analog-digital converter when the channel selection instruction is given to said multiplexer.

5,349,352

ANALOG-TO-DIGITAL CONVERTER HAVING HIGH AC LINE NOISE REJECTION AND INSENSITIVE TO AC LINE FREQUENCY VARIATIONS

Farid Saleh, San Jose, Calif., assignor to Harris Corporation, Melbourne, Fla.

Filed Dec. 21, 1992, Ser. No. 994,008
Int. Cl.[5] H03M *3/02*
U.S. Cl. 341—143 **16 Claims**



1. An analog-to-digital converter, comprising:

(a) a sigma-delta modulator;

(b) a digital filter coupled to said modulator;

(c) a clock generator providing clock signals at a clock frequency to said modulator and to said filter, wherein said clock frequency is a fixed multiple of a variable power line frequency; and

(d) wherein said digital filter is a comb filter with a notch at a fixed fraction of said clock frequency which equals said power line frequency.

5,349,353

METHOD AND APPARATUS FOR MIXED ANALOG AND DIGITAL PROCESSING OF DELTA MODULATED PULSE STREAMS INCLUDING DIGITAL-TO-ANALOG CONVERSION OF A DIGITAL INPUT SIGNAL

Djuro G. Zrilic, 1108 Columbia St., Las Vegas, N. Mex. 87701

Filed Dec. 28, 1992, Ser. No. 997,498
Int. Cl.[5] H03M *1/66*
U.S. Cl. 341—144 **36 Claims**

1. A digital processing circuit comprising:

a source for producing a sigma-delta modulated pulse density stream first input signal;

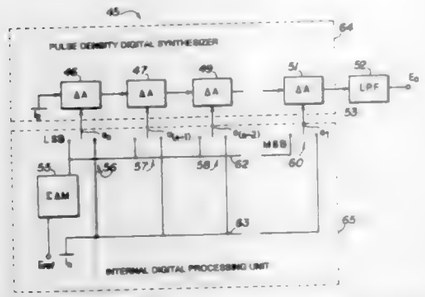
a first node for receiving the sigma-delta modulated pulse density stream first input signal;

a second node for receiving a digital second input signal;

a source of pulses having a known pulse sequence;

a delta adder circuit connected to receive said pulses having a known pulse sequence on a first input, and having a second input;

and a switch connected to receive said first input signal and said source of pulses having a known pulse sequence for selectively connecting either the first input signal or said pulses having a known pulse sequence to the second input



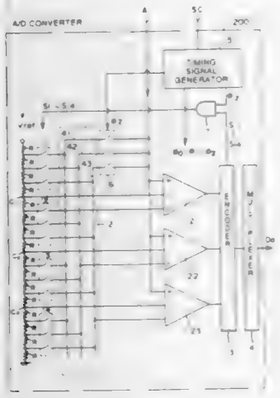
of said delta adder circuit in accordance with a state of the second input signal to produce a sigma-delta modulated output pulse density stream at an output of said delta adder circuit.

5,349,354

A/D CONVERTER AND CONVERTING METHOD HAVING COARSE COMPARISON AND FINE COMPARISON PERIODS

Masao Ito, and Shiro Hosotani, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1993, Ser. No. 29,426
Claims priority, application Japan, Mar. 11, 1992, 4-052270; Mar. 1, 1993, 5-039662
Int. Cl.[5] H03M *1/14, 1/36*
U.S. Cl. 341—156 **22 Claims**



1. An A/D converter, comprising:

reference voltage generating means for generating a plurality of coarse reference voltages for defining a plurality of coarse voltage ranges and a plurality of fine reference voltages for defining a plurality of fine voltage ranges, each of said plurality of coarse voltage ranges including a corresponding group of said plurality of fine voltage ranges;

range detecting means for detecting a voltage range of an analog input signal potential from voltage ranges defined by applied reference voltages;

coarse voltage applying means for applying said plurality of coarse reference voltages to said range detecting means, said range detecting means detecting a coarse voltage range of the analog input signal potential based on the applied coarse reference voltages in a coarse comparison period;

fine voltage applying means responsive to said range detecting means for selectively applying to said range detecting means, the group of fine reference voltages corresponding to the coarse voltage range detected, said range detecting means detecting a fine voltage range of the analog input signal potential based on the applied fine reference voltages in a fine comparison period; and

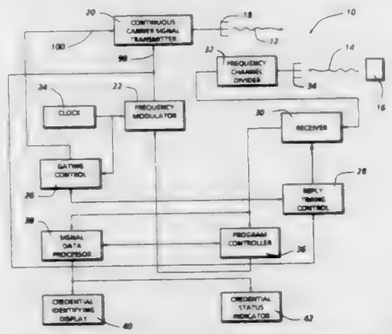
fine voltage application prohibiting means for prohibiting the application of the fine reference voltages to said coarse reference voltages by said fine voltage applying means in said coarse voltage range comparison period.

5,349,355

CREDENTIAL TRACKING SYSTEM

Socrates A. Longas, Glendale, and Robert A. Leverance, College Park, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 21, 1993, Ser. No. 16,384
Int. Cl.[5] G01S *13/80*
U.S. Cl. 342—42 **20 Claims**



1. A method of operating a system for tracking credential units within a reception zone exposed to interrogating radiation emitted from a tracking location at a predetermined carrier frequency, said interrogating radiation being sequentially modulated at different modulation frequencies during periodic transmit intervals for detection by the credential units in the reception zone causing emissions therefrom of reply signals at different code frequencies during reception periods between said transmit intervals, said modulation frequencies of the detected interrogating radiation and the code frequencies of the emitted reply signals being determined by internal coding of the respective credential units; the improvement comprising the steps of: limiting said emissions of the reply signals at the reception zone to a plurality of time slots within said reception periods; selecting the time slots within which the reply signals are emitted in accordance with said internal coding of the respective credential units and timing reception of said reply signals within the selected time slots at the tracking location to identify the respective credential units being tracked thereat.

5,349,356

SIMULTANEOUS DATA TRANSMISSION AND RECEPTION SYSTEM USING MICROWAVES

Marc Camiade, Antony; Véronique Serru, Paris, and Dominique Geffroy, Courcouronnes, all of France, assignors to Thomson Composants Microondes, Puteaux, France

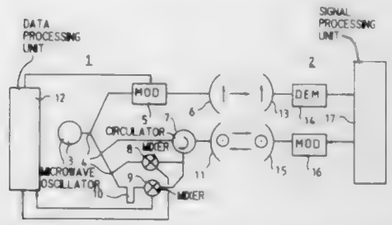
Continuation of Ser. No. 933,308, Aug. 21, 1992, abandoned. This application Sep. 3, 1993, Ser. No. 115,716
Claims priority, application France, Aug. 23, 1991, 91 10570
Int. Cl.[5] G01S *13/80*
U.S. Cl. 342—50 **11 Claims**

1. A system to exchange data in the form of microwaves, between a first station and at least one second station, each of said first and second stations including a pair of antennas, said

data exchange system operating in the write and read mode simultaneously and comprising:

a first channel to allow said first station to write data to said second station, the first channel comprising a first transmission antenna included in said first station and a first reception antenna included in said second station, said first transmission and reception antennas being compatibly polarized,

a second channel to allow said first station to read data recorded in said second station simultaneously with the



writing of data from said first station to said second station, the second channel including a second transmission-reception antenna in the first station an a second transmission-reception antenna in the second station, said second pair of transmission-reception antennas being compatibly polarized, and wherein

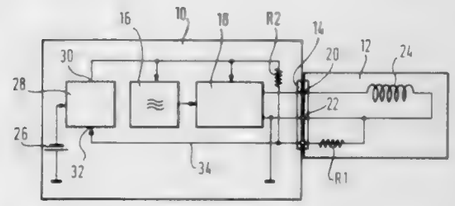
the polarization of the first transmission and reception antenna pair included in said first channel crosses the polarization of the transmission-reception antenna pair included in said second channel.

5,349,357

CIRCUIT ARRANGEMENT FOR OBTAINING A CONSTANT FIELD STRENGTH OF AN HF SIGNAL RADIATED BY A TRANSMITTING DEVICE WITH EXCHANGEABLE ANTENNA

Josef H. Schürmann, Oberhummel, Fed. Rep. of Germany, and Lodewijk J. D'Hont, Zwolle, Netherlands, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 17, 1992, Ser. No. 916,045
Claims priority, application European Pat. Off., Jul. 18, 1991, 91112051.7
Int. Cl.[5] G01S *13/80*
U.S. Cl. 342—51 **10 Claims**



1. A circuit arrangement for obtaining constant field strength of an HF signal radiated by an antenna of a transmitting device which has exchangeable antennas and an assembly within comprising:

a transmitting device for generating and transmitting a constant field strength HF signal;

at least one exchangeable, disconnectable antenna, capable of being connected to and disconnected from said transmitting device for transmitting said constant field strength signal, comprising,

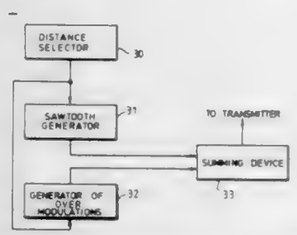
an antenna-specific component, distinct for each exchangeable antenna, for increasing, decreasing or maintaining the transmitting power of said transmitting device via transmission of a control signal from said antenna-specific component to an assembly disposed within said transmitting device.

5,349,358

METHOD AND DEVICE TO DETERMINE THE PASSING TO A PRE-SELECTED DISTANCE OF A REFLECTOR POINT BY MEANS OF THE TIME OF PROPAGATION OF A CONTINUOUS WAVE

Yves Canal, Antony, France, assignor to Thomson-CSF, Puteaux, France

Filed Mar. 19, 1993, Ser. No. 34,859
Claims priority, application France, Mar. 20, 1992, 92 03359
Int. Cl.[5] G01S *13/38*
U.S. Cl. 342—128 **8 Claims**



1. A method to determine the passing of a reflector point by a pre-selected distance from a transmitter by indirect measurement of the delay of propagation, between said transmitter and a receiver means, of a continuous wave modulated according to a modulation, chosen between phase modulation and frequency modulation, and reflected at said point, said method comprising the steps of:

selecting a characteristic coding to be applied to said continuous wave according to said modulation chosen between phase modulation and frequency modulation:

superimposing on said characteristic coding at least one periodic over-modulation having a period equal to N times the delay of propagation of the modulation continuous wave for said pre-selected distance, where N is a number greater than or equal to 1, for delivering an over-modulated characteristic coding;

controlling said transmitter for modulating said continuous wave to be transmitted by said transmitter with said over-modulated characteristic coding, according to said modulation chosen between phase modulation and frequency modulation;

receiving the modulated continuous wave transmitted by said transmitter after reflection at said point; and

performing a time analysis of the delay between the transmitted characteristic coding and the received characteristic coding, based on filtering adjusted to said pre-selected distance.

5,349,359

SPATIALLY VARIANT APODIZATION

Rodney J. Dallaire, Livonia, and Herbert C. Stankwitz, Ann Arbor, both of Mich., assignors to Environmental Research Institute of Michigan, Ann Arbor, Mich.

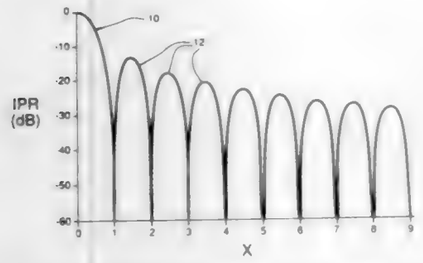
Filed May 10, 1993, Ser. No. 58,174
Int. Cl.[5] G01S *13/89*
U.S. Cl. 342—195 **26 Claims**

1. In signal processing of finite data sequences having at least one mainlobe and a plurality of sidelobes resulting from the transformation of finite data sequences from the frequency domain, the method of attenuating the sidelobes without widening the mainlobe comprising the steps of:

acquiring a finite set of discrete data samples in the frequency domain;

transforming the set to space domain to produce a transformed set of data samples which includes at least one mainlobe and a plurality of sidelobes;

determining weights for each sample as a function of the negative of the current sample divided by the sum of the neighboring samples where the weight is limited to a predetermined range;



attenuating the sidelobes by adding to each sample the product of the determined weight and the sum of neighboring samples; and

using the waveform with attenuated sidelobes in an image-processing system.

5,349,360

ELECTRONICALLY CONTROLLED ANTENNA SYSTEM

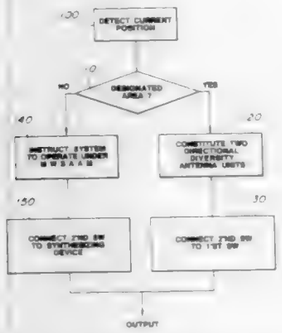
Hiroyasu Matsui, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 1, 1993, Ser. No. 24,126

Claims priority, application Japan, Mar. 13, 1992, 4-089832

Int. Cl.[5] **H01Q** *3/02, 3/24;* **H04B** *1/06*

U.S. Cl. 342—374 **11 Claims**



1. An electronically controlled antenna system comprising:

an antenna having a plurality of antenna elements;

first means for producing a plurality of antenna modes by using the antenna elements;

second means for detecting a current position of said antenna; and

third means for switching said antenna modes of said first means in accordance with the current position detected by said second means.

5,349,361

THREE-WAVE ANTENNA FOR VEHICLES

Yoshimi Egashira, and Ryouichi Miyakawa, both of Tokyo, Japan, assignors to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

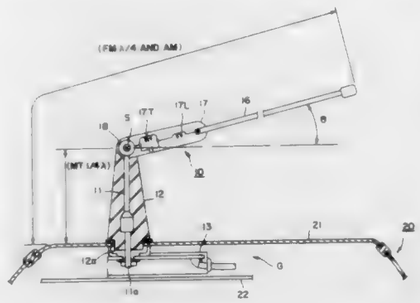
Continuation of Ser. No. 593,788, Oct. 5, 1990, abandoned. This application Sep. 20, 1993, Ser. No. 124,367

Claims priority, application Japan, Oct. 5, 1989, 1-261571

Int. Cl.[5] **H01Q** *1/32, 1/00*

U.S. Cl. 343—715 **3 Claims**

1. A three-band antenna for use in automobiles comprising: a first antenna element which is installed perpendicularly on an automobile roof and is ¼ wavelength long in telephone frequency band and resonates in the telephone frequency band; a second antenna element with its base coupled to the top part of said first antenna element via a shaft supporting assembly which is capable of rotating, said second antenna element together with said first antenna element being ¼ wavelength



long in a FM band and resonating in the FM band; and said first and second antenna elements function in the AM radio reception band; and a trap element for blocking said telephone frequency band, said trap element being interposed between said first and second antenna elements.

5,349,362

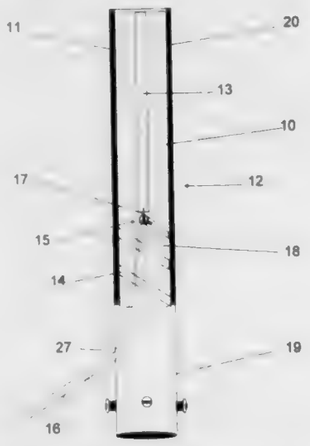
CONCEALED ANTENNA APPLYING ELECTRICALLY-SHORTENED ELEMENTS AND DURABLE CONSTRUCTION

Mark M. Forbes, and John H. Kernkamp, both of P.O. Box 445, Rocklin, Calif. 95677

Filed Jun. 19, 1992, Ser. No. 900,679

Int. Cl.[5] **H01Q** *1/22, 21/30*

U.S. Cl. 343—720 **18 Claims**



1. A concealed antenna combination including a roof of a structure, a vent pipe extending below said roof and having an upper exposed portion projecting above said roof, an antenna mounted on the upper exposed portion of said vent pipe, said antenna comprising a first dielectric tube having an inner and outer surface, an antenna conductor carried on said outer surface, a dielectric covering to conceal said antenna conductor on said outer surface, and means mounting said dielectric covering and said first dielectric tube on said vent pipe forming an extension thereof.

5,349,363

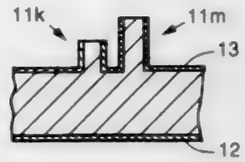
ANTENNA ARRAY CONFIGURATIONS EMPLOYING CONTINUOUS TRANSVERSE STUB ELEMENTS

William W. Milroy, Playa del Rey, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 751,282, Aug. 29, 1991, Pat. No. 5,266,961. This application Oct. 18, 1993, Ser. No. 104,469

Int. Cl.[5] **H01Q** *13/00*

U.S. Cl. 343—772 **10 Claims**



1. An antenna array employing continuous transverse stubs as radiating elements comprising:

a planar sheet of dielectric material having two generally parallel broad surfaces separated by a predetermined distance and having a plurality of elongated, raised, relatively thin, rectangular dielectric members formed along a broad surface of the sheet of dielectric material that extend across one dimension of the broad surface and that extend away from the broad surface, and wherein the plurality of thin rectangular dielectric members are spaced apart from each other by a predetermined distance;

a conductive material disposed on the broad surfaces of the sheet of dielectric material and on transversely extending edgewalls formed by the plurality of thin variable length rectangular dielecteric members arranged as closely spaced pairs so as to define a parallel plane waveguide having a plurality of matched couplet continuous variable length transverse stubs disposed on one plate thereof, and wherein distal ends of the plurality of thin rectangular dielectric members are free of the conductive material so as to define a plurality of radiating elements, and wherein an edge of the sheet of dielectric material is free of conductive coating so as to define a feed for the antenna array; and

line-feed variation means to scan the antenna array.

5,349,364

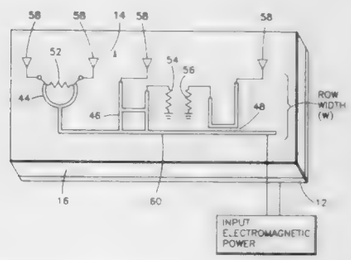
ELECTROMAGNETIC POWER DISTRIBUTION SYSTEM COMPRISING DISTINCT TYPE COUPLERS

James Bryanos, Nahant; Timothy Soule, Newbury, and Michael Harris, Melrose, all of Mass., assignors to Acvo Corporation, Providence, R.I.

Filed Jun. 26, 1992, Ser. No. 904,597

Int. Cl.[5] **H01P** *5/12;* **H01Q** *21/06*

U.S. Cl. 343—853 **12 Claims**



1. A feed system for electromagnetic signal power, comprising:

a plurality of elongated coupler assemblies disposed side by side in a common plane in a first direction, each of said assemblies extending in a second direction perpendicular to said first direction, each of said assemblies comprising a plurality of couplers of electromagnetic power arranged in a row extending in said second direction;

wherein, in any one of said assemblies, said plurality of couplers comprises at least three couplers, each of said couplers has an input terminal for receiving an input electromagnetic power, each of said couplers has a first output terminal for outputting a first fraction of said input power and a second output terminal for outputting a second fraction of said input power, said second fraction being a power division ratio of the coupler;

in any one of said assemblies, the division ratio of any one of said couplers has a nominal value which differs from a nominal value of the division ratio of another of said couplers;

in each of said assemblies, each of said respective couplers has a respective phase-shift characteristic with introduction of a specific phase shift between said first output terminal and said second output terminal of the coupler, wherein a magnitude of the specific phase shift of any one of said couplers differs from a magnitude of the specific phase shift of another of said couplers;

in each of said assemblies, among said plurality of couplers in said assembly, the first output terminal of a first of said couplers is connected to the input terminal of a next second of said couplers in the row of couplers, the first output terminal of said second coupler is connected to the input terminal of a third of said coupler in the row of couplers, and the second output terminals of said first coupler and of said second coupler and of said third coupler output electromagnetic power to radiating elements of an antenna having an array of radiating elements upon a connection of respective ones of the radiating elements to the second output terminals in respective ones of said couplers in said row of couplers; and

each of said assemblies of couplers comprises a main conductor interconnection the couplers of said row of couplers, the input terminal and the first output terminal of each of the couplers of said row of couplers comprising sections of said main conductor.

5,349,365

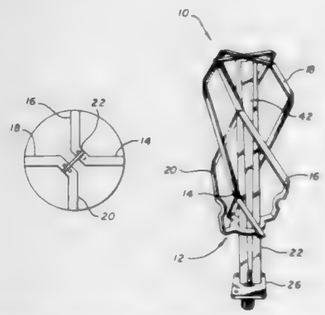
QUADRIFILAR HELIX ANTENNA

Steven G. Ow, 1130 Coventry Dr., Thousand Oaks, Calif. 93065, and Peter J. Connolly, 1461 Paul St., Simi Valley, Calif. 91360

Filed Oct. 21, 1991, Ser. No. 779,895

Int. Cl.[5] **H01Q** *11/08, 1/36*

U.S. Cl. 343—895 **4 Claims**



1. An improved quadrifilar helix antenna comprising:

a unitary antenna having at least two radiating elements extending radially from a common junction and

a microstrip balun connected to said plural antenna elements at said common junction,

wherein said radiating elements are joined at distal ends thereof, arranged in a helical pattern, and mounted such that a longitudinal axis extending through the axial center

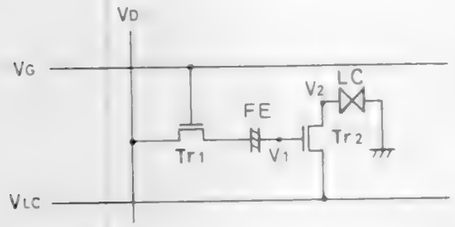
of the antenna is coincident with a longitudinal axis of said microstrip balun and each of said antenna elements includes a tab at said distal end thereof adapted to engage a slot in said microstrip balun.

5,349,366

ELECTRO-OPTICAL DEVICE AND PROCESS FOR FABRICATING THE SAME AND METHOD OF DRIVING THE SAME

Shunpei Yamazaki, Tokyo, and Yasuhiko Takemura, Kanagawa, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Oct. 27, 1992, Ser. No. 966,831
Claims priority, application Japan, Oct. 29, 1991, 3-309915
Int. Cl.[5] G09G *3/34*
U.S. Cl. 345—92 **21 Claims**



1. An electro-optical device of an active matrix type comprising:

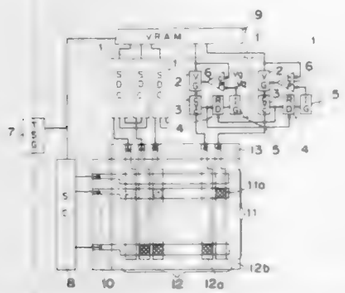
a pixel comprising a first element for selecting said pixel, a memory element for storing an output of said first element where said memory element comprises a ferroelectric capacitor comprising a pair of electrodes and ferroelectric material provided between said electrodes, and a second element for feeding electric power to said pixel based on the stored output such that the second element is turned on when the stored output exceeds a predetermined voltage so that the electric power can be fed to said pixel and whereby the spontaneous polarization of the ferroelectric capacitor defines a lower limit for said stored output while said electric power is being fed to said pixel and whereby the ferroelectric capacitor, in response to storing a further output of said first element, is reversed in polarity to turn the second element off so that the electric power can not be fed to the pixel.

5,349,367

DRIVING CIRCUIT FOR USE IN A LIQUID CRYSTAL DISPLAY DEVICE

Naohide Wakita, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 27, 1993, Ser. No. 9,850
Claims priority, application Japan, Jan. 27, 1992, 4-011658
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—97 **7 Claims**



1. A liquid crystal driving circuit for a liquid crystal panel in which ferroelectric liquid crystals are sandwiched between a plurality of scanning electrodes and a plurality of signal electrodes, which are opposed to each other, said driving circuit comprising:

a switching current detecting section for detecting, from the value of a current supplied from an arbitrary signal electrode a, a switching current value due to switching of spontaneous polarization of the ferroelectric liquid crystals at a selected pixel on the arbitrary signal electrode a;

an integrating section for integrating the switch current value to develop an integral value; and

a comparator for comparing the integrated value with a gray scale indicating voltage which corresponds to gray scale data, wherein the signal voltage value applied to the arbitrary signal electrode a is changed depending on an output of said comparator, so that the gray scale indicating voltage and the integrated value are made coincident with each other.

5,349,368

MACHINE TRANSLATION METHOD AND APPARATUS

Kimihito Takeda, Odawara; Hideki Hirakawa, Kawasaki; Hisahiro Adachi, Chigasaki, and Shinya Amano, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 477,129, Feb. 7, 1990, abandoned, which is a continuation of Ser. No. 109,524, Oct. 19, 1987, abandoned. This application Dec. 2, 1991, Ser. No. 799,884
Claims priority, application Japan, Oct. 24, 1986, 61-251820
Int. Cl.[5] G09G *5/34*
U.S. Cl. 345—115 **19 Claims**



1. A method for displaying in a related manner translated texts and their corresponding original texts being referred to on a display section of a machine translation apparatus, comprising the steps of:

dividing input original texts into units under a given condition on the basis of their descriptions and writing into a first memory the divided original texts with an identification number assigned for each of the divided texts;

writing into a second memory corresponding translated texts in units translated from the original texts written in the first memory, the translated texts being assigned with identification numbers each corresponding to each of the identification numbers assigned for each of the divided original texts;

displaying the translated texts written in the second memory on an entire area of a translated text display region in the display section;

registering in a table a relationship between a display position of each unit of the translated texts displayed on the translated text display region and respective identification numbers of each unit of the original texts corresponding to the translated texts;

specifying a part of the translated texts being displayed, in response to issuance of a demand for referring to a corresponding part of the original texts, for recognizing the

display position on the translated text display region of the specified part of the translated texts from the table and securing an original text display region for displaying the corresponding original texts; and

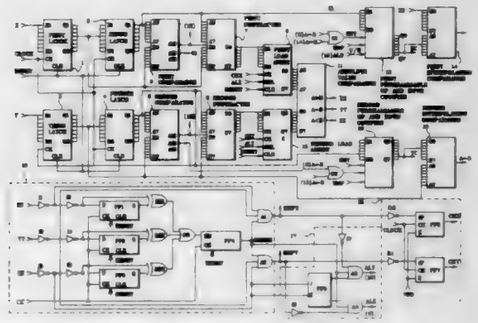
determining an identification number of a part of the original texts corresponding to the specified part of the translated texts from the table, and retrieving from the first memory the part of the original texts corresponding to the specified part of the translated text on the basis of the determined identification number of the part of the original texts, and displaying the retrieved part of the original texts on the original text display region.

5,349,369

IMAGE INTERPOLATION CIRCUIT

Hak S. Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Jul. 23, 1993, Ser. No. 95,469
Claims priority, application Rep. of Korea, Jul. 23, 1992, 92-13153
Int. Cl.[5] G09G *5/00*
U.S. Cl. 345—136 **4 Claims**



1. An image interpolation circuit comprising:

first through fourth latches storing X abscissa and Y ordinate values of two coordinate points input by an external input unit;

first and second comparators connected to said for comparing sizes between input X1 and X2 abscissa points and between input Y1 and Y2 ordinate points;

first and second subtracters connected to said first and second comparators, respectively, for obtaining absolute values of the differences between input X1 and X2 abscissa points and between input Y1 and Y2 ordinate points;

first and second load adders connected to said first and second subtracters, respectively, for adding absolute values of the X1 and X2 abscissa points and of said Y1 and Y2 ordinate points to the loaded values, after loading absolute values of said X1 and X2 abscissa points and of said Y1 and Y2 ordinate points obtained from said first and second subtracters;

an absolute value comparator connected to said first and second load adders, for comparing outputs of said first and second load adders;

first and second programmable up and down counters connected to said second and fourth latches and said first and second comparators, respectively, for outputting an interpolation signal by up or down counting said first X axis abscissa value or said Y axis ordinate value having a larger absolute value as a result of the comparison of said absolute value comparator;

first and second interpolation comparators connected to said first and second programmable up and down counters, for disabling said first and second programmable up and down counters by comparing outputs of said first and second programmable up and down counters with the second X axis input value and Y axis input value;

control signal generating means connected to said absolute value comparator, for outputting count enable signals of said first and second programmable up and down counters by using the output of said absolute value comparator;

selection signal generating means connected to said control signal generating means, for controlling loads for adding said first and second load adders by using an output signal of said control signal generating means; and

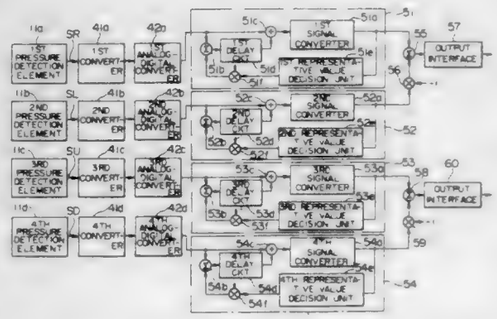
a clock generator connected to said control signal generating means, for generating a clock to control an operation of said first and second load adders by assembling an output signal of said control signal generating means with an outside clock signal.

5,349,370

SIGNAL PROCESSING CIRCUIT FOR A POINTING DEVICE

Sumio Katayama; Ichiro Usui, and Takashi Yanase, all of Chofu, Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1992, Ser. No. 957,289
Claims priority, application Japan, Oct. 9, 1991, 3-090679[U]
Int. Cl.[5] G09G *5/00*
U.S. Cl. 345—159 **1 Claim**



1. A signal processing circuit for a pointing device including a detecting portion comprising first through fourth pressure detection elements responsive to a pressure applied to said detecting portion for producing first through fourth pressure detection signals, respectively, said signal processing circuit comprising processing means for processing said first through said fourth pressure detection signals into an X-axis movement value and a Y-axis movement value to move a cursor displayed on a display along an X-axis direction and a Y-axis direction, respectively, said first, said second, said third, and said fourth pressure detection elements being for defining the movement of said cursor in an X-axis plus direction, an X-axis minus direction, a Y-axis plus direction, and a Y-axis minus direction, respectively, said processing means comprising:

first through fourth converting means for converting said first through said fourth pressure detection signals into first through fourth time signals representative of time values, respectively, each of said first through said fourth time signals comprising a succession of a plurality of frames for carrying said time values;

a first processing circuit connected to said first converting means and supplied with said first time signal for correcting a particular time value in a particular frame of said first time signal with reference to a preceding time value in a preceding frame of said first time signal to produce a corrected value and for converting said corrected value into a cursor moving value in said X-axis plus direction to produce a first move signal;

a second processing circuit connected to said second converting means and supplied with said second time signal

for correcting a particular time value in a particular frame of said second time signal with reference to a preceding time value in a preceding frame of said second time signal to produce a corrected value and for converting said corrected value into a cursor moving value in said X-axis minus direction to produce a second move signal;

a third processing circuit connected to said third converting means and supplied with said third time signal for correcting a particular time value in a particular frame of said third time signal with reference to a preceding time value in a preceding frame of said third time signal to produce a corrected value and for converting said corrected value into a cursor moving value in said Y-axis plus direction to produce a third move signal;

a fourth processing circuit connected to said fourth converting means and supplied with said fourth time signal for correcting a particular time value in a particular frame of said fourth time signal with reference to a preceding time value in a preceding frame of said fourth time signal to produce a corrected value and for converting said corrected value into a cursor moving value in the Y-axis minus direction to produce a fourth move signal;

a first calculation circuit connected to said first and said second processing circuits for carrying out a predetermined calculation by the use of said first and said second move signals to produce said X-axis movement value; and

a second calculation circuit connected to said third and said fourth processing circuits for carrying out a predetermined calculation by the use of said third and said fourth move signals to produce said Y-axis movement value;

wherein each of said first through said fourth processing circuits comprises:

a signal converter for converting a particular time value in a particular frame into one of a plurality of types of cursor moving values with reference to a predetermined translation table;

a representative value decision unit connected to said signal converter and supplied with said cursor moving for deciding a representative time value with reference to a predetermined translation curve related to said translation table;

a multiplier connected to said representative value decision unit for multiplying said representative time value −1 to calculate a modified time value;

a first adder connected to said multiplier for adding said modified time value and said particular time value in said particular frame to calculate a deviation time value;

a delay circuit connected to said first adder for delaying said deviation time value by one frame to produce a delayed deviation time value; and

a second adder connected to said delay circuit for adding said delayed deviation time value and a following time value in a following frame to calculate a corrected time value;

said signal converter being for producing a cursor moving value in a following frame with reference to said predetermined translation table and on the basis of said corrected time value.

5,349,371

ELECTRO-OPTICAL MOUSE WITH MEANS TO SEPARATELY DETECT THE CHANGES IN CONTRAST RATIO IN X AND Y DIRECTIONS

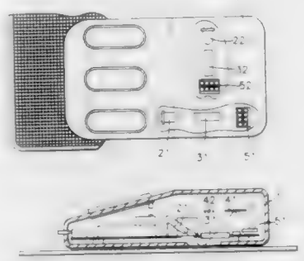
Kwang-Chien Fong, 5F, No. 3, Lane 359, Sec. 2, Chung Shan Rd., Chung Ho City, Taipei Hsien, Taiwan

Continuation of Ser. No. 709,829, Jun. 4, 1991, abandoned. This application Feb. 24, 1993, Ser. No. 22,384

Int. Cl.[5] G09G *3/00*

U.S. Cl. 345—166 **1 Claim**

1. An electro-optical mouse, comprising a first signal pick-up device for detecting, in an X direction, changes in contrast ratio of a reflective surface caused by passage of the first signal pick-up device over a grid of lines on the reflective surface in the X direction and second pick-up device for detecting, in a Y direction, changes in contrast ratio of the reflective surface caused by passage of the second signal pick-up device over said grid of lines in Y direction, said first and second signal pick-up devices comprising light source means including an LED light source for projecting light onto said reflective surface, lens means including a cylindrical lens for amplifying light reflected from said surface, reflector means including a reflector for transmitting light from said cylindrical lens to a detector,



said detector including means for generating an electrical signal sensed changes in contrast ratio in order to enable a computer to accurately control the movement of a cursor on a visual display the central axes of said cylindrical lenses being oriented at right angles to each other to separately amplify changes in said contrast ratio on the X and Y direction each lens amplifying only the line crossing of said grid of lines which are disposed parallel to the central axis thereof.

5,349,372

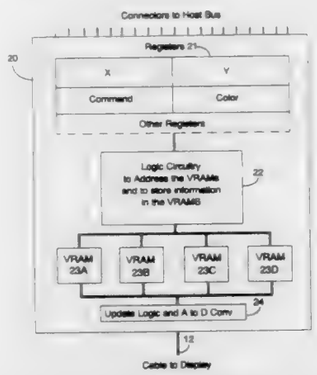
VIDEO SUBSYSTEMS UTILIZING ASYMMETRICAL COLUMN INTERLEAVING

Scott D. Sellers, Menlo Park, Calif., assignor to Pellucid Inc., Santa Clara, Calif.

Filed Jul. 16, 1993, Ser. No. 92,702

Int. Cl.[5] G09G *3/00*

U.S. Cl. 345—185 **5 Claims**



1. A video subsystem including a display, a video memory which has rows and columns, and means for mapping and interleaving the pixels between the display and the video memory according to the following formula:

$$R=(\text{TTI of } 2\ (Y/3))+P$$

$$C=\text{LNB}\{[(\text{TTI of Y mod } 3)\ 341)+(\text{TTI of } X/3)\}$$

where:

TTI means truncation to an integer

LNB means lower nine order bits of P is "1" if (((X>511) and (Y mod 3=1)) or (Y mod 3=2))

5,349,373

THERMAL HEAD DRIVE UNIT

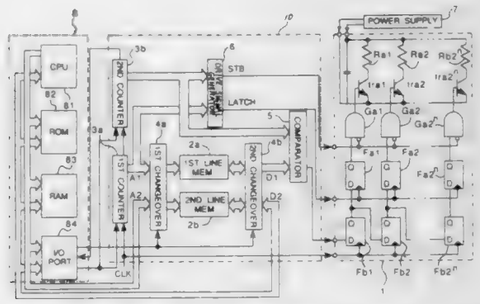
Yasuki Matsumoto, Hirakata; Haruo Yamashita, Osaka; Yoshihiro Mushika, Neyagawa, and Hideshi Ishihara, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 15, 1992, Ser. No. 898,442

Claims priority, application Japan, Jun. 14, 1991, 3-142929

Int. Cl.[5] B41J *2/36*

U.S. Cl. 346—76 PH **6 Claims**



1. A thermal head drive unit using recording paper for forming thereon an image through a color generation or ink transfer process comprising:

electric power supply means for supplying electric power to heat-generating resistor elements arranged in a line in a thermal head;

head drive means for electrically driving the heat-generating resistor elements in a lump by supplying, as a function of gradation data, electric power continuously variably in time to said heat-generating resistor elements depending on input gradation data; and

head drive control means for controlling said head drive means so that, in a one-line recording time period composed of a power supply time during which electric power is supplied to said heat-generating resistor elements and an intermission time during which no electric power is supplied to said heat-generating resistor elements in disregard of the gradation data, the intermission time occupies a part not more than approximately 40% in the one-line recording time period.

5,349,374

COLOR IMAGE FORMING DEVICE TO PREVENT COLOR SHIFTING

Kazuhiko Arai; Toru Teshigawara, and Toshiaki Sagara, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 24, 1992, Ser. No. 996,639

Claims priority, application Japan, Dec. 30, 1991, 3-358387

Int. Cl.[5] H04N *1/21*

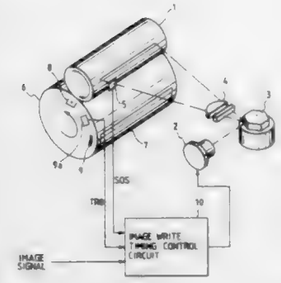
U.S. Cl. 346—108 **5 Claims**

1. A color image forming device in which latent images are formed by radiating a light beam onto a photoreceptor for each of a plurality of colors, the latent images are developed to provide visible images, and a recording medium is transported to the visible images a plurality of times to thereby form a color image consisting of a plurality of colors on the recording medium, said color image forming device comprising:

means for detecting a reference transporting position of the recording medium to be moved to the photoreceptor;

means for detecting a scan start signal of the light beam;

means for measuring an error time from detection of the reference transporting position to detection of the scan start signal; and



means for correcting a radiation timing of the light beam in accordance with the error time.

5,349,375

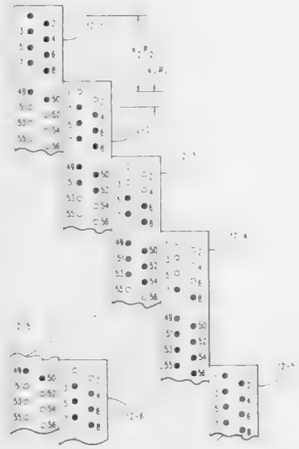
INK JET PRINTER DOT PLACEMENT COMPENSATION METHOD

John P. Bolash; Edmund H. James, III, both of Lexington; Randall D. Mayo, Georgetown, all of Ky., and Richard G. Zumbach, Davidson, N.C., assignors to Lexmark International, Inc., Greenwich, Conn.

Filed Apr. 16, 1992, Ser. No. 870,449

Int. Cl.[5] B41J *2/07*

U.S. Cl. 347—40 **18 Claims**



9. A method of operating a printer mechanism having a print head for printing pixels on a record medium during a plurality of line scans as said print head is moved along an axis relative to said record medium, and a stepper motor for moving said record medium in a direction orthogonal to said axis, said print head having a plurality of print elements **1**,**2** . . . P,(P+1) . . . (P+X) responsive to selectively applied address signals **1**, **2**, . . . P for selectively printing pixels at adjacent pixel positions aligned in the direction of record medium movement with a distance R_1 between centers of adjacent pixel positions, and said stepper motor being responsive to energizing pulses for moving said record medium by a minimum distance R_2 where R_2 is greater than R_1, said method comprising the following steps:

step 1) during a given one of said line scans, applying the address signals **1**, **2**, . . . P to said print elements $(1+k_1)$, $(2+k_1)$ . . . $(P+k_1)$ whereby said print elements print pixels which are shifted by a shift distance k_1R_1 relative to

where pixels would have been printed if said addressing signals had been applied to said print elements 1,2, . . . P, respectively, the shift distance being parallel to the direction the record medium is moved and k_1 being zero or a positive integer no greater than X;

step 2) between successive ones of said line scans, applying pulses to the stepper motor to move the record medium a distance k_2R_2; and,

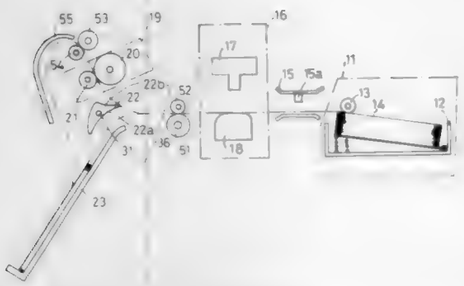
step 3) repeatedly executing step 1 and step 2 while applying said address signals to different ones of said print elements to vary said shift distance k_1R_1 and while varying the number of pulses applied to said stepper motor so that a sum of the distance k_2R_2 that the record medium is moved when step 2 is executed and the shift distance k_1R_1 that the pixels are printed during a next succeeding execution of step 1 differs from PR_1 by no more than one-half R_1, k_2, P and X being positive integers.

5,349,376

PRINTING APPARATUS FOR PERFORMING OVERHEAD PROJECTOR PROCESSING

Mamoru Imaizumi, and Fumio Morita, both of, Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 10, 1992, Ser. No. 896,629
Claims priority, application Japan, Jun. 14, 1991, 3-143255
Int. Cl.[5] B41J *2/01*
U.S. Cl. 347—16 **19 Claims**



1. A printing apparatus comprising:

printing means for performing printing in a plurality of colors including black;

overhead projector-oriented processing means for enhancing light transmittance of an overhead projector-ready sheet on which said printing means prints print data, including flattening means for flattening any protrusions of ink printed on the sheet;

color judging means for making one of two color judgments, one color judgment being that data printed on said overhead projector-ready sheet are in black monochrome, the other color judgment being that data printed on said overhead projector-ready sheet are in a plurality of colors; and

controlling means for controlling said overhead projector-oriented processing means in accordance with the one of two color judgments made by said color judging means;

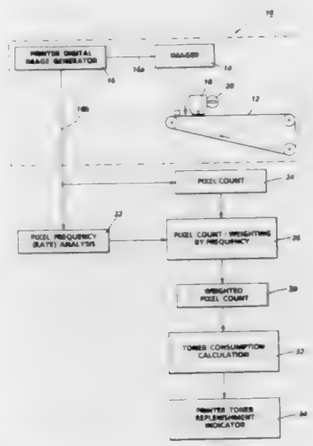
wherein said controlling means activates said overhead projector-oriented processing means if said color judging means finds the print data to be in a plurality of colors, and said controlling means deactivates said overhead projector-oriented processing means if said color judging means finds the print data to be in black monochrome.

5,349,377

PRINTER TONER USAGE INDICATOR WITH IMAGE WEIGHTED CALCULATION

W. Keith Gilliland, Webster; Christian G. Midgley, Fairport; Alison M. Murphy, Penfield, and Wayne T. Bowerman, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 17, 1993, Ser. No. 62,971
Int. Cl.[5] G01D *15/06;* **G03G** *15/08*
U.S. Cl. 346—153.1 **4 Claims**



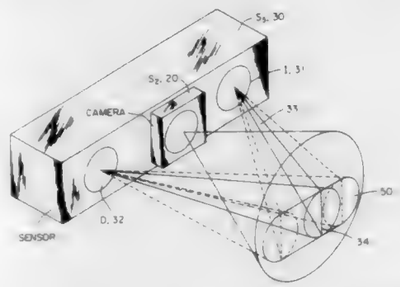
1. An improved system for more accurately estimating consumption of imaging material in a digital printing apparatus in relation to the digital pixels which are being used to generate the various images being printed in said printing apparatus, wherein a count of digital image pixels is accumulated; wherein the frequency rates of said digital pixels switching between print and non-print pixels are analyzed to provide weighting factors corresponding to different types of images being printed which affect said consumption of imaging material by said printer, and said pixel counts corresponding to said frequency rates are weighted by said weighting factors in said pixel count accumulation to provide an imaging material consumption estimation calculation based on image types as well as image pixel counts.

5,349,378

CONTEXT INDEPENDENT FUSION OF RANGE AND INTENSITY IMAGERY

Fereydoun Maali, New York, N.Y., assignor to Robotic Vision Systems, Inc., Hauppauge, N.Y.

Filed Dec. 21, 1992, Ser. No. 993,393
Int. Cl.[5] H06N *13/02*
U.S. Cl. 348—46 **13 Claims**



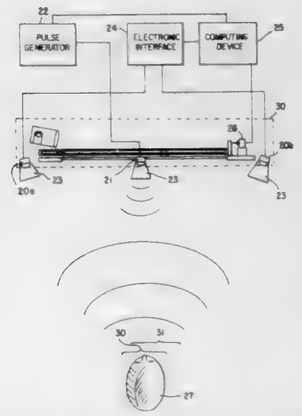
1. A calibration process with a self-scanned active three dimensional optical triangulation-based sensor and an independent TV camera and a planar target to provide a fused sensory source for subsequent complete data fusion of a scene imaged by both its constituent sensory systems, and is not constrained by absence of spatial or spectral structures in the scene, said calibration process comprising the steps: of aligning two sensors with view volumes so that their view volumes partially overlap; imaging a laser-projected stripe of a self-scanned 3D sensor at every step by both sensory systems as the stripe is being traversed at steps commensurate with a desired lateral resolution across a target comprising a planar rectangular slab; processing imaged lasers stripes to yield a set of corresponding least squares fitted line segments in a first sensory space and a second sensory space arising from least squares line fitting of preprocessed and Hough-like transformed points between leading and trailing edge elements of the imaged stripe at every step and projection of the said edge elements onto said lines in both said spaces; sampling corresponding line segments at equal numbers of equidistant intervals to a desired vertical resolution to yield two ordered point sets that are a mapping of one another; recording coordinates of 3D points against those of corresponding points in said second space; repeating all said steps as the target is being depressed through the overlapping view volume; and least squares line fitting in three space coordinate measurement system of said first space, said second space having resolution cells, three space points corresponding to each resolution cell of said second space; viewing line equations as those of rays connecting said second space resolution cells to their corresponding three space points; and storing thereafter said equations along with their corresponding second space resolution cells in a data fusion table for subsequent data fusion during run-time.

5,349,379

AUTOSTEREOSCOPIC DISPLAY ILLUMINATION SYSTEM ALLOWING VIEWING ZONES TO FOLLOW THE OBSERVER'S HEAD

Jesse B. Eichenlaub, Penfield, N.Y., assignor to Dimension Technologies Inc., Rochester, N.Y.

Continuation-in-part of Ser. No. 942,718, Sep. 9, 1992. This application Aug. 17, 1993, Ser. No. 105,811
Int. Cl.[5] H04N *13/04*
U.S. Cl. 348—59 **21 Claims**



1. In an autostereoscopic display device having (1) a screen surface upon which is displayed, or imaged, a number of sets of thin parallel vertical light emitting lines, each set containing a multiplicity of said lines, the members of each set being located in the areas between the members of the other sets, and each set capable of being independently turned on and off, said surface remaining dark between said emitting lines, (2) a light valve array parallel to and in front of said screen, said light valve having individual picture elements, arranged in a regular pattern across its surface, said pattern possessing vertical columns of said picture elements, there being at least two vertical columns of picture elements for each of said light emitting lines in each set of said lines, said light emitting line being located behind and between said elements, so as to establish areas of space known to the art as "Viewing zones" in front of the display, within which an observer's eye sees all the light lines of a given set behind either an odd or even set of pixel columns, (3) optionally said display is in color obtained by filtering light passing through said picture elements along said columns with filters of at least three colors, and (4) electronic means to cause the left eye image or a stereoscopic image pair to be displayed on the odd or even columns of pixels, and the right eye image of a stereoscopic image pair to be displayed on the remaining columns of pixels; the improvement which comprises—

a. incorporating a device capable of monitoring the position of the head of a person who is looking at the display,

b. using information from this device to determine which set of light emitting lines is on, and which set of picture information is displayed on the odd or even columns of pixels of the display;

c. selecting which light line set is on and which set of information is displayed on which column of pixels according to which combination of line set and image display,

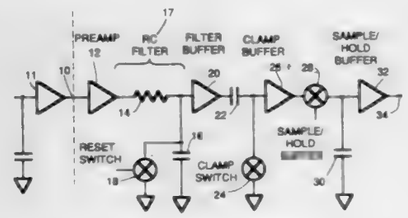
thereby causing the left eye viewing zone formed at the observers location to encompass the position of the observer's left eye, and the right eye zones to encompass the position of the observers right eye.

5,349,380

RESETTABLE CLAMP-SAMPLE-AND-HOLD SIGNAL PROCESSING CIRCUIT FOR IMAGING SENSORS

John T. Stein, Danbury, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 15, 1991, Ser. No. 776,735
Int. Cl.[5] H04N *3/14*
U.S. Cl. 348—250 **17 Claims**



6. A signal processing circuit, comprising:

an RC filter, formed of a resistor and a capacitor, said RC filter having buffer means for receiving an input signal for processing;

means, connected to said RC filter, for selectively discharging the capacitor of the RC filter prior to said filter receiving a new signal for processing;

means, connected to said RC filter, for receiving a signal from the RC filter and for amplifying said signal;

a clamping stage for receiving and clamping the signal from the buffer means and for providing an output signal; and

a sample and hold stage for selectively sampling the output signal from the clamping stage and for providing an output, such that input noise is rejected by the RC filter and crosstalk between sequential signals is eliminated by the use of the selective discharging means.

5,349,381

VIDEO CAMERA WITH APERTURE CORRECTION HAVING REDUCED POWER CONSUMPTION

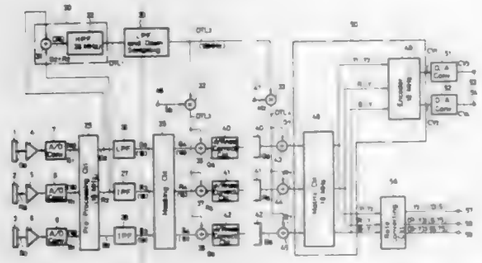
Hideaki Murayama; Taku Kihara; Fumihiko Sudo, and Takashi Asaida, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 26, 1993, Ser. No. 23,931

Claims priority, application Japan, Feb. 28, 1992, 4-044099; Feb. 28, 1992, 4-044101

Int. Cl.[5] H04N 5/225, 5/208

U.S. Cl. 348—252 31 Claims



1. A video camera having three image pickup devices each operating at a first clock frequency and in which a pixel of a respective one of three channels forming three analog primary color signals is spatially displaced from pixels of said other two channels by ½ pixel, comprising:

means for converting said three analog primary color signals from said three image pickup devices into three digital primary color signals, said means for converting operating at said first clock frequency;

aperture signal forming means for forming an aperture signal from at least one of said three digital primary color signals, said aperture signal forming means operating at a second clock frequency twice said first clock frequency;

means for adding said aperture signal to said three digital primary color signals; and

video signal forming means for forming a digital video signal of a predetermined format from an output of said means for adding, said video signal forming means operating at said first clock frequency.

5,349,382

IMAGE PICKUP APPARATUS WITH IMAGE LIGHT FOCUS PREVENTION

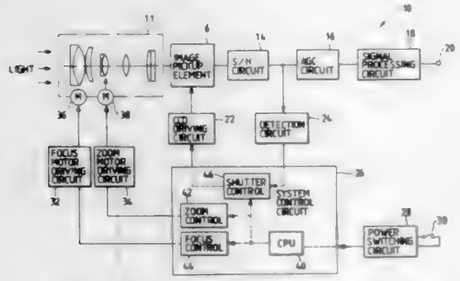
Kyoji Tamura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1992, Ser. No. 866,479

Claims priority, application Japan, Apr. 12, 1991, 3-079629; Apr. 21, 1991, 3-079631

Int. Cl.[5] H04N 5/232

U.S. Cl. 348—345 5 Claims



1. An image pickup apparatus comprising:

(a) image pickup means for photo-electrically converting image light from an object;

(b) focusing means for focusing; and

(c) control means for inhibiting the image light from being focused on the photo-sensing plane of said image pickup means for a predetermined period by controlling said focusing means after said image pickup apparatus is powered.

5,349,383

TWO LAYER VIDEO SIGNAL CODING

Ian Parke; Michael E. Nilsson; David O. Beaumont, and David G. Morrison, all of Suffolk, England, assignors to British Telecommunications public limited company, London, England

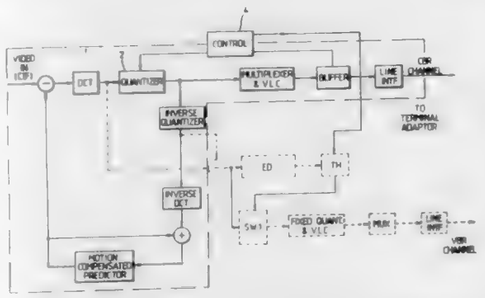
PCT No. PCT/GB91/01788, § 371 Date Apr. 30, 1993, § 102(e) Date Apr. 30, 1993, PCT Pub. No. WO92/07445, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 15, 1991, Ser. No. 39,489

Claims priority, application United Kingdom, Oct. 15, 1990, 9022326

Int. Cl.[5] H04N 7/137

U.S. Cl. 348—397 7 Claims



1. A method of coding a video signal for transmission, comprising the steps of:

coding data representing the video signal by a base layer coding operation which includes a base layer quantization step size to provide coded video data for transmission;

deriving inverse-coded video data by carrying out an inverse base layer coding operation on the coded video data;

deriving difference data from the data representing the video signal and the inverse-coded video data; and

coding the difference data by an enhancement layer coding operation;

characterised in that the difference data is coded only when the energy of the difference data exceeds a variable threshold, the threshold being inversely proportional to the base layer quantization step size.

5,349,384

APPARATUS AND METHODS FOR TRANSMITTING COMPRESSED DIGITAL IMAGE SIGNALS

Masaki Oguro, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 30, 1992, Ser. No. 998,606

Claims priority, application Japan, Jan. 14, 1992, 4-024487; Jan. 14, 1992, 4-024488

Int. Cl.[5] H04N 7/133

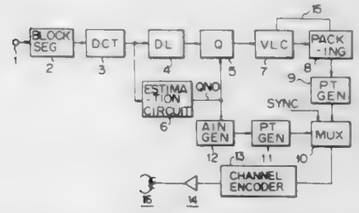
U.S. Cl. 348—405 18 Claims

1. An apparatus for variable length encoding and transmitting a plurality of predetermined portions of digital image signals which have been encoded to compress image data therein, comprising:

first variable length encoding means for encoding each of the plurality of predetermined portions to form a corresponding one of a plurality of variable length encoded portions;

data limiting means for limiting an amount of image data contained in each of said plurality of predetermined portions such that an amount of data contained in the corresponding one of said plurality of variable length encoded portions is equal to or less than a predetermined target value, said limiting means including first quantizing means for requantizing said image data contained in each of said plurality of predetermined portions with a corresponding predetermined quantization interval of equal value;

sync block transforming means for arranging said plurality of variable length encoded portions in a plurality of sync



blocks having a predetermined data length such that each of said plurality of variable length encoded portions requantized by said corresponding quantization interval of equal value is contained entirely within a respective plurality of sync blocks;

supplying means for supplying a single quantization number representing said corresponding predetermined quantization interval of equal value to a portion of each of said plurality of sync blocks separate from said variable length encoded portions, thereby reducing the amount of quantization interval data supplied to said sync blocks; and

transmission means for transmitting each said respective plurality of sync blocks via a transmission medium.

5,349,385

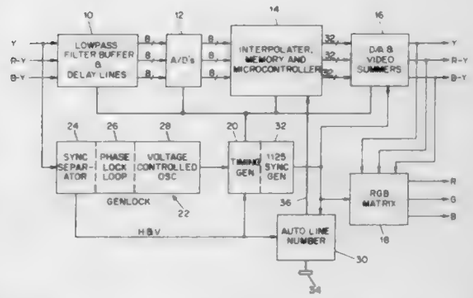
ADAPTIVE SCAN CONVERTER

William E. Glenn, Fort Lauderdale, Fla., assignor to Florida Atlantic University, Boca Raton, Fla.

Filed Aug. 6, 1992, Ser. No. 926,587

Int. Cl.[5] H04N 7/01

U.S. Cl. 348—458 10 Claims



1. Scan conversion apparatus for converting an input signal having an input format and a predetermined vertical scan frequency to a selected fixed output format also having said predetermined vertical scan frequency, said apparatus comprising:

(a) means for recognizing the number of lines in said input format;

(b) means responsive to the number of lines recognized in said input format and to the number of lines in said selected fixed output format for automatically deriving an interpolation ratio to make the conversion from said input format to said selected fixed output format; and

(c) interpolation means for deriving by interpolation according to said derived interpolation ratio, a current field or frame having said selected fixed output format from a current field of an input signal having said input format.

5,349,386

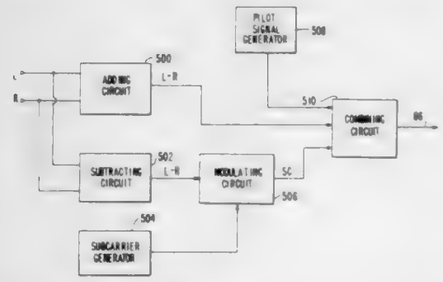
WIRELESS SIGNAL TRANSMISSION SYSTEMS, METHODS AND APPARATUS

Robert L. Borchardt, New York; William T. McGreevy, Babylon; Ashok Nawarange, Astoria, and Efrain L. Rodriguez, Brooklyn, all of N.Y., assignors to Recoton Corporation, Long Island City, N.Y.

Division of Ser. No. 822,598, Jan. 17, 1992, which is a continuation-in-part of Ser. No. 665,772, Mar. 7, 1991. This application Nov. 30, 1992, Ser. No. 982,889

Int. Cl.[5] H04N 7/04

U.S. Cl. 348—485 8 Claims



1. A method of transmitting stereo multiplexed audio signals from a received television signal having a horizontal frequency f_H, comprising the steps of:

receiving right and left channel audio signals obtained by demodulation from the received television signal;

adding the right and left channel audio signals to form a first combined audio signal;

subtracting the right and left channel audio signals to form a second combined audio signal;

modulating a subcarrier with one of the first and second combined audio signals, the subcarrier having a frequency substantially equal to $3f_H$ to form a subcarrier modulated audio signal;

combining the other of the first and second combined audio signals with the subcarrier modulated audio signal to form a stereo multiplexed audio signal; and

transmitting the stereo multiplexed audio signal.

5,349,387

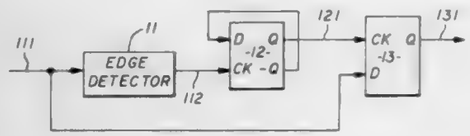
APPARATUS FOR DETECTING POLARITY OF AN INPUT SIGNAL

Yung F. Fan Chiang, and Kun M. Lee, both of Taoyuan, Taiwan, assignors to Acer Peripherals, Inc., Taiwan

Filed Sep. 21, 1993, Ser. No. 124,780

Int. Cl.[5] H04N 5/04, 5/08, 5/10

U.S. Cl. 348—525 6 Claims



1. All apparatus for detecting a polarity of an input signal, comprising:

edge detection means, responsive to an edge of said input signal, for generating a trigger signal of a first frequency;
divide-by-N means, inputing said trigger signal, for generating a latch signal of a second frequency, the second frequency being equal to tile first frequency divided by N;
latch means, inputing said input signal and in response to said latch signal, for latching said input signal and outputing a polarity value representative of the polarity of said input signal.

5,349,388

VIDEO SIGNAL GENERATING APPARATUS

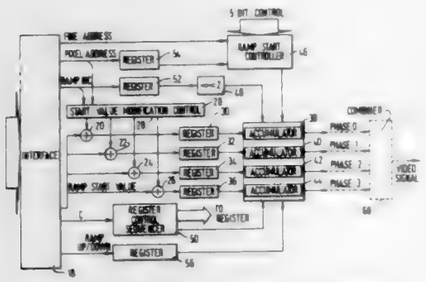
Alan Turner; Mukesh Chouhan, both of Basingstoke, and David J. Hedley, Winchester, all of England, assignors to Sony United Kingdom Limited, Staines, United Kingdom

Filed Mar. 17, 1993, Ser. No. 32,108

Claims priority, application United Kingdom, Mar. 27, 1992, 9206708.1

Int. Cl.[5] H04N *5/262, 5/272*

U.S. Cl. 348—590 **7 Claims**



1. A video signal generating apparatus comprising:
input means for inputting data relating to a video signal to be generated and representing signal pixel start addresses, signal start levels at said signal start addresses, and signal increment values;
a plurality of adder means for adding modification levels to said signal start levels for respective video outputs;
start value modification control means for generating a number of said modification levels, the number of said modification levels corresponding to the number of said adder means;
a plurality of accumulator means for accumulating the output signals of said adder means from said signal start addresses in dependence on said signal increment values, so as to generate demultiplexed video signals; and
combiner means for combining the demultiplexed signals so to generate said video signal.

5,349,389

VIDEO ATTENUATOR WITH OUTPUT COMBINED WITH SIGNAL FROM NON-LINEAR SHUNT BRANCH TO PROVIDE GAMMA CORRECTION AND HIGH FREQUENCY DETAIL ENHANCEMENT

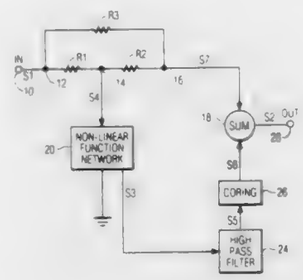
Anton W. Keller, Zurich, Switzerland, assignor to RCA Thomson Licensing Corporation, Princeton, N.J.

Filed Apr. 14, 1993, Ser. No. 48,649

Int. Cl.[5] H04N *5/20*

U.S. Cl. 348—625 **11 Claims**

1. Video signal processing apparatus for providing gamma correction and detail enhancement, comprising:
a source for providing a video input signal to be processed;
a summing circuit having an output for providing a processed video output signal:
an attenuator having a series branch and a shunt branch, each said branch for coupling said video input signal to said summing circuit;
said shunt branch including a non-linear element providing attenuation as a direct function of the level of said video input signal; and wherein:
said shunt branch includes a signal amplitude sensing element providing a sensed video signal exponentially related to the video input signal;



a high pass filter is coupled to said sensing element and responsive to the sensed video signal for providing a high frequency boosted detail signal; and
means for applying said detail signal to said summing circuit for enhancing high frequency detail of said gamma corrected video output signal.

5,349,390

PICTURE SIGNAL PROCESSOR FOR PERFORMING BOTH LARGE AREA AND SMALL AREA CONTRAST REDUCTION, AND PICTURE DISPLAY APPARATUS INCORPORATING SUCH A PICTURE SIGNAL PROCESSOR

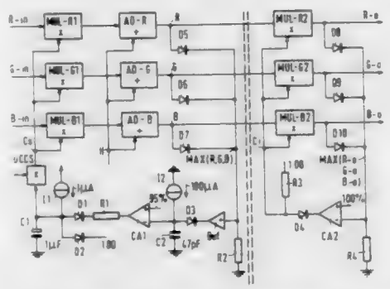
Jeroen H. Stessen, and Robert R. Meijler, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 19, 1993, Ser. No. 109,279

Claims priority, application European Pat. Off., Sep. 22, 1992, 92202901.2

Int. Cl.[5] H04N *5/52*

U.S. Cl. 348—679 **5 Claims**



1. A picture signal processor for providing a contrast reduced picture signal, comprising:
first contrast reduction means coupled to receive a picture signal for providing a first contrast reduced picture signal, said first contrast reduction means only reducing the contrast of said picture signal when said picture signal exceeds a given first threshold for relatively large areas of an image formed by said picture signal when displayed; and
second contrast reduction means coupled to said first contrast reduction means for providing said contrast reduced picture signal by immediately reducing the contrast of a too bright part of the first contrast reduced picture signal as soon and as long as an instantaneous amplitude of the first contrast reduced picture signal exceeds a given second threshold.

5,349,391

APPARATUS FOR USE IN AN INTERCONNECTION SYSTEM

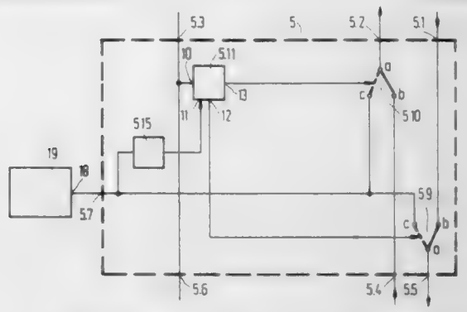
Richard C. Spiero, Eindhoven, Netherlands; Terence A. Douglas, Redhill, Great Britain, and Marnix C. Vlot, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 4, 1993, Ser. No. 26,348

Claims priority, application European Pat. Off., Apr. 8, 1992, 92201003.8

Int. Cl.[5] H04N *5/268*

U.S. Cl. 348—705 **13 Claims**



1. An apparatus comprising first and second connector means and first and second switching means, the first and second connector means each having a signal input terminal, a signal output terminal and a control signal terminal, the first and second switching means each having first, second and third terminals, the first terminal of the first switching means being coupled to the signal output terminal of the second connector means, the second terminal of the first switching means being coupled to the signal input terminal of the first connector means, the first terminal of the second switching means being coupled to the signal input terminal of the first connector means, the second terminal of the first switching means being coupled to the signal output terminal of the first connector means, the second terminal of the second switching means being coupled to the signal input terminal of the second connector means, the first and second switching means being adapted to couple the second or the third terminal to the first terminal under the influence of a first or a second control signal, respectively, the apparatus further comprising control signal generator means having a first terminal coupled to the control signal terminals of the first and second connector means, and output terminals for supplying the first and second control signals for the first and second switching means, respectively, characterized in that the apparatus further comprises third connector means having a signal input terminal, the signal input terminal of the third connector means being coupled to the third terminals of the first and second switching means, the control signal generator means having a second terminal for receiving a control signal, and being adapted to generate a switching control signal for at least one of the first and the second switching means, in response to the control signal applied to its second terminal.

5,349,392

FILTER MOUNTING FRAMES FOR EYEGLASSES

Alain Buffet, 81 rue Gabriel Péri, F 54110 Varangeville, France

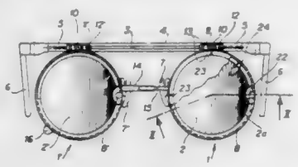
Filed Jun. 9, 1993, Ser. No. 73,420

Claims priority, application France, Jun. 12, 1992, 92 07314

Int. Cl.[5] G02C *7/10, 9/02*

U.S. Cl. 351—45 **6 Claims**

1. A mounting frame for eyeglass filters whose filtering properties are distributed asymmetrically over their surface, comprising:
a) a pair of mounting seats, each comprising a pair of nested annular elements having a channel-shaped cross section;
b) a filter lens mounted in an inner one of said pair of nested annular elements of each said mounting seat;
c) manipulating means for angularly orienting each lens in its associated mounting seat, each said manipulating means comprising:
(i) a slidable detent member extending transversely through the inner annular element and engageable in locating holes formed in the associated outer annular element;
(ii) biasing means for resiliently urging said detent member into engagement with said locating holes; and
(iii) gripping means protruding through a slot in the wall of the outer annular member to permit manual disengagement of said detent member against the action of said biasing means;



wherein an outer one of said pair of annular nested elements of each mounting seat is split to permit the separation of its two ends for insertion of the inner annular nested element, each of the ends of the split outer annual nested element being attached by a connecting element to a support member.

5,349,393

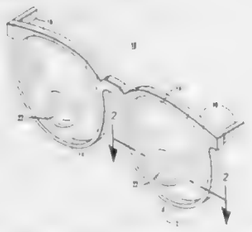
LIGHT-TRANSMITTING ELASTOMERIC SUCTION LENS

James P. Kreft, Rte. 2, Box 65A-2, Tecumseh, Okla. 74873

Filed Jun. 1, 1993, Ser. No. 69,395

Int. Cl.[5] G02C *7/06*

U.S. Cl. 351—57 **16 Claims**



1. An ophthalmic lens for attachment to a smooth surface comprising:
a lens body formed of a light-transmitting elastomeric material;
said lens body having a contacting concave surface for contacting the smooth surface to create suction with the smooth surface; and
said lens body having an exposed surface opposite said contacting surface for creating a predetermined relationship with said contacting surface and said exposed surface for providing a specific diopter.

5,349,394

RIGID GAS PERMEABLE LENSES

Michael H. Freeman, Denbigh, United Kingdom, and William E. Meyers, San Ramon, Calif., assignors to Pilkington Diffractive Lenses Limited, St. Helens, United Kingdom

Filed Apr. 12, 1991, Ser. No. 684,322

Claims priority, application United Kingdom, Apr. 17, 1990, 9008577.0

Int. Cl.[5] G02C *7/04;* **G02B** *27/44*

U.S. Cl. 351—160 R **12 Claims**

1. A method of fitting rigid gas permeable contact lenses to prescription, comprising the steps of (1) providing a set of lenses of differing BCOR values, the BCOR value being the

Back Surface Central Optical Radius which is the distance from a rear surface of the lens to a centre of curvature of that rear surface, but the same optical corrective power, (2) fitting a patient with a lens and determining its BCOR value, (3) determining the corrective optical prescription required for that patient and (4) supplying the patient with a lens having the determined BCOR value, and the corrective prescription, the lens supplied having been manufactured in the same geometry and fitting characteristics as the lens from the set used in fitting, and adjusted to the correct prescription power from the basic power by diffractive means.

11. A single vision rigid gas permeable lens in which the power of the lens is determined by a combination of basic



refractive power arising from the shape, curvature and material of the lens, and diffractive power, the diffractive power being produced by cutting one of the lens surfaces so as to provide a diffractive means with steps on that surface, the cutting being carried out with a flatted diamond and the diffractive means being one in which the step heights when multiplied by the refractive index difference between the lens material and the tear film provide an optical path difference substantially equivalent to one wavelength of light close to the center of the human visual response or some integral multiple thereof wherein said flatted diamond is characterized as having a shape such that when the diamond is plunged into the surface of the lens to provide a diffractive zone, its trailing edge leaves a step with a gradient steeper than 45%.

5,349,395

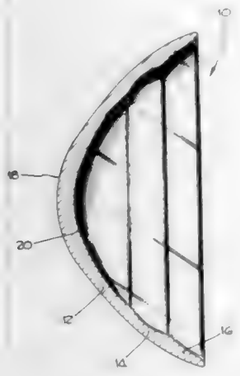
MULTIPLE FOCUS CORNEAL CONTACT LENS AND METHOD FOR TREATING MYOPIA

Nick Stoyan, 3841 Diamante Pl., Encino, Calif. 91436

Continuation-in-part of Ser. No. 748,845, Aug. 23, 1991, Pat. No. 5,191,365. This application Jan. 26, 1993, Ser. No. 9,322

Int. Cl.[5] G02C *7/04*

U.S. Cl. 351—161 **5 Claims**



1. A multiple focus corneal contact lens having a posterior surface for contact with the cornea of an eye and an anterior surface, said corneal contact lens comprising:

an aspheric central zone having a central zone radius of curvature and a central zone periphery; wherein said radius of curvature increases from the center of said central zone to said periphery to provide for multiple focusing of light passing through said corneal contact lens into said eye and wherein the periphery of said aspheric central zone has a diameter of between 6 to 20 millimeters;

a tear zone located concentrically around said central zone and having a tear zone radius of curvature and a tear zone radial thickness, wherein said tear zone radius of curvature is smaller than said central zone radius of curvature;

a peripheral zone located concentrically around said tear zone, said peripheral zone being integral with said tear zone and having a peripheral zone radius of curvature wherein said peripheral zone radius of curvature is greater than or equal to said central zone radius of curvature.

5,349,396

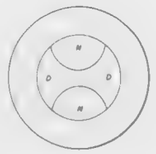
CLEAR AXIS, SEGMENTED MULTIFOCAL OPHTHALMIC LENS

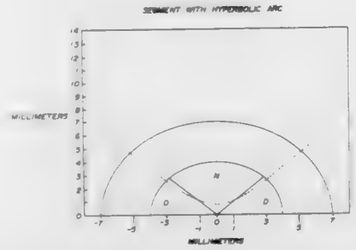
Jeffrey Roffman; Robert LaBelle; Edgar Menezes, and Carl Crowe, all of Jacksonville, Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Continuation of Ser. No. 827,199, Jan. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 728,903, Jul. 10, 1991, Pat. No. 5,198,844. This application Oct. 25, 1993, Ser. No. 142,649

Int. Cl.[5] G02C *7/04*

U.S. Cl. 351—161 **7 Claims**





1. A non-oriented, multifocal refractive contact lens for focusing light on the retina of the eye, said lens having a central zone and a concave surface adapted to cover the outer surface of the human eye and, comprising:

a plurality of segments where at least one segment has an aspherical surface curvature,

one of said plurality of segments being a first segment having a first, distant optical power,

another of said plurality of segments being a second segment having a second, near optical power,

said second segment located adjacent said first segment and forming a boundary therewith,

the step height difference along said segment boundaries being less than that formed by two spherical lens surfaces of the same near and distant optical powers;

wherein one of said segments includes the central zone of the lens.

5,349,397

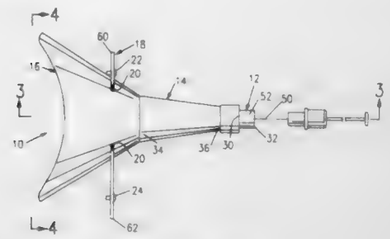
APPARATUS AND METHOD FOR DETERMINING A PATIENT'S DOMINANT EYE

Patrick W. Monahan, 2744 Coral Ridge Rd., Rancho Palos Verdes, Calif. 90274

Filed Jun. 29, 1993, Ser. No. 84,306

Int. Cl.[5] A61B *3/02, 3/08*

U.S. Cl. 351—201 **15 Claims**



1. An examining device comprising:

(a) a viewing port comprising a perimeter structure with an aperture;

(b) a face support disposed spaced apart from the viewing port, the face support being adapted to receive and retain the face of the user so as to hold the eyes of the user in fixed relationship to the viewing port, the face support having one or more eye ports so that (i) the user can see through the viewing port with the user's right eye along a single right eye line of sight, and (ii) the user can see through the viewing port with the user's left eye along a single left eye line of sight;

(c) a first blocking device for alternatively blocking and unblocking the right eye line of sight;

(d) a second blocking device for alternatively blocking and unblocking the left eye line of sight; and

(e) a cap attached to the viewing port in such a way that the viewing port is disposed between the cap and the face support, the cap having sidewalls and a head plate disposed opposite the viewing port, the head plate having an opening to allow for the passage of light through the viewing port to the face support;

wherein the head plate opening is disposed so that the furthermost point from the face support where the left and the right eye lines of sight can meet when neither line of sight through the viewing port is blocked is located between the viewing port and the head plate opening.

5,349,398

OPHTHALMOMETER SYSTEM

Charles J. Koester, Glen Rock, N.J., assignor to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Jul. 17, 1992, Ser. No. 915,912

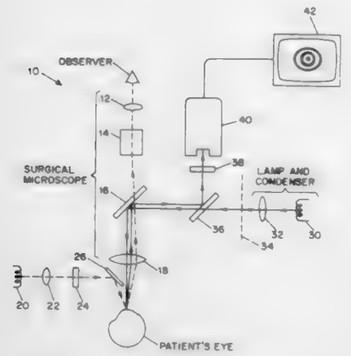
Int. Cl.[5] A61B *3/10*

U.S. Cl. 351—212 **31 Claims**

1. An optical system for illuminating the cornea during surgery and for measuring corneal topography, comprising:

first means for illuminating the cornea with first component light that is visible to a surgeon;

second means for illuminating the cornea with second component light having at least one characteristic different from the first component light, wherein the second means for illuminating includes a reticle means for generating a ringed pattern to illuminate the cornea; and



third means for directing the second component light to a corneal topography measuring apparatus while excluding said first component light.

5,349,399

INTRAOCULAR LENGTH MEASURING INSTRUMENT HAVING PHASE COMPENSATING MEANS

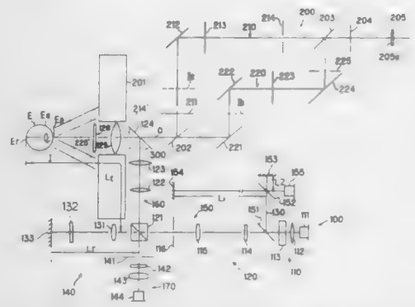
Akihiko Sekine, Tokyo, Japan, assignor to Kabushiki Kaisha Topcon, Tokyo, Japan

Filed Apr. 2, 1993, Ser. No. 41,997

Claims priority, application Japan, Apr. 3, 1992, 4-081981

Int. Cl.[5] A61B *3/10*

U.S. Cl. 351—215 **3 Claims**



1. An intraocular length measuring instrument, comprising:

a polarization component substantially perpendicular to said measuring beam of linearly polarized light emitted from the light source portion, said phase compensating means being disposed between the eye to be measured and said beam splitter.

5,349,400

BACK-PROJECTION DISPLAY SYSTEM AND METHOD FOR MAKING A BACK-PROJECTION MIRROR

Daniel Kaplan, Paris, and Jean-Claude Lehureau, Sainte Genevieve des Bois, both of France, assignors to Thomson-CSF, Puteaux, France

PCT No. PCT/FR91/00952, § 371 Date May 27, 1993, § 102(e) Date May 27, 1993, PCT Pub. No. WO92/09918, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 29, 1990, Ser. No. 64,164

Claims priority, application France, Nov. 30, 1990, 90 15018

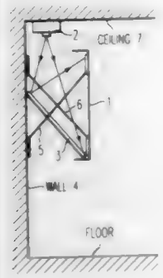
Int. Cl.[5] G03B *21/28*

U.S. Cl. 353—119 **24 Claims**

1. A back-projection display system, comprising:

a display screen;

a projector for displaying images on a rear face of said display screen, wherein said display screen is attached to a planar surface and includes means for folding said display screen against said planar surface and also for moving said display screen away from said planar surface so that a major surface of said display screen is maintained substantially parallel to said planar surface when said display screen is held against said planar surface and when said display screen is moved perpendicularly away from said planar surface; and



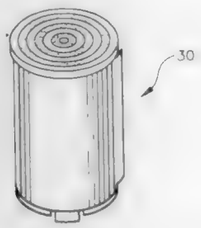
a mirror for reflecting light from said projector onto said rear face of said display screen, including means for folding said mirror against said planar surface.

5,349,401

ORIENTATION INDEPENDENT, DETACHABLE FILM CARTRIDGE, MEMORY MODULE

Robert S. Bryant, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 4, 1993, Ser. No. 71,096
Int. Cl.[5] G03B *7/00*
U.S. Cl. 354—21 | **6 Claims**



1. A memory module for a film cartridge in which information related to the camera exposure of film image frames may be recorded in non-volatile memory for subsequent read-out comprising:

a disc-shaped module housing having an upper and a lower surface and a diameter generally corresponding to the diameter of an end of the film cartridge;

a printed circuit formed in the pattern of a plurality of concentric, conductive bands spaced apart and electrically isolated from one another on the upper surface of the disc-shaped module housing;

an integrated circuit chip, including a non-volatile memory, attached to the lower surface of the disc-shaped module housing and having a plurality of input and output terminals;

means for making electrical connections between the plurality of input and output terminals of the integrated circuit chip and the plurality of concentric conductive bands; and

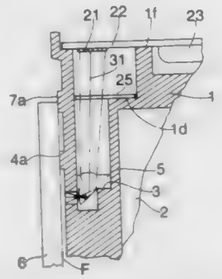
means for attaching the disc-shaped module housing to the end of a film cartridge so that the upper surface is exposed for making electrical contact with data recording and reading terminals of camera and film processing equipment.

5,349,402

DATA IMPRINTING DEVICE FOR A CAMERA

Isao Soshi; Hidenori Miyamoto; Motoyuki Ohtake, and Hiroshi Wakabayashi, all of Tokyo, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Sep. 21, 1993, Ser. No. 124,670
Claims priority, application Japan, Sep. 21, 1992, 4-250295; Dec. 30, 1992, 4-093489[U]; Jan. 22, 1993, 5-009202; Jan. 27, 1993, 5-011876
Int. Cl.[5] G03B *17/24*
U.S. Cl. 354—106 | **20 Claims**



1. A data imprinting device for a camera comprising:

a diaphragm member;

an optical member;

said camera having a camera body;

a light source for imprinting data on a film;

said diaphragm member gathering light from said light source;

said optical member reflecting and focusing said light upon said film;

means for supporting said diaphragm member;

means for mounting said optical member; and

said means for supporting and said means for mounting being formed integrally with said camera body.

4. A data imprinting device for a camera comprising:

means for selecting a chosen mode of a first and a second screen size mode;

a light source mounted in a body of said camera;

means for driving said light source responsive to a movement of a film;

a first optical member for focusing light from said light source upon said film at a first location, when said first screen size mode is selected, whereby an image is imprinted upon said film at said first location;

a second optical member for focusing light from said light source upon said film at a second location, when said second screen size mode is selected, whereby an image is imprinted upon said film at said second location;

bracket means for coupling said first and second optical members in a fixed relationship to each other; and

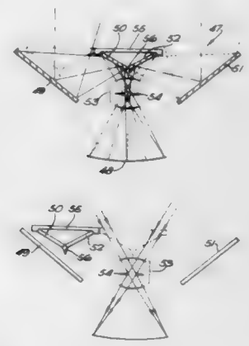
said bracket means being mounted in said body of said camera such that said first and second optical members focus said light source upon said film.

5,349,403

PHOTOGRAPHIC CAMERA FOR PRODUCING STEROGRAPHIC AND MONO PHOTOGRAPHS

Anthony Lo, 12 A Olympian Mansion, 9 Conduit Rd., Hong Kong, Hong Kong

Filed Apr. 18, 1990, Ser. No. 510,678
Claims priority, application United Kingdom, Apr. 28, 1989, 8909757
Int. Cl.[5] G03B *35/08*
U.S. Cl. 354—114 | **10 Claims**



9. A camera for producing stereoscopic and mono photographic images, the camera comprising:

a camera casing having a chamber formed therein;

a reflector system housed within the chamber of the camera casing for projecting two images onto a light sensitive recording medium in side-by-side relationship to produce a stereograph, said reflector system having an operative and an inoperative condition, said reflector system being adjustable within the chamber of the camera casing between the operative and inoperative condition;

means for projecting a single image onto the light sensitive recording medium to produce a mono photograph at times when the reflector system is in the inoperative condition; and

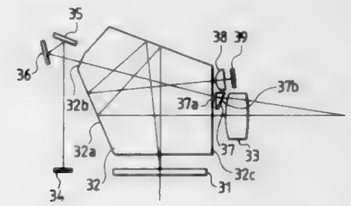
means for adjusting the reflector system within the camera casing between the operative and inoperative condition.

5,349,404

FINDER INDICATION OPTICAL SYSTEM IN A SINGLE-LENS REFLEX CAMERA

Kenji Yamada, Yachiyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 6, 1993, Ser. No. 161,488
Claims priority, application Japan, Dec. 15, 1992, 4-353775
Int. Cl.[5] G03B *19/12*
U.S. Cl. 354—152 | **5 Claims**



1. A finder indication optical system in a single-lens reflex camera including:

an eyepiece;

an indicator for indicating photographing information;

a pentagonal prism having a third reflecting surface for reflecting light from an object, a light transmitting portion provided adjacent to said third reflecting surface for receiving a light beam from said indicator and transmitting said light beam therethrough, and a pentagonal prism exit surface from which emerge the light beam from said indicator transmitted through said light transmitting portion and the light from the object reflected by said third reflecting surface; and

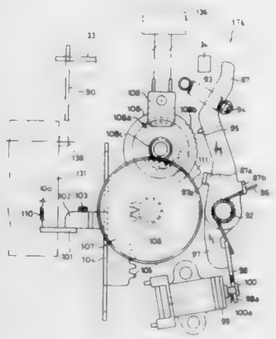
a deflection prism disposed between said eyepiece and said pentagonal prism and having an entrance surface opposed to said pentagonal prism exit surface and substantially parallel to said pentagonal prism exit surface, and a deflection prism exit surface opposed to said eyepiece and substantially parallel to the surface of said light transmitting portion, said deflection prism being for receiving the light beam from said indicator emerging from said pentagonal prism exit surface by said entrance surface and causing said light beam to emerge from said deflection prism exit surface to said eyepiece.

5,349,405

SINGLE LENS REFLEX CAMERA

Tomoaki Itabashi, and Masayuki Misawa, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 944,317, Sep. 14, 1992. This application Dec. 7, 1993, Ser. No. 162,845
Claims priority, application Japan, Oct. 9, 1991, 3-102253
Int. Cl.[5] G03B *19/12*
U.S. Cl. 354—152 | **20 Claims**



1. A single lens reflex camera comprising:

a mirror box provided in a camera body, said mirror box comprising means for supporting a mirror, located on an optical axis of a photographing lens, for up and down movement, said mirror box and said mirror comprising a unit which is detachably attachable to a camera body;

means for driving said mirror for up and down movement in accordance with a shutter release operation, said mirror driving means being operable when said driving means is charged, said mirror driving means being assembled to said mirror box;

a diaphragm control mechanism for controlling an aperture size of a diaphragm, said diaphragm control mechanism mounted to a mounting member, separate from said mirror box, said mounting member and said diaphragm control mechanism comprising a unit which is detachably attachable to said camera body;

charge/reset means for charging said driving means and for resetting said diaphragm control mechanism, wherein said charge/reset means charges said mirror driving means to render said mirror driving means operable, and reset said diaphragm control mechanism so that an aperture size of a diaphragm is changeable between a full open state and a smallest state;

means for mounting said charge/reset means to said camera body; and

said charge/reset means comprising means for mechanically

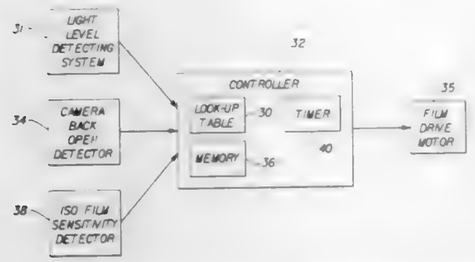
and functionally connecting said mirror driving means and said diaphragm control mechanism.

5,349,406

CAMERA AND METHOD FOR BYPASSING FOGGED PHOTOGRAPHIC FILM

Glenn W. Johnson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 17, 1993, Ser. No. 18,626
Int. Cl.[5] G03B *1/18*
U.S. Cl. 354—173.1 14 Claims



1. A method of skipping frames of a photographic film strip in a pre-wind camera that includes a pre-wind mode of operation and a picture-taking mode of operation after frames have been fogged by opening of the camera back, comprising the steps of:

detecting when the camera back is opened;

skipping a number of frames of the filmstrip corresponding to said fogged frames, the number of frames to be skipped being determined as a function of ambient light and the filmstrip sensitivity to light, by rewinding the filmstrip into a light-tight film canister by the determined number of frames during the picture-taking mode of operation; and

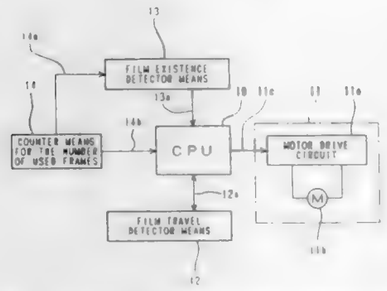
resuming camera picture-taking operation.

5,349,407

FILM TRANSPORTING SYSTEM INCLUDING A COUNTER AND A FILM EXISTENCE DETECTOR FOR A PHOTOGRAPHIC CAMERA

Tatsuo Saito; Haruo Onozuka, and Yasuhiko Tanaka, all of Ohmiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Ohmiya, Japan

Filed Jun. 4, 1993, Ser. No. 71,706
Claims priority, application Japan, Jun. 5, 1992, 4-171966
Int. Cl.[5] G03B *1/18, 17/36*
U.S. Cl. 354—173.1 11 Claims



3. A film transporting system for a photographic camera, the film transporting system comprising:

a film transporter selectively functioning to advance or rewind a film roll loaded in the camera;

a counter mounted in the camera to count the number of used film frames on the film roll loaded in the camera and generating a count signal indicating the count;

a film existence detector coupled to said counter and responsive said count signal from said counter to detect whether the camera has the film roll loaded therein, wherein said film existence detector only determines whether film is loaded in the camera when said count signal is "0"; and

a film travel detector selectively controlling film advance or film rewinding by detecting a film travel pulse output every time the film roll travels by a predetermined length and applying a film stop signal to said film transporter when the number of said travel pulses has reached a predetermined number;

wherein said film transporter is not actuated when said film existence detector indicates that the camera has no film roll loaded therein; and

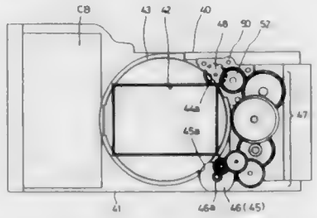
wherein said predetermined length is dependent on whether said count signal is "0" when the film roll is loaded in the camera.

5,349,408

ZOOM LENS CAMERA WITH DRIVE MOTOR AND GEAR TRAIN

Hiroshi Nomura; Norio Sato, and Nobuaki Aoki, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1993, Ser. No. 46,734
Claims priority, application Japan, Apr. 17, 1992, 4-024853[U]; Apr. 17, 1992, 4-098260
Int. Cl.[5] G03B *5/00, 17/02*
U.S. Cl. 354—195.1 30 Claims



1. An electrically driven zoom lens camera comprising:

a zoom lens barrel having a rotatable driving member and a variable lens group which is moved in an optical axis direction by rotation of said driving member,

a camera body having an aperture which defines a size of a picture to be taken, upper and lower wall surfaces in a elevational view, and a cylindrical portion in which said zoom lens barrel is accommodated, said aperture and said cylindrical portion being arranged along the optical axis direction, and a plurality of component accommodating chambers which are each defined by and between said cylindrical portion and one of said upper and lower wall surfaces of said camera body, said cylindrical portion extending between said upper and lower wall surfaces, a diameter of said cylindrical portion substantially perpendicular to said wall surfaces corresponding to a distance between said wall surfaces, said component accommodating chambers being offset with respect to said diameter, and

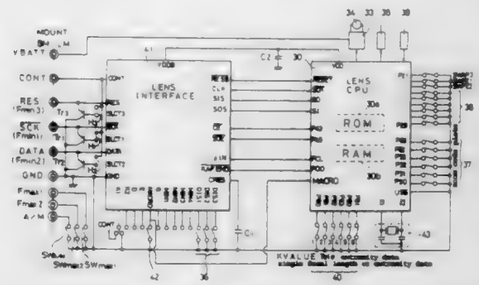
a motor which rotates said rotatable driving member through a gear train, said motor and a terminal gear of said gear train are each housed in individual ones of said component accommodating chambers.

5,349,409

PHOTOGRAPHING LENS

Masahiro Kawasaki; Hiroyuki Takahashi, and Shigeru Iwamoto, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 726,801, Jul. 8, 1991, abandoned. This application Apr. 29, 1993, Ser. No. 53,816
Claims priority, application Japan, Jul. 6, 1990, 2-178829
Int. Cl.[5] G03B *1/18*
U.S. Cl. 354—195.12 12 Claims



1. A photographing lens adapted to be detachably attached to a camera body, comprising:

memory means for storing respective steady lens data in a group of steady lens data that are constant regardless of photographing conditions, and variable lens data that vary in accordance with said photographing conditions, said respective steady lens data being stored at first predetermined addresses in a steady lens data area of said memory means, respectively, said variable lens data being stored in a variable lens data area of said memory means different from said steady lens data area; and

data reading means for reading the data stored in said memory means; and

said group of steady lens data further comprising address data for identifying said variable lens data area, said address data being stored at second predetermined addresses in said steady lens data area of said memory means;

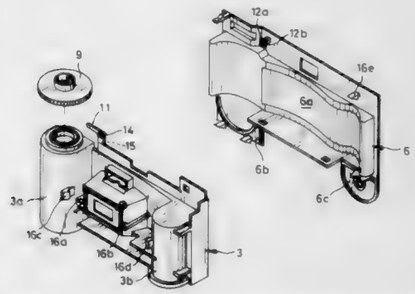
whereby respective variable lens data are read by said data reading means based upon said address data read from said second predetermined addresses and said photographing conditions.

5,349,410

LENS-FITTED PHOTOGRAPHIC FILM UNIT

Kazuo Kamata, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 4, 1993, Ser. No. 70,604
Claims priority, application Japan, Jun. 4, 1992, 4-144652
Int. Cl.[5] G03B *17/02*
U.S. Cl. 354—288 19 Claims



1. A lens-fitted photographic film unit including at least first and second parts connected together, the film unit including a photo-taking mechanism and unexposed photographic film, the film unit further comprising:

a claw structure formed on said first part for retaining said first part on said second part; and

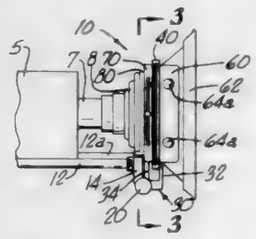
a receiving portion formed on said second part for receiving and unremovably retaining said claw structure, said receiving portion being readily broken away from said second part upon separation of said first and second parts and retained unremovably on said first part, thereby to provide on said first part the unremovably retained receiving portion as an indication that said first part has been used.

5,349,411

FILTER AND MATTE BOX SUPPORT SYSTEM

Jean-Pierre Beauviala, Grenoble, France, assignor to Aaton, Grenoble, France

Filed Jan. 16, 1992, Ser. No. 821,984
Claims priority, application France, Nov. 28, 1991, 91 14717
Int. Cl.[5] G03B *11/00, 17/02*
U.S. Cl. 354—295 19 Claims



1. A matte box assembly for a camera having a lens and a separate support means for supporting the matte box assembly, comprising

a stationary support bracket mountable to the separate support means;

a hinge assembly connected to the stationary support bracket;

a U-shaped support structure mounted to the hinge assembly, the U-shaped support structure comprised of a first support arm and a second support arm, both arms extending outward from the hinge assembly;

a sunshade frame mounted to and supported by the first support arm;

a primary filter module mounted to and supported by the second support arm; and

a rotating filter support module which includes a filter housing and is rotatably supported by at least one of the primary filter module and the sunshade frame and positioned therebetween, the rotating filter support module being rotatable independently from both the primary filter module and the sunshade frame.

5,349,412

METHOD AND APPARATUS FOR PROCESSING PHOTOSENSITIVE MATERIAL

Eiji Miyasaka, Hokone, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Japan

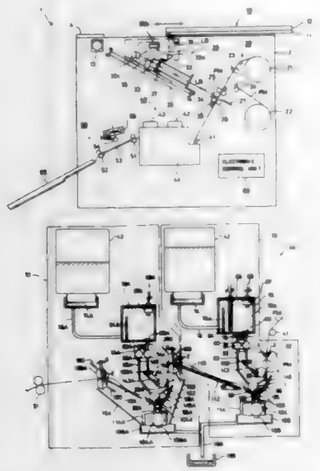
Filed Nov. 27, 1991, Ser. No. 799,394
Claims priority, application Japan, Nov. 27, 1990, 2-327329
Int. Cl.[5] G03D *13/00, 3/02*
U.S. Cl. 354—299 13 Claims

1. An apparatus for processing a silver salt photosensitive material such as printing paper or photosensitive paper or film for direct plate making, comprising:

a rotating liquid retentive roller with liquid retentive surface, which is disposed along the width of said photosensitive material conveyed after completion of exposure;

supply means for providing processing solution that is applied onto the surface of said liquid retentive roller;

first means for holding processing solution on the surface of said liquid retentive roller;



application means for applying said processing solution onto the surface of said photosensitive material by nip free pressing of said photosensitive material against said liquid retentive roller with the processing solution held thereon and conveying said photosensitive material in the rotational direction of said liquid retentive roller.

5,349,413

SHEET-LIKE MATERIAL PROCESSING APPARATUS

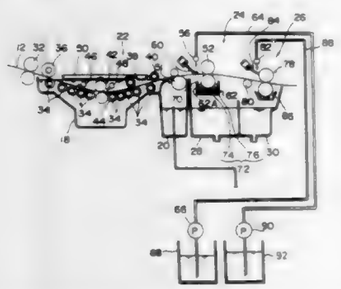
Chikashi Ohishi; Hiroyuki Sasayama, and Hisao Kanzaki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 12, 1993, Ser. No. 31,125

Claims priority, application Japan, Mar. 13, 1992, 4-054734; Mar. 18, 1992, 4-062471; Feb. 8, 1993, 5-020287

Int. Cl.[5] G03B *3/02*

U.S. Cl. 354—324 **18 Claims**



1. A sheet-like material processing apparatus in which while a sheet-like material is interposed between and conveyed by a pair of rollers, excess processing solution is squeezed out from the sheet-like material, and the sheet-like material is processed, comprising:

a solution supplying device provided at an upstream side of said pair of rollers for dripping the processing solution;

processing solution limiting means provided at an upstream side of said pair of rollers for limiting movement of the processing solution toward the upstream side, and for accumulating the processing solution by said pair of rollers and said processing solution limiting means;

a processing solution accumulating member receiving and accumulating the processing solution which flows down from transverse direction ends of the sheet-like material and in which only one of said pair of rollers which is located at a lower side of a conveying path of the sheet-like material is submerged; and

a flow-out portion provided at a central portion corresponding to transverse direction ends of the sheet-like material, on a vertical wall of said accumulating member, for letting excess processing solution within said accumulating member flow out.

5,349,414

APERTURE-PRIORITY LENS SHUTTER APPARATUS FOR A CAMERA

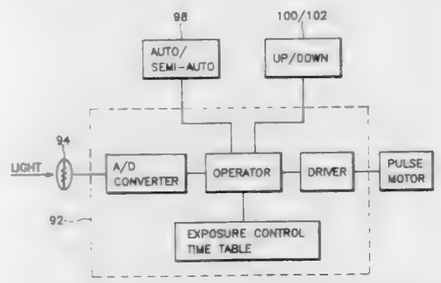
Jae-kyeong Seo; Seon-ho Lee, and Deog-ho Choi, all of Kyeongsangnam, Rep. of Korea, assignors to Samsung Aerospace Industries, Ind., Kyeongsangnam, Rep. of Korea

Filed Nov. 10, 1993, Ser. No. 150,403

Claims priority, application Rep. of Korea, Nov. 16, 1992, 92-21489

Int. Cl.[5] G03B *13/36, 7/097*

U.S. Cl. 354—400 **8 Claims**



1. An aperture-priority lens shutter apparatus for a camera comprising:

a lens mount including a hollow cylindrical portion defining an opening and a flange fixed on said cylindrical portion;

at least two sheet-like lens shutter blades rotatably mounted on said flange of the lens mount on a side opposite said cylindrical portion to cover over the opening, and of which an open degree is decided in accordance with an F number and of which an open time is decided in accordance with an exposure time;

a first means for driving the lens shutter blades;

a second means for setting the F number manually;

a light measuring means for producing a signal corresponding to the amount of light available to photograph an object; and

a central processing unit including an exposure control time table in which the F number for exposure in a suitable exposure value in accordance with the measured value by said light measuring means and exposure time data are inputted, an operator which recognizes the F number set manually in a semiautomatic mode, receives the data from the exposure control time table corresponding to a signal from said light measuring means, calculates a time for maintaining the exposure state in the set F number, adds the exposure time from the exposure control time table to the time for maintaining the exposure state and calculating a total exposure time, and a driver for driving the first means in accordance with a result from the operator.

5,349,415

PHOTOGRAPHIC OPTICAL SYSTEM CONTROLLING APPARATUS

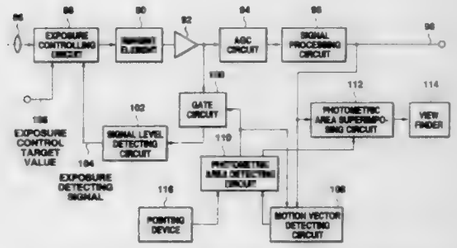
Yoshihiro Nishida, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 686,354, Apr. 17, 1991, Pat. No. 5,210,566. This application Oct. 30, 1992, Ser. No. 969,577

Claims priority, application Japan, Apr. 19, 1990, 2-103607; Nov. 1, 1990, 2-296391

Int. Cl.[5] G03B *7/08, 17/18*

U.S. Cl. 354—432 **39 Claims**



1. An exposure controlling apparatus for controlling exposure in an optical system based on an image signal obtained at a photometric area designated on a photographic screen, said apparatus comprising:

(a) motion vector detecting means for detecting the motion of an image in a motion vector detecting area from the correlation of two time continuous frames of image data;

(b) photometric area controlling means for detecting the motion of a main object from the output of said motion vector detecting means, and for controlling this photometric area to follow the motion of the main object;

(c) judging means for judging if the main object occupies a part or the majority of the screen;

(d) area changing means, responsive to said judging means, for changing the motion vector detecting area and the photometric area.

5,349,416

DISPLAY APPARATUS

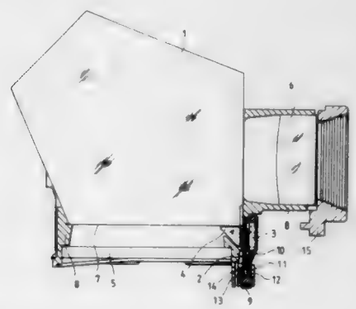
Masaharu Hara, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 998,639, Dec. 29, 1992, abandoned, which is a continuation of Ser. No. 751,741, Aug. 29, 1991, abandoned. This application Oct. 6, 1993, Ser. No. 132,212

Claims priority, application Japan, Sep. 4, 1990, 2-92438[U]

Int. Cl.[5] G03B *17/20*

U.S. Cl. 354—471 **8 Claims**



1. A display apparatus, comprising:

a first emission element;

a second emission element different from said first emission element in emission color; and

a reflecting member for displaying by reflecting light from said second emission element, wherein said reflecting member has a color which is a substantially complementary color to the emission color of said first emission element, and does not reflect light from said first emission element, but reflects light from said second emission element.

5,349,417

CAMERA

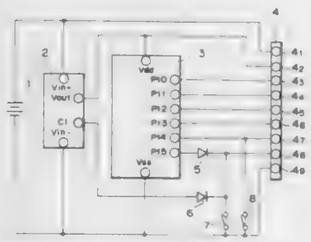
Hidehiro Ogawa, Tokyo, Japan, assignor to Nikon Corporation, Funabashi, Japan

Filed Oct. 24, 1991, Ser. No. 782,313

Claims priority, application Japan, Oct. 29, 1990, 2-112086[U]

Int. Cl.[5] G03B *7/00*

U.S. Cl. 354—485 **2 Claims**



1. A camera system comprising a camera and a plurality of external accessories selectively attachable to said camera, wherein said camera comprises:

a terminal for forming a camera activating circuit;

a terminal for forming a shutter releasing circuit;

a terminal for forming a power supply circuit;

a terminal for forming a data communication circuit; and

a connector fixed on the camera body as an integral unit including all the above-mentioned terminals arranged in a predetermined positional relationship; and

wherein said accessories are provided with respective connectors connectable with the connector of the camera and having respective groups of terminals corresponding to different groups of the above-mentioned terminals of the camera.

5,349,418

CRT METHOD OF AND APPARATUS FOR ILLUMINATING PHOTOGRAPHIC NEGATIVES TO PRODUCE A HARD COPY

Talmadge W. Hopson, Minnetonka, Minn., assignor to Lifetouch Inc., Minneapolis, Minn.

Continuation of Ser. No. 773,438, Oct. 9, 1991, Pat. No. 5,182,594. This application Jan. 5, 1993, Ser. No. 471

Int. Cl.[5] G03B *27/80*

U.S. Cl. 355—20 **23 Claims**

1. An apparatus for producing a positive photographic print from a photographic negative by exposing photographic image receiving media, the apparatus comprising:

means for determining chromic and luminance characteristics of the photographic negative and for generating a signal representing the determined chromic and luminance characteristics of the photographic negative;

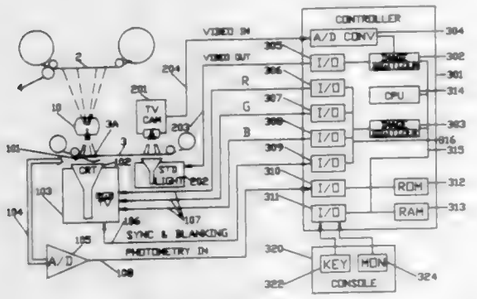
means for determining required levels of chromic and luminance necessary for faithful reproduction of the positive photographic print based on the chromic and luminance characteristics of the photographic negative, including:

means for determining chromic and luminance characteristics of a swatch of said photographic image receiving media having different shades of chromic intensity and

for generating a signal representing the chromic and luminance characteristics of each shade of chromic intensity;

means for ascertaining levels of chromaluminance that produced the chromic and luminance characteristics of each shade of chromic intensity of the swatch; and

means for comparing the ascertained chromaluminance of each shade of chromic intensity of the swatch with the chromic and luminance character-istics of the photographic negative to determine the required level of chromic and luminance intensity for faithful reproduction of the photographic negative;



cathode ray tube means for exposing the photographic image receiving media to produce a positive photographic print; and

means for controlling the chromance and luminance of the cathode ray tube means so that chromance and luminance of the cathode ray tube means are substantially equal the required levels of chromance and luminance.

5,349,419

METHOD AND APPARATUS FOR RECORDING STEREOSCOPIC IMAGES

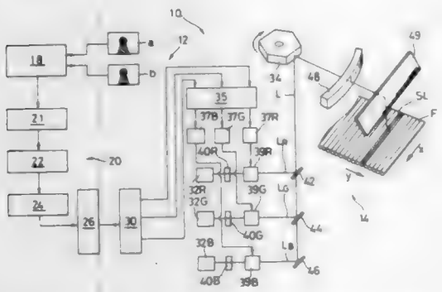
Seiichi Taguchi, Kanagawa, and Shunkichi Igarashi, Tokyo, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 14, 1993, Ser. No. 46,838

Claims priority, application Japan, Apr. 15, 1992, 4-95439

Int. Cl.[5] G03B *27/32, 35/14*

U.S. Cl. 355—22 **6 Claims**



1. A method for recording stereoscopic images, which comprises the steps of:

reading a plurality of original images from different viewpoints;

splitting each of said original images into linear images to be recorded;

calculating the linear image recording positions of said linear images for each lenticular lens in a lenticular sheet so as to insure that all of the linear images of the nth original image that are to be recorded in association with the respective lenticular lenses will fall within the same area at the intended viewing position; and

recording said linear images at said linear image recording positions calculated by said calculating step.

5,349,420

IMAGER APPARATUS SUPPORT SYSTEM

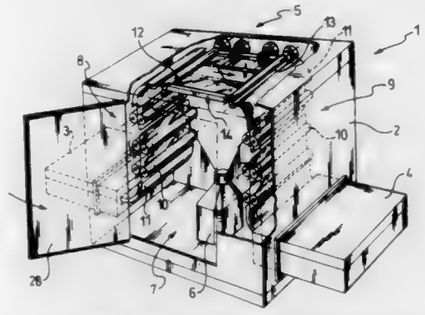
Renato Bolognese, Savona, and Rino Gandolfo, Roccavignale, both of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 12, 1993, Ser. No. 17,149

Claims priority, application Italy, Mar. 27, 1992, MI92 A 000726

Int. Cl.[5] G03B *29/00*

U.S. Cl. 355—75 **6 Claims**



1. An imager apparatus for exposing a film with a plurality of recorded images separated by middle border areas intermediate the edges of the film, wherein the apparatus comprises an exposure site, film driving means located at the exposure site for driving film though the exposure site and film supporting means for holding the film at the exposure site during exposure, characterized in that the film supporting means comprises at least one rod on which the film rests, wherein the rod contacts the film at only the middle border areas of the film.

5,349,421

ELECTROPHOTOGRAPHING APPARATUS

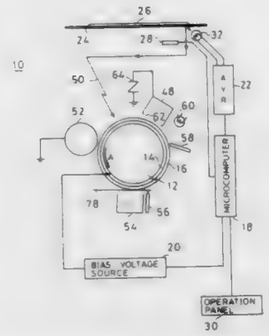
Yasuhiro Kishimoto, Gifu, and Kunio Tsuboi, Hyogo, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Sep. 24, 1993, Ser. No. 126,500

Claims priority, application Japan, Sep. 25, 1992, 4-256417

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—208 **10 Claims**



1. An electrophotographing apparatus, comprising:

a photoreceptor including an electric conductive substrate;

charging means for charging said photoreceptor at a predetermined voltage;

exposing means for exposing said photoreceptor to form an electrostatic latent image according to an original on said photoreceptor;

developing means for toner-developing said electrostatic latent image on said photoreceptor with a predetermined developing voltage;

reflectance sensing means for sensing a reflectance of said original; and

bias voltage applying means for applying a bias voltage that is changed in response to an output of said reflectance sensing means to said electric conductive substrate.

5,349,422

PRINTER FOR SCANNING ORIGINAL DOCUMENT AND COPY SHEET AND COMPUTING MAGNIFICATION RATIO

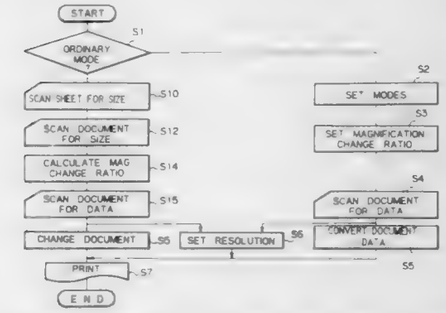
Yasuo Ohashi, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 27, 1993, Ser. No. 112,324

Claims priority, application Japan, Sep. 1, 1992, 4-233779; Jul. 22, 1993, 5-181419

Int. Cl.[5] G03G *15/04*

U.S. Cl. 355—243 **3 Claims**



1. A printer capable of processing image data, comprising:

mode selecting means for selecting either of a regular size sheet print mode for printing image data on a sheet of regular size or an irregular size sheet print mode for printing image data on a sheet of irregular size;

scanner means for scanning, when said irregular size sheet print mode is selected, a sheet of irregular size and a document associated with said sheet of irregular size for determining a size of the sheet of irregular size and a size of the document;

calculating means for calculating a magnification change ratio for said sheet of irregular size on the basis of the determined size of the sheet of irregular size and the determined size of the document; and

printing means for printing image data of said document on the basis of said magnification change ratio calculated by said calculating means.

5,349,423

RECORDING APPARATUS AND HEATING APPARATUS FOR USE IN RECORDING APPARATUS

Hitoshi Nagato, Tokyo, and Yuzo Koike, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

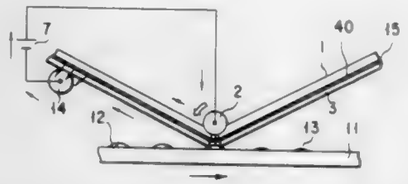
Continuation-in-part of Ser. No. 832,699, Feb. 7, 1992, abandoned. This application Sep. 14, 1992, Ser. No. 944,264

Claims priority, application Japan, Mar. 16, 1991, 3-75559; Mar. 10, 1992, 4-051685

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—285 **16 Claims**

1. A heating apparatus comprising heating means having a first conductor, a pressure-sensitive conductive switching layer formed on said first conductor and a region of which can be conducted upon being pressed, a heat-generating resistor layer formed on said pressure-sensitive conductive switching layer, and a second conductor formed on said heat-generating resistor layer, wherein said heating means and a material to be heated are partially brought into tight contact with each other, and a voltage is applied across said first and second conductors, so that a current flows in said pressed region of said pressure-sensitive conductive switching layer and a portion of said heat-generating resistor layer around said region to generate Joule heat, thereby heating the object to be heated by using the Joule heat.



5,349,424

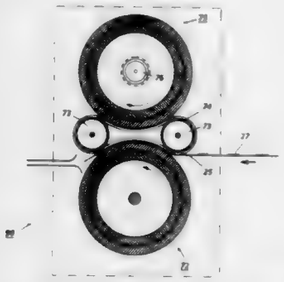
THICK WALLED HEATED BELT FUSER

Edul N. Dalal, Webster, and Robert M. Jacobs, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 25, 1993, Ser. No. 140,926

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—285 **18 Claims**



1. A heat and pressure fuser apparatus comprising:

a rotatably supported fuser belt;

a pressure member adjacent a first portion of said belt wherein the first portion of said belt contacts said pressure member to form an extended nip therewith, said pressure member comprising a first rotatably supported roll in circumferential contact with said belt; and

a heat source, adjacent a second portion of said belt said heat source comprises a second rotatably mounted roll in circumferential contact with the external surface of said belt and a heat generator, internal to said second roll, wherein said heat generator causes the temperature of the exterior surface of said second roll to elevate.

5,349,425

COMBINED CLEANER AND TONER MAGAZINE FOR AN IMAGE FORMING APPARATUS

Masahiko Kamijo, Kawasaki; Hiroshi Saitoh, Ayase; Yozo Matsuura, Tokyo, and Shiro Kondo, Atsugi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 10,876

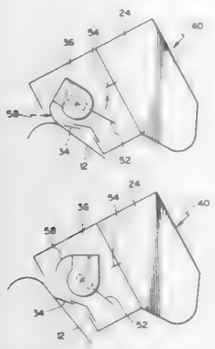
Claims priority, application Japan, Jan. 31, 1992, 4-16405

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—298 **7 Claims**

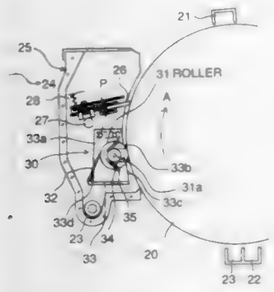
1. A combined cleaner and toner magazine (CTM) for an image forming apparatus, comprising:

toner supplying means for supplying a toner to a developing unit;
cleaning means constructed integrally with said toner supplying means for removing and storing the toner remaining on a photoconductive element after image transfer; and
preventing means for preventing part of the toner left on the photoconductive element without being stored in said



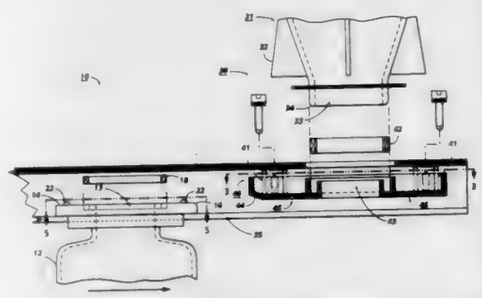
cleaning means from being scattered around in said image forming apparatus;
wherein:
said preventing means comprises an openable electromagnet shutter; and
said electromagnet shutter comprises an openable shutter member, and control means for selectively opening or closing said shutter member.

5,349,426
TONER GUIDE ROLLER FOR IMAGE-FORMING PROCESS AND APPARATUS APPLIED THEREWITH
Koichi Kudoh; Eiichi Sakai, and Yoshiaki Takei, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Nov. 8, 1993, Ser. No. 148,624
Claims priority, application Japan, Nov. 9, 1992, 4-298913; Jan. 20, 1993, 5-007787
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—298 **19 Claims**



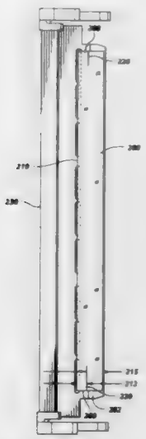
1. An image forming apparatus for forming a toner image on a recording sheet, comprising:
a photoreceptor for holding the toner image;
means for forming a latent image on said photoreceptor;
means for developing said latent image with a toner so that said toner image is formed on a surface of said photoreceptor;
means for transferring said toner image from said surface of said photoreceptor to the recording sheet;
means for scraping off a residual toner on said surface of said photoreceptor after said toner image is transferred from said surface to said recording sheet;
means for collecting said residual toner;
a toner guide roller means for conveying said residual toner from said scraping means to said collecting means;
wherein said toner guide roller means is urged onto said surface of said photoreceptor, and said toner guide roller means has a surface made of an open-cell cellular material having a pore size between 1 μm and 50 μm.

5,349,427
REPRODUCTION MACHINE WASTE IMAGING MATERIALS REMOVAL SYSTEM
Lawrence R. Benedict, Rushville; Raymond C. Bassett, Webster, and Thomas C. Fowler, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 13, 1993, Ser. No. 165,791
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—298 **8 Claims**



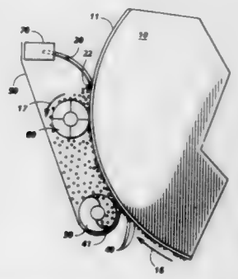
1. In an waste imaging material collection and removal system wherein waste imaging material from a reproduction apparatus is collected in a removable waste collection container, which waste imaging material collection container is removably insertable into the reproduction apparatus so that an inlet opening of said container is positioned at a waste imaging material discharge outlet of the reproduction apparatus; the improvement wherein:
said waste imaging material collection container has a resilient pneumatic seal surrounding said inlet opening of said container;
said waste imaging material container also has an integral insertion guide member;
said waste imaging material discharge outlet of the reproduction apparatus includes an entrance guide path and a spring loaded sled member and a second pneumatic seal connecting between said sled member and said discharge outlet to allow limited movement of said sled member;
said integral insertion guide member of said container being adapted to slide on said entrance guide path into compressed superposed engagement with said spring loaded sled member to form a pneumatic seal between said container and said sled member with said resilient pneumatic seal when said container is inserted into the reproduction apparatus;
said sled member providing a pneumaticaly sealed waste material path between said discharge outlet of the reproduction apparatus and said inlet opening of said container when said insertion guide member is so inserted in the reproduction apparatus.

5,349,428
CLEANING APPARATUS FOR THE REDUCTION OF BLADE TUCK IN REMOVAL OF SPOT-CAUSING AGGLOMERATE PARTICLES
John F. Derrick, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 4, 1993, Ser. No. 145,558
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—299 **22 Claims**



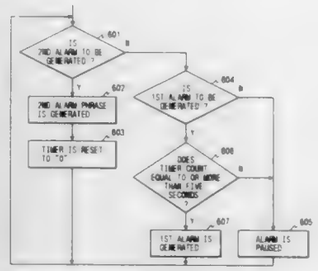
1. A printing machine of the type having means for recording a latent image on a surface and means for developing the latent image with toner, wherein the improvement comprises a blade, interposed between the recording means and the developing means, having a free edge adapted to engage the surface to remove at least residual toner therefrom, said blade defining a slit extending inwardly from a side of said blade in a direction substantially parallel to the edge thereof so as to substantially prevent blade tuck.

5,349,429
CLEANER BLADE LUBRICATING SYSTEM
Kip L. Jugle, Holcomb, and Nero R. Linblad, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 9, 1993, Ser. No. 149,249
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—299 **13 Claims**



1. A method for lubricating a cleaning blade in engagement with a moving surface having toner particles thereon, comprising:
removing the toner particles from the surface with the blade such that the toner particles move away from the blade;
collecting the toner particles; and
applying the collected toner particles to the surface to lubricate the blade.

5,349,430
RADAR APPARATUS FOR A VEHICLE
Kouji Yamamoto; Makoto Yamanoi; Hirokazu Endo, and Kimiaki Ishikawa, all of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan
Filed Mar. 29, 1993, Ser. No. 38,640
Claims priority, application Japan, Mar. 31, 1992, 4-104103
Int. Cl.[5] G01C *3/08*; B60T *7/16*; B62D *1/24*
U.S. Cl. 356—5 **18 Claims**



1. In a radar apparatus for use in a vehicle which measures a distance from an object located forward of the vehicle, generates a first alarm when the measured distance is shorter than a first alarm distance and a second alarm when the distance is shorter than a second alarm distance which is shorter than the first alarm distance, and pauses said second alarm in response to a predetermined condition, wherein the improvement comprises means for inhibiting generating of said first alarm for at least a predetermined period from a time when said second alarm is paused.

5,349,431
APPARATUS FOR MEASURING CROSS-SECTIONAL DISTRIBUTION OF REFRACTIVE INDEX OF OPTICAL WAVEGUIDE
Nicolas Gisin, Geneva; Patrick Stamp; Rogerio Passy, both of Carouge, all of Switzerland; Nobuo Hori, and Shigenori Nagano, both of Tokyo, Japan, assignors to Kabushiki Kaisha TOPCON, Tokyo, Japan
Filed Jun. 30, 1993, Ser. No. 85,200
Int. Cl.[5] G01N *21/41, 21/43*
U.S. Cl. 356—73.1 **6 Claims**



1. An apparatus for measuring the cross-sectional distribution of the refractive index of an optical waveguide, comprising a projector system for causing a luminous flux for measurement to be incident on one end of an optical waveguide portion provided on one surface of a substrate portion and a light-receiving unit for receiving leaking light of said luminous flux for measurement from said optical waveguide portion, characterized in that said light-receiving unit is arranged at the other end of said optical waveguide portion such as to receive only

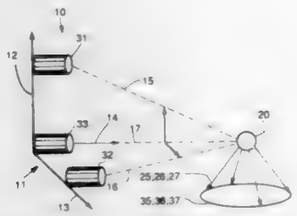
leaking light having passed through said substrate portion, wherein the cross-sectional distribution of the refractive index of said optical waveguide portion is measured from changes in the amount of light incident on said light-receiving unit.

5,349,432

MULTI-LASER COHERENT IMAGING THROUGH ABERRATING MEDIA

Douglas E. Elerath, Alameda, N. Mex., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 11, 1992, Ser. No. 989,264
Int. Cl.[5] G01J *1/00*
U.S. Cl. 356—121 **19 Claims**



1. A method of determining phase distortions induced by a near field aberrator in an active laser system, said method comprising the steps of:

forming a plurality of laser beams having known characteristic signals, and pointing the laser beams at a common object that generate laser return signals from illuminated target objects;

maintaining spatial displacement of the laser beams with respect to each other in an orthogonal coordinate system including the axis of one reference laser beam;

incorporating a distinguishable identification signature signal imbedded in the characteristic signal of each laser beam;

using an array of detectors responsive to the laser characteristic signals to provide detector output signals representing return signals from the target objects, wherein center to center spacings between individual detectors is substantially equal to the spatial displacement of the axes of the laser beams times the ratio of a return path range divided by a transmit path range;

extracting the laser return signals according to their identification signature signal from each detector output signal and classifying each return signal according to it's origin among the plurality of laser beams; and

comparing the return signals from each detector respecting each laser beam thereby determining the aberrator induced phase distortion.

5,349,433

AUTOMATIC LENSMETER

Toru Iwane, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jan. 21, 1992, Ser. No. 822,948
Claims priority, application Japan, Feb. 1, 1991, 3-012270; Feb. 4, 1991, 3-013569
Int. Cl.[5] G01B *9/00*
U.S. Cl. 356—124 **5 Claims**

3. An automatic lensmeter for automatically measuring a lens characteristic of a lens to be tested, comprising:

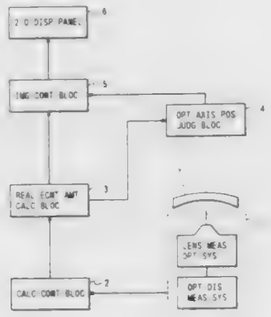
a measuring unit including an optical system for detecting a refraction characteristic of the lens;

a determining unit inputting information from said measuring unit for determining a lens characteristic value;

a display unit for displaying the lens characteristic value determined at said determining unit;

actual eccentricity determining means for determining an actual eccentricity on the basis of the lens characteristic value determined at said determining unit and a condition for determining the actual eccentricity; and

optical axis position judging means for judging whether or not the actual eccentricity determined at said actual eccentricity determining means is within a predetermined range and for determining whether or not a measurement and/or a marking are permitted, said display means displaying the result of the judgement; wherein said actual eccentricity determining means determines the eccentricity in accordance with the following equations when $S(S+C)<\zeta_0$ is not satisfied:



$$X=10(PX(S+C(1-\cos(2AX))/2\text{-}PY\sin(2AX))/(S(S+C))$$

$$Y=10(PY(S+C(1+\cos(2AX))/2\text{-}PX\sin(2AX))/(S(S+C))$$

where

S: a degree of sphere of the lens to be tested;

C: a degree of cylinder of the lens to be tested;

ζ_0: a predetermined value;

PX: a horizontal prism value of the lens;

PY: a vertical prism value of the lens;

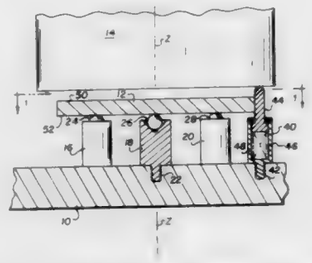
AX: an angle.

5,349,434

METHOD OF MEASURING ARTIFACT TAPER

Jon F. Fleig, Rochester, N.Y.; Mark J. Tronolone, San Jose, Calif.; Chunsheng J. Huang, Fairport, N.Y., assignors to Tropel Corporation, Fairport, N.Y.

Filed Mar. 24, 1993, Ser. No. 36,454
Int. Cl.[5] G01B *11/26;* **G01C** *1/00;* **G01F** *23/00*
U.S. Cl. 356—138 **27 Claims**



1. A method of measuring taper between two surfaces of an artifact comprising steps of:

measuring a first surface of the artifact;

calculating a first angular orientation of a first plane passing through a first set of three points on said first surface;

calculating a second angular orientation of a second plane passing through a second set of three points on said first surface;

inverting said artifact;

aligning said first set of three points with three points of support;

measuring a second surface of the artifact;

calculating a third angular orientation of said second surface;

rotating said artifact;

aligning said second set of three points with said three points of support;

remeasuring said second surface of the artifact;

calculating a fourth angular orientation of said second surface; and

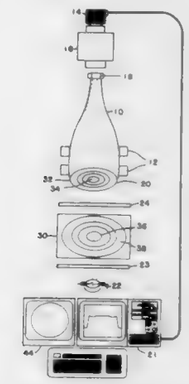
combining said first, second, third, and fourth angular orientations in a calculation for determining a fifth angular orientation between said first and second surfaces.

5,349,435

MACHINE FOR INSPECTING THE BOTTOM OF GLASS CONTAINERS

Benjamin L. Hall, Corning, and Leo B. Baldwin, Horseheads, both of N.Y., assignors to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Jun. 8, 1993, Ser. No. 73,700
Int. Cl.[5] G01N *21/90, 9/04*
U.S. Cl. 356—240 **5 Claims**



1. A machine for inspecting the bottom of a glass container having an opening at the top thereof comprising

means for delivering a glass container to an inspection station, said inspection station including

a two dimensional camera having an imaging surface viewing the bottom of the glass container through the opening thereof,

a light source for directing light through the bottom of the container towards said imaging surface,

a computer for evaluating the viewed bottom imaged on said imaging surface, and

means for reducing the dynamic brightness range for the viewed bottom image including

a spatial modulator located between said imaging surface and said light directing means and

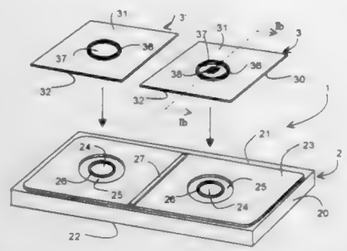
said computer further comprising means for complimenting and transferring the image of the viewed bottom to said spatial light modulator so that the viewed bottom of a container to be inspected at the inspection station and the complimented image will be imaged concentrically and the same size on said imaging surface.

5,349,436

BIOLOGICAL ASSEMBLY

Harry Fisch, 2727 Palisade Ave., Bronx, N.Y. 10463

Filed Dec. 2, 1992, Ser. No. 984,152
Int. Cl.[5] G02B *21/34*
U.S. Cl. 356—246 **17 Claims**



1. A biological assembly for effecting the examination of a sample in a liquid medium under magnification, comprising:

a transparent substrate having a first main surface;

means forming at least one sample chamber and an immediately adjacent overflow chamber on the first main surface and receptive of a sample in a liquid medium, said means comprising a thin film having for each sample chamber and overflow chamber, means defining a first opening therein corresponding to the sample chamber and means defining a second opening surrounding the first opening and corresponding to the overflow chamber, wherein the first and second openings form a separating wall of thin film therebetween; and

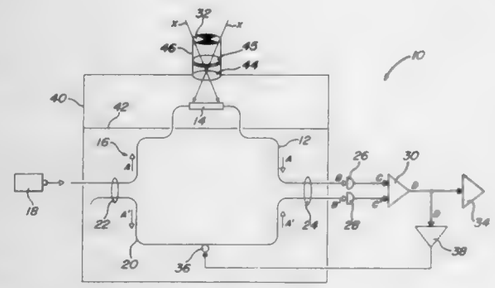
a transparent cover having first main surface superposable on the thin film to cover the at least one sample chamber and overflow chamber when a sample is received therein, wherein the cover has a second main surface opposite the first main surface and having a thin film pattern thereon demarcating an area for aligning the area of the cover with the at least one sampling chamber.

5,349,437

ELECTROMAGNETIC RADIATION DETECTOR UTILIZING AN ELECTROMAGNETIC RADIATION ABSORBING ELEMENT IN A MACH-ZEHNDER INTERFEROMETER ARRANGEMENT

Lloyd C. Bobb, Horsham, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1992, Ser. No. 954,521
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **11 Claims**



1. Apparatus for detecting electromagnetic radiation, comprising:

a single-mode optical waveguide;

an electromagnetic radiation-absorbing element disposed at

a thermal interface with said waveguide along a longitudinal portion of the length thereof to apply heat thereto in proportion to the magnitude of electromagnetic radiation impinged upon and absorbed by said electromagnetic radiation-absorbing element;

means for chopping the electromagnetic radiation impinged upon said electromagnetic radiation-absorbing element; and

interferometer apparatus operatively connected to said waveguide to measure a change in the optical pathlength thereof in proportion to the heat applied thereto, which change in optical pathlength is indicative of the amount of electromagnetic radiation absorbed.

5,349,438

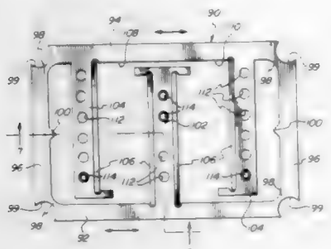
STRUCTURE FOR THE DYNAMIC SUPPORT OF A REFLECTIVE ELEMENT AND INTERFEROMETER COMPRISING THE SAME

Peter R. Solomon, West Hartford, Conn., assignor to Advanced Fuel Research Inc., East Hartford, Conn.

Continuation-in-part of Ser. No. 773,225, Oct. 9, 1991, Pat. No. 5,196,902. This application Jan. 6, 1992, Ser. No. 837,622

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—346 **25 Claims**



1. Structure for the dynamic support of a reflective element, immunized against extraneous forces, comprising: a multiplicity of rigid members including a pair of opposing side members and a pair of end members, said members being flexibly interconnected so as to permit conjoint displacement of said side members in opposite directions along parallel axes of shifting, with said end members rotating in the same direction about pivot points located on an intermedial axis lying between and parallel to said axes of shifting, said intermedial axis effectively dividing said structure into two portions, each of said portions including one of said side members and having its center of gravity located on a common axis that extends perpendicular to the aforesaid axes, at least a first one of said portions, inclusive of a first one of said side members, having structural means for spacing said center of gravity of said first one of said portions to the side of said intermedial axis opposite to said axis of shifting of said first side member; and at least one reflective dement operatively supported by said rigid members.

5,349,439

OPTO-ELECTRONIC MEASURING DEVICE WITH OPTICAL AIR WEDGE SPECTRAL ANALYSIS ARRANGEMENT

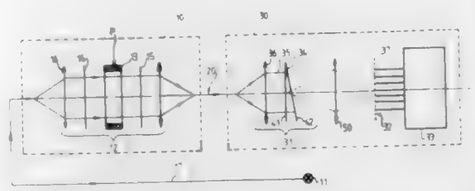
Philippe Graindorge, Crimolois, and Denis Trouchet, Le Pecq, both of France, assignors to Photonetics, Marly le Roi, France

Continuation-in-part of Ser. No. 466,625, Jan. 17, 1990, abandoned. This application Mar. 31, 1992, Ser. No. 860,997

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—346 **16 Claims**

1. A measuring device comprising a light source with a wide spectrum feeding an optical sensor through an optical fiber, said optical sensor comprising an interferometer adjusted to a dull tint, an optical component sensitive to a measured parameter P and introducing in the interferometer a path difference depending on the measured parameter P, an optical fiber connection connecting the sensor to means for reading out the spectrum of the light flux leaving the interferometer, said means for reading out comprising photodetector means being formed of elementary detectors, and processing means, the means for reading out including an optical air wedge being formed by two flat plates being positioned at a slight angle



with respect to each other to produce fringes, whose lateral position and contrast are representative of the spectrum of the light flux leaving the interferometer and analyzed by the photodetector means, the processing means measuring the lateral position of said fringes and converting said lateral position into the value of parameter P.

5,349,440

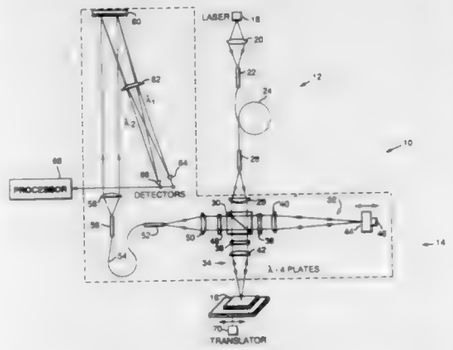
INTERFEROMETRIC LASER PROFILOMETER INCLUDING A MULTIMODE LASER DIODE EMITTING A RANGE OF STABLE WAVELENGTHS

Peter DeGroot, Bellevue, Wash., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 652,698, Feb. 8, 1991, abandoned. This application Aug. 7, 1992, Ser. No. 927,047

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—349 **5 Claims**



1. Synthetic wavelength optical metrology apparatus for determining a characteristic of a surface, said apparatus comprising:

a multimode laser diode operable to emit a source beam including a range of stable wavelengths;

means for receiving the source beam to provide a phase modulated reference beam and a measurement beam, the measurement beam being focused to impinge on the surface;

means for combining the reference beam with the measurement beam reflected by the surface;

means for detecting, simultaneously at a plurality of wavelengths, a phase difference between the reference beam and the reflected measurement beam for determining a characteristic of the surface; and

means for translating the surface with respect to the measurement beam such that a profile of the surface is determined.

5,349,441

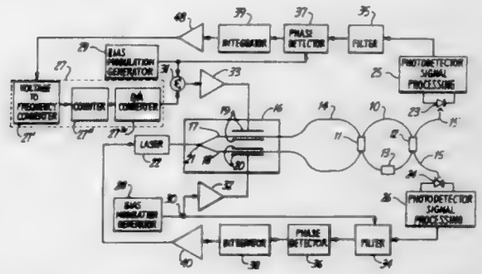
FIBER OPTIC GYROSCOPE REFRACTIVE INDEX INDUCED ERROR COMPENSATION

Glen A. Sanders, Scottsdale, Ariz., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Aug. 6, 1991, Ser. No. 740,741

Int. Cl.[5] G01B *09/02*

U.S. Cl. 356—350 **24 Claims**



1. An error compensator for providing compensation of rotation rate errors arising because of an optical Kerr effect in a coiled optical fiber in a rotation sensor capable of sensing rotation about an axis of said coiled optical fiber formed in a closed optical path in conjunction with at least a first coil coupler which is connected therewith such that electromagnetic waves can be coupled between said coiled optical fiber and a first external optical fiber, said rotation sensing based on having opposing electromagnetic waves propagating through said coiled optical fiber in opposing directions so as to result in each said opposing optical fiber electromagnetic wave impinging at least in part on a corresponding one of first and second photodetectors in a plurality of photodetectors each coupled to a selected one of said coiled optical fiber and said external optical fiber with at least one of said opposing coiled optical fiber electromagnetic waves propagating in one of said opposing directions being subject to having the phasing thereof varied by selected signals supplied to a first input of a first phase modulator, said first photodetector providing an output signal in response to such impingement thereon of a corresponding said opposing coiled optical fiber electromagnetic wave which is representative of that wave, said error compensator comprising:

a controlled frequency adjustment signal generator means having a frequency adjustment input and having an output electrically connected to said first phase modulator first input, said first controlled frequency adjustment signal generator means being capable of providing an output signal at said output thereof having a basic waveform repeated at a selected first shift operation frequency of a value selected based on signals appearing on said frequency adjustment input;

a signal component selection means having an input electrically connected to said first photodetector to receive said first photodetector output signal, and an output electrically connected to said first controlled frequency adjustment signal generator means frequency adjustment input, said first signal component selection means being capable of extracting a desired signal component from said photodetector output signal and providing an output signal based thereon at said output thereof;

an amplitude modulation signal generator means capable of providing amplitude modulation component in said opposing coiled optical fiber electromagnetic waves; and

a compensation means having a first input electrically connected to at least one of said plurality of photodetectors to receive a corresponding photodetector output signal, said compensation means being capable of extracting a plurality of differing characteristics from said corresponding photodetector signal and combining them so as to result in a determination of substantially that rotation rate error due to said optical Kerr effect in said coiled optical fiber.

5,349,442

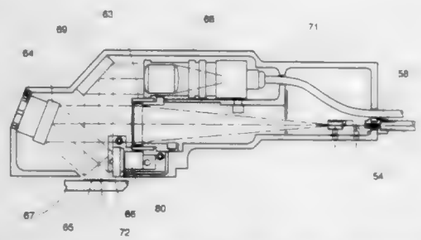
HAND HELD PHASE-SHIFTING DIFFRACTION MOIRE INTERFEROMETER

Vance A. Deason, and Michael B. Ward, both of Idaho Falls, Id., assignors to EG&G Idaho, Inc., Idaho Falls, Id.

Continuation of Ser. No. 763,415, Sep. 20, 1991, abandoned. This application Mar. 18, 1993, Ser. No. 34,636

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—354 **15 Claims**



1. A method of determining in-plane surface deformations of an object on the basis of diffraction of rays by a diffraction grating replicated onto the surface of said object, the steps comprising:

providing from a source a beam of coherent light;

coupling said beam to a polarization maintaining, single mode optical fiber;

transmitting said beam of coherent light through said single mode optical fiber to a remote hand held unit;

positioning said hand held unit over the diffraction grating replicated onto the surface of said object;

controlling and directing said beam of coherent light within said hand held unit by separate paths onto said diffraction gratings at opposite, but equal, incident angles; and

viewing, identifying and recording interference patterns created by diffraction of said coherent beams as a result of deviations in said diffraction grating.

5,349,443

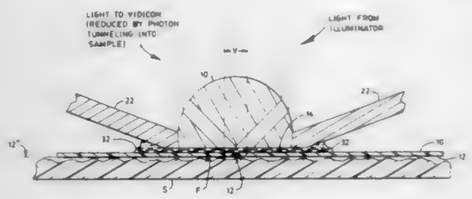
FLEXIBLE TRANSDUCERS FOR PHOTON TUNNELING MICROSCOPES AND METHODS FOR MAKING AND USING SAME

John M. Guerra, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 25, 1992, Ser. No. 981,270

Int. Cl.[5] G01N *21/17*

U.S. Cl. 356—376 **28 Claims**



20. An assembly for photon tunneling microscopic imaging, said assembly comprising:

an optical microscope with a predetermined field of view and having an objective including a flexible optical transducer;

an illuminator for providing light energy to said microscope;

a stage for supporting a sample beneath said microscope;

said flexible optical transducer being arranged and adapted to engage said sample and substantially conform to the

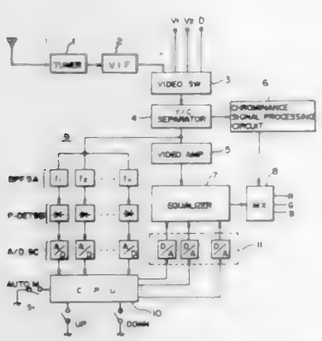
macrotopography of said sample, said flexible optical transducer comprising: an optically transmissive body having a totally internally reflecting surface therein, and a second surface plano-parallel to said reflective surface when said reflective surface and said second surface are in an unstressed state, said second surface comprising a combination light energy entrance surface and light energy exit surface, said reflective surface being oriented such that light energy introduced at said second surface is adapted to be reflected totally from the interior of said reflective surface to said second surface such that a light pattern of variable intensity emerges from said second surface as a result of frustration of total internal reflection from said reflective surface as said reflective surface is brought sufficiently proximate a surface of said sample.

5,349,444

VIDEO SIGNAL OUTPUT CIRCUIT WITH ADAPTIVE EQUALIZER

Toshio Amano, Kanagawa; Osamu Oda, Saitama, and Mitsumasa Saitoh, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 13, 1992, Ser. No. 959,663
Claims priority, application Japan, Oct. 21, 1991, 3-299516
Int. Cl.[5] H04N *5/205*
U.S. Cl. 348—711 **5 Claims**



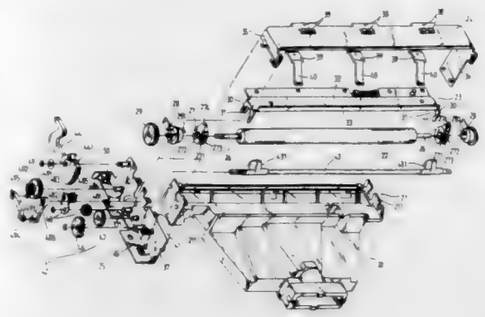
1. A video signal output circuit comprising:
detecting means for detecting specific frequencies of the frequency spectrum of an input video signal;
a signal processor for averaging outputs of said detecting means using a predetermined time constant to obtain respective frequency level values for each detected specific frequency; and
an equalizer circuit for receiving the frequency level values of said input video signal obtained by said signal processing portion;
wherein said equalizer circuit performs any one of two operations, one of the two operations being equalizing the level values of the respective specific frequencies of the frequency spectrum of said input video signal to be substantially equal, the other of the two operations being modifying the level values of the respective specific frequencies of the frequency spectrum of said input video signal to have a predetermined frequency spectrum pattern.

5,349,445

MECHANICAL TRANSMISSION MECHANISM FOR FAX MACHINE

Hong-Yu Chang, Cheng I-Lan Hsien, Taiwan, assignor to Cal-Compelectronics, Inc., Taipei, Taiwan

Filed Oct. 3, 1991, Ser. No. 770,213
Int. Cl.[5] H04N *1/23, 1/32*
U.S. Cl. 358—296 **15 Claims**



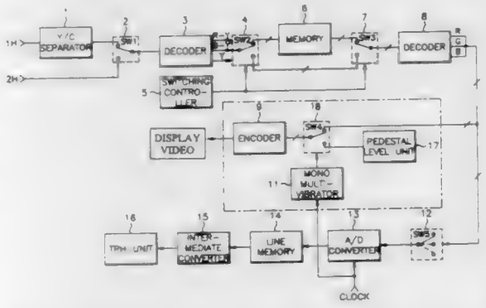
1. A fax machine comprising:
an optical reader,
a roller,
a heat sensitive head for printing,
a heat sensitive head press piece, and
a mechanical transmission mechanism,
said roller being pivotally arranged at one side of a projection portion of said optical reader,
said heat sensitive head being pivotally disposed at one side of said roller, said heat sensitive head being pressed upon by said heat sensitive head press piece,
said mechanical transmission mechanism including a heat sensitive head urging means for initiating a compressional disassociation of said heat sensitive head and said roller when said fax machine has received a transmitting signal.

5,349,446

METHOD FOR DISPLAYING PRINTING SITUATION OF A COLOR VIDEO PRINTER

Hee-Guk Kwak, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Maetan, Rep. of Korea

Filed Dec. 24, 1991, Ser. No. 812,945
Claims priority, application Rep. of Korea, Jan. 18, 1991, 1991-799
Int. Cl.[5] H04N *1/40, 1/46;* **G09G** *5/00*
U.S. Cl. 358—296 **22 Claims**



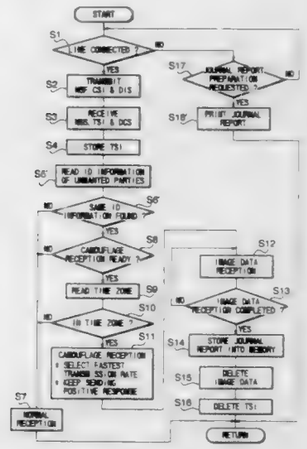
1. A method for displaying a printing status of a color video printer, comprising the steps of:
multiplexing a pedestal level signal and a white level signal in response to a pulse width converted control signal to produce a first multiplexed signal;
receiving said first multiplexed signal and a chrominance signal, and multiplexing said chrominance signal in response to a selection control signal to produce a multiplexed chrominance signal; and
displaying said multiplexed chrominance signal on a variable visual display by stimulating said variable visual display with colors representative of a color as printed by the video printer.

5,349,447

FACSIMILE MACHINE

Tetsuya Kuwahara, Shiga, and Eiichi Morimoto, Moriyama, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Feb. 24, 1993, Ser. No. 22,732
Claims priority, application Japan, Mar. 3, 1992, 4-045655; Mar. 3, 1992, 4-045656
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—404 **7 Claims**



1. A facsimile machine comprising:
means for registering identification information of unwanted stations;
means for detecting an identification information carried on in data transmitted from a calling station; and
control means for maintaining the facsimile communication while disregarding the transmitted data if the identification information of the calling station corresponds to one of the identification information of unwanted stations or for disconnecting a line with the calling station if the identification information of the calling station corresponds to one of the identification information of unwanted stations; and
a timer for setting a time zone, the control means maintaining the line connection while disregarding the transmitted data if the data arrives in the time zone whereas the control means interrupts the line connection if the data does not arrive the time zone.

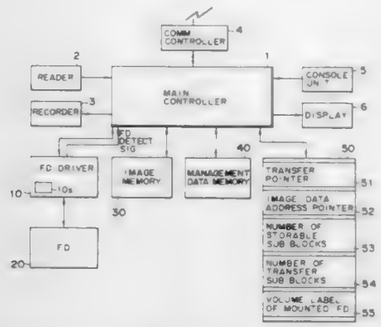
5,349,448

IMAGE COMMUNICATION APPARATUS

Nobuyuki Hirai, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1992, Ser. No. 894,281
Claims priority, application Japan, Jun. 4, 1991, 3-132698
Int. Cl.[5] H04N *1/00;* **H04M** *1/00*
U.S. Cl. 358—444 **10 Claims**

1. An image communication apparatus, which stores image data in a first memory, and transfers the image data from the first memory to a detachable external storage medium, comprising:
detection means for detecting an insertion/detachment state of said external storage medium;
transfer means for transferring image data in said external storage medium to said first memory upon insertion of said external storage medium; and



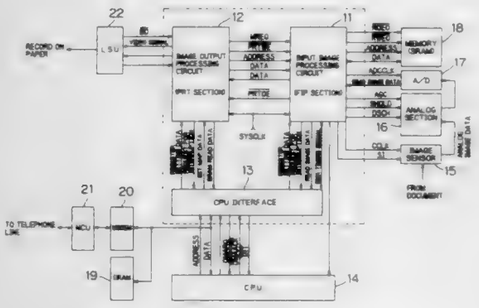
delete means for deleting the same image data stored in said first memory as the image data transferred from the first memory to said external storage medium upon detachment of said external storage medium.

5,349,449

IMAGE DATA PROCESSING CIRCUIT AND METHOD OF ACCESSING STORING MEANS FOR THE PROCESSING CIRCUIT

Ikuhiro Omi, Osaka; Hideo Azumai, Osaka, and Satoshi Iwatsubo, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 7, 1993, Ser. No. 86,906
Claims priority, application Japan, Jul. 13, 1992, 4-185560
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—448 **3 Claims**



1. An image data processing circuit comprising:
a first image data processing circuit;
a second image data processing circuit which is operated asynchronously with the first image data processing circuit; and
storing means for storing data which is shared between the first image data processing circuit and the second image data processing circuit, and wherein
the first image data processing circuit and the second image data processing circuit access the storing means in synchronization with the same clock,
an order of priority is so set that access to the storing means by the second image data processing circuit precedes access to the storing means by the first image data processing circuit, and access to the storing means by the first image data processing circuit is interrupted while the second image data processing circuit is accessing the storing means, and

a unit operation time period, S1, required for the first image data processing circuit to process data corresponding to one pixel, a maximum time period, T1, during which the first image data processing circuit can access the storing means in the unit operation time period, S1, a unit operation time period, S2, required for the second image data processing circuit to process data corresponding to one pixel and a maximum time period, T2, during which the second image data processing circuit can access the storing means in the unit operation time period, S2, are set, so as to satisfy the following conditions:

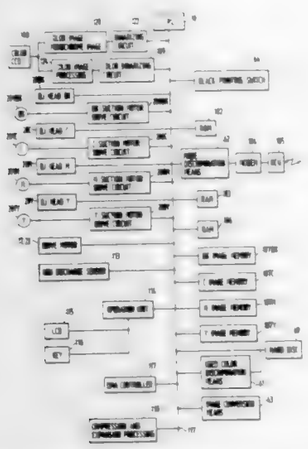
$S1 \geqq T1 + T2$, and $S1 \leqq S2$.

5,349,450

COLOR FACSIMILE APPARATUS

Kiyoharu Yoshioka, Yokohama, and Koji Arai, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 670,256, Mar. 15, 1991, abandoned.
This application Dec. 11, 1992, Ser. No. 989,915
Claims priority, application Japan, Mar. 16, 1990, 2-66113; Mar. 16, 1990, 2-66114; Mar. 16, 1990, 2-66115
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—500 **26 Claims**



1. A color facsimile apparatus comprising:
receiving means for receiving color data through a line;
means for forming an image corresponding to the color data received by said receiving means by depositing plural kinds of colorants, wherein said forming means is operable in two printing modes, a color printing mode and a monochromatic printing mode;
means for checking for non-depositing by said forming means; and
control means for controlling the printing mode of said forming means in accordance with said checking means.

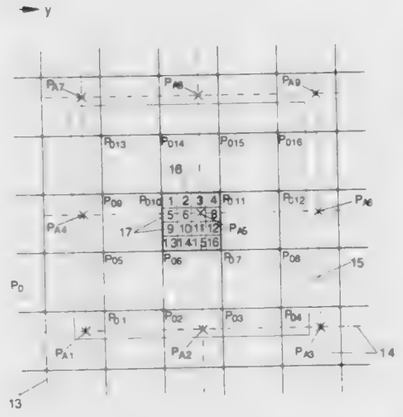
5,349,451

METHOD AND APPARATUS FOR PROCESSING COLOR VALUES

Herbert Dethardt, Schoenkirchen, Fed. Rep. of Germany, assignor to Linotype-Hell AG, Eschborn, Fed. Rep. of Germany

Filed Oct. 28, 1993, Ser. No. 144,552
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1992, 4236520; Oct. 15, 1993, 4335214
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—518 **18 Claims**

1. A method for processing color values in reproduction of a color original, comprising the steps of:
acquiring by pixel-by-pixel and line-by-line optoelectronic scanning of a color original color values (R_0, G_0, B_0) of original pixels (P_0) representing color components arranged in an original raster network, and storing said color values (R_0, G_0, B_0);
for modifying a reproduction scale in comparison to a scale of the original, generating an output raster network corresponding to said respective reproduction scale for output pixels (P_A) to be reproduced, color values (R_A, G_A, B_A) of the output pixels (P_A) being calculated from the stored color values (R_0, G_0, B_0) of the original pixels (P_0); and
generating the output raster network by the steps of
defining a category field in the original raster network and subdividing it into sub-fields that represent interpolation categories,
defining an interpolation window around the category field, the interpolation window covering as many original pixels (P_0) of the original raster network as color value triads (R_0, G_0, B_0) participating in calculation of a color value triad (R_A, G_A, B_A) of an output pixel (P_A),
identifying a plurality of weighting coefficients (k_M) corresponding in number to a plurality of original pixels (P) within the interpolation window for every interpolation category (IK) of the category field before a color value processing, determining a respective distance of a sub-



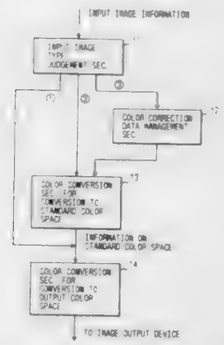
field representing a corresponding interpolation category (IK) from the individual original pixels (P_0) within the interpolation window, and calculating a weight-weighting coefficient (k_M) that corresponds to a distance (a) from a weighting function (GF) for every original pixel (P) within the interpolation window,
addressably allocating calculated sets of weighting coefficients (k_M) to the individual sub-fields and corresponding interpolation categories (IK),
shifting a color value processing of the category field, including the interpolation window, over the original raster network until a respective output pixel (P_A) of the output raster network lies within the shifted category field,
identifying the sub-field into which the corresponding output pixel (P_A) falls, and
calling in the color values (R_0, G_0, B_0) of the original pixels (P_0) lying within the shifted interpolation window, weighting them with the weighting coefficients (k_M) of the interpolation category (IK) corresponding to the identified sub-fields, and adding the weighted color values in order to obtain the color values (R_A, G_A, B_A) of the corresponding output pixel (P_A) in the output raster network.

5,349,452

IMAGE PROCESSING SYSTEM CAPABLE OF ATTAINING COLOR COINCIDENCE BETWEEN INPUT AND OUTPUT IMAGES

Masahiro Maeda; Toru Yamasaki; Masayuki Kurahashi, and Noriaki Seki, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1994, Ser. No. 187,730
Claims priority, application Japan, Jan. 29, 1993, 5-32534
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—527 **7 Claims**



1. In transmitting color input image information from an image input device to an image output device by use of a color processing system to which at least one image input device and at least one image output device can be connected, a color coincidence processing method comprising the steps of:
recognizing a color space of input image information and, if it is not a standard color space, judging whether the input image information is associated with color correction data; and
realizing color coincidence between an input image and an output image by:
using the standard color space, if the input image information is on the standard color space;
performing a color correcting operation by using the color correction data associated with the input image information, if the input image information is not on the standard color space but associated with the color correction data; or
performing a color correcting operation by using color correction data stored in the color processing system, if the input image information is neither on the standard color space nor associated with the color correction data.

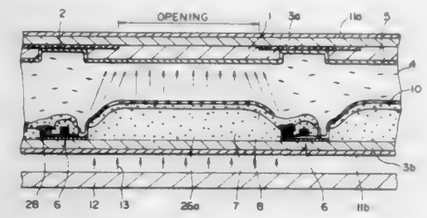
5,349,453

LIQUID CRYSTAL DISPLAY DEVICE WITH MICROLENSES ON SAME PLANE AS SWITCHING ELEMENTS

Masaki Munakata, Saitama, Japan, assignor to Sony Corporation, Japan

Filed Aug. 14, 1992, Ser. No. 929,438
Claims priority, application Japan, Aug. 23, 1991, 3-212217
Int. Cl.[5] G02F *1/1335, 1/1343*
U.S. Cl. 359—40 **10 Claims**

1. A liquid crystal display device which comprises:
a first substrate;
a plurality of picture element electrodes arranged in a matrix formed on an inner surface of the first substrate;
a plurality of switching elements wherein each one of said plurality of picture element electrodes is associated with a corresponding one of said plurality of switching elements;
a plurality of lens elements formed on the inner surface of the first substrate, each lens element being separately disposed under a corresponding picture element electrode;
a second substrate opposed to the first substrate; and



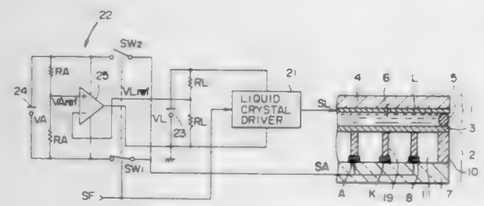
a liquid crystal layer disposed between the first substrate and the second substrate,
wherein said plurality of lens elements are formed on a same plane with said plurality of switching elements.

5,349,454

PLASMA ADDRESSING ELECTRO-OPTICAL DEVICE HAVING INVERTOR CIRCUIT CONNECTED TO ANODES

Jun Iwama, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 22, 1993, Ser. No. 50,647
Claims priority, application Japan, Apr. 24, 1992, 4-131822
Int. Cl.[5] G02F *1/133;* G09G *3/28, 3/36*
U.S. Cl. 359—54 **10 Claims**



1. A plasma addressing electro-optical device, comprising:
a first substrate having a plurality of first electrodes arranged substantially in parallel to each other on a major surface thereof;
a second substrate having a plurality of second electrodes to define addressing units each including an anode and a cathode in pair to thereby define overlapping regions of the first electrodes and the addressing units;
an electro-optical material layer positioned between said first and second substrates;
a discharge chamber formed between said electro-optical material layer and said second substrate and containing ionizable gas;
a signal generating circuit for providing a signal to the first electrodes, said signal being inverted on the basis of a predetermined potential; and
means for providing an anode potential which is inverted in synchronism with the inversion of the signal.

5,349,455

ELECTRO-OPTICAL PLASMA ADDRESSING DEVICE WITH CATHODES HAVING DISCHARGE, RESISTIVE AND VOLTAGE SUPPLYING PORTIONS

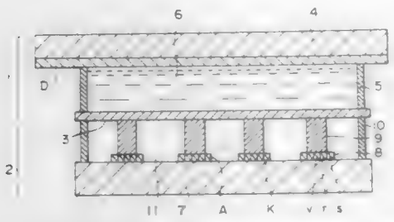
Masatake Hayashi, and Motoharu Nishida, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Apr. 21, 1993, Ser. No. 50,807

Claims priority, application Japan, Apr. 21, 1992, 4-128265

Int. Cl.[5] G02F *1/133;* **G09G** *3/28;* **H01J** *17/49*

U.S. Cl. 359—54 **8 Claims**



1. An electro-optical plasma addressing device comprising:
a first substrate having a plurality of first electrodes arranged substantially in parallel to each other on a major surface thereof;;
a second substrate opposed to the first substrate and having a plurality of second electrodes to define addressing units, each unit comprising an anode and a cathode for selectively ionizing a gas, said second electrodes having at least cathodes comprised of a discharge portion, a voltage supplying portion, and a resistive portion which connects the discharge portion and the voltage supplying portion, said voltage supplying portion and resistive portion being covered with an insulating layer;
an electro-optical material layer positioned between the first and second substrates; and
a discharge chamber formed between the electro-optical material layer and the second substrate.

5,349,456

SUBSTRATE HAVING AN ACTIVE ELEMENT ARRAY WITH LOW HYDROXYL AND CHLORINE

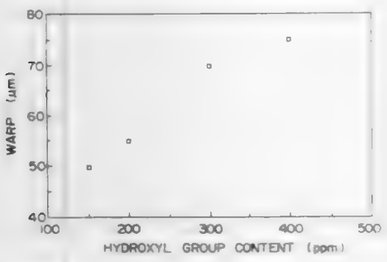
Toshihiko Iwanaga; Kazuyoshi Yoshida, both of Kanagawa, and Takusei Sato, Kagoshima, all of Japan, assignors to Sony Corporation, Japan

Filed Jan. 27, 1993, Ser. No. 9,677

Claims priority, application Japan, Jan. 31, 1992, 4-042080; Jun. 19, 1992, 4-186057

Int. Cl.[5] G02F *1/1333*

U.S. Cl. 359—82 **10 Claims**



5. An electrooptical device comprising:
a glass substrate composed of synthetic quartz glass including a hydroxyl group whose concentration is 200 ppm or less and a chlorine group whose concentration is 50 ppm or less;
a plurality of picture element electrodes disposed in the matrix form, each picture element electrode being associated with a switching element;
an insulating substrate placed opposite to and spaced apart from the glass substrate; and
an electrooptical material layer sandwiched between the glass substrate and the insulating substrate.

5,349,457

FIBER OPTIC TELEPHONE LOOP NETWORK

James A. Bears, Osgoode, Canada, assignor to Northern Telecom Limited, Montreal, Canada

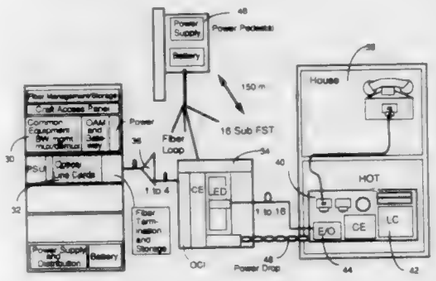
Continuation-in-part of Ser. No. 810,067, Dec. 19, 1991. This application Jan. 28, 1993, Ser. No. 10,243

Claims priority, application United Kingdom, Feb. 4, 1992, 9202353.0

The portion of the term of this patent subsequent to Jun. 28, 2011, has been disclaimed.

Int. Cl.[5] H04J *14/00*

U.S. Cl. 359—118 **2 Claims**



1. A cost optimized digital telephone loop network connecting a switch in a central switching office and a plurality of individual subscribers, comprising:
a) a remote fiber terminal located at the central switching office and including multiplexer/demultiplexer means for converting electrical signals from the switch to multiplexed digital optical signals and vice versa;
b) between one to sixteen fiber service terminal means, each located substantially near the plurality of subscribers, each of the fiber service terminal means including multiplexer/demultiplexer means for converting the multiplexed optical signals into demultiplexed individual home optical signals and vice versa and a plurality of surface light emitting diodes for transmitting the individual home optical signal to and from the plurality of subscribers;
c) single mode fiber optic feeder cables connecting the remote fiber terminal and a plurality of fiber service terminal means for transmitting the multiplexed optical signals to the fiber service terminal means;
d) a small number of passive optical splitter/combiner means on any of the single mode fiber optic feeder cables for splitting and combining the multiplexed optical signals to and from the plurality of fiber service terminal means, the split rate of each splitter/combiner means being not more than one-to-four;
e) a plurality of pairs of multimode fiber optic drops, each pair optically connecting one of the fiber service terminal means and one individual subscriber of the plurality of subscribers, by way of the plurality of surface light emitting diodes, one drop within each being for transmitting the demultiplexed individual home optical signal to the individual subscriber and the other drop of the pair being for receiving individual home optical signal from the individual subscriber;
f) house optical terminal means, each located at the individual subscriber and including an individual line card or cards which contain a surface light emitting diode, for converting the demuliplexed individual home optical signals to home electrical signals and vice versa; and
g) electrical drops, each connecting a fiber service terminal means and the individual subscriber for supplying the electrical power to its house optical terminal means,
wherein the network has for each fiber service terminal means at least two separate single mode feeder cables connecting to respective separate remote fiber terminals at the central switching office, each feeder cable having separate go and return paths, and in each fiber service terminal means interfacing the switch for connecting the multiplexer/demultiplexer means of the fiber service terminal means with one or other of the feeder cables whereby in the event of a fault developing in either feeder cable at least one go and one return path remains effective between the fiber service terminal and the central switching office.

5,349,458

METHOD FOR DETECTING EXTERNAL INFLUENCE ON AN OPTICAL CABLE

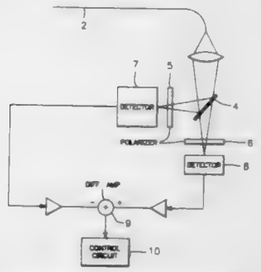
Stefan U. Karlsson, Rönnbärsgatan 2, S-590 50 Vikingstad, Sweden

PCT No. PCT/SE89/00116, § 371 Date Sep. 9, 1991, § 102(e) Date Sep. 9, 1991, PCT Pub. No. WO90/10921, PCT Pub. Date Sep. 20, 1990

PCT Filed Mar. 9, 1989, Ser. No. 752,575

Int. Cl.[5] H04B *10/08;* **H04J** *14/02*

U.S. Cl. 359—124 **14 Claims**



1. A method for detecting external influence on an optical fiber in an optical cable, the method comprising the steps of:
transmitting coherent radiation for surveillance purposes in multimode through the optical fiber;
receiving the coherent radiation on a receiver end of the optical cable;
splitting the received radiation into two beams, each beam including an entire interference pattern created by the transmission in the fiber;
plane-polarizing the two beams in two different directions;
detecting amplitude of each beam and generating measurement signals respectively representative thereof;
comparing the measurement signals of each beam to generate an output signal representing the relationship therebetween; and
triggering an alarm when the output signal exceeds a predetermined threshold.

5,349,459

SECURE REMOTE CONTROL SYSTEM

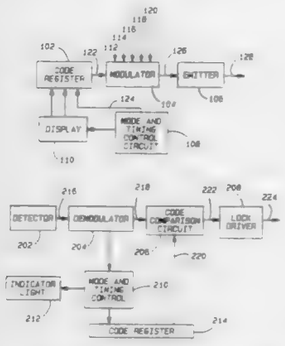
Irving S. Reed, Santa Monica, Calif., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 18, 1992, Ser. No. 884,971

Int. Cl.[5] H04B *10/02*

U.S. Cl. 359—142 **10 Claims**

5. A secure remote control system, comprising:
a key transmitter for generating an electromagnetic radiation signal, the signal including a plurality of pulse pairs, each pair including a start pulse and a stop pulse, with the time interval between each start-and-stop pulse being proportional to a corresponding value in a predetermined key code sequence;
a lock receiver for detecting the electromagnetic signal, the receiver including:
means for deriving the key code sequence from the time intervals in the received sequence of start-and-stop pulse pairs;
means for comparing the derived key code sequence to a predetermined lock code sequence; and



means for generating a valid signal if each value in the derived key code sequence corresponds in a predetermined manner to each value in the lock code sequence wherein the means for generating a valid signal further comprises:
means for generating a valid signal if each value in the derived key code sequence is the complement of the corresponding value in the lock code sequence.

5,349,460

REMOTE CONTROL SYSTEM FOR CONTROLLING A TELEVISION RECEIVER

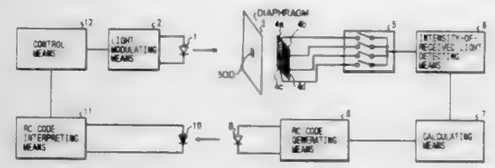
Naokazu Ogasahara, Osaka, and Hiroshi Miyai, Takarazuka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 4,655, Jan. 14, 1993, abandoned, which is a continuation of Ser. No. 706,320, May 28, 1991, abandoned. This application Dec. 30, 1993, Ser. No. 176,289

Claims priority, application Japan, May 28, 1990, 2-137800

Int. Cl.[5] H04B *10/00*

U.S. Cl. 359—142 **11 Claims**



10. A remote control system having a remote control device and a unit to be controlled by said remote control device, said remote control device comprising:
a diaphragm for limiting the cross section of a beam of light incident thereon to a small area;
at least three light receiving elements for receiving the incident light passing through said diaphragm, said light receiving elements being arranged such that an area, on which the incident light impinges, of each of said light receiving elements changes depending on an angle of incidence of the incident light;
a switching circuit for receiving outputs of selected necessary ones of said light receiving elements and outputting the received outputs of the selected necessary ones of said light receiving elements;

an automatic gain control circuit for compensating change of outputs of said switching circuit, which is caused by change in distance between the remote control device and the unit, and for outputting a first signal representing a result of compensation, said automatic gain control circuit outputting a second signal, which represents a quantity of noises generated therein, when said switching circuit receives no outputs of said light receiving elements;

an intensity-of-received-light detecting means for detecting the intensity of light received by each of said light receiving elements from the first signal output by said automatic gain control circuit and for detecting correction data from the second signal output from said automatic gain control circuit;

a position-information generating means for generating position data from the intensities of light detected by said intensity-of-received light detecting means and for outputting the generated position data which indicates what position of said unit said remote control device is turned toward;

a remote-control-code generating means for generating a remote control code corresponding to output data of said position-information generating means and for outputting a signal representing the generated remote code;

a light emitting element for emitting light designating the signal representing the remote control code generated by said remote-control-code generating means, wherein said unit includes:

a light receiving element for receiving the light emitted from said first light emitting element of said remote control device; and

a remote-control-code interpreting and discriminating means for interpreting and discriminating the remote control code as represented by the light received by said second light receiving element.

5,349,461

SIMULTANEOUS BIDIRECTIONAL DIGITAL DATA TRANSMISSION OVER A SINGLE LINE AT A COMMON FREQUENCY ON AN OPTICAL WAVEGUIDE

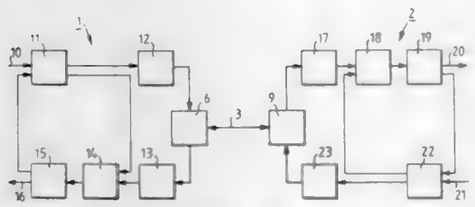
Hon Huynh; Jörg Franzke; Harald Lilienthal, and Peter Bresche, all of Berlin, Fed. Rep. of Germany, assignors to Krone AG, Beeskowdamm, Fed. Rep. of Germany

Filed Jul. 22, 1992, Ser. No. 918,675

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1991, 4125105

Int. Cl.[5] H04L *7/00*

U.S. Cl. 359—152 **16 Claims**



1. A device for bidirectional digital data transmission on an optical waveguide comprising: a first transmitter/receiver unit connected to a second transmitter/receiver unit by the optical waveguide, said first transmitter/receiver unit comprising:

data input means for inputting a data signal in electrical form, said data signal having a pulse width T_b;

data editing means for reducing a pulse width of said signal received from said data input to generate an output with a pulse width T_r and a reception pause having a width $T_b - T_r$;

optical transmitter means for receiving said signal of a pulse width T_r and generating an optical signal having a pulse width T_r;

an optical coupling element for coupling said optical signal of a pulse width T_r to said optical waveguide;

an optical receiver connected to said coupling element, said optical receiver for receiving optical signals of a pulse width T_r and generating electrical signals of a pulse T_r;

pulse-width correction means for receiving electrical signals from said optical receiver of a pulse-width T_r and providing an output of corrected signals having a pulse width T_b, said output of said data editing means being connected to said input of said pulse-width correction means;

control signal output means receiving said output of said pulse-width correction means and generating a control signal output for varying a time of transmitting a pulse width T_r transmitted from said second transmitter/receiver unit during said reception pause $(T_b - T_r)$ received from said first transmitter/receiver unit, said control signal output being applied to said data editing unit; and

data output means, connected to said control signal means for output of transmitted data.

5,349,462

SINGLE SEND-RECEIVE OPTICAL HEAD FOR TRANSMISSION AND RECEPTION OF DATA BY OPTICAL SYSTEM, AND ASSOCIATED SWITCHING CIRCUIT

Jean-Marc Defranco, Malesherbes; Florence Barnabe, Paris, and Alain Rouzier, Le Blanc Mesnil, all of France, assignors to Thomson-Csf, Puteaux, France

Filed Sep. 20, 1993, Ser. No. 100,290

Claims priority, application France, Sep. 1, 1992, 92 10433

Int. Cl.[5] H04B *10/00*

U.S. Cl. 359—152 **8 Claims**

1. A switching circuit for use in conjunction with a semiconductor laser device operating in both send and receive modes, comprising:

a first diode connected to a first voltage source;

a laser connected in series to the first diode;

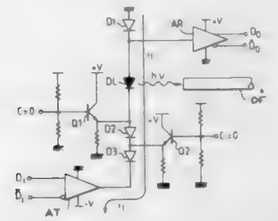
a second diode connected in series to the laser;

a third diode connected in series to the second diode and connected to a second voltage source;

a transmission amplifier having an output connected to a cathode of the third diode;

a reception amplifier having an input connected to a cathode of the first diode;

a first control device connected to an anode of the second diode; and



a second control device connected to a cathode of the second diode, wherein the first and second control devices are connected to a third voltage source.

5,349,463

OPTICAL RADIO REPEATER WITH SIGNAL QUALITY DETECTION

Kazutoshi Hirohashi, Yokohama; Hiroshi Horii, Tokyo; Hideo Koike, Kanagawa; Yoshiaki Yunoki, Tokyo; Tetsuo Fukasawa, Sagamihara; Susumu Katayama, Tokyo; Akio Yoshikawa, Kawasaki; Keishi Ushijima, Nagareyama; Takaaki Takeda, Fujisawa; Takeshi Nomoto, Yokohama; Michio Kikuta, Tokyo; Shunichi Shichijo, Yokosuka, and Yoshiki Iwasaki, Yokohama, all of Japan, assignors to Victor Company of Japan, Yokohama and NTT Data Communications Systems Corporation, Tokyo, both of Japan

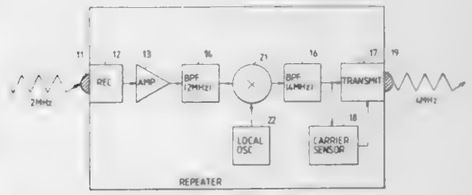
Continuation of Ser. No. 744,097, Aug. 13, 1991, abandoned.

This application May 28, 1993, Ser. No. 68,572

Claims priority, application Japan, Aug. 17, 1990, 2-216531; Nov. 24, 1990, 2-319400

Int. Cl.[5] H04B *10/00, 10/16*

U.S. Cl. 359—174 **16 Claims**



1. An optical radio system comprising a host device, an end device and a repeater, wherein the host device and the end device communicate with each other via the repeater by use of light signals; and wherein the repeater comprises;

first means for receiving a first light signal from one of the host device and the end device;

second means connected to the first means for converting the first light signal received by the first means into a first electric signal;

third means connected to the second means for frequency-converting the first electric signal into a second electric signal;

fourth means connected to the third means for generating a second light signal in response to the second electric signal and transmitting the generated second light signal when enabled;

fifth means connected to the second means and the third means for demodulating one of the first electric signal and the second electric signal into a baseband signal;

sixth means connected to the fifth means for detecting the quality of the baseband signal; and

seventh means connected to the fourth means and the sixth means for enabling transmission of the second light signal by the fourth means only when the baseband signal quality detected by the sixth means is equal to or greater than a predetermined quality.

5,349,464

NONLINEAR OPTICAL ELEMENT

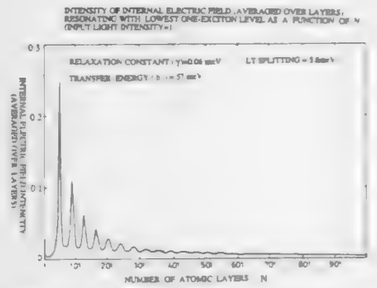
Hajime Ishihara; Yoshinori Nomura, and Kikuo Cho, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1992, Ser. No. 941,730

Claims priority, application Japan, Sep. 11, 1991, 3-231809

Int. Cl.[5] G02F *1/37*

U.S. Cl. 359—240 **25 Claims**



1. A nonlinear optical element for receiving an input light and a control light and producing an output light comprising:

a plurality of quantum members of a predetermined shape which cause a nonlinear optical effect on the output light; and

a plurality of barrier portions, each barrier portion separating a quantum member from another quantum member;

wherein the size of each quantum member is selected to be within a specific range such that an internal electric field is maximized, the specific range having a center point approximately equal to a twice when the electric field is at a peak value and the specific range having a width being approximately equal to twice that of the width of a size range when the internal electric field is equal to or greater than half of the peak value.

5,349,465

OPTICAL DEMOCULATOR

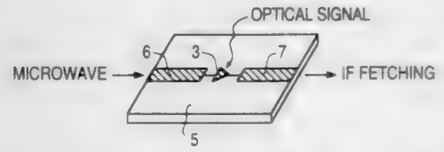
Koji Mizuno, Sendai, Japan, assignor to Research Development Corporation of Japan, Tokyo, Japan

Filed Jul. 16, 1992, Ser. No. 913,661

Claims priority, application Japan, Jul. 16, 1991, 3-199791

Int. Cl.[5] G02F *2/00*

U.S. Cl. 359—325 **5 Claims**



1. An optical demodulator for demodulating a modulated optical signal wave to obtain a signal wave, said optical demodulator comprising:

a semiconductor diode responsive to light and microwave-submillimeter waves;

a waveguide circuit for applying a local oscillated signal to said semiconductor diode; and

means for fetching a signal wave produced by said semiconductor diode by a heterodyne system,

wherein said semiconductor diode produces the signal wave in response to simultaneous

irradiation of said semiconductor diode with a modulated optical signal wave having a microwave-submillimeter subcarrier wave modulated by the signal wave, and

application, via said waveguide circuit, of a local oscil-

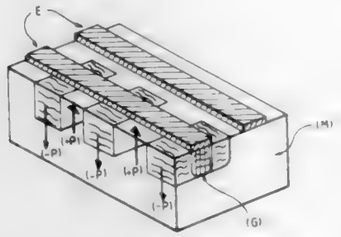
lated signal having the same frequency as the subcarrier wave to said semiconductor diode.

5,349,466

FREQUENCY DOUBLER INCLUDING AN ELECTRICALLY CONTROLLED OPTICAL INDEX NETWORK

Dominique Delacourt, Paris; Michel Papuchon, Villebon Palaiseau; Eric Lallier, Levallois, and Florence Armani, Orsay, all of France, assignors to Thomson-CSF, Puteaux, France

Continuation of Ser. No. 988,762, Dec. 10, 1992, abandoned. This application Jan. 6, 1994, Ser. No. 178,359
Claims priority, application France, Dec. 10, 1991, 91 15277
Int. Cl.[5] G02F *1/35*
U.S. Cl. 359—326 **27 Claims**



19. A frequency doubler comprising:
a material having a locally reversed ferroelectric polarization to create alternating (+P) domains and (−P) domains;
a first continuous electrode formed on a first face of the material above the alternating (+P) domains and (−P) domains; and
a second electrode formed on the first face of the material, the second electrode being parallel to the first continuous electrode.

5,349,467

THORIUM-FREE COATING FOR GERMANIUM IR WINDOW

Frank C. Sulzbach, Dallas, and Valeria J. Epling, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 27, 1992, Ser. No. 966,920
Int. Cl.[5] G02B *5/28, 1/10, 1/12*
U.S. Cl. 359—359 **10 Claims**

1. A method of forming a magnesium fluoride coating comprising the steps of:
(a) disposing a substrate in a chamber;
(b) ion beam cleaning the surface of said substrate at ion energies of from about 100 eV to about 2000 eV; and
(c) ion aided depositing a layer of magnesium fluoride on said cleaned substrate while bombarding said substrate with inert gas ions having an energy level of from about 1 eV to about 200 eV,

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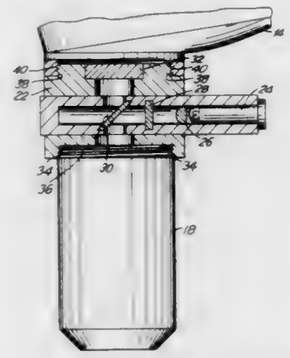
5,349,468

ADAPTER FOR MICROSCOPE

Richard R. Rathbone, Hamden, and Stephen C. Wardlaw, Old Saybrook, both of Conn., assignors to Yale University, New Haven, Conn.

Division of Ser. No. 410,163, Sep. 20, 1989, Pat. No. 5,198,927. This application Dec. 4, 1992, Ser. No. 986,864
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] G02B *21/06*
U.S. Cl. 359—390 **16 Claims**

1. An adapter to be coupled to a conventional, non-fluorescent microscope having at least one objective lens and a turret for supporting the at least one objective lens, the adapter comprising:
a body member having a first coupling means at one end thereof for detachably coupling directly to the objective lens of the microscope and having a second coupling means at another end thereof for detachably coupling directly to the turret, such that said body member is interposed directly between the objective lens and the turret, said body member having an axial light path running longitudinally therethrough and having a radial light path which intersects the axial light path, the longitudinal, axial light path passing through the body member being in alignment with a light path passing through the objective lens and passing through the turret when the adapter is coupled to the microscope;
a source of light disposed in the radial light path;



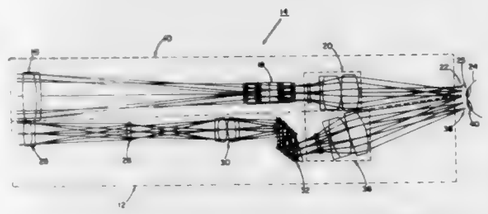
a first filtering means disposed in the radial light path, downstream of the source of light, for passing light at wavelengths which excite fluorescence in a specimen to be examined in a microscope and for blocking light at wavelengths where visible fluorescence emission occurs in the specimen;
a reflecting means disposed at the intersection of the axial light path and radial light path, the reflecting means passing light through the axial light path and reflecting light at excitation wavelengths, but not reflecting light at emission wavelengths; and
a second filtering means disposed in the axial light path and disposed above the reflecting means adjacent the second coupling means, the second filtering means blocking light at excitation wavelengths which pass through the reflecting means.

5,349,469

OPTICAL MODE SWITCHING SYSTEM

Melvin Francis, Midland, Canada, assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 22, 1992, Ser. No. 994,578
Int. Cl.[5] G02B *27/00*
U.S. Cl. 359—420 **11 Claims**



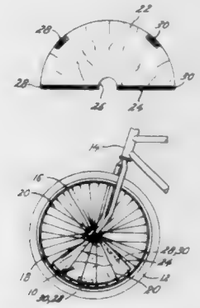
1. An optical mode switching system for providing a plurality of closely spaced exit pupils to facilitate separate views of each exit pupil by a viewer's eye, comprising:
a first optic system for providing a first image at a first position adjacent a first exit pupil; and
N additional optic systems for providing N separate images at N corresponding additional exit pupils closely spaced to said first exit pupil, where N is an integer greater than zero, each of said N optic systems having a line-of-sight substantially parallel to a line-of-sight of said first optic system, whereby each of the N images is viewable by the viewer's eye with little eye movement and essentially no movement of the viewer's head.

5,349,470

SPOKED WHEEL REFLECTIVE VEST FOR BICYCLES AND THE LIKE

Keith L. T. Alexander, 2503 Packard Rd. "Q", Anne Arbor, Mich. 48104

Filed Oct. 27, 1993, Ser. No. 143,935
Int. Cl.[5] G02B *5/12*
U.S. Cl. 359—523 **8 Claims**



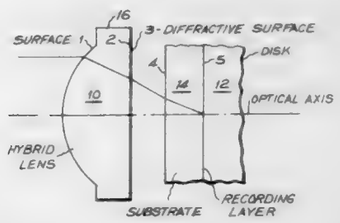
1. A safety reflective device for use with a spoked wheel assembly having spokes axially spaced around a hub and extending radially to a rim and tire assembly comprising:
a flexible semicircular base member having a highly light reflective side, said light reflective side being the outside, the inside of said base member carrying fastening means disposed at outer edges such that when the base member is folded upon itself it forms a pie slice shaped covering located on the spoked wheel positioned between the hub and rim and said fastening means securing the base member together in about one quadrant-like area of said spokes.

5,349,471

HYBRID REFRACTIVE/DIFFRACTIVE ACHROMATIC LENS FOR OPTICAL DATA STORAGE SYSTEMS

G. Michael Morris, Fairport; David Kay, Rochester, both of; Dale Buralli, both of Rochester, all of N.Y., and David Kubalak, Somerville, Mass., assignors to The University of Rochester, Rochester, N.Y.

Filed Feb. 16, 1993, Ser. No. 17,712
Int. Cl.[5] G02B *3/08, 5/18, 27/44*
U.S. Cl. 359—565 **6 Claims**



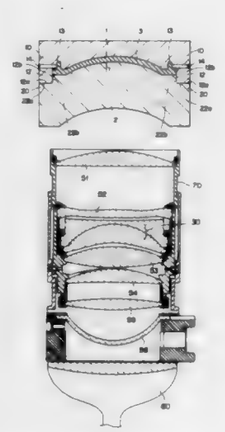
1. A hybrid refractive and diffractive achromat lens for optical data storage systems using a laser beam having a wavelength which can vary over a 20 nm wavelength range, which lens comprises a body of optically transmissive material having an index of refraction at a wavelength approximately in the center of said range of at least 1.65, said body having first and second surfaces on opposite sides thereof, said first and second surfaces being intersected successively by an optical axis of said lens which extends in a longitudinal direction, at least one of said surfaces being curved to provide a converging refractive element having power and longitudinal chromatic aberration, said lens having a converging diffractive element having power which substantially achromatizes said lens for said longitudinal chromatic aberration of said refractive element over said 20 nm range; and wherein said lens has an Abbe υ number, υ_{ref}, of less than 50, and said diffractive element has an Abbe υ-number, υ_{diff} which is negative.

5,349,472

COUPLED LENS ASSEMBLY

Takashi Terai, and Takayuki Yoshioka, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 9, 1992, Ser. No. 911,672
Claims priority, application Japan, Jul. 12, 1991, 3-172125; Jul. 12, 1991, 3-172126
Int. Cl.[5] G02B *3/00, 9/00*
U.S. Cl. 359—649 **12 Claims**



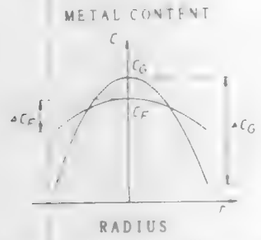
1. A coupled lens assembly comprising:
a plurality of lens units coupled, in which each of said lens units has a central lens portion and a peripheral portion surrounding the central lens portion, one of adjoining lens units has a flanged portion formed to a peripheral portion and the other one of the adjoining lens units has an engaging portion formed to the peripheral portion to be engaged with the flanged portion when both the lens units are coupled with optical axes of both the adjoining lens units being aligned;
an intermediate layer disposed between the adjoining lens units formed of a bonding agent; and
at least one of a groove and a discharge passage formed to at least one of the peripheral portions of the adjoining lens units for receiving any excessive bonding agent when the bonding agent is excessively applied.

5,349,473

GRADIENT INDEX OPTICAL ELEMENT

Yuko Kurasawa, Hachiohji; Satoshi Noda, Akishima, and Morinao Fukuoka, Hachiohji, all of Japan, assignors to Olympus Optical Company Limited, Japan

Filed Oct. 28, 1992, Ser. No. 967,839
Claims priority, application Japan, Oct. 28, 1991, 3-308510
Int. Cl.[5] G02B 3/00
U.S. Cl. 359—654 22 Claims



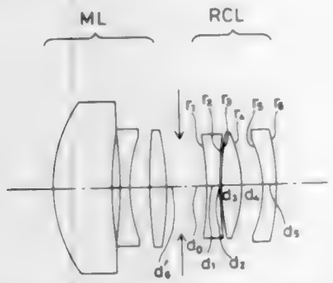
12. A gradient index optical element, comprising: at least one first metal dopant selected from the group consisting of La, Y, Ga, In, Ge, Sn, Zn, Zr, Ba, Ca, As, Sr, Gd and Be, the first metal dopant being distributed at a concentration gradient in a medium, the concentration gradient of the first metal dopant defining a slope having a direction; and at least one second metal dopant different from the first metal dopant and selected from the group consisting of Bi, Sb, Nb, Ti, Ta, Pb, Tl, Zr, In, Sn, Y, Ba, Ca and Sr, the second metal dopant being distributed at a concentration gradient in the medium, the concentration gradient of the second metal dopant defining a slope smaller than the slope of the concentration gradient of the first metal dopant, and the slope of the concentration gradient of the second metal dopant being in the same direction as the slope of the concentration gradient of the first metal dopant.

5,349,474

REAR CONVERTER LENS

Seiji Shimizu, and Masaru Takashima, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 12, 1993, Ser. No. 3,428
Claims priority, application Japan, Jan. 13, 1992, 4-003958
Int. Cl.[5] G02B 15/08
U.S. Cl. 359—675 8 Claims



7. A rear converter lens adapted to be attached on the image side of a master lens system to increase its focal length, the rear converter lens consisting of a first lens of negative power, a second lens of positive power and a third lens of negative power

wherein said rear converter lens has a negative power as a whole; and

when attached on the image side of said master lens system, allows said first lens to be proximately to said master lens system, and said rear converter lens conforms to the following conditions:

$$0.3<f_1/f_3<1$$

$$0.23<d_4/\Sigma d<0.6$$

$$0.9<|f_1/f_2|<1.7$$

$$0.3<|f_2/f_3|<0.7$$

$$0.3<|r_1/F'|<1.5$$

$$0.2<|r_6/F'|<0.7$$

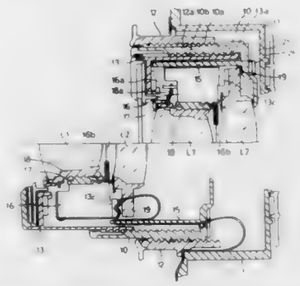
where f_1, f_2 and f_3 are the focal lengths of the first, second and third lenses, respectively, d_4 is the axial air space between the second and third lens, and Σd is the axial space from the first to sixth surface of the rear converter lens, r_1, and r_6 are the radii of curvature of the first and sixth lens surfaces, respectively, as viewed in order form the object side of the rear converter lens, and F' is the focal length of the overall rear converter lens system.

5,349,475

POSITION ADJUSTING APPARATUS OF ZOOM LENS BARREL

Hiroshi Nomura; Norio Sato, and Nobuaki Aoki, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1993, Ser. No. 46,812
Claims priority, application Japan, Apr. 17, 1992, 4-098261
Int. Cl.[5] G02B 15/14
U.S. Cl. 359—694 15 Claims



1. An adjusting apparatus of a zoom lens barrel comprising;

a zoom mechanism in which the zooming is carried out by rotation of a rotatable cam ring;

a code plate provided on a linearly movable member which is linearly moved in an optical axis direction by the zoom mechanism;

a brush holder having brushes which come into contact with the code plate to detect a focal length thereof;

a brush position adjusting mechanism which adjusts position of the brush holder in the optical axis direction; and,

a confirmation means for confirming that the rotatable cam ring, whose reference angular position is varied in accordance with the adjustment of the brush holder by the brush position adjusting mechanism is located at a predetermined angular position.

5,349,476

CONTROL FOR OPTICAL SYSTEM HAVING MULTIPLE FOCAL LENGTHS

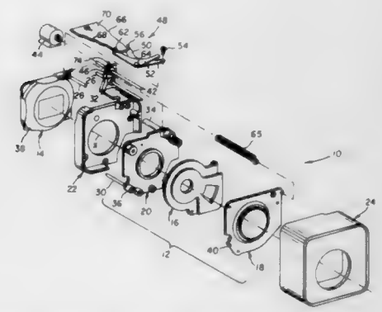
William L. Burnham, Leroy; Ralph M. Lyon, Rochester, and Michael J. Poccia, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 1, 1993, Ser. No. 24,132
Int. Cl.[5] G02B 15/14, 7/02, 27/64
U.S. Cl. 359—699 10 Claims

1. An optical system including a plurality of optical elements

disposed along an optical axis, and means for moving said optical elements along the optical axis relative to each other, thereby to vary the focal length of said optical system, characterized in that:

said moving means includes compensating means for maintaining the focal length constant upon lateral displacement of at least one of said optical elements in a direction substantially perpendicular to said optical axis, wherein said optical elements include first and second lens groups moveable along said optical axis, and first and second



linkage means coupled, respectively, to said first and second lens groups for displacing said second lens group relative to said first lens group in response to movement of said first lens group along said optical axis; and,

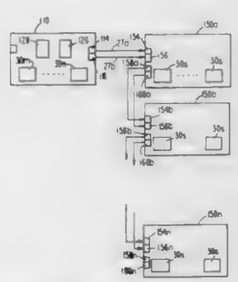
wherein said compensating means includes means for causing said first and second linkage means to move proportionally in opposite directions relative to each other to maintain the focal length of said optical system constant when at least one of said lens groups is displaced laterally in a direction substantially perpendicular to said optical axis.

5,349,477

SYSTEM FOR RECORDING FROM LIVE SOURCE OR DUBBING TO MULTIPLE TAPES

Kenji Shuto, Tokyo, Japan, assignor to Mothers System U.S.A., Inc., New York, N.Y.

Filed Jun. 25, 1992, Ser. No. 904,077
Int. Cl.[5] G11B 5/86
U.S. Cl. 360—15 15 Claims



1. A system for copying program signals from a master tape to a slave tape having a nonrecordable tape leader, comprising:

master and slave drive units for master and slave tapes;

a first head for reproducing program signals prerecorded on said master tape;

a second head for recording program signals on said slave tape; and

control means coupled to a control panel and said master and slave tape drive units and responsive to a panel selection of a dubbing mode of operation for energizing said master and slave drive units and controlling said first and second heads to copy program signals from said master tape to said slave tapes;

wherein said control means includes a delay circuit coupled to said master drive unit and operative during said dubbing mode to delay energizing only said master drive unit following a start-up of said system for a duration sufficient to enable the nonrecordable tape leader of said slave tape to bypass said second head;

further comprising multiple slave drive units operable simultaneously by said control means to make multiple copies of said master tape program signals; wherein

(a) said master and slave drive units are incorporated in cassette decks, including a microphone input;

(b) said control means is responsive to a panel selection of a live performance recording mode of operation for recording live performance signals received through said microphone input onto cassettes in said multiple decks simultaneously;

(c) said control panel includes control switches to commonly control multiple slave decks;

(d) said control panel further includes means for generating a control signal in response to operation of a control switch;

(e) each slave deck includes a control signal conditioning circuit for amplifying and removing spurious components from said control signal; and

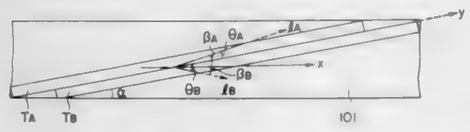
(f) said master deck includes input terminals for receiving control signals from said control panel and output terminals for sending control signals to a slave deck, and each slave deck includes input terminals for receiving control signals from said master deck or another slave deck and output terminals for sending control signals to a slave deck.

5,349,478

MAGNETIC RECORDING AND/OR REPRODUCING METHOD HAVING A DOUBLE AZIMUTH HEAD ARRANGEMENT

Kenichi Sato, and Kazunobu Chiba, both of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 16, 1993, Ser. No. 32,015
Claims priority, application Japan, Mar. 31, 1992, 4-105368
Int. Cl.[5] G11B 5/02
U.S. Cl. 360—55 7 Claims



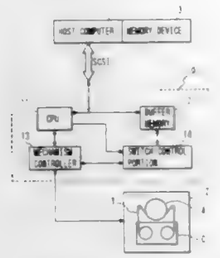
5. Apparatus for magnetically recording and/or reproducing signals on a magnetic tape comprising: a double azimuth head arrangement containing two heads for scanning oblique tracks across said tape, the magnetic tape having a coating of magnetic particles substantially aligned in a longitudinal direction of said tape and the oblique tracks being inclined at an angle a with respect to said longitudinal direction, one of said two heads being formed with an azimuth angle θ_A and the other of said two heads being formed with an azimuth angle θ_B, wherein $|\theta_A| \neq |\theta_B|$, such that $|\beta_A| - |\theta_B| \leqq 10°$, where $\beta_A = |\alpha + |\theta_A||$ and $\beta_B = |\alpha - |\theta_B||$.

5,349,479

DATA TRANSFER METHOD OF MAGNETIC RECORDING/REPRODUCING APPARATUS

Noriji Arimura, and Tatsumaro Yamashita, both of Shibata, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 839,546, Feb. 19, 1992, abandoned.
This application Mar. 16, 1994, Ser. No. 210,103
Claims priority, application Japan, Feb. 20, 1991, 3-077383
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—73.06 3 Claims



1. A method of transferring data to a magnetic tape recording/reproducing apparatus, the apparatus including a buffer memory for storing data and a read/write head mounted on a rotating drum for writing data from the buffer memory onto the magnetic tape, the read/write head being rotated by the rotating drum at a head rotating speed, the magnetic tape being driven over the rotating drum at a tape driving speed, the method comprising the steps of:

determining an amount of data stored in the buffer memory;

determining a rate at which the amount of data stored in the buffer is increasing or decreasing; and

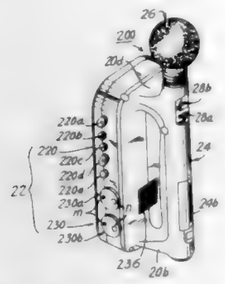
changing a rate at which data is written on the magnetic tape by selecting between a plurality of predetermined head rotating speeds and tape driving speeds in response to the determined amount of data and the determined rate of storage.

5,349,480

PORTABLE AUDIO APPARATUS

Hideo Takao, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 643,189, Jan. 18, 1991, Pat. No. 5,225,944, which is a continuation-in-part of Ser. No. 827,544, Jan. 29, 1992, abandoned, which is a continuation of Ser. No. 455,655, Nov. 29, 1989, abandoned. This application Mar. 4, 1993, Ser. No. 26,396
Claims priority, application Japan, Mar. 31, 1988, 63-44135; Mar. 31, 1988, 53-44136; Jun. 10, 1988, 63-77497; Oct. 26, 1989, 2-290230; Jan. 22, 1990, 2-4405[U]; Feb. 7, 1990, 2-11321[U]
The portion of the term of this patent subsequent to May 4, 1993, has been disclaimed.
Int. Cl.[5] G11B *33/12;* H04B *1/20, 1/00;* H04R *27/00*
U.S. Cl. 360—74.1 13 Claims



1. A portable sound reproducing apparatus for outputting information from a recording medium having information recording thereon and an external voice sound suitable for use as a karaoke device, comprising:

a housing having a first side, a second side opposite said first side, a first end between said first and second sides, and a second end opposite said first end;

accommodating means positioned on said first side of said housing for storing said recording medium;

sound signal reproduction means positioned and arranged in said housing for reproducing said information recorded on said recording medium as a sound signal;

microphone means essentially coupled to the first end of said housing for receiving said external voice sound;

speaker means positioned on first side of said housing for amplifying and outputting said sound signals from said sound signal reproduction means and said voice sound from said microphone means;

a handle mounted on said second side of said housing, said handle being adapted to support the housing as a unitary structure for karaoke, said housing supporting said accommodating means, said sound signal reproduction means, said microphone means and said speaker means to form said unitary structure supportable solely by the handle; and

control means mounted on a third side of said housing between said first and second sides for controlling said sound signal reproduction means;

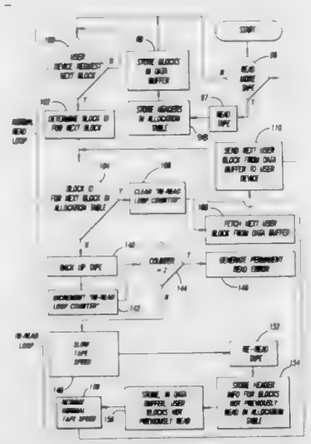
whereby when the entire apparatus is supported solely by the handle, the microphone means can face essentially upwardly toward the head of a user and the speaker means can face essentially away from the user, the control means being positioned for easy manipulation during operation.

5,349,481

APPARATUS AND METHOD FOR DISTORTED TRACK DATA RECOVERY BY REWINDING AND RE-READING THE TAPE AT A SLOWER THAN NOMINAL SPEED

Gerald C. Kauffman, Longmont; Timothy C. Hughes; Don Heins, both of Boulder; Patricia Slovacek, Louisville, and Fadi Abou-Jaoude, Westminster, all of Colo., assignors to Exabyte Corporation, Boulder, Colo.

Filed Jun. 10, 1993, Ser. No. 74,671
Int. Cl.[5] G11B *15/48, 5/09, 15/467, 5/584*
U.S. Cl. 360—74.4 20 Claims



7. Apparatus for reading information recorded on a storage medium in helical tracks, with each track comprising a plurality of blocks of data with each block having unique block-identifying information, said apparatus comprising:

a transport for selectively transporting the storage medium in forward and reverse directions of medium travel;

a rotatable drum having a portion of a peripheral surface thereof contiguous with the storage medium as the storage medium is transported therepast by the transport;

a reading head mounted on the drum for traversing original azimuthal paths across the storage medium and for reading blocks including the block-identifying information recorded along at least a portion of each of the original azimuthal paths;

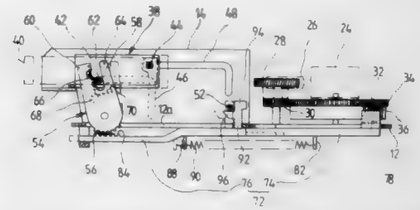
a controller which uses the block-identifying information to determine whether any blocks expected to be read during the traversal of the original azimuthal paths were not read, and which generates a plurality of control signals in accordance with the determination for application to the transport, a first of the control signals causing the transport to transport the storage medium in the reverse direction of medium travel, a second of the control signals causing the transport to transport the storage medium at a re-read speed which is slower than a nominal reading speed, whereby, as the storage medium is transported at the re-read speed, the read head traverses modified azimuthal paths in an attempt to read a block which should have been previously read but was not previously read, the modified azimuthal paths being closer together in the direction of medium travel than the original azimuthal paths.

5,349,482

CASSETTE LOADING DEVICE FOR USE WITH A VIDEO CASSETTE RECORDER

Jong S. Park, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 19, 1993, Ser. No. 49,119
Claims priority, application Rep. of Korea, Apr. 21, 1992, 92-6699
Int. Cl.[5] G11B *15/675, 5/008*
U.S. Cl. 360—96.5 5 Claims



1. A cassette loading device for use with a video cassette recorder of the type including a main chassis composed of a generally rectangular bottom plate and a pair- of spaced parallel side walls each extending upward from lateral edges of the bottom plate, said device comprising:

a cassette holder movably mounted between the side walls for transporting a tape cassette from a cassette reception position to a loading commencement position and, then, to a loading completion position;

a photoelectric sensor including a light emitter located at a center of the bottom plate to project a light beam along a given light beam path and a pair of light receivers positioned at the side walls to receive the projected light beam, said photoelectric sensor designed to generate an electrical driving signal each time when the cassette holder is pushed into the loading commencement position;

a swingable loading arm pivotably attached at its proximal end to at least one of the side walls for pivotal movement between a first, a second and a third angular positions, the cassette holder being located at the cassette reception position, the loading commencement position, and the loading completion position respectively when the loading arm is located at said first, second, and third angular positions, said loading arm carrying the cassette holder at its distal end to allow the cassette holder to move between the loading commencement position and the loading completion position as it is being subjected to the pivotal movement;

an electric loading motor responsive to the electrical driving signal from the photoelectric sensor for causing the loading arm to swing from the second angular position to the third angular position so that the cassette holder can move from the loading commencement position to the loading completion position;

a linkage lever slidably mounted on the bottom plate for translating a rotary movement of the loading motor into a pivotal swinging movement of the loading arm, wherein said linkage lever including a first elongate segment operatively connected to the electric motor and a second elongate segment operatively connected to the loading arm, said second segment extendibly coupled to the first segment in an end-to-end relationship therewith and normally biased toward the first segment by a tension spring; and

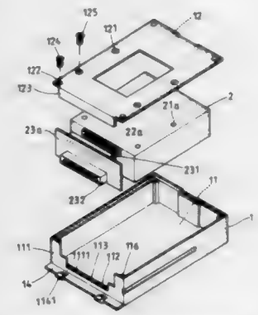
a light beam interrupter piece carried by the second segment, said interrupter piece so shaped and arranged that, when the cassette holder is in the loading commencement position, it can interrupt the light beam to thereby enable the photoelectric sensor to generate the electrical driving signal.

5,349,483

SLIDING HARD DISK DRIVE MOUNTING HARDWARE

I-Shou Tsai, 2F-1, No. 5, Lane 678, Sec. 4, PA TEH Rd., Taipei, Taiwan

Filed Oct. 8, 1992, Ser. No. 957,831
The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.
Int. Cl.[5] G11B *5/012, 33/02;* H05K *7/10*
U.S. Cl. 360—97.01 1 Claim



1. A sliding hard disk mounting hardware comprising:

a hard disk drive having a plurality of screw holes spaced on a top surface thereof, an input/output port attached with an interference elimination circuit board assembly, said interference elimination circuit having a mainframe connector on the outside;

a sliding box consisted of a flat, rectangular box body covered with a cover to hold said hard disk drive, said box body having a trapezoidal opening on a vertical front wall thereof, a channel behind said trapezoidal opening, a horizontal guide board extended outwards from said vertical front wall, two tenons spaced on said horizontal guide board, two longitudinal grooves on two opposite vertical side walls thereof on the outside, and four screw holes on inside four corners thereof, said cover comprising a first set of countersunk holes respectively connected to the four screw holes on said box body by screws, a second set of countersunk holes respectively connected to the screw holes on said hard disk drive by screws, and a downward plate adjacent to a front end thereof stopped against said interference elimination circuit board above said mainframe connector;

a computer mainframe having a recessed chamber into

which said sliding box fits, two side rails inside said recessed chamber on two opposite sides respectively fitted into said two longitudinal grooves on said box body, two spaced mortises into which said two tenons on said box body fit respectively, an interface circuit board having a connector on one side toward said recessed chamber for connecting said mainframe connector of said interference elimination circuit board of said hard disk drive to a master board through a flat cable, a LED indicator on a peripheral wall thereof electrically connected to said master board; and

wherein said LED indicator is turned on by means of the control of a control card as said hard disk drive is installed to produce a signal of low potential, or turned off as said hard disk drive is not installed.

5,349,484

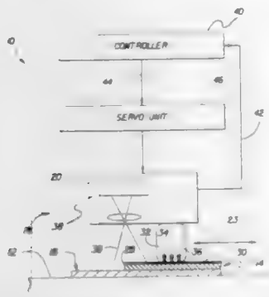
LIGHT PATTERN DETECTION FOR FILM EDGE FOLLOWING

Steven F. Koehler, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1992, Ser. No. 995,434

Int. Cl.[5] **G11B** *5/584, 7/00;* **G03B** *17/24;* **G01N** *21/86*

U.S. Cl. 360—77.12 **10 Claims**



1. A method of positioning a magnetic read head of a photographic apparatus above a photographic filmstrip, which is supported on an apparatus top surface and has at least one data track recorded in magnetic recording material of the filmstrip, as relative movement occurs between the filmstrip and the magnetic read head, the method comprising the steps of:

placing a predetermined optical pattern on the apparatus top surface beneath the photographic filmstrip such that a portion of the optical pattern is visible beyond one edge of the filmstrip;

locating the magnetic head above the data track in the photographic filmstrip;

optically detecting a field of view, relative to the magnetic head, which encompasses the filmstrip edge and the portion of the optical pattern that is visible beyond the filmstrip edge;

moving the magnetic read head such that the proportion of the detected optical field of view filled with the filmstrip to the proportion of the detected optical field of view filled with the optical pattern is substantially constant.

5,349,485

MAGNETIC TAPE LOADING MECHANISM FOR A MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS

Wen-Don Lin; Chyi-Fwu Chiou; Chih-Chung Chu; Pan Ch'un-Hsiu, and Ming-Che Chiu, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

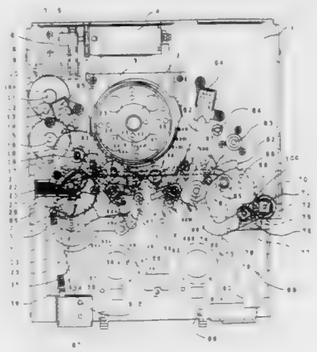
Filed Sep. 30, 1992, Ser. No. 954,866

Int. Cl.[5] **G11B** *5/027, 5/008*

U.S. Cl. 360—85 **8 Claims**

7. A magnetic tape loading mechanism for loading a tape contained in a tape cassette inside a magnetic recording and/or reproducing apparatus, said loading mechanism comprising a base, a magnetic head having a magnetic drum which is rotatably mounted on said base, a guide slot formed on said base, a pair of first and second mounting blocks each being movable along said guide slot, an inclination post provided on said guide slot which enables said tape to move at an arcuate rotational angle along said inclination post and prevents said tape from twisting, a guide roller for guiding and changing a direction of said tape and adjusting and limiting the vibration of said tape, a moving post for leading said tape out of said tape cassette and for guiding said tape, a pinch roller for controlling movement of said tape, a tension post for adjusting tension of said tape, a reversible driving motor for providing a driving force, a first gear train comprising a plurality of transmission gears for transmitting the driving force from said driving motor and for reducing the rotational speed derived from said driving motor, and a capstan shaft for transmitting the driving force to said tape.

wherein the improvement being characterized in that said loading mechanism further comprising a second gear train connected to said first gear train which causes a plurality of actuated members to be actuated and disposed in appropriate predetermined positions in said apparatus in accordance with various work modes of said loading mechanism, said actuated members comprising said pair of mounting blocks, said pinch roller, said moving post, and said tension post; and said second gear train comprising:



a first actuating gear meshed with a first transmission gear of said first gear train and operatively connected to said first mounting block;

a second actuating gear being identical in dimension to said first actuating gear and meshed therewith, said second actuating gear being operatively connected to said second mounting block;

a third actuating gear being adapted to receive a rotational force from said second actuating gear and operatively connected to said pinch roller;

a fourth actuating gear being adapted to receive a rotational force from said third actuating gear and operatively connected to said moving post; and

a fifth actuating gear being adapted to receive a rotational force from a second transmission gear of said first gear train and operatively connected to said tension post;

wherein said work modes of said cassette comprising an unloading mode, a search and stop mode, and a play mode, and

in said unloading mode, said inclination posts, said guide rollers, said pinch rollers, said moving post and said tension post are all disposed within said tape and extending between a supply wheel and a take-up wheel of said cassette,

in said search and stop mode, said actuated members are actuated by said second train to move to respective predetermined positions to cooperatively cause said tape to be

led out of said tape cassette, wound around said magnetic drum, and extended along a predetermined path between said supply and take-up wheels, and

in said play mode, said pinch roller is further moved to press said tape against said capstan shaft thereby allowing said tape to be driven by said capstan shaft, and said tension post is also moved to be in contact with said tape for controlling a tension of said tape,

said loading mechanism further comprising a first and a second actuating mechanisms operatively and respectively connected between said first actuating gear and said first mounting block, and between said second actuating gear and said second mounting block, said first and second actuating gears are identical to and meshed with each other for allowing said first and second mounting blocks to be synchronously moved, each of said pair of mounting blocks being movable along a guide slot for loading and unloading said magnetic tape toward and away from said rotatable drum, and each of said first and second actuating mechanisms includes a torsion spring for applying a rated spring force on said respective mounting blocks to allow said mounting blocks to be positively engaged with respective positioning stoppers located at one extreme end of said guide slot and to reliably bring said magnetic tape into and out of a sliding contact with said magnetic drum for recording and reproducing information with detail signals when said apparatus is in said play mode;

a third and a fourth actuating mechanism operatively and respectively connected between said third and actuating gear and said pinch roller, and between said fourth actuating gear and said moving post;

said third actuating mechanism comprising a pair of sector gears meshed with each other and interposed between said second and third actuating gears to also mesh respectively therewith, said third actuating mechanism further comprising an actuating arm supporting said pinch roller and adapted to be driven by said third actuating gear to enable said pinch roller to be engaged with said adapted to be driven by said third actuating gear to enable said pinch roller to be engaged with said capstan shaft;

each of said third and fourth actuating mechanisms further comprising a torsion spring, which is arranged so as to act as a power transmitting medium and to apply a rated spring force on said pinch roller and said moving post to keep said pinch roller and said moving post at respectively predetermined positions when said apparatus is in said play mode; and

a fifth actuating mechanism operatively connected between said fifth actuating gear and said tension post, said fifth actuating mechanism comprising a turn disc and an actuating arm, both of which being fixedly mounted on a pivot shaft for mounting said fifth actuating gear, said actuating arm having first and second ends and said actuating arm being connected to said pivot shaft at said first end thereof, said turn disc containing a stopper pin which prevents said actuating arm from turning even when a spring force is constantly applied on said actuating arm, wherein when said turn disc is synchronously moved by said fifth actuating gear, said actuating arm is gradually released as it is rotated along with said turn disc, and said tension post is moved to touch said tape to control an optimum tension on said tape, said actuating arm is also biased by a extension spring to turn in one direction to allow said tension post provided on said second end thereof to be brought into contact with said tape when said fifth actuating gear is driven to cause said turn disc to rotate to a position for disengaging said stopper pin provided on said disc from said actuating arm during said play mode.

5,349,486

MAGNETIC DISK STORAGE APPARATUS HAVING A VIBRATION PROOF STRUCTURE

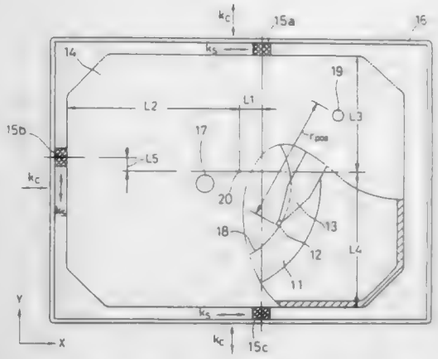
Masaharu Sugimoto, Kawasaki; Keiji Aruga, Hiratsuka; Tomoyoshi Yamada, Yokohama; Takahiro Imamura, Fujisawa, and Yoshifumi Mizoshita, Tama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 584,149, Sep. 18, 1990, abandoned. This application Sep. 29, 1992, Ser. No. 954,951

Claims priority, application Japan, Sep. 18, 1989, 1-240198; Oct. 19, 1989, 1-270450; Feb. 20, 1990, 2-037196; Mar. 9, 1990, 2-056422

Int. Cl.[5] **G11B** *5/012, 33/14;* **F16M** *13/00*

U.S. Cl. 360—97.01 **25 Claims**



1. A magnetic disk storage apparatus, comprising:

an enclosure housing plural components of said magnetic disk storage apparatus and having a center of gravity, said plural components comprising:

at least one magnetic disk having a recording surface and plural tracks at corresponding positions on the recording surface,

rotating drive means for rotating said at least one magnetic disk,

a magnetic head, and

a rotary actuator for positioning said magnetic head to a designated track on the recording surface of said at least one magnetic disk;

a frame surrounding and holding said enclosure;

a plurality of (i) vibration proof supporting members provided between said frame and said enclosure so as to balance a linear moment around the center of gravity of said enclosure resultant from a translational vibration input to the frame in a plane perpendicular to the axis of rotation of said at least one magnetic disk, and thereby to prevent said translational vibration input from producing rotational displacement of said enclosure relative to an initial, rest position thereof; and

said enclosure and said vibration proof supporting members, in the initial, rest position of said enclosure, are related in an X-Y coordinate system wherein, when:

the center of gravity of the enclosure is located at the origin (X=0, Y=0) of the coordinate system,

$i \geqq 3$,

Xi, Yi is the position of the ith vibration proof supporting member in the X-Y coordinate system and, thus, relative to the origin of the X-Y coordinate system, and

K_{xi} and K_{yi} are the spring constants of the ith vibration proof supporting member, respectively in the X-direction and Y-direction of the X-Y coordinate system, then:

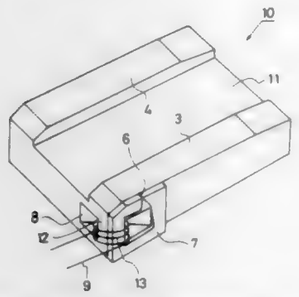
$$\rho K_{xi} Y_i = 0, \ \Sigma K_{yi} X_i = 0.$$

5,349,487

FLOATING MAGNETIC HEAD WITH A HEAD CORE-REINFORCING PORTION

Motoji Egawa, and Akio Takayama, both of Shizuoka, Japan, assignors to Minebea Co., Ltd., Nagano, Japan

Filed Apr. 26, 1993, Ser. No. 51,550
Claims priority, application Japan, Aug. 28, 1992, 4-254168
Int. Cl.[5] G11B *5/60*
U.S. Cl. 360—103 **4 Claims**



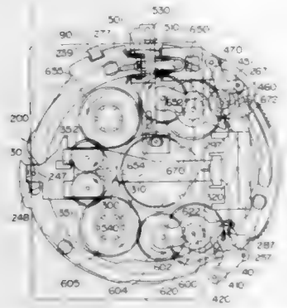
1. A floating magnetic head, comprising:
a slider of a nonmagnetic material having rails on a surface opposite a magnetic recording medium to produce a floating force, the slider having a recess located on an adjacent slider surface with at least one reinforcing portion spanning the recess; and
a head core having first and second opposed surfaces and at least one winding portion, the first opposed surface being bonded on the adjacent surface of the slider abutting the recess and the reinforcing portion, wherein the at least one winding portion is bonded to the at least one reinforcing portion for receiving the coil winding of the head core, the second opposed surface being exposed along the slider surface.

5,349,488

APPARATUS FOR SELECTING AN OPERATING MODE OF A RECORDING AND REPRODUCING SYSTEM FOR A CASSETTE TAPE RECORDER

Masanori Shibata; Shigeo Umetsu; Shinichi Suzuki; Michihiro Sato; Kazuhiro Saito, and Hiroyuki Akama, all of Yamagata, Japan, assignors to Pioneer Electronic Corporation, Tokyo and Tohoku Pioneer Electronic Corporation, Tendo, both of Japan

Filed Jul. 7, 1993, Ser. No. 89,297
Claims priority, application Japan, Jul. 10, 1992, 4-207596
Int. Cl.[5] G11B *21/22*
U.S. Cl. 360—105 **4 Claims**



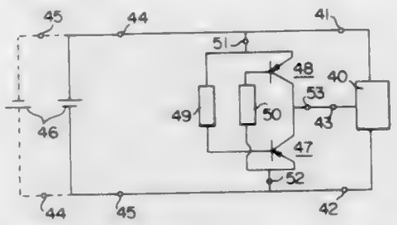
1. An apparatus for selecting an operating mode of a cassette tape recorder comprising:
a base plate;
a magnetic head provided on a supporting plate which is movably mounted on the base plate;
a normal reel gear and a reverse reel gear rotatably mounted on the base plate, respectively;
a normal pinch device mounts on the base plate and comprising a normal capstan, a normal pinch roller provided on a normal swing lever so as to be engaged with the capstan, and a normal idler gear provided to be engaged with the normal reel gear;
a reverse pinch device mounted on the base plate and comprising a reverse capstan, a reverse pinch roller provided on a reverse swing lever so as to be engaged with the reverse capstan, and a reverse idler gear provided to be engaged with the reverse reel gear;
a power transmitting device for transmitting a driving power from a motor to the normal capstan and reverse capstan;
an idler gear rotatably mounted on a movable plate movably mounted on the base plate; and
a mode control ring rotatably mounted on the base plate, the mode control ring having:
a head shifting cam formed on an outer peripheral surface for shifting the support plate to move the magnetic head between a head operative position against a tape and a head inoperative position away from the tape;
a normal pinch cam formed as a circumferential groove for shifting the normal swing lever so as to engage the normal pinch roller with the normal capstan;
a reverse pinch cam formed on an outer peripheral surface for shifting the reverse swing lever so as to engage the reverse pinch roller with the reverse capstan;
a normal idler cam formed on an inner peripheral surface for engaging the normal idler gear with the normal reel gear to drive it for normal playing;
a reverse idler cam formed on an inner peripheral surface for engaging the reverse idler gear with the reverse reel gear to drive it for reverse playing; and
a fast-forward cam formed as a circumferential groove for shifting the movable plate so as to selectively engage the idler gear with one of the normal reel gear and the reverse reel gear.

5,349,489

INTEGRATED SEMICONDUCTOR CIRCUIT WITH POLARITY REVERSAL PROTECTION

Johannes B. J. Schelen, Den Haag, Netherlands, assignor to B.V. Optische Industrie "De Oude Delft" , Delft, Netherlands

PCT No. PCT/EP89/01401, § 371 Date Dec. 12, 1991, § 102(e) Date Dec. 12, 1991, PCT Pub. No. WO90/06012, PCT Pub. Date May 31, 1990
PCT Filed Nov. 9, 1989, Ser. No. 573,171
Claims priority, application Netherlands, Nov. 18, 1988, 8802852
Int. Cl.[5] H02H *9/00*
U.S. Cl. 361—77 **5 Claims**



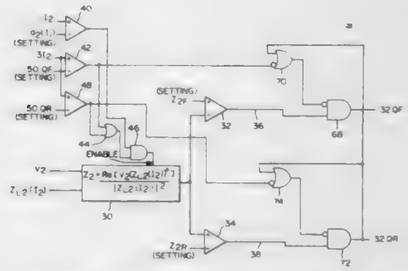
1. A circuit, which comprises:
a supply voltage source having negative and positive connection terminals;
an integrated semiconductor circuit including a number of components surrounded by a region of particular conductivity provided on a substrate, positive and negative connection terminals and a connection terminal to said region of particular conductivity, said positive and negative connection terminals of said integrated semiconductor circuit connected to said positive and negative connection terminals of said supply voltage source; and
a protection circuit having two input terminals and an output terminal, said input terminals connected to said negative and positive connection terminals of said supply voltage source and of said integrated semiconductor circuit, said output terminal connected to said connection terminal of said semiconductor circuit, said protection circuit providing a conduction path between said output terminal and said input terminal having a most extreme potential, said most extreme potential being a most positive potential when said region is of n-type conductivity and a most negative potential when said region is of p-type conductivity.

5,349,490

NEGATIVE SEQUENCE DIRECTIONAL ELEMENT FOR A RELAY USEFUL IN PROTECTING POWER TRANSMISSION LINES

Jeffrey B. Roberts, Moscow, Id., and Edmund O. Schweitzer, III, Pullman, Wash., assignors to Schweitzer Engineering Laboratories, Inc., Pullman, Wash.

Filed Oct. 15, 1992, Ser. No. 961,260
Int. Cl.[5] H02H *3/26*
U.S. Cl. 361—80 **10 Claims**



1. A directional element for use in a relay for protection of power transmission lines, comprising:
means for obtaining negative sequence voltage and current quantities of the power signal present on the power transmission line;
means for calculating from said negative sequence voltage and current quantities a quantity which is representative of the negative sequence impedance of the transmission line; and
means for comparing said calculated quantity against first and second selected threshold quantities to identify direction of a fault relative to the relay, the first threshold quantity being for a forward fault and the second threshold quantity being for a reverse fault.

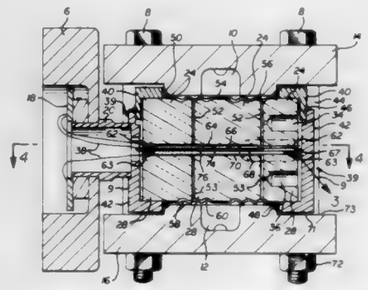
5,349,491

PRE-STRESSED PRESSURE TRANSDUCER AND METHOD OF FORMING SAME

Horst Obermeier, Huellhorst, Fed. Rep. of Germany, assignor to Kavlico Corporation, Moorepark, Calif.

Filed Nov. 6, 1992, Ser. No. 973,088
Int. Cl.[5] H01G *7/00*
U.S. Cl. 361—283.4 **3 Claims**

1. A pre-stressed capacitive pressure transducer capable of withstanding high pressure, said transducer comprising:
a flexible ceramic diaphragm;
a pair of fixed ceramic disks mounted spaced on either side of said diaphragm, said diaphragm and at least one of said fixed disks having conductive plates thereon, so that the capacitance between said conductive plates varies as said diaphragm flexes;
a pair of glass frit seals which secure together and space apart said diaphragm and said two disks;
pressure means for applying pressure to be measured to said diaphragm;
upper and lower cylindrical pre-stress members overlapping one another, and bearing on outer surfaces of said two disks;
a weld which secures said two pre-stress members together under a substantial compressive force, the compressive force thereby being applied to said two disks and said diaphragm;
wherein said pre-stress members protect said transducer against failure of said glass frit seals under high internal pressure;



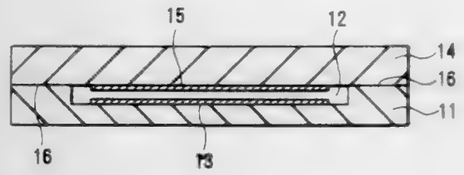
a pair of pressure input flanges which apply pressure to be measured by said transducer;
sealing means for sealing inner surfaces of said input flanges to outer surfaces of said disks;
securing means for securing said pressure input flanges together;
wherein at least one of said pre-stress members includes an outer surface which is positioned and configured to contact an inner surface of one of said pressure input flanges in the event an excessively high external pressure is applied to said transducer, wherein further movement of said disk in contact with said pre-stress member is prevented, thereby limiting the amount of external pressure transmitted to said diaphragm and said glass frit seals.

5,349,492

CAPACITIVE PRESSURE SENSOR

Shigeo Kimura; Yoshiyuki Ishikura; Takashi Masuda; Takaaki Kuroiwa, and Takashi Kihara, all of Kanagawa, Japan, assignors to Yamatake-Honeywell Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 994,713
Claims priority, application Japan, Dec. 26, 1991, 3-356678
Int. Cl.[5] H01G *7/00*
U.S. Cl. 361—283.4 **2 Claims**



1. A capacitive pressure sensor comprising:
a first substrate consisting essentially of quartz glass;
a second substrate of a rectangular cross section consisting essentially of quartz glass and having:
a peripheral portion directly bonded to the first substrate, wherein bonding of the first and second substrates is performed at a temperature not higher than a melting

point of quartz glass and without forming a bonding layer,

a groove formed in a central portion of a main surface of the second substrate, wherein the first and second substrates oppose each other through the groove, and an external surface opposite to the main surface that is flat;

a first electrode with an entire surface coupled to and in tight contact with a surface of the first substrate which opposes the second substrate, the first electrode being movable together with the first substrate; and

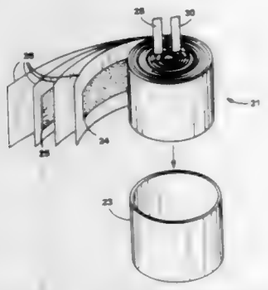
a second electrode with an entire surface coupled to and in tight contact with a surface of the second substrate that opposes the first substrate such that the second electrode is parallel to the first electrode.

5,349,493

ELECTRICAL CAPACITOR

Paul Winsor, IV, Somerset, Mass., assignor to Aerovox Incorporated, New Beford, Mass.

Filed Dec. 18, 1992, Ser. No. 993,303
Int. Cl.[5] H01G *4/02*; H01B *3/18*
U.S. Cl. 361—301.5 **19 Claims**



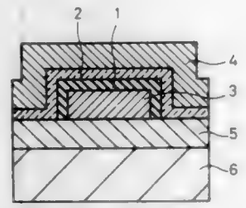
1. An electrical film capacitor comprising first and second film electrodes, a porous layer, and a liquid dielectric wicked along the extent of the porous layer, said first and second electrodes and porous layer being wound into a wound assembly, and said liquid dielectric consisting essentially of an adipic acid ester, alone or in combination with a biphenyl.

5,349,494

SEMICONDUCTOR DEVICE WITH CAPACITOR INSULATING FILM AND METHOD FOR FABRICATING THE SAME

Koichi Ando, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 28, 1992, Ser. No. 920,921
Claims priority, application Japan, Jul. 29, 1991, 3-188512
Int. Cl.[5] H01G *4/10*; H01L *21/70*
U.S. Cl. 361—322 **7 Claims**



1. A semiconductor device comprising:

a lower electrode of impurity-doped polysilicon formed on an electrical insulating film on a semiconductor substrate;

a capacitor insulating film covering said lower electrode, said capacitor insulating film including a first silicon nitride film formed by thermal nitriding and a second silicon nitride film formed by chemical vapor deposition, said first silicon nitride film being disposed on essentially only said lower electrode and said second silicon nitride film being disposed on an entire surface of said semiconductor device; and

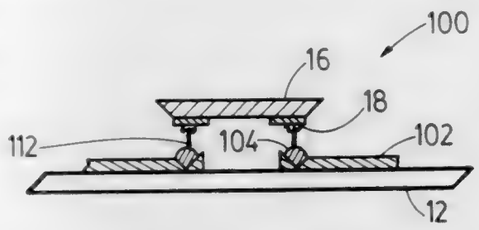
an upper electrode covering said capacitor insulating film.

5,349,495

SYSTEM FOR SECURING AND ELECTRICALLY CONNECTING A SEMICONDUCTOR CHIP TO A SUBSTRATE

Thomas A. Visel, Phoenix, Ariz., and Jon M. Long, Livermore, Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 370,932, Jun. 23, 1989, abandoned. This application Oct. 4, 1990, Ser. No. 592,709
Int. Cl.[5] H01R *9/00*
U.S. Cl. 361—774 **19 Claims**



1. A semiconductor chip package comprising:

a semiconductor die;

a substrate structure;

a first set of bonding pads on a first surface of the die;

a second set of bonding areas on a second surface of the substrate structure wherein the pads in the first set and areas in the second set are located such that when the first and second surfaces are placed adjacent each other, and for at least some of the areas on the second set, each of said at least some areas in the second set is aligned with a pad in the first set, said two aligned pad and area defining a corresponding pair; and

means for securing and electrically connecting at least some of the corresponding pairs, thereby securely bonding said semiconductor die to said structure,

wherein said securing and electrically connecting means includes an alloy and a plurality of elongated members for drawing the alloy towards predetermined locations on the bonding pads to reduce the probability of bridging of the alloy.

5,349,496

CHIP-TYPE SOLID ELECTROLYTIC CAPACITOR

Hiromichi Taniguchi, and Yoshihiko Saiki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,874
Claims priority, application Japan, Mar. 3, 1992, 4-045088
Int. Cl.[5] H01G *9/04*
U.S. Cl. 361—528 **4 Claims**

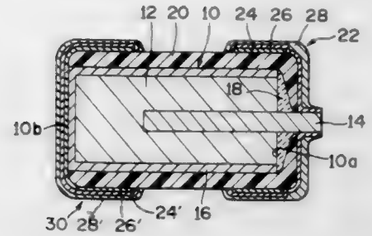
1. A chip-type solid electrolytic capacitor, comprising:

a capacitor element comprising an anode body which is made of a valve metal and has a first end face, an opposite second end face and a side face extending from the perimeter of the first end face to the perimeter of the second end face, a pin-like anode lead which is made of said valve metal and planted into the anode body so as to protrude from said first end face, a dielectric oxide layer formed on said second end face and said side face of the anode body, a solid electrolyte layer formed on said dielectric oxide layer and a cathode conductor layer formed on said solid electrolyte layer;

an insulating resin cover layer formed on the capacitor element so as to enclose the capacitor element except a protruding part of said anode lead and a cathode end face over said second end face of the anode body;

a cathode terminal which is formed on said cathode end face of the capacitor element and on said resin cover layer in an area near said cathode end face; and

an anode terminal comprising a conductive layer which is formed on said resin cover layer in an area near said first end face of the anode body, said conductive layer being spaced from the anode lead so as to prevent contact of said



conductive layer with the anode lead and having a microscopically rough surface, a plating layer which is formed on said conductive layer and on said resin cover layer in an area near and over said first end face of the anode body and extends to the surface of the protruding part of the anode lead and a solder layer formed on said plating layer,

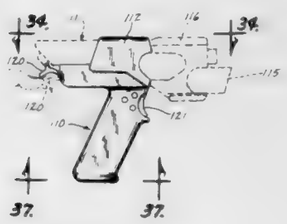
said conductive layer of said anode terminal comprising a powder of a conductive substance, a binding resin and a particulate filler which contributes to the formation of said microscopically rough surface.

5,349,497

DETACHABLE HANDLE STRUCTURES FOR TERMINALS

George E. Hanson; Steven R. Kunert; Darald R. Schultz; William T. Gibbs; Jon Rasmussen, and Robert J. Traeger, all of Cedar Rapids, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 950,261, Sep. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 922,843, Jul. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 877,625, May 1, 1992, abandoned, which is a continuation-in-part of Ser. No. 816,705, Jan. 2, 1992, abandoned, Ser. No. 744,813, Aug. 12, 1991, abandoned, Ser. No. 674,756, Mar. 25, 1991, abandoned, and Ser. No. 364,594, Jun. 7, 1989, abandoned, said Ser. No. 816,705, is a continuation-in-part of Ser. No. 812,767, Dec. 23, 1991, abandoned, said Ser. No. 674,756, is a continuation-in-part of Ser. No. 660,615, Feb. 25, 1991, Pat. No. 5,218,187, which is a continuation-in-part of Ser. No. 633,500, Dec. 26, 1990, Pat. No. 5,202,817, said Ser. No. 744,813, is a continuation of Ser. No. 364,902, Jun. 8, 1989, abandoned. This application Oct. 5, 1992, Ser. No. 956,730
Int. Cl.[5] H05K *7/02*; G06K *7/10*
U.S. Cl. 361—683 **17 Claims**



17. Apparatus comprising:

terminal means for receiving and storing information;

battery means for providing power to said terminal means;

means for operatively attaching said battery means to said terminal means;

a handle;

means for selectively attaching said handle to said terminal means wherein said means for selectively attaching includes a first side connected to said handle and a second side connected to said handle, said first side including a first flange connected to said first side and partially extending over the top of said terminal means, and said second side including a second flange connected to said second side and partially extending over the top of said terminal means;

scanner means disposed within said handle for scanning bar codes; and

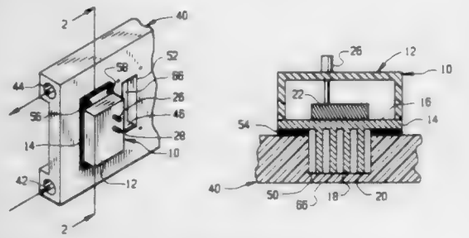
means for operatively attaching said scanner means and said handle to said terminal means.

5,349,498

INTEGRAL EXTENDED SURFACE COOLING OF POWER MODULES

Herbert J. Tanzer, Topanga; Gholam A. Goodarzi, Torrance, and Richard J. Olaveson, Inglewood, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 23, 1992, Ser. No. 995,444
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—689 **7 Claims**



1. A power module cooling system comprising:

a cold plate comprising a fluid inlet and a fluid outlet, a channel interconnecting said fluid inlet and said fluid outlet, and a mounting face having an opening therein into said channel;

a power module disposed on said cold plate, said power module comprising a metallic base that is larger than said opening in said mounting face of said cold plate so that said metallic base overlies said cold plate around said opening to seal against said cold plate adjacent said opening, said metallic base comprising metallic fins that are disposed through said opening in said face of said cold plate into said channel so that coolant fluid flow through said cold plate passes said fins wherein said fins are secured to a side of said channel opposite said opening into said channel, said metallic base comprising a mounting face on said metallic base opposite said fins; and

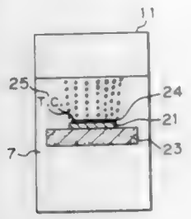
a semiconductor wafer disposed on said mounting face of said metallic base so that heat generated in said semiconductor wafer moves directly through said metallic base and said fins into said coolant fluid in said channel.

5,349,499

IMMERSION COOLING COOLANT AND ELECTRONIC DEVICE USING THIS COOLANT

Mitsutaka Yamada, Atsugi; Kishio Yokouchi, Machida; Nobuo Kamehara, Isehara, and Koichi Niwa, Tama, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 697,569, May 9, 1991, abandoned. This application Apr. 28, 1993, Ser. No. 53,452
Claims priority, application Japan, May 11, 1990, 2-119969
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—700 9 Claims



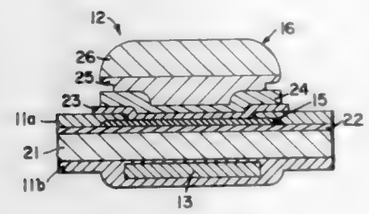
1. A boiling cooling-type electronic device for using at a temperature in a range of room temperature to 80° C., comprising an electronic element having a heat generating portion immersed in a liquid coolant, the liquid coolant comprising a low boiling point fluorocarbon having a boiling point of 30° C. to 100° C. and a high boiling point fluorocarbon having a boiling point of 150° C. to 260° C. and higher than that of the low boiling point fluorocarbon by at least 100° C., an amount of the high boiling point fluorocarbon being from 1.5% by volume to 20% by volume, based on the volume of the low boiling point fluorocarbon.

5,349,500

DIRECT APPLICATION OF UNPACKAGED INTEGRATED CIRCUIT TO FLEXIBLE PRINTED CIRCUIT

Keith L. Casson, Northfield, Minn.; Kelly D. Habeck, Tampa, Fla., and Eugene T. Selbitschka, South St. Paul, Minn., assignors to Sheldahl, Inc., Northfield, Minn.

Division of Ser. No. 932,064, Aug. 19, 1992, Pat. No. 5,261,593. This application Jun. 23, 1993, Ser. No. 81,544
Int. Cl.[5] H05K *1/00*
U.S. Cl. 361—749 7 Claims



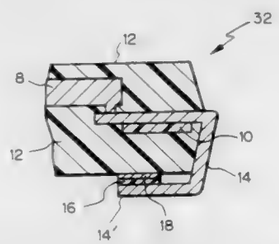
1. A flexible printed circuit comprising:
an adhesiveless flexible printed circuit board having a flexible polyimide substrate and a copper interconnection layer affixed to at least one side of the substrate, the layer having a plurality of contact pads defined thereon, some of the contact pads defined as active contact pads arranged in footprint patterns for electrical connection to a plurality of flip chips; and
a plurality of flip chips electrically connected to the circuit board, each flip chip connected by at least two electrical connections formed between bonding pads on an active side of the flip chip and opposing active contact pads on the circuit board;
wherein each electrical connection between a flip chip and the circuit board includes a homogeneous solder composition substantially free of undesired crystalline microstructures and deformities, the homogeneous solder composition being formed by reflowing solder paste located on the corresponding active contact pad on the circuit board such that a solder bump located on the corresponding bonding pad on the flip chip is allowed to self-align with the corresponding active contact pad and such that the solder paste mixes with the solder bump, and wherein each electrical connection is formed concurrently by applying heat to the circuit board and flip chips as a whole after the flip chips have been placed on the circuit board in a manner which allows for unobstructed motion of the flip chips during reflow.

5,349,501

ELECTRONIC DEVICE ADAPTIVE TO MOUNTING ON A PRINTED WIRING BOARD

Youji Kawakami, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 9, 1992, Ser. No. 958,622
Claims priority, application Japan, Oct. 11, 1991, 3-292083
Int. Cl.[5] H01R *9/00*
U.S. Cl. 361—776 9 Claims



1. A semiconductor package adaptive to mounting on a circuit board, comprising:
a semiconductor element;
a substrate made from a flexible material and including a carrying portion for mounting the semiconductor element thereon;
a plurality of leads formed on the substrate, electrically connected to the semiconductor element, and extending toward predetermined position on the substrate; and
a resin portions molded onto said semiconductor element, the substrate, and portions other than an end portions of the leads;
wherein at least ends of said leads remaining in an exposed state are adhered to a surface of said resin portion.

5,349,502

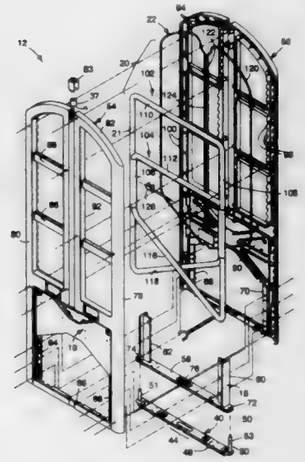
UNIVERSAL LATTICE FOR MAGNETIC ELECTRONIC ARTICLE SURVEILLANCE SYSTEM

Roger K. Westerberg, Cottage Grove, and Thomas J. Brace, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 29, 1993, Ser. No. 55,147
Int. Cl.[5] H02B *1/01*
U.S. Cl. 361—829 16 Claims

1. A universal lattice assembly for use with magnetic electronic article surveillance systems comprising:
a) a structural chassis having a bottom section adapted to be secured to a base mounted on a floor, opposing parallel side sections secured to opposite ends of the bottom section, and having means for indexing and interlocking the chassis with other members of the assembly,
b) a coil assembly comprising a drive coil and a detector coil; and
c) a frame comprising two identical, molded half-shells, each half-shell, when mated with the other, forming

i) opposing spaced-apart vertical legs,
ii) a top section connected across the top of the legs,
iii) a middle section connected between the legs and spaced upward of the bottom of the frame,
iv) at least one additional section extending between the legs intermediate between the top and middle sections; and
v) a centermost vertical section connected between the respective top, additional and middle sections and the bottom of said frame, said frame having an interior cavity extending through and connecting said vertical legs, said top section, said middle section, said at least one additional section and said centermost vertical section, and having means, within said interior cavity,



for receiving and anchoring the coil assembly in place; and further comprising
vi) a plurality of interlocking tabs and notches extending around a major portion of the periphery of each half-shell adapted to mate together when the half-shells are portioned facing each other and are pressed together, thereby attaching the respective half-shells together, and having means below the bottom of the frame adapted to receive associated electronic sub-assemblies and to mate with members of the chassis, the mating of the chassis and half-shells making up the frame, thereby forming a completed composite lattice assembly of a strength suitable for use in a hostile-user environment without requiring additional bonding of the chassis and the half-shells.

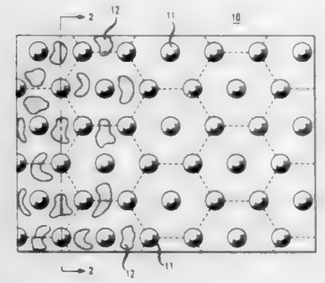
5,349,503

ILLUMINATED TRANSPARENT DISPLAY WITH MICROTEXTURED BACK REFLECTOR

Greg E. Blonder, Summit, and Bertrand H. Johnson, Murray Hill, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 816,405, Dec. 31, 1991, Pat. No. 5,245,454. This application Apr. 23, 1993, Ser. No. 52,320
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] F21V *8/00*
U.S. Cl. 362—31 7 Claims

1. An illuminating device comprising:
a transparent substrate comprising a pair of substantially parallel major surfaces;
one of said major surfaces comprising a plurality of spherical segments having smooth, continuous mold-formed surfaces and bases in the range 10–125 micrometers in diameter; and



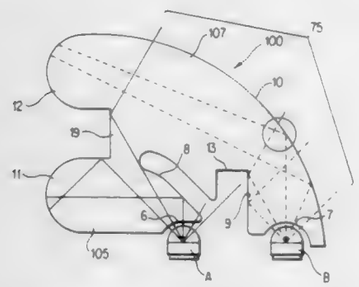
means for directing light into said substrate in a direction generally parallel to said major surfaces.

5,349,504

MULTI-LEVEL LIGHTPIPE DESIGN FOR SMD LEDS

Norman Simms, Barnegat, and Michael Cazzola, Toms River, both of N.J., assignors to Dialight Corporation, Manasquan, N.J.

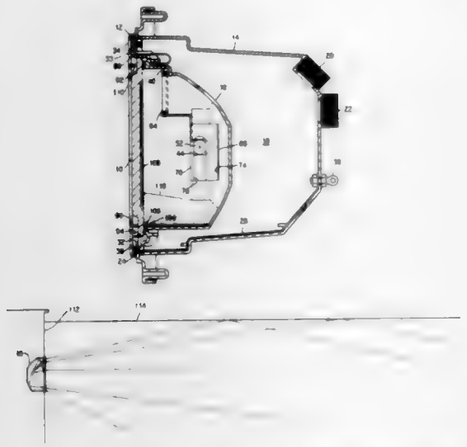
Filed Jul. 12, 1993, Ser. No. 89,775
Int. Cl.[5] F21V *7/04*
U.S. Cl. 362—32 11 Claims



1. A multi-level lightpipe component for a surface mount LED, said component comprising:
(a) a housing having first and second LED accommodating portions and attachment means for permitting the removable attachment of said housing to a printed circuit board having a first and a second LED thereon so as to align said first and second LED accommodating portions of said housing with the first and second LEDs on the printed circuit board, respectively, and
(b) a multi-level lightpipe positioned in an opening in said housing, said multi-level lightpipe comprising:
(i) a first surface portion and a second surface portion each positioned adjacent to a corresponding one of said first and second LED accommodating portions of said housing when said multi-level lightpipe is positioned in said opening in said housing, each of said first and second surface portions separately receiving light from a corresponding one of the first and second LEDs during use of said component;
(ii) a first radiating surface portion and a second radiating surface portion; and
(iii) a first passageway and a separate second passageway extending between said first surface portion and said first radiating surface portion and said second surface portion and said second radiating surface portion, respectively, each of said first and second passageways comprising a plurality of reflecting surfaces for separately redirecting and transmitting the light from the first LED to said first radiating surface portion and the

light from the second LED to said second radiating surface portion.

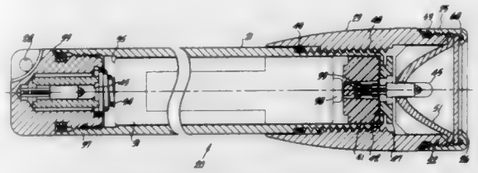
5,349,505
WET NICHE LIGHT
Charles B. Poppenheimer, La Canada-Flintridge, Calif., assignor to GTY Industries, Sylmar, Calif.
Filed Nov. 24, 1992, Ser. No. 981,014
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—101 **11 Claims**



1. A wet niche light for placement underwater, comprising
a niche;
a housing including a front opening;
a mounting for mounting said housing in said niche with said front opening lying substantially in a vertical plane;
a lens extending across said front opening;
a lamp mounted in said housing, said housing, said lamp, said lens and said opening being constructed and arranged to transmit light directly from said lamp through said lens, when underwater, which has an angle of incidence to a horizon above and outwardly of said housing which is no less than the critical angle of total reflection at a water-to-air boundary, said housing further including a lower inner surface between said lamp and said lens nonreflective toward said front opening of light from said lamp.

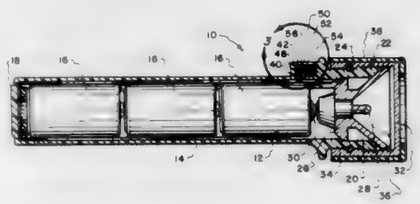
5,349,506
MINIATURE FLASHLIGHT
Anthony Maglica, Anaheim, Calif., assignor to MAG Instrument, Inc., Ontario, Calif.
Division of Ser. No. 866,422, Apr. 10, 1992, Pat. No. 5,207,502, which is a continuation of Ser. No. 719,156, Jun. 21, 1991, Pat. No. 5,113,326, which is a continuation-in-part of Ser. No. 553,977, Jul. 16, 1990, abandoned, which is a continuation of Ser. No. 356,361, May 23, 1989, Pat. No. 4,942,505, which is a continuation of Ser. No. 222,378, Jul. 19, 1988, Pat. No. 4,899,265, which is a continuation of Ser. No. 34,918, Apr. 6, 1987, abandoned, which is a continuation of Ser. No. 828,729, Feb. 11, 1986, Pat. No. 4,658,336, which is a continuation of Ser. No. 648,032, Sep. 6, 1984, Pat. No. 4,577,263. This application Apr. 20, 1993, Ser. No. 49,525
The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.
Int. Cl.[5] F21L *7/00*
U.S. Cl. 362—158 **9 Claims**

1. A flashlight comprising
a battery housing;
an end cap at one end of said battery housing, having a cavity therein open at a first end toward said battery housing and a port open to atmosphere from said cavity and displaced from said first end;
an insert in said cavity having a cross section providing for a longitudinal passage between said insert and said end cap



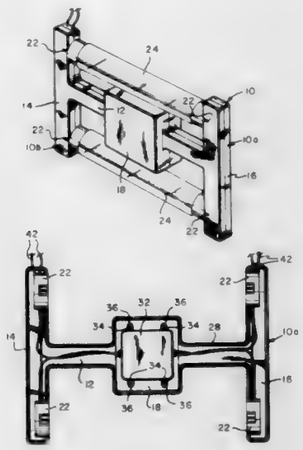
in said cavity and a lip seal about said insert and extending to said end cap in said cavity fully about said insert and inclined toward said port to form a one-way seal allowing flow from said battery housing to said port.

5,349,507
FLASHLIGHT WITH PRESSURE RELIEF VALVE
David H. Parker, 2255 Jefferson St., Torrance, Calif. 90501
Filed Dec. 10, 1993, Ser. No. 164,556
Int. Cl.[5] F21L *7/00*
U.S. Cl. 362—158 **2 Claims**



1. In combination with the flashlight formed of a body having an enclosed internal compartment, said compartment being substantially airtight and watertight, said compartment adapted to contain at least one battery, said compartment having an access opening, a reflector housing mounted within said access opening, a light bulb mounted within said reflector housing, a lens cover enclosing said reflector housing and sealing in a fluid-tight manner with said body, the improvement comprising:
a pressure relief opening formed within said body, a pressure relief valve assembly mounted on said body in conjunction with said pressure relief opening, said pressure relief valve assembly to expel into the ambient pressurized gas accumulated within said internal compartment;
said pressure relief valve assembly being normally closed, said pressure relief valve assembly opens automatically upon sufficient gas pressure being accumulated within said internal compartment; and
said pressure relief valve assembly including a spring, said spring pressing against a sealing disc, said spring normally locating said sealing disc in the closed position closing said pressure relief opening, said sealing disc having a peripheral edge, said peripheral edge including at least one groove, whereby upon sufficient gas pressure being created within said internal compartment said sealing disc is unseated from its said seated position with gas being permitted to flow through said groove into the ambient.

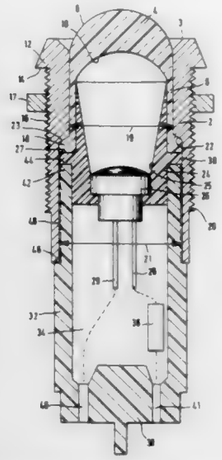
5,349,508
INTEGRAL HOUSING FOR BALLAST AND FLUORESCENT LAMPS
Adam A. Karbaf, Huntington, Ind., assignor to Magnetek, Inc., Los Angeles, Calif.
Filed Jul. 7, 1993, Ser. No. 88,557
Int. Cl.[5] F21S *3/00*
U.S. Cl. 362—217 **5 Claims**



1. A fixture for a pair of fluorescent lamps comprising:
a housing of two complementary mating hollow sections each having a center arm and a side arm extending transversely from each end therefor to form a generally H shape, said center arm having at least a portion which is enlarged relative to said side arms,
means for holding said sections together,
a ballast transformer within the enlarged portion of said center arm of said sections,
a socket for accepting the terminal of a fluorescent lamp adjacent each end of each side arm to hold a fluorescent lamp both above and below said center arm between said side arms and spaced from said center arm, and
wiring for the fixture extending between said ballast transformer and said sockets within said housing sections.

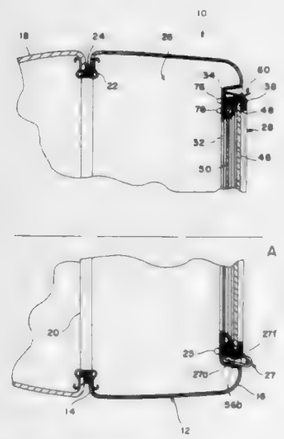
5,349,509
INDICATOR ELEMENT
Georg Klug, Bad Dürkheim, Fed. Rep. of Germany, assignor to EBT Licht-Technik GmbH, Bad Durkheim, Fed. Rep. of Germany
Filed Feb. 18, 1993, Ser. No. 19,434
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1992, 9202608[U]
Int. Cl.[5] F21V *17/00*
U.S. Cl. 362—362 **15 Claims**

1. An indicator element comprising a light permeable cap **(6)**, a light source **(26, 50)** arranged to direct light through said cap, a protective sleeve **(32)** axially arranged with respect to said cap in an inner chamber of which connecting conductors **(54, 55)** for said light source **(26, 50)** extend, an outer sleeve **(2)** at least partially surrounding said cap **(6)** and said protective sleeve **(32)**, said cap **(6)** and said protective sleeve **(32)** being fastened in said outer sleeve **(2)**; wherein said outer sleeve is provided with an external thread **(16)** and has a radially outwardly extending, rearwardly



facing contact surface **(14)**, said external thread directly adjoining said contact surface.

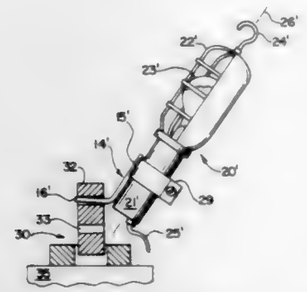
5,349,510
SPRING LATCHING MECHANISM FOR LIGHT FIXTURE
David L. Jordan, Boones Mill, and Marc A. Schetselaar, Christiansburg, both of Va., assignors to Hubbell Incorporated, Orange, Conn.
Filed Mar. 23, 1992, Ser. No. 855,669
Int. Cl.[5] F21V *17/00*
U.S. Cl. 362—374 **17 Claims**



1. A light fixture, comprising:
a housing having a longitudinal axis, and an open axial end;
a lens door assembly including a lens mounted in a lens frame;
hinge means for pivotally connecting the said door assembly to said housing and permitting said lens door assembly to move between an open position and a closed position; and
latch means for securing the lens door assembly in the closed position over said open axial end of said housing, said latch means including a spring clip connected to said housing and engaging the lens door assembly when in the

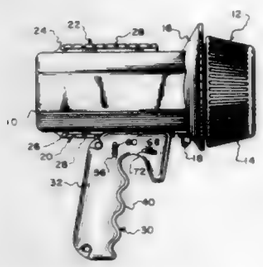
closed position, said spring clip including a first leg and a second leg, said first leg extending axially from the housing at an acute angle towards the longitudinal axis of the housing and being oriented to flex radially outwardly to receive and then engage the lens frame when the lens door assembly is in the closed position, said second leg being integral with the first leg and being fixedly connected to the housing perpendicularly with respect to the longitudinal axis of the housing, said first leg including an aperture, said lens frame including a radially outwardly extending tab which is received in and detachably engages the aperture of the first leg when the lens door assembly is in the closed position.

5,349,511
WORK LAMP, WITH HOLDER THEREFOR
John Henderson, 7406 Forest Preserve Dr., Chicago, Ill. 60634
Filed Feb. 12, 1993, Ser. No. 17,146
Int. Cl.[5] F21V *21/00*
U.S. Cl. 362—396 **6 Claims**



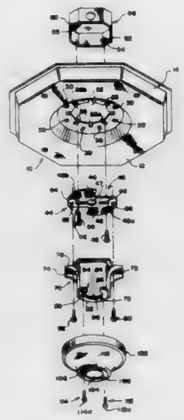
1. For a work lamp of the type which has a handle defining an axis, generally opposed first and second ends, and a socket for a light source at the second end, and which is adapted to be associated with holding means with a channel, the improvement comprising a shank member which
is rigidly joined with the work lamp,
extends from the handle proximate the first end,
forms an angle relative to the axis, and
is adapted to be received in a channel of and adjustably retained by the holding means.

5,349,512
ELECTRICAL LANTERN WITH MULTIPLE POSITION CONNECTING HANDLE
David H. Parker, 2255 Jefferson St., Torrance, Calif. 90501
Filed Dec. 10, 1993, Ser. No. 164,567
Int. Cl.[5] F21L *15/12*
U.S. Cl. 362—399 **6 Claims**



1. An electrical lantern comprising:
a casing having a lens assembly through which a beam of light is to be emitted, said casing having an exterior wall surface;
an attachment mounted on said exterior wall surface; and
a graspable handle connected with said attachment, said graspable handle including connecting means, said attachment including a locking detent, said connecting means including a locking pawl, said locking pawl being continuously spring biased toward a locking position capable of connecting with said locking detent, with said locking pawl in said locking position and connecting with said locking detent said graspable handle being fixedly secured to said casing.

5,349,513
LIGHT FIXTURE
William N. Taylor, III, 1201 Shady Creek Dr., Euless, Tex. 76040
Filed Oct. 26, 1993, Ser. No. 142,186
Int. Cl.[5] F21S *1/04*
U.S. Cl. 362—404 **14 Claims**

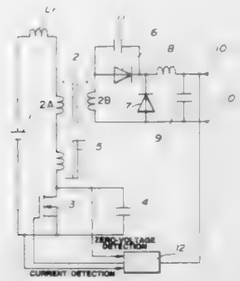


1. A light fixture comprising a pan-shaped member and at least one light bulb receiving socket mounted with said pan-shaped member, said pan-shaped member having a base and a wall extending upwardly from said base around said substantially the entire perimeter thereof, said light fixture including a central boss elevated above said base and inward of said wall on one side of said fixture to define a recess on an opposite side of said fixture, said boss having an opening and a plurality of notches communicating with said opening, each of said notches being adapted to receive a mounting member, whereby said fixture is mountable with a ceiling or other support surface.

5,349,514
REDUCED-RESONANT-CURRENT ZERO-VOLTAGE-SWITCHED FORWARD CONVERTER USING SATURABLE INDUCTOR
Shuichi Ushiki, and Ryoji Saito, both of Tokyo, Japan, assignors to Origin Electric Company, Limited, Tokyo, Japan
Filed Oct. 19, 1992, Ser. No. 963,195
Claims priority, application Japan, Nov. 1, 1991, 3-313308
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—21 **10 Claims**

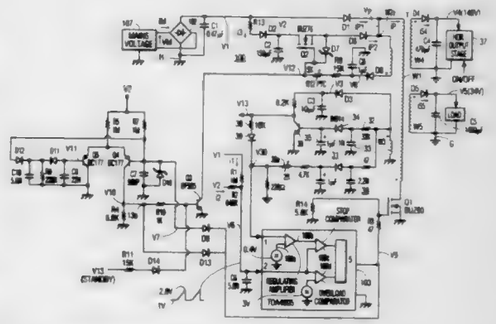
1. A zero-voltage-switched forward converter, comprising:
a DC power supply;
a transformer having a primary winding connected in series to said DC power supply and a secondary winding magnetically coupled with said primary winding;
a switching device connected in series to said primary winding of said transformer;
a first resonant capacitance connected in parallel to said switching device;

a saturable inductor inserted in series in said primary winding of said transformer and said switching device, said saturable inductor having a predetermined value of inductance in a light current region and a small value of inductance at a predetermined integral voltage due to magnetic saturation, said saturable inductor having a non-saturated inductance which accumulates magnetic energy to discharge said first resonant capacitance up to zero voltage for zero voltage turning-on of said switching device;



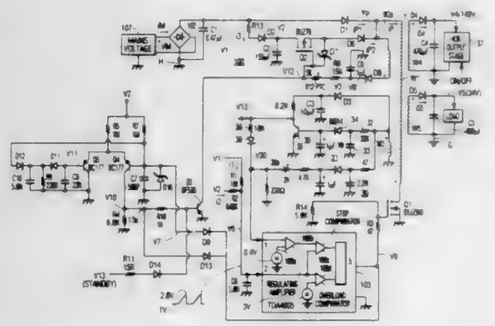
a rectifier diode connected in series to said secondary winding of said transformer;
a free wheeling diode interposed between one end of said secondary winding of said transformer and one end of said rectifier diode;
choke input smoothing circuit means, connected in parallel to said free wheeling diode, for smoothing current passing through said secondary winding of said transformer; and
control circuit means for providing a control signal to said switching device to control a conduction thereof.

5,349,515
SWITCH MODE POWER SUPPLY WITH FEED-FORWARD PULSE LIMIT CONTROL
Magdy Megeid, Zurich, Switzerland, assignor to RCA Thomson Licensing Corporation, Princeton, N.J.
Filed Jul. 23, 1993, Ser. No. 95,387
Claims priority, application United Kingdom, Sep. 17, 1992, 9219663.3; Dec. 18, 1992, 9226381.3
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—21 **5 Claims**



1. A switch mode power supply, comprising:
a source of an AC, mains supply voltage;
an inductance; a first rectifier coupled to said mains source for rectifying said mains supply voltage to apply to said inductance a rectified, first supply voltage;
switching means responsive to a switching signal for generating in said inductance pulse-width modulated current pulses from said first supply voltage at a frequency that is substantially higher than a frequency of said mains supply voltage, said current pulses being coupled from said inductance to a load circuit to energize said load circuit;
a pulse-width modulator responsive to a feedback signal for generating said switching signal in accordance with said feedback signal; and
means coupled to said pulse-width modulator and responsive to said mains supply voltage for limiting a pulse-width of said switching signal such that a limit associated with said pulse-width varies during a period of said mains supply voltage in accordance with a waveform of said mains supply voltage and such that when said pulse-width reaches said limit, a further change in said feedback signal is prevented from further changing said pulse-width in a direction that tends to exceed said limit.

5,349,516
SWITCH MODE POWER SUPPLY WITH REDUCED INPUT CURRENT DISTORTION
Magdy Megeid, Zurich, Switzerland, assignor to RCA Thomson Licensing Corporation, Princeton, N.J.
Filed Jul. 23, 1993, Ser. No. 95,389
Claims priority, application United Kingdom, Sep. 17, 1992, 9219663; Dec. 18, 1992, 9226381
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—21 **24 Claims**



1. A switch mode power supply, comprising:
a source of an AC, mains supply voltage;
a first rectifier coupled to said mains source for rectifying said mains supply voltage without filtering out a low frequency component at a frequency related to that of said mains supply voltage to develop an unfiltered, rectified, first supply voltage;
first switching means responsive to a first switching signal and coupled to an inductance having applied thereto said first supply voltage for developing a first plurality of current pulses at a frequency that is substantially higher than that of said mains supply voltage, said first plurality of current pulses being coupled via a second rectifier to produce a first portion of a rectified output supply current;
a filter capacitor;
a third rectifier coupled to said mains source and to said capacitor for rectifying said mains supply voltage to develop current pulses in said capacitor for producing a rectified, second supply voltage in said capacitor;
second switching means coupled to said second supply voltage and responsive to a second switching signal for developing in an inductance that is coupled to said capacitor a second plurality of current pulses at a frequency that is substantially higher than that of said mains supply voltage, said second plurality of current pulses being coupled via a rectifier to produce a second portion of said output supply current; and
means coupled to said capacitor for lengthening a pulse-

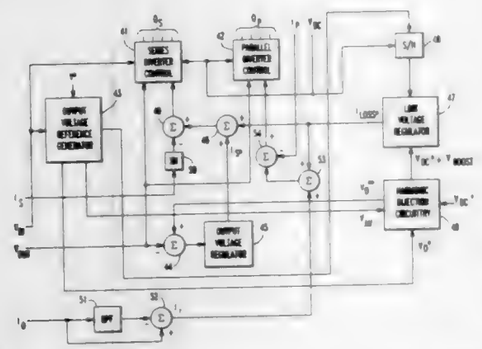
width and decreasing a peak amplitude of a given current pulse in said capacitor.

5,349,517

ACTIVE POWER LINE CONDITIONER UTILIZING HARMONIC FREQUENCY INJECTION FOR IMPROVED PEAK VOLTAGE REGULATION

Michael B. Brennen, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 19, 1993, Ser. No. 108,269
Int. Cl.[5] H02M *1/12, 1/14*
U.S. Cl. 363—40 **16 Claims**



1. An improved active power line conditioner of the type for electrical connection interposing an electrical energy source and an electrical load to regulate AC output voltage supplied to said electrical load when AC input voltage remains within a preselected sinusoidal regulation range, said active power line conditioner including control means for controlling at least one inverter including a DC energy storage element, wherein the improvement comprises:

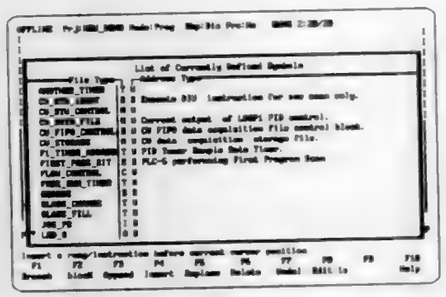
said control means further having harmonic means for regulating said AC output voltage to have at least one harmonic frequency component superimposed on a fundamental frequency component thereof when said AC input voltage is not within said sinusoidal regulation range of said active power line conditioner.

5,349,518

METHOD AND APPARATUS FOR SYMBOLIC LADDER LOGIC PROGRAMMING WITH AUTOMATIC ATTACHMENT OF ADDRESSES

Scott C. Zifferer, Mequon, and Joseph J. Menter, Jr., Milwaukee, both of Wis., assignors to ICOM, Inc., West Allis, Wis.

Filed Jun. 30, 1989, Ser. No. 374,487
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—192 **4 Claims**



1. A method of providing symbol help in a program editor executed by a computer, the program editor being used by an operator for the displaying and editing of a ladder logic program on a monitor attached to the computer, wherein the ladder logic program is comprised of instructions operating on elements of data tables, the method comprising:

(a) maintaining a symbol assignment record in the computer, wherein the symbol assignment record identifies a correspondence between symbols and elements of the data tables, wherein each element is assigned to a specific symbol and each symbol represents a specific element, so that instructions in the ladder logic program reference an element using a symbol representing the element;

(b) displaying a list of symbols obtained from the symbol assignment record on the monitor while the program is being edited, receiving a command from the operator selecting a symbol from the displayed list of symbols, and modifying an operator-identified instruction in the program so that it references the selected symbol; and

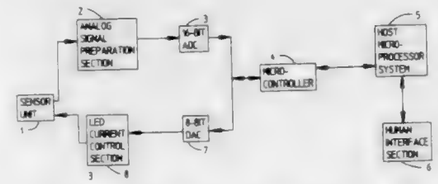
(c) wherein the displaying step (b) further comprises receiving commands from the operator specifying a portion of a desired symbol, and displaying in the list of symbols only those symbols from the symbol assignment record which match the portion of the desired symbol.

5,349,519

METHOD FOR DIGITALLY PROCESSING SIGNALS CONTAINING INFORMATION REGARDING ARTERIAL BLOOD FLOW

Siegfried Kaestle, Nufringen, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 408,001, Sep. 15, 1989, Pat. No. 5,299,120. This application Nov. 12, 1993, Ser. No. 151,321
Int. Cl.[5] G06F *15/42;* **G01N** *33/16*
U.S. Cl. 364—413.09 **4 Claims**



1. A method for identifying acceptable systolic edges in a blood pressure signal derived from a patient comprising:

identifying as a first systolic edge a portion of the signal meeting criteria for at least one feature including the maximum absoluted value of a first derivative;

determining value windows for respective features including those with wide variations only from the values of the features in said first systolic edge; and

determining whether a subsequent portion of said signal passes through said value windows; and

identifying it as being an acceptable edge if it does.

5,349,520

APPARATUS FOR SURVEYING AND MARKING HIGHWAYS

Bruce F. Hickman, 971 Ohio Ave., Elmore, Ohio 43416

Continuation-in-part of Ser. No. 443,594, Nov. 29, 1989, abandoned. This application Sep. 9, 1991, Ser. No. 756,907
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—424.01 **12 Claims**

1. An apparatus for surveying and marking highways comprising:

a computer for installation in a first vehicle;

first transducer means connected to said computer for sensing increments of distance travelled by the first vehicle and generating a first distance signal representing the increments of distance to said computer, said computer being responsive to said first distance signal and a second distance signal representing increments of distance travelled by a second vehicle for generating a difference signal representing the spacing between the first vehicle and the second vehicle;

a first radio modem connected to said computer;

a first antenna;

a first radio transmitter connected between said modem and said first antenna for generating said difference signal as a first radio signal;

a pulse decoder connected to said computer;

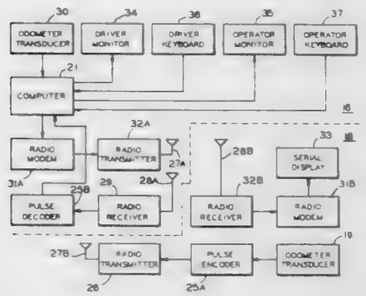
a second antenna;

a first radio receiver connected between said pulse decoder and said second antenna for receiving a second radio signal and generating said second distance signal to said computer;

a display means for installation in a second vehicle;

a second radio modem connected to said display means;

a third antenna;



a second radio receiver connected between said second radio modem and said third antenna for receiving said first radio signal and generating said difference signal to said display means;

a second transducer means for sensing increments of distance travelled by the second vehicle and generating said second distance signal;

a pulse encoder connected to said second transducer means;

a fourth antenna; and

a second radio transmitted for installation in the second vehicle and connected between said pulse encoder and said fourth antenna and responsive to said second difference signal for generating said second radio signal whereby said display means indicates the spacing between the first and second vehicles in response to said difference signal.

5,349,521

FULL WAVE RECTIFIER USING A CURRENT MIRROR BRIDGE

Paolo Menegoli, Milpitas, Calif., and Mark E. Rohrbaugh, Scottsdale, Ariz., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Nov. 25, 1992, Ser. No. 981,819
Int. Cl.[5] H02M *7/217*
U.S. Cl. 363—81 **5 Claims**

1. A rectifier for providing a rectified signal at a circuit output based on a signal applied to a circuit input, the rectifier comprising:

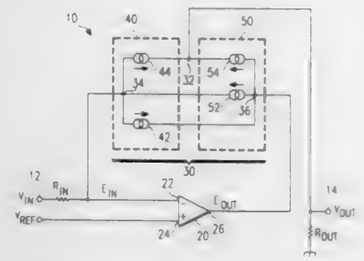
an amplifier having an inverting input, a non-inverting input and an amplifier output;

an input resistor connected between the circuit input and the inverting input of the amplifier; and

a current bridge having an output terminal coupled to the circuit output, and comprising:

a first current mirror circuit including a first current source and a second current source, a source end of each of said first and second current sources connected to the inverting input of said amplifier, a drain end of the first current source connected to the amplifier output, and a drain end of the second current source connected to the current bridge output terminal; and

a second current mirror circuit including a third current source and a fourth current source, a source end of each of said third and fourth current sources connected to



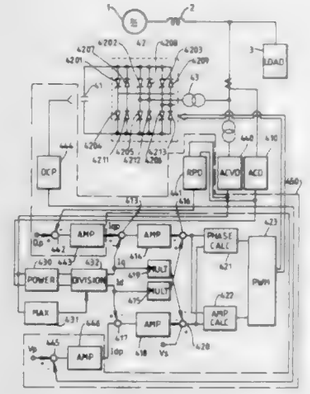
the amplifier output, a drain end of the third current source connected to the source end of the first and second current sources, and a drain end of the fourth current source connected to the current bridge output terminal.

5,349,522

METHOD AND APPARATUS FOR CONTROLLING THE OUTPUT VOLTAGE OF AN AC ELECTRICAL SYSTEM

Hiroo Konishi, Katsuta; Hironari Kawazoe, Hitachi; Junzo Kawakami, Mito; Tomoharu Nakamura, Hitachioota; Yukio Tokiwa, Ichihara, and Tatsuhito Nakajima, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 12, 1992, Ser. No. 897,845
Claims priority, application Japan, Jun. 14, 1991, 3-142967
Int. Cl.[5] H02M *5/257*
U.S. Cl. 363—95 **10 Claims**



1. A method of controlling the amplitude and phase of the voltage of an AC electrical system, said AC electrical system having a converter, said method comprising:

measuring instantaneous current and voltage magnitude values in said AC electrical system;

deriving power measurements from said instantaneous current and voltage magnitude values, said power measurements relating to less than one cycle of said AC electrical system, wherein said power measurements are an instantaneous real power and an instantaneous imaginary power;

deriving, from said power measurements, phase-related control values, wherein said phase-related control values are a phase-related real current control value obtained from the instantaneous real power divided by the instantaneous voltage magnitude and a phase-related imaginary current control value obtained from the instantaneous

imaginary power divided by the instantaneous voltage magnitude;

generating control signals for said converter from said phase-related control values; and

controlling said converter on the basis of said control signals, thereby to control said amplitude and phase of said voltage of said AC electrical system.

5,349,523

SWITCHING POWER SUPPLY

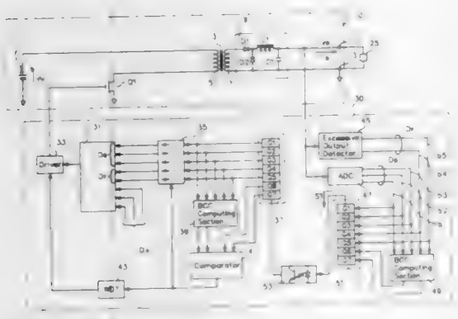
Kiyoharu Inou; Hitoshi Yasui, and Shunsuke Hayashi, all of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan

Filed Apr. 14, 1993, Ser. No. 47,226

Claims priority, application Japan, Feb. 22, 1993, 5-031826

Int. Cl.[5] H02M *3/335*

U.S. Cl. 363—97 **4 Claims**



1. A control unit comprising

output circuit means for producing an output signal;

analog-to-digital converter means for converting said output signal from output circuit means into digital form;

digital-to-analog converter means for converting an output instruction value into analog form and for supplying the resulting analog signal to said output circuit means;

arithmetic means for calculating an output instruction value either from an instruction value sent from a system or according to a predetermined control rule, wherein said arithmetic means contains a normal output flag, a normal operation flag, and a status communication section, said normal output flag indicating whether an output preset value agrees with an output signal from said output circuit means, said normal operation flag indicating whether a predetermined calculation has been correctly performed, said status communication section acting to transmit a communication flag containing data about said normal output flag and normal operation flag;

monitoring means comprising

register means for storing data transmitted by said status communication;

discriminator means for deciding whether a communication frame stored in said register means contains an error;

power-operation-instruction flag means for permitting supply of power to said output circuit means when said discriminator means determines that the communication frame is correct and both a transmitted normal output flag and a transmitted normal operation flag indicate normality;

interface connection instruction flag means which is set when said discriminator means determines that said communication frame is correct, and the transmitted normal operation flag indicates normality; and

watchdog timer means for performing resetting when said discriminator means determines said communication frame to be correct, and for resetting said power-operation-instruction flag means and said interface connection flag means when said resetting operation is not performed for a given amount of time;

isolating means for isolating said status communication section from said register means; and

system interface means for connecting said arithmetic means and said system; wherein

said system interface means permits communication between said arithmetic means and said system except when said interface connection flag means is set.

5,349,524

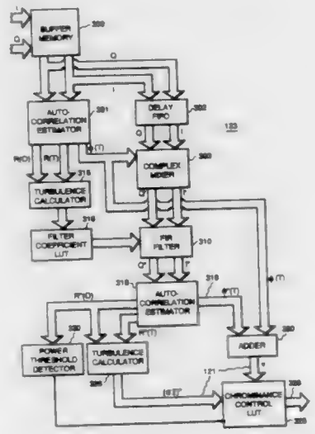
COLOR FLOW IMAGING SYSTEM UTILIZING A TIME DOMAIN ADAPTIVE WALL FILTER

Christopher M. W. Daft, Schenectady, N.Y.; Anne L. Hall, New Berlin, Wis.; Sharbel E. Noujaim, Clifton Park, N.Y.; Lewis J. Thomas, Schenectady, N.Y., and Kenneth B. Welles, II, Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 8, 1993, Ser. No. 1,998

Int. Cl.[5] G01F *1/66;* **G06F** *15/66;* **A61B** *8/00*

U.S. Cl. 364—413.25 **17 Claims**



1. In a vibratory energy imaging system which includes a receiver that demodulates an echo signal received from a vibratory energy transducer to produce a baseband echo signal, a color flow processor which comprises:

a first autocorrelation estimator coupled to receive the baseband echo signal and to produce an output signal $\phi(T)$ indicative of the mean frequency of said baseband echo signal;

a complex mixer coupled to receive the output signal $\phi(T)$ and the baseband echo signal and to shift the frequency of the baseband echo signal by an amount indicated by the output signal $\phi(T)$;

a high pass filter coupled to receive the frequency shifted baseband echo signal from said complex mixer and to filter out signal components therein having a frequency near zero;

a second autocorrelation estimator coupled to receive the filtered, frequency shifted baseband echo signal from the high pass filter and to produce an output signal $\phi''(T)$ which is indicative of the mean frequency thereof; and

chrominance control means coupled to receive the output signal $\phi''(T)$ from said second autocorrelation estimator and to control color of a display in response to said second autocorrelation estimator output signal.

5,349,525

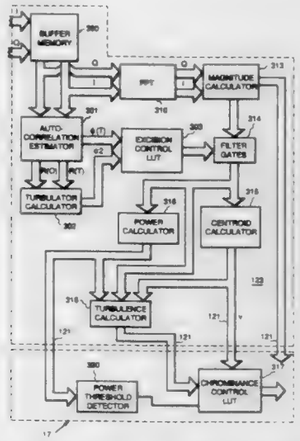
COLOR FLOW IMAGING SYSTEM UTILIZING A FREQUENCY DOMAIN WALL FILTER

Robert J. Dunki-Jacobs, Ballston Lake, N.Y.; Anne L. Hall, New Berlin, Wis.; Richard B. Bernardi, Strafford, Pa.; Matthew O'Donnell, Ann Arbor, Mich.; Lewis J. Thomas, Schenectady, N.Y.; Kenneth B. Welles, II, and William E. Engeler, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 8, 1993, Ser. No. 2,000

Int. Cl.[5] C06F *15/42;* **A61B** *8/00*

U.S. Cl. 364—413.25 **13 Claims**



9. In a vibratory energy imaging system which includes a receiver that demodulates an echo signal received from a vibrational energy transducer to produce a baseband echo signal, a method of operating a color flow processor that controls a display system, said method comprising the steps of:

producing an output signal indicative of the mean frequency of said baseband echo signal;

Fourier transforming the baseband echo signal to a frequency domain echo signal;

producing, from said frequency domain signal, an excision signal which indicates a mean frequency to be filtered;

filtering out of the frequency domain echo signal the frequency indicated by the excision signal;

producing an output signal corresponding to the mean frequency of the filtered frequency domain echo signal; and

controlling color of a display in accordance with the mean frequency of the filtered frequency domain echo signal.

5,349,526

SYSTEM AND METHOD FOR CONVERTING SENTENCE ELEMENTS UNRECOGNIZABLE BY A COMPUTER SYSTEM INTO BASE LANGUAGE ELEMENTS RECOGNIZABLE BY THE COMPUTER SYSTEM

George W. Potts, Sr., Wellesley; Patrick Breen, Medford, and Robert Paushter, Watertown, all of Mass., assignors to Occam Research Corporation, Waltham, Mass.

Filed Aug. 7, 1991, Ser. No. 741,306

Int. Cl.[5] G06F *15/40*

U.S. Cl. 364—419.1 **20 Claims**

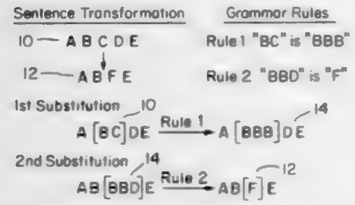
1. A system for converting sentence elements unrecognizable by a computer system into base language elements recognizable by the computer system, comprising:

means for establishing and storing within the computer system a set of rules for substituting said unrecognizable sentence elements with said base language elements;

means for inputting a sentence of said unrecognizable sentence elements into said computer system;

means for sequentially comparing each rule to each said inputted unrecognizable sentence element to find a match between a rule and one or more contiguous unrecognizable sentence elements;

means for substituting the inputted unrecognizable sentence elements matching the rule with the base language elements as defined by the matching rule; and



means for continuing the sequential comparison and substitution of the said base language elements for said unrecognizable sentence elements to fully convert the sentence to base language elements recognizable by said computer system.

5,349,527

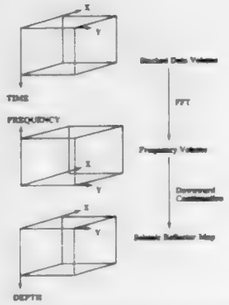
METHOD OF SEISMIC TIME MIGRATION USING A MASSIVELY PARALLEL COMPUTER

Andrew Pieprzak, Houston, and Peter T. Highnam, Austin, both of Tex., assignors to Schlumberger Technology Corporation, Austin, Tex.

Filed Dec. 20, 1991, Ser. No. 811,565

Int. Cl.[5] G01V *1/00*

U.S. Cl. 364—421 **19 Claims**



1. A method for time migration of space-time domain seismic data to build a reflector time map using a parallel computer having a number of processing components, comprising the steps of:

(1) transforming the seismic data from the space-time domain x,y,t to a space frequency domain x,y,f data cube using a Fourier transform process;

(2) storing the space frequency data cube in computer memory;

(3) grouping one or more frequency planes from said space frequency data cube into frequency chunks;

(4) downwardly continuing the space frequency data cube for each frequency chunk through a number of time steps to obtain a reflector time map, where for each time step the method includes the substeps of

(a) modeling a velocity profile,

(b) loading a table of operator coefficients into memory,

(c) for a single frequency plane within the frequency chunk, assigning processing components to respective subgrids of one or more x,y spatial positions in the x,y plane,

(d) extrapolating all of the x,y spatial positions by concurrently operating several processing components in parallel, for each x,y position the extrapolation using the

velocity profile and some of the operator coefficients from the table,

(e) building the reflector time map.

5,349,528

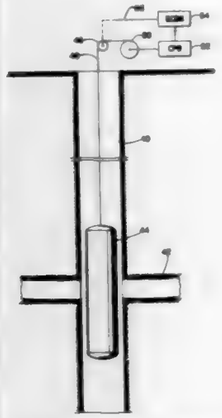
METHOD APPARATUS FOR DETERMINATION OF POROSITY LITHOLOGICAL COMPOSITION

Naum Ruhovets, Houston, Tex., assignor to Halliburton Logging Services, Inc., Houston, Tex.

Continuation of Ser. No. 492,028, Mar. 12, 1990, abandoned. This application Feb. 23, 1993, Ser. No. 22,794

Int. Cl.[5] **G01V** *1/00;* **E21B** *49/00*

U.S. Cl. 364—422 **19 Claims**



1. A method of preparing logs of laminated sand and shale formations comprising the steps of:

(a) along a well borehole, making logging measurements with a logging tool having a specified vertical resolution across laminated sand and shale formations where the laminated formations have a thickness less than the vertical resolution of the logging tool and forming an output signal indicative of measurements made at a specified measurement resolution dependent on the logging tool vertical resolution;

(b) forming a shale volume measurement from the logging tool for the laminated sand and shale formations;

(c) forming the laminated sand and shale formation porosity; from the logging tool measurements;

(d) forming the laminated sand and shale formation conductivity from the logging tool measurements; and

(e) forming the laminated sand and shale formation water saturation.

5,349,529

METHOD OF CORRECTING MAGNETIZATION VECTOR

Yutaka Masumoto, and Satoshi Odagawa, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 22, 1992, Ser. No. 901,921

Claims priority, application Japan, Jun. 25, 1991, 3-153383

Int. Cl.[5] **G01C** *17/38*

U.S. Cl. 364—424.01 **5 Claims**

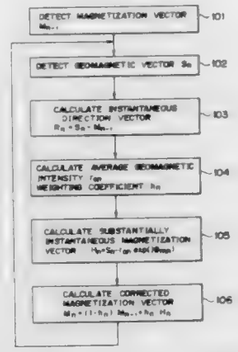
1. A method of correcting the output of a magnetization vector detector of a stand alone navigation system of a mobile body, said mobile body having said magnetization vector detector and a geomagnetic vector detector, said method comprising:

detecting a magnetization vector M_{n-1} with said magnetization vector detector, said magnetization vector being directed from a reference position toward the center of a magnetic circle which indicates the magnetized condition of the mobile body;

determining the direction of progression of the mobile body and detecting a geomagnetic vector S_n which is directed from the reference position in the direction in which the mobile body progresses;

calculating an instantaneous direction vector R_n which is directed from the center of the magnetic circle in the direction in which the mobile body progresses and which has a direction angle Θ_{mn} according to the equation $R_n=S_n-M_{n-1}$;

calculating an average geomagnetic intensity τ_{on} from the average of past values of the magnitude r_n of the instantaneous direction vector R_n, and a weighing coefficient h_n that is a positive real number no greater than 1 based on the average geomagnetic intensity τ_{on};



calculating a substantially instantaneous magnetization vector H_n for correcting the magnetization vector M_{n-1} according to the equation: $H_n=S_n-\tau_{on}\cdot\exp(j\Theta_{mn})$;

determining the corrected magnetization vector M_n from the magnetization vector M_{n-1}, the weighing coefficient h_n, and the substantially instantaneous magnetization vector H_n according to the equation: $M_n=(1-h_n)\cdot M_{n-1}+h_n\cdot H_n$ and

correcting an output of said magnetization vector detector in accordance with said determined corrected magnetization vector.

5,349,530

DIRECTION DETECTING DEVICE

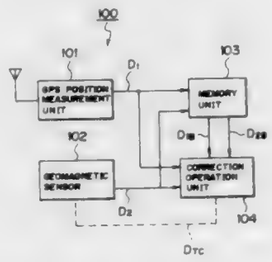
Satoshi Odagawa, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 9, 1992, Ser. No. 910,244

Claims priority, application Japan, Jul. 10, 1991, 3-170059

Int. Cl.[5] **G06F** *15/50*

U.S. Cl. 364—449 **5 Claims**



1. A direction detecting device comprising:

position measurement means for receiving an electric wave from a satellite and for generating first direction data from the electric wave;

geomagnetic sensor for generating second direction data;

memory means for storing the first direction data and the second direction data respectively obtained at a previous measurement timing; and

correction operation means, coupled to said position measurement means, said geomagnetic sensor and said memory means, for obtaining data related to a true magnetic circle from the first direction data and the second direction data stored in said storage means and the first direction data and the second direction data respectively obtained at a current measurement timing and for correcting an error contained in the current second direction data in accordance with the data related to the true magnetic circle.

5,349,531

NAVIGATION APPARATUS USING A GLOBAL POSITIONING SYSTEM

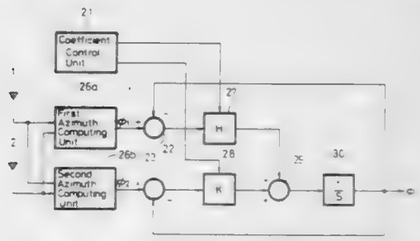
Kazuteru Sato; Kanshi Yamamoto; Mikio Morohoshi; Noriyuki Akaba, and Atsushi Kawakami, all of Tokyo, Japan, assignors to Tokimec Inc., Tokyo, Japan

Filed Mar. 9, 1992, Ser. No. 848,388

Claims priority, application Japan, Mar. 13, 1991, 3-048429; Mar. 13, 1991, 3-048431

Int. Cl.[5] **G01S** *5/02;* **H04B** *7/185*

U.S. Cl. 364—449 **8 Claims**



1. A navigation apparatus utilizing satellite radio waves of a global positioning system comprising:

(a) at least first and second satellite reception antennas installed on a navigation vehicle at a predetermined distance from each other;

(b) a first azimuth computing unit for computing a first azimuth angle of said navigation vehicle from the satellite radio waves received at said first and second antennas and the phase difference therebetween;

(c) a second azimuth computing unit for computing a second azimuth angle from the time change of antenna positions calculated from the satellite radio wave received at said first and second reception antenna;

(d) first and second multiplying units for multiplying the outputs of said first and second azimuth computing units with predetermined coefficients, respectively;

(e) an adding unit for adding the outputs of said first and second multiplying units to produce a third azimuth angle, indicative of the motion direction of the navigation vehicle; and

(f) a coefficient control unit for varying coefficient values of said first and second multiplying units in accordance with either the input from the first and second satellite receptors or the turning frequency of said navigation vehicle.

5,349,532

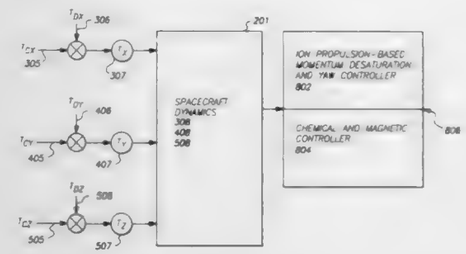
SPACECRAFT ATTITUDE CONTROL AND MOMENTUM UNLOADING USING GIMBALLED AND THROTTLED THRUSTERS

Scott W. Tilley, Belmont; Tung Y. Liu, Union City, and John S. Higham, Mountain View, all of Calif., assignors to Space Systems/Loral, Palo Alto, Calif.

Filed Apr. 28, 1992, Ser. No. 875,276

Int. Cl.[5] **B64G** *1/26, 1/24;* **F03H** *1/00*

U.S. Cl. 364—459 **13 Claims**



1. A wholly-autonomous closed-loop method of simultaneously moving a three-axis stabilized spacecraft having thruster means to attain a desired attitude during north/south maneuvers, said method comprising the steps of:

sensing a current spacecraft attitude;

determining a first set of forces necessary to produce said desired attitude given said sensed current spacecraft attitude;

gimballing said thruster means; and

throttling said thruster means by adjusting power applied therto, said steps of gimballing and throttling causing said thruster means to produce said first set of forces on the spacecraft simultaneous with activation of said thruster means to produce a change in velocity of the spacecraft in the north/south direction, said steps of gimballing and throttling further being controllably performed to substantially eliminate a torque applied to a body of said spacecraft due to the activation of said thruster means.

5,349,533

SYSTEM AND METHOD FOR COLLISION CHECKING BETWEEN SOLID OBJECTS AND VECTORS

Vibeke Libby, San Mateo, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed May 8, 1992, Ser. No. 880,267

Int. Cl.[5] **G06F** *15/20*

U.S. Cl. 364—461 **10 Claims**

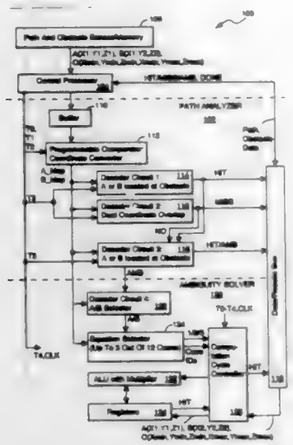
1. A path analyzer, comprising

a programmable comparator that converts a specified path's first and second endpoints in three dimensional space into first and second map signals, wherein each map signal indicates whether the corresponding path endpoint's position on predefined X, Y and Z coordinate axes is above, below or within a range of coordinate values associated with a specified obstacle; wherein said specified obstacle is specified by coordinate values corresponding to a rectangular parallelepiped having six sides;

a first decoder that decodes said first and second map signals and generates a path analysis signal that specifies one of three path conditions selected from the group comprising: blocked (said specified path is blocked by said specified obstacle), unblocked (said specified path is not blocked by said specified obstacle), and may-be-blocked (said specified path may be blocked by said specified obstacle); and

a dedicated computational unit, coupled to said first decoder, that is activated only when said first decoder generates a path analysis signal specifying a may-be-blocked path condition; said dedicated computational unit including (1) an arithmetic unit having a controller prepro-

grammed to perform selected ones of six predefined path intersection computations, each predefined path intersection computation determining whether any specified path intersects a distinct one of any specified obstacle's six sides; and (2) a second decoder that decodes said first and second map signals and generates identifier signals that identify a minimum number of said predefined path inter-



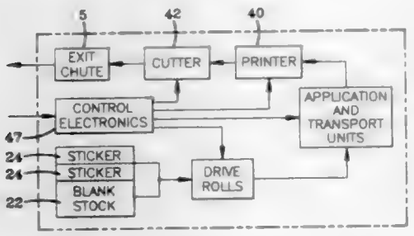
section computations necessary to determine whether said specified path is blocked by said specified obstacle; wherein said controller is coupled to second decoder for receiving said identifier signals and for directing said arithmetic unit to perform the ones of said predefined path intersection computations identified by said identifier signals.

5,349,534

AUTOMATIC FORM DISPENSING SYSTEM

Christ M. Rousseff, Rancho Santa Fe, Calif., and George E. Wallace, Salem, Ohio, assignors to American Registration Systems, Inc., Encinitas, Calif.

Filed Sep. 9, 1993, Ser. No. 119,406
Int. Cl.[5] G06F *15/00, 7/08*
U.S. Cl. 364—479 **20 Claims**



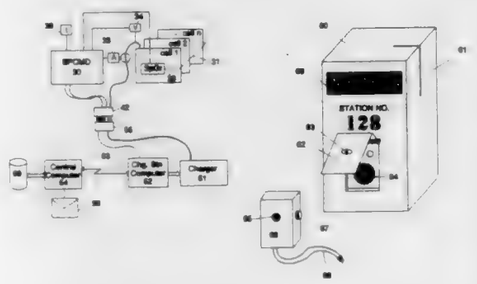
1. An automatic form dispensing system including:
a housing;
entry means for allowing an operator entry of commands and information;
at least two stock supply means in the housing for providing a supply of blank stock, each having first and second sides, for receiving information specific to a particular transaction on the first sides, and with one of said blank stock supplies having a pressure-sensitive adhesive on the second side thereof;
application means for releasably applying at least one of the pressure-sensitive blank stocks onto another of the blank stocks to provide a combined form;
printer means for printing information on the first sides of both the blank stocks which provides the combined form;
transport means for transporting the blank stocks from the supply means toward the printer means;
dispensing means for dispensing the printed combined form from the housing to an operator; and
control means for controlling operation of the entry means, transport means, printer means and dispensing means according to a stored program of instructions.

5,349,535

BATTERY CONDITION MONITORING AND RECORDING SYSTEM FOR ELECTRIC VEHICLES

Om P. Gupta, Ithaca, N.Y., assignor to Digicomp Research Corporation, Ithaca, N.Y.

Filed Oct. 20, 1992, Ser. No. 963,997
Int. Cl.[5] G08B *21/00*; **H02J** *7/00*
U.S. Cl. 364—483 **21 Claims**



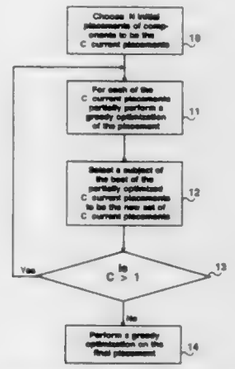
1. A battery pack monitoring device permanently attached to a battery pack which battery pack is a replaceable pack in a battery-using installation, such that when the battery pack in the installation is exhausted, the entire battery pack may be replaced with a new pack having a battery pack monitoring device, and the replaceable pack is recharged external of the battery-using installation, the battery pack comprising a plurality of batteries, each battery comprising a plurality of cells, the device comprising:
a) a plurality of sensor means for collecting information on at least one of the cells, each of the sensors having inputs for monitoring a parameter of the cell,
b) a plurality of data output means for communicating data about the battery pack, and
c) computer means for processing and storing data, comprising:
i) a plurality of input port means for accepting data connected to the plurality of sensors,
ii) a plurality of output port means for transmitting data connected to the plurality of data output means,
iii) a plurality of data input/output means for communicating with an external data processing means for collecting data, one of the data input/output means receives identification indicia from the battery-using installation, such that the installation is identified to the battery monitoring device,
iv) nonvolatile memory means for storing instructions and data, and
v) programmable processor means for processing data connected to the input port means, output port means, data input/output means, and memory means, in which data about the battery pack collected through the sensors is accepted by the computer means through the input port means and is processed by the programmable processor means based upon instructions stored in the memory means and is accumulated as processed data, the processed data being stored in the memory means and the processed data and the identification indicia of the battery-using installation is communicated to the external data processing means through the data input/output means.

5,349,536

METHOD FOR OPTIMALLY PLACING COMPONENTS OF A VLSI CIRCUIT

Sunil V. Ashtaputre, San Jose, and Dale M. Wong, San Francisco, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Aug. 20, 1991, Ser. No. 747,542
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—491 **20 Claims**



1. A method comprising the steps of:
(a) selecting an initial number of current placements of components for a VLSI circuit, including, for each of the initial current placements, selecting locations within the VLSI circuit for placement of each of the components;
(b) for each of the current placements, changing locations of the components to improve the current placement so that the current placement is partially optimized in accordance with partial performance of a greedy optimization;
(c) selecting a subset of the current placements partially optimized in step (b) to be new current placements, the selection being based on a global cost metric for the current placements;
(d) when there are more than one new current placements, repeating steps (a) through (d) with the new current placements being the current placements;
(e) when there is only one new current placement, performing an optimization on the new current placement to obtain an optimized placement; and,
(f) manufacturing the VLSI circuit with the components of the VLSI circuit arranged in accordance with the optimized placement.

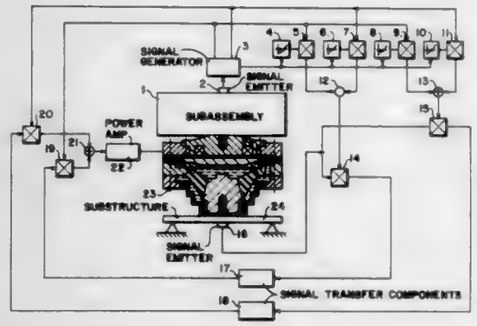
5,349,537

HYDRAULICALLY DAMPED RUBBER BEARING THAT SUPPORTS A MECHANICAL SUBASSEMBLY

Stefan Burger, Weinheim; Georg Feurer, Mörlenbach; Tillman Freudenberg, Weinheim; Ulrich Freudenberg, Hirschberg, and Uwe Weltin, Rimbach, all of Fed. Rep. of Germany, assignors to Firma Carl Freundenberg, Weinheim/Bergstrasse, Fed. Rep. of Germany

Filed Feb. 5, 1992, Ser. No. 831,725
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1991, 4104168
Int. Cl.[5] F16F *9/53*
U.S. Cl. 364—508 **4 Claims**

1. Control apparatus for a hydraulically damped rubber bearing adapted to support a vibrating mechanical subassembly on a substructure, said rubber bearing having a fluid-filled chamber and an actuator with an electromagnetic drive mechanism, associated with the fluid-filled chamber, for varying the hydraulic pressure in the chamber, said control apparatus comprising, in combination:
(a) first signal emitter means coupled to the subassembly for sensing relative movement thereof and producing a signal representing such movement;
(b) signal generator means coupled to the first signal emitter means for producing two harmonic-mutually phase shifted first signals having a common frequency equal to the frequency of vibration of the subassembly and producing a second signal that reproduces such common frequency in a characteristic manner;
(c) a plurality of characteristic curve-generating means, each responsive to said second signal, for producing an output signal having a prescribed relationship to said second signal;
(d) a plurality of first multiplier means, responsive to said first signals and said output signals, for producing third signals each representing the product of the respective values represented by one of said first signals and at least one of said output signals;
(e) at least one first adding means, each coupled to receive two of said third signals, for producing a pair added signal representing the sum of the respective values represented by said pair of third signals;



(f) second signal emitter means coupled to the substructure for sensing relative movement thereof and producing a fourth signal representing such movement;
(g) a plurality of second multiplier means, responsive to said pair added signals and to said fourth signal, for producing fifth signals each representing the product of the respective values represented by one of said third signals and said fourth signal;
(h) a plurality of transfer component means, each responsive to one of said fifth signals, for producing a sixth signal in dependence thereon, said transfer component means each having a transfer function which exhibits a low pass filter behavior above a prescribed frequency;
(i) a plurality of third multiplier means, each responsive to one of said sixth signals and to one of said first signals, for producing a seventh signal representing the product of the respective values represented by one of said sixth signals and one of said first signals;
(j) second adding means, responsive to said seventh signals, for producing an eighth signal representing the sum of the respective values represented by said seventh signals; and
(k) power amplifier means, responsive to said eighth signal, for producing a power output signal for controlling said drive mechanism of said rubber bearing.

5,349,538

METHOD FOR DETERMINING THE DISTRIBUTION OF CONSTITUENT SUBPOPULATIONS WITHIN A POPULATION OF PARTICLES HAVING OVERLAPPING SUBPOPULATIONS

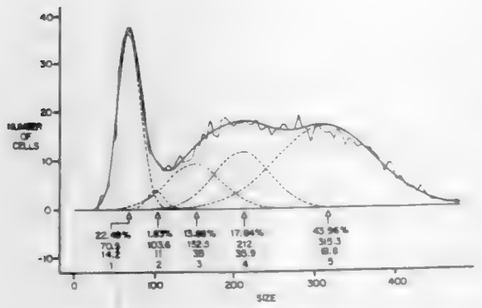
Edward L. Carver, Jr., Oxford, Conn.; Richard D. DeVeaux, Princeton, N.J., and David C. DeCava, Oxford, Conn., assignors to Edward Lawrence Carver, Jr., Oxford, Conn.

Continuation of Ser. No. 650,886, Feb. 5, 1991, Pat. No. 5,187,673. This application Feb. 12, 1993, Ser. No. 17,618

The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.

Int. Cl.[5] G01N *15/04, 15/02*

U.S. Cl. 364—555 **15 Claims**



1. A method for measuring and determining the parameters of constituent subpopulations of particles within a sample containing a population of particles including overlapping subpopulations of particles, comprising the following steps:

detecting the differences in at least one physical characteristic of the particles and generating first signals indicative of the differences;

measuring at least one characteristic of the first signals indicative of the differences in the at least one physical characteristic of the particles being measured, and generating second signals indicative of the at least one measured characteristic of the first signals; and

generating the parameters of each subpopulation of particles by estimating the probability that a particle belongs to a given subpopulation based on the second signals.

5,349,539

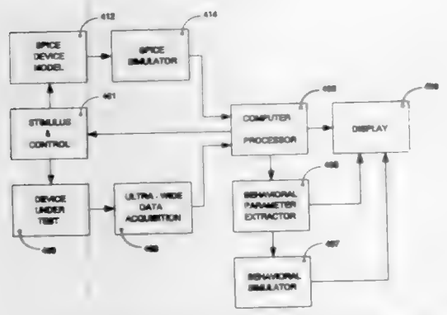
BEHAVIORAL MODEL PARAMETER EXTRACTOR

Hiro Moriyasu, Portland, Oreg., assignor to Zeelan Technology, Inc., Beaverton, Oreg.

Filed Oct. 28, 1991, Ser. No. 783,855

Int. Cl.[5] G06G *7/62*

U.S. Cl. 364—578 **13 Claims**



1. Apparatus for extracting circuit and system time domain behavioral model parameters of a device under test in a Laplace notation form comprising:

pulse stimulus means adapted to interface with the device under test and provide an input stimulus thereto;

data acquisition means to measure both the input stimulus and response of the device under test;

timebase means to control the relationship of input stimulus start and stop and data acquisition interval;

computer processor means to perform data processing of acquired data;

root parameter extraction means to analyze the acquired data in the time domain with respect to input stimulus and extract critical system and behavioral root parameters, including nonlinear parameters; and

means to convey information regarding original device under test response and extracted behavioral root parameters.

5,349,540

APPARATUS FOR DETERMINING THE STATE OF PHYSICAL PROPERTIES OF RECHARGEABLE ELECTRIC ENERGY STORAGE DEVICES

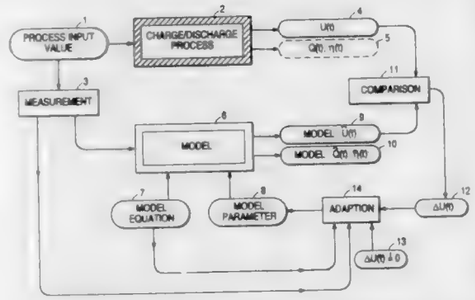
Michael Birkle; Gunther Grasemann, and Hartwig Steusloff, all of Karlsruhe, Fed. Rep. of Germany, assignors to Fraunhofer Gesellschaft zur Foerder der angewandten Forschung e. V., Fed. Rep. of Germany

Filed Nov. 12, 1991, Ser. No. 784,444

Claims priority, application Fed. Rep. of Germany, May 12, 1989, 3915550; PCT Int'l Appl., May 8, 1990, PCT/DE90/00322

Int. Cl.[5] G01R *13/36*

U.S. Cl. 364—578 **23 Claims**



1. A method of determining a state of charge and other physical properties of a rechargeable electric energy storage apparatus, which storage apparatus is subjected to a process which alters said physical properties, said method comprising the steps of:

measuring at least one input value for said physical properties during said process;

processing said at least one input value in a data processor in accordance with a predetermined model in the form of a non-linear mulitparametric function and a heuristic parametering technique, said multiparametric function having more parameters than input values, said processing step including the step of first estimating an unknown solution value for said predetermined model using said heuristic parametering based on characteristic curves and data of known energy storage apparatus, and then estimating derived values for said state of charge and other physical properties, and generating relationships between said derived valued for said state of charge and other physical properties;

comparing said derived values with the measured input value for said physical properties;

adapting said predetermined model to minimize differences between said measured input value and derived values; and

determining the state of charge and said other physical properties of said rechargeable electric energy storage apparatus from said comparing step.

5,349,541

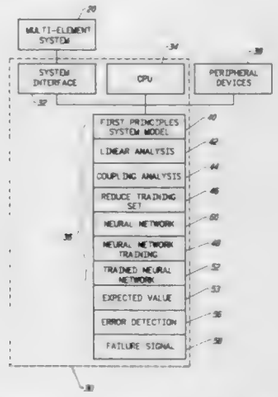
METHOD AND APPARATUS UTILIZING NEURAL NETWORKS TO PREDICT A SPECIFIED SIGNAL VALUE WITHIN A MULTI-ELEMENT SYSTEM

Frank J. Alexandro, Jr., Kirkland, Wash.; Robert W. Colley, Menlo Park; Ali Ipakchi, San Carlos, both of Calif., and Mostafa Khadem, Los Altos, Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jan. 23, 1992, Ser. No. 824,794

Int. Cl.[5] G06G *7/48, 7/62*

U.S. Cl. 364—578 **6 Claims**



1. An apparatus for predicting a signal value for a target element within a multi-element system, said apparatus comprising:

a storage device containing a system model defining fundamental physical relationships between said target element and said multi-element system, said fundamental physical relationships of said system model being defined in accordance with the laws of physics;

a processor interpreting said system model to identify a reduced data set of coupled elements within said system model, said reduced data set of coupled elements corresponding to elements within said multi-element system which are coupled to said target element;

a neural network trained with process values corresponding to said reduced data set of coupled elements, said neural network processing measured system values corresponding to said reduced data set of coupled elements to render a predicted value for said target element;

means for comparing said predicted value from said neural network to a measured value for said target element to determine whether said target element is malfunctioning; and

an indicator responsive to said comparing means to identify when said target element is malfunctioning.

5,349,542

METHOD FOR SIZING WIDTHS OF POWER BUSSES IN INTEGRATED CIRCUITS

Daniel R. Brasen, San Jose, and Bruce S. Seiler, Fremont, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Apr. 2, 1992, Ser. No. 862,095

Int. Cl.[5] G06F *15/60, 15/20*

U.S. Cl. 364—578 **10 Claims**

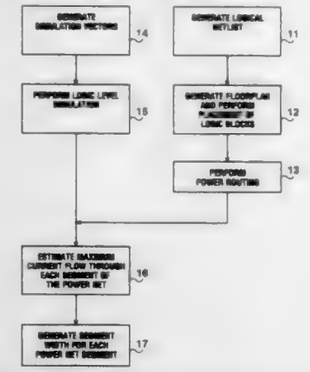
1. A method for sizing widths of power net segments within a power net of an integrated circuit, the method comprising the steps of:

(a) grouping circuit elements of the integrated circuit into logic blocks;

(b) routing the power net between the logic blocks;

(c) simulating performance of the logic blocks within the integrated circuit to obtain an estimated maximum current requirement for each logic block;

(d) for each power net segment, summing the estimated current requirements for each logic block which draws current through the power net segment to obtain estimated maximum current flow through the power net segment;



(e) based on maximum current flow in step (d) calculating a width for each power net segment; and,

(f) sizing the width for each power net segment based on the calculation performed in step (e).

5,349,543

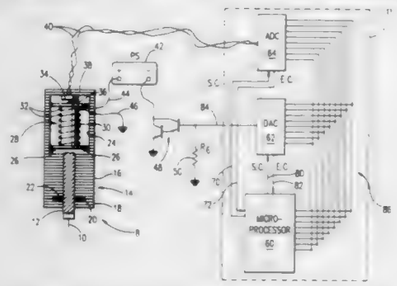
CONSTANT FORCE PROBE

Stanley Buliszyn, Rhinebeck; James A. Landor, Poughkeepsie, and Reuben Q. Zielinski, High Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 10, 1992, Ser. No. 896,288

Int. Cl.[5] G05B *23/02*

U.S. Cl. 364—579 **6 Claims**



1. A constant force probe for engagement with a workpiece, comprising:

a housing;

a probe tip, having an axis, partially contained within said housing and constrained for limited movement within said housing along the axis of said probe tip;

said probe tip comprising a permanently magnetic portion at least partially contained within said housing;

an electromagnet contained within said housing and constrained for movement within said housing;

a sensing means for sensing force exerted thereon by said electromagnet;

an electrical energy source connected to said electromagnet to energize said electromagnet with an electrical current;

electronic control means for regulating said electrical current to control repulsive forces between said magnetic portion and said electromagnet;

said electronic control means responsive to said sensing means;

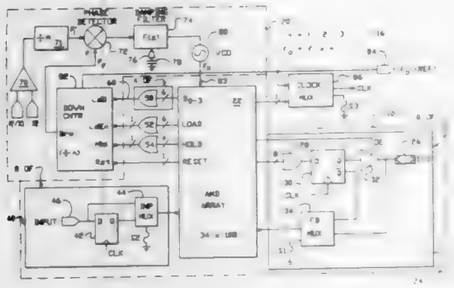
whereby said probe tip is forced against said workpiece by magnetic repulsion force between said magnet and said electromagnet and said repulsion force is sensed by said sensing means and controlled responsive to said sensing means by said electronic control means by varying said electrical current to said electromagnet.

5,349,544

PROGRAMMABLE SYSTEM SYNCHRONIZER

Michael J. Wright, Santa Clara, and Om P. Agrawal, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 15, 1988, Ser. No. 207,317
Int. Cl.[5] G06J *1/00*
U.S. Cl. 364—600 **25 Claims**



1. A single chip integrated circuit programmable logic device comprising:

a phase lock loop (**20**, **100**, **200**);

a programmable logic circuit (**10**, **102**, **202**) having at least one logic circuit input (e.g., **26**, **46**, **128***a*, **256**) and at least one logic circuit output (e.g., **26**, **60**, **130***a*, **236**, **280**);

wherein said programmable logic circuit comprises:

a programmable combinatorial logic array (**22**, **28**, **50**, **52**, **54**, **120**, **122**, **250**, **262**, **266**, **274**, **276**) having at least one array input and at least one array output and being programmable such that each of said array outputs carries an array output signal which is a programmable Boolean function of a subset of said array inputs;

logic circuit input coupling means (e.g., **42**, **44**) for providing to one of said array inputs the signal on one of said logic circuit inputs (e.g., **46**);

logic circuit output coupling means (e.g., **30**, **32**) for providing to one of said logic circuit outputs (e.g., **26**) the signal on one of said array outputs; and

a state register (**30**, **290**) having an input coupled to one of said array outputs and an output coupled to one of said array inputs; and

inter-block coupling means (e.g., **60**, **83**, **128***a*, **220**, **236**, **256**, **258**, **304**) for coupling said phase lock loop to said programmable logic circuit.

5,349,545

ARITHMETIC LOGIC UNIT DEQUANTIZATION

Michael Keith, Holland, Pa., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 24, 1992, Ser. No. 981,322
Int. Cl.[5] G06K *9/36*
U.S. Cl. 364—715.02 **12 Claims**

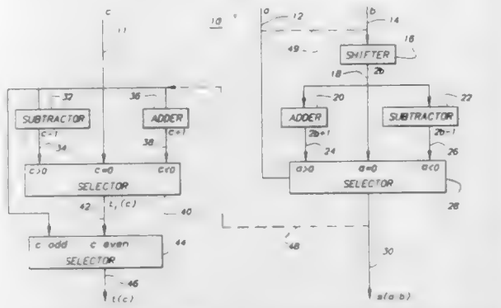
1. A device for dequantization of signals, said device having inputs for receiving at least first and second input signals, comprising:

a first shifter for shifting said second input signal to provide a third shifter signal;

a first addition device for adding a fourth signal to said third shifted signal to provide a first added signal;

a second addition device for adding a fifth signal to said third shifted signal to provide a second added signal; and,

first selector means for receiving said third shifted signal and said first added signal and said second added signal and for applying a selected one of said third shifted or first added



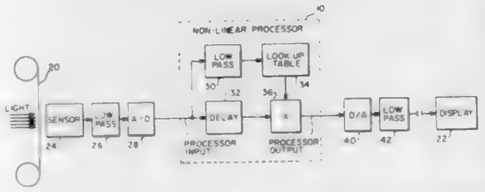
or second added signals to a first selector means output in accordance with said first input signal.

5,349,546

METHOD AND APPARATUS FOR NON-LINEAR SIGNAL PROCESSING WITH REDUCED UPPER HARMONIC COMPONENTS

Richard A. Sharman, Dunstable, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 1, 1992, Ser. No. 889,694
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.01 **11 Claims**



1. A method for the processing of sampled data, said method comprising the steps of:

storing a non-linear function in a look-up table memory such that each table input generates a table output based upon the transfer characteristic of the non-linear function;

low pass filtering the sampled data;

addressing the input of the look-up table memory with the low pass filtered data; and

multiplying the sampled data by the output of the look-up table memory.

5,349,547

BIDIMENSIONAL FIR FILTER

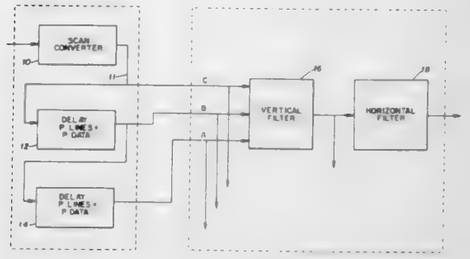
Michel Harrand, Seyssinet-Pariset, France, assignor to SGS-Thomson Microelectronics S.A., Saint-Genis Pouilly, France

Continuation of Ser. No. 926,815, Aug. 7, 1992, Pat. No. 5,265,041. This application Aug. 25, 1993, Ser. No. 111,624
Claims priority, application France, Aug. 9, 1991, 91 10425
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.05 **33 Claims**

1. A bidimensional filter for filtering an input stream of electrical signals that represents a bidimensional matrix having a plurality of rows and a plurality of columns, the input stream of electrical signals being supplied in a row-ordered sequence, the bidimensional filter comprising:

conversion means for converting the sequence of the input stream of electrical signals and generating a converted stream of electrical signals that represents the bidimensional matrix in a column-ordered sequence;

first filtering means, coupled to the conversion means, for filtering the converted stream of electrical signals and generating a first filtered stream of electrical signals that is substantially vertically filtered; and



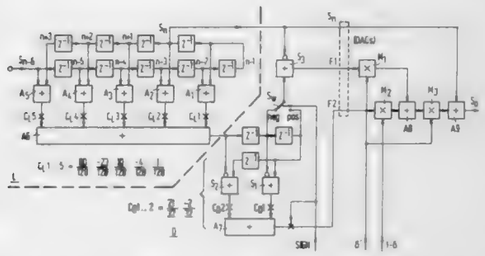
second filtering means, coupled to the first filtering means, for further filtering the first filtered stream of electrical signals and generating a bidimensionally filtered stream of electrical signals representing the bidimensional matrix.

5,349,548

NON-INTEGRAL DELAY CIRCUIT

Antonius H. H. J. Nillesen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 13, 1993, Ser. No. 61,358
Claims priority, application European Pat. Off., Jun. 26, 1992, 92201894.0
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.1 **6 Claims**



1. A non-integral delay circuit for delaying a digital signal by a selectable fraction (δ) of a sampling period of said digital signal, comprising:

first means for differentiating said digital signal to obtain a first differential signal (**F1**) having a first phase characteristic with respect to said digital signal;

second means for differentiating said digital signal to obtain a second differential signal (**F2**) having a second phase characteristic with respect to said digital signal; said first and second phase characteristics differing from each other;

means for combining said first (**F1**) and second (**F2**) differential signals in dependence on said selectable fraction (δ) to obtain a phase-adjusted correction signal; and

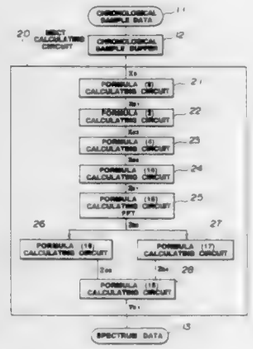
means for adding a product of said selectable fraction (δ) and said phase-adjusted correction signal to said digital signal, to obtain said digital signal delayed by said selectable fraction (δ) of the sampling period of said digital signal.

5,349,549

FORWARD TRANSFORM PROCESSING APPARATUS AND INVERSE PROCESSING APPARATUS FOR MODIFIED DISCRETE COSINE TRANSFORMS, AND METHOD OF PERFORMING SPECTRAL AND TEMPORAL ANALYSES INCLUDING SIMPLIFIED FORWARD AND INVERSE ORTHOGONAL TRANSFORM PROCESSING

Kyoya Tsutsui, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 24, 1992, Ser. No. 950,945
Claims priority, application Japan, Sep. 30, 1991, 3-276165
Int. Cl.[5] G06F *15/332*
U.S. Cl. 364—725 **23 Claims**



1. A forward transform processing apparatus for carrying out a modified discrete cosine transform on a digital input signal, the digital input signal comprising plural samples in the time domain, the apparatus comprising:

(1) means for dividing the digital input signal blocks of N samples, where N is a positive multiple of four;

(2) a multiplier, the multiplier multiplying each block of N samples by a forward transform window to provide a block of N forward transform window processed samples; and

(3) transform means for transforming the block of N forward transform window processed samples to provide a block of N/2 spectral coefficients, the transform means including:

(a) a preprocessing means for preprocessing the block of N forward transform window processed samples to provide a block of N/4 complex numbers,

(b) an FFT means for performing processing equivalent to a Fast Fourier Transform on the block of N/4 complex numbers to provide a transformed block of N/4 complex numbers; and

(c) a postprocessing means for post-processing the transformed block of complex numbers to provide the block of N/2 spectral coefficients.

5,349,550

LONG SEQUENCE CORRELATION COPROCESSOR

Douglas W. Gage, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

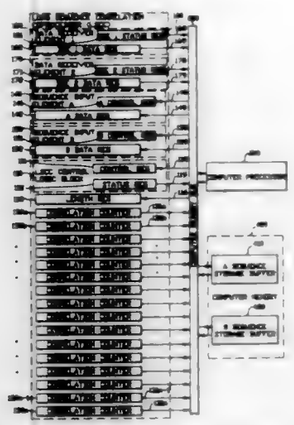
Filed Jun. 27, 1991, Ser. No. 722,059
Int. Cl.[5] G06F *15/336*
U.S. Cl. 364—728.03 **6 Claims**

1. An apparatus for the correlation of two sequences of binary data interfaced via a memory bus (**200**) to a computer processor (**300**) and a computer memory (**400**) comprising:

a plurality of sequential counter means (**130***a*–**130***n*), operating simultaneously, for each tallying sequentially a separate correlation coefficient in response to a common clock

signal and one of a plurality of discrete counter enable signals (**129***a*–**129***n*) and

correlation counter enable logic means (**120**) connected to receive said two sequences of binary data and connected to said plurality of sequential counter means (**130***a*–**130***n*) for comparing one bit (**156**) of the first sequence with a plurality of bits (**122***a*–**122***n*) of the second sequence during each cycle of said common clock signal to produce said plurality of discrete counter enable signals (**129***a*–**129***n*) to increment each of the sequential counter means (**130***a*–**130***n*) when the bits of the two sequences which are compared are the same, and thus provide separate correlation coefficients simultaneously for different alignments of said two sequences of data.



5,349,551

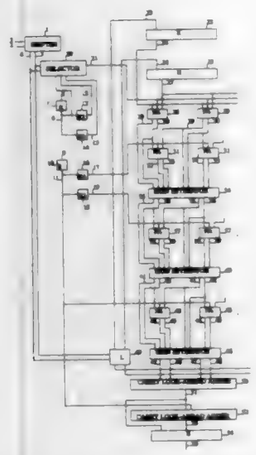
DEVICE FOR AND METHOD OF PREFORMING AN N-BIT MODULAR MULTIPLICATION IN APPROXIMATELY N/2 STEPS

John Petro, San Diego, Calif., assignor to The United States of America as represented by the Director of National Security Agency, Washington, D.C.

Filed Jul. 30, 1993, Ser. No. 99,490

Int. Cl.[5] **G06F** *7/38, 7/52*

U.S. Cl. 364—746 **4 Claims**



1. A device for performing an n-bit modular multiplication of A×B modulo C in approximately n/2 steps, where A denotes a binary multiplier of any length, C denotes an n-bit binary modulus where n is any positive integer, and B denotes a binary multiplicand having a magnitude less than the magnitude of C, comprising:

a) a first register having a first input for loading A, a second input for shifting the contents of said first register, a first output connected to the most significant bit position of said first register, and a second output connected to the next most significant bit position of said first register, the second input is used to shift the contents of said first register so that the contents of said first register appear two bits at a time at the first output and the second output of said first register;

b) a second register having an input for loading B and an output bus for transmitting B;

c) a third register having an input for loading −C and an output bus for transmitting −C;

d) means, connected to the output bus of said second register, for generating 2B, said first generating means having an output bus for transmitting 2B;

e) means, connected to the output bus of said second register, for generating 3B, said second generating means having an output bus for transmitting 3B;

f) means, connected to the output bus of said third register, for generating −4C, said third generating means having an output bus for transmitting −4C;

g) means, connected to the output bus of said third register, for generating −2C, said fourth generating means having an output bus for transmitting −2C;

h) means, having a first control-input connected to said first output of said first register, a second control-input connected to the second output of said first register, a first input bus connected to the output bus of said second register, a second input bus connected to the output bus of said first generating means, and a third input bus connected to the output bus of said second generating means, for selecting one set of bits from the group of sets of bits consisting of binary zero, B, 2B, and 3B, said selecting means having an output bus for transmitting the set of bits selected, where binary zero is transmitted by the output bus of said selecting means when the decimal value of the most significant bit and the next most significant bit of said first register is zero, where B is transmitted by the output bus of said selecting means when the decimal value of the most significant bit and the next most significant bit of said first register is one, where 2B is transmitted by the output bus of said selecting means when the decimal value of the most significant bit and the next most significant bit of said first register is two, and where 3B is transmitted by the output bus of said selecting means when the decimal value of the most significant bit and the next most significant bit of said first register is three;

i) a first partial product register having an input bus for storing save-bits of partial products generated in performing A×B modulo C, and an output bus for transmitting the contents of said first partial product register, where said first partial product register has a length sufficient to store an n-bit binary number, three overflow bits, and a sign bit;

j) a second partial product register having an input bus for storing carry-bits of partial products generated in performing A×B modulo C, and an output bus for transmitting the contents of said second partial product register, where said second partial product register has a length equal to the length of said first partial product register;

k) a number of first-row full-adders equal to the length of said first partial product register, where each of said first-row full adders corresponds to one bit position of said first partial product register and said selecting means, each of said first-row full-adders having a first input connected to the corresponding bit position in the output bus of said first partial product register, a second input connected to the corresponding bit position in the output bus of said selecting means, a carry-input connected to the bit position in the output bus of said second partial product register that is one bit position less significant than the bit position of the output bus connected to the first input of the same first-row full-adder, a carry-output, and a save-output, for adding either zero, B, 2B, or 3B to the partial product contained in said first partial product register and said second partial product register based on the value of the two most significant bits in said first register;

l) a number of second-row full-adders equal to the length of said first partial product register, where each of said second-row full adders corresponds to one bit position of said first-row full-adders and said third generating means, each of said second-row full-adders having a first input connected to the save-output of said corresponding first-row full-adder, a second input connected to the corresponding bit position in the output bus of said third generating means, a carry-input connected to the carry-output of the first-row full-adder that is one bit position less significant than the save-output position connected to the first input of said second-row full-adder, a carry-output, and a save-output, for adding −4C to the partial product appearing at the carry-outputs and the save outputs of said first-row full-adders;

m) a first sign-estimating means, connected to the carry-outputs and the save-outputs of said first-row full-adders and the carry-outputs and the save-outputs of said second-row full-adders, for estimating the sign of the carry-outputs and the save-outputs of said second-row full-adders and transmitting the carry-outputs and the save-outputs of said second-row full-adders from corresponding carry-outputs and save outputs of said first sign-estimating means when the carry-outputs and the save-outputs of said second-row full-adders are estimated to be greater than or equal to zero and transmitting the carry-outputs and the save-outputs of said first-row full-adders otherwise;

n) a number of third-row full-adders equal to the length of said first partial product register, where each of said third-row full-adders corresponds to one bit position of said first sign-estimating means and said fourth generating means, each of said third-row full-adders having a first input connected to the corresponding save-output of said first sign-estimating means, a second input connected to the corresponding bit position in the output bus of said fourth generating means, a carry-input connected to the carry-output of said first sign-estimating means that is one bit position less significant than the save-output connected to the first input of said third-row full-adders, a carry-output, and a save-output, for adding −2C to the partial product represented by the carry-outputs and the save outputs of said first sign-estimating means;

o) a second sign-estimating means, connected to the carry-outputs and the save-outputs of said third-row full-adders and the carry-outputs and the save-outputs of said first sign-estimating means, for estimating the sign of the carry-outputs and the save-outputs of said third-row full-adders and transmitting the carry-outputs and the save-outputs of said third-row full-adders from corresponding carry-outputs and save-outputs of said second sign-estimating means when the carry-outputs and the save-outputs of said third-row full-adders are estimated to be greater than or equal to zero and transmitting the carry-outputs and the save-outputs of said first sign-estimating means otherwise;

p) a number of fourth-row full-adders equal to the length of said first partial product register, where each of said fourth-row full-adders corresponds to one bit position of said second sign-estimating means and said third register, each of said fourth-row full-adders having a first input connected to the corresponding save-output of said second sign-estimating means, a second input connected to the corresponding bit position in the output bus of said third register, a carry-input connected to the carry-output of said second sign-estimating means that is one bit position less significant than the save-output connected to the first input of said fourth-row full-adders, a carry-output, and a save-output, for adding −C to the partial product represented by the carry-outputs and the save-outputs of said second sign-estimating means;

q) a third sign-estimating means, connected to the carry-outputs and the save-outputs of said fourth-row full-adders and the carry-outputs and the save-outputs of said second sign-estimating means, for estimating the sign of the carry-outputs and the save-outputs of said fourth-row full-adders and transmitting the carry-outputs and the save-outputs of said fourth-row full-adders from corresponding carry-outputs and save-outputs of said third sign-estimating means when the carry-outputs and the save-outputs of said fourth-row full-adders are estimated to be greater than or equal to zero and transmitting the carry-outputs and the save-outputs of said second sign-estimating means otherwise;

r) means, connected to the carry-outputs and the save-outputs of said third sign-estimating means and at least one of said first output and said second output of said first register, for transmitting each save-output of said third sign-estimating means to the bit position in the input bus of said first partial product register that is two places more significant than each save-output of said third sign-estimating means and transmitting each carry-output of said third sign-estimating means to the bit position in the input bus of said second partial product register that is two places more significant than each carry-output of said third sign-estimating means if said first register contains any bits of A;

s) a first carry-look-ahead adder of length equal to the length of said first partial product register, having a first input bus connected to the save-outputs of said third sign-estimating means, a second input bus connected to the carry-outputs of said third sign-estimating means, and an output bus, for converting the redundant form of the carry-outputs and the save-outputs of said third sign-estimating means to a non-redundant form;

t) a second carry-look-ahead adder of length equal to the length of said first partial product register, having a first input bus connected to the output bus of said first carry-look-ahead adder, a second input bus connected to the output bus of said third register, and an output bus, for adding −C to the product appearing at the output bus of said first carry-look-ahead adder; and

u) means, connected to the output bus of said first carry-look-ahead adder and said output bus of said second carry-look-ahead adder, for determining the sign of the result appearing at the output bus of said second carry-look-ahead adder and transmitting the result appearing at the output bus of said second carry-look-ahead adder as A×B modulo C from an output bus of said sign-determining means if the result appearing at the output bus of said second carry-look-ahead adder is greater than or equal to zero and transmitting the result appearing at the output bus of said first carry-look-ahead adder as A×B modulo C from an output bus of said sign-determining means otherwise.

5,349,552

MEMORY COMPILER WITH MULTIPLE SELECTABLE CORE ELEMENTS

Michael A. Zampaglione, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 20, 1991, Ser. No. 811,401

Int. Cl.[5] **G11C** *5/02*

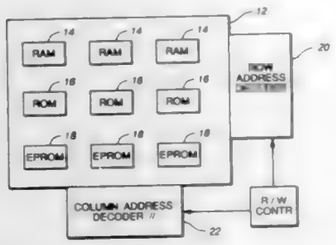
U.S. Cl. 365—51 **12 Claims**

1. A method for designing a memory array comprising the steps of:

establishing a code file to identify whether individual cell locations of the memory array are to be fabricated as a first type of cell or as a second type of cell;

allocating a first portion of a circuit layout to memory cells of said first type;

allocating a second portion of the circuit layout to memory cells of said second type; and,



allocating a third portion of the circuit layout to decoder and control logic, the decoder and control logic being shared by the first portion and the second portion.

5,349,553

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

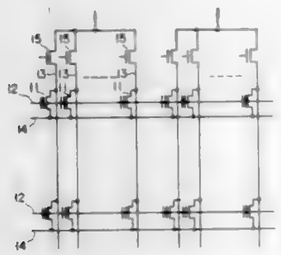
Seiji Yamada, Tokyo, and Masamitsu Oshikiri, Sagamikara, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 17, 1993, Ser. No. 77,719

Claims priority, application Japan, Jun. 18, 1992, 4-159485

Int. Cl.[5] G11C *11/40, 11/24*

U.S. Cl. 365—185 **5 Claims**



1. A nonvolatile semiconductor memory device comprising:

a memory cell array including a plurality of memory cell transistors arranged in a row and column matrix, wherein said memory cell transistors comprise a floating gate and a control gate having a lamination gate structure;

a word line group having a plurality of word lines, wherein each word line corresponds to a row of said memory cell array and is connected in common to said memory cell transistors arranged in the corresponding row of said memory cell array;

a bit line group having a plurality of bit lines, wherein each bit line corresponds to a column of said memory cell array and is connected in common to said memory cell transistors in the corresponding column of said memory cell array;

row decoder means, connected to each word line, for selectively driving an arbitrary word line of said word line group, wherein said row decoder means when in a read mode applies a voltage to the arbitrary word line that is lower than a threshold voltage of said memory cell transistors in a state in which said floating gate stores no electrical charge; and

column decoder means, connected to each bit line, for selectively driving an arbitrary bit line of said bit line group when in the read mode.

5,349,554

MEMORY ELEMENT WITH BIPOLAR TRANSISTORS IN RESETTABLE LATCH

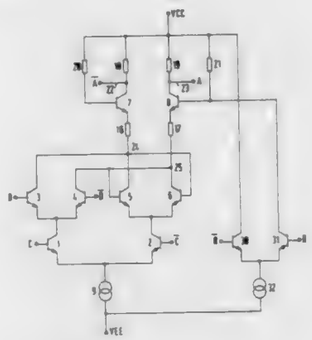
Klaus Delker, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 17, 1993, Ser. No. 123,524

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1992, 4231178

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—189.05 **5 Claims**



1. A memory element, comprising:

(a) a first transistor pair having first and second transistors with bases, collectors and coupled emitters, and a current source connecting the coupled emitters to a terminal for a first supply potential;

(b) a second transistor pair having first and second transistors with bases, collectors and coupled emitters, the collector of said first transistor of said first transistor pair being connected to the coupled emitters of said first and second transistors of said second transistor pair;

(c) a third transistor pair having first and second transistors with bases, collectors and coupled emitters, the collector of said second transistor of said first transistor pair being connected to the coupled emitters of said first and second transistors of said third transistor pair;

(d) resistors having first and second terminals, the collectors of one of said transistors of each of said second and third transistor pairs being coupled together and connected to the first terminal of one of said resistors, and the collectors of the other of said transistors of each of said second and third transistor pairs being coupled together and connected to the first terminal of the other of said resistors;

(e) a fourth transistor pair having first and second transistors with bases and with collectors and emitters defining collector-to-emitter paths, the second terminals of said resistors each being connected through the collector-to-emitter path of a respective one of said transistors of said fourth transistor pair to a terminal for a second supply potential;

(f) said transistors of said fourth transistor pair being connected as an emitter follower circuit with respect to the second supply potential;

(g) the collector of at least one of said transistors of said fourth transistor pair being connected to an output signal terminal, and at least one other resistor connecting the collector of the at least one transistor of said fourth transistor pair to the terminal for the second supply potential;

(h) the base of said first transistor of said third transistor pair being connected to the collector of said second transistor of said third transistor pair;

(i) the bases of said first transistors of said first and second transistor pairs each being a terminal for a respective input signal;

(j) the bases of said second transistors of said first, second and third transistor pairs each being a terminal for a respective reference signal;

(k) a fifth transistor pair having first and second transistors with bases, collectors and coupled emitters, and another current source connecting the coupled emitters of said first and second transistors of said fifth transistor pair to the terminal for the first supply potential;

(l) the collector of said first transistor of said fifth transistor pair being connected to the base of one of said transistors of said fourth transistor pair;

(m) the collector of said second transistor of said fifth transistor pair being connected to the terminal for the second supply potential; and

(n) the base of one of said transistors of said fifth transistor pair being a terminal for an input signal, and the base of the other of said transistors of said fifth transistor pair being a terminal for a reference signal.

5,349,555

REDUNDANCY CIRCUIT

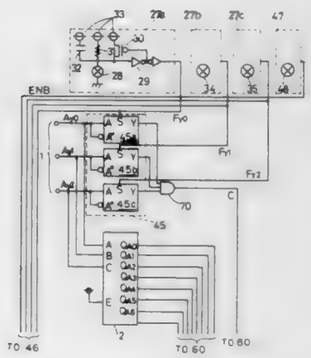
Michio Nakajima, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1993, Ser. No. 52,629

Claims priority, application Japan, May 7, 1992, 4-114710

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—200 **17 Claims**



1. A redundancy circuit comprising:

(a) storage means having (M+N) storage columns including M specific redundant columns, each said storage column being substantially formed by a plurality of storage units;

(b) faulty column specifying means for outputting a faulty column signal indicating J faulty columns being storage columns having faulty said storage units;

(c) column signal specifying means for outputting a column signal indicating specific one of said storage columns and a match signal indicating match/mismatch of said specific one of storage columns and said faulty columns;

(d) a combination circuit receiving said column signal, said faulty column signal and said match signal for specifying one of said specific redundant columns in correspondence to said specific one of storage columns when said specific one of storage columns is a faulty column; and

(e) an enable circuit for generating an enable signal for controlling the operation of said combination circuit,

where M and N represent positive integers and J (≦M) represents a non-negative integer.

5,349,556

ROW REDUNDANCY CIRCUIT SHARING A FUSE BOX

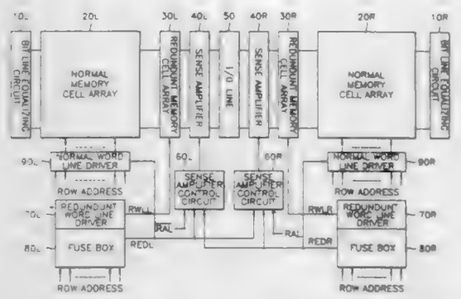
Kyu-Chan Lee, Ahnsan, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 13, 1993, Ser. No. 90,691

Claims priority, application Rep. of Korea, Jul. 13, 1992, 12436

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—200 **12 Claims**



1. A row redundancy circuit in a semiconductor memory device having a plurality of first normal memory cell arrays and a plurality of second normal memory cell arrays, each first normal memory cell array having a plurality of rows and further including a first redundant memory cell array and a first sense amplifier array, and each second normal memory cell array having a plurality of rows and further including a second redundant memory cell array and a second sense amplifier array, said second normal memory cell array being substantially adjacent to said first normal memory cell array, said row redundancy circuit comprising:

a first sense amplifier control circuit connected to said first sense amplifier array that generates a first sense amplifier array control signal that is input to said first sense amplifier array; and

a second sense amplifier control circuit connected to said second sense amplifier array that generates a second sense amplifier array control signal that is input to said second sense amplifier array;

a first redundant row address decoder programmed to decode a first row address and a first array select signal associated with a first one of said rows located within one of said first normal memory cell arrays and said substantially adjacent second normal memory cell array, said first redundant row address decoder outputting a first redundant row address decode signal when said first row address is decoded to both said first and second sense amplifier control circuits; and

a second redundant row address decoder programmed to decode a second row address and a second array select signal associated with a second one of said rows located within said one of said first normal memory cell arrays and said substantially adjacent second normal memory cell array, said second redundant row address decoder outputting a second redundant row address decode signal when said second row address is decoded to both said first and second sense amplifier control circuits.

5,349,557

SEMICONDUCTOR MEMORY DEVICE

Makoto Yoshida, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 19, 1993, Ser. No. 109,329

Claims priority, application Japan, Aug. 25, 1992, 4-226102

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—200 **35 Claims**

1. A semiconductor memory device of this embodiment includes:

a plurality of memory cells for storing data;

at least one redundant block having strings of the memory cells arranged in a predetermined direction; and

a plurality of regular blocks having strings of the memory cells arranged in the predetermined direction,

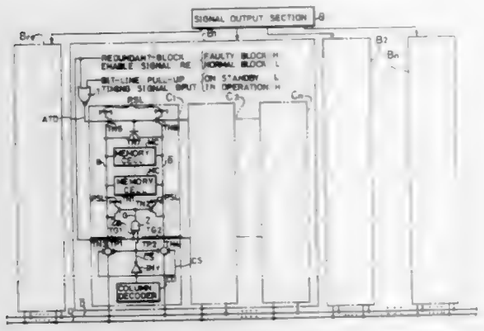
wherein, when there is a faulty block among the regular blocks, the redundant block is used instead of the faulty block, and

wherein each string of the memory cells in the regular blocks includes:

a pair of bit lines, connected to a plurality of the memory cells, for transmitting signals read out from the memory cells and signals to write data in the memory cells;

first pull-up switching means for starting or stopping pulling-up of the bit lines; and

second pull-up switching means for starting or stopping pulling-up of the bit lines to prevent data stored in the memory cells from being lost,



said semiconductor memory device further comprising:

first driving means for driving said first pull-up switching means so that said first pull-up switching means in a faulty regular block is always turned off, and that said first pull-up switching means in a normal regular block is turned on in a standby state and is turned off when reading or writing data; and

second driving means for driving said second pull-up switching means so that said second pull-up switching means in a faulty regular block is always turned off, and that said second pull-up switching means in a selected string of the memory cells in a normal regular block is turned off and said second pull-up switching means in an unselected string of the memory cells in the normal regular block is turned on when reading or writing data.

5,349,558

SECTOR-BASED REDUNDANCY ARCHITECTURE

Lee E. Cleveland, Santa Clara; Michael A. Van Buskirk, San Jose; Johnny C. Chen, Cupertino, and Chung K. Chang, Sunnyvale, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 26, 1993, Ser. No. 112,033

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—200 **7 Claims**

1. A semiconductor integrated circuitry memory device having array means formed of a plurality of sectors each formed of an array of flash EEPROM cells and redundancy circuit means for repairing defective columns of memory cells in the plurality of sectors on a sector-by-sector basis, said redundant circuit means comprising in combination:

a plurality of sector-based redundancy blocks (**12**–**26**) each having redundant columns of memory cells extending through the plurality of sectors;

sector selection means (Q1,Q2) for dividing said redundant columns into different segments each residing in at least one of said plurality of sectors and for isolating the different segments so as to allow independent use from other segments in the same redundant columns in repairing the defective columns in corresponding ones of said plurality of sectors;

addressable storage means (**314**) for storing sector-based redundancy column addresses each defining a column address containing the defective column of memory cells in the plurality of sectors in association with one of the different redundant column segments to be used in repairing the defective column;

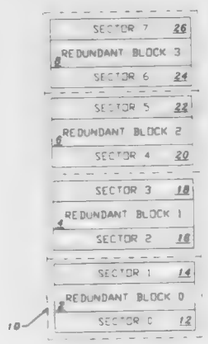
said addressable storage means including means responsive to sector address signals and address input signals for programming said redundant column addresses;

said addressable storage means including means (**316**) for reading said stored redundancy column addresses in relation to said plurality of sector-based redundancy blocks and for comparing said address input signals with said redundancy column address which is being read to generate a redundancy signal and a disable signal when there is a match;

means (**318***a*,**318***b*) responsive to said redundancy signal for enabling said redundant block to be used to repair said defective columns;

means (**318***c*) responsive to said disable signal for disabling a Y-decoder to the defective columns;

said addressable storage means (**314***a*) including a first addressable storage circuit for storing said redundancy column addresses corresponding to a first redundant element



in each of said plurality of sector-based redundancy blocks and a second addressable storage circuit (**314***b*) for storing said redundancy column addresses corresponding to a second redundant element in each of said plurality of sector-based redundancy blocks;

each of said first and second addressable storage circuit being formed of a plurality of quad address circuits (**315***a*–**315***g*);

the number of said quad address circuits being independent upon the number of columns in said plurality of sectors;

each of said quad address circuits consisting of a plurality of single address bit storage circuits (**319***a*–**319***d*) whose outputs are arrayed so as to share a common read path, each of said quad address circuits being used to store a bit address of said redundancy column address associated with each of said plurality of sector-based redundancy blocks;

the number of said single address bit storage circuits being dependent upon the number of said plurality of sector-based redundancy blocks; and

each of said plurality of single address bit storage circuits having a single address bit storage cell formed of a program transistor device (DP) for storing one of said bit addresses associated with one of said plurality of sector-based redundancy blocks and a read transistor device (DR) responsive to said sector address signals for reading said stored redundancy column address.

5,349,559

INTERNAL VOLTAGE GENERATING CIRCUIT

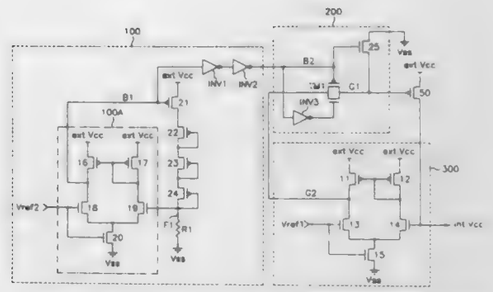
Yong-Bo Park, Suwon, and Hyung-Kyu Lim, Seoul, both of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Aug. 18, 1992, Ser. No. 940,205

Claims priority, application Rep. of Korea, Aug. 19, 1991, 14272/1991

Int. Cl.[5] G11C *29/00*

U.S. Cl. 365—201 **21 Claims**



1. A voltage generating circuit for use with a semiconductor memory device, for providing an internal voltage to said memory device during normal operation and for providing an external voltage during a burn-in test operation of said semiconductor memory device, said semiconductor memory device having a predetermined operating voltage, said voltage generating circuit comprising:

driver means coupled to receive said external voltage, for generating said internal voltage from said external voltage in response to a first control signal;

first comparing means for comparing said internal voltage to a first reference voltage to generate said first control signal;

second comparing means for generating a second control signal representing a comparison between said external voltage and a second reference voltage, said second comparing means comprising:

a first transistor having a first electrode of a principal electrically conducting channel connected to a first terminal of said external voltage and a control electrode coupled to receive said second control signal;

voltage reducing means interposed between a second electrode of said principal electrically conducting channel of said first transistor and a common node, for reducing an amplitude of said external voltage;

a resistor interposed between said common node and a second terminal of a reference potential; and

differential amplifier means interposed between said first terminal of said external voltage and said second terminal of said reference potential and connected to said common node, for comparing said external voltage with said first reference voltage to provide said second control signal; and

control means responsive to said second control signal, for enabling and disabling reception of said first control signal by said driver means, said driver means providing said internal voltage to said semiconductor memory device when said control means enables said first control signal to be received by said driver means, and said driver means providing said external voltage to said semiconductor memory device when said control means disables reception of said first control signal by said driver means.

5,349,560

SEMICONDUCTOR MEMORY DEVICE WITH IMPROVED BIT LINE PRECHARGED CIRCUITS

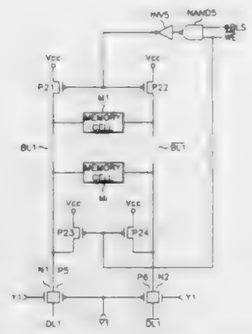
Young-Ho Suh, Suwon, and Suk-Bin Kim, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 30, 1993, Ser. No. 39,741

Claims priority, application Rep. of Korea, Mar. 30, 1992, 1992-5283

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—203 **4 Claims**



1. A semiconductor memory device having a number of memory cells each sharing a pair of bit lines, each bit line pair together with corresponding memory cells forming a memory cell array, said semiconductor memory device comprising:

first bit line precharge means coupled to a first position along a bit line pair for precharging the bit lines of said bit line pair under the control of a block selection signal and a write enable signal; and

second bit line precharge means coupled at a second position along said bit line pair for precharging said bit lines of said bit line pair under the control of the write enable signal, said first and second positions substantially corresponding to respective opposite ends of said bit line pair to reduce a precharge time and a write recovery time associated with said bit line pair.

5,349,561

MULTIPORT MEMORY AND METHOD OF OPERATION THEREOF

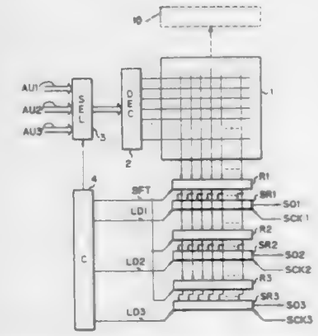
Seiichiro Iwase, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 27, 1991, Ser. No. 722,226

Claims priority, application Japan, Jun. 29, 1990, 2-173327

Int. Cl.[5] G11C *7/00, 19/00*

U.S. Cl. 365—219 **10 Claims**



9. The multiport memory having a plurality of serial output ports, comprising:

semiconductor memory means for storing data in a plurality of memory elements arrayed in rows and columns and coupled by respective row and column connecting lines and for reading the stored data therefrom in parallel to one of the row connecting lines and the column connecting lines of the plurality of memory elements;

first register means for storing the data read in parallel from the semiconductor memory means via the connecting lines, for supplying the data stored therein in serial form to a first one of the serial output ports, and for reading the data stored therein in parallel to parallel output terminals thereof;

second register means coupled with the parallel output terminals of the first register means to receive the data read in parallel form from the first register means for storing the received data therein, and for supplying the data stored therein to a second one of the serial output ports; and

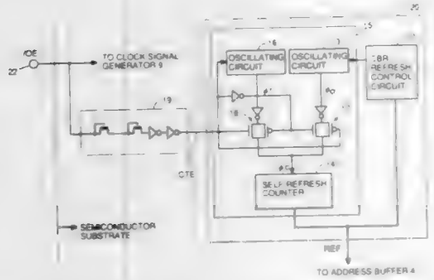
control means for supplying a read address to the semiconductor memory means for controllably selecting data to be read in parallel therefrom, the control means being operative to supply respective control signals to the first and second register means for controlling the storage of data therein and the reading and supply of data therefrom.

5,349,562

DYNAMIC RANDOM ACCESS MEMORY DEVICE SUITABLE FOR SHORTENING TIME REQUIRED FOR TESTING SELF-REFRESH FUNCTION

Tetsushi Tanizaki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1993, Ser. No. 45,572
Claims priority, application Japan, Jun. 4, 1992, 4-144044
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—222 **11 Claims**



1. A dynamic random access memory device having a self-refresh function, comprising:

a memory cell array having a plurality of memory cells arranged in rows and columns;

refresh address generating means responsive to an applied clock signal for generating a refresh address signal;

designating means responsive to the refresh address signal for designating a memory cell to be refreshed in said memory cell array;

first clock signal generating means for generating a first clock signal having a first frequency defining a refresh cycle in a normal self-refresh mode;

second clock signal generating means for generating a second clock signal having a second frequency higher than said first frequency; and

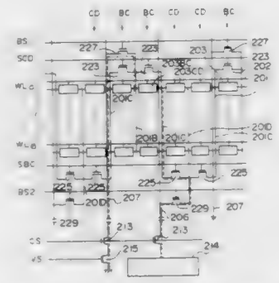
selective supply means responsive to an externally applied test mode signal for selectively supplying one of said first and second clock signals to said refresh address generating means.

5,349,563

MASK ROM

Taira Iwase, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 5, 1993, Ser. No. 41,587
Claims priority, application Japan, Apr. 3, 1992, 4-081238
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.01 **5 Claims**



1. A mask ROM having a plurality of memory cell blocks each composed of a main bit line, a ground line, and a plurality of memory cells for storing information; and a sense amplifier for reading the information stored in the memory cells via the main bit line, which comprises:

a plurality of first block selecting means for selecting a memory cell block to be connected to the main bit line from a plurality of the memory cell blocks; and

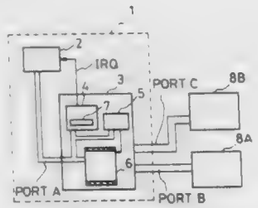
a plurality of second block selecting means for selecting a memory cell block to be connected to the ground line from a plurality of the memory cell blocks, said first and second block selecting means being arranged alternately with the memory cell block sandwiched therebetween.

5,349,564

MULTI-PORT RAM HAVING MEANS FOR PROVIDING SELECTABLE INTERRUPT SIGNALS

Takashi Miyake, and Mitsuru Sugita, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1991, Ser. No. 731,556
Claims priority, application Japan, Jul. 24, 1990, 2-195925
Int. Cl.[5] G11B *7/00*
U.S. Cl. 365—230.05 **6 Claims**



1. A multi-port RAM coupled to a central processing unit (CPU), said multi-port RAM comprising:

a memory having a plurality of storage locations, each storage location accessed by a unique address in a memory address space;

a plurality of ports for transmitting data between external devices and said memory; and

an interrupt circuit, coupled to said plurality of ports, to said memory, and to the CPU, for generating interrupt signals to the CPU, when specific storage locations in said memory address space are written to via said plurality of ports, said interrupt circuit comprising:

decoding means for decoding a plurality of specific addresses corresponding to said specific storage locations in said memory address space to generate said interrupt signals; and

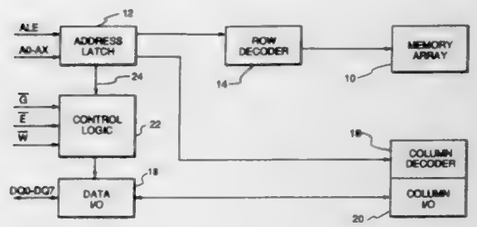
a selection circuit, coupled to said decoding means, for selecting one of said generated interrupt signals to interrupt the CPU.

5,349,565

SRAM WITH TRANSPARENT ADDRESS LATCH AND UNLATCHED CHIP ENABLE

Sheau-Dong Wu, Saratoga, and Iu-Lin Lih, San Jose, both of Calif., assignors to MOS Electronics Corporation, San Jose, Calif.

Filed Sep. 5, 1991, Ser. No. 755,319
Int. Cl.[5] G11C *11/34*
U.S. Cl. 365—230.08 **12 Claims**



1. A single chip address latched SRAM device comprising:

a memory array organized to store data in a word format with each word containing a predetermined number of data bits;

address latch means having a plurality of input address lines and a plurality of output lines and operative to latch row address and column address inputs addressing particular locations in said memory array, and an address latch enable (ALE) input line, said address latch means being functionally transparent when an ALE input signal of a first logic state is applied to said ALE input line, said address latch means being operative to latch said output lines when an ALE input signal of a second logic state is applied to said ALE input line;

data input/output means having a plurality of data input-/output lines and a control input, said data input/output means being operative to selectively couple said plurality of data input/output lines to said memory array, and responsive to a control signal applied to said control input to determine when data is to be input thereto or output therefrom; and

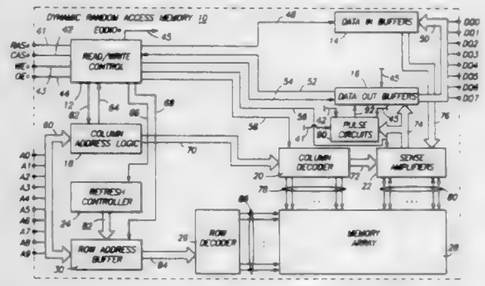
control logic means having at least three unlatched chip input lines for respectively receiving an output enable signal ($\overline{G}$), a chip enable signal ($\overline{E}$) and a write enable signal ($\overline{W}$), said control logic means being directly responsive to the three enable signals $\overline{G}$, $\overline{E}$ and $\overline{W}$, and operative to develop said control signal for controlling said data I/O means such that when $\overline{G}$ is of one state and $\overline{W}$ is of one state, data from said memory array will be output to said input/output lines, and when $\overline{W}$ is of a second state and $\overline{G}$ is of a second state, data present on said input/output lines will be written into an addressed memory location, and wherein when $\overline{E}$ is of a first logic state, said memory array is selected, and when $\overline{E}$ is of a second logic state, said memory array is deselected.

5,349,566

MEMORY DEVICE WITH PULSE CIRCUIT FOR TIMING DATA OUTPUT, AND METHOD FOR OUTPUTTING DATA

Todd A. Merritt, and Greg A. Blodgett, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed May 19, 1993, Ser. No. 64,484
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—233.5 **13 Claims**



1. A memory device comprising:

a memory array;

an output buffer operatively coupled to the memory array, the output buffer temporarily storing data that is retrieved from the memory array during a read cycle, the output buffer holding the data until it is replaced by subsequently retrieved data; and

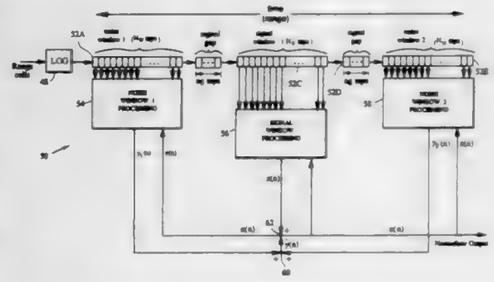
a pulse circuit operatively coupled to the memory array and the output buffer, the pulse circuit outputting a pulse signal as soon as data is valid which causes the output buffer to store the retrieved data.

5,349,567

LEAST MEAN SQUARE (LMS) NORMALIZER FOR ACTIVE SONAR

Francis A. Reed, Yorba Linda, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 24, 1993, Ser. No. 110,901
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—100 **22 Claims**



1. In an active sonar including a matched filter processor for processing received waveform echoes, an improved normalizer responsive to a sequence of matched filter output data to provide a normalizer output, comprising:

means responsive to said matched filter output data for providing a logarithm of said output data; and

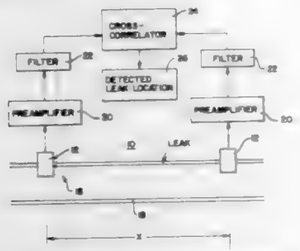
normalizer processing means for processing said logarithm of said output data to dynamically adapt to locally non-stationary noise, said processing means comprising means for applying an adaptive Least Means Square (LMS) algorithm to said logarithm of said output data.

5,349,568

LEAK LOCATING MICROPHONE, METHOD AND SYSTEM FOR LOCATING FLUID LEAKS IN PIPES

David S. Kupperman, Oak Park, and Lev Spevak, Highland Park, both of Ill., assignors to The University of Chicago, Chicago, Ill.

Filed Sep. 27, 1993, Ser. No. 127,742
Int. Cl.[5] G01S *3/80;* G01M *3/00*
U.S. Cl. 367—125 8 Claims



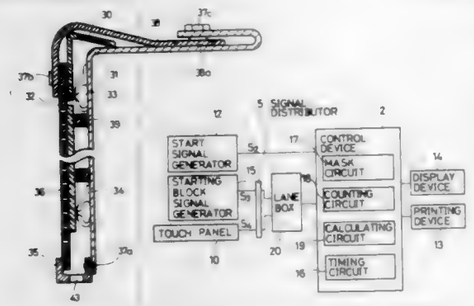
1. A leak detecting microphone for insertion directly into fluid within a pipe comprising:
- a housing having a first end being inserted within the pipe and a second opposed end extending outside the pipe;
- a diaphragm mounted within said first housing end;
- an acoustic transducer coupled to said diaphragm for converting acoustical signals to electrical signals; and
- a plurality of apertures provided in said housing first end, said apertures located both above and below said diaphragm, whereby to equalize fluid pressure on either side of the diaphragm.

5,349,569

TIMING SYSTEM FOR SWIMMING RACE

Hiroshi Tanaka, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed Feb. 25, 1993, Ser. No. 22,368
Claims priority, application Japan, Feb. 28, 1992, 4-043977; Jul. 14, 1992, 4-186764; Jul. 15, 1992, 4-188244; Jul. 20, 1992, 4-192538
Int. Cl.[5] G04B *47/00;* G04F *8/00;* H01H *35/00*
U.S. Cl. 368—10 20 Claims



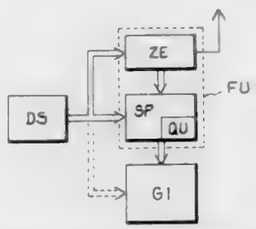
1. A timing system for a swimming race comprising:
- a start signal generator for generating a start signal of a swimming race;
- a starting block signal generator provided at a starting block for generating a starting block signal in response to a swimmer's feet leaving from said starting block;
- a touch panel suspended along the wall of a swimming pool for generating a touch signal in response to a swimmer touching said touch panel, said touch panel comprising a rear panel having a vertical portion having a switch portion and a horizontal portion bent at a bending portion from said vertical portion, a front panel disposed opposite to said vertical portion of said rear panel, a top edge panel fixed at one end on the upper part of said front panel and covering the bending portion of said rear panel, and an elastic member disposed between said rear panel and said top edge panel and having a bending angle which is more acute than that of said bending portion of said rear panel in order to elastically support said top edge panel and being located so as to touch said switch portion for actuating an electric switch when said top edge panel is pressed obliquely;
- a control device having at least a timing cicuit for clocking the time in response to said start signal, said starting block signal, and said touch signal; and
- a recording device for recording the time outputted from said control device.

5,349,570

METHOD FOR OPERATION OF A RADIO-CONTROLLED CLOCK AND RADIO-CONTROLLED CLOCK FOR USE IN AN ENVIRONMENT SUBJECT TO INTERFERENCE FIELDS

Reinhold Kaiser, Heilbronn, Fed. Rep. of Germany, assignor to Temic Telefunken microelectronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Aug. 5, 1993, Ser. No. 102,244
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1992, 4233126
Int. Cl.[5] G04C *11/02*
U.S. Cl. 368—47 9 Claims



1. A method for operation of a radio-controlled clock comprising a quartz-controlled clock and a time signal receiver which receives a time signal for synchronizing said quartz-controlled clock, said radio-controlled clock connected in a common array with an additional device which can have several operating states and which generates a strong interference field in a first operating state and a reduced or non-existent interference field in a second operating state; and wherein said method comprises synchronizing said quartz-controlled clock with said time signal solely when said additional device is in said second operating state.

5,349,571

Patent Not Issued For This Number

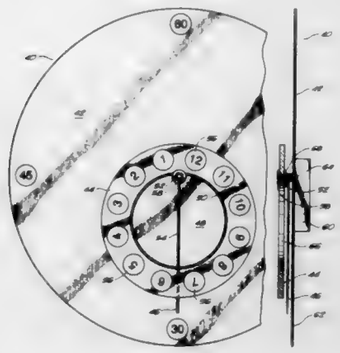
5,349,572

CLOCK DIAL

Jaroslav Belik, 1610 Mulcahy, Rosenberg, Tex. 77471

Filed May 10, 1993, Ser. No. 59,108
Int. Cl.[5] G04B *19/04, 19/20*
U.S. Cl. 368—77 13 Claims

1. A clock dial comprising:
minute face;
an hour face having a smaller diameter than said minute face; and
a minute hand rotatable relative to said minute face, said minute face having a central axis for rotating said minute hand, said hour face geared relative to said central axis such that one revolution of said minute hand moves said hour face for less than a full revolution, said central axis having a first gear extending therearound, said first gear having external teeth, said hour face being an annular disk, said annular disk having internal teeth formed therein, said internal teeth engaging said external teeth of said first gear.

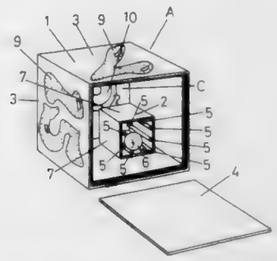


5,349,573

TIMER

Junji Hiromori, Tokyo, Japan, assignor to Hiromori, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 110,550, Aug. 23, 1993. This application Feb. 18, 1994, Ser. No. 198,857
Claims priority, application Japan, Sep. 9, 1992, 4-69445[U]
Int. Cl.[5] G04F *8/00;* G04B *37/00*
U.S. Cl. 368—108 4 Claims



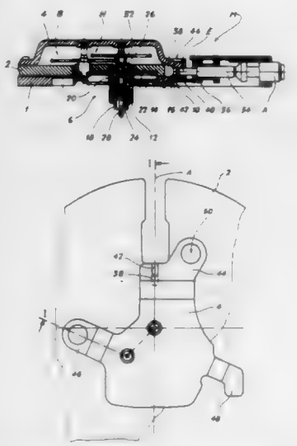
1. A timer comprising:
- a polygonal cubic frame formed by connecting a plurality of square or rectangular side plates to each other and having upper and lower openings,
- a main hollow body (**1**) constituted by said polygonal cubic frame and lids (**4**, **4***a*, **4***b*) with the configuration corresponding to that of the upper and lower openings of said polygonal cubic frame,
- a time setting device (**2**) containing side plates, a spherical conductor (**6**) and further provided with two ON-contacts (**5**, **5**) in the shape of a stick mounted at each inner surface of the side plates of said device (**2**) having a reduced and almost the same pattern as that of said main hollow body,
- a circuit (C) which actuates different functions being set up at each of said ON-contacts adjacent each other mounted at the side plates of the time setting device (**2**), and
- said device (**2**) being fixed to the main hollow body (**1**) within said body in a manner such that the side plates of said device and main hollow body are parallel, thereby conducting the pair of ON-contacts through said spherical conductor so as to actuate said circuit.

5,349,574

HOROLOGICAL MOVEMENT HAVING GUIDE MEANS FOR A CONTROL MEMBER SUCH AS A SHAFT

Jakob Edwin, Granges, Switzerland, and Siegfried Grau, Pforzheim, Fed. Rep. of Germany, assignors to ETA S.A. Fabriques D'Ebauches, Granges, Switzerland

Filed Mar. 26, 1993, Ser. No. 37,427
Claims priority, application Switzerland, Apr. 2, 1992, 01076/92-4
Int. Cl.[5] G04B *19/24*
U.S. Cl. 368—190 9 Claims



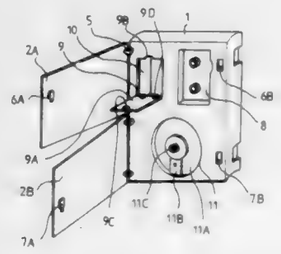
1. A horological movement comprising horometric means for supplying a time information, and guide means for guiding in at least one of axial and rotational movements at least one control member adapted to act on the horometric means, said guide means comprising two opposite guide parts and a third guide part forming an intermediary center bar mounted and sandwiched between the two opposite guide parts to form therebetween a seating for freely receiving said control member, said horometric means comprising at least one staff supported by said intermediary center bar, and one of said opposite guide parts forming a train bar for guiding said at least one staff of the horometric means.

5,349,575

PORTABLE AUDIO DEVICE

Chung O. Park, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed May 19, 1993, Ser. No. 63,470
Claims priority, application Rep. of Korea, May 19, 1992, 1992-8411
Int. Cl.[5] H04B *1/08*
U.S. Cl. 369—1 15 Claims



1. A portable audio device having the functions of a cassette

tape recorder, a compact disc player and an AM/FM tuner, comprising:

a slimmed body provided with the cassette tape recorder, the compact disc player and the AM/FM tuner wherein the compact disc player and the cassette tape recorder respectively accept a compact disc and cassette tape in a same plane of the slimmed body; and

at least one cover, provided on said slimmed body, for covering the cassette tape recorder and the compact disc player;

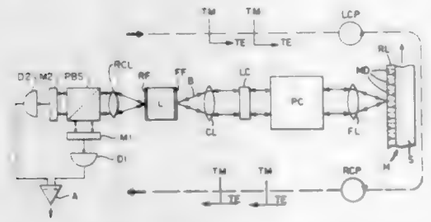
wherein said slimmed body and said at least one cover are connected in a notebook arrangement.

5,349,576

APPARATUS AND METHOD FOR POLARIZATION SWITCHING OF A READOUT BEAM IN A MAGNETO-OPTIC STORAGE SYSTEM

Edward C. Gage, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 27, 1992, Ser. No. 919,668
Int. Cl.[5] G11B *13/04*
U.S. Cl. 369—13 **16 Claims**



1. A playback apparatus for playing back information recorded on a recording layer of a magneto-optic material, wherein vertically magnetized domains of said recording layer have a differential absorption to circularly polarized radiation depending on the orientation of said magnetized domains, said playback apparatus comprising:

a laser unit having a first mode and a second mode of linearly polarized radiation, said modes of radiation having planes of polarization that are substantially orthogonal;

optical elements forming an extended cavity for said laser units, said optical elements including:

first conversion means for converting said linearly polarized radiation modes to circularly polarized radiation and for applying said circularly polarized radiation to said recording layer;

second conversion means for converting said circularly polarized radiation to a first and second linearly polarized radiation components having planes of polarization parallel to planes of polarization of said first and said second modes;

separation means for creating a first portion of said extended cavity with only first mode and first component radiation and for creating a second portion of said extended cavity having only second mode and second component radiation therein; and

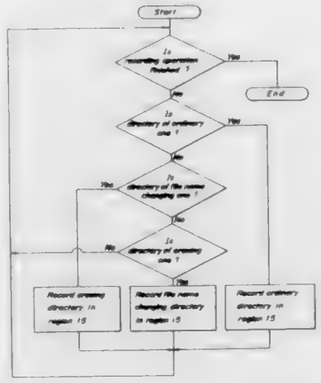
at least one loss control element in a one of said first and said second portions.

5,349,577

OPTICAL RECORD MEDIUM INCLUDING DATA RECORD REGION AND DIRECTORY RECORD REGION AND METHOD OF MANAGING FILE DATA

Noboru Mikamo, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 25, 1992, Ser. No. 951,013
Claims priority, application Japan, Sep. 25, 1991, 3-245745
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—47 **4 Claims**



1. A method of managing file data recorded in an optical record medium comprising:

recording file data on a track in a data record region in the optical record medium;

preparing an ordinary directory including at least a file name specific to said file data recorded in the data region, a file size denoting a size of the relevant file data and a track address denoting the track on which the relevant file data is recorded;

preparing a file name changing directory including at least an old file name and a new file name;

recording said ordinary directory and file name changing directory in a directory record region in the optical record medium;

reading all ordinary directories and file name changing directories out of the directory record region in the optical record medium;

storing the thus read out directories in a memory;

changing an old file name contained in an ordinary directory stored in the memory by a new file name contained in a corresponding file name changing directory in which said old file name and new file name are recorded;

entering a file name of file data to be read out of the data record region;

retrieving a directory having a file name corresponding to the entered file name out of the directories stored in the memory;

reading a track address in the retrieved directory; and

reading file data recorded on a track denoted by said track address contained in the retrieved directory.

5,349,578

TIME SLOT SWITCHING FUNCTION DIAGNOSTIC SYSTEM

Noboru Tatsuki, and Hideaki Funae, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed May 7, 1992, Ser. No. 879,615
Claims priority, application Japan, May 10, 1991, 3-105834; Sep. 4, 1991, 3-250284
Int. Cl.[5] H04J *1/16, 3/14*
U.S. Cl. 370—13 **1 Claim**

1. A time slot switching function diagnostic system comprising:

test pattern generating means for generating a test pattern;

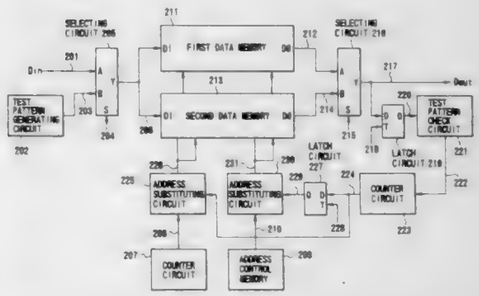
test pattern inserting means for inputting the test pattern from said test pattern generating means and an input signal having a unit frame consisting of N time slots and for inserting the test pattern into a specific time slot of the input signal in response to a pattern switching control signal;

a data memory for storing an output from said test pattern inserting means and outputting data in accordance with write and read addresses;

test pattern check means for checking a pattern extracted from the output data of said data memory in response to a clock signal;

test address generating means, controlled by a control signal from said test pattern check means, for generating a test address; and

address substituting means for substituting the write and read addresses of said data memory address generating



means in order to switch the test pattern to another time slot;

a first counter circuit for generating a sequential write address in an order of the N time slots, an address control memory for generating a read address of a predetermined pattern in an order of the N time slots, a latch circuit for adjusting a timing difference between the write address from said first counter circuit and the test address from a second counter circuit serving as said test address generating circuit by one time slot, a substitution write address generating circuit for generating a substitution write address of said data memory by using the write address from said first counter circuit and the test address from said second counter circuit, and a substitution read address generating circuit for generating a substitution read address of said data memory by using the read address from said address control memory and the test address adjusted by said latch circuit.

5,349,579

TELECOMMUNICATION SWITCH WITH PROGRAMMABLE COMMUNICATIONS SERVICES

Robert P. Madonna, W. Barnstable, and Kevin C. Kicklighter, Hyannis, both of Mass., assignors to Excel, Inc., Sagamore Beach, Mass.

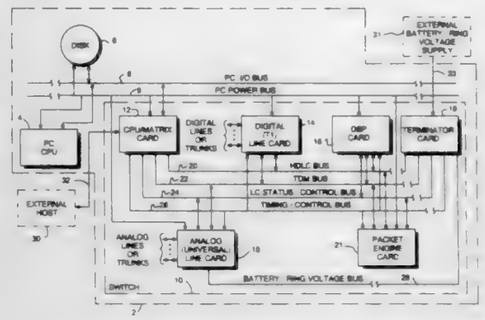
Filed Jan. 5, 1993, Ser. No. 1,113
Int. Cl.[5] H04L *12/52*; H04Q *11/04*
U.S. Cl. 370—58.2 **45 Claims**

1. A programmable communications switch comprising:

controllable-switching means for dynamically connecting or disconnecting communication paths between various ones of a plurality of ports in response to messages generated by a host, including a time slot interchange for switching a plurality of time slots corresponding to said ports and means for processing said messages;

one or more means connected in communicating relationship with said switching means for terminating either analog or digital lines or trunks which represent said ports, said communicating relationship including a bus for carrying time division multiplex TDM data; and

one or more programmable means connected in communicating relationship with said switching means and said one or more terminating means for providing programmable communications services to said ports in response to messages generated by said processing means, each of said



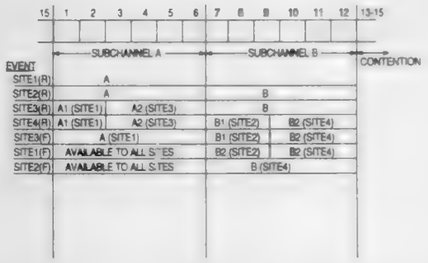
programmable means being operable to receive TDM data via said data bus from said terminating means during all of said time slots and to transmit TDM data via said data bus to said terminating means during preselected ones of said time slots, whereby said communications services are provided without switching the TDM data received or transmitted by the programmable means through said time slot interchange.

5,349,580

METHOD AND APPARATUS FOR CHANNEL ALLOCATION INTEGRITY IN A COMMUNICATION NETWORK

Phillip Hester, Indian Harbour Beach, and William Highsmith, Indialantic, both of Fla., assignors to Scientific-Atlanta, Inc., Atlanta, Ga.

Division of Ser. No. 880,209, May 8, 1992, abandoned. This application Dec. 14, 1993, Ser. No. 165,889
Int. Cl.[5] H04J *3/22*
U.S. Cl. 370—84 **10 Claims**



1. A communication network having a master and a plurality of remotes, said remotes supporting a plurality of co-services, the network comprising:

means for sharing access to an inbound frequency among the remotes, over which inbound frequency information signals, are transmitted from a remote to said master;

means for detecting a need by a remote for an extraordinary amount of bandwidth in excess of that currently being provided by said inbound frequency for the transmission of information signals;

means for allocating to said remote a reserved amount of bandwidth in response to the detection of said need for extraordinary bandwidth for said remote; and

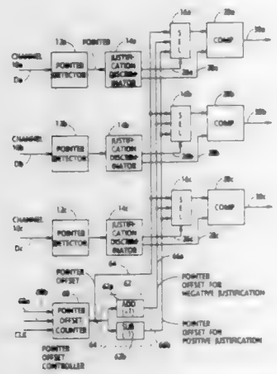
means for informing each of the remotes of the network of the allocations of the bandwidth.

5,349,581

DETECTING LOCATION OF TIME SLOT WHERE DATA BEGINS USING POINTER IN JUSTIFICATION OR STUFFING SYNCHRONOUS TDM

Hiroaki Kaneko, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jun. 29, 1992, Ser. No. 905,618
Claims priority, application Japan, Jun. 28, 1991, 3-185274
Int. Cl.[5] H04J *3/07*
U.S. Cl. 370—102 **2 Claims**



1. A method of determining a location of a time slot where data having a predetermined length begins by detecting a pointer included in a demultiplexed channel information in a synchronous TDM communications system, the data being transmitted after being subject to zero, negative or positive justification, said method comprising the steps of:

(a) extracting a pointer from the demultiplexed channel information;

(b) detecting a pointer value indicative of the predetermined length and detecting a justification status from the pointer extracted;

(c) receiving a timing signal which corresponds to the zero justification;

(d) producing first pointer offset using said timing signal;

(e) producing second and third pointer offsets by advancing and retarding said first pointer offset by one time slot, respectively;

(f) selecting one of said first to third pointer offsets depending on said justification status; and

(g) comparing the pointer offset selected and said pointer value and outputting a signal indicative of a leading time slot of the data in the event that the comparison coincidence has been detected.

5,349,582

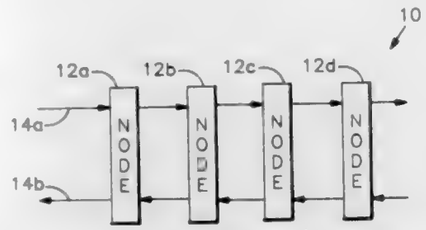
SCHEME FOR SOURCE ASSISTED PARTIAL DESTINATION RELEASE OF SLOTS IN SLOTTED NETWORKS

Chatschik Bisdikian, Mount Kisco, and Ahmed N. Tantawy, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 4, 1992, Ser. No. 971,373
Int. Cl.[5] H04J *3/02, 3/24*
U.S. Cl. 370—85.1 **13 Claims**

1. A method of releasing time slots in a slotted communications network of the type having a multitude of nodes and a communications medium connecting the nodes together, in which data are transmitted in time slots between the nodes, wherein for each of the time slots, one of the nodes is a source node and at least one of the nodes is a destination node, and wherein the time slots follow one another in sequence and each of the time slots includes a continuation flag and a busy flag, the method comprising:

for each time slot, the source node of the time slot setting the continuation flag and the busy flag of said each time slot each time said each time slot is destined for the same destination node as was an immediately preceding time slot; and



for each time slot the destination node of said each time slot resetting the continuation flag of said each time slot, and releasing said each time slot to receive new data, each time

(i) the continuation flag of said each time slot is set, and

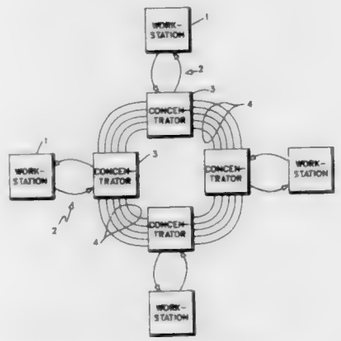
(ii) a time slot immediately preceding said each time slot was destined for said same destination node.

5,349,583

MULTI-CHANNEL TOKEN RING

Kenneth J. Christensen, Apex, and Francis E. Noel, Jr., Durham, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 16, 1991, Ser. No. 746,677
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—85.5 **9 Claims**



1. A communications system comprising:

a transmission media having multiple channels;

a plurality of access units, each interfacing with each of the individual channels of said transmission media;

at least one device associated with each of said access units, each said device interfacing with its associated access unit to receive data from and send data to said transmission media; and

means for sending data between said at least one device and its associated access unit, said sending means including a dedicated communications channel for each said at least one device and its associated access unit;

wherein each said access unit determines which data, if any, being transmitted over the channels of said transmission media is intended for one of said device associated therewith, intercepts only the intended data, and sends the intercepted data to said associated device via said dedicated communications channel of said sending means, and

wherein each said dedicated communications channel of said

sending means comprises a lobe ring, each lobe ring providing communications between one of said access units and said at least one device associated with said one access unit, and wherein each of said access units includes:

at least one first physical interface, each first interface interfacing with and corresponding to each lobe ring associated with the access unit;

second physical interfaces, one corresponding to and interfacing with each channel of said transmission media with which

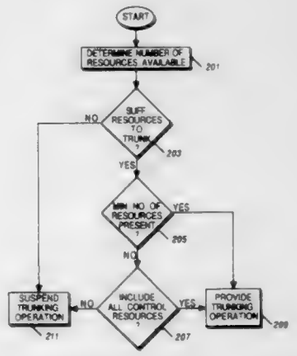
means for controlling access to the first physical interfaces, receipt of data from and transmission of data to the channels of said transmission media and access to the second physical interfaces.

5,349,584

METHOD OF MAINTAINING CONTROL IN A TRUNKED COMMUNICATION SYSTEM

David A. Sticha, Marengo; Glenn N. Mayer, Elgin; Stephen J. Ranz, Elmhurst, and John Garbarino, Streamwood, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 30, 1993, Ser. No. 114,799
Int. Cl.[5] H04B *3/36*
U.S. Cl. 370—97 **14 Claims**



1. A method of maintaining control by a master repeater of a trunked communication system having a number of communication resources, wherein the number of communication resources includes one or more control resources and one or more message resources, comprising the steps of:

(A) determining how many communication resources, from among the number of communication resources are available to the master repeater, providing a number of available communication resources;

(B) when at least one control resource and at least one message resource are among the available communication resources, suspending trunked communication system operation when:

(a) the number of available communication resources are less than a minimum number of resources; and

(b) the available communication resources fail to include all control resources from the trunked communication system;

(C) when at least one control resource and at least one message resource are among the available communication resources, providing trunked communication system operation when one of the following is true:

(a) the number of available communication resources are equal to or greater than a minimum number of resources; and

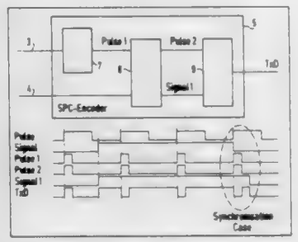
(b) the available communication resources include all control resources from the trunked communication system.

5,349,585

METHOD FOR TRANSMITTING TWO DIGITAL SIGNALS WHICH ARE INDEPENDENT OF ONE ANOTHER

Peter Soukal, Schwarzenbruck, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 9, 1993, Ser. No. 87,881
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1992, 4223639
Int. Cl.[5] H04J *13/00*
U.S. Cl. 370—110.4 **3 Claims**



1. A method for transmitting two digital signals that are independent of one another via a common channel, comprising the steps of:

transmitting a first and second signal including:

supplying said first signal to a pulse channel of an encoder;

supplying said second signal to a signal channel of the encoder;

generating a pulse of fixed width in a coded signal at an output of the encoder for transmission upon every level transition of said first signal;

defining a polarity of said pulse in said coded signal for transmission by said second signal;

receiving said first and second signals including:

separating said coded signal into said first and second signals by using time measurements between two successive level changes in said coded signal;

starting a time measurement at one signal edge of said coded signal;

allocating said coded signal to a pulse channel of a decoder when a further signal edge appears in said coded signal within a fixed time limit; and

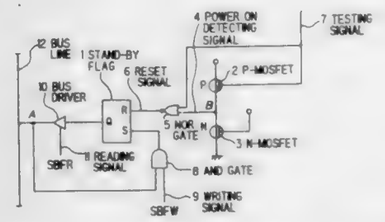
allocating said coded signal to a signal channel of the decoder when no further signal edge appears in said coded signal within said fixed time limit.

5,349,586

STAND BY CONTROL CIRCUIT

Hiroshi Katsuta, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 17, 1991, Ser. No. 781,008
Claims priority, application Japan, Oct. 17, 1990, 2-278268
Int. Cl.[5] G01R *31/318*
U.S. Cl. 371—22.1 **2 Claims**



1. A stand-by control circuit for an integrated circuit device, comprising:

a power on detector for detecting a power on state of a power supply, said power on detector including a P-MOS-

FET, an N-MOSFET, and a NOR gate, said P-MOSFET being connected at a gate to a testing signal line, at a source to said power supply, and at a drain to a drain of said N-MOSFET, said N-MOSFET being connected at a gate to said power supply and at a source to ground, and said NOR gate being connected at two input terminals to said testing signal line and said drain of said P-MOSFET;

a flag flip-flop which is reset by a power ON detecting signal from said NOR gate; and

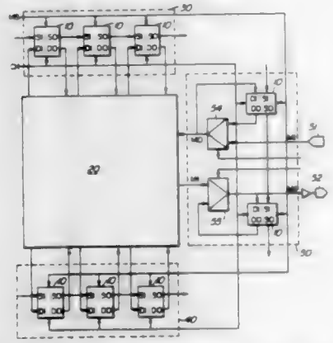
an AND gate connected to set said flag flip-flop in response to a standby flag writing signal and a bus line signal, wherein a testing signal on said testing signal line turns said P-MOSFET OFF and prevents said NOR gate from outputting said power ON detecting signal.

5,349,587

MULTIPLE CLOCK RATE TEST APPARATUS FOR TESTING DIGITAL SYSTEMS

Benoit Nadeau-Dostie, Aylmer; Abu S. M. Hassan, Nepean; Dwayne M. Burek, Nepean, and Stephen K. Sunter, Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 26, 1992, Ser. No. 858,377
Int. Cl.[5] A04B *17/00;* **G01R** *31/28*
U.S. Cl. 371—22.3 **19 Claims**



2. A method for testing a digital system comprising a plurality of scannable memory elements and at least one combinational network, the method comprising:

configuring the memory elements in a scan mode in which the memory elements are connected to define a plurality of scan chains;

clocking a test stimulus pattern into each of the scan chains at a respective clock rate during a respective scan-in interval, at least two of the clock rates being different from one another, all respective scan-in intervals overlapping in tome for a plurality of clock cycles at a highest of the respective clock rates;

configuring the memory elements of each scan chain in a normal operation mode during a respective normal mode interval, the memory elements of each scan chain being interconnected by the combinational network in the normal operation mode, all respective normal mode intervals overlapping in time for at least one clock cycle at the highest of the respective clock rates;

configuring the memory elements in the scan mode; and

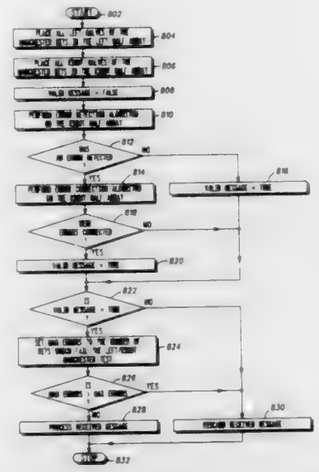
clocking a test response pattern out of each of the scan chains at its respective clock rate during a respective scan-out interval, all respective scan-out intervals overlapping in time for a plurality of clock cycles at the highest of the respective clock rates.

5,349,588

ERROR DETECTING METHOD AND APPARATUS FOR DATA COMMUNICATIONS

Michael J. Schellinger, Vernon Hills, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 832,118, Feb. 6, 1992. This application Jun. 23, 1992, Ser. No. 903,206
Int. Cl.[5] H04L *5/08*
U.S. Cl. 371—37.1 **12 Claims**



1. A method of processing data transmitted on a communications channel in a data word including a plurality of data bits, said method comprising the steps of:

receiving a data word from the communications channel, each received data bit having a binary state represented by at least two non-return-to zero (NRZ) bit samples;

determining, on the basis of the binary state of the NRZ bit samples of each data bit, an error possibility value for the data bit;

summing the error possibility values of all data bits of the received data word; and

discarding the received data word if the sum of the error possibility values is greater than a predetermined value.

5,349,589

GENERALIZED VITERBI ALGORITHM WITH TAIL-BITING

Sandeep Chennakeshu, and Raymond L. Toy, both of Clifton Park, N.Y., assignors to Ericsson GE Mobile Communications Inc., Research Triangle Park, N.C.

Filed Jul. 1, 1991, Ser. No. 724,280
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—43 **5 Claims**

1. A method of decoding L information bits convolutionally encoded in a tail-biting scheme and transmitted with each transmitted bit corresponding to a state transition, comprising the steps of:

a) sequentially receiving the L received bits from a beginning bit to an end bit;

b) extending the L received bits by copying E bits from the beginning of the L received bits to the end resulting in L+E received bits;

c) constructing a trellis diagram having a L+E stages each stage having a plurality of states, with stages pertaining to consecutive time periods and also pertaining to bits received during those time periods;

d) determining a set of connected state transitions, known as a path, through the trellis up to stage L+E which has a state at an initial stage which is equal to a state at a final stage;

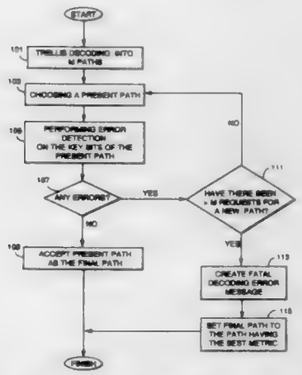
e) determining a path metric associated with the path;

f) repeating steps "d"–"e" for a plurality of paths and path metrics;

g) determining a path which most closely correspond to the L+E received bits indicated by the associated path metric;

h) determining a most likely path being a set of connected state transitions through the trellis up to stage L+E which most closely correspond to the L+E received bits, and also has a state at an initial stage which is equal to a state at a final stage;

i) tracing back the most likely path through L levels to arrive at the state x of stage E;



j) selecting a path which ends at state x of stage L+E, known as xpath;

k) tracing back along xpath for E levels to end on state y at stage L, state y being a more reliable state than the state at stage L+E, state y is the most likely initial state and also being the most likely final state;

l) determining a predetermined number of candidate paths and associated path metrics for the L+E received bits each initialized with the most likely initial state and the most likely final state;

m) decoding a selected candidate path into decoded information bits; and

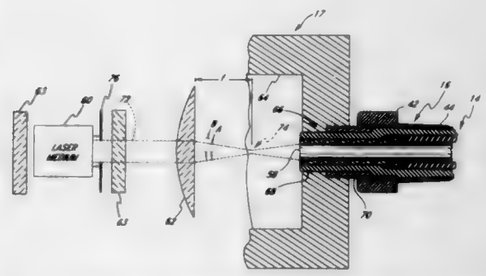
n) utilizing the decoded information bits to produce a desired output.

5,349,590

MEDICAL LASER APPARATUS FOR DELIVERING HIGH POWER INFRARED LIGHT

Varouj D. Amirkhanian, Glendale; Colette Cozean, El Toro, and Robert J. Freiberg, Mission Viejo, all of Calif., assignors to Premier Laser Systems, Inc., Irvine, Calif.

Continuation of Ser. No. 866,876, Apr. 10, 1992, abandoned. This application Jun. 11, 1993, Ser. No. 75,720
Int. Cl.[5] H01S *3/30*
U.S. Cl. 372—6 **28 Claims**



1. A medical laser apparatus for delivering infrared energy to a treatment site, said apparatus comprising a waveguide, said waveguide comprising:

a guiding structure which transmits invisible infrared light at a wavelength of about 3 microns at a power density of at least about 4 kilowatts per square centimeter, said guiding structure consisting of a core having a refractive index and at least one cladding having a refractive index lower than that of said core, said core being comprised of a compound that includes a metal; and

a protective structure comprising a material which is substantially impermeable to moisture and has a moisture resistance significantly higher than that of said guiding structure, said protective structure surrounding said guiding structure and juxtaposed therewith such that said protective structure receives a portion of said infrared light having said power density, said portion of said light received by said protective structure being in the form of leaky modes, said protective structure being flexible and having relatively high resistance to bending compared to said guiding structure to protect said guiding structure against breakage, said protective structure additionally having a sufficiently high transmittance to said infrared light, such that the energy of said light in said leaky modes is dissipated from said protective structure without damaging said waveguide; and

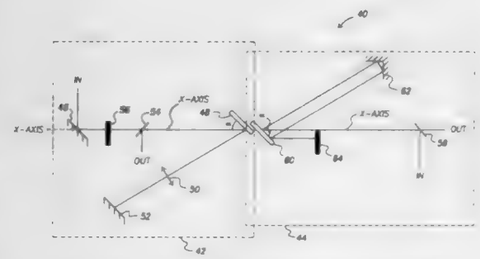
said apparatus additionally comprising a source of infrared light coupled to said waveguide to produce a power density of at least 4 kilowatts per square centimeter in said core.

5,349,591

LASER PULSE STRETCHER AND COMPRESSOR WITH SINGLE PARAMETER WAVELENGTH TUNABILITY

Jeremy Weston, San Jose, and William E. White, San Ramon, both of Calif., assignors to Positive Light, Inc., Los Gatos, Calif.

Filed Apr. 26, 1993, Ser. No. 52,778
Int. Cl.[5] H01S *3/105*
U.S. Cl. 372—25 **10 Claims**



1. A laser pulse stretcher and compressor comprising:

a stretcher portion having a first diffraction grating for receiving a laser pulse and stretching the pulse, the stretcher portion receiving a first input beam to the stretcher portion along a first axis, the first diffraction grating positioned for receiving the first input beam with an input side of the first diffraction grating; and

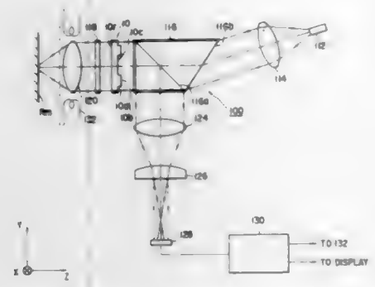
a compressor portion having a second diffraction grating for receiving a laser pulse and compressing the pulse, the compressor portion receiving a second input beam along a second axis, the second axis parallel to the first axis, the second diffraction grating positioned for receiving the second input beam with an input side of the second diffraction grating, and the second diffraction grating being positioned in a plane parallel to a plane in which the first diffraction grating is positioned.

5,349,592

SUPER-RESOLUTION OPTICAL ELEMENT FOR USE IN IMAGE FORMING APPARATUS

Hideo Andō, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 25, 1993, Ser. No. 22,559
Claims priority, application Japan, Feb. 27, 1992, 4-040884; Jul. 30, 1992, 4-204022
Int. Cl.[5] H01S *3/13*
U.S. Cl. 372—32 31 Claims



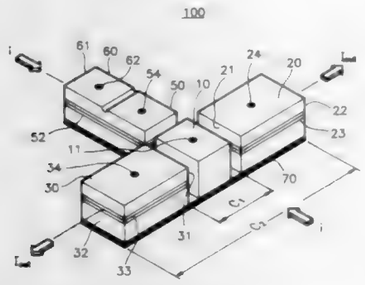
1. An optical system comprising:
means for uniformly passing a light beam therethrough; and
phase-changing means formed on part of the passing means and having a thickness differing from that of the passing means, for changing the phase of that part of the light beam which passes therethrough;
wherein the phase-changing means includes means for changing the phase of the part of the light beam passing therethrough to deviate by $\pi+2n\pi$ measured in radians from the phase of the other part of the light beam passing through the remaining part of the passing means.

5,349,593

OPTICAL REGENERATOR USING BISTABLE FABRY-PEROT INTERFEROMETER

Svjatoslav A. Lomashevitch, and Yuri V. Svetikov, both of Sankt-Peterburg, Russian Federation, assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Jul. 6, 1993, Ser. No. 85,935
Claims priority, application Russian Federation, Jul. 6, 1992, 5051990
Int. Cl.[5] H01S *3/10, 3/106;* G02F *3/00*
U.S. Cl. 372—50 5 Claims



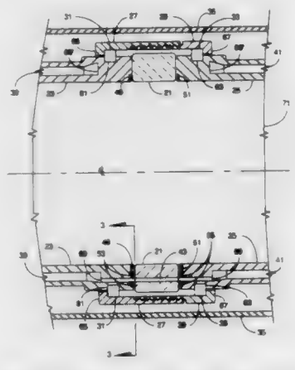
1. An optical regenerator comprising:
a first and a second active resonators, each of which has an inlet and an outlet mirrors;
a rectangular phase modulator optically coupled between the inlet mirrors of the first and the second active resonators, said modulator having a plurality of free interfaces, wherein the phase modulator and the inlet mirrors form a nonlinear Fabry-Perot interferometer; and
a multielectrode injection laser optically coupled with one of the free interfaces of the rectangular phase modulator.

5,349,594

INSULATIVE LASER SHELL COUPLER

Phillip A. Arnold; Andrew T. Anderson, both of Livermore, and Terry W. Alger, Tracy, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 12, 1993, Ser. No. 89,917
Int. Cl.[5] H01S *3/03*
U.S. Cl. 372—62 8 Claims



5. A segmented coaxial laser shell assembly comprising in combination:
(a) at least two fluid jacket sections, each having:
(i) an inner tubular section defining an inner tubular laser path cavity;
(ii) a fluid path, adjacent to at least a portion of the exterior of said inner tubular section for conducting fluid therethrough; and
(iii) mating face in at least one of said fluid jacket sections, through which said inner tubular laser path cavity opens, and which defines at least one fluid port therethrough in communication with said fluid path;
(b) a dielectric break ring of a selected thickness to be placed between and in coaxial alignment with said mating face;
(c) said break ring defining:
(i) an inner tubular laser path cavity having a substantially similar size and shape as said inner tubular laser path cavity; and
(ii) at least one fluid passage for communicating with said at least one fluid port through said mating face; and
(d) a coupling for retaining said break ring and said at least two fluid jacket sections together.

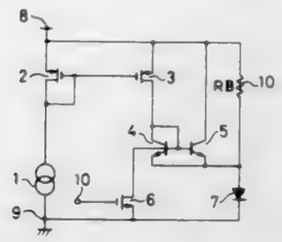
5,349,595

DRIVE CIRCUIT FOR SEMICONDUCTOR LIGHT-EMITTING DEVICE

Katsuhisa Ogawa, Machida, and Takamasa Sakuragi, Hiratsuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1993, Ser. No. 23,358
Claims priority, application Japan, Feb. 28, 1992, 4-043880
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 16 Claims

1. A drive circuit of a driving object for supplying a constant drive current to the driving object, comprising:
input means for inputting a control signal;
constant driving current generating means for generating the constant driving current;
switching means for switching a supply of the constant driving current to the driving object in accordance with the control signal inputted by said input means; and



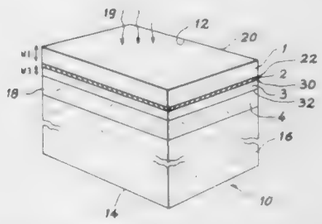
means for supplying a current to said switching means in response to an input of the control signal representing a turn-on before said driving object is actually driven.

5,349,596

ASYMMETRICAL SEMICONDUCTOR HETEROSTRUCTURE LASER CAVITY AND LASER EQUIPPED WITH SAID CAVITY

Engin Molva, Grenoble; Roger Accomo, Le Versoud; Guy Feuillet, St. Martin d'Uriage; Joël Cibert, St. Nazaire les Eymes; Dang Le Si, Montbonnot, and Claire Bodin-Deshayes, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 16, 1993, Ser. No. 46,744
Claims priority, application France, Apr. 17, 1992, 92 04791
Int. Cl.[5] H01S *3/18;* H01L *21/203*
U.S. Cl. 372—43 20 Claims



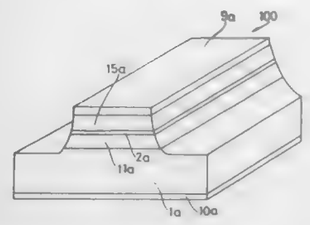
1. Semiconductor heterostructure laser cavity having semiconductor layers epitaxied to define four zones on a substrate, said laser cavity comprising:
a first zone with a composition that varies continuously from a first face a second face with a gap decreasing from the first face to the second face, said first zone ensuring an optical confinement and light guidance;
a second zone constituting an active emission zone in contact with the second face of the first zone and having at least one quantum well with a gap smaller than that of the first zone;
a third zone having a gap larger than that of the at least one quantum well, said third zone ensuring an optical confinement and a light guidance, and having a composition which varies continuously from a first face to a second face with a gap which increases from the first face to the second face, the first face of the third zone being in contact with the active emission zone; and
a fourth zone constituting a buffer zone which contacts the second face of the third zone and the substrate, said fourth zone serving as an optical barrier for light guiding, the first and third zones being asymmetrical with respect to the active emission zone to define an asymmetrical GRINSCH structure, one of the first and third zones constituting a surface of the semiconductor heterostructure and ensuring an electron excitation and creation of electron-hole pairs.

5,349,597

SEMICONDUCTOR LASER DEVICE AND PRODUCTION METHOD THEREFOR

Hitoshi Mizuochi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1993, Ser. No. 106,605
Claims priority, application Japan, Aug. 25, 1992, 4-250830
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—44 7 Claims



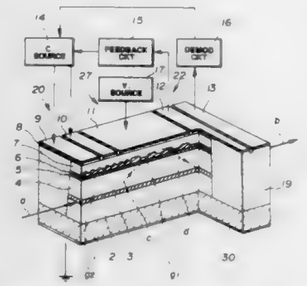
1. A semiconductor laser device comprising:
a Zn-doped p type semiconductor substrate in which more than 81% of Zn dopant atoms are activated to produce carriers;
semiconductor layers successively disposed on said Zn-doped p type semiconductor substrate including an active layer sandwiched between two cladding layers; and
p side and n side electrodes electrically contacting said substrate and said semiconductor layers opposite said semiconductor substrate, respectively.

5,349,598

OPTICAL SEMICONDUCTOR APPARATUS, A METHOD OF DRIVING THE SAME AND AN OPTICAL TRANSMISSION SYSTEM USING THE SAME

Toshihiko Ouchi, Machida, and Hajime Sakata, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 11,211
Claims priority, application Japan, Feb. 6, 1992, 4-056385
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—50 22 Claims



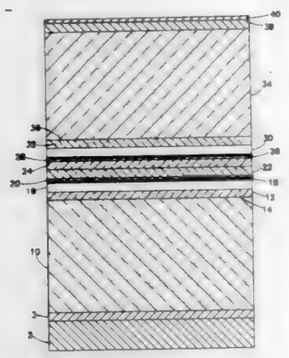
1. An optical semiconductor apparatus comprising:
a substrate;
a plurality of semiconductor layers formed on said substrate,
at least an upper waveguide and a lower waveguide fabricated in said semiconductor layers, said upper and lower waveguides being separated from each other in a direction of said semiconductor layers and being coupled to each other to a predetermined coupling degree;
a semiconductor laser positioned on said substrate so that light emitted therefrom enters one of said upper and lower waveguides;
a photodetector positioned on said substrate so as to receive light from one of said upper and lower waveguides.

5,349,599

BISTABLE OPTICAL LASER BASED ON A HETEROSTRUCTURE PNPN THYRISTOR

Eric C. Larkins, Fraunhofer Institute IAF, Tullastrasse 72, D-7800 Freiburg, Fed. Rep. of Germany

Division of Ser. No. 501,253, Mar. 29, 1990, Pat. No. 5,204,871.
This application Apr. 19, 1993, Ser. No. 49,827
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—50 6 Claims



1. An optoelectronic circuit comprising:
a first subcircuit branch including a series connection of a bistable light producing device, having an anode electrode and a cathode electrode, a first resistor, and a voltage rectifying device, having an anode electrode and a cathode electrode, with the first resistor and the voltage rectifying device being connected to opposite ones of the anode electrode and the cathode electrode of the bistable light-producing device and first means for positively biasing the anode electrodes of both the rectifying device and the bistable light-producing device relative to their respective cathode electrodes;
a second subcircuit branch including a photo-sensitive device, having an anode electrode and a cathode electrode, and a second resistor connected in series with the anode electrode of the photo-sensitive device, second means for positively biasing the anode electrode of the photo-sensitive device with respect to its cathode electrode; and wherein both the first subcircuit branch and the second subcircuit branch are connected in parallel, with the first resistor and the second resistor being connected together at one of their ends;
a capacitor having one electrode connected to a junction between the bistable light-producing device and the voltage rectifying device of the first subcircuit branch and another electrode connected to a junction between the second resistor and the photo-sensitive device of the second subcircuit branch; and
means for introducing optical input signals to the photo-sensitive device of the second subcircuit branch.

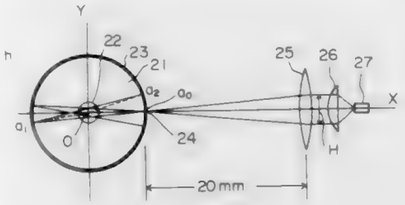
5,349,600

SOLID STATE LASER

Osamu Shinbori, Tokyo; Yoshinori Mimura, Wako; Yukio Noda, Hatoyama-Saitama, and Tetsuya Nakai, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1993, Ser. No. 116,323
Claims priority, application Japan, Sep. 21, 1992, 4-274924
Int. Cl.[5] H01S *3/08, 3/091*
U.S. Cl. 372—92 6 Claims

1. A high-output solid state laser of single functional mode of laser light comprising,
a high efficiency cylindrical laser glass rod core containing an element added as a laser medium and a cylindrical glass cladding disposed circumferentially of said rod core and longitudinally thereof concentrically therewith;
said glass cladding being free of an element acting as a laser medium and defining a narrow slit along a length thereof as an entrance window for excitation light to pass therethrough for incidence on said rod core along an optical axis thereof;
a source of said excitation light and means for focusing the excitation light on the surface of said glass cladding;



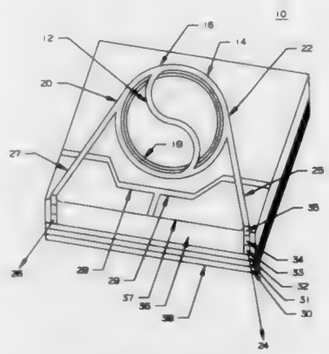
high incident light reflecting mirror surfaces formed on said glass cladding disposed for defining said narrow slit and for reflecting continuously excitation light passing through said rod core back accurately through the optical axis of the core so that incident light is accurately repeatedly reflected to the optical axis of the rod core for high efficiency absorption of the incident excitation light; and
an optical resonator for developing laser oscillations along the optical axis of said rod core.

5,349,601

UNIDIRECTIONAL RING LASERS

John P. Hohimer, and David C. Craft, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 20, 1993, Ser. No. 123,835
Int. Cl.[5] H01S *3/083*
U.S. Cl. 372—94 28 Claims



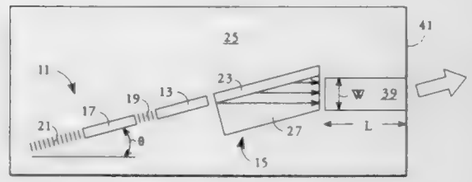
5. A unidirectional semiconductor ring laser comprising:
a substrate; and
active waveguide means formed on the substrate comprising;
a closed loop resonant cavity portion, at least a section of which exhibits optical gain for lasing action;
means integrated with the closed loop resonant cavity portion to control the direction of the light traveling within the cavity including means to selectively couple light out of the resonant cavity in a non-preferred direction and means to selectively couple light into the resonant cavity in a preferred direction; and
means to transmit light out of the cavity.

5,349,602

BROAD-AREA MOPA DEVICE WITH LEAKY WAVEGUIDE BEAM EXPANDER

David G. Mehuys, Menlo Park; Stephen O'Brien, Sunnyvale, and David F. Welch, Menlo Park, all of Calif., assignors to SDL, Inc., San Jose, Calif.

Filed Mar. 15, 1993, Ser. No. 31,684
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—98 27 Claims



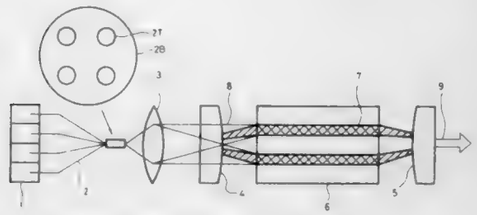
1. A coherent light source comprising
at least one laser oscillator
a leaky waveguide beam expander having only one elongated antiguide core of a first effective refractive index which is optically coupled to said laser oscillator to receive lightwaves therefrom, said beam expander also having at least one radiated-wave receiving region of at least a second effective refractive index that is greater than said first refractive index, said radiated-wave receiving region laterally disposed on at least one side of said antiguide core to receive lightwaves radiated laterally out of a length of said antiguide core, said laterally radiated lightwaves forming a wide light beam propagating laterally in said receiving region from said antiguide core to an output end of said receiving region, and
a single broad area optical power amplifier region optically coupled to said beam expander to receive said laterally propagating wide light beam from said output end of said radiated-wave receiving region, said amplifier region having excitation means associated therewith for amplifying said lightwaves as said beam continues to propagate in a lateral direction along a length of said amplifier region.

5,349,603

SOLID-STATE LASER RESONATOR

Yushi Kaneda, and Michio Oka, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Nov. 13, 1992, Ser. No. 976,276
Claims priority, application Japan, Nov. 25, 1991, 3-309103
Int. Cl.[5] H01S *3/08, 3/16, 3/139*
U.S. Cl. 372—101 8 Claims



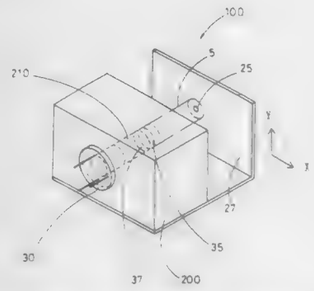
1. A solid-state laser resonator comprising:
a pair of reflecting means, at least one of said reflecting means having a convex curved-surface mirror;
a laser medium interposed between said pair of reflecting means and having end faces.;
a plurality of point laser sources, laser beams emitted from said laser sources being passed through one of said paired reflecting means and irradiated as pumping lights on one end face of said laser medium; and
means having a plurality of resonator portions, said resonator portions being comprised of said reflecting means, said laser medium and a plurality of thermal lenses which are formed within said laser medium, said means causing an output laser beam to be produced from the other end face of said laser medium through the other one of said reflecting means.

5,349,604

SEMICONDUCTOR LASER SOURCE

Naotaro Nakata, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Mar. 12, 1993, Ser. No. 30,863
Claims priority, application Japan, Mar. 13, 1992, 4-054820
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—103 14 Claims



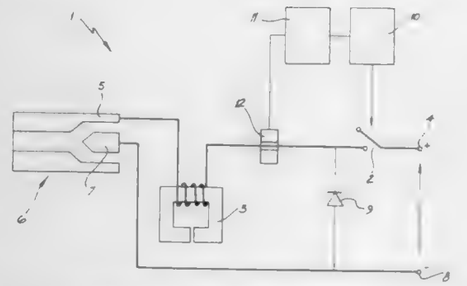
1. A semiconductor laser source comprising:
beam emitting means including a semiconductor laser for emitting a laser beam;
an optical system transmitting and collimating the laser beam emitted from said beam emitting means; and
a beam restricting member provided with an aperture of a size which is predetermined so that a central portion of the laser beam from said optical system is transmitted and diffracted while a remaining nonuniform portion of the laser beam is removed.

5,349,605

DC ARC TORCH POWER SUPPLY

Brian Campbell, Sydney, Australia, assignor to The University of Sydney, Sydney, Australia

PCT No. PCT/AU91/00251, § 371 Date Nov. 20, 1992, § 102(e) Date Nov. 20, 1992, PCT Pub. No. WO91/20176, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 13, 1991, Ser. No. 952,901
Claims priority, application Australia, Jun. 15, 1990, PK 0662
Int. Cl.[5] H05B *7/00*
U.S. Cl. 373—25 5 Claims



1. A DC power supply having a source of direct current, for a DC arc torch, comprising:
a controlled switch coupled between the source of direct current and the DC arc torch, for electrically communi-

cating the source of direct current to the DC arc torch when switched ON and for decoupling the source of direct current from the DC arc torch when switched OFF;

an inductance, coupled between said controlled switch, and the DC arc torch, for providing a current flow to the DC arc torch in response to said controlled switch being switched OFF;

a free-wheeling diode, coupled to the DC arc torch and to said inductance, said free-wheeling diode being reverse biased when said controlled switch is switched ON, and said free-wheeling diode being forward biased when said controlled switch is switched OFF, said free-wheeling diode for maintaining said current flow through the DC arc torch and said inductance in response to said controlled switch being switched OFF;

a switch driver, coupled to said controlled switch, for switching said controlled switch ON and OFF at a variable duty cycle; and

a feedback circuit, having a current sensor, coupled to the DC arc torch and to said switch driver for controlling said variable duty cycle of said controlled switch in response to a current flowing through the DC arc torch.

5,349,606

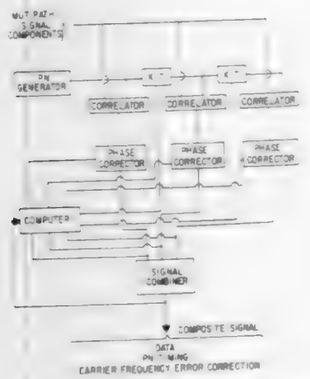
APPARATUS FOR MULTIPATH DSSS COMMUNICATIONS

John W. Lovell, Sherborn; Karen M. Schramm, Needham, and William E. DeLisle, Milford, all of Mass., assignors to GTE Government Systems Corporation, Waltham, Mass.

Filed Dec. 31, 1992, Ser. No. 999,507

Int. Cl.[5] H04L *27/30;* **H04B** *1/10*

U.S. Cl. 375—1 **1 Claim**



1. Circuit for recovery of a plurality of multipath direct sequence spread spectrum signal components received over a time span, wherein said multipath signal components are components of a signal generated from digital data comprised of data bits at a data bit rate modulated by a pseudo-noise code, consisting of a sequence of chips having a chip rate greater than the data bit rate, wherein said sequence of chips is a code repetition period equal or greater than the received time span of said multipath signal components, said circuit comprising:

a plurality of correlators, each correlator having an first input for coupling to said multipath signal components, a second input, and an output;

a pseudo-noise code generator for generating a duplicate of said pseudo-noise code;

a time delayer coupled between the second inputs of a mulitiplicity of said correlators and said pseudo-noise code generator, for delaying said duplicate of said pseudo-noise code by a multiple of a time delay equal to the time of a chip duration or less;

a plurality of phase correcting devices arranged with a phase correcting device at the output of each of said correlators; and

a signal combiner coupled to said plurality of phase correcting devices.

5,349,607

RECEIVER FOR A DIGITAL RADIOMOBILE SYSTEM WITH CANCELLATION OF ISOFREQUENCY INTERFERING SIGNALS HAVING THE SAME KIND OF MODULATION, AND RELEVANT METHOD

Luigi Moreno, Turin, Italy, assignor to Italtel Societa Italiana Telecomunicazioni S.p.A., Milan, Italy

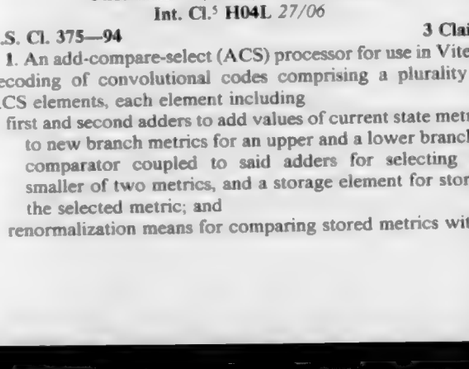
PCT No. PCT/EP90/02297, § 371 Date Aug. 14, 1992, § 102(e) Date Aug. 14, 1992, PCT Pub. No. WO91/10295, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 22, 1990, Ser. No. 859,475

Claims priority, application Italy, Dec. 22, 1989, 22841 A/89

Int. Cl.[5] H03D *1/00;* **H04L** *27/06*

U.S. Cl. 375—94 **26 Claims**



1. A receiver for phase modulated digital signals in a burst mode transmission system, each burst including a known preamble for the correction of distortions, the receiver including:

a sampling circuit sampling a received signal at a sampling rate equal to a multiple of the bit transmission frequency;

an estimation circuit estimating the channel impulse response having as an input samples from said sampling circuit and having an output connected to a control input of a maximum likelihood estimation circuit;

an interference estimation circuit estimating interference parameters including amplitude, phase and synchronism, having inputs of the samples from said sampling circuit and the channel impulse response from said estimation circuit, and outputting amplitude and phase parameter signals to the maximum likelihood estimation circuit;

a sampling selection circuit selecting a sample from said sampling circuit and having a control input of a signal representing the synchronism parameter output from said estimation circuit and having an output of the selected sample to an input of the maximum likelihood estimation circuit.

5,349,608

VITERBI ACS UNIT WITH RENORMALIZATION

Hatch Graham, Fremont, and Christine Nguyen, Milpitas, both of Calif., assignors to Stanford Telecommunications, Inc., Santa Clara, Calif.

Filed Mar. 29, 1993, Ser. No. 38,323

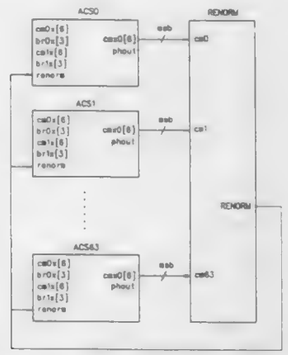
Int. Cl.[5] H04L *27/06*

U.S. Cl. 375—94 **3 Claims**

1. An add-compare-select (ACS) processor for use in Viterbi decoding of convolutional codes comprising a plurality of ACS elements, each element including

first and second adders to add values of current state metrics to new branch metrics for an upper and a lower branch, a comparator coupled to said adders for selecting the smaller of two metrics, and a storage element for storing the selected metric; and

renormalization means for comparing stored metrics with a selected scale factor in one clock cycle, and rescaling all stored metrics when the minimum stored metric value exceeds said selected scale factor in the following clock cycle.



5,349,609

ADAPTIVE INTERFERENCE CANCELLATION AND EQUALIZATION USING EQUALIZER DECISION ERROR AS A COMMON CORRECTIVE FACTOR

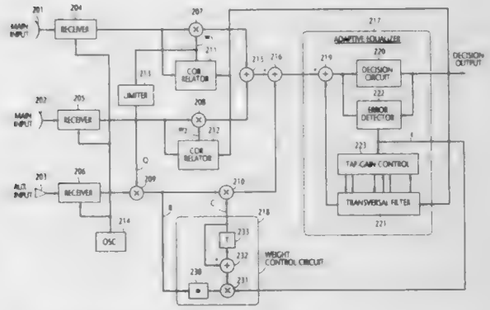
Ichiro Tsujimoto, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 3, 1993, Ser. No. 100,982

Claims priority, application Japan, Aug. 5, 1992, 4-208652

Int. Cl.[5] H04B *7/02*

U.S. Cl. 375—100 **6 Claims**



1. An interference canceler comprising:

an adaptive equalizer for equalizing multipath distortions and producing an equalized output signal and a decision error signal;

first and second diversity branches for receiving a transmitted signal and producing first and second diversity branch signals, respectively;

a first correlator associated with said first diversity branch for producing a first correlation output representative of a correlation between the equalized output signal from said adaptive equalizer and said first diversity branch signal, and a second correlator associated with said second diversity branch for producing a second correlation output representative of a correlation between said equalized output signal and said second diversity branch signal;

a first multiplier for multiplying the first diversity branch signal with said first correlation output, and a second multiplier for multiplying the second diversity branch signal with said second correlation output;

a diversity combiner for combining the outputs of said first and second multipliers and producing a diversity combined signal;

an auxiliary branch for receiving an interference signal and producing an auxiliary signal;

means for detecting a phase variation component of one of said first and second correlation outputs;

a third multiplier for multiplying said auxiliary signal with said phase variation component and producing an output signal whose phase rotation is the same as a phase rotation of the diversity combined signal;

weight control means responsive to said decision error signal from said adaptive equalizer and the output signal of said third multiplier for producing a weight control signal;

a fourth multiplier for multiplying the output signal of said third multiplier with said weight control signal;

means for subtracting an output signal of said fourth multiplier from said diversity combined signal to produce an interference-canceled signal and applying the interference-canceled signal to said adaptive equalizer.

5,349,610

DIGITAL DATA DETECTING AND SYNCHRONIZING CIRCUIT

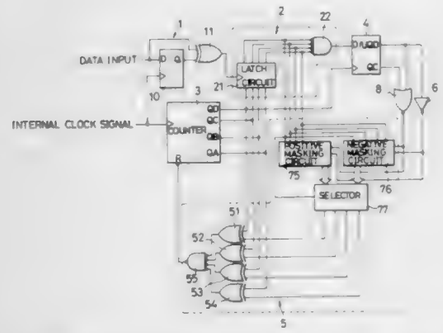
Kazuo Sakamoto, Kobe; Tatsuya Fujii, Nishinomiya; Naoto Shiraishi, Minoo; Ryo Fukui, Yao; Yukihiro Imai, Kawanishi; Yutaka Sato, Settsu, and Yoshiteru Yamada, Kobe, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 6, 1991, Ser. No. 741,060

Claims priority, application Japan, Aug. 10, 1990, 2-213146; Oct. 12, 1990, 2-274047; Mar. 29, 1991, 3-092878; Jun. 13, 1991, 3-168757

Int. Cl.[5] H04L *7/00, 7/02*

U.S. Cl. 375—106 **8 Claims**



4. A digital data detecting circuit for forming a receiving clock signal synchronized with every bit of digital data and detecting contents of the digital data, said digital data detecting circuit comprising:

a synchronuous signal generating counter, responsive to a reference clock signal, for generating the receiving clock signal sychronized with every bit of digital data;

a data-changing point detecting circuit for detecting a changing point of the digital data at which a value indicative of the digital data is changed from value 1 to value 0, or value 0 to value 1;

a masking pattern control circuit, responsive to a signal from the synchronous signal generating counter, for determining a masking bit to be masked in accordance with a shift amount of the timing of the changing point; and

a masking circuit, responsive to the masking pattern control circuit, for masking a bit of an output of the synchronous signal generating counter when the changing point is detected by the data-changing point detecting circuit; and

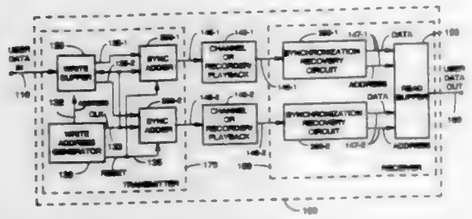
a reset control circuit for controlling the timing of a reset operation of said synchronous signal generating counter based on an output of the masking circuit.

5,349,611

RECOVERING SYNCHRONIZATION IN A DATA STREAM

George R. Varian, Palo Alto, Calif., assignor to Ampex Systems Corporation, Redwood City, Calif.

Continuation of Ser. No. 974,745, Nov. 13, 1992, abandoned.
This application Jan. 13, 1993, Ser. No. 3,896
Int. Cl.[5] H04L *7/00, 9/00;* H04J *3/06*
U.S. Cl. 375—115 46 Claims



30. Apparatus for associating a pseudo-random (PN) state of a first PN generator with data locations in a read buffer, the read buffer for storing data words, the apparatus comprising:

means for discovering the position of a PN sequence in a data stream of data words and for determining the PN state corresponding to the PN sequence in the data stream;

means responsive to an output from a PN detector and to the position of the PN sequence in the data stream for aligning word boundaries with respect to the location of the PN sequence; and

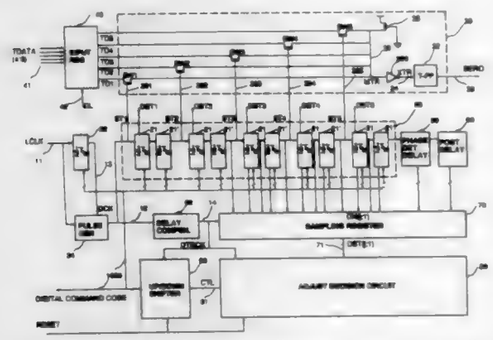
means for associating the PN state of the PN sequence in the data stream with locations in the read buffer so that data can be written into locations in the read buffer corresponding to those locations the data occupied in a write buffer.

5,349,612

DIGITAL SERIALIZER AND TIME DELAY REGULATOR

Bin Guo, Cupertino, Calif., and James J. Kubinec, Reno, Nev., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 19, 1992, Ser. No. 901,312
Int. Cl.[5] H04L *7/00, 25/36, 25/40;* H03D *3/24*
U.S. Cl. 375—118 12 Claims



10. An all digital method for regulating a delay line which is transmitting a serial pulse train having a bit frequency equal to 1/Tb comprising

launching a pulse having a pulse width equal to ½ Tb into said delay line, said delay line including a plurality of serially connected delay units having a nominal delay equal to ½ Tb;

determining the position of any instant of said pulse in said delay line;

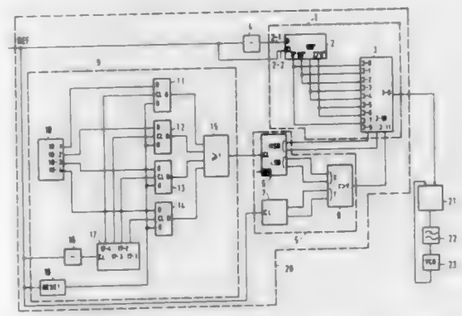
adjusting said delay of each said ½ Tb delay units responsive to the said position of said pulse in said delay line.

5,349,613

DIGITAL PHASE LOCKED LOOP, AND DIGITAL OSCILLATOR ARRANGED TO BE USED IN THE DIGITAL PHASE LOCKED LOOP

Antonie Dijkhof, Eemnes, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 30, 1992, Ser. No. 876,847
Claims priority, application Netherlands, May 8, 1991, 91201105
Int. Cl.[5] H03D *3/24*
U.S. Cl. 375—120 20 Claims



1. A digital phase locked loop, comprising a voltage controlled oscillator, a digital oscillator, a low-pass filter and a phase detector having first and second inputs and an output; the phase detector output being coupled to an input of the voltage controlled oscillator through said low-pass filter, an output of the voltage controlled oscillator being coupled to the first input of the phase detector, and an output of the digital oscillator being coupled to the second input of the phase detector,

characterized in that the digital oscillator comprises means for receiving a reference signal, and

multiplexing shifter means for receiving and shifting said reference signal by a predetermined phase magnitude per time interval, and for generating an output signal which is the reference signal shifted by a predetermined phase magnitude per time interval,

said multiplexing shifter means comprising a shifter circuit providing a plurality of shifter output signals having the frequency of said reference signal and having a phase respectively differing from each other by said predetermined phase magnitude; and a multiplexer having a plurality of multiplexer inputs respectively connected to said shifter outputs, for selecting a respective one of said multiplexer inputs to be said output signal for a time related to said time interval.

5,349,614

STEAM LINE PLUG INSTALLATION TOOL

James E. Bruner, Downington, Pa., assignor to General Electric Company, San Jose, Calif.

Filed Mar. 22, 1993, Ser. No. 34,976
Int. Cl.[5] G21C *13/00*
U.S. Cl. 376—204 20 Claims

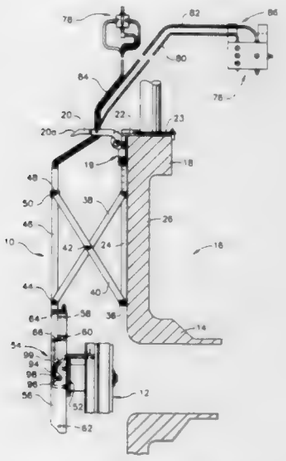
1. A plug installation tool for remotely installing a plug in a steam outlet nozzle of a reactor pressure vessel having a flange, comprising:

a strongback assembly on which said plug is securely mounted;

movable support means for supporting said strongback assembly, said movable support means being movable from an extended state to a collapsed state;

rigid tool hanging means for hanging said movable support means from said flange and inside said vessel at an azimuth and an elevation such that said plug is aligned with but not inside said steam line nozzle when said movable support means is in said extended state; and

first actuating means coupled to said movable support means



such that said movable support means moves between said extended state and said collapsed state in response to manipulation of said first actuating means,

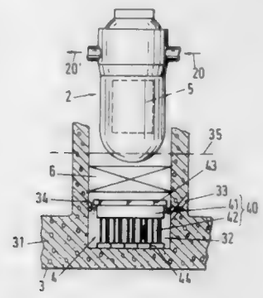
whereby said plug is inserted inside said steam line nozzle during movement of said movable support means from said extended state to said collapsed state.

5,349,615

CORE MELT-THROUGH RETENTION DEVICE FOR LIGHT-WATER REACTORS

Ferruccio Ferroni, Zürich, Switzerland, assignor to Elektrowatt Ingenieurunternehmung AG, Zurich, Switzerland

Filed Aug. 18, 1993, Ser. No. 108,362
Claims priority, application European Pat. Off., Sep. 14, 1992, 92810708.5
Int. Cl.[5] G21C *9/016*
U.S. Cl. 376—280 12 Claims



10. A core reactor plant comprising:

a reactor pressure vessel having an outer wall;

a containment foundation for housing the pressure vessel;

a retention device disposed within the containment foundation for retaining molten mass from a core melt-through in the pressure vessel, the retention device comprising:

a water filled cooling basin beneath the pressure vessel; and

a crucible disposed within the cooling basin, the crucible having a metal wall lined with a ceramic material and including a container with a plurality of cooling tubes extending from a lower surface of the container, a lid that forms a watertight upper seal for the container and a reinforcement structure disposed within the container for absorption of kinetic energy from the core melt-through; and

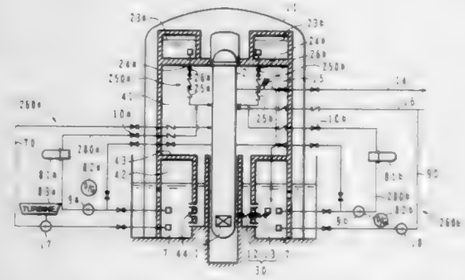
a generally conical collecting structure disposed between the pressure vessel and the retention device, the collecting structure being adapted to protect the retention device from a section of the outer wall being blown off the pressure vessel and to direct the molten mass into the container.

5,349,616

REACTOR COOLING SYSTEM FOR BOILING WATER REACTORS

Takashi Nakayama; Kanehiro Ochiai, both of Hitachi, and Masaki Matsumoto, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 28, 1993, Ser. No. 53,372
Claims priority, application Japan, Apr. 30, 1992, 4-111698
Int. Cl.[5] G21C *15/18*
U.S. Cl. 376—282 4 Claims



1. A reactor cooling system for boiling water reactors comprising:

a pressure vessel containing a core of a boiling water reactor;

a pressure suppression pool filled with a water and disposed to surround the pressure vessel;

static core injection means including two systems having a capacity in total not less than 100% of the capacity necessary to maintain submergence of said core in said pressure vessel; and

dynamic core injection means including two systems having a capacity in total not less than 100% of the capacity necessary to maintain submergence of said core in said pressure vessel;

said two systems of said static core injection means each having a water source installed at a position inside the reactor container higher than said pressure vessel, a first core injection line communicating said water source with said pressure vessel, and first valve means provided in said first core injection line and including an isolation valve and a check valve for allowing only a flow of cooing water from said water source of said pressure vessel, and each system having a capacity not less than 50% of the capacity necessary to maintain the submergence of said core in said pressure vessel;

said two systems of said dynamic core injection means each having a second core injection line communicating said pressure suppression pool with said pressure vessel, a pump provided in said second core injection line, and second valve means provided in said second core injection line and including an isolation valve and a check valve for allowing only a flow of cooling water from said pressure suppression pool to said pressure vessel, and each system having a capacity not less than 50% of the capacity necessary to maintain the submergence of said core in said pressure vessel; and

said first core injection line and said second core injection

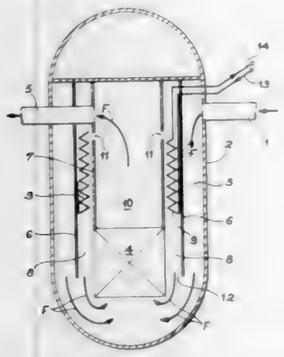
line being connected with each other at a location downstream of said first valve means and said second valve means.

5,349,617

APPARATUS FOR REMOVING THE RESIDUAL POWER OF A PRESSURIZED NUCLEAR REACTOR CORE

G. Marie Gautier, Pertuis, France, assignor to Commissariat a l'Engergie Atomique, France

Filed Apr. 16, 1993, Ser. No. 49,011
Claims priority, application France, Apr. 28, 1992, 92 05220
Int. Cl.[5] G21C *15/18*
U.S. Cl. 376—299 6 Claims



1. A pressurized water nuclear reactor, comprising:
a. a vessel forming a first ferrule (2);
b. a second ferrule (6) contained in the vessel (2) and concentric therewith, said first and second ferrules defining an external annular compartment (3) through which primary coolant flow water circulates to provide a hairpin-shaped flow path F of said primary coolant from top to bottom of said vessel (2);
c. a central cylindrical compartment (10) containing a core (4) for heating said water, said flow path F of primary water continuing from the bottom of said vessel, through said core, to the top of cylindrical compartment;
d. an apparatus for removing residual power from the core of said reactor, said apparatus comprising a third ferrule (7) defining a complementary annular space (8) between said external annular compartment (3) and said central cylindrical compartment (10), said complementary annular space (8) including a first orifice (12) for permitting communication of flow water between a lower part of said complementary annular space (8) and a lower part of said external annular compartment (3), said complementary annular space (8) also including a second orifice (11) for permitting communication of flow water between said cylindrical compartment (10) and an upper part of said complementary annular space, said apparatus also comprising at least one self-contained auxiliary heat exchanger (9) for removing said residual power, said heat exchanger being located in said complementary annular space (8) and being supplied autonomously with a second heat transfer fluid separate from said flow water; and
e. means for increasing vacuum effect in the vicinity of the lower part of the complementary annular space, wherein said means for increasing vacuum effect comprises means for partially closing the first orifice and a series of cylindrical radial pipes (16) extending, in the vicinity of the base of the core, into the external annular compartment (3), said cylindrical radial pipes (16) issuing onto openings (15) provided on the periphery of the lower part of the intermediate ferrule in the complementary annular space and being provided on their wall with longitudinal slots (17) for communication with the external annular compartment (3).

5,349,618

BWR FUEL ASSEMBLY HAVING OXIDE AND HYDRIDE FUEL

Ehud Greenspan, 4 Captain Dr. #407, Emeryville, Calif. 94608

Filed Sep. 9, 1992, Ser. No. 941,530
Int. Cl.[5] G21C *3/30*
U.S. Cl. 376—429 30 Claims



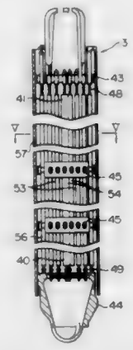
1. In a boiling water reactor, a fuel assembly comprising a plurality of fuel rods wherein at least a multiplicity of fuel rods in said plurality of fuel rods each includes a first fueled region containing an oxide fuel and an axially adjacent second fueled region containing a hydride fuel, said hydride fuel functioning simultaneously as a fuel and as a neutron moderator within said assembly.

5,349,619

FUEL ASSEMBLY FOR LIGHT WATER REACTOR AND LIGHT WATER REACTOR CORE

Takaaki Mochida, Hitachi, and Motoo Aoyama, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 21, 1993, Ser. No. 64,638
Claims priority, application Japan, May 21, 1992, 4-129027
Int. Cl.[5] G21C *3/32*
U.S. Cl. 376—444 28 Claims



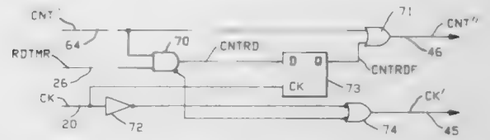
1. A fuel assembly for a light water reactor comprising a plurality of fuel rods which contain a primary fissile material, wherein at least one of water rods, in which cooling water flows therein when said fuel assembly is provided in the reactor, is provided at least in one of each corner position of an outermost layer of a polygonal arrangement of the fuel rods and a position in the outermost layer adjacent to said corner position in such a manner that said water rods are located in rotation symmetry, each of said water rods being filled with water over a length at least corresponding to a fuel effective length, and the fuel rods are provided at positions in an adjacent layer to the outermost layer which are adjacent to those positions at which said water rods are located.

5,349,620

TIMER ACCESS CONTROL APPARATUS

Theodore C. White, Tustin; Jayesh V. Sheth, Mission Viejo, and Kha Nguyen, Anaheim, all of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jan. 12, 1993, Ser. No. 3,925
Int. Cl.[5] H03K *21/40*
U.S. Cl. 377—3 8 Claims



1. An apparatus for controlling access to a timer circuit during periods of instability thereof, said apparatus comprising:
a.) first terminal means disposed for receiving a count signal of said timer circuit;
b.) second terminal means disposed for receiving a clock signal of said timer circuit;
c.) third terminal means disposed for receiving a load-timer signal;
d.) fourth terminal means disposed for receiving a read-timer signal;
e.) means for generating a first modification of said count signal, including logic means for generating an inhibit signal in response to a positive transition of said load-timer signal and a positive transition of said count signal, and gating means for combining said inhibit signal and said count signal such that said first modified count signal is inactive during the presence of said inhibit signal; and,
f.) means for generating a second modification of said count signal in response to said read-timer signal said clock signal and said first modified count signal, said second modification of said count signal being supplied for incrementing said timer circuit, whereby said timer circuit cannot be incremented during a read or load operation.

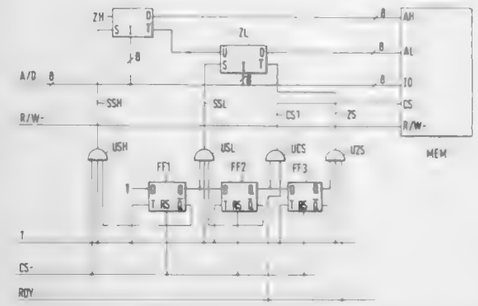
5,349,621

METHOD AND CIRCUIT ARRANGEMENT FOR TRANSMITTING DATA BLOCKS THROUGH A BUS SYSTEM

Wolfgang Fiesel, Markgröningen, Fed. Rep. of Germany, assignor to Alcatel N.V., Netherlands

Filed Oct. 29, 1992, Ser. No. 968,384
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1991, 4135553
Int. Cl.[5] H03K *21/02*
U.S. Cl. 377—44 7 Claims

1. A method of transferring data blocks over a bus system comprising common lines for providing address and data signals regulated by timing signal pulses, comprising the steps of:
providing a data transfer enable signal for enabling a data block transfer during a selected period of successive timing signal pulses;
receiving a starting memory address on the common lines for storing or retrieving a first data signal to or from the starting memory address in the presence of one of the successive timing signal pulses in the selected period; and
storing or retrieving additional data signals on the common lines at successive memory addresses in the presence of additional ones of the successive timing signal pulses in the selected period, wherein the length of the selected period is indicated by the length of the data transfer enable signal.

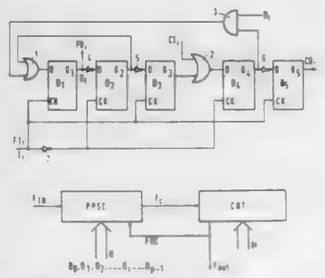


5,349,622

PROGRAMMABLE FREQUENCY DIVIDER CIRCUIT

Philippe Gorisse, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 8, 1992, Ser. No. 896,081
Claims priority, application France, Jun. 7, 1991, 91 06928
Int. Cl.[5] H03K *23/66*
U.S. Cl. 377—52 7 Claims



1. A programmable frequency divider circuit, comprising:
cascade-connected frequency dividing cells, a cell of rank i in the cascade performing an ith division, where i takes a value from 0 to (p−1), all cells being switchable between a normal divide-by-two mode and a programmed divide-by-three mode, a cell of arbitrary rank i comprising a first input (I_i) for an input frequency signal (FI_i) and a first output (O_i) for an output frequency signal (FO_i) to be applied to the first input (I_{i+1}) of the next cell of rank (i+1), a second input (CI_i) for an enable signal for the programmed mode, a third input (D_i) for a programming signal, and a second output (CO_i) for a gating signal, and means for generating said gating signal from the enable signal received on the second input (CI_i) of the cell i, said gating signal being applied to the second input (CI_{i-1}) of the cell (i−1) of lower rank as an enable signal, characterized in that the means for generating the gating signal are operative so that this signal is supplied from the instant at which the enable signal received by the relevant cell i returns to its inactive logic state, in that with the p cells which constitute a prescaler for the frequency divider circuit there are associated counting means for forming a first counting operation and a second counting operation for a first number and a second number, respectively, of periods of the output frequency of said prescaler, the second input (CI_{p-1}) of the pth cell receiving an enable signal which is supplied by the counting means and which

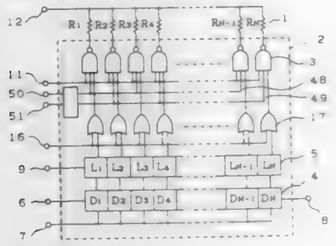
is derived from the completion of said first counting operation, the completion of said first and second counting operations constituting an output period of the divider circuit.

5,349,623

DRIVING CIRCUIT FOR EXOTHERMIC RESISTORS

Hiroshi Itoh, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1992, Ser. No. 956,410
Claims priority, application Japan, Oct. 14, 1991, 3-292039
Int. Cl.[5] H03K *19/082, 3/01*
U.S. Cl. 377—75 **18 Claims**



1. A driving circuit comprising:

a holding means for holding serial signal information comprising first driving signal information for a respective number of driven elements and for outputting said first driving signal information in parallel;

a number of switching elements coupled to the respective driven elements and to the holding means for receiving said first driving signal information from said holding means and for performing switching operations according to said first driving signal information for controlling the driving periods of time for said driven elements and supplying said first driving signal information output from said holding means to said driven elements for driving them; and

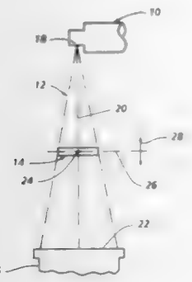
a signal information supply means for supplying to said switching elements second driving signal information independently of said first driving signal information for driving said driven elements independently of the said first driving signal information.

5,349,624

SOLID PARTICLE CONTAMINANT DETECTION AND ANALYSIS SYSTEM

Jeffrey M. Warren, Herndon, Va., and Richard D. Weller, Laurel, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 21, 1993, Ser. No. 65,259
Int. Cl.[5] G21K *3/00*
U.S. Cl. 378—43 **10 Claims**



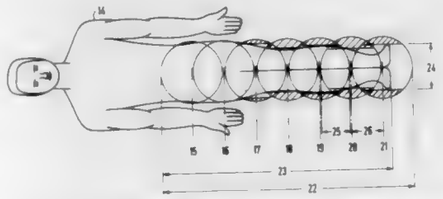
1. A method for examining particulate matter using X-ray equipment, comprising the steps of: passing a sample of said particulate matter through an analysis zone; directing microfocus X-ray beams generated by the X-ray equipment through said analysis zone to scan said sample and form X-ray images thereof; magnifying said X-ray images to enable detection of feature portions therein corresponding to contaminants within the sample; measuring the magnified X-ray images with respect to size and location of the feature portions therein after said detection thereof; and non-destructively analyzing the particulate matter from the size and location of the feature portions measured as the contaminants.

5,349,625

X-RAY DIAGNOSTICS INSTALLATION FOR PERIPHERAL ANGIOGRAPHY EXAMINATIONS

Hans-Joachim Born, Moehrendorf; Gerd Huettenrauch, Uttenreuth, and Heinz-Joachim Link, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 11, 1993, Ser. No. 29,543
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1992, 4210120
Int. Cl.[5] G21K *5/10*
U.S. Cl. 378—95 **12 Claims**



1. An x-ray diagnostics installation for peripheral angiography comprising:

an x-ray exposure means for generating an x-ray beam and for detecting said x-ray beam after passage through a patient to obtain an x-ray exposure of said subject, said x-ray exposure unit including diaphragm means for selectively gating said x-ray beam;

a support unit for receiving a patient to be examined using said x-ray exposure means, said support unit and said x-ray exposure means being relatively movable through a plurality of steps each having a step length with an exposure of said patient being obtained by said x-ray exposure means at each of said steps to obtain a plurality of successive exposures; and

control means connected to said x-ray exposure means and to said support unit for controlling operation of said x-ray exposure means and said support unit, including controlling said diaphragm means, said control means including arithmetic means for calculating values for pre-setting one or more of said plurality of successive exposures, said step length and said plurality of steps matched to said patient based on subject-related data including the size, weight and physique of said patient.

5,349,626

X-RAY TUBE ANODE TARGET

Paul U. Ujari, Milwaukee, and Thomas C. Tiearney, Waukesha, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Oct. 19, 1992, Ser. No. 962,562
Int. Cl.[5] H01J *35/10*
U.S. Cl. 378—144 **1 Claim**

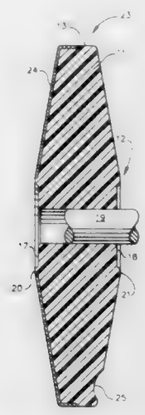
1. A rotating X-ray composite target structure comprising, in combination

(a) a circular graphite disc body having opposed front and back face surfaces,

(b) each of said surfaces having a large annular section tapering towards each other to define a narrow axial rim periphery surface and a central circular hub section,

(c) a circular concentric ridge projecting from said front surface by a small radius of curvature and defining said hub section from which said face surfaces taper towards each other at about 10°,

(d) a circular concentric smooth shoulder at said back surface corresponding to said ridge on said front surface and defining said hub section from which said back face tapers towards said front face,



(e) said axial, rim surface having an undercut portion therein extending a significant dimension from said front face towards said back face.

(f) and a layer of a refractory metal alloy coextensively covering said tapered front face to fit smoothly into said small radius of curvature of said ridge at said defined hub and smoothly into said axial rim surface undercut portion,

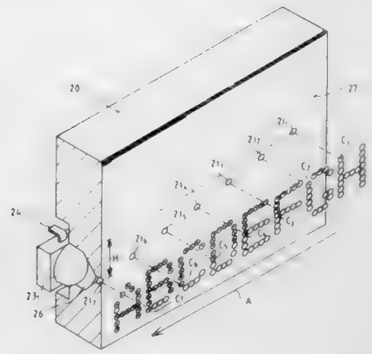
g) the slant height thickness of said layer being greater than the diameter of said hub section.

5,349,627

METHOD AND APPARATUS FOR MARKING A FILM IN A DARK ROOM

Arto Virta, Helsinki; Pekka Strömmer, Espoo, and Juha Sormunen, Sievi, all of Finland, assignors to Planmeca Oy, Finland

Filed Feb. 17, 1993, Ser. No. 18,788
Claims priority, application Finland, Feb. 26, 1992, 920864
Int. Cl.[5] H05G *1/28*
U.S. Cl. 378—166 **12 Claims**



1. A method for marking a radiographic film with patient data or similar information in a dark room after a radiographic exposure, in which method the marks to be produced are made latent onto the film (F) in a form becoming visible during the development of the film (F), comprising the steps of transferring the film (F) to be marked substantially linearly in a marking apparatus during a marking step in the dark room while simultaneously exposing the film to an array of vertically spaced sources of marking radiation;

sequentially composing the marking characters from vertically adjacently placed marks ($C_1 \ldots C_N$) using the above-mentioned linear motion of the film (F) as the shift in the direction of the marking character row;

guiding the film (F) horizontally supported by its lower edge; and

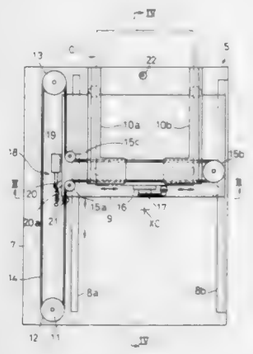
transferring the film linearly in the horizontal direction past a marking head (**20**) of the marking apparatus while supporting the film on a plane inclined to a small angle (α) from the vertical plane.

5,349,628

X-RAY PHOTOGRAPHIC EQUIPMENT

Ryuji Taniguruma, Nara, and Katsuhiro Masuo, Shiga, both of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed May 4, 1993, Ser. No. 56,383
Claims priority, application Japan, Jun. 29, 1992, 4-51785[U]
Int. Cl.[5] G03B *42/02*
U.S. Cl. 378—181 **8 Claims**



1. An X-ray photographic holder for holding an X-ray cassette, said holder comprising:

a carriage having the cassette placed thereon and moving reciprocally between a cassette loading position and a radiographic position;

a pair of grippers provided on the carriage having at least one gripper movable in the direction perpendicular to a movement of loading and unloading direction of the carriage, thereby to grip the cassette on both sides;

a single revolution driving means;

a plurality of follow pulleys provided on the carriage;

a force transmission belt, driven by said driving means, for moving at least one of said grippers and said carriage, said belt being guided by said follow pulleys and connected with said at least one gripper at a spot;

a stopper device for stopping the movement of the carriage so long as the cassette is in said loading position; and

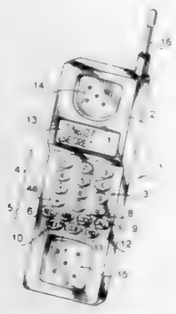
a control means for releasing the stopper device in response to a detecting signal indicating the gripping of the cassette.

5,349,629

PORTABLE TELEPHONE WITH SPEED DIALING

Toshiya Kumano, Uji, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jun. 28, 1993, Ser. No. 83,658
Claims priority, application Japan, Jul. 8, 1992, 4-181342
Int. Cl.[5] H04M *11/00, 1/00*
U.S. Cl. 379—58 13 Claims



1. A portable telephone comprising:

first input means for inputting telephone numbers, abbreviated numbers corresponding to telephone numbers, and group numbers, the abbreviated numbers being divided into several groups and each group being assigned one group number, the group numbers being divided into a speed dialing prohibited category and a speed dialing permitted category;

first memory means for storing the abbreviated numbers in connection with the group numbers;

second input means for inputting call limitation data to prohibit a call with the abbreviated number to which the group number of the speed dialing prohibited category is assigned;

second memory means for storing the call limitation data in connection with the group numbers;

display means for displaying the abbreviated number and the telephone number; and

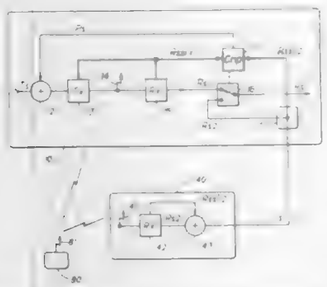
control means for controlling the display means in accordance with the group number stored in the first memory means and/or the call limitation data stored in the second memory means.

5,349,630

RADIO TELEPHONE SYSTEM

Erkka Sointula, Märynummi, Finland, assignor to Nokia Mobile Phones, Ltd., Salo, Finland

Filed Aug. 20, 1993, Ser. No. 109,630
Claims priority, application Finland, Sep. 1, 1992, 923923
Int. Cl.[5] H04M *11/00;* H04B *1/16*
U.S. Cl. 379—58 10 Claims



1. A method of operation of a radio telephone system comprising a base station, at least one auxiliary base station located within the coverage area of the base station and at least one mobile station, the method comprising the steps of:

i) in response to initiating a communication between the base station and a mobile station, receiving a signal from a mobile station at the base station and at an auxiliary base station;

ii) producing a signal (RSSI1) characteristic of the received signal strength for the signal received from the mobile station at the base station and producing a signal (RSSI2) characteristic of the received signal strength for the signal received from the mobile station at the auxiliary base station;

transmitting the signal RSSI2 from the auxiliary base station to the base station, wherein the signal transmitted from the mobile station to the auxiliary base station and the signal (RSSI2) characteristic of the received signal strength produced at the auxiliary base station are transmitted to the base station as a combined signal;

iii) comparing at the base station the signals RSSI1 and RSSI2; and

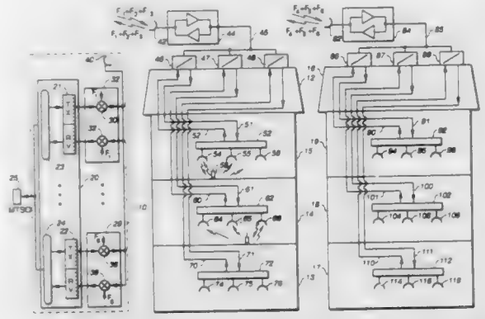
iv) transmitting a pilot signal from the base station to the mobile station instructing the mobile station to reduce the power of the transmitted signal to a level which can be detected only by the base station, when the magnitude of RSSI1 is greater than the magnitude of RSSI2, or to reduce the power level of the transmitted signal to a level which can be detected only by the auxiliary base station, and not by the base station, when the magnitude of RSSI2 is greater than the magnitude of RSSI1, in which case the auxiliary base station re-transmits the signal received from the mobile station to the base station, in order that the mobile station transmitter power is set to a level to cause transmission via a route that consumes a least amount of mobile station power.

5,349,631

INBUILDING TELEPHONE COMMUNICATION SYSTEM

William C. Lee, Corona Del Mar, Calif., assignor to AirTouch Communications, Walnut Creek, Calif.

Filed Nov. 21, 1991, Ser. No. 795,782
Int. Cl.[5] H04M *11/00;* H04Q *7/00*
U.S. Cl. 379—59 22 Claims



1. An inbuilding communication system for providing telephone communication to a first set of portable telephones located in a first area and to a second set of portable telephones located in a second area, the first set of portable telephones transmitting and receiving a first set of radio signals having a set of assigned frequencies, the second set of portable telephones transmitting and receiving a second set of radio signals having the same set of assigned frequencies used by the first set of portable telephones, the first and the second areas being separated by a structure which attenuates radio signals, said inbuilding communication system comprising:

a first set of at least two antennas located inside the first area communicating with the first set of portable telephones over the first set of radio signals, the number of antennas and the position of each antenna in said first set of antennas being chosen such that said first set of antennas is able to communicate with the first set of telephones at all locations in the first area above predefined minimum signal levels and such that the first set of radio signals is attenuated below a predetermined level after passing through the structure so as to reduce interference between the first and second set of radio signals;

a second set of at least two antennas located inside the second area for communicating with the second set of portable telephones over the second set of radio signals, the number of antennas and the position of each antenna in said second set of antennas being chosen such that said second set of antennas is able to communicate with the second set of telephones at all locations in the second area above predefined minimum signal levels and such that the second set of radio signals is attenuated below a predetermined level after passing through the structure so as to reduce interference between the first and second set of radio signals;

first selection means for selecting an antenna of said first set of antennas for transmitting a first selected radio signal of the first set of radio signals to a corresponding one of the first set of portable telephones, said selected antenna of said first set of antennas requiring the lowest signal intensity for transmitting said first selected radio signal of the first set of radio signals to said corresponding one of the first set of portable telephones; and

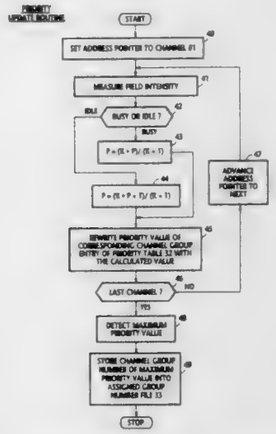
second selection means for selecting an antenna of said second set of antennas for transmitting a first selected radio signal of the second set of radio signals to a corresponding one of the second set of portable telephones, said selected antenna of said second set of antennas requiring the lowest signal intensity for transmitting said first selected radio signal of the second set of radio signals to said corresponding one of the second set of portable telephones.

5,349,632

CORDLESS TELECOMMUNICATION NETWORK WITH DYNAMICALLY ASSIGNED UNIQUE TIMESLOTS FOR ZONE REGISTRATION POLLING

Noriaki Nagashima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 20, 1992, Ser. No. 885,890
Claims priority, application Japan, May 20, 1991, 3-115015
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—61 10 Claims



1. A telecommunication network for serving cordless units located in a plurality of service zones, said network having radio speech channels which are organized into a plurality of channel groups such that no intermodulation products occur among the channels of each group, said network comprising a plurality of base units located respectively in said service zones, each of said base units comprising:

means for establishing two-way speech channels with those of the cordless units which are located in the same zone as the base units;

means for generating priority values of said channel groups as representations of usages of said groups through a statistical process and uniquely assigning one of said channel groups to the base units according to said priority values; and

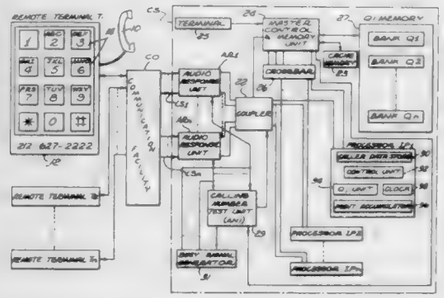
means for defining a timeslot depending on the assigned channel group and transmitting a polling signal from the base units during the defined timeslot to elicit a response from the cordless units located in the same zone as the base units.

5,349,633

TELEPHONIC-INTERFACE GAME CONTROL SYSTEM

Ronald A. Katz, Los Angeles, Calif., assignor to First Data Resources Inc., Omaha, Nebr.

Continuation of Ser. No. 73,585, Jun. 7, 1993, which is a continuation of Ser. No. 534,907, Jun. 8, 1990, Pat. No. 5,218,631, which is a continuation-in-part of Ser. No. 335,923, Apr. 10, 1989, which is a continuation of Ser. No. 194,258, May 16, 1988, Pat. No. 4,845,739, which is a continuation-in-part of Ser. No. 18,244, Feb. 24, 1987, Pat. No. 4,792,968, which is a continuation-in-part of Ser. No. 753,299, Jul. 10, 1985, abandoned. This application Feb. 4, 1994, Ser. No. 191,868
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[5] H04M *1/66, 3/50*
U.S. Cl. 379—88 7 Claims



6. A process for statistical analysis of data for use with a communication facility including remote terminal apparatus for individual callers, wherein said remote terminal apparatus may comprise a conventional telephone instrument including voice communication means and digital input means in the form of an array of alphabetic numeric buttons for providing identification and statistical data, said process including the steps of:

interfacing said communication facility to provide voice signals and receive digital identification data developed by said terminal apparatus under control of said callers;

generating voice signals and supplying said voice signals to actuate said terminal apparatus, as to provide individual vocal operating instructions to a caller;

providing sequence signals representative of sequence data indicating the sequence of a call with reference to calls from other callers;

initiating files and storing data from qualified callers including said sequence data and identification data as indicated by identification signals from said terminal apparatus;

providing external data signals distinct from said sequence data; and

comparing said sequence data for an individual caller and analyzing said sequence data for said individual caller in combination with said external data signals to isolate a select subset of said callers.

5,349,634

FACSIMILE APPARATUS

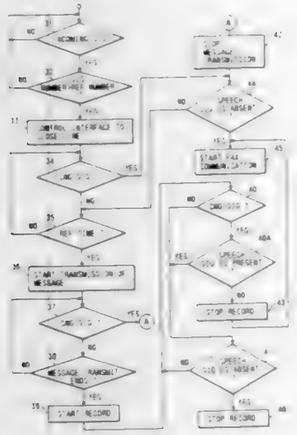
Hiroki Shimomura, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka

Filed Oct. 1, 1991, Ser. No. 769,269

Claims priority, application Japan, Oct. 18, 1990, 2-281172

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—100 **10 Claims**



5. A facsimile apparatus comprising:

a first means for detecting a presence and an absence of a calling tone signal;

second means for detecting a presence and an absence of a speech signal; and

third means for enabling facsimile communication in cases wherein the first means detects the presence of the calling tone signal and the second means detects the absence of the speech signal;

wherein the third means comprises means for enabling the facsimile communication in cases where the first means continues to detect the presence of the calling tone signal and simultaneously the second means continues to detect the absence of the speech signal for a predetermined time.

5,349,635

HALF-DUPLEX OR FULL-DUPLEX AUTOMODE OPERATION FOR USE IN DATA COMMUNICATIONS EQUIPMENT

Robert E. Scott, Indian Rocks Beach, Fla., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 19, 1992, Ser. No. 978,536

Int. Cl.[5] H04M *11/00;* **H04B** *1/38*

U.S. Cl. 379—97 **13 Claims**

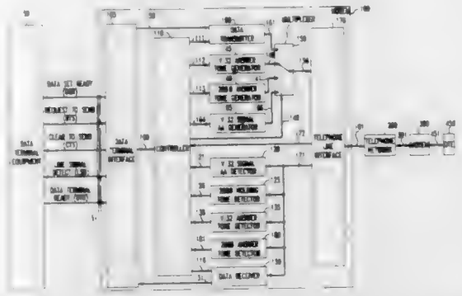
1. A method for originating a data call for use in data communications equipment, the method comprising the steps of:

a) placing a telephone call to a called party;

b) detecting an answer tone from an answering data communications equipment of the called party, where the answer tone comprises a single frequency; and

c) switching to one of a number of operating modes as a function of the frequency of the detected answer tone;

where the one of the number of operating modes is a full-duplex mode and another one of the number of operating modes is a half-duplex mode, and where said full-duplex operating mode is selected if the frequency of the detected answer tone is at a first frequency and where the half-duplex operating mode is selected if the frequency of the



detected answer tone is at a second frequency, where the first frequency and the second frequency are different from each other.

5,349,636

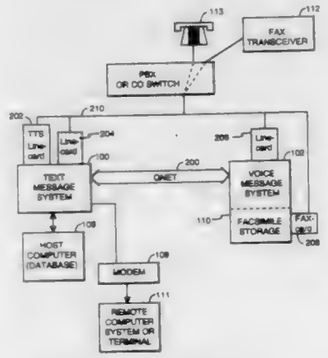
INTERFACE SYSTEM AND METHOD FOR INTERCONNECTING A VOICE MESSAGE SYSTEM AND AN INTERACTIVE VOICE RESPONSE SYSTEM

Roberto Irribarren, Fremont, Calif., assignor to Centigram Communications Corporation, San Jose, Calif.

Continuation of Ser. No. 783,686, Oct. 28, 1991, abandoned. This application Aug. 2, 1993, Ser. No. 101,342

Int. Cl.[5] H04M *1/64, 11/00*

U.S. Cl. 379—89 **7 Claims**



1. A communication system comprising:

a telephone line;

a voice message system directly coupled to said telephone line, said voice message system storing and retrieving voice messages, said voice message system including a first transfer mechanism to generate a first transfer command in response to a first instruction;

a text message system directly coupled to said telephone line, said text message system storing and retrieving text messages, said text message system including a second transfer mechanism to generate a second transfer command in response to a second instruction; and

a network coupled between said voice message system and said text message system for transferring processing of a call between said voice message system and said text message system in response to said first transfer command and said second transfer command, said first transfer command initiating a first control transfer wherein processing of a call is transferred from said voice message system to said text message system and said second transfer command initiating a second control transfer wherein processing of a call is transferred from said text message system to said voice message system, said first control transfer including the transfer of user identification data to enable access to said text message system.

5,349,637

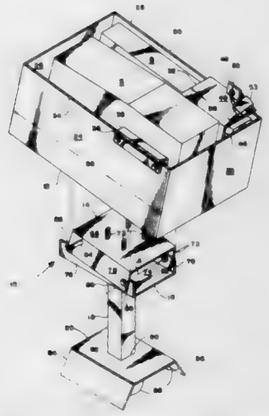
SECURITY BRACKET FOR PORTABLE TELEPHONES

Larry P. Miller, R.R. 1, Box 24, Hildreth, Nebr. 68947

Filed Jun. 3, 1993, Ser. No. 70,782

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—445 **20 Claims**



1. A security bracket for use with a portable telephone apparatus comprising at least a transceiver, battery, carrying bag, and hand set, with the telephone apparatus installable in a vehicle, said security bracket comprising:

a mounting base, a support column, an upper base support, a container base, and an open container;

said mounting base comprising a central plate, with said mounting base providing attachment means for said security bracket to an underlying structure;

said support column having a lower end and an upper end, with said lower end being secured to said mounting base central plate;

said upper base support comprising an underlying plate secured to said support column upper end, with said underlying plate having first and second flanges upwardly extending therefrom and oppositely disposed upon said underlying plate;

said open container comprising a bottom and first, second, third, and fourth sides defining a generally rectangular volume having an open top, with said open container bottom secured to an upper plate of said container base;

said open container first and third sides being disposed opposite one another and each having an upper edge and a lower edge, with said open container further including a lock bar hingedly attached to said upper edge of said first side and extending across said rectangular volume of said open container to cooperate with a securing means extending from said upper edge of said third side of said open container;

said lock bar comprising a hinge securing portion, an opposite securing portion, a first member depending from said hinge securing portion, a second member depending from said opposite securing portion; and a lower guard portion extending between said first depending member and said second depending member, whereby said lock bar defines a substantially U shaped member with said lower guard portion disposed within said open container when said lock bar is extended across said open container; whereby,

a portable telephone apparatus is protected from theft by said lock bar when the apparatus is placed within said open container and said lock bar is lockably secured thereover, and the hand set of the portable telephone apparatus is placed across said lower guard portion of said lock bar; the hand set further engages the transceiver of the portable telephone apparatus, thereby providing normal operation for the telephone apparatus and further positioning the telephone hand set in a position ready for use and protected from lateral movement by means of said first, second, third, and fourth sides of said open container and said first and second depending members of said lock bar.

5,349,638

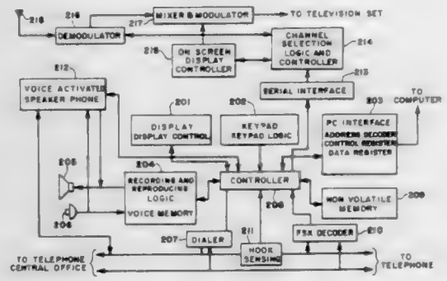
UNIVERSAL CALLING/ORIGINATING NUMBER IDENTIFICATION

Satyan G. Pitroda, Downers Grove, Ill., and Krishnappa Ranganath, Milwaukee, Wis., assignors to Micro-Technology Inc.-Wisconsin, Menomonee Falls, Wis.

Filed Jan. 25, 1993, Ser. No. 8,513

Int. Cl.[5] H04M *11/00, 1/56*

U.S. Cl. 379—142 **9 Claims**



1. An interface circuit for use between a telephone central office and a subscriber's telephone instrument for identifying the source of an incoming call, including control means, display means connected to said control means operated in response to signals representative of the identity of the source of said incoming call received from said telephone central office via a telephone line, to provide a visual indication of said incoming call identification, and a calling device connected to said control means operable by a subscriber to operate said control means to transmit via said telephone line, call selection signals, the improvement comprising:

a dialer circuit connected between said control means and said telephone line;

sensing means connected between said telephone line and said control means operated to indicate to said control means the condition of said telephone line;

decoder means connected between said telephone line and said control means, operated to decode incoming signals and extend decoded information representative of said incoming signals to said control means;

a loudspeaker;

recording and reproducing means connected between said loudspeaker and said control means, operated in response to said decoded information received from said control means to reproduce audibly the identification of the source of said incoming call;

a microphone connected to said recording and reproducing means, said microphone and said recording and reproducing means operated by a subscriber to program in a voice memory associated with said recording and reproducing means, information related to the identity of the source of an incoming telephone call; and

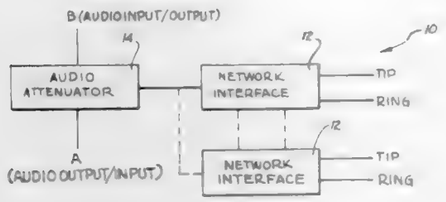
a computer interface connected between said control means and a computer, said decoded information extended via said computer interface to said computer.

5,349,639

AUTOMATIC ELECTRONIC AUDIO SIGNAL ATTENUATING DEVICE AND METHOD THEREFOR

Patrick Goodrich, 13236 N. 7th St., Suite 4-252, Phoenix, Ariz. 85022

Filed Apr. 30, 1993, Ser. No. 54,436
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—373 **28 Claims**



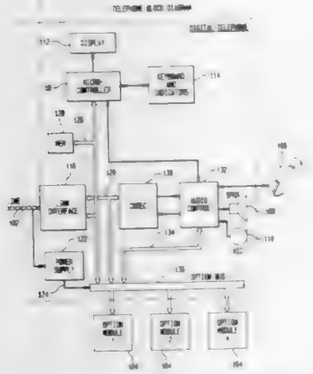
1. A combined audio system and automatic electronic audio signal attenuating device, comprising, in combination:
audio system means having a plurality of components for transforming audio signals to audible signals;
an automatic electronic audio signal attenuating device comprising:
audio attenuating means having at least first audio input/output connection means and second audio input/output connection means for attenuating said audio signals, said audio attenuating means having at least a first and a second configuration together providing a plurality of degrees of audio signal attenuation;
a plurality of network interface means each having at least one input from a telephone system and at least one connection to said audio attenuating means for controlling said audio attenuating means in response to changes to said at least one input from said telephone system; and
plurality of signal means each providing a voltage difference between two inputs from said telephone system of each of said plurality of network interface means coupled to a base junction of each of a plurality of transistors for controlling said transistors.

5,349,640

OPTION BUS ADAPTER

Tave P. Dunn; Larry A. Stell; William F. Dunn, Jr., all of Austin, Tex., and Norman Endick, Munich, Fed. Rep. of Germany, assignors to ROLM Company, Santa Clara, Calif.

Filed Jun. 24, 1993, Ser. No. 82,658
Int. Cl.[5] H04M *9/00*
U.S. Cl. 379—387 **14 Claims**



1. An option for use with a digital telephone of a type in which options are electrically coupled to the digital telephone by way of an option bus including bus control signals and bus data signals, and wherein the option bus is further coupled to a telephony switch by way of a telephony link and to internal telephone components by way of an internal bus, the option comprising:
a data Communication port accessible by an external computing device;
means for interfacing with the option bus;
means, coupled to the data communication port and the means for interfacing, for generating data communication signals indicative of telephony signals received from the switch by way of the telephony communication link and for providing the data communication signals to the data communication port;
means, coupled to the data communication port and the means for interfacing, for receiving data indicative of modified telephony signals from the computing device and for providing the modified telephony signals to the telephone by way of the option bus;
means for intercepting the telephony signals before they are sent to an internal telephone component to which they are directed and for sending the modified telephony signals to the internal telephone component in their stead.

5,349,641

PROCESS FOR THE TRANSMISSION AND RECEPTION OF CONDITIONAL ACCESS PROGRAMMES WITH A REDUCED PROGRAMME SWITCHING TIME

Francoise Coutrot, Cesson Sevigne, and Jean-Luc Giachetti, Rennes, both of France, assignors to France Telecom Etablissement Autonome de Droit Public and Telediffusion de France, both of Paris, France

Filed Aug. 12, 1993, Ser. No. 105,056
Claims priority, application France, Aug. 13, 1992, 92 10002
Int. Cl.[5] H04M *7/167*
U.S. Cl. 380—10 **5 Claims**



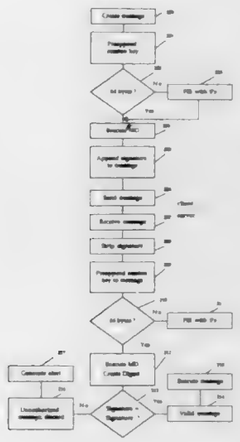
1. Process of reducing program switching times of scrambled conditional access programs synchronously transmitted with entitlement control messages having check words for descrambling the conditional access programs, wherein the check words for the conditional access programs are changed after a predetermined time period, comprising:
transmitting main check messages (ECMp) for a main access program at a first frequency (Fp) a plurality of times during each said time period;
transmitting secondary check messages (ECMs) for secondary access programs at second frequencies (Fs), lower than the first frequency (Fp), between two successive transmissions of the main check messages (ECMp) for the main access program; and
setting the second frequencies (Fs) of the secondary check messages in order to transmit all of the secondary check messages (ECMs) for the secondary access programs during said each said time period such that all of the check words are available each said time period and the program switching time is reduced.

5,349,642

METHOD AND APPARATUS FOR AUTHENTICATION OF CLIENT SERVER COMMUNICATION

Kevin Kingdon, Orem, Utah, assignor to Novell, Inc., Provo, Utah

Filed Nov. 3, 1992, Ser. No. 970,611
Int. Cl.[5] H04L *9/28*
U.S. Cl. 380—25 **20 Claims**



1. A method of authenticating a message transmitted between a sender and a receiver comprising the steps of:
generating a message at said sender;
combining a session key with said message to create a first appended message;
calculating a first digest of said first appended message;
combining a first portion of said first digest with said message to create a transmit message;
transmitting said transmit message to said receiver;
removing said first portion of said first digest from said transmit message to result in said message;
combining said session key with said message to generate a second appended message;
calculating a second digest of said second appended message;
comparing said said portion of said first digest and a second portion of said second digest;
authenticating said message when said first portion of said first digest matches said second portion of said second digest.

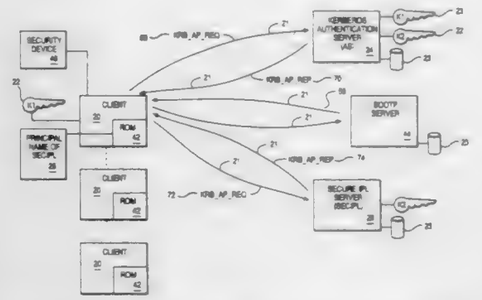
5,349,643

SYSTEM AND METHOD FOR SECURE INITIAL PROGRAM LOAD FOR DISKLESS WORKSTATIONS

James O. Cox, and James M. Mott, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 10, 1993, Ser. No. 58,842
Int. Cl.[5] H04L *9/12*
U.S. Cl. 380—25 **24 Claims**

1. A method executed by a computer system comprised of a client and a server in a network for providing a secure operating system comprising
storing a shared key at said client;
communicating signals across said network comprising a request including said shared key from said client to said server interconnected by said network for activating said operating system at said client;
authenticating said request at said server;
communicating signals across said network comprising a response from said server to said client in response to said authenticated said request, said response from said server including at least a portion of said operating system;
authenticating said at least a portion of said operating system at said client with said shared key; and



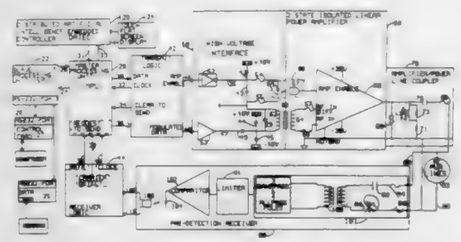
activating said operating system at said client in response to said response from said server.

5,349,644

DISTRIBUTED INTELLIGENCE ENGINEERING CASUALTY AND DAMAGE CONTROL MANAGEMENT SYSTEM USING AN AC POWER LINE CARRIER-CURRENT LAN

John Massey, Fairfax, and Garland R. Granzow, Leesburg, both of Va., assignors to Electronic Innovators, Inc., Fairfax, Va.

Continuation of Ser. No. 906,309, Jun. 30, 1992, abandoned. This application Dec. 1, 1993, Ser. No. 159,692
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **150 Claims**



1. A distributed data acquisition and equipment control system for communicating information over AC power lines, comprising:
an electrical power distribution line;
a plurality of carrier-current communication means positioned at predetermined locations on said power distribution line for transmitting and receiving information, said plurality of carrier-current communication means forming a local area network (LAN);
said LAN of carrier-current communication means comprising at least one Terminal Unit;
said Terminal Unit comprising:
a power line carrier current (PLCC) transceiver means for sending and receiving electrical signals constituting a LAN message over said power distribution line;
a slave processing means for interfacing and controlling communication with a first plurality of sensors and equipment;
an input/output (I/O) means for allowing an operator to input information onto and obtain information from the LAN;
a controller means for providing an interactive interface via said I/O means and for maintaining a data base of integrated command, equipment parameter and damage control information in a local non-volatile memory; and

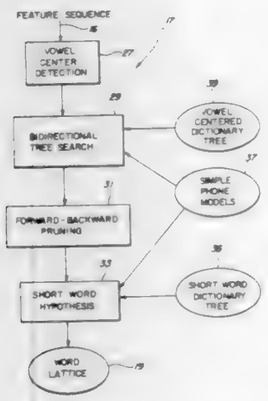
a master processing means for controlling the exchange of information between said slave processing means, said controller means and said PLCC transceiver means, and for controlling the formation, transmission and reception of LAN messages with any other carrier-current communication means in said LAN via said PLCC transceiver means.

5,349,645

WORD HYPOTHESIZER FOR CONTINUOUS SPEECH DECODING USING STRESSED-VOWEL CENTERED BIDIRECTIONAL TREE SEARCHES

Yunxin Zhao, Santa Barbara, Calif., assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 31, 1991, Ser. No. 807,255
Int. Cl.[5] G10L *9/00*
U.S. Cl. 395—2.52 **30 Claims**



1. A high-speed continuous speech-decoding system decoding a speech sentence by utilizing two-pass decoding, said system comprising:

means for converting a speech utterance into a sequence of feature vectors;

means for detecting stressed vowel centers in said sequence of feature vectors;

means for generating a word lattice based on the detected stressed vowel centers; and

means for performing a time-synchronous Viterbi beam search using the word lattice from said generating means to constrain said Viterbi beam search.

5,349,646

SIGNAL PROCESSING APPARATUS HAVING AT LEAST ONE NEURAL NETWORK

Toshiyuki Furuta; Takashi Kitaguchi, and Hirotoshi Eguchi, all of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 826,906, Jan. 24, 1992, Pat. No. 5,259,064. This application Jul. 20, 1993, Ser. No. 93,618
Claims priority, application Japan, Jan. 25, 1991, 3-25518; Jan. 30, 1991, 3-29243; Jan. 30, 1991, 3-29341
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—22 **9 Claims**

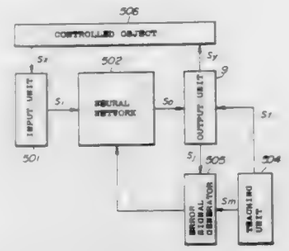
1. A signal processing apparatus for controlling a controlled object having an output signal, comprising:

converting means for converting said output signal of the controlled object into a network input signal, said network input signal being a pulse density signal having a pulse density defined by a number of first values and second values within a predetermined time, the first values and the second values being arranged at random, and the first and second values respectively corresponding to high and low binary signal levels;

a neural network for receiving the network input signal and outputting a network output signal which is also a pulse density signal;

output means, coupled to said neural network, for converting said network output signal into a control output signal applied to the controlled object;

teaching means, coupled to said neural network, for generating a teaching signal for making the neural network learn in real-time;



switching means, coupled to said teaching means, for selectively allowing said teaching means to operate such that the neural network is selectively made to learn; and

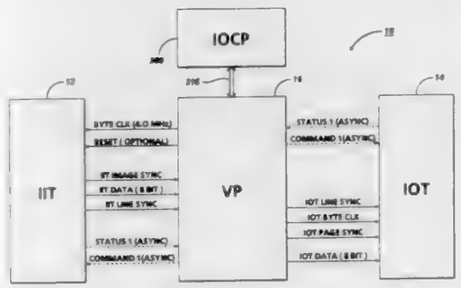
error signal generating means, coupled to said neural network and said teaching means, for generating an error signal using the teaching signal and information contained in said network output signal, said error signal controlling the neural network so that the control output signal has correct control information with respect to the output signal from the controlled object.

5,349,647

INPUT/OUTPUT COPROCESSOR FOR PRINTING MACHINE

Joseph A. Freiburg, Rochester, and Isaak Rivshin, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 812,314, Dec. 23, 1991, Pat. No. 5,307,458. This application Feb. 2, 1994, Ser. No. 190,387
Int. Cl.[5] G06F *3/12*
U.S. Cl. 395—115 **21 Claims**



1. A printing machine for concurrently processing first and second sets of image data, comprising:

a video processing section for processing the first set of image data, including:

a first bus for transferring the first set of image data thereacross

an input apparatus, coupled with said first bus, for transmitting the first set of image data, and

a first page buffer, coupled with said first bus, for receiving the first set of image data from said input apparatus;

a fault-tolerant coprocessing section coupled with said video processing section, including:

a second bus for transferring the second set of image data thereacross,

a plurality of input/output devices, each of said input/output devices being coupled with said second bus,

a third bus, coupled with said second bus, for transferring the second set of image data thereacross, said third bus being operable notwithstanding the inoperability of said second bus,

a second page buffer being coupled with said third bus and adapted to store the second set of image data, said plurality of input/output devices being permitted to communicate among one another when said third bus is inoperative, and

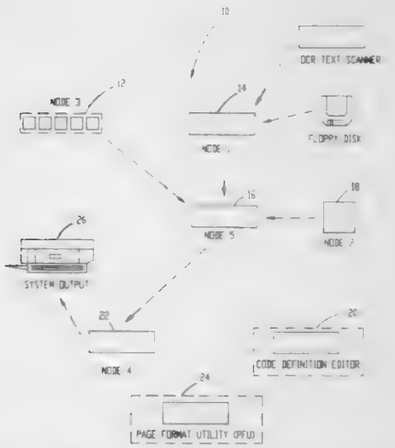
means for transferring the second set of image data between a selected one of said plurality of input/output devices and said second page buffer concurrent with the first set of image data being processed in said video processing section, said transferring means transferring the second set of image data in response to receiving a signal from said selected one of said plurality of input-/output devices.

5,349,648

AUTOMATIC HIGH SPEED PUBLISHING SYSTEM

George E. Handley, 5306 W. 119th Ter., Overland Park, Kans. 66209

Continuation of Ser. No. 758,477, Sep. 9, 1991, Pat. No. 5,133,051, which is a continuation of Ser. No. 626,989, Dec. 13, 1990, abandoned. This application Apr. 9, 1992, Ser. No. 847,261
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—148 **7 Claims**



1. A method of imaging a publication composed of manuscript material such as text and graphics, said method comprising the steps of:

defining in a computer system the structure of a publication to be imaged to include a plurality of identifiable entities associable with manuscript material wherein said entities make up at least a portion of said structure, and assigning at least one imaging attribute to each entity;

receiving manuscript material along with entity-identifying information;

associating said material with ones of said entities identified by said information; and

imaging said manuscript material associated with each of said entities according to said attributes assigned thereto, said imaging step further including the steps of

searching the manuscript material associated with predetermined ones of said entities for at least one predetermined manuscript item,

retrieving in response to detection of said manuscript item, predetermined manuscript material stored in said computer system memory and unassociated with any particular publication, and

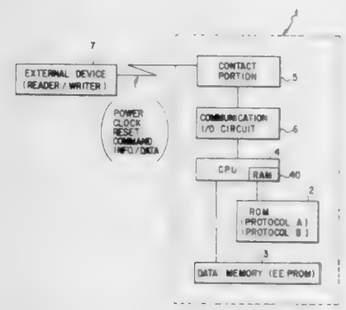
imaging said predetermined manuscript material in association with said entity having said manuscript item.

5,349,649

PORTABLE ELECTRONIC DEVICE SUPPORTING MULTI-PROTOCOLS

Yasuo Iijima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1992, Ser. No. 860,180
Claims priority, application Japan, Apr. 22, 1991, 3-090173
Int. Cl.[5] G06F *15/02*
U.S. Cl. 395—275 **17 Claims**



1. A portable electronic device connectable to an external device, said portable electronic device comprising:

first storing means for storing software programs respectively using different communication protocols;

second storing means for storing prescribed information, said prescribed information serving to discriminate a specific protocol which is to be used when communication is started with said external device;

third storing means, coupled with said first and second storing means, for storing said specific protocol when communication is started;

communication means for communicating with said external device based on one of said software programs stored in said first storing means, said software program corresponding to said specific protocol stored in said third storing means; and

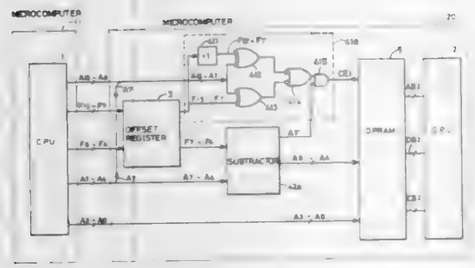
a controller unit, coupled to said first and said second storing means as well as said communication means and which incorporates said third storing means, for temporarily changing said specific protocol used by said portable electronic device during communication in response to a protocol type selection command input from said external device, where said specific protocol is changed by modifying the stored contents of said third storing means, and for changing said specific protocol used by said portable electronic device at the time of start of communication in response to an initial data updating command, where said specific protocol for use at the time of start of communication is changed by modifying the stored contents of said second storing means.

5,349,650

ADDRESS TRANSLATING APPARATUS FOR TRANSLATING VIRTUAL ADDRESS INTO REAL ADDRESS WITHOUT DEPENDING ON PROCESSING BY CPU

Tatsuya Imakura, and Mitsuru Sugita, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1991, Ser. No. 723,011
Claims priority, application Japan, Oct. 8, 1990, 2-271407
Int. Cl.[5] G06F *12/08*
U.S. Cl. 395—400 12 Claims



10. A data processing apparatus comprising:

a memory cell array having first and second input/output ports and a plurality of memory cells arranged in rows and columns;

first accessing means connected to the first input/output port of said memory cell array for accessing said memory cell array through the first input/output port; and

second access means connected to the second input/output port of said memory cell array and responsive to an externally applied virtual address signal for accessing said memory cell array through the second input/output port, wherein said second access mean comprises

offset data holding means for holding predetermined offset data for address translation,

enabling means responsive to predetermined more significant bits of the virtual address signal and predetermined more significant bits of the offset data held in said offset data holding means for enabling access to said memory cell arrays, said enabling means having

i) first coincidence detecting means for detecting coincidence of the more significant bits of the virtual address signal and the offset data held in said offset data holding means,

ii) second coincidence detecting means for detecting coincidence between the more significant bits of the virtual address signal and data bits having a prescribed relationship with the more significant bits of the virtual address signal by addition of a prescribed value to the more significant bits of the virtual address, and

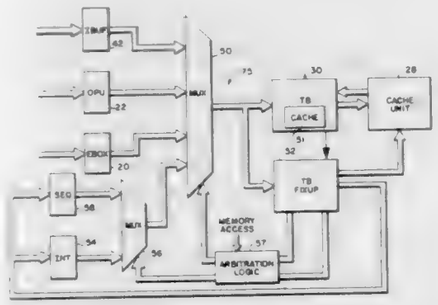
real address signal generating means responsive to predetermined less significant bits of the virtual address signal and predetermined less significant bits of the offset data held in said offset data holding means for generating said real address signal, said enabling means and real address signal generating means sharing a common address bus and said memory cell array being responsive to the real address signal generated from said real address signal generating means to be addressed.

5,349,651

SYSTEM FOR TRANSLATION OF VIRTUAL TO PHYSICAL ADDRESSES BY OPERATING MEMORY MANAGEMENT PROCESSOR FOR CALCULATING LOCATION OF PHYSICAL ADDRESS IN MEMORY CONCURRENTLY WITH CACHE COMPARING VIRTUAL ADDRESSES FOR TRANSLATION

Ricky C. Hetherington, Northboro; David A. Webb, Jr., Berlin; David B. Fite, Northboro; John E. Murray, Acton; Tryggve Fossum, Northboro, and Dwight P. Manley, Holliston, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 306,544, Feb. 3, 1989, abandoned. This application Aug. 9, 1991, Ser. No. 746,007
Int. Cl.[5] G06F *12/10, 12/00*
U.S. Cl. 395—400 16 Claims



1. A memory access unit for controlling access to a memory by a data processing unit of a digital computer system, said data processing unit providing a plurality of virtual addresses to said memory access unit and said memory access unit providing a corresponding plurality of physical addresses to said memory, said memory having a plurality of memory locations, each of said memory locations storing one of the plurality of physical addresses, said memory access unit comprising:

a translation buffer including:

a) a translation buffer cache of previously converted virtual addresses and corresponding physical addresses,

b) means for comparing a current virtual address to the translation buffer cache of previously converted virtual addresses and delivering one of a miss and hit signal in response to respectively detecting an absence and presence of a match between the current virtual address and one of said previously converted virtual addresses, and

c) means responsive to receiving said hit signal for delivering to said memory the physical address from said translation buffer cache corresponding to the current virtual address; and

a memory management processor for updating said translation buffer cache in response to receiving said miss signal, said memory management processor including:

a) means for calculating a memory address of one of said memory locations containing the physical address corresponding to said current virtual address,

b) means for retrieving the physical address corresponding to said current virtual address from the memory using the calculated memory address from the means for calculating, and

c) means for storing in said translation buffer cache the retrieved physical address in correspondence with said current virtual address;

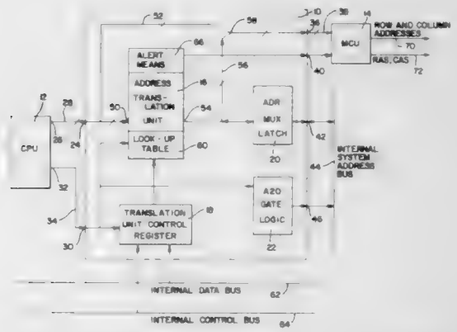
wherein said translation buffer and said means for calculating are interconnected for receiving and operating concurrently upon a same virtual address from the data processing unit so that said means for calculating performs the calculation of the memory address of the memory location containing the physical address concurrently with the translation buffer performing the comparing of the current virtual address to the translation buffer cache of previously converted virtual addresses.

5,349,652

SINGLE CHIP INTEGRATED ADDRESS MANAGER WITH ADDRESS TRANSLATING UNIT

James R. MacDonald, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 576,605, Aug. 31, 1990, abandoned. This application Aug. 4, 1993, Ser. No. 102,113
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—400 11 Claims



1. An address manager for use in a memory management system for receiving from a central processing unit a multiple-bit memory address to be translated and a multiple-bit memory address to remain untranslated and for translating said multiple-bit memory address to be translated and providing a translated memory address to a memory control unit, said address manager comprising:

an input for receiving from said central processing unit said multiple-bit memory address to be translated and said multiple-bit memory address to remain untranslated, said multiple-bit memory address to be translated including a first portion to remain untranslated and a second portion to be translated;

an address translation unit coupled to said input for receiving said second portion to be translated, said address translation unit including a translation look-up table for translating said memory address second portion to be translated to a translated address portion in accordance with translation parameters stored in said look-up table and an alert means for providing said memory control unit with an alert signal responsive to said address translation unit receiving said portion to be translated for causing said memory control unit to adjust its timing to accommodate the translation of said portion to be translated;

a translation unit control register coupled to said address translation unit for providing said address translation unit look-up table with said translation parameters;

an output for providing said memory control unit with said translated memory address including said first portion to remain untranslated combined with said translated address portion, and

an address latch coupled to said address translation unit, said address translation unit conveying said multiple-bit address to remain untranslated to said address latch without translation, said address latch for latching said multiple-bit address to remain untranslated;

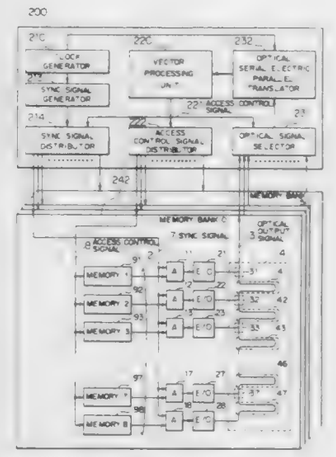
said central processing unit, said address translation unit, said translation unit control register, said address latch, and said memory control unit all being integrated within a single integrated circuit.

5,349,653

APPARATUS FOR CONVERTING PARALLEL BITS OF AN ELECTRICAL DATA SIGNAL INTO SERIAL BITS OF AN OPTICAL DATA SIGNAL UTILIZING AN OPTICAL TIME DELAY

Hiroshi Kurokawa, Kodaira; Yasushi Takahashi, Hachioji, and Yasuhiro Inagami, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 11, 1991, Ser. No. 775,030
Claims priority, application Japan, Oct. 12, 1990, 2-272154
Int. Cl.[5] G06F *5/00*
U.S. Cl. 395—500 39 Claims



23. A computer system, comprising:

a storage having a plurality of memory banks;

a processing unit;

a parallel-serial converting unit provided in each of said memory banks;

means responsive to an access control signal outputted from said processing unit, for selecting a serial optical output signal from one of said plurality of memory banks; and

means for converting the selected serial optical output signal into parallel electric signals to supply them to said processing unit;

wherein each of said parallel-serial signal converting units includes:

memory means responsive to the access control signal, for outputting a plurality of electric data signals representing parallel data bits;

a plurality of switch means connected to said memory means, each switch means having a control terminal which is used to control ON and OFF states of said switch means in response to an electric data signal, wherein said switch means when in said ON state permits a signal to pass through and when in said OFF state does not permit a signal to pass through;

means for distributing a single pulsed optical synchronizing signal to said plurality of switch means on the basis of system clocks of said processing unit;

at least one optical delay means connected to output terminals of said plurality of switch means, each thereof causing said optical synchronizing signal to be delayed by a predetermined time longer than a pulse width of said optical synchronizing signal by utilizing an optical delaying property; and

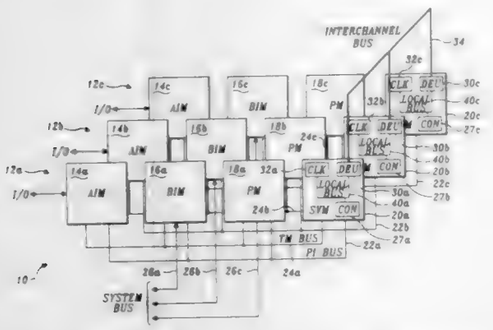
optical coupling means connected to an output terminal of said at least one optical delay means, for coupling said optical synchronizing signals passing substantially simultaneously through said respective switch means in an ON state to produce the serial optical pulse signal.

5,349,654

FAULT TOLERANT DATA EXCHANGE UNIT

David G. Bond; Vincent A. Caluori, both of Kent; Todd Hill, Seattle; David T. Kirkland, Kent; Michael L. Raftery, Federal Way, and Derek J. VanAlen, Kent, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Feb. 20, 1992, Ser. No. 839,208
Int. Cl.[5] G06F *11/08*
U.S. Cl. 395—575 20 Claims



1. A data exchange unit for use in a fault tolerant system having redundant channels, each channel being associated with a different data exchange unit, the data exchange units being used for transferring data from at least one source to a recipient so as to detect and compensate a fault in at least one channel of the redundant channels, each data exchange unit comprising:

(a) a transmitter connected to receive the data from the source over a local bus for one channel with which the data exchange unit is associated, the transmitter distributing that data to the other data exchange units associated with each of the channels over an inter-channel communications link;

(b) a multiplexer having plural inputs connected to the inter-channel communications link to receive the data distributed by the transmitter of each data exchange unit for the other channels, and an output;

(c) receiver means for receiving data conveyed over the inter-channel communications link from the output of the multiplexer in each data exchange unit associated with each channel so that a separate data input and data output for the receiver means are provided for each of the channels;

(d) initialization means for initializing the data exchange unit to synchronize it with the data exchange units for the other channels of the fault tolerant system; and

(e) a voter that selects the data output of the receiver means for transmission to the recipient based on predefined logic, so as to insure that at least one fault in the data input to the receiver means is compensated.

5,349,655

METHOD FOR RECOVERY OF A COMPUTER PROGRAM INFECTED BY A COMPUTER VIRUS

Omri Mann, Jerusalem, Israel, assignor to Symantec Corporation, Cupertino, Calif.

Continuation-in-part of Ser. No. 705,390, May 24, 1991, abandoned. This application May 12, 1992, Ser. No. 881,859
Int. Cl.[5] H04L *9/00*; G06F *7/02*
U.S. Cl. 395—575 7 Claims

1. A method of restoring a computer program infected by a computer virus comprising:

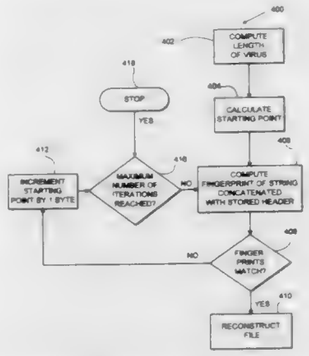
(a) generating a unique fingerprint for a computer program prior to said computer program being infected;

(b) generating a first string which is a transitive function of a first plurality of substrings of said computer program said function having an inverse function for calculating an unknown input given all other inputs and a value of the function;

(c) storing said unique fingerprint and said first string prior to said computer program being infected at a separate location;

(d) generating a substring of said computer program from said first string and said computer program by utilizing said inverse function;

(e) generating a fingerprint of a second string formed of a second plurality of substrings of said computer program and a trial substring generated from said computer program and said first string;



(f) comparing the fingerprint generated in step e) with the fingerprint saved at step c) and determining that said computer program can be restored if said fingerprints match;

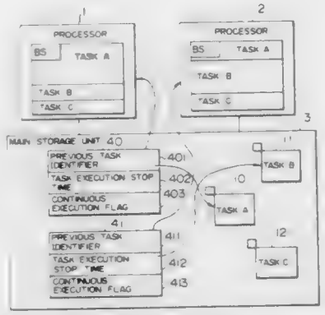
(g) restoring said computer program as said second plurality of substrings and said trial substring if said comparison in step f) determines that restoration is possible.

5,349,656

TASK SCHEDULING METHOD IN A MULTIPROCESSOR SYSTEM WHERE TASK SELECTION IS DETERMINED BY PROCESSOR IDENTIFICATION AND EVALUATION INFORMATION

Seiji Kaneko, Yokohama; Toshiyuki Kinoshita, Sagamihara; Akio Yamamoto, Sagamihara, and Yasuhisa Tamura, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 797,912
Claims priority, application Japan, Nov. 28, 1990, 2-327627
Int. Cl.[5] G06F *9/445*
U.S. Cl. 395—650 12 Claims



1. In a computer system having a main storage unit and a plurality of instruction processors each having a buffer storage unit, said buffer storage unit having a copy of a part of said main storage unit and deleting a part of said copy when reading a main storage unit area not stored in said buffer storage unit,

a task scheduling method for a multiprocessor, comprising the steps of:

providing each task control block of a task control block queue with an area for storing processor identification of an instruction processor which executes a task and an area for storing evaluation information for evaluating a copied data amount for said task, remaining in said buffer storage unit of said instruction processor executing said task;

causing said instruction processor to register said processor identification and said evaluation information in said task control block when execution of said task is stopped; and

when selecting a task to be executed by a subject instruction processor from a plurality of tasks to be executed in said computer system, causing said subject instruction processor to sequentially read said task control blocks in said task control block queue to check each task in accordance with said processor identification and said evaluation information, and if a checked result shows that said copied data amount corresponding to a checked task and remaining in said buffer storage unit of said instruction processor is greater than a predetermined amount, causing said subject instruction processor not to select said checked task and allowing another instruction processor to select said checked task.

5,349,657

METHOD OF AUTOMATING UPLOADING OF HELP PANELS

Adrienne Y. Lee, Grapevine, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 634,279, Dec. 21, 1990, abandoned. This application Apr. 19, 1993, Ser. No. 49,229
Int. Cl.[5] G06F *15/16, 7/00*
U.S. Cl. 395—650 2 Claims



1. A method implemented in a data processing system having at least one host processor for automating the uploading of HELP panels created in one of a plurality of workstations in a first file format and converting the HELP panels within said host processor to a second filed format, said method comprising the steps of:

providing a plurality of HELP panels in one of a plurality of workstations in said data processing system in said first file format describing text to aid a user in the use of an application program in a host environment;

automatically uploading and converting said plurality of HELP panels from said one of said plurality of workstations to said host environment in response to loading and executing coded teleprocessing network simulator modules into said host by said user, said coded teleprocessing network simulator modules providing a simulation of a network with which said said plurality of HELP panels interacts, said teleprocessing network simulator modules performing the steps of:

establishing a communication link between said workstation and said host environment by logging onto a Customer Information Control System (CICS) region within said host environment;

providing storage within said host environment to receive said plurality of HELP panels;

transferring said plurality of HELP panels from said workstation to storage in said Customer Information Control System (CICS) region within said host environment in a headings file in said first file format over said communication link;

creating a plurality of shared HELP panels in said Customer Information Control System (CICS) region within said host environment in a second file format usable by said host environment by reading and converting said headings file to said second file format in the storage of said host environment, wherein said shared HELP panels are accessible by said user of said application program; and

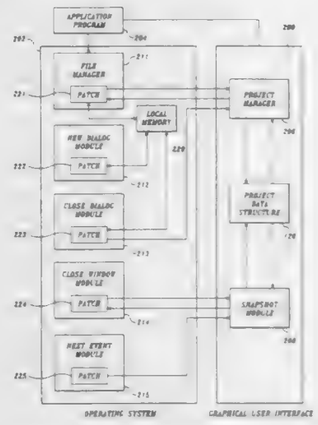
terminating said communication link between said workstation and said host environment by logging off said Customer Information Control System (CICS) and ending the execution of the coded teleprocessing network simulation modules.

5,349,658

GRAPHICAL USER INTERFACE

Thomas C. O'Rourke, 2409 E. Roanoke, Seattle, Wash. 98112; Brian T. O'Neill, 2917 Franklin E., Seattle, Wash. 98102; Rodney C. Cook, 1027 A Ave., Edmonds, Wash. 98020; Kuntay O. Taner, 11520-29th Dr., SE., Everett, Wash. 98208; Steven P. Synder, 27427-226th Ave. SE., Maple Valley, Wash. 98038, and Adam R. Joyner, 5026-7th Ave. NE., Seattle, Wash. 98195

Filed Nov. 1, 1991, Ser. No. 786,291
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—700 11 Claims



1. In a computer system including a display, means for executing an application program, and a memory for storing one or more application programs and other data, each application program including means for producing screens on the display during execution of the application program, the improvement comprising user interface means including:

(a) snapshot means for automatically recording in the memory of snapshot graphically representative of a screen produced by the application program during execution of the application program; and

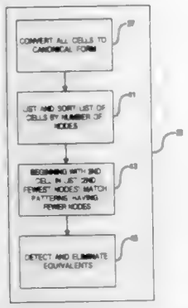
(b) means for displaying the snapshot on the display after execution of the application program has terminated.

5,349,659

HIERARCHICAL ORDERING OF LOGICAL ELEMENTS IN THE CANONICAL MAPPING OF NET LISTS

Cuong Do, San Jose, and Ruey-Sing Wei, Fremont, both of Calif., assignors to Cadence Design Systems, Inc.

Filed Jan. 23, 1992, Ser. No. 824,599
Int. Cl.[5] G06F *15/60*
U.S. Cl. 395—700 **2 Claims**



1. In a computer automated design system for the design and logic synthesis of electronic circuits, the system comprising a cell library having a plurality of cell components for implementing an electronic circuit in a fabrication technology, each cell component having one or more nodes defined therein, a computer implemented method for hierarchically defining and ordering the cell components, comprising the steps of:

converting each cell component into a canonical form cell component having a number of nodes;

sequentially ordering all of said cell components based on the number of nodes contained in each cell component, with cell components having more nodes being higher in the hierarchy, to create an ordered array of cell components;

for each cell component, hierarchically redefining the selected cell component in terms of cell components lower in the hierarchy than the selected cell component to create a plurality of hierarchical cell components in the ordered array of cell components;

for each hierarchical cell component, comparing the hierarchical cell component with all other hierarchical cell components in the ordered array of cell components to determine whether any other hierarchical cell component is structurally identical to the hierarchical cell component; and

eliminating from the ordered array of cell components any other hierarchical cell component which is structurally identical to the hierarchical cell component to ensure that each hierarchical, cell component is structurally distinct.

5,349,660

METHOD OF IMPROVING PERFORMANCE IN AN AUTOMATED TEST SYSTEM

Bryan J. Sutula, and Jerry D. Metz, both of Loveland, Colo., assignors to Hewlett-Pacakard Company, Palo Alto, Calif.

Filed Jan. 24, 1992, Ser. No. 828,534
Int. Cl.[5] G06F *11/22*
U.S. Cl. 395—700 **7 Claims**

1. A method for performing programmed test instrument commands in an automated test system, wherein said programmed test instrument commands are combined with language commands of a programming language, said method comprising the steps of:

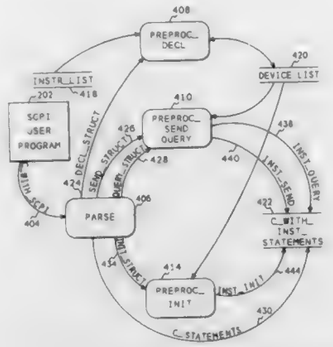
(a) reading a file containing said programmed test instrument commands and said language commands;

(b) separating said programmed test instrument commands from said language commands;

(c) precompiling said programmed test instrument commands to create a second set of language commands;

(d) combining said language commands and said second set of language commands into a combined set of commands; and

(e) compiling said combined set of commands into a single executable form; and



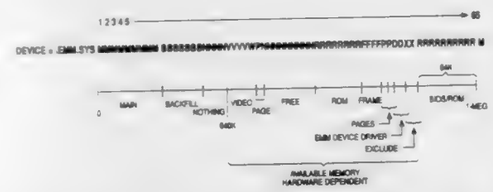
(f) performing said executable form in said automated test system.

5,349,661

INSTALLATION OF AN EXPANDED MEMORY MANAGER

James A. Brewer, Leander; Paul R. Habermehl, Round Rock; James M. Stafford, Round Rock, and Errol R. Williams, Jr., Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 20, 1992, Ser. No. 886,614
Int. Cl.[5] G06F *7/00, 9/44*
U.S. Cl. 395—700 **16 Claims**



1. A data processing system having expanded memory including a system memory and corresponding memory map and an installed expanded memory device having a capacity beyond said system memory, comprising:

means for checking said memory map for a status of all discrete addressable locations in said system memory; and

means for installing an expanded memory device driver using an installation command line;

means for identifying a plurality of different characters that occupy positions in said command line as directly corresponding to said discrete addressable locations in said system memory; and

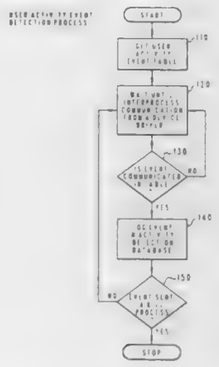
means for indicating a status of said system memory by representing an associated function of the data processing system allocated to said discrete addressable locations with each of said characters.

5,349,662

METHOD OF AND APPARATUS FOR PROVIDING AUTOMATIC DETECTION OF USER ACTIVITY

William J. Johnson, Flower Mound; Robert S. Keller, Grapevine; George C. Manthuruthil, Coppell, and Marvin L. Williams, Lewisville, all of Tex., assignors to International Business Machines Corporation, Roanoke, Tex.

Filed May 21, 1992, Ser. No. 886,728
Int. Cl.[5] G06F *11/30*
U.S. Cl. 395—700 **12 Claims**



1. A method of providing automatic detection of an activity of a user of a data processing system, the data processing system having one or more occurring events that occur on the data processing system, comprising the steps of:

providing a sequence of user activity indicating events that correspond to a user activity on said data processing system;

detecting occurrences of the occurring events in the data processing system; and

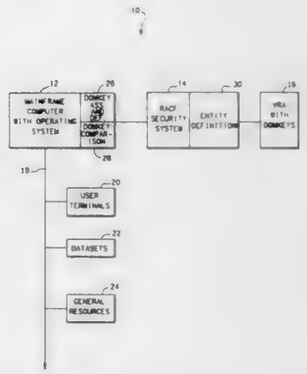
evaluating the detected occurring events to determine if the detected occurring events indicate user activity on the data processing system by comparing a sequence of the detected occurring events to said sequence of user indicating activity events.

5,349,663

SYSTEM FOR REPRESENTING HIERARCHICAL STRUCTURES

Ronn H. Bailey, P.O. Box 791, Orange, Calif. 92666

Filed Jul. 1, 1992, Ser. No. 907,515
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—700 **19 Claims**



1. A method for defining hierarchical relationships between functional entities in a hierarchy within a computer system, said hierarchy having a plurality of levels, each level having one or more positions, said method comprising the steps of:

providing a computer system including functional entities having hierarchical relationships each of said functional entities corresponding to a position in said hierarchy;

defining a DOMKEY for each position in said hierarchy, wherein each DOMKEY is a unique string of information, said step of defining further comprising the steps of:

defining one or more logical positions within said DOMKEY; assigning data to each said logical position, said data being capable of representing the maximum number of entities which can be defined to a given level in said hierarchical structure; incorporating the DOMKEYs of higher positions in the hierarchy in their entirety into the DOMKEYs of positions below them in the hierarchy; and assigning a unique DOMKEY to each of the positions which are at the same level in the hierarchy;

assigning each functional entity to said position in said hierarchy to which it corresponds;

assigning to each functional entity in said hierarchy said defined DOMKEY which has been assigned to said position corresponding to said functional entity in said computer system's hierarchy; and

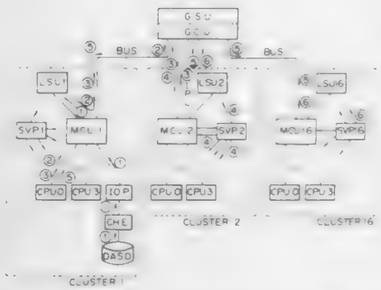
for any selected first and second functional entities in said hierarchy where the second functional entity has a DOMKEY that is longer than that of the first entity, using said DOMKEYs to verify that the second functional entity is at a position below said first function entity in said hierarchy by determining if the DOMKEY for the first functional entity is contained for its full length in the DOMKEY for the second functional entity.

5,349,664

INITIAL PROGRAM LOAD CONTROL SYSTEM IN A MULTIPROCESSOR SYSTEM

Masayuki Ikeda, and Koichi Ueda, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 280,822, Dec. 7, 1988, abandoned. This application Aug. 3, 1992, Ser. No. 921,994
Claims priority, application Japan, Dec. 9, 1987, 62-309455
The portion of the term of this patent subsequent to Aug. 13, 2093, has been disclaimed.
Int. Cl.[5] G06F *13/14, 15/16*
U.S. Cl. 395—700 **4 Claims**



1. An apparatus for executing an initial program load between processors constituting a multiprocessor system, the processors being divided into a plurality of clusters, said apparatus comprising:

global storage means for storing all initial program load information;

a bus line, operatively connected to said global storage means;

global control means, operatively connected to each of the clusters and said global storage means via said bus line, for processing orders transmitted between the clusters to cause a reset operation and an initial program load opera-

tion in the clusters and for accessing said global storage means, said control means including;

priority means for determining a priority of each of the orders sent from each of the clusters for selective processing of the orders in dependence upon priorities thereof and for providing a logical cluster number for each of the clusters;

logical-to-real cluster translation logic means for converting the logical cluster number of a specified cluster indicated in the order into a physical cluster number based on a connection state of the specified cluster and a power ON/OFF state of the specified cluster;

logical-to-real cluster translation table means for storing the relationship between the logical cluster number and the physical cluster number;

cluster connection table means for indicating the connection state of the specified cluster; and

cluster power-on table means for indicating the power ON/OFF state of the specified cluster;

memory control means, one provided in each of the clusters and operatively connected between said global control means and each of the processors in a corresponding cluster, for controlling transmission and reception of the orders between said global control means and the clusters, said memory control means including;

priority means for determining a priority of the orders sent from any of the processors in the corresponding cluster and for providing the priority and the orders to said global control means;

command execution means for executing the orders received from said global control means and for generating an interrupt request signal;

status generataion means for generating status information in accordance with the orders received from said command execution means; and

interruption pending latch control means for turning ON an interruption pending latch in the one of the clusters in dependence upon the interrupt request signal;

local storage means, one provided in each of the clusters and operatively connected to said memory control means, for storing the initial program load information and transferring the initial program load information to said global storage means;

service processors, one provided in each of the clusters and operatively connected to said memory control means, for processing the reset operation and the initial program load operation in response to the orders; and

direct access storage means, provided in a direct access storage group of the clusters including at least one but not all of the clusters and operatively connected to said memory control means, for storing the initial program load information, the service processors of the direct access storage group of the clusters executing the initial program load operation to the local storage means of the direct access storage group of the clusters, the local storage means of the direct access storage group of the clusters transferring the initial program load information to said global storage means, said global storage means transferring the initial program load information to the local storage means of any of the clusters not in the direct access storage group of the clusters.

5,349,665

COMPILER VECTORIZING SYSTEM

Akiyoshi Endo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 13, 1993, Ser. No. 2,755

Claims priority, application Japan, Jan. 16, 1992, 4-024311

Int. Cl.[5] G06F *9/45*

U.S. Cl. 395—700 **3 Claims**

1. A method within a vector computer compiler of generating a vectorized object program from a source program described in a high level language, the method comprising the steps of:

detecting a variable definition condition dependency when a specific variable is defined under a plurality of independent conditions within a loop within an intermediate text;

generating condition data reflecting whether each independent condition associated with the variable definition condition dependency is met;

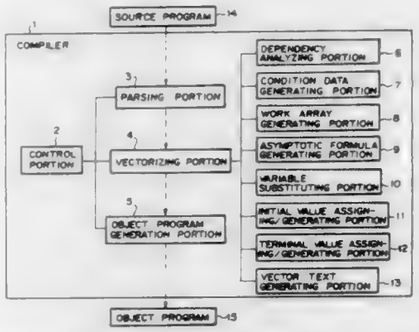
generating a work array corresponding to a variable associated with the variable definition condition dependency;

generating a linear asymptotic formula having

a linear coefficient computed from the condition data, and

a constant term computed by combining the condition data with values assigned to each condition of the condition data;

installing in the work array a calculation of the linear coefficient and the constant term;



substituting a reference of the variable associated with the variable definition condition dependency within the loop for a corresponding element of the work array;

generating a first intermediate text element and inserting it immediately before the loop;

generating a second intermediate text element, in which the value of a last defined element of the work array is assigned a value associated with the variable definition condition dependency, and inserting the second intermediate text element immediately after the loop associated with the variable definition condition dependency such that the intermediate text comprises the text inclusively located between the first intermediate text element and the second intermediate text element; and

vectorizing the intermediate text to generate a vectorized intermediate text.

5,349,666

REDUCED POWER LINE FLUCTUATION/NOISE CIRCUIT BY INCREASING IMPEDANCE LEVEL WHEN NUMBER OF BUS LINES SIMULTANEOUSLY CHANGE STATE EXCEEDS THE PREDETERMINED NUMBER

Mitsuru Adachi, and Tsunenori Umeki, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1992, Ser. No. 838,633

Claims priority, application Japan, Feb. 21, 1991, 3-048875

Int. Cl.[5] G06F *1/26;* **G08B** *21/00;* **H03H** *11/00;* **H03K** *5/08*

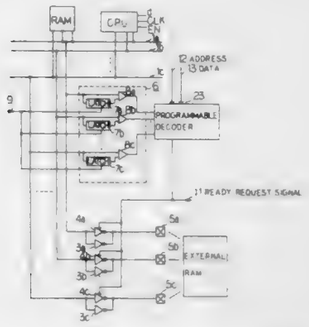
U.S. Cl. 395—750 **7 Claims**

1. A circuit in a microcomputer for reducing noise on a power line created when selected ones of a plurality of bus lines connected to an external load simultaneously change state, said circuit comprising:

a plurality of variable-impedance buffer units, coupled to the plurality of bus lines, for driving signals between the plurality of bus lines and the external load, said plurality of variable impedance buffer units having a specific impedance level;

a detector circuit, coupled to the plurality of bus lines, for detecting signal inversions in each one of the plurality of bus lines; and

a decoder, coupled to said detector circuit and to said plurality of variable-impedance buffer units, for increasing said



impedance level of said plurality of variable-impedance buffer units when the number of bus lines in which said detector circuit detects signal inversions exceeds a predetermined number, thereby decreasing through current of said buffer units and reducing noise on the power line.

5,349,667

INTERRUPT CONTROL SYSTEM FOR MICROPROCESSOR FOR HANDLING A PLURALITY OF MASKABLE INTERRUPT REQUESTS

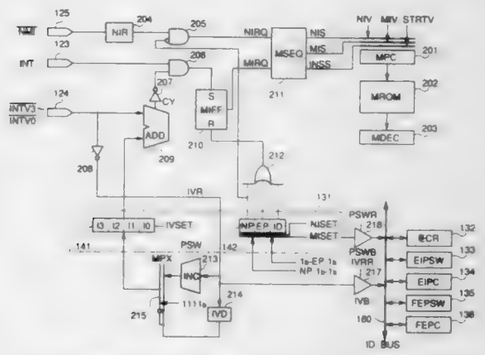
Hiroaki Kaneko, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 8, 1992, Ser. No. 940,924

Claims priority, application Japan, Sep. 5, 1991, 3-225557

Int. Cl.[5] G06F *9/46*

U.S. Cl. 395—725 **3 Claims**



1. An interrupt control system for use in a microprocessor configured to sequentially execute an instruction indicated by a program counter and to be able to process a plurality of interrupt requests, the interrupt control system including:

first receiving means for receiving an interrupt request signal from an external source,

second receiving means for receiving from the external source a plurality of signal lines weighted to indicate a level of said interrupt request signal,

status hold means having a group of flags which include a plurality of flags indicative of an interrupt allowing level and one flag indicating a predetermined status of an interrupt request,

first save means for temporarily saving a content of said status hold means in its entirety in said microprocessor,

second save means for temporarily saving a content of said program counter in said microprocessor,

status indicating means for indicating that the interrupt request is acknowledged,

comparison means for comparing the interrupt allowing level indicated by said group of flags, with said level received by said second receiving means so as to determine a large-and-small relation therebetween, and

control means for controlling said status hold means, said first and second save means and said status indicating means, whereby when an interrupt request is supplied to said first receiving means, said control means processes said interrupt request supplied to said first receiving means, on a basis of a result of the large-and-small relation comparison by said comparison means and a content of said flag indicating a predetermined status of an interrupt request.

5,349,668

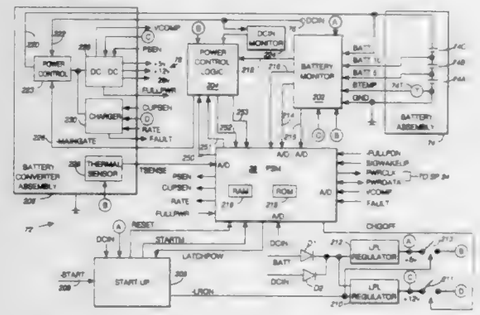
BATTERY OPERATED COMPUTER HAVING IMPROVED BATTERY MONITOR AND CELL REVERSAL PROTECTION CIRCUIT

Leo A. Gladstein, Boca Raton, Fla.; Christopher Dave Jones, and James C. Wulf, both of Georgetown, Ky., assignors to International Business Machines, Armonk, N.Y.

Filed Apr. 15, 1992, Ser. No. 869,411

Int. Cl.[5] G06F *1/28*

U.S. Cl. 395—750 **11 Claims**



1. A battery-operated, portable computer comprising:

a battery connected to said computer for supplying electrical energy to operate said computer, said battery comprising a plurality of battery banks connected in series, each bank comprising a like number of matched battery cells connected in series;

voltage monitoring means connected to said banks for measuring respective bank voltages across each of said banks during operation of said computer, said voltage monitoring means comprising first means for generating a low battery warning signal when the bank voltage across any one of said banks drops below a predetermined first value corresponding to a battery charge level allowing said computer to save volatile data and power down under program control, said voltage monitoring means further comprising second means for generating a cutoff signal when the bank voltage across any one of said banks drops below a predetermined second value lower than said first value, said second value corresponding to a voltage level below which cell polarity reversal is eminent;

shutdown means connected to said monitoring means for receiving said warning signal and, in response thereto, initiating saving volatile data and powering down said computer; and

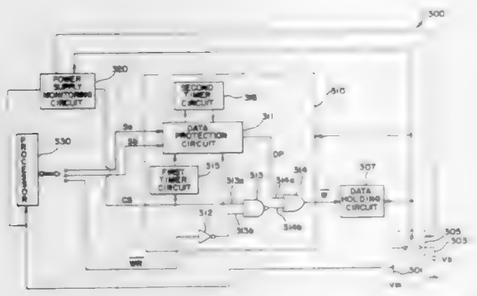
cell reversal protection circuit means connected to said monitoring means for receiving said cutoff signal and, in response thereto, immediately disconnecting said battery from said computer to prevent cell polarity reversal from occurring.

5,349,669

DATA WRITE CONTROL MEANS

Yasuo Arai, and Hisatake Sato, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 566,453, Aug. 19, 1990, abandoned.
This application Feb. 2, 1993, Ser. No. 12,618
Claims priority, application Japan, Dec. 21, 1988, 63-323055
Int. Cl.[5] G06F *12/16*
U.S. Cl. 395—750 18 Claims



1. A data write system for preventing a data store circuit from storing erroneous data therein so as to keep data stored therein while a data protect signal is generated, said data store circuit being supplied with a voltage by a power supply, comprising:

a power supply monitor coupled to the power supply for producing a first control signal selectively having first and second levels, the first level being produced when the voltage supplied from the power supply is greater than a predetermined level, the second level being produced when the voltage supplied from the power supply is less than or at the predetermined level;

a processor, connected to receive said voltage from the power supply, for generating a second control signal which has a data protect set mode and a data protect release mode and a third control signal which has a write permit mode and a write prohibit mode, in order to control said data store circuit;

a data protect setting and releasing circuit responsively coupled to said processor; and

a data protect circuit responsively coupled to said data protect setting and releasing circuit and selectively generating the data protect signal which has a protect mode and a release mode;

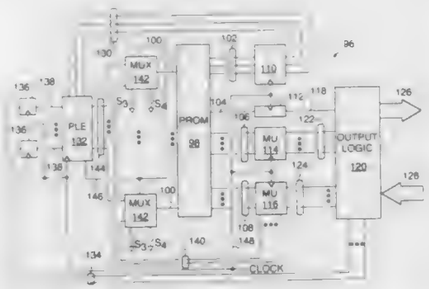
said data protect setting and releasing circuit, when the second control signal has the data protect set mode and the third control signal has the write permit mode, setting said data protect circuit to generate the data protect signal having a protect mode only when the first control signal has the first level a predetermined first period of time after the third control signal has the write permit mode, and when the second control signal has the data protect release mode and the third control signal has the write permit mode, said data protect setting and releasing circuit further setting said data protect circuit to generate the data protect signal only when the first control signal has the first level the predetermined first period of time after the third control signal has the write permit mode, otherwise said protect setting and release circuit causing said data protect circuit to continue outputting the data protect signal.

5,349,670

INTEGRATED CIRCUIT PROGRAMMABLE SEQUENCING ELEMENT APPARATUS

Om P. Agrawal, San Jose; Arthur H. Khu, San Mateo, and Kapil Shankar, San Jose, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 819,603, Jan. 9, 1992, abandoned, which is a continuation of Ser. No. 320,869, Mar. 7, 1989, abandoned, which is a continuation of Ser. No. 889,453, Jul. 23, 1986, abandoned. This application Nov. 8, 1993, Ser. No. 149,029
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—775 28 Claims



16. An integrated circuit comprising:

a PROM which receives respective n-bit PROM address signals and which provides a plurality of M PROM output signals including at least n first PROM output signals, M being greater than n;

external signal means for receiving from an external environment at least one external signal;

programmable sequencing element (PSE) means for providing at least n PSE output signals, said PSE means being responsive to at least one stored version of the at least n first PROM output signals;

selection means, coupled to the PROM and to the PSE means, for selecting the respective n-bit PROM address signals from among the at least n first PROM output signals and the at least n PSE signals;

output storage means for storing the at least n first PROM output signals and for providing stored versions of the at least n first PROM output signals to the programmable sequencing element (PSE) means;

output selection means for selecting between the at least n first PROM output signals and the stored versions of the at least n first PROM output signals; and

feedback means for providing the stored versions of the at least n first PROM output signals to said selection means;

wherein said external signal means, alternatively, provides to the external environment a programmably-selected one or more of the at least n first PROM output signals or provides to the external environment a programmably-selected one or more of the stored versions of the at least n first PROM output signals or receives from the external environment the at least n external signals.

5,349,671

MICROPROCESSOR SYSTEM GENERATING INSTRUCTION FETCH ADDRESSES AT HIGH SPEED

Toshinori Maeda; Tomoharu Kawada, and Jiro Miyake, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 16, 1990, Ser. No. 494,368
Claims priority, application Japan, Mar. 23, 1989, 1-70813
Int. Cl.[5] G06F *9/32, 9/38*
U.S. Cl. 395—800 8 Claims

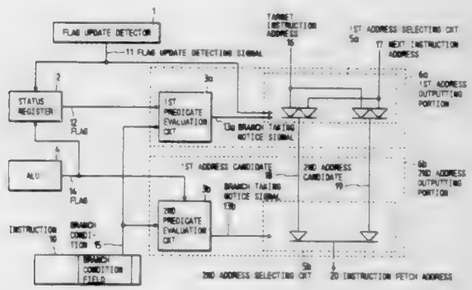
1. A microprocessor system comprising:

an arithmetic logic unit for generating flats;

a flag update detector for outputting a flag update detecting signal;

a status register coupled to said flag update detector and said arithmetic logic unit for receiving the flag update detecting signal and a flag outputted from said arithmetic logic unit;

a first address outputting portion coupled to said flag update detector and said status register for receiving the flag update detecting signal, a flag outputted from said status register, a target instruction address, a next instruction address and a branch condition of a conditional branch instruction, for determining according to the flag received from said status register whether or not the branch condition is met, and for outputting first and second address candidates selected from the target instruction address and the next instruction address according to the flag



update signal and to whether or not the branch condition is met; and

a second address outputting portion coupled to said first address outputting portion and said arithmetic logic unit for receiving the first and second address candidates outputted from said first address outputting portion, the branch condition of the conditional branch instruction and the flag outputted from said arithmetic logic unit, for determining according to the flag received from said arithmetic logic unit whether or not the branch condition is met, and for outputting the target instruction address or the next instruction address as an instruction fetch address on the basis of a result of determining according to the flag received from said arithmetic logic unit whether or not the branch condition is met.

5,349,672

DATA PROCESSOR HAVING LOGICAL ADDRESS MEMORIES AND PURGE CAPABILITIES

Tadahiko Nishimukai, Sagamihara; Atsushi Hasegawa, Koganei; Kunio Uchiyama, Hachioji; Ikuya Kawasaki, Kodaira, and Makoto Hanawa, Kokubunji, all of Japan, assignors to Hitachi, Ltd. and Hitachi MicroComputer Engineering, Ltd., both of Tokyo, Japan

Continuation of Ser. No. 238,261, Aug. 30, 1988, abandoned, which is a division of Ser. No. 840,433, Mar. 17, 1986, abandoned. This application Apr. 3, 1990, Ser. No. 503,128
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—800 54 Claims

1. A single chip data processor for use with a main memory, in which operand data and instructions are stored, comprising:

means for decoding instructions and generating decoded results;

means for executing instructions in accordance with said decoded results;

first means for generating a logical instruction address corresponding to an instruction to be read;

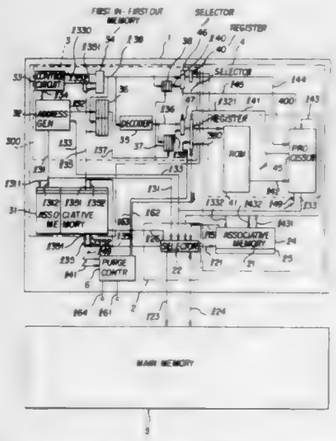
second means for generating an instruction demand signal;

third means, coupled to said first means and to said second means, for storing a plurality of logical instruction addresses and instructions corresponding to said logical instruction addresses, detecting in response to a generated logical instruction address, generated by said first means, whether an instruction corresponding to said generated logical instruction address is present in said third means, providing the instruction corresponding to said generated logical instruction address from said third means in case presence of the instruction within said third means is detected, and generating a first signal in case absence of an instruction corresponding to said generated logical instruction address is detected, said first signal commanding that an instruction corresponding to said generated logical instruction address be read from said main memory;

fourth means for generating a logical operand address signal corresponding to an operand data to be read;

fifth means for generating an operand demand signal;

sixth means, coupled to said fourth means and to said fifth means, for storing a plurality of logical operand addresses and operand data corresponding to said logical operand addresses, detecting in response to said generated logical operand address, generated by said fourth means, whether an operand data corresponding to said generated logical operand address is present in said sixth means, providing the operand data corresponding to said generated logical operand address from said sixth means in case presence of the operand data within said sixth means is detected, and generating a second signal in case absence of operand data corresponding to said generated logical operand address is detected, said second signal commanding that operand



data corresponding to said generated logical operand address be read from said main memory;

main memory access circuitry, having inputs coupled to said first means and said fourth means and an output coupled said main memory, said memory access circuit including; (a) means for selecting either one of said generated logical instruction address and said generated operand address; and (b) means, coupled to said means for selecting, for translating the selected logical address to a physical address to be supplied to said main memory, in response to one of said first and second signals, and

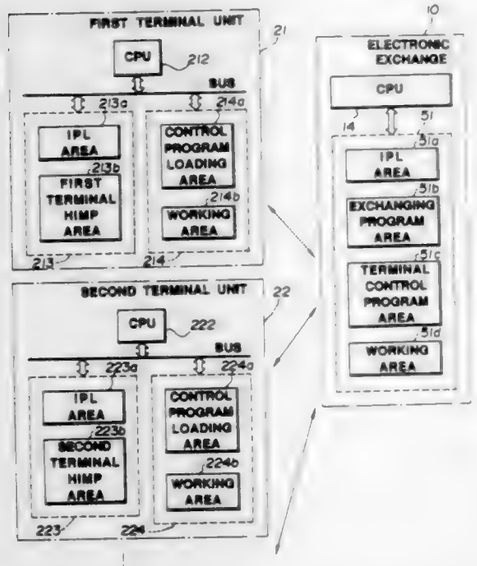
circuitry having first and second outputs coupled to said third means and to said sixth means respectively, and receiving data produced by the means for executing in response to execution of one of said instructions, said circuitry responsive to a first bit of said received data to provide a first clear signal on said first output that clears said third means, to a second bit of said received data to provide a second clear signal on said second output that clears said sixth means and to said first bit and second bit of said received data to provide first and second clear signals on said first and second outputs respectively, said one instruction belonging to instructions decoded by said means for decoding and executed by said means for executing.

5,349,673

MASTER/SLAVE SYSTEM AND ITS CONTROL PROGRAM EXECUTING METHOD

Susumu Yasuda, Hino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 25, 1990, Ser. No. 557,458
Claims priority, application Japan, Jul. 28, 1989, 1-193857
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—800 8 Claims



1. A master/slave system including a single master device and a plurality of different types of slave devices connected to said master device, the operation of each of said slave devices being controlled and managed by said master device through control programs corresponding to each of said slave devices, said master device comprising:

memory means for storing therein a first control program constituting a part of said control programs, said first control program describing a control procedure common to said plurality of slave devices; and

first communication means for transmitting said first control program to said slave devices,

each of said slave devices comprising:

second communication means for receiving said first control program transmitted from said master device;

a first program memory for storing said first control program; and

a second program memory for previously storing therein a uniquely associated one of a plurality of second control programs which constitute parts of said control programs, each of said second control programs describing a unique control procedure corresponding to a unique specification of the slave device in which the second program is stored,

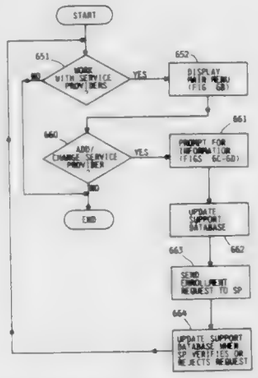
wherein said master device generally manages and controls the operation of said slave devices through said first control program transmitted to said slave devices, and each of said slave devices interprets the contents of said first control program through the unique control procedure of the second control program stored in said second program memory.

5,349,674

AUTOMATED ENROLLMENT OF A COMPUTER SYSTEM INTO A SERVICE NETWORK OF COMPUTER SYSTEMS

Nathanial Calvert; John L. Koehler; Erik D. Lindberg; Mark A. McKelvey; Steven P. Mervosh; Jeffrey A. Newton; George B. Scarborough; Ruth A. Upchurch, and Sandra D. Westling, all of Rochester, Minn., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 17, 1990, Ser. No. 569,110
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—800 12 Claims



1. A method of enrolling a service provider into a service network of computer systems, said method being performed by a service requestor, said service requestor being a first computer system and said service provider being a second computer system, said method comprising the steps of:

identifying contact information about said service provider;

determining a component list for which said service requestor desires to receive service;

building an enrollment request from said contact information and from said component list;

transmitting said enrollment request to said service provider; and

receiving from said service provider an enrollment confirmation notice which is responsive to said enrollment request.

5,349,675

SYSTEM FOR DIRECTLY DISPLAYING REMOTE SCREEN INFORMATION AND PROVIDING SIMULATED KEYBOARD INPUT BY EXCHANGING HIGH LEVEL COMMANDS

Arthur K. Fitzgerald, Raleigh, N.C.; Charles W. Gainey, Jr., Poughkeepsie, N.Y.; William K. Kelley, Wappingers Falls, N.Y., and Samuel L. Wentz, Endwell, N.Y., assignors to International Business Machines Corporations, Armonk, N.Y.

Filed Sep. 4, 1990, Ser. No. 577,967
Int. Cl.[5] G06F *15/16*
U.S. Cl. 395—800 6 Claims

1. A computer network comprising:

a first computer comprising a first display screen;

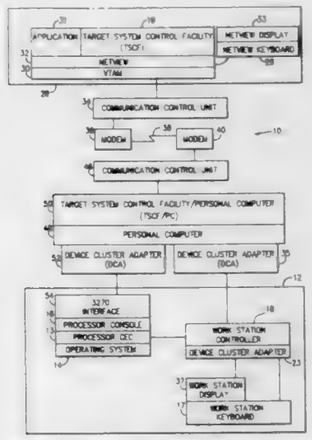
a second computer, coupled to said first computer and comprising a second display screen and program means or operator interface means for generating a command having a human readable verb, a parameter and data to request contents of said first display screen; and

means for transmitting said command from said second computer to said first computer; and wherein

said first computer includes means, responsive to said command, for generating a multiplicity of commands each having a human readable verb, parameter and message data, said data messages defining the contents, line by line, of substantially the entire first display screen;

the transmitting means transmits said multiplicity of commands from said first computer to said second computer;

said second computer includes means for displaying said screen contents without interpretation and means, responsive to said program means or operator interface means,



for generating another command having a human readable verb, parameter, and data;

the transmitting means transmits said other command from said second computer to said first computer; and

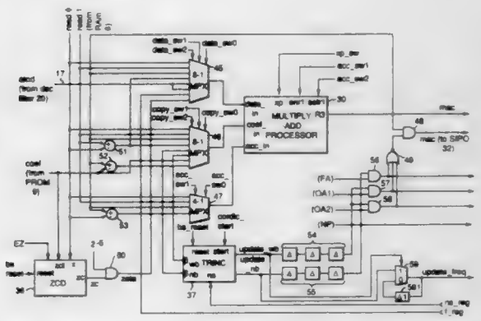
said first computer includes means for converting said data of said other command into keystroke format to simulate keyboard input for said first display screen.

5,349,676

DATA ACQUISITION SYSTEMS WITH PROGRAMMABLE BIT-SERIAL DIGITAL SIGNAL PROCESSORS

Steven L. Garverick, Schenectady, N.Y., and Kenji Fujino, Tokyo, Japan, assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 11, 1991, Ser. No. 653,935
Int. Cl.[5] G06F *7/68, 7/70, 9/302*
U.S. Cl. 395—800 25 Claims



5. In combination with a plurality of sensors for generating respective sensor output signals, a monolithic integrated circuit having disposed therewithin:

a bit-serial multiply-add processor, including

a bit-serial digital multiplier for multiplying a first bit-serial processor input signal by a second bit-serial processor input signal to generate a bit-serial product signal,

a bit-serial digital adder for adding a third bit-serial processor input signal to said bit-serial product signal to generate a bit-serial sum signal, and

means for supplying a bit-serial processor output signal with bits corresponding to those of said bit-serial sum signal;

a first multiplexer for supplying said first bit-serial processor input signal responsive to a selected one of a plurality of bit-serial input signals, including said bit-serial sum signal, supplied to said first multiplexer;

a second multiplexer for supplying said second bit-serial processor input signal responsive to a selected one of a plurality of bit-serial input signals, including said bit-serial sum signals, supplied to said second multiplexer;

a third multiplexer for supplying said third bit-serial processor input signal responsive to a selected one of a plurality of bit-serial input signals, including said bit-serial sum signal, supplied to said third multiplexer;

an on-chip memory;

means for reading during each of first selected times stored information from a location within said on-chip memory selected during each of said first selected times to said first, second and third multiplexers as respective bit-serial input signals thereto;

means for reading during each of second selected times stored information from a location within said on-chip memory selected during each of said second selected times to said first, second and third multiplexers as respective input signals thereto; and

means for writing during each of third selected times said bit-serial processor output signal to a location within said on-chip memory selected during each of said third selected times;

analog-to-digital converter means for converting said sensor output signals, as supplied to said integrated circuit, to a respective number of bit-serial analog-to-digital conversion results; and

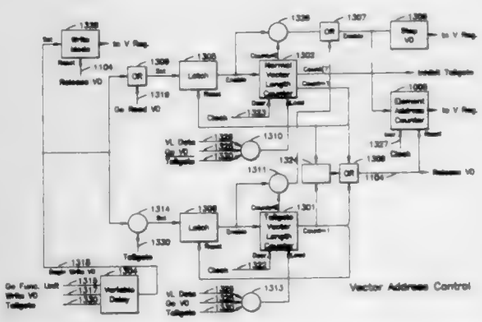
means for applying at least selected ones of said analog-to-digital conversion results, on a time-division multiplex basis, to said first multiplexer as one of its said plurality of respective bit-serial input signals.

5,349,677

APPARATUS FOR CALCULATING DELAY WHEN EXECUTING VECTOR TAILGATING INSTRUCTIONS AND USING DELAY TO FACILITATE SIMULTANEOUS READING OF OPERANDS FROM AND WRITING OF RESULTS TO SAME VECTOR REGISTER

Seymour R. Cray; James R. Bedell; Dennis W. Kuba, all of Chippewa Falls, and William T. Moore, Jr., Elk Mound, all of Wis., assignors to Cray Research, Inc., Eagan, Minn.

Continuation of Ser. No. 192,210, May 10, 1988, abandoned.
This application Apr. 10, 1991, Ser. No. 683,095
Int. Cl.[5] G06F *9/312, 9/34*
U.S. Cl. 395—800 7 Claims



1. A method of processing vectors in a computer, comprising the steps of:

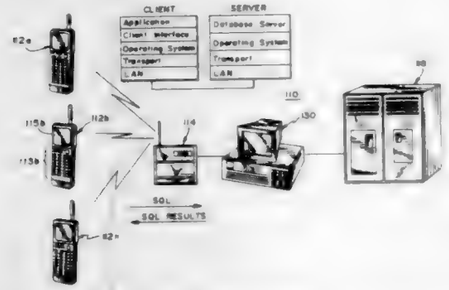
(a) issuing a first instruction for operating on operands contained in a first vector register;
(b) successively calculating first element addresses for addressing the first vector register operands, wherein said first element addresses increment sequentially;
(c) successively reading at least one operand of the first vector register according to the successively calculated first element addresses;
(d) issuing a second instruction for operating on operands contained in a second vector register, said second instruction being configured to save one or more results to said first vector register;
(e) calculating an address offset to compensate for delay time between issuance of said second instruction and generation of one of the one or more results and for elapsed time between issuance of said first and said second instructions;
(f) successively calculating second element addresses by subtracting said address offset from said first element addresses; and
(g) successively storing, simultaneously with the reading of elements of said first vector register, the one or more results into said first vector register according to said successively calculated second element addresses.

5,349,678

VERSATILE RF DATA CAPTURE SYSTEM

Michael D. Morris, and Lyle L. Zumbach, both of Cedar Rapids, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Filed Aug. 21, 1991, Ser. No. 748,150
Int. Cl.[5] G06F *15/21*
U.S. Cl. 395—800 **27 Claims**



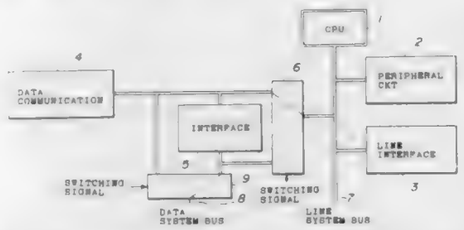
1. A data capture system comprising:
a) a plurality of portable client data collection terminals, each terminal comprising means for collecting data, dynamic addressable storage means and first control means operating on data formatted in a first style;
b) a server station comprising mass memory means which is larger than said dynamic addressable storage means of a terminal for storing data to be used by said data collection terminals, means responsive to a memory altering request for addressing said mass memory means and second control means operating on data formatted in a second style different from said first style, said data stored in said mass memory means being formatted in said second style; and
c) communication means for interconnecting said server station and each of said plurality of client data collection terminals;
d) said first control means of each client data collection terminal comprising means responsive to a need for further data for generating said memory altering request and for actuating said communication means to transmit said generated request to said server station, said generated request identifying its terminal and the particular needed data;
e) said responsive means of said server station responsive to said generated and transmitted request for addressing and retrieving said needed data from said mass memory means before actuating said communication means to transmit said needed data back to said requesting terminal as identified by said request;
f) said communication means comprises RF radio means for transmitting said memory altering request from each of said plurality of client data collection terminals to said server station and for transmitting said needed data from said server station back to said requesting terminal.

5,349,679

COMMUNICATION CONTROL UNIT FOR SELECTING A CONTROL MODE OF DATA COMMUNICATION AND SELECTIVELY BYPASSING AN INTERPROCESSOR INTERFACE

Mikio Nakayama, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 27, 1991, Ser. No. 750,827
Claims priority, application Japan, Aug. 28, 1990, 2-225973
Int. Cl.[5] G06F *3/00*
U.S. Cl. 395—800 **32 Claims**



25. A communication control system which includes a plurality of communication control units, each of said communication control units having identical constructions comprising:
a central processing unit;
a line bus system coupled to said central processing unit;
a peripheral circuit part for operating the central processing unit;
a line interface part coupled to said line bus system for carrying out control of a call signal received therefrom;
a data communication part for controlling a data terminal;
said line system bus coupling the central processing unit, the peripheral circuit part and the line interface part;
an interprocessor interface part which is coupled to the data communication part;
a first bus selector part which is coupled to the line system bus, the data communication part and the interprocessor interface part; and
a second bus selector part which is coupled to the first bus selector part, the interprocessor interface part and the data communication part,
said first bus selector part bypassing the interprocessor interface part and coupling the line system bus to the data communication part in a single mode in which the central processing unit controls both the line interface part and the data communication part;
said first bus selector part coupling the line system bus to the data communication part via the interprocessor interface part in a multi mode in which the central processing unit controls the line interface part and another central processing unit controls the data communication part via the data system bus,
said second bus selector part bypassing the interprocessor interface part and coupling the data system bus to the data communication part in the single and multi modes,
said second bus selector part coupling the data system bus to the data communication part via the interprocessor interface part in a slave mode in which the interprocessor interface part makes a communication with another communication control unit, said first bus selector part bypassing the interprocessor interface part to couple the line system bus to the data communication part in the slave mode.

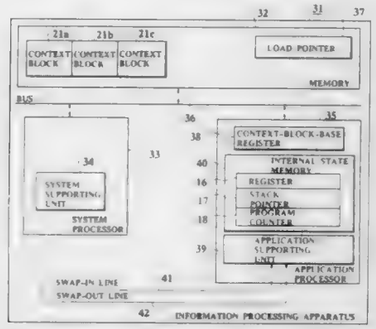
an arbitrary one of the communication control units being used in the multi mode while other remaining communication control units are used in the slave mode, the line system bus of said arbitrary communication control unit being coupled to the data system buses of said other remaining communication control units.

5,349,680

INFORMATION PROCESSING APPARATUS FOR EXECUTING APPLICATION PROGRAMS UNDER CONTROL OF A SYSTEM PROGRAM

Katsuhito Fukuoka, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 31, 1991, Ser. No. 785,828
Claims priority, application Japan, Nov. 7, 1990, 2-299943; Nov. 19, 1990, 2-311633
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—800 **8 Claims**



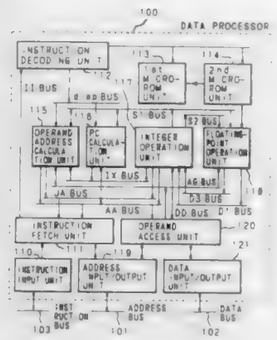
1. An information processing apparatus for executing a plurality of application programs under control of a system program, comprising:
memory means for storing said system program;
context blocks storing means for storing a plurality of context blocks, each of said plurality of context blocks corresponding respectively to a context of one of said plurality of application programs;
system control means including a system program executing means for controlling execution of said plurality of application programs;
load pointing means for pointing out an address of one of said plurality of context blocks under control of said system program executed in said system control means, said address of said one of said context blocks pointed out by said load pointing means being replaced with an address of a context block corresponding to a next one of said application programs, when said next one of said application programs is determined to be executed, under control of said system program executed in said system control means; and
application program executing means, connected to said system program executing means through a swap in line and a swap out line, for executing said application program corresponding to said context block whose address is pointed out by said load pointing means, said application program being executed until said next one of said application programs is determined in said system control means and being replaced with said next one of said application programs, said application program executing means including;
a register for registering an address of said context block pointed out by said load pointing means; and
an internal state memory for storing said context stored in said context block whose address is registered in said register;
wherein said system control means generates a swap-in request signal and a swap-out request signal along said swap-in line and said swap-out line, respectively, said swap-in request signal indicating a request for writing a context stored in said context block pointed out by said load pointing means to said internal state memory, and said swap-out request signal indicating a request for writing a context stored in said internal state memory to said context block pointed out by said load pointing means.

5,349,681

BIT SEARCHING CIRCUIT AND DATA PROCESSOR INCLUDING THE SAME

Toyohiko Yoshida, and Masahito Matsuo, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jan. 16, 1992, Ser. No. 821,802
Claims priority, application Japan, Jan. 22, 1991, 3-005651
Int. Cl.[5] G06F *9/312*
U.S. Cl. 395—800 **11 Claims**



1. A bit searching circuit, comprising:
an offset value designating circuit which outputs an offset value designating a search-start bit position of a bit string;
a bit position detecting circuit, coupled to said offset value designating circuit, which detects the first bit position which has a first binary value in a search field in said bit string, said search field located between the bit position designated by said offset value and the last bit position in said bit string, wherein said bit detecting circuit repeats the detecting of the first bit position which has a first binary value in a search field until a signal indicating the end of bit search processing is received;
a count circuit which counts the number of bits in said search field which have said first binary value to provide an initial indication of a number of remaining transfers; and
a search-end detecting circuit coupled to said bit position detecting circuit and to said count circuit which detects the end of bit search processing in said search field by decrementing said number of remaining transfers by the bits detected by said bit position detecting circuit and outputs said signal indicating the end of bit search processing to said bit position detecting circuit when the number of remaining transfers is zero.

5,349,682

DYNAMIC FAULT-TOLERANT PARALLEL PROCESSING SYSTEM FOR PERFORMING AN APPLICATION FUNCTION WITH INCREASED EFFICIENCY USING HETEROGENEOUS PROCESSORS

Steven Rosenberry, Reading, Pa., assignor to Parallel PCs, Inc., Reading, Pa.

Filed Jan. 31, 1992, Ser. No. 829,098
Int. Cl.[5] G06F *15/00, 15/16*
U.S. Cl. 395—800 **26 Claims**

1. A parallel processing system for performing an application function by a plurality of processing units contained

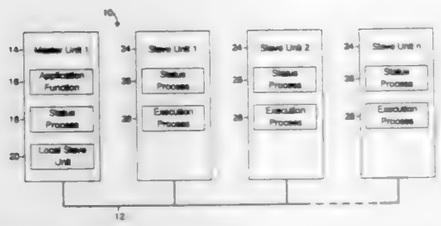
within a common network, the parallel processing system comprising:

a plurality of slave units connected to the common network, each slave unit adapted to process a given amount of data specified by the application function at a particular processing power, each slave unit providing an indication of availability, present status, processing power, and resources available;

at least one master unit connected to said slave units and said common network, said master unit initiating an application function which is to be processed by said slave units, said master unit providing an indication of processing power and resources available;

pro-active polling means for polling said slave units and master unit to determine the processing power of each slave unit and the master unit, the resources available to each slave unit and said master unit, and the availability of each slave unit;

receiving means for receiving from each slave unit and master unit the processing power and resources available to each slave unit and the master unit;



selecting means for selecting one or more slave units to be engaged in processing said application function, said selection based upon the received processing power and resources available to each slave unit and the master unit and the availability of each slave unit;

dividing means for dividing said application function in a manner defined by the application function into a plurality of specified portions of data, each specified portion of data being assigned and communicated to a different specific slave unit for processing; and

calculating means for performing predetermined calculations defined by the application function on each said specified portion of data by each slave unit;

each slave unit including means for being accessible for performing local processing, the local processing having priority over and discontinuing the processing of the specified portion of data assigned to the slave unit, the master unit including means for having the option to select an alternate unit for processing the specified portion of data assigned to a slave unit performing local processing, the alternate unit being selected from the master unit and available slave units.

5,349,683

BIDIRECTIONAL FIFO WITH PARITY GENERATOR/CHECKER

Sheau-Dong Wu, Saratoga, and Hiro Yoshida, Santa Clara, both of Calif., assignors to Mosel-Vitelic, San Jose, Calif.

Filed Jul. 16, 1992, Ser. No. 916,304

Int. Cl.[5] G06F *5/06*

U.S. Cl. 395—800 **6 Claims**

1. A single chip integrated circuit bidirectional memory buffer device comprising:

a first bidirectional data port;

a second bidirectional data port;

an input multiplexer responsive to a first control signal, wherein when said first control signal is of a first state:

said input multiplexer is operative to receive a series of data words from said first bidirectional data port, and output said data words;

and when said first control signal is of a second state:

said input multiplexer is operative to receive a series of data words from said second bidirectional data port, and output said data words;

a byte/word converter responsive to a second control signal, wherein when said second control signal is of a first state:

said byte/word converter is operative to receive a set of input data words, each x-bits in length, from the input mux, to construct an assembled data word, y-bits in length, where y is greater than x, by concatenating the bits of the set of input data words, and to output said assembled data word;

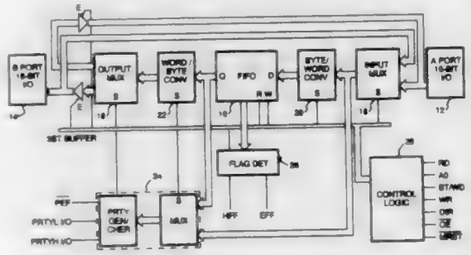
and when said second control signal is of a second state:

said byte/word converter is operative to receive input data words, y-bits in length, from the input mux, and output said input data words unchanged in length;

a FIFO memory array responsive to a third control signal, wherein upon receipt of said third signal:

said FIFO memory array is operative to receive a data word from the byte/word converter, to write said data word into a memory location indicated by a write pointer, and to update said write pointer to indicate the next memory location available to be written to;

said FIFO memory array further responsive to a fourth control signal, wherein upon receipt of said fourth signal:



said FIFO memory array is operative to read a data word from a memory location indicated by a read pointer, to output said data word, and to update said read pointer to indicate the location of the next data word to be read;

a word/byte converter responsive to a fifth control signal, wherein when said fifth control signal is of a first state:

said word/byte converter is operative to receive a data word from the FIFO memory array, to construct a set of disassembled data words, each containing a part of the received data word, and to output said disassembled data words;

and when said fifth control signal is of a second state:

said word/byte converter is operative to receive data words from the FIFO memory array, and to output said data words unchanged;

an output mux, responsive to a sixth control signal, wherein when said sixth control signal is of a first state:

said output multiplexer is operative to receive a series of data words from said word/byte converter, and to output said data words to said first bidirectional data port;

and when said sixth control signal is of a second state:

said output multiplexer is operative to receive a series of data words from said word/byte converter, and to output said data words to said second bidirectional data port;

control logic responsive to external input signals, and operative to generate said first, second, third, fourth, fifth and sixth control signals.

5,349,684

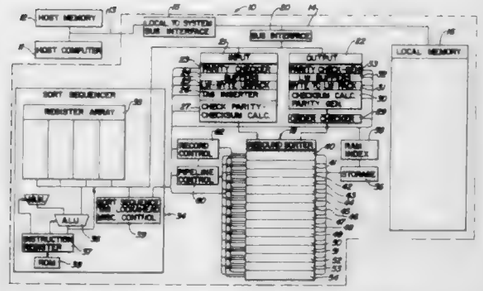
SORT AND MERGE SYSTEM USING TAGS ASSOCIATED WITH THE CURRENT RECORDS BEING SORTED TO LOOKAHEAD AND DETERMINE THE NEXT RECORD TO BE SORTED

Brian C. Edem, San Jose, Calif.; Richard P. Helliwell, Colorado Springs, Colo.; John T. Johnston, San Jose, Calif., and Richard F. Lary, Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass. and National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 374,342, Jun. 30, 1989, abandoned. This application Jul. 22, 1992, Ser. No. 918,871

Int. Cl.[5] G06F *7/36*

U.S. Cl. 395—800 **3 Claims**



2. A method of serially sorting groups of unordered records into a composite string of records in sorted order using a sorter comprising the steps of:

a) serially receiving said groups of unordered records;

b) serially inputting the records of each group of unordered records into the sorter;

c) sorting the records of each group into strings of ordered records;

d) serially storing said strings of ordered records;

e) serially inputting to the sorter a new group of records comprising the smallest record from each of said strings of ordered records and adding to each of said smallest records a tag identifying the string into which each of said smallest records was sorted;

f) determining the smallest one of the records currently in the sorter;

g) selecting said smallest one of the records currently in the sorter to be outputted:

h) generating a signal within the sorter indicating that said smallest one of the records currently in the sorter has been selected;

i) examining, in response to said indicating signal, the tag of said smallest record currently in the sorter before said currently smallest record is completely outputted from the sorter and identifying said string into which said currently smallest record was sorted;

j) selecting the next record to be inputted to the sorter from said string identified by said tag of said currently smallest record unless said identified string is empty and then selecting as the next record to be inputted to the sorter the smallest record from any non-empty string of said strings of ordered records;

k) outputting said currently smallest record in the sorter;

l) inputting to the sorter said next record and adding to said next record a tag identifying said string into which said next record was sorted;

m) repeating steps f) through l) to form said composite string of ordered records comprising all of the records from said strings of ordered records.

5,349,685

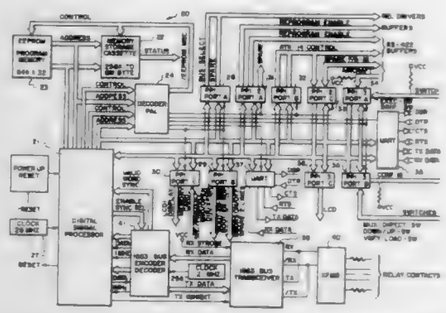
MULTIPURPOSE BUS INTERFACE UTILIZING A DIGITAL SIGNAL PROCESSOR

Christian L. Houlberg, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 5, 1992, Ser. No. 878,713

Int. Cl.[5] G06F *3/00*

U.S. Cl. 395—800 **5 Claims**



1. A multipurpose bus interface circuit for interfacing a first communications bus to a second communications bus, said second communications bus being a Manchester encoded time division multiplexed serial data bus having first, second, third and fourth primary avionics buses and an electronic warfare bus, said multipurpose bus interface circuit comprising:

an integrated circuit memory card;

first transceiver means for receiving data from and transmitting data to said first communications bus, said first transceiver means formatting the data received thereby to a digital format;

programmable array logic means for receiving a plurality of read/write control signals, and for decoding said read/write control signals so as to control the transfer of said digital data between said first communications bus and said integrated circuit memory card;

digital signal processor means for providing said plurality of read/write control signals and a plurality of eight bit control words, said digital signal processor means having direct access to said integrated circuit memory card such that data to or from said first communications bus is transferred between said integrated circuit memory card and said first communications bus via said first transceiver means and said digital signal processor means and data to or from said second communications bus is transferred between said integrated circuit memory card and said second communications bus via said digital signal processor means;

an electrically erasable programmable read only memory electrically coupled to said digital signal processor means, said electrically erasable programmable read only memory containing software for said digital signal processor means, said software controlling the handling of data to and from said first communications bus and said software controlling the handling of data to and from said second communications bus by enabling the operation of said digital signal processor means according to bus standards and data protocols and formats of Military Standard 1553;

means for encoding digital data from said integrated circuit memory card so as to provide Manchester encoded data and for decoding Manchester encoded data so as to provide digital data, said encoding and decoding means providing an interface between said digital signal processor means and said second communications bus;

second transceiver means for transmitting the Manchester encoded data provided by said encoder and decoder means to said second communications bus and for receiving from said second communications bus Manchester

encoded data for decoding by said encoder and decoder means;

transformer means for electrically isolating said second communications bus from said digital signal processing means;

programmable peripheral interface means for receiving said eight bit control words from said digital signal processor means and decoding said eight bit control words to provide a first avionics bus enable signal, a second avionics bus enable signal, a third avionics bus enable signal, a fourth avionics bus enable signal and an electronic warfare bus enable signal;

a first driver circuit electrically coupled to said programmable peripheral interface means to receive said first, second, third and fourth avionics bus enable signals;

a first relay electrically coupled to said transformer means, said first driver circuit and said first primary avionics bus;

a second relay electrically coupled to said transformer means, said first driver circuit and said second primary avionics bus;

a third relay electrically coupled to said transformer means, said first driver circuit and said third primary avionics bus;

a fourth relay electrically coupled to said transformer means, said first driver circuit and said fourth primary avionics bus;

said first driver circuit responsive to said first, second, third and fourth avionics bus enable signals selectively enabling one of said first, second, third and fourth relays to allow for a first transfer of said Manchester encoded data between said encoder and decoder means and one of said first, second, third and fourth primary avionics buses through the one of said first, second, third and fourth relays selectively enabled by said first driver circuit;

a second driver circuit electrically coupled to said programmable peripheral interface means for receiving said electronic warfare bus enable signal; and

a fifth relay electrically coupled to said transformer means, said second driver circuit and said electronic warfare bus;

said second driver circuit responsive to said electronic warfare bus enable signal enabling said fifth relay to allow for a second transfer of said Manchester encoded data between said encoding and decoding means and said electronic warfare bus.

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METHOD AND CIRCUIT FOR PROGRAMMABLY SELECTING A VARIABLE SEQUENCE OF ELEMENTS USING WRITE-BACK

Kumar Gajjar, San Jose, and Anh Nguyen, Sunnyvale, both of Calif., assignors to MTI Technology Corporation, Anaheim, Calif.

Continuation of Ser. No. 372,278, Jun. 27, 1989, Pat. No. 5,146,574. This application Jul. 14, 1992, Ser. No. 913,104

The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.

Int. Cl.[5] G06F *3/06*

U.S. Cl. 395—800 **19 Claims**

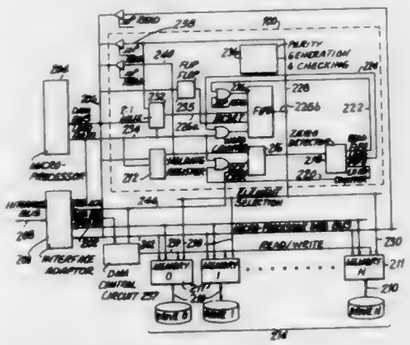
1. A system including a plurality of elements each selectable to perform a task and a programmable circuit for selecting a variable sequence of elements from the plurality of elements to perform a series of tasks, wherein the programmable circuit comprises:

(a) sequence storage means for storing a sequence of element identifiers, the sequence storage means having an input terminal through which element identifiers are loaded into the sequence storage means to be stored, an output terminal through which element identifiers stored in the sequence storage means are accessed, and input and output terminal control circuitry responsive respectively to input and output terminal control signals for controlling the input and output terminals;

(b) programming circuit means, coupled by bus and signal logic means to the input terminal and to the input terminal control circuitry of the sequence storage means, to program the sequence storage means by loading a sequence of element identifiers in the sequence storage means for selecting the variable sequence of elements from the plurality of elements in the system to perform the series of tasks, each of the element identifiers in the loaded sequence of element identifiers having a value;

(c) access means, including bus and signal logic means coupled to the programming circuit means, and to the output terminal and the output terminal control circuitry of the sequence storage means, for providing an output terminal control signal to the output terminal control circuitry to access an element identifier stored in the sequence storage means responsive to a read signal provided to the access means upon completion of each of the series of tasks performed by selected ones of the plurality of elements in the system, such that an element identifier is automatically accessed from the sequence storage means upon completion of each task;

(d) write-back means, including bus and signal logic means coupled to the input and output terminals of the sequence storage means, and to the input and output terminal control circuitry of the sequence storage means, for reloading an accessed element identifier from the output terminal of the sequence storage means into the input terminal of the sequence storage means responsive to a load signal provided to the write-back means upon completion of each of



the series of tasks performed by selected ones of the plurality of elements in the system, thus providing automatic programming of the sequence storage means upon completion of each task;

(e) element selection means, including signal lines coupled to the output terminal of the sequence storage means and to the plurality of elements, for selecting at least one element from the plurality of elements identified by a value of an element identifier accessed from the sequence storage means, the element selection means selecting a variable sequence of elements to perform the series of tasks based on the automatic accessing of element identifiers from the sequence storage means by the access means in response to successive tasks of the series; and

(f) read and load signal providing means, coupled by signal lines to the access means and the write-back means, for providing read and load signals respectively to the access means and the write-back means when a task is completed by a selected element, the provided load signals causing the write-back means to automatically program the sequence storage means in response to the completion of each task in the series of tasks performed by selected ones of the plurality of elements, and the provided read signals causing the access means to automatically access an element identifier from the sequence storage means in response to completion of each task in the series of tasks performed by selected ones of the plurality of elements.

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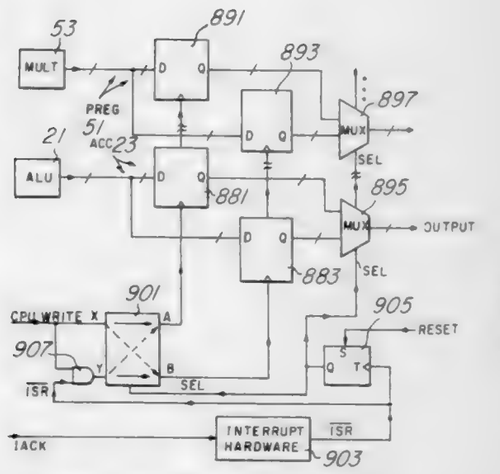
SPEECH RECOGNITION SYSTEM HAVING FIRST AND SECOND REGISTERS ENABLING BOTH TO CONCURRENTLY RECEIVE IDENTICAL INFORMATION IN ONE CONTEXT AND DISABLING ONE TO RETAIN THE INFORMATION IN A NEXT CONTEXT

Peter N. Ehlig, Houston, Tex.; Frederic Boutaud, Roquefort les Pins, France, and James F. Hollander, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 864,776, Apr. 7, 1992, which is a division of Ser. No. 347,615, May 4, 1989, Pat. No. 5,142,677. This application Oct. 9, 1992, Ser. No. 959,008

Int. Cl.[5] G06F *9/46*

U.S. Cl. 395—800 **9 Claims**



1. A speech recognition system comprising:

a microphone;

an analog-to-digital converter for producing a digital signal representative of speech to be processed and a context signal indicating that the digital signal is available for processing; and

a digital processing device having

a processor for executing digital signal processing operations in alternative processing contexts identified by a state of said context signal; and

a speech recognition processor connected to said processor for executing speech recognition operations in response to the digital signal processing operations;

said processor including:

a plurality of register sets, each of said register sets having a first and second register, said first and second registers connected to concurrently store identical information during one of the processing contexts, said first register connected to individually participate and be continuously available in a next of the processing contexts when said first register is selected thereby enabling the second register to retain said information from said one processing context; and

a context switching circuit responsive to the state of said context signal and connected to said first and second registers to alternatively control input and output operations of said register set and to from said processor depending on the processing context.

5,349,688

METHOD FOR REDUCING POWER CONSUMPTION INCLUDES COMPARING VARIANCE IN NUMBER OF TIMES MICROPROCESSOR TRIED TO READ INPUT IN PREDEFINED PERIOD TO PREDEFINED VARIANCE

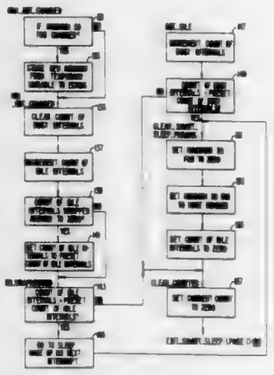
Au H. Nguyen, Santa Clara, Calif., assignor to Chips & Technologies, Inc., San Jose, Calif.

Continuation of Ser. No. 434,200, Nov. 13, 1989, Pat. No. 5,201,059. This application Dec. 11, 1992, Ser. No. 989,249

The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.

Int. Cl.[5] G06F *15/00, 11/30*

U.S. Cl. 395—800 **19 Claims**



1. A method for placing a microprocessor, having a clock generating a clock frequency, into a sleep state while the microprocessor waits for data input from a keyboard, the method being performed in a system controller coupled to said microprocessor and comprising the steps of:

(a) counting a number of times the microprocessor has tried to read data from the keyboard in a predefined amount of time;

(b) comparing said number of times the microprocessor tried to read data in the predefined amount of time with a predefined minimum number;

(c) comparing the variance in said number of times the microprocessor tried to read data in a predefined amount of time to a predefined variance amount, if a number of tries exceeded said predefined minimum number;

(d) comparing a length of time that both said number of times the microprocessor tried to read data exceeded said predefined minimum number and the result was less than the predefined variance to a predefined minimum time if the variance was less than the predefined variance; and

(e) placing the computer into a sleep state if the length of time exceeded the minimum time, wherein in said sleep state, the clock stops generating the clock frequency

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5,349,689

APPARATUS FOR MAINTAINING RESET ON MICROPROCESSOR UNTIL AFTER ELECTRICAL CHATTERING FROM CONNECTION OF REMOVABLE MEMORY CARTRIDGE HAS CEASED

Masahiro Suzuki, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 436,622, Nov. 15, 1989, abandoned. This application Jan. 8, 1993, Ser. No. 3,859

Claims priority, application Japan, Nov. 21, 1988, 63-292480

Int. Cl.[5] G06F *9/04, 11/30*

U.S. Cl. 395—800 **7 Claims**

1. An electric circuit device, comprising:

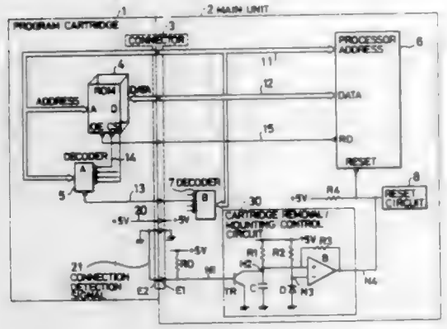
connector means for permitting removable mounting of a cartridge with a circuit built therein;

processor means for performing operations and processing using said circuit built in said cartridge;

a first reset circuit means for supplying said processing means with a first reset signal, said first reset circuit means producing said first reset signal when resetting is commanded by manual input or when a power supply for the electric circuit device is turned on;

connection detection means for producing a connection detection signal which is in a first state when the cartridge is mounted to the connector means and which is in a second state when the cartridge is not mounted to the connector means;

second reset circuit means for receiving said connection detection signal via the connector means and for producing a second reset signal when said connection detection signal is in said second state, said second reset circuit means terminating said second reset signal a predetermined time after said first state of said connection detection signal begins, said predetermined time being longer



than the duration of chattering of the connection detection signal which may occur when the cartridge is being mounted; and

means for applying a reset input to said processor means when said first reset signal or said second reset signal is received,

wherein said second reset circuit means includes

a first resistor and a capacitor connected in series between the power supply and ground,

switch circuit means for discharging the capacitor when said connection detection signal is in said second state and permitting charging of the capacitor from the power supply through said first resistor when said connection detection signal is in said first state,

reference voltage means for producing a reference voltage having a predetermined constant value, and

comparator means for comparing the voltage on the capacitor and the reference voltage and producing said second reset signal when the former is lower than the latter.

5,349,690

FAIR ARBITRATION SCHEME FOR ARBITRATING BETWEEN MULTIPLE NODES IN A COMPUTER SYSTEM SEEKING CONTROL OF A COMMON BUS

Robert C. Frame, Westboro; Fernando A. Zayas, Worchester, both of Mass., and Edward A. Gardner, Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 782,885, Oct. 18, 1991, abandoned, which is a continuation of Ser. No. 600,140, Oct. 17, 1990, abandoned, which is a continuation of Ser. No. 192,649, May 11, 1988, abandoned. This application Feb. 11, 1993, Ser. No. 16,419

Int. Cl.[5] G06F *9/22, 9/46, 13/18, 13/36*

U.S. Cl. 395—800 **25 Claims**

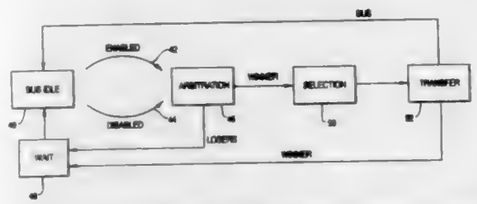
1. A method for selecting a particular node from a plurality of nodes coupled to a bus, each node having a predetermined priority, to allow said particular node to use the bus, and for enabling the plurality of nodes after each of the nodes has had an opportunity to use the bus to allow a subsequent selection of a particular node, said method comprising the steps of:

a. enabling for for arbitration each of said nodes having a message to send on the bus; wherein such enabling is performed by each node itself;

b. monitoring the bus for a bus idle condition;

c. determining which of said nodes are enabled message nodes,

d. arbitrating between said enabled message nodes after the bus has been in a bus idle condition for a first period of



time, to select the enabled message node having a highest pre-determined priority among said enabled message nodes to use the bus;

e. disabling said selected enabled message node from arbitration; wherein such disabling is performed by each selected enabled message node itself;

f. repeating steps b, c, d and e until all said enabled message nodes have been disabled from arbitration; and

g. thereafter enabling all said nodes for arbitration when the bus has been in a bus idle condition for a second period of time which is longer than the first period of time, while the plurality of nodes and said bus are running and stable.

5,349,691

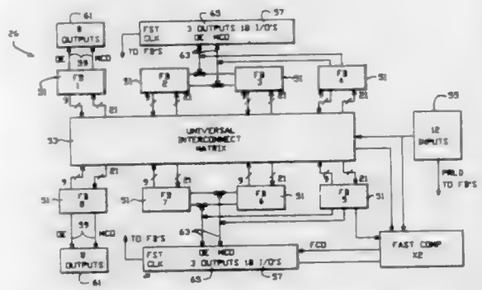
PROGRAMMING PROCESS FOR 3-LEVEL PROGRAMMING LOGIC DEVICES

David A. Harrison, Cupertino, Calif., and Abdul Malik, Fishkill, N.Y., assignors to Xilinx, Inc., San Jose, Calif.

Continuation of Ser. No. 547,861, Jul. 3, 1990, abandoned. This application May 4, 1993, Ser. No. 58,679

Int. Cl.[5] G06F *9/302*

U.S. Cl. 395—800 **24 Claims**



1. A process of programming a programmable logic device for carrying out a specified logic function, the programmable logic device to be programmed being of a type having multiple logic blocks, each logic block of said programmable logic device having input lines, output lines and successive configurable first and second arrays between said input lines and output lines for carrying out first and second levels of logic, said programmable logic device also having input pins, output pins and means, programmably combining selected output lines of said logic blocks, for carrying out a third level of logic, input lines to said logic blocks coupling to selected input pines

of said programmable logic device and output lines from said means for carrying out the third level of logic coupling to selected output pins of said programmable logic device, the programming process comprising:

factoring a specified multiple output logic function into multiple factors using apparatus other than the programmable logic device that has been provided to be programmed, each factor being in sum-of-products form, wherein said factoring of said logic function includes replacing at least one pair of existing product terms of said logic function, with a corresponding "supercube" product term whose input terms consist only of those input terms which are present in both product terms of the replaced pair and whose output terms consist of those output terms which are present in either product term of the replaced pair and whose output terms consist of those output terms which are present in either product term of the replaced pair wherein plural sets of factors are determined for said logic function, each set of factors having a certain number of product terms, one particular set of factors that is found upon comparison with the other sets of factors that is found upon comparison with the other sets of factors to have a fewest number of product terms being a selected set for loading into said programmable logic device,

loading each factor of the selected set of factors of said logic function into a logic block of said programmable logic device, the entire set of factors being loaded into a plurality of said logic blocks, wherein loading a factor includes configuring the first array for carrying out said first level of logic such that product terms corresponding to said factor are produced by said first array from signals on said input lines and configuring the second array for carrying out said second level of logic such that said product terms are combined to produce said factor at said output liens, and

configuring said means for carrying out said third level of logic such that outputs from said logic blocks representing said factors are combined to produce said logic function at said output pins.

5,349,692

INSTRUCTION HANDLING SEQUENCE CONTROL SYSTEM FOR SIMULTANEOUS EXECUTION OF VECTOR INSTRUCTIONS

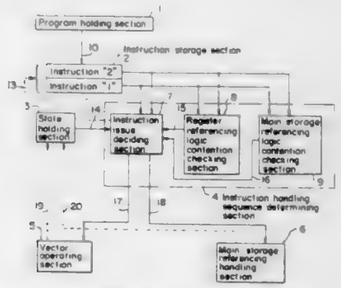
Naoki Nishi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 331,970, Apr. 3, 1989, Pat. No. 5,241,633. This application Jun. 7, 1993, Ser. No. 72,083

Claims priority, application Japan, Apr. 1, 1988, 63-81519

Int. Cl.[5] G06F *9/06, 9/26, 9/302, 9/38*

U.S. Cl. 395—800 **2 Claims**



1. An instruction handling sequence control system for vector processing comprising:

(a) a vector operating unit having one or more pipelined arithmetic units, a plurality of vector registers, and a network combining said one or more pipelined arithmetic unit and said vector registers;

(b) a main storage handling unit for vector-based loading/storing between a main storage unit and said vector registers;

(c) first means for holding a group of instructions to be issued to said vector operating unit and said main storage handling unit;

(d) second means for holding states of resources being used by an instruction being executed, said resources including said vector registers, said one or more pipelined arithmetic units and said main storage unit; and

(e) third means for determining, out of said group of instructions held by said first means and on the basis of the states of the resources held by said second means and instructions from said first means, whether a succeeding instruction may be issued to the vector operating unit and to the main storage handling unit prior to a preceding instruction without conforming to a programmed sequence of instructions, and when said succeeding and preceding instructions are memory referencing vector instructions, for judging that there is no logical sequential relationship between said succeeding instruction and said preceding instruction on the basis of addresses in said main storage unit referenced by said preceding and succeeding instructions, said third means including,

means for determining a condition, with respect to a vector store instruction and a vector load instruction in the group of instructions held by said first means, said vector load instruction being programmed to be issued after said vector store instruction, said condition being determined when a distance between vector elements designated by said vector store instruction is equal to a distance between vector elements designated by said vector load instruction, a store starting point address designated by said vector store instruction is unequal to a load starting point address designated by said vector load instruction, and a difference between the store starting point address designated by said vector store instruction and the load starting point designated by said vector load instruction is smaller than a distance between vector elements designated by said vector load instruction, and

means for issuing, upon determination of said condition, with respect to said vector store instruction and said vector load instruction, said vector load instruction before said vector store instruction to the vector operating unit and the main storage handling unit.

5,349,693

CONTROL CIRCUIT FOR DIGITAL DATA TRANSFER

Naoyuki Matsushita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 557,033, Jul. 23, 1990, abandoned. This application Nov. 23, 1993, Ser. No. 158,188

Claims priority, application Japan, Jul. 21, 1989, 1-187286

Int. Cl.[5] G06F *3/00, 13/36*

U.S. Cl. 395—800 **4 Claims**

1. A control circuit for digital data transfer between first and second digital circuits which are respectively provided with different bus architectures, said first digital circuit having an N-bit data bus, N being a positive even integer, said second digital circuit having an N/2-bit data bus, said control circuit being included in said first digital circuit and comprising:

a first data bus transceiver which is operatively coupled to said second digital circuit and to a first N/2-bit data bus provided in said first digital circuit, said first data bus transceiver being assigned to pass therethrough first N/2-bit data;

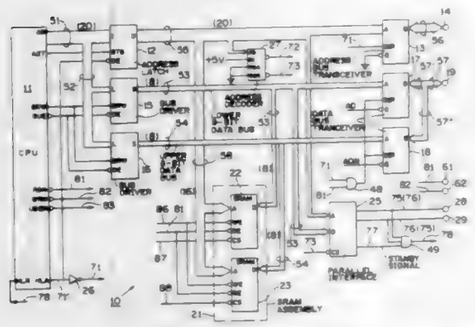
a second data bus transceiver operatively coupled to said second digital circuit and to a second N/2-bit data bus provided in said first digital circuit, said second data bus transceiver being assigned to pass therethrough second N/2-bit data;

first memory means for storing said first N/2-bit data applied from said second digital circuit via said first data bus

transceiver, said first memory means being coupled to said first data bus transceiver via said first N/2-bit data bus;

second memory means for storing said second N/2-bit data applied from said second digital circuit via said second data bus transceiver, said second memory means being coupled to said second data bus transceiver via said second N/2-bit data bus;

first control means operatively coupled to said first and second data bus transceivers, said first control means controlling said first and second data bus transceivers so as to determine data transfer direction between said first and second digital circuits based on negotiations between said first and second digital circuits on a right of use of the data buses within said first and second digital data circuits, and



said first control means selectively rendering one of said first and second data bus transceivers operative;

second control means for allowing said first memory means to be active if said first control means renders said first data bus transceiver operative and if said first control means instructs data to be received, from said second digital circuit, and said second control means allowing said second memory means to be active if said first control means renders said second data bus transceiver operative and if said first control means instructs data to be received from said second digital circuit; and

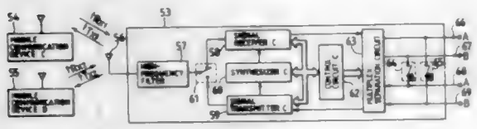
third control means for rendering said N-bit data bus to be used as an address bus in a time sharing manner, said third control means branching said N-bit data bus into said first and second N/2-bit data buses.

5,349,694

RADIO RELAY SYSTEM WITH A MULTIPLEX SEPARATION CIRCUIT AND CONTROL FOR PROVIDING TIME DELAY MULTIPLEX OPERATION OF RECEIVER AND TRANSMITTER

Minori Kawano; Kohji Ogawa; Sadayuki Tsukagoshi; Hiroyuki Kuroiwa; Masato Sato, all of Gunma; Yasuhiro Ishizaki, Kanagawa; Fumiaki Komatsu, Kanagawa, and Eiichi Kuroda, Kanagawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 743,973, Aug. 12, 1991, Pat. No. 5,267,297.
This application Jul. 15, 1993, Ser. No. 91,447
Claims priority, application Japan, Aug. 22, 1990, 2-220530
Int. Cl.[5] H04B *7/15;* **H04J** *3/16;* **H04L** *1/02;* **H04M** *11/00*
U.S. Cl. 455—11.1 **5 Claims**



1. A radio relay system comprising:

a first mobile communication device for transmitting a radio carrier wave;

a second mobile communication device for receiving a radio carrier wave;

a radio relay device receiving said radio carrier wave transmitted by said first mobile communication device and transmitting said radio carrier wave thus received to said second mobile communication device; and

wherein said radio relay device comprises:

an antenna for transmission and reception of said radio carrier wave;

a signal receiver for receiving said radio carrier wave from said first mobile communication device;

a signal transmitter for transmitting said radio carrier wave to said second mobile communication device through said antenna;

a switch for selectively connecting said signal receiver and signal transmitter to said antenna;

a multiplex separation circuit having a first input terminal coupled to said signal receiver and a first output terminal coupled to said signal transmitter, said separation circuit being responsive to a received signal from said antenna and said signal receiver for generating an output base band signal and being responsive to an input base band signal coupled thereto for generating a transmission signal having a predetermined time delay with respect to said input base band signal, and wherein said transmission signal generated in response to an input base band signal from different sources have mutually different time delays for preventing mutual interference therebetween; and

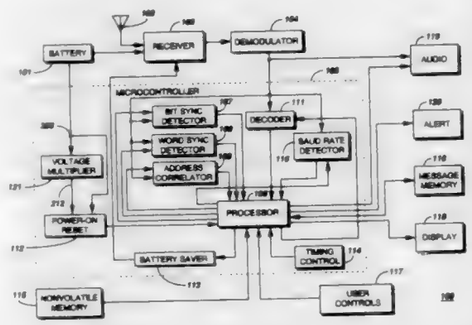
control circuit means coupled to said switch, said signal receiver, said signal transmitter, and said multiplex separation circuit for providing time delay multiplex operation of said signal receiver and said signal transmitter.

5,349,695

SELECTIVE CALL RECEIVER HAVING CMOS POWER-ON RESET CIRCUIT

Zhong K. Zhong, Delray Beach, and Barry W. Herold, Boca Raton, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 3, 1992, Ser. No. 984,827
Int. Cl.[5] H04Q *3/02;* **H03K** *17/30*
U.S. Cl. 455—38.3 **5 Claims**



1. A selective call receiver that operates to recover an information signal and is powered by a battery supplying a first voltage that is multiplied to generate a second voltage, the selective call receiver comprising:

a processor that extracts message information contained within the recovered information signal for presentation, the processor operating from the second voltage; and

a power-on reset circuit coupled to the processor for generating a power-on reset signal comprising first and second portions corresponding with a processor reset and a processor execute state, respectively, the power-on reset

signal changing from the processor reset to the processor execute state when the second voltage exceeds a sum of a PMOS transistor threshold voltage and a NMOS transistor threshold voltage, thereby completing a power-on reset of the processor, the power-on reset circuit comprising:

a first PMOS transistor having a first terminal coupled to the first voltage and to a control terminal of a first NMOS transistor, the first PMOS transistor further having a control terminal coupled to a ground reference and a second terminal providing the first portion of the power-on reset signal;

a second PMOS transistor having a control terminal and a first terminal coupled to a first terminal of the first NMOS transistor, the second PMOS transistor further having a second terminal coupled to the second voltage, and the first NMOS transistor further having a second terminal coupled to a ground reference, the second PMOS transistor having the PMOS transistor threshold voltage; and

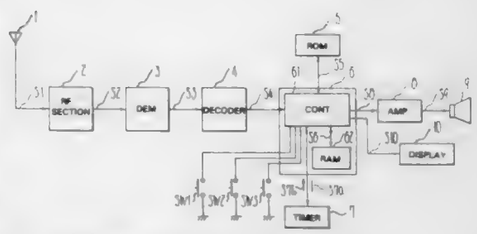
a second NMOS transistor having a control terminal coupled to the first terminal of the first NMOS transistor, a second terminal coupled to the ground reference, and a first terminal providing the second portion of the power-on reset signal, the second NMOS transistor having the NMOS transistor threshold voltage.

5,349,696

DATA DISPLAY RADIO PAGER WITH AUTOMATIC MESSAGE PROTECTION

Masahiro Matai, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 2, 1991, Ser. No. 800,987
Claims priority, application Japan, Nov. 30, 1990, 2-336536
Int. Cl.[5] H04B *7/00;* **G08B** *5/22*
U.S. Cl. 455—70 **18 Claims**



1. A data display radio pager comprising:

receiving means for demodulating a radio frequency (RF) signal received via an antenna to produce a paging signal,

decoding means for producing a call signal including an address signal and a message signal in response to said paging signal,

ROM means for storing an address assigned to said pager,

altering means for performing an altering operation in response to an alert signal,

display means for displaying a message in response to a message control signal, and

control means responsive to said call signal for outputting, if said address signal and said address stored in said ROM means are identical, said alert signal, storing said message signal in a message storage area, and outputting said message control signal associated with said message signal stored in said message storage area;

said control means comprising:

protecting information detecting means for detecting protection information from said message signal produced by said decoding means, said protection information being made up of a protection time signal indicative of a time over which said message signal should be protected from being erased and a particular mark occurring before and after the protection time signal, said protection information being included in said paging signal; and

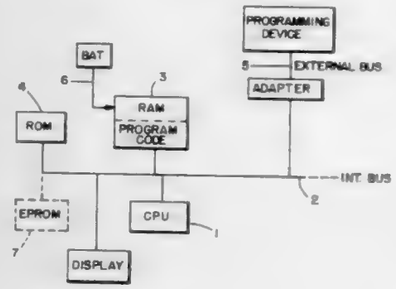
message signal protecting means responsive to said protection information for protecting said message signal stored in said message storage area until said protection time elapses.

5,349,697

RADIOTELEPHONE INCLUDING BATTERY-BACKUP RANDOM ACCESS MEMORY FOR STORING OPERATING CODE

Sakari Pelkonen, Oulu, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Jun. 11, 1992, Ser. No. 897,280
Claims priority, application Finland, Jun. 14, 1991, 912875
Int. Cl.[5] H04B *1/38*
U.S. Cl. 455—89 **5 Claims**



1. A radiotelephone comprising:

a volatile random access memory (RAM) for storing program code for the radiotelephone;

a security battery connected to said volatile RAM for assuring continued temporary storage of said program code in the event of a loss of primary power;

a nonvolatile read only memory (ROM) for containing code used to determine that a state of said program code is correct;

an internal bus connected to said volatile RAM,

nonvolatile ROM and connectable to an external bus emanating from a programming device; and

processor means connected to said internal bus and operable upon primary power being applied to said radiotelephone, to be controlled by said code in said nonvolatile ROM to check that said state of said program code in said RAM is acceptable and, if an error is detected, to enter a wait state to await an interconnection of said external bus to said internal bus and a reloading of said program code via said external bus and internal bus from said programming device.

5,349,698

RADIO COMMUNICATION SYSTEM FOR A SELECTED ONE OF A PLURALITY OF TERMINAL UNITS OF DIFFERENT KINDS

Tsuguo Maru, Tokyo, Japan, assignor to NEC Corporation, Japan

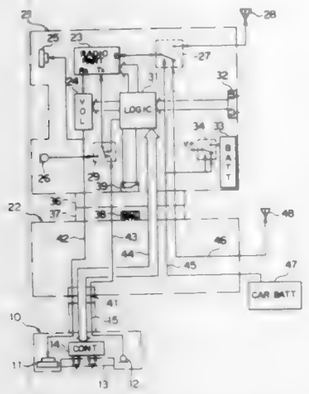
Continuation of Ser. No. 633,673, Dec. 26, 1990, abandoned.
This application Dec. 2, 1992, Ser. No. 985,510
Claims priority, application Japan, Dec. 26, 1989, 1-335167
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—89 **22 Claims**

1. A radio communication apparatus for use in combination with a selected terminal unit, the selected terminal unit being selected from a plurality of terminal units of different kinds, the selected terminal unit being a selected kind, said radio communication apparatus including receiving means for receiving a radio signal to produce a received signal and adjusting means

for adjusting said received signal to produce an adjusted signal, said radio communication apparatus comprising:

detecting means for detecting the kind of said selected terminal unit from among the different kinds and for producing a type signal representative of the selected kind; and

control means coupled to said adjusting means and said detecting means for controlling said adjusting means to make said adjusted signal have a selected level which is



appropriate for said selected terminal unit in accordance with said type signal, said selected terminal unit comprising one of a hands-free terminal unit, a terminal unit having a control unit responsive to said control means and further being responsive to a manually operated volume control and a terminal unit which is not responsive to said control means and having an adjustable volume control for adjusting the volume of an output audio signal independently of said control means.

5,349,699

RADIO RECEIVER WITH MASKING OF SWITCHOVER NOISE

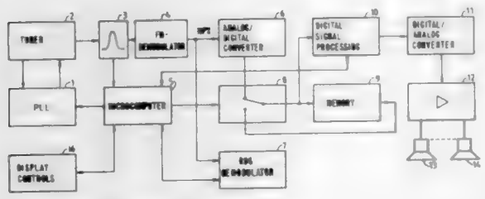
Peter Erben, Seelze; Helmut Liman, Nordstemmen; Wilhelm Hegeler, Hildesheim; Harald Bochmann, Hanover; Jürgen Kässer, Diekholzen, and Werner Henze, Hohnhorst, all of Fed. Rep. of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Jan. 22, 1992, Ser. No. 824,205

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1991, 4103061; Feb. 1, 1991, 4103064

Int. Cl.[5] H04B *1/16*

U.S. Cl. 455—186.1 **14 Claims**



1. In a radio receiver having

storing means (**9**; **41**, **42**) for continuously storing a most-recently-received portion of a radio transmission; and

switchover means (**1**, **5**, **34**) for automatic switchover from a first reception frequency to a second reception frequency,

a method of suppressing audio output of noise during a switchover from a first reception frequency to a second reception frequency, comprising the steps of:

continuously storing said most-recently-received transmission portion;

upon cessation of audio signals received at said first reception frequency, retrieving, from said storing means (**9**; **41**, **42**), said most-recently-received transmission portion and directing audio output thereof as a substitute signal;

repeating audio output of said most-recently-received transmission portion until audio signals are received at said second reception frequency; and

performing a dissolve or temporary averaging between said most-recently-received transmission portion and said audio signals received at said second reception frequency, during transition therebetween, thereby minimizing jumps in amplitude and phase of a resulting audio output signal.

5,349,700

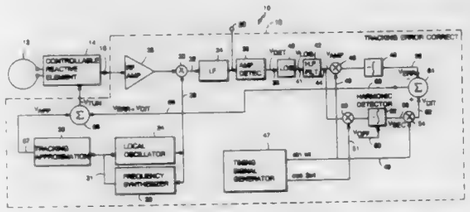
ANTENNA TUNING SYSTEM FOR OPERATION OVER A PREDETERMINED FREQUENCY RANGE

Robert P. Parker, Westboro, Mass., assignor to Bose Corporation, Framingham, Mass.

Filed Oct. 28, 1991, Ser. No. 783,273

Int. Cl.[5] H04B *1/16*

U.S. Cl. 455—193.2 **21 Claims**



1. A tunable antenna system for operation over a predetermined frequency range comprising,

an antenna having a length and width each significantly less than a quarter wavelength within said predetermined frequency range,

a controllable reactive element coupled to said antenna having a variable reactance for tuning said antenna in a resonant circuit to the frequency of a desired signal in said frequency range, and

an antenna-tuning circuit responsive to the frequency to which said antenna is tuned for providing an antenna-tuning signal to said controllable reactive element, to control the reactance of the reactive element so that the antenna remains tuned to the frequency of said desired signal, said antenna-tuning signal comprising:

a frequency approximation component for roughly tuning said antenna to the frequency of the desired signal,

an error component for fine tuning said antenna to the frequency of the desired signal, and

a dither component for varying at dither frequency the tuning of said antenna around the frequency of said desired signal.

5,349,701

METHOD AND APPARATUS FOR BROKEN LINK DETECT USING AUDIO ENERGY LEVEL

Gary S. Lobel, Boynton Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 15, 1992, Ser. No. 822,033

Int. Cl.[5] H04B *1/10*

U.S. Cl. 455—222 **9 Claims**

1. A radio communications device for receiving a radio frequency (RF) signal via an RF link, the radio communications device comprising:

receiving means for receiving the RF signal;

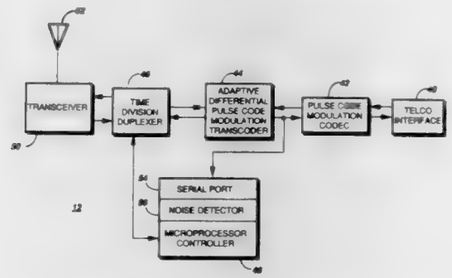
signal sampling means coupled to the receiving means for

sampling the received signal over a predetermined time period to measure a plurality of signal energy levels;

determining means coupled to the signal sampling means for determining whether the RF link is broken or not in response to an average of the plurality of signal energy levels exceeding or not exceeding a predetermined threshold; and

control means coupled to the determining means for generating a noise indication signal in response to the average of the plurality of signal energy levels exceeding the predetermined threshold; and

audio output means coupled to the receiving means and the control means for presenting audible output in response to



the received signal if no noise indication signal is generated by the control means.

DESIGN PATENTS

GRANTED SEP. 20, 1994

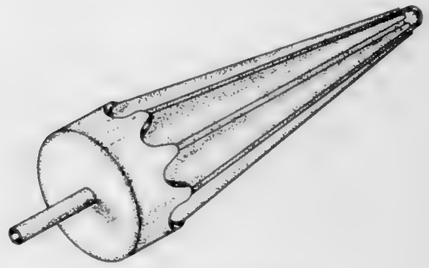
ERRATA

For CLASS	See PATENT NO.
006-631	D 350,644
025-113	D 350,824

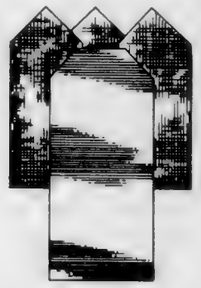
DESIGNS

SEPTEMBER 20, 1994

350,635
FROZEN CONFECTION
Neal E. White, Old Tappan, N.J., assignor to Noveltech, Inc., Northvale, N.J.
Filed May 28, 1993, Ser. No. 8,835
Term of patent 14 years
U.S. Cl. D1—102



350,636
POCKET HANDKERCHIEF
Johnnie Spratley, 23241 Court House Rd., Windsor, Va. 23487
Filed Feb. 5, 1993, Ser. No. 4,488
Term of patent 14 years
U.S. Cl. D2—500



350,637
SPORTS SHOE
Shigeyuki Mitsui, Irvine, Calif., assignor to Asics Corporation, Hyogo, Japan
Filed May 27, 1993, Ser. No. 9,815
Claims priority, application Japan, Dec. 3, 1992, 4-35763
Term of patent 14 years
U.S. Cl. D2—902



350,638
SHOE SOLE
Kazumasa Yoshikawa, Osaka, and Toshikazu Kayano, Akashi, both of Japan, assignors to Asics Corporation, Hyogo, Japan
Filed Jun. 25, 1993, Ser. No. 9,888
Claims priority, application Japan, Dec. 28, 1992, 4-38610
Term of patent 14 years
U.S. Cl. D2—953



350,639
SHOE SOLE
Shigeyuki Mitsui, Irvine, Calif., and Toshiaki Kawasaki, Kobe, Japan, assignors to Asics Corporation, Hyogo, Japan
Filed Jun. 25, 1993, Ser. No. 9,895
Claims priority, application Japan, Dec. 28, 1992, 4-38607
Term of patent 14 years
U.S. Cl. D2—953



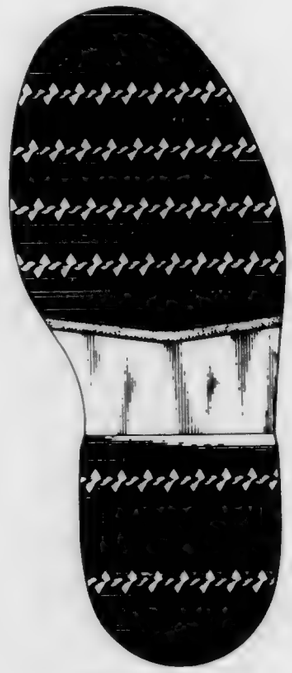
350,640
SHOE SOLE
Toshikazu Kayano, Hyogo, Japan, and Shigeyuki Mitsui, Irvine, Calif., assignors to ASICS Corporation, Hyogo, Japan
Filed Jun. 25, 1993, Ser. No. 9,893
Claims priority, application Japan, Dec. 28, 1992, 4-38604
Term of patent 14 years
U.S. Cl. D2—957



350,641
SHOE SOLE
Toshikazu Kayano, Hyogo, Japan, and Yoshiaki Hase, Irvine, Calif., assignors to Asics Corporation, Hyogo, Japan
Filed Jun. 25, 1993, Ser. No. 9,869
Claims priority, application Japan, Dec. 28, 1992, 4-38605
Term of patent 14 years
U.S. Cl. D2—959



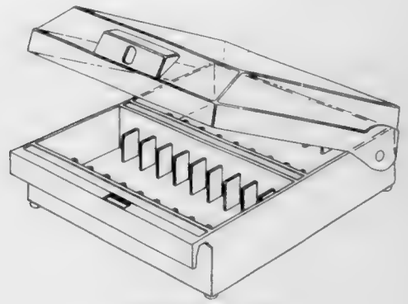
350,642
TREAD SURFACE AND PERIPHERY OF A FOOTWEAR UNIT SOLE
James R. Novy, Framingham, Mass., assignor to Quabaug Corporation, North Brookfield, Mass.
Filed Oct. 21, 1993, Ser. No. 14,440
Term of patent 14 years
U.S. Cl. D2—960



350,643
IMPROVED OUTDOOR UMBRELLA
Joseph H. De Marco, 60 Seaman Ave., New York, N.Y. 10034
Filed May 4, 1993, Ser. No. 7,827
Term of patent 14 years
U.S. Cl. D3—5



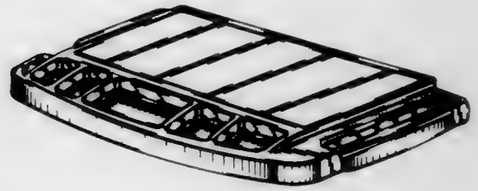
350,644
COMBINED HOUSING UNIT AND LID FOR TAPE CARTRIDGES
James L. Cameron, Glenbrook, Australia, assignor to Omega Date Furniture Pty Limited ACN, Penrith, Australia
Filed Aug. 13, 1992, Ser. No. 930,236
Claims priority, application Australia, Feb. 14, 1992, 337/92
Term of patent 14 years
U.S. Cl. D3—631



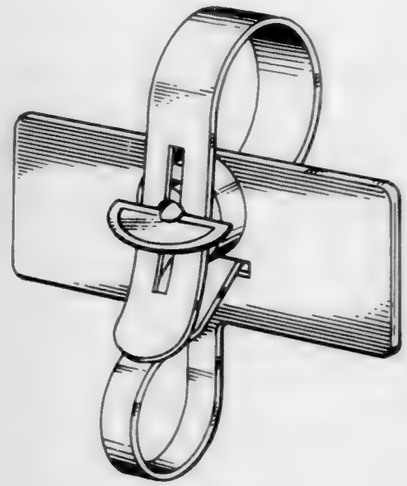
350,645
COMBINED TASSEL AND KEY FOR ADJUSTING TENSION OF CLIP-ON EARRINGS
Mary L. Bagnall, 310 E. 46th St., New York, N.Y. 10017
Filed Jan. 22, 1993, Ser. No. 3,990
Term of patent 14 years
U.S. Cl. D3—208



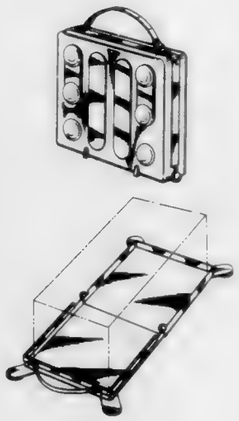
350,646
LID FOR TOOL CHEST
Frank Bescher, Cedar Falls; Steven Kohagen, Waverly, both of Iowa; Wade A. F. Maple, Sherrills Ford, N.C.; John P. Oltman, Cedar Falls, Iowa; David A. Trower, Waterloo, Iowa, and Douglas F. Wolff, Marshall, Mich., assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Apr. 8, 1993, Ser. No. 6,905
Term of patent 14 years
U.S. Cl. D3—318



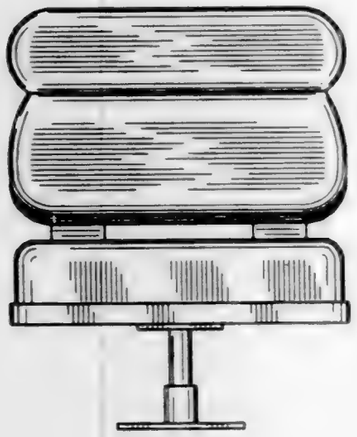
350,647
HOLDER FOR PURSE
Robert D. Dee, Allentown, Pa., assignor to Smirne Plastics, Inc., Allentown, Pa.
Filed Sep. 28, 1992, Ser. No. 953,572
Term of patent 14 years
U.S. Cl. D3—328



350,648
COLLAPSIBLE PORTABLE CHILD'S PLAY-PEN
Christopher Gabriel-Lacki, Pointe-Claire, and Andrzej Kryszto-fowicz, Brossard, both of Canada, assignors to Quinn Wise & Associates Inc., Tornoto, Canada
Filed Jun. 7, 1993, Ser. No. 9,208
Term of patent 14 years
U.S. Cl. D6—331



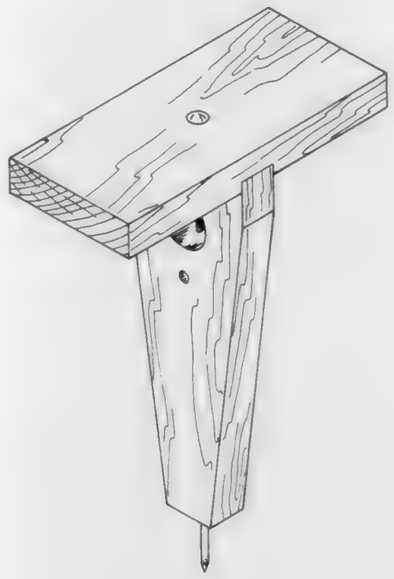
350,649
COMBINED SEAT AND LIFE PRESERVER CUSHION
James W. Rozum, 3620 Blackberry La., Imperial, Mo. 63052
Filed Feb. 19, 1993, Ser. No. 5,113
Term of patent 14 years
U.S. Cl. D6—335



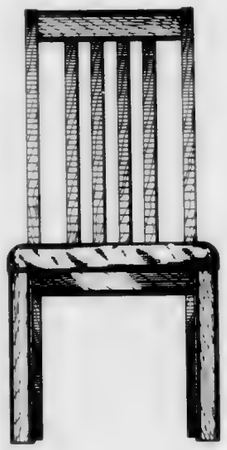
350,650
ROCKING CHAIR
David B. Chaney, Powell; W. Henry Kahl, Wooster, and Barry W. Smith, Dublin, all of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jul. 12, 1993, Ser. No. 10,544
Term of patent 14 years
U.S. Cl. D6—348



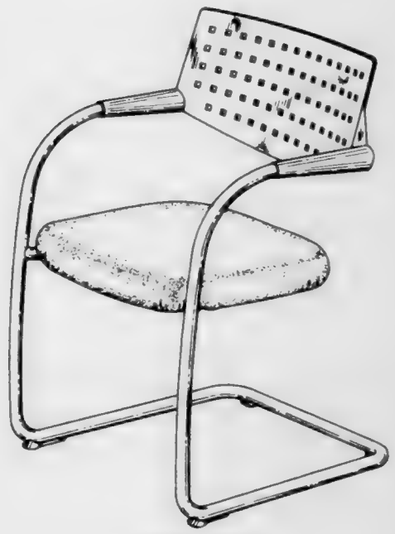
350,651
PORTABLE ONE-LEG SEAT
Donald K. Emery, P.O. Box 934, Columbia, Mo. 65205
Filed Dec. 30, 1992, Ser. No. 3,120
Term of patent 14 years
U.S. Cl. D6—364



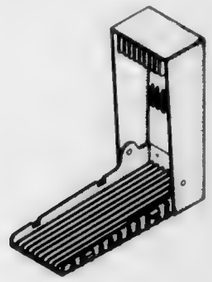
350,652
DINING CHAIR
Friedrich H. Wegener, Columbus, Ohio, assignor to Schottenstein Stores Corporation, Columbus, Ohio
Filed Sep. 11, 1992, Ser. No. 943,594
Term of patent 14 years
U.S. Cl. D6—370



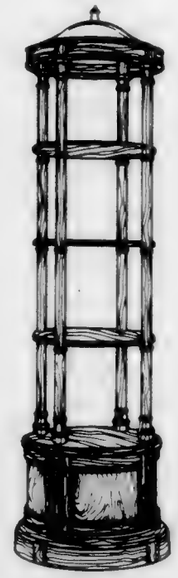
350,653
CHAIR
Antonio Citterio, Milan, Italy, assignor to Fehlbaum & Co., Switzerland
Filed Apr. 5, 1993, Ser. No. 6,704
Claims priority, application Int'l Pat. Institute, Oct. 6, 1992, DM/024097
Term of patent 14 years
U.S. Cl. D6—372



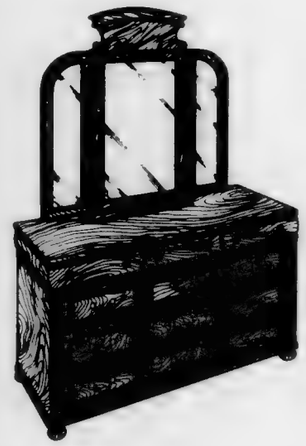
350,654
CASE FOR LASER DISKS
Jui-Yu Chen, No. 12, Ta Yuan 25 Street, 33 Ling, Chung Shan Ts'un, Tai Ping Hsiang, Taichung Hsien, Taiwan
Filed Feb. 25, 1993, Ser. No. 5,469
Term of patent 14 years
U.S. Cl. D6—407



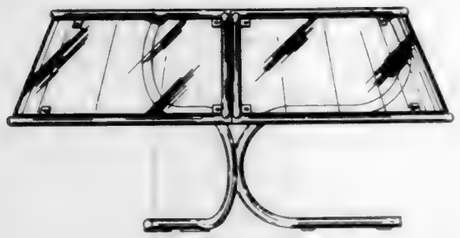
350,655
COMBINED CABINET AND SHELF UNIT
Darrell C. Ferguson, Charleston, S.C., assignor to Lineage Home Furnishings, Inc., High Point, N.C.
Filed May 18, 1992, Ser. No. 885,384
Term of patent 14 years
U.S. Cl. D6—436



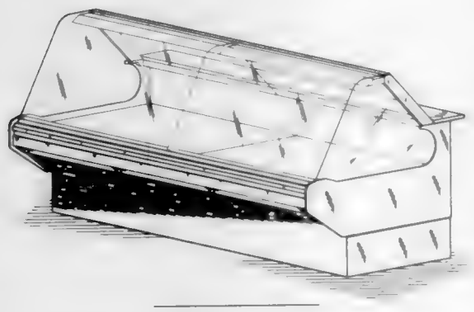
350,656
DRESSER WITH MIRROR
Darrell C. Ferguson, Charleston, S.C., assignor to Lineage Home Furnishings, Inc., High Point, N.C.
Filed May 19, 1992, Ser. No. 885,398
Term of patent 14 years
U.S. Cl. D6—444



350,657
CAROUSEL SNEEZE GUARD
Peter A. LaVaute, and Sydney W. Baumgartner, both of 10260 E. Highway 00, Hallsville, Mo. 65255
Filed Feb. 18, 1992, Ser. No. 836,936
Term of patent 14 years
U.S. Cl. D6—472



350,658
FOOD DISPLAY CASE
Kenneth T. Graat, Laguna Niguel, Calif., assignor to Spectra Displays, Aliso Viejo, Calif.
Filed Jul. 6, 1993, Ser. No. 10,393
Term of patent 14 years
U.S. Cl. D6—471



350,659
AUDIO COMPONENT STAND
Gary Di Tomasso, 350 Seneca Hill Dr. Ste. 1403, Willowdale Ontario, Canada M2J 4S7
Filed Sep. 30, 1992, Ser. No. 953,594
Claims priority, application Canada, Apr. 16, 1992, 71231
Term of patent 14 years
U.S. Cl. D6—479



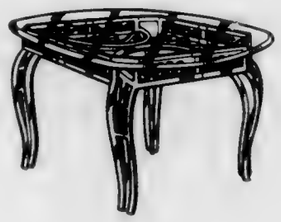
350,660
TABLE
Richard S. Klein, Los Angeles, Calif., assignor to Cal-Style Furniture Mfg. Co., Compton, Calif.
Filed Apr. 29, 1993, Ser. No. 7,712
Term of patent 14 years
U.S. Cl. D6—480



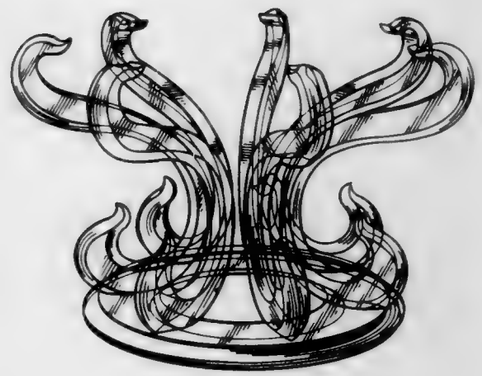
350,661
TABLE
Richard S. Klein, Los Angeles, Calif., assignor to Cal-Style Furniture Mfg. Co., Compton, Calif.
Filed Apr. 29, 1993, Ser. No. 7,696
Term of patent 14 years
U.S. Cl. D6—487



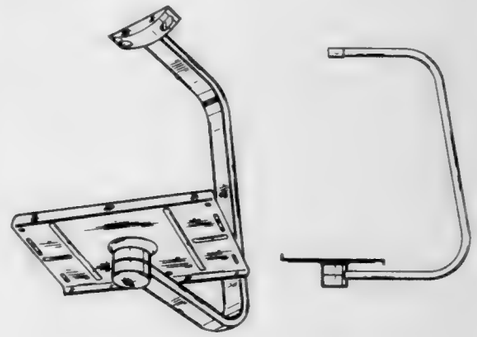
350,662
TABLE
Richard S. Klein, Los Angeles, Calif., assignor to Cal-Style Furniture Mfg. Co., Compton, Calif.
Filed Apr. 19, 1993, Ser. No. 7,310
Term of patent 14 years
U.S. Cl. D6—487



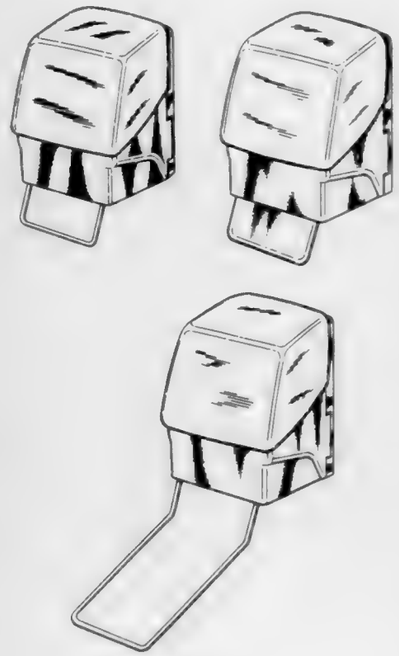
350,663
TABLE BASE
Mikhail Loznikov, 2007 Balboa St., San Francisco, Calif. 94121
Filed Jun. 8, 1993, Ser. No. 9,271
Term of patent 14 years
U.S. Cl. D6—495



350,664
TV SUPPORT
Henricus H. Vogels, Eindhoven, Netherlands, assignor to Vogel's Holding B.V., Eindhoven, Netherlands
Filed Jun. 22, 1993, Ser. No. 9,837
Claims priority, application Hague, Dec. 23, 1992, DMA/002020
Term of patent 14 years
U.S. Cl. D6—513



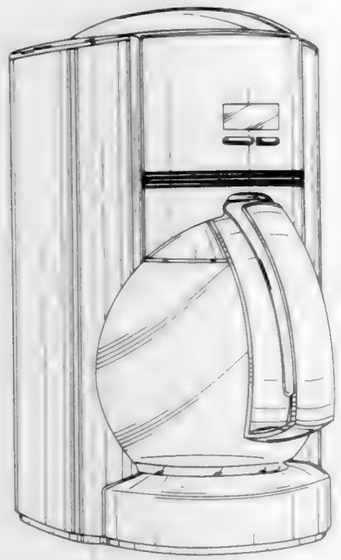
350,665
LIQUID DISPENSER
Heiner Ophardt, Vineland, Canada, assignor to Hygiene-Technik Inc., Beamsville, Canada
Filed Nov. 23, 1993, Ser. No. 15,643
Term of patent 14 years
U.S. Cl. D6—545



350,666
WINDOW OPERATOR HANDLE DESIGN
Greg R. Wobschall, and Marvin G. Root, both of Owatonna, Minn., assignors to Truth Hardware Corporation, Owatonna, Minn.
Filed May 13, 1992, Ser. No. 882,622
Term of patent 14 years
U.S. Cl. D6—580



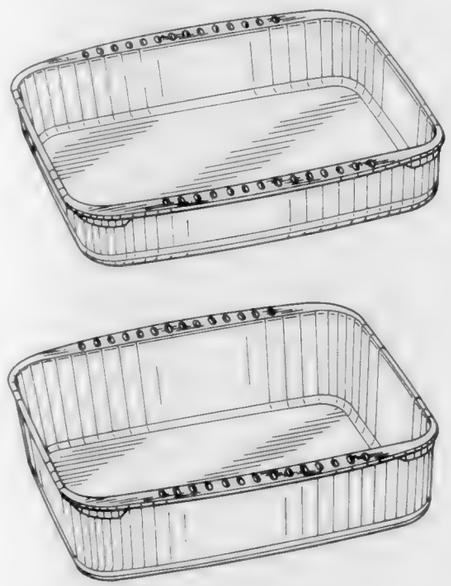
350,667
ELECTRIC COFFEEMAKER
Philippe Saltet, Chateaufort, France, assignor to Moulinex (Societe Anonyme), Bagnolet, France
Filed Dec. 23, 1992, Ser. No. 3,005
Claims priority, application France, Jul. 2, 1992, 924186
Term of patent 14 years
U.S. Cl. D7—309



350,668
KETTLE GRILL
Michael Giebel; David Landis, both of Joplin; Tienchai Puangnak, and Randy Love, both of Neosho, all of Mo., assignors to Sunbeam Corporation, Fort Lauderdale, Fla.
Filed Nov. 30, 1992, Ser. No. 2,103
Term of patent 14 years
U.S. Cl. D7—334



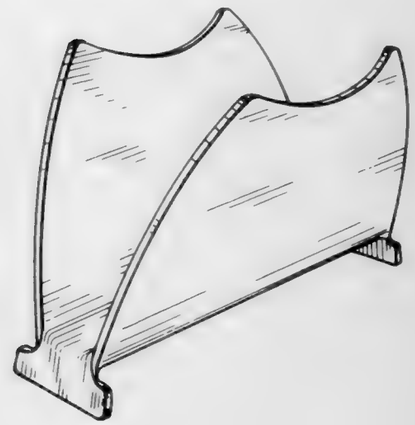
350,669
ROASTING PAN
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Deerfield, Ill.
Filed Aug. 13, 1992, Ser. No. 930,029
Term of patent 14 years
U.S. Cl. D7—360



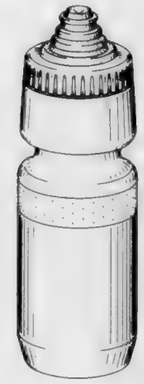
350,670
COMBINED BARBECUE GRILL ASH AND FLAME GUARD
Lynwood A. Harris, 8436 S. Michigan, Chicago, Ill. 60619
Filed Nov. 6, 1992, Ser. No. 1,208
Term of patent 14 years
U.S. Cl. D7—402



350,671
TACO HOLDER
Jerome L. Asner, 501 SW. 9th, Oklahoma City, Okla. 73109
Filed May 11, 1993, Ser. No. 8,069
Term of patent 14 years
U.S. Cl. D7—504



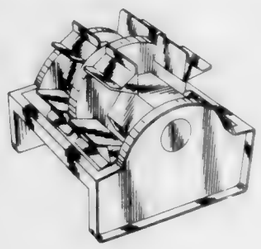
350,672
BEVERAGE BOTTLE
F. Robert Egger, Watsonville; Brenden J. Boyle, Palo Alto; Phillip M. Hobson, Los Altos, and Lynette M. Ross, Mountain View, all of Calif., assignors to Specialized Bicycle Components, Inc., Morgan Hill, Calif.
Filed Mar. 31, 1993, Ser. No. 6,574
Term of patent 14 years
U.S. Cl. D7—510



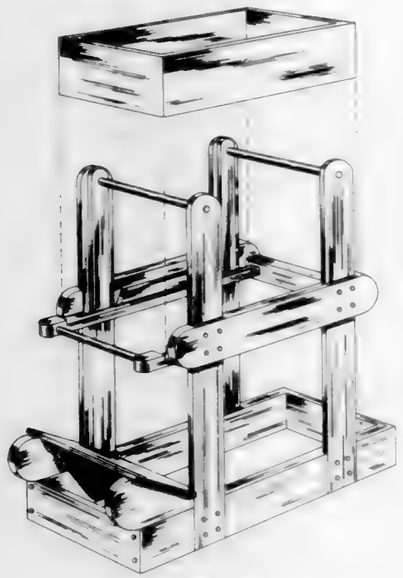
350,673
HANDLE FOR FLATWARE
Rose Gong, Brooklyn, N.Y., assignor to Polo Ralph Lauren Corporation, New York, N.Y.
Filed Jan. 11, 1993, Ser. No. 3,419
Term of patent 14 years
U.S. Cl. D7—654



350,674
SPICE BOTTLE WHEEL
Gerald Grusin, 640 N. LaSalle Dr., Chicago, Ill. 60610
Filed Apr. 2, 1993, Ser. No. 6,649
Term of patent 14 years
U.S. Cl. D7—707



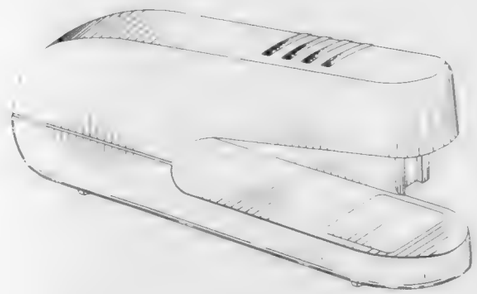
350,675
PORTABLE SOIL SIFTER
Paul E. Salisbury, 22 16th St., Bangor, Me. 04401
Filed Feb. 16, 1993, Ser. No. 4,811
Term of patent 14 years
U.S. Cl. D8—1



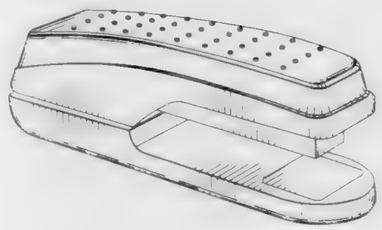
350,676
PLANTING TOOL
Allan Lefkow, 536 Valley West Ct., West Des Moines, Iowa 50265
Filed Sep. 20, 1993, Ser. No. 13,165
Term of patent 14 years
U.S. Cl. D8—1



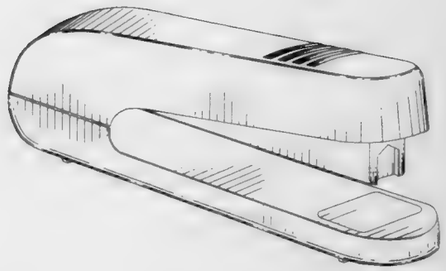
350,677
STAPLING MACHINE
Zahed Khan, Cardiff, Wales, and Paul Jones, Mid-Glamorgan, Great Britain, assignors to Ofrex Group Holdings PLC, Middlesex, Great Britain
Filed Feb. 21, 1992, Ser. No. 839,236
Claims priority, application United Kingdom, Aug. 23, 1991, 2016930
Term of patent 14 years
U.S. Cl. D8—50



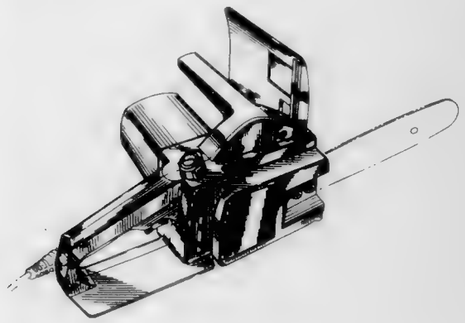
350,678
STAPLING MACHINE
Zahed Khan, Cardiff, Wales, and Paul Jones, Mid-Glamorgan, Great Britain, assignors to Ofrex Group Holdings PLC, Middlesex, Great Britain
Filed Feb. 21, 1992, Ser. No. 839,237
Claims priority, application United Kingdom, Aug. 23, 1991, 2016932
Term of patent 14 years
U.S. Cl. D8—50



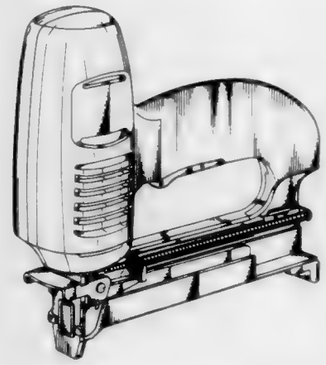
350,679
STAPLING MACHINE
Zahed Khan, Cardiff, Wales, and Paul Jones, Mid-Glamorgan, Great Britain, assignors to Ofrex Group Holdings PLC, Middlesex, Great Britain
Filed Feb. 21, 1992, Ser. No. 839,238
Claims priority, application United Kingdom, Aug. 23, 1991, 2016931
Term of patent 14 years
U.S. Cl. D8—50



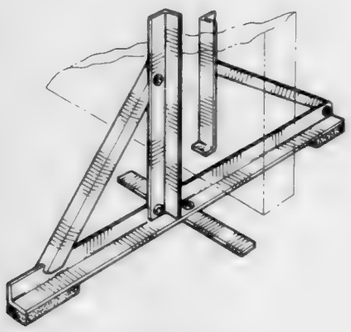
350,680
CHAIN SAW
Robert C. Berfield, Jersey Shore, and Ronald E. Meland, Muncy, both of Pa., assignors to McCulloch Corporation, Tucson, Ark.
Filed Jun. 22, 1993, Ser. No. 9,827
Term of patent 14 years
U.S. Cl. D8—65



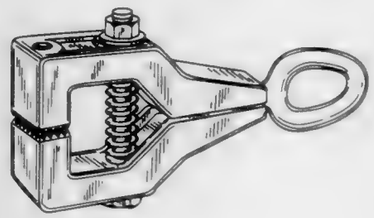
350,681
STAPLE GUN
Sven-Erik Juhlin, Gustavsberg, and Hans Himbert, Bromma, both of Sweden, assignors to Isaberg AB, Hestra, Sweden
Filed Jul. 14, 1993, Ser. No. 10,647
Claims priority, application Sweden, Feb. 5, 1993, 930300
Term of patent 14 years
U.S. Cl. D8—69



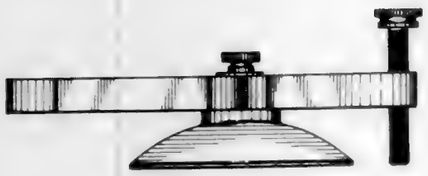
350,682
PANEL SUPPORT STAND
John Carey, 1996 Milford Pl., El Cajon, Calif. 92020
Filed Aug. 10, 1992, Ser. No. 927,363
Term of patent 14 years
U.S. Cl. D8—71



350,683
CLAMP
Alan O. Tessman, Sherwood, Oreg., assignor to Pull-It Corporation, Beaverton, Oreg.
Filed May 28, 1993, Ser. No. 8,891
Term of patent 14 years
U.S. Cl. D8—72



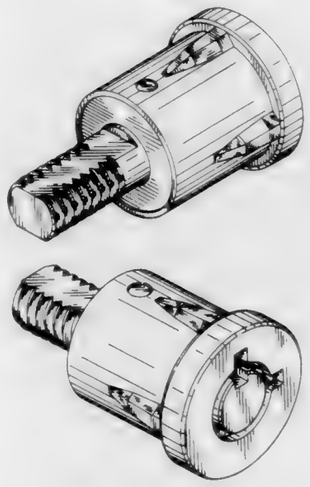
350,684
HOLDING STRUCTURE
Richard A. Campfield, 3696 Beatty Dr., Riverside, Calif. 92506
Filed Jul. 16, 1993, Ser. No. 10,772
Term of patent 14 years
U.S. Cl. D8—72



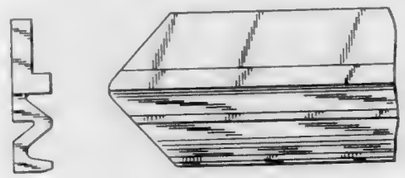
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SCREWDRIVER BIT
Fred H. Perkins, P.O. Box 217, Lincoln Center, Me. 04458, and Allan S. Perkins, R.F.D. #1 Box 605, Norway, Me. 04268
Filed May 4, 1992, Ser. No. 878,022
Term of patent 14 years
U.S. Cl. D8—86



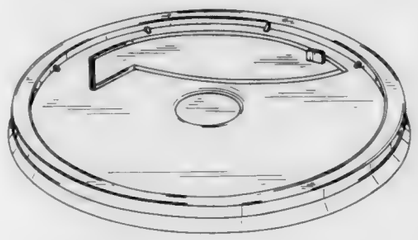
350,686
LOCK SHELL FOR AN AXIAL PIN TUMBLER LOCK
Gary L. Myers, River Grove, Ill., assignor to Fort Lock Corporation, River Grove, Ill.
Filed Feb. 12, 1992, Ser. No. 835,145
Term of patent 14 years
U.S. Cl. D8—343



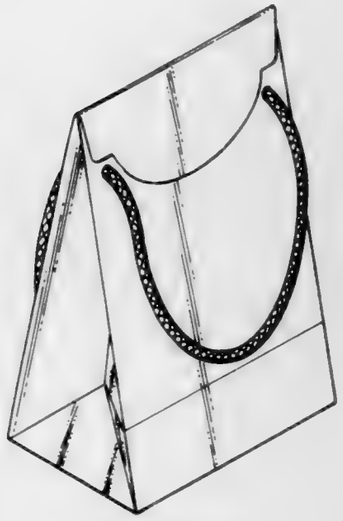
350,687
PORTION OF A KEY BLADE BLANK
Anthony J. Hoffman, Plantsville, Conn., and Robert E. Kearns, San Francisco, Calif., assignors to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,294
Term of patent 14 years
U.S. Cl. D8—347



350,688
LID FOR A PAIL FOR DISPENSING CHAIN
Myron H. Wardell, Jr., Lititz, Pa., assignor to Cooper Industries, Inc., Houston, Tex.
Filed May 26, 1992, Ser. No. 888,960
Term of patent 14 years
U.S. Cl. D9—435



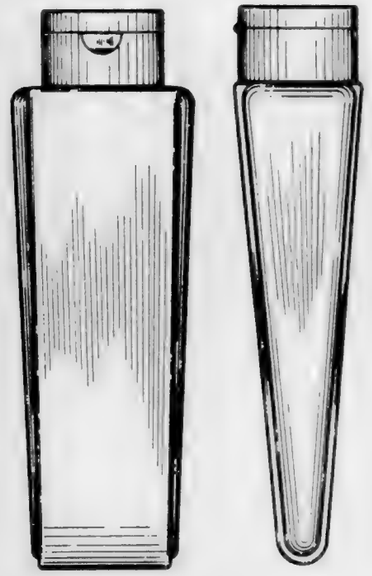
350,689
COVERED TOTE BAG
Judy Chao, 9430 Sunfall Ct., Columbia, Md. 21046
Division of Ser. No. 911,221, Jul. 9, 1992, Pat. No. Des. 343,288.
This application Oct. 28, 1993, Ser. No. 14,683
Term of patent 14 years
U.S. Cl. D9—305



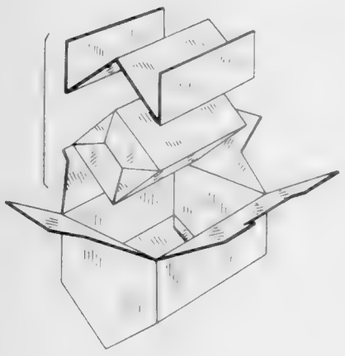
350,690
BAG
Ramzi M. Herro, 430 Prince Arthur, West, #6, Montreal (Quebec) H2X 1T2, Canada
Filed Dec. 31, 1992, Ser. No. 3,054
Claims priority, application Canada, Jul. 3, 1992, 03-07-92-02
Term of patent 14 years
U.S. Cl. D9—306



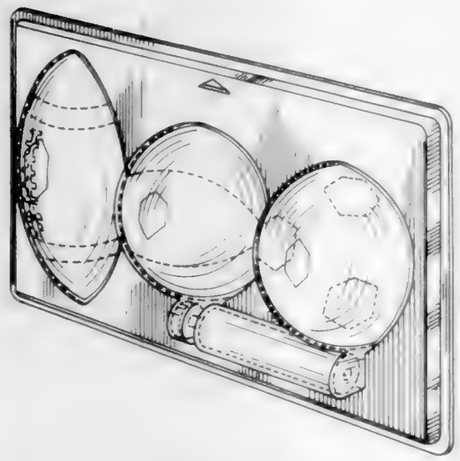
350,691
COMBINED CONTAINER AND CAP
Paolo Simion, Turin, Italy, assignor to L'Oreal, France
Filed Mar. 3, 1993, Ser. No. 5,394
Term of patent 14 years
U.S. Cl. D9—306



350,692
PACKAGING CONTAINER
Akihiko Seki, New York, N.Y., assignor to Purisys Inc., New York, N.Y.
Filed Jun. 28, 1993, Ser. No. 10,052
Term of patent 14 years
U.S. Cl. D9—322



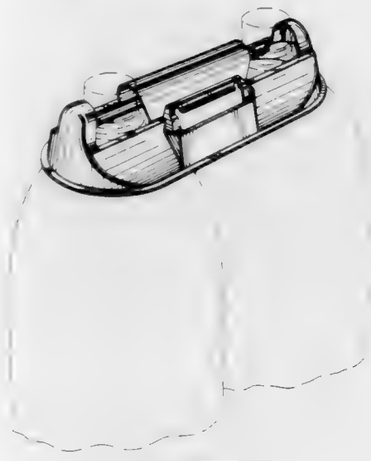
350,693
PACKAGE FOR BALLS AND PUMP
Kenneth W. Pratt, Ware, Mass., assignor to Seneca Sports Inc., Milford, Mass.
Continuation of Ser. No. 892,370, Jun. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 863,701, Apr. 3, 1992, Pat. No. 8,344,019, and a continuation-in-part of Ser. No. 784,044, Oct. 28, 1991, abandoned. This application Jul. 20, 1993, Ser. No. 10,868
Term of patent 14 years
U.S. Cl. D9—415



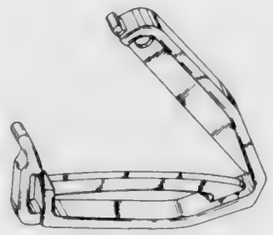
350,694
TWIST-OFF CLOSURE
Theodore J. Kovacic, Bedford; Richard H. Kaufman, Chappaqua, both of N.Y.; Martin M. Bostwick, Norwalk, Conn.; Donald C. Crescenzi, Killingsworth, Conn.; William H. Valls, Harwinton, Conn., and Thomas Bucaccio, Westmount, Canada, assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Jun. 5, 1992, Ser. No. 894,716
Term of patent 14 years
U.S. Cl. D9—434



350,695
MULTIPLE BOTTLE CARRIER
Arthur E. Adami, Andover, Mass., and Christopher P. Amberg, Ownings Mills, Md., assignors to Sweetheart Cup Company Inc., Owings Mills, Md.
Filed Mar. 5, 1992, Ser. No. 845,338
Term of patent 14 years
U.S. Cl. D9—455



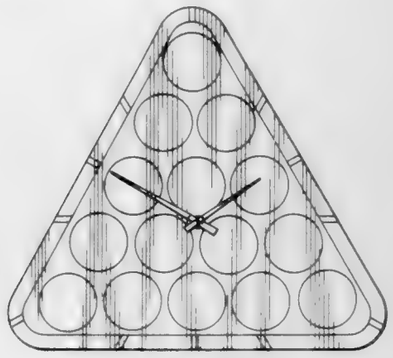
350,696
BAG CLIP
Ingemar Näslund, Huddinge, Sweden, assignor to Weland Medical AB, Smalandsstenar, Sweden
Filed Aug. 17, 1992, Ser. No. 930,624
Claims priority, application Sweden, Feb. 20, 1992, 92-0376
Term of patent 14 years
U.S. Cl. D9—443



350,697
CUP LID WITH ROTATABLE COVER SEGMENT
Ronald J. Sidman, Marstons Mills, Mass., assignor to Kiddie Products, Inc., Avon, Mass.
Filed Nov. 23, 1992, Ser. No. 1,763
Term of patent 14 years
U.S. Cl. D9—445



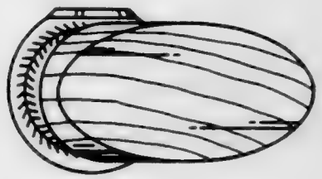
350,698
CLOCK FACE
Brendon Nunes, 467 Westney Road, S., Unit 3, Ajax, Ontario, Canada L1S 6V7
Filed Apr. 22, 1991, Ser. No. 688,359
Term of patent 14 years
U.S. Cl. D10—6



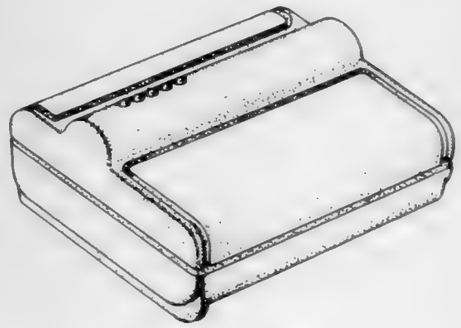
350,699
BASEBALL CLOCK
Alan E. Lincourt, 20 Langdon Ave., P.O. Box 445, Richfield Springs, N.Y. 13439
Filed Jan. 19, 1993, Ser. No. 3,836
Term of patent 14 years
U.S. Cl. D10—6



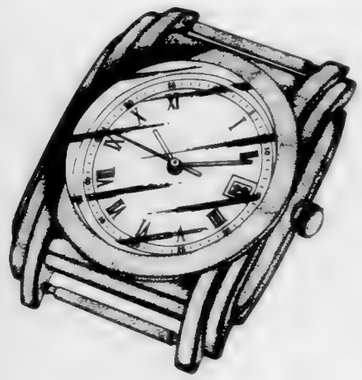
350,700
BASEBALL CLOCK
Alan E. Lincourt, 20 Langdon Ave., P.O. Box 445, Richfield Springs, N.Y. 13439
Filed Jan. 19, 1993, Ser. No. 3,860
Term of patent 14 years
U.S. Cl. D10—6



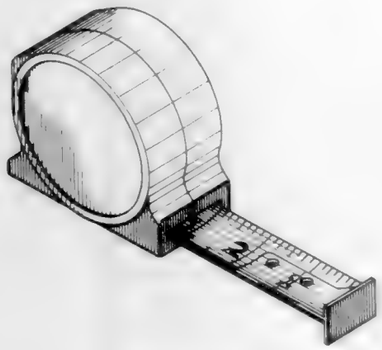
350,701
BATTERY CHECKER
Hui-Jen Pan, Keelung, Taiwan, assignor to Guardforce Corporation, Taipei, Taiwan
Filed Apr. 12, 1993, Ser. No. 6,897
Term of patent 14 years
U.S. Cl. D10—77



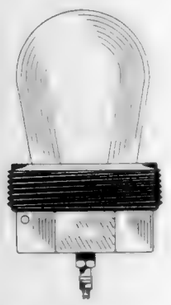
350,702
WRISTWATCH
Jean-Claude Schwarz, La Cibourg, Switzerland, assignor to Le Phare-Jean D'Eve S.A., La Chaux-de-Fonds, Switzerland
Filed Dec. 16, 1991, Ser. No. 808,279
Claims priority, application Switzerland, Jun. 14, 1991, DM/019-888
Term of patent 14 years
U.S. Cl. D10—39



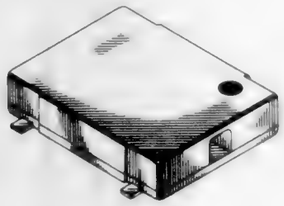
350,703
TAPE MEASURE
Donald R. Fifer, P.O. Box 492277, Redding, Calif. 96049
Filed Oct. 8, 1992, Ser. No. 213
Term of patent 14 years
U.S. Cl. D10—72



350,704
PNEUMATIC TEST PLUG
Allen D. Mathison, Richfield; Marc P. Bevacco, New Hope, and Bryan R. Benson, North Branch, all of Minn., assignors to Cherne Industries Incorporated, Minneapolis, Minn.
Filed Apr. 12, 1993, Ser. No. 6,982
Term of patent 14 years
U.S. Cl. D10—80



350,705
AUDIBLE SIGNAL FOR ALARM UNITS
Takahiro Sone, Shizuoka, Japan, assignor to Star Micronics Co., Ltd., Shizuoka, Japan
Filed Aug. 31, 1992, Ser. No. 936,550
Claims priority, application Japan, Mar. 6, 1992, 4-6517
The portion of the term of this patent subsequent to Sep. 21, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—116



350,706
WATCH BAND
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jun. 23, 1993, Ser. No. 9,847
Term of patent 14 years
U.S. Cl. D11—3



350,707
BRACELET
Freddy Fraimovici, Givatayim, and Maury Golan, Herzlia, both of Israel, assignors to Golan Fine Crafts (1977) Ltd., Bnei Brak, Israel
Filed Dec. 2, 1993, Ser. No. 15,916
Term of patent 14 years
U.S. Cl. D11—4



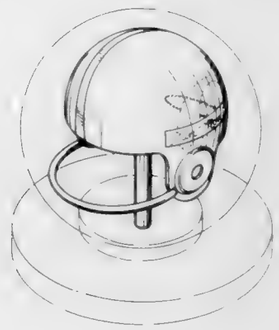
350,708
GEMSTONE
Shlomo Bachar, 235 W. 75th St.,, New York, N.Y. 10023
Filed Nov. 2, 1992, Ser. No. 999
Term of patent 14 years
U.S. Cl. D11—90



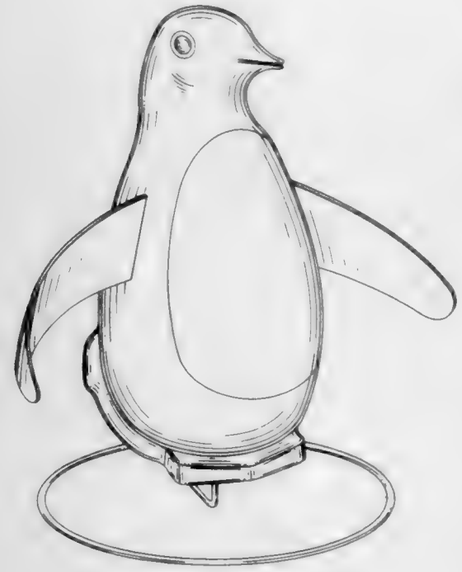
350,709
PLAQUE
Gertrude M. Perrille, Warwick, and Duane S. Kuczer, Woonsocket, both of R.I., assignors to Suncatcher Gallery, Inc., Warwick, R.I.
Filed May 18, 1993, Ser. No. 8,429
Term of patent 14 years
U.S. Cl. D11—133



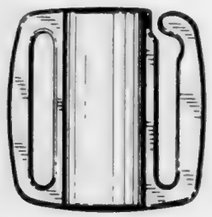
350,710
COLLECTOR'S HELMET
Kenneth D. Keiffer, 4658 Middlebrook Rd. Q, Orlando, Fla. 32811
Filed May 3, 1993, Ser. No. 7,784
Term of patent 14 years
U.S. Cl. D11—157



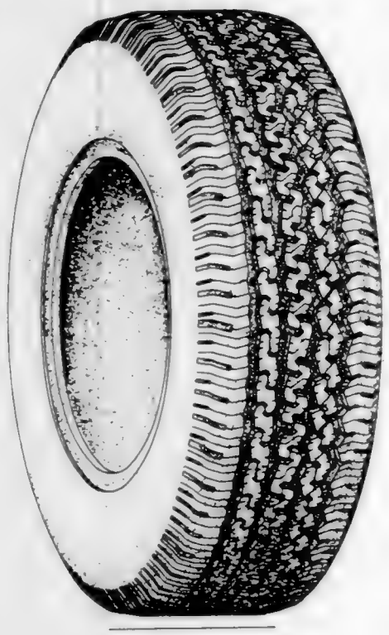
350,711
INDOOR/OUTDOOR FIGURE
Scott B. Olson, 4882 Lake Harriet Parkway West, Minneapolis, Minn. 55410
Filed Jul. 1, 1993, Ser. No. 10,266
Term of patent 14 years
U.S. Cl. D11—162



350,712
CLASP
Lucy T. D'Ambrosio, Monsey; Berna J. Goldstein, New York, both of N.Y., and Alex J. Gibson, Gross Point Farms, Mich., assignors to Wacoal America, Inc., New York, N.Y.
Filed Mar. 26, 1993, Ser. No. 6,378
Term of patent 14 years
U.S. Cl. D11—218



350,713
TIRE
John R. Emerson, Simpsonville, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Jul. 10, 1992, Ser. No. 911,815
The portion of the term of this patent subsequent to Jun. 29, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—143



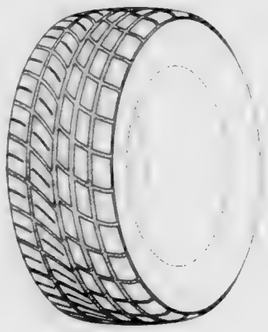
350,715
TIRE TREAD
Christian Labbe, Meix Le Tige, and Claude Lardo, Walzing, both of Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jun. 28, 1993, Ser. No. 10,074
Term of patent 14 years
U.S. Cl. D12—146



350,714
TIRE TREAD
Paul B. Maxwell, Mamer, Luxembourg, and Sean D. Montag, Westerville, Ohio, assignors to The Goodyeat Tire & Rubber Company, Akron, Ohio
Filed Apr. 2, 1993, Ser. No. 6,648
Term of patent 14 years
U.S. Cl. D12—146



350,716
TIRE TREAD
Perry W. Bell, North Lawrence; Nathan A. Gammon, Akron; Charles K. Schmalix, Canal Fulton, and Michael J. Weber, Mogadore, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 2, 1993, Ser. No. 6,607
Term of patent 14 years
U.S. Cl. D12—147



350,717
TIRE TREAD
Paul B. Maxwell, Mamer, Luxembourg, and Sean D. Montag, Westerville, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 5, 1993, Ser. No. 6,653
Term of patent 14 years
U.S. Cl. D12—147



350,719
TIRE TREAD
Maurice Graas, Reichlange, and Bruno Maitre, Useldange, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed May 21, 1993, Ser. No. 8,672
Term of patent 14 years
U.S. Cl. D12—147



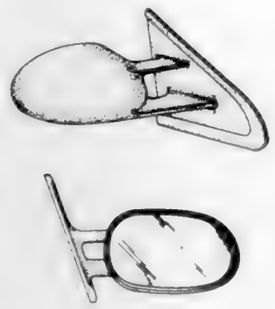
350,718
TIRE TREAD
John S. Attinello, Hartsville, and William E. Glover, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 8, 1993, Ser. No. 6,829
Term of patent 14 years
U.S. Cl. D12—147



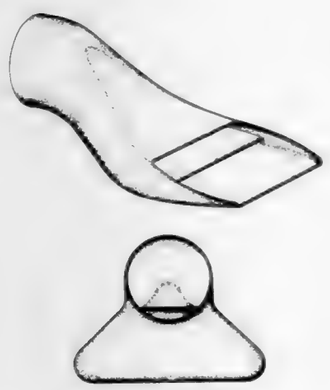
350,720
TIRE TREAD
Olivier De Barsy, Mersch, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jun. 17, 1993, Ser. No. 9,528
Term of patent 14 years
U.S. Cl. D12—147



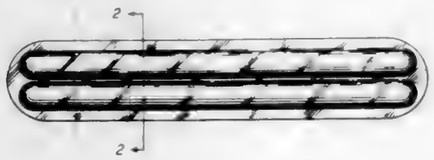
350,721
VEHICLE REAR VIEW MIRROR
William A. Dayton, Northville; Michael Santoro, Birmingham, and Darrel L. Morley, Troy, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Aug. 19, 1993, Ser. No. 11,982
Term of patent 14 years
U.S. Cl. D12—187



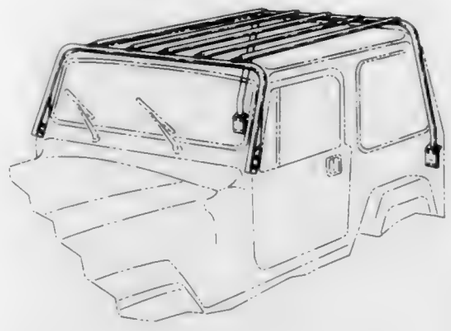
350,722
EXHAUST DUCT FOR AN AIRCRAFT TURBO PROP
Leonard J. Figueroa, Arleta, Calif., assignor to Lockheed Corporation, Calabasas, Calif.
Filed Nov. 18, 1993, Ser. No. 15,500
Term of patent 14 years
U.S. Cl. D12—345



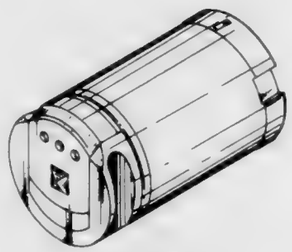
350,723
WINDSHIELD WIPER BLADE SNOW AND ICE REMOVING STRIP FOR ATTACHMENT TO A VEHICLE WINDSHIELD
Thomas W. Longazel, 127 Butler St., Ebensburg, Pa. 15931
Filed Mar. 11, 1993, Ser. No. 5,822
Term of patent 14 years
U.S. Cl. D12—400



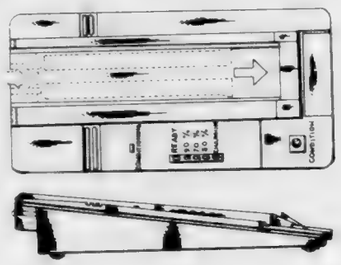
350,724
SPORT UTILITY RACK
Eric Lichtbach, 9940 Richeon Ave., Downey, Calif. 90240
Filed Nov. 18, 1993, Ser. No. 15,487
Term of patent 14 years
U.S. Cl. D12—412



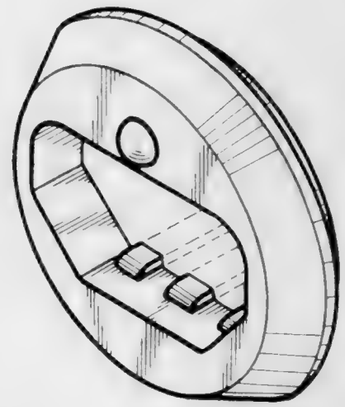
350,725
ELECTRIC BATTERY
David K. Powers, Bellevue; Michael Mahan, Issaquah; David Persen, Bellevue, and Thomas Clary, Issaquah, all of Wash., assignors to Power Battery Holdings Corporation, Bellevue, Wash.
Filed May 7, 1993, Ser. No. 8,114
Term of patent 14 years
U.S. Cl. D13—103



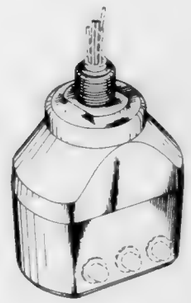
350,726
BATTERY CHARGER FOR CELLULAR PHONE BATTERIES
Gershon N. Cooper, Encino, Calif., assignor to Alliance Research Corporation, Chatsworth, Calif.
Filed Feb. 11, 1992, Ser. No. 836,221
Term of patent 14 years
U.S. Cl. D13—107



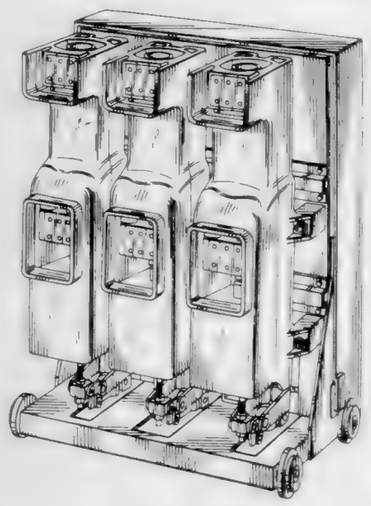
350,727
FACIA PORTION OF AN ELECTRICAL SOCKET
Guido J. H. P. Landry, and Franco G. Pucci, both of Durban, South Africa, assignors to Control Logic (Proprietary) Limited, Natal Province, South Africa
Filed Dec. 23, 1992, Ser. No. 2,967
Claims priority, application South Africa, Nov. 13, 1992, 92-1073
Term of patent 14 years
U.S. Cl. D13—146



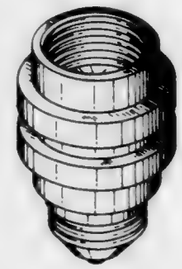
350,728
SURGE PROTECTOR HOUSING
William R. Goldbach, Seffner, and Thomas R. Conrad, both of Tampa, Fla., assignors to L.E.A. Dynatech, Tampa, Fla.
Filed Feb. 19, 1993, Ser. No. 5,115
Term of patent 14 years
U.S. Cl. D13—160



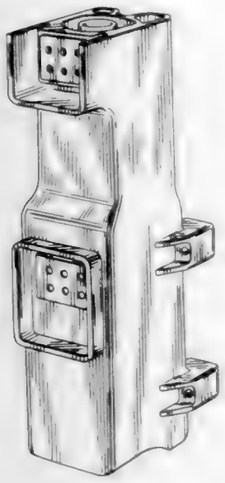
350,729
VACUUM CIRCUIT BREAKER
Takayuki Miyazawa, Tama; Junji Fujiwara, Oume; Kimiya Sato, Tokorozawa; Makoto Taniguchi; Satoshi Ogawa, both of Fuchu; Akihiko Konno, Tokyo, and Hideki Tsuboi, Koganei, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 22, 1993, Ser. No. 6,162
Claims priority, application Japan, Sep. 22, 1992, 4-27638
Term of patent 14 years
U.S. Cl. D13—160



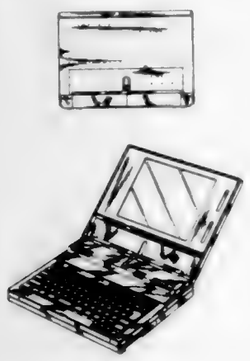
350,730
LIGHT BULB ADAPTOR FOR CONTROLLING LIGHT INTENSITY AND THE PERIOD TO REACH DETERMINED INTENSITY
Richard Ayotte, 3927 Cardinal Dr., Niagara Falls, Ontario,, Canada L2H-2W2
Filed Apr. 2, 1993, Ser. No. 6,619
Term of patent 14 years
U.S. Cl. D13—162



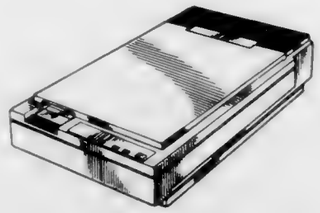
350,731
VACUUM VALVE FOR A VACUUM CIRCUIT BREAKER
Takayuki Miyazawa, Tama; Junji Fujiwara, Oume; Kimiya Sato, Tokorozawa; Makoto Taniguchi, Fuchu, and Satoshi Ogawa, Fuchu, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 22, 1993, Ser. No. 6,166
Claims priority, application Japan, Sep. 22, 1992, 4-27639
Term of patent 14 years
U.S. Cl. D13—173



350,732
ELECTRONIC COMPUTER WITH PRINTER
Yoshinori Inukai, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 22, 1993, Ser. No. 6,165
Claims priority, application Japan, Sep. 22, 1992, 4-27721
Term of patent 14 years
U.S. Cl. D14—106

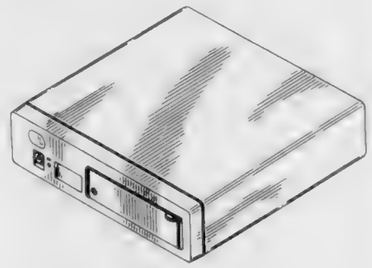


350,733
IMAGE SCANNER
Ikuo Masujima, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan
Filed Dec. 15, 1992, Ser. No. 2,649
Claims priority, application Japan, Jun. 19, 1992, 4-18330
Term of patent 14 years
U.S. Cl. D14—107

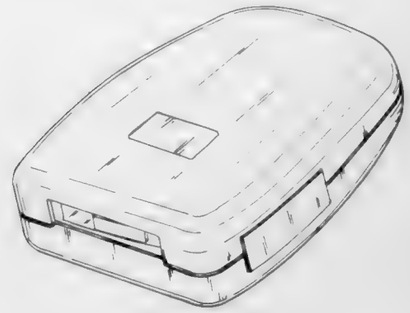




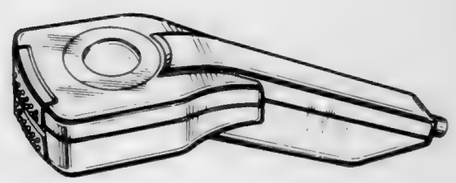
350,734
TAPE DRIVE FOR A DATA PROCESSING SYSTEM
David W. Hill, and Tim K. Murphy, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 27, 1992, Ser. No. 938,635
Term of patent 14 years
U.S. Cl. D14—108



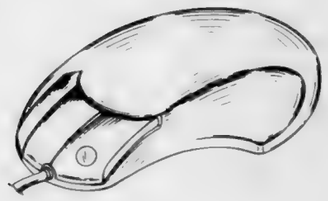
350,735
BAR CODE SCANNER
James H. Karlin, Fairport, and Harold McGuire, Ontario, both of N.Y., assignors to PSC Inc., Webster, N.Y.
Filed Oct. 2, 1992, Ser. No. 602
Term of patent 14 years
U.S. Cl. D14—114



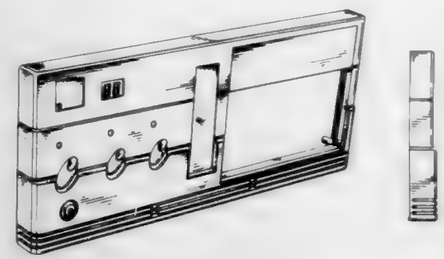
350,736
TRACK BALL
Masaki Takahashi, Kawasaki, and Yoshinori Inukai, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 22, 1993, Ser. No. 3,952
Claims priority, application Japan, Jul. 28, 1992, 4-22541
Term of patent 14 years
U.S. Cl. D14—114



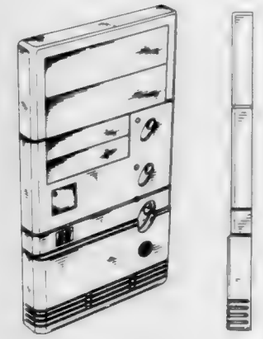
350,737
MOUSE
Jerry Chen, Fl. 4, No. 157, Sung Lung Rd., Hsin I Area, Taipei, Taiwan
Filed May 26, 1993, Ser. No. 8,776
Term of patent 14 years
U.S. Cl. D14—114



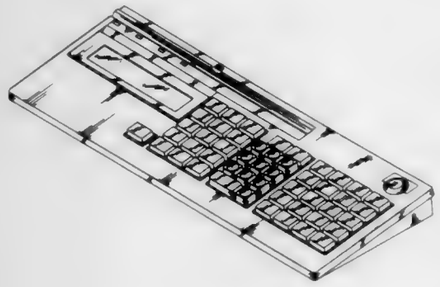
350,738
FRONT PANEL OF A COMPUTER MAIN FRAME
Yun Chu, 2F., No. 10, Lane 329, Sec. 1, Tun Hwa South Road, Taipei, Taiwan
Filed Apr. 5, 1993, Ser. No. 6,693
Term of patent 14 years
U.S. Cl. D14—115



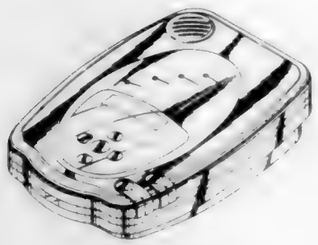
350,739
FRONT PANEL OF A COMPUTER MAIN FRAME
Yun Chu, 2F., No. 10, Lane 329, Sec. 1, Tun Hwa South Road, Taipei, Taiwan
Filed Apr. 5, 1993, Ser. No. 6,697
Term of patent 14 years
U.S. Cl. D14—115



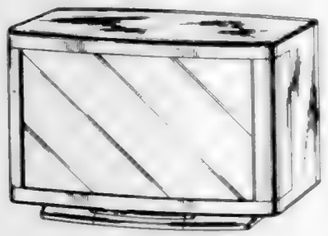
350,740
KEYBOARD FOR COMPUTERS
Ronald A. Smith, Apex, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 29, 1993, Ser. No. 7,656
Term of patent 14 years
U.S. Cl. D14—115



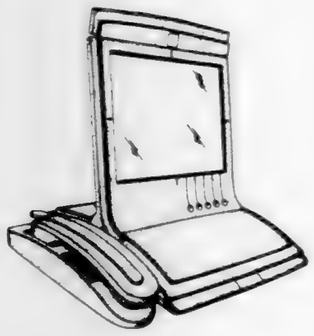
350,741
COMBINED FACSIMILE, TELEPHONE ANSWERING MACHINE AND MODEM
Ching-Song Chen, No. 13, Alley 65, Lane 59, Nan-Men Rd., Taichung City, Taiwan
Filed Feb. 9, 1993, Ser. No. 6,117
Term of patent 14 years
U.S. Cl. D14—118



350,742
TELEVISION RECEIVER
Yusuke Morita, Osaka; Eiichiro Naito, Hyogo, and Hiroshi Yonekura, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 26, 1993, Ser. No. 8,779
Claims priority, application Japan, Nov. 30, 1992, 4-35243
Term of patent 14 years
U.S. Cl. D14—126



350,743
VIDEOTELEPHONE
John A. Hicks, III, Ocean, and Stephen G. Miggels, Wyckoff, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Mar. 30, 1993, Ser. No. 6,477
Term of patent 14 years
U.S. Cl. D14—130



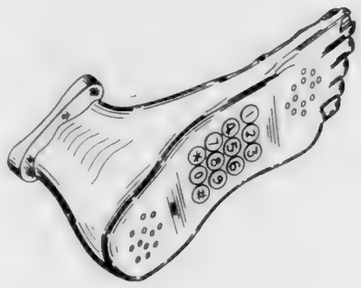
350,744
CELLULAR PHONE
Ichirou Hino, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 5, 1993, Ser. No. 6,715
Claims priority, application Japan, Oct. 28, 1992, 4-31527
Term of patent 14 years
U.S. Cl. D14—138



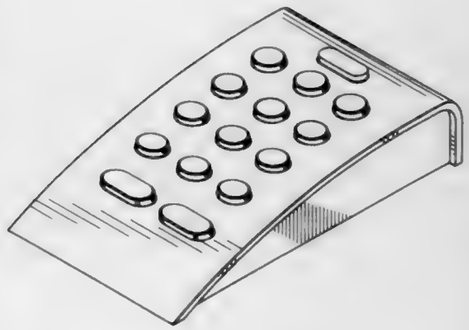
350,745
AUTOMATIC TELEPHONE MESSAGE RECORDER
Kenji Tamura, Fussa; Isamu Yoshitake, Musashino, and Takashi Yatabe, Higashimurayama, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed May 4, 1993, Ser. No. 7,889
Term of patent 14 years
U.S. Cl. D14—141



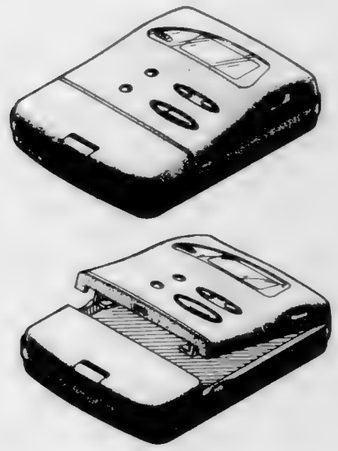
350,746
TELEPHONE
David Miscichowski, 33 Bayside Ave., Oyster Bay, N.Y. 11771
Filed Jul. 7, 1993, Ser. No. 10,452
Term of patent 14 years
U.S. Cl. D14—143



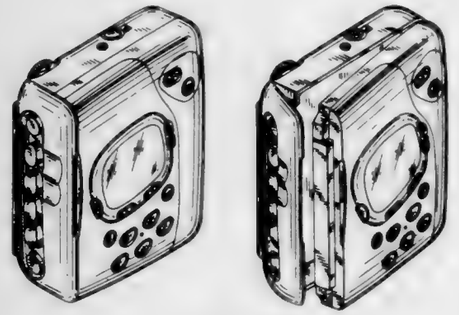
350,747
HANDS-FREE TELEPHONE
Charles L. McClendon, San Diego, Calif., assignor to Jabra Corporation, San Diego, Calif.
Filed Apr. 1, 1993, Ser. No. 6,565
Term of patent 14 years
U.S. Cl. D14—150



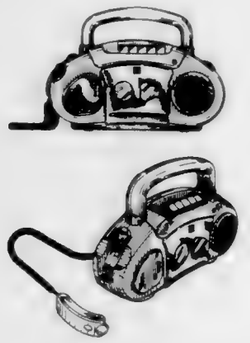
350,748
DIGITAL DISK PLAYER
Keiji Sakata, and Hirokazu Shibata, both of Hiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 10, 1993, Ser. No. 5,803
Claims priority, application Japan, Sep. 18, 1992, 4-27489
Term of patent 14 years
U.S. Cl. D14—156



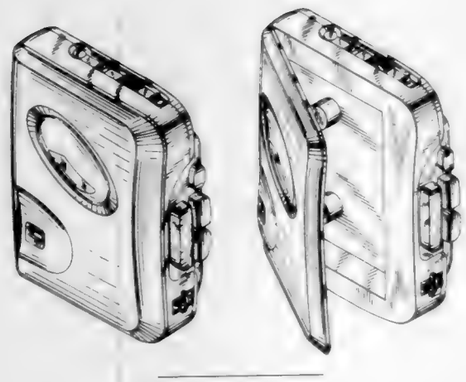
350,749
TAPE PLAYER COMBINED WITH A RADIO RECEIVER
Joh Wada, and Hisanori Narita, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Dec. 8, 1993, Ser. No. 16,125
Claims priority, application Japan, Jun. 11, 1993, 5-17526
Term of patent 14 years
U.S. Cl. D14—163



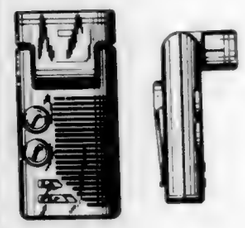
350,750
TAPE RECORDER
Yuji Oki, Tokyo, and Hideo Ohtani, Yokohama, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Aug. 27, 1993, Ser. No. 12,240
Claims priority, application Japan, Mar. 30, 1993, 5-8798
Term of patent 14 years
U.S. Cl. D14—165



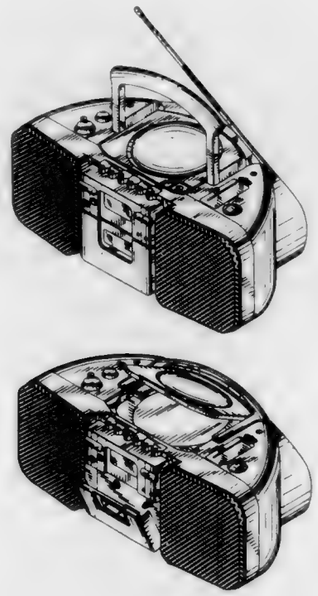
350,751
TAPE PLAYER
Youzoh Matsuzaka, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 8, 1993, Ser. No. 16,122
Term of patent 14 years
U.S. Cl. D14—165



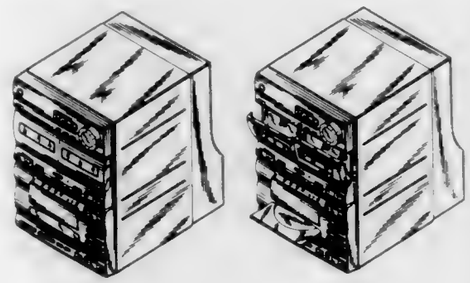
350,752
COMBINED RADIO AND LIGHT
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Apr. 7, 1992, Ser. No. 864,968
Claims priority, application United Kingdom, Oct. 14, 1991, 2018274
Term of patent 14 years
U.S. Cl. D14—168



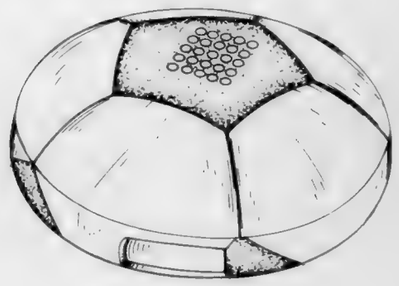
350,753
DIGITAL AUDIO DISC PLAYER COMBINED WITH A RADIO TUNER AND A TAPE RECORDER
Hiroki Oka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 20, 1992, Ser. No. 915,185
Claims priority, application Japan, Jan. 21, 1992, 4-1205
Term of patent 14 years
U.S. Cl. D14—168



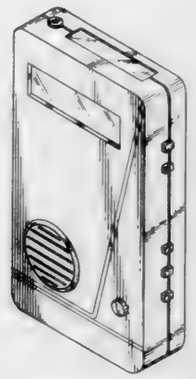
350,754
DIGITAL AUDIO DISC PLAYER COMBINED WITH TUNER, EQUALIZER AMPLIFIER AND TAPE RECORDER
Osamu Sasago, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 18, 1993, Ser. No. 14,243
Claims priority, application Japan, Apr. 27, 1993, 5-12529
Term of patent 14 years
U.S. Cl. D14—168



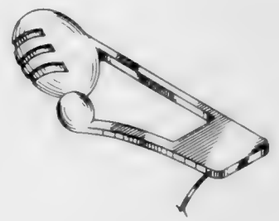
350,755
PORTABLE RADIO
Charlie Tou, No. 83, Pei-Chuang Rd., Shen-Kang Hsiang, Tai-chung Hsien, Taiwan
Filed Dec. 2, 1993, Ser. No. 15,923
Term of patent 14 years
U.S. Cl. D14—189



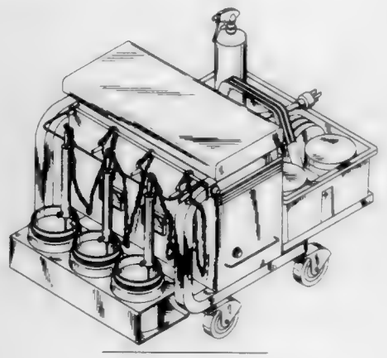
350,756
COMBINED PAGER AND PERSONAL STEREO
Thomas A. Zelios, 302 96 St., Apt. 6K, Brooklyn, N.Y. 11209
Filed Jun. 18, 1993, Ser. No. 9,577
Term of patent 14 years
U.S. Cl. D14—191



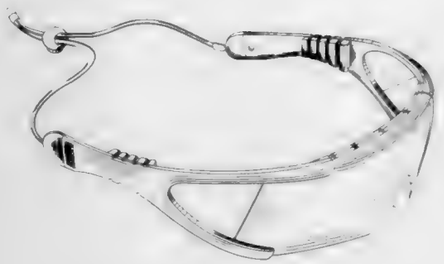
350,757
CLIP-ON EARPHONE
Todd P. Carpenter, 36 Janette Dr., Poca, W. Va. 25159
Filed Aug. 5, 1993, Ser. No. 11,416
Term of patent 14 years
U.S. Cl. D14—223



350,758
PORTABLE ELECTRO-PLATING APPARATUS
Daniel A. McLaughlin, Madeira Beach, Fla., assignor to Gold Effects, Inc., Largo, Fla.
Filed Aug. 13, 1993, Ser. No. 11,742
Term of patent 14 years
U.S. Cl. D15—199



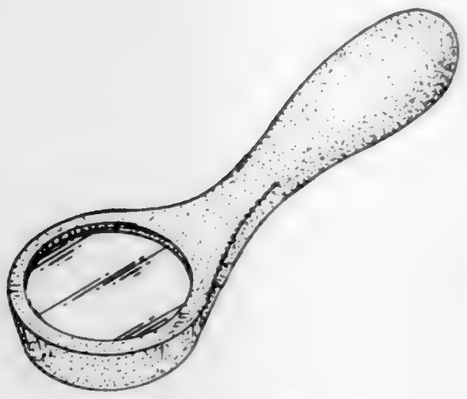
350,759
SPORT PROTECTIVE EYEWEAR
Paulo Lanna, New York, N.Y.; Rob Bruce, Sacramento, and Martin Smith, Los Angeles, both of Calif., assignors to Sun Sport Optics, Inc., Merritt Island, Fla.
Filed Feb. 4, 1993, Ser. No. 4,423
Term of patent 14 years
U.S. Cl. D16—312



350,760
EYEGLASS FRAME TEMPLE
Bernard Clark, Arlington, Vt.; Noelle S. Chin, and Frederick Morris, both of Shrewsbury, Mass., assignors to Luxtec Corporation, Worcester, Mass.
Filed Jul. 31, 1992, Ser. No. 923,357
Term of patent 14 years
U.S. Cl. D16—335



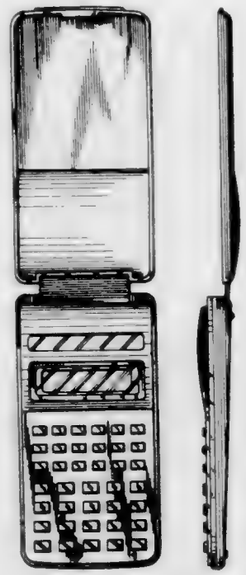
350,761
HANDHELD MAGNIFIER
Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., Ronkonkoma, N.Y.
Filed Nov. 27, 1992, Ser. No. 2,000
The portion of the term of this patent subsequent to Sep. 13, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D16—135



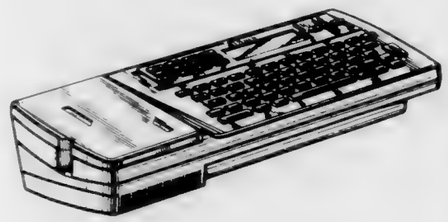
350,762
ELECTRONIC DRUM
Masaharu Ohno, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan
Filed Jun. 23, 1993, Ser. No. 9,875
Claims priority, application Japan, Dec. 29, 1992, 4-38615
Term of patent 14 years
U.S. Cl. D17—22



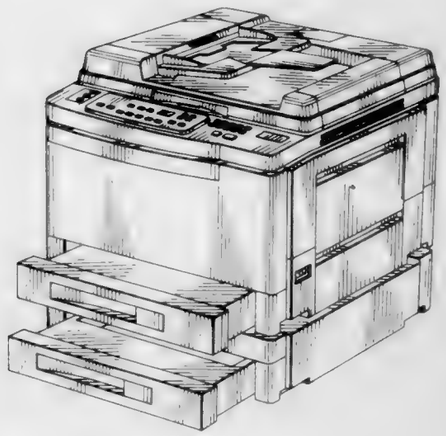
350,763
ELECTRONIC CALCULATOR
Makoto Matsuda, Matsudo, and Yuichi Onumata, Hachioji, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,479
Term of patent 14 years
U.S. Cl. D18—7



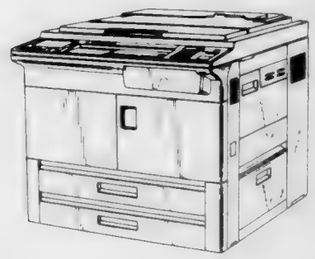
350,764
LABEL PRINTER
Philip J. Gray, Royston, and Barrie K. Weaver, London, both of United Kingdom, assignors to Esselte Dymo, St. Niklaas, Belgium
Filed Jun. 23, 1993, Ser. No. 9,897
Claims priority, application United Kingdom, Dec. 24, 1992, 2027979
Term of patent 14 years
U.S. Cl. D18—19



350,765
ELECTRONIC COPYING MACHINE
Shin-ichi Hiroki, Tokyo, and Kimiko Kageyama, Koganei, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jun. 9, 1992, Ser. No. 894,236
Claims priority, application Japan, Dec. 9, 1991, 3-36892
Term of patent 14 years
U.S. Cl. D18—36



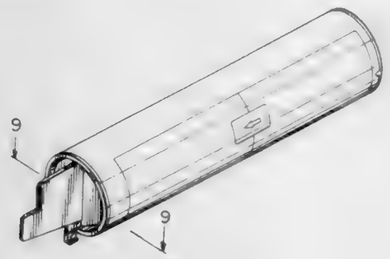
350,766
COPYING MACHINE WITH PRINTER AND FACSIMILE TRANSMITTER-RECEIVER
Kenichi Tomatsu, Yokohama; Akira Momose, Narashino; Yoko Nakamura, Yokohama; Tatsuo Okuda; Fumiyo Kojima, both of Tokyo; Masahiro Kurita, Yokohama, and Mayumi Hamasaki, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jun. 25, 1992, Ser. No. 903,193
Term of patent 14 years
U.S. Cl. D18—39



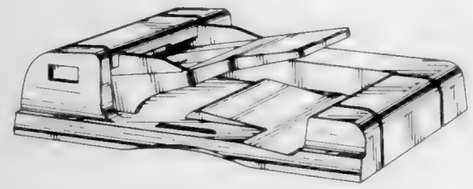
350,767
ELECTROSTATIC COPYING MACHINE
Fumiyo Kojima, Mitaka; Akira Momose, Narashino; Mayumi Hamazaki; Tatsuhiro Terasaki, both of Tokyo; Takafumi Hoshimura, Kawasaki, and Makoto Sugita, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jun. 17, 1992, Ser. No. 900,697
Claims priority, application Japan, Dec. 17, 1991, 3-38035
Term of patent 14 years
U.S. Cl. D18—38



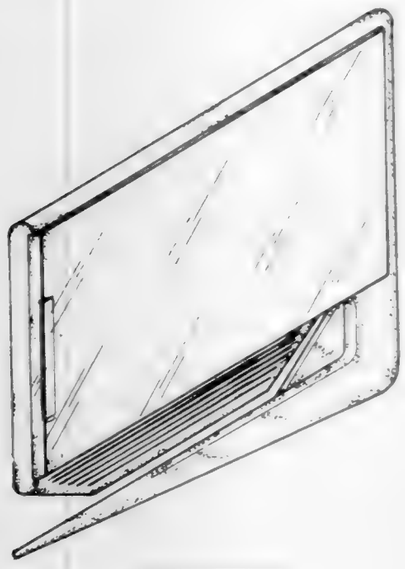
350,768
TONER CARTRIDGE
Minoru Kishino, Kanagawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed May 26, 1992, Ser. No. 889,089
Claims priority, application Japan, Oct. 20, 1991, 3-32505
Term of patent 14 years
U.S. Cl. D18—43



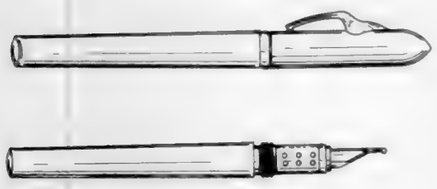
350,769
AUTOMATIC DOCUMENT FEEDER FOR COPIER
Atsuko Hattori, and Yuji Hayashihara, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 13, 1992, Ser. No. 912,618
Claims priority, application Japan, Jan. 20, 1992, 4-1195
Term of patent 14 years
U.S. Cl. D18—49



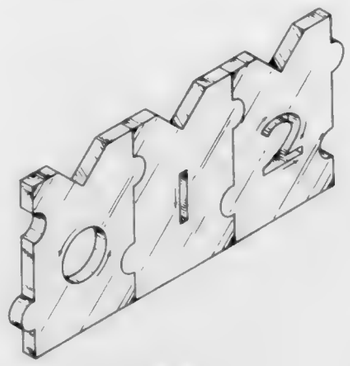
350,770
COMBINED BUSINESS CARD HOLDER AND ENVELOPE OPENER
Albert P. Carney, Ellisville, and David P. Lage, Manchester, both of Mo., assignors to Quick Point, Inc., Fenton, Mo.
Continuation of Ser. No. 887,086, May 22, 1992, Pat. No. 5,285,577. This application Sep. 17, 1992, Ser. No. 948,901
Term of patent 14 years
U.S. Cl. D19—36



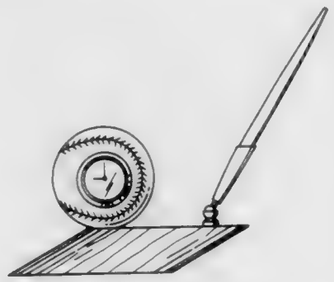
350,771
FOUNTAIN PEN
Renata Kettmeir, Bolzano, Italy, assignor to Ettore Bugatti, S.r.l., Bolzano, Italy
Filed Jul. 23, 1992, Ser. No. 918,355
Claims priority, application Italy, Apr. 22, 1992, MO92 000007
Term of patent 14 years
U.S. Cl. D19—51



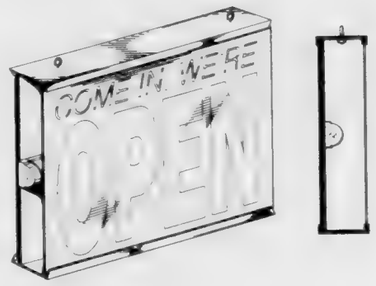
350,772
PUZZLE FOR TEACHING
Marcus S. King, 1926 W. Casino Rd. Apt H-204, Everett, Wash. 98204
Filed Dec. 4, 1992, Ser. No. 2,239
Term of patent 14 years
U.S. Cl. D19—64



350,773
COMBINED DESK SET AND CLOCK
Alan E. Lincourt, 20 Langdon Ave., P.O. Box 445, Richfield Springs, N.Y. 13439
Filed Jan. 19, 1993, Ser. No. 3,837
Term of patent 14 years
U.S. Cl. D19—82



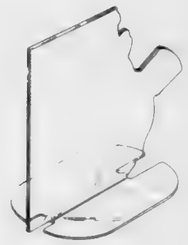
350,774
ILLUMINATED SIGN
Gerry L. King, 5673 La Fleur Trail, Lithonia, Ga. 30038
Filed Sep. 18, 1992, Ser. No. 948,902
Term of patent 14 years
U.S. Cl. D20—10



350,775
CARD HOLDER
Theresa Salmi, 114 Mistletoe Dr., Southbury, Conn. 06488
Filed Jun. 19, 1992, Ser. No. 878,893
Term of patent 14 years
U.S. Cl. D20—40



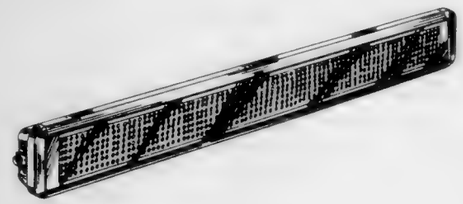
350,776
VERTICAL HOLDER FOR PAPER INSERTS
Robert A. Noreika, Rocky Hill, Conn., assignor to Gastro-Gnomes, Inc., West Hartford, Conn.
Filed Mar. 30, 1993, Ser. No. 6,465
Term of patent 14 years
U.S. Cl. D20—40



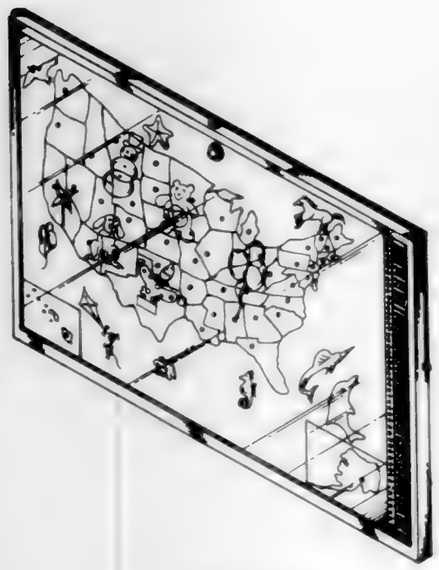
350,777
VERTICAL HOLDER FOR PAPER INSERTS
Carolann Dvorak, Simsbury, Conn., assignor to Gastro-Gnomes, Inc., West Hartford, Conn.
Filed May 11, 1993, Ser. No. 8,201
Term of patent 14 years
U.S. Cl. D20—40



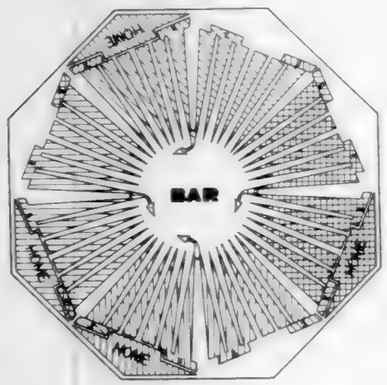
350,778
ILLUMINABLE CHANGING EXHIBITOR MESSAGE SIGN
Andy K. F. Kaoh, 17020 Nectarine St., Fountain Valley, Calif. 29708
Filed Dec. 3, 1993, Ser. No. 16,001
Term of patent 14 years
U.S. Cl. D20—42



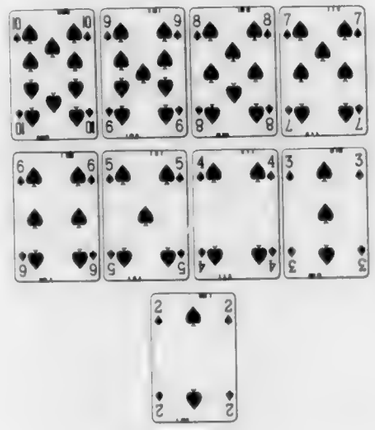
350,779
STATE CAPITAL LEARNING GAME
Alton E. Bice, 8719-C SW 92 Ln., Ocala, Fla. 32676
Filed Feb. 20, 1992, Ser. No. 837,418
Term of patent 14 years
U.S. Cl. D21—31



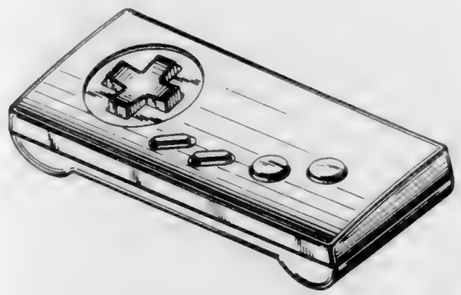
350,780
GAME BOARD
Frank W. Giambrone, 15812 Joyce La., Laurel, Md. 20707
Filed Jul. 6, 1993, Ser. No. 10,273
Term of patent 14 years
U.S. Cl. D21—36



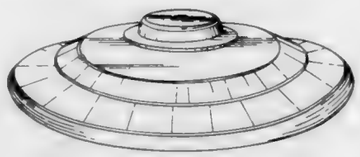
350,781
DECK OF CODED PLAYING CARDS FOR THE CARD GAME OF BRIDGE
Per Jannersten, Krylbo, Sweden, assignor to Jannersten Förlag AB, Avesta, Sweden
Filed Dec. 26, 1991, Ser. No. 813,424
Term of patent 14 years
U.S. Cl. D21—45



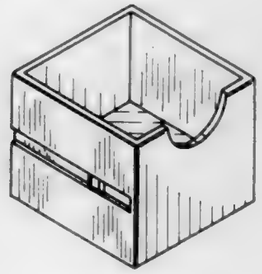
350,782
CONTROLLER FOR VIDEO GAME MACHINE
Lance Barr, Renton, Wash., assignor to Nintendo of America Inc., Redmond, Wash.
Filed May 24, 1993, Ser. No. 8,632
Term of patent 14 years
U.S. Cl. D21—48



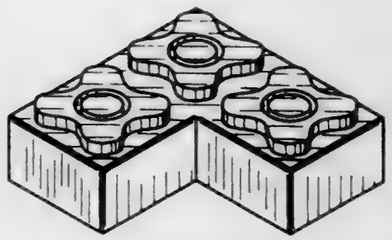
350,783
LIGHTED FLYING DISK
Jerry R. Bacon, 405 W. Kentucky Ave., LaFollette, Tenn. 37766
Filed Jun. 10, 1993, Ser. No. 9,366
Term of patent 14 years
U.S. Cl. D21—86



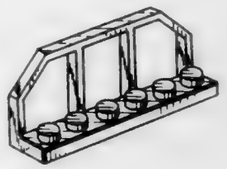
350,784
ELEMENT FOR A TOY BUILDING SET
Lotte M. Nielsen, Copenhagen, and Berit Holmstrom, Gadstrup, both of Denmark, assignors to Interlego, A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,265
Term of patent 14 years
U.S. Cl. D21—108



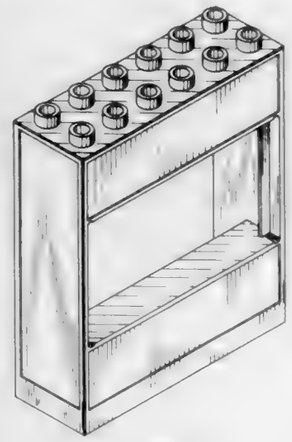
350,785
BUILDING ELEMENT FOR A TOY BUILDING SET
Philip M. Kushner, Greve Strand; Kenn Rasmussen, Valby, and Niels Ohrwald, Espergarde, all of Denmark, assignors to Interlego, A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,267
Term of patent 14 years
U.S. Cl. D21—108



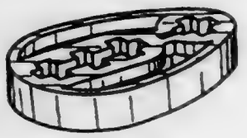
350,786
ELEMENT FOR A TOY BUILDING SET
Torben Plagborg, Grindsted, and Bjarne J. Larsen, Ringkobing, both of Denmark, assignors to Interlego, A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,279
Term of patent 14 years
U.S. Cl. D21—108



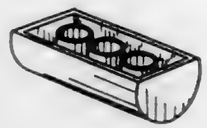
350,787
ELEMENT FOR A TOY BUILDING SET
Charlotte K. H. Hojlund, Virum, and Berit Holmstrom, Gadstrup, both of Denmark, assignors to Interlego, A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,281
Term of patent 14 years
U.S. Cl. D21—108



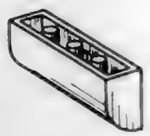
350,788
ELEMENT FOR A TOY BUILDING SET
Erik Bach, and Hans Madsen, both of Billund, Denmark, assignors to Interlego, A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,284
Term of patent 14 years
U.S. Cl. D21—108



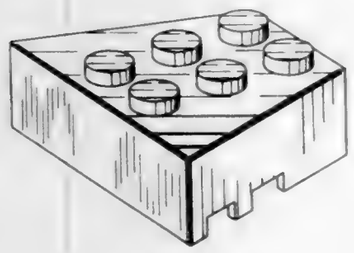
350,789
ELEMENT FOR A TOY BUILDING SET
Jan Ryna, Billund, and Lene Köhler, Jelling, both of Denmark, assignors to Interlego, A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,286
Term of patent 14 years
U.S. Cl. D21—108



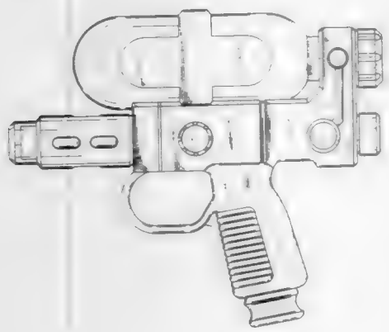
350,790
ELEMENT FOR A TOY BUILDING SET
Jan Ryaa, Billund, and Lene Köhler, Jelling, both of Denmark, assignors to Interlego, A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,287
Term of patent 14 years
U.S. Cl. D21—108



350,791
ELEMENT FOR A TOY BUILDING SET
Arne Refsing, Billund, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,326
Term of patent 14 years
U.S. Cl. D21—108



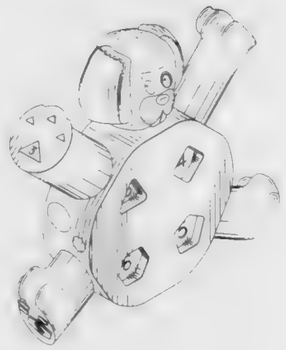
350,792
SINGLE TANK WATER PISTOL
Frank Caminos, 124 Christie St., Leonia, N.J. 07605, and Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Sta., N.J. 08889
Filed Jul. 2, 1993, Ser. No. 10,388
Term of patent 14 years
U.S. Cl. D21—147



350,793
TOY PANDA FIGURE
Jay M. Bro, and Philip M. Baerenwald, both of Plano, Tex., assignors to Today's Kids, Inc., Booneville, Ark.
Filed Feb. 5, 1993, Ser. No. 4,446
Term of patent 14 years
U.S. Cl. D21—159



350,794
TOY PUPPY FIGURE
Jay M. Bro, and Philip M. Baerenwald, both of Plano, Tex., assignors to Today's Kids, Inc., Booneville, Ark.
Filed Feb. 5, 1993, Ser. No. 4,448
Term of patent 14 years
U.S. Cl. D21—161



350,795
PHYSICAL EXERCISER
Charles L. Barbour, 1618 Trailridge Rd., Charlottesville, Va. 22903
Filed Jun. 8, 1993, Ser. No. 9,203
Term of patent 14 years
U.S. Cl. D21—191



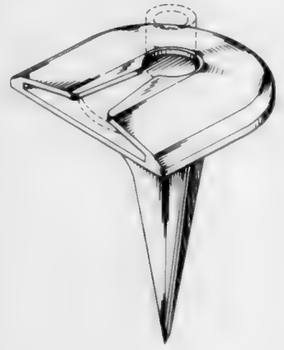
350,796
GYROSCOPIC EXERCISER
Kenneth L. Pravitz, 51 E. Grand Blvd., Corona, Calif. 91719
Filed Mar. 11, 1993, Ser. No. 5,817
Term of patent 14 years
U.S. Cl. D21—198



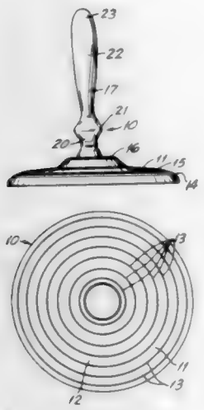
350,797
BASKETBALL GOAL
Bobby L. Curtis, 1415 Jill La., Excelsior Springs, Mo. 64024
Filed Sep. 21, 1992, Ser. No. 948,876
Term of patent 14 years
U.S. Cl. D21—201



350,798
GOLF TEE HOLDER
Stephen J. Luther, 6164 27th St., Sacramento, Calif. 95822
Filed Apr. 5, 1993, Ser. No. 6,688
Term of patent 14 years
U.S. Cl. D21—208



350,799
GAME BAT
Nandor Kaity, Queensland, Australia, assignor to Artur Maros, New South Wales, Australia
Filed Feb. 10, 1993, Ser. No. 4,651
Claims priority, application Australia, Aug. 11, 1992, 2180/92
Term of patent 14 years
U.S. Cl. D21—211



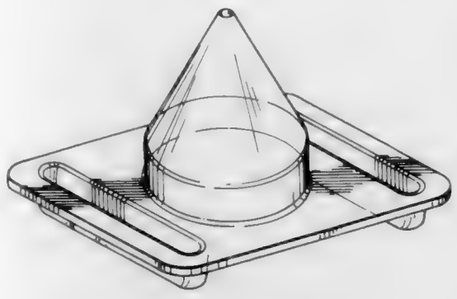
350,800
IRON-TYPE GOLF CLUBHEAD
Dean Ota, Irvine, Calif., assignor to Bost Enterprises, Inc., Westport, Conn.
Filed Oct. 18, 1991, Ser. No. 781,024
Term of patent 14 years
U.S. Cl. D21—220



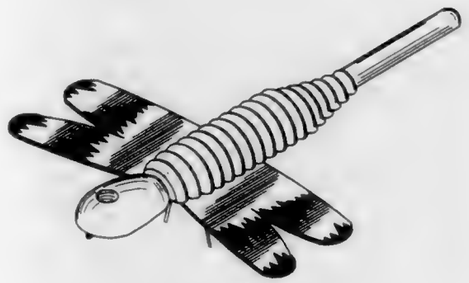
350,801
SWIMMING FIN
Enzo Dagnino, Genova, Italy, assignor to Cressi Sub S.P.A., Genova, Italy
Filed Mar. 1, 1993, Ser. No. 5,330
Claims priority, application Italy, Sep. 2, 1992, FI/92/0/42
Term of patent 14 years
U.S. Cl. D21—239



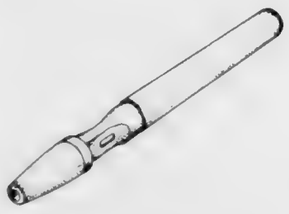
350,802
FLY CATCHER
Phil L. Herbert, 685 W. 1600, N. Mapleton, Utah 84664
Filed May 18, 1993, Ser. No. 8,448
Term of patent 14 years
U.S. Cl. D22—122



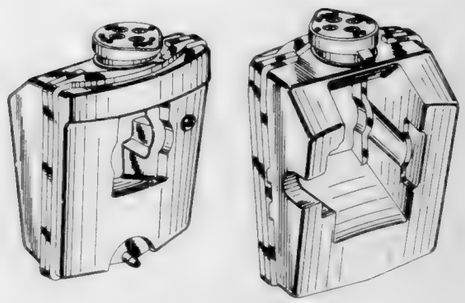
350,803
FISHING LURE
Walter N. Koss, Jr., 2158 Garwood Rd., Erial, N.J. 08081
Filed Jan. 21, 1993, Ser. No. 3,911
Term of patent 14 years
U.S. Cl. D22—132



350,804
HANDLE FOR FISHING RODS
Bo Kook Park, Busan, Rep. of Korea, assignor to Silver Star Co., Ltd., Busan, Rep. of Korea
Filed Jul. 29, 1992, Ser. No. 922,072
Term of patent 14 years
U.S. Cl. D22—142



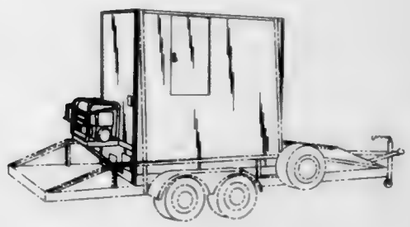
350,805
TANK FOR A PRESSURE WASHER
Robert C. Berfield, Jersey Shore, Pa., assignor to Shop Vac Corporation, Williamsport, Pa.
Filed Aug. 18, 1992, Ser. No. 932,015
Term of patent 14 years
U.S. Cl. D23—202



350,806
GASOLINE CONTAINER
Clinton T. Cooper, Canfield, Ohio, assignor to SAFE-T-WAY, Canfield, Ohio
Filed Apr. 23, 1992, Ser. No. 872,391
Term of patent 14 years
U.S. Cl. D23—205



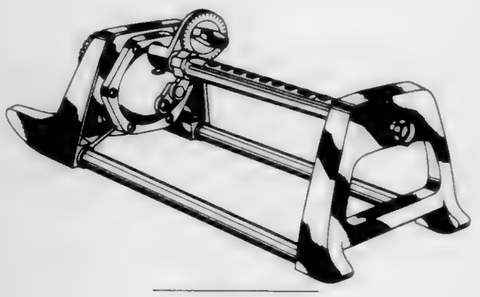
350,807
ENCLOSED TRANSPORTABLE WATER PURIFICATION APPARATUS
Clark D. Michels, O'Fallon, Mo., assignor to Michels & Michels, Inc., O'Fallon, Mo.
Filed May 14, 1992, Ser. No. 883,254
Term of patent 14 years
U.S. Cl. D23—207



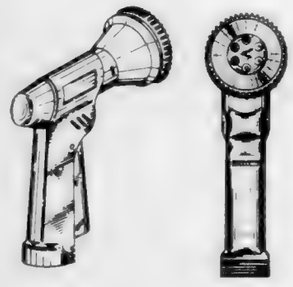
350,808
SHOWER HEAD FACE
Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to I.W. Industries, Inc., Melville, N.Y.
Filed Nov. 27, 1992, Ser. No. 1,987
Term of patent 14 years
U.S. Cl. D23—213



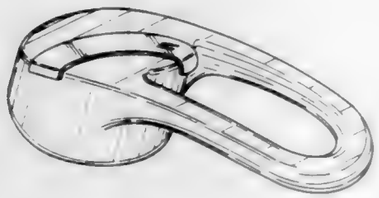
350,809
OSCILLATING SPRINKLER
Paul C. Aquilina, Kitchener, Canada, assignor to Hunter Fan Company, Memphis, Tenn.
Filed Apr. 1, 1992, Ser. No. 862,246
Term of patent 14 years
U.S. Cl. D23—216



350,810
WATER SPRAY GUN
E-Shun Chih, No. 5, Tian-Yang Section, Lu-Gung Town, Chang-Hau Hsien, Taiwan
Filed Mar. 31, 1993, Ser. No. 6,502
Term of patent 14 years
U.S. Cl. D23—223



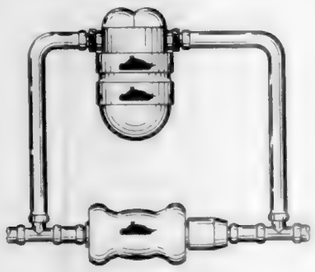
350,811
FAUCET HANDLE
Adolf Gottwald, Iserlohn, Fed. Rep. of Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Fed. Rep. of Germany
Filed May 13, 1992, Ser. No. 882,316
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1991, M9108292.7
The portion of the term of this patent subsequent to Sep. 13, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—252



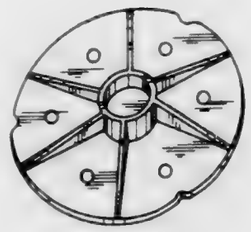
350,812
FAUCET SPOUT
Paul P. Kolada, Bexley; Michael J. Painter, Delaware, and Terry Birchler, Westerville, all of Ohio, assignors to Moen Incorporated, Elyria, Ohio
Division of Ser. No. 854,967, Mar. 20, 1992. This application Jan. 18, 1994, Ser. No. 17,616
Term of patent 14 years
U.S. Cl. D23—255



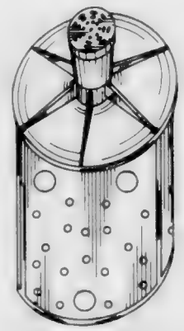
350,813
BOAT FUEL DELIVERY APPARATUS
Michael C. Yarbrough, 205 Timber Creek, Kemp, Tex. 75143
Filed Mar. 19, 1992, Ser. No. 854,058
Term of patent 14 years
U.S. Cl. D23—259



350,814
DRYWELL COVER
Thomas Florence, Centerville, Mass., assignor to Owl 1990 Trust, Hyannis, Mass.
Continuation-in-part of Ser. No. 661,464, Feb. 26, 1991, Pat. No. 5,131,196. This application Jun. 16, 1992, Ser. No. 900,095
Term of patent 14 years
U.S. Cl. D23—260



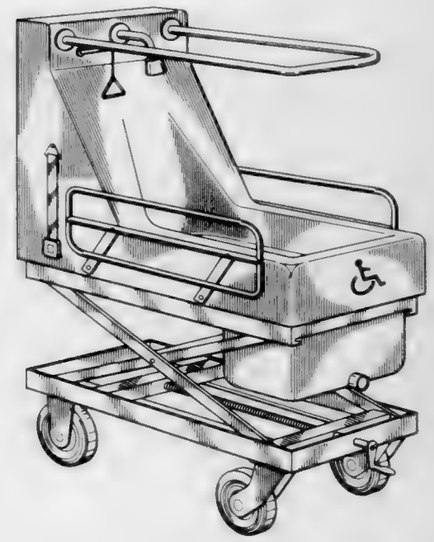
350,815
COMBINED DRYWELL AND STORM DRAIN
Thomas Florence, Centerville, Mass., assignor to Owl 1990 Trust, Hyannis, Mass.
Continuation-in-part of Ser. No. 661,464, Feb. 26, 1991, Pat. No. 5,131,196, which is a continuation-in-part of Ser. No. 619,115, Nov. 28, 1990, Pat. No. 5,086,594. This application Jun. 16, 1992, Ser. No. 900,096
Term of patent 14 years
U.S. Cl. D23—260



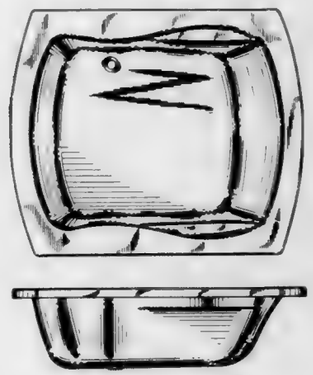
350,816
COMBINED DRYWELL COVER AND DRAIN INSERT
Thomas Florence, Centerville, Mass., assignor to Owl 1990 Trust, Hyannis, Mass.
Continuation-in-part of Ser. No. 661,464, Feb. 26, 1991, Pat. No. 5,131,196. This application Jun. 16, 1992, Ser. No. 900,100
Term of patent 14 years
U.S. Cl. D23—260



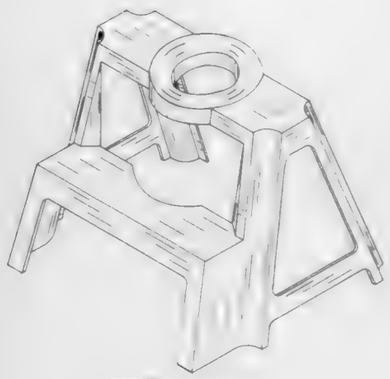
350,817
PORTABLE BATHING TUB FOR INVALIDS
Alyce G. Rathburn, 343 Unity Ave., No. 2, Athol, Mass. 01331-1543
Filed Dec. 28, 1992, Ser. No. 3,089
Term of patent 14 years
U.S. Cl. D23—277



350,818
BATHTUB
Robin H. Levien, London, England, assignor to American Standard Inc., New York, N.Y.
Division of Ser. No. 738,939, Aug. 1, 1991, Pat. No. Des. 346,648, which is a continuation-in-part of Ser. No. 554,031, Jul. 17, 1990, Pat. No. Des. 330,934. This application Dec. 20, 1993, Ser. No. 16,591
Term of patent 14 years
U.S. Cl. D23—277



350,819
TOILET TRAINING SEAT FOR INFANTS
Michael C. Laroue, 931 S. Ford Blvd., Los Angeles, Calif. 90022
Filed Jun. 21, 1993, Ser. No. 9,682
Term of patent 14 years
U.S. Cl. D23—296



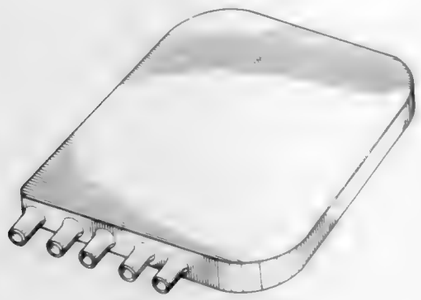
350,820
TOILET
Tony Chiu, 6th Fl., No. 18, Lane 588, Pei-An Rd., Taipei City, Taiwan
Filed May 6, 1993, Ser. No. 7,984
Term of patent 14 years
U.S. Cl. D23—301



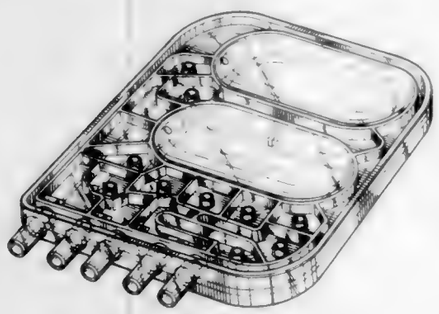
350,821
ORAL INHALER
David J. Wright, Epsom, and Timothy J. Grattan, Weybridge, both of England, assignors to SmithKline Beecham p.l.c., Brentford, United Kingdom
Filed May 15, 1992, Ser. No. 884,541
Claims priority, application United Kingdom, Nov. 18, 1991, 2019036
Term of patent 14 years
U.S. Cl. D24—110



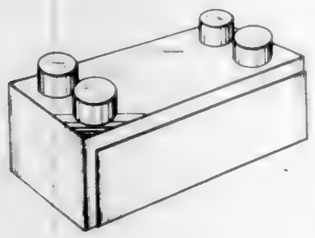
350,822
DISPOSABLE PARENTERAL-FLUID CASSETTE
Richard J. Lanigan, Concord, N.H., assignor to Deka Products Limited Partnership, Manchester, N.H.
Filed Feb. 24, 1993, Ser. No. 5,148
Term of patent 14 years
U.S. Cl. D24—111



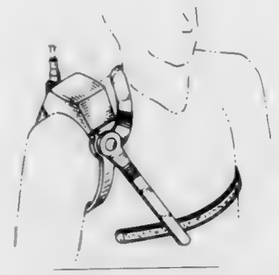
350,823
RIGID PORTION OF DISPOSABLE PARENTERAL-FLUID CASSETTE
Richard J. Lanigan, Concord, N.H., assignor to Deka Products Limited Partnership, Manchester, N.H.
Filed Feb. 24, 1993, Ser. No. 5,155
Term of patent 14 years
U.S. Cl. D24—111



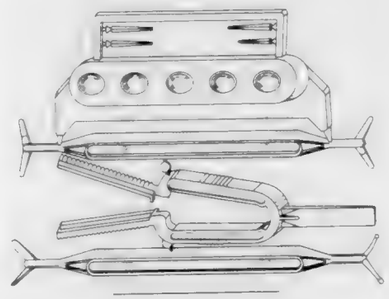
350,824
LANDSCAPING BRICK
James N. Perrin, Jr., Pelican Rapids, Minn., assignor to F & M Plastics, Fergus Falls, Minn.
Filed Feb. 7, 1992, Ser. No. 832,489
Term of patent 14 years
U.S. Cl. D25—113



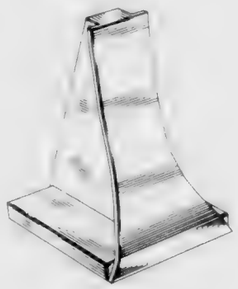
350,825
HOUSING WITH STRAPS FOR A SHOULDER COIL FOR A MAGNETIC RESONANCE IMAGING DEVICE
Milton C. Lee, Daly City, Calif., assignor to Toshiba America MRI, Inc., San Francisco, Calif.
Filed Mar. 30, 1992, Ser. No. 860,363
Term of patent 14 years
U.S. Cl. D24—158



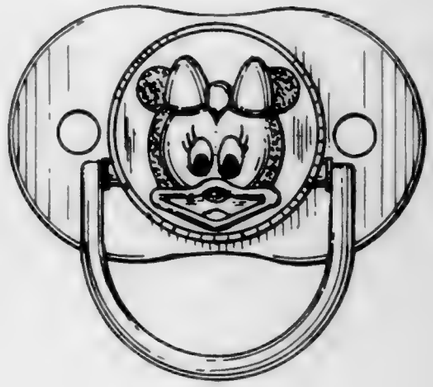
350,826
DISPOSABLE DENTAL INSTRUMENT KIT
Rily Young, and James Shen, both of 18751 Beach Blvd., Huntington Beach, Calif. 94628
Filed Jul. 2, 1991, Ser. No. 724,967
The portion of the term of this patent subsequent to Aug. 20, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—176



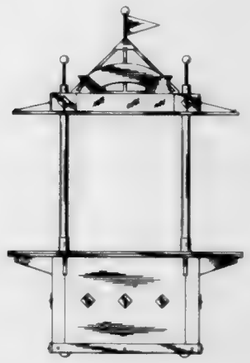
350,827
COMBINED DISPOSABLE EMERGENCY UPPER CERVICAL AND HEAD IMMOBILIZER
Leslie J. Alderson, 5155 Shoemake, and Barry L. Hickerson, 2508 Walnut Park Dr., both of Modesto, Calif. 95358
Filed Jan. 19, 1993, Ser. No. 3,748
Term of patent 14 years
U.S. Cl. D24—191



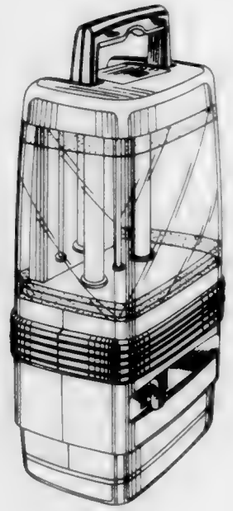
350,828
PACIFIER
Meredith Spence, Jr., Cuyahoga Falls, and James J. Keane, Aurora, both of Ohio, assignors to Lisco, Inc., Tampa, Fla.
Filed Jul. 24, 1992, Ser. No. 919,116
Term of patent 14 years
U.S. Cl. D24—195



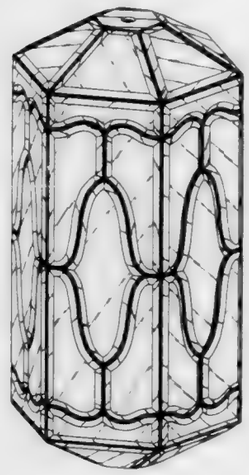
350,829
KIOSK
Tony L. Horton, Dallas, Tex., assignor to T L Horton Design, Inc., Dallas, Tex.
Filed Jan. 28, 1993, Ser. No. 4,172
Term of patent 14 years
U.S. Cl. D25—16



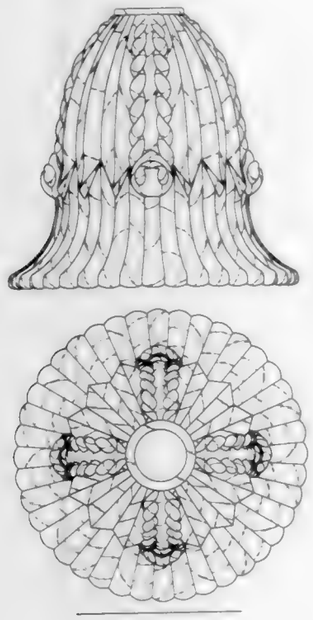
350,830
LANTERN WITH SLIDABLE SHUTTER
David J. Bamber, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.
Filed Jan. 28, 1993, Ser. No. 4,165
Term of patent 14 years
U.S. Cl. D26—42



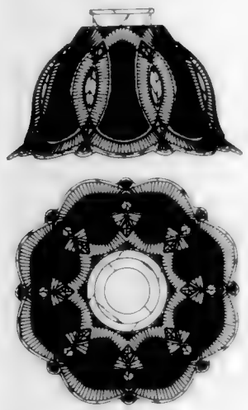
350,831
LIGHTING FIXTURE SHADE
David H. Porter, Chagrin Falls, Ohio, assignor to The L.D. Kichler Co., Cleveland, Ohio
Filed May 14, 1993, Ser. No. 8,467
Term of patent 14 years
U.S. Cl. D26—130



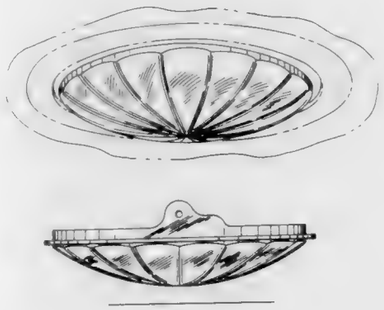
350,832
GLASS SHADE
David H. Porter, Chagrin Falls, Ohio, assignor to The L.D. Kichler Co., Cleveland, Ohio
Filed May 14, 1993, Ser. No. 8,523
Term of patent 14 years
U.S. Cl. D26—133



350,833
GLASS LAMP SHADE
Richard Hammar, Cleveland, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed Jun. 28, 1993, Ser. No. 9,822
Term of patent 14 years
U.S. Cl. D26—133



350,834
TRANSLUCENT FLUTED LENS FOR RECESSED LIGHTING TRIM
Scott L. Roos, Glenview, Ill., and Kevin Von Kluck, Hudson, Ohio, assignors to Juno Lighting, Inc., Des Plaines, Ill.
Filed Oct. 2, 1992, Ser. No. 57
Term of patent 14 years
U.S. Cl. D26—134



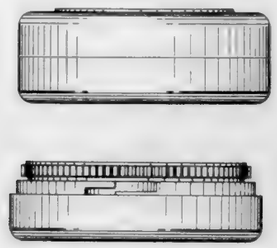
350,835
COMB HANDLE
Huo-Piao Wang, No. 9-2, An-Tou Lane,, Yen-Peng Li, Changhua City, Taiwan
Filed Jan. 15, 1993, Ser. No. 3,723
Term of patent 14 years
U.S. Cl. D28—34



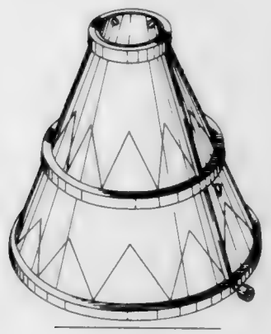
350,836
MAKEUP CASE
Alain Chevassus, Sceaux, France, assignor to Societe Techpack International (S.A.), Parigne L'Eveque, France
Filed Jan. 31, 1991, Ser. No. 648,367
Claims priority, application France, Jul. 31, 1990, 90 4969
Term of patent 14 years
U.S. Cl. D28—76



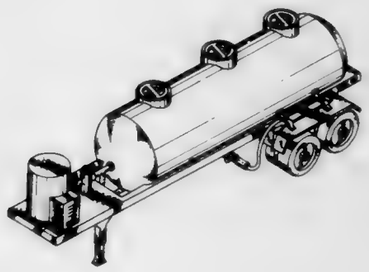
350,837
COSMETIC POWDER COMPACT
Lynelle Kirby, New York, N.Y., assignor to Avon Products, Inc., New York, N.Y.
Filed Sep. 23, 1991, Ser. No. 764,389
Term of patent 14 years
U.S. Cl. D28—82



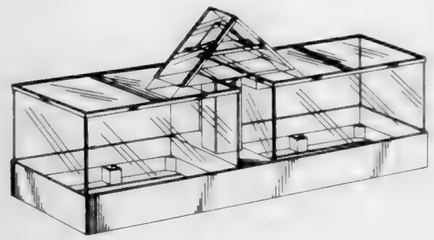
350,838
OIL FIRE EXTINGUISHING CONE
Howard Johnson, 819 SW. 50th St., Lawton, Okla. 73505
Filed Feb. 21, 1992, Ser. No. 838,006
Term of patent 14 years
U.S. Cl. D29—125



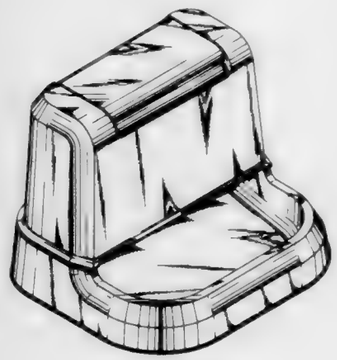
350,839
FOREST FIRE EXTINGUISHER
Edmundo P. Ledesma, Valle De Lerma No. 704, Celaya, Guanajuato, Mexico 38060
Filed Jul. 20, 1992, Ser. No. 914,697
Term of patent 14 years
U.S. Cl. D29—125



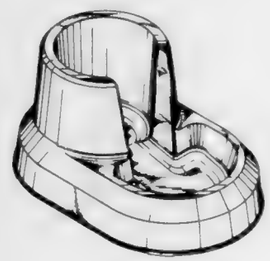
350,840
FISH AQUARIUM
Larry Carlisle, P.O. Box 573, Big Bear City, Calif. 92314
Filed Mar. 2, 1993, Ser. No. 5,401
Term of patent 14 years
U.S. Cl. D30—101



350,841
PET FEEDER
Ralph VanSkiver, Arlington, Tex., assignor to Doskocil Manufacturing Company, Inc., Arlington, Tex.
Filed Jun. 1, 1993, Ser. No. 9,014
Term of patent 14 years
U.S. Cl. D30—121



350,842
PET WATERER
Ralph VanSkiver, Arlington, Tex., assignor to Doskocil Manufacturing Company, Inc., Arlington, Tex.
Filed Mar. 30, 1993, Ser. No. 6,474
Term of patent 14 years
U.S. Cl. D30—121



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF SEPTEMBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aaton: *See*—
Beauviala, Jean-Pierre, 5,349,411, Cl. 354-295.000.

AB Volvo: *See*—
Haland, Yngve; and Pilhall, Stig, 5,348,342, Cl. 280-730.00A

ABB Carbon AB: *See*—
Kemmer, Leif; and Nilsson, Karl J., 5,347,814, Cl. 60-676.000.

ABB Power T&D Company Inc.: *See*—
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ABB Stal AB: *See*—
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Abbott, Christopher E.; and Mushrush, Glenn T. Pivotal and adjustable closure vertical rail louver system. 5,347,756, Cl. 49-74.100.

Abbott Laboratories: *See*—
Ogden, John E.; Bryant, Peter L.; and Caron, Lois L., 5,347,847, Cl. 73-37.000.

Abe, Mitsuhiro; Itsuto, Nakanishi; Hideho, Ariyoshi; and Iguchi, Asao, to Matsushita Electric Industrial Co., Ltd. Mold tool assembly. 5,349,136, Cl. 174-52.200.

Abe, Tsutomu: *See*—
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Abe, Yuzuru: *See*—
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Abou-Jaoude, Fadi: *See*—
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Abrahamson, Timothy A.: *See*—
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Abrams, Martin. Portable, collapsible luggage carrier. 5,348,325, Cl. 280-40.000.

Abreu, Rene, to Hughes Aircraft Company. System and method for sensing attitude of a spacecraft with equilized star tracker errors along three orthogonal axes. 5,348,255, Cl. 244-171.000.

Absil, Robert P. L.; and Herbst, Joseph A., to Mobil Oil Corp. Catalytic conversion with improved catalyst. 5,348,643, Cl. 208-114.000.

ABT, Inc.: *See*—
Stegall, Lannie L., 5,348,421, Cl. 405-119.000.

Abul-Haj, Roxanne E.; and Norman, Jacob J., to Minnesota Mining and Manufacturing Company. Calibration system and method for making. 5,348,706, Cl. 422-100.000.

Abumrad, Naji N.: *See*—
Nissen, Steven L.; Flakoll, Paul J.; and Abumrad, Naji N., 5,348,979, Cl. 514-557.000.

Accomo, Roger: *See*—
Molva, Engin; Accomo, Roger; Feuillet, Guy; Cibert, Joel; Le Si, Dang; and Bodin-Deshayes, Claire, 5,349,596, Cl. 372-43.000.

Acedo, Rafael M. Mortar spreading apparatus for the laying of bricks. 5,348,204, Cl. 222-611.100.

Acer Peripherals, Inc.: *See*—
Fan Chiang, Yung F.; and Lee, Kun M., 5,349,387, Cl. 348-525.000.

Acevedo, Rodolfo J., to Hughes Aircraft Company. Movable supporting arm. 5,348,260, Cl. 248-280.100.

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Actron Entwicklungs Ag: *See*—
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Adachi, Hisahiro: *See*—
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Adam, Gabriel H.: *See*—
Kasbo, Loyd G., deceased; Cotton, James D.; Morman, Michael T.; and Adam, Gabriel H., 5,347,950, Cl. 119-171.000.

Adams, Brian M.; Luch, Daniel; and Chenault, Rawson, to Portola Packaging, Inc. Unitary tamper-evident fitment and closure assembly. 5,348,184, Cl. 220-266.000.

Adams, Brian M.: *See*—
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Adams, John M.; Alferness, Clifton A.; and Infinger, Kenneth R., to InControl, Inc. Apparatus and method for reliably detecting a depolarization activation wave of the heart and atrial defibrillator utilizing same. 5,348,021, Cl. 128-708.000.

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Adir et Compagnie: *See*—
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Aerospatiale Societe Nationale Industrielle: *See*—
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Ahl-Goy, Patricia A.: *See*—
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Ahmad, Kaleem: *See*—
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Ahnell, Edward E.; and Curry, Ernest W., to Besst Frozen Products, Inc. Food processing apparatus and method. 5,348,753, Cl. 426-231.000.

Aikawa, Haruhiko; Nagayama, Katsuya; Ishiguro, Yoichi; Yoshimura, Ichiro; Katsuyama, Yutaka; and Yoshizawa, Nobuyuki, to Sumitomo Electric Industries, Ltd.; and Nippon Telegraph and Telephone Corporation. Method for manufacturing a hermetically coated optical fiber. 5,348,564, Cl. 65-413.000.

Aiolfi, Franco: *See—*
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Air America: *See—*
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Air Products and Chemicals, Inc.: *See—*
Bowe, Donald J.; Bonner, Brian B.; and Garg, Diwakar, 5,348,593, Cl. 148-208.000.
Furlan, Wayne R., 5,349,009, Cl. 524-563.000.
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AirTouch Communications: *See—*
Lee, William C., 5,349,631, Cl. 379-59.000.

Aisan Kogyo Kabushiki Kaisha: *See—*
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Aisin A W Kabushiki Kaisha: *See—*
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Akahira, Nobuo: *See—*
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Akama, Hiroyuki: *See—*
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Akashi, Goro: *See—*
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Akashi, Yasutaka: *See—*
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Akatani, Akiko: *See—*
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Akebono Brake Industry Co., Ltd.: *See—*
Takahashi, Kimio; Miyake, Katsuya; Kunimi, Takashi; Ogawahara, Tatsuo; Kobayashi, Tadashi; and Fukaya, Kunio, 5,348,123, Cl. 188-72.100.

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Nilsson, Dan; and Donnerdal, Ove, 5,347,812, Cl. 60-494.000.

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Brand, Johannes; and Brouwer, Wilfridus M., 5,349,035, Cl. 526-284.000.
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Ploumen, Jan J. H.; and Thomas, Christiane, 5,348,695, Cl. 264-42.000.

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Schultz, Horst, 5,348,187, Cl. 220-752.000

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Arnold, Phillip A.; Anderson, Andrew T.; and Alger, Terry W., 5,349,594, Cl. 372-62.000.

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Walters, Mark A., 5,348,728, Cl. 424-7.100.

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Golecki, Ilan; Morris, Robert C.; and Narasimhan, Dave, 5,348,774, Cl. 427-543.000.
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Fulkerson, Gregory M.; and Allrich, Melvin, 5,348,135, Cl. 198-419.300.

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Ohtomo, Naoki; and Kimura, Shigeo, 5,348,009, Cl. 128-653.100.

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Patel, Rakesh H., 5,349,255, Cl. 307-593.000.

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McDonnell, Michael P.; and Althoff, Johannes J. W., 5,347,770, Cl. 52-108.000

Altman, Kenneth A.: *See—*
Feldstein, David A.; and Altman, Kenneth A., 5,347,987, Cl. 128-4.000

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Misra, Chanakya; and Perrotta, Anthony J., 5,348,725, Cl. 423-594.000.
Parker, Anthony A.; Anderson, Edward M.; and Stanzione, Todd T., 5,348,760, Cl. 427-9.000.

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Dong, Liang C.; Dealey, Michael H.; Burkoth, Terry L.; Wong, Patrick S. L.; Childers, Jerry D.; and Barclay, Brian L., 5,348,746, Cl. 424-473.000.

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Ito, Masaoki, 5,347,898, Cl. 83-27.000.

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Takeda, Kimihito; Hirakawa, Hideki; Adachi, Hisahiro; and Amano, Shinya, 5,349,368, Cl. 345-115.000.

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McKinlay, Peter R.; and Shaw, Neil W., 5,348,610, Cl. 156-472.000.

Amemiya, Kensuke; Hakamata, Yoshimi; Tokiguchi, Katsumi; and Sakudo, Noriyuki, to Hitachi, Ltd. Ion implanting apparatus. 5,349,196, Cl. 250-492.210.

American Cyanamid Company: *See—*
Patel, Bomi P., 5,348,947, Cl. 514-64.000.
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Sheth, Nitin V.; Valorose, Joseph J., Jr.; Ellway, Keith A.; Ganesan, MaduraiGurusamy; Mooney, Kieran G.; and Johnson, Jerry B., 5,348,748, Cl. 424-494.000.
Sterling, Michael; and Critzer, Susan, 5,348,146, Cl. 206-63.300.

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Bianco, Giustino, 5,348,747, Cl. 424-490.000.
Kao, Wenling; and Vogel, Robert L., 5,349,060, Cl. 540-456.000.

American Registration Systems, Inc.: *See—*
Rousseff, Christ M.; and Wallace, George E., 5,349,534, Cl. 364-479.000.

American Safety Flight Systems, Inc.: *See—*
Danon, Joseph S., 5,348,001, Cl. 128-205.240

American Safety Razor Company: *See—*
Prochaska, Frank H., 5,347,714, Cl. 30-41.500.

American Standard Inc.: *See—*
Oltman, Robert L.; and Carey, Michael D., 5,347,821, Cl. 62-84.000.

American Sterilizer Company: *See—*
Buckner, Charles A., III; and Leonard, Stephen B., 5,348,185, Cl. 220-326.000.

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Chappell, Joseph; Saunders, Court A.; and Wolf, Fred R., 5,349,126, Cl. 800-205.000.
Kukes, Simon G.; Hopkins, P. Donald; Olleandorff, Riitta L. A.; Hendler, Pablo D.; Ontiveros, Cynthia D.; and Washecheck, Don M., 5,348,928, Cl. 502-306.000.

Amor, William H.: *See—*
DeMeester, Gordon D.; Morich, Michael A.; and Amor, William H., 5,349,297, Cl. 324-318.000.

Amper, S.A.: *See—*
Martin, Emilio B., 5,347,924, Cl. 101-91.000.

Ampex Systems Corporation: *See—*
Varian, George R., 5,349,611, Cl. 375-115.000.

Amway Corporation: *See—*
Mulry, Patrick E.; Kool, Dennis J.; Tybergheln, Mike B.; Gura, Donald S.; and Plyler, Jeffrey D., 5,347,865, Cl. 73-427.000.

An, Seong-Wan, to SamSung Electronics Co., Ltd. Method of automatically cooking food by detecting the amount of gas or smoke being exhausted from a cooking device during cooking. 5,349,163, Cl. 219-492.000.

Anagnostopoulos, Constantine N.; Chang, Win-Chyi; Stevens, Eric G.; and Torok, Georgia R., to Eastman Kodak Company. Antiblooming structure for solid-state image sensor. 5,349,215, Cl. 257-223.000.

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Bonderman, Ruby P., 5,348,852, Cl. 435-4.000.

Andersen, Knud E.; Knutsen, Lars J. S.; Sorensen, Per O.; Lundt, Behrend F.; Lau, Jesper; and Petersen, Hans, to Novo Nordisk A/S. N-substituted azaheterocyclic carboxylic acids. 5,348,965, Cl. 514-325.000.

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Anderson, Barbara J., to PPG Industries, Inc. Amine-free internal antistatic agent. 5,348,995, Cl. 524-157.000.

Anderson-Cook Incorporated: *See—*
Everlove, Craig; and Garden, Dale J., 5,347,704, Cl. 29-563.000.

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Dushane, Steven D.; Anderson, Kenneth K.; Bohm, Grant E.; and Simoni, Wayne, 5,348,078, Cl. 165-22.000.

Ando, Fumitaka, to Mazda Motor Corporation. Automobile suspension. 5,348,337, Cl. 280-672.000.

Ando, Hideo, to Kabushiki Kaisha Toshiba. Super-resolution optical element for use in image forming apparatus. 5,349,592, Cl. 372-32.000.

Ando, Koichi, to NEC Corporation. Semiconductor device with capacitor insulating film and method for fabricating the same. 5,349,494, Cl. 361-322.000.

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Daeumer, Bernd; Dragon, Andree; Beckerle, Wilhelm F.; Franzmann, Gernot; Neutzner, Josef; Wistuba, Eckehardt; Pakusch, Joachim; and Angel, Maximilian, 5,348,993, Cl. 524-44.000.

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Antonini, Joseph, to Dana Corporation. Seals with indicia and method of molding seals with indicia to allow inspection after trimming. 5,348,314, Cl. 277-152.000.

Aoki, Katsuji: *See—*
Miyaoh, Yoshio; and Aoki, Katsuji, 5,348,311, Cl. 277-9.000.

Aoki, Masahiro: *See—*
Kato, Yoshinori; Hayashi, Ryutaro; Tsukamoto, Takeo; and Aoki, Masahiro, 5,348,997, Cl. 524-189.000

Aoki, Nobuaki: *See—*
Nomura, Hiroshi; Sato, Norio; and Aoki, Nobuaki, 5,349,408, Cl. 354-195.100
Nomura, Hiroshi; Sato, Norio; and Aoki, Nobuaki, 5,349,475, Cl. 359-694.000.

AOS Holding Company: *See—*
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Aoyama, Motoo: *See—*
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Appl, Richard C.: *See—*
Fuisz, Richard C.; Battist, Gerald E.; Appl, Richard C.; and Richards, Anthony P., 5,348,758, Cl. 426-660.000.

Apple Computer, Inc.: *See—*
Miller, Wayne H.; Helm, Bradley C.; Lee, Wayman M.; Lathrop, Braxton L.; Melton, Jimmy A.; and Chapman, Robert D., 5,349,132, Cl. 174-35.00R.
Moulton, James I., 5,348,356, Cl. 292-80.000.

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Collins, Kenneth S.; and Trow, John R., 5,349,313, Cl. 333-131.000.

Applied Magnetics Corporation: *See—*
Prikryl, Ivan, 5,349,175, Cl. 250-201.500.

Applied Materials, Inc.: *See—*
Nitescu, Petru N., 5,348,497, Cl. 439-824.000.

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Moehring, Mark A.; Curry, Mark A.; Spencer, Merrill P.; and Klepper, John R., 5,348,015, Cl. 128-661.070.

Aqua-Chem, Inc.: *See—*
Carlson, Timothy J.; Geiger, Richard D.; Karls, Gerald A.; and Meysembourg, Bruce A., 5,348,651, Cl. 210-321.600.

Arai, Hajime: *See—*
Murata, Kiyohito; Shindo, Yoshio; and Arai, Hajime, 5,348,127, Cl. 192-3.300.

Arai, Kazuhiko; Teshigawara, Toru; and Sagara, Toshiaki, to Fuji Xerox Co., Ltd. Color image forming device to prevent color shifting. 5,349,374, Cl. 346-108.000.

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Yoshioka, Kiyoharu; and Arai, Koji, 5,349,450, Cl. 358-500.000.

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Shishikura, Akihiro; Kimbara, Hiroshi; Yamaguchi, Katsuhisa; and Arai, Kunio, 5,349,084, Cl. 562-580.000

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ARES Corporation: *See—*
McLain, Clifford E., 5,348,178, Cl. 220-88.100.

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Mochizuki, Hidehiro; Ariga, Yutaka; Kuboyama, Hiroki; Uemura, Hiroyuki; and Nogawa, Chiharu, 5,348,931, Cl. 503-227.000.

Arimura, Norij; and Yamashita, Tatsumaro, to Alps Electric Co., Ltd Data transfer method of magnetic recording/reproducing apparatus. 5,349,479, Cl. 360-73.060.

Arjo Hospital Equipment AB: *See—*
Sandell, Anders L.; Sonesson, Leif B.; and Persson, Bo G., 5,348,273, Cl. 254-385.000
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Armani, Florence: *See—*
Delacourt, Dominique; Papuchon, Michel; Lallier, Eric; and Armani, Florence, 5,349,466, Cl. 359-326.000

Armstrong World Industries, Inc.: *See—*
Frecska, Sandor A.; Nute, Ernest B., Jr.; and Sauer, Gale E., 5,347,783, Cl. 52-506.070.

Arndt, Larry W.: *See—*
Slack, William E.; Dunlap, Kenneth L.; Arndt, Larry W.; and Renbaum, Louis, 5,349,082, Cl. 560-352.000.

Arnold, Dale B., to Morrison Company, Inc. Means and method of encapsulating mechanically fastened belt splice for agricultural belt 5,348,782, Cl. 428-60.000.

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Arnold, Phillip A.; Anderson, Andrew T.; and Alger, Terry W., to United States of America, Energy. Insulative laser shell coupler 5,349,594, Cl. 372-62.000.

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Grim, Tracy E.; Arnold, William K.; and Iglesias, Joseph M., 5,348,530, Cl. 602-13.000.

Aro Corporation, The: *See*—
Kozumplik, Nicholas, Jr.; and Distel, Gerald M., 5,348,046, Cl. 137-454.400.

Aruga, Keiji: *See*—
Sugimoto, Masaharu; Aruga, Keiji; Yamada, Tomoyoshi; Imamura, Takahiro; and Mizoshita, Yoshifumi, 5,349,486, Cl. 360-97.010.

Asahi Breweries, Ltd.: *See*—
Kitaguchi, Masaru; and Sakashita, Shigeru, 5,347,831, Cl. 62-510.000.

Asahi Denka Kogyo K. K.: *See*—
Kuroda, Syoichi; Shibata, Soichiro; Shimamura, Nonyuki; Kawasaki, Shigetake; Kasahara, Keisuke; Sakuma, Seiichi; Komatsu, Fujio; Ishikawa, Masaya; Sugiyama, Kunio; Mashimo, Mitsuo; Shindo, Yuzuru; and Kawamura, Kuniaki, 5,348,080, Cl. 165-104.130

Asahi Glass Company Ltd.: *See*—
Kodama, Shun-ichi; Sasao, Yasuyuki; and Miura, Ryuichi, 5,349,031, Cl. 525-386.000.
Kumai, Seisaku; Wada, Akihiro; and Morikawa, Shinsuke, 5,349,098, Cl. 570-141.000.
Kushitani, Hideki; Nishizawa, Manabu; and Nakao, Yasumasa, 5,348,916, Cl. 501-66.000
Oda, Noriyuki; Maeno, Hiroshi; Higashi, Katsumi; Toriyama, Akira; and Shimoda, Hiromi, 5,348,568, Cl. 95-14.000.

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Itabashi, Tomoaki; and Misawa, Masayuki, 5,349,405, Cl. 354-152.000
Kawasaki, Masahiro; Takahashi, Hiroyuki; and Iwamoto, Shigeru, 5,349,409, Cl. 354-195.120
Nomura, Hiroshi; Sato, Norio; and Aoki, Nobuaki, 5,349,408, Cl. 354-195.100.
Nomura, Hiroshi; Sato, Norio; and Aoki, Nobuaki, 5,349,475, Cl. 359-694.000.
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Asai, Hiroshi: *See*—
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Asaida, Takashi: *See*—
Murayama, Hideaki; Kihara, Taku; Sudo, Fumihiko; and Asaida, Takashi, 5,349,381, Cl. 348-252.000

Asakawa, Kyoichi, to NEC Corporation. Cooling apparatus for electronic system. 5,348,076, Cl. 165-13.000.

Asakura, Hiroshi: *See*—
Saji, Nobuyoshi; Ohya, Hiroshi; Asakura, Hiroshi; and Nagai, Shunji, 5,347,819, Cl. 62-51.300.

Asami, Keiichi; Takahashi, Hideki; Inoue, Katsuo; Echigo, Yoshiaki; Ohsawa, Toshiyuki; and Kabata, Toshiyuki, to Unitika Ltd.; and Ricoh Company, Ltd. Carbonaceous material and a cell using the same. 5,348,818, Cl. 429-213.000.

Asano, Naoki: *See*—
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Asea Brown Boveri Ltd.: *See*—
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Aseltine, Clifford L.: *See*—
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Ohkura, Tadao; and Ashida, Mamoru, 5,348,672, Cl. 252-42.000.

Ashida, Takashi; and Sato, Yoshinori, to Idemitsu Petrochemical Co., Ltd. Process for production of styrene-based resin composition. 5,349,013, Cl. 525-53.000.

Ashihara, Teruaki; Tone, Shingo; Saito, Toshimitsu; and Orita, Ryozo, to Toyo Kasei Kogyo Company Limited. Manufacture of the emulsion of synthetic resin composites. 5,349,022, Cl. 524-414.000.

Ashland Oil, Inc.: *See*—
Maggard, Steven M.; and Welch, William T., 5,348,645, Cl 208-209.000
Maggard, Steven M., 5,349,188, Cl. 250-339.000.
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Ashton, Thomas E. Magnetic fluid treatment device. 5,348,050, Cl. 137-827.000

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Whittle, Rex W. J., 5,349,284, Cl. 323-207.000

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Pontiff, Thomas M., 5,348,458, Cl. 425-4.00R

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Blonder, Greg E.; and Johnson, Bertrand H., 5,349,503, Cl 362-31.000.
Choquette, Kent D.; Freund, Robert S.; and Hong, Minghwei, 5,348,912, Cl. 437-129.000
Hauschild, Mark E., 5,349,341, Cl. 340-825.030.
McBride, Richard; and Wong, Ching-Ping, 5,348,913, Cl 437-209.000
Scott, Robert E., 5,349,635, Cl. 379-97.000.

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Metcalf, Derek N. G., 5,347,922, Cl. 108-108.000.

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Shink, Joe, 5,348,347, Cl. 281-31.000.

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Butenop, Klaus, 5,348,248, Cl. 242-383.200.

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Rooney, John M.; Patel, Narendra M.; Kveglis, Albert A.; Catena, Robert J.; Di Leo, Leonard; and Avci, Selcuk, 5,349,021, Cl 524-761.000.

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Syed, Ali N.; and Ahmad, Kaleem, 5,348,737, Cl. 424-71.000.

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Odman, Svante; Karlsson, Jan-Olof; and Axelsson, Krister, deceased, 5,348,851, Cl. 435-4.000.

Axelsson, Martin, heir: *See*—
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Ayme, Henri: *See*—
Slama, Georges; Daffos, Thierry; Ayme, Henri; Pascal, Yves; Cornu, Bernard; and Denis, Philippe, 5,347,959, Cl. 122-32.000

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Berghuis, Albert H.; McKechnie, Richard C.; and Drenth, Albert, 5,348,798, Cl. 428-285.000.

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Azzazy, Medhat T.; and Dabiri, Ali, to Science Applications International Corporation. Method and apparatus for detecting vehicle occupants under the influence of alcohol. 5,349,187, Cl. 250-338.500.

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Brundrett, Robert L., 5,348,122, Cl. 188-71.500.
Long, Carl J., II; Amjad, Zahid; Masler, William F., III; and Wingo, William H., 5,349,030, Cl. 525-450.000.

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Baba, Shigeki: *See*—
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Kato, Yasuyoshi; and Konishi, Kunihiko, 5,348,987, Cl. 502-242.000.

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Kuo, Tzu-Yu, 5,348,374, Cl. 297-344.180.

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Vander Heyden, William H., 5,347,873, Cl. 73-861.220.

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Baier, Joachim: *See*—
Klein, Hans-Christof; Kahrs, Manfred; Drott, Peter; Beer, Wilhelm; Baier, Joachim; Kraft, Peter; and Lang, Andreas, 5,348,110, Cl. 180-132.000.

Bailey, Bert E.; Pollock, W. Al; and Thompson, W. Les, to Ercon Development Co. System for erosion control. 5,348,419, Cl. 405-21.000.

Bailey, Ronn H. System for representing hierarchical structures. 5,349,663, Cl. 395-700.000.

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Baker, Harold L., to Longview Fibre Company. Paperboard container for fluids having top opening fitment and exposed lip for engagement by handling implements. 5,348,186, Cl. 220-465.000.

Baker Hughes Incorporated: *See*—
Scott, Danny E.; Smith, Redd H.; and Tibbitts, Gordon A., 5,348,108, Cl. 175-432.000.

Baker, Myles L.; and Levitt, David J. Drag reducing device for land vehicles. 5,348,366, Cl. 296-180.400.

Baldwin, Leo B.: *See*—
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Balk, Pieter: *See*—
Jurgensen, Holger; Gruter, Klaus; Deschler, Marc; and Balk, Pieter, 5,348,911, Cl. 117-91.000.

Balkovec, James M.; and Zambias, Robert A., to Merck & Co., Inc. Cyclohexapeptidyl hydroxypropionitrile compounds. 5,348,940, Cl. 514-11.000.

Ball Burnishing Machine Tools Limited: *See*—
Linzell, Geoffrey R., 5,348,210, Cl. 228-115.000.

Balsdon, Julian G., to Rolls-Royce plc. Vectorable nozzle mounting. 5,348,252, Cl. 244-52.000.

Balzer, Juliane: *See*—
Wirtz, Herbert; von Halasz, Sigmar-Peter; Feustel, Michael; and Balzer, Juliane, 5,349,019, Cl. 525-217.000.

Balzer, Wolf-Dieter: *See*—
Mohr, Juergen; Oppenlaender, Knut; Balzer, Wolf-Dieter; Thomas, Juergen; and Schreyer, Peter, 5,348,560, Cl. 44-387.000.

Balzers Aktiengesellschaft: *See*—
Jost, Stephan, 5,348,632, Cl. 204-165.000.

Bamola, Rajan K.: *See*—
Sievers, G. Kelly; and Bamola, Rajan K., 5,348,770, Cl. 427-422.000.

Ban, Yukinobu: *See*—
Shibata, Ryoji; Kobayashi, Masahiko; Ban, Yukinobu; and Obayashi, Hirokatu, 5,347,762, Cl. 451-15.000.

Bandgap Technology Corporation: *See*—
Sabacky, Bruce J.; and Doane, Robert E., 5,348,723, Cl. 423-489.000.

Banerjee, Chandra K.: *See*—
Barnes, Russell D.; Banerjee, Chandra K.; Crooks, Evon L.; and Clearman, Jack F., 5,348,027, Cl. 131-194.000.

Baragar, James B., to Marglass Industries Limited. Transformer connector. 5,349,144, Cl. 200-18.000.

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Alfano, Robert R.; Pradhan, Asima; Tang, Guichen C.; Wang, Leming; Budansky, Yury; and Baran Das, Bidyut, 5,348,018, Cl. 128-665.000.

Baran, Mark E.; Phibbs, David P.; Couch, Vern W.; and Michalec, George W., to James River Corporation of Virginia. Positive displacement screw pump having pressure feedback control. 5,348,453, Cl. 417-440.000.

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Gambale, Ronald J.; and Barbera, Bruce C. J., 5,348,769, Cl. 427-387.000.

Barclay, Brian L.: *See*—
Dong, Liang C.; Dealey, Michael H.; Burkoth, Terry L.; Wong, Patrick S. L.; Childers, Jerry D.; and Barclay, Brian L., 5,348,746, Cl. 424-473.000.

Barker, Robert W.: *See*—
Chiang, David; Ho, Thomas Y.; Ku, Wei-Yi; Simmons, George H.; and Barker, Robert W., 5,349,249, Cl. 307-465.000.

Barker, Ronald S., to Black & Decker Inc. Protective battery cap. 5,348,815, Cl. 429-65.000.

Barkhoudarian, Sarkis, to Rockwell International Corporation. Diffraction grating rotary speed sensor having a circumferentially variable pitch diffraction grating. 5,349,183, Cl. 250-231.130.

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Bauer, Karl; Dammann, Peter; and Urbahn, Friedrich, 5,348,242, Cl. 242-18.0EW.

Barnabe, Florence: *See*—
Defranco, Jean-Marc; Barnabe, Florence; and Rouzier, Alain, 5,349,462, Cl. 359-152.000.

Barnes, Russell D.; Banerjee, Chandra K.; Crooks, Evon L.; and Clearman, Jack F., to R. J. Reynolds Tobacco Company. Cigarette with improved substrate. 5,348,027, Cl. 131-194.000.

Barney, Charlotte L.; McCarthy, James R.; and Wannamaker, Marion W., to Merrell Dow Pharmaceuticals Inc. Piperidyl ethers and thioethers as inhibitors of cholesterol biosynthesis. 5,348,964, Cl. 514-315.000.

Baronquel, Pierre; and Biros, Jean-Louis, to SARP Industries. Method and installation for the destruction of laboratory waste. 5,347,930, Cl. 102-302.000.

Barr, Morton L.: *See*—
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Barten, Brian L.: *See*—
Halstead, Gary A.; Barten, Brian L.; and Smith, Gregory R., 5,348,081, Cl. 165-144.000.

Barth, Marshall L.: *See*—
Fabritz, Jacqueline M. B.; Barth, Marshall L.; and Longo, Anthony R., 5,347,656, Cl. 2-67.000.

Barton, Christopher B.: *See*—
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Steadings, Stephen W.; and Barton, Christopher B., 5,348,318, Cl. 279-62.000.

Barton, Michael J.: *See*—
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BASF Aktiengesellschaft: *See*—
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Mohr, Juergen; Oppenlaender, Knut; Balzer, Wolf-Dieter; Thomas, Juergen; and Schreyer, Peter, 5,348,560, Cl. 44-387.000.
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BASF Corporation: *See*—
Laugal, James A.; Martin, Glenn E.; St. Aubin, Donald L.; and Wold, Gerald G., 5,348,635, Cl. 204-181.700.
Minns, Charles R.; Blount, Timothy W.; and Varner, Thomas L., Jr., 5,348,556, Cl. 8-137.000.

Bassett, Raymond C.: *See*—
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Batdorff, David M.: *See*—
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Baudrich, Rolf: *See*—
Halbedel, Bernd; Mueller, Walter; Baudrich, Rolf; and Huelsenberg, Dagmar, 5,348,237, Cl. 241-67.000.

Bauer, Friedhelm, to Asea Brown Boveri Ltd. Turn-off power semiconductor device. 5,349,213, Cl. 257-147.000.

Bauer, Karl; Dammann, Peter; and Urbahn, Friedrich, to Barmag AG. Yarn winding apparatus with yarn cutting capability. 5,348,242, Cl. 242-18.0EW.

Baum, Eric A.: *See*—
Hodson, Peter D.; Baum, Eric A.; Smith, David K.; Kuepper, Anton; and Wilby, Matthew J., 5,347,998, Cl. 128-200.230.

Bausch & lomb Incorporated: *See*—
Jones, Thomas G., 5,347,896, Cl. 82-125.000.

Baxter, Andrew J. G.; and Meghani, Premji, to Fisons plc. Angiotensin converting enzyme inhibitors. 5,348,978, Cl. 514-547.000.

Baxter International Inc.: *See*—
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Bay, William E.: *See*—
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Herzig, Joachim; Bredtmann, Kurt; Knickel, Birger; and Dorzbach-Lange, Cornelia, 5,348,582, Cl. 106-696.000.

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Blum, Harald; Kahl, Lothar; Yuva, Nusret; and Bock, Manfred, 5,349,041, Cl. 528-85.000.
Hain, Rudiger; and Stenzel, Klaus, 5,349,122, Cl. 800-205.000.
Knipp, Ulrich; and Skoupi, Dieter, 5,348,778, Cl. 428-35.800.
Podszun, Wolfgang; Bomer, Bruno; Grosser, Rolf; Lange, Walter; and Grosse-Bley, Michael, 5,348,656, Cl. 210-635.000
Trinks, Rainer; Konigshofen, Heinrich; Ganster, Otto; Stepanski, Horst; and Colinas-Martinez, Jose, 5,349,040, Cl. 528-75.000.

Beach, John R., to Illinois Tool Works Inc. Roofing washer-dispensing and fastener-driving machine. 5,347,707, Cl. 29-809.000.

Bears, James A., to Northern Telecom Limited. Fiber optic telephone loop network. 5,349,457, Cl. 359-118.000.

Beaumont, David O.: *See*—
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Beauviala, Jean-Pierre, to Aaton. Filter and matte box support system 5,349,411, Cl. 354-295.000

Beck, Edward W.; Brewster, Blair M.; and Walker, Andrew M., to Permar Systems, Inc. Method for making porcelain tags and signs by selectively radiating a frit containing-emulsion coating applied thereto. 5,348,843, Cl. 430-275.000.

Beck, Jeffrey S.; Kuehl, Guenter H.; Olson, David H.; Schlenker, John L.; Stucky, Galen D.; and Vartuli, James C., to Mobil Oil Corp M41S materials having nonlinear optical properties. 5,348,687, Cl 252-582.000.

Becker, J. Ole: *See*—
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Beckerle, Wilhelm F.: *See—*
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Beckman Instruments, Inc.: *See—*
Reddy, Parameswara M.; and Hanna, Naeem B., 5,348,868, Cl. 435-91.100.

Beckwith, Glenn, to RDP Marathon Inc. Apparatus for cutting and stacking a multi-form web. 5,348,527, Cl. 493-413.000.

Becton, Dickinson and Company: *See—*
Sweeney, Niall; Bressler, Peter W.; and Caizza, Richard J., 5,348,544, Cl. 604-192.000.

Becton Dickinson France S.A.: *See—*
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Beeny, Steven K.: *See—*
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Beer, Wilhelm: *See—*
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Behler, Ansgar; Ploog, Uwe; Hensen, Hermann; and Uphues, Guenter, to Henkel Kommanditgesellschaft auf Aktien. Process for reducing the residual content of free alkylating agent in aqueous solutions of cationic surfactants. 5,349,106, Cl. 564-282.000.

Belik, Jaroslay. Clock dial. 5,349,572, Cl. 368-77.000.

Bell Atlantic Network Services, Inc.: *See—*
Franklin, William H., III; and Samolyk, John H., 5,348,118, Cl 182-187.000

Belleau, Bernard, deceased: *See—*
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Bellinghausen, Thomas G.; and Coburn, David R., II, to FMC Corporation. Brake lathe with electronic feed control. 5,347,895, Cl 82-112.000.

Belliotti, Thomas R.; Connor, David T.; and Kostlan, Catherine R., to Warner-Lambert Company. 5-hydroxy-2-pyrimidinylmethylene derivatives useful as antiinflammatory agents. 5,348,957, Cl. 514-235.800.

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Bencloski, William A.: *See—*
Ciez, Albert P.; Blasiole, George A.; and Bencloski, William A., 5,348,352, Cl. 285-136.000.

Benedict, Lawrence R.; Bassett, Raymond C.; and Fowler, Thomas C., to Xerox Corporation. Reproduction machine waste imaging materials removal system. 5,349,427, Cl. 355-298.000

Bennett, Bryson: *See—*
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Bennett, Moira A.: *See—*
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Benson, Bryan R., to Cherne Industries Incorporated. Mechanical plug device. 5,348,085, Cl. 166-92.000.

Benson, William B.: *See—*
Gordon, Dale F.; and Benson, William B., 5,348,387, Cl. 366-63.000

Benz, Mark G.: *See—*
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Benzing, Martin: *See—*
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Berberian, Paul A.; Tytell, Michael; and Gower, David J., to Wake Forest University. Method of treatment with hsp70. 5,348,945, Cl. 514-21.000.

Berg, Arne: *See—*
Almen, Torsten; Berg, Arne; Dugstad, Harald; Klaveness, Jo; Krautwurst, Klaus D.; and Rongved, Pal, 5,348,954, Cl. 514-227.500.

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Berg Jacob and Sons (Furniture), Ltd.: *See—*
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Berg, Lloyd, to Berg, Lloyd. Separation of ethanol from isopropanol by extractive distillation. 5,348,625, Cl. 203-57.000.

Bergann, Ludwig: *See—*
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Bergen, D. Michael: *See—*
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Berghuis, Albert H.; McKechnie, Richard C.; and Drenth, Albert, to Azdel, Inc. Method of making a hollow core structural member. 5,348,798, Cl. 428-285.000.

Berke, Neal S.: *See—*
Arfaei, Ahmad; Berke, Neal S.; Jeknavorian, Ara A.; Gartner, Ellis M.; Hartman, JudithAnn R.; and Myers, David F., 5,348,583, Cl 106-696.000.

Berna, Claude; O'Rell, Dennis; Praet, Herve; Rich, Gerard; Rodgers, Richard; and Stutz, Jean P., to W. R. Grace & Co.-Conn. Anisotropic endless printing element and method for making the same. 5,347,927, Cl. 101-401.100.

Bernardi, Richard B.: *See—*
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Bernhard, Werner: *See—*
Roll, Ulrich; Bernhard, Werner; and Reiser, Ludwig, 5,349,270, Cl. 315-209.00R.

Bernhardt, Bruno, to IEG Industrie-Engineering GmbH. Method and arrangement for influencing liquid in ground. 5,348,420, Cl 405-52.000.

Bernhardt, Wolfgang; and Schmidt, Guenther, to Robert Bosch GmbH. Hydraulic brake unit with anti-lock and traction control system for motor vehicles. 5,348,381, Cl. 303-113.200.

Berryhill, Ross C.: *See—*
Mahon, Jeff A.; and Berryhill, Ross C., 5,347,966, Cl. 123-179.210.

Beshouri, Sharon M.; Wong, Pui K.; and Handlin, Dale L., Jr., to Shell Oil Company. Polymerization of β-lactones under rim conditions. 5,349,046, Cl. 528-354.000.

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Besst Frozen Products, Inc.: *See—*
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Betbeder, Didier: *See—*
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Better Sleep Mfg.: *See—*
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Bettis Corporation: *See—*
Owen, Charles D.; Rembert, Michael E.; and Davis, Albert S., 5,348,271, Cl. 251-95.000.

Bettle, Griscom, Jr.; Bettle, Griscom, III; and Jeruzal, Patricia, to Tropicana Products, Inc. Beverage container with novel dispensing means. 5,348,217, Cl. 229-103.100.

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Bettle, Griscom, Jr.; Bettle, Griscom, III; and Jeruzal, Patricia, 5,348,217, Cl. 229-103.100.

Bhat, Mousumi: *See—*
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Bianco, Giustino, to American Home Products Corporation. Pharmaceutical coating sugars. 5,348,747, Cl. 424-490.000

Bickerstaff, David M., to Marley Cooling Tower Company, The. Retractable cover unit for hot water basin of crossflow cooling tower. 5,348,692, Cl. 261-111.000.

Bikson, Benjamin; Gotz, Gertrud; Ozcayir, Yurdagul; and Nelson, Joyce K., to Praxair Technology, Inc. Modified poly(phenylene oxide) based membranes for enhanced fluid separation. 5,348,569, Cl. 95-45.000.

Billeb, Gilbert: and Semler, Gunther, to Hoechst Aktiengesellschaft. Stabilized aminobenzotrifluorides. 5,349,104, Cl. 564-5.000

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Tsai, John J.; Trzasko, Peter T.; Philbin, Michael T.; Billmers, Robert L.; Tessler, Martin M.; Van Gompel, Joseph A.; and Rutenberg, Morton W., 5,349,089, Cl. 564-291.000.

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Binzer, Lothar; Morrissette, Didace E.; and Toth, Ronald, to Canadian Heating Products Inc. Flame monitor safeguard system. 5,347,982, Cl. 126-503.000

Bio-Tek Instruments, Inc.: *See—*
Merrick, Edwin B.; and Haas, Peter, 5,348,005, Cl. 128-633.000

Biochem Immunosystems, Inc.: *See—*
Attardo, Giorgio G.; and Belleau, Bernard, deceased, 5,348,946, Cl. 514-34.000.

Biohit OY: *See—*
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Bionta, Richard M.: *See—*
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Biosensori S.p.A.: *See—*
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Biotronics Corporation: *See—*
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Birkle, Michael; Grasemann, Gunther; and Steusloff, Hartwig, to Fraunhofer Gesellschaft zur Foerder der angewandten Forschung e. V. Apparatus for determining the state of physical properties of rechargeable electric energy storage devices. 5,349,540, Cl. 364-578.000.

Biros, Jean-Louis: *See—*
Baronquel, Pierre; and Biros, Jean-Louis, 5,347,930, Cl. 102-302.000.

Bischoff, Thomas C.; Meregotte, Pedro A.; and Morell, David P., to Medtronic, Inc. Method for fabrication of implantable electrode. 5,347,708, Cl. 29-825.000.

Bisco, Inc.: *See—*
Suh, Byoung; and Hamer, Martin, 5,348,988, Cl. 523-118.000.

Bisdikian, Chatschik; and Tantawy, Ahmed N., to International Business Machines Corporation. Scheme for source assisted partial destination release of slots in slotted networks. 5,349,582, Cl. 370-85.100

Bishop, Alan W.; Bray, David J.; Gardiner, Robert W.; and Viney, Brian W., to United Kingdom of Great Britain and Northern Ireland, The Secretary of the State for Defence in Her Britannic Majesty's Government of the. Vapor deposition apparatus and method 5,348,703, Cl. 420-590.000

Bissett, Larry A.; Strickland, Larry D.; and Rockey, John M., to United States of America, Energy. Method for reducing sulfate formation during regeneration of hot-gas desulfurization sorbents. 5,348,921, Cl. 502-43.000

Bissex, Karl A., to DMS, Inc. Bin unloading apparatus. 5,348,435, Cl 414-310.000

Bissolino, Pierluigi; Alpegiani, Marco; Perrone, Ettore; Orezzi, Piergiuseppe; Cassinelli, Giuseppe; and Franceschi, Giovanni, to Farmitalia Carlo Erba S.R.L. β-lactam derivatives of the cephem sulphone type 5,348,952, Cl. 514-202.000

Bjorkman, Bengt, to Nobeltech Electronics AB. Threat sector indicating warner. 5,349,333, Cl. 340-600.000.

Black & Decker Inc.: *See—*
Barker, Ronald S., 5,348,815, Cl. 429-65.000
Nickels, Richard C., Jr., 5,347,673, Cl. 15-97.100.

Black, Kevin E. Flower care, storage and display device. 5,347,752, Cl 47-41.110.

Blacker, Paul N., to Trend-Lines, Inc. Slide bar clamp and straight edge. 5,348,276, Cl. 269-88.000

Blagaila, John H., to Integral Peripherals, Inc. Run length limited encoding/decoding system for low power disk drives. 5,349,350, Cl. 341-59.000.

Blahuta, Lew: *See—*
Tarrson, Emanuel B.; Maric, Dane; Blahuta, Lew; and Koepsel, Scott, 5,347,675, Cl. 15-167.100.

Blain, David A.; Horodysky, Andrew G.; Poole, Ronald J.; and Wu, Shi-Ming, to Mobil Oil Corporation. Amide/ester heterocyclic derivatives of hydrocarbylsuccinic anhydrides as rust/corrosion inhibiting additives for lubricants. 5,348,674, Cl. 252-51.50R.

Blais, Normand D. Patching tool and method. 5,348,613, Cl. 156-579.000.

Blanco, Ernesto E.; and Schnorr, William, to Massachusetts Institute of Technology. Flexible, articulable column. 5,348,259, Cl. 248-276.000.

Blankenship, George D., to Lincoln Electric Company, The. Inverter power supply for welding. 5,349,157, Cl. 219-130.320.

Blasiole, George A.: *See—*
Ciez, Albert P.; Blasiole, George A.; and Bencloski, William A., 5,348,352, Cl. 285-136.000.

Blaupunkt-Werke GmbH: *See—*
Erben, Peter; Liman, Helmut; Hegeler, Wilhelm; Bochmann, Harald; Kasser, Jurgen; and Henze, Werner, 5,349,699, Cl 455-186.100.

Blodgett, Greg A.: *See—*
Merritt, Todd A.; and Blodgett, Greg A., 5,349,566, Cl 365-233.500.

Blohm & Voss AG: *See—*
Huser, Peter, 5,348,285, Cl. 271-183.000.

Blom, Hans A.: *See—*
Wheatcraft, Paul A.; Daane, Laurence A.; and Blom, Hans A., 5,347,711, Cl. 29-843.000.

Blondel, Jean-Marie: *See—*
De Soete, Gerard; Ninane, Leon; and Blondel, Jean-Marie, 5,348,716, Cl. 423-239.100

Blonder, Greg E.; and Johnson, Bertrand H., to AT&T Bell Laboratories. Illuminated transparent display with microtextured back reflector. 5,349,503, Cl. 362-31.000.

Blose, Thomas L.; and Britten, David L., to Ipsco Enterprises Inc. Pipe coupling. 5,348,350, Cl. 285-94.000.

Blount, Gregory M. Weight lifter's bench pad. 5,348,523, Cl. 482-104.000.

Blount, Timothy W.: *See—*
Minns, Charles R.; Blount, Timothy W.; and Varner, Thomas L., Jr., 5,348,556, Cl. 8-137.000.

Blum, Harald; Kahl, Lothar; Yuva, Nusret; and Bock, Manfred, to Bayer Aktiengesellschaft. Water dilutable, polyester polyols and their use in coating compositions. 5,349,041, Cl. 528-85.000.

Blumenthal, Herbert E., to Hunter Fan Company. Portable patient alerting apparatus. 5,349,340, Cl. 341-574.000

Blumenthal, Jack L.; Gat, Nahum; Faigle, Ernst M.; Semchena, John H.; and Thompson, Richard J., to TRW Vehicle Safety Systems Inc. Apparatus for inflating a vehicle occupant restraint. 5,348,344, Cl. 280-737.000.

Boatwright, Kevin: *See—*
Copenhaver, Richard; Rainwater, Larry; Lane, Luther; Whittaker, Roger; Boatwright, Kevin; and Lee, Joe, 5,347,832, Cl. 66-140.00R.

Bob Fournet Company, The: *See—*
Tchakarov, Borislav J.; and Earl, Leon, 5,348,091, Cl. 166-217.000.

Bobb, Lloyd C., to United States of America, Navy. Electromagnetic radiation detector utilizing an electromagnetic radiation absorbing element in a Mach-Zehnder interferometer arrangement. 5,349,437, Cl. 356-345.000.

Bochmann, Harald: *See—*
Erben, Peter; Liman, Helmut; Hegeler, Wilhelm; Bochmann, Harald; Kasser, Jurgen; and Henze, Werner, 5,349,699, Cl. 455-186.100

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Bockholt, Karl H., to Master Appliance Corporation. Heat gun with improved temperature regulator. 5,349,161, Cl. 219-385.000

Bodenseewerk Geratetechnik GmbH: *See—*
Semler, Gerd; and Zeischke, Winfried, 5,348,250, Cl. 244-3.160.

Bodin-Deshayes, Claire: *See—*
Molva, Engin; Accomo, Roger; Feuillet, Guy; Cibert, Joel; Le Si, Dang; and Bodin-Deshayes, Claire, 5,349,596, Cl. 372-43.000.

Boe, Thomas E.: *See—*
Fox, Robert E.; Smith, William L., Jr.; and Boe, Thomas E., 5,348,101, Cl. 172-2.000

Boehringer Ingelheim KG: *See—*
Poss, Gerhard; and Wittekind, Jurgen, 5,347,999, Cl. 128-203.150.

Boeing Company, The: *See—*
Avila, Carl A.; Hack, Kenneth W.; and Hibbert, John A., 5,347,910, Cl. 89-41.220.
Bond, David G.; Caluori, Vincent A.; Hill, Todd; Kirkland, David T.; Raftery, Michael L.; and VanAlen, Derek J., 5,349,654, Cl. 395-575.000
Parikh, Pradip G., 5,348,256, Cl. 244-208.000.

Bofors AB: *See—*
Hallqvist, Sten, 5,347,911, Cl. 89-45.000.

Bogaert, Yvan A.: *See—*
Kumar, Ramesh C.; Everaerts, Albert I.; and Bogaert, Yvan A., 5,349,004, Cl. 524-461.000

Boggs, Steven W.; and Moor, Richard L., to Moore Business Forms, Inc. Multipurpose label construction. 5,348,780, Cl. 428-42.000.

Bognandi, Francois: *See—*
Vives, Michel; Taveau, Pierre; Habarou, Georges; and Bognandi, Francois, 5,348,598, Cl. 156-93.000

Bohannon, Brynne K.; and Syverson, Daniel J., to Texas Instruments Incorporated. Metal selective polymer removal. 5,348,619, Cl. 156-664.000

Bohler, Lorenz. Micro-dosing device for powdery and granulate substances. 5,348,188, Cl. 222-1.000.

Bohm, Grant E.: *See—*
Dushane, Steven D.; Anderson, Kenneth K.; Bohm, Grant E.; and Simoni, Wayne, 5,348,078, Cl. 165-22.000.

Bohmer, William; and Bow, Clark F., to Display Matrix Corporation. Battery charge indicator. 5,348,813, Cl. 429-91.000

Bolash, John P.; James, Edmund H., III; Mayo, Randall D.; and Zumbach, Richard G., to Lexmark International, Inc. Ink jet printer dot placement compensation method. 5,349,375, Cl. 347-40.000.

Boliver, Ronald J.: *See—*
Duguette, Paul J.; Gatto, Neil A.; Boliver, Ronald J.; and Laforest, Daniel J., 5,347,670, Cl. 7-107.000

Boliver, Scott J.: *See—*
Nettles, Timothy P.; Boliver, Scott J.; and Robinson, Mark D., 5,348,064, Cl. 144-176.000

Bolognese, Renato; and Gandolfo, Rino, to Minnesota Mining and Manufacturing Company. Imager apparatus support system. 5,349,420, Cl. 355-75.000.

Bomer, Bruno: *See—*
Podszun, Wolfgang; Bomer, Bruno; Grosser, Rolf; Lange, Walter; and Grosse-Bley, Michael, 5,348,656, Cl. 210-635.000.

Bonaldi, Antonio, to Erregierre Industria Chimica S.p.A. Process for pharmaceutical grade high purity hyodeoxycholic acid preparation. 5,349,074, Cl. 552-551.000

Bonaventura, Joseph; Brouwer, Marius; and Cashon, Robert E., to Duke University. Activated benzenepentacarboxylate-crosslinked low oxygen affinity hemoglobin. 5,349,054, Cl. 530-385.000.

Bond, David G.; Caluori, Vincent A.; Hill, Todd; Kirkland, David T.; Raftery, Michael L.; and VanAlen, Derek J., to Boeing Company, The. Fault tolerant data exchange unit. 5,349,654, Cl. 395-575.000

Bonderman, Ruby P., to Analytical Control Systems Inc. Diagnostic and therapeutic compositions. 5,348,852, Cl. 435-4.000.

Bonelli, Enrico: *See—*
Mascitelli, Francesco; and Bonelli, Enrico, 5,348,194, Cl. 222-209.000.

Bonner, Brian B.: *See—*
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Garg, Diwakar; Bonner, Brian B.; Kilhefner, Paul T.; Mattiola, Paul A.; and Mitchell, David L., 5,348,592, Cl. 148-208.000.

Booker, LeRoy A.: *See—*
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Boomus, Mary K.: *See—*
Costello, John R., Jr.; Knoedler, Leonard F.; Vincent, Monty E.; and Boomus, Mary K., 5,348,646, Cl. 210-94.000.

Boozer, James J., to Sportlite/Powermag. Retriever tool with interchangeable accessories. 5,348,359, Cl. 294-24.000.

Borchardt, Robert L.; McGreevy, William T.; Nawarange, Ashok; and Rodriguez, Efrain L., to Recoton Corporation. Wireless signal transmission systems, methods and apparatus. 5,349,386, Cl. 348-485.000

Borcher, Thomas A., Sr.: *See—*
Bacon, Dennis R.; Borcher, Thomas A., Sr.; Corona, Alessandro, III; Palmer, Clyde D.; and Trinh, Toan, 5,348,667, Cl. 252-8.600

Borg-Warner Automotive Transmission & Engine Components Corporation: *See—*
Grzesiak, Anthony J., 5,347,702, Cl. 29-511.000.

Born, Hans-Joachim; Huettenrauch, Gerd; and Link, Heinz-Joachim, to Siemens Aktiengesellschaft. X-ray diagnostics installation for peripheral angiography examinations. 5,349,625, Cl. 378-95.000

Bornn, Robert; Levinsky, Jeff L.; Ricks, Robert D.; and Worth, Laura A., to Somnus Corporation. Cardiorespiratory alert system. 5,348,008, Cl. 128-642.000

Bors, David A.: *See—*
Emmons, William D.; Bors, David A.; and Kielbania, Andrew J., Jr., 5,349,026, Cl. 525-328.600

Bortinger, Arie, to Scientific Design Company, Inc. Treatment for virgin phosphorous/vanadium oxidation catalysts. 5,348,927, Cl. 502-209.000

Bortinger, Arie: *See—*
Potter, Mark J.; Kao, Jar-Lin; Cross, Virginia R.; Vanderspurt, Thomas H.; Dienes, Edward K.; Riley, Robert E.; Tungate, Freddie L.; and Bortinger, Arie, 5,348,924, Cl. 502-66.000.

Bortoli, Giulio: *See—*
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Borzym, John J. Modular tube cutting apparatus. 5,347,901, Cl 83-320.000

Bose Corporation: *See—*
Parker, Robert P., 5,349,700, Cl. 455-193.200

Boston, David R., to Minnesota Mining and Manufacturing Company Antistatic coatings comprising chitosan acid salt and metal oxide particles. 5,348,799, Cl. 428-323.000

Boucher, David S.: *See—*
Krupke, Leroy G.; Grisham, James L.; and Boucher, David S., 5,348,437, Cl. 414-401.000.

Bouquet, Philippe L.; Pocknell, David; Bruning, Werner; Dittrich-Duster, Martina; and Lamers, Gunter, to Dow Corning France S.A Apparatus for mixing and dispensing a multicomponent composition. 5,348,392, Cl. 366-162.000

Boutaud, Frederic: *See—*
Ehlig, Peter N.; Boutaud, Frederic; and Hollander, James F., 5,349,687, Cl. 395-800.000

Bouzianne, Michel: *See—*
Mouterde, Renaud; and Bouzianne, Michel, 5,347,908, Cl. 89-34.000

Bow, Clark F.: *See—*
Bohmer, William; and Bow, Clark F., 5,348,813, Cl. 429-91.000

Bowden, William L.: *See—*
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Bowe, Donald J.; Bonner, Brian B.; and Garg, Diwakar, to Air Products and Chemicals, Inc. Method of heat treating gold or gold alloy parts. 5,348,593, Cl. 148-208.000.

Bowerman, Wayne T.: *See—*
Gilliland, W. Keith; Midgley, Christian G.; Murphy, Alison M.; and Bowerman, Wayne T., 5,349,377, Cl. 346-153.100.

Boyce Thompson Institute for Plant Research, Inc.: *See—*
McKenna, Kevin A.; and Granados, Robert R., 5,348,877, Cl. 435-240.210.

Boysel, R. Mark, to Texas Instruments Incorporated. Vacuum microelectronics device. 5,349,217, Cl. 257-266.000

BP Chemicals Limited: *See—*
Cockman, Russell W.; Haining, Gordon J.; Lusman, Philip; and Melville, Archibald D., 5,349,096, Cl. 568-896.000.

Brace, Thomas J.: *See—*
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Brachert, Jost: *See—*
Korasiak, Wolfgang; Muller, Elmar; Brachert, Jost; and Herzmansky, Karl-Heinz, 5,348,380, Cl. 303-103.000.

Bradshaw, Micheal. Modular terrain board. 5,348,478, Cl. 434-150.000.

Brand, Johannes; and Brouwer, Wilfridus M., to Akzo Nobel N.V Copolymerization process and optical copolymer produced therefrom. 5,349,035, Cl. 526-284.000

Brandell, John T.; Duell, Alan B.; and Stepp, Lee W., to Halliburton Company. Method and apparatus for the multiple stage cementing of a casing string in a well. 5,348,089, Cl. 166-154.000

Branscum, Jerry D. Secure laundry and dry cleaning transfer station. 5,347,833, Cl. 70-59.000.

Brasen, Daniel R.; and Seiler, Bruce S., to VLSI Technology, Inc. Method for sizing widths of power busses in integrated circuits. 5,349,542, Cl. 364-578.000.

Braslawsky, Gary R.: *See—*
Kaneko, Takushi; Willner, David; Monkovic, Ivo; Greenfield, Robert S.; and Braslawsky, Gary R., 5,349,066, Cl. 546-294.000.

Brassier, Marc; Rydel, Charles; and Medjaoui, Omar, to Valeo Vision. Lighting and/or indicating apparatus for use in foggy conditions. 5,349,267, Cl. 315-82.000.

Brauer, Melvin; and Chu, Yuan C., to CasChem, Inc. Cable grease composition and articles incorporating same. 5,348,669, Cl 252-28.000

Bray, David J.: *See—*
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Bray, Derek: *See—*
van Os, Ron; and Bray, Derek, 5,349,271, Cl. 315-248.000

Bray, James R., to Globe Business Furniture, Inc. Partition joining system. 5,347,778, Cl. 52-239.000.

Braymen, Steve D., to Iowa State University Research Foundation, Inc. Selective etching process. 5,348,617, Cl. 156-644.000.

Brechling, Kathleen: *See—*
Esposito, Joseph J.; Moss, Bernard; and Brechling, Kathleen, 5,348,741, Cl. 424-199.100.

Bredtmann, Kurt: *See—*
Herzig, Joachim; Bredtmann, Kurt; Knickel, Birger; and Dorzbach-Lange, Cornelia, 5,348,582, Cl. 106-696.000.

Breed, Allen K.: *See—*
Humphreys, Gerard J.; Breed, Allen K.; and Thuen, Torbjorn, 5,348,340, Cl. 280-728.00A

Breed Automotive Technology, Inc.: *See—*
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Breen, Patrick: *See—*
Potts, George W., Sr.; Breen, Patrick; and Paushter, Robert, 5,349,526, Cl. 364-419.100

Breen, Thomas. Electrical outlet box locator. 5,348,274, Cl. 269-3.000

Brennen, Michael B., to Westinghouse Electric Corporation. Active power line conditioner utilizing harmonic frequency injection for improved peak voltage regulation. 5,349,517, Cl. 363-40.000.

Brenner, Joseph H.; and Katrib, Suhail. Compartmentalized carrier for integrated circuits. 5,348,150, Cl. 206-328.000.

Bresche, Peter: *See—*
Huynh, Hon; Franzke, Jorg; Lilienthal, Harald; and Bresche, Peter, 5,349,461, Cl. 359-152.000

Bressler, Peter W.: *See—*
Sweeney, Niall; Bressler, Peter W.; and Caizza, Richard J., 5,348,544, Cl. 604-192.000

Brewer, James A.; Habermehl, Paul R.; Stafford, James M.; and Williams, Errol R., Jr., to International Business Machines Corporation Installation of an expanded memory manager. 5,349,661, Cl 395-700.000

Brewer, John C.: *See—*
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Brewster, Blair M.: *See—*
Beck, Edward W.; Brewster, Blair M.; and Walker, Andrew M., 5,348,843, Cl. 430-275.000.

Brickner, Louis C.; and Garcia, Jaime E., to Delta International Machinery Corp. Motorized miter box. 5,347,902, Cl. 83-468.300.

Bridgestone Corporation: *See—*
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Bridgestone/Firestone, Inc.: *See—*
Hergenrother, William L.; and Morrow, Martin E., 5,349,024, Cl. 525-289.000.

Briechle, George T.; Lubowe, David H.; and Dobras, Alfred D., to Electronic Retailing Systems Int'l Inc. Electronic price display system with vertical rail. 5,348,485, Cl. 439-110.000.

Brintazzoli, Renato, to O.A.M. S.p.a. Box with a sealed closure and with a reclosable product delivery spout. 5,348,219, Cl. 229-131.100.

Bristol-Myers Squibb Company: *See—*
Hewawasam, Piyasena; and Meanwell, Nicholas A., 5,348,960, Cl. 514-293.000.
Kaneko, Takushi; Willner, David; Monkovic, Ivo; Greenfield, Robert S.; and Braslawsky, Gary R., 5,349,066, Cl. 546-294.000.
Romine, Jeffrey L.; and Meanwell, Nicholas A., 5,348,969, Cl 514-376.000.
Wright, John J.; Pearce, Bradley C.; Parker, Rex; and Qureshi, Asaf A., 5,348,974, Cl. 514-456.000.

British Telecommunications public limited company: *See—*
Parke, Ian; Nilsson, Michael E.; Beaumont, David O.; and Morrison, David G., 5,349,383, Cl. 348-397.000.

Britten, David L.: *See—*
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Brooks, Robert T.: *See—*
Wood, Edward T.; Suman, George O., Jr.; and Brooks, Robert T., 5,348,093, Cl. 166-250.000.

Brosse, Jean C.: *See—*
Demuth, Odile; Wattiez, Daniel; Maguin, Jacques; Brosse, Jean C.; Poncin-Epaillard, Fabienne; and Chevet, Bruno, 5,348,772, Cl 427-536.000.

Brossier, Pascal N.; Mazeaud, Georges; and Wurniesky, Pascal C., to Societe Nationale D'Etude et de Construction de Moteurs d'Aviaton "SNECMA". Combined jet engine with RAM jet and turbojet 5,347,807, Cl. 60-225.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Hori, Masayuki; and Uyama, Yoshiyuki, 5,347,940, Cl. 112-121.110
Imaizumi, Mamoru; and Morita, Fumio, 5,349,376, Cl. 347-16.000
Mizuno, Yasuo, 5,347,941, Cl. 112-199.000.
Yoshiaki, Nagao; Atsuhiro, Kobayashi; and Sakuma, Mikio, 5,348,406, Cl. 400-615.200.

Brothers, Lance E.; and Dahl, Jeffrey A., to Halliburton Company. Hydrocarbon liquid and water dispersible particulate cement compositions. 5,348,584, Cl. 106-725.000.

Brotman, Eric M. Auxiliary magnetic weights and method of using same. 5,348,522, Cl. 482-98.000.

Brougham, Paul; Sanderson, William R.; and Pearce, Timothy, to Solvay Interox Limited. Solutions of peracids. 5,349,083, Cl. 562-6.000

Brouwer, Marius: *See—*
Bonaventura, Joseph; Brouwer, Marius; and Cashon, Robert E., 5,349,054, Cl. 530-385.000

Brouwer, Wilfridus M.: *See—*
Brand, Johannes; and Brouwer, Wilfridus M., 5,349,035, Cl. 526-284.000.

Brown, Daniel R.; and Laible, Rodney. Fluid tight medical apparatus disposal receptacle. 5,348,549, Cl. 604-403.000

Brown, Nancy M.; Reina, Debra A.; and Krippendorf, Carl E., to Smith & Nephew Rolyan, Inc. Wrap-on finger hooks. 5,348,531, Cl. 602-22.000.

Brown & Sharpe Mfg. Co.: *See—*
Russell, Gary W., 5,347,723, Cl. 33-503.000.

Brown, Steven J. Compact retrievable marker buoy. 5,348,501, Cl. 441-2.000

Browning, Calvin J.; Mercer, Carl D.; and Milligan, William S., to Dow Chemical Company, The. Double spiral-wound gasket assembly with leak detection. 5,348,310, Cl. 277-1.000.

Bruckner, James V.; and Bruckner, Tony A., to Mace Security International, Inc. Holder for aerosol can. 5,348,193, Cl. 222-175.000.

Bruckner, Tony A.: *See—*
Bruckner, James V.; and Bruckner, Tony A., 5,348,193, Cl. 222-175.000.

Brundrett, Robert L., to B. F. Goodrich Company, The. Sliding back leg brake. 5,348,122, Cl. 188-71.500

Bruner, James E., to General Electric Company. Steam line plug installation tool. 5,349,614, Cl. 376-204.000

Brunhouse, Robert F.; Hajek, Constance M.; Russell, Thomas; and Coulter, Wallace H., to Coulter Corporation. Method and apparatus for obtaining an absolute white blood cell subset count and white blood cell multipart differential. 5,348,859, Cl. 435-7.240.

Bruning, Werner: *See—*
Bouquet, Philippe L.; Pocknell, David; Bruning, Werner; Dittrich-Duster, Martina; and Lamers, Gunter, 5,348,392, Cl. 366-162.000.

Bruno, James: *See—*
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Brunswick Bowling & Billards: *See—*
Steurer, Steven T., 5,348,205, Cl. 224-209.000.

Bryanos, James; Soule, Timothy; and Harris, Michael, to Acvo Corporation. Electromagnetic power distribution system comprising distinct type couplers. 5,349,364, Cl. 343-853.000.

Bryant, Peter L.: *See—*
Ogden, John E.; Bryant, Peter L.; and Caron, Lois L., 5,347,847, Cl. 73-37.000.

Bryant, Robert S., to Eastman Kodak Company. Orientation independent, detachable film cartridge, memory module. 5,349,401, Cl. 354-21.000.

Bucciarelli, Douglas A. Constant temperature solar water heater switch. 5,347,985, Cl. 126-572.000.

Buch, Holger M.; and Springer, Hartmut, to Hoechst Aktiengesellschaft. Water soluble azo dyes containing a cyanoamino-triazinylamino group and a fiber-reactive of the sulfone series. 5,349,057, Cl. 534-637.000

Buchanan, Jerry E., to Jebco Packaging Systems, Inc. Container. 5,348,398, Cl. 383-122.000.

Buchanan, Jerry E., to Jebco Packaging Systems, Inc. Method of constructing flexible containers with tubular fitments. 5,348,525, Cl. 493-213.000.

Buck, Helmut, to Heidelberger Druckmaschinen AG. Device for controlling an individual separation of sheets incorrectly separated from a sheet pile. 5,348,286, Cl. 271-263.000.

Buck, Helmut; and Bergann, Ludwig, to Heidelberger Drukmaschinen AG. Method and apparatus for the alignment of paper stacks in a printing press. 5,349,200, Cl. 250-561.000.

Buckner, Charles A., III; and Leonard, Stephen B., to American Sterilizer Company. Cassette for sterilizing articles and latch therefor. 5,348,185, Cl. 220-326.000.

Budansky, Yury: *See—*
Alfano, Robert R.; Pradhan, Asima; Tang, Guichen C.; Wang, Leming; Budansky, Yury; and Baran Das, Bidyut, 5,348,018, Cl. 128-665.000.

Budd, Kenton D.; and Wilson, David M., to Minnesota Mining and Manufacturing Company. Yttria-alumina fibers. 5,348,918, Cl. 501-95.000.

Buehler AG: *See—*
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Buehler, Daniel W.: *See—*
Powell, Donald L.; Buehler, Daniel W.; and Carson, David E., 5,348,133, Cl. 198-380.000.

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Buenemann, Morris C., Jr.: *See—*
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Kanehiro, Masaki; Shimasaki, Yuichi; Ishioka, Takuji; Baba, Shigeki; Hisaki, Takashi; Maruyama, Shigeru; Chikamatsu, Masataka; Terata, Shukoh; Maeda, Kenichi; and Kakimoto, Kazuhito, 5,349,299, Cl. 324-399.000.
Childers, Jerry D.: *See—*
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Chilenskas, Albert A.: *See—*
Nelson, Paul A.; Malecha, Richard F.; and Chilenskas, Albert A., 5,347,816, Cl. 62-46.200
Chimera, Cynthia M. Universal valve coupling member. 5,348,043, Cl. 137-269.000
Chiou, Chyi-Fwu: *See—*
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Chips & Technologies, Inc.: *See—*
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Rosenberg, Steven; and Tekamp-Olson, Patricia, 5,349,059, Cl. 536-24.100.
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Chitwood, Kenneth; Knipp, Richard; and Schmitt, Richard, to Pestban Pest Control of Florida, Inc. Termiticide delivery system. 5,347,749, Cl. 43-124.000.
Chiu, Ming-Che: *See—*
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Cho, Kikuo: *See—*
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Choate, Paul R.: *See—*
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Choi, Injae; and Ferrara, Joseph J., to Xerox Corporation. Self adjusting feed roll. 5,348,282, Cl. 271-117.000.
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Cholet, Henri; and Lessi, Jacques, to Institut Francais du Petrole. Device and method for pumping a viscous liquid comprising injecting a thinning product, application to horizontal wells. 5,348,094, Cl. 166-371.000

Choong, Kian T.: *See—*
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Chopin, Thierry; Guichon, Herve; and Touret, Olivier, to Rhone-Poulenc Chimie. Rare earth sesquisulfide compositions comprising alkali/alkaline earth metal values. 5,348,581, Cl. 106-461.000

Choquette, Kent D.; Freund, Robert S.; and Hong, Minghwei, to AT&T Bell Laboratories. Semiconductor surface emitting laser having enhanced optical confinement. 5,348,912, Cl. 437-129.000

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Christ, Heinrich: *See—*
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Christensen, Kenneth J.; and Noel, Francis E., Jr., to International Business Machines Corporation. Multi-channel token ring. 5,349,583, Cl. 370-85.500

Christopher, Brian J.: *See—*
Harris, David E.; Christopher, Brian J.; and Rackett, Cary W., 5,348,442, Cl. 415-55.100

Christy, Ronald I.: *See—*
Rosenthal, Richard D.; DePoorter, Gerald L.; and Christy, Ronald I., 5,347,887, Cl. 76-104.100

Chrysler Corporation: *See—*
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Reguiero, Jose F., 5,347,964, Cl. 123-90.220.

Chu, Chih-Chung: *See—*
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Chu, Yuan C.: *See—*
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Chung, David Y.; Gutierrez, Antonio; and Struglinski, Mark J., to Exxon Chemical Patents Inc. Multifunctional viscosity index improver derived from amido-amine and degraded ethylene copolymer exhibiting improved low temperature viscometric properties. 5,348,673, Cl. 252-47.000

Chung, Inhwa, to Hyundai Motor Company. Lash adjustment system for an internal combustion engine. 5,347,963, Cl. 123-90.460

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Church & Dwight Co., Inc.: *See—*
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Church, Keith D.: *See—*
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Church, Stephanie E.: *See—*
Tunison, Donald E., III; Church, Stephanie E.; Leman, Gregory W.; and Troike, Carl L., Jr., 5,348,163, Cl. 209-135.000

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Eichman, Eric C.; Sommer, Bruce A.; Churley, Michael J.; and Ramsey, W. Chuck, 5,348,587, Cl. 118-723.0MP

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Gulec, Bilge, 5,349,103, Cl. 558-314.000.
Hofherr, Walther; Minder, Ernst; Hilti, Bruno; and Ansermet, Jean-Philippe, 5,348,762, Cl. 427-121.000
Howell, Charles R.; Becker, J. Ole; Lam, Stephen T.; and Ligon, James M., 5,348,742, Cl. 424-93.470.
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Cibert, Joel: *See—*
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Ciez, Albert P.; Blasiole, George A.; and Bencloski, William A., to Westinghouse Electric Corporation. Rotary connector with removable spool. 5,348,352, Cl. 285-136.000.

Cikotte, Leonard J.; Dannels, Wayne R.; and McBride, Thomas R., to Picker International, Inc. Magnetic resonance scan sequencer 5,349,296, Cl. 324-309.000

Cipriani, Thomas J. Adjustable bridge system for acoustical stringed instruments. 5,347,905, Cl. 84-298.000.

Cirque Corporation: *See—*
Gerpheide, George E., 5,349,303, Cl. 330-257.000.

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Corr, Robert A., II; and Citeno, Joseph, 5,348,395, Cl. 374-135.000

Claar, James A.: *See—*
Swarup, Shanti; Sundararaman, Padmanabhan; McCollum, Gregory J.; Kania, Charles M.; and Claar, James A., 5,349,006, Cl. 524-507.000.

Claiborne, Theodore C.: *See—*
Schnall, Mitchell D.; Lenkinski, Robert E.; Kressel, Herbert Y.; Pollack, Howard M.; Claiborne, Theodore C.; Misic, George J.; Welch, Thomas R.; and Rhinehart, Edward J., 5,348,010, Cl. 128-653.200.

Clapper, Ronald C., Jr., to LTB Game Enterprises. Electronic gaming apparatus. 5,348,299, Cl. 273-138.00A

Clark, Arthur E., to United States of America, Navy. Magnetomechanical sensor attachment method. 5,347,872, Cl. 73-779.000.

Clark, Harold E. Outerwear garment with fabric strips. 5,347,658, Cl 2-69.000.

Clark, Raymond C.: *See—*
Buehrle, Harry W., II; Nist, Lance E.; and Clark, Raymond C., 5,347,961, Cl. 123-90.110.

Clark, Stephen E. Separator valve. 5,348,041, Cl. 137-172.000.

Clary, Everett: *See—*
Weaver, David E.; Clary, Everett; Shem, Robert; and Taft, George, 5,348,759, Cl. 427-1.000.

Clavenna, LeRoy R.; Davis, Stephen M.; Say, Geoffrey R.; and Fiato, Rocco A., to Exxon Research & Engineering Co. Synthesis gas from particulate catalysts, and admixtures of particulate catalysts and heat transfer solids. 5,348,717, Cl. 423-418.200

Clayer, Frederic: *See—*
Henneuse, Henri; Clayer, Frederic; Tanguy, Jean-Luc; and Lutz, Jean, 5,347,859, Cl. 73-151.000.

Clearman, Jack F.: *See—*
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Clemence, Francois; Fortin, Michel; Hamon, Gilles; Le Martret, Odile, and Moura, Anne-Marie, to Roussel Uclaf. Indanes useful as analgesics. 5,348,971, Cl. 514-428.000.

Clemson University: *See—*
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Cleveland, Lee E.; Van Buskirk, Michael A.; Chen, Johnny C.; and Chang, Chung K., to Advanced Micro Devices, Inc. Sector-based redundancy architecture. 5,349,558, Cl. 365-200.000

Clipcar Industrie: *See—*
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Clos, Jeffrey P., to T.K.F. Inc. Conveyor roller system and method. 5,348,140, Cl. 198-790.000

Cloud, Linda D. Cosmetic apparatus. 5,348,031, Cl. 132-317.000.

Clough, Thomas J.; Grosvenor, Victor L.; and Pinsky, Naum, to Ensci, Inc. Copper oxide coated substrates. 5,348,797, Cl. 428-283.000

Clyde Shaw Limited: *See—*
Chappell, David J., 5,348,567, Cl. 75-10.660

Coalition Technologies, Limited: *See—*
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Coburn, David R., II: *See—*
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Coca-Cola Company, The: *See—*
Rudick, Arthur G.; Gatipon, Shaun B.; and Wachenheim, Howard W., 5,347,827, Cl. 62-440.000

Cockman, Russell W.; Haming, Gordon J.; Lusman, Philip; and Melville, Archibald D., to BP Chemicals Limited. Olefin hydration process. 5,349,096, Cl. 568-896.000

Cocks, Franklin H.; and LaViers, Henry. Carbon-ion fuel cell for the flameless oxidation of coal. 5,348,812, Cl. 429-13.000.

Coflexip: *See—*
Maloberti, Rene ; Coutarel, Alain; and Espinasse, Philippe F., 5,348,423, Cl. 405-166.000

Cohen, Alan P.: *See—*
Lavin, Maryellen; Cohen, Alan P.; Greenlay, Nanette; Cannan, Thomas R.; and Hinchey, Richard J., 5,347,822, Cl. 62-85.000

Cohen, Brett I.; and Deutsch, Allan S., to Essential Dental Systems, Inc System for fabrication of dental cast post and core using a burn-out post. 5,348,476, Cl. 433-220.000.

Cohen, Lewis; and Henriques Machado, Leonel, to Double W. Stationery Corp. Apparatus for removing a flashing from a manufactured article. 5,348,462, Cl. 425-142.000.

Cohen, Martin L.; Bay, William E.; and Errigo, Lynn E., to Omniglow Corporation. Preparation of chemiluminescent vinyl halide or vinylidene halide polymer structures. 5,348,690, Cl. 252-700.000.

Cole, John J.: *See—*
Piffath, Rodney S.; and Cole, John J., 5,348,467, Cl. 431-153.000.

Cole, William L. Disposable individual gelled instant toothbrush. 5,348,153, Cl. 206-361.000.

Colgate-Palmolive Company: *See—*
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Colinas-Martinez, Jose: *See—*
Trinks, Rainer; Konigshofen, Heinrich; Ganster, Otto; Stepanski, Horst; and Colinas-Martinez, Jose, 5,349,040, Cl. 528-75.000.

Colley, Robert W.: *See—*
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Collin, Edwin J.: *See—*
Kelaita, Joseph B., Jr.; Castonguay, Roger N.; and Collin, Edwin J., 5,349,145, Cl. 200-43.150.

Collins, Craig J.: *See—*
Nilles, Robert B.; Collins, Craig J.; Killigrew, James J.; and Sasuta, Michael D., 5,349,342, Cl. 340-825.080.

Collins, Kenneth S.; and Trow, John R., to Applied Maetrials Inc Variable RF power splitter. 5,349,313, Cl. 333-131.000.

Collins, Michael J.: *See—*
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Colombo, Adalberto: *See—*
Venzi, Stefano; and Colombo, Adalberto, 5,348,801, Cl 428-354.000

Columbia University in the City of New York, The Trustees of: *See—*
Koester, Charles J., 5,349,398, Cl. 351-212.000.

Combustion Engineering, Inc.: *See—*
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Commissariat a l'Energie Atomique: *See—*
Molva, Engin; Accomo, Roger; Feuillet, Guy; Cibert, Joel; Le Si, Dang; and Bodin-Deshayes, Claire, 5,349,596, Cl. 372-43.000

Commissariat a l'Engergie Atomique: *See—*
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Commonwealth of Puerto Rico: *See—*
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Commonwelth Edison: *See—*
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Compagnie Generale des Etablissements Michelin - Michelin & Cie: *See—*
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Composite Materials Technology, Inc.: *See—*
Wong, James, 5,348,597, Cl. 149-87.000

Confalonieri, Pierangelo. Initialization circuit for memory registers. 5,349,244, Cl. 307-296.400

Conmed Corporation: *See—*
Hitti, Raja, 5,348,007, Cl. 128-640.000.

Connolly, Peter J.: *See—*
Ow, Steven G.; and Connolly, Peter J., 5,349,365, Cl. 343-895.000.

Connor, David T.: *See—*
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Conoco Inc.: *See—*
Williams, Jerry G., 5,348,096, Cl. 166-384.000.

Consadori, Franco; and Slamka, Richard, to Hydro Flame Corporation. Gas flow modulator. 5,348,224, Cl. 236-20.00R.

Cook, Arnold J., to PCC Composites, Inc. Top fill casting. 5,348,071, Cl. 164-61.000

Cook, Robert G.: *See—*
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Cook, Rodney C.: *See—*
O'Rourke, Thomas C.; O'Neill, Brian T.; Cook, Rodney C.; Taner, Kuntay O.; Synder, Steven P.; and Joyner, Adam R., 5,349,658, Cl. 395-700.000

Coombs, Peter M.; and Bennett, Bryson, to Gradco (Japan) Ltd. Moving tray sorter with variable tray shifting motor controller. 5,348,288, Cl. 271-288.000

Cooper Industries, Inc.: *See—*
Deremo, Edwin J., 5,348,427, Cl. 408-17.000.

Cooper, Lavon K., to Honeywell Inc. Sense amplifier input stage for single array memory. 5,349,302, Cl. 365-207.000.

Cooperman, Murray C.: *See—*
Reichert, William W.; and Cooperman, Murray C., 5,349,011, Cl 524-602.000

Coopers Animal Health NZ Ltd.: *See—*
Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Lightowlers, Marshall W.; O'Hoy, Kim L.; Johnson, Kevin S.; Heath, David D.; Lawrence, Stephen B.; and Vinton, Jennifer G., 5,348,740, Cl. 424-191.100.

Coots, Daniel R.: *See—*
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Copenhaver, Richard; Rainwater, Larry; Lane, Luther; Whittaker, Roger; Boatwright, Kevin; and Lee, Joe. Yarn binder apparatus. 5,347,832, Cl. 66-140.00R

Corain, Luciano; and Bortoli, Giulio, to Nuovopignone Industrie Meccahniche E Fonderia S.p.A. Taker gripper in which the wedge moves axially within the hook. 5,348,057, Cl. 139-448.000

Cordier, Bruno: *See—*
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Cordy, Clifford B. Solar powered high pressure steam generator 5,347,986, Cl. 126-574.000.

Cornette, H. Mitchell; Morrison, Stephen E.; and Barton, Michael J., to Atlantic Richfield Company. Gravel pack assembly with tubing seal 5,348,092, Cl. 166-227.000.

Cornish, Edwina C.: *See—*
Holton, Timothy A.; Cornish, Edwina C.; Kovacic, Filippa; Tanaka, Yoshikazu; and Lester, Diane R., 5,349,125, Cl. 800-205.000.

Cornu, Bernard: *See—*
Slama, Georges; Daffos, Thierry; Ayme, Henri; Pascal, Yves; Cornu, Bernard; and Denis, Philippe, 5,347,959, Cl. 122-32.000.

Corona, Alessandro, III: *See—*
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Corr, Robert A., II; and Citeno, Joseph, to General Electric Company Aspirating pyrometer with platinum thermocouple and radiation shields. 5,348,395, Cl. 374-135.000.

Corrigan, Dennis: *See—*
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Cossement, Eric: *See—*
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Costello, John R., Jr.; Knoedler, Leonard F.; Vincent, Monty E.; and Boomus, Mary K. Fluid filter assembly. 5,348,646, Cl. 210-94.000.

Cotton, James D.: *See—*
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Couch, C. Dean: *See—*
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Couch, Vern W.: *See—*
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Coulter Corporation: *See—*
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Coulter, Wallace H.: *See—*
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County Sanitation Districts of Los Angeles County: *See—*
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Coustel, Nicole: *See—*
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Coutarel, Alain: *See—*
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Coutrot, Francoise; and Giachetti, Jean-Luc, to France Telecom Etablissement Autonome de Droit Public; and Telediffusion de France. Process for the transmission and reception of conditional access programmes with a reduced programme switching time. 5,349,641, Cl. 380-10.000

Cox, James O.; and Mott, James M., to International Business Machines Corporation. System and method for secure initial program load for diskless workstations. 5,349,643, Cl. 380-25.000.

Cox, Paul E.: *See—*
Sardynski, Gary F.; Cox, Paul E.; and Pacheco, Gilbert R., 5,348,192, Cl. 222-129.100.

Cozean, Colette: *See—*
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CPX Industries, Inc.: *See—*
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Craft, David C.: *See—*
Hohimer, John P.; and Craft, David C., 5,349,601, Cl. 372-94.000

Craig, Thomas M. Apparatus for controlling aircraft on ships or the like. 5,347,947, Cl. 114-261.000.

Crane, Roger M.; and Bergen, D. Michael, to United States of America, Navy. Multi-layered translated rib-stiffened composite hollow cylinder assembly. 5,348,052, Cl. 138-174.000

Cray Research, Inc.: *See—*
Cray, Seymour R.; Bedell, James R.; Kuba, Dennis W.; and Moore, William T., Jr., 5,349,677, Cl. 395-800.600

Cray, Seymour R.; Bedell, James R.; Kuba, Dennis W.; and Moore, William T., Jr., to Cray Research, Inc. Apparatus for calculating delay when executing vector tailgating instructions and using delay to facilitate simultaneous reading of operands from and writing of results to same vector register. 5,349,677, Cl. 395-800.000.

Creeth, Jonathan E.; Riley, Paul I.; and Laing, Mark E., to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Toothpaste composition. 5,348,732, Cl. 424-49.000

Creusen, Raymond J. M.; and Vercauteren, Franky F., to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Tno. Semipermeable composite membrane. 5,348,652, Cl. 210-490.000.

Crick, Dallas M.; and Moliere, Alfred, to Nailite International. Decorative wall covering with improved interlock and corner construction 5,347,784, Cl. 52-520.000.

Crisco, Joseph J.: *See—*
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Cristiani, Marcello: *See—*
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Critzer, Susan: *See—*
Sterling, Michael; and Critzer, Susan, 5,348,146, Cl. 206-63.300

Crook, Alan, to Gillette Company, The. Safety razors. 5,347,716, Cl. 30-77.000

Crooks, Evon L.: *See—*
Barnes, Russell D.; Banerjee, Chandra K.; Crooks, Evon L.; and Clearman, Jack F., 5,348,027, Cl. 131-194.000

Cross, Robert P.: *See—*
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Cross, Virginia R.: *See—*
Potter, Mark J.; Kao, Jar-Lin; Cross, Virginia R.; Vanderspurt, Thomas H.; Dienes, Edward K.; Riley, Robert E.; Tungate, Freddie L.; and Bortinger, Arie, 5,348,924, Cl. 502-66.000.

Crossan, David I.: *See—*
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Crowe, Carl: *See—*
Roffman, Jeffrey; LaBelle, Robert; Menezes, Edgar; and Crowe, Carl, 5,349,396, Cl. 351-161.000

Crowley, H. W., to Roll Systems, Inc. Apparatus for folding web material. 5,348,277, Cl. 270-39.000.

CTC International: *See—*
Wood, Edward T.; Suman, George O., Jr.; and Brooks, Robert T., 5,348,093, Cl. 166-250.000

Cucin, Robert L., to Rocin Laboratories, Inc. Power-assisted liposuction instrument and cannula assembly therefor. 5,348,535, Cl 604-35.000.

Cummings, Paul W., Jr., to Aeration Engineering Resources Corporation. Waste water treatment apparatus. 5,348,650, Cl. 210-199.000.

Cummins Engine Company, Inc.: *See—*
Mahon, Jeff A.; and Berryhill, Ross C., 5,347,966, Cl. 123-179.210

Cur, Nihat O.; Kruck, Richard W.; Immoos, Martin P.; and Higazy, Mohamed E., to Whirlpool Corporation. Vacuum filling machine and method. 5,347,793, Cl. 53-512.000

Curcio, Michael: *See—*
Jenkins, William G.; Keemer, Craig; Lamborn, H. Taylor; and Curcio, Michael, 5,348,579, Cl. 106-404.000

Curry, Ernest W.: *See—*
Ahnell, Edward E.; and Curry, Ernest W., 5,348,753, Cl 426-231.000.

Curry, Mark A.: *See—*
Moehring, Mark A.; Curry, Mark A.; Spencer, Merrill P.; and Klepper, John R., 5,348,015, Cl. 128-661.070

Czichy, Reinhard H., to Agence Spatiale Europeenne. Device for acquiring data from a light beam and a communication system including the device with dual sensor fastened on a stiff frame. 5,349,176, Cl. 250-206.200.

D. W. Haber & Son, Inc.: *See—*
Haber, Robert H., 5,347,979, Cl. 126-43.000.

Daane, Laurence A.: *See—*
Wheatcraft, Paul A.; Daane, Laurence A.; and Blom, Hans A., 5,347,711, Cl. 29-843.000.

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Azzazy, Medhat T.; and Dabiri, Ali, 5,349,187, Cl. 250-338.500.

Daeumer, Bernd; Dragon, Andree; Beckerle, Wilhelm F.; Franzmann, Gernot; Neutzner, Josef; Wistuba, Eckehardt; Pakusch, Joachim; and Angel, Maximilian, to BASF Aktiengesellschaft. Aqueous polymer dispersions. 5,348,993, Cl. 524-44.000

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Park, Jong S., 5,349,482, Cl. 360-96.500

Daffos, Thierry: *See—*
Slama, Georges; Daffos, Thierry; Ayme, Henri; Pascal, Yves; Cornu, Bernard; and Denis, Philippe, 5,347,959, Cl. 122-32.000.

Daft, Christopher M. W.; Hall, Anne L.; Noujaim, Sharbel E.; Thomas, Lewis J.; and Welles, Kenneth B., II, to General Electric Company. Color flow imaging system utilizing a time domain adaptive wall filter. 5,349,524, Cl. 364-413.250

Daher, Lawrence J., to Miles Inc. Aqueous granulation solution and a method of tablet granulation. 5,348,745, Cl. 424-466.000.

Dahl, Jeffrey A.: *See—*
Brothers, Lance E.; and Dahl, Jeffrey A., 5,348,584, Cl 106-725.000

Dai Nippon Printing Co., Ltd.: *See—*
Hatano, Tsutomu, 5,348,827, Cl. 430-11.000.
Nakamura, Osamu; and Ikegami, Takeshi, 5,348,825, Cl. 430-5.000.

Daikin Industries, Ltd.: *See—*
Oka, Masahiko; Kishine, Mitsuru; Saito, Hideya; and Kokumai, Masuo, 5,349,093, Cl. 568-615.000

Dainippon Screen Mfg. Co., Ltd.: *See—*
Miyasaka, Eiji, 5,349,412, Cl. 354-299.000.

Daiwa Golf Co., Ltd.: *See—*
Sasamoto, Akinori; and Aizawa, Yuichi, 5,348,302, Cl. 273-169.000.

Daiwa Seiko, Inc.: *See—*
Iwama, Shinichi, 5,347,731, Cl. 36-119.000.
Kaneko, Kyoichi, 5,348,247, Cl. 242-303.000.

Dalal, Edul N.; and Jacobs, Robert M., to Xerox Corporation. Thick walled heated belt fuser. 5,349,424, Cl. 355-285.000

Dall, Paul E., to Keyes Fiber Co. Degradation resistant molded pulp horticultural container. 5,347,753, Cl. 47-66.000.

Dallaire, Rodney J.; and Stankwitz, Herbert C., to Environmental Research Institute of Michigan. Spatially variant apodization. 5,349,359, Cl. 342-195.000

Dallas, Albert B.: *See—*
Johnson, Kenneth H.; and Dallas, Albert B., 5,348,710, Cl. 422-211.000

Daly, Maureen A.: *See—*
Huettner, Steven E.; Daly, Maureen A.; and Fitzgerald, Derek J., 5,349,312, Cl. 333-81.00A

Dammann, Peter: *See—*
Bauer, Karl; Dammann, Peter; and Urbahn, Friedrich, 5,348,242, Cl. 242-18.0EW

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Khanna, Dinesh N.; McKenzie, Douglas; Sobodacha, Chester J.; and Dammel, Ralph R., 5,348,842, Cl. 430-272.000.

DAN-PAL: *See—*
Ben-Zvi, Nir; and Givoni, Shaul, 5,348,790, Cl. 428-178.000.

Dana Corporation: *See—*
Antonini, Joseph, 5,348,314, Cl. 277-152.000.
Watson, Rick D.; Jester, Terry L.; and Deutschman, Ernest F., 5,347,881, Cl. 74-473.00R.

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Rock, Kenneth L., 5,348,878, Cl. 435-240.260.

D'Andrea, Louis A.; and Masson, Roger W., to Teledyne Industries, Inc. Strain sensor. 5,347,871, Cl. 73-775.000.

Daniels, William J.: *See—*
Musil, Edward C.; and Daniels, William J., 5,348,143, Cl 198-844.200.

Dannels, Wayne R.: *See—*
Cikotte, Leonard J.; Dannels, Wayne R.; and McBride, Thomas R., 5,349,296, Cl. 324-309.000

Danon, Joseph S., to American Safety Flight Systems, Inc. Oxygen breathing controls. 5,348,001, Cl. 128-205.240

Dao, Giang T.; Qian, Qi De; Tam, Nelson N.; Gaw, Eng T.; and Fujimoto, Harry H., to Intel Corporation. Reticle with structurally identical inverted phase-shifted features. 5,348,826, Cl. 430-5.000

Dasarmaux, Pierre; Dogat, Vincent; and Thomas, Pascal, to Salomon S.A. Device for adjustment of the longitudinal position of an alpine binding. 5,348,335, Cl. 280-633.000.

Dattagupta, Nanibhushan; Rae, Peter M. M.; Rabin, Daniel U.; and Huguenel, Edward D., to Miles Inc. Assay for nucleic acid sequences in an unpurified sample. 5,348,855, Cl. 435-6.000.

Davidovits, Joseph. Method for obtaining a geopolymeric binder allowing to stabilize, solidify and consolidate toxic or waste materials 5,349,118, Cl. 588-252.000.

Davidson, James A., to Smith & Nephew Richards Inc. Osteoinductive bone screw. 5,348,026, Cl. 128-898.000.

Davies, Oliver S.: *See—*
Van Berkel, Cornelis; Bird, Neil C.; Davies, Oliver S.; Edwards, Martin J.; Shannon, John M.; and Knapp, Alan G., 5,349,174, Cl 250-208.100.

Davis, Alan R.: *See—*
Lanting, Mark L.; Davis, Alan R.; and Edelen, Stephen A., 5,348,267, Cl. 248-635.000

Davis, Albert S.: *See—*
Owen, Charles D.; Rembert, Michael E.; and Davis, Albert S., 5,348,271, Cl. 251-95.000.

Davis, George B., to Honeywell Inc. Air purifying apparatus 5,348,563, Cl. 55-385.200.

Davis, Stephen M.: *See—*
Clavenna, LeRoy R.; Davis, Stephen M.; Say, Geoffrey R.; and Fiato, Rocco A., 5,348,717, Cl. 423-418.200.

Davison, Brian H.: *See—*
Scott, Charles D.; Faison, Brendlyn D.; Davison, Brian H.; and Woodward, Jonathan, 5,348,871, Cl. 435-165.000.

Davy (Distington) Limited: *See—*
Perry, Robert M.; Reynolds, Timothy; Hope, Thomas; and Lawson, Kenneth T., 5,348,075, Cl. 164-476.000

Day, Evan E., to Thiokol Corporation. Combustible flare ignition system. 5,347,931, Cl. 102-340.000

Dayco Products, Inc.: *See—*
Foley, Mark P., 5,348,514, Cl. 474-135.000.

Dealey, Michael H.: *See—*
Dong, Liang C.; Dealey, Michael H.; Burkoth, Terry L.; Wong, Patrick S. L.; Childers, Jerry D.; and Barclay, Brian L., 5,348,746, Cl. 424-473.000

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Meyer, August K.; Shadden, Johnny W.; Stipe, Candace M.; and Dean, Leron R., 5,348,699, Cl. 264-176.100.

Deason, Vance A.; and Ward, Michael B., to EG&G Idaho, Inc. Hand held phase-shifting diffraction moire interferometer. 5,349,442, Cl. 356-354.000

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Eugene, Michel; Rodriguez, Jean-Claude; and Debons, Rene , 5,348,044, Cl. 137-312.000

DeCava, David C.: *See—*
Carver, Edward L., Jr.; DeVeaux, Richard D.; and DeCava, David C., 5,349,538, Cl. 364-555.000.

Deckers, Hubertus G. A.: *See—*
Lambregts, Augustines W. M.; Remmen, Johannes H. P.; and Deckers, Hubertus G. A., 5,348,279, Cl. 270-53.000.

Decuir, Alex J., to Decuir Development Company. Valve control device and method. 5,347,965, Cl. 123-90.610.

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Decuir, Alex J., 5,347,965, Cl. 123-90.610.

Deere & Company: *See—*
Fox, Robert E.; Smith, William L., Jr.; and Boe, Thomas E., 5,348,101, Cl. 172-2.000

Defranco, Jean-Marc; Barnabe, Florence; and Rouzier, Alain, to Thomson-Csf. Single send-receive optical head for transmission and reception of data by optical system, and associated switching circuit. 5,349,462, Cl. 359-152.000

Degeilh, Robert, to E.I. du Pont de Nemours and Company. Process for the production of polyvinyl butyral having improved properties. 5,349,014, Cl. 525-61.000

DeGroot, Peter, to Hughes Aircraft Company. Interferometric laser profilometer including a multimode laser diode emitting a range of stable wavelengths. 5,349,440, Cl. 356-349.000.

Degussa Aktiengesellschaft: *See—*
Eickhoff, Hubert; Schirrmacher, Rudiger;; Mangartz, Karl-Heinz; Huber, Hans-Martin; and Godecke, Ralf, 5,348,657, Cl. 210-636.000.
Groeger, Ulrich; and Drauz, Karlheinz, 5,348,882, Cl. 435-280.000.
Schulte, Peter; Volkmer, Michael; and Kuhn, Frank, 5,348,665, Cl. 210-748.000.

de Jong, Robertus E.; Kempers, Torben P.; and de Wit, Gerrit, to General Electric Company. Polymer mixture comprising aromatic polycarbonate, polybutylene terephthalate and polyalkylene glycol 5,348,999, Cl. 524-377.000

Dekeyser, Michel. Device for storage and dispensation of measured quantities of pasty materials and process for its embodiment 5,348,191, Cl. 222-107.000.

Deki, Naotaka: *See—*
Kubo, Kimio; and Deki, Naotaka, 5,348,073, Cl. 164-457.000.

Delacourt, Dominique; Papuchon, Michel; Lallier, Eric; and Armani, Florence, to Thomson-CSF. Frequency doubler including an electrically controlled optical index network. 5,349,466, Cl. 359-326.000

Delgado, Cristina; Francis, Gillian E.; and Fisher, Derek, to Royal Free Hospital School of Medicine. Process for fractionating polyethylene glycol (PEG)-protein adducts and an adduct for PEG and granulocyte-macrophage colony stimulating factor. 5,349,052, Cl. 530-351.000

DeLisle, William E.: *See—*
Lovell, John W.; Schramm, Karen M.; and DeLisle, William E., 5,349,606, Cl. 375-1.000

Delker, Klaus, to Siemens Aktiengesellschaft. Memory element with bipolar transistors in resettable latch. 5,349,554, Cl. 365-189.050.

Delta Estates, Inc.: *See—*
Hawkins, Wallace H., 5,348,331, Cl. 280-476.100.

Delta International Machinery Corp.: *See—*
Brickner, Louis C.; and Garcia, Jaime E., 5,347,902, Cl. 83-468.300.

De Marchi, Silverio: *See—*
Marazzi, Silvio; and De Marchi, Silverio, 5,348,487, Cl. 439-138.000

DeMatteis, Robert B. Plastic bags with waveform edge configurations. 5,348,399, Cl. 383-209.000

DeMeester, Gordon D.; Morich, Michael A.; and Amor, William H., to Picker International Inc. Combined self shielded gradient coil and shimset. 5,349,297, Cl. 324-318.000.

Dempster, Philip T.: *See—*
Prince, Jeffrey T.; Rawls, Robert L.; Dempster, Philip T.; and Ono, Jody, 5,348,519, Cl. 482-6.000

Dempster, Robert P.: *See—*
Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Lightowlers, Marshall W.; O'Hoy, Kim L.; Johnson, Kevin S.; Heath, David D.; Lawrence, Stephen B.; and Vinton, Jennifer G., 5,348,740, Cl. 424-191.100.

Demuth, Odile; Wattiez, Daniel; Maguin, Jacques; Brosse, Jean C.; Poncin-Epaillard, Fabienne; and Chevet, Bruno, to Institut Textile de France. Use of amino groups, obtained on a polymer material by an electric treatment under nitrogen atmosphere, for accelerating a grafting reaction. 5,348,772, Cl. 427-536.000.

Demuth, Stefan: *See—*
Stoll, Kurt; Demuth, Stefan; and Henzler, Magnus, 5,348,047, Cl. 137-554.000.

DeNicola, Anthony J., Jr.; and Sams, Rosemary C., to Himont Incorporated. Fibers of graft copolymers having a propylene polymer material backbone. 5,349,016, Cl. 525-71.000.

Denis, Philippe: *See—*
Slama, Georges; Daffos, Thierry; Ayme, Henri; Pascal, Yves; Cornu, Bernard; and Denis, Philippe, 5,347,959, Cl. 122-32.000.

Dennison, Charles H.; and Manning, Monte, to Micron Semiconductor, Inc. Method of fabricating a bottom and top gated thin film transistor. 5,348,899, Cl. 437-41.000.

Denny, Thomas A.: *See—*
Slater, William M.; Chiasson, Anthony M.; and Denny, Thomas A., 5,347,995, Cl. 128-10.000.

Denny, William A.; Palmer, Brian D.; Ware, David C.; and Wilson, William P., to Warner Lambert Company. Cobalt complexes as anti-cancer agents. 5,348,977, Cl. 514-501.000.

DePoorter, Gerald L.: *See—*
Rosenthal, Richard D.; DePoorter, Gerald L.; and Christy, Ronald I., 5,347,887, Cl. 76-104.100

Deremo, Edwin J., to Cooper Industries, Inc. Airfeed peck drill configuration. 5,348,427, Cl. 408-17.000

Derrick, John F., to Xerox Corporation. Cleaning apparatus for the reduction of blade tuck in removal of spot-causing agglomerate particles. 5,349,428, Cl. 355-299.000.

Desbiendras, Daniel; and Michaud, Pascal, to Elf Atochem S.A. Composition based on 1,1,1,3,3-pentafluorobutane and methylene chloride, for the cleaning and/or drying of solid surfaces. 5,348,681, Cl. 252-172.000.

Deschler, Marc: *See—*
Jurgensen, Holger; Gruter, Klaus; Deschler, Marc; and Balk, Pieter, 5,348,911, Cl. 117-91.000.

Descombes, Jean-Jacques: *See—*
Lavielle, Gilbert; Maillos, Philippe; Muller, Olivier; Laubie, Michel; Verbeuren, Tony; and Descombes, Jean-Jacques, 5,348,968, Cl. 514-360.000.

DesJardin, William F.; Ozimek, Edward J.; Rivera, Luis A.; and Tarn, Terry, to Eastman Kodak Company. Package and method for assembly of infra-red imaging devices. 5,349,234, Cl. 257-684.000.

De Soete, Gerard; Ninane, Leon; and Blondel, Jean-Marie, to Solvay (Societe Anonyme). Process for purifying a gas containing nitric oxide. 5,348,716, Cl. 423-239.100.

Desu, Seshu B.; Nyman, May; and Agaskar, Pradyot A., to Sharp Kabushiki Kaisha. Method and apparatus for synthesizing lead β-diketonates. 5,348,631, Cl. 204-157.400.

Dethardt, Herbert, to Linotype-Hell AG. Method and apparatus for processing color values. 5,349,451, Cl. 358-518.000.

Deutsch, Allan S.: *See—*
Cohen, Brett I.; and Deutsch, Allan S., 5,348,476, Cl. 433-220.000.

Deutsch, David; and Flores, Thomas C. Solar water purification device. 5,348,622, Cl. 202-176.000.

Deutsche Babcock Energie- und Umwelttechnik Aktiengesellschaft: *See—*
Jelich, Werner; Rehwinkel, Heiko; Klauke, Friedrich; Konig, Dieter; and Kalthoff, Udo, 5,348,572, Cl. 96-113.000.

Deutschman, Ernest F.: *See—*
Watson, Rick D.; Jester, Terry L.; and Deutschman, Ernest F., 5,347,881, Cl. 74-473.00R.

DeVeaux, Richard D.: *See—*
Carver, Edward L., Jr.; DeVeaux, Richard D.; and DeCava, David C., 5,349,538, Cl. 364-555.000.

Devier, Lonnie J.; Krone, John J.; Lunzman, Stephen V.; and Marsden, Howard A., to Caterpillar Inc. Cruise control for hydraulically driven vehicle. 5,348,115, Cl. 180-308.000.

Dewanckele, Jean-Marie: *See—*
Van Rompuy, Ludo; and Dewanckele, Jean-Marie, 5,348,836, Cl. 430-204.000.

Deweerdt, Kevin R., to Chrysler Corporation. Positive quick-connect tube locking construction with preassembly retention of spring keeper. 5,348,353, Cl. 285-305.000.

Dewey, David L. Control lever lock. 5,347,835, Cl. 70-202.000.

de Wit, Gerrit: *See—*
de Jong, Robertus E.; Kempers, Torben P.; and de Wit, Gerrit, 5,348,999, Cl. 524-377.000.

D'Hont, Lodewijk J.: *See—*
Schurmann, Josef H.; and D'Hont, Lodewijk J., 5,349,357, Cl. 342-51.000.

Diablo Research Corporation: *See—*
van Os, Ron; and Bray, Derek, 5,349,271, Cl. 315-248.000

Dialight Corporation: *See—*
Simms, Norman; and Cazzola, Michael, 5,349,504, Cl. 362-32.000.

Diamond SA: *See—*
Marazzi, Silvio; and De Marchi, Silverio, 5,348,487, Cl. 439-138.000.

Diana, Guy D.; and Nitz, Theodore J., to Sterling Winthrop Inc. 1,2,4-oxadiazolyl-phenoxyalkylisoxazoles and their use as antiviral agents. 5,349,068, Cl. 548-131.000

Dick, Wesley M. Torque transfer case for a full time four-wheel drive system. 5,348,517, Cl. 475-210.000

Dienes, Edward K.: *See—*
Potter, Mark J.; Kao, Jar-Lin; Cross, Virginia R.; Vanderspurt, Thomas H.; Dienes, Edward K.; Riley, Robert E.; Tungate, Freddie L.; and Bortinger, Arie, 5,348,924, Cl. 502-66.000.

Dietz, David H., to Foster Wheeler Energy Corporation. Fluidized bed combustion system having an improved pressure seal. 5,347,954, Cl. 122-4.00D

Diez, Maria T.: *See—*
Schwartz, Robert E.; Onishi, Janet C.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez, Fernando; Diez, Maria T.; Vicente, Francisca; Gorrochategui, Julian; Helms, Gregory L.; and Pramanik, Barnali, 5,348,970, Cl. 514-422.000

Digicomp Research Corporation: *See—*
Gupta, Om P., 5,349,535, Cl. 364-483.000.

Digital Equipment Corporation: *See—*
Edem, Brian C.; Helliwell, Richard P.; Johnston, John T.; and Lary, Richard F., 5,349,684, Cl. 395-800.000
Frame, Robert C.; Zayas, Fernando A.; and Gardner, Edward A., 5,349,690, Cl. 395-800.000.
Hetherington, Ricky C.; Webb, David A., Jr.; Fite, David B.; Murray, John E.; Fossum, Tryggve; and Manley, Dwight P., 5,349,651, Cl. 395-400.000.

Di Giulio, Benedetto. Shock-absorbing horse-shoe with three layers. 5,348,098, Cl. 168-12.000.

Dijkhof, Antonie, to U.S. Philips Corporation. Digital phase locked loop, and digital oscillator arranged to be used in the digital phase locked loop. 5,349,613, Cl. 375-120.000.

Di Leo, Leonard: *See—*
Rooney, John M.; Patel, Narendra M.; Kveglis, Albert A.; Catena, Robert J.; Di Leo, Leonard; and Avci, Selcuk, 5,349,021, Cl. 524-761.000

Dimension Technologies Inc.: *See—*
Eichenlaub, Jesse B., 5,349,379, Cl. 348-59.000.

Dimotsis, George L.: *See—*
Kunz, Gerhard; Dimotsis, George L.; and Sampson, Richard L., 5,348,659, Cl. 210-678.000.

Dinh, Khanh. Bladder damper. 5,348,270, Cl. 251-61.100.

Dinsmore, David W., to Joyce Gangewer DBA Sea Coast Canvas & Awning Co. Anti-graffiti device. 5,347,769, Cl. 52-101.000

Diong, Chong K.; and Choong, Kian T. Touch programmable illumination means. 5,349,330, Cl. 340-567.000.

Display Matrix Corporation: *See—*
Bohmer, William; and Bow, Clark F., 5,348,813, Cl. 429-91.000.

Distel, Gerald M.: *See—*
Kozumplik, Nicholas, Jr.; and Distel, Gerald M., 5,348,046, Cl. 137-454.400

Dittrich-Duster, Martina: *See—*
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Dixit, Girish A.: *See—*
Chen, Fusen E.; Dixit, Girish A.; and Miller, Robert O., 5,348,901, Cl. 437-47.000.

DMS, Inc.: *See—*
Bissex, Karl A., 5,348,435, Cl. 414-310.000

Do, Cuong; and Wei, Ruey-Sing, to Cadence Design Systems, Inc. Hierarchical ordering of logical elements in the canonical mapping of net lists. 5,349,659, Cl. 395-700.000.

Doane, Robert E.: *See—*
Sabacky, Bruce J.; and Doane, Robert E., 5,348,723, Cl. 423-489.000.

Dobras, Alfred D.: *See—*
Briechle, George T.; Lubowe, David H.; and Dobras, Alfred D., 5,348,485, Cl. 439-110.000.

Dogat, Vincent: *See—*
Dasarmaux, Pierre; Dogat, Vincent; and Thomas, Pascal, 5,348,335, Cl. 280-633.000.

Doherty, James B.; Finke, Paul E.; Hagmann, William K.; Kissinger, Amy L.; MacCoss, Malcolm; and Shah, Shrenik K., to Merck & Co., Inc. Substituted azetidinones as anti-inflammatory and antidegenerative agents. 5,348,953, Cl. 514-210.000

Doljack, Frank A., to Gas Research Institute. Induction heater system for fusing plastics. 5,349,165, Cl. 219-633.000.

Donaldson, Robert L.: *See—*
Verrier, Guy F.; Stein, Frank L.; and Donaldson, Robert L., 5,349,139, Cl. 178-19.000

Dong, Eun S., to Goldstar Co., Ltd. Food weight sensing device for microwave oven. 5,349,138, Cl. 177-144.000

Dong, Liang C.; Dealey, Michael H.; Burkoth, Terry L.; Wong, Patrick S. L.; Childers, Jerry D.; and Barclay, Brian L., to Alza Corporation. Method for administering drug. 5,348,746, Cl. 424-473.000

Donnelly, Charles E.: *See—*
Peeples, Frank K.; Raith, David; and Donnelly, Charles E., 5,348,434, Cl. 414-301.000

Donnelly, Martin: *See—*
Worrall, Robert N.; Lohbeck, Wilhelmus C. M.; Choate, Paul R.; and Donnelly, Martin, 5,348,095, Cl. 166-380.000.

Donnerdal, Ove: *See—*
Nilsson, Dan; and Donnerdal, Ove, 5,347,812, Cl. 60-494.000.

Dornier Medizintechnik GmbH: *See—*
Weiler, Herbert; Hagelauer, Ulrich; and Weingart, Michael, 5,347,997, Cl. 601-3.000

Dorzbach-Lange, Cornelia: *See—*
Herzig, Joachim; Bredtmann, Kurt; Knickel, Birger; and Dorzbach-Lange, Cornelia, 5,348,582, Cl. 106-696.000

Dosch, Jeffrey J.; Mayne, Roger W.; and Inman, Daniel J., to State University of New York. Dual function system having a piezoelectric element. 5,347,870, Cl. 73-769.000.

Double W. Stationery Corp.: *See—*
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Douglas, Terence A.: *See—*
Spiero, Richard C.; Douglas, Terence A.; and Vlot, Marnix C., 5,349,391, Cl. 348-705.000.

Douty, Brent D.: *See—*
Bacon, Edward R.; Illig, Carl R.; Caulfield, Thomas J.; Douty, Brent D.; and Josef, Kurt A., 5,348,727, Cl. 424-5.000

Dow Chemical Company, The: *See—*
Browning, Calvin J.; Mercer, Carl D.; and Milligan, William S., 5,348,310, Cl. 277-1.000
Park, Chung P., 5,348,795, Cl. 428-220.000
Scheck, Daniel M., 5,349,111, Cl. 568-721.000
Thomas, P. J.; and Pews, R. Garth, 5,349,095, Cl. 568-814.000.
Tuinstra, Hendrik; and Rand, Cynthia L., 5,349,102, Cl. 558-274.000.

Dow Corning Corporation: *See—*
Haluska, Loren A.; and Michael, Keith W., 5,348,839, Cl. 430-270.000.
Lee, Chi-Long; and Yeh, Ming-Hsiung, 5,348,771, Cl. 427-515.000.
Michael, Keith W.; and Pernisz, Udo C., 5,348,773, Cl. 427-540.000.

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Bouquet, Philippe L.; Pocknell, David; Bruning, Werner; Dittrich-Duster, Martina; and Lamers, Gunter, 5,348,392, Cl. 366-162.000.

Dowa Mining Co., Ltd.: *See—*
Shiratori, Toshikazu; Inoue, Chihiro; Kitagawa, Yoshichika; and Kusano, Tomonobu, 5,348,888, Cl. 435-320.100.

Downs, Robert C.: *See—*
Mainquist, James K.; Downs, Robert C.; Nitz, Larry T.; and Kinsey, Kyle K., 5,347,886, Cl. 477-161.000.

Doya, Masaharu; Ohkawa, Takashi; Kanbara, Yutaka; Okamoto, Aksushi; and Kimizuka, Kenichi, to Mitsubishi Gas Chemical Company, Inc. Process for producing alkylene carbonates. 5,349,077, Cl. 558-260.000

Doyle, Brian P.: *See—*
Fernie, Geoffrey R.; Doyle, Brian P.; and Griggs, Gerald T., 5,348,336, Cl. 280-641.000

Dragon, Andree: *See—*
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Drake, John L., Jr.: *See—*
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Drappel, Stephan V.: *See—*
Sacripante, Guerino G.; Croucher, Melvin D.; and Drappel, Stephan V., 5,348,831, Cl. 430-109.000.

Drauz, Karlheinz: *See—*
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Dreams Come True Enterprises International, Inc.: *See—*
McGhie, John R.; and Johnson, Kole D., 5,348,507, Cl. 446-16.000.

Dreisbach, Richard C.: *See—*
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Berghuis, Albert H.; McKechnie, Richard C.; and Drenth, Albert, 5,348,798, Cl. 428-285.000.

Dressen, Larry G., to Empak, Inc. Low profile disk carrier. 5,348,151, Cl. 206-334.000.

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Drott, Peter: *See—*
Klein, Hans-Christof; Kahrs, Manfred; Drott, Peter; Beer, Wilhelm; Baier, Joachim; Kraft, Peter; and Lang, Andreas, 5,348,110, Cl. 180-132.000.

Dru, Francoise. Apparatus for the collection, identification and reclamation of recyclable waste. 5,348,128, Cl. 194-209.000.

Drvota, Jiri ; and Bursik, Milan. Process of and device for more effective use of the deformation zone of motor vehicle bodies. 5,348,113, Cl. 180-271.000.

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White, George; and King, David C., 5,348,211, Cl. 228-120.000.

Dubal, Hans-Rolf: *See—*
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Dubose, Charles R.: *See—*
Hood, Clarence E., Jr.; and Dubose, Charles R., 5,347,939, Cl. 111-36.000

Duell, Alan B.: *See—*
Brandell, John T.; Duell, Alan B.; and Stepp, Lee W., 5,348,089, Cl. 166-154.000.

Duggan, Matthew S. Paddle game apparatus. 5,348,307, Cl. 273-320.000.

Dugstad, Harald: *See—*
Almen, Torsten; Berg, Arne; Dugstad, Harald; Klaveness, Jo; Krautwurst, Klaus D.; and Rongved, Pal, 5,348,954, Cl. 514-227.500.

Duguette, Paul J.; Gatto, Neil A.; Boliver, Ronald J.; and Laforest, Daniel J., to Stanley Works, The. Locking plier with wire cutter. 5,347,670, Cl. 7-107.000.

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Sluss, James J., Jr.; Duke, James C.; Lewelling, Kevin R.; and Harris, Shaun L., 5,348,019, Cl. 128-667.000.

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Dumont, Alain M. G., to Schlumberger Technology Corporation. Spectroscopy method for high count rate nuclear pulses. 5,349,195, Cl. 250-395.000

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Kaczur, Jerry J.; Cawlfield, David W.; Woodard, Kenneth E., Jr., and Duncan, Budd L., 5,348,683, Cl. 252-187.310.

Duncan, Gregory S.: *See—*
Ginzl, Jeffrey A.; and Duncan, Gregory S., 5,347,791, Cl. 53-450.000

Duncan, Warren G.: *See—*
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Dunnett, Graeme S., to Macbon Pty. Ltd. Sleeper laying apparatus. 5,347,934, Cl. 104-6.000

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Hermkens, Peter H. H.; Van Maarseveen, Jan H.; Scheeren, Johan W.; and Kruse, Cornelis G., 5,348,949, Cl. 514-183.000

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West, Michael W. J., 5,349,087, Cl. 564-252.000.

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Duracell Inc.: *See—*
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Durel Corporation: *See—*
Kimball, Robert A., 5,349,269, Cl. 315-169.300.

Dushane, Steven D.; Anderson, Kenneth K.; Bohm, Grant E.; and Simoni, Wayne, to Dushane, Steven D. Dwelling heating and air conditioning system. 5,348,078, Cl. 165-22.000.

Duval, Michel, to Hydro-Quebec. Process of coating by melt extrusion a solid polymer electrolyte on positive electrode of lithium battery. 5,348,824, Cl. 429-192.000

Dykema, Michael A.; and Burkhard, Terry E., to General Motors Corporation. Variable length shaft assembly. 5,348,345, Cl. 280-777.000

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Dynisco, Inc.: *See—*
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Dziuk, Richard; and Wulfert, Karl-Ludwig, to Hewi Heinrich Wilke GmbH. Connection system for two structural component parts constructed as pipe or rod and/or nodal elements. 5,348,414, Cl. 403-90.000

E + E Elektronik Gesellschaft m.b.H.: *See—*
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E.I. du Pont de Nemours and Company: *See—*
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E. J. Brooks Company: *See—*
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Eagle Electric Manufacturing Co., Inc.: *See—*
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Earhart, Charles F.: *See—*
Georgiou, George; Francisco, Joseph A.; and Earhart, Charles F., 5,348,867, Cl. 435-69.700.

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Earleson, Walter E.: *See—*
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East Coast Terminal Assoc., Ltd.: *See—*
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Eastman Chemical Company: *See—*
Kuo, Thauming, 5,349,010, Cl. 524-600.000.
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Eastman Kodak Company: *See—*
Anagnostopoulos, Constantine N.; Chang, Win-Chyi; Stevens, Eric G.; and Torok, Georgia R., 5,349,215, Cl. 257-223.000.
Bryant, Robert S., 5,349,401, Cl. 354-21.000.
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DesJardin, William F.; Ozimek, Edward J.; Rivera, Luis A.; and Tarn, Terry, 5,349,234, Cl. 257-684.000.
Gage, Edward C., 5,349,576, Cl. 369-13.000.
Johnson, Glenn W., 5,349,406, Cl. 354-173.100
Koehler, Steven F., 5,349,484, Cl. 360-77.120.
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Eaton Corporation: *See—*
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Ebara Corporation: *See—*
Yamamoto, Masakazu; Sakacho, Hiromi; and Yamada, Seiichirou, 5,348,452, Cl. 417-422.000

Ebata, Hirokazu, to Yoshida Kogyo K.K. Slider pull tab. 5,347,692, Cl. 24-429.000

Ebaugh, Roger L.; and Janssens, Richard J., to INA Bearing Company, Inc. Anti-lock brake system eccentric bearing arrangement including counterweight. 5,348,382, Cl. 303-116.400

Eberly, Paul E.: *See—*
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Ebling, Wendell V.; and Elmore, J. Charles, to Ebling, Wendell V. Endoscope with sterile sleeve. 5,347,990, Cl. 128-4.000.

EBT Licht-Technik GmbH: *See—*
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Echigo, Yoshiaki: *See—*
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ECP Enichem Polimeri S.r.l.: *See—*
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Edelen, Stephen A.: *See—*
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Edem, Brian C.; Helliwell, Richard P.; Johnston, John T.; and Lary, Richard F., to Digital Equipment Corporation; and National Semiconductor Corporation. Sort and merge system using tags associated with the current records being sorted to lookahead and determine the next record to be sorted. 5,349,684, Cl. 395-800.000.

Edgerton, John L., Jr., to Joerns Healthcare Inc. Two position floor lock and caster assembly. 5,347,682, Cl. 16-34.000.

EDR Acquisition Corp.: *See—*
Kunz, Gerhard; Dimotsis, George L.; and Sampson, Richard L., 5,348,659, Cl. 210-678.000.

EDV-Dienstleistungs KG: *See—*
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Edward Lawrence Carver, Jr.: *See—*
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Edwards, Martin J.: *See—*
Van Berkel, Cornelis; Bird, Neil C.; Davies, Oliver S.; Edwards, Martin J.; Shannon, John M.; and Knapp, Alan G., 5,349,174, Cl. 250-208.100

Edwin, Jakob; and Grau, Siegfried, to ETA S.A. Fabriques D'Ebauches. Horological movement having guide means for a control member such as a shaft. 5,349,574, Cl. 368-190.000

EG&G Idaho, Inc.: *See—*
Deason, Vance A.; and Ward, Michael B., 5,349,442, Cl 356-354.000

Egashira, Yoshimi; and Miyakawa, Ryouichi, to Harada Kogyo Kabushiki Kaisha. Three-wave antenna for vehicles. 5,349,361, Cl. 343-715.000

Egawa, Motoji; and Takayama, Akio, to Minebea Co., Ltd. Floating magnetic head with a head core-reinforcing portion. 5,349,487, Cl. 360-103.000

Eguchi, Hirotoshi: *See—*
Furuta, Toshiyuki; Kitaguchi, Takashi; and Eguchi, Hirotoshi, 5,349,646, Cl. 395-22.000

Ehlig, Peter N.; Boutaud, Frederic; and Hollander, James F., to Texas Instruments Incorporated. Speech recognition system having first and second registers enabling both to concurrently receive identical information in one context and disabling one to retain the information in a next context. 5,349,687, Cl. 395-800.000

Eichelberger, Charles W.: *See—*
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Eichenlaub, Jesse B., to Dimension Technologies Inc. Autostereoscopic display illumination system allowing viewing zones to follow the observer's head. 5,349,379, Cl. 348-59.000.

Eichman, Eric C.; Sommer, Bruce A.; Churley, Michael J.; and Ramsey, W. Chuck, to Materials Research Corporation. Apparatus for elimination of low temperature ammonia salts in $TiCl_4$ NH_3 CVD reaction. 5,348,587, Cl. 118-723.0MP

Eickhoff, Hubert; Schirrmacher, Rudiger;; Mangartz, Karl-Heinz; Huber, Hans-Martin; and Godecke, Ralf, to Degussa Aktiengesellschaft. Process for the separation of catalyst-free working solution from the hydrogenation circuit of the anthraquinone process for the production of hydrogen peroxide. 5,348,657, Cl. 210-636.000.

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Elco Corporation, The: *See—*
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Electric Power Research Institute, Inc.: *See—*
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Electrical Geodesics, Inc.: *See—*
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Electrolab, Inc.: *See—*
Senghaas, Karl A.; Senghaas, Peter; Wang, Jing; Kolonko, Pete T., Jr.; and Michalec, Jerzy, 5,347,864, Cl. 73-313.000.

Electronic Development, Inc.: *See—*
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Electronic Innovators, Inc.: *See—*
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Electronic Retailing Systems Int'l Inc.: *See—*
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Electronic Voting Systems, Inc.: *See—*
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Elektrowatt Ingenieurunternehmung AG: *See—*
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Elerath, Douglas E., to Hughes Aircraft Company. Multi-laser coherent imaging through aberrating media. 5,349,432, Cl. 356-121.000.

Elf Aquitaine Production: *See—*
Peytavy, Jean-Louis; Le Coz, Philippe; and Oliveau, Olivier, 5,348,714, Cl. 423-228.000.

Elf Atochem North America, Inc.: *See—*
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Elf Atochem S.A.: *See—*
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Eli Lilly and Company: *See—*
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Ellis, David W., to Padula, Joseph P., a part interest. Holder for percutaneously introduced tubes. 5,348,542, Cl. 604-173.000

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Elmore, J. Charles: *See—*
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Elsenheimer, John A.; and Riddle, Timothy K., to Newell Operating Co. Mini blind head rail. 5,348,068, Cl. 160-176.100

Elsenheimer, Willi; and Zentgraf, Hans-Dieter, to General Motors Corporation. Deforming vehicle door. 5,348,365, Cl. 296-146.600.

Emery, William W., to Better Sleep Mfg. Releasably mountable caddy devices. 5,348,168, Cl. 211-106.000

Emhart Glass Machinery Investments Inc.: *See—*
Hall, Benjamin L.; and Baldwin, Leo B., 5,349,435, Cl. 356-240.000.

Emhart, Inc.: *See—*
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Emmons, William D.; Bors, David A.; and Kielbania, Andrew J., Jr., to Rohm and Haas Company. Reactive coalescents. 5,349,026, Cl. 525-328.600.

Empak, Inc.: *See—*
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Endick, Norman: *See—*
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Endo, Akiyoshi, to NEC Corporation. Compilar vectorizing system. 5,349,665, Cl. 395-700.000

Endo, Hirokazu: *See—*
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Endo, Takeshi: *See—*
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Endoh, Naoshi: *See—*
Nakajima, Sadahiro; Endoh, Naoshi; Kataoka, Kenzo; and Odaka, Masaki, 5,348,552, Cl. 606-13.000

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Enomoto, Masahiro, to Fuji Photo Film Co., Ltd. Photographic film cassette. 5,348,239, Cl. 242-348.400.

Enomoto, Osaomi: *See—*
Tadaki, Yoshitaka; Sekiguchi, Toshihuro; Uchiyama, Hiroyuki; Kaga, Toru; Murata, Jun; and Enomoto, Osaomi, 5,349,218, Cl. 257-296.000.

Ensci, Inc.: *See—*
Clough, Thomas J.; Grosvenor, Victor L.; and Pinsky, Naum, 5,348,797, Cl. 428-283.000

Environmental Research Institute of Michigan: *See—*
Dallaire, Rodney J.; and Stankwitz, Herbert C., 5,349,359, Cl. 342-195.000.

Enzinna, Donald J., to Kistler Instrument Corporation. Self-testing transducer curcuit. 5,347,841, Cl. 73-1.00D

Enzon, Inc.: *See—*
Greenwald, Richard B.; and Martinez, Anthony J., 5,349,001, Cl. 525-408.000

EOA Systems, Inc.: *See—*
McCormick, Peter E., 5,349,337, Cl. 340-680.000.

Epling, Valeria J.: *See—*
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Erben, Peter; Liman, Helmut; Hegeler, Wilhelm; Bochmann, Harald; Kasser, Jurgen; and Henze, Werner, to Blaupunkt-Werke GmbH Radio receiver with masking of switchover noise. 5,349,699, Cl. 455-186.100.

Ercon Development Co.: *See—*
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Ergonomiprodukter I Bodafors AB: *See—*
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Erich Netzsch GmbH & Co. Holding KG: *See—*
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Ericsson GE Mobile Communications Inc.: *See—*
Chennakeshu, Sandeep; and Toy, Raymond L., 5,349,589, Cl. 371-43.000

Ernst, Josef. *See—*
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Erregierre Industria Chimica S.p.A.: *See—*
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Errigo, Lynn E.: *See—*
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Escher, Claus: *See—*
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Espinasse, Philippe F.: *See—*
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Esposito, Joseph J.; Moss, Bernard; and Brechling, Kathleen, to United States of America, Health and Human Services. Vector for Recombinant poxvirus expressing rabies virus glycoprotein. 5,348,741, Cl 424-199.100.

Essential Dental Systems, Inc.: *See—*
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ETA S.A. Fabriques D'Ebauches: *See—*
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Eugene, Michel; Rodriguez, Jean-Claude; and Debons, Rene , to Aerospatiale Societe Nationale Industrielle. Sealed drainage unit for a hydraulic circuit. 5,348,044, Cl. 137-312.000.

Everaerts, Albert I.: *See—*
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Everard, Donald G.; and Gorman, William, to Homecare Products, Inc. Portable, stowable knock-down ramp. 5,347,672, Cl. 14-69.500

Everbrite, Inc.: *See—*
Pacholok, David, 5,349,273, Cl. 315-307.000.

Everlove, Craig; and Garden, Dale J., to Anderson-Cook Incorporated. Apparatus for progressive broaching. 5,347,704, Cl. 29-563.000.

Exabyte Corporation: *See—*
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Excel, Inc.: *See—*
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executrix, Pierrette Belleau: *See—*
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Exxon Chemical Patents Inc.: *See—*
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Mintz, Eric A., 5,349,100, Cl. 585-350.000.
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Exxon Research & Engineering: *See—*
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Eyelematic Manufacturing Co., Inc.: *See—*
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Fabrique Nationale Nouvelle Herstal, en abrege FNNH, societe anonyme: *See—*
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Fabritz, Jacqueline M. B.; Barth, Marshall L.; and Longo, Anthony R., to CCC Acquisitions Corp. Figure-enhancing pneumatic bathing suit. 5,347,656, Cl. 2-67.000.

Faigle, Ernst M.: *See—*
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Faison, Brendlyn D.: *See—*
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Falessi, George: *See—*
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Falossi, Aldo; and Thomas, Paul. Adapter/connector shell assembly with unisex hardware. 5,348,494, Cl. 439-362.000.

Famili, Amir: *See—*
Robeson, Lloyd M.; Kuphal, Jeffrey A.; and Famili, Amir, 5,349,000, Cl. 524-388.000.

Fan Chiang, Yung F.; and Lee, Kun M., to Acer Peripherals, Inc. Apparatus for detecting polarity of an input signal. 5,349,387, Cl. 348-525.000.

Fankboner, Peter V., to Pacific Pearl Culture Ltd. Process for producing pearls in abalone and other shell-bearing molluska and nucleus used therewith. 5,347,951, Cl. 119-244.000.

Fantazian, George V.: *See—*
Eisbrenner, Ronald J.; and Fantazian, George V., 5,349,151, Cl. 219-89.000.

Fantoni, Giuseppe; Forno, Mario; Gibellino, Gianfranco; and Miglietta, Giampiero, to Officine Meccaniche Giovanni Cerutti S.p.A. Printing element for a rotary printing machine having a plurality of receiving carriages for an impression cylinder. 5,347,926, Cl. 101-219.000.

Farmitalia Carlo Erba S.R.L.: *See—*
Bissolino, Pierluigi; Alpegiani, Marco; Perrone, Ettore; Orezzi, Piergiuseppe; Cassinelli, Giuseppe; and Franceschi, Giovanni, 5,348,952, Cl. 514-202.000.
Monsan, Pierre; Paul, Francois; Betbeder, Didier; and Sarmientos, Paolo, 5,348,863, Cl. 435-68.100.

Faryniarz, Joseph R.: *See—*
Patti, Anthony L.; Hentrich, Susan K.; and Faryniarz, Joseph R., 5,348,731, Cl. 424-47.000.

Fassman, Arnold: *See—*
Riccardi, Victor; and Fassman, Arnold, 5,348,509, Cl. 446-46.000.

Faucher, Philippe: *See—*
Le Disert, Yves; Roue, Jean; Moriarity, Thomas; and Faucher, Philippe, 5,348,578, Cl. 106-287.200

Fay, Jean-Baptiste; and Huvey, Michel, to Institut Francais du Petrole. Device for carrying out measuring and servicing operations in a well bore and use in an oil well. 5,348,084, Cl. 166-65.100.

Fay, Jean-Baptiste: *See—*
Giannesini, Jean-Francois; and Fay, Jean-Baptiste, 5,348,097, Cl. 166-385.000

FCI-FiberChem, Inc.: *See—*
Saini, Devinder P.; and Law, Tommy J., 5,349,181, Cl. 250-227.140.

Feather Safety Razor Co., Ltd.: *See—*
Kiyoshi, Ido; and Hideo, Fujii, 5,348,152, Cl. 206-354.000.

Fechtner, Ryszard. Underwater paddle and vertical fin for swimmer. 5,348,503, Cl. 441-56.000.

Feistel, Norbert, to Maschinenfabrik Sulzer-Burckhardt AG. Piston compressor for the oilfree compression of gases. 5,347,915, Cl. 92-258.000

Feldstein, David A.; and Altman, Kenneth A. Self-centering endoscope system. 5,347,987, Cl. 128-4.000.

Ferguson, David B.; Booker, LeRoy A.; and Szklany, Craig R., to Sensormatic Electronics Corportion. EAS system with requency hopping. 5,349,332, Cl. 340-572.000.

Ferguson, Frederick D. Dirigible airship. 5,348,251, Cl. 244-30.000.

Fernie, Geoffrey R.; Doyle, Brian P.; and Griggs, Gerald T. Walking aid. 5,348,336, Cl. 280-641.000

Ferrara, Joseph J.: *See—*
Choi, Injae; and Ferrara, Joseph J., 5,348,282, Cl. 271-117.000

Ferrari, R. Keith. Medical temperature sensing probe. 5,348,397, Cl 374-185.000

Ferro Corporation: *See—*
Thometzek, Peter; and Christ, Heinrich, 5,348,914, Cl. 501-18.000.
Thometzek, Peter, 5,348,915, Cl. 501-24.000

Ferroni, Ferruccio, to Elektrowatt Ingenieurunternehmung AG. Core melt-through retention device for light-water reactors. 5,349,615, Cl. 376-280.000

Festo KG: *See—*
Stoll, Kurt; Demuth, Stefan; and Henzler, Magnus, 5,348,047, Cl. 137-554.000

Fetcenko, Michael A.: *See—*
Ovshinsky, Stanford R.; Corrigan, Dennis; Venkatesan, Srini; Young, Rosa; Fierro, Christian; and Fetcenko, Michael A., 5,348,822, Cl. 429-223.000.

Feuillet, Guy: *See—*
Molva, Engin; Accomo, Roger; Feuillet, Guy; Cibert, Joel; Le Si, Dang; and Bodin-Deshayes, Claire, 5,349,596, Cl. 372-43.000.

Feurer, Georg: *See—*
Burger, Stefan; Feurer, Georg; Freudenberg, Tillman; Freudenberg, Ulrich; and Weltin, Uwe, 5,349,537, Cl. 364-508.000

Feustel, Michael: *See—*
Wirtz, Herbert; von Halasz, Sigmar-Peter; Feustel, Michael; and Balzer, Juliane, 5,349,019, Cl. 525-217.000.

Few, Jeffrey P.; and Leftwich, William B., to Norco Industries, Inc Quick release seat pedestal. 5,348,264, Cl. 248-503.100.

Few, Jeffrey P.; and Rumler, Thomas, to Norco Industries, Inc. Integrated stabilizer jack apparatus. 5,348,330, Cl. 280-475.000

Feygin, Ilya. Hand held paper sheet folding device. 5,348,526, Cl. 493-405.000.

Fiato, Rocco A.: *See—*
Clavenna, LeRoy R.; Davis, Stephen M.; Say, Geoffrey R.; and Fiato, Rocco A., 5,348,717, Cl. 423-418.200

Ficht, Thomas A.; and Adams, L. Garry, to Texas A & M University. Probes and method for identifying species and biovars of brucella. 5,348,857, Cl. 435-6.000

Field, John M.: *See—*
Louwagie, Dominic J.; and Field, John M., 5,348,491, Cl. 439-188.000.

Field, Robert J.: *See—*
Thomas, Nils I.; and Field, Robert J., 5,349,177, Cl. 250-214.0VT.

Fierro, Christian: *See—*
Ovshinsky, Stanford R.; Corrigan, Dennis; Venkatesan, Srini; Young, Rosa; Fierro, Christian; and Fetcenko, Michael A., 5,348,822, Cl. 429-223.000.

Fiesel, Wolfgang, to Alcatel N.V. Method and circuit arrangement for transmitting data blocks through a bus system. 5,349,621, Cl. 377-44.000.

Filkins, James S. Tree stand and adaptor comprising the same. 5,348,119, Cl. 182-187.000.

Fink, Heinz: *See—*
Butzke, Frank; Fink, Heinz; and Leupers, Wolfgang, 5,347,805, Cl. 57-279.000.

Fink, Raymond W., to Kenco/Williams. Vehicle windshield bug and debris deflector. 5,348,363, Cl. 296-91.000.

Finke, Paul E.: *See—*
Doherty, James B.; Finke, Paul E.; Hagmann, William K.; Kissinger, Amy L.; MacCoss, Malcolm; and Shah, Shrenik K., 5,348,953, Cl. 514-210.000.

Finlay, Ian R.: *See—*
Anderson, Karen L.; Finlay, Ian R.; Mitchell, Joan L.; and Thornton, Davey S., 5,349,348, Cl. 341-51.000.

Finley, Lisa M.; and Iding, Stephen H., to Procter & Gamble Company, The. Stable thickened aqueous bleach compositions. 5,348,682, Cl 252-186.360

First Data Resources Inc.: *See—*
Katz, Ronald A., 5,349,633, Cl. 379-88.000.

Fisch, Harry. Biological assembly. 5,349,436, Cl. 356-246.000.

Fischer, Harry C. Co-current packed tower bio-reactor. 5,348,654, Cl. 210-615.000.

Fischer, Kurt; and Leutwiler, Hans, to Georg Fischer AG. Process for the compression of molding sand for casting molds. 5,348,070, Cl. 164-38.000.

Fischer, Paul D., to PMT Corporation. Torque limiting device. 5,347,894, Cl. 81-471.000

Fischhoff, David A.; and Rogers, Stephen G., to Monsanto Company. Insect-resistant lettuce plants. 5,349,124, Cl. 800-205.000.

Fisher, Derek: *See—*
Delgado, Cristina; Francis, Gillian E.; and Fisher, Derek, 5,349,052, Cl. 530-351.000

Fisher, John S.: *See—*
Porter, Jerry, 5,348,035, Cl. 135-66.000

Fisons Instruments, S.P.A.: *See—*
Grob, Konrad; and Munari, Fausto, 5,347,844, Cl. 73-23.410.

Fisons plc: *See—*
Baxter, Andrew J. G.; and Meghani, Premji, 5,348,978, Cl. 514-547.000

Fite, David B.: *See—*
Hetherington, Ricky C.; Webb, David A., Jr.; Fite, David B.; Murray, John E.; Fossum, Tryggve; and Manley, Dwight P., 5,349,651, Cl. 395-400.000

Fitzgerald, Arthur K.; Gainey, Charles W., Jr.; Kelley, William K.; and Wentz, Samuel L., to International Business Machines Corporations System for directly displaying remote screen information and providing simulated keyboard input by exchanging high level commands 5,349,675, Cl. 395-800.000.

Fitzgerald, Derek J.: *See—*
Huettner, Steven E.; Daly, Maureen A.; and Fitzgerald, Derek J., 5,349,312, Cl. 333-81.00A

FKI Industries Inc.: *See—*
Klotz, Steven H., 5,347,882, Cl. 74-502.400

Flakoll, Paul J.: *See—*
Nissen, Steven L.; Flakoll, Paul J.; and Abumrad, Naji N., 5,348,979, Cl. 514-557.000

Fleig, Jon F.; Tronolone, Mark J.; and Huang, Chunsheng J., to Tropel Corporation. Method of measuring artifact taper. 5,349,434, Cl 356-138.000

Fleming, Alison A.; and Antezzo, Meiylin F., to Akzo Nobel nv. Process for forming α-aminonitriles from carbonyl compound and fatty amine hydrohalide. 5,349,079, Cl. 558-346.000

Flexible Steel Lacing Company: *See—*
Musil, Edward C.; and Daniels, William J., 5,348,143, Cl 198-844.200

Flores, Thomas C.: *See—*
Deutsch, David; and Flores, Thomas C., 5,348,622, Cl. 202-176.000

Florida Atlantic University: *See—*
Glenn, William E., 5,349,385, Cl. 348-458.000.

Fly, Howard G.; and Cook, Robert G. Water conditioner dispensing apparatus. 5,347,661, Cl. 4-225.100.

FMC Corporation: *See—*
Bellinghausen, Thomas G.; and Coburn, David R., II, 5,347,895, Cl. 82-112.000
Ginzl, Jeffrey A.; and Duncan, Gregory S., 5,347,791, Cl. 53-450.000

Focke & Co. (GmbH & Co.): *See—*
Focke, Heinz, 5,348,440, Cl. 414-792.900.

Focke, Heinz, to Focke & Co. (GmbH & Co.). Apparatus for loading cartons onto pallets. 5,348,440, Cl. 414-792.900.

Foley, Mark P., to Dayco Products, Inc. Belt tensioner, components therefor and methods of making the same. 5,348,514, Cl. 474-135.000

Fond, Olivier; Pasquali, Mario; and Pierre, Bernard, to Nestec S.A. Device to assist extraction of beverage material in cartridges. 5,347,916, Cl. 99-295.000.

Fong, Miller Y.: *See—*
Zweig, Jan B.; and Fong, Miller Y., 5,347,738, Cl. 40-642.000

Forbes, Mark M.; and Kernkamp, John H. Concealed antenna applying electrically-shortened elements and durable construction. 5,349,362, Cl. 343-720.000

Ford Motor Company: *See—*
Giltinan, Paul J., 5,348,334, Cl. 280-691.000
Mansoor, Dhafer Y.; and Kallenberg, Walter J., 5,347,090, Cl. 24-295.000
Nietering, Kenneth E., 5,348,599, Cl. 156-100.000

Ford New Holland, Inc.: *See—*
McIlwain, Irwin D., 5,347,801, Cl. 56-341.000
Vansteelant, Marc G.; and Schoonheere, Marnix J., 5,347,920, Cl. 100-4.000.

Forno, Mario: *See—*
Fantoni, Giuseppe; Forno, Mario; Gibellino, Gianfranco; and Miglietta, Giampiero, 5,347,926, Cl. 101-219.000.

Forsvarets Forskningsanstalt: *See—*
Odman, Svante; Karlsson, Jan-Olof; and Axelsson, Krister, deceased, 5,348,851, Cl. 435-4.000

Fortin, Michel: *See—*
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Fossum, Tryggve: *See—*:
Hetherington, Ricky C.; Webb, David A., Jr.; Fite, David B.; Murray, John E.; Fossum, Tryggve; and Manley, Dwight P., 5,349,651, Cl. 395-400.000
Foster Wheeler Energy Corporation: *See—*
Adbulally, Igbal F., 5,347,953, Cl. 122-4.00D.
Dietz, David H., 5,347,954, Cl. 122-4.00D
Vatsky, Joel, 5,347,937, Cl. 110-261.000.
Fowler, George F., Jr.: *See—*
Richards, Turner W.; Francis, Hubert C.; and Fowler, George F., Jr., 5,347,780, Cl. 52-204.100
Fowler, Thomas C.: *See—*
Benedict, Lawrence R.; Bassett, Raymond C.; and Fowler, Thomas C., 5,349,427, Cl. 355-298.000
Fox, Robert E.; Smith, William L., Jr.; and Boe, Thomas E., to Deere & Company. Hydraulic system for a towed implement. 5,348,101, Cl. 172-2.000.
Framatome: *See—*
Slama, Georges; Daffos, Thierry; Ayme, Henri; Pascal, Yves; Cornu, Bernard; and Denis, Philippe, 5,347,959, Cl. 122-32.000.
Frame, Robert C.; Zayas, Fernando A.; and Gardner, Edward A., to Digital Equipment Corporation. Fair arbitration scheme for arbitrating between multiple nodes in a computer system seeking control of a common bus. 5,349,690, Cl. 395-800.000.
Framo Developments (UK) Limited: *See—*
Mohn, Frank, 5,348,451, Cl. 417-390.000
France Telecom Etablissement Autonome de Droit Public: *See—*
Coutrot, Francoise; and Giachetti, Jean-Luc, 5,349,641, Cl 380-10.000
Franceschi, Giovanni: *See—*
Bissolino, Pierluigi; Alpegiani, Marco; Perrone, Ettore; Orezzi, Piergiuseppe; Cassinelli, Giuseppe; and Franceschi, Giovanni, 5,348,952, Cl. 514-202.000.
Francis, Gillian E.: *See—*
Delgado, Cristina; Francis, Gillian E.; and Fisher, Derek, 5,349,052, Cl. 530-351.000.
Francis, Hubert C.: *See—*
Richards, Turner W.; Francis, Hubert C.; and Fowler, George F., Jr., 5,347,780, Cl. 52-204.100.
Francis, Melvin, to Hughes Aircraft Company. Optical mode switching system. 5,349,469, Cl. 359-420.000.
Francisco, Joseph A.: *See—*
Georgiou, George; Francisco, Joseph A.; and Earhart, Charles F., 5,348,867, Cl. 435-69.700.
Frank, Joel: *See—*
Standish, Robert; Frank, Joel; and Meyer, Pascal, 5,347,808, Cl 60-226.200.
Frank, Sylvester H. Vehicle top carrier. 5,348,207, Cl. 224-310.000
Franklin, William H., III; and Samolyk, John H., to Bell Atlantic Network Services, Inc. Method and apparatus for installing fiber optic cable. 5,348,118, Cl. 182-187.000
Frantzen, John J.: *See—*
Taylor, Charles S.; Tiffany, William B.; Cherkas, Paul; Frantzen, John J.; Hampton, Hilary J.; Nanis, Leonard; and Shah, Bhupendra O., 5,348,693, Cl. 264-22.000.
Franz, Gerald H.: *See—*
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Franzke, Jorg: *See—*
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Daeumer, Bernd; Dragon, Andree; Beckerle, Wilhelm F.; Franzmann, Gernot; Neutzner, Josef; Wistuba, Eckehardt; Pakusch, Joachim; and Angel, Maximilian, 5,348,993, Cl. 524-44.000.
Fraunhofer Gesellschaft zur Foerder der angewandten Forschung e V.: *See—*
Birkle, Michael; Grasemann, Gunther; and Steusloff, Hartwig, 5,349,540, Cl. 364-578.000.
Fravala, G. Michael: *See—*
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Frazier Industrial Company: *See—*
Allen, Donald R., 5,348,169, Cl. 211-151.000.
Frecska, Sandor A.; Nute, Ernest B., Jr.; and Sauer, Gale E., to Armstrong World Industries, Inc. Prenotched fire-rated runner 5,347,783, Cl. 52-506.070
Frederiksen, Torben. Polyurethane club with cylindrical core. 5,348,296, Cl. 273-84.00R.
Freeman, David R.: *See—*
Klappert, Willi; and Freeman, David R., 5,347,706, Cl. 29-609.000.
Freeman, Michael H.; and Meyers, William E., to Pilkington Diffractive Lenses Limited. Rigid gas permeable lenses. 5,349,394, Cl. 351-160.00R
Freiberg, Robert J.: *See—*
Amirkhanian, Varouj D.; Cozean, Colette; and Freiberg, Robert J., 5,349,590, Cl. 372-6.000
Freiburg, Joseph A.; and Rivshin, Isaak, to Xerox Corporation. Input-/output coprocessor for printing machine. 5,349,647, Cl. 395-115.000
Freudenberg, Tillman: *See—*
Burger, Stefan; Feurer, Georg; Freudenberg, Tillman; Freudenberg, Ulrich; and Weltin, Uwe, 5,349,537, Cl. 364-508.000
Freudenberg, Ulrich: *See—*
Burger, Stefan; Feurer, Georg; Freudenberg, Tillman; Freudenberg, Ulrich; and Weltin, Uwe, 5,349,537, Cl. 364-508.000.
Freund, Robert S.: *See—*
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Friedland, Donald H. Blade shave counter. 5,347,715, Cl. 30-41.700.
Friedrich Grohe Aktiengesellschaft: *See—*
Wagner, Friedrich; and Grau, Walter, 5,348,042, Cl. 137-237.000.
Frish Pty. Ltd.: *See—*
Quin, Bernard J., 5,347,798, Cl. 56-8.000.
Fu, Chi Y., to United States of America, Energy. Process for forming synapses in neural networks and resistor therefor. 5,348,908, Cl. 437-60.000
Fuchs, Martin; and Merion, Michael, to Waters Investments Limited. Process for effecting capillary electrophoresis. 5,348,658, Cl 210-656.000
Fuisz, Richard C.; Battist, Gerald E.; Appl, Richard C.; and Richards, Anthony P., to Fuisz Technologies Ltd. Controlled melting point matrix formed with admixtures of a shearform matrix material and an oleaginous material. 5,348,758, Cl. 426-660.000
Fuisz Technologies Ltd.: *See—*
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Fuji Electric Co., Ltd.: *See—*
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Seki, Yasukazu, 5,349,212, Cl. 257-133.000.
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Fuji Electrochemical Co., Ltd.: *See—*
Shinoda, Kenichi; Izumi, Akihide; Tsutsui, Kiyohide; Yamashita, Katsuhiro; Tsuzuki, Hidenori; and Matsuo, Takashi, 5,348,816, Cl. 429-206.000
Fuji Kogyo Co., Ltd.: *See—*
Ohmura, Ryuichi, 5,347,742, Cl. 43-22.000.
Fuji Photo Film Co., Ltd.: *See—*
Enomoto, Masahiro, 5,348,239, Cl. 242-348.400.
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Ito, Tadashi, 5,348,849, Cl. 430-574.000.
Kamata, Kazuo, 5,349,410, Cl. 354-288.000.
Morigaki, Masakazu; Kawamoto, Hiroshi; Fujita, Yoshihiro; Nakamura, Shigeru; Watanabe, Hiroyuki; and Yagihara, Morio, 5,348,845, Cl. 430-372.000.
Nagao, Makoto; and Akashi, Goro, 5,348,811, Cl. 428-699.000.
Ohishi, Chikashi; Sasayama, Hiroyuki; and Kanzaki, Hisao, 5,349,413, Cl. 354-324.000.
Shibata, Norio; and Suzuki, Akihiro, 5,348,768, Cl. 427-356.000
Shigesada, Keiji; Shibata, Norio; and Akiyama, Syozo, 5,347,868, Cl. 73-715.000
Suzuki, Makoto; Takahashi, Osamu; Shimada, Yasuhiro; Matsuoka, Koushin; and Yoshioka, Yasuhiro, 5,348,847, Cl. 430-558.000.
Taguchi, Seiichi; and Igarashi, Shunkichi, 5,349,419, Cl. 355-22.000
Terashima, Masaaki; and Makiuchi, Hajime, 5,348,889, Cl. 436-8.000
Yoshida, Tetsuo, 5,348,850, Cl. 430-575.000
Fuji Photo Optical Co., Ltd.: *See—*
Saito, Tatsuo; Onozuka, Haruo; and Tanaka, Yasuhiko, 5,349,407, Cl. 354-173.100.
Tanaka, Toshizumi, 5,347,993, Cl. 128-4.000.
Fuji Xerox Co., Ltd.: *See—*
Arai, Kazuhiko; Teshigawara, Toru; and Sagara, Toshiaki, 5,349,374, Cl. 346-108.000.
Maeda, Masahiro; Yamasaki, Toru; Kurahashi, Masayuki; and Seki, Noriaki, 5,349,452, Cl. 358-527.000
Miyake, Hiroyuki; Abe, Tsutomu; Ito, Hisao; Hotta, Hiroyuki; Shimizu, Yasumoto; and Sakai, Yoshihiko, 5,348,892, Cl 437-3.000
Fujihara, Yoshimi: *See—*
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Fujihira, Tatsuhiko: *See—*
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Fujii, Hideki: *See—*
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Fujii, Takashi, to NEC Corporation. Second order phase locked loop. 5,349,309, Cl. 331-17.000.
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Fujikata, Shingo, to Fuji Photo Film Co., Ltd. Filter apparatus and method with filter evaluation by sample solutions. 5,348,660, Cl 210-767.000
Fujiki, Hironao; Michimata, Kaoru; and Okami, Takehide, to Shin-Etsu Chemical Co., Ltd. Adhesive composition. 5,349,037, Cl. 528-15.000.
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Imashimizu, Yoshinori; Suda, Yoshiaki; Yamamoto, Shuichi; Takada, Toshiyuki; Maeyama, Kaoru; Hiramoto, Etsuro; Oki, Toshihide; Morita, Sadayuki; Kawatani, Shoji; Morioka, Kunihito; Fujimitsu, Ryoichi; and Handa, Kazuhisa, 5,347,703, Cl. 29-525.100
Fujimoto, Harry H.: *See—*
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Fujimoto, Katsumi; Yoshitani, Kazuhiro; Mori, Akira; and Nakamura, Takeshi, to Murata Manufacturing Co., Ltd. Vibrator. 5,349,261, Cl. 310-321.000.
Fujino, Kenji: *See—*
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Fujirebio Kabushiki Kaisha: *See—*
Masaki, Mitsuo; Uehara, Masaki; Hirate, Kenji; Isowa, Yoshikazu; Sato, Yoshiaki; and Nakashima, Yoshiharu, 5,349,050, Cl. 530-330.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
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Fujita, Masanari: *See—*
Fujita, Toshio; Fujita, Masanari; Takeda, Naoto; and Hirashima, Koji, 5,349,012, Cl. 525-52.000.
Fujita, Shigetomo; Hasegawa, Tsukasa; Hayashi, Tomoe; and Suzuki, Osamu, to Mitsubishi Jukogyo Kabushiki Kaisha. Tanker for the prevention of cargo oil spillage. 5,347,943, Cl. 114-74.00R.
Fujita, Toshio; Fujita, Masanari; Takeda, Naoto; and Hirashima, Koji, to Nippon Steel Chemical Co., Ltd. Process for preparing rubber-modified styrene resins. 5,349,012, Cl. 525-52.000.
Fujita, Yoshihiro: *See—*
Morigaki, Masakazu; Kawamoto, Hiroshi; Fujita, Yoshihiro; Nakamura, Shigeru; Watanabe, Hiroyuki; and Yagihara, Morio, 5,348,845, Cl. 430-372.000.
Fujitsu Ltd.: *See—*
Harajiri, Shuichi, 5,348,906, Cl. 437-54.000.
Ikeda, Masayuki; and Ueda, Koichi, 5,349,664, Cl. 395-700.000.
Kotani, Seigo; and Imamura, Takeshi, 5,349,291, Cl. 324-248.000.
Mochizuki, Akihiro; Kasahara, Shigeo; Makino, Tetsuya; Watanabe, Masashi; Nakatsuka, Masakatsu; Yoshio, Kunikiyo; Satoh, Masahiro; Watanabe, Tetsuya; Sugita, Naoko; and Yanagi, Tatsuroh, 5,348,685, Cl. 252-299.620.
Murao, Toshiaki; Kikuchi, Takeo; Iryu, Toshihiko; Nomura, Hidenori; and Sugamoto, Hiroyuki, 5,349,219, Cl. 257-208.000.
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Sakamoto, Kiichi; and Yasuda, Hiroshi, 5,349,197, Cl. 250-492.220.
Sugimoto, Masaharu; Aruga, Keiji; Yamada, Tomoyoshi; Imamura, Takahiro; and Mizoshita, Yoshifumi, 5,349,486, Cl. 360-97.010.
Yamada, Mitsutaka; Yokouchi, Kishio; Kamehara, Nobuo; and Niwa, Koichi, 5,349,499, Cl. 361-700.000.
Yamada, Toyonobu, 5,349,290, Cl. 324-158.100.
Yamagishi, Yasuo; and Owada, Tamotsu, 5,349,155, Cl. 219-121.710.
Fujitsu VLSI Limited: *See—*
Murao, Toshiaki; Kikuchi, Takeo; Iryu, Toshihiko; Nomura, Hidenori; and Sugamoto, Hiroyuki, 5,349,219, Cl. 257-208.000.
Fukasawa, Tetsuo: *See—*
Hirohashi, Kazutoshi; Horii, Hiroshi; Koike, Hideo; Yunoki, Yoshiaki; Fukasawa, Tetsuo; Katayama, Susumu; Yoshikawa, Akio; Ushijima, Keishi; Takeda, Takaaki; Nomoto, Takeshi; Kikuta, Michio; Shichijo, Shunichi; and Iwasaki, Yoshiki, 5,349,463, Cl. 359-174.000.
Fukaya, Hideyuki: *See—*
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Fukaya, Kunio: *See—*
Takahashi, Kimio; Miyake, Katsuya; Kunimi, Takashi; Ogawahara, Tatsuo; Kobayashi, Tadashi; and Fukaya, Kunio, 5,348,123, Cl. 188-72.100.
Fukuda, Hiroshi; Yamanaka, Ryoko; Tawa, Tsutomu; Terasawa, Tsuneo; and Yonezawa, Seiji, to Hitachi, Ltd. Projection exposure apparatus and pattern forming method for use therewith. 5,348,837, Cl. 430-269.000.
Fukuda, Kosei: *See—*
Tateyama, Masaru; Tamura, Yukihiko; Fukuda, Kosei; Yoshida, Shigeru; and Kami, Chikashi, 5,348,424, Cl. 405-262.000.
Fukuda, Masao, to Ishida Scales Mfg. Co., Ltd. Transverse sealer for packaging machine. 5,347,795, Cl. 53-552.000
Fukuda, Yutaka: *See—*
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Fukui, Masanori: *See—*
Kumon, Naoki; Kawagoe, Harue; Matsugi, Shin; Kano, Hiroshi; Nakaoka, Noriyoshi; Morii, Shoichi; Kusanagi, Shigekazu; Koi, Kenji; Hatai, Takashi; and Fukui, Masanori, 5,347,665, Cl. 4-541.100.
Fukui, Ryo: *See—*
Sakamoto, Kazuo; Fujii, Tatsuya; Shiraishi, Naoto; Fukui, Ryo; Imai, Yukihiro; Sato, Yutaka; and Yamada, Yoshiteru, 5,349,610, Cl. 375-106.000.
Fukuoka Kagaku Ltd.: *See—*
Fukuoka, Masahiro, 5,348,370, Cl. 297-217.000.
Fukuoka, Katsuhito, to Kabushiki Kaisha Toshiba. Information processing apparatus for executing application programs under control of a system program. 5,349,680, Cl. 395-800.000
Fukuoka, Masahiro, to Fukuoka Kagaku Ltd. Apparatus for vibrating seats. 5,348,370, Cl. 297-217.000.
Fukuoka, Morinao: *See—*
Kurasawa, Yuko; Noda, Satoshi; and Fukuoka, Morinao, 5,349,473, Cl. 359-654.000.
Fulkerson, Gregory M.; and Allrich, Melvin, to Thiele Engineering Company. Can selector bar assembly. 5,348,135, Cl. 198-419.300
Fullenkamp, Eugene H.; Heimbrock, Richard H.; Hensley, David; and Hornbach, David W., to Hill-Rom Company, Inc. Carrier with deployable center wheels. 5,348,326, Cl. 280-43.170.
Fuller, Luke, to U.S. Ring Binder. Releasable attachment for a ring metal to a ring binder. 5,348,412, Cl. 402-75.000.
Funae, Hideaki: *See—*
Tatsuki, Noboru; and Funae, Hideaki, 5,349,578, Cl. 370-13.000
Funk, Kent D.: *See—*
Heiniger, Richard W.; Kolb, Troy C.; and Funk, Kent D., 5,348,226, Cl. 239-1.000.
Furlan, Wayne R., to Air Products and Chemicals, Inc. Water-based construction adhesive mastic. 5,349,009, Cl. 524-563.000.
Furukawa Electric Co., Ltd., The: *See—*
Kinoshita, Isamu; Suzuki, Kenji; Shibata, Nobuyuki; and Nishiwaki, Toshimitsu, 5,347,698, Cl. 29-407.000.
Furukawa Electric Co., Ltd: *See—*
Sotani, Junji; Satoh, Kuniyoshi; and Noda, Hajima, 5,349,131, Cl. 174-24.000.
Furukawa, Koji: *See—*
Kusunoki, Haruyuki; Yasutome, Kikuo; Yamazaki, Shigeo; Furukawa, Koji; and Sasaki, Takeshi, 5,348,431, Cl. 409-132.000
Furukawa, Kunio: *See—*
Kobori, Takuji; Ishii, Koji; Takahashi, Motoichi; Matsunaga, Yoshinori; Niwa, Naoki; Tagami, Jun; Mizuno, Takayuki; and Furukawa, Kunio, 5,347,771, Cl. 52-167.00R.
Furuta, Toshiyuki; Kitaguchi, Takashi; and Eguchi, Hirotoshi, to Ricoh Company, Ltd. Signal processing apparatus having at least one neural network. 5,349,646, Cl. 395-22.000
Furuya, Katsuhiko: *See—*
Takahashi, Tadashi; and Furuya, Katsuhiko, 5,347,994, Cl. 128-6.000.
Futagawa, Hitoshi; Ikeda, Koji; and Kikuchi, Toshihiro, to Nissho Corporation. Drug vessel. 5,348,060, Cl. 141-100.000.
Futagawa, Hitoshi: *See—*
Ikeda, Koji; Futagawa, Hitoshi; and Kikuchi, Toshihiro, 5,348,550, Cl. 604-411.000.
G. D. Searle & Co.: *See—*
Honan, David G.; Lantz, Gregory W.; and Salisbury, Thomas E., 5,348,158, Cl. 206-531.000.
Gabbert, Chuck. Contact lens treatment apparatus. 5,347,674, Cl 15-97.100.
Gadbois, Laurence E., to United States of America, Navy. Storm water runoff first flush sampler. 5,347,877, Cl. 73-863.520.
Gadski, Robert A.: *See—*
Bumol, Thomas F.; Gadski, Robert A.; Hamilton, Amy E.; Sportsman, J. Richard; and Strnad, Joann, 5,348,887, Cl. 435-320.100
Gage, Douglas W., to United States of America, Navy. Long sequence correlation coprocessor. 5,349,550, Cl. 364-728.030
Gage, Edward C., to Eastman Kodak Company. Apparatus and method for polarization switching of a readout beam in a magneto-optic storage system. 5,349,576, Cl. 369-13.000
Gainey, Charles W., Jr.: *See—*
Fitzgerald, Arthur K.; Gainey, Charles W., Jr.; Kelley, William K.; and Wentz, Samuel L., 5,349,675, Cl. 395-800.000.
Gajjar, Kumar; and Nguyen, Anh, to MTI Technology Corporation Method and circuit for programmably selecting a variable sequence of elements using write-back. 5,349,686, Cl. 395-800.000.
Galanes, George W., to Commonwelth Edison. Welding method for rotatable shafts. 5,348,212, Cl. 228-135.000
Gall, Thomas P.; Heck, Howard L.; and Kresge, John S., to International Business Machines Corporation. Parallel processor and method of fabrication. 5,347,710, Cl. 29-830.000.
Gallivan, James R., to Hughes Missile Systems Company. Retro reflection guidance and control apparatus and method. 5,348,249, Cl 244-3.110.
Gallone, Cesare. Protection device against water splashes for electric switches and the like. 5,349,147, Cl. 200-302.300.
Gambale, Ronald J.; and Barbera, Bruce C. J., to OSi Specialties, Inc Fluorosilicone compositions as wash durable soil and stain repellent finishes. 5,348,769, Cl. 427-387.000.
Gambro, AB: *See—*
Jonsson, Lennart; and Knutsson, Stefan, 5,348,389, Cl. 366-136.000
Gamo, Takaharu: *See—*
Niikura, Junji; Yasumoto, Eiichi; Hatoh, Kazuhito; and Gamo, Takaharu, 5,348,814, Cl. 429-19.000.
Gandolfo, Rino: *See—*
Bolognese, Renato; and Gandolfo, Rino, 5,349,420, Cl. 355-75.000.
Gandy, Samuel E.; Caporaso, Gregg L.; and Greengard, Paul, to Rockefeller University, The. Method of screening for modulators of amyloid formation. 5,348,963, Cl. 514-313.000
Ganesan, MaduraiGurusamy: *See—*
Sheth, Nitin V.; Valorose, Joseph J., Jr.; Ellway, Keith A.; Ganesan, MaduraiGurusamy; Mooney, Kieran G.; and Johnson, Jerry B., 5,348,748, Cl. 424-494.000.
Gannaway, Edwin L.: *See—*
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Ganster, Otto: *See—*
Trinks, Rainer; Konigshofen, Heinrich; Ganster, Otto; Stepanski, Horst; and Colinas-Martinez, Jose, 5,349,040, Cl. 528-75.000.
GAO Gesellschaft fur Automation and Organisation mbH: *See—*
Baader, Helmut, 5,348,460, Cl. 425-121.000.
Gao, Xinglong, to Hitop Science Technology Co., Ltd. Multifunctional energy-saving system for vehicles including an automatic clutch unit with both differential and anti-slip capabilities. 5,348,126, Cl 192-7.000.
Garbarino, John: *See—*
Sticha, David A.; Mayer, Glenn N.; Ranz, Stephen J.; and Garbarino, John, 5,349,584, Cl. 370-97.000
Garcia, Brent E.; Garcia, Mary L.; and Garcia, John A. Shield for high chair. 5,348,368, Cl. 297-148.000

Garcia, Jaime E.: *See—*
Brickner, Louis C.; and Garcia, Jaime E., 5,347,902, Cl. 83-468.300.

Garcia, John A.: *See—*
Garcia, Brent E.; Garcia, Mary L.; and Garcia, John A., 5,348,368, Cl. 297-148.000.

Garcia, Mary L.: *See—*
Garcia, Brent E.; Garcia, Mary L.; and Garcia, John A., 5,348,368, Cl. 297-148.000.

Garcia Rodriguez, Manuel. Nail varnish applicator having pincers. 5,348,029, Cl. 132-74.500.

Garden, Dale J.: *See—*
Everlove, Craig; and Garden, Dale J., 5,347,704, Cl. 29-563.000

Gardiner, Robert W.: *See—*
Bishop, Alan W.; Bray, David J.; Gardiner, Robert W.; and Viney, Brian W., 5,348,703, Cl. 420-590.000

Gardner, Edward A.: *See—*
Frame, Robert C.; Zayas, Fernando A.; and Gardner, Edward A., 5,349,690, Cl. 395-800.000.

Gardner, Robert J.; and Buenemann, Morris C., Jr., to Olin Corporation. Shot wad with highly collapsible hinge portion. 5,347,932, Cl. 102-451.000.

Garfinkel, Henry A. Toy with simulated force discharge. 5,348,508, Cl. 446-24.000.

Garg, Diwakar; Bonner, Brian B.; Kilhefner, Paul T.; Mattiola, Paul A.; and Mitchell, David L., to Air Products and Chemicals, Inc. Method of producing nitrogen-hydrogen atmospheres for metals processing 5,348,592, Cl. 148-208.000.

Garg, Diwakar: *See—*
Bowe, Donald J.; Bonner, Brian B.; and Garg, Diwakar, 5,348,593, Cl. 148-208.000

Garmong, Gregory O., to Napp Systems, Inc. Photosensitive polymeric printing medium and water developable printing plates. 5,348,844, Cl. 430-286.000.

Garnjost, Kenneth D.; and Rey, Gonzalo J., to Moog Inc. Method and apparatus for cancellation of rotational unbalance. 5,347,884, Cl. 74-573.000.

Garrett, L. A., to I-Sha-Vi, Inc. Eyewear in combination with a visor. 5,347,655, Cl. 2-10.000.

Gartner, Ellis M.. *See—*
Arfaei, Ahmad; Berke, Neal S.; Jeknavorian, Ara A.; Gartner, Ellis M.; Hartman, JudithAnn R.; and Myers, David F., 5,348,583, Cl. 106-696.000

Garverick, Steven L.; and Fujino, Kenji, to General Electric Company Data acquisition systems with programmable bit-serial digital signal processors. 5,349,676, Cl. 395-800.000.

Gas Research Institute: *See—*
Doljack, Frank A., 5,349,165, Cl. 219-633.000.
Kang, Sukhvinder S.; Patel, Bharatan R.; and Kothari, Kirankumar M., 5,347,876, Cl. 73-861.950.

Gat, Nahum: *See—*
Blumenthal, Jack L.; Gat, Nahum; Faigle, Ernst M.; Semchena, John H.; and Thompson, Richard J., 5,348,344, Cl. 280-737.000.

Gathoye, Jean-Louis, to Fabrique Nationale Nouvelle Herstal, en abrege FNNH, societe anonyme. Elements for decelerating the recoil of the moving parts of a fire arm. 5,347,912, Cl. 89-169.000.

Gatipon, Shaun B.: *See—*
Rudick, Arthur G.; Gatipon, Shaun B.; and Wachenheim, Howard W., 5,347,827, Cl. 62-440.000.

Gatto, Neil A.: *See—*
Duguette, Paul J.; Gatto, Neil A.; Boliver, Ronald J.; and Laforest, Daniel J., 5,347,670, Cl. 7-107.000.

Gauthier, Patricia; Gros, Philippe; Le Perchec, Pierre; and Senet, Jean-Pierre, to Societe Nationale des Poudres et Explosifs - S.N.P.E Silica-based substrates modified by grafting of polyalkylguanidinium groups, their process of manufacture and their use as catalysts 5,348,923, Cl. 502-62.000

Gautier, G. Marie, to Commissariat a l'Engergie Atomique. Apparatus for removing the residual power of a pressurized nuclear reactor core. 5,349,617, Cl. 376-299.000.

Gavin, Norman W. Universal spacer for concrete reinforcement rods 5,347,787, Cl. 52-677.000.

Gaw, Eng T.: *See—*
Dao, Guang T.; Qian, Qi De; Tam, Nelson N.; Gaw, Eng T.; and Fujimoto, Harry H., 5,348,826, Cl. 430-5.000

Gay, Howard, to Hyde Athletic Industries, Inc. Adjustable skate brake. 5,348,320, Cl. 280-11.200.

Gay, Philippe B.: *See—*
Ryals, John A.; Gay, Philippe B.; and Ahl-Goy, Patricia A., 5,348,743, Cl. 424-94.610

Gay, Ricahard L.; Guon, Jerold; and Newcomb, John C., to Rockwell International Corporation. Molten salt destruction of alkali and alkaline earth metals. 5,348,689, Cl. 588-18.000.

Gaz de France: *See—*
Sauron, Jean; and Thomas, Jean-Jacques, 5,348,459, Cl. 425-11.000

Gaztambide, Jesus F.: *See—*
Simas, Luis E. D.; and Gaztambide, Jesus F., 5,348,655, Cl 210-625.000

Gazzano-Santoro, Helene: *See—*
Little, Roger G., II; Gazzano-Santoro, Helene; and Parent, James B., 5,348,942, Cl. 514-12.000.

GE Yokogawa Medical Systems, Limited: *See—*
Inoue, Yuji, 5,349,318, Cl. 335-299.000

Gee, Calvin J., to GMT, Inc. Portable tongue for trailers. 5,348,333, Cl 280-491.500

Geffroy, Dominique: *See—*
Camiade, Marc; Serru, Veronique; and Geffroy, Dominique, 5,349,356, Cl. 342-50.000.

Geiger, John F. Adjustable stringed instrument mute. 5,347,906, Cl 84-453.000

Geiger, Richard D.: *See—*
Carlson, Timothy J.; Geiger, Richard D.; Karls, Gerald A.; and Meysembourg, Bruce A., 5,348,651, Cl. 210-321.600.

Gelardi, Anthony: *See—*
Gelardi, John A.; Gelardi, Anthony; and Goldman, Leonard, 5,348,408, Cl. 400-715.000.

Gelardi, John A.; Gelardi, Anthony; and Goldman, Leonard. Wrist pad for use with keyboards. 5,348,408, Cl. 400-715.000.

General DataComm, Inc.: *See—*
Sorrentino, Gregory L., 5,348,484, Cl. 439-101.000.

General Electric Company: *See—*
Bruner, James E., 5,349,614, Cl. 376-204.000
Corr, Robert A., II; and Citeno, Joseph, 5,348,395, Cl. 374-135.000
Daft, Christopher M. W.; Hall, Anne L.; Noujaim, Sharbel E.; Thomas, Lewis J.; and Welles, Kenneth B., II, 5,349,524, Cl 364-413.250.
de Jong, Robertus E.; Kempers, Torben P.; and de Wit, Gerrit, 5,348,999, Cl. 524-377.000
Dunki-Jacobs, Robert J.; Hall, Anne L.; Bernardi, Richard B.; O'Donnell, Matthew; Thomas, Lewis J.; Welles, Kenneth B., II; and Engeler, William E., 5,349,525, Cl. 364-413.250
Garverick, Steven L.; and Fujino, Kenji, 5,349,676, Cl. 395-800.000.
Head, Jesse S., 5,349,344, Cl. 340-825.230.
Kelaita, Joseph B., Jr.; Castonguay, Roger N.; and Collin, Edwin J., 5,349,145, Cl. 200-43.150.
Klappert, Willi; and Freeman, David R., 5,347,706, Cl. 29-609.000.
Lee, Ching-Pang; Isburgh, Anne M.; and Wilson, Paul S., 5,348,446, Cl. 416-241.00R.
Makarenko, Peter; Harris, Stacy E.; and Martin, Robert R., 5,348,602, Cl. 156-161.000.
Patel, Gautam A., 5,349,002, Cl. 428-412.000
Pearce, Eric J.; and Carbone, John W., 5,348,985, Cl. 521-124.000.
Sawyer, Thomas F.; Benz, Mark G.; Carter, William T., Jr.; and Zabala, Robert J., 5,348,566, Cl. 75-10.240.
Ujari, Paul U.; and Tiearney, Thomas C., 5,349,626, Cl. 378-144.000
Wojnarowski, Robert J.; and Eichelberger, Charles W., 5,348,607, Cl. 156-298.000.

General Hospital Corporation, The: *See—*
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General Motors Corporation: *See—*
Dykema, Michael A.; and Burkhard, Terry E., 5,348,345, Cl. 280-777.000.
Elsenheimer, Willi; and Zentgraf, Hans-Dieter, 5,348,365, Cl 296-146.600
Halstead, Gary A.; Barten, Brian L.; and Smith, Gregory R., 5,348,081, Cl. 165-144.000.
Harris, David E.; Christopher, Brian J.; and Rackett, Cary W., 5,348,442, Cl. 415-55.100
Hawthorn, Laura A., 5,348,343, Cl. 280-730.00R.
Konchan, Jeffrey L.; Portelli, Alfred L.; and Paulik, Rita M., 5,348,357, Cl. 292-216.000.
Morello, John R.; Okrucky, James A.; and Neale, Frank T., 5,348,498, Cl. 439-877.000.
Newman, Kenneth B., 5,347,829, Cl. 62-474.000.
Nini, James P., 5,348,261, Cl. 248-430.000.
Ordo, Richard A., 5,347,879, Cl. 74-331.000.
Press, Roman J.; and Wilson, James O., 5,348,233, Cl. 239-585.300.
Tura, Vincent J., Jr.; and Germ, Kenneth B., 5,348,486, Cl. 439-125.000
Webber, James L., 5,348,341, Cl. 280-728.00R.

General, Ronald: *See—*
Harris, Dennis; and General, Ronald, 5,348,735, Cl. 424-65.000.

General Signal Corporation: *See—*
Lavrenge, Edward T.; and Scott, Dane C., 5,348,611, Cl. 156-571.000

Genesis Research Corporation: *See—*
Kindig, James K., 5,348,160, Cl. 209-17.000.

Genovese, Joseph E.: *See—*
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Georg Fischer AG: *See—*
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Georgia-Pacific Corporation: *See—*
Richards, Turner W.; Francis, Hubert C.; and Fowler, George F., Jr., 5,347,780, Cl. 52-204.100

Georgia Tech Reserach Corporation: *See—*
Propst, Eric K.; and Kohl, Paul A., 5,348,627, Cl. 204-129.300.

Georgiou, George; Francisco, Joseph A.; and Earhart, Charles F., to Georgiou, George. Expression of proteins on bacterial surface. 5,348,867, Cl. 435-69.700

Georgopoulos, George; and Dreisbach, Richard C., to E. J. Brooks Company. Reusable bolt seal. 5,347,689, Cl. 24-136.00R.

Gerber, Reinhold: *See—*
Smith, Bruce R.; and Gerber, Reinhold, 5,348,181, Cl. 220-254.000.

Gerhold, Bruce W.: *See—*
Carter, Michael C.; and Gerhold, Bruce W., 5,348,718, Cl. 423-291.000.

Germ, Kenneth B.: *See—*
Tura, Vincent J., Jr.; and Germ, Kenneth B., 5,348,486, Cl 439-125.000

Gerpheide, George E., to Cirque Corporation. Electrical charge transfer apparatus. 5,349,303, Cl. 330-257.000.

Gertel, Maurice; and Haynes, Robert G., to Kinetic Systems, Inc. Reduced horizontal stiffness vibration isolation system. 5,348,266, Cl 248-562.000.

Getschel, Glen. Fishing lure. 5,347,744, Cl. 43-42.360

Geyer, Paul. Extrusion apparatus for mixing and extruding thermo-plastic materials. 5,348,388, Cl. 366-80.000.

GHS Products, Inc.: *See—*
Harris, Dennis; and General, Ronald, 5,348,735, Cl. 424-65.000.

Giachetti, Jean-Luc: *See—*
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Giacobbe, Robert A.: *See—*
Schwartz, Robert E.; Onishi, Janet C.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez, Fernando; Diez, Maria T.; Vicente, Francisca; Gorrochategui, Julian; Helms, Gregory L.; and Pramanik, Barnali, 5,348,970, Cl. 514-422.000.

Giannesini, Jean-Francois; and Fay, Jean-Baptiste, to Institut Francais du Petrole. Device for carrying out measuring and servicing operations in a well bore, comprising tubing having a rod centered therein, process for assembling the device and use of the device in an oil well. 5,348,097, Cl. 166-385.000.

Giat Industries: *See—*
Mouterde, Renaud; and Bouzianne, Michel, 5,347,908, Cl. 89-34.000

Gibbs, William T.: *See—*
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Gibellino, Gianfranco: *See—*
Fantoni, Giuseppe; Forno, Mario; Gibellino, Gianfranco; and Miglietta, Giampiero, 5,347,926, Cl. 101-219.000.

Gibson, Michael A.; and Knudsen, Christian W., to Carbotek Inc. Integrated lunar materials manufacturing process. 5,348,696, Cl. 264-65.000

Gieske, Juergen W. Collapsible manually towed or bicycle trailered sailboard dolly. 5,348,327, Cl. 280-47.331.

Gilbert, George A., Jr.: *See—*
Carmo, Robert A.; and Gilbert, George A., Jr., 5,348,240, Cl. 242-401.000

Gilbert, Percy V.; and Neudeck, Gerold W., to Purdue Research Foundation. Integrable MOS and IGBT devices having trench gate structure. 5,349,224, Cl. 257-333.000.

Gillette Company, The: *See—*
Crook, Alan, 5,347,716, Cl. 30-77.000.

Gilliam, Steve: *See—*
Tyler, Larry; Burbidge, Jack; Gilliam, Steve; Hampton, Gary; Olson, Jim; and Simmons, Ron, 5,347,686, Cl. 16-247.000.

Gilliland, W. Keith; Midgley, Christian G.; Murphy, Alison M.; and Bowerman, Wayne T., to Xerox Corporation. Printer toner usage indicator with image weighted calculation. 5,349,377, Cl. 346-153.100

Gilmartin, Bryan W.: *See—*
Gilmartin, Michael P.; Gilmartin, Bryan W.; and Gilmartin, Frank J., 5,349,241, Cl. 307-114.000

Gilmartin, Frank J.: *See—*
Gilmartin, Michael P.; Gilmartin, Bryan W.; and Gilmartin, Frank J., 5,349,241, Cl. 307-114.000.

Gilmartin, Michael P.; Gilmartin, Bryan W.; and Gilmartin, Frank J., to CPX Industries, Inc. Multiple point controlled flashing locator system. 5,349,241, Cl. 307-114.000.

Gilmore, John R.: *See—*
Hallisy, Michael J.; Gilmore, John R.; Hobbs, Steven J.; and Duncan, Warren G., 5,349,091, Cl. 568-22.000.

Giltinan, Paul J., to Ford Motor Company. Suspension apparatus for a motor vehicle. 5,348,334, Cl. 280-691.000.

Ginzburg, Vladimir B., to International Rolling Mill Consultants, Inc.; and United Engineering, Inc. Method of rolling using bendable sleeved roll. 5,347,837, Cl. 72-243.600.

Ginzl, Jeffrey A.; and Duncan, Gregory S., to FMC Corporation. Computer controlled horizontal wrapper. 5,347,791, Cl. 53-450.000.

Girard, James J.: *See—*
Hock, Ng L.; Girard, James J.; Keen, Lee G.; Chan, James L. K.; and Lim, Chuin K., 5,348,407, Cl. 400-711.000

Gisin, Nicolas; Stamp, Patrick; Passy, Rogerio; Hori, Nobuo; and Nagano, Shigenori, to Kabushiki Kaisha TOPCON. Apparatus for measuring cross-sectional distribution of refractive index of optical waveguide. 5,349,431, Cl. 356-73.100.

Givoni, Shaul: *See—*
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Gladstein, Leo A.; Jones, Christopher Dave; and Wulf, James C., to International Business Machines. Battery operated computer having improved battery monitor and cell reversal protection circuit. 5,349,668, Cl. 395-750.000.

Glaverbel: *See—*
Laroche, Pierre, 5,348,763, Cl. 427-137.000.

Glenn, Joe; and McGuire, Roger, to McGuire, Roger. Carpet stripping device. 5,348,608, Cl. 156-344.000.

Glenn, William E., to Florida Atlantic University. Adaptive scan converter. 5,349,385, Cl. 348-458.000.

Globe Business Furniture, Inc.: *See—*
Bray, James R., 5,347,778, Cl. 52-239.000.

Gmelin, Karl; and Gregorius, Thomas, to Robert Bosch GmbH Contact strip for providing common electrical connection of several electrically operated fuel injection valves. 5,347,969, Cl. 123-456.000.

GMT, Inc.: *See—*
Gee, Calvin J., 5,348,333, Cl. 280-491.500.

Gnade, Bruce E.; and Summerfelt, Scott R., to Texas Instruments Incorporated. Method of forming electrical connections to high dielectric constant materials. 5,348,894, Cl. 437-12.000

GNB Battery Technologies Inc.: *See—*
Rao, Purushothama; and Cherng, Jing-Yih, 5,348,817, Cl 429-210.000.

Gobert, Jean: *See—*
Van Keulen, Berend J.; Goldstein, Solo; Cossement, Eric; Gobert, Jean; and Wulfert, Ernst, 5,348,956, Cl. 514-232.200.

Godecke, Ralf: *See—*
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Goerg, Kristin A.: *See—*
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Grab, Lawrence A., to Union Carbide Chemicals & Plastics Technology Corporation. Method for stabilizing glutaraldehyde in aqueous systems. 5,348,666, Cl. 210-754.000
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Graf, Konrad; and Lasselsberger, Gunter, to Chamottewaren-und Thonofenfabrick Aug. Rath Jun. Aktiengesellschaft. Fiber brick and burner with such fiber brick. 5,348,468, Cl. 431-171.000
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Grasselli, Robert K.; Lago, Rudolph M.; Socha, Richard F.; and Tsikoyiannis, John G., to Mobil Oil Corp. Process for sorption separation. 5,349,117, Cl. 585-820.000.
Grasset, Jean-Charles, to Thomson-CSF Semiconducteurs Specifiques Amplifier using a follower transistor. 5,349,308, Cl. 330-296.000.
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Greenberg, Michael J., to Wm. Wrigley Jr. Company. Enhanced flavors using menthone ketals. 5,348,750, Cl. 426-3.000
Greenfield, Robert S.: *See*—
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Greenleaf, David J.; Purewal, Tarlochan S.; and Jinks, Philip A., to Minnesota Mining and Manufacturing Company. Method for preparing medicinal aerosol formulation containing coated medicament. 5,348,730, Cl. 424-45.000
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Greenspan, Ehud. BWR fuel assembly having oxide and hydride fuel. 5,349,618, Cl. 376-429.000.
Greenwald Industries, Inc.: *See*—
Zirkiev, Arkady, 5,348,129, Cl. 194-235.000.
Greenwald, Richard B.; and Martinez, Anthony J., to Enzon, Inc. Cyclic imide thione activated polyalkylene oxides. 5,349,001, Cl. 525-408.000
Gregorius, Thomas: *See*—
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Griffin, Nigel D., to Camco Drilling Group Ltd. Cutter assemblies and cutting elements for rotary drill bits. 5,348,109, Cl. 175-434.000.
Griggs, Gerald T.: *See*—
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Grim, Tracy E.; Arnold, William K.; and Iglesias, Joseph M., to Royce Medical Company. Pneumatic ankle brace with bladder and pump arrangement. 5,348,530, Cl. 602-13.000
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Grob, Konrad; and Munari, Fausto, to Fisons Instruments, S.P.A Process & device for vaporisation injections in equipments for gas chromatographic analysis. 5,347,844, Cl. 73-23.410.
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Gros, Philippe: *See*—
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Grosch, Peter T. Adjustable height tiltable footrest. 5,348,377, Cl. 297-423.450.
Gross, Harry R.; Johnson, Raydene; and Walters, J. C., to United States of America, Agriculture. Beehive-mounted device for utilizing honeybees (hymenoptera: apidae) in the dissemination of biocontrol agents. 5,348,511, Cl. 449-2.000
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Grudzien, Christopher P., Jr.; Malloy, Robert; and Reilly, James F., to Dynisco, Inc. Capillary rheometer plunger pressure transducer and measurement technique. 5,347,851, Cl. 73-53.010.
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GTE Government Systems Corporation: *See*—
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Gulec, Bilge, to Ciba-Geigy Corporation. Preparation of aromatic nitriles. 5,349,103, Cl. 558-314.000
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Guon, Jerold: *See*—
Gay, Ricahard L.; Guon, Jerold; and Newcomb, John C., 5,348,689, Cl. 588-18.000
Gupta, Om P., to Digicomp Research Corporation. Battery condition monitoring and recording system for electric vehicles. 5,349,535, Cl 364-483.000
Gupta, Subhash, to Advanced Micro Devices, Inc. Selective planarization method using regelation. 5,348,615, Cl. 156-635.000.
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van Es, Remco M.; Keizer, Gerrit D.; and van Doorn, Albert W. J., 5,348,891, Cl. 436-525.000.
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Weinhold, Dennis G.; Hieatt, Allen C.; and Ludwig, Jerome H., 5,348,679, Cl. 252-105.000
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Brothers, Lance E.; and Dahl, Jeffrey A., 5,348,584, Cl. 106-725.000
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Halligan, Francis; and Walsh, Daniel. Curtain rod and attachment system. 5,347,683, Cl. 16-87.40R
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Halstead, Gary A.; Barten, Brian L.; and Smith, Gregory R., to General Motors Corporation. High capacity automotive condenser. 5,348,081, Cl. 165-144.000
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Hamza, Hassan; Burkitt, Garrett J., III; and Olson, Gordon D., to KDI American Products, Inc. Suction fitting with pump control device. 5,347,664, Cl. 4-509.000
Han, Byung H. Salicylic acid-maltol conjugates. 5,349,070, Cl. 549-417.000
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Weder, Donald E., 5,347,789, Cl. 53-397.000.

Highnam, Peter T.: *See*—
Pieprzak, Andrew; and Highnam, Peter T., 5,349,527, Cl. 364-421.000

Highsmith, William: *See*—
Hester, Phillip; and Highsmith, William, 5,349,580, Cl. 370-84.000

Higuchi, Susumu: *See*—
Yanagisawa, Munehisa; Higuchi, Susumu; and Tamura, Yuuki, 5,349,208, Cl. 257-79.000

Hill, Alan. Oil absorption method and apparatus utilizing a replaceable bladder. 5,348,661, Cl. 210-680.000

Hill-Rom Company, Inc.: *See*—
Fullenkamp, Eugene H.; Heimbrock, Richard H.; Hensley, David; and Hornbach, David W., 5,348,326, Cl. 280-43.170

Hill, Todd: *See*—
Bond, David G.; Caluori, Vincent A.; Hill, Todd; Kirkland, David T.; Raftery, Michael L.; and VanAlen, Derek J., 5,349,654, Cl. 395-575.000

Hillman, Chris F. Integrated air exchanger. 5,348,077, Cl. 165-16.000.

Hilti, Bruno: *See*—
Hofherr, Walther; Minder, Ernst; Hilti, Bruno; and Ansermet, Jean-Philippe, 5,348,762, Cl. 427-121.000.

Himont Incorporated: *See*—
DeNicola, Anthony J., Jr.; and Sams, Rosemary C., 5,349,016, Cl. 525-71.000

Hinchey, Richard J.: *See*—
Lavin, Maryellen; Cohen, Alan P.; Greenlay, Nanette; Cannan, Thomas R.; and Hinchey, Richard J., 5,347,822, Cl. 62-85.000.

Hines, Horace; Hug, Paul; and Lamp, Mark L., to ADAC Laboratories. Adjustable triple-detector image data acquisition system. 5,349,190, Cl. 250-363.050.

Hiraharu, Teruo: *See*—
Kato, Minoru; Hiraharu, Teruo; Nishiwaki, Koichi; and Tadenuma, Hiroshi, 5,349,003, Cl. 524-458.000

Hirai, Nobuyuki, to Canon Kabushiki Kaisha. Image communication apparatus. 5,349,448, Cl. 358-444.000.

Hirai, Yoshikatsu: *See*—
Uetsuki, Setsuyoshi; Sato, Osamu; Nakayama, Yasuo; and Hirai, Yoshikatsu, 5,348,858, Cl. 435-7.100.

Hirakawa, Hideki: *See*—
Takeda, Kimihito; Hirakawa, Hideki; Adachi, Hisahiro; and Amano, Shinya, 5,349,368, Cl. 345-115.000.

Hiramatsu, Soichi: *See*—
Yanagi, Haruyuki; Suzuki, Tetsuo; Hiramatsu, Soichi; Nojima, Takashi; and Saikawa, Satoshi, 5,348,283, Cl. 271-127.000.

Hiramatsu, Toru: *See*—
Matsuhisa, Yoji; Hiramatsu, Toru; Yoshida, Kazuo; and Katagiri, Gen, 5,348,802, Cl. 428-367.000.

Hiramoto, Etsuro: *See*—
Imashimizu, Yoshinori; Suda, Yoshiaki; Yamamoto, Shuichi; Takada, Toshiyuki; Maeyama, Kaoru; Hiramoto, Etsuro; Oki, Toshihide; Morita, Sadayuki; Kawatani, Shoji; Morioka, Kunihito; Fujimitsu, Ryoichi; and Handa, Kazuhisa, 5,347,703, Cl. 29-525.100

Hirano, Yoshihide: *See*—
Torigai, Katsumi; Takahashi, Masanori; and Hirano, Yoshihide, 5,348,499, Cl. 440-76.000

Hirashima, Koji: *See*—
Fujita, Toshio; Fujita, Masanari; Takeda, Naoto; and Hirashima, Koji, 5,349,012, Cl. 525-52.000.

Hirata, Toshihiro; and Ogawa, Shin-ichiro, to Idemitsu Kosan Company Limited. Synergistic herbicidal composition comprising triazine herbicides and either diclofop or fenoxaprop with fenchlorazole. 5,348,932, Cl. 504-106.000.

Hirate, Kenji: *See*—
Masaki, Mitsuo; Uehara, Masaki; Hirate, Kenji; Isowa, Yoshikazu; Sato, Yoshiaki; and Nakashima, Yoshiharu, 5,349,050, Cl 530-330.000.

Hirohashi, Kazutoshi; Horii, Hiroshi; Koike, Hideo; Yunoki, Yoshiaki; Fukasawa, Tetsuo; Katayama, Susumu; Yoshikawa, Akio; Ushijima, Keishi; Takeda, Takaaki; Nomoto, Takeshi; Kikuta, Michio; Shichijo, Shunichi; and Iwasaki, Yoshiki, to Victor Company of Japan; and NTT Data Communications Systems Corporation. Optical radio repeater with signal quality detection. 5,349,463, Cl. 359-174.000.

Hiromori, Inc.: *See*—
Hiromori, Junji, 5,349,573, Cl. 368-108.000.

Hiromori, Junji, to Hiromori, Inc. Timer. 5,349,573, Cl. 368-108.000.

Hirzel, Suzy C. Retractable brush with upwardly angled teeth. 5,348,030, Cl. 132-123.000.

Hisaki, Takashi: *See*—
Kanehiro, Masaki; Shimasaki, Yuichi; Ishioka, Takuji; Baba, Shigeki; Hisaki, Takashi; Maruyama, Shigeru; Chikamatsu, Masataka; Terata, Shukoh; Maeda, Kenichi; and Kakimoto, Kazuhito, 5,349,299, Cl. 324-399.000

Hitachi Computer Electronics: *See*—
Shigemura, Seizi; Oka, Hitoshi; and Shindo, Motokazu, 5,348,590, Cl. 148-23.000

Hitachi, Ltd.: *See*—
Amemiya, Kensuke; Hakamata, Yoshimi; Tokiguchi, Katsumi; and Sakudo, Noriyuki, 5,349,196, Cl. 250-492.210.
Fukuda, Hiroshi; Yamanaka, Ryoko; Tawa, Tsutomu; Terasawa, Tsuneo; and Yonezawa, Seiji, 5,348,837, Cl. 430-269.000.
Kaneko, Seiji; Kinoshita, Toshiyuki; Yamamoto, Akio; and Tamura, Yasuhisa, 5,349,656, Cl. 395-650.000.
Kitano, Kouji; Kayano, Mitsuo; Kaneyasu, Masayoshi; Katougi, Kouzou; Ichihara, Takanobu; and Kurihara, Nobuo, 5,347,846, Cl. 73-35.000.
Konishi, Hiroo; Kawazoe, Hironari; Kawakami, Junzo; Nakamura, Tomoharu; Tokiwa, Yukio; and Nakajima, Tatsuhito, 5,349,522, Cl. 363-95.000
Kurokawa, Hiroshi; Takahashi, Yasushi; and Inagami, Yasuhiro, 5,349,653, Cl. 395-500.000.
Mizuno, Masako; Tochigi, Kenji; and Misawa, Yutaka, 5,348,649, Cl. 210-198.200.
Mochida, Takaaki; and Aoyama, Motoo, 5,349,619, Cl. 376-444.000.
Nakayama, Takashi; Ochiai, Kanehiro; and Matsumoto, Masaki, 5,349,616, Cl. 376-282.000
Nishimukai, Tadahiko; Hasegawa, Atsushi; Uchiyama, Kunio; Kawasaki, Ikuya; and Hanawa, Makoto, 5,349,672, Cl. 395-800.000.
Shigemura, Seizi; Oka, Hitoshi; and Shindo, Motokazu, 5,348,590, Cl. 148-23.000
Shimada, Shigeru; Shibata, Ryuji; and Kurosawa, Atsushi, 5,348,902, Cl. 437-51.000
Tadaki, Yoshitaka; Sekiguchi, Toshihiro; Uchiyama, Hiroyuki; Kaga, Toru; Murata, Jun; and Enomoto, Osaomi, 5,349,218, Cl. 257-296.000
Yamaguchi, Yukihiro; Saito, Chuichi; Takahashi, Tatsuhiko; and Haraguchi, Tomomi, 5,348,131, Cl. 198-330.000.
Yatsuda, Yuji; Hagiwara, Takaaki; Kondo, Ryuji; Minami, Shinichi; and Itoh, Yokichi, 5,348,898, Cl. 437-41.000.

Hitachi, LTD: *See*—
Obara, Sanshiro; Watabe, Mitsuru; Minami, Rika; and Morinaga, Shigeki, 5,349,351, Cl. 341-141.000.

Hitachi Magnetics Corporation: *See*—
Mitsuji, Katsuo, 5,348,639, Cl. 205-181.000.

Hitachi Metals, Ltd.: *See*—
Kojo, Katsuhiko; Negishi, Akibumi; and Gonda, Masayuki, 5,348,806, Cl. 428-552.000
Kubo, Kimio; and Deki, Naotaka, 5,348,073, Cl. 164-457.000.

Hitachi MicroComputer Engineering, Ltd.: *See*—
Nishimukai, Tadahiko; Hasegawa, Atsushi; Uchiyama, Kunio; Kawasaki, Ikuya; and Hanawa, Makoto, 5,349,672, Cl. 395-800.000.

Hitachi Seiko, Ltd.: *See*—
Mita, Tsuneo; Shinada, Tsuneo; and Kashima, Takayuki, 5,349,159, Cl. 219-137.0PS.

Hitaka, Takenori: *See*—
Akimoto, Hiroshi; Hitaka, Takenori; and Miwa, Tetsuo, 5,349,064, Cl. 544-280.000

Hitop Science Technology Co., Ltd.: *See*—
Gao, Xinglong, 5,348,126, Cl. 192-7.000.

Hitti, Raja, to Conmed Corporation. Biomedical electrode. 5,348,007, Cl. 128-640.000

HM Electronics, Inc.: *See*—
Bugaj, Julian J., 5,349,281, Cl. 320-14.000.

Ho, Thomas Y.: *See*—
Chiang, David; Ho, Thomas Y.; Ku, Wei-Yi; Simmons, George H.; and Barker, Robert W., 5,349,249, Cl. 307-465.000.

Hobbs, Steven J.: *See*—
Hallisy, Michael J.; Gilmore, John R.; Hobbs, Steven J.; and Duncan, Warren G., 5,349,091, Cl. 568-22.000.

Hober AG: *See*—
Hoppe, Reinhard; Lindemann, Rolf; and Moller, Henning, 5,347,853, Cl. 73-82.000.

Hock, Ng L.; Girard, James J.; Keen, Lee G.; Chan, James L. K.; and Lim, Chuin K., to Hewlett-Packard Company. Snap-on control panel. 5,348,407, Cl. 400-711.000.

Hodam, Robert H., Jr.; and Gold, Marvin H., to Medical Polymers Technologies, Inc. Polymer-based cleaning and lubricating composition. 5,348,678, Cl. 252-106.000.

Hodder, James J.; Lesko, Patricia M.; and Stewart, Thomas, to Rohm and Haas Company. Polymeric retan fatliquor for low fogging upholstery leather. 5,348,807, Cl. 428-473.000.

Hodge, Bobby L., to Ina Bearing Company, Inc. Friction reduced constant velocity universal joint. 5,348,512, Cl. 464-111.000.

Hodges, B. Eugene, to Bruno, James. Reusable concrete spacer sleeve. 5,347,786, Cl. 52-577.000.

Hodson, Peter D.; Baum, Eric A.; Smith, David K.; Kuepper, Anton; and Wilby, Matthew J., to Minnesota Mining and Manufacturing Company. Breath actuated inhaler having an electromechanical priming mechanism. 5,347,998, Cl. 128-200.230.

Hoechst: *See*—
Wirtz, Herbert; von Halasz, Sigmar-Peter; Feustel, Michael; and Balzer, Juliane, 5,349,019, Cl. 525-217.000.

Hoechst Aktiengesellschaft: *See*—
Billeb, Gilbert; and Semler, Gunther, 5,349,104, Cl. 564-5.000.
Buch, Holger M.; and Springer, Hartmut, 5,349,057, Cl. 534-637.000.
Hemmerling, Wolfgang; Dubal, Hans-Rolf; Escher, Claus; Illian, Gerhard; Inoguchi, Yoshio; Muller, Ingrid; Murakami, Mikio; Ohlendorf, Dieter; and Wingen, Rainer, 5,348,684, Cl. 252-299.610.
Krimm, Alexander, 5,348,038, Cl. 137-68.100.
Mohr, Dieter; Benzing, Martin; Mertes, Juergen; Hultzsch, Guenter; Gramm, Ine; Michel, Manfred; Elsaesser, Andreas; Hsieh, Shane; and Siegfried, David L., 5,348,833, Cl. 430-143.000
Thum, Gerhard, 5,349,033, Cl. 526-140.000
von der Eltz, Andreas; Schrell, Andreas; and Russ, Werner H., 5,348,557, Cl. 8-188.000.

Hoechst Celanese Corporation: *See*—
Khanna, Dinesh N.; McKenzie, Douglas; Sobodacha, Chester J.; and Dammel, Ralph R., 5,348,842, Cl. 430-272.000.
Tafesh, Ahmed M.; Kvakovszky, George; and Lindley, Charlet R., 5,349,090, Cl. 564-343.000
Walpita, Lakshaman M.; Stamatoff, James B.; and Lundberg, George, 5,348,990, Cl. 523-219.000.
Wanat, Stanley F., 5,348,834, Cl. 430-143.000.

Hoechst-Roussel Pharmaceuticals, Inc.: *See*—
Lee, Thomas B. K.; and Lee, George E., 5,349,086, Cl. 564-220.000.

Hoevel, Kenneth E.: *See*—
Jacobs, Dwight W.; Hoevel, Kenneth E.; and Chester, Bruce E., 5,348,154, Cl. 206-369.000.

Hoewing, Timothy D.: *See*—
Lutz, Eugene F.; Schisla, David K.; Tomaskovic, Robert S.; and Hoewing, Timothy D., 5,349,101, Cl. 558-36.000.

Hoff, Jeffrey H.: *See*—
Mikic, Frank; and Hoff, Jeffrey H., 5,347,893, Cl. 81-436.000.

Hoffmann-La Roche Inc.: *See*—
Stocker, Achim; and Woggon, Wolf D., 5,348,869, Cl. 435-125.000.

Hoffmann, Martin: *See*—
Buetikofer, Peter; Hoffmann, Martin; and Schulz, Jens, 5,348,612, Cl. 156-578.000.

Hoffnung, Jacques: *See*—
Velluet, Pascal; and Hoffnung, Jacques, 5,348,082, Cl. 165-173.000.

Hofherr, Walther; Minder, Ernst; Hilti, Bruno; and Ansermet, Jean-Philippe, to Ciba-Geigy Corporation. Process for the production of conductive layers. 5,348,762, Cl. 427-121.000.

Hogenkamp, Wilhelm; and Hamberger, Werner, to Klockner Hansel GmbH. Store for individual products. 5,348,436, Cl. 414-331.000.

Hohimer, John P.; and Craft, David C., to United States of America, Energy. Unidirectional ring lasers. 5,349,601, Cl. 372-94.000.

Hojo, Yasuo: *See*—
Taga, Yutaka; Hojo, Yasuo; and Tabata, Atsushi, 5,347,885, Cl. 477-65.000.

Holderegger, Jurg, to PRSS - Maschinen AG. Solder or conductive paste printing stencil holder. 5,347,925, Cl. 101-127.000.

Holik, Herbert: *See*—
Pinter, Reinhard; Holik, Herbert; and Leitenberger, Werner, 5,347,728, Cl. 34-115.000.

Hollander, James F.: *See*—
Ehlig, Peter N.; Boutaud, Frederic; and Hollander, James F., 5,349,687, Cl. 395-800.000

Holliday, Jeffrey C. Linear transducer. 5,349,256, Cl. 310-12.000.

Holling, Ronald W., to Whirlpool Corporation. Fault detection method and apparatus for a domestic appliance. 5,349,162, Cl. 219-453.000

Hollub, Seth D., to Nellcor Incorporated. Electronic processor for pulse oximeter. 5,348,004, Cl. 128-633.000.

Holmes, Philip: *See*—
Serrand, Willibald; Holmes, Philip; Steffens, Todd R.; Terry, Patrick H.; and Eberly, Paul E., 5,348,642, Cl. 208-113.000.

Holtermann, Hugo: *See*—
Hansen, Per-Egil; Holtermann, Hugo; and Wille, Knut, 5,349,085, Cl. 564-153.000.

Holton, Timothy A.; Cornish, Edwina C.; Kovacic, Filippa; Tanaka, Yoshikazu; and Lester, Diane R., to International Flower Developments Pty. Ltd. Genetic sequences encoding a 3:5'-hydroxylase and uses therefor. 5,349,125, Cl. 800-205.000.

Homecare Products, Inc.: *See*—
Everard, Donald G.; and Gorman, William, 5,347,672, Cl. 14-69.500.

Honan, David G.; Lantz, Gregory W.; and Salisbury, Thomas E., to G. D. Searle & Co. Dispenser pack for the successive dispensing of a drug. 5,348,158, Cl. 206-531.000.

Honda Giken Hogyo Kabishiki Kaisha: *See*—
Hosaka, Jun; Moriyama, Hiroshi; and Tokuda, Tatsuya, 5,347,799, Cl. 56-15.800.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Kuriki, Nobuharu; Ohsaki, Seiji; Shibue, Hideaki; and Noro, Yoshiki, 5,348,338, Cl. 280-707.000
Miyauch, Masaaki; Kawano, Makoto; Kitamura, Takashi; Okunishi, Hiromu; and Haga, Fumio, 5,347,760, Cl. 451-114.000.
Sandou, Yasuyuki; and Takahashi, Nobu, 5,347,972, Cl. 123-564.000
Takahashi, Hideo; and Yoshino, Ryutaro, 5,349,277, Cl. 318-568.120

Honda Giken Kogyo Kabushiki Kaishi: *See*—
Kanehiro, Masaki; Shimasaki, Yuichi; Ishioka, Takuji; Baba, Shigeki; Hisaki, Takashi; Maruyama, Shigeru; Chikamatsu, Masataka; Terata, Shukoh; Maeda, Kenichi; and Kakimoto, Kazuhito, 5,349,299, Cl. 324-399.000.

Honeywell Inc.: *See*—
Cooper, Lavon K., 5,349,302, Cl. 365-207.000.
Davis, George B., 5,348,563, Cl. 55-385.200.
Sanders, Glen A., 5,349,441, Cl. 356-350.000.

Hong, Gary, to United Microelectronics Corporation. Flash memory cell and its operation. 5,349,220, Cl. 257-322.000

Hong, Minghwei: *See*—
Choquette, Kent D.; Freund, Robert S.; and Hong, Minghwei, 5,348,912, Cl. 437-129.000.

Honzawa, Shooichi: *See*—
Sakashita, Nobuyuki; Nakajima, Toshio; Murai, Shigeo; Maeda, Kazuyuki; Nakamura, Yuji; Yoshida, Tsunezo; Honzawa, Shooichi; and Kanamori, Fumio, 5,348,933, Cl. 504-213.000

Hood, Clarence E., Jr.; and Dubose, Charles R., to Clemson University. Agricultural apparatus. 5,347,939, Cl. 111-36.000.

Hoover, Herbert C., Jr.: *See*—
Hanna, Michael G., Jr.; Haspel, Martin V.; and Hoover, Herbert C., Jr., 5,348,880, Cl. 435-240.270.

Hoover Universal, Inc.: *See*—
Stiennon, Richard D., 5,348,373, Cl. 297-344.100.

Hope, Thomas: *See*—
Perry, Robert M.; Reynolds, Timothy; Hope, Thomas; and Lawson, Kenneth T., 5,348,075, Cl. 164-476.000.

Hopkins, P. Donald: *See*—
Kukes, Simon G.; Hopkins, P. Donald; Olleandorff, Rutta L. A.; Hendler, Pablo D.; Ontiveros, Cynthia D.; and Washecheck, Don M., 5,348,928, Cl. 502-306.000

Hoppe, Reinhard; Lindemann, Rolf; and Moller, Henning, to Hober AG. Method of and apparatus for ascertaining the hardness of rod-shaped articles of the tobacco processing industry. 5,347,853, Cl. 73-82.000

Hopson, Talmadge W., to Lifetouch Inc. CRT method of and apparatus for illuminating photographic negatives to produce a hard copy 5,349,418, Cl. 355-20.000.

Hori, Koichiro, to Linvatec Corporation. Endoscope coupler with liquid interface. 5,347,988, Cl. 126-4.000.

Hori, Masayuki; and Uyama, Yoshiyuki, to Brother Kogyo Kabushiki Kaisha. Sewing machine and pattern selection apparatus. 5,347,940, Cl. 112-121.110.

Hori, Nobuo: *See*—
Gisin, Nicolas; Stamp, Patrick; Passy, Rogerio; Hori, Nobuo; and Nagano, Shigenori, 5,349,431, Cl. 356-73.100.

Hori, Tomoshige; Shinoki, Yasuhiko; and Ito, Kensuke, to Snow Brand Milk Products Co., Ltd. Method and apparatus for measuring fluid thermal conductivity. 5,348,394, Cl. 374-44.000.

Horibe, Hidehiko; and Usui, Yuuta, to Tsuchiya Mfg. Co., Ltd. Resonator type silencer having plural resonance chambers. 5,349,141, Cl. 181-224.000.

Horii, Hiroshi: *See—*
Hirohashi, Kazutoshi; Horii, Hiroshi; Koike, Hideo; Yunoki, Yoshiaki; Fukasawa, Tetsuo; Katayama, Susumu; Yoshikawa, Akio; Ushijima, Keishi; Takeda, Takaaki; Nomoto, Takeshi; Kikuta, Michio; Shichijo, Shunichi; and Iwasaki, Yoshiki, 5,349,463, Cl. 359-174.000

Horii, Katsuhiko: *See—*
Yagi, Hideaki; and Horii, Katsuhiko, 5,348,630, Cl. 204-153.220

Horikoshi, Kenichi: *See—*
Ishihama, Hitoshi; Hayakawa, Yasuyoshi; Asano, Naoki; Horikoshi, Kenichi; Onuki, Tetsuro; Toma, Akihiro; and Yamagata, Masanori, 5,348,284, Cl. 271-160.000.

Horn, Gerald: *See—*
Spears, Kenneth G.; and Horn, Gerald, 5,348,551, Cl. 606-5.000.

Horn, Michael; and Kotzsch, Hans-Joachim, to Huls Aktiengesellschaft. Low-temperature-stable titanium chelates and method for their preparation. 5,349,073, Cl. 556-54.000.

Hornbach, David W.: *See—*
Fullenkamp, Eugene H.; Heimbrock, Richard H.; Hensley, David; and Hornbach, David W., 5,348,326, Cl. 280-43.170

Horodysky, Andrew G.; Law, Derek A.; and Wu, Shi-Ming, to Mobil Oil Corporation. Lubricant compositions containing arylsulfonic acids, and organo phosphites and reaction products thereof. 5,348,671, Cl. 252-32.70E.

Horodysky, Andrew G.: *See—*
Blain, David A.; Horodysky, Andrew G.; Poole, Ronald J.; and Wu, Shi-Ming, 5,348,674, Cl. 252-51.50R

Horowitz, Bernard; Shulman, Richard W.; Setton, Adriar.ne J.; Nishimura, Toyohiko; and Kawashima, Yoichi, to New York Blood Center, Inc.; JCR Pharmaceuticals Co., Ltd.; and Santen Pharmaceutical Co., Ltd. Fibronectin-containing ophthalmic solution, method of preserving an ophthalmic solution, and method of treatment of ophthalmic wounds. 5,348,939, Cl. 514-8.000.

Horsch, Gunter: *See—*
Rieder, Klaus-Hartwig; Horsch, Gunter; and Powell, William E., 5,349,310, Cl. 331-18.000.

Hosaka, Jun; Moriyama, Hiroshi; and Tokuda, Tatsuya, to Honda Giken Hogyo Kabishiki Kaisha. Motor vehicle body paneling 5,347,799, Cl. 56-15.800

Hosoda, Masaaki: *See—*
Kobayashi, Norio; Takahashi, Toshiaki; Makino, Masahiro; and Hosoda, Masaaki, 5,348,930, Cl. 503-209.000.

Hosotani, Shiro: *See—*
Ito, Masao; and Hosotani, Shiro, 5,349,354, Cl. 341-156.000.

Hosoya, Kazuki; and Kado, Hirotaka, to Sanden Corporation. Heat exchanger. 5,348,083, Cl. 165-174.000.

Hosseinian, Amir P.; and Binford, John L., to Sierracin Corporation. Method of forming a tube union. 5,347,701, Cl. 29-508.000.

Hotta, Hiroyuki: *See—*
Miyake, Hiroyuki; Abe, Tsutomu; Ito, Hisao; Hotta, Hiroyuki; Shimizu, Yasumoto; and Sakai, Yoshihiko, 5,348,892, Cl. 437-3.000

Hou, Donald: *See—*
Kuo, Shen-Chun; Hou, Donald; and Zhan, Zheng-Yun, 5,349,099, Cl. 570-147.000

Houlberg, Christian L., to United States of America, Navy. Multipurpose bus interface utilizing a digital signal processor. 5,349,685, Cl. 395-800.000.

Houser, John M., to Lucerne Products, Inc. Reversible electrical switch. 5,349,143, Cl. 200-11.00J

Howell, Charles R.; Becker, J. Ole; Lam, Stephen T.; and Ligon, James M., to Ciba-Geigy Corporation; and United States of America, Agriculture. Anti-pathogenic bacterial strains of *Pseudomonas fluorescens*. 5,348,742, Cl. 424-93.470

Howell Laboratories, Inc.: *See—*
Miers, Gary L.; Allen, David G.; and Merrill, Bruce G., 5,348,663, Cl. 210-739.000.

Howell, Lloyd A.; and Kurlas, Peter N. Modular display device. 5,347,734, Cl. 40-506.000.

Hoya Corporation: *See—*
Nakajima, Sadahiro; Endoh, Naoshi; Kataoka, Kenzo; and Odaka, Masaki, 5,348,552, Cl. 606-13.000.

Hrudicka, James: *See—*
Hanaway, Richard W.; and Hrudicka, James, 5,348,606, Cl. 156-292.000.

Hsiao, Chun-Fang; Wu, Chung-Yu; and Chen, Chin-Cheng, to United Microelectronics Corporation. Fully differential current sample/hold circuit. 5,349,305, Cl. 330-253.000

Hsieh, Shane: *See—*
Mohr, Dieter; Benzing, Martin; Mertes, Juergen; Hultzsch, Guenter; Gramm, Ine; Michel, Manfred; Elsaesser, Andreas; Hsieh, Shane; and Siegfried, David L., 5,348,833, Cl 430-143.000.

Huan, Lee C. Mouth opener. 5,347,996, Cl. 128-12.000.

Huang, Bin: *See—*
Hermes, Matthew E.; and Huang, Bin, 5,349,047, Cl. 528-361.000

Huang, Chunsheng J.: *See—*
Fleig, Jon F.; Tronolone, Mark J.; and Huang, Chunsheng J., 5,349,434, Cl. 356-138.000.

Huang, Nai Z.; Kolp, Christopher I.; and Sgarlata, Christopher R., to Lubrizol Corporation, The. Copper-containing aromatic mannich complexes and concentrates and diesel fuels containing same 5,348,559, Cl. 44-367.000.

Hubbard, Frank M. Portable expandable lap desk. 5,348,263, Cl. 248-444.000.

Hubbell Incorporated: *See—*
Jordan, David L.; and Schetselaar, Marc A., 5,349,510, Cl. 362-374.000.

Huber, Hans-Martin: *See—*
Eickhoff, Hubert; Schirrmacher, Rudiger;; Mangartz, Karl-Heinz; Huber, Hans-Martin; and Godecke, Ralf, 5,348,657, Cl. 210-636.000

Huelsenberg, Dagmar: *See—*
Halbedel, Bernd; Mueller, Walter; Baudrich, Rolf; and Huelsenberg, Dagmar, 5,348,237, Cl. 241-67.000.

Huette, Dennis M. Romex wire dispenser. 5,348,241, Cl. 242-597.500.

Huettenrauch, Gerd: *See—*
Born, Hans-Joachim; Huettenrauch, Gerd; and Link, Heinz-Joachim, 5,349,625, Cl. 378-95.000.

Huettner, Steven E.; Daly, Maureen A.; and Fitzgerald, Derek J., to Raytheon Company. Voltage variable attenuator. 5,349,312, Cl. 333-81.00A

Hug, Paul: *See—*
Hines, Horace; Hug, Paul; and Lamp, Mark L., 5,349,190, Cl. 250-363.050.

Hughes Aircraft Company: *See—*
Abreu, Rene, 5,348,255, Cl. 244-171.000.
Acevedo, Rodolfo J., 5,348,260, Cl. 248-280.100
DeGroot, Peter, 5,349,440, Cl. 356-349.000
Elerath, Douglas E., 5,349,432, Cl. 356-121.000.
Francis, Melvin, 5,349,469, Cl. 359-420.000.
Milroy, William W., 5,349,363, Cl. 343-772.000
Reed, Francis A., 5,349,567, Cl. 367-100.000.
Stanchina, William E.; and Hasenberg, Thomas C., 5,349,201, Cl. 257-18.000
Stein, John T., 5,349,380, Cl. 348-250.000.
Tanzer, Herbert J.; Goodarzi, Gholam A.; and Olaveson, Richard J., 5,349,498, Cl. 361-689.000.
Wedeen, Robert S., 5,349,278, Cl. 318-632.000

Hughes, Dennis R., to AOS Holding Company. Water heater with integral mixing valve. 5,347,956, Cl. 122-13.100

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Gallivan, James R., 5,348,249, Cl. 244-3.110.

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Kauffman, Gerald C.; Hughes, Timothy C.; Heins, Don; Slovacek, Patricia; and Abou-Jaoude, Fadi, 5,349,481, Cl. 360-74.400.

Huguenel, Edward D.: *See—*
Dattagupta, Nanibhushan; Rae, Peter M. M.; Rabin, Daniel U.; and Huguenel, Edward D., 5,348,855, Cl. 435-6.000.

Huh, Namdol: *See—*
Raju, Muppala S.; and Huh, Namdol, 5,348,973, Cl. 514-456.000.

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Mohr, Dieter; Benzing, Martin; Mertes, Juergen; Hultzsch, Guenter; Gramm, Ine; Michel, Manfred; Elsaesser, Andreas; Hsieh, Shane; and Siegfried, David L., 5,348,833, Cl. 430-143.000.

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Jwd, Chin-Tsaw, 5,348,445, Cl. 416-229.00R.

Hung, Michael. Control switch for electric winch cable. 5,349,148, Cl. 200-562.000.

Hunter Fan Company: *See—*
Blumenthal, Herbert E., 5,349,340, Cl. 341-574.000.

Hunts, Larry D. Bag opening and reclosing device. 5,347,671, Cl 7-156.000.

Huser, Peter, to Blohm & Voss AG. Hold-down device on handling machines, in particular punching machines, for thin, flat objects in particular sheets of paper. 5,348,285, Cl. 271-183.000.

Hush, Glen; and Thomann, Mark R., to Micron Technology, Inc. Enhancement circuit and method for ensuring diactuation of a switching device. 5,349,247, Cl. 307-451.000.

Huth, Andreas: *See—*
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Hutson, William H. Method and system for near real-time analysis and display of electrocardiographic signals. 5,348,020, Cl. 128-696.000.

Huvey, Michel: *See—*
Fay, Jean-Baptiste; and Huvey, Michel, 5,348,084, Cl. 166-65.100.

Huynh, Hon; Franzke, Jorg; Lilienthal, Harald; and Bresche, Peter, to Krone AG. Simultaneous bidirectional digital data transmission over a single line at a common frequency on an optical waveguide. 5,349,461, Cl. 359-152.000.

Hwang, Eui K., to Samsung Electronics Co., Ltd. Cooling/warming control system for an air-conditioner. 5,348,225, Cl. 236-51.000.

Hyatt, Hugh M.: *See—*
Miller, John S.; and Hyatt, Hugh M., 5,349,288, Cl. 324-126.000.

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Hydraulics Research Limited: *See—*
Waters, Colin B., 5,349,327, Cl. 340-540.000

Hydro Flame Corporation: *See—*
Consadori, Franco; and Slamka, Richard, 5,348,224, Cl. 236-20.00R

Hydro-Quebec: *See—*
Duval, Michel, 5,348,824, Cl. 429-192.000.

Hyundai Motor Company: *See—*
Chung, Inhwa, 5,347,963, Cl. 123-90.460.
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I-Sha-Vi, Inc.: *See—*
Garrett, L. A., 5,347,655, Cl. 2-10.000

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ICI Pharma: *See—*
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ICOM, Inc.: *See—*
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Idemitsu Kosan Company Limited: *See—*
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Idemitsu Petrochemical Co., Ltd.: *See—*
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Shishikura, Akihiro; Kimbara, Hiroshi; Yamaguchi, Katsuhisa; and Arai, Kunio, 5,349,084, Cl. 562-580.000.

Iding, Stephen H.: *See—*
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IEG Industrie-Engineering GmbH: *See—*
Bernhardt, Bruno, 5,348,420, Cl. 405-52.000

Igarashi, Ichiro, to Tokai Rubber Industries, Ltd. Refrigerant transporting hose having inner tube including resin layer, and connector for the same. 5,348,779, Cl. 428-36.700

Igarashi, Kazunari: *See—*
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Igarashi, Shunkichi: *See—*
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Iglesias, Joseph M.: *See—*
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Ihara Chemical Industry Co., Ltd.: *See—*
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Ihara, Tomohiko: *See—*
Hattori, Hisao; Ihara, Tomohiko; Yoshino, Hiroshi; and Yamanaka, Shosaku, 5,348,792, Cl. 428-209.000

Iijima, Yasuo, to Kabushiki Kaisha Toshiba. Portable electronic device supporting multi-protocols. 5,349,649, Cl. 395-275.000

Ikeda Bussan Co., Ltd.: *See—*
Isomura, Tohru, 5,348,262, Cl. 248-430.000

Ikeda, Kaoru; and Sato, Toshiaki, to Kuraray Co., Ltd. Vinyl alcohol copolymer having terminal amino group. 5,349,023, Cl. 525-61.000.

Ikeda, Koji; Futagawa, Hitoshi; and Kikuchi, Toshihiro, to Nissho Corporation. Drug vessel. 5,348,550, Cl. 604-411.000.

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Futagawa, Hitoshi; Ikeda, Koji; and Kikuchi, Toshihiro, 5,348,060, Cl. 141-100.000

Ikeda, Masayuki; and Ueda, Koichi, to Fujitsu Limited. Initial program load control system in a multiprocessor system. 5,349,664, Cl 395-700.000.

Ikegami, Takeshi: *See—*
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Ikemoto, Yoshihiro; and Maruyama, Teruo, to Matsushita Electric Industrial Co., Ltd. Fluid rotating apparatus with plural drive motor synchronization system. 5,348,448, Cl. 417-17.000

Ikonomou, Michael G.; and Kebarle, Paul, to University of Alberta, The Governors of the. Electrospray interface for mass spectrometer and method of supplying analyte to a mass spectrometer. 5,349,186, Cl. 250-288.000

Ilchuk, John. Tree mover. 5,348,361, Cl. 294-68.230.

Illian, Gerhard: *See—*
Hemmerling, Wolfgang; Dubal, Hans-Rolf; Escher, Claus; Illian, Gerhard; Inoguchi, Yoshio; Muller, Ingrid; Murakami, Mikio; Ohlendorf, Dieter; and Wingen, Rainer, 5,348,684, Cl. 252-299.610

Illig, Carl R.: *See—*
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Imai, Hideki: *See—*
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Imai, Yukihiro: *See—*
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Imaizumi, Mamoru; and Morita, Fumio, to Brother Kogyo Kabushiki Kaisha. Printing apparatus for performing overhead projector processing. 5,349,376, Cl. 347-16.000.

Imakura, Tatsuya; and Sugita, Mitsuru, to Mitsubishi Denki Kabushiki Kaisha. Address translating apparatus for translating virtual address into real address without depending on processing by CPU. 5,349,650, Cl. 395-400.000

Imamori, Katsumi: *See—*
Kurazumi, Toshiaki; Mizuno, Hiroyuki; Imamori, Katsumi; and Iwasa, Akira, 5,348,744, Cl. 424-439.000

Imamura, Takahiro: *See—*
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Imashimizu, Yoshinori; Suda, Yoshiaki; Yamamoto, Shuichi; Takada, Toshiyuki; Maeyama, Kaoru; Hiramoto, Etsuro; Oki, Toshihide; Morita, Sadayuki; Kawatani, Shoji; Morioka, Kunihito; Fujimitsu, Ryoichi; and Handa, Kazuhisa, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Method of coupling a module framework to a ship structure. 5,347,703, Cl. 29-525.100

Immoos, Martin P.: *See—*
Cur, Nihat O.; Kruck, Richard W.; Immoos, Martin P.; and Higazy, Mohamed E., 5,347,793, Cl. 53-512.000

Imperial Chemical Industries PLC: *See—*
Simpson, Michael A. D.; and Sayer, Trevor S. B., 5,349,036, Cl. 526-320.000

Imran, Mir A.; and Pomeranz, Mark L., to Cardiac Pathways Corporation. Catheter for RF ablation with cooled electrode. 5,348,554, Cl. 606-41.000

Imura, Satoshi: *See—*
Tanaka, Takashi; Imura, Satoshi; Tanaka, Kenji; and Kida, Yasuji, 5,349,065, Cl. 546-15.000

In Gweon, Kang, to Samsung Electronics Co., Ltd. Mounting arrangement for a refrigerator deodorizer. 5,347,820, Cl. 62-78.000.

INA Bearing Company, Inc.: *See—*
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Inagaki, Kiyoshi, to NEC Corporation. Constant current generation circuit of current mirror type having equal input and output currents. 5,349,307, Cl. 330-288.000

Inagami, Yasuhiro: *See—*
Kurokawa, Hiroshi; Takahashi, Yasushi; and Inagami, Yasuhiro, 5,349,653, Cl. 395-500.000

Inazawa, Shintaro: *See—*
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InControl, Inc.: *See—*
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Indresco Inc.: *See—*
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Industrial Technology Research Institute: *See—*
Li, Chien-Hui; Lee, Tzong-Ming; and Chen, Jyh-Chien, 5,349,039, Cl. 528-170.000.
Lin, Wen-Don; Chiou, Chyi-Fwu; Chu, Chih-Chung; Ch'un-Hsiu, Pan; and Chiu, Ming-Che, 5,349,485, Cl. 360-85.000
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Infinger, Kenneth R.: *See—*
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Ingman, Dov. Fluid flow meter. 5,347,862, Cl. 73-269.000.

Inman, Daniel J.: *See—*
Dosch, Jeffrey J.; Mayne, Roger W.; and Inman, Daniel J., 5,347,870, Cl. 73-769.000.

Inoguchi, Yoshio: *See—*
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Inou, Kiyoharu; Yasui, Hitoshi; and Hayashi, Shunsuke, to Yokogawa Electric Corporation. Switching power supply. 5,349,523, Cl. 363-97.000.

Inoue, Akihisa: *See—*
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Inoue, Chihiro: *See—*
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Inoue, Katsuo: *See—*
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Inoue, Shigeyasu: *See—*
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Inoue, Tsuyoshi: *See—*
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Institut Francais du Petrole: *See—*
Cholet, Henri; and Lessi, Jacques, 5,348,094, Cl. 166-371.000.
Fay, Jean-Baptiste; and Huvey, Michel, 5,348,084, Cl. 166-65.100.
Giannesini, Jean-Francois; and Fay, Jean-Baptiste, 5,348,097, Cl 166-385.000.
Pucci, Annick; Mikitenko, Paul; and Zuliani, Massimo, 5,348,624, Cl. 203-14.000
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Institut Textile de France: *See—*
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Institute de Recherche Jouveinal: *See—*
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Institute for Molecular Biology and Biotechnology/FORTH: *See—*
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Institutet For Verkstadsteknisk Forskning: *See—*
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Integral Peripherals, Inc.: *See—*
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Integrated Device Technology, Inc.: *See—*
McAllister, Kenneth, 5,349,325, Cl. 338-307.000

Intel Corporation: *See—*
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Verrier, Guy F.; Stein, Frank L.; and Donaldson, Robert L., 5,349,139, Cl. 178-19.000

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Anderson, Karen L.; Finlay, Ian R.; Mitchell, Joan L.; and Thornton, Davey S., 5,349,348, Cl. 341-51.000.
Bisdikian, Chatschik; and Tantawy, Ahmed N., 5,349,582, Cl. 370-85.100
Brewer, James A.; Habermehl, Paul R.; Stafford, James M.; and Williams, Errol R., Jr., 5,349,661, Cl. 395-700.000
Buliszyn, Stanley; Landor, James A.; and Zielinski, Reuben Q., 5,349,543, Cl. 364-579.000
Calvert, Nathanial; Koehler, John L.; Lindberg, Erik D.; McKelvey, Mark A.; Mervosh, Steven P.; Newton, Jeffrey A.; Scarborough, George B.; Upchurch, Ruth A.; and Westling, Sandra D., 5,349,674, Cl. 395-800.000
Christensen, Kenneth J.; and Noel, Francis E., Jr., 5,349,583, Cl 370-85.500
Cox, James O.; and Mott, James M., 5,349,643, Cl. 380-25.000.
Gall, Thomas P.; Heck, Howard L.; and Kresge, John S., 5,347,710, Cl. 29-830.000
Johnson, William J.; Keller, Robert S.; Manthuruthil, George C.; and Williams, Marvin L., 5,349,662, Cl. 395-700.000.
Kenney, Donald M., 5,348,905, Cl. 437-52.000.
Lee, Adrienne Y., 5,349,657, Cl. 395-650.000.
Martin, Yves; and Wickramasinghe, Hemantha K., 5,347,854, Cl 73-105.000
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Holton, Timothy A.; Cornish, Edwina C.; Kovacic, Filippa; Tanaka, Yoshikazu; and Lester, Diane R., 5,349,125, Cl 800-205.000.

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Iowa State University Research Foundation, Inc.: *See—*
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Nissen, Steven L.; Flakoll, Paul J.; and Abumrad, Naji N., 5,348,979, Cl. 514-557.000.

Ipakchi, Ali: *See—*
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IPOS GmbH & Co. KG: *See—*
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Irribarren, Roberto, to Centigram Communications Corporation. Interface system and method for interconnecting a voice message system and an interactive voice response system. 5,349,636, Cl. 379-89.000.

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Ishida Scales Mfg. Co., Ltd.: *See—*
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Ishida, Tetsurou: *See—*
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Ishiguro, Yoichi: *See—*
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Ishihama, Hitoshi; Hayakawa, Yasuyoshi; Asano, Naoki; Horikoshi, Kenichi; Onuki, Tetsuro; Toma, Akihiro; and Yamagata, Masanori, to Canon Kabushiki Kaisha. Sheet supply apparatus. 5,348,284, Cl 271-160.000.

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Ishihara Sangyo Kaisha Ltd.: *See—*
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Sakashita, Nobuyuki; Nakajima, Toshio; Murai, Shigeo; Maeda, Kazuyuki; Nakamura, Yuji; Yoshida, Tsunezo; Honzawa, Shooichi; and Kanamori, Fumio, 5,348,933, Cl. 504-213.000

Ishii, Koji: *See—*
Kobori, Takuji; Ishii, Koji; Takahashi, Motoichi; Matsunaga, Yoshinori; Niwa, Naoki; Tagami, Jun; Mizuno, Takayuki; and Furukawa, Kunio, 5,347,771, Cl. 52-167.00R.

Ishii, Ryutaro, to Bridgestone Corporation. Method and apparatus for forming a cylindrical member. 5,348,600, Cl. 156-134.000.

Ishikawa Gasket Co., Ltd.: *See—*
Miyaoh, Yoshio; and Aoki, Katsuji, 5,348,311, Cl. 277-9.000.

Ishikawa, Kimiaki: *See—*
Yamamoto, Kouji; Yamanoi, Makoto; Endo, Hirokazu; and Ishikawa, Kimiaki, 5,349,430, Cl. 356-5.000.

Ishikawa, Masaya: *See—*
Kuroda, Syoichi; Shibata, Soichiro; Shimamura, Nonyuki; Kawasaki, Shigetake; Kasahara, Keisuke; Sakuma, Seiichi; Komatsu, Fujio; Ishikawa, Masaya; Sugiyama, Kunio; Mashimo, Mitsuo; Shindo, Yuzuru; and Kawamura, Kuniaki, 5,348,080, Cl 165-104.130.

Ishikawajima-Harima Heavy Industries, Co., Ltd.: *See—*
Saji, Nobuyoshi; Ohya, Hiroshi; Asakura, Hiroshi; and Nagai, Shunji, 5,347,819, Cl. 62-51.300.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Imashimizu, Yoshinori; Suda, Yoshiaki; Yamamoto, Shuichi; Takada, Toshiyuki; Maeyama, Kaoru; Hiramoto, Etsuro; Oki, Toshihide; Morita, Sadayuki; Kawatani, Shoji; Morioka, Kunihito; Fujimitsu, Ryoichi; and Handa, Kazuhisa, 5,347,703, Cl. 29-525.100.

Ishikura, Yoshiyuki: *See—*
Kimura, Shigeo; Ishikura, Yoshiyuki; Masuda, Takashi; Kuroiwa, Takaaki; and Kihara, Takashi, 5,349,492, Cl. 361-283.400.

Ishimaru, Kazuko: *See—*
Ishimaru, Shinji; Niiya, Takahiro; and Ishimaru, Kazuko, 5,347,772, Cl. 52-167.00R.

Ishimaru, Shinji; Niiya, Takahiro; and Ishimaru, Kazuko, to Takenaka Corporation; and Tokyu Construction Co., Ltd. Vibration suppressing structure. 5,347,772, Cl. 52-167.00R

Ishino, Masaru: *See—*
Nomura, Kotohiro; Ishino, Masaru; Yamamoto, Michio; Suzukamo, Gohfu; and Itagaki, Makoto, 5,349,115, Cl. 585-513.000

Ishioka, Takuji: *See—*
Kanehiro, Masaki; Shimasaki, Yuichi; Ishioka, Takuji; Baba, Shigeki; Hisaki, Takashi; Maruyama, Shigeru; Chikamatsu, Masataka; Terata, Shukoh; Maeda, Kenichi; and Kakimoto, Kazuhito, 5,349,299, Cl. 324-399.000.

Ishiwa, Takuzo, to Ringston Co., Ltd. Plastic film bag with an inflated pattern. 5,348,155, Cl. 206-457.000.

Ishiwata, Kazuya: *See—*
Murata, Tatsuo; Ishiwata, Kazuya; and Yoshioka, Toshifumi, 5,348,828, Cl. 430-20.000.

Ishizaki, Yasuhiro: *See—*
Kawano, Minori; Ogawa, Kohji; Tsukagoshi, Sadayuki; Kuroiwa, Hiroyuki; Sato, Masato; Ishizaki, Yasuhiro; Komatsu, Fumiaki; and Kuroda, Eiichi, 5,349,694, Cl. 455-11.100.

Isoda, Satoru: *See—*
Hanazato, Yoshio; Isoda, Satoru; Ueyama, Satoshi; and Nishikawa, Satoshi, 5,349,203, Cl. 257-40.000.

Isojima, Shinzo; Akatani, Akiko; Okazaki, Yuichi; and Sugimoto, Masanobu, to Isojima, Shinzo; and Tonen Corporation. Genes encoding porcine zona pellucida protein PZP-4, expression thereof and contraceptive vaccines comprising expressed (poly) peptides. 5,348,866, Cl. 435-673.000.

Isomura, Tohru, to Ikeda Bussan Co., Ltd. Power seat slide device. 5,348,262, Cl. 248-430.000.

Isowa, Yoshikazu: *See—*
Masaki, Mitsuo; Uehara, Masaki; Hirate, Kenji; Isowa, Yoshikazu; Sato, Yoshiaki; and Nakashima, Yoshiharu, 5,349,050, Cl. 530-330.000.

Isozumi, Shuzoo; and Morishita, Akira, to Mitsubishi Denki Kabushiki Kaisha. Single lens reflex camera. 5,349,405, Cl. 354-152.000.

Itagaki, Makoto: *See—*
Nomura, Kotohiro; Ishino, Masaru; Yamamoto, Michio; Suzukamo, Gohfu; and Itagaki, Makoto, 5,349,115, Cl. 585-513.000.

Italtel Societa Italiana Telecomunicazioni S.p.A.: *See—*
Moreno, Luigi, 5,349,607, Cl. 375-94.000.

Ito, Hiroshi; Sasaki, Koji; Okumoto, Tadaoki; Ohta, Takashi; Matsushita, Mitsumasa; and Sato, Norio, to Toyoda Gosei Co., Ltd. Fuel absorbent. 5,348,929, Cl. 502-402.000.

Ito, Hisao: *See—*
Miyake, Hiroyuki; Abe, Tsutomu; Ito, Hisao; Hotta, Hiroyuki; Shimizu, Yasumoto; and Sakai, Yoshihiko, 5,348,892, Cl. 437-3.000.

Ito, Katsuya; and Tanigawa, Fumiyoshi, to Sumitomo Wiring Systems, Ltd. Wear-detection probe for a brake lining material. 5,347,858, Cl. 73-129.000.

Ito, Kenji: *See—*
Shimizu, Hiroyuki; and Ito, Kenji, 5,349,314, Cl. 333-204.000.

Ito, Kensuke: *See—*
Hori, Tomoshige; Shiinoki, Yasuhiko; and Ito, Kensuke, 5,348,394, Cl. 374-44.000.

Ito, Masao; and Hosotani, Shiro, to Mitsubishi Denki Kabushiki Kaisha. A/D converter and converting method having coarse comparison and fine comparison periods. 5,349,354, Cl. 341-156.000.

Ito, Masaoki, to Amada Company, Limited. System for assorting small product pieces cut from work pieces. 5,347,898, Cl. 83-27.000.

Ito, Mineyuki, to Sakurai Graphic Systems Corporation. Plate clamping unit for offset press. 5,347,928, Cl. 101-415.100.

Ito, Satoru; Matoba, Takao; Yamamoto, Kenji; and Sugiura, Shinji, to Kansai Paint Co., Ltd. Coating composition comprising particles of an emulsion polymerized gelled polymer. 5,348,998, Cl. 524-190.000.

Ito, Shigekazu: *See—*
Shibata, Masaru; Ito, Shigekazu; Sakai, Jun-etsu; and Hayashi, Shigeru, 5,348,976, Cl. 514-469.000.

Ito, Tadashi, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,348,849, Cl. 430-574.000.

Ito, Yoshihiro; and Fukaya, Hideyuki, to Mitsubishi Denki Kabushiki Kaisha. Layout pattern generating apparatus. 5,348,558, Cl. 29-25.010.

Itoh, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Driving circuit for exothermic resistors. 5,349,623, Cl. 377-75.000.

Itoh, Yokichi: *See—*
Yatsuda, Yuji; Hagiwara, Takaaki; Kondo, Ryuji; Minami, Shinichi; and Itoh, Yokichi, 5,348,898, Cl. 437-41.000.

Itoki Crebio Corporation: *See—*
Takamatsu, Shunichi; Kubo, Hirozi; Hama, Katsunori; and Iwabuchi, Hiroshi, 5,348,372, Cl. 297-306.000

Itsuto, Nakanishi: *See—*
Abe, Mitsuhiro; Itsuto, Nakanishi; Hideho, Ariyoshi; and Iguchi, Asao, 5,349,136, Cl. 174-52.200.

ITT Corporation: *See—*
Sterns, William G., 5,349,316, Cl. 333-208.000.
Thomas, Nils I.; and Field, Robert J., 5,349,177, Cl. 250-214.0VT.

Ivey, Don L.; and Mak, King K., to Texas A&M University System, The. Gandy dancer: end piece for crash cushion or rail end treatment. 5,348,416, Cl. 404-6.000.

Iwabuchi, Hiroshi: *See—*
Takamatsu, Shunichi; Kubo, Hirozi; Hama, Katsunori; and Iwabuchi, Hiroshi, 5,348,372, Cl. 297-306.000.

Iwama, Jun, to Sony Corporation. Plasma addressing electro-optical device having invertor circuit connected to anodes. 5,349,454, Cl. 359-54.000.

Iwama, Shinichi, to Daiwa Seiko, Inc. Ski boot with an inner foot presser. 5,347,731, Cl. 36-119.000.

Iwamoto, Shigeru: *See—*
Kawasaki, Masahiro; Takahashi, Hiroyuki; and Iwamoto, Shigeru, 5,349,409, Cl. 354-195.120.

Iwanaga, Toshihiko; Yoshida, Kazuyoshi; and Sato, Takusei, to Sony Corporation. Substrate having an active element array with low hydroxyl and chlorine. 5,349,456, Cl. 359-82.000.

Iwane, Toru, to Nikon Corporation. Automatic lensmeter. 5,349,433, Cl. 356-124.000.

Iwaooji, Makoto, to Casio Computer Co., Ltd. Pitch extracting apparatus having means for measuring interval between zero-crossing points of a waveform. 5,349,130, Cl. 84-616.000.

Iwasa, Akira: *See—*
Kurazumi, Toshiaki; Mizuno, Hiroyuki; Imamori, Katsumi; and Iwasa, Akira, 5,348,744, Cl. 424-439.000.

Iwasaki, Hiroshi: *See—*
Kobayashi, Masao; Ogiso, Koichi; Goto, Shinichi; Mizutani, Haruyasu; Goto, Masaomi; and Iwasaki, Hiroshi, 5,347,759, Cl 49-496.100

Iwasaki, Junichi: *See—*
Katayama, Sumio; Iwasaki, Junichi; Toi, Shuichi; Usui, Ichiro; and Yanase, Takashi, 5,349,263, Cl. 310-338.000.

Iwasaki, Yoshiki: *See—*
Hirohashi, Kazutoshi; Horii, Hiroshi; Koike, Hideo; Yunoki, Yoshiaki; Fukasawa, Tetsuo; Katayama, Susumu; Yoshikawa, Akio; Ushijima, Keishi; Takeda, Takaaki; Nomoto, Takeshi; Kikuta, Michio; Shichijo, Shunichi; and Iwasaki, Yoshiki, 5,349,463, Cl. 359-174.000.

Iwase, Seiichiro, to Sony Corporation. Multiport memory and method of operation thereof. 5,349,561, Cl. 365-219.000

Iwase, Taira, to Kabushiki Kaisha Toshiba. Mask ROM. 5,349,563, Cl 365-230.010

Iwata, Masayuki; Kimura, Tomio; Inoue, Teruhiko; Fujihara, Yoshimi; and Katsube, Tetsushi, to Sankyo Company Limited. 4-oxoquinoline-3-carboxylic acid derivatives and their use. 5,348,961, Cl. 514-312.000.

Iwatsubo, Satoshi: *See—*
Omi, Ikuhiro; Azumai, Hideo; and Iwatsubo, Satoshi, 5,349,449, Cl. 358-448.000.

Izuhara, Katsuhiro: *See—*
Kobayashi, Hisamine; Suzuki, Takeo; and Izuhara, Katsuhiro, 5,348,637, Cl. 204-213.000.

Izumi, Akihide: *See—*
Shinoda, Kenichi; Izumi, Akihide; Tsutsui, Kiyohide; Yamashita, Katsuhiro; Tsuzuki, Hidenori; and Matsuo, Takashi, 5,348,816, Cl. 429-206.000.

J & D Sales: *See—*
Redetzke, Donovan A., 5,348,447, Cl. 416-247.00R

Jachowsky, Norbert, to Maschinenbau Herbert GmbH & Co. Method of manufacture of a profiled segment. 5,349,150, Cl. 219-69.170.

Jackson, Linda J. Grip cover. 5,347,684, Cl. 16-111.00R.

Jacob, Steven D., to Landis & Gyr Powers, Inc. Position sensing apparatus. 5,347,754, Cl. 49-13.000.

Jacobs Chuck Technology Corporation: *See—*
Steadings, Stephen W.; and Barton, Christopher B., 5,348,317, Cl. 279-62.000.
Steadings, Stephen W.; and Barton, Christopher B., 5,348,318, Cl 279-62.000.

Jacobs, Dwight W.; Hoevel, Kenneth E.; and Chester, Bruce E., to Minnesota Mining and Manufacturing Company. Packaging curable materials. 5,348,154, Cl. 206-369.000.

Jacobs, Paul G.: *See—*
Williams, William H.; and Jacobs, Paul G., 5,347,678, Cl. 15-331.000.

Jacobs, Robert M.: *See—*
Dalal, Edul N.; and Jacobs, Robert M., 5,349,424, Cl. 355-285.000

James, Edmund H., III: *See—*
Bolash, John P.; James, Edmund H., III; Mayo, Randall D.; and Zumbach, Richard G., 5,349,375, Cl. 347-40.000.

James River Corporation of Virginia: *See—*
Baran, Mark E.; Phibbs, David P.; Couch, Vern W.; and Michalec, George W., 5,348,453, Cl. 417-440.000.
Smith, Bruce R.; and Gerber, Reinhold, 5,348,181, Cl. 220-254.000.

Jan and Miller, Inc.: *See—*
Zweig, Jan B.; and Fong, Miller Y., 5,347,738, Cl. 40-642.000.

Jang, Wen-Yueh; and Ko, Wen-Chung, to Winbond Electronic Corp. Method for fabricating a BiCMOS device. 5,348,896, Cl. 437-31.000.

Janssens, Richard J.: *See—*
Ebaugh, Roger L.; and Janssens, Richard J., 5,348,382, Cl 303-116.400.

Japan Steel Works, Ltd., The: *See—*
Nishida, Shoso; and Shiotani, Yusuke, 5,348,461, Cl. 425-129.100.

Japan Synthetic Rubber Co., Ltd.: *See—*
Kato, Minoru; Hiraharu, Teruo; Nishiwaki, Koichi; and Tadenuma, Hiroshi, 5,349,003, Cl. 524-458.000.

Jarry, Alain: *See—*
Ullmann, Gabriel; and Jarry, Alain, 5,348,675, Cl. 252-82.000

Jaskie, James E.: *See*—
Moyer, Curtis D.; Harvey, Thomas B., III; and Jaskie, James E., 5,349,209, Cl. 257-80.000.

Jaster, Dale R.; Vestuto, Russell J.; and Maruszak, Ronald S., to Ready Metal Manufacturing Company. Automatically actuated door arrangement. 5,347,755, Cl. 49-25.000.

JATCO Corporation: *See*—
Shibata, Masanori, 5,348,516, Cl. 475-206.000.

JCR Pharmaceuticals Co., Ltd.: *See*—
Horowitz, Bernard; Shulman, Richard W.; Setton, Adrianne J.; Nishimura, Toyohiko; and Kawashima, Yoichi, 5,348,939, Cl. 514-8.000.

Jebco Packaging Systems, Inc.: *See*—
Buchanan, Jerry E., 5,348,398, Cl. 383-122.000.
Buchanan, Jerry E., 5,348,525, Cl. 493-213.000.

Jee, Kyung H., to SamSung Electronics Co., Ltd. Automatic voltage control circuit by using reactive power. 5,349,283, Cl. 323-207.000.

Jeknavorian, Ara A.: *See*—
Arfaei, Ahmad; Berke, Neal S.; Jeknavorian, Ara A.; Gartner, Ellis M.; Hartman, JudithAnn R.; and Myers, David F., 5,348,583, Cl. 106-696.000.

Jelich, Werner; Rehwinkel, Heiko; Klauke, Friedrich; Konig, Dieter; and Kalthoff, Udo, to Deutsche Babcock Energie- und Umwelttechnik Aktiengesellschaft. Device for filtering hot and dusty gases. 5,348,572, Cl. 96-113.000.

Jeneric/Pentron Inc.: *See*—
Waknine, Samuel; Prasad, Arun; and Jia, Weitao, 5,348,475, Cl. 433-215.000.

Jenkins, William G.; Keemer, Craig; Lamborn, H. Taylor; and Curcio, Michael, to Silberline Manufacturing Co., Inc. Water resistant metal pigment-containing paste and method for making. 5,348,579, Cl. 106-404.000.

Jennings, Melvin R. Cosmic communication cubes. 5,348,300, Cl. 273-146.000.

Jensen, Palle L. Merchandising hook. 5,348,167, Cl. 211-57.100.

Jeon, Hong-Seob: *See*—
Moon, Young-Ho; Jeon, Hong-Seob; Choi, Kyu-Whan; Lee, Kwan-Ho; and Kim, Man-Keun, 5,348,865, Cl. 435-69.100.

Jeong, Hyeon J.: *See*—
Lee, Joon K.; Jeong, Hyeon J.; Kim, Kyung S.; and Kwon, Oh-Sik, 5,349,235, Cl. 257-693.000.

Jeong, Keun Choon: *See*—
Park, Byeong Yeol; Chung, Sang Ki; Jung, Bal; Jeong, Keun Choon; and Kim, Jong Sik, 5,348,698, Cl. 264-154.000.

Jerbic, Chris, to LSI Logic Corporation. Process for dynamic control of the concentration of one or more reactants in a plasma-enhanced process for formation of integrated circuit structures. 5,348,614, Cl. 156-626.000.

Jeruzal, Patricia: *See*—
Bettle, Griscom, Jr.; Bettle, Griscom, III; and Jeruzal, Patricia, 5,348,217, Cl. 229-103.100.

Jester, Terry L.: *See*—
Watson, Rick D.; Jester, Terry L.; and Deutschman, Ernest F., 5,347,881, Cl. 74-473.00R.

Jet-Lube, Inc.: *See*—
Oldiges, Donald A.; and Joseph, Anthony W., 5,348,668, Cl. 252-26.000.

Jet Spray Corp.: *See*—
Sardynski, Gary F.; Cox, Paul E.; and Pacheco, Gilbert R., 5,348,192, Cl. 222-129.100.

Jia, Weitao: *See*—
Waknine, Samuel; Prasad, Arun; and Jia, Weitao, 5,348,475, Cl. 433-215.000.

Jiang, Ying, to United States Surgical Corporation. Polymer derived from cyclic amide and medical devices manufactured therefrom. 5,349,045, Cl. 528-323.000.

Jidoshi Kiki Co., Ltd.: *See*—
Yanagi, Kunio; and Satoh, Toshiaki, 5,347,813, Cl. 60-585.000.

Jinks, Philip A.: *See*—
Greenleaf, David J.; Purewal, Tarlochan S.; and Jinks, Philip A., 5,348,730, Cl. 424-45.000.

Jinro Limited: *See*—
Moon, Young-Ho; Jeon, Hong-Seob; Choi, Kyu-Whan; Lee, Kwan-Ho; and Kim, Man-Keun, 5,348,865, Cl. 435-69.100

Joeckel, Klaus H.; and Harrell, Duronnie L., to Pelton & Crane Company, The. Versatile dental delivery system. 5,348,472, Cl. 433-79.000

Joerns Healthcare Inc.: *See*—
Edgerton, John L., Jr., 5,347,682, Cl. 16-34.000.

John O. Butler Company, Inc.: *See*—
Tarrson, Emanuel B.; Maric, Dane; Blahuta, Lew; and Koepsel, Scott, 5,347,675, Cl. 15-167.100.

Johnson, Bertrand H.: *See*—
Blonder, Greg E.; and Johnson, Bertrand H., 5,349,503, Cl 362-31.000.

Johnson, Glenn W., to Eastman Kodak Company. Camera and method for bypassing fogged photographic film. 5,349,406, Cl. 354-173.100.

Johnson, Jerry B.: *See*—
Sheth, Nitin V.; Valorose, Joseph J., Jr.; Ellway, Keith A.; Ganesan, MaduraiGurusamy; Mooney, Kieran G.; and Johnson, Jerry B., 5,348,748, Cl. 424-494.000

Johnson, John L., Jr., to Caterpillar Inc. Integral air compression system. 5,347,968, Cl. 123-320.000.

Johnson & Johnson Vision Products, Inc.: *See*—
Roffman, Jeffrey; LaBelle, Robert; Menezes, Edgar; and Crowe, Carl, 5,349,396, Cl. 351-161.000.

Johnson, Kenneth A.; and White, Steven W., to MDT Corporation. Dental handpiece sterilizer. 5,348,711, Cl. 422-300.000.

Johnson, Kenneth H.; and Dallas, Albert B. Catalytic distillation structure. 5,348,710, Cl. 422-211.000.

Johnson, Kevin S.: *See*—
Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Lightowlers, Marshall W.; O'Hoy, Kim L.; Johnson, Kevin S.; Heath, David D.; Lawrence, Stephen B.; and Vinton, Jennifer G., 5,348,740, Cl. 424-191.100.

Johnson, Kole D.: *See*—
McGhie, John R.; and Johnson, Kole D., 5,348,507, Cl. 446-16.000.

Johnson, Marvin M.: *See*—
Kallenbach, Lyle R.; and Johnson, Marvin M., 5,349,116, Cl. 585-730.000.

Johnson, Raydene: *See*—
Gross, Harry R.; Johnson, Raydene; and Walters, J. C., 5,348,511, Cl. 449-2.000.

Johnson, William J.; Keller, Robert S.; Manthuruthil, George C.; and Williams, Marvin L., to International Business Machines Corporation. Method of and apparatus for providing automatic detection of user activity. 5,349,662, Cl. 395-700.000.

Johnston, David E., to Carl Freudenberg, Firma. Cassette seal. 5,348,312, Cl. 277-39.000.

Johnston, John T.: *See*—
Edem, Brian C.; Helliwell, Richard P.; Johnston, John T.; and Lary, Richard F., 5,349,684, Cl. 395-800.000.

Jones, Christopher Dave: *See*—
Gladstein, Leo A.; Jones, Christopher Dave; and Wulf, James C., 5,349,668, Cl. 395-750.000.

Jones, Eric M.: *See*—
Pearlman, Marshall B.; and Jones, Eric M., 5,347,992, Cl. 128-4.000.

Jones, Jack A., to California Institute of Technology. Regenerative adsorbent heat pump. 5,347,815, Cl. 62-46.200.

Jones, Thomas G., to Bausch & lomb Incorporated. Automated collet loading for the manufacture of contact lenses. 5,347,896, Cl. 82-125.000.

Jonsson, Lennart; and Knutsson, Stefan, to Gambro, AB. System for the preparation of a fluid concentrate intended for medical use. 5,348,389, Cl. 366-136.000.

Jordan, David L.; and Schetselaar, Marc A., to Hubbell Incorporated. Spring latching mechanism for light fixture. 5,349,510, Cl. 362-374.000.

Jordan, Paul, to RLS-Bautechnologie-AG. High-rise building. 5,347,779, Cl. 52-302.300.

Josef, Kurt A.: *See*—
Bacon, Edward R.; Illig, Carl R.; Caulfield, Thomas J.; Douty, Brent D.; and Josef, Kurt A., 5,348,727, Cl. 424-5.000.

Joseph, Anthony W.: *See*—
Oldiges, Donald A.; and Joseph, Anthony W., 5,348,668, Cl. 252-26.000.

Joshua, Alummoottil V.; and Scott, John R., to Alberta Cancer Board. Pancreatic imaging agents. 5,349,063, Cl. 544-162.000.

Jost, Stephan, to Balzers Aktiengesellschaft. Method of plasma treating a surface of a workpiece, vacuum treatment apparatus and previously plasma treated plastic article. 5,348,632, Cl. 204-165.000.

Joy MM Delaware, Inc.: *See*—
Thomas, Terry M., 5,348,130, Cl. 198-312.000.

Joyce Gangewer DBA Sea Coast Canvas & Awning Co.: *See*—
Dinsmore, David W., 5,347,769, Cl. 52-101.000.

Joyner, Adam R.: *See*—
O'Rourke, Thomas C.; O'Neill, Brian T.; Cook, Rodney C.; Taner, Kuntay O.; Synder, Steven P.; and Joyner, Adam R., 5,349,658, Cl. 395-700.000.

Jud, Wilfried: *See*—
Haiss, Manfred; and Jud, Wilfried, 5,348,400, Cl. 383-210.000.

Jugle, Kip L.; and Linblad, Nero R., to Xerox Corporation. Cleaner blade lubricating system. 5,349,429, Cl. 355-299.000.

Jung, Bal: *See*—
Park, Byeong Yeol; Chung, Sang Ki; Jung, Bal; Jeong, Keun Choon; and Kim, Jong Sik, 5,348,698, Cl. 264-154.000.

Jung, Frederic H., to ICI Pharma. Cephalosporins. 5,348,951, Cl. 514-202.000.

Junien, Jean-Louis: *See*—
Aubard, Gilbert; Bure, Jacques; Calvet, Alain; Gouret, Claude J.; Grouhel, Agnes; and Junien, Jean-Louis, 5,348,980, Cl. 514-653.000.

Junk, Ronald K.; Urmson, William T., Jr.; and Walker, Thomas R., to Portec Inc. Rail lubrication apparatus. 5,348,120, Cl. 184-3.100.

Jurgensen, Holger; Gruter, Klaus; Deschler, Marc; and Balk, Pieter, to Aixtron GmbH. Material-saving process for fabricating mixed crystals. 5,348,911, Cl. 117-91.000.

Justak, John F.; and Owens, Gregg R., to United States of America, National Aeronautics and Space Administration. Hybrid bearings for turbopumps. 5,348,401, Cl. 384-101.000.

Jwd, Chin-Tsaw, to Hung, Cheng-Chi. Fan blade. 5,348,445, Cl. 416-229.00R.

Kabata, Toshiyuki: *See*—
Asami, Keiichi; Takahashi, Hideki; Inoue, Katsuo; Echigo, Yoshiaki; Ohsawa, Toshiyuki; and Kabata, Toshiyuki, 5,348,818, Cl. 429-213.000.

Kabelmetal Electro Gesellschaft mit beschrankter Haftung: *See*—
Schauer, Friedrich; and Neuner, Andreas, 5,348,490, Cl. 439-164.000.

Kabushiki Kaisha Hoky: *See*—
Saitoh, Hiroshi, 5,347,676, Cl. 15-245.000.

Kabushiki Kaisha Morita Seisakusho: *See*—
Nakajima, Sadahiro; Endoh, Naoshi; Kataoka, Kenzo; and Odaka, Masaki, 5,348,552, Cl. 606-13.000.

Kabushiki Kaisha Sakura Kurepasu: *See*—
Ozu, Tatsuya; Yasunaga, Masahiro; and Inoue, Shigeyasu, 5,348,411, Cl. 401-219.000.

Kabushiki Kaisha Sangi: *See*—
Atsumi, Kiminori; Saito, Tomoki; and Komori, Masaaki, 5,348,577, Cl. 106-18.310.

Kabushiki Kaisha Seibu Giken: *See*—
Kuma, Toshimi, 5,348,922, Cl. 502-60.000.

Kabushiki Kaisha SG: *See*—
Tanaka, Shuichi; and Ichikawa, Wataru, 5,349,293, Cl. 324-207.160

Kabushiki Kaisha TOPCON: *See*—
Gisin, Nicolas; Stamp, Patrick; Passy, Rogerio; Hori, Nobuo; and Nagano, Shigenori, 5,349,431, Cl. 356-73.100.
Sekine, Akihiko, 5,349,399, Cl. 351-215.000.

Kabushiki Kaisha Toshiba: *See*—
Ando, Hideo, 5,349,592, Cl. 372-32.000.
Fukuoka, Katsuhito, 5,349,680, Cl. 395-800.000
Iijima, Yasuo, 5,349,649, Cl. 395-275.000.
Iwase, Taira, 5,349,563, Cl. 365-230.010
Kanda, Ryoichi; and Sumino, Yoichi, 5,348,013, Cl. 128-660.070
Kojima, Fumitoshi, 5,348,012, Cl. 128-653.300.
Nagato, Hitoshi; and Koike, Yuzo, 5,349,423, Cl. 355-285.000.
Nakabayashi, Kazuto, 5,349,298, Cl. 324-322.000.
Oba, Masayuki; Hayase, Rumiko; Kihara, Naoko; Hayase, Shuzi; Mikogami, Yukihiro; Nakano, Yoshihiko; Oyasato, Naohiko; Matake, Shigeru; and Takano, Kei, 5,348,835, Cl. 430-192.000
Ohta, Nobuaki, 5,349,164, Cl. 219-506.000.
Okado, Takeshi, 5,348,014, Cl. 128-660.090.
Sasaki, Akira, 5,349,233, Cl. 257-666.000.
Takeda, Kimihito; Hirakawa, Hideki; Adachi, Hisahiro; and Amano, Shinya, 5,349,368, Cl. 345-115.000
Tanaka, Minoru; and Tanimoto, Hiroshi, 5,349,242, Cl. 307-249.000.
Tokunaga, Yu, 5,349,295, Cl. 324-309.000.
Ushirogouchi, Toru; Kihara, Naoko; Sasaki, Osamu; Tada, Tsukasa; Naito, Takuya; and Saito, Satoshi, 5,348,838, Cl 430-270.000.
Yamada, Seiji; and Oshikiri, Masamitsu, 5,349,553, Cl. 365-185.000
Yasuda, Susumu, 5,349,673, Cl. 395-800.000.

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Terazoe, Masahiko, 5,347,691, Cl. 24-295.000.

K.K. Vayu: *See*—
Matsuda, Takehisa; Nakayama, Yasuhide; and Sugawara, Takashi, 5,348,873, Cl. 435-182.000.

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Murata, Katsumi; Murakami, Kazuo; Kusakabe, Isao; and Satoh, Toshihide, 5,348,875, Cl. 435-200.000.

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Murata, Katsumi; Murakami, Kazuo; Kusakabe, Isao; and Satoh, Toshihide, 5,348,875, Cl. 435-200.000.

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Miyata, Shigeru; Matsubara, Yoshihiro; and Kagawa, Junichi, 5,347,855, Cl. 73-116.000.
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Blum, Harald; Kahl, Lothar; Yuva, Nusret; and Bock, Manfred, 5,349,041, Cl. 528-85.000.

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Klein, Hans-Christof; Kahrs, Manfred; Drott, Peter; Beer, Wilhelm; Baier, Joachim; Kraft, Peter; and Lang, Andreas, 5,348,110, Cl. 180-132.000.

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Shirai, Etsuo, 5,349,289, Cl. 324-127.000.

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Hasegawa, Fuminori, 5,349,142, Cl. 187-110.000.

Kaiser, Reinhold, to Temic Telefunken microelectronic GmbH Method for operation of a radio-controlled clock and radio-controlled clock for use in an environment subject to interference fields. 5,349,570, Cl. 368-47.000.

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Kobori, Takuji; Ishii, Koji; Takahashi, Motoichi; Matsunaga, Yoshinori; Niwa, Naoki; Tagami, Jun; Mizuno, Takayuki; and Furukawa, Kunio, 5,347,771, Cl. 52-167.00R.

Kajimura, Atsuko: *See*—
Ippommatsu, Masamichi; Sasaki, Hirokazu; Otoshi, Shoji; Suzuki, Minoru; and Kajimura, Atsuko, 5,348,776, Cl. 427-586.000.

Kakimoto, Kazuhito: *See*—
Kanehiro, Masaki; Shimasaki, Yuichi; Ishioka, Takuji; Baba, Shigeki; Hisaki, Takashi; Maruyama, Shigeru; Chikamatsu, Masataka; Terata, Shukoh; Maeda, Kenichi; and Kakimoto, Kazuhito, 5,349,299, Cl. 324-399.000

Kakugo, Masahiro; Miyatake, Tatsuya; Mizunuma, Koozi; Yagi, Yoshio; and Watanabe, Kazuhiro, to Sumitomo Chemical Company, Limited. Process for selective production of trans-1,4-polybutadiene 5,349,034, Cl. 526-143.000.

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Mansoor, Dhafer Y.; and Kallenberg, Walter J., 5,347,690, Cl 24-295.000.

Kallenberger, Harvey J., to Harnischfeger Corporation. Method and apparatus for servicing a gear assembly. 5,347,880, Cl. 74-447.000.

Kalotay, Paul Z.; and Titlow, Joseph D., to Micro Motion, Incorporated. In-flow coriolis effect mass flowmeter. 5,347,874, Cl 73-861.380.

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Jelich, Werner; Rehwinkel, Heiko; Klauke, Friedrich; Konig, Dieter; and Kalthoff, Udo, 5,348,572, Cl. 96-113.000.

Kamata, Kazuo, to Fuji Photo Film Co., Ltd. Lens-fitted photographic film unit. 5,349,410, Cl. 354-288.000.

Kamehara, Nobuo: *See*—
Yamada, Mitsutaka; Yokouchi, Kishio; Kamehara, Nobuo; and Niwa, Koichi, 5,349,499, Cl. 361-700.000.

Kamei, Ryosuke: *See*—
Nakamura, Akira; Kamei, Ryosuke; Takahashi, Takeshi; Takahashi, Tetuya; Terazono, Shigenori; and Takiyama, Eiichiro, 5,348,700, Cl. 264-177.170.
Takahashi, Tetuya; Uda, Hitoshi; Nakamura, Akira, Kamei, Ryosuke; and Takiyama, Eiichiro, 5,349,028, Cl. 525-440.000

Kami, Chikashi: *See*—
Tateyama, Masaru; Tamura, Yukihiko; Fukuda, Kosei; Yoshida, Shigeru; and Kami, Chikashi, 5,348,424, Cl. 405-262.000.

Kamijo, Masahiko; Saitoh, Hiroshi; Matsuura, Yozo; and Kondo, Shiro, to Ricoh Company, Ltd. Combined cleaner and toner magazine for an image forming apparatus. 5,349,425, Cl. 355-298.000

Kamiyama, Minoru: *See*—
Yokoshima, Yasuhiro, 5,348,764, Cl. 427-140.000.

Kamp, Michael E.; and Rabe, Michael W., to Caterpillar Inc. Adjustable spanner wrench assembly. 5,347,891, Cl. 81-175.000

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Sakashita, Nobuyuki; Nakajima, Toshio; Murai, Shigeo; Maeda, Kazuyuki; Nakamura, Yuji; Yoshida, Tsunezo; Honzawa, Shooichi; and Kanamori, Fumio, 5,348,933, Cl. 504-213.000.

Kanbara, Youchi: *See*—
Ichibori, Keiji; Matsumoto, Takaharu; and Kanbara, Youchi, 5,348,796, Cl. 428-224.000.

Kanbara, Yutaka: *See*—
Doya, Masaharu; Ohkawa, Takashi; Kanbara, Yutaka; Okamoto, Aksushi; and Kimizuka, Kenichi, 5,349,077, Cl. 558-260.000.

Kanda, Kazunori: *See*—
Yoshikawa, Motoyoshi; Noda, Hideyoshi; Shirakawa, Shinsuke; Tsuboniwa, Noriyuki; Yamanaka, Eiji; Urano, Satoshi; and Kanda, Kazunori, 5,348,991, Cl. 523-402.000.

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Ichibori, Keiji; Matsumoto, Takaharu; and Kanbara, Youchi, 5,348,796, Cl. 428-224.000.

Kanehiro, Masaki; Shimasaki, Yuichi; Ishioka, Takuji; Baba, Shigeki; Hisaki, Takashi; Maruyama, Shigeru; Chikamatsu, Masataka; Terata, Shukoh; Maeda, Kenichi; and Kakimoto, Kazuhito, to Honda Giken Kogyo Kabushiki Kaishi. Fuel supply misfire-detecting system for internal combustion engines. 5,349,299, Cl. 324-399.000.

Kaneko, Hiroaki, to NEC Corporation. Detecting location of time slot where data begins using pointer in justification or stuffing synchronous TDM. 5,349,581, Cl. 370-102.000.

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Kaneko, Kyoichi, to Daiwa Seiko, Inc. Braking apparatus for fishing reel. 5,348,247, Cl. 242-303.000.

Kaneko, Seiji; Kinoshita, Toshiyuki; Yamamoto, Akio; and Tamura, Yasuhisa, to Hitachi, Ltd. Task scheduling method in a multiprocessor system where task selection is determined by processor identification and evaluation information. 5,349,656, Cl. 395-650.000

Kaneko, Takushi; Willner, David; Monkovic, Ivo; Greenfield, Robert S.; and Braslawsky, Gary R., to Bristol-Myers Squibb Company Bifunctional linking compounds, conjugates and methods for their production. 5,349,066, Cl. 546-294.000.

Kaneko, Tatsuya: *See*—
Hata, Go; Kaneko, Tatsuya; Kawai, Hideki; Mutoh, Masato; and Hashimoto, Hideyuki, 5,348,950, Cl. 514-186.000.

Kaneko, Toru; and Nakamura, Osamu, to Minebea Co., Ltd. Rotor for a printed motor. 5,349,259, Cl. 310-261.000.

Kaneyasu, Masayoshi: *See—*
Kitano, Kouji; Kayano, Mitsuo; Kaneyasu, Masayoshi; Katougi, Kouzou; Ichihara, Takanobu; and Kurihara, Nobuo, 5,347,846, Cl. 73-35.000

Kanezaki, Kazuharu: *See—*
Ueki, Toru; Yoshimura, Masaji; Kanezaki, Kazuharu; Kishi, Susumu; Satoh, Takashi; and Takiguchi, Minoru, 5,349,027, Cl. 525-331.700.

Kang, Sukhvinder S.; Patel, Bharatan R.; and Kothari, Kirankumar M., to Gas Research Institute. Gas flowmeter using thermal time-of-flight principle. 5,347,876, Cl. 73-861.950

Kania, Charles M.: *See—*
Swarup, Shanti; Sundararaman, Padmanabhan; McCollum, Gregory J.; Kania, Charles M.; and Claar, James A., 5,349,006, Cl. 524-507.000.

Kanigan, Kim W., to Sign-Rite Inc. Illuminated sign. 5,347,736, Cl. 40-576.000

Kanke, Tetsuo: *See—*
Hagimori, Kenji; Abe, Yuzuru; and Kanke, Tetsuo, 5,348,724, Cl 423-531.000

Kano, Hiroshi: *See—*
Ishibashi, Tadaya; Sasaki, Masanori; Obara, Hideto; Kano, Hiroshi; and Yamashita, Shintaro, 5,348,628, Cl. 204-153.000
Kumon, Naoki; Kawagoe, Harue; Matsugi, Shin; Kano, Hiroshi; Nakaoka, Noriyoshi; Morii, Shoichi; Kusanagi, Shigekazu; Koi, Kenji; Hatai, Takashi; and Fukui, Masanori, 5,347,665, Cl 4-541.100.

Kansai Paint Co., Ltd.: *See—*
Ito, Satoru; Matoba, Takao; Yamamoto, Kenji; and Sugiura, Shinji, 5,348,998, Cl. 524-190.000

Kanzaki, Hisao: *See—*
Ohishi, Chikashi; Sasayama, Hiroyuki; and Kanzaki, Hisao, 5,349,413, Cl. 354-324.000

Kao, Jar-Lin: *See—*
Potter, Mark J.; Kao, Jar-Lin; Cross, Virginia R.; Vanderspurt, Thomas H.; Dienes, Edward K.; Riley, Robert E.; Tungate, Freddie L.; and Bortinger, Arie, 5,348,924, Cl. 502-66.000

Kao, Wenling; and Vogel, Robert L., to American Home Products Corporation. Rapamycin 31-ester with N,N-dimethylglycine derivatives useful as immunosuppressive agents. 5,349,060, Cl. 540-456.000

Kaplan, Daniel; and Lehureau, Jean-Claude, to Thomson-CSF. Back-projection display system and method for making a back-projection mirror. 5,349,400, Cl. 353-119.000

Karbaf, Adam A., to Magnetek, Inc. Integral housing for ballast and fluorescent lamps. 5,349,508, Cl. 362-217.000.

Karger, Barry L.; and Shimura, Kiyohito, to Northeastern University Method for quantitating trace amounts of an analyte in a sample by affinity capillary electrophoresis. 5,348,633, Cl. 204-180.100.

Karl Storz Endoscopy America, Inc.: *See—*
Pearlman, Marshall B.; and Jones, Eric M., 5,347,992, Cl. 128-4.000.

Karls, Gerald A.: *See—*
Carlson, Timothy J.; Geiger, Richard D.; Karls, Gerald A.; and Meysembourg, Bruce A., 5,348,651, Cl. 210-321.600.

Karlsson, Jan-Olof: *See—*
Odman, Svante; Karlsson, Jan-Olof; and Axelsson, Krister, deceased, 5,348,851, Cl. 435-4.000

Karlsson, Stefan U. Method for detecting external influence on an optical cable. 5,349,458, Cl. 359-124.000.

Kasahara, Keisuke: *See—*
Kuroda, Syoichi; Shibata, Soichiro; Shimamura, Nonyuki; Kawasaki, Shigetake; Kasahara, Keisuke; Sakuma, Seiichi; Komatsu, Fujio; Ishikawa, Masaya; Sugiyama, Kunio; Mashimo, Mitsuo; Shindo, Yuzuru; and Kawamura, Kuniaki, 5,348,080, Cl. 165-104.130.

Kasahara, Shigeo: *See—*
Mochizuki, Akihiro; Kasahara, Shigeo; Makino, Tetsuya; Watanabe, Masashi; Nakatsuka, Masakatsu; Yoshio, Kunikiyo; Satoh, Masahiro; Watanabe, Tetsuya; Sugita, Naoko; and Yanagi, Tatsuroh, 5,348,685, Cl. 252-299.620

Kasbo, Barbara A., executrix: *See—*
Kasbo, Loyd G., deceased; Cotton, James D.; Morman, Michael T.; and Adam, Gabriel H., 5,347,950, Cl. 119-171.000.

Kasbo, Loyd G., deceased (by Kasbo, Barbara A., executrix); Cotton, James D.; Morman, Michael T.; and Adam, Gabriel H., to Kimberly-Clark Corporation. Animal litter composition and package. 5,347,950, Cl. 119-171.000

Kasden, Larry R. Electrical cord plug lock assembly. 5,348,495, Cl 439-371.000

Kashida, Meguru: *See—*
Kuwabara, Haruyoshi; Otsuka, Akio; Maki, Yasuyuki; and Kashida, Meguru, 5,348,919, Cl. 501-97.000.

Kashima, Takayuki: *See—*
Mita, Tsuneo; Shinada, Tsuneo; and Kashima, Takayuki, 5,349,159, Cl. 219-137.0PS

Kashioka, Motohiko: *See—*
Hanada, Koji; Hamuro, Makiko; Yoshikawa, Takeshi; Ohmura, Toru; and Kashioka, Motohiko, 5,348,348, Cl. 283-91.000

Kasser, Jurgen: *See—*
Erben, Peter; Liman, Helmut; Hegeler, Wilhelm; Bochmann, Harald; Kasser, Jurgen; and Henze, Werner, 5,349,699, Cl 455-186.100

Kasuboski, Larry, to Picker International Inc. Two and three-dimensionally selective RF pulses for magnetic resonance imaging 5,349,294, Cl. 324-309.000

Katagiri, Gen: *See—*
Matsuhisa, Yoji; Hiramatsu, Toru; Yoshida, Kazuo; and Katagiri, Gen, 5,348,802, Cl. 428-367.000.

Kataoka, Kenzo: *See—*
Nakajima, Sadahiro; Endoh, Naoshi; Kataoka, Kenzo; and Odaka, Masaki, 5,348,552, Cl. 606-13.000

Katayama, Sumio; Iwasaki, Junichi; Toi, Shuichi; Usui, Ichiro; and Yanase, Takashi, to Mitsumi Electric Co., Ltd. Pointing device suitable for miniaturization. 5,349,263, Cl. 310-338.000

Katayama, Sumio; Usui, Ichiro; and Yanase, Takashi, to Mitsumi Electric Co., Ltd. Signal processing circuit for a pointing device 5,349,370, Cl. 345-159.000

Katayama, Susumu: *See—*
Hirohashi, Kazutoshi; Horii, Hiroshi; Koike, Hideo; Yunoki, Yoshiaki; Fukasawa, Tetsuo; Katayama, Susumu; Yoshikawa, Akio; Ushijima, Keishi; Takeda, Takaaki; Nomoto, Takeshi; Kikuta, Michio; Shichijo, Shunichi; and Iwasaki, Yoshiki, 5,349,463, Cl 359-174.000.

Katchka, Jay R., to Robertshaw Controls Company. Hot water tank construction, parts therefor and methods of making the same 5,348,037, Cl. 137-15.000.

Kato, Akira: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; Kato, Akira; Shibata, Toshisuke; and Nishiyama, Nobuyuki, 5,348,591, Cl. 148-403.000

Kato, Minoru; Hiraharu, Teruo; Nishiwaki, Koichi; and Tadenuma, Hiroshi, to Japan Synthetic Rubber Co., Ltd. Aqueous fluorine-containing polymer dispersion and aqueous dispersion containing fluorine-containing polymer and water-soluble resin and/or water dispersible resin. 5,349,003, Cl. 524-458.000.

Kato, Tetsuro, to NEC Corporation. Semiconductor infrared emitting device with oblique side surface with respect to the cleavage 5,349,211, Cl. 257-90.000

Kato, Yasuhiro; and Suzuki, Hideki, to Nippondenso Co. Ltd. System for detecting the compression of liquid refrigerant in a compressor and controlling the compressor. 5,347,824, Cl. 62-133.000.

Kato, Yasuyoshi; and Konishi, Kunihiko, to Babcock-Hitachi Kabushiki Kaisha. NOx removal catalyst containing an inorganic fiber. 5,348,987, Cl. 502-242.000

Kato, Yoshinori; Hayashi, Ryutaro; Tsukamoto, Takeo; and Aoki, Masahiro, to Mitsubishi Yuka Badische Co., Ltd. Crosslinking aqueous pigment dispersion. 5,348,997, Cl. 524-189.000.

Katoh, Takayuki: *See—*
Notani, Yoshihiro; and Katoh, Takayuki, 5,349,317, Cl. 333-236.000.

Katougi, Kouzou: *See—*
Kitano, Kouji; Kayano, Mitsuo; Kaneyasu, Masayoshi; Katougi, Kouzou; Ichihara, Takanobu; and Kurihara, Nobuo, 5,347,846, Cl. 73-35.000

Katrib, Suhail: *See—*
Brenner, Joseph H.; and Katrib, Suhail, 5,348,150, Cl. 206-328.000.

Katsube, Tetsushi: *See—*
Iwata, Masayuki; Kimura, Tomio; Inoue, Teruhiko; Fujihara, Yoshimi; and Katsube, Tetsushi, 5,348,961, Cl. 514-312.000.

Katsuta, Hiroshi, to NEC Corporation. Stand by control circuit 5,349,586, Cl. 371-22.100.

Katsuyama, Yutaka: *See—*
Aikawa, Haruhiko; Nagayama, Katsuya; Ishiguro, Yoichi; Yoshimura, Ichiro; Katsuyama, Yutaka; and Yoshizawa, Nobuyuki, 5,348,564, Cl. 65-413.000

Katz, Ronald A., to First Data Resources Inc. Telephonic-interface game control system. 5,349,633, Cl. 379-88.000

Kauffman, Gerald C.; Hughes, Timothy C.; Heins, Don; Slovacek, Patricia; and Abou-Jaoude, Fadi, to Exabyte Corporation. Apparatus and method for distorted track data recovery by rewinding and re-reading the tape at a slower than nominal speed. 5,349,481, Cl. 360-74.400.

Kauffman, Glenn A.: *See—*
Reeme, Mahan L.; Williams, Barry N.; and Kauffman, Glenn A., 5,347,849, Cl. 73-49.200.

Kavlico Corporation: *See—*
Obermeier, Horst, 5,349,491, Cl. 361-283.400

Kawada, Tomoharu: *See—*
Maeda, Toshinori; Kawada, Tomoharu; and Miyake, Jiro, 5,349,671, Cl. 395-800.000

Kawagoe, Harue: *See—*
Kumon, Naoki; Kawagoe, Harue; Matsugi, Shin; Kano, Hiroshi; Nakaoka, Noriyoshi; Morii, Shoichi; Kusanagi, Shigekazu; Koi, Kenji; Hatai, Takashi; and Fukui, Masanori, 5,347,665, Cl. 4-541.100.

Kawaguchi, Shigeru; Kubouchi, Kenji; Uemura, Hiroshi; and Inoue, Kunitoshi, to Nippon Gasket Co., Ltd. Metallic gasket. 5,348,315, Cl 277-235.00B.

Kawaguchi, Takafumi; and Takeda, Shiro, to Sharp Kabushiki Kaisha Active matrix substrate having a contact pad for detecting bus line signals. 5,349,226, Cl. 257-347.000

Kawai, Hideki: *See—*
Hata, Go; Kaneko, Tatsuya; Kawai, Hideki; Mutoh, Masato; and Hashimoto, Hideyuki, 5,348,950, Cl. 514-186.000.

Kawajiri, Yukio: *See—*
Shibata, Makoto; Kawajiri, Yukio; Koyama, Shuji; Sueoka, Manabu; Suzuki, Toshio; Yamamoto, Hisashi; and Suzuki, Takumi, 5,347,713, Cl. 29-890.100.

Kawakami, Atsushi: *See—*
Sato, Kazuteru; Yamamoto, Kanshi; Morohoshi, Mikio; Akaba, Noriyuki; and Kawakami, Atsushi, 5,349,531, Cl. 364-449.000

Kawakami, Junzo: *See—*
Konishi, Hiroo; Kawazoe, Hironari; Kawakami, Junzo; Nakamura, Tomoharu; Tokiwa, Yukio; and Nakajima, Tatsuhito, 5,349,522, Cl. 363-95.000.

Kawakami, Youji, to Nippon Steel Corporation. Electronic device adaptive to mounting on a printed wiring board. 5,349,501, Cl. 361-776.000.

Kawamoto, Hiroshi: *See—*
Morigaki, Masakazu; Kawamoto, Hiroshi; Fujita, Yoshihiro; Nakamura, Shigeru; Watanabe, Hiroyuki; and Yagihara, Morio, 5,348,845, Cl. 430-372.000.

Kawamura, Ban: *See—*
Watanabe, Junzo; Ueyama, Akihiro; and Kawamura, Ban, 5,349,274, Cl. 315-395.000.

Kawamura, Kuniaki: *See—*
Kuroda, Syoichi; Shibata, Soichiro; Shimamura, Nonyuki; Kawasaki, Shigetake; Kasahara, Keisuke; Sakuma, Seiichi; Komatsu, Fujio; Ishikawa, Masaya; Sugiyama, Kunio; Mashimo, Mitsuo; Shindo, Yuzuru; and Kawamura, Kuniaki, 5,348,080, Cl. 165-104.130.

Kawamura, Shinichi: *See—*
Sato, Junichi; Sanemitzu, Yuzuru; Kawamura, Shinichi; Mito, Nobuaki; Hamada, Tatsuhiro; and Yoshida, Ryo, 5,349,108, Cl. 564-340.000

Kawamura, Takahiro; and Uehira, Tetsuo, to Sony Corporation. Method of assembling a shadow mask and an apparatus for carrying out the same. 5,348,506, Cl. 445-30.000.

Kawano, Katsuo: *See—*
Miyamato, Masahiko; Nakamura, Nobuo; Takashita, Jyunji; Ando, Manabu; Kawano, Katsuo; Nishimura, Yoshiaki; and Yuasa, Satoshi, 5,347,763, Cl. 451-241.000.

Kawano, Makoto: *See—*
Miyauch, Masaaki; Kawano, Makoto; Kitamura, Takashi; Okunishi, Hiromu; and Haga, Fumio, 5,347,760, Cl. 451-114.000.

Kawano, Minori; Ogawa, Kohji; Tsukagoshi, Sadayuki; Kuroiwa, Hiroyuki; Sato, Masato; Ishizaki, Yasuhiro; Komatsu, Fumiaki; and Kuroda, Eiichi, to Mitsubishi Denki Kabushiki Kaisha. Radio relay system with a multiplex separation circuit and control for providing time delay multiplex operation of receiver and transmitter. 5,349,694, Cl. 455-11.100

Kawano, Yukita: *See—*
Kubota, Noriyasu; Miyagawa, Yoshihiro; and Kawano, Yukita, 5,349,120, Cl. 800-200.000.

Kawasaki, Ikuya: *See—*
Nishimukai, Tadahiko; Hasegawa, Atsushi; Uchiyama, Kunio; Kawasaki, Ikuya; and Hanawa, Makoto, 5,349,672, Cl. 395-800.000.

Kawasaki, Masaaki: *See—*
Okada, Keiji; Murata, Kazuhiko; Tojo, Tetsuo; Kawasaki, Masaaki; and Takata, Toshimasa, 5,349,020, Cl. 525-237.000.

Kawasaki, Masahiro; Takahashi, Hiroyuki; and Iwamoto, Shigeru, to Asahi Kogaku Kogyo Kabushiki Kaisha. Photographing lens. 5,349,409, Cl. 354-195.120.

Kawasaki, Shigetake: *See—*
Kuroda, Syoichi; Shibata, Soichiro; Shimamura, Nonyuki; Kawasaki, Shigetake; Kasahara, Keisuke; Sakuma, Seiichi; Komatsu, Fujio; Ishikawa, Masaya; Sugiyama, Kunio; Mashimo, Mitsuo; Shindo, Yuzuru; and Kawamura, Kuniaki, 5,348,080, Cl. 165-104.130.

Kawashima, Yoichi: *See—*
Horowitz, Bernard; Shulman, Richard W.; Setton, Adrianne J.; Nishimura, Toyohiko; and Kawashima, Yoichi, 5,348,939, Cl. 514-8.000.

Kawatani, Shoji: *See—*
Imashimizu, Yoshinori; Suda, Yoshiaki; Yamamoto, Shuichi; Takada, Toshiyuki; Maeyama, Kaoru; Hiramoto, Etsuro; Oki, Toshihide; Morita, Sadayuki; Kawatani, Shoji; Morioka, Kunihito; Fujimitsu, Ryoichi; and Handa, Kazuhisa, 5,347,703, Cl. 29-525.100.

Kawazoe, Hironari: *See—*
Konishi, Hiroo; Kawazoe, Hironari; Kawakami, Junzo; Nakamura, Tomoharu; Tokiwa, Yukio; and Nakajima, Tatsuhito, 5,349,522, Cl. 363-95.000.

Kay, David: *See—*
Morris, G. Michael; Kay, David; Buralli, Dale; and Kubalak, David, 5,349,471, Cl. 359-565.000.

Kayaba Industry Co., Ltd.: *See—*
Hasegawa, Yoshimi; Nishiumi, Kenichi; Yonekubo, Yoshitake; Naito, Hisato; and Koiwai, Hideshi, 5,347,811, Cl. 60-426.000
Yonekubo, Yoshitake; Koiwai, Hideshi; and Narita, Susumu, 5,348,049, Cl. 137-636.200.

Kayaba Kogyo Kabushiki Kaisha: *See—*
Kobori, Takuji; Ishii, Koji; Takahashi, Motoichi; Matsunaga, Yoshinori; Niwa, Naoki; Tagami, Jun; Mizuno, Takayuki; and Furukawa, Kunio, 5,347,771, Cl. 52-167.00R

Kayano, Mitsuo: *See—*
Kitano, Kouji; Kayano, Mitsuo; Kaneyasu, Masayoshi; Katougi, Kouzou; Ichihara, Takanobu; and Kurihara, Nobuo, 5,347,846, Cl. 73-35.000.

KDI American Products, Inc.: *See—*
Hamza, Hassan; Burkitt, Garrett J., III; and Olson, Gordon D., 5,347,664, Cl. 4-509.000.

Kearney, Chris: *See—*
Quemada, Hector D.; Slightom, Jerry L.; Gonsalves, Dennis; and Kearney, Chris, 5,349,128, Cl. 800-205.000

Kebarle, Paul: *See—*
Ikonomou, Michael G.; and Kebarle, Paul, 5,349,186, Cl 250-288.000

Keemer, Craig: *See—*
Jenkins, William G.; Keemer, Craig; Lamborn, H. Taylor; and Curcio, Michael, 5,348,579, Cl. 106-404.000.

Keen, John M.: *See—*
Canham, Leigh-Trevor; Keen, John M.; and Leong, Weng Y., 5,348,618, Cl. 156-644.000.

Keen, Lee G.: *See—*
Hock, Ng L.; Girard, James J.; Keen, Lee G.; Chan, James L. K.; and Lim, Chuin K., 5,348,407, Cl. 400-711.000.

Keitel, Ralph; and Stillhard, Bruno, to Klockner Ferromatik Desma GmbH. Injection unit having adjustable and settable nozzle contact pressure. 5,348,463, Cl. 425-145.000.

Keith, Michael, to Intel Corporation. Arithmetic logic unit dequantization. 5,349,545, Cl. 364-715.020.

Keizer, Gerrit D.: *See—*
van Es, Remco M.; Keizer, Gerrit D.; and van Doorn, Albert W J., 5,348,891, Cl. 436-525.000.

Kelaita, Joseph B., Jr.; Castonguay, Roger N.; and Collin, Edwin J., to General Electric Company. Circuit breaker operating handle interlock. 5,349,145, Cl. 200-43.150.

Keller, Anton W., to RCA Thomson Licensing Corporation. Video attenuator with output combined with signal from non-linear shunt branch to provide gamma correction and high frequency detail enhancement. 5,349,389, Cl. 348-625.000.

Keller, Robert S.: *See—*
Johnson, William J.; Keller, Robert S.; Manthuruthil, George C.; and Williams, Marvin L., 5,349,662, Cl. 395-700.000.

Keller, Teddy M.; and Henderson, Leslie J., Jr., to United States of America, Navy. Ceramics formed by pyrolysis of either linear or thermosetting carborane (siloxane or silane) acetylene based precursor polymers. 5,348,917, Cl. 501-92.000.

Kelley, William K.: *See—*
Fitzgerald, Arthur K.; Gainey, Charles W., Jr.; Kelley, William K.; and Wentz, Samuel L., 5,349,675, Cl. 395-800.000.

Kemmer, Leif; and Nilsson, Karl J., to ABB Carbon AB. Steam system in a multiple boiler plant. 5,347,814, Cl. 60-676.000.

Kempers, Torben P.: *See—*
de Jong, Robertus E.; Kempers, Torben P.; and de Wit, Gerrit, 5,348,999, Cl. 524-377.000.

Kenco/Williams: *See—*
Fink, Raymond W., 5,348,363, Cl. 296-91.000.

Kenney, Donald M., to International Business Machines Corporation Method of making diffused buried plate trench DRAM cell array. 5,348,905, Cl. 437-52.000.

Kenny, Garry R.; Rhys, Hugh R.; and Skeen, Michael A., to Magnetic Separation Systems, Inc. Singulation system for recyclable material. 5,348,136, Cl. 198-443.000.

Kepler, Robert P., to Whirlpool Corporation. Appliance shipping container air sampling system. 5,347,845, Cl. 73-31.030.

Kerfoot, Derek E.; Collins, Michael J.; and Chalkley, Michael E., to Sherritt Gordon Limited. Recovery of metal values from zinc plant residues. 5,348,713, Cl. 423-26.000.

Kern, Norman P., to Unisys Corporation. Image-based document processing system providing enhanced transaction balancing. 5,349,170, Cl. 235-379.000.

Kernkamp, John H.: *See—*
Forbes, Mark M.; and Kernkamp, John H., 5,349,362, Cl 343-720.000

Kerr Group, Inc.: *See—*
Koo, James Y. C., 5,348,201, Cl. 222-556.000

Kerus Medical Systems: *See—*
Spears, Kenneth G.; and Horn, Gerald, 5,348,551, Cl. 606-5.000.

Kesten, Arthur S., to United Technologies Corporation. Organic hydride/metal hydride heat pump. 5,347,828, Cl. 62-46.200.

Keuro Besitz GmbH & Co.: *See—*
Stolzer, Armin, 5,347,903, Cl. 83-796.000

Keutgen, Franz; Leuwer, Heinz-Josef; Perings, Dieter; Stadler, Peter; and Winterhager, Rudiger, to Mannesmann Aktiengesellschaft. Continuous casting plant for the continuous horizontal casting of metals. 5,348,072, Cl. 164-420.000.

Keyes Fiber Co.: *See—*
Dall, Paul E., 5,347,753, Cl. 47-66.000

Khadem, Mostafa: *See—*
Alexandro, Frank J., Jr.; Colley, Robert W.; Ipakchi, Ali; and Khadem, Mostafa, 5,349,541, Cl. 364-578.000

Khanna, Dinesh N.; McKenzie, Douglas; Sobodacha, Chester J.; and Dammel, Ralph R., to Hoechst Celanese Corporation. Method for producing positive photoresist image utilizing diazo ester of benzolactone ring compound and diazo sulfonyl chloride. 5,348,842, Cl 430-272.000

Khu, Arthur H.: *See—*
Agrawal, Om P.; Khu, Arthur H.; and Shankar, Kapil, 5,349,670, Cl. 395-775.000.

Khudenko, Boris M. Method and apparatus for electrolytic processing of materials. 5,348,629, Cl. 204-130.000

Kibino, Nobuyuki: *See—*
Miyake, Shigenobu; Kibino, Nobuyuki; Monoi, Takashi; Ohira, Hiroyuki; and Inazawa, Shintaro, 5,349,032, Cl. 526-127.000.

Kicklighter, Kevin C.: *See—*
Madonna, Robert P.; and Kicklighter, Kevin C., 5,349,579, Cl 370-58.200.

Kida, Yasuji: *See—*
Tanaka, Takashi; Imura, Satoshi; Tanaka, Kenji; and Kida, Yasuji, 5,349,065, Cl. 546-15.000

Kielbania, Andrew J., Jr.: *See—*
Emmons, William D.; Bors, David A.; and Kielbania, Andrew J., Jr., 5,349,026, Cl. 525-328.600.

Kihara, Naoko *See—*
Oba, Masayuki; Hayase, Rumiko; Kihara, Naoko; Hayase, Shuzi; Mikogami, Yukihiro; Nakano, Yoshihiko; Oyasato, Naohiko; Matake, Shigeru; and Takano, Kei, 5,348,835, Cl. 430-192.000
Ushirogouchi, Toru; Kihara, Naoko; Sasaki, Osamu; Tada, Tsukasa; Naito, Takuya; and Saito, Satoshi, 5,348,838, Cl. 430-270.000.

Kihara, Takashi: *See—*
Kimura, Shigeo; Ishikura, Yoshiyuki; Masuda, Takashi; Kuroiwa, Takaaki; and Kihara, Takashi, 5,349,492, Cl. 361-283.400.

Kihara, Taku: *See—*
Murayama, Hideaki; Kihara, Taku; Sudo, Fumihiko; and Asaida, Takashi, 5,349,381, Cl. 348-252.000.

Kikuchi, Takeo: *See—*
Murao, Toshiaki; Kikuchi, Takeo; Iryu, Toshihiko; Nomura, Hidenori; and Sugamoto, Hiroyuki, 5,349,219, Cl. 257-208.000

Kikuchi, Toshihiro: *See—*
Futagawa, Hitoshi; Ikeda, Koji; and Kikuchi, Toshihiro, 5,348,060, Cl. 141-100.000.
Ikeda, Koji; Futagawa, Hitoshi; and Kikuchi, Toshihiro, 5,348,550, Cl. 604-411.000.

Kikuta, Michio: *See—*
Hirohashi, Kazutoshi; Horii, Hiroshi; Koike, Hideo; Yunoki, Yoshiaki; Fukasawa, Tetsuo; Katayama, Susumu; Yoshikawa, Akio; Ushijima, Keishi; Takeda, Takaaki; Nomoto, Takeshi; Kikuta, Michio; Shichijo, Shunichi; and Iwasaki, Yoshiki, 5,349,463, Cl. 359-174.000.

Kilhefner, Paul T.: *See—*
Garg, Diwakar; Bonner, Brian B.; Kilhefner, Paul T.; Mattiola, Paul A.; and Mitchell, David L., 5,348,592, Cl. 148-208.000.

Killigrew, James J.: *See—*
Nilles, Robert B.; Collins, Craig J.; Killigrew, James J.; and Sasuta, Michael D., 5,349,342, Cl. 340-825.080.

Kim, Hak S., to Samsung Electronics Co., Ltd. Image interpolation circuit. 5,349,369, Cl. 345-136.000.

Kim, Hyunkyu, to Zebco Corporation. Line guide for bait cast reel. 5,348,246, Cl. 242-279.000.

Kim, Ik-Sun, to SamSung Electronics Co., Ltd. Battery protective circuit. 5,349,280, Cl. 320-13.000.

Kim, Jong Sik: *See—*
Park, Byeong Yeol; Chung, Sang Ki; Jung, Bal; Jeong, Keun Choon; and Kim, Jong Sik, 5,348,698, Cl. 264-154.000.

Kim, Jong-Youb, to Samsung Electronics Co., Ltd. Accumulator construction of cooling heating dual-purpose air conditioner. 5,347,817, Cl. 62-471.000.

Kim, Kyung S.: *See—*
Lee, Joon K.; Jeong, Hyeon J.; Kim, Kyung S.; and Kwon, Oh-Sik, 5,349,235, Cl. 257-693.000.

Kim, Man-Keun: *See—*
Moon, Young-Ho; Jeon, Hong-Seob; Choi, Kyu-Whan; Lee, Kwan-Ho; and Kim, Man-Keun, 5,348,865, Cl. 435-69.100.

Kim, Sang D., to Goldstar Co., Ltd. Method for controlling combined sensing type clothes dryer. 5,347,727, Cl. 34-491.000.

Kim, Suk-Bin: *See—*
Suh, Young-Ho; and Kim, Suk-Bin, 5,349,560, Cl. 365-203.000.

Kim, Yong H.; and Strand, Roger L., to Stranco, Inc. Process for disinfecting water by controlling oxidation/reduction potential. 5,348,664, Cl. 210-746.000.

Kimball, Robert A., to Durel Corporation. Power supply having dual inverters for electroluminescent lamps. 5,349,269, Cl. 315-169.300.

Kimbara, Hiroshi: *See—*
Shishikura, Akihiro; Kimbara, Hiroshi; Yamaguchi, Katsuhisa; and Arai, Kunio, 5,349,084, Cl. 562-580.000.

Kimberly-Clark Corporation: *See—*
Hermans, Michael A.; Makolin, Robert J.; Goerg, Kristin A.; and Chen, Fung-Jou, 5,348,620, Cl. 162-9.000.
Kasbo, Loyd G., deceased; Cotton, James D.; Morman, Michael T.; and Adam, Gabriel H., 5,347,950, Cl. 119-171.000.

Kimizuka, Kenichi: *See—*
Doya, Masaharu; Ohkawa, Takashi; Kanbara, Yutaka; Okamoto, Aksushi; and Kimizuka, Kenichi, 5,349,077, Cl. 558-260.000.

Kimura, Hirohiko: *See—*
Haga, Takahiro; Sugi, Hideo; Shigehara, Itaru; Odawara, Shinji; Yotsuya, Syuichi; Kimura, Hirohiko; and Yamamoto, Kazuhiro, 5,348,967, Cl. 514-352.000.

Kimura, Masakazu, to Seiko Epson Corporation. Integrated memory circuit with high density load elements. 5,349,206, Cl. 257-67.000

Kimura, Masao: *See—*
Matsuo, Munetsugu; Masahashi, Naoya; Hashimoto, Keizo; Hanamura, Toshihiro; Fujii, Hideki; Kimura, Masao; Mizuhara, Youji; and Suzuki, Hiroo, 5,348,702, Cl. 420-421.000

Kimura, Masato: *See—*
Takahashi, Tomonori; Kimura, Masato; Oka, Masataka; and Ogasawara, Isamu, 5,348,794, Cl. 428-213.000.

Kimura, Shigeo; Ishikura, Yoshiyuki; Masuda, Takashi; Kuroiwa, Takaaki; and Kihara, Takashi, to Yamatake-Honeywell Co., Ltd. Capacitive pressure sensor. 5,349,492, Cl. 361-283.400.

Kimura, Shigeo: *See—*
Ohtomo, Naoki; and Kimura, Shigeo, 5,348,009, Cl. 128-653.100

Kimura, Tomio: *See—*
Iwata, Masayuki; Kimura, Tomio; Inoue, Teruhiko; Fujihara, Yoshimi; and Katsube, Tetsushi, 5,348,961, Cl. 514-312.000.

Kind, Burckart, to Actron Entwicklungs Ag. Method and apparatus for the detection of labels employing subtraction of background signals. 5,349,339, Cl. 340-572.000.

Kindig, James K., to Genesis Research Corporation. Coal cleaning process. 5,348,160, Cl. 209-17.000.

Kinetic Systems, Inc.: *See—*
Gertel, Maurice; and Haynes, Robert G., 5,348,266, Cl. 248-562.000.

King, David C.: *See—*
White, George; and King, David C., 5,348,211, Cl. 228-120.000.

Kingdon, Kevin, to Novell, Inc. Method and apparatus for authentication of client server communication. 5,349,642, Cl. 380-25.000.

Kinoshita, Isamu; Suzuki, Kenji; Shibata, Nobuyuki; and Nishiwaki, Toshimitsu, to Furukawa Electric Co., Ltd., The. Method for assembly and inspection of optical fiber connectors. 5,347,698, Cl. 29-407.000.

Kinoshita, Toshio; Nakamura, Youichi; Sawamura, Kiyoshi; and Yanagimoto, Tsutomu, to Matsushita Electric Industrial Co., Ltd. Traverse apparatus. 5,347,914, Cl. 92-88.000.

Kinoshita, Toshiyuki: *See—*
Kaneko, Seiji; Kinoshita, Toshiyuki; Yamamoto, Akio; and Tamura, Yasuhisa, 5,349,656, Cl. 395-650.000.

Kinsey, Kyle K.: *See—*
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Kippes, Arlin J. Transfer aid. 5,347,666, Cl. 5-81.100.

Kirkland, David T.: *See—*
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Kisaichi, Hiroyasu: *See—*
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Kishi, Susumu: *See—*
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Kishimoto, Yasuhiro; and Tsuboi, Kunio, to Sanyo Electric Co., Ltd. Electrophotographing apparatus. 5,349,421, Cl. 355-208.000.

Kishine, Mitsuru: *See—*
Oka, Masahiko; Kishine, Mitsuru; Saito, Hideya; and Kokumai, Masuo, 5,349,093, Cl. 568-615.000.

Kissinger, Amy L.: *See—*
Doherty, James B.; Finke, Paul E.; Hagmann, William K.; Kissinger, Amy L.; MacCoss, Malcolm; and Shah, Shrenik K., 5,348,953, Cl. 514-210.000.

Kistler Instrument Corporation: *See—*
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Kitagawa, Yoshichika: *See—*
Shiratori, Toshikazu; Inoue, Chihiro; Kitagawa, Yoshichika; and Kusano, Tomonobu, 5,348,888, Cl. 435-320.100.

Kitaguchi, Masaru; and Sakashita, Shigeru, to Mayekawa Mfg. Co., Ltd; and Asahi Breweries, Ltd. Refrigeration system consisting of a plurality of refrigerating cycles. 5,347,831, Cl. 62-510.000.

Kitaguchi, Takashi: *See—*
Furuta, Toshiyuki; Kitaguchi, Takashi; and Eguchi, Hirotoshi, 5,349,646, Cl. 395-22.000.

Kitamura, Takashi: *See—*
Miyauch, Masaaki; Kawano, Makoto; Kitamura, Takashi; Okunishi, Hiromu; and Haga, Fumio, 5,347,760, Cl. 451-114.000.

Kitano, Kouji; Kayano, Mitsuo; Kaneyasu, Masayoshi; Katougi, Kouzou; Ichihara, Takanobu; and Kurihara, Nobuo, to Hitachi, Ltd. Knocking detecting device for internal combustion engine and method therefor. 5,347,846, Cl. 73-35.000.

Kivlighan, Michael F., Jr. Medical tool. 5,348,473, Cl. 433-114.000.

Kiyohara, Osamu: *See—*
Tagami, Toshio; and Kiyohara, Osamu, 5,349,018, Cl. 525-92.000.

Kiyoshi, Ido; and Hideo, Fujii, to Feather Safety Razor Co., Ltd. Spare blade storage case for barber's razor. 5,348,152, Cl. 206-354.000.

Klappert, Willi; and Freeman, David R., to General Electric Company. Method for making packets of amorphous steel strip for transformer core manufacture. 5,347,706, Cl. 29-609.000

Klaren, Johannes A. Solar pool heater. 5,347,984, Cl. 126-564.000.

Klauke, Friedrich: *See—*
Jelich, Werner; Rehwinkel, Heiko; Klauke, Friedrich; Konig, Dieter; and Kalthoff, Udo, 5,348,572, Cl. 96-113.000.

Klaveness, Jo: *See—*
Almen, Torsten; Berg, Arne; Dugstad, Harald; Klaveness, Jo; Krautwurst, Klaus D.; and Rongved, Pal, 5,348,954, Cl. 514-227.500.

Klein, Hans-Christof; Kahrs, Manfred; Drott, Peter; Beer, Wilhelm; Baier, Joachim; Kraft, Peter; and Lang, Andreas. Device for actuating the control valve of a hydraulic power steering system. 5,348,110, Cl. 180-132.000.

Klein, Traugott, to Hewlett-Packard Company. Housing holder for a medical monitor. 5,348,268, Cl. 248-681.000.

Klepper, John R.: *See—*
Moehring, Mark A.; Curry, Mark A.; Spencer, Merrill P.; and Klepper, John R., 5,348,015, Cl. 128-661.070.

Klockner Ferromatik Desma GmbH: *See—*
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Klockner Hansel GmbH: *See—*
Hogenkamp, Wilhelm; and Hamberger, Werner, 5,348,436, Cl. 414-331.000.

Klok, Robbert: *See—*
van den Berg, Hendrikus; and Klok, Robbert, 5,349,075, Cl. 554-170.000.

Klotz, Steven H., to FKI Industries Inc. Cable mounting construction. 5,347,882, Cl. 74-502.400.

Klug, Georg, to EBT Licht-Technik GmbH. Indicator element. 5,349,509, Cl. 362-362.000.

Kmiecik-Lawrynowicz, Grazyna E.: *See—*
Sacripante, Guerino G.; Patel, Raj D.; and Kmiecik-Lawrynowicz, Grazyna E., 5,348,832, Cl. 430-109.000.

Knapp, Alan G.: *See—*
Van Berkel, Cornelis; Bird, Neil C.; Davies, Oliver S.; Edwards, Martin J.; Shannon, John M.; and Knapp, Alan G., 5,349,174, Cl. 250-208.100.

Kneuper, Heinz-Josef: *See—*
Thome, Alfred; Roeper, Michael; and Kneuper, Heinz-Josef, 5,349,097, Cl. 568-906.000.

Knickel, Birger: *See—*
Herzig, Joachim; Bredtmann, Kurt; Knickel, Birger; and Dorzbach-Lange, Cornelia, 5,348,582, Cl. 106-696.000.

Knifton, John F., to Texaco Chemical Company. Synthesis of low molecular weight glycol ethers from oxiranes plus olefins. 5,349,110, Cl. 568-678.000.

Knipp, Richard: *See—*
Chitwood, Kenneth; Knipp, Richard; and Schmitt, Richard, 5,347,749, Cl. 43-124.000.

Knipp, Ulrich; and Skoupi, Dieter, to Bayer Aktiengesellschaft. Sandwich elements in the form of slabs, shells and the like. 5,348,778, Cl. 428-35.800.

Knoedler, Leonard F.: *See—*
Costello, John R., Jr.; Knoedler, Leonard F.; Vincent, Monty E.; and Boomus, Mary K., 5,348,646, Cl. 210-94.000.

Knudsen, Christian W.: *See—*
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Knutsen, Lars J. S.: *See—*
Andersen, Knud E.; Knutsen, Lars J. S.; Sorensen, Per O.; Lundt, Behrend F.; Lau, Jesper; and Petersen, Hans, 5,348,965, Cl. 514-325.000.

Knutsson, Stefan: *See—*
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Ko, Wen-Chung: *See—*
Jang, Wen-Yueh; and Ko, Wen-Chung, 5,348,896, Cl. 437-31.000.

Kobayashi, Hisamine; Suzuki, Takeo; and Izuhara, Katsuhiro, to Tipton Corp. Surface treatment apparatus for workpieces. 5,348,637, Cl. 204-213.000.

Kobayashi, Ikunori; Nakamura, Kazuyoshi; Matsunaga, Koji; Takeda, Mamoru; and Matsuoka, Tomizo, to Matsushita Electric Industrial Co., Ltd. Thin-film transistor array with anodic oxide for use in a liquid crystal display. 5,349,205, Cl. 257-59.000.

Kobayashi, Keiichi: *See—*
Tamai, Seiichiro; Kobayashi, Keiichi; Imai, Hideki; and Yamao, Takahiro, 5,349,171, Cl. 235-462.000.

Kobayashi, Masahiko: *See—*
Shibata, Ryoji; Kobayashi, Masahiko; Ban, Yukinobu; and Obayashi, Hirokatu, 5,347,762, Cl. 451-15.000.

Kobayashi, Masao; Ogiso, Koichi; Goto, Shinichi; Mizutani, Haruyasu; Goto, Masaomi; and Iwasaki, Hiroshi, to Toyoda Gosei Co., Ltd. Door lower molding. 5,347,759, Cl. 49-496.100.

Kobayashi, Norio; Takahashi, Toshiaki; Makino, Masahiro; and Hosoda, Masaaki, to Nicca Chemical Co., Ltd. Heat sensitive recording material. 5,348,930, Cl. 503-209.000.

Kobayashi, Tadashi: *See—*
Takahashi, Kimio; Miyake, Katsuya; Kunimi, Takashi; Ogawahara, Tatsuo; Kobayashi, Tadashi; and Fukaya, Kunio, 5,348,123, Cl. 188-72.100.

Kobayashi, Yasunori; Sugiura, Tsuguo; and Morita, Yoshiyuki, to Nippondenso Co., Ltd. Apparatus for monitoring air leakage into fuel supply system for internal combustion engine. 5,347,971, Cl. 123-520.000.

Koblella, Robert J., to Signode Corporation. Method and apparatus for producing a welded joint in thermoplastic strap with differential pressure. 5,348,781, Cl. 428-57.000.

Kobori, Takuji; Ishii, Koji; Takahashi, Motoichi; Matsunaga, Yoshinori; Niwa, Naoki; Tagami, Jun; Mizuno, Takayuki; and Furukawa, Kunio, to Kajima Corporation; and Kayaba Kogyo Kabushiki Kaisha. High damping device for seismic response controlled structure. 5,347,771, Cl. 52-167.00R.

Kodama, Shun-ichi; Sasao, Yasuyuki; and Miura, Ryuichi, to Asahi Glass Company Ltd. Fluorine-containing coating composition. 5,349,031, Cl. 525-386.000.

Koehler, John L.: *See—*
Calvert, Nathanial; Koehler, John L.; Lindberg, Erik D.; McKelvey, Mark A.; Mervosh, Steven P.; Newton, Jeffrey A.; Scarborough, George B.; Upchurch, Ruth A.; and Westling, Sandra D., 5,349,674, Cl. 395-800.000.

Koehler, Steven F., to Eastman Kodak Company. Light pattern detection for film edge following. 5,349,484, Cl. 360-77.120.

Koenig & Bauer Aktiengesellschaft: *See—*
Stettner, Gerd Erich, 5,348,793, Cl. 428-211.000.

Koepsel, Scott: *See—*
Tarrson, Emanuel B.; Maric, Dane; Blahuta, Lew; and Koepsel, Scott, 5,347,675, Cl. 15-167.100.

Koester, Charles J., to Columbia University in the City of New York, The Trustees of. Ophthalmometer system. 5,349,398, Cl. 351-212.000.

Kofoed, Scott A.: *See—*
Orr, Joseph A.; and Kofoed, Scott A., 5,347,843, Cl. 73-3.000.

Kohl, Paul A.: *See—*
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Kohlen, Helmut: *See—*
Grecksch, Hans; Wirtz, Ulrich; Kohlen, Helmut; Surkamp, Paul; and Hensen, Helmuth, 5,348,221, Cl. 242-35.50A.

Koi, Kenji: *See—*
Kumon, Naoki; Kawagoe, Harue; Matsugi, Shin; Kano, Hiroshi; Nakaoka, Noriyoshi; Morii, Shoichi; Kusanagi, Shigekazu; Koi, Kenji; Hatai, Takashi; and Fukui, Masanori, 5,347,665, Cl. 4-541.100.

Koike, Hideo: *See—*
Hirohashi, Kazutoshi; Horii, Hiroshi; Koike, Hideo; Yunoki, Yoshiaki; Fukasawa, Tetsuo; Katayama, Susumu; Yoshikawa, Akio; Ushijima, Keishi; Takeda, Takaaki; Nomoto, Takeshi; Kikuta, Michio; Shichijo, Shunichi; and Iwasaki, Yoshiki, 5,349,463, Cl. 359-174.000.

Koike, Yuzo: *See—*
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Koito Manufacturing Co., Ltd.: *See—*
Yamamoto, Kouji; Yamanoi, Makoto; Endo, Hirokazu; and Ishikawa, Kimiaki, 5,349,430, Cl. 356-5.000.

Koiwai, Hideshi: *See—*
Hasegawa, Yoshimi; Nishiumi, Kenichi; Yonekubo, Yoshitake; Naito, Hisato; and Koiwai, Hideshi, 5,347,811, Cl. 60-426.000.
Yonekubo, Yoshitake; Koiwai, Hideshi; and Narita, Susumu, 5,348,049, Cl. 137-636.200.

Kojima, Akira: *See—*
Ohsawa, Kenji; Nagano, Mutsumi; Kojima, Akira; and Takahashi, Hideyuki, 5,349,238, Cl. 257-736.000.

Kojima, Fumitoshi, to Kabushiki Kaisha Toshiba. Magnetic resonance imaging apparatus and method for forming an image of an artery. 5,348,012, Cl. 128-653.300.

Kojo, Katsuhiko; Negishi, Akibumi; and Gonda, Masayuki, to Hitachi Metals, Ltd. Cermet alloy and process for its production. 5,348,806, Cl. 428-552.000.

Koksbang, Rene; and Tonder, Pia, to Valence Technology, Inc. Electrodes for rechargable lithium batteries. 5,348,821, Cl. 429-218.000.

Kokumai, Masuo: *See—*
Oka, Masahiko; Kishine, Mitsuru; Saito, Hideya; and Kokumai, Masuo, 5,349,093, Cl. 568-615.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Shinbori, Osamu; Mimura, Yoshinori; Noda, Yukio; and Nakai, Tetsuya, 5,349,600, Cl. 372-92.000.

Kolb, Troy C.: *See—*
Heiniger, Richard W.; Kolb, Troy C.; and Funk, Kent D., 5,348,226, Cl. 239-1.000.

Koljack, Mathias P.: *See—*
Calcaterra, Lidia T.; and Koljack, Mathias P., 5,348,786, Cl. 428-96.000.

Kolonko, Pete T., Jr.: *See—*
Senghaas, Karl A.; Senghaas, Peter; Wang, Jing; Kolonko, Pete T., Jr.; and Michalec, Jerzy, 5,347,864, Cl. 73-313.000.

Kolp, Christopher I.: *See—*
Huang, Nai Z.; Kolp, Christopher I.; and Sgarlata, Christopher R., 5,348,559, Cl. 44-367.000.

Komatsu, Fujio: *See—*
Kuroda, Syoichi; Shibata, Soichiro; Shimamura, Nonyuki; Kawasaki, Shigetake; Kasahara, Keisuke; Sakuma, Seiichi; Komatsu, Fujio; Ishikawa, Masaya; Sugiyama, Kunio; Mashimo, Mitsuo; Shindo, Yuzuru; and Kawamura, Kuniaki, 5,348,080, Cl. 165-104.130.

Komatsu, Fumiaki: *See—*
Kawano, Minori; Ogawa, Kohji; Tsukagoshi, Sadayuki; Kuroiwa, Hiroyuki; Sato, Masato; Ishizaki, Yasuhiro; Komatsu, Fumiaki; and Kuroda, Eiichi, 5,349,694, Cl. 455-11.100.

Komatsu, Hiroshi: *See—*
Nakamura, Makoto; Sakuragi, Shigeru; and Komatsu, Hiroshi, 5,347,962, Cl. 123-90.160.

Komatsu, Kazuyoshi; Narimatsu, Osamu; Takemura, Yasuo; Takeuchi, Yoko; and Waki, Susumu, to Mitsui Toatsu Chemicals, Inc. Method for polishing surface of transparent substrate layer of color filter unit. 5,347,766, Cl. 451-29.000.

Komori, Masaaki: *See—*
Atsumi, Kiminori; Saito, Tomoki; and Komori, Masaaki, 5,348,577, Cl. 106-18.310.

Konchan, Jeffrey L.; Portelli, Alfred L.; and Paulik, Rita M., to General Motors Corporation. Vehicle closure latch having plastic coated ratchet. 5,348,357, Cl. 292-216.000.

Kondo, Ryuji: *See—*
Yatsuda, Yuji; Hagiwara, Takaaki; Kondo, Ryuji; Minami, Shinichi; and Itoh, Yokichi, 5,348,898, Cl. 437-41.000.

Kondo, Shiro: *See—*
Kamijo, Masahiko; Saitoh, Hiroshi; Matsuura, Yozo; and Kondo, Shiro, 5,349,425, Cl. 355-298.000.

Konica Corporation: *See—*
Kudoh, Koichi; Sakai, Eiichi; and Takei, Yoshiaki, 5,349,426, Cl. 355-298.000.
Murakami, Shuji; and Tanaka, Shigeo, 5,348,848, Cl. 430-569.000
Yamada, Yasushi; Mizubata, Tsuyoshi; and Ushio, Masaru, 5,348,281, Cl. 271-3.100.

Konig, Dieter: *See*—
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Konigshofen, Heinrich: *See*—
Trinks, Rainer; Konigshofen, Heinrich; Ganster, Otto; Stepanski, Horst; and Colinas-Martinez, Jose, 5,349,040, Cl. 528-75.000.

Konishi, Hiroo; Kawazoe, Hironari; Kawakami, Junzo; Nakamura, Tomoharu; Tokiwa, Yukio; and Nakajima, Tatsuhito, to Hitachi, Ltd. Method and apparatus for controlling the output voltage of an AC electrical system. 5,349,522, Cl. 363-95.000

Konishi, Kunihiko: *See*—
Kato, Yasuyoshi; and Konishi, Kunihiko, 5,348,987, Cl 502-242.000.

Konrad, John V. Illuminated fishing rod. 5,347,741, Cl. 43-17.500

Koo, James Y. C., to Kerr Group, Inc. Flip top closure. 5,348,201, Cl. 222-556.000.

Kool, Dennis J.: *See*—
Mulry, Patrick E.; Kool, Dennis J.; Tyberghein, Mike B.; Gura, Donald S.; and Plyler, Jeffrey D., 5,347,865, Cl. 73-427.000

Korasiak, Wolfgang; Muller, Elmar; Brachert, Jost; and Herzmansky, Karl-Heinz, to Robert Bosch GmbH. Anti-lock brake system which calculates exponential changes in wheel brake pressure. 5,348,380, Cl 303-103.000.

Koreyasu, Toshiyuki; and Maruyama, Shoji, to B.M.L., Inc. Automatic clinical sample dispensing system. 5,348,705, Cl. 422-67.000.

Kornfeld, Hans-Joachim: *See*—
Schmode, Hartmut; Wiebe, Ulrich; Storm, Siegfried; Hetland, Detlev; and Kornfeld, Hans-Joachim, 5,347,705, Cl. 29-566.400

Korr Medical Technologies Inc.: *See*—
Orr, Joseph A.; and Kofoed, Scott A., 5,347,843, Cl. 73-3.000.

Kostlan, Catherine R.: *See*—
Belliotti, Thomas R.; Connor, David T.; and Kostlan, Catherine R., 5,348,957, Cl. 514-235.800.

Kotani, Seigo; and Imamura, Takeshi, to Fujitsu Limited. Superconducting magnetic sensor having a cryostat for improved sensitivity of magnetic detection. 5,349,291, Cl. 324-248.000.

Kothari, Kirankumar M.: *See*—
Kang, Sukhvinder S.; Patel, Bharatan R.; and Kothari, Kirankumar M., 5,347,876, Cl. 73-861.950.

Kotzsch, Hans-Joachim: *See*—
Horn, Michael; and Kotzsch, Hans-Joachim, 5,349,073, Cl. 556-54.000.

Kovacic, Filippa: *See*—
Holton, Timothy A.; Cornish, Edwina C.; Kovacic, Filippa; Tanaka, Yoshikazu; and Lester, Diane R., 5,349,125, Cl. 800-205.000.

Koyama, Kuniaki, to NEC Corporation. Method of fabricating semiconductor memory device including an improved substrate structure. 5,348,904, Cl. 437-52.000.

Koyama, Shuji: *See*—
Shibata, Makoto; Kawajiri, Yukio; Koyama, Shuji; Sueoka, Manabu; Suzuki, Toshio; Yamamoto, Hisashi; and Suzuki, Takumi, 5,347,713, Cl. 29-890.100

Kozlik, Andreas, to Rheinmetall GmbH. Device for transmission of electrical signals. 5,347,909, Cl. 89-40.010.

Kozumplik, Nicholas, Jr.; and Distel, Gerald M., to Aro Corporation, The. Spring check valve cartridge. 5,348,046, Cl. 137-454.400.

Kraft General Foods, Inc.: *See*—
Lee, Thomas D.; Wood, Robert W.; and Addesso, Anne M., 5,348,756, Cl. 426-576.000

Kraft, Heinrich: *See*—
Vokey, David E.; Sontag, Kenneth N.; and Kraft, Heinrich, 5,349,182, Cl. 250-227.210.

Kraft, Peter: *See*—
Klein, Hans-Christof; Kahrs, Manfred; Drott, Peter; Beer, Wilhelm; Baier, Joachim; Kraft, Peter; and Lang, Andreas, 5,348,110, Cl. 180-132.000.

Kramer, Charles F., to Steel Heddle Mfg. Co. Heddle eyelet structure. 5,348,055, Cl. 139-93.000

Krautwurst, Klaus D.: *See*—
Almen, Torsten; Berg, Arne; Dugstad, Harald; Klaveness, Jo; Krautwurst, Klaus D.; and Rongved, Pal, 5,348,954, Cl. 514-227.500

Krbechek, Leroy O., to Henkel Corporation. Oximation process. 5,349,088, Cl. 564-259.000

Kreft, James P. Light-transmitting elastomeric suction lens. 5,349,393, Cl. 351-57.000.

Kresge, John S.: *See*—
Gall, Thomas P.; Heck, Howard L.; and Kresge, John S., 5,347,710, Cl. 29-830.000.

Kressel, Herbert Y.: *See*—
Schnall, Mitchell D.; Lenkinski, Robert E.; Kressel, Herbert Y.; Pollack, Howard M.; Claiborne, Theodore C.; Misic, George J.; Welch, Thomas R.; and Rhinehart, Edward J., 5,348,010, Cl. 128-653.200.

Krimm, Alexander, to Hoechst Aktiengesellschaft. Foam inlet device for liquid tanks. 5,348,038, Cl. 137-68.100.

Krings, Wilfried H., to U.S. Philips Corporation. Electric lamp construction having a contact tongue securely fixed by an insulator body in a sleeve. 5,349,264, Cl. 313-318.000.

Krippendorf, Carl E.: *See*—
Brown, Nancy M.; Reina, Debra A.; and Krippendorf, Carl E., 5,348,531, Cl. 602-22.000

Krist, Gene D. Hydronic interface system, method and apparatus. 5,347,825, Cl. 62-179.000

Krolak, Edward J.: *See*—
Stuart, John C., 5,347,739, Cl. 42-70.110.

Krone AG: *See*—
Huynh, Hon; Franzke, Jorg; Lilienthal, Harald; and Bresche, Peter, 5,349,461, Cl. 359-152.000.

Krone, John J.: *See*—
Devier, Lonnie J.; Krone, John J.; Lunzman, Stephen V.; and Marsden, Howard A., 5,348,115, Cl. 180-308.000.

Kruck, Richard W.: *See*—
Cur, Nihat O.; Kruck, Richard W.; Immoos, Martin P.; and Higazy, Mohamed E., 5,347,793, Cl. 53-512.000

Kruger, Martin; Huth, Andreas; Seidelmann, Dieter; Schneider, Herbert; Turski, Lechoslaw; and Stephens, David N., to Schering Aktiengesellschaft. Hetaryloxy-β-carbolines, and use as pharmaceutical agents for treating epilepsy and anxiety. 5,348,958, Cl. 514-249.000.

Krupke, Leroy G.; Grisham, James L.; and Boucher, David S., to Overhead Door Corporation. Vehicle restraining apparatus. 5,348,437, Cl. 414-401.000.

Krupp, Ernest E. Ball nose cutter having a single cutter insert. 5,348,426, Cl. 407-40.000.

Kruse, Cornelis G.: *See*—
Hermkens, Peter H. H.; Van Maarseveen, Jan H.; Scheeren, Johan W.; and Kruse, Cornelis G., 5,348,949, Cl. 514-183.000.

KSB Aktiengesellschaft: *See*—
Metzinger, Wolfgang; and Witzel, Rolf, 5,348,444, Cl. 416-179.000.

Ku, Wei-Yi: *See*—
Chiang, David; Ho, Thomas Y.; Ku, Wei-Yi; Simmons, George H.; and Barker, Robert W., 5,349,249, Cl. 307-465.000.

Kuba, Dennis W.: *See*—
Cray, Seymour R.; Bedell, James R.; Kuba, Dennis W.; and Moore, William T., Jr., 5,349,677, Cl. 395-800.000.

Kubalak, David: *See*—
Morris, G. Michael; Kay, David; Buralli, Dale; and Kubalak, David, 5,349,471, Cl. 359-565.000.

Kubinec, James J.: *See*—
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Kubo, Hirozi: *See*—
Takamatsu, Shunichi; Kubo, Hirozi; Hama, Katsunori; and Iwabuchi, Hiroshi, 5,348,372, Cl. 297-306.000.

Kubo, Kimio; and Deki, Naotaka, to Hitachi Metals, Ltd. Method and apparatus for producing cast steel article. 5,348,073, Cl. 164-457.000.

Kubota, Masaru: *See*—
Serizawa, Hajime; Kubota, Masaru; Sano, Hiroyuki; and Tajima, Yoshihisa, 5,349,007, Cl. 524-513.000.

Kubota, Noriyasu; Miyagawa, Yoshihiro; and Kawano, Yukita, to Takara Shuzo Co., Ltd.; and Nagano Prefectural Economic Federation of Agricultural Co-operatives. White mushroom. 5,349,120, Cl. 800-200.000

Kubouchi, Kenji: *See*—
Kawaguchi, Shigeru; Kubouchi, Kenji; Uemura, Hiroshi; and Inoue, Kunitoshi, 5,348,315, Cl. 277-235.00B.

Kuboyama, Hiroki: *See*—
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Kubushiki Kaisha Toshiba: *See*—
Sugiura, Satoshi, 5,349,292, Cl. 324-309.000.

Kudoh, Koichi; Sakai, Eiichi; and Takei, Yoshiaki, to Konica Corporation. Toner guide roller for image-forming process and apparatus applied therewith. 5,349,426, Cl. 355-298.000.

Kuehl, Guenter H.: *See*—
Beck, Jeffrey S.; Kuehl, Guenter H.; Olson, David H.; Schlenker, John L.; Stucky, Galen D.; and Vartuli, James C., 5,348,687, Cl. 252-582.000.

Kuepper, Anton: *See*—
Hodson, Peter D.; Baum, Eric A.; Smith, David K.; Kuepper, Anton; and Wilby, Matthew J., 5,347,998, Cl. 128-200.230.

Kuhm, Peter: *See*—
Harris, Eugene G.; Hees, Udo; Bunte, Reinhard; Hachgenei, Johannes W.; and Kuhm, Peter, 5,349,094, Cl. 568-619.000.

Kuhn, Frank: *See*—
Schulte, Peter; Volkmer, Michael; and Kuhn, Frank, 5,348,665, Cl. 210-748.000.

Kuhn, George F., Jr. Portable unloading device. 5,348,439, Cl. 414-543.000.

Kukes, Simon G.; Hopkins, P. Donald; Olleandorff, Riitta L. A.; Hendler, Pablo D.; Ontiveros, Cynthia D.; and Washecheck, Don M., to Amoco Corporation. Selective hydrotreating catalyst. 5,348,928, Cl. 502-306.000.

Kulagowski, Janusz J.; Mawer, Ian M.; Leeson, Paul D.; and Rowley, Michael, to Merck Sharpe & Dohme Ltd. Hydroxyquinolone derivatives compounds which have pharmaceutical utility. 5,348,962, Cl. 514-312.000.

Kulla, Hans, to Lonza Ltd. Device and method for the detection of microorganisms which produce low-molecular-weight metabolites. 5,348,861, Cl. 435-35.000.

Kulla, Hans, to Lonza Ltd. Device and method for the detection of microorganisms which produce low-molecular-weight metabolites. 5,348,884, Cl. 435-291.000.

Kuma, Toshimi, to Kabushiki Kaisha Seibu Giken. Gas adsorbing element and method for forming same. 5,348,922, Cl. 502-60.000.

Kumai Chemical Industry Co., Ltd.: *See*—
Shibata, Masaru; Ito, Shigekazu; Sakai, Jun-etsu; and Hayashi, Shigeru, 5,348,976, Cl. 514-469.000.

Kumai, Seisaku; Wada, Akihiro; and Morikawa, Shinsuke, to Asahi Glass Company Ltd. Process for producing chlorofluorobenzenes. 5,349,098, Cl. 570-141.000.

Kumano, Toshiya, to Murata Kikai Kabushiki Kaisha. Portable telephone with speed dialing. 5,349,629, Cl. 379-58.000.

Kumar, Ramesh C.; Everaerts, Albert I.; and Bogaert, Yvan A., to Minnesota Mining and Manufacturing Company. Fluoroalkyl siloxane/vinyl copolymer dispersions and pressure-sensitive adhesives having improved solvent resistance prepared therefrom. 5,349,004, Cl. 524-461.000.

Kumobayashi, Hidenori: *See*—
Watanabe, Seiji; Mitsuhashi, Shigeru; and Kumobayashi, Hidenori, 5,349,107, Cl. 568-318.000

Kumon, Naoki; Kawagoe, Harue; Matsugi, Shin; Kano, Hiroshi; Nakaoka, Noriyoshi; Morii, Shoichi; Kusanagi, Shigekazu; Koi, Kenji; Hatai, Takashi; and Fukui, Masanori, to Matsushita Electric Works, Ltd. Carbonate spring bath system. 5,347,665, Cl. 4-541.100.

Kun, Leslie C.; and Nenov, Neno T., to Praxair Technology, Inc. Helical dry screw expander with sealing gas to the shaft seal system. 5,348,456, Cl. 418-95.000.

Kunert, Steven R.: *See*—
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Kunimi, Takashi: *See*—
Takahashi, Kimio; Miyake, Katsuya; Kunimi, Takashi; Ogawahara, Tatsuo; Kobayashi, Tadashi; and Fukaya, Kunio, 5,348,123, Cl. 188-72.100.

Kunishi, Noriyuki: *See*—
Kuze, Shigeki; Okumura, Ryozo; and Kunishi, Noriyuki, 5,349,043, Cl. 528-200.000.

Kunz, Gerhard; Dimotsis, George L.; and Sampson, Richard L., to EDR Acquisition Corp. Countercurrent regeneration process. 5,348,659, Cl. 210-678.000.

Kuo, Shen-Chun; Hou, Donald; and Zhan, Zheng-Yun, to Schering Corporation. Process for preparing intermediates for the synthesis of antifungal agents. 5,349,099, Cl. 570-147.000.

Kuo, Thauming, to Eastman Chemical Company. Water-dispersible polyester resins and process for their preparation. 5,349,010, Cl 524-600.000

Kuo, Tzu-Yu, to Baby Trend, Inc. High chair. 5,348,374, Cl. 297-344.180.

Kuphal, Jeffrey A.: *See*—
Robeson, Lloyd M.; Kuphal, Jeffrey A.; and Famili, Amir, 5,349,000, Cl. 524-388.000.

Kupperman, David S.; and Spevak, Lev, to University of Chicago, The Leak locating microphone, method and system for locating fluid leaks in pipes. 5,349,568, Cl. 367-125.000.

Kurahashi, Masayuki: *See*—
Maeda, Masahiro; Yamasaki, Toru; Kurahashi, Masayuki; and Seki, Noriaki, 5,349,452, Cl. 358-527.000.

Kuraray Co., Ltd.: *See*—
Ikeda, Kaoru; and Sato, Toshiaki, 5,349,023, Cl. 525-61.000
Takada, Shigeki; Yuki, Ken; Maruyama, Hitoshi; Tanaka, Taku; and Igarashi, Kazunari, 5,349,008, Cl. 524-557.000.

Kurasawa, Yuko; Noda, Satoshi; and Fukuoka, Morinao, to Olympus Optical Company Limited. Gradient index optical element. 5,349,473, Cl. 359-654.000

Kurazumi, Toshiaki; Mizuno, Hiroyuki; Imamori, Katsumi; and Iwasa, Akira, to SS Pharmaceutical Co., Ltd. Antidiarrheal compositions containing loperamide hydrochloride and a saccharide. 5,348,744, Cl 424-439.000.

Kurihara, Nobuo: *See*—
Kitano, Kouji; Kayano, Mitsuo; Kaneyasu, Masayoshi; Katougi, Kouzou; Ichihara, Takanobu; and Kurihara, Nobuo, 5,347,846, Cl. 73-35.000.

Kuriki, Nobuharu; Ohsaki, Seiji; Shibue, Hideaki; and Noro, Yoshiki, to Honda Giken Kogyo Kabushiki Kaisha. Active vehicle suspension system. 5,348,338, Cl. 280-707.000.

Kurlas, Peter N.: *See*—
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Kurmeier, Hans A.: *See*—
Poetsch, Eike; Kurmeier, Hans A.; Eidenschink, Rudolf; Weber, Georg; and Wachtler, Andreas, 5,348,677, Cl. 252-299.600.

Kuroda, Eiichi: *See*—
Kawano, Minori; Ogawa, Kohji; Tsukagoshi, Sadayuki; Kuroiwa, Hiroyuki; Sato, Masato; Ishizaki, Yasuhiro; Komatsu, Fumiaki; and Kuroda, Eiichi, 5,349,694, Cl. 455-11.100.

Kuroda, Nobuyuki: *See*—
Suga, Masanobu; Akita, Seiichi; and Kuroda, Nobuyuki, 5,348,820, Cl. 429-216.000

Kuroda, Syoichi; Shibata, Soichiro; Shimamura, Nonyuki; Kawasaki, Shigetake; Kasahara, Keisuke; Sakuma, Seiichi; Komatsu, Fujio; Ishikawa, Masaya; Sugiyama, Kunio; Mashimo, Mitsuo; Shindo, Yuzuru; and Kawamura, Kuniaki, to Tokyo Electric Power Company; Maekawa Mfg. Co., Ltd.; and Asahi Denka Kogyo K. K. Latent heat storage apparatus and latent heat storage solution therefor. 5,348,080, Cl. 165-104.130

Kuroiwa, Hiroyuki: *See*—
Kawano, Minori; Ogawa, Kohji; Tsukagoshi, Sadayuki; Kuroiwa, Hiroyuki; Sato, Masato; Ishizaki, Yasuhiro; Komatsu, Fumiaki; and Kuroda, Eiichi, 5,349,694, Cl. 455-11.100.

Kuroiwa, Takaaki: *See*—
Kimura, Shigeo; Ishikura, Yoshiyuki; Masuda, Takashi; Kuroiwa, Takaaki; and Kihara, Takashi, 5,349,492, Cl. 361-283.400.

Kurokawa, Hiroshi; Takahashi, Yasushi; and Inagami, Yasuhiro, to Hitachi, Ltd. Apparatus for converting parallel bits of an electrical data signal into serial bits of an optical data signal utilizing an optical time delay. 5,349,653, Cl. 395-500.000.

Kurosawa, Atsushi: *See*—
Shimada, Shigeru; Shibata, Ryuji; and Kurosawa, Atsushi, 5,348,902, Cl. 437-51.000.

Kusakabe, Isao: *See*—
Murata, Katsumi; Murakami, Kazuo; Kusakabe, Isao; and Satoh, Toshihide, 5,348,875, Cl. 435-200.000.

Kusakabe, Katsuhiko: *See*—
Yoshihama, Yoshio; Kusakabe, Katsuhiko; Matsui, Susumu; and Morita, Hideo, 5,349,121, Cl. 800-200.000

Kusanagi, Shigekazu: *See*—
Kumon, Naoki; Kawagoe, Harue; Matsugi, Shin; Kano, Hiroshi; Nakaoka, Noriyoshi; Morii, Shoichi; Kusanagi, Shigekazu; Koi, Kenji; Hatai, Takashi; and Fukui, Masanori, 5,347,665, Cl 4-541.100.

Kusano, Tomonobu: *See*—
Shiratori, Toshikazu; Inoue, Chihiro; Kitagawa, Yoshichika; and Kusano, Tomonobu, 5,348,888, Cl. 435-320.100

Kushitani, Hideki; Nishizawa, Manabu; and Nakao, Yasumasa, to Asahi Glass Company Ltd. Alkali free glass. 5,348,916, Cl. 501-66.000.

Kusunoki, Haruyuki; Yasutome, Kikuo; Yamazaki, Shigeo; Furukawa, Koji; and Sasaki, Takeshi, to Canon Kabushiki Kaisha. Precision cutting process machine and precision cutting process method 5,348,431, Cl. 409-132.000

Kuwabara, Haruyoshi; Otsuka, Akio; Maki, Yasuyuki; and Kashida, Meguru, to Shin-Etsu Chemical Co., Ltd. High-packing silicon nitride powder and method for making. 5,348,919, Cl. 501-97.000

Kuwahara, Tetsuya; and Morimoto, Eiichi, to Murata Kikai Kabushiki Kaisha. Facsimile machine. 5,349,447, Cl. 358-404.000.

Kuze, Shigeki; Okumura, Ryozo; and Suwabe, Yoshinobu, to Idemitsu Petrochemical Co., Ltd. Process for producing polycarbonate. 5,349,042, Cl. 528-196.000.

Kuze, Shigeki; Okumura, Ryozo; and Kunishi, Noriyuki, to Idemitsu Petrochemical Co., Ltd. Polycarbonate and process for producing the same. 5,349,043, Cl. 528-200.000

Kvakovszky, George: *See*—
Tafesh, Ahmed M.; Kvakovszky, George; and Lindley, Charlet R., 5,349,090, Cl. 564-343.000.

Kveglis, Albert A.: *See*—
Rooney, John M.; Patel, Narendra M.; Kveglis, Albert A.; Catena, Robert J.; Di Leo, Leonard; and Avci, Selcuk, 5,349,021, Cl 524-761.000

Kwak, Hee-Guk, to SamSung Electronics Co., Ltd. Method for displaying printing situation of a color video printer. 5,349,446, Cl. 358-296.000

Kwang-Chien, Fong. Electro-optical mouse with means to separately detect the changes in contrast ratio in X and Y directions. 5,349,371, Cl. 345-166.000

Kwon, Oh-Sik: *See*—
Lee, Joon K.; Jeong, Hyeon J.; Kim, Kyung S.; and Kwon, Oh-Sik, 5,349,235, Cl. 257-693.000.

L. Schuler GmbH: *See*—
Wolfgang, Michael; Andreas, Lauke; and Werner, Fritz, 5,347,840, Cl. 72-455.000.

LaBar, Grant V.: *See*—
Oksanen, Kari J.; and LaBar, Grant V., 5,348,036, Cl. 137-1.000

Labarthe, Jean-Christophe. Culture dish. 5,348,885, Cl. 435-294.000.

LaBelle, Robert: *See*—
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Lin, Chhiu-Tsu, to Northern Illinois University. Production of PT/PZT/PLZT laser 'direct write' patterns. 5,348,775, Cl. 427-555.000.

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Visel, Thomas A.; and Long, Jon M., 5,349,495, Cl. 361-774.000.

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Longview Fibre Company: *See—*
Baker, Harold L., 5,348,186, Cl. 220-465.000.

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Kulla, Hans, 5,348,861, Cl. 435-35.000.
Kulla, Hans, 5,348,884, Cl. 435-291.000

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Mathison, Dennis R.; and Perkins, James H., 5,347,933, Cl. 104-2.000.

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Prince, Jeffrey T.; Rawls, Robert L.; Dempster, Philip T.; and Ono, Jody, 5,348,519, Cl. 482-6.000

Lorenz, Perry S., to National Semiconductor Corporation. Low power comparator having a non-saturating current mirror load. 5,349,287, Cl. 323-316.000.

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Ziegler, Kelly W.; Alexson, Clayton C.; and Lovold, Curt W., 5,347,796, Cl. 53-566.000.

Lowe, Richard D. Golf ball teeing apparatus. 5,348,305, Cl. 273-201.000

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Jerbic, Chris, 5,348,614, Cl. 156-626.000.

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Clapper, Ronald C., Jr., 5,348,299, Cl. 273-138.00A.

LTC Roll & Engineering: *See—*
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Huang, Nai Z.; Kolp, Christopher I.; and Sgarlata, Christopher R., 5,348,559, Cl. 44-367.000

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Houser, John M., 5,349,143, Cl. 200-11.00J.

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Lumex, Inc.: *See—*
Mizelle, Ned W., 5,348,367, Cl. 297-83.000.

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Walpita, Lakshaman M.; Stamatoff, James B.; and Lundberg, George, 5,348,990, Cl. 523-219.000.

Lundt, Behrend F.: *See—*
Andersen, Knud E.; Knutsen, Lars J. S.; Sorensen, Per O.; Lundt, Behrend F.; Lau, Jesper; and Petersen, Hans, 5,348,965, Cl. 514-325.000.

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Devier, Lonnie J.; Krone, John J.; Lunzman, Stephen V.; and Marsden, Howard A., 5,348,115, Cl. 180-308.000.

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Cockman, Russell W.; Haining, Gordon J.; Lusman, Philip; and Melville, Archibald D., 5,349,096, Cl. 568-896.000.

Lutz, Eugene F.; Schisla, David K.; Tomaskovic, Robert S.; and Hoewing, Timothy D., to Shell Oil Company. Process for the preparation of secondary alkyl sulfate-containing surfactant compositions. 5,349,101, Cl. 558-36.000.

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Burnham, William L.; Lyon, Ralph M.; and Poccia, Michael J., 5,349,476, Cl. 359-699.000.

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Schultz, David; and Heinz, Donald E., 5,347,899, Cl. 83-50.000.

Ma, Johg-Nam. Head for use with a golf putter. 5,348,301, Cl. 273-167.00B.

Maali, Fereydoun, to Robotic Vision Systems, Inc. Context independent fusion of range and intensity imagery. 5,349,378, Cl. 348-46.000.

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Dunnett, Graeme S., 5,347,934, Cl. 104-6.000.

MacCoss, Malcolm: *See—*
Doherty, James B.; Finke, Paul E.; Hagmann, William K.; Kissinger, Amy L.; MacCoss, Malcolm; and Shah, Shrenik K., 5,348,953, Cl. 514-210.000.

MacDonald, James R., to Advanced Micro Devices, Inc. Single chip integrated address manager with address translating unit. 5,349,652, Cl. 395-400.000.

Mace Security International, Inc.: *See—*
Bruckner, James V.; and Bruckner, Tony A., 5,348,193, Cl. 222-175.000.

Mackal, Glenn H. Apparatus for interconnecting a handle and a lanyard. 5,347,685, Cl. 16-114.00B

Mackay, James F., to Wisconsin Alumni Research Foundation. Solid state detector for polarized x-rays. 5,349,192, Cl. 250-370.010.

MacNaughton, Michael G.: *See—*
Schlaemus, Herman W.; Marshall, Mary C.; MacNaughton, Michael G.; Alexander, Matthew L.; and Scott, James R., 5,348,803, Cl. 428-402.200.

Madigan, R. Bruce; and Quinn, Timothy P., to United States of America, Commerce. Sensing of gas metal arc welding process characteristics for welding process control. 5,349,156, Cl. 219-130.010.

Madonna, Robert P.; and Kicklighter, Kevin C., to Excel, Inc. Telecommunication switch with programmable communications services. 5,349,579, Cl. 370-58.200.

Maeda, Kazuyuki: *See—*
Sakashita, Nobuyuki; Nakajima, Toshio; Murai, Shigeo; Maeda, Kazuyuki; Nakamura, Yuji; Yoshida, Tsunezo; Honzawa, Shooichi; and Kanamori, Fumio, 5,348,933, Cl. 504-213.000.

Maeda, Kenichi: *See—*
Kanehiro, Masaki; Shimasaki, Yuichi; Ishioka, Takuji; Baba, Shigeki; Hisaki, Takashi; Maruyama, Shigeru; Chikamatsu, Masataka; Terata, Shukoh; Maeda, Kenichi; and Kakimoto, Kazuhito, 5,349,299, Cl. 324-399.000

Maeda, Masahiro; Yamasaki, Toru; Kurahashi, Masayuki; and Seki, Noriaki, to Fuji Xerox Co., Ltd. Image processing system capable of attaining color coincidence between input and output images. 5,349,452, Cl. 358-527.000

Maeda, Toshinori; Kawada, Tomoharu; and Miyake, Jiro, to Matsushita Electric Industrial Co., Ltd. Microprocessor system generating instruction fetch addresses at high speed. 5,349,671, Cl. 395-800.000.

Maejima, Yoshihisa; Nishimura, Seiya; Takabayashi, Masayoshi; and Ohta, Tokuyoshi, to Yamaha Corporation. Method of making lead frame. 5,347,709, Cl. 29-827.000.

Maekawa Mfg. Co., Ltd.: *See—*
Kuroda, Syoichi; Shibata, Soichiro; Shimamura, Nonyuki; Kawasaki, Shigetake; Kasahara, Keisuke; Sakuma, Seiichi; Komatsu, Fujio; Ishikawa, Masaya; Sugiyama, Kunio; Mashimo, Mitsuo; Shindo, Yuzuru; and Kawamura, Kuniaki, 5,348,080, Cl 165-104.130.

Maeno, Hiroshi: *See—*
Oda, Noriyuki; Maeno, Hiroshi; Higashi, Katsumi; Toriyama, Akira; and Shimoda, Hiromi, 5,348,568, Cl. 95-14.000.

Maeyama, Kaoru: *See—*
Imashimizu, Yoshinori; Suda, Yoshiaki; Yamamoto, Shuichi; Takada, Toshiyuki; Maeyama, Kaoru; Hiramoto, Etsuro; Oki, Toshihide; Morita, Sadayuki; Kawatani, Shoji; Morioka, Kunihito; Fujimitsu, Ryoichi; and Handa, Kazuhisa, 5,347,703, Cl. 29-525.100

MAG Instrument, Inc.: *See—*
Maglica, Anthony, 5,349,506, Cl. 362-158.000.

Maggard, Steven M.; and Welch, William T., to Ashland Oil, Inc Determination of aromatics in hydrocarbons by near infrared spectroscopy. 5,348,645, Cl. 208-209.000.

Maggard, Steven M., to Ashland Oil, Inc. Near infrared analysis of piano constituents and octane number of hydrocarbons. 5,349,188, Cl. 250-339.000

Maggard, Steven M., to Ashland Oil, Inc. Process and apparatus for analysis of hydrocarbons by near-infrared spectroscopy. 5,349,189, Cl. 250-339.070.

Maglica, Anthony, to MAG Instrument, Inc. Miniature flashlight. 5,349,506, Cl. 362-158.000.

Magneco/Metrel, Inc.: *See—*
Soofi, Madjid, 5,348,275, Cl. 266-236.000.

Magnetek, Inc.: *See—*
Karbaf, Adam A., 5,349,508, Cl. 362-217.000.

Magnetic Separation Systems, Inc.: *See—*
Kenny, Garry R.; Rhys, Hugh R.; and Skeen, Michael A., 5,348,136, Cl. 198-443.000

Maguin, Jacques: *See—*
Demuth, Odile; Wattiez, Daniel; Maguin, Jacques; Brosse, Jean C.; Poncin-Epaillard, Fabienne; and Chevet, Bruno, 5,348,772, Cl. 427-536.000.

Mahon, Jeff A.; and Berryhill, Ross C., to Cummins Engine Company, Inc. Speed-dependent air intake system and method for internal combustion engines. 5,347,966, Cl. 123-179.210

Maier, Michael L. Artist sketch box. 5,348,144, Cl. 206-1.700.

Maier, Willy, to Grapha-Holding AG. Carriage for a conveyor for piece goods. 5,348,132, Cl. 198-365.000.

Maillos, Philippe: *See—*
Lavielle, Gilbert; Maillos, Philippe; Muller, Olivier; Laubie, Michel; Verbeuren, Tony; and Descombes, Jean-Jacques, 5,348,968, Cl. 514-360.000.

Mainquist, James K.; Downs, Robert C.; Nitz, Larry T.; and Kinsey, Kyle K., to Saturn Corporation. Lubrication control with increased lubrication during shift and during cruise for a multi-plate friction device for an automatic transmission. 5,347,886, Cl. 477-161.000.

Maitz, Franz, to H. B. Fuller Licensing & Financing, Inc. Cleaning composition for removing reactive polyurethane hot melt adhesives 5,348,680, Cl. 252-162.000.

Mak, King K.: *See—*
Ivey, Don L.; and Mak, King K., 5,348,416, Cl. 404-6.000.

Makarenko, Peter; Harris, Stacy E.; and Martin, Robert R., to General Electric Company. Method for making a bonded laminated article bend portion. 5,348,602, Cl. 156-161.000.

Maki, Yasuyuki: *See—*
Kuwabara, Haruyoshi; Otsuka, Akio; Maki, Yasuyuki; and Kashida, Meguru, 5,348,919, Cl. 501-97.000.

Makino, Chiho: *See—*
Takatsuka, Tsutomu; Mori, Shigeki; and Makino, Chiho, 5,348,738, Cl. 424-78.370.

Makino, Masahiro: *See—*
Kobayashi, Norio; Takahashi, Toshiaki; Makino, Masahiro; and Hosoda, Masaaki, 5,348,930, Cl. 503-209.000.

Makino, Tetsuya: *See—*
Mochizuki, Akihiro; Kasahara, Shigeo; Makino, Tetsuya; Watanabe, Masashi; Nakatsuka, Masakatsu; Yoshio, Kunikiyo; Satoh, Masahiro; Watanabe, Tetsuya; Sugita, Naoko; and Yanagi, Tatsuroh, 5,348,685, Cl. 252-299.620.

Makiuchi, Hajime: *See—*
Terashima, Masaaki; and Makiuchi, Hajime, 5,348,889, Cl 436-8.000.

Makolin, Robert J.: *See—*
Hermans, Michael A.; Makolin, Robert J.; Goerg, Kristin A.; and Chen, Fung-Jou, 5,348,620, Cl. 162-9.000.

Malecha, Richard F.: *See—*
Nelson, Paul A.; Malecha, Richard F.; and Chilenskas, Albert A., 5,347,816, Cl. 62-46.200.

Malhi, Satwinder, to Texas Instruments Incorporated. Silicon carbide wafer bonded to a silicon wafer. 5,349,207, Cl. 257-76.000.

Malik, Abdul: *See—*
Harrison, David A.; and Malik, Abdul, 5,349,691, Cl. 395-800.000.

Malloy, Robert: *See—*
Grudzien, Christopher P., Jr.; Malloy, Robert; and Reilly, James F., 5,347,851, Cl. 73-53.010.

Maloberti, Rene ; Coutarel, Alain; and Espinasse, Philippe F., to Coflexip. Device and process for unrolling flexible tubular conduits essentially vertically. 5,348,423, Cl. 405-166.000

Manchak, Frank E., III; Manchak, Michael E.; and Manchak, Peter J., to Terranalysis Corporation. Methods for the formation and operation of an in situ process reactor. 5,348,422, Cl. 405-128.000

Manchak, Michael E.: *See—*
Manchak, Frank E., III; Manchak, Michael E.; and Manchak, Peter J., 5,348,422, Cl. 405-128.000

Manchak, Peter J.: *See—*
Manchak, Frank E., III; Manchak, Michael E.; and Manchak, Peter J., 5,348,422, Cl. 405-128.000

Mangartz, Karl-Heinz: *See—*
Eickhoff, Hubert; Schirrmacher, Rudiger;; Mangartz, Karl-Heinz; Huber, Hans-Martin; and Godecke, Ralf, 5,348,657, Cl. 210-636.000.

Manibs Spezialarmaturen GmbH & Co. KG: *See—*
Serve, Klaus, 5,348,045, Cl. 137-318.000

Manley, Dwight P.: *See—*
Hetherington, Ricky C.; Webb, David A., Jr.; Fite, David B.; Murray, John E.; Fossum, Tryggve; and Manley, Dwight P., 5,349,651, Cl. 395-400.000

Mann, Jeffrey S.: *See—*
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Mann, Omri, to Symantec Corporation. Method for recovery of a computer program infected by a computer virus. 5,349,655, Cl. 395-575.000

Mannesmann Aktiengesellschaft: *See—*
Keutgen, Franz; Leuwer, Heinz-Josef; Perings, Dieter; Stadler, Peter; and Winterhager, Rudiger, 5,348,072, Cl. 164-420.000

Manning, Duane B. Therapeutic headrest device. 5,347,668, Cl. 5-622.000

Manning, Monte: *See—*
Dennison, Charles H.; and Manning, Monte, 5,348,899, Cl. 437-41.000.

Mansanto Company: *See—*
Lee, Stephen C.; Leuch, Mark S.; Luckow, Verne A.; and Olins, Peter O., 5,348,886, Cl. 435-320.100

Mansoor, Dhafer Y.; and Kallenberg, Walter J., to Ford Motor Company. Fastener apparatus for an automotive body panel component. 5,347,690, Cl. 24-295.000

Manthuruthil, George C.: *See—*
Johnson, William J.; Keller, Robert S.; Manthuruthil, George C.; and Williams, Marvin L., 5,349,662, Cl. 395-700.000

Marazzi, Silvio; and De Marchi, Silverio, to Diamond SA. Plug connector for optical fibers. 5,348,487, Cl. 439-138.000.

Marglass Industries Limited: *See—*
Baragar, James B., 5,349,144, Cl. 200-18.000.

Mari, Antonio. Torch for continuous-wire electric welding machines, gas- or water-cooled. 5,349,158, Cl. 219-137.620.

Maric, Dane: *See—*
Tarrson, Emanuel B.; Maric, Dane; Blahuta, Lew; and Koepsel, Scott, 5,347,675, Cl. 15-167.100.

Marler, David O.: *See—*
Lago, Rudolph M.; Marler, David O.; and McCullen, Sharon B., 5,349,114, Cl. 585-475.000.

Marley Cooling Tower Company, The: *See—*
Bickerstaff, David M., 5,348,692, Cl. 261-111.000

Maroszek, Raymond V.; and Coots, Daniel R., to Outlook Graphics Corporation. Display holder. 5,348,156, Cl. 206-491.000

Maroy, Pierre; Loutaty, Roben; and Patureaux, Thierry, to Campagnie de Raffinage et de Distribution Total France. Process and apparatus for contacting a hydrocarbon feedstock with hot solid particles in a tubular reactor with a rising fluidized bed. 5,348,644, Cl. 208-153.000.

Marquis, Edward T.; and Plishka, Martin J., to Texaco Chemical Company. Use of carbonates in metal ion extraction. 5,348,712, Cl. 423-22.000

Marsden, Howard A.: *See—*
Devier, Lonnie J.; Krone, John J.; Lunzman, Stephen V.; and Marsden, Howard A., 5,348,115, Cl. 180-308.000

Marshall, Andrew; Schmidt, Thomas A.; and Teggatz, Ross E., to Texas Instruments Incorporated. Compensation for low gain bipolar transistors in voltage and current reference circuits. 5,349,286, Cl 323-315.000

Marshall, Mary C.: *See—*
Schlaemus, Herman W.; Marshall, Mary C.; MacNaughton, Michael G.; Alexander, Matthew L.; and Scott, James R., 5,348,803, Cl. 428-402.200.

Martin, Daniel T.; and Harden, William H., III, to Ingersoll-Rand Company. Bootstrap method of loading a compressor having a spring loaded blowoff valve. 5,348,450, Cl. 417-299.000

Martin, Emilio B., to Amper, S.A. Device for printing endorsements on documents. 5,347,924, Cl. 101-91.000

Martin, Glenn E.: *See—*
Laugal, James A.; Martin, Glenn E.; St. Aubin, Donald L.; and Wold, Gerald G., 5,348,635, Cl. 204-181.700.

Martin Marietta Energy Systems, Inc.: *See—*
Scott, Charles D.; Faison, Brendlyn D.; Davison, Brian H.; and Woodward, Jonathan, 5,348,871, Cl. 435-165.000

Martin, Robert R.: *See—*
Makarenko, Peter; Harris, Stacy E.; and Martin, Robert R., 5,348,602, Cl. 156-161.000

Martin, Timothy J.: *See—*
Thompson, Peter J.; and Martin, Timothy J., 5,348,791, Cl. 428-184.000.

Martin, Yves; and Wickramasinghe, Hemantha K., to International Business Machines Corporation. Two dimensional profiling with a contact force atomic force microscope. 5,347,854, Cl. 73-105.000

Martinez, Anthony J.: *See—*
Greenwald, Richard B.; and Martinez, Anthony J., 5,349,001, Cl. 525-408.000

Maru, Tsuguo, to NEC Corporation. Radio communication system for a selected one of a plurality of terminal units of different kinds 5,349,698, Cl. 455-89.000

Maruszak, Ronald S.: *See—*
Jaster, Dale R.; Vestuto, Russell J.; and Maruszak, Ronald S., 5,347,755, Cl. 49-25.000.

Maruyama, Hitoshi: *See—*
Takada, Shigeki; Yuki, Ken; Maruyama, Hitoshi; Tanaka, Taku; and Igarashi, Kazunari, 5,349,008, Cl. 524-557.000.

Maruyama, Shigeru: *See—*
Kanehiro, Masaki; Shimasaki, Yuichi; Ishioka, Takuji; Baba, Shigeki; Hisaki, Takashi; Maruyama, Shigeru; Chikamatsu, Masataka; Terata, Shukoh; Maeda, Kenichi; and Kakimoto, Kazuhito, 5,349,299, Cl. 324-399.000

Maruyama, Shoji: *See—*
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Maruyama, Teruo: *See—*
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Masahashi, Naoya: *See—*
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Masaki, Mitsuo; Uehara, Masaki; Hirate, Kenji; Isowa, Yoshikazu; Sato, Yoshiaki; and Nakashima, Yoshiharu, to Nippon Chemiphar Co., Ltd.; and Fujirebio Kabushiki Kaisha. Peptides, and antidementia agents containing the same. 5,349,050, Cl. 530-330.000.

Maschinenbau Herbert GmbH & Co.: *See—*
Jachowsky, Norbert, 5,349,150, Cl. 219-69.170.

Maschinenfabrik Sulzer-Burckhardt AG: *See—*
Feistel, Norbert, 5,347,915, Cl. 92-258.000

Mascitelli, Francesco; and Bonelli, Enrico, to SAR S.p.A. Atomizer bottle with pump operable by squeezing. 5,348,194, Cl. 222-209.000

Mashimo, Mitsuo: *See—*
Kuroda, Syoichi; Shibata, Soichiro; Shimamura, Nonyuki; Kawasaki, Shigetake; Kasahara, Keisuke; Sakuma, Seiichi; Komatsu, Fujio; Ishikawa, Masaya; Sugiyama, Kunio; Mashimo, Mitsuo; Shindo, Yuzuru; and Kawamura, Kuniaki, 5,348,080, Cl 165-104.130.

Masler, William F., III: *See—*
Long, Carl J., II; Amjad, Zahid; Masler, William F., III; and Wingo, William H., 5,349,030, Cl. 525-450.000.

Mason, Robert F. Anti-wicking flossing tool. 5,348,032, Cl. 132-325.000.

Massachusetts Institute of Technology: *See—*
Blanco, Ernesto E.; and Schnorr, William, 5,348,259, Cl. 248-276.000
Shapiro, Alan R.; Gray, Martha L.; Melendez, Luis A.; Schaffer, Jonathan L.; Wright John D.; and Venegas, Jose G., 5,348,879, Cl. 435-240.241

Massey, John; and Granzow, Garland R., to Electronic Innovators, Inc. Distributed intelligence engineering casualty and damage control management system using an AC power line carrier-current lan 5,349,644, Cl. 395-200.000.

Masson, Roger W.: *See—*
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Master Appliance Corporation: *See—*
Bockholt, Karl H., 5,349,161, Cl. 219-385.000.

Masuda, Takashi: *See—*
Kimura, Shigeo; Ishikura, Yoshiyuki; Masuda, Takashi; Kurotwa, Takaaki; and Kihara, Takashi, 5,349,492, Cl. 361-283.400.

Masumoto, Tsuyoshi; Inoue, Akihisa; Kato, Akira; Shibata, Toshisuke; and Nishiyama, Nobuyuki, to Masumoto, Tsuyoshi; Toyota Jidosha Kabushiki Kaisha; Yoshida Kogyo K.K.; and Teikoku Piston Ring Co., Ltd. High-strength amorphous magnesium alloy. 5,348,591, Cl 148-403.000

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Masuo, Katsuhiro: *See—*
Taniguruma, Ryuji; and Masuo, Katsuhiro, 5,349,628, Cl. 378-181.000

Matai, Masahiro, to NEC Corporation. Data display radio pager with automatic message protection. 5,349,696, Cl. 455-70.000

Matake, Shigeru: *See—*
Oba, Masayuki; Hayase, Rumiko; Kihara, Naoko; Hayase, Shuzi; Mikogami, Yukihiro; Nakano, Yoshihiko; Oyasato, Naohiko; Matake, Shigeru; and Takano, Kei, 5,348,835, Cl. 430-192.000.

Materials Research Corporation: *See—*
Eichman, Eric C.; Sommer, Bruce A.; Churley, Michael J.; and Ramsey, W. Chuck, 5,348,587, Cl. 118-723.0MP.

Matherne, Lonny R.; and Mower, Barry D. Ball return apparatus and method. 5,348,290, Cl. 273-1.50A.

Mathison, Dennis R.; and Perkins, James H., to Loram Maintenance of Way, Inc. Railway ballast cleaning machine with integrated hopper car. 5,347,933, Cl. 104-2.000.

Matoba, Takao: *See—*
Ito, Satoru; Matoba, Takao; Yamamoto, Kenji; and Sugiura, Shinji, 5,348,998, Cl. 524-190.000.

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McClure, Malcolm S., to Span, Inc. Battery charging and monitoring system. 5,349,282, Cl. 320-32.000.

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Micro-Technology Inc.-Wisconsin: *See—*
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Micron Semiconductor, Inc.: *See—*
Dennison, Charles H.; and Manning, Monte, 5,348,899, Cl. 437-41.000
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Micropure Inc.: *See—*
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Miller, Larry P. Security bracket for portable telephones. 5,349,637, Cl. 379-445.000.
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Millington, Howard G. Sulky wheel guard. 5,348,328, Cl. 280-63.000.
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Budd, Kenton D.; and Wilson, David M., 5,348,918, Cl. 501-95.000.
Greenleaf, David J.; Purewal, Tarlochan S.; and Jinks, Philip A., 5,348,730, Cl. 424-45.000.
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Misawa, Masayuki: *See—*
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Mita, Tsuneo; Shinada, Tsuneo; and Kashima, Takayuki, to Hitachi Seiko, Ltd. Consumable-electrode AC gas shield arc welding method and apparatus therefor. 5,349,159, Cl. 219-137.0PS.
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Mitsubishi Kasei Corporation: *See—*
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Mitsubishi Paper Mills Limited: *See—*
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Mitsui Toatsu Chemicals, Inc.: *See—*
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Mitsuji, Katsuo, to Hitachi Magnetics Corporation. Surface treatment for iron-based permanent magnet including rare-earth element 5,348,639, Cl. 205-181.000
Mitsumi Electric Co., Ltd.: *See—*
Katayama, Sumio; Iwasaki, Junichi; Toi, Shuichi; Usui, Ichiro; and Yanase, Takashi, 5,349,263, Cl. 310-338.000
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Mitter, Helmut; Scharizer, Walter; Sollradl, Herbert; and Rossak, Norbert, to E + E Elektronik Gesellschaft m.b.H.; and Lenzing Aktiengesellschaft. Use of a swellable plastic and process for making a resistive moisture sensor. 5,348,761, Cl. 427-101.000.
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Miyagawa, Yoshihiro: *See—*
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Miyake, Jiro: *See—*
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Miyake, Katsuya: *See—*
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Miyake, Shigenobu; Kibino, Nobuyuki; Monoi, Takashi; Ohira, Hiroyuki; and Inazawa, Shintaro, to Showa Denko K.K. Metallocene and process for producing polyolefin using the same. 5,349,032, Cl. 526-127.000.
Miyake, Takashi; and Sugita, Mitsuru, to Mitsubishi Denki Kabushiki Kaisha. Multi-port RAM having means for providing selectable interrupt signals. 5,349,564, Cl. 365-230.050.
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Miyata, Shigeru; Matsubara, Yoshihiro; and Kagawa, Junichi, to NGK Spark Plug Co., Ltd. Misfire detector device for use in an internal combustion engine. 5,347,856, Cl. 73-116.000.
Miyatake, Tatsuya: *See—*
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Miyazawa, Kazutoshi; and Yoshida, Naoyuki, to Chisso Corporation. Optically active compounds having plural chiral centers and production thereof. 5,348,870, Cl. 435-125.000
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Mizuno, Masako; Tochigi, Kenji; and Misawa, Yutaka, to Hitachi, Ltd. Apparatus for measuring glycohemoglobin. 5,348,649, Cl. 210-198.200
Mizuno, Takayuki: *See—*
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Mizzi, John V.; and Merte, Donald A., to Omnific International Ltd. Insert module aerosol container. 5,348,190, Cl. 222-82.000.

Mizzi, John V.; and Merte, Donald A., to Omnific International Inc. Aerosol container having a side coupled pump module. 5,348,197, Cl. 222-401.000.
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Mizzi, John V.: *See—*
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Beck, Jeffrey S.; Kuehl, Guenter H.; Olson, David H.; Schlenker, John L.; Stucky, Galen D.; and Vartuli, James C., 5,348,687, Cl. 252-582.000.
Blain, David A.; Horodysky, Andrew G.; Poole, Ronald J.; and Wu, Shi-Ming, 5,348,674, Cl. 252-51.50R.
Chang, Clarence D.; and Rodewald, Paul G., 5,349,113, Cl. 585-475.000
Grasselli, Robert K.; Lago, Rudolph M.; Socha, Richard F.; and Tsikoyiannis, John G., 5,349,117, Cl. 585-820.000.
Harandi, Mohsen N.; and Owen, Hartley, 5,348,707, Cl 422-129.000
Horodysky, Andrew G.; Law, Derek A.; and Wu, Shi-Ming, 5,348,671, Cl. 252-32.70E.
Lago, Rudolph M.; Marler, David O.; and McCullen, Sharon B., 5,349,114, Cl. 585-475.000.
Shih, Stuart S., 5,348,641, Cl. 208-89.000.
Mobley, Larry W.: *See—*
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Mochida, Takaaki; and Aoyama, Motoo, to Hitachi, Ltd. Fuel assembly for light water reactor and light water reactor core. 5,349,619, Cl. 376-444.000
Mochizuki, Akihiro; Kasahara, Shigeo; Makino, Tetsuya; Watanabe, Masashi; Nakatsuka, Masakatsu; Yoshio, Kunikiyo; Satoh, Masahiro; Watanabe, Tetsuya; Sugita, Naoko; and Yanagi, Tatsuroh, to Fujitsu Limited; Mitsui Toatsu Chemicals, Inc.; and Sanyo Chemical Industries, Ltd. Ferroelectric liquid crystal composition. 5,348,685, Cl. 252-299.620.
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Mohr, Dieter; Benzing, Martin; Mertes, Juergen; Hultzsch, Guenter; Gramm, Ine; Michel, Manfred; Elsaesser, Andreas; Hsieh, Shane; and Siegfried, David L., to Hoechst Aktiengesellschaft. Colored positive-working quinone diazide photosensitive recording material for the production of a color test image utilizing adhesive layer containing alkali-insoluble organic polymer and alkali-soluble polyester. 5,348,833, Cl. 430-143.000
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Crick, Dallas M.; and Moliere, Alfred, 5,347,784, Cl. 52-520.000
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Monahan, Patrick W. Apparatus and method for determining a patient's dominant eye. 5,349,397, Cl. 351-201.000.
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Kaneko, Takushi; Willner, David; Monkovic, Ivo; Greenfield, Robert S.; and Braslawsky, Gary R., 5,349,066, Cl. 546-294.000.
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Miyake, Shigenobu; Kibino, Nobuyuki; Monoi, Takashi; Ohira, Hiroyuki; and Inazawa, Shintaro, 5,349,032, Cl. 526-127.000
Monroe, Richard A.; Perkins, Jeffrey; and Wood, Robert J., to Welch Allyn, Inc. Control mechanism for steerable elongated probe having a sealed joystick. 5,347,989, Cl. 128-4.000
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Plischke, Le Moyne W.; and Snooks, Rupert J., Jr., 5,349,038, Cl. 528-150.000.
Tokas, Edward F.; Shaltout, Raafat M.; and Chen, Ken S., 5,348,574, Cl. 106-1.110.
Montgomery, Robert D. Combination roller ball and hockey puck. 5,348,298, Cl. 273-128.00R.
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Garnjost, Kenneth D.; and Rey, Gonzalo J., 5,347,884, Cl. 74-573.000
Moon, Young-Ho; Jeon, Hong-Seob; Choi, Kyu-Whan; Lee, Kwan-Ho; and Kim, Man-Keun, to Jinro Limited. Genome coding phytolacca antiviral protein and a recombinant expression vector therefor 5,348,865, Cl. 435-69.100.
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Sheth, Nitin V.; Valorose, Joseph J., Jr.; Ellway, Keith A.; Ganesan, MaduraiGurusamy; Mooney, Kieran G.; and Johnson, Jerry B., 5,348,748, Cl. 424-494.000.
Moor, Richard L.: *See—*
Boggs, Steven W.; and Moor, Richard L., 5,348,780, Cl. 428-42.000.
Moore Business Forms, Inc.: *See—*
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Gottfreid, Thomas M., 5,348,147, Cl. 206-215.000
Ring, Robert S., 5,348,278, Cl. 270-52.000.
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Payne, Michael; Perkins, Robert W.; and Moore, Danny R., 5,348,547, Cl. 604-378.000
Moore, Lillie B. T. Antiherpetic treatment. 5,348,981, Cl. 514-788.000.
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Cray, Seymour R.; Bedell, James R.; Kuba, Dennis W.; and Moore, William T., Jr., 5,349,677, Cl. 395-800.000
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Morello, John R.; Okrucky, James A.; and Neale, Frank T., to General Motors Corporation. Sealed pass through electrical connector. 5,348,498, Cl. 439-877.000
Moreno, Luigi, to Italtel Societa Italiana Telecomunicazioni S.p.A. Receiver for a digital radiomobile system with cancellation of isofrequency interfering signals having the same kind of modulation, and relevant method. 5,349,607, Cl. 375-94.000
Morgan, Robert K. Apparatus for harvesting, pruning, and/or trimming. 5,347,800, Cl. 56-335.000.
Mori, Akira: *See—*
Fujimoto, Katsumi; Yoshitani, Kazuhiro; Mori, Akira; and Nakamura, Takeshi, 5,349,261, Cl. 310-321.000.
Mori, Shigeki: *See—*
Takatsuka, Tsutomu; Mori, Shigeki; and Makino, Chiho, 5,348,738, Cl. 424-78.370.
Moriarity, Thomas: *See—*
Le Disert, Yves; Roue, Jean; Moriarity, Thomas; and Faucher, Philippe, 5,348,578, Cl. 106-287.200.
Morich, Michael A.: *See—*
DeMeester, Gordon D.; Morich, Michael A.; and Amor, William H., 5,349,297, Cl. 324-318.000.
Morigaki, Masakazu; Kawamoto, Hiroshi; Fujita, Yoshihiro; Nakamura, Shigeru; Watanabe, Hiroyuki; and Yagihara, Morio, to Fuji Photo Film Co., Ltd. Color image-stabilization processing solution used for processing a silver halide color photographic material and a processing method using the same. 5,348,845, Cl. 430-372.000.
Morii, Shoichi: *See—*
Kumon, Naoki; Kawagoe, Harue; Matsugi, Shin; Kano, Hiroshi; Nakaoka, Noriyoshi; Morii, Shoichi; Kusanagi, Shigekazu; Koi, Kenji; Hatai, Takashi; and Fukui, Masanori, 5,347,665, Cl 4-541.100
Morikawa, Shinsuke: *See—*
Kumai, Seisaku; Wada, Akihiro; and Morikawa, Shinsuke, 5,349,098, Cl. 570-141.000.
Morimoto, Eiichi: *See—*
Kuwahara, Tetsuya; and Morimoto, Eiichi, 5,349,447, Cl. 358-404.000.
Morimoto, Masaru: *See—*
Matsumoto, Koji; Morimoto, Masaru; Osuka, Masahiro; and Uno, Naomi, 5,349,017, Cl. 525-84.000.

Morimoto, Takao: *See*—
Nakano, Shinji; Morimoto, Takao; and Endo, Takeshi, 5,349,067, Cl. 546-347.000.

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Obara, Sanshiro; Watabe, Mitsuru; Minami, Rika; and Morinaga, Shigeki, 5,349,351, Cl. 341-141.000.

Monoka, Kunihito: *See*—
Imashimizu, Yoshinori; Suda, Yoshiaki; Yamamoto, Shuichi; Takada, Toshiyuki; Maeyama, Kaoru; Hiramoto, Etsuro; Oki, Toshihide; Morita, Sadayuki; Kawatani, Shoji; Morioka, Kunihito; Fujimitsu, Ryoichi; and Handa, Kazuhisa, 5,347,703, Cl. 29-525.100

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Morishita, Akira: *See*—
Isozumi, Shuzoo; and Morishita, Akira, 5,349,319, Cl. 335-274.000.

Morita, Fumio: *See*—
Imaizumi, Mamoru; and Morita, Fumio, 5,349,376, Cl. 347-16.000.

Morita, Hideo: *See*—
Yoshihama, Yoshio; Kusakabe, Katsuhiko; Matsui, Susumu; and Morita, Hideo, 5,349,121, Cl. 800-200.000

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Kobayashi, Yasunori; Sugiura, Tsuguo; and Morita, Yoshiyuki, 5,347,971, Cl. 123-520.000

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Hosaka, Jun; Moriyama, Hiroshi; and Tokuda, Tatsuya, 5,347,799, Cl. 56-15.800

Moriyasu, Hiro, to Zeelan Technology, Inc. Behavioral model parameter extractor. 5,349,539, Cl. 364-578.000.

Morley, Roland M., to Litton Systems, Inc. Night vision device with holographic reticle which is transparent in a first condition and visibly superimposed in a second condition. 5,349,179, Cl. 250-214.0VT

Morman, Michael T.: *See*—
Kasbo, Loyd G., deceased; Cotton, James D.; Morman, Michael T.; and Adam, Gabriel H., 5,347,950, Cl. 119-171.000

Moro, Hideharu; and Miyauchi, Yasuharu, to TDK Corporation. Composite soft magnetic material. 5,348,800, Cl. 428-328.000

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Morris, Arthur J.: *See*—
Laflin, Walter J.; and Morris, Arthur J., 5,348,088, Cl. 166-134.000.

Morris, Donald E., to University of California, The Regents of the Highly oxidized superconductors. 5,348,935, Cl. 505-482.000.

Morris, G. Michael; Kay, David; Buralli, Dale; and Kubalak, David, to University of Rochester, The. Hybrid refractive/diffractive achromatic lens for optical data storage systems. 5,349,471, Cl. 359-565.000.

Morris, Michael D.; and Zumbach, Lyle L., to Norand Corporation Versatile RF data capture system. 5,349,678, Cl. 395-800.000

Morris, Robert C.: *See*—
Golecki, Ilan; Morris, Robert C.; and Narasimhan, Dave, 5,348,774, Cl. 427-543.000

Morrison Company, Inc.: *See*—
Arnold, Dale B., 5,348,782, Cl. 428-60.000

Morrison, David G.: *See*—
Parke, Ian; Nilsson, Michael E.; Beaumont, David O.; and Morrison, David G., 5,349,383, Cl. 348-397.000

Morrison, Stephen E.: *See*—
Cornette, H. Mitchell; Morrison, Stephen E.; and Barton, Michael J., 5,348,092, Cl. 166-227.000.

Morrissette, Didace E.: *See*—
Binzer, Lothar; Morrissette, Didace E.; and Toth, Ronald, 5,347,982, Cl. 126-503.000

Morrow, Martin E.: *See*—
Hergenrother, William L.; and Morrow, Martin E., 5,349,024, Cl 525-289.000.

Morton International, Inc.: *See*—
Hallisy, Michael J.; Gilmore, John R.; Hobbs, Steven J.; and Duncan, Warren G., 5,349,091, Cl. 568-22.000.

MOS Electronics Corporation: *See*—
Wu, Sheau-Dong; and Lih, Iu-Lin, 5,349,565, Cl. 365-230.080.

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Wu, Sheau-Dong; and Yoshida, Hiro, 5,349,683, Cl. 395-800.000.

Moseley, Brian. Inline pneumatic/mechanical flow control valve system. 5,348,269, Cl. 251-33.000

Mosler, Inc.: *See*—
Vogel, Victor J., 5,348,280, Cl. 269-48.100.

Mosley, Stephen T.: *See*—
Tanaka, Richard D.; Ricci, Beverly S.; and Mosley, Stephen T., 5,349,058, Cl. 536-23.200.

Moss, Bernard: *See*—
Esposito, Joseph J.; Moss, Bernard; and Brechling, Kathleen, 5,348,741, Cl. 424-199.100

Mothers System U.S.A., Inc.: *See*—
Shuto, Kenji, 5,349,477, Cl. 360-15.000

Motorola, Inc.: *See*—
Ackley, Donald E.; Lebby, Michael S.; and Witting, Gary F., 5,349,210, Cl. 257-84.000
Hartman, Davis H.; and Lebby, Michael S., 5,348,616, Cl 156-643.000
Lobel, Gary S., 5,349,701, Cl. 455-222.000.
Matz, John E.; and Mitzlaff, James E., 5,349,300, Cl. 330-129.000.
Moyer, Curtis D.; Harvey, Thomas B., III; and Jaskie, James E., 5,349,209, Cl. 257-80.000.
Nilles, Robert B.; Collins, Craig J.; Killigrew, James J.; and Sasuta, Michael D., 5,349,342, Cl. 340-825.080.
Pfiester, James R.; and Hayden, James D., 5,348,903, Cl 437-52.000
Schellinger, Michael J., 5,349,588, Cl. 371-37.100.
Sticha, David A.; Mayer, Glenn N.; Ranz, Stephen J.; and Garbarino, John, 5,349,584, Cl. 370-97.000
Tehrani, Saied N.; Zhu, X. Theodore; Goronkin, Herbert; and Shen, Jun, 5,349,214, Cl. 257-192.000.
Zhong, Zhong K.; and Herold, Barry W., 5,349,695, Cl. 455-38.300

Mott, James M.: *See*—
Cox, James O.; and Mott, James M., 5,349,643, Cl. 380-25.000.

Mott, Richard B.; Waldman, Charles G.; and Ungar, Daniel E., to Princeton Gamma Tech, Inc. Highly sensitive nuclear spectrometer apparatus and method. 5,349,193, Cl. 250-370.060.

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Hughes, John B.; and Moulding, Kenneth W., 5,349,245, Cl 307-353.000.

Moulton, James I., to Apple Computer, Inc. Hidden, releasable latch for a molded plastic enclosure. 5,348,356, Cl. 292-80.000.

Moura, Anne-Marie: *See*—
Clemence, Francois; Fortin, Michel; Hamon, Gilles; Le Martret, Odile; and Moura, Anne-Marie, 5,348,971, Cl. 514-428.000

Mouterde, Renaud; and Bouzianne, Michel, to Giat Industries. Ammunition magazine. 5,347,908, Cl. 89-34.000.

Movaghar, Abdolreza; Rhoads, W. Wistar; and Nguyen, Michael A., to Hewlett-Packard Company. Split bushing mounting of a printer carriage with pre-load. 5,348,404, Cl. 400-354.000

Mower, Barry D.: *See*—
Matherne, Lonny R.; and Mower, Barry D., 5,348,290, Cl. 273-1.50A.

Moyer, Curtis D.; Harvey, Thomas B., III; and Jaskie, James E., to Motorola, Inc. Diamond/organic LED. 5,349,209, Cl. 257-80.000.

MTI Technology Corporation: *See*—
Gajjar, Kumar; and Nguyen, Anh, 5,349,686, Cl. 395-800.000.

Mueller, Heinz; Herold, Claus-Peter; and von Tapavicza, Stephan, to Henkel Kommanditgesellschaft auf Aktien. Oleophilic alcohols as a constituent of invert drilling fluids. 5,348,938, Cl. 507-139.000.

Mueller, Mark A.: *See*—
Preston, Kyle L.; Wu, Chung-Nan T.; Taylor, Mark E.; and Mueller, Mark A., 5,349,072, Cl. 549-529.000.

Mueller, Roman, to Buehler AG. Process for guiding air for cleaning semolina, as well as semolina cleaning apparatus. 5,348,161, Cl. 209-29.000

Mueller, Walter: *See*—
Halbedel, Bernd; Mueller, Walter; Baudrich, Rolf; and Huelsenberg, Dagmar, 5,348,237, Cl. 241-67.000.

Mugno, John R. Contact lens insertion tool. 5,348,358, Cl. 294-1.200.

Mullen, Timothy L.; Schaefer, Thomas J.; and McCutcheon, Tera D., to Graco, Inc. Planar foam nozzle. 5,348,230, Cl. 239-428.000.

Muller, Elmar: *See*—
Korasiak, Wolfgang; Muller, Elmar; Brachert, Jost; and Herzmansky, Karl-Heinz, 5,348,380, Cl. 303-103.000.

Muller, Hans-Joachim; and Plankert, Hans-Wilhelm, to Goetz E. AG. Corrosion protection composition for metal workpieces. 5,348,575, Cl. 106-14.350.

Muller, Hans R., to AlliedSignal Inc. Method and apparatus for correcting dynamically induced errors in static pressure, airspeed and airspeed rate. 5,349,347, Cl. 340-969.000.

Muller, Ingrid: *See*—
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Muller, Olivier: *See*—
Lavielle, Gilbert; Maillos, Philippe; Muller, Olivier; Laubie, Michel; Verbeuren, Tony; and Descombes, Jean-Jacques, 5,348,968, Cl. 514-360.000.

Muller, Rolf, to Papst Licensing GmbH. Brushless direct current motor. 5,349,275, Cl. 318-254.000.

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Munari, Fausto: *See*—
Grob, Konrad; and Munari, Fausto, 5,347,844, Cl. 73-23.410.

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Muni, Ketan P.: *See*—
Wiesner, Steven P.; and Muni, Ketan P., 5,348,537, Cl. 604-96.000.

Murai, Shigeo: *See*—
Sakashita, Nobuyuki; Nakajima, Toshio; Murai, Shigeo; Maeda, Kazuyuki; Nakamura, Yuji; Yoshida, Tsunezo; Honzawa, Shooichi; and Kanamori, Fumio, 5,348,933, Cl. 504-213.000.

Murai, Yasuhiko, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for determining the deformation of workpiece on grinding machine 5,347,761, Cl. 451-364.000.

Murakami, Kazuo: *See*—
Murata, Katsumi; Murakami, Kazuo; Kusakabe, Isao; and Satoh, Toshihide, 5,348,875, Cl. 435-200.000.

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Murakami, Shuji; and Tanaka, Shigeo, to Konica Corporation. Method of manufacturing silver halide photographic emulsion and silver halide photographic light-sensitive material comprising the silver halide photographic emulsion. 5,348,848, Cl. 430-569.000.

Murao, Toshiaki; Kikuchi, Takeo; Iryu, Toshihiko; Nomura, Hidenori; and Sugamoto, Hiroyuki, to Fujitsu Limited; and Fujitsu VLSI Limited. Wafer-scale semiconductor integrated circuit device and method of forming interconnection lines arranged between chips of wafer-scale semiconductor integrated circuit device. 5,349,219, Cl. 257-208.000

Murata, Jun: *See*—
Tadaki, Yoshitaka; Sekiguchi, Toshihiro; Uchiyama, Hiroyuki; Kaga, Toru; Murata, Jun; and Enomoto, Osaomi, 5,349,218, Cl. 257-296.000.

Murata, Katsumi; Murakami, Kazuo; Kusakabe, Isao; and Satoh, Toshihide, to Kabushikikaisha Kibun Shokuhin; and Kabushikikaisha Kibun Foodchemifa. Production of alginase from *Enterobacter cloacae* M-1 (FERM BP-2577). 5,348,875, Cl. 435-200.000.

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Okada, Keiji; Murata, Kazuhiko; Tojo, Tetsuo; Kawasaki, Masaaki; and Takata, Toshimasa, 5,349,020, Cl. 525-237.000.

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Kumano, Toshiya, 5,349,629, Cl. 379-58.000.
Kuwahara, Tetsuya; and Morimoto, Eiichi, 5,349,447, Cl. 358-404.000.
Yamauchi, Toshio; and Uchida, Hiroshi, 5,348,238, Cl. 242-18.00R.

Murata, Kiyohito; Shindo, Yoshio; and Arai, Hajime, to Toyota Jidosha Kabushiki Kaisha. Fluid coupling power transmission with lockup clutch. 5,348,127, Cl. 192-3.300.

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Fujimoto, Katsumi; Yoshitani, Kazuhiro; Mori, Akira; and Nakamura, Takeshi, 5,349,261, Cl. 310-321.000.

Murata, Tatsuo; Ishiwata, Kazuya; and Yoshioka, Toshifumi, to Canon Kabushiki Kaisha. Process for producing electrode substrate. 5,348,828, Cl. 430-20.000.

Murayama, Hideaki; Kihara, Taku; Sudo, Fumihiko; and Asaida, Takashi, to Sony Corporation. Video camera with aperture correction having reduced power consumption. 5,349,381, Cl. 348-252.000

Murayama, Motoaki, to NEC Corporation. Semiconductor input protective device against external surge voltage. 5,349,227, Cl. 257-361.000.

Murphy, Alison M.: *See*—
Gilliland, W. Keith; Midgley, Christian G.; Murphy, Alison M.; and Bowerman, Wayne T., 5,349,377, Cl. 346-153.100.

Murphy, Edward P., to Graco Inc. Liquid pump resilient inlet insert for pumping high solids content liquids. 5,348,454, Cl. 417-554.000.

Murphy, J. D.; Schuffenecker, R.; and Suty, H., to Elf Atochem S.A. Polyaluminumchlorosulfates and preparation and uses thereof. 5,348,721, Cl. 423-463.000.

Murray, John E.: *See*—
Hetherington, Ricky C.; Webb, David A., Jr.; Fite, David B.; Murray, John E.; Fossum, Tryggve; and Manley, Dwight P., 5,349,651, Cl. 395-400.000.

Murray, Veronica: *See*—
Sieber, Heinrich; and Wolf, Roland, 5,349,331, Cl. 340-572.000.

Murray, William M. Manual bone cement mixing method. 5,348,391, Cl. 366-139.000.

Mushika, Yoshihiro: *See*—
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Mushrush, Glenn T.: *See*—
Abbott, Christopher E.; and Mushrush, Glenn T., 5,347,756, Cl. 49-74.100.

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Nini, James P., to General Motors Corporation. Low mass manual two-way seat adjuster. 5,348,261, Cl. 248-430.000

Nippon Chemiphar Co., Ltd.: *See—*
Masaki, Mitsuo; Uehara, Masaki; Hirate, Kenji; Isowa, Yoshikazu; Sato, Yoshiaki; and Nakashima, Yoshiharu, 5,349,050, Cl 530-330.000.

Nippon Gasket Co., Ltd.: *See—*
Kawaguchi, Shigeru; Kubouchi, Kenji; Uemura, Hiroshi; and Inoue, Kunitoshi, 5,348,315, Cl. 277-235.00B.

Nippon Graphite Industries Ltd.: *See—*
Ohkura, Tadao; and Ashida, Mamoru, 5,348,672, Cl. 252-42.000.

Nippon Oil Company, Limited: *See—*
Suga, Masanobu; Akita, Seiichi; and Kuroda, Nobuyuki, 5,348,820, Cl. 429-216.000
Takashima, Hiroyuki; Okada, Mitsuo; and Shimizu, Teruo, 5,348,676, Cl. 252-56.00R.

Nippon Paint Co., Ltd.: *See—*
Nakano, Shinji; Morimoto, Takao; and Endo, Takeshi, 5,349,067, Cl. 546-347.000.
Shimakura, Toshiaki; Ishida, Yutaka; and Watanabe, Tomomi, 5,348,640, Cl. 205-318.000
Yokoi, Junji; and Harada, Akio, 5,348,576, Cl. 106-15.050
Yoshikawa, Motoyoshi; Noda, Hideyoshi; Shirakawa, Shinsuke; Tsuboniwa, Noriyuki; Yamanaka, Eiji; Urano, Satoshi; and Kanda, Kazunori, 5,348,991, Cl. 523-402.000.

Nippon Petrochemicals Company, Limited: *See—*
Takahashi, Tomonori; Kimura, Masato; Oka, Masataka; and Ogasawara, Isamu, 5,348,794, Cl. 428-213.000

Nippon Steel Chemical Co., Ltd.: *See—*
Fujita, Toshio; Fujita, Masanari; Takeda, Naoto; and Hirashima, Koji, 5,349,012, Cl. 525-52.000.

Nippon Steel Corporation: *See—*
Hanamura, Toshihiro; Uemori, Ryuji; Tanino, Mitsuru; and Takamura, Jin-ichi, 5,348,594, Cl. 148-421.000.
Hanamura, Toshihiro; Uemori, Ryuji; Tanino, Mitsuru; and Takamura, Jin-ichi, 5,348,595, Cl. 148-538.000.
Kawakami, Youji, 5,349,501, Cl. 361-776.000.
Matsuo, Munetsugu; Masahashi, Naoya; Hashimoto, Keizo; Hanamura, Toshihiro; Fujii, Hideki; Kimura, Masao; Mizuhara, Youji; and Suzuki, Hiroo, 5,348,702, Cl. 420-421.000
Oyagi, Yashichi; Nakamura, Kiyonori; and Taniuchi, Keiji, 5,348,809, Cl. 428-622.000.

Nippon Telegraph and Telephone Corporation: *See—*
Aikawa, Haruhiko; Nagayama, Katsuya; Ishiguro, Yoichi; Yoshimura, Ichiro; Katsuyama, Yutaka; and Yoshizawa, Nobuyuki, 5,348,564, Cl. 65-413.000.

Nippon Zeon Co., Ltd.: *See—*
Nishina, Masaaki; and Ozaki, Osamu, 5,349,049, Cl. 528-485.000.

Nippondenso Co. Ltd.: *See—*
Kato, Yasuhiro; and Suzuki, Hideki, 5,347,824, Cl. 62-133.000.

Kobayashi, Yasunori; Sugiura, Tsuguo; and Morita, Yoshiyuki, 5,347,971, Cl. 123-520.000.
Narita, Ryoichi; and Fukuda, Yutaka, 5,349,240, Cl. 257-791.000.

Nishi, Naoki, to NEC Corporation. Instruction handling sequence control system for simultaneous execution of vector instructions. 5,349,692, Cl. 395-800.000

Nishida, Motoharu: *See—*
Hayashi, Masatake; and Nishida, Motoharu, 5,349,455, Cl 359-54.000.

Nishida, Shoso; and Shiotani, Yusuke, to Japan Steel Works, Ltd., The. Apparatus for assembling molded products. 5,348,461, Cl. 425-129.100.

Nishida, Yoshihiro, to Mitsubishi Denki Kabushiki Kaisha. Photographic optical system controlling apparatus. 5,349,415, Cl. 354-432.000.

Nishiguchi, Masanori; and Miki, Atsushi, to Sumitomo Electric Industries, Ltd. Method of mounting semiconductor elements. 5,348,214, Cl. 228-180.220

Nishikawa Rubber Co., Ltd.: *See—*
Yamane, Tadanao, 5,347,758, Cl. 49-484.100.

Nishikawa, Satoshi: *See—*
Hanazato, Yoshio; Isoda, Satoru; Ueyama, Satoshi; and Nishikawa, Satoshi, 5,349,203, Cl. 257-40.000.

Nishimoto, Yoshifumi: *See—*
Yamamoto, Shinji; and Nishimoto, Yoshifumi, 5,348,287, Cl. 271-267.000.

Nishimukai, Tadahiko; Hasegawa, Atsushi; Uchiyama, Kunio; Kawasaki, Ikuya; and Hanawa, Makoto, to Hitachi, Ltd.; and Hitachi MicroComputer Engineering, Ltd. Data processor having logical address memories and purge capabilities. 5,349,672, Cl. 395-800.000.

Nishimura, Masaaki; and Ochiyama, Takahashi, to Odawara Engineering Co., Ltd. Adjustable pallet. 5,348,142, Cl. 198-803.010.

Nishimura, Seiya: *See—*
Maejima, Yoshihisa; Nishimura, Seiya; Takabayashi, Masayoshi; and Ohta, Tokuyoshi, 5,347,709, Cl. 29-827.000

Nishimura, Toyohiko: *See—*
Horowitz, Bernard; Shulman, Richard W.; Setton, Adrianne J.; Nishimura, Toyohiko; and Kawashima, Yoichi, 5,348,939, Cl 514-8.000

Nishimura, Yoshiaki: *See—*
Miyamato, Masahiko; Nakamura, Nobuo; Takashita, Jyunji; Ando, Manabu; Kawano, Katsuo; Nishimura, Yoshiaki; and Yuasa, Satoshi, 5,347,763, Cl. 451-241.000.

Nishina, Masaaki; and Ozaki, Osamu, to Nippon Zeon Co., Ltd. Method of production of polyvinyl chloride resin for paste processing 5,349,049, Cl. 528-485.000.

Nishiuchi, Kenichi: *See—*
Ohno, Eiji; Yamada, Noboru; Nagata, Kenichi; Nishiuchi, Kenichi; and Akahira, Nobuo, 5,348,783, Cl. 428-64.000.

Nishiumi, Kenichi: *See—*
Hasegawa, Yoshimi; Nishiumi, Kenichi; Yonekubo, Yoshitake; Naito, Hisato; and Koiwai, Hideshi, 5,347,811, Cl. 60-426.000.

Nishiura, Masaharu; and Fujihira, Tatsuhiko, to Fuji Electric Co., Ltd. Overheating detection circuit for detecting overheating of a power device. 5,349,336, Cl. 340-653.000

Nishiwaki, Koichi: *See—*
Kato, Minoru; Hiraharu, Teruo; Nishiwaki, Koichi; and Tadenuma, Hiroshi, 5,349,003, Cl. 524-458.000

Nishiwaki, Toshimitsu: *See—*
Kinoshita, Isamu; Suzuki, Kenji; Shibata, Nobuyuki; and Nishiwaki, Toshimitsu, 5,347,698, Cl. 29-407.000.

Nishiyama, Nobuyuki: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; Kato, Akira; Shibata, Toshisuke; and Nishiyama, Nobuyuki, 5,348,591, Cl. 148-403.000.

Nishizawa, Manabu: *See—*
Kushitani, Hideki; Nishizawa, Manabu; and Nakao, Yasumasa, 5,348,916, Cl. 501-66.000.

Nissan Motor Co., Ltd.: *See—*
Matsui, Hiroyasu, 5,349,360, Cl. 342-374.000.
Nakamura, Makoto; Sakuragi, Shigeru; and Komatsu, Hiroshi, 5,347,962, Cl. 123-90.160.

Nissen, Steven L.; Flakoll, Paul J.; and Abumrad, Naji N., to Iowa State University Research Foundation Inc.; and Vanderbilt University. Method of promoting nitrogen retention in humans. 5,348,979, Cl. 514-557.000

Nissho Corporation: *See—*
Futagawa, Hitoshi; Ikeda, Koji; and Kikuchi, Toshihiro, 5,348,060, Cl. 141-100.000.
Ikeda, Koji; Futagawa, Hitoshi; and Kikuchi, Toshihiro, 5,348,550, Cl. 604-411.000

Nist, Lance E.: *See—*
Buehrle, Harry W., II; Nist, Lance E.; and Clark, Raymond C., 5,347,961, Cl. 123-90.110.

Nitescu, Petru N., to Applied Materials, Inc. High voltage vaccum feed-through electrical connector. 5,348,497, Cl. 439-824.000.

Nitz, Larry T.: *See—*
Mainquist, James K.; Downs, Robert C.; Nitz, Larry T.; and Kinsey, Kyle K., 5,347,886, Cl. 477-161.000

Nitz, Theodore J.: *See—*
Diana, Guy D.; and Nitz, Theodore J., 5,349,068, Cl. 548-131.000.

Niwa, Koichi: *See—*
Yamada, Mitsutaka; Yokouchi, Kishio; Kamehara, Nobuo; and Niwa, Koichi, 5,349,499, Cl. 361-700.000.

Niwa, Naoki: *See—*
Kobori, Takuji; Ishii, Koji; Takahashi, Motoichi; Matsunaga, Yoshinori; Niwa, Naoki; Tagami, Jun; Mizuno, Takayuki; and Furukawa, Kunio, 5,347,771, Cl. 52-167.00R.

NKK Corporation: *See—*
Ohdake, Takayuki; Ohmori, Toshimichi; Takamura, Toshihiro; Yamada, Takemi; and Sampei, Tetsuya, 5,348,701, Cl. 420-73.000.

Nobeltech Electronics AB: *See—*
Bjorkman, Bengt, 5,349,333, Cl. 340-600.000.

Noda, Hajima: *See—*
Sotani, Junji; Satoh, Kuniyoshi; and Noda, Hajima, 5,349,131, Cl. 174-24.000.

Noda, Hideyoshi: *See—*
Yoshikawa, Motoyoshi; Noda, Hideyoshi; Shirakawa, Shinsuke; Tsuboniwa, Noriyuki; Yamanaka, Eiji; Urano, Satoshi; and Kanda, Kazunori, 5,348,991, Cl. 523-402.000.

Noda, Koji: *See—*
Taniguchi, Takao; Tsukamoto, Kazumasa; Hayabuchi, Masahiro; and Noda, Koji, 5,348,518, Cl. 475-285.000.

Noda, Satoshi: *See—*
Kurasawa, Yuko; Noda, Satoshi; and Fukuoka, Morinao, 5,349,473, Cl. 359-654.000.

Noda, Yukio: *See—*
Shinbori, Osamu; Mimura, Yoshinori; Noda, Yukio; and Nakai, Tetsuya, 5,349,600, Cl. 372-92.000.

Noel, Francis E., Jr.: *See—*
Christensen, Kenneth J.; and Noel, Francis E., Jr., 5,349,583, Cl 370-85.500

NOF Corporation: *See—*
Ichikawa, Shuji; Mitani, Motohiro; Yokoyama, Yuko; Sawada, Hideo; and Matsumoto, Takeo, 5,348,890, Cl. 436-172.000.

Nogawa, Chiharu: *See—*
Mochizuki, Hidehiro; Ariga, Yutaka; Kuboyama, Hiroki; Uemura, Hiroyuki; and Nogawa, Chiharu, 5,348,931, Cl. 503-227.000.

Nojima, Takashi: *See—*
Yanagi, Haruyuki; Suzuki, Tetsuo; Hiramatsu, Soichi; Nojima, Takashi; and Saikawa, Satoshi, 5,348,283, Cl. 271-127.000.

Nokia Mobile Phones Ltd.: *See—*
Pelkonen, Sakari, 5,349,697, Cl. 455-89.000.
Sointula, Erkka, 5,349,630, Cl. 379-58.000.

Nomoto, Takeshi: *See—*
Hirohashi, Kazutoshi; Horii, Hiroshi; Koike, Hideo; Yunoki, Yoshiaki; Fukasawa, Tetsuo; Katayama, Susumu; Yoshikawa, Akio; Ushijima, Keishi; Takeda, Takaaki; Nomoto, Takeshi; Kikuta, Michio; Shichijo, Shunichi; and Iwasaki, Yoshiki, 5,349,463, Cl 359-174.000

Nomura, Hidenori: *See—*
Murao, Toshiaki; Kikuchi, Takeo; Iryu, Toshihiko; Nomura, Hidenori; and Sugamoto, Hiroyuki, 5,349,219, Cl. 257-208.000.

Nomura, Hiroshi; Sato, Norio; and Aoki, Nobuaki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens camera with drive motor and gear train. 5,349,408, Cl. 354-195.100.

Nomura, Hiroshi; Sato, Norio; and Aoki, Nobuaki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Position adjusting apparatus of zoom lens barrel. 5,349,475, Cl. 359-694.000.

Nomura, Kotohiro; Ishino, Masaru; Yamamoto, Michio; Suzukamo, Gohfu; and Itagaki, Makoto, to Sumitomo Chemical Co., Ltd. Dimerization of low α-olefins. 5,349,115, Cl. 585-513.000.

Nomura, Yoshinori: *See—*
Ishihara, Hajime; Nomura, Yoshinori; and Cho, Kikuo, 5,349,464, Cl. 359-240.000

Noolandi, Jaan: *See—*
Slater, Gary; Noolandi, Jaan; and Turmel, Chantal, 5,348,636, Cl. 204-182.800

Noone, Michael J.: *See—*
Terrenzio, Louis A.; and Noone, Michael J., 5,347,785, Cl. 52-555.000

Norand Corporation: *See—*
Hanson, George E.; Kunert, Steven R.; Schultz, Darald R.; Gibbs, William T.; Rasmussen, Jon; and Traeger, Robert J., 5,349,497, Cl. 361-683.000.
Morris, Michael D.; and Zumbach, Lyle L., 5,349,678, Cl. 395-800.000

Norco Industries, Inc.: *See—*
Few, Jeffrey P.; and Leftwich, William B., 5,348,264, Cl 248-503.100.
Few, Jeffrey P.; and Rumler, Thomas, 5,348,330, Cl. 280-475.000.

Nordberg, Henry T. Tractive tire compactor. 5,347,919, Cl. 100-12.000.

Nordica S.p.A.: *See—*
Sbrilli, Franco, 5,348,321, Cl. 280-11.220.

Norman, George M., Sr. Training aid for improving the throw of an athlete. 5,348,292, Cl. 273-26.00C.

Norman, Jacob J.: *See—*
Abul-Haj, Roxanne E.; and Norman, Jacob J., 5,348,706, Cl. 422-100.000

Noro, Yoshiki: *See—*
Kuriki, Nobuharu; Ohsaki, Seiji; Shibue, Hideaki; and Noro, Yoshiki, 5,348,338, Cl. 280-707.000.

Norscan Instruments Ltd.: *See—*
Vokey, David E.; Sontag, Kenneth N.; and Kraft, Heinrich, 5,349,182, Cl. 250-227.210.

Northeastern University: *See—*
Karger, Barry L.; and Shimura, Kiyohito, 5,348,633, Cl. 204-180.100.

Northern Illinois University: *See—*
Lin, Chhiu-Tsu, 5,348,775, Cl. 427-555.000

Northern Telecom Limited: *See—*
Bears, James A., 5,349,457, Cl. 359-118.000.
Nadeau-Dostie, Benoit; Hassan, Abu S. M.; and Burek, Dwayne M., 5,349,587, Cl. 371-22.300.

Northrop Corporation: *See—*
Rippe, Jeffrey A., 5,347,680, Cl. 16-19.000.

Norton, Walter L. Ostomy bag with liquid-gas separation device. 5,348,546, Cl. 604-333.000.

Norwood, Peter M. Collapsible-stackable plastic container. 5,348,173, Cl. 215-10.000.

Notani, Yoshihiro; and Katoh, Takayuki, to Mitsubishi Denki Kabushiki Kaisha. High frequency signal transmission tape. 5,349,317, Cl. 333-236.000.

Notomi, Tetsuo. Lower jaw moving function readjusting apparatus and position determination setting apparatus. 5,348,471, Cl. 433-57.000.

Noujaim, Sharbel E.: *See—*
Daft, Christopher M. W.; Hall, Anne L.; Noujaim, Sharbel E.; Thomas, Lewis J.; and Welles, Kenneth B., II, 5,349,524, Cl. 364-413.250.

Novell, Inc.: *See—*
Kingdon, Kevin, 5,349,642, Cl. 380-25.000.

Novo Nordisk A/S: *See—*
Andersen, Knud E.; Knutsen, Lars J. S.; Sorensen, Per O.; Lundt, Behrend F.; Lau, Jesper; and Petersen, Hans, 5,348,965, Cl. 514-325.000.

NTT Data Communications Systems Corporation: *See—*
Hirohashi, Kazutoshi; Horii, Hiroshi; Koike, Hideo; Yunoki, Yoshiaki; Fukasawa, Tetsuo; Katayama, Susumu; Yoshikawa, Akio; Ushijima, Keishi; Takeda, Takaaki; Nomoto, Takeshi; Kikuta, Michio; Shichijo, Shunichi; and Iwasaki, Yoshiki, 5,349,463, Cl. 359-174.000

Numaya, Kuniaki: *See—*
Yoshino, Nobuo; and Numaya, Kuniaki, 5,347,888, Cl. 76-107.100.

Nuovopignone Industrie Meccahniche E Fonderia S.p.A.: *See—*
Corain, Luciano; and Bortoli, Giulio, 5,348,057, Cl. 139-448.000.

Nute, Ernest B., Jr.: *See—*
Frecska, Sandor A.; Nute, Ernest B., Jr.; and Sauer, Gale E., 5,347,783, Cl. 52-506.070.

Nuutinen, Kyosti: *See—*
Lehikoinen, Antti; and Nuutinen, Kyosti, 5,347,977, Cl. 126-19.00R

Nycomed Imaging AS: *See—*
Almen, Torsten; Berg, Arne; Dugstad, Harald; Klaveness, Jo; Krautwurst, Klaus D.; and Rongved, Pal, 5,348,954, Cl 514-227.500.
Hansen, Per-Egil; Holtermann, Hugo; and Wille, Knut, 5,349,085, Cl. 564-153.000

Nyman, May: *See—*
Desu, Seshu B.; Nyman, May; and Agaskar, Pradyot A., 5,348,631, Cl. 204-157.400.

O.A.M. S.p.a.: *See—*
Brintazzoli, Renato, 5,348,219, Cl. 229-131.100.

O.C.L.A.P. s.r.l.: *See—*
Losito, Pietro, 5,347,757, Cl. 49-255.000.

Oba, Masayuki; Hayase, Rumiko; Kihara, Naoko; Hayase, Shuzi; Mikogami, Yukihiro; Nakano, Yoshihiko; Oyasato, Naohiko; Matake, Shigeru; and Takano, Kei, to Kabushiki Kaisha Toshiba. Photosensitive resin composition for forming polyimide film pattern comprising an o-quinone diazide photosensitive agent. 5,348,835, Cl. 430-192.000.

Obara, Hideto: *See—*
Ishibashi, Tadaya; Sasaki, Masanori; Obara, Hideto; Kano, Hiroshi; and Yamashita, Shintaro, 5,348,628, Cl. 204-153.000.

Obara, Sanshiro; Watabe, Mitsuru; Minami, Rika; and Morinaga, Shigeki, to Hitachi, LTD. Analog-digital converting device. 5,349,351, Cl. 341-141.000.

Obayashi, Hirokatu: *See—*
Shibata, Ryoji; Kobayashi, Masahiko; Ban, Yukinobu; and Obayashi, Hirokatu, 5,347,762, Cl. 451-15.000.

Obermeier, Horst, to Kavlico Corporation. Pre-stressed pressure transducer and method of forming same. 5,349,491, Cl. 361-283.400.

O'Brien, Stephen: *See—*
Mehuys, David G.; O'Brien, Stephen; and Welch, David F., 5,349,602, Cl. 372-98.000.

Ocampo, Salvador C. Railroad switch heating control. 5,348,257, Cl. 246-220.000.

Occam Research Corporation: *See—*
Potts, George W., Sr.; Breen, Patrick; and Paushter, Robert, 5,349,526, Cl. 364-419.100.

Oce-Nederland, B.V.: *See—*
Lambregts, Augustines W. M.; Remmen, Johannes H. P.; and Deckers, Hubertus G. A., 5,348,279, Cl. 270-53.000.

Ochiai, Kanehiro: *See—*
Nakayama, Takashi; Ochiai, Kanehiro; and Matsumoto, Masaki, 5,349,616, Cl. 376-282.000.

Ochiyama, Takahashi: *See—*
Nishimura, Masaaki; and Ochiyama, Takahashi, 5,348,142, Cl. 198-803.010.

Oda, Noriyuki; Maeno, Hiroshi; Higashi, Katsumi; Toriyama, Akira; and Shimoda, Hiromi, to Asahi Glass Company Ltd. Filtering method of flue gas of a boiler and a filter apparatus for hot gas. 5,348,568, Cl. 95-14.000.

Oda, Osamu: *See—*
Amano, Toshio; Oda, Osamu; and Saitoh, Mitsumasa, 5,349,444, Cl. 348-711.000.

Odagawa, Satoshi, to Pioneer Electronic Corporation. Direction detecting device. 5,349,530, Cl. 364-449.000.

Odagawa, Satoshi: *See—*
Masumoto, Yutaka; and Odagawa, Satoshi, 5,349,529, Cl 364-424.010

Odaka, Masaki: *See—*
Nakajima, Sadahiro; Endoh, Naoshi; Kataoka, Kenzo; and Odaka, Masaki, 5,348,552, Cl. 606-13.000.

Odawara Engineering Co., Ltd.: *See—*
Nishimura, Masaaki; and Ochiyama, Takahashi, 5,348,142, Cl. 198-803.010.

Odawara, Shinji: *See—*
Haga, Takahiro; Sugi, Hideo; Shigehara, Itaru; Odawara, Shinji; Yotsuya, Syuichi; Kimura, Hirohiko; and Yamamoto, Kazuhiro, 5,348,967, Cl. 514-352.000.

Odman, Svante; Karlsson, Jan-Olof; and Axelsson, Krister, deceased (by Axelsson, Martin, heir), to Forsvarets Forskningsanstalt. Method and device for the detection of vessel dilatation components. 5,348,851, Cl. 435-4.000.

O'Donnell, Matthew: *See—*
Dunki-Jacobs, Robert J.; Hall, Anne L.; Bernardi, Richard B.; O'Donnell, Matthew; Thomas, Lewis J.; Welles, Kenneth B., II; and Engeler, William E., 5,349,525, Cl. 364-413.250.

Oertli, Gustav, to Sulzer Rueti AG. Device for coupling and uncoupling heald shafts. 5,348,053, Cl. 139-57.000

Oertli, Gustav, to Sulzer Ruti AG. Device for making a hinged connection between two parts in a loom. 5,348,054, Cl. 139-57.000.

Officine Meccaniche Giovanni Cerutti S.p.A.: *See—*
Fantoni, Giuseppe; Forno, Mario; Gibellino, Gianfranco; and Miglietta, Giampiero, 5,347,926, Cl. 101-219.000

Ogasahara, Naokazu; and Miyai, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Remote control system for controlling a television receiver. 5,349,460, Cl. 359-142.000.

Ogasawara, Isamu: *See—*
Takahashi, Tomonori; Kimura, Masato; Oka, Masataka; and Ogasawara, Isamu, 5,348,794, Cl. 428-213.000.

Ogawa, Hidehiro, to Nikon Corporation. Camera. 5,349,417, Cl. 354-485.000

Ogawa, Katsuhisa; and Sakuragi, Takamasa, to Canon Kabushiki Kaisha. Drive circuit for semiconductor light-emitting device. 5,349,595, Cl. 372-38.000.

Ogawa, Kohji: *See—*
Kawano, Minori; Ogawa, Kohji; Tsukagoshi, Sadayuki; Kuroiwa, Hiroyuki; Sato, Masato; Ishizaki, Yasuhiro; Komatsu, Fumiaki; and Kuroda, Eiichi, 5,349,694, Cl. 455-11.100.

Ogawa, Shin-ichiro: *See—*
Hirata, Toshihiro; and Ogawa, Shin-ichiro, 5,348,932, Cl. 504-106.000

Ogawahara, Tatsuo: *See—*
Takahashi, Kimio; Miyake, Katsuya; Kunimi, Takashi; Ogawahara, Tatsuo; Kobayashi, Tadashi; and Fukaya, Kunio, 5,348,123, Cl. 188-72.100.

Ogden, John E.; Bryant, Peter L.; and Caron, Lois L., to Abbott Laboratories. Test apparatus employing pneumatic bridge for testing pneumatic flow resistance and related methods. 5,347,847, Cl. 73-37.000.

Ogiso, Koichi: *See—*
Kobayashi, Masao; Ogiso, Koichi; Goto, Shinichi; Mizutani, Haruyasu; Goto, Masaomi; and Iwasaki, Hiroshi, 5,347,759, Cl. 49-496.100.

Oguro, Masaki, to Sony Corporation. Apparatus and methods for transmitting compressed digital image signals. 5,349,384, Cl. 348-405.000

Oh-Kita, Motomu: *See—*
Watanabe, Seigo; and Oh-Kita, Motomu, 5,349,092, Cl 568-480.000.

Ohashi, Yasuo, to Ricoh Company, Ltd. Printer for scanning original document and copy sheet and computing magnification ratio. 5,349,422, Cl. 355-243.000

Ohdake, Takayuki; Ohmori, Toshimichi; Takamura, Toshihiro; Yamada, Takemi; and Sampei, Tetsuya, to NKK Corporation. Vibration-damping alloy. 5,348,701, Cl. 420-73.000.

Ohira, Hiroyuki: *See—*
Miyake, Shigenobu; Kibino, Nobuyuki; Monoi, Takashi; Ohira, Hiroyuki; and Inazawa, Shintaro, 5,349,032, Cl. 526-127.000.

Ohishi, Chikashi; Sasayama, Hiroyuki; and Kanzaki, Hisao, to Fuji Photo Film Co., Ltd. Sheet-like material processing apparatus. 5,349,413, Cl. 354-324.000.

Ohkawa, Takashi: *See—*
Doya, Masaharu; Ohkawa, Takashi; Kanbara, Yutaka; Okamoto, Aksushi; and Kimizuka, Kenichi, 5,349,077, Cl. 558-260.000.

Ohkura, Tadao; and Ashida, Mamoru, to Nippon Graphite Industries Ltd. Water-soluble lubricants for hot plastic working. 5,348,672, Cl 252-42.000.

Ohlendorf, Dieter: *See—*
Hemmerling, Wolfgang; Dubal, Hans-Rolf; Escher, Claus; Illian, Gerhard; Inoguchi, Yoshio; Muller, Ingrid; Murakami, Mikio; Ohlendorf, Dieter; and Wingen, Rainer, 5,348,684, Cl. 252-299.610.

Ohlson, Eric W.: *See—*
Mirhakimi, Siamak; Earleson, Walter E.; and Ohlson, Eric W., 5,347,857, Cl. 73-118.100.

Ohmachi, Junya; Saitou, Kengo; and Sasaki, Kazuo, to Sony Corporation. Tape cartridge with corner case notch to prevent inadvertent writing of data on tape. 5,348,243, Cl. 242-342.000.

Ohmori, Toshimichi: *See—*
Ohdake, Takayuki; Ohmori, Toshimichi; Takamura, Toshihiro; Yamada, Takemi; and Sampei, Tetsuya, 5,348,701, Cl 420-73.000.
Ohmura, Ryuichi, to Fuji Kogyo Co., Ltd. Reel seats for use on fishing rods. 5,347,742, Cl. 43-22.000.
Ohmura, Toru: *See—*
Hanada, Koji; Hamuro, Makiko; Yoshikawa, Takeshi; Ohmura, Toru; and Kashioka, Motohiko, 5,348,348, Cl. 283-91.000
Ohnishi, Shuji: *See—*
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Ohno, Eiji; Yamada, Noboru; Nagata, Kenichi; Nishiuchi, Kenichi; and Akahira, Nobuo, to Matsushita Electric Industrial Co., Ltd. Optical information recording medium. 5,348,783, Cl. 428-64.000
O'Hoy, Kim L.: *See—*
Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Lightowlers, Marshall W.; O'Hoy, Kim L.; Johnson, Kevin S.; Heath, David D.; Lawrence, Stephen B.; and Vinton, Jennifer G., 5,348,740, Cl. 424-191.100.
Ohsaki, Seiji: *See—*
Kuriki, Nobuharu; Ohsaki, Seiji; Shibue, Hideaki; and Noro, Yoshiki, 5,348,338, Cl. 280-707.000.
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Ohsawa, Toshiyuki: *See—*
Asami, Keiichi; Takahashi, Hideki; Inoue, Katsuo; Echigo, Yoshiaki; Ohsawa, Toshiyuki; and Kabata, Toshiyuki, 5,348,818, Cl. 429-213.000
Ohta, Nobuaki, to Kabushiki Kaisha Toshiba. Cooking appliance with multifunction knobs. 5,349,164, Cl. 219-506.000
Ohta, Takashi: *See—*
Ito, Hiroshi; Sasaki, Koji; Okumoto, Tadaoki; Ohta, Takashi; Matsushita, Mitsumasa; and Sato, Norio, 5,348,929, Cl. 502-402.000.
Ohta, Tokuyoshi: *See—*
Maejima, Yoshihisa; Nishimura, Seiya; Takabayashi, Masayoshi; and Ohta, Tokuyoshi, 5,347,709, Cl. 29-827.000
Ohtake, Motoyuki: *See—*
Soshi, Isao; Miyamoto, Hidenori; Ohtake, Motoyuki; and Wakabayashi, Hiroshi, 5,349,402, Cl. 354-106.000
Ohtomo, Naoki; and Kimura, Shigeo, to Aloka Co., Ltd. Bone assessment apparatus. 5,348,009, Cl. 128-653.100.
Ohya, Hiroshi: *See—*
Saji, Nobuyoshi; Ohya, Hiroshi; Asakura, Hiroshi; and Nagai, Shunji, 5,347,819, Cl. 62-51.300.
Oka, Hitoshi: *See—*
Shigemura, Seizi; Oka, Hitoshi; and Shindo, Motokazu, 5,348,590, Cl. 148-23.000
Oka, Masahiko; Kishine, Mitsuru; Saito, Hideya; and Kokumai, Masuo, to Daikin Industries, Ltd. Fluorovinyl ether. 5,349,093, Cl. 568-615.000
Oka, Masataka: *See—*
Takahashi, Tomonori; Kimura, Masato; Oka, Masataka; and Ogasawara, Isamu, 5,348,794, Cl. 428-213.000
Oka, Michio: *See—*
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Oka, Miwako: *See—*
Morishima, Seiji; Oka, Miwako; and Yoji, Yamazaki, 5,348,733, Cl. 424-52.000.
Okada, Keiji; Murata, Kazuhiko; Tojo, Tetsuo; Kawasaki, Masaaki; and Takata, Toshimasa, to Mitsui Petrochemical Industries, Ltd. Vulcanizable rubber composition. 5,349,020, Cl. 525-237.000
Okada, Mitsuo: *See—*
Takashima, Hiroyuki; Okada, Mitsuo; and Shimizu, Teruo, 5,348,676, Cl. 252-56.00R
Okado, Takeshi, to Kabushiki Kaisha Toshiba. Ultrasonic diagnostic apparatus. 5,348,014, Cl. 128-660.090.
Okami, Takehide: *See—*
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Okamoto, Aksushi: *See—*
Doya, Masaharu; Ohkawa, Takashi; Kanbara, Yutaka; Okamoto, Aksushi; and Kimizuka, Kenichi, 5,349,077, Cl. 558-260.000.
Okanobu, Taiwa, to Sony Corporation. Power supply circuit. 5,349,285, Cl. 323-312.000.
Okazaki, Yuichi: *See—*
Isojima, Shinzo; Akatani, Akiko; Okazaki, Yuichi; and Sugimoto, Masanobu, 5,348,866, Cl. 435-673.000
O'Keefe, Daniel P.: *See—*
Dean, Caroline; Harder, Patricia A.; Leto, Kenneth J.; O'Keefe, Daniel P.; Omer, Charles A.; Romesser, James A.; and Tepperman, James M., 5,349,127, Cl. 800-205.000
Oki Electric Industry Co., Ltd.: *See—*
Arai, Yasuo; and Sato, Hisatake, 5,349,669, Cl. 395-750.000.
Mizutani, Minoru; and Isaka, Norihisa, 5,348,403, Cl. 400-196.000
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Oki, Toshihide: *See—*
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Okrucky, James A.: *See—*
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Okumoto, Tadaoki: *See—*
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Okunishi, Hiromu: *See—*
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Olaveson, Richard J.: *See—*
Tanzer, Herbert J.; Goodarzi, Gholam A.; and Olaveson, Richard J., 5,349,498, Cl. 361-689.000
Oldiges, Donald A.; and Joseph, Anthony W., to Jet-Lube, Inc. Coating and bonding composition. 5,348,668, Cl. 252-26.000.
Olin Corporation: *See—*
Gardner, Robert J.; and Buenemann, Morris C., Jr., 5,347,932, Cl 102-451.000.
Kaczur, Jerry J.; Cawlfield, David W.; Woodard, Kenneth E., Jr.; and Duncan, Budd L., 5,348,683, Cl. 252-187.310.
Randlett, Myron R.; and Dupy, Jerome M., 5,348,213, Cl. 228-146.000
Olins, Peter O.: *See—*
Lee, Stephen C.; Leuch, Mark S.; Luckow, Verne A.; and Olins, Peter O., 5,348,886, Cl. 435-320.100.
Oliveau, Olivier: *See—*
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Oliver, Christopher J., to Cabletron Systems, Inc. Flexible module interconnect system. 5,349,343, Cl. 340-825.520.
Olleandorff, Riitta L. A.: *See—*
Kukes, Simon G.; Hopkins, P. Donald; Olleandorff, Riitta L. A.; Hendler, Pablo D.; Ontiveros, Cynthia D.; and Washecheck, Don M., 5,348,928, Cl. 502-306.000
Olson, David H.: *See—*
Beck, Jeffrey S.; Kuehl, Guenter H.; Olson, David H.; Schlenker, John L.; Stucky, Galen D.; and Vartuli, James C., 5,348,687, Cl 252-582.000
Olson, Gordon D.: *See—*
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Olson, Jim: *See—*
Tyler, Larry; Burbidge, Jack; Gilliam, Steve; Hampton, Gary; Olson, Jim; and Simmons, Ron, 5,347,686, Cl. 16-247.000.
Olsson, Jorgen: *See—*
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Oltman, Robert L.; and Carey, Michael D., to American Standard Inc. Apparatus and method of oil charge loss protection for compressors. 5,347,821, Cl. 62-84.000.
Olympus Optical Company Limited: *See—*
Kurasawa, Yuko; Noda, Satoshi; and Fukuoka, Morinao, 5,349,473, Cl. 359-654.000.
Mikamo, Noboru, 5,349,577, Cl. 369-47.000.
Shimizu, Seiji; and Takashima, Masaru, 5,349,474, Cl. 359-675.000.
Omer, Charles A.: *See—*
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Omi, Ikuhiro; Azumai, Hideo; and Iwatsubo, Satoshi, to Mita Industrial Co., Ltd. Image data processing circuit and method of accessing storing means for the processing circuit. 5,349,449, Cl. 358-448.000.
Omnific International Inc.: *See—*
Mizzi, John V.; and Merte, Donald A., 5,348,197, Cl. 222-401.000.
Omnific International Ltd.: *See—*
Mizzi, John V.; and Merte, Donald A., 5,348,190, Cl. 222-82.000.
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Omniglow Corporation: *See—*
Cohen, Martin L.; Bay, William E.; and Errigo, Lynn E., 5,348,690, Cl. 252-700.000
Omori, Motofumi: *See—*
Shibahara, Masahiko; Takeshige, Nobuhide; Asai, Hiroshi; and Omori, Motofumi, 5,348,069, Cl. 164-34.000.
O'Neill, Brian T.: *See—*
O'Rourke, Thomas C.; O'Neill, Brian T.; Cook, Rodney C.; Taner, Kuntay O.; Synder, Steven P.; and Joyner, Adam R., 5,349,658, Cl. 395-700.000.
Onishi, Janet C.: *See—*
Schwartz, Robert E.; Onishi, Janet C.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez, Fernando; Diez, Maria T.; Vicente, Francisca; Gorrochategui, Julian; Helms, Gregory L.; and Pramanik, Barnali, 5,348,970, Cl. 514-422.000.
Onishi, Kenji: *See—*
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Onishi, Shigeo: *See—*
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Ono, Jody: *See—*
Prince, Jeffrey T.; Rawls, Robert L.; Dempster, Philip T.; and Ono, Jody, 5,348,519, Cl. 482-6.000
Ono, Mitsuya: *See—*
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Onozuka, Haruo: *See—*
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Ontiveros, Cynthia D.: *See—*
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Onuki, Tetsuro: *See—*
Ishihama, Hitoshi; Hayakawa, Yasuyoshi; Asano, Naoki; Horikoshi, Kenichi; Onuki, Tetsuro; Toma, Akihiro; and Yamagata, Masanori, 5,348,284, Cl. 271-160.000.
Oonuki, Masahide; Yamaguchi, Tetsuo; Nakahara, Akihiro; and Miki, Mitsunori, to Sumitomo Rubber Industries, Ltd. Structural member of pipe shape. 5,348,777, Cl. 428-34.500.
Oppelt, Arnulf: *See—*
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Oppenlaender, Knut: *See—*
Mohr, Juergen; Oppenlaender, Knut; Balzer, Wolf-Dieter; Thomas, Juergen; and Schreyer, Peter, 5,348,560, Cl. 44-387.000.
Opto Tech Corporation: *See—*
Shie, Jin-Shown; and Weng, Ping-Kuo, 5,347,869, Cl. 73-755.000.
Orazi, Richard J.: *See—*
Russell, Stephen D.; Sexton, Douglas A.; and Orazi, Richard J., 5,348,609, Cl. 156-345.000.
Ordo, Richard A., to General Motors Corporation. Power transmission. 5,347,879, Cl. 74-331.000.
O'Rell, Dennis: *See—*
Berna, Claude; O'Rell, Dennis; Praet, Herve; Rich, Gerard; Rodgers, Richard; and Stutz, Jean P., 5,347,927, Cl. 101-401.100.
Orezzi, Piergiuseppe: *See—*
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Origin Electric Company, Limited: *See—*
Ushiki, Shuichi; and Saito, Ryoji, 5,349,514, Cl. 363-21.000.
Orita, Ryozo: *See—*
Ashihara, Teruaki; Tone, Shingo; Saito, Toshimitsu; and Orita, Ryozo, 5,349,022, Cl. 524-414.000
O'Rourke, Patrick E.; Livingston, Ronald R.; and Prather, William S., to United States of America, Energy. Method and apparatus for optical temperature measurement. 5,348,396, Cl. 374-161.000.
O'Rourke, Thomas C.; O'Neill, Brian T.; Cook, Rodney C.; Taner, Kuntay O.; Synder, Steven P.; and Joyner, Adam R. Graphical user interface. 5,349,658, Cl. 395-700.000.
Orr, Joseph A.; and Kofoed, Scott A., to Korr Medical Technologies Inc. Differential pressure flowmeter with enhanced signal processing for respiratory flow measurement. 5,347,843, Cl. 73-3.000.
Ortiz, John E., to Cardiometrics, Inc. Rotary connector for use with small diameter flexible elongate member having electrical capabilities. 5,348,481, Cl. 439-25.000.
Osaka Gas Company Limited: *See—*
Ippommatsu, Masamichi; Sasaki, Hirokazu; Otoshi, Shoji; Suzuki, Minoru; and Kajimura, Atsuko, 5,348,776, Cl. 427-586.000.
Oshikiri, Masamitsu: *See—*
Yamada, Seiji; and Oshikiri, Masamitsu, 5,349,553, Cl. 365-185.000.
Oshino, Fumio; and Yamaki, Masahiko, to Mitsui Toatsu Chemicals, Incorporated. Reusable fixture for carrier tape. 5,349,236, Cl. 257-701.000.
OSi Specialties, Inc.: *See—*
Gambale, Ronald J.; and Barbera, Bruce C. J., 5,348,769, Cl. 427-387.000.
Osuka, Masahiro: *See—*
Matsumoto, Koji; Morimoto, Masaru; Osuka, Masahiro; and Uno, Naomi, 5,349,017, Cl. 525-84.000.
Otoshi, Shoji: *See—*
Ippommatsu, Masamichi; Sasaki, Hirokazu; Otoshi, Shoji; Suzuki, Minoru; and Kajimura, Atsuko, 5,348,776, Cl. 427-586.000.
Otrusina, Edward C. Quick-release connector. 5,347,693, Cl. 24-597.000.
Otsuka, Akio: *See—*
Kuwabara, Haruyoshi; Otsuka, Akio; Maki, Yasuyuki; and Kashida, Meguru, 5,348,919, Cl. 501-97.000.
Otsuka Pharmaceutical Co., Ltd.: *See—*
Uetsuki, Setsuyoshi; Sato, Osamu; Nakayama, Yasuo; and Hirai, Yoshikatsu, 5,348,858, Cl. 435-7.100.
Ouchi, Toshihiko; and Sakata, Hajime, to Canon Kabushiki Kaisha. Optical semiconductor apparatus, a method of driving the same and an optical transmission system using the same. 5,349,598, Cl. 372-50.000
Outboard Marine Corporation: *See—*
Lassanske, George G., 5,348,500, Cl. 440-89.000.
Outlook Graphics Corporation: *See—*
Maroszek, Raymond V.; and Coots, Daniel R., 5,348,156, Cl. 206-491.000
Overhead Door Corporation: *See—*
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Ovonic Battery Company, Inc.: *See—*
Ovshinsky, Stanford R.; Corrigan, Dennis; Venkatesan, Srini; Young, Rosa; Fierro, Christian; and Fetcenko, Michael A., 5,348,822, Cl. 429-223.000.
Ovshinsky, Stanford R.; Corrigan, Dennis; Venkatesan, Srini; Young, Rosa; Fierro, Christian; and Fetcenko, Michael A., to Ovonic Battery Company, Inc. Chemically and compositionally modified solid solution disordered multiphase nickel hydroxide positive electrode for alkaline rechargeable electrochemical cells. 5,348,822, Cl. 429-223.000.
Ow, Steven G.; and Connolly, Peter J. Quadrifilar helix antenna 5,349,365, Cl. 343-895.000
Owada, Tamotsu: *See—*
Yamagishi, Yasuo; and Owada, Tamotsu, 5,349,155, Cl 219-121.710.
Owen, Charles D.; Rembert, Michael E.; and Davis, Albert S., to Bettis Corporation. Locking device. 5,348,271, Cl. 251-95.000.
Owen, Hartley: *See—*
Harandi, Mohsen N.; and Owen, Hartley, 5,348,707, Cl 422-129.000.
Owens, Gregg R.: *See—*
Justak, John F.; and Owens, Gregg R., 5,348,401, Cl. 384-101.000.
Oyagi, Yashichi; Nakamura, Kiyonori; and Taniuchi, Keiji, to Nippon Steel Corporation. Sheet steel easy open can lid superior in can openability and not requiring repair coating of inner and outer surfaces. 5,348,809, Cl. 428-622.000
Oyasato, Naohiko: *See—*
Oba, Masayuki; Hayase, Rumiko; Kihara, Naoko; Hayase, Shuzi; Mikogami, Yukihiro; Nakano, Yoshihiko; Oyasato, Naohiko; Matake, Shigeru; and Takano, Kei, 5,348,835, Cl. 430-192.000.
Oyha, Takeji, to Mazda Motor Corporation. Automotive engine hood latch mechanism. 5,348,355, Cl. 292-11.000.
Ozaki, Osamu: *See—*
Nishina, Masaaki; and Ozaki, Osamu, 5,349,049, Cl. 528-485.000.
Ozcayir, Yurdagul: *See—*
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Ozimek, Edward J.: *See—*
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Ozu, Tatsuya; Yasunaga, Masahiro; and Inoue, Shigeyasu, to Kabushiki Kaisha Sakura Kurepasu. Writing implement and a fabricating method thereof. 5,348,411, Cl. 401-219.000.
Pacheco, Gilbert R.: *See—*
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Pacholok, David, to Everbrite, Inc. Dimmer and ground fault interruption for solid state neon supply. 5,349,273, Cl. 315-307.000.
Pacific Electricord Company: *See—*
Carmo, Robert A.; and Gilbert, George A., Jr., 5,348,240, Cl. 242-401.000
Pacific Pearl Culture Ltd.: *See—*
Fankboner, Peter V., 5,347,951, Cl. 119-244.000
Packer, Allan, deceased (by Packer, Vivien, legal representative); and Yoell, Richard W. F., to Unilever Patent Holdings B.V. Dough product. 5,348,751, Cl. 426-94.000.
Packer, Vivien, legal representative: *See—*
Packer, Allan, deceased; and Yoell, Richard W. F., 5,348,751, Cl. 426-94.000
Padawer, Robert S. Scroll frame including slots and fabric engaging rods. 5,347,732, Cl. 38-102.400.
Padula, Joseph P.: *See—*
Ellis, David W., 5,348,542, Cl. 604-173.000
Page, Michael C., to LTC Roll & Engineering. Elastomeric laminated sheet metal parts. 5,348,810, Cl. 428-625.000.
Page, Samuel W.: *See—*
Sternberg, Esther M.; Gold, Philip W.; and Page, Samuel W., 5,348,729, Cl. 424-9.000.
Paintal, Gurpal: *See—*
Shani, Jacob; Paintal, Gurpal; and Wand, Bruce, 5,348,545, Cl. 604-281.000.
Pajot, Alain D., to Symac. Apparatus for extracting a substance stored in the divided state in a silo. 5,348,195, Cl. 222-227.000
Pakusch, Joachim: *See—*
Daeumer, Bernd; Dragon, Andree; Beckerle, Wilhelm F.; Franzmann, Gernot; Neutzner, Josef; Wistuba, Eckehardt; Pakusch, Joachim; and Angel, Maximilian, 5,348,993, Cl. 524-44.000.
Palitex Project-Company GmbH: *See—*
Butzke, Frank; Fink, Heinz; and Leupers, Wolfgang, 5,347,805, Cl. 57-279.000.
Palmer, Brian D.: *See—*
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Palmer, Clyde D.: *See—*
Bacon, Dennis R.; Borcher, Thomas A., Sr.; Corona, Alessandro, III; Palmer, Clyde D.; and Trinh, Toan, 5,348,667, Cl. 252-8.600
Palmer, R. Gary. Vertical tensioning and anti-rotational device for use with single continuous rope conveyor lifting system. 5,348,137, Cl. 198-643.000.
Palmers, Goran; and Maupoix, Max, to Institutet For Verkstadsteknisk Forskning. Method and apparatus for the production of reinforced plastic objects. 5,348,697, Cl. 264-102.000.
Panayotatos, Nikos, to Regeneron Pharmaceuticals. Modified ciliary neurotrophic factors. 5,349,056, Cl. 530-399.000
Panelleria, Joseph A.: *See—*
Smith, Ernest L.; and Panelleria, Joseph A., 5,348,196, Cl. 222-386.000.
Pangerl, Michael A., to Minnetonka Warehouse Supply, Inc. Accelerometer incorporating a driven shield. 5,347,867, Cl. 73-517.00R.
Papadopoulos, Christos: *See—*
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Pape, Werner; and Dronier, Pierre, to Robert Bosch GmbH. Fuel injection device for internal combustion engines. 5,347,970, Cl. 123-506.000.

Papillon, Jean; and York, Frederick J., to Haemoentics Corporation. Pheresis apparatus. 5,348,533, Cl. 604-4.000.

Pappas, Charles A. Medical waste disposal system. 5,348,235, Cl. 241-41.000.

Pappas, Phillip M., Jr., to Univex Corporation. Safety guard system for food mixer. 5,348,393, Cl. 366-207.000.

Papst Licensing GmbH: *See*—
Muller, Rolf, 5,349,275, Cl. 318-254.000.

Papuchon, Michel: *See*—
Delacourt, Dominique; Papuchon, Michel; Lallier, Eric; and Armani, Florence, 5,349,466, Cl. 359-326.000

Paradigm Technology, Inc.: *See*—
Yen, Ting-Pwu, 5,348,897, Cl. 437-40.000.

Parallel PCs, Inc.: *See*—
Rosenberry, Steven, 5,349,682, Cl. 395-800.000

Parent, James B.: *See*—
Little, Roger G., II; Gazzano-Santoro, Helene; and Parent, James B., 5,348,942, Cl. 514-12.000

Parikh, Pradip G., to Boeing Company, The. Supersonic aircraft and method. 5,348,256, Cl. 244-208.000

Park, Byeong Yeol; Chung, Sang Ki; Jung, Bal; Jeong, Keun Choon; and Kim, Jong Sik, to Agency of Defense Development. Method for manufacturing pressure container having opposite dome ends with different opening diameters. 5,348,698, Cl. 264-154.000.

Park, Chung O., to Goldstar Co., Ltd. Portable audio device. 5,349,575, Cl. 369-1.000.

Park, Chung P., to Dow Chemical Company, The. Process for making a dimensionally-stable open-cell polypropylene foam with organic blowing agents. 5,348,795, Cl. 428-220.000.

Park, Jong S., to Daewoo Electronics Co., Ltd. Cassette loading device for use with a video cassette recorder. 5,349,482, Cl. 360-96.500

Park, Yong-Bo; and Lim, Hyung-Kyu, to SamSung Electronics Co., Ltd. Internal voltage generating circuit. 5,349,559, Cl. 365-201.000.

Parke, Ian; Nilsson, Michael E.; Beaumont, David O.; and Morrison, David G., to British Telecommunications public limited company Two layer video signal coding. 5,349,383, Cl. 348-397.000.

Parker, Anthony A.; Anderson, Edward M.; and Stanzione, Todd T., to Aluminum Company of America. Surface treated ceramic powders. 5,348,760, Cl. 427-9.000

Parker, David H. Flashlight with pressure relief valve. 5,349,507, Cl. 362-158.000

Parker, David H. Electrical lantern with multiple position connecting handle. 5,349,512, Cl. 362-399.000

Parker Hannifin RAK S.A.: *See*—
Badoureaux, Jean-Pierre, 5,348,354, Cl. 285-308.000

Parker, Rex: *See*—
Wright, John J.; Pearce, Bradley C.; Parker, Rex; and Qureshi, Asaf A., 5,348,974, Cl. 514-456.000.

Parker, Robert P., to Bose Corporation. Antenna tuning system for operation over a predetermined frequency range. 5,349,700, Cl. 455-193.200

Parlour, David B.; Goetting, F. Erich; and Trimberger, Stephen M., to Xilinx, Inc. Adaptive programming method for antifuse technology 5,349,248, Cl. 307-465.000.

Parson, Ronald W. Wind velocity signalling apparatus. 5,349,334, Cl. 340-601.000.

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Greenleaf, David J.; Purewal, Tarlochan S.; and Jinks, Philip A., 5,348,730, Cl. 424-45.000.

Puskaric, Vladimir, to Pioneer Hi-Bred International, Inc. Inbred corn line PHTM9. 5,349,119, Cl. 800-200.000.

Qian, Qi De: *See—*
Dao, Giang T.; Qian, Qi De; Tam, Nelson N.; Gaw, Eng T.; and Fujimoto, Harry H., 5,348,826, Cl. 430-5.000.

Quad/Tech Inc.: *See—*
Quadracci, H. Richard; Voss, Karl R.; and Sainio, Jeffrey W., 5,347,726, Cl. 34-465.000.

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Queiros, Robert E. Sport net. 5,348,309, Cl. 273-411.000.

Quemada, Hector D.; Slightom, Jerry L.; Gonsalves, Dennis; and Kearney, Chris, to Upjohn Company, The. Cucumber mosaic virus coat protein gene. 5,349,128, Cl. 800-205.000.

Quest International Flavors & Good Ingredients Company, division of Indopco, Inc.: *See—*
Vedamuthu, Ebenezer R.; Henderson, James T.; and Vandenbergh, Peter A., 5,348,881, Cl. 435-252.100.

Quin, Bernard J., to Frish Pty. Ltd. Harvesting apparatus. 5,347,798, Cl. 56-8.000

Quinn, Timothy P.: *See—*
Madigan, R. Bruce; and Quinn, Timothy P., 5,349,156, Cl. 219-130.010.

Quinton Instrument Company: *See—*
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Qureshi, Asaf A.: *See—*
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R. J. Reynolds Tobacco Company: *See—*
Barnes, Russell D.; Banerjee, Chandra K.; Crooks, Evon L.; and Clearman, Jack F., 5,348,027, Cl. 131-194.000.

Rabe, Michael W.: *See—*
Kamp, Michael E.; and Rabe, Michael W., 5,347,891, Cl 81-175.000.

Rabin, Daniel U.: *See—*
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Harris, David E.; Christopher, Brian J.; and Rackett, Cary W., 5,348,442, Cl. 415-55.100

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Radoux, Henri: *See—*
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Railway Technical Research Institute: *See—*
Tateyama, Masaru; Tamura, Yukihiko; Fukuda, Kosei; Yoshida, Shigeru; and Kami, Chikashi, 5,348,424, Cl. 405-262.000.

Rainwater, Larry: *See—*
Copenhaver, Richard; Rainwater, Larry; Lane, Luther; Whittaker, Roger; Boatwright, Kevin; and Lee, Joe, 5,347,832, Cl. 66-140.00R

Raith, David: *See—*
Peeples, Frank K.; Raith, David; and Donnelly, Charles E., 5,348,434, Cl. 414-301.000.

Raju, Muppala S.; and Huh, Namdol, to Rhone-Poulenc Chimie. Resolution of hydroxychroman-2-carboxylic acid esters by enantiomeric hydrolysis. 5,348,973, Cl. 514-456.000.

Ramey, Larry E. Apparatus and method for controlling oilwell fire. 5,348,100, Cl. 169-69.000

Ramsauer, Dieter. Pivoting lever catch securable with a cylinder lock device. 5,347,834, Cl. 70-120.000.

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Eichman, Eric C.; Sommer, Bruce A.; Churley, Michael J.; and Ramsey, W. Chuck, 5,348,587, Cl. 118-723.0MP.

Rand, Cynthia L.: *See—*
Tuinstra, Hendrik; and Rand, Cynthia L., 5,349,102, Cl. 558-274.000.

Randlett, Myron R.; and Dupy, Jerome M., to Olin Corporation. Method for the manufacture of internally enhanced welded tubing. 5,348,213, Cl. 228-146.000.

Ranganath, Krishnappa: *See—*
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Ranz, Stephen J.: *See—*
Sticha, David A.; Mayer, Glenn N.; Ranz, Stephen J.; and Garbarino, John, 5,349,584, Cl. 370-97.000.

Rao, Madhukar: *See—*
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Rao, Purushothama; and Cherng, Jing-Yih, to GNB Battery Technologies Inc. Bipolar lead-acid battery. 5,348,817, Cl. 429-210.000.

Rasmussen, C. Martin. Z-bracket camper jack mounting assembly. 5,348,258, Cl. 248-218.400.

Rasmussen, Jon: *See—*
Hanson, George E.; Kunert, Steven R.; Schultz, Darald R.; Gibbs, William T.; Rasmussen, Jon; and Traeger, Robert J., 5,349,497, Cl. 361-683.000.

Ratcliff, Perry, to Micropure Inc. Oral health preparation and method. 5,348,734, Cl. 424-53.000.

Rathbone, Richard R.; and Wardlaw, Stephen C., to Yale University. Adapter for microscope. 5,349,468, Cl. 359-390.000.

Rather, Brenda L.: *See—*
Rather, Lewis L.; Rather, Brenda L.; and Mobley, Larry W., 5,347,740, Cl. 42-94.000.

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Strandli, Kare R.; Angard, Inge M.; and Willassen, Einar, 5,347,907, Cl. 86-20.140.

Rawls, Robert L.: *See—*
Prince, Jeffrey T.; Rawls, Robert L.; Dempster, Philip T.; and Ono, Jody, 5,348,519, Cl. 482-6.000.

Ray, Bryan L.: *See—*
Lin, Edmund; and Ray, Bryan L., 5,348,872, Cl. 435-172.100.

Ray, Hemen, to United States of America, Navy. Method of making an offset corrugated sandwich construction. 5,348,601, Cl. 156-155.000

Raytheon Company: *See—*
Huettner, Steven E.; Daly, Maureen A.; and Fitzgerald, Derek J., 5,349,312, Cl. 333-81.00A.
Shaw, Beverley A., 5,348,934, Cl. 505-125.000.

RCA Thomson Licensing Corporation: *See—*
Keller, Anton W., 5,349,389, Cl. 348-625.000.
Megeid, Magdy, 5,349,515, Cl. 363-21.000.
Megeid, Magdy, 5,349,516, Cl. 363-21.000.

RDP Marathon Inc.: *See—*
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Read, Bradley I.: *See—*
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Ready Metal Manufacturing Company: *See—*
Jaster, Dale R.; Vestuto, Russell J.; and Maruszak, Ronald S., 5,347,755, Cl. 49-25.000.

Reagan, Peter; Scoville, Ann N.; and Leaf, Rebecca, to Thermo Electron Corporation. Method of forming composite articles from CVD gas streams and solid particles or fibers. 5,348,765, Cl. 427-180.000.

Recher, Gilles: *See—*
Vasselin, Thierry; Vuachet, Michel; and Recher, Gilles, 5,348,804, Cl. 428-423.100

Recoton Corporation: *See—*
Borchardt, Robert L.; McGreevy, William T.; Nawarange, Ashok; and Rodriguez, Efrain L., 5,349,386, Cl. 348-485.000

Rector, James L.: *See—*
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Rector, Robert E., to Gulton Industries, Inc. Multiple output ballast circuit. 5,349,272, Cl. 315-294.000.

Reddy, Parameswara M.; and Hanna, Naeem B., to Beckman Instruments, Inc. Methods and reagents for cleaving and deprotecting oligonucleotides. 5,348,868, Cl. 435-91.100

Redetzke, Donovan A., to J & D Sales. Improved fan housing with easy access. 5,348,447, Cl. 416-247.00R.

Redwine, Donald J.; Bhat, Mousumi; and Smayling, Michael, to Texas Instruments Incorporated. Field effect transistor with a lightly doped drain. 5,349,225, Cl. 257-336.000.

Reed, Francis A., to Hughes Aircraft Company. Least mean square (LMS) normalizer for active sonar. 5,349,567, Cl. 367-100.000

Reed, Irving S., to Rockwell International Corporation. Secure remote control system. 5,349,459, Cl. 359-142.000.

Reeme, Mahan L.; Williams, Barry N.; and Kauffman, Glenn A., to Tanknology Corporation International. Water sensor that detects tank or vessel leakage. 5,347,849, Cl. 73-49.200.

Regeneron Pharmaceuticals: *See—*
Panayotatos, Nikos, 5,349,056, Cl. 530-399.000.

Reguiero, Jose F., to Chrysler Corporation. Valve train for internal combustion engines. 5,347,964, Cl. 123-90.220.

Rehwinkel, Heiko: *See—*
Jelich, Werner; Rehwinkel, Heiko; Klauke, Friedrich; Konig, Dieter; and Kalthoff, Udo, 5,348,572, Cl. 96-113.000

Reichert, William W.; and Cooperman, Murray C., to Rheox, Inc. Polyamide ester rheological additive, a solution containing the additive and thickened compositions containing the additive. 5,349,011, Cl. 524-602.000.

Reilly, James F.: *See—*
Grudzien, Christopher P., Jr.; Malloy, Robert; and Reilly, James F., 5,347,851, Cl. 73-53.010.

Rein, Russsell J.: *See—*
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Reina, Debra A.: *See—*
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Reiner, Robert: *See—*
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Rembert, Michael E.: *See—*
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Renbaum, Louis: *See—*
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Renko, John E. Expanding and contracting bicycle rim. 5,348,379, Cl 301-32.000.

Renner, Wolf, to Emhart, Inc. Process for the electric welding of two weld parts. 5,349,152, Cl. 219-99.000.

Replas Incorporated: *See—*
Stuart, James L., 5,348,465, Cl. 425-505.000

Research Development Corporation of Japan: *See—*
Mizuno, Koji, 5,349,465, Cl. 359-325.000.

Research & Manufacturing Co., Inc.: *See—*
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Rey, Gonzalo J.: *See—*
Garnjost, Kenneth D.; and Rey, Gonzalo J., 5,347,884, Cl 74-573.000

Reynard, Kenneth. Lift fitting for cargo containers. 5,348,175, Cl 220-1.500.

Reynolds, Timothy: *See—*
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Rheem Manufacturing Company: *See—*
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Rheometrics, Inc.: *See—*
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Rheox, Inc.: *See—*
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Rhinehart, Edward J.: *See—*
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Rhoads, W. Wistar: *See—*
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Rhone-Poulenc Chimie: *See—*
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Raju, Muppala S.; and Huh, Namdol, 5,348,973, Cl. 514-456.000.
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RHS Fertilizing/Spraying Systems: *See—*
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Rhys, Hugh R.: *See—*
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Riccardi, Victor; and Fassman, Arnold. Flying disk toy. 5,348,509, Cl. 446-46.000.

Ricci, Beverly S.: *See—*
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Rich, Gerard: *See—*
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Richard, Clarence N. Asphalt oil tank monitor. 5,347,863, Cl. 73-301.000

Richards, Anthony P.: *See—*
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Richards, Turner W.; Francis, Hubert C.; and Fowler, George F., Jr., to Georgia-Pacific Corporation. Gypsum fiberboard door frame 5,347,780, Cl. 52-204.100

Richwood Building Products, Inc.: *See—*
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Ricks, Robert D.: *See—*
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Ricoh Company, Ltd.: *See—*
Asami, Keiichi; Takahashi, Hideki; Inoue, Katsuo; Echigo, Yoshiaki; Ohsawa, Toshiyuki; and Kabata, Toshiyuki, 5,348,818, Cl. 429-213.000.
Furuta, Toshiyuki; Kitaguchi, Takashi; and Eguchi, Hirotoshi, 5,349,646, Cl. 395-22.000.
Kamijo, Masahiko; Saitoh, Hiroshi; Matsuura, Yozo; and Kondo, Shiro, 5,349,425, Cl. 355-298.000.
Mochizuki, Hidehiro; Ariga, Yutaka; Kuboyama, Hiroki; Uemura, Hiroyuki; and Nogawa, Chiharu, 5,348,931, Cl. 503-227.000.
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Sakamoto, Kazuo; Fujii, Tatsuya; Shiraishi, Naoto; Fukui, Ryo; Imai, Yukihiro; Sato, Yutaka; and Yamada, Yoshiteru, 5,349,610, Cl. 375-106.000

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Rieder, Klaus-Hartwig; Horsch, Gunter; and Powell, William E., to Alcatel Network Systems, Inc. Digitally controlled fractional frequency synthesizer. 5,349,310, Cl. 331-18.000.

Riley, Archie; and Goodale, Keith, to Baxter International Inc. Tablet accumulator for an automated prescription vial filling system. 5,348,061, Cl. 141-104.000.

Riley, Dennis P.: *See—*
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Riley, Paul I.: *See—*
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Riley, Robert E.: *See—*
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Rimer, J. Patton. Benthic sampling effectiveness measurer. 5,347,860, Cl. 73-170.330.

Riney, Ernest E.: *See—*
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Ring, Robert S., to Moore Business Forms, Inc. Paper web separator and guiding apparatus. 5,348,278, Cl. 270-52.000

Ringspann GmbH: *See—*
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Ringston Co., Ltd.: *See—*
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Rinnemaa, Heikki: *See—*
Lappalainen, Juhani; Rinnemaa, Heikki; Tuunanen, Ari; and Saarelainen, Pertti, 5,348,105, Cl. 175-24.000

Rippe, Jeffrey A., to Northrop Corporation. Spring retracting caster. 5,347,680, Cl. 16-19.000.

Ritt, K. Thomas. Two way opening display case. 5,348,383, Cl 312-138.100.

Rivera, Luis A.: *See—*
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Riverwood International Corporation: *See—*
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Rivshin, Isaak: *See—*
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RMS Engineering, Inc.: *See—*
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Robbins, Clarence R.: *See—*
Patel, Amrit M.; and Robbins, Clarence R., 5,348,736, Cl. 424-70.000.

Roberson, Henry C. Lawn edger with multi-directional forced air streams. 5,348,102, Cl. 172-15.000.

Robert Bosch GmbH: *See—*
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Gmelin, Karl; and Gregorius, Thomas, 5,347,969, Cl. 123-456.000.
Korasiak, Wolfgang; Muller, Elmar; Brachert, Jost; and Herzmansky, Karl-Heinz, 5,348,380, Cl. 303-103.000.
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Roberts, Jeffrey B.; and Schweitzer, Edmund O., III, to Schweitzer Engineering Laboratories, Inc. Negative sequence directional element for a relay useful in protecting power transmission lines. 5,349,490, Cl. 361-80.000.

Roberts, Robert V. Vehicle wheel changing aid. 5,348,438, Cl 414-426.000

Roberts, Victor N. Wind impeller. 5,348,443, Cl. 416-9.000.

Robertshaw Controls Company: *See—*
Katchka, Jay R., 5,348,037, Cl. 137-15.000.
Momber, Gregory J., 5,348,466, Cl. 431-6.000

Robeson, Lloyd M.; Kuphal, Jeffrey A.; and Famili, Amir, to Air Products and Chemicals, Inc. Extrudable polyvinyl alcohol compositions containing polyester-polyether block copolymers. 5,349,000, Cl. 524-388.000

Robinson, Mark D.: *See—*
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Robotic Vision Systems, Inc.: *See—*
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Rocin Laboratories, Inc.: *See—*
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Rock, Kenneth L., to Dana-Farber Cancer Institute. Class I MHC-restricted T-T hybridomas, and a CD8-transfected BW5147, fusion partner therefor. 5,348,878, Cl. 435-240.260.

Rockefeller University, The: *See—*
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Rockey, John M.: *See—*
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Rockwell International Corporation: *See—*
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Rockwell International Corporatoin: *See—*
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Rodewald, Paul G.: *See—*
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Rodgers, Richard: *See—*
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Rodriguez Colon, Jorge A., to Commonwealth of Puerto Rico. Low heel shoe convertible to high heel shoe and vice versa with an adjustable shank. 5,347,730, Cl. 36-76.00R

Rodriguez, Efrain L.: *See—*
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Rodriguez, Jean-Claude: *See—*
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Roemen, Fernand: *See—*
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Roeper, Michael: *See—*
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Roffman, Jeffrey; LaBelle, Robert; Menezes, Edgar; and Crowe, Carl, to Johnson & Johnson Vision Products, Inc. Clear axis, segmented multifocal ophthalmic lens. 5,349,396, Cl. 351-161.000.

Rogers, James B., to PH Hydraulics, Inc. Pivoting barrel injection molding machine. 5,348,464, Cl. 425-190.000.

Rogers, Joel G., to Triumf. Gamma ray detector for three-dimensional position encoding. 5,349,191, Cl. 250-367.000

Rogers, Stephen G.: *See—*
Fischhoff, David A.; and Rogers, Stephen G., 5,349,124, Cl. 800-205.000.

Rogers, Wesley A., to Electronic Development, Inc. Magnetic and electric field shield. 5,349,133, Cl. 174-36.000.

Rohm Co., Ltd.: *See—*
Nakata, Naotaro, 5,349,604, Cl. 372-103.000.
Shimoji, Noriyuki, 5,349,221, Cl. 257-324.000.
Shimoji, Noriyuki, 5,349,222, Cl. 257-326.000.

Rohm GmbH Chemische Fabrik: *See—*
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Rohm and Haas Company: *See—*
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Hodder, James J.; Lesko, Patricia M.; and Stewart, Thomas, 5,348,807, Cl. 428-473.000

Rohrbaugh, Mark E.: *See—*
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Roll Systems, Inc.: *See—*
Crowley, H. W., 5,348,277, Cl. 270-39.000.

Roll, Ulrich; Bernhard, Werner; and Reiser, Ludwig, to Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen mbH. Transformerless fluorescent lamp operating circuit, particularly for a compact fluorescent lamp, with phase-shifted inverter control. 5,349,270, Cl. 315-209.00R.

Rolls, James B. Portable carrier for wires, hoses and the like. 5,348,362, Cl. 294-151.000.

Rolls-Royce plc: *See—*
Balsdon, Julian G., 5,348,252, Cl. 244-52.000.

ROLM Company: *See—*
Dunn, Tave P.; Stell, Larry A.; Dunn, William F., Jr.; and Endick, Norman, 5,349,640, Cl. 379-387.000.

Romanenko, Michael; and Ross, Gerald D., to ElectroCom Gard, Ltd. Automatic traying and automatic sweeping device for letter mail. 5,347,790, Cl. 53-443.000.

Romesser, James A.: *See—*
Dean, Caroline; Harder, Patricia A.; Leto, Kenneth J.; O'Keefe, Daniel P.; Omer, Charles A.; Romesser, James A.; and Tepperman, James M., 5,349,127, Cl. 800-205.000.

Romine, Jeffrey L.; and Meanwell, Nicholas A., to Bristol-Myers Squibb Company. Diphenyloxazolyl-oxazoles as platelet aggregation inhibitors. 5,348,969, Cl. 514-376.000.

Rongved, Pal: *See—*
Almen, Torsten; Berg, Arne; Dugstad, Harald; Klaveness, Jo; Krautwurst, Klaus D.; and Rongved, Pal, 5,348,954, Cl. 514-227.500.

Rooney, John M.; Patel, Narendra M.; Kveglis, Albert A.; Catena, Robert J.; Di Leo, Leonard; and Avci, Selcuk, to Sun Chemical Corporation. Thermosetting printing ink composition. 5,349,021, Cl. 524-761.000

Rosby Corporation: *See—*
Yurgevich, Howard J.; and Rosby, Thomas J., 5,348,176, Cl. 220-1.500.

Rosby, Thomas J.: *See—*
Yurgevich, Howard J.; and Rosby, Thomas J., 5,348,176, Cl 220-1.500.

Roscoe, Gary W.: *See—*
Rabjohns, Douglas T.; and Roscoe, Gary W., 5,349,199, Cl. 250-561.000

Rosemount Office Systems, Inc.: *See—*
Mollenkopf, Lloyd C.; and Rein, Russsell J., 5,349,135, Cl. 174-48.000.

Rosenberg, Steven; and Tekamp-Olson, Patricia, to Chiron Corporation. Hybrid promoter contructs of glyceraldehyde-3-phosphate dehydrogenase promoter. 5,349,059, Cl. 536-24.100.

Rosenberry, Steven, to Parallel PCs, Inc. Dynamic fault-tolerant parallel processing system for performing an application function with increased efficiency using heterogeneous processors. 5,349,682, Cl. 395-800.000

Rosenthal, Richard D.; DePoorter, Gerald L.; and Christy, Ronald I., to Microsurgical Techniques, Inc. Composite cutting edge. 5,347,887, Cl. 76-104.100.

Ross, Gerald D.: *See—*
Romanenko, Michael; and Ross, Gerald D., 5,347,790, Cl. 53-443.000

Ross, James M. Clothing fastener apparatus. 5,347,688, Cl. 24-40.000.

Rossak, Norbert: *See—*
Mitter, Helmut; Scharizer, Walter; Sollradl, Herbert; and Rossak, Norbert, 5,348,761, Cl. 427-101.000.

Rossetti, Carlo: *See—*
Pasero, Edoardo; Rossetti, Carlo; and Aiolfi, Franco, 5,348,862, Cl. 435-39.000.

Rossman, David I.: *See—*
Munavalli, Shekar; and Rossman, David I., 5,349,076, Cl. 556-72.000.

Roth, Rudolf. Fire retardant sleeve. 5,347,767, Cl. 52-1.000.

Rothhammer, Reed. Swimming aid device. 5,348,505, Cl. 441-117.000.

Roue, Jean: *See—*
Le Disert, Yves; Roue, Jean; Moriarity, Thomas; and Faucher, Philippe, 5,348,578, Cl. 106-287.200.

Rouleau, Georges O. Guide apparatus for an elongated workpiece. 5,347,897, Cl. 82-164.000.

Rousseff, Christ M.; and Wallace, George E., to American Registration Systems, Inc. Automatic form dispensing system. 5,349,534, Cl 364-479.000.

Roussel Uclaf: *See—*
Clemence, Francois; Fortin, Michel; Hamon, Gilles; Le Martret, Odile; and Moura, Anne-Marie, 5,348,971, Cl. 514-428.000.

Roustaei, Alex. Optical scanning head. 5,349,172, Cl. 235-472.000.

Routman, Brent E.; and Stults, Larry W. Fire detector and alarm system. 5,349,338, Cl. 340-692.000.

Rouzier, Alain: *See—*
Defranco, Jean-Marc; Barnabe, Florence; and Rouzier, Alain, 5,349,462, Cl. 359-152.000

Rovel, Jean-Marie, to S.A. Degremont. Process for the biological purification of effluent. 5,348,653, Cl. 210-605.000.

Rowe, Bruce: *See—*
Rafferty, Kevin; and Rowe, Bruce, 5,348,215, Cl. 228-181.000

Rowley, Michael: *See—*
Kulagowski, Janusz J.; Mawer, Ian M.; Leeson, Paul D.; and Rowley, Michael, 5,348,962, Cl. 514-312.000

Roy, Glenn M., to Calgon Carbon Corporation. Extension of edible oil lifetime using activated carbons. 5,348,755, Cl. 426-541.000.

Royal Appliance Mfg. Co.: *See—*
Saunders, Craig M.; Stephens, Paul D.; and Wright, Michael F., 5,347,679, Cl. 15-416.000.

Royal Free Hospital School of Medicine: *See—*
Delgado, Cristina; Francis, Gillian E.; and Fisher, Derek, 5,349,052, Cl. 530-351.000.

Royce Medical Company: *See—*
Grim, Tracy E.; Arnold, William K.; and Iglesias, Joseph M., 5,348,530, Cl. 602-13.000

Rudick, Arthur G.; Gatipon, Shaun B.; and Wachenheim, Howard W., to Coca-Cola Company, The. Modular refrigeration apparatus 5,347,827, Cl. 62-440.000.

Rudy, Norbert J., to Coalition Technologies, Limited. Low bulk and leight-weight products. 5,348,621, Cl. 162-100.000

Rudy, William J., Jr.; Shaffer, Howard R.; and Stahl, Daniel E., to Whitaker Corporation, The. High density integrated backplane assembly. 5,348,482, Cl. 439-61.000.

Rufkahr, Bernard O. Top puller. 5,347,890, Cl. 81-3.550.

Ruhl, Mark A., to National Instrument Company, Inc. Clean-in-place filling machine. 5,348,058, Cl. 141-1.000.

Ruhovets, Naum, to Halliburton Logging Services, Inc. Method apparatus for determination of porosity lithological composition 5,349,528, Cl. 364-422.000.

Rumler, Thomas: *See—*
Few, Jeffrey P.; and Rumler, Thomas, 5,348,330, Cl. 280-475.000.

Ruppert, Malcolm F., Jr.; and Liu, Eric C., to Rockwell International Corporation. Axle housing breather. 5,348,570, Cl. 96-6.000.

Russ, Werner H.: *See—*
von der Eltz, Andreas; Schrell, Andreas; and Russ, Werner H., 5,348,557, Cl. 8-188.000.

Russell, Gary W., to Brown & Sharpe Mfg. Co. Air bearing control system. 5,347,723, Cl. 33-503.000

Russell, James P. Corner mounted wiring devices. 5,349,134, Cl. 174-48.000

Russell, Stephen D.; Sexton, Douglas A.; and Orazi, Richard J., to United States of America, Navy. Method for laser-assisted silicon etching using halocarbon ambients. 5,348,609, Cl. 156-345.000.

Russell, Thomas: *See—*
Brunhouse, Robert F.; Hajek, Constance M.; Russell, Thomas; and Coulter, Wallace H., 5,348,859, Cl. 435-7.240.

Rutenberg, Morton W.: *See—*
Tsai, John J.; Trzasko, Peter T.; Philbin, Michael T.; Billmers, Robert L.; Tessler, Martin M.; Van Gompel, Joseph A.; and Rutenberg, Morton W., 5,349,089, Cl. 564-291.000.

Ryals, John A.; Gay, Philippe B.; and Ahl-Goy, Patricia A., to Ciba-Geigy Corporation. Anti-pathogenically effective compositions comprising lytic peptides and hydrolytic enzymes. 5,348,743, Cl. 424-94.610.

Ryat, Marc H., to SGS-Thomson Microelectronics, Inc. Operational amplifier having multiple positive inputs. 5,349,304, Cl. 330-253.000.

Rydel, Charles: *See—*
Brassier, Marc; Rydel, Charles; and Medjaoui, Omar, 5,349,267, Cl. 315-82.000

Ryobi Motor Products Corporation: *See—*
Stolzer, J. Timothy, 5,348,319, Cl. 279-77.000.

Rytand, David H. Panelized float system. 5,347,948, Cl. 114-263.000.

Saarelainen, Pertti: *See—*
Lappalainen, Juhani; Rinnemaa, Heikki; Tuunanen, Ari; and Saarelainen, Pertti, 5,348,105, Cl. 175-24.000

Sabacky, Bruce J.; and Doane, Robert E., to Bandgap Technology Corporation. Synthesis of semiconductor grade tungsten hexafluoride. 5,348,723, Cl. 423-489.000

Sacripante, Guerino G., to Xerox Corporation. Poliymide toner and developer compositions. 5,348,830, Cl. 430-109.000

Sacripante, Guerino G.; Croucher, Melvin D.; and Drappel Stephan V., to Xerox Corporation. Polyester-imide toner and developer compositions. 5,348,831, Cl. 430-109.000

Sacripante, Guerino G.; Patel, Raj D.; and Kmiecik-Lawrynowicz, Grazyna E., to Xerox Corporation. Toner compositions. 5,348,832, Cl. 430-109.000.

Saft S.A.: *See—*
Caillon, Georges; and Lebarbier, Cyrille, 5,348,823, Cl. 429-246.000.

Sagano, Hideki, to Yamaichi Electronics Co., Ltd. IC socket. 5,348,483, Cl. 439-72.000.

Sagara, Toshiaki: *See—*
Arai, Kazuhiko; Teshigawara, Toru; and Sagara, Toshiaki, 5,349,374, Cl. 346-108.000

Saikawa, Satoshi: *See—*
Yanagi, Haruyuki; Suzuki, Tetsuo; Hiramatsu, Soichi; Nojima, Takashi; and Saikawa, Satoshi, 5,348,283, Cl. 271-127.000.

Saiki, Hoshihiko: *See—*
Taniguchi, Hiromichi; and Saiki, Hoshihiko, 5,349,496, Cl. 361-528.000.

Saini, Devinder P.; and Law, Tommy J., to FCI-FiberChem, Inc. Fiber optic chemical sensor having specific channel connecting design 5,349,181, Cl. 250-227.140.

Sainio, Jeffrey W.: *See—*
Quadracci, H. Richard; Voss, Karl R.; and Sainio, Jeffrey W., 5,347,726, Cl. 34-465.000.

St. Aubin, Donald L.: *See—*
Laugal, James A.; Martin, Glenn E.; St. Aubin, Donald L.; and Wold, Gerald G., 5,348,635, Cl. 204-181.700.

St. Clair, David J.: *See—*
Pottick, Lorelle A.; and St. Clair, David J., 5,349,015, Cl. 525-65.000.

St. Denis, Andrew R. Multi-purpose wine bottle stopper device. 5,347,889, Cl. 81-3.290

Saint-Gobain Vitrage International: *See—*
Zagdoun, Georges; and Cordier, Bruno, 5,348,805, Cl. 428-432.000.

Saito, Chuichi: *See—*
Yamaguchi, Yukihiro; Saito, Chuichi; Takahashi, Tatsuhiko; and Haraguchi, Tomomi, 5,348,131, Cl. 198-330.000.

Saito, Hideya: *See—*
Oka, Masahiko; Kishine, Mitsuru; Saito, Hideya; and Kokumai, Masuo, 5,349,093, Cl. 568-615.000

Saito, Kazuhiro: *See—*
Shibata, Masanori; Umetsu, Shigeo; Suzuki, Shinichi; Sato, Michihiro; Saito, Kazuhiro; and Akama, Hiroyuki, 5,349,488, Cl. 360-105.000.

Saito, Ryoji: *See—*
Ushiki, Shuichi; and Saito, Ryoji, 5,349,514, Cl. 363-21.000

Saito, Satoshi: *See—*
Ushirogouchi, Toru; Kihara, Naoko; Sasaki, Osamu; Tada, Tsukasa; Naito, Takuya; and Saito, Satoshi, 5,348,838, Cl. 430-270.000.

Saito, Tatsuo; Onozuka, Haruo; and Tanaka, Yasuhiko, to Fuji Photo Optical Co., Ltd. Film transporting system including a counter and a film existence detector for a photographic camera. 5,349,407, Cl 354-173.100.

Saito, Tomoki: *See—*
Atsumi, Kiminori; Saito, Tomoki; and Komori, Masaaki, 5,348,577, Cl. 106-18.310.

Saito, Toshimitsu: *See—*
Ashihara, Teruaki; Tone, Shingo; Saito, Toshimitsu; and Orita, Ryozo, 5,349,022, Cl. 524-414.000.

Saitoh, Hiroshi, to Kabushiki Kaisha Hoky. Squeegee. 5,347,676, Cl 15-245.000.

Saitoh, Hiroshi: *See—*
Kamijo, Masahiko; Saitoh, Hiroshi; Matsuura, Yozo; and Kondo, Shiro, 5,349,425, Cl. 355-298.000

Saitoh, Mitsumasa: *See—*
Amano, Toshio; Oda, Osamu; and Saitoh, Mitsumasa, 5,349,444, Cl 348-711.000.

Saitou, Kengo: *See—*
Ohmachi, Junya; Saitou, Kengo; and Sasaki, Kazuo, 5,348,243, Cl. 242-342.000.

Saji, Nobuyoshi; Ohya, Hiroshi; Asakura, Hiroshi; and Nagai, Shunji, to Ishikawajima-Harima Heavy Industries, Co., Ltd. Method and apparatus for manufacturing superfluidity helium. 5,347,819, Cl. 62-51.300

Sakacho, Hiromi: *See—*
Yamamoto, Masakazu; Sakacho, Hiromi; and Yamada, Seiichirou, 5,348,452, Cl. 417-422.000

Sakai, Eiichi: *See—*
Kudoh, Koichi; Sakai, Eiichi; and Takei, Yoshiaki, 5,349,426, Cl. 355-298.000

Sakai, Jun-etsu: *See—*
Shibata, Masaru; Ito, Shigekazu; Sakai, Jun-etsu; and Hayashi, Shigeru, 5,348,976, Cl. 514-469.000

Sakai, Yoshihiko: *See—*
Miyake, Hiroyuki; Abe, Tsutomu; Ito, Hisao; Hotta, Hiroyuki; Shimizu, Yasumoto; and Sakai, Yoshihiko, 5,348,892, Cl. 437-3.000.

Sakamoto, Kazuo; Fujii, Tatsuya; Shiraishi, Naoto; Fukui, Ryo; Imai, Yukihiro; Sato, Yutaka; and Yamada, Yoshiteru, to Ricoh Company, Ltd. Digital data detecting and synchronizing circuit. 5,349,610, Cl. 375-106.000.

Sakamoto, Kiichi; and Yasuda, Hiroshi, to Fujitsu Limited. Method for exposing a pattern on an object by a charged particle beam. 5,349,197, Cl. 250-492.220.

Sakamoto, Makoto; and Tamano, Michiko, to Toyo Ink Manufacturing Co., Ltd. Optical recording medium. 5,348,840, Cl. 430-270.000

Sakarya, Dursun, to Matsushita Electric Corporation of America. Call progress detection circuit. 5,349,254, Cl. 307-525.000.

Sakashita, Nobuyuki; Nakajima, Toshio; Murai, Shigeo; Maeda, Kazuyuki; Nakamura, Yuji; Yoshida, Tsunezo; Honzawa, Shooichi; and Kanamori, Fumio, to Ishihara Sangyo Kaisha, Ltd. Substituted pyridinesulfonamide compound or its salt, process for preparing the same, and herbicide containing the same. 5,348,933, Cl. 504-213.000.

Sakashita, Shigeru: *See—*
Kitaguchi, Masaru; and Sakashita, Shigeru, 5,347,831, Cl. 62-510.000.

Sakata, Hajime: *See—*
Ouchi, Toshihiko; and Sakata, Hajime, 5,349,598, Cl. 372-50.000.

Sakudo, Noriyuki: *See—*
Amemiya, Kensuke; Hakamata, Yoshimi; Tokiguchi, Katsumi; and Sakudo, Noriyuki, 5,349,196, Cl. 250-492.210.

Sakuma, Mikio: *See—*
Yoshiaki, Nagao; Atsuhiro, Kobayashi; and Sakuma, Mikio, 5,348,406, Cl. 400-615.200

Sakuma, Seiichi: *See—*
Kuroda, Syoichi; Shibata, Soichiro; Shimamura, Nonyuki; Kawasaki, Shigetake; Kasahara, Keisuke; Sakuma, Seiichi; Komatsu, Fujio; Ishikawa, Masaya; Sugiyama, Kunio; Mashimo, Mitsuo; Shindo, Yuzuru; and Kawamura, Kuniaki, 5,348,080, Cl. 165-104.130.

Sakuragi, Shigeru: *See—*
Nakamura, Makoto; Sakuragi, Shigeru; and Komatsu, Hiroshi, 5,347,962, Cl. 123-90.160.

Sakuragi, Takamasa: *See—*
Ogawa, Katsuhisa; and Sakuragi, Takamasa, 5,349,595, Cl. 372-38.000

Sakurai Graphic Systems Corporation: *See—*
Ito, Mineyuki, 5,347,928, Cl. 101-415.100.

Salansky, Werner. Ball throwing device for tennis balls. 5,347,975, Cl. 124-78.000.

Saleh, Farid, to Harris Corporation. Analog-to-digital converter having high AC line noise rejection and insensitive to AC line frequency variations. 5,349,352, Cl. 341-143.000

Salisbury, Thomas E.: *See—*
Honan, David G.; Lantz, Gregory W.; and Salisbury, Thomas E., 5,348,158, Cl. 206-531.000.

Salmon, Michael E., to Terrill Designs, Inc. Water heating and distilling apparatus. 5,348,623, Cl. 203-1.000.

Salmon, Stephen M.: *See—*
Thornton, Peter; and Salmon, Stephen M., 5,348,017, Cl. 128-662.060

Salomon S.A.: *See—*
Dasarmaux, Pierre; Dogat, Vincent; and Thomas, Pascal, 5,348,335, Cl. 280-633.000.
Vasselin, Thierry; Vuachet, Michel; and Recher, Gilles, 5,348,804, Cl. 428-423.100

Samolyk, John H.: *See—*
Franklin, William H., III; and Samolyk, John H., 5,348,118, Cl 182-187.000

Sampei, Tetsuya: *See—*
Ohdake, Takayuki; Ohmori, Toshimichi; Takamura, Toshihiro; Yamada, Takemi; and Sampei, Tetsuya, 5,348,701, Cl 420-73.000

Sampson, Richard L.: *See—*
Kunz, Gerhard; Dimotsis, George L.; and Sampson, Richard L., 5,348,659, Cl. 210-678.000.

Sams, Rosemary C.: *See—*
DeNicola, Anthony J., Jr.; and Sams, Rosemary C., 5,349,016, Cl. 525-71.000

Samsung Aerospace Industries, Ind.: *See—*
Seo, Jae-kyeong; Lee, Seon-ho; and Choi, Deog-ho, 5,349,414, Cl. 354-400.000

SamSung Electronics Co., Ltd.: *See—*
An, Seong-Wan, 5,349,163, Cl. 219-492.000
Hwang, Eui K., 5,348,225, Cl. 236-51.000.
In Gweon, Kang, 5,347,820, Cl. 62-78.000.
Jee, Kyung H., 5,349,283, Cl. 323-207.000.
Kim, Hak S., 5,349,369, Cl. 345-136.000.
Kim, Ik-Sun, 5,349,280, Cl. 320-13.000.
Kim, Jong-Youb, 5,347,817, Cl. 62-471.000.
Kwak, Hee-Guk, 5,349,446, Cl. 358-296.000.
Lee, Joon K.; Jeong, Hyeon J.; Kim, Kyung S.; and Kwon, Oh-Sik, 5,349,235, Cl. 257-693.000.
Lee, Kyu-Chan, 5,349,556, Cl. 365-200.000.
Lomashevitch, Svjatoslav A.; and Svetikov, Yuri V., 5,349,593, Cl. 372-50.000.
Park, Yong-Bo; and Lim, Hyung-Kyu, 5,349,559, Cl. 365-201.000
Suh, Young-Ho; and Kim, Suk-Bin, 5,349,560, Cl. 365-203.000.

Sandell, Anders L.; Sonesson, Leif B.; and Persson, Bo G., to Arjo Hospital Equipment AB. Lifting appliance, especially for a patient lifting device. 5,348,273, Cl. 254-385.000

Sanden Corporation: *See—*
Hosoya, Kazuki; and Kado, Hirotaka, 5,348,083, Cl. 165-174.000.
Tanaka, Hiroshi, 5,348,079, Cl. 165-67.000.
Yamada, Yasuo, 5,347,830, Cl. 62-481.000.

Sanders, Glen A., to Honeywell, Inc. Fiber optic gyroscope refractive index induced error compensation. 5,349,441, Cl. 356-350.000.

Sanderson, William R.: *See—*
Brougham, Paul; Sanderson, William R.; and Pearce, Timothy, 5,349,083, Cl. 562-6.000.

Sandlie, Inger: *See—*
Michaelsen, Terje; and Sandlie, Inger, 5,348,876, Cl. 435-240.200

Sandor, Raymond P. Methods for production of faux effects using select color mixtures and blending solvents. 5,348,767, Cl. 427-273.000.

Sandou, Yasuyuki; and Takahashi, Nobu, to Honda Giken Kogyo Kabushiki Kaisha. Supercharge pressure control system in internal combustion engine. 5,347,972, Cl. 123-564.000.

Sanemitzu, Yuzuru: *See—*
Sato, Junichi; Sanemitzu, Yuzuru; Kawamura, Shinichi; Mito, Nobuaki; Hamada, Tatsuhiro; and Yoshida, Ryo, 5,349,108, Cl. 564-340.000.

Sankyo Company Limited: *See—*
Iwata, Masayuki; Kimura, Tomio; Inoue, Teruhiko; Fujihara, Yoshimi; and Katsube, Tetsushi, 5,348,961, Cl. 514-312.000.

Sano, Hiroyuki: *See—*
Serizawa, Hajime; Kubota, Masaru; Sano, Hiroyuki; and Tajima, Yoshihisa, 5,349,007, Cl. 524-513.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Torigai, Katsumi; Takahashi, Masanori; and Hirano, Yoshihide, 5,348,499, Cl. 440-76.000.

Santen Pharmaceutical Co., Ltd.: *See—*
Horowitz, Bernard; Shulman, Richard W.; Setton, Adrianne J.; Nishimura, Toyohiko; and Kawashima, Yoichi, 5,348,939, Cl. 514-8.000

Santos, Jorge. Hurricane shutters for windows. 5,347,775, Cl. 52-202.000

Sanyo Chemical Industries, Ltd.: *See—*
Mochizuki, Akihiro; Kasahara, Shigeo; Makino, Tetsuya; Watanabe, Masashi; Nakatsuka, Masakatsu; Yoshio, Kunikiyo; Satoh, Masahiro; Watanabe, Tetsuya; Sugita, Naoko; and Yanagi, Tatsuroh, 5,348,685, Cl. 252-299.620.

Sanyo Electric Co., Ltd.: *See—*
Kishimoto, Yasuhiro; and Tsuboi, Kunio, 5,349,421, Cl. 355-208.000.

SAR S.p.A.: *See—*
Mascitelli, Francesco; and Bonelli, Enrico, 5,348,194, Cl. 222-209.000.

Sardynski, Gary F.; Cox, Paul E.; and Pacheco, Gilbert R., to Jet Spray Corp. Dispenser valve. 5,348,192, Cl. 222-129.100.

Sarmientos, Paolo: *See—*
Monsan, Pierre; Paul, Francois; Betbeder, Didier; and Sarmientos, Paolo, 5,348,863, Cl. 435-68.100

SARP Industries: *See—*
Baronquel, Pierre; and Biros, Jean-Louis, 5,347,930, Cl. 102-302.000.

Sasaki, Akira, to Kabushiki Kaisha Toshiba. Lead frame and semiconductor module using the same having first and second islands and three distinct pluralities of leads and semiconductor module using the lead frame. 5,349,233, Cl. 257-666.000.

Sasaki, Hirokazu: *See—*
Ippommatsu, Masamichi; Sasaki, Hirokazu; Otoshi, Shoji; Suzuki, Minoru; and Kajimura, Atsuko, 5,348,776, Cl. 427-586.000.

Sasaki, Kazuo: *See—*
Ohmachi, Junya; Saitou, Kengo; and Sasaki, Kazuo, 5,348,243, Cl. 242-342.000.

Sasaki, Koji: *See—*
Ito, Hiroshi; Sasaki, Koji; Okumoto, Tadaoki; Ohta, Takashi; Matsushita, Mitsumasa; and Sato, Norio, 5,348,929, Cl. 502-402.000.

Sasaki, Masanori: *See—*
Ishibashi, Tadaya; Sasaki, Masanori; Obara, Hideto; Kano, Hiroshi; and Yamashita, Shintaro, 5,348,628, Cl. 204-153.000.

Sasaki, Osamu: *See—*
Ushirogouchi, Toru; Kihara, Naoko; Sasaki, Osamu; Tada, Tsukasa; Naito, Takuya; and Saito, Satoshi, 5,348,838, Cl. 430-270.000.

Sasaki, Takeshi: *See—*
Kusunoki, Haruyuki; Yasutome, Kikuo; Yamazaki, Shigeo; Furukawa, Koji; and Sasaki, Takeshi, 5,348,431, Cl. 409-132.000.

Sasamoto, Akinori; and Aizawa, Yuichi, to Daiwa Golf Co., Ltd. Golf club head. 5,348,302, Cl. 273-169.000.

Sasao, Yasuyuki: *See—*
Kodama, Shun-ichi; Sasao, Yasuyuki; and Miura, Ryuichi, 5,349,031, Cl. 525-386.000.

Sasayama, Hiroyuki: *See—*
Ohishi, Chikashi; Sasayama, Hiroyuki; and Kanzaki, Hisao, 5,349,413, Cl. 354-324.000.

Sasuta, Michael D.: *See—*
Nilles, Robert B.; Collins, Craig J.; Killigrew, James J.; and Sasuta, Michael D., 5,349,342, Cl. 340-825.080

Sato, Hiroya, to Sharp Kabushiki Kaisha. Vertical type construction transistor. 5,349,239, Cl. 257-737.000.

Sato, Hisatake: *See—*
Arai, Yasuo; and Sato, Hisatake, 5,349,669, Cl. 395-750.000.

Sato Iron Works Co., Ltd.: *See—*
Sato, Takuya, 5,347,725, Cl. 34-386.000.

Sato, Junichi; Sanemitzu, Yuzuru; Kawamura, Shinichi; Mito, Nobuaki; Hamada, Tatsuhiro; and Yoshida, Ryo, to Sumitomo Chemical Company, Limited. 5-substituted-2,4-diphenylpyrimidine derivatives, their production and use. 5,349,108, Cl. 564-340.000.

Sato, Kazuteru; Yamamoto, Kanshi; Morohoshi, Mikio; Akaba, Noriyuki; and Kawakami, Atsushi, to Tokimec Inc. Navigation apparatus using a global positioning system. 5,349,531, Cl. 364-449.000.

Sato, Kenichi; and Chiba, Kazunobu, to Sony Corporation. Magnetic recording and/or reproducing method having a double azimuth head arrangement. 5,349,478, Cl. 360-55.000.

Sato, Masato: *See—*
Kawano, Minori; Ogawa, Kohji; Tsukagoshi, Sadayuki; Kuroiwa, Hiroyuki; Sato, Masato; Ishizaki, Yasuhiro; Komatsu, Fumiaki; and Kuroda, Eiichi, 5,349,694, Cl. 455-11.100

Sato, Michihiro: *See—*
Shibata, Masanori; Umetsu, Shigeo; Suzuki, Shinichi; Sato, Michihiro; Saito, Kazuhiro; and Akama, Hiroyuki, 5,349,488, Cl. 360-105.000.

Sato, Norio: *See—*
Ito, Hiroshi; Sasaki, Koji; Okumoto, Tadaoki; Ohta, Takashi; Matsushita, Mitsumasa; and Sato, Norio, 5,348,929, Cl. 502-402.000.
Nomura, Hiroshi; Sato, Norio; and Aoki, Nobuaki, 5,349,408, Cl. 354-195.100.
Nomura, Hiroshi; Sato, Norio; and Aoki, Nobuaki, 5,349,475, Cl. 359-694.000.

Sato, Osamu: *See—*
Uetsuki, Setsuyoshi; Sato, Osamu; Nakayama, Yasuo; and Hirai, Yoshikatsu, 5,348,858, Cl. 435-7.100.

Sato, Takusei: *See—*
Iwanaga, Toshihiko; Yoshida, Kazuyoshi; and Sato, Takusei, 5,349,456, Cl. 359-82.000

Sato, Takuya, to Sato Iron Works Co., Ltd. Method and apparatus for vacuum drying colloidal substances. 5,347,725, Cl. 34-386.000.

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Ikeda, Kaoru; and Sato, Toshiaki, 5,349,023, Cl. 525-61.000

Sato, Yoshiaki: *See—*
Masaki, Mitsuo; Uehara, Masaki; Hirate, Kenji; Isowa, Yoshikazu; Sato, Yoshiaki; and Nakashima, Yoshiharu, 5,349,050, Cl. 530-330.000.

Sato, Yoshiko: *See—*
Uemachi, Hiroshi; Sato, Yoshiko; Sotomura, Tadashi; and Takeyama, Kenichi, 5,348,819, Cl. 429-213.000.

Sato, Yoshinori: *See—*
Ashida, Takashi; and Sato, Yoshinori, 5,349,013, Cl. 525-53.000.

Sato, Yutaka: *See—*
Sakamoto, Kazuo; Fujii, Tatsuya; Shiraishi, Naoto; Fukui, Ryo; Imai, Yukihiro; Sato, Yutaka; and Yamada, Yoshiteru, 5,349,610, Cl. 375-106.000.

Satoh, Kiyoshi, to Stec Inc. Thermal mass flow meter. 5,347,861, Cl. 73-204.120.

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Sotani, Junji; Satoh, Kuniyoshi; and Noda, Hajima, 5,349,131, Cl. 174-24.000

Satoh, Masahiro: *See—*
Mochizuki, Akihiro; Kasahara, Shigeo; Makino, Tetsuya; Watanabe, Masashi; Nakatsuka, Masakatsu; Yoshio, Kunikiyo; Satoh, Masahiro; Watanabe, Tetsuya; Sugita, Naoko; and Yanagi, Tatsuroh, 5,348,685, Cl. 252-299.620.

Satoh, Takashi: *See—*
Ueki, Toru; Yoshimura, Masaji; Kanezaki, Kazuharu; Kishi, Susumu; Satoh, Takashi; and Takiguchi, Minoru, 5,349,027, Cl. 525-331.700.

Satoh, Toshiaki: *See—*
Yanagi, Kunio; and Satoh, Toshiaki, 5,347,813, Cl. 60-585.000.

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Murata, Katsumi; Murakami, Kazuo; Kusakabe, Isao; and Satoh, Toshihide, 5,348,875, Cl. 435-200.000.

Saturn Corporation: *See—*
Mainquist, James K.; Downs, Robert C.; Nitz, Larry T.; and Kinsey, Kyle K., 5,347,886, Cl. 477-161.000.

Sauer, Gale E.: *See—*
Frecska, Sandor A.; Nute, Ernest B., Jr.; and Sauer, Gale E., 5,347,783, Cl. 52-506.070.

Saunders Archery Company: *See—*
Saunders, Charles A., 5,347,976, Cl. 124-87.000.

Saunders, Charles A., to Saunders Archery Company. Peep sight with field-viewing frame. 5,347,976, Cl. 124-87.000.

Saunders, Court A.: *See—*
Chappell, Joseph; Saunders, Court A.; and Wolf, Fred R., 5,349,126, Cl. 800-205.000

Saunders, Craig M.; Stephens, Paul D.; and Wright, Michael F., to Royal Appliance Mfg. Co. Stick type vacuum cleaner. 5,347,679, Cl. 15-416.000.

Saunders, William T., to Weirton Steel Corporation. Draw-process methods, systems and tooling for fabricating one-piece can bodies. 5,347,839, Cl. 72-347.000

Sauron, Jean; and Thomas, Jean-Jacques, to Societe Joseph Sauron Materiel Industriel; and Gaz de France. Portable device for straightening out tubes. 5,348,459, Cl. 425-11.000.

Savair Inc.: *See—*
Eisbrenner, Ronald J.; and Fantazian, George V., 5,349,151, Cl. 219-89.000.

Savakis, Charalambos; Franz, Gerald H.; and Loukeris, Athanasios, to Institute for Molecular Biology and Biotechnology/FORTH. Eukaryotic transposable element. 5,348,874, Cl. 435-196.000

Sawada, Hideo: *See—*
Ichikawa, Shuji; Mitani, Motohiro; Yokoyama, Yuko; Sawada, Hideo; and Matsumoto, Takeo, 5,348,890, Cl. 436-172.000

Sawamura, Kiyoshi: *See—*
Kinoshita, Toshio; Nakamura, Youichi; Sawamura, Kiyoshi; and Yanagimoto, Tsutomu, 5,347,914, Cl. 92-88.000

Sawyer, Thomas F.; Benz, Mark G.; Carter, William T., Jr.; and Zabala, Robert J., to General Electric Company. Method and apparatus for flow control in electroslag refining process. 5,348,566, Cl. 75-10.240.

Say, Geoffrey R.: *See—*
Clavenna, LeRoy R.; Davis, Stephen M.; Say, Geoffrey R.; and Fiato, Rocco A., 5,348,717, Cl. 423-418.200

Sayer, Trevor S. B.: *See—*
Simpson, Michael A. D.; and Sayer, Trevor S. B., 5,349,036, Cl. 526-320.000.

Sayka, Anthony; and Siddiqui, Mohammad A., to VLSI Technology, Inc. Integrated circuit package including a heat pipe. 5,349,237, Cl. 257-715.000.

Sbrilli, Franco, to Nordica S.p.A. Skate with aligned wheels. 5,348,321, Cl. 280-11.220.

Scarborough, George B.: *See—*
Calvert, Nathanial; Koehler, John L.; Lindberg, Erik D.; McKelvey, Mark A.; Mervosh, Steven P.; Newton, Jeffrey A.; Scarbor-

ough, George B.; Upchurch, Ruth A.; and Westling, Sandra D., 5,349,674, Cl. 395-800.000.

Schaefer, Thomas J.: *See—*
Mullen, Timothy L.; Schaefer, Thomas J.; and McCutcheon, Tera D., 5,348,230, Cl. 239-428.000

Schaffer, Jonathan L.: *See—*
Shapiro, Alan R.; Gray, Martha L.; Melendez, Luis A.; Schaffer, Jonathan L.; Wright John D.; and Venegas, Jose G., 5,348,879, Cl. 435-240.241

Scharf, Gary. Device for lifting and cutting glued-down carpet 5,347,719, Cl. 30-294.000.

Scharizer, Walter: *See—*
Mitter, Helmut; Scharizer, Walter; Sollradl, Herbert; and Rossak, Norbert, 5,348,761, Cl. 427-101.000.

Schauer, Friedrich; and Neuner, Andreas, to Kabelmetal Electro Gesellschaft mit beschrankter Haftung. Device for transferring current between two end points. 5,348,490, Cl. 439-164.000.

Scheck, Daniel M., to Dow Chemical Company, The. Benzocyclobutene novolac resin compositions. 5,349,111, Cl. 568-721.000.

Scheckel, Bruno; and Reiner, Robert, to Siemens Aktiengesellschaft Apparatus for contactless data and energy transmission. 5,349,173, Cl. 235-492.000.

Scheeren, Johan W.: *See—*
Hermkens, Peter H. H.; Van Maarseveen, Jan H.; Scheeren, Johan W.; and Kruse, Cornelis G., 5,348,949, Cl. 514-183.000.

Scheiwiller, Rene , to Scheiwiller, Rolf, a part interest. Compound pavement stone. 5,348,417, Cl. 404-41.000.

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Scheiwiller, Rene , 5,348,417, Cl. 404-41.000.

Schelen, Johannes B. J., to B.V. Optische Industrie "De Oude Delft" Integrated semiconductor circuit with polarity reversal protection. 5,349,489, Cl. 361-77.000.

Schellinger, Michael J., to Motorola, Inc. Error detecting method and apparatus for data communications. 5,349,588, Cl. 371-37.100.

Scherer, Stephen J. Carrying sleeve for camera. 5,348,206, Cl. 224-220.000

Schering Aktiengesellschaft: *See—*
Kruger, Martin; Huth, Andreas; Seidelmann, Dieter; Schneider, Herbert; Turski, Lechoslaw; and Stephens, David N., 5,348,958, Cl. 514-249.000.

Schering Corporation: *See—*
Gold, Elijah H.; Neustadt, Bernard R.; and Smith, Elizabeth M., 5,348,944, Cl. 514-19.000
Kuo, Shen-Chun; Hou, Donald; and Zhan, Zheng-Yun, 5,349,099, Cl. 570-147.000.

Schertenleib, Peter, to Erich Netzsch GmbH & Co. Holding KG. Method and apparatus for mixing pulverous solids into a liquid phase. 5,348,390, Cl. 366-136.000

Schetselaar, Marc A.: *See—*
Jordan, David L.; and Schetselaar, Marc A., 5,349,510, Cl. 362-374.000.

Schirado, Lowell C.; Chambers, James L.; and Whitaker, Richard H. Quick connect coupling system. 5,348,048, Cl. 137-588.000.

Schirrmacher, Rudiger;: *See—*
Eickhoff, Hubert; Schirrmacher, Rudiger;; Mangartz, Karl-Heinz; Huber, Hans-Martin; and Godecke, Ralf, 5,348,657, Cl 210-636.000

Schisla, David K.: *See—*
Lutz, Eugene F.; Schisla, David K.; Tomaskovic, Robert S.; and Hoewing, Timothy D., 5,349,101, Cl. 558-36.000

Schlaemus, Herman W.; Marshall, Mary C.; MacNaughton, Michael G.; Alexander, Matthew L.; and Scott, James R., to Southwest Research Institute. Microcapsules and method for degrading hydrocarbons. 5,348,803, Cl. 428-402.200.

Schlenker, John L.: *See—*
Beck, Jeffrey S.; Kuehl, Guenter H.; Olson, David H.; Schlenker, John L.; Stucky, Galen D.; and Vartuli, James C., 5,348,687, Cl 252-582.000

Schlumberger Technology Corporation: *See—*
Dumont, Alain M. G., 5,349,195, Cl. 250-395.000.
Lerche, Nolan C.; Aseltine, Clifford L.; and Voreck, Wallace E., Jr., 5,347,929, Cl. 102-202.140.
Pieprzak, Andrew; and Highnam, Peter T., 5,349,527, Cl. 364-421.000.
Wraight, Peter D., 5,349,184, Cl. 250-266.000.

Schmidt, Guenther: *See—*
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Schmidt, Thomas A.: *See—*
Marshall, Andrew; Schmidt, Thomas A.; and Teggatz, Ross E., 5,349,286, Cl. 323-315.000

Schmitt, Richard: *See—*
Chitwood, Kenneth; Knipp, Richard; and Schmitt, Richard, 5,347,749, Cl. 43-124.000

Schmode, Hartmut; Wiebe, Ulrich; Storm, Siegfried; Hetland, Detlev; and Kornfeld, Hans-Joachim, to Weidmuller Interface GmbH & Co., Firma. Pliers for dressing conductor ends. 5,347,705, Cl. 29-566.400

Schnall, Mitchell D.; Lenkinski, Robert E.; Kressel, Herbert Y.; Pollack, Howard M.; Claiborne, Theodore C.; Misic, George J.; Welch, Thomas R.; and Rhinehart, Edward J., to Medrea, Inc., Pennsylvania Corp.; and University of Pennsylvania, Not-For-Profit Pennsylvania Corp., Trustees of the, a part interest. Intracavity probe and interface device for MRI imaging and spectroscopy. 5,348,010, Cl 128-653.200.

Schneider, Herbert: *See—*
Kruger, Martin; Huth, Andreas; Seidelmann, Dieter; Schneider, Herbert; Turski, Lechoslaw; and Stephens, David N., 5,348,958, Cl. 514-249.000

Schnorr, William: *See—*
Blanco, Ernesto E.; and Schnorr, William, 5,348,259, Cl. 248-276.000.

Schoeffel, Eberhard; and Ernst, Josef, to Robert Bosch GmbH. Apparatus for measuring a hydraulic fluid flow rate and/or leakage rate through an object to be tested. 5,347,848, Cl. 73-37.000

Schoonheere, Marnix J.: *See—*
Vansteelant, Marc G.; and Schoonheere, Marnix J., 5,347,920, Cl. 100-4.000

Schramm, Karen M.: *See—*
Lovell, John W.; Schramm, Karen M.; and DeLisle, William E., 5,349,606, Cl. 375-1.000.

Schreiber Foods, Inc.: *See—*
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Schrell, Andreas: *See—*
von der Eltz, Andreas; Schrell, Andreas; and Russ, Werner H., 5,348,557, Cl. 8-188.000.

Schreyer, Peter: *See—*
Mohr, Juergen; Oppenlaender, Knut; Balzer, Wolf-Dieter; Thomas, Juergen; and Schreyer, Peter, 5,348,560, Cl. 44-387.000.

Schroeder, Richard B.: *See—*
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Schuffenecker, R.: *See—*
Murphy, J. D.; Schuffenecker, R.; and Suty, H., 5,348,721, Cl. 423-463.000.

Schulte, Peter; Volkmer, Michael; and Kuhn, Frank, to Degussa Aktiengesellschaft. Method for the degradation of harmful substances in water by means of hydrogen peroxide under UV irradiation. 5,348,665, Cl. 210-748.000.

Schultz, Darald R.: *See—*
Hanson, George E.; Kunert, Steven R.; Schultz, Darald R.; Gibbs, William T.; Rasmussen, Jon; and Traeger, Robert J., 5,349,497, Cl. 361-683.000.

Schultz, David; and Heinz, Donald E., to M & S Tool and Die Company. Slot cutter. 5,347,899, Cl. 83-50.000.

Schultz, Horst, to ALFA Institut fur hauswirtschaftliche Produkt- and Verfahrens- Entwicklung GmbH. Double-walled cooking pot. 5,348,187, Cl. 220-752.000.

Schulz, Jens: *See—*
Buetikofer, Peter; Hoffmann, Martin; and Schulz, Jens, 5,348,612, Cl. 156-578.000.

Schurmann, Josef H.; and D'Hont, Lodewijk J., to Texas Instruments Incorporated. Circuit arrangement for obtaining a constant field strength of an HF signal radiated by a transmitting device with exchangeable antenna. 5,349,357, Cl. 342-51.000.

Schutt Manufacturing Company: *See—*
Vaught, Russell L., 5,348,289, Cl. 273-1.50R.

Schwartz, Robert E.; Onishi, Janet C.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez, Fernando; Diez, Maria T.; Vicente, Francisca; Gorrochategui, Julian; Helms, Gregory L.; and Pramanik, Barnali, to Merck & Co., Inc. Antifungal compound and compositions containing the compound. 5,348,970, Cl. 514-422.000.

Schwarz, Nora: *See—*
Schwarz, Sam; and Schwarz, Nora, 5,347,667, Cl. 5-418.000.

Schwarz, Sam; and Schwarz, Nora. Protective beach appliance. 5,347,667, Cl. 5-418.000.

Schweitzer, Edmund O., III: *See—*
Roberts, Jeffrey B.; and Schweitzer, Edmund O., III, 5,349,490, Cl. 361-80.000.

Schweitzer Engineering Laboratories, Inc.: *See—*
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Science Applications International Corporation: *See—*
Azzazy, Medhat T.; and Dabiri, Ali, 5,349,187, Cl. 250-338.500

Scientific-Atlanta, Inc.: *See—*
Hester, Phillip; and Highsmith, William, 5,349,580, Cl. 370-84.000.

Scientific Design Company, Inc.: *See—*
Bortinger, Arie, 5,348,927, Cl. 502-209.000.

Scimed Life Systems, Inc.: *See—*
Wang, Lixiao; and Tran, The Thomas T., 5,348,538, Cl. 604-96.000.

Scott, Charles D.; Faison, Brendlyn D.; Davison, Brian H.; and Woodward, Jonathan, to Martin Marietta Energy Systems, Inc. Process for converting cellulosic materials into fuels and chemicals. 5,348,871, Cl. 435-165.000.

Scott, Dane C.: *See—*
Lavrenge, Edward T.; and Scott, Dane C., 5,348,611, Cl. 156-571.000.

Scott, Danny E.; Smith, Redd H.; and Tibbitts, Gordon A., to Baker Hughes Incorporated. Rolling cone bit with improved wear resistant inserts. 5,348,108, Cl. 175-432.000.

Scott, James R.: *See—*
Schlaemus, Herman W.; Marshall, Mary C.; MacNaughton, Michael G.; Alexander, Matthew L.; and Scott, James R., 5,348,803, Cl. 428-402.200.

Scott, John C. Printable diskette envelope form. 5,348,216, Cl. 229-75.000.

Scott, John R.: *See—*
Joshua, Alummoottil V.; and Scott, John R., 5,349,063, Cl. 544-162.000.

Scott, Robert E., to AT&T Bell Laboratories. Half-duplex or full-duplex automode operation for use in data communications equipment. 5,349,635, Cl. 379-97.000.

Scoville, Ann N.: *See—*
Reagan, Peter; Scoville, Ann N.; and Leaf, Rebecca, 5,348,765, Cl. 427-180.000.

Scully, Michael T. Ball pitching trainer. 5,348,291, Cl. 273-26.00A.

SDL, Inc.: *See—*
Mehuys, David G.; O'Brien, Stephen; and Welch, David F., 5,349,602, Cl. 372-98.000.

Seal, Galen, Jr.: *See—*
Seal, Lesley T.; and Seal, Galen, Jr., 5,347,797, Cl. 54-46.100.

Seal, Lesley T.; and Seal, Galen, Jr. Mounting stirrup. 5,347,797, Cl 54-46.100.

Sealed Air Corporation: *See—*
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Sealright Co., Inc.: *See—*
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Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, The: *See—*
Canham, Leigh-Trevor; Keen, John M.; and Leong, Weng Y., 5,348,618, Cl. 156-644.000.

Seemann, Karl F. No-nest bird gate. 5,348,138, Cl. 198-671.000.

Sefsick, Stephen J. Archery bowsight. 5,347,722, Cl. 33-265.000.

Segna, Todd D.: *See—*
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Seidelmann, Dieter: *See—*
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Seiko Epson Corporation: *See—*
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Namose, Isamu, 5,348,910, Cl. 437-70.000.
Takao, Hideo, 5,349,480, Cl. 360-74.100

Seiko Instruments Inc.: *See—*
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Seiler, Bruce S.: *See—*
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Seki, Noriaki: *See—*
Maeda, Masahiro; Yamasaki, Toru; Kurahashi, Masayuki; and Seki, Noriaki, 5,349,452, Cl. 358-527.000.

Seki, Yasukazu, to Fuji Electric Co., Ltd. Semiconductor device having thyristor structure. 5,349,212, Cl. 257-133.000.

Sekiguchi, Toshihiro: *See—*
Tadaki, Yoshitaka; Sekiguchi, Toshihiro; Uchiyama, Hiroyuki; Kaga, Toru; Murata, Jun; and Enomoto, Osaomi, 5,349,218, Cl. 257-296.000

Sekine, Akihiko, to Kabushiki Kaisha Topcon. Intraocular length measuring instrument having phase compensating means. 5,349,399, Cl. 351-215.000.

Selbitschka, Eugene T.: *See—*
Casson, Keith L.; Habeck, Kelly D.; and Selbitschka, Eugene T., 5,349,500, Cl. 361-749.000.

Selker, Edwin J., to International Business Machines Corporation Powercord transformer. 5,349,321, Cl. 336-221.000

Sellers, Scott D., to Pellucid Inc. Video subsystems utilizing asymmetrical column interleaving. 5,349,372, Cl. 345-185.000

Semchena, John H.: *See—*
Blumenthal, Jack L.; Gat, Nahum; Faigle, Ernst M.; Semchena, John H.; and Thompson, Richard J., 5,348,344, Cl. 280-737.000.

Semi-Bulk Systems, Inc.: *See—*
Handleman, Avrom R., 5,348,063, Cl. 141-314.000.

Semiconductor Energy Laboratory Co., Ltd.: *See—*
Arai, Yasuyuki; and Nakajima, Setsuo, 5,348,589, Cl. 136-244.000.
Yamazaki, Shunpei, 5,349,204, Cl. 257-53.000.
Yamazaki, Shunpei; and Takemura, Yasuhiko, 5,349,366, Cl. 345-92.000.

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Semler, Gunther: *See—*
Billeb, Gilbert; and Semler, Gunther, 5,349,104, Cl. 564-5.000.

Senet, Jean-Pierre: *See—*
Gauthier, Patricia; Gros, Philippe; Le Perchec, Pierre; and Senet, Jean-Pierre, 5,348,923, Cl. 502-62.000.

Senghaas, Karl A.; Senghaas, Peter; Wang, Jing; Kolonko, Pete T., Jr.; and Michalec, Jerzy, to Electrolab, Inc. Liquid level measuring apparatus. 5,347,864, Cl. 73-313.000.

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Senghaas, Karl A.; Senghaas, Peter; Wang, Jing; Kolonko, Pete T., Jr.; and Michalec, Jerzy, 5,347,864, Cl. 73-313.000.

Sensormatic Electronics Corportion: *See—*
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Seo, Jae-kyeong; Lee, Seon-ho; and Choi, Deog-ho, to Samsung Aerospace Industries, Ind. Aperture-priority lens shutter apparatus for a camera. 5,349,414, Cl. 354-400.000

Serizawa, Hajime; Kubota, Masaru; Sano, Hiroyuki; and Tajima, Yoshihisa, to Polyplastics Co., Ltd.; and Takeda Chemical Industries, Ltd. Lightweight thermoplastic polyester molding compositions, methods of making the same and molded articles formed thereof. 5,349,007, Cl. 524-513.000.

Serrand, Willibald; Holmes, Philip; Steffens, Todd R.; Terry, Patrick H.; and Eberly, Paul E., to Exxon Research Engineering Co. Catalytic cracking process with circulation of hot, regenerated catalyst to the stripping zone. 5,348,642, Cl. 208-113.000.

Serru, Veronique: *See—*
Camiade, Marc; Serru, Veronique; and Geffroy, Dominique, 5,349,356, Cl. 342-50.000

Serve, Klaus, to Manibs Spezialarmaturen GmbH & Co. KG. Pipe clamp for plastic supply pipelines, particularly a tapping clamp. 5,348,045, Cl. 137-318.000.

Sestrap, Arv M., to Sharjan Limited. Air, propane and oxygen burner with no exit flame. 5,348,469, Cl. 431-353.000.

Setteducati, Mark, to Tenyo Co., Ltd. Savings box. 5,348,220, Cl. 232-1.00D

Setton, Adrianne J.: *See—*
Horowitz, Bernard; Shulman, Richard W.; Setton, Adrianne J.; Nishimura, Toyohiko; and Kawashima, Yoichi, 5,348,939, Cl. 514-8.000.

Sexton, Douglas A.: *See—*
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Sexton, Michael D.; and Strange, Rosalind H., to Exxon Chemical Patents Inc. Fuel oil compositions. 5,348,561, Cl. 44-422.000.

Sgarlata, Christopher R.: *See—*
Huang, Nai Z.; Kolp, Christopher I.; and Sgarlata, Christopher R., 5,348,559, Cl. 44-367.000.

SGS-Thomson Microelectronics, Inc.: *See—*
Chen, Fusen E.; Dixit, Girish A.; and Miller, Robert O., 5,348,901, Cl. 437-47.000
McClure, David C., 5,349,243, Cl. 307-272.100.
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Menegoli, Paolo; and Rohrbaugh, Mark E., 5,349,521, Cl. 363-81.000.
Ryat, Marc H., 5,349,304, Cl. 330-253.000.
Wei, Che-Chia; and Liou, Fu-Tai, 5,349,229, Cl. 257-383.000

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Harrand, Michel, 5,349,547, Cl. 364-724.050.
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Shadden, Johnny W.: *See—*
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Shaffer, David T.: *See—*
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Shaffer, Howard R.: *See—*
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Shaft, David L.: *See—*
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Shah, Bhupendra O.: *See—*
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Shah, Shrenik K.: *See—*
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Shaltout, Raafat M.: *See—*
Tokas, Edward F.; Shaltout, Raafat M.; and Chen, Ken S., 5,348,574, Cl. 106-1.110.

Shamsuddin, Abulkalam M. Screening test and kit for cancerous and precancerous conditions. 5,348,860, Cl. 435-25.000.

Shani, Jacob; Paintal, Gurpal; and Wand, Bruce, to Advanced Cardiovascular Systems, Inc. Guiding catheter for the right coronary artery. 5,348,545, Cl. 604-281.000

Shankar, Kapil: *See—*
Agrawal, Om P.; Khu, Arthur H.; and Shankar, Kapil, 5,349,670, Cl. 395-775.000

Shannon, John M.: *See—*
Van Berkel, Cornelis; Bird, Neil C.; Davies, Oliver S.; Edwards, Martin J.; Shannon, John M.; and Knapp, Alan G., 5,349,174, Cl. 250-208.100.

Shapiro, Alan R.; Gray, Martha L.; Melendez, Luis A.; Schaffer, Jonathan L.; Wright John D.; and Venegas, Jose G., to General Hospital Corporation, The; and Massachusetts Institute of Technology. Cell stretching method. 5,348,879, Cl. 435-240.241

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Sestrap, Arv M., 5,348,469, Cl. 431-353.000.

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Shaw, Neil W.: *See—*
McKinlay, Peter R.; and Shaw, Neil W., 5,348,610, Cl. 156-472.000.
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Casson, Keith L.; Habeck, Kelly D.; and Selbitschka, Eugene T., 5,349,500, Cl. 361-749.000.
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Beshouri, Sharon M.; Wong, Pui K.; and Handlin, Dale L., Jr., 5,349,046, Cl. 528-354.000.
Lutz, Eugene F.; Schisla, David K.; Tomaskovic, Robert S.; and Hoewing, Timothy D., 5,349,101, Cl. 558-36.000.
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Shepard, John K., to Sonoco Products Company. Container having a tamper-evident seal. 5,348,180, Cl. 220-214.000.
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Miotto, Loris, 5,348,371, Cl. 297-301.000.
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Kerfoot, Derek E.; Collins, Michael J.; and Chalkley, Michael E., 5,348,713, Cl. 423-26.000
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Harris, Rodney M., 5,349,080, Cl. 560-81.000.
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Kinoshita, Isamu; Suzuki, Kenji; Shibata, Nobuyuki; and Nishiwaki, Toshimitsu, 5,347,698, Cl. 29-407.000.
Shibata, Norio; and Suzuki, Akihiro, to Fuji Photo Film Co., Ltd. Method of applying a liquid coating to a flexible web. 5,348,768, Cl. 427-356.000.
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Shibata, Ryoji; Kobayashi, Masahiko; Ban, Yukinobu; and Obayashi, Hirokatu, to Nidek Co., Ltd. Lens periphery processing apparatus, method for obtaining processing data, and lens periphery processing method. 5,347,762, Cl. 451-15.000.
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Shibata, Soichiro: *See—*
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Masumoto, Tsuyoshi; Inoue, Akihisa; Kato, Akira; Shibata, Toshisuke; and Nishiyama, Nobuyuki, 5,348,591, Cl. 148-403.000.
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Shichijo, Shunichi: *See—*
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Haga, Takahiro; Sugi, Hideo; Shigehara, Itaru; Odawara, Shinji; Yotsuya, Syuichi; Kimura, Hirohiko; and Yamamoto, Kazuhiro, 5,348,967, Cl. 514-352.000.
Shigekane, Hisao, to Fuji Electric Co., Ltd. Diode circuit for high speed switching transistor. 5,349,230, Cl. 257-474.000.
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Shigemura, Seizi; Oka, Hitoshi; and Shindo, Motokazu, to Hitachi, Ltd.; and Hitachi Computer Electronics. Surface treating agent for copper or copper alloys. 5,348,590, Cl. 148-23.000.
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Shimadzu Corporation: *See—*
Taniguruma, Ryuji; and Masuo, Katsuhiro, 5,349,628, Cl. 378-181.000
Togawa, Yoshiyuki, 5,348,883, Cl. 435-291.000.
Shimakura, Toshiaki; Ishida, Yutaka; and Watanabe, Tomomi, to Nippon Paint Co., Ltd. Chemical conversion method and aqueous chemical conversion solution used therefor. 5,348,640, Cl. 205-318.000.
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Shimano Inc.: *See—*
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Shimasaki, Yuichi: *See—*
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Shimek, Ronald J. Draft hood attachment device. 5,347,983, Cl. 126-529.000.
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Shimizume, Kazutoshi, to Sony Corporation. Modulator circuit for a recording for a digital recording medium. 5,349,349, Cl. 341-58.000.
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Oda, Noriyuki; Maeno, Hiroshi; Higashi, Katsumi; Toriyama, Akira; and Shimoda, Hiromi, 5,348,568, Cl. 95-14.000.
Shimoji, Noriyuki, to Rohm Co., Ltd. Semiconductor memory device and method of reading out information for the same. 5,349,221, Cl. 257-324.000.
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Shimono, Tsugio; and Yamamoto, Kenichi, to NEC Corporation. Removal of detrimental metal ions from hydrofluoric acid solution for cleaning silicon surfaces. 5,348,722, Cl. 423-488.000.
Shimura, Kiyohito: *See—*
Karger, Barry L.; and Shimura, Kiyohito, 5,348,633, Cl. 204-180.100.
Shin-Etsu Chemical Co., Ltd.: *See—*
Amano, Tadashi; and Ohnishi, Shuji, 5,348,708, Cl. 422-132.000.
Fujiki, Hironao; Michimata, Kaoru; and Okami, Takehide, 5,349,037, Cl. 528-15.000.

Kuwabara, Haruyoshi; Otsuka, Akio; Maki, Yasuyuki; and Kashida, Meguru, 5,348,919, Cl. 501-97.000.
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Yamagishi, Hirotoshi, 5,348,893, Cl. 437-10.000.
Shin Etsu Handotai Kabushiki Kaisha: *See—*
Yanagisawa, Munehisa; Higuchi, Susumu; and Tamura, Yuuki, 5,349,208, Cl. 257-79.000.
Shinada, Tsuneo: *See—*
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Shinbori, Osamu; Mimura, Yoshinori; Noda, Yukio; and Nakai, Tetsuya, to Kokusai Denshin Denwa Kabushiki Kaisha. Solid state laser. 5,349,600, Cl. 372-92.000.
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Murata, Kiyohito; Shindo, Yoshio; and Arai, Hajime, 5,348,127, Cl. 192-3.300
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Kuroda, Syoichi; Shibata, Soichiro; Shimamura, Nonyuki; Kawasaki, Shigetake; Kasahara, Keisuke; Sakuma, Seiichi; Komatsu, Fujio; Ishikawa, Masaya; Sugiyama, Kunio; Mashimo, Mitsuo; Shindo, Yuzuru; and Kawamura, Kuniaki, 5,348,080, Cl. 165-104.130.
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Shink, Joe, to Auto-Shade, Inc. Portable phone organizer. 5,348,347, Cl. 281-31.000.
Shinoda, Kenichi; Izumi, Akihide; Tsutsui, Kiyohide; Yamashita, Katsuhiro; Tsuzuki, Hidenori; and Matsuo, Takashi, to Fuji Electrochemical Co., Ltd. Alkaline battery. 5,348,816, Cl. 429-206.000.
Shinto Paint Co., Ltd.: *See—*
Matsuo, Katsuhiko; and Takeshi, Kuninori, 5,348,634, Cl. 204-181.100.
Shiotani, Yusuke: *See—*
Nishida, Shoso; and Shiotani, Yusuke, 5,348,461, Cl. 425-129.100.
Shirai, Etsuo, to Kaise Kabushiki Kaisha. Clamp-on multimeter having a display for indicating the results of a plurality of measurements. 5,349,289, Cl. 324-127.000.
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Sakamoto, Kazuo; Fujii, Tatsuya; Shiraishi, Naoto; Fukui, Ryo; Imai, Yukihiro; Sato, Yutaka; and Yamada, Yoshiteru, 5,349,610, Cl. 375-106.000.
Shirakawa, Shinsuke: *See—*
Yoshikawa, Motoyoshi; Noda, Hideyoshi; Shirakawa, Shinsuke; Tsuboniwa, Noriyuki; Yamanaka, Eiji; Urano, Satoshi; and Kanda, Kazunori, 5,348,991, Cl. 523-402.000.
Shiraki, Harumitsu; Sohtome, Hiroyasu; Suzuki, Kiyoshi; Uematsu, Tetsutaro; and Su, Lao-Sou, to Castrol Limited Burmah Castrol House. Dual-purpose fluid for cutting and electrical discharge machining. 5,349,149, Cl. 219-69.140.
Shiratori, Toshikazu; Inoue, Chihiro; Kitagawa, Yoshichika; and Kusano, Tomonobu, to Dowa Mining Co., Ltd. DNA fragment coding for mercuric reductase of thiobacillus, and recombinant plasmid. 5,348,888, Cl. 435-320.100.
Shishikura, Akihiro; Kimbara, Hiroshi; Yamaguchi, Katsuhisa; and Arai, Kunio, to Idemitsu Petrochemical Co., Ltd. Process for recovering high-purity organic acid. 5,349,084, Cl. 562-580.000.
Showa Denko K.K.: *See—*
Miyake, Shigenobu; Kibino, Nobuyuki; Monoi, Takashi; Ohira, Hiroyuki; and Inazawa, Shintaro, 5,349,032, Cl. 526-127.000.
Showa Highpolymer Co., Ltd.: *See—*
Nakamura, Akira; Kamei, Ryosuke; Takahashi, Takeshi; Takahashi, Tetuya; Terazono, Shigenori; and Takiyama, Eiichiro, 5,348,700, Cl. 264-177.170.
Takahashi, Tetuya; Uda, Hitoshi; Nakamura, Akira; Kamei, Ryosuke; and Takiyama, Eiichiro, 5,349,028, Cl. 525-440.000.
Shozi, Yukio; and Naramoto, Satoru, to Hidan Co. Cylindrical cosmetic container with flexible brake. 5,348,410, Cl. 401-78.000.
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Shurtz, Richard R., II: *See—*
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Shuto, Kenji, to Mothers System U.S.A., Inc. System for recording from live source or dubbing to multiple tapes. 5,349,477, Cl. 360-15.000.
Siddiqui, Mohammad A.: *See—*
Sayka, Anthony; and Siddiqui, Mohammad A., 5,349,237, Cl. 257-715.000
Sieber, Heinrich; and Wolf, Roland, to Murray, Veronica. Securing device for preventing an attempted theft and unlocking device. 5,349,331, Cl. 340-572.000.
Siecor Corporation: *See—*
Temple, Kenneth D., Jr.; and Church, Keith D., 5,348,586, Cl. 118-405.000.
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Siemens Aktiengesellschaft: *See—*
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Born, Hans-Joachim; Huettenrauch, Gerd; and Link, Heinz-Joachim, 5,349,625, Cl. 378-95.000.
Delker, Klaus, 5,349,554, Cl. 365-189.050.
Mattern, Detlef; Oppelt, Arnulf; and Sklebitz, Hartmut, 5,349,178, Cl. 250-214.0VT.
Scheckel, Bruno; and Reiner, Robert, 5,349,173, Cl. 235-492.000.
Soukal, Peter, 5,349,585, Cl. 370-110.400.
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Willer, Josef; Wendt, Hermann; and Reisinger, Hans, 5,347,696, Cl. 29-25.420.
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Sievers, G. Kelly; and Bamola, Rajan K. Method of forming an uninterrupted refractory coating on a downhole drill bit cone. 5,348,770, Cl 427-422.000.
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Kanigan, Kim W., 5,347,736, Cl. 40-576.000.
Signode Corporation: *See—*
Koblella, Robert J., 5,348,781, Cl. 428-57.000.
Sikter, Andras, to S+V Engineering Kft. Method for treating panic disorder. 5,348,749, Cl. 424-604.000
Silberline Manufacturing Co., Inc.: *See—*
Jenkins, William G.; Keemer, Craig; Lamborn, H. Taylor; and Curcio, Michael, 5,348,579, Cl. 106-404.000.
Simas, Luis E. D.; and Gaztambide, Jesus F., to Liquid Carbonic Corporation. Method for increasing the capacity of sewage treatment plant. 5,348,655, Cl. 210-625.000.
Simcock, John H., to Indecctotherm Europe Limited. Induction heating apparatus with PWM multiple zone heating control. 5,349,167, Cl. 219-662.000.
Simmons, George H.: *See—*
Chiang, David; Ho, Thomas Y.; Ku, Wei-Yi; Simmons, George H.; and Barker, Robert W., 5,349,249, Cl. 307-465.000.
Simmons, Ron: *See—*
Tyler, Larry; Burbidge, Jack; Gilliam, Steve; Hampton, Gary; Olson, Jim; and Simmons, Ron, 5,347,686, Cl. 16-247.000.
Simms, Norman; and Cazzola, Michael, to Dialight Corporation. Multilevel lightpipe design for SMD LEDs. 5,349,504, Cl. 362-32.000.
Simoni, Wayne: *See—*
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Simpson, Michael A. D.; and Sayer, Trevor S. B., to Imperial Chemical Industries PLC. Amphipathic copolymer pigment dispersants. 5,349,036, Cl. 526-320.000.
Sinclair, Peter J.; Goulet, Joung; Wong, Frederick; Goulet, Mark; Parsons, William H.; and Wyvratt, Matthew J., to Merck & Co., Inc O-heteroaryl, O-alkylheteroaryl, O-alkenylheteroaryl and O-alkynylheteroarylmacrolides having immunosuppressive activity. 5,349,061, Cl. 540-45.600.
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Siol, Werner; and Terbrack, Ulrich, to Rohm GmbH Chemische Fabrik. Heat sealable plastic film. 5,349,025, Cl. 525-309.000.
Sirraya, Inc.: *See—*
Caro, Richard G., 5,348,002, Cl. 128-633.000.
Caro, Richard G., 5,348,003, Cl. 128-633.000.
Skeen, Michael A.: *See—*
Kenny, Garry R.; Rhys, Hugh R.; and Skeen, Michael A., 5,348,136, Cl. 198-443.000.
Sklar, Albert. Conduit sealing assembly for neon lighting displays 5,348,413, Cl. 403-24.000.
Sklebitz, Hartmut: *See—*
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Skoff, James M. Flexible roof vent sealing device. 5,347,776, Cl. 52-219.000.
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Slater, William M.; Chiasson, Anthony M.; and Denny, Thomas A. Laryngoscope blade cover. 5,347,995, Cl. 128-10.000

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Sloane, Norman S. Splined safety lock. 5,348,349, Cl. 285-92.000.

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Sluss, James J., Jr.; Duke, James C.; Lewelling, Kevin R.; and Harris, Shaun L., to University of Oklahoma, The Board of Regents of the. Optical fiber pressure sensing catheter. 5,348,019, Cl. 128-667.000.

Smayling, Michael: *See—*
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Smayling, Michael C.; Torreno, Manuel J., Jr. deceased; and Falessi, George, to Texas Instruments Incorporated. LDMOS transistor with self-aligned source/backgate and photo-aligned gate. 5,348,895, Cl. 437-54.000.

Smith, Alvin H. Tethered tennis game. 5,348,293, Cl. 273-29.00A.

Smith, Bruce R.; and Gerber, Reinhold, to James River Corporation of Virginia. Winged cup lid. 5,348,181, Cl. 220-254.000.

Smith, David K.: *See—*
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Smith International, Inc.: *See—*
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Smith, Jeremy P., to Summit Packaging Systems, Inc. Aerosol valve having means to shut off flow if valve is tipped beyond a certain inclination from vertical. 5,348,199, Cl. 222-402.190.

Smith, Jerry R., to Ideaz International, Inc. Vehicle security apparatus and method. 5,349,329, Cl. 340-539.000

Smith, L. J.: *See—*
Smith, Lynn H., 5,347,774, Cl. 52-182.000.

Smith, Lynn H., to Smith, L. J. Methods of manufacturing curved staircases and staircases produced. 5,347,774, Cl. 52-182.000.

Smith & Nephew Richards Inc.: *See—*
Davidson, James A., 5,348,026, Cl. 128-898.000

Smith & Nephew Rolyan, Inc.: *See—*
Brown, Nancy M.; Reina, Debra A.; and Krippendorf, Carl E., 5,348,531, Cl. 602-22.000.

Smith, Redd H.: *See—*
Scott, Danny B.; Smith, Redd H.; and Tibbitts, Gordon A., 5,348,108, Cl. 175-432.000.

Smith, William F.: *See—*
McElroy, James F.; Smith, William F.; and Genovese, Joseph E., 5,348,691, Cl. 261-36.100

Smith, William L., Jr.: *See—*
Fox, Robert E.; Smith, William L., Jr.; and Boe, Thomas E., 5,348,101, Cl. 172-2.000.

Smiths Industries Public Limited Company: *See—*
Wigram, Richard I., 5,348,502, Cl. 441-7.000.

SMS Schloemann-Siemag Aktiengesellshaft: *See—*
Streubel, Hans, 5,348,074, Cl. 164-476.000

SNAM S.P.A.: *See—*
Venzi, Stefano; and Colombo, Adalberto, 5,348,801, Cl. 428-354.000

Snap-on Incorporated: *See—*
Mikic, Frank; and Hoff, Jeffrey H., 5,347,893, Cl. 81-436.000.

Snooks, Rupert J., Jr.: *See—*
Plischke, Le Moyne W.; and Snooks, Rupert J., Jr., 5,349,038, Cl 528-150.000.

Snow Brand Milk Products Co., Ltd.: *See—*
Hori, Tomoshige; Shiinoki, Yasuhiko; and Ito, Kensuke, 5,348,394, Cl. 374-44.000

Sobodacha, Chester J.: *See—*
Khanna, Dinesh N.; McKenzie, Douglas; Sobodacha, Chester J.; and Dammel, Ralph R., 5,348,842, Cl. 430-272.000

Socha, Richard F.: *See—*
Grasselli, Robert K.; Lago, Rudolph M.; Socha, Richard F.; and Tsikoyiannis, John G., 5,349,117, Cl. 585-820.000.

S.A. Degremont: *See—*
Rovel, Jean-Marie, 5,348,653, Cl. 210-605.000

Societe de Construction des Avions Hurel-Dubois: *See—*
Standish, Robert; Frank, Joel; and Meyer, Pascal, 5,347,808, Cl. 60-226.200

Societe Europeenne De Propulsion: *See—*
Vives, Michel; Taveau, Pierre; Habarou, Georges; and Bognandi, Francois, 5,348,598, Cl. 156-93.000

Societe Joseph Sauron Materiel Industriel: *See—*
Sauron, Jean; and Thomas, Jean-Jacques, 5,348,459, Cl. 425-11.000.

Societe Nationale des Poudres et Explosifs - S.N.P.E.: *See—*
Gauthier, Patricia; Gros, Philippe; Le Perchec, Pierre; and Senet, Jean-Pierre, 5,348,923, Cl. 502-62.000.

Societe Nationale D'Etude et de Construction de Moteurs d'Aviaton "SNECMA": *See—*
Brossier, Pascal N.; Mazeaud, Georges; and Wurniesky, Pascal C., 5,347,807, Cl. 60-225.000

Societe Nationale Elf Aquitaine (Production): *See—*
Henneuse, Henri; Clayer, Frederic; Tanguy, Jean-Luc; and Lutz, Jean, 5,347,859, Cl. 73-151.000.

Sohtome, Hiroyasu: *See—*
Shiraki, Harumitsu; Sohtome, Hiroyasu; Suzuki, Kiyoshi; Uematsu, Tetsutaro; and Su, Lao-Sou, 5,349,149, Cl. 219-69.140.

Sointula, Erkka, to Nokia Mobile Phones, Ltd. Radio telephone system. 5,349,630, Cl. 379-58.000.

Sollradl, Herbert: *See—*
Mitter, Helmut; Scharizer, Walter; Sollradl, Herbert; and Rossak, Norbert, 5,348,761, Cl. 427-101.000.

Solomon, Peter R., to Advanced Fuel Research Inc. Structure for the dynamic support of a reflective element and interferometer comprising the same. 5,349,438, Cl. 356-346.000.

Solvay Interox Limited: *See—*
Brougham, Paul; Sanderson, William R.; and Pearce, Timothy, 5,349,083, Cl. 562-6.000.

Solvay (Societe Anonyme): *See—*
De Soete, Gerard; Ninane, Leon; and Blondel, Jean-Marie, 5,348,716, Cl. 423-239.100.

Sommer, Bruce A.: *See—*
Eichman, Eric C.; Sommer, Bruce A.; Churley, Michael J.; and Ramsey, W. Chuck, 5,348,587, Cl. 118-723.0MP.

Sommercorn, Richard K.: *See—*
Young, Pauline R.; Abrahamson, Timothy A.; and Sommercorn, Richard K., 5,348,536, Cl. 604-43.000.

Somnus Corporation: *See—*
Bornn, Robert; Levinsky, Jeff L.; Ricks, Robert D.; and Worth, Laura A., 5,348,008, Cl. 128-642.000.

Sonesson, Leif; and Olsson, Jorgen, to Arjo Hospital Equipment AB Method and apparatus for controlling temperature of a liquid 5,348,223, Cl. 236-12.120.

Sonesson, Leif B.: *See—*
Sandell, Anders L.; Sonesson, Leif B.; and Persson, Bo G., 5,348,273, Cl. 254-385.000

Sonnet, Alain, to Institut Francais du Petrole. Bracket and connector for a cable inserted into a pipe for enabling a measurement in the cable. 5,348,492, Cl. 439-194.000.

Sonoco Products Company: *See—*
Shepard, John K., 5,348,180, Cl. 220-214.000.

Sontag, Kenneth N.: *See—*
Vokey, David E.; Sontag, Kenneth N.; and Kraft, Heinrich, 5,349,182, Cl. 250-227.210.

Sony Corporation: *See—*
Amano, Toshio; Oda, Osamu; and Saitoh, Mitsumasa, 5,349,444, Cl. 348-711.000.
Hayashi, Masatake; and Nishida, Motoharu, 5,349,455, Cl. 359-54.000
Iwama, Jun, 5,349,454, Cl. 359-54.000
Iwanaga, Toshihiko; Yoshida, Kazuyoshi; and Sato, Takuset, 5,349,456, Cl. 359-82.000.
Iwase, Seiichiro, 5,349,561, Cl. 365-219.000.
Kaneda, Yushi; and Oka, Michio, 5,349,603, Cl. 372-101.000.
Kawamura, Takahiro; and Uehira, Tetsuo, 5,348,506, Cl. 445-30.000.
Munakata, Masaki, 5,349,453, Cl. 359-40.000
Murayama, Hideaki; Kihara, Taku; Sudo, Fumihiko; and Asaida, Takashi, 5,349,381, Cl. 348-252.000.
Nakagawa, Tomihiro, 5,348,244, Cl. 242-338.300.
Oguro, Masaki, 5,349,384, Cl. 348-405.000.
Ohmachi, Junya; Saitou, Kengo; and Sasaki, Kazuo, 5,348,243, Cl. 242-342.000.
Ohsawa, Kenji; Nagano, Mutsumi; Kojima, Akira; and Takahashi, Hideyuki, 5,349,238, Cl. 257-736.000
Okanobu, Taiwa, 5,349,285, Cl. 323-312.000.
Sato, Kenichi; and Chiba, Kazunobu, 5,349,478, Cl. 360-55.000.
Shimizume, Kazutoshi, 5,349,349, Cl. 341-58.000.
Takemasa, Kazuo; Hayashi, Shoichi; Inoue, Tsuyoshi; and Tanaami, Hideo, 5,348,441, Cl. 414-796.700
Tsutsui, Kyoya, 5,349,549, Cl. 364-725.000.
Watanabe, Junzo; Ueyama, Akihiro; and Kawamura, Ban, 5,349,274, Cl. 315-395.000.
Yasuda, Nobuyuki; Tamura, Toshio; Toi, Hiroshi; and Mishima, Akio, 5,347,712, Cl. 29-852.000.

Sony United Kingdom Limited: *See—*
Turner, Alan; Chouhan, Mukesh; and Hedley, David J., 5,349,388, Cl. 348-590.000

Soofi, Madjid, to Magneco/Metrel, Inc. Tundish nozzle assembly block. 5,348,275, Cl. 266-236.000.

Sorensen, Per O.: *See—*
Andersen, Knud E.; Knutsen, Lars J. S.; Sorensen, Per O.; Lundt, Behrend F.; Lau, Jesper; and Petersen, Hans, 5,348,965, Cl. 514-325.000

Sormunen, Juha: *See—*
Virta, Arto; Strommer, Pekka; and Sormunen, Juha, 5,349,627, Cl. 378-166.000

Sorrentino, Gregory L., to General DataComm, Inc. Grounding spring clip for modular jacks. 5,348,484, Cl. 439-101.000.

Soshi, Isao; Miyamoto, Hidenori; Ohtake, Motoyuki; and Wakabayashi, Hiroshi, to Nikon Corporation. Data imprinting device for a camera. 5,349,402, Cl. 354-106.000.

Sotani, Junji; Satoh, Kuniyoshi; and Noda, Hajima, to Furukawa Electric Co., Ltd. Electrical wiring material and transformer. 5,349,131, Cl. 174-24.000.

Sotomura, Tadashi: *See—*
Uemachi, Hiroshi; Sato, Yoshiko; Sotomura, Tadashi; and Takeyama, Kenichi, 5,348,819, Cl. 429-213.000.

Soukal, Peter, to Siemens Aktiengesellschaft. Method for transmitting two digital signals which are independent of one another. 5,349,585, Cl. 370-110.400.

Soule, Timothy: *See—*
Bryanos, James; Soule, Timothy; and Harris, Michael, 5,349,364, Cl. 343-853.000.

Soundwich, Inc.: *See—*
Moore, Dan T., III, 5,347,810, Cl. 60-323.000.

Southern, Malcolm; and Wolenski, Walter, to Goodman Manufacturing Company, L.P. Pilot pressure switch and method for controlling the operation of a furnace. 5,347,981, Cl. 126-116.00A.

Southwest Research Institute: *See—*
Schlaemus, Herman W.; Marshall, Mary C.; MacNaughton, Michael G.; Alexander, Matthew L.; and Scott, James R., 5,348,803, Cl. 428-402.200.

Space Systems/Loral: *See—*
Tilley, Scott W.; Liu, Tung Y.; and Higham, John S., 5,349,532, Cl. 364-459.000

Span, Inc.: *See—*
McClure, Malcolm S., 5,349,282, Cl. 320-32.000

Spann, J. Richard: *See—*
Toth, Louis E.; and Spann, J. Richard, 5,348,937, Cl. 505-238.000

Spargo, John D.; and Drake, John L., Jr., to United States of America, Navy. Impeller assembly for processing device. 5,348,236, Cl. 241-46.170.

Spears, Kenneth G.; and Horn, Gerald, to Kerus Medical Systems. Method for correcting refractive disorders. 5,348,551, Cl. 606-5.000.

Spencer, Merrill P.: *See—*
Moehring, Mark A.; Curry, Mark A.; Spencer, Merrill P.; and Klepper, John R., 5,348,015, Cl. 128-661.070.

Spevak, Lev: *See—*
Kupperman, David S.; and Spevak, Lev, 5,349,568, Cl. 367-125.000.

Spiero, Richard C.; Douglas, Terence A.; and Vlot, Marnix C., to U.S. Philips Corporation. Apparatus for use in an interconnection system. 5,349,391, Cl. 348-705.000.

Sportlite/Powermag: *See—*
Boozer, James J., 5,348,359, Cl. 294-24.000.

Sportsman, J. Richard: *See—*
Bumol, Thomas F.; Gadski, Robert A.; Hamilton, Amy E.; Sportsman, J. Richard; and Strnad, Joann, 5,348,887, Cl. 435-320.100.

Springer, Hartmut: *See—*
Buch, Holger M.; and Springer, Hartmut, 5,349,057, Cl. 534-637.000.

Spung, Richard C.: *See—*
Yen, Jeffrey H.; and Spung, Richard C., 5,348,662, Cl. 210-717.000.

Srivastava, Anurag S.: *See—*
Nicholas, Kenneth M.; and Srivastava, Anurag S., 5,349,109, Cl 564-408.000

SS Pharmaceutical Co., Ltd.: *See—*
Kurazumi, Toshiaki; Mizuno, Hiroyuki; Imamori, Katsumi; and Iwasa, Akira, 5,348,744, Cl. 424-439.000

Stadler, Peter: *See—*
Keutgen, Franz; Leuwer, Heinz-Josef; Perings, Dieter; Stadler, Peter; and Winterhager, Rudiger, 5,348,072, Cl. 164-420.000

Stafford, James M.: *See—*
Brewer, James A.; Habermehl, Paul R.; Stafford, James M.; and Williams, Errol R., Jr., 5,349,661, Cl. 395-700.000.

Stahl, Daniel E.: *See—*
Rudy, William J., Jr.; Shaffer, Howard R.; and Stahl, Daniel E., 5,348,482, Cl. 439-61.000.

Stahlecker, Fritz; and Stahlecker, Hans. Spinning machine and a process for changing blocks of sliver cans on a spinning machine 5,347,803, Cl. 57-90.000

Stahlecker, Fritz; and Stahlecker, Hans. Spinning machine with drivable guiding belts for transporting sliver. 5,347,804, Cl. 57-90.000.

Stahlecker, Fritz: *See—*
Stahlecker, Hans; and Stahlecker, Gerd, 5,347,802, Cl. 57-88.000

Stahlecker, Gerd: *See—*
Stahlecker, Hans; and Stahlecker, Gerd, 5,347,802, Cl. 57-88.000.

Stahlecker, Hans; and Stahlecker, Gerd, to Stahlecker, Fritz; and Stahlecker, Hans. Spinning or twisting spindle. 5,347,802, Cl. 57-88.000.

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Stahlecker, Fritz; and Stahlecker, Hans, 5,347,803, Cl. 57-90.000
Stahlecker, Fritz; and Stahlecker, Hans, 5,347,804, Cl. 57-90.000.

Staley, Charles F.: *See—*
Green, Eric T.; Shaffer, David T.; and Staley, Charles F., 5,348,488, Cl. 439-140.000

Stalker, David M.: *See—*
Shewmaker, Christine K.; and Stalker, David M., 5,349,123, Cl 800-205.000.

Stallings, Hulon D. Tool for assembling a tire lift mechanism. 5,347,697, Cl. 29-280.000.

Stamatoff, James B.: *See—*
Walpita, Lakshaman M.; Stamatoff, James B.; and Lundberg, George, 5,348,990, Cl. 523-219.000.

Stamp, Patrick: *See—*
Gisin, Nicolas; Stamp, Patrick; Passy, Rogerio; Hori, Nobuo; and Nagano, Shigenori, 5,349,431, Cl. 356-73.100.

Stanchina, William E.; and Hasenberg, Thomas C., to Hughes Aircraft Company. NPN heterojunction bipolar transistor including antimonide base formed on semi-insulating indium phosphide substrate. 5,349,201, Cl. 257-18.000.

Standish, Robert; Frank, Joel; and Meyer, Pascal, to Societe de Construction des Avions Hurel-Dubois. Jet-engine thrust reversers. 5,347,808, Cl. 60-226.200.

Stanfield, Gregory R.: *See—*
Wood, Ross W.; and Stanfield, Gregory R., 5,348,229, Cl. 239-397.500.

Stanford Telecommunications, Inc.: *See—*
Graham, Hatch; and Nguyen, Christine, 5,349,608, Cl. 375-94.000.

Stankwitz, Herbert C.: *See—*
Dallaire, Rodney J.; and Stankwitz, Herbert C., 5,349,359, Cl. 342-195.000

Stanley Works, The: *See—*
Duguette, Paul J.; Gatto, Neil A.; Boliver, Ronald J.; and Laforest, Daniel J., 5,347,670, Cl. 7-107.000.

Stanzione, Todd T.: *See—*
Parker, Anthony A.; Anderson, Edward M.; and Stanzione, Todd T., 5,348,760, Cl. 427-9.000.

Starzl, Thomas E.; and Todo, Satoru, to Fujisawa Pharmaceutical Co., Ltd. Method for treating pyoderma and Sezary's syndrome using FK 506 and related compounds. 5,348,966, Cl. 514-326.000

Stasiak, James W., to Lexmark International, Inc. Manufacture of printhead with diamond resistors. 5,348,909, Cl. 437-60.000.

State of Alaska: *See—*
Weaver, David E.; Clary, Everett; Shem, Robert; and Taft, George, 5,348,759, Cl. 427-1.000.

State University of New York: *See—*
Dosch, Jeffrey J.; Mayne, Roger W.; and Inman, Daniel J., 5,347,870, Cl. 73-769.000.

Steadings, Stephen W.; and Barton, Christopher B., to Jacobs Chuck Technology Corporation. Chuck. 5,348,317, Cl. 279-62.000

Steadings, Stephen W.; and Barton, Christopher B., to Jacobs Chuck Technology Corporation. Chuck. 5,348,318, Cl. 279-62.000.

Stec Inc.: *See—*
Satoh, Kiyoshi, 5,347,861, Cl. 73-204.120.

Steel Heddle Mfg. Co.: *See—*
Kramer, Charles F., 5,348,055, Cl. 139-93.000

Steffens, Todd R.: *See—*
Serrand, Willibald; Holmes, Philip; Steffens, Todd R.; Terry, Patrick H.; and Eberly, Paul E., 5,348,642, Cl. 208-113.000.

Stegall, Lannie L., to ABT, Inc. Trench forming assembly and method. 5,348,421, Cl. 405-119.000.

Stein, Frank L.: *See—*
Verrier, Guy F.; Stein, Frank L.; and Donaldson, Robert L., 5,349,139, Cl. 178-19.000

Stein, John T., to Hughes Aircraft Company. Resettable clamp-sample-and-hold signal processing circuit for imaging sensors. 5,349,380, Cl 348-250.000

Steinfels, Joan: *See—*
Steinfels, Victor E., III, 5,348,145, Cl. 206-45.190.

Steinfels, Victor E., III, to Steinfels, Joan. Product accessible display container. 5,348,145, Cl. 206-45.190

Steininger, Ulrich, to Siemens Aktiengesellschaft. Dental patient chair with a pivotable backrest. 5,348,375, Cl. 297-362.110

Stell, Larry A.: *See—*
Dunn, Tave P.; Stell, Larry A.; Dunn, William F., Jr.; and Endick, Norman, 5,349,640, Cl. 379-387.000

Stenzel, Klaus: *See—*
Hain, Rudiger; and Stenzel, Klaus, 5,349,122, Cl. 800-205.000.

Stepanski, Horst: *See—*
Trinks, Rainer; Konigshofen, Heinrich; Ganster, Otto; Stepanski, Horst; and Colinas-Martinez, Jose, 5,349,040, Cl. 528-75.000.

Stephens, David N.: *See—*
Kruger, Martin; Huth, Andreas; Seidelmann, Dieter; Schneider, Herbert; Turski, Lechoslaw; and Stephens, David N., 5,348,958, Cl. 514-249.000.

Stephens, Paul D.: *See—*
Saunders, Craig M.; Stephens, Paul D.; and Wright, Michael F., 5,347,679, Cl. 15-416.000

Stepner, David E. Portable bicycle pump having collapsible handle and footstand. 5,347,913, Cl. 92-58.100.

Stepp, Lee W.: *See—*
Brandell, John T.; Duell, Alan B.; and Stepp, Lee W., 5,348,089, Cl. 166-154.000.

Sterling, Michael; and Critzer, Susan, to American Cyanamid Co Suture package. 5,348,146, Cl. 206-63.300.

Sterling Winthrop Inc.: *See—*
Bacon, Edward R.; Illig, Carl R.; Caulfield, Thomas J.; Douty, Brent D.; and Josef, Kurt A., 5,348,727, Cl. 424-5.000
Diana, Guy D.; and Nitz, Theodore J., 5,349,068, Cl. 548-131.000.

Sternberg, Esther M.; Gold, Philip W.; and Page, Samuel W., to United States of America, Health and Human Services. Evaluative means for detecting inflammatory reactivity. 5,348,729, Cl. 424-9.000.

Sterns, William G., to ITT Corporation. Dual bandpass microwave filter. 5,349,316, Cl. 333-208.000

Sterzel, Hans-Josef, to BASF Aktiengesellschaft. Foamed polylactide moldings and production thereof. 5,348,983, Cl. 521-54.000.

Stessen, Jeroen H.; and Meijler, Robert R., to U.S. Philips Corporation. Picture signal processor for performing both large area and small area contrast reduction, and picture display apparatus incorporating such a picture signal processor. 5,349,390, Cl. 348-679.000.

Stettner, Gerd Erich, to Koenig & Bauer Aktiengesellschaft. Paper web splice tape. 5,348,793, Cl. 428-211.000.

Steurer, Steven T., to Brunswick Bowling & Billards. Golf dual shoulder strap. 5,348,205, Cl. 224-209.000.

Steusloff, Hartwig: *See—*
Birkle, Michael; Grasemann, Gunther; and Steusloff, Hartwig, 5,349,540, Cl. 364-578.000.

Stevens, Eric G.: *See—*
Anagnostopoulos, Constantine N.; Chang, Win-Chyi; Stevens, Eric G.; and Torok, Georgia R., 5,349,215, Cl. 257-223.000.

Stewart, Thomas: *See—*
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Sticha, David A.; Mayer, Glenn N.; Ranz, Stephen J.; and Garbarino, John, to Motorola, Inc. Method of maintaining control in a trunked communication system. 5,349,584, Cl. 370-97.000.

Stiennon, Richard D., to Hoover Universal, Inc. Elecromechanical release mechanism for a seat assembly. 5,348,373, Cl. 297-344.100

Stillhard, Bruno: *See—*
Keitel, Ralph; and Stillhard, Bruno, 5,348,463, Cl. 425-145.000.

Stipe, Candace M.: *See—*
Meyer, August K.; Shadden, Johnny W.; Stipe, Candace M.; and Dean, Leron R., 5,348,699, Cl. 264-176.100

Stocker, Achim; and Woggon, Wolf D., to Hoffmann-La Roche Inc. Process for producing tocopherols with spheroplasts of algae 5,348,869, Cl. 435-125.000.

Stoll, Kurt; Demuth, Stefan; and Henzler, Magnus, to Festo KG. Valve arrangement. 5,348,047, Cl. 137-554.000

Stolzer, Armin, to Keuro Besitz GmbH & Co.; and EDV-Dienstleistungs KG. Horizontal bandsaw with automatic tilt control. 5,347,903, Cl. 83-796.000.

Stolzer, J. Timothy, to Ryobi Motor Products Corporation. Chuck utilizing cam. 5,348,319, Cl. 279-77.000.

Stork Nedserv B.V.: *See—*
v.d. Woude, Meino J., 5,348,234, Cl. 239-753.000.

Storm, Siegfried: *See—*
Schmode, Hartmut; Wiebe, Ulrich; Storm, Siegfried; Hetland, Detlev; and Kornfeld, Hans-Joachim, 5,347,705, Cl. 29-566.400

Stoyan, Nick. Multiple focus corneal contact lens and method for treating myopia. 5,349,395, Cl. 351-161.000

Stranco, Inc.: *See—*
Kim, Yong H.; and Strand, Roger L., 5,348,664, Cl. 210-746.000.

Strand, Roger L.: *See—*
Kim, Yong H.; and Strand, Roger L., 5,348,664, Cl. 210-746.000.

Strandli, Kare R.; Angard, Inge M.; and Willassen, Einar, to Raufoss A/S. Multipurpose projectile and a method of making it. 5,347,907, Cl. 86-20.140

Strange, Rosalind H.: *See—*
Sexton, Michael D.; and Strange, Rosalind H., 5,348,561, Cl 44-422.000

Streubel, Hans, to SMS Schloemann-Siemag Aktiengesellshaft. Process and a device for continuous casting of slabs or ingots. 5,348,074, Cl. 164-476.000.

Stribling, Robert, to Stribling Systems, Inc. Self-contained hydraulic power unit for waste compactor containers. 5,348,125, Cl. 191-12.20R

Stribling Systems, Inc.: *See—*
Stribling, Robert, 5,348,125, Cl. 191-12.20R.

Strickland, Larry D.: *See—*
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Strishak, Anatole; and Strishak, Andre. Game apparatus and method for playing same. 5,348,306, Cl. 273-317.000.

Strishak, Andre: *See—*
Strishak, Anatole; and Strishak, Andre, 5,348,306, Cl. 273-317.000.

Strnad, Joann: *See—*
Bumol, Thomas F.; Gadski, Robert A.; Hamilton, Amy E.; Sportsman, J. Richard; and Strnad, Joann, 5,348,887, Cl. 435-320.100.

Strommer, Pekka: *See—*
Virta, Arto; Strommer, Pekka; and Sormunen, Juha, 5,349,627, Cl. 378-166.000.

Struglinski, Mark J.: *See—*
Chung, David Y.; Gutierrez, Antonio; and Struglinski, Mark J., 5,348,673, Cl. 252-47.000.

Stuart, James L., to Replas Incorporated. Apparatus for producing pellets from film. 5,348,465, Cl. 425-505.000.

Stuart, John C., to Krolak, Edward J. Safety cartridge. 5,347,739, Cl. 42-70.110.

Stucky, Galen D.: *See—*
Beck, Jeffrey S.; Kuehl, Guenter H.; Olson, David H.; Schlenker, John L.; Stucky, Galen D.; and Vartuli, James C., 5,348,687, Cl. 252-582.000

Stults, Larry W.: *See—*
Routman, Brent E.; and Stults, Larry W., 5,349,338, Cl. 340-692.000

Stutz, Jean P.: *See—*
Berna, Claude; O'Rell, Dennis; Praet, Herve; Rich, Gerard; Rodgers, Richard; and Stutz, Jean P., 5,347,927, Cl. 101-401.100.

Su, Lao-Sou: *See—*
Shiraki, Harumitsu; Sohtome, Hiroyasu; Suzuki, Kiyoshi; Uematsu, Tetsutaro; and Su, Lao-Sou, 5,349,149, Cl. 219-69.140.

Suda, Yoshiaki: *See—*
Imashimizu, Yoshinori; Suda, Yoshiaki; Yamamoto, Shuichi; Takada, Toshiyuki; Maeyama, Kaoru; Hiramoto, Etsuro; Oki, Toshihide; Morita, Sadayuki; Kawatani, Shoji; Morioka, Kunihito; Fujimitsu, Ryoichi; and Handa, Kazuhisa, 5,347,703, Cl. 29-525.100.

Sudduth, James R., to Post Tension Product Mfg., Inc. Anchor plate assembly. 5,347,777, Cl. 52-223.130.

Sudo, Fumihiko: *See—*
Murayama, Hideaki; Kihara, Taku; Sudo, Fumihiko; and Asaida, Takashi, 5,349,381, Cl. 348-252.000.

Sueoka, Manabu: *See—*
Shibata, Makoto; Kawajiri, Yukio; Koyama, Shuji; Sueoka, Manabu; Suzuki, Toshio; Yamamoto, Hisashi; and Suzuki, Takumi, 5,347,713, Cl. 29-890.100.

Suga, Masanobu; Akita, Seiichi; and Kuroda, Nobuyuki, to Nippon Oil Company, Limited. Zinc electrode for alkaline storage battery. 5,348,820, Cl. 429-216.000.

Sugahara, Tatsuya, to Tokyo Gas Company Ltd. Water heater with reduced NO_x output. 5,347,957, Cl. 122-18.000.

Sugamoto, Hiroyuki: *See—*
Murao, Toshiaki; Kikuchi, Takeo; Iryu, Toshihiko; Nomura, Hidenori; and Sugamoto, Hiroyuki, 5,349,219, Cl. 257-208.000

Sugawara, Kenichi. Drag structure for fishing reel. 5,348,245, Cl. 242-246.000.

Sugawara, Takashi: *See—*
Matsuda, Takehisa; Nakayama, Yasuhide; and Sugawara, Takashi, 5,348,873, Cl. 435-182.000.

Sugi, Hideo: *See—*
Haga, Takahiro; Sugi, Hideo; Shigehara, Itaru; Odawara, Shinji; Yotsuya, Syuichi; Kimura, Hirohiko; and Yamamoto, Kazuhiro, 5,348,967, Cl. 514-352.000.

Sugimoto, Masaharu; Aruga, Keiji; Yamada, Tomoyoshi; Imamura, Takahiro; and Mizoshita, Yoshifumi, to Fujitsu Limited. Magnetic disk storage apparatus having a vibration proof structure. 5,349,486, Cl. 360-97.010.

Sugimoto, Masanobu: *See—*
Isojima, Shinzo; Akatani, Akiko; Okazaki, Yuichi; and Sugimoto, Masanobu, 5,348,866, Cl. 435-673.000.

Sugimoto, Shoji; Takeuchi, Yoshiaki; and Umezaki, Hiroshi, to Sumitomo Chemical Company, Limited. θ-alumina powder, preparation thereof and magnetic recording medium. 5,348,920, Cl. 501-153.000.

Sugita, Mitsuru: *See—*
Imakura, Tatsuya; and Sugita, Mitsuru, 5,349,650, Cl. 395-400.000
Miyake, Takashi; and Sugita, Mitsuru, 5,349,564, Cl. 365-230.050

Sugita, Naoko: *See—*
Mochizuki, Akihiro; Kasahara, Shigeo; Makino, Tetsuya; Watanabe, Masashi; Nakatsuka, Masakatsu; Yoshio, Kunikiyo; Satoh, Masahiro; Watanabe, Tetsuya; Sugita, Naoko; and Yanagi, Tatsuroh, 5,348,685, Cl. 252-299.620.

Sugiura, Satoshi, to Kubushiki Kaisha Toshiba. Magnetic resonance imaging apparatus. 5,349,292, Cl. 324-309.000

Sugiura, Shinji: *See—*
Ito, Satoru; Matoba, Takao; Yamamoto, Kenji; and Sugiura, Shinji, 5,348,998, Cl. 524-190.000.

Sugiura, Tsuguo: *See—*
Kobayashi, Yasunori; Sugiura, Tsuguo; and Morita, Yoshiyuki, 5,347,971, Cl. 123-520.000.

Sugiyama, Kunio: *See—*
Kuroda, Syoichi; Shibata, Soichiro; Shimamura, Nonyuki; Kawasaki, Shigetake; Kasahara, Keisuke; Sakuma, Seiichi; Komatsu, Fujio; Ishikawa, Masaya; Sugiyama, Kunio; Mashimo, Mitsuo; Shindo, Yuzuru; and Kawamura, Kuniaki, 5,348,080, Cl 165-104.130.

Suh, Byoung; and Hamer, Martin, to Bisco, Inc. Dentin bonding system 5,348,988, Cl. 523-118.000.

Suh, Young-Ho; and Kim, Suk-Bin, to Samsung Electronics Co., Ltd. Semiconductor memory device with improved bit line precharged circuits. 5,349,560, Cl. 365-203.000.

Sulzbach, Frank C.; and Epling, Valeria J., to Texas Instruments Incorporated. Thorium-free coating for germanium IR window. 5,349,467, Cl. 359-359.000

Sulzer Escher Wyss GmbH: *See—*
Pinter, Reinhard; Holik, Herbert; and Leitenberger, Werner, 5,347,728, Cl. 34-115.000.

Sulzer Rueti AG: *See—*
Oertli, Gustav, 5,348,053, Cl. 139-57.000.

Sulzer Ruti AG: *See—*
Oertli, Gustav, 5,348,054, Cl. 139-57.000.

Suman, George O., Jr.: *See—*
Wood, Edward T.; Suman, George O., Jr.; and Brooks, Robert T., 5,348,093, Cl. 166-250.000.

Sumi, Seiichi: *See—*
Nakagawa, Kunihiro; Sumi, Seiichi; and Baba, Hideaki, 5,348,846, Cl. 430-512.000.

Sumino, Yoichi: *See—*
Kanda, Ryoichi; and Sumino, Yoichi, 5,348,013, Cl. 128-660.070.

Sumitomo Chemical Company, Limited: *See—*
Kakugo, Masahiro; Miyatake, Tatsuya; Mizunuma, Koozi; Yagi, Yoshio; and Watanabe, Kazuhiro, 5,349,034, Cl. 526-143.000.
Nomura, Kotohiro; Ishino, Masaru; Yamamoto, Michio; Suzukamo, Gohfu; and Itagaki, Makoto, 5,349,115, Cl 585-513.000.
Sato, Junichi; Sanemitzu, Yuzuru; Kawamura, Shinichi; Mito, Nobuaki; Hamada, Tatsuhiro; and Yoshida, Ryo, 5,349,108, Cl. 564-340.000.
Sugimoto, Shoji; Takeuchi, Yoshiaki; and Umezaki, Hiroshi, 5,348,920, Cl. 501-153.000.

Sumitomo Construction Machinery: *See—*
Haman, Alan H.; and Wolles, Timothy L., 5,348,171, Cl 212-189.000.

Sumitomo Electric Industries, Ltd.: *See—*
Aikawa, Haruhiko; Nagayama, Katsuya; Ishiguro, Yoichi; Yoshimura, Ichiro; Katsuyama, Yutaka; and Yoshizawa, Nobuyuki, 5,348,564, Cl. 65-413.000.
Goto, Mitsuhiro; and Nakai, Tetsuo, 5,348,808, Cl. 428-552.000.
Hattori, Hisao; Ihara, Tomohiko; Yoshino, Hiroshi; and Yamanaka, Shosaku, 5,348,792, Cl. 428-209.000.
Nishiguchi, Masanori; and Miki, Atsushi, 5,348,214, Cl 228-180.220.

Sumitomo Rubber Industries, Ltd.: *See—*
Oonuki, Masahide; Yamaguchi, Tetsuo; Nakahara, Akihiro; and Miki, Mitsunori, 5,348,777, Cl. 428-34.500.

Sumitomo Wiring Systems, Ltd.: *See—*
Ito, Katsuya; and Tanigawa, Fumiyoshi, 5,347,858, Cl. 73-129.000.
Tamura, Yoshikazu, 5,348,208, Cl. 226-24.000.

Summerfelt, Scott R.: *See—*
Gnade, Bruce E.; and Summerfelt, Scott R., 5,348,894, Cl. 437-12.000.

Summit Packaging Systems, Inc.: *See—*
Smith, Jeremy P., 5,348,199, Cl. 222-402.190.

Sun Chemical Corporation: *See—*
Rooney, John M.; Patel, Narendra M.; Kveglis, Albert A.; Catena, Robert J.; Di Leo, Leonard; and Avci, Selcuk, 5,349,021, Cl. 524-761.000.

Sundararaman, Padmanabhan: *See—*
Swarup, Shanti; Sundararaman, Padmanabhan; McCollum, Gregory J.; Kania, Charles M.; and Claar, James A., 5,349,006, Cl. 524-507.000.

Sundstrand Corporation: *See—*
Herndon, Michael R., 5,349,257, Cl. 310-68.00B.

Sung, Younkwan, to Hyundai Motor Company. Fuel backward flow-preventing device for use in an automotive vehicle. 5,348,177, Cl. 220-86.200.

Sunstar Kabushiki Kaisha: *See—*
Takatsuka, Tsutomu; Mori, Shigeki; and Makino, Chiho, 5,348,738, Cl. 424-78.370

Suntello, Inc.: *See—*
Hellstrand, Jan U. K.; and Hermodsson, Svante H., 5,348,739, Cl. 424-85.200.

Suomen Voulukivi OY: *See—*
Lehikoinen, Antti; and Nuutinen, Kyosti, 5,347,977, Cl. 126-19.00R

Suovaniemi, Osmo, to Biohit OY. Pipette with locking adjustment and method for using the same. 5,347,878, Cl. 73-864.180.

Superior Graphite Co.: *See—*
Goldberger, William M., 5,348,694, Cl. 264-27.000.

Surkamp, Paul: *See—*
Grecksch, Hans; Wirtz, Ulrich; Kohlen, Helmut; Surkamp, Paul; and Hensen, Helmuth, 5,348,221, Cl. 242-35.50A.

Sutula, Bryan J.; and Metz, Jerry D., to Hewlett-Pacakard Company Method of improving performance in an automated test system. 5,349,660, Cl. 395-700.000.

Suty, H.: *See—*
Murphy, J. D.; Schuffenecker, R.; and Suty, H., 5,348,721, Cl. 423-463.000.

Suwabe, Yoshinobu: *See—*
Kuze, Shigeki; Okumura, Ryozo; and Suwabe, Yoshinobu, 5,349,042, Cl. 528-196.000.

Suzukamo, Gohfu: *See—*
Nomura, Kotohiro; Ishino, Masaru; Yamamoto, Michio; Suzukamo, Gohfu; and Itagaki, Makoto, 5,349,115, Cl. 585-513.000.

Suzuki, Akihiro: *See—*
Shibata, Norio; and Suzuki, Akihiro, 5,348,768, Cl. 427-356.000.

Suzuki, Hideki: *See—*
Kato, Yasuhiro; and Suzuki, Hideki, 5,347,824, Cl. 62-133.000.

Suzuki, Hiroo: *See—*
Matsuo, Munetsugu; Masahashi, Naoya; Hashimoto, Keizo; Hanamura, Toshihiro; Fujii, Hideki; Kimura, Masao; Mizuhara, Youji; and Suzuki, Hiroo, 5,348,702, Cl. 420-421.000.

Suzuki, Hiroyuki; Hara, Shinichi; and Ono, Mitsuya, to Zexel Corporation. Vane-type compressor with at least one suction hole. 5,348,457, Cl. 418-259.000.

Suzuki, Kenji: *See—*
Kinoshita, Isamu; Suzuki, Kenji; Shibata, Nobuyuki; and Nishiwaki, Toshimitsu, 5,347,698, Cl. 29-407.000.

Suzuki, Kiyoshi: *See—*
Shiraki, Harumitsu; Sohtome, Hiroyasu; Suzuki, Kiyoshi; Uematsu, Tetsutaro; and Su, Lao-Sou, 5,349,149, Cl. 219-69.140.

Suzuki, Makoto; Takahashi, Osamu; Shimada, Yasuhiro; Matsuoka, Koushin; and Yoshioka, Yasuhiro, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 5,348,847, Cl. 430-558.000.

Suzuki, Masahiro, to Oki Electric Industry Co., Ltd. Apparatus for maintaining reset on microprocessor until after electrical chattering from connection of removable memory cartridge has ceased. 5,349,689, Cl. 395-800.000.

Suzuki, Minoru: *See—*
Ippommatsu, Masamichi; Sasaki, Hirokazu; Otoshi, Shoji; Suzuki, Minoru; and Kajimura, Atsuko, 5,348,776, Cl. 427-586.000.

Suzuki, Nobuo; Yoshikawa, Koji; and Takeuchi, Hitoshi, to Aisan Kogyo Kabushiki Kaisha. Ignition coil for internal combustion engines. 5,349,320, Cl. 336-92.000.

Suzuki, Osamu: *See—*
Fujita, Shigetomo; Hasegawa, Tsukasa; Hayashi, Tomoe; and Suzuki, Osamu, 5,347,943, Cl. 114-74.00R.

Suzuki, Shinichi: *See—*
Shibata, Masanori; Umetsu, Shigeo; Suzuki, Shinichi; Sato, Michihiro; Saito, Kazuhiro; and Akama, Hiroyuki, 5,349,488, Cl. 360-105.000.

Suzuki, Takeo: *See—*
Kobayashi, Hisamine; Suzuki, Takeo; and Izuhara, Katsuhiro, 5,348,637, Cl. 204-213.000.

Suzuki, Takumi: *See—*
Shibata, Makoto; Kawajiri, Yukio; Koyama, Shuji; Sueoka, Manabu; Suzuki, Toshio; Yamamoto, Hisashi; and Suzuki, Takumi, 5,347,713, Cl. 29-890.100.

Suzuki, Tetsuo: *See—*
Yanagi, Haruyuki; Suzuki, Tetsuo; Hiramatsu, Soichi; Nojima, Takashi; and Saikawa, Satoshi, 5,348,283, Cl. 271-127.000.

Suzuki, Toshio: *See—*
Shibata, Makoto; Kawajiri, Yukio; Koyama, Shuji; Sueoka, Manabu; Suzuki, Toshio; Yamamoto, Hisashi; and Suzuki, Takumi, 5,347,713, Cl. 29-890.100.

S+V Engineering Kft.: *See—*
Sikter, Andras, 5,348,749, Cl. 424-604.000.

Svetikov, Yuri V.: *See—*
Lomashevitch, Svjatoslav A.; and Svetikov, Yuri V., 5,349,593, Cl 372-50.000.

Swartz, Eric T., to Research & Manufacturing Co., Inc. Dewar with improved efficiency. 5,347,818, Cl. 62-51.100

Swarup, Shanti; Sundararaman, Padmanabhan; McCollum, Gregory J.; Kania, Charles M.; and Claar, James A., to PPG Industries, Inc. Azetidinol reaction products used as pigment grind and film forming vehicles. 5,349,006, Cl. 524-507.000.

Sweeney, Niall; Bressler, Peter W.; and Caizza, Richard J., to Becton, Dickinson and Company. Single-handedly actuatable safety shield for needles. 5,348,544, Cl. 604-192.000

Swissheim, Charles T., to Bullet Golf Ball, Inc. Golf club grip. 5,348,303, Cl. 273-187.500.

Syed, Ali N.; and Ahmad, Kaleem, to Avlon Industries, Inc. Composition and process for decreasing hair fiber swelling. 5,348,737, Cl. 424-71.000.

Symac: *See—*
Pajot, Alain D., 5,348,195, Cl. 222-227.000.

Symantec Corporation: *See—*
Mann, Omri, 5,349,655, Cl. 395-575.000

Synder, Steven P.: *See—*
O'Rourke, Thomas C.; O'Neill, Brian T.; Cook, Rodney C.; Taner, Kuntay O.; Synder, Steven P.; and Joyner, Adam R., 5,349,658, Cl. 395-700.000

Syverson, Daniel J.: *See—*
Bohannon, Brynne K.; and Syverson, Daniel J., 5,348,619, Cl. 156-664.000.

Szarkowski, Stephen D.; Beeny, Steven K.; and May, Arthur D., to Uniflo Conveyor, Inc. Counter-balanced pressure sensor for conveyor accumulation zone. 5,348,139, Cl. 198-781.000.

Szklany, Craig R.: *See—*
Ferguson, David B.; Booker, LeRoy A.; and Szklany, Craig R., 5,349,332, Cl. 340-572.000

T.K.F. Inc.: *See—*
Clos, Jeffrey P., 5,348,140, Cl. 198-790.000.

Tabata, Atsushi: *See—*
Taga, Yutaka; Hojo, Yasuo; and Tabata, Atsushi, 5,347,885, Cl. 477-65.000.

Tachi-S Co., Ltd.: *See—*
Natori, Takashi, 5,348,376, Cl. 297-391.000

Tada, Tsukasa: *See—*
Ushirogouchi, Toru; Kihara, Naoko; Sasaki, Osamu; Tada, Tsukasa; Naito, Takuya; and Saito, Satoshi, 5,348,838, Cl. 430-270.000.

Tadaki, Yoshitaka; Sekiguchi, Toshihiro; Uchiyama, Hiroyuki; Kaga, Toru; Murata, Jun; and Enomoto, Osaomi, to Hitachi, Ltd.; and Texas Instruments Japan, Inc. Semiconductor integrated circuit device including memory cells having a structure effective in suppression of leak current. 5,349,218, Cl. 257-296.000.

Tadenuma, Hiroshi: *See—*
Kato, Minoru; Hiraharu, Teruo; Nishiwaki, Koichi; and Tadenuma, Hiroshi, 5,349,003, Cl. 524-458.000.

Tafesh, Ahmed M.; Kvakovszky, George; and Lindley, Charlet R., to Hoechst Celanese Corporation. Process for preparing arylketoamines. 5,349,090, Cl. 564-343.000.

Taft, George: *See—*
Weaver, David E.; Clary, Everett; Shem, Robert; and Taft, George, 5,348,759, Cl. 427-1.000.

Taga, Yutaka; Hojo, Yasuo; and Tabata, Atsushi, to Toyota Jidosha Kabushiki Kaisha. Shift control system for selecting between two shift patterns based on the transmission temperature and lock-up clutch state in an automatic transmission. 5,347,885, Cl. 477-65.000.

Tagami, Jun: *See—*
Kobori, Takuji; Ishii, Koji; Takahashi, Motoichi; Matsunaga, Yoshinori; Niwa, Naoki; Tagami, Jun; Mizuno, Takayuki; and Furukawa, Kunio, 5,347,771, Cl. 52-167.00R

Tagami, Toshio; and Kiyohara, Osamu, to Tomoegawa Paper Co., Ltd. Polyamide-hydrogenated polybutadiene-acrylonitrile copolymers. 5,349,018, Cl. 525-92.000.

Taguchi, Seiichi; and Igarashi, Shunkichi, to Fuji Photo Film Co., Ltd. Method and apparatus for recording stereoscopic images. 5,349,419, Cl. 355-22.000.

Tajima, Yoshihisa: *See—*
Serizawa, Hajime; Kubota, Masaru; Sano, Hiroyuki; and Tajima, Yoshihisa, 5,349,007, Cl. 524-513.000

Takabayashi, Masayoshi: *See*—
Maejima, Yoshihisa; Nishimura, Seiya; Takabayashi, Masayoshi; and Ohta, Tokuyoshi, 5,347,709, Cl. 29-827.000.
Takada, Shigeki; Yuki, Ken; Maruyama, Hitoshi; Tanaka, Taku; and Igarashi, Kazunari, to Kuraray Co., Ltd. Process for suspension polymerization of vinyl compound. 5,349,008, Cl. 524-557.000.
Takada, Toshiyuki: *See*—
Imashimizu, Yoshinori; Suda, Yoshiaki; Yamamoto, Shuichi; Takada, Toshiyuki; Maeyama, Kaoru; Hiramoto, Etsuro; Oki, Toshihide; Morita, Sadayuki; Kawatani, Shoji; Morioka, Kunihito; Fujimitsu, Ryoichi; and Handa, Kazuhisa, 5,347,703, Cl. 29-525.100.
Takahashi, Hideki: *See*—
Asami, Keiichi; Takahashi, Hideki; Inoue, Katsuo; Echigo, Yoshiaki; Ohsawa, Toshiyuki; and Kabata, Toshiyuki, 5,348,818, Cl 429-213.000
Takahashi, Hideo; and Yoshino, Ryutaro, to Honda Giken Kogyo Kabushiki Kaisha. Control system for legged mobile robot. 5,349,277, Cl. 318-568.120.
Takahashi, Hideyuki: *See*—
Ohsawa, Kenji; Nagano, Mutsumi; Kojima, Akira; and Takahashi, Hideyuki, 5,349,238, Cl. 257-736.000.
Takahashi, Hiroyuki: *See*—
Kawasaki, Masahiro; Takahashi, Hiroyuki; and Iwamoto, Shigeru, 5,349,409, Cl. 354-195.120.
Takahashi, Kimio; Miyake, Katsuya; Kunimi, Takashi; Ogawahara, Tatsuo; Kobayashi, Tadashi; and Fukaya, Kunio, to Akebono Brake Industry Co., Ltd.; and Akebono Research and Development Centre Ltd. Brake actuating apparatus for a vehicle. 5,348,123, Cl 188-72.100
Takahashi, Masanori: *See*—
Torigai, Katsumi; Takahashi, Masanori; and Hirano, Yoshihide, 5,348,499, Cl. 440-76.000
Takahashi, Motoichi: *See*—
Kobori, Takuji; Ishii, Koji; Takahashi, Motoichi; Matsunaga, Yoshinori; Niwa, Naoki; Tagami, Jun; Mizuno, Takayuki; and Furukawa, Kunio, 5,347,771, Cl. 52-167.00R.
Takahashi, Nobu: *See*—
Sandou, Yasuyuki; and Takahashi, Nobu, 5,347,972, Cl. 123-564.000
Takahashi, Osamu: *See*—
Suzuki, Makoto; Takahashi, Osamu; Shimada, Yasuhiro; Matsuoka, Koushin; and Yoshioka, Yasuhiro, 5,348,847, Cl. 430-558.000
Takahashi, Tadashi; and Furuya, Katsuhiko, to Asahi Kogaku Kogyo Kabushiki Kaisha. Endoscope light source apparatus with setting enable and disable modes. 5,347,994, Cl. 128-6.000.
Takahashi, Takeshi: *See*—
Nakamura, Akira; Kamei, Ryosuke; Takahashi, Takeshi; Takahashi, Tetuya; Terazono, Shigenori; and Takiyama, Eiichiro, 5,348,700, Cl. 264-177.170.
Takahashi, Tatsuhiko: *See*—
Yamaguchi, Yukihiro; Saito, Chuichi; Takahashi, Tatsuhiko; and Haraguchi, Tomomi, 5,348,131, Cl. 198-330.000.
Takahashi, Tetuya; Uda, Hitoshi; Nakamura, Akira; Kamei, Ryosuke; and Takiyama, Eiichiro, to Showa Highpolymer Co., Ltd. Polyester fibers. 5,349,028, Cl. 525-440.000
Takahashi, Tetuya: *See*—
Nakamura, Akira; Kamei, Ryosuke; Takahashi, Takeshi; Takahashi, Tetuya; Terazono, Shigenori; and Takiyama, Eiichiro, 5,348,700, Cl. 264-177.170.
Takahashi, Tomonori; Kimura, Masato; Oka, Masataka; and Ogasawara, Isamu, to Nippon Petrochemicals Company, Limited. Monoaxially oriented multilayered packaging material. 5,348,794, Cl. 428-213.000
Takahashi, Toshiaki: *See*—
Kobayashi, Norio; Takahashi, Toshiaki; Makino, Masahiro; and Hosoda, Masaaki, 5,348,930, Cl. 503-209.000.
Takahashi, Yasushi: *See*—
Kurokawa, Hiroshi; Takahashi, Yasushi; and Inagami, Yasuhiro, 5,349,653, Cl. 395-500.000.
Takamatsu, Shunichi; Kubo, Hirozi; Hama, Katsunori; and Iwabuchi, Hiroshi, to Itoki Crebio Corporation. Tilting control assembly for chair. 5,348,372, Cl. 297-306.000
Takamura, Jin-ichi: *See*—
Hanamura, Toshihiro; Uemori, Ryuji; Tanino, Mitsuru; and Takamura, Jin-ichi, 5,348,594, Cl. 148-421.000.
Hanamura, Toshihiro; Uemori, Ryuji; Tanino, Mitsuru; and Takamura, Jin-ichi, 5,348,595, Cl. 148-538.000.
Takamura, Toshihiro: *See*—
Ohdake, Takayuki; Ohmori, Toshimichi; Takamura, Toshihiro; Yamada, Takemi; and Sampei, Tetsuya, 5,348,701, Cl. 420-73.000.
Takanaka, Masao, to Mitsubishi Denki Kabushiki Kaisha. Beam supply device. 5,349,198, Cl. 250-492.300
Takano, Kei: *See*—
Oba, Masayuki; Hayase, Rumiko; Kihara, Naoko; Hayase, Shuzi; Mikogami, Yukihiro; Nakano, Yoshihiko; Oyasato, Naohiko; Matake, Shigeru; and Takano, Kei, 5,348,835, Cl. 430-192.000.
Takao, Hideo, to Seiko Epson Corporation. Portable audio apparatus. 5,349,480, Cl. 360-74.100
Takara Shuzo Co., Ltd.: *See*—
Kubota, Noriyasu; Miyagawa, Yoshihiro; and Kawano, Yukita, 5,349,120, Cl. 800-200.000
Yoshihama, Yoshio; Kusakabe, Katsuhiko; Matsui, Susumu; and Morita, Hideo, 5,349,121, Cl. 800-200.000
Takasago International Corporation: *See*—
Watanabe, Seiji; Mitsuhashi, Shigeru; and Kumobayashi, Hidenori, 5,349,107, Cl. 568-318.000
Takashima, Hiroyuki; Okada, Mitsuo; and Shimizu, Teruo, to Nippon Oil Co., Ltd. Lubricating oil composition for food processing machineries. 5,348,676, Cl. 252-56.00R.
Takashima, Masaru: *See*—
Shimizu, Seiji; and Takashima, Masaru, 5,349,474, Cl. 359-675.000
Takashita, Jyunji: *See*—
Miyamato, Masahiko; Nakamura, Nobuo; Takashita, Jyunji; Ando, Manabu; Kawano, Katsuo; Nishimura, Yoshiaki; and Yuasa, Satoshi, 5,347,763, Cl. 451-241.000.
Takata, Toshimasa: *See*—
Okada, Keiji; Murata, Kazuhiko; Tojo, Tetsuo; Kawasaki, Masaaki; and Takata, Toshimasa, 5,349,020, Cl. 525-237.000.
Takatsuka, Tsutomu; Mori, Shigeki; and Makino, Chiho, to Sunstar Kabushiki Kaisha. Oral composition with active water insoluble polymer. 5,348,738, Cl. 424-78.370.
Takayama, Akio *See*—
Egawa, Motoji; and Takayama, Akio, 5,349,487, Cl. 360-103.000.
Takazawa, Hidenao. Methods for processing wastes using potential heat of waste gas prior to incineration. 5,347,938, Cl. 110-346.000.
Takeda Chemical Industries, Ltd.: *See*—
Akimoto, Hiroshi; Hitaka, Takenori; and Miwa, Tetsuo, 5,349,064, Cl. 544-280.000.
Serizawa, Hajime; Kubota, Masaru; Sano, Hiroyuki; and Tajima, Yoshihisa, 5,349,007, Cl. 524-513.000.
Takeda, Kimihito; Hirakawa, Hideki; Adachi, Hisahiro; and Amano, Shinya, to Kabushiki Kaisha Toshiba. Machine translation method and apparatus. 5,349,368, Cl. 345-115.000.
Takeda, Mamoru: *See*—
Kobayashi, Ikunori; Nakamura, Kazuyoshi; Matsunaga, Koji; Takeda, Mamoru; and Matsuoka, Tomizo, 5,349,205, Cl. 257-59.000
Takeda, Naoto: *See*—
Fujita, Toshio; Fujita, Masanari; Takeda, Naoto; and Hirashima, Koji, 5,349,012, Cl. 525-52.000.
Takeda, Shiro: *See*—
Kawaguchi, Takafumi; and Takeda, Shiro, 5,349,226, Cl. 257-347.000
Takeda, Takaaki: *See*—
Hirohashi, Kazutoshi; Horii, Hiroshi; Koike, Hideo; Yunoki, Yoshiaki; Fukasawa, Tetsuo; Katayama, Susumu; Yoshikawa, Akio; Ushijima, Keishi; Takeda, Takaaki; Nomoto, Takeshi; Kikuta, Michio; Shichijo, Shunichi; and Iwasaki, Yoshiki, 5,349,463, Cl 359-174.000
Takei, Yoshiaki: *See*—
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Tanaka, Richard D.; Ricci, Beverly S.; and Mosley, Stephen T., to E. R. Squibb & Sons, Inc. Nucleic acid encoding human mevalonate kinase. 5,349,058, Cl. 536-23.200.
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Tanaka, Shuichi; and Ichikawa, Wataru, to Kabushiki Kaisha SG Conductive rotational position detection device having stator and rotor. 5,349,293, Cl. 324-207.160
Tanaka, Takashi; Imura, Satoshi; Tanaka, Kenji; and Kida, Yasuji, to Tokuyama Soda Kabushiki Kaisha. Photochromic compound. 5,349,065, Cl. 546-15.000.
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Taniguruma, Ryuji; and Masuo, Katsuhiro, to Shimadzu Corporation. X-ray photographic equipment. 5,349,628, Cl. 378-181.000.
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Tanknology Corporation International: *See*—
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Thomas, Nils I.; and Field, Robert J., to ITT Corporation. Image intensifier tube having a solid state electron amplifier. 5,349,177, Cl 250-214.0VT.
Thomas, P. J.; and Pews, R. Garth, to Dow Chemical Company, The. Process for preparing hydroxyalkylbenzocyclobutenes. 5,349,095, Cl. 568-814.000
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Thome, Alfred; Roeper, Michael; and Kneuper, Heinz-Josef, to BASF Aktiengesellschaft. Catalytic isomerization of α-alkenols. 5,349,097, Cl. 568-906.000.
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Tiffany, William B.: *See—*
Taylor, Charles S.; Tiffany, William B.; Cherkas, Paul; Frantzen, John J.; Hampton, Hilary J.; Nanis, Leonard; and Shah, Bhupendra O., 5,348,693, Cl. 264-22.000.
Tilley, Scott W.; Liu, Tung Y.; and Higham, John S., to Space Systems/Loral. Spacecraft attitude control and momentum unloading using gimballed and throttled thrusters. 5,349,532, Cl. 364-459.000.
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Kobayashi, Hisamine; Suzuki, Takeo; and Izuhara, Katsuhiro, 5,348,637, Cl. 204-213.000.
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Kalotay, Paul Z.; and Titlow, Joseph D., 5,347,874, Cl. 73-861.380.
Tius, Marcus A., to University of Hawaii. Cyclic anti-tumor promoter compounds, compositions and methods for production and use. 5,349,112, Cl. 514-532.000.
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Todero, Giuseppe P. I.; and Harms, Rodney L., to McCulloch Corporation. Four-stroke internal combustion engine. 5,347,967, Cl. 123-317.000.
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Starzl, Thomas E.; and Todo, Satoru, 5,348,966, Cl. 514-326.000.
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Togawa, Yoshiyuki, to Shimadzu Corporation. Selecting device for cells and the like. 5,348,883, Cl. 435-291.000.
Tohoku Pioneer Electronic Corporation: *See—*
Kaiwa, Hiroshi, 5,349,301, Cl. 330-126.000
Shibata, Masanori; Umetsu, Shigeo; Suzuki, Shinichi; Sato, Michihiro; Saito, Kazuhiro; and Akama, Hiroyuki, 5,349,488, Cl. 360-105.000.
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Yasuda, Nobuyuki; Tamura, Toshio; Toi, Hiroshi; and Mishima, Akio, 5,347,712, Cl. 29-852.000.
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Katayama, Sumio; Iwasaki, Junichi; Toi, Shuichi; Usui, Ichiro; and Yanase, Takashi, 5,349,263, Cl. 310-338.000.
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Okada, Keiji; Murata, Kazuhiko; Tojo, Tetsuo; Kawasaki, Masaaki; and Takata, Toshimasa, 5,349,020, Cl. 525-237.000.
Tokai Kogyo Kabushiki Kaisha: *See—*
Yada, Yukihiko, 5,348,364, Cl. 296-93.000.
Tokai Rubber Industries, Ltd.: *See—*
Igarashi, Ichiro, 5,348,779, Cl. 428-36.700.
Tokas, Edward F.; Shaltout, Raafat M.; and Chen, Ken S., to Monsanto Company. Metal-coated polyimide. 5,348,574, Cl. 106-1.110.
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Tokimec Inc.: *See—*
Sato, Kazuteru; Yamamoto, Kanshi; Morohoshi, Mikio; Akaba, Noriyuki; and Kawakami, Atsushi, 5,349,531, Cl. 364-449.000.
Tokiwa, Yukio: *See—*
Konishi, Hiroo; Kawazoe, Hironari; Kawakami, Junzo; Nakamura, Tomoharu; Tokiwa, Yukio; and Nakajima, Tatsuhito, 5,349,522, Cl. 363-95.000.
Tokuda, Isamu; and Onishi, Kenji, to Shimano Inc. Guide for use on a fishing rod. 5,347,743, Cl. 43-24.000.
Tokuda, Tatsuya: *See—*
Hosaka, Jun; Moriyama, Hiroshi; and Tokuda, Tatsuya, 5,347,799, Cl. 56-15.800.
Tokumi, Jyoji. Double-acting piston engine. 5,347,960, Cl. 123-63.000.
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Tanaka, Takashi; Imura, Satoshi; Tanaka, Kenji; and Kida, Yasuji, 5,349,065, Cl. 546-15.000.
Tokyo Electric Power Company: *See—*
Kuroda, Syoichi; Shibata, Soichiro; Shimamura, Nonyuki; Kawasaki, Shigetake; Kasahara, Keisuke; Sakuma, Seiichi; Komatsu, Fujio; Ishikawa, Masaya; Sugiyama, Kunio; Mashimo, Mitsuo; Shindo, Yuzuru; and Kawamura, Kunaki, 5,348,080, Cl. 165-104.130.
Tokyo Gas Company Ltd.: *See—*
Sugahara, Tatsuya, 5,347,957, Cl. 122-18.000.
Tokyu Construction Co., Ltd.: *See—*
Ishimaru, Shinji; Niiya, Takahiro; and Ishimaru, Kazuko, 5,347,772, Cl. 52-167.00R.
Tateyama, Masaru; Tamura, Yukihiko; Fukuda, Kosei; Yoshida, Shigeru; and Kami, Chikashi, 5,348,424, Cl. 405-262.000.
Toma, Akihiro: *See—*
Ishihama, Hitoshi; Hayakawa, Yasuyoshi; Asano, Naoki; Horikoshi, Kenichi; Onuki, Tetsuro; Toma, Akihiro; and Yamagata, Masanori, 5,348,284, Cl. 271-160.000.
Tomaskovic, Robert S.: *See—*
Lutz, Eugene F.; Schisla, David K.; Tomaskovic, Robert S.; and Hoewing, Timothy D., 5,349,101, Cl. 558-36.000.
Tomassian, Edward; and Young, Nelson N. T., to County Sanitation Districts of Los Angeles County. Annular scrubber. 5,348,573, Cl. 96-151.000.
Tomaszewski, Gina M.; and Cavanaugh, Garrett, to Tambrands Inc. Tampon applicator. 5,348,534, Cl. 604-14.000
Tomczuk, Zygmunt: *See—*
Miller, William E.; and Tomczuk, Zygmunt, 5,348,626, Cl. 204-1.500.
Tominaga, Osamu; and Shimanaka, Hiroshi, to Mazda Motor Corporation. Method of assembling vehicle parts. 5,347,700, Cl. 29-430.000.
Tomko, Richard F.: *See—*
Pearson, Paul D.; Rao, Madhukar; and Tomko, Richard F., 5,348,992, Cl. 523-523.000
Tomoegawa Paper Co., Ltd.: *See—*
Tagami, Toshio; and Kiyohara, Osamu, 5,349,018, Cl. 525-92.000.
Tonder, Pia: *See—*
Koksbang, Rene; and Tonder, Pia, 5,348,821, Cl. 429-218.000.
Tone, Shingo: *See—*
Ashihara, Teruaki; Tone, Shingo; Saito, Toshimitsu; and Orita, Ryozo, 5,349,022, Cl. 524-414.000.
Tonen Corporation: *See—*
Isojima, Shinzo; Akatani, Akiko; Okazaki, Yuichi; and Sugimoto, Masanobu, 5,348,866, Cl. 435-673.000.
Toray Industries, Inc.: *See—*
Hata, Go; Kaneko, Tatsuya; Kawai, Hideki; Mutoh, Masato; and Hashimoto, Hideyuki, 5,348,950, Cl. 514-186.000
Matsuhisa, Yoji; Hiramatsu, Toru; Yoshida, Kazuo; and Katagiri, Gen, 5,348,802, Cl. 428-367.000.
Toray Research Center, Inc.: *See—*
Matsuhisa, Yoji; Hiramatsu, Toru; Yoshida, Kazuo; and Katagiri, Gen, 5,348,802, Cl. 428-367.000.
Torfs, Walter F. Rotary drive assemblies. 5,348,104, Cl. 173-151.000.
Torigai, Katsumi; Takahashi, Masanori; and Hirano, Yoshihide, to Sanshin Kogyo Kabushiki Kaisha. Outboard motor. 5,348,499, Cl. 440-76.000.
Toriyama, Akira: *See—*
Oda, Noriyuki; Maeno, Hiroshi; Higashi, Katsumi; Toriyama, Akira; and Shimoda, Hiromi, 5,348,568, Cl. 95-14.000.
Torok, Georgia R.: *See—*
Anagnostopoulos, Constantine N.; Chang, Win-Chyi; Stevens, Eric G.; and Torok, Georgia R., 5,349,215, Cl. 257-223.000.
Torreno, Manuel J., Jr. deceased: *See—*
Smayling, Michael C.; Torreno, Manuel J., Jr. deceased; and Falessi, George, 5,348,895, Cl. 437-54.000.
Toshin Chemical Industry Co., Ltd.: *See—*
Hagimori, Kenji; Abe, Yuzuru; and Kanke, Tetsuo, 5,348,724, Cl. 423-531.000.
Tosoh Corporation: *See—*
Yamada, Satoru; and Yano, Akihiro, 5,348,926, Cl. 502-117.000
Toth, Louis E.; and Spann, J. Richard, to United States of America, Navy. Aligned bismuth, strontium, calcium cuprate coatings on polycrystalline substrates. 5,348,937, Cl. 505-238.000.
Toth, Ronald: *See—*
Binzer, Lothar; Morrissette, Didace E.; and Toth, Ronald, 5,347,982, Cl. 126-503.000.
Touret, Olivier: *See—*
Chopin, Thierry; Guichon, Herve; and Touret, Olivier, 5,348,581, Cl. 106-461.000.
Toy, Raymond L.: *See—*
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Toyo Ink Manufacturing Co., Ltd.: *See—*
Hanada, Koji; Hamuro, Makiko; Yoshikawa, Takeshi; Ohmura, Toru; and Kashioka, Motohiko, 5,348,348, Cl. 283-91.000
Sakamoto, Makoto; and Tamano, Michiko, 5,348,840, Cl. 430-270.000.
Toyo Kasei Kogyo Company Limited: *See—*
Ashihara, Teruaki; Tone, Shingo; Saito, Toshimitsu; and Orita, Ryozo, 5,349,022, Cl. 524-414.000
Toyoda Gosei Co., Ltd.: *See—*
Ito, Hiroshi; Sasaki, Koji; Okumoto, Tadaoki; Ohta, Takashi; Matsushita, Mitsumasa; and Sato, Norio, 5,348,929, Cl. 502-402.000
Kobayashi, Masao; Ogiso, Koichi; Goto, Shinichi; Mizutani, Haruyasu; Goto, Masaomi; and Iwasaki, Hiroshi, 5,347,759, Cl. 49-496.100.
Toyota Jidosha Kabushiki Kaisha: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; Kato, Akira; Shibata, Toshisuke; and Nishiyama, Nobuyuki, 5,348,591, Cl. 148-403.000.
Murata, Kiyohito; Shindo, Yoshio; and Arai, Hajime, 5,348,127, Cl. 192-3.300.
Taga, Yutaka; Hojo, Yasuo; and Tabata, Atsushi, 5,347,885, Cl. 477-65.000.
Taniguchi, Takao; Tsukamoto, Kazumasa; Hayabuchi, Masahiro; and Noda, Koji, 5,348,518, Cl. 475-285.000
Traeger, Robert J.: *See—*
Hanson, George E.; Kunert, Steven R.; Schultz, Darald R.; Gibbs, William T.; Rasmussen, Jon; and Traeger, Robert J., 5,349,497, Cl. 361-683.000.
Tran, The Thomas T.: *See—*
Wang, Lixiao; and Tran, The Thomas T., 5,348,538, Cl. 604-96.000.
Trend-Lines, Inc.: *See—*
Blacker, Paul N., 5,348,276, Cl. 269-88.000

Trimberger, Stephen M.: *See—*
Parlour, David B.; Goetting, F. Erich; and Trimberger, Stephen M., 5,349,248, Cl. 307-465.000

Trinh, Toan: *See—*
Bacon, Dennis R.; Borcher, Thomas A., Sr.; Corona, Alessandro, III; Palmer, Clyde D.; and Trinh, Toan, 5,348,667, Cl. 252-8.600.

Trinks, Rainer; Konigshofen, Heinrich; Ganster, Otto; Stepanski, Horst; and Colinas-Martinez, Jose, to Bayer Aktiengesellschaft. Two-component polyurethane adhesives. 5,349,040, Cl. 528-75.000.

Triogen Limited: *See—*
Wheatley, James, 5,348,709, Cl. 422-186.180.

Triumf: *See—*
Rogers, Joel G., 5,349,191, Cl. 250-367.000.

Troike, Carl L., Jr.: *See—*
Tunison, Donald E., III; Church, Stephanie E.; Leman, Gregory W.; and Troike, Carl L., Jr., 5,348,163, Cl. 209-135.000.

Tronolone, Mark J.: *See—*
Fleig, Jon F.; Tronolone, Mark J.; and Huang, Chunsheng J., 5,349,434, Cl. 356-138.000.

Tropel Corporation: *See—*
Fleig, Jon F.; Tronolone, Mark J.; and Huang, Chunsheng J., 5,349,434, Cl. 356-138.000.

Tropicana Products, Inc.: *See—*
Bettle, Griscom, Jr.; Bettle, Griscom, III; and Jeruzal, Patricia, 5,348,217, Cl. 229-103.100.

Trotta, Frank A., to Electronic Voting Systems, Inc. Transportable component stand. 5,348,324, Cl. 280-35.000

Trouchet, Denis: *See—*
Graindorge, Philippe; and Trouchet, Denis, 5,349,439, Cl. 356-346.000.

Trout, Randall L. Combination downhole tool. 5,348,086, Cl. 166-99.000.

Trow, John R.: *See—*
Collins, Kenneth S.; and Trow, John R., 5,349,313, Cl. 333-131.000.

Trubiano, Antoine, to Cari-All Inc. Infant seat plate for shopping cart. 5,348,323, Cl. 280-33.993

TRW Vehicle Safety Systems Inc.: *See—*
Blumenthal, Jack L.; Gat, Nahum; Faigle, Ernst M.; Semchena, John H.; and Thompson, Richard J., 5,348,344, Cl. 280-737.000.

Trzasko, Peter T.: *See—*
Tsai, John J.; Trzasko, Peter T.; Philbin, Michael T.; Billmers, Robert L.; Tessler, Martin M.; Van Gompel, Joseph A.; and Rutenberg, Morton W., 5,349,089, Cl. 564-291.000.

Tsai, I-Shou. Sliding hard disk drive mounting hardware. 5,349,483, Cl. 360-97.010.

Tsai, John J.; Trzasko, Peter T.; Philbin, Michael T.; Billmers, Robert L.; Tessler, Martin M.; Van Gompel, Joseph A.; and Rutenberg, Morton W., to National Starch and Chemical Investment Holding Corporation. Reagent for preparing polycationic polysaccharides. 5,349,089, Cl. 564-291.000.

Tsai, Pei-Kuo: *See—*
Middaugh, C. Russell; Tsai, Pei-Kuo; and Volkin, David B., 5,348,941, Cl. 514-12.000.

Ts'ai, Tse-Jen. Chuck assembly for a disposable razor. 5,347,717, Cl. 30-89.000.

Tsai, Yung C. Mini type aquarium. 5,347,952, Cl. 119-246.000.

Tsikoyiannis, John G.: *See—*
Grasselli, Robert K.; Lago, Rudolph M.; Socha, Richard F.; and Tsikoyiannis, John G., 5,349,117, Cl. 585-820.000.

Tsuboi, Kunio: *See—*
Kishimoto, Yasuhiro; and Tsuboi, Kunio, 5,349,421, Cl. 355-208.000.

Tsuboniwa, Noriyuki: *See—*
Yoshikawa, Motoyoshi; Noda, Hideyoshi; Shirakawa, Shinsuke; Tsuboniwa, Noriyuki; Yamanaka, Eiji; Urano, Satoshi; and Kanda, Kazunori, 5,348,991, Cl. 523-402.000.

Tsuchiya Mfg. Co., Ltd.: *See—*
Horibe, Hidehiko; and Usui, Yuuta, 5,349,141, Cl. 181-224.000.

Tsujimoto, Ichiro, to NEC Corporation. Adaptive interference cancellation and equalization using equalizer decision error as a common corrective factor. 5,349,609, Cl. 375-100.000.

Tsukagoshi, Sadayuki: *See—*
Kawano, Minori; Ogawa, Kohji; Tsukagoshi, Sadayuki; Kuroiwa, Hiroyuki; Sato, Masato; Ishizaki, Yasuhiro; Komatsu, Fumiaki; and Kuroda, Eiichi, 5,349,694, Cl. 455-11.100.

Tsukamoto, Kazumasa: *See—*
Taniguchi, Takao; Tsukamoto, Kazumasa; Hayabuchi, Masahiro; and Noda, Koji, 5,348,518, Cl. 475-285.000

Tsukamoto, Takeo: *See—*
Kato, Yoshinori; Hayashi, Ryutaro; Tsukamoto, Takeo; and Aoki, Masahiro, 5,348,997, Cl. 524-189.000.

Tsutsui, Kiyohide: *See—*
Shinoda, Kenichi; Izumi, Akihide; Tsutsui, Kiyohide; Yamashita, Katsuhiro; Tsuzuki, Hidenori; and Matsuo, Takashi, 5,348,816, Cl. 429-206.000

Tsutsui, Kyoya, to Sony Corporation. Forward transform processing apparatus and inverse processing apparatus for modified discrete cosine transforms, and method of performing spectral and temporal analyses including simplified forward and inverse orthogonal transform processing. 5,349,549, Cl. 364-725.000

Tsuzuki, Hidenori: *See—*
Shinoda, Kenichi; Izumi, Akihide; Tsutsui, Kiyohide; Yamashita, Katsuhiro; Tsuzuki, Hidenori; and Matsuo, Takashi, 5,348,816, Cl. 429-206.000.

Tsuzuki, Makoto, to Three-D Composites Research Corporation. Three-dimensional woven fabric with varied thread orientations. 5,348,056, Cl. 139-384.00R

Tucker, Don M., to Electrical Geodesics, Inc. Head sensor positioning pedestal. 5,348,006, Cl. 128-639.000.

Tuinstra, Hendrik; and Rand, Cynthia L., to Dow Chemical Company, The. Process for the preparation of phenyl carbonates or polycarbonates. 5,349,102, Cl. 558-274.000.

Tuma, John E., to Tanknology Corporation International. Method for detecting and localizing leaks in above ground storage tanks. 5,347,850, Cl. 73-49.200.

Tungate, Freddie L.: *See—*
Potter, Mark J.; Kao, Jar-Lin; Cross, Virginia R.; Vanderspurt, Thomas H.; Dienes, Edward K.; Riley, Robert E.; Tungate, Freddie L.; and Bortinger, Arie, 5,348,924, Cl. 502-66.000.

Tunimar S.A.: *See—*
Almendres Martinez, Jose J., 5,348,757, Cl. 426-646.000.

Tunison, Donald E., III; Church, Stephanie E.; Leman, Gregory W.; and Troike, Carl L., Jr., to Cabot Corporation. Method and apparatus for separating fine particles. 5,348,163, Cl. 209-135.000.

Tura, Vincent J., Jr.; and Germ, Kenneth B., to General Motors Corporation. Heat shielded spark plug boot assembly. 5,348,486, Cl 439-125.000

Turmel, Chantal: *See—*
Slater, Gary; Noolandi, Jaan; and Turmel, Chantal, 5,348,636, Cl. 204-182.800.

Turner, Alan; Chouhan, Mukesh; and Hedley, David J., to Sony United Kingdom Limited. Video signal generating apparatus. 5,349,388, Cl. 348-590.000.

Turner, Darin J., to AlliedSignal Inc. Air bag module with cover 5,348,339, Cl. 280-728.00B.

Turner, Gordon H. Underfloor drilling jig and frame. 5,348,428, Cl. 408-99.000.

Turner, Paul J. Folding handle hatchet. 5,347,718, Cl. 30-122.000.

Turski, Lechoslaw: *See—*
Kruger, Martin; Huth, Andreas; Seidelmann, Dieter; Schneider, Herbert; Turski, Lechoslaw; and Stephens, David N., 5,348,958, Cl. 514-249.000.

Tuunanen, Ari: *See—*
Lappalainen, Juhani; Rinnemaa, Heikki; Tuunanen, Ari; and Saarelainen, Pertti, 5,348,105, Cl. 175-24.000.

Tyberghein, Mike B.: *See—*
Mulry, Patrick E.; Kool, Dennis J.; Tyberghein, Mike B.; Gura, Donald S.; and Plyler, Jeffrey D., 5,347,865, Cl. 73-427.000.

Tyler, Larry; Burbidge, Jack; Gilliam, Steve; Hampton, Gary; Olson, Jim; and Simmons, Ron, to Ceco Door Products. Convertible hinge preparation assembly and method. 5,347,686, Cl. 16-247.000.

Tytell, Michael: *See—*
Berberian, Paul A.; Tytell, Michael; and Gower, David J., 5,348,945, Cl. 514-21.000.

UCB S.A.: *See—*
Van Keulen, Berend J.; Goldstein, Solo; Cossement, Eric; Gobert, Jean; and Wulfert, Ernst, 5,348,956, Cl. 514-232.200.

Uchida, Hiroshi: *See—*
Yamauchi, Toshio; and Uchida, Hiroshi, 5,348,238, Cl. 242-18.00R.

Uchiyama, Hiroyuki: *See—*
Tadaki, Yoshitaka; Sekiguchi, Toshihiro; Uchiyama, Hiroyuki; Kaga, Toru; Murata, Jun; and Enomoto, Osaomi, 5,349,218, Cl. 257-296.000.

Uchiyama, Kunio: *See—*
Nishimukai, Tadahiko; Hasegawa, Atsushi; Uchiyama, Kunio; Kawasaki, Ikuya; and Hanawa, Makoto, 5,349,672, Cl. 395-800.000.

Uchiyama, Masaki; Akashi, Yasutaka; Taya, Masaaki; and Unno, Makoto, to Canon Kabushiki Kaisha. Monocomponent-type developer for developing electrostatic image and image forming method. 5,348,829, Cl. 430-106.600.

Uda, Hitoshi: *See—*
Takahashi, Tetuya; Uda, Hitoshi; Nakamura, Akira; Kamei, Ryosuke; and Takiyama, Eiichiro, 5,349,028, Cl. 525-440.000.

Ueda, Katsunori: *See—*
Togai, Kazuhide; Ishida, Tetsurou; and Ueda, Katsunori, 5,347,974, Cl. 123-682.000.

Ueda, Koichi: *See—*
Ikeda, Masayuki; and Ueda, Koichi, 5,349,664, Cl. 395-700.000.

Uehara, Masaki: *See—*
Masaki, Mitsuo; Uehara, Masaki; Hirate, Kenji; Isowa, Yoshikazu; Sato, Yoshiaki; and Nakashima, Yoshiharu, 5,349,050, Cl 530-330.000.

Uehira, Tetsuo: *See—*
Kawamura, Takahiro; and Uehira, Tetsuo, 5,348,506, Cl. 445-30.000.

Ueki, Toru; Yoshimura, Masaji; Kanezaki, Kazuharu; Kishi, Susumu; Satoh, Takashi; and Takiguchi, Minoru, to Mitsui Toatsu Chemicals, Inc. Modified polyolefin resin compositions. 5,349,027, Cl. 525-331.700.

Uemachi, Hiroshi; Sato, Yoshiko; Sotomura, Tadashi; and Takeyama, Kenichi, to Matsushita Electric Industrial Co., Ltd. Reversible electrode. 5,348,819, Cl. 429-213.000.

Uematsu, Tetsutaro: *See—*
Shiraki, Harumitsu; Sohtome, Hiroyasu; Suzuki, Kiyoshi; Uematsu, Tetsutaro; and Su, Lao-Sou, 5,349,149, Cl. 219-69.140.

Uemori, Ryuji: *See—*
Hanamura, Toshihiro; Uemori, Ryuji; Tanino, Mitsuru; and Takamura, Jin-ichi, 5,348,594, Cl. 148-421.000

Hanamura, Toshihiro; Uemori, Ryuji; Tanino, Mitsuru; and Takamura, Jin-ichi, 5,348,595, Cl. 148-538.000.

Uemura, Hiroshi: *See—*
Kawaguchi, Shigeru; Kubouchi, Kenji; Uemura, Hiroshi; and Inoue, Kunitoshi, 5,348,315, Cl. 277-235.00B.

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Mochizuki, Hidehiro; Ariga, Yutaka; Kuboyama, Hiroki; Uemura, Hiroyuki; and Nogawa, Chiharu, 5,348,931, Cl. 503-227.000.

Uemura, Tetsuya, to NEC Corporation. Tunneling transistor. 5,349,202, Cl. 257-25.000

Ueno, Yoshiharu; and Inoue, Masahiro, to Sharp Kabushiki Kaisha. Microwave oven using a precoated sheet steel as walls of an internal chamber thereof. 5,349,169, Cl. 219-756.000.

Uetsuki, Setsuyoshi; Sato, Osamu; Nakayama, Yasuo; and Hirai, Yoshikatsu, to Otsuka Pharmaceutical Co., Ltd. Monoclonal antibody specific for human interleukin-1β and method for detection of biologically active human interleukin-1β. 5,348,858, Cl. 435-7.100.

Ueyama, Akihiro: *See—*
Watanabe, Junzo; Ueyama, Akihiro; and Kawamura, Ban, 5,349,274, Cl. 315-395.000.

Ueyama, Satoshi: *See—*
Hanazato, Yoshio; Isoda, Satoru; Ueyama, Satoshi; and Nishikawa, Satoshi, 5,349,203, Cl. 257-40.000

Ujari, Paul U.; and Tiearney, Thomas C., to General Electric Company. X-ray tube anode target. 5,349,626, Cl. 378-144.000.

Ullmann, Gabriel; and Jarry, Alain, to Rhone-Poulenc Chimie. Heteropolysaccharide BM07. 5,348,675, Cl. 252-82.000

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Adachi, Mitsuru; and Umeki, Tsunenori, 5,349,666, Cl. 395-750.000.

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Shibata, Masanori; Umetsu, Shigeo; Suzuki, Shinichi; Sato, Michihiro; Saito, Kazuhiro; and Akama, Hiroyuki, 5,349,488, Cl. 360-105.000.

Umezaki, Hiroshi: *See—*
Sugimoto, Shoji; Takeuchi, Yoshiaki; and Umezaki, Hiroshi, 5,348,920, Cl. 501-153.000.

Umix Co., Ltd.: *See—*
Matsuoka, Mitsuo, 5,347,838, Cl. 72-313.000

Ungar, Daniel E.: *See—*
Mott, Richard B.; Waldman, Charles G.; and Ungar, Daniel E., 5,349,193, Cl. 250-370.060.

Unger, Evan C.; and Wu, Guanli. Apparatus for preparing gas filled liposomes for use as ultrasonic contrast agents. 5,348,016, Cl. 128-662.020.

Unger, Michael, to Neste OY. Ski stick. 5,348,346, Cl. 280-819.000.

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Szarkowski, Stephen D.; Beeny, Steven K.; and May, Arthur D., 5,348,139, Cl. 198-781.000

Unilever Patent Holdings B.V.: *See—*
Packer, Allan, deceased; and Yoell, Richard W. F., 5,348,751, Cl. 426-94.000.
van den Berg, Hendrikus; and Klok, Robbert, 5,349,075, Cl 554-170.000

Union Carbide Chemicals & Plastics Technology Corporation: *See—*
Grab, Lawrence A., 5,348,666, Cl. 210-754.000.

Unisys Corporation: *See—*
Kern, Norman P., 5,349,170, Cl. 235-379.000.
White, Theodore C.; Sheth, Jayesh V.; and Nguyen, Kha, 5,349,620, Cl. 377-3.000.

United Engineering, Inc.: *See—*
Ginzburg, Vladimir B., 5,347,837, Cl. 72-243.600

United Kingdom of Great Britain and Northern Ireland, The Secretary of the State for Defence in Her Britannic Majesty's Government of the: *See—*
Bishop, Alan W.; Bray, David J.; Gardiner, Robert W.; and Viney, Brian W., 5,348,703, Cl. 420-590.000.

United Microelectronics Corporation: *See—*
Hong, Gary, 5,349,220, Cl. 257-322.000.
Hsiao, Chun-Fang; Wu, Chung-Yu; and Chen, Chin-Cheng, 5,349,305, Cl. 330-253.000.

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Gross, Harry R.; Johnson, Raydene; and Walters, J. C., 5,348,511, Cl. 449-2.000.
Howell, Charles R.; Becker, J. Ole; Lam, Stephen T.; and Ligon, James M., 5,348,742, Cl. 424-93.470.
Moreland, Thomas W.; Pickens, Lawrence G.; and Miller, Richard W., 5,347,748, Cl. 43-107.000.

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Puckett, Lawrence J., 5,347,946, Cl. 114-90.000.
Sharp, Edward J.; Wood, Gary L.; Shurtz, Richard R., II; and Pohlmann, Juergen L. W., 5,348,688, Cl. 252-582.000.

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Madigan, R. Bruce; and Quinn, Timothy P., 5,349,156, Cl. 219-130.010.

Energy: *See—*
Arnold, Phillip A.; Anderson, Andrew T.; and Alger, Terry W., 5,349,594, Cl. 372-62.000.
Bissett, Larry A.; Strickland, Larry D.; and Rockey, John M., 5,348,921, Cl. 502-43.000.
Fu, Chi Y., 5,348,908, Cl. 437-60.000.
Hohimer, John P.; and Craft, David C., 5,349,601, Cl. 372-94.000.
Miller, William E.; and Tomczuk, Zygmunt, 5,348,626, Cl. 204-1.500.
O'Rourke, Patrick E.; Livingston, Ronald R.; and Prather, William S., 5,348,396, Cl. 374-161.000
Wuest, Craig R.; and Bionta, Richard M., 5,349,194, Cl. 250-372.000.

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Esposito, Joseph J.; Moss, Bernard; and Brechling, Kathleen, 5,348,741, Cl. 424-199.100.
Sternberg, Esther M.; Gold, Philip W.; and Page, Samuel W., 5,348,729, Cl. 424-9.000.

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Justak, John F.; and Owens, Gregg R., 5,348,401, Cl. 384-101.000.
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National Security Agency: *See—*
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Navy: *See—*
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Clark, Arthur E., 5,347,872, Cl. 73-779.000.
Crane, Roger M.; and Bergen, D. Michael, 5,348,052, Cl. 138-174.000
Gadbois, Laurence E., 5,347,877, Cl. 73-863.520.
Gage, Douglas W., 5,349,550, Cl. 364-728.030.
Houlberg, Christian L., 5,349,685, Cl. 395-800.000
Keller, Teddy M.; and Henderson, Leslie J., Jr., 5,348,917, Cl. 501-92.000.
Longas, Socrates A.; and Leverance, Robert A., 5,349,355, Cl. 342-42.000.
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Russell, Stephen D.; Sexton, Douglas A.; and Orazi, Richard J., 5,348,609, Cl. 156-345.000
Spargo, John D.; and Drake, John L., Jr., 5,348,236, Cl. 241-46.170.
Toth, Louis E.; and Spann, J. Richard, 5,348,937, Cl. 505-238.000.
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Dijkhof, Antonie, 5,349,613, Cl. 375-120.000.
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Hazan, Jean-Pierre; Polaert, Remy; and Nagel, Jean-Louis, 5,349,160, Cl. 219-250.000.
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Krings, Wilfried H., 5,349,264, Cl. 313-318.000.
Nillesen, Antonius H. H. J., 5,349,548, Cl. 364-724.100.
Spiero, Richard C.; Douglas, Terence A.; and Vlot, Marnix C., 5,349,391, Cl. 348-705.000.
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U.S. Ring Binder: *See—*
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United States Surgical Corporation: *See—*
Hermes, Matthew E.; and Huang, Bin, 5,349,047, Cl. 528-361.000.
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United Technical Products, Inc.: *See—*
Lampert, Bruce G., 5,348,784, Cl. 428-92.000.

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Kesten, Arthur S., 5,347,828, Cl. 62-46.200.
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Unitika Ltd.: *See—*
Asami, Keiichi; Takahashi, Hideki; Inoue, Katsuo; Echigo, Yoshiaki; Ohsawa, Toshiyuki; and Kabata, Toshiyuki, 5,348,818, Cl. 429-213.000
Ishibashi, Tadaya; Sasaki, Masanori; Obara, Hideto; Kano, Hiroshi; and Yamashita, Shintaro, 5,348,628, Cl. 204-153.000.

University of Alberta, The Governors of the: *See—*
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University of California, The Regents of the: *See—*
Chang, Shih-Ger, 5,348,715, Cl. 423-235.000.
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University of Chicago, The: *See—*
Kupperman, David S.; and Spevak, Lev, 5,349,568, Cl. 367-125.000.
Nelson, Paul A.; Malecha, Richard F.; and Chilenskas, Albert A., 5,347,816, Cl. 62-46.200.

University of Hawaii: *See—*
Tius, Marcus A., 5,349,112, Cl. 514-532.000.

University of Maryland, The: *See—*
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University of Melbourne: *See—*
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University of Oklahoma, The Board of Regents of the: *See—*
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Sluss, James J., Jr.; Duke, James C.; Lewelling, Kevin R.; and Harris, Shaun L., 5,348,019, Cl. 128-667.000.

University of Pennsylvania, The Trustees of the: *See*—
McCauley, John P., Jr.; Zhu, Qing; Vaughan, Gavin; and Coustel, Nicole, 5,348,936, Cl. 505-460.000.

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Schnall, Mitchell D.; Lenkinski, Robert E.; Kressel, Herbert Y.; Pollack, Howard M.; Claiborne, Theodore C.; Misic, George J.; Welch, Thomas R.; and Rhinehart, Edward J., 5,348,010, Cl. 128-653.200

University of Rochester, The: *See*—
Morris, G. Michael; Kay, David; Buralli, Dale; and Kubalak, David, 5,349,471, Cl. 359-565.000

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Pappas, Phillip M., Jr., 5,348,393, Cl. 366-207.000.

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Uno, Naomi: *See*—
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Unsell, Robert D. Swim suit bottom. 5,347,657, Cl. 2-67.000.

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Lavin, Maryellen; Cohen, Alan P.; Greenlay, Nanette; Cannan, Thomas R.; and Hinchey, Richard J., 5,347,822, Cl. 62-85.000.

Upchurch, Ruth A.: *See*—
Calvert, Nathanial; Koehler, John L.; Lindberg, Erik D.; McKelvey, Mark A.; Mervosh, Steven P.; Newton, Jeffrey A.; Scarborough, George B.; Upchurch, Ruth A.; and Westling, Sandra D., 5,349,674, Cl. 395-800.000

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Urano, Satoshi: *See*—
Yoshikawa, Motoyoshi; Noda, Hideyoshi; Shirakawa, Shinsuke; Tsuboniwa, Noriyuki; Yamanaka, Eiji; Urano, Satoshi; and Kanda, Kazunori, 5,348,991, Cl. 523-402.000.

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Urmson, William T., Jr.: *See*—
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Ushiki, Shuichi; and Saito, Ryoji, to Origin Electric Company, Limited. Reduced-resonant-current zero-voltage-switched forward converter using saturable inductor. 5,349,514, Cl. 363-21.000

Ushio, Masaru: *See*—
Yamada, Yasushi; Mizubata, Tsuyoshi; and Ushio, Masaru, 5,348,281, Cl. 271-3.100

Ushirogouchi, Toru; Kihara, Naoko; Sasaki, Osamu; Tada, Tsukasa; Naito, Takuya; and Saito, Satoshi, to Kabushiki Kaisha Toshiba. Photosensitive composition comprising alkali soluble binder and photoacid generator having sulfonyl group. 5,348,838, Cl 430-270.000.

Usui, Ichiro: *See*—
Katayama, Sumio; Iwasaki, Junichi; Toi, Shuichi; Usui, Ichiro; and Yanase, Takashi, 5,349,263, Cl. 310-338.000.
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Usui, Yuuta: *See*—
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Uyama, Yoshiyuki: *See*—
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v.d. Woude, Memo J., to Stork Nedserv B.V. Cleaning lance machine. 5,348,234, Cl. 239-753.000.

Vagedes, Michael, to Richwood Building Products, Inc. Shutter assembly. 5,347,782, Cl. 52-473.000

Vaillancourt, Gil J., to Works Performance Products, Inc. Motorcycle height adjuster. 5,348,112, Cl. 180-227.000.

Valence Technology, Inc.: *See*—
Koksbang, Rene; and Tonder, Pia, 5,348,821, Cl. 429-218.000.

Valenzin, Lawrence R. Microphone windscreen. 5,349,140, Cl 181-158.000

Valeo Thermique Moteur: *See*—
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Valeo Vision: *See*—
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VanAlen, Derek J.: *See*—
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Van Berkel, Cornelis; Bird, Neil C.; Davies, Oliver S.; Edwards, Martin J.; Shannon, John M.; and Knapp, Alan G., to U.S. Philips Corporation. Image sensor with transparent capacitive regions. 5,349,174, Cl. 250-208.100

Van Buskirk, Michael A.: *See*—
Cleveland, Lee E.; Van Buskirk, Michael A.; Chen, Johnny C.; and Chang, Chung K., 5,349,558, Cl. 365-200.000.

van den Berg, Hendrikus; and Klok, Robbert, to Unilever Patent Holdings B.V. Continous esterification of carboxylic and fatty acids in the absense of a catalyst. 5,349,075, Cl. 554-170.000.

Vandenbergh, Peter A.: *See*—
Vedamuthu, Ebenezer R.; Henderson, James T.; and Vandenbergh, Peter A., 5,348,881, Cl. 435-252.100

Van Den Berghe, Al. Automatic closure for a container. 5,348,200, Cl 222-514.000

Vanderbilt University: *See*—
Mendenhall, Marcus H., 5,349,185, Cl. 250-287.000.
Nissen, Steven L.; Flakoll, Paul J.; and Abumrad, Naji N., 5,348,979, Cl. 514-557.000.

Vanderheyden, Theodore E.: *See*—
Burrous, Richard A.; Vanderheyden, Theodore E.; Haase, James W.; and Segna, Todd D., 5,348,562, Cl. 55-235.000

Vander Heyden, William H., to Badger Meter, Inc. Double wing vortex flowmeter with strouhal number corrector. 5,347,873, Cl. 73-861.220.

Vanderschel, David J., to Vindicator Corporation. Electronic lock. 5,349,345, Cl. 340-825.310

Vanderspurt, Thomas H.: *See*—
Potter, Mark J.; Kao, Jar-Lin; Cross, Virginia R.; Vanderspurt, Thomas H.; Dienes, Edward K.; Riley, Robert E.; Tungate, Freddie L.; and Bortinger, Arie, 5,348,924, Cl. 502-66.000.

van Doorn, Albert W. J.: *See*—
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van Es, Remco M.; Keizer, Gerrit D.; and van Doorn, Albert W. J., to H.B.T. Holland Biotechnology. Method for an increased visualization of the reaction product of a specifically binding substance and a corresponding bindable substance and test kit therefor. 5,348,891, Cl. 436-525.000.

Van Gompel, Joseph A.: *See*—
Tsai, John J.; Trzasko, Peter T.; Philbin, Michael T.; Billmers, Robert L.; Tessler, Martin M.; Van Gompel, Joseph A.; and Rutenberg, Morton W., 5,349,089, Cl. 564-291.000.

Van Keulen, Berend J.; Goldstein, Solo; Cossement, Eric; Gobert, Jean; and Wulfert, Ernst, to UCB S.A. Substituted cyclopropylamino-1,3,5-triazines. 5,348,956, Cl. 514-232.200.

Van Maarseveen, Jan H.: *See*—
Hermkens, Peter H. H.; Van Maarseveen, Jan H.; Scheeren, Johan W.; and Kruse, Cornelis G., 5,348,949, Cl. 514-183.000

van Os, Ron; and Bray, Derek, to Diablo Research Corporation. Electrodeless discharge lamp with spiral induction coil. 5,349,271, Cl. 315-248.000.

Van Rompuy, Ludo; and Dewanckele, Jean-Marie, to AGFA-Gevaert, N.V. Silver halide photographic material. 5,348,836, Cl. 430-204.000.

Vansteelant, Marc G.; and Schoonheere, Marnix J., to Ford New Holland, Inc. Twine force sensing apparatus for use on a rectangular baler. 5,347,920, Cl. 100-4.000.

Varian, George R., to Ampex Systems Corporation. Recovering synchronization in a data stream. 5,349,611, Cl. 375-115.000.

Varner, Thomas L., Jr.: *See*—
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Vartuli, James C.: *See*—
Beck, Jeffrey S.; Kuehl, Guenter H.; Olson, David H.; Schlenker, John L.; Stucky, Galen D.; and Vartuli, James C., 5,348,687, Cl. 252-582.000.

Vasselin, Thierry; Vuachet, Michel; and Recher, Gilles, to Salomon S.A. Ski structure obtained from a polyamide based thermoplastic elastomer and grafted copolyolefin based film adapted for adhesion. 5,348,804, Cl. 428-423.100

Vatsky, Joel, to Foster Wheeler Energy Corporation. Split stream burner assembly. 5,347,937, Cl. 110-261.000.

Vaughan, Arthur H., to United States of America, National Aeronautics and Space Administration. Wide field strip-imaging optical system. 5,349,180, Cl. 250-227.200.

Vaughan, Gavin: *See*—
McCauley, John P., Jr.; Zhu, Qing; Vaughan, Gavin; and Coustel, Nicole, 5,348,936, Cl. 505-460.000

Vaught, Russell L., to Schutt Manufacturing Company. Breakaway basketball rim. 5,348,289, Cl. 273-1.50R.

Vedamuthu, Ebenezer R.; Henderson, James T.; and Vandenbergh, Peter A., to Quest International Flavors & Good Ingredients Company, division of Indopco, Inc. Multiple bacteriocin producing lactococcus and compositions. 5,348,881, Cl. 435-252.100.

Veerapandian, Balasubramanian, to University of Maryland. Modified interluekin-1β. 5,349,051, Cl. 530-351.000.

Velicka, Alvydas, to Eyelematic Manufacturing Co., Inc. Metal flexible finger ferrule for flanged container closure. 5,348,174, Cl. 215-277.000.

Velluet, Pascal; and Hoffnung, Jacques, to Valeo Thermique Moteur. Heat exchanger with tubes of oblong cross section, in particular for motor vehicles. 5,348,082, Cl. 165-173.000.

Veltri, Wayne R. Rocking-actuated massage apparatus. 5,348,529, Cl. 601-99.000

Venegas, Jose G.: *See*—
Shapiro, Alan R.; Gray, Martha L.; Melendez, Luis A.; Schaffer, Jonathan L.; Wright John D.; and Venegas, Jose G., 5,348,879, Cl. 435-240.241.

Venkatesan, Srini: *See*—
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Venkatesan, Suresh: *See*—
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Venzi, Stefano; and Colombo, Adalberto, to SNAM S.P.A. Tape for reinforcing pressure-supporting hollow bodies and a method for repairing deteriorated pipes. 5,348,801, Cl. 428-354.000.

Verbeuren, Tony: *See*—
Lavielle, Gilbert; Maillos, Philippe; Muller, Olivier; Laubie, Michel; Verbeuren, Tony; and Descombes, Jean-Jacques, 5,348,968, Cl. 514-360.000.

Vercauteren, Franky F.: *See*—
Creusen, Raymond J. M.; and Vercauteren, Franky F., 5,348,652, Cl. 210-490.000

Verrier, Guy F.; Stein, Frank L.; and Donaldson, Robert L., to International Business Machines. Architecture for communication of remote devices to a digitizing display. 5,349,139, Cl. 178-19.000

Vestuto, Russell J.: *See*—
Jaster, Dale R.; Vestuto, Russell J.; and Maruszak, Ronald S., 5,347,755, Cl. 49-25.000.

Vezzani, Enrico; and Caliari, Mario, to Zini Prodotti Alimentari S.r.l. Machine for preparing pasta based dishes. 5,347,917, Cl. 99-335.000.

Vicente, Francisca: *See*—
Schwartz, Robert E.; Onishi, Janet C.; Bills, Gerald F.; Giacobbe, Robert A.; Pelaez, Fernando; Diez, Maria T.; Vicente, Francisca; Gorrochategui, Julian; Helms, Gregory L.; and Pramanik, Barnali, 5,348,970, Cl. 514-422.000.

Vickerman, Harold E. Statistical sampling apparatus. 5,348,480, Cl. 434-188.000

Victor Company of Japan: *See*—
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Villiger, Paul. Apparatus for collapsing containers. 5,347,923, Cl. 100-137.000.

Vince, Dennis J., to Vince Medical Company Limited. Cardiac assist device. 5,348,528, Cl. 600-16.000.

Vince Medical Company Limited: *See*—
Vince, Dennis J., 5,348,528, Cl. 600-16.000.

Vincent, Monty E.: *See*—
Costello, John R., Jr.; Knoedler, Leonard F.; Vincent, Monty E.; and Boomus, Mary K., 5,348,646, Cl. 210-94.000.

Vincenti, Paul J.; and Barr, Morton L., to Mennen Company, The. Basic aluminum antiperspirant active material having enhanced activity, antiperspirant active composition containing such material, and methods for preparation of such material and composition. 5,348,720, Cl. 423-462.000.

Vindicator Corporation: *See*—
Vanderschel, David J., 5,349,345, Cl. 340-825.310.

Viney, Brian W.: *See*—
Bishop, Alan W.; Bray, David J.; Gardiner, Robert W.; and Viney, Brian W., 5,348,703, Cl. 420-590.000

Vinod, Yashavant V., to Du Pont de Nemours, E. I., and Company. Method for manufacturing a carpet having a secondary backing substantially impervious to aqueous solutions and the resultant carpet. 5,348,785, Cl. 428-95.000.

Vinton, Jennifer G.: *See*—
Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Lightowlers, Marshall W.; O'Hoy, Kim L.; Johnson, Kevin S.; Heath, David D.; Lawrence, Stephen B.; and Vinton, Jennifer G., 5,348,740, Cl. 424-191.100.

Virta, Arto; Strommer, Pekka; and Sormunen, Juha, to Planmeca Oy. Method and apparatus for marking a film in a dark room. 5,349,627, Cl. 378-166.000.

Visel, Thomas A.; and Long, Jon M., to VLSI Technology, Inc. System for securing and electrically connecting a semiconductor chip to a substrate. 5,349,495, Cl. 361-774.000.

Visintini, Giuliano: *See*—
Anemogiannis, Kimon; and Visintini, Giuliano, 5,349,260, Cl. 310-313.00D.

Vives, Michel; Taveau, Pierre; Habarou, Georges; and Bognandi, Francois, to Societe Europeenne De Propulsion. Method of manufacturing a gun barrel provided with a lining. 5,348,598, Cl. 156-93.000.

Vlot, Marnix C.: *See*—
Spiero, Richard C.; Douglas, Terence A.; and Vlot, Marnix C., 5,349,391, Cl. 348-705.000.

VLSI Technology, Inc.: *See*—
Ashtaputre, Sunil V.; and Wong, Dale M., 5,349,536, Cl. 364-491.000.
Brasen, Daniel R.; and Seiler, Bruce S., 5,349,542, Cl. 364-578.000.
Sayka, Anthony; and Siddiqui, Mohammad A., 5,349,237, Cl. 257-715.000.
Visel, Thomas A.; and Long, Jon M., 5,349,495, Cl. 361-774.000.
Zampaglione, Michael A., 5,349,552, Cl. 365-51.000.

Vo, Tuan A.: *See*—
Mojaradi, Mohamad M.; Vo, Tuan A.; and Buhler, Steven A., 5,349,223, Cl. 257-329.000

Vogel, Gregory G.: *See*—
Grenon, Stephen M.; and Vogel, Gregory G., 5,349,262, Cl. 310-334.000.

Vogel, Robert L.: *See*—
Kao, Wenling; and Vogel, Robert L., 5,349,060, Cl. 540-456.000.

Vogel, Victor J., to Mosler, Inc. Apparatus for aligning multilateral tube sections. 5,348,280, Cl. 269-48.100

Vokey, David E.; Sontag, Kenneth N.; and Kraft, Heinrich, to Norscan Instruments Ltd. Fiber optic cable moisture monitoring system. 5,349,182, Cl. 250-227.210.

Volkin, David B.: *See*—
Middaugh, C. Russell; Tsai, Pei-Kuo; and Volkin, David B., 5,348,941, Cl. 514-12.000.

Volkmer, Michael: *See*—
Schulte, Peter; Volkmer, Michael; and Kuhn, Frank, 5,348,665, Cl. 210-748.000

von der Eltz, Andreas; Schrell, Andreas; and Russ, Werner H., to Hoechst Aktiengesellschaft. Production of dyeings by the inkjet printing technique on modified fiber materials using anionic textile dyes. 5,348,557, Cl. 8-188.000.

von Halasz, Sigmar-Peter: *See*—
Wirtz, Herbert; von Halasz, Sigmar-Peter; Feustel, Michael; and Balzer, Juliane, 5,349,019, Cl. 525-217.000.

von Tapavicza, Stephan: *See*—
Mueller, Heinz; Herold, Claus-Peter; and von Tapavicza, Stephan, 5,348,938, Cl. 507-139.000.

Voreck, Wallace E., Jr.: *See*—
Lerche, Nolan C.; Aseltine, Clifford L.; and Voreck, Wallace E., Jr., 5,347,929, Cl. 102-202.140.

Voss, Karl R.: *See*—
Quadracci, H. Richard; Voss, Karl R.; and Sainio, Jeffrey W., 5,347,726, Cl. 34-465.000.

VSLI Technology Incorporated: *See*—
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Wada, Akihiro: *See*—
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Wadell, Lars G. A., to Nestec S.A. Gripping device. 5,348,134, Cl. 198-409.000.

Wagner, Friedrich; and Grau, Walter, to Friedrich Grohe Aktiengesellschaft. Ceramic-plate flow-control valve. 5,348,042, Cl. 137-237.000.

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Waknine, Samuel; Prasad, Arun; and Jia, Weitao, to Jeneric/Pentron Inc. Trimodal method of curing dental restorative compositions. 5,348,475, Cl. 433-215.000.

Waldman, Charles G.: *See*—
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Walker, Robert A., Jr., to Walker Design Inc. Vacuum relief valve. 5,347,973, Cl. 123-574.000.

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Walpita, Lakshaman M.; Stamatoff, James B.; and Lundberg, George, to Hoechst Celanese Corp. Low dielectric materials. 5,348,990, Cl. 523-219.000

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Walt Disney Company, The: *See—*
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Walters, Mark A., to Alliance Pharmaceutical Corp. Fluorocarbon compositions labeled with visible or fluorescent agent. 5,348,728, Cl. 424-7.100.

Wanat, Stanley F., to Hoechst Celanese Corporation. Water developable, negative working overlay color proofing system utilizing water soluble polymeric diazonium compound; water insoluble, water swellable binder resin; and a colorant. 5,348,834, Cl. 430-143.000.

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Wang, Chin-Yuan. Water sprayer with flow rate control. 5,348,228, Cl. 239-394.000.

Wang, Enoch I.; Lin, Lifun; and Bowden, William L., to Duracell Inc. Process for producing manganese dioxide. 5,348,726, Cl. 423-605.000

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Wang, Lixiao; and Tran, The Thomas T., to Scimed Life Systems, Inc. Shrinking balloon catheter having nonlinear or hybrid compliance curve. 5,348,538, Cl. 604-96.000

Wannamaker, Marion W.: *See—*
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Watanabe, Kazuhiro: *See—*
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Watanabe, Masashi: *See—*
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Watanabe, Seigo; and Oh-Kita, Motomu, to Mitsubishi Rayon Co., Ltd. Process for producing catalysts for synthesis of unsaturated aldehydes and unsaturated carboxylic acids. 5,349,092, Cl. 568-480.000.

Watanabe, Seiji; Mitsuhashi, Shigeru; and Kumobayashi, Hidenori, to Takasago International Corporation. Process for producing optically active γ-hydroxyketones. 5,349,107, Cl. 568-318.000.

Watanabe, Tetsuya: *See—*
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Watkin, John E.; and Wilkinson, Della A., to Canada, Her Majesty the Queen in Right of Canada as represented by the Solicitor General of Enhancement of polycyanoacrylate-developed fingerprints. 5,348,159, Cl. 206-568.000

Watson, Peter, to Skytainer Services, Inc. Quick-release cargo net securing device. 5,348,433, Cl. 411-347.000.

Watson, Rick D.; Jester, Terry L.; and Deutschman, Ernest F., to Dana Corporation. Damper assembly for shift lever mechanism. 5,347,881, Cl. 74-473.00R.

Wattiez, Daniel: *See—*
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Weaver, David E.; Clary, Everett; Shem, Robert; and Taft, George, to State of Alaska. Apparatus for cyanoacrylate fingerprint developing and method of use therefore. 5,348,759, Cl. 427-1.000

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Webber, James L., to General Motors Corporation. Method of folding an air bag. 5,348,341, Cl. 280-728.00R

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Weber, Georg: *See—*
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Webster, John A., Jr. Method for detecting prokaryotic organisms. 5,348,854, Cl. 435-6.000.

Wedeen, Robert S., to Hughes Aircraft Company. Torque oscillation compensation utilizing velocity feedback. 5,349,278, Cl. 318-632.000.

Weder, Donald E., to Highland Supply Corporation. Decorative material having a colored sticky element disposed thereon forming at least a portion of a decoration and method. 5,347,789, Cl. 53-397.000

Wei, Che-Chia; and Liou, Fu-Tai, to SGS-Thomson Microelectronics, Inc. Local interconnect for integrated circuits. 5,349,229, Cl. 257-383.000

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Weinhold, Dennis G.; Hieatt, Allen C.; and Ludwig, Jerome H., to h.e.r.c. Incorporated. Aqueous multipurpose cleaning composition containing sulfites and glycol ethers. 5,348,679, Cl. 252-105.000.

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Welch, David F.: *See—*
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Welch, Edward K., II: *See—*
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Wentz, Samuel L.: *See—*
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Werner, Fritz: *See—*
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West, Michael W. J., to Du Pont de Nemours, E. I., and Company. Carbodiimides and processes therefor. 5,349,087, Cl. 564-252.000.

Westerberg, Roger K.; and Brace, Thomas J., to Minnesota Mining and Manufacturing Company. Universal lattice for magnetic electronic article surveillance system. 5,349,502, Cl. 361-829.000.

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Weston, Colin K. Liquid dispensing apparatus. 5,348,585, Cl. 118-305.000

Weston, Jeremy; and White, William E., to Positive Light, Inc. Laser pulse stretcher and compressor with single parameter wavelength tunability. 5,349,591, Cl. 372-25.000

Wheatcraft, Paul A.; Daane, Laurence A.; and Blom, Hans A., to Whitaker Corporation, The. Termination of multi-conductor electrical cables. 5,347,711, Cl. 29-843.000.

Wheatley, James, to Triogen Limited. Apparatus for generating ozone. 5,348,709, Cl. 422-186.180.

Whirlpool Corporation: *See—*
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Holling, Ronald W., 5,349,162, Cl. 219-453.000.
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Whitaker Corporation, The: *See—*
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Whitaker, William W. Yard trash burner. 5,347,935, Cl. 110-240.000.

White, Eugene W., to Interpore Orthopaedics, Inc. Mesh sheet with microscopic projections and holes. 5,348,788, Cl. 428-131.000.

White, George; and King, David C., to Du Pont Canada Inc. Joining of metallic pipe lined with thermoplastic polymer. 5,348,211, Cl. 228-120.000.

White, Steven W.: *See—*
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White, Theodore C.; Sheth, Jayesh V.; and Nguyen, Kha, to Unisys Corporation. Timer access control apparatus. 5,349,620, Cl. 377-3.000.

White, William E.: *See—*
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Whitney, Douglass G. Method for promoting blood vessel healing. 5,348,553, Cl. 606-41.000.

Whittaker, Roger: *See—*
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Whittington, Richard W. Magnetic name tag. 5,347,733, Cl. 40-1.500.

Whittle, Rex W. J., to Astec International, Ltd. Power factor boost converter power supply. 5,349,284, Cl. 323-207.000.

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Wiesner, Steven P.; and Muni, Ketan P., to Advanced Cardiovascular Systems, Inc. Catheter with intraluminal sealing element. 5,348,537, Cl. 604-96.000.

Wigram, Richard I., to Smiths Industries Public Limited Company. Mounts for buoys. 5,348,502, Cl. 441-7.000.

Wilby, Matthew J.: *See—*
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Wilen, Allan S., to Zeneca Inc. Microwaveable packaging composition. 5,349,168, Cl. 219-730.000.

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Willassen, Einar: *See—*
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Wille, Knut: *See—*
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Wm. Wrigley Jr. Company: *See—*
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Williams, David A.; Wright, Peter G.; and Burke, David, to Group Lotus PLC. Wheeled vehicle steering system. 5,348,111, Cl. 180-140.000.

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Williams, William H.; and Jacobs, Paul G. Head assembly for a vacuum cleaning apparatus having dual-individually floating heads. 5,347,678, Cl. 15-331.000.

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Wilson, Bryan A. Wood trim system. 5,348,066, Cl. 144-344.000

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Wilson, Frederick F. K. Industrial carrying machine. 5,348,172, Cl. 212-196.000.

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Winbond Electronic Corp.: *See—*
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Wirtz, Herbert; von Halasz, Sigmar-Peter; Feustel, Michael; and Balzer, Juliane, to Hoechst. New copolymers, mixtures thereof with poly(-meth)acrylate esters and the use thereof for improving the cold fluidity of crude oils. 5,349,019, Cl. 525-217.000.

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Wisconsin Alumni Research Foundation: *See—*
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Wisniewski, John M.; and Shier, William W., to Wisniewski, John M Electronic sound generating toy. 5,349,129, Cl. 84-600.000.

Wistuba, Eckehardt: *See—*
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Yamada, Kenji, to Nikon Corporation. Finder indication optical system in a single-lens reflex camera. 5,349,404, Cl. 354-152.000.

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Yamada, Toyonobu, to Fujitsu Limited. Method for testing semiconductor integrated circuit device, voltage drop power supply circuit suitable for the method, and semiconductor integrated circuit device having the voltage drop circuit. 5,349,290, Cl. 324-158.100.

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Yamada, Yoshiteru: *See—*
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Yamauchi, Toshio; and Uchida, Hiroshi, to Murata Kikai Kabushiki Kaisha. Doubler winder. 5,348,238, Cl. 242-18.00R

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Yamazaki, Shunpei; and Takemura, Yasuhiko, to Semiconductor Energy Laboratory Co., Ltd. Electro-optical device and process for fabricating the same and method of driving the same. 5,349,366, Cl. 345-92.000.

Yanagi, Haruyuki; Suzuki, Tetsuo; Hiramatsu, Soichi; Nojima, Takashi; and Saikawa, Satoshi, to Canon Kabushiki Kaisha. Sheet feeding apparatus having sheet separating means with adjustable feeding force. 5,348,283, Cl. 271-127.000

Yanagi, Kunio; and Satoh, Toshiaki, to Jidoshi Kiki Co., Ltd. Cap for master cylinder reservoir. 5,347,813, Cl. 60-585.000.

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Yokoi, Shin, to Yokoi Manufacturing Co., Ltd. Indoor fire hydrant apparatus. 5,348,099, Cl. 169-51.000.
Yokoshima, Yasuhiro, to Yokoshima, Yasuhiro; and Kamiyama, Minoru. Method for impregnating a lining material with a hardenable resin. 5,348,764, Cl. 427-140.000
Yokouchi, Kishio: *See*—
Yamada, Mitsutaka; Yokouchi, Kishio; Kamehara, Nobuo; and Niwa, Koichi, 5,349,499, Cl. 361-700.000.
Yokoyama, Yuko: *See*—
Ichikawa, Shuji; Mitani, Motohiro; Yokoyama, Yuko; Sawada, Hideo; and Matsumoto, Takeo, 5,348,890, Cl. 436-172.000
Yonekubo, Yoshitake; Koiwai, Hideshi; and Narita, Susumu, to Kayaba Industry Co., Ltd. Input apparatus. 5,348,049, Cl. 137-636.200.
Yonekubo, Yoshitake: *See*—
Hasegawa, Yoshimi; Nishiumi, Kenichi; Yonekubo, Yoshitake; Naito, Hisato; and Koiwai, Hideshi, 5,347,811, Cl. 60-426.000.
Yonezawa, Seiji: *See*—
Fukuda, Hiroshi; Yamanaka, Ryoko; Tawa, Tsutomu; Terasawa, Tsuneo; and Yonezawa, Seiji, 5,348,837, Cl. 430-269.000
Yorgason, James A., to Thiokol Corporation. Composite/metal hybrid rocket motor case and methods for manufacturing. 5,348,603, Cl. 156-191.000
York, Frederick J.: *See*—
Papillon, Jean; and York, Frederick J., 5,348,533, Cl. 604-4.000.
Yoshiaki, Nagao; Atsuhiro, Kobayashi; and Sakuma, Mikio, to Brother Kogyo Kabushiki Kaisha. Tape feed mechanism with tape cutter and guide. 5,348,406, Cl. 400-615.200.
Yoshida, Hiro: *See*—
Wu, Sheau-Dong; and Yoshida, Hiro, 5,349,683, Cl. 395-800.000.
Yoshida, Kazuo: *See*—
Matsuhisa, Yoji; Hiramatsu, Toru; Yoshida, Kazuo; and Katagiri, Gen, 5,348,802, Cl. 428-367.000
Yoshida, Kazuyoshi: *See*—
Iwanaga, Toshihiko; Yoshida, Kazuyoshi; and Sato, Takusei, 5,349,456, Cl. 359-82.000.
Yoshida Kogyo K.K.: *See*—
Ebata, Hirokazu, 5,347,692, Cl. 24-429.000.
Masumoto, Tsuyoshi; Inoue, Akihisa; Kato, Akira; Shibata, Toshisuke; and Nishiyama, Nobuyuki, 5,348,591, Cl. 148-403.000.
Yoshida, Makoto, to Sharp Kabushiki Kaisha. Semiconductor memory device. 5,349,557, Cl. 365-200.000
Yoshida, Naoyuki: *See*—
Miyazawa, Kazutoshi; and Yoshida, Naoyuki, 5,348,870, Cl. 435-125.000.
Yoshida, Ryo: *See*—
Sato, Junichi; Sanemitzu, Yuzuru; Kawamura, Shinichi; Mito, Nobuaki; Hamada, Tatsuhiro; and Yoshida, Ryo, 5,349,108, Cl. 564-340.000.
Yoshida, Shigeru: *See*—
Tateyama, Masaru; Tamura, Yukihiko; Fukuda, Kosei; Yoshida, Shigeru; and Kami, Chikashi, 5,348,424, Cl. 405-262.000.
Yoshida, Tetsuo, to Fuji Photo Film Co., Ltd. Silver halide photographic material and method of processing the same. 5,348,850, Cl. 430-575.000.
Yoshida, Toyohiko; and Matsuo, Masahito, to Mitsubishi Denki Kabushiki Kaisha. Bit searching circuit and data processor including the same. 5,349,681, Cl. 395-800.000.
Yoshida, Tsunezo: *See*—
Sakashita, Nobuyuki; Nakajima, Toshio; Murai, Shigeo; Maeda, Kazuyuki; Nakamura, Yuji; Yoshida, Tsunezo; Honzawa, Shooichi; and Kanamori, Fumio, 5,348,933, Cl. 504-213.000.
Yoshihama, Yoshio; Kusakabe, Katsuhiko; Matsui, Susumu; and Morita, Hideo, to Takara Shuzo Co., Ltd. Biologically pure mushroom culture and method for mushroom cultivation. 5,349,121, Cl. 800-200.000.
Yoshikawa, Akio: *See*—
Hirohashi, Kazutoshi; Horii, Hiroshi; Koike, Hideo; Yunoki, Yoshiaki; Fukasawa, Tetsuo; Katayama, Susumu; Yoshikawa, Akio; Ushijima, Keishi; Takeda, Takaaki; Nomoto, Takeshi; Kikuta, Michio; Shichijo, Shunichi; and Iwasaki, Yoshiki, 5,349,463, Cl. 359-174.000.
Yoshikawa, Koji: *See*—
Suzuki, Nobuo; Yoshikawa, Koji; and Takeuchi, Hitoshi, 5,349,320, Cl. 336-92.000.
Yoshikawa, Motoyoshi; Noda, Hideyoshi; Shirakawa, Shinsuke; Tsuboniwa, Noriyuki; Yamanaka, Eiji; Urano, Satoshi; and Kanda, Kazunori, to Nippon Paint Co., Ltd. Aqueous dispersion coating composition. 5,348,991, Cl. 523-402.000.
Yoshikawa, Takeshi: *See*—
Hanada, Koji; Hamuro, Makiko; Yoshikawa, Takeshi; Ohmura, Toru; and Kashioka, Motohiko, 5,348,348, Cl. 283-91.000
Yoshimura, Ichiro: *See*—
Aikawa, Haruhiko; Nagayama, Katsuya; Ishiguro, Yoichi; Yoshimura, Ichiro; Katsuyama, Yutaka; and Yoshizawa, Nobuyuki, 5,348,564, Cl. 65-413.000.
Yoshimura, Masaji: *See*—
Ueki, Toru; Yoshimura, Masaji; Kanezaki, Kazuharu; Kishi, Susumu; Satoh, Takashi; and Takiguchi, Minoru, 5,349,027, Cl. 525-331.700.
Yoshino, Hiroshi: *See*—
Hattori, Hisao; Ihara, Tomohiko; Yoshino, Hiroshi; and Yamanaka, Shosaku, 5,348,792, Cl. 428-209.000.
Yoshino, Nobuo; and Numaya, Kuniaki. Method for forming a bead forming die. 5,347,888, Cl. 76-107.100.
Yoshino, Ryutaro: *See*—
Takahashi, Hideo; and Yoshino, Ryutaro, 5,349,277, Cl. 318-568.120.
Yoshio, Kunikiyo: *See*—
Mochizuki, Akihiro; Kasahara, Shigeo; Makino, Tetsuya; Watanabe, Masashi; Nakatsuka, Masakatsu; Yoshio, Kunikiyo; Satoh, Masahiro; Watanabe, Tetsuya; Sugita, Naoko; and Yanagi, Tatsuroh, 5,348,685, Cl. 252-299.620.
Yoshioka, Kiyoharu; and Arai, Koji, to Canon Kabushiki Kaisha. Color facsimile apparatus. 5,349,450, Cl. 358-500.000.
Yoshioka, Takayuki: *See*—
Terai, Takashi; and Yoshioka, Takayuki, 5,349,472, Cl. 359-649.000.
Yoshioka, Toshifumi: *See*—
Murata, Tatsuo; Ishiwata, Kazuya; and Yoshioka, Toshifumi, 5,348,828, Cl. 430-20.000.
Yoshioka, Yasuhiro: *See*—
Suzuki, Makoto; Takahashi, Osamu; Shimada, Yasuhiro; Matsuoka, Koushin; and Yoshioka, Yasuhiro, 5,348,847, Cl. 430-558.000.
Yoshitani, Kazuhiro: *See*—
Fujimoto, Katsumi; Yoshitani, Kazuhiro; Mori, Akira; and Nakamura, Takeshi, 5,349,261, Cl. 310-321.000.
Yoshiya, Akihiko: *See*—
Yamamoto, Iwao; Yoshiya, Akihiko; and Nakagoshi, Akira, 5,348,719, Cl. 423-447.400.
Yoshizawa, Nobuyuki: *See*—
Aikawa, Haruhiko; Nagayama, Katsuya; Ishiguro, Yoichi; Yoshimura, Ichiro; Katsuyama, Yutaka; and Yoshizawa, Nobuyuki, 5,348,564, Cl. 65-413.000.
Yost, Richard W. Child safety toilet lid lock. 5,347,663, Cl. 4-253.000.
Yotsuya, Syuichi: *See*—
Haga, Takahiro; Sugi, Hideo; Shigehara, Itaru; Odawara, Shinji; Yotsuya, Syuichi; Kimura, Hirohiko; and Yamamoto, Kazuhiro, 5,348,967, Cl. 514-352.000.
Young, Donald M.: *See*—
Mezzatesta, Frank, Jr.; and Young, Donald M., 5,349,276, Cl. 318-268.000.
Young, Nelson N. T.: *See*—
Tomassian, Edward; and Young, Nelson N. T., 5,348,573, Cl. 96-151.000.

Young, Pauline R.; Abrahamson, Timothy A.; and Sommercorn, Richard K., to Quinton Instrument Company. Coextruded catheter and method of forming. 5,348,536, Cl. 604-43.000.
Young, Rosa: *See*—
Ovshinsky, Stanford R.; Corrigan, Dennis; Venkatesan, Srini; Young, Rosa; Fierro, Christian; and Fetcenko, Michael A., 5,348,822, Cl. 429-223.000.
Yu, Sheu-Meei: *See*—
Teng, Che-Ming; Chen, Chien-Chih; and Yu, Sheu-Meei, 5,348,959, Cl. 514-280.000.
Yu, Tsai-Yun. Saddle for a bicycle. 5,348,369, Cl. 297-214.000.
Yuasa, Satoshi: *See*—
Miyamato, Masahiko; Nakamura, Nobuo; Takashita, Jyunji; Ando, Manabu; Kawano, Katsuo; Nishimura, Yoshiaki; and Yuasa, Satoshi, 5,347,763, Cl. 451-241.000.
Yuki, Ken: *See*—
Takada, Shigeki; Yuki, Ken; Maruyama, Hitoshi; Tanaka, Taku; and Igarashi, Kazunari, 5,349,008, Cl. 524-557.000.
Yunoki, Yoshiaki: *See*—
Hirohashi, Kazutoshi; Horii, Hiroshi; Koike, Hideo; Yunoki, Yoshiaki; Fukasawa, Tetsuo; Katayama, Susumu; Yoshikawa, Akio; Ushijima, Keishi; Takeda, Takaaki; Nomoto, Takeshi; Kikuta, Michio; Shichijo, Shunichi; and Iwasaki, Yoshiki, 5,349,463, Cl. 359-174.000.
Yurgevich, Howard J.; and Rosby, Thomas J., to Rosby Corporation. High-cube top lift cargo carrier structure. 5,348,176, Cl. 220-1.500.
Yuva, Nusret: *See*—
Blum, Harald; Kahl, Lothar; Yuva, Nusret; and Bock, Manfred, 5,349,041, Cl. 528-85.000.
Zabala, Robert J.: *See*—
Sawyer, Thomas F.; Benz, Mark G.; Carter, William T., Jr.; and Zabala, Robert J., 5,348,566, Cl. 75-10.240.
Zagdoun, Georges; and Cordier, Bruno, to Saint-Gobain Vitrage International. Formation of a layer of aluminum and tin or titanium oxides on a glass substrate. 5,348,805, Cl. 428-432.000.
Zambias, Robert A.: *See*—
Balkovec, James M.; and Zambias, Robert A., 5,348,940, Cl. 514-11.000.
Zambounis, John, to Ciba-Geigy Corporation. Substituted naphtho[1,8-de:5,4-d'e']bis[1,3]thiazines, process for their preparation and the use thereof. 5,349,062, Cl. 544-4.000.
Zampaglione, Michael A., to VLSI Technology, Inc. Memory compiler with multiple selectable core elements. 5,349,552, Cl. 365-51.000.
Zayas, Fernando A.: *See*—
Frame, Robert C.; Zayas, Fernando A.; and Gardner, Edward A., 5,349,690, Cl. 395-800.000.
Zebco Corporation: *See*—
Kim, Hyunkyu, 5,348,246, Cl. 242-279.000.
Zeelan Technology, Inc.: *See*—
Moriyasu, Hiro, 5,349,539, Cl. 364-578.000.
Zeischke, Winfried: *See*—
Semler, Gerd; and Zeischke, Winfried, 5,348,250, Cl. 244-3.160.
Zeneca Inc.: *See*—
Wilen, Allan S., 5,349,168, Cl. 219-730.000.
Zentgraf, Hans-Dieter: *See*—
Elsenheimer, Willi; and Zentgraf, Hans-Dieter, 5,348,365, Cl. 296-146.600.
Zexel Corporation: *See*—
Suzuki, Hiroyuki; Hara, Shinichi; and Ono, Mitsuya, 5,348,457, Cl. 418-259.000
Zhan, Zheng-Yun: *See*—
Kuo, Shen-Chun; Hou, Donald; and Zhan, Zheng-Yun, 5,349,099, Cl. 570-147.000
Zhang, Yun H. Pressure balanced torsion system for a backrest and the like. 5,348,378, Cl. 297-452.490.
Zhao, Yunxin, to Matsushita Electric Inductrial Co., Ltd. Word hypothesizer for continuous speech decoding using stressed-vowel centered bidirectional tree searches. 5,349,645, Cl. 395-2.520
Zhong, Zhong K.; and Herold, Barry W., to Motorola, Inc. Selective call receiver having CMOS power-on reset circuit. 5,349,695, Cl. 455-38.300.
Zhu, Qing: *See*—
McCauley, John P., Jr.; Zhu, Qing; Vaughan, Gavin; and Coustel, Nicole, 5,348,936, Cl. 505-460.000.
Zhu, X. Theodore: *See*—
Tehrani, Saied N.; Zhu, X. Theodore; Goronkin, Herbert; and Shen, Jun, 5,349,214, Cl. 257-192.000
Zide, Rodney M.; and Rector, James L. Adjustable high/low hook-up chin strap for athletic helmets. 5,347,660, Cl. 2-421.000
Ziegler, Kelly W.; Alexson, Clayton C.; and Lovold, Curt W., to Riverwood International Corporation. Cross loading apparatus for use with cartoning systems. 5,347,796, Cl. 53-566.000.
Zielinski, Reuben Q.: *See*—
Buliszyn, Stanley; Landor, James A.; and Zielinski, Reuben Q., 5,349,543, Cl. 364-579.000.
Zifferer, Scott C.; and Menter, Joseph J., Jr., to ICOM, Inc. Method and apparatus for symbolic ladder logic programming with automatic attachment of addresses. 5,349,518, Cl. 364-192.000.
Zini Prodotti Alimentari S.r.l.: *See*—
Vezzani, Enrico; and Caliari, Mario, 5,347,917, Cl. 99-335.000
Zinnanti, William J. Endoscopic suction, irrigation and cautery instrument. 5,348,555, Cl. 606-49.000.
Zirkiev, Arkady, to Greenwald Industries, Inc. Coin chute assembly having removable sizing inserts for sizing coins. 5,348,129, Cl. 194-235.000.
Zrilic, Djuro G. Method and apparatus for mixed analog and digital processing of delta modulated pulse streams including digital-to-analog conversion of a digital input signal. 5,349,353, Cl. 341-144.000.
Zuliani, Massimo: *See*—
Pucci, Annick; Mikitenko, Paul; and Zuliani, Massimo, 5,348,624, Cl. 203-14.000.
Zumbach, Lyle L.: *See*—
Morris, Michael D.; and Zumbach, Lyle L., 5,349,678, Cl. 395-800.000.
Zumbach, Richard G.: *See*—
Bolash, John P.; James, Edmund H., III; Mayo, Randall D.; and Zumbach, Richard G., 5,349,375, Cl. 347-40.000.
Zuran, Johann. Eco-grill pan. 5,347,978, Cl. 126-41.00R.
Zweig, Jan B.; and Fong, Miller Y., to Jan and Miller, Inc. Display device for photographs and printed images. 5,347,738, Cl. 40-642.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF SEPTEMBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AT&T Bell Laboratories: *See—*
Tsaul Kuabe T,; and Toy, Wing N., deceased, Re. 34,735, Cl 379-67.000.

Cambonie, Joel, to SGS-Thomson Microelectronics, S.A. Integrated digital signal processing circuit for performing cosine transformation Re. 34,734, Cl. 364-725.000.

Channell, Glenn L., to Omaha Standard. Scissor frame lift apparatus for dump trucks. Re. 34,733, Cl. 298-22.00J.

Hanaway, Ronald L. Guide sleeve guide post and modified ball bearing assembly. Re. 34,736, Cl. 384-49.000.

Ijiri, Yasuo: *See—*
Iri, Eiji; Kaneko, Takashi; Shintani, Takeshi; Mio, Kotaro; and Ijiri, Yasuo, Re. 34,732, Cl. 385-109.000

Iri, Eiji; Kaneko, Takashi; Shintani, Takeshi; Mio, Kotaro; and Ijiri, Yasuo, to Mitsubishi Cable Industries, Ltd. Waterproof optical fiber cable. Re. 34,732, Cl. 385-109.000.

Kaneko, Takashi: *See—*
Iri, Eiji; Kaneko, Takashi; Shintani, Takeshi; Mio, Kotaro; and Ijiri, Yasuo, Re. 34,732, Cl. 385-109.000.

Lee, Calvin S.; and Tousson, Eliahou, to Lee/Maatuk Engineering, Inc. Digital level sensing probe system. Re. 34,731, Cl. 73-304.00C.

Lee/Maatuk Engineering, Inc.: *See—*
Lee, Calvin S.; and Tousson, Eliahou, Re. 34,731, Cl. 73-304.00C.

Maeda, Shuichi: *See—*
Niwa, Toshio; Murata, Yukichi; and Maeda, Shuichi, Re. 34,737, Cl. 503-227.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Niwa, Toshio; Murata, Yukichi; and Maeda, Shuichi, Re. 34,737, Cl. 503-227.000.

Mio, Kotaro: *See—*
Iri, Eiji; Kaneko, Takashi; Shintani, Takeshi; Mio, Kotaro; and Ijiri, Yasuo, Re. 34,732, Cl. 385-109.000

Mitsubishi Cable Industries, Ltd.: *See—*
Iri, Eiji; Kaneko, Takashi; Shintani, Takeshi; Mio, Kotaro; and Ijiri, Yasuo, Re. 34,732, Cl. 385-109.000.

Mitsubishi Kasei Corporation: *See—*
Niwa, Toshio; Murata, Yukichi; and Maeda, Shuichi, Re. 34,737, Cl. 503-227.000.

Murata, Yukichi: *See—*
Niwa, Toshio; Murata, Yukichi; and Maeda, Shuichi, Re. 34,737, Cl. 503-227.000.

Niwa, Toshio; Murata, Yukichi; and Maeda, Shuichi, to Mitsubishi Kasei Corporation; and Matsushita Electric Industrial Co., Ltd. Dye transfer sheet for sublimation heat-sensitive transfer recording. Re. 34,737, Cl. 503-227.000.

Omaha Standard: *See—*
Channell, Glenn L., Re. 34,733, Cl. 298-22.00J.

SGS-Thomson Microelectronics, S.A.: *See—*
Cambonie, Joel, Re. 34,734, Cl. 364-725.000.

Shintani, Takeshi: *See—*
Iri, Eiji; Kaneko, Takashi; Shintani, Takeshi; Mio, Kotaro; and Ijiri, Yasuo, Re. 34,732, Cl. 385-109.000.

Tousson, Eliahou: *See—*
Lee, Calvin S.; and Tousson, Eliahou, Re. 34,731, Cl. 73-304.00C.

Toy, Romayne Louis, executrix: *See—*
Tsaul Kuabe T,; and Toy, Wing N., deceased, Re. 34,735, Cl. 379-67.000

Toy, Wing N., deceased: *See—*
Tsaul Kuabe T,; and Toy, Wing N., deceased, Re. 34,735, Cl 379-67.000.

Tsaul Kuabe T,; and Toy, Wing N., deceased (by Toy, Romayne Louis, executrix), to AT&T Bell Laboratories. Call waiting arrangement providing options to both a subsequent calling party and to the called party. Re. 34,735, Cl. 379-67.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Allegran, Inc.: *See—*
Chandraratna, Roshantha A. S., B1 5,013,744, Cl. 514-345.000.

Balo Precision Parts Inc.: *See—*
Rapoza, Edward J., B1 5,110,307, Cl. 439-566.000.

Bell Telephone Laboratories, Incorporated: *See—*
Doughty, Carolyn A., B1 4,582,956, Cl. 379-94.000.

Brunet, Michel; and Garcia, Firmin, to Establissements Valois. Push-nipple for medical sprayer. B1 4,801,093, 9-20-94, Cl. 239-490.000.

Chandraratna, Roshantha A. S., to Allegran, Inc. Acetylenes distributed with a pyridinyl group and a substituted phenyl group having retinoid like activity. B1 5,013,744, 9-20-94, Cl. 514-345.000

Chiuminatta, Alan R.: *See—*
Chiuminatta, Edward; and Chiuminatta, Alan R., B1 5,086,750, Cl 125-13.010.

Chiuminatta, Edward; and Chiuminatta, Alan R. Skid plate for concrete saw. B1 5,086,750, 9-20-94, Cl. 125-13.010

Doughty, Carolyn A., to Bell Telephone Laboratories, Incorporated. Method and apparatus for displaying at a selected station special service information during a silent interval between ringing. B1 4,582,956, 9-20-94, Cl. 379-94.000.

Doutrich, Ray C., to Du Pont de Nemours, E. I., and Company. Electrical connector with pin retention feature. B1 4,847,588, 9-20-94, Cl. 439-751.000.

Du Pont de Nemours, E. I., and Company: *See—*
Doutrich, Ray C., B1 4,847,588, Cl. 439-751.000.

Establissements Valois: *See—*
Brunet, Michel; and Garcia, Firmin, B1 4,801,093, Cl. 239-490.000.

Fireman, Robert; and Shaffield, Gary. Sofa bed recliner. B1 4,829,611, 9-20-94, Cl. 5-47.000.

Garcia, Firmin: *See—*
Brunet, Michel; and Garcia, Firmin, B1 4,801,093, Cl. 239-490.000.

Lester, Larry E.: *See—*
MacPhee, John; and Lester, Larry E., B1 4,724,764, Cl. 101-451.000.

MacPhee, John; and Lester, Larry E. Dampening system. B1 4,724,764, 9-20-94, Cl. 101-451.000.

Rapoza, Edward J., to Balo Precision Parts Inc. Laser weldable hermetic connector. B1 5,110,307, 9-20-94, Cl. 439-566.000.

Shaffield, Gary: *See—*
Fireman, Robert; and Shaffield, Gary, B1 4,829,611, Cl. 5-47.000.

Total Containment, Inc.: *See—*
Webb, Michael C., B1 5,060,509, Cl. 73-40.50R.

Webb, Michael C., to Total Containment, Inc. Secondary containment system using flexible piping. B1 5,060,509, 9-20-94, Cl. 73-40.50R.

LIST OF DESIGN PATENTEES

Adami, Arthur E.; and Amberg, Christopher P., to Sweetheart Cup Company Inc. Multiple bottle carrier. 350,695, 9-20-94, Cl. D9-455.000

Alderson, Leslie J.; and Hickerson, Barry L. Combined disposable emergency upper cervical and head immobilizer. 350,827, 9-20-94, Cl D24-191.000

Alliance Research Corporation: *See—*
Cooper, Gershon N., 350,726, Cl. D13-107.000.

Amberg, Christopher P.: *See—*
Adami, Arthur E.; and Amberg, Christopher P., 350,695, Cl. D9-455.000

American Standard Inc.: *See—*
Levien, Robin H., 350,818, Cl. D23-277.000.

Aquilina, Paul C., to Hunter Fan Company. Oscillating sprinkler. 350,809, 9-20-94, Cl. D23-216.000.

ASICS Corporation: *See—*
Kayano, Toshikazu; and Mitsui, Shigeyuki, 350,640, Cl. D2-957.000.
Kayano, Toshikazu; and Hase, Yoshiaki, 350,641, Cl. D2-959.000.
Mitsui, Shigeyuki, 350,637, Cl. D2-902.000.
Mitsui, Shigeyuki; and Kawasaki, Toshiaki, 350,639, Cl. D2-953.000
Yoshikawa, Kazumasa; and Kayano, Toshikazu, 350,638, Cl. D2-953.000.

Asner, Jerome L. Taco holder. 350,671, 9-20-94, Cl. D7-504.000

AT&T Bell Laboratories: *See—*
Hicks, John A., III; and Miggels, Stephen G., 350,743, Cl. D14-130.000.

Attinello, John S.; and Glover; William E., to Goodyear Tire & Rubber Company, The. Tire tread. 350,718, 9-20-94, Cl. D12-147.000.

Avon Products, Inc.: *See—*
Kirby, Lynelle, 350,837, Cl. D28-82.000.

Ayotte, Richard. Light bulb adaptor for controlling light intensity and the period to reach determined intensity. 350,730, 9-20-94, Cl. D13-162.000.

Bach, Erik; and Madsen, Hans, to Interlego, A.G. Element for a toy building set. 350,788, 9-20-94, Cl. D21-108.000.

Bachar, Shlomo. Gemstone. 350,708, 9-20-94, Cl. D11-90.000.

Bacon, Jerry R. Lighted flying disk. 350,783, 9-20-94, Cl. D21-86.000.

Baerenwald, Philip M.: *See—*
Bro, Jay M.; and Baerenwald, Philip M., 350,793, Cl. D21-159.000.
Bro, Jay M.; and Baerenwald, Philip M., 350,794, Cl. D21-161.000.

Bagnall, Mary L. Combined tassel and key for adjusting tension of clip-on earrings. 350,645, 9-20-94, Cl. D3-208.000.

Bamber, David J., to Coleman Company, Inc., The. Lantern with slidable shutter. 350,830, 9-20-94, Cl. D26-42.000.

Barbour, Charles L. Physical exerciser. 350,795, 9-20-94, Cl. D21-191.000.

Barr, Lance, to Nintendo of America Inc. Controller for video game machine. 350,782, 9-20-94, Cl. D21-48.000.

Baumgartner, Sydney W.: *See—*
LaVaute, Peter A.; and Baumgartner, Sydney W., 350,657, Cl. D6-472.000.

Bell, Perry W.; Gammon, Nathan A.; Schmalix, Charles K.; and Weber, Michael J., to Goodyear Tire & Rubber Company, The. Tire tread. 350,716, 9-20-94, Cl. D12-147.000.

Benson, Bryan R.: *See—*
Mathison, Allen D.; Bevacco, Marc P.; and Benson, Bryan R., 350,704, Cl. D10-80.000.

Berfield, Robert C.; and Meland, Ronald E., to McCulloch Corporation. Chain saw. 350,680, 9-20-94, Cl. D8-65.000.

Berfield, Robert C., to Shop Vac Corporation. Tank for a pressure washer. 350,805, 9-20-94, Cl. D23-202.000

Bescher, Frank; Kohagen, Steven; Maple, Wade A. F.; Oltman, John P.; Trower, David A.; and Wolff, Douglas F., to Rubbermaid Incorporated. Lid for tool chest. 350,646, 9-20-94, Cl. D3-318.000.

Bevacco, Marc P.: *See—*
Mathison, Allen D.; Bevacco, Marc P.; and Benson, Bryan R., 350,704, Cl. D10-80.000.

Bice, Alton E. State capital learning game. 350,779, 9-20-94, Cl. D21-31.000.

Birchler, Terry: *See—*
Kolada, Paul P.; Painter, Michael J.; and Birchler, Terry, 350,812, Cl. D23-255.000.

Bost Enterprises, Inc.: *See—*
Ota, Dean, 350,800, Cl. D21-220.000.

Bostwick, Martin M.: *See—*
Kovacic, Theodore J.; Kaufman, Richard H.; Bostwick, Martin M.; Crescenzi, Donald C.; Valls, William H.; and Bucaccio, Thomas, 350,694, Cl. D9-434.000.

Boyle, Brenden J.: *See—*
Egger, F. Robert; Boyle, Brenden J.; Hobson, Phillip M.; and Ross, Lynette M., 350,672, Cl. D7-510.000.

Bro, Jay M.; and Baerenwald, Philip M., to Today's Kids, Inc. Toy panda figure. 350,793, 9-20-94, Cl. D21-159.000

Bro, Jay M.; and Baerenwald, Philip M., to Today's Kids, Inc. Toy puppy figure. 350,794, 9-20-94, Cl. D21-161.000.

Bruce, Rob: *See—*
Lanna, Paulo; Bruce, Rob; and Smith, Martin, 350,759, Cl. D16-312.000.

Bucaccio, Thomas: *See—*
Kovacic, Theodore J.; Kaufman, Richard H.; Bostwick, Martin M.; Crescenzi, Donald C.; Valls, William H.; and Bucaccio, Thomas, 350,694, Cl. D9-434.000.

Cal-Style Furniture Mfg. Co.: *See—*
Klein, Richard S., 350,660, Cl. D6-480.000.
Klein, Richard S., 350,661, Cl. D6-487.000.
Klein, Richard S., 350,662, Cl. D6-487.000.

Cameron, James L., to Omega Date Furniture Pty Limited ACN. Combined housing unit and lid for tape cartridges. 350,644, 9-20-94, Cl. D3-631.000

Caminos, Frank; and D'Andrade, Bruce M. Single tank water pistol. 350,792, 9-20-94, Cl. D21-147.000.

Campfield, Richard A. Holding structure. 350,684, 9-20-94, Cl. D8-72.000

Canon Kabushiki Kaisha: *See—*
Inukai, Yoshinori, 350,732, Cl. D14-106.000.
Takahashi, Masaki; and Inukai, Yoshinori, 350,736, Cl. D14-114.000.

Carey, John. Panel support stand. 350,682, 9-20-94, Cl. D8-71.000.

Carlisle, Larry. Fish aquarium. 350,840, 9-20-94, Cl. D30-101.000.

Carney, Albert P.; and Lage, David P., to Quick Point, Inc. Combined business card holder and envelope opener. 350,770, 9-20-94, Cl. D19-36.000

Carpenter, Todd P. Clip-on earphone. 350,757, 9-20-94, Cl. D14-223.000.

Casio Computer Co., Ltd.: *See—*
Matsuda, Makoto; and Onumata, Yuichi, 350,763, Cl. D18-7.000
Oki, Yuji; and Ohtani, Hideo, 350,750, Cl. D14-165.000
Tamura, Kenji; Yoshitake, Isamu; and Yatabe, Takashi, 350,745, Cl. D14-141.000.

Chaney, David B.; Kahl, W. Henry; and Smith, Barry W., to Rubbermaid Incorporated. Rocking chair. 350,650, 9-20-94, Cl. D6-348.000.

Chao, Judy. Covered tote bag. 350,689, 9-20-94, Cl. D9-305.000

Chen, Ching-Song. Combined facsimile, telephone answering machine and modem. 350,741, 9-20-94, Cl. D14-118.000

Chen, Jerry. Mouse. 350,737, 9-20-94, Cl. D14-114.000

Chen, Jui-Yu. Case for laser disks. 350,654, 9-20-94, Cl. D6-407.000

Cherne Industries Incorporated: *See—*
Mathison, Allen D.; Bevacco, Marc P.; and Benson, Bryan R., 350,704, Cl. D10-80.000

Chevassus, Alain, to Societe Techpack International (S.A.). Makeup case. 350,836, 9-20-94, Cl. D28-76.000.

Chih, E-Shun. Water spray gun. 350,810, 9-20-94, Cl. D23-223.000.

Chin, Noelle S.: *See—*
Clark, Bernard; Chin, Noelle S.; and Morris, Frederick, 350,760, Cl. D16-335.000.

Chiu, Tony. Toilet. 350,820, 9-20-94, Cl. D23-301.000

Chrysler Corporation: *See—*
Dayton, William A.; Santoro, Michael; and Morley, Darrel L., 350,721, Cl. D12-187.000

Chu, Yun. Front panel of a computer main frame. 350,738, 9-20-94, Cl. D14-115.000.

Chu, Yun. Front panel of a computer main frame. 350,739, 9-20-94, Cl. D14-115.000.

Citterio, Antonio, to Fehlbaum & Co. Chair. 350,653, 9-20-94, Cl. D6-372.000.

Clark, Bernard; Chin, Noelle S.; and Morris, Frederick, to Luxtec Corporation. Eyeglass frame temple. 350,760, 9-20-94, Cl. D16-335.000.

Clary, Thomas: *See—*
Powers, David K.; Mahan, Michael; Persen, David; and Clary, Thomas, 350,725, Cl. D13-103.000.

Coleman Company, Inc., The: *See—*
Bamber, David J., 350,830, Cl. D26-42.000.

Conrad, Thomas R.: *See—*
Goldbach, William R.; and Conrad, Thomas R., 350,728, Cl. D13-160.000.

Conti, Rino, to Dart Industries Inc. Roasting pan. 350,669, 9-20-94, Cl. D7-360.000.

Control Logic (Proprietary) Limited: *See—*
Landry, Guido J. H. P.; and Pucci, Franco G., 350,727, Cl. D13-146.000.

Cooper, Clinton T., to SAFE-T-WAY. Gasoline container. 350,806, 9-20-94, Cl. D23-205.000.

Cooper, Gershon N., to Alliance Research Corporation. Battery charger for cellular phone batteries. 350,726, 9-20-94, Cl. D13-107.000.

Cooper Industries, Inc.: *See—*
Wardell, Myron H., Jr., 350,688, Cl. D9-435.000.

Corbin Russwin, Inc.: *See—*
Hoffman, Anthony J.; and Kearns, Robert E., 350,687, Cl. D8-347.000.

Crescenzi, Donald C.: *See—*
Kovacic, Theodore J.; Kaufman, Richard H.; Bostwick, Martin M.; Crescenzi, Donald C.; Valls, William H.; and Bucaccio, Thomas, 350,694, Cl. D9-434.000.

Cressi Sub S.P.A.: *See—*
Dagnino, Enzo, 350,801, Cl. D21-239.000.

Curtis, Bobby L. Basketball goal. 350,797, 9-20-94, Cl. D21-201.000.

Dagnino, Enzo, to Cressi Sub S.P.A. Swimming fin. 350,801, 9-20-94, Cl. D21-239.000.

D'Ambrosio, Lucy T.; Goldstein, Berna J.; and Gibson, Alex J., to Wacoal America, Inc. Clasp. 350,712, 9-20-94, Cl. D11-218.000
D'Andrade, Bruce M.: *See—*
Caminos, Frank; and D'Andrade, Bruce M., 350,792, Cl. D21-147.000.
Dart Industries Inc.: *See—*
Conti, Rino, 350,669, Cl. D7-360.000.
Dayton, William A.; Santoro, Michael; and Morley, Darrel L., to Chrysler Corporation. Vehicle rear view mirror. 350,721, 9-20-94, Cl. D12-187.000.
De Barsy, Olivier, to Goodyear Tire & Rubber Company, The. Tire tread. 350,720, 9-20-94, Cl. D12-147.000
Dee, Robert D., to Smirne Plastics, Inc. Holder for purse. 350,647, 9-20-94, Cl. D3-328.000
Deka Products Limited Partnership: *See—*
Lanigan, Richard J., 350,822, Cl. D24-111.000.
Lanigan, Richard J., 350,823, Cl. D24-111.000.
De Marco, Joseph H. Improved outdoor umbrella. 350,643, 9-20-94, Cl. D3-5.000
Designs for Vision, Inc.: *See—*
Feinbloom, Richard E., 350,761, Cl. D16-135.000.
Di Tomasso, Gary. Audio component stand. 350,659, 9-20-94, Cl D6-479.000
Doskocil Manufacturing Company, Inc.: *See—*
VanSkiver, Ralph, 350,841, Cl. D30-121.000
VanSkiver, Ralph, 350,842, Cl. D30-121.000
Dvorak, Carolann, to Gastro-Gnomes, Inc. Vertical holder for paper inserts. 350,777, 9-20-94, Cl. D20-40.000.
Egger, F. Robert; Boyle, Brenden J.; Hobson, Phillip M.; and Ross, Lynette M., to Specialized Bicycle Components, Inc. Beverage bottle. 350,672, 9-20-94, Cl. D7-510.000.
Emerson, John R., to Michelin Recherche et Technique S.A. Tire. 350,713, 9-20-94, Cl. D12-143.000.
Emery, Donald K. Portable one-leg seat. 350,651, 9-20-94, Cl. D6-364.000.
Esselte Dymo: *See—*
Gray, Philip J.; and Weaver, Barrie K., 350,764, Cl. D18-19.000.
Ettore Bugatti, S.r.l.: *See—*
Kettmeir, Renata, 350,771, Cl. D19-51.000
F & M Plastics: *See—*
Perrin, James N., Jr., 350,824, Cl. D25-113.000.
Fehlbaum & Co.: *See—*
Citterio, Antonio, 350,653, Cl. D6-372.000
Feinbloom, Richard E., to Designs for Vision, Inc. Handheld magnifier. 350,761, 9-20-94, Cl. D16-135.000.
Ferguson, Darrell C., to Lineage Home Furnishings, Inc. Combined cabinet and shelf unit. 350,655, 9-20-94, Cl. D6-436.000
Ferguson, Darrell C., to Lineage Home Furnishings, Inc. Dresser with mirror. 350,656, 9-20-94, Cl. D6-444.000
Fifer, Donald R. Tape measure. 350,703, 9-20-94, Cl. D10-72.000.
Figueroa, Leonard J., to Lockheed Corporation. Exhaust duct for an aircraft turbo prop. 350,722, 9-20-94, Cl. D12-345.000
Florence, Thomas, to Owl 1990 Trust. Drywell cover. 350,814, 9-20-94, Cl. D23-260.000.
Florence, Thomas, to Owl 1990 Trust. Combined drywell and storm drain. 350,815, 9-20-94, Cl. D23-260.000.
Florence, Thomas, to Owl 1990 Trust. Combined drywell cover and drain insert. 350,816, 9-20-94, Cl. D23-260.000.
Fort Lock Corporation: *See—*
Myers, Gary L., 350,686, Cl. D8-343.000.
Fraimovici, Freddy; and Golan, Maury, to Golan Fine Crafts (1977) Ltd. Bracelet. 350,707, 9-20-94, Cl. D11-4.000.
Friedrich Grohe Aktiengesellschaft: *See—*
Gottwald, Adolf, 350,811, Cl. D23-252.000.
Fujiwara, Junji: *See—*
Miyazawa, Takayuki; Fujiwara, Junji; Sato, Kimiya; Taniguchi, Makoto; Ogawa, Satoshi; Konno, Akihiko; and Tsuboi, Hideki, 350,729, Cl. D13-160.000
Miyazawa, Takayuki; Fujiwara, Junji; Sato, Kimiya; Taniguchi, Makoto; and Ogawa, Satoshi, 350,731, Cl. D13-173.000.
Gabriel-Lacki, Christopher; and Krysztofowicz, Andrzej, to Quinn Wise & Associates Inc. Collapsible portable child's play-pen. 350,648, 9-20-94, Cl. D6-331.000
Gammon, Nathan A.: *See—*
Bell, Perry W.; Gammon, Nathan A.; Schmalix, Charles K.; and Weber, Michael J., 350,716, Cl. D12-147.000.
Gastro-Gnomes, Inc.: *See—*
Dvorak, Carolann, 350,777, Cl. D20-40.000.
Noreika, Robert A., 350,776, Cl. D20-40.000.
Giambrone, Frank W. Game board. 350,780, 9-20-94, Cl. D21-36.000.
Gibson, Alex J.: *See—*
D'Ambrosio, Lucy T.; Goldstein, Berna J.; and Gibson, Alex J., 350,712, Cl. D11-218.000.
Giebel, Michael; Landis, David; Puangnak, Tienchai; and Love, Randy, to Sunbeam Corporation. Kettle grill. 350,668, 9-20-94, Cl. D7-334.000.
Glover, William E.: *See—*
Attinello, John S.; and Glover, William E., 350,718, Cl. D12-147.000.
Golan Fine Crafts (1977) Ltd.: *See—*
Fraimovici, Freddy; and Golan, Maury, 350,707, Cl. D11-4.000.
Golan, Maury: *See—*
Fraimovici, Freddy; and Golan, Maury, 350,707, Cl. D11-4.000.
Gold Effects, Inc.: *See—*
McLaughlin, Daniel A., 350,758, Cl. D15-199.000.
Goldbach, William R.; and Conrad, Thomas R., to L.E.A. Dynatech Surge protector housing. 350,728, 9-20-94, Cl. D13-160.000.
Goldstein, Berna J.: *See—*
D'Ambrosio, Lucy T.; Goldstein, Berna J.; and Gibson, Alex J., 350,712, Cl. D11-218.000.
Gong, Rose, to Polo Ralph Lauren Corporation. Handle for flatware. 350,673, 9-20-94, Cl. D7-654.000
Goodyear Tire & Rubber Company, The: *See—*
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Bell, Perry W.; Gammon, Nathan A.; Schmalix, Charles K.; and Weber, Michael J., 350,716, Cl. D12-147.000.
De Barsy, Olivier, 350,720, Cl. D12-147.000.
Graas, Maurice; and Maitre, Bruno, 350,719, Cl. D12-147.000.
Labbe, Christian; and Lardo, Claude, 350,715, Cl. D12-146.000.
Maxwell, Paul B.; and Montag, Sean D., 350,717, Cl. D12-147.000.
Goodyeat Tire & Rubber Company, The: *See—*
Maxwell, Paul B.; and Montag, Sean D., 350,714, Cl. D12-146.000.
Gottwald, Adolf, to Friedrich Grohe Aktiengesellschaft. Faucet handle. 350,811, 9-20-94, Cl. D23-252.000
Graas, Maurice; and Maitre, Bruno, to Goodyear Tire & Rubber Company, The. Tire tread. 350,719, 9-20-94, Cl. D12-147.000
Graat, Kenneth T., to Spectra Displays. Food display case. 350,658, 9-20-94, Cl. D6-471.000
Grattan, Timothy J.: *See—*
Wright, David J.; and Grattan, Timothy J., 350,821, Cl. D24-110.000.
Gray, Philip J.; and Weaver, Barrie K., to Esselte Dymo. Label printer 350,764, 9-20-94, Cl. D18-19.000.
Grusin, Gerald. Spice bottle wheel. 350,674, 9-20-94, Cl. D7-707.000.
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Pan, Hui-Jen, 350,701, Cl. D10-77.000.
Hamasaki, Mayumi: *See—*
Tomatsu, Kenichi; Momose, Akira; Nakamura, Yoko; Okuda, Tatsuo; Kojima, Fumiyo; Kurita, Masahiro; and Hamasaki, Mayumi, 350,766, Cl. D18-39.000.
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Hammar, Richard, to L. D. Kichler Co., The. Glass lamp shade 350,833, 9-20-94, Cl. D26-133.000.
Harris, Lynwood A. Combined barbecue grill ash and flame guard 350,670, 9-20-94, Cl. D7-402.000.
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Kayano, Toshikazu; and Hase, Yoshiaki, 350,641, Cl. D2-959.000
Hattori, Atsuko; and Hayashihara, Yuji, to Sharp Kabushiki Kaisha. Automatic document feeder for copier. 350,769, 9-20-94, Cl. D18-49.000
Hayashihara, Yuji: *See—*
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Herbert, Phil L. Fly catcher. 350,802, 9-20-94, Cl. D22-122.000.
Herro, Ramzi M. Bag. 350,690, 9-20-94, Cl. D9-306.000
Hickerson, Barry L.: *See—*
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Hicks, John A., III; and Miggels, Stephen G., to AT&T Bell Laboratories. Videotelephone. 350,743, 9-20-94, Cl. D14-130.000.
Hill, David W.; and Murphy, Tim K., to International Business Machines Corporation. Tape drive for a data processing system. 350,734, 9-20-94, Cl. D14-108.000
Himbert, Hans: *See—*
Juhlin, Sven-Erik; and Himbert, Hans, 350,681, Cl. D8-69.000.
Hino, Ichirou, to Sony Corporation. Cellular phone. 350,744, 9-20-94, Cl. D14-138.000.
Hiroki, Shin-ichi; and Kageyama, Kimiko, to Kabushiki Kaisha Toshiba. Electronic copying machine. 350,765, 9-20-94, Cl. D18-36.000.
Hobson, Phillip M.: *See—*
Egger, F. Robert; Boyle, Brenden J.; Hobson, Phillip M.; and Ross, Lynette M., 350,672, Cl. D7-510.000
Hoffman, Anthony J.; and Kearns, Robert E., to Corbin Russwin, Inc. Portion of a key blade blank. 350,687, 9-20-94, Cl. D8-347.000.
Hojlund, Charlotte K. H.; and Holmstrom, Berit, to Interlego, A.G. Element for a toy building set. 350,787, 9-20-94, Cl. D21-108.000.
Holmstrom, Berit: *See—*
Hojlund, Charlotte K. H.; and Holmstrom, Berit, 350,787, Cl. D21-108.000.
Nielsen, Lotte M.; and Holmstrom, Berit, 350,784, Cl. D21-108.000.
Horton, Tony L., to T L Horton Design, Inc. Kiosk. 350,829, 9-20-94, Cl. D25-16.000
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Hygiene-Technik Inc.: *See—*
Ophardt, Heiner, 350,665, Cl. D6-545.000.
I.W. Industries, Inc.: *See—*
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Kushner, Philip M.; Rasmussen, Kenn; and Ohrwald, Niels, 350,785, Cl. D21-108.000.

Nielsen, Lotte M.; and Holmstrom, Berit, 350,784, Cl. D21-108.000.
Plagborg, Torben; and Larsen, Bjarne J., 350,786, Cl. D21-108.000.
Refsing, Arne, 350,791, Cl. D21-108.000.
Ryaa, Jan; and Kohler, Lene, 350,789, Cl. D21-108.000.
Ryaa, Jan; and Kohler, Lene, 350,790, Cl. D21-108.000.
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Jabra Corporation: *See—*
McClendon, Charles L., 350,747, Cl. D14-150.000.
Jannersten Forlag AB: *See—*
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Jannersten, Per, to Jannersten Forlag AB. Deck of coded playing cards for the card game of bridge. 350,781, 9-20-94, Cl. D21-45.000.
John Manufacturing Limited: *See—*
Yuen, John S., 350,752, Cl. D14-168.000
Johnson, Howard. Oil fire extinguishing cone. 350,838, 9-20-94, Cl. D29-125.000
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Khan, Zahed; and Jones, Paul, 350,678, Cl. D8-50.000.
Khan, Zahed; and Jones, Paul, 350,679, Cl. D8-50.000
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Kabushiki Kaisha Toshiba: *See—*
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Kageyama, Kimiko: *See—*
Hiroki, Shin-ichi; and Kageyama, Kimiko, 350,765, Cl. D18-36.000.
Kahl, W. Henry: *See—*
Chaney, David B.; Kahl, W. Henry; and Smith, Barry W., 350,650, Cl. D6-348.000.
Kaity, Nandor, to Maros, Artur. Game bat. 350,799, 9-20-94, Cl. D21-211.000.
Kaneko, Ryoichi, to Seikosha Co., Ltd. Watch band. 350,706, 9-20-94, Cl. D11-3.000.
Kaoh, Andy K. F. Illuminable changing exhibitor message sign. 350,778, 9-20-94, Cl. D20-42.000.
Karlin, James H.; and McGuire, Harold, to PSC Inc. Bar code scanner. 350,735, 9-20-94, Cl. D14-114.000.
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Kayano, Toshikazu; and Mitsui, Shigeyuki, to ASICS Corporation. Shoe sole. 350,640, 9-20-94, Cl. D2-957.000.
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Hoffman, Anthony J.; and Kearns, Robert E., 350,687, Cl. D8-347.000.
Keiffer, Kenneth D. Collector's helmet. 350,710, 9-20-94, Cl. D11-157.000.
Kettmeir, Renata, to Ettore Bugatti, S.r.l. Fountain pen. 350,771, 9-20-94, Cl. D19-51.000.
Khan, Zahed; and Jones, Paul, to Ofrex Group Holdings PLC. Stapling machine. 350,677, 9-20-94, Cl. D8-50.000
Khan, Zahed; and Jones, Paul, to Ofrex Group Holdings PLC. Stapling machine. 350,678, 9-20-94, Cl. D8-50.000.
Khan, Zahed; and Jones, Paul, to Ofrex Group Holdings PLC. Stapling machine. 350,679, 9-20-94, Cl. D8-50.000.
Kiddie Products, Inc.: *See—*
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King, Gerry L. Illuminated sign. 350,774, 9-20-94, Cl. D20-10.000.
King, Marcus S. Puzzle for teaching. 350,772, 9-20-94, Cl. D19-64.000.
Kirby, Lynelle, to Avon Products, Inc. Cosmetic powder compact. 350,837, 9-20-94, Cl. D28-82.000.
Kishino, Minoru, to Olympus Optical Co., Ltd. Toner cartridge. 350,768, 9-20-94, Cl. D18-43.000.
Klein, Richard S., to Cal-Style Furniture Mfg. Co. Table. 350,660, 9-20-94, Cl. D6-480.000.
Klein, Richard S., to Cal-Style Furniture Mfg. Co. Table. 350,661, 9-20-94, Cl. D6-487.000.
Klein, Richard S., to Cal-Style Furniture Mfg. Co Table. 350,662, 9-20-94, Cl. D6-487.000
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Bescher, Frank; Kohagen, Steven; Maple, Wade A. F.; Oltman, John P.; Trower, David A.; and Wolff, Douglas F., 350,646, Cl D3-318.000
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Kojima, Fumiyo; Momose, Akira; Hamazaki, Mayumi; Terasaki, Tatsuhiro; Hoshimura, Takafumi; and Sugita, Makoto, to Ricoh Company, Ltd. Electrostatic copying machine. 350,767, 9-20-94, Cl. D18-38.000.
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Tomatsu, Kenichi; Momose, Akira; Nakamura, Yoko; Okuda, Tatsuo; Kojima, Fumiyo; Kurita, Masahiro; and Hamasaki, Mayumi, 350,766, Cl. D18-39.000.
Kolada, Paul P.; Painter, Michael J.; and Birchler, Terry, to Moen Incorporated. Faucet spout. 350,812, 9-20-94, Cl. D23-255.000.
Konno, Akihiko: *See—*
Miyazawa, Takayuki; Fujiwara, Junji; Sato, Kimiya; Taniguchi, Makoto; Ogawa, Satoshi; Konno, Akihiko; and Tsuboi, Hideki, 350,729, Cl. D13-160.000.
Koss, Walter N., Jr. Fishing lure. 350,803, 9-20-94, Cl. D22-132.000.
Kovacic, Theodore J.; Kaufman, Richard H.; Bostwick, Martin M.; Crescenzi, Donald C.; Valls, William H.; and Bucaccio, Thomas, to Kraft General Foods, Inc. Twist-off closure. 350,694, 9-20-94, Cl. D9-434.000.
Kraft General Foods, Inc.: *See—*
Kovacic, Theodore J.; Kaufman, Richard H.; Bostwick, Martin M.; Crescenzi, Donald C.; Valls, William H.; and Bucaccio, Thomas, 350,694, Cl. D9-434.000.
Krysztofowicz, Andrzej: *See—*
Gabriel-Lacki, Christopher; and Krysztofowicz, Andrzej, 350,648, Cl. D6-331.000.
Kuczer, Duane S.: *See—*
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Kurita, Masahiro: *See—*
Tomatsu, Kenichi; Momose, Akira; Nakamura, Yoko; Okuda, Tatsuo; Kojima, Fumiyo; Kurita, Masahiro; and Hamasaki, Mayumi, 350,766, Cl. D18-39.000
Kushner, Philip M.; Rasmussen, Kenn; and Ohrwald, Niels, to Interlego, A.G. Building element for a toy building set. 350,785, 9-20-94, Cl. D21-108.000.
L. D. Kichler Co., The: *See—*
Hammar, Richard, 350,833, Cl. D26-133.000.
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Porter, David H., 350,832, Cl. D26-133.000.
L.E.A. Dynatech: *See—*
Goldbach, William R.; and Conrad, Thomas R., 350,728, Cl. D13-160.000.
Labbe, Christian; and Lardo, Claude, to Goodyear Tire & Rubber Company, The. Tire tread. 350,715, 9-20-94, Cl. D12-146.000.
Lage, David P.: *See—*
Carney, Albert P.; and Lage, David P., 350,770, Cl. D19-36.000.
Landis, David: *See—*
Giebel, Michael; Landis, David; Puangnak, Tienchai; and Love, Randy, 350,668, Cl. D7-334.000.
Landry, Guido J. H. P.; and Pucci, Franco G., to Control Logic (Proprietary) Limited. Facia portion of an electrical socket. 350,727, 9-20-94, Cl. D13-146.000.
Lanigan, Richard J., to Deka Products Limited Partnership. Disposable parenteral-fluid cassette. 350,822, 9-20-94, Cl. D24-111.000.
Lanigan, Richard J., to Deka Products Limited Partnership. Rigid portion of disposable parenteral-fluid cassette. 350,823, 9-20-94, Cl. D24-111.000.
Lanna, Paulo; Bruce, Rob; and Smith, Martin, to Sun Sport Optics, Inc. Sport protective eyewear. 350,759, 9-20-94, Cl. D16-312.000.
Lardo, Claude: *See—*
Labbe, Christian; and Lardo, Claude, 350,715, Cl. D12-146.000.
Laroue, Michael C. Toilet training seat for infants. 350,819, 9-20-94, Cl. D23-296.000.
Larsen, Bjarne J.: *See—*
Plagborg, Torben; and Larsen, Bjarne J., 350,786, Cl. D21-108.000.
LaVaute, Peter A.; and Baumgartner, Sydney W. Carousel sneeze guard. 350,657, 9-20-94, Cl. D6-472.000.
Le Phare-Jean D'Eve S.A.: *See—*
Schwarz, Jean-Claude, 350,702, Cl. D10-39.000
Ledesma, Edmundo P. Forest fire extinguisher. 350,839, 9-20-94, Cl. D29-125.000.
Lee, Milton C., to Toshiba America MRI, Inc. Housing with straps for a shoulder coil for a magnetic resonance imaging device. 350,825, 9-20-94, Cl. D24-158.000.
Lefkow, Allan. Planting tool. 350,676, 9-20-94, Cl. D8-1.000
Levien, Robin H., to American Standard Inc. Bathtub. 350,818, 9-20-94, Cl. D23-277.000.
Lichtbach, Eric. Sport utility rack. 350,724, 9-20-94, Cl. D12-412.000.
Lincourt, Alan E. Baseball clock. 350,699, 9-20-94, Cl. D10-6.000
Lincourt, Alan E. Baseball clock. 350,700, 9-20-94, Cl. D10-6.000.
Lincourt, Alan E. Combined desk set and clock. 350,773, 9-20-94, Cl. D19-82.000
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Ferguson, Darrell C., 350,655, Cl. D6-436.000
Ferguson, Darrell C., 350,656, Cl. D6-444.000

Lisco, Inc.: *See—*
Spence, Meredith, Jr.; and Keane, James J., 350,828, Cl. D24-195.000.
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Longazel, Thomas W. Windshield wiper blade snow and ice removing strip for attachment to a vehicle windshield. 350,723, 9-20-94, Cl. D12-400.000.
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Giebel, Michael; Landis, David; Puangnak, Tienchai; and Love, Randy, 350,668, Cl. D7-334.000.
Loznikov, Mikhail. Table base. 350,663, 9-20-94, Cl. D6-495.000.
Luther, Stephen J. Golf tee holder. 350,798, 9-20-94, Cl. D21-208.000.
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Maitre, Bruno: *See—*
Graas, Maurice; and Maitre, Bruno, 350,719, Cl. D12-147.000
Maple, Wade A. F.: *See—*
Bescher, Frank; Kohagen, Steven; Maple, Wade A. F.; Oltman, John P.; Trower, David A.; and Wolff, Douglas F., 350,646, Cl D3-318.000
Maros, Artur: *See—*
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Masujima, Ikuo, to Seiko Epson Corporation. Image scanner. 350,733, 9-20-94, Cl. D14-107.000
Mathison, Allen D.; Bevacco, Marc P.; and Benson, Bryan R., to Cherne Industries Incorporated. Pneumatic test plug. 350,704, 9-20-94, Cl. D10-80.000
Matsuda, Makoto; and Onumata, Yuichi, to Casio Computer Co., Ltd Electronic calculator. 350,763, 9-20-94, Cl. D18-7.000
Matsushita Electric Industrial Co., Ltd.: *See—*
Morita, Yusuke; Naito, Eiichiro; and Yonekura, Hiroshi, 350,742, Cl. D14-126.000
Matsuzaka, Youzoh, to Sony Corporation. Tape player. 350,751, 9-20-94, Cl. D14-165.000.
Maxwell, Paul B.; and Montag, Sean D., to Goodyeat Tire & Rubber Company, The. Tire tread. 350,714, 9-20-94, Cl. D12-146.000.
Maxwell, Paul B.; and Montag, Sean D., to Goodyear Tire & Rubber Company, The. Tire tread. 350,717, 9-20-94, Cl. D12-147.000
McClendon, Charles L., to Jabra Corporation. Hands-free telephone 350,747, 9-20-94, Cl. D14-150.000
McCulloch Corporation: *See—*
Berfield, Robert C.; and Meland, Ronald E., 350,680, Cl. D8-65.000
McGuire, Harold: *See—*
Karlin, James H.; and McGuire, Harold, 350,735, Cl. D14-114.000.
McLaughlin, Daniel A., to Gold Effects, Inc. Portable electro-plating apparatus. 350,758, 9-20-94, Cl. D15-199.000
Meland, Ronald E.: *See—*
Berfield, Robert C.; and Meland, Ronald E., 350,680, Cl. D8-65.000
Michelin Recherche et Technique S.A.: *See—*
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Michels, Clark D., to Michels & Michels, Inc. Enclosed transportable water purification apparatus. 350,807, 9-20-94, Cl. D23-207.000.
Michels & Michels, Inc.: *See—*
Michels, Clark D., 350,807, Cl. D23-207.000
Miggels, Stephen G.: *See—*
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Miscichowski, David. Telephone. 350,746, 9-20-94, Cl. D14-143.000
Mitsui, Shigeyuki, to Asics Corporation. Sports shoe. 350,637, 9-20-94, Cl. D2-902.000.
Mitsui, Shigeyuki; and Kawasaki, Toshiaki, to Asics Corporation. Shoe sole. 350,639, 9-20-94, Cl. D2-953.000.
Mitsui, Shigeyuki: *See—*
Kayano, Toshikazu; and Mitsui, Shigeyuki, 350,640, Cl. D2-957.000.
Miyazawa, Takayuki; Fujiwara, Junji; Sato, Kimiya; Taniguchi, Makoto; Ogawa, Satoshi; Konno, Akihiko; and Tsuboi, Hideki, to Kabushiki Kaisha Toshiba. Vacuum circuit breaker. 350,729, 9-20-94, Cl. D13-160.000
Miyazawa, Takayuki; Fujiwara, Junji; Sato, Kimiya; Taniguchi, Makoto; and Ogawa, Satoshi, to Kabushiki Kaisha Toshiba. Vacuum valve for a vacuum circuit breaker. 350,731, 9-20-94, Cl. D13-173.000.
Moen Incorporated: *See—*
Kolada, Paul P.; Painter, Michael J.; and Birchler, Terry, 350,812, Cl. D23-255.000.
Momose, Akira: *See—*
Kojima, Fumiyo; Momose, Akira; Hamazaki, Mayumi; Terasaki, Tatsuhiro; Hoshimura, Takafumi; and Sugita, Makoto, 350,767, Cl. D18-38.000.
Tomatsu, Kenichi; Momose, Akira; Nakamura, Yoko; Okuda, Tatsuo; Kojima, Fumiyo; Kurita, Masahiro; and Hamasaki, Mayumi, 350,766, Cl. D18-39.000
Montag, Sean D.: *See—*
Maxwell, Paul B.; and Montag, Sean D., 350,714, Cl. D12-146.000.
Maxwell, Paul B.; and Montag, Sean D., 350,717, Cl. D12-147.000.
Morita, Yusuke; Naito, Eiichiro; and Yonekura, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Television receiver. 350,742, 9-20-94, Cl. D14-126.000
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Morris, Frederick: *See—*
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Moulinex (Societe Anonyme): *See—*
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Myers, Gary L., to Fort Lock Corporation. Lock shell for an axial pin tumbler lock. 350,686, 9-20-94, Cl. D8-343.000
Naito, Eiichiro: *See—*
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Nakamura, Yoko: *See—*
Tomatsu, Kenichi; Momose, Akira; Nakamura, Yoko; Okuda, Tatsuo; Kojima, Fumiyo; Kurita, Masahiro; and Hamasaki, Mayumi, 350,766, Cl. D18-39.000.
Narita, Hisanori: *See—*
Wada, Joh; and Narita, Hisanori, 350,749, Cl. D14-163.000
Naslund, Ingemar, to Weland Medical AB. Bag clip. 350,696, 9-20-94, Cl. D9-443.000.
Nielsen, Lotte M.; and Holmstrom, Berit, to Interlego, A.G. Element for a toy building set. 350,784, 9-20-94, Cl. D21-108.000.
Nintendo of America Inc.: *See—*
Barr, Lance, 350,782, Cl. D21-48.000.
Noretka, Robert A., to Gastro-Gnomes, Inc. Vertical holder for paper inserts. 350,776, 9-20-94, Cl. D20-40.000
Noveltech, Inc.: *See—*
White, Neal E., 350,635, Cl. D1-102.000.
Novy, James R., to Quabaug Corporation. Tread surface and periphery of a footwear unit sole. 350,642, 9-20-94, Cl. D2-960.000.
Nunes, Brendon. Clock face. 350,698 9-20-94, Cl. D10-6.000.
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Khan, Zahed; and Jones, Paul, 350,677, Cl. D8-50.000.
Khan, Zahed; and Jones, Paul, 350,678, Cl. D8-50.000.
Khan, Zahed; and Jones, Paul, 350,679, Cl. D8-50.000.
Ogawa, Satoshi: *See—*
Miyazawa, Takayuki; Fujiwara, Junji; Sato, Kimiya; Taniguchi, Makoto; Ogawa, Satoshi; Konno, Akihiko; and Tsuboi, Hideki, 350,729, Cl. D13-160.000.
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Ohno, Masaharu, to Yamaha Corporation. Electronic drum. 350,762, 9-20-94, Cl. D17-22.000.
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Ohtani, Hideo: *See—*
Oki, Yuji; and Ohtani, Hideo, 350,750, Cl. D14-165.000.
Oka, Hiroki, to Sony Corporation. Digital audio disc player combined with a radio tuner and a tape recorder. 350,753, 9-20-94, Cl. D14-168.000.
Oki, Yuji; and Ohtani, Hideo, to Casio Computer Co., Ltd. Tape recorder. 350,750, 9-20-94, Cl. D14-165.000.
Okuda, Tatsuo: *See—*
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Olson, Scott B. Indoor/outdoor figure. 350,711, 9-20-94, Cl. D11-162.000.
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Kishino, Minoru, 350,768, Cl. D18-43.000.
Omega Date Furniture Pty Limited ACN: *See—*
Cameron, James L., 350,644, Cl. D3-631.000
Onumata, Yuichi: *See—*
Matsuda, Makoto; and Onumata, Yuichi, 350,763, Cl. D18-7.000.
Ophardt, Heiner, to Hygiene-Technik Inc. Liquid dispenser. 350,665, 9-20-94, Cl. D6-545.000.
Ota, Dean, to Bost Enterprises, Inc. Iron-type golf clubhead. 350,800, 9-20-94, Cl. D21-220.000.
Owl 1990 Trust: *See—*
Florence, Thomas, 350,814, Cl. D23-260.000.
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Painter, Michael J.: *See—*
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Pan, Hui-Jen, to Guardforce Corporation. Battery checker. 350,701, 9-20-94, Cl. D10-77.000.
Park, Bo Kook, to Silver Star Co., Ltd. Handle for fishing rods. 350,804, 9-20-94, Cl. D22-142.000.
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Perkins, Fred H.; and Perkins, Allan S. Screwdriver bit. 350,685, 9-20-94, Cl. D8-86.000.
Perrille, Gertrude M.; and Kuczer, Duane S., to Suncatcher Gallery, Inc. Plaque. 350,709, 9-20-94, Cl. D11-133.000.

Perrin, James N., Jr., to F & M Plastics. Landscaping brick. 350,824, 9-20-94, Cl. D25-113.000.
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Plagborg, Torben; and Larsen, Bjarne J., to Interlego, A.G. Element for a toy building set. 350,786, 9-20-94, Cl. D21-108.000.
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Porter, David H., to L.D. Kichler Co., The. Lighting fixture shade 350,831, 9-20-94, Cl. D26-130.000.
Porter, David H., to L.D. Kichler Co., The. Glass shade. 350,832, 9-20-94, Cl. D26-133.000.
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Powers, David K.; Mahan, Michael; Persen, David; and Clary, Thomas, 350,725, Cl. D13-103.000.
Powers, David K.; Mahan, Michael; Persen, David; and Clary, Thomas, to Power Battery Holdings Corporation. Electric battery. 350,725, 9-20-94, Cl. D13-103.000.
Pratt, Kenneth W., to Seneca Sports Inc. Package for balls and pump 350,693, 9-20-94, Cl. D9-415.000.
Pravitz, Kenneth L. Gyroscopic exerciser. 350,796, 9-20-94, Cl. D21-198.000.
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Puangnak, Tienchai: *See—*
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Pucci, Franco G.: *See—*
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Pull-It Corporation: *See—*
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Purisys Inc.: *See—*
Seki, Akihiko, 350,692, Cl. D9-322.000.
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Quinn Wise & Associates Inc.: *See—*
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Ross, Lynette M.: *See—*
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Rubbermaid Incorporated: *See—*
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Chaney, David B.; Kahl, W. Henry; and Smith, Barry W., 350,650, Cl. D6-348.000.
Ryaa, Jan; and Kohler, Lene, to Interlego, A.G. Element for a toy building set. 350,789, 9-20-94, Cl. D21-108.000.
Ryaa, Jan; and Kohler, Lene, to Interlego, A.G. Element for a toy building set. 350,790, 9-20-94, Cl. D21-108.000.
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Sakata, Keiji; and Shibata, Hirokazu, to Sharp Kabushiki Kaisha. Digital disk player. 350,748, 9-20-94, Cl. D14-156.000.
Salisbury, Paul E. Portable soil sifter. 350,675, 9-20-94, Cl. D8-1.000.
Salmi, Theresa. Card holder. 350,775, 9-20-94, Cl. D20-40.000.
Saltet, Philippe, to Moulinex (Societe Anonyme). Electric coffeemaker. 350,667, 9-20-94, Cl. D7-309.000.
Santoro, Michael: *See—*
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Sasago, Osamu, to Sony Corporation. Digital audio disc player combined with tuner, equalizer amplifier and tape recorder. 350,754, 9-20-94, Cl. D14-168.000.
Sato, Kimiya: *See—*
Miyazawa, Takayuki; Fujiwara, Junji; Sato, Kimiya; Taniguchi, Makoto; Ogawa, Satoshi; Konno, Akihiko; and Tsuboi, Hideki, 350,729, Cl. D13-160.000
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Schwarz, Jean-Claude, to Le Phare-Jean D'Eve S.A. Wristwatch. 350,702, 9-20-94, Cl. D10-39.000.
Seiko Epson Corporation: *See—*
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Seikosha Co., Ltd.: *See—*
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Seneca Sports Inc.: *See—*
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Sidman, Ronald J., to Kiddie Products, Inc. Cup lid with rotatable cover segment. 350,697, 9-20-94, Cl. D9-445.000.
Silver Star Co., Ltd.: *See—*
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Lanna, Paulo; Bruce, Rob; and Smith, Martin, 350,759, Cl. D16-312.000.
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Societe Techpack International (S.A.): *See—*
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Sony Corporation: *See—*
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Oka, Hiroki, 350,753, Cl. D14-168.000.
Sasago, Osamu, 350,754, Cl. D14-168.000.
Wada, Joh; and Narita, Hisanori, 350,749, Cl. D14-163.000.
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Spectra Displays: *See—*
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Sone, Takahiro, 350,705, Cl. D10-116.000.
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Tessman, Alan O., to Pull-It Corporation. Clamp. 350,683, 9-20-94, Cl. D8-72.000.
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Bennett, Cecilia L. D., deceased; and by O'Brien administrator, Susan M. Miniature rose plant, named Grace Seward. 8,899, 9-20-94, Cl. 8.100.
Bodill, Mary, administrator: *See*—
Walters, Ernest, deceased, 8,908, Cl. 87.120.
Bodill, Mary, administratrix: *See*—
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Denis-Plants B.V.B.A.: *See*—
Denis, Rene G. M. A., 8,902, Cl. 88.900.
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CLASSIFICATION OF PATENTS

ISSUED SEPTEMBER 20, 1994

NOTE.—First number, class; second number, subclass; third number, patent number

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227 5,348,092
250 5,348,093
371 5,348,094
380 5,348,095
384 5,348,096
385 5,348,097

CLASS 168

12 5,348,098

CLASS 169

51 5,348,099
69 5,348,100

CLASS 172

2 5,348,,01
15 5,348,102
45 5,348,103

CLASS 173

151 5,348,104

CLASS 174

24 5,349,131
35 R 5,349,132
36 5,349,133
48 5,349,134
5,349,135
52.2 5,349,136
76 5,349,137

CLASS 175

24 5,348,105
27 5,348,106
162 5,348,107
432 5,348,108
434 5,348,109

CLASS 177

144 5,349,138

CLASS 178

19 5,349,139

CLASS 180

132 5,348,110
140 5,348,111
227 5,348,112
271 5,348,113
291 5,348,114
308 5,348,115

CLASS 181

158 5,349,140
224 5,349,141

CLASS 182

5 5,348,116
5,348,117
187 5,348,118
5,348,119

CLASS 184

3.1 5,348,120
6.3 5,348,121

CLASS 187

110 5,349,142

CLASS 188

71.5 5,348,122
72.1 5,348,123
378 5,348,124

CLASS 191

12.2 R 5,348,125

CLASS 192

3.3 5,348,127
7 5,348,126

CLASS 194

209 5,348,128
235 5,348,129

CLASS 198

312 5,348,130
330 5,348,131
365 5,348,132
380 5,348,133
409 5,348,134
419.3 5,348,135
443 5,348,136
643 5,348,137
671 5,348,138
781 5,348,139
790 5,348,140
801 5,348,141
803.01 5,348,142
844.2 5,348,143

CLASS 200

11 J 5,349,143
18 5,349,144
43.15 5,349,145
61.6 5,349,146
302.3 5,349,147
562 5,349,148

CLASS 202

176 5,348,622

CLASS 203

1 5,348,623
14 5,348,624
57 5,348,625

CLASS 204

1.5 5,348,626
129.3 5,348,627
130 5,348,629
153 5,348,628
153.22 5,348,630
157.4 5,348,631
165 5,348,632
180.1 5,348,633
181.1 5,348,634
181.7 5,348,635
182.8 5,348,636
213 5,348,637

CLASS 205

122 5,348,638
181 5,348,639
318 5,348,640

CLASS 206

1.7 5,348,144
45.19 5,348,145
63.3 5,348,146
215 5,348,147
288 5,348,148
326 5,348,149
328 5,348,150
334 5,348,151
354 5,348,152
361 5,348,153
369 5,348,154
457 5,348,155
491 5,348,156
522 5,348,157
531 5,348,158
568 5,348,159

CLASS 208

89 5,348,641
113 5,348,642
114 5,348,643
153 5,348,644
209 5,348,645

CLASS 209

17 5,348,160
29 5,348,161
35 5,348,162
135 5,348,163
573 5,348,164

CLASS 210

94 5,348,646
109 5,348,648
198.2 5,348,649
199 5,348,650
321.6 5,348,651
411 5,348,647
490 5,348,652
605 5,348,653
615 5,348,654
625 5,348,655
635 5,348,656
636 5,348,657
656 5,348,658
678 5,348,659
680 5,348,661
717 5,348,662
739 5,348,663
746 5,348,664
748 5,348,665
754 5,348,666
767 5,348,660

CLASS 211

13 5,348,165
30 5,348,166
57.1 5,348,167
106 5,348,168
151 5,348,169
187 5,348,170

CLASS 212

189 5,348,171
196 5,348,172

CLASS 215

10 5,348,173
277 5,348,174

CLASS 219

69.14 5,349,149
69.17 5,349,150
89 5,349,151
99 5,349,152
120 5,349,153
121.71 5,349,155
130.01 5,349,156
130.32 5,349,157
137.PS 5,349,159
137.62 5,349,158
250 5,349,160
385 5,349,161
453 5,349,162
492 5,349,163
506 5,349,164
633 5,349,165
643 5,349,166
662 5,349,167
730 5,349,168
756 5,349,169

CLASS 220

1.5 5,348,175
5,348,176
86.2 5,348,177
88.1 5,348,178
209 5,348,179
214 5,348,180
254 5,348,181
256 5,348,182
5,348,183
266 5,348,184
326 5,348,185
465 5,348,186
752 5,348,187

CLASS 222

1 5,348,188
5,348,189
82 5,348,190
107 5,348,191
129.1 5,348,192
175 5,348,193
209 5,348,194
227 5,348,195
386 5,348,196
401 5,348,197
5,348,198
402.19 5,348,199
514 5,348,200
556 5,348,201
606 5,348,202
5,348,203
611.1 5,348,204

CLASS 224

209 5,348,205
220 5,348,206
310 5,348,207

CLASS 226

24 5,348,208

CLASS 228

43 5,348,209
115 5,348,210
120 5,348,211
135 5,348,212
146 5,348,213
180.22 5,348,214
181 5,348,215

CLASS 229

75 5,348,216
103.1 5,348,217
117.07 5,348,218
131.1 5,348,219

CLASS 232

1 D 5,348,220
43.2 5,348,222

CLASS 235

379 5,349,170
462 5,349,171
472 5,349,172
492 5,349,173

CLASS 236

12.12 5,348,223
20 R 5,348,224
51 5,348,225

CLASS 239

1 5,348,226
63 5,348,227
394 5,348,228
397.5 5,348,229
428 5,348,230
428.5 5,348,231
490 B1 4,801,093
585.3 5,348,233
585.4 5,348,232
753 5,348,234

CLASS 241

41 5,348,235
46.17 5,348,236
67 5,348,237

CLASS 242

18 EW 5,348,242
18 R 5,348,238
35.5 A 5,348,221
246 5,348,245
279 5,348,246
303 5,348,247
338.3 5,348,244
342 5,348,243
348.4 5,348,239
383.2 5,348,248
401 5,348,240
597.5 5,348,241

CLASS 244

3.11 5,348,249
3.16 5,348,250
30 5,348,251
52 5,348,252
91 5,348,253
97 5,348,254
171 5,348,255
208 5,348,256

CLASS 246

220 5,348,257

CLASS 248

218.4 5,348,258
276 5,348,259
280.1 5,348,260
430 5,348,261
5,348,262
444 5,348,263
503.1 5,348,264
550 5,348,265
562 5,348,266
635 5,348,267
681 5,348,268

CLASS 250

201.5 5,349,175
206.2 5,349,176
208.1 5,349,174
214 VT 5,349,177
5,349,178
5,349,179
227.14 5,349,181
227.2 5,349,180
227.21 5,349,182
231.13 5,349,183
266 5,349,184
287 5,349,185
288 5,349,186
338.5 5,349,187
339 5,349,188
339.07 5,349,189
363.05 5,349,190
367 5,349,191
370.01 5,349,192
370.06 5,349,193
372 5,349,194
395 5,349,195
492.21 5,349,196
492.22 5,349,197
492.3 5,349,198
561 5,349,199
5,349,200

CLASS 251

33 5,348,269
61.1 5,348,270
95 5,348,271
214 5,348,272

CLASS 252

8.6 5,348,667
26 5,348,668
28 5,348,669
32.5 5,348,670
32.7 E 5,348,671
42 5,348,672
47 5,348,673
51.5 R 5,348,674
56 R 5,348,676
82 5,348,675
105 5,348,679
106 5,348,678
162 5,348,680
172 5,348,681
186.36 5,348,682
187.31 5,348,683
299.6 5,348,677
299.61 5,348,684
299.62 5,348,685
514 5,348,686
582 5,348,687
5,348,688
700 5,348,690

CLASS 254

385 5,348,273

CLASS 257

18 5,349,201
25 5,349,202
40 5,349,203
53 5,349,204
59 5,349,205
67 5,349,206
76 5,349,207
79 5,349,208
80 5,349,209
84 5,349,210
90 5,349,211
133 5,349,212
147 5,349,213
192 5,349,214
208 5,349,219
223 5,349,215
230 5,349,216
266 5,349,217
296 5,349,218
322 5,349,220
324 5,349,221
326 5,349,222
329 5,349,223
333 5,349,224
336 5,349,225
347 5,349,226
361 5,349,227
365 5,349,228
383 5,349,229
474 5,349,230
566 5,349,231
603 5,349,232
666 5,349,233
684 5,349,234
693 5,349,235
701 5,349,236
715 5,349,237
736 5,349,238
737 5,349,239
791 5,349,240

CLASS 261

36.1 5,348,691
111 5,348,692

CLASS 264

22 5,348,693
27 5,348,694
42 5,348,695
65 5,348,696
102 5,348,697
154 5,348,698
176.1 5,348,699
177.17 5,348,700

CLASS 266

236 5,348,275

CLASS 269

3 5,348,274
48.1 5,348,280
88 5,348,276

CLASS 270

39 5,348,277
52 5,348,278
53 5,348,279

CLASS 271

3.1 5,348,281
117 5,348,282
127 5,348,283
160 5,348,284
183 5,348,285
263 5,348,286
267 5,348,287
288 5,348,288

CLASS 273

1.5 A 5,348,290
1.5 R 5,348,289
26 A 5,348,291
26 C 5,348,292
29 A 5,348,293
73 D 5,348,294
79 5,348,295
84 R 5,348,296
5,348,297
128 R 5,348,298
138 A 5,348,299
146 5,348,300
167 B 5,348,301
169 5,348,302
187.5 5,348,303
187.6 5,348,304
201 5,348,305
317 5,348,306
320 5,348,307
411 5,348,309

CLASS 277

1 5,348,310
9 5,348,311
39 5,348,312
135 5,348,313
152 5,348,314
235 B 5,348,315

CLASS 279

3 5,348,316
62 5,348,317
5,348,318
77 5,348,319

CLASS 280

11.2 5,348,320
11.22 5,348,321
18 5,348,322
33.993 5,348,323
35 5,348,324
40 5,348,325
43.17 5,348,326

47.331 5,348,327
63 5,348,328
461.1 5,348,329
475 5,348,330
476.1 5,348,331
5,348,332
491.5 5,348,333
633 5,348,335
641 5,348,336
672 5,348,337
691 5,348,334
707 5,348,338
728 A 5,348,340
728 B 5,348,339
728 R 5,348,341
730 A 5,348,342
730 R 5,348,343
737 5,348,344
777 5,348,345
819 5,348,346

CLASS 281

31 5,348,347

CLASS 283

91 5,348,348

CLASS 285

92 5,348,349
94 5,348,350
110 5,348,351
136 5,348,352
305 5,348,353
308 5,348,354

CLASS 292

11 5,348,355
80 5,348,356
216 5,348,357

CLASS 294

1.2 5,348,358
24 5,348,359
57 5,348,360
68.23 5,348,361
151 5,348,362

CLASS 296

91 5,348,363
93 5,348,364
146.6 5,348,365
180.4 5,348,366

CLASS 297

83 5,348,367
148 5,348,368
214 5,348,369
217 5,348,370
301 5,348,371
306 5,348,372
344.1 5,348,373
344.18 5,348,374
362.11 5,348,375
391 5,348,376
423.45 5,348,377
452.49 5,348,378

CLASS 298

22 J Re.34,733

CLASS 301

32 5,348,379

CLASS 303

103 5,348,380
113.2 5,348,381
116.4 5,348,382

CLASS 307

114 5,349,241
249 5,349,242
272.1 5,349,243
296.4 5,349,244
353 5,349,245
443 5,349,246
451 5,349,247
465 5,349,248
5,349,249
5,349,250
475 5,349,253
525 5,349,254
593 5,349,255

CLASS 310

12 5,349,256
68 B 5,349,257
154 5,349,258
261 5,349,259
313 D 5,349,260
321 5,349,261
334 5,349,262
338 5,349,263

CLASS 312

138.1 5,348,383
140.3 5,348,384
247 5,348,385
348 5,348,386

CLASS 313

318 5,349,264
345 5,349,265

CLASS 315

82 5,349,267
169.3 5,349,269
209 R 5,349,270
248 5,349,271
294 5,349,272
307 5,349,273
395 5,349,274

CLASS 318

254 5,349,275
268 5,349,276
568.12 5,349,277
632 5,349,278
803 5,349,279

CLASS 320

13 5,349,280
14 5,349,281
32 5,349,282

CLASS 323

207 5,349,283
5,349,284
312 5,349,285
315 5,349,286
316 5,349,287

CLASS 324

126 5,349,288
127 5,349,289
158.1 5,349,290
207.16 5,349,293
248 5,349,291
309 5,349,292
5,349,294
5,349,295
5,349,296
318 5,349,297
322 5,349,298
399 5,349,299

CLASS 330

126 5,349,301
129 5,349,300
253 5,349,304
5,349,305
257 5,349,303
277 5,349,306
288 5,349,307
296 5,349,308

CLASS 331

17 5,349,309
18 5,349,310
57 5,349,311

CLASS 333

81 A 5,349,312
131 5,349,313
202 5,349,315
204 5,349,314
208 5,349,316
236 5,349,317

CLASS 335

274 5,349,319
299 5,349,318

CLASS 336

92 5,349,320
221 5,349,321

CLASS 338

25 5,349,322
176 5,349,323
307 5,349,325

CLASS 340

426 5,349,326
442 5,349,328
539 5,349,329
540 5,349,327
567 5,349,330
572 5,349,331
5,349,332
5,349,339
600 5,349,333
601 5,349,334
636 5,349,335
653 5,349,336
680 5,349,337
692 5,349,338
825.03 5,349,341
825.08 5,349,342
825.23 5,349,344
825.31 5,349,345
825.52 5,349,343
908 5,349,346
969 5,349,347

CLASS 341

51 5,349,348
58 5,349,349
59 5,349,350
141 5,349,351
143 5,349,352
144 5,349,353
156 5,349,354
574 5,349,340

CLASS 342

42 5,349,355
50 5,349,356
51 5,349,357
128 5,349,358
195 5,349,359
374 5,349,360

CLASS 343

715 5,349,361
720 5,349,362
772 5,349,363
853 5,349,364
895 5,349,365

CLASS 345

92 5,349,366
97 5,349,367
115 5,349,368
136 5,349,369
159 5,349,370
166 5,349,371
185 5,349,372

CLASS 346

76 PH 5,349,373
108 5,349,374
153.1 5,349,377

CLASS 347

16 5,349,376
40 5,349,375

CLASS 348

46 5,349,378
59 5,349,379
250 5,349,380
252 5,349,381
345 5,349,382
397 5,349,383
405 5,349,384
458 5,349,385
485 5,349,386
525 5,349,387
590 5,349,388
625 5,349,389
679 5,349,390
705 5,349,391
711 5,349,444

CLASS 351

45 5,349,392
57 5,349,393
160 R 5,349,394
161 5,349,395
5,349,396
201 5,349,397
212 5,349,398
215 5,349,399

CLASS 353

119 5,349,400

CLASS 354

21 5,349,401
106 5,349,402
114 5,349,403
152 5,349,404
5,349,405
173.1 5,349,406
5,349,407
195.1 5,349,408
195.12 5,349,409
288 5,349,410
295 5,349,411
299 5,349,412
324 5,349,413
400 5,349,414
432 5,349,415
471 5,349,416
485 5,349,417

CLASS 355

20 5,349,418
22 5,349,419
75 5,349,420
208 5,349,421
243 5,349,422
285 5,349,423
298 5,349,424
5,349,425
5,349,426
299 5,349,427
5,349,428
5,349,429

CLASS 356

5 5,349,430
73.1 5,349,431
121 5,349,432
124 5,349,433
138 5,349,434
240 5,349,435
246 5,349,436
345 5,349,437
346 5,349,438
5,349,439
349 5,349,440
350 5,349,441
354 5,349,442
376 5,349,443

CLASS 358

296 5,349,445
5,349,446
404 5,349,447
444 5,349,448
448 5,349,449
500 5,349,450
518 5,349,451
527 5,349,452

CLASS 359

40 5,349,453
54 5,349,454
5,349,455
82 5,349,456
118 5,349,457
124 5,349,458
142 5,349,459
5,349,460
152 5,349,461
5,349,462
174 5,349,463
240 5,349,464
325 5,349,465
326 5,349,466
359 5,349,467
390 5,349,468
420 5,349,469
523 5,349,470
565 5,349,471
649 5,349,472
654 5,349,473
675 5,349,474
694 5,349,475
699 5,349,476

CLASS 360

15 5,349,477
55 5,349,478
73.06 5,349,479
74.1 5,349,480
74.4 5,349,481
77.12 5,349,484
85 5,349,485
96.5 5,349,482
97.01 5,349,483
5,349,486
103 5,349,487
105 5,349,488

CLASS 361

77 5,349,489
80 5,349,490
283.4 5,349,491
5,349,492
301.5 5,349,493
322 5,349,494
528 5,349,496
683 5,349,497
689 5,349,498
700 5,349,499
749 5,349,500
774 5,349,495
776 5,349,501
829 5,349,502

CLASS 362

31 5,349,503
32 5,349,504
101 5,349,505
158 5,349,506
5,349,507
374 5,349,508
396 5,349,509
399 5,349,510
404 5,349,511
5,349,512
5,349,513

CLASS 363

21 5,349,514
5,349,515
5,349,516
40 5,349,517
81 5,349,521
95 5,349,522
97 5,349,523

CLASS 364

192 5,349,518
413.09 5,349,519
413.25 5,349,524
5,349,525
419.1 5,349,526
421 5,349,527
422 5,349,528
424.01 5,349,520
5,349,529
449 5,349,530
5,349,531
459 5,349,532
461 5,349,533
479 5,349,534
483 5,349,535
491 5,349,536
508 5,349,537
555 5,349,538
578 5,349,539
5,349,540
5,349,541
5,349,542
579 5,349,543
600 5,349,544
715.02 5,349,545
724.01 5,349,546
724.05 5,349,547
724.1 5,349,548
725 Re.34,734
5,349,549
728.03 5,349,550
746 5,349,551

CLASS 365

51 5,349,552
185 5,349,553
189.05 5,349,554
200 5,349,555
5,349,556
5,349,557
5,349,558
201 5,349,559
203 5,349,560
207 5,349,302
219 5,349,561
222 5,349,562
230.01 5,349,563
230.05 5,349,564
230.08 5,349,565
233.5 5,349,566

CLASS 366

63 5,348,387
80 5,348,388
136 5,348,389
5,348,390
139 5,348,391
162 5,348,392
207 5,348,393

CLASS 367

100 5,349,567
125 5,349,568

CLASS 368

10 5,349,569
47 5,349,570
77 5,349,572
108 5,349,573
190 5,349,574

CLASS 369

1 5,349,575
13 5,349,576
47 5,349,577

CLASS 370

13 5,349,578
58.2 5,349,579
84 5,349,580
85.1 5,349,582
85.5 5,349,583
97 5,349,584
102 5,349,581
110.4 5,349,585

CLASS 371

22.1 5,349,586
22.3 5,349,587
37.1 5,349,588
43 5,349,589

CLASS 372

6 5,349,590
25 5,349,591
32 5,349,592
38 5,349,595
43 5,349,596
44 5,349,597
50 5,349,593
5,349,598
5,349,599
62 5,349,594
92 5,349,600
94 5,349,601
98 5,349,602
101 5,349,603
103 5,349,604

CLASS 373

25 5,349,605

CLASS 374

44 5,348,394
135 5,348,395
161 5,348,396
185 5,348,397

CLASS 375

1 5,349,606
94 5,349,607
5,349,608
100 5,349,609
106 5,349,610
115 5,349,611
118 5,349,612
120 5,349,613

CLASS 376

204 5,349,614
280 5,349,615
282 5,349,616
299 5,349,617
429 5,349,618
444 5,349,619

CLASS 377

3 5,349,620
44 5,349,621
52 5,349,622
75 5,349,623

CLASS 378

43 5,349,624
95 5,349,625
144 5,349,626
166 5,349,627
181 5,349,628

CLASS 379

58 5,349,629
5,349,630
59 5,349,631
61 5,349,632
67 Re.34,735
88 5,349,633
89 5,349,636
94 B1 4,582,956
97 5,349,635
100 5,349,634
142 5,349,638
373 5,349,639
387 5,349,640
445 5,349,637

CLASS 380

10 5,349,641
25 5,349,642
5,349,643

CLASS 383

122 5,348,398
209 5,348,399
210 5,348,400

CLASS 384

49 Re.34,736
101 5,348,401
462 5,348,402

CLASS 385

109 Re.34,732

CLASS 395

2.52 5,349,645
22 5,349,646
115 5,349,647
148 5,349,648
160 5,349,268
200 5,349,644
275 5,349,649
400 5,349,650
5,349,651
5,349,652
500 5,349,653
575 5,349,654
5,349,655
650 5,349,656
5,349,657
700 5,349,658
5,349,659
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5,349,664
5,349,665
725 5,349,667
750 5,349,666
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5,349,692
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CLASS 400

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354 5,348,404
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CLASS 409

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CLASS 411

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CLASS 414

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401 5,348,437
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543 5,348,439
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796.7 5,348,441

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CLASS 416

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505 5,348,465

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210 5,348,817
213 5,348,818
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558 5,348,847
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217 5,349,019
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386 5,349,031
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450 5,349,030
476 5,349,029

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361 5,349,047
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280 5,349,064

CLASS 546

15 5,349,065
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CLASS 548

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CLASS 549

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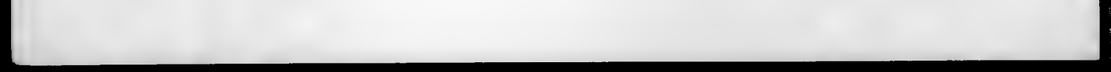
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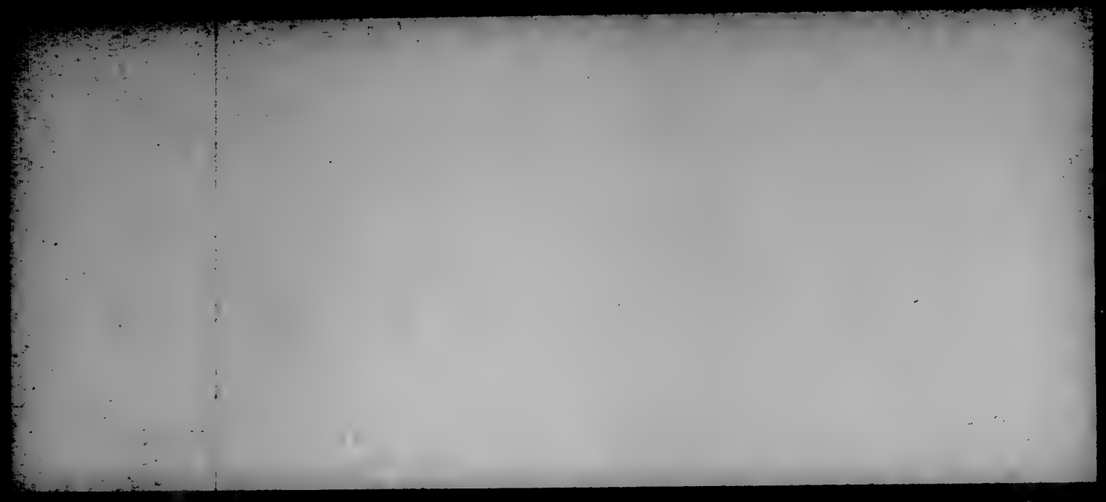
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September 27, 1994 Volume 1166 Number 4

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25 on Sept. 14, 1993.

International fees were changed effective on May 1, 1993, due to a changes in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992 and were announced in the *Official Gazette* at 1141 O.G. 68 on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars) effective Oct. 1, 1993 is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation)	230.00

U.S. National Stage Fees	Small Entity	Regular
Basic National Fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Patent Cooperation Treaty Update

Designation for an ARIPO Patent

The African Regional Industrial Property Organization (ARIPO) has 14 member States, 11 of which are party to the Harare Protocol on Patents and Industrial Designs. The Harare Protocol makes it possible to obtain an ARIPO patent effective in any or all of the Protocol's member States.

The United States Patent and Trademark Office received notification from the World Intellectual Property Organization (WIPO) that under amendments to the Harare Protocol and its Implementing Regulations adopted in April 1994, an international application under the Patent Cooperation Treaty (PCT) will be able to include a designation for an ARIPO patent (two-letter code: AP) of those Harare Protocol member States which are also Contracting States of the PCT. Processing of such international applications in the regional phase will be undertaken by the ARIPO Office as a designated (or elected) Office under the PCT.

The amendments to the Harare Protocol entered into force on July 1, 1994. Kenya, Malawi and Sudan, which are Harare Protocol member States, are already bound by the PCT and thus, can be designated for an ARIPO patent. It also remains possible to designate those States for national patents under PCT. Swaziland, which is also a Harare Protocol member State, will become bound by the PCT on September 20, 1994 (see below), and will be able to be designated for an ARIPO patent from that date.

Accession by Swaziland

The United States Patent and Trademark Office received notification from WIPO that Swaziland deposited its instrument of accession to the PCT on June 20, 1994. Swaziland will become the 73rd Contracting State of the PCT on September 20, 1994. Consequently, nationals and residents of Swaziland are entitled to file international applications under the PCT on and after September 20, 1994, and from the same date it is possible to file international applications designated and electing Swaziland (country code: SZ).

Since Swaziland is a member of the Harare Protocol within the framework of ARIPO, Swaziland will be able to be designated for a patent granted by ARIPO. As of September 20, 1994, any designation in an international application for an ARIPO patent will automatically include the designation of Swaziland for that purpose. It is expected that the national law of Swaziland will be changed to provide that any designation of Swaziland in an international application shall have the effect of an indication of the wish to obtain an ARIPO patent.

Listing of PCT Member Countries

Country	Instrument	Date of Deposit of Instrument	Entry into Force[1]
(1) Central African Republic[2]	Accession	15 September 1971	24 January 1978
(2) Senegal[2]	Ratification	08 March 1972	24 January 1978
(3) Madagascar	Ratification	27 March 1972	24 January 1978
(4) Malawi	Accession	16 May 1972	24 January 1978
(5) Cameroon[2]	Accession	15 March 1973	24 January 1978
(6) Chad[2]	Accession	12 February 1974	24 January 1978
(7) Togo[2]	Ratification	28 January 1975	24 January 1978
(8) Gabon[2]	Accession	06 March 1975	24 January 1978
(9) United States of America	Ratification	26 November 1975	24 January 1978
(10) Germany[3]	Ratification	19 July 1976	24 January 1978
(11) Congo[2]	Accession	08 August 1977	24 January 1978
(12) Switzerland[3]	Ratification	14 September 1977	24 January 1978
(13) United Kingdom[3]	Ratification	24 October 1977	24 January 1978
(14) France[3]	Ratification	25 November 1977	25 February 1978
(15) Russian Federation	Ratification	29 December 1977	29 March 1978
(16) Brazil	Ratification	09 January 1978	09 April 1978
(17) Luxembourg[3]	Ratification	31 January 1978	30 April 1978
(18) Sweden[3]	Ratification	17 February 1978	17 May 1978
(19) Japan	Ratification	01 July 1978	01 October 1978
(20) Denmark[3]	Ratification	01 September 1978	01 December 1978
(21) Austria[3]	Ratification	23 January 1979	23 April 1979
(22) Monaco[3]	Ratification	22 March 1979	22 June 1979
(23) Netherlands[3]	Ratification	10 April 1979	10 July 1979
(24) Romania	Ratification	23 April 1979	23 July 1979
(25) Norway	Ratification	01 October 1979	01 January 1980
(26) Liechtenstein[3]	Accession	19 December 1979	19 March 1980
(27) Australia	Accession	31 December 1979	31 March 1980
(28) Hungary	Ratification	27 March 1980	27 June 1980
(29) Democratic People's Republic of Korea (North Korea)	Accession	08 April 1980	08 July 1980
(30) Finland	Ratification	01 July 1980	01 October 1980
(31) Belgium[3]	Ratification	14 September 1981	14 December 1981
(32) Sri Lanka	Accession	26 November 1981	26 February 1982
(33) Mauritania[2]	Accession	13 January 1983	13 April 1983
(34) Sudan	Accession	16 January 1984	16 April 1984
(35) Bulgaria	Accession	21 February 1984	21 May 1984
(36) Republic of Korea (South Korea)	Accession	10 May 1984	10 August 1984
(37) Mali[2]	Accession	19 July 1984	19 October 1984
(38) Barbados	Accession	12 December 1984	12 March 1985
(39) Italy[3]	Ratification	28 December 1984	28 March 1985
(40) Benin[2]	Accession	26 November 1986	26 February 1987
(41) Burkina Faso[2]	Accession	21 December 1988	21 March 1989
(42) Spain[3]	Accession	16 August 1989	16 November 1989
(43) Canada	Ratification	02 October1989	02 January 1990
(44) Greece[3]	Accession	09 July 1990	09 October 1990
(45) Poland	Accession	25 September 1990	25 December 1990
(46) Cote d'Ivoire[2]	Ratification	31 January 1991	30 April 1991
(47) Guinea[2]	Accession	27 February 1991	27 May 1991
(48) Mongolia	Accession	27 February 1991	27 May 1991
(49) Czech Republic	Declaration[4]	18 December 1992	01 January 1993
(50) Ireland[3]	Ratification	01 May 1992	01 August 1992
(51) Portugal[3]	Accession	24 August 1992	24 November 1992
(52) New Zealand	Accession	01 September 1992	01 December 1992
(53) Ukraine	Declaration[4]	21 September 1992	25 December 1991
(54) Viet Nam	Accession	10 December 1992	10 March 1993
(55) Slovakia	Declaration[4]	30 December 1992	01 January 1993

(56) Niger[2]	Accession	21 December 1992	21 March 1993
(57) Kazakhstan	Declaration[4]	16 February 1993	25 December 1991
(58) Belarus	Declaration[4]	14 April 1993	25 December 1991
(59) Latvia	Accession	07 June 1993	07 September 1993
(60) Uzbekistan	Declaration[4]	18 August 1993	25 December 1991
(61) China	Accession	01 October 1993	01 January 1994
(62) Slovenia	Accession	01 December 1993	01 March 1994
(63) Trinidad and Tobago	Accession	10 December 1993	10 March 1994
(64) Georgia	Declaration[4]	18 January 1994	25 December 1991
(65) Kyrgyzstan	Declaration[4]	14 February 1994	25 December 1991
(66) Republic of Moldova	Declaration[4]	14 February 1994	25 December 1991
(67) Tajikistan	Declaration[4]	14 February 1994	25 December 1991
(68) Kenya	Accession	08 March 1994	08 June 1994
(69) Lithuania	Accession	05 April 1994	05 July 1994
(70) Armenia	Declaration[4]	17 May 1994	25 December 1991
(71) Estonia	Accession	24 May 1994	24 August 1994
(72) Liberia	Accession	27 May 1994	27 August 1994
(73) Swaziland	Accession	20 June 1994	20 September 1994

[1]Although the PCT entered into force on January 24, 1978, the Assembly of the PCT Union fixed June 1, 1978, as the date from which international applications could be filed and demands for international preliminary examination could be submitted.
[2]Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI countries. A designation of any country is an indication that all OAPI countries have been designated. Only one designation fee is due regardless of the number of OAPI member countries designated.
[3]Member of European Patent Convention (EPC) regional patent system. Either national or European patents for member countries are available through PCT, except for France, Monaco, Belgium, Italy, Greece and Ireland for which only European patents are available if PCT is used. Note: Only one designation fee is due if European regional patent protection is sought for one, several or all EPC member countries under the PCT.
[4]Declaration of continued application.

September 2, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3,7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on September 24, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,050,240 through 5,052,051
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on September 22, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,694,505 through 4,696,063
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on September 20, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,404,687 through 4,406,020
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, and 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amount of the surcharges for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and

six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED July 20, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,101	07/184,283	10/24/89
(4,600,548)	(06/457,009)	(07/15/86)
4,339,906	06/221,385	07/20/82
4,339,939	06/273,640	07/20/82
4,339,974	06/283,987	07/20/82
4,340,014	06/247,746	07/20/82
4,340,040	06/222,001	07/20/82
4,340,051	06/224,109	07/20/82
4,340,056	06/230,651	07/20/82
4,340,057	06/219,669	07/20/82
4,340,105	06/238,798	07/20/82
4,340,150	06/255,002	07/20/82
4,340,169	06/240,572	07/20/82
4,340,172	06/238,973	07/20/82
4,340,229	06/231,981	07/20/82
4,340,264	06/251,687	07/20/82
4,340,284	06/268,561	07/20/82
4,340,290	06/229,936	07/20/82
4,340,295	06/222,303	07/20/82
4,340,317	06/261,730	07/20/82
4,340,348	06/248,540	07/20/82
4,340,351	06/234,348	07/20/82
4,340,359	06/224,030	07/20/82
4,340,382	06/216,980	07/20/82
4,340,385	06/237,278	07/20/82
4,340,387	06/221,468	07/20/82
4,340,391	06/282,841	07/20/82
4,340,392	06/285,923	07/20/82
4,340,393	06/285,924	07/20/82
4,340,394	06/285,928	07/20/82
4,340,395	06/285,978	07/20/82
4,340,400	06/300,528	07/20/82
4,340,406	06/221,489	07/20/82
4,340,407	06/233,341	07/20/82
4,340,409	06/233,370	07/20/82
4,340,439	06/233,276	07/20/82
4,340,444	06/230,987	07/20/82
4,340,445	06/223,683	07/20/82
4,340,469	06/227,759	07/20/82
4,340,476	06/271,180	07/20/82
4,340,478	06/294,039	07/20/82
4,340,487	06/219,886	07/20/82
4,340,488	06/251,365	07/20/82
4,340,500	06/239,430	07/20/82
4,340,515	06/274,251	07/20/82
4,340,518	06/274,819	07/20/82
4,340,526	06/220,407	07/20/82
4,340,546	06/241,870	07/20/82
4,340,549	06/248,527	07/20/82
4,340,552	06/236,767	07/20/82
4,340,557	06/216,747	07/20/82
4,340,560	06/288,970	07/20/82
4,340,566	06/239,814	07/20/82
4,340,580	06/254,580	07/20/82
4,340,589	06/237,125	07/20/82
4,340,619	06/225,274	07/20/82
4,340,635	06/216,397	07/20/82
4,340,645	06/262,086	07/20/82
4,340,654	06/290,165	07/20/82
4,340,657	06/241,803	07/20/82
4,340,666	06/234,936	07/20/82
4,340,669	06/233,928	07/20/82
4,340,678	06/222,388	07/20/82
4,340,708	06/219,244	07/20/82
4,340,711	06/225,576	07/20/82
4,340,714	06/266,363	07/20/82
4,340,715	06/267,149	07/20/82
4,340,717	06/243,096	07/20/82
4,340,720	06/279,996	07/20/82
4,340,738	06/223,544	07/20/82
4,340,744	06/242,012	07/20/82
4,340,754	06/304,282	07/20/82
4,340,756	06/231,193	07/20/82
4,340,757	06/280,440	07/20/82
4,340,758	06/280,399	07/20/82
4,340,767	06/263,768	07/20/82
4,340,785	06/228,095	07/20/82
4,340,823	06/258,927	07/20/82
4,340,846	06/217,928	07/20/82
4,340,857	06/277,992	07/20/82
4,340,864	06/217,404	07/20/82
4,340,896	06/218,897	07/20/82
4,340,897	06/288,245	07/20/82
4,340,925	06/226,761	07/20/82
4,599,746	06/665,726	07/15/86
4,599,748	06/714,810	07/15/86
4,599,762	06/611,465	07/15/86
4,599,763	06/637,301	07/15/86
4,599,766	06/684,877	07/15/86
4,599,772	06/576,556	07/15/86
4,599,775	06/690,277	07/15/86
4,599,776	06/663,564	07/15/86
4,599,777	06/744,676	07/15/86
4,599,781	06/682,461	07/15/86
4,599,784	06/584,208	07/15/86
4,599,788	06/630,916	07/15/86
4,599,796	06/720,689	07/15/86
4,599,800	06/612,568	07/15/86
4,599,801	06/663,379	07/15/86
4,599,808	06/714,005	07/15/86
4,599,811	06/599,709	07/15/86
4,599,812	06/787,057	07/15/86
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4,941,327	07/383,704	07/17/90
4,941,328	07/376,677	07/17/90
4,941,329	07/316,941	07/17/90
4,941,330	07/134,318	07/17/90
4,941,336	07/166,008	07/17/90
4,941,337	07/375,145	07/17/90
4,941,344	07/268,152	07/17/90
4,941,345	07/188,395	07/17/90
4,941,352	07/347,565	07/17/90
4,941,358	07/315,472	07/17/90
4,941,373	07/385,410	07/17/90
4,941,375	06/716,089	07/17/90
4,941,380	07/324,410	07/17/90
4,941,381	07/204,894	07/17/90
4,941,384	07/320,640	07/17/90
4,941,387	07/145,093	07/17/90
4,941,394	07/404,114	07/17/90
4,941,395	07/241,701	07/17/90
4,941,406	07/204,542	07/17/90
4,941,414	07/325,266	07/17/90
4,941,419	07/342,754	07/17/90
4,941,420	07/310,948	07/17/90
4,941,424	07/258,638	07/17/90
4,941,425	07/254,506	07/17/90
4,941,427	07/246,990	07/17/90
4,941,432	07/374,950	07/17/90
4,941,436	07/400,681	07/17/90
4,941,453	06/822,960	07/17/90
4,941,458	06/914,784	07/17/90
4,941,460	07/431,687	07/17/90
4,941,464	07/377,153	07/17/90
4,941,467	07/324,111	07/17/90
4,941,472	07/338,232	07/17/90
4,941,480	07/362,481	07/17/90
4,941,487	07/377,958	07/17/90
4,941,488	07/178,496	07/17/90
4,941,492	07/353,544	07/17/90
4,941,497	07/320,661	07/17/90
4,941,498	07/316,414	07/17/90
4,941,499	07/332,791	07/17/90
4,941,500	07/219,069	07/17/90
4,941,501	07/306,392	07/17/90
4,941,504	07/371,929	07/17/90
4,941,505	07/336,000	07/17/90
4,941,507	07/338,730	07/17/90
4,941,515	07/319,765	07/17/90
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4,941,521	07/416,634	07/17/90
4,941,526	07/146,374	07/17/90
4,941,527	07/343,594	07/17/90
4,941,529	07/230,419	07/17/90
4,941,534	07/345,441	07/17/90
4,941,540	07/317,194	07/17/90
4,941,543	07/289,027	07/17/90
4,941,544	07/358,405	07/17/90
4,941,547	07/411,900	07/17/90
4,941,553	07/273,341	07/17/90
4,941,555	07/223,546	07/17/90
4,941,560	07/328,127	07/17/90
4,941,562	07/190,737	07/17/90
4,941,565	07/182,924	07/17/90
4,941,571	07/302,315	07/17/90
4,941,573	07/199,009	07/17/90
4,941,575	07/344,972	07/17/90
4,941,577	07/222,584	07/17/90
4,941,581	07/055,272	07/17/90
4,941,585	07/192,907	07/17/90
4,941,588	07/398,960	07/17/90
4,941,589	07/413,893	07/17/90
4,941,591	07/304,856	07/17/90
4,941,600	07/401,644	07/17/90
4,941,601	07/394,475	07/17/90

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4,941,603	07/026,114	07/17/90
4,941,605	07/243,446	07/17/90
4,941,607	07/282,021	07/17/90
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4,941,611	06/931,639	07/17/90
4,941,615	07/251,806	07/17/90
4,941,616	07/352,042	07/17/90
4,941,618	06/882,686	07/17/90
4,941,629	07/368,552	07/17/90
4,941,632	07/292,446	07/17/90
4,941,633	06/934,508	07/17/90
4,941,635	07/191,899	07/17/90
4,941,638	07/276,130	07/17/90
4,941,641	07/306,027	07/17/90
4,941,644	07/462,727	07/17/90
4,941,645	07/217,311	07/17/90
4,941,648	07/345,187	07/17/90
4,941,653	07/376,983	07/17/90
4,941,654	06/760,010	07/17/90
4,941,658	07/362,140	07/17/90
4,941,659	07/304,246	07/17/90
4,941,660	07/239,986	07/17/90
4,941,661	07/309,484	07/17/90
4,941,663	07/343,502	07/17/90
4,941,667	07/375,028	07/17/90
4,941,670	07/242,396	07/17/90
4,941,672	07/348,436	07/17/90
4,941,675	06/927,117	07/17/90
4,941,680	07/297,867	07/17/90
4,941,681	07/313,633	07/17/90
4,941,682	07/318,061	07/17/90
4,941,684	07/232,176	07/17/90
4,941,688	07/437,372	07/17/90
4,941,689	07/275,590	07/17/90
4,941,692	07/355,406	07/17/90
4,941,700	07/250,757	07/17/90
4,941,702	07/314,032	07/17/90
4,941,705	07/377,316	07/17/90
4,941,710	07/185,889	07/17/90
4,941,714	07/418,520	07/17/90
4,941,717	07/419,382	07/17/90
4,941,718	07/171,038	07/17/90
4,941,720	07/307,009	07/17/90
4,941,724	07/237,338	07/17/90
4,941,728	07/151,926	07/17/90
4,941,739	07/297,406	07/17/90
4,941,742	07/288,309	07/17/90
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4,941,746	07/132,521	07/17/90
4,941,747	07/308,521	07/17/90
4,941,749	07/289,664	07/17/90
4,941,756	07/331,831	07/17/90
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4,941,767	07/454,994	07/17/90
4,941,768	07/266,375	07/17/90
4,941,771	07/403,617	07/17/90
4,941,773	07/333,467	07/17/90
4,941,778	07/214,206	07/17/90
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4,941,789	07/151,910	07/17/90
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4,941,828	07/213,925	07/17/90
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4,941,866	07/241,983	07/17/90
4,941,869	07/258,872	07/17/90
4,941,871	07/236,147	07/17/90
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4,941,921	07/295,815	07/17/90
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4,941,935	07/269,213	07/17/90
4,941,943	07/148,951	07/17/90
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4,941,946	07/307,679	07/17/90
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4,941,961	07/341,708	07/17/90
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4,941,971	06/803,291	07/17/90
4,941,977	07/000,538	07/17/90
4,941,990	07/424,301	07/17/90
4,941,993	07/330,493	07/17/90
4,941,996	07/089,219	07/17/90
4,941,997	07/215,672	07/17/90
4,941,998	07/195,272	07/17/90
4,942,002	07/381,603	07/17/90
4,942,010	07/328,732	07/17/90
4,942,020	07/211,864	07/17/90
4,942,021	07/137,224	07/17/90
4,942,026	07/349,687	07/17/90
4,942,029	07/323,625	07/17/90
4,942,033	06/896,570	07/17/90
4,942,037	07/202,088	07/17/90
4,942,041	07/287,436	07/17/90
4,942,043	07/284,325	07/17/90
4,942,045	07/264,337	07/17/90
4,942,046	07/194,267	07/17/90
4,942,047	07/457,162	07/17/90
4,942,048	06/921,689	07/17/90
4,942,049	07/295,878	07/17/90
4,942,057	07/085,854	07/17/90
4,942,062	06/851,080	07/17/90
4,942,067	07/328,688	07/17/90
4,942,069	07/280,979	07/17/90
4,942,081	07/146,339	07/17/90
4,942,093	07/242,392	07/17/90
4,942,100	07/390,390	07/17/90
4,942,113	07/319,249	07/17/90
4,942,119	07/227,939	07/17/90
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4,942,148	07/256,514	07/17/90
4,942,154	07/062,997	07/17/90
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4,942,170	07/199,664	07/17/90
4,942,172	07/196,431	07/17/90
4,942,174	07/269,940	07/17/90
4,942,176	07/348,115	07/17/90
4,942,180	06/772,390	07/17/90
4,942,191	07/186,052	07/17/90
4,942,194	07/019,016	07/17/90
4,942,196	07/351,072	07/17/90
4,942,203	07/217,226	07/17/90
4,942,218	07/197,459	07/17/90
4,942,226	07/291,714	07/17/90

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4,942,233	07/221,744	07/17/90
4,942,240	07/043,363	07/17/90
4,942,242	07/261,552	07/17/90
4,942,249	07/396,500	07/17/90
4,942,250	07/018,948	07/17/90
4,942,264	07/158,232	07/17/90
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4,942,276	07/336,057	07/17/90
4,942,287	07/367,885	07/17/90
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4,942,305	07/350,769	07/17/90
4,942,310	07/325,135	07/17/90
4,942,313	07/233,242	07/17/90
4,942,315	07/394,256	07/17/90
4,942,322	07/199,632	07/17/90
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4,942,333	07/279,889	07/17/90
4,942,350	07/347,894	07/17/90
4,942,354	07/368,994	07/17/90
4,942,358	07/266,446	07/17/90
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4,942,364	07/310,179	07/17/90
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4,942,400	07/478,102	07/17/90
4,942,402	07/262,798	07/17/90
4,942,411	07/211,856	07/17/90
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4,942,420	07/300,437	07/17/90
4,942,421	07/382,888	07/17/90
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4,942,443	06/370,495	07/17/90
4,942,445	07/217,449	07/17/90
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4,942,495	07/261,176	07/17/90
4,942,506	07/309,190	07/17/90
4,942,508	07/363,515	07/17/90
4,942,537	07/285,051	07/17/90
4,942,546	07/246,415	07/17/90
4,942,549	07/320,319	07/17/90
4,942,550	07/202,944	07/17/90
4,942,567	07/160,807	07/17/90
4,942,575	07/207,874	07/17/90
4,942,586	07/343,949	07/17/90
4,942,591	07/320,295	07/17/90
4,942,594	06/788,781	07/17/90
4,942,614	07/035,441	07/17/90
4,942,617	07/288,775	07/17/90
4,942,620	07/199,686	07/17/90

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,127,343, Re. S.N. 08/271,401, July 6, 1994, Cl. 110/233, HYDROCARBON EXTRACTOR, Jeffrey K. O'Ham, Owner of Record: *Sandoz Ltd., Basle, Switzerland,* Attorney or Agent: Richard E. Vila, Ex. Gp.: 3404

5,129,207, Re. S.N. 08/274,314, July 13, 1994, Cl. 53/118, NET WRAP FEEDING SYSTEMS FOR A ROUND BALER, Marvin W. Butler, Owner of Record: *Gehl Co., West Bend, Wis.,* Attorney or Agent: Peter C. Stomma, Ex. Gp.: 3201

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 33,933, Reexam. No. 90/003,505, July 22, 1994, Cl. 446/301, TOY MUSIC ROCKING CHAIR, Jack Hou, Owner of Record: *Giftec, Ltd., Alexandria, Va.,* Attorney or Agent: Eugene Mar, Bacon & Thomas, Ex. Gp.: 3301, Requester: Owner

4,166,152, Reexam. No. 90/003,513, Aug. 2, 1994, Cl. 428/522, TACKY POLYMERIC MICROSPHERES, William A. Baker, Owner of Record: *Minnesota Mining & Manufacturing Corp., St. Paul, Minn.,* Attorney or Agent: Gerald F. Chernivec, St. Paul, Minn., Ex. Gp.: 1502, Requester: Cushman, Darby & Cushman, 1100 New York Ave., 9th Floor, Washington, D.C. 20005-3918

4,295,416, Reexam. No. 90/003,501, July 18, 1994, Cl. 454/262, AIR DISTRIBUTION SYSTEM, Dimiter Gorbachev, et. al., Owner of Record: *Mitco Corp., Sommerville, Mass.,* Attorney or Agent: Mark G. Lappin, Boston, Mass., Ex. Gp.: 3404, Requester: Barry R. Lipsitz, Bradford Coreen, Monroe, Conn.

4,295,567, Reexam. No. 90/003,514, Aug. 2, 1994, Cl. 206/534, MEDICAMENT CONTAINER, Eric T. Knudsen, Owner of Record: *Beecham Group Ltd., Brentford, England,* Attorney or Agent: Rosenman & Colin, New York, N.Y., Ex. Gp.: 2404, Requester: Aquilino & Welsh, 2121 Crystal Drive Ste. 503, Arlington, Va. 22202

4,813,685, Reexam. No. 90/003,502, July 21, 1994, Cl. 15/347, WET AND DRY VACUUM CLEANER, Nick M. Bosyj, et. al., Owner of Record: *The Hoover Corp.,* Attorney or Agent: A. Burgess Lowe, North Canton, Ohio, Ex. Gp.: 2402, Requester: James E. Longacre, c/o Longacre & White, Arlington, Va.

4,976,368, Reexam. No. 90/003,500, July 18, 1994, Cl. 220/268, CONCENTRIC CONVENIENCE OPENING BEVERIDGE CAN END, Gerald B. Klein, Owner of Record: *Inventor,* Attorney or Agent: Dennis O. Kraft, Ex. Gp.: 2401, Requester: David H. Badger, Willian, Brinks, Hufer, Gilson & Lione, Indianapolis, Ind.

5,146,550, Reexam. No. 90/003,507, July 25, 1994, Cl. 395/140, PROCESS FOR DISPLAYING MEASURING RESULTS IN GRAPHIC FORM IN TEST APPARATUS FOR TESTING TEXTILE GOODS AND APPARATUS FOR CARRYING OUT THE PROCESS, Richard Furter, et. al., Owner of Record: *Zellweger Uster Ltd., Uster, Switzerland,* Attorney or Agent: William L. Mathis, Burns, Doane, Swecker, & Mathis, Alexandria, Va., Ex. Gp.: 2301, Requester: Brian M. Dingman, Natick, Mass.

5,180,551, Reexam. No. 90/003,512, July 29, 1994, Cl. 420/511, GOLD ALLOYS OF EXCEPTIONAL YELLOW COLOR AND REVERSIBLE HARDNESS, Dwarika P. Agarwal, Owner of Record: *Leach & Garner, North Attlebora, Mass.,* Attorney or Agent: Sommer, Oliverio & Sommer, Buffalo, N.Y., Ex. Gp.: 1101, Requester: Samson Helfgott, Helfgott & Karas, New York, N.Y.

5,184,828, Reexam. No. 90/003,509, July 27, 1994, Cl. 273/228, SOLID THREE-PIECE GOLF BALL, Moon K. Kim, et. al., Owner of Record: *Ilya, Co., Ltd., Seoul, Korea,* Attorney or Agent: Amster, Rothstein & Eberstein, New York, N.Y., Ex. Gp.: 3304, Requester: Niel B. Siegel, Shugrue, Mion, Zinn, McPeak & Seas, Washington, D.C.

5,196,404, Reexam. No. 90/003,511, July 27, 1994, Cl. 514/13, INHIBITORS OF THROMBIN, John M. Maraganore, et. al., Owner of Record: *Biogen, Inc. & Ma & Health Research Inc., Cambridge, Mass., & Albany, N.Y.,* Attorney or Agent: James F. Haley, Jr., Fish and Neave, Ex. Gp.: 1806, Requester: Foley, Lardner, Washington, D.C.

5,197,978, Reexam. No. 90/003,510, July 27, 1994, Cl. 623/001, REMOVABLE HEAT-RECOVERABLE TISSUE SUPPORTING DEVICE, Robert L. Hess, Owner of Record: *Advanced Coronary Technology Inc., Menlo Park, Calif.,* Attorney or Agent: Burns, Doane, Swecker, Mathis, Alexandria, Va., Ex. Gp.: 3308, Requester: Dr. C.C. Shroff, Alexandria, Va.

5,204,106, Reexam. No. 90/003,508, July 27, 1994, Cl. 424/423, PROCESS FOR RESTORING AN OSSEOUS DEFECT OR DEFICIENCY BY FILLING WITH OSSEOUS TISSUE, Evert Schepers, et. al., Owner of Record: *FBFC International S.A., Brussels, Belgium,* Attorney or Agent: Dennison, Meserok, Pollack & Scheiner, Arlington, Va., Ex. Gp.: 1502, Requester: Kerkam, Stowell, Kondracki & Clarke, Falls Church, Va.

5,228,936, Reexam. No. 90/003,506, July 22, 1994, Cl. 156/260, PROCESS FOR FABRICATING HONEYCOMB MATERIAL, William B. Goldhue, Owner of Record: *Hunter Douglas Inc., Saddle River, N.J.,* Attorney or Agent: Gary M. Polumbus, Denver, Colo., Ex. Gp.: 1304, Requester: Roger H. Stein & Russell E. Hattis, Wallenstein Wagner & Hattis, Ltd., Chicago, Ill.

5,265,739, Reexam. No. 90/003,503, July 21, 1994, Cl. 211/162, DOUBLE DENSITY STORAGE RACK SYSTEM FOR DATA TAPE CARTRIDGES, Macy J. Price, Jr., et. al., Owner of Record: *Engineered Data Products, Inc., Broomfield, Colo.,* Attorney or Agent: Glenn L. Webb, Bloomfield, Colo., Ex. Gp.: 3505, Requester: Wright Line, Inc., Worcester, Mass.

5,278,454, Reexam. No. 90/003,504, July 21, 1994, Cl. 307/064, EMERGENCY CAPACITIVE ENERGY SOURCE AND CIRCUIT FOR DAMPER MOTORS AND ACTUATOR MOTORS, Jason Strauss, et. al., Owner of Record: *National Environmental Products Ltd., Sunrise, Fla.,* Attorney or Agent: Robert C. Kain, Jr., Cesarano-Kain, Miami, Fla., Ex. Gp.: 2104, Requester: Owner

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED AUGUST 08, 1994
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
41,422	70/041,422	11/03/1903
94,101	71/071,955	11/04/1913
94,111	71/058,491	11/04/1913
94,120	71/070,162	11/04/1913
306,917	71/336,326	10/03/1933
307,565	71/339,814	10/31/1933
307,580	71/321,111	10/31/1933
307,601	71/337,005	10/31/1933
307,620	71/335,425	10/31/1933
307,629	71/339,306	10/31/1933
307,636	71/338,477	10/31/1933
307,645	71/339,013	10/31/1933
307,649	71/339,257	10/31/1933
307,701	71/336,228	10/31/1933
307,704	71/338,585	10/31/1933
307,715	71/339,064	10/31/1933
555,908	71/600,089	03/11/1952
581,736	71/490,374	11/03/1953
581,743	71/569,334	11/03/1953
581,746	71/577,095	11/03/1953
581,747	71/578,034	11/03/1953
581,753	71/585,534	11/03/1953
581,756	71/595,280	11/03/1953
581,767	71/607,350	11/03/1953
581,771	71/608,539	11/03/1953
581,776	71/612,497	11/03/1953
581,783	71/615,292	11/03/1953
581,784	71/615,711	11/03/1953
581,789	71/616,764	11/03/1953
581,793	71/617,568	11/03/1953
581,794	71/617,653	11/03/1953
581,798	71/618,948	11/03/1953
581,809	71/622,300	11/03/1953
581,810	71/622,423	11/03/1953
581,812	71/623,524	11/03/1953
581,815	71/623,622	11/03/1953
581,817	71/623,696	11/03/1953
581,818	71/623,831	11/03/1953
581,822	71/624,716	11/03/1953
581,828	71/625,666	11/03/1953
581,834	71/626,299	11/03/1953
581,836	71/626,353	11/03/1953
581,842	71/627,944	11/03/1953
581,843	71/628,014	11/03/1953
581,845	71/628,376	11/03/1953
581,856	71/629,922	11/03/1953
581,868	71/631,501	11/03/1953
581,886	71/633,125	11/03/1953
581,887	71/633,185	11/03/1953
581,889	71/633,374	11/03/1953
581,892	71/633,881	11/03/1953
581,896	71/634,273	11/03/1953
581,898	71/634,276	11/03/1953
581,901	71/634,387	11/03/1953
581,910	71/635,234	11/03/1953
581,912	71/635,343	11/03/1953
581,918	71/635,689	11/03/1953
581,920	71/635,796	11/03/1953
581,926	71/636,293	11/03/1953
581,927	71/636,294	11/03/1953
581,933	71/636,569	11/03/1953
581,937	71/636,620	11/03/1953
581,940	71/637,089	11/03/1953
581,943	71/637,300	11/03/1953
581,955	71/638,277	11/03/1953
581,956	71/638,278	11/03/1953
581,961	71/638,445	11/03/1953
581,967	71/638,916	11/03/1953
581,968	71/638,924	11/03/1953
581,969	71/638,987	11/03/1953
581,972	71/639,344	11/03/1953
581,992	71/640,536	11/03/1953
581,998	71/640,618	11/03/1953
582,001	71/640,723	11/03/1953
582,003	71/640,742	11/03/1953
582,006	71/640,877	11/03/1953
582,018	71/641,552	11/03/1953
582,027	71/642,092	11/03/1953
582,028	71/642,093	11/03/1953
582,032	71/642,176	11/03/1953
582,041	71/642,559	11/03/1953

Reg. Number	Serial Number	Reg. Date
582,057	71/643,094	11/03/1953
582,068	71/644,516	11/03/1953
582,070	71/644,714	11/03/1953
582,077	71/645,081	11/03/1953
582,080	71/645,976	11/03/1953
582,082	71/646,261	11/03/1953
582,095	71/638,625	11/03/1953
582,097	71/640,351	11/03/1953
582,102	71/538,258	11/03/1953
582,103	71/538,259	11/03/1953
582,108	71/598,528	11/03/1953
582,116	71/624,963	11/03/1953
582,138	71/636,853	11/03/1953
931,358	72/340,161	03/28/1972
964,592	72/378,481	07/24/1973
971,652	72/409,417	10/30/1973
971,657	72/440,076	10/30/1973
971,662	72/448,796	10/30/1973
971,664	72/449,905	10/30/1973
971,675	72/442,362	10/30/1973
971,678	72/423,627	10/30/1973
971,681	72/432,365	10/30/1973
971,687	72/408,462	10/30/1973
971,688	72/413,795	10/30/1973
971,691	72/417,163	10/30/1973
971,692	72/420,170	10/30/1973
971,693	72/420,296	10/30/1973
971,694	72/423,761	10/30/1973
971,695	72/427,907	10/30/1973
971,705	72/441,649	10/30/1973
971,706	72/443,394	10/30/1973
971,709	72/453,022	10/30/1973
971,710	72/453,024	10/30/1973
971,711	72/453,922	10/30/1973
971,712	72/417,440	10/30/1973
971,713	72/431,145	10/30/1973
971,714	72/412,745	10/30/1973
971,716	72/453,924	10/30/1973
971,717	72/423,630	10/30/1973
971,720	72/435,537	10/30/1973
971,722	72/439,972	10/30/1973
971,723	72/443,491	10/30/1973
971,724	72/319,632	10/30/1973
971,725	72/400,058	10/30/1973
971,730	72/407,802	10/30/1973
971,731	72/408,708	10/30/1973
971,732	72/412,195	10/30/1973
971,733	72/414,638	10/30/1973
971,735	72/415,642	10/30/1973
971,736	72/415,859	10/30/1973
971,738	72/420,764	10/30/1973
971,739	72/429,619	10/30/1973
971,743	72/441,502	10/30/1973
971,752	72/416,846	10/30/1973
971,755	72/403,177	10/30/1973
971,758	72/413,378	10/30/1973
971,759	72/426,061	10/30/1973
971,761	72/427,509	10/30/1973
971,763	72/428,135	10/30/1973
971,766	72/431,021	10/30/1973
971,768	72/434,319	10/30/1973
971,770	72/441,949	10/30/1973
971,771	72/445,493	10/30/1973
971,773	72/971,773	10/30/1973
971,778	72/374,719	10/30/1973
971,782	72/422,322	10/30/1973
971,785	72/429,725	10/30/1973
971,791	72/442,034	10/30/1973
971,798	72/442,309	10/30/1973
971,799	72/443,157	10/30/1973
971,801	72/444,306	10/30/1973
971,802	72/444,354	10/30/1973
971,804	72/445,158	10/30/1973
971,805	72/445,571	10/30/1973
971,807	72/397,952	10/30/1973
971,809	72/420,072	10/30/1973
971,810	72/429,377	10/30/1973
971,821	72/438,998	10/30/1973
971,825	72/436,723	10/30/1973
971,826	72/440,116	10/30/1973
971,829	72/422,714	10/30/1973
971,831	72/440,117	10/30/1973
971,832	72/434,123	10/30/1973
971,834	72/450,983	10/30/1973
971,837	72/419,788	10/30/1973
971,838	72/431,577	10/30/1973
971,840	72/441,283	10/30/1973
971,843	72/442,136	10/30/1973
971,852	72/407,298	10/30/1973
971,857	72/431,644	10/30/1973
971,858	72/432,512	10/30/1973
971,860	72/445,835	10/30/1973
971,870	72/421,717	10/30/1973
971,879	72/428,107	10/30/1973
971,881	72/429,792	10/30/1973
971,883	72/429,961	10/30/1973
971,884	72/430,573	10/30/1973
971,888	72/435,798	10/30/1973
971,890	72/441,079	10/30/1973
971,891	72/441,583	10/30/1973
971,892	72/444,900	10/30/1973
971,895	72/411,526	10/30/1973
971,896	72/411,781	10/30/1973
971,898	72/416,107	10/30/1973
971,903	72/424,133	10/30/1973
971,906	72/427,317	10/30/1973
971,928	72/417,842	10/30/1973
971,929	72/418,307	10/30/1973
971,931	72/439,887	10/30/1973
971,934	72/440,798	10/30/1973
971,935	72/458,504	10/30/1973
971,938	72/415,058	10/30/1973
971,940	72/421,972	10/30/1973
971,943	72/427,712	10/30/1973
971,944	72/429,527	10/30/1973
971,945	72/416,482	10/30/1973
971,946	72/422,679	10/30/1973
971,952	72/373,217	10/30/1973
971,954	72/389,438	10/30/1973
971,955	72/401,428	10/30/1973
971,956	72/405,920	10/30/1973
971,957	72/406,493	10/30/1973
971,959	72/416,802	10/30/1973
971,960	72/420,477	10/30/1973
971,967	72/441,679	10/30/1973
971,973	72/447,909	10/30/1973
971,974	72/448,281	10/30/1973
971,978	72/450,091	10/30/1973
971,981	72/451,448	10/30/1973
971,982	72/451,455	10/30/1973
971,984	72/451,488	10/30/1973
971,992	72/453,975	10/30/1973
971,996	72/432,201	10/30/1973
972,002	72/407,733	10/30/1973
972,003	72/435,611	10/30/1973
972,005	72/442,401	10/30/1973
972,006	72/443,737	10/30/1973
972,008	72/375,718	10/30/1973
972,011	72/412,130	10/30/1973
972,015	72/439,101	10/30/1973
972,017	72/444,467	10/30/1973
972,018	72/446,161	10/30/1973
972,026	72/417,827	10/30/1973
972,027	72/418,913	10/30/1973
972,029	72/428,074	10/30/1973
972,031	72/432,072	10/30/1973
972,036	72/444,865	10/30/1973
972,042	72/380,417	10/30/1973
972,048	72/420,494	10/30/1973
972,049	72/423,145	10/30/1973
972,050	72/425,653	10/30/1973
972,056	72/432,600	10/30/1973
972,065	72/373,594	10/30/1973
972,067	72/378,248	10/30/1973
972,075	72/409,938	10/30/1973
972,076	72/413,546	10/30/1973

Reg. Number	Serial Number	Reg. Date
972,084	72/432,059	10/30/1973
972,086	72/429,111	10/30/1973
972,087	72/430,480	10/30/1973
972,096	72/349,796	10/30/1973
972,106	72/385,647	10/30/1973
972,107	72/426,606	10/30/1973
972,108	72/426,607	10/30/1973
972,109	72/426,608	10/30/1973
972,110	72/426,609	10/30/1973
972,111	72/426,610	10/30/1973
972,112	72/426,611	10/30/1973
972,115	72/433,435	10/30/1973
972,116	72/411,404	10/30/1973
972,119	72/455,156	10/30/1973
972,120	72/408,803	10/30/1973
982,845	72/447,665	04/30/1974

Errata

All reference to Patent No. 5,334,223 to Alan P. Dieken of Minnesota for 'ELECTRICAL SAFETY SYSTEM FOR ELECTRICAL DEVICE' appearing in the Official Gazette of August 2, 1994 should be deleted since no patent was granted.

All reference to Patent No. 5,334,426 to Robert G. Smith of Minnesota for 'HIGH TEMPERATURE CERAMIC COMPOSITE' appearing in the Official Gazette of August 2, 1994 should be deleted since no patent was granted.

All reference to Patent No. 5,336,544 to Gary M. Bach of Wisconsin for 'REINFORCED CELL MATERIAL' appearing in the Official Gazette of August 9, 1994 should be deleted since no patent was granted.

All reference to Patent No. 5,339,032 to Mineyuki Konishi of Japan for 'MAGNETIC RESONANCE IMAGING APPARATUS' appearing in the Official Gazette of August 16, 1994 should be deleted since no patent was granted.

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before November 11, 1994.

Grigsby, Thomas N., 1311 S. Norwood St., Arlington, Va. 22204
Gutowski, Anthony M., 650A 15th St. S., Arlington, Va. 22202
Jackson, Jill D., 1301 S. Arlington Ridge Rd., #802, Arlington, Va. 22202
Kalinchak, Stephen G., 1712 U St., N.W., #3, Washington, D.C. 20009
Keesee, LaCharles P., II, 3165 S. Elmira Ct., Denver, Colo. 80231
Krawczyk, Nancy T., 10244 Hickory Ridge Rd., #203, Columbia, Md. 21044
Lindsay, Robert L., Jr., 17843 Susie's Point, Troup, Tex. 75678
Pellman, Irving R., 13701 Stoner Dr., Silver Spring, Md. 20904
Rafa, Michael J., 424 E. McKinley Ave., Sunnydale, Calif. 94086
Schacher, Richard A., 6107 Sherborn Ln., Springfield, Va. 22152
Shami, Khaled, 203 Bookham Ln., Gaithersburg, Md. 20877
Tarring, Henry W., II, 3306 W. Ox Rd., Herndon, Va. 22071
Yarbrough, Amelia B., 8613 Sapienza Dr., Ft. Washington, Md. 20744

August 31, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Registration To Practice

The August 9, 1994 *Official Gazette* listed the names of the persons who successfully passed the April 13, 1994 registration examination. However, the name of the following person was incorrectly listed. The name should have read as follows:

Diehl, R. Anthony, 950 Chelten Hills Dr., Wyncote, Pa. 19095

August 31, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following person successfully passed the registration examination that was held April 8, 1993. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before November 11, 1994.

Gallo, Christopher A., 8938 Waldren Way, Lorton, Va. 22079

August 31, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Patent Term Extended Under 35 U.S.C. § 156(e)(2)

A second interim extension of the term of U.S. Patent No. 3,975,512 has been granted under 35 U.S.C. § 156(e)(2) for a period of one year from the first extended expiration date of the patent. On September 2, 1993, a first interim extension was granted under 35 U.S.C. § 156(e)(2) extending the term of the patent for a period of one year. See 1154 OG 85. The first extended term of the patent expires on August 13, 1994. An application for patent term extension was filed by the patent owner of record The Board of Trustees of the University of Illinois based on approval of the product "IMAGENT GI" by the Food and Drug Administration. The initial PTO review of the application to date indicates that the '512 patent would be eligible for a maximum two year extension of the patent term under 35 U.S.C. § 156 (g)(6)(C).

Advance Notice of Change to MPEP § 1309

This memorandum is to provide advance notice of a change to a portion of MPEP § 1309 which will appear in the next revision to the Manual. The change is being implemented because the Office has been made aware of the need and desire of some law firms to have listed on a patent the firm name as well as the names of the attorneys or agents who worked on the patent application. The applicable portion of MPEP § 1309 will be changed to read as follows:

Printing Names of Practitioners and Firm on Patent

The Issue Fee Transmittal form provides a space (item 4) for the person submitting the base issue fee to indicate, for printing, (1) the names of up to three registered patent attorneys or agents or, alternatively, (2) the name of a single firm, which has as a member at least one registered patent attorney or agent, and the names of up to two registered patent attorneys or agents. If the person submitting the issue fee desires that no name of practitioner or firm be printed on the patent, the space on the Issue Fee Transmittal form should be left blank. If no name is listed on the form, no name will be printed on the patent.

The change in practice will take effect immediately.

August 29, 1994 J. MICHAEL THESZ
Editor, Manual of Patent
Examining Procedure

Certificate of Correction Issued for September 27, 1994

P. 5,273	5,130,702	5,226,896	5,261,909
Re. 33,555	5,134,149	5,227,372	5,262,192
Re. 34,147	5,135,643	5,227,908	5,262,873
D. 319,423	5,137,668	5,228,579	5,263,080
D. 345,597	5,142,829	5,228,636	5,263,182
D. 348,142	5,149,714	5,229,214	5,263,663
D. 349,232	5,153,204	5,231,319	5,264,080
4,640,568	5,153,847	5,231,539	5,264,427
4,830,617	5,156,729	5,232,826	5,265,490
4,872,980	5,156,876	5,232,892	5,266,283
4,877,965	5,157,482	5,233,411	5,266,471
4,889,865	5,157,853	5,234,159	5,266,574
4,896,025	5,158,854	5,235,311	5,266,721
4,949,172	5,160,345	5,235,407	5,268,145
4,953,551	5,162,188	5,235,815	5,268,248
4,975,605	5,168,176	5,236,071	5,268,330
4,980,369	5,169,185	5,236,469	5,268,434
4,988,811	5,171,899	5,237,351	5,270,914
4,992,412	5,172,897	5,237,471	5,271,597
4,998,784	5,175,833	5,237,670	5,272,028
5,000,098	5,176,672	5,238,938	5,272,335
5,000,586	5,177,722	5,239,194	5,272,351
5,006,550	5,179,115	5,239,307	5,274,698
5,009,229	5,184,156	5,239,695	5,274,752
5,012,660	5,186,250	5,240,674	5,276,079
5,015,694	5,186,737	5,241,527	5,276,106
5,025,519	5,186,931	5,243,557	5,276,139
5,028,428	5,187,090	5,244,546	5,276,646
5,032,152	5,188,649	5,244,871	5,276,733
5,053,407	5,190,102	5,245,193	5,276,888
5,058,664	5,190,870	5,246,824	5,276,890
5,069,928	5,192,125	5,246,909	5,277,024
5,070,768	5,193,536	5,248,167	5,277,546
5,072,731	5,194,936	5,249,301	5,277,962
5,082,539	5,195,464	5,249,557	5,278,092
5,083,572	5,196,515	5,253,113	5,278,603
5,086,775	5,198,043	5,254,153	5,278,938
5,087,184	5,202,241	5,254,516	5,279,062
5,087,627	5,204,895	5,255,110	5,279,182
5,088,218	5,206,159	5,255,206	5,279,341
5,089,867	5,206,780	5,255,305	5,279,907
5,091,237	5,207,163	5,256,293	5,279,920
5,092,332	5,207,841	5,256,391	5,280,310
5,092,527	5,208,027	5,257,056	5,280,457
5,102,815	5,208,341	5,257,061	5,280,544
5,104,506	5,216,648	5,257,134	5,280,964
5,107,833	5,216,663	5,257,213	5,281,372
5,108,485	5,219,221	5,257,897	5,281,729
5,109,361	5,219,760	5,258,014	5,283,214
5,110,350	5,219,869	5,259,635	5,283,874
5,110,570	5,219,922	5,260,088	5,284,039
5,113,860	5,220,317	5,260,203	5,284,118
5,115,504	5,221,288	5,260,486	5,284,286
5,124,296	5,221,483	5,260,802	5,284,694
5,126,777	5,223,871	5,260,976	5,284,783
5,128,346	5,225,129	5,261,348	5,284,819
5,284,843	5,297,739	5,313,125	5,326,270
5,284,889	5,297,767	5,313,179	5,326,396
5,285,097	5,298,016	5,313,183	5,326,413
5,285,129	5,298,653	5,313,198	5,326,524
5,285,171	5,298,928	5,313,340	5,326,547
5,285,291	5,298,951	5,313,763	5,326,757
5,285,327	5,299,150	5,313,950	5,327,009
5,285,478	5,299,372	5,314,037	5,327,041
5,285,863	5,299,538	5,314,081	5,327,078
5,286,173	5,299,810	5,314,139	5,327,352
5,286,550	5,299,847	5,314,162	5,327,460
5,286,837	5,300,094	5,314,185	5,327,562
5,286,887	5,301,141	5,314,398	5,327,658
5,287,337	5,301,162	5,314,457	5,327,779
5,287,365	5,301,195	5,314,722	5,327,791
5,287,830	5,301,354	5,314,975	5,327,926
5,287,951	5,301,984	5,315,289	5,328,082
5,287,995	5,302,021	5,315,502	5,328,287
5,288,017	5,302,288	5,315,524	5,328,508
5,288,050	5,302,296	5,315,929	5,328,568
5,288,658	5,302,351	5,316,039	5,328,683
5,288,660	5,302,423	5,316,746	5,328,736
5,288,824	5,302,540	5,317,025	5,328,825
5,289,008	5,302,579	5,317,113	5,329,180
5,289,365	5,302,587	5,317,276	5,329,351
5,289,458	5,303,231	5,317,279	5,329,418
5,289,706	5,303,506	5,317,416	5,329,526
5,290,030	5,304,507	5,317,517	5,329,575
5,290,405	5,304,618	5,317,775	5,330,057
5,290,458	5,304,750	5,317,944	5,330,227
5,290,819	5,304,954	5,318,144	5,330,298
5,290,837	5,305,060	5,318,318	5,330,325
5,290,964	5,305,371	5,318,876	5,330,368
5,291,228	5,306,257	5,319,091	5,330,543
5,291,440	5,306,359	5,319,181	5,330,575
5,291,668	5,306,448	5,319,258	5,330,586
5,291,836	5,306,504	5,319,656	5,330,712
5,291,887	5,306,586	5,319,681	5,330,751
5,291,962	5,306,644	5,319,695	5,330,776
5,292,602	5,306,832	5,319,708	5,330,844
5,292,603	5,306,934	5,320,235	5,330,972
5,292,999	5,307,061	5,320,372	5,331,069
5,293,018	5,307,065	5,320,598	5,331,246
5,293,108	5,307,067	5,320,820	5,331,358
5,293,242	5,307,376	5,320,862	5,331,619
5,293,892	5,307,467	5,320,933	5,331,665
5,293,980	5,307,470	5,320,970	5,331,669
5,294,095	5,307,492	5,320,993	5,331,757
5,294,192	5,307,507	5,321,359	5,331,833
5,294,387	5,308,829	5,321,544	5,331,862
5,294,394	5,309,089	5,321,608	5,332,015
5,294,449	5,309,131	5,321,860	5,332,039
5,294,469	5,309,318	5,322,140	5,332,076
5,294,545	5,309,374	5,322,143	5,332,087
5,294,997	5,309,601	5,322,305	5,332,121
5,295,384	5,309,756	5,322,931	5,332,191
5,295,510	5,309,846	5,322,973	5,332,197
5,295,748	5,310,423	5,323,127	5,332,453
5,296,239	5,310,566	5,323,188	5,332,798
5,296,322	5,310,743	5,323,317	5,332,812
5,296,462	5,310,900	5,323,414	5,333,390
5,296,498	5,310,902	5,323,601	5,333,530
5,296,526	5,311,049	5,323,653	5,333,594
5,296,561	5,311,110	5,324,090	5,333,651
5,296,782	5,311,290	5,324,149	5,333,818
5,296,816	5,311,325	5,324,529	5,333,907
5,296,897	5,311,442	5,324,651	5,334,332
5,296,899	5,311,466	5,325,163	5,334,345
5,297,018	5,311,978	5,325,307	5,334,350
5,297,142	5,312,247	5,325,545	5,334,514
5,297,685	5,312,402	5,325,551	5,335,447
5,297,705	5,313,025	5,325,717	5,337,841
5,297,728	5,313,110	5,326,020	

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

August 15-19, 1994

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
8-15	EX	73/837,839	Kabushiki Kaisha Edwin	2(a) [geographic deceptiveness]; preclusive effect of prior decision on registrability	Refusal Affirmed		"AMERICAN SLIM" [jeans, slacks, jackets, shirts]		No
8-15	EX	74/094,803	PMH Enterprises, Inc.	2(d)	Refusal Affirmed		"THE CENTER OF THE MACINTOSH UNIVERSE" [computer peripheral equipment sold separately or sold together with computer software for operating the peripheral equipment or together with instruction manuals; retail store, mail order, and distributorship services in the field of computers]	"MACINTOSH" [computer terminals, video display units, computer printers, modems, disk drives, and prerecorded computer programs on magnetic disks]	No
8-15	CANC	19,209	Holman Automotive, Inc. v. Safir Engineering Ltd.	genericness	Petition to Cancel Denied		"GT 40" [automobiles and structural parts therefor]		No
8-15	EX	74/179,084	CIBA-GEIGY Corp.	2(e)(1)	Refusal Affirmed		"MILO PAK" [plastic shrink-wrapped packaging for sorghum hybrid seeds]		No
8-16	OPP	86,042	Purina Mills, Inc. v. Hubbard Milling Co.	2(d)	Opposition Sustained	"ACCURATION LTD." [cattle feed]; "ACCU-GROW," "ACCU-START," "ACCU-LAY," and "ACCU-LINE" [poultry feed]	"ACCUPAK" [feed for swine]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
8-16	EX	74/178,616	Sunmarks, Inc.	2(d)	Refusal Affirmed		"ULTRA" [gasoline, motor oil, automotive grease, general purpose grease, machine grease and gear oil]	"ULTRA LUBE" [lubricating oils and greases]; "ULTRA LUBE" (and design) [engine oil additives, radiator products and automatic transmission fluid; lubricants, namely, greases, engine oil and industrial lubricants]	Yes
8-17	CANC	20,281	T.H.C., Inc. v. The Men's Warehouse, Inc.	2(d); fraud; abandonment	Petition to Cancel Denied	"THE WAREHOUSE", "THE CLOTHING WAREHOUSE", "THE CLOTHING WAREHOUSE (with graphic of a man between the words "CLOTHING" and "WAREHOUSE") and "THE WAREHOUSE (with graphic of a man between the words "THE and WAREHOUSE") [retail store services for men's attire]	"The MEN'S WEARHOUSE" [men's, women's and boys' suits, sportcoats, slacks, rainwear, jackets, coats, scarves, ties and belts]		No
8-17	OPP	88,462	Gly-Derm, Inc. v. Beauty Points Int'l., Inc	2(d)	Opposition Sustained	"GLY DERM" [cosmetic skin cream and lotion, etc.]	"GLYSODERM" [skin emollients]		No
8-18	EX	74/225,854	ORE-IDA Foods, Inc.	2(d)	Refusal Affirmed		"GOLDEN CRISP" [frozen bread, namely, french toast sticks	"SUPER GOLDEN CRISP" [breakfast cereal]	NO

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR MAIL

Special PTO mail department numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special departments. If any documents other than the specified type identified for each department are addressed to that department, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Washington, D.C. 20231

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Box 5	"No Fee" mail related to trademarks.
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Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation*; papers relating to pending litigation shall be mailed only to the Office of the Solicitor, P.O.Box 15667, Arlington, Va. 22215
Box 9	Coupon orders for U.S. patent and trademark copies.
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Box 11	Electronic Ordering Service (EOS).
Box 12	Contributions to the Examiner Education Program.
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Assignment	All assignment documents except those filed with new applications.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box EEO	Mail for the Office of Equal Employment Programs.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85 "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	Not Yet Operational
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-8847
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Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
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	Tampa Campus Library, University of South Florida	(813) 974-2726
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Idaho	Moscow: University of Idaho Library	(208) 885-6235
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	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2873
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Kansas	Wichita: Ablah library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	Not Yet Operational
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
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North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	Not Yet Operational
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	10/04/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	07/29/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	12/14/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/14/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/07/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—JOSEPH J. ROLLA, JR., Director	308-1782	10/08/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	02/22/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	08/31/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	09/05/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/05/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	02/10/93
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	12/08/92
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	09/13/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	08/23/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	09/30/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	04/09/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	08/12/93

*A communication from the examiner should have been received in most applications filed prior to this date

Expiration of Patents: The patents within the range of numbers indicated below expire during August 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.
Patents.....Numbers 4,038,697 to 4,045,823 inclusive
Plant Patents.....4,086 to 4,096

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of Sept. 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/22/94	07/07/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/12/94	06/28/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/21/94	07/11/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/07/94	05/25/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/07/94	04/06/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/06/94	06/27/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/15/94	05/11/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/09/94	07/20/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/13/94	05/07/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/21/94	07/25/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/01/94	05/06/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/24/94	07/13/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/31/94	05/24/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	03/11/94	—0—
Renewals (All Classes)	06/03/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

SEPTEMBER 27, 1994

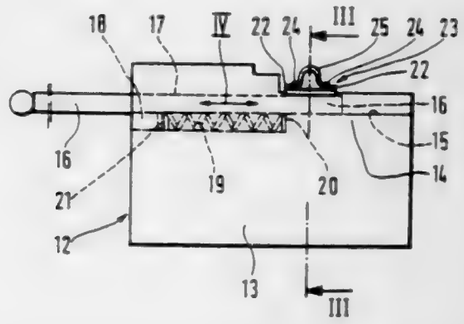
Matter enclosed in heavy brackets **[ ]** appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,706,147 (2402nd)

CASSETTE FOR CLEANING THE HEADS OF A MAGNETIC TAPE RECORDER

Hans Muller, Silvrettastrasse 14, 7000 Stuttgart 60, Fed. Rep. of Germany

Reexamination Request No. 90/003,250, Nov. 5, 1993.
Reexamination Certificate for Patent No. 4,706,147, issued Nov. 10, 1987, Ser. No. 753,228, Jul. 9, 1985.
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1985, 85014079[U]
Int. Cl.[5] G11B *5/41*
U.S. Cl. 360—128



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **4** are determined to be patentable as amended.

Claims **2**, **3** and **5–17**, dependent on an amended claim, are determined to be patentable.

New claims **18** and **19** are added and determined to be patentable.

1. A cleaning cassette for cleaning a read/write head of a magnetic tape recorder, said cassette comprising:

a cassette body;

a supporting member reciprocally housed in said cassette body, said supporting member having a support surface facing the read/write head of the recorder;

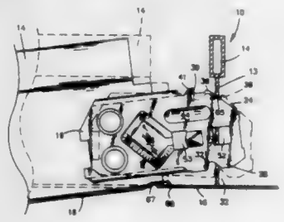
a cleaning device mounted on said support surface for cleaning said read/write head upon reciprocal movement of said supporting member *along an operating path of a magnetic tape*, said cleaning device including a cleaning member *secured at opposite ends to said supporting surface to form a curved body configuration with the curvature in a direction of movement and* having a smooth flexible cleaning surface, said cleaning surface curving generally outwardly from said support surface and having an elasticity such that reciprocal movement of said cleaning member past said read/write head *from side-to-side completely beyond said read/write head in each direction of movement of said cleaning member* results in said cleaning surface contacting said read/write head and matingly contouring about said read/write head to clean said read/write head in both directions of said reciprocal movement.

B1 4,779,394 (2403rd)

CONNECTOR FOR SUSPENSION CEILING GRID

Richard Shirey, Avon; Gerald L. Koski, Parma; Jonathan P. Teli, Avon Lake, and David F. Mieyal, Strongsville, all of Ohio, assignors to Donn Incorporated, Chicago, Ill.

Reexamination Request No. 90/002,225, Dec. 11, 1990.
Reexamination Certificate for Patent No. 4,779,394, issued Oct. 25, 1988, Ser. No. 38,246, Apr. 14, 1987.
Int. Cl.[5] E04C *2/42*
U.S. Cl. 52—667



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **4** and **5** are cancelled.

Claims **2**, **3**, **6**, **11**, **12**, **14**, **15**, **18–21**, **23** and **26** are determined to be patentable as amended.

Claims **7–10**, **13**, **16**, **17**, **22**, **24** and **25**, dependent on an amended claim, are determined to be patentable.

[1. A suspension ceiling grid system comprising elongated grid runners interconnected at intersections, including a through-runner and two opposed runner ends said runners including a web, an elongated verticaly extending opening in the web of said through-runner having an upper and a lower end, and generally planar end connectors on the ends of said opposed runners projecting into said opening from opposite sides thereof, each connector providing lateral projections engaging the remote side of said through-runner web beyond said upper and lower ends thereof to provide a first-end-in-lock with said through-runner.**]**

B1 4,809,021 (2404th)

APPARATUS AND METHOD FOR GENERATING IMAGES BY PRODUCING LIGHT SPOTS OF DIFFERENT SIZES

Frank T. Check, San Jose, Calif., and Ronald P. Sansome, Weston, Conn.; Donald T. Dolan; Henry Stalzer, both of Danbury, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Reexamination Request No. 90/002,665, Mar. 18, 1992.
Reexamination Certificate for Patent No. 4,809,021, issued Feb. 28, 1989, Ser. No. 144,704, Jan. 12, 1988.
Continuation of Ser. No. 472,559, Mar. 7, 1983, abandoned, Continuation-in-part of Ser. No. 391,029, Jun. 22, 1982, Pat. No. 4,386,272, which is a continuation of Ser. No. 240,532, Mar. 14, 1981, abandoned, which is a division of Ser. No. 130,278, Mar. 14, 1980, Pat. No. 4,310,757, which is a division of Ser. No. 922,596, Jul. 7, 1978, Pat. No. 4,214,157
Int. Cl.[5] G01D *9/42, 15/10;* **B41J** *2/205, 3/00*
U.S. Cl. 346—108

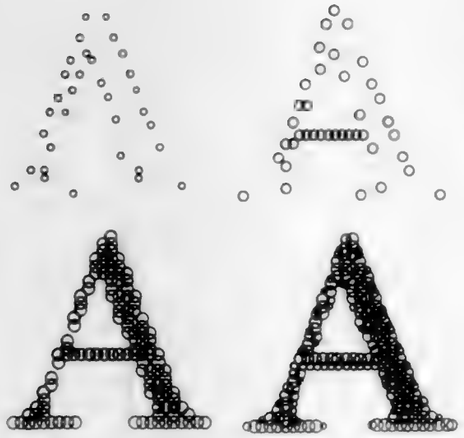
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–11 is confirmed.

1. Apparatus for printing characters on a record medium in accordance with input data, comprising:

an electronic printer having means for producing dot matrix patterns on a record medium and for intermeshing dots of at least three different sizes,

a microprocessor connected to said electronic printer,



a data input connected to said microprocessor, and a look-up table connected to said microprocessor that contains information of the characters to be printed on the record member by said printer in the form of different dot sizes, whereby characters with smoother edges may be produced by said electronic printer by intermeshing dots of at least three different sizes.

B1 5,069,622 (2405th)

SPACER

Bo Rangert, Mölnlycke; Lars Jörnéus; Claes Holmberg, both of Gothenburg, and Matts Andersson, Fåker, all of Sweden, assignors to Nobelpharma AB, Gothenburg, Sweden

Reexamination Request No. 90/003,331, Feb. 9, 1994.

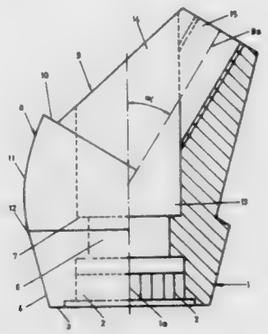
Reexamination Certificate for Patent No. 5,069,622, issued Dec. 3, 1991, Ser. No. 512,499, Apr. 20, 1990.

Continuation of Ser. No. 271,824, Nov. 16, 1988, abandoned

Claims priority, application Sweden, Nov. 18, 1987, 8704514-2

Int. Cl.[5] **A61C** *8/00*

U.S. Cl. 433—173



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–10 is confirmed.

1. An angulated spacer element adapted at its one end for attachment to a fixture having a threaded aperture and implanted in the jaw bone, said spacer element being adapted at its other end to support a dental prosthesis, comprising:

said spacer element being a unitary member;

said spacer element having a first portion with an end surface thereof permitting abutting engagement with the protruding end of the implanted fixture, said first portion also having a through bore aligned with said threaded aperture in the fixture and defining an internal ledge to enable a screw to pass through said bore, abut said ledge, and threadably engage the threaded aperture in the fixture;

said first portion having means for locking said spacer element in a selectable one of a plurality of rotational, fixed positions in relation to said protruding portion of said fixture;

said spacer element having a second portion for supporting the dental prosthesis on the spacer element, said second portion forming an acute angle with respect to said through bore of said first portion; and

wherein said locking means is adapted to cooperate with an interlocking means provided on the protruding portion of the fixture and wherein one of said means is an n-sided polygon and the other means is a 2n-sided polygon.

REISSUES

SEPTEMBER 27, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,738

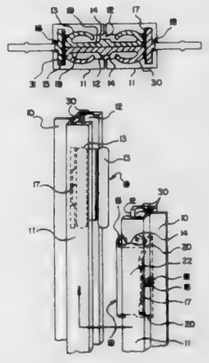
CONCEALED PORTABLE DISPLAY DEVICE FASTENER

Jack R. Brady, 910 N. Brooklyn Rd., Monroe, Utah 84754

Original No. 5,081,749, dated Jan. 21, 1992, Ser. No. 670,315, Mar. 15, 1991. Application for reissue Jun. 15, 1992, Ser. No. 904,048

Int. Cl.[5] **A44B** *17/00*

U.S. Cl. 24—577 **37 Claims**



21. A fastener for coupling panels together comprising

an elongate channel including on one side, means for attaching the channel to an edge of a panel, and on another side, an open end keyway enlarged inside the opening, and a breech formed in communication with the keyway,

clip means having a flexible enlargement at one end for snugly fitting within the enlarged portion of a keyway of a channel, and a plate means at the opposite end generally forming a T shape for fitting within a breech of a different channel, the plate means having a configuration such that the plate means is securely held in the breech as force directed away from the breech is applied to the clip means, and

means for securing the plate means in place in the breech of a channel,

wherein two channels can receive, when positioned together with facing keyways, the clip means disposed in the channels with the flexible enlargement in an enlarged portion of a keyway of one of the channels, and with plate means in a breech of the other of the channels, such that the two channels are held together.

Re. 34,739

SEAL RETAINING CONFIGURATION FOR HUMIDIFIER

Kirk A. Nelson, Minneapolis, and Peter J. Loniello, Richfield, both of Minn., assignors to Dri Steem Humidifier Co., Eden Prairie, Minn.

Original No. 5,099,823, dated Mar. 31, 1992, Ser. No. 559,383, Jul. 25, 1990. Continuation of Ser. No. 395,758, Aug. 18, 1989, abandoned. Application for reissue Oct. 26, 1992, Ser. No. 966,467

Int. Cl.[5] **F24H** *3/14*

U.S. Cl. 126—113 **11 Claims**

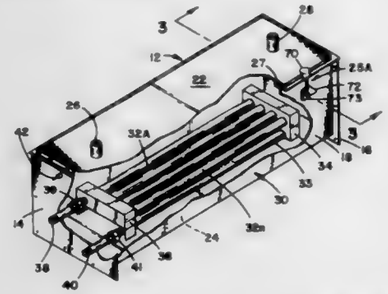
11. An improved reservoir of the type which is used to contain water and steam in a humidifier for a forced air heating system comprising:

a reservoir container having a bottom and at least one wall having an upper edge which defines an open top, said container further comprising a horizontal flange extending inwardly from said upper edge, said horizontal flange having an upper surface and an inner edge;

a compressible gasket on said upper surface of said horizontal flange, said compressible gasket having an uncompressed vertical height and a fully compressed vertical height;

a removable top plate having a bottom surface;

means for fastening said top plate to said container so that said gasket is pressed against and seals said bottom surface of said removable top plate; and



a lip for limiting compression of said compressible gasket, said lip being positioned between said upper surface of said horizontal flange and said bottom surface of said removable top plate, said lip having a vertical height which is less than said uncompressed vertical height of said gasket but greater than said compressed vertical height, whereby limited compression of said gasket for sealing purposes is allowed but over compression of said gasket which could elastically deform said gasket is prevented.

Re. 34,740

ADSORPTIVE RESIN FOR MICROORGANISMS

Nariyoshi Kawabata, Osaka; Akinori Minami, and Tadahira Yo, both of Ibaragi, all of Japan, assignors to Japane Vilkene Company, Ltd., Tokyo, Japan

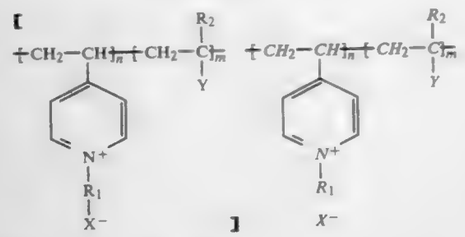
Original No. 5,185,415, dated Feb. 9, 1993, Ser. No. 809,208, Dec. 13, 1991. Continuation of Ser. No. 550,967, Jul. 11, 1990, abandoned. Application for reissue Dec. 6, 1993, Ser. No. 163,327

Claims priority, application Japan, Jul. 12, 1989, 1-181576

Int. Cl.[5] **C08F** *26/06*

U.S. Cl. 526—265 **13 Claims**

1. A resin for adsorbing microorganisms comprising a vinyl copolymer of the following formula



wherein, R_1 is a benzyl group, an alkyl group of 4 to 16 carbon atoms or a pentafluorophenylmethyl group, R_2 is a hydrogen atom or an alkyl group of 1 to 3 carbon atoms, X is a halogen atom, and Y is a hydrogen atom, an alkyl group of 1 to 3 carbon atoms, a benzyl group, an ether group, a carboxyl

group, a carboxylic acid ester group or an aryl group, said vinyl copolymer being insoluble in water and soluble in organic solvent.

Re. 34,741

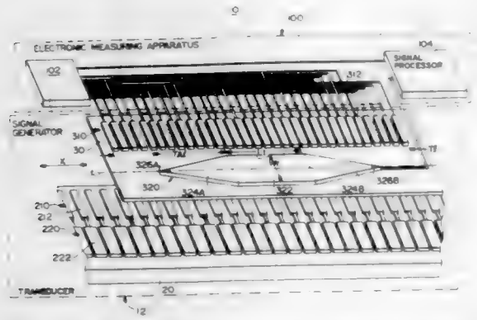
ELECTRODE STRUCTURE FOR CAPACITANCE-TYPE MEASUREMENT TRANSDUCERS

Mils I. Andermo, Kirkland, Wash., assignor to Mitutoyo Corporation, Tokyo, Japan

Original No. 4,959,615, dated Sep. 25, 1990, Ser. No. 359,699, May 31, 1989. Continuation-in-part of Ser. No. 200,368, May 31, 1988, Pat. No. 4,879,508, which is a continuation-in-part of Ser. No. 30,346, Mar. 26, 1987, abandoned, and a continuation-in-part of Ser. No. 31,049, Mar. 26, 1987, abandoned, and a continuation-in-part of Ser. No. 35,859, Apr. 8, 1987, abandoned. Application for reissue Sep. 24, 1992, Ser. No. 950,316

Int. Cl.[5] G01R *27/26*

U.S. Cl. 324—690 70 Claims



41. A capacitance-type measurement transducer comprising:

first and second support members, said support members being relatively displaceable with respect to each other, and at least one of said support members being displaceable relative to a measurement axis;

first and second electrode structures disposed on said first support member;

a third electrode structure disposed on said second support member and capacitively coupling said first and second electrode structures for signal transfer between said first and second electrode structures through said third electrode structure;

said first and second electrode structures each having an elongate configuration extending in the direction of the measurement axis, and one of said first and second electrode structures having two end portions configured such that the degree of coupling between said first and second electrode structures, through said third electrode structure, decrease relative to the measurement axis along the extent of each end portion, and such that the respective directions of the decrease in the degree of coupling for said two end members are opposite to each other, so that the effect of tilt between said first and second support members on signal transfer between said first and second electrode structures is reduced.

Re. 34,742

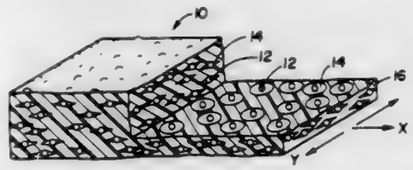
SHAPED ARTICLES FROM ORIENTABLE POLYMERS AND POLYMER MICROBEADS

Larry K. Maier; Elizabeth K. Priebe, both of Rochester; Jong S. Lee, Pittsford; Paul E. Woodgate, Spencerport, all of N.Y., and Glen C. Smith, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Original No. 4,994,312, dated Feb. 19, 1991, Ser. No. 457,894, Dec. 27, 1989. Application for reissue Sep. 4, 1991, Ser. No. 754,951

Int. Cl.[5] B32B *3/26, 5/16;* D02G *3/00*

U.S. Cl. 428—36.5 17 Claims



1. A shaped article selected from the group [comprising] *consisting of* films, sheets, bottles, tubes, fibers and rods wherein said article comprises a continuous oriented polymer phase selected from the group [comprising] *consisting of* ep polyesters and polypropylene having dispersed therein microbeads of a cross-linked polymer coated with a slop agent and which are at least partially bordered by void space *formed from substantially closed cells so that substantially no open fluid transport path extends across opposed sides of said article, said microbeads being present in an amount of about* 5–50% by weight based on the weight of said oriented polymer, said void space occupying about 2–60% by volume of said shaped article wherein said cross-linked polymer comprises polymerizable organic material which is a member selected from the group consisting of an alkenyl aromatic compound having the general formula

$$Ar-\overset{R}{\overset{|}{C}}=CH_2$$

wherein Ar represents an aromatic hydrocarbon radical, or an aromatic [halohydracarbon] *halohydrocarbon* radical of the benzene series and R is hydrogen or the methyl radical; acrylate-type monomers include monomers of the formula

$$[\ CH_2=\overset{R'}{\overset{|}{C}}-\overset{O}{\overset{\|}{C}}-OR\ ]$$

$$CH_2=\overset{R'}{\overset{|}{C}}-\overset{O}{\overset{\|}{C}}-OR$$

wherein R is selected from the group consisting of hydrogen and an alkyl radical containing from about 1 to 12 carbon atoms and R' is selected from the group consisting of hydrogen and methyl; copolymers of vinyl chloride and vinylidene chloride, acrylonitrile and vinyl chloride, vinyl bromide, vinyl esters having the formula

$$CH_2=CH-O-\overset{O}{\overset{\|}{C}}-R$$

wherein R is an alkyl radical containing from 2 to 18 carbon atoms; acrylic acid, methacrylic acid, itaconic acid, citraconic acid, maleic acid, fumaric acid, oleic acid, vinylbenzoic acid; the synthetic polyester resins which are prepared by reacting terephthalic acid and dialkyl terephthalics or ester-forming derivatives thereof, with a glycol of the series $HO(CH_2)_nOH$, wherein n is a whole number within the range of 2–10 and having reactive olefinic linkages within the polymer molecule,

the hereinabove described polyesters which include copolymerized therein up to 20 percent by weight of a second acid or ester thereof having reactive olefinic unsaturation and mixtures thereof, and a cross-linking agent selected from the group consisting of divinylbenzene, diethylene glycol dimethacrylate, oiallyl fumarate, diallyl phthalate and mixtures thereof.

Re. 34,743

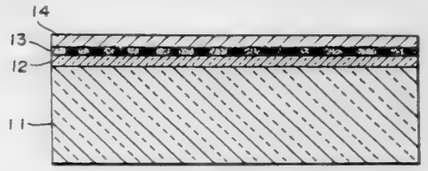
DECORATIVE PLATE

Yasukichi Ogasawara; Kazuo Ishige, and Keizo Ogata, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Original No. 5,019,440, dated May 28, 1991, Ser. No. 417,077, Oct. 4, 1989. Continuation-in-part of Ser. No. 269,715, Nov. 10, 1988, abandoned. Application for reissue May 20, 1993, Ser. No. 63,681

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—195 19 Claims



1. A decorative glass plate comprising a primer layer of light-permeable polyurethane resin which is a room temperature-curing resin and has a thickness of *1 to* 100 μm a transfer-printing layer of a printed image formed of an ink containing a pigment and a binder, and a cured resin layer, these layers being formed consecutively on one surface of a light-permeable glass plate.

Re. 34,744

ANTI-CORROSIVE BATTERY TERMINAL

Charles A. Sykes, 1928 Big Bend Rd., Adrian, Oreg. 97901

Original No. 4,938,706, dated Jul. 3, 1990, Ser. No. 181,342, Apr. 14, 1988. Application for reissue Jul. 2, 1992, Ser. No. 909,224

Int. Cl.[5] H01R *4/60, 4/46*

U.S. Cl. 439—202 40 Claims

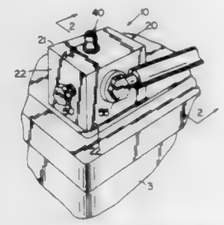
26. A battery connector assembly for detachably connecting in electrical conduit to a pole of a battery, said assembly comprising:

(a) a pole connector located on said battery and having an external surface area;

(b) a terminal block detachably mounted on said battery and having an outer surface, said terminal block defining a socket having an interior which surrounds said external surface area of said pole connector, and defining an entryway to said socket through which said pole connector enters said socket;

(c) a bottom surface portion of said outer surface of said terminal block surrounding said entryway, for impeding fluid flow through said entryway from the interior of said socket in cooperation with a surface of the battery;

(d) fluid conduit means in said terminal block communicating between the interior of said socket and the outer surface of said terminal block independently of said entryway for conducting fluid from said outer surface to the interior of said socket;



(e) the interior of said socket loosely surrounding said pole connector so as to leave a fluid-containing space between a first portion of said external surface area of said pole connector and the interior of said socket; and

(f) engagement means on the interior of said socket engaging said pole connector while covering not more than a second portion of said external surface area of said pole connector so as to leave said first portion of said external surface area exposed to said fluid-containing space, said first portion of said external surface area being interposed between said bottom surface portion of said outer surface of said terminal block and said second portion of said external surface area.

Re. 34,745

HIGH PURITY PROCESS FOR THE PREPARATION OF 4,6-DIAMINO-1,3-BENZENEDIOL

Zenon Lysenko, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Original No. 4,766,244, dated Aug. 23, 1988, Ser. No. 925,358, Oct. 30, 1986. Continuation of Ser. No. 570,678, Aug. 22, 1990, abandoned. Application for reissue Nov. 9, 1992, Ser. No. 973,925

Int. Cl.[5] C07C *213/00*

U.S. Cl. 564—418 12 Claims

9. A process comprising the step of contacting a 1,2,3-trihalo-4,6-dinitrobenzene with an alkanol and a base that can generate hydroxide ion under conditions such that a 4,6-dinitro-2-halo-1,3-benzenediol is formed.

PLANT PATENTS

GRANTED SEPTEMBER 27, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,910

HYBRID TEA ROSE PLANT NAMED HADSATIN

Harvey D. Davidson, #3 El Verano Rd., Orinda, Calif. 94563

Filed Oct. 18, 1993, Ser. No. 137,553
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described.

8,911

HYBRID TEA ROSE PLANT NAME HADFLARE

Harvey D. Davidson, #3 El Verano Rd., Orinda, Calif. 94563

Filed Oct. 15, 1993, Ser. No. 143,580
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described.

8,912

INTERSPECIFIC ROOTSTOCK "VIKING"

Chris F. Zaiger, 537 Rosemore Ave.; Gary N. Zaiger, 1907 Elm Ave.; Leith M. Gardner, 1207 Grimes Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Aug. 2, 1993, Ser. No. 100,284
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—42.1 **1 Claim**

1. A new and distinct interspecific rootstock tree substantially as illustrated and described which is of large size, vigorous upright in growth (the variety being particularly characterized by its ability to reproduce by cuttings planted directly in the field), is well anchored with a deep root system, produces little to no root suckers, is compatible with almonds and peaches; in comparison to trees budded to Nemaguard rootstock the scion tree is approximately 25% larger in size, having greater production of fruit and nuts.

8,913

INTERSPECIFIC ROOTSTOCK TREE "ATLAS"

Chris F. Zaiger, 537 Rosemore Ave.; Gary N. Zaiger, 1907 Elm Ave.; Leith M. Gardner, 1207 Grimes Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Jan. 19, 1994, Ser. No. 183,352
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—43.1 **1 Claim**

1. A new and distinct interspecific rootstock tree, substantially as illustrated and described, characterized by its large size, vigorous upright growth, having the ability to be asexually reproduced by cuttings when planted directly into the field and developing a well anchored, deep root system; in comparison to scions budded on the Nemaguard rootstock, the scion variety is approximately 25% larger in size, having greater fruit production with larger size fruit.

8,914

PETUNIA PLANT NAMED CAS 51

Gabriel Danziger, Post Beit Dagan, Israel, assignor to Florfis AG, Binningen, Switzerland

Filed Dec. 7, 1993, Ser. No. 162,349
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of petunia plant named Cas 51, as illustrated and described.

8,915

PETUNIA PLANT NAMED CAS 45

Gabriel Danziger, Post Beit Dagan, Israel, assignor to Florfis AG, Binningen, Switzerland

Filed Dec. 7, 1993, Ser. No. 162,350
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of petunia plant named Cas 45, as illustrated and described.

8,916

IMPATIENS PLANT NAMED BAROQUE

Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Dec. 9, 1993, Ser. No. 163,768
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of Impatiens plant named Baroque, as illustrated and described.

8,917

IMPATIENS PLANT NAMED ALLEGRO

Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Dec. 9, 1993, Ser. No. 163,769
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of Impatiens plant named Allegro, as illustrated and described.

PATENTS

GRANTED SEP. 27, 1994

ERRATA

For CLASS	See PATENT NO.
004-250	5,349,703
451-314	5,349,784
451-357	5,349,785
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348-725	5,351,130
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361-681	5,351,176
347-069	5,351,183
372-002	5,351,248
379-067	5,351,276

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GRANTED SEPTEMBER 27, 1994

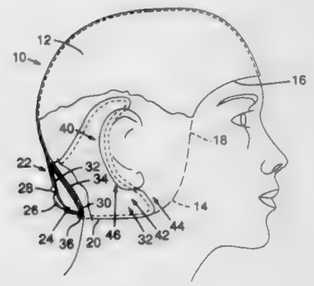
GENERAL AND MECHANICAL

5,349,702

LEAK-PROOF CAP WITH IMPROVED SEAL CONSTRUCTION

John L. Runckel, Lake Oswego, Oreg., assignor to John L. Runckel, Trust, Portland, Oreg., John Runckel and Markie W. Runckel, Cotrustees

Filed Jan. 21, 1993, Ser. No. 6,472
Int. Cl.[5] A42B *1/12*
U.S. Cl. 2—68 **6 Claims**



1. A leak-proof cap comprising:

a cap body of pliant material having an edge, the edge extending across the nape of a wearer's neck, adjacent the wearer's ears, and across the forward part of the wearer's head; and

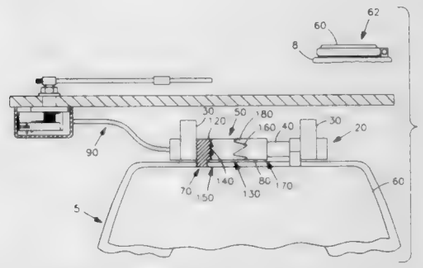
sealing structure positioned on the inside of the cap body adjacent said edge, said sealing structure including, for each of the wearer's ears, an inflatable bladder portion positioned directly below the wearer's ear and adjacent the mandible, said portion extending upwardly along at least a part of the rear of the ear and across the mastoid process.

5,349,703

TOILET LID FOR FLUSHING A TOILET

Gabriel C. Mocilnikar, 3437 Calle La Veta, San Clemente, Calif. 92672; Roger Edwards, 15502 Pelican La., Huntington Beach, Calif. 92649, and James Tipton, 26586 Paseo Carmel, San Juan Capistrano, all of Calif. 92675

Filed Oct. 5, 1993, Ser. No. 131,694
Int. Cl.[5] E03D *5/04*
U.S. Cl. 4—250 **2 Claims**



1. A toilet lid assembly for a toilet of the type having a toilet bowl and water flow control means for admitting water into the toilet bowl for flushing the same, the toilet lid assembly comprising:

a hinge means providing a pair of standoffs adapted to be attached to the toilet bowl and extending upwardly therefrom, a horizontal hinge bar supported therebetween, and a water flow actuation means adapted to be engaged with the hinge bar and the water flow control means;

the water flow actuation means comprising a first sleeve rotatably mounted on the hinge bar having sleeve teeth arranged annually at one end thereof, a second sleeve mounted on the hinge bar and restrained for linear motion thereon, and a toothed sprocket having sprocket teeth arranged annually at one end thereof for mating with the sleeve teeth on the first sleeve in rotational engagement on the hinge bar, the sleeve teeth and the sprocket teeth shaped so that rotation of the toothed sprocket drives the first sleeve in rotation therewith in one direction only;

a lid attached to the toothed sprocket for rotation between a horizontal position for covering the toilet bowl and a near vertical position for uncovering the toilet bowl, such that as the lid is rotated from the near vertical position to the horizontal position, the first sleeve is rotated on the hinge bar in said one direction;

the first sleeve further comprising a plurality of first annular engagement fingers on an end opposite said one end, the second sleeve mounted on the hinge bar adjacent to the first sleeve and comprising a plurality of second annular engagement fingers at one end thereof positioned for interlocking with the first engagement fingers, the first and second fingers shaped such that as the first sleeve rotates about the hinge bar, driven by the toothed sprocket, the second sleeve is caused to slide along the hinge bar in linear motion away from the first sleeve;

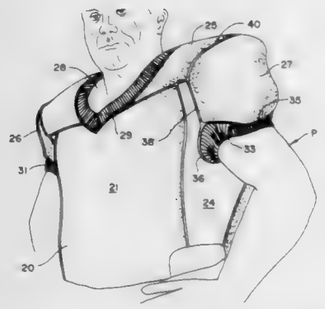
a flexible cable means interconnecting the second sleeve with the flow control means so that as the second sleeve is caused to move away from the first sleeve the cable means is caused to actuate the flow control means for flushing the toilet.

5,349,704

FOOTBALL JERSEY WITH TAILORED SLEEVE

Charles Masters, Cookeville, Tenn., assignor to Wilson Sportiong Goods Co., Chicago, Ill.

Filed May 3, 1993, Ser. No. 56,504
Int. Cl.[5] A41B *1/00;* **A41D** *27/00, 27/10*
U.S. Cl. 2—115 **10 Claims**



1. A football jersey adopted to be worn over shoulder pads comprising:

a front panel adapted to cover the front torso of a wearer,

a back panel adapted to cover the back torso of a wearer,

right and left side panels extending between the front and back panels and adapted to cover the side torso of a wearer,

the front panel, back panel, and said panels forming a tubular enclosure for the torso of a wearer,

right and left shoulder portions extending between the front

and back panels and adapted to extend over the shoulder pads,

a right sleeve extending outwardly from the right shoulder portion and the right side panel,

a left sleeve extending outwardly from the left shoulder portion and the left side panel,

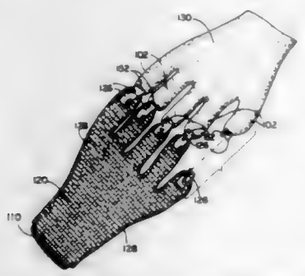
each of the sleeves having a free edge which is not attached to the shoulder portions or side panels, each of the side panels having an upper portion which is located between the front and back panels and which does not extend outwardly beyond the tubular enclosure so that the side panel does not extend outwardly below the arm of a wearer, the upper portion of each side panel having a free edge portion which is not connected to the front panel, back panel, or shoulder portions and which is adapted to extend along the side torso of a wearer from adjacent the front panel to adjacent the back panel, the free edge of the right sleeve cooperating with the free edge portion of the right side panel to form a right arm opening and the free edge of the left sleeve cooperating with the free edge portion of the left side panel to form a left arm opening, whereby the jersey will fit tightly below the arms of a wearer without any excess material of the side panels extending below the arms of a wearer.

5,349,705

FIREFIGHTER'S GLOVE AND METHOD OF MANUFACTURE

Thomas G. Ragan, Germantown, Tenn., assignor to Shelby Group International Inc., Memphis, Tenn.

Filed Jul. 12, 1991, Ser. No. 729,720
Int. Cl.[5] A41D *19/00*
U.S. Cl. 2—161.6 **18 Claims**



11. A method for producing a multi-layer glove comprising the steps of:

providing a (1) glove-shaped exterior glove layer, (2) a moisture barrier layer having a peripheral seal and extension portions extending outwardly from the seal, and (3) an inner liner, each having an outer surface, an inner surface and a plurality of finger portions;

attaching the inner liner to the moisture barrier layer by stitching through the moisture barrier layer only in the extension portions extending outwardly from the peripheral seal of the moisture barrier layer, whereby the glove-shaped portion of the moisture barrier layer remains unpunctured;

reversing the moisture barrier layer to overlie the inner liner;

affixing attachment tabs to the moisture barrier layer using an adhesive bond, the tabs overlying the finger portions of the outer surface of the moisture barrier layer; and

attaching the finger portions of the outer glove layer to the attachment means by stitching,

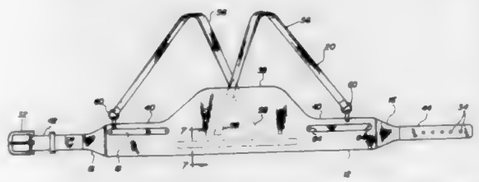
whereby the glove-shaped portion of the moisture barrier layer remains unpunctured.

5,349,706

WORK BELTS WITH LUMBAR SUPPORTS, STRETCHABLE SIDE PANELS AND INTERCHANGEABLE POUCHES

Timothy S. Keer, 101 E. Phillips St., Coaldale, Pa. 18218

Filed Dec. 27, 1993, Ser. No. 172,911
Int. Cl.[5] A41F *19/00*
U.S. Cl. 2—300 **5 Claims**



2. A work belt with lumbar support, stretchable side panels and interchangeable pouches comprising:

a main belt structure having a buckle at one end and holes at the other end for removable coupling with respect to the buckle and with a central section of an increased height;

a lumbar support extending laterally within the central section and fabricated of a elastomeric material;

elastic panels secured to the belt at locations laterally spaced from the lumbar support;

pouch support straps located on the belt laterally disposed on opposite sides of the lumbar support for receiving any one of a plurality of interchangeable pockets;

suspender straps permanently secured to a central extent of the belt structure with opposite ends releasably secured to the upper edges of the belt near the buckle and holes; and

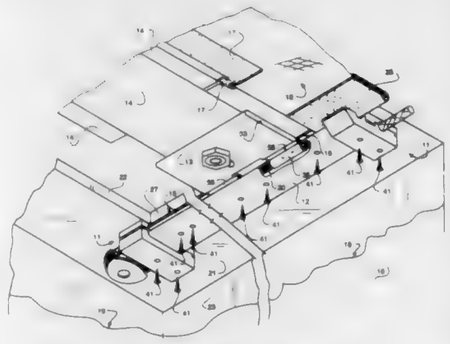
a plurality of interchangeable pockets adapted to be secured to the support straps.

5,349,707

SPLIT STOP FOR AUTOMATIC SWIMMING POOL COVERS WITH A HYDRAULIC DRIVE SYSTEM

Harry J. Last, 482 W. Latimer, Campbell, Calif. 95008

Continuation-in-part of Ser. No. 913,796, Jul. 16, 1992, Pat. No. 5,327,590, which is a continuation-in-part of Ser. No. 741,480, Nov. 28, 1991, Pat. No. 5,184,537, which is a continuation-in-part of Ser. No. 494,564, Mar. 16, 1990, Pat. No. 5,067,184, which is a continuation-in-part of Ser. No. 258,000, Oct. 17, 1988, Pat. No. 4,939,798. This application Sep. 7, 1993, Ser. No. 117,293
Int. Cl.[5] E04H *3/19*
U.S. Cl. 4—502 **14 Claims**



2. A positive stop for arresting translation of a slider captured and sliding within a "C" channel of a pool cover track anchored to a cable extending from a front corner of a beaded

side edge of a pool cover at an end of the pool cover track, comprising, in combination,

a) a top member having a mating surface with two parallel half cylinder channels with lands defining an alignment slot between the channels,

b) a base member having a complementary mating surface to that of the top member with two parallel half cylinder channels and a central alignment rail between the channels dimensioned to fit into the alignment slot of the top member, the alignment rail extending perpendicularly from a side of the base member, and

c) means for securing the top and base members together and at the end of the pool cover track with the alignment rail extending perpendicularly from the side of the base member inserted into a rectangular space between the "C" channel and a cable channel of the pool cover track which aligns the mating half cylinder channels of the top and base members with the corresponding cable return and "C" channels of the track, the mating surfaces of the top and base members defining:

(i) a cylindrical cable channel; and

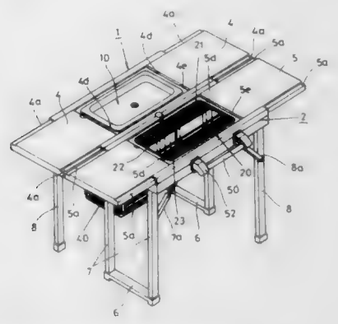
(ii) a longitudinally slit, cylindrical, beaded cover edge channel dimensioned for stopping translation of the slider while allowing passage of the beaded edge of the cover through the stop.

5,349,708

FOLDABLE KITCHEN SINK

Hae-Sup Lee, 1467-16, Seocho-Dong, Seocho-Ku, Seoul, Rep. of Korea

Filed Oct. 15, 1993, Ser. No. 138,231
Claims priority, application Rep. of Korea, May 25, 1993, 93-9121; Jul. 26, 1993, 93-14023
Int. Cl.[5] E03C *1/186*
U.S. Cl. 4—638 **12 Claims**



1. A foldable kitchen sink comprising:

a pair of support members, each having an upper and lower surface, said members being hinged to each other such that said upper surfaces may be deployed in a facing folded position or in a generally coplanar unfolded position, one of said support members having a dishwater bucket detachably mounted thereto and the other of said support members having a grille detachably mounted thereto;

a pair of upper panels attached to two sides respectively of each said support member such that said panels may selectively cover said dishwater bucket or said grille respectively in a folded position;

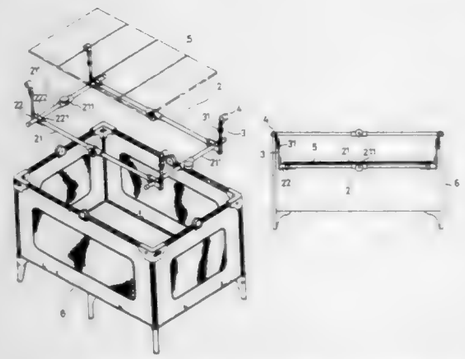
a pair of twin legs and a pair of single legs, one of each hinged to said lower surface of each said support member such that in said unfolded position said twin legs are diagonally opposed to each other and said single legs are diagonally opposed to each other, said twin legs and said single legs being foldable onto said lower surfaces, and each of said twin legs comprising two legs connected to each other by a support beam extending therebetween.

5,349,709

ELEVATED FLOORBOARD FRAME FOR A PLAYPEN AND BABY BED

Ying-Hsiung Cheng, San Diego, Calif., assignor to Top Fortune Ltd., San Diego, Calif.

Filed Dec. 21, 1993, Ser. No. 170,834
Int. Cl.[5] A47D *7/03*
U.S. Cl. 5—93.1 **1 Claim**



1. An adjustable and foldable floorboard frame system for a playpen, baby bed or crib comprising:

a frame body consisting of (1) a pair of parallel longitudinally directed rods, and (2) a pair of parallel laterally directed rods, each of said longitudinally directed rods being formed of respective rod sections connected pivotally each to the other by a connector at a first end of each rod section, a second end of each rod section is pivotally connected within an open end of a U-shaped connector, each of said parallel laterally directed rods being formed of respective lateral rod sections connected pivotally with a lateral connector at a first end of each lateral rod section a second end of each of said lateral rod sections is connected to a respective U-shape connector located at each of four corners of said frame body;

four support bands respectively having a lower end protruding through a vertically formed hole in each of said U-shaped connectors bent upon itself and riveted firmly holding an end of said U-shaped connector, and an adjusting hook mounted around each said support band for adjusting the length of each said support band;

a hanging hook being fixed at a top section of each of said support bands for capturing lateral rods of said playpen, baby bed, or crib; and,

a floorboard having a plurality of foldable boards foldably connected together being laid on said frame body for a baby to lie thereon.

5,349,710

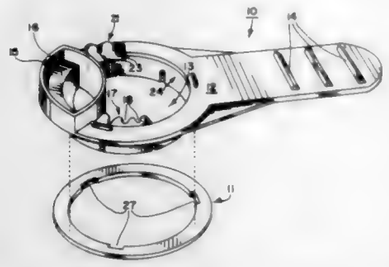
FLEXIBLE BAG RETAINING DEVICE

William P. Dunn, 801 N. Pitt St. Apt. 206, Alexandria, Va. 22314

Filed Oct. 15, 1992, Ser. No. 961,414
Int. Cl.[5] B65B *67/00*
U.S. Cl. 5—503.1 **9 Claims**

1. A bag retaining device comprising: an elongated member, said elongated member defining an aperture, a flange, said flange depending from said elongated member and surrounding said aperture, a retaining ring, said ring positionable on said

flange for maintaining the mouth of a flexible bag on said flange and a liquid reservoir, said reservoir positioned on said



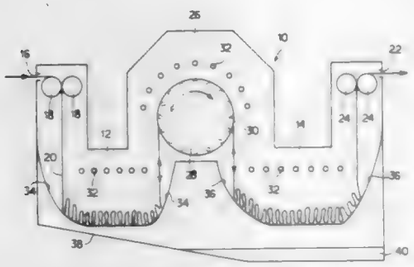
elongated member proximate said aperture and extending downwardly along said flange.

5,349,711

CLOTH TREATMENT METHOD

Hideo Iwami, Kyoto, Japan, assignor to Naigai Specinl Dying Co., Ltd., Kyoto, Japan

Filed Jul. 27, 1992, Ser. No. 919,413
Claims priority, application Japan, Jul. 29, 1991, 3-212615
Int. Cl.[5] D06B *3/32*
U.S. Cl. 8—152 1 Claim



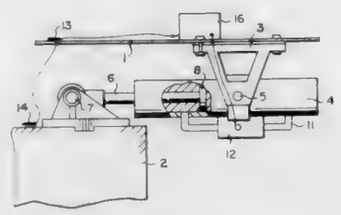
1. A method of treating a cloth which comprises the steps of:
feeding an elongated belt-like cloth to be treated into a treatment tank which is divided into a front chamber and a rear chamber, and in which a cylindrical rotary member comprising a plurality of rods is arranged on the midway of a passage communicating said mentioned two chambers, to form a rotatably supported cylinder;
stopping said feed of the cloth at the time when a predetermined length of the cloth has been received in an inner bottom of the front chamber;
driving the cylindrical rotary member so as to convey the cloth at high speed from the front chamber to the rear chamber while causing the cloth taken up on the cylindrical rotary member to sequentially contact each of the rods forming a cylindrical surface of the cylindrical rotary member so that the cloth is rubbed, kneaded and squeezed by the plurality of rods of the rotary member;
stopping said conveyance of the cloth to the rear chamber at the time when a predetermined length of the cloth has been received in an inner bottom of the rear chamber;
driving the cylindrical rotary member in reverse direction so as to convey the cloth at high speed while causing the cloth taken on the cylindrical rotary member to sequentially contact each of the rods;
stopping said conveyance of the cloth to the front chamber at the time when a predetermined length of the cloth is received in the inner bottom of the front chamber;
repeating said every step of conveyance of the cloth between the front and rear chambers required number of times;
applying a treating solution such as washing water from injection pipes respectively provided in the front and rear chambers and in the vicinity of the cylindrical rotary member to the cloth during the repetition of said every step; and
sending out the cloth of which treatment has been completed and which has been received in the inner bottom of the treatment tank,
wherein a high pressure air is mixed with a water or hot water, and the high pressure air is supplied together with the water or hot water to the cloth through each of the injection pipes disposed in the front and rear chambers and in the vicinity of the cylindrical rotary member.

5,349,712

VARIABLE DAMPER FOR BRIDGES AND BRIDGE

Kazuhiko Kawashima; Shigeki Unjoh, both of Tsukuba, and Hideyuki Shimizu, Fukushima, all of Japan, assignors to Public Works Research Institute, Ministry of Construction, Tsukuba, Japan

Filed Nov. 3, 1992, Ser. No. 970,720
Claims priority, application Japan, Nov. 7, 1991, 3-291261
Int. Cl.[5] E01D *19/12*
U.S. Cl. 14—73.5 4 Claims



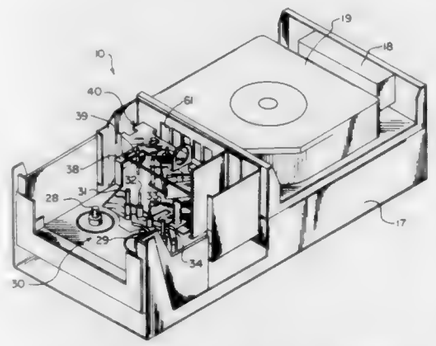
1. In a bridge having a superstructure and a substructure, a variable system, comprising a damper and means for changing the damping coefficient of the damper in response to vibration of the bridge, the damper attached to the superstructure and substructure of the bridge.

5,349,713

MAGNETIC TAPE CLEANING SYSTEM

Jerome P. Stimpfl, 2545 Vine Pl., Boulder, Colo. 80304, assignor to Jerome P. Stimpfl, Boulder, Colo.

Filed Nov. 25, 1992, Ser. No. 981,713
Int. Cl.[5] G11B *3/58*
U.S. Cl. 15—1.51 14 Claims



1. Apparatus for cleaning an elongated magnetic tape media having two surfaces, the tape media being intended for use in extremely high data density applications, comprising:
means for moving the tape media along a predetermined path;
means engaging one surface of the tape media with a wiping media at a first location;

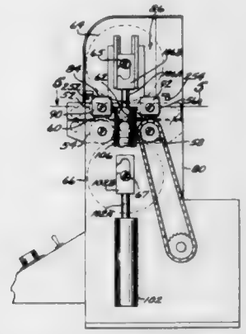
means for driving air through a flow path including said first location thereby passing air across both surfaces of the tape media;
means for ionizing the air in said flow path prior to passage thereof over both surfaces of the tape media,
said ionizing means including an electrostatic discharge grid in said flow path, and
means for applying a potential voltage across said grid for ionizing the air in said flow path.

5,349,714

SHEET CLEANING APPARATUS

John A. Korbonski, San Juan Capistrano, and Eugene C. Greenwood, Costa Mesa, both of Calif., assignors to Systems Division Incorporated, Mission Viejo, Calif.

Filed Oct. 26, 1993, Ser. No. 143,361
Int. Cl.[5] B08B *11/00*
U.S. Cl. 15—3 30 Claims



1. A sheet cleaning apparatus for cleaning foreign particles from at least one surface of a sheet, comprising:
a frame;
a sheet cleaning roller rotatably mounted on said frame for rotation about a sheet cleaning roller axis and comprising a layer of resilient material defining a peripheral roller surface with a high surface tack adapted to transfer foreign particles from said sheet to said peripheral roller surface upon contact and subsequent separation therebetween while affording clean separation between the sheet and said peripheral surface;
a roller cleaning member having a contact surface with a width about the same as a width of said sheet cleaning roller surface, said contact surface having a greater surface tack with respect to said foreign particles than said sheet cleaning roller surface, said contact surface adapted to transfer said foreign particles from said peripheral surface of said cleaning roller to said contact surface of said roller cleaning member, said roller cleaning member comprising a roll having an external surface defining said contact surface and a cleaning element axis arranged substantially parallel to said roller axis; and
means for applying a selectively adjustable preload force to urge said contact surface into contact with said roller surface during sheet cleaning operation of said apparatus.

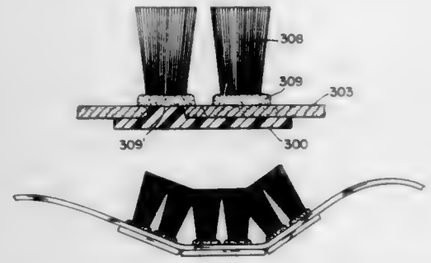
5,349,715

BRUSH FABRIC CLEANER

John C. Lewis, Jr., Salisbury, Vt., assignor to Tucel Industries, Inc., Forest Dale, Vt.

Filed Sep. 4, 1992, Ser. No. 941,273
Int. Cl.[5] A47L *13/12*
U.S. Cl. 15—114 9 Claims

1. A brush fabric combination cleaning device comprising:
a fabric body having an upper surface and an under surface, at least a first and a second parallel synthetic monofilament tufts radiating generally at 90 degrees from said fabric's upper surface;
a tuft receiving member having at least one groove running through said member's surface separating said member into two tuft sections, each of said two sections located on said fabric's under surface side directly under said tufts;
a first one of said tufts located over and integral with one of the two tuft sections;



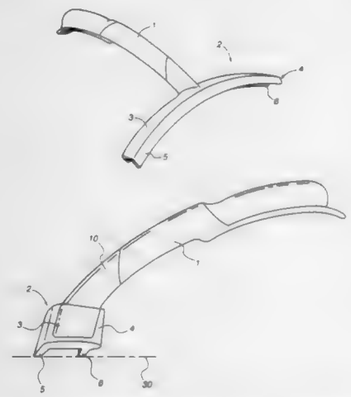
a second tuft located over and integral with the second tuft section;
said fabric body located between said tufts and integral tuft receiving member and a portion thereof encased therein;
whereby when the device is flexed said tufts change from a parallel attitude.

5,349,716

SQUEEGEE DEVICE INCLUDING A RESILIENTLY FLEXIBLE BLADE ARRANGEMENT

Robert W. Millar, Prospect, Australia, assignor to Robert Hicks Pty Ltd., Preston, Australia

Continuation of Ser. No. 995,348, Dec. 22, 1992, abandoned, which is a continuation of Ser. No. 767,067, Sep. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 501,654, Mar. 29, 1990, Pat. No. D. 328,807. This application Sep. 13, 1993, Ser. No. 120,634
Claims priority, application Australia, Oct. 3, 1989, 3241/89
Int. Cl.[5] A47L *1/06, 13/11*
U.S. Cl. 15—245 18 Claims



1. A squeegee comprising: a handle and a resiliently flexible elongated blade arrangement extending substantially transverse to the handle, said blade arrangement having a concave curvature in a longitudinal direction transverse to the handle and including a resiliently flexible blade back, said blade back being substantially flat in lateral cross section without slots to substantially enhance flexure of the blade back and having secured thereto a flexible blade body, said blade body including at least one substantially planar blade member depending therefrom at an acute angle relative to the blade back, said

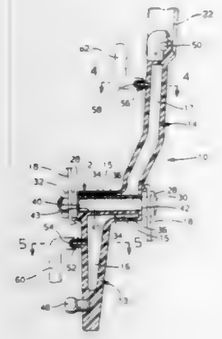
blade back being sufficiently flexible to allow said blade arrangement to deform under application of force so as to enable said blade member to maintain substantial contact with a surface to be wiped.

5,349,717

WET INTEGRAL WINDSHIELD WIPER ARM

Douglas D. Patterson, Centerville; Harry C. Buchanan, Jr., Spring Valley, and Michael J. McClain, Dayton, all of Ohio, assignors to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.

Filed Oct. 14, 1992, Ser. No. 960,624
Int. Cl.[5] B60S *1/34, 1/46, 1/48*
U.S. Cl. 15—250.04 **2 Claims**



1. An integral wiper arm for a vehicle having both a source of pressurized washer fluid and a cowl that supports the arm, the arm comprising:

a pivot having an inner wall, an outer wall and a cavity disposed between the inner wall and the outer wall, the inner wall defining an aperture passing through the pivot;

a crack extending a first length from the pivot having a generally box shaped cross section transverse to the first length of the crank providing an interior cavity, the interior cavity of the crank being fluidly connected to the cavity of the pivot; and

a blade mount extending a second length from the pivot having a generally box shaped cross section transverse to the second length of the blade mount providing an interior cavity, the interior cavity of the blade mount being fluidly connected to the cavity of the pivot, whereby the interconnected cavities provide a path for the pressurized washer fluid through the arm.

5,349,718

WIPER BLADE FOR A VEHICLE WINDSHIELD

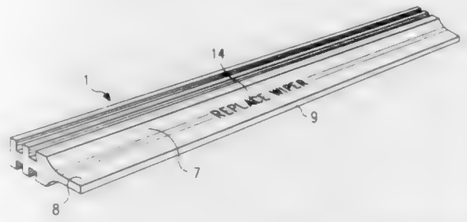
Robert M. Gibbon, Fort Worth, Tex., assignor to JMK International, Inc., Fort Worth, Tex.

Filed Aug. 9, 1991, Ser. No. 742,869
Int. Cl.[5] B60S *1/38, 1/04*
U.S. Cl. 15—250.36 **16 Claims**

9. A wiper, comprising:

an elongate blade of elastomeric material for use in an environment including a source of ultraviolet radiation, and having a finite useful life; and

a marker joined to said blade, said marker including a pigment which is sensitive to ultraviolet radiation, said marker changing color after exposure to a predetermined amount of ultraviolet radiation, such that said marker



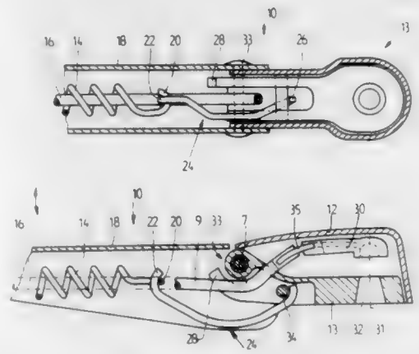
gives visual evidence of whether said blade needs to be replaced.

5,349,719

YOKE FOR WIPER ARM

Bruno Egner-Walter, Kaferflugstr. 43, 7100 Heilbronn, Fed. Rep. of Germany

Filed May 15, 1992, Ser. No. 857,915
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1990, 4029343
Int. Cl.[5] B60S *1/32, 1/46*
U.S. Cl. 15—250.35 **13 Claims**



1. A wiper arm assembly comprising:

a link member pivotally mounted about a pivot axis to a fastening member, said pivot axis having a first plane pass therethrough extending perpendicular to said pivot axis;

said link member holding a hose for conveying washing liquid, said hose being positioned within a bore of a pressure spring,

an elongated yoke having a mid-section and end parts, a first of said end parts connected to said pressure spring and a second of said end parts connected to said fastening member, said hose member extending out of the pressure spring and in the direction of said yoke, wherein said yoke mid-section is connected between both end parts, said end parts lying in said first plane and said mid-section having a portion thereof displaced from said first plane and from a second plane which is perpendicular to said plane and passes through both end parts.

5,349,720

MOP WRINGER

Mario Primeau, St. Leonard, Canada, assignor to Atlantic Promotions Inc., Quebec, Canada

Filed Feb. 4, 1994, Ser. No. 191,521
Claims priority, application United Kingdom, Feb. 4, 1993, 9302150
Int. Cl.[5] A47C *13/60*
U.S. Cl. 15—262 **7 Claims**



1. A mop wringer including the combination of a pail and lid, wherein the lid comprises means to lock the lid to the pail, a first roller mounted for rotation about a first axis in the lid, the lid including a cut-out portion and a panel hinged to the lid and provided within the cut-out portion, the hinged panel rotates about a hinge axis parallel to the first axis, a second roller is mounted to the hinged panel in an area of the hinged panel remote from the hinge axis and the axis of rotation of the second roller is parallel to the first axis, the hinged panel including a forward edge parallel to the first axis and near the second roller, spring means extending between the lid and the hinged panel adapted to urge the hinged panel to a first position wherein the second roller is adjacent to and slightly spaced apart from the first roller forming a nip, and to urge the hinge panel to a second position, different from said first position, when the hinged panel is rotated clockwise about the hinge axis wherein the second roller is spaced downwardly within the pail.

5,349,721

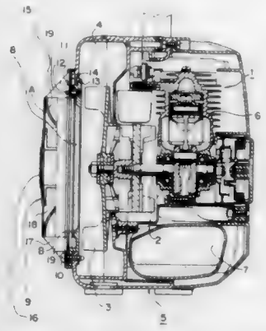
FAN APPARATUS

Yosikazu Iida, Tokyo, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,380
Claims priority, application Japan, Feb. 18, 1992, 4-006426[U]
Int. Cl.[5] A47L *5/22*
U.S. Cl. 15—330 **2 Claims**

1. A fan apparatus comprising: a volute casing; a fan rotor rotatably arranged in said volute casing; an air suction port having a first bell-mouth on said casing for said fan rotor; and an air suction port cover removably provided outside of said volute casing at said air suction port,

said air suction port cover comprising: a bell-mouth shaped member having a second bell-mouth with an arc shaped cross section and formed with an inner bell-mouth surface and an outer bell-mouth surface for guiding air being sucked into said casing through said air suction port in such a manner that air is introduced from a radial side of said air suction port cover, said inner bell-mouth surface defining a first suction passage between said first bell-mouth; and a blind patch member disposed in the space defined by said outer bell-mouth surface with a gap between said blind patch member and said outer bell-mouth



surface of said bell-mouth so that a second suction passage is defined therebetween.

5,349,722

METHODS OF AND APPARATUS FOR CONTAINING AND EVACUATING FLUIDS (II)

Steven Chayer, 4445 S. 168th St., Seatac, Wash. 98188

Continuation-in-part of Ser. No. 725,635, Jul. 3, 1991, abandoned. This application Sep. 4, 1992, Ser. No. 940,651
Int. Cl.[5] A47L *7/00*
U.S. Cl. 15—353 **28 Claims**

1. A fluid containment and removal system for disposing of a fluid on a surface, said system comprising:

a. fluid containment means for trapping the fluid on said surface, the fluid containment means comprising;

i. an elongated, open bottom, vacuum plenum defining member with spaced apart front and back walls and outlet means, vacuum plenum defining member being arranged on said surface such that at least part of the vacuum plenum is directly exposed to said surface,

ii. means for providing structural rigidity to the plenum defining member to maintain the member in its vacuum plenum defining shape, and

iii. means for allowing ingress of fluid from the exterior of the fluid containment means to the vacuum plenum thereof; and

b. means for evacuating from the surface fluid trapped by the fluid containment means, the fluid evacuating means comprising a vacuum pump and a vacuum line so providing fluid communication between the vacuum pump and the outlet means of the fluid containment means as to enable the pump to create a negative pressure in the vacuum plenum of the fluid containment means and thereby:

i. create on the fluid containment means a pressure effective to adhere the fluid containment means to the surface in a manner that allows negative pressure to be maintained within the plenum, and

ii. evacuate fluid from the surface through the ingress allowing means into the vacuum plenum and discharge fluid from the vacuum plenum through the vacuum line.

5,349,723

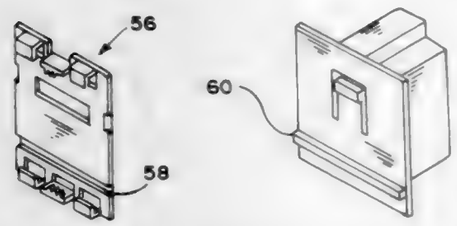
ADJUSTABLE MOUNTING BRACKET WITH A TONGUELESS DRAWER GUIDE

Georg Domenig, 1205 Bayhill Ct., Kernersville, N.C. 27284

Continuation-in-part of Ser. No. 60,838, May 14, 1993, which is a continuation-in-part of Ser. No. 929,754, Aug. 12, 1992, abandoned. This application Jul. 26, 1993, Ser. No. 96,419

Int. Cl.[5] E05D *15/00;* **A47B** *88/00*

U.S. Cl. 16—94 R **3 Claims**



1. A laterally adjustable mounting bracket for use with a drawer maintained by a supporting surface and with a tongueless drawer guide, the bracket comprising: a base plate releasably secured to the supporting surface; a movable drawer guide plate having top, bottom, and side edges cooperatively receiving a tongueless drawer guide and cooperatively associated with the base plate; and means associated with the base plate and guide plate adjustably securing the drawer guide plate to the base plate, wherein the adjustable securing means includes base plate spring members engaging guide plate top and bottom edges to enable preselected lateral adjustment of the drawer and the carried drawer guide and drawer guide plate, the drawer guide plate has a resilient stop and the base plate has an elongated slot and connecting ramp cooperatively receiving and engaging the resilient stop to limit the preselected adjustment of the drawer, drawer guide, and drawer guide plate, and the guide plate and the base plate means includes a support ridge on one of the plates and a channel on the other of the plates cooperatively receiving the support ridge.

5,349,724

HERMETIC SEAL FOR LIQUID CONTAINERS

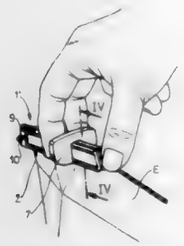
Mario Bracco Barcina, Villarroel St. 253, and Enrique Miro Domenech, c/o Mario Bracco, Villarroel 253, both of, 08036 Barcelona, Spain

Filed Nov. 19, 1992, Ser. No. 978,636

Claims priority, application Spain, Nov. 20, 1991, P 9102573; Nov. 12, 1992, P 9202278

Int. Cl.[5] B65D *77/18*

U.S. Cl. 24—30.5 R **5 Claims**



1. A hermetic seal for liquid containers, comprising:

a flat, rectangular, parallelepiped-shaped element including a hinged mid-plane dividing said element into a first part and a second part over more than one half of a major dimension of said element, said element first part and said second part each having outer faces, each outer face having a longitudinal groove, and each of said first part of said second part having an inner face with longitudinally extending projecting ribs;

a bridge-shaped piece including first and second laterally projecting wings on each side of said peripheral opening, said bridge-shaped element defining a receiving portion between said wings, said receiving portion having an inner surface with inner surface ribs, said inner surface ribs being dimensioned corresponding to said longitudinal grooves for receiving said longitudinal grooves allowing said bridge receiving portion to receive said first part and said second part causing said longitudinal projecting ribs of said first part to move toward said second part in a region adjacent to said longitudinal ribs of said second part as said flat element is moved in sliding action into said receiving part.

5,349,725

JEWELRY CLOSURE HAVING A MAGNETIC CLASP WITH SAFETY FEATURES

Davida Levy, Surfside, Fla., assignor to Davida Enterprises, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 536,777, Jun. 12, 1990, Pat. No. 5,008,984, Ser. No. 688,102, Apr. 19, 1991, Pat. No. 5,092,019, and Ser. No. 844,863, Mar. 2, 1992. This application Nov. 13, 1992, Ser. No. 976,213

The portion of the term of this patent subsequent to Apr. 23, 2008, has been disclaimed.

Int. Cl.[5] A44B *21/00;* **A44C** *5/00*

U.S. Cl. 24—303 **15 Claims**

1. A jewelry closure comprising:

a magnetic closure comprising first and second closure members for engaging together magnetically, wherein at least one of said first and second closure members comprises a magnet;

a mechanical closure comprising a mechanical closure member attached to said first closure member for engaging a complementary portion of said second closure member when said second closure member is held by magnetic attraction to said first closure member, wherein said mechanical closure member comprises a plate having a shaped portion and said second closure member comprises a complementarily shaped portion which engages said shaped portion when said magnetic and mechanical closures are secured.

5,349,726

FASTENING CLOSURE SYSTEM

Eduardo M. Shapiro, Campos Eliseos No. 231, piso 19, Col. Polanco 11550, Mexico

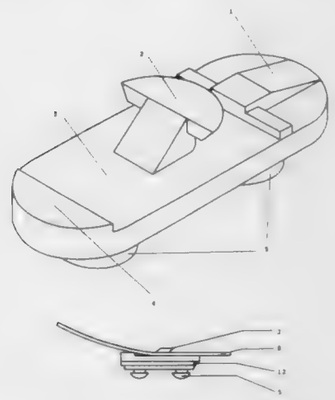
Filed Sep. 14, 1993, Ser. No. 122,046

Claims priority, application Mexico, Jul. 21, 1993, 93 4391

Int. Cl.[5] A43C *7/00;* **A44B** *21/00*

U.S. Cl. 24—713.6 **5 Claims**

1. A fastening closure system for footwear, which is formed by a clasp securely joined to the footwear and wherein the free end of an adjustable belt is locked providing the necessary fitting in order that the footwear stays into its position on the foot of the user, comprising: a clasp having on its upper part a bracket which acts as a butt to prevent the clasp from sliding on the footwear retaining belt; a clasp head portion which enters under pressure and in a sliding manner through buttonholes located on the belt, whereby it is coupled in a cooperative manner in order to provide the fastening of the shoe; and a heel portion acting in a cooperative manner with the head and the bracket of the clasp to keep the belt fixed into its fastening positions; the clasp is provided on its lower part with



two retaining pins entering into two corresponding holes made in the shoe wall and providing the necessary anchoring to the clasp in order to avoid movements of the clasp from its position; a retaining belt joined by one of its end to the shoe side where the clasp is fixed; and a clasp retainer which fastens the clasp by engagement with the clasp retaining pins to avoid the clasp being disjoined from its site by the force effected thereon by the movement of the user's foot.

5,349,727

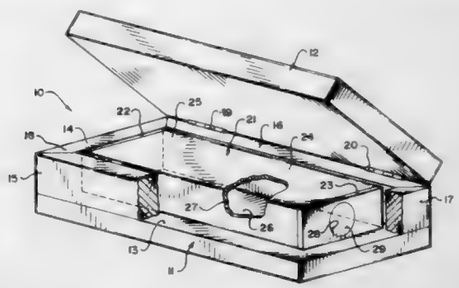
STORAGE CONTAINER FOR CREMATION ASHES

Glenn Niebergall, 1324 Hamilton Street, Regina, Saskatchewan, Canada S4R 2B5

Filed Apr. 23, 1993, Ser. No. 51,246

Int. Cl.[5] A61G *17/00*

U.S. Cl. 27—1 **6 Claims**



1. A storage container for cremation ashes comprising an outer decorative container, formed of an opaque material, comprising a base wall for resting on a support surface and upstanding walls defining a hollow interior, and including an openable lid allowing access to the hollow interior; and an inner container mounted in the hollow interior of the outer container, the inner container being separate from the outer container and removable therefrom through the lid, the inner container being formed of a rigid plastics material and having a base for resting adjacent the base wall of the outer container and cover walls defining with the base a hollow interior of the inner container, one of the base and the cover walls having an opening therein which is closed by a sealed cap so that the base, the cover walls and the sealed cap form a fully closed, sealed enclosure surrounding the hollow interior, and cremation ashes contained within the hollow interior of the inner container, the base and cover walls of the inner container being mechanically connected such that removal of the cover walls through the lid necessarily carries the base therewith.

5,349,728

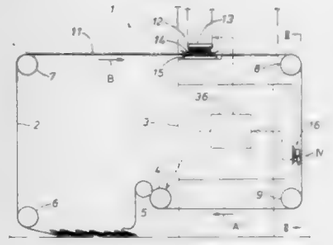
MAGNETIC POSITION MARKER AND CONTROL SYSTEM FOR PRODUCTION OF FELT

Fumio Murakami; Eiichi Morita, both of Saitama; Tokuji Iwasaki, Chiba; Yasushi Suzuki, Tokyo, and Kouha Fujimoto, Osaka, all of Japan, assignors to Nippon Felt Co., Ltd., Japan

Filed May 27, 1992, Ser. No. 889,840

Int. Cl.[5] D04H *17/00;* **G08B** *13/24*

U.S. Cl. 28—107 **10 Claims**



1. A control system for production of felt by needling, comprising:

powered conveying means for conveying ground fabric for said felt in a lengthwise direction of said felt;

needle punch unit for integrally entangling fibers of a fiber web with said ground fabric by repeatedly piercing an assembly of said ground fabric and said fiber web with a plurality of punch needles;

a pair of magnetic markers are secured in lateral alignment to opposite fringe parts of said ground fabric, said magnetic markers including a base sheet and a plurality of magnetized fibers attached to a surface of said base sheet and arranged in a parallel relationship to accommodate the repeated piercing of said markers by the plurality of punch needles;

magnetic sensor means secured to a part of said system for detecting said markers; and

control means for selecting operation parameters of said needle punch unit and said powered conveying means according to a travel of said magnetic markers on said ground fabric as detected by said magnetic sensor means.

5,349,729

METHOD TO CONTROL DRAWING OF A PLURALITY OF SYNTHETIC YARNS

Robert S. Brown, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

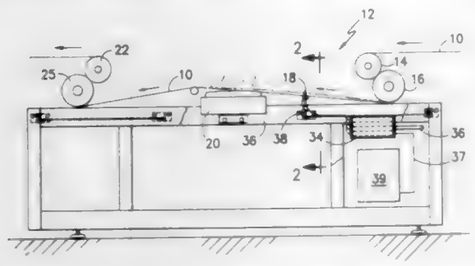
Filed Aug. 2, 1993, Ser. No. 100,426

Int. Cl.[5] D02J *1/22*

U.S. Cl. 28—243 **7 Claims**

1. A method to draw continuous filament synthetic yarn comprising the steps of: supplying a plurality of continuous filament synthetic yarns at one speed from a first set of rolls delivering the yarn to a second set of rolls driven at a second speed higher than the speed of the first set of rolls to draw the

yarn, passing the yarns over a heater between the first set of rolls and the second set of rolls and periodically blowing selected yarns away from the surface of the heater to provide yarns with unset drawn portions thereon.

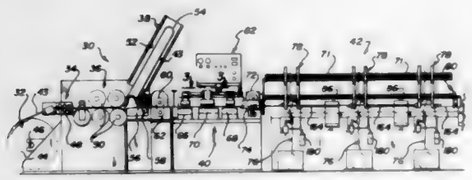


5,349,730

MEHTOD AND APPARATUS FOR ASSEMBLING BLINDS

Richard N. Anderson, Whitesville, Ky.; Dan Hurt, Tupelo, Miss.; Dave Burtnett, Aberdeen, Miss.; Jay Gaskins, Tupelo, Miss., and Jim Wall, Shannon, Miss., assignors to Hunter Douglas Inc., Upper Saddle River, N.J.

Filed Mar. 9, 1993, Ser. No. 28,791
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—24.5 14 Claims



1. An apparatus for assembling blinds from slat material, comprising:

supply means for supplying a continuous length of slat material;

punching and cutting means downstream from said supply means operatively connected to the supply means and receptive of the slat material for punching holes in the slat material at predetermined positions and for cutting the slat material into slats of predetermined length;

outfeed means operatively associated with the punching and cutting means for removing the punched and cut slats from the punching and cutting means; and

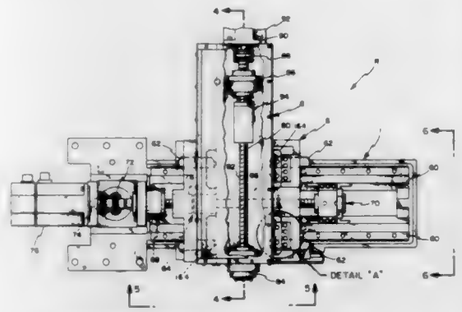
lacing means downstream from said punching and cutting means operatively associated with the outfeed means and having a plurality of spaced lacing towers with tape ladders, said lacing means being receptive of the punched and cut slats for inserting the slats into said tape ladders and further including a guide means extending substantially the entire distance between adjacent lacing towers for guiding the slats into the lacing towers, wherein the guide means includes a cable strung between adjacent lacing towers.

5,349,731

TEMPERATURE COMPENSATED AND SHOCK RESISTANT MACHINE TOOL

Terrence M. Sheehan, Elmira; Jyoti Mukherjee, Elmira Heights; Raymond C. Cady, Horseheads, all of N.Y.; Gary L. Comstock, Gillett, Pa., and Daniel P. Soroka, Horseheads, N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.Y.

Filed May 7, 1991, Ser. No. 696,843
Int. Cl.[5] B23Q *5/22*
U.S. Cl. 29—27 R 8 Claims



1. A machine tool, comprising:

a) a support;

b) a screw having first and second ends;

c) first and second anchors including respective first and second housings for axially securing said first and second ends to said support, respectively;

d) a carriage mounted on said support and movable between said ends of said screw;

e) a nut operably secured to said screw and said carriage such that rotation of said screw causes translational movement of said carriage along said support;

f) said first anchor including a stop operably secured to said first end;

g) a first member operably secured to said first anchor housing and engaging said stop said first member being disposed between said stop and said second end, said first member being selectively axially positionable relative to said first anchor housing

h) whereby axial movement of said first member against said stop and away from said second end elongates said first end by an amount to compensate for thermal growth of said screw during operation.

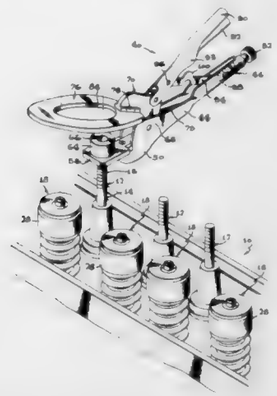
5,349,732

TOOL FOR THE INSTALLATION AND REMOVAL OF VALVES FROM INTERNAL COMBUSTION ENGINES

John O. Spence, P.O. Box 722, Acton, Calif. 93510

Filed Mar. 16, 1993, Ser. No. 31,910
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—221 11 Claims

1. A tool for removing and installing valve springs an overhead valve engine, the overhead valve engine having a stud adjacent the valve spring, the tool comprising a pair of locking type pliers having a first jaw having a tubular member with an aperture therethrough for engaging the stud, a second jaw for engaging the valve spring, said second jaw having an opening therein sufficient to allow the valve retainer to pass therethrough, such that when said first jaw is positioned with the stud extending through said aperture and said second jaw is positioned over the valve spring, said tool can be actuated to a locked position causing said second jaw to compress the spring with said first jaw reacting the force applied to compress the valve spring.

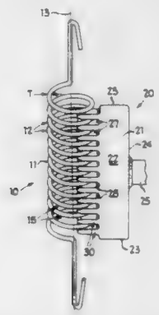


5,349,733

BRAKE SPRING SERVICE TOOL

Kirk E. Mellits, Racine, and Dean J. Iwinski, Muskego, both of Wis., assignors to Snap-on Incorporated, Kenosha, Wis.

Filed Aug. 11, 1993, Ser. No. 104,648
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—227 13 Claims



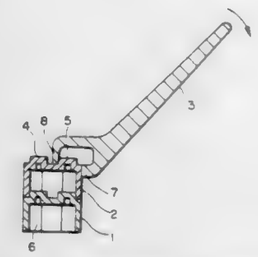
1. A tool for maintaining in an axially extended condition a helical spring including a wire of a predetermined thickness coiled into a plurality of convolutions with a predetermined helix angle, said tool comprising: a body including at least three blades substantially equidistantly spaced apart along an axis by a distance at least as great as the predetermined thickness of the spring wire, each of said blades terminating at a distal end and having a pair of opposed substantially parallel flat planar faces, each of said faces being chamfered at the distal end of the associated blade, each of said faces being inclined at substantially the predetermined helix angle with respect to a plane perpendicular to said axis, whereby said blades are disposable alternately between convolutions of the spring when it is in its axially extended condition to prevent contraction thereof.

5,349,734

TOOL FOR USE IN THE SEPARATION OF ELEMENTS IN A BUILDING SET

Ole V. Poulsen; Carsten Michaelsen, and Kurt Jensen, all of Vejle, Denmark, assignors to Interlego A.G., Baar, Switzerland

PCT No. PCT/DK90/00076, § 371 Date Nov. 20, 1991, § 102(e) Date Nov. 20, 1991, PCT Pub. No. WO90/11112, PCT Pub. Date Oct. 4, 1990
PCT Filed Mar. 19, 1990, Ser. No. 768,577
Claims priority, application Denmark, Mar. 20, 1989, 1352/89
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—239 5 Claims



1. A tool for use in the separation of elements of a toy building set, said elements having a top face provided with coupling means in the form of one of the type consisting of projections and the type consisting of depressions and having a wall part extending transversely to said top face, said elements further having side edges and said coupling means being disposed parallel to a side edge of said elements; said tool comprising:

a lever;

gripper means disposed at one end of said lever, said gripper means having first and second engagement faces,

said first face being provided with coupling means of one of said depression and projection types configured to respectively engage one of the projection and depression types of coupling means of one of said elements

and said second face being configured to engage a side edge of said one of said elements when said first face engages said one of the types of coupling means of said top face of said one of said elements.

5,349,735

INFORMATION DETECTION APPARATUS AND DISPLACEMENT INFORMATION MEASUREMENT APPARATUS

Toshimitsu Kawase, Atsugi; Akihiko Yamano, Yokohama; Ryo Kuroda, Atsugi; Hiroyasu Nose, Zama, and Toshihiko Miyazaki, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 727,529, Jul. 9, 1991, abandoned. This application Oct. 5, 1993, Ser. No. 132,161
Claims priority, application Japan, Jul. 9, 1990, 2-179558
Int. Cl.[5] H01J *37/00*
U.S. Cl. 29—407 25 Claims

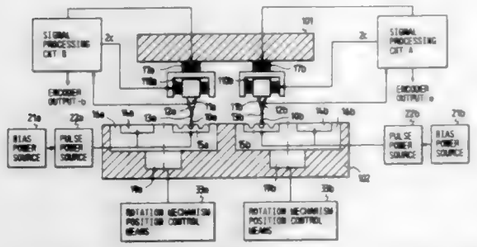
1. An apparatus for detecting information from an information bearing medium, comprising:

a plurality of probes arranged to face the medium, each of said probes producing a detection signal from the medium;

performance test means for testing a signal producing condition of each of said probes; and

detection means for selecting a detection signal from at least

one of the probes having a predetermined signal producing condition based on a test by said performance test



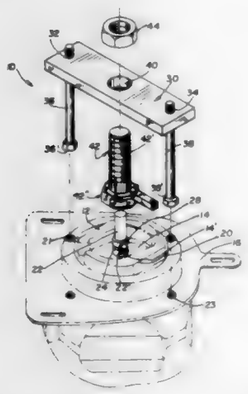
means and detecting the information in response to the selected detection signal.

5,349,736

METHOD AND TOOL FOR PULLING CLUTCH FROM WASHING-MACHINE MOTOR

Michael Rubino, Chicago, Ill., and John Hart, Downsview, Canada, assignors to Hart to Sensible Products, Inc., Chicago, Ill.

Filed Feb. 26, 1993, Ser. No. 24,200
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—426.5 14 Claims



1. A tool for removing a clutch from a washing machine, comprising:

a mounting plate having a first end-portion and a second end-portion;

said mounting plate having an opening;

a bolt passing through said opening, said bolt having a threaded shank portion and a lower, enlarged end-portion, said bolt being movable in said opening, and having a hollow interior, and an open lower end for allowing entry into said hollow interior;

means operatively connected to said enlarged end-portion for temporarily attaching said bolt to a tubular sleeve of a washing machine clutch-mechanism;

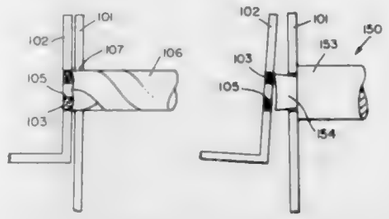
said means for temporarily attaching said bolt to a tubular sleeve of a washing machine clutch-mechanism comprising a pivotal latch having a first end pivotally mounted to a first portion of said enlarged end-portion, and a second end, and means for selectively locking said second end of said latch to a second portion of said enlarged end-portion after said bolt has been telescopingly mounted over a tubular sleeve of a washing-machine clutch mechanism, whereby, when said enlarged end-portion is moved away from the clutch-mechanism, it pulls off the tubular sleeve of the clutch-mechanism from engagement with the motor drive-shaft.

5,349,737

METHOD FOR SEPARATING SPOT-WELDED SHEET METAL PARTS

James A. Long, 1741 Jim Long Rd., Hillsboro, Tenn. 37342

Filed Nov. 30, 1993, Ser. No. 159,161
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—426.4 12 Claims



1. A process for separating overlapping front and rear sheet metal panels, which are welded together by a spot-weld which extends through both said front and rear panels, said process comprising:

(a) removing only the portion of said spot-weld in said front panel to form a hole in said front panel, said hole having a diameter at least substantially equal to the diameter of said spot-weld, whereby the portion of said spot-weld in said front panel is absent and the portion of said spot-weld in said rear panel is retained; and

(b) applying pressure to the side of said retained portion of said spot-weld in said rear panel facing toward said front panel in a rearward direction to force said rear panel away from said front panel;

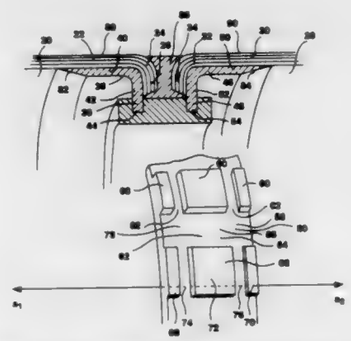
(c) whereby said front and rear panels are separated without substantial damage to said panels.

5,349,738

ATTACHMENT METHODOLOGY FOR COMPOSITE CYLINDER ASSEMBLY

Roger M. Crane, Arnold, and Paul Coffin, Chesapeake Beach, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 864,794, Apr. 7, 1992, Pat. No. 5,288,114.
This application Sep. 30, 1993, Ser. No. 128,786
Int. Cl.[5] F16L *21/00, 25/00*
U.S. Cl. 29—434 21 Claims



1. A method for attaching first and second hollow cylinders, each having an axial end and a longitudinal axis, comprising:

engaging a fastening ring with a first flanged axial end of a first cylinder whereby a plurality of first teeth mesh with said fastening ring at the locations of intersection of a first circumferential channel with a plurality of axial channels;

engaging said fastening ring with a second flanged axial end of a second cylinder whereby a plurality of second teeth oppose said fastening ring at the locations of intersection

of a second circumferential channel with a plurality of axial channels;

said first flanged axial end having a first radially inwardly planar flange which is normal to the axis of said first cylinder;

said first radially inwardly planar flange having said plurality of first teeth selectively distributed around the inner perimeter of said first radially inwardly planar flange;

said second flanged axial end having a second radially inwardly planar flange which is nodal to the axis of said second cylinder;

said second radially inwardly planar flange having said plurality of second teeth selectively distributed, correspondingly with said first teeth, around the inner perimeter of said second radially inwardly planar flange;

said fastening ring includes an outer circumferential surface having said first circumferential channel, said second circumferential channel and said plurality of axial channels;

said axial channels perpendicularly intersecting said first circumferential channel and said second circumferential channel;

said first circumferential channel, said second circumferential channel and said axial channels forming three parallel circumferential rows of alternating raised and recessed faces and a plurality of parallel axial rows of alternating raised and recessed faces;

said three circumferential rows being a first lateral circumferential row, a second lateral circumferential row and an intermediate circumferential row;

said first circumferential channel being interposed between said first lateral circumferential row and said intermediate row;

said second circumferential channel being interposed between said second lateral circumferential row and said intermediate row;

said axial channels being selectively distributed correspondingly with said first teeth of said first radially inwardly planar flange and with said second teeth of said second radially inwardly planar flange; and

rotating said fastening ring so as to align said first teeth and said second teeth with said axial rows, said first teeth meshing with said recessed faces of said axial rows and interposed between said raised faces of said first lateral circumferential row and said raised faces of said intermediate circumferential row, said second teeth meshing with said recessed faces of said axial rows and interposed between said raised faces of said second lateral circumferential row and said raised faces of said intermediate circumferential row.

5,349,739

FLOWER POT ACCESSORY

Donald E. Weder, Highland, Ill., assignor to Highland Supply Corporation, Highland, Ill.

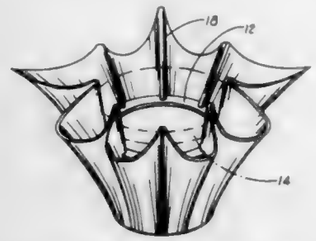
Continuation of Ser. No. 890,499, May 27, 1992, which is a continuation of Ser. No. 405,410, Sep. 11, 1989, Pat. No. 5,129,182, which is a continuation of Ser. No. 327,996, Mar. 21, 1989, Pat. No. 4,901,423, which is a continuation of Ser. No. 232,541, Aug. 11, 1988, Pat. No. 4,835,834, which is a continuation of Ser. No. 204,963, Jun. 6, 1989, abandoned, which is a continuation of Ser. No. 876,405, Jun. 20, 1986, abandoned.
This application Oct. 8, 1992, Ser. No. 958,851
The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.
Int. Cl.[5] B23P *19/02*
U.S. Cl. 29—525 1 Claim

1. A method for shaping a sheet of material about the outer peripheral surface of a flower pot having a bottom, an upper end and a lower end comprising:

providing a collar having an opening formed therethrough, the opening being shaped and adapted to receive the flower pot so that the flower pot extends through the opening formed in the collar and so that the collar extends generally about the outer peripheral surface of the flower pot with the collar being positioned generally between the upper and the lower ends of the flower pot, the collar having means for securing the sheet of material to the collar for forming a decorative flower pot cover;

positioning and securing the collar on the outer periphery of said flower pot between said upper and lower ends;

placing the bottom of the flower pot on said sheet of material; and



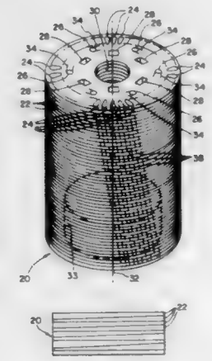
shaping the sheet of material generally about the outer peripheral surface of the flower pot and generally about the collar with portions of the sheet of material being secured to the collar via said means for securing the sheet of material to the collar so that the sheet of material extends over the outer peripheral surface of the flower pot forming the decorative flower pot cover.

5,349,740

METHOD AND PROGRESSIVE DIE ASSEMBLY WITH SEPARATE BLANKING AND STACKING FOR THE MANUFACTURE OF LAMINATED PARTS

Thomas R. Neuenschwander, Fort Wayne, Ind., assignor to L. H. Carbide Corporation, Fort Wayne, Ind.

Division of Ser. No. 874,860, Apr. 28, 1992, which is a division of Ser. No. 724,866, Jul. 2, 1991, Pat. No. 5,123,155, which is a continuation of Ser. No. 171,555, Mar. 22, 1988, Pat. No. 5,087,849, which is a continuation of Ser. No. 853,207, Apr. 17, 1986, Pat. No. 4,738,020, which is a division of Ser. No. 478,692, Mar. 25, 1983, Pat. No. 4,619,028. This application Apr. 5, 1993, Ser. No. 42,992
Int. Cl.[5] H02K *15/02;* B23P *19/00*
U.S. Cl. 29—596 28 Claims



1. A progressive die assembly for manufacturing electromagnetic cores from sheet stock material, said progressive die assembly comprising:

a punching station including means for blanking laminas out of a generally planar sheet of stock material, said punching station further including means for returning the laminas to the plane generally defined by the sheet stock material; and

a stacking station separate from said punching station, said stacking station including holding means for frictionally holding a first lamina and inserting means for inserting a second lamina into said holding means, said inserting means also interlocking the second lamina with said first lamina.

14. A method of manufacturing laminas from sheet stock material to produce electromagnetic cores using a progressive die assembly having a device for holding the laminas, said method comprising the steps of:

blanking the lamina by punching the lamina out of the plane generally defined by said sheet stock material, and returning the lamina to the plane generally defined by said sheet stock material;

inserting the lamina into an interference fit with a holding device;

blanking a second lamina out of the sheet stock material, and returning the second lamina to the sheet stock material; and

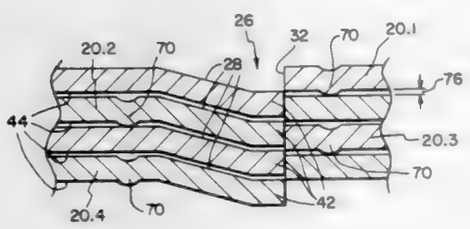
inserting the second lamina into the holding device and interlocking the first and second laminas.

5,349,741

METHOD OF MAKING AN INTERLOCKED CORE SPACED FOR ANNEAL PENETRATION

Thomas R. Neuenschwander, Fort Wayne, Ind., assignor to L.H. Carbide Corporation, Fort Wayne, Ind.

Filed Jun. 24, 1992, Ser. No. 903,372
Int. Cl.[5] H02K *15/02*
U.S. Cl. 29—598 11 Claims



1. A method of manufacturing laminated parts wherein the laminas for forming a laminated part are blanked from strip stock material and are then stacked to form the laminated part, the laminas having opposite planar surfaces, said method comprising:

a first step of forming spacing means in a first lamina at predetermined locations thereof;

a second step of forming spacing means in a second lamina at predetermined locations thereof which correspond to the predetermined locations of spacing means on the first lamina;

a third step of rotating said second lamina relative to said first lamina so that said spacing means of the first and second laminas are offset; and

a fourth step of annealing said laminas while the planar surfaces of said laminas are spaced apart by said spacing means.

5,349,742

METHOD OF MAKING A SECONDARY FOR USE IN INDUCTION MOTORS

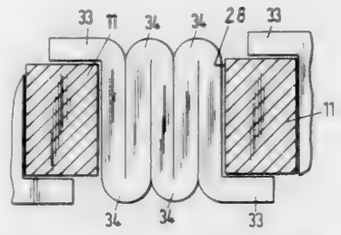
Eugen Nolle, Sersheim, Fed. Rep. of Germany, assignor to Blum GmbH, Vaihingen, Fed. Rep. of Germany

Filed Aug. 27, 1992, Ser. No. 937,354
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1991, 4128757; Oct. 23, 1991, 4134884
Int. Cl.[5] H02K *15/06*
U.S. Cl. 29—598 35 Claims

1. A method of making a secondary for use in an induction motor comprising the steps of:

(a) providing a core with at least one set of recesses;

(b) forming at least two substantially ladder-shaped cages, each said cage having two spaced apart rails and bars extending between, and of one piece with, the rails; and



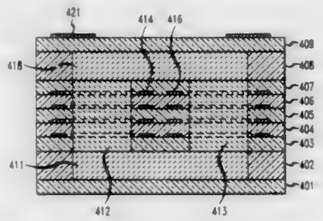
(c) inserting the bars of each said cage into respective recesses of the core, so as to stack the bars in the recesses and at least partially fill the recesses with stacked bars.

5,349,743

METHOD OF MAKING A MULTILAYER MONOLITHIC MAGNET COMPONENT

Gideon S. Grader, Haifa, Israel; David W. Johnson, Jr., Pluckemin, N.J.; Apurba Roy, Rockwall, Tex., and John Thomson, Jr., Spring Lake, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 2, 1991, Ser. No. 695,653
Int. Cl.[5] H01F *41/02*
U.S. Cl. 29—602.1 39 Claims



1. A method for constructing a solid composite magnetic component comprising the steps of:

preparing a magnetic material in a ceramic material format having a first sintering rate and a first sintering temperature;

preparing an insulating non-magnetic material in a ceramic material format, with a sintering rate and sintering temperature substantially identical to the first sintering rate and first sintering temperature;

preparing apertures in the magnetic material for accepting the insulating non-magnetic material;

depositing conductors within the insulating non-magnetic material which are connected to form at least a winding positioned to provide electromagnetic excitation of the magnetic material;

forming a composite structure of the magnetic material and the insulating non-magnetic material including addition of the insulating non-magnetic material to the apertures to form a structure with well defined magnetic and insulating non-magnetic regions; and

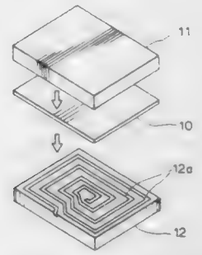
co-firing the structure to form a solid composite structure.

5,349,744

GRADIENT COIL AND GRADIENT COIL UNIT FOR MRI AND METHODS OF MANUFACTURING THE SAME

Ryoichi Takahashi, Otawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 13, 1992, Ser. No. 882,437
Claims priority, application Japan, May 15, 1991, 3-110593
Int. Cl.[5] H01F *7/06*
U.S. Cl. 29—602.1 16 Claims



1. A method of manufacturing a gradient coil for magnetic resonance imaging, in which the gradient coil consists of at least one of the x-coil and y-coil among an x-coil, a y-coil and a z-coil wound on predetermined positions of a nonmagnetic hollow cylindrical bobbin, said method comprising:

a prepatory step of preparing a conductor plate;

a stamping step of stamping said gradient coil having a predetermined pattern out of the prepared conductor plate; and

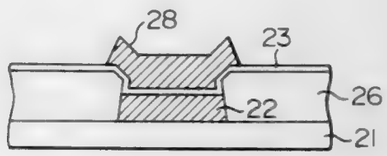
a forming step of curving the stamped gradient coil in a conformity with a curvature of an outer circumferential surface of the bobbin.

5,349,745

METHOD OF FABRICATING THIN-FILM MAGNETIC HEAD

Takashi Kawabe, Hitachi; Eiji Ashida, Hitachiota; Moriaki Fuyama, Hitachi; Tadayuki Iwakura, Hitachi; Hiroshi Fukui, Hitachi; Yoshikazu Tsuji, Kanagawa; Shunichiro Kuwatsuka; Harunobu Saito, both of Odawara; Yoshiki Hagiwara, Hadano; Issei Takemoto, Hiratsuka, and Masayasu Fujisawa, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 1, 1993, Ser. No. 69,586
Claims priority, application Japan, Jun. 9, 1992, 4-149208
Int. Cl.[5] G11B *5/42*
U.S. Cl. 29—603 9 Claims



1. A method of fabricating a thin-film magnetic head, comprising the steps of:

forming a first magnetic film on a substrate;

forming a first mask film on the first magnetic film;

forming a second mask film on the first mask film, a material for the second mask film being different from a material for the first mask film;

etching the second mask film, the first mask film and the first magnetic film to a predetermined pattern;

forming a non-magnetic film on the second mask film and the exposed region of the substrate;

removing a portion of the non-magnetic film to expose the second mask film;

removing the second mask film;

removing the first mask film;

forming a magnetic gap film on at least the first magnetic film; and

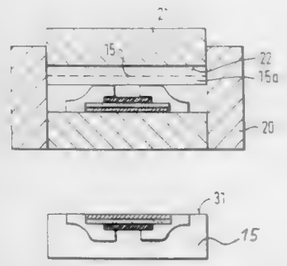
forming a second magnetic film on the magnetic gap film, the width of the upper edge of the second magnetic film being larger than the width of the lower edge of the second magnetic film, the lower edge of the second magnetic film being contiguous to the magnetic gap film.

5,349,746

PROCESS FOR THE MANUFACTURE OF A FORCE SENSOR

Werner Gruenwald, Gerlingen; Kurt Schmid, Ditzingen, and Martin Mast, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00359, § 371 Date Nov. 30, 1992, § 102(e) Date Nov. 30, 1992, PCT Pub. No. WO91/17415, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 29, 1991, Ser. No. 956,892
Claims priority, application Fed. Rep. of Germany, May 7, 1990, 4014511
Int. Cl.[5] H01C *17/06*
U.S. Cl. 29—620 14 Claims



1. A process for manufacturing a sensor constructed in thick-film technology for the determination of forces acting on a surface of the sensor, the sensor including; at least one thick-film resistor which is applied to an insulating layer disposed on a metal pressure support, the latter having a smooth surface facing the layer arrangement; the resistor is electrically contacted at at least two spatially separated locations by means of conductor paths, with the surfaces of the layer arrangement being treated such that they are plane parallel to one another; and wherein the pressure support surface to be provided with the layer arrangement is polished smooth and the pressure support is removed once the production of the layer arrangement is completed.

5,349,747

METHOD OF MAKING MODULE FOR AUTOMOTIVE ELECTRICAL SYSTEMS

Michael E. Dennis, Wiltshire, United Kingdom, assignor to I.S.T. Laboratories, Ltd., Westmead, United Kingdom

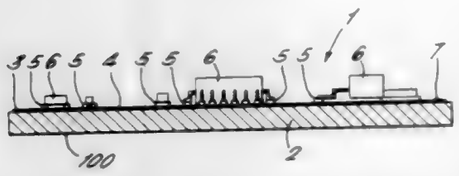
Division of Ser. No. 508,285, Apr. 13, 1990, Pat. No. 5,198,696.
This application Dec. 24, 1992, Ser. No. 996,571
Claims priority, application United Kingdom, Apr. 13, 1989, 8908366
Int. Cl.[5] H05K *3/34*
U.S. Cl. 29—840 5 Claims

1. A method of forming a module of an electrical system for an automobile, comprising the steps of:

subjecting to heat treatment a substrate formed from stainless steel sheet, the heat treatment being such as to heat the substrate to a temperature in the range 800 degrees C. to

1000 degrees C., whereby a chromium oxide layer is formed on the substrate;

applying an initial adhesion layer of a dielectric material to a surface portion of the substrate such that an uncoated surface portion remains exposed, the dielectric material being selected to have a coefficient of thermal expansion substantially equal that of stainless steel;



subsequently applying a final layer of a further dielectric material selected to have a coefficient of thermal expansion substantially matched to that of a thick film ink;

applying electrical components including conductors by a screen printing process in which thick film inks are printed onto the final layer to thereby form a thick film circuit; and

surface mounting further electrical components by soldering to conductors of the thick film circuit.

5,349,748

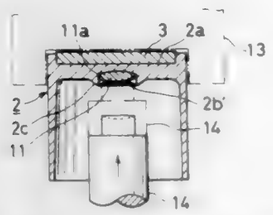
METHOD OF MANUFACTURING A TAPPET FOR AN INTERNAL COMBUSTION ENGINE

Nobuo Hara, Fujisawa, Japan, assignor to Fuji Oozx, Inc., Japan

Division of Ser. No. 37,227, Mar. 26, 1993, Pat. No. 5,269,268. This application Aug. 9, 1993, Ser. No. 103,223

Int. Cl.[5] B23P *15/00*

U.S. Cl. 29—888.43 **3 Claims**



1. A method of manufacturing a tappet for use in an internal combustion engine comprising the steps of:

providing a plastically deformable, cup-shaped cylindrical tappet body closed at an upper end and having an inner upper surface;

forming an engage bore having a flat upper surface at the center of the inner upper surface of the cylindrical tappet body;

inserting a tip having upper and lower convex surfaces and a rounded upper circumferential corner having a certain curvature within the engage bore; and

imposing force upon the lower convex surface of the tip plastically deforming the inner upper surface of the engage bore forming a concave surface in the inner upper surface of the engage bore corresponding to the upper convex surface of the tip.

5,349,749

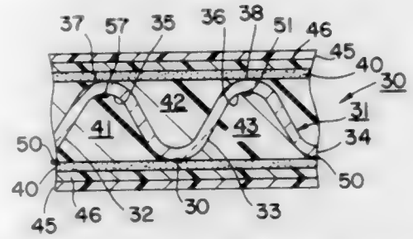
PROCESS FOR FORMING A MONOLITHIC COMPOSITE PLATE

Leslie C. Fiedler, 553 N. Mission Dr., San Gabriel, Calif. 91775

Filed Aug. 27, 1992, Ser. No. 936,766

Int. Cl.[5] B65D *19/26;* **B31F** *1/20*

U.S. Cl. 29—897 **4 Claims**



1. A process for forming a solid, monolithic composite structural plate, said plate when formed comprising a reinforcement sheet having first and second parallel, spaced-apart sides, a corrugation between said sides having alternating crests and troughs, each of said crests defining a void thereunder, and buttresses filling said troughs and said voids, said buttresses being bonded to said corrugation and said sheet, said process comprising:

adhering a sequence of said crests of said corrugation to said first side, the material of said corrugation being initially flexible;

placing said second side of said sheet in spaced-apart, parallel relation with said corrugation and said first side such that said corrugation is situated between said first and second sides;

inserting a flexible strand in each trough, and moving said strands to engage the corrugation material and move said troughs toward said second side;

placing an initially fluid, foam-forming material in said troughs and said voids; and

curing said foam-forming material to form a solid foam buttress in each of said troughs and said voids, which bonds to said corrugation and to a respective side.

5,349,750

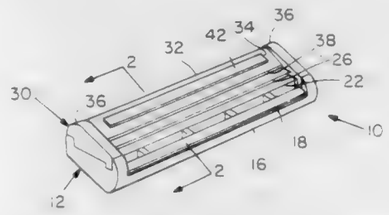
SHAVING SYSTEM

Mingchih M. Tseng, Hingham, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 590,027, Sep. 28, 1990, abandoned. This application Apr. 9, 1992, Ser. No. 865,594

Int. Cl.[5] B26B *21/44, 21/14, 21/00*

U.S. Cl. 30—41 **16 Claims**



1. A shaving system of the wet shave type comprising a blade member, and structure defining an external skin-engaging portion adjacent the shaving edge of said blade member, said skin-engaging portion including a shaving aid composite comprising an extruded or injection molded blend of ethylene vinyl acetate and an effective amount of polyethylene oxide in intimate mixture with said ethylene vinyl acetate.

5,349,751

PIPE CUTOFF APPARATUS

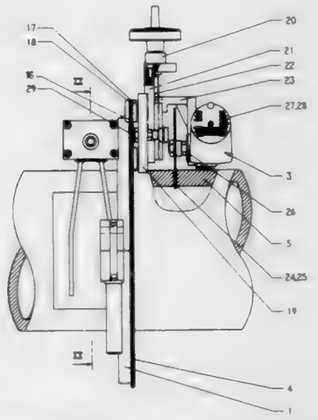
Markus Fahr, Gottmadingen, Fed. Rep. of Germany, assignor to Georg Fischer Rohrleitungssysteme AG, Schaffhausen, Switzerland

Continuation of Ser. No. 882,604, May 13, 1992, abandoned. This application May 17, 1993, Ser. No. 62,682

Claims priority, application Switzerland, May 17, 1991, 01487/91-7

Int. Cl.[5] B26B *27/00;* **B26D** *3/16;* **B23D** *21/06*

U.S. Cl. 30—102 **10 Claims**



1. An apparatus for cutting a pipe, comprising:

a frame having first and second separable segments for surrounding the pipe during cutting;

guides secured to said frame for supporting a cutter movable around the pipe; and

a clamping device supported on the first segment for centrally securing the pipe with respect to said apparatus during cutting, wherein the clamping device includes:

two jaws for clamping the pipe;

a guide box secured on the first segment and having a straight line guide for supporting the two clamping jaws for linear displacement relative to each other; and

a threaded spindle for displacing the clamping jaws toward and away from each other.

5,349,752

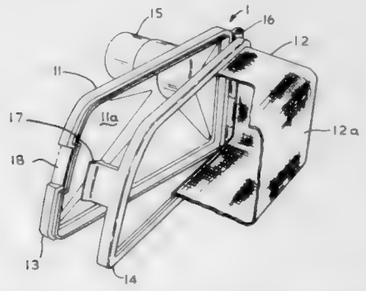
DUST COLLECTION

Michael Stirm, Oberursel, Fed. Rep. of Germany, assignor to Black & Decker Inc., Newark, Del.

Filed Feb. 25, 1993, Ser. No. 23,260

Int. Cl.[5] B25B *1/00;* **A47L** *9/00*

U.S. Cl. 30—124 **11 Claims**



1. A dust collection bag for a power tool having a dust outlet, comprising a box-like container separable into two parts along a plane of said container, each part having an interfitting portion, the interfitting portions of the two parts being rigid, one part having means for connecting the container to said power tool dust outlet and the other part having at least part of its wall surface formed of filter material, and the two parts having releasable connection means for releasably connecting the two parts' interfitting portions to form the container.

5,349,753

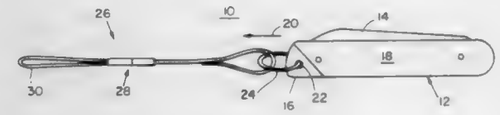
ONE-HANDED KNIFE SYSTEM

Patrick Gaffney, R.R. 2, Box 722, Putnam, Vt. 05346

Filed May 19, 1993, Ser. No. 64,771

Int. Cl.[5] B26B *3/06;* **F41B** *13/00;* **A44B** *11/25*

U.S. Cl. 30—155 **12 Claims**



1. A one-handed knife system comprising:

a knife including a blade;

means for deploying said blade including extendable means for deploying said blade upon application of a first tensile force to said extendible means;

a separable tether including a first portion attached to said extendable means and a second portion, and means for automatically separating said second portion from said first portion upon application of a second tensile force to said tether greater than said first tensile force and for maintaining said second portion in contact with said first portion upon application of said first tensile force to said tether for allowing said blade to be deployed and for separating the tether with one hand.

5,349,754

POWER SAW WITH OPPOSITELY RECIPROCATING SAW BLADES

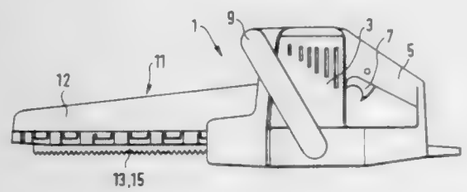
Steffen Wuensch, Holzgerlingen; Claus Kemmner, Aichtal-Neuenhaus; Karl-Heinz Braunbach, Leinfelden-Echterdingen, and Vinzenz Haerle, Neckartenzlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 7, 1992, Ser. No. 987,441

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1991, 4140395

Int. Cl.[5] B23D *49/16, 49/06*

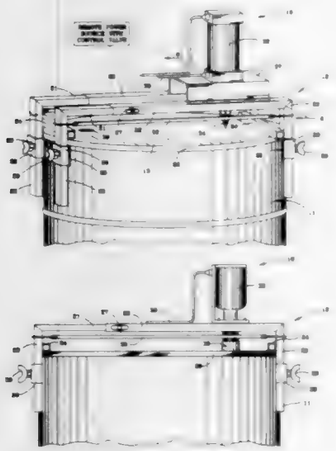
U.S. Cl. 30—369 **15 Claims**



1. A power saw, comprising an elongated sword having side walls which form a groove-shaped guide extending in direction of elongation of said sword; and two parallel oppositely reciprocable saw blades having one longitudinal side provided with saw teeth and another longitudinal side provided with backs which are guided in said groove-shaped guide, said groove-shaped guide being interrupted substantially in a region of said backs of said saw blades by a plurality of recesses extending transversely to said direction of elongation of said

sword and spaced from one another in said direction of elongation of said sword.

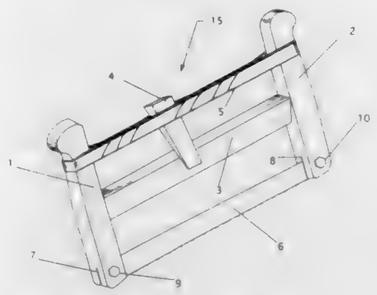
5,349,755
PORTABLE REMOTE DRUM OPENING DEVICE
Carl R. Haywood, 1023 Gardens Pl., Birmingham, Ala. 35216
Filed Sep. 19, 1991, Ser. No. 762,431
Int. Cl.[5] B67B *7/42, 7/48*
U.S. Cl. 30—443 **5 Claims**



1. A system for opening drums that may contain hazardous materials without exposing an operator to contamination from materials in the drum or injury in the act of opening the drums, comprising in combination:
a power driven opening mechanism,
a framework for firmly attaching the opening mechanism in place on the drum in a position for opening the drum,
a power line for carrying power to operate said mechanism from a remote location away from the drums whereby said operator is not exposed to contamination or injury,
manually operable control means at said remote location, wherein said drum has a substantially cylindrical outer periphery with an upper end with a substantially flat surface surrounded by a rim and wherein said framework further comprises a bracket extending diametrically across the flat surface and terminating in clamping members extending downwardly to mate with the cylindrical drum outer periphery.

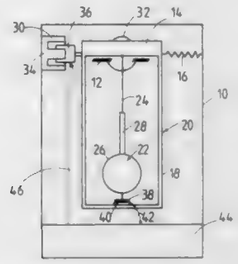
4. A system for opening drums that may contain hazardous materials without exposing an operator to contamination from materials in the drum or injury in the act of opening the drums, comprising in combination:
a power driven opening mechanism,
a framework for firmly attaching the opening mechanism in place on the drum in a position for opening the drum,
a power line for carrying power to operate said mechanism from a remote safe location away from the drums whereby said operator is not exposed to contamination or injury, and
manually operable control means at said remote location,
wherein the opening mechanism comprises a bung rotation wrench operable by a rotary reversible motor.

5,349,756
SURVIVAL SAW
Le Roi D. Davenport, 948 E. 7th Ave., Broomfield, Colo. 80020
Filed Sep. 7, 1993, Ser. No. 116,521
Int. Cl.[5] B21D *39/00;* **B27B** *21/00*
U.S. Cl. 30—506 **20 Claims**



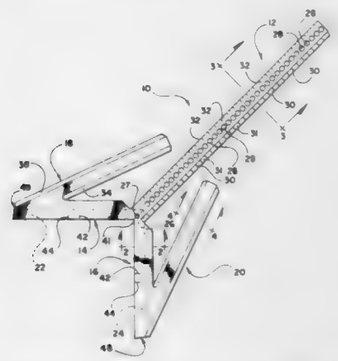
1. A multipurpose outdoor tool comprising:
a first handle and a second handle parallel to said first handle;
said first and second handles each having an upper end and a lower end;
a crosspiece extending between said first handle and said second handle;
said crosspiece having a first end with a first extending projection, an opposing second end with a second extending projection and an upward facing hole in the middle portion of said crosspiece;
said crosspiece being beveled on the bottom;
said first handle having a hole in the middle portion;
said second handle having a hole in the middle portion;
said first extending projection fitting into said middle hole of said first handle, and said second extending projection fitting into said middle hole of said second handle;
a saw blade having a first hole at a first end and a second hole at an opposing second end;
said first handle having a first retaining pin at the side of the lower end, and having a second retaining pin at the bottom of the lower end;
said second handle having a first retaining pin at the side of the lower end, and having a second retaining pin at the bottom of the lower end;
said saw blade first hole fitting onto said first retaining pin of said first handle, and said second hole fitting onto said first retaining pin of said second handle, thereby allowing vertical mounting of the saw blade;
said saw blade first hole alternatively fitting onto said second retaining pin of said first handle and said second hole fitting onto said second retaining pin of said second handle, thereby allowing horizontal mounting of the saw blade;
tensioning strap of sufficient length to wrap around the upper end of said first handle and the upper end of said second handle;
a tensioning rod;
whereby said tensioning rod may be inserted into said tensioning strap and circularly rotated about an axis parallel to said crosspiece such that said tensioning strap twists and winds up when said tensioning rod is circularly rotated so as to pull the upper ends of said handles toward one another, thereby putting said saw blade under tension by creating a fulcrum at said crosspiece; and
said tensioning rod further comprising removable engagement in said hole in said crosspiece, thereby securing said tensioning strap; and
said tensioning strap further comprising a loop on one end and an opposing free end.

5,349,757
TAPE-SUSPENDED MERIDIAN GYRO
Horst Renker, Uberlingen-Nussdorf, Fed. Rep. of Germany, assignor to Bodenseewerk Gerätetechnik GmbH, Bodensee, Fed. Rep. of Germany
Filed Jun. 15, 1993, Ser. No. 76,800
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1992, 4220279
Int. Cl.[5] F01C *19/38*
U.S. Cl. 33—316 **8 Claims**



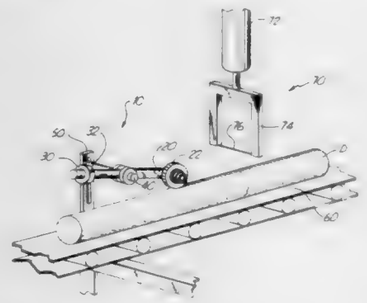
1. A tape suspended meridian gyro comprising:
(a) an outer housing (**10**;**50**),
(b) an intermediate housing (**20**;**64**) movably mounted in said outer housing (**10**;**50**),
(c) a gyro (**22**;**66**), having a substantially horizontal spin axis (**70**), suspended in said intermediate housing (**20**;**64**) by means of a tape (**24**;**68**), and
(d) a pick-off (**40**;**76**) which responds to deflection of said gyro (**22**;**66**), wherein
(e) said pick-off (**40**;**70**) is arranged to detect transverse deflection of a substantially vertical upward axis of said gyro (**22**;**66**) from its central position,
(f) said intermediate housing (**20**;**64**) is arranged to be moved by servo motor means (**30**, **32**;**60**,**62**) transversely to said substantially vertical upward axis of said gyro (**22**;**66**), and
(g) said servo motor means (**30**,**32**;**60**,**62**) are arranged to be energized by said pick-off (**40**;**76**) through a controller (**44**;**80**) to damp pendulous oscillations of said tape suspended gyro (**22**;**66**).

5,349,758
WOODWORKING SQUARE HAVING MULTIPLE USES
Michael Bear, #9 Carriage Ct., Beaufort, S.C. 29902
Filed Oct. 28, 1992, Ser. No. 967,792
Int. Cl.[5] B43L *7/027, 7/033, 7/02*
U.S. Cl. 33—417 **19 Claims**



1. A device for use in laying out pitch angles on a rafter including a straight edge thereon, said device comprising:
an elongate body member defining an axis therethrough.
a pivot surface attached along a bottom side of said body member and located on said axis;
two legs defining top sides and bottom sides thereon and extending from a juncture on said elongate body member, said legs and said elongate body member being coplanar and forming a Y configuration; and
at least one wing member extending from one of said legs coplanar with said elongate body member and including a scale thereon comprising a plurality of spaced apart marks each of which corresponds to an angle;
said device being configured such that when said pivot surface is positioned adjacent said straight edge of said rafter, said scale on said wing member corresponds with said straight edge of said rafter, said angle corresponding to said one of said plurality of marks indicating the angle formed between said elongate body member and said straight edge of said rafter.

5,349,759
SLICING GUIDE MARKER
Joseph G. Anton, Brooklyn Park; Dale W. Frederickson, Lindstrom, and Glenn O. Rasmussen, Champlin, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.
Filed Jun. 16, 1993, Ser. No. 78,709
Int. Cl.[5] B43L *13/00;* **G01B** *1/00*
U.S. Cl. 33—524 **5 Claims**

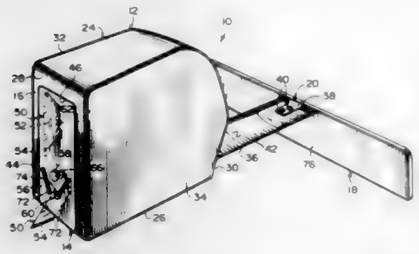


1. A slicing guide marker for marking an impressionable food product comprising an elongate cantilever arm rotatably attached to a support shaft, the cantilever arm having a marking roller adjacent one end thereof and a counterweight slidably carried by the arm, the marking roller comprising a wheel having a plurality of teeth extending generally radially outwardly of the wheel for marking the food product.

5,349,760
MEASURING AND CUTTING TOOL
Vincent DeVito, 275 Fendale St., Franklin Square, N.Y. 11010
Filed Nov. 24, 1993, Ser. No. 124,799
Int. Cl.[5] G01B *3/10;* **B26B** *1/08*
U.S. Cl. 33—760 **7 Claims**

1. An improved measuring and cutting tool which comprises:
a) an extensible tape measure, said extensible tape measure including a case having a base, a rear wall, a front wall, a left side wall and a right side wall, a coiled flexible tape within said case protractible and retractable through said front wall in line with said base, an end hook, a first set of rivets for attaching said end hook to a distal end of said tape, and scale markings therealong, so that said scale markings can be used to indicate how much of said tape should be protracted and retracted through said front wall of said case;
b) means for cutting on a first end of said extensible tape measure, said cutting means being an adjustable utility knife assembly built into said first end of said extensible tape measure which is said rear wall of said case; and

c) means for guiding on a second opposite end of said extensible tape measure, so that said guiding means will allow said cutting means to make quick and accurate cuts into a piece of soft thin material.



5,349,761

LINEAR MEASURING DEVICE

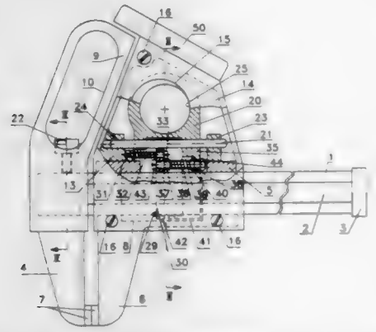
Hans Meyer, Rue du Bugnon 24, CH1020 Renens, Switzerland

Filed Jan. 21, 1993, Ser. No. 6,995

Claims priority, application Switzerland, Jan. 27, 1992, 00217/92-2

Int. Cl.[5] G01B 5/02

U.S. Cl. 33—810 16 Claims



1. Linear measuring device comprising a rail (1) on which a slide (5) is adjustably arranged, a measuring jaw (4) on the rail (1) and a measuring jaw (6) on the slide (5), and the rail (1) including a holding member (9) having at least one handle hole (10) and the slide (5) being provided with a ring handle (20; 120), and wherein the slide (5) is equipped with a clamping means (29) acting on the rail (1), and the ring handle (20; 120) is connected with the clamping means (29) for operation of the latter, the ring handle (20; 120) being adjustably arranged in a housing (14; 114), the clamping means (29) having a clamping piece (30; 130) supported between the housing (14; 114) and the ring handle (20; 120) and extending at least in part around the rail (1), the clamping piece (30; 130) being swingable relative to the ring handle (20; 120) and relative to the housing (14; 114) and relative to the slide (5) and relative to the rail (1) between a first position in which the clamping piece (30; 130) slides freely along the rail (1) and a second position in which the clamping piece (30; 130) grips the rail (1) to prevent sliding movement of the clamping piece (30; 130) on the rail (1), spring means (32; 132, 39) maintaining said clamping piece (30; 130) in said first position when the slide (5) and the ring handle (20; 120) move together as a unit toward the holding member (9), the ring handle (20; 120) being movable toward the holding member (9) relative to the slide (5) when movement of the slide (5) toward the holding member (9) is prevented by an object disposed between said measuring jaws (4, 6), and means carried by said ring handle (20; 120) to move said clamping piece (30; 130) to said second position upon said movement of said ring handle (20; 120) relative to the slide (5).

5,349,762

VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR

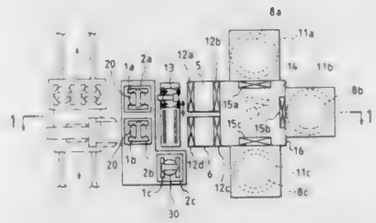
Shigekazu Kato, Kudamatsu; Kouji Nishihata, Tokuyama; Tsunehiko Tsubone, Hikari, and Atsushi Itou, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 751,951, Aug. 29, 1991. This application Jul. 26, 1993, Ser. No. 96,256

Claims priority, application Japan, Aug. 29, 1990, 2-225321

Int. Cl.[5] F26B 5/04

U.S. Cl. 34—406 28 Claims



1. A vacuum processing apparatus having vacuum processing chambers for which dry cleaning is effected therein after substrates to be processed are processed therein in vacuum, said apparatus comprising:

first storage means for storing said substrates to be treated and second storage means for storing dummy substrates, said first and second storage means being disposed in the air atmosphere, said second storage means not being disposed in a vacuum;

conveyor means for transferring both (1) said substrates to be processed between said first storage means and said vacuum processing chambers, and (2) said dummy substrates between said second storage means and said vacuum processing chambers; and

control means for controlling said conveyor means so as to transfer said dummy substrates from said vacuum processing chambers to said second storage means respectively before and after said dry cleaning of said vacuum processing chambers.

5,349,763

APPARATUS FOR DRYING HOSES, PARTICULARLY FIRE HOSES

Karl Hafenrichter, Langenfelder Str. 22, D-3262 Auetal-Hattendorf, and Heinz Bormann, Westerwalder Str. 1, D-3262 Auetal-Westerwald, both of Fed. Rep. of Germany

Filed May 5, 1993, Ser. No. 56,550

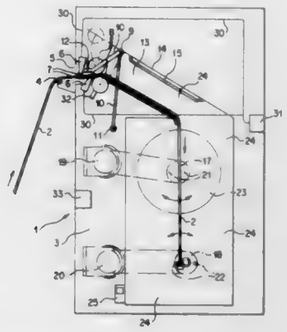
Claims priority, application Fed. Rep. of Germany, May 5, 1992, 4214815; May 5, 1992, 4214836

Int. Cl.[5] F26B 9/06

U.S. Cl. 34—104 18 Claims

1. Apparatus for drying an outside surface of a hose having a hose wall, said hose being moved through said apparatus in a movement direction, comprising:

a pneumatic suction device having suction nozzles, said suction nozzles being successively arranged on said hose wall in the movement direction above and below said hose in a spaced manner, said hose being curved in a vicinity of said suction nozzles;



wherein each of said suction nozzles are externally positioned on an outwardly curved area of said outside surface of said hose.

5,349,765

EXCAVATOR FOR CONSTRUCTING UNDERGROUND CONTINUOUS WALL AND CONSTRUCTION METHOD USING THE EXCAVATOR

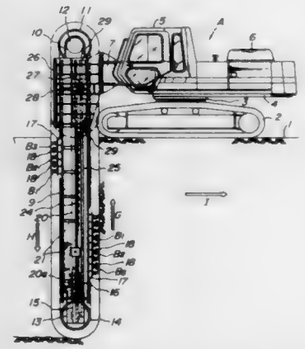
Katsumi Kitanaka, and Takehiko Kitanaka, both of Tokyo, Japan, assignors to Hokushin Kogyo Corporation, Tokyo, Japan

Filed Jul. 2, 1992, Ser. No. 908,166

Claims priority, application Japan, Apr. 1, 1992, 4-079849

Int. Cl.[5] E02F 3/14; E02D 5/18

U.S. Cl. 37—356 1 Claim



1. An excavator for constructing an underground continuous wall, comprising a vehicle for traveling on the ground; a boom horizontally extending from the vehicle and having an end outwardly projecting from one side of the vehicle; an endless chain cutter including an extensible vertical guide post connected to the end of the boom, a chain driving wheel at an upper end portion of the guide post, a chain sprocket at a lower end portion of the guide post, an endless chain extending around the chain driving wheel and the chain sprocket and a plurality of cutter bits and a plurality of agitator bars alternatively arranged on the endless chain; a jet pipe in the guide post for connecting to a fluid supply source and having a plurality of nozzles branched from the jet pipe; wherein each of the agitator bars comprises a base plate attached to one link of said endless chain, plural arms attached to the base plate so as to project from the base plate, and bar members fixed to free ends of the arms, respectively.

5,349,764

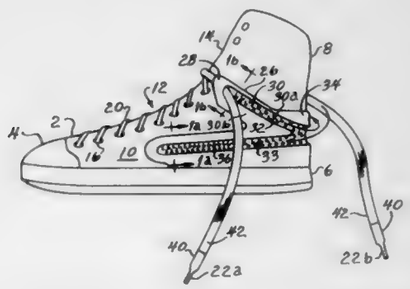
SHOE SECUREMENT APPARATUS

Scott Posner, Michigan City, Ind., assignor to Dan Lynn Industries, Inc., Michigan City, Ind.

Filed Jun. 12, 1992, Ser. No. 897,899

Int. Cl.[5] A43B 11/00

U.S. Cl. 36—50.1 19 Claims



1. A shoe securement apparatus for a shoe employing a lace to interconnect two sides of the shoe comprising:

a guide positioned on one side of the shoe for directing the lace;

a channel positioned on one side of the shoe for receiving the lace;

a first groove formed in said channel for receiving the lace as directed from said guide;

a second groove formed in said channel having a first end in communication with said first groove and a second end remote from said first end; and

a fastener being fitted in said second end adapted to holding the lace in position as the lace is directed through said second groove.

5,349,766

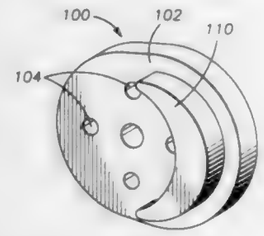
BOOM SUPPORT PENDANT PIN RETAINER

Vance D. Dutton, Marion, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 24, 1992, Ser. No. 840,153

Int. Cl.[5] E02F 3/46

U.S. Cl. 37—397 10 Claims



8. A pendant pin retainer assembly having:

a plurality of pendant pins, each of said pins having a plurality of threaded bores;

a structure having a plurality of openings for receiving said

pins, said openings include a first bore overlapped by a smaller second bore;

a retainer plate having a plurality of bores for alignment with a plurality of threaded openings in each end of said pendant pins and said bores and said threaded openings receiving a plurality of bolts so that each said retainer plate is securable to each end of said pendant pins; and

a projection adjacent to an inside face of said retainer plate, said projection constructed and arranged to be adjacent to a side of said pendant pins and a side of said first bore in said structure.

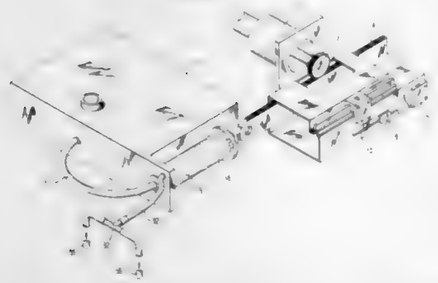
5,349,767

STEAM IRONING PRESS INCLUDING PUMP AND HEATING CONTROL CIRCUITS

Man Y. Foo, Quarry Bay, Hong Kong, assignor to The Singer Company N.V., Curacao, Netherlands Antilles

Filed May 10, 1993, Ser. No. 61,100
Int. Cl.[5] D06F *71/34, 71/36*
U.S. Cl. 38—16 10 Claims





1. A steam press for pressing fabric wherein a movable upper member is disposed above a stationary lower member, the press having respective open and closed positions at which the movable upper member is respectively spaced from or engages the lower member, fabric being pressed when disposed between the two engaged members, said press comprising:

first means disposed in the upper member and including an inlet water port, an electrically energizable element which when supplied with electrical energy is adapted to heat the surface of said upper member adjacent the lower member and when water is delivered to the inlet port to heat said water into steam, and bottom disposed steam outlet ports for discharging steam into the fabric being pressed;

first and second timing circuits which are normally deactuated, the first circuit being actuated when the press is closed and the temperature within the press exceeds a preset value, the second circuit being actuated when the press is open and the temperature exceeds said predetermined value; and

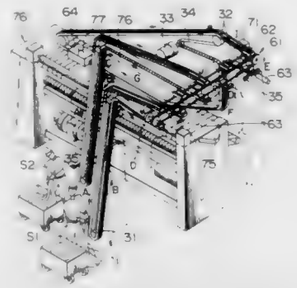
an alarm device for preventing the heating element from being supplied with electrical energy when either one of the circuits is actuated for a preselected time period.

5,349,768

CLAMP AND TOOTHED BELT CONVEYOR FOR CARRYING LINENS

Hidetoshi Ishihara; Atsushi Ueda, and Kunio Kojima, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1993, Ser. No. 62,554
Claims priority, application Japan, Jun. 4, 1992, 4-168309; Nov. 20, 1992, 4-333813; Nov. 26, 1992, 4-337856
Int. Cl.[5] D06F *67/04*
U.S. Cl. 38—143 6 Claims



1. In a conveyor for carrying linens which includes the processes of: gripping a linen on any corner and one place on a side of said linen including said corner of a rectangular cloth with clips installed on a movable clamp; moving the cloth onto the top surface of a table by using said clamp; and pulling the cloth onto said table, said conveyor for carrying linens including a drive section comprising:

a clamp body;

two pairs of wheels supported by shafts fixed to said clamp body;

a toothed block which has a plurality of tooth-shaped protrusions engaging with a toothed belt for driving the clamp body in a running direction and is installed straddling over said clamp body by a pin inserted into an elongated hole so that said block is movable in a downward direction by the height of said tooth-shaped protrusions; and

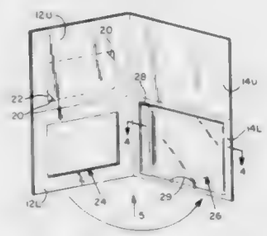
a compression spring which is energized so as to push said toothed block in an engaging direction, and is engaged between said clamp body and said toothed block.

5,349,769

IMAGE PRESENTATION CARD

Frank Okola, 15 Hudson St., P.O. Box 040544, Staten Island, N.Y. 10304

Filed Jun. 25, 1993, Ser. No. 82,532
Int. Cl.[5] G09F *1/00*
U.S. Cl. 40—124.1 5 Claims



5. An image presentation card comprising:

an image holder, constructed of a chemically inert transparent sheet bent twice to create an image holder front, an image holder back, and an image holder tab where the image holder back is tucked into to form a pocket between the image holder front and the image holder back for receiving a delicate image;

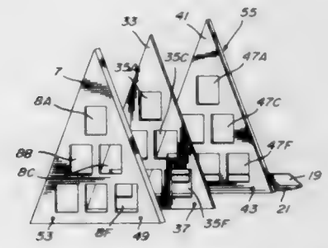
a mounted surface upon which the image holder is secured, the mounted surface including tab means for holding the image holder with the image inserted therein in place, a window opposite the image holder, the mounted surface folded so that the window overlays a spot of the image holder for framing the image when inserted in the image holder, and to allow the image to be viewed through the window, the mounted surface further comprising a cover for completely covering the image to protect it from light when the image is not being viewed.

5,349,770

FRAME DISPLAY ARRANGEMENT FOR DISPLAYING THIN, FLAT OBJECTS

Roy Bursey, 4970 Westhill Ave., Montreal, Quebec, Canada H4V 2W5 , and Michel Carlos, 2828 LePailleur St., Montreal, Quebec, Canada H1L 6G2

Filed Feb. 23, 1993, Ser. No. 21,306
Int. Cl.[5] G09F *1/12*
U.S. Cl. 40—124.2 7 Claims



1. A frame display arrangement for displaying thin, flat objects of a predetermined size, comprising:

protective encasements for protectively mounting said objects, said encasements being of a size larger than said predetermined size;

a multi-sided frame having one side which includes a removably attachable portion;

said frame having a front wall including a plurality of cut-outs, each cut-out being of a size smaller than the size of said encasements;

two panels being mounted, one behind the other, in said frame, said panels being insertable into and removable out of said frame when said removably attachable portion is removed from said frame, and being maintained in said frame when said removably attachable portion is attached to said frame;

said two panels comprising a holding panel, having a plurality of cut-outs equal in number to the cut-outs of said front wall of said frame and being aligned with the cut-outs of said front wall of said frame when said holding panel is mounted in said frame, the cut-outs of said holding panel being of substantially the same size as the size of said protective encasements, and a restraining panel;

said holding panel being mounted in said frame adjacent said front wall of said frame and said restraining panel being mounted in said frame adjacent said holding panel and removed from said front wall of said frame; and

said encasements being mounted in the cut-outs of said holding panel;

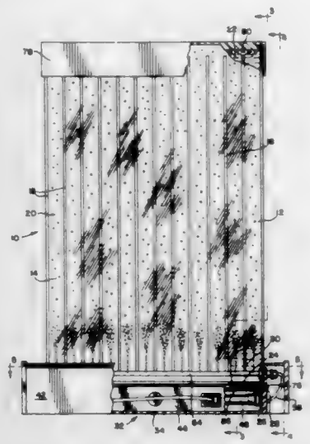
said encasements being maintained in position within said frame by said holding panel and being prevented from falling out of said frame by said front wall of said frame and said restraining panel.

5,349,771

RISING BUBBLE DISPLAY DEVICE

Kenneth Burnett, Lincolnwood, Ill., assignor to Midwest Tropical, Inc., Lincolnwood, Ill.

Filed May 21, 1992, Ser. No. 887,171
Int. Cl.[5] G09F *19/00*
U.S. Cl. 40—406 13 Claims



1. In a rising bubble display device comprising a reservoir configured to contain a liquid, a pump, at least one conduit coupled to the pump and defining an array of orifices positioned in the reservoir such that the pump introduces bubbles of a fluid into the reservoir via the orifices and the bubbles of fluid move upwardly in the reservoir, and a lamp positioned to illuminate the bubbles of fluid in the reservoir, the improvement comprising:

a colored translucent element; and

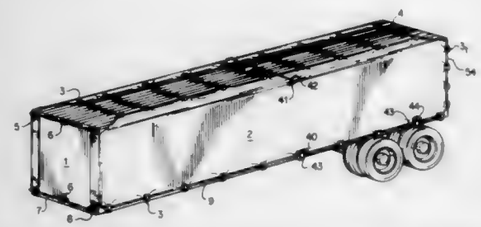
a retainer mounted adjacent the reservoir, said retainer shaped to define a recess adjacent one end of the reservoir shaped to slideably receive the colored translucent element, said retainer releasably retaining the colored translucent element in place between the lamp and the conduit such that the colored translucent element is positioned to color light from the lamp incident on the reservoir, said colored translucent element slidable in said recess, said retainer configured to allow ready removal and replacement of the colored translucent element.

5,349,772

FLEXIBLE FRAME MOBILE DISPLAY

Jon P. Pardue, Commerce, Ga., assignor to Patterson's Mobile Media, Inc., Duluth, Ga.

Filed Feb. 27, 1992, Ser. No. 842,516
Int. Cl.[5] G09F *21/04*
U.S. Cl. 40—590 8 Claims



1. A device for covering a portion of an external surface of a movable freight container with advertising material, comprising:

a first flexible sheet material having a plurality of edges and provided with indicia on its outside surface, said first flexible sheet material substantially covering at least one external surface of a movable freight container;

a plurality of first cable tensioning mechanisms for affixing and tensioning said first flexible sheet material to substantially cover a portion of at least one external surface of a movable freight container, each of said first cable tensioning mechanisms attached to said first flexible sheet material at discrete locations along a first of said edges of said first flexible sheet material by a first gripping and fastening means for gripping a portion of said first flexible sheet material and maintaining said first flexible sheet material in place, each of said first gripping and fastening means including a longitudinal tube, a clamping block having a longitudinal groove therein for gripping said first flexible sheet material between said longitudinal tube and said clamping block, said first gripping and fastening means further including an L-shaped jaw mount and a first fastening device for fastening said L-shaped jaw mounted to said clamping block and maintaining said longitudinal tube within said longitudinal groove of said clamping block, as well as a second fastening device extending through said L-shaped jaw mount transverse to said first fastening device;

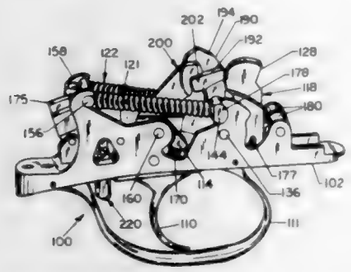
a plurality of second cable tensioning mechanism for tensioning said first flexible sheet material to substantially cover at least one external surface of a movable freight container, each of said second cable tensioning mechanisms attached to said first flexible sheet material at discrete locations along a second of said edges of said first flexible sheet material by a second gripping and fastening means for gripping a portion of said first flexible sheet material and maintaining said first flexible sheet material in phase.

5,349,773

DOUBLE BARREL BREAK-ACTION SHOTGUN

Keith J. Sprangers, Racine, Wis., assignor to U.S. Competiton Arms, Inc., Racine, Wis.

Filed Aug. 11, 1992, Ser. No. 928,117
Int. Cl.[5] F41A *19/14*
U.S. Cl. 42—42.02 **17 Claims**



2. A firing mechanism comprising:

(A) a trigger housing having a seat formed thereon;

(B) a trigger connected to said trigger housing;

(C) a hammer movable upon actuation of said trigger from a cocked position to a released position; and

(D) a mainspring assembly including a movable member which seats on said hammer whenever said hammer is in said cocked position and on said seat of said trigger housing whenever said hammer is in said released position, said mainspring assembly applying the only biasing force which biases said hammer towards said released position from said cocked position, whereby, when said mainspring assembly is seated on said seat of said trigger housing and said hammer is in said released position, said hammer is unbiased,

wherein said trigger housing has a second seat formed thereon, and further comprising

a second hammer movable upon actuation of said trigger from a cocked position to a released position, and

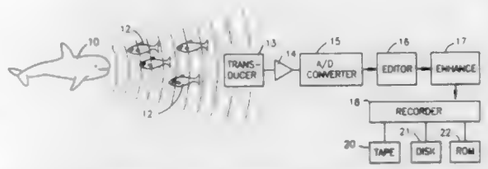
a second mainspring assembly including a second movable member which seats on said second hammer when said second hammer is in said cocked position and on said second seat of said trigger housing when said second hammer is in said released position.

5,349,774

METHOD AND APPARATUS FOR SEPARATING DOLPHIN FROM TUNA

Jorge M. Parra, New Port Richey, Fla., assignor to Seaway Technologies, Inc., New Port Richey, Fla.

Division of Ser. No. 633,539, Dec. 28, 1990, Pat. No. 5,134,592.
This application Jan. 30, 1992, Ser. No. 828,052
The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.
Int. Cl.[5] A01K *79/02;* **H04B** *1/02*
U.S. Cl. 43—9.2 **2 Claims**



1. In a tuna fishing system wherein a fishing vessel utilizes nets to catch tuna therein, a method for using the primordial fear of dolphin of killer whales to separate dolphin from tuna so that the tuna can be caught in the nets free of dolphin, comprising providing a digitally synthesized, edited and enhanced sound of feeding killer whale, including, infrasonic sounds, providing a transducer, playing said digitally synthesized sound of feeding killer whale on said transducer under water and in the vicinity of a mixed school of dolphin and tuna and as the dolphin leave said vicinity, catching the tuna in nets.

5,349,775

ADJUSTABLE GROUND-INSERTED FISHING ROD HOLDER

Valentino G. Mondares, 361 Avalon Cir., Vallejo, Calif. 94589

Filed Sep. 3, 1993, Ser. No. 115,592
Int. Cl.[5] A01K *97/10*
U.S. Cl. 43—21.2 **2 Claims**

1. An adjustable ground-inserted fishing rod holder for use with a fishing rod having a handle, said holder comprising:

a stake having a pointed tip at an end thereof;

an upper support coupled to an upper end of said stake;

a lower support slidably disposed upon said stake, said lower support being operable to receive a portion of said handle of said fishing rod;

a foot engaging means coupled to said stake for facilitating a forced insertion of said stake into a ground surface; and,

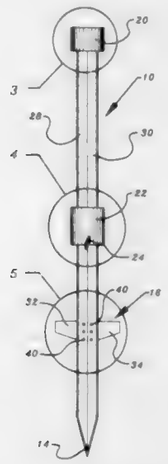
measurement indicia means positioned along a longitudinal length of said stake for measuring a captured fish;

wherein said lower support comprises a substantially hollow cylindrical member; an interior stop positioned upon an interior surface of said cylindrical member; an angled member coupled to said cylindrical member in a manner so as to define an angled aperture therethrough operable to receive said stake; a nut fixedly secured to said cylindrical member; and a securing fastener threadably engaged to said nut and operable to be selectively engaged to said stake to secure a position of said lower support along a longitudinal length of said stake;

wherein said upper support comprises a semi-cylindrical member secured to said stake;

wherein said stake comprises an elongated first member integrally coupled an elongated second member along longitudinal edges thereof to define an angle therebetween;

wherein said foot engaging means comprises a first member



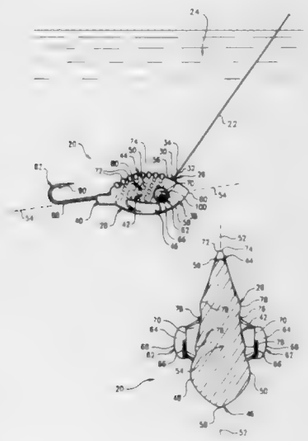
mount joined at an edge thereof to an edge of a second member mount to form said angle therebetween; a first wing jointed at an edge thereof to a further edge of said first member mount; a second wing joined at an edge thereof to a further edge of said second member mount, wherein said first wing and said second wing lie in a plane.

5,349,776

ARTIFICIAL FISHING LURE

Mark H. Lucas, 12049 NE. 97th St., Kirkland, Wash. 98033

Filed Jun. 30, 1993, Ser. No. 85,506
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.39 **25 Claims**



1. A combined sinker and artificial fishing lure capable of being submerged under water, said lure being attachable to a fishing line, said lure comprising:

(a) means for attaching said lure to the fishing line; and

(b) an oblong body portion generally resembling a fish, said attaching means being operatively secured to said body portion, said body portion being substantially formed from a dense material that is heavier than water, said body portion having

(i) a leading, forward end portion,

(ii) an opposed, trailing, rearward tail portion,

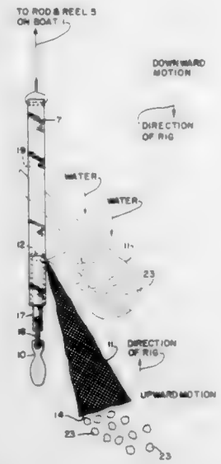
(iii) a central or torso portion interposed between said forward end portion and said rearward tail portion, said torso portion having opposed sides, an upper back portion, and a belly portion, said belly portion being enlarged with respect to said opposed sides, said belly portion generally defining an enlarged stomach or abdomen of said lure, said belly portion generally defining a ballast positioned near a centrally located lower edge of said lure, said body portion generally defining an upright rudder, said belly portion and said body portion being capable of urging said lure to maintain a generally upright position when said lure is towed through water.

5,349,777

CHUNK DISPENSING RIG

Robert V. Pallay, Sr., 157 Waughaw Rd., Towaco, N.J. 07082; Robert V. Pallay, Jr., 17 Sparrow Rd., Randolph, N.J. 07869, and Joseph A. Pallay, 210 Split Rock Rd., Rockaway Township, Morris County, N.J. 07005

Filed Feb. 18, 1994, Ser. No. 198,770
Int. Cl.[5] A01K *97/02*
U.S. Cl. 43—44.99 **19 Claims**



1. A reusable chunk dispensing rig capable of dispensing chunks at any desired depth in waters being fished comprising:

an elongated body including a longitudinal axis, a width having a predetermined configuration and a predetermined thickness;

first means coupled to said body to control the descent and ascent of said body in said waters into which said chunks are to be dispensed;

second means having one end thereof closed and secured at a first predetermined location along said width on one side of said body and the other end thereof capable of being opened to receive and dispense said chunks; and

an opening disposed at a second predetermined location along said width of said body different than said first location, said opening extending from said one side of said body through said thickness of said body to the other side of said body at a predetermined angle less than 90° with respect to said axis, said opening having said other end of said second means threaded therethrough after said second means receives said chunks, said predetermined angle of said opening and the force of said waters when said body is descending captures said other end of said second means in said opening to maintain said second means

closed until said desired depth is reached, and said predetermined angle of said opening and the force of said waters when said body is caused to momentarily ascend at said desired depth causes said other end of said second means to slide from said opening and open up to dispense said chunks at said desired depth.

5,349,778

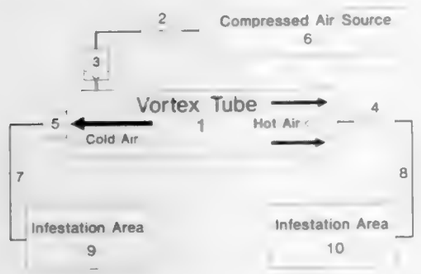
VORTEX TUBE FOR EXTERMINATING ORGANISMS

Cheng Chu, 5373 Bothe Ave., San Diego, Calif. 92122

Continuation-in-part of Ser. No. 910,689, Jul. 8, 1992, abandoned. This application Apr. 26, 1993, Ser. No. 51,577

Int. Cl.[5] A01M *1/20*

U.S. Cl. 43—124 **4 Claims**



1. A method for exterminating organisms comprising:
locating the infestation area;
feeding compressed air to vortex tube to generate a cold stream of air with sub-freezing temperature and a hot stream of air with elevated temperature;
delivering said cold stream of air to infestation area; and
monitoring and maintaining temperature of infestation area to a sub-freezing lethal range for a long enough period to exterminate organisms at infestation area.

5,349,779

ADJUSTABLE CLASP FOR SUSPENDING PLANTS

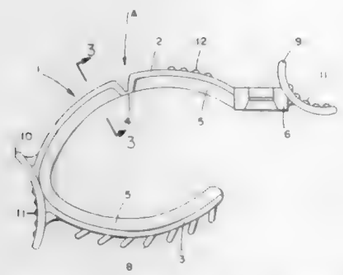
Michael Ben-Dror, Merom Hagalil, Israel, assignor to Paskal Avizarey Kshira Ltd., Tefen, Israel

Filed Mar. 8, 1993, Ser. No. 27,681

Claims priority, application Israel, Mar. 13, 1992, 101223

Int. Cl.[5] A01G *17/06*

U.S. Cl. 47—44 **5 Claims**



1. An adjustable clasp for suspending a plant, integrally molded of a semi-rigid polymer material and comprising first and second arcuate arms, said second arcuate arm being longer than said first arcuate arm, each of said first and second arcuate arms having first and second ends and being hinged together at their first ends by means of an integral hinge section of reduced thickness which tends to bias apart the second ends of said arms to form an open position of the clasp, the arms being manually movable around said hinge section to a closed position of the clasp, wherein the second ends of the arms are abutting to form a substantially annular enclosure for encircling a portion of the plant, the arms being secured in said closed position by means of inter-engaging adjustable locking means provided at or adjacent the second ends of the arms, said locking means consisting of a buckle integral with the second end of said first arm and a plurality of integral retaining teeth spacedly provided along an outer circumference of the second end portion of said second arm and pointing obliquely away from said second end, said spacedly provided teeth allowing for adjustment of the clamp size and said teeth also having such length, angle and resilience as to permit irreversible passage of said second end portion of the second arm through said buckle, but prevent its retraction from the buckle with consequent mutual disengagement of the arms and opening of the clasp.

5,349,780

RIBBED PLANT SUPPORT POLES

David E. Dyke, Rte. 1 Box 285A, Vienna, W. Va. 45784, assignor to David E. Dyke and Janet M. Dyke, Vincent, Ohio

Filed Jul. 20, 1992, Ser. No. 916,472

Int. Cl.[5] A01G *17/06*

U.S. Cl. 47—47 **35 Claims**



1. A plant support device for primarily supporting plant stems and fencing comprising:
a support member having a distal end and a proximal end, at least one rib structure on the exterior surface of said support member and extending longitudinally between said distal end and said proximal end, and at lest one hole slot positioned between said distal end and said proximal end;
an extension member telescopically inserted into said support member to extend the length of said plant support device, said extension member and a plurality of hole slots; and
securing means for rigidly affixing said extension member to said support member, said securing means including at least one frictional protrusion in the inner surface of said support member to form a rigid connection with the outer surface of said extension member.

5,349,781

SIMULATION-PREVENTING TURNSTILE

Mario Libardi, Levico Terme, Italy, assignor to Italdis S.p.A., Lavis, Italy

Filed Mar. 24, 1993, Ser. No. 36,641

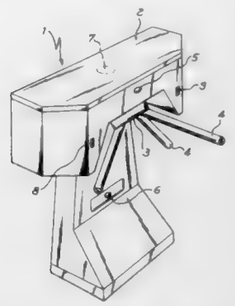
Claims priority, application Italy, Mar. 25, 1992, MI92 A 000709

Int. Cl.[5] E06B *11/08*

U.S. Cl. 49—47 **3 Claims**

1. A simulation-preventing turnstile having an upstream and a downstream side and comprising:
a housing;

a revolving member extending from the housing between the upstream and downstream sides;
a first optical sensor located at the upstream side of the housing;
a second optical sensor located at the downstream side of the housing;
a third optical sensor located above the revolving member; and



a fourth optical sensor located below the revolving member, each of the first through fourth optical sensors providing a triggering signal to an electronic control unit, the optical sensors being triggered in a predetermined manner when a person correctly passes through the turnstile from the upstream side to the downstream side, the electronic control unit activating an alarm when a deviation from the predetermined manner is detected.

5,349,782

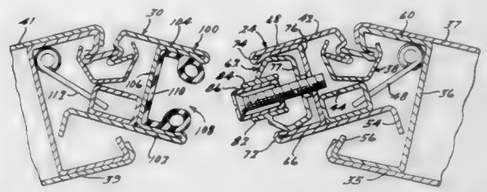
DOOR CONSTRUCTION HAVING IMPROVED LOCKING ASSEMBLY

Leon B. Yulkowski, 4390 Derry Rd., Bloomfield Hills, Mich. 48302

Filed Mar. 8, 1993, Ser. No. 27,784

Int. Cl.[5] E05C *7/04*

U.S. Cl. 49—366 **18 Claims**



1. A pair of doors hinged to a frame and having closing edges interlocked by a locking assembly, said locking assembly comprising:
a first locking element movably mounted on the closing edge of one of said pair of doors;
a substantially continuous tongue support secured within said first locking element, said tongue support having a pair of clamping arms in opposing parallel relationship;
an elongated tongue with a portion thereof clampingly held between said clamping arms and a portion thereof protruding beyond said first locking element; and
a second locking element movably mounted on the closing edge of the other of said pair of doors and adapted to receive in interlocking engagement said protruding portion of said tongue when said pair of doors are in closed relationship;
said first and second locking elements being sufficiently moveable relative to the associated doors that said elements disengage upon selective movement so the doors may open.

5,349,783

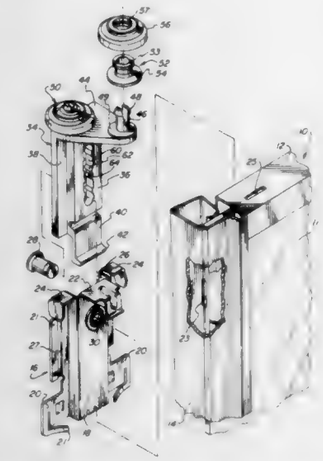
TWIN WHEEL GUIDE FOR SLIDING DOORS

Steve J. Jasperson, Fort Wayne, Ind., and Torsti T. T. Jerila, West Covina, Calif., assignors to The Stanley Works, New Britain, Conn.

Filed Feb. 26, 1993, Ser. No. 23,603

Int. Cl.[5] E05D *15/06*

U.S. Cl. 49—425 **21 Claims**



1. A support assembly for a sliding door comprising:
(a) an elongated track providing a track portion of generally inverted U-shaped cross section with a pair of vertical walls; and
(b) a wheeled guide comprising
(i) a body member of generally inverted L-shaped configuration defined by a vertical leg adapted to be mounted to the door and a horizontal leg extending horizontally above said vertical leg and adapted to extend over the associated door; and
(ii) a pair of wheels rotatably mounted on said horizontal leg for rotation about axes perpendicular to said horizontal leg and having their peripheral portions extending beyond the opposite ends of said horizontal portion, the axes of rotation of said wheels being oriented on an imaginary line extending at an angle of at least 30° to the central axis of said horizontal leg, the circumferential portions of said wheels rotatably bearing on said vertical walls of said track.

5,349,784

OPTICAL FIBER POLISHING APPARATUS

Igor Grois, Northbrook; Ilya Makhlin, Skokie, and Mark Margolin, Lincolnwood, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jul. 10, 1992, Ser. No. 911,837

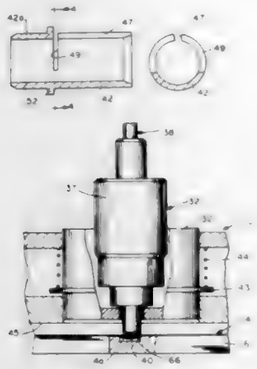
Int. Cl.[5] B24B *11/00*

U.S. Cl. 451—314 **5 Claims**

1. An apparatus for polishing an end face of an optical fiber located within a ferrule portion of a fiber optic connector device the end face located on an end of the optical fiber projecting from the ferrule portion, comprising:
mounting means having a forward surface and a receptacle for mounting the connector device with the end of the optical fiber projecting from the forward surface to permit the end face to be polished by moving the mounting means over an appropriate polishing surface, wherein said receptacle is configured for receiving and holding the ferrule portion of the fiber optic connector device and comprises a resilient sleeve, wherein said sleeve is generally cylindri-

cal and is at least in part axially and radially slit to provide resiliency for gripping the ferrule portion; and

polishing means including a substrate having a recess in a forward surface thereof, and a polishing film on the substrate the polishing film having adhesive means on a back side thereof for adhering to the forward surface of the substrate, spanning the recess to define an air space in the recess beneath the film confining air present in the recess,



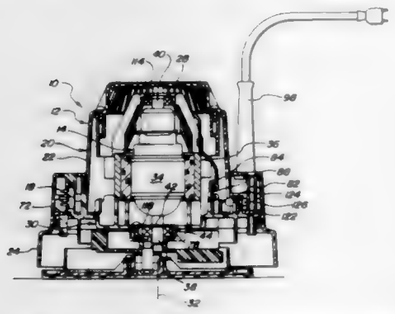
whereby the mounting means can be positioned over the polishing means to align the end of the optical fiber with the recess, in engagement with the polishing film spanning the recess, to permit the end face of the optical fiber to be polished by moving the forward surfaces of the mounting means and the polishing means relative to each other.

5,349,785

MOTOR SUPPORT FOR ORBITAL POLISHER

Richard C. Nickels, Jr., Hampstead, Md., and David M. Rider, Bethlehem, Pa., assignors to Black & Decker Inc., Newark, Del.

Filed Nov. 30, 1992, Ser. No. 983,791
Int. Cl.[5] B24B *23/00*
U.S. Cl. 451—357 16 Claims



1. A power tool including a motor having an armature and motor shaft rotationally supported at its opposite ends by a pair of motor bearings and electrical circuit means for controlling the application of power to the motor; the power tool further comprising:

a substantially bucket-shaped housing member forming an interior and defining a longitudinal axis and including an integrally formed first end cap located at one axial end thereof for mounting one of said pair of motor bearings for rotationally supporting one end of the motor shaft along said axis such that the motor is substantially contained within said interior, and further including an integrally formed support surface proximate the other axial end thereof; and

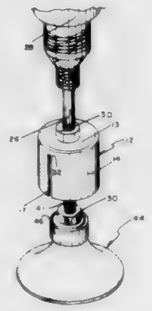
a support member including an integrally formed second end cap for mounting the other of said pair of motor bearings for rotationally supporting the other end of the motor shaft along said axis, said support member being mounted to said support surface substantially transversely to said axis and including means for mounting said electrical circuit means thereon.

5,349,786

APPARATUS AND METHOD FOR PRODUCING AND OSCILLATING, AN ORBITING AND A VIBRATING MOVEMENT ON A DISC BODY

James M. Dorrah, 8423 Champions, Wichita, Kans. 67226

Filed Sep. 27, 1993, Ser. No. 126,774
Int. Cl.[5] B24B *23/00*
U.S. Cl. 451—357 20 Claims



1. A resilient coupling comprising

a cup-shaped sleeve means having a cylindrical sleeve wall terminating in a cylindrical sleeve end;

an elastomeric pad means disposed within said cup-shaped sleeve means, said elastomeric pad means having a cylindrical elastomeric wall and terminating in an elastomeric pad end;

a threaded hub embedded within said elastomeric pad means, said threaded hub having a hub top with a general planar surface, a hub bottom with a general planar surface and a threaded longitudinal hub opening; and

said hub bottom generally registers with said elastomeric pad end and is spaced from said cylindrical elastomeric wall with said elastomeric end directly exposed to the atmosphere.

5,349,787

DISPOSABLE LAP BLANK

Kenneth O. Wood, Stafford, Conn., assignor to Gerber Optical Inc., South Windsor, Conn.

Division of Ser. No. 717,685, Jun. 19, 1991, Pat. No. 5,269,102.
This application Sep. 23, 1993, Ser. No. 126,031
Int. Cl.[5] B24D *17/00*
U.S. Cl. 451—550 21 Claims

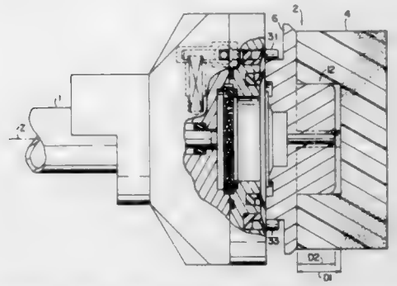
1. A lap blank assembly comprising:

a disposable lap having a first side face and an opposite substantially parallel second side face separated from one another by a given thickness;

a reusable holder having one face facing one of said first and second side faces of said lap,

engagement means extending outwardly from said holder one face a given distance therefrom for engaging said lap inwardly and beyond the one of said first and second lap faces facing said holder to secure the lap against relative rotational and axial movement and to cause the lap to be releasably gripped by the holder; and

wherein said lap is formed from a compressible material and the holder engagement means is releasably compressibly gripped by the compressible material making up the lap as



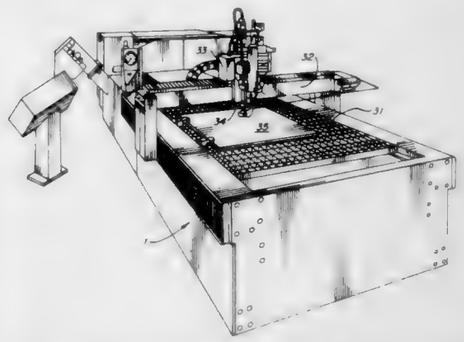
a result of being inserted into said lap beyond the involved one of said first and second lap faces.

5,349,788

APPARATUS FOR CATCHING RESIDUAL WATER JET IN WATER JET CUTTING APPARATUS

Werner Nedo, Bautzen; Harry Thonig, Neukirch, and Mathias Walden, Sohland, all of Fed. Rep. of Germany, assignors to Saechsishe Werkzeug und Sondermaschinen GmbH, Neukirch, Fed. Rep. of Germany

Filed Oct. 14, 1993, Ser. No. 136,544
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1992, 4235090
Int. Cl.[5] B24C *3/04, 9/00*
U.S. Cl. 451—75 18 Claims



1. A water jet cutting apparatus having a line catcher for water and abrasive passing through the worktable, comprising:

(a) a frame;

(b) a pervious worktable on the frame;

(c) a carriage on said frame above said worktable and movable thereover;

(d) a water jet cutting head on said carriage;

(e) a pan supported on said frame and spaced below said worktable;

(f) a collector extending transversely of the frame and supported thereon between said worktable and pan for movement along the length of said worktable in alignment with said cutting head, said collector having end, side and bottom walls, said collector having a drain for flow of water and abrasive therefrom and into said pan;

(g) an insert member of generally polygonal cross section supported in said collector and having end, side and bottom walls, said bottom wall being spaced from said bottom wall of said collector and having a drain for flow of water and abrasive therethrough;

(h) a settling tank;

(i) a sludge pump with a conduit from said pan to said settling tank to transport water and abrasive material to said tank; and

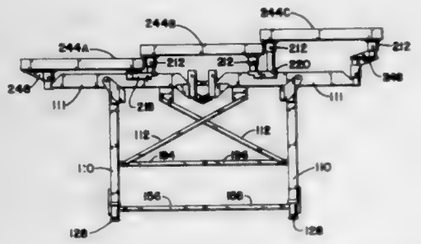
(j) a rinsing pump having a conduit from said settling tank to said collector to draw water substantially free from abrasive from the top of said settling tank and to pump the water to said collector to flush abrasive from said collector outwardly of said drain into said pan.

5,349,789

MULTI-LEVEL FOLDING STAGE

Gary W. Andert, Rosemount; Rollin D. Botts, Bloomington, and Andrew J. Shea, Eden Prairie, all of Minn., assignors to Sico Incorporated, Minneapolis, Minn.

Continuation-in-part of Ser. No. 743,154, Aug. 9, 1991, Pat. No. 5,325,640. This application Jul. 31, 1992, Ser. No. 923,368
Int. Cl.[5] E04H *3/12, 3/22*
U.S. Cl. 52—7 17 Claims



1. An elevationally adjustable folding stage, comprising:

a folding support structure;

removable stage panels attaching to the support structure so as to form a stage surface;

connecting means for connecting the stage panels to the support structure, wherein the connecting means is movable between a first position for connecting first stage panels having a first size and a second position for connecting second stage panels having a second size;

height adjustment means for individually adjusting elevation of each stage panel;

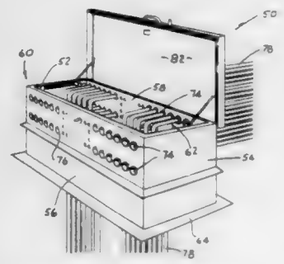
bridging means for supporting panels between adjacent stages at the elevation of each stage panel.

5,349,790

ROOF PIPE ENTRY HATCH

Keith Beetles, and David Fulford, both of Mississauga, Canada, assignors to Lexsuco Canada Limited, Etobicoke, Canada

Filed Oct. 14, 1992, Ser. No. 960,873
Int. Cl.[5] E04D *13/14*
U.S. Cl. 52—19 18 Claims



1. In a roof conduit entry hatch including:

(a) vertically upstanding side wall means defining an opening;.

(b) a cover hinged to one end of said side wall means exteriorally of said opening;

(c) aperture means disposed on vertically upstanding said

side wall means for fixedly receiving conduits horizontally disposed through vertically upstanding side wall means and through said opening;

(d) sealing means for sealing the interior of said roof conduit hatch against weather;

(e) whereby said cover permits roof entry into said opening for access to said conduit means when said cover is in an open position and whereby said cover bars access to said opening and said conduits where said cover is in a closed position;

(f) said aperture means including a horizontally projecting circumferential edge extending exteriorally from said vertically upstanding side wall means so as to enhance sealing between said aperture means and said conduits.

5,349,791

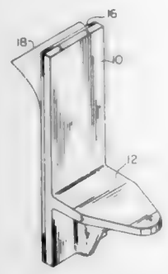
SNOW GUARD AND ITS APPLICATION

Joseph D. Zaleski, 49 Rservoir Rd., Farmington, Conn. 06032

Filed Jun. 30, 1993, Ser. No. 85,586

Int. Cl.[5] E04D *13/00*

U.S. Cl. 52—24 **2 Claims**



1. A snow guard for use on a metal roof, and comprising a cast metal base with upstanding shelf and a backside of at least four square inches, said base backside being flat, a layer of 0.04 inch thick acrylic foam tape one side of which tape is adhesively applied to said base backside, said foam tape having an exposed surface coextensive with said one side, and a peel-off backing material covering said exposed tape surface until the snow guard is to be applied to a metal roof or the like.

5,349,792

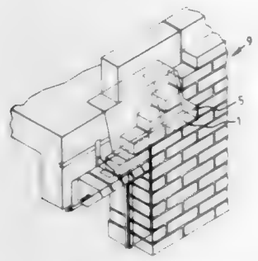
CAVITY TRAY

Ronald C. Bayes, Hertfordshire, England, assignor to Weldform Components Limited, Hertfordshire, United Kingdom

Continuation of Ser. No. 821,697, Jan. 16, 1992, abandoned. This application Nov. 22, 1993, Ser. No. 156,391

Int. Cl.[5] E04D *1/36*

U.S. Cl. 52—62 **12 Claims**



1. A cavity tray disposed in a gap between and engaged with inner and outer skins of a building wall, the cavity tray comprising:

a continuous one-piece flexible body constructed of thin sheet-like non-metallic material;

said body having sheet-like and substantially planar upper and lower flange parts disposed at opposite extremities of the body and disposed in their entireties in vertically and laterally spaced relation and engaged with the respective inner and outer skins of the building wall, said lower flange part extending generally horizontally and fixedly disposed within the outer skin of the wall;

said body including an inclined flat and elongated sheet-like intermediate part extending vertically and laterally between and interconnected to said upper and lower flange parts, said intermediate part extending in angled relation relative to both of said upper and lower flange parts;

said body further including a lower arcuately elongate sheet-like transitional part integrally and directly located between said intermediate part and said lower flange part, said lower transitional part having a vertically rounded and arcuately elongate profile as it extends between said lower flange part and said intermediate part, said lower transitional part having horizontal and vertical flexibility to allow the upper flange part to be positionally movably adjusted horizontally and vertically relative to the lower flange part to accommodate variations between the inner and outer skins, and said arcuately elongate profile being free of fold lines and abrupt directional discontinuities for permitting a damp-proof member adhesively bonded thereto so that there is substantially no discontinuity between the lower transitional part and the damp-proof member to prevent the development of a leakage path therebetween; and

said body also including a flat sheet-like end wall part integrally secured to and projecting substantially vertically upwardly from concurrent side edges of said lower flange part, said lower transitional part and at least a portion of said intermediate part.

5,349,793

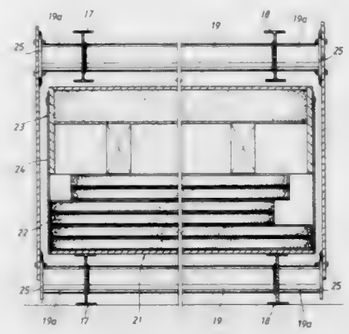
BUILDING SYSTEM

Floyd E. Bigelow, Jr., P.O. Box 7064, Houston, Tex. 77248

Filed Aug. 12, 1991, Ser. No. 745,059

Int. Cl.[5] B65D *19/00, 85/46*

U.S. Cl. 52—143 **6 Claims**



1. A stacked assembly of a plurality of knocked-down buildings, each building comprising;

a skid having two parallel skid runners spaced apart a standard distance by transverse structural members for cooperating with standard guides for an oil field truck,

horizontally extending floor, walls and roof stacked on said skid,

said floor secured to said skid and having a width greater than the spacing of said skid runners,

at least two structural outriggers having outer ends extending outwardly in a horizontal plane from each skid runner to approximately the perimeter of the floor, and

a mounting plate secured to the outer end of each outrigger, said mounting plates on said stacked assembly of buildings positioned in vertically aligned groups; and

stacking plates releasably secured to and extending between said vertically aligned mounting plates of vertically spaced skids of said stacked buildings,

each of said stacking plates has a pair of spaced bars secured to the plate and each of said bars abutts a horizontally extending edge of one of said mounting plates.

5,349,794

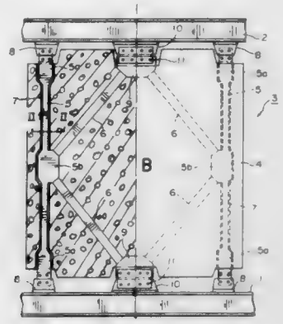
WALL FOR DAMPING VIBRATION

Masayasu Taga, Tokyo, Japan, assignor to Shimizu Construction Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 859,588

Int. Cl.[5] E04C *5/00*

U.S. Cl. 52—167 CB **11 Claims**



1. A wall for damping vibration and oscillation, comprising:

at least one connecting member erected between a pair of beams, and connected to the beams, the connecting member being made of a first strength steel;

a plurality of bracings made of a second strength steel, one end of each of the bracings being attached to the connecting member, the other end of the bracing being attached to one of the beams; said second strength steel having a higher yield point and tensile strength than said first strength steel;

a wall body made of precast concrete surrounding the connecting member and the bracings, said bracings being fixed relative to the wall body, and the wall body being disposed in a space between the beams; and

unbonded layers formed between the wall body and the connecting member so that the connecting member can slide relative to the wall body.

5,349,795

WIDTH-ADJUSTABLE STAIRWAY STEP TREAD AND METHOD FOR CONSTRUCTING A STAIRWAY THEREWITH

Terry L. French, 13462 Lakeshore Dr., Grand Haven, Mich. 49417, and Steven C. Johnson, 16329 Hemlock, Spring Lake, Mich. 49456

Filed Mar. 3, 1993, Ser. No. 25,860

Int. Cl.[5] E04F *11/00*

U.S. Cl. 52—183 **12 Claims**

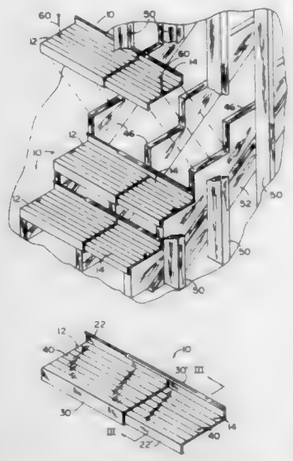
1. A stairway comprising:

at least a first stringer and a second stringer oriented in generally parallel spaced relative to one another, said stringers defining a length of said stairway; and

a series of treads spaced along said length, each tread of said series having an adjustable width and extending at least between said first and second stringers, each said tread further having:

a first member extending along at least a portion of said width, said first member having a first cross-sectional shape; and

a second member extending along a portion greater than a remaining portion of said width, said second member having a second cross-sectional shape, said second cross-sectional shape being identical to said first cross-sectional shape, but rotated edge-to-edge in inverted orientation relative to said first cross-sectional shape, said first cross-sectional shape and said second cross-sectional shape



being adapted to couple in interlocking engagement of said first member with said second member whereby said first and second members are coupled to define a range of widths of said tread.

5,349,796

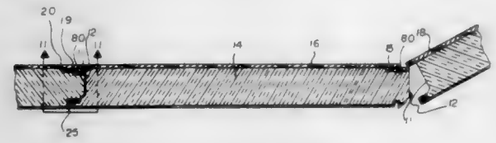
BUILDING PANEL AND METHOD

Steven C. Meyerson, Clearwater, Fla., assignor to Structural Panels, Inc., Oldsmar, Fla.

Filed Dec. 20, 1991, Ser. No. 811,822

Int. Cl.[5] E04B *1/80, 7/00*

U.S. Cl. 52—309.11 **9 Claims**



1. A building panel comprising, in combination,

a central essentially rectangular core of material having lateral edges, ends, and opposed first and second faces,

said core having a male edge extension on a first lateral edge and a female recess on a second lateral edge,

a formed skin having a first snap fit interlocking member one of two lateral edges of the formed skin overlying the male extension of the core material,

a second snap fit interlocking member formed at the second lateral edge of said skin and extending from the skin adjacent the second lateral edge of the core for mating engagement with the said first interlocking member on an adjacent panel,

a sheet of composite skin material overlying the core second face,

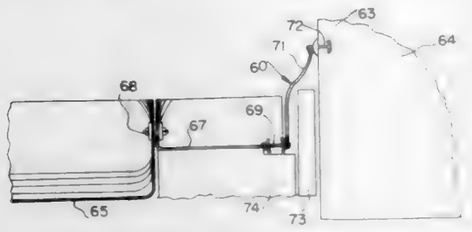
a recess in the core material overlying the male extension of the core and extending beneath said composite sheet material,

a nailable joiner running beneath said composite sheet material within said recess and extending outwardly over the male edge extension,

an extension of said composite skin material extending beyond the core at one lateral edge of the core female recess,

said extension being proportioned to overlie the joiner on an adjacent panel formed substantially identical as said building panel.

5,349,797
JOINT LIQUID STOP
Jeffrey H. Stultz, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Filed Apr. 29, 1993, Ser. No. 55,156
Int. Cl.[5] E04B 1/68
U.S. Cl. 52—396.05 6 Claims



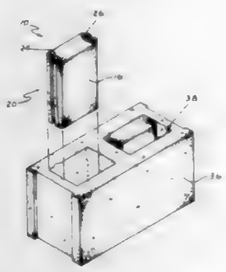
1. A liquid containment system for a treatment facility, the treatment facility including a plurality of spaced-apart liquid containing vessels and a plurality of concrete slabs one adjacent the other with spaces therebetween, vessels adjacent slabs at an interface thereof, the system comprising

slab liquid stop member means between each of every two adjacent slab members; the liquid stop member means comprising a first slab stop portion, a second slab stop portion, and a third slab stop portion; the first slab stop portion embedded in one of two adjacent slabs, the second slab stop portion embedded in the other of the two adjacent slabs, and the third slab stop portion extending along a length of a space between the slabs,

an expansion joint member disposed between the slabs above the third slab stop portion,

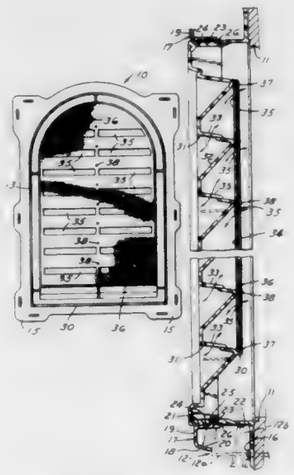
vessel liquid stop member means between each vessel and every slab adjacent a vessel; the vessel liquid stop member means comprising a first vessel stop portion having a first end secured to an exterior wall of the vessel, and a second end secured to an anchor embedded in a slab adjacent the vessel to seal the interface between the vessel and the slab.

5,349,798
INSULATING INSERT FOR CONCRETE BLOCKS
Jeffrey A. Gross, Nashport, Ohio, assignor to Fabricating Packaging Materials, Inc., Lancaster, Ohio
Filed Sep. 17, 1992, Ser. No. 946,928
Int. Cl.[5] E04B 1/62
U.S. Cl. 52—405.1 7 Claims



1. An insulating insert for the cores of building blocks, said insert comprising a generally rectangular body having: top, bottom, front and rear panels; two segmented endwalls with contiguous end portions; and collapsing means in said end portions for allowing both widthwise and lengthwise reduction of the insert, to adapt the insert to fit snugly within non-rectangular cores and cores of different lengths, wherein said means comprises opposing T-slots that start at the endwalls and extend all the way through the insert, from the top to bottom panels.

5,349,799
PLASTIC GABLE VENT
Charles E. Schiedegger, Metamora, and Richard J. MacLeod, Milford, both of Mich., assignors to Mid-America Building Products Corporation, Plymouth, Mich.
Filed Aug. 25, 1993, Ser. No. 111,986
Int. Cl.[5] F24F 13/08
U.S. Cl. 52—473 5 Claims



1. A plastic gable vent for placement on the wall of a building to provide a louver wherein siding abuts the gable vent comprising a plastic body having a front wall and a peripheral wall circumscribing the front wall,

a plurality of integral longitudinally spaced louvers are provided on the front wall,

each louver includes an inwardly extending apex with side walls, one of which has a slot therein,

said plastic body further including an integral inner peripheral wall that circumscribes the louvers,

a generally planar plastic member having a darker color than the color of the plastic body mounted on the inner periphery wall and engaging the inner apices of the louvers,

said planar member including slots that are spaced transversely from the walls of the apices having the openings therein,

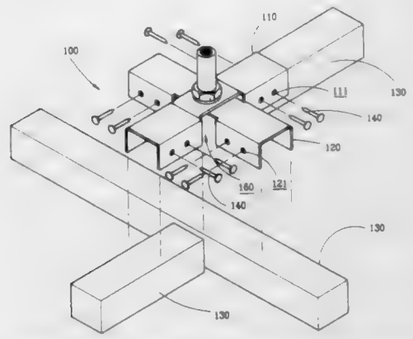
a screen is mounted in overlying relationship to said planar member on the inner peripheral wall and spanning the inner apices,

a movable flange member telescoped over the peripheral wall of the body and including a laterally extending flange adapted dot overlie portions of abutting siding or the like,

said flange member and the outer peripheral wall including interengaging portions for selectively positioning the flange member,

said plastic body including a laterally extending flange for mounting the plastic body on the wall of a building.

5,349,800
CEILING FRAME JOINT STRUCTURE
Sen-Ming Peng, No 5, Lane 46, Cheng Kung Street, Hsin-Pu, Hsinchu Hsien, Taiwan
Filed Apr. 19, 1993, Ser. No. 49,765
Int. Cl.[5] E04B 5/52
U.S. Cl. 52—506.06 16 Claims



1. A ceiling frame joint kit for connecting ceiling bars, the joint kit comprising:

a first joint member including a pair of substantially U-shaped channel portions, each channel portion adapted to receive a ceiling bar and each having a pair of side walls and a connecting wall arranged between the side walls, and a substantially planar portion arranged substantially between the connecting walls to define a first notch transversely between the chapel portions;

a second joint member, separate and apart from the first joint member, including a pair of substantially U-shaped channel portions, each channel portion adapted to receive a ceiling bar and each having a pair of side walls and a connecting wall arranged between the side walls, and a substantially planar portion arranged substantially between the connecting walls to define a second notch transversely between the channel portions:

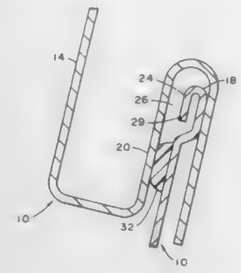
a joint fastener for securing the first joint member to the second joint member such that the first and second joint members are offset approximately 90° from one another; and

at least one bar fastener for securing a ceiling bar received by one of the respective channel portions of the first and second joint members;

wherein the first notch defines a distance sufficient to allow the second joint member to be adjusted relative to the first joint member when the first and second joint members am in an assembled state.

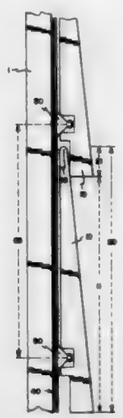
5,349,801
SHEET METAL SHINGLE
David W. Verbofsky, Sidney, Ohio, assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Aug. 25, 1993, Ser. No. 111,662
Int. Cl.[5] E04D 1/16, 1/36
U.S. Cl. 52—518 9 Claims

1. A sheet metal shingle adapted to be installed on a roof beginning at a roof ridge and proceeding downwardly, said shingle having a first surface to be exposed outwardly, a second surface to face inwardly, a first longitudinally extending edge to be installed as a top edge of the shingle and a second longitudinally extending edge to be installed as a bottom edge of the shingle, said shingle comprising an elongated generally rectangular metal panel shaped to have ornamental contours therein extending generally transversely of the panel, a male portion extending along said first edge, a female portion extending adjacent said second edge to receive a male portion of an adjacent shingle, an integral nailing flange extending along said second edge below said female portion, first and second hook portions extending along first and second ends of said panel with a first hook portion turned outwardly toward said first surface and a second hook portion turned inwardly toward said second surface so that hook portions on adjacent shingles can be interengaged, a bead of resilient, compressible



foamed polymeric material adhered to said male portion of said panel along the length of the panel to resist moisture infiltration through the engagement of male and female portions of adjacent shingles and a sealing compound disposed in at least one of said hooks along the length thereof to resist moisture infiltration through interengaged hooks on adjacent shingles.

5,349,802
POSITIONER/FASTENER
Stephen D. Kariniemi, 500 13th St. S., Buffalo, Minn. 55313
Filed Dec. 29, 1992, Ser. No. 998,750
Int. Cl.[5] E04B 1/38; E04C 1/14
U.S. Cl. 52—543 20 Claims



1. A fastener system for attaching siding to a substrate comprising:

a longitudinal strip mounted to the substrate;

a plurality of overlapping siding members extending parallel to one another and transverse to the strip;

a plurality of channels and inserts mounting the siding members to the strip, one of the plurality of channels or plurality of inserts affixed to the strip in a spaced apart configuration, and the other of the plurality of channels and plurality of inserts affixed to the siding members one per siding member;

the inserts each including an enlarged head;

the channels each defining a U-shaped profile with each channel including first and second retainers defining a narrowed opening and an enlarged cavity interconnected therewith, the cavity of each channel receiving the en-

larged head of one of the inserts, and the first and second retainers retaining the enlarged head in the cavity;

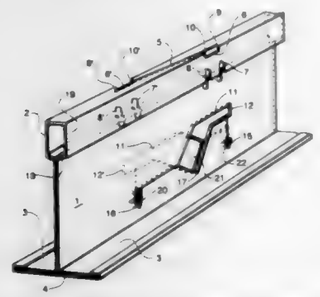
wherein each siding member is mounted to the strip with only one hold down location defined by the channels and the inserts for each siding member.

5,349,803

LANCED FIRE-RATED RUNNER

Ernest B. Nute, Jr., Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Jun. 7, 1993, Ser. No. 72,392
Int. Cl.[5] E04C *2/42, 2/52*
U.S. Cl. 52—573.1 3 Claims



1. A fire expansion section for a ceiling runner wherein:

(a) the ceiling runner has a vertical web member having at its upper end a bulb-shaped element with two spaced side walls, a bottom wall and a top wall, and at its lower end oppositely positioned flanges on either side of the web to support ceiling boards, said web member consisting of two side-by-side pieces of metal, each piece connected at the bottom of the web to a flange and connected at the top of the web to the bottom wall of the bulb; and

(b) said fire expansion section being located between the ends of the ceiling runner comprising:

(1) a slit cut in the top wall of the bulb-shaped element extending from one side wall to the other side wall;

(2) a rectangular cutout in part of the top wall and part of the side wall of the bulb at each end of the slit;

(3) a web cutout in one piece of the metal of the web at the top of the web adjacent the bulb bottom wall near and below one end of the slit and a corresponding cutout similarly located in the other piece of metal of the web near and below the other end of the slit:

(4) said bulb side walls being unconnected at their lower end adjacent the web;

(5) three evenly spaced apart cuts in the web near the flanges, the center cut at its lower end being V-shaped with the point of the V-shape positioned near the flange to form a notch, the center cut being cut through both pieces of metal forming the web, the cut on the side of the center notch being cut through both pieces of metal forming the web with the cut located below the web cutout in the same piece of metal, the cut on the other side of the center notch being cut through both pieces of metal forming the web and positioned in the same manner as the cut on the said one side; and

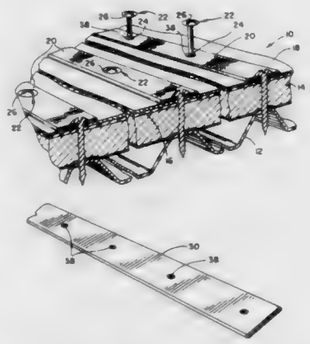
(6) the upper ends of the three cuts being connected by a severance of the metal above the cuts.

5,349,804

METHOD OF FORMING A BUILDING STRUCTURE INCORPORATING A SEAMLESS TUBE USEFUL TO MAKE ROOFING BATTENS AND RELATED METHOD

Donald L. Van Erden, Wildwood; Juergen O. Rathgeber, Arlington Heights; Parimal M. Vadhar, Prospect Heights, and John P. Wojcik, Long Grove, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Division of Ser. No. 885,587, May 19, 1992, abandoned, which is a division of Ser. No. 719,981, Jun. 24, 1991, Pat. No. 5,242,736, which is a continuation-in-part of Ser. No. 631,219, Dec. 21, 1990, Pat. No. 5,161,342, which is a continuation of Ser. No. 294,324, Jan. 6, 1989, abandoned. This application Oct. 8, 1993, Ser. No. 133,423
Int. Cl.[5] E04B *1/00*; B29C *47/34, 53/20*
U.S. Cl. 52—747 22 Claims



1. A method of forming a building structure, comprising the steps of:

disposing at least one flexible, water-impervious sheet membrane onto a building structure substrate so as to seal said building structure substrate against liquid penetration, said at least one flexible, water-impervious sheet membrane being capable of being affixed to said building structure substrate by means of a plurality of mechanical fasteners arranged in a plurality of laterally spaced, longitudinally extending rows;

forming a roofing batten by extruding a polymeric material so as to form a seamless tue having a longitudinal axial extent; flattening said seamless tube along said longitudinal axial extent so as to define two superimposed roofing batten plies integrally connected together along oppositely disposed, laterally spaced, longitudinally extending side edge portions thereof and with a substantially collapsed lumen defined therebetween; orienting said seamless tube longitudinally; punching holes through both of said two roofing batten plies of said flattened seamless tube at spaced intervals along said longitudinal axial extent of said flattened seamless tube, wherein each hole within one of said two superimposed roofing batten plies is coaxially aligned with a hole within the other one of said two superimposed roofing batten plies, for receiving said plurality of fasteners for securing said roofing batten atop said at least one flexible, water-impervious sheet membrane and to said building structure substrate; and cutting said flattened seamless tube, having said holes provided therein, to predetermined lengths so as to define a plurality of roofing battens having said predetermined lengths such that each one of said roofing battens extends at least between two axially spaced positions at which at least two of said plurality of fasteners, arranged within said longitudinally extending, laterally spaced rows, are to be disposed;

disposing said roofing battens atop said at least one flexible, water-impervious sheet membrane so as to extend along each one of said laterally spaced, longitudinally extending rows; and

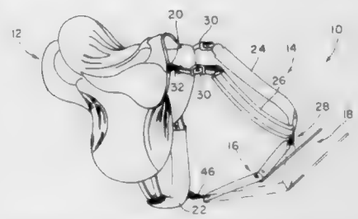
inserting said plurality of mechanical fasteners through said holes of said roofing battens so as to secure said roofing battens atop said at least one flexible, water-impervious sheet membrane and thereby, in turn, secure said at least one flexible, water-impervious sheet membrane to said building structure substrate.

5,349,805

BREASTPLATE ASSEMBLY WITH ELASTIC TIEDOWN

Roy L. Brown, Nevada, Mo., assignor to Ortho-Flex Saddle Co., Inc., Nevada, Mo.

Filed Jan. 18, 1994, Ser. No. 181,781
Int. Cl.[5] B68B *1/00*
U.S. Cl. 54—35 9 Claims



1. A breastplate assembly adapted for connection with a saddle secured to a horse by a lower girth strap, there being a bridle assembly operably mounted on the head of said horse, said assembly comprising:

a breastplate including a pair of interconnected breast-engaging straps each presenting a free end adapted for coupling to said saddle;

a depending, central strap operably coupled with said breastplate and extending downwardly therefrom, the end of said central strap remote from said breastplate being adapted for coupling with said lower girth strap,

said central strap including an elastic, axially stretchable section; and

an elongated tiedown strap operably connected with said central strap and extending upwardly therefrom in order to connect with said bridle assembly for elastic, axial stretching of said central strap section in response to upward movement of the head of said horse.

5,349,806

WRAPPING MECHANISM FOR ROUND BALERS

John R. Swearingen, Elliott; Richard K. Jardine; John O. Bradford, both of Gibson City, and Loren L. Rathbun, Colfax, all of Ill., assignors to M & W Gear Company, Gibson City, Ill.

Continuation of Ser. No. 841,407, Feb. 26, 1992, Pat. No. 5,231,828. This application Jun. 21, 1993, Ser. No. 80,300
Int. Cl.[5] A01F *15/07*
U.S. Cl. 56—341 2 Claims

1. Apparatus for feeding twine or sheet material into a bale forming mechanism comprising, in combination:

a twine storage chamber;

a separate sheet material holder;

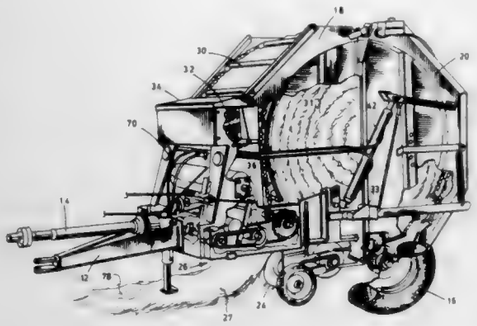
generally parallel, spaced rolls for receipt therebetween of twine from the twine chamber or sheet from the sheet holder, at least one of said rolls being driven to thereby advance the twine or sheet between the rolls,

means for directing at least one strand of twine between the rolls intermediate the ends of the rolls, said means for directing carriage means for reciprocally guiding the twine in a constantly changing position between the ends of the rolls to thereby provide that the twine will wrap a bale about its outer circumference;

means for supporting and directing a sheet between the same rolls;

knife means on the exit side of the rolls positioned to move and cut twine or sheet passing therebetween; and

means for actuating the knife means in response to a control



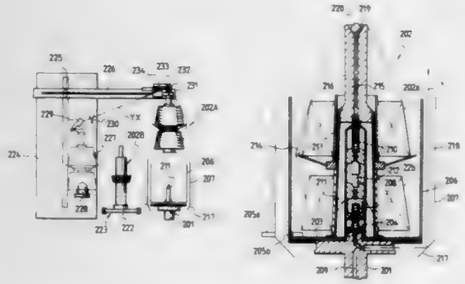
signal to thereby sever the twine or sheet that has passed between the rolls whereby the remaining end of the twine or sheet remains between the rolls for further advance therebetween.

5,349,807

ROBOT APPARATUS FOR DOUBLE TWISTER

Tsukasa Kawarabashi, Kyoto; Hiroshi Mima, Joyo, and Tadashi Suzuki, Uji, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Apr. 17, 1992, Ser. No. 870,550
Claims priority, application Japan, Apr. 19, 1991, 3-088455; Jun. 24, 1991, 3-180363; Jul. 1, 1991, 3-160632
Int. Cl.[5] D01H *11/00*
U.S. Cl. 57—261 13 Claims



1. A method of operating a robot device for a double twister, the double twister comprising a plurality of units, each of the units configured for supporting a winding package and a feed package, the winding package defining a yarn end and the feed package defining a yarn end, the method comprising:

detecting a unit having a yarn breakage,

detecting whether the unit having the yarn breakage has a winding package having a predetermined diameter and which a yarn feed package has yarn remaining thereon,

exchanging the yarn feed package and doffing the winding package when a winding package having a predetermined diameter is detected and yarn remaining on the feed package is not detected,

exchanging the yarn feed package and piecing the yarn end of the winding package and the yarn end of the feed package when a winding package having a predetermined diameter is not detected and yarn remaining on the feed package is not detected, and

piecing the yarn end of the winding package and the yarn end of the feed package when a winding package having

a predetermined diameter is not detected and yarn remaining on the feed package is detected.

5,349,808

YARN TWISTING DISC

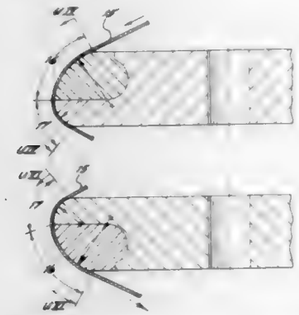
Hellmut Lorenz, Remscheid, Fed. Rep. of Germany, assignor to Barmag AG, Remscheid, Fed. Rep. of Germany

Filed Jun. 1, 1990, Ser. No. 531,894

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1989, 3919395

Int. Cl.[5] D01H *7/92, 13/00*

U.S. Cl. 57—339 **7 Claims**



1. A rotary yarn twisting disc adapted for imparting twist to an advancing yarn, comprising;

an annular flange defining a central rotational axis and having an annular yarn contacting peripheral surface over which the yarn is adapted to advance in a direction transverse to the circumferential direction of said surface,

said annular yarn contacting peripheral surface consisting of first and second annular segments which are axially adjacent each other, one of said segments having a coefficient of friction and a radius of curvature which are greater than the coefficient of friction and radius of curvature, respectively, of the other segment; said radius of curvature of said one segment being substantially uniform.

5,349,809

SHAFT FOR AN OPEN-END SPINNING ROTOR ASSEMBLY

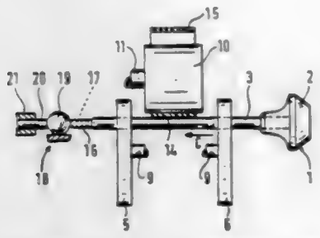
Fritz Stahlecker, Bad Überkingen, Fed. Rep. of Germany, assignor to Stahlecker: Hans, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 846,694, Mar. 6, 1992, abandoned. This application Aug. 6, 1993, Ser. No. 102,804

Claims priority, application Fed. Rep. of Germany, May 25, 1991, 4117175

Int. Cl.[5] D01H *4/12*

U.S. Cl. 57—406 **14 Claims**



1. A shaft assembly for an open-end spinning rotor comprising:

a shaft having a first end supporting a rotor and an opposite second end;

a receiving device at the second end of the shaft and

a substantially cylindrical ceramic supporting element pressed into the receiving device, the supporting element having a supporting surface projecting slightly out of the receiving device of the shaft in the axial direction, the supporting surface having rounded edges, wherein the supporting element includes longitudinal grooves on a circumference of the supporting element.

5,349,810

HUMID AIR TURBINE (HAT) CYCLE POWER PROCESS

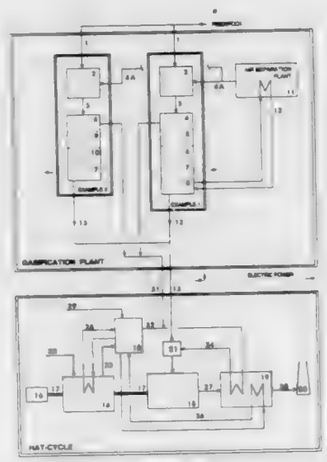
Ingvar Landälv, Nynäshamn, Sweden, assignor to Nykomb Synergetics Aktiebolag, Stockholm, Sweden

Filed Apr. 16, 1993, Ser. No. 48,051

Claims priority, application Sweden, Feb. 16, 1993, 9300500

Int. Cl.[5] F02G *3/00;* **F02B** *43/00*

U.S. Cl. 60—39.02 **12 Claims**



1. A process for the production of power from a carbonaceous fuel comprising partially oxidizing the fuel with oxygen or an oxygen containing gas to yield a combustible gas stream and sensible heat wherein said sensible heat or a major part thereof is transferred to a power producing unit with the combustible gas, said power producing unit being a humid air turbine cycle and wherein compression heat from an air compressor powered by a combustion turbine of the power producing unit is used to produce hot water which is used to humidify compressed combustion air before the air is introduced into a combustion turbine combustor of the power producing unit so that sensible heat available in the compressed air is utilized for generation of power in the combustion turbine.

5,349,811

PULSED FUEL INJECTION SYSTEM FOR REDUCING NO_x EMISSIONS

David B. Stickler, Carlisle; Daniel W. Swallom, Reading; Judith E. Reich, Andover; Victor M. Goldfarb, Swampscott, and Isaac Sadovnik, Newton, all of Mass., assignors to Avco Corporation, Providence, R.I.

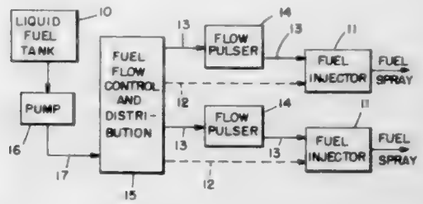
Filed Dec. 16, 1992, Ser. No. 991,185

Int. Cl.[5] F02C *9/26*

U.S. Cl. 60—39.06 **40 Claims**

1. In a gas turbine combustion process in which liquid fuel is introduced to a primary combustion zone of a combustor as a fine spray and air is compressed and introduced as primary air to primary combustion zone with the fuel spray to form a combustile mixture, and is also introduced as secondary air to a secondary combustion zone through a multiplicity of discrete jets and cooling passageways to cool the combustor walls, assist the mixing of the fuel and air, complete the combustion of the gases from the primary combustion zone and cool and

dilute them for emission, the improvement which comprises supplying a continuous flow of said liquid fuel and primary air to form a combustile mixture in said primary combustion zone, modulating the flow rate of a portion of said liquid fuel to introduce uniformly-spaced modulations in the fuel flow rate, with a time period between peaks in said uniformly-spaced modulations of less than about 10 milliseconds, in order to produce a controlled variation of primary zone combustion



temperature and volume, resulting in a controlled degree of gas flow oscillation in the form of cyclic expansion and contraction of the primary and secondary combustion zones without creating a net pressure gain throughout the combustion chamber, thereby substantially improving the gas phase mixing rate and the homogeneity of the formed fuel/air mixtures and decreasing the net extent of NO_x formation normally resulting from the transitioning of fuel-air mixtures from high to low stoichiometry during combustion or oxidation.

5,349,812

GAS TURBINE COMBUSTOR AND GAS TURBINE GENERATING APPARATUS

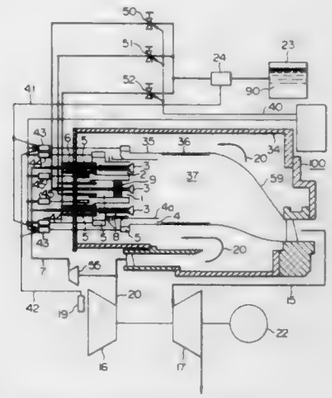
Masayuki Taniguchi; Hironobu Kobayashi, both of Katsuta; Kiyoshi Narato, Ibaraki; Tadayoshi Murakami, Hitachi; Shigeru Azuhata, Hitachi; Michio Kuroda, Hitachi, and Noriyuki Hayashi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,576

Claims priority, application Japan, Jan. 29, 1992, 4-013685

Int. Cl.[5] F02C *9/50*

U.S. Cl. 60—39.23 **6 Claims**



1. A gas turbine combustor comprising:

a combustion chamber;

pilot burner means of a premixed flame burner type disposed in said combustion chamber, said premixed flame burner means being constructed such that fuel and air are premixed prior to combustion;

main burner means of a premixed flame burner type disposed so as to surround said pilot burner means, said main burner means being constructed such that fuel and air are premixed prior to combustion;

bypass air port means;

means for supplying fuel to said pilot burner means and said main burner means;

first means for controlling an amount of fuel to be supplied to said pilot burner means;

second means for controlling an amount of fuel to be supplied to said main burner means, said second fuel controlling means being independent of said first fuel controlling means;

means for supplying air to said pilot burner means, said main burner means and said bypass air port means;

first means for controlling an amount of air to be supplied to said pilot burner means;

second means for controlling an amount of air to be supplied to said main burner means;

third means for controlling a flow rate of air to be supplied to said bypass air port means, said first, second and third air controlling means being independent from one another;

means for sensing a fuel heating value of fuel to be supplied to said combustion chamber;

means for sensing a humidity of air to be supplied to said combustion chamber;

means for detecting a load of the gas turbine;

means for determining respective control variables of said first and second fuel controlling means based upon a detected gas turbine load in such a manner that, when the detected gas turbine load is under a load which requires a main burner ignition, the detected gas turbine load is increasing, and the controlled variable of the first fuel controlling means is determined so as to increase an amount of fuel to be supplied to said pilot burner means and, when the detected gas turbine load is equal to or greater than a load requiring a main burner ignition, when the detected gas turbine load is increasing, the controlled variable of the second fuel controlling means is determined so as to increase the amount of fuel to be supplied to said main burner means;

means for determining respective controlled variables of said first and second air controlling means based upon detected gas turbine load in such a manner that, when the detected gas turbine load is under a load requiring a main burner ignition, the controlled variable of said first air controlling means is determined so as to increase an amount of air to be supplied to said pilot burner means, and when the detected gas turbine load in a vicinity of requiring a main burner ignition, the controlled variable of the first air controlling means is determined so as to decrease an amount of air to be supplied to the pilot burner means, and when the detected gas turbine load is greater than a load which requires a main burner ignition, the controlled variable of said second air controlling means is determined so as to increase an amount of air to be supplied to said main burner means;

means for determining the controlled variable of the third air controlling means in dependence upon a detected fuel heating value and a detected air humidity in such a manner that, when the detected fuel heating value is greater than a reference level, the controlled variable of said third air controlling means is determined so as to decrease a flow rate of air to be supplied from said dilution air port means, when the detected fuel heating value is less than the reference level, the controlled variable of said third air controlling means is determined so as to increase a flow rate of air to be supplied from the dilution air port means, when the detected air humidity is greater than a reference level, the controlled variable of said third air controlling means is so determined so as to increase a flow rate of air to be supplied from said dilution air port means, and when the detected air humidity is less than the reference level, the controlled variable of said third air controlling means is determined so as to decrease a flow rate of air to be supplied from said dilution air port means; and

means for determining the controlled variable of said third

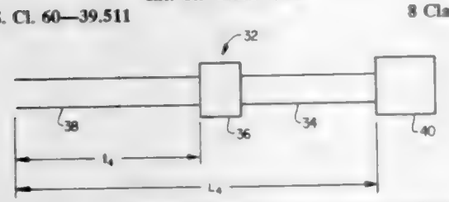
air controlling means in dependence upon a detected gas turbine load in such a manner that, when the detected gas turbine load is increasing, the controlled variable of said third air controlling means is determined so as to decrease a flow rate of air to be supplied from said dilution air port means, and a ratio of a change of the flow rate of air to be supplied from said dilution air port means to said change of the detected gas turbine load being maximum when a detected gas turbine load is substantially a load which requires a main burner ignition.

5,349,813

VIBRATION OF SYSTEMS COMPRISED OF HOT AND COLD COMPONENTS

Frantisek L. Eisinger, Demarest, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed Nov. 9, 1992, Ser. No. 973,022
Int. Cl.[5] F02C *7/10*
U.S. Cl. 60—39.511 **8 Claims**



1. A system for resisting severe thermoacoustic oscillations, comprising:

a component having a relatively cold section and a relatively hot section, said relatively cold section and a relatively hot section, said relatively cold and hot sections being in gas flow communication, and said component having a total effective length L;

said relatively cold section having an effective length l and having an average temperature T_c across said length l;

said relatively hot section having an effective length L-l and having an average temperature T_h across said length L-l;

said temperatures T_c and T_h being subject to variations at different loads for said component and being related by a variable temperature ratio α which is equal to T_h/T_c;

said component having a known minimum critical temperature ratio α_{min} below which said component is not subject to thermoacoustic oscillations regardless of selected lengths of said relatively cold section or said relatively hot section;

said component having a known maximum operating temperature ratio α_{max}, said component being subject to severe thermoacoustic oscillations when said maximum temperature ratio α_{max} is equal to or greater than a critical temperature ratio α_{cr};

said relatively cold section length l and said relatively hot section length L-l being selected so that said critical temperature ratio α_{cr} is greater than said known maximum operating temperature ratio α_{max} when said critical temperature ratio α_{cr} is defined as follows:

$$\log \alpha_{cr} = \frac{(\log (\frac{L-l}{l}))^2 + \log \alpha_{min}}{1.52}$$

5,349,814

AIR-START ASSEMBLY AND METHOD

John J. Ciokajlo, and Michael T. O'Brien, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 3, 1993, Ser. No. 12,664
Int. Cl.[5] F02C *7/262*
U.S. Cl. 60—226.1 **7 Claims**

1. An air-start assembly for an aircraft gas turbine engine having a fan powered by a low pressure turbine through a first shaft, and a compressor powered by a high pressure turbine through a second shaft disposed coaxially around said first shaft comprising:

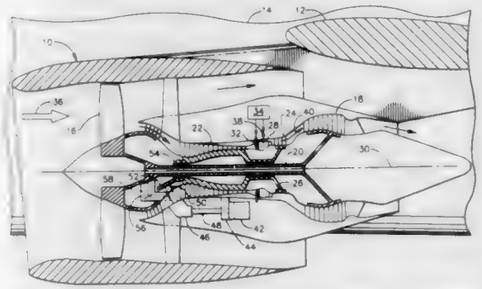
a gear train selectively operatively joined between said first and second shafts by a selectively engageable first clutch for transmitting torque through said first clutch only in one direction from said first shaft to said second shaft when said fan is windmilling for driving said second shaft to allow an air-start of the gas turbine engipe during flight; and

a second clutch operatively joined to said gear train and selectively engageable at speeds of said second shaft below a predetermined release speed, and disengageable at said release speed and above;

wherein said first clutch comprises a sprag clutch and said second clutch comprises a centrifugal clutch;

wherein said gear train has a speed ratio greater than 1.0 from said first shaft to said second shaft;

wherein said gear train comprises:



a first gear having a hub operatively joined coaxially to said first shaft, and further having gear teeth;

a second gear having a hub operatively joined to an idle shaft, and having teeth joined in engagement with said first gear teeth for transmitting torque therebetween;

a third gear having a hub operatively joined to said idle shaft, and further having gear teeth;

a fourth gear having a hub operatively joined to a starter shaft, and further having gear teeth joined in engagement with said third gear teeth;

a fifth gear having a hub operatively joined to said starter shaft, and further having gear teeth; and

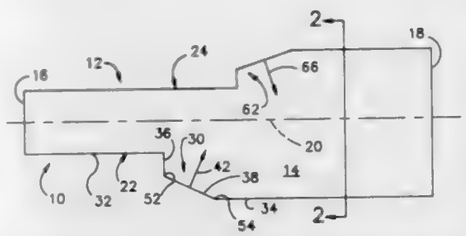
a sixth gear having a hub operatively joined to said second shaft, and further having gear teeth joined in engagement with said fifth gear teeth.

5,349,815

SCRAMJET COMBUSTOR HAVING A TWO-PART, AFT-FACING STEP

Paul H. Kutschenreuter, Jr., Loveland, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Aug. 27, 1991, Ser. No. 750,343
Int. Cl.[5] F02K *7/08*
U.S. Cl. 60—270.1 **15 Claims**



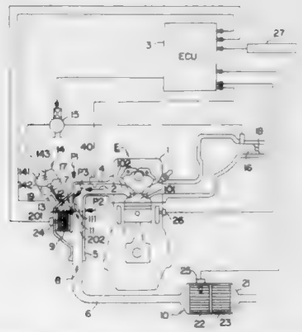
1. A flight vehicle scramjet combustor comprising: two spaced-apart, generally opposing, and generally longitudinally extending walls extending forward and aft, wherein one of said walls includes a generally aft-facing step, a forward wall portion extending generally longitudinally forward of said step, and an aft wall portion extending generally longitudinally aft of said step, wherein said step includes a first section and an interconnected second section, wherein said first section is attached to said forward wall portion and said second section is attached to said aft wall portion, and wherein said first section is generally perpendicular to said forward wall portion and said second section includes a fuel injector discharge orifice and faces both generally towards the other of said walls and longitudinally aft.

5,349,816

EXHAUST EMISSION CONTROL SYSTEM

Daisuke Sanbayashi, Toyota; Osamu Hirako, Okazaki; Yoshiaki Danno, and Kazuo Koga, both of Kyoto, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1993, Ser. No. 19,902
Claims priority, application Japan, Feb. 20, 1992, 4-033727; Feb. 20, 1992, 4-033728; Feb. 20, 1992, 4-033729
Int. Cl.[5] F01N *3/28*
U.S. Cl. 60—277 **18 Claims**



1. An exhaust emission control system comprising:

a) a first catalyst for purifying an exhaust gas at an initial stage of engine operation, the first catalyst being disposed in an exhaust path near an internal combustion engine;

b) a second catalyst disposed downstream of the first catalyst, the second catalyst including a lean NOx catalyst for purifying nitrogen of oxides in a lean exhaust gas;

a first bypass detouring the first catalyst and converging with the exhaust path upstream of the second catalyst;

a first select valve for controlling an amount of exhaust gas to be introduced to the first bypass and the first catalyst; and

control means for providing the first select valve with signals indicative of positions of the first select valve.

5,349,817

AIR GAP MANIFOLD PORT FLANGE CONNECTION

Mark W. Bekkering, Byron Center, Mich., assignor to Benteler Industries, Inc., Grand Rapids, Mich.

Filed Nov. 12, 1993, Ser. No. 151,556
Int. Cl.[5] F01N *7/10*
U.S. Cl. 60—322 **6 Claims**

1. Air gap manifold joint construction comprising:

an engine exhaust port flange having a plurality of exhaust port orifices, each with an inner orifice wall;

a dual wall manifold having a plurality of runners, each including an inner tubular liner and an outer tubular jacket;

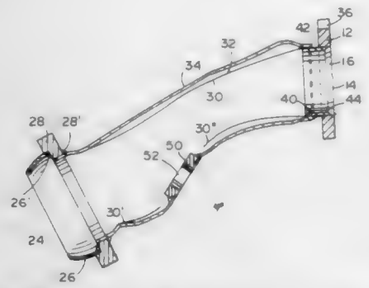
said inner tubular liner being generally spaced from said outer tubular jacket substantially over the length of said inner tubular liner to form an air gap;

said inner tubular liner having an inlet end and said outer tubular jacket having an end adjacent to said inner tubular liner inlet end;

said inner tubular liner inlet end having an outer diameter substantially the same size as the inner diameter of said outer tubular jacket end and in peripheral engagement therewith;

an adapter sleeve having first and second ends;

said adapter sleeve first end having an outer diameter substantially the same size as the diameter of said inner orifice wall of said exhaust port orifice;



said adapter sleeve second end having an outer diameter substantially the same size as the inner diameter of said inner tubular liner inlet end and in peripheral engagement therewith;

an inner weld seam joining said adapter sleeve first end to said inner orifice wall; and

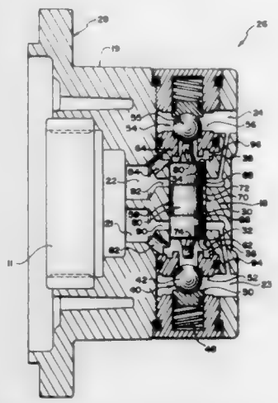
an outer weld seam joining said inner tubular liner inlet end and said outer tubular jacket end to said adapter sleeve second end.

5,349,818

LOW DEADBAND MARINE HYDRAULIC STEERING SYSTEM

Andrew W. McFadyen, Richmond; James B. McBeth, North Vancouver, Canada, and Eric B. Fetchko, Burnaby, all of Canada, assignors to Teleflex (Canada) Limited, Richmond, Canada

Filed Aug. 11, 1993, Ser. No. 104,642
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—385 **12 Claims**



1. A lock valve apparatus, comprising lock valve body (**19**, **19.1**, **19.2**) having a bore (**30**, **30.1**, **30.2**) therein, a first port (**21**, **21.1**, **21.2**), a second port (**22**, **22.1**, **22.2**), a third port (**23**,**23.1**,**23.2**) and a fourth port (**24**, **24.1**, **24.2**);

a spool valve (**59**, **59.1**,**5 9.2**) having a spool (**60**, **60.1**, **60.2**) reciprocatingly received in the bore;

first means (**60**, **40**, **54**, **60.1**, **54.1**, **60.2**, **40.2**) in the lock valve

body for normally preventing fluid flowing between the ports;

second means (**40**, **40.1**, **40.2**) for permitting a fluid flow from the first port to the third port when the first port is pressurized, the second means including a first one way valve disposed operatively between the first port and the third port;

third means (**54**, **54.1**, **92.2**, **84.2**, **72.2**, **38.2**, **96.2**) for permitting a fluid flow from the second port to the fourth port when the second port is pressurized, the third means including a second one way valve (**54**, **54.1**) disposed operatively between the second port and the fourth port;

fourth means (**96**, **96.1**, **96.2**, **72**, **72.1**, **72.2**, **92**, **92.1**, **92.2**) for permitting a return flow of fluid from the fourth port to the second port when the first port is pressurized, the fourth means including a passageway (**82**, **82.1**, **82.2**) extending from the first port to the bore adjacent one end (**62**, **62.1**, **62.2**) of the spool, whereby the spool is shifted in a first direction as the first port is pressurized, and a passageway (**72**, **72.1**, **72.2**) in the spool valve which interconnects passageways (**96**, **96.1**, **96.2**, **92**, **92.1**, **92.2**) through the bore when the spool is shifted in the first direction;

fifth means (**94**, **94.1**, **72**, **72.1**, **90**, **90.1**, **74.2**, **40.2**, **52.2**) for permitting a return flow of fluid from the third port to the first port when the second port is pressurized, the fifth means including a passageway (**84**, **84.1**) extending from the second port to the bore adjacent another end (**64**, **64.1**) of the spool, whereby the spool is shifted in a second direction when the second port is pressurized, a passageway in the spool valve (**72**, **72.1**) which interconnects passageways (**94**, **94.1**, **90**, **90.1**) through the bore when the spool is so shifted in the second direction, and means (**74**, **74.2**) on the valve spool for contacting the first one way valve to unseat said first valve when the spool is shifted towards said first valve; and

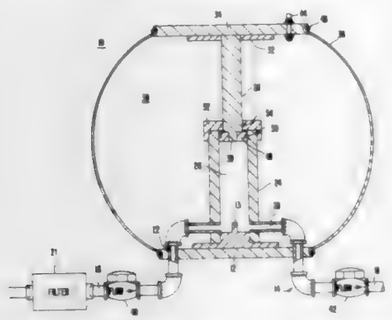
at least one of said means for permitting a return flow including passageways (**96**, **96.1**, **96.2**, **92**, **92.1**, **92.2**) normally blocked by the spool which are uncovered when the spool is deflected by pressurized fluid.

5,349,819

APPARATUS FOR GENERATING HIGH PRESSURE WATER IN RESPONSE TO WATER WEIGHT CHANGES CAUSED BY WAVES

Thomas B. Margittai, 778 Cornwall Dr., State College, Pa. 16801

Filed Sep. 15, 1993, Ser. No. 122,060
Int. Cl.[5] F16D *33/00*
U.S. Cl. 60—398 **16 Claims**



1. An apparatus for pressurizing water and collecting the pressurized water in a collection tank, said apparatus comprising:

a stable base adapted to be positioned below a surface of a body of water having waves;

a cylinder mounted to said base and defining a fluid chamber having a cross-sectional area;

water conducting means, for conducting water from the body of water to the collection tank and having:

(a) an inlet portion adapted for conducting water from the body of water,

(b) an outlet portion adapted for conducting water to the collection tank, and

(c) a central portion disposed between said inlet portion and said outlet portion and in fluid communication with said fluid chamber;

a plunger movable within said cylinder and sealingly engaging the inside of said cylinder and having:

(a) a lower end which further defines said fluid chamber, and

(b) an upper end;

a flat disk, having a surface area greater than said cross-sectional area of said fluid chamber, disposed parallel to the surface of the body of water and coupled to said upper end of said plunger;

means for:

(a) driving said plunger upward to an extended position in response to the presence of a wave trough above said flat disk, and

(b) permitting said plunger to be driven downward to a compressed position in response to the presence of a wave crest above said flat disk;

first flow control means, disposed in the inlet portion of said water conducting means, for:

(a) permitting water flow from the body of water to said fluid chamber as said plunger is moved upward, and

(b) preventing water flow from said fluid chamber to the body of water as said plunger is moved downward; and

second flow control means, disposed in the outlet portion of said water conducting means, for:

(a) permitting water flow from said fluid chamber to the collection tank as said plunger is moved downward, and

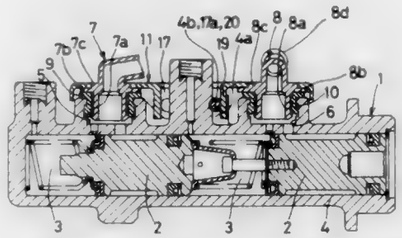
(b) preventing water flow from the collection tank to said fluid chamber as said plunger is moved upwards.

5,349,820

INLET UNION FOR MASTER CYLINDER

Kunio Yanagi, and Syusaku Chiba, both of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1993, Ser. No. 12,129
Claims priority, application Japan, Feb. 18, 1992, 4-016198[U]; Mar. 30, 1992, 4-026418[U]; Aug. 21, 1992, 4-058790[U]
Int. Cl.[5] B60T *11/20*
U.S. Cl. 60—562 **5 Claims**



1. An inlet union for a master cylinder, said inlet union comprising:

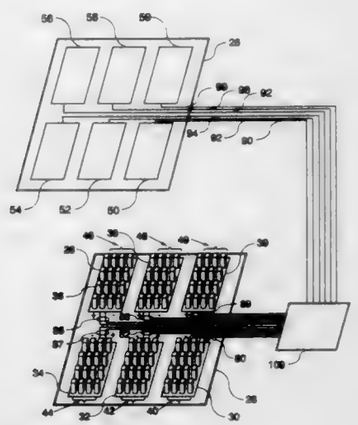
a plurality of independent duct members for supplying working fluid from a reservoir to pressure chambers in said master cylinder, said master cylinder having a plurality of sets of piston and pressure chambers arranged in series in an axial direction and a common attaching cover for attaching said duct members, wherein a flange portion is disposed at a periphery of said duct member, a circular raised portion whose outside diameter is smaller than that of said flange portion is integrally formed, at least one convex portion protruding radially disposed at the outer periphery of said circular raised portion, attaching holes for said duct members are disposed in the top plate of said attaching cover, a plurality of concave portions corresponding to the convex portion of circular raised portion of said flange portion are disposed at the inner periphery of said attaching hole so that said convex portion of said duct member selectively engages with said concave portion of said attaching cover, and a depression is formed at the inner periphery of said attaching cover to mount the outer periphery of said flange portion wherein said protruding portions, which protrude radially beyond said convex portion, are disposed on the circular raised portion of said duct member, so that the lower surface of each said protruding portion engages with the top surface of said attaching cover by disposing said protruding portion on the top surface side of said attaching cover when said duct member is mounted to said attaching cover.

5,349,821

AUGMENTED THERMAL BUS WIH MULTIPLE THERMOELECTRIC DEVICES INDIVIDUALLY CONTROLLED

Dean S. Schrage, Strongsville, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 25, 1993, Ser. No. 81,891
Int. Cl.[5] F25B *21/02*
U.S. Cl. 62—3.7 **5 Claims**



1. A thermal bus comprising:

a heat source,

a plurality of quadrants located in said heat source, said quadrants each including a heat sensing means for sensing heat in said heat source,

a heat sink including a plurality of quadrants each, coupled to one of said plurality of quadrants in said heat source,

a plurality of thermo-electric heat pumps each positioned between one of said plurality of quadrants located in the heat source and said coupled quadrant in said heat sink, thereby pumping heat from each of said plurality of quadrants in said heat source, to each of said coupled quadrants in said heat sink, and

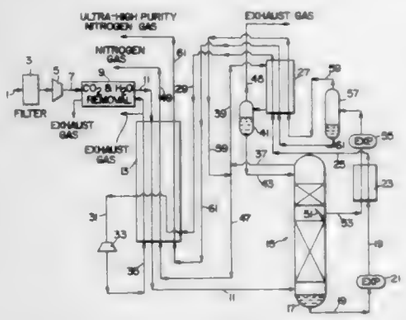
a model based controller individually connected between each of said heat sensing means and each of said plurality of thermo-electric heat pumps thereby controlling said plurality of thermo-electric heat pumps by sensing said heat.

5,349,822

METHOD AND APPARATUS FOR THE PRODUCTION OF ULTRA-HIGH PURITY NITROGEN

Takashi Nagamura, and Takao Yamamoto, both of Hyogo, Japan, assignors to Teisan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1993, Ser. No. 26,481
Int. Cl.[5] F25J *3/00*
U.S. Cl. 62—39 **8 Claims**



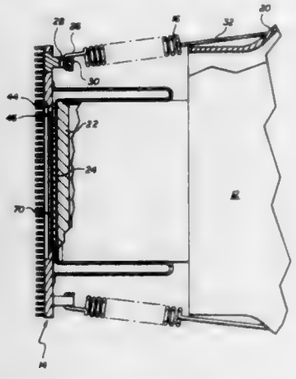
1. In a method for separating air by low temperature liquefaction and fractionation wherein feed air is compressed and cooled and supplied to a single stage air separation column from which gaseous nitrogen is removed from the top and wherein an oxygen-rich liquid is removed from the bottom, said column containing solid material providing solid surfaces on which mass and energy transfer takes place to effect fractionation over a substantial vertical height in the single stage of the column; the improvement comprising removing liquid from said column intermediate said height, subcooling said removed liquid, expanding said subcooled liquid to produce a gas and a liquid, and withdrawing the last-named liquid as ultra-high purity nitrogen.

5,349,823

INTEGRATED REFRIGERATED COMPUTER MODULE

Raymond Solomon, Penn Valley, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 837,353, Feb. 14, 1992. This application Sep. 22, 1993, Ser. No. 125,040
Int. Cl.[5] F25B *9/00;* **F25D** *23/12;* **H05K** *7/20*
U.S. Cl. 62—6 **5 Claims**



1. A computer module, comprising:

a chip carrier that has at least one pin extending from a first surface of said chip carrier, said chip carrier containing at least one electronic device that is capable of generating heat, said chip carrier further having a cold plate opposite from said first surface, said chip carrier having a pair of lugs;

a cryogenic cooler adapted to remove said heat generated by said electronic device, said cryogenic cooler having a pair of lugs;

a enclosure attached to said chip carrier, said enclosure having a wall adapted to support said cryogenic cooler and a base adjacent to said cold plate, said enclosure being constructed such that said cryogenic cooler is in contact with said base such that said heat flows from said cold plate through said base and into said cryogenic cooler, said enclosure wall having a first portion that extends from said base toward said cryogenic cooler and a second portion that extends from said first portion and is connected to said chip carrier, said first portion and said second portion being substantially separated by a vacuum channel such that the thermal path along said wall is along the entire lengths of said first and second portions; and,

at least two springs that have hooks attached to said lugs of said chip carrier and said cryogenic cooler, wherein said springs exert a force that presses said cryogenic cooler into operative contact with said base of said enclosure.

5,349,824

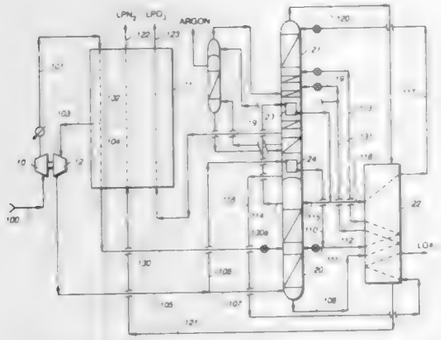
PROCESS FOR THE MIXED PRODUCTION OF HIGH AND LOW PURITY OXYGEN

Bao Ha, Vacaville, Calif., and Catherine Garnier, Paris, France, assignors to Liquid Air Engineering Corporation, Montreal, Canada

Continuation of Ser. No. 775,453, Oct. 15, 1991. This application Jun. 30, 1993, Ser. No. 83,515

Int. Cl.[5] F25J *3/02*

U.S. Cl. 62—24 **6 Claims**



1. A process for simultaneously producing both high and low purity oxygen from a double column, double reboiler apparatus, the double columns being low and high pressure columns, and said low pressure column having a lower and an upper reboiler, which comprises:

a) condensing a first compressed and cooled feed stream fraction containing at least nitrogen and oxygen in a reboiler located at the bottom of the lower pressure column;

b) feeding at least a fraction of the resulting liquefied feed stream to either high or low pressure columns or both as feed;

c) introducing a second fraction of a feed stream to a bottom of the high pressure column as gaseous feed, whereby a bottom oxygen-rich liquid stream and an overhead nitrogen-rich gaseous stream are formed;

d) passing the oxygen-rich liquid stream to the low pressure column as feed;

e) condensing the nitrogen-rich gaseous stream against a boiling liquid in an upper reboiler of the low pressure column, thereby serving as a second reboil for distillation;

f) returning a portion of the condensed nitrogen-rich stream to the high pressure column as reflux, and passing at least a fraction of a remaining portion of the nitrogen-rich stream to the top of the low pressure column as reflux, whereby the low pressure column separates its feeds into bottom stream oxygen product and top stream-rich in nitrogen;

g) recovering the bottom stream oxygen product as high purity liquid oxygen; and

h) drawing from a tray or a stage between the two reboilers of the low pressure column, an oxygen product stream as low purity oxygen.

5,349,825

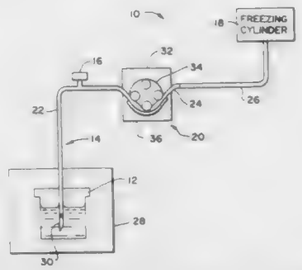
SYSTEM AND METHOD FOR DISPENSING A CONFECTIONERY PRODUCT USING A PERISTALTIC PUMP

Daniel G. Duke, East Moline; Kenneth J. Emody, Geneseo, and Gary P. Almblade, East Moline, all of Ill., assignors to H. C. Duke & Son, Inc., East Moline, Ill.

Filed May 18, 1993, Ser. No. 63,443

Int. Cl.[5] A23G *9/20*

U.S. Cl. 62—69 **5 Claims**



1. A confectionery dispensing system for moving a confectionery mixture having a predetermined ratio of air to fluid to a freezing cylinder, comprising:

a reservoir containing a confectionery fluid;

a tube connecting said reservoir to said freezing cylinder;

an air metering means coupled to said tube for controlling the ratio of air mixed with said confectionery fluid to form said confectionery mixture having a predetermined air to fluid ratio;

a peristaltic pump having a generally U-shaped path for receiving said tube, said peristaltic pump having an operating mode and an idle mode;

said tube being positioned in said generally U-shaped path of said peristaltic pump forming a generally U-shaped trough in said tube,

said peristaltic pump moving said confectionery mixture to said freezing cylinder in said operating mode;

a liquid seal formed by a portion of said confectionery mixture in said trough in said tube when said peristaltic pump is in said idle mode, said liquid seal preventing the movement of air across the trough in said tube and maintaining the air-to-fluid ratio of said confectionery mixture.

5,349,826

AIR CONDITIONING APPARATUS FOR AUTOMOTIVE VEHICLE

Nobuyuki Kawai, Fujisawa; Ikutaro Noji, Yokohama, and Makoto Fukubayashi, Isehara, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Sep. 2, 1993, Ser. No. 115,080

Claims priority, application Japan, Sep. 21, 1992, 4-250300

Int. Cl.[5] B60H *1/32*

U.S. Cl. 62—133 **4 Claims**

1. An air conditioning apparatus for an automotive vehicle, comprising:

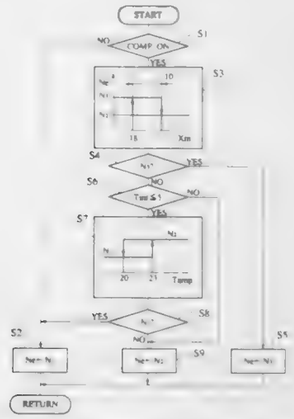
a compressor driven by an engine, for compressing a refrigerant;

an evaporator for evaporating the refrigerant compressed by said compressor;

engine speed commanding means for outputting a first command signal to drive the engine at a first engine idle speed when said compressor is not actuated, and outputting a second command signal to drive the engine at a second engine idle speed higher than the first engine idle speed when said compressor is actuated;

an after-evaporator temperature sensor for detecting air temperature immediately after said evaporator;

an external air temperature sensor for detecting external air temperature; and



inhibiting means for inhibiting said engine speed commanding means from outputting the second command signal, when air temperature detected by said after-evaporator temperature sensor is lower than a predetermined temperature and further external air temperature detected by said external temperature sensor is lower than another predetermined temperature, irrespective of whether said compressor is actuated or not.

5,349,827

PROCESS FOR THE CONSTRUCTION OF A CRYOGENIC UNIT FOR THE SEPARATION OF GAS, CRYOGENIC UNIT, SUBASSEMBLY AND TRANSPORTABLE ASSEMBLY FOR THE CONSTRUCTION OF SUCH A UNIT

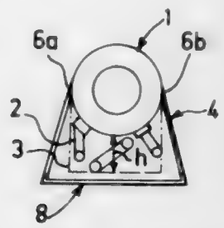
Gilles Bracque, Saint Leu Desserent; Francois Dehaine, Villemomble; Jean-Pierre Gourbier, Le Plessis Trevise; Alain Grelaud, La Quene-En-Brie; Alain Guillard, Paris; Michel Mouliney, St. Jean De Moiran, and Norbert Rieth, Paris, all of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Jun. 10, 1993, Ser. No. 74,411

Claims priority, application France, Jun. 17, 1992, 92 07327

Int. Cl.[5] F25J *3/00*

U.S. Cl. 62—298 **8 Claims**



1. In a process for the construction of a cryogenic unit for the separation of gases including at least one distillation column (**1**), comprising the steps of preassembling in a factory a said column (**1**) with added tubing elements (**2**) to constitute a pre-equipped subassembly, and transporting and installing the subassembly at a worksite; the improvement comprising constituting the pre-equipped subassembly with tubing elements disposed so as to be inscribed in at least one elongated volume (**3**; 3_1, 3_2) lateral to the column, and disposing the subassembly (**1**, **2**) on at least one transport cradle (**4**, **4'**), transporting the subassembly and its cradle to the worksite and mounting at the worksite the subassembly in a cold box (**10**).

5,349,828

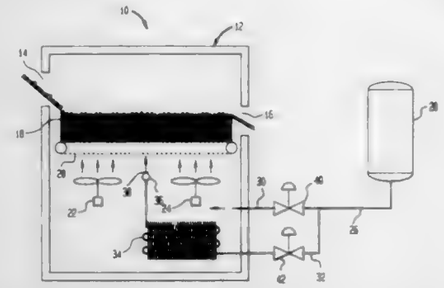
CONVEYOR BELT CLEANING APPARATUS FOR FOOD FREEZING

Ron C. Lee, Bloombury, and Mark J. Kirschner, Morristown, both of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Sep. 17, 1993, Ser. No. 122,676

Int. Cl.[5] F28G *1/00*

U.S. Cl. 62—303 **6 Claims**



1. In a freezer comprising: a freezing compartment having an inlet through which articles to be refrigerated enter the freezing compartment, the refrigeration supplied by a liquid cryogen and the articles refrigerated at a temperature higher than that of the liquid cryogen prior to entry of the liquid cryogen to the freezing compartment and an outlet through which the articles are discharged from the freezing compartment after having been refrigerated; and a porous conveyor belt for conveying the articles through the freezing compartment, from the inlet to the outlet, the porous conveyor belt accumulating ice during operation of the freezer; the improvement comprising:

liquid cryogen conduit means configured to be connected to a source of the liquid cryogen for conveying a stream of the liquid cryogen into the freezing chamber;

a vaporizer located within the freezing chamber and in communication with the liquid cryogen conduit means for vaporizing the stream of the liquid cryogen to form cryogenic vapor while said freezer is in use; and

means for forming and for directing jets of the cryogenic vapor against the porous belt to clear ice accumulated on the porous belt.

5,349,829

METHOD AND APPARATUS FOR EVAPORATIVELY COOLING GASES AND/OR FLUIDS

Alexandre Tsimerman, Odessa, U.S.S.R., assignor to AOC, Inc., Scottsdale, Ariz.

Filed May 21, 1992, Ser. No. 886,405

Int. Cl.[5] F28D *5/00*

U.S. Cl. 62—314 **11 Claims**

1. An air cooling apparatus comprising:

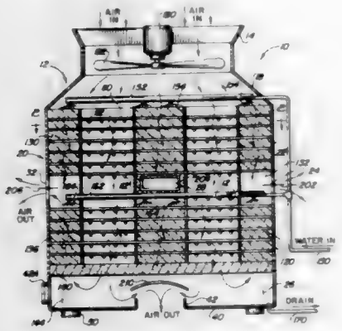
(a) a housing defining an intake for a total air flow to be treated and an outlet for cooled supply air;

(b) said housing defining at least one wet channel and one dry channel extending between said intake and outlet, said wet and dry channels arranged in adjacent heat exchange relationship and said dry channel having an inlet end

communicating with said intake and a discharge end communicating with said outlet, said wet channel having opposite first and second inlet ends, said wet channel first inlet end communicating with said intake and said second inlet communicating with said outlet;

(c) evaporative media disposed in said wet channel extending substantially the entire length thereof and water distribution means for delivering water to said evaporative media;

(d) substantially solid conductive heat transfer elements extending in heat transfer relationship between the dry and wet channels arranged generally perpendicular to the flow through said channels:



(e) an air discharge aperture located in said housing communicating with the wet channel at an intermediate location; and

means for directing a part of the air flow discharged from said dry channel through said wet channel and a portion to said outlet whereby sensible cooling occurs in said dry channel with heat being transferred to said wet channel by conduction along said heat transfer elements and wherein said air flow in said wet channel from said first inlet end to said air discharge aperture is generally parallel to that in the dry channel and wherein said air flow in said wet channels from said second inlet and to said air discharge is countercurrent to the air flow in said dry channel.

5,349,830

LOCK SYSTEM

Ernst Keller, Untere Schwandenstrasse 22, CH-8805 Richterswil, Switzerland

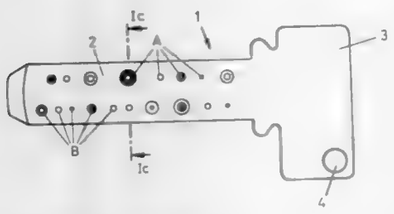
PCT No. PCT/CH91/00010, § 371 Date Sep. 17, 1991, § 102(e) Date Sep. 17, 1991, PCT Pub. No. WO91/10795, PCT Pub. Date Jul. 25, 1991

PCT Filed Jan. 11, 1991, Ser. No. 761,933

Claims priority, application Switzerland, Jan. 17, 1990, 144/90-9

Int. Cl.[5] E05B *27/10*

U.S. Cl. 70—358 **7 Claims**



1. A lock system comprising;

at least one flat safety key (**1**), two lock cylinders (**5**, **6**), each of which have at least one rotor (**9**, **10**) with a key channel (**7**, **8**) for introduction of said at least one flat safety key (**1**), said at least one rotor of a first lock cylinder of said two lock cylinders rotated 180° about an axis of rotation with respect to a first corresponding cylinder housing (**11**) of said first lock cylinder in comparison to said at least one rotor within a second corresponding cylinder housing (**12**) of a second lock cylinder of said two lock cylinders when said at least one rotor (**9**) of said first lock cylinder and said at least one rotor (**10**) of said second lock cylinder are respectively fixed by lock rows in said first corresponding cylinder housing and said second corresponding cylinder housing,

the lock rows being aligned and the corresponding rotor turnable within the cylinder thereon when the key is introduced into the key channel,

said at least one flat safety key (**1**) being a non-reversible key having a plurality of bores with one lock code for alignment with the lock rows of said first lock cylinder or with the lock rows of said second lock cylinder,

or having a plurality of bores with two lock codes, one code for alignment with the lock rows of said first lock cylinder and the other code for alignment with the lock rows of said second lock cylinder.

5,349,831

APPARATUS FOR COOLING HEAT GENERATING MEMBERS

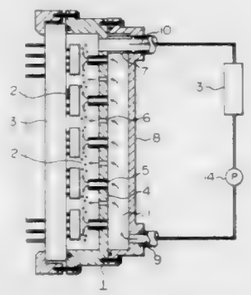
Takahiro Daikoku, Ushiku, and Hiroshi Inouye, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 6, 1992, Ser. No. 972,844

Claims priority, application Japan, Nov. 8, 1991, 3-293115

Int. Cl.[5] F28D *7/12*; **H05K** *7/20*

U.S. Cl. 62—376 **7 Claims**



1. An apparatus for cooling heat generating members by means of a refrigerant liquid flow, said apparatus for cooling heat generating members comprising:

first means for directing a first portion of a low temperature refrigerant liquid against said heat generating members for cooling said heat generating members and thereby heating said first portion of refrigerant liquid to a high temperature and causing boiled bubbles of said refrigerant liquid to occur in said first portion and second means for mixing, with each other, a second portion of said low temperature refrigerant liquid and said high temperature refrigerant liquid which has cooled said heat generating members to cause boiled bubbles in said high temperature refrigerant liquid to disappear.

5,349,832

MULLION BAR ASSEMBLY WITH ENHANCED HEAT TRANSFER BARRIER CHARACTERISTICS

Thomas M. Johnson, and John C. Ellingwood, both of Galesburg, Ill., assignors to Maytag Corporation, Newton, Iowa

Filed May 14, 1993, Ser. No. 61,004

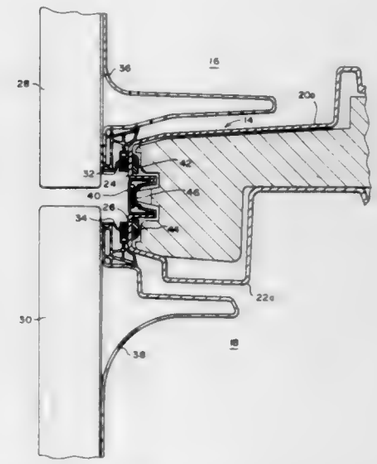
Int. Cl.[5] F25D *11/02*

U.S. Cl. 62—447 **12 Claims**

1. A mullion bar assembly having enhanced heat transfer barrier characteristics for a refrigerator cabinet having a cabinet with opposite sides defining an interior space, interior wall means to divide the interior space into at least two chambers and movable door means to selectively open or close each of the at least two chambers, comprising:

a) first and second non-magnetic means operatively associated with the interior wall means and defining first and second, spaced apart non-magnetic sealing surfaces;

b) magnetic gasket sealing means located on the movable door means such that, when the door means close the at least two chambers, the magnetic gasket sealing means contact the first and second, spaced apart non-magnetic sealing surfaces;



c) spaced apart magnets located on the first and second non-magnetic means so as to attract the magnetic gasket sealing means and urge the gasket sealing means into sealing contact with the nonmagnetic sealing surfaces; and,

d) a mullion bar spaced from the magnets and extending between opposite sides of the refrigerator cabinet, the mullion bar located so as to extend between the first and second spaced apart non-magnetic sealing surfaces and out of contact with the magnetic gasket sealing means such that the mullion bar is out of direct heat transfer relationship with the at least two chambers when the door means are closed.

5,349,833

CRYOTRAP FOR AIR POLLUTION ANALYZER

Michael A. Pardee, Saugus, and Matthias J. C. Yoong, Ventura, both of Calif., assignors to Xontech, Inc., Van Nuys, Calif.

Filed Feb. 22, 1993, Ser. No. 20,981

Int. Cl.[5] B01D *8/00*

U.S. Cl. 62—55.5 **13 Claims**

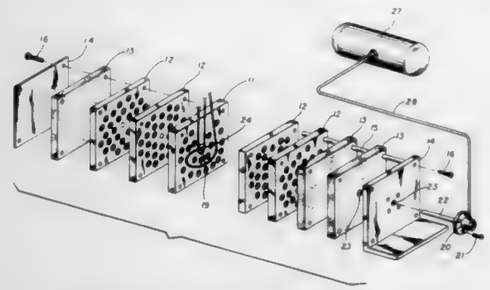
1. In a cryotrap for an air pollution analyzer, the combination of:

a core having first means for receiving a cooling gas expander;

a length of tubing carried on said core defining a gas flow path around said gas expander; and

an electric heater on said core, with said tubing disposed between said heater and expander;

said core having a helical groove around the exterior thereof, with said length of tubing positioned in said



groove, and with said heater positioned around said core over said tubing.

5,349,834

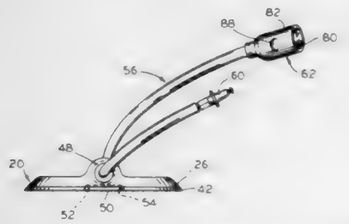
ADHESIVELY MOUNTED SECURITY SYSTEM

Gregory M. Davidge, Maui, Hi., assignor to Tortoise Products, Inc., Kula, Hi.

Continuation-in-part of Ser. No. 852,576, Mar. 17, 1992, abandoned. This application Nov. 5, 1992, Ser. No. 972,166

Int. Cl.[5] E05B *73/00*

U.S. Cl. 70—18 **10 Claims**



1. A security device for removably attaching a portable article to a non-portable object so as to prevent unauthorized removal of the portable article, comprising:

a base member formed of a polymeric material;

means for permanent attachment of the base member to a surface of the non-portable object;

said base member being in the form of a substantially flat slab and including a raised arch extending substantially diametrically of said slab, said arch having a tunnel extending entirely through said arch and surrounded by said polymeric material, said tunnel defining an axis of cylindrical symmetry;

a reinforcing tube fabricated of a metallic material, said tube defining an axis of cylindrical symmetry and being coaxially received in said tunnel;

an elongated attaching member being received within said tube and said tunnel, and having end portions which both extend outwardly from said base member toward said portable article;

and means for removably securing said attaching member to said portable article.

5,349,835

CYLINDRICAL LOCK

Wu-chang Liao, No. 18, Alley 5, Lane 42, Tien Hsiang Street, Hsin Chuang, Taipei Hsien, Taiwan

Filed Jul. 30, 1993, Ser. No. 99,534

Int. Cl.[5] E05B *27/00*

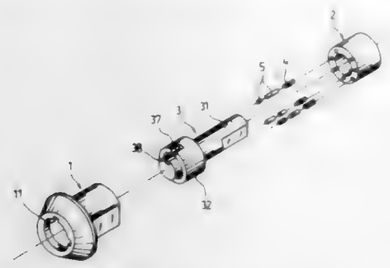
U.S. Cl. 70—491 **2 Claims**

1. An improved cylindrical lock comprising:

a housing;

a lower pin seat mounted in said housing;

a spindle;
a plurality of springs; and
plural sets of upper and lower cylindrical pins, wherein said spindle is a cylinder and an annular upper pin seat circumferentially provided with a plurality of holes;
an upper portion of said upper pin seat is provided with an annular wall having a slit for accommodating an outward protruding wing of a key;
an inner portion of said annular wall is provided with a plurality of semi-cylinder-shaped grooves that communi-



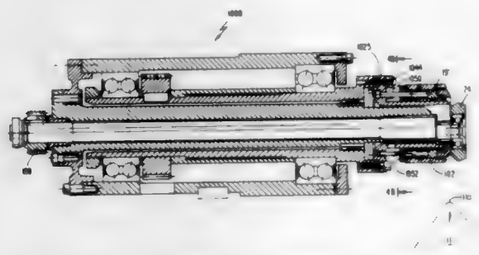
cate with a corresponding hole in order to form a longitudinal cylinder-shaped hole for receiving a set of springs and cylindrical pins, one end of each of said semi-cylinder-shaped grooves is formed as a grooved wall in order to prevent said pins from popping out of said hole, said upper portion of said annular wall on said upper pin seat of said spindle is partially cut to expose a bottom portion of said semi-cylinder-shaped grooves, so that said pins are visible during assembly in order to facilitate said assembly of said pins when a key is temporarily inserted into said spindle.

5,349,836

METHOD AND APPARATUS FOR MINIMIZING PLUG DIAMETER VARIATION IN SPIN FLOW NECKING PROCESS

Harry W. Lee, Jr., Chesterfield County, Va., assignor to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 929,933, Aug. 14, 1992, Pat. No. 5,245,848. This application Sep. 29, 1992, Ser. No. 953,421
Int. Cl.[5] B21D *19/12*
U.S. Cl. 72—84 **12 Claims**



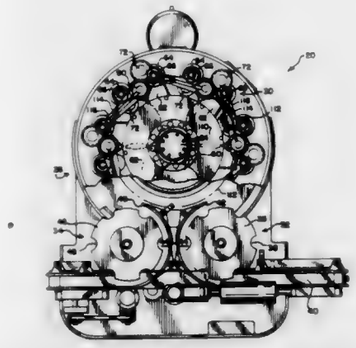
1. Apparatus for necking-in an open end of a side wall of a container body, comprising:
a) a first member and a second member mounted for engaging inside surfaces of the container side wall defining said open end;
b) an arrangement for rotating said container body;
c) an externally located member mounted for radially inward movement into deforming contact with an outside surface of said container side wall in a region thereof overlying an interface between said first and second members, whereby contact between said externally located member with said side wall causes the contacted wall portion to move radially inwardly into a gap formed at the interface caused by axial separation of said first and second members under the action of the radially inward advancing movement of the externally located member into the gap to thereby neck-in said side wall; and
d) stop means for limiting axial movement of said first member to thereby stop the radially inward advancing movement of the externally located member.

5,349,837

METHOD AND APPARATUS FOR PROCESSING CONTAINERS

Andrew Halasz, 3007 Springbrook Rd., Crystal Lake, Ill. 60012, and Sylvan Prattarlon, 4822 S. Ellis, Chicago, Ill. 60615

PCT No. PCT/US90/00451, § 371 Date Jul. 24, 1991, § 102(e) Date Jul. 24, 1991, PCT Pub. No. WO91/11275, PCT Pub. Date Aug. 8, 1991
Continuation-in-part of Ser. No. 351,769, May 12, 1989, Pat. No. Des. 332,750, which is a continuation-in-part of Ser. No. 945,314, Dec. 22, 1986, Pat. No. Des. 306,972, which is a division of Ser. No. 594,610, Mar. 24, 1984, Pat. No. Des. 290,688, which is a continuation-in-part of Ser. No. 523,514, Aug. 15, 1983, Pat. No. Des. 283,011. This PCT application Jan. 26, 1990, Ser. No. 730,794
Int. Cl.[5] B21D *51/26*
U.S. Cl. 72—94 **27 Claims**



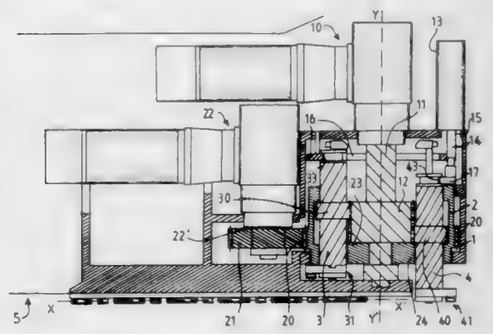
1. A method of processing a drawn and ironed open-ended container having a dome-shaped bottom wall merging with a cylindrical side wall through a generally U-shaped annular support member including a rotating turret (**26**) having a plurality of peripheral stations (**30**) with each station having a rotation rigid mandrel (**50**) and loading means (**52, 53**) for loading a container onto said mandrel, said mandrel having a peripheral surface (**102**) conforming generally to an inner diameter of said container and having spaced pockets (**104**) formed therein, each station including an impression mandrel (**54**) associated therewith, the steps of introducing containers to said loading means at each station and introducing said container onto said rigid mandrel, moving said impression mandrel into pressure engagement with said rigid mandrel to grip said container therebetween, driving said rigid mandrels and said impression mandrels to deform said side walls of said containers into said pockets and providing a support (**80, 82**) between an adjacent pair of stations with an adjacent pair of impression mandrels supported thereon, and pivoting said support to simultaneously produce pressure engagement between said adjacent pair of impression mandrels and an adjacent pair of rigid mandrels.

5,349,838

BENDING HEAD WITH MULTIPLE TOOLS FOR A MACHINE FOR BENDING METAL WIRES

Yves Latour, Haraucourt, France, assignor to Latour & Fils S.A., France

PCT No. PCT/FR92/00511, § 371 Date Dec. 4, 1992, § 102(e) Date Dec. 4, 1992, PCT Pub. No. WO92/21455, PCT Pub. Date Dec. 10, 1992
PCT Filed Jun. 5, 1992, Ser. No. 949,650
Claims priority, application France, Jun. 6, 1991, 91 07101
Int. Cl.[5] B21D *7/024*
U.S. Cl. 72—219 **9 Claims**



1. Apparatus for bending metal wires passing along a predetermined axis on a longitudinally extending arm, said apparatus comprising a bending head affixed to said longitudinally extending arm, said bending head including a housing, a rotatable cage arranged within said housing and mounted on said arm and rotatable about a cage axis perpendicular to said predetermined axis, motor means for rotating said rotatable cage about said cage axis, a plurality of tool carrying members, each tool carrying member having a wire bending tool rotatable about said cage axis so as to bend said wire, each tool carrying member having a longitudinal axis and mounted within said rotatable cage for slidable movement along said longitudinal axis between a rest inoperative position within said cage and an extended operative position whereby at least one wire bending tool carried by said tool carrying member projects from said cage into the path of said metal wire, selection means for selectively actuating a selected one of said plurality of tool carrying members and moving said selected one of said plurality of tool carrying members from said rest position to said extended position, ring means arranged within said housing for supporting said plurality of tool carrying members and for providing a guide path therefor, and tool carrying member rotation means for rotating said selected one of said tool carrying members along said guide path defined by said ring means about said cage axis.

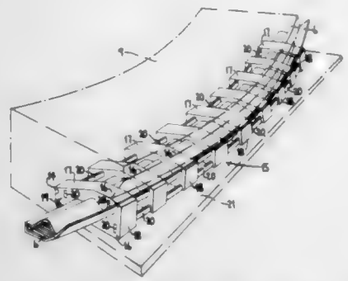
5,349,839

FLEXIBLE CONSTRAINING APPARATUS AND METHOD FOR THE STRETCH FORMING OF ELONGATED HOLLOW METAL SECTIONS

Robert E. Weykamp, Plum Boro, and Robert P. Evert, Allison Park, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 5, 1993, Ser. No. 43,014
Int. Cl.[5] B21D *11/02, 26/02*
U.S. Cl. 72—296 **10 Claims**

1. Apparatus for the stretch forming of an elongated hollow metal section into a predetermined contour, comprising means to grip the opposed ends of said elongated hollow metal section and tension said elongated hollow metal section above its elastic limit, a forming die member having a rigid forming die face and a die cavity in said die face and a flexible constraining means substantially surrounding the outer periphery of said elongated hollow metal section at closely spaced intervals along the length thereof and adapted to constrain the external surfaces of said hollow metal section while both said elongated hollow metal section and said flexible constraining means are contained in said die cavity during the stretch forming of the



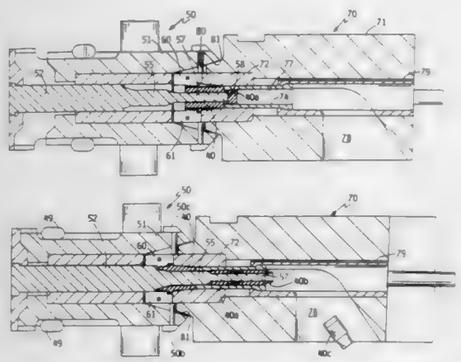
elongated hollow metal section, said flexible constraining means having means for engaging said die cavity during said stretch forming operation and for supporting the elongated metal section so that the elongated metal section does not contact the die cavity.

5,349,840

METHOD OF MAKING A HIGH TORQUE BATTERY TERMINAL

Robert W. Ratte, North Oaks; Ronald Cain, White Bear Lake, and Norman E. Peterson, Wyoming, all of Minn., assignors to Water Gremlin Company, White Bear Lake, Minn.

Continuation-in-part of Ser. No. 940,391, Sep. 3, 1992, Pat. No. 5,296,317. This application Feb. 11, 1993, Ser. No. 16,370
Int. Cl.[5] B21D *28/32, 28/16;* **B21J** *5/12*
U.S. Cl. 72—327 **9 Claims**



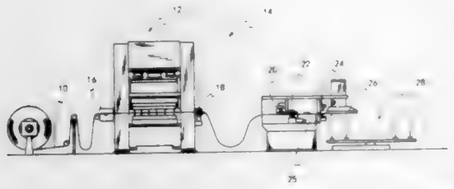
9. The process of cold forming a substantially flash free finished battery terminal by:
placing a lead slug having a first end and a second end between two dies;
forming a die chamber in the shape of a battery terminal around the lead slug by radially closing at least two die segments around the lead slug;
radially expanding the lead slug into the die chamber while forcing excess lead laterally forward in the die chamber by driving a punch with a transition zone through the lead slug with the transition zone forming an angle of about 11° to the central axis of the punch to thereby limit the radially expanding forces on the lead slug to below the force sufficient to form a flash on the lead slug by simultaneously forcing a portion of the lead radially and a further portion of lead laterally forward of the transition zone until the further portion is outside of the die chamber to thereby cold form a substantially flash free finished battery terminal.

5,349,841

FEEDING APPARATUS FOR METAL BELTING AND MANUFACTURING APPARATUS FOR FINS OF A HEAT EXCHANGER

Kensaku Honma; Masahide Sakaguchi, and Toshiki Miyazawa, all of Tokyo, Japan, assignors to Hidaka Seiki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 988,796
Claims priority, application Japan, Dec. 17, 1991, 3-353294
Int. Cl.[5] B21D *28/00, 43/12*
U.S. Cl. 72—333 20 Claims



1. A feeding apparatus for a metal belting having a plurality of through-holes in a feeding direction, the feeding apparatus comprising:

a basic plate supporting said metal belting, said basic plate having a slit formed in the feeding direction, wherein the through-holes correspond to the slit when said metal belting is supported on said basic plate;

a plurality of traveling plates being provided beneath and in parallel to said basic plate, said traveling plates being movable in the feeding direction of said metal belting, the traveling plates being independently movable relative to one another without a direct interconnection therebetween to thereby avoid play between the traveling plates;

driving means for moving said traveling plates in the feeding direction of said metal belting;

a plurality of feeding pins extending through said traveling plates, wherein lower ends of said feeding pins are projected from bottom faces of said traveling plates;

biasing means for biasing said feeding pins downward; and

a plate cam being provided beneath said traveling plates, said plate cam applying force to upwardly move said feeding pins, against said biasing means, in a prescribed range, whereby upper ends of said feeding pins are movable to fit into the through-holes of said metal belting and the feeding pins being movable in the feeding direction with the traveling plates to move said metal belting a prescribed length.

8. A manufacturing apparatus for fins of a heat exchanger comprising:

a die set for forming a plurality of parallel lines of collared through-holes, each of which are formed in a longitudinal direction of a metal belting, in the transverse direction thereof;

a slitter for continuously slitting between adjacent lines of the collared through-holes in the longitudinal direction of said metal belting so as to make slit plates, the slit plates include a line of the collared through-holes; a cutter for cutting said slit plates to a prescribed length; and

a feeding apparatus having:

a plurality of traveling plates movable in the feeding direction, the travelling plates being independently movable without a direct interconnection therebetween to thereby avoid play between the traveling plates;

a plurality of feeding pins being provided between said slitter and said cutter, said feeding pins being received in the traveling plates and being movable therewith in the feeding direction of said slit plates, one end of the feeding pins fitting into the collared through-holes of each slit plate;

biasing means being provided for each feeding pin, said biasing means biasing said feeding pins to separate from the collared through-holes;

a plate cam having a cam face extending in the feeding direction of said slit plates, the cam face biasing said feeding pins against said biasing means, whereby said feeding pins are fitted into the collared trough-holes and are movable toward said cutter by a prescribed length; and

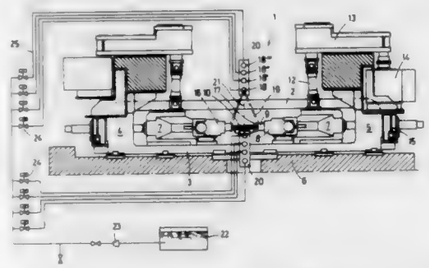
driving means for moving said feeding pins in the feeding direction.

5,349,842

COOLING DEVICE FOR THE PRESSING TOOLS OF AN UPSETTING PRESS AND METHOD FOR OPERATING THE COOLING DEVICE

Gerhard Heitze, Netphen, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldolf, Fed. Rep. of Germany

Filed Dec. 23, 1991, Ser. No. 812,104
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1990, 4041787
Int. Cl.[5] B21D *37/16;* B05B *1/14*
U.S. Cl. 72—342.3 7 Claims



1. A cooling device for use in an upsetting press for width reduction of slabs, the upsetting press including two pressing tools having each a front edge, two tool carriers arranged on opposite sides of a slab for receiving the two pressing tools, respectively, and two pairs of spaced pressure rollers arranged above and below the slab in a region of the pressing tools for holding down the slab, said cooling device comprising:

two cooling agent nozzle beams arranged above and below a center of the slab between a respective pair of pressure rollers for directing cooling agent against the front edges of the two pressing tools, wherein each nozzle beam includes a plurality of flat jet nozzles arranged in a plurality of rows, with flat jet nozzles of each row having predetermined spreading angles and having axes thereof directed towards the front edge of the pressing tool at different angles, which depend on a width of the slab and a distance of the pressing tool from the center of the slab;

conduit means for connecting each row of flat jet nozzles of each nozzle beam with a source of a cooling agent; and

valve means for each conduit means for switching a respective row on and off.

5,349,843

OVERHEAD BELT DISCHARGE APPARATUS FOR CONTAINER END CLOSURES

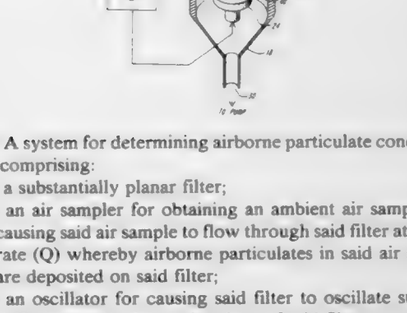
Martin M. Hubball, Arlington Hts., Ill., assignor to Buhrke Industries, Inc., Arlington Heights, Ill.

Continuation-in-part of Ser. No. 926,764, Aug. 6, 1992, abandoned. This application Jun. 25, 1993, Ser. No. 83,622
Int. Cl.[5] B21D *45/02*
U.S. Cl. 72—344 33 Claims

1. An improved formed end discharge apparatus for discharging blanked and formed container ends from a forming press having end forming tooling, the improvement comprising:

a discharge plate mounted in close proximity to said end forming tooling and extending away from said end forming tooling; and

at least one rotating discharge belt mounted in close spatial relationship along said discharge plate for rotation therealong, said rotating discharge belt having a nose end



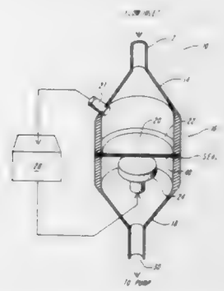
mounted closely adjacent to said forming tooling so as to engage formed ends ejected from said forming tooling, said discharge belt being further adapted to convey said formed ends along said discharge plate to a discharge position after said nose end engages said formed ends.

5,349,844

SYSTEM AND METHOD FOR RESONANT FILTER MASS MONITORING

Pedro Lilienfeld, Lexington, Mass., assignor to TRC Companies, Inc., Windsor, Conn.

Filed Sep. 11, 1992, Ser. No. 944,214
Int. Cl.[5] G01N *31/00;* G01G *3/16*
U.S. Cl. 73—28.01 28 Claims



15. A system for determining airborne particulate concentration, comprising:

(a) a substantially planar filter;

(b) an air sampler for obtaining an ambient air sample and causing said air sample to flow through said filter at a flow rate (Q) whereby airborne particulates in said air sample are deposited on said filter;

(c) an oscillator for causing said filter to oscillate substantially perpendicular to the plane of said filter at a natural resonant frequency (f);

(d) a detector for detecting said oscillatory movement of said filter; and

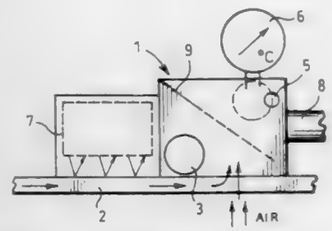
(e) particulate concentration determining means for determining the airborne particulate concentration (C_m) of said sample based on the ratio between the initial (f_0) and final (f_1) resonant frequencies of said filter.

5,349,845

APPARATUS FOR MEASURING THE CONDITION OF A FELT IN A PAPER MACHINE

Mikko Blom, Tampere, Finland, assignor to Tamfelt Oy Ab, Tampere, Finland

Filed Mar. 31, 1993, Ser. No. 41,063
Claims priority, application Finland, Apr. 7, 1992, 921532
Int. Cl.[5] G01N *15/08*
U.S. Cl. 73—38 16 Claims



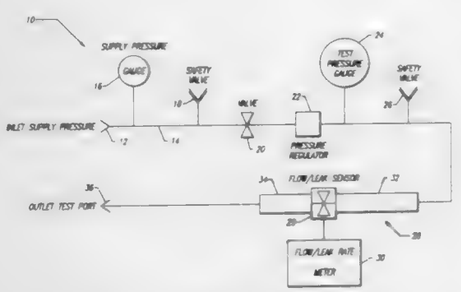
1. Apparatus for measuring the condition of a felt in a paper machine, comprising a measuring head arranged to be positioned against the surface of the felt, an air conduit being connected to the measuring head for sucking air through the felt into the measuring head by utilizing a vacuum, and a water removal conduit being connected to said measuring head for separately removing water carried with the air into the measuring head from the felt; measuring means for measuring the vacuum created during measuring; a microwave radiator connected to the measuring head for measuring the water content of the felt, and a temperature detector for measuring the temperature of the air sucked through the measuring head into the air conduit.

5,349,846

PORTABLE LEAK/FLOW TEST EQUIPMENT FOR NIGHT VISION EQUIPMENT

Erasmo Martinez, Torrance, and Steven E. Walmsley, Signal Hill, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 25, 1993, Ser. No. 8,380
Int. Cl.[5] G01M *3/26*
U.S. Cl. 73—40 2 Claims



1. A portable leak detection system comprising:

a portable housing;

inlet means disposed within said housing for receiving fluid from a source;

outlet means disposed within said housing for communicating said fluid supplied via said inlet means to an external unit under test;

flow meter means disposed within said housing and connected between said inlet means and said outlet means for measuring the flow of the fluid into said unit under test;

means disposed within said housing for verifying calibration of said flow meter means;

a pressure regulator disposed within said housing and connected between said inlet means and said flow meter means;.

a first gauge disposed within said housing between said inlet and said pressure regulator for measuring the pressure of the fluid contained in said source; and;

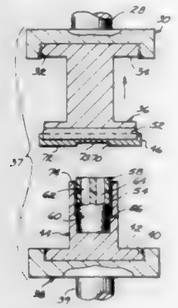
a first two-way valve disposed within said housing between said first gauge and said pressure regulator.

5,349,847

RELEASABLE STATIONARY PLATE FOR RHEOMETER

Chun D. Lee, and Donald L. Broughton, both of Cincinnati, Ohio, assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Filed Nov. 29, 1993, Ser. No. 159,082
Int. Cl.[5] G01N *11/14*
U.S. Cl. 73—54.28 8 Claims



1. A stationary plate assembly for a rheometer used for testing the melt viscoelastic properties of a material sample, the rheometer having a frame supporting a rotary drive having a drive shaft selectively switchable between a continuous rotation and an arcuate oscillation, the drive shaft being coupled to a movable plate, the rheometer further including a positioning mechanism for moving the movable plate relative to the stationary plate assembly, the stationary plate assembly comprising:

a support member adapted to be coupled to the frame in an aligned relationship to the movable plate;

a sample plate for supporting the material sample with respect to the movable plate; and

means for releasably coupling the sample plate to the support member to permit the positioning mechanism to separate the movable plate, the material sample and the sample plate as a unit from the support member, thereby allowing the movable plate, the material sample and the sample plate to rotate as a unit with respect to the support member as may occur when selectively switching the drive shaft between the continuous rotation and the arcuate oscillation.

5,349,848

CONSISTENCY MEASURING APPARATUS INCLUDING ELASTOMERIC MEMBER FOR IMPROVED RELIABILITY

Benjamin K. Driver, 6931 N. Century Blvd., Century, Fla. 32535

Filed Feb. 9, 1993, Ser. No. 15,528
Int. Cl.[5] G01N *11/00*
U.S. Cl. 73—54.28 8 Claims

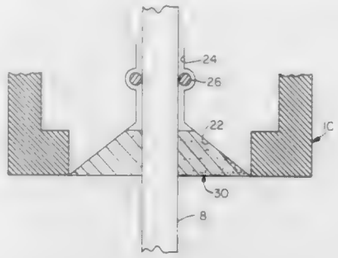
1. An apparatus for measuring the consistency of a flowing solid-liquid mixture comprising:

a blade member positioned within a flowing solid-liquid mixture;

carrier shaft means extending transversely with respect to the direction of flow of the mixture, said carrier shaft means being connected at one end thereof to the blade member;

a measuring device coupled to the other end of said carrier shaft means by the blade member for producing an output signal corresponding to applied force; said measuring device including a housing having an enlarged inverted truncated conical opening through which said carrier shaft means extends, said carrier shaft means in sealing connection to the housing; and

an elastomeric member disposed in said enlarged opening of



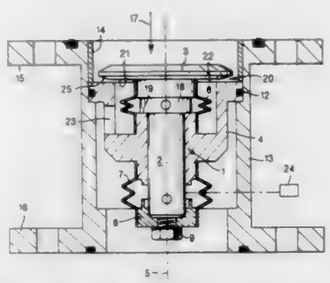
said housing substantially filling the same and surrounding a portion of the carrier shaft means extending through said opening thereby preventing solid liquid mixture from contacting said sealing connection provided between said carrier shaft means and the housing, and preventing said solid liquid mixture from interfering with free movement of said carrier shaft means in response to force applied thereto by the blade member.

5,349,849

LIQUID FLOW SYSTEM HAVING INPROVED APPARATUS FOR DETERMINING PARTICULATE CONTAMINATION LEVEL

Roger A. Heron, Stagsden, England, assignor to British Technology Group Limited, London, United Kingdom

PCT No. PCT/GB91/01640, § 371 Date Apr. 27, 1993, § 102(e) Date Apr. 27, 1993, PCT Pub. No. WO92/05424, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 24, 1991, Ser. No. 30,313
Claims priority, application United Kingdom, Sep. 25, 1990, 9020811.7
Int. Cl.[5] G01N *15/06*
U.S. Cl. 73—61.73 13 Claims



1. A liquid flow system having conduit means through which liquid is pumped in normal use, and including means for determining the level of particulate contamination within that liquid, the determining means comprising:

a valve in communication with the conduit means and comprising a valve housing and a valve member moveable relatively to said valve housing in which the valve member can be set relative to the valve housing to define a predetermined clearance through which flow takes place;

means for interrupting the normal pumped flow of liquid to flow instead through the said predetermined clearance, and

means for monitoring the volume of liquid passed and for deriving a measure of the degree of contamination of the liquid in the system,

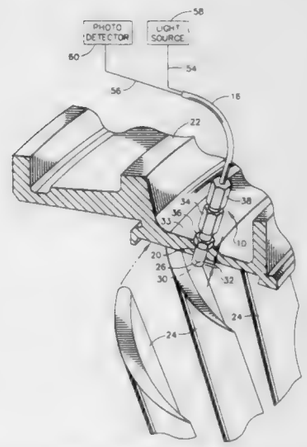
said predetermined clearance being oriented for causing the flow through said predetermined clearance to be in a direction substantially at right angles to that of the relative movement of said valve member and valve housing.

5,349,850

INSTRUMENTATION LIGHT PROBE HOLDER

Joseph C. Young, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Nov. 19, 1992, Ser. No. 978,600
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—116 14 Claims



1. An instrumentation light probe holder for use in observing and measuring operating characteristics of rotating blades of a gas turbine engine during engine operation, said probe holder comprising:

an elongated cylindrical member having a threaded exterior portion for insertion into a matingly threaded opening formed radially through an annular casing of a gas turbine engine, said cylindrical member having a hollow interior for receipt of an instrumentation light probe and a first end for insertion into the casing;

means for retaining said cylindrical member within said opening and for retaining said first end at a predetermined depth as measured from an outer surface of said casing;

stop means formed at said first end for abutting an operating end of the probe to prevent the operating end from extending beyond said first end, said means for retaining and said stop means combining to position and retain the operating end of the probe at a selected set-back distance from the rotating blades;

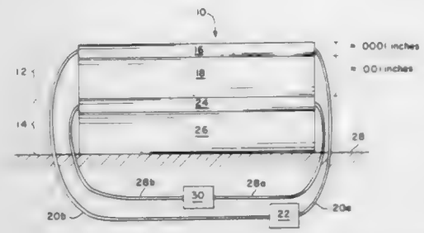
means for releasably grasping the light probe, said light probe grasping means releasably locking the light probe in position in said cylindrical member.

5,349,851

ACTIVE THERMAL ISOLATION FOR TEMPERATURE RESPONSIVE SENSORS

Scott D. Martinson, Hampton; David L. Gray, Newport News; Debra L. Carraway, Virginia Beach, all of Va., and Daniel C. Reda, San Jose, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 820,431, Jan. 2, 1992, Pat. No. 5,311,772.
This application Jan. 18, 1994, Ser. No. 181,938
Int. Cl.[5] G01F *1/68;* G01M *9/00*
U.S. Cl. 73—147 26 Claims



1. An apparatus for monitoring airflow over a specified surface of a body comprising:

a temperature responsive sensor located in the airflow over the specified surface of the body;

means for maintaining said temperature responsive sensor at a constant temperature;

an active thermal isolator located between said temperature responsive sensor and the specified surface of the body, wherein said active thermal isolator comprises an upper layer facing said temperature responsive sensor and having a relatively high temperature coefficient of resistance and a lower layer having a relatively high electrical resistance; and

means for controlling the temperature of said active thermal isolator to reduce conductive heat flow from said temperature responsive sensor to the body, wherein said temperature controlling means controls the temperature of the upper layer of said active thermal isolator.

5,349,852

PUMP CONTROLLER USING ACOUSTIC SPECTRAL ANALYSIS

Dean L. Kamen, Bedford, N.H.; Joseph B. Seale, Gorham, Me.; Joseph Briggs, Manchester, N.H., and Finn Arnold, Sutton, Mass., assignors to Deka Products Limited Partnership, Manchester, N.H.

Continuation-in-part of Ser. No. 615,612, Nov. 19, 1990, abandoned, Ser. No. 673,834, Mar. 22, 1991, abandoned, Ser. No. 674,813, Mar. 22, 1991, abandoned, and Ser. No. 614,806, Nov. 19, 1990, abandoned, each is a continuation-in-part of Ser. No. 523,801, May 15, 1990, Pat. No. 5,088,515, which is a continuation-in-part of Ser. No. 345,387, May 1, 1989, Pat. No. 4,976,162, which is a continuation-in-part of Ser. No. 92,481, Sep. 3, 1987, Pat. No. 4,826,482, which is a continuation-in-part of Ser. No. 22,167, Mar. 5, 1987, Pat. No. 4,808,161, and Ser. No. 836,023, Mar. 4, 1986, Pat. No. 4,778,451. This application Nov. 15, 1991, Ser. No. 792,877
Int. Cl.[5] G01F *17/00, 22/00;* F04B *49/06;* G05D *7/06*
U.S. Cl. 73—149 15 Claims

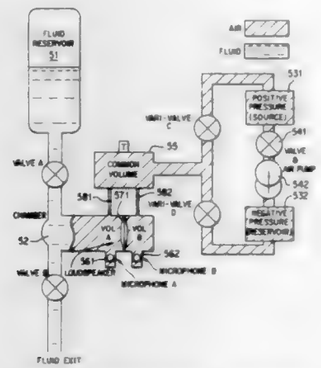
1. A system for controlling the flow of liquid through a line, the system comprising:

a chamber disposed in the line, wherein the chamber has an inlet from the line and an outlet to the line, wherein the chamber houses a volume of gas in communication with liquid in the chamber;

isolation means for isolating in the chamber a volume of liquid from pressure effects of liquid in the rest of the line and for dispensing liquid from the chamber, wherein the

isolation means includes a first valve means, located at the inlet, for selectively permitting and preventing flow into the chamber, and a second valve means, located at the outlet, for selectively permitting and preventing flow out of the chamber;

resonance means for associating with the chamber a resonatable mass of known acoustic characteristics, associated with the chamber, so as to form an acoustic resonant system;



detection means for determining a frequency of self-resonance of the system, and, based on the frequency of self-resonance, the volume of gas in the chamber; and

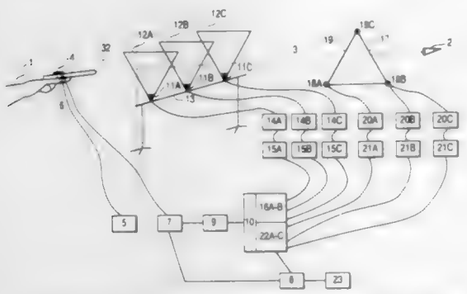
control means, in communication with the first and second valve means and the detection means, for receiving information regarding the volume of gas in the chamber and directing the operation of the first and second valve means in order to measure and control flow of liquid through the line.

5,349,853

APPARATUS AND METHOD FOR MEASURING AND CALCULATING EXTERIOR AND INTERIOR BALLISTICS

Kenneth L. Oehler, 1308 Barclay Dr., Austin, Tex. 78746

Filed Dec. 30, 1992, Ser. No. 998,850
Int. Cl.[5] G01L *5/14*; G01P *5/18, 13/00*; G01S *15/00*
U.S. Cl. 73—167 **28 Claims**



1. An apparatus for measuring ballistics in a firearm comprising in combination:

(a) an outside-surface-mounted means for measuring pressure in a firearm firing-chamber according to the following formula:

$$PSI/\text{bit} = \frac{2.13\ N(D^2 - (d - 0.025)^2)}{G\ (d - 0.025)^2}$$

$$N = \frac{PSI_{Max}\ G\ (d - 0.025)^2}{435\ (D^2 - (d - 0.025)^2)}$$

and where

PSI_{Max} is Maximum expected PSI,

N is the gain port setting which is a digital setting to an amplifier gain port and is expressed as an integer from 20 to 255,

G is the gage factor,

D is the outside diameter of the firing chamber at the gage, and

d is the inside diameter of the firing chamber at the gage; and producing an analog signal indicative of said pressure;

(b) a target means located at a predetermined point producing an analog signal indicative of time;

(c) means for receiving separate streams of analog signals from said means for measuring pressure and from said target means, and for converting said separate streams of analog signals from analog to digital form and for outputting said separate streams as digital signals:

(d) signal receiving means for receiving said separate streams of digital signals as a data output set; and

(e) means for computing an estimated velocity and ballistics from said digital output set.

15. A method for integrated measuring and calculating exterior and interior ballistics of a bullet fired from a firearm having a muzzle comprising the steps of:

(a) measuring the pressure in the firing chamber of the firearm using the following formula:

$$PSI/\text{bit} = \frac{2.13\ N(D^2 - (d - 0.025)^2)}{G\ (d - 0.025)^2}$$

$$N = \frac{PSI_{Max}\ G\ (d - 0.025)^2}{435\ (D^2 - (d - 0.025)^2)}$$

p1 and where

PSI_{Max} is Maximum expected PSI,

N is the gain port setting which is a digital setting to an amplifier gain port and is expressed as an integer from 20 to 255,

G is the gage factor,

D is the outside diameter of the firing chamber at the gage, and

d is the inside diameter of the firing-chamber at the gage;

(b) measuring the velocity of a bullet by means of at least two detectors located at a first predetermined location near the firearm muzzle;

(c) measuring a period of time said bullet reached a second predetermined location downrange from the firearm by detecting a presence of said bullet.; and

(d) computing a velocity of said bullet at said second predetermined location downrange by a determination of a ballistic coefficient based upon (i) said velocity, (ii) said time measurement, and (iii) a standard drag function representative of said bullet.

5,349,854

ELEVATOR SPEED AND POSITION INDICATING DEVICE

Alfonso Garrido, and Jose Sevilleja, both of Madrid, Spain, assignors to Otis Elevator Company, Farmington, Conn.

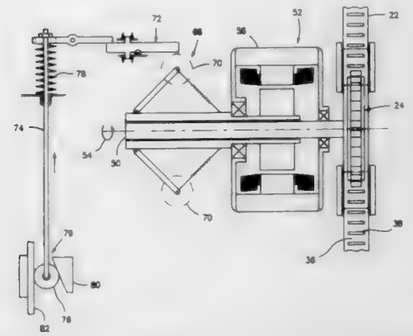
Filed May 1, 1992, Ser. No. 877,307
Int. Cl.[5] G01P *3/18*; B66B *5/04*
U.S. Cl. 73—490 **1 Claim**

1. In an elevator comprising an elevator car and a hoistway,

a means for sensing the speed and position of said elevator car within said hoistway, comprising:

an elongated member mounted in a stationary position within said hoistway of said elevator, said member having regularly spaced perforations;

a circular disk, having an exterior surface comprising a number of spaced teeth, having a pitch, said disk mounted on said elevator car for communicating with said regu-



larly spaced perforations of said elongated member, wherein said pitch of said teeth corresponds to said regular spacing of said perforations, thereby allowing said elongated member to freely receive said teeth as said speed sheave rotatably contacts said member, and

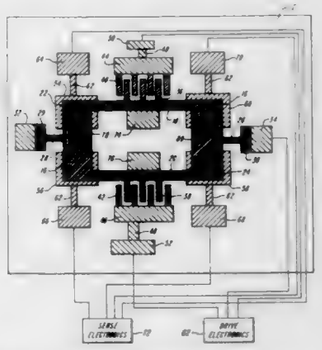
wherein said elongated member and said disk have a constant relationship such that relative positions between said elongated member and said disk are repeatable.

5,349,855

COMB DRIVE MICROMECHANICAL TUNING FORK GYRO

Jonathan J. Bernstein, Medfield, and Marc S. Weinberg, Needham, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Apr. 7, 1992, Ser. No. 870,414
Int. Cl.[5] G01P *9/04*
U.S. Cl. 73—505 **12 Claims**



1. An inertial rate sensor comprising:

a first weighted element suspended to rotate about a first axis and adapted to vibrate in a direction substantially orthogonal to said first axis;

a set of driven electrodes projecting from said suspended element in the direction of vibration;

a set of drive electrodes freely meshing with said set of driven electrodes;

a source of vibration drive contacting, through said suspended element, said set of driven electrodes and said set of drive electrodes with opposite polarity signals to induce vibration of said suspended element;

a plurality of position sensors placed at locations facing said suspended element wherein spacing between said plurality of position sensors and said suspended element varies with rotation thereof about said axis;

an electrical signal source for energizing at least some of said plurality of position sensors relative to said suspended element; and

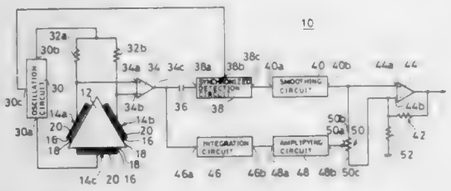
a signal sensor responsive to at least a subset of said plurality of position sensors for receiving a signal varying with rotation of said element about said axis.

5,349,856

VIBRATORY GYROSCOPE

Takeshi Nakamura, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Aug. 4, 1992, Ser. No. 924,704
Claims priority, application Japan, Aug. 12, 1991, 3-228290
Int. Cl.[5] G01P *9/04*
U.S. Cl. 73—505 **3 Claims**



1. A vibratory gyroscope comprising:

a vibrating body;

an oscillation circuit for vibrating said vibrating body;

two detecting piezoelectric elements formed on said vibrating body for detecting vibration of said vibrating body;

a detection circuit for detecting an output signal difference of said two detecting piezoelectric elements, two input terminals of said detection circuit being connected respectively to said two detecting piezoelectric elements;

a synchronized detection circuit for detecting an output of said detection circuit in synchronism with vibration of said vibrating body, an input terminal of said synchronized detection circuit being connected to an output terminal of said detection circuit;

a smoothing circuit for smoothing an output of said synchronized detection circuit, an input terminal of said smoothing circuit being connected to an output terminal of the synchronized detection circuit;

an integration circuit for integrating said output of said detection circuit, an input terminal of said integration circuit being connected to said output terminal of said detection circuit; and

a composite circuit for composing an output of said smoothing circuit and an output of said integration circuit, one input terminal of said composite circuit being connected to an output terminal of the smoothing circuit, the other input terminal of said composite circuit being connected to an output terminal of the integration circuit.

5,349,857

VIBRATORY GYROSCOPE

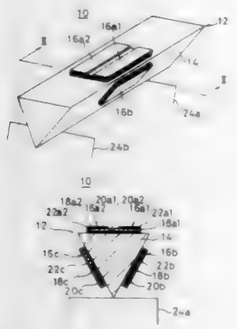
Tohru Kasanami; Takeshi Nakamura; Keiichi Okano, and Yoshiko Morishita, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Division of Ser. No. 835,087, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 525,821, May 21, 1990, abandoned, which is a division of Ser. No. 391,825, Aug. 10, 1989, abandoned. This application Apr. 12, 1993, Ser. No. 44,630

Claims priority, application Japan, Aug. 12, 1988, 63-202385; Feb. 25, 1989, 1-44806; Feb. 25, 1989, 1-44807; Apr. 6, 1989, 1-89396; Apr. 6, 1989, 1-89397; Apr. 6, 1989, 1-89398; May 8, 1989, 1-115436; May 8, 1989, 1-115437; May 12, 1989, 1-120102; Jun. 9, 1989, 1-147779; Jun. 9, 1989, 1-147782

Int. Cl.[5] **G01P** *9/04*

U.S. Cl. 73—505 | **18 Claims**



1. A vibratory gyroscope comprising:

a rod-like vibratable body;

a driving means for vibrating said vibratable body in a direction perpendicular to an axis of said vibratable body; and

two piezoelectric means formed a) on two side faces of said vibratable body which are in a non-parallel relationship with each other and b) on both sides of a plane including said axis and a vibrating direction of said vibratable body driven by said driving means,

wherein said two piezoelectric means are used for detecting a rotational angular velocity applied to said vibratable body.

5,349,858

ANGULAR ACCELERATION SENSOR

Takayuki Yagi, Machida; Yutaka Hirai, Tokyo; Osamu Takamatsu; Masaru Nakayama, both of Atsugi; Hiroyasu Nose, Zama; Katsuhiko Shinjo, Isehara, and Yasuhiro Simada, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1992, Ser. No. 826,867

Claims priority, application Japan, Jan. 29, 1991, 3-029348

Int. Cl.[5] **G01P** *15/08, 15/125*

U.S. Cl. 73—517 A **8 Claims**

1. An angular acceleration sensor comprising:

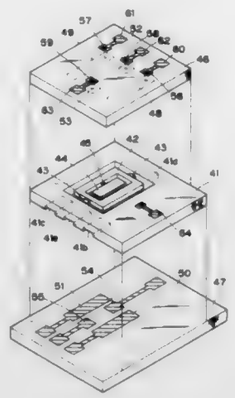
a first weight member having a first weight side electrode;

a second weight member having a second weight side electrode, said second weight member being disposed around said first weight member;

a first resilient member for supporting said first weight member from both sides thereof, said first resilient member being installed between said first and said second weight member, said first resilient member being disposed a first rotational axis and supporting said first weight member for rotation about said first rotational axis relative to said second weight member;

a second resilient member for supporting said second weight member from both sides thereof, said second resilient member being disposed on a second rotational axis and supporting said second weight member for rotation about said second rotational axis;

a first opposed electrode disposed so as to be opposed to said first weight side electrode, wherein an angular acceleration about an axis parallel to said first rotational axis is detected from a variation in electrostatic capacity corresponding to a variation in a spacing between said first opposed electrode and said first weight side electrode resulting from the rotation of said first weight member; and



a second opposed electrode disposed so as to be opposed to said second weight side electrode, wherein an angular acceleration about an axis parallel to said second rotational axis is detected from a variation in electrostatic capacity corresponding to a variation in a spacing between said second opposed electrode and said second weight side electrode resulting from the rotation of said second weight member.

5,349,859

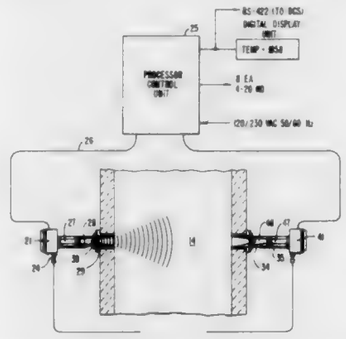
METHOD AND APPARATUS FOR MEASURING ACOUSTIC WAVE VELOCITY USING IMPULSE RESPONSE

John A. Kleppe, Reno, Nev., assignor to Scientific Engineering Instruments, Inc., Sparks, Nev.

Filed Nov. 15, 1991, Ser. No. 792,971

Int. Cl.[5] **G01N** *29/18;* **G01K** *11/22, 11/24*

U.S. Cl. 73—597 **19 Claims**



1. A method of measuring a transit time of acoustic waves in a fluid in a noisy environment, said method comprising the steps of:

(a) transmitting randomly generated acoustic waves through the fluid from a transmitting location to a receiving location;

(b) coupling electrical signals corresponding to said acoustic waves transmitted from said transmitting location to a computing device;

(c) coupling electrical signals corresponding to the acoustic waves arriving at the receiving location to the computing device; and

(d) determining the transit time of the acoustic waves between the transmitting location and the receiving location by

(1) obtaining the impulse response from the electrical signals corresponding to said transmitted waves and from the electrical signals corresponding to the received waves, whereby said impulse response is defined by the relationship:

$$h(\tau)=F^{-1}[S_{xy}/S_{xx}]$$

whereby

x(t)=the electrical signals corresponding to said transmitted waves

y(t)=the electrical signals corresponding to said received waves

$X(f)\Delta F[x(t)]$

$Y(f)\Delta F[y(t)]$

$S_{xy}\Delta X^{*}Y$

$S_{xx}\Delta X^{*}X$

and (2) determining the point of maximum value of the impulse response, the transit time of the acoustic waves being represented by the value τ at which the point of maximum value of the impulse response is found.

5,349,860

APPARATUS FOR MEASURING THE THICKNESS OF CLAD MATERIAL

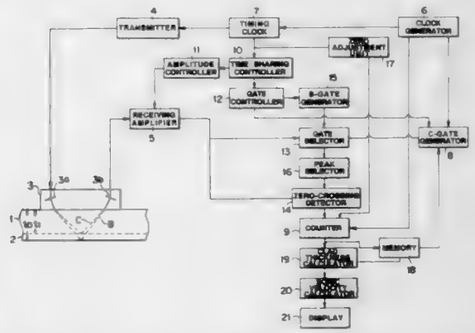
Tetsuo Nakano, deceased, late of Kawasaki by Kazuko Nakano, legal representative ; Takeshige Katsumata, Kawasaki; Megumu Tanaka, Kawasaki; Isao Narushima, Kawasaki; Yoshiharu Hirano, Kawasaki, and Kazuko Nakano, Takaoka, all of Japan, assignors to NKK Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 771,513, Oct. 1, 1991, which is a continuation of Ser. No. 591,752, Oct. 2, 1990, abandoned. This application May 12, 1992, Ser. No. 882,455

Claims priority, application Japan, Nov. 28, 1989, 1-306468

Int. Cl.[5] **G01N** *29/10*

U.S. Cl. 73—597 **17 Claims**



1. An apparatus for measuring the thickness of a clad material, said clad material comprising a clad metal and a mother metal, said clad metal having an outer surface and an inner surface, said mother metal having an outer and an inner surface, said clad metal being clad to said mother metal such that the outer surface of said clad metal and the inner surface of said mother metal form a boundary surface, said apparatus comprising:

a double crystal angle probe contacting the outer surface of said mother metal, said double crystal angle probe comprising:

a transmitter crystal means for radiating a plurality of ultrasonic beams into said clad material; and

a receiver crystal means for receiving a first echo of an ultrasonic beam from the boundary surface of said mother metal and clad metal, for receiving a second echo of the ultrasonic beam from the inner surface of said clad metal, and for producing first and second echo signals, respectively;

amplifying means for amplifying said first echo signal with a first amplitude value, and for amplifying said second echo signal with a second amplitude value, said amplifying means being responsive to first and second time sharing signals for alternately amplifying said first and second echo signals with said first amplitude value and said second amplitude value;

zero point determining means for determining a zero point of time when the transmitter crystal means radiates an ultrasonic beam into said clad material;

time sharing means for generating said first time sharing signal and said second time sharing signal at predetermined timings;

detecting means for detecting a time when said amplified first echo signal reaches a first zero-crossing point after a peak of said amplified first echo signal, and for detecting a time when said amplified second echo signal reaches a first zero-crossing point after a peak of said amplified second echo signal;

period calculating means for calculating a first time period from the zero point of time determined by said zero point determining means to the first zero-crossing point of said amplified first echo signal, and for calculating a second time period from the zero point of time to the first zero-crossing point of said amplified second echo signal; and

thickness calculating means for calculating the thickness of said clad metal and the total thickness of said clad material as a function of said calculated first time period and said calculated second time period.

5,349,861

DEVICE FOR AUTOMATICALLY MEASURING THE RESIDUAL STRESSES IN THE RIM OF ONE WHEEL OF A RAILWAY WHEELSET

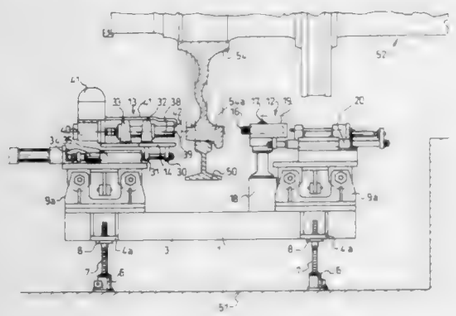
Bernard Catot, Leffrinckoucke; Valério Del Fabbro, Marly, and Guy Stevenot, Denain, all of France, assignors to Valdunes, Puteaux, France

Filed Jan. 29, 1993, Ser. No. 11,154

Claims priority, application France, Mar. 30, 1992, 92 03817

Int. Cl.[5] **G01N** *29/04*

U.S. Cl. 73—598 **9 Claims**



1. A device for measuring the residual stresses in a rim of one wheel of a railway wheelset having two wheels each resting upon a horizontal rail, said device comprising:

the rail for supporting the wheel,

a mechanism for lifting and supporting a chassis, said lifting and supporting mechanism resting upon a substantially horizontal surface situated at a level lower than the rail and having a plurality of substantially vertically extending

parts arranged under the rail, wherein said chassis comprises a horizontal chassis mounted on the mechanism for lifting and supporting so as to be adjustable in height on the vertical parts,

two sets of slides fixed to the chassis in a direction parallel to the rail and wherein one of said sets of slides is on one side of the plane of symmetry of the rail and the other said sets of slides is on the other side of the plane of symmetry of the rail,

a carriage mounted to move translationally on each one of said sets of slides,

a mechanism for translationally displacing each said carriage on said slides,

a grinding device mounted on each said carriage for moving in a direction perpendicular to the slides at a level for allowing the grinding device to grind the rim of the wheel,

a mechanism for displacing each said grinding device towards and away from the wheel,

an ultrasound checking device mounted to move translationally on one of the two carriages in a direction perpendicular to the slides,

a mechanism for displacing the ultrasound checking device between a service position in contact with the rim to measure the residual stresses in the rim of the wheel and a position withdrawn from the rim,

a position detector mounted on each said carriage for moving in a direction perpendicular to the slides,

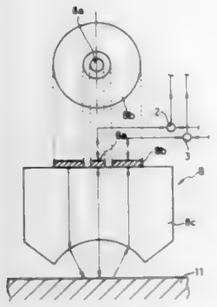
a mechanism for displacing each said detector between a non-obstructing position and a position bearing against the rim of the wheel, each said detector located facing one another to measure the thickness of the rim.

5,349,862

APPARATUS FOR MEASURING THE VELOCITY OF ULTRASONIC SOUND IN TERMS OF V(Z) CHARACTERISTICS AND ULTRASONIC MICROSCOPE USING THAT APPARATUS

Noriyoshi Chubachi, 4-3-18 Kaigamori, and Hiroshi Kanai, 4-18-1-301 Nakayama, both of Aobu-Ku, Sendai-shi, Miyagi-ken, Japan

Filed Nov. 20, 1991, Ser. No. 795,041
Claims priority, application Japan, Nov. 25, 1990, 2-321737
Int. Cl.[5] G01N *29/18, 29/24*
U.S. Cl. 73—602 **9 Claims**



1. An apparatus for measuring the velocity of an ultrasonic acoustic wave in terms of the V(z) characteristics, comprising:

a focusing acoustic probe, including a first transducer for receiving a first acoustic wave reflected from a sample at a central portion of the acoustic probe and a second transducer for receiving a second acoustic wave reflected from the sample at a peripheral portion of the acoustic probe, for outputting a first reception signal representing said first acoustic wave and a second reception signal representing said second acoustic wave, wherein said first and second transducers are disposed in a common plane;

driving means for driving said acoustic probe in response to an externally supplied driving signal to cause the first and second transducers to emit acoustic waves toward the sample for reflection back to said first and second transducers as said first and second acoustic waves;

moving means for moving the sample relative to said acoustic probe from a focal point of said acoustic probe to a defocus point that is closer to said acoustic probe than is said focal point;

sampling means for sampling the received first and second acoustic waves and for deriving intensity and phase difference values from results of the sampling, said phase difference values representing differences in phase between each of the first and second received acoustic waves and one of the driving signal and a predetermined corresponding reference signal; and

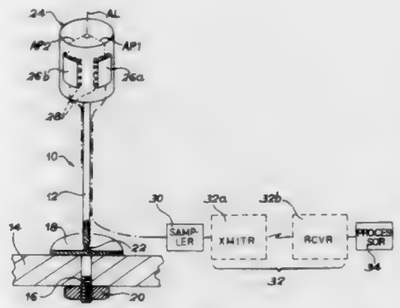
velocity computing means for computing a velocity of a leaky elastic surface wave component, reradiated by the sample in response to an acoustic wave emitted by the acoustic probe in response to the driving signal, as a vector function of position-dependent data representing an interference wave generated by interference between said leaky elastic surface wave component and a reflected wave component near a central axis of the acoustic probe, said data being obtained by said sampling means for a plurality of sample positions in a defocus direction resulting from sample movement by said moving means.

5,349,863

SHOCK SENSOR AND DEVICES TO WHICH THE LATTER IS APPLIED

Jean-Pierre Dumont, Mantes La Jolie, and Riviere Daniel, Conflans Ste Honorine, both of France, assignors to Societe Nationale Industrielle et Aerospatiale, France

PCT No. PCT/FR90/00476, § 371 Date Feb. 27, 1992, § 102(e) Date Feb. 27, 1992, PCT Pub. No. WO91/00521, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 27, 1990, Ser. No. 781,142
Claims priority, application France, Jun. 28, 1989, 89 08626
Int. Cl.[5] G01D *21/00*
U.S. Cl. 73—651 **11 Claims**



1. A shock sensor for attachment to a structure and having a fundamental resonant frequency, said sensor comprising:

a rod having a first end, a second end and a longitudinal axis, said first end being attachable to said structure;

a weight attached to said second end;

acceleration detection means attached to said weight for detecting vibrations along an axis perpendicular to said longitudinal axis; and

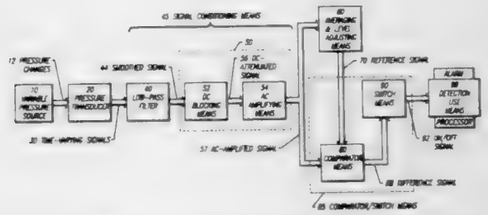
means to remove a plurality of harmonics of said fundamental resonant frequency from said vibrations.

5,349,864

SYSTEM FOR COMPARING A REFERENCE SIGNAL WITH A FILTERED SIGNAL TO DETECT PRESSURE DISCONTINUITY

Kyong M. Park, Thousand Oaks, and Niraj Gupta, Moorpark, both of Calif., assignors to Kavlico Corporation, Moorpark, Calif.

Filed Jul. 7, 1993, Ser. No. 88,172
Int. Cl.[5] G01L *9/12*
U.S. Cl. 73—724 **20 Claims**



14. A pressure discontinuity analysis system, applicable to a fluid pressure which, except for small magnitude fluctuations, is normally substantially constant or within a narrow range, comprising:

pressure transducer means for converting pressure changes to time-varying electrical signals;

signal conditioning means for suppressing direct current (DC) components while amplifying alternating current (AC) components of said signals, thereby producing a conditioned signal;

reference signal producing means coupled to the output of said conditioning means for generating a reference signal proportional to the average magnitude of said conditioned signal during normal continuous variation of said pressure;

circuit means, including a comparator having two inputs, including a first input coupled to said signal conditioning means and a second input coupled to said reference signal producing means, for comparing the conditioned signal of said signal conditioning means of said conditioning means with said reference signal, said circuit means further including a bistable switch comparator means for producing an output on-state signal when a significant pressure discontinuity occurs, and wherein said circuit means is insensitive to minor pressure and corresponding signal variations but produces an output on-state signal upon major pressure discontinuities; and

detection use means coupled to said circuit means for providing a detection use signal upon reception of said output on-state signal from said circuit means.

5,349,865

WIDE-PRESSURE-RANGE, ADAPTABLE, SIMPLIFIED PRESSURE TRANSDUCER

Fred Kavli, Santa Barbara, and Kyong M. Park, Thousand Oaks, both of Calif., assignors to Kavlico Corporation, Los Angeles, Calif.

Filed Aug. 30, 1993, Ser. No. 114,000
Int. Cl.[5] G01L *9/12*
U.S. Cl. 73—724 **24 Claims**

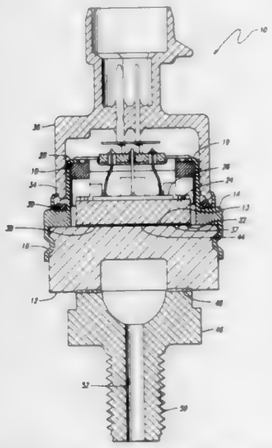
1. A simple, reliable, inherently accurate, intrinsically wide-pressure-range adaptable, very low to ultra-high pressure capable transducer comprising:

a capacitive pressure transducer comprised of a reference capacitor and a variable capacitor, each comprised of an electrode formed of a layer of conductive material on the same face of an insulating plate, said insulating plate having an upper surface a lower surface, said reference capacitor electrode being substantially topologically annular and peripherally disposed around said variable capacitor electrode, said variable capacitor electrode being substantially topologically disk-like and covering the central portion of said insulating plate, said insulating plate being spaced slightly apart from a thick flat flexible metal diaphragm at the outer peripheries thereof, said diaphragm being flexible under applied deflection forces to deflect toward said insulating plate and change a variable capacitance of the variable capacitor formed between said variable capacitor electrode and said diaphragm, said diaphragm being at least 0.015 inches thick, and said metal diaphragm being in mechanical coupling proximity with said insulating plate over the greater portion of the area of said variable capacitor electrode;

a pressure fitting including a pressure input coupling for connecting to a source of pressurized fluid;

a housing for said insulating plate peripherally constraining the electrode-bearing face of said insulating plate, essentially rigidly, to remain in close and fixed but spaced-apart proximity to the periphery of said metal diaphragm;

peripheral, uninterrupted, annular means for spacing said insulating plate apart from but very close to said metal



diaphragm, said means for spacing disposed on said lower surface of said insulating plate, whereby said means for spacing mounted on said insulating plate and directly engages said metal diaphragm;

said variable capacitance constituting means for determining variations in the magnitude of the deflection of the central portion of said diaphragm as pressure to said pressure input coupling is varied; and

said pressure input coupling having an upper component defining a pressure chamber, said pressure chamber adjacent to and having an extent comparable to that of said metal diaphragm, said pressure chamber and said metal diaphragm being formed from one integral body of material, said chamber being connected to said input coupling;

whereby, when the pressure applied to said input coupling changes, the corresponding pressure change in said pressure chamber causes the deflection of said diaphragm to change correspondingly, and the resultant changed output capacitance of the transducer indicates the new pressure level.

5,349,866

DIGITAL PRESSURE GAUGE

Tien-Tsai Huang, No. 4, Lane 30, Wu-Chang St., Pan-Chiao City, Taiwan

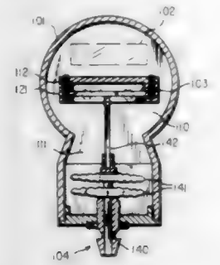
Filed May 13, 1992, Ser. No. 882,540
Int. Cl.[5] G01L *9/06*
U.S. Cl. 73—727 **4 Claims**

1. A digital pressure gauge, comprising:

a casing having a weight sensing member provided therein

and a display member electrically connected to said weight sensing member, said display member displaying a weight sensed by said sensing member in digital numbers; and

an expandable air pressure sensitive mechanism provided in said casing and having an inlet in communication with the air pressure mechanism;



an insulating rod for engaging said air pressure sensitive mechanism and which directly contacts said weight sensing member at a point on a surface of the weight sensing member closest to said pressure sensitive mechanism in response to pressure flowing through the inlet so as to expand the pressure sensitive mechanism.

5,349,867

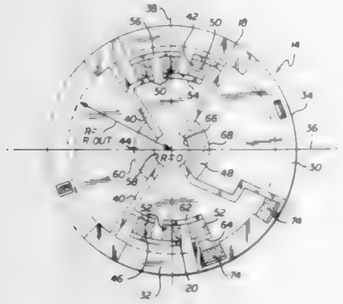
SENSITIVE RESISTIVE PRESSURE TRANSDUCER

Kyong M. Park, Thousand Oaks, Calif., assignor to Kavlico Corporation, Moorpark, Calif.

Continuation-in-part of Ser. No. 801,526, Dec. 2, 1991. This application Jun. 3, 1993, Ser. No. 72,763

Int. Cl.[5] G01L *7/08, 9/06*

U.S. Cl. 73—727 **23 Claims**



1. A resistive configuration for measuring pressure, the configuration deposited on a surface of a diaphragm of substantially uniform thickness and having a path of conductive material, wherein the diaphragm is circular with an outer edge defining an outer diameter and a diaphragm radius, the resistive configuration comprising:

a first resistive pattern deposited in close proximity to the outer edge of the diaphragm, wherein the first resistive pattern is comprised of a plurality of radially extending resistors spaced apart along the circumference of the diaphragm and interconnected by the conductive material;

a second curved resistive pattern deposited in close proximity to the center of the diaphragm;

a third resistive pattern deposited in close proximity to the outer edge of the diaphragm, wherein the third resistive pattern is comprised of a plurality of radially extending resistors spaced apart along the circumference of the diaphragm and interconnected by the conductive material; and

a fourth curved resistive pattern deposited in close proximity to the center of the diaphragm;

wherein the conductive material has a pre-determined resistivity and the first, second, third, and fourth resistive patterns have resistivities at least one hundred times greater than the pre-determined resistivity.

5,349,868

PRESSURE SENSOR INCLUDING BRIDGE CIRCUIT FOR DETECTING PERMEABILITY OF A MAGNETIC LAYER

Rihito Shoji, Yawata; Hiroyuki Hase, Kyoto, and Masayuki Wakamiya, Suita, all of Japan, assignors to Matsushita Electric Industries Co., Ltd., Osaka, Japan

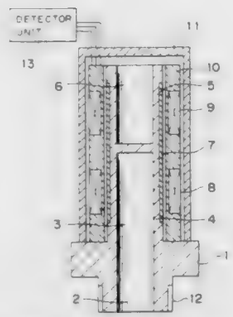
Filed Apr. 23, 1993, Ser. No. 51,302

Claims priority, application Japan, Apr. 23, 1992, 4-103296

The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclosed.

Int. Cl.[5] G01L *9/10*

U.S. Cl. 73—728 **22 Claims**



1. A pressure sensor comprising:

a sensor body comprising a deforming part deformable under an applied pressure to be detected and a non-deforming part subjected to a constant pressure, the deforming part having an opening for introducing the applied pressure;

a magnetic layer made of a material having large magnetostriction, which magnetic layer being fixed on the deforming part and on the non-deforming part;

first and second permeability detector elements disposed to detect the permeability of the magnetic layer on the deforming part and on the non-deforming part, respectively, each of the first and second permeability detector elements having an inductance and an internal resistance, the first and second permeability detector elements being connected in series;

a first resistor connected to the first permeability detector element, the resistance of the first resistor being smaller than the impedance of the first permeability detector element; and

a second resistor connected to the second permeability detector element and to the first resistance, the resistance of the second resistor being smaller than the impedance of the second permeability detector element;

wherein a bridge is constructed by the first and second permeability detector elements and the first and second resistors for taking out a difference of the voltages generated in the first and second permeability detector elements.

5,349,869

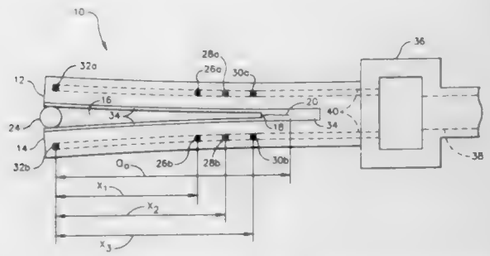
WELDED NICKEL ALLOY DOUBLE-CANTILEVER BEAM CRACK GROWTH SENSOR AND METHOD FOR ITS FABRICATION

Thomas P. Diaz, San Martin; Gail E. Dunning, Sunnyvale, and Ronald E. LeBlanc, San Martin, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Apr. 5, 1993, Ser. No. 43,052

Int. Cl.[5] G01N *19/00*

U.S. Cl. 73—799 **20 Claims**



1. A double-cantilever beam crack growth sensor comprising first and second cantilever beams and a crack formation zone, each of said first and second cantilever beams having one end joined to said crack formation zone, said crack formation zone having a direction of crack growth opposite to the general direction in which said cantilever beams extend away from said crack formation zone, wherein said crack formation zone is made of an alloy of first type having a microstructure of dendrites which are substantially parallel to said preferred direction of crack growth.

5,349,870

METHOD AND APPARATUS FOR DETECTING STRESS IN AN OBJECT

Martin J. Webber, Beckenham, and Gordon R. Hopkinson, Bromley, both of Great Britain, assignors to Sira Limited, Chislehurst, United Kingdom

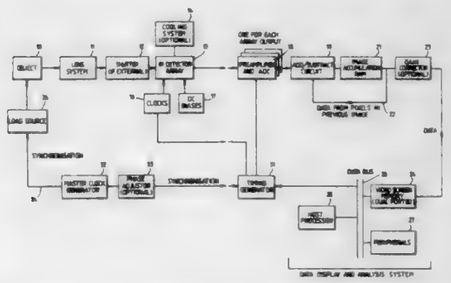
PCT No. PCT/GB90/00988, § 371 Date Feb. 21, 1992, § 102(e) Date Feb. 21, 1992, PCT Pub. No. WO91/00504, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 26, 1990, Ser. No. 835,941

Claims priority, application United Kingdom, Jul. 3, 1989, 8915227

Int. Cl.[5] G01N *3/00*

U.S. Cl. 73—808 **26 Claims**



1. A method of measuring stress simultaneously at a plurality of points on an object, comprising the steps of: applying a cyclically varying load of period T to the object, collecting and measuring thermal radiation from a plurality of said points over a sample time interval t, wherein $t<T$, determining the phase of the first sample time interval t with respect to the cyclic variation of thermal radiation produced by each point in response to said applied load, and, from said collected and measured value of thermal radiation and said phase, providing a measure of stress at each point.

5,349,871

LOAD SENSING DEVICE HAVING IMPROVED LOAD SENSING ABILITY

Mikio Naganuma, Yokohama, Japan, assignor to TEAC Corporation, Japan

Filed Sep. 10, 1992, Ser. No. 943,444

Claims priority, application Japan, Sep. 18, 1991, 3-238443

Int. Cl.[5] G01L *1/22*

U.S. Cl. 73—862.635 **7 Claims**



1. A load sensing device having improved minimum load sensing characteristics, said device comprising:

a load bearing portion for receiving the load applied to the device generally along an axis of the device;

a support portion surrounding said load bearing portion, said load bearing portion being displaceable with respect to said support portion responsive to the applied load;

a plurality of strain members extending between said load bearing portion and said support portion in a radial direction with respect to the axis of the device and spaced symmetrically about the axis, each of said strain members being formed of a pair of strain portions, said strain portions extending between said load bearing portion and said support portion in a manner generally parallel to each other, said strain portions of each strain member lying in a common plane containing said strain member, said common plane being parallel to the axis of the device, the strain portions of each strain member being spaced from each other in a direction parallel to the axis of said device by a hole extending completely through the respective strain member perpendicular to the common plane of said strain member, said strain portions being subjected to deformation upon the application of a load to the device such that upon being deformed, each pair of said strain portions, said load bearing portion, and said support portion generally form a parallelogram having a pair of acute angles; and

strain sensing means coupled to said strain portions for sensing the strain occurring in said strain portions so as to sense the load applied to said load bearing portion.

5,349,872

STATIONARY COILS FOR A CORIOLIS EFFECT MASS FLOWMETER

Paul Z. Kalotay, Lafayette, and Craig B. Van Cleve, Lyons, both of Colo., assignors to Micro Motion, Inc., Boulder, Colo.

Filed Aug. 20, 1993, Ser. No. 110,164

Int. Cl.[5] G01F *1/84*

U.S. Cl. 73—861.38 **16 Claims**

1. In a Coriolis flowmeter having first and second flow tubes positioned substantially parallel to each other;

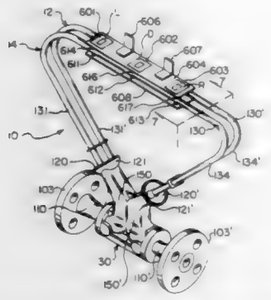
means for vibrating said first and second flow tubes out of phase with respect to each other;

sensor means for detecting the movement of said flow tubes resulting from material flow through said vibrating flow tubes;

said sensor means comprising:

at least two magnets each of which is affixed to a corresponding portion of different ones of said flow tubes;

a coil proximate said magnets and having a substantially flat surface aligned substantially parallel to a plane defined by a surface of both of said magnets;



means for maintaining said coil in a substantially non-movable fixed position as said magnets vibrate out of phase with respect to each other;

said coil being responsive to the vibration of said magnets affixed to said vibrating flow tubes for generating a signal representing the relative movement of said vibrating flow tubes, said movement including the movement due to Coriolis forces generated by material flow within said flow vibrating flow tubes.

5,349,873

FORCE TRANSDUCER AND PRESSURE DETECTING CIRCUIT USING THE SAME

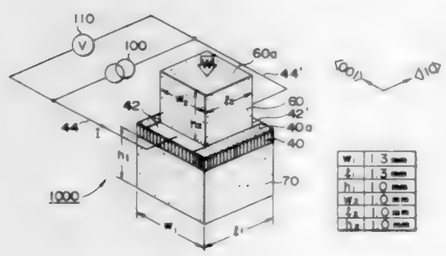
Yoshiteru Omura; Kouji Tsukada, both of Seto; Yutaka Nonomura, Nagoya, and Takeshi Morikawa, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Jul. 16, 1993, Ser. No. 92,480

Claims priority, application Japan, Jul. 16, 1992, 4-212082

Int. Cl.[5] G01L *1/16, 1/18, 9/04, 1/75*

U.S. Cl. 73—862.68 **25 Claims**



1. A force transducer comprising:

(a) a silicon semiconductor having a face of (110) or a crystal face equivalent to the face of (110), on which a force is to be applied;

(b) a pair of input-output shared electrodes mounted on the crystal face of said silicon semiconductor in mutual confronting relationship in a direction of <110> of the crystal or a direction equivalent to the direction of <110>;

(c) a force transmission block connected to the crystal face of said silicon semiconductor for transmitting the force perpendicularly to the crystal face;

(d) a support bed supporting said silicon semiconductor and connected to said silicon semiconductor at a face opposite to the crystal face to which said force transmission block is connected, whereby a voltage corresponding to the force and to be measured is output from said input-output shared electrodes when the force is applied perpendicularly to the crystal face of said silicon semiconductor via said force transmission block while a current flows in said silicon semiconductor via said input-output shared electrodes; and

(e) wherein said pair of input-output shared electrodes are configured for a two-probe measurement.

5,349,874

METHOD FOR MICROBIOLOGICAL MONITORING

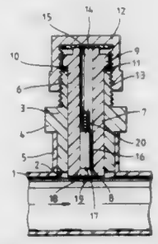
Simon F. D. Schapira, Aberdeen, Scotland; Robin W. Eycott; William P. Richardson, both of Bucks, England, and Jim S. Robinson, Surrey, England, assignors to Houseman Limited, United Kingdom

Continuation-in-part of Ser. No. 306,937, Feb. 6, 1989, abandoned. This application Oct. 16, 1991, Ser. No. 777,158

Claims priority, application United Kingdom, Feb. 4, 1988, 8802473

Int. Cl.[5] G01N *17/00, 33/48*

U.S. Cl. 73—864 **28 Claims**



1. A method for monitoring biofilm formation on surfaces in aquatic systems which comprises incorporating in the aquatic system a sampler apparatus comprising a duct which forms a channel for a flow of water and which has at least one port in its walls, a stud having a biofoulable test surface and retaining means comprising a sleeve having a stud-retaining bore, said stud being retained in a first end of said stud-retaining bore, and said sleeve being retained in the port in fixed relationship with respect to the duct so that the test surface is substantially flush with the duct wall and is exposed to water in the channel, said method comprising the steps of:

retaining said stud in the sampler apparatus for an interval for testing;

removing the sleeve from the port;

attaching said stud to a stud removal member to rigidly mount said stud and stud removal member together during removal;

removing said stud from said sleeve in a direction outwardly from the first end of the stud-retaining bore using said stud removal member; and

collecting and analyzing the bacteria from the test surface of said stud.

5,349,875

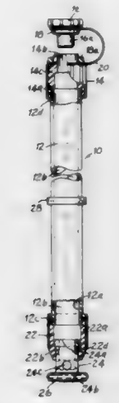
UNIVERSAL SAMPLING DEVICE FOR HIGH AND LOW VISCOSITY SUBSTANCES

Samuel E. Sher, Rockaway; Stephen A. Borgianini, Mount Holly; Robert E. Carpenter, Nutley; Scott Santora, Hammonton, and William S. Scavuzzo, Clark, all of N.J., assignors to Norton Company, Worcester, Mass.

Filed Sep. 2, 1992, Ser. No. 939,341

Int. Cl.[5] G01N *1/12*

U.S. Cl. 73—864.65 **23 Claims**



1. A device for retrieving samples of high and low viscosity substances at various depths from sources contained by bottom and side containing walls comprising:

an elongated tube of relatively small width and of sufficient length to reach a point and depth in the substance from which a sample is desired without complete submergence thereof having an outer wall surrounding an internal chamber and extending between opposite inlet and outlet ends of the tube;

an outlet vent valve means connected to an outlet end portion of the tube and manually operable for opening and closing off the outlet end of the tube and the internal chamber; and

an inlet valve body sealingly connected to the inlet end portion of the tube and having an opposite inlet end portion with an inlet valve bore extending therethrough, a movable valve stem slidably mounted in and sealingly engaging internal surfaces of the inlet valve bore and having an outer wall extending around an internal passage and upwardly from a lower end wall to an upper open end of the valve stem and the internal passage and an inlet port in the outer wall connected to the internal passage and situated adjacent the lower end wall and which inlet port may be selectively opened to receive a sample by pulling the valve stem outwardly to a position outside an inlet end of the inlet valve body and closed off by pushing the valve stem and inlet port into the inlet valve body.

5,349,876

MEASUREMENT APPARATUS AND METHOD FOR BULK PRODUCTS, INCLUDING AT LEAST ONE WEIGHT MEASUREMENT

Dominique Le Gigan, Parmain, France, assignor to Star Partners, Chicago, Ill.

Filed Jun. 11, 1992, Ser. No. 897,284

Claims priority, application France, Jun. 13, 1991, 91 07216

Int. Cl.[5] G01N *33/00;* **G01G** *19/00*

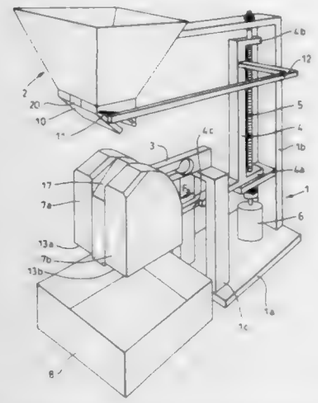
U.S. Cl. 73—866 **29 Claims**

1. An apparatus for measuring a product, comprising:

a hopper for feeding the product;

a cell to receive the product through an opening and provided with a trap door and a means for opening and closing said trap door for evacuation of the product after measuring the product;

a structure that is movably mounted to reciprocate along a vertical direction with respect to a fixed frame, wherein said structure comprises support means for engaging said cell for driving said cell along said vertical direction;



a weighing sensor mounted on a part of the fixed frame and arranged to support said cell at a predetermined weighing position located along the vertical direction, wherein at said weighing position said movable structure is disengaged from said cell and motion of the movable structure in one direction results in said movable structure engaging said cell and the sensor disengaging from said cell.

5,349,877

METHOD OF MAKING A STARTER HEAD FOR AN INTERNAL COMBUSTION ENGINE, AND A STARTER HEAD MADE BY SUCH A METHOD

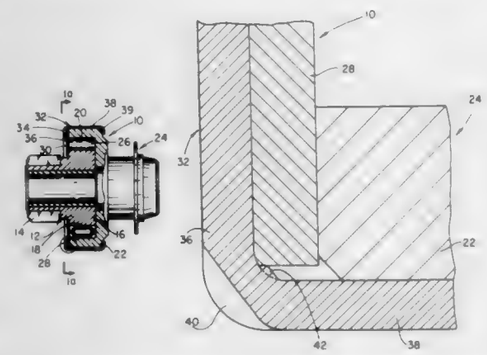
Viviane Bonin, Villefontaine, and Jean-François Serrano, Saint Priest, both of France, assignors to Valeo Equipements Electriques Moteur S.A., Creteil, France

Filed Feb. 24, 1993, Ser. No. 22,072

Claims priority, application France, Feb. 25, 1992, 92 02147

Int. Cl.[5] F02N *15/06;* **F16D** *41/00;* **B23P** *11/00*

U.S. Cl. 74—6 **6 Claims**



1. A method of making a starter head for an internal combustion engine, said starter head comprising: a starter pinion; a driving sleeve; a pair of half rings which together constitute a ring member coupling the starter pinion to the driving sleeve; and a securing cap fitted around the half rings to secure the driving sleeve, the half rings and the starter pinion together, wherein said method comprises the steps of:

forming a set of chamfers on the outer periphery of the

securing cap so as to cause local flow of the material of the securing cap, thereby forming, in radial alignment with each chamfer, a projecting nib on the inside surface of the securing cap;

positioning the starter pinion with respect to the driving sleeve;

positioning the two half rings against a camming cage associated with the driving sleeve; and

reforming the securing cap against the half rings so that the half rings become embedded in said nibs.

6. A starter head for an internal combustion engine, said starter head comprising: a starter pinion; a driving sleeve; a pair of half rings which together constitute a ring member coupling the starter pinion to the driving sleeve; and a securing cap fitted around the half rings to secure the driving sleeve, the half rings and the starter pinion together, wherein the starter head is made by the method according to claim 1.

5,349,878

HORIZONTAL SEAT POSITION ADJUSTER

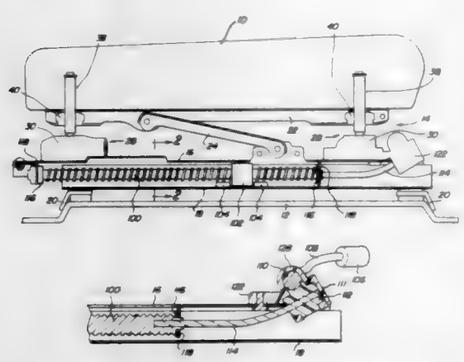
Mark D. White, and Roger Freund, both of Bracebridge, Canada, assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 755,408, Sep. 5, 1991, Pat. No. 5,222,402. This application Jun. 28, 1993, Ser. No. 83,417

The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.

Int. Cl.[5] F16H *25/20, 55/22;* **B60N** *2/06, 2/16*

U.S. Cl. 74—89.14 **3 Claims**



1. A low vertical profile horizontal seat position adjustment mechanism to be used to provide selectable horizontal position adjustment of a vehicle seat with respect to a base comprising:

a pair of relatively reciprocable track members slidably interfitted with one another to form an open channel section therebetween;

a first track of said pair maintained fixed and a second track of said pair reciprocable with respect thereto;

a horizontally orientated rotatable screw bearingly supported at opposing ends by said second track and disposed within said open channel section;

said screw threadably engaging a nut affixed to said first track;

a transmission at least partially disposed within said open channel section including a housing defining a cavity;

a helical gear disposed within said housing;

a worm gear disposed within said cavity and meshingly engaged to said helical gear; and

means to drivingly connect said helical gear to said screw.

5,349,879

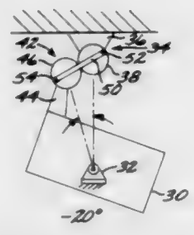
HIGH-ACCURACY DISCRETE POSITIONING DEVICE

John J. Brooks, Santa Ynez, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed Sep. 30, 1992, Ser. No. 954,701

Int. Cl.[5] F16H *21/44*

U.S. Cl. 74—96 **18 Claims**



1. Apparatus for controllably and precisely positioning an article at discrete locations, comprising:

a first crank having a first axis of rotation;

first drive means for controllably driving the first crank about the first axis of rotation;

a second crank having a second axis of rotation;

second drive means for controllably driving the second crank about the second axis of rotation, at least one of the first drive means and the second drive means being a stepper motor;

a link having a first end pivotably joined to the first crank at a first pivot point displaced from the first axis of rotation and a second end pivotably joined to the second crank at a second pivot point displaced from the second axis of rotation; and

means for joining the second crank to an article to be positioned.

5,349,880

TRANSMISSION WITH VARIABLE MECHANICAL PRESTRESS

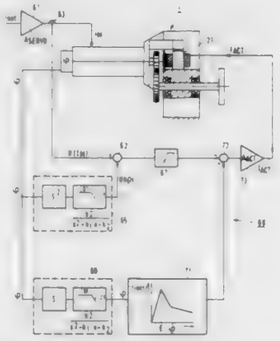
Marinus P. Koster, and Casparus W. Kruijer, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 19, 1993, Ser. No. 6,090

Claims priority, application European Pat. Off., Jan. 24, 1992, 92200193.8

Int. Cl.[5] F16H *57/12*

U.S. Cl. 74—399 **17 Claims**



1. A transmission with variable prestress for driving a load, said transmission including

toothed drive means having bearings and engaging teeth with flanks;

a motor for driving a toothed drive means;

toothed driven means also having bearings and engaging teeth with flanks for cooperating with the toothed drive means, wherein one of the toothed means is rotatable, and

electromagnetic actuator means for applying a prestress force causing the toothed means to press against one another with the flanks of their mutually engaging teeth, wherein the prestress force is controlled instantaneously by the actuator in dependence on the load instantaneously applied to the transmission;

wherein the improvement comprises:

a stationary housing having the bearings of one of the toothed means mounted therein and;

a block moveable relative to the stationary housing wherein the bearings of the other of the toothed means are mounted, the actuator being coupled to both the block and the stationary housing and the prestress force generated by the actuator causing the toothed means to press against one another in a radial direction.

5,349,881

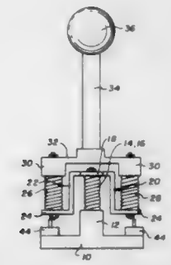
MULTI-AXIAL CENTERING SPRING MECHANISM

George M. Olorenshaw, deceased, late of Maple Ridge, and by Christine J. Olorenshaw, executor, 11810 Stephens Street, Maple Ridge, B.C., both of Canada V2X 6S3

Filed May 3, 1993, Ser. No. 56,724

Int. Cl.[5] G05G *9/00*

U.S. Cl. 74—471 XY **7 Claims**



1. A multi-axial centering spring mechanism comprising:

a first set of at least two close wound coil springs, in line and coupled together in a first plane, mounted on a base means;

a yoke having a first cross piece attached to the first set of springs, such that force applied to the first cross piece, transverse to the first plane, deflects the yoke relative to the base means, and the first set of springs causes the yoke to return to a center position when no force is applied;

the yoke having a second cross piece transverse to the first cross piece;

a second set of at least two close wound coil springs, in line and coupled together in a second plane, mounted on the second cross piece;

a tie bar attached to the second set of springs, such that force applied to the tie bar, transverse to the second plane, deflects the tie bar relative to the yoke, and the second set of springs causes the tie bar to return to a center position when no force is applied, and

lever means connected to the tie bar for applying force in the first plane and the second plane.

5,349,882

CLUTCH WEAR-COMPENSATING COMPOUND FLYWHEEL ASSEMBLY

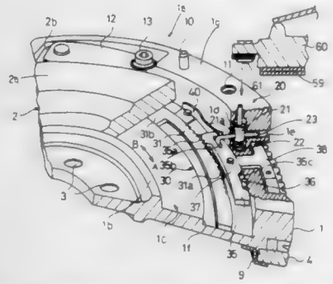
Takenori Kamio, Neyagawa, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Filed Jul. 22, 1993, Ser. No. 96,046

Claims priority, application Japan, Jul. 23, 1992, 4-196649

Int. Cl.[5] F16D *11/00;* **G05G** *1/00*

U.S. Cl. 74—572 **12 Claims**



1. A clutch wear-compensating compound flywheel assembly, comprising:

a first flywheel;

a ring gear peripherally connected to said first flywheel so as to rotate through a predetermined angle relative to said first flywheel;

a second flywheel connected to said first flywheel so as to be angularly fixed yet axially movable relative to said first flywheel and bearing a friction facing against which a clutch disc is pressed;

a clutch wear-gauging mechanism provided in an end surface of said first flywheel facing said clutch disc, for gauging wear of said clutch disc; and

an adjusting mechanism for inducing said second flywheel to move axially toward said clutch disc utilizing a cranking torque as transmitted by said ring gear, in cooperative response to said clutch wear-gauging mechanism.

5,349,883

APPARATUS FOR COUNTERACTING TORSIONAL STRESSES

Wolfgang Reik, Bühl, and Hans-Dieter Elison, Offenburg, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau, Bühl, Fed. Rep. of Germany

Continuation of Ser. No. 730,241, Jul. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 405,417, Sep. 11, 1989, Pat. No. 5,040,433, which is a continuation of Ser. No. 901,775, Aug. 28, 1986, abandoned. This application Jun. 2, 1993, Ser. No. 70,492

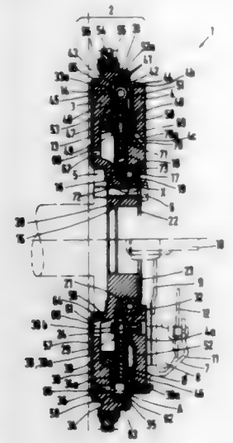
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1985, 3532018; Jul. 5, 1986, 3622697; Aug. 25, 1986, 3628770; Sep. 6, 1986, 8623931[U]

Int. Cl.[5] F16F *15/10*

U.S. Cl. 74—574 **33 Claims**

1. Apparatus for reducing fluctuations of torque which is transmitted between a first flywheel connectable to an output element of a combustion engine and a second flywheel which is rotatable relative to the first flywheel and has a friction surface engageable with a friction element of a friction clutch and transmits torque between the first flywheel and the friction clutch, comprising means for centering said flywheels including an antifriction roller bearing, one of said flywheels comprising a first wall; a second wall carried by said one flywheel and defining with the first wall an at least substantially sealed chamber for a supply of viscous fluid medium which at least partially fills said chamber, said second wall having means for sealing said chamber and said second wall being out of contact

with said bearing; a starter gear on one of said walls; and a damper device disposed in said chamber and including at least



one energy storing element which is resilient in the circumferential direction of and connects said flywheels to each other.

5,349,884

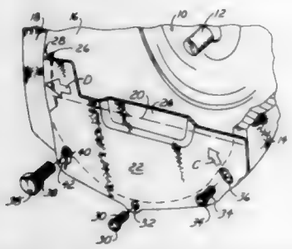
DUST SHIELD MOUNTING SYSTEM

Lawrence E. Werner, Grosse Pointe, and James R. Klotz, Mt. Clemens, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Oct. 28, 1993, Ser. No. 141,976

Int. Cl.[5] F16H *57/02;* **F16D** *1/00;* **F16B** *39/28*

U.S. Cl. 74—606 R **3 Claims**



1. In combination: an improved assembly system for attaching a cover member to a housing (**14**) along only substantially one edge portion of the cover member, comprising: a generally planar cover member (**22**) having an opening (**40**) therethrough; a fastener (**38**) with a cylindrical body portion adapted to extend through said opening for threading into the housing (**14**); a tab (**42**) having an end surface (**44**) defining a portion of the side of said opening (**40**), said tab (**42**) in an unstressed pre-assembly condition extending obliquely from the plane of said cover member (**22**) causing said end surface (**44**) of said tab (**42**) to be spaced outwardly from the plane of said cover member (**22**) and away from the housing (**14**) a portion of said tab (**42**) opposite said end surface (**44**) serving as an integral hinge (**48**) with the remainder of said cover member (**22**), said tab (**42**) being capable of flattening movement into the plane of said cover member (**22**); a head portion (**38'**) of said fastener (**38**) engaging said end surface (**44**) of the tab (**42**) to produce flattening distortion of said tab (**42**) when said fastener (**38**) is tightened and its head portion (**38'**) moved toward the housing (**14**), thereby flattening said tab (**42**) into the plane of the cover (**22**).

5,349,885

HYDRAULIC CONTROL SYSTEM FOR CONTROLLING LINE PRESSURE BASED ON BACKTORQUE AND THROTTLE RATE IN AN AUTOMATIC TRANSMISSION

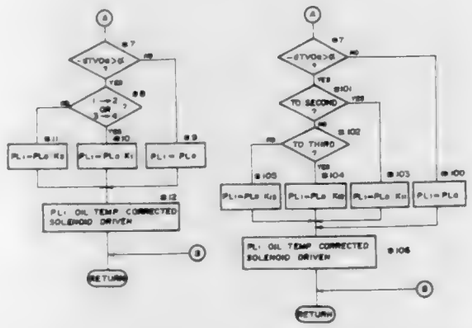
Hiroshi Yoshimura; Kazuo Sasaki; Kenji Kurisu; Takuji Fujiwara, and Mitsutoshi Abe, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 27, 1992, Ser. No. 936,203

Claims priority, application Japan, Sep. 3, 1991, 3-222580; Nov. 15, 1991, 3-300732

Int. Cl.[5] F16H *5/66*

U.S. Cl. 477—61 **25 Claims**



1. A hydraulic control system for an automatic transmission including a multi-speed transmission gear mechanism having an input shaft, an output shaft and a plurality of friction coupling elements, the hydraulic control system being for selectively applying and releasing the friction coupling elements to cause the transmission gear mechanism to shift to a speed which is determined according to a predetermined shift pattern, and comprising a hydraulic circuit for supplying a hydraulic pressure to the friction coupling elements and applying the friction coupling elements and a control means which controls the hydraulic circuit, characterized in that

said control means is provided with a target hydraulic pressure setting means which sets a target hydraulic pressure to be applied to the friction coupling elements according to a kind of shift to be effected and load on the engine of a vehicle, an engine load detecting means which detects a parameter indicative of the engine load and another parameter indicative of the rate of change in the engine load a back torque shift detecting means which detects that the transmission gear mechanism is to make a back torque upshift due to a reduction in said another parameter indicative of the rate of change in the engine load by a predetermined amount, a rotational speed detecting means which detects a rotational speed of a driving system which drives the input shaft of the transmission gear mechanism, and a correcting means, when the back torque shift detecting means detects that the transmission gear mechanism is to make said back torque upshift increases the target hydraulic pressure set by the target hydraulic pressure setting means by an amount which is determined according to said parameter indicative of the engine load and the rotational speed of the driving system:

wherein said rotational speed detecting means detects the rotational speed of a turbine of a torque convertor as the rotational speed of the driving system, and said correction means determines the amount by which the target hydraulic pressure set by the target hydraulic pressure setting means is increased according to the kind of the back torque upshift as well as to said parameter indicative of the engine load and the rotational speed of the driving system.

5,349,886

HAND SCREW DRIVER

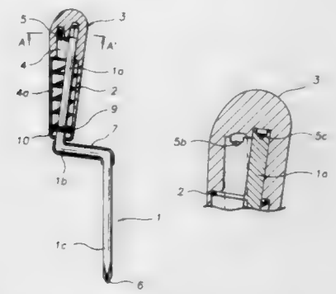
Soo W. Jin, 466 Seogodori, Kummamyun, Iksankun, Chulabukdo, Rep. of Korea

Filed Jul. 22, 1993, Ser. No. 94,903

Claims priority, application Rep. of Korea, Aug. 25, 1992, 92-16023; Apr. 2, 1993, 93-5256

Int. Cl.[5] B25G *3/02*

U.S. Cl. 81—37 **4 Claims**



1. A hand screw driver comprising:

an offset shank having a tip at its lower end and an angular recess at its top end, said shank being bent twice to have a Z-shape;

a handle having a shank receiving hole for rotatably receiving an upper section of said offset shank, said shank receiving hole being a stepped hole comprising a small diameter upper hole and a large diameter lower hole;

shank engaging means, provided at said small diameter upper hole of said shank receiving hole, for selectively engaging said top end of said offset shaft in one of (i) a fixed position wherein said shank is fixed with respect to said handle and (ii) a rotatable position wherein said shank is relatively rotatable with respect to said handle, said shank engaging means comprising (i) an angular protrusion, corresponding to said angular recess of said offset shank, for fixing said offset shank to said handle when said angular protrusion engages with said angular recess, and (ii) a cylindrical protrusion, neighboring with said angular protrusion, for allowing said shank to be relatively rotated with respect to said handle when said cylindrical protrusion engages with said angular recess; and

biasing means, provided about said upper section of said shank in said handle, for biasing said handle with respect to said shank, said biasing means operable to aid in shifting said shank between said fixed position and said rotatable position,

whereby said hand screw driver prevents a user's wrist from being twisted during a screw driving operation.

5,349,887

TUBULAR PIPE WRENCH

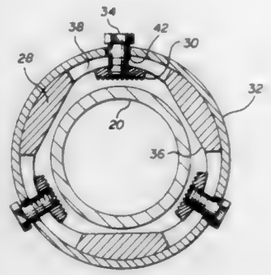
Kaye Suwa, 4510 Alta Canyada Rd., La Canada, Calif. 91011

Filed Jun. 21, 1993, Ser. No. 80,923

Int. Cl.[5] B25B *13/18*

U.S. Cl. 81—128 **13 Claims**

1. A tubular pipe wrench comprising a generally cylindrical camming head having internal cain surfaces, camming jaws in said camming head, slotted openings in said camming head, a sleeve surrounding said camming head, and bolts passing through said sleeve and said slotted openings and threadedly engaged with said camming jaws, and generally cylindrical



drive means connected to said camming head including flats on the surface thereof.

5,349,888

METHOD FOR MACHINING SURFACES OR REVOLUTION AT WORKPIECES AND DISK-SHAPED TOOL FOR PERFORMING SAME

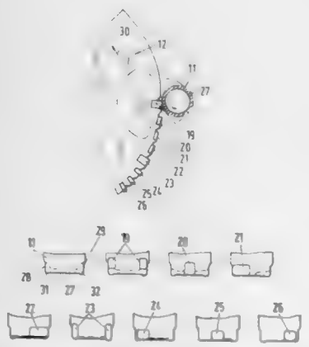
Karlheinz Schmid, Nürtingen, Fed. Rep. of Germany, assignor to Gebr. Heller Maschinenfabrik Gesellschaft mit beschränkter Haftung, Nürtingen, Fed. Rep. of Germany

Filed Jun. 11, 1992, Ser. No. 896,836

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1991, 4119162

Int. Cl.[5] B23B *5/00*

U.S. Cl. 82—1.11 **9 Claims**



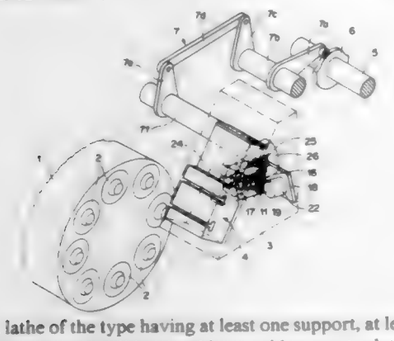
1. A method for machining surfaces of revolution at workpieces, comprising the steps of:

rotating the workpiece during machining;

roughing by turning the workpiece with a disk-shaped tool having at its circumferential edge cutting elements with cutting edges; and,

for finishing the surfaces of revolution of the workpiece, plunge-cutting by turning the workpiece with the disk-shaped tool wherein said step of plunge-cutting by turning is divided into a sequence of individual plunge-cutting by turning steps so that in an axial direction of the surfaces of revolution material of overlapping portions of the workpiece is removed sequentially.

5,349,889
LATHE
Jean C. Simonin, Moutier, Switzerland, assignor to Tornos-Bechler SA, Moutier, Switzerland
Filed Mar. 26, 1992, Ser. No. 857,971
Claims priority, application Switzerland, Mar. 28, 1991, 952/91
Int. Cl.[5] B23B 21/00
U.S. Cl. 82—118 9 Claims



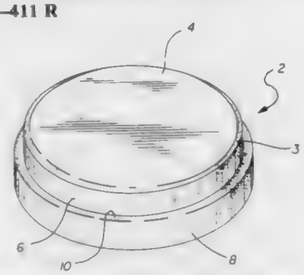
1. A lathe of the type having at least one support, at least one spindle, at least one slide movable on said support relative to a longitudinal axis of said spindle, control means for determining the travel of said slide, and at least one transmission mechanism actuated by said control means, comprising:
a programmable motor having a rotor and a stator,
a first transmission element forming part of said transmission mechanism and having an adjustable transmission ratio controlled by said motor; and
a shaft oscillated by said control means about a longitudinal axis of said shaft, wherein said first transmission element is a radial arm integral at one end thereof with said shaft, the active length of said arm being variable and controlled by said motor.

5,349,890
APPARATUS FOR SEVERING OFF PIECES FROM AN ENDLESS WEB
John J. Butkus, Woodbury, and Paul R. Bird, Naugatuck, both of Conn., assignors to Scovill Fasteners Inc., Clarkesville, Ga.
Continuation of Ser. No. 979,064, Nov. 19, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 127,134
Int. Cl.[5] B26D 1/06, 7/10
U.S. Cl. 83—171 4 Claims



1. In combination:
a. an endless web of synthetic fabric,
b. a severing apparatus comprising:
1. a bed having guide means for guiding the web on a path through the apparatus and having a flat metal cutting block disposed horizontally in the bed transverse to the path, the block being directly underlaid by a layer of resilient material,
2. support means secured to the bed and extending upward on opposite sides of the path,
3. vertically reciprocating drive means mounted on the support means above the block and comprising a vertically disposed pneumatic cylinder having a piston operatively disposed therein, a connecting rod connected thereto and extending through a sealed opening in the lower end of the cylinder, a horizontally disposed yoke secured at its center to the lower end of the rod,
4. vertically diposed support pins secured to and extending down from the opposite ends of the yoke, and
5. a heated knife assembly comprising a thin vertically disposed body having securing means at the opposite ends of the upper portion thereof secured to the pins respectively, a heating element disposed in the assembly, the lower end of the assembly comprising a heated knife being pointed in a cutting line parallel to the top surface of the cutting block, the converging sides of the heated knife at the cutting line being symmetrical about an imaginary vertical line through the cutting line and disposed at an obtuse angle with respect to each other so that the sides are at angles to the cutting block of less than 45° respectively, the heating element being parallel to the cutting line and adapted to heat the knife to a temperature approaching 950°F
whereby when the drive means is activated, it will drive down the knife assembly so that the cutting line forcefully impacts the synthetic fabric and severs it and binds together the threads in the synthetic fabric adjacent the cut and creates non-fraying edges, the edges having been subject to the broad impact of the sides of the heated knife at an angle of less than 45° to the cutting block.

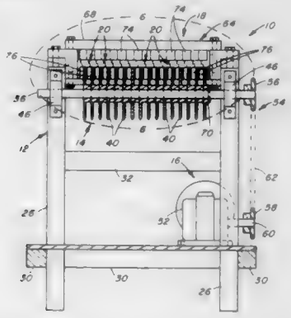
5,349,891
CONVERTIBLE DRUMHEAD
Remo D. Belli, North Hollywood, Calif., assignor to Remo, Inc., North Hollywood, Calif.
Continuation-in-part of Ser. No. 35,049, Mar. 22, 1993, abandoned. This application Jul. 22, 1993, Ser. No. 94,983
Int. Cl.[5] G10D 13/02
U.S. Cl. 84—411 R 13 Claims



1. In a combination with a drum shell having a circumferential side wall with a top rim and a bottom rim defined at opposite ends of said side wall, a musical instrument in the form of a convertible drumhead adapted to be installed in direct contacting engagement with or upon one or both of said rims, comprising
a material for constituting a drumming surface having an exposed annular rim, said drumming surface and said annular rim being aligned along a common plane,
a first circumferential wall having an exterior surface and an interior surface and a top section and a bottom section, said first circumferential wall formed generally normal to and integrally with the annular rim of the drumming surface, said drumming surface and said first circumferential wall combining to define a cavity with an opening at one end,
an annular shoulder generally disposed circumferentially about the bottom section of said first circumferential wall comprising a second circumferential wall and a corresponding annular seat formed in a normal relation therewith and being adapted for use alternatively either as a hand grasp, when employing the instrument as a single-headed drum, or as a means to engage a mechanism for tensioning the drumhead and attach and secure the drumhead to the drum shell.

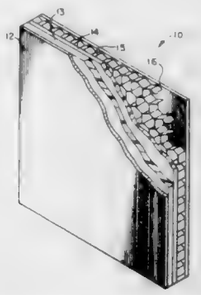
5,349,892
PROPELLANT STICK KERFING APPARATUS AND METHOD
Michael A. Taylor, Circle Pines, and Steven R. Chambers, Zimmerman, both of Minn., assignors to Alliant Techsystems Inc., Hopkins, Minn.
Filed Nov. 6, 1991, Ser. No. 788,408
Int. Cl.[5] F42B 3/20; D03D 23/00
U.S. Cl. 86—21 20 Claims

1. A propellant stick kerfing apparatus, comprising:
(a) a support frame;
(b) means mounted on the frame for conveying a succession of spaced propellant sticks along a path of travel with the propellant sticks extending in transverse relation to the direction of travel;
(c) means mounted on the support frame and coupled to the conveying means for driving the conveying means to advance the succession of propellant sticks along the path of travel; and



(d) means mounted on the support frame across the path of travel of the propellant sticks and defining stationary cutting edges for making transaxial kerfs in the propellant sticks from opposite upper and lower sides thereof as the succession of spaced sticks ace advanced along the path of travel between the cutting edges.

5,349,893
IMPACT ABSORBING ARMOR
Eric S. Dunn, 810 Van Dyke La., Belair, Md. 21014
Filed Feb. 20, 1992, Ser. No. 838,018
Int. Cl.[5] F41H 1/02
U.S. Cl. 89—36.05 5 Claims

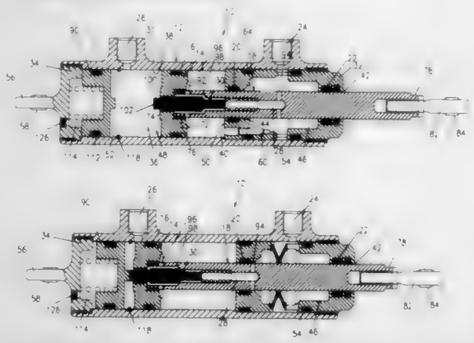


1. In light weight personal body armor having layers of material capable of resisting projectile penetration, the improvement which comprises a panel on the innermost side of said armor for absorbing and distributing kinetic energy, said panel comprising a pair of sheets of an ionomer and a rigid thermoplastic structure between said sheets having a multiplicity of joined polygonal cells of a honeycomb structure forming a sheet of uniaxial cells with a wall-thickness of about 0.003 to 0.250 inch and a cell diameter of about 0.1 to 1 inch.

5,349,894
LOCKING HYDRAULIC ACTUATOR
Arthur O. Greer, Los Angeles, Calif., assignor to Loud Engineering & Manufacturing, Ontario, Calif.
Filed Oct. 1, 1993, Ser. No. 130,306
Int. Cl.[5] F15B 15/26
U.S. Cl. 91—43 19 Claims

1. A method for locking a hydraulic actuator in a predetermined position, the hydraulic actuator comprising an actuator enclosure defined by a hollow cylinder enclosed by a rearward end wall and an opposed forward end wall, a piston slidably disposed in the actuator enclosure and a piston rod attached to the piston, the method comprising the steps of:
(a) supplying hydraulic fluid from a source of hydraulic fluid into a forward chamber disposed in the actuator enclosure, the forward chamber being defined by the forward end wall, the actuator enclosure, the piston rod and an intermediate wall positioned between the forward end wall and the piston;
(b) transferring the hydraulic fluid from the forward chamber into a forward moiety of a rearward chamber disposed in the actuator enclosure, the forward moiety of the rearward chamber being defined by the piston, the piston rod, the actuator enclosure and the intermediate wall; and
(c) sealing the hydraulic fluid in the forward moiety of the rearward chamber.

5. A locking hydraulic actuator comprising:
(a) a housing member comprising of a hollow cylinder bounded by a forward end wall and a rearward end wall, the walls cooperating to define an actuator enclosure having an interior surface, the housing member further having an intermediate wall disposed within the actuator enclosure between the forward end wall and the rearward end wall so as to partition the actuator enclosure into a forward chamber and a rearward chamber, the rearward chamber having a forward moiety and a rearward moiety and both the forward end wall and the intermediate wall having a central aperture;



(b) a piston having a forward facing surface, a rearward facing surface and a cross sectional shape corresponding to that of the actuator enclosure, the piston being shaped and dimensioned to closely conform to the interior surface of the actuator enclosure and being slidably disposed within the forward moiety of the rearward chamber so as to partition the rearward chamber into a forward moiety and a rearward moiety;
(c) a piston seal for slidably sealing the piston to the interior surface of the actuator enclosure;
(d) a piston rod attached to the forward facing surface of the piston, with the piston rod extending away from the piston through the apertures in the intermediate wall and forward end wall;
(e) an intermediate piston rod seal for slidably sealing the piston rod to the aperture in the intermediate wall;
(f) a forward piston rod seal for slidably sealing the piston rod to the aperture in the forward end wall;
(g) a first port disposed in the housing member to permit

bi-directional fluid communication between the forward chamber and a source of pressurized hydraulic fluid or a fluid return reservoir sump;

(h) a second port disposed in the housing member to permit bi-directional fluid communication between the rearward moiety of the rearward chamber and a source of pressurized hydraulic fluid or a fluid return reservoir sump;

(i) a fluid passageway connecting the forward chamber and the forward moiety of the rearward chamber in fluid communication with one another; and

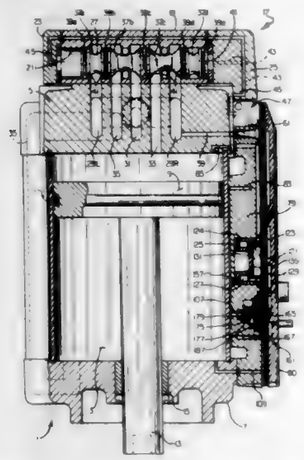
(j) a valve device disposed in the fluid passageway for alternatively closing and opening the fluid passageway to fluid flow between the forward chamber and the forward moiety of the rearward chamber.

5,349,895

AIR MOTOR CONTROL

Leonard J. DiCarlo, St. Louis, Mo., assignor to McNeil (Ohio) Corporation, St. Paul, Minn.

Filed Nov. 23, 1992, Ser. No. 980,552
Int. Cl.[5] F01B *25/06*
U.S. Cl. 91—221 **11 Claims**



1. A runaway control for an air motor of the expansible chamber type comprising an air cylinder, a piston reciprocable therein, valve means shiftable alternately to effect supply of air to and venting of air from opposite sides of the piston to reciprocate the piston, said control being operable on increase in speed of the air motor above a speed limit to stop the motor and comprising

pressure-responsive means comprising means defining an air chamber for air under pressure, means movable away from a first position in response to increase in air pressure in said chamber above a predetermined limit to a second position, and movable back to said first position on reduction of pressure in said chamber below said limit, said movable means widen in its first position enabling operation of the air motor and when in its second position cutting off the operation of the motor,

said pressure-responsive means having a bleed for bleeding off pressure from the chamber at a controlled rate,

an air pump controlled by the air motor,

said pump being interconnected with the motor for operation simultaneously with the motor for delivering air under pressure at a rate related to the speed of the motor and having an outlet in communication with the chamber for the delivery of the air under pressure to the chamber,

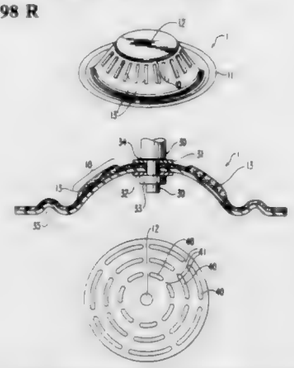
the pressure in the chamber being controlled by the rate of delivery of air under pressure to the chamber and the bleed of air from the chamber, whereby on increase in speed of the motor above said speed limit, the pump, operating at increased speed, delivers air under pressure at an increased rate to said chamber over and above the capability of the bleed to bleed off the increase, and on ensuing increase in air pressure in the chamber above said limit, said movable means moves to its said second position to cut off the motor.

5,349,896

PUMP DIAPHRAGM

William E. Delaney, III, Hockessin, Del.; John M. Connelly, Jr., Rising Sun, Md., and Fred C. Sicker, Newark, Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Jun. 14, 1993, Ser. No. 76,605
Int. Cl.[5] F01B *19/00*
U.S. Cl. 92—98 R **1 Claim**



1. A pump diaphragm having a circularly-configured body having a convex face side and a concave air-pressure receiving side consisting of a composite in which the convex face side is mace of polytetrafluoroethylene and the concave air-pressure receiving side is made of a resilient elastomeric material;

said body having a central opening for receiving a piston rod;

said body having a generally annular flexure portion that flexes in operation;

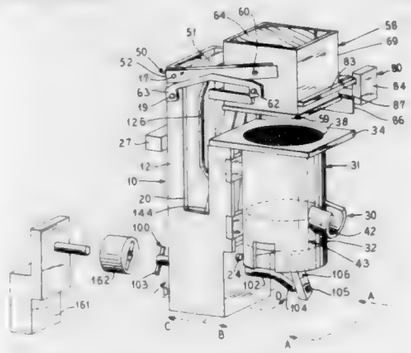
said body having on the face side a plurality of radially disposed uniformly spaced ribs extending radially outwardly across said flexure portion.

5,349,897

COFFEE BREWER METHOD AND APPARATUS

Brian L. King, Palo Alto, Calif., and Paul A. King, Montreal, Canada, assignors to Zuma Coffee Technologies, Inc., Saint-Hubert, Canada

Continuation-in-part of Ser. No. 938,768, Sep. 1, 1992. This application Oct. 27, 1993, Ser. No. 141,733
Int. Cl.[5] A47J *31/32*
U.S. Cl. 99—289 R **21 Claims**



1. Apparatus for brewing a beverage comprising, in combination:

an upper chamber for receiving and containing hot water and a brewing material and having an open lower end,

a lower chamber having an open upper end,

a filter mounted over the upper end of said lower chamber preventing passage of the brewing material therethrough,

means for providing relative movement between said lower chamber and said upper chamber to move said chambers between a first position wherein said filter is clamped between said lower end of said upper chamber and said upper end of said lower chamber and a second position wherein said lower end of said upper chamber is spaced from said upper end of said lower chamber,

means for removing brewing material off the top surface of said filter, and

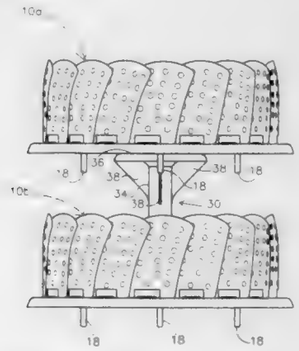
means for moving said removing means across said filter when said chambers are in said second position to remove brewing material from said filter, a moveable support member connected to said upper chamber and wherein said means for providing relative movement between said upper and lower chambers includes a push rod with one end pivotally connected to the center of said support member and wherein said push rod is aligned with the center of said upper chamber and said support member.

5,349,898

VEGETABLE STEAMER ARRANGEMENT

Paul Po Wo Cheung, Hong Kong, Hong Kong, assignor to Maxpat Trading & Marketing (Far East) Limited, Hong Kong, Hong Kong

Filed Jul. 30, 1992, Ser. No. 922,542
Claims priority, application United Kingdom, Aug. 1, 1991, 9116669
Int. Cl.[5] A47J *27/04, 27/12, 43/24*
U.S. Cl. 99—417 **16 Claims**



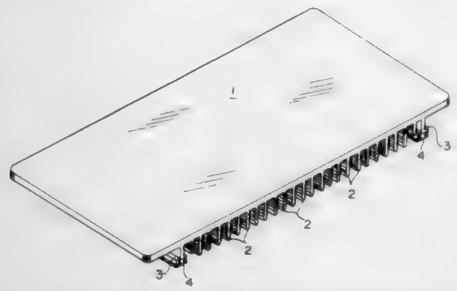
1. In combination a support device and first and second vegetable steamers, each of said steamers having a base, the support device comprising a pillar formed in two parts which are telescopically connected, one of the parts having an external screw threading and the other part being hollow and having an internal screw threading to receive the external screw threading of the first part, the pillar having first and second ends, a support for the base of the first vegetable steamer being provided at said first end of said pillar and means to attach the support device to the second vegetable steamer being provided at said second end so that the pillar is upstanding from the base of the second vegetable steamer and extends from the second vegetable steamer above to support the first vegetable steamer above the second vegetable steamer, wherein the pillar is of adjustable length.

5,349,899

NATURAL THAWING PAN

Seigo Tominaga; Osamu Akasi; Masao Imai; Koji Sugita; Setuko Suzuki; Akira Maeda; Kazumasa Isiguro; Masahiro Uchida, and Makoto Sato, all of Tokyo, Japan, assignors to Kanehiro Co., Ltd., Tokyo, Japan

Filed Apr. 16, 1993, Ser. No. 48,775
Claims priority, application Japan, Nov. 26, 1992, 4-087259
Int. Cl.[5] A47J *43/00*
U.S. Cl. 99—646 R **8 Claims**



1. A thawing pan for thawing foods under ambient conditions, comprising:

a substantially flat rectangular plate made of material having high heat transfer characteristics, the plate having an upper flat surface for receiving food and an opposite lower surface;

a plurality of elongated spaced parallel fins, extending from and across the lower surface of the plate, said fins including facing side surfaces;

a plurality of elongated ridges extending along each of the facing side surfaces of the fins to increase a heat transfer characteristics of the fins;

a pair of elongated legs extending parallel to the plurality of fins and position respectively near opposite ends of the plate and defining a space therebetween in which at least some of said fins are located, said legs extending from said lower surface a greater distance than said fins;

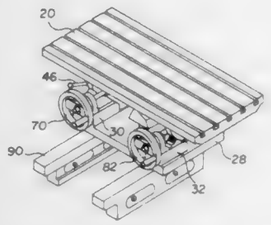
said plate, fins and legs all being made of one piece of the material having the high heat transfer characteristic.

5,349,900

DUAL-AXIS TABLE ASSEMBLY

Donald B. Rottler, 2617 W. Galer St., Seattle, Wash. 98199

Filed Jan. 5, 1993, Ser. No. 641
Int. Cl.[5] A47F *5/12*
U.S. Cl. 100—4 **8 Claims**



1. A dual-axis table assembly comprising:

a table having a front and back, and left and right ends,

a base spaced beneath said table;

left and right sector members each having a center of curvature, said members depending rigidly from said table and spaced apart in parallel relation perpendicular to a left to right axis passing through each of their centers of curvature;

left and right pairs of support elements on said base supporting said left and right sector members, respectively, said left pair of elements supporting said left sector member at left support locations spaced apart in a front to back direction relative to said table, and said right pair of elements supporting said right sector member at right support locations spaced apart in a front to back direction relative to said table;

left adjustment means carried by said base for turning said left sector member on said left pair of support elements with respect to said axis and thereby tilting said table and right sector member in a front/back direction relative to said base; and

right adjustment means carried by said base for adjusting the distance between said right pair of elements to vary the distance between said right support locations to thereby selectively raise or lower said right sector member and responsively tilt said axis, table, and both sector members in a right/left direction relative to said base.

5,349,901

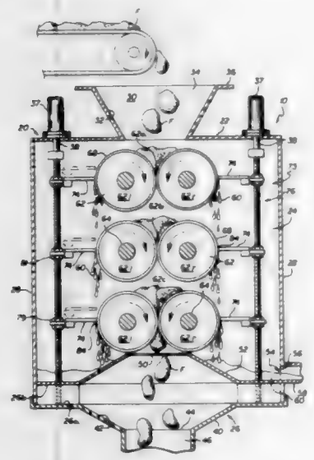
APPARATUS FOR THE TREATMENT OF OIL FILTERS FOR LOW CONTAMINANT RECYCLE

Charles Brittain, 10177 Elkwood, Sun Valley, Calif. 91352; Gilbert Ross, 17640 Vincennes, Northridge, Calif. 91324, and Jack D. Brittain, 10863 Mountair Ave., Tujunga, Calif. 91042

Filed May 17, 1993, Ser. No. 62,590

Int. Cl.[5] B30B *9/20, 3/04*

U.S. Cl. 100—37 **23 Claims**



23. Method for low contamination recycling oil filter elements, including feeding a succession of oil-containing filter elements to a sequence of nip roll pairs supported by a frame having a wall below said nip roll pairs, sequentially squeezing said filter elements to separate said oil from said filter elements, diverting separated oil from said nip roll pairs along a first path to recycle, and diverting oil-separated filter elements along a second path to recycle separate from said first path, said first and second paths being defined by said frame bottom wall.

5,349,902

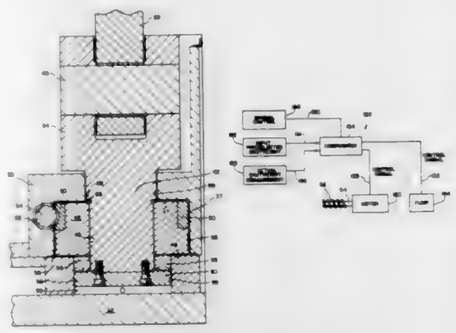
PRESS SHUTHEIGHT ADJUSTMENT MECHANISM

Edward A. Daniel, Fort Loramie, and Frederick C. Bergman, Coldwater, both of Ohio, assignors to The Minster Machine Company, Minster, Ohio

Filed Apr. 20, 1993, Ser. No. 49,991

Int. Cl.[5] B30B *15/14, 1/26*

U.S. Cl. 100—48 **18 Claims**



1. A press comprising:

a frame structure with a crown and a bed;

a slide guided by the frame structure for reciprocating movement in opposed relation to said bed;

a drive means attached to said frame structure for reciprocating said slide;

a bolster assembly mounted to said bed;

a shutheight adjustment mechanism arranged for adjustment-in-motion attached on the press to adjust the shutheight between said slide and said bolster, said mechanism having a male threaded member threadedly engaging a female threaded member, said male and female members having at least two portions that require a clearance space therebetween; and

an injecting means for injecting a liquid within said clearance space whereby undamped free movement between said threaded members is reduced by the formation of a liquid squeeze-film within said clearance space during pressure loads between said portions.

5,349,903

PRINTING HEAD IN WIRE-DOT PRINTER

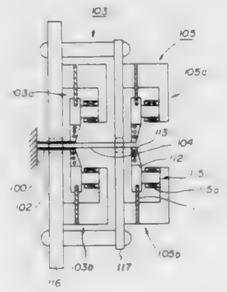
Hitoshi Moriyama; Kiyoshi Itoh; Minoru Hara, and Masahisa Inagaki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 4, 1992, Ser. No. 985,480

Claims priority, application Japan, Dec. 5, 1991, 3-321852; Mar. 2, 1992, 4-044496

Int. Cl.[5] B41J *2/245*

U.S. Cl. 101—93.05 **12 Claims**



1. A printing head provided in a wire-dot printer comprising:

a first sub-printing head comprising a first head module and a second head module each having a plurality of first wire pins and a plurality of first driving mechanisms for respectively driving said first wire pins, said first and second head modules being mounted on a first planar supporting member with printing ends of said first wire pins being arranged in one or more straight lines and said first head module opposing said second head module;

a second sub-printing head comprising a third head module and a fourth head module each having a plurality of second wire pins and a plurality of second driving mechanisms for respectively driving said second wire pins, said third and fourth head modules being mounted on a second planar supporting member with printing ends of said second wire pins arranged in one or more straight lines and said third head module opposing said fourth head module;

said first and second planar supporting members being connected together in parallel by a connecting mechanism comprising a plurality of spacing rods rigidly engaged thereto, said first supporting member being formed with a plurality of first guide holes and said second supporting member being formed with a plurality of second guide holes;

said first wire pins of said first sub-printing head each passing through a first guide hole and respective second wire pins of said second sub-printing head each passing through a second guide hole and through a first guide hole, said second wire pins being spaced alternately with and parallel to respective first wire pins of said first sub-printing head, each of said pins extending in a direction approximately perpendicular to a printing plane such that the printing ends of said first and second wire pins form an array of one or more straight lines at said printing plane.

5,349,904

NON-STOP PILE-CHANGE DEVICE IN A DELIVERY OF A PRINTING PRESS

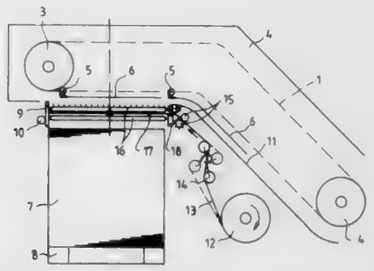
Udo Ganter, Friedberg, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jul. 6, 1993, Ser. No. 88,154

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1992, 4221928

Int. Cl.[5] B41F *13/56*

U.S. Cl. 101—227 **13 Claims**



1. Non-stop pile-changing device in a delivery of a printing press, comprising an auxiliary pile support insertable between two sheets in a sheet-conveying direction for temporarily receiving thereon oncoming sheets in an auxiliary pile, means for exchanging a main pile of sheets and an old main pile support whereon the main pile has been deposited for a new main pile support, and means for depositing the auxiliary pile on said new main pile support, said auxiliary pile support being relatively thin in comparison with the thickness of said main pile support, and remaining underneath the auxiliary pile and forming a base for the auxiliary pile as it is being deposited on said new main pile support.

5,349,905

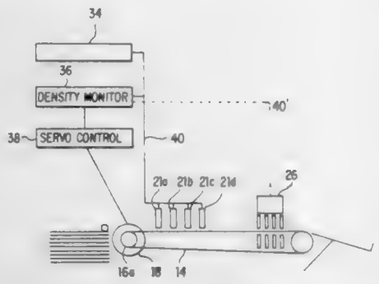
METHOD AND APPARATUS FOR CONTROLLING PEAK POWER REQUIREMENTS OF A PRINTER

Thomas N. Taylor, Rochester, and Frederick A. Donahue, Walworth, both of N.Y., assignors to Xeox Corporation, Stamford, Conn.

Continuation of Ser. No. 856,786, Mar. 24, 1992, abandoned. This application Apr. 5, 1993, Ser. No. 43,615

Int. Cl.[5] B41L *35/14*

U.S. Cl. 101—488 **2 Claims**



1. A printing apparatus comprising:

means for depositing a dryable ink on a recording medium to form an image;

a microwave dryer having an energy absorbing means for absorbing microwave energy not consumed in drying ink, said energy absorbing means comprises a dummy load for dissipating excess microwave energy;

a conveying member for conveying the recording medium with an image formed thereon through the dryer;

determining means for determining the energy, consumed by the dryer to dry the ink on the recording medium, said determining means including means for sensing the amount of energy dissipated in the dummy load; and

means for controlling the speed of the conveying member in accordance with the energy consumption determined by the determining means.

5,349,906

CARTRIDGE TUBE FOR RIFLE GRENADE CAPABLE OF RETAINING THE BULLET FRAGMENTS

Dominique Devaux; Caroline Heilio, both of Bourges, and Jean-Gabriel Misse, Saint Florent sur Cher, all of France, assignors to Luchaire Defense SA, Versailles Cedex, France

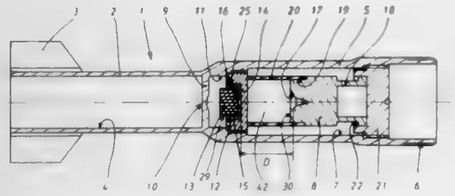
PCT No. PCT/FR92/01145, § 371 Date Jun. 7, 1993, § 102(e) Date Jun. 7, 1993, PCT Pub. No. WO93/13382, PCT Pub. Date Jul. 8, 1993

PCT Filed Dec. 3, 1992, Ser. No. 70,453

Claims priority, application France, Dec. 24, 1991, 91 16060

Int. Cl.[5] F42B *30/06*

U.S. Cl. 102—485 **10 Claims**



1. A cartridge tube for a grenade fired from a rifle by a live round, the tube comprising:

a bullet trap for stopping a bullet;

a plug made of a deformable material for preventing fragments produced when the bullet impacts the bullet trap from escaping from the cartridge tube; and

a support positioned between the plug and the bullet trap,

said support comprising a bore delimited by a wall such that said support has a C-shaped cross-section, said bore retaining said plug, and said plug bearing against the wall, the wall being disposed between said bore and said bullet trap and attached to the cartridge tube and substantially perpendicular to a center line of the tube, the wall being positioned at a distance from the bullet trap along the center-line of the cartridge tube to create a space between the wall and the bullet trap.

5,349,907

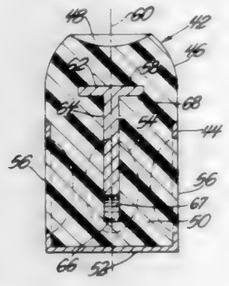
HIGH VELOCITY PROJECTILE

Robert M. Petrovich, 10748 Bob White, P.O. Box 111, Hamburg, Mich. 48139, and Paul A. Petrovich, 11269 Judd Rd., Fowlerville, Mich. 48836

Division of Ser. No. 35,863, Mar. 23, 1993, abandoned. This application Oct. 1, 1993, Ser. No. 130,574

Int. Cl.[5] F42B *12/06, 12/34*

U.S. Cl. 102—506 **12 Claims**



1. A projectile comprising:

a longitudinal axis;

a fore end;

an aft end;

a plastically deformable body defining a nose at the fore end and a posterior part at the aft end;

a jacket of denser and stronger material than the material of body surrounding the posterior part of the body;

the jacket defining apertures in an annular array around the jacket, the jacket sized diametrically in a vicinity of the array of apertures to be engraved by rifling of a gun barrel;

means for enhancing radial expansion upon target impact of the posterior part through the jacket at the array of apertures so as to accelerate jacket fragmentation;

the enhancing means including a core in the body along the longitudinal axis, the core formed of material stronger than the material of the body;

a flat, generally planar head of the core disposed in the nose of the body.

5,349,908

EXPLOSIVELY FORGED ELONGATED PENETRATOR

Mark Walz, Northboro, and Richard J. Schoon, Southboro, both of Mass., assignors to Nuclear Metals, Inc., Concord, Mass.

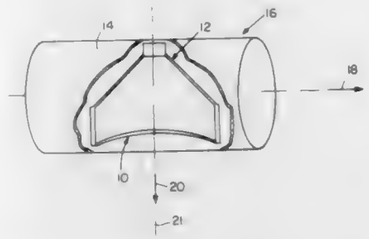
Filed Feb. 1, 1993, Ser. No. 11,996

Int. Cl.[5] F42B *1/02*

U.S. Cl. 102—307 **30 Claims**

1. An explosively forged elongated penetrator comprising:

a liner having a central section, an intermediate section and a peripheral section; the axial velocity of said sections being approximately equal, the axial thickness of said sections decreasing from the central to the peripheral section; the radial velocity increasing from the central to the peripheral section; and the line profile angle decreasing from the central to the peripheral section; to define an inwardly directed centrally focused force for forging the



penetrator from the liner substantially independently of the axial velocities.

5,349,909

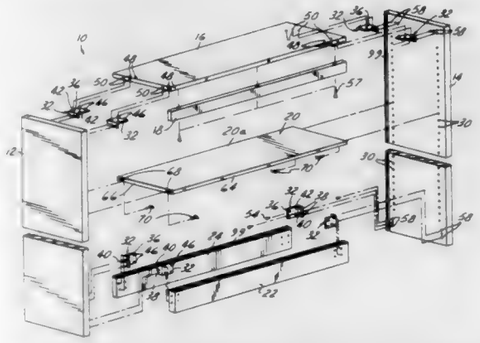
SHELVING UNIT

Kenneth J. Smit, Hudsonville, and James A. Brown, Grand Haven, both of Mich., assignors to The Worden Company, Holland, Mich.

Filed Jun. 26, 1992, Ser. No. 906,860

Int. Cl.[5] A47B *9/00*

U.S. Cl. 108—107 **2 Claims**



1. A shelving unit comprising laterally spaced, upright end panels, shelving extending between said end panels comprising an elongated shelf having opposite ends, and means for connecting said ends of said shelf to said respective end panels, said connecting means comprising a first pair of spaced apart shelf locking pins each having a threaded end portion threadedly engaged and anchored in one of said end panels and a shelf-supporting end portion projecting from said one end panel in supporting engagement with one end portion of said shelf, a second pair of spaced apart shelf locking pins each having a threaded end portion threadedly engaged and anchored in the other of said end panels and a shelf-supporting end portion projecting from said other end panel toward said one end panel in supporting engagement with the other end portion of said shelf, the opposite end portions of said shelf having grooves in the underside thereof receiving said shelf-supporting end portions of said respective locking pins, said shelf-supporting end portions of said locking pins each having a transverse pin projecting radially from diametrically opposite sides thereof providing a handle to facilitate threading the same into said end panels, and said end portions of said shelf having sockets receiving said respective transverse pins to prevent said locking pins from pulling away from said shelf.

5,349,910

METHOD AND APPARATUS FOR INCINERATING WASTE IN A CEMENT KILN PLANT

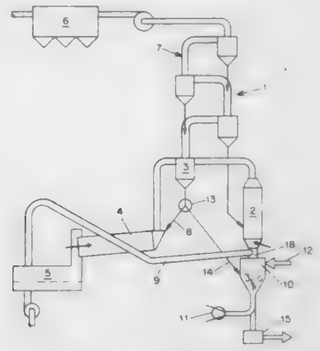
Soren Hundebol, Valby, Denmark, assignor to F. L. Smidth & Co. A/S, Denmark

Filed Aug. 4, 1993, Ser. No. 101,932

Claims priority, application Denmark, Aug. 6, 1992, 989/92

Int. Cl.[5] F23G *5/02*

U.S. Cl. 110—346 **8 Claims**



1. A method for incineration of waste during the manufacture of clinker, which clinker is manufactured by a process in which cement raw meal is preheated in a preheater, calcined in a calciner, burned into clinker in a kiln, whereafter the clinker is eventually cooled in a cooler, said method for incineration of waste comprising:

introducing the waste into a separate decomposition chamber;

decomposing the waste in the decomposition chamber by means of heat from at least one of preheated raw meal from the preheater and calcined raw meal from the calciner;

feeding gaseous products of the decomposition into the calciner; and

discharging noncombustible by-products from the decomposition chamber.

5,349,911

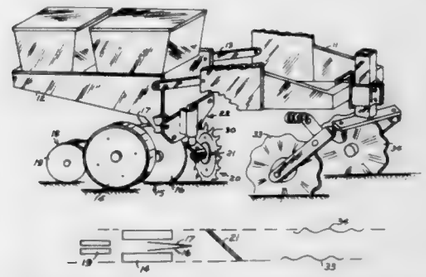
ASSEMBLY USED IN FARM IMPLEMENTS TO CLEAR MULCH FOR MINIMUM TILLAGE

Dean W. Holst, LeClaire, Iowa, and Ray Rawson, Farwell, Mich., assignors to Unverferth Manufacturing Company, Inc., Kalida, Ohio

Filed Dec. 6, 1991, Ser. No. 802,844

Int. Cl.[5] A01C *5/06*

U.S. Cl. 111—139 **1 Claim**



1. In an assembly for use in conservation tillage over soil having residue of former crops remaining thereon, and including a planting assembly for opening a seed furrow, for depositing seed therein and for closing the coil over the seed; a frame operatively connected to the planting assembly for placement in front of the planting assembly; a unit mounted on the frame and engageable with the soil sufficiently to cut the remaining residue and to define a path therebetween for planting, the path having a centerline extended in plan longitudinally of the unit; a residue clearing device comprising:

rotatable means mounted on the frame between the unit and the planting assembly, said rotatable means disposed angularly across the path;

said rotatable means engageable with the soil sufficient only to move the residue remaining on the path to one side thereof whereby to clear the residue from in front of the planting assembly and further wherein the said rotatable means comprises a single wheel having peripheral outward teeth and rotatable about a generally horizontal axis, and extended angularly in plan completely across the path; said wheel engageable with the soil sufficiently only to provide rotation of said wheel, and said wheel disposed with its center aligned in plan with the centerline of the path,

whereby providing minimal penetration into mulch and soil while clearing the center of the path.

5,349,912

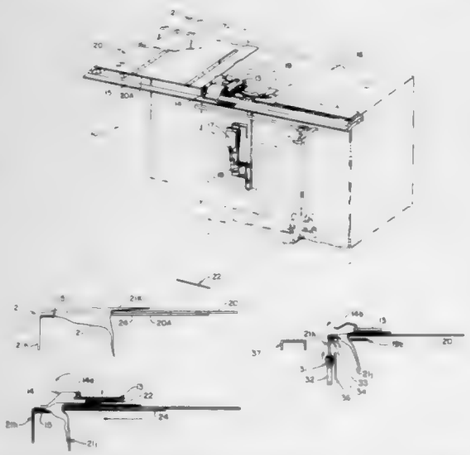
POCKET SETTER FOR FLAT AND TABULAR GARMENTS

Tadeusz A. Olewicz, Clinton, and Ernst Schramayr, Barneveld, both of N.Y., assignors to Jet Sew Technologies Inc., Barnefeld, N.Y.

Filed Mar. 25, 1993, Ser. No. 37,085

Int. Cl.[5] D05B *21/00*

U.S. Cl. 112—262.2 **8 Claims**



1. The method of affixing a garment part to a tubular knit body comprising the steps of:

a) extending said body over an edge of a flat table to arrange an area of said tubular knit body to which the garment part is to be affixed upon an upper surface of said table without substantially distorting said area while simultaneously extending an opposite side of said body under said table;

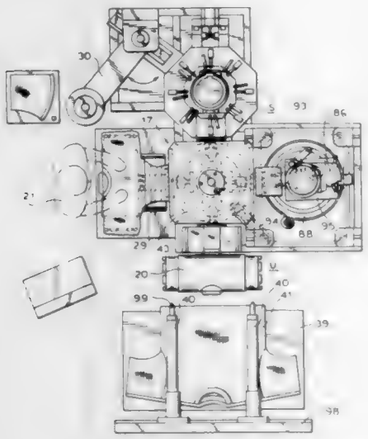
b) depositing upon said area said garment part and pressing said garment part thereupon to clamp said part and said body against the upper surface of said table;

c) moving that portion of said tubular body which is under the table to clear the edge of said table and maintaining said portion clear of the edge of said table while maintaining the area of said body clamped against the upper surface of said table under said garment part in an undistorted condition;

d) sliding said garment body across said table with the garment part clamped thereupon to a position for stitching

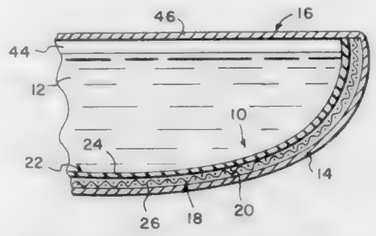
said part to said body while maintaining said area under said garment body in an undistorted condition;
e) stitching said part to said body; and
f) releasing said garment body from said table.

5,349,913
METHOD AND APPARATUS FOR ATTACHING SLEEVES TO TUBULAR SHIRT BODIES
Ernst Schramayr, Barneveld, and Tadeusz A. Olewicz, Clinton, both of N.Y., assignors to Jet Sew Technologies Inc., Barnefeld, N.Y.
Filed May 14, 1993, Ser. No. 62,127
Int. Cl.[5] D05B *21/00*
U.S. Cl. 112—265.1 **27 Claims**



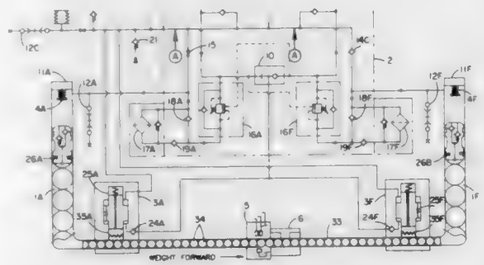
1. A process for sewing tubular sleeves to tubular shirt bodies, which comprises
(a) providing a tubular shirt body with contoured sleeve openings therein,
(b) providing tubular sleeve sections having outer end edges and contoured inner end edges for attachment to said shirt body at said openings,
(c) applying said shirt body, in an outside-out orientation, over a shirt body form having a central portion and opposite end portions,
(d) thereafter aligning edges of said sleeve openings with a predetermined reference position with respect to the end portions of said shirt body form,
(e) thereafter applying tubular sleeve sections, in an inside-out and outer-end-first orientation over the opposite end portions of said shirt body form, in surrounding relation to portions of said shirt body containing said sleeve openings,
(f) thereafter aligning the contoured inner end edges of said sleeve sections with said predetermined reference position, and
(g) while retaining said shirt body and said sleeve sections substantially in their aligned positions on said shirt body form, sewing seams to secure each of the respective sleeve sections to its respective sleeve opening.

5,349,914
LEAKPROOF OIL SUPER-TANKER
Robert M. Lapo, P.O. Box 3732, Wenatchee, Wash. 98807, and George Spector, 233 Broadway Rm. 702, New York, N.Y. 10279
Filed Jun. 30, 1993, Ser. No. 84,162
Int. Cl.[5] B63B *25/12*
U.S. Cl. 114—74 R **2 Claims**



1. A device for impeding the spillage of a liquid cargo from a damaged hull of a water traveling vessel which comprises:
a) a protective layer placed against an inner surface of the hull;
b) a flexible liner placed between said protective layer and the liquid cargo so that if the hull is punctured, said protective layer will hold said flexible liner and the liquid cargo in place within the hull; wherein said flexible liner is fabricated out of rubber which is resistant to the liquid cargo; wherein said protective layer is a plurality of interconnecting movable perforated flexible plates; wherein each said plate includes:
c) at least one male member having a round top corner on one side of said plate from top to bottom;
d) a flexible pin extending outwardly from near the bottom of said male member; and
e) at least one female socket on an opposite side of said plate from top to bottom and having a slot extending inwardly so that at least one male member can mate with said at least one female socket on another said plate, allowing said flexible pin to enter said slot, thereby said plates can ride up and down with respect to each other to conform to the shape of the hull and when the hull is distorted by impact with external objects.

5,349,915
SUBMERSIBLE TRIM SYSTEM
David L. Thomas, Columbus, Ohio, and Ronald L. Legue, Oxnard, Calif., assignors to Battelle Memorial Institute, Columbus, Ohio
Filed Jun. 11, 1993, Ser. No. 75,684
Int. Cl.[5] B63B *39/02*
U.S. Cl. 114—124 **16 Claims**



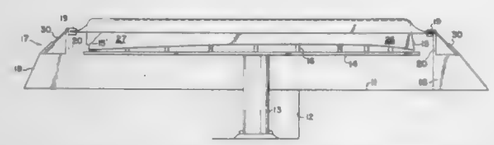
1. A trim system for a submersible comprising
A. an elongated, ball transfer conduit communicating with the submersible and extending from a first position to a second position;
B. a plurality of unconnected high-density balls within the ball transfer conduit and moveable therein;
C. means for hydraulically moving preselected balls in the ball transfer conduit and altering the weight distribution of the submersible, wherein the high-density balls are spherical and the ball transfer conduit is circular in cross section and they cooperate to form an annular orifice therebetween sufficient to allow the slip flow of hydraulic fluid through the annular orifice.

5,349,916
SYSTEM FOR EFFECTING UNDERWATER COUPLING OF OPTICAL FIBER CABLES CHARACTERIZED BY A NOVEL POD-TO-VEHICLE INTERLOCK
Christopher F. Hillenbrand, Bristol; Thomas D. Barron, Portsmouth, and David M. Nugent, Newport, all of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 13, 1993, Ser. No. 120,880
Int. Cl.[5] B63G *8/00*
U.S. Cl. 114—312 **10 Claims**



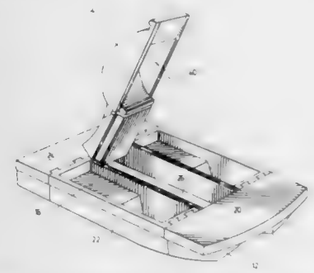
1. An undersea vehicle and cable coupling system comprising:
a buoyant pod;
a cable suspended from said pod, a V-shaped cable engaging probe provided on said vehicle such that said cable can be engaged by the open end of said V-shaped probe as a result of moving said vehicle transversely toward said cable;
plug means including a male plug portion on said pod provided axially around said cable;
said plug means also including a socket part at the vertex of said V-shaped probe whereby continued transverse movement of said vehicle causes said cable to slide along said V-shaped probe until engaged by said pod male plug portion; and
said plug portion including a lifting pin mechanism provided in said male plug portion for engaging said socket whereby said probe is secured to said pod and said cable coupled to said vehicle, said lifting pin mechanism having locking devices, and biasing means for urging said locking devices toward positions wherein they engage detents in said socket part.

5,349,917
UNITARY ALUMINUM WATERCRAFT AND METHOD OF PRODUCTION OF SAME
Billy D. May, Quincy, Fla., assignor to Marine Research and Development, Inc., Quincy, Fla.
Continuation of Ser. No. 788,545, Nov. 6, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 5,462
Int. Cl.[5] B63B *3/00*
U.S. Cl. 114—347 **20 Claims**



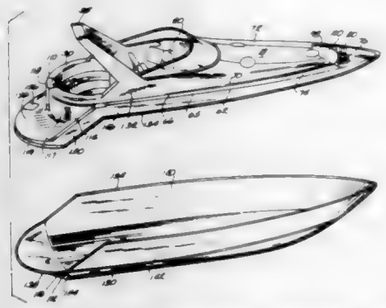
1. A method of producing a watercraft for passengers having a unitary body comprising the steps of:
A. forming a unitary watercraft body from a single unitary sheet of deep-formable metal;
B. providing a mold in a desired shape corresponding substantially to the body of the watercraft;
C. forcing the mold into the sheet of metal to cause the mold to imprint the shape of the mold onto the sheet;
D. fabricating a rigid floor adaptable for attachment to the watercraft body; and
E. attaching the floor to the watercraft body.

5,349,918
MODULAR TWIN HULL BOAT
Christian Elie, Outremont, Canada, assignor to Pelican International, Québec, Canada
Filed Jun. 4, 1993, Ser. No. 71,054
Int. Cl.[5] B63B *7/04*
U.S. Cl. 114—352 **16 Claims**



1. A modular twin hull boat for two persons comprising:
two elongated side members each providing a middle portion of a hull, said side members including cockpit for receiving a person;
bow means connectable to a bow side of said side members for providing a bow portion of said hull continuous with said middle portion, said cockpit having a footwell at the bow side;
stern means connectable to a stern side of said side members for providing a stern portion of said hull continuous with said middle portion, said cockpit having a seat at the stern side; and
means for connecting said side members together and to said bow means and said stern means with said side members parallel and separated, said connecting means including an upper flange connected to said side members at said stern side and a lower flange connected to said stern means, a lower surface of said upper flange for engaging an upper surface of said lower flange, whereby a buoyancy of said stern means causes said flanges to engage.

5,349,919
RECREATIONAL BOAT
James M. Douglass, Palmetto, Fla., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Feb. 12, 1993, Ser. No. 17,041
Int. Cl.[5] B63B *5/24*
U.S. Cl. 114—56 49 Claims



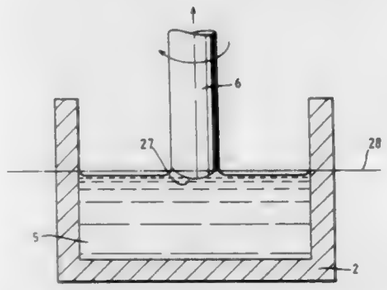
1. A recreational boat comprising a fiberglass member including an aft cockpit having a semi-circular aft wall, a cabin in front of said aft cockpit, said cabin having a top surface, side walk ways on the port and starboard sides of said cabin, said walk ways having upper surfaces below said cabin top surface, and a forward cockpit having a portion in front of said cabin, and a floor with an upper surface located below said upper surfaces of said walk ways.

5,349,920
SAFETY REFLECTOR MARKER
Toshio Koizumi, 26-2 Senju Motomachi, Adachi-ku Tokyo, Japan
Filed Dec. 23, 1992, Ser. No. 995,380
Int. Cl.[5] B60Q *1/26, 7/02*
U.S. Cl. 116—28 R 2 Claims



1. A warning device removably securable to an article and capable of reflecting light emitted from a light source, said warning device comprising:
- a planar reflector including one reflective surface having a plurality of reflective microprisms that reflect said light emitted from said light source substantially independently of an orientation of said reflector with respect to said light source; wherein said reflector further comprises a second reflective surface including a holographic, metallized mirror having a plurality of multifaceted, light-reflective patterns, each of said plurality of patterns having light-refractive characteristics;
- an attachment means for securing said warning device to said article; and
- a flexible hanger having a first end and a second end, said first end rotatably secured to said reflector and said second end rotatably secured to said attachment means, wherein said flexible hanger includes a rotatable chain; said hanger permitting substantially unrestricted reorientation of the reflector with respect to said light source.

5,349,921
GROWING SEMICONDUCTOR CRYSTALLINE MATERIALS
Keith G. Barraclough, and Robert W. Series, both of Malvern, England, assignors to Her Majesty the Queen in right of Canada, as represented by The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
PCT No. PCT/GB89/00220, § 371 Date Oct. 12, 1990, § 102(e) Date Oct. 12, 1990, PCT Pub. No. WO89/08731, PCT Pub. Date Sep. 21, 1989
PCT Filed Mar. 6, 1989, Ser. No. 585,075
Claims priority, application United Kingdom, Mar. 8, 1988, 8805478
Int. Cl.[5] C30B *15/20*
U.S. Cl. 117—13 4 Claims

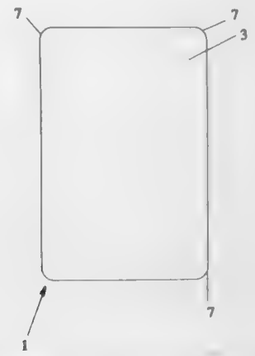


1. A method of growing semiconductor crystalline materials comprising the steps:
- providing in a crucible a melt of the material to be grown as a crystal,
- dipping a seed crystal into the melt,
- withdrawing and rotating the seed crystal from the melt,
- maintaining a temperature gradient between the melt and seed crystal, whereby a single crystalline material is grown from the melt,
- during said withdrawing and rotating step, providing a magnetic field that is substantially rotationally symmetrical about the axis of rotation of the crystal and with a component of field parallel to the axis of crystal rotation that is less than 500 gauss at the interface between growing crystal and melt, with a value of magnetic field above 500 gauss at other parts of the melt,
- and maintaining this distribution of magnetic field during growth of the crystal,
- whereby forced convective flows in the melt adjacent the crystal/melt interface are substantially undamped, whilst convective flows in other parts of the melt are damped.

5,349,922
FREE STANDING DIAMOND SHEET AND METHOD AND APPARATUS FOR MAKING SAME
Thomas R. Anthony, Schenectady, and James F. Fleischer, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Division of Ser. No. 537,963, Jun. 13, 1990, Pat. No. 5,264,071. This application Jul. 30, 1993, Ser. No. 99,508
Int. Cl.[5] B05D *3/06*
U.S. Cl. 117—204 17 Claims

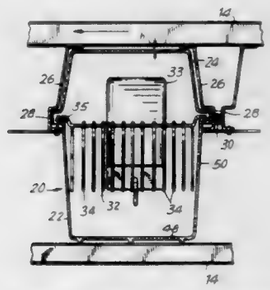
1. An apparatus for making a diamond by the chemical vapor deposition of an intact sheet of diamond onto a substrate wherein the improvement comprises a uniformly smooth

diamond receiving surface on the substrate to provide uniform adhesion sufficient to retain the diamond on the substrate



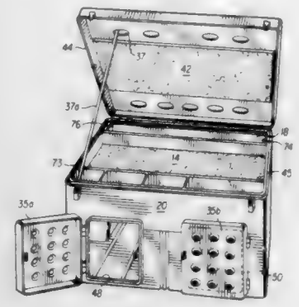
during deposition, but weak enough to allow removal of the diamond from the substrate without breakage after deposition.

5,349,923
VENTILATED CAGE AND OPEN RACK SYSTEM
John E. Sheaffer, Perryville, and Eric A. Deitrich, Woodbine, both of Md., assignors to Lab Products, Maywood, N.J.
Continuation-in-part of Ser. No. 975,033, Nov. 12, 1992, Pat. No. 5,311,836, which is a continuation of Ser. No. 596,808, Oct. 12, 1990, Pat. No. 5,165,362, which is a continuation-in-part of Ser. No. 515,803, Apr. 27, 1990, Pat. No. 4,989,545. This application Feb. 4, 1993, Ser. No. 13,467
The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.
Int. Cl.[5] A01K *1/00*
U.S. Cl. 119—15 20 Claims



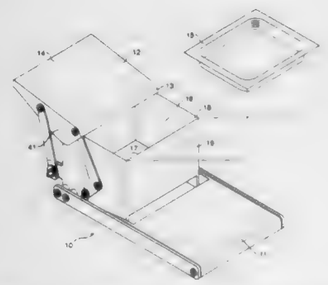
1. A ventilated cage and rack system comprising a ventilated rack, said rack including a plurality of shelves, exhaust plenum means for conveying air either from or to predetermined air positions along said shelves, at least one cage for housing at least one animal therein, said at least one cage being a cage level barrier having a bottom portion and upstanding side wall and a filter bonnet positioned on said side wall, and canopy cage guide means for positioning at least one of said cages at at least one of said predetermined air positions, said cage guide means being disposed to form a friction fit with a portion of said bonnet while maintaining a first gap and a second gap between said filter bonnet and said exhaust plenum means, said exhaust plenum means removing air disposed within said canopy cage guide means.

5,349,924
ANIMAL KENNEL
Eugene J. Hooper, Jr., 1632 Bald Hill Loop, Madison, N.C. 27025
Filed Mar. 11, 1993, Ser. No. 29,522
Int. Cl.[5] A01K *1/02*
U.S. Cl. 119—19 17 Claims



13. An animal kennel comprising:
a generally rectangular housing having front, rear, left and right housing sidewalls, and top and bottom walls for defining an interior space, wherein one of said sidewalls and walls comprises at least one door;
wherein said housing has air holes therein, said air holes being defined by wall portions which are funnel-shaped to converge as they protrude outwardly, away from said interior space.

5,349,925
ANIMAL FEEDER DEVICE
Louis Zerato, P.O. Box 872, Yellville, Ark. 72687, and Art Randolph, P.O. Box 1541, Santa Rosa, Calif. 95402
Filed Oct. 4, 1993, Ser. No. 131,442
Int. Cl.[5] A01K *5/00*
U.S. Cl. 119—62 3 Claims



1. A feeder for the selective presentation of food products to animals, said feeder comprising a storage bin for containing animal food, said storage bin having a closed bottom and side walls and an open top, a lid, said lid having a forward edge and rearward edge removably residing over said open top such that when said lid resides on said open top, said food products are covered by said lid, a pressure plate located adjacent said closed bottom of said bin and emanating from said bin on a side proximate the location of the forward edge of said lid when said lid is positioned over said top, and means for functionally linking said pressure plate to said lid such that when an animal steps upon said pressure plate, said lid withdraws from said top in an orientation that the forward edge of the lid does not vertically rise above said rearward edge of the lid in exposing food products within the bin to said animal wherein said lid is spring biased whereby the lid remains covering said open top of said bin unless an animal of sufficient weight overcomes said bias and steps upon said pressure plate.

5,349,926

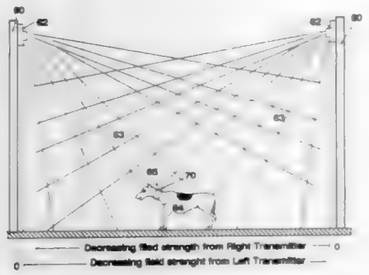
ANIMAL CONTAINMENT SYSTEM

David A. McCarney; Frank A. Calabrese, both of Waynesboro, and Kenneth B. Shockey, Greencastle, all of Pa., assignors to Industrial Automation Technologies, Inc., Waynesboro, Pa.

Continuation-in-part of Ser. No. 14,810, Feb. 8, 1993, which is a continuation of Ser. No. 867,892, Apr. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 94,075, Sep. 4, 1987, Pat. No. 5,113,962, which is a continuation of Ser. No. 820,644, Jan. 21, 1986, abandoned. This application Sep. 24, 1993, Ser. No. 126,321

Int. Cl.[5] A01K *3/00, 29/00*

U.S. Cl. 119—721 10 Claims



1. An animal confinement system comprising

means for transmitting coded near infrared energy,

means to be carried by an animal to be contained for receiving said transmitted coded near infrared energy, including infrared receiving diode means,

a comparator for conditioning the output of said infrared receiving diode means, and

means for establishing a predetermined threshold for said comparator which will cause the output of the comparator to go low when the output of said infrared receiving diode means is received.

5,349,927

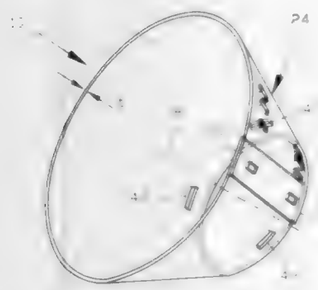
ANIMAL PROTECTIVE COLLAR

Blair H. Campbell, R.R. #3, Box 7029, Rutland, Vt. 05701

Filed Dec. 22, 1993, Ser. No. 172,611

Int. Cl.[5] A01K *27/00*

U.S. Cl. 119—815 9 Claims



1. A protective collar comprising:

a collar formed from a substantially flat sheet of resilient material having a thickness t, said sheet of resilient material being bounded by an outer substantially semicircular boundary, an inner substantially semicircular boundary, a first substantially straight end, and a second substantially straight end, said outer substantially semicircular boundary and said inner substantially semicircular boundary having a common axis, said axis serving as an axis for a frusto conical surface formed when said first substantially straight end is overlaid onto said second substantially straight end;

a clip hole pattern having at least two clip holes, said at least two clip holes being rectangular having a first pair of spaced apart sides and a second pair of spaced apart sides with said first pair of spaced apart sides being substantially normal to said outer substantially semicircular boundary and said inner substantially semicircular boundary;

at least one adjustment hole pattern having at least two clip receiving holes each of said clip receiving holes having a first pair of spaced apart sides which are substantially normal to said outer substantially semicircular boundary and said inner substantially semicircular boundary, each of said at least one series of adjustable hole patterns being coincident with said clip hole pattern when superimposed thereon; and resilient clips engaging said clip holes and one of said series of adjustable holes positioned therebelow, said clips having,

a back member having an upper surface and a lower surface,

a first leg attaching to said lower surface of said back member, said first leg having a first leg inner surface and a first leg outer surface,

a second leg attaching to said lower surface of said back element, said second leg having a second leg inner surface and a second leg outer surface, said second leg being spaced apart from said first leg, and

a first groove having first groove sidewalls and a first grove bottom, said first groove residing in said first leg outer surface and a second groove having second groove sidewalls and a second groove bottom, said second groove residing in said second leg outer surface, said first groove sidewalls and said second groove sidewalls being separated by a distance W which is greater than 2 t and said first groove bottom and said second groove bottom being positioned such that when said resilient clip is engaged in one of said clip holes said first groove bottom and said second groove bottom will compressibly engage said second pair of spaced apart sidewalls of said clip holes.

5,349,928

AIR INTAKE ARRANGEMENT FOR A TWO-CYCLE ENGINE

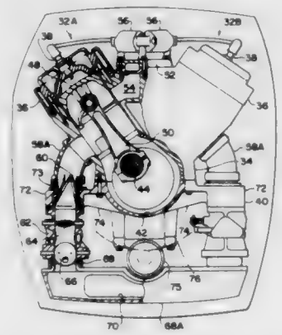
Masatetsu Takahashi, and Katsumi Torigai, both of Shizuoka, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Jan. 30, 1992, Ser. No. 828,217

Claims priority, application Japan, Jan. 31, 1991, 3-029216; Feb. 1, 1991, 3-031418

Int. Cl.[5] F02M *35/10*

U.S. Cl. 123—73 A 15 Claims



1. An air intake arrangement for use in a V-type two-cycle engine having a cylinder block with first and second cylinder rows, a crankcase interconnecting the cylinder rows and a crankshaft rotatably mounted within a crank chamber defined by said crankcase, said air intake arrangement comprising first and second air intake passages for supplying air to the first and second cylinder rows respectively said first and second air intake passages being substantially symmetrically aligned on either side of the crankshaft, each of said first and second air intake passages including a first end portion attached to the cylinder block and a second end portion supported by the crankcase.

5,349,929

VALVE CONTROLLER FOR CONTROLLING THE SUCTION VALVE OF AN INTERNAL-COMBUSTION ENGINE

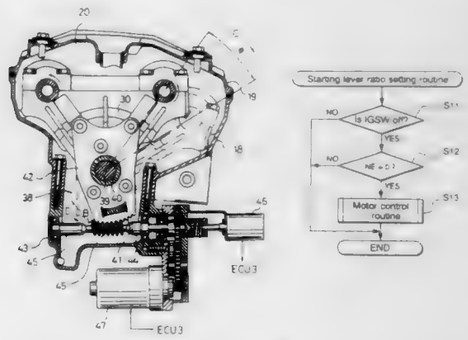
Kiyoshi Shimizu, and Yoshihiro Fujiyoshi, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1993, Ser. No. 87,294

Claims priority, application Japan, Jul. 8, 1992, 4-205928

Int. Cl.[5] F01L *1/34*

U.S. Cl. 123—90.16 18 Claims



1. A valve controller for controlling an intake valve of an internal-combustion engine, the internal-combustion engine comprising a cylinder head, intake and exhaust camshafts having cams engaged therewith and being disposed in an upper portion of the cylinder head, an exhaust valve, rocker arms pivotally supported on intake and exhaust rocker shafts so as to be driven for rocking motion by respective cams of the intake and exhaust camshafts to respectively operate the intake valve and the exhaust value, a lever ratio of the respective rocker arm of the intake valve specifying a distance between an axis of the intake rocker shaft and a point at which the respective cam applies pressure to the respective rocker arm, the lever ratio being variable to regulate intake air flow, the valve controller comprising:

lever ratio detecting means for detecting the lever ratio of the respective rocker arm;

operating condition detecting means for detecting operating conditions of the internal-combustion engine including at least a load on the internal-combustion engine and an engine speed of the internal-combustion engine;

air-fuel ratio detecting means for detecting an air-fuel ratio of an air-fuel mixture on the basis of an oxygen concentration of an exhaust gas of the internal-combustion engine;

desired lever ratio calculating means for calculating a desired lever ratio on the basis of detection signals provided by said operating condition detecting means and said air-fuel ratio detecting means;

lever ratio regulating means for adjusting the lever ratio detected by said lever ratio detecting means to the desired lever ratio calculated by said desired lever ratio calculating means; and

starting lever ratio setting means for setting an optimum starting lever ratio for operation of the internal-combustion engine during a period from stoppage of the internal-combustion engine to restart of the internal-combustion engine, including cranking when restarting the internal-combustion engine.

5,349,930

HIGH TENSION CORD COVER WITH MISFIRE DETECTING CAPACITOR FOR INTERNAL COMBUSTION ENGINE

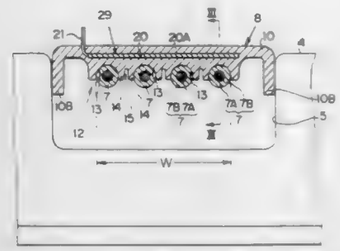
Shigeru Maruyama; Yuichi Shimasaki; Masaki Kanehiro; Takuji Ishioka; Shigeki Baba, and Takashi Hisaki, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1993, Ser. No. 53,690

Claims priority, application Japan, May 1, 1992, 4-139809

Int. Cl.[5] F02P *17/00*

U.S. Cl. 123—143 C 27 Claims



17. A high tension cord cover for covering at least one high tension cord having a conductive core therein carrying an ignition voltage current for an internal combustion engine, comprising:

a first member made of an insulation material for holding the at least one high tension cord;

a second member made of an insulation material and disposed at a fixed position with respect to the first member; and

a second conductor embedded in the second member keeping a predetermined distance from the high tension cord and sandwiching a portion of the second member between said high tension cord and said second conductor such that a capacitor is formed.

5,349,931

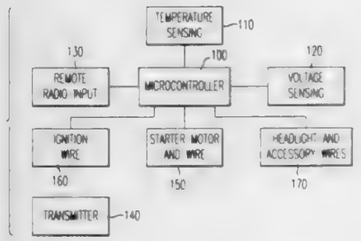
AUTOMATIC VEHICLE STARTER

Mark Gottlieb, Annandale, and Harry Powell, Shipman, both of Va., assignors to Design Tech International, Inc., Springfield, Va.

Filed Jun. 28, 1993, Ser. No. 82,545

Int. Cl.[5] F02N *11/08*

U.S. Cl. 123—179.2 19 Claims



1. A method for starting a vehicle, comprising the steps of:

generating a signal to a vehicle starter to crank a starter motor of the vehicle;

determining an approximate temperature of an engine of the vehicle;

measuring a first battery voltage;

turning on power to an ignition and accessories in the vehicle so that all turned on accessories have power supplied thereto;

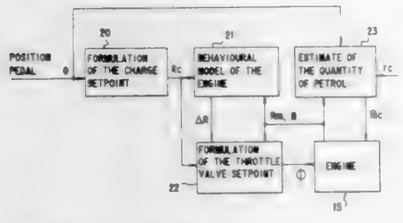
measuring a second battery voltage which represents the battery voltage with a load applied thereto from the turned on accessories having power supplied thereto;
starting the vehicle by cranking a starter motor in the vehicle, wherein a duration of time that the vehicle starter motor is cranked is based on the determined temperature;
measuring the battery voltage continuously; and
determining if the battery voltage falls below a predetermined battery voltage value indicating a stall condition.

5,349,932

METHOD AND DEVICE FOR CONTROL OF THE RICHNESS OF THE AIR/FUEL FEED MIXTURE OF AN INTERNAL COMBUSTION ENGINE

Serge Boverie, Plaisance-du-Touch, and Pierre Bidan, Toulouse, both of France, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/EP91/00387, § 371 Date Sep. 23, 1992, § 102(e) Date Sep. 23, 1992, PCT Pub. No. WO91/13249, PCT Pub. Date May 9, 1991
PCT Filed Mar. 1, 1991, Ser. No. 927,310
Claims priority, application France, Mar. 2, 1990, 90 02633
Int. Cl.[5] F02D *41/24*
U.S. Cl. 123—399 **15 Claims**



1. A method of controlling the richness of an air/fuel feed mixture of an internal combustion engine being controlled by an accelerator pedal and having an air intake throttle valve, which comprises:
measuring a position of the accelerator pedal;
calculating a setpoint air charge from the accelerator pedal position;
activating a behavioral model of the engine by the setpoint air charge in real time and extracting from the behavioral model a reference air charge value;
relating, in the behavioral model, a time rate of change of the reference air charge to the setpoint air charge and the reference air charge;
measuring an actual air charge value of the engine;
forming a difference between the setpoint air charge and the actual air charge value;
specifying a setpoint richness and, in steady-state operation, calculating a quantity of fuel to be injected from the actual air charge value and the setpoint richness; and
controlling an opening of the air intake throttle valve in such a way that a change in the actual air charge value of the engine closely follows a change in the reference air charge extracted from the behavioral model.

5,349,933

FUEL METERING CONTROL SYSTEM IN INTERNAL COMBUSTION ENGINE

Yusuke Hasegawa; Shusuke Akazaki; Isao Komoriya; Hidetaka Maki, and Toshiaki Hirota, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1993, Ser. No. 137,344
Claims priority, application Japan, Oct. 19, 1992, 4-306086; Jun. 30, 1993, 5-186850; Jul. 30, 1993, 5-208835
Int. Cl.[5] F02D *41/10*
U.S. Cl. 123—486 **55 Claims**

9. A system for controlling fuel metering in an internal combustion engine on the basis of the air flowing to a cylinder of the engine determined on a fluid dynamic model describing the behavior of the air passing through a throttle provided in an air intake system of the engine, comprising;
first means for detecting operating parameters of the engine at least including engine speed, manifold pressure and throttle opening;
second means for determining a fuel injection amount (Timap) under a steady-state engine operating condition at least from the engine speed and manifold pressure in accordance with a predetermined first characteristic;
third means for determining a first effective throttle opening area (A) at least from a value obtained from the throttle opening;



fourth means for obtaining a second effective throttle opening area (ADELAY) in accordance with a predetermined second characteristic;
fifth means for obtaining a ratio (A/ADELAY) between the first and second effective throttle opening areas (A, ADELAY) and for multiplying the determined fuel injection amount (Timap) by the ratio (A/ADELAY) to determine an output fuel injection amount (Tout) from the product as

$$Tout = Timap \times (A/ADELAY); \text{ and}$$

sixth means for driving an injector to open for a period corresponding to the output fuel injection amount (Tout).

5,349,934

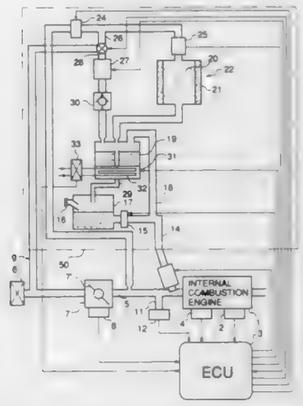
EVAPORATIVE EMISSION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Hideyo Miyano, Wako, Japan, assignor to Honda Giken Kogyo K.K., Tokyo, Japan

Filed Jun. 14, 1993, Ser. No. 78,010
Claims priority, application Japan, Jun. 19, 1992, 4-185837; Jun. 19, 1992, 4-185838
Int. Cl.[5] F02M *33/02, 21/02*
U.S. Cl. 123—519 **11 Claims**

1. An evaporative emission control system for an internal combustion engine having an intake passage, a a throttle valve arranged in said intake passage, and a fuel tank, comprising:
a canister connected to said fuel tank for temporarily storing evaporative fuel generated from tank:
a purging passage connecting between said canister and a portion of said intake passage at a location downstream of said throttle valve; and
evaporative fuel-increasing means for increasing an amount of evaporative fuel generated from said fuel tank,

said evaporative fuel-increasing mean including a second fuel tank arranged between said first-mentioned fuel



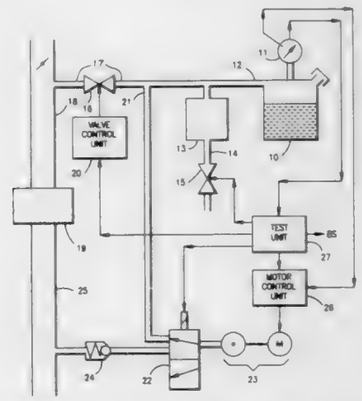
tank and said canister, and fuel-vaporizing means arranged in said second fuel tank.

5,349,935

TANK-VENTING SYSTEM AND MOTOR VEHICLE HAVING THE SYSTEM AS WELL AS A METHOD AND AN ARRANGEMENT FOR CHECKING THE OPERABILITY OF THE SYSTEM

Manfred Mezger, Tamm; Andreas Blumenstock, Ludwigsburg, and Rainer Frank, Sachsenheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE92/00502, § 371 Date Mar. 24, 1993, § 102(e) Date Mar. 24, 1993, PCT Pub. No. WO93/02283, PCT Pub. Date Feb. 4, 1993
PCT Filed Jun. 19, 1992, Ser. No. 30,314
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1991, 4124465
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—520 **9 Claims**



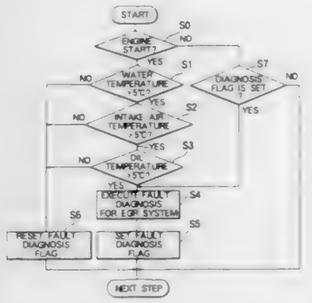
1. A tank-venting system adapted to operate with an internal combustion engine having an intake pipe comprising:
a tank;
an adsorption filter;
a tank-connection line connecting said adsorption filter to said tank;
said adsorption filter having a venting line;
a tank-venting valve;
a first valve line segment connecting said tank-venting valve to the intake pipe;
a second valve line segment connecting said tank-venting valve to said adsorption filter;
pressure supply means for supplying air under pressure to said second valve line segment;
a pressure sensor on said tank; and,
a shut-off valve in said venting line.

5,349,936

METHOD OF DIAGNOSING EXHAUST GAS RECIRCULATION CONTROL SYSTEM OF INTERNAL COMBUSTION ENGINE AND APPARATUS FOR CARRYING OUT THE SAME

Masanobu Uchinami, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1993, Ser. No. 100,430
Claims priority, application Japan, Aug. 5, 1992, 4-209106
Int. Cl.[5] F02M *25/07*
U.S. Cl. 123—676 **12 Claims**



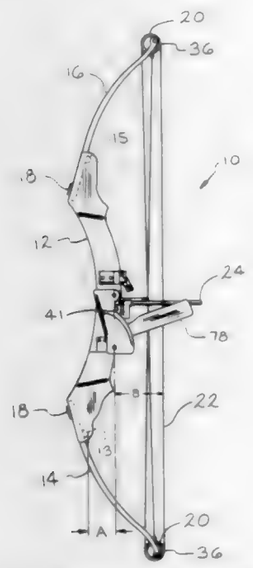
1. In an internal combustion engine equipped with an exhaust gas recirculation control system which includes an exhaust gas recirculation passage communicated to an exhaust gas passage and an intake air passage of said engine and an exhaust gas recirculation control valve disposed in said exhaust gas recirculation passage for selectively closing and opening said exhaust gas recirculation passage,
a method of diagnosing said exhaust gas recirculation control system as to occurrence of a fault, wherein said exhaust gas recirculation control valve is temporarily manipulated during operation of said engine to thereby detect by pressure sensor means incorporated in said exhaust gas recirculation control system whether or not a change in pressure within one of said intake air passage and said exhaust gas passage brought about by said temporary manipulation of said exhaust gas recirculation control valve lies within a predetermined range, and a diagnosis is performed for said exhaust gas recirculation control system as to occurrence of a fault in said system on the basis of a result of said detection,
said method comprising:
a step of making decision in response to a start switch signal generated for starting operation of said engine as to whether or not at least one of a cooling water temperature, an intake air temperature and an engine oil temperature of said engine upon starting thereof is lower than a predetermined lowest temperature at which said pressure sensor means can operate normally; and
a step of invalidating said fault diagnosis of said exhaust gas recirculation control system when said at least one temperature is not higher than said predetermined lowest temperature.

5,349,937

TORQUE FREE BOW WITH IMPROVED HANDLE GRIP ASSEMBLY

Michael R. Burling, 7611 Holstein Rd., Toledo, Ohio 43617

Continuation-in-part of Ser. No. 792,392, Nov. 15, 1991, abandoned. This application Jan. 7, 1993, Ser. No. 1,446
Int. Cl.[5] F41B *5/10*
U.S. Cl. 124—25.6 8 Claims



1. A compound archery bow having a center plane, said bow comprising

a riser and limb assembly wherein said limbs are supported on said riser at a given limb angle for action about limb pivots,

cams secured to said limbs,

a bowstring

a grip assembly, said grip assembly comprising

a handle having a center plane and a low point, said handle being secured to and supported on said riser so that forces applied to said handle act on said riser through at least one point which is substantially coincident with the center plane of said bow, and string stop means for limiting over travel of said bow string after release of an arrow,

wherein said riser is constructed so that the bow has a brace height, when strung with said bow string, which is at least one inch less than seven inches and wherein the distance between said bowstring and said at least one point is substantially equal to the brace height and wherein said riser is constructed so that the limb pivots are at least one inch forward, relative to the handle low point and said at least one point, of the corresponding position that said limb pivots would have in a conventional bow with a brace height of approximately seven inches,

wherein the bow has a standard rated velocity which is at least six feet per second faster than a conventional bow comprising

a conventional riser,

said cams and

said limbs and

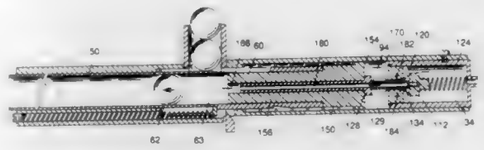
having a brace height of substantially seven inches and having a limb angle corresponding with the given limb angle, when strung with said bowstring.

5,349,938

RECIPROCATABLE BARREL PNEUMATIC GUN

Kenneth R. Farrell, 19202 SE. 184th St., Renton, Wash. 98058

Filed Apr. 22, 1993, Ser. No. 52,084
Int. Cl.[5] F41B *11/00*
U.S. Cl. 124—73 12 Claims



1. A gas projectile gun, comprising:

a gas reservoir having a main inlet valve;

a reciprocating barrel movable between a forwardly, cocked position and a rearwardly, main inlet valve opening position;

an expandable recocking chamber intermediate the main inlet valve and the barrel for receiving a portion of gas from the inlet valve to expand the chamber, expansion of the chamber causing a force to be applied to the barrel to move the barrel to the cocked position;

a first fluid channel for communicating gas directly from the reservoir to the barrel to propel the projectile; and,

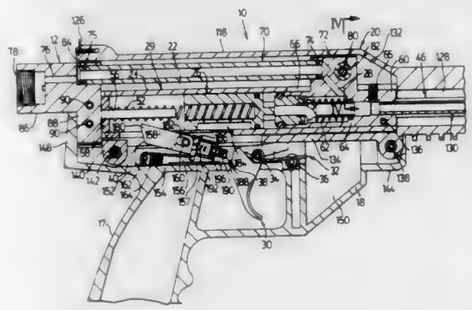
a second fluid channel communicating gas from the reservoir to the recocking chamber for expanding the chamber and recocking the barrel.

5,349,939

SEMI-AUTOMATIC GUN

Aldo Perrone, Mississauga, Canada, assignor to Brass Eagle Inc., Mississauga, Canada

Filed Aug. 13, 1992, Ser. No. 929,992
Int. Cl.[5] F41B *11/26, 11/06*
U.S. Cl. 124—76 14 Claims



1. A gun for firing pellets or balls using compressed gas comprising:

an elongate breech having a front end, a rear end, a main longitudinal passageway with a first opening at its front end, and a second opening in the side of said passageway for entry of compressed gas into said passageway;

passage means for supplying compressed gas from a source thereof to said second opening;

a gun handle connected to said breech;

a barrel through which said pellets or balls are fired connected to said front end of said breech;

a hammer mechanism, including a hammer slidably mounted in said passageway and a spring biasing said hammer to move to a forward position in said passageway;

a gas valve system arranged in said passageway in front of said hammer mechanism, said system including a sealed gas passageway connected to said second opening and being constructed to release compressed gas in order to fire a pellet or ball when said hammer mechanism is released;

a trigger pivotally mounted to a lower portion of the breech, said trigger having a rearwardly projecting cam;

means for pivoting said trigger to a forward position upon release of the trigger; and

means for releasing said hammer when said trigger is pulled, said releasing means including a sear having a front end, a rear end and an elongate hole extending transversely therethrough, a sear pin mounted in said breech and extending through said elongate hole, means for biasing said sear so that the front end thereof pivots downwardly when said hammer is released, a sear detent slidably mounted in the front end of said sear, and means for biasing said sear detent to move to a forward position relative to said sear;

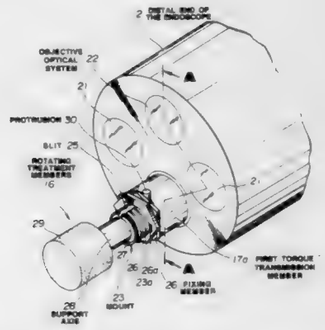
wherein said sear can pivot about said sear pin and slide longitudinally thereon, said sear detent is engaged directly by said cam on said trigger so that said rear end of said sear is pivoted downwards and out of engagement with said hammer when the trigger is pulled, said detent is forced rearwardly by direct engagement with said trigger in its pulled position, and said detent moves forwardly by the action of said detent biasing means when said trigger is released so that said trigger can reengage said sear and sear detent in order to fire said gun again.

5,349,940

ENDOSCOPE SYSTEM WITH A ROTATING TREATMENT ADAPTER AT THE END

Ichiro Takahashi, Hachioji; Yasundo Tanaka, Urawa, and Katsunori Sakiyama, Akigawa, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 8, 1992, Ser. No. 818,128
Claims priority, application Japan, Jan. 10, 1991, 3-001472; Mar. 19, 1991, 3-054873; Nov. 22, 1991, 3-308028
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 25 Claims



1. An endoscope system comprising:

an elongated insertion tube;

an illumination light emitting means which is installed in the tip of said insertion tube and emits illumination light;

an objective optical system which is installed in the tip of said insertion tube and forms optical images;

a torque transmission member which is installed at least in the tip of said insertion tube and outputs received torque from a mount installed at its distal end, said mount having a slit;

a rotating treatment member which is mounted to said mount to be freely detachable, and includes an axis and a protrusion on the external circumference near the proximal end thereof and a rotating treatment section which is formed as part of the distal end of said axis and grinds a touching object when it is driven to rotate, wherein said protrusion is fitted into said slit for removably mounting said rotating treatment member, along said axis thereof, into said mount; and

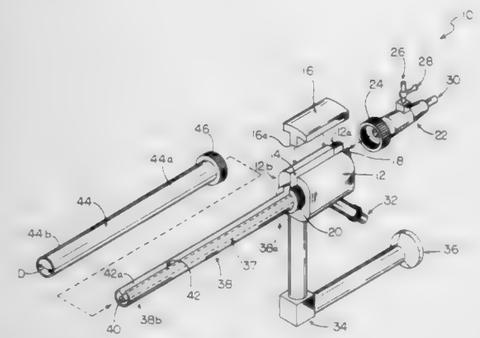
a locking member having an axial end, wherein said axial end directly abuts said protrusion for locking said protrusion fitted in said slit.

5,349,941

CLEANABLE ENDOSCOPE

Koichiro Hori, Framingham, Mass., assignor to Oktas, Framingham, Mass.

Filed Mar. 26, 1993, Ser. No. 38,167
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 20 Claims



1. An endoscope comprising:

a tube having first and second ends and having a bore therethrough;

a sheath, installable over said tube, said sheath having a first end and a second end;

a handle body having first and second ends, said handle body coupled to the first end of said tube, said handle body having a channel extending between the first and second ends of said handle body wherein at least one side of the channel is open along substantially the entire length thereof to promote cleaning of the channel;

a cover having an interlocking fit with the channel of said handle body wherein at least a portion of said cover projects into the channel of said handle body; and

an end piece coupled to said handle body, said end piece for introducing fluid into the channel coupled to said handle body.

5,349,942

FLEXIBLE ENDOSCOPE

Rudolf Heimberger, Oberderdingen, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed May 28, 1993, Ser. No. 68,963
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1992, 4218706
Int. Cl.[5] A61B *1/00*
U.S. Cl. 126—4 13 Claims

1. Endoscope comprising:

a flexible shaft,

a connecting portion,

an operating wire,

a handle portion,

an eyepiece portion

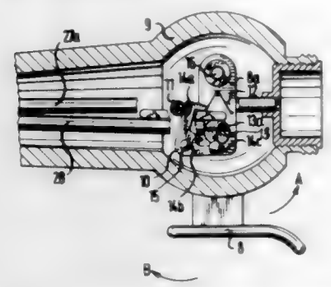
a hand operated control means including a closable operating wire receiver wherein

a distal end of said flexible shaft can be steered into different positions by adjustment of said operating wire,

said flexible shaft is joined to said connecting portion which is releasably couplable to said handle portion,

said eyepiece portion is arranged at the proximal end of the handle portion,

said handle is connected to said control means which receives a proximal end of said wire by means of said receiver for operating said wire,



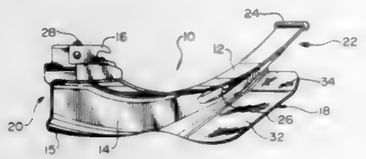
and said control means further includes an adjusting lever for releasing said proximal end from said receiver.

5,349,943

MIRROR LARYNGOSCOPE BLADE

Ernest Ruiz, Richfield, Minn., assignor to Hennepin Faculty Associates, Minneapolis, Minn.

Filed Aug. 24, 1993, Ser. No. 110,887
Int. Cl.[5] A61B *1/06*
U.S. Cl. 128—11 **21 Claims**



1. A laryngoscope blade, including:
a shaft having edges, and proximal and distal ends;
a mount on the proximal end of the shaft for mounting the blade to a handle;
a flange extending from an edge of the shaft; and
a mirror, including a primary viewing surface and a tip, extending from the flange and facing the shaft, the tip inclined toward the shaft with respect to the primary viewing surface and located between the distal end and distal third-point of the shaft.

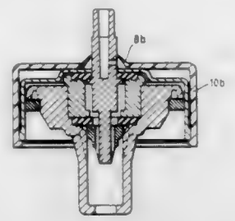
5,349,944

INHALATION DEVICES WITH A REDUCED RISK OF BLOCKAGE

Kevan E. Chippendale, Stoke on Trent; John S. Corbett, Loughborough; John L. Hart, Bramcote, and Geraldine Walkley, Melton Mowbray, all of England, assignors to Fisons plc, Ipswich, England

Continuation of Ser. No. 487,963, Jul. 5, 1990, abandoned. This application Oct. 7, 1992, Ser. No. 958,449
Claims priority, application United Kingdom, Mar. 28, 1988, 8806990; Mar. 28, 1988, 8806991; Aug. 9, 1988, 8818180; Sep. 10, 1988, 8821339
Int. Cl.[5] A61M *11/00*
U.S. Cl. 128—200.14 **2 Claims**

1. An aerosol inhalation device, comprising:
a mouthpiece;
a canister of pressurized hygroscopic medicament, said canister having an end fitted with a dispensing metering valve feeding said medicament to said mouthpiece, said metering valve having a valve stem provided with an inlet port;
said valve stem being movable between an inoperative position in which the inlet port is located outside the metering valve and an operative state in which the inlet port is located within the metering valve; and
a cap of elastomeric material fitted over the end of the canister provided with the valve, said cap being provided with a frusto-conical central portion through which the valve



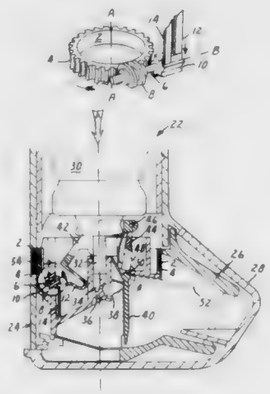
stem passes and protrudes, such that in the inoperative position of the valve stem, the cap shields the inlet port from a user's breath and upon movement between the inoperative and operative positions the cap brushes the surface of the valve stem.

5,349,945

AEROSOL DISPENSER COMPRISING AN INDICATOR ASSEMBLY

Anthony C. L. Wass, Lincs, and Brian R. Law, Leicester, both of United Kingdom, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 12, 1991, Ser. No. 790,373
Claims priority, application United Kingdom, Nov. 26, 1990, 9025654
Int. Cl.[5] A61M *11/00*
U.S. Cl. 128—200.23 **16 Claims**



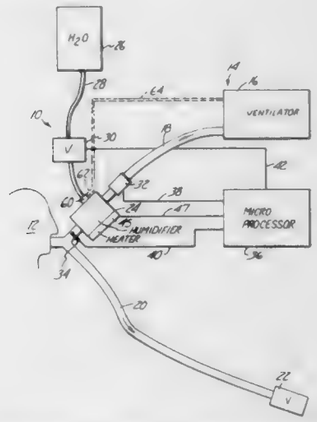
1. An aerosol dispenser comprising a housing having a patient port, the housing being adapted to accommodate an aerosol vial equipped with a metered-dose dispensing valve that comprises a valve stem movable between closed and discharge positions, the dispenser further comprising a support block having a socket adapted to receive a valve stem and an orifice having open communication with the socket and the patient port, the support block being reciprocally movable relative to an aerosol vial accommodated within the housing, the dispenser having an indicator assembly comprising a rotatable indicator, the indicator comprising a circumferential rack and being mounted for rotation about an axis parallel to said reciprocal movement of the support block relative to an aerosol vial accommodated within the housing; a worm-gear engaging said circumferential rack, and a movement detecting member movable in response to said reciprocal movement, wherein movement of the movement detecting member in response to said reciprocal movement causes rotation of said worm gear and indicator.

5,349,946

MICROPROCESSOR CONTROLLED FLOW REGULATED MOLECULAR HUMIDIFIER

R. Carter McComb, 30 Kenwood Pkwy., St. Paul, Minn. 55105

Filed Oct. 7, 1992, Ser. No. 958,031
Int. Cl.[5] A61M *15/00*
U.S. Cl. 128—203.17 **22 Claims**



1. A humidification system for humidifying breathable gas supplied to a patient by a medical gas delivery device having inhalation tubing connecting from the device to provide a flow of gas to the patient and exhalation tubing extending from the patient, the system comprising:
a humidifier comprising blotting paper to absorb the water and disposed in the path of flow of the inhalation tubing adjacent to the patient;
delivery means for delivering water to the blotting paper;
measurement means capable of measuring at least two parameters;
a regulation means for regulating the delivery means based on the measured parameters so that an appropriate amount of water is delivered to the blotting paper to achieve a desired humidity level in the gas, said humidifier, said delivery means, said measurement means and said regulation means together providing a gas having a molecular humidity substantially free of particulate water droplets at a humidity level in the range from approximately 28 to approximately 31 mg H_2O/l gas at approximately 37° C.

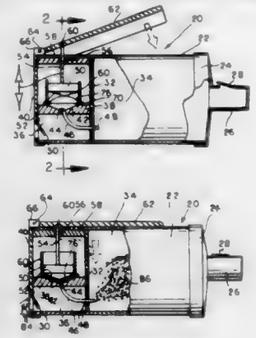
5,349,947

DRY POWDER INHALER AND PROCESS THAT EXPLOSIVELY DISCHARGES A DOSE OF POWDER AND GAS FROM A SOFT PLASTIC PILLOW

Michael T. Newhouse, 436 Queen Street South, Hamilton, Ontario, Canada L8N 4A6 , and W. Douglas Baines, 1675 Wedmore Way, Mississauga, Ontario, Canada

Filed Jul. 15, 1993, Ser. No. 92,085
Int. Cl.[5] A61M *15/00, 16/00, 13/00;* B65D *83/04*
U.S. Cl. 128—203.21 **24 Claims**

22. A process for propellant free dispersing of powder medication, said process comprising the steps of providing a plastic pillow containing powder medication and a gas, completely surrounding said pillow except for a very small area relative to the size of said pillow, explosively rupturing said pillow at said small area by compressing said pillow and the gas within said pillow while so surrounded and thereby deaggregating said



powder medication, and delivering said deaggregated powder medication to a patient for inhalation.

5,349,948

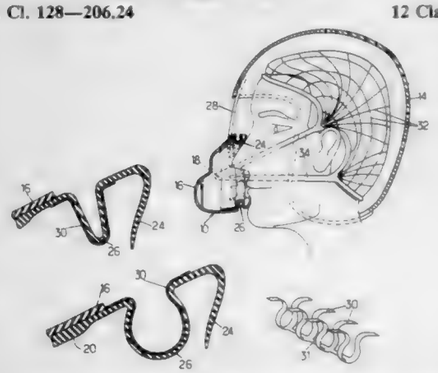
Patent Not Issued For This Number

5,349,949

FACE MASK WITH LIP, FOLD, AND RESILIENT SPRING MEANS TO IMPROVE SEAL

Robert Schegerin, Jouy En Josas, France, assignor to Intertechnique, Plaisir, France

Filed Oct. 1, 1992, Ser. No. 955,157
Claims priority, application France, Oct. 3, 1991, 91 12184
Int. Cl.[5] A62B *18/08, 17/04*
U.S. Cl. 128—206.24 **12 Claims**



1. Breathing equipment for delivering breathing gas under a pressure greater than ambient pressure to a wearer, said equipment comprising a face mask having a face cover of elastomer material, a rigid shell carrying said face cover and provided with fastening means for connection with straps for holding said face cover on a wearer's face, and a coupling for feeding breathing gas under pressure into the mask, wherein said face cover has a lateral wall section and a lip section for bearing against a wearer's face, said lip section being bent inwardly with respect to said lateral wall section, said lateral wall section comprising a front portion sealingly secured to said shell, a rear portion terminated by said lip section, and an intermediate portion comprising at least one deformable circumferential fold connecting said front and rear portions and allowing displacement of said rear portion and said lip section relative to said front portion, and wherein resilient spring means for urging said lip into sealing engagement with a wearer's face are carried by the face cover within said fold, said resilient spring means exerting forces distributed along the fold responsive to the amount of deformation of said resilient spring means and

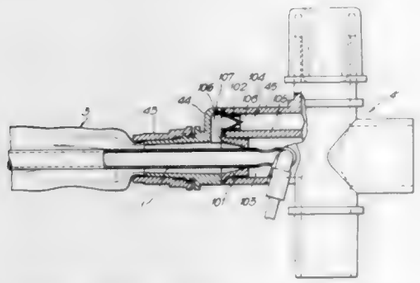
resistance of said fold said resilient spring means opening said fold and urging said lip section against a wearer's face.

5,349,950

SUCTION CATHETER ASSEMBLIES

Karl Ulrich, Belmont, and Thomas Devlin, Cambridge, both of Mass., assignors to Smiths Industries Medical Systems, Inc., Keene, N.H.

Continuation-in-part of Ser. No. 967,844, Oct. 28, 1992. This application Jun. 25, 1993, Ser. No. 82,016
Int. Cl.[5] A61M *1/00, 16/00*
U.S. Cl. 128—207.16 **10 Claims**



1. A suction catheter assembly for use in removing undesirable fluid from a patient, said catheter assembly comprising:
an aspirating catheter having a proximal end and a distal end, said distal end being suitable for insertion into a patient;
a vacuum connecting member located in the vicinity of the proximal end of the aspirating catheter;
a patient connecting member mounted to surround the aspirating catheter in the vicinity of the distal end of the aspirating catheter, said patient connecting member housing a wiper/seal member sealingly engaging with the outside surface of the aspirating catheter;
a protective sleeve surrounding at least the majority of the length of the catheter and extending between said vacuum connecting member and said patient connecting member, said protective sleeve being adapted to permit the distal end of said catheter to be extended from said protective sleeve into the patient and to be withdrawn from the patient; and
a separate one-way valve means also provided within the patient connecting member, wherein said one-way valve means permits gas flow therethrough from inside the sleeve and into the patient connecting member but prevent any substantial gas flow through the one-way valve means into the sleeve such that any gas trapped in the sleeve can escape into the patient connecting member through the one-way valve means.

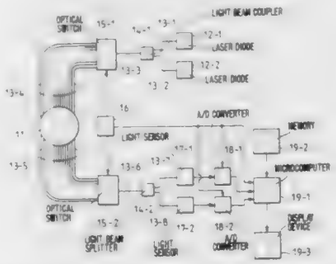
5,349,951

OPTICAL CT IMAGING DEVICE

Yoshitoshi Ito, Ome; Fumio Kawaguchi, Hinode; Yukito Shinohara, Tokyo, and Munetaka Haida, Isehara, all of Japan, assignors to Hitachi, Ltd. and Tokai University, both of Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 35,117
Claims priority, application Japan, Mar. 19, 1992, 4-063055
Int. Cl.[5] A61B *6/03*
U.S. Cl. 128—633 **16 Claims**

1. A diagnostic device for obtaining an optical CT image of a living specimen, said device comprising:
a light source generating a measuring light having at least a first wavelength component and a second wavelength component which is different from said first wavelength component;
a first light guide including a plurality of first optical fibers guiding said measuring light to predetermined irradiating input points with respect to said living specimen;
a first light scanner supplying said measuring light to respective said first optical fibers of said first light guide in a time-sequential scanning manner;
a second light guide including a plurality of second optical fibers receiving light transmitted from said first light guide and through sadi living specimen at predetermined irradiating output points with respect to said living specimen;
a second light scanner connected to said second light guide selecting a light output from respective said second optical fibers of said second light guide in a time-sequential scanning manner in synchronism with a time-sequence of said first light scanner;



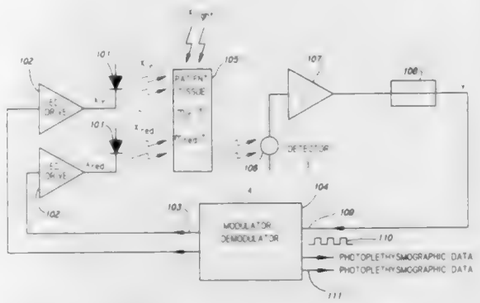
a light splitter splitting said light output into said first wavelength component and said second wavelength component;
a light detector detecting an intensity of said first wavelength component and said second wavelength component; and
a data processor obtaining a tomograph image of said living specimen by processing a distribution of differences in absorption quantity between said first wavelength component and said second wavelength component detected by said light detector using a line spread function which defines an inclusion ratio of light components transmitted through optical paths other than a straight path between said irradiating input points and said irradiating output points.

5,349,952

PHOTOPLETHYSMOGRAPHICS USING PHASE-DIVISION MULTIPLEXING

Rex McCarthy, Newbury Park, and Robert Smith, Corona, both of Calif., assignors to Sensormedics Corp., Yorba Linda, Calif.

Filed Mar. 5, 1991, Ser. No. 665,594
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **56 Claims**



1. An instrument for evaluating the concentration of a constituent in an object by measuring the transmission of light of two wavelengths therethrough, comprising:

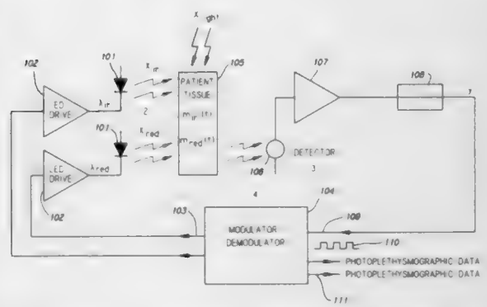
(a) first and second light emitter means for emitting light at respective, first and second different wavelengths;
(b) modulator/driver means for driving the light emitter means simultaneously with respect first and second carriers which vary as a function of time, the carriers being continuous time-varying signals of the same carrier frequency and having a phase difference other than 0° degrees and other than an integer multiple of 180° degrees, wherein said first and second light emitter means have at least one time period when they are both substantially emitting;
(c) detector means disposed to receive light from the first and second light emitter means after it has passed through the object, for generating a resulting detector signal carrying information relating to transmission of the object at both wavelengths;
(d) demodulator means for generating, in response to the detector signal, in a first channel, a first demodulated signal which is a sum of a component proportional to the object's transmission at the first wavelength and one or more carrier modulated components, and, in a second channel, a second demodulated signal which is a sum of a component proportional to the object's transmission at the second wavelength and one or more carrier modulated components; and
(e) a demodulated signal filter, coupled to said first and second channels, wherein said demodulated signal filter filters out carrier modulated components of the signals from the first and second channels.

5,349,953

PHOTOPLETHYSMOGRAPHICS USING COMPONENT-AMPLITUDE-DIVISION MULTIPLEXING

Rex McCarthy, Newbury Park, and Robert Smith, Corona, both of Calif., assignors to Sensormedics, Corp., Yorba Linda, Calif.

Filed Mar. 5, 1991, Ser. No. 665,595
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **44 Claims**



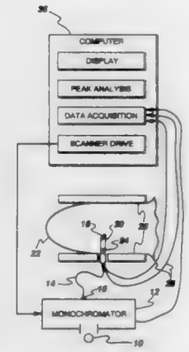
1. A device for collecting photoplethysmographic data, comprising
means for multiplying a mixing matrix and a vector of component signals;
means for applying a plurality of modulating effects to a resultant of said means for multiplying; and
means for multiplying an inverse of said mixing matrix and a resultant of said means for applying.

5,349,954

TUMOR TISSUE CHARACTERIZATION APPARATUS AND METHOD

Jerome J. Tiemann, Schenectady, and Fay A. Marks, Waterford, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 23, 1993, Ser. No. 95,462
Int. Cl.[5] A61B *6/00*
U.S. Cl. 128—634 **19 Claims**



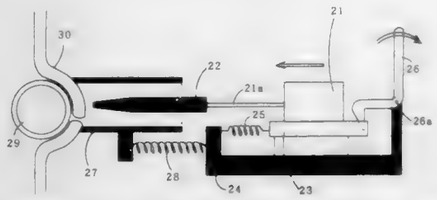
1. A tissue diagnostic instrument, comprising:
a needle having a hollow shaft, a tip on one end of said shaft, and a base on the other end of said shaft;
an optical fiber positioned within said shaft for delivering light of varying wavelengths in a predetermined range to a desired region of tissue through said tip; and
a photodetector mounted in said shaft and having a light sensitive surface facing outward from a side of said shaft for detecting back-scattered light from said desired region of tissue.

5,349,955

TONOMETER

Takayoshi Suzuki, Chofu, Japan, assignor to Kowa Company Ltd., Japan

Filed Jul. 6, 1993, Ser. No. 88,182
Claims priority, application Japan, Jul. 27, 1992, 4-198887; Sep. 29, 1992, 4-258747
Int. Cl.[5] A61B *3/16*
U.S. Cl. 128—645 **5 Claims**



1. A tonometer for measuring intraocular pressure by applying pressure onto an eye of a person being examined, comprising:
pressure means for pressing against an eyelid of an eye of a person being examined to thereby apply pressure to the eye;
drive means for driving the pressure means against the eye to cause the pressure means to apply pressure to the eye;
load sensor means for detecting a load applied to the pressure means;
calculating means for calculating intraocular pressure of the eye based on the load detected by the load sensor means when the pressure means presses on the eye; and

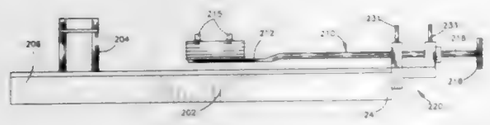
means for immobilizing the eye during the application of pressure thereto by the pressure means.

5,349,956

APPARATUS AND METHOD FOR USE IN MEDICAL IMAGING

Peter M. Bonutti, Effingham, Ill., assignor to Apogee Medical Products, Inc., Effingham, Ill.

Filed Dec. 4, 1991, Ser. No. 802,358
Int. Cl.[5] A61B *6/00*
U.S. Cl. 128—653.1 **63 Claims**



1. An apparatus for imaging a joint of a patient, said apparatus comprising an imaging unit, cuff means for holding a portion of the patient's body adjacent to the joint, a rotatable support member at least partially disposed in said imaging unit, connector means for connecting said cuff means with said support member, said cuff means being movable along an arcuate path in said imaging unit upon rotation of said support member, and means for applying force to said cuff means to distract the joint while the joint is in the imaging unit.

5,349,957

PREPARATION AND MAGNETIC PROPERTIES OF VERY SMALL MAGNETITE-DEXTRAN PARTICLES

Joseph S. Yudelson, Rochester, N.Y., assignor to Sterling Winthrop Inc., New York, N.Y.

Filed Dec. 2, 1992, Ser. No. 984,611
Int. Cl.[5] A61B *6/00*
U.S. Cl. 128—653.4 **11 Claims**



1. A process for the preparation of particles comprised of a magnetically responsive material and a dispersant, said process comprising admixing a magnetically responsive material with a dispersant to form an admixture, suspending said admixture in a gel phase and contacting said admixture in said gel phase with a base for a time period and under conditions appropriate to form a magnetically responsive material-dispersant particle.

5,349,958

METHOD AND DEVICE FOR CUTANEOUS MARKING OF THE VENOUS ANATOMY

Lawrence M. Hanrahan, Austin, Tex., and Lawrence P. Kinney, Cincinnati, Ohio, assignors to Core Medical Technologies, Inc., Houston, Tex.

Division of Ser. No. 851,032, Mar. 12, 1992, Pat. No. 5,226,419. This application May 13, 1993, Ser. No. 60,870
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.01 **14 Claims**

1. A device for cutaneously marking the venous anatomy which comprises:

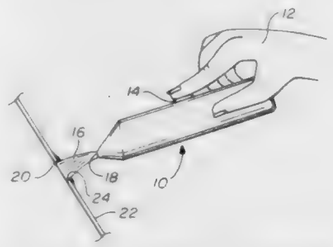
a plastic encasing having an orifice;

a housing inside the plastic encasing having an inlet port and an outlet port;

a channel inside the housing, the channel connecting the inlet port to the outlet port;

a propellent source having a pressurized gas contained therein, the propellent source being connected to the inlet port;

a reservoir having a marking fluid contained therein, the marking fluid coming in contact with the pressurized gas at the orifice;



a switch connected to the channel, the switch being selectively engageable to allow the pressurized gas to pass through the channel to the outlet port, the pressurized gas coming in contact with the marking fluid at the office;

a piercing needle; and

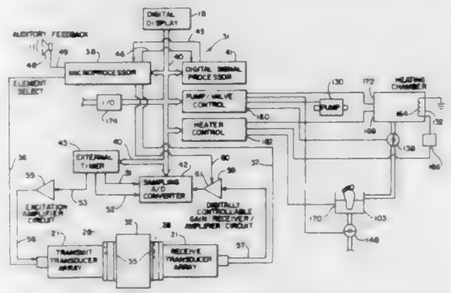
a lever, the piercing needle entering the propellent source upon engagement of the lever and thereby releasing the pressurized gas into the channel.

5,349,959

ULTRASONIC DENSITOMETER DEVICE AND METHOD

Scott A. Wiener, Mount Horeb, and James G. Delubery, Madison, both of Wis., assignors to Lunar Corporation, Madison, Wis.

Continuation of Ser. No. 895,494, Jun. 8, 1992, which is a continuation-in-part of Ser. No. 772,982, Oct. 7, 1991, Pat. No. 5,119,820, which is a continuation-in-part of Ser. No. 343,170, Apr. 25, 1989, Pat. No. 5,054,490, which is a continuation-in-part of Ser. No. 193,295, May 11, 1988, Pat. No. 4,930,511. This application Jun. 4, 1993, Ser. No. 73,222
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.06 **3 Claims**



3. An apparatus for measuring the physical properties and integrity of a member in vivo, comprising:

(a) a pair of transducers having fixed separation distance suitable for receiving the member between them;

(b) means for transmitting an acoustic signal between the pair of ultrasonic transducers;

(c) mean for determining a member transit time of the acoustic signal through the member when the member is between the ultrasonic transducers;

(d) means for determining an attenuation of at least one specific frequency component of the acoustic signal through the member when the member is between the ultrasonic transducers

(e) comparator for making a mathematical time comparison of the member transit time to a standard material transit time through a standard material of known acoustic properties and a mathematical attenuation comparison of the attenuation of the individual specific component through the member to an attenuation of the corresponding frequency component through the standard material; and

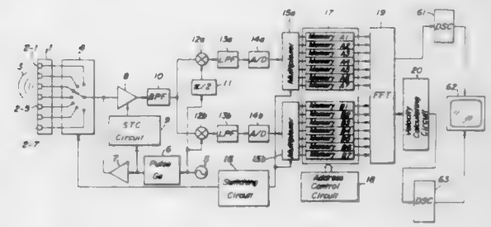
(f) means for relating both the mathematical time comparison and the mathematical attenuation comparison to the physical properties of the member.

5,349,960

ULTRASONIC DIAGNOSIS APPARATUS

Masahiko Gondo, Fuchu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,811
Claims priority, application Japan, Oct. 1, 1991, 3-253679; Oct. 24, 1991, 3-277805
Int. Cl.[5] A61B *8/06*
U.S. Cl. 128—661.09 **6 Claims**



1. An ultrasonic diagnosing apparatus comprising: a transmitting circuit for outputting pulses;

a vibrating element array having a number of vibrating elements arranged side by side;

a multiplexer for receiving said pulses from said transmitting circuit and selectively providing said pulses to one of said vibrating elements such that said one of said vibrating elements (i) transmits an ultrasonic pulse in response to said pulses and (ii) receives an ultrasonic wave reflected by an object under inspection and generates an echo signal based on said reflected ultrasonic wave;

a receiving circuit for amplifying said echo signal generated from said one of said vibrating elements to provide an amplified echo signal;

an orthogonal detector for converting said amplified echo signal from the receiving circuit into a complex signal consisting of a real part and an imaginary part;

A/D converting means for converting said complex signal into a digital complex signal;

wave surface data storing means including plural pairs of memories said memory pairs corresponding to respective vibrating elements and storing a said digital complex signal, provided by its respective vibrating element, as wave surface data;

spectrum distribution detecting means for detecting a spatial frequency from the wave surface data stored in said wave surface data storing means;

means for deriving an ultrasonic wave reflection strength from a DC component of the spatial frequency detected by said spectrum distribution detecting means and displaying an ultrasonic image based on said ultrasonic wave reflection strength; and

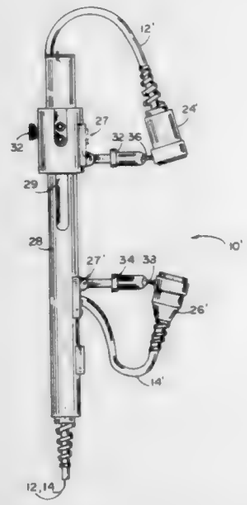
means for deriving a velocity of a blood stream from frequency components, of said spatial frequency detected by said spectrum distribution detecting means, other than said DC component.

5,349,961

METHOD AND APPARATUS FOR IN VIVO OPTICAL SPECTROSCOPIC EXAMINATION

Hugh F. Stoddart, Groton, Mass., and Gary D. Lewis, St. Clair Shores, Mich., assignors to Somanetics Corporation, Troy, Mich.

Continuation of Ser. No. 846,588, Mar. 5, 1992, abandoned, which is a continuation of Ser. No. 329,945, Mar. 29, 1989, Pat. No. 5,139,025, which is a continuation-in-part of Ser. No. 542,022, Oct. 14, 1983, Pat. No. 4,570,638, and a continuation-in-part of Ser. No. 827,526, Feb. 10, 1986, Pat. No. 5,140,989, and a continuation-in-part of Ser. No. 830,578, Feb. 18, 1986, Pat. No. 4,817,623. This application Jul. 8, 1993, Ser. No. 89,398
The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.
Int. Cl.[5] A61B *6/00*
U.S. Cl. 128—665 **27 Claims**



1. A method of non-obtrusively and non-invasively by optical response the conditional state of physiological substance located within a particular internal volume inside a test subject, comprising the steps:

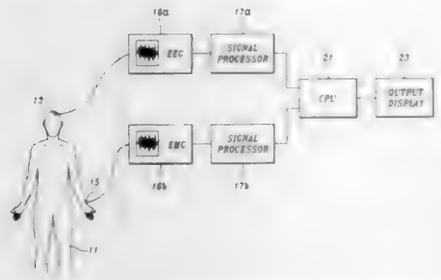
introducing light of selected wavelengths into said subject from a source location outside of said subject;

selecting at least first and second light-detection locations on said subject at points spaced from one another and spaced from said source by unequal first and second distances such that a first mean optical path is established extending between said source and said first detection location and a second mean optical path of a length different than that of said first mean optical path is established between the source and said second detection location, said second path generally defining an overall internal volume containing said particular internal volume and said first optical path generally defining a secondary internal volume located at least partially within said overall internal volume but disposed generally nearer said source location than said particular internal volume;

detecting the light resulting from said introduced light at said first and second locations and producing signals representative of such detected light; and

processing said signals to obtain optical response data which particularly characterizes selected attributes of said particular internal volume substantially without effects attributable to said secondary internal volume.

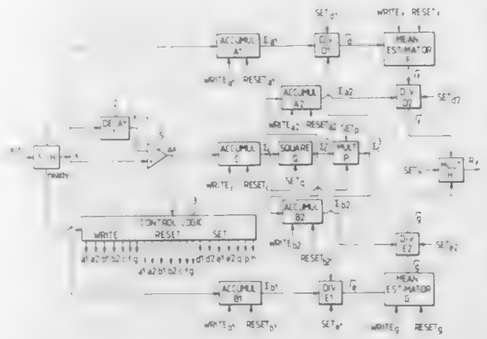
5,349,962
METHOD AND APPARATUS FOR DETECTING EPILEPTIC SEIZURES
Joan S. Lockard, Bellevue; Larry L. DuCharme, Seattle; William C. Congdon, Jr., Woodinville, and Douglas F. Kalk, Seattle, all of Wash., assignors to University of Washington, Seattle, Wash.
Filed Nov. 30, 1993, Ser. No. 159,855
Int. Cl.[5] A61B 5/0476, 5/0488
U.S. Cl. 128—732 30 Claims



1. A method of detecting an epileptic seizure in a person comprising the steps of:
(a) monitoring the amount of brain activity of said person to produce a brain activity signal and monitoring the amount of motor activity of said person to produce a motor activity signal;
(b) sampling said brain activity signal at a sampling frequency to produce a brain activity signal amplitude and sampling said motor activity signal at said sampling frequency to produce a motor activity signal amplitude;
(c) incrementing a brain activity counter when said brain activity signal amplitude is within a predetermined brain window and decrementing said brain activity counter when said brain activity signal is without said predetermined brain window;
(d) incrementing a motor activity counter when said motor activity signal amplitude is within a predetermined motor window and decrementing said motor activity counter when said motor activity signal is without said predetermined motor window; and
(e) indicating that an epileptic seizure is occurring when said brain activity counter is above a brain threshold and said motor activity counter is above a motor threshold.

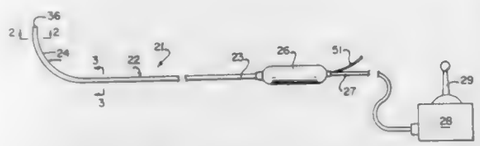
5,349,963
METHOD AND APPARATUS FOR MEASURING MUSCLE FATIGUE
Paavo Eskelinen, Oulu, Finland, assignor to Sanhill Oy, Oulu, Finland
Filed Aug. 6, 1993, Ser. No. 103,749
Int. Cl.[5] A61B 5/0488
U.S. Cl. 128—733 14 Claims

1. A method for measuring muscle fatigue, in which electromyographic (EMG) signals measured from a muscle are used to determine the fatigue level of the muscle, the method comprising the steps of:
receiving an EMG input signal x(t) from electrodes attached to the muscle to be analyzed;
sampling said input signal to form a sequence of discrete signal values x_i;
calculating the difference Δx_i between several pairs of successive sample values x_i and x_{i-i};
depending on the signal of the calculated difference Δ_{xi}, adding cumulatively the sampled values x_i in a first accumulator means (A1) if said difference is positive, and in a second accumulator means (B1) if said difference is negative, and said difference values Δ_{xi} in a third accumulator means (C);
obtaining separate sequences of quotients between the values representative of the output from said third accumulator means and values representative of the outputs from said first and second accumulator means, respectively;
obtaining for each of said sequences a single quotient having



a weighted value representative of a number of said quotients; and
multiplying the obtained weighted values with each other in order to obtain an index indicative of fatigue in said muscle.

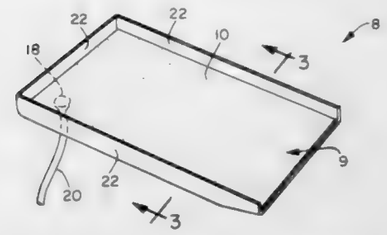
5,349,964
DEVICE HAVING AN ELECTRICALLY ACTUATABLE SECTION WITH A PORTION HAVING A CURRENT SHUNT AND METHOD
Mir A. Imran, Palo Alto; Gholam-Reza Zadno-Azizi, Newark, and Mark L. Pomeranz, Los Gatos, all of Calif., assignors to Intelliwire, Inc., Sunnyvale, Calif.
Filed May 5, 1993, Ser. No. 57,098
Int. Cl.[5] A61B 5/00
U.S. Cl. 128—772 27 Claims



1. A steerable catheter or guide wire device comprising an elongate tubular member having proximal and distal extremities and having a section with a plurality of lumens extending from the proximal extremity to the section, at least two conductive elements disposed in said lumens in said section of the elongate tubular member, at least one of said conductive elements being formed of a conductive metal alloy having a recoverable strain in excess of 1% and exhibiting a martensitic phase transformation, means coupled to the conductive elements for applying electrical current to at least one conductive element, said section having at least one portion and current conductive means carried by said at least one conductive element for shunting current flow around said at least one portion.

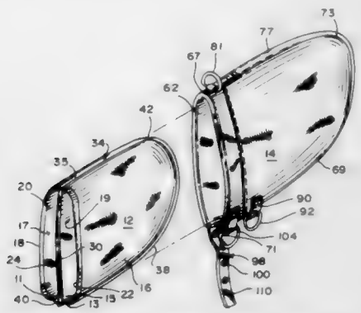
5,349,965
SURGICAL FLUID EVACUATION SYSTEM
Stacey G. McCarver, Marietta, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Continuation of Ser. No. 808,131, Dec. 16, 1991, abandoned.
This application Dec. 17, 1993, Ser. No. 169,723
Int. Cl.[5] A61F 5/37; A61B 19/00
U.S. Cl. 128—846 16 Claims

1. A liquid evacuation system comprising:
a liquid impervious bottom layer and a liquid pervious top layer, said top and bottom layers being joined to each other by a liquid impervious seal to define a liquid receiving chamber between said top and bottom layers;



separation means located within said chamber for maintaining said top and bottom layers generally separated from one another, and
means for evacuating said chamber of liquid entering said chamber through said liquid pervious top layer.

5,349,966
HANDS RESTRAINT FOR HANDCUFFED WRISTS
Joseph L. Garcia, 2408 Pleasure House Rd., Virginia Beach, Va. 23455
Filed Dec. 11, 1992, Ser. No. 989,144
Int. Cl.[5] A61F 5/37
U.S. Cl. 128—879 3 Claims



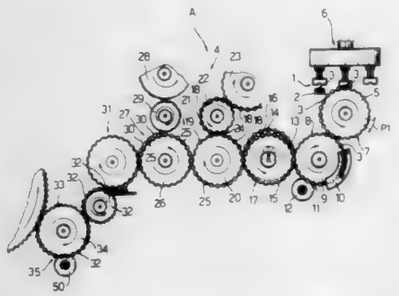
1. A restraint for hands wherein the wrists are handcuffed comprising:
an inner pouch including a pair of spaced-apart wall panels;
means joining the panels to one another along the edges thereof forming a bottom at one end and an opening opposite thereto;
an inner wall panel extending substantially equidistantly between said spaced apart wall panels and being secured therein by the means joining said panels to thereby define a pair of compartments whereby a hand is disposed in each through said opening to maintain the fingers of each hand out of contact with the opposite hand; and
an outer pouch removably receiving said inner pouch and means on the outer pouch securing each pouch over said handcuffed wrists.

5,349,967
SHIELD FOR USE BY HEALTH CARE PERSONNEL DURING SKIN INJECTIONS
John M. Tennis, 121 Fawnbrook Dr., Greenwood, S.C. 29646; Adriane H. Able, Rte. 3, Box 769, Saluda, S.C. 29138; Marilyn C. Coleman, 104 Spruce Ct., Milford Manor, Greenwood, S.C. 29649; Mark Hough, 156 Jamestowne Ct., Lexington, S.C. 29072, and Kaye M. Mahon, Rte. 1, Hwy. 101, Gray Court, S.C. 29654
Filed Mar. 19, 1993, Ser. No. 33,837
Int. Cl.[5] A61G 13/00
U.S. Cl. 128—888 20 Claims



1. A device for use by a user in performing a medical procedure on a body, said device comprising:
a first shield;
a second shield; and
means for holding said first and said second shields so as to define a space therebetween dimensioned for the body to be positioned in said space and to allow the user access to said space so that the medical procedure can be performed on the body, said device being orientable so that either said first shield or said second shield can be positioned between the user and the body so that the user is shielded from fluids from the body said first shield and said second shield held by said holding means so that said first ends of said first and second shields are closer to one another than said second ends of said first and second shields.

5,349,968
METHOD OF PRODUCING FILTER-TIPPED CIGARETTES
Salvatore Rizzoli, Bologna, and Fiorenzo Draghetti, Medicina, both of Italy, assignors to G.D Societa' per Azioni, Bologna, Italy
Filed Jul. 20, 1993, Ser. No. 95,071
Claims priority, application Italy, Jul. 22, 1992, BO92A 000282; May 31, 1993, BO93A 000246
Int. Cl.[5] A24C 5/47, 5/52
U.S. Cl. 131—94 18 Claims



1. A method for producing and delivering filter-tipped cigarettes, into two successions of cigarettes with only one pitch change occurring from a feeding stage through a rolling stage through cutting stage, and through a turnover stage, the method comprising:

in a feeding stage, feeding an orderly succession of first tobacco items along a given path substantially equally spaced at a first pitch, P1, each first item comprising two cigarette portions and an intermediate double filter, and feeding an outer band to each first item;

in a rolling stage, connecting, along said path, the two cigarette portions, the intermediate double filter and the outer band, to form an orderly succession of second items substantially equally spaced at a second pitch, P2;

maintaining an orderly succession of said second items at said second pitch, P2 during delivery of said second items to a cutting stage;

in a cutting stage located along said path, cutting the second items and forming a first and second succession of third items consisting of single, side by side, oppositely-oriented filter-tipped cigarettes maintained at said second pitch P2;

maintaining an orderly first and second succession of third items at said second pitch, P2 during delivery of said third items to a turnover stage; and

in a turnover stage along said path, turning over by 180° the cigarettes in one of the two successions in relation to those in the other succession to equiorient the cigarettes in the two successions maintained at the second pitch, P2, and to form at least one stream of equioriented cigarettes for supply to a follow-up machine and wherein said pitch of said tobacco items has been changed only once as said items have been produced and delivered between said feeding stage and said follow-up machine.

5,349,969

NAIL FILE PROTECTOR DEVICE

Trudy Price, 6755 Green Hill Dr., Evansville, Ind. 47711

Filed Mar. 23, 1993, Ser. No. 35,990

Int. Cl.[5] A45D *79/18*

U.S. Cl. 132—76.5 **2 Claims**

1. A nail file protector comprising:

a base handle of strong, molded material, said base handle having a first side panel and a second side panel opposing each other; a top panel and a bottom panel bordering said first and second side panels and a slot formed between said panels, said slot being sized and shaped to receive a non-metallic nail file;

said second side panel having a longer length than said first side panel in a longitudinal direction thereof, said longer length forming a support extension which extends along an inserted non-metallic nail file to provide support and rigidity to the inserted nail file and leaving a first filing surface of said nail file exposed while substantially covering a second filing surface of the nail file.

5,349,970

METHOD FOR FOILING HAIR

Peter Y. Razzouq, 20218 Hickory Wind Dr., Humble, Tex. 77346

Filed Oct. 19, 1992, Ser. No. 962,705

The portion of the term of this patent subsequent to Dec. 27, 2010, has been disclaimed.

Int. Cl.[5] A45D *19/18;* **A61K** *7/135*

U.S. Cl. 132—208 **17 Claims**

1. An improved method of foiling hair comprising the steps of:

positioning a rigid planar member so as to have one end in abutment with a surface of a head of one person and another end in abutment with a chest of another person;

placing a strip of a foil material over a top surface of said rigid planar member;



extending a strand of hair from said head over said foil material; and

applying a hair treatment solution to said strand of hair.

5,349,971

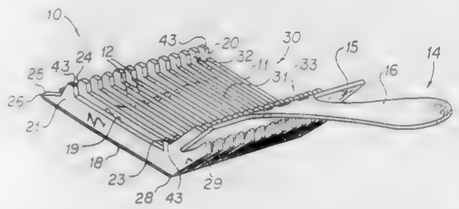
CLIPPER COMB

James E. Player, 3945 Cliftondale Pl., College Park, Ga. 30349

Filed Mar. 16, 1992, Ser. No. 851,937

Int. Cl.[5] A45D *24/34*

U.S. Cl. 132—213.1 **6 Claims**



1. A clipper comb for manipulating hair as it is cut with an electric clipper, the clipper comb comprising:

a base having an array of juxtaposed teeth forming a generally flat, segmented clipper bearing surface;

a handle extending from a first end of said base;

a first clipper guide wall bordering one side of said clipper bearing surface and oriented generally perpendicular to said clipper bearing surface;

a second clipper guide wall oriented generally perpendicular to said array of teeth and bordering a side of said bearing surface opposite said first clipper guide wall, said first and second clipper guide walls being substantially parallel to each other;

said teeth have first coplanar bottom surfaces beneath said clipper bearing surface and second coplanar bottom surfaces that extend angularly from said first coplanar bottom surfaces;

a spacer nested against said clipper bearing surface and at least one of said first and second clipper guide walls, said spacer having an array of juxtaposed teeth forming a generally flat spacer clipper bearing surface.

5,349,972

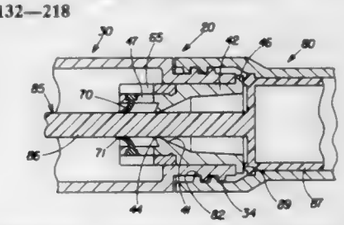
DUAL WIPER MASCARA PACKAGE HAVING RESIDUAL CHAMBER WITH BYPASS CHANNEL

Robert S. Dirksing, and David T. Miller, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 18, 1992, Ser. No. 993,285

Int. Cl.[5] A45D *40/26*

U.S. Cl. 132—218 **17 Claims**



1. A package for a cosmetic product comprising:

(a) a container having a plurality of walls connected so as to house the product, said container including an opening in one of the walls providing communication with the product housed within the container;

(b) a applicator including a stem having a proximal end, a distal end, means for grasping the applicator at the proximal end of the stem and means for applying the product at the distal end of the stem; and

(c) a dual wiper mechanism located within the opening of the container including:

(i) a primary wiper element having an opening therein;

(ii) a secondary wiper element having an opening therein, the secondary wiper providing wiping of the stem; and

(iii) a housing which locates the primary wiper element within the opening of the container and the secondary wiper element within the opening of the container exteriorly of the primary wiper element and spaced from the primary wiper element forming a residual cosmetic product reservoir between the primary wiper element and the secondary wiper element, the housing having a channel providing fluid communication from the residual product reservoir around the primary wiper element.

5,349,973

Patent Not Issued For This Number

5,349,974

GENERAL PARTS WASHER

Pierre G. Mansur, Miami, Fla., assignor to Mansur Industries Inc., Miami, Fla.

Filed Mar. 4, 1994, Ser. No. 207,136

Int. Cl.[5] B08B *3/02*

U.S. Cl. 134—107 **11 Claims**

2. An apparatus for washing articles with a solvent comprising:

a wash basin including a floor with drain means therein structured and disposed for draining the solvent from within said wash basin,

a holding tank for containing the solvent,

solvent discharge means for circulating and discharging solvent from said holding tank into said wash basin,

return means for directing the solvent from said drain means to said holding tank,

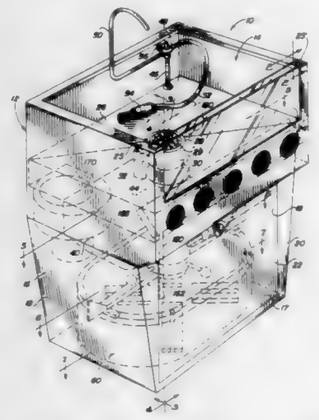
a distillation pot including a surrounding, insulated side wall structure and bottom, and a removable insulated top lid,

transfer means for selectively transferring contaminated solvent from said holding tank to said distillation pot,

a vacuum pump connected to said holding tank for creating a vacuum in said holding tank and said distillation pot,

heating elements in said distillation pot structured and disposed for boiling the contaminated solvent contained therein to produce solvent vapors, and

a condenser structured and disposed to receive and subsequently condense the solvent vapors to yield pure, non-contaminated solvent, said condenser being further structured and disposed to dispense the condensed pure solvent



into said holding tank for subsequent circulation and discharge into said wash basin to facilitate washing and rinsing of the articles therein.

5,349,975

AIR COOLED UMBRELLA

Vimagda Valdner, 17 Third Ave., Garden City Park, N.Y. 11040

Filed Nov. 2, 1993, Ser. No. 144,404

Int. Cl.[5] A45B *3/00*

U.S. Cl. 135—16 **7 Claims**



1. An air cooled umbrella comprising a rod having opposite top and bottom ends, a handle with a hand grip on the bottom end of the rod, a runner mounted on the rod, a collapsible canopy mounted on the rod adjacent the top end thereof and incorporating a plurality of elongate flat ribs, a plurality of stretchers extending between the canopy and flat ribs, each of the flat ribs being formed along its length with a plurality of holes extending through the canopy for venting hot air from under the canopy, through the canopy, when opened.

5,349,976

STRUCTURE OF UMBRELLA RING

Fu Y. Ko, No. 7, Lane 30, Chung Shiao Street, Changhua, Taiwan

Filed Oct. 1, 1993, Ser. No. 130,274

Int. Cl.[5] A45B *19/00*

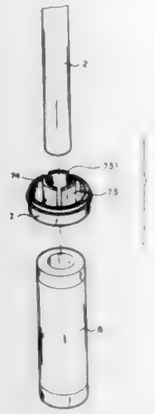
U.S. Cl. 135—25.4 **4 Claims**

1. An umbrella ring used on an umbrella shank for rotating umbrella tips proximate said umbrella shank, said umbrella ring comprising:

a cup having an annular peripheral wall extending from a

circular base; said circular base having a central aperture receiving said umbrella shank;

a sleeve situated within said cup and projecting from said circular base in coaxial alignment with said cup and said central aperture; said sleeve having a plurality of slots formed therein and defining a plurality of cantilever spring fingers extending along said umbrella shank; and



whereby said cup is slidable from a first position in which said cup in normally retained in axial alignment with said shank by said spring fingers to a second position in which said cup is slid along said shank to facilitate placement of said umbrella tips into said cup or removal of said umbrella tips from said cup.

5,349,977

ADJUSTABLE WALKER

Maurice S. Wood, 15318 Chipman, Houston, Tex. 77060

Filed Apr. 5, 1991, Ser. No. 680,843

Int. Cl.[5] A61H *3/00*

U.S. Cl. 135—67 **18 Claims**



1. A walker comprising:

a frame having a pair of hand grips formed thereon;

a plurality of legs connected to said frame and extending downwardly therefrom, said plurality of legs comprising four legs, each of said legs positioned at a corner of said frame;

a plurality of extensible leg portions slidably received by said plurality of legs and extending downwardly therefrom; and

actuator means connected to said frame generally adjacent said hand grips, said actuator means interconnected to said legs and to said extensible leg portions for controlling a movement of said extensible leg portion with respect to said legs, said actuator means movable between a first position and a second position, said first position for causing said extensible leg portions to move freely with respect to said legs, said second position for causing said extensible leg portions to lock in position relative to said legs said actuator means comprising:

a first actuator bar extending between said first pair of legs on one side of said frame;

a second actuator means extending between said second pair of legs on another side of said frame, said first and second actuator bars positioned below said hand grips; and

housing means interconnected to said first and second actuator bars and to said legs and to said extensible leg portions, said housing means for controlling the movement of said extensible leg portions with respect to said legs.

5,349,978

CLEANING DEVICE FOR CLEANING PLANAR WORKPIECE

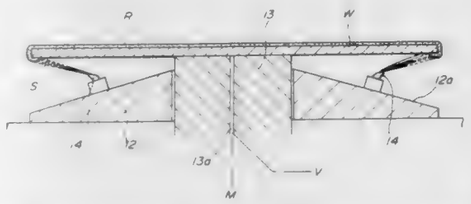
Hiroyoshi Sago; Shigemi Fujiyama; Katsuhiko Kudo, and Hirofsugu Kumazawa, all of Kanagawa, Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan

Filed Jun. 4, 1993, Ser. No. 72,142

Claims priority, application Japan, Jun. 4, 1993, 4-170246

Int. Cl.[5] B08B *3/02*

U.S. Cl. 134—153 **19 Claims**



18. A cleaning device for cleaning a reverse side of planar workpiece whose face side is coated with a coating solution, comprising:

a rotatable chuck for holding the planar workpiece thereon;

a pair of nozzles disposed on a concentric circle about said rotatable chuck for alternately applying a cleaning solution to the peripheral edge on the reverse side of the workpiece; and

actuator means for rotating said rotatable chuck with the workpiece held thereon alternatively in opposite directions such that the cleaning solution is ejected from one of said nozzles while said rotatable chuck is being rotated in one of said opposite directions by said actuator means, and the cleaning solution is ejected from the other of said nozzles while said rotatable chuck is being rotated in the other of said opposite directions by said actuator means;

said nozzles having respective axes along which the cleaning solution is ejected, said axes extending symmetrically with respect to a line passing through the center of said rotatable chuck perpendicularly to a line connecting the pair of nozzles.

5,349,979

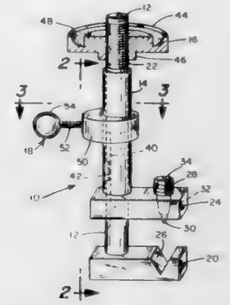
LINE TAPPING AND CLAMPING ASSEMBLY FOR REFRIGERATION SYSTEMS

Terri Zeien, and Richard Rahn, both of Lakeville, Minn., assignors to Instant Pierce, Inc., Lakeville, Minn.

Continuation-in-part of Ser. No. 948,037, Sep. 21, 1992, abandoned. This application Jan. 31, 1994, Ser. No. 189,432

Int. Cl.[5] F16K *43/00;* **F16L** *41/06*

U.S. Cl. 137—318 **21 Claims**



1. A self-contained piercing apparatus comprising:

(a) an inner shaft having an upper portion, a lower portion and a first arm carried on said lower portion;

(b) an hollow outer shaft slidably fitting over a portion of said inner shaft and carrying a second arm thereon, said first and second arms being capable of alignment by relative movement of said inner and outer shafts;

(c) piercing means having an end with a piercing point for piercing a line supported by one of said arms, said piercing means being attached to the other of said first and second arms with the piercing point facing in the direction of the one of said arm supporting the line and the line; and

(d) a threaded actuating means for urging said first and said second arms together as they move relative to each other, said actuating means including means for rotating said threaded actuating means to cause said piercing means to pierce said line.

5,349,980

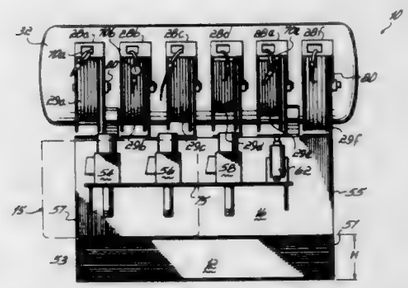
SERVICE MODULE FOR AN AUTOMOBILE SERVICING VEHICLE

Daniel J. Spiegel, 2327 Kenmore Dr., Charlotte, N.C. 28204

Filed Jul. 19, 1993, Ser. No. 93,813

Int. Cl.[5] B65H *75/34*

U.S. Cl. 137—1 **36 Claims**



1. A method of changing the engine oil in a customer vehicle using a service vehicle having a front end, a rear end and a bed, the method comprising:

a) driving the service vehicle to the location of the customer vehicle;

b) draining the waste oil from the customer vehicle engine;

c) pouring the waste oil into a waste oil tank, the waste oil tank forming a base of a service module located inside the service vehicle and mounted on the vehicle bed, the tank base spreading the weight of the module over the bed and positioning an equal portion of the volume of the waste oil on either side of a longitudinal axis of the service vehicle bed;

d) extending a first extensible hose from the service vehicle to the customer vehicle, the hose connected to a fresh oil tank located above of the waste oil tank base in the module, the fresh oil tank locating an equal portion of its volume on either side of said longitudinal axis, the module distributing the weight of any respective oil contained in the tanks generally equally on either side of the service vehicle; and

e) transferring fresh oil into the engine of the customer vehicle through the hose.

5,349,981

DRAIN VALVE FOR A FLUSH TANK

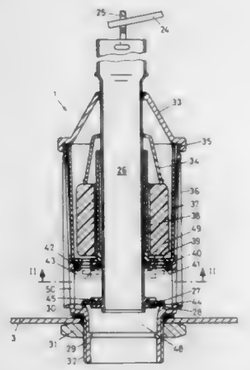
Peter Schmucki, and Paul Wey, both of Eschenbach, Switzerland, assignors to Geberit AG, Jona, Switzerland

Filed Sep. 21, 1993, Ser. No. 124,961

Claims priority, application Switzerland, Sep. 21, 1992, 2951/92

Int. Cl.[5] F16K *31/22, 33/00;* **E03D** *1/35*

U.S. Cl. 137—436 **7 Claims**



1. In a drain valve for a flush tank having a valve housing (**12**,**36**) mounted in said flush tank, a valve tube (**5**,**26**) axially movably mounted in said valve housing with a closing element (**6**,**27**) disposed at the lower end thereof for closing the drain opening in said flush tank, a float (**21**,**38**) cooperating with said valve tube, and means (**15**,**40**) for regulating the sinking speed of said valve tube, the improvement comprising:

said valve tube (**5**,**26**) including engagement means (**20**,**45**) engagable with said means (**15**,**40**) for regulating the sinking speed of said valve tube by the displacement of said valve tube whereby the means (**15**,**40**) for regulating the sinking speed of the valve tube can be adjusted when the closing element is in an open position and a portion of said valve tube being in an operative locking engagement with said regulating means as said float reaches a predetermined position in response to a predetermined water level in said flush tank.

5,349,982

CONTROL MECHANISM FOR WATER BLASTING GUN

Peter J. Goldsmith, Houston, Tex., assignor to Control Rain Systems, Inc., Houston, Tex.

Filed Oct. 13, 1993, Ser. No. 136,121

Int. Cl.[5] B05B *1/14*

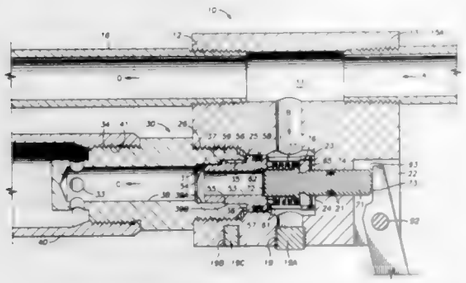
U.S. Cl. 137—454.5 **11 Claims**

1. In a water blasting gun having a block, said block having a high pressure fluid inlet, a high pressure fluid outlet, first

passageway means between said high pressure inlet and outlet, a low pressure fluid outlet, second passageway means between said first passageway means and said low pressure outlet, and means for controlling fluid communication between said high pressure fluid inlet and said low pressure fluid outlet, the improvement comprising:

said controlling means including;

valve seat means and valve means positioned in said block, said valve means being biased toward a first position out



of engagement with said valve seat means, and valve activating means, engageable with said valve means, for urging said valve means into engagement with said valve seat means, said valve seat means includes a depending cage portion which carries a valve encompassing spring member and slidably receives a valve portion therein; and

said block includes bore means for slidably receiving and guiding a stem portion of said valve means.

5,349,983

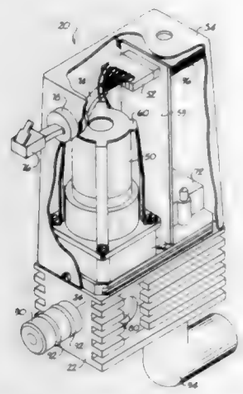
PROPORTIONAL CONTROL VALVE FOR PATIENT SUPPORT SYSTEM

Ryszard S. Ozarowski, Marietta, Ga.; Barry D. Hand, Mt. Pleasant; Robert C. Novack, Charleston, both of S.C.; Vernon D. Beard, Pompano Beach, Fla.; James O. Threlkeld, Denver, N.C., and William T. Sutton, Charleston, S.C., assignors to SSI Medical Services, Inc., Charleston, S.C.

Filed Jul. 7, 1993, Ser. No. 88,541

Int. Cl.[5] F16K *31/04*

U.S. Cl. 137—487.5 **17 Claims**



1. A proportional flow control valve for an air bed, comprising:

a housing;

an inlet defined through said housing for receiving air flow from a pressurized air source;

an outlet defined through said housing for directing pressurized air flow from said housing;

a valve passage defined through said housing between said inlet and said outlet;

a flow control member rotatably disposed within said housing and across said valve passage;

a means for maintaining the axial alignment of said flow control member and preventing said flow control member from binding within said housing;

a means for limiting the degree of rotation of said flow control member within said housing;

a means for controlling the flow of air between said inlet and said outlet of said housing in direct proportion to the degree of rotational displacement of said flow control member within said housing, said proportional flow control means including:

a motor for selectively rotating said flow control member within said housing, said motor being mounted to said housing and having a rotatable output shaft;

a torque-limiting clutch operatively disposed between said motor output shaft and said flow control member for connecting said motor output shaft to said flow control member; and

an electrical control circuit connected to said motor for controlling operation of said motor; and

a motor support bracket generally encircling said motor and secured to said housing, said bracket being configured and disposed to prevent relative movement between said motor and said housing.

5,349,984

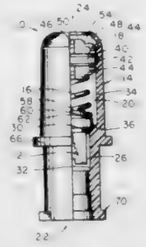
CHECK VALVE

Jacek M. Weinheimer, Treasure Island; Michael T. Taylor, St. Petersburg, and Terrence C. Allen, Clearwater, all of Fla., assignors to Halkey-Roberts Corporation, St. Petersburg, Fla.

Filed Jan. 25, 1993, Ser. No. 8,452

Int. Cl.[5] F16K *15/06*

U.S. Cl. 137—543.21 **1 Claim**



1. A check valve, comprising in combination:

an elastomeric valve body having a central axial passageway therethrough defining an input and an output and having valve seat means therein;

an elastomeric valve reciprocatingly positioned within said axial passageway, said valve element having valve seat means in sealingly engageable position with said valve seat means of said valve body when said valve element is urged forwardly toward said input;

an elastomeric apertured plug positioned within said output of said axial passageway, said apertured plug comprising a symmetrical design allowing said plug to be positioned within said output irrespective of which end of said plug is inserted therein, said plug comprising an annular ring and a vane positioned diametrically across said ring to define an aperture between said vane and said annular ring; an inward edge of said vane comprising a lower annular platform portion and an upper annular platform portion with sloping sides therebetween allowing said compression spring to be seated upon said lower annular platform portion and sloping sides and centered within said axial fluid passageway by means of said upper annular platform portion, said valve element comprising a reduced diameter portion and an increased diameter portion joined together at a forwardly converging frusto-conical valve seat defining said valve seat means allowing said compression spring to be seated thereon, said valve element comprising a rearward end including a lower annular platform portion and an upper annular platform portion with sloping sides therebetween allowing said compression spring to be seated upon said lower annular platform and sloping sides portion and centered within said axial passageway by means of said upper annular platform portion of said valve element; and

a metal compression coil spring positioned within said axial passageway between said valve element and said apertured plug, whereby said valve element is urged forwardly toward said input.

5,349,985

PLUMBING FIXTURE

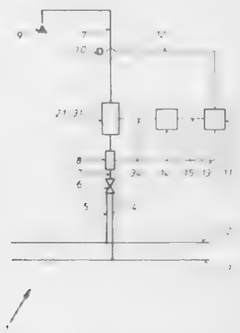
Gerhard Fischer, Campione, Italy, assignor to Cosmos Entwicklungs-und Forschungsanstalt, Vaduz, Liechtenstein

Filed Mar. 12, 1993, Ser. No. 30,326

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1991, 4124154

Int. Cl.[5] F16K *11/24*

U.S. Cl. 137—607 **15 Claims**



1. A plumbing fixture that can be actuated without physical contact, comprising:

a water line that is connected to a source of water and has a water outlet;

a mixer valve disposed in said water line;

a shut-off valve disposed in said water line downstream of said mixer valve;

a proximity-sensitive sensor;

a control unit for controlling said shut-off valve as a function of control signals from said sensor;

a turbine disposed in said water line for supplying electrical energy to said control unit, said turbine having a wheel that is rotatably drivingly mounted on a shaft that extends in a direction of flow in a water supply channel of a tubular section of said water line, wherein said tubular section is provided with a first partition through which water can flow and a second partition through which water can flow, with said turbine wheel being disposed between said first and said second partitions, said first partition being disposed upstream of said turbine wheel and being provided in an outer region thereof with at least one jet aperture, which is disposed at an angle relative to said direction of flow; and

a generator that is operatively associated with said turbine, whereby permanent magnets are distributed equidistantly about an outer periphery of said turbine wheel, and a wall of said tubular section is provided, at a level of said permanent magnets, with at least two magnet coils that are oriented in an axial direction of said tubular section and cooperate with said permanent magnets to form said generator.

5,349,986

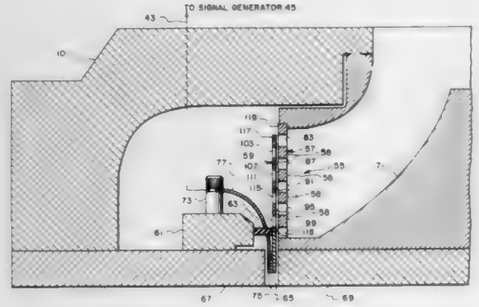
VALVE MECHANISM FOR AN ACOUSTIC MODULATOR

James L. Sullivan, Ventura, and Gary S. Borgen, Camarillo, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 23, 1993, Ser. No. 112,814

Int. Cl.[5] F16K *31/08, 3/26;* **H04R** *9/00*

U.S. Cl. 137—625.33 **2 Claims**



1. A valve mechanism for an acoustic modulator, said valve mechanism comprising:

first and second cylindrical shaped members, said first cylindrical shaped member being positioned inside of said second cylindrical shaped member;

said first cylindrical shaped member having sixty elongated valve ports therethrough, said valve ports of said first cylindrical shaped member being positioned on first, second, third, fourth and fifth planes passing through said first cylindrical shaped member, each of said first, second, third, fourth and fifth planes passing through said first cylindrical shaped member having twelve of said sixty elongated valve ports positioned thereon;

said first cylindrical shaped member having elongated lands located between said valve ports positioned on adjacent planes of said first cylindrical shaped member, each of said lands of said first cylindrical shaped member having a width of about one eighth of an inch;

said first cylindrical shaped member having an upper elongated land at a top portion of said first cylindrical shaped member, said upper elongated land at the top portion of said first cylindrical shaped member having a width of about one eighth of an inch;

said second cylindrical shaped member having forty eight elongated valve ports therethrough, said valve ports of said second cylindrical shaped member being positioned on first, second, third, and fourth planes passing through said second cylindrical shaped member, each of said first, second, third, and fourth planes passing through said second cylindrical shaped member having twelve of said forty eight elongated valve ports positioned thereon;

said second cylindrical shaped member having elongated lands located between said valve ports positioned on adjacent planes of said second cylindrical shaped member, each of said lands of said second cylindrical shaped member having a width of about one eighth of an inch;

said second cylindrical shaped member having an upper elongated land at a top portion of said first cylindrical shaped member and a lower elongated land at a bottom portion of said second cylindrical shaped member, said upper elongated land at the top portion of said second cylindrical shaped member and said lower elongated land at the bottom portion of said second cylindrical shaped

member each having a width of about one eighth of an inch;

each of said elongated valve ports of said first and second cylindrical shaped members having a length of about eleven sixteenths of an inch and a width of about one eighth of an inch;

first and second support members, said first cylindrical shaped member being fixedly attached to said first support member;

a ring shaped elastomeric material strip connecting said second cylindrical shaped member to said second support member, said ring shaped elastomeric material strip allowing a first movement of said second cylindrical shaped member in an upward direction from a neutral position followed by a second movement of said second cylindrical shaped member in a downward direction from said neutral position;

a drive coil wound around the outer surface near the lower end of said second cylindrical shaped member;

means for generating a magnetic field, said magnetic field generating means having a gap therein, said magnetic field being generated within said gap;

said drive coil being positioned within the gap of said magnetic field generating means, said drive coil responsive to an electrical sinusoidal input signal of a predetermined frequency supplied to said drive coil moving said second cylindrical shaped member in said upward direction from said neutral position and then moving said second cylindrical shaped member in said downward direction from said neutral position;

each of the valve ports of said first cylindrical shaped member being aligned with one of the lands of said second cylindrical shaped member and each of the valve ports of said second cylindrical shaped member being aligned with one of the lands of said first cylindrical shaped member when said second cylindrical shaped member is in said neutral position;

each of the valve ports of said second cylindrical shaped member being aligned with one of the valve ports of said first cylindrical shaped member positioned on said first, second, third and fourth planes of said first cylindrical shaped member when said first movement of said second cylindrical shaped member occurs;

each of the valve ports of said second cylindrical shaped member being aligned with one of the valve ports of said first cylindrical shaped member positioned on said second, third, fourth and fifth planes of said first cylindrical shaped member when said second movement of said second cylindrical shaped member occurs;

said neutral position of said second cylindrical shaped member prohibiting air flow through said valve mechanism, said first and second movements of said second cylindrical shaped member allowing said air flow through said valve mechanism;

said valve mechanism providing a modulated acoustic wave front having a frequency in the range of about sixteen hundred hertz to about two thousand hertz, the frequency of said acoustic wave front being twice the predetermined frequency of said electrical sinusoidal input signal.

5,349,987

FAUCET WITH A MOVABLE EXTENSION NOZZLE

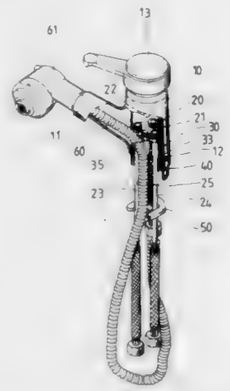
Ming-Dang Shieh, No. 18, Tou Lun Lane, Tou Lun Li, Lu Kang Chen, Chang Hua Hsien, Taiwan

Filed Jan. 24, 1994, Ser. No. 185,008

Int. Cl.[5] B05B *15/06*

U.S. Cl. 137—801 **1 Claim**

1. A faucet comprising a casing having a spout, a barrel received inside said casing, a socket received inside said casing and connected to said barrel at the bottom, a hot/cold water flow rate control switch received inside said casing, a water outlet pipe and a hot water intake pipe and a cold water intake pipe respectively connected to said barrel and retained in place by a locating ring and a locating plate, a nozzle detachably mounted on the spout of said casing, a bellows expansion tube connected between said barrel and said nozzle, and an operating lever mounted on said casing at the top and moved to control said hot/cold water flow rate control switch, wherein said barrel defines a water mixing chamber, which receives said hot/cold water flow rate control switch, and comprises a unitary bottom disk blocked at the bottom, said bottom disk having holes to which said hot and cold water intake pipes and said water outlet pipe are respectively connected; said socket has an elongated guide groove horizontally disposed on an outer surface thereof, and an inside annular groove made



around an inside wall thereof at the bottom; said casing comprises a screw threaded into a screw hole thereof on the outside and having a tip engaged into the elongated guide groove said socket to limit the turning angle of said casing in either direction relative to said socket; said locating ring comprises a plurality of hooks respectively hooked in the inside annular groove on said socket, a smooth inside surface surrounding said hot and cold water intake, pipes and said water outlet pipe; said locating plate comprises a through hole through which said water outlet pipe passes, and two wing plates mounted around said hot and cold water intakes pipes to hold them in place.

5,349,988

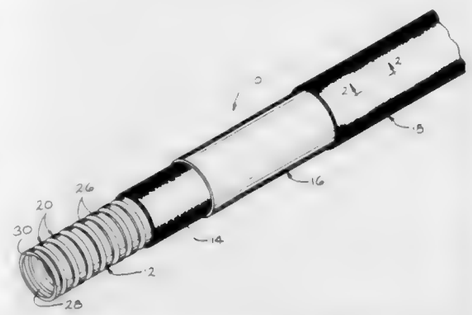
CORREGATED REFRIGERATION HOSE SYSTEM

Brian J. Walsh, and Robert M. Lefere, both of Jackson, Mich., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Jun. 17, 1991, Ser. No. 716,092

Int. Cl.[5] F16L *11/04*

U.S. Cl. 138—107 **11 Claims**



1. A hose system characterized by its flexibility and low permeation of gases, such as for refrigerants, comprising, in combination, a hose inner tube having a longitudinal axis said hose inner tube comprising, a wall having inner and outer

surfaces, and an end, said inner tube being formed of a thermoplastic material, a plurality of annular corrugations defined on said wall, adjacent corrugations being axially spaced and alternately radially extending in the direction of said inner and outer surfaces, said corrugations radially extending in the direction of said wall outer surface defining axially spaced annular grooves within said inner tube, a reinforcing layer tube closely encompassing said inner tube radially located outwardly of said grooves and unbonded with respect to said inner tube and axially displaceable thereto, a flexible continuous wall tube of moisture ingression resistant material extruded upon and circumscribing said reinforcing layer tube and being unbonded with respect to said reinforcing layer tube and a flexible tubular outer cover circumscribing said continuous wall tube, said outer cover being unbonded with respect to said continuous wall tube and all of said tubes and outer cover being axially displaceable with respect to each other and axially displaceable with respect to each other during lateral deflection of the hose system assembly.

5,349,989

FLUID TRANSPORTATION MULTICONDUIT UMBILICAL

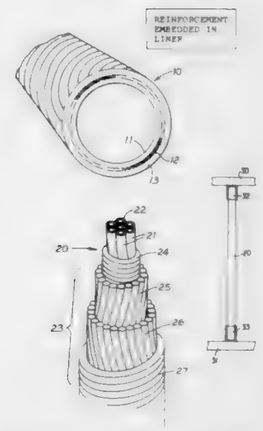
Lucien Legallais, Orgeval, France, assignor to Dunlop Coflexip Umbilicals Limited, London, United Kingdom

Filed Dec. 29, 1992, Ser. No. 962,587

Claims priority, application United Kingdom, Jun. 29, 1990, 9014514; Jan. 22, 1991, 9101424

Int. Cl.[5] F16L *9/18*

U.S. Cl. 138—111 **11 Claims**



1. A multi-conduit umbilical for the transportation of methanol or glycol over a distance of at least 3 kilometers and comprising a plurality of conduits at least one of which is comprised of a flexible hose comprising a hose reinforcement structure which extends along the length of the hose and a liner layer of cross-linked polyethylene which extends along at least a substantial part of the length of the hose at least at a position radially inwards of the hose reinforcement structure, the plurality of conduits forming the umbilical being maintained in a bundled configuration by a surrounding umbilical reinforcement structure.

5,349,990

DEVICE FOR HOLDING WEFT THREADS FOR SERIES-SHED LOOMS

Lorant Gacsay, Zürich, Switzerland, assignor to Sulzer Rueti AG, Rueti, Switzerland

Filed Jun. 17, 1993, Ser. No. 78,480

Claims priority, application European Pat. Off., Aug. 11, 1992, 92810607

Int. Cl.[5] D03D *41/00*

U.S. Cl. 139—194 **19 Claims**



1. A device for holding weft threads of a series-shed loom between a weft input side and a weft output side of a rotating rotor of said series-shed loom rotating in a direction of rotation from a weft thread insertion angle to a weft thread discharge angle about a central axis of rotation, said device for holding weft threads comprising:

at least one weft thread holding device on the input side and one weft thread holding device on the output side of said rotor;

at least one cutting device at least on the input side of said rotor for severing inserted weft threads;

each said weft thread holding device including means for clamping at least one weft thread end whereby a weft thread is clamped at a first end on said input side and at a second end at the output side and is held between said devices;

each said means for clamping including a support member defining a supporting surface extending substantially parallel to the central axis of rotation of said rotor of said series shed loom;

each said means for clamping further including two endless conveyor belts laying over one another at least inside an angle β of partial revolution of said rotor between said weft thread insertion angle to said weft thread discharge angle;

said two conveyor belts guided over guide rollers so that an inlet slot for weft threads is produced in conjunction with said supporting surface;

means moving said conveyor belts to capture said weft threads in the direction of rotation of said rotor; and,

the distance of the supporting surface increasing within said angle of rotation β from a distance R_2 to a greater distance R_3, whereby a weft thread gripped between aid clamping slots moves away with respect to the center of rotation of said rotor to said discharge angle with respect to said rotating rotor.

5,349,991

WOVEN SURFACE FASTENER CONSTRUCTION

Mitsuhisa Okawa, and Ryuichi Murasaki, both of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Apr. 30, 1993, Ser. No. 54,242

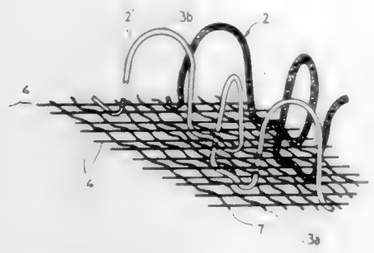
Claims priority, application Japan, May 8, 1992, 4-037613

Int. Cl.[5] A44B *18/00*

U.S. Cl. 139—391 **3 Claims**

1. A surface fastener having a woven tape forming a tape surface, wherein said tape includes a number of longitudinal locking regions and a number of longitudinal mesh regions

alternately arranged across the width, each said locking region being woven of weft threads of monofilaments and first and second warp threads, the second warp threads forming male or



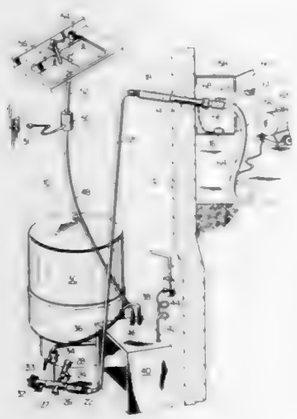
female engaging elements extending outwardly from a plane parallel to the tape surface, each of said mesh regions including only the weft threads.

5,349,992

LIQUID DISTRIBUTION AND DISPENSING APPARATUS AND METHOD

Steven P. Gallo, 21 Aldom Cir., West Caldwell, N.J. 07006, and Jack Fiorelli, 521 Rivervale Rd., Rivervale, N.J. 07675

Filed Aug. 21, 1992, Ser. No. 934,177
Int. Cl.[5] B65B *3/00*
U.S. Cl. 141—18 17 Claims



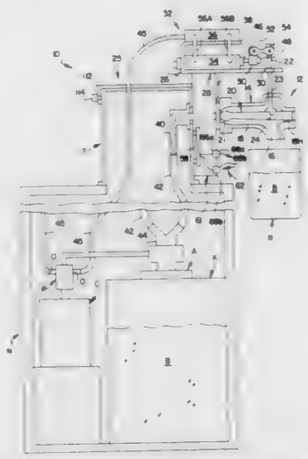
1. An apparatus for dispensing a potable liquid, comprising:
a faucet that can be opened or closed;
a storage tank for storing potable liquid supplied by an outside source;
a sanitary fitting containing a channel through which potable liquid is made to pass when said source is connected thereto, the channel being made to terminate at a first coupling at one end and at a second coupling at the other end, the first coupling being configured to connect to and disconnect from said source,
the first coupling of said fitting having an acme sanitary thread contained thereon which is configured and dimensioned to closely mate with a corresponding acme sanitary thread contained on a corresponding coupling associated with said outside source,
the channel being inclined to cause any free-standing liquid therein to drain out through the first coupling;
an intake channel having first and second ends, the first end being connected to said tank;
a check valve having its inlet end connected to the second coupling of said sanitary fitting and its discharge end connected to the second end of said intake channel;
a discharge channel, connected to said tank at one end and to said faucet at the other end; and
first flow means, cooperating with said tank and said faucet, for causing a flow of liquid from said tank and through said discharge channel upon the opening of said faucet.

5,349,993

BEVERAGE DISPENSING APPARATUS AND RETROFITTING KIT

Joseph B. Casey, St. Louis, Mo., assignor to Polster, Lieder, Woodruff & Lucchesi, LC., St. Louis, Mo.

Filed Oct. 13, 1992, Ser. No. 959,963
Int. Cl.[5] B65B *3/04;* B67C *3/00*
U.S. Cl. 141—94 15 Claims



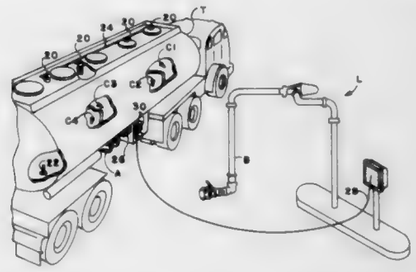
1. An apparatus for dispensing a potable beverage stored in a pressurized container, the apparatus comprising:
tap means attachable to the container for providing a discharge flow path for the beverage stored therein, the tap means comprising a tap removably attachable to the beverage container;
valve means for opening and closing the discharge flow path, the valve means including a valve normally closing the discharge flow path;
a source of pressure including a gas cylinder containing an inert gas;
valve control means for operating the valve means, the valve control means utilizing said source of pressure to operate the valve means, the valve control means, when activated, moving the valve to open the path; the valve control means including a second cylinder operable by the inert gas, a solenoid through which the gas is routed to the second cylinder, and controller means for activating the valve control means, the controller means including switch means for energizing and de-energizing the solenoid and sensing means for first sensing when a receptacle is positioned adjacent the tap means to activate the valve control means for beverage to be dispensed into the receptacle and for subsequently sensing when the receptacle has been withdrawn to deactivate the valve control means and stop dispensing of the beverage.

5,349,994

CONTROL SYSTEM FOR FILLING TANKS WITH LIQUIDS

Robert C. Koeninger, Fairfield, Ohio, assignor to Dover Corporation, New York, N.Y.

Continuation of Ser. No. 590,653, Sep. 28, 1990, abandoned. This application May 11, 1993, Ser. No. 60,709
Int. Cl.[5] B67D *5/32*
U.S. Cl. 141—94 11 Claims



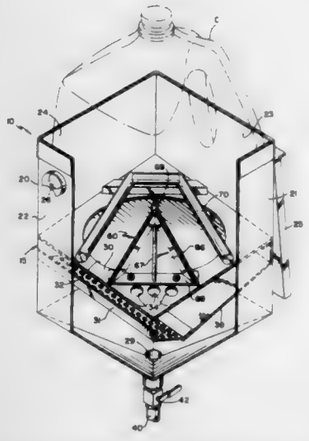
1. A system for controlling the loading of liquid into a tank, said system being adapted to assure that liquid will not be loaded under conditions which would result in the tank being overfilled,
said system comprising
A. independently controlled means for loading liquid into the tank,
a. said independently controlled loading means requiring an enabling signal input in order to initiate and to continue loading of liquid into the tank,
B. means for generating said enabling signal input, said generating means comprising
a. a sensor
i. mounted in the tank,
ii. comprising means for generating a "dry" signal so long as the level of liquid in the tank is below said sensor,
iii. having a fail safe failure mode wherein the generation of a "dry" signal is terminated in the event of a malfunction in the means for generating the "dry" signal,
b. an enabling signal generator operative to generate the enabling signal in response to and only so long as there is a "dry" signal input from said sensor,
c. electrical conduit means interconnecting said sensor and its means for generating a "dry" signal with said enabling signal generator, to provide the "dry" signal input therefor, so that the loading of liquid cannot be initiated, or continued, in the event that the level of liquid in the tank reaches the sensor,
C. sensory discernable means having a first condition indicating that a "dry" signal is not being generated and a second condition for indicating that a "dry" signal is being generated,
whereby, if there is a failure to generate an enabling signal and the sensory discernable means have the one condition, a visual examination of the liquid level will confirm that there has been a failure in the "dry" signal generating means of the sensor, if the liquid level is below the sensor,
characterized in that
D. the sensory discernable means have a third condition that indicates a failure in the electrical conduit means interconnecting the sensor and the enabling signal generator,
whereby trouble shooting is further facilitated by the ability to identify that the failure of an enabling signal is attributable to a failure in the electrical conduit connection between the sensor and the enabling signal generator.

5,349,995

USED OIL COLLECTING DEVICE

Fernando Perez, 5101 SW. 139th Ct., Miami, Fla. 33175

Filed Aug. 16, 1993, Ser. No. 106,661
Int. Cl.[5] B67C *11/00*
U.S. Cl. 141—98 7 Claims



1. A device for collecting oil contained in plastic containers mounted on a waste disposal truck having a moving rear assembly and said device mounted to said assembly, said device comprising:
A) housing means for receiving said plastic containers and including means for puncturing said plastic containers, said housing means including a bottom having an outlet and said housing means being mounted to said moving rear assembly;
B) flexible conduit means having two ends and one of said ends being connected to said outlet; and
C) tank means for storing said oil connected to the other end of said flexible conduit means and said tank means being mounted to said moving rear assembly so that said tank is below said housing means at all positions of said moving rear assembly.

5,349,996

BAG FILLING APPARATUS HAVING DUST-TIGHT SPOUT

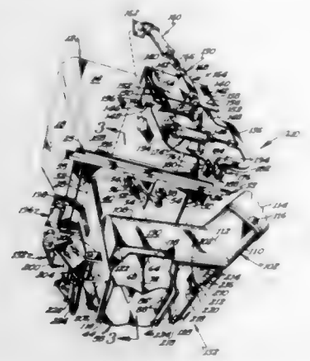
Harold R. McGregor, 645 Riverwood Dr., Owatonna, Minn. 55060

Filed Jul. 27, 1992, Ser. No. 919,934
Int. Cl.[5] B65B *1/04*
U.S. Cl. 141—314 3 Claims

1. In a bag filling machine for filling a product into a bag having an interior region and a generally open top and a top edge, said bag filling machine being of a type having a hopper, a spout suspended beneath said hopper onto which said bag is mounted, a bag gripping assembly for maintaining said bag on said spout, and at least one dust collector disposed between said bag gripping assembly and said spout, said bag gripping assembly having a pair of bag gripping arms including a pair of bag gripping members for gripping said top edge of said bag, said pair of bag gripping arms being mounted for pivotal movement in a lateral direction toward and away from said spout, said dust collector having an outer surface disposed opposing said spout, the improvement comprising:
at least one cushion, said cushion being connected to at least one of the pair of bag gripping arms and oriented such that

said cushion contacts the outer surface of the dust collector when the pair of bag gripping arms are moved laterally toward the spout,

whereby the contact between the cushion and the outer surface of the dust collector controls and limits a maximum extent of the lateral movement of the pair of bag gripping arms toward the spout,



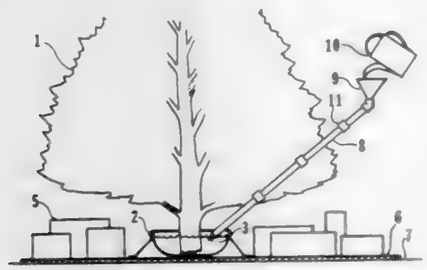
wherein the at least one cushion is mounted for movement relative to the bag gripping arms such that the bag gripping arms are displaced a predetermined distance from the outer surface of the dust collector when the pair of bag gripping arms are moved the maximum extent laterally toward the spout, and such that said predetermined distance may be selectively adjusted by moving the at least one cushion relative to the bag gripping arms.

5,349,997

SYSTEM FOR WATERING INSIDE TREES

Craig H. Rial, 906 Seven Oaks Rd., Chester Springs, Pa. 19425

Filed Nov. 9, 1993, Ser. No. 149,381
Int. Cl.[5] A47G *33/12*
U.S. Cl. 141—331 **3 Claims**



1. An economical watering system for easily filling tree watering stands from outside the perimeter of the tree without the danger of spilling water on valuable packages or the floor and floor coverings that are generally beneath said tree watering stands; comprising

a multi-segment tube having individual tube segments each with one end having an overlapping tubular coupling which when coupled at said couplings form a water delivery tube assembly that is approximately three to four feet in length adapted to penetrate through the limbs of said tree to deliver water to said watering stand at the base of said tree;

an elastic cord inside said tube assembly;

said multiple segment tube held together by said elastic cord which runs through the inside of said segments, and said cord is fastened under tension at both ends of said multi-segment tube so as to draw and hold together said segments and said overlapping tube couplings;

said overlapping tube couplings having a diameter sized when said coupling interconnects with a respective other end of a segment to avoid frictional interference when said multiple tube segments are being held by said elastic cord;

a receiving funnel;

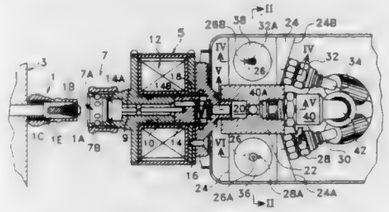
said outermost end segment of said multiple tube segments having said receiving funnel with said funnel mounted at a 45 degree angle to said outermost end segment to make said receiving funnel near vertical and said funnel adapted to receive water after the entire watering assembly is placed between the tree limbs at approximately a 45 degree angle to the tree trunk, and directing water to the watering stand at the base of said tree.

5,349,998

INJECTOR MANIFOLD VALVE CAPABLE OF PREVENTING LEAKS INTO THE ENVIRONMENT, FOR COOLANT GASES

Giovanni Gonfiantini, Pistoia, Italy, assignor to Galileo Vacuum Tec S.p.A., Florence, Italy

Filed Nov. 12, 1992, Ser. No. 975,458
Claims priority, application Italy, Nov. 15, 1991, FI91A 273
Int. Cl.[5] B65B *3/00*
U.S. Cl. 141—351 **8 Claims**



1. An injector for filling confined spaces of systems, comprising:

a connector communicating with a confined volume having the confined space;

a connector valve regulating fluid flow through said connector;

a quick-release coupling, said quick release coupling positioned between said control unit and said connector for connection to said connector;

a passage leading from said quick-release coupling;

control unit means for opening said connector valve independently of the connection status of said quick release coupling

a manifold connected to said passage;

a fluid supply pipe connected to said manifold;

a vacuum source pipe connected to said manifold;

a suction recovery pipe connected to said manifold;

a fluid supply connection connected to an end of said fluid supply pipe, opposite said manifold;

a vacuum source connection connected to said vacuum source pipe at an end of said vacuum source pipe opposite said manifold;

a suction recovery connection connected to said suction recovery pipe at an end of said suction recovery pipe opposite said manifold;

a fluid supply valve connected to said fluid supply connection;

a vacuum source valve connected to said vacuum source connection; and

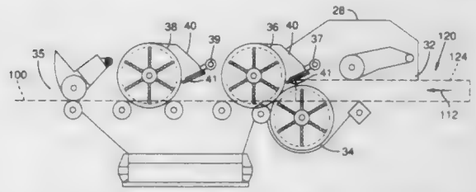
a suction recovery valve connected to said suction recovery connection, said fluid supply valve, said vacuum source valve said suction recovery valve and said connector valve cooperating to delimit a dead space and thereby defining means to allow discharge, extraction, or recovery of a pollutant fluid from said dead space independent from discharge, extraction or recovery of pollutant fluid from the confined volume of said system.

5,349,999

MOBILE COMBINATION DEBARKING/CHIPPING MACHINE

Arnold N. Peterson, Eugene, and Larry A. Sprague, Pleasant Hill, both of Oreg., assignors to Peterson Pacific Corp., Eugene, Oreg.

Filed May 24, 1993, Ser. No. 65,708
Int. Cl.[5] B27L *7/00, 1/00*
U.S. Cl. 144—208 J **8 Claims**



1. A mobile combination debarking/chipping machine comprising:

a single chassis mounted on wheels supporting the chassis in elevated relation on a surface, and adapted to be transported between logging sites, said chassis being elongated with opposed ends and opposed sides and adapted to carry a sequence of machinery between its ends;

a chipping unit mounted on the chassis near one end, a debarking unit mounted on the chassis near the other end and a conveyor system provided on the chassis for conveying a bundle of logs along a forwardly directed feed path into and through the debarking unit where the logs are debarked, said feed path then crossing a spacing whereat loose bark is removed from the logs and then into the chipping unit where the debarked logs are reduced to chips, said debarking unit comprising;

a single rotatable bottom flailing member positioned below the feed path with rotating flails on the member being projected into the feed path to remove bark from the bottom half of the logs;

a first rotatable upper flailing member positioned above the feed path, said first upper flailing member having flails projecting into the feed path, said first upper flailing member and said bottom flailing member cooperatively removing a major portion of the bark provided on said logs; and

a second rotatable upper flailing member positioned above the feed path, said second upper flailing member having flails projected into the feed path, said second upper flailing member positioned forward of the first upper flailing member for removing attached and loose bark on the upper half of the logs not removed by the first upper flailing member.

5,350,000

INFLATABLE MULTI-AIR-BAG COVER FOR CARS

S. B. Wang, 7F, No. 18, Hsin Kuo Road, Sanmin District, Kaohsiung City, Rep. of Korea

Filed Feb. 2, 1994, Ser. No. 190,369
Int. Cl.[5] B65D *65/02*
U.S. Cl. 150—166 **1 Claim**

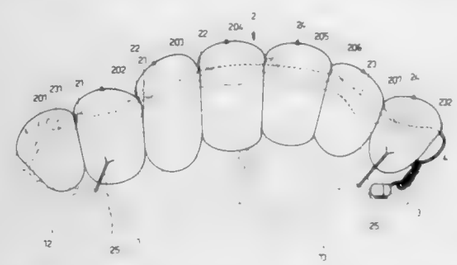
1. An inflatable multi-air-bag cover for cars, comprising:

a plurality of air bags which are arranged and heat-sealed together in parallel to each other and have two downward bent and extended sides, giving said cover a hood-like configuration;

a pressure valve provided on each of said heat-sealed portions between every two of said air bags;

a discharge valve provided on each of said air bags for separately discharging said air bags;

an unperforated air tube being disposed inside said cover by passing through said air bags via heat-sealed portions between every two of said air bags; said air tube having a first end projecting out of one of said air bags located at a first end of said cover, and a second end extending into one of said air bags located at a second end of said cover; said first end of said air tube being detachably connected to an inflation hose connected to an air compressor for



sending air into said air bag at said second end of said cover, such that said air bags are sequentially inflated by air passing through said pressure valves and finally form said hood-like cover to automatically cover a car; and

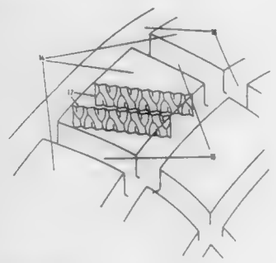
fastening straps with hooking means connected to free ends thereof being provided at predetermined positions on said cover for securing said cover to said car.

5,350,001

TIRE HAVING A TREAD SURFACE WITH FINE CUT-OUTS AT THE TIRE TREAD SURFACE

Otto Beckmann, Traiskirchen; Helmut Loidl, Sparbach, and Ernst Petraschek, Modling, all of Austria, assignors to Semperit Reifen Aktiengesellschaft, Traiskirchen, Austria

Filed May 20, 1992, Ser. No. 885,964
Claims priority, application Austria, May 21, 1991, 1029/91
Int. Cl.[5] B60C *11/12*
U.S. Cl. 152—209 R **24 Claims**



1. A tire comprising:

a tread surface defining a circumferential direction and having a predetermined profile formed by profile elements;

said profile elements extending in said circumferential direction;

said profile elements including lamella fine cut-outs

said lamella fine cut-outs defining wall regions deviating from a planar shape;

said wall regions including at least partially three-dimensionally structured wall regions which are associated to each other and comprise protruding and receding edges and surfaces;

said edges of said three-dimensionally structured wall regions define a network of said edges; and

said network of edges further comprising respective pluralities of at least three of said edges, each of said at least three edges branching from a common area in a respective different direction.

5,350,002

ASSEMBLY AND METHOD FOR MAKING A PATTERN OF A HOLLOW COMPONENT

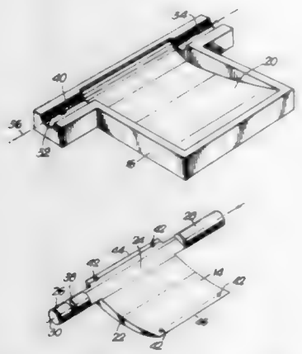
Keith Orton, Derby, England, assignor to Rolls-Royce plc, Derby, England

Filed Jan. 26, 1993, Ser. No. 9,071

Claims priority, application United Kingdom, Feb. 20, 1992, 9203585

Int. Cl.[5] B22D *29/00*

U.S. Cl. 164—24 **33 Claims**



1. An assembly for making a pattern of a hollow component, the assembly comprising a die and a noncircular core which is located within and is in spaced relationship from the die to define the internal shape of a pattern of a hollow component, the noncircular core having two shaped projections which locate in correspondingly shaped apertures in the die, the projections extending from opposite ends of the noncircular core, both of the projections of the noncircular core and the corresponding apertures in the die having a portion that is curved to allow relative rotation between the die and the noncircular core to control the spacing between the die and the noncircular core, each portion having an axis of rotation, the axes of rotation of said projections sharing a common axis and the apertures in said die sharing a common axis.

5,350,003

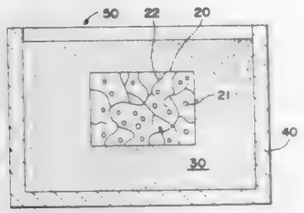
REMOVING METAL FROM COMPOSITE BODIES AND RESULTING PRODUCTS

Birol Sonuparlak; William B. Johnson, both of Newark, and Ali S. Fareed, Wilmington, all of Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Filed Jul. 9, 1993, Ser. No. 90,352

Int. Cl.[5] B22D *19/02, 19/14*

U.S. Cl. 164—91 **65 Claims**



1. A method for removing at least one metallic component of a metallic constituent contained within a fiber reinforced ceramic matrix composite body comprising:

contacting at least a portion of at least one surface of said fiber reinforced ceramic matrix composite body with at least one permeable mass comprising at least one material selected from the group consisting of at least one filler material and at least one preform of at least one filler material; and

spontaneously infiltrating at least a portion of the at least one permeable mass with at least one metallic component of a metallic constituent of the fiber reinforced ceramic matrix composite body, thereby reducing the amount of said at least one metallic component in the fiber reinforced ceramic matrix composite body.

5,350,004

RIGIDIZED FILLER MATERIALS FOR METAL MATRIX COMPOSITES AND PRECURSORS TO SUPPORTIVE STRUCTURAL REFRACTORY MOLDS

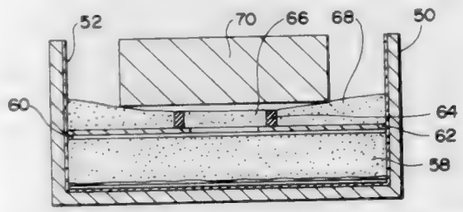
Michael A. Rocazella; Kurt J. Becker, and Michael K. Aghajanian, all of Newark, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

PCT No. PCT/US91/03233, § 371 Date Jan. 8, 1993, § 102(e) Date Jan. 8, 1993

PCT Filed May 9, 1991, Ser. No. 971,850

Int. Cl.[5] B22D *19/14*

U.S. Cl. 164—97 **20 Claims**



17. A method for making a metal matrix composite comprising:

providing at least one permeable mass comprising at least one filler;

at least partially surrounding said at lest one permeable mass with at least one precursor to at least one supportive structural refractory material which contacts at least a portion of at least one exterior surface of said at lest one permeable mass;

providing at least one matrix metal;

providing at least one material comprising at least one of at least one infiltration enhancer precursor and at least one infiltration enhancer to at least one of said at least one permeable mass and said at least one matrix metal;

providing at least one infiltrating atmosphere;

causing said at least one precursor to at least one supportive structural refractory material to become at least one supportive structural refractory material;

causing said at least one matrix metal to become molten; and

spontaneously infiltrating at least a portion of said at least one permeable mass.

5,350,005

CONTROL DEVICE FOR CONTROLLING MOLD OSCILLATION IN A CONTINUOUS CASTING MACHINE

Kenichi Sorimachi, Chiba; Hirokazu Tozawa, Okayama; Toshiaki Ochi, and Yasuhito Itoh, both of Ehima, all of Japan, assignors to Kawasaki Steel Corporation, Kobe and Sumitomo Heavy Industries, Ltd., Tokyo, both of Japan

Filed May 21, 1993, Ser. No. 64,436

Claims priority, application Japan, May 21, 1992, 4-128502

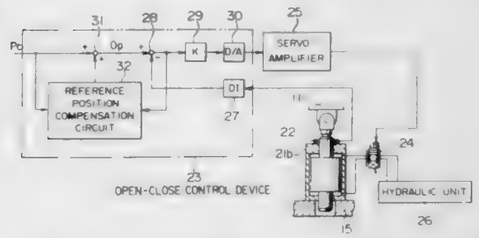
Int. Cl.[5] B22D *11/04, 11/07*

U.S. Cl. 164—154.1 **7 Claims**

1. A control device for controlling horizontal oscillation on a mold into which molten metal is poured in a continuous casting machine, said mold having a mold frame; two long-side plates opposed with each other; and two short-side plates extending orthogonal to said long-side plates, each of said long-side plates being movably attached to said mold frame such that they can move horizontally through hydraulic cylinders and each of said hydraulic cylinders having a piston rod, wherein said control device comprising:

position detecting means attached to said piston rod for detecting an actual position of said long-side plates to produce an actual horizontal position signal representing the detected actual position of said long-side plates;

open-close control means connected to said position detecting means, supplied with a target horizontal position command, and given to a predetermined offset value, for producing a control signal by using said target horizontal position command, said actual horizontal position signal, and said predetermined offset value, said target horizontal



position command representing a target horizontal position of said long-side plates and said target horizontal position varies from a target close position up to a target open position indicated as a function of time, said control signal indicating a deviation between said target horizontal position and said detected actual horizontal position, said open-close control means making said deviation to be equal to said predetermined offset value when said target horizontal position is equal to said target close position; and

driving means, connected to said open-close control means and said hydraulic cylinders, for driving said hydraulic cylinders according to said control signal.

5,350,006

DEVICE FOR SPRAYING MOLD RELEASE AGENT AND FEEDING MOLTEN METAL

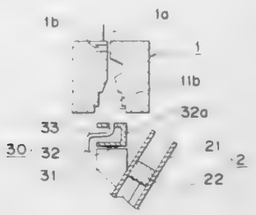
Takashi Hanano, Kobe, Japan, assignor to Hanano Corporation, Hyogo, Japan

Filed Jul. 8, 1993, Ser. No. 87,318

Claims priority, application Japan, Sep. 14, 1992, 4-244988

Int. Cl.[5] B22D *17/20*

U.S. Cl. 164—267 **4 Claims**



1. A device for spraying a mold-release agent onto inside surfaces of a metal mold of a mold casting device and for feeding molten metal into the mold comprising (a) a nozzle for spraying the mold release agent, (b) a holding body carrying the nozzle, and (c) a feeder having a sleeve for feeding molten metal into the mold, wherein the holding body and the sleeve can alternatively extend to and fit in an opening of the mold casting device, and wherein the nozzle is extendible from the holding body to a desired length and turnable in a desired direction.

5,350,007

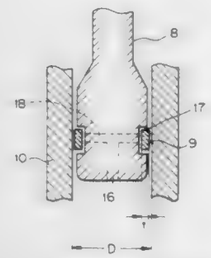
INJECTION APPARATUS FOR A HOT-CHAMBER DIE-CAST MACHINE

Isao Miki; Hisao Isogai; Masao Saito; Toru Yamanashi; Toshiyuki Kawai; Akinami Saito; Sadanori Ishikawa, all of Ihara; Masahiko Konno, and Keiichi Okada, both of Tsurugashima, all of Japan, assignors to Nippon Light Metal Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1993, Ser. No. 95,094

Int. Cl.[5] B22D *17/04*

U.S. Cl. 164—316 **8 Claims**



1. An injection apparatus of a hot-chamber die-cast machine comprising:

a cylindrical sleeve;

a plunger body slidingly movably disposed in said sleeve and having at least one circumferential groove on an outer cylindrical surface thereof and passages extending from a pressurizing face to said circumferential groove;

divided seal rings loosely fit in said circumferential groove of said plunger body, in such a manner that said divided rings are urged radially outwardly by a pressure of a molten metal in said sleeve through said passages when said plunger body is moved; and

said divided rings satisfy the following conditions,

$$t^3 \leqq 4.5 \times 10^2\ (mm) \times D^2 \times P/E$$

where t: thickness (mm) of the divided rings, E: Young's modulus (Pa) of the divided rings, D: inner diameter (mm) of the sleeve, and P: pressure (Pa) which should be exerted to the molten metal when injected.

5,350,008

MOLD ASSEMBLY FOR THERMO-MOLD CONTINUOUS CASTING

Jia-Chin Liu; Shu-Fahr Chang; Shyue-Sheng Wu, and Yen-Cheng Cheng, all of Hsinchu, Taiwan, assignors to Industrial Tech. Research Institute, Hsinchu, Taiwan and OCC Research Center Inc., Tokyo, Japan

Filed Jul. 30, 1993, Ser. No. 100,910

Int. Cl.[5] B22D *11/00*

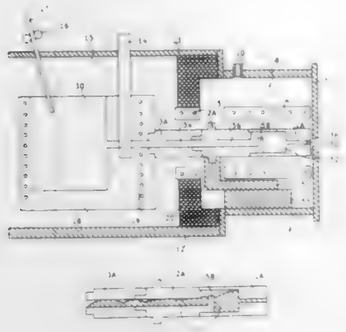
U.S. Cl. 164—440 **10 Claims**

1. A mold assembly in a thermo-mold continuous casting apparatus which has a casting furnace and a thermo-mold chamber provided with an outlet and is adapted to cast a metal comprising:

a first mold member adapted to be mounted within said thermo-mold chamber and having two ends one of which is adapted to be positioned adjacent to said outlet and provided with a first cavity therein and the other of which is provided with a second cavity therein communicating with said first cavity in said one end; and

a second mold member adapted to be mounted within said thermo-mold chamber, connected to said the other end, and being provided with a cavity channel therein communicating with said second cavity, characterized in that said

mold assembly further includes means for separating a residual metal in said first and second mold members



when a casting procedure in said thermo-mold continuous casting apparatus is stopped.

5,350,009

TWIN ROLL-TYPE SHEET CONTINUOUS CASTING METHOD AND APPARATUS

Toshiaki Mizoguchi; Kiyomi Shio; Yoshiyuki Ueshima; Kazumi Yasuda; Yoshio Morimoto; Hiromitu Haga, and Kenichi Miyazawa, all of Futtsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

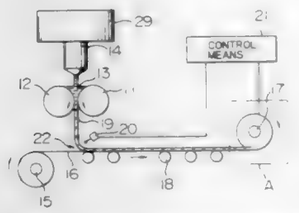
PCT No. PCT/JP92/00483, § 371 Date Dec. 21, 1992, § 102(e) Date Dec. 21, 1992, PCT Pub. No. WO92/18272, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 16, 1992, Ser. No. 971,922

Claims priority, application Japan, Apr. 19, 1991, 3-088364; Jan. 24, 1992, 4-010625; Jan. 24, 1992, 4-011083

Int. Cl.[5] B22D *11/06, 11/128, 11/20*

U.S. Cl. 164—454 **15 Claims**



1. A twin roll-type sheet continuous casting method comprising the steps of:

continuously casting molten metal, supplied from a nozzle, into a sheet by a pair of horizontally-disposed casting rolls;

placing said sheet discharged from said casting rolls on a support sheet extending below said pair of casting rolls;

continuously transferring said cast sheet on said support sheet towards a coiler; and

taking up said support sheet, having said cast sheet placed thereon, by said coiler.

4. A twin roll-type sheet continuous casting apparatus comprising:

a nozzle for supplying molten metal;

a pair of casting rolls for casting said molten metal, supplied from said nozzle, into a sheet, said casting rolls being horizontally disposed in parallel relation to each other, and being cooled, and being rotated in opposite directions, respectively;

a coiler; and

a movable support sheet extending substantially horizontally below said pair of casting rolls, said support sheet being positioned for receiving said cast sheet discharging from said casting rolls and for continuously transferring said cast sheet towards said coiler, said support sheet with said cast sheet placed thereon being taken up by said coiler.

5,350,010

METHOD OF PRODUCING PLANOGRAPHIC PRINTING PLATE SUPPORT

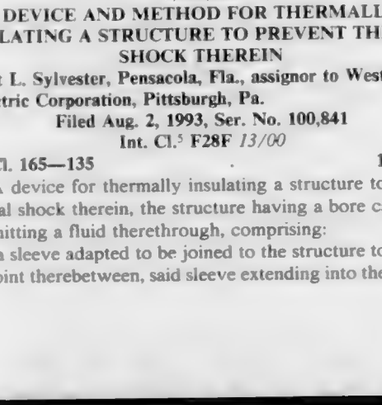
Hirokazu Sawada; Tsutomu Kakei; Masaya Matsuki, and Akio Uesugi, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 12, 1993, Ser. No. 89,562

Claims priority, application Japan, Jul. 31, 1992, 4-223534; Sep. 3, 1992, 4-258888; Apr. 16, 1993, 5-112404

Int. Cl.[5] B22D *11/06*

U.S. Cl. 164—476 **10 Claims**



1. A method of producing a planographic printing plate support, comprising the following steps:

continuously casting molten aluminum into an aluminum thin plate in a forward direction;

continuously casting molten aluminum into an aluminum thin plate in a forward direction;

cold rolling said plate so that said plate is of a predetermined thickness;

heating said plate;

flattening said plate so that said plate has a predetermined flatness; and

roughening a surface of said plate, wherein the Fe content of said plate is selected to be in a range of from 0.4 weight % to 0.2 weight %, the Si content is selected to be in a range of from 0.02 weight % to 0.05 weight %, the Cu content is selected to be in a range of not larger than 0.02 weight %, and the Al purity is selected to be not smaller than 99.5 weight %, and wherein after continuous casting, Fe in a range of from 20 weight % to 90 weight % of the Fe total content exists in a grain boundary and the rest of Fe exists as a solid solution in grains.

5,350,011

DEVICE AND METHOD FOR THERMALLY INSULATING A STRUCTURE TO PREVENT THERMAL SHOCK THEREIN

Robert L. Sylvester, Pensacola, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

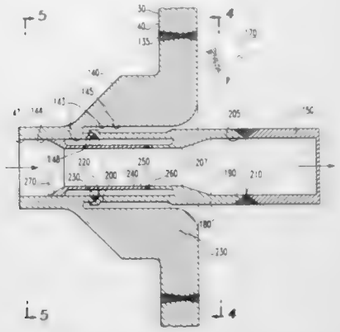
Filed Aug. 2, 1993, Ser. No. 100,841

Int. Cl.[5] F28F *13/00*

U.S. Cl. 165—135 **12 Claims**

1. A device for thermally insulating a structure to prevent thermal shock therein, the structure having a bore capable of transmitting a fluid therethrough, comprising:

(a) a sleeve adapted to be joined to the structure to define a joint therebetween, said sleeve extending into the bore for thermally insulating the structure as the fluid is transmitted through the bore; and



(b) a liner disposed in said sleeve and covering the joint for thermally insulating the joint as the fluid is transmitted through the bore.

5,350,012

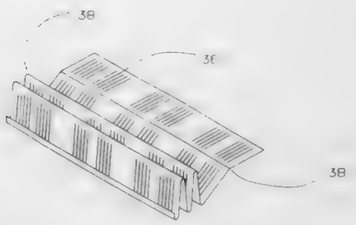
ROTARY FIN MACHINE

Kazimierz Sadowski, Ransomville; Donald Ziemendorf, Sanborn; Robert Carlo, Ransomville, and Gary Kochems, North Tonawanda, all of N.Y., assignors to Voss Manufacturing, Inc., Sanborn, N.Y.

Filed Aug. 21, 1992, Ser. No. 934,011

Int. Cl.[5] F28D *1/02*

U.S. Cl. 165—152 **6 Claims**



1. A serpentine louvered heat exchange element comprising a folded metallic strip having a length and width wherein the length is over ten times the width prior to being folded, said strip having back and forth folds with legs having substantially equal lengths defined therebetween, a plurality of said legs being provided with louvres having openings which allow the passage of fluid, each of said folds having a fold apex with an observable preformed fold arc characterized by an observable fold line at a junction of the preformed fold arc with the remainder of the fold.

5,350,013

MANDREL OPERATED TORQUE ANCHOR

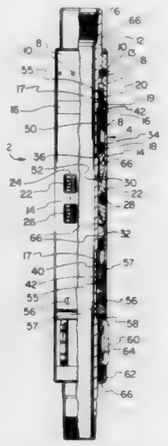
Bill Jani; Thomas Garay, and John Ravensbergen, all of Calgary, Canada, assignors to Variperm (Canada) Limited, Alberta, Canada

Filed Aug. 31, 1993, Ser. No. 115,341

Int. Cl.[5] E21B *23/00*

U.S. Cl. 166—217 **13 Claims**

1. In a mandrel-operated tension torque anchor for insertion into the casing of a well to anchor the pipe string from rotation and vertical movement, the anchor comprising a tubular anchor frame including a drag block means, a plurality of slips having upper and lower feet mounted within a slip cage secured to the frame, each of said slips actuable by pairs of cones associated with the frame and movable longitudinally relative thereto into anchoring position under the feet of the slips to force the feet outwardly into anchoring position engaging walls of the casing, so as to prevent rotary and vertical movement of the anchor frame in the casing, actuation means to cause the cones and slips to move relatively together into that anchoring position, and an emergency release assembly for disassociating the anchor from the casing on tension being applied to the mandrel; the improvement characterized in that



the actuation means comprises drive means operatively secured to the mandrel so as to rotate therewith and isolate the emergency release assembly from the setting force applied to the slips, the drive means threadably secured to the frame so as to cause movement of the cones into anchoring position upon rotation of the mandrel in one direction.

5,350,014

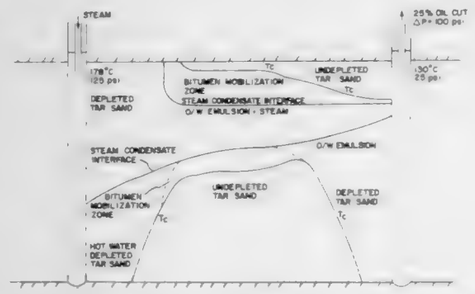
CONTROL OF FLOW AND PRODUCTION OF WATER AND OIL OR BITUMEN FROM POROUS UNDERGROUND FORMATIONS

Alexander S. McKay, South Lake Tahoe, Calif., assignor to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Filed Feb. 26, 1992, Ser. No. 842,059

Int. Cl.[5] E21B *43/24*

U.S. Cl. 166—263 **14 Claims**



5. In the production of oil or bitumen from an underground formation containing said oil or bitumen in the presence of water or wherein said oil or bitumen formation is in direct contact with a water-containing or producing formation and wherein a hot aqueous fluid is introduced into said oil or bitumen-containing formation to move or drive the oil or bitumen therein to a production well for recovery and wherein after a period of time substantially only aqueous fluid at a temperature Td is produced and recovered at said production well with no

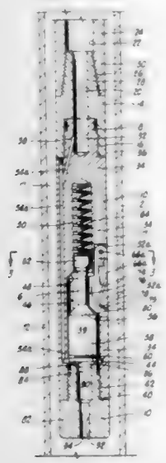
substantial production of oil or bitumen, the improvement which comprises introducing hot water or steam into said oil or bitumen-containing formation to drive or produce additional oil or bitumen from said formation toward and into said production well for recovery therefrom, the temperature of the thus-produced oil or bitumen being at or above the temperature Tc, Tc being higher than the temperature Td and being the minimum temperature for the produced oil or bitumen, in the form of an oil-in-water emulsion, to flow through the formation from which the oil or bitumen is produced through said production well and maintaining the temperature of thus-produced oil or bitumen recovered at said production well at a temperature not lower than or greater than the temperature Tc.

5,350,015

ROTARY DOWNHOLE CUTTING TOOL

Charles D. Hailey, 11628 Burning Oaks, Oklahoma City, Okla. 73150

Filed Jun. 30, 1993, Ser. No. 85,394
Int. Cl.[5] E21B *29/00*
U.S. Cl. 166—55.8 **5 Claims**



1. In a downhole cutting tool of the type that is suspended by fluid conducting continuous tubing and responsive to increased fluid pressure to effect a tubular goods cutting operation, the apparatus comprising:

an elongate body of revolution having a sidewall, upper end and lower end with the upper end connected to said tubing, said body having an axial cylinder cavity disposed adjacent the lower end and a reduced bore axially communicating downhole;

plural, equi-spaced longitudinal slots formed radially to extend outward from the cylinder cavity through the body sidewall;

plural, generally flat cutter bars pivotally suspended in each of said plural longitudinal slots, each cutter bar having a pivot hole at the upper end and extending downward to form a linear camming surface at the lower, radially inward edge, while the radially outward edge is formed as a cutter blade extending into a hook and point portion;

a piston member disposed slidably in the lower portion of the body axial cylinder cavity, said piston member having an upper camming shoulder extending upward axially to form a piston rod and foot end;

a compression spring disposed in said axial cylinder cavity and seated against said piston member end to maintain downward spring pressure;

plural porting means in said body of revolution directing fluid under pressure from the body upper end down to the body lower end for communication with said axial cylinder cavity below the piston member;

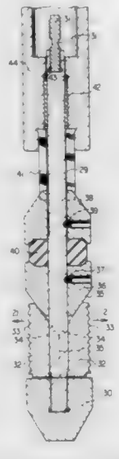
whereby sufficiently increased fluid pressure forces the piston member upward while urging the piston member upper camming shoulder against the plural cutter bar linear camming surfaces thereby to force the cutter bars outward into cutting contact with surrounding tubular goods.

5,350,016

WELLBORE ANCHOR

Willie H. Thornton, Jr., Fort Worth, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 23, 1993, Ser. No. 109,894
Int. Cl.[5] E21B *23/04*
U.S. Cl. 166—120 **30 Claims**



1. A wellbore anchor tool having a long axis, said tool comprising a mandrel extending along said long axis for at least part of the length of said tool, at least one pair of individual slip segments, each individual slip segment having first and second opposing sides, said first side having a plurality of slip wickers thereon, said second side having a cavity therein, said cavity extending along at least part of said second side so that each individual slip segment mates with and wraps partially around said mandrel along said long axis of said tool, said pair of slip segments in combination when mated with said mandrel in opposing relationship wrapping essentially around said mandrel, each individual slip segment having on its cavity side a slanted surface which extends away from said mandrel toward said first side thereby defining a sloping drive surface on said slip segment, said slanted surface and opposing mandrel defining a drive opening which narrows as said drive surface approaches said mandrel, at least one drive member carried by said mandrel, said drive member having a sloping surface which mates with said drive surface of said slip segments so that when said drive member is forced into said drive opening said slip segments are moved transverse to said long axis, each said slip segment carrying at least one retaining member for holding said slip segment in said tool and in slidable engagement with said tool.

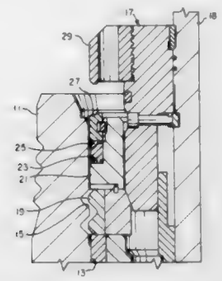
5,350,017

ELASTOMERIC SEAL WITH REINFORCING RING

Herman O. Henderson, Jr., Houston, Tex., assignor to ABB Vetco Gray Inc., Houston, Tex.

Filed Apr. 9, 1993, Ser. No. 45,405
Int. Cl.[5] E21B *23/02*
U.S. Cl. 166—208 **18 Claims**

1. In an oil well apparatus which is lowered into and retrieved from a well, the apparatus having a cylindrical shoulder wall which locates within a cylindrical inner wall of an outer tubular member of the well, an elastomeric seal carried by the apparatus and having an outer surface for sealing against the inner wall and an inner surface sealing against the shoulder wall of the apparatus, energizing means acting axially on the seal for moving the outer surface of the seal radially outward to an engaged position in sealing engagement with the inner wall, the improvement comprising:



an annular nonexpansible reinforcing ring embedded within the seal to prevent stretching of the inner surface of the seal when the apparatus is retrieved from the well, the reinforcing ring being located within the seal at a point closer to the inner surface of the seal than the outer surface of the seal and the outer surface of the seal being free of any radial expansion restraining structure so as to allow the outer surface of the seal to freely move outward to the engaged position.

5,350,018

WELL TREATING SYSTEM WITH PRESSURE READOUT AT SURFACE AND METHOD

Robert M. Sorem, Sugar Land, Tex.; David M. Eslinger, Broken Arrow, Okla.; Hubertus V. Thomeer; Darrin Willauer, both of Houston, Tex., and Sarmad Adnan, Alvin, Tex., assignors to Dowell Schlumberger Incorporated, Sugar Land, Tex.

Filed Oct. 7, 1993, Ser. No. 133,631
Int. Cl.[5] E21B *33/124, 33/127, 47/06, 47/12*
U.S. Cl. 166—250 **22 Claims**



1. A well treating system where downhole variables such as pressure and temperature are made available at the surface in real time, comprising: a tubular body adapted to be lowered into the well on a running string; inflatable packer means on said body for isolating a zone of the well; valve means operatively associated with said body for allowing packer inflation, fluid circulation, fluid injection and packer deflation; a plurality of transducers in said body for sensing said variables and providing signals representative thereof; transmission means connected to each of said transducers and including switching means for sampling the output of each of said transducer means; electrical conductor cable means extending through said running string from the surface to said telemetry means; and means connected to said cable at the surface for processing said signals and providing a real time display of each of said variables.

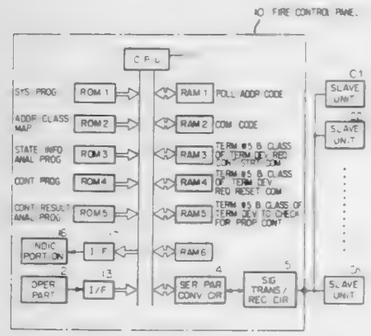
6. A method of treating a well zone with a tool string run on coiled tubing and providing a surface read out of at least one downhole measurement during said treating, comprising the steps of: positioning an electrical conductor throughout the length of said coiled tubing; placing said coiled tubing on the reel of a coiled tubing unit; bringing said conductor to the outside of the inner end of said coiled tubing where said conductor can be hooked up to a read-out device; connecting the outer end of said coiled tubing to a tool string that can be operated downhole to isolate the zone to be treated; electrically connecting the outer end of said conductor to transducer means for making said measurement; lowering said tool string into the well on said coiled tubing and operating said tool string to isolate said well zone; performing a treating operation in said well zone; making a measurement with said transducer means in connection with said treating operation; and obtaining a surface read out of said measurement via said conductor.

5,350,019

FIRE PROTECTION SYSTEM

Akira Igarashi, Tokyo, Japan, assignor to Nohmi Bosai Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP87/00654, § 371 Date Dec. 4, 1987, § 102(e) Date Dec. 4, 1987, PCT Pub. No. WO88/01521, PCT Pub. Date Mar. 10, 1988
Continuation of Ser. No. 408,431, Sep. 14, 1989, abandoned, which is a continuation of Ser. No. 141,663, Dec. 4, 1987, abandoned. This PCT application Sep. 2, 1987, Ser. No. 68,309 Claims priority, application Japan, Sep. 5, 1986, 61-210469
Int. Cl.[5] A62C *37/40*
U.S. Cl. 169—61 **3 Claims**



1. A fire protection system comprising a control panel coupled to a plurality of slave units each equipped with a plurality of control circuits for respectively generating control signals to a plurality of fire prevention/detection units, each of said fire prevention/detection units being controlled according to said control signals received from a corresponding one of said control circuits, said slave units each being further equipped with timer means which is activated in response to a command received from said control panel to generate an output for a predetermined period of time, a duration of activation of at least one of said fire prevention/detection units being controlled according to said output from said timer means via said control circuits, said control panel including means for calling

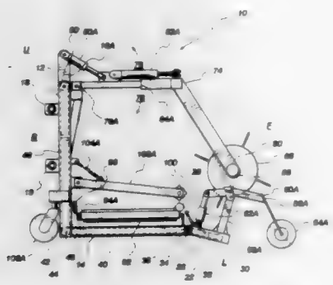
said slave units according to a polling method, said fire prevention/detection units including a fire detector, a fire door control device, a smoke venting control device and a fire shutter control device, wherein the command between said control panel and each corresponding slave unit is not maintained during the predetermined period of time in which said timer means of said each corresponding slave unit is activated in response to the command received from said control panel.

5,350,020

MULTI-CROP HARVESTER/WINDROWER IMPLEMENT

Billie C. Vandever, and Vicki Vandever, Rte. 1, Box 1402, Heyburn, Id. 83336

Filed Jun. 29, 1992, Ser. No. 905,621
Int. Cl.[5] A01D *31/02, 33/10*
U.S. Cl. 171—26 **19 Claims**



1. A farm implement having interchangeable crop dissociating attachments for harvesting crops comprising:

a frame having a plurality of horizontal arms attached thereto each having releasable fastener means for alternately engaging various attachments;

crop dissociating attachments alternately attachable to said frame for harvesting said crops including,

a rod weeder attachment for uprooting crops comprising,

a plurality of horizontal arm extension for removable attachment of said rod weeder attachment to said horizontal arms by engagement of said releasable fastener means,

a square shaft rotatably attached to said horizontal arm extensions,

adjustment means for adjusting the altitude of said square shaft with respect to the roots of a crop, and

means for directing uprooted crops away from said square shaft, and

a sickle attachment, attachable to said frame when said rod weeder is detached from said frame, for severing the stalks of a crop comprising,

a plurality of horizontal arm extension for removable attachment of said sickle attachment to said horizontal arms by engagement of said releasable fastener means,

a sickle blade movably attached to said horizontal arm extensions,

adjustment means for adjusting the altitude of said sickle blade with respect to the stalks of crop, and

means for directing severed crops away from said sickle blade,

attachment drive means attached to said frame for urging said crop dissociating means to dissociate a crop from a field, said attachment drive means being adapted to attach to said rod weeder attachment to urge said square shaft to rotate, and to said sickle attachment to urge said sickle blade to move.

12. A farm implement for harvesting and windrowing a crop comprising:

a frame having a plurality of horizontal arms extending therefrom and a hitch for mounting said implement to a tractor said frame being adapted to alternately receive various crop dissociating means;

crop dissociating means detachably attached to said horizontal arms for dissociating said crop from a field;

a draper belt horizontally disposed in said frame for moving said dissociated crop laterally with respect to said dissociating means, said raper belt comprising an endless belt rotatable around end rollers;

draper belt drive means attached to said frame and drivingly interconnected to at least one of said end rollers for urging said draper belt to rotate around said end rollers;

a reel rotatingly attached to said frame having a plurality of rode protruding therefrom, said rods for engaging said dissociated crop and transferring it to said draper belt;

reel drive means attached to said reel and said frame for urging said reel to rotate around a reel rotational axis;

first adjusting means attached to said frame for adjusting the altitude of said crop dissociating means with respect to said crop; and

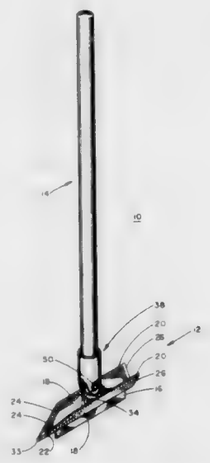
second adjusting means attached to said frame for pivotally adjusting the altitude of said reel with respect to said crop dissociating means.

5,350,021

CREVICE CLEANING IMPLEMENT FOR PAVEMENT AND THE LIKE

Stafford B. Walker, 10057 Avenida Magnifica, San Diego, Calif. 92131

Filed Apr. 5, 1993, Ser. No. 43,942
Int. Cl.[5] A01D *34/84*
U.S. Cl. 172—13 **6 Claims**



1. An implement for cleaning spaces between adjacent slabs of paving materials, said implement comprising:

a substantially planar pilot member proportioned to fit into the spaces between the adjacent slabs of paving materials;

a pair of flange members forming a V-shape having an apex;

said pilot member and said pair of flange members being joined such that said pilot member extends away from the exterior of said apex of said V-shape;

a handle that extends away from the interior of said apex of said V-shape: and

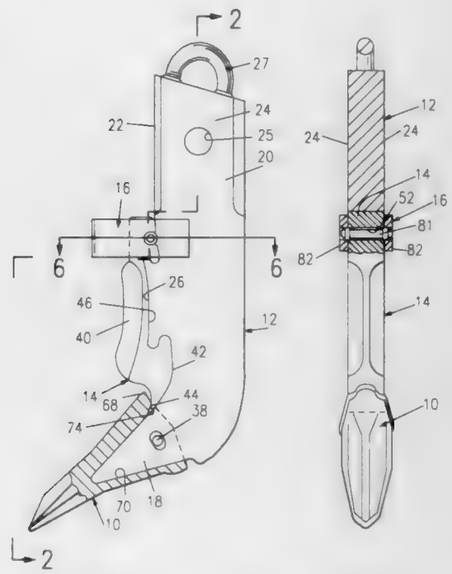
pivot means for providing a pivoting movement between: said pair of flange members and said pilot member; and said handle.

5,350,022

ATTACHMENT ASSEMBLY FOR WEAR CAPS RIPPER TEETH

Richard L. Launder, Whittier, Calif., and Charles Clendenning, Broken Arrow, Okla., assignors to H & L Tooth Company, Montebello, Calif.

Filed Jul. 22, 1992, Ser. No. 918,662
Int. Cl.[5] A01B *13/08, 23/02*
U.S. Cl. 172—700 **16 Claims**



1. An attachment assembly for securing a ripper tooth having an open cavity in the base thereof to an earth excavation device, said assembly comprising:

a substantially "J"-shaped ripper shank defining a lower forwardly projecting tapered end portion, an upper end portion, a front end wall and a pair of side walls, said lower end portion being adapted to project into the cavity in the ripper tooth for carrying said tooth thereon and defining means for securing the tooth about said lower end portion, said upper end portion defining means for securing said shank to the earth excavation device, and said front end wall defining a forwardly projecting elongated securement rib having substantially opposed curvilinear undercut portions adjacent the upper and lower ends thereof;

an elongated wear cap adapted to be carried by and engage said ripper shank, said cap defining a tapered front digging surface, a tapered lower end portion, an upper end portion, and a rear surface, said tapered lower end portion being adapted to be disposed adjacent said lower end portion of said shank and project into the cavity in the tooth adjacent said shank and abut the tooth, and said rear surface being adapted to be disposed adjacent and mate with a portion of the front end wall of said ripper shank, said rear surface defining an open channel therein adapted to receive said securement rib upon said wear cap being transversely slided over said securement rib thereby preventing any forward movement of said wear cap with respect to said shank; and

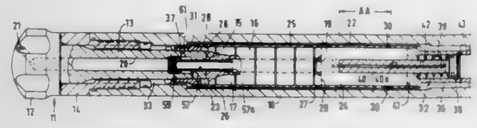
a securement member adapted to be secured over and about said upper end portion of said wear cap and portions of said side walls of said shank for preventing relative lateral movement of said wear cap with respect to said shank.

5,350,023

PNEUMATIC HAMMER

Guenter W. Klemm, Olpe, Fed. Rep. of Germany, assignor to Ing. G. Klemm Bohrtechnik GmbH, Fed. Rep. of Germany

PCT No. PCT/EP92/02434, § 371 Date Jun. 22, 1993, § 102(e) Date Jun. 22, 1993, PCT Pub. No. WO93/08363, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 23, 1992, Ser. No. 78,275
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1991, 4134917
Int. Cl.[5] B23Q *5/033*
U.S. Cl. 173—17 **13 Claims**



1. A pneumatic hammer having a working piston (**16**) movable in a working cylinder, said piston imparting impacts onto a drill bit via an anvil (**15**), and control members provided at said working cylinder and said working piston, which control a supply of compressed air to front and rear cylinder chambers (**23**, **24**) at both ends of said working piston and which cooperate such that, during a return stroke, said working piston performs an acceleration phase and an air compression phase and that, during a subsequent forward directed working stroke, said working piston performs a drive phase and an impact on said anvil (**15**),

characterized in that

at a front end of said working cylinder there is provided a reciprocable adjusting means (**37**) for adjusting the length of the return stroke of said working piston in dependence on the supply pressure of the compressed air.

5,350,024

DRILL PIPE

Heinz Gruber, Seesen-Rhüden, Fed. Rep. of Germany, assignor to GD-Anker GmbH, Seesen-Rhüden, Fed. Rep. of Germany

PCT No. PCT/EP92/01149, § 371 Date Feb. 26, 1993, § 102(e) Date Feb. 26, 1993, PCT Pub. No. WO93/04257, PCT Pub. Date Mar. 4, 1993
PCT Filed May 22, 1992, Ser. No. 988,969
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1991, 4127249
Int. Cl.[5] E21B *17/16, 17/22*
U.S. Cl. 175—323 **11 Claims**

1. A drill pipe useable as an injection anchor, comprising at least one anchor rod having a predetermined length and provided with a throughgoing external profiling and a throughgoing longitudinal passage, said anchor rod having a uniform internal thread over said length; a coupling member, said internal thread in combination with said coupling member being dimensioned and shaped so that it can be screwed to at least one further similar anchor rod; a drill head provided at least with one axial outlet bore and including a tubular portion screwable into an end of said anchor rod, said coupling element including a base member having a longitudinal passage and an end provided with a threaded portion arranged to be screwed into said anchor rod, said coupling member also having an annular member carried on said base member and performing a stop function, said annular member having a diameter corresponding to a diameter of said anchor rod and also having an external profiling corresponding to said external profiling of said anchor rod, said tubular portion of said drill head and said coupling member having an external thread for screwing into said anchor rod, said anchor rod with said coupling member being provided with at least one of a uniform external diameter and a uniform thread-like profiling starting

from said tubular cylinder of said drill head and extending to an end facing away from said drill head; a plurality of intermediate members provided with at least one injection valve, each of said intermediate members having two ends and being provided with a tubular portion at at least one of said ends, said tubular portion of said intermediate members being dimensioned and shaped to be fully screwed into adjacent ends of said anchor rod, said injection valve having a tubular member with at least one transverse bore and an external profiling and



at least one sleeve member composed of elastic material and sealingly closing off said tubular member in the region of said transverse bore, said sleeve member being arranged coaxially relative to said tubular member and having two ends provided with tubular cylinders having an external profiling and fixed relative to said tubular member, said tubular cylinders and said sleeve member of said injection valve having substantially identical external diameters, said anchor rod and said tubular cylinders of said injection valve having the same diameter and corresponding external profiling.

5,350,025

NONROTARY PISTON FOR JACKHAMMER AND REMOVABLE SPLINED NUT THEREFOR

Paul B. Campbell, Roanoke; Robert R. Kimberlin, Troutville; Sean M. O'Malley, and Roland P. Holt, both of Roanoke, all of Va., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

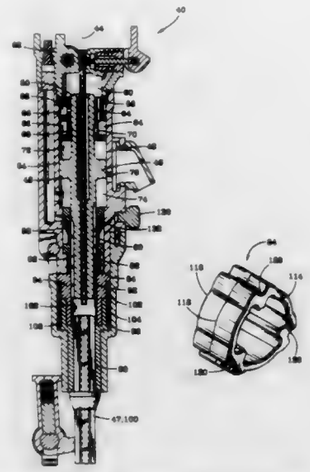
Division of Ser. No. 948,545, Sep. 23, 1992, Pat. No. 5,305,835.
This application Oct. 12, 1993, Ser. No. 135,222
Int. Cl.[5] B25D *9/04, 16/00*
U.S. Cl. 173—111 **4 Claims**

4. In a fluid-activated jackhammer having a backhead at a top end, a drill steel chuck at a bottom end, a housing extending therebetween forming a central bore having a reciprocal piston supported therein for reciprocation along a longitudinal axis, and a wrap spring clutch for causing rotation, in one direction, of a drill steel in said chuck during reciprocation of said piston, the improvement comprising:

said piston having a piston stem, a piston tail and a piston head therebetween;

a plurality of longitudinal grooves extending downwardly along said piston stem and spaced apart around a circumference of said piston stem; and

a removable nut body having an axis, a splined internal surface slidably connected to said longitudinal grooves, and a male profile lobed external surface restrained in said housing, said external surface forming a circumference with at least one male profile lobe thereon, said at least one male profile lobe being formed by a rounded projection extending radially outwardly from said circumference, wherein said external surface is tapered such that, when viewed in a direction perpendicular to the axis of said nut body, said at least one male profile lobe has a center apex portion between said top and bottom ends for



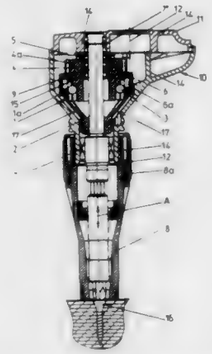
interference fit into a housing portion having at least one female profile lobe cavity, whereby rotation of said nut body and said piston is restrained but longitudinal movement of said piston is permitted.

5,350,026

POWER-DRIVEN ELECTRICAL HAND TOOL

Heule Markus, Widnau, and Gerschwiler Othmar, Wattwil, both of Switzerland, assignors to Ceka Electrowerkzeuge AG & Co. KG, Wattwill, Switzerland

Filed Nov. 25, 1992, Ser. No. 981,351
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1992, 4233712
Int. Cl.[5] B25B *23/157*
U.S. Cl. 173—178 **21 Claims**



1. A power-driven electric hand tool, comprising:

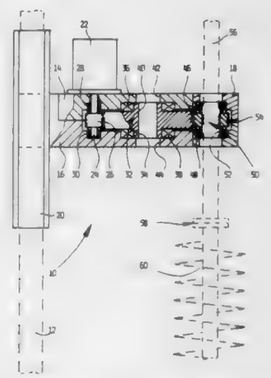
coupling means for disengaging a drive connection between a driving electric motor and a tool output shaft, the output shaft being mounted so as to be displaceable axially, said coupling means being configured as a friction coupling for producing the drive connection by frictional engagement in response to an applied pressure exerted on said output shaft, said friction coupling separating said drive connection as the applied pressure decreases and when the applied pressure is absent, said coupling means including a first coupling element rotatably driven by the motor and a second coupling element mounted nonrotatably on said output shaft, said first and second coupling elements being telescopically arranged relative to each other, said coupling means further including force deflection elements that are responsive to a pressure on said output shaft for acting on one of said coupling elements for effecting coupling by radial movement of said deflection elements.

5,350,027

DRILL MACHINE TABLE

Magnus Mauch, Goppingen, and Achim Kehrberger, Ostfildern, both of Fed. Rep. of Germany, assignors to DELMAG Maschinenfabrik Reinhold Dornfeld GmbH & Co., Esslingen, Fed. Rep. of Germany

PCT No. PCT/EP90/01519, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO92/04523, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 8, 1990, Ser. No. 930,509
Int. Cl.[5] B23Q *5/00;* **E21C** *5/00*
U.S. Cl. 173—216 **8 Claims**



1. A drilling machine for a mobile drilling appliance which comprises in combination

(a) a housing (**14**, **16**, **18**) which is slidably mounted to a jobber (**12**),

(b) a drive motor (**22**) mounted on a part of said housing,

(c) a pinion (**26**) operatively connected to said drive motor (**22**),

(d) a step-down gear (**32**) rotatably engaging said pinion (**26**), the diameter of said step-down gear (**32**) being large in comparison with the diameter of said pinion (**26**),

(e) a driving socket (**50**) located in the vicinity of a side face of said housing (**18**), said socket (**50**) containing a central non-circular opening (**52**) receiving in an axially displaceable manner, a driving shaft (**56**) that in turn is connected to a drilling tool (**60**), and

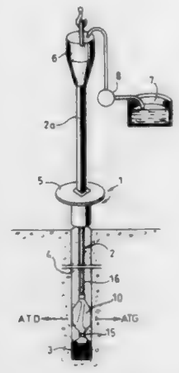
(f) a driving ring (**54**) positioned in said driving socket (**50**) around said opening (**52**) and engageable with said step-down gear (**32**), the diameter of said driving ring (**54**) being small in comparison with the diameter of the surface of said step-down gear (**32**) that engages said pinion (**26**).

5,350,028

DEVICE FOR ADJUSTING THE PATH OF A ROTARY DRILLING TOOL

Jean Boulet, Paris, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

PCT No. PCT/FR92/00578, § 371 Date Apr. 28, 1993, § 102(e) Date Apr. 28, 1993, PCT Pub. No. WO93/01390, PCT Pub. Date Jan. 21, 1993
PCT Filed Jun. 24, 1992, Ser. No. 983,533
Claims priority, application France, Jul. 4, 1991, 91 08405
Int. Cl.[5] E21B *7/08*
U.S. Cl. 175—26 **9 Claims**



1. A device for adjusting an azimuthal direction of a trajectory of a rotary-drilling bit fastened to an end of a drill string rotatable around an axis thereof arranged substantially along a vertical drilling plane during a drilling of a hole, the azimuthal direction of the trajectory being defined by an angular position of the vertical drilling plane with respect to a reference direction, wherein the device comprises at least one drill string element integrally connected with the drill string for rotation and fastened to the drill string in a vicinity of the drilling bit, the drill string element comprising parts having outer bearing surfaces arranged in a cylindrical surface having an axis merged or substantially merged with an axis of the drill string and a maximum diameter equal to or substantially equal to a nominal diameter of the hole, distributed around the axis of the drill string so as to generate, during rotation of the drill string, by reaction of a wall of the hole on the at least one drill string element, forces tipping of the drilling bit out of the vertical drilling plane, either to the right or to the left of the vertical drilling plane, during part of the full rotation of the drill string and to maintain the drill string substantially along an axis of the hole during a remainder of the rotation, and wherein a distance between the axis of the drill string and said outer bearing surfaces is constant during at least one revolution of said drill string.

5,350,029

AUTOMOBILE EMERGENCY ACCESSORY

Hector D. Figueroa, 1410 New Haven Ave., Far Rockaway, N.Y. 11691

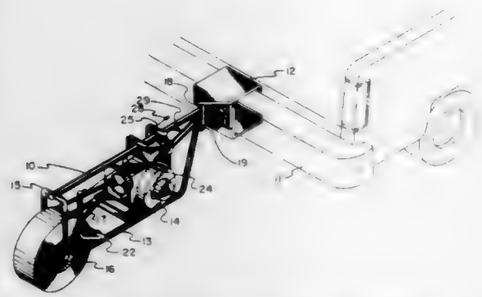
Filed May 5, 1993, Ser. No. 56,924
Int. Cl.[5] B62D *59/04*
U.S. Cl. 180—11 **6 Claims**

1. An automobile emergency accessory for use with an automobile, said accessory comprising:

a rigid frame having a rearward end and a forward end with a yoke portion formed at said rearward end and a cylindrical member coupled to said forward end thereof;

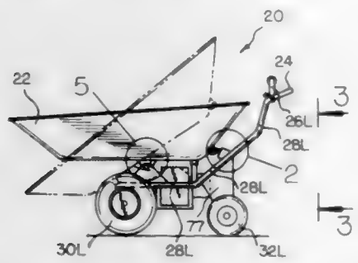
a gasoline motor mounted to said rigid frame, said motor having a throttle means for controlling a speed of said motor, said motor further having a motor sprocket;

a driving wheel rotatably mounted within said yoke portion of said frame, said wheel having a wheel sprocket;
a driving chain mechanically coupling the motor and the driving wheel, said chain extending over said motor sprocket and said wheel sprocket;
brake means coupled to said frame and operable to retard a rotational motion of said driving wheel relative to said frame;
a first remote control having a first flexible line attached to said throttle means, said first flexible line having a manually operable end thereof which extends forward to within reach of a driver of the automobile;
a second remote control having a second flexible line attached to said brake means, said second flexible line having a manually operable end thereof which extends forward to within reach of a driver of the automobile;



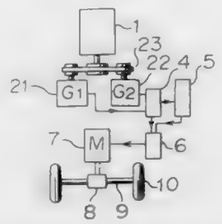
clamping means for coupling said accessory directly to a bumper, said clamping means comprising first and second spaced, vertically adjustable parallel clamping plates, said first plate having a vertically depending flange with a pair of spaced, vertical slots extending through said flange, said second plate having a pair of spaced fastening bolts extending therefrom and positioned for projection through said slots for securement by a pair of nuts each adapted to thread onto an individual one of said fastening bolts to secure said plates at a desired vertical displacement, said plates each further having an inner edge downwardly bent and arranged for securement around inner edges of said bumper; and a pivot member extending downwardly from said first plate and arranged for reception within said cylindrical member of said frame.

5,350,030
WHEELBARROW
James G. Mawhinney, 421 Cummer Ave Willowdale, North York, Ontario, Canada M2M 2G3 , and Smity A. Anderson, 65A Emmett Avenue #1502, Toronto, Ontario, Canada M6M 2E5
Filed Aug. 11, 1993, Ser. No. 104,533
Int. Cl.[5] B62D *51/04*
U.S. Cl. 180—19.3 **3 Claims**



1. A new and improved wheelbarrow comprised of:
a handle frame bar defining a straight handle, and a left handle frame bar side and right handle frame bar side;
a bucket pivotally coupled to said handle frame bar by a tilting mechanism, said tilting mechanism comprising a left handle frame bar pivot set-back plate fixedly secured to said left handle frame bar side, a right handle frame bar pivot set-back plate fixedly secured to said right handle frame bar side, a left bucket bottom pivot set-back plate secured to said bucket in an off-centered manner and pivotally coupled to said left handle frame bar pivot set-back plate by a pivot rod, and a right bucket bottom pivot set-back plate secured to said bucket in an off-centered manner and pivotally coupled to said right handle frame bar pivot set-back plate by a further pivot rod;
a left front wheel rotatably coupled to said left handle frame bar side, a right front wheel rotatably coupled to said right handle frame bar side, and an axle coupled to both said front wheels;
a left rear wheel and a right rear wheel;
a rear wheel pivot rotatably coupled to said handle frame bar, said rear wheel pivot being operable to rotatably support both said left and right rear wheels, thereby allowing said rear wheels to turn said wheelbarrow;
an internal combustion engine secured to and supported by said handle frame bar;
a gear box having a forward gear and a reverse gear, said gear box being in mechanical communication with both a pulley system means for transmitting mechanical power to said front wheels and said engine; and;
a generator in mechanical communication with said engine for generating electrical power.

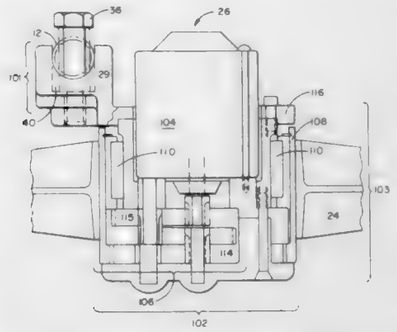
5,350,031
PLURAL GENERATOR APPARATUS FOR AN ELECTRIC HYBRID AUTOMOBILE
Takeshi Sugiyama, and Yutaka Kitamura, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 23, 1993, Ser. No. 79,923
Claims priority, application Japan, Jul. 7, 1992, 204359
Int. Cl.[5] B60K *1/02*
U.S. Cl. 180—65.4 **2 Claims**



1. A power generation apparatus for an electric hybrid automobile, said power generation apparatus comprising:
a) a plurality of a.c. generators commonly driven in parallel by an internal combustion engine (**1**) through a rotation transmitting means (**23**),
b) a rectifier (**4**) for rectifying a.c. output voltages of the a.c. generators,
c) a battery (**5**) charged with an output from the rectifier,
d) a control device (**6**) supplied with a d.c. voltage from the rectifier of the battery, for converting the d.c. voltage into a variable frequency a.c. voltage by means of a stationary inverter, and
e) an induction motor (**7**) supplied with a.c. power by the control device for driving an automobile,
f) one of the a.c. generators having a relatively low rotation speed at the initiation of power generation, and another one of the a.c. generators having a relatively high rotation speed at the initiation of power generation.

dynamic braking thereof when the controller is placed in a neutral position by the operator.

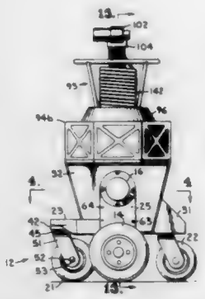
5,350,032
POWER CONVERSION KIT FOR WHEELCHAIR
Terry W. Smith, 3618 NE. 167th Street, North Miami Beach, Fla. 33160
Filed Apr. 8, 1993, Ser. No. 44,818
Int. Cl.[5] B60K *1/02*
U.S. Cl. 180—65.6 **6 Claims**



1. A power conversion kit to motorize a wheelchair of standard design which is provided with a frame which includes a pair of vertically extending rear frame members and a pair of manually driven original right and left rear wheels, each rear wheel being mounted to a respective rear frame member and having an axis of rotation which intersects the rear frame member said conversion kit comprising a pair of matched components for replacement of each of said right rear drive wheel and said left rear drive wheel, each member of said pair of matched components including:
a. means for mounting a power drive assembly to a frame of a wheelchair of standard design, at the same location, and through the same holes, formerly occupied by hardware used to mount the original rear drive wheels of the wheelchair, said mounting means comprising an essentially "z" shaped bracket having three defined areas or segments, a first (coupling) segment, a second (offsetting) segment and a third (power hub) segment
the first segment of said bracket being adapted for mechanically coupling the bracket to the respective rear frame member of the wheelchair at the same location on the chair frame formerly occupied by the original rear wheels of said wheelchair,
the second segment of said bracket being adapted for displacing a power driven rear drive wheel to a new central rotational axis located rearwardly of the rotational axis of the original manually driven wheel which extends through the rear frame member so as to effect a forward shift in the wheelchair's center of balance, and being further adapted for aligning the third segment inboard, in relation to the frame, so as to maintain the wheelchair's original dimensions and to minimize interference of said power hubs with the wheelchair's frame during collapse and folding of the wheelchair, and
the third segment of said bracket being adapted to provide a stator for a power drive assembly;
b. a power drive assembly comprising a power driven rear drive wheel, a power hub mechanically coupled to said rear drive wheel at the hub thereof for roller bearing support of the drive wheel about the new central rotational axis, said power hub being further characterized as having a controller activated motor and a spur gear array for power transfer engagement of the motor with the hub of said rear drive wheel; and
c. a controller for operator engagement and selective activation of each of the power hubs of said conversion kit, said controller enabling both directional movement of a motorized wheelchair equipped with said power hubs in response to operator initiated input to said controller, and

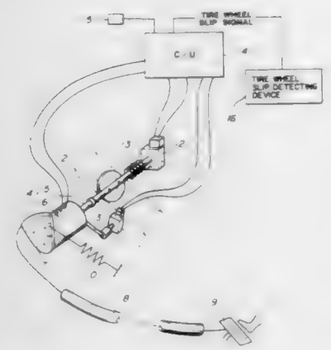
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5,350,033
ROBOTIC INSPECTION VEHICLE
Brett W. Kraft, 11667 W. 90th St., Overland Park, Kans. 66214
Filed Apr. 26, 1993, Ser. No. 53,083
Int. Cl.[5] B62D *1/28;* **H04N** *7/18*
U.S. Cl. 180—167 **28 Claims**



1. A robotic inspection vehicle comprising:
(a) a vehicle housing;
(b) an articulating support and drive assembly including four wheels, said assembly being adapted to support said vehicle by maintaining at least three of said wheels in a supporting position when said vehicle is traversing an obstacle;
(c) environmental monitoring means for sensing ambient conditions around said vehicle, said monitoring means being mounted on said vehicle housing; and
(d) means for shifting the center of gravity of said vehicle over the three wheels which are in a supporting position when said vehicle is traversing said obstacle.

5,350,034
APPARATUS FOR CONTROLLING OPENING ANGLE OF THROTTLE VALVE IN INTERNAL COMBUSTION ENGINE
Hideyuki Sato, Isezaki, Japan, assignor to Japan Electronic Control Systems Co., Ltd., Isezaki City, Japan
Filed Jul. 8, 1992, Ser. No. 909,391
Claims priority, application Japan, Jul. 8, 1991, 3-166811
Int. Cl.[5] B60K *31/00;* **B60T** *8/32*
U.S. Cl. 180—197 **8 Claims**



1. An apparatus for controlling an opening angle of a throttle valve installed in an intake air passage of an internal combustion engine, comprising: a throttle valve having a pivotal axle;
a) a single motor having a drive axle and a main body, said

motor selectively performing a holding function such that the drive axle is held with respect to the main body, the drive axle being linked to the pivotal axle of the throttle valve so as to pivot the axle of the throttle valve to selectively open and close the throttle valve;

b) biasing means for biasing the throttle valve in a direction so as to close the throttle valve;

c) a manually operable acceleration mechanism linked to the main body of the motor so that the main body is interlocked and rotated with the manually operable acceleration mechanism;

d) opening angle detecting means for detecting the opening angle of the throttle valve; and

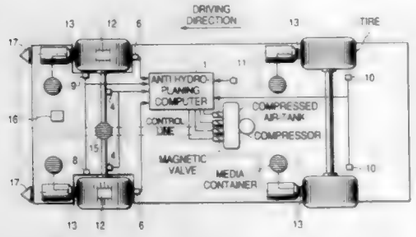
e) controlling means for selectively carrying out one of a first control such that, with the holding function of the drive axle of the motor released, the throttle valve is biased toward a closed position by means of a biasing force of the biasing means and the opening angle of the throttle valve is controlled in response to a control signal therefrom and controlled according to the opening angle detected by the throttle valve opening angle detecting means, and a second control such that the drive axle of the motor is rotated together with the main body of the motor and together with the acceleration of the manually operable acceleration mechanism, with the drive axle of the motor being held by a predetermined torque which is at least higher than the biasing force of the biasing means.

5,350,035

ANTIHYDROPLANING SYSTEM FOR A MOTOR VEHICLE

Rüdiger Bodier, Aying, and Hartmut Schmidt, Petershausen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Ottobrunn, Fed. Rep. of Germany

Filed May 11, 1992, Ser. No. 881,270
Int. Cl.[5] B60K *23/00, 28/16*
U.S. Cl. 180—271 **17 Claims**



1. An antihydroplaning system for improving wheel adhesion of a motor vehicle, having at least one wheel with a tire, a fuel supply, an engine an da steering booster, in the presence of water on a road surface, comprising:

a first sensor for generating first signals indicative of ambient temperature of the vehicle surroundings;

a second sensor for generating second signals indicative of chassis vibration;

a third sensor for generating third signals indicative of vibration of at least a part of a vehicle body which can be influenced by water splashed from a road surface;

a fourth sensor for generating fourth signals indicative of rotational speed and slippage of wheels of said vehicle;

electronic means for analyzing and evaluating said first, second, third and fourth signals and for generating output signals;

a computer coupled to receive said output signals from said electronic means; and

wheel adhesion means for mechanically displacing a water layer on said road surface in front of wheels of said vehicle by means of a mass jet;

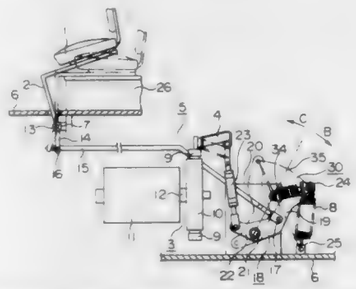
said wheel adhesion means being controlled over time by said computer in response to a logical analysis of output signals from said electronic means.

5,350,036

DEADMAN BRAKE ASSEMBLY FOR CARGO VEHICLES

Hideaki Shima, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jun. 8, 1992, Ser. No. 895,100
Claims priority, application Japan, Jun. 12, 1991, 3-140196
Int. Cl.[5] B60K *28/04*
U.S. Cl. 180—273 **6 Claims**



1. A deadman brake assembly for a cargo vehicle having a vehicle frame and a driver's seat, comprising a brake device for selectively applying a braking force to said cargo vehicle, moving means provided for moving said brake device between a brake release position in response to a driver sitting on said driver's seat and a normal brake application position when a driver is not on said seat; a link mechanism interconnecting said moving means and said brake device for effecting movement of said brake device between said brake release and brake application positions in response to movement of said moving means; first urging means connected to said link mechanism normally urging said moving means toward said brake application position; second urging means connected to said link mechanism for urging said moving means toward said brake release position when a driver sits on said driver's seat; and third urging means connected to said link mechanism urging said moving means toward said brake application position independently of said first urging means; said link mechanism comprising a bell crank having a long arm and a short arm swingably mounted on said vehicle frame by a first mounting means; said first, second and third urging means being mounted on the end of said long arm by a second mounting means; one end of said link mechanism being connected in the middle of said long arm; a brake lever of said brake device being connected to the end of said short arm; said first urging means comprising a coil spring connected to said vehicle frame on one end thereof and connected to the end of said long arm on the outer end thereof; said second and third urging means including a turnover spring mounted on said vehicle frame by a third mounting means on one end thereof and connected to the end of said long arm on the other end thereof; and said third mounting means of said turnover spring being within the swinging range of said bell crank which swings from a first position to a second position as said moving means moves from said brake application position to said brake release position.

5,350,037

WORKPERSON SAFETY RESTRAINT SYSTEM

Ali Ghahremani, Granada Hills, Calif., assignor to Skymaster, Inc., City of Industry, Calif.

Filed May 24, 1993, Ser. No. 65,478
Int. Cl.[5] A62B *37/00*
U.S. Cl. 182—3 **11 Claims**

1. A safety restraint system for a workman on a structure at an elevated location, comprising:

a plurality of cable supports spaced along said structure, each cable support comprising a support arm and a cable anchorage tube on said arm, said support arm being narrower than the tube transversely of the tube axis,

a safety cable extending between and through said tubes, each tube being affixed to the cable to anchor the cable to the cable supports, said cable having a thickness greater than the transverse thickness of each support arm,

a flexible lanyard having a first end attachable to a workman's body and having a free second end,

connector means attached to the free end of the lanyard, said connector means comprising a ring element encircling said cable, and a tie element pivotably connected to said ring element, said ring element having two flat side faces extending



transversely of the cable axis, said ring element having a radial slot of a width greater than the transverse thickness of each support arm and smaller than the thickness of the cable, whereby the ring element is slidable transversely along the cable and across the cable supports, but is not removable from the cable via the slot, said tie element being pivotably attached to the ring element for swinging motion about an axis parallel to and spaced from the cable axis, said tie element comprising a bifurcated structure having ear portions overlapping the flat side faces of said ring element, said tie element being connected to said lanyard so that upon exertion of a pulling force on the lanyard, the swing axis of the tie element is disposed on a line extending from the cable axis coincident with the lanyard line of action.

5,350,038

FOLDABLE EXTENSION LADDER AND LADDER SECTIONS THEREFOR

Jonathan F. Lazarus, 9 Vinton Ave., Bedford, N.Y. 10506

Filed Feb. 1, 1993, Ser. No. 12,264
Int. Cl.[5] E06C *1/12*
U.S. Cl. 182—163 **22 Claims**



1. A foldable extension ladder comprising:

a first ladder section;

a second ladder section;

each of said first and second ladder sections including:

at least three foldable sections, each foldable section including a pair of end rails and a plurality of rungs extending in a transverse direction of said ladder section and connecting said pair of end rails in a parallel, spaced apart relation, and all said foldable sections being of substantially equal length;

a plurality of hinge means for hingedly connecting together said foldable sections in end to end relation for movement between an in-line configuration in which the foldable sections are arranged substantially in-line with each other along a lengthwise direction of said ladder section and a folded configuration in which all of said foldable sections are arranged in a substantially parallel, overlaying relation with each other, each said hinge means including pivot means for pivotally connecting ends of two adjacent ones of said foldable sections, said pivot means of all said hinge means being arranged to a first side of each ladder section, as measured in a depthwise direction which is substantially perpendicular to said transverse and lengthwise directions, when said ladder section is in said in-line configuration; and

locking means for releasably locking each said hinge means in a fixed position when two foldable sections at opposite ends of each said hinge means are arranged in said in-line configuration; and

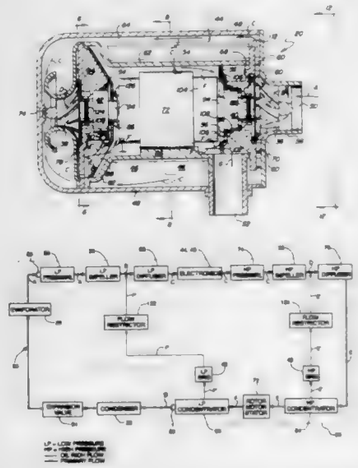
means for slidably connecting said end rails of said first and second ladder sections together in said lengthwise direction of said ladder, at second, opposite sides of said first and second ladder sections such that said first and second ladder sections are fully slidable with respect to each other and such that said hinge means of the first and second ladder sections can move past each other in said lengthwise direction during said sliding movement.

5,350,039

LOW CAPACITY CENTRIFUGAL REFRIGERATION COMPRESSOR

Mark G. Voss, Brighton, and William O. Harvey, Cadillac, both of Mich., assignors to Nartron Corporation, Reed City, Mich.

Filed Feb. 25, 1993, Ser. No. 23,053
Int. Cl.[5] F01M *1/00*
U.S. Cl. 184—6.16 **6 Claims**



1. An improved motor driven centrifugal refrigerant compressor having a housing, a motor, control electronics for the motor and moving parts, said housing enclosing said motor, control electronics for the motor and moving parts of the compressor and also including an internal fluid pathway for

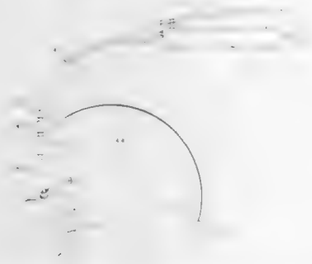
circulating a refrigerant/lubricant mixture, said pathway including a restrictive surface including an opening, interposed in said pathway and in communication with said pathway, wherein lubricant in said mixture impinging on said surface is coalesced into a concentrated stream said pathway also including means for convective heat transfer in communication with said motor and control electronics whereby said motor and electronics are cooled by the circulating refrigerant mixture.

5,350,040

VIBRATION MONITORING LUBRICATION DEVICE

Douglas L. Gribble, 815 Sunrise La., Centralia, Wash. 98531

Filed Feb. 12, 1992, Ser. No. 835,121
Int. Cl.[5] F16N *21/00*
U.S. Cl. 184—105.2 15 Claims



1. A device for assessing whether a bearing requiring periodic lubrication and having a fitting for receiving lubricating material requires service, the device comprising:

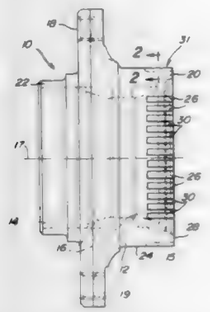
a coupling for introducing lubricating material into the bearing from a source of lubricating material; and a sensor attached to the coupling for detecting vibration and producing an electric signal indicative of the vibration of the bearing when the coupling is mated with the bearing wherein the sensor includes a tube for carrying the lubricating material and a transducer in contact with the tube for detecting the vibration of the bearing through the tube and producing the electric signal in response to the vibration.

5,350,041

INTEGRAL ABS EXCITER RING FOR CAST IRON HUB

David R. Steele, Farmington Hills, and Thomas B. Stimson, Commerce Township, Oakland County, both of Mich., assignors to The Budd Company, Troy, Mich.

Continuation-in-part of Ser. No. 682,098, Apr. 5, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 975,647
Int. Cl.[5] B60T *8/60*
U.S. Cl. 188—18 R 5 Claims



1. A unitary hub and exciter ring for a motor vehicle having an anti-lock braking system, said hub and exciter ring comprising:

a cast hub having a substantially cylindrical body including an outer cylindrical surface and an interior passageway defined by an inner cylindrical surface, means for rotatably mounting said hub to a suspension structure of the motor vehicle for rotation about an axis of rotation; and

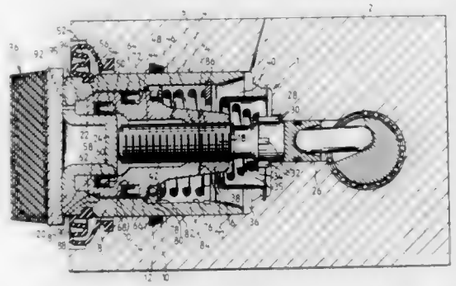
an exciter ring unitarily formed with said body of said hub, said exciter ring being defined by a plurality of axial grooves formed in said body and extending axially therealong, said grooves having a radial depth which extends only partially through said body of said hub, said grooves also defining a plurality of axially extending teeth therebetween, said teeth being equidistantly spaced and circumferentially positioned around said body of said hub, said teeth having an outer cylindrical surface coincidental with said outer cylindrical surface of said hub.

5,350,042

AUTOMATIC ADJUSTING APPARATUS FOR A DISC BRAKE

Rudolf Thiel, Frankfurt am Main, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Fed. Rep. of Germany

PCT No. PCT/EP91/01189, § 371 Date Feb. 26, 1993, § 102(e) Date Feb. 26, 1993, PCT Pub. No. WO93/00526, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 26, 1991, Ser. No. 980,803
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1991, 4121026
Int. Cl.[5] F16D *65/56*
U.S. Cl. 188—71.9 54 Claims



1. An automatic adjusting apparatus for a disc brake with a brake caliper housing,

the disc brake being furnished with a brake piston, having a bottom, which is slidingly positioned within a cylindrical bore of the brake caliper housing for the actuation of a brake shoe and which is actuatable by means of a hydraulic actuating device and a mechanical actuating device;

with an extendable adjusting member which is disposed between said brake piston and said mechanical actuating device and is furnished with two adjusting elements being connected to each other through a thread free of nonreversibility, said adjusting elements being configured in the shape of an adjusting nut and of an adjusting spindle; and

with a friction clutch to hold back one of said adjusting elements in the event of a mechanical actuation,

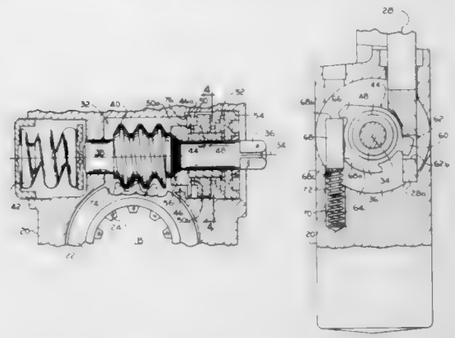
characterized in that said brake piston includes a cylinder directed into the interior of said cylindrical bore and which projects out of the bottom of said brake piston, wherein said cylinder is encased by said adjusting nut, and in that an external cylindrical surface of said cylinder interacts with a ring-shaped circumferential sealing element.

5,350,043

AUTOMATIC SLACK ADJUSTER

Gary Crewson, Orchard Park, N.Y., and Darryl F. Dimond, Niagara Falls, Canada, assignors to Crewson Brunner Inc., Buffalo, N.Y.

Filed Mar. 5, 1993, Ser. No. 26,823
Int. Cl.[5] F16D *65/38*
U.S. Cl. 188—79.55 9 Claims



1. In a slack adjuster for connecting a brake operator to rotate a cam shaft of a vehicle brake system of the type including a housing; a worm gear mounted by said housing for rotation with said cam shaft about a first axis; a worm shaft mounted by said housing to rotate about a second axis perpendicular to said first axis and for displacement axially of said second axis in first and second axial directions, said worm shaft having opposite ends and a worm intermediate said ends engaged with said worm gear; a rotor and a coupling each mounted coaxially to rotate relative to one of said ends of said worm shaft; connecting means connecting said housing to said brake operator for rotating said housing about said first axis as vehicle brakes are applied and released; a link connected to said connection means and said rotor for rotating said rotor in a first direction as said vehicle brakes are applied and in a second direction as said vehicle brakes are released; one way clutch means tending to couple said coupling for rotation with said rotor when said rotor is rotated in said second direction and tending to uncouple said coupling from rotation with said rotor when said rotor is rotated in said first direction; slip means for releasably connecting said coupling to said worm shaft for rotation therewith; spring means tending to bias said worm shaft against movement in said second axial direction from rotational coupling engagement with said coupling via said slip means, said spring means permitting movement of said worm shaft in said second axial direction to uncouple said coupling from rotation with said worm shaft via said slip means upon a given axial loading of said worm shaft incident to operation of said vehicle brakes, the improvement comprising in combination:

means for defining a first reference position of said rotor and a return spring for biasing said rotor for rotation in said second direction into said first reference position.

5,350,044

VIBRATION DAMPER FOR MOTOR VEHICLES

Ingo Gelhausen, Fürthen, Fed. Rep. of Germany, assignor to BOGE Aktiengesellschaft, Eitorf, Fed. Rep. of Germany

Filed Aug. 21, 1992, Ser. No. 934,113
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1991, 4131323
Int. Cl.[5] B60G *15/00*
U.S. Cl. 188—322.12 13 Claims

1. A vibration damper for motor vehicles, the vibration damper for dampening transmission of vibrations between a wheel suspension of the motor vehicle and a frame of the motor vehicle, the vibration damper comprising:

a tubular member;

fastening means rigidly attached to said tubular member for fastening said tubular member to one of: the vehicle body and the wheel suspension;

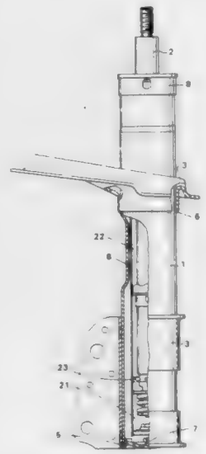
first and second chambers disposed within said tubular member;

piston means for separating said first chamber from said second chamber;

a piston rod connected to said piston means, said piston rod for being connected to the other of the vehicle body and the wheel suspension;

said tubular member having a first surface disposed adjacent said fastening means;

said fastening means having a second surface disposed adjacent said tubular member;



said first surface and said second surface being disposed in intimate contact with one another; and

at least said first surface and said second surface comprising a protective layer of metallic aluminum disposed thereon to cover said first surface and said second surface, said protective layer of aluminum being configured to provide at least one of:

reduced friction between said tubular member and said fastening means during alternating loads produced during use, said reduced friction being less than friction between said tubular member and said fastening means without said protective layer of metallic aluminum; and

increased corrosion protection for at least said contacting first and second surfaces, said increased corrosion protection being greater than corrosion protection without said protective layer of aluminum.

5,350,045

COMPARTMENTED STORAGE CONTAINER

Jeffrey Todd Robertson, 116 Quail La., Whitehouse, Tex. 75791

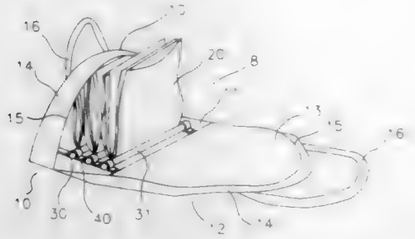
Filed Sep. 9, 1992, Ser. No. 942,649
Int. Cl.[5] A45C *5/12, 13/02;* B65D *30/00*
U.S. Cl. 190—110 11 Claims

1. A compartmented storage container, useful for organizing and containing a number of items, comprising

an outer container having peripheral walls defining a hollow interior with an inner surface, having an access opening from the exterior to the interior of said outer container, and having closure means for selectively closing and opening such access opening;

a plurality of item holders to be received in the interior of said outer container, each of said item holders having a side wall, a closed bottom, and an open top, defining a hollow envelope-like enclosure open at the top, and sealing means to releasably seal said open top;

a holder carrier to releasably connect a group of said item holders, said holder carrier having an elongate body with a longitudinal axis and first and second ends, with a cavity in the interior of said elongate body to receive said closed bottom of each of said item holders of the group of item



holders to be connected, and with passage means for extension of said side wall of each of said item holders from the interior of said elongate body to the exterior thereof;

retaining means for retaining said closed bottoms of said item holders in the interior of said elongate body.

5,350,046

LUGGAGE CASE WITH PULL HANDLE

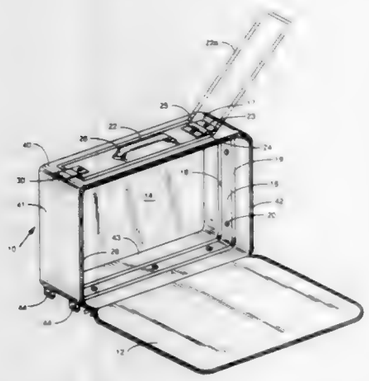
Thomas Falloon, Pittsburgh, and Hyun S. Kim, New Castle, both of Pa., assignors to Airway Industries, Inc., Ellwood City, Pa.

Continuation-in-part of Ser. No. 812,724, Dec. 23, 1991, Pat. No. 5,165,508. This application Nov. 23, 1992, Ser. No. 979,149

The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.

Int. Cl.[5] A45C *13/26*

U.S. Cl. 190—115 **11 Claims**



1. A suitcase having spaced, generally parallel front and back sides connected about their periphery to a peripheral wall member extending between the front and back sides and thereby defining a volume, a spine affixed to the wall member around the periphery of the suitcase, the spine providing support to the wall member, roller means mounted on said wall member positioned to support said suitcase when in upright position and enabling rolling movement of said suitcase across a surface when the suitcase is entirely supported by said roller means, a rigid pull handle connected to the spine at separated points positioned transversely of the spine, the pull handle being pivotally mounted on an axis transverse to the spine and rotatable about that axis between a pulling position in which the handle extends outwardly from the suitcase and a storage position in which the handle is in juxtaposition to the peripheral wall member, said pull handle including a gripping member, and two extension arms, each said extension arm having two ends and said gripping member being connected to one end of each of said extension arms, the other end of each extension arm being pivotally connected to the spine at said separated points, the handle enabling the suitcase to be pulled across the surface in upright position with its weight being carried by said roller means when the handle is in the pulling position.

5,350,047

ROTARY VALVE FOR AUTOMATIC TRANSMISSION

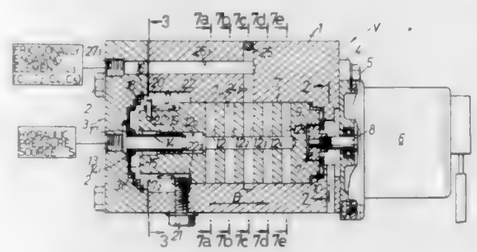
Koichi Kimura; Kazuma Hatakeyama, and Hideo Furukawa, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushkiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 871,431, Apr. 21, 1992, abandoned. This application Nov. 22, 1993, Ser. No. 155,273

Claims priority, application Japan, Apr. 23, 1991, 3-092146; Jul. 31, 1991, 3-192301

Int. Cl.[5] F16D *25/10*

U.S. Cl. 192—87.13 **7 Claims**



1. A rotary valve for an automatic transmission comprising a spool rotatably received within a valve housing and driven by an actuator for selectively supplying hydraulic pressure from a hydraulic pressure source to each of a plurality of frictionally engaging elements through said spool, wherein

said rotary valve includes a central oil passage formed in said spool and extending along an axis of rotation of said spool,

pairs of radial oil passages formed in said spool and extending symmetrically about said central oil passage on respective diametrical lines, an oil supply port opened into an axial end of said central oil passage, and

a feed pipe connected at one end to said hydraulic pressure source and inserted at the other end into said central oil passage, wherein said spool is rotatable relative to said feed pipe.

5,350,048

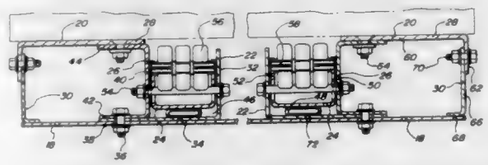
MODULAR COMPONENT SYSTEM FOR ASSEMBLY OF MATERIAL FLOW RAILS

John F. Wylie, 1606 Colton Dr., Orlando, Fla. 32822

Filed Apr. 2, 1993, Ser. No. 41,717

Int. Cl.[5] B65G *13/00*

U.S. Cl. 193—35 A **16 Claims**



1. An interchangeable modular fail-safe gravity type roller conveyor for permitting intermittent controlled movement of articles therealong, said conveyor comprising:

a fixed frame having a plurality of attachment holes;

at least one base adapted to be fixedly secured to said frame using at least one of said attachment holes, said base being assembled from at least two of a plurality of interchangeable module components;

an elongated roller assembly mounted on each of said bases for vertical movement relative thereto, each roller assembly including an elongated support extending longitudinally of said conveyor and a plurality of non-powered rollers rotatably mounted on said support, said plurality of rollers being spaced apart in the longitudinal direction of said support and defining a declining plane which extends at an acute angle in order to allow said articles to move by gravity along said roller assembly when said articles are supported by said roller assembly;

lifting means coacting between each of said bases and its respective roller assembly for causing cycling vertical reciprocating movement of said respective roller assembly between an upper position and a lower position, said articles exhibiting gravity urged movement along said respective roller assembly when said respective roller assembly is in an upper position, said articles being stopped by contact with said base when said respective roller assembly is in said lower position, said respective roller assembly being urged into said lower position upon failure of said lifting means;

control means operatively connected to said lifting means for causing cyclic actuation thereof in order to cause said roller assembly to vertically reciprocate between said upper and lower position in a respective manner: and

wherein said plurality of interchangeable modular components comprises;

an L-shaped mounting plate: and

a C-shaped supporting frame secured to said L-shaped mounting plate to form a generally rectangular longitudinally running channel, said elongated roller assembly being disposed within said longitudinally running channel.

5,350,049

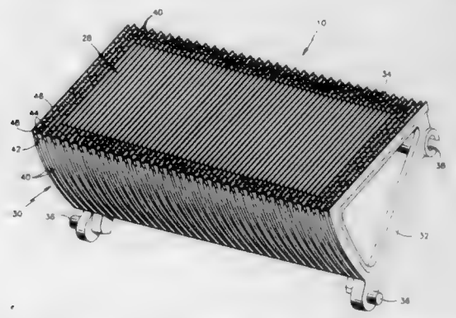
WEAR RESISTANT SAFETY COATING FOR PEOPLE MOVING DEVICE TREADPLATES

Hermann W. Ahls, Veblen; Michael Kruse, Minden, and Peter Borchers, Alfeld, all of Fed. Rep. of Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Jul. 15, 1993, Ser. No. 92,173

Int. Cl.[5] B66B *23/12*

U.S. Cl. 198—333 **9 Claims**



1. A treadplate for conveying passengers in a passenger conveying device, comprising:

a tread surface, having a body defined by a width and a length, wherein said length extends in the direction of travel of said treadplate; and

a wear resistant coating, bonded to said tread surface, said coating comprising a thermal setting plasticized polyvinylchloride plastic.

5,350,050

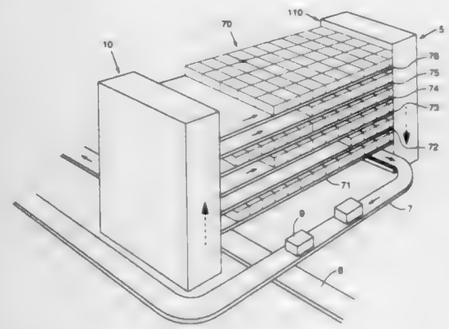
CONTINUOUS VERTICAL CONVEYOR

Walter K. Franke, Fremont, Calif., assignor to Donald L. Collver, San Jose, Calif., a part interest

Filed Sep. 9, 1993, Ser. No. 119,517

Int. Cl.[5] B65G *1/00*

U.S. Cl. 198—347.1 **9 Claims**



1. A continuous vertical conveyor comprising:

first and second pairs of continuous lengths of roller chain,

at least one pair of drive sprockets carrying, guiding and driving each of said pairs of chain in a single direction continuously,

each of said first and second pairs of chain moving in parallel paths and each pair carrying at least one slat means extending therebetween,

each of said slat means forming a generally horizontal surface when said pair of roller chains is moving in a vertical direction, and

synchronizing means for aligning two or more of said slat means carried by said first and second pairs of chain to form a generally planar, horizontal, multi-sectional elevator surface wherein two slats are adjacent each other when said first and second pairs of chain are moving in a vertical direction.

5,350,051

AGITATOR APPARATUS FOR CYLINDRICAL ARTICLES

Ricky N. Cooper; Renee R. Cooper, both of Chesterfield; Charles P. Pendleton, Madison Heights; Steven R. Rinehart, Chesterfield; Louis R. Turano, Colonial Heights, and Richard N. Webb, Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Dec. 2, 1993, Ser. No. 160,308

Int. Cl.[5] B65G *47/14*

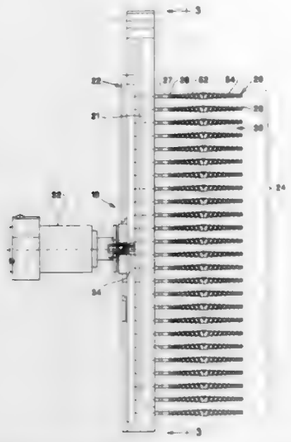
U.S. Cl. 198—396 **17 Claims**

1. An apparatus for preventing jams in a flow of cylindrical articles, comprising:

a plurality of pins, the pins rotatably mounted with parallel axes of rotation in a frame, the pins being interposed in a flow of articles;

the pins being spaced apart for passage between adjacent

pins of an article aligned parallel to the axes of rotation of the pins;



each pin having helical threads on an outer surface of the pin for conveying a non-aligned article out of the flow; and, means for rotating the pins.

5,350,052

DEVICE FOR TRANSPORTING AND EXCHANGING CONTAINERS OF TEXTILE STRAND MATERIAL

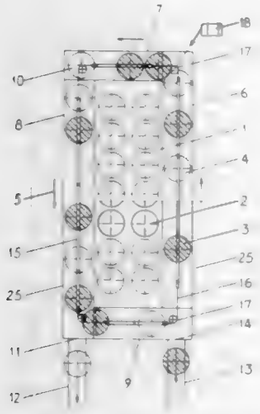
Gregor Gebald, and Manfred Langen, both of Moenchengladbach, Fed. Rep. of Germany, assignors to Innovatex Materials Handling GmbH, Moenchengladbach, Fed. Rep. of Germany

Filed Aug. 2, 1993, Ser. No. 100,761

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1992, 9210330

Int. Cl.[5] **B65G** *25/00*

U.S. Cl. 198—465.2 **11 Claims**



1. A device for transporting and exchanging containers of textile strand material at a textile strand processing machine having a plurality of processing stations, said device comprising:

(a) guide means for guiding containers in a transport path extending around the machine past the processing stations, said transport path having straight sections and corner sections connecting the straight sections;

(b) an inserting station at which containers may be inserted into the transport path;

(c) a discharging station at which containers may be discharged from the transport path;

(d) an endless drive connection reciprocally movable in the transport path and having flexible portions reciprocally movable through the corner sections of the transport path;

(e) drive means for reciprocally driving said drive connection for reciprocation in the transport path; and

(f) container engaging elements projecting from and at spacings along said drive connection in the straight sections of the transport path for drivingly engaging containers during movement of the drive connection in one direction and out of driving engagement with containers during movement of the drive connection in the opposite direction, thereby step-wise advancing the containers along the transport path.

5,350,053

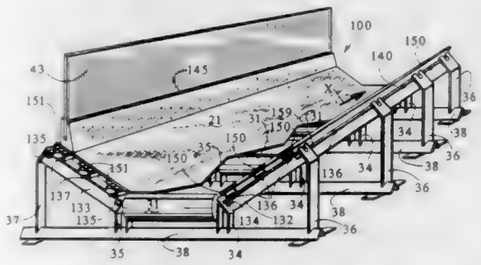
BELT CONVEYOR INPUT STATION

Neil Archer, Paducah, Ky., assignor to Arch Environmental Equipment, Inc., Paducah, Ky.

Filed Nov. 22, 1991, Ser. No. 796,420

Int. Cl.[5] **B65G** *47/19*

U.S. Cl. 198—525 **6 Claims**



1. A side roller replacement kit for the input station of a belt conveyor of the kind comprising a continuous conveyor belt of given width having a conveyor run extending through an input station to and around a head pulley at a discharge location, and a return run from the head pulley to and around a tail pulley back into the input station, the input station comprising a frame, including a plurality of N pairs of center stanchions each aligned with two side stanchions, located beneath the conveyor run of the belt at an input location, center belt support means comprising a plurality of N center support rollers each having a length less than the belt width, each center support roller mounted between one pair of center stanchions, so that the center support rollers support the central portion of the conveyor belt throughout the input station, and first and second lateral belt support means, on opposite sides of the frame adjacent the center belt support means, each lateral belt support means comprising a plurality of N side support rollers each having a length less than the belt width, each side belt support roller mounted between one center stanchion and one side stanchion;

the side roller replacement kit comprising:

two sets of lateral support members, N lateral support members in each set, each lateral support member mountable between a center stanchion and a side stanchion, in place of one of the side support rollers;

two sets of belt support rails;

and two sets of mounting means, one for each set of belt support rails, for mounting the belt support rails on the lateral support members with the belt support rails extending longitudinally of the belt and with each set of belt support rails supporting one side of the conveyor belt at an acute angle to the central portion of that belt throughout the input station.

5,350,054

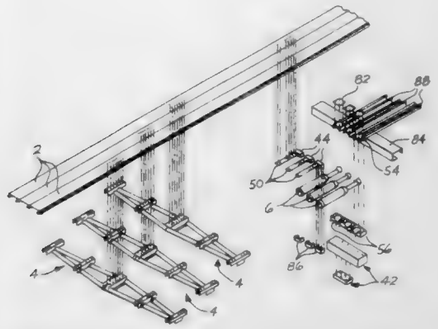
BALL BLOCK FOR MOUNTING LINEAR MOTOR

Raymond K. Foster, P.O. Box 1, Madras, Oreg. 97741

Filed Apr. 28, 1993, Ser. No. 54,533

Int. Cl.[5] **B65G** *25/00*

U.S. Cl. 198—750 **36 Claims**



1. A ball block for mounting a ball end of a linear motor, said motor having a piston component and a cylinder component, said ball end being formed on an outer end of one of said components, and said motor being operable to move said components relative to each other along an axis that extends through a center portion of said ball end, said ball block comprising:

first and second mating housing portions that together define a socket for receiving the ball end; said housing portions abutting each other along mating surfaces that are substantially parallel to said axis; and said socket having a closed rear end portion, and a forward end portion;

a passageway extending from said forward end portion through said first and second housing portions, said passageway being dimensioned to receive therethrough a forwardly projecting portion of the component on which the ball end is formed; and

a plurality of fasteners positioned around said socket and extending through said mating surfaces to secure said housing portions together;

wherein one of said housing portions includes an integral rear wall; said wall having an inner forward surface that defines a rear portion of said socket, and an outer rear surface that is securable to a fixed support; and said axis extending through said rear surface and said forward surface, and said wall extending substantially perpendicularly past said axis, to directly transmit loads created by operation of the linear motor from the ball end to a fixed support to which said wall is secured.

5,350,055

CONVEYOR MECHANISM HAVING SELECTIVELY POSITIONABLE PUSHING FINGERS AND HAVING FINGER POSITIONING CAM ARRANGEMENT

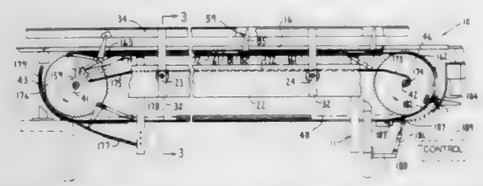
Dale S. Lecrone, Jackson, Mich., assignor to LeMatic, Inc., Jackson, Mich.

Filed Mar. 16, 1993, Ser. No. 33,231

Int. Cl.[5] **B65G** *19/00*

U.S. Cl. 198—718 **23 Claims**

1. An apparatus comprising: means defining an upwardly facing support surface; a movably supported drive member and drive means for effecting movement of said drive member along a path of movement which includes a portion approximately parallel to said support surface; pushing means for sliding an article in a direction of movement on said support surface, said pushing means including a first pushing portion supported on said drive member and engageable with an article on said surface as said first pushing portion moves with said drive member in said direction of movement along said portion of said path of movement, and a second pushing portion supported for movement relative to said drive member between operational and retracted positions in which it is respectively engageable with and free of engagement with an article on said surface as said second pushing portion moves with said drive member in said direction of movement along said portion of said path of movement; first and second elongate guide surfaces extending substantially parallel to each other and substantially parallel to said support surface, said second pushing portion being coupled to a guide part which respectively moves along a respective one of said first and second guide surfaces as said drive member moves along said portion of said path of movement to thereby position said second pushing



portion in a respective one of said operational and retracted positions with respect to said drive member; a movable guide member provided at a location along said path of movement prior to said portion of said path of movement and engageable with said guide part; control means for selectively positioning said guide member in a selected one of first and second positions, said guide part engaging said guide member and being guided by said guide member in response to movement of said drive member to one of first and second positions with respect to said guide member; and means responsive to said guide member being respectively in said first and second positions for guiding said guide part respectively into engagement with said first and second guide surfaces.

5,350,056

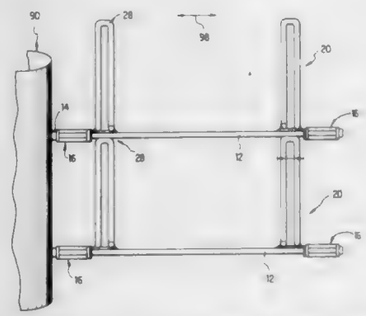
SELF-SUPPORTING CONVEYOR BELT WITH WIRE-FORMED SPACERS

Michael L. Hager, Eden, Md., assignor to Cambridge, Inc., Cambridge, Md. and York Food Systems, Inc., Issaquah, Wash.

Filed Jun. 16, 1993, Ser. No. 77,064

Int. Cl.[5] **B65G** *21/18*

U.S. Cl. 198—778 **46 Claims**

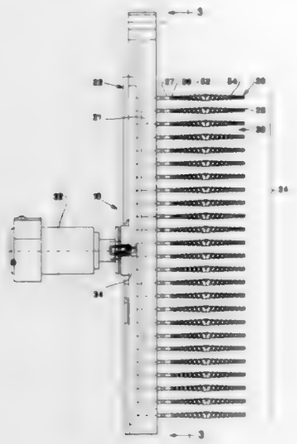


1. A conveyor belt of the type having at least one side edge capable of collapsing or extending to permit the belt to be coiled in a helical belt stack with superimposed tiers; the belt comprising: a plurality of transverse rods extending between opposite side edges of the belt;

a plurality of links joining adjacent transverse rods together so as to permit the belt to assume a curved configuration; and

a plurality of spacers secured to said belt and projecting upwardly from the belt so as to engage at least some of the

pins of an article aligned parallel to the axes of rotation of the pins;



each pin having helical threads on an outer surface of the pin for conveying a non-aligned article out of the flow; and, means for rotating the pins.

5,350,052

DEVICE FOR TRANSPORTING AND EXCHANGING CONTAINERS OF TEXTILE STRAND MATERIAL

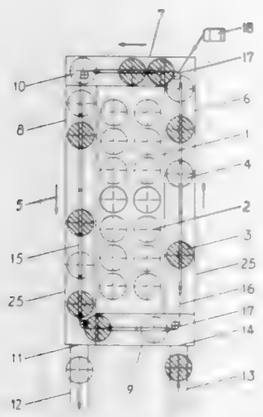
Gregor Gebald, and Manfred Langen, both of Moenchengladbach, Fed. Rep. of Germany, assignors to Innovatex Materials Handling GmbH, Moenchengladbach, Fed. Rep. of Germany

Filed Aug. 2, 1993, Ser. No. 100,761

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1992, 9210330

Int. Cl.[5] B65G *25/00*

U.S. Cl. 198—465.2 **11 Claims**



1. A device for transporting and exchanging containers of textile strand material at a textile strand processing machine having a plurality of processing stations, said device comprising:

(a) guide means for guiding containers in a transport path extending around the machine past the processing stations, said transport path having straight sections and corner sections connecting the straight sections;

(b) an inserting station at which containers may be inserted into the transport path;

(c) a discharging station at which containers may be discharged from the transport path;

(d) an endless drive connection reciprocally movable in the transport path and having flexible portions reciprocally movable through the corner sections of the transport path;

(e) drive means for reciprocally driving said drive connection for reciprocation in the transport path; and

(f) container engaging elements projecting from and at spacings along said drive connection in the straight sections of the transport path for drivingly engaging containers during movement of the drive connection in one direction and out of driving engagement with containers during movement of the drive connection in the opposite direction, thereby step-wise advancing the containers along the transport path.

5,350,053

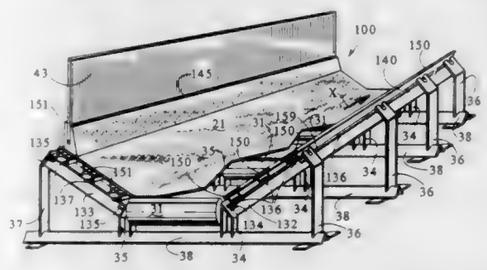
BELT CONVEYOR INPUT STATION

Neil Archer, Paducah, Ky., assignor to Arch Environmental Equipment, Inc., Paducah, Ky.

Filed Nov. 22, 1991, Ser. No. 796,420

Int. Cl.[5] B65G *47/19*

U.S. Cl. 198—525 **6 Claims**



1. A side roller replacement kit for the input station of a belt conveyor of the kind comprising a continuous conveyor belt of given width having a conveyor run extending through an input station to and around a head pulley at a discharge location, and a return run from the head pulley to and around a tail pulley back into the input station, the input station comprising a frame, including a plurality of N pairs of center stanchions each aligned with two side stanchions, located beneath the conveyor run of the belt at an input location, center belt support means comprising a plurality of N center support rollers each having a length less than the belt width, each center support roller mounted between one pair of center stanchions, so that the center support rollers support the central portion of the conveyor belt throughout the input station, and first and second lateral belt support means, on opposite sides of the frame adjacent the center belt support means, each lateral belt support means comprising a plurality of N side support rollers each having a length less than the belt width, each side belt support roller mounted between one center stanchion and one side stanchion;

the side roller replacement kit comprising:

two sets of lateral support members, N lateral support members in each set, each lateral support member mountable between a center stanchion and a side stanchion, in place of one of the side support rollers;

two sets of belt support rails;

and two sets of mounting means, one for each set of belt support rails, for mounting the belt support rails on the lateral support members with the belt support rails extending longitudinally of the belt and with each set of belt support rails supporting one side of the conveyor belt at an acute angle to the central portion of that belt throughout the input station.

5,350,054

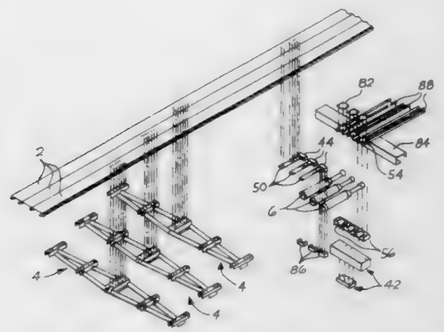
BALL BLOCK FOR MOUNTING LINEAR MOTOR

Raymond K. Foster, P.O. Box 1, Madras, Oreg. 97741

Filed Apr. 28, 1993, Ser. No. 54,533

Int. Cl.[5] B65G *25/00*

U.S. Cl. 198—750 **36 Claims**



1. A ball block for mounting a ball end of a linear motor, said motor having a piston component and a cylinder component, said ball end being formed on an outer end of one of said components, and said motor being operable to move said components relative to each other along an axis that extends through a center portion of said ball end, said ball block comprising:

first and second mating housing portions that together define a socket for receiving the ball end; said housing portions abutting each other along mating surfaces that are substantially parallel to said axis; and said socket having a closed rear end portion, and a forward end portion;

a passageway extending from said forward end portion through said first and second housing portions, said passageway being dimensioned to receive therethrough a forwardly projecting portion of the component on which the ball end is formed; and

a plurality of fasteners positioned around said socket and extending through said mating surfaces to secure said housing portions together;

wherein one of said housing portions includes an integral rear wall; said wall having an inner forward surface that defines a rear portion of said socket, and an outer rear surface that is securable to a fixed support; and said axis extending through said rear surface and said forward surface, and said wall extending substantially perpendicularly past said axis, to directly transmit loads created by operation of the linear motor from the ball end to a fixed support to which said wall is secured.

5,350,055

CONVEYOR MECHANISM HAVING SELECTIVELY POSITIONABLE PUSHING FINGERS AND HAVING FINGER POSITIONING CAM ARRANGEMENT

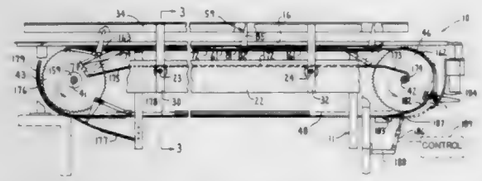
Dale S. Lecrone, Jackson, Mich., assignor to LeMatic, Inc., Jackson, Mich.

Filed Mar. 16, 1993, Ser. No. 33,231

Int. Cl.[5] B65G *19/00*

U.S. Cl. 198—718 **23 Claims**

1. An apparatus comprising: means defining an upwardly facing support surface; a movably supported drive member and drive means for effecting movement of said drive member along a path of movement which includes a portion approximately parallel to said support surface; pushing means for sliding an article in a direction of movement on said support surface, said pushing means including a first pushing portion supported on said drive member and engageable with an article on said surface as said first pushing portion moves with said drive member in said direction of movement along said portion of said path of movement, and a second pushing portion supported for movement relative to said drive member between operational and retracted positions in which it is respectively engageable with and free of engagement with an article on said surface as said second pushing portion moves with said drive member in said direction of movement along said portion of said path of movement; first and second elongate guide surfaces extending substantially parallel to each other and substantially parallel to said support surface, said second pushing portion being coupled to a guide part which respectively moves along a respective one of said first and second guide surfaces as said drive member moves along said portion of said path of movement to thereby position said second pushing



portion in a respective one of said operational and retracted positions with respect to said drive member; a movable guide member provided at a location along said path of movement prior to said portion of said path of movement and engageable with said guide part; control means for selectively positioning said guide member in a selected one of first and second positions, said guide part engaging said guide member and being guided by said guide member in response to movement of said drive member to one of first and second positions with respect to said guide member; and means responsive to said guide member being respectively in said first and second positions for guiding said guide part respectively into engagement with said first and second guide surfaces.

5,350,056

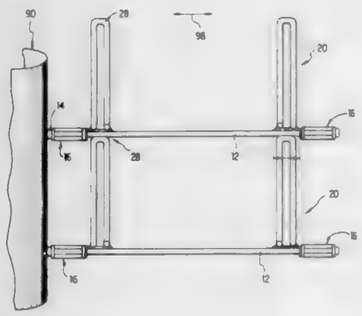
SELF-SUPPORTING CONVEYOR BELT WITH WIRE-FORMED SPACERS

Michael L. Hager, Eden, Md., assignor to Cambridge, Inc., Cambridge, Md. and York Food Systems, Inc., Issaquah, Wash.

Filed Jun. 16, 1993, Ser. No. 77,064

Int. Cl.[5] B65G *21/18*

U.S. Cl. 198—778 **46 Claims**



1. A conveyor belt of the type having at least one side edge capable of collapsing or extending to permit the belt to be coiled in a helical belt stack with superimposed tiers; the belt comprising: a plurality of transverse rods extending between opposite side edges of the belt;

a plurality of links joining adjacent transverse rods together so as to permit the belt to assume a curved configuration; and

a plurality of spacers secured to said belt and projecting upwardly from the belt so as to engage at least some of the

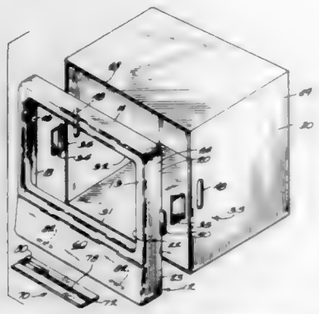
transverse rods of an overlying belt tier of the belt stack to permit said overlying belt tier to move laterally relative the underlying belt tier with the spacers moving along an underside of the transverse rods of the overlying belt tier; whereby the overlying and underlying belt tiers can move relative each other in said lateral direction without the belt tiers destacking.

5,350,057

DISPLAY DEVICE

Peter F. Bemis, Sheboygan, and Timothy J. Otte, Sheboygan Falls, both of Wis., assignors to Bemis Manufacturing Company, Sheboygan Falls, Wis.

Filed Jun. 2, 1993, Ser. No. 70,723
Int. Cl.[5] B65D *5/52*
U.S. Cl. 206—44 R **27 Claims**



1. A display device that can be used singularly for securing a single open-faced container on a shelf for display of and access to the container contents or in multiples to secure any number of open-faced containers on a shelf for display of and access to the contents in each container, said device comprising:

a frame defining an access opening, said frame being dimensioned to surround the open face of the container on which the frame is to be mounted;

a releasable locking means on said frame for removably securing said frame to the open-faced container on which said frame is to be mounted; and

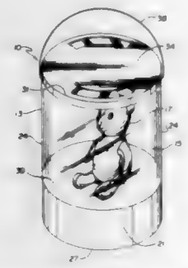
an anchor means for releasably attaching said frame to the shelf when said display is in use.

5,350,058

CHAMBERED ENCLOSURE FOR MAINTAINING A TOY IN A DRY CONDITION

Katherine A. Keough, 15172 Afton Hills Dr., Afton, Minn. 55001

Filed Dec. 10, 1993, Ser. No. 165,729
Int. Cl.[5] B65D *25/00;* **A63H** *33/04, 23/00*
U.S. Cl. 206—45.34 **11 Claims**



1. A chambered enclosure for holding a toy within the enclosure to maintain the toy in a dry condition while portions of the enclosure are getting wet, comprising:

a) a container having wall portions comprising sidewalls and a base, the side walls having portions forming part of the walls defining a dry chamber and a wet chamber within the enclosure, the sidewalls further forming a rim designed for cooperative engagement with an enclosure openable portion which is selectively configurable as a watertight closeable portion, the rim providing access to the dry chamber within which a toy may be placed to keep the toy dry;

b) a wet chamber formed by the base and portions of the sidewalls extending beyond the dry chamber, the wet chamber being separated from the dry chamber by an internal solid wall extending between the sidewalls, the internal solid wall comprising means for holding the toy placed within the enclosure; and

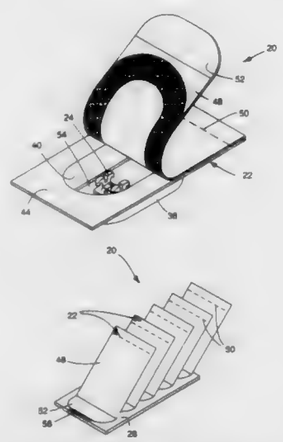
c) wet chamber ballasting means for allowing water to enter the wet chamber to provide ballast to stabilize the enclosure.

5,350,059

DENTAL DISPENSING SYSTEM

Bruce E. Chester, Irvine, and James D. Cleary, Glendora, both of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 2, 1993, Ser. No. 12,304
Int. Cl.[5] A61B *19/02*
U.S. Cl. 206—63.5 **19 Claims**



14. A dental dispensing system comprising:

a plurality of dental appliances;

a plurality of containers each having a side wall and a bottom defining a well, said well of each of said containers receiving a respective one of said dental appliances, each of said containers including a cover removably covering its well, each of said containers having a generally flat configuration;

a carrier strip; and

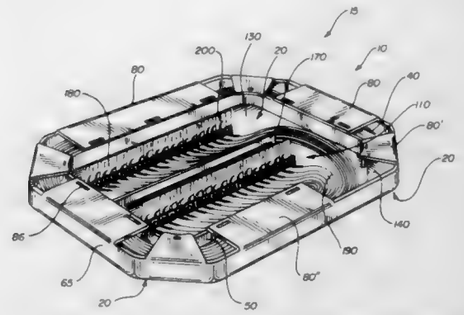
means for detachably connecting each of said containers to said carrier strip such that said containers abut each other and are oriented in a stacked array with each of said containers extending in an upward direction.

5,350,060

PROCEDURE KIT AND PACKAGE

Marvin Alpern, Glen Ridge, N.J., and Robert Cerwin, Pipersville, Pa., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jan. 15, 1993, Ser. No. 6,005
Int. Cl.[5] B65D *85/24*
U.S. Cl. 206—63.3 **113 Claims**



1. A package for a surgical suture and needle procedure kit that defines a suture winding channel, comprising:

a base having a central area, the central area having an outer periphery;

an inner wall extending up from the base about the central area wherein the inner wall comprises a pair of substantially opposed inner longitudinal walls extending from the base and, a pair of substantially opposed inner latitudinal walls extending from said base, said latitudinal walls being connected to said longitudinal walls wherein the inner longitudinal walls and the inner latitudinal walls are connected by curved intermediate walls sections;

an outer wall extending up from the base, wherein the inner wall and the outer wall form a suture winding channel;

at least one spacer means located in the channel for separating the channel into at least two coplanar sections;

a plurality of door means hingingly attached to the suture winding channel, the door means being closable to enclose a suture within the suture winding channel; and,

means for locking said door means in their closed position.

20. A package for a surgical suture and needle procedure kit that defines a suture winding channel, comprising:

a base having a central area, the central area having an outer periphery;

an inner wall extending up from the base about the central area said inner wall comprising a pair of substantially opposed inner longitudinal walls extending from the base and a pair of substantially opposed inner latitudinal walls extending from said base, said latitudinal walls being connected to said longitudinal walls;

an outer wall extending up from the base, wherein the inner wall and the outer wall form a suture winding channel wherein the inner longitudinal walls and the inner latitudinal walls are connected by curved intermediate walls sections;

a plurality of door means hingingly attached to the suture winding channel, the door means being closable to enclose a suture within the suture winding channel and means for locking said door means in their closed position;

at least one spacer means located in the channel for separating the channel into at least two coplanar sections; and,

at least one needle park means located in said central area.

42. A surgical suture and needle procedure kit, comprising:

I) a package for surgical needles and sutures that defines a suture winding channel, said package comprising:

a base having a central area, the central area having an outer periphery;

an inner wall extending up from the base about the central area;

an outer wall extending up from the base, wherein the inner wall and the outer wall form a suture winding channel;

at least one spacer means located in the channel for separating the channel into at least two coplanar sections; and

II) at least two surgical needles and at least two surgical sutures, the needles placed in the central area and the sutures wound in the suture winding channel, wherein at least one of the sutures in a double-armed suture.

73. A surgical suture and needle procedure kit, comprising:

I) a package for surgical needles and sutures that defines a suture winding channel, said package comprising:

a base having a central area, the central area having an outer periphery;

an inner wall extending up from the base about central area;

an outer wall extending up from the base, wherein the inner wall and the outer wall form a suture winding channel;

at least one spacer means located in the channel for separating the channel into at least two coplanar sections; and,

at least one means for parking at least one needle located in said central area; and,

II) at least two surgical needles and at least two surgical sutures, the needles engaged by the needle park means and the sutures wound in the suture winding channel, wherein at least one of the sutures is a double-armed suture.

100. A surgical suture and needle procedure kit, comprising:

I) a package for surgical needles and sutures that defines a suture winding channel, said package comprising:

a base having a central area, the central area having an outer periphery;

an inner wall extending up from the base about central area;

an outer wall extending up from the base, wherein the inner wall and the outer wall form a suture winding channel;

at least one spacer means located in the channel for separating the channel into at least two coplanar sections; and,

at least one means for parking at least one needle located in said central area; and,

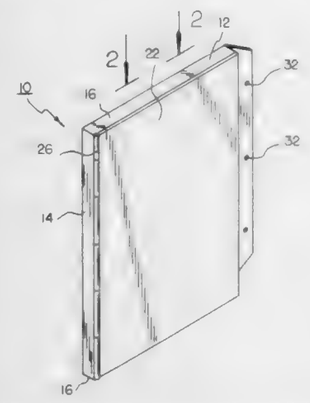
II) a plurality of surgical needles and sutures for a surgical procedure, the needles engaged by the needle park means and the sutures wound in the suture winding channel.

5,350,061

CONTAINER SYSTEMS FOR SCHOOL SUPPLIES

Andrew L. Gunn, 2829 Ransom Island Dr., Corpus Christi, Tex. 78418

Filed Jan. 21, 1994, Ser. No. 183,871
Int. Cl.[5] A45C *11/34;* **B65D** *85/28*
U.S. Cl. 206—214 **3 Claims**

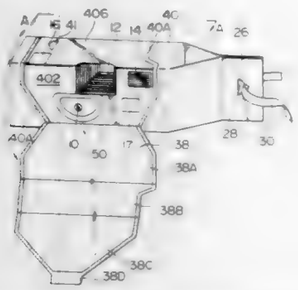


2. A container system for school supplies comprising:

a container having long parallel side walls and short parallel end walls coupled together in a rectangular configuration with a rectangular floor secured at its periphery to the adjacent edges of the side and end walls;

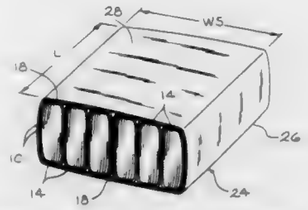
a lid in a planar configuration positionable over the edges of the side and end walls remote from the floor;
a hinge coupling the adjacent edges of the container and lid for opening and closing the container;
a clasp to secure the lid in a closed position with respect to the container;
a flexible tab formed as an extension of the floor, the tab having a plurality of apertures for being received within the loose leaf note book of a student; and
a plurality of planar strips secured along their interior edges to the face of the floor within the container and with their end edges secured with respect to the side and end walls to thereby form a plurality of compartments for the segregated receipt of school supplies; and
a supplemental container of a configuration similar to that of the first mentioned container; and
a plurality of apertures extending through the floor of the first mentioned container and a plurality of pins extending from the exterior surface of the floor of the supplemental container and releasably positionable within the holes to thereby form a system with two containers releasably secured with respect to each other.

5,350,062
WRAPPER OF FILM UNIT WITH LENS
Miho Takiguchi; Noriko Katayama; Aya Itoh; Kaori Ohama, all of Tokyo, and Yasuo Tanaka, Oosaka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Division of Ser. No. 977,202, Nov. 16, 1992, abandoned. This application Jul. 26, 1993, Ser. No. 96,824
Claims priority, application Japan, Nov. 18, 1991, 3-094428[U]
Int. Cl.[5] B65D *85/38*
U.S. Cl. 206—316.2 **11 Claims**



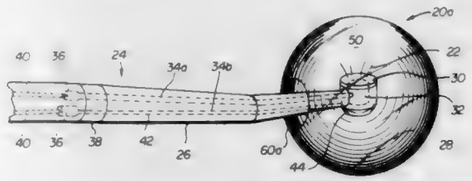
1. A photographic film unit comprising a body containing unexposed photographic film, said body having a horizontal length and a vertical height and a horizontal depth that extends from front to rear of said body, said length being greater than either said height or said depth, a taking lens in the body for exposing the photographic film, a viewfinder to determine the field of view of the photographic film unit, a shutter release button in said body for causing an exposure of the photographic film through said taking lens, a wrapper within which said body is enclosed, said wrapper having a portion covering at least a part of said body of the film unit, said portion being adapted to be peeled away from a remaining portion of said wrapper by which said body remains partially enclosed after said peelable portion is peeled away, said peelable portion when peeled away exposing said taking lens and said viewfinder and said shutter release button, and said wrapper extending endwise beyond the body in prolongation of said horizontal length and having walls thereof sealed together, and a hole passing through said sealed-together walls for hanging said unit at a point of sale, said walls being sealed together entirely about said hole.

5,350,063
CARTWHEELABLE SHIPPING PACKAGE FOR INSULATION
Clarke Berdan, II, Granville, Ohio, assignor to Owens-Corning Fiberglas Technology Inc., Summit, Ill.
Filed Jul. 13, 1993, Ser. No. 90,822
Int. Cl.[5] B65D *85/46*
U.S. Cl. 206—321 **22 Claims**



1. An insulation shipping package for compressible insulation products, the insulation shipping package having two generally rectangular major faces, defined by shipping package major face edges having length and width edge dimensions, and comprising at least two units, each unit comprising at least two insulation packages, the insulation shipping package having a ratio of major face edge dimensions less than about 1:1.5, the insulation products being compressed to a greater extent in the insulation shipping package than in the units so that when the insulation shipping package is opened into individual units, each individual unit has two generally rectangular major faces, defined by unit major face edges having length and width edge dimensions, and each unit has a ratio of major face edge dimensions less than about 1:1.5.

5,350,064
DISPOSABLE CONTAINER FOR CLEANING AND LUBRICATING A DENTAL HANDPIECE
Gary G. Schneck, Algonquin, Ill., assignor to Gendex Corporation, Des Plaines, Ill.
Continuation-in-part of Ser. No. 20,659, Feb. 22, 1993, Pat. No. 5,316,590. This application Apr. 16, 1993, Ser. No. 73,274
Int. Cl.[5] B65D *83/02*
U.S. Cl. 206—368 **17 Claims**



1. An apparatus for use with a dental handpiece, said dental handpiece having a handle portion and a head portion mounted to said handle portion, said head portion having means therein for mounting a turbine, a turbine mounted in said head portion and fluid conduit means in the handle portion communicating with the head portion for carrying fluid for driving said turbine, said apparatus being used when said dental handpiece is being cleaned or lubricated by respective cleaning or lubricating fluid being circulated through the fluid conduit of the handle portion to the head portion and turbine, said apparatus comprising:
a disposable container sized for surroundingly enclosing a head portion of a dental handpiece, said container having an aperture sized to receive a head portion of a dental handpiece therethrough for entry of the head portion into the container so as to be substantially surrounded by the container while leaving part of a handle portion of the dental handpiece extending outwardly of the container so that when cleaning or lubricating fluid is circulated through the fluid conduit of the handle portion to the head portion and turbine, that part of said fluid which is expelled from the head portion, together with any other materials carried by the fluid, are received and confined along an inner surface of the container.

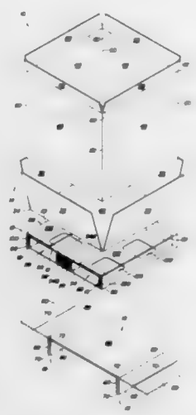
5,350,065
TOOL AND HARDWARE CARRIER FOR BUCKET
John J. Darrey, 1799 Highland Ave., North, Apt. 134-J, Clearwater, Fla. 34615-2109
Filed Jun. 11, 1993, Ser. No. 76,436
Int. Cl.[5] B65D *85/20, 6/40;* **A47F** *7/00*
U.S. Cl. 206—373 **18 Claims**



1. An insert apparatus for adapting a bucket for use in carrying tools and otherwise facilitating the conduct of tasks with hand tools, the insert apparatus comprising;
a circular member which is generally planar and further comprises a generally circular opening at its center, said circular member being constructed of a noncorrosive material and of adequate strength to bear the weight of a plurality of tools customarily held in and controlled by hand and moved from place to place during the conduct of mechanical, carpentry, plumbing, or electrical functions;
said circular member further comprising holding means for holding tools said holding means for holding tools further comprising receiving means about its circumference on a bottom side, said receiving means adapted to receive the upper ridge of a bucket of matching circumference and having an open interior, such that said circular member generally forms a plane across the top of said bucket with said circular opening at or near the bucket's center;
said circular member being further adapted with a series of openings at various points across its surface, said openings comprising a series of slots and holes in a variety of sizes and shapes which may correspond with various hand tools such that a given hand tool will rest securely in one of said openings;
said circular opening being joined with an upper end of a cylindrical member, said cylindrical member being open at said upper end and extending down to a generally planar and closed lower end such that objects may be placed within the cylindrical cavity formed between the upper and lower ends, said circular opening being of adequate size to permit a person's hand to fit and maneuver within said cylindrical cavity.

11. A bucket and apparatus adapted for use in carrying tools and otherwise facilitating the conduct of tasks with hand tools, the apparatus comprising;
a circular member which is generally planar and is further adapted with a generally circular opening at its center, said circular member being constructed of a noncorrosive material and of adequate strength to bear the weight of a plurality of tools customarily held in and controlled by hand and moved from place to place during the conduct of mechanical, carpentry, plumbing, or electrical functions;
said circular member being fastened to the upper ridge of said bucket such that said circular member generally forms a plane across the top of said bucket with said circular opening at or near the bucket's center;
said circular member being further adapted with a series of openings at various points across its surface, said openings comprising a series of slots and holes in a variety of sizes and shapes which may correspond with various hand tools such that a given hand tool with reset securely in one of said openings;
said circular opening being joined with an upper end of a cylindrical member, said cylindrical member being open at said upper end and extending down into said bucket and further having a generally planar and closed lower end such that objects may be placed within the cylindrical cavity formed between the upper and lower ends, said circular opening being of adequate size to permit a person's hand to fit and maneuver within said cylindrical cavity, said cylindrical member being no longer than may fit into the bucket without preventing said circumferential slot with resting upon said upper bucket ridge.

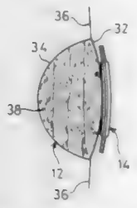
5,350,066
CORRUGATED PALLET AND CONTAINER SYSTEM
Ramon C. Mendoza, Moline, Ill., and Michael J. Vonderhaar, Davenport, Iowa, assignors to Deere & Company, Moline and Miller Container Corp., Rock Island, both of Ill.
Filed Oct. 15, 1993, Ser. No. 138,171
Int. Cl.[5] B65D *19/20*
U.S. Cl. 206—386 **17 Claims**



1. A pallet component adapted for receipt of and movement by the forks of a fork pallet truck, the pallet component comprising:
a unitary sheet of corrugated material having top and bottom generally planar surfaces and opposed parallel sides, inner and outer panels defined at each of said opposed parallel sides by fore-and-aft extending inner and outer fold lines running parallel to the sides, said inner and outer panels folded together about each of said outer fold lines into facing contact with each other, the folded together inner and outer panels folded downwardly along each of said inner fold lines to form fore-and-aft extending outer or side runners unitary with the remainder of the sheet to provide outer runner lateral stability;
a central runner fixed to the bottom of the sheet generally parallel to said outer runners to define with the outer runners fore-and-aft extending fork receiving areas; and
a wrapper extending under the central and side runners, the wrapper folded around the side runners about fold lines parallel to the side runners so that the side runners are surrounded on their bottom, side and top portions, the wrapper having upper planar portions extending inwardly from the side portions of the side runners toward the

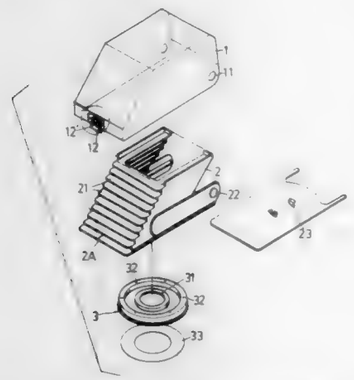
central runner, wherein the wrapper extends inwardly toward the central runner and is fixed to the top planar surface to provide lateral stability to the side runners.

5,350,067
PACKAGING SYSTEM
Patricio H. Beltran, Junin 116, Barrio San Marcos, Quito, Ecuador
Continuation of Ser. No. 371,073, Jun. 26, 1989, abandoned, which is a continuation of Ser. No. 58,214, Jun. 4, 1987, Pat. No. 4,848,572. This application Dec. 29, 1992, Ser. No. 139,291
Claims priority, application Ecuador, Jun. 9, 1986, SP-86-183
The portion of the term of this patent subsequent to Jul. 18, 2006, has been disclaimed.
Int. Cl.[5] A61B *17/06*
U.S. Cl. 206—440 **8 Claims**



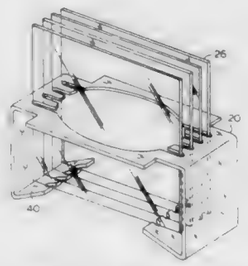
1. A packaging system comprising, in combination:
an article of manufacture having an area of adhesive defined on a surface thereof for mounting the article of manufacture in opposed, facing relation to a portion of the user's skin;
a hermetic sheath releasably adhered to said area of adhesive;
a member made of hydrophilic materials sealed in said hermetic sheath; and
an aseptic solution contained in the hydrophilic member.

5,350,068
ROTARY 3½" DISKETTE STORAGE BOX
Walter Chieng, 1F, No. 12, Alley 18, Lane 277, Sec. 6 Chung Shan N. Rd., Taipei, Taiwan
Filed Sep. 10, 1993, Ser. No. 119,725
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—444 **12 Claims**



1. A rotary 3½" diskette storage box comprising:
a diskette case including a plurality of U-shaped plates together forming a plurality of stepped spaces each for receiving a diskette, said spaces being offset in an upward and rearward direction along the diskette case, the diskette case having a rear end and a bottom;
a cover for covering the stepped spaces, the cover having a rear end;
a hinge connected between the rear ends of the case and cover for pivotally connecting the cover to the case for exposing and covering the stepped spaces;
a pair of spaced apart hooks extending downwardly from the bottom; and
a base having a fixing hole therein, engagable by said hooks for rotatably connecting said base to said case, said base having a circumference with a plurality of convex spot-like projections spaced there around and engageable against the bottom of the case for facilitating rotation of the case on the base.

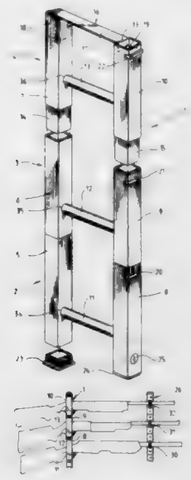
5,350,069
CLEANING AND STORAGE DEVICE
David E. Agwu, 1105 Fenimore St., Winston-Salem, N.C. 27103
Filed Aug. 31, 1993, Ser. No. 114,683
Int. Cl.[5] B65D *85/48;* **A47G** *19/08*
U.S. Cl. 206—454 **10 Claims**



1. A device for washing and storage of electrophoresis components, comprising a rectangular sheet of material having two parallel first sides and two second sides perpendicular to said first sides, said rectangular sheet having the following cutout portions:
(a) end notches along each first side, with the end notches on one first side being aligned with the end notches on the other first side;
(b) a central opening having two opposite sides;
(c) side notches cut at each opposite side of the central opening, said side notches on each side being aligned with the side notches on the other side, and with the end notches on the first sides;
(d) corner cutout areas adjacent said end notches,
wherein said sheet is bent to form a central segment around said central opening which is contiguous with two side segments, each of said side segments being contiguous with a foot segment containing end notches, wherein said device may be placed on a surface with said central segment parallel to said surface, said side segments at about a 90° angle to said central segment, said foot segments at an angle to said surface and each of said side notches positioned directly above an end notch, wherein a space is formed between said foot segments, said surface and the lower edge of a glass slide placed in a pair of opposite side notches and in end notches below said pair, which space is of sufficient size to accommodate a magnetic stirrer.

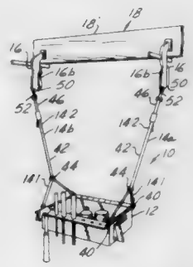
5,350,070
GUN RACK
Michael Stamatopoulos, Broadmeadows, and George Silverio, Campbellfield Vic, both of Australia, assignors to Arma-Lok Pty Ltd., Campbellfield, Australia
Filed Aug. 2, 1993, Ser. No. 100,683
Claims priority, application Australia, Aug. 27, 1992, PL 4337
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—64 **6 Claims**

1. A modular gun rack comprising a modular barrel support means for supporting a barrel of a gun and modular stock support means for supporting a stock of the gun, the stock support means being suitably spaced from the barrel support means when the rack is assembled and installed, the modular stock support means comprising a first frame element, a second frame element, a first cross-member for joining the first and second frame elements, securing means for securing the first



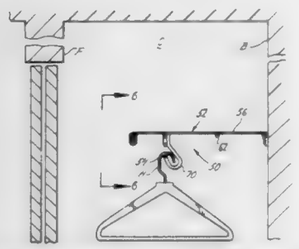
frame element to a wall, and a second cross-member for securing the first frame element to the second frame element, wherein the first cross-member is capable of passing through a trigger guard of a gun to secure the gun when the rack is assembled and the first and second frame elements have ends that are so adapted that corresponding additional frame elements can be attached thereto to extend the modular glen rack.

5,350,071
SUSPENDABLE TRAY
Kelan B. Pond, 3230 Kenicott Dr., Walled Lake, Mich. 48390
Filed Feb. 19, 1993, Ser. No. 20,105
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—70.6 **18 Claims**



1. A suspendable tray for being selectively suspended from an overhead structure, comprising:
tray means for holding articles;
holding means for selectively connecting with the overhead structure; and
suspension member means connected with said tray means and said holding means for providing an elongate and substantially flexible connection therebetween;
wherein said suspension member means connects with said tray means in a predetermined symmetrically spaced pattern so as to provide balanced suspension of said tray means with respect to said suspension member means when said holding means is connected with the overhead structure;
wherein a length is defined along said suspension member means between said tray means said holding member means, wherein further said suspension member means further comprises length adjustment means for selectively adjusting said length.

5,350,072
RESIDENTIAL INTEGRAL SHELF AND HANGER ROD
Richard D. Rogers; Charles Camilleri, both of St. Louis, and Raymond Wood, Fenton, all of Mo., assignors to Lee Rowan Company, St. Louis, Mo.
Continuation-in-part of Ser. No. 966,274, Oct. 26, 1992, which is a continuation of Ser. No. 771,763, Oct. 4, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 48,116
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—123 **8 Claims**

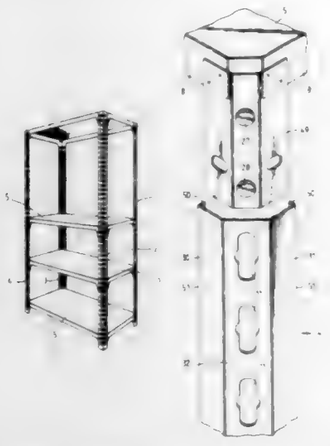


1. A residential integral shelf and hanger rod from which garment hangers can be hung by their hooks comprising:
a shelf member having a back and a front and being formed of longitudinal and transverse wires welded together,
the longitudinal wires including parallel horizontally spaced forward and rearward wires;
the rearward wire being adjacent the back of the shelf and the forward wire being toward the front of the shelf relative to the rearward wire;
a lower forward wire spaced below and parallel to the forward wire;
an elongated garment hanger rod;
a plurality of support brackets connected to the forward wire; the lower forward wire, and the garment hanger rod;
the configuration of each bracket being non-linear and clearing the hook of a garment hanger whereby the garment hanger can slide along the garment hanger rod in an uninterrupted path that passes the support brackets;
all of the wires and the garment hanger rod having diameters of less than one half inch whereby the integral shelf and hanger rod can be handled and installed by one person in a residential closet; and,
the longitudinal wires include an upper front wire spaced forward of the forward wire;
the transverse wires extending across and being welded to the forward, rearward and upper front longitudinal wires.

5,350,073
FREE-STANDING SHELVING SYSTEM
Thornley, Robert S., Watford, and Christos Papadopoulos, Tickhill, both of England, assignors to McKechnie (UK) Limited, West Midlands, United Kingdom
Filed Oct. 19, 1992, Ser. No. 991,342
Claims priority, application United Kingdom, Oct. 17, 1991, 9122088.9
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—187 **11 Claims**

1. A free-standing shelving system, comprising:
a plurality of uprights having spaced holes therealong;
a plurality of shelves having exterior surfaces; and

an attachment arrangement attaching said shelves to said uprights so that said shelves can extend approximately horizontally between said uprights and be supported thereby, said attachment arrangement comprising a separate corner piece attachment at each corner of each said shelf on the exterior surface thereof such that said corner piece projects outwardly from the exterior surface of said shelf, and each said corner piece extending longitudinally



in a direction substantially perpendicular to said shelf and having a protrusion protruding through one of said holes in said uprights;

wherein said uprights have exterior edges with longitudinal flanges thereon, said longitudinal flanges being positioned about said separate corner pieces projecting outwardly from the exterior surfaces of said shelves such that said corner pieces are held substantially rigid with respect to said uprights.

5,350,074

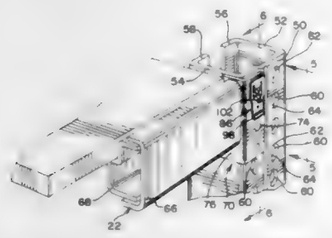
PALLET RACK LOCK

Philip A. Rosenband, Palm Beach, Fla., assignor to Morgan Marshall Industries, Inc., Chicago Heights, Ill.

Filed Oct. 1, 1993, Ser. No. 130,172

Int. Cl.[5] A47F *5/00*

U.S. Cl. 211—192 **15 Claims**



1. A rack lock in a pallet rack system releasably locking one end of a shelf beam of a pallet rack to an upright column of the pallet rack, said column has a plurality of vertically spaced locking apertures, said rack lock including; a lock plate fixed to the shelf beam and positioned substantially parallel to the upright column, a load bearing stud fixed to the lock plate, said load bearing stud positioned in a lower portion of a locking aperture, a resilient carrier having one end fixed to the locking plate and the opposite end being free, a lock stud mounted on the resilient carrier and movable therewith, said lock stud positioned in an upper portion of a respective locking aperture to prevent upward movement of the load bearing stud in its locking aperture, and a dog limiting movement of the resilient carrier away from the lock plate, whereby the lock stud may be selectively moved out of its locking aperture by bending a portion of the resilient carrier away from the lock plate and the dog limits bending of the resilient carrier sufficiently to prevent permanent deformation of the carrier.

5,350,075

ARRANGEMENT FOR CONTROLLING THE DIRECTION OF MOVEMENT OF A LOAD HOIST TROLLEY

Sture Kahlman, Läckeredsvägen 10, S-462 61 Vänersborg, Sweden

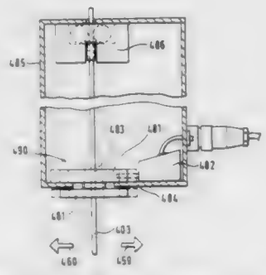
PCT No. PCT/SE90/00277, § 371 Date Oct. 30, 1991, § 102(e) Date Oct. 30, 1991, PCT Pub. No. WO90/13508, PCT Pub. Date Nov. 15, 1990

PCT Filed Apr. 25, 1990, Ser. No. 781,155

Claims priority, application Sweden, May 2, 1989, 8901579-6; Jan. 2, 1990, 9000003-5

Int. Cl.[5] B66C *13/12;* **H01H** *9/26*

U.S. Cl. 212—159 **1 Claim**



1. A load hoist arrangement comprising a manually controllable load device supported by a lifting cable, driving means for driving said load device in a horizontal direction, a movement transmission element, said movement transmission element having a slidable position indicator control which is laterally slidable in reaction to lateral movement of the lifting cable, a potentiometer which is actuated by said slidable position indicator control, a transport trolley mounted on said driving means and having hoist machinery connected with said lifting cable, said transport trolley movable in at least two opposite directions, and at least two drive motors for driving said trolley in said two opposite directions, means connecting said drive motors with said position indicator control, whereby manual lateral movement in one direction of said lifting cable by an operator actuates said movement transmission element such that said position indicator control transmits a signal to one of said drive motors, causing said motor to drive said trolley in the same direction as the manual lateral movement of said lifting cable, and whereby manual lateral movement of said lifting cable in the opposite direction likewise causes trolley movement in the opposite direction.

5,350,076

BRIDGE CRANE ELECTRIC MOTOR CONTROL SYSTEM

Brian A. Kalan, Lynwood, Ill., assignor to Whiting Corporation, Harvey, Ill.

Division of Ser. No. 471,309, Jan. 29, 1990, Pat. No. 5,133,465. This application Mar. 16, 1992, Ser. No. 851,631

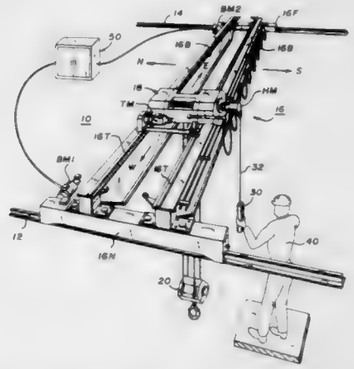
Int. Cl.[5] B66C *17/00;* **B60P** *1/02;* **G06F** *7/70*

U.S. Cl. 212—209 **1 Claim**

1. The method of operating an overhead crane of the type wherein operating units are driven in three different directions so as to position a hoist unit at any desired position within a volume of space for lifting, moving and depositing loads from one position to another within that volume, said overhead crane having three operating units including a bridge movable forwardly and reverse and a trolley movable forwardly and

reverse on said bridge, a hoist mechanism mounted on said trolley for up and down movements, each of said three operating units being each independently driven by one of three separate electric motor means, each of which separate motor means is controlled by separate motor control means, said crane also including a source of command signals for operating the crane, said command signals include at least a bridge forward signal, a bridge reverse signal, a trolley forward and a trolley reverse signal, said crane also including a source of bridge overload signals and a source of trolley overload signals; a single computer of the programmable controller type coupled to each of said three electric motor control means to selectively energize or not energize the three separate electric motors means in response to a predetermined computer program and the command signals, said computer including means for receiving said command signals as inputs, and further including means with at least an incremental bridge overload counter and an incremental trolley overload counter, for storing information as to the number of overload operations of each of said separate electric motor means for said bridge and said trolley and for outputting said information on command, said computer program including at least the following subroutines:

(a) if said bridge forward signal is present, ask if a bridge overload signal in present, if "yes", increase the bridge overload counter and take no action toward further energizing said motor means associated with said bridge, if



"no", query if said bridge reverse command signal is present and if the answer to this query in "yes", take no action toward further energizing said motor means associated with said bridge, if "no", energize said electric motor means associated with said bridge to drive said bridge forward;

(b) if said trolley forward signal is present ask if a trolley overload signal is present, if "yes", increase the trolley overload counter and take no action toward further energizing said motor means associated with said trolley, if "no", query if said trolley reverse command signal is present and if the answer to this query is "yes", take no action toward further energizing said motor means associated with said trolley, if "no", energize said electric motor means associated with said trolley to drive said trolley forward;

said means for storing and outputting information stores information generated from said subroutines relative to the use of said crane over a period of time and outputs such information on command; comprising the steps of:

(a) in response to a specific command to run a first of said three electric motor means in a selected direction, recording the selected direction of motion of said first motor means, sensing if the overload condition for that motor means is present and developing signals indicative of an overload situation in said first of said electric motor means;

(b) in response to a specific command to run a second of said three electric motor means in a selected direction, recording the selected direction of motion of said second motor means, sensing if the overload condition for that motor means is present and developing signals indicative of an overload situation in said electric motor means;

(c) recording said signals indicative of an overload situation in each of said first and second motor means as they occur over time in said programmable controller such that the number of overload situations over time as to each of the said first and said second electric motor means can be accumulated and determined by accessing said recorded information in said programmable controller;

(d) reading out the accumulated information so stored.

5,350,077

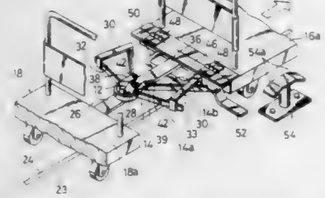
METHOD AND DEVICE FOR COUPLING A SELF-PROPELLED TRUCK WITH A CARRYING TRUCK

Takashi Nezu; Minoru Iwagami, and Hisayoshi Kawashima, all of Ohme, Japan, assignors to Taichi-S Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1993, Ser. No. 75,091

Int. Cl.[5] B61G *1/28*

U.S. Cl. 213—75 R **18 Claims**



1. A method for coupling a self-propelled truck with a carrying truck, comprising the steps of:

providing a female engagement means at a rearward side of said self-propelled truck;

providing a male engagement means at a forward side of said carrying truck;

wherein said female engagement means is so formed as to have an engagement base portion for allowing engagement with said male engagement means and retaining the same therein, and a pair of right and left opening means disposed symmetrically relative to and continuous with said engagement base portion;

defining a curved point in a path along which said self-propelled truck moves in a forward direction; and

locating said carrying truck adjacent to said curved point, such that said male engagement means provided at the forward side of said carrying truck is positioned at a path along which one of said right and left opening means is to be displaced when said forwardly moving self-propelled truck turns at said curved point,

whereby, when said self-propelled truck turns at said curved point, said female engagement means is subject to a swerving motion in respect of a curved line at said curved point, bringing said one of said right and left opening means towards said male engagement means of the thus-located carrying truck, so that said male engagement means is caught in said one of said right and left opening means, and engaged and retained in said engagement base portion of said female engagement means.

5,350,078

BEVERAGE BOTTLE

Jo Lee B. Potts; Joann H. Miller, both of Bradenton; Marvin W. Hodge, and Griscom Bettle, III, both of Sarasota, all of Fla., assignors to Tropicana Products, Inc., Bradenton, Fla.

Filed Sep. 24, 1992, Ser. No. 950,466
Int. Cl.[5] B65D *23/10*
U.S. Cl. 215—100 A 15 Claims



1. A plastic bottle for holding beverages comprising:
an elongated body; and
a neck extending vertically above said body and having an access opening;
said body having a substantially square cross section defined by four side walls, each of said side wall having a substantially vertical planar surface and a substantially planar shoulder sloping toward said neck;
three of said side walls having a substantially horizontal arcuate groove extending across said vertical surface, the grooves on two opposed side walls being sized and shaped to fit a person's finger, and the groove on the third side wall being shallower and having a larger radius of curvature than the grooves on the opposed side walls to form a hand grip for holding said bottle while a liquid is dispensed from said opening.

5,350,079

SAFETY COVER ASSEMBLY FOR OPEN CONTAINER

Douglas A. Larson, River Forest; Thomas J. Danowski, and Roy Voss, both of Elgin, all of Ill., assignors to Safety-Kleen Corp., Elgin, Ill.

Filed Mar. 1, 1993, Ser. No. 24,631
Int. Cl.[5] B65D *43/26*
U.S. Cl. 220—264 11 Claims



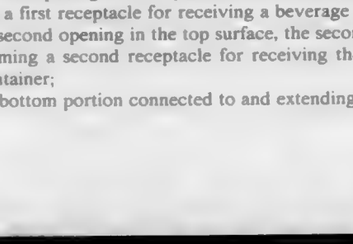
1. A safety cover assembly for use with an associated drum unit comprising, in combination, a drum insert portion having a collar element defining an opening for receiving materials to be stored and disposed of, said collar element being generally congruent and dimensioned to fit within an upper margin of said associated drum, said collar having a top flange portion which extends radially outwardly to position said collar in relation to said drum; a cover assembly having a fixed cover element extending chordwise across a portion of said opening, a movable cover panel extending substantially across the remainder of said opening, and a hinge pivotally connecting said fixed cover element to said movable cover panel along a hinge axis; a lift frame assembly having a generally horizontally extending treadle portion, a pair of risers extending upwardly toward said cover assembly, and a crank mechanism having a pair of elements engaging the upper ends of said risers and another element secured to said movable panel, whereby a downward movement of said treadle portion will cause said movable cover panel to pivot about said hinge axis and raise said movable cover panel so as to provide access to the interior of said drum.

5,350,080

MULTI-ACCESS PORT FOR USE IN A CELL CULTURE MEDIA SYSTEM

Dennis Brown, Logan, and Dale G. Kern, Hyde Park, both of Utah, assignors to HyClone Laboratories, Logan, Utah

Continuation-in-part of Ser. No. 15,804, Feb. 10, 1993. This application Mar. 26, 1993, Ser. No. 37,940
Int. Cl.[5] B65D *47/00*
U.S. Cl. 220—465 11 Claims



1. A multi-access port for use with a cell culture media containment system, the containment system utilizing a media bag having walls forming a chamber therein, the bags being supported within a barrel, the port comprising:
a) a mounting flange having a top surface and bottom surface, the top surface being capable of affixation to the wall of the media bag surrounding a hole formed therein;
b) an access cap;
c) a sidewall extending from the mounting flange to the access cap;
d) an aperture having walls formed through the access cap; and
e) a tubing connector fitted into the aperture, the tubing connector having a lower tip extending below the access cap a distance less than the distance between the mounting flange and the access cap, and the tubing connector having an upper tip extending above the access cap.

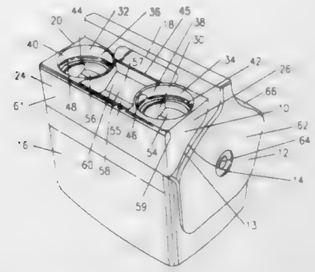
5,350,081

BEVERAGE CONTAINER HOLDER

Wayne B. Graham, 4475 Golden Foothill Pkwy., El Dorado Hills, Calif. 95762

Filed Oct. 13, 1993, Ser. No. 136,302
Int. Cl.[5] B65D *21/00*
U.S. Cl. 220—737 20 Claims

1. A beverage container holder for attachment to a carrier having a sloped outer face and a handle above the sloped outer surface for gripping by a user of the carrier, the container holder comprising:
(a) a top surface facing upwardly;
(b) a first opening in the top surface, the first opening forming a first receptacle for receiving a beverage container;
(c) a second opening in the top surface, the second opening forming a second receptacle for receiving the beverage container;
(d) a bottom portion connected to and extending below the top surface, the bottom portion including first and second supporting surfaces;
(e) an attaching mechanism connected to and adjacent with the first and second supporting surfaces for attaching the bottom portion to the sloped outer surface;



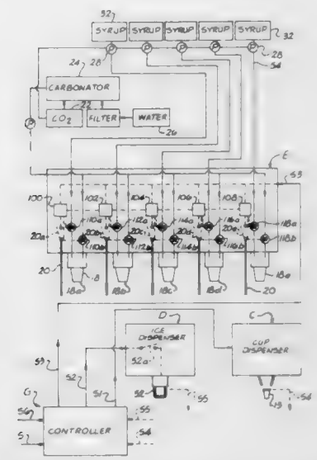
the first and second supporting surfaces being sloped so that when the bottom portion is attached by the attaching mechanism to the sloped outer surface, the first and second receptacles each being capable of receiving the beverage container in a substantially vertical position wherein liquid in the beverage container is substantially level.

5,350,082

AUTOMATIC SODA FOUNTAIN AND METHOD

Alex Kiriakides, Jr., 205 Sweetbrier Rd., Greenville, S.C. 29606, and Thomas L. Cox, Greenville, S.C., assignors to Alex Kiriakides, Jr., Greenville, S.C.

Filed Nov. 9, 1992, Ser. No. 973,428
Int. Cl.[5] G07F *13/10*
U.S. Cl. 221—1 35 Claims



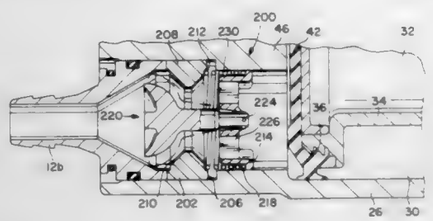
28. A method for automatically controlling a beverage dispensing line with consumer interaction, said dispensing line having a series of remote dispensing stations including a cup dispensing station having a cup dispenser for dispensing a cup which is manually received and transported to subsequent stations by a consumer, a remote ice dispensing station spaced a distance from said cup dispensing station to which said cup is transported by said consumer having an ice dispenser for dispensing ice into said cup manually positioned by said consumer at said ice dispenser, a first switch associated with said ice dispenser which is manually actuated by said consumer for dispensing said ice into said cup during ice actuation times of said first switch, a remote beverage dispensing station spaced a distance for said ice dispensing station to which said cup is transported by said consumer having a beverage dispenser for dispensing a beverage manually positioned by said consumer, said beverage dispenser comprising a plurality of dispensing nozzles and a plurality of second, nozzle switches associated with said beverage dispensing nozzles which are manually actuated by said consumer for dispensing a selected beverage into said cup during beverage actuation times of said second switches; said method comprising:
providing a money validator which receives money;
generating a start signal in response to said money validator detecting a prescribed amount of money representing a start of a beverage dispensing cycle;
automatically controlling said cup dispenser to dispense a cup in response to said start signal;
activating said ice dispenser during a first fixed preset time period,
automatically dispensing said ice from said activated ice dispenser into said cup upon manual actuation of said first switch by said consumer dependent only upon said ice actuation times of said first switch during said first fixed preset time period;
activating said beverage dispenser during a second fixed preset time period, and
automatically dispensing said prescribed amount of beverage into said manually positioned cup upon actuation of said second switch by said consumer dependent only upon said beverage actuation times of said second switch during said second fixed preset time period.

5,350,083

CONDIMENT DISPENSING DEVICE

Benjamin R. Du, 22832 Skyview Wy., Laguna Beach, Calif. 92677

Continuation-in-part of Ser. No. 12,940, Feb. 3, 1993, which is a continuation-in-part of Ser. No. 923,136, Jul. 31, 1992, Pat. No. 5,230,443, which is a continuation of Ser. No. 830,113, Jan. 30, 1992, Pat. No. 5,158,210, which is a continuation of Ser. No. 537,509, Jun. 13, 1990, abandoned. This application May 20, 1993, Ser. No. 65,537
The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.
Int. Cl.[5] B67D *5/60*
U.S. Cl. 222—134 9 Claims



1. A fluid-driven pump for use in a condiment dispensing system, comprising:
a housing means having first and second ends and an inner surface defining at least one interior cavity;
a piston slidably positioned within said housing means, said piston being reciprocally movable through intake and exhaust strokes within said interior cavity for selectively drawing a pre-determined quantity of condiment thereinto and dispensing the predetermined quantity therefrom;
a seal assembly engaged to and enclosing the second end of said housing means, said seal assembly defining an inlet-/exhaust port for supplying a pressurized fluid to a portion of the interior cavity intermediate the piston and the second end for initiating an exhaust stroke of the piston and venting the pressurized fluid from the interior cavity during the intake stroke of the piston;
a product inlet disposed in the first end of the housing means for placing said interior cavity in fluid communication

with a condiment reservoir during the intake stroke of the piston;

a product outlet disposed in the first end of the housing means for placing said interior cavity in fluid communication with a condiment dispensing apparatus during the exhaust stroke of the piston;

a first spring means disposed within said interior cavity, said first spring means being directly engaged to said piston in a manner operable to bias said piston toward the second end of the housing means when the pressurized fluid is vented from the interior cavity via said inlet/exhaust port; and

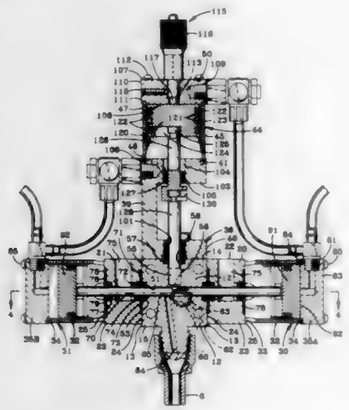
an inlet check valve positioned between said product inlet and said piston, and an outlet check valve positioned between said product outlet and said piston, said outlet check valve being adapted to pull a vacuum within said product outlet during the intake stroke of said piston to eliminate drippage of residual condiment from said condiment dispensing apparatus.

5,350,084

MIXING, METERING AND DISPENSING DEVICE

Kenneth L. Miller, Indianapolis, Ind., and Mark E. Centea, Akron, Ohio, assignors to Liquid Control Corporation, North Canton, Ohio

Filed Sep. 3, 1993, Ser. No. 115,820
Int. Cl.[5] B67D *5/52*
U.S. Cl. 222—137 **19 Claims**



1. A device for metering, mixing and dispensing at least two liquid materials comprising:

a housing defining a pair of chambers each communicating with a material inlet port and a material outlet port for dispensing a respective material therefrom;

a spool slidably mounted within each of the chambers wherein said spools communicate discretely with said material inlet and outlet ports;

a holding means in communication with each of the chambers for receiving and holding a volume of one of the materials after said materials enter said inlet ports and passes said spools;

a single first pressure means for forcing the materials simultaneously out of said holding means and past said spools and through said material outlet ports; and

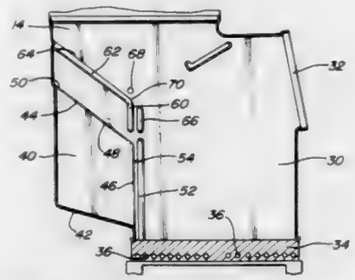
second pressure means for slidably moving the spools between a first position where said holding means are in communication with said material inlet ports, and a second position where the holding means are in communication with said material outlet ports.

5,350,085

ADJUSTABLE ICE BIN

Robert P. Kidd, Prosper, and Jerry A. Long, Carrollton, both of Tex., assignors to Booth, Inc., Carrollton, Tex.

Filed Mar. 9, 1993, Ser. No. 28,232
Int. Cl.[5] B67D *5/62*
U.S. Cl. 222—146.6 **19 Claims**



1. A beverage dispenser for dispensing a beverage concentrate and a mixing liquid at a specified ratio, said beverage dispenser comprising:

an ice bin defining an ice storage cavity;

means for cooling said mixing liquid prior to the dispensing of said mixing liquid, said means for cooling said mixing liquid in communication with said ice storage cavity over a first predetermined surface area, said first predetermined surface area comprising substantially the entire surface area of said means for cooling said mixing fluid; and

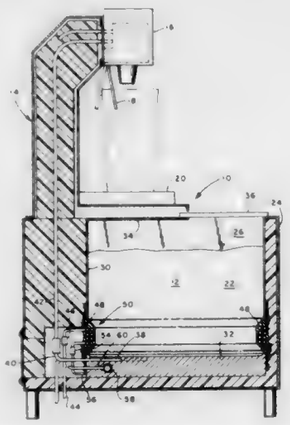
means for reducing the volume of said ice storage cavity of said ice bin, said means for reducing the volume of said ice storage cavity operable to maintain said communication between said first predetermined surface area and said ice storage cavity while reducing the volume of said ice storage cavity.

5,350,086

ICE CHEST BEVERAGE DISPENSER HAVING A PRE-CHILL COIL

Herman H. Martin, Schaumburg, Ill., and Michael S. Long, New Hartford, Conn., assignors to Wilshire Partners, Cleveland, Ohio

Continuation of Ser. No. 5,087, Jan. 15, 1993, abandoned. This application Dec. 20, 1993, Ser. No. 169,180
Int. Cl.[5] B67D *5/62*
U.S. Cl. 222—146.6 **46 Claims**



43. A beverage dispenser comprising an ice chest adapted to

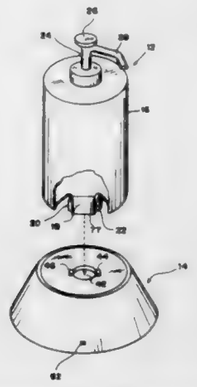
contain a body of ice having a bottom, at least three side walls and a top; a source of diluent; at least one source of flavored syrup; at least one beverage dispensing valve adapted to received said diluent and said syrup and dispense a mixture of said diluent and syrup; a chilling means for chilling said diluent, said chilling means fluidly connected between said diluent source and said at least one dispensing valve; and a pre-chill means thermally isolated from said chilling means for pre-chilling said diluent, said pre-chilling means fluidly connected between said chilling means and said diluent source.

5,350,087

SECURED DISPOSABLE LIQUID SOAP DISPENSER

Alan D. Frazier, West Chester, and Richard P. Lewis, Oaks Meeting, both of Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Division of Ser. No. 661,273, Feb. 26, 1991, Pat. No. 5,240,147. This application Mar. 12, 1993, Ser. No. 31,116
Int. Cl.[5] B67D *5/64*
U.S. Cl. 222—153 **14 Claims**



1. A countertop mounted fluid dispensing system comprising:

(a) a base unit adapted to be affixed to a supporting surface, said base unit including at least one lug orifice in a wall thereof;

(b) a fluid dispenser including a bottle and a lug extending from said bottle, said lug adapted to be received in said at least one orifice;

(c) a sled slidably mounted within said base unit, said sled having a port and a slot therethrough, said sled being movable from a locked position wherein said slot lies beneath said at least one lug orifice to an unlocked position wherein said port lies beneath said at least one lug orifice, said sled being movable from said locked position to said unlocked position in response to the insertion of a key means into said base unit; and

(d) biasing means automatically moving said sled back to said locked position when said key means is removed from said base unit.

5,350,088

INVERTIBLE AEROSOL VALVE

Jeremy P. Smith, Louden, N.H., assignor to Summit Packaging Systems, Inc., Manchester, N.H.

Filed Sep. 13, 1993, Ser. No. 119,624
Int. Cl.[5] B65D *83/00*
U.S. Cl. 222—402.19 **7 Claims**

1. An invertible aerosol valve comprising:

a. a cup-shaped valve body having a circular side wall and a floor with an opening therethrough, the side wall of the body extending downward below the floor to define a downwardly facing circular socket,

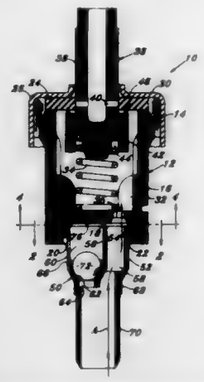
b. an annular resilient gasket sealingly secured across the top of the valve body,

c. a valve element defined by a tubular upward stem sealingly surrounded by the gasket, and an enlarged head normally seating against the underside of the gasket, the stem having outward passage means through the tubular stem adjacent the head, the gasket normally sealing the passage means,

d. spring means in the valve body urging the valve element upward toward seating,

e. a bypass appendage having a cylindrical side wall frictionally and sealingly engaging in the socket and vertically partitioned inside into:

1. a ball chamber provided at its lower end with a bypass valve seat having a central seat opening, the ball chamber having an upper end closed off by the floor and a



lateral opening therein above the seat to outside the appendage and,

2. a substantially vertical product passage to the

side of the ball chamber, the lower end communicating with the bypass valve seat opening from therebelow, the upper end communicating with the opening in the floor in the valve body,

f. a dip tube connected to the appendage and communicating with the lower end of the product passage, and

g. a gravity-responsive ball in the ball chamber normally seating on the seat and valving it off but falling away from the seat when the aerosol valve inverted to permit passage of product through the lateral opening, through the seat opening, through the vertical product passage into the valve body and out the tubular stem when the aerosol valve stem depressed to unseal the passage means.

5,350,089

FEEDER FOR DISPENSING FLOWABLE SUBSTANCES

Friedrich W. Preiser, Sewell, N.J.; Kenneth W. Bullivant, Chadds Ford, Pa., and Marcel Peyer, Waltenschwil, Switzerland, assignors to K-Tron Technologies, Inc., Wilmington, Del.

Filed Apr. 30, 1993, Ser. No. 55,729
Int. Cl.[5] G01F *11/20;* **B25G** *3/08;* **F16B** *7/00;* **F16D** *1/00*
U.S. Cl. 222—413 **19 Claims**

1. A feeder for controllably dispensing a flowable substance comprising:

storage means for holding a flowable substance and having a discharge opening through which said flowable substance is discharged;

a trough positioned to receive said flowable substance discharged from said storage means and having a dispensing opening;

a rotatable feed screw positioned in said trough for advancing said flowable substance discharged from said storage means along said trough to said dispensing opening ;

drive means for providing torque to rotate said feed screw; and coupling means for imparting torque from said drive means to said feed screw, said coupling means including:

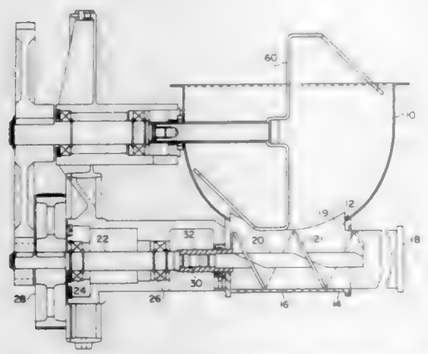
(a) a torque transmitting member connected at a first end to said drive means and having:

(1) a cylindrical pilot portion at a second end of said torque transmitting member opposite from said first end of said torque transmitting member,

(2) a locking member in said pilot portion and radially movable to project radially outward of said pilot portion, and

(3) a drive transmitting portion of non-circular cross-section, and

(b) a torque receiving member having a first end from



which said feed screw extends and an axial bore extending from a second end of said torque receiving member opposite from said first end of said torque receiving member, said axial bore having:

(1) a drive receiving portion of non-circular cross-section complementary to said non-circular cross-section of said drive transmitting portion of said torque transmitting member and within which said drive transmitting portion is fitted, and

(2) a cylindrical pilot receiving portion, inward of said drive receiving portion, within which said pilot portion of said torque transmitting member is fitted and having a recess for receiving said locking member of torque transmitting member upon radially outward movement of said locking member.

5,350,090

BEVERAGE DISPENSER

Ralph K. McClure, 6589 Leffingwell Rd., Canfield, Ohio 44406

Filed May 11, 1993, Ser. No. 60,314

Int. Cl.[5] B67D *3/02*

U.S. Cl. 222—511 **18 Claims**

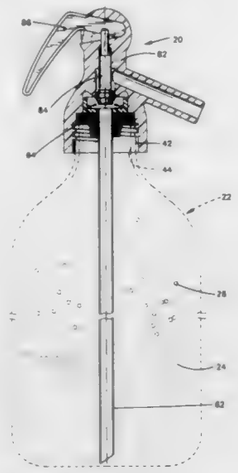
1. A dispenser for use with a pressurizable fluid container, said dispenser comprising:

a head removably connectable with the container and including an inlet, an outlet, a valve seat, a cavity and a chamber for fluid communication between said inlet and outlet, said valve seat located between said inlet and said chamber, said cavity located between said inlet and said valve seat;

a valve body having a portion receivable in said chamber, said valve body being actuatable for movement between an open position allowing fluid flow through said chamber and a closed position blocking fluid flow through said chamber, said valve body including a seal seat surface adapted to face in a direction towards said inlet;

a seal receivable on said valve body for engagement with said seal seat surface, said seal being engageable with said valve seat to establish the closed position;

a cap member receivable within said cavity; and



bias means engageable with said cap member for normally biasing said seal towards said valve seat.

5,350,091

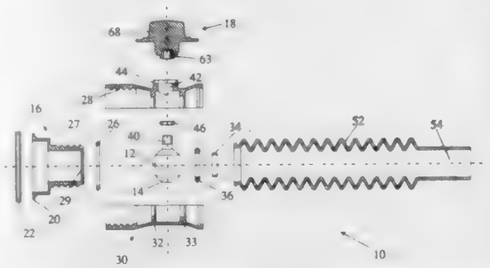
FUEL POURING NOZZLE

Jeremy S. Leete V8R 6T5 , and Christopher A. Ring, both of 207 - 3921 Shelbourne Street, Victoria, British Columbia, Canada V8P 4H9

Continuation-in-part of Ser. No. 885,422, May 18, 1992, abandoned. This application May 12, 1993, Ser. No. 60,004

Int. Cl.[5] B67C *11/04*

U.S. Cl. 222—529 **7 Claims**



1. A fuel pouring nozzle for use on vented fuel containers, comprising:

a base adapted to be attached to a vented fuel container having a threaded neck and a screw cap, said base having an end portion at a first end and a downstream end at a second end;

a tubular valve body having a cylindrical side wall with an opening therein, an upstream end having a valve seat and a downstream end;

a tubular conduit connecting the upstream end of the valve body and the downstream end of the base;

a ball valve positioned in the valve body against the valve seat, said ball valve having a stem extending through the opening in the side wall and being rotatable about a longitudinal axis through the stem between a position which opens said nozzle and a position which closes said nozzle, the ball valve having a passageway therethrough which communicates with the upstream and downstream ends of the valve body when the valve is rotated to an open position;

a tubular member having an upstream end connected to the valve body, and a downstream end forming a spout;

a closure cap having an inner side with a protrusion which releasably fits within the end portion of the base; and

means for releasably engaging the ball valve and the closure cap to rotate the ball valve when the closure cap is removed from said base.

5,350,092

GARMENT HANGER AND CLIP

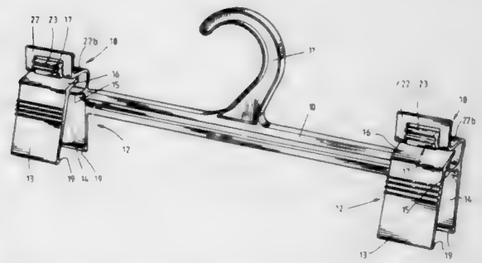
Joseph C. Hollis, Victoria, Australia, assignor to Spotless Plastics Pty. Ltd., Victoria, Australia

Continuation of Ser. No. 836,150, Feb. 13, 1992, abandoned, which is a continuation of Ser. No. 561,064, Aug. 1, 1990, abandoned. This application Sep. 14, 1993, Ser. No. 121,966

Claims priority, application Australia, Aug. 1, 1989, PJ5553; Sep. 8, 1989, PJ6254

Int. Cl.[5] A47G *25/48*

U.S. Cl. 223—96 **11 Claims**



9. A hanger molded in a single piece from plastics material, said hanger having at least one integral plastic clip molded in a substantially H-shaped configuration, said clip comprising a pair of leg members, each leg member having a first and second end, and providing at respective first ends jaws for gripping a garment, said legs further having a predetermined open position in which the first ends of the legs are spaced apart and face toward each other and define an article receiving opening to receive an article to be gripped by the first ends of the legs, said leg members being joined by an integrally molded resilient leaf constructed to allow said jaws to be moved towards each other to a gripping position whereby said leaf is in a deformed state when said jaws are in said gripping position and to cause said jaws to spring apart to and to hold said first ends of the legs in said predetermined open position when released from said gripping position, said leg members being formed at second ends with a ratchet and pawl mechanism for holding said jaws in said gripping position and facilitating ready release to said open position.

5,350,093

CARGO BINDER

Shawn M. Sheely, 832 24th Ave. S.E., Minneapolis, Minn. 55414

Filed Aug. 25, 1992, Ser. No. 931,161

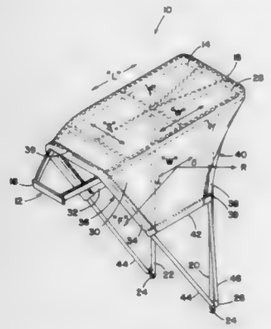
Int. Cl.[5] B62J *11/00*

U.S. Cl. 224—34 **14 Claims**

1. A cargo binder for use on a cargo carrier on a vehicle, the vehicle having left and right sides, the carrier having an upper surface defining a longitudinal plane and having front, back, and side edges, the upper surface being attached to the vehicle at a first location, the carrier further having left and right side struts connecting the upper surface to the vehicle at second and third locations, respectively, the side struts defining left and right generally vertical planes along the left and right sides of the vehicle, the cargo binder comprising:

secondary tensioning means for securing cargo to the upper surface of the carrier, the secondary tensioning means comprising an elastic top panel for generally extending over the upper surface of the carrier, and left and right elastic side panels attached to the top panel extending along the left and right vertical planes, respectively, the top and side panels having at least one axis of elasticity, the left and right side panels having front and rear portions generally extending toward the second and third locations, respectively;

primary tensioning means engaged with the forward and rear portions of the left and right side panels for tensioning the forward and rear portions of the left and right side panels at some angle relative to the axis of elasticity;



a tubular opening containing a shock cord formed along a portion of a perimeter of the secondary tensioning means and the primary tensioning means, the primary tensioning means being interconnected with the secondary tensioning means along a portion of the perimeter so that the shock cord may move freely within the tubular member when cargo items are located between the upper surface and the secondary tensioning means; and

attachment means proximate the second and third locations for releasably retaining the primary tensioning means thereto, so that cargo may be releasably secured between the secondary tensioning means and the upper surface of the carrier.

5,350,094

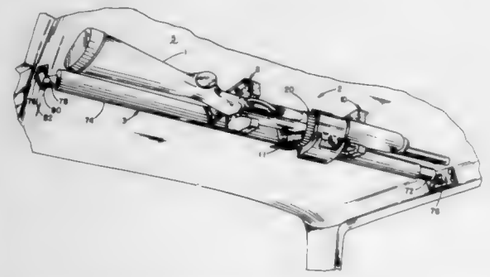
VEHICLE MOUNTED LOCKING FIREARM SUPPORT

Ted Morford, Bozeman, Mont., assignor to Big Sky Racks, Inc., Bozeman, Mont.

Filed Jan. 15, 1993, Ser. No. 4,982

Int. Cl.[5] B60R *7/00*

U.S. Cl. 224—42.45 R **18 Claims**



1. Firearm support apparatus comprising:

(a) a vehicle support including first and second tubular members mounted to telescope from one another along a longitudinal axis;

(b) first and second attachment means respectively mounted to an end of said first and second members for restraining

said vehicle support in close association to a planar vehicle surface, wherein each of said first and second attachment means includes a portion which mounts to a motor vehicle and a pivot axis which extends transverse to said longitudinal axis and parallel to the planar surface;

(c) a plurality of cradle supports selectively mounted to transversely radiate from said vehicle support wherein each of said cradle supports comprises i) a coupler having a bore sized to mount to an outermost one of said first and second members, ii) means for restraining said coupler to said vehicle support, and iii) an arm extending from said coupler and supporting a concave cradle at an unrestrained distal end of said arm; and

(d) means for restraining articles to said cradle supports, whereby at least a firearm can be supported parallel to one side of said vehicle support and other articles can be supported to an opposite side.

5,350,095

RACK ASSEMBLIES MOUNTABLE TO TRUCKS FOR TRANSPORTING SHEET MATERIAL AND THE LIKE

John Stevens, 234 Mar Vista Dr., Monterey, Calif. 93940

Filed Nov. 12, 1993, Ser. No. 151,004
Int. Cl.[5] B60R *9/00*; **B60P** *3/00*
U.S. Cl. 224—42.45 R **3 Claims**



1. A rack assembly mountable to trucks for transporting sheet material and the like comprising:

a pair of generally parallel extending side support rails having upper and lower ends and positionable adjacent to one side of a truck in spaced apart generally vertical positions, each said rail including means on one side thereof for coupling said side rails to the truck for supporting each rail in said respective positions;

a lower support rail extends extending laterally from the opposite side of each side rail adjacent the lower end thereof and having an upper support for sheet material to be transported, each lower support rail having an outer end with an upturned end cap mounted thereon in spaced relation to said opposite side of each generally vertical rail; a pair of generally parallel upper support rails coupled to the upper ends of the side rails and angled outwardly and downwardly with respect to the side of the truck, each upper rail having opposite ends with an upturned end cap mounted on each said end, the upper surfaces of the upper rails constituting support surfaces for elongated objects;

said means for coupling including a lower attachment rail extending laterally from said one side and adjacent to the lower end of each side rail for securement to a truck; and

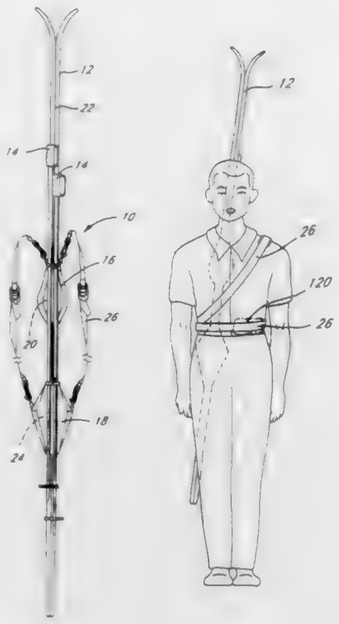
said means for coupling further including an upper attachment rail having one end attached to said one side of said side rail above the lower attachment rail and another end for securement to a truck.

5,350,096

SKI CARRIER

L. Aryn Sieber, Rowland Heights, Calif., assignor to Advanced Pro-Formance, Inc., Rowland Heights, Calif.

Filed Jun. 3, 1992, Ser. No. 893,283
Int. Cl.[5] A45F *3/04*
U.S. Cl. 224—209 **17 Claims**



1. A ski carrying device for carrying a pair of skis on a skier's body, each ski having a toe binding and a heel binding, said ski carrying device comprising:

an upper cover comprising a first upper pocket formed by a first portion of an upper rear panel and a first upper front panel which is attached to said rear panel by a first upper central panel, and an opposing second upper pocket formed by a second portion of said upper rear panel and a second upper front panel which is attached to said rear panel by a second upper central panel, said first upper pocket being sized to receive one of the toe bindings of the skis and said second upper pocket being sized to receive the other toe binding of the skis each pocket being configured to snugly fit about a rear end of the corresponding toe binding, said upper cover further comprising a fastener to secure said upper cover to the skis;

a lower cover comprising a first lower pocket formed by a first portion of a lower rear panel and a first lower front panel which is attached to said lower rear panel by a first lower central panel, and an opposing second lower pocket formed by a second portion of said lower rear panel and a second lower front panel which is attached to said lower rear panel by a second lower central panel, said first lower pocket being configured to receive one of the heel bindings of the skis and said second lower pocket being sized to receive the other heel binding of the skies, each pocket being configured to snugly fit about a rear end of the corresponding heel binding, said lower cover further comprising a fastener to secure said lower cover to the skis; and

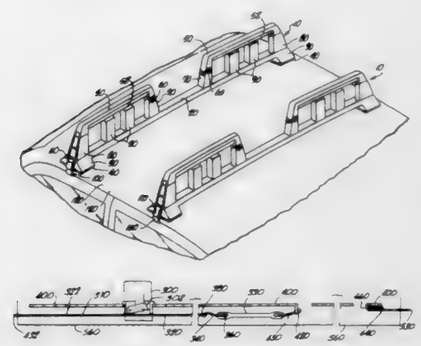
a first strap and a second strap, each strap connecting to and extending between said upper cover and said lower cover.

5,350,097

UTILITY RACK FOR A VEHICLE

Richard J. Walter, Westlake Village, Calif., assignor to Sportrack Canada, Inc., Granby, Canada

Continuation-in-part of Ser. No. 670,033, Mar. 15, 1991, Pat. No. 5,137,195. This application Feb. 14, 1992, Ser. No. 837,242
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—315 **22 Claims**



1. A utility rack for attachment to a first anchoring site on a vehicle, comprising:

(a) a carrier bar;

(b) a first strap for attaching the carrier bar to the first anchoring site, the first strap being made of a substantially non-elastic material, the first strap having an anchoring portion and a perforated strip portion;

(c) elastic means attached in series between the first strap and the carrier bar for elastically urging the first strap toward the carrier bar when the anchoring portion is attached to the first anchoring site, the elastic means being sufficiently elastic that the first strap can be detached from the first anchoring site by stretching the elastic means; and

(d) locking means attached to the carrier bar for releasably locking the first strap to the carrier bar when the locking means is in a locking position so that the elastic means can no longer be stretched to remove the first strap from the first anchoring site, the locking means engaging with the perforated strip portion in the locking position.

5,350,098

SEVERING A WORKPIECE BY SCORING AND BREAKING THEREOF

Gary A. Oakley, Denver, and David Chrisp, Littleton, both of Colo., assignors to Oakley Industries, Incorporated, Englewood, Colo.

Filed Oct. 22, 1992, Ser. No. 966,096
Int. Cl.[5] B26F *3/00*
U.S. Cl. 225—2 **35 Claims**

1. An apparatus for severing a workpiece comprising:

first means for engaging the workpiece having first and second portions with the second portion to be severed from the first portion, said first means fixedly holding the first portion stationary to prevent rotation of the first portion during the severing of the second portion from the first portion;

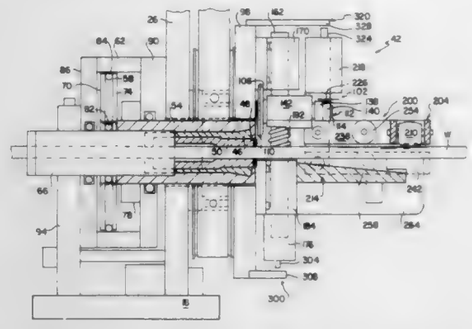
second means for cutting the workpiece to sever the second portion from the first portion, said second means including a cutting edge that is located immediately adjacent to said first means with said second means rotating about the workpiece to form a cutting path using a centrifugal force generated by portions of said second means;

third means for breaking the workpiece, said third means including means for pushing that applies a breaking force that is created by a centrifugal force, which is generated by one of: said portions of said second means and portions of said third means, during rotation of said means for pushing relative to the workpiece, while said second means is cutting the workpiece, said means for pushing only contacting the second portion of the workpiece and with the first portion of the workpiece being free of contact from said means for pushing; and

fourth means for adjusting for use in controlling movement of said portions of at least one of said second and third means.

27. A method for severing a workpiece, comprising:

holding a workpiece, using engaging means, that is to be severed into at least first and second portions, with the first portion extending away from said engaging means and the second portion being held stationary during the severing of the workpiece by said engaging means;



rotating a cutting means located immediately adjacent to said engaging means about the workpiece while the second portion remains stationary;

cutting the workpiece during said rotating step by use of centrifugal force created by first weight means operatively connected to said cutting means;

controlling movement of said cutting means during rotation thereof; and

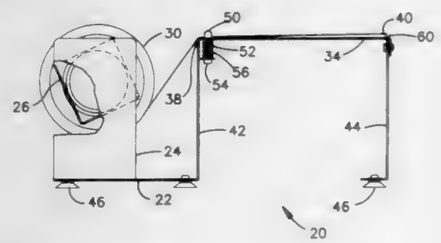
breaking the second portion from the first portion while conducting said cutting step, said breaking step being performed using means for pushing in which said means for pushing only contacts the first portion of the workpiece while being free of contact from the second portion of the workpiece, said means for pushing causing said breaking using centrifugal force generated by second weight means during rotation of said means for pushing.

5,350,099

DISPENSER FOR PACKAGE SEALING TAPE

Timothy Kienzle, Kansas City, Mo., assignor to Robbie Manufacturing, Inc., Lenexa, Kans.

Filed Nov. 16, 1992, Ser. No. 976,958
Int. Cl.[5] B26F *3/02*; **B65H** *16/02*
U.S. Cl. 225—34 **3 Claims**



1. A dispenser for adhesive tape, comprising:

a base;

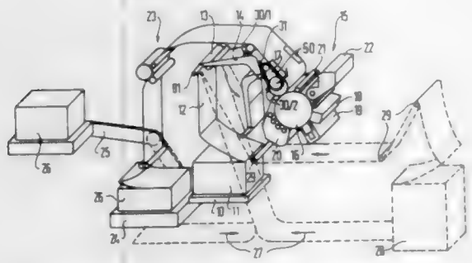
a pair of spaced support arms extending outwardly from said base;
a tube support mounted on each of said support arms;
a tube removably mounted to said tube supports, said tube having a longitudinal length allowing the mounting of a plurality of rolls of adhesive tape thereon;
a platform connected to said base and having an upper face adapted to receive the tape thereon which is drawn from the rolls of tape, said upper face being substantially planar and having a first end adjacent said tube and a second end spaced from said tube a distance greater than said first end is spaced from said tube;
a hold down bar mounted adjacent said first end of said upper face, said bar being resiliently biased into engagement with said upper face and adapted to have the tape drawn from the rolls of tape pass between said bar and upper face;
means for severing the tape drawn from the rolls of tape, said means being mounted adjacent said second end of said upper face;
at least one roll of adhesive tape, said roll of tape having a cylindrical core mounted coaxially about said tube and a length of flexible film having an adhesive coating on one face thereof wound about said core with said one face opposed to said core, and wherein at least one of said film and said adhesive include indicia printed thereon which is repetitive along the length of said film, said core being mounted upon said roll such that said film and adhesive, drawn from said roll of tape and laid upon said upper face without twisting about its length, has said film interposed between said adhesive and said upper face; and
at least one endless elastic band mounted tube adjacent each said roll of adhesive tape, said band being in abutment with said core to thereby restrict movement of said roll of tape with respect to said tube.

5,350,100

PAPER FEED DEVICE FOR THE TRANSFER STATION OF A PRINTING DEVICE WITH LATENT CHARACTER IMAGE GENERATION

Peter Rumpel, Feldkirchen, Fed. Rep. of Germany, assignor to Siemens Nixdorf Informationssysteme AG, Paderborn, Fed. Rep. of Germany

PCT No. PCT/EP90/00149, § 371 Date Jul. 27, 1992, § 102(e) Date Jul. 27, 1992, PCT Pub. No. WO90/11895, PCT Pub. Date Oct. 18, 1990
PCT Filed Jan. 26, 1990, Ser. No. 768,186
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1989, 89105998
Int. Cl.[5] G03B *1/30*; B41J *11/32*
U.S. Cl. 226—74 **9 Claims**



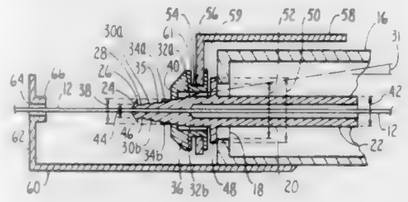
1. A paper feed device for feeding continuous stationery, provided with lateral perforations, into transport elements of a transfer station of a printing device with latent character image generation, comprising:
a motor;
input side paper transport elements and output side paper transport elements in the transfer station operable to carry the continuous stationary in a transport direction of the continuous stationery, said input side paper transport elements and said output side paper transport elements being connected for drive by said motor both on an input and on an output side and engaging in the lateral perforation of the continuous stationery;
a paper brake, which can be actuated when required, is arranged upstream, of the input-side transport elements in the transport direction of the continuous stationary to clamp the continuous stationary;
an actuation rocker movable between first and second positions, said actuation rocker carrying said paper brake and carrying said continuous stationary when said paper brake is clamped so that said continuous stationary is moved between a paper loading position and an operating position; and
a control means for controlling clamping and for operating said motor to feed the continuous stationery in the transfer station after the continuous stationery has been deposited in the output-side paper transport elements, said motor drives said paper transport elements during a paper feed time when the paper brake is activated.

5,350,101

DEVICE FOR ADVANCING A ROTATABLE TUBE

Peter P. Godlewski, San Carlos, Calif., assignor to Interventional Technologies Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 616,983, Nov. 20, 1990, abandoned. This application Feb. 16, 1993, Ser. No. 17,529
Int. Cl.[5] B65H *20/00*
U.S. Cl. 226—129 **11 Claims**



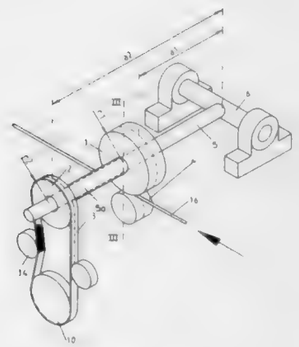
1. A device for advancing an elongated piece of stock, which comprises:
a housing;
a collet for radially surrounding a portion of said stock, said collet being movable between a first configuration wherein said collet grips said stock for translation with said stock, and a second configuration wherein said collet releases said stock for independent movement of said collet relative to said stock;
a chuck slidingly surrounding said collet and movable relative thereto between a first position and a second position for respectively moving said collet into said first and second configurations, said chuck being formed with a radial groove;
an actuator having a projection formed perpendicularly thereon for engaging said groove of said chuck;
an elongated advancer having first and second ends, wherein said collet is formed as said first end of said advancer, said second end of said advancer being slidably attached to said housing and said advancer being formed with a ring extending radially outward from said advancer intermediate said first and second ends, said stock slidably and rotatably extending coaxially through said advancer and said housing;
first means attached to said device for limiting the advancing translation of said collet to cause said chuck to move into said second position; and
second means distanced from said first means and attached to said device for limiting independent movement of said collet to move said chuck into said first position.

5,350,102

WIRE TRANSPORT APPARATUS

Andries C. de Muijnck, Heiloo, and Johan W. Herman de Groot, Bloemendaal, both of Netherlands, assignors to Hoogovens Groep BV, Ijmuiden, Netherlands

Filed Jan. 6, 1992, Ser. No. 817,350
Claims priority, application Netherlands, Jan. 10, 1991, 9100028
Int. Cl.[5] B65H *20/00*
U.S. Cl. 226—186 **8 Claims**



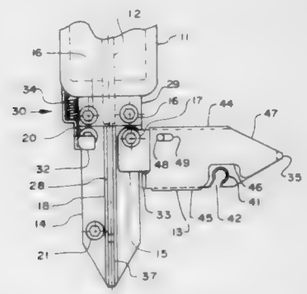
1. Wire transport apparatus having
a pair of wire-contracting rollers, one of which is a driven roller, said rollers having mutually opposed peripheral running surfaces and arranged to provide a nip at which said running surfaces in use contact the wire to transport it in a wire travel direction,
an arm pivotable about a pivot axis, said pivot axis being parallel to said wire transport direction,
a coupling pulley drivingly connecting to said driven roller and co-axial therewith on a common rotational axis which is perpendicular to said pivot axis, said coupling pulley and said driven roller being mounted on said arm and being spaced apart and at different distances from said pivot axis,
means for driving said coupling pulley in rotation including an elongate flexible element running around said coupling pulley and arranged so that tension in said flexible element causes said driven roller to apply load to said wire.

5,350,103

EASY FASTENER JAM REMOVAL TOOL

Umberto Monacelli, via Parini 6, I-20052 Monza, Italy

Filed Jul. 13, 1993, Ser. No. 90,254
Int. Cl.[5] B25C *1/04*
U.S. Cl. 227—8 **9 Claims**



1. Apparatus for driving fasteners into a workpiece comprising:
(a) a housing structure;
(b) a back plate secured to said housing structure;
(c) a front plate cooperating with said back plate to define therebetween a drive track;
(d) means for guiding the fasteners to said drive track:
(e) means for advancing the fasteners from said guiding means to said drive track;
(f) means for pivotally mounting said front plate to said back plate for movement along an arcuate path about an axis off set to one side of said drive track between a closed position and an open position, wherein access from the exterior of said housing is given to the fasteners in said drive track;
(g) means for latching said front plate in said closed position and releasable for allowing said front plate to be pivotally moved to said open position, said latching means is disposed on another side of said drive track with respect to said axis;
(h) a fastener driving element adapted for rectilinear movement within said drive track;
(i) actuable means for initialing the reciprocal movement of said fastener driving element;
(j) an element having an end portion for contacting the workpiece;
(k) means for mounting said workpiece contacting element on said front plate for rectilinear movement with respect to said front plate between a first position wherein said end portion extends beyond said front plate and is exposed for contact with the workpiece and a second position wherein said workpiece contacting element engages and actuates said actuable means to initiate the reciprocal movement of said fastener driving element, said mounting means mounts said workpiece contacting element for movement with said front plate between said closed position of said front plate wherein said workpiece contacting plate operatively engages said actuable means when said workpiece contacting element is disposed in its second position, and said open position of said front plate wherein said workpiece contacting element is removed from operative engagement from said actuable means; and
(l) means for biasing said workpiece contacting element to said second position thereof.

5,350,104

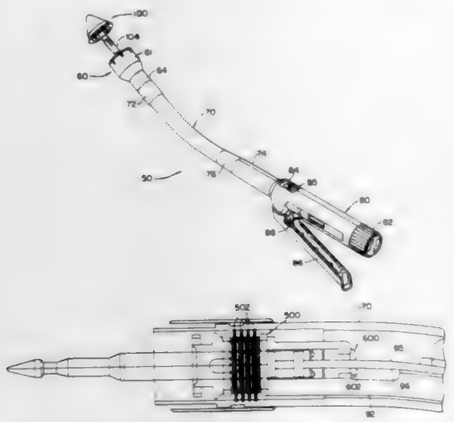
SEALING MEANS FOR ENDOSCOPIC SURGICAL ANASTOMOSIS STAPLING INSTRUMENT

Lauren O. Main, Loveland, and Richard L. Grant, Cincinnati, both of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Continuation of Ser. No. 976,787, Nov. 16, 1992, which is a continuation-in-part of Ser. No. 938,982, Sep. 1, 1992, Pat. No. 5,205,459, which is a division of Ser. No. 749,393, Aug. 23, 1991, abandoned. This application Jan. 12, 1994, Ser. No. 180,942
Int. Cl.[5] A61B *17/068*
U.S. Cl. 227—179 **4 Claims**

1. A surgical stapling instrument for applying one or more surgical staples to tissue, comprising:
a stapling head assembly including a staple holder for receiving one or more surgical staples, an anvil for clamping the tissue against said staple holder, and driver means for driving the staples from said staple holder;
an actuator handle assembly for actuating said staple driver;
a shaft assembly with a generally hollow interior and including a support shaft for mounting said stapling head assembly on said actuator handle assembly;
a tension member contained within said support shaft for transmitting tension from said actuator handle assembly to said anvil to resist the forces exerted on said anvil when the staples are formed;
a compression member contained within said support shaft for transmitting a compressive force from said actuator handle assembly to advance said staple driver to drive the staples from said staple holder into the tissue and to form the staples against said anvil; and
containing an elastomeric sealing apparatus placed around

said tension member and held in place by said compression member, said elastomeric sealing apparatus containing an attachment element, and said compression member containing an attachment element, such that the respective attachment elements on said elastomeric sealing apparatus



and said compression members are matedly joined so as to hold said elastomeric sealing apparatus in place between said tension and compression members, such that compressed air is prevented from flowing between said tension and compression members.

5,350,105

SOLDER CONNECTOR DEVICE

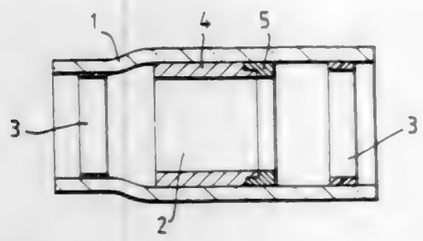
Jacques Delalle, 36 Rue du General Gallieni, 78510 Triel sur Siene; Mahrez Ouaniche, 19 Rue du Commerce, 95610 - Eragny; Michele Lamothe, 16 Villa Cheuvreuse, 92140 Clamart; Frederic Passa, 8 Les Dix Arpents Ocres, 95610 Ergany, and Philippe Roucaute, 100 Rue Henri Barbusse, 60230 Chambly, all of France

Continuation of Ser. No. 774,676, Oct. 11, 1991, abandoned, which is a division of Ser. No. 610,730, Nov. 8, 1990, Pat. No. 5,086,967. This application Jan. 5, 1994, Ser. No. 177,640

Claims priority, application PCT Int'l Appl., Apr. 29, 1988, PCT/GB88/00335

Int. Cl.[5] H01R *4/72;* **B23K** *3/00*

U.S. Cl. 228—56.3 **13 Claims**



1. A device for forming a solder connection between a plurality of elongate bodies, comprising a dimensionally recoverable article into which part of the bodies are insertable, the article containing an annular composite solder insert comprising:

a first annular portion for forming a solder joint between the bodies formed form a relatively low melting point solder; and

a second portion comprising an annular flange joined to the first portion;

wherein the second portion is formed from a relatively high melting point solder which, when the device is heated in use, will not melt until after the relatively low melting point solder has melted and flowed.

5,350,106

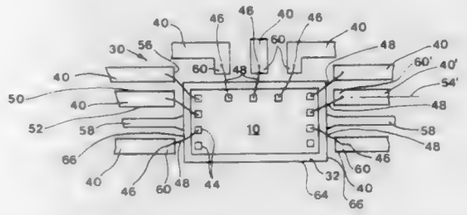
SEMICONDUCTOR WIRE BONDING METHOD

Rich Fogal, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed May 7, 1993, Ser. No. 59,971

Int. Cl.[5] H01L *21/603*

U.S. Cl. 228—103 **10 Claims**



1. In a wire bonding process, in which a bond wire is bonded to bond pads formed on a semiconductor die and then to a bond site located on a tip portion of a lead finger of a semiconductor leadframe, utilizing an automated wire bonding apparatus, a method for teaching a location of the bond site on the lead finger, said method comprising the steps of:

sensing a location of the lateral edges and a terminal edge of the tip portion of the lead finger using an automated vision sensing system of the wire bonding apparatus;

determining a location of a longitudinal axis of the tip portion of the lead finger; and then

locating the bond site on the lead finger along the longitudinal axis of the lead finger and spaced by a predetermined distance from the terminal edge.

5,350,107

IRON ALUMINIDE ALLOY COATINGS AND JOINTS, AND METHODS OF FORMING

Richard N. Wright; Julie K. Wright, and Glenn A. Moore, all of Idaho Falls, Id., assignors to EG&G Idaho, Inc., Idaho Falls, Id.

Continuation-in-part of Ser. No. 603,650, Oct. 26, 1990, Pat. No. 5,269,830. This application Sep. 8, 1993, Ser. No. 118,864

Int. Cl.[5] B23K *20/00, 31/00*

U.S. Cl. 228—198 **41 Claims**

1. A method of joining two bodies together, at least one of the bodies being predominantly composed of metal, the two bodies each having a respective joint surface for joining with the joint surface of the other body, the two bodies having a respective melting point, the method comprising the following steps:

providing aluminum metal and iron metal on at least one of the joint surfaces of the two bodies;

after providing the aluminum metal and iron metal on the one joint surface, positioning the joint surfaces of the two bodies in juxtaposition against one another with the aluminum and iron positioned therebetween;

heating the aluminum and iron on the juxtaposed bodies to a temperature from greater than or equal to 600° C. to less than the melting point of the lower melting point body;

applying pressure on the juxtaposed surfaces; and

maintaining the pressure and the temperature for a time period effective to form the aluminum and iron into an iron aluminide alloy joint which bonds the juxtaposed surfaces and correspondingly the two bodies together.

5,350,108

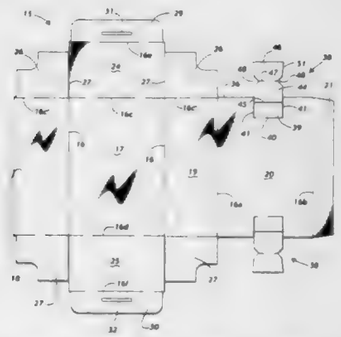
SELF-LOCKING BOX

C. Edward Friar, Macon; M. Lee Jones; H. English Robinson, Jr., both of Atlanta, and Douglas N. King, Marietta, all of Ga., assignors to Why Wrap? Incorporated, Atlanta, Ga.

Continuation-in-part of Ser. No. 96,053, Jul. 22, 1993, abandoned, which is a continuation of Ser. No. 975,308, Nov. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 960,787, Oct. 14, 1992, abandoned. This application Sep. 20, 1993, Ser. No. 123,563

Int. Cl.[5] B65D *5/10, 5/42*

U.S. Cl. 229—102 **22 Claims**



1. A box that is lockable when closed, the box comprising:

a plurality of body panels interconnected to form a box;

an end panel connected to a first said body panel to selectively close an end of the box, and having a flap extending into the box to occupy a location adjacent to a second said body panel when the end panel closes the end of the box;

a slot located in the end panel flap;

a locking tab connected to the second body panel adjacent the location occupied by the flap;

said locking tab having a fold line defining a locking panel for insertion in the slot;

the locking panel having a central portion and a fold line defining a terminal portion selectably foldable to lie alongside the central portion with the fold line thereby forming a leading edge of the folded locking panel; and

the locking panel with the terminal portion so folded being aligned for insertion by the leading edge through the slot into the box, whereat the terminal portion partially unfolds to abut the end panel,

thereby locking the end panel to the second body panel to form a closed box.

5,350,109

PAPERBOARD CARTON HANDHOLDS

Scott B. Brown, London, and Hugh A. Maxwell, Ingersoll, both of Canada, assignors to Labatt Brewing Company Limited, London, Canada

Filed Mar. 8, 1993, Ser. No. 27,527

Int. Cl.[5] B65D *5/46*

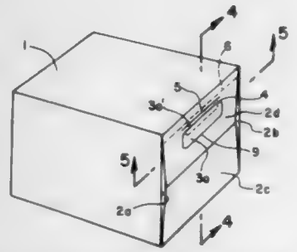
U.S. Cl. 229—117.16 **19 Claims**

1. A paperboard carton having a two layered wall comprising mutually secured interior and exterior layers mutually secured along a laterally extending, elongated glue line subtended on the exterior layer by an incipient upper hinge line, said wall being adapted to have a handhold formed therein in longitudinally spaced relation below said glue line and said upper hinge line; and, wherein:

said interior layer surrounds an incipient handhold opening that is covered by a generally rectangular interior flap formed from said interior layer, said interior flap is defined along a first lateral side, a second lateral side and third lowermost side by an interior layer line of relative weakness that also extends inwardly from said first lateral side and said second lateral side along a fourth uppermost side of said interior flap, to meet at respective opposed ends of an intermediate score line located along said fourth uppermost side and adapted to be hingedly deformable; and, wherein

said exterior layer surrounds an incipient handhold opening that is covered by a generally rectangular exterior flap of generally less width than that of said interior flap, said exterior flap being defined along a first lateral side, a second lateral side and a third lowermost side by an exterior layer line of relative weakness that also extends inwardly from said first lateral side and said second lateral side along a fourth uppermost side of said exterior layer to meet at respective opposed ends of an elongated intermediate score line located along said fourth uppermost side and adapted to be hingedly deformable; and wherein,

said exterior and interior flaps are arranged in mutually co-operable register with the respective interior layer and exterior layer intermediate score lines positioned parallel and adjacent to one another in cooperative lower hinge-forming relation; and wherein,



said interior layer line of relative weakness includes zones of relative intermediate weakness along respective junctures with corresponding opposed ends of said interior layer intermediate score line; and whereby,

in response to application of extrinsic laterally applied force against said flaps, said flaps are respectively broken away along said lines of relative weakness from exterior and interior said layers, and rotated inwardly about said lower hinge; and whereby,

in response to subsequent application of extrinsic lifting forces at said handholds, each said zone of weakness is torn generally upwardly from the corresponding end of the interior layer intermediate score line toward the glue line, to form an enlarged opening and a corresponding nascent, relatively narrower flap, intermediate between said glue line and said exterior layer and interior layer intermediate score lines, and concomitantly freeing nascent flap to rotate outwardly about said upper hinge line, whereupon outlying portions of said interior flap are engaged in interfering abutting relation against exterior layer surfaces adjacent raw edges surrounding said opening through said exterior layer.

5,350,110

LIQUID CONTAINER AND A METHOD OF MAKING SAME

Wilhelm Will, Breite Hecke 7, 4670 Lunen, Fed. Rep. of Germany

PCT No. PCT/EP92/01717, § 371 Date May 27, 1993, § 102(e) Date May 27, 1993, PCT Pub. No. WO93/02931, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 29, 1992, Ser. No. 39,117

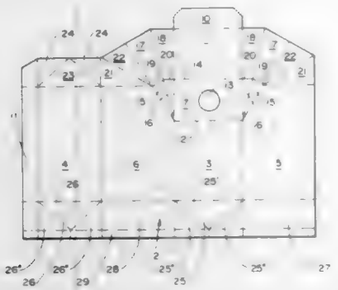
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1991, 9109758

Int. Cl.[5] B65D *43/14*

U.S. Cl. 229—125.15 **12 Claims**

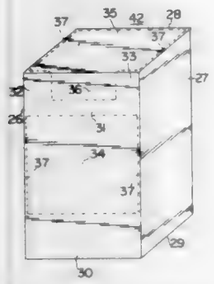
1. A liquid container made from a blank of a foldable and liquid tight sheet material, comprising top, bottom, front, rear and side walls, a longitudinally extending connecting flap for

preclosing said blank to form a tubular portion, an inclined wall disposed between said top and front walls and including a spout which is connected to said side walls via first triangular folding segments, each of said first triangular folding segments having a tip which substantially merges with a first folding line between said front wall and said inclined wall, characterized in that said top wall is connected to said side walls via further folding segments of which internal folding segments extend from said top wall and include second folding lines aligned with third folding lines of said first triangular folding segments when the blank is flat, and are connected to said first triangular



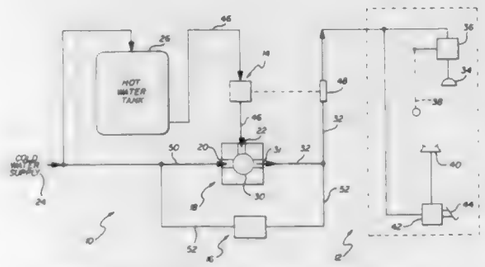
folding segments via fourth folding lines extending substantially parallel to a folding line between said inclined wall and said top wall in the finished container, that second triangular folding segments are disposed between said internal folding segments and said side walls and have tips which also merge substantially with the connecting line between the inclined wall and the top wall of a finished container, that said first triangular folding segments, said further folding segments, and said second triangular folding segments are folded inwardly, and that said top wall includes a top flap for connection to said back wall.

5,350,111
PRODUCT DISPLAY BOX
Peter S. Vosbikian, Moorestown, N.J., assignor to Quickie Manufacturing Corporation, Cinnaminson, N.J.
Filed Jan. 19, 1993, Ser. No. 5,666
Int. Cl.[5] B65D *5/42*
U.S. Cl. 229—162 **4 Claims**



1. A box for product display, comprising:
a pair of opposing side walls, said side walls each having a back edge, a front edge, a bottom edge, and upper and lower sections, said side walls having a height;
a back wall, said back wall disposed at said opposing side walls at said back edges, said back wall having a bottom edge and a height substantially equal to said side walls, said side and back walls defining an enclosed space;
a bottom coupled at said bottom edges to said side and back walls;
a front wall disposed at said front edges of said side walls at said lower section, said front wall having a height substantially less than said side and back walls; and,
wherein said box is substantially completely open between the side and back walls over a top side opposite from the bottom, for access to contents of the box through the top side, and further comprising a reinforced support piece, said support piece disposed at said upper section of said side walls at said front edges across said enclosed space, said support piece being resistant to compression and being constructed of one of wood, plastic, metal or layered cardboard, said support piece inhibiting the box from deformation when filled with product for display.

5,350,112
TEMPERED WATER MIXING SYSTEM
Matthew I. Stein, Truckee, Calif., assignor to Haw Company, Sparks, Nev.
Filed Nov. 3, 1993, Ser. No. 146,951
Int. Cl.[5] G05D *23/13*
U.S. Cl. 236—12.13 **6 Claims**

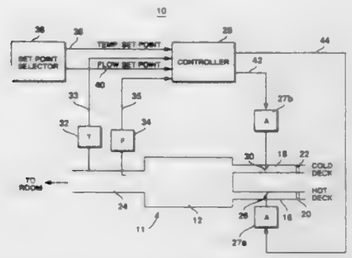


3. A tempered water mixing system, comprising:
a main mixing valve having a cold water inlet, a hot water inlet, a discharge outlet, and thermostatic blending means for blending cold and hot water inflows coupled respectively to said cold and hot water inlets to provide a tempered water discharge outflow at a selected temperature level at said discharge outlet;
a cold water supply conduit for supplying cold water to said cold water inlet;
a hot water supply conduit for supplying hot water to said hot water inlet;
a discharge flow conduit connected to said discharge outlet;
a high temperature limit valve connected along said hot water supply conduit and including means responsive to the temperature of said discharge outflow for modulating hot water flow through said hot water supply conduit to prevent the temperature of the discharge outflow from exceeding a preset upper limit; and
a flow control valve connected between said cold water supply conduit and said discharge flow conduit and including means responsive to the pressure differential between the cold water supply and said discharge flow outlet conduit to permit a bypass flow of make-up cold water from said cold water supply conduit to said discharge outflow conduit when said pressure differential exceeds a predetermined limit.

5,350,113
AIR FLOW CONTROL SYSTEM AND METHOD FOR A DUAL DUCT SYSTEM
James J. Coogan, Des Plaines, Ill., assignor to Landis & Gyr Powers, Inc., Buffalo Grove, Ill.
Filed Jul. 23, 1993, Ser. No. 97,397
Int. Cl.[5] F24F *13/04*
U.S. Cl. 236—13 **8 Claims**

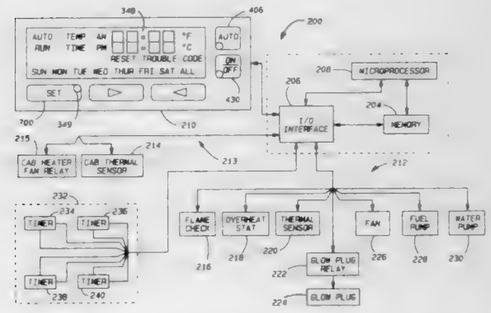
1. A method for controlling air flow in a dual-duct HVAC system to provide a desired temperature and air flow in an

area, each of the ducts having a damper means therein for regulating air flow therethrough, each damper means being adapted to be positioned from one end to the other end of its stroke and thereby regulate air flow in the duct, the method comprising:
selecting a desired temperature set point for the area;
selecting a desired air flow set point for the area;
generating a temperature signal representing a measured temperature in the area;
generating an air flow signal representing a measured amount of air flow in the area;
generating an air flow adjustment signal based upon said air flow set point and sad air flow signal;



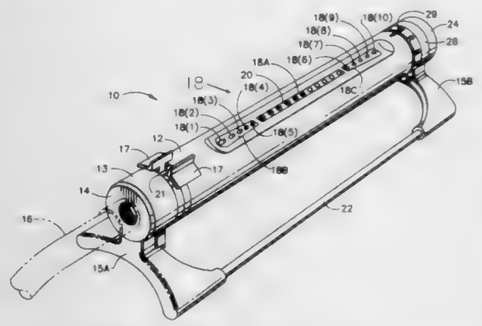
generating a temperature adjustment signal based upon said temperature set point and said temperature signal;
determining whether either of the damper means is at an end of its stroke;
controlling both dampers in response to each of said air flow adjustment signal and said air temperature adjustment signal to at least approach both said selected air flow set point and said selected temperature set point; and
prioritizing air flow control over temperature control when at least one of the damper means has reached an end of tis stroke such that the damper means are controlled to effect the air flow set point at the expense of attaining the temperature set point.

5,350,114
MICROPROCESSOR CONTROLLER FOR DIESEL FUEL FIRED HEATER
Kirk A. Nelson, Minneapolis, and William A. Byrnes, Brooklyn Center, both of Minn., assignors to The Budd Company, Troy, Mich.
Filed Jul. 21, 1993, Ser. No. 95,650
Int. Cl.[5] G05D *23/00*
U.S. Cl. 237—2 A **21 Claims**



1. In a diesel heater including a combustion chamber, fuel pumping means for pumping diesel fuel to said combustion chamber, air supplying means for supplying combustion air to said combustion chamber, igniting means for igniting said diesel fuel to generate combustion heat, heat exchange fluid supplying means for supplying a fluid in heat exchange relationship with said combustion heat, a thermal sensor in contact with said heat exchange fluid for generating a temperature signal related to the temperature of said heat exchange fluid, and flame detecting means for detecting an ignited diesel fuel flame and for generating a flame signal in response thereto, an improvement comprising:
a microprocessor including a memory and a plurality of input/output ports wherein said input/output ports are electrically connected to said thermal sensor, said fuel pump means, said heat transfer fluid supplying means, said igniting means, said combustion air supplying means, and said flame detecting means and wherein said memory stores a normal operating sequence, and a start-up sequence; and
input means for entering current day and current time in said microprocessor memory wherein said microprocessor thereafter updates said current day and said current time, said input means for entering a lower temperature setpoint for said heat exchange fluid into said microprocessor memory, and said input means for entering a start day and start time,
wherein said microprocessor automatically initiates said start-up sequence when said heat transfer fluid falls below said lower temperature setpoint or when said current day and said current time equals said start day and said start time, and
wherein said microprocessor executes said normal operating sequence when said flame signal is received.

5,350,115
LAWN SPRINKLER WITH CAM-CONTROLLED VARIABLE SPRAY PATTERN
Douglas J. Burnworth, Confluence, Pa., and Joachim H. Lungershausen, Stuttgart, Fed. Rep. of Germany, assignors to Vermont American Corporation, Louisville, Ky.
Filed Aug. 10, 1993, Ser. No. 101,651
Int. Cl.[5] B05B *3/16*
U.S. Cl. 239—242 **26 Claims**



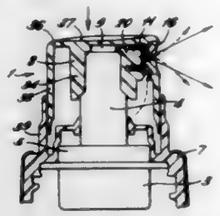
1. An oscillating water sprinkler comprising:
a water tube to carry water having a plurality of orifices in the top thereof;
a cam shaft extending longitudinally of and disposed within said water tube, said cam shaft including a plurality of rotatable plungers therealong, and a plurality of cam surfaces, said rotatable plungers being in cooperating relation with and movable in response to positioning of said cam surfaces to selectably permit or interrupt water flow to said orifices;
means to rotate said cam shaft;
means to oscillate said water tube; and
means to add water to said water tube.

5,350,116

DISPENSING APPARATUS

Miro S. Cater, Newtown, Conn., assignor to Bespak PLC, Norfolk, United Kingdom

Filed Mar. 1, 1993, Ser. No. 25,420
Int. Cl.[5] B05B *7/24*
U.S. Cl. 239—333 **13 Claims**



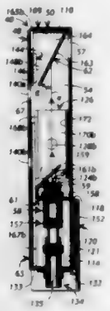
1. Apparatus for dispensing liquid from a reservoir as an atomized spray, comprising: a delivery means, an actuator defining a dispensing channel and being operatively connected to the delivery means whereby the delivery means is operable by relative movement of the actuator to deliver a flow of liquid to the dispensing channel, a first nozzle connected to the actuator and defining a first nozzle aperture communicating with the dispensing channel, air pumping means operable by movement of the actuator relative to the delivery means to compress an enclosed volume of air during actuation of the delivery means wherein the actuator defines an air ejection channel for the release of the compressed air, wherein the apparatus further includes a second nozzle connected to the actuator externally of the first nozzle, the second nozzle defining a second nozzle aperture and having a rear face spaced from a front face of the first nozzle to define an air gap therebetween, the air gap communicating with the second nozzle aperture and the air ejection channel, wherein the rear face of the second nozzle is conically tapered in a direction toward the first nozzle, the air ejection channel communicating with the air gap at a location circumferential relative to the rear face of the second nozzle whereby in use, a radially inward flow of air entering the air gap is deflected by the rear face of the second nozzle toward the first nozzle and both the liquid spray and the compressed air are dispensed through the second nozzle aperture.

5,350,117

DISCRIMINATING HUMIDIFICATION SYSTEM

Itamar Kleinberger, 4367 Dunmore Rd., Marietta, Ga. 30068, and John J. Hayman, Jr., 1882 Wicks Valley Dr., Marietta, Ga. 30062

Continuation-in-part of Ser. No. 830,190, Jan. 31, 1992, Pat. No. 5,193,354. This application Nov. 23, 1992, Ser. No. 980,301
Int. Cl.[5] E03C *1/08*
U.S. Cl. 239—428.5 **49 Claims**



37. An apparatus for creating a discriminated mist, said apparatus comprising:

a structure including an inner surface defining a mist chamber having a first end and a second end, wherein said inner surface further defines a release aperture located toward said second end;

a mist means for converting a liquid into a mist, wherein said mist means includes, at least, a mist aperture disposed within said first end of said mist chamber for introducing the mist into said mist chamber, wherein the mist includes larger droplets and smaller droplets, and wherein said mist means is so constructed that a majority of the larger droplets and smaller droplets have a first directional component defined in a direction from said mist aperture toward said release aperture; and

a baffle means constructed for maintaining said first directional component of a majority of the smaller droplets and collecting a portion of the larger droplets,

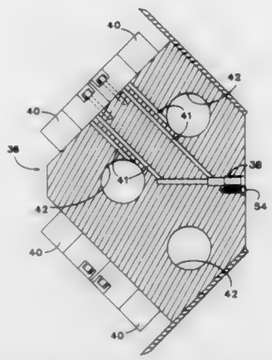
whereby said apparatus functions to dissuade the larger droplets from passing through said release aperture with the smaller droplets.

5,350,118

GLASS CULLET SEPARATOR AND METHOD OF USING SAME

James T. Mitchell; James L. Mitchell, both of Eugene, Oreg., and Mark A. Woods, Renton, Wash., assignors to Alpine Technology, Inc., Eugene, Oreg.

Continuation of Ser. No. 798,166, Nov. 26, 1991, abandoned. This application Aug. 2, 1993, Ser. No. 101,271
Int. Cl.[5] B05B *12/02*
U.S. Cl. 239—551 **13 Claims**



1. A manifold (**36**) for delivering air to a plurality of nozzles (**38**) for delivering high pressure, high volume blasts of air into a stream of particles for the purpose of displacing particular particles from the stream of particles as part of a system for removing nonconforming particles, said manifold comprising:

(a) an elongate member having a plurality of passageways (**42**) extending longitudinally therethrough, said member having a nozzle surface and at least one valve surface;

(b) said member defining a plurality of bores (**52**), each of said bore receiving therein one of said nozzles (**38**) which opens out of said nozzle surface;

(c) said member defining a plurality of air conduits (**41**) for conducting the flow of air;

(d) a first plurality of valve pairs (**40**) aligned substantially longitudinally on a first valve surface of said at least one valve surface of said member and a second plurality of valve pairs (**40**) aligned substantially longitudinally on a second valve surface of said at least one valve surface of said member, said valves for regulating airflow between said air passageways and said bores;

(e) whereby for each said bore;

(i) a first one of said air conduits extends between said bore and one of said valve surfaces so as to have fluid communication between said bore and a first valve of one of said valve paris;

(ii) a second one of said air conduits extends between said first valve and a first one of said air passageways;

(iii) a third one of said air conduits extends between said bore and said one of said valve surfaces so as to have fluid communication between said bore and a second valve of said one of said valve pairs; and

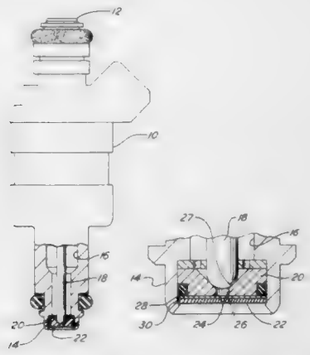
(iv) a fourth one of said conduits extends between said second valve and a second one of said air passageways.

5,350,119

CLAD METAL ORIFICE DISK FOR FUEL INJECTORS

John S. Bergstrom, Williamsburg, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Jun. 1, 1993, Ser. No. 70,594
Int. Cl.[5] F16K *27/00*
U.S. Cl. 239—585.4 **8 Claims**



1. A fuel injector for injecting fuel into an internal combustion engine comprising a body having a fuel inlet at which pressurized fuel is received, a nozzle from which fuel is injected, a passageway between said inlet and said nozzle, a valve seat member disposed in said passageway, electrically-operated valve means cooperating with said valve seat member for controlling flow through said passageway to said nozzle, and an orifice disk member at said nozzle downstream of said valve seat member, said orifice disk member comprising an orifice through which fuel is injected from the fuel injector, characterized in that said orifice disk member comprises a clad metal comprising a soft metal lamina and a refractory metal lamina, said orifice extending through said soft metal lamina and said refractory metal lamina.

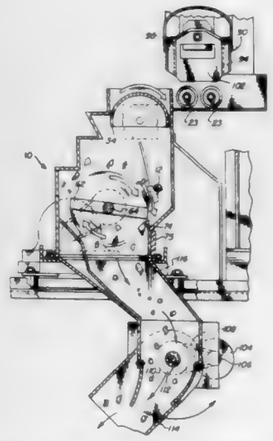
6. In a method of making a fuel injector which has a body having a fuel inlet at which pressurized fuel is received, a nozzle from which fuel is injected, a passageway between said inlet and said nozzle, a valve seat member disposed in said passageway, electrically-operated valve means cooperating with said valve seat member for controlling flow through said passageway to said nozzle, and an orifice disk member at said nozzle downstream of said valve seat member, said orifice disk member comprising an orifice through which fuel is injected from the fuel injector, the steps comprising: fabricating said orifice disk member from clad metal comprising a soft metal lamina and a refractory metal lamina, including fabricating said orifice extending through said soft metal lamina and said refractory metal lamina, and assembling said orifice disk member into said nozzle downstream of said valve seat member.

5,350,120

METHOD OF CRUSHING A BOTTLE AND A GLASS CRUSHING APPARATUS

Carmine M. Melchionna, Watertown, Conn., assignor to New England Redemption of Connecticut, Inc., New Haven, Conn.

Filed Aug. 10, 1993, Ser. No. 105,334
Int. Cl.[5] B02C *19/06*
U.S. Cl. 241—5 **9 Claims**



1. A method for crushing glass bottles comprising the steps of:

conveying a glass bottle to a crushing bin,

catching the bottle at the top of the bin,

dropping the whole bottle into the bin,

impelling the whole bottle against an interior angular wall of the bin forming a sharp corner having an apex to smash the same, and

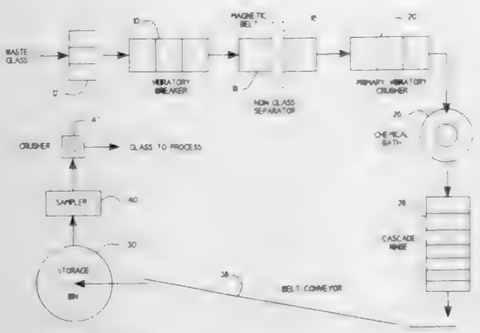
collecting the smashed glass in a collection bin.

5,350,121

METHOD FOR RECYCLING GLASS

Edward A. Vitunac, Pittsburgh, and Edward A. Zawadzki, Wexford, both of Pa., assignors to Falcon United Ltd., Wexford, Pa.

Filed Dec. 9, 1991, Ser. No. 805,260
Int. Cl.[5] B09B *3/00*
U.S. Cl. 241—14 **49 Claims**



1. A process comprising:

subjecting a feed stock of waste materials comprised of articles and portions thereof made of glass and nonglass components, wherein at least portions of said glass components are affixed to at least portions of said nonglass components, to controlled vibrations in a vibrating appa-

ratus at a frequency, impact force and for a period of time effective for breaking said glass components into pieces of glass of a first size range and for liberating said glass components from said nonglass components; and

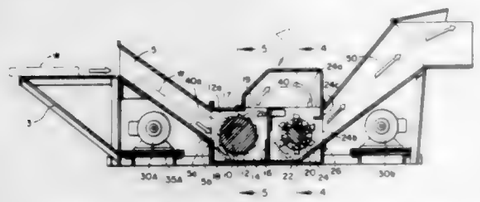
thereafter separating said nonglass components present in the feed stock from said pieces of glass.

5,350,122

WASTE RECYCLING DEVICE

Vincent G. Hundt, Rte. 1, Box 392, Coon Valley, Wis. 54623, and Frederick G. Peltz, 26902 County Rd. 10, P.O. Box 301, St. Martin, Minn. 56376

Filed Mar. 10, 1993, Ser. No. 29,122
Int. Cl.[5] B02C *13/04, 13/08*
U.S. Cl. 241—29 18 Claims



1. A waste recycling device for reducing waste objects to a recyclable particle size, said device comprising:

a) a preshredding rotor equipped with a number of blunt impacting projections for fragmenting the waste objects into intermediate sized fragments;

b) a shredding rotor equipped with a plurality of shredding members for shredding the fragments into smaller sized particles, with the shredding members including means for protectively retracting the shredding members from a shredding zone when said shredding members are exposed to an excessive impacting force exceeding a minimum shearing force threshold for maintaining said shredding members within said shredding zone in an unretracted position;

c) means for advancing the fragments from said preshredding rotor to said shredding rotor;

d) power driven means for rotationally driving said preshredding rotor and said shredding rotor at different rotational speeds; and

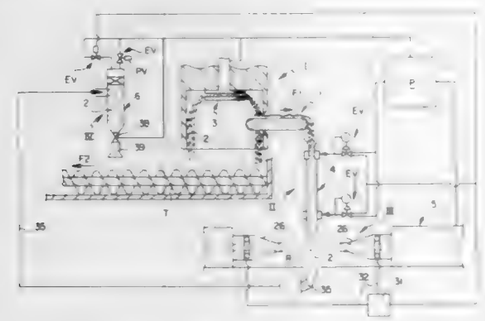
e) means for discharging said particles from said device.

5,350,123

SYSTEM FOR CONTROLLING THE GRINDING OF ROAST COFFEE

Ernesto Illy, Trieste, Italy, assignor to Illycaffe' S.p.A., Trieste, Italy

Filed Apr. 8, 1991, Ser. No. 681,257
Claims priority, application Italy, Apr. 24, 1990, 20122 A/90
Int. Cl.[5] B02C *23/00*
U.S. Cl. 241—37 5 Claims



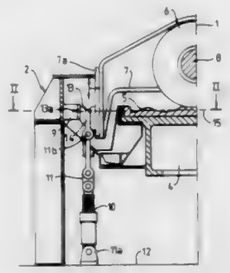
1. In a system for grinding roast coffee, testing the granulometry of the ground coffee, and conveying the ground coffee to a packaging machine, which system includes (1) a coffee grinding means wherein the granulometry is controlled by a programmer, (2) a testing means which uses laser beams to analyze the granulometry of the ground coffee and to compare the granulometry of the ground roast coffee with the granulometry of a reference sample of ground roast coffee, and (3) a conveyor means for transporting the ground roast coffee from the grinding means to a packaging means, the improvements comprising: a) a transporting means which transports samples of roast ground coffee from the stream of ground roast coffee coming from the grinding means to a vertical tube, which vertical tube leads to a test area of a test meter; b) the vertical tube is adapted by means of apertures in the perimeter of the tube to receive a downward flow of pressurized gas, which pressurized gas transports the ground coffee along the tube to the test area of the test meter, the vertical tube is further adapted by means of radial apertures to receive a second pressurized gas which flows at right angles to the tube, which gas breaks down any aggregates of ground coffee before the ground coffee falls into the test area of the test meter; c) the test meter containing a plurality of lenses through which laser beams pass; d) a compressed air source which is arranged to create a pressurized gas volume in the area around each lens of the test meter so that the ground coffee is prevented from entering the area around each lens; e) a suction means which is arranged to recover the ground coffee from the test area of the test meter and to deposit the recovered ground coffee in a container; and f) the container being positioned to hold the received ground coffee and to periodically release the held ground coffee and to return the ground coffee to the transporting means which conveys the coffee to the packaging machine.

5,350,124

ROLL MILL

Ludger Lohnherr, Oelde; Herbert Pingel, Wadersloh; Ludger Kimmeyer, Beckum, and Hans-Dieter Baldus, Ahlen, all of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Fed. Rep. of Germany

Filed Feb. 24, 1993, Ser. No. 21,886
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1992, 4209459
Int. Cl.[5] B02C *19/00*
U.S. Cl. 241—119 10 Claims



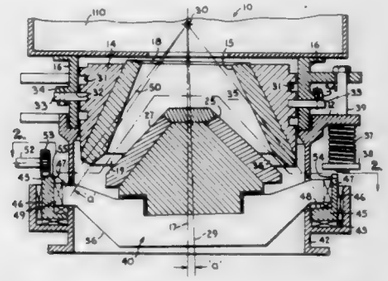
1. A roll mill construction comprising a housing; a grinding table supported in said housing for rotation about a vertical axis and having a substantially horizontal grinding surface; at least one roller support extending above and outwardly of said axis beyond said grinding surface; at least one pair of grinding rollers mounted on said roller support at its inner end for rotation about a substantially horizontal axis and in rolling engagement with said grinding surface; a guide lug connected to said roller support and extending beyond the periphery of said grinding table; a vertical guide carried by said housing and cooperating with said guide lug for guiding vertical movements of said roller support; and an upright spring tensioning rod coupled at its upper end to the outer end of said roller support and fixed to a stationary support at its lower end, said guide lug and said vertical guide being positioned at approximately the level of said grinding surface.

5,350,125

CONE CRUSHER WITH PERIPHERALLY DRIVEN GYRATORY HEAD

Roger M. Clark, Eugene, Oreg., assignor to Cedarapids, Inc., Cedar Rapids, Iowa

Filed Jul. 1, 1993, Ser. No. 86,534
Int. Cl.[5] B02C *2/04*
U.S. Cl. 241—208 19 Claims



12. A gyratory crusher of the type which crushes materials between a concave and a gyrating crusher head, comprising:

a spider arm cradle disposed generally centrally within the gyratory crusher, the spider arm cradle having a plurality of spider arms;

a crusher head totaly supported by the spider arm cradle, the spider arms of the spider arm cradle extending outward from the periphery of the crusher head through a material discharge region disposed annularly about the crusher head, the spider arms having respective spider arm ends disposed externally of and annularly about the material discharge region; and

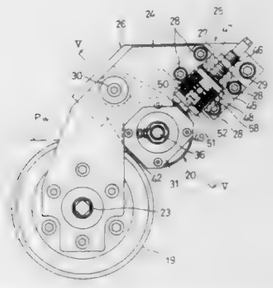
means, disposed externally about the material discharge region and engaging each of the spider arm ends for revolving each of the spider arm ends about respective axes of gyration intersecting at an apex, to gyrate the crusher head about the apex of gyration.

5,350,126

SHREDDING DEVICE FOR PAPER WEB USED IN THE MANUFACTURE OF CIGARETTES WITH FILTERS

Takayuki Irikura, Tokyo, Japan, assignor to Japan Tobacco, Inc., Tokyo, Japan

Filed Jun. 23, 1993, Ser. No. 88,422
Claims priority, application Japan, Jun. 24, 1992, 4-165877
Int. Cl.[5] B02C *1/08*
U.S. Cl. 241—235 8 Claims



1. A shredding device for a paper web used in the manufacture of cigarettes with filters, comprising:

a first drum rotatably arranged and having a peripheral surface for carrying the paper web as the drum rotates; and

shredding means for shredding the paper web into paper pieces of a specified length in cooperation with said first drum, said shredding means including

a first shaft arranged in parallel to said first drum, said first shaft being rotated in the opposite direction from said first drum,

a second drum mounted on said first shaft and having a peripheral surface, said second drum being rotated with said first shaft,

a pair of free rollers rotatably mounted on said first shaft at both sides of said second drum and having a larger outside diameter than said second drum, said pair of free rollers being rotated while contacting the peripheral surface of said first drum as said first drum rotates,

a plurality of shredding blades arranged circumferentially on the peripheral surface of said second drum at equal intervals, said shredding blades passing said first drum with a specified gap between themselves and the peripheral surface of said first drum as said second drum is rotated, and shredding the paper web on said first drum while passing,

supporting means for supporting said second drum and the pair of rollers so that they are allowed to move toward or away from the peripheral surface of said first drum, the supporting means includes a second shaft which is generally parallel to the first shaft, the second shaft being fixed, the supporting means further includes a pair of supporting arms rotatably supported on the second shaft, said first shaft being rotatably supported by the supporting arms, and

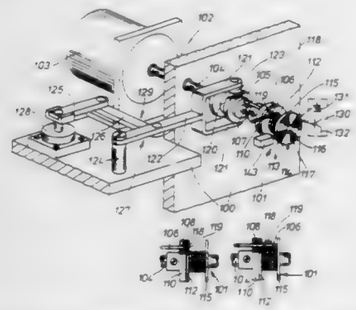
urging means for urging said second drum and said pair of free rollers toward the peripheral surface of said first drum and pressing the pair of free rollers against the peripheral surface of the first drum with a specified force.

5,350,127

PROCESS AND DEVICE FOR MONITORING THE BOBBIN THREAD ON STITCH-FORMING MACHINES

Kurt Arnold, Kaiserslautern; Wolfgang Hauck, Weilerbach; Reiner Klein, Kaiserslautern; Bernhard Mertel, Enkenbach-Alsenborn; Karl-Heinz Walther, Weilerbach, and Horst Zinssmeister, Kaiserslautern, all of Fed. Rep. of Germany, assignors to G.M. Aktiengesellschaft, Kaiserlauter, Fed. Rep. of Germany

Division of Ser. No. 886,957, May 21, 1992. This application May 6, 1993, Ser. No. 58,470
Claims priority, application Fed. Rep. of Germany, May 23, 1991, 4116788
Int. Cl.[5] B65H *54/02*
U.S. Cl. 242—20 4 Claims



1. A device for winding up thread on a bobbin for providing the bobbin with thread having turns of a predeterminable residual amount of thread wound in a direction opposite a direction of winding of a principle amount of thread comprising: a winder drive and a winder shaft for rotating the bobbin for winding of thread; counting means for counting revolu-

tions of the bobbin winder shaft; a deflecting member movable from a resting position located outside a path of feed of thread to a deflecting position located within a path of feed of thread; an adjusting device connected to said deflecting member for moving said deflecting member between said resting position and said deflecting position and control means for activating said deflecting member based on a predeterminable filling ratio of said residual amount of thread to said principle amount of thread, an actual filling amount of thread being determined based on revolutions counted by said counting means.

5,350,128

APPARATUS FOR LOADING WINDING TUBES

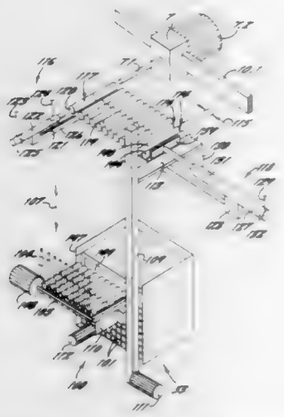
Ludger A. Deters, Remscheid, and Frank Adenheuer, Wuppertal, both of Fed. Rep. of Germany, assignors to Barmag, AG, Fed. Rep. of Germany

Filed Sep. 14, 1992, Ser. No. 945,111

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1991, 4130300; Feb. 10, 1992, 4203787

Int. Cl.[5] B65H *67/06*

U.S. Cl. 242—35.50 A **13 Claims**



1. An apparatus for transporting empty yarn winding tubes from a tube magazine wherein the tubes are supported in vertically stacked, horizontal rows of tubes, and onto one or more transport mandrels of a transport carriage system, and comprising

a horizontally disposed tube receiving tray having a plurality of parallel channels formed therein, with the channels being positioned laterally adjacent to each other so as to define a predetermined gauge, and with at least one of said channels defining a tube dispensing position,

a tube transport rake comprising a horizontal bar and a plurality on tines extending perpendicularly from the bar and in a horizontal direction, and with said tines being laterally spaced apart so as to have a gauge which closely corresponds to said predetermined gauge of said channels,

means mounting said rake for movement in a vertical direction and in a horizontal direction corresponding to the direction of said tines, and such that said rake can be moved horizontally into the uppermost row of tubes in said magazine with the tines entering respective ones of said tubes, and then moved vertically so that the tubes may be deposited in respective channels of said tray,

tube dispensing means for longitudinally dispensing the tubes located at said tube dispensing position coaxially onto at least one transport mandrel or the like, and

tube shifting means for laterally shifting the remaining tubes on said tray toward said tube dispensing position and so that at least one tube is shifted to said tube dispensing position and the tube dispensing means can then dispense said at least one shifted tube onto at least one additional transport mandrel.

5,350,129

SPINNING REEL HAVING BALANCING MEANS

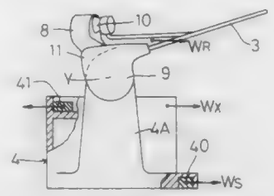
Yoshiyuki Furomoto, Osaka; Osamu Yoshikawa, and Kenichi Sugawara, both of Sakai, all of Japan, assignors to Shimano Inc., Osaka, Japan

Filed May 28, 1992, Ser. No. 889,273

Claims priority, application Japan, May 31, 1991, 3-040086[U]; Nov. 19, 1991, 3-094724[U]

Int. Cl.[5] A01K *89/01, 89/027*

U.S. Cl. 242—231 **4 Claims**



1. A spinning reel comprising:

a reel body (**2**);

a rotor (**4**) disposed at a forward position of the reel body (**2**);

a pair of arm portions (**4A**, **4A**) extending form said rotor (**4**), disposed on said rotor (**4**) substantially opposite to each other with respect to the axis of rotation (X) of said rotor (**4**);

an arm cam (**8**) pivotably attached to one of said pair of arm portions (**4A**);

a line roller (**10**) mounted on said arm cam (**8**);

a pivotable arm (**9**) attached to the other of said arm portions (**4A**);

a bail (**3**) interposed between said line roller (**10**) and the pivotable arm (**9**);

said arm cam (**8**) and said pivotable arm (**9**) being pivotable about a pivot axis (Y) substantially normal to said axis of rotation (X);

a balancer (**11**) provided to the pivotable arm (**9**), the balancer (**11**) having a configuration projecting from the pivotable arm (**9**) on a side of said pivot axis (Y) substantially opposite to the bail (**3**) and disposed outwardly on the pivotable arm (**9**) with respect to the axis of rotation (X), said balancer being formed integrally with said pivotable arm (**9**).

5,350,130

SPINNING REEL WITH REMOVABLE COVER

Yasuhiro Hitomi, Hashimoto; Noboru Sakaguchi, Tondabayashi, and Masuo Ban, Sakai, all of Japan, assignors to Shimano Inc., Osaka, Japan

Filed Oct. 13, 1992, Ser. No. 959,658

Claims priority, application Japan, Oct. 15, 1991, 3-083351[U]; Oct. 15, 1991, 3-083352[U]; Oct. 16, 1991, 3-083571[U]

Int. Cl.[5] A01K *89/00*

U.S. Cl. 242—241 **13 Claims**

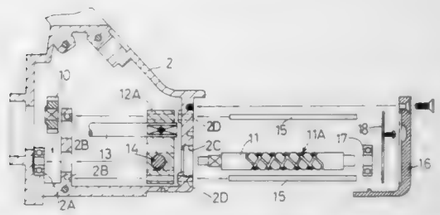
1. A spinning reel comprising: a reel body including a rear opening, a rear wall and a side wall;

a handle attached to said reel body;

a spool connected to a forward portion of said reel body through a spool shaft and means for reciprocating said spool shaft fore and aft relative to said reel body, said means for reciprocating comprising an oscillating mechanism mounted in said reel body and including:

a screw shaft driven by said handle, said screw shaft being inserted into said reel body through said rear opening and supported by said rear wall;

a slider engaged with said screw shaft and connected to said spool shaft, said slider being operable to convert rotation of maid screw shaft to a reciprocating motion of a fore and aft direction of said reel body for transmission to said spool through said spool shaft; and



guide means fixed to said reel body for prohibiting displacement of said slider transversely of said screw shaft, said guide means being inserted into said reel body through said rear opening and supported by said rear wall.

5,350,131

FISHING REELS WITH A SPOOL RECEIVING THE FISHING LINE

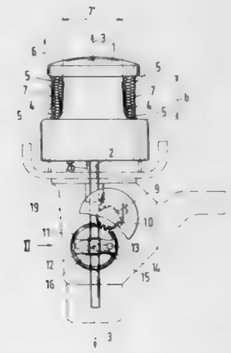
Walter Baumgartner, Theilenhofen, and Dieter Hamann, Gunzenhausen, both of Fed. Rep. of Germany, assignors to D.A.M. Deutsche Angelgerate Manufaktur Hellmuth Kuntze GmbH & Co. KG, Fed. Rep. of Germany

Filed Nov. 7, 1991, Ser. No. 788,801

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1990, 4035846

Int. Cl.[5] A01K *89/015*

U.S. Cl. 242—242 **6 Claims**



1. In a fishing reel which includes a spool for receiving a fishing line, means for winding the fishing line on the spool, a crank drive, a cam drive, and a spindle member connected to the spool, the spool having a longitudinal axis and being displaced to and fro parallely to the longitudinal axis between reversing positions of the spool at which a direction of displacement of the spool reverses by means of the cam drive which causes the spindle member to also move to and fro parallely to the longitudinal axis, the cam drive including a guide part having a guide slot which includes sidewalls, said guide part being connected to the spindle member, a gear rotated by said crank drive, a cam stud, and means for eccentrically mounting the cam stud on the gear to rotate in a circular path about an axis of rotation, said stud entering the guide slot and sliding along said sidewalls of the slot to displace said guide part and therefore the spool in the direction parallel to the longitudinal axis, the improvement wherein the guide slot has an elongated S shape, said cam drive forming drive means for causing the cam stud to be approximately midway between end zones of the S when the spool is at said reversing positions of the spool and in one of the end zones of the S when the spool is at a position approximately midway between said reversing positions, wherein a line connecting said end zones of the S subtends a nonzero angle with respect to the direction of displacement of the guide part, and wherein as the spool is moved from one reversing position to a position approximately midway between said reversing positions, and from said position approximately midway between said reversing positions to a next reversing position, said drive means causes said cam stud to impart to the guide part continuously changing stroke speeds as a result of the shape of the guide slot and displacement of the cam stud, said sidewalls also forming means for causing the stroke speed to increase as the spool approaches one of the reversing positions, and for causing the stroke speed to decrease as the spool approaches the position approximately midway between the reversing positions,

wherein segments of the sidewalls in which the cam stud is located before reversal of the spool displacement direction are spaced farther from a line through the slot whose direction coincides with the direction of displacement of the guide part and which is transverse to said longitudinal direction than are segments of the sidewalls in which the cam stud is located substantially at the side positions.

5,350,132

ANTI-REVERSE STRUCTURE FOR A SPINNING REEL

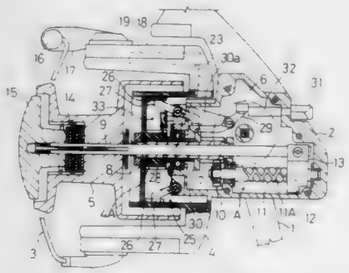
Yasuhiro Hitomi, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Mar. 20, 1992, Ser. No. 854,864

Claims priority, application Japan, Mar. 22, 1991, 3-017482[U]

Int. Cl.[5] F16D *63/00;* **A01K** *89/01*

U.S. Cl. 242—247 **12 Claims**



1. An anti-reverse structure for a spinning reel comprising:

internal engaging teeth formed on an inner peripheral surface of a rotary frame attached to a front face of a reel body;

a stopper mechanism including said engaging teeth and at least two pawls for engaging said engaging teeth for preventing said rotary frame from rotating backward in a line releasing direction; and

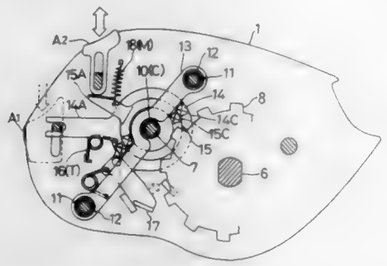
a position changing drive element for changing said pawls between an operative position to engage said engaging teeth and an inoperative position retracted from said engaging teeth;

wherein said drive element is mounted inside said reel body and interlocked with a rotary frame drive system for driving said rotary frame backward and forward, said drive element being operable to change said pawls to said operative position with backward rotation in said line releasing direction of said rotary frame drive system.

5,350,133
FISHING REEL HAVING AN IMPROVED CLUTCH MECHANISM

Shinichi Morimoto, Nishinomiya, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Jun. 24, 1992, Ser. No. 903,478
Claims priority, application Japan, Jun. 27, 1991, 3-1555055
Int. Cl.[5] A01K *89/015*
U.S. Cl. 242—261 **12 Claims**

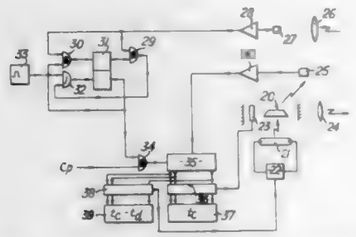


1. A fishing reel comprising:
a spool connected to a spool shaft;
a winding control system for rotating said spool shaft;
a clutch mechanism for engaging said winding control system with said spool shaft and for disengaging said winding control system from said spool shaft;
a pair of clutch controllers each of which is movable from a rest position to an operable position to cause said clutch mechanism to disengage said winding control system from said spool shaft;
a toggle action mechanism coupled exclusively to a first of said clutch controllers for causing said first clutch controller to retain said clutch mechanism in a condition where said winding control system is disengaging from said spool shaft after said first clutch controller moves to its operable position; and
a momentary action mechanism coupled exclusively to a second of said clutch controllers for causing said second clutch controller to return to its rest position from its operable position, and for causing said clutch mechanism to engage said winding control system with said spool shaft, after an operating force applied to said second clutch controller is released.

5,350,134
TARGET IDENTIFICATION SYSTEMS

Ian D. Crawford, Edinburgh, Scotland, assignor to GEC Ferranti Defence Systems Limited, Stanmore, England

Filed Jul. 3, 1973, Ser. No. 374,791
Int. Cl.[5] F41G *7/26*
U.S. Cl. 244—3.16 **26 Claims**

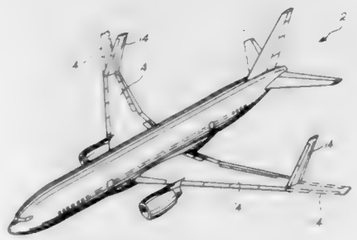


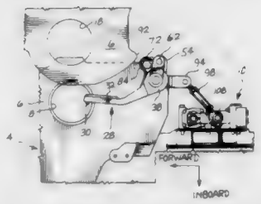
1. A target identification system which includes a target marker capable of selecting, and directing radiation at, a target, a weapon delivery system to which the target is to be identified, means for establishing between the target marker and the weapon delivery system a two-way communication channel over which pulsed radiation may be transmitted from one to the other by reflection from the selected target, and means carried by the target marker and the weapon delivery system for so encoding the radiation transmitted over the communication channel as to identify uniquely the selected target to the weapon delivery system.

5,350,135
LATCH PIN INHIBITOR FOR FOLDING WING-TIP AIRCRAFT

Michael E. Renzelmann, Woodinville, and Mark H. Smith, Vashon Island, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 828,308, Jan. 30, 1992, Pat. No. 5,201,479. This application Apr. 12, 1993, Ser. No. 45,903
Int. Cl.[5] B64C *3/56*
U.S. Cl. 244—49 **28 Claims**



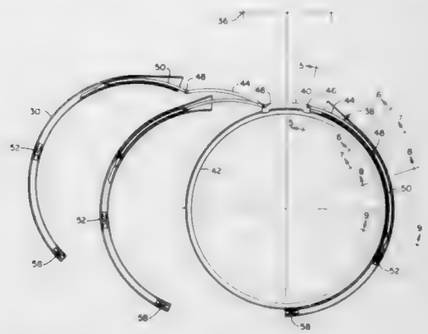


1. In an aircraft folding wing system of a type having first and second wing portions hingedly connected to each other, said portions including first and second lugs, respectively, each said lug having an opening, and said lugs being movable relative to each other along a spread pathway between a folded position and a spread position in which said openings are aligned for receiving a latch pin, apparatus for sensing said spread position, comprising:
an inhibitor pivotably mounted on said first portion to pivot between an inhibit position in which it extends into said pathway and an engaged position; said inhibitor being positioned to be engaged by said second lug, as said lugs move from said folded position to said spread position, and to be moved thereby from said inhibit position to said engaged position;
a spread valve having a sense port, a pressure port, a return port, and a valve member; said valve member being movable between a first position in which said sense port is in communication with one of said pressure and return ports and is closed from communication with the other of said pressure and return ports, and a second position in which said sense port is in communication with said other of said ports and is closed from communication with said one of said ports; and
linkage interconnecting said inhibitor with said valve member to cause said valve member to be mechanically moved from said first position to said second position by movement of said inhibitor from said inhibit position to said engaged position.

5,350,136
NACELLE ARRANGEMENT

Harold T. Prosser, Vernon; Joseph L. Forsyth, East Hampton, and Lewis J. Frost, Vernon, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 14, 1993, Ser. No. 61,887
Int. Cl.[5] E05B *65/04;* **E05C** *7/02;* **B64C** *1/16*
U.S. Cl. 244—129.4 **3 Claims**



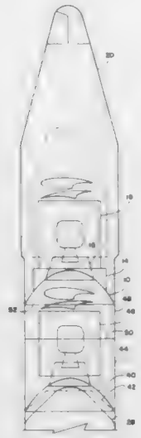
1. A nacelle arrangement comprising:
a support structure;
an outer cowl, formed of two clamshell doors, each hinged to said support with hinges having axially extending axes;
two inner cowl clamshell doors concentrically supported from and within said outer cowl, and extending axially rearward of said outer cowl, whereby said inner cowl clamshell doors pivot around said axially extending axis on opening and closing, and having two upper quadrants and two lower quadrants;
an engine centrally located within said inner and outer cowls;
a latch band on each of said inner cowl doors;
a latch band anchor on said engine at the top thereof;
said latch band comprising an arcuate upper link pivotally secured to said anchor, a lower link pivotally secured to said upper link, circumferentially slidable in said cowl and extending into a lower quadrant when said cowl is in the closed position; and
a latch secured to each lower link in a lower quadrant for placing said link in tension.

5,350,137
MULTIPLE APPLICATION PARABOLOID SPACECRAFT STRUCTURE

Mark W. Henley, San Diego, Calif., assignor to General Dynamics Corporation Space Systems Division, San Diego, Calif.

Filed May 19, 1993, Ser. No. 64,389
Int. Cl.[5] B64G *1/22, 1/64*
U.S. Cl. 244—158 R **16 Claims**

1. A multiple purpose spacecraft arrangement that is adapted to be placed in orbit around the earth by a space transportation vehicle, which spacecraft comprises:
a primary structure having an open paraboloid shape with a convex side and an opposite concave side having a focus whereby the primary structure may be used for a predetermined space application when placed into orbit by a space transportation vehicle;
the primary structure having a suitable attitude control means secured on the surface of the structure of the convex side of the open-paraboloid shape for positioning of the spacecraft in orbit; and
the primary structure also having a command and control system secured to the convex side for receiving signals for ordering the spacecraft to position itself in a predetermined orientation in orbit, and

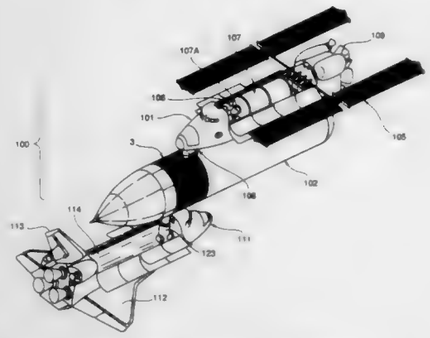


the primary structure having sufficient strength and rigidity to cooperate with an adapter for securing a payload of a space transportation vehicle.

5,350,138
LOW-COST SHUTTLE-DERIVED SPACE STATION

Philip E. Culbertson; Thomas F. Rogers, both of McLean, Va., and Randolph H. Ware, Boulder, Colo., assignors to University Corporation for Atmospheric Research, Boulder, Colo.

Filed Mar. 15, 1993, Ser. No. 31,603
Int. Cl.[5] B64D *1/22, 1/10*
U.S. Cl. 244—159 **33 Claims**



1. A prefabricated space station comprising:
a space shuttle orbiter vehicle, powered by rocket engines, having a cargo bay;
habitable laboratory module means mounted in said cargo bay;
an external fuel tank for containment of propellant materials for sid orbiter vehicle rocket engines;
means for mounting said orbiter vehicle on a side of said external tank;
means of dimensions to enable passage therethrough of a human being between said habitable space located within said orbiter vehicle and said habitable space located within said external tank; and
means for connecting a habitable space located within said orbiter vehicle with said habitable space located within said laboratory module means.

5,350,139

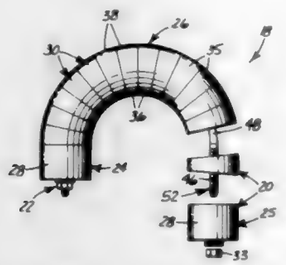
MANDREL FOR MAKING A RIGID TUBULAR ARTICLE

Mikhail Leyderman, Bloomington, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 773,150, Oct. 8, 1991, abandoned. This application Feb. 25, 1993, Ser. No. 22,769

Int. Cl.[5] B28B *7/28, 21/86*

U.S. Cl. 249—177 **7 Claims**



1. A mandrel useful for forming a rigid, tubular ceramic composite article that has a straight portion and an arcuate portion, which mandrel comprises:

(a) a plurality of shape-providing elements that:

(i) define a straight portion and an arcuate portion of the mandrel; and

(ii) include first and second terminal shape-providing elements; and

(b) a means for retaining the shape-providing elements in an aligned position the retaining means consisting essentially of:

(i) at least one member that is straight and arcuate to pass through the shape-providing elements of the straight portion and arcuate portion of the mandrel, respectively; and

(ii) first and second fasteners disposed immediately adjacent to the first and second terminal shape-providing elements;

wherein the straight and arcuate portions of the mandrel are disposed on the at least one member that passes through the straight and arcuate portions of the mandrel such that after removing one or more of the first and second fasteners all of the shape-providing elements of the straight and arcuate portions of the mandrel are slidably and separatively removable from the at least one member when the rigid, tubular article has been formed about the straight and arcuate portions of the mandrel.

5,350,140

UNIVERSAL CONTROL CONSOLE

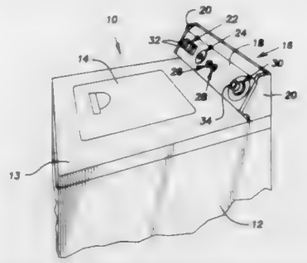
Brian D. Ripley; James L. Boston, both of Webster City; Edward G. Luehrmann, Eagle Grove, and Dale L. Barglof, Williamsburg, all of Iowa, assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Continuation of Ser. No. 984,360, Dec. 2, 1992, abandoned. This application Jan. 27, 1994, Ser. No. 188,361

Int. Cl.[5] G12B *9/00*

U.S. Cl. 248—27.1 **10 Claims**

1. A universal control console, comprising a generally planar central section and a pair of end section, said central section defining a hole pattern which is adapted to interchangeably receive control devices, said hole pattern including a central aperture and a plurality of laterally-spaced mounting apertures, said central aperture comprising a main opening and a plurality of outwardly extending apertures, wherein the central aperture and the laterally-spaced openings are adapted to interchangeably receive the control devices, and a generally



T-shaped opening, said T-shaped opening being downwardly spaced from said central aperture.

5,350,141

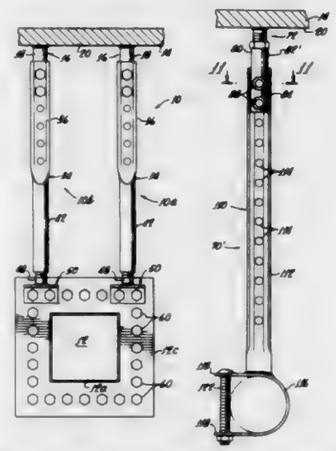
VERSATILE SUPPORT APPARATUS

Frederick Perrault, 1727 Date Ave., Torrance, Calif. 90503, and Raymond E. Perrault, 3845 E. Crest Rd., Rancho Palos Verdes, Calif. 90274

Filed Mar. 18, 1993, Ser. No. 33,042

Int. Cl.[5] E21F *17/02*

U.S. Cl. 248—59 **12 Claims**



1. A versatile support apparatus providing both large scale and fine-dimension incremental adjustability of a supported article relative to a supporting surface, said support apparatus including:

a stud member attached to and extending from said supporting surface;

an elongate support assembly removable securing to said stud member, said support assembly including an elongate portion defining plural spaced fastener holes therethrough, and a bracket portion securing to said elongate portion and configured to supportingly engage said article;

said support assembly further including intersecuring means for on the one hand securing to said elongate portion at any one of said plural fastener holes thereof thereby to provide said large scale incremental adjustability of incremental size equal to said regular spacing of said fastener holes, and on the other hand said intersecuring means providing for threading interrelationship of one of said stud member and bracket with said elongate portion to provide said fine-dimension incremental adjustment by

relative rotation of said elongate portion and said one of said stud member and bracket member;

wherein said intersecuring means includes one of said stud member and said bracket member including an elongate threaded end portion, and an elongate tubular portion defining an axial threaded bore threadably receiving said threaded end portion; and

wherein said stud member includes said threaded end portion, and said intersecuring means further includes an elongate adaptor member at one end thereof defining said elongate tubular portion with said threaded axial bore, and at the opposite end portion thereof said elongate adaptor member defining at least one transverse through fastener hole for securing with a fastener to said elongate portion of said support assembly.

5,350,142

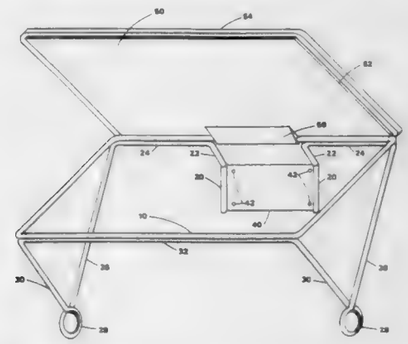
SUPPORT FRAME FOR FLEXIBLE BAGS WITH HANDLES

Michael R. Kurtzman, and Meehyun Kim, both of 840 California St. #57, San Francisco, Calif. 94108

Filed Apr. 19, 1993, Ser. No. 49,762

Int. Cl.[5] B65B *67/04*

U.S. Cl. 248—99 **4 Claims**



1. A frame for supporting a flexible bag of the type having a pair of bag handles disposed on opposing sides of the bag adjacent to an opening of the bag, comprising;

A) a rim having a plurality of rim members connected together in a planar configuration and framing an opening;

B) means for providing attachment of the frame to a planar surface;

C) a pair of lateral braces attached to the rim on opposing sides of the opening, both of said braces extending perpendicularly to the planar configuration of the rim; and

D) a pair of members forming ring like openings each attached to a respective brace distal from the rim, wherein said bag handles are threaded through and integrally attached to said ring like members.

5,350,143

COLLAPSIBLE STAND FOR GUITARS OR THE LIKE

Yoshiki Hoshino, Aichi, Japan, assignor to Hoshino Gakki Co., Ltd., Japan

Filed Nov. 13, 1992, Ser. No. 975,794

Claims priority, application Japan, Feb. 26, 1992, 4-018391[U]

Int. Cl.[5] G10D *3/00*

U.S. Cl. 248—166 **11 Claims**

1. A collapsible support stand comprising:

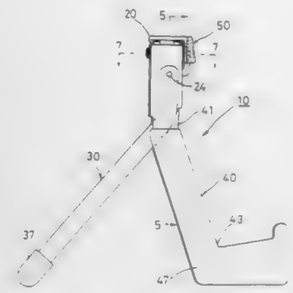
a main member;

a central leg in first pivot for pivotally supporting the central leg to the main member for the leg to pivot forward and rearward around a first axis at the main member;

opposite left and right side legs respectively at the opposite sides of the central leg aligned with the first axis, the first pivot being disposed between the left and right side legs;

a common second pivot for pivotally supporting the left and right side legs to the main member for the side legs to pivot left and right outward away from each other and from the central leg and inward toward each other, the common second pivot for the left and right side legs being along a second axis across the direction of the first axis;

whereby the stand may be erected for support by pivoting



the left and right legs outward away from the central leg and by pivoting the central leg rearward around the first axis;

each of the left and right side legs being generally L-shaped for defining one respective part of the L bent forwardly for supporting an object on the forwardly bent part when the left and right side legs are pivoted outward.

5,350,144

MOUNTING FIXTURE FOR A HAND-HELD HAIR DRYER

Fredric C. Lary, 2022 Ridge Rd., Muttontown, N.Y. 11791

Filed Aug. 13, 1993, Ser. No. 106,221

Int. Cl.[5] F16M *11/12*

U.S. Cl. 248—183 **14 Claims**



1. A mounting fixture for a hand-held hair dryer having an elongate dryer handle and barrel extending from a central portion, the dryer handle and barrel having a generally perpendicular orientation with respect to one another, said mounting fixture comprising:

a fixture body including a base portion having a support surface, and an arm portion extending from said support surface in a direction generally perpendicular to said support surface;

a bridge member supported on said arm portion, said bridge member having a longitudinal axis which is generally parallel to said support surface, said bridge member being spaced from said support surface;

a clasp mounted on said support surface and spaced from the longitudinal axis of said bridge member, said clasp being

adapted to receive the end of the dryer handle and to impede displacement of the dryer handle relative to said bridge member;

a clamp connected to said bridge member for holding the dryer barrel against the bridge member when the end of the dryer handle is inserted into said clasp; and

said base portion having a slot extending in a generally perpendicular direction relative to the longitudinal axis of said bridge member, said clasp being slidably mounted in said slot for translation therein, said clasp being adapted to be secured in a plurality of positions in said slot.

5,350,145

TENSIONING STRUCTURE PARTICULARLY FOR CARRYALL BARS ON MOTOR VEHICLES HAVING NO DRIPRAIL

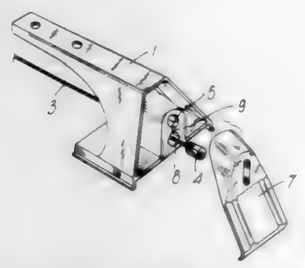
Luciano Fabbri Corsarini, Lonato, Italy, assignor to Ilma S.r.l. Industria Lavorazioni Meccaniche Autoaccessori, Bornato Cazzago San Martino, Italy

Filed Nov. 12, 1992, Ser. No. 974,448

Claims priority, application Italy, Nov. 29, 1991, MI91U001042

Int. Cl.[5] B60R *9/00*

U.S. Cl. 248—201 **1 Claim**



1. Tensioning structure particularly for carryall bars on motor vehicles having no driprail comprising;

supporting brackets for a carryall bar;

accommodation seats provided in said supporting brackets;

a metallic cable having ends;

terminals connected to said ends of said metallic cable and engageable in said accommodation seats, said metallic cable mutually connecting said supporting brackets;

an accommodation hole formed in each of said supporting brackets;

means for fixing a jaw for coupling to a motor vehicle roof accommodated in said accommodation hole in each of said supporting brackets;

a slot connecting said accommodation hole formed in each of said supporting brackets to one of said accommodation seats.

5,350,146

CLAMP FOR FASTENING A TRACKBALL-CONTAINING SHELL TO LAPTOP COMPUTER KEYBOARDS

Tzung-Nan Chiang, Taipei, Taiwan, assignor to Shih Yang Tso, Taipei, Taiwan

Filed Apr. 27, 1993, Ser. No. 52,915

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—231.4 **2 Claims**

1. A clamp for fastening a trackball-containing shell to a keyboard, comprising:

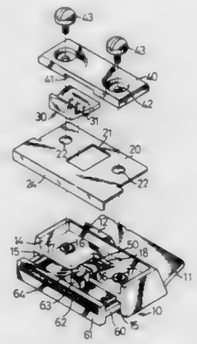
a base comprising (a) a plate comprising first, second, third and fourth edges, upper and lower surfaces, two first threaded holes formed through said upper surface thereof, two second threaded holes formed in said lower surface thereof and a cutout formed therein between said first threaded holes and between said second threaded holes, (b) two walls formed along said second and fourth edges of said plate thereof, (c) a wall formed along said third edge of said plate thereof, said walls formed along said second and fourth edges of said plate thereof respectively comprising two limits formed thereon facing each other and (d) a tray formed on said wall formed along said third edge of said plate thereof for carrying the trackball-containing shell;

a first clamping element comprising a first jaw perpendicularly connecting therewith, two holes formed therein and an opening formed therein between said holes, said first clamping element being sited on said plate of said base;

a button comprising upper and lower surfaces and a pushing portion formed on said lower surface thereof, said button being sited on said first clamping element with said pushing portion inserted through said opening formed in said first clamping element and said cutout formed in said plate of said base;

a top plate comprising two holes formed therein, said top plate being sited on said button;

two threaded bolts inserted through said holes formed in said top plate and said first clamping element for being engaged in said first threaded holes so that said first clamping element is attached to said base and that said



button is mounted between said first clamping element and said top plate;

a second clamping element comprising first, second, third and fourth edges, upper and lower surfaces, a second jaw perpendicularly formed along said first edge thereof and two anchors formed along said third edge thereof, said second clamping element being sited below said plate of said base between said walls formed along said second and fourth edges of said plate of said base;

a spring comprising a middle section and two terminal sections, said middle section of said spring being sited against said third edges of said plate of said base and said terminal sections of said spring being sited against said wall formed along said third edge of said plate of said base so that said second jaw is biased toward said first jaw by means of said spring;

a bottom plate comprising two holes formed therein, said bottom plate being sited below said second clamping element; and

two threaded bolts being inserted through said holes formed in said bottom plate for being engaged in said second threaded holes.

5,350,147

OMNIPOSITIONAL POD FOR CAMERA

Thomas J. Paganus, 187 Lindsay Ct., Franklin Township, Somerset County, N.J. 08823

Filed Oct. 19, 1993, Ser. No. 137,961

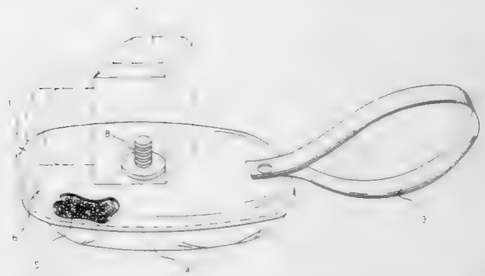
Int. Cl.[5] A47B *91/00*

U.S. Cl. 248—346 **16 Claims**

1. An omnipositional pod for supporting a camera, said pod comprising:

a) a cushion for supporting a camera, said cushion has a top side and a bottom side and comprises a pliable material;

b) a fastener mounted to said cushion, said fastener comprises a threaded stud a top plate integrally mounted to said threaded stud; a bottom plate having an area large enough to adequately anchor said top plate such that said threaded stud remains rigid; and, rivets extending from



said top plate, passing through said top side of said cushion, and attaching to said bottom plate, said rivets attach said top and said bottom plates such that said top side is held between them; for fastening to a camera; and

c) a fluid material contained within said cushion, said fluid material comprises free flowing solid particles to provide adequate support and ballast while allowing high pliability.

5,350,148

SEAT SLIDING DEVICE

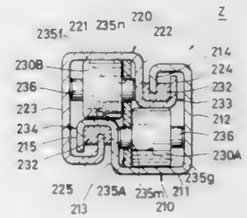
Mitsuji Yamamura, Kosai, Japan, assignor to Fujikiko Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1992, Ser. No. 890,514

Claims priority, application Japan, May 31, 1991, 3-129883; May 31, 1991, 3-129885

Int. Cl.[5] B60N *1/08*

U.S. Cl. 248—430 **4 Claims**



1. A seat sliding device, comprising:

an upper rail fixedly mounted on a seat and extending in a third direction, said seat sliding in said third direction, said upper rail having a substantially flat base portion, being mounted on said seat;

two side wall portions;

two flange portions;

said upper rail having an upper rail cross section defined by said base portion extending in a first direction which is approximately perpendicular to said third direction, said base portion having two side ends, said side wall portions extending from said side ends of said base portion, respectively, in a second direction which is approximately perpendicular to said first and third directions, respectively, said side wall portions having respective ends distal from said base portion, said flange portions extending from said distal ends of said side wall portions, respectively, at least in the first direction;

a lower rail being fixedly mounted on a vehicle body having a substantially flat base portion, two side wall portions and two flange portions, and having a lower rail cross section that is substantially identical to said upper rail cross section taken along said first and second directions; and

a rolling member for assisting said upper rail when sliding along said lower rail in said third direction by rolling inside said upper and lower rails; and wherein, said upper and lower rails form a seat sliding body while engaging with each other in said third direction, said seat sliding body having a unitary cross section taken in said first and second directions, said unitary cross section being defined by a first length in said first direction and a second length in said second direction, said first and second lengths being approximately equal wherein said rolling member includes a pair of rolling members; a retainer for supporting said pair of rolling members in said seat sliding body, said retainer having a base portion and first and second supporting holes, said base portion of said retainer being arranged in said seat sliding body in said second direction, said first and second supporting holes being provided in said second direction in said base portion of said retainer; and wherein, said rolling members have first and second shafts protruding from side faces on said rolling members at positions of the rotational axis thereof, said first shaft abutting against said side wall portions of said upper and lower rails, said second shaft being fitted in said supporting holes of said retainer.

5,350,149

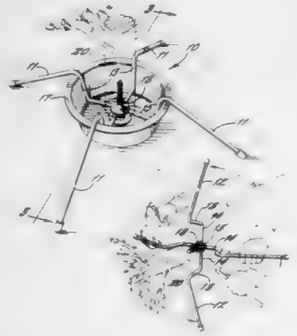
CHRISTMAS TREE STAND

Ernest B. Evans, Jr., Peachtree City, Ga.; Hines E. Fulk, Jr., Kernersville, N.C.; Norman T. Bennett, Kernersville, N.C., and Dana R. Wilkerson, Kernersville, N.C., assignors to Symple Products, Inc., Kernersville, N.C.

Filed Feb. 16, 1993, Ser. No. 17,621

Int. Cl.[5] A01K *97/10*

U.S. Cl. 248—523 **6 Claims**



1. A Christmas tree stand comprising

a central support member,

a plurality of legs extending radially outwardly from said central support member, each of said legs consisting of a unitary rigid rod having an inner end connected to said central support member, and an outer end which is adapted to rest upon a horizontal supporting surface, and with each of said legs being configured to define, when viewed in side elevation,

(a) an upwardly inclined outer end portion extending from said outer end to an elevated medial portion,

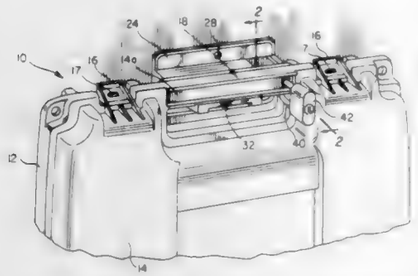
(b) an intermediate portion extending downwardly from said elevated medial portion to a lower medial portion, and

(c) a generally horizontal inner end portion extending from said lower medial portion to said inner end of said rod, and

said central support including an upwardly extending externally threaded member which is adapted to be threaded

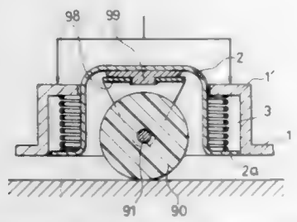
into a bore in the base of the tree for securing the stand to the tree.

5,350,150
WALL MOUNTING BRACKET FOR CARRYING CASE
Joseph F. Fiore, Lebanon, Pa., assignor to Doskocil Manufacturing Company, Inc., Arlington, Tex.
Filed Oct. 5, 1992, Ser. No. 956,156
Int. Cl.[5] A45C *13/18*
U.S. Cl. 248—552 4 Claims



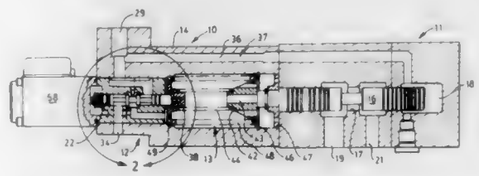
1. A carrying case and a wall mounting bracket for said case, the carrying case having a base, a lid, and respective apertures in pars of the base and lid which parts fit together when the case is closed to form a carrying handle of the case with said apertures in alignment, the mounting bracket having a flange for attaching same to a wall or other mounting surface, a support member extending from said flange to receive said carrying handle of the case thereon, said support member including a base member for receiving said carrying handle of the case thereon and an upright wall section adjacent said base member formed with a further aperture, the bracket being opened behind said wall section for receipt of a padlock hasp, said further aperture in said support member to align with said apertures of the case when said carrying handle is received on said support member in a manner whereby a hasp of a padlock can be passed through all of said apertures for locking the case to the bracket and preventing said parts of the base and lid of the case from being separated sufficiently to open the case.

5,350,151
LOAD SUPPORTING APPARATUS
Satoshi Aoki, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Oct. 13, 1992, Ser. No. 959,909
Claims priority, application Japan, Dec. 9, 1991, 3-324206
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—615 10 Claims



1. A load supporting apparatus for supporting an audiovisual assembly comprising:
a supporting base,
plural load supporting bodies mounted to said supporting base so that said supporting base is vertically movable with respect to the support bodies, and
resilient members provided between each of said load supporting bodies and said supporting base, which permit the supporting base to move vertically with respect to the supporting bodies against a resilient force of the resilient members and, when a force which acts on said supporting base exceeds a predetermined amount, permit an edge of said supporting base to come into contact with a surface on which the load supporting apparatus is disposed, thereby increasing an angle formed between a vertical line through a center of gravity of said apparatus and an oblique straight line connecting the center of gravity of the audiovisual assembly and a forward most point of contact of said load supporting apparatus.

5,350,152
DISPLACEMENT CONTROLLED HYDRAULIC PROPORTIONAL VALVE
Eric A. Hutchison, Peoria, and John J. Krone, Dunlap, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Dec. 27, 1993, Ser. No. 172,981
Int. Cl.[5] F16K *31/42*
U.S. Cl. 251—30.05 7 Claims

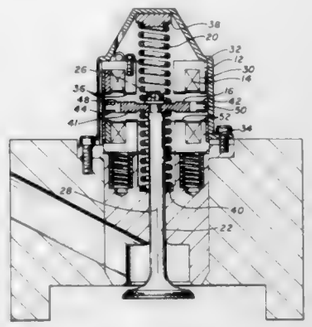


1. A displacement controlled hydraulic proportional valve having a main valve spool, a control chamber disposed at one end of the main valve spool, a control port communicating with the control chamber, a pilot valve spool in axial alignment with the main valve spool and movable in a first direction to control fluid flow out of the control chamber through the control port and in a second direction to control fluid flow into the control chamber through the control port, means for biasing the main valve spool toward the pilot valve spool, and a force module disposed to selectively exert an increasing control force against the pilot valve spool to move the pilot valve spool in the first direction and a decreasing control force against the pilot valve spool to move the pilot valve spool in the second direction comprising;
a compression force feedback spring disposed within the control chamber between the pilot valve spool and the main valve spool;
a spring retainer disposed between the feedback spring and the pilot valve spool and having a cylindrical pocket facing the pilot valve spool; and
an arcuate convex end portion provided on the pilot valve spool and extending into the cylindrical pocket.

5,350,153
CORE DESIGN FOR ELECTROMAGNETICALLY ACTUATED VALVE
Fernando B. Morinigo, Los Angeles; William C. Blaire, Buena Park, and Dennis Bulgatz, Reseda, all of Calif., assignors to Aura Systems, Inc., El Segundo, Calif.
Continuation-in-part of Ser. No. 957,194, Oct. 5, 1992, Pat. No. 5,222,714. This application Jun. 28, 1993, Ser. No. 84,814
Int. Cl.[5] F16K *31/06*
U.S. Cl. 251—129.16 16 Claims

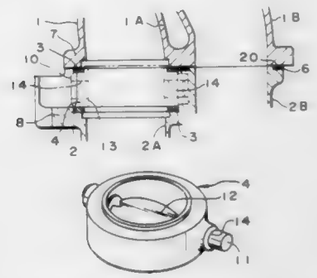
1. In an electromagnetically actuated valve having at least one electromagnetic assembly including an electromagnetic element and a coil disposed within the electromagnetic element, and at least one core element defining an upper surface, a lower surface, an outer edge surface and a central axis and being biased in an initial spaced apart relationship from the electromagnetic element, an improvement comprising:
a layer of structurally stable, non-magnetic material disposed

intermediate the electromagnetic element and the core element; and,



at least one radial aperture extending radially at least partially through the core element intermediate the upper surface and the lower surface.

5,350,154
SUPPORT STRUCTURE FOR A CERAMIC VALVE ASSEMBLY
Kenichiro Takama, Toyota; Kimihide Horio, Susono; Michihiko Miyasaka, Kokubu; Takafumi Tsurumaru, Kokubu, and Shinsuke Takenishi, Kokubu, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Nov. 1, 1993, Ser. No. 146,299
Claims priority, application Japan, Nov. 2, 1992, 4-294418; Mar. 31, 1993, 5-73283
Int. Cl.[5] F16K *1/22*
U.S. Cl. 251—305 15 Claims



1. A support structure of a ceramic valve assembly comprising:
(a) two metal pipes having flanges, the metal pipes being connected to each other at the flanges, one of the two pipes having a recess at a radially inner portion of the flange, the recess having a step at an axial end thereof;
(b) a ceramic valve assembly including:
a ceramic housing having a substantially cylindrical wall defining a first bore inside the wall and two shaft support bores formed in the wall, each shaft support bore extending substantially perpendicularly to a longitudinal axis of the ceramic housing;
a ceramic shaft having opposed ends rotatably supported by the shaft support bores; and
a ceramic butterfly valve fixedly coupled to the ceramic shaft so as to be rotatable together with the ceramic shaft within the first bore; and
(c) a first gasket disposed between the ceramic housing and the step of the recess and a second gasket disposed between the housing and the flange of the other of the two pipes, respectively, each gasket having a larger coefficient of linear expansion than said two metal pipes.

5,350,155
WIRE HOLDING FENCE POST ATTACHMENT ASSEMBLY
Lowell E. Burk, P.O. Box 356, Sharon Springs, Kans. 67758
Filed Aug. 17, 1992, Ser. No. 930,790
Int. Cl.[5] E04H *17/12*
U.S. Cl. 256—48 8 Claims



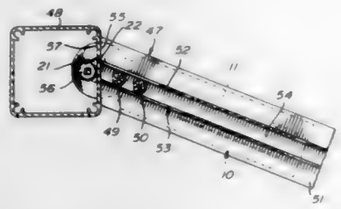
1. A strand holding fence post attachment adapted to be connected to a fence post member to support fence strand members thereon, comprising:
a) a main strand support and connector member includes a rigid central body member of generally V-shape having a fence strand receiving opening with an adjacent lock pin receiving projection;
b) a lock pin member releasably mounted in said lock pin receiving projection to restrain lateral movement of a fence strand member in said strand receiving opening;
c) said central body member integral with outer connector flange sections extended perpendicular to each other;
d) said outer connector flange sections engagable and connectable to an outer surface of the fence post member by an anchor member;
e) said central body member having a pair of cooperating ones of said lock pin receiving projections mounted on opposite sides of said strand receiving opening;
f) said lock pin receiving projections offset relative to each other to receive respective ones of said lock pin members therein; and
g) said lock pin members are individually removable from respective ones of said lock pin receiving projections without interference with each other due to the offset relationship;
whereby said lock pin member is mounted in said lock pin receiving projections transversely of said strand receiving opening to hold the fence strand member therein and restrict lateral movement thereof while allowing axial movement.

5,350,156

MECHANICAL CONNECTION DEVICE FOR ASSEMBLING A RAILING

Raynald Coté, 40, des Bouleaux, and Victor Coté, 2, de L'entre-deux, both of St-Apollinaire, Québec, Canada G0S 2E0

Filed Mar. 19, 1993, Ser. No. 34,814
Int. Cl.[5] E04H *17/00*
U.S. Cl. 256—65 16 Claims



1. A device for connecting one end of a generally elongated member to a hollow member formed with a slot therein, comprising:

first and second substantially flat sections separated by a pair of lateral shoulders;

said first section to be secured to said one end of the elongated member; and

said second comprising between said lateral shoulders an outer semicircular edge surfaces extending over more than 180° and being formed with a hole defining an inner semicircular edge surface generally concentric with said outer semicircular edge surface, said second section to be inserted in said slot so that said second section extends at least partially inside said hollow member for enabling insertion, from the inside of said hollow member, of a fastener resting on both said inner semicircular edge surface and an inner surface of said hollow member to secure the second section in said slot and therefore said one end of the elongated ember to the hollow member.

5,350,157

METHOD FOR LINING A CONTINUOUS CASTING DISTRIBUTOR WITH A REFRACTORY MATERIAL, DISTRIBUTOR AND REFRACTORY MATERIAL RESULTING FROM SAID METHOD

Jacques Poirier, Dunkerque; Gilbert Provost, Les Breviaires; Jean Martin, and Jean Rozieres, both of Metz, all of France, assignors to Sollac, Puteaux and Le Laboratoire Metallurgique, Woippy, both of France

Filed Oct. 26, 1992, Ser. No. 966,464
Claims priority, application France, Nov. 4, 1991, 91 13721
Int. Cl.[5] B22D *41/02*; C04B *35/66*
U.S. Cl. 266—44 8 Claims

1. A method for lining a distributor for the continuous casting of metals comprising the steps of:

preparing a wear-resistant refractory lining material for said distributor comprising a material selected from the group consisting of raw natural dolomite, raw natural calcite, and a mixture thereof, choosing for said selected raw material a particle size of between 0 and 5 mm,

adding to said selected raw material a binder in a proportion of 0.4 to 5% by weight and a plasticizer in a proportion of 0.2 to 3% by weight,

putting said lining material in an aqueous form and putting it in position in said distributor, thereafter drying and baking said lining material, decarbonating said lining material in the course of said drying and baking,

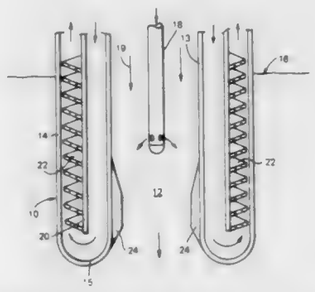
said method further comprising adding to said lining material at least a compound different from said binder and plasticizer and having a property of shrinking at temperatures below about 700° C.

5,350,158

METALLURGICAL LANCE AND METHOD OF COOLING THE LANCE

John G. Whellock, Denver, Colo., assignor to Mincorp Limited, Englewood, Colo.

PCT No. PCT/GB91/01902, § 371 Date Apr. 19, 1993, § 102(e) Date Apr. 19, 1993, PCT Pub. No. WO92/07965, PCT Pub. Date May 14, 1992
PCT Filed Oct. 30, 1991, Ser. No. 39,287
Claims priority, application United Kingdom, Oct. 31, 1990, 9023716
Int. Cl.[5] C21C *5/46*
U.S. Cl. 266—46 25 Claims



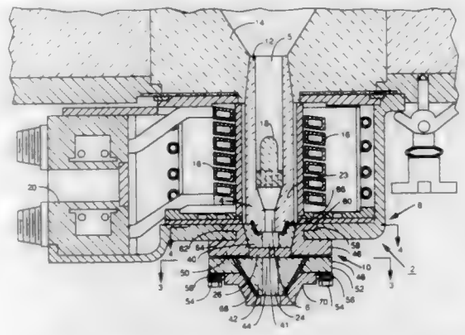
1. A metallurgical lance comprising an inner passageway through which reactants can be fed, an independent outer passageway which extends around the inner passageway and which has wall surfaces arranged to be exposed to heat flux, the outer passageway defining an end portion which is subjected to the highest heat flux during use and being arranged to have a coolant flow therethrough, and auxiliary means located only within said end portion of the outer passageway to modify the coolant flow in said end portion to enhance the take-up of heat uniformly around the wall surfaces of said end portion to cool the same.

5,350,159

ON/OFF VALVE APPARATUS FOR USE IN CONJUNCTION WITH ELECTROMAGNETIC FLOW CONTROL DEVICE CONTROLLING THE FLOW OF LIQUID METAL THROUGH AN ORIFICE

Irvin L. Parker, Freehold, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 18, 1993, Ser. No. 19,251
Int. Cl.[5] B22D *41/22*
U.S. Cl. 266—237 20 Claims



1. A valve combination for controlling the flow of liquid metal through an orifice, comprising:

a nozzle constructed of a non-conductive material and having a first generally longitudinal opening therethrough defining an orifice for the flow of liquid metal therethrough, an upstream end of said nozzle being in communication with a source of liquid metal;

an electromagnetic flow control device adjacent to and surrounding said nozzle for controlling the flow of said liquid metal through said nozzle, said electromagnetic flow control device having a coil operable to produce an electromagnetic field within said nozzle and the liquid metal flowing therethrough;

an on/off valve connected to a downstream end of said nozzle; and

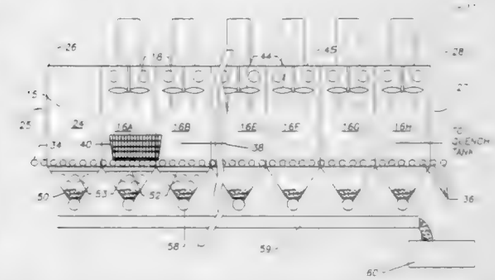
said on/off valve including a second generally longitudinal opening therethrough and in communication with said first generally longitudinal opening, a slider plate in communication with said second generally longitudinal opening and having at least one opening therethrough, and slide means for moving said slider plate in a plane generally perpendicular to said generally longitudinal openings so as to selectively align said opening through said slider plate with said second generally longitudinal opening, whereby said liquid metal may freely flow through said second generally longitudinal opening when said opening in said slider plate is aligned therewith and said flow of said liquid metal is substantially completely blocked when said opening in said slider plate is not aligned with said second generally longitudinal opening.

5,350,160

METHOD AND APPARATUS FOR HEAT TREATING METAL CASTINGS

Paul M. Crafton, Marietta, and Scott P. Crafton, Kennesaw, both of Ga., assignors to Consolidated Engineering Company, Kennesaw, Ga.

Division of Ser. No. 979,621, Nov. 20, 1992, Pat. No. 5,294,094, which is a continuation of Ser. No. 705,626, May 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 415,135, Sep. 29, 1989, abandoned. This application Nov. 9, 1993, Ser. No. 149,323
Int. Cl.[5] B22D *29/00*
U.S. Cl. 266—252 5 Claims



1. An apparatus for heat treating a metal casting having a sand core comprising sand bound by a binder, wherein the sand core defines a cavity within the casting, and wherein the apparatus comprises:

a furnace defining a work chamber for receiving the casting therewithin;

a heating means for heating said work chamber such that the casting and the sand core are heated to a temperature sufficient to combust the binder of the sand core, whereby the binder is burned off, leaving the sand of the sand core;

an airflow means for directing a flow of air over the casting while the casting is in said work chamber so as to dislodge a portion of the sand from the casting; and

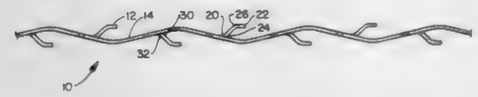
a capturing means operatively associated within said work chamber for capturing portions of the sand core which become dislodged from the casting prior to the binder being combusted therefrom and retaining the captured portions of the sand core within said work chamber until the binder has been substantially combusted therefrom, wherein said capturing means includes, at least, a screen.

5,350,161

NUCLEAR REACTOR GRID STRIP CANTILEVER SPRING WITH NONUNIFORM MATERIAL CHARACTERISTICS

Patrick A. Perrotti, Newington, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Continuation of Ser. No. 660,805, Feb. 26, 1991, abandoned. This application Nov. 6, 1992, Ser. No. 973,609
Int. Cl.[5] G21C *3/34*
U.S. Cl. 267—160 18 Claims



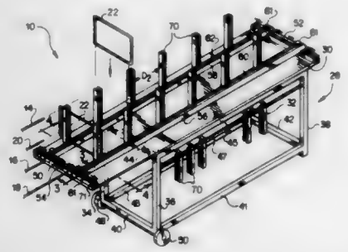
1. A grid strip for a nuclear reactor fuel assembly, the grid strip having a plurality of loaded metal cantilever springs which grow and relax when subjected to irradiation, each spring having a first end portion connected to the grid strip, a second end portion with an unattached terminal end, a length extending along the spring from the first end to the second end, and a thickness, the first end portion including a first curved portion which is curved in a first direction and the second end portion including a second curved portion which is curved in a second direction which is opposite to the first direction, the first curved portion having a first layer including a convex exterior surface and a second layer including a concave exterior surface, the first and second layers being opposite each other in a direction parallel to the thickness of the spring, the first layer having different material characteristics than the second layer such that upon irradiation of the grid strip the relaxation of the spring is at least partially offset by differential growth of the first and second layers, the second end portion having substantially uniform material characteristics throughout its thickness.

5,350,162

APPARATUS FOR ASSEMBLING REINFORCING BAR PIER CAGES

Meredith K. Cushing, 3327 Makyes Rd., Nedrow, N.Y. 13120

Filed Mar. 8, 1993, Ser. No. 27,650
Int. Cl.[5] B23P *19/00*
U.S. Cl. 269—13 15 Claims



1. A jig for assembling a rebar pier cage having a plurality of elongated rebars arranged in spaced, parallel relationship and a plurality of rebar stirrups each configured in substantially the same, predetermined polygonal shape defining a central opening said rebar stirrups longitudinally arranged in spaced, parallel planes with said elongated rebars extending through said central opening of each of said second plurality of rebars and secured in abutting relationship thereto with said parallel

planes lying perpendicular to the longitudinal axes of said elongated rebars, said jig comprising:

a) a first plurality of stirrup retaining elements positioned and spaced along a first longitudinal axis and configured to removably receive and hold a respective plurality of said rebar stirrups in said spaced, parallel planes with portions of said rebar stirrups extending laterally beyond either side of said stirrup retaining elements;

b) a second plurality of stirrup retaining elements positioned and spaced along a second longitudinal axis which lies spaced and parallel to said first longitudinal axis, each of said second plurality of stirrup retaining elements positioned in direct lateral alignment with a respective one of said first plurality of stirrup retaining elements with each laterally adjacent pair of said first and second plurality of retaining elements configured to removably receive and hold one of said rebar stirrups in said spaced, parallel planes with portions of said rebar stirrups extending laterally beyond each of said laterally adjacent pairs of rebar stirrups;

c) first and second, elongated channel bars having top, bottom and side surfaces lying along said first and second longitudinal axes, respectively, said first and second channel bars including first and second, longitudinally extending openings having a constant width w traversing said top surfaces thereof, respectively;

d) a fastening element attached to each of said stirrup retaining elements, said fastening element manually operable to removably engage portions of said top surface of one of said first and second channel bars adjacent said respective longitudinally extending opening, said fastening element comprising:

i) a cylindrical female connector element fixedly attached to the surface of said base portion facing in a direction away from said first and second legs, said female connector element having a longitudinally extending, threaded aperture which extends along an axis running parallel to and approximately midway between said spaced, parallel planes along which said first and second legs lie, said female connector element further including a circular flange extending around the terminal periphery thereof opposite said base portion with said flange having a diameter d which is larger than said constant width w_1 of said longitudinally extending openings of said first and second channel bars; and

ii) male connector element removably connected to said female connector element, said male connector element comprising a substantially planar head portion of predetermined outline with a threaded shaft fixedly attached thereto and extending therefrom in a direction substantially normal to said planar head portion, said threaded shaft of said male portion being removably threadedly engaged in said threaded aperture of said female connector element with said head portion of said male connector element and said circular flange of said female connector element clampingly engaging said portions of said top surface of said one of said first and second channel bars adjacent said respective longitudinally extending opening; and

e) said stirrup retaining elements each including first and second, elongated planar legs lying in spaced, parallel planes and having a base portion interconnecting said first and second legs, said first and second legs of each of said stirrup retaining elements lying in planes extending substantially perpendicular to said first and second longitudinal axes upon removably securing said stirrup retaining elements to said first and second elongated channel bars, respectively.

5,350,163

CLAMP WITH PIVOTING AND SLIDING JAWS

Wilfried Lichtenberg, 3/16 Stokes Street, Darwin, NT 0820, Australia

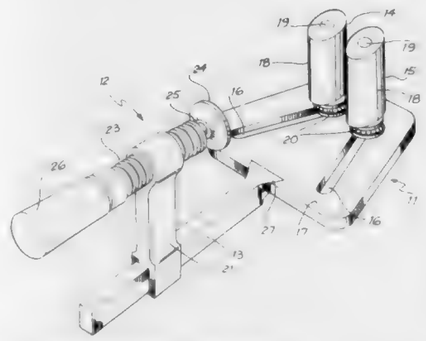
PCT No. PCT/AU91/00046, § 371 Date Sep. 16, 1992, § 102(e) Date Sep. 16, 1992, PCT Pub. No. WO91/12114, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 8, 1991, Ser. No. 923,961

Claims priority, application Australia, Feb. 9, 1990, PJ8568

Int. Cl.[5] B25B *1/00*

U.S. Cl. 269—156 **23 Claims**



1. A clamping member comprising:

a support plate;

a pair of engaging elements each having a wall surface, at least a portion of the wall surface of each engaging element being arcuate in shape and being formed from a non-slop material,

a pair of retaining means provided in the support plate, each respective one of the engaging elements being retained in a respective one of the retaining means such that each engaging element extends outwardly from a first side of the support plate so that the respective wall surfaces of the engaging elements are opposed to each other, each engaging element being slidable in its respective retaining means; and

mounting means between each engaging element and the support plate such that each engaging element can freely rotate relative to the support plate about an axis of rotation, thereby enabling a distance between the opposing wall surfaces of the engaging elements to be varied by sliding the engaging elements in their respective retaining means,

wherein the mounting means are low friction bearings and rotation of the engaging elements via the low friction bearings from a first position to a second position causes the distance between the opposing wall surfaces to be reduced.

5,350,164

SORTER OPERATED JOGGER

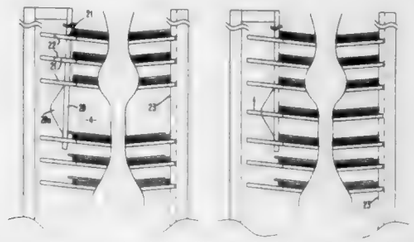
Peter M. Coombs, Tustin, Calif., assignor to Gradco (Japan) Ltd., Tokyo, Japan

Filed May 28, 1992, Ser. No. 889,633

Int. Cl.[5] B42B *2/00*; **B65H** *31/36*

U.S. Cl. 270—53 **7 Claims**

1. A sorter comprising: a plurality of trays arranged in a vertical stack and extended horizontally, means for vertically shifting said trays sequentially to positions providing an enlarged sheet entry space for receiving sheets fed into said trays, a registration surface engageable by sheets in said trays to register the sheets at one side edge, said trays otherwise being closely spaced, and sheet jogging means for moving sheets in



said trays towards said registration surface responsive to shifting of said trays.

5,350,165

SHEET FEEDING APPARATUS

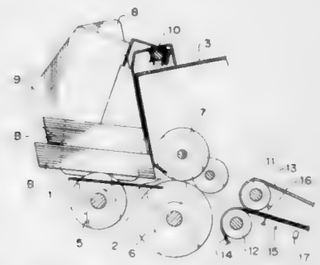
Masayuki Nagamoto, Minoo, Japan, assignor to Laurel Bank Machines Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1993, Ser. No. 105,055

Claims priority, application Japan, Aug. 31, 1992, 4-231782

Int. Cl.[5] B65H *1/06*

U.S. Cl. 271—9 **8 Claims**



1. A sheet feeding apparatus comprising:

a sheet stacking portion constructed and arranged to receive a plurality of sheets of different sheet widths stacked in a sheet feeding direction in order of width so that the widest sheets are disposed at a lowermost position of said sheet stacking portion,

a first pair of guides provided in said sheet stacking portion and being constructed and arranged to restrict a lateral position of said widest sheets along a predetermined path,

at least one other pair of guides provided in said sheet stacking portion and being constructed and arranged to restrict a lateral position of sheets having a width narrower than a width of said widest sheets along a predetermined path and to contact an upper surface of a sheet of said widest sheets disposed immediately beneath the narrower sheets, and

at least one feeder constructed and arranged to move successive sheets of said plurality of sheets from said stacking portion such that said widest sheets are first moved from said stacking portion until all sheets of said widest sheets are moved and thereafter said feeder moving said narrower sheets.

5,350,166

SHEET SEPARATING MECHANISM AND METHOD OF FLEXING A SHEET TO FACILITATE SEPARATION FROM A STACK

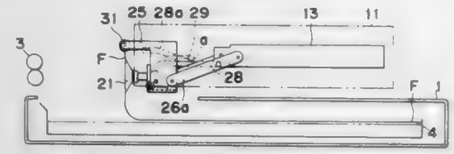
Satoshi Shimizu; Tomohiro Kudo, both of Yokohama, and Kenichi Suzuki, Isehara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 727,121, Jul. 9, 1991, abandoned. This application Jun. 28, 1993, Ser. No. 82,167

Claims priority, application Japan, Jul. 13, 1990, 2-186270; Jun. 5, 1991, 3-134212

Int. Cl.[5] B65H *5/08*

U.S. Cl. 271—14 **19 Claims**



1. A mechanism for separating a sheet, comprising:

a suction unit;

a magazine for storing stacked sheets;

a support moving in a first direction substantially parallel with the stacked sheets while rotatably supporting said suction unit; and

a regulating member for regulating movement of the sheet in the first direction to give flexure to the sheet being held by said suction unit in response to movement of the support in the first direction, said suction unit being rotated in a second direction by the flexure of the sheet to separate at least a part of the sheet from the stacked sheets.

5,350,167

APPARATUS FOR TRANSPORTING SHEET-LIKE PRODUCTS

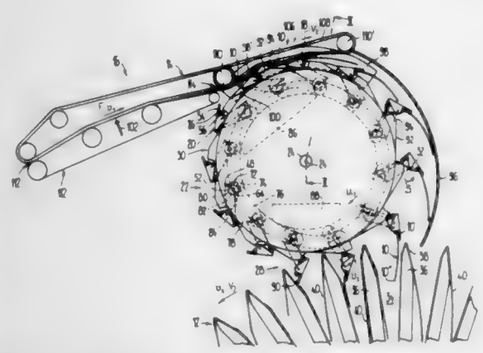
Egon Hansch, Wetzikon, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Dec. 23, 1993, Ser. No. 173,374

Claims priority, application Switzerland, Jan. 14, 1993, 00106/93

Int. Cl.[5] B65H *29/00*

U.S. Cl. 271—82 **8 Claims**



1. An apparatus for transporting sheet-like products comprising:

a continuously circulating belt conveyor having a flexible conveyor belt driven in a conveying direction at a conveying speed for transporting the products;

a takeover conveyor having a rotating carrying member driven in a second rotating direction;

a plurality of individually controllable clamps successively

mounted on the carrying member to rotate at a clamp speed, the clamps having a first clamping jaw and a second clamping jaw and a clamp mouth defined therebetween;

a takeover region wherein the products are transferred from the conveyor belt to the clamps;

in the takeover region, the clamp speed being greater than the conveying speed, the clamp mouth being directed forward in the conveying direction to seize the products at their trailing end, and the first clamping jaw of the clamps facing the conveyor belt and pressing the product to be seized by a following clamp against the conveyor belt firmly enough to be taken along, in order to convey it further at the conveying speed; and

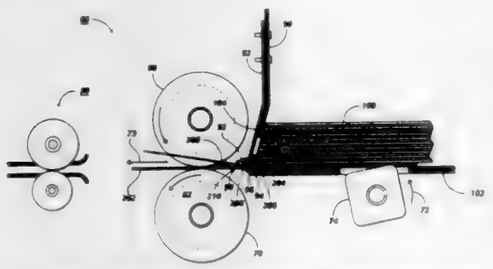
means disposed on the first clamping jaw for permitting relative movement between the first clamping jaw and the product.

5,350,168

CORRUGATED FANG FOR MULTI MEDIA FEEDER

Kevin M. Sheridan, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 26, 1992, Ser. No. 858,262
Int. Cl.[5] B65H *3/52*
U.S. Cl. 271—122 **11 Claims**



1. A sheet feeding apparatus adapted to advance sheets from a stack of sheets, comprising:

means for supporting the stack of sheets;

means, mounted adjacent said support means, for advancing sheets from the stack; and

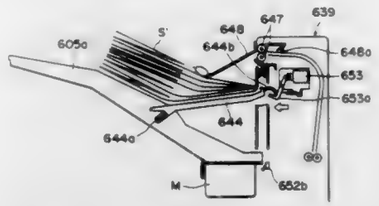
means for queuing and separating sheets being advanced by said advancing means from the stack, said queuing and separating means comprising a substantially planar member adapted to engage a lead edge of one portion of the sheets of the stack so as to initially separate a plurality of sheets from one side of the stack and a corrugated member extending from one end of the said planar member and adapted to engage the other portion of the sheets of the stack, wherein said queuing and separating means further comprises a retard member having a substantially arcuate surface adjacent to a portion of said corrugated member and forming a nip with said advancing means.

5,350,169

TRAY APPARATUS

Masakazu Hiroi, Tokyo; Akimitsu Hoshi, Yokohama; Noriyoshi Iida, Ichikawa; Tadayuki Kitajima, and Nobutaka Uto, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 988,879, Dec. 10, 1992, which is a division of Ser. No. 758,484, Sep. 9, 1991, Pat. No. 5,215,300, which is a continuation of Ser. No. 277,523, Nov. 28, 1988, abandoned, which is a continuation of Ser. No. 839,610, Mar. 14, 1986, abandoned. This application Feb. 2, 1994, Ser. No. 190,500
Claims priority, application Japan, Mar. 15, 1985, 60-053065; Mar. 18, 1985, 60-055485; Mar. 20, 1985, 60-057141
Int. Cl.[5] B65H *31/04*
U.S. Cl. 271—213 **4 Claims**



1. A tray apparatus comprising:

a bin tray for supporting plural sheet materials, said tray inclined so that an upstream side thereof with respect to movement of the sheet materials is at a lower level;

means for supporting said tray for vertical movement;

means for detecting an amount of the sheet materials stacked on said tray;

driving means for lowering said tray by a predetermined amount when said detecting means detects that a predetermined amount of the sheet materials are stacked on said tray; and

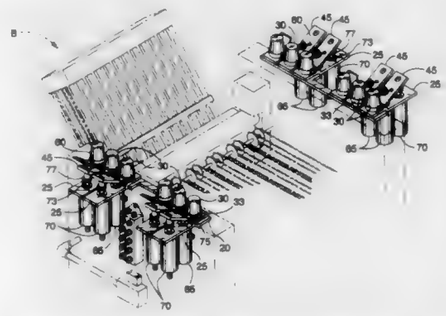
an auxiliary sheet stacking plate mounted to said tray, said auxiliary sheet stacking plate having an inclination opposite to the inclination of said tray as said tray is being lowered so as to raise an upstream side of said auxiliary sheet stacking plate.

5,350,170

ROLLER GAP SETTING SYSTEM

Jon Emigh, 7050 Mt. Aukum Rd. #5, Somerset, Calif. 95684, and Motaz Qutub, 11044 Cobblestone Dr., Rancho Cordova, Calif. 95670

Filed Jul. 21, 1993, Ser. No. 95,692
Int. Cl.[5] B65H *5/00*
U.S. Cl. 271—273 **19 Claims**



1. For use in transporting a packet containing from one to a plurality of pages, a dynamic roller positioning system for adjusting a packet receiving gap between two packet transporting rollers, comprising:

a) a pair of rollers with each roller having a packet contacting surface and the packet receiving gap separating said surfaces;

b) gap setting means for setting by steps said paired rollers to a selected gap dimension;

c) control means for actuating said gap setting means for each packet; and

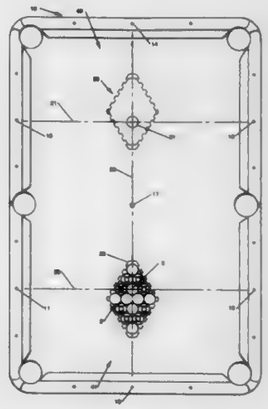
d) a database utilized by said control means, whereby said control means utilizes a page count for each packet found in said database to signal said gap setting means to produce an appropriate gap dimension to receive that said packet.

5,350,171

METHOD AND APPARATUS FOR PLAYING A POCKET BILLIARD GAME

Thomas J. Wozniak, Akron, Ohio, assignor to Grand Prix Billiards, Inc., North Royalton, Ohio

Filed Oct. 2, 1991, Ser. No. 771,453
Int. Cl.[5] A63D *15/00*
U.S. Cl. 473—1 **13 Claims**



1. A method of playing pocket billiards with a cue ball on a pocket billiard table having pockets, comprising:

a) providing a collection of no more than 21 object balls, said collection having a predetermined set of equal valued balls and a predetermined set of differing valued balls;

b) arranging said object balls in a predetermined configuration upon the table, all said object balls in contact with at least two adjacent object balls;

c) alternately designating one of said two predetermined sets as a target set;

d) using movement of said cue ball to strike a ball in one of said two predetermined sets designated as said target set;

e) using movement of said cue ball to strike a ball in the other of said two predetermined sets so long as the preceding strike of the cue ball in step d) caused a ball in said target set to enter any of the pockets on the table, all object balls entering a pocket remaining in said pocket until all other object balls have been pocketed;

f) awarding a predetermined number of points for each ball pocketed from said equal valued set of balls and a number of points for each ball pocketed from said differing valued set of balls corresponding to the numerical point value associated with said ball;

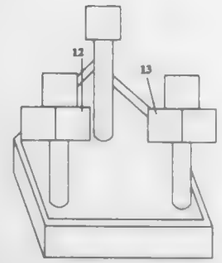
g) repeating steps c) through f) until all of said object balls have been pocketed.

5,350,172

BASEBALL PITCH TO WIN APPARATUS

Richard M. Garrett, 15 Bronwood Dr., Voorhees, N.J. 08043, and Al Holland, 3523 Cove Rd. NW., Roanoke, Va. 24017

Filed Oct. 13, 1992, Ser. No. 959,636
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—26 A **9 Claims**



1. A baseball pitching training apparatus for developing and improving pitching skills comprising

(a) a planar base representative of a baseball home plate, said base having three slots therein arranged in a triangle pattern,

(b) a first pole having a first predetermined length and being mounted vertically in a first one of said slots, said first pole having mounted on its upper end a target, said predetermined length being the optimum lower height of the batting strike zone,

(c) a second pole having a predetermined length and being mounted vertically in a second one of said slots, having mounted on its upper end a target, said second predetermined length being the optimum lower height of said batter strike zone, and first and second poles being spaced apart a predetermined straight line distance, said predetermined distance between said first and second poles being substantially normal to a ball thrower positioned facing said base,

(d) a third pole having a third predetermined length and being mounted vertically in a third one of said slots, said third pole having mounted on its upper end a target, said third predetermined length being the optimum upper limit height of said strike zone, said third pole being located at the apex of said triangular pattern, said first and second predetermined lengths being equal and said third predetermined length being greater than said first and second predetermined lengths,

(e) recoil means located in each of the first, second, and third poles to cause said poles to return to its normal vertical position after being struck by a thrown ball.

5,350,173

SPORTS RACKET

Charles DiCerbo, 600 Bowes Rd., Concord, Ontario, Canada

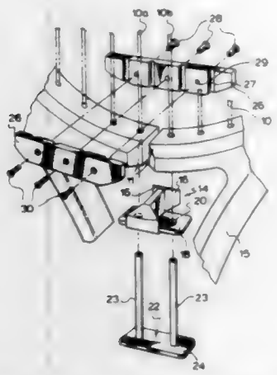
Filed Sep. 2, 1993, Ser. No. 114,631
Int. Cl.[5] A63B *49/02*
U.S. Cl. 273—73 G **2 Claims**

1. In a strung racket having a frame with a handle, a rim having an inside face and an outer face and strings through the rim, the rim having a discontinuity at its base to provide two spaced free ends, the improvement of:

a resilient insert between said free ends of said rim to absorb movement of the frame at said free ends, said resilient insert having opposite sides, the movement of the free ends having components towards each other and components perpendicular to a plane of the rim whereby to dampen the effect of the vibration transmitted to the handle from ball impact on the strings;

means for transmitting movement from the strings to said resilient insert comprising a strip overlaying the outer face of the rim and extending across the discontinuity;

tubular vibration-transmitting string sheaths on each of said sides of the resilient insert extending from said strip and through the rim and having free ends extending beyond the inside face of the rim, a string extending through each sheath; and



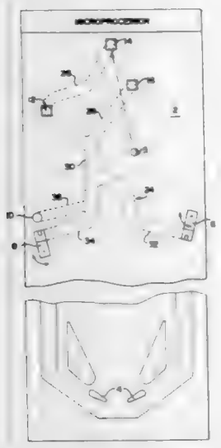
resilient clamp means, said free ends of said sheaths extending beyond the inside face of said rim a distance to be engageable by said clamp means and, said clamp means clamping the free ends of said sheaths to their respective strings.

5,350,174

BELOW THE PLAYFIELD BALL DELIVERY SYSTEM FOR A PINBALL GAME

Steve Ritchie, Evanston, and Carl Biagi, Chicago, both of Ill., assignors to Williams Electronics Games, Inc., Chicago, Ill.

Filed Oct. 28, 1993, Ser. No. 144,306
Int. Cl.[5] A63F *9/36*
U.S. Cl. 273—121 A **20 Claims**



1. In a pinball game, having an inclined playfield supporting a rolling ball in play, a below the playfield ball delivery system comprising:

a) a ball inlet for receiving the ball in play from the playfield;

b) a ramp located below the playfield for delivering the ball in play from the ball inlet to a second location;

c) signaling means for detecting the entrance of the ball in play into said ball inlet;

d) means for storing at least one stored ball at said second location; and

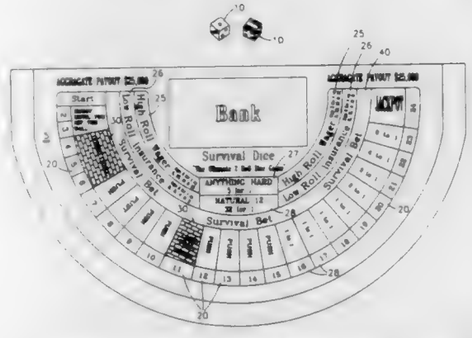
e) means for delivering said stored ball to said playfield upon detecting the ball in play entering said ball inlet.

5,350,175

BETTING GAME METHOD OF PLAY

Dean DiLullo, 7066 Shadow Crest, Las Vegas, Nev. 89119, and James Jorasch, Los Altos Hills, Calif., assignors to Dean DiLullo, Las Vegas, Nev.

Filed Jan. 7, 1994, Ser. No. 178,502
Int. Cl.[5] A63F *9/04*
U.S. Cl. 273—146 **8 Claims**



1. A method for playing a betting game employing a pair of dice or their mechanized equivalent, such that any one of the numbers from 2 through 12, defining a first numerical set **S1**, can result from a fair roll of the dice, the number produced being an outcome represented by N1, and any one of the numbers between 4 and 24, defining a second numerical set **S2**, can result from summing the outcomes, N1 plus N2; of two sequential fair rolls of the dice, the method comprising the steps of:

a) setting rewards on a single roll of the dice wherein a winning number may be any member of a previously selected first subset **SS1**, of the first numerical set **S1**;

b) setting rewards on a single roll of the dice wherein a winning number may be any member of a previously selected second subset **SS2**, of the first numerical set **S1**, wherein **SS1** and **SS2** are mutually exclusive;

c) setting rewards on a single roll of the dice wherein a winning number may be any one of the even numbers of **S1**, the winner being chosen only if the dice are thrown as doubles;

d) setting rewards on a single roll of the dice wherein a single member of **S1** is selected as the winning number;

e) setting rewards on two rolls of the dice wherein a winning bet may be any member of **S2** exclusive of a previously selected subset **SS3**, of **S2**;

f) taking bets on the members of **S1** for rewards determined in accordance with steps (a) through (d) for a single roll of the dice;

g) taking bets on the members of **S2** for rewards determined in accordance with step (e);

h) rolling the dice to determine a first outcome number N1;

i) rewarding successful bets in accordance with steps (a) through (d), and collecting bets placed in accordance with step (e) when N1 is a member of SS3;

j) rolling the dice to determine a second outcome number N2;

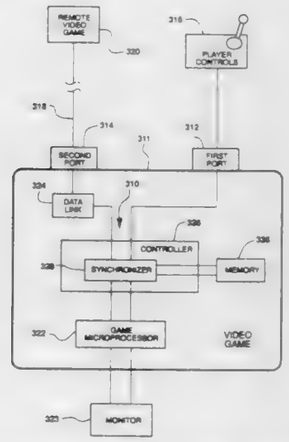
k) rewarding, in accordance with step (e), when the sum of N1 plus N2 is not equal to a member of **SS3**, and collecting all remaining bets when the sum of N1 plus N2 equals any member of **SS3**.

5,350,176

VIDEO GAME

Peter Hochstein, 2966 River Valley Dr., Troy, Mich. 48098, and Jeff Tenenbaum, 6162 Wynford, West Bloomfield, Mich. 48322

Continuation-in-part of Ser. No. 708,682, May 31, 1991, Pat. No. 5,292,125. This application Mar. 7, 1994, Ser. No. 207,275
Int. Cl.[5] A63F *9/22*
U.S. Cl. 273—148 B **13 Claims**



1. A video game synchronizing assembly (**310**) adaptable to communicate a local video game (**311**) with a remote video game (**320**), the local video game (**311**) including a game microprocessor (**322**), at least two player ports (**312,314**), and a set of player controls (**316**) electrically connected to one (**312**) of said two player ports (**312, 314**), the set of player controls (**316**) manipulatable to create local command signals to be incorporated in the local video game (**311**) to define player parameters, said video game synchronizing assembly (**310**) comprising:

a controller (**326**) for receiving the local command signals from the set of player controls (**316**) and remote command signals from the remote video game (**320**) and for transmitting the local and remote command signals to the local video game (**311**);

a data link (**324**) for transmitting the local command signals to the remote video game (**320**) and for receiving a remote synchronization code and the remote command signals from the remote video game (**320**), said video game synchronizing assembly (**310**) characterized by

synchronizing means for synchronizing the transmission of the local and remote video command signals by said controller to the game microprocessor (**322**) of the video game (**311**).

5,350,177

GOLF CLUB SWING TRAINING APPARATUS

Norman C. Furbush, Jr., 11425 Dun Loring Pl., Largo, Md. 20772

Filed Mar. 3, 1993, Ser. No. 25,742
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—191 R **10 Claims**

1. A collapsible and adjustable golf club swing training apparatus for use by a golfer in positioning the stance and golf club awing arc of said golfer relative to a grounded or teed golf ball positioned upon a playing surface in order to propel said golf ball by means of said golf club along a desired trajectory, said swing training apparatus comprising;

an inner guide and an outer guide,

said inner and outer guides each having a forward end, a rearward end, and a midpoint,

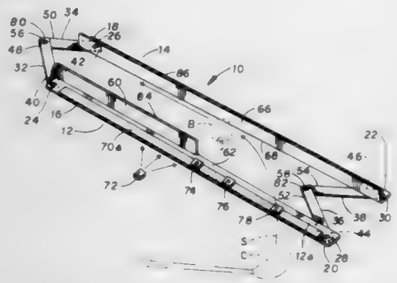
adjustable positioning markers secured to said inner guide,

inner and outer forward and inner and outer rearward connecting links,

each of said connecting links having a guide connecting end and a link connecting end,

said inner and outer forward connecting link guide connecting ends respectively pivotally attached to said inner and outer guide forward ends,

said forward connecting links pivotally attached to one another at said forward link connecting ends,



said rearward connecting links pivotally attached to one another at said rearward link connecting ends,

said inner and outer guides each having a guide fence extending upward therefrom, wherein said inner guide fence is substantially shorter in length than said outer guide fence,

said inner guide having an upper surface providing securing means for said adjustable positioning markers, whereby

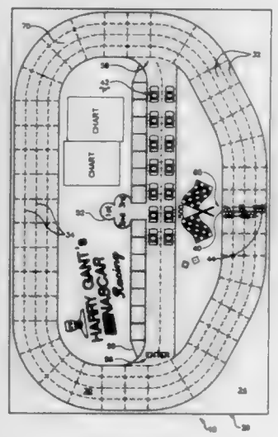
said swing training apparatus provides adjustable positioning guidance for said stance and said club swing arc of said golfer.

5,350,178

CAR RACING GAME

A. Keith Hollar, 3333 Tryon Courthouse Rd., Cherryville, N.C. 28021

Filed Apr. 26, 1993, Ser. No. 53,181
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—246 **6 Claims**



1. A board game simulating an automobile race for one or multiple players; said board game comprising:

A. a game board formed of a sheet of selected flexible material, of a predetermined size, and having a first face on one side thereof and a second face on the opposite side thereof;

B. on said first face a playing surface comprised of a first printed depiction of a known, existing race track, said playing surface having a plurality of defined regions and a plurality of contiguous lanes representing a path of player travel, each of said lanes being divided into a plurality of distinct spaces;

C. a plurality of token cars for demonstrating player advancement along said race track;

D. a plurality of charts for determining the course and type of movement along said race track; each of said charts including defined categories of movement and enumerated instructions within each of said categories;

E. a plurality of dice to enumerate movement along said lanes and to indicate a referenced instruction on a selected one of said charts according to the rules of play; at least one of said die being of a first color, and a second one being of a second, different color;

F. texturing means for increasing the definition of distinct areas and lanes on said race track for enabling the positioning of said token cars on a selected area of said race track;

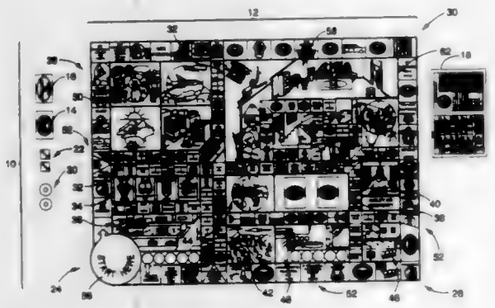
whereby one or more players play an auto racing game which, by use of rules which require decision making and strategy, coupled with chance, actually teaches some of the elements involved in auto racing.

5,350,179

DRUG AWARENESS GAME AND METHOD FOR PLAYING

Ronald D. Hill; Adam G. Marglon, both of 5715 Eagle Rd., Apt. K, Carmichael, Calif. 95608, and David P. Johnson, 647 Ellis Rd., Marysville, Calif. 95901

Filed Aug. 10, 1993, Ser. No. 105,332
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—249 **29 Claims**



1. A board game apparatus, comprising:

(a) a playing board including:

(i) a start position and an end position,

(ii) a pathway extending about the surface of said playing board between said start position and said end position, said pathway divided into a plurality of side by side shapes defining playing positions, each playing position representing point values or giving information or giving instructions or requiring the taking of a card or designating a neutral position or designating a barricade position,

(iii) a plurality of said playing positions adjacent to said start position identifying a plurality of prerequisite items;

b) a police chart, said police chart having means for monitoring a tally of points;

(c) a game piece corresponding to a player, said game piece movable in a player's turn a selected number of playing positions upon said pathway;

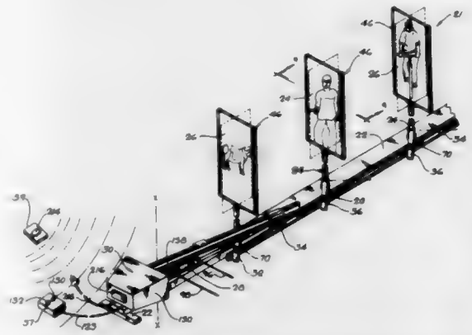
(d) a random number generator for selecting the number of playing positions said game piece must move.

5,350,180

REMOTELY CONTROLLED TARGET SYSTEM WITH OPTIONALLY SELECTIBLE POWER DRIVES SUCH AS FLUID PRESSURE AND ELECTRICAL POWER DRIVES

Joseph Acock, 250 S. Sprague Rd., Coldwater, Mich. 49036

Filed Jul. 28, 1993, Ser. No. 98,597
Int. Cl.[5] F41J *7/00*
U.S. Cl. 273—406 **16 Claims**



1. In a target system, an elongated horizontal base, a plurality of posts journaled for rotation at spaced intervals along the base, each post supporting a target board having at least one target face and being rotatable through an arc of at least ninety degrees to rotate the corresponding target board between a full view working position in which the target face is visible to a shooter, and an edge view working position in which the target face is concealed from the shooter, each post having a lever arm extending outwardly therefrom, an elongated connecting bar extending along the base and pivotally connected to each of the lever arms to synchronize rotation of the target boards between said working positions, remote controlled optional dual power mechanisms for rotating the target boards comprising in combination:

a drive crank arm pivotally movable on the base for horizontal swinging movement;

means pivotally connecting the elongated connecting bar to the drive crank arm to swing the target boards between said working positions in response to swinging movement of the drive crank arm;

optionally selectible first and second power drive means mounted on the base, each power drive means having a reciprocable drive member connected to the drive crank arm;

first and second remote control means for said first and second power drive means respectively, located at a distance remote from the target boards, said first remote control means being operable to actuate the first power drive means to swing the drive crank arm in opposite directions to move the target boards between said working positions, said second remote control means being operable to actuate the second power drive means to swing the drive crank arm in opposite directions to also move the target boards between said working positions; and

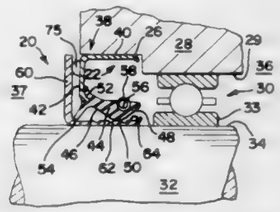
first release means selectively adjustable to release the first power drive means from the drive crank arm during actuation of the drive crank arm by the second power drive means, and second release means selectively adjustable to release the second power drive means from the drive crank arm during actuation of the drive crank arm by the first power drive means.

5,350,181

PUMPING FEATURE ON WEAR SLEEVE FOR UNITIZED SEAL

Leslie A. Horve, Deer Park, Ill., assignor to SKF USA Inc., Elgin, Ill.

Continuation of Ser. No. 769,082, Sep. 30, 1991, abandoned. This application May 19, 1993, Ser. No. 64,742
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—35 **9 Claims**



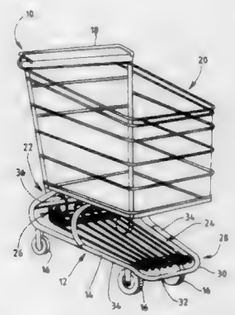
1. A seal assembly for use with two relatively movable elements to be sealed, said assembly comprising a primary seal unit and an associated sheet metal wear sleeve, said primary seal unit including a casing for mounting relative to one of said two relatively moveable elements and a seal element including a circumferentially continuous elastomeric body having a portion bonded to said casing and another portion biased by its own innate resiliency toward said wear sleeve whereby snug, fluid-tight sealing contact may be made between a portion of said seal element and a mating surface of an associated wear sleeve, said associated wear sleeve having a radial flange and a generally cylindrical portion adapted to be fixed in fluid-tight relation to the second of said relatively movable elements, said cylindrical portion being of reduced thickness relative to the thickness of said radial flange and having thereon a surface pattern formed by metal cold flow during sleeve thickness reduction, said pattern including at least one hydrodynamic pumping element having a contoured portion radially offset from the remainder of said cylindrical portion.

5,350,182

SHOPPING CART HAVING UNDERCARRIAGE TRAY WITH INTEGRAL BASKET

Jack W. Hurst, Wagoner, Okla., assignor to UNR Industries, Inc., Chicago, Ill.

Filed May 10, 1993, Ser. No. 60,088
Int. Cl.[5] B62B *3/08*
U.S. Cl. 280—33.996 **6 Claims**



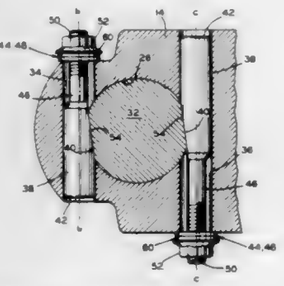
1. A shopping cart comprising an undercarriage, which has a front end and a back end, the undercarriage comprising a frame including two lateral portions extending longitudinally between the front and back ends of the undercarriage, at a lower level, and a straight, transverse portion extending transversely in a horizontal plane, near the back end of the undercarriage, at a higher level, and a tray having a front portion, at which the tray is mounted pivotally to the frame, near the front end of the undercarriage, so as to permit the tray to tilt on a transverse axis approximately at the lower level between a generally level position and an upwardly tilted position to permit nesting of the shopping cart with a similar shopping cart, the tray having a back portion, which extends upwardly and backwardly and is disposed to rest against a middle section of the transverse portion of the frame, between the lateral portions thereof, in the generally level position of the tray, the back portion being elevated in the upwardly tilted position of the tray.

5,350,183

STEERABLE AXLE ASSEMBLY WITH PRELOADED KINGPIN DRAWKEYS

Noah A. Shealy, Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Continuation of Ser. No. 554,098, Jul. 17, 1990, abandoned, which is a continuation of Ser. No. 326,692, Mar. 21, 1989, abandoned. This application Sep. 29, 1992, Ser. No. 953,203
Int. Cl.[5] B62D *7/18*
U.S. Cl. 280—96.1 **9 Claims**



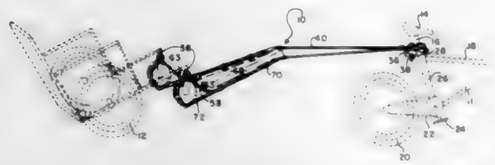
1. In a steerable axle assembly including a transverse axle beam defining an elongated vertically oriented boss at one end, said boss defining a pair of vertically spaced ends and having a bore extending fully between said ends, said assembly further including a pivotal steering knuckle defining a bifurcated yoke having upper and lower arms, said arms including aligned apertures adapted to mate with opposed ends of said bore, said assembly further including a cylindrical kingpin supported within said bore and extending through said apertures, said boss comprising a cross aperture extending transversely to and partially intersecting said bore, a drawkey supported within said cross aperture, said drawkey including an elongated head having a tapered flat surface adapted to engage said kingpin, wherein said kingpin has a tapered flat surface for mating with said tapered flat surface on said head of said drawkey, said drawkey including a threaded shaft portion having an end extending externally of said cross aperture, said end having a nut threaded thereon for securement of said drawkey against said kingpin; an improvement comprising spring means interposed between said boss and said nut for preloading said drawkey against said kingpin and for providing a relatively constant force to avoid slack or clearance due to kingpin wear, wherein said spring means comprise two deflecting disc spring washers positioned about said threaded shaft portion of said drawkey, each washer defining inner and outer circumferential portions, said washers positioned so that in their uncompressed form, their inner portions are in contact with one another while their outer portions bear against said boss and said nut, respectively.

5,350,184

BICYCLE TOW-BAR FOR WHEELCHAIRS

Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434; Ronald D. Loftis, and Carolyn I. Loftis, both of 20595 Eaton Rd., Reno, Nev. 89511

Filed Dec. 18, 1992, Ser. No. 992,806
Int. Cl.[5] B62K *27/00*
U.S. Cl. 280—204 2 Claims



1. A bicycle tow-bar in combination with a towing bicycle and a towed wheelchair, said bicycle having a frame, a seat post with a seat thereon, a tow-bar mounting means secured rearwardly from said seat post, said wheelchair having at least a pair of front swivel wheels and at least a pair of rear support wheels, said bicycle tow-bar comprising; left and right elongated bars having first and second ends, said elongated bars being fixedly attached at their said first ends, said first ends having pivotable attaching means to attach to said tow-bar mounting means of said bicycle, said second ends of said elongated bars being un-attached to each other and spaced apart forming said elongated bars in the shape of a flexible inverted V, means to removably and separately attach said second ends of said elongated bars to said pair of said front swivel wheels of said wheelchair by chains, said chains surrounding and capturing said front swivel wheels in a fixed relationship, said chains having tensioning means whereby;

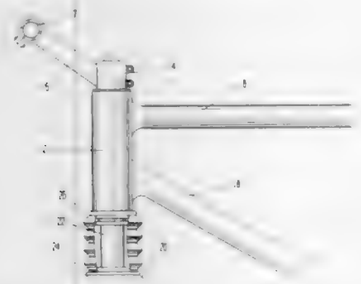
when said tow-bar is affixed to said bicycle and said wheelchair, said pair of said front swivel wheels of said wheelchair are raised out of communication with a supporting surface while said rear support wheels communicate with said supporting surface to become a two-wheel trailer.

5,350,185

BICYCLE SHOCK ABSORBER

Russell Robinson, P.O. Box 417, Silverado, Calif. 92676

Filed Mar. 9, 1990, Ser. No. 491,461
The portion of the term of this patent subsequent to Feb. 27, 2009, has been disclaimed.
Int. Cl.[5] B62K *25/08*
U.S. Cl. 280—276 10 Claims



1. In a front suspension for a bicycle having a frame which rotationally supports a rear wheel and a front wheel and having a front end provided with a head tube and a support shaft rotationally received within said head tube and supporting on its lower end a fork which rotationally supports the front wheel, and at its opposite end, a handle bar support member, the improved support shaft which comprises:

a. an outer cylinder rotationally received within said head tube and fixedly secured at its upper end to said handle bar support member;

b. an inner, hollow cylinder with its upper end slidably received within said outer cylinder in a concentric and telescopic assembly and fixedly secured at its lower end to said fork with its outer wall opposite the inner wall of said outer cylinder;

c. rotational indexing means between said inner and outer cylinder comprising at least one axial groove on the inner wall of said outer cylinder and an aligned axial groove on the outer wall of said inner cylinder to define a longitudinal bearing track therebetween;

d. a plurality of bearing balls in rolling reception in said bearing track;

e. a bearing retainer comprising a third, thin-walled cylinder concentrically between said inner and outer cylinders and having a plurality of apertures at predetermined axial spacing and aligned along said bearing track, with one each of said bearing balls received within each of said apertures;

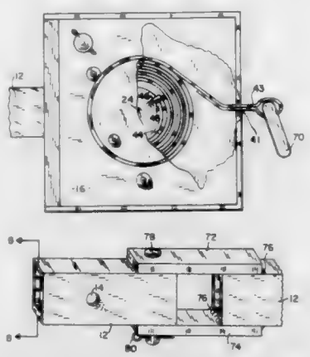
f. a compression spring captured and compressed between the upper, received end of said inner cylinder and the upper end of said outer cylinder to bias said cylinders in an extended telescoping position.

5,350,186

TOWLINE REEL ATTACHABLE TO A TRAILER HITCH RECEPTACLE

Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434; Dick Hammer, P.O. Box 621, Tahoe City, Calif. 96145, and C. Park Bechdolt, P.O. Box 1178, Carnelion Bay, Calif. 96140

Filed Jul. 13, 1992, Ser. No. 912,242
Int. Cl.[5] B60D *1/18*
U.S. Cl. 280—480.1 1 Claim



1. A towline apparatus adapted to be detachably connected to a steel square, tubular receiver mounted to a frame of a towing vehicle comprising; a connection member having first and second ends, means to removably fasten said first end of said connection member within said tubular receiver, said connection member having pivotable means between said first and second ends, said pivotable means including said connection member being divided into a first and second section, said first section having a top and bottom plate extending beyond the end opposite the vehicle mounting end, said top and bottom plates having matching vertical bores thru their extended ends, said second section having a vertical bore, a pin, said pin being of a size and shape to be inserted thru said bores of said top and bottom plates and said bore of said second section to form a working hinge, a housing, said housing having four walls, a top and a bottom, means to affix one of said walls to an end of said connection member, a shaft, said shaft being journaled between two of said walls which are at substantially a 90 degree angle to said wall connected to said connection member, a flat spring having multiple coils, said spring having the end of it's inner coil affixed to said shaft, said spring having the end of it's outer coil affixed to one of said four walls, a flexible tow strap, said strap having one of it's ends affixed to said shaft, said strap having it's opposite end affixed to an attachment member, said wall of said housing which is opposite said wall affixed to said connection member having a slot, said attachment member being of a size and shape larger than said slot, said slot being of a size and shape to allow said strap to slide thru, said strap and said flat spring having a first and second position, said first position being with said coiled spring and said strap being in a tensioned coiled position within said housing around said shaft, said second position being with said coiled spring being in a tightened, tensioned position within said housing and said strap being in an extended position outside of said housing

whereby,

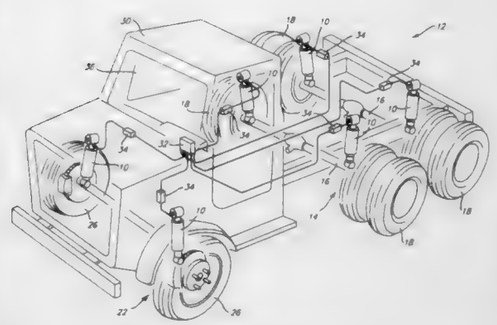
when said strap is pulled from said housing to its said second position and said attachment member on said strap is suitably attached to an object to be towed, said attachment member, said strap, said shaft, said spring, said housing and said connection member cooperate together to provide a towline apparatus which keeps said strap in a tensioned relationship between said towing vehicle and said object to be towed.

5,350,187

ADJUSTABLE DAMPING SYSTEM

David M. Shinozaki, Piedmont, S.C., assignor to Monroe Auto Equipment Company, Monroe, Mich.

Filed Oct. 16, 1992, Ser. No. 962,501
Int. Cl.[5] B60G *11/26*
U.S. Cl. 280—707 32 Claims



1. An expandable and adjustable damping system for a motor vehicle comprising:

a plurality of dampers each having

(a) a pressure cylinder forming a working chamber having first and second portions operable to store damping fluid,

(b) means for electrically controlling the flow of damping fluid between said first and second portions of said pressure cylinder, and

(c) a control module operable to control the damping characteristics of said damper, said control module being disposed proximate to said pressure cylinder;

means for generating a plurality of electrical control signals for controlling the operation of each of said control modules, said generating means being manually selectable between at least three pre-defined damping characteristics associated with said plurality of dampers; and

means for connecting each of said control modules to said generating means, wherein at least one of said control modules comprises

(a) a driver transistor electrically coupled to one of said dampers, said driver transistor being operable to selectively deliver current to said one damper to thereby cause the damping characteristics of said one damper to change,

(b) a first gate transistor for controlling the current delivered to the base of said driver transistor in response to whether a first input from said one damper is substantially different from a first imput from said means for generating a plurality of electrical control signals, and

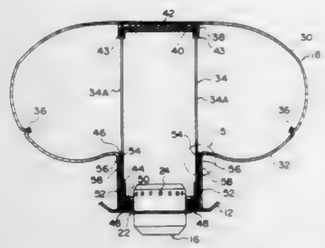
(c) a second gate transistor for controlling the current delivered to the base of said driver transistor in response to whether a second input from said one damper is substantially different than a second input from said means for generating a plurality of electrical control signals.

5,350,188

BAG SUITABLE FOR USE IN AIR BAG APPARATUS

Koki Sato, Aichi, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Mar. 6, 1992, Ser. No. 846,861
Claims priority, application Japan, Mar. 8, 1991, 3-013036
Int. Cl.[5] B60R *21/30*
U.S. Cl. 280—739 13 Claims



1. A bag suitable for use in an air bag apparatus which is activated when a vehicle rapidly decelerates, said bag being accommodated in said air bag apparatus in a folded state and expands toward an occupant when gas flows therein, said bag comprising;

a connecting member spanning portions of the inner surface of said bag, said connecting member serving to restrict the degree of expansion of said bag toward the occupant, said connecting member having a first end fixedly mounted on an inner surface of the bag on a first side of said bag which expands toward the occupant, said first side contacting the occupant when said air bag is fully expanded, and a second end fixedly mounted on a second side of said bag opposite said first side;

an aperture defined in the bag and capable of discharging gas therefrom; and

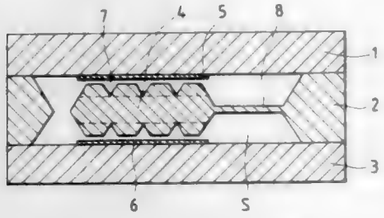
blocking means for connecting said inner surface of said bag to said connecting member at a connecting portion with a predetermined connecting strength and for blocking said aperture of said bag wherein said bag is subsequently expanded in a vicinity of said connecting portion and said aperture is unblocked to discharge the air in said bag from said aperture after subsequent expansion of said bag when the pressure in said bag exceeds a predetermined value and said inner surface of said bag is peeled from said connecting member upon the rapid deceleration of the vehicle.

5,350,189

CAPACITANCE TYPE ACCELEROMETER FOR AIR BAG SYSTEM

Shigeki Tsuchitani, Mito; Seiko Suzuki, Hitachioota; Masayuki Miki, Katsuta, and Masahiro Matsumoto, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 24, 1992, Ser. No. 918,021
Claims priority, application Japan, Jul. 24, 1991, 3-184595
Int. Cl.[5] H01L *21/302*
U.S. Cl. 280—728 R 11 Claims



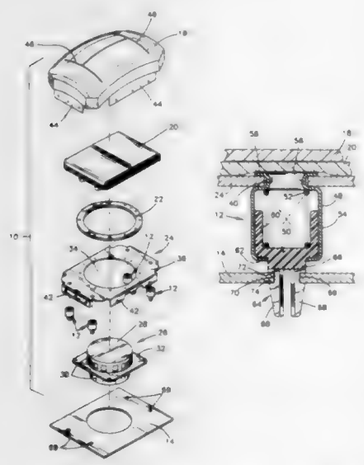
1. A capacitance-accelerometer, comprising:
a fixed electrode; and
a movable electrode being supported by a cantilever at a portion adjacent to said fixed electrode having a gap thereinbetween;
wherein grooves for reducing air damping are provided on a surface of said movable electrode, and
said grooves are so arranged that electrode surface areas divided by said grooves are symmetrical with respect to a symmetrical axis parallel to said cantilever.

5,350,190

AIR BAG ASSEMBLY MOUNT INCLUDING SNAP-FIT HORN ATTACHMENT

Attila Szigethy, Rocky River, Ohio, assignor to Primrose, Inc., Cleveland, Ohio

Filed Jul. 6, 1993, Ser. No. 87,651
Int. Cl.[5] B60R *21/20*; H01H *9/00*
U.S. Cl. 280—728 A 17 Claims



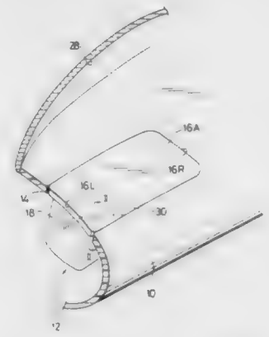
1. An air bag module comprising a base plate and a series of connectors for removably attaching the module to a mounting plate, said connectors comprising an outer member connected to the base plate, an inner member which telescopingly projects from the outer member and releasably connects the module to the mounting plate, and means for biasing the inner member away from the outer member, said outer member being electrically conductive and including a first end which is attached to the base plate and a second end which retains a portion of the inner member within the outer member, said second end cooperating with the mounting plate to define a horn switch, said inner member being electrically insulative and including a series of resiliently deformable arms, said arms cooperating to define an annular groove for the receipt of the mounting plate, said biasing means being intermediate the inner and outer members, said connectors allowing the module to move toward the mounting plate while connected thereto and allowing the module to be disconnected and removed from the mounting plate.

5,350,191

LID OF AN AIR BAG DEVICE FOR A PASSENGER

Akira Kokeguchi, and Takayasu Zushi, both of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,573
Claims priority, application Japan, Mar. 25, 1992, 4-067196
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—752 3 Claims



1. A lid of an air bag device for a passenger, said air bag device having a container with a front opening and being disposed in an instrument panel near a windshield of an automobile, comprising,
a rectangular plate for covering the front opening of the container and being formed of synthetic resin and a reinforcement plate embedded in the synthetic resin,
attaching means for rotatably attaching the plate to the container at a side of the windshield, and
a bendable portion formed in the reinforcement plate and extending linearly to form a triangular portion at a corner of the rectangular plate located away form the windshield and a driver when the lid is installed on the instrument panel, said bendable portion being formed of a stepped portion so that when the triangular portion of the rectangular plate contacts the windshield upon rotation of the plate in accordance with activation of the air bag device, the triangular portion of the plate bends along the bendable portion to widely open the plate.

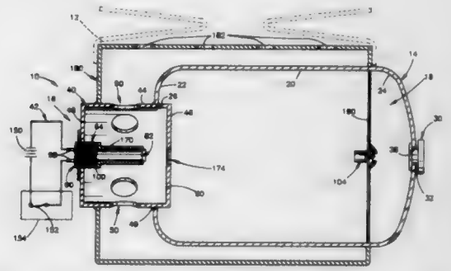
5,350,192

INFLATOR ASSEMBLY

Jack L. Blumenthal, Los Angeles, Calif., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Aug. 11, 1993, Ser. No. 105,296
Int. Cl.[5] B60R *21/26*
U.S. Cl. 280—737 15 Claims

1. An inflator assembly for inflating an inflatable vehicle occupant restraint, said inflator assembly comprising:
a source of inflation fluid for inflating the vehicle occupant restraint;
means for directing inflation fluid into the vehicle occupant restraint;
a closure located to block inflation fluid flow through said directing means, said closure including a predefined break away portion which, when broken away, enables inflation fluid flow through said directing means;
a projectile member for breaking away said break away portion of said closure to enable inflation fluid flow through said directing means; and
means for propelling said projectile member from a first position in which said closure is located to block inflation fluid flow through said directing means to a second position in which said break away portion of said closure is broken away to enable inflation fluid flow through said directing means;



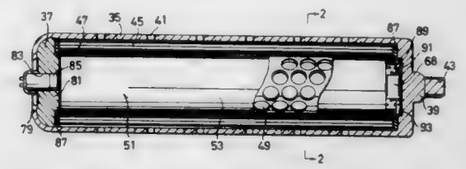
said projectile member comprising (i) a mass having kinetic energy when said projectile member is propelled, (ii) a tip for penetrating said break away portion of said closure, and (iii) surface means for engaging the material of said break away portion of said closure as said tip penetrates said break away portion to enable the kinetic energy associated with said mass to break away said break away portion and then to carry away said break away portion, thereby to enable inflation fluid flow through said directing means.

5,350,193

AIR BAG INFLATION GAS GENERATOR

Mitsuaki Murashima; Sakae Takahashi; Yukio Ikeda; Hirokazu Kobari; Michio Shiota, and Takashi Kazumi, all of Fukushima, Japan, assignors to Nippon Koki Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1993, Ser. No. 127,758
Claims priority, application Japan, Jun. 22, 1993, 5-150386; Jun. 22, 1993, 5-150387; Jun. 22, 1993, 5-150388; Jun. 22, 1993, 5-150389
Int. Cl.[5] B60R *21/26*
U.S. Cl. 280—741 5 Claims



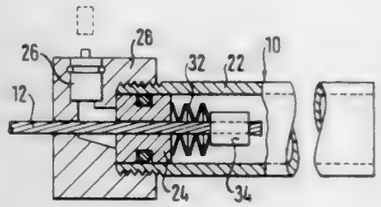
1. An air bag inflation gas generator comprising:
a longitudinal cylindrical member whose both ends are sealed by a first end plate and a second end plate and whose outer periphery has a plurality of gas outlets formed,
a gas generating agent pack which is accommodated in said cylindrical member, which has a plurality of gas generating agents accommodated in the stacked state in the axial direction within a longitudinal cylindrical pack with both ends sealed by a first end face and a second end face, and which has an ignition agent disposed near said first end face,
an igniter which is disposed at the first end plate of said cylindrical member, and
an energizing member which is disposed between the second end plate of said cylindrical member and the second end face of said cylindrical pack and energizes the cylindrical pack toward said igniter, wherein
said first end plate is caulked for fixing by an open end of said cylindrical member toward said cylindrical pack, a projection accommodating the ignition agent is formed on the second end face of said cylindrical pack with a certain gap disposed with respect to said second end plate, and a heat transmission member which is pressed against said second end plate by said energizing member is fitted to the projection under a fitting load smaller than the energizing force of said energizing member.

5,350,194

LINEAR DRIVE FOR VEHICLE RESTRAINING SYSTEMS

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Feb. 24, 1993, Ser. No. 21,774
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1992, 4206980
Int. Cl.[5] B60R *22/46*
U.S. Cl. 280—805 18 Claims



1. A linear drive for a belt pretensioner in a vehicle safety belt system, comprising:
a pyrotechnical gas generator;
a piston/cylinder unit which is activatable by the gases generated by said generator; and
a pulling cable being connected to said piston of said piston/-cylinder unit in a manner to establish a flow path of force between said piston and said cable which comprises a deformable damping means dimensioned to limit the force exerted by said piston on said cable in a phase of pressure rise of gas released by said gas generator and to allow said force to rise continuously, said damping means being effective during an entire initial phase of piston movement in which the gas pressure provided by the gas generator rises.

5,350,195

DEVICE FOR CLAMPING SEAT BELT WEBBING

Louis R. Brown, Oxford, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

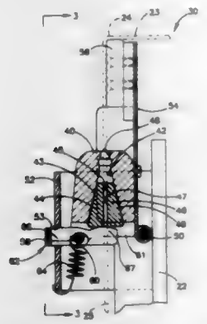
Filed Jan. 28, 1993, Ser. No. 10,594
Int. Cl.[5] B60R *22/36*
U.S. Cl. 280—806 9 Claims

1. A device mounted on a vehicle for clamping seat belt webbing to reduce transfer of tension force from one portion of the belt webbing to another portion of the belt webbing in response to a predetermined tension force being applied to the one portion of the belt webbing, said device comprising:
a clamp mechanism including a pair of clamping members which are movable towards each other to clamp the belt webbing between the portions of the belt webbing, said clamp mechanism having an actuated position in which the belt webbing is clamped between said clamping mem-

bers and an unactuated position in which the belt webbing may move relative to said clamping members; and

means for actuating said clamp mechanism to move said clamping members toward each other and thereby to clamp the belt webbing between said clamping members, said actuating means comprising a linkage mechanism including a member pivotable about a first axis and a link pivotally carried by said member for pivotal movement about a second axis relative to said member;

said linkage mechanism including (i) means for pivoting said member about said first axis in response to the predetermined tension force being applied to the one portion of the belt webbing, and (ii) means for enabling said link to pivot about said second axis when said member pivots about said first axis in response to the predetermined tension force being applied to the one portion of the belt webbing, said link having a clamp actuating portion for actuating said clamp mechanism to move said clamping members toward each other and thereby to clamp the belt webbing between said clamping members upon said link pivoting about said second axis in response to said member pivoting about said first axis.



5,350,196

RETRACTION LOCKING DEVICE FOR RESTRAINING BELT

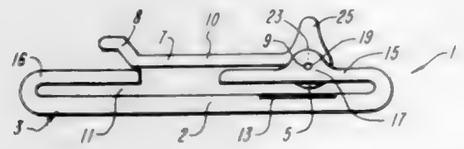
George Atkins, 61a Oseney Crescent, Kentish Town, London, United Kingdom NW5 2BE

Filed Jul. 6, 1992, Ser. No. 909,242

Claims priority, application United Kingdom, Jul. 3, 1992, 9114359

Int. Cl.[5] **B60R** *22/30;* **A44B** *11/12*

U.S. Cl. 280—808 **7 Claims**



1. A removable clamping device for use with a restraining belt system, said system having a belt, an inertial reel for storing part of the belt, and an anchor for the belt positioned to allow the belt to slide therethrough, the removable clamping device comprising:

a C-shaped casing, said casing having a laterally extending lower plate and cantilevered flanges extending from said lower plate a distance over the lower plate and leaving a gap between the flanges for belt insertion and removal to and from a position within said casing intermediate belt ends, said belt extending laterally between said lower plate and flanges, for releasably enveloping widthwise said restraining belt;

a cam having a progressive curvilinear surface, rotatably mounted in the casing by a roll-pin which extends along an axis extending substantially parallel to the length of the belt;

lever means for manually rotating the cam from a neutral position with the lever means facing away from the casing in which the cam does not make contact with the belt, to a clamping position with the lever means lying along the casing and covering the gap between the casing flanges in which the cam grips the belt along a length of said belt tangent to the curvilinear surface of the cam in a confined width portion of the belt; and

stop means disposed on said lever means to prevent the cam from rotating away from the clamping position beyond the neutral position when the lever means is rotated from the clamping position.

5,350,197

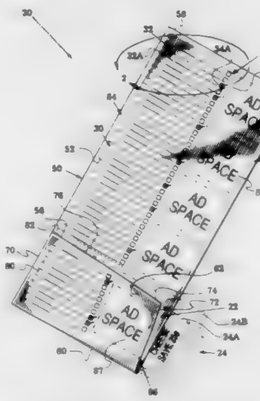
SHOPPING LIST AND DISCOUNT COUPON CORRELATOR

Scott A. Schmidt, 77-857 Woodhaven Dr. S., Palm Desert, Calif. 92260

Filed Feb. 7, 1994, Ser. No. 192,721

Int. Cl.[5] **G09B** *19/00*

U.S. Cl. 283—56 **5 Claims**



1. A shopping list and discount coupon correlator, comprising:

a sheet of cardstock having front and rear faces extending longitudinally between a lower sheet end and an upper sheet end;

a transverse fold line longitudinally spaced from said lower sheet end;

a flap defined by said sheet between said lower sheet end and said transverse fold line, said flap folded about said fold line to adjoin said front face, said flap having transversely spaced first and second edges connected by a transversely directed upper edge;

means for securing said first edge to said front face;

a pouch thereby formed between said flap, said front face and said securing means, said pouch open along said upper edge and said second edge for insertion therein of selected discount coupons;

portions of said front and rear faces each displaying a shopping list that includes a plurality of shopping item spaces and a plurality of coupon indicator spaces wherein some of said shopping item spaces are filled with printed predetermined shopping items and the remainder are configured for written insertion of selected shopping items; and

each of said coupon indicator spaces disposed in a corresponding spatial relationship with a different one of said shopping item spaces so that insertion of written indicia into a coupon indicator space indicates that a discount coupon has been inserted in said pouch for the corresponding shopping item.

5,350,198

RECORDING MEDIUM WITH COLORED PICTURE INFORMATION, IN PARTICULAR A CHECK CARD OR IDENTITY CARD

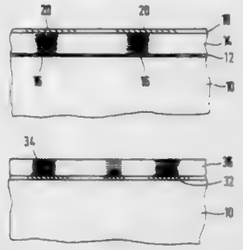
Otto Bernecker, Neufahrn, Fed. Rep. of Germany, assignor to GAO Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Filed Oct. 16, 1992, Ser. No. 962,360

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1991, 4134539

Int. Cl.[5] **B42D** *15/00*

U.S. Cl. 283—77 **15 Claims**



1. A multilayer recording medium comprising at least two layers including one layer inaccessible from the exterior of the medium, and combined picture information, said picture information being divided into at least two information parts which complement each other to form the combined picture information, at least one of said information parts comprising a colored picture carried by one of the layers, and wherein at least one of the information parts is provided in the layer that is inaccessible from the exterior of the medium.

5,350,199

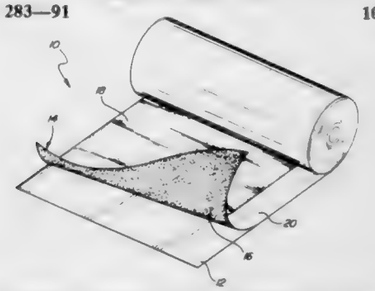
SECURITY FACSIMILE PAPER

Aurelia G. Young, 60 Maywood, Pleasant Ridge, Mich. 48069, and Peter A. Hochstein, 2966 River Valley Dr., Troy, Mich. 48098

Filed Sep. 17, 1993, Ser. No. 122,696

Int. Cl.[5] **B42D** *15/00*

U.S. Cl. 283—91 **10 Claims**



1. A printing medium (**10**) for receiving and displaying images produced by a thermal printer of a standard facsimile machine comprising:

a sheet of plain-surfaced printing paper (**12**) receivable by the facsimile machine for passage therethrough past the thermal printer thereof;

a sheet of cover medium (**14**) disposed over said printing paper (**12**) so as to pass through the facsimile machine in combination with said printing paper, said cover medium (**14**) including a bottom surface facing toward said printing paper and a top surface facing away from said printing paper;

an ink coating means (**16**) disposed on said bottom surface of said cover medium (**14**) for being transferred from said cover medium to a predetermined location on said printing paper (**12**) in response to heat applied by the facsimile machine as the printing medium (**10**) passes through the facsimile machine;

characterized by said cover medium (**14**) including scattering means (**18**) for reflecting and scattering light travelling to and away from said cover medium (**14**) to create a diffuse non-specular reflection and thereby prevent the reading of images produced in said cover medium and said printing paper (**12**) by the facsimile machine until said cover medium is separated from said printing paper.

5,350,200

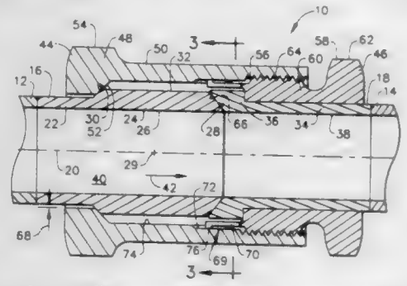
TUBE COUPLING ASSEMBLY

Ivan H. Peterson; James S. Hoelle, both of Hamilton, Ohio, and Thomas G. Wakeman, Laurenceburg, Ind., assignors to General Electric Company, Cincinnati, Ohio

Filed Jan. 10, 1994, Ser. No. 179,174

Int. Cl.[5] **F16L** *55/00*

U.S. Cl. 285—92 **4 Claims**



1. A tube coupling assembly for use in connecting first and second fluid-carrying tubes, said tube coupling assembly comprising:

a) an annular sleeve member having a cylindrical bore, said sleeve member being operably affixable to said first fluid-carrying tube;

b) an annular ferrule having a cylindrical bore, said ferrule being operably affixable to said second fluid-carrying tube, wherein said cylindrical bore of said sleeve member is disposed relative to said cylindrical bore of said ferrule so as to define a passage means for providing flow communication between said first and second fluid-carrying tubes;

c) a coupling nut including a flange portion, a barrel portion protruding axially from said flange portion, and a generally frusto-conical surface formed between said flange portion and said barrel portion; and

d) a tube connector including a flange portion and a barrel portion protruding axially from said flange portion;

e) wherein said coupling nut and said tube connector threadingly engage one another so as to force a first spherical surface of said sleeve member against a generally frusto-conical surface of said ferrule and to force a second spherical surface of said sleeve member against said generally frusto-conical surface of said coupling nut, said first spherical surface and said generally frusto-conical surface of said ferrule engaging one another so as to form a sealing means for preventing fluid from escaping said passage means, said first and second spherical surfaces combing with said generally frusto-conical surfaces of said ferrule and said coupling nut, respectively, to accommodate angular misalignment between said first and second fluid-carrying tubes;

f) an internal locking means for preventing said first spherical surface from disengaging said generally frusto-conical surface of said ferrule;

g) said internal locking means comprises a plurality of circumferentially spaced and axially extending resilient fingers protruding from said barrel portion of said ferrule and a plurality of circumferentially spaced and axially extending grooves formed in said barrel portion of said coupling nut;

h) said grooves comprise a portion of a radially inner surface of said barrel portion of said coupling nut and each of said fingers include a radially outwardly extending tip portion, said fingers and said grooves are disposed relative to one another such that at least one of said fingers releasably interlockingly engages one of said grooves with the corresponding one of said tip portions being positioned within said one of said grooves.

5,350,201

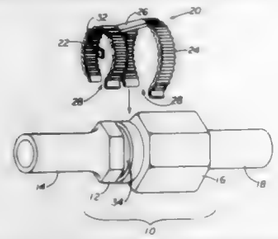
SEPARABLE CONNECTOR EXTERNAL CAPTURE DEVICE

Kurt K. Bynum, Saline, Mich., assignor to Moeller Manufacturing Co., Inc., Wixom, Mich.

Filed Jan. 15, 1993, Ser. No. 5,012
Int. Cl.[5] F16L *15/08*
U.S. Cl. 285—92 **7 Claims**

1. A connector capture device comprising at least two open and spaced apart clips co-axial about a common axis, each clip being circumferentially discontinuous anal formed to encompass substantially more than 180° but less than 360° about one of a plurality of non-cylindrical surfaces on a connector, said non-cylindrical surfaces being rotatable relative to each other,

at least one of said clips being formed with multiple serrations on an inner surface thereof for engagement with said non-cylindrical surfaces, the number of said serrations on the clip being sufficient to obviate adjustment of the relative rotational position of the non-cylindrical surfaces in preparation for installation of the capture device, and



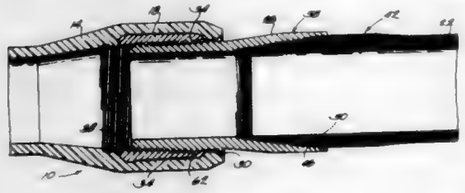
a bar joining the clips, the bar spacing the clips axially about the common axis for engagement with co-axial non-cylindrical surfaces.

5,350,202

METHOD AND APPARATUS FOR ATTACHING LENGTHS OF FIBERGLASS REINFORCED PLASTIC PIPE

Peter J. Fritz, Mequon; Timothy H. Houle, Wauwatosa, both of Wis.; Michael L. McCoy, Wichita, Kans.; Wayne A. Miller, Waukesha, Wis., and Paul M. Nyberg, Wichita, Kans., assignors to Smith Fiberglass Products Inc., Little Rock, Ark.

Filed Aug. 5, 1992, Ser. No. 925,944
Int. Cl.[5] F16L *55/00*
U.S. Cl. 285—174 **15 Claims**



2. A fiberglass reinforced plastic pipe assembly comprising

a first length of fiberglass reinforced plastic pipe having an end,

a metal female member secured to said end of said first length by said first length being wound around said female member and said female member having an outer surface converging in the direction toward said end of said first length,

a second length of fiberglass reinforced plastic pipe having an end, said second length including an enlarged section which extends from said end of said second length, which has a plurality of layers of fiberglass, and which is tapered and externally threaded, and

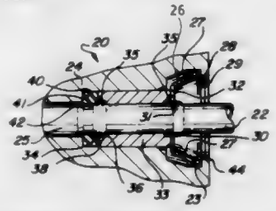
a male member received in and removably fastened to said female member, and said male member having a tapered, internally threaded wall threadedly connected to said enlarged section of said second length such that said male member wall engages a plurality of said layers of said second length.

5,350,203

QUICK CONNECT TUBING CONNECTOR AND METHOD OF ASSEMBLY

James McNaughton, Rochester; Walfred J. Liimatta, Rochester Hills, and Mark G. Ketcham, Marine City, all of Mich., assignors to Bundy Corporation, Warren, Mich.

Filed Sep. 10, 1991, Ser. No. 757,393
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—319 **18 Claims**



1. A fluid connector comprising:

a housing defining a bore, said bore extending axially inwardly into said housing, said bore having an entrance portion of a relatively small first radial dimension at an outer end of said bore, and a greater radial portion of a second dimension positioned axially inwardly from said entrance portion; and

a tube received within said bore, said tube being secured within said bore by a locking member, said locking member having resilient arms extending away from a ring-shaped member, said arms having a relaxed outer radial dimension intermediate said first and second dimensions and being biased inwardly as said locking member is moved into said bore and through said entrance portion, said arms springing radially outwardly to said relaxed dimension, securing said locking member within said bore when said locking member reaches said greater radial portion, said ring-shaped member abutting an outer axial extent of a sleeve, and an inner axial extent of said sleeve abutting a radially greater portion of said tube, such that said ring-shaped member of said locking member retains said sleeve within said bore, and said sleeve retains said tube within said bore.

5,350,204

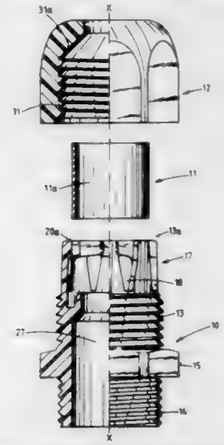
SCREW COUPLING

Dieter Henniger, Schalksmühle, Fed. Rep. of Germany, assignor to Hermann Kleinhuis GmbH & Co. KG, Ludenscheid, Fed. Rep. of Germany

Filed Jul. 23, 1993, Ser. No. 96,774
Int. Cl.[5] F16L *5/00*
U.S. Cl. 285—323 **13 Claims**

1. A screw coupling, particularly for surrounding cables, hoses, conduits, conductors and like bodies, comprising a substantially tubular nipple including an externally threaded first annular section and a second annular section attached to and coaxial with said first section, said second section including a plurality of neighboring identiacal flexible prongs extending in substantial parallelism with the common axis of said sections and being separated from each other by slots of said second section, said prongs having a width which decreases

from said first section toward an end of said second section distal said first section, as viewed in the direction of the common axis of said first and second sections, and said slots having a width which increases from said first section toward the distal end of said second section; and a nut having an internal thread movable into mesh with the external threads of said first section in response to rotation of said nut in a predetermined direction to thereby deform at least a portion of each of said prongs from a starting position toward said common axis, said prongs having clamping portions extending circumferentially only in said direction and the clamping portions of neighboring



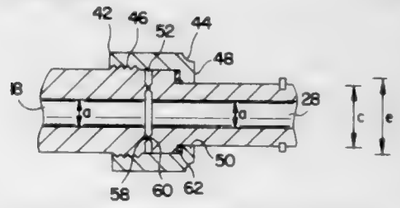
prongs at least partially overlying said neighboring prongs in said starting positions of the prongs.

5,350,205

HIGH PRESSURE GAS FITTING FOR REPEATED CONNECTION AND DISCONNECTION

Lewis L. Aldridge, Parsippany, N.J., and Kenneth W. Sawyer, Bellville, N.J., assignors to EWAL Manufacturing Company, Inc., N.J.

Filed May 20, 1993, Ser. No. 65,214
Int. Cl.[5] H16L *25/00*
U.S. Cl. 285—328 **12 Claims**



1. A high seal integrity fluid fitting comprising:

a first member having a mating end, a fluid passage extending therethrough from the mating end and an array of threads;

an annular metallic seal releasably disposed in sealing engagement with the mating end of the first member;

a second member having a mating end releasably disposed in sealing engagement with the annular metallic seal, the second member having a fluid passage extending from the mating end thereof and communicating with the fluid passage of the first member, the second member including an annular bearing surface facing generally oppositely from the mating end of the second member, said annular bearing surface defining inside and outside diameters;

a continuous integrally formed annular thrust bearing having inside and outside diameters approximately equal to the respective inside and outside diameters of the bearing surface, said thrust bearing further having opposed parallel planar bearing surfaces, said thrust bearing defining a thickness of approximately 0.005 inch, said thrust bearing being mounted around said second member and in abutting relationship to the bearing surface thereof, the thrust bearing being formed from a material having a hardness (HRC) at lest ten points greater than the second member;

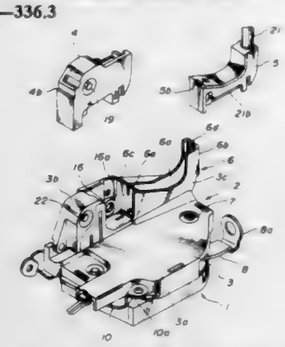
a coupling nut disposed around the mating ends of the first and second members, the coupling nut having an array of threads threadedly engaged with the threads of the first member and having a substantially planar bearing surface engaging the thrust bearing, the coupling nut being formed from a material having a hardness (HRC) at least ten points less than the thrust bearing, whereby threaded tightening of the coupling nut with the first member causes the bearing surface of the coupling nut to slidably engage the thrust bearing for urging the thrust bearing tightly into the bearing surface of the second member and for urging the mating ends of the first and second members into tight sealing engagement with said annular metallic seal.

5,350,206

AUTOMOTIVE DOOR LOCK DEVICE

Masakazu Akahori, and Masaaki Yuge, both of Yokohama, Japan, assignors to Ohi Seisakusho Co., Ltd., Yokohama, Japan

Filed Jan. 25, 1993, Ser. No. 8,160
Claims priority, application Japan, Jan. 31, 1992, 4-040683
Int. Cl.[5] E05C *3/26*
U.S. Cl. 292—336.3 **9 Claims**



1. An automotive door lock device comprising:

a lock proper having a latch mechanism installed therein;

a main cover plate fixed to said lock proper, said main cover plate having therein an interchanger mechanism operatively engaged with said latch mechanism;

a socket structure defined by said main cover plate, said socket structure having a terminal member of said interchanger mechanism exposed to an interior of said socket structure;

an auxiliary cover plate having a shape to be detachably held by said socket structure and having an actuating member installed thereto, said actuating member being brought into an operative connection with said terminal member when said auxiliary cover plate is properly held by said socket structure; and

latch means for achieving a latched engagement between said auxiliary cover plate and said socket structure when said auxiliary cover plate is fully inserted into the interior of said socket structure.

5,350,207

LOCKING ASTRAGAL

Vernard W. Sanders, Port Hueneme, Calif., assignor to Pemko Manufacturing Company, Ventura, Calif.

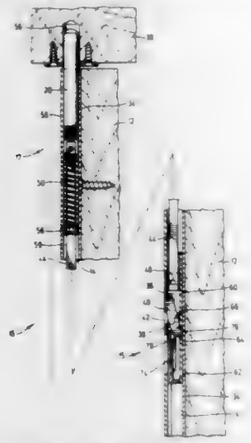
Filed Apr. 30, 1992, Ser. No. 878,336
Int. Cl.[5] E05B *63/20*
U.S. Cl. 292—335 **18 Claims**

1. An astragal, comprising:

an elongated casing having opposing ends and a casing aperture arranged between the opposing ends;

at least one locking bolt slidably positioned near at least one of the ends of the elongated casing, each locking bolt sliding between a first and second position;

at least one bolt latching member for selectively latching an associated locking bolt in the first and second positions, the latching member being pivotable between a latched



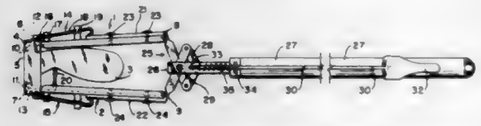
position substantially within the caging aperture such that the locking bolt is latched and a released position substantially outside the casing aperture such that the locking bolt is unlatched, the latching member having an integral spring portion for biasing the latching member in the latched position.

5,350,208

ANIMAL WASTE PICKUP AND DISPOSAL UNIT

Dante C. Heinrichson, 3 Hearthstone Dr., Kinnelon, N.J. 07405

Filed Dec. 13, 1993, Ser. No. 165,600
Int. Cl.[5] A01K *29/00;* **E01H** *1/12*
U.S. Cl. 294—1.4 **8 Claims**



1. An animal waste pickup and disposal unit comprising:

a pair of opposed jaws each having a gripping edge movable toward each other;

a plastic bag removably disposed between said pair of jaws having material adjacent an open end thereof folded back over an outer surface of said pair of jaws;

a pair of spring clips to releasably secure said material of said plastic bag to said outer surface of said pair of jaws, each of said pair of spring clips being disposed on said outer surface of an associated one of said pair of jaws and having at least a portion thereof adjacent said gripping edge of said associated one of said pair of jaws and substantially parallel to and coextensive with said gripping edge of said associated one of said pair of jaws;

an elongated handle; and

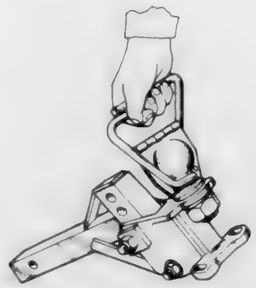
a mechanism secured to each of said pair of jaws and said handle to bias said pair of jaws in an open position and to activate each of said pair of jaws to enable said gripping edges to pickup animal waste and to deposit the same in said plastic bag for disposal at a later time.

5,350,209

HANDLE FOR A TRAILER BALL-MOUNT

Daniel Van Mullen, and Doris Van Mullen, both of 4725 - 12 Mile, Sparta, Mich. 49345

Filed Oct. 16, 1992, Ser. No. 962,139
Int. Cl.[5] B65G *7/12*
U.S. Cl. 294—16 **2 Claims**



1. In combination with a ball section of a trailer hitch, said ball section being normally removably mounted on a towing vehicle, a detachable handle, said section having a ball projection with a relatively smaller diameter stem, said handle comprising:

grasping means including a hook adapted to receive said stem and retain said ball, said hook having a lateral extension beyond said ball, and also having an angular offset; and

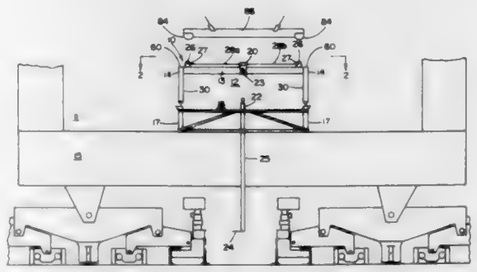
grip means secured to said offset to facilitate carrying said ball section when removed from said vehicle, said handle being a unitary configuration of bent rod.

5,350,210

APPARATUS FOR SECURING SHORE CRANE SPREADERS TO AUXILIARY FRAMES

Robert B. Barnett, Mobile, Ala., and Stanley J. Wisniewski, Lincroft, N.J., assignors to Sea-Land Service, Inc., Edison, N.J.

Continuation-in-part of Ser. No. 760,511, Sep. 16, 1991, Pat. No. 5,236,238. This application Sep. 16, 1992, Ser. No. 945,748
The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.
Int. Cl.[5] B66C *1/66*
U.S. Cl. 294—81.53 **24 Claims**



1. Apparatus for remotely connecting and locking an auxiliary frame to a crane spreader, said apparatus comprising:

a) a stowage frame for supporting said auxiliary frame when not in use;

b) an auxiliary frame having:

i) a plurality of rotatable locking means mounted thereon for securing said auxiliary frame to said crane spreader; and

ii) a plurality of extensible and rotatable twist lock members for securing said auxiliary frame to an intermodal container;

c) a rotary actuator mounted on said auxiliary frame, said actuator being connected to said rotatable locking means via a linkage means, said actuator having a first unlocked and unsecured position and a second locked and secured position;

d) first means for receiving said rotary actuator mounted on said stowage frame, said first means having a second means for rotating said rotary actuator when said rotary actuator is received by said first means;

e) third means mounted on said auxiliary frame for preventing rotation of said rotary actuator when said rotary actuator is withdrawn from said first means; and

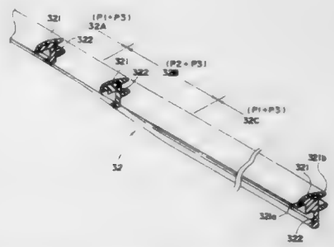
f) manual means for uncoupling said rotary actuator from said third means in the event of an emergency.

5,350,211

WINDSHIELD MOLDING FOR VEHICLES AND THE PRODUCTION METHOD THEREOF

Yukihiko Yada, and Tosikazu Ito, both of Nagoya, Japan, assignors to Tokai Kogyo Kabushiki Kaisha, Ohbu, Japan

Filed Sep. 30, 1992, Ser. No. 953,968
Claims priority, application Japan, Sep. 30, 1991, 3-278584; Sep. 30, 1991, 3-278585; Aug. 18, 1992, 4-063341[U]
Int. Cl.[5] B60J *10/02*
U.S. Cl. 296—93 **23 Claims**



1. A windshield molding for a vehicle, comprising:

a plurality of interconnected sections which upon being installed in the vehicle are of a substantially rectilinear shape; and

a plurality of bending sections, said interconnected sections and bending sections including a decorative portion exposed externally and a support leg projecting from said decorative portion to be inserted and fixed to the vehicle body, wherein said decorative portion and support leg consist of a continuously and integrally extrusion molded body, at least the external surface of said decorative portion is made of a single type of material throughout the entire length thereof including the interconnected sections and bending sections, and wherein the support legs corresponding to the bending sections comprise a more flexible material as compared with a material used for forming the interconnected sections.

5,350,212

VEHICLE SUNVISOR

Jack E. Corn, 1644 S. Jamestown, Tulsa, Okla. 74112

Filed Jul. 24, 1992, Ser. No. 917,970
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.4 **13 Claims**

1. A sunvisor for a vehicle, which sunvisor comprises:

(a) a sunvisor shell;

(b) gear drive means to drivingly engage at least one rack within said shell to move said shell in response to rotation of said gear drive means;

(c) at least one boot; and

(d) guide support means on said shell for each boot, each guide support means including a slot therein having a flared circular opening upon at least one end of said slot, so that said shell will move linearly while said boot is in



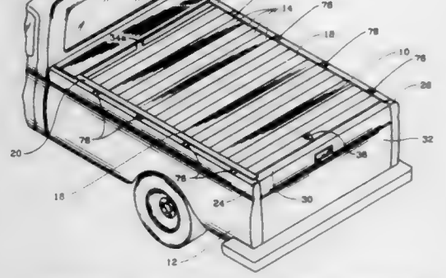
said slot and said shell will move radially when said boot is in said circular opening in response to rotation of said gear drive means.

5,350,213

APPARATUS FOR POSITIONING, LATCHING AND LOCKING A RETRACTABLE TRUCK BED COVER

Richard G. Bernardo, 2350 NE. 29th St., Lighthouse Point, Fla. 33064

Filed Mar. 12, 1993, Ser. No. 30,671
Int. Cl.[5] B60P *7/02*
U.S. Cl. 296—98 **12 Claims**



1. A retractable utility truck bed cover, positioning, and latching apparatus for covering the open bed of a conventional pickup truck having a conventional tailgate, partially or completely comprising:

a retractable truck bed cover;

latch means connected to said truck bed cover for securing said truck bed cover in partially open positions and a fully closed position relative to the truck bed;

means for actuating said latch means connected to said latch means for engaging or disengaging said latch means;

said truck bed cover including a guide means, said guide means including a stopping means that is engagable with said latch means for positioning said cover in predetermined locations relative to said truck bed;

a strap connected to said truck bed cover for manually moving said truck bed cover;

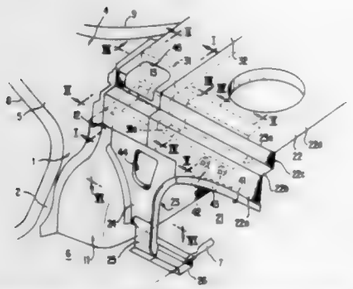
said latch means activated by movement of said truck bed cover to said stopping means at predetermined locations;

said latch means including a latch bolt assembly including movable guide track latch bolts engageable with said guide means and tailgate pin latch bolt means said guide track latch bolts and said pin latch bolt means including stops engagable with said bolts attached to guide tracks and pins attached to said tailgate for receiving said tailgate pin latch bolt means, respectively;

a handle for actuating said guide track latch bolts and said tailgate pin latches, said handle being connected to a lead slat of said coves;

a truck bed cover housing for receiving said truck bed cover in a retracted, rolled-up disposition;
a biased reel mounted in said truck bed cover housing for biasly receiving said truck bed cover in said rolled-up disposition; and
means connected adjacent to the path of said handle as said truck bed cover is retracted for mechanically rotating said handle at a particular location relative to the truck bed cover and truck bed cover reel housing.

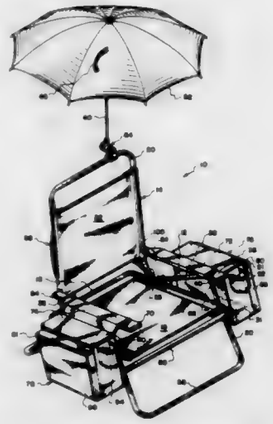
5,350,214
REAR BODY STRUCTURE FOR AUTOMOTIVE VEHICLE
Makoto Yamauchi, Hiroshima, and Eiichiro Iida, Higashihiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed May 10, 1993, Ser. No. 58,737
Claims priority, application Japan, May 8, 1992, 4-030076[U]
Int. Cl.[5] B62D *23/00*
U.S. Cl. 296—204 **7 Claims**



1. A rear body structure of a vehicle including rear suspension towers for supporting upper ends of rear suspensions, each of which is disposed on one side of a compartment of a vehicle and juts upward from a floor of the compartment and sideways into the compartment from a rear fender so as to form at least front and back wall portions for defining a housing for each said rear suspension, said rear body structure comprising:
a gusset panel extending transversely in said compartment between said rear suspension towers, said gusset panel being secured to said floor and each said rear suspension tower;
a first panel secured to said back wall portion and said gusset panel on a back side; and
a second panel secured to said front wall portion and said gusset panel on a front side;
said gusset panel and said first and second panels extending transversely into said compartment so as to provide a closed cross section between and above said rear suspension towers.

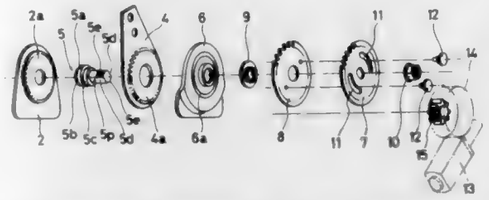
5,350,215
LEISURE CHAIR
Robert A. DeMars, 23221 Ladrillo Ave., Woodland Hills, Calif. 91367
Filed Jan. 25, 1993, Ser. No. 8,316
Int. Cl.[5] A47C *7/62, 1/14*
U.S. Cl. 297—194 **6 Claims**

1. A chair movable between an extended/usable position and a retracted/stowage position, said chair having a seat section, extending outward and beneath said seat section when said chair is in said extended/usable position is a leg assembly, said seat section having a back edge from which extends upwardly a back section, said seat section having opposing sides, a pair of armrests connected between said back section and said seat section with there being a said armrest located at and spaced upwardly from each said side when said chair is in said extended/usable position, the improvement comprising:
a first flexible walled pouch mounted on one said armrest, a second flexible walled pouch mounted on the remaining said armrest, each said flexible walled pouch adapted to function as an article carrier, said first flexible walled pouch having an attaching flap, said second flexible walled pouch having an attaching flap, each said attaching flap being secured to its respective said armrest, each said flexible walled pouch being pivotally movable relative to



its respective said armrest with said flexible walled pouches being locatable in either an aligned position or a spaced apart position with this pivotal movement ocurring at each said attaching flap, when in said aligned position said first flexible walled pouch being aligned with said second flexible walled pouch and means for joining said pouches together when said chair is in said retracted/-stowage position.

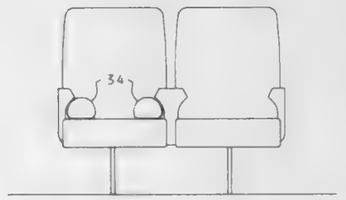
5,350,216
RECLINING SEAT APPARATUS
Sadao Ito, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Jul. 8, 1992, Ser. No. 909,394
Claims priority, application Japan, Jul. 9, 1991, 3-168341
Int. Cl.[5] B60N *1/06*
U.S. Cl. 297—362 **7 Claims**



1. A reclining seat apparatus for a vehicle comprising:
a seat cushion mountable on a floor of a vehicle body;
a pair of lower arms, each of which is secured to a pair of rear side portions of the seat cushion;
a pair of upper arms, each of which is swingably secured to a corresponding one of the lower arms through a pair of shafts, each of the shafts having an eccentric portion on which one of the corresponding upper arms and the corresponding lower arm is supported;
a seat back secured to the upper arms at a pair of lower side portions thereof;
a pair of inward gears, each of which is disposed on one of the corresponding upper arms and the corresponding lower arm;

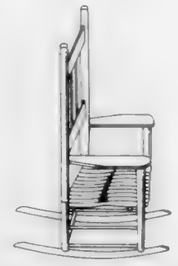
a pair of outward gears, each of which is disposed on the other one of the corresponding upper arms and the corresponding lower arm so as to be engaged with the corresponding inward gear at a part of the circumference thereof, a number of teeth of each of the outward gears being less than that of each of the inward gears;
stopper means having a first gear secured on the shaft, a second gear having a differing number of teeth from the first gear and mounted on the shaft so as to be rotatable relative to the first gear through an angle, and restriction means for establishing a first engagement between the first gear and the second gear when the first gear reaches a first angular limit in one direction and a second engagement between the first gear and the second gear when the first gear reaches a second angular limit in the other direction; and
driving means for rotating at least one of the first gear and the second gear.

5,350,217
DIAMOND SHAPED ARMRESTS FOR AIRLINE PASSENGER SEATS
Andrew S. Kanigowski, La Crescenta, Calif., assignor to Futureflite Corporation, Carson City, Nev.
Continuation-in-part of Ser. No. 764,374, Sep. 23, 1991, abandoned. This application Feb. 25, 1992, Ser. No. 841,335
Int. Cl.[5] A47C *7/54;* B60N *2/46*
U.S. Cl. 297—411.2 **7 Claims**



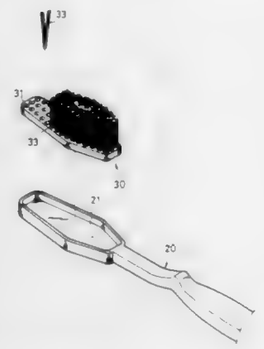
1. An improved armrest assembly having at least one armrest with a top wall and side walls, for use in an aircraft passenger seat, the improvement comprising:
(a) said armrest having at least one upper sloping side wall surface starting near an upper edge of said top wall, wherein said upper sloping wall surface diverges from said top wall and extends outwardly and downwardly toward the approximate center of a seat occupant's leg when seated, said upper sloping side wall housing a seat control button or a passenger control unit;
(b) at least one lower curved side wall surface positioned below and integral with said upper sloping side wall surface, wherein said lower curved side wall surface extends inwardly and downwardly due to a substantial cutout, said cutout having a curvature generally conforming to the outside shape of the seat occupant's leg;
(c) wherein the armrest side wall surfaces form a cross-section resembling a semi diamond shape for an outboard armrest and a full diamond shape for a center armrest, such shapes being independent of any adjustable mechanism of variable geometry;
whereby said armrests having the semi-diamond and full diamond shapes provide more leg room for passengers measured in the lateral direction between the armrests and provide a substantially wider armrests measured near said top wall; and the upper sloping side wall surface providing a more convenient, angular exposure of the seat control button or passenger control unit.

5,350,218
KNOCKDOWN FURNITURE STRUCTURE
Julian B. Perkins, 2098 Hope Dr., Greenville, N.C. 27858
Filed Oct. 6, 1993, Ser. No. 132,452
Int. Cl.[5] A47C *7/02*
U.S. Cl. 297—440.1 **5 Claims**



1. A knockdown furniture structure comprising in combination: a seat horizontally engaging a leg structure comprising four parallel, vertical legs arranged in a quadrangular array and mutually interconnected by a plurality of horizontal cross pieces which connect vertical adjacent legs; one pair of adjacent legs extending to a greater height than the other shorter pair of adjacent legs with the upward, facing ends of said other pair of legs being provided with means for engaging a rectangular back structure which extends vertically above and perpendicular to said seat; said pair of legs of greater height being also provided at their upper ends with means for each to engage a horizontal arm rest which extends back to engage said back structure.

5,350,219
TOOTHBRUSH WITHOUT METAL GASKET
Huang Shou-Jen, Taipei Hsien, Taiwan, assignor to Acumen Co., Ltd, Tapei-Hsien, Taiwan
Filed Jul. 26, 1993, Ser. No. 96,883
Int. Cl.[5] A46D *1/08, 3/00*
U.S. Cl. 300—21 **3 Claims**



1. A toothbrush manufacturing process comprising the steps of:
a. forming a plastic bristle carrier with first and second major faces, and an array of bristle-reception holes extending between said faces;
b. stuffing a bundle of bristles into each bristle-reception hole so that each bundle of bristles has anchored portions thereof extending entirely through the associated hole from said first face to a point slightly beyond said second face;
c. providing a toothbrush mold having a mold cavity that includes a first cavity section for forming the head of a

toothbrush, and a second cavity section for forming the handle of a toothbrush;

d. inserting said bristle carrier into said first section of the mold cavity so that said second face of the carrier faces the cavity interior space;

e. introducing moldable plastic material into the mold cavity; and

f. heating the moldable plastic material under bristles and bristle carrier.

5,350,220

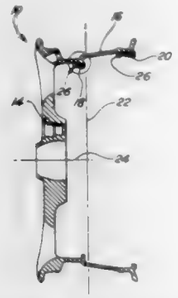
VEHICLE WHEEL WITH BALANCE WEIGHTS

Robert J. Atwell, Jr., Washington, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 22, 1993, Ser. No. 155,664

Int. Cl.[5] B60B *21/02*

U.S. Cl. 301—5.21 **7 Claims**



7. A wheel structure for an automotive vehicle comprising a generally radially extending wheel body having a central axis of rotation, a generally axially extending annular rim integral with said wheel body and extending around the radially outer periphery of said wheel body, said wheel structure having a circular flange on the axially inner side of said wheel body concentric with said axis of rotation, a balance weight releasably secured to said flange in circumferentially adjusted position, the axially outer side of said wheel body being devoid of a balance-weight mounting flange and the ornamental and design graphics of said wheel body being continued radially outwardly substantially to the radially outer edge of said wheel body, said balance weight being located in a position such that it is obscured by said wheel body when said wheel structure is viewed from the axially outer side.

5,350,221

FIBER REINFORCED SPOKE FOR WHEELS OF BICYCLES, WHEELCHAIRS AND THE LIKE, AND METHOD OF MAKING SAME

Terry V. Pearce, Sandy, and Tony M. Pearce, Alpine, both of Utah, assignors to Edo Sports Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 728,619, Jul. 11, 1991, abandoned. This application Mar. 18, 1993, Ser. No. 32,386

Int. Cl.[5] B60B *1/02*

U.S. Cl. 301—104 **20 Claims**

1. A one-piece integral spoke for use in wheels of bicycles, wheelchairs and the like, comprising

an injection molded discontinuous fiber reinforced plastic shaft formed to have a cross-sectional symmetrical airfoil shape positioned such that when installed in a wheel, the dimension transverse to the direction of forward motion of the wheel is less than the dimension aligned with such forward motion, wherein the discontinuous fibers are generally aligned with one another along the length of the spoke,

a threaded end section integrally formed on one end of the shaft, of discontinuous fiber reinforced plastic, for connecting to a wheel rim, the cross-sectional shape of the threaded end section being generally circular, and



a hub end section integrally formed on the other end of the shaft, of discontinuous fiber reinforced plastic, having a generally circular cross-sectional shape, and being formed with a bend for connecting to a wheel hub.

5,350,222

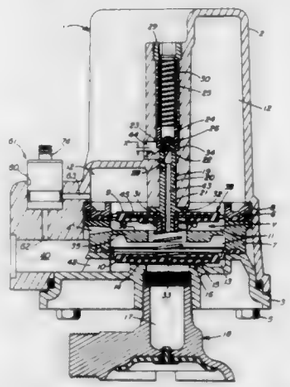
AUXILIARY STABILIZER VALVE FOR VX VENT VALVE

John B. Carroll, Irwin, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed May 10, 1993, Ser. No. 58,336

Int. Cl.[5] B60T *11/34, 15/44*

U.S. Cl. 303—82 **16 Claims**



1. A vent valve device for locally venting a railway car brake pipe when an emergency rate of reduction of the fluid pressure carried in said brake pipe is initiated, comprising:

(a) a housing having an inlet port to which said brake pipe is connected, a vent port, a first chamber communicated with said inlet port, and a second chamber;

(b) flow restrictor means via which fluid pressure communications is provided between said first and second chambers for establishing a predetermined pressure differential therebetween when said brake pipe pressure is reduced at an emergency rate;

(c) vent valve means for establishing fluid pressure communication between said inlet port and said vent port in accordance with said predetermined pressure differential being established between said first and second chambers; and

(d) nullifier valve means in parallel with said flow restrictor means between said second chamber and said brake pipe, said nullifier valve means being manually operable for establishing fluid pressure communication between said second chamber and said brake pipe in bypass of said flow restrictor means, thereby preventing said pressure differential from being established when said brake pipe pressure is reduced at said emergency rate.

5,350,223

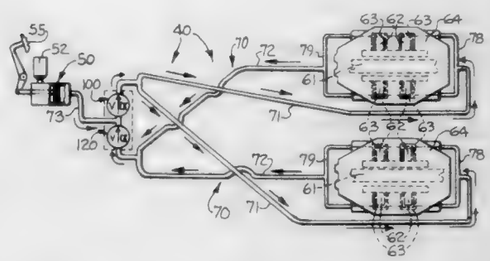
SELF-PURGING VEHICLE BRAKING SYSTEM

Howard C. Stewart, Jr., High Point, N.C., assignor to Stewart Components, High Point, N.C.

Filed Feb. 8, 1993, Ser. No. 14,700

Int. Cl.[5] B60T *15/00*

U.S. Cl. 303—84.2 **26 Claims**



1. A vehicle braking system characterized by being constructed for self-purging and removal of air from the brake lines to thereby prevent the accumulation of air therein so as to provide a more effective braking system, the braking system comprising a master cylinder including a fluid reservoir for supplying brake fluid to the braking system, a hydraulically controlled disk brake having a caliper including a plurality of cylinders and a plurality of respective hydraulically actuable brake pistons guided in said cylinders, an inlet brake line interconnecting said master cylinder and said caliper for supplying brake fluid to said caliper, an outlet brake line interconnecting said master cylinder and said caliper for receiving brake fluid from said caliper, and flow control means associated with and in fluid communication with said inlet and outlet brake lines and positioned remote from said caliper and adjacent said master cylinder for restricting fluid flow from said master cylinder only through said inlet brake line and for restricting fluid flow to said master cylinder only from said outlet brake line during operation of the braking system so that air entrapped in said brake lines is directed from said outlet brake line, through said flow control means, to said master cylinder positioned adjacent said flow control means, and toward said fluid reservoir of said master cylinder for removal of the air and thereby purge said brake lines of the air.

5,350,224

BRAKE-PRESSURE CONTROL DEVICE FOR A ROAD VEHICLE

Joachim Nell, Ostfildern; Manfred Steiner, Winnenden, and Georg Coermann, Stuttgart, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Oct. 12, 1993, Ser. No. 134,836

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1992, 4234043

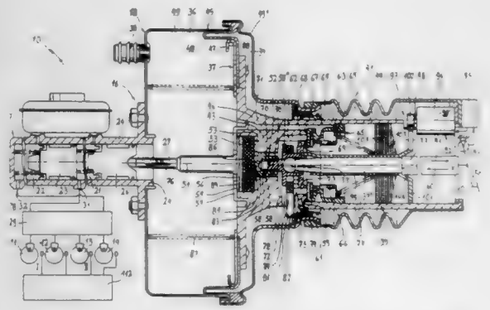
Int. Cl.[5] B60T *8/44, 13/52*

U.S. Cl. 303—113.3 **20 Claims**

1. A brake-pressure control device for a road vehicle with a hydraulic multi-circuit brake system, comprising a master cylinder for generating the brake pressures to be fed into wheel brakes and a pedal-controlled pneumatic brake booster arranged to actuate the master cylinder and provided with a change-over device operative to respond to actuating behavior of a vehicle driver and to cause an automatic change-over of the brake booster from a boost factor value required for limited braking to a higher boost factor value required for full braking, at least in the event that a speed with which the vehicle driver actuates a brake pedal associated with the brake booster in an introductory phase of a braking operation exceeds a threshold value,

(a) the brake booster having a vacuum chamber connected to a suction pipe of an engine of the vehicle and a driving chamber movably limited relative to said vacuum chamber via a driving piston and, via a control part functioning overall as a proportional valve, comprising an inlet valve and a compensating valve and actuatable by the brake pedal, is configured to be loaded with a pressure higher than the pressure prevailing in the vacuum chamber and being proportional to a regulating force exerted by the vehicle driver and introduced into the master cylinder via a pedal tappet, a reaction piston, a flexible reaction element and a push rod, which are supported axially with respect to one another in a mechanical series connection and which form a force-transmission train via which an actuating force is introduced into the master cylinder, and a reaction force resulting from generation of brake pressure reacts on the brake pedal,

(b) the inlet valve comprising a flanged portion of the reaction piston arranged axially displaceably in a depression of a control-part housing, said depression being communicatingly connected with the driving chamber, and a valve element configured as an annular disc and sealingly supportable at an inner edge region on the flanged portion and connected in a pressure-tight manner, via a sealing cuff, to a radially outer boundary, formed by a tubular



portion of the control-part housing, of an ambient pressure space through which the pedal tappet engaging on the reaction piston passes centrally,

(c) the compensating valve comprising a seat coaxially surrounding the depression, in which a sealing flange of the reaction piston is axially displaceably arranged, and which delimits the depression from an outer coaxial annular space communicatingly connectable to the vacuum chamber via a housing channel, and a radially outer region of the annular disc valve element arranged to be urged by a valve spring into bearing contact with the seat, wherein

(d) the reaction piston comprises a first part-piston supported axially on the reaction disc and guided axially displaceably and non-rotatably on the housing part carrying the reaction disc, and a rotatable second part-piston forming the sealing flange of the inlet valve, the first and second part-pistons being in engagement with one another via complementary threads extending in the axial direction;

(e) the change-over device comprises a rotationally reversible electric motor via which the second part-piston can be rotatably driven via a reduction gear, while, in the event that the vehicle driver actuates the brake pedal at a speed higher than a threshold value at the start of the braking operation, an actuation of the electric motor takes place in a rotational direction which ensures that relative rotational movement of the first and second part-pistons results in a shortening of the reaction piston overall and, at

the latest at the end of the braking operation, an actuation of the electric motor takes place in an opposite rotational direction, until a position of the first and second part-pistons corresponding to a maximum length of the reaction piston is again reached; and

(f) the electric motor is arranged in a pedal-side end portion of the control-part housing so as to execute movements of the control-part housing, and is drivingly coupled to the rotatable second part-piston via a hollow shaft coaxially surrounding the pedal tappet.

5,350,225

ROAD VEHICLE BRAKE-PRESSURE CONTROL DEVICE

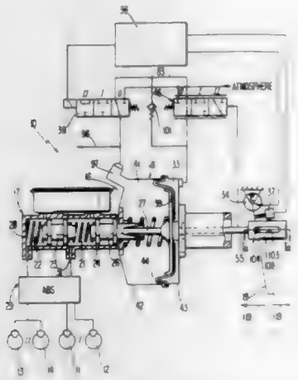
Manfred Steiner, Winnenden, and Joachim Nell, Ostfildern, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Mar. 17, 1993, Ser. No. 33,757

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1992, 4208496

Int. Cl.[5] B60T *8/44, 13/58*

U.S. Cl. 303—113.4 **12 Claims**



1. A brake-pressure control device for a road vehicle equipped with an antilock system which during a braking operation regulates dynamically stable deceleration behavior of the vehicle, having a hydraulic multiple circuit braking system configured such that wheel braking is effected by operation of a brake pedal, a braking device comprising a master cylinder having output pressure chambers individually assigned to brakes and a pneumatic brake power assist unit having a vacuum chamber connected to an intake stub of a vehicle engine and a working chamber configured to be subjected, via a control element operable by the brake pedal, to a pressure higher than a pressure prevailing at the intake stub, a sensor to detect a position of one of the brake pedal and an element motively coupled thereto and to generate electrical output signals characteristic of at least one of instantaneous position of the brake pedal and variations therein, and/or a force transmitter which generates output signals characteristic of a force with which a vehicle driver operates the brake pedal when braking, and an electronic control unit operatively associated with the sensor and/or the force transmitter such that, by processing signals from one of the sensor and the force transmitter, output signals are generated by the electronic control unit as drive signals for the brake-pressure control device so that, during a driving operation, a higher brake pressure than the brake pressure otherwise to be expected in accordance with the instantaneous pedal force can be coupled into said brakes, furthermore, driving of the brake-pressure control device for the purpose of increased brake-pressure deployment being triggered when at least one of a speed at which the brake pedal is operated for the purpose of a brake pressure build-up and a rate of variation of the force at which the vehicle driver operates the brake pedal is higher than a prescribed threshold value wherein the vacuum brake power assist unit includes a solenoid valve arrangement driven by one of the electrical output signals of the electronic control unit and movable from a basic position, in which a control duct of the control element, via which pressure compensation can be performed between the vacuum chamber and the working chamber of the vacuum brake power assist unit, is communicatingly connected to the vacuum chamber, whereas the working chamber of the vacuum brake power assist unit is blocked off from the outside atmosphere, into an excited functional position in which the control duct of the brake power assist unit is subjected to the ambient pressure via a flow path of the solenoid valve arrangement that is released in the functional position, whereas the control duct is blocked off from the vacuum chamber, the basic position of the solenoid valve arrangement being assigned to a non-operated state of the braking system and to a target braking operation thereof and the valve arrangement passing into its excited position when, during operation of the brake pedal, at least one of the threshold value of the speed of operation and the threshold value of the rate of variation of the operating force is overshot, and a valve is operatively associated to respond to the pressure in the control duct, is subjected to an opening direction to a relatively higher pressure in the control duct than in the working chamber and is otherwise blocked, and via which the control duct can be connected directly to the working chamber of the vacuum brake power assist unit.

5,350,226

ANTI-LOCK HYDRAULIC BRAKE SYSTEM

Jochen Burgdorf, Offenbach-Rumpenheim; Hans-Dieter Reinartz, Frankfurt am Main; Helmut Steffes, Hattersheim; Norbert Ocvirk, Offenbach; Peter Volz, Darmstadt; Lutz Weise, Mainz; Helmut Fennel, Bad Soden; Hans Wupper, Friedrichsdorf; Hans-Wilhelm Bleckmann, Nauheim; Erhard Beck, Weilburg; Dieter Dinkel, Eppstein/Ts, and Karlheinz Haupt, Gau-Algesheim, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

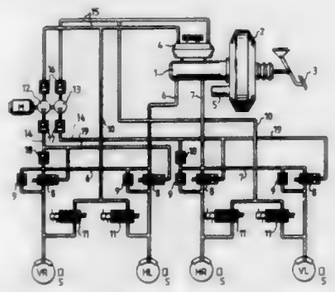
PCT No. PCT/EP90/00874, § 371 Date Dec. 10, 1991, § 102(e) Date Dec. 10, 1991, PCT Pub. No. WO90/15738, PCT Pub. Date Dec. 27, 1990

PCT Filed Jun. 1, 1990, Ser. No. 809,498

Claims priority, application Fed. Rep. of Germany, Jun. 17, 1989, 3919842; Oct. 6, 1989, 3933396; Nov. 23, 1989, 3938734

Int. Cl.[5] B60T *13/18*

U.S. Cl. 303—116.2 **28 Claims**



6. A hydraulic brake system for an automotive vehicle having at least one wheel brake, said system including:

a brake pedal;

a pedal operated master cylinder

a brake pressure line means hydraulically connecting said master cylinder and said wheel brake;

pump means supplying pressurized hydraulic fluid to said wheel brake during controlled brake operation, said pump means including an inlet and an outlet, said outlet connected to said brake line to supply pressurized fluid thereto;

an unpressurized fluid reservoir;

a return line hydraulically connecting said wheel brake and said fluid reservoir;

an electrically operated outlet valve in said return line having closed and opened conditions to control communication of said fluid reservoir and said wheel brake;

throttle valve means in said brake pressure line interposed between both of said master cylinder and pump means outlet connection and said wheel brake, said throttle valve means having a valve member shiftable to create two conditions of said throttle valve means, a first condition providing for free communication to said wheel brake and a second condition providing restricted communication of said pump means and master cylinder to said wheel brake; and

means for shifting said throttle valve to said restricted condition comprising means connecting said pump means outlet to said throttle valve means to cause said shifting of said valve member to create said second condition only upon development of fluid pressure by said pump means, and wherein said pump means includes a pump drive, and also including means causing said pump drive to be activated upon opening of said outlet valve.

5,350,227

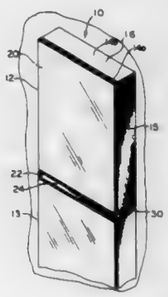
SPACER FOR FILLING A SPACE BETWEEN TWO ADJACENT MODULAR CABINETS

Howard S. Katz, Riegelsville, Pa., assignor to Robern, Inc., Bensalem, Pa.

Filed Sep. 16, 1992, Ser. No. 945,762

Int. Cl.[5] A47B *87/00*

U.S. Cl. 312—198 **2 Claims**



1. A combination of two adjacent modular cabinets and a spacer for filling a space between the cabinets, the combination comprising:

two adjacent cabinets, each cabinet having side walls, including side wall edges, the side walls having a predetermined length and a predetermined width, and a front wall, the cabinets being arranged such that at least one of the side walls of one of the cabinets is adjacent to and spaced by a first predetermined distance from at least one of the side walls of the other cabinet to form a space therebetween;

at least one front filler positioned in the space between the cabinets, the front filler having a length generally equal to the length of the adjacent side walls of the cabinets, a generally central portion having a width generally corresponding to the first predetermined distance, and a pair of generally parallel grooves located on an underside thereof extending the length of the filler and being located within the space between the cabinets, the front filler including attachment means for securing the front filler to at least one of the adjacent cabinets such that the two modular cabinets and the front filler form a single unit, with the front filler and the side wall edges of the adjacent cabinets being coplanar,

at least one side filler positioned in the space between the cabinets, the side filler having a length generally equal to the width of at least one of the adjacent sidewalls, a generally central portion having a width generally corresponding to the width of the central portion of the front filler, and a pair of generally parallel grooves located on an underside thereof extending the length of the side filler and being located within the space between the cabinets, the side filler including attachment means for securing the side filler to at least one of the adjacent cabinets, with the side filler and the side wall edges of the adjacent cabinets being coplanar; and

attaching means for attaching said front filler to said side filler, the attaching means including a first wall and a second wall wherein the second wall is at an angle with respect to the first wall, the first wall being received within the grooves of the front filler and the second wall being received within the grooves of the side filler such that the front filler and the side filler are adjacent one another at an angle equal to the angle between the first and second walls of the attaching means, wherein the cabinets, the front filler and the side filler form a single unit in which the central portion of the side filler is adjacent the adjacent side walls of each cabinet and the front filler is adjacent the front walls of each cabinet.

5,350,228

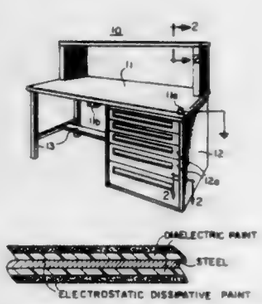
ELECTROSTATIC DISCHARGE PROTECTIVE WORKSTATION AND METHOD OF MAKING SAME

John L. Remington, Coplay, Pa., assignor to The Stanley Works, New Britain, Conn.

Filed Jan. 14, 1993, Ser. No. 4,700

Int. Cl.[5] A47B *81/00*

U.S. Cl. 312—223.1 **14 Claims**



8. A method of making a metal cabinet having drawer and/or shelves suitable for use in an electrostatic discharge protective workstation conform with the standard resistivity ranges for static dissipative control point-to-point resistance of 10^6–10^{10} ohms and point-to-common point ground resistance to 10^6–10^{10} ohms at 10 V DC and 100 V DC comprising the steps of precleaning and drying the metal parts of the cabinet, coating the metal parts with a dielectric base paint coat to a thickness of about 0.4 to about 0.6 mils measured dry after curing, and thereafter coating the base coated metal parts with an electrostatic dissipative paint to a thickness of about 0.7 to about 0.9 mils measured dry after curing.

5,350,229

SECURE STORAGE DESK DRAWER AND INSTALLATION CLAMP THEREFOR

Ole Smed, 655 Wilderness Drive S.E., Calgary, Alberta, Canada T2J 1Z5 , assignor to Ole Smed, Calgary, Canada

Filed Nov. 16, 1992, Ser. No. 977,006

Int. Cl.[5] A47B *88/04*

U.S. Cl. 312—334.23 **8 Claims**

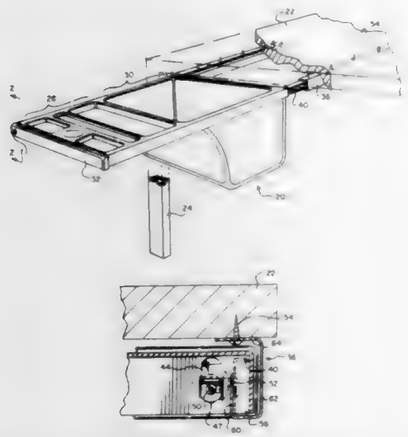
1. A drawer assembly for mounting to a horizontal surface of desk or table, the drawer assembly comprising:

a pair of suspension brackets and a storage drawer;

the pair of suspension brackets for being mounted in a paral-

lel relationship to support the storage drawer, each suspension bracket including a U-shaped channel with a bottom channel wall and parallel channel sidewalls slidably supporting a drawer slide of said storage drawer, one of the channel sidewalls being longer than another of the channel sidewalls, the longer channel sidewall being inturned so that a portion thereof forms a flat flange in a plane above the shorter channel sidewall and parallel with the bottom channel wall of the U-shaped channel, and a free edge of the flat flange extends past a plane coincident with the shorter channel sidewall, the free edge being adapted for receiving fasteners for mounting the suspension bracket to the horizontal surface;

the storage drawer including a rectangular drawer face, a first storage area and a second storage area, said rectangular drawer face, said first storage area, and said second



storage area being integrally formed, said first storage area being of a first depth and length such that knee clearance is provided for a person sitting at the desk or table when the storage drawer is installed and is in its closed position;

said first storage area extending rearwardly of the drawer face, and said second storage area extending rearwardly of said first storage area and being of a second depth which is substantially greater than said first depth and of a second length such that the drawer assembly lies within outer edges of the surface of the desk or table when installed, and said storage drawer is slidably supported by the drawer slides which reciprocates in the U-shaped channels, and whereby a total length of the storage drawer being such that fasteners used to mount the suspension brackets are concealed and access to the fasteners is not permitted when the storage drawer is installed and is in its closed position.

5,350,230

DOOR LOCKING MECHANISM FOR BATCH MIXERS

Timothy L. Ray, Winchester, Va., assignor to O'Sullivan Corporation, Winchester, Va.

Filed Sep. 29, 1993, Ser. No. 128,204

Int. Cl.[5] B29B *5/00;* **B01F** *15/02*

U.S. Cl. 366—75 **11 Claims**

1. A mixing apparatus in which materials are mixed and heated, comprising:

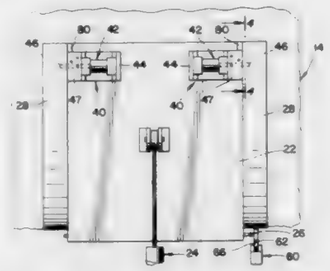
a mixing body forming therein a mixing chamber;

a feed hopper communicating with said mixing chamber for supplying thereto materials to be mixed, said hopper including a door movable between open and closed positions;

heating means for heating the materials in the mixing chamber;

mixing means in said mixing chamber for mixing the materials; and

door locking means comprising at least one locking element movable between an unlocking position enabling said



door to be fully opened, and a locking position enabling said door to be only partially opened in response to a pressure build-up within said mixing chamber, for venting such pressure in a controlled manner.

5,350,231

DOUBLE WORM EXTRUDER WITH MESHING SCREWS

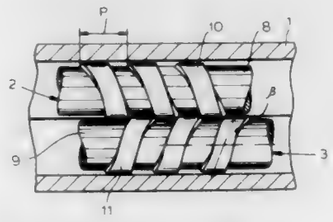
Horst Eigruber, McPherson, Kans., assignor to Friedrich Theysohn GmbH, Bad Oeynhausen, Fed. Rep. of Germany

Filed Oct. 27, 1993, Ser. No. 143,826

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1992, 4236496

Int. Cl.[5] B01F *7/08*

U.S. Cl. 366—85 **3 Claims**



1. A double-worm extruder, comprising:

an elongated worm housing having a pair of adjacent laterally overlapping bores extending longitudinally in said housing and defining an open figure-eight cross section therein; and

a respective screw received in each of said bores, said screws being journalled in said housing and having longitudinally extending bodies formed with helical ribs projecting therefrom, the ribs of the screws meshing with one another, said ribs each being of trapezoidal cross section between outwardly diverging flanks.

5,350,232

DEVICE FOR MIXING, HOMOGENIZING OR REACTING AT LEAST TWO COMPONENTS

Wolf-Dieter Kreuziger, Theresiengasse 17, A-1180 Vienna, Austria

PCT No. PCT/AT91/00121, § 371 Date Jul. 14, 1993, § 102(e) Date Jul. 14, 1993, PCT Pub. No. WO92/09361, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 22, 1991, Ser. No. 64,130

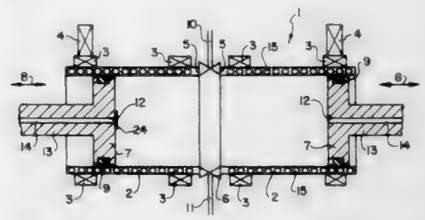
Claims priority, application Austria, Nov. 23, 1990, A2384/90

Int. Cl.[5] B01F *13/06, 9/02, 15/06*

U.S. Cl. 366—139 **14 Claims**

1. A device for mixing, homogenizing or reacting at least two flowable or pourable components, comprising a container (**1**) drivable to perform rotating movement about an axis, and having at least one closeable opening (**10, 11, 12, 14**) for filling

and/or emptying the container (**1**), wherein: the container (**1**) is formed from at least two separately drivable pipe lengths (**2, 16, 17**) arranged in mating end-to-end relationship, the mating ends of the pipe lengths (**2, 16, 17**) being seated within a seal;



and wherein non-mating ends of the pipe lengths at opposite ends of the container have a sealingly closing end wall (**7, 18**) at least one of which is displaceable in the axial direction of the respective pipe lengths (**12, 16, 17**).

5,350,233

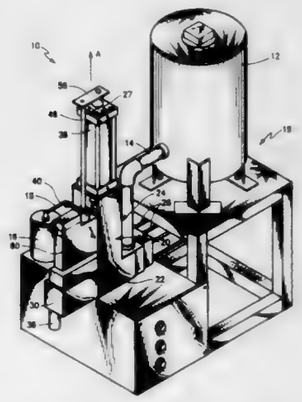
MIXING APPARATUS AND METHOD FOR FORMING A BLENDED COMPOSITE MATERIAL FROM A PLURALITY OF COMPONENTS

Donald W. Sonntag, Titusville, and Brian Skeuse, Middlesex, both of N.J., assignors to Reagent Chemical & Research, Inc., Middlesex, N.J.

Filed Sep. 22, 1992, Ser. No. 949,394

Int. Cl.[5] B01F *15/04, 5/06*

U.S. Cl. 366—160 **25 Claims**



1. Mixing apparatus adapted for dispensing a selected quantity of composite material blended from a first component measured from a first source and a second component measured from a second source, comprising:

(a) a blending assembly operative to intimately mix materials flowing therethrough, said blending assembly including a dispensing nozzle for dispensing said composite material and a blending element;

(b) first metering means for metering a first quantity of said first component at a selected first volume, said first metering means switchable between a first measuring mode wherein said first metering means is in fluid communication with the first source whereby the first quantity of said first component is measured and a first discharge mode wherein said first metering means is in fluid communication with said blending assembly whereby the first selected quantity may be introduced into said blending assembly;

(c) a second metering means for metering a second quantity of said second component at a selected second volume, said second metering means switchable between a second measuring mode wherein said second metering means is in fluid communication with said second source whereby the second selected quantity of said second component is measured and a second discharge mode wherein said second metering means is fluid communication with said blending assembly whereby the second selected quantity may be introduced into said blending assembly;

(d) control means for cyclically operating said first and second metering means to place said first metering means in said first measuring mode and said first discharge mode and said second metering means in said second measuring mode and said second discharge mode, said control means operative to concurrently place said first and second metering means in the respective said first and second discharge mode; and

(e) ejection means for concurrently ejecting the first and second selected quantities out of said first and second metering means so that said first and second selected quantities are introduced into said blending assembly and thereafter dispensed through said dispensing nozzle as a composite material of a volume equal to the selected first and second volumes.

5,350,234

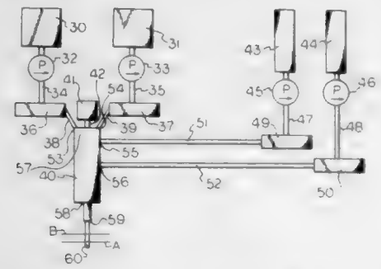
PROCESS FOR CONTINUOUSLY MIXING TWO OR MORE MATERIALS WITH NON-PULSATING MIXING AND FILLING STORAGE CONTAINERS

Peter Hagen, Harbor Springs, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jan. 21, 1994, Ser. No. 184,370

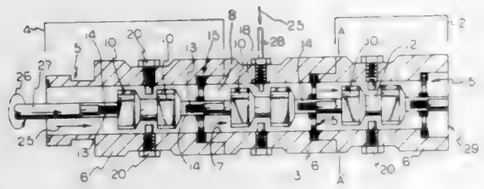
Int. Cl.[5] B01F *15/04, 15/02*

U.S. Cl. 366—162 **6 Claims**



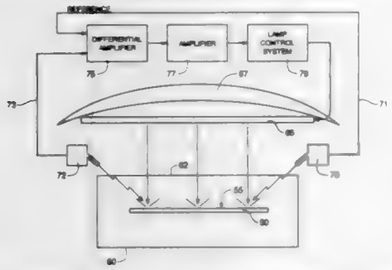
1. A process comprising continuously displacing with pulsating movement created by a force means from at least two material suppliers, pumpable feed material from each material supplier through respective pulsate eliminators into a dynamic mixer having an input end and an exit end wherein the pressure at the input end is less than 3.5 MPa, and thereby continuously combining at least two pumpable feed materials in a predetermined volume ratio to provide a thoroughly mixed product which is being continuously exuded from the exit end of said dynamic mixer at a constant volume flow and said product exiting the dynamic mixer being of constant composition throughout the time the process is operated given the pumpable feed materials are constant and the predetermined volume ratio of pumpable feed materials is constant, continuously passing the mixed product exude from the exit end of the dynamic mixer through a multi-way valve attached to the exit end of the dynamic mixer, and filling storage containers.

5,350,235
IN LINE DYNAMIC MIXER WITH FOLDING ELEMENTS AND PERFORATED PLATES
Peter Hagen, and Matthias Hagen, both of Harbor Springs, Mich., assignors to Sealex, Inc., Harbor Springs, Mich.
Filed Jan. 21, 1994, Ser. No. 184,630
Int. Cl.[5] B01F 7/04
U.S. Cl. 366—168 4 Claims



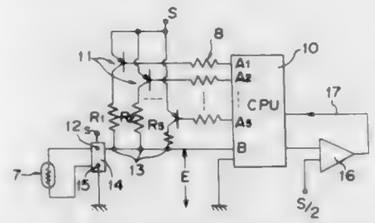
1. A mixing apparatus comprising
a plurality of disconnectable mixing units, each said mixing unit having
a casing with a chamber extending the length of said casing;
a perforated bulkhead, removably disposed within the chamber of said casing, said perforated bulkhead having a spindle bushing disposed therein; and
a spindle in coaxial relation to said chamber and rotatably mounted in said spindle bushing, said spindle having means for mixing and means for disconnectably coupling the spindle of an adjacent mixing unit,
so that upon rotation of one spindle, the spindle in each mixing unit rotates, and material within the chamber of each said mixing unit is mixed.

5,350,236
METHOD FOR REPEATABLE TEMPERATURE MEASUREMENT USING SURFACE REFLECTIVITY
Randhir P. S. Thakur; Gurtej S. Sandhu, and Annette L. Martin, all of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.
Filed Mar. 8, 1993, Ser. No. 28,051
Int. Cl.[5] G01J 5/54
U.S. Cl. 374—161 20 Claims



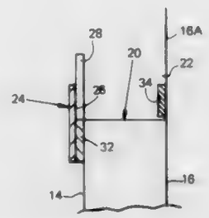
1. A method for measuring the temperature of a substrate, comprising the steps of:
providing a substrate in a chamber, said substrate having a reflective surface;
exposing said substrate to a gas and radiant energy to form a film superjacent said substrate, said energy having a power level;
comparing the reflectivity of said surface prior to said exposing and while said film is being formed, said power level responsive to differences in said compared reflectivities.

5,350,237
TEMPERATURE MEASURING CIRCUIT FOR HEATING AND COOKING APPLIANCES
Kiyonori Hida, Daito, Japan, assignor to Funai Electric Co., Ltd., Daito, Japan
Filed Oct. 16, 1992, Ser. No. 962,405
Int. Cl.[5] G01K 7/24
U.S. Cl. 374—183 7 Claims



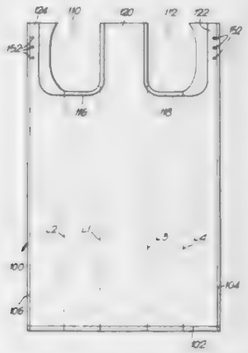
1. A temperature measuring circuit for heating and cooking appliances operative at predetermined temperatures, comprising a resistance network comprising a plurality of resistors having different resistance values; temperature detecting means exhibiting changes in resistance responsive to temperature variations; said temperature detecting means selectively cooperating with one of resistors at each predetermined temperature for generating first control voltage representative of an associated predetermined temperature; comparator means for comparing each control voltage with a reference voltage; and switching means for switching one of said resistors to cooperate with said temperature detecting means when a preselected relationship is established between said control and reference voltages.

5,350,238
SECURITY BAGS
Geoffrey A. Bolton, Lancashire, England, assignor to Learoyd Packaging Limited, Lancashire, England
Filed Feb. 17, 1993, Ser. No. 18,400
Claims priority, application United Kingdom, Feb. 20, 1992, 9203606
Int. Cl.[5] B65D 33/18, 33/34
U.S. Cl. 383—5 9 Claims



1. A security bag, comprising:
an enclosure formed from first and second panels having an access opening along an edge of the enclosure for insertion of articles into the enclosure;
a void tape layer having a first adhesive layer superposed on the void tape layer, the void tape layer being attached to the first panel at the access opening, wherein the void tape layer and the first adhesive layer extend beyond the first panel such that a portion of the adhesive is exposed for connection, the exposed portion comprising a first mating portion provided with a removable release strip; and
a second adhesive layer being disposed on the second panel comprising a second mating portion on the second panel, wherein the first and second mating portions are positioned to face each other and a seal is formed by a translational movement of the mating portions when the removal release strip is removed.

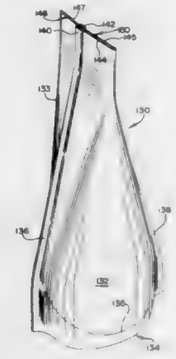
5,350,239
SUSPENSION AND VENTING
Olaf Strand, Porsgrunn, Norway, and Donald M. Martin, Louth, England, assignors to Norsk Hydro A.S., Oslo, Norway
Continuation of Ser. No. 956,259, Oct. 5, 1992, abandoned. This application Dec. 17, 1993, Ser. No. 168,410
Claims priority, application United Kingdom, Oct. 3, 1991, 9121002
Int. Cl.[5] B65D 33/01, 33/14
U.S. Cl. 383—7 31 Claims



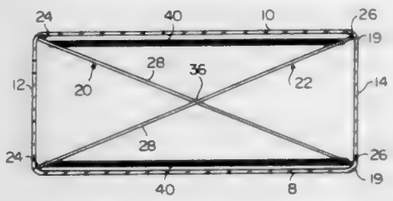
1. In a flexible intermediate bulk container including a flexible outer bag, said bag having a top, a bottom and side walls, and a flexible inner liner located within said bag and to have filled therein granular material, said liner having a top, a bottom and side walls extending downwardly from said top, the improvement comprising:
said liner including at said top thereof at least one suspension member connecting said top of said liner to said top of said bag such that said liner, when granular material is filled therein, will be positioned in a predetermined orientation within said bag;
said side walls of said liner being entirely free of direct connection to said side walls of said outer bag, such that said liner is connected to said outer bag solely by said at least one suspension member; and
said liner having extending therethrough, adjacent said top thereof, a vent connecting an interior of said liner to a space exterior thereof, to thereby enable expulsion of air from said interior of said liner.

5,350,240
STAND-UP POUCH HAVING CROSS-SEAL FEATURE AND METHOD OF MAKING
Fred L. Billman, Caledonia Township, Racine County, Wis., and Russell B. Wortley, Waukegan, Ill., assignors to S. C. Johnson & Son, Inc., Racine, Wis.
Continuation-in-part of Ser. No. 532,296, Jun. 1, 1990, abandoned. This application Dec. 17, 1991, Ser. No. 924,135
Int. Cl.[5] B65D 30/10
U.S. Cl. 383—104 1 Claim

1. A flexible-plastic pouch, adapted for containment of a fluid comprising:
a gussetted bottom having a depth represented by the value C and a width when the pouch is filled represented by the value Wf;
a pair of sidewalls joined to the bottom, each sidewall including edge margins disposed transverse to the bottom and an end margin located in distal relation to the bottom, the edge margins of one sidewall being joined in a fluid-tight manner to the respective edge margins of the other sidewall, thereby defining a pair of spaced-apart fluid-tight sideseams, each sideseam having a respective end portion located opposite the bottom as well as an end portion located adjacent the bottom wherein sideseam ends spaced from the bottom are closer together than sideseam ends adjacent the bottom, a portion of each sidewall end margin being joined in a fluid-tight manner to the remainder portion thereof and the sideseam end portions opposite the bottom being proximally joined together in a fluid-tight manner, thereby collectively defining a fluid-tight endseam having a width represented by the value A; and
the bottom defining a base having a geometry sufficient for enabling the sidewalls to remain generally upright relative to a horizontal surface onto which the base has been placed
wherein the pouch has a height represented by the value H and
wherein the various values are related to each other as follows:
A is equal to from 0.1 C to 1.5 C;
H is equal to from 0.5 C to 12 C; and
Wf is equal to from C to 6 C.



5,350,241
EXPANDING DEVICE FOR COLLAPSIBLE ARTICLES
Martin Zoland, P.O. Box 68, Hawksburn, Victoria, Australia
PCT No. PCT/AU91/00321, § 371 Date Jun. 29, 1992, § 102(e) Date Jun. 29, 1992, PCT Pub. No. WO92/01404, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 18, 1991, Ser. No. 866,185
Int. Cl.[5] A45C 7/00
U.S. Cl. 383—127 16 Claims



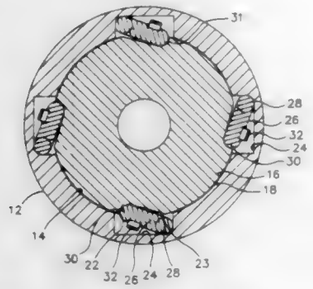
1. An expanding device in combination with a collapsible article, said article having a plurality of walls, each wall having a plurality of edges, such that pairs of edges of adjacent intersecting walls are coupled to each other by a corresponding join, wherein said walls collapse when forces are applied to said walls, said expanding device comprising:
a) first and second engaging portions, each of said engaging portions touching two of, and only two of, said joins at opposing edges of at least three of said walls; and
b) first and second resilient means, coupled to said engaging portions, for acting on said engaging portions to expand said article for display purposes when said forces are released.

5,350,242

BEARING ASSEMBLY FOR A DOWNHOLE MOTOR

William Wenzel, 3771 - 74 Avenue, Edmonton, Alberta, Canada T6B 2T7

Filed Jun. 17, 1993, Ser. No. 79,108
Claims priority, application Canada, Jun. 18, 1992, 2071611
Int. Cl.[5] E21B 4/02
U.S. Cl. 384—97 3 Claims



1. An improvement in a bearing assembly for a downhole motor, the bearing assembly consisting of a cylindrical housing having an interior surface, a cylindrical inner mandrel having an exterior surface telescopically received within the housing, bearing means disposed between the interior surface of the housing and the exterior surface of the inner mandrel thereby facilitating relative rotation of the housing and inner mandrel while bearing axial and radial loading, the improvement comprising:

a. a plurality of notches in one of the exterior surface of the inner mandrel and the interior surface of the housing, the notches being upwardly inclined from a base; and

b. a plurality of pins disposed within pockets in the other of the housing and the inner mandrel, each pin having one end pivotally secured within the pocket and a second end, biasing means being provided to exert a force biasing the second end of the pins toward the notches, such that the pins travel freely up the incline on the notches upon relative rotation of the inner mandrel and housing in the first direction and the pins travel down the incline on the notches until the pins engage the base of the notch upon the relative rotation of the inner mandrel and the housing in the second direction, thereby preventing relative rotation of the inner mandrel and the housing.

5,350,243

TAPE CASSETTE

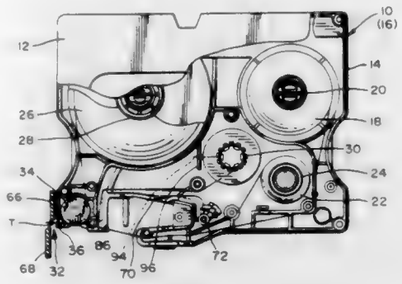
Yoshio Ichinomiya, Aichi; Koshiro Yamaguchi, Kasugai, and Nobuo Kato, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jan. 6, 1993, Ser. No. 1,099
Claims priority, application Japan, Jan. 8, 1992, 4-020581; Jul. 3, 1992, 4-176957
Int. Cl.[5] B41J 35/28
U.S. Cl. 400—208 19 Claims

1. A tape cassette accommodating a tape-shaped member, said tape cassette comprising an accommodation case member with a side and a cover member for covering said accommodation case member, a single exit slit, said exit slit being formed on said side;

wherein said tape-shaped member is ejected through said exit slit, and

wherein said accommodation case member has at least one protruded portion at said exit slit, said protruded portion being provided to prevent an end of said tape shaped-member from being retracted into the cassette, said protruded portion being protruded by a predetermined



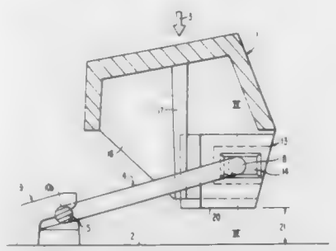
amount in the feeding direction of said tape-shaped member and extending along said exit slit.

5,350,244

KEYBOARD FOR TYPEWRITER AND THE LIKE

Gunter Büttner, Nürnberg, Fed. Rep. of Germany, assignor to TA Triumph-Adler AG, Nürnberg, Fed. Rep. of Germany

Filed Jul. 5, 1991, Ser. No. 726,039
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1990, 4022917
Int. Cl.[5] B41J 5/14
U.S. Cl. 400—496 7 Claims



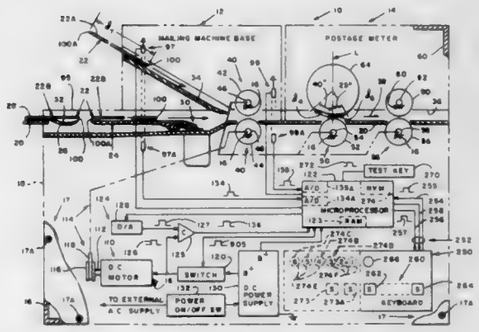
1. A keyboard, comprising at least one elongated key; means for swivellably supporting said key and including at least-one bracket which is substantially U-shaped and has a bottom, two legs connected with opposite ends of said bottom and having free ends forming two projections parallel to said bottom, such that said at least one elongated key is swivellably supported on said projections; at least two stationary swivel bearings swivellably supporting said bottom of said at least one bracket; means for supporting one of said at least one bracket and said at least one elongated key so as to dampen noise produced during actuation of said at least one elongated key, said means including a bearing member which is composed of a noise-dampening material selected from the group consisting of rubber and synthetic plastic material and mounted on said at least one elongated key so that said projections of said legs of said at least one bracket engage in said bearing member so as to dampen noise generation during actuation of said at least one elongated key.

5,350,245

MACHINE INCLUDING MEANS FOR SELECTING THE MARGINAL DISTANCE FROM SHEET LEADING EDGE FOR PRINTING INDICIA ON SHEET

Dennis M. Gallagher, Danbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 18, 1992, Ser. No. 978,020
Int. Cl.[5] B41J 11/42
U.S. Cl. 400—582 12 Claims



1. A machine comprising:

a. means for printing an indicia;

b. means for feeding a sheet having a leading edge downstream in a path of travel to the printing means;

c. means for controlling the sheet feeding and printing means, the controlling means including a microprocessor, the controlling means including means for sensing the leading edge of a sheet in the path of travel, the sensing means connected to the microprocessor and providing a signal thereto indicating that the leading edge has been sensed, the microprocessor including a program, the program including means for commencing counting a predetermined time delay in response to the signal, the microprocessor program including means for causing the printing means to commence printing the indicia on the sheet a selected marginal distance from the leading edge thereof corresponding to the predetermined time delay;

d. the controlling means including means for manually selecting the marginal distance and thus the predetermined time delay from a plurality thereof, the controlling means including a plurality of light emitting diodes (LEDs) respectively corresponding to a different one of the plurality of marginal distances, and the microprocessor program including means for energizing a predetermined different one of the LEDs for each selected distance to permit visual verification of the selected marginal distance; and,

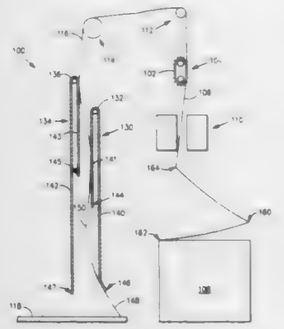
e. the machine including a normal mode of operation and a service mode of operation and a margin selecting mode of operation, the controlling means including a manually actuatable first switch connected to the microprocessor, the microprocessor program including means for causing the machine to enter into the service mode of operation thereof in response to actuation of the first switch, the controlling means including a manually actuatable second switch connected to the microprocessor, and the microprocessor program including means for causing the machine to enter into the margin selecting mode of operation in response to actuation of the second switch if the machine is in the service mode of operation thereof.

5,350,246

HIGH SPEED CONTINUOUS-FORMS PRINTER

Lawrence T. Sehringer, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1992, Ser. No. 924,136
Int. Cl.[5] B31B 1/96; B41J 11/58
U.S. Cl. 400—613.2 26 Claims



1. A printer comprising in combination:

means for supplying a length of continuous form paper which is prefolded laterally along linear performations which connect between sheets;

printing means for producing images on the surface of the length of paper;

tractor means for moving the length of paper longitudinally through the printing means and downward onto a fanfold stack after printing;

surface means including a fixed height platform for stacking perforation connected paper sheets thereon in a fanfold arrangement up to a maximum operating stack height; and

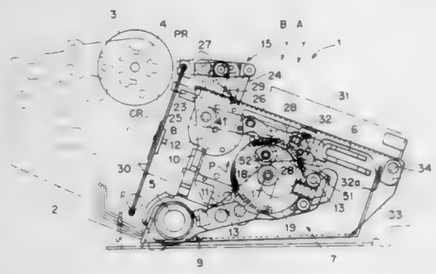
control means for properly depositing and refolding the paper over an entire range of the stack height, said control means including a plurality of chains of different length for cooperating with the paper as it is stacked upon the platform.

5,350,247

PRINTER HAVING ERASING MECHANISM FOR REPEATED ERASURE

Masaya Funamoto, Kasugai, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 28, 1993, Ser. No. 83,633
Claims priority, application Japan, Jul. 10, 1992, 4-183811
Int. Cl.[5] B41J 29/373
U.S. Cl. 400—696 13 Claims



1. A printer for generating a printed character on a printing paper using a print ribbon and for erasing the printed character using a correction ribbon, the printer comprising:

a platen;

a carriage driven to reciprocally follow the platen, the carriage mounting thereon a daisy wheel having a plurality of types, a print ribbon, a correction ribbon, a print hammer,

a cam unit, and a drive motor for rotatably driving the cam unit, printing operation being made by non-impactedly pressing one of said plurality of types against the printing paper and the platen through the print ribbon by means of the print hammer operatively driven by the rotation of the cam unit, and the erasure operation being performed by pressing a plurality of times said one of the plurality of types onto the printing paper and the platen through the correction ribbon by means of the print hammer;

a motor control means for controlling rotation of the motor during erasure operation including means for providing a first pressing force applied by the print hammer and, during second and subsequent pressings, means for providing a pressing force by the print hammer smaller than the first pressing force.

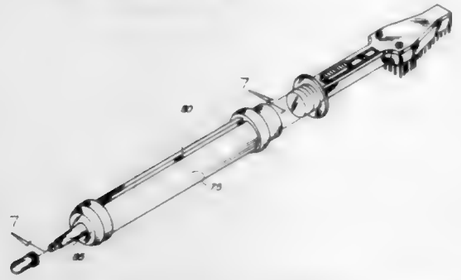
5,350,248

TOOTHBRUSH WITH EXTENDIBLE BRUSHING ELEMENT

Anselm V. K. Chen, 46 Rockview Estate, Kuching, Sarawak, Malaysia 93200

Filed Dec. 21, 1993, Ser. No. 170,820
Int. Cl.[5] B43K *29/00;* **A46B** *9/04*
U.S. Cl. 401—195 **3 Claims**





2. A toothbrush comprising in combination:

an elongated handle portion having a first end and a second end;

an elongated, hollow forward portion, an aperture formed through the hollow forward portion;

an elongated, curved spring element having a first end and a second end, the first end of the spring element being fixed to and within the hollow forward portion, the second end of the spring element being positioned adjacent the aperture of the hollow forward portion;

a bristled element positioned within the aperture of the hollow forward portion, the bristled element being fixed to the second end of the spring element, the spring element normally biasing said bristled element down into the aperture within the elongated, hollow portion;

an elongated actuation element mounted in the elongated hollow forward portion for longitudinal sliding movement along the length of said elongated hollow forward portion, said elongated actuation element having a first end and a second end, a finger engaging surface positioned at the first end of the actuation element, the second end of the actuation element engaging the spring and being adapted to ride along the spring element in contact therewith, movement of the finger engaging element serving to move the second end of the actuation element along the length of the spring, the movement of the second end of the actuation element along the spring serving to straighten the spring and move the bristled element out through the aperture of the hollow forward portion against the action of said spring;

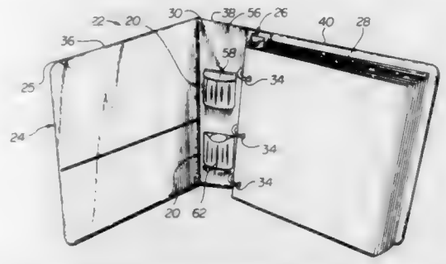
a forward portion cover dimensioned to fit over the forward portion, a slot formed within the forward portion cover, the finger engaging element extending through the slot.

5,350,249

BINDER POCKET

Grant H. Peters, 3015 N. Greenview, Chicago, Ill. 60657

Filed Apr. 8, 1993, Ser. No. 44,978
Int. Cl.[5] B42F *13/40*
U.S. Cl. 402—4 **20 Claims**



1. A binder for retaining leafs and other components comprising:

a cover having an inside surface and an outside surface;

a holding device depending from said cover, said holding device having at least two component holders for retaining said leafs and other components in relation to said cover; said component holders retaining said leafs and components generally along a common edge of said leafs and components;

a void being defined by a portion of said inside surface of said cover and said common edges of said components retained on said component holders of said holding device;

at least one compartment in said void being defined by a volume of said void bordered by two component holders;

a pocket for holding articles being positioned on said inside surface of said cover for nesting in a corresponding one of said compartments.

5,350,250

QUICK COUPLING OF A FRONT WORK ATTACHMENT ON EXCAVATORS

Jürgen Nagler, Kirchender Dorfweg 5, W-5804 Herdecke, Fed. Rep. of Germany

PCT No. PCT/EP91/00073, § 371 Date Sep. 23, 1991, § 102(e) Date Sep. 23, 1991, PCT Pub. No. WO91.11565, PCT Pub. Date Aug. 8, 1991
Continuation of Ser. No. 768,859, Sep. 23, 1991, abandoned. This PCT application Jan. 17, 1991, Ser. No. 49,964
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1990, 9000721[U]
Int. Cl.[5] E02F *9/00*
U.S. Cl. 403—316 **3 Claims**

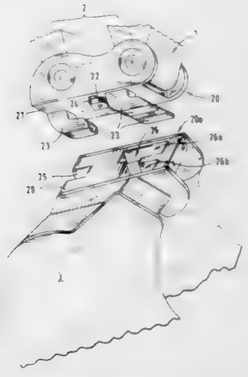
1. A device for quick coupling of work equipment to an excavator boom having a free end, said device comprising:

a first coupling plate connectable to the work equipment and having catch openings formed therein;

a second coupling plate, connectable to the free end of the boom and having hook-shaped catch elements for engaging in said catch openings of said first coupling plate thereby to couple the work equipment to the boom; and

at least one locking element connected to one of said first and second coupling plates and movable in a plane in a locking direction for locking said hook-shaped catch elements in said catch openings;

wherein at least one of said catch openings has a first wedging surface and said at least one locking element has complementary second wedging surface, wherein said at least one of said catch openings has a hook-engaging surface and said hook-shaped catch element received in said at least one of said catch openings has a rear surface remote from said hook-engaging surface, and wherein said device further comprises means for wedging said at least one locking element against said first wedging surface and adjacent said rear surface for locking said hook-shaped catch elements in said catch openings upon connection of the work equipment with the boom.

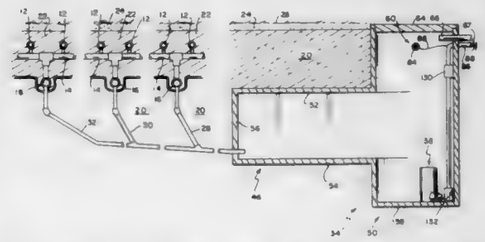


5,350,251

PLANTED SURFACE MOISTURE CONTROL SYSTEM

William H. Daniel, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Apr. 8, 1992, Ser. No. 865,070
Int. Cl.[5] E02B *11/00*
U.S. Cl. 405—37 **21 Claims**



1. A system for controlling the moisture content of a planted surface, the system comprising:

a plurality of drain conduits located beneath the planted surface for collecting liquid from the planted surface;

a sealed collection tank coupled to the plurality of drain conduits, the collection tank being located beneath the planted surface to collect liquid passing through the plurality of drain conduits therein;

a waste pit located adjacent to the collection tank beneath the planted surface;

a pump for pumping liquid from the collection tank into the waste pit; and

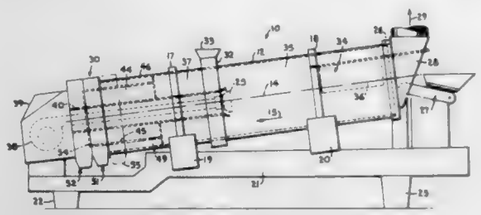
a vacuum pump coupled to the collection tank for removing air from the collection tank and in the plurality of drain conduits to draw liquid from the planted surface through the plurality of drain conduits and into the collection tank.

5,350,252

SINGLE DRUM MULTIPLE SOIL REMEDIATION AND CLASSIFICATION APPARATUS AND METHOD

Joseph E. Musil, Ely, and William D. McFarland, Cedar Rapids, both of Iowa, assignors to Cedarapids, Inc., Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 908,903, Jul. 2, 1992, Pat. No. 5,193,935, which is a continuation of Ser. No. 638,046, Jan. 7, 1991, abandoned. This application Dec. 15, 1992, Ser. No. 990,504
The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
Int. Cl.[5] B09B *3/00*
U.S. Cl. 405—128 **14 Claims**



1. A soil decontamination apparatus comprising:

a drum disposed generally horizontally and supported to rotate about a central axis therethrough, the drum having a material intake end and a material discharge end and including means for advancing materials in a downstream direction of the drum from the intake end toward the discharge end;

a heating zone disposed within the drum adjacent the feed end, the apparatus including means for generating a hot stream of gases to flow through the heating zone toward the material intake end;

means disposed at the intake end of the drum for receiving materials fed into the heating zone of the drum;

a mixing zone disposed adjacent and downstream of the heating zone, the mixing zone including means for receiving a second material and means for mixing the first and second materials; and

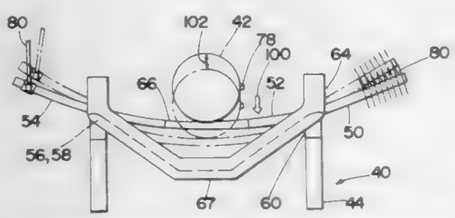
a classification zone disposed adjacent a downstream end of the mixing zone and extending to the discharge end of the drum, the classification zone including means for separating materials according to size into at least first and second products and at least first and second discharge means for discharging, respectively, the first and second products at the discharge end of the drum.

5,350,253

METHOD FOR SUPPORTING DISTRIBUTION MEANS

John Cunningham, 35 Loughberry Rd., Saratoga Springs, N.Y. 12866

Filed Mar. 24, 1993, Ser. No. 36,660
Int. Cl.[5] F16L *1/00*
U.S. Cl. 405—154 **19 Claims**

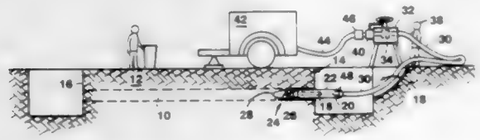


1. A method for supporting distribution means, comprising the following steps:

arranging at least one pair of laterally spaced apart fixed

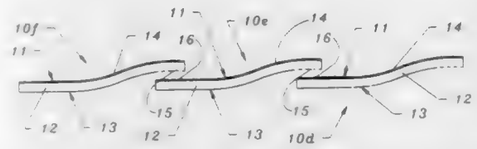
bearing supports on a surface adjacent a path for distribution means;
forming said bearing supports with a bearing surface for engaging an elongated member;
supporting at least one elongated elastic support member on at least one pair of said bearing supports;
arranging said elastic member substantially perpendicular to said path with a midportion of said elastic member extending between said pair of bearing supports and end portions of said elastic member extending longitudinally beyond said pair of bearing supports such that said bearing surfaces engage said elastic member at a distance spaced inwardly from said end portions;
selecting an elastic member capable of bending from an equilibrium position to assume a more downwardly bowed position when a load is applied to said midportion intermediate said pair of bearing supports;
resting said end portions of said elastic member on said pair of bearing supports to enable said end portions to slidably move relative to said bearing supports in response to a bending of said midportion or in response to movement of any of said bearing supports; and
placing distribution means on said elastic member, said distribution means arranged substantially perpendicular to said elastic member.

5,350,254
GUIDED MOLE
Allan T. Fisk, Needham; David I. Freed, Weston, and Thomas H. Mann, Littleton, all of Mass., assignors to Foster-Miller, Inc., Waltham, Mass.
Filed Nov. 22, 1993, Ser. No. 156,060
Int. Cl.[5] F16L *1/00*
U.S. Cl. 405—184 **19 Claims**



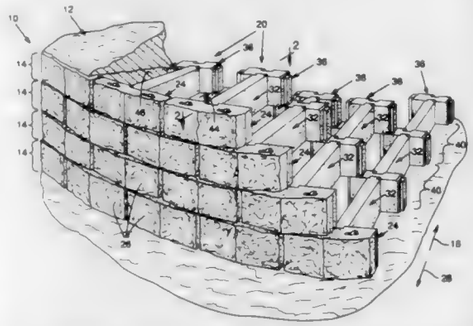
1. Moling apparatus for forming a generally horizontal underground passage in soil for a utility conduit or the like comprising
tool head structure that defines a tool axis, said tool head structure including a base portion and a nose portion mounted on said base portion,
said base portion being rotatable relative to said nose portion between a first position in which said nose portion has surfaces which are in symmetrical position with respect to said tool axis and a second position in which said nose surfaces are in asymmetrical position with respect to said tool axis so that said tool will tend to move through soil along a generally straight portion when said nose portion is in said first position and will tend to move through soil along a curved path when said nose portion is in said second position in response to propulsion forces applied to said tool head structure,
first surface structure for interacting with the soil in which said tool head structure is disposed to impart torque about said tool axis in a first rotational direction when said nose portion is in said first position and second surface structure for generating torque through interaction with the soil in the opposite rotational direction when said nose portion is in said second position.

5,350,255
GEOSYNTHETIC CLAY LINER WITH MODIFIED EDGES FOR IMPROVED SEALING
Richard Carriker, Woodstock, Ga., assignor to James Clem Corporation, Chicago, Ill.
Filed Jan. 19, 1993, Ser. No. 6,222
Int. Cl.[5] E02D *3/12*
U.S. Cl. 405—270 **15 Claims**



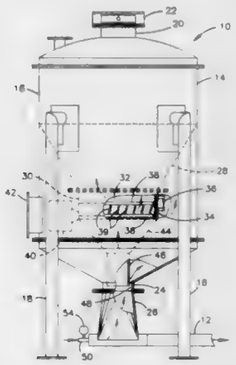
1. A lining system for containing liquid, the system comprising:
a plurality of geosynthetic clay liners, each geosynthetic clay liner including at least one clay layer, each clay layer disposed between at least one primary carrier sheet and at least one cover sheet,
each cover sheet including at least one longitudinal section disposed at an outer edge thereof, each longitudinal section of one geosynthetic clay liner engaging at least a portion of an adjacent geosynthetic clay liner,
each longitudinal section allowing substantial migration of activated clay through the longitudinal section,
activated clay migrating through each longitudinal section creating a seal between two adjacent geosynthetic clay liners by creating an activated clay seal between the longitudinal section of one geosynthetic clay liner and the primary carrier sheet of an adjacent geosynthetic clay liner.

5,350,256
INTERLOCKING RETAINING WALLS BLOCKS AND SYSTEM
James Hammer, Portland, Oreg., assignor to Westblock Products, Inc., Portland, Oreg.
Filed Nov. 26, 1991, Ser. No. 798,120
Int. Cl.[5] E02D *27/00, 29/00, 5/00*
U.S. Cl. 405—286 **19 Claims**



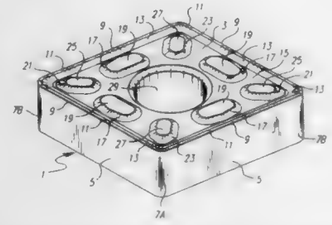
1. A modular building block system for building a retaining wall comprising a plurality of blocks each having a dovetail connector element for interlocking with a complementary dovetail element of another of the blocks, the blocks including:
a face block including a single face block dovetail element, the face block having an exposed face surface and an opposed rear surface including the dovetail element;
an elongated trunk block having a first trunk block dovetail element at a first end, and a second trunk block dovetail element at an opposite end, at least said first trunk block dovetail element being complementary in size and shape to the face block dovetail element for interlocking therewith; and
a tail block having opposed first and second surfaces, with first and second tail block dovetail elements formed one on each of the first and second surfaces, at least said first tail block dovetail element being complementary in size and shape to the second trunk block dovetail element and the second tail block dovetail element being complementary in size and shape to the first trunk block dovetail element, such that the blocks may be assembled to form subassemblies each having a trunk block attached by a dovetail element to the rear of the face block, the trunk block extending rearwardly from the rear of the face block, with a tail block attached by a dovetail element to the opposite end of the trunk block, and such that additional trunk blocks and tail blocks may be optionally attached by dovetail elements to extend rearwardly from the tail block to form elongated subassemblies of variable selectable lengths.

5,350,257
PNEUMATIC CONVEYOR FOR GRANULAR MATERIALS
Richard E. Newbolt, and Theodore L. Remmers, both of Sabetha, Kans., assignors to Mac Equipment, Inc., Sabetha, Kans.
Continuation of Ser. No. 946,664, Sep. 18, 1992, abandoned. This application Jan. 12, 1994, Ser. No. 180,573
Int. Cl.[5] B65G *53/40*
U.S. Cl. 406—75 **8 Claims**



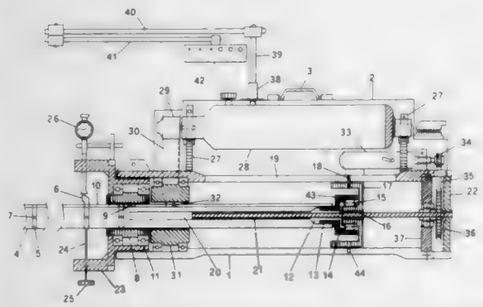
1. A pneumatic conveyor for granular, cylindrical, or flake material, said conveyor comprising:
a conduit having an inlet nozzle adapted to be connected to a source of entraining air, said conduit adapted to allow the material entrained in said air to pass therethrough;
a pressure vessel defining an interior cavity and having an inlet opening for receiving the material therethrough, a pressure valve operatively associated with said inlet opening and allowing a substantially airtight seal across said opening, and an outlet throat in communication with said conduit at a position downstream of said inlet nozzle; and
a metering device mounted within said cavity at a position interposed between said inlet opening and said outlet throat and providing a metered gravimetric flow of the material received from said inlet opening to said outlet throat, an outlet conduit of said metering device extending into, but being spaced from, said outlet throat by an outlet gap defining an open passage through which the material does not flow, said outlet gap being located intermediate at least a portion of a periphery of said outlet conduit of said metering device and said outlet throat, whereby said cavity of said vessel, and an interior and exterior of said metering device, are pressurized at a level at least substantially equal to that in said conduit.

5,350,258
CERAMIC CUTTING TOOL WITH CHIP CONTROL
Craig W. Beeghly, Raleigh, N.C.; Deepak P. Ahuja; Pankaj K. Mehrotra, both of Greensburg, Pa., and Kenneth L. Niebauer, Raleigh, N.C., assignors to Kennametal Inc., Latrobe, Pa.
Continuation-in-part of Ser. No. 629,760, Dec. 18, 1990, Pat. No. 5,141,367. This application Jun. 11, 1992, Ser. No. 897,226
The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.
Int. Cl.[5] B23B *27/16*
U.S. Cl. 407—119 **8 Claims**



1. A ceramic cutting insert for high speed machining comprising:
a cutting edge,
a rake face with a chip control groove surface,
a flank face,
and wherein said cutting edge is formed at the juncture of said flank face and said rake face;
said ceramic insert comprising 0.5 to less than 5 volume percent silicon carbide whiskers, 5 to 15 volume percent zirconia, a residue of a magnesia addition added in an amount of zero to 3 volume percent, all dispersed in an alumina matrix;
and wherein said ceramic insert has a fracture toughness of at least 4.0 MPam$^{\frac{1}{2}}$.

5,350,259
PORTABLE BORING MACHINE
Evangelista Russo, Contrada Uria, Via Margherita,, I-88050 Sellia Marina CZ, Italy, assignor to Evangelista Russo, Sella Marina and Rinaldo Siracusa, Catanzaro, both of Italy
Filed Oct. 6, 1992, Ser. No. 956,981
Claims priority, application Italy, Oct. 7, 1991, RM91A000755
Int. Cl.[5] B23B *45/00, 47/02*
U.S. Cl. 408—137 **17 Claims**



1. Portable boring machine comprising, a casing, integrally surmounted by a housing; a drilling spindle, supported on the inside of said casing in a rotatable and axially mobile manner and extending out of said casing through the open front end of the latter; at least one drilling tool which can be positioned in

one of a number of seats on said drilling spindle; first and second motor means arranged inside said housing, capable of imparting, by way of respective transmission means, a rotational movement and an axial translation movement to said drilling spindle, a centering bush integral in rotation with said spindle in correspondence with said open front end of said casing to support said spindle, a rotating body fixed in an immovable manner to the rear end of said spindle and axial displacement means engaged with said rotating body, said displacement means being provided with means to allow a translation movement and to prevent rotation thereof.

5,350,260

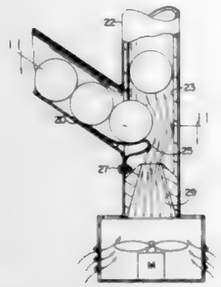
GOLF BALL HANDLING SYSTEM

Richard H. Hollrock, Simsbury, Conn., and J. Richard Hollrock, South Deerfield, Mass., assignors to Hollrock Engineering, Inc., Simsbury, Conn.

Division of Ser. No. 877,265, Apr. 28, 1992, Pat. No. 5,228,168, which is a continuation-in-part of Ser. No. 717,365, Jun. 19, 1991, abandoned. This application Apr. 13, 1993, Ser. No. 46,770

Int. Cl.[5] B65G *51/28*

U.S. Cl. 406—147 **7 Claims**



1. A golf ball transport system comprising: means for feeding golf balls into a load station, conduit means defining the load station for receiving said balls, said conduit means having an internal configuration of generally cylindrical shape to accommodate spherical golf balls,

a discharge station provided at the downstream end of said conduit means, said load station being provided adjacent an upstream end thereof,

air moving means for creating air flow inside said conduit means for moving the gold balls from the load station toward the discharge station,

means for disrupting the flow of air around the ball at said load station, said means for disrupting comprising a generally tubular sleeve provided inside the conduit means and having an inside diameter approximately equal to the outside diameter of the spherical balls being handled.

5,350,261

TWIST DRILL

Sueji Takaya; Kazuo Takasaki, and Kazuaki Tone, all of Gifu, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Feb. 26, 1993, Ser. No. 23,686

Claims priority, application Japan, Mar. 12, 1992, 4-053912; Mar. 18, 1992, 4-062672; Mar. 26, 1992, 4-068629

Int. Cl.[5] B23B *51/02*

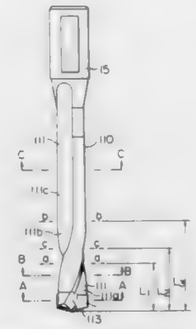
U.S. Cl. 408—229 **10 Claims**

1. A twist drill comprising:

a substantially cylindrical tool body having a rotational axis therethrough, a front portion, a rear portion, a front flank face, a plurality of web thicknesses, a plurality of flutes formed on an outer peripheral surface thereof and extending to the front flank face, and a land disposed between a pair of the flutes, said flute having a wall portion facing toward the rotational direction of the tool body; and

a cutting edge formed at an intersection between said wall portion for the flute and said front flank face;

said flute consisting of a spiral portion opening to the front flank face and a straight portion extending from the rear



end of said spiral portion toward the rear portion of the tool body and extend in parallel to the axis of said body, and the web thickness at said straight portion being less than the web thickness at said spiral portion.

5,350,262

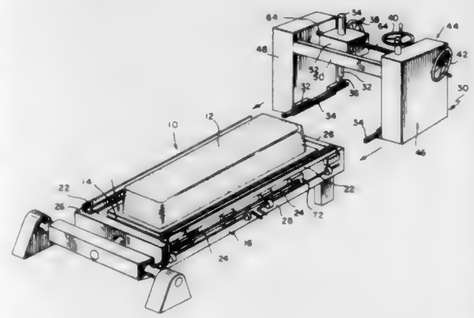
DOOR SEAL MACHINING DEVICE

Ronald E. Michaelis, Martinsville, and Oscar F. Selburg, Beech Grove, both of Ind., assignors to Citizens Gas & Coke Utility, Indianapolis, Ind.

Filed Feb. 12, 1993, Ser. No. 17,694

Int. Cl.[5] B23C *1/20*

U.S. Cl. 409—178 **6 Claims**



1. A device for preparing a coke oven door seal, the device comprising:

a longitudinally extending coke oven door having a center refractory portion and a door seal extending about the perimeter of the door to engage a door jamb on the coke oven, said seal enclosing the center refractory portion;

a maintenance frame adapted for holding the door in a stationary position;

milling means for machining the door seal, said milling means having a gantry coupled to the maintenance frame for positioning the milling means in a milling position relative to the door seal, said milling means being movable vertically, longitudinally, and transversely relative to the door to track the door seal about the perimeter of the door and to maintain the milling means in a milling position relative to the seal; and

drive means for movably coupling the milling means to the maintenance frame, the drive means including rail means for guiding the gantry and a rack coupled to the maintenance frame and bearing means for coupling the gantry to the rail means and a pinion coupled to the gantry for engaging the rack and moving the gantry along the rail means.

5,350,263

TOOLHEAD FOR CHIP-FORMING MACHINE TOOLS

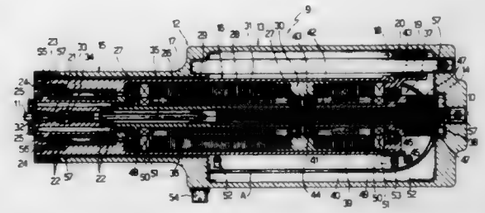
Giancarlo Fedeli, Foligno, Italy, assignor to Gifam S.r.l., Foligno, Italy

Filed Mar. 29, 1993, Ser. No. 38,525

Claims priority, application Italy, Mar. 30, 1992, PG92 A 0005

Int. Cl.[5] B23C *1/06;* **B23B** *47/06*

U.S. Cl. 409—231 **16 Claims**



1. A toolhead for chip-forming machine tools; said toolhead presenting an axis and comprising an outer casing; a sleeve coaxial with said axis and connected in axially-sliding, angularly-fixed manner to the casing; a spindle for supporting a tool and connected to said sleeve in axially-fixed manner and able to rotate about said axis; a first motor for rotating the spindle about said axis and in relation to the sleeve; a drive for moving said sleeve along said axis and in relation to the casing; and a second motor for activating said drive; the spindle, both said first and second motors and said drive being housed inside the sleeve in a substantially mutually aligned arrangement along said axis.

5,350,264

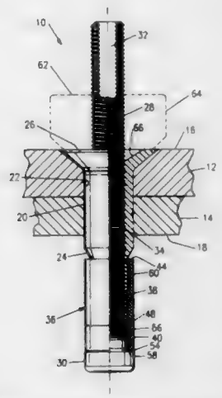
BLIND FASTENER WITH REINFORCED CONTAINMENT SLEEVE

Edgar L. Stencel, Alta Loma, Calif., assignor to Monogram Aerospace Fasteners, Inc., Los Angeles, Calif.

Filed Mar. 26, 1993, Ser. No. 37,923

Int. Cl.[5] F16B *13/06*

U.S. Cl. 411—55 **15 Claims**



1. A blind fastener for mounting in an opening in a workpiece having an outer surface and an inner surface, the fastener comprising:

(a) an generally tubular fastener body received within the opening in the workpiece, the fastener body having an inner end projecting inwardly beyond the inner surface of the workpiece and an enlarged body head for engagement with the outer surface of the workpiece;

(b) a cylindrical stem passing through the fastener body, the stem having an enlarged stem head spaced from the inner end of the fastener body;

(c) means cooperating between the stem and the fastener body for preventing loosening of the fastener after the fastener has been set; and

(d) a deformable sleeve mounted on the stem between the stem head and the inner end of the fastener body, wherein the deformable sleeve comprises:

a forming sleeve made of a relatively soft, deformable material surrounding the stem, wherein the forming sleeve includes a reduced diameter portion on its outer surface forming a neck extending from an outer shoulder of the forming sleeve to an inner end of the forming sleeve, and

a containment sleeve made of a relatively hard, nondeformable material surrounding the neck of the forming sleeve adjacent to the stem head, wherein the containment sleeve has an outer end in abutment with the outer shoulder of the forming sleeve, such that axial movement of the stem outwardly through the fastener body deforms the forming sleeve to a fully set condition in overlying contact with the inner surface of the workpiece, with the containment sleeve remaining substantially undeformed.

5,350,265

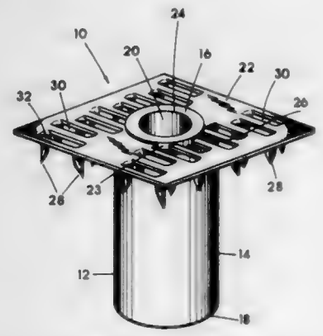
FITTING FOR BOLTED WOOD MEMBERS

David M. Kinner, P.O. Box 1502, Red Bluff, Calif. 96080

Filed Nov. 1, 1993, Ser. No. 144,323

Int. Cl.[5] F16B *39/24, 43/02;* **E04C** *3/02*

U.S. Cl. 411—160 **2 Claims**



1. A lateral load distributing fitting for use in combination with a bolt to connect a wood member to another member so as to provide substantially greater surface area around the bolt for the wood member to abut against during lateral pulling of the wood member transversely relative to the bolt and thereby allow for use of a smaller bolt absent a reduction in connecting strengths, said lateral load distributing fitting comprising,

an elongated rigid tubular member having a top end and an oppositely disposed bottom end, said tubular member defined by an annular wall having substantial thickness rendering said tubular member in diameter at least one-third larger than a central bore extending through said tubular member from said bottom end through said top end, said central bore being absent threads so as to allow a bolt shank of slightly less diameter relative to said central bore to be slipped through said central bore,

a nail plate having a bolt hole therethrough, said nail plate securely affixed to the top end of said tubular member with the bolt hole of said nail plate aligned with the central bore of said tubular member, said nail plate having a plurality of rigid spikes extending from an underside of

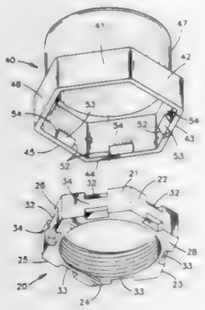
said nail plate in the direction of said bottom end of said tubular member, said plurality of rigid spikes being sufficiently rigid so as to allow driving of said spikes into the wood member with said top end of said tubular member facing outward away from the wood member and with said tubular member positioned within an aperture completely through the wood member, said tubular member extending from said underside of said nail plate a distance about equal in length to the aperture through the wood member so as to provide substantially greater surface area around a bolt when positioned within said central bore for the wood member to abut against during lateral pulling of the wood member transversely relative to the bolt, said nail plate with said rigid spikes providing further means for distributing lateral loads between and around the wood member and the bolt.

5,350,266

PLASTIC CAPPED NUT

Carl R. Espey, Fairview Park, and Donald A. Fischer, Strongsville, both of Ohio, assignors to Creco Corporation, Seville, Ohio

Filed Oct. 22, 1993, Ser. No. 141,481
Int. Cl.[5] F16B *37/14*
U.S. Cl. 411—431 **6 Claims**



1. A nut and cap assembly comprising:

a nut having a central axis, an axial opening with internal threads and external side faces symmetrically located about said axis and parallel thereto, said faces being intersected by a central plane perpendicular to said axis, each of said faces having first and second axially extending slots formed therein on opposite sides of said central plane and symmetrical therewith, and being separated at their inner ends by a bridge portion in the respective face, and

a cap for said nut formed of relatively stiff resilient plastic material and having a socket formed therein with interior side faces corresponding to the external side faces of said nut, whereby said cap and nut may be assembled with said nut received within said socket of said cap,

at least two of said interior side faces of said socket having a projection extending radially inward therefrom, said projection having a ramp portion facing outwardly relative to said socket,

said projection being located generally in alignment with said first slot of the respective side face of said nut when said cap and nut are oriented for assembly,

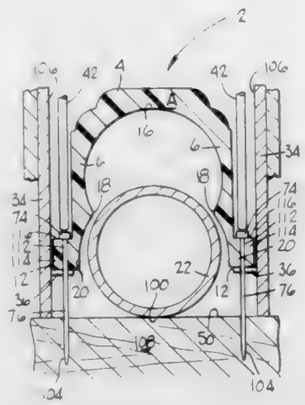
whereby during assembly of said cap and nut said projection is initially moved axially within the respective first slot and when said ramp engages said respective bridge portion of said nut, said projection is urged radially outward to flex said socket sufficiently that said projection moves axially over and beyond said bridge portion and locks in said second slot to secure said cap to said nut.

5,350,267

APPARATUS FOR MOUNTING RELATIVELY RIGID OBJECTS

Peter G. Mangone, Jr., 28600 Buchanan Dr., Evergreen, Colo. 80439

Continuation-in-part of Ser. No. 776,979, Oct. 15, 1991, abandoned. This application Jan. 7, 1993, Ser. No. 1,348
Int. Cl.[5] F16B *15/08;* **B25C** *5/02*
U.S. Cl. 411—442 **20 Claims**



2. Apparatus for use in attaching an elongated relatively rigid cylindrical object to a support surface so that the elongated relatively rigid cylindrical object is spaced from the support surface of a support member comprising:

a plurality of individual mounting devices mounted in abutting relationship to provide an elongated row of mounting devices having a longitudinal axis extending therethrough;

each of said mounting devices having a central body portion and spaced apart leg portions having end surfaces;

each of said mounting devices having at least one inner surface;

said at least one inner surface having a first portion having an arcuate section having an arcuate extent greater than one hundred and eighty degrees and having spaced apart terminal end portions so that a portion of said elongated relatively rigid cylindrical object may be retained therein;

said at least one inner surface having second portions located between said spaced apart terminal end portions and said end surfaces;

tool means for moving one of said mounting devices over said elongated relatively rigid cylindrical object while said elongated relatively rigid cylindrical object is in contact with said support surface so that movement of said elongated relatively rigid cylindrical object in the same direction as said mounting device is prevented;

restraining means for restraining pivotal movement of said leg portions relative to said central body portion when said one of said mounting devices is moved over said elongated relatively rigid cylindrical object;

force applying means for moving said elongated relatively rigid cylindrical object in a direction opposite to the direction of movement of said one of said mounting devices first to move said portion of said elongated relatively rigid cylindrical object into said first portion to be retained therein;

attaching means for attaching said one of said mounting devices to said support surface with said end surfaces in contact with said support surface; and

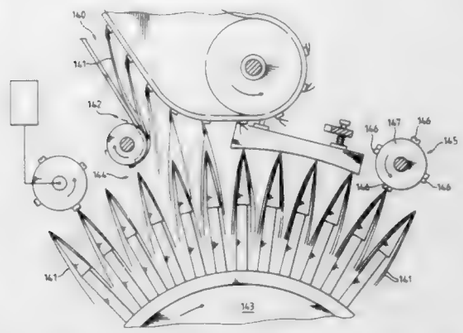
said arcuate section being spaced from said end surfaces so that said portion of said elongated relatively rigid object in said arcuate section is spaced from said support surface.

5,350,268

METHOD FOR JOINING PAPER LAYERS

Erwin Müller, Kalchofenstrasse 25, 8635 Oberdürnten, Switzerland

Continuation-in-part of Ser. No. 489,970, Mar. 7, 1990, abandoned. This application Dec. 24, 1991, Ser. No. 813,100
Claims priority, application Switzerland, Mar. 30, 1989, 1156/89
Int. Cl.[5] B24C *11/00*
U.S. Cl. 412—1 **6 Claims**



1. A method for binding together layers of sheet material comprising the steps of

conveying a stream of sheets of material traveling along a first path,

providing a second path for the sheets of material, the second path continuously taking over the sheets of material delivered by the first path,

carrying a plurality of binding means along a third closed path, the third path being at least partially parallel with the second path,

binding sheets of the material together using ultrasonic energy while the sheets are moving along the second path, and

delivering the bound material to a fourth path which received material substantially continuously from the second path.

5,350,269

WORK PICK-UP APPARATUS

Yusaku Azuma, Yokohama; Katsumi Ishihara, Tokyo, and Masaru Shibata, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 499,730, Mar. 27, 1990, abandoned. This application Jan. 15, 1992, Ser. No. 820,808
Claims priority, application Japan, Mar. 27, 1989, 1-71895; Mar. 8, 1990, 2-55032
Int. Cl.[5] B65B *69/00;* **B25J** *19/04;* **G01B** *11/03*
U.S. Cl. 414—416 **8 Claims**

1. A work pick-up apparatus which picks up an object work out of a plurality of works accommodated in units of a container case having a plurality of cells, each cell having a predetermined size and a predetermined location expressed in a coordinate system associated with said work pick-up apparatus, said work pick-up apparatus comprising:

visual sensor means for obtaining an image of said case;

memory means for storing shape characteristic information representative of the shape characteristics of said object work;

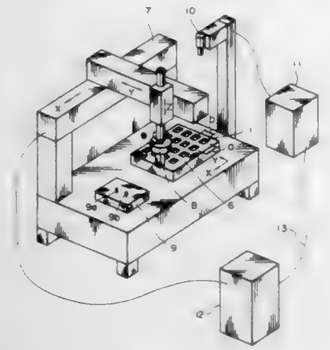
input means for inputting work position information representing a position of an object work to be picked up within said case, said work position information being expressed in terms of the coordinate system associated with said work pick-up apparatus; and

measuring means for determining a position of said work to be picked up in terms of said coordinate system associated with said pick-up apparatus,

said measuring means comprising:

first conversion means for converting the work position information expressed in the coordinate system associated with the apparatus into a work position expressed in terms of a coordinate system associated with said visual sensor means;

area setting means for setting an image area around the work position expressed in terms of the coordinate system associated with said visual sensor means, and for obtaining image information of the set image area, the image area being selected as incrementally larger than the size of the work accommodating unit of said container case;



processing means for subjecting an obtained work image to pattern recognition processing, and for searching an image having shape characteristics similar to those of an image of said object work from a processed image, the search being performed using shape characteristics of the work stored in the memory means;

computing means for computing a position of a searched image; and

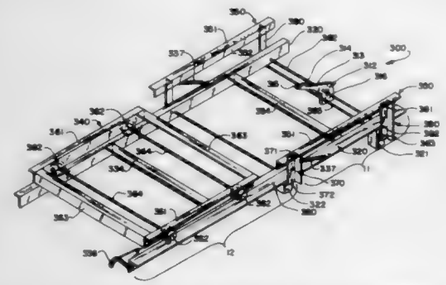
second conversion means for converting said position of said searched image expressed in terms of the coordinate system associated with said visual sensor means into a coordinate position expressed in terms of the coordinate system associated with the apparatus.

5,350,270

PICKFACE CONVEYOR

David W. Stallard, Grand Rapids, and John P. Conner, Grandville, both of Mich., assignors to Qube, Inc., Grand Rapids, Mich.

Filed Oct. 9, 1991, Ser. No. 774,070
Int. Cl.[5] B65G *1/08*
U.S. Cl. 414—276 **24 Claims**



18. A device for advancing loads from a first station to a second station, comprising:

an inclined track extending from the first station to the second station;

a trolley movable on said track between said first and second stations under the force of gravity;

a first load support mounted on said track at the first station by a first linkage pivotally joined at a first pivot point to said first load support and at a second pivot point to said track, said first linkage movable to shift said first load support between first and second vertical positions relative to said track, said first load support disposed above said trolley in said first vertical position and disposed below said trolley in said second vertical position; and

a first and second activating means for shifting said first and second pivot points fore and aft relative to one another, said first activating means configured for shifting said first load support into said first vertical position and said second activating means configured for shifting said first load support into said second vertical position and thereby transfer a load supported on said first load support onto said trolley.

5,350,271

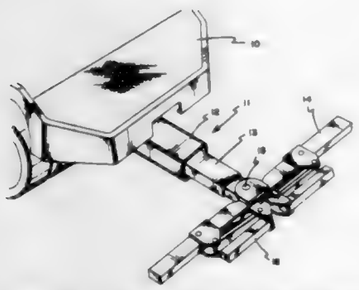
AUTOMOBILE LIFTING AND TOWING EQUIPMENT

Peter J. Weller, 2006 Curtis Ave., Redondo Beach, Calif. 90278

Filed Jan. 2, 1992, Ser. No. 816,177

Int. Cl.[5] B60P *3/12*

U.S. Cl. 414—563 **18 Claims**



18. An automotive vehicle lifting and towing apparatus for a tow truck having a boom and a cross-arm pivotally connected to the boom, the apparatus comprising:

(a) one or more wheel retainers for lifting the vehicle, the wheel retainers being coupled to the cross-arm using link means attached at pivot points on both the wheel retainers and the cross-arm by pins about which the link means may rotate; and

(b) means for extending the wheel retainers by rotating the link means about the pivot points, so that the wheel retainers are prevented from entering a space occupied by the vehicle's tires, wherein the wheel retainers when extended are substantially parallel to the cross-arm and positioned behind the vehicle's tires at a distance from the cross-arm so that the tires are retained therebetween, and for retracting the wheel retainers by rotating the link means about the pivot points, so that the wheel retainers when retracted are in a folded position substantially parallel to and nestled compactly against and adjacent the cross-arm, and wherein the wheel retainers are in substantially the same parallel orientation with respect to the cross-arm when in both the extended and retracted positions.

5,350,272

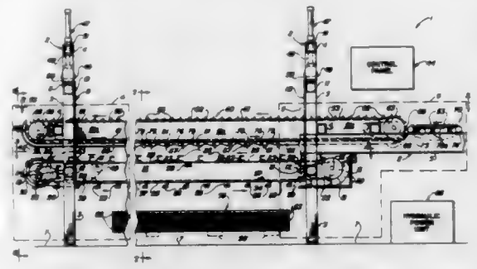
AUTOMATIC STICK LAYING APPARATUS

William P. Bowlin, 9372 Bowlin Dr., Shreveport, La. 71129

Continuation-in-part of Ser. No. 839,478, Feb. 19, 1992, Pat. No. 5,263,812, which is a continuation-in-part of Ser. No. 733,665, Jul. 22, 1991, Pat. No. 5,246,333. This application Oct. 19, 1992, Ser. No. 962,902

Int. Cl.[5] B65G *57/18*

U.S. Cl. 414—789.5 **26 Claims**



23. A method of successively positioning spacing sticks in a selected spaced relationship, on tiers of lumber, comprising the steps of accumulating spacing sticks on spaced, oppositely-disposed pairs of accumulator chain cleats provided on a pair of spaced accumulator chains; operating a drop gate positioned beneath said accumulator chains and delivering the spacing sticks from said accumulator chain cleats to spaced, oppositely-disposed pairs of positioner chain cleats provided on a pair of positioner chains disposed over the lumber and beneath said drop gate and said accumulator chains; positioning the spacing sticks above the lumber along a path of travel by rotation of the positioner chains; lowering said positioner chains and said positioner chain cleats over the lumber; operating pivoting diverter assemblies from retracted mode into extended mode and repositioning the spacing sticks on selected ones of the positioner chain cleats; operating pivoting stick retaining assemblies from retracted mode into extended mode and retaining assemblies from retracted mode into extended mode and retaining the spacing sticks on said positioner chain cleats for a selected period of time; sequentially advancing said positioner chains and said positioner chain cleats for displacing the spacing sticks over the lumber; operating the diverter assemblies and stick retaining assemblies from extended mode into retracted mode, respectively; and raising said positioner chains and said positioner chain cleats.

5,350,273

WIND ENERGY COLLECTION SYSTEM

Francis N. Hector, Sr., 101 South Ave., Box 23, Unit 701, Attleboro, Mass. 02703, and Francis N. Hector, Jr., 905 S. Ridge Dr., Apt. #203, Delray Beach, Fla. 33444

Filed Aug. 23, 1993, Ser. No. 110,220

Int. Cl.[5] F03B *15/06*

U.S. Cl. 415—4.1 **5 Claims**

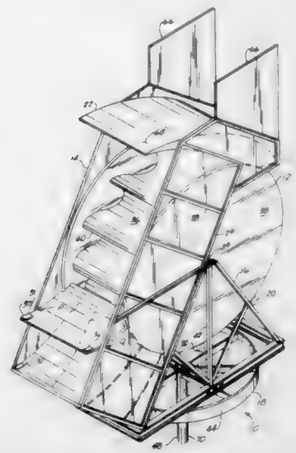
1. A wind-driven apparatus for generating rotational mechanical energy from a wind flow stream comprising:

(a) a rotatable wind collector having a first axis of rotation, an entrance, an exit, and a plurality of elongated curved vanes located about its outer circumference and extending generally parallel to said first axis of rotation;

(b) framework means for supporting said wind collector in an elevated rotatable position;

(c) turntable means supporting said framework above the ground for turning or positioning said wind collector as desired, said turntable means incorporating covered rolling means comprising a track with casters rolling thereon for pivoting said wind collector about a second axis of rotation, said first and said second axes of rotation being generally orthogonal with respect to each other;

(d) shroud means surrounding said entrance to said rotatable wind collector for directing wind forces onto said wind collector, said shroud means comprising pivotable upper and lower shroud members, said upper and said lower shrouds each being curved and converging towards said entrance to said wind collector, said upper and lower



shrouds comprising balance weights to restrain them in place with respect to said wind collector; and,

(e) foil means located along said exit of said wind collector for creating a negative pressure behind said wind collector.

5,350,274

SELF-CLEANING SIDE CHANNEL MACHINE HAVING AT LEAST ONE IMPELLER ROTATABLY MOUNTED IN THE HOUSING OF THE MACHINE

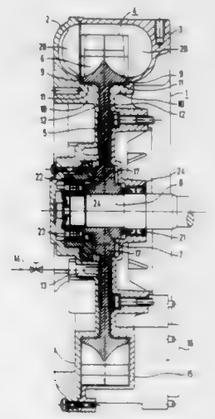
Norbert Schmid, and Norbert Aust, both of Bad Neustadt, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 2, 1993, Ser. No. 86,000

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1992, 4221691

Int. Cl.[5] F01D *1/12*

U.S. Cl. 415—55.1 **14 Claims**



1. A self-cleaning side channel machine comprising:

a) a housing having an inlet port and an outlet port:

b) at least one impeller being arranged rotatably in the housing of the machine, wherein said impeller comprises:

(i) a disk-shaped hub part; and

(ii) a blade ring being mounted on a periphery of the disk-shaped hub part; and

(iii) a hub bore being disposed on the hub part, whereby said impeller is mountable on a shaft of a drive motor by means of said hub bore;

c) a side channel being formed at least one side of the blade ring in the housing and extending circumferentially between the inlet port and the outlet port of the housing;

d) a plurality of sealing gaps being disposed on both sides of the housing at least in a region of the hub part that is radially inwardly contiguous to the blade ring between said hub part and the housing;

e) a supply line being disposed in the region between the hub bore and the blade ring on the housing of the side channel machine; and

f) a flushing fluid being fed via the supply line, whereby the flushing fluid flows via the sealing gaps into the side channel and from the side channel at least via the outlet port out of the side channel machine whereby said flushing fluid causes said self-cleaning.

11. A method for cleaning a side channel machine, which machine has an impeller arranged rotatably in a housing of the machine, which impeller includes a disk-shaped hub part and a blade ring mounted on a periphery of the disk shaped hub part, and which impeller is mountable on a shaft of a drive motor by means of a hub bore provided on the hub part, said method comprising the steps of:

a) providing a side channel at least on one side of the blade ring in the housing which side channel extends circumferentially between an inlet port and an outlet port of the housing;

b) providing a plurality of sealing gaps on both sides of the blade ring at least in a region of the hub part that is radially inwardly contiguous to the blade ring between said hub part and the housing;

c) providing a supply line in a region between the hub bore and the blade ring on the housing of the side channel machine;

d) feeding a flushing fluid into the side channel machine via the supply line;

e) guiding the flushing fluid via the sealing gaps into the side channel; and

f) guiding the flushing fluid from the side channel out of the side channel machine via an outlet port in the housing whereby said flushing fluid causes said self-cleaning.

5,350,275

TURBOMOLECULAR PUMP HAVING VANES WITH CERAMIC AND METALLIC SURFACES

Hajime Ishimaru, Tsukuba, Japan, assignor to Zaidan Houjin Shinku Kagaku Kenkyujo, Japan

Filed Jun. 3, 1993, Ser. No. 71,571

Claims priority, application Japan, Jun. 5, 1992, 4-171768

Int. Cl.[5] F01D *1/36*

U.S. Cl. 415—90 **12 Claims**

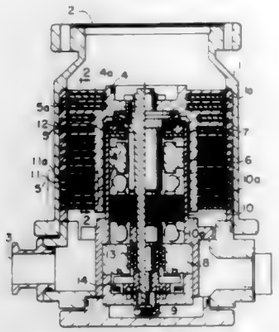
1. A turbomolecular pump comprising:

a casing having an inlet port at one end portion and an outlet port at another end portion,

a rotor having rotor vanes in multi-steps and being supported rotatably within said casing,

a stator having stator vanes in multi-steps and inserted between said rotor vanes with very small gaps therebetween and being fixed on an inner wall of said casing, and

a motor extending coaxially with said rotor for rotationally driving said rotor;



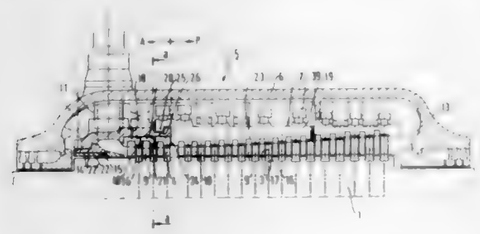
wherein both said rotor vanes and said stator vanes have ceramic surfaces at the steps near said outlet port, and have metallic surfaces at all the other steps.

5,350,276

HIGH PRESSURE MODULES OF DRUM ROTOR TURBINES WITH ADMISSION OF STEAM HAVING VERY HIGH CHARACTERISTICS

Jean-Pierre Gros, Villemomble, France, assignor to GEC Alsthom Electromecanique SA, Paris, France

Filed Apr. 16, 1993, Ser. No. 47,192
Claims priority, application France, Apr. 17, 1992, 92 04812
Int. Cl.[5] F01D *1/04, 5/06*
U.S. Cl. 415—168.4 **10 Claims**



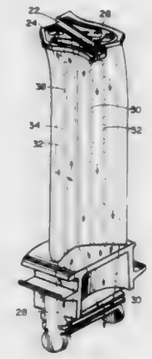
1. A high pressure module for a multistage impulse turbine, said module including an admission for steam having very high temperature and pressure, an exhaust for said steam, a rotor supporting moving wheels constituted by moving blades, a stator including an external body and an internal body supporting stationary stator portions comprising stationary vanes co-operating with the moving wheels to constitute multiple turbine stages, said internal body being provided at an admission end with a baffle carrier surrounding the rotor and independent of the internal body, said internal body comprising an anterior body disposed at the admission end of the internal body, coupled to a posterior body disposed at an exhaust end; said anterior body being a single piece and surrounding a portion of the rotor, said rotor being a drum rotor situated in a zone of the anterior body and provided with grooves, said moving blades comprising roots, said roots of said moving blades being fixed in said grooves, said grooves of the drum rotor situated in the zone of the anterior body are longitudinal grooves, and the moving wheels being situated in the zone of the anterior body and being separated by spacers having the same shape as the roots of the blades, and said spacers being slid into the longitudinal grooves and facing said stationary vanes constituted by single-piece diaphragms, and said roots of said moving blades having a complementary shape to that of said longitudinal grooves.

5,350,277

CLOSED-CIRCUIT STEAM-COOLED BUCKET WITH INTEGRALLY COOLED SHROUD FOR GAS TURBINES AND METHODS OF STEAM-COOLING THE BUCKETS AND SHROUDS

Ariel C. P. Jacala, and R. Paul Chiu, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 20, 1992, Ser. No. 979,247
Int. Cl.[5] F01D *5/18*
U.S. Cl. 416—90 R **14 Claims**



1. A closed-circuit steam-cooling system for turbine buckets comprising:

a generally elongated radially extending turbine bucket body having a surface in the form of an airfoil, root and tip portions, generally radially extending leading and trailing edges, and a plurality of generally radially extending interior passages, including a generally radially outwardly directed steam supply passage for flowing steam from said root portion along said body to said tip portion and a generally radially inwardly directed steam return passage for flowing steam from said tip portion along said body to said root portion for steam-cooling said bucket body, said steam supply passage extending along said body adjacent said leading edge and said steam return passage extending along said body between said steam supply passage and said trailing edge;

a shroud carried by said tip portion of said bucket body and having a cross-over passage in communication with said steam supply passage and said steam return passage for turning the steam from generally radially outwardly directed flow along said steam supply passage to generally radially inwardly directed flow along said steam return passage, said shroud including a shroud seal tip projecting generally radially outwardly of said shroud leaving first and second body portions of said shroud on opposites sides of said seal tip, said steam supply passage opening into said cross-over passage in said first body portion on one side of said seal tip, said steam return passage opening into said cross-over passage in said second body portion on the opposite side of said seal tip.

5,350,278

JOINING MEANS FOR ROTOR DISCS

Joseph C. Burge, Palm Beach Gardens, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

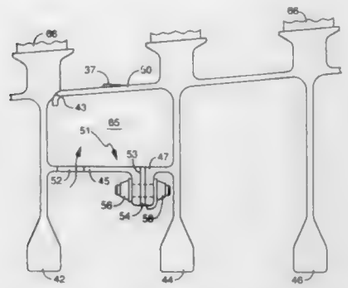
Filed Jun. 28, 1993, Ser. No. 85,991
Int. Cl.[5] F01D *5/06*
U.S. Cl. 416—198 A **14 Claims**

1. An assembly of rotor discs at least one of which is removably mounted to another of said discs, away from potential fatigue points in said discs comprising:

a) at least a pair of spaced joinable discs positioned to rotate about a common axis,

b) a spacer arm extending between said discs in contact therewith, said spacer arm contacting a piloted joint in one of said discs under axial compression,

c) each disc having a flange which extends between said discs toward the flange of said other disc and



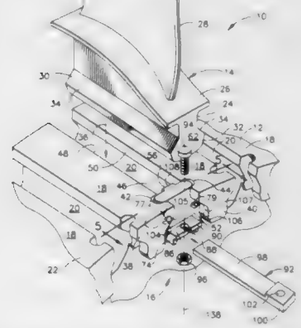
d) securing means to removably join said flanges under axial tension in a pre-loaded redundant support junction to also join said discs at a junction removed from said discs.

5,350,279

GAS TURBINE ENGINE BLADE RETAINER SUB-ASSEMBLY

Ian F. Prentice, and Jerome A. Juenger, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 2, 1993, Ser. No. 85,356
Int. Cl.[5] F01D *5/32*
U.S. Cl. 416—220 R **10 Claims**



1. In a gas turbine engine having an annular disk which is rotatable about a longitudinal axis of the engine and at least one radially extending blade mounted on the disk, the disk including a plurality of circumferentially alternating posts and dovetail slots disposed about a rim of the disk, the posts and slots extending axially across the rim, wherein a dovetail portion of the at least one blade is received by one of the dovetail slots, the dovetail portion including first and second lateral surfaces and an axially forward facing surface extending between the lateral surfaces, a blade retaining sub-assembly comprising:

a) first and second circumferentially spaced lugs extending axially forward from circumferentially adjacent ones of the disk posts such that said first and second lugs are disposed axially forward of, and circumferentially adjacent to, respective ones of the lateral surfaces of the dovetail portion of the at least one blade; and

b) means formed in each of said first and second lugs for receiving a retainer plate, said retainer plate preventing the at least one blade from migrating from the corresponding dovetail slot in an axially forward direction;

c) said retainer plate including a body section and a contoured platform;

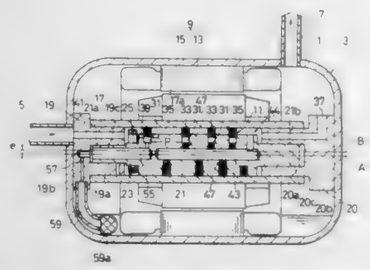
d) said contoured platform being disposed about a circumferentially central portion of said body section and extending axially aftward from an aft surface of said body section such that said contoured platform is in confronting relationship with the axially forward facing surface of the dovetail portion of the at least one blade, said contoured platform including a periphery which is predeterminedly shaped and positioned so as to enhance a load carrying capability of said retainer plate and said first and second lugs.

5,350,280

FLUID COMPRESSOR

Toshiya Yajima; Takuya Hirayama; Hirotsugu Sakata; Makoto Hayano; Masayuki Okuda; Naoya Morozumi; Takeshi Kumazawa, and Teruo Kobuna, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 12, 1992, Ser. No. 897,690
Claims priority, application Japan, Jun. 12, 1991, 3-140089; Oct. 16, 1991, 3-267609
Int. Cl.[5] F04B *49/00*
U.S. Cl. 417—310 **7 Claims**



1. A fluid compressor for sucking, compressing, and discharging a fluid, comprising:

(a) a cylinder having a suction port and a discharge port;

(b) a cylindrical rotary member eccentrically disposed in and along said cylinder so that the periphery thereof may partly be in contact with the inner face of said cylinder, said cylinder and rotary member being relatively turntable;

(c) a helical groove formed around said rotary member at pitches that gradually reduce from the suction port side toward the discharge port side;

(d) a helical blade movably fitted in said helical groove, the periphery of said blade being in contact with the inner face of said cylinder, said blade defining a plurality of work chambers between the inner face of said cylinder and the peripheral face of said rotary member;

(e) drive means for relatively turning said rotary member and cylinder so that the fluid is drawn into the work chambers through the suction port, successively compressed and conveyed through the work chambers toward the discharge port, and discharged from the discharge port;

(f) a one-way communication path connecting the bottom of said helical groove to the discharge port of said cylinder; and

(g) control valve means for releasing pressure from the work chambers if the pressure in the work chambers exceeds a predetermined value during a compressing process;

wherein said one-way communication path is formed in said rotary member; and

wherein part of said one-way communication path forms a path extending in the same direction as said groove, and said control valve means includes a piston rod disposed in the path, the piston rod being pushed to the bottom of said blade and having an undercut for releasing pressure from

the work chambers only when the pressure exceeds the predetermined value.

5,350,281

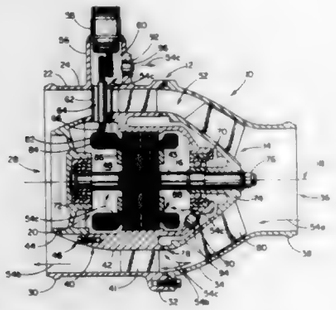
FAN WITH SECONDARY AIR PASSAGE FOR MOTOR COOLING

Behzad Hagshenas, San Diego, Calif., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jan. 26, 1993, Ser. No. 9,187

Int. Cl.[5] F04B *39/06*

U.S. Cl. 417—371 **16 Claims**



1. A fan comprising:

a housing including,

an outer wall defining an inlet and an outlet of the fan, and a primary passage providing fluid communication between the inlet to the outlet;

a motor enclosure disposed within the primary passage and defining a motor compartment, said motor enclosure further including a port extending through the motor enclosure and providing fluid communication between the primary passage and the motor compartment,

a conduit connecting the motor enclosure to the outer wall, and providing fluid communication between the motor compartment and ambient air surrounding the outer wall of the housing opposite the primary passage,

said port and conduit in combination with the motor enclosure thereby defining a secondary passage providing fluid communication between the primary passage and the ambient air surrounding the outer wall of the housing;

a fan impeller for creating a flow of air from the inlet through the primary passage to the outlet, and from the inlet through the primary and secondary passages in combination to the ambient air surrounding the outer wall of the housing; and

a motor mounted within the motor compartment and operatively connected to drive the fan impeller;

said secondary passage thereby allowing said impeller to provide a flow of air for cooling said motor should the flow of air through the primary passage become blocked or restricted.

5,350,282

PNEUMATIC TIN SUCKER

Chi-Hung Ting, 79, Alley 2, Sheng-Li St. Yung-Kang Shiang, Tainan Shien, Taiwan

Filed May 10, 1993, Ser. No. 59,258

Int. Cl.[5] F04B *17/00*

U.S. Cl. 417—402 **2 Claims**

1. A pneumatic tin sucker comprising:

a nozzle with an inverted cone shape, having a hollow interior with a tin sucking chamber and a passageway extending from a small end into the tin sucking chamber:

a connecting tube having a lower end which screws into an upper end of the nozzle, the connecting tube having a hollow interior communicating with the tin sucking chamber of the nozzle, and further including an upper end wall and a hole in the upper end wall for a piston rod to pass through;

a control tube having an lower end which screws into an upper end of the connecting tube, a separating wall in an intermediate portion to divide its hollow interior into an upper chamber and a lower inlet chamber, and a projection on an outer lower surface;

a valve member secured in the projection of the control tube and having a stop valve therein;

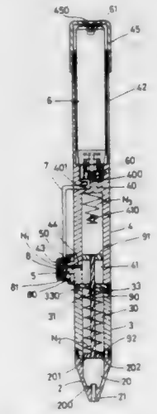
an air tank for storing compressed air therein, having an air valve at a lower end and a filling hole in an upper end, and being deposited in said upper chamber of the control tube;

a push button secured by a ring around the projection of the control tube on an outer wall of the control tube, and further having a hammer head therein;

an actuating unit including a piston rod extending in the inlet chamber of the control tube and the interior of the connecting tube, an upper piston in the inlet chamber connected with an upper end of the piston rod, and a lower piston in the connecting tube connected with a lower end of the piston rod;

a cap of a tubular shape having an inserting hole in an upper end, and screwing onto the upper end of the control tube;

a coil spring deposited around the piston rod and between the upper end wall of the connecting tube and the lower



piston, and a helical spring fixed on the separating wall of the control tube; wherein

said tin sucking chamber has two opposing projecting stop edges at an upper end and a tin storing recess at a lower end, and there is an inlet hole through the lower wall of said control tube, said projection on said control tube having a cell for depositing said valve member therein, said cell communicating with said inlet hole, said separating wall in the control tube having an upper projection and an air passageway connected with an air tube, said air tube being controlled by said valve member and in communicating with said inlet hole, said inlet chamber having several exhausting holes, said air valve of the air tank is urged by the upper projection on said separating wall to allow the compressed air to flow through the air tube, said compressed air being kept in balance with the air passageway and the air tube and checked by the valve member, said push button being pressed to actuate the hammer head and thus the stop valve to permit compresses air to flow through the inlet hole into the inlet chamber, said two pistons being pushed up to cause a strong sucking force in said tin sucking chamber so that tin scrap can be sucked together with air through the passageway into the tin sucking chamber where it is received in said tin storing recess, said two pistons then being pushed down until said

lower piston is stopped by said two stop edges by the two springs after said pistons have reached an upper dead point.

5,350,283

CLEAN PUMP

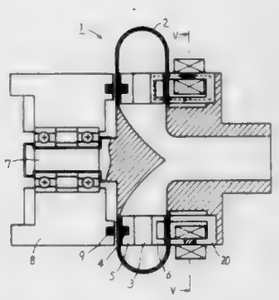
Tsugito Nakazeki, and Hiroyoshi Ito, both of Shizuoka, Japan, assignors to NTN Corporation, Osaka, Japan

Filed Nov. 25, 1992, Ser. No. 981,684

Claims priority, application Japan, Dec. 4, 1991, 3-320420; Jun. 26, 1992, 4-169553

Int. Cl.[5] F04B *17/00*

U.S. Cl. 417—423.7 **7 Claims**



1. A clean pump comprising:

a case member,

a ring-shaped impeller rotatable about a rotational axis in said case member,

a rotatable rotor provided opposed to one side of said impeller with said case member provided therebetween,

passive radial magnetic bearings one provided at said one side of said impeller and the other provided at a side of said rotor opposed to said impeller for radially supporting said impeller,

an active magnetic bearing including a plurality of combined electromagnets and a permanent magnet disposed opposed to the other side of said impeller with said case member provided therebetween and an electromagnet, for controlling the rotation of said impeller about an axis perpendicular to said rotational axis, and

controlling means for zero-power controlling said active magnetic bearing.

5,350,284

PERISTALTIC PUMP

Werner Wehling, Dorsten, Fed. Rep. of Germany, assignor to Allweiler AG, Radolfzell, Fed. Rep. of Germany

Filed May 10, 1993, Ser. No. 60,032

Claims priority, application Fed. Rep. of Germany, May 11, 1992, 4214916

Int. Cl.[5] F04B *43/08*

U.S. Cl. 417—474 **10 Claims**

1. A peristaltic pump which comprises:

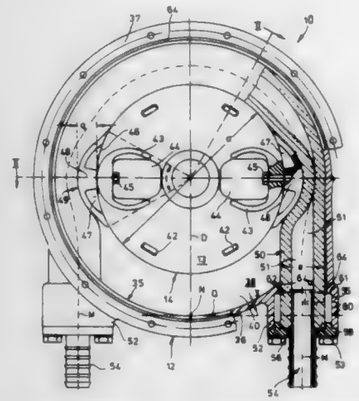
a pump tube for conveying material with elastically deformable walls and connection ends, wherein the cross-section of the pump tube is partially varied during the conveying operation with a reduction in the internal volume thereof;

a pump housing for the pump tube having wall connections thereof with center lines, and having a pump housing wall with an inside surface thereof and an inside diameter, wherein the pump tube is arranged in the pump housing and is fitted in the pump housing with a portion thereof which is curved in a part circular configuration, and wherein the pump tube ends are accessible from the outside of the pump housing;

a pump shaft and a pump rotor within the pump housing, wherein the curved portion of the pump tube is curved around the shaft at a radial spacing from the shaft;

wherein the tube ends of the pump tube form a U-shape in plan view and are fixed in the region of the wall connections of the pump housing;

wherein the tube connection ends of the pump tube are clamped in the wall connection of the pump housing between 1) the inside diameter d of the pump housing and 2) a tangent (Q) to the inside surface of the pump housing



wall through the intersection thereof with the pump diameter (D) which is approximately parallel to the center lines of the pump housing wall connections; and

at least one packing ring of elastic material clamped between the wall connection of the pump housing and the pump tube.

5,350,285

AGGREGATE FOR FEEDING FUEL FROM SUPPLY TANK TO INTERNAL COMBUSTION ENGINE OF MOTOR VEHICLE

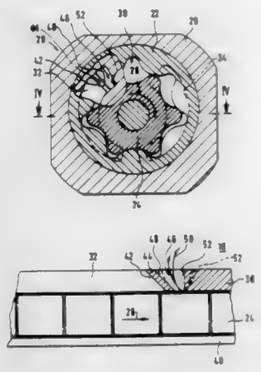
Uwe Liskow, Kornwestheim; Jochen Thoennissen, Stuttgart; Uwe Loistl, Unterriexingen, and Oliver Wahl, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 23, 1993, Ser. No. 97,069

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1992, 4240592

Int. Cl.[5] F04C *2/10, 15/00;* **F02M** *37/04, 37/20*

U.S. Cl. 418—15 **6 Claims**



1. An aggregate for feeding fuel from a supply tank to the internal combustion engine of a motor vehicle, comprising means forming a pump chamber with a suction opening for receiving fuel and a pressure opening for supplying a fuel, said means including chamber end walls; a feeding element rotating

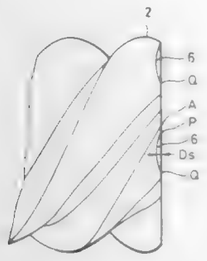
in said pump chamber and feeding fuel from said suction opening to said pressure opening, at least one of said chamber end walls in a region of a sealing surface formed between an end surface of said feeding element and one of said chamber walls being provided with an opening which leads to an unloading space, said opening as considered in a rotary direction of said feeding element being located near one edge which limits said suction opening, said opening having a radial extension which is at least equal to a radial extension of said suction opening, said opening having an edge surface facing in the rotary direction of said feeding element and inclined so that with an increasing distance from said feeding element in direction of a rotary axis of said feeding element it approaches said edge of said suction opening.

5,350,286

LIQUID INJECTION TYPE SCREW COMPRESSOR WITH LUBRICANT RELIEF CHAMBER

Takayuki Kisi, Ibaragi, and Keisuke Kasahara, Tokyo, both of Japan, assignors to Kabushiki Kaisha Naekawa Seisakusho, Tokyo, Japan

Filed Jul. 29, 1992, Ser. No. 921,910
Claims priority, application Japan, Nov. 30, 1990, 2-130135
Int. Cl.[5] F04C *15/00*
U.S. Cl. 418—150 **11 Claims**



1. A liquid injection screw compressor comprising
a casing having an intake port and a discharge port;
rotor means in said casing for taking in a gas through said intake port, transporting said gas through spaces, and discharging said gas through said discharge port;
means defining a three sided passage between a first space compressing said gas and a second space receiving said gas; and
said three sided passage including means for relieving pressure exerted upon a liquid by said rotor means while maintaining efficiency of said screw compressor.

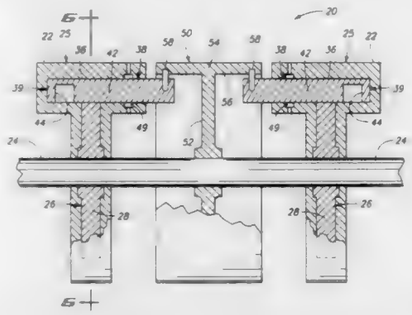
5,350,287

ROTARY ENGINE AND CAM-OPERATED WORKING MEMBER ASSEMBLY

Denver Secord, R.R. #2, Oliver, British Columbia, Canada V0H 1T0

Filed Jul. 23, 1993, Ser. No. 96,683
Int. Cl.[5] F01C *1/00*
U.S. Cl. 418—245 **27 Claims**

1. A rotary engine comprising:
an engine block having an annular working chamber formed about a central axis;
a power shaft mounted coaxially about the central axis for rotation within the engine block;
a rotor connected to the power shaft, the rotor including a working member positioned to travel in a circular path about the central axis through the annular working chamber;
a partition member mounted within the engine block to extend across the annular working chamber, the partition member being slidable between first and second positions in a direction perpendicular to the travel of the working member, the partition member spanning the annular working chamber in both the first and second positions;
the partition member including a slot which is aligned with the annular working chamber when the partition member is in its first position to allow passage of the working member therethrough; and
the partition member further including a solid wall which is aligned with the annular working chamber when the partition member is in its second position, the partition



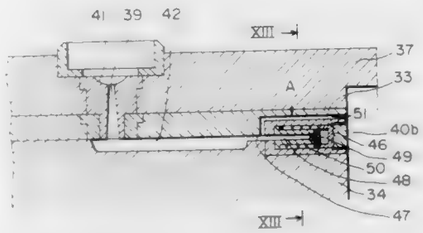
member thereby dividing the annular working chamber into expansion and exhaust chambers;
the working member having a leading surface and a trailing surface, the leading and trailing surfaces being angled so that the leading surface gradually enters the partition member slot as the partition member slides to its first position and so that the trailing surface gradually exits the partition member slot as the partition member slides to its second position.

5,350,288

INJECTION MOLDING UNIT

Hidetoshi Kimoto, Moriguchi, and Isao Shihota, Settsu, both of Japan, assignors to Daiho Industrial Co., Ltd. and Dainichi Mold Manufacturing Co., Ltd., both of Osaka, Japan

Filed Oct. 21, 1993, Ser. No. 139,026
Claims priority, application Japan, Oct. 22, 1992, 4-284236
Int. Cl.[5] B29C *45/18, 45/20, 45/76*
U.S. Cl. 425—136 **18 Claims**



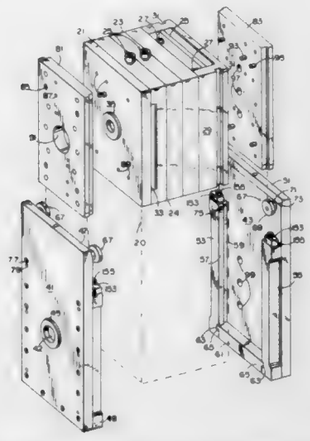
1. An injection molding unit comprising an injection molding machine for injecting a molten resin plasticized in a screw cylinder from a nozzle fitted at a tip of said screw cylinder by advancing the screw to a molding cavity of an injection mold having a cavity mold and core mold having a hollow therebetween to produce an injection molded part, wherein the injection molding unit further comprises:
pressure relief means for releasing the molten resin out of a resin passage when a pressure measured at any point on said resin passage is greater than a corresponding predetermined value, said resin passage extending between the screw cylinder and a terminal end of the core mold; and
the cavity mold being formed by a plurality of mold segments forming wall portions of the hollow.

5,350,289

QUICK CHANGE SYSTEM FOR MOLD BASES

Roger G. Martin, Greenville, Mich., assignor to Master Unit Die Products, Inc., Greenville, Mich.

Filed Jul. 27, 1992, Ser. No. 920,612
Int. Cl.[5] B29C *45/66*
U.S. Cl. 425—190 **15 Claims**



1. A quick change apparatus for mold bases comprising:
an adapter frame for attachment to each platen in a press, said adapter frame comprising:
a base plate having a plurality of apertures therein for attaching said base plate to a platen;
a pair of spaced guide rails on said base plate, each of said guide rails having a stepped edge including a narrow portion and a wider portion, each guide rail being positioned along opposite edges of said base plate with said narrow edge portion attached to said base plate and with the wider edge portion of each of said guide rails facing inwardly and spaced from said base plate to define a guide channel on the face of said base plate;
a stop member along one edge of said base plate extending between and closing said guide channel defined by said guide rails;
a guide roller adjacent the entrance of each side of said guide channel; and
an ear plate for attachment to each half of a mold base, said ear plate being configured to fit within the guide channel on each adapter frame, said guide roller being T-shaped to roll against and capture an edge of said ear plate.

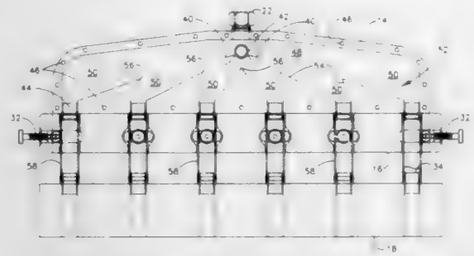
5,350,290

MANIFOLD AND VALVING ARRANGEMENT FOR DOUGH DIVIDER

Kenneth C. Honings, Chesterfield, Va., assignor to AMF Machinery Systems, Inc., Richmond, Va.

Filed Jan. 19, 1993, Ser. No. 5,622
Int. Cl.[5] A23P *1/12*
U.S. Cl. 425—311 **15 Claims**

1. Apparatus for dividing a mass of dough into a plurality of smaller volumes of substantially uniform weight comprising:
a pump to provide a source of dough of substantially uniform density under pressure;
a manifold assembly having an inlet connected to said pump;
a manifold cavity located in said manifold assembly adjacent said inlet;
a plurality of internal conduits for dividing a stream of dough into equally flowing streams located in said manifold assembly adjacent said manifold cavity each having a funnel shaped opening;
an extrusion assembly having a plurality of extrusion openings each having an inlet end connected directly to a single one of said divided stream conduits and each having an outlet end for extruding said divided streams of dough; and



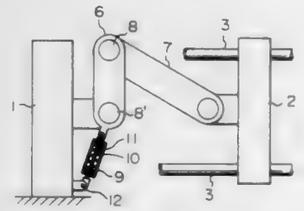
a cut-off mechanism adjacent said extrusion assembly arranged to cut off said divided streams of dough as they are extruded from said outlet end into a plurality of pieces of dough of substantially uniform weight.

5,350,291

MOLD OPENING AND CLOSING APPARATUS FOR ELECTRIC INJECTION MOLDING MACHINE

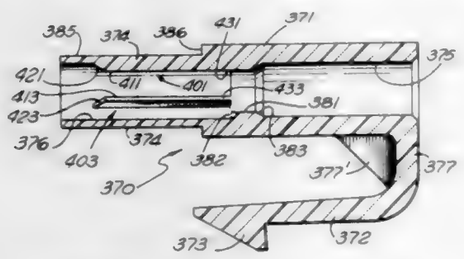
Masaya Kitajima, Chiba, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Jun. 8, 1993, Ser. No. 72,942
Claims priority, application Japan, Jun. 12, 1992, 4-177650
Int. Cl.[5] B29C *45/66*
U.S. Cl. 425—593 **3 Claims**



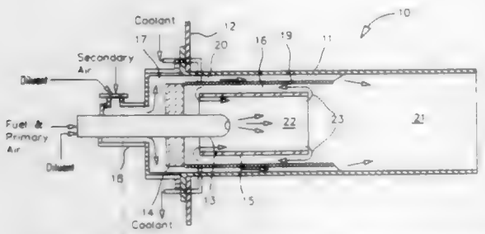
1. A mold opening and closing apparatus for an electric injection molding machine, comprising:
a toggle support;
tie bars connecting a stationary platen with said toggle support;
a movable platen supported in such a manner as to be slidable on said tie bars; and
a toggle link mechanism disposed between said toggle support and said movable platen for advancing and retracting said movable platen with respect to said stationary platen to a mold clamping position and a mold opening position, respectively, of said movable platen, said toggle link mechanism comprising a first arm rotatably supported by said toggle support, a second arm having a first end pivotally joined to the distal end of said first arm and a second end pivotally joined to said movable platen, and an electric drive device for rotating said first arm,
said apparatus further comprising a spring device for urging said first arm toward a position at which said movable platen is retracted to said mold opening position.

5,350,292
ELECTRICAL HALF CONNECTOR WITH CONTACT-CENTERING VANES
Stuart E. Sanders, Brandon, and Fred P. Bauer, Mendenhall, both of Miss., assignors to Magnetek, Los Angeles, Calif.
Continuation-in-part of Ser. No. 680,699, Apr. 4, 1991, Pat. No. 5,260,678. This application Jan. 19, 1993, Ser. No. 6,313
Int. Cl.[5] H01R *13/432*
U.S. Cl. 439—733 **20 Claims**



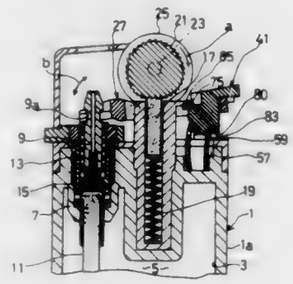
1. An inexpensive small electrical half connector for use in completing at least one electrical circuit, and comprising:
a small and very inexpensive half-connector body that defines at least one hole formed through the body for receiving a respective terminal;
at least one electrical terminal, each having at least one retaining element for engaging with the half-connector body to retain the terminal within the half connector; each hole having:
at least one segment of relatively large transverse dimension for receiving the respective terminal, with transverse clearance about substantially the entire circumference of the terminal,
at least one segment of reduced transverse dimension, for receiving the respective terminal and engaging with the at least one retaining element of the respective terminal to retain the terminal, and
integral means for approximately centering the terminal in the large-transverse-dimension segment of the hole; and
means for ensuring, without in any rotational position of the terminal relative to the half-connector body, effective engagement between the at least one retaining element and its respective at least one reduced-transverse-dimension segment.

5,350,293
METHOD FOR TWO-STAGE COMBUSTION UTILIZING FORCED INTERNAL RECIRCULATION
Mark J. Khinkis, Morton Grove; Abbasi, Hamid A., Darien, and David F. Cygan, Villa Park, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.
Filed Jul. 20, 1993, Ser. No. 94,940
Int. Cl.[5] F23M *3/00*
U.S. Cl. 431—116 **21 Claims**



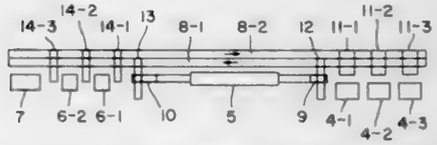
1. A method for two-stage combustion comprising the steps of:
burning a mixture of fuel and primary combustion air in a primary combustion zone, said primary combustion air comprising less than a stoichiometric requirement for complete combustion of said fuel, forming partial combustion products;
removing a first portion of heat from said primary combustion zone, cooling said partial combustion products;
recirculating a portion of said cooled partial combustion products from a downstream end of said primary combustion zone to an upstream end of said primary combustion zone;
introducing secondary combustion air into a secondary combustion zone downstream of said primary combustion zone, completing combustion of said partial combustion products; and
removing a second portion of heat from said secondary combustion zone.

5,350,294
LIGHTER
Masayuki Iwahori, 15-19 Nakadahoncho, Shizuokashi, Shizuoka, 422, Japan
Filed Jul. 9, 1993, Ser. No. 88,552
Claims priority, application Japan, Feb. 9, 1993, 5-044632
Int. Cl.[5] F23D *11/36*
U.S. Cl. 431—153 **11 Claims**



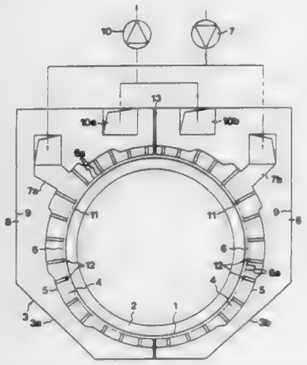
1. A lighter comprising:
a lighter body for storing fuel;
valve means, attached to an upper portion of said lighter body, for stopping injection of said fuel when closed and permitting injection of said fuel when open;
ignition means, provided at said upper portion of said lighter body and activatable as needed to ignite said fuel injected by opening of said valve means;
lift-up means, arranged rotatable via a rotary shaft at said upper portion of said lighter body and having one end connected to said valve means, for allowing said valve means to close when urged in one direction by an elastic member and opening said valve means when rotated in the opposite direction against urging force of said elastic member; and
push-down means, provided movable along said lift-up means on a side of the other end thereof, a slide position of said push-down means being properly maintained by means forming a locking relationship with respect to said lighter body or said lift-up means,
whereby when said lighter is not in use, said push-down means is kept positioned on said other end side of said lift-up means and has a lower end abutting against said lighter body to set a locked state to restrict a push-down action, as said push-down means is moved along said lift-up means toward said one end thereof, said locked state is released and a position of that movement of said push-down means toward said one end of said lift-up means is maintained by said means forming a locking relationship with respect to said lighter body or said lift-up means, when said push-down means is then pushed down, said means forming a locking relationship is released, said lift-up means is rotated to open said valve means and release said means forming a locking relationship and said ignition means is activated at a same time to ignite said fuel injected through said valve means, and when that downward action of said push-down means is released, said push-down means moves upward to an original state while moving toward said other end of said lift-up means returning by said urging force of said elastic member along said lift-up means.

5,350,295
METHOD FOR PRODUCING DIFFERENT KINDS OF HEAT-TREATED PRODUCTS
Takeuchi Kenji, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
PCT No. PCT/JP92/00703, § 371 Date Jan. 26, 1993, § 102(e) Date Jan. 26, 1993, PCT Pub. No. WO92/21926, PCT Pub. Date Dec. 10, 1992
PCT Filed May 27, 1992, Ser. No. 965,254
Claims priority, application Japan, May 29, 1991, 3-126201
Int. Cl.[5] F27D *5/00*
U.S. Cl. 432—5 **6 Claims**



1. A method of producing different kinds of heated products using a facility comprising a heating device for heat treating works while feeding said works facility from entrance to facility outlet, a plurality of pre-treatment and post-treatment devices provided, respectively, upstream and downstream of said heating device, a case carrier device having a main carrier line extending along said heating device and said pre-treatment and post-treatment devices, a first transfer device provided between said carrier device and the entrance of said heating device, and a second transfer device provided between said carrier device and the outlet of said heating device.
said method comprising the steps of putting a plurality of kinds of works fed from said pre-treatment device in a plurality of heat-resistant trays with one tray carrying the same kind of works, setting said heat-resistant trays in carrier cases each having a marking for showing the kind of works carried by the respective tray, moving each carrier case by said carrier device to a point near said heating device, separating each heat-resistant tray from the respective carrier case by means of said first transfer device, feeding each tray into said heating device while moving said tray-free carrier cases toward said second transfer device by said carrier device, putting each heat-resistant tray coming out of said heating device back into said carrier case by said second transfer device, moving said carrier cases now carrying the trays further ahead by said carrier device, sorting said cases according to the markings on said cases, and feeding said cases thus sorted to said post-treatment device.

5,350,296
METHOD AND DEVICE FOR COOLING A ROTARY KILN
Göran Wikström, Växjö, Sweden, assignor to Abb Flakt AB, Nacka, Sweden
PCT No. PCT/SE91/00621, § 371 Date Mar. 17, 1993, § 102(e) Date Mar. 17, 1993, PCT Pub. No. WO92/05394, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 17, 1991, Ser. No. 103,870
Claims priority, application Sweden, Sep. 17, 1990, 9002949-7
Int. Cl.[5] F27D *15/02*
U.S. Cl. 432—80 **5 Claims**

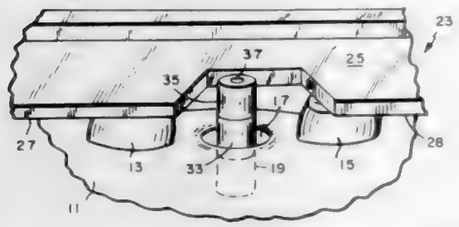


1. A method for cooling a rotary kiln having a cylindrical outer jacket, comprising the steps of:
blowing cooling air at a high speed substantially radially towards the jacket from a supply-air chamber which surrounds said jacket over the main part of its circumference and extends over at least part of its axial extension and which has an inner wall located at a slight distance from said jacket and formed with substantially radially directed perforations which are distributed over the supply-air chamber and through which the cooling air is blown towards said jacket;
sucking the cooling air out substantially radially from the space between the jacket and the inner wall of the supply-air chamber to an exhaust-air chamber which is separate from and surrounds the supply-air chamber and communicates with said space via tubes which are distributed throughout the supply-air chamber and extend substantially radially therethrough; and
adjusting the cooling-air flow through the chambers by supply-air and exhaust-air devices connected to said chambers.

5,350,297
METHOD AND APPARATUS FOR RECORDING THE POSITION OF DENTAL IMPLANTS
Robert N. Cohen, 196 Fox Tail Rd., Burlington, Mass. 01803
Filed Dec. 24, 1991, Ser. No. 814,402
Int. Cl.[5] A61C *3/02*
U.S. Cl. 433—76 **11 Claims**

1. An indexing device for recording the position of a dental implant, having an implant coping releasably secured thereto, with respect to a stent releasably mounted to surface features and having a spanning section adjacent said implant, which implant coping has an apical section towards said implant and an occlusal section extending from said apical section, said occlusal section having alignment surfaces which relate to the rotational position of the implant coping and said implant, said indexing device comprising:
an index coping having a cavity, said cavity having a receiving alignment surface for receiving said alignment surface of said implant coping, said index coping having means for

releasably receiving and securing said occlusal section of said implant coping and having means for securing and fixing said index coping to said spanning section of said stent; said index coping upon release from said implant coping and upon the release of said stent from surface features, recording the position relationship on the vertical and horizontal axis and the rotational relationship of said implant coping secured to said implant, said stent with said index coping secured thereto for receiving an implant coping analog for placing an implant analog in a cast and for identifying the position of said implant following removal of said implant coping and healing over the



implant, said means for securing and fixing said index coping to said spanning section of said stent comprising a tissue punch guide, said tissue punch guide having a cylindrical cavity for receiving and securing said index coping within said cylindrical cavity, said cavity and index coping having cooperating alignment notches to secure said index coping and tissue punch guide in rotational alignment with said implant coping and implant, said tissue punch guide having stent receiving surfaces for securing said tissue punch guide to said stent to record the position of said implant, said tissue punch guide, upon release of said index coping, for receiving a cooperating interfitting tissue punch.

5,350,298

METHOD AND CANAL INSTRUMENT FOR FILLING AND/OR COATING THE WALLS OF AN ENDODONTIC CANAL

Jacques Delaire, Besancon, France, assignor to Micro Mega SA, Besancon, France

Filed Dec. 11, 1992, Ser. No. 989,111
Int. Cl.[5] A61G *5/02*
U.S. Cl. 433—81 **19 Claims**



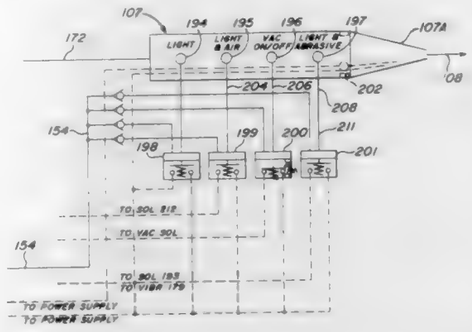
1. A canal instrument adapted for mounting to a head of a vibrating handpiece, for applying a filling paste in a dental canal by applying layers to either produce a complete filling or to produce a thin layer on walls of the canal, comprising a handle portion for attachment to the handpiece, and a blade portion including a body and at least one helicoid groove formed in the body and extending from a distal end of the body and along at least portions of the body, wherein the helicoid groove has rounded outer edges to prevent any cutting effect, and reaming of the canal.

5,350,299

DENTAL TREATMENT SYSTEM

Ben J. Gallant, Corpus Christi, Tex., assignor to American Dental Technologies, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 859,158, Mar. 27, 1992. This application Mar. 25, 1993, Ser. No. 29,732
The portion of the term of this patent subsequent to Jul. 19, 2011, has been disclaimed.
Int. Cl.[5] A61C *3/02*
U.S. Cl. 433—88 **14 Claims**



1. A system for performing a dental procedure on teeth or associated tooth structure by means of abrasive particles carried by a fluid stream comprising, in combination with a source of fluid;

(a) means for increasing the pressure of said fluid to about an initial pressure;

(b) pressure selection means for selectively providing said fluid at least a first pressure or a second pressure, each of said first and second pressures being less than about said initial pressure;

(c) abrasive mixing means for combining the abrasive particles with said fluid at either said first pressure or said second pressure to provide an abrasive-laden fluid stream;

(d) selectively operable means for activating and deactivating said abrasive mixing means;

(e) nozzle means for delivering said abrasive-laden fluid stream to the teeth or tooth structure undergoing said dental procedure; and

(f) means for evacuating excess abrasive materials, post-use abrasive materials and other debris from the area of the mouth of the patient being treated, said evacuation means including means in juxtaposition to the mouth of the patient for creating a negative pressure in the mouth region effective to withdraw abrasive materials and debris from the mouth.

5,350,300

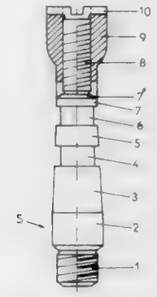
DENTAL IMPLANT

Jacques Gallais, 1, Rue de l'Ecrivain, 89. Sens, France

PCT No. PCT/FR90/00789, § 371 Date May 1, 1991, § 102(e) Date May 1, 1991, PCT Pub. No. WO91/07140, PCT Pub. Date May 30, 1991
PCT Filed Oct. 31, 1990, Ser. No. 675,915
Claims priority, application France, Nov. 8, 1989, 89 14682
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—173 **5 Claims**

1. A dental implant for installation in the maxillary comprised of a body and a head, said body is provided with a threaded end for attaching a dental prosthesis, said threaded end is connected to a first cylindrical portion which is connected to a first truncated conical portion, which in turn is connected to a second cylindrical portion having a diameter smaller than the smallest diameter of said truncated conical portion, said second cylindrical portion is further connected to

a second truncated conical portion having the same conicity as said first truncated conical portion and said first and second truncated conical portions being coaxially disposed such that their conical surfaces will mate with the internal surface of a prepared maxillary cavity, said second truncated conical portion is further connected to a third cylindrical portion which has a diameter smaller than the smallest diameter of second truncated conical portion, said third cylindrical portion is further connected to a fourth cylindrical portion coaxial with said first and second truncated conical portions, said fourth cylindrical portion having a base at the side connected to said



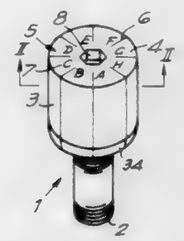
third cylindrical portion and having a diameter equal to the diameter of the conical projection, onto said base of the fourth cylindrical portion, of a cone defined by the first and second truncated conical portions, said fourth cylindrical portion is further connected to a third conical portion having an inclination of thirty degrees which in turn is connected to a fifth cylindrical portion, said fifth cylindrical portion is provided with threads for receiving said head, said fifth cylindrical portion having a split portion forming two legs which can be bent into slots formed on said head, whereby said head is prevented from rotation to lock the head against unthreading.

5,350,301

METHOD AND APPARATUS FOR APPLYING A DIRECTION-ADJUSTING EXTENSION PIECE IN A DENTAL IMPLANT

Vincent De Buck, Sint-Niklaas, Belgium, assignor to Alphadent, Antwerpen, Belgium

Filed Aug. 19, 1993, Ser. No. 108,796
Claims priority, application Belgium, Aug. 19, 1992, 09200726
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—173 **18 Claims**



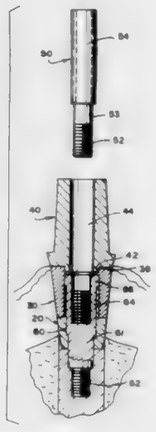
1. An arrangement for correcting an orientation axis associated with a dental implant comprising: an orientation axle including a screw thread part and a body, said body being provided, at least at an upper extension portion thereof, with a plurality of circumferentially spaced marks; and a series of extension pieces each of which has an associated direction-adjusting element that defines a predetermined mounting axis corresponding to a respective one of said plurality of marks, whereby said orientation axle may be placed within a dental implant to determine a required adjustment of an orientation axis associated with the implant and a respective one of said extension pieces can be selected based on the presence of said plurality of marks.

5,350,302

IMPLANT COLLAR AND POST SYSTEM

Gerald M. Marlin, 4400 Jenifer St., NW., Washington, D.C. 20015

Continuation-in-part of Ser. No. 548,250, Jul. 5, 1990, Pat. No. 5,135,395, and a continuation-in-part of Ser. No. 729,170, Jul. 12, 1991. This application Jul. 30, 1992, Ser. No. 921,729
The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—174 **16 Claims**



1. An assembly for use in prosthetic implant restorations in dentistry including an implant having an internal implant passage, the assembly comprising in combination: an adaptor chosen to be compatible to and receivable on an associated implant and having a first portion adapted to extend above an implant when in use, an abutment post dimensioned to receive a crown or coping and having a passage therein and being mounted on the first portion of the adaptor, said adaptor having an axial through passage in register with the passage in the abutment post and extending through opposite ends thereof, said adaptor having an internal shoulder surrounding the through passage in the adaptor, first means for adjusting the relative angular positions of the post and adaptor to compensate for angulated implants, second means including a screw member received in the axial passage of said adaptor and engaged on said internal shoulder for securing the adaptor to an associated implant when mounted on an implant in use, said screw member being a piece separate from said abutment post and having internal threads, and third means including a screw receivable through the passage in the post and engaged in said internal threads of the screw member for securing the post to said adaptor.

5,350,303

METHOD FOR ACCESSING INFORMATION IN A COMPUTER

David S. Fox, Summit; Hosagrahar V. Jagadish, Berkeley Heights; Lawrence O'Gorman, Millburn, all of N.J., and Guy A. Story, New York, N.Y., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 24, 1991, Ser. No. 782,842
Int. Cl.[5] G09B *19/00*
U.S. Cl. 434—118 **27 Claims**

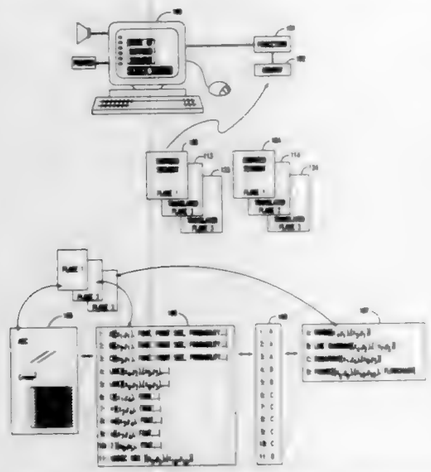
1. A method for accessing a physically perceivable information segment from a plurality of physically perceivable infor-

mation segments stored in a computer storage medium COMPRISING THE STEPS OF:

maintaining in said computer storage medium a digitized representation of each of said plurality of physically perceivable information segments.

maintaining in said computer storage medium at least one corresponding translated representation of each of said plurality of physically perceivable information segments,

maintaining in said computer storage medium binding information that associates elements of each translated representation of each physically perceivable information segment with portions of the corresponding digitized representation of each physically perceivable information segment, and



in response to a user request, selecting one of the physically perceivable information segments maintained in said computer storage medium, and

presenting the digitized representation of the selected physically perceivable information segment to the user.

5,350,304

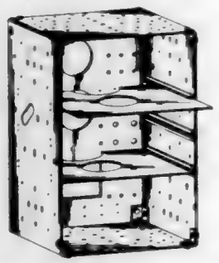
METHOD OF REHABILITATING MUSCLES AND NEUROLOGICAL PATHWAYS IN A PATIENT USING A MULTIFUNCTIONAL THERAPEUTIC WORKSTATION KIT

Karen A. Fula, and Carl E. Krippendorf, both of Milwaukee, Wis., assignors to Smith & Nephew Rolyan, Inc., Memphis, Tenn.

Continuation of Ser. No. 803,091, Dec. 5, 1991, abandoned. This application Mar. 9, 1993, Ser. No. 28,523

Int. Cl.[5] G09B *19/00*

U.S. Cl. 434—258 **4 Claims**



1. A method of rehabilitating the muscles and neurological pathways of patients that have been subjected to physical or neurological trauma, comprising:

(a) selecting a therapeutic workstation kit for rehabilitation of muscular and neurological functions comprising:

(1) a side panel having a top edge, a bottom edge, and two sides, and having a slot for grasping and lifting, said side panel further having spaced holes at least along the perimeter of the panel for accepting bolts to allow connection to another panel with right angled elbows;

(2) a middle panel having a top edge, a bottom edge, and two sides, and having at least one aperture sized to permit the insertion of a hand and arm therethrough, said middle panel being provided with spaced holes for bolts at least along the perimeter of the panel to allow connection of the middle panel to another panel with right angled elbows; and

(3) a top panel, said top panel having sides, related in length to the top sides of the side and middle panels, so that the top panel may be affixed at right angles to said middle and side panels with right angled elbows;

(b) manipulating the panels of the kit and interconnecting said panels to each other with right angled elbows to form a module; and

(c) exercising the traumatized muscles or neurological pathways by the manipulating and assembling, thereby performing a therapeutic function.

5,350,305

COMBINATION LAMP AND SOCKET

Jean Pidancet, Besancon, France, assignor to Socop, S.A., Besancon, France

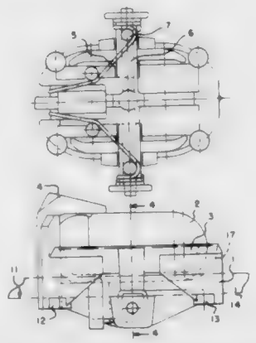
PCT No. PCT/FR91/00655, § 371 Date Apr. 30, 1992, § 102(e) Date Apr. 30, 1992, PCT Pub. No. WO92/03685, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 8, 1991, Ser. No. 847,020

Claims priority, application France, Aug. 16, 1990, 90 10505

Int. Cl.[5] H01R *33/09*

U.S. Cl. 439—56 **12 Claims**



1. An assembly comprising a lamp having a filament and a support having a base for insertion into a printed circuit board associated with a dashboard of a vehicle; wherein the support comprises a cradle for receiving the lamp and having a reflective surface for increasing luminescence of the lamp, and a clip for holding the lamp in position within the cradle; wherein the base is inserted into the printed circuit board along a home axis; wherein the lamp is disposed within the cradle of the support in a direction generally perpendicular to the home axis so that the lamp and the filament are substantially parallel to the printed circuit board; and wherein the support includes electrical connectors formed as wires which extend toward bottom portions of the support and which are wound onto free ends of a resilient support beam.

5,350,306

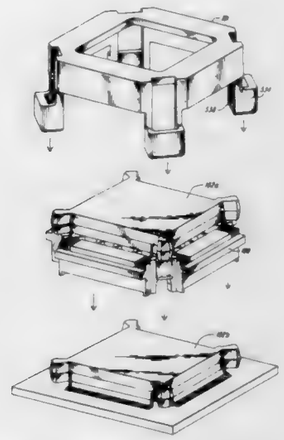
STACKABLE INTERCONNECTION SOCKET

Stephen D. DelPrete, and Donald Santos, both of Rehoboth, Mass., assignors to Augat Inc., Mansfield, Mass.

Filed Dec. 23, 1992, Ser. No. 995,972

Int. Cl.[5] H01R *23/72*

U.S. Cl. 439—69 **22 Claims**



1. A removably installable engagement mechanism for mechanically engaging an upper electronic component package having a first member with a lower electronic component package having a second member, comprising:

a substantially planar upper surface;

a plurality of sidewalls disposed substantially perpendicular to said upper surface;

at least one resilient latch oriented substantially perpendicular to said upper surface, said at least one resilient latch including a latch floor configured for matably engaging a portion of said second member of said lower package, mechanically engaging said first package with said second package, and a latch floor abutment surface abutting a portion of at least one of said upper package and said lower package to effect deflection of said resilient latch during installation of said removably installable engagement mechanism; and

at least one extraction tool engagement portion for receiving an extraction tool to effect deflection of said at least one resilient latch and facilitate disengagement of said upper package from said lower package.

5,350,307

CONNECTOR FOR PRINTED CIRCUIT BOARD

Takashi Takagishi; Nobuhiko Suzuki, and Akira Kato, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Apr. 14, 1992, Ser. No. 868,766

Claims priority, application Japan, Apr. 15, 1991, 3-025041[U]

Int. Cl.[5] H01R *9/09*

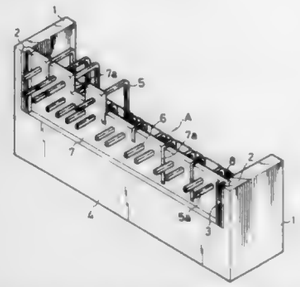
U.S. Cl. 439—79 **2 Claims**

1. A connector for a printed circuit board, comprising:

a housing;

an elongated terminal guide mounted in said housing and having a plurality of lead terminal insertion holes spaced longitudinally apart for receiving lead terminals, and a plurality of stress relieving openings disposed between said longitudinally adjacent lead terminal insertion holes for absorbing thermal expansion or contraction of said terminal guide in a longitudinal direction; and

a plurality of lead terminals mounted in respective ones of said lead terminal insertion holes;



wherein said stress relieving openings comprise slits formed in said terminal guide, said slits each having an opening in a longitudinal edge of said terminal guide.

5,350,308

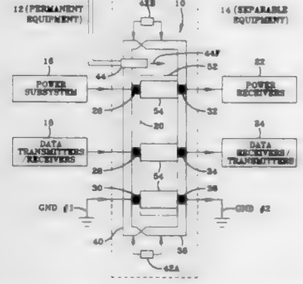
ELASTOMERIC ELECTRICAL CONNECTOR

Joseph E. Laska, Warrington; John T. Oakley, Richboro, and Francis R. Reinert, Wycombe, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 16, 1993, Ser. No. 107,431

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—91 **9 Claims**



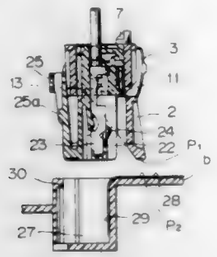
1. A separable connector that provides solderless electrical connections between first and second electrical equipments, said separable connector comprising:

(a) first and second plates respectively carrying electrical terminals of said first and second electrical equipments;

(b) means for holding and compressing together the first and second plates and having a first cutout with predetermined dimensions, said holding and compressing means further having a means responsive to an impulse for releasing said holding and compressing of said first and second plates; and

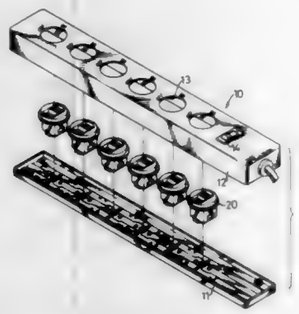
(c) a device inserted into said cutout and comprising elastic material and having a plurality of compressible conductive wires that are embedded in said elastic material, said conductive wires being spaced apart from each by a predetermined distance of about 0.035 inches and said wires are of a monel metal and include about 750 to about 900 wires per square inch, said conductive wires providing a plurality of electrical paths each having an electrical resistance of less than 5 milliohms between said terminals of said first and second electrical equipments when said first and second plates are being held and compressed together.

5,350,309
CONNECTOR WITH A PROTECTIVE COVER
Yukihiro Abukawa, Kanagawa; Hiraji Takase, and Yasuhisa Shinji, both of Shizuoka, all of Japan, assignors to Yazaki Corporation and Isuzu Motors Limited, both of Tokyo, Japan
Filed Mar. 23, 1993, Ser. No. 35,924
Claims priority, application Japan, Mar. 24, 1992, 4-015340
Int. Cl.[5] H01R *13/44*
U.S. Cl. 439—138 12 Claims



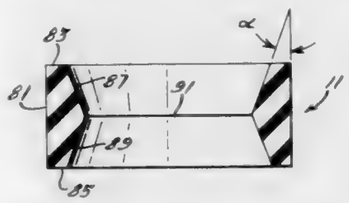
1. A connector assembly for use in an electrical circuit of a case, comprising:
a connector having a housing with an opening formed on one side thereof through which an electrical contact projects from said housing; and
a protective cover comprising:
a housing holder detachably assembled to said housing of the connector;
an insulating protector for covering the opening of the connector, said insulating protector having a protective plate and arms extending from opposite ends of said protective plate, said arms being assembled at distal end portions thereof to said housing holder such that said arms are rotatable about a rotating axis; and
a locking means for locking said arms at a first position when said protective plate covers said opening to protect said electrical contacts until said connector is inserted into said case to engage with the electrical circuit, and at a second position when said protective plate uncovers said opening to permit the connector to be inserted into said case to engage with the electrical circuit.

5,350,310
SOCKET TERMINAL
Ken-Ching Chen, 2nd Fl., No. 13, Lane 125, Fu Ying Rd., Hsin Chuang City, Taipei Hsien, Taiwan
Filed Sep. 20, 1993, Ser. No. 124,280
Int. Cl.[5] H01R *29/00*
U.S. Cl. 439—188 13 Claims



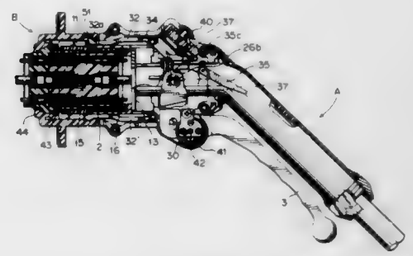
1. A socket terminal comprising:
a shell comprising a base and a cover which is mounted on the base, wherein the base defines at least one pivot-receiving recess and wherein the cover defines at least one shaft-receiving hole;
two electrodes which are mounted on the base and connected to a power supply;
at least one socket member comprising:
a casing comprising a pivot formed on a side and a disk-shaped shaft formed on an opposite side, whereby the pivot is received in the pivot-receiving recess and the disk-shaped shaft is received in the shaft-receiving hole, so that the casing is rotatable between a first position and a second position; and
two conductive strips which are received in the casing so that they contact the electrodes when the casing is in the first position and that they do not contact the electrodes when the casing is in the second position.

5,350,311
SEAL FOR AN AUTOMOTIVE ELECTRICAL CONNECTOR ASSEMBLY
Dhirendra C. Roy, Canton, and Zenon Hotra, Troy, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.
Filed Jul. 30, 1993, Ser. No. 100,503
Int. Cl.[5] H01R *13/52*
U.S. Cl. 439—273 16 Claims



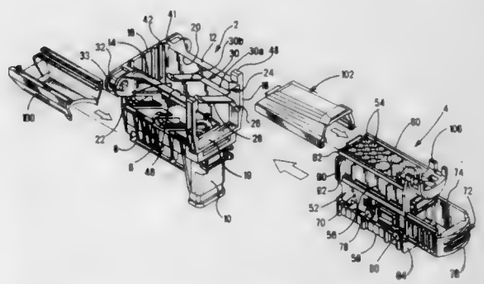
1. An electrical connector assembly for an automotive vehicle comprising:
a first connector half having an electrical contact proximate therewith and being substantially surrounded by a support structure therearound, said support structure further having an outer surface thereof;
a second connector half having an electrical contact proximate therewith, said second connector half further having a body segment and a mating segment within which extends an outer peripheral wall having an outside surface, an inside surface and a peripheral edge therearound, said body segment of said second connector half having a shoulder thereon such that said inside surface of said mating portion intersects said body at said shoulder thereto; and
a sealing member having a pentagonal cross sectional shape thereto with an inside surface defining an aperture centrally therein, said pentagonal cross sectional shape having a substantially straight base wall with a pair of relatively shorter end walls projecting therefrom and having a pair of angular faces extending therefrom, said pair of angular faces intersecting each other at a peaked segment, said inside surface of said second connector half peripheral wall and said outer surface of said first connector half supporting structure having said sealing member juxtapositioned therebetween such that said peaked segment is compressed therein.

5,350,312
FEEDER CONNECTOR
Hiromichi Kuno; Toshiyuki Sekimori, both of Aichi; Shigemitsu Inaba, and Toshiaki Hasegawa, both of Shizuoka, all of Japan, assignors to Yazaka Corporation, Tokyo and Toyota Jidosha Kabushiki Kaisha, Toyat, both of Japan
Filed Dec. 14, 1993, Ser. No. 165,886
Claims priority, application Japan, Dec. 18, 1992, 4-338739
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—310 12 Claims



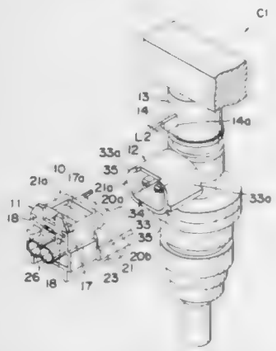
1. A feeder connector including a feeding-side connector provided on a side of a feeder apparatus and a receiving-side connector provided on a body of a vehicle or the like, said feeding-side connector comprising:
a casing;
a connector body slidably installed in a front half section inside said casing and accommodating a plurality of terminals;
a hollow-shaped handle that allows lead wires connected to said plurality of terminals to pass therethrough;
a lever at an intermediate portion thereof rotatably supported inside said casing and including an operating portion extending outside said casing, said lever, when rotated, causing said connector body to move forwardly into engagement with said receiving-side connector; and
an electro-magnetic locking means provided at a position offset from a fitting axis of said connector body for restricting the rotation of said lever such that said connector body and said receiving-side connector are maintained engaged with each other.

5,350,313
LATCHING MECHANISM FOR BLINDMATE ELECTRICAL CONNECTORS
Josef Woller, Griesheim, Fed. Rep. of Germany, assignor to The Whitaker Corporation, Wilmington, Del.
Filed Feb. 26, 1993, Ser. No. 23,541
Claims priority, application United Kingdom, Feb. 27, 1992, 9204155
Int. Cl.[5] H01R *4/50*
U.S. Cl. 439—347 12 Claims



1. An electrical connector assembly comprising mating first and second connector housings, where one of the housings includes first camming members, and the other connector includes a camming slide moveable transversely to a mating axis, the camming slide including second camming members thereon, which cooperate with the camming members on said first housing, said camming slide being moveable to cause axial movement between said first and second housings along the mating axis, the assembly being characterized in that said first housing has at least one partially opened end wall and said camming members are positioned on inner side surfaces of said first housing, said second connector member being insertable through said partially opened end wall along an axis transverse to said mating axis, and between said side surfaces, whereby activation of said camming slide moves said first and second housings into a mated condition along said mating axis.

5,350,314
ANTI-ROTATION CONNECTOR
Toshikazu Saba, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Filed Mar. 9, 1993, Ser. No. 28,190
Claims priority, application Japan, Apr. 16, 1992, 4-024403[U]
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—378 5 Claims

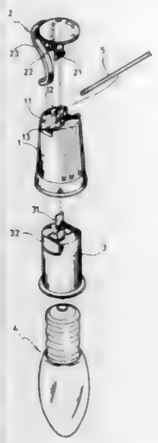


1. An anti-rotation connector arranged to be fitted with a mating fitting member rotatably mounted with respect to a fixing member, said anti-rotation connector comprising a guide member provided thereon, and a rib portion formed to project outwardly from said fixing member connected with said mating fitting member, said guide member being movable with respect to said connector toward and away from said rib portion, said mating fitting member and said connector being adapted to be held in a regular position by engaging said guide member with said rib portion.

5,350,315
LAMP SOCKET FOR A CHRISTMAS TREE LIGHT
You-Jen Cheng, and Tzu-Ling Cheng, both of 2nd Fl., 18-9, Tienmu W. Rd., Taipei City, Taiwan
Filed Sep. 7, 1993, Ser. No. 117,866
Int. Cl.[5] H01R *33/22, 4/24*
U.S. Cl. 439—419 1 Claim

1. A lamp socket comprised of a socket shelf, a mounting device fastened to said socket shell on the outside through hooked joints to hold an electric wire, a socket body fitted into said socket shell to hold a lamp bulb through a screw joint permitting the lamp bulb to be electrically connected to the electric wire, wherein said socket shell comprises four stop blocks on the inside at four corners respectively engaged into two opposite openings on said socket body to stop said socket body from rotary motion relative to said socket shell; said mounting device comprises two bottom blocks pressed oil the

electric wire against said socket shell; said socket body comprises two opposite projecting strips inserted through holes on



said socket shell and respectively bent inward to hold down the electric wire.

5,350,316

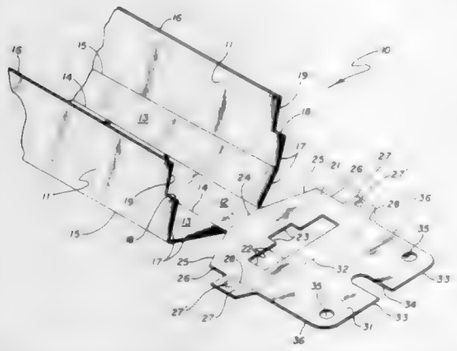
FLUORESCENT-LAMP LEADLESS BALLAST WITH IMPROVED CONNECTOR

Raymond H. Van Wagener, Darien, Conn.; Robert A. Kulka, Livingston; Richard Hoogmoed, Hawthorne, both of N.J.; Stuart E. Sanders, Brandon, and Fred P. Bauer, Mendenhall, both of Miss., assignors to Magnetek, Inc., Paramus, N.J.

Continuation of Ser. No. 680,699, Apr. 4, 1991, Pat. No. 5,260,678. This application May 14, 1993, Ser. No. 9,645

Int. Cl.[5] H01R *13/58*

U.S. Cl. 439—460 **25 Claims**



1. In combination, a ballast and connecting apparatus for use in a fluorescent-lamp fixture comprising:

at least one electrical winding;

plural electrical leads operatively connected to the winding, for carrying electrical power to and from the winding;

generally enclosing the winding and leads, a housing having two generally upstanding side walls; the housing having two ends;

an electrical half connector disposed at at least one end of the housing;

defined at each side of the half connector, respectively, an ear that extends laterally into association with one side wall, respectively;

defined in each said side wall, immediately adjacent to said one end of the housing, a cutout notch for receiving the connector ear that is associated with that side wall, to retain the connector in place longitudinally at the end of the housing; and

plural individual electrical contacts formed from or operatively connected to ends of the electrical leads respectively, and fixed within the half connector for making electrical connections outside the housing; and wherein:

the housing also has at least one end wall, at the same end of the housing as the half connector;

an orifice is defined in the end wall of the housing; and

the connector is disposed at least partly within the housing at the orifice and against the end wall; and

the side walls and end wall are resilient and biased outward; and further comprising;

means for securing the side walls and end wall inward, against their resilient bias, so that at least the end wall firmly engages the half connector; and wherein:

said securing means are installed after the connector; and

before said securing means are installed, the end wall resiliently engages the half connector longitudinally to facilitate assembly by retaining the half connector in place.

5,350,317

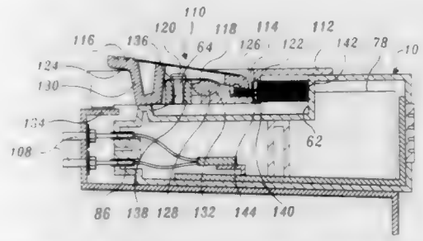
BATTERY PACK

Robert J. Weaver, Kirkland; Dennis C. Brittingham, Seattle; Joseph C. Basta, Bellevue, and John C. Daynes, Redmond, all of Wash., assignors to Physio-Control Corporation, Redmond, Wash.

Continuation of Ser. No. 640,072, Jan. 11, 1991, Pat. No. 5,224,870. This application Jul. 6, 1993, Ser. No. 88,202

Int. Cl.[5] H01R *3/00*

U.S. Cl. 439—500 **4 Claims**



1. A battery pack for use with a medical instrument including a latch, an ejector, and an electrical connector, said battery pack comprising:

a housing including a battery storage section and a connector section, the connector section being disposed at a side of the battery storage section;

energy storage means , disposed in the battery storage section, for storing electrical energy;

connector engagement means, disposed on the connector section proximate to a front face of the housing;

latch engagement means, disposed on the connector section, for engaging said latch;

ejector engagement means, disposed on the connector section, for engaging said ejector; and

wherein said latch engagement means, ejector engagement means, and connector engagement means are substantially aligned such that the latch engagement means is disposed between the connector engagement means and the ejector engagement means.

5,350,318

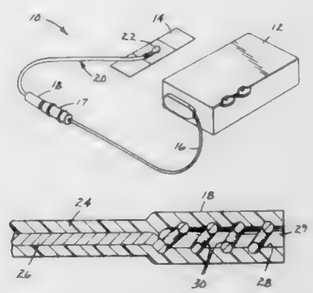
BIOMEDICAL ELECTRICAL CONNECTOR USING A SOCKET RECEPTACLE HAVING A RESILIENT SHEATH

Terry S. Nees, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 661,892, Feb. 27, 1991, abandoned. This application Oct. 8, 1993, Ser. No. 133,774

Int. Cl.[5] H01R *11/22*

U.S. Cl. 439—593 **12 Claims**



1. A receptacle for making electrical contact with a bayonet connector, comprising:

a dip molded socket for receiving the bayonet connector comprising an electrical conductor surrounded by a resilient, insulative sheath, wherein said socket is formed by dip molding said sheath from a plastisol about said electrical conductor, and whereby when the bayonet connector is inserted into said socket, said sheath resiliently grips the bayonet connector, holding the bayonet connector in electrical contact with said conductor.

5,350,319

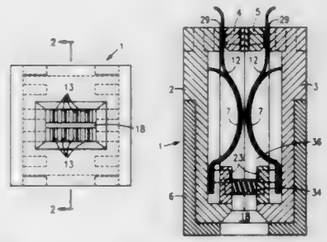
HIGH-DENSITY PRINTED CIRCUIT CONNECTOR

Joseph A. Roberts, Grafton, N.H., assignor to Miraco, Inc., Nashua, N.H.

Filed Apr. 2, 1993, Ser. No. 41,964

Int. Cl.[5] H01R *9/09, 23/70*

U.S. Cl. 439—632 **13 Claims**



1. A connector for connecting electrical conductor areas of a flexible circuit with conductor pads of an edge connector portion of a circuit board comprising:

a) a molded structure having first and second identical outer modules, disposed in mirror image of one another, first and second identical inner modules, disposed in mirror image of one another, sandwiched between the outer modules and a housing having resilient snap connector features to engage and retain the modules together as a unit with the modules in desired positions relative to one another;

b) first and second flexible circuits each defining said conductor areas in an edge connector contacting region and having a free end terminating an end region of the flexible circuit, which is disposed between the free end and the connector contacting region;

c) first and second spring means each having an arched feature for biasing said conductor areas into electrical contact with said conductor pads when said connector is attached to said edge connector portion; wherein

d) said first outer and said first inner module together retain the first said flexible circuit and said second outer and said second inner module together retain the second said flexible circuit to align both flexible circuits with an edge connector portion receiving passage defined by and having an entrance defined by said first and second inner modules;

e) said spring means are located by said modules to provide said bias; and

f) said passage is shaped and dimensioned to position said edge connector portion, when inserted therein, to ensure only desired electrically conductive contact occurs between the areas and the pads under the biasing influence of the spring means.

5,350,320

ELECTRICAL CONNECTOR

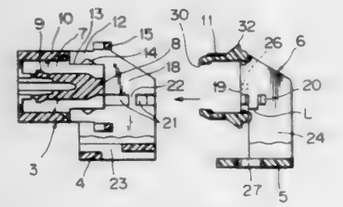
Shigemi Hashizawa, and Shinichi Tsuchiya, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Aug. 24, 1993, Ser. No. 110,994

Claims priority, application Japan, Aug. 25, 1992, 4-225808

Int. Cl.[5] H01R *13/436*

U.S. Cl. 439—752 **3 Claims**



1. An electrical connector comprising:

a connector housing having terminal accommodating cavities and brackets with mounting holes; and

a rear holder inserted into said connector housing, said rear holder having arms for preventing terminals, which are accommodated in the terminal accommodating cavities, from being pulled out such that an end of each said arm abuts a rear portion of its respective terminal, said rear holder further having bolt holes which overlap said mounting holes of the brackets of the housing in a fully locked state of the rear holder to the connector housing.

5,350,321

FEMALE TERMINAL

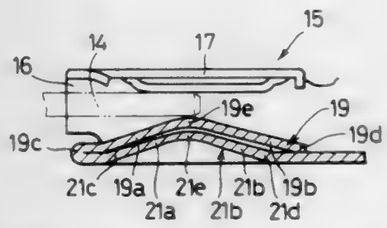
Kenji Takenouchi, Shizuoka, Japan, assignor to Yazaki Corporation, Japan

Filed Jan. 26, 1993, Ser. No. 9,143

Claims priority, application Japan, Jan. 28, 1992, 4-012982

Int. Cl.[5] H01R *11/22*

U.S. Cl. 439—839 **4 Claims**



1. A female terminal for electrical connection with a male terminal, comprising:

a cylindrical portion having an opening for insertion of said male terminal;

an elastic contact portion contained in said cylindrical portion for pressing said male terminal inserted through said opening against an inner wall of said cylindrical portion, said elastic contact portion having a first arm, a second arm, and a first vertex connecting said first and said second arms, an end of said first arm being connected to said cylindrical portion in the vicinity of said opening thereof, an end of said second arm being a free end; and

a supporting portion for restricting a degree of deflection of said elastic contact portion, said supporting portion having a third arm to be brought into contact with said first arm of said elastic contact portion to restrict deflection of said elastic contact portion;

wherein contact surfaces of said first and said third arms are conformable to each other so as to assure close contact therebetween along the length thereof.

5,350,322

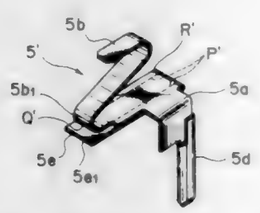
BULB SOCKET TERMINAL

Hiroyuki Kondo, Haibara, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 734,110, Jul. 24, 1991, abandoned, which is a continuation of Ser. No. 483,173, Feb. 22, 1990, abandoned. This application Aug. 30, 1993, Ser. No. 113,360

Int. Cl.[5] H01R *13/207*

U.S. Cl. 439—862 **3 Claims**



1. A bulb socket terminal insertable into a metal mold prior to insert-molding of a socket body of a connector bulb socket for accommodating a bulb having a filament and a ground end, said terminal comprising:

a base;

an elastic contact portion connected to said base and for contacting with at least one of said filament end and said ground end of said bulb on one side of said base, wherein said elastic contact portion comprises a first bent portion extending from said base, a slant portion extending from said first bent portion, and a second bent portion formed at a free end of said slant portion;

a connecting portion connectable to a connector on a side of said base; and

a resin flow blocking wall means integral to said ba for sealing and blocking entry of resin into an area behind said elastic contact portion during insert-molding of said socket body of said connector bulb socket, said resin flow blocking wall means being formed between said elastic contact portion and said connecting portion and contacting an insert-molding metal mold for said socket body during insert-molding of said socket body of said connector bulb socket, wherein each of said first bent portion, said slant portion and said second bent portion is narrower than said base, and wherein said resin flow blocking wall means includes a reinforcing plate (5e) coupled to said base which extends laterally along said base and beyond a bent edge (Q') of said first bent portion.

5,350,323

CONTACT FOR AN ELECTRICAL CONNECTOR PROTECTED BY A POLYMER FILM AND ITS PRODUCTION PROCESS

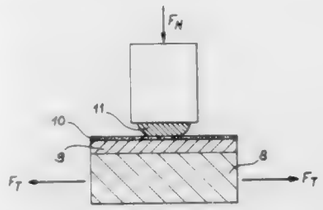
Jacques Boissel, L'Isle-Adam, France; Joseph Delhalle, Novilles-Bois, Belgium; Gérard LeCayon, Les Vlls, and Pascal Viel, Meudon, both of France, assignors to Commissariat a l'Energie Atomique and Souriau et Cie, France

Continuation of Ser. No. 830,691, Feb. 4, 1992, abandoned. This application Jun. 3, 1993, Ser. No. 71,380

Claims priority, application France, Feb. 12, 1991, 91 01604

Int. Cl.[5] H01R *4/58*

U.S. Cl. 439—886 **8 Claims**



1. A contact for an electrical connector having a contact resistance of at the most 10 ohms, incorporating a base metal covered with a 5 to 500 nanometer thick homogeneous, adhesive organic polymer film consisting according to only one polymer directly polymerized on the base metal, said polymer having a cyclized and unsaturated structure, wherein said cyclized and unsaturated structure is obtained by treatment of said polymer by one of heat or radiation, the radiation being selected from the group consisting of UV radiation and the white beam of synchroton radiation.

5,350,324

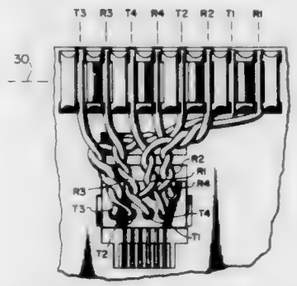
TELECOMMUNICATIONS CIRCUIT ASSEMBLIES OF WIRES AND CONNECTORS

Paul-Andre Guilbert, Lasalle, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 25, 1993, Ser. No. 37,834

Int. Cl.[5] H01B *11/04*

U.S. Cl. 439—894 **2 Claims**



1. A telecommunications circuit assembly comprising:

a first connector and a second connector, the first connector having a plurality of conductors disposed in a rectilinear array wherein a parasitic reactive coupling exists between a first of the conductors and a second of the conductors adjacent to the first conductor in one direction along the array and wherein a parasitic reactive coupling exists between the first conductor and a third of the conductors adjacent to the first conductor in the opposite direction along the array;

and a plurality of individually insulated conductor wires each electrically connecting an individual conductor of the first connector with an individual conductor of the second connector with the insulated conductor wire extending from the first conductor twisted along one part of its length solely with another of the conductor wires and twisted along another part of its length with a further of the conductor wires, the other and the further conductor wires selectively extending to fourth and fifth conductors whereby the twisting of the first conductor wire with the other conductor wire and with the further conductor wire produces compensating reactive couplings to the parasitic reactive couplings.

5,350,325

WATER INJECTION PROPULSION DEVICE

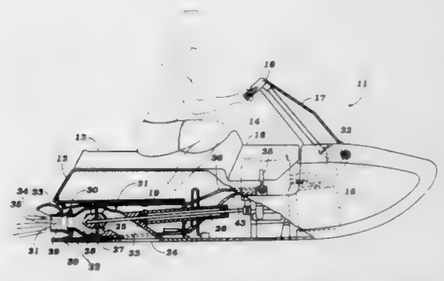
Masayoshi Nanami, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed May 28, 1993, Ser. No. 69,977

Claims priority, application Japan, Jun. 17, 1992, 4-181518

Int. Cl.[5] B63H *11/02*

U.S. Cl. 440—41 **13 Claims**



1. A watercraft having a hull and a jet propulsion unit supported by said hull for propelling said watercraft, said jet propulsion unit having a discharge nozzle, a reverse thrust bucket supported for movement relative to said discharge nozzle between a forward drive position and a reverse drive position wherein the water from the discharge nozzle is diverted in a forward direction so as to provide a reverse driving thrust, said hull having a portion underlying said discharge nozzle, and a movable closure plate carried directly by said underlying portion and moveable between a closed position to provide an extension of the hull that extends under said discharge nozzle and an open position to provide an opening through which the water diverted by said reverse thrust bucket may pass when operating in the reverse thrust mode.

5,350,326

HYDRAULIC PRESSURE GENERATING DEVICE FOR POWER STEERING APPARATUS FOR OUTBOARD ENGINE

Yasuo Funami, and Nobuo Miura, both of Saitama, Japan, assignors to Kabushiki Kaisha Showa Seisakusho, Gyoda, Japan

Filed Feb. 10, 1993, Ser. No. 16,580

Claims priority, application Japan, Feb. 10, 1992, 4-057522

Int. Cl.[5] B63H *25/42*

U.S. Cl. 440—61 **3 Claims**

3. A power steering apparatus for steering an outboard engine, comprising:

a hydraulic cylinder unit for angularly moving a steering arm of the outboard engine;

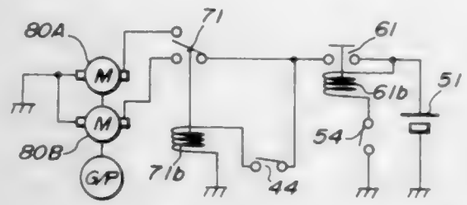
a hydraulic pump for supplying a hydraulic pressure to said hydraulic cylinder unit;

a motor for actuating said hydraulic pump; and

a motor driver for supplying a first amount of electric energy to said motor when the outboard engine is not steered, and supplying a second amount of electric energy, larger than said first amount of electric energy, to said motor when the outboard engine is steered, and wherein said motor comprises a pair of first and second motors having a common output shaft, and said motor driver comprises:

a power supply for generating electric energy; and

a relay having a movable contact which is connectable to said first motor to supply the electric energy from said power supply to said first motor to rotate said first motor



at a first speed when the outboard engine is not steered, and which is connectable to said second motor to supply the electric energy from said power supply to said second motor to rotate said second motor at a second speed, higher than said first speed, when the outboard engine is steered.

5,350,327

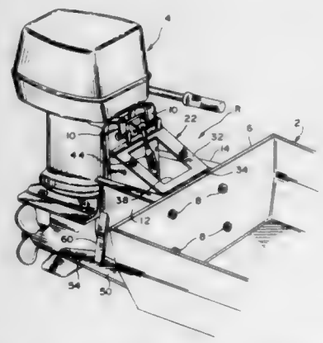
DEVICE TO PERMIT AN OUTBOARD MOTOR BOAT TO OPERATE IN SHALLOW WATER

Robert W. Self, 213 Frazer St., Lake Charles, La. 70605, and Karl Styron, P.O. Box 153, Creole, La. 70632

Filed Aug. 18, 1993, Ser. No. 107,897

Int. Cl.[5] B63H *21/26*

U.S. Cl. 440—66 **41 Claims**



1. A device for permitting a boat to operate in shallow water, comprising:

a) a bottom plate having front and rear ends, said bottom plate for pivotably connecting to a transom of a boat at said front end, said bottom plate having a bottom surface;

b) a motor mount having top and bottom ends, said motor mount bottom end being pivotably connected to said bottom plate rear end;

c) said motor mount being adapted to carry an outboard motor such that the propeller is disposed below said bottom plate, the propeller having a housing with leading surface;

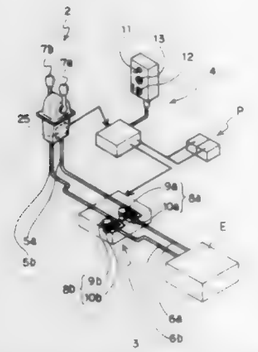
d) first and second side plates for securing to the transom of the boat and transversely disposed respectively on each side of said bottom plate;

e) a keel secured to said bottom surface of said bottom plate, said keel having a lagging edge having a substantially complementary profile as the leading surface of the propeller housing; and

f) means for moving said bottom plate about said front end

such that said keel lagging edge is disposed adjacent the propeller housing leading surface when said bottom plate is in a raised position for shallow water operation.

5,350,328
MARINE ENGINE CONTROL SYSTEM
Mikiya Yagi, Takarazuka, Japan, assignor to Nippon Cable System Inc., Takarazuka, Japan
Filed Mar. 18, 1993, Ser. No. 34,374
Claims priority, application Japan, Mar. 19, 1992, 4-063312
Int. Cl.[5] B60K *41/00*
U.S. Cl. 440—84 **7 Claims**



1. A marine engine control system comprising a manual remote control stand, an electrically-driven actuator, a controller unit, a first control cable connecting the manual remote control stand with the electrically-driven actuator, and a second control cable connecting the electrically-driven actuator with a subject device to be controlled,

wherein the manual remote control stand has an operational lever connected at a base portion thereof to the first control cable,

wherein the electrically-driven actuator is provided with a clutch means for achieving connection and disconnection between the first control cable and the second control cable and a motor for driving the second control cable, and

wherein the controller unit has a switch means for changing over between a manual operation by the manual remote control stand and an electrically-driven operation by the electrically-driven actuator.

5,350,329
FLUSHING SYSTEM FOR OUTBOARD MOTOR
David F. Haman, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Jun. 15, 1993, Ser. No. 77,562
Int. Cl.[5] B63H *21/38*
U.S. Cl. 440—88 **14 Claims**

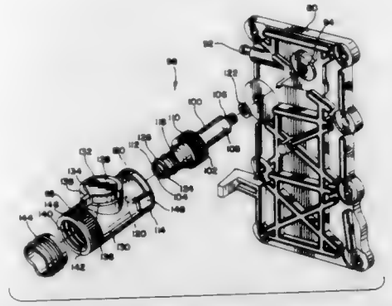
1. A flushing system for an outboard marine motor, including an engine provided with at least one cylinder at least partially surrounded by a cooling jacket, comprising:

an access port disposed on said engine and being in fluid communication with said cooling jacket;

flushing means being detachably engageable in said access port for permitting inflow of a flushing fluid into said cooling jacket;

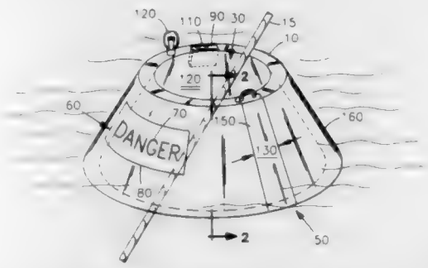
valve means disposed on said flushing means for selectively controlling the inflow of flushing fluid into said cooling jacket at the engine and at the discretion of an operator;

said flushing means including a flushing adapter having an axial throughbore, a first end releasably engageable in said access port, a shank portion adjacent said first end, a gripping portion adjacent said shank portion, and a second end adjacent said gripping portion and configured to releasably engage said valve means; and



said first end of said valve means is provided with releasable biased locking means for preventing axial disengagement of said valve means from said flushing adapator.

5,350,330
FLOATING MARKER FOR AN ANCHOR LINE
Gary W. Platis, 2082 Business Ctr. Dr. #225, Irvine, Calif. 92715
Filed Jun. 16, 1993, Ser. No. 78,743
Int. Cl.[5] B63C *9/08*
U.S. Cl. 441—6 **5 Claims**



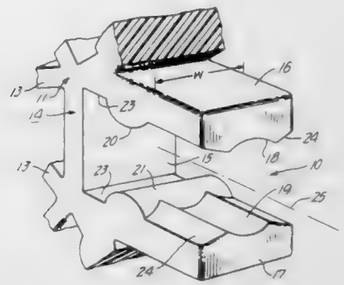
1. A floating marker for floating on the surface of a body of water for identifying the location of an anchor line while not being attached to the anchor line, the marker comprising:

a flotation means shaped as a modified torus providing an interior surface formed as a frustrum of an inverted cone, the interior surface defining a central hole in the flotation means, and forming an angle with the surface of the body of water of between approximately 70 and 80 degrees such that at least one portion of the interior surface is approximately parallel to the anchor line;

a means for providing passage of the anchor line from outside the flotation means into the central hole, the flotation means thereby encircling the anchor line while being free to move on the surface of the body of water relative to the anchor line; and

means for closing the passage means such that the anchor line cannot pass out therefrom, and further that the marker provides a visible indicator to mark the location of the anchor line, the latter being free to move within the central hole.

5,350,331
CONSTRUCTION TOY SYSTEM
Joel I. Glickman, Huntingdon Valley, Pa., assignor to Connector Set Limited Partnership, Hatfield, Pa.
Continuation of Ser. No. 717,639, Jun. 19, 1991, Pat. No. 5,199,919, which is a continuation-in-part of Ser. No. 687,386, Apr. 18, 1991, Pat. No. 5,137,486, and Ser. No. 625,809, Dec. 11, 1990, Pat. No. 5,061,219. This application Feb. 18, 1993, Ser. No. 19,066
Int. Cl.[5] A63H *33/04*
U.S. Cl. 446—126 **12 Claims**



1. A construction toy system of the type comprising

(a) a connector element molded of resilient plastic material,

(b) a rod-like strut element formed of plastic material and removably joinable with said connector element to form a coherent structure,

(c) said strut element having a strut axis and having opposite end portions and an intermediate portion aligned on said strut axis,

(d) said connector element including a socket-forming section defining a socket having an open end and at least one open side,

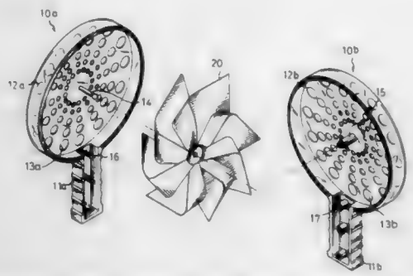
(e) said socket-forming section comprising a pair of gripping arms and gripping surfaces symmetrically arranged with respect to and defining a single predetermined socket axis,

(f) said strut element having an end portion receivable between said gripping arms by lateral snap-in entry through said open side, in a direction transverse to said strut axis, with said gripping arms being resiliently deflectable to accommodate said entry,

(g) said gripping arms and said strut end portion having mutually engageable gripping surfaces operative, upon said gripping arms resiliently gripping said end portion from opposite sides, to maintain said strut axis and said single predetermined socket axis in substantially coincident alignment.

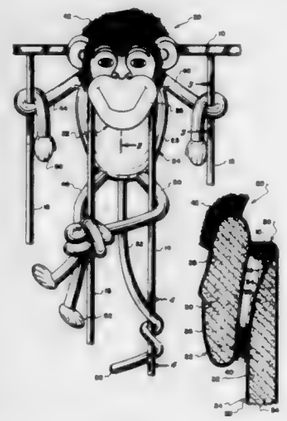
5,350,332
COMBINED TOY BAT AND WINDMILL
Chien P. Yu, No. 13, Lane 251, Tung Yang Rd., and I C. Yu, No. 20, Lane 492, Shui Yuan Rd., both of Feng Yuan City, Taichung Hsien, Taiwan
Filed Jun. 2, 1993, Ser. No. 70,263
Int. Cl.[5] A63H *33/40, 1/00, 1/06*
U.S. Cl. 446—217 **7 Claims**

1. A combined toy bat and windmill comprising a toy windmill rotatably mounted in a transparent hollow toy bat through which a number of holes is formed, said hollow bat comprising first and second halves which are separate from each other along a plane perpendicular to an axis about which said toy windmill rotates, wherein said first half comprises a handle and



a transparent head through which the number of holes is formed.

5,350,333
TOY DOLL
Noreen A. Croyle, 602 W. Fir - Unit 103, San Diego, Calif. 92101
Filed Aug. 19, 1993, Ser. No. 109,704
Int. Cl.[5] A63H *3/04*
U.S. Cl. 446—370 **1 Claim**



1. A toy doll constructed of a thin, sheet material, flexible, exterior layer which has a plurality of interior closed compartments, said toy doll comprising:

a body section having at least one said interior closed compartment filled with a stuffing;

a head section having at least one said interior closed compartment filled with said stuffing;

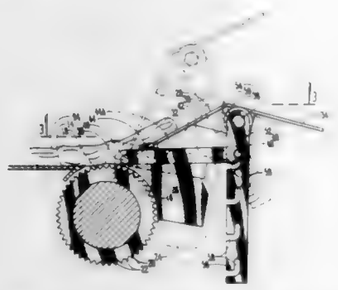
a strip connecting said head section and said body section, said strip permitting independent movement of both said head section and said body section relative to said strip, said strip is adapted to be located on an exterior bar structure with both said head section and said body section being dropped downwardly by gravity assuming a juxtaposed position, said strip being composed of a plurality of directly joined layers, each of said layers comprising said exterior layer;

a plurality of appendages being connected to said body section, each one of said appendages including a bendable wire rod that permits wrapping of each of said appendages around an exterior structure and also intertwining of said appendages together in an overlapping, wound together, configuration, said bendable wire rod of each one of said appendages to remain in its wrapped configuration until manually unwrapped;

a fastener arrangement connecting said head section to said

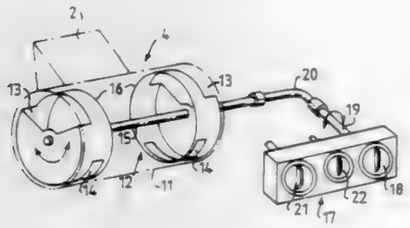
body section when in said juxtaposition, said fastener arrangement being spaced from said strip.

5,350,334
MEAT SKINNING MACHINE WITH PIVOTAL DEFLECTOR PLATE
Donald D. Holms, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa
Filed Sep. 15, 1993, Ser. No. 121,609
Int. Cl.[5] A22C *17/12*
U.S. Cl. 452—127 **9 Claims**



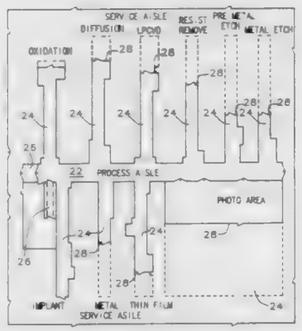
1. An improved meat skinning machine having a frame, an elongated skinning blade with a cutting edge, a rotatable gripping roll positioned adjacent the blade, and a motor operatively connected to the gripping roll, the improvement comprising:
an elongated deflector plate pivotally connected to the frame and having opposite forward and rearward edges and opposite sides, the forward edge being positioned closely to the blade so as to deflect meat upwardly after the meat engages the blade; and
angle adjustment means for adjusting the angle of the deflector plate relative to the blade.

5,350,335
DISTRIBUTOR DEVICE FOR A VENTILATION SYSTEM IN A VEHICLE
Roland Andersson, Sollebrunn, Sweden, assignor to Saab Automobile Aktiebolag, Sweden
Filed Mar. 15, 1993, Ser. No. 30,116
Claims priority, application Sweden, Sep. 17, 1990, 9002950-5
Int. Cl.[5] B60H *1/26*
U.S. Cl. 454—121 **19 Claims**



1. A ventilation distributor device for a vehicle ventilation system for distributing ventilation to a plurality of ventilator nozzles in the vehicle, the distributor device comprising:
a substantially cylindrical housing having a first circumferential housing surface and a first housing end wall; at least one first outlet in the first circumferential surface and at least one second outlet in the first end wall;
a substantially cylindrical ventilator unit rotatably journaled in the housing to rotate with respect to the housing, the ventilator unit having a second circumferential ventilator unit surface and a second ventilator unit end wall;
at least one first aperture in the second circumferential surface and placed so that rotation of the ventilator unit may bring one first aperture of the ventilator unit to coincide with one first outlet from the housing; at least one second aperture in the second end wall placed so that rotation of the ventilator unit in the housing may bring one second aperture to coincide with one second outlet from the housing;
at least one ventilator unit first aperture and one ventilator unit second aperture being merged to define a single continuous aperture; at least a first one of the first housing outlets and at least a first one of the second housing outlets together communicating with both of the second circumferential surface and the second end wall for being supplied with air via the single continuous aperture.

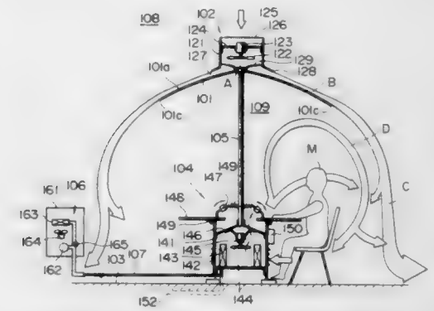
5,350,336
BUILDING AND METHOD FOR MANUFACTURE OF INTEGRATED SEMICONDUCTOR CIRCUIT DEVICES
Hsing-Hai Chen; Hsiao-Pin Tseng, both of Hsinchu, and Chih-Yuan Lu, Taipei, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan
Filed Apr. 23, 1993, Ser. No. 51,381
Int. Cl.[5] F24F *3/16*
U.S. Cl. 454—187 **18 Claims**



1. A plant for the manufacture of integrated circuit semiconductor devices, that is initially sized to accommodate the initial phase of low volume manufacturing capability, but adapted to be economically expanded to provide a high volume final phase manufacturing capability with a minimum disruption to the operating manufacturing line, that includes a containment building having a (1) manufacturing equipment floor and (2) a lower basement floor beneath the manufacturing equipment floor comprising:
an enclosed process aisle, including a ceiling, on said manufacturing floor;
a plurality of spaced tunnels, each including walls and a ceiling, opening into said aisle, and adapted to contain manufacturing equipment or have access to manufacturing equipment through a tunnel wall;
means to provide a clean air environment within said aisle and tunnels, said means to provide clean air including a plenum system over said ceilings, openings in said ceilings, and a means to force air into said plenum, through said opening into said tunnel;
service areas on said manufacturing floor outside of said aisle and said tunnels;
air lock entry means to said aisle;
partitions across said tunnels that separate the initial area in the tunnels needed to accommodate the initial phase of manufacturing from the remaining area in the tunnels that will ultimately be used along with initial area for the final phase of manufacturing;
manufacturing equipment within or accessible to said initial area of said tunnels;

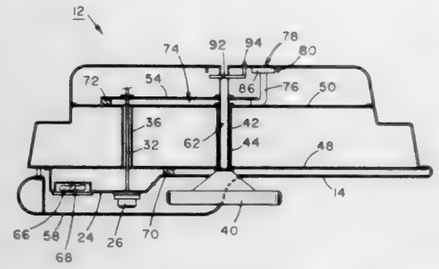
air filters over said openings in said ceilings over the initial areas of said tunnels;
impervious panels over said openings in said ceilings over said remaining areas of said tunnels;
fluid supply lines beneath the tunnels, necessary to service all of the manufacturing equipment used in the initial phase and equipment to be added in the final phase in the tunnels; and
plumbing connections and valves joining said supply lines to said manufacturing equipment to be used in the initial area.

5,350,337
ZONE-FORMING APPARATUS
Fumio Kondo; Yoshiaki Aoki; Tsuyoshi Imaida, all of Nagoya; Hiroki Nozoe, Nishi; Yuji Maki, Nishi, and Shin Watabe, Nishi, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 569,416, Aug. 17, 1990, abandoned. This application Oct. 23, 1992, Ser. No. 965,357
Claims priority, application Japan, Aug. 18, 1989, 1-212643; Aug. 23, 1989, 1-217125; Feb. 16, 1990, 2-36800
Int. Cl.[5] F24F *3/06, 13/00*
U.S. Cl. 454—189 **17 Claims**



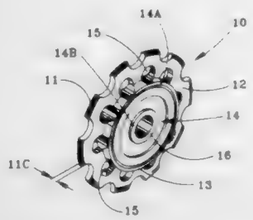
1. An apparatus for conditioning a first zone of fluid and substantially isolating the first zone from a surrounding second zone, the apparatus comprising:
fluid regulating means positioned at a first end of the first zone and for conditioning fluid contained in the first zone, said fluid regulating means circulating the first zone fluid through said fluid regulating means and substantially throughout the first zone;
a jet-stream generating means for generating a stream of fluid at a second end of the first zone;
a guide member positioned at the second end of the first zone and downstream of said jet-stream generating means, said guide members having a guide surface means for substantially guiding said stream of fluid into a canopy-like film layer, said canopy-like film layer initially guided in a radially outward direction and radially beyond said guide surface means, said guide surface means also for guiding said canopy-like film layer in an axial direction, said canopy-like film layer and said guide member defining and isolating the first zone of conditioned fluid from the surround second zone of fluid, the zone being defined by said stream of fluid being guided into said canopy-like film layer, said zone having a diameter larger than said guide member.

5,350,338
VAULT VENTILATOR SYSTEM
Robert R. Hellman, Jr., 3 McKinley St., Naugatuck, Conn. 06770
Division of Ser. No. 732,735, Jul. 18, 1991, Pat. No. 5,194,039, which is a continuation of Ser. No. 597,209, Oct. 11, 1990, abandoned. This application Mar. 15, 1993, Ser. No. 31,632
Int. Cl.[5] F24F *7/00*
U.S. Cl. 454—195 **3 Claims**



1. A vault ventilator system to provide fresh air to the inside of a vault, comprising:
(a) means to cause said fresh air to flow into said vault; and
(b) air passages defined between components of a lock mechanism installed in a door of said vault for the flow of air therethrough, wherein said air passages include a first clearance defined between at least one lock spindle and a lock spindle tube within which said at least one lock spindle is disposed.

5,350,339
DERAILLEUR PULLEY FOR USE WITH BICYCLE DERAILLEUR SYSTEMS
George H. Carmichael, 10 Farrar Rd., Rindge, N.H. 03461
Filed Mar. 10, 1993, Ser. No. 29,129
Int. Cl.[5] F16H *9/00*
U.S. Cl. 474—79 **10 Claims**



1. A chain guide pulley for use with a bicycle rear derailleur system, said chain guide pulley comprising:
a guide sprocket;
a substantially circular outer periphery of said guide sprocket;
a plurality of teeth positioned on said outer periphery, said teeth having predetermined width, depth and thickness dimensions;
a cylindrical shaped inner peripheral surface axially therethrough said guide sprocket, defining thereby a bearing means aperture, said bearing means aperture having a periphery dimensioned to accept therein, into low frictional rotational bearing relationship, a spindle means of said rear derailleur system; and
a plurality of circumferentially spaced-apart debris-clearing apertures, said plurality of apertures located on a concentric between said bearing means and said substantially circularly configured outer periphery.

5,350,340

LOCKABLE DIFFERENTIAL GEAR

Michael Paul, Passau; Eberhard Wilks, Hutthurm, and Peter Sigl, Pocking, all of Fed. Rep. of Germany, assignors to ZF Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

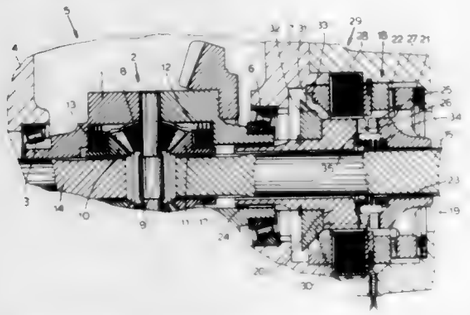
PCT No. PCT/EP89/01151, § 371 Date Mar. 27, 1991, § 102(e) Date Mar. 27, 1991, PCT Pub. No. WO90/04118, PCT Pub. Date Apr. 19, 1990

PCT Filed Sep. 30, 1989, Ser. No. 671,768

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1988, 3833785

Int. Cl.[5] F16H *1/445*

U.S. Cl. 475—237 | **5 Claims**



1. Differential gear having these features:

An axially stationary planet carrier (**1**) drives two center gears (**10**, **11**) over at least one planetary gear (**8**),

each center gear (**10**, **11**) drives an axially mobile output shaft (**14**, **15**),

at least one actuatable clutch (**18** or **36**) with an axially stationary and an axially mobile component (**19**, **20**) connects the planet carrier (**1**) with an output shaft (**15**),

the stationary clutch component (**19**) is corotatably connected with the output shaft (**15**),

a gear housing (**5**) has an intermediate ring part (**7**) between a first and a second main component (**4**, **27**);

the planet carrier (**1**) is supported by a first bearing (**3**) in the first main component (**4**) and by a second bearing (**6**) in the intermediate ring part (**7**),

the mobile clutch component (**20**) is corotatably connected with the planet carrier (**1**), characterized by these features:

the stationary clutch component (**19**) is supported by two axial bearings (**21**, **22**) axially fixed with respect to the second main component (**27**).

5,350,341

INFANT FLAG ENCLOSURE

Maria S. T. Wolscht, RR #1 Catering Rd., Sutton, Ontario, Canada L0E 1R0

Filed Jul. 28, 1993, Ser. No. 98,040

Int. Cl.[5] A63B *9/00, 17/00*

U.S. Cl. 482—35 | **3 Claims**

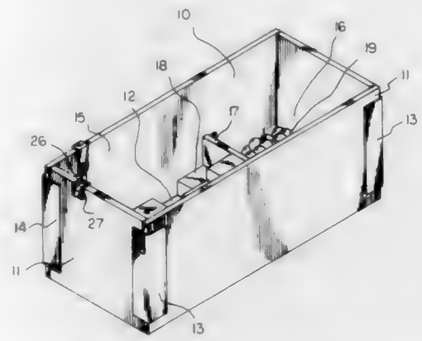
1. An infant dream gym adapted to safely hold and entertain infants from just after birth up to at least twenty-four months of age, said dream gym comprising incombination:

an enclosure formed of four separate walls and a floor, said enclosure including means for releasably securing said walls to said floor and said walls to each other to define said enclosure, said walls and floor being comprised of a sturdy resilient foam material and

a washable plastic film coating covering the surfaces of said foam, said enclosure being free standing

a divider wall of substantially lower height than said four walls separating said enclosure into two areas to define a first area and a second areas, said divider wall being releasably secured to the walls and floor of said enclosure

a plurality of raised padded steps releasably secured to said floor of said enclosure within one of said first or second areas, one of said steps being low relative to remaining



said steps to permit an infant to pull up thereon prior to developing the capability of climbing said steps.

5,350,342

DEFORMABLE GRIP

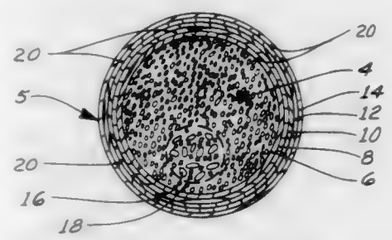
Mark A. Scatterday, 4001 N. 54th. Pl., Phoenix, Ariz. 85018

Continuation of Ser. No. 895,791, Jun. 9, 1992, Pat. No. 5,190,504. This application Feb. 22, 1993, Ser. No. 21,520

The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.

Int. Cl.[5] A63B *23/16*

U.S. Cl. 482—49 | **8 Claims**



7. A semi-resilient exercise grip comprising:

a non-resilient dry core containing a deformable tightly-packed mixture of individual, substantially millet-sized particles that are in continuous contact with each other; and

a resilient covering surround said core wherein when the grip is held in a user's hand in a non-deformed round shape and then compressed by a user's hand, it is deformed into a first shape and upon the release of compressive force, the grip partially resumes the shape it had prior to the deformation and assumes a second shape that is different from said first shape and wherein the effort required to deform the grip increases as the grip is deformed away from a non-deformed shape.

5,350,343

MULTI-FUNCTIONAL HAND GRIPPING DEVICE

Elias S. DaSilva, 77-12 35 Avenue, Apartment B-34, Jackson Heights, N.Y. 11372

Filed Oct. 27, 1993, Ser. No. 143,309

Int. Cl.[5] A63B *21/00*

U.S. Cl. 482—106 | **8 Claims**

1. A multi-functional, hand gripping device which comprises:

(I) a flexible gripping pad which comprises:

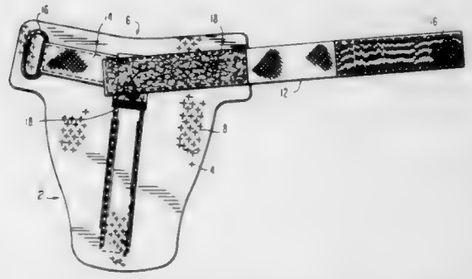
(a) a wrist pad for wrapping at least partway around the wrist of a user for protecting the wrist, the wrist pad covering at least the portion of the wrist adjacent to the palm of the hand of the user; and

(b) a hand pad comprising:

(i) a first end having a width, the first end being proximal to the wrist of the user and securely attached to the wrist pad over its entire width;

(ii) a free end; and,

(iii) a substantially continuous non-grip surface disposed toward the hand of the user extending between the first end and the free end, and a substantially continuous non-slip surface opposite the non-slip surface extending between the first end and the free end, the hand pad being sufficiently wide to substantially



cover the hand surface of the user to form a barrier between the hand surface of the user and an object to be grasped, the hand pad being further adapted to be curved away from the hand surface of the user at the free end, around an object to be grasped, and to form a barrier between the hand surface of the user and the object, the width of the hand pad being tapered from the first end to the wrist end whereby the surface of the hand pad is sized to substantially cover only the hand surface of the user; and

(II) means for securing the gripping pad to the wrist of the user with the wrist pad protecting the wrist of the user and the hand pad substantially covering the hand surface of the user, the securing means being attached to the wrist pad.

5,350,344

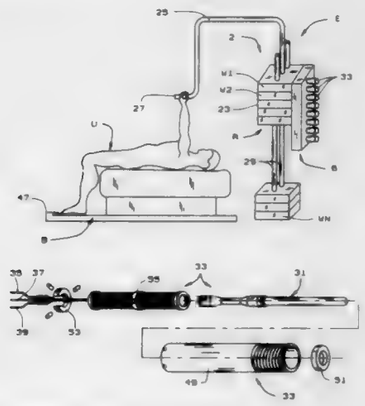
EXERCISE MACHINE

Robert M. Kissel, 757A Windy Ridge, Manchester, Mo. 63021

Filed Jan. 6, 1993, Ser. No. 1,041

Int. Cl.[5] A63B *21/062*

U.S. Cl. 482—98 | **5 Claims**



1. An exercise machine comprising:

a weight stack composed of a plurality of separate weights vertically disposed with respect to each other;

a lift bar disposed for vertical movement with the stack; and

pin means for removably securing a desired portion of the weight stack to the lift bar for vertical movement therewith, whereby the total weight carried by the lift bar is determined by the portion of the weight stack removably secured to the lift bar by the pin means;

said pin means including at least one pin operated by an actuator, said pin being movable by its actuator over a predetermined stroke, said actuator including first means for positively moving the pin to an extended position to removably secure a portion of the weight stack to the lift bar, said actuator first means including a first magnet mechanically secured to move with the pin in a first direction upon application of an electrical current to said first coil, and first electrically operable means for positively moving the pin to the extended position, said first electrically operable means having a first coil longitudinally disposed with respect to the longitudinal axis of the pin;

said actuator means further including second means for positively moving the pin to a retracted position in which the corresponding portion of the weight stack is free of the lift bar, the actuator second means including a second magnet mechanically secured to move with the pin in a second direction.

5,350,345

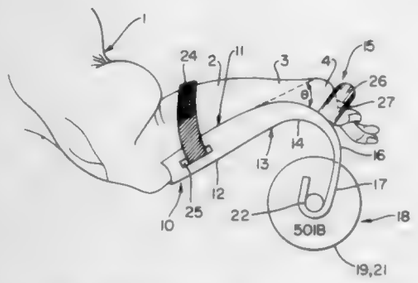
EXERCISE APPARATUS FOR THE UPPER ARM

Mark Frey, 2 Hewlett Rd., New Fairfield, Conn. 06812

Filed Mar. 4, 1993, Ser. No. 27,288

Int. Cl.[5] A63B *21/065*

U.S. Cl. 482—105 | **13 Claims**



1. An exercise apparatus for an arm of a user, said exercise apparatus comprising:

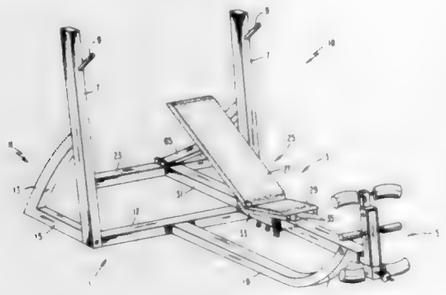
a support including:

a first part for extending along a portion of the lower arm of said user; and

a second part extending from said first part, said second part having an outwardly curved portion for supporting the wrist of said user, and said second part including a weight support portion extending from said curved portion for supporting a weight, said weight support potion extending downwardly and then extending in a curved fashion to form a hook; and

a grip attached to said second part of said support and adapted to be grasped by the hand of said user when said lower arm and wrist of said user are supported in said first and second parts of said support.

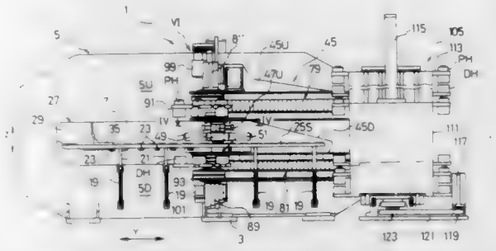
5,350,346
WEIGHT BENCH WITH SLIDABLE SEAT CONSTRUCTION
Guillermo Martinez, Miami, Fla., assignor to Legacy International, Inc., Florida, N.Y.
Filed Jul. 20, 1993, Ser. No. 93,822
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—142 **13 Claims**



1. In a weight bench comprising a frame having means for supporting exercise devices, the improvement comprising
a) an elongated bench support member;
b) a sleeve sized to longitudinally translate along said elongated bench support member;
c) a bench having a back rest and a seat, said back rest including a first supporting frame and said seat including a second supporting frame, each of said back rest and said seat being pivotally attached to said sleeve at a respective end thereof; and
d) a back rest support assembly comprising:
i) a back rest support member having first and second ends; and
ii) a mounting bracket fixed to a portion said frame at an intersection of said portion and one end of said elongated bench support member;
iii) an end face of said first end positioned within said mounting bracket with said first end pivotally attached to said mounting bracket;
iv) said second end of said back rest support member pivotally attached to said first supporting frame;
e) wherein longitudinal translational of said sleeve causes said back rest support member first end to pivot within said mounting bracket and said back rest support member second end to pivot with respect to said first supporting frame.

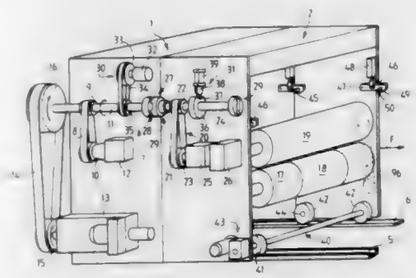
5,350,347
TURRET PUNCH PRESS
Takayuki Fujiwara, Kanagawa, Japan, and Konrad Popp, Augsburg, Fed. Rep. of Germany, assignors to Amada Company, Limited, Kanagawa, Japan
Filed Aug. 12, 1992, Ser. No. 928,314
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1991, 4129556
Int. Cl.[5] B23Q *3/155;* **B21D** *37/04*
U.S. Cl. 483—29 **24 Claims**

1. A turret punch press comprising:
a rotatable upper turret for detachable supporting a punch;
a rotatable lower turret for detachably supporting a die which processes a plate workpiece in collaboration with the punch;
a striker with vertical movement for striking a punch which has been indexed in a work position;
a plate positioning device for moving and positioning, in the X, Y directions, the plate workpiece, supported on a work table; and
a tool changing device for detaching and changing the punch and die on the upper and lower turrets, respectively; characterized by
a punch holder magazine, adjacent to the upper turret, for supporting a punch which is to be detached and changed at the upper turret;
a die holder magazine, adjacent to the lower turret, for supporting a die which is to be detached and changed at the lower turret;
wherein:



a punch changing position on the upper turret is below the punch holder magazine, a die changing position on the lower turret is above the die holder magazine, and the tool changing device is positioned on a vertical line between the punch and die changing positions so that the punches and dies can be changed by a direct linear operation, and a semicircular auxiliary table with a support member for supporting a plate workpiece is provided on the side of the lower turret.

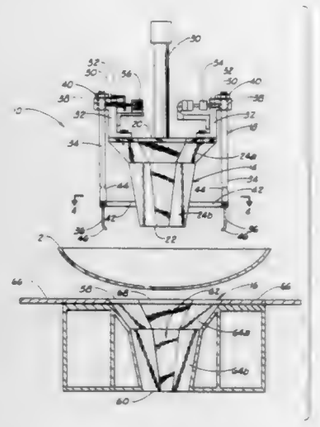
5,350,348
MODULAR MACHINE FOR MAKING CARDBOARD PACKAGES
Bernard Guot, Le Port Albert, 49460 Feneu, France
Filed Oct. 21, 1992, Ser. No. 964,411
Claims priority, application France, Oct. 21, 1991, 91 12982
Int. Cl.[5] B31B *1/14, 1/25, 49/02*
U.S. Cl. 493—34 **13 Claims**



1. A modular machine for making packages from a sheet material comprising:
a plurality of treatment modules, one of the modules being a driving module and the other modules being driven modules, the modules being separably connected in alignment along a line having a geometrical axis, each module having a first side, a second side, a first end and a second end;
a plurality of rails mounted parallel to the geometric axis of the line, wherein each module is capable of being guided in translation along the rails towards or away from an adjacent module;
a plurality of driven module locking devices, each driven module locking device having a first locking portion mounted on the first end of each of the driven modules and a second locking portion mounted on the second end of each of the driven modules, the first locking portion being adapted to cooperate in a locking relationship with the second locking portion of an adjacent driven module;
a driving module locking device having at least one portion mounted to the first end of the driving module;
a plurality of rotary members for performing a treatment function, one rotary member being mounted to each module;
a plurality of driven shafts having a first and second end, one driven shaft being coupled to each driven module and extending parallel to the geometric axis of the line, each driven shaft driving each rotary member in a cyclical, rotating movement;
an initial shaft having a first end and a second end and being mounted to the driving module and extending parallel to the geometric axis of the line, the initial shaft driving the rotary member of the driving module in a cyclical, rotating movement;
a transmitting means connected to each rotary member for transmitting the rotating movement of each shaft to each rotary member;
a plurality of driven coupling devices for coupling the first end of each shaft of each driven module with the second end of each shaft of each adjacent driven module, so that the shafts are aligned by translation of the driven modules respective one another;
a driving coupling device for coupling the first end of the initial shaft of the driving module to an adjacent second end of the shaft of a driven module so that the initial shaft is aligned by translation of the driving and driven modules respective one another;
a rotary drive device coupled to the second end of the initial shaft by an initial transmitting means, the rotary drive device transmitting rotary movement from the rotary drive device to the initial shaft;
a controlling automatic indexing device adapted to cooperate with the initial shaft for stopping the initial shaft and each driven shaft at a predetermined indexing angular position;
controlled indexing devices mounted to each driven module for receiving indexing commands from the controlling automatic indexing device; and
a plurality of mechanical blocking means, one mechanical blocking means being coupled to each driven module for blocking the driven shaft at the angular indexing position.

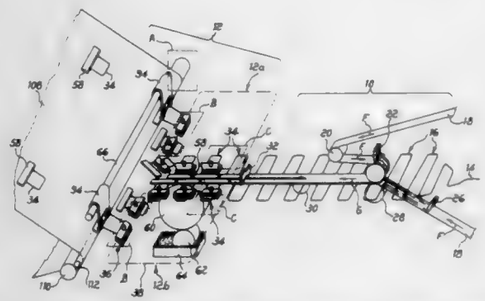
5,350,349
FLOWER POT COVER APPARATUS HAVING FINGERS SUSPENDED FROM MALE MOLD
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Filed Apr. 30, 1993, Ser. No. 56,700
Int. Cl.[5] B65H *45/12*
U.S. Cl. 493—154 **8 Claims**

8. A method of forming a sheet of material into a flower pot or flower pot cover, the steps of the method comprising:
providing a male mold having an outer periphery defining a male forming surface, and a plurality of fingers suspended about the outer periphery thereof for telescoping movement between a lower position and an upper position relative to said male mold;
providing a female mold having a female opening defining a female forming surface;
moving said male mold to a storage position wherein said male forming surface is spaced a distance from said female forming surface;
placing a sheet of material over the female opening;
positioning said fingers in the lower position in order for said fingers to engage and control the sheet of material as said male mold is moved into the female opening;
moving said male mold into a forming position within the female opening to form the sheet of material into a flower pot or flower pot cover while said fingers engage the sheet of material and telescope from the lower position to the upper position with respect to said male mold;
moving said male mold from the forming position to the storage position; and



securing said fingers in the Upper position after moving said male mold into the forming position and before moving said male mold into the storage position.

5,350,350
APPARATUS FOR FORMING AND APPLYING HANDLES TO BAGS
Giacomo Maccalli, Lodi, Italy, assignor to Curioni Sun S.r.l., Teramo, Italy
PCT No. PCT/IT91/00107, § 371 Date Jul. 23, 1993, § 102(e) Date Jul. 23, 1993, PCT Pub. No. WO93/10968, PCT Pub. Date Jun. 10, 1993
PCT Filed Dec. 6, 1991, Ser. No. 90,155
Int. Cl.[5] B31B *37/62, 37/86, 1/86*
U.S. Cl. 493—221 **17 Claims**



1. An apparatus for carrying rope handles for paper bags from a rope handle forming station to a paper bag forming station, said rope handle forming station feeding two rows of rope handles in a predetermined direction, the rope handles having U bent ends, wherein said rode handles are applied on a paper strip at an entrance of said paper bag forming station before forming the paper bags, the apparatus comprising:
a first and a second plurality of means for gripping the rope handles, said first plurality of gripping means and said second plurality of gripping means being arranged substantially side by side and laterally with respect to the feeding direction of the two rows of rope handles fed from said rope handle forming station;
supporting means for carrying said gripping means along an

essentially close path, said path being rectilinear at least along a first tract adjacent to that in which the rope handles supported by said gripping means are fed towards the bag forming station entrance and along a second tract in which said rode handles move transversely with respect to the direction along which said rope handles are introduced in the bag forming station;

means for smearing a glue layer on a surface of sheets for holding the ends of the U bent rope of the rope handle provided in a median zone of said first tract;

means for inhibiting said means for gripping the rope handles provided along the second tract; and

means for bringing the handles to the bag forming station.

5,350,351

MEDICAL TREATMENT INSTALLATION HAVING AN IMAGING SYSTEM AND A THERAPY FIELD TRANSMITTER FOR TREATING A SUBJECT

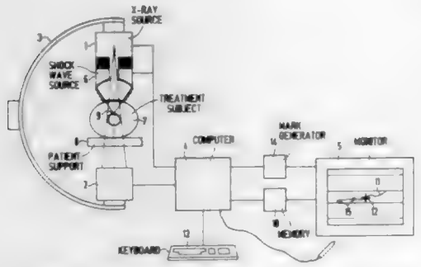
Edmund Saffer, Eggolsheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 27, 1993, Ser. No. 10,009

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1992, 4211274

Int. Cl.[5] A61B *6/00*

U.S. Cl. 601—2 **5 Claims**



1. A medical installation for treating a region of a patient, comprising:

imaging means for generating an image of a region to be treated of a patient;

therapy means for generating a focused therapy field converging at a focal point for treating a pathology in said region;

means for displacing the position of said focal point relative to said region so that said focal point of said focused therapy field is successively incident at a plurality of locations in said region during generation of said focused therapy field said therapy means being activated to generate said therapy field at each of said locations; and

means interacting with said imaging means for generating at least a first indicator in said image corresponding to each of said locations of said focal point of said focused therapy field in said region at which said therapy means was active and a second indicator indicating the location at which the focal point is currently incident.

5,350,352

ACOUSTIC PRESSURE PULSE GENERATOR

Gerhard Buchholtz, and Matthias Mahler, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 4, 1992, Ser. No. 830,912

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1991, 4105476

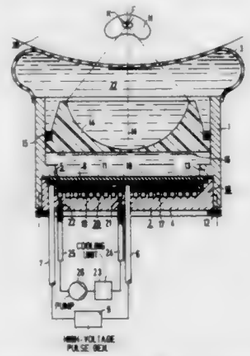
Int. Cl.[5] A61B *17/22*

U.S. Cl. 601—4 **10 Claims**

1. A pressure pulse generator comprising:

a housing having a pressure-tight space terminated at one side by a membrane and containing an acoustic propagation medium, said membrane normally being disposed in an initial position in said housing;

means for rapidly displacing said membrane from said initial position causing said membrane to interact with said acoustic propagation medium to generate a pressure pulse therein;



means for maintaining said acoustic propagation medium in said space at a static pressure which is greater than the ambient pressure for returning said membrane to said initial position after displacement of said membrane; and

means for cooling said membrane and said means for rapidly displacing said membrane containing a coolant which is separated from said acoustic propagation medium.

5,350,353

Patent Not Issued For This Number

5,350,354

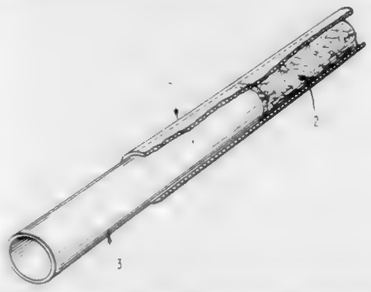
WATER-DISPOSABLE TAMPON APPLICATORS AND BIODEGRADABLE COMPOSITION FOR USE THEREIN

Robert L. Billmers, Stockton, N.J., assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 457,658, Dec. 27, 1989. This application Dec. 6, 1991, Ser. No. 802,786

Int. Cl.[5] A61F *13/70*

U.S. Cl. 604—11 **14 Claims**



1. A water-dispersible, toilet-disposable, biodegradable applicator for tampons comprising a self-supporting, open-ended tube having a composition consisting essentially of 45 to 90%, by weight, starch, 5 to 40%, by weight, plasticizer and 5 to 15%; by weight water and wherein the starch contains a) 40% or less of amylose or b) more than 40% by weight amylose modified with up to 20%, by weight propylene oxide, and is dispersed by being gelatinized prior to formation of the applicator to provide water-dispersibility to the applicator and a substantially rigid plunger or inner tube movably received within said open-ended tube and adapted to expel a tampon therefrom.

5,350,355

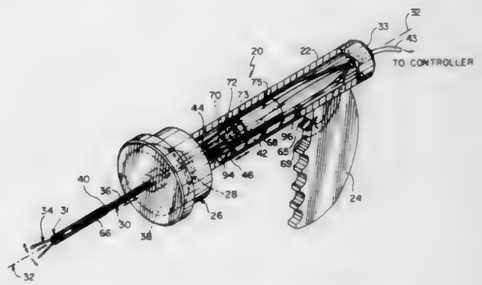
AUTOMATED SURGICAL INSTRUMENT

Martin J. Sklar, Needham, Mass., assignor to Automated Medical Instruments, Inc., Needham, Mass.

Filed Feb. 14, 1992, Ser. No. 837,352

Int. Cl.[5] A61M *37/00;* **A61B** *17/32*

U.S. Cl. 604—23 **39 Claims**



1. An automated surgical instrument comprising:

a housing;

a substantially rigid tube having a lumen, a distal end projecting from an end of the housing and a proximal end positioned within the housing;

a linear drive motor for moving the distal end of the tube toward and away from the housing substantially along a direction of a longitudinal axis of the tube wherein the linear drive motor comprises a screw drive and the tube includes a threaded surface interengaging the screw drive.

5,350,356

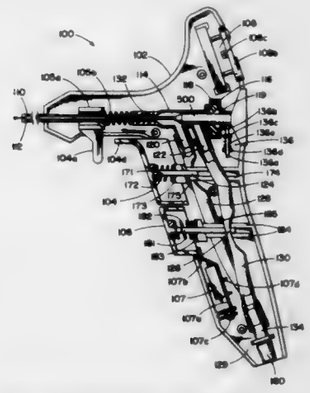
ENDOSCOPIC SUCTION-IRRIGATION INSTRUMENT WITH INSERTABLE PROBE LOCKABLE IN PARTIALLY WITHDRAW POSITION

Thomas O. Bales; Saul Gottlieb; Jurgen A. Kortenbach, all of Miami; Dana W. Ryan, Davie; Kevin W. Smith, Miami, and Matthew S. Solar, Cooper City, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Filed Oct. 9, 1992, Ser. No. 959,244

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—27 **12 Claims**



1. An endoscopic instrument comprising:

a) a fluid chamber having proximal and distal ends;

b) a hollow cannula coupled to the distal end of said fluid chamber, said hollow cannula having a distal end;

c) a port means at said proximal end of said fluid chamber;

d) a probe means having a first locking means on an outer surface thereof, said probe means extending through said port means, said fluid chamber, and said hollow cannula in a first fully inserted position, with a distal end of said probe means extending past said distal end of said cannula;

e) a shell housing said fluid chamber and said port means; and

f) a second automatic locking means housed by said shell, said second automatic locking means for automatically engaging said first locking means of said probe means when said probe means is partially withdrawn to a second position of said probe means where said distal end of said probe means is within said cannula, said second automatic locking means being releasable to allow said probe means to be fully withdrawn from said cannula.

5,350,357

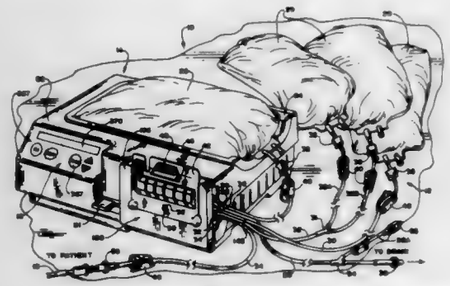
PERITONEAL DIALYSIS SYSTEMS EMPLOYING A LIQUID DISTRIBUTION AND PUMPING CASSETTE THAT EMULATES GRAVITY FLOW

Dean Kamen, Bedford; Geoffrey P. Spencer, and Douglas E. Vincent, both of Manchester, all of N.H., assignors to Deka Products Limited Partnership, Manchester, N.H.

Filed Mar. 3, 1993, Ser. No. 27,328

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—29 **35 Claims**



1. A system for performing peritoneal dialysis comprising

a pumping mechanism comprising a diaphragm,

means for establishing flow communication with the patient's peritoneal cavity through the pumping mechanism, and

actuating means for emulating a selected gravity flow condition by applying fluid pressure to the diaphragm to operate the pumping mechanism to either move dialysis solution from the peritoneal cavity or move dialysis solution into the peritoneal cavity, and

control means selectively operating the actuating means for applying fluid pressure to emulate either a fixed head height condition or different head height conditions.

5,350,358

BENT CO-AXIAL CATHETER

Geoffrey S. Martin, Mississauga, Canada, assignor to Med-Pro Design, Inc., Mississauga, Canada

Filed Dec. 22, 1992, Ser. No. 995,213

Int. Cl.[5] A61M *3/00*

U.S. Cl. 604—43 **20 Claims**

1. A co-axial dual lumen catheter comprising:

a main section having proximal and distal ends and including a first outer tube;

a tip section at said distal end;

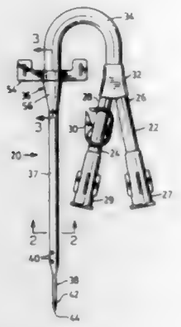
an attachment at said proximal end for anchoring the catheter to a patient immediately adjacent an incision where the catheter entry is effected;

a U-shaped proximal portion having a distal end attached to the main section at said proximal end of the main section and having a proximal end, the proximal portion including a second outer tube;

a junction attached to the proximal end of the proximal portion;

an inner tube extending loosely inside the first and second outer tubes and anchored at the tip and the junction to define a return lumen and combining with the first and second outer tubes to define an annular intake lumen;

intake and outlet tubes attached to the junction, the tubes



extending generally in parallel with the main section and to one side of the main section and being coupled to the respective intake and return lumens; and

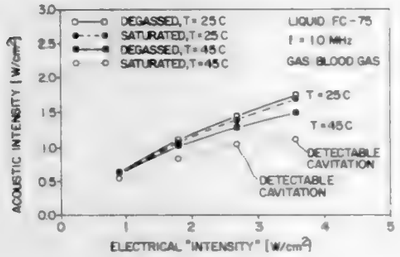
the inner tube being thin walled relative to the wall thickness of the first outer tube, and the second outer tube having a greater cross-sectional area than the first outer tube.

5,350,359

CONTROL, TREATMENT AND/OR DIAGNOSIS OF PHYSIOLOGICAL CONDITIONS WITH DEGASSED PERFLUOROCARBON LIQUID

Thomas H. Shaffer, Lansdowne, and Maria R. Wolfson, Philadelphia, both of Pa., assignors to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.

Filed Jul. 16, 1992, Ser. No. 916,332
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—51 **12 Claims**



1. A process for removing gas emboli from a cavity, space, void or gap present in or around a patient's gastrointestinal tract, uterus, bladder, nasal cavity, sinus cavity or acoustic canal, said process comprising the steps of:

(a) degassing a perfluorocarbon liquid,

(b) delivering the degassed perfluorocarbon liquid to a cavity, space, void or gap present in or around the patient's gastrointestinal tract, uterus, bladder, nasal cavity, sinus cavity or acoustic canal containing a gas emboli,

(c) permitting the degassed perfluorocarbon liquid to absorb at least a portion of the gas emboli to form an emboli-containing perfluorocarbon liquid, and

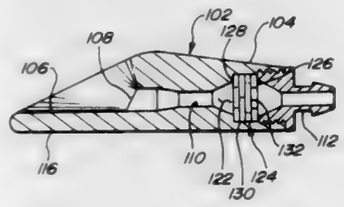
(d) removing from the cavity, space, void or gap present in or around the patient's gastrointestinal tract, uterus, bladder, nasal cavity, sinus cavity or acoustic canal the emboli-containing perfluorocarbon liquid.

5,350,360

IMPLANTABLE ACCESS DEVICES

William D. Ensminger, and Robert F. Gavin, both of Ann Arbor, Mich., assignors to Michigan TransTech Corporation, Ann Arbor, Mich.

Division of Ser. No. 940,619, Sep. 4, 1992, Pat. No. 5,281,199, which is a continuation-in-part of Ser. No. 818,626, Jan. 10, 1992, Pat. No. 5,226,879, which is a continuation-in-part of Ser. No. 654,661, Feb. 15, 1991, Pat. No. 5,180,365, which is a continuation-in-part of Ser. No. 539,793, Jun. 18, 1990, Pat. No. 5,053,013, which is a continuation-in-part of Ser. No. 487,541, Mar. 1, 1990, Pat. No. 5,057,084. This application Oct. 8, 1993, Ser. No. 148,394
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—93 **20 Claims**



1. An implantable access device for permitting access to an internal catheter by a filament such as a needle, external catheter, wire or optical fiber, said device being implantable within the body of a patient and comprising:

a housing having a funnel shaped entrance orifice, a passageway and an exit orifice, said entrance orifice having a decreasing cross sectional area defining a target area for insertion of said filament and causing said filament introduced into said entrance orifice to be directed to and enter said passageway, said passageway connecting said entrance orifice with said exit orifice;

a leaflet valve positioned within said passageway and normally remaining closed for providing resistance to fluid flow through said passageway, said leaflet valve also permitting passage of said filament therethrough for enabling said filament to communicate with said internal catheter, said leaflet valve including a resilient disk of elastomeric material having a single slit extending thereacross and defining two leaves in said disk; and

supporting means for supporting said access device within the body of a patient.

5,350,361

TRI-FOLD BALLOON FOR DILATATION CATHETER AND RELATED METHOD

Ross Tsukashima, San Diego; Matthew Jordan, Los Angeles, and Gordon Jung, San Diego, all of Calif., assignors to Medtronic, Inc., Minneapolis, Minn.

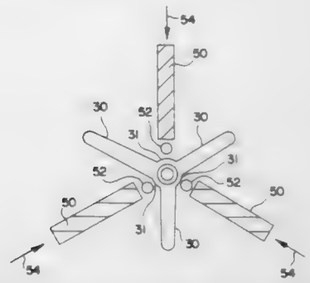
Filed Nov. 10, 1993, Ser. No. 150,673
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **4 Claims**

1. A method for preparing an elongate tri-fold dilatation catheter balloon, comprising the steps of:

(a) drawing said balloon into an elongate interstitial channel defined by three substantially cylindrical pins;

(b) applying negative pressure to a lumen of said balloon to deflate said balloon into a tri-fold configuration;

(c) removing said balloon from said interstitial channel while maintaining said negative pressure;



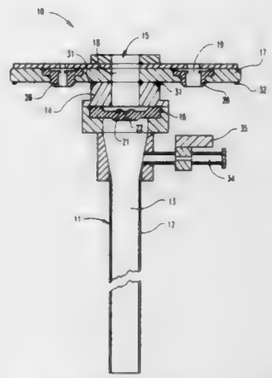
(d) softening said balloon along three longitudinal lines evenly spaced around said elongate balloon.

5,350,362

SELECTABLE SEAL CANNULA

Albert E. Stouder, Jr., 318 N. West, Tipton, Ind. 46072

Continuation-in-part of Ser. No. 903,370, Jun. 24, 1992, Pat. No. 5,211,633. This application May 18, 1993, Ser. No. 62,992
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—167 **23 Claims**



1. A device for a surgical cannula, said surgical cannula having a tubular member defining a passageway insertable into a medical patient and a housing member at a proximal end of the tubular member and adapted to receive a movable member transversely across the passageway of the tubular member, comprising:

(a) a movable member mountable to the housing cannula and movable transversely across the passageway;

(b) a first aperture in said movable member;

(c) a first valve body mountable in said first aperture, said first valve body having an opening sized to receive and provide a fluid tight seal around a first medical device;

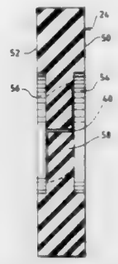
(d) a second aperture in said movable member sized to receive a second medical device, wherein said movable member is transversely movable across the passageway of the cannula between a first position with said first valve body aligned with the passageway and a second position with the second aperture aligned with the passageway.

5,350,363

ENHANCED SHEATH VALVE

Roberta D. Goode, Miami, and Lawrence A. Weinstein, Davie, both of Fla., assignors to Cordis Corporation, Miami Lakes, Fla.

Filed Jun. 14, 1993, Ser. No. 77,242
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—167 **30 Claims**



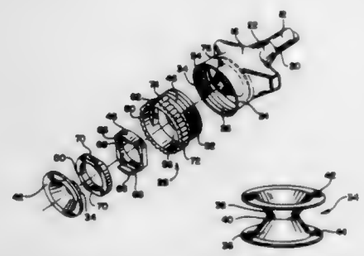
1. A catheter which comprises a tubular catheter body having a proximal and a distal end, a housing carried on said proximal end, and an elastomeric valve partition member having a first face and a second, opposed face secured in said housing, both of said faces defining a recess of substantially rectangular cross section to reduce the central thickness of said partition member, said rectangular cross section each having a first side parallel to the plane of said partition member which is of greater length than the sides of said rectangular cross section adjacent thereto, and a slit extending between said first and second faces within said recesses, in which said elastomeric partition member comprises a slit-defining elastomeric material which has an elongation of 900 to 1500 percent, whereby elongated members may extend through said partition member and catheter body with sealing at said partition member.

5,350,364

UNIVERSAL SEAL FOR TROCAR ASSEMBLY

Randy R. Stephens, Fairfield, Ohio; John M. Collins, Ipswich, Mass.; Robert Farra, Leominster, Mass., and Dean Pichon, Concord, Mass., assignors to Ethicon, Inc., Cincinnati, Ohio

Division of Ser. No. 781,026, Oct. 18, 1991, Pat. No. 5,197,955. This application Jan. 4, 1993, Ser. No. 108
Int. Cl.[5] A61M *29/02*
U.S. Cl. 604—167 **9 Claims**



1. A trocar assembly for providing communication into an anatomical cavity, comprising:

(a) a trocar tube defining an interior lumen having an open distal end portion and an open proximal end portion for accommodating axial reciprocation of an elongate implement of lesser cross-sectional dimension therethrough;

(b) means adjoining said proximal end portion of said trocar tube defining a chamber having open distal and proximal end portions that communicate with said lumen and permit axial reciprocation of such an elongate implement therethrough;

(c) seal means positioned in said chamber, said seal means having a generally hourglass shape defining generally converging and diverging side walls that form a constricted center bore portion therebetween allowing an elongate implement to pass therethrough in sealing engagement therewith, said seal means sealing said proximal end portion of said chamber

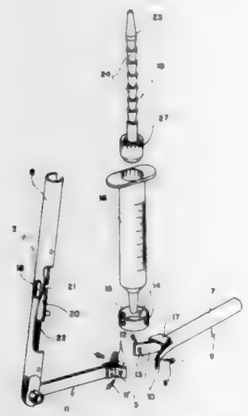
(d) compressing means for compressing said center bore portion so as to reduce the inner diameter thereof, said compressing means applying a twisting force to said seal means.

5,350,365

SURGICAL INSTRUMENT FOR INJECTING/REMOVING NON-SOLID SUBSTANCES

Roberto De Godoy Moreira, Rua Sao Salvador, 99, Sao Paulo, SP, Brazil

Filed Aug. 2, 1993, Ser. No. 101,460
Claims priority, application Brazil, Nov. 16, 1992, PI 9204536
Int. Cl.[5] A61M *5/00, 5/315*
U.S. Cl. 604—187 **9 Claims**



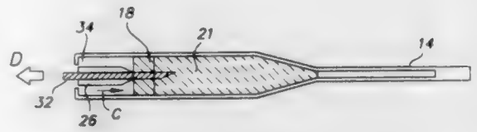
1. A surgical instrument for injecting/removing non-solid substances from a body, particularly a human body, comprising first and second legs (**1**, **2**) pivotally connected to each other at a respective first end of each, said first leg having means (**15**, **17**) for receiving and retaining a syringe (**16**), and said second leg having means (**18**, **22**) for selectively retaining a plunger (**19**) in cooperation with said syringe, said first and second legs being selectively pivotable between a first position wherein said plunger (**19**) is received within said syringe (**16**) and a plurality of second positions wherein said plunger (**18**) moves within said syringe (**16**) in order to inject/remove a non-solid substance, wherein said means for receiving and retaining includes a receiving ring having bores and said first leg has an upper half and a lower half, each of said upper and lower halves having first tabs with through bores extending therethrough wherein said receiving ring is attached to said first tabs of both said upper and lower halves through cooperation between said bores and through bores.

5,350,366

STORAGE DEVICE WITH POSITIVE DISPLACEMENT DISPENSER BY MEANS OF EGRESS THROUGH A PIERCED SEPTEM

Mark S. Schlosser, Seattle, Wash., and Lionel S. Goldring, Irvine, Calif., assignors to SpaceLabs Medical, Inc., Redmond, Wash.

Continuation of Ser. No. 535,903, Jun. 11, 1990, Pat. No. 5,207,654. This application Dec. 17, 1992, Ser. No. 992,068
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.
Int. Cl.[5] A61B *5/00*
U.S. Cl. 604—203 **21 Claims**



1. A fluid storage system, comprising:

a vessel for storing a fluid therein;

sealing means disposed in said vessel;

a fluid contained in said vessel, said fluid being separated by said sealing means from at least a portion of the wall of said vessel;

access means for passing through a portion of the wall of said vessel where said sealing means separates said fluid from the wall of said vessel, said access means then passing through said sealing means such that one end of said access means communicates with said fluid and the other end of said access means extends outwardly from said vessel; and

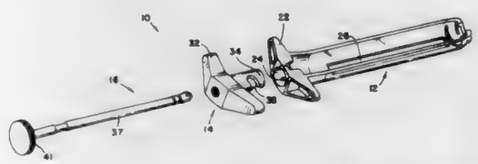
means for causing said fluid to flow from said vessel through said access means.

5,350,367

SNAP TOGETHER HYPODERMIC SYRINGE HOLDER

Mark A. Stiehl; Eugene Sisto, both of Rochester; William A. Bergstresser, Prattsburg, and Ronald R. Vacek, Rochester, all of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Nov. 6, 1990, Ser. No. 609,963
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—232 **7 Claims**



1. An injection molded hypodermic syringe holder adapted to receive a disposable medicament-containing ampoule including a bore and a piston within said bore, said syringe holder comprising

a semi-cylindrical hollow frame portion shaped to receive an ampoule and having a generally cylindrical portion having on the frame side of its inside surface a projecting lug and a cut-away portion opposite said lug;

an axially movable clamping element rotatable about its longitudinal axis within the cylindrical portion of said frame portion and engageable with an associated ampoule to securely immobilize the ampoule within the frame portion of the syringe holder, said clamping element comprising a barrel portion at the distal end and thereof, a handle portion at the proximal end thereof, a helical groove on the outer surface of said barrel portion, a bore therethrough, and ramp means for permitting said lug to access said helical groove connecting said helical groove with the distal end surface of said clamping element; said barrel portion being sized to rotate and translate within said cylindrical head;

a plunger element having a rod portion having on its distal end a piston engaging means for engaging the piston of said ampoule, said rod portion and piston engaging means being axially slidable and receivable within said bore of said clamping element;

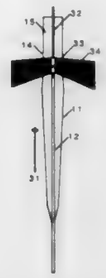
wherein said lug can be slided through said ramp means to access and engage said helical groove, whereby said lug secures the clamping element to said frame portion such that all of the elements of the syringe holder are in cooperative engagement with one another.

5,350,368

TETHERED BUTTERFLY NEEDLE TRAP

Jack W. Shields, 1950 Las Tunas Rd., Santa Barbara, Calif. 93103

Filed Dec. 17, 1992, Ser. No. 993,236
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—263 **5 Claims**



1. A tethered trap for safely shielding a hollow-bore steel needle having a winged hub assembly and trailing cylindrical tubing attached thereto; said tethered trap comprising a puncture-resistant, semi-rigid hollow cone; said tethered trap being internally dimensioned to slide over said trailing cylindrical tubing, and wherein said tethered trap further comprises:

(a) an open leading end resembling an open mouth with an internal diameter larger than the external diameter of the hub of said winged hub assembly, V-shaped recesses on each side, and a superior leading surface extending to form a flexible tether;

(b) an open trailing end with an internal diameter less than the internal diameter of said open leading end, and nearly equal to or greater than the external diameter of said trailing cylindrical tubing,

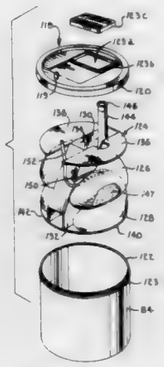
(c) a body portion between said leading and said trailing end, said body portion having symmetrically paired horizontal slits extending from said V-shaped recesses to terminate in paired horizontal slots, the combined length of said slits and slots being greater than the distance between the leading tip of said hollow-bore steel needle and the trailing edges of the wings in said winged hub assembly, the width of said slots being greater than the thickness of each wing in said winged hub assembly, and the length of said slots being greater than the distance between the leading and said trailing edges of said wings where enclosed in said paired horizontal slots.

5,350,369

APPARATUS AND METHODS FOR CLOSED COLLECTION OF HUMAN WASTES

James P. Workman, Spring Hill, Kans., and Thomas S. Hargest, Charleston, S.C., assignors to Burke, Inc., Mission, Kans.

Division of Ser. No. 314,716, Feb. 23, 1989, Pat. No. 5,058,222.
This application Oct. 18, 1991, Ser. No. 778,516
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—327 **1 Claim**



1. A replacement waste collection unit, comprising:

an outer canister including a closed bottom wall and at least one closed side wall having an upper edge, and a removable top wall having an aperture and a sealing lid removably closing said aperture;

an upstanding supporting liner disposed within said canister, said liner defining a central well;

a reservoir bag within said canister and straddling said supporting liner;

a waste receptacle bag within said canister and straddling said supporting liner; and

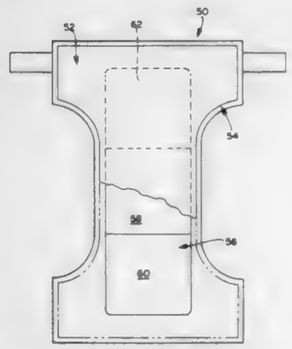
a patient interface, adapted for external engagement with an area at least partially surrounding a human anal region and adapted to be operatively connected to said receptacle bag, within the canister.

5,350,370

HIGH WICKING LIQUID ABSORBENT COMPOSITE

David M. Jackson, Roswell, and Billie J. Matthews, Woodstock, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

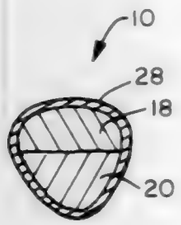
Filed Apr. 30, 1993, Ser. No. 56,280
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—367 **15 Claims**



1. A high wicking liquid absorbent composite comprising:

a relatively uniform mixture of from about 5 to about 20 percent fine wettable fiber having a length less than about 2 millimeters and a fiber diameter between about 0.5 and 5.0 microns, from about 3 to about 30 percent pulp fibers, from about 50 to about 90 percent superabsorbent and from 0 to about 10 percent binder, said percentages being on a dry weight basis, based upon the total weight of said mixture, said mixture being compressed into a composite having a density of from about 0.1 to about 0.5 grams per cubic centimeter and, a vertical wicking height of at least about 10 centimeters in one hour.

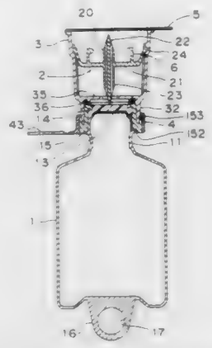
5,350,371
CATAMENIAL TAMPON
Thomas P. Van Iten, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Continuation of Ser. No. 798,371, Nov. 26, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 14,071
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—398 **22 Claims**



1. A tampon comprising:
a) an absorbent curved slightly longitudinally along a central longitudinal axis prior to insertion into a woman's vagina, said absorbent having a length, and a major and a minor radius of curvature located on opposite sides of said longitudinal axis, said major and minor radii having zones of different fiber densities, said zones extending substantially along said length of said absorbent, wherein a cross section of said absorbent along said curved central longitudinal axis one of said zones is located directly adjacent to and above said axis and the other of said zones is located directly adjacent to and below said axis; and
b) withdrawal string attached to said absorbent.

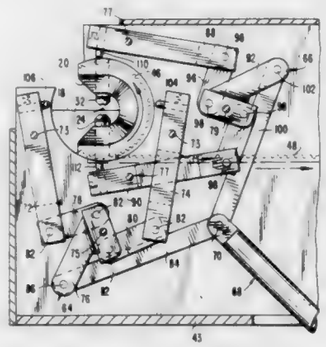
5,350,372
SOLVENT CONTAINER WITH A CONNECTER FOR COMMUNICATING WITH A DRUG VIAL
Koji Ikeda, Osaka; Hitoshi Futagawa, Kusatsu; Toshihiro Kikuchi, Suita; Minoru Honda, Otsu, and Masanobu Iwasa, Osaka, all of Japan, assignors to Nissho Corporation, Osaka, Japan
Filed May 18, 1993, Ser. No. 62,541
Claims priority, application Japan, May 19, 1992, 4-152925
Int. Cl.[5] A61B *19/00*
U.S. Cl. 604—414 **6 Claims**

1. A solvent container with a means for communicating with a drug vial, comprising:
a flexible container body containing a solvent and having a mouth covered with a self-sealing means;
a guide capsule having an open end at one end and being removably mounted on the mouth of said flexible container body at the other end, said open end being sealed by a sealing member prior to insertion of a drug vial;
a double-pointed needle having a sharp piercing edge at each end and a hub at its central part, said needle being slidably arranged in said guide capsule to constitute a means for communicating with a drug vial in cooperation with said guide capsule;
an inner wall of said guide capsule having one or more vertical guide grooves for holding said double-pointed needle and for guiding said double-pointed needle towards the mouth of said flexible container, said guide capsule having a partition wall with a hole for insertion of the piercing edge of said double-pointed needle into said



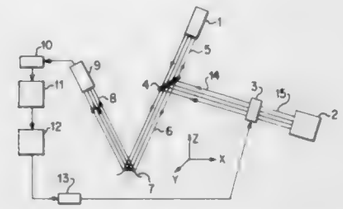
mouth of said container body through said self-sealing means; and
wherein said guide grooves extend above and below said hub and extend to said partition wall.

5,350,373
APPARATUS FOR ATTACHING SURGICAL SUTURE COMPONENTS
Francis D. Colligan, Waterbury, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.
Filed Oct. 9, 1992, Ser. No. 959,114
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—1 **24 Claims**



1. Apparatus for attaching a surgical suture to an eyeless needle comprising:
support means;
die means having a die cartridge with at least one jaw slidably secured thereto, said die means supported by said support means for selectively impacting the needle such that a portion of the needle is deformed to maintain the suture therein, said die cartridge being rotatable between at least two positions relative to said support means;
first drive means associated with said support means for actuating said at least one jaw to impact the needle in at least one of said two positions; and
second drive means associated with said support means for rotating said die cartridge at least to a second of said two positions relative to said needle.

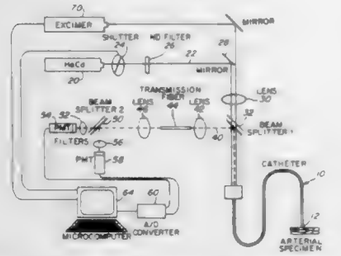
5,350,374
TOPOGRAPHY FEEDBACK CONTROL SYSTEM FOR PHOTOABLATION
Robert F. Smith, 3714 Henley Dr., Pittsburgh, Pa. 15235
Filed Mar. 18, 1993, Ser. No. 33,329
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—5 **17 Claims**



1. An apparatus for performing photorefractive keratectomy on an anterior surface of a cornea comprising:
a laser means for producing a collimated beam of photoablative radiation said beam having a cross sectional area;
a modulating device having dividing means for subdividing said beam's cross sectional area into sub beams, said sub beams comprised of laser radiation covering an optically useful area of the cornea, said modulating device further comprises blocking means for either blocking or transmitting said radiation comprising said sub beams; an optical projection system comprised of a light source emitting visible light, said light being collimated and directed through a reticle, said reticle producing a grid of collimated rays equal in number to said sub beams;
a dielectric mirror transparent to the light of said optical projection system, said mirror fully reflecting said radiation of said sub beams, said mirror collinearly aligning the collimated rays of said optical projection system with said sub beams to produce a combined beam, said combined beam being projected upon said cornea;
a video camera for imaging said grid projected on said cornea onto a raster of pixels;
an analog to digital converter for converting said light projected image of each said pixel into a binary word and transmitting said word through a direct memory access channel;
a preprocessor containing a high speed microprocessor and memory, said preprocessor receiving and translating said words into three-dimensional corneal coordinates;
a computer means receiving said corneal coordinates and generating an array of errors between said corneal coordinates and desired coordinates; a digital to analog converter generating said external control signals in response to said errors, said signals in turn controlling said modulating device.

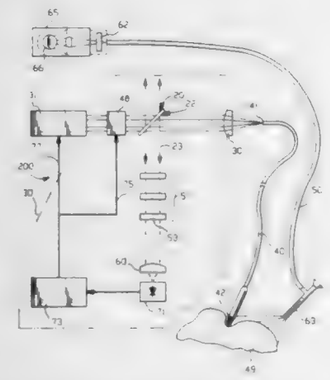
5,350,375
METHODS FOR LASER INDUCED FLUORESCENCE INTENSITY FEEDBACK CONTROL DURING LASER ANGIOPLASTY
Lawrence I. Deckelbaum, Woodbridge, and John J. Scott, Milford, both of Conn., assignors to Yale University, New Haven, Conn.
Filed Mar. 15, 1993, Ser. No. 31,540
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—7 **11 Claims**

1. A method for controlling the effectiveness of fluid flushing in a blood vessel, comprising the steps of:
advancing a catheter through a blood vessel to a region of interest, said catheter including an optical fiber extending therethrough;
introducing a flushing fluid into the region of interest in the blood vessel;
stimulating fluorescence from material in the region of interest adjacent to the distal end of said optical fiber by transmitting through said optical fiber laser radiation having a wavelength and intensity to stimulate such fluorescence;
monitoring the intensity of the fluorescence from material in the region of interest; and



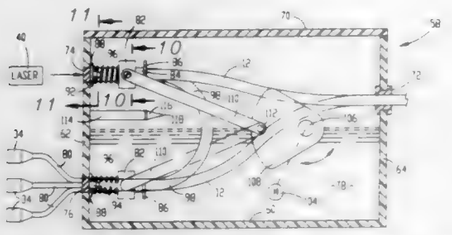
increasing the amount of flushing fluid in the region of interest if the intensity of said fluorescence is representative of less than a desired amount of flushing fluid in the region of interest.

5,350,376
OPTICAL CONTROLLER DEVICE
Joseph D. Brown, Acworth, Ga., assignor to CeramOptec, Inc., Enfield, Conn.
Filed Apr. 16, 1993, Ser. No. 47,190
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—12 **4 Claims**



1. A method of controlling a surgical laser instrument comprising the steps of:
generating a laser beam;
guiding said laser beam onto biological tissue;
detecting radiation emitted by pyrolytic glowing of at least partially carbonized biological tissue and by background illumination wherein said background illumination is intentionally created so as to be only within a very narrow spectral band relative to the spectral band radiation emitted by pyrolytic glowing of biological tissue;
separating radiation emitted by pyrolytic glowing from radiation emitted by background illumination; and,
controlling the intensity of said laser beam in response to the intensity of radiation detected from the pyrolytic glowing of said biological tissue while excluding radiation detected from background illumination.

5,350,377
MEDICAL CATHETER USING OPTICAL FIBERS THAT TRANSMIT BOTH LASER ENERGY AND ULTRASONIC IMAGING SIGNALS
Thomas R. Winston, Leawood, and John M. Neet, Shawnee, both of Kans., assignors to Ultrasonic Sensing & Monitoring Systems, Inc., Leawood, Kans.
Filed Oct. 26, 1992, Ser. No. 966,279
Int. Cl.[5] A61B *17/36, 8/12*
U.S. Cl. 606—15 **10 Claims**



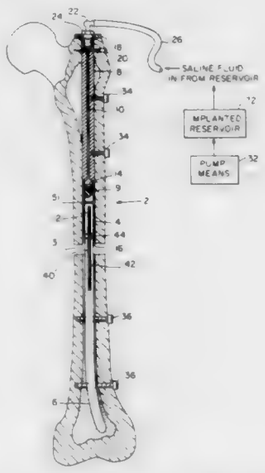
1. A catheter for insertion into the body to effect medical treatment, comprising:
an elongated catheter tube having opposite ends;
an optical fiber extending through said catheter tube and terminating in a tip disposed in the body when the catheter tube is inserted therein, said optical fiber having an input end opposite the tip;
a panel adjacent said input end of said optical fiber;
a port on said panel;
ultrasonic transducer means connected to said port for applying ultrasonic signals to said input end of the fiber for transmission therealong to said tip and for receiving reflected ultrasonic signals received by said tip and transmitted along said fiber to said input end, thereby providing ultrasonic information regarding the treatment area adjacent the fiber tip;
a window on said panel at a location thereon spaced from said port;
means for applying laser energy through said window to said input end of the fiber to effect treatment of the area adjacent the fiber tip; and
means for effecting selective movement of said input end of the fiber between a first position adjacent said window for the receipt of laser energy and a second position adjacent said port for the receipt of said ultrasonic signals and the reflected signals.

5,350,378
POSTERIOR EXTERNAL PELVIC FIXATOR
J. Dean Cole, 530 E. Central, Apt. 1005, Orlando, Fla. 32801, and Daniel F. Justin, 4544 Tescott Dr., Orlando, Fla. 32817
Filed May 19, 1993, Ser. No. 64,589
Int. Cl.[5] A61B *17/60*
U.S. Cl. 606—57 **4 Claims**



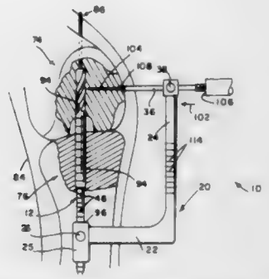
1. A pelvic fixation device for stabilization and reduction of pelvic ring fractures of a patient, comprising:
a frame formed of a radiolucent material, the frame including first and second sections, each one having generally a U shape with a relatively straight connecting portion, each connecting portion having a back, and curving end portions, the sections being oriented so that the backs of the respective connecting portions face each other, and the end portions including a plurality of openings extending parallel to the connecting portion of the frame for providing adjustable placement of the fixation means;
first and second fixation means connected to the frame in spaced relation relative to each other for fixing the frame to the posterior pelvis on opposite sides of the fracture;
adjustment means for moving the first and second fixation means relative to each other for stabilizing and reducing the pelvic fracture; and
an adjustable spacing means for adjusting the distance between the frame and the patient.

5,350,379
BONE AND TISSUE LENGTHENING DEVICE
Alan R. Spievack, Watertown, Mass., assignor to Genesis Orthopedics, Cambridge, Mass.
Filed Feb. 18, 1993, Ser. No. 18,820
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—63 **15 Claims**



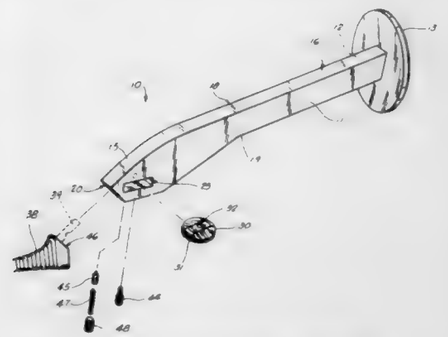
1. A device insertable in the medullar canal of a bone for lengthening the bone and tissue in a human or animal by incrementally extending the distance between discrete portions of the bone which are separated into a proximal portion and a distal portion to permit continued growth between the separated portions comprising:
an intramedullary nail having a distal portion and a proximal portion;
the proximal portion of the nail being securable within the medullar canal or the bone at the proximal end of the bone;
the distal portion of the nail being securable within the medullar canal of the bone at the distal end of the bone;
a hydraulic cylinder connected to the proximal portion of the nail;
a piston connected to the distal portion of the nail and movable in the cylinder;
a supply of operating fluid contained within an implantable elastomeric diaphragm in communication with the cylinder; and
racheting mechanism between the piston and cylinder to limit the relative movement of the proximal and distal portions of the intramedullary nail and the bone portions to which they are securable to one direction.

5,350,380
METHOD FOR SECURING A LIGAMENT REPLACEMENT IN A BONE
E. Marlowe Goble, Logan, Utah, and Jerry L. Lower, Bourbon, Ind., assignors to Depuy Inc., Warsaw, Ind.
Filed Jan. 15, 1993, Ser. No. 4,987
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—80 **14 Claims**



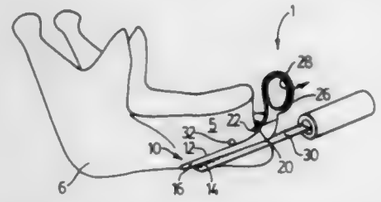
10. A method for anchoring a replacement ligament inside a knee which includes a tibia bone and a femur bone, the method comprising the steps of:
drilling a first hole through the tibia and the femur with a drill to form a ligament tunnel therethrough for receiving a replacement ligament therein;
drilling a second hole in the femur at an angle relative to the ligament tunnel using the drill inside the ligament tunnel as a support to establish the position of the second hole;
inserting a ligament replacement into the ligament tunnel; and
inserting a transverse pin through the second hole to secure one end of the replacement ligament to the femur.

5,350,381
ORTHOPEDIC BROACH HANDLE APPARATUS
Mark Melton, Memphis, Tenn., assignor to Smith & Nephew Richards Inc., Memphis, Tenn.
Filed Mar. 11, 1993, Ser. No. 29,770
Int. Cl.[5] A61F *5/04;* **B23D** *71/04*
U.S. Cl. 606—85 **9 Claims**



1. A broach and handle apparatus; comprising:
a) an orthopedic broach for preparation of the intramedullary canal of a bone to receive an implant, the broach including a tapered roughened portion and an upper end portion with a connector thereon,
b) an elongated handle body portion having a first end portion with a connection end adapted for connecting to the upper end portion of the broach at the connector, and a second portion adapted to be gripped by a user;
c) a socket disposed at the first end portion of the handle body for receiving the connector portion of the broach thereunto;
d) a slot positioned at the distal end of the handle body and in communication with the socket;
e) rotary means rotatably disposed within the slot about a rotational axis for forming a connection between the handle and the broach, the rotating member having a release surface portion that allows the broach to be separated from the handle when the release surface is positioned in the socket and adjacent the broach, wherein said release surface forms an acute angle with said rotational axis.

5,350,382
SURGICAL CUTTING GUIDE
Jerrold E. A. Armstrong, 1324 Victoria Street, Windsor, Ontario, Canada N8X 1P1
Filed Jan. 5, 1993, Ser. No. 760
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—87 **41 Claims**



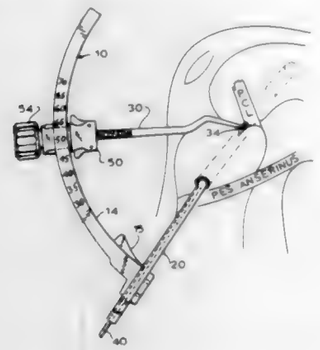
1. A cutting guide for use in human maxillofacial surgery comprising a bowed body portion adapted to substantially surround the anterior surface of the mandible, said body portion having:
(i) a means for guiding a saw blade to cut said mandible in a straight line comprising a substantially planar bottom surface on said body portion;
(ii) a means to locate the guide in a desired position on said mandible comprising one or more elongate pins adapted for insertion into holes created in the mandible;
(iii) a gripper adapted to be gripped by a user to stabilize said guide means while said cut is performed;
(iv) a bowed inner periphery adapted for placement adjacent the anterior surface of the mandible; and
(v) a retracting means to retract a neurovascular bundle protruding from the surface of the mandible to avoid contact with said saw while making said cut, said retracting means comprising a part of said inner periphery closely spaced to said mandible and located beneath said bundle while said cut is being made.

5,350,383
ADJUSTABLE DRILL GUIDE WITH INTERCHANGEABLE MARKING HOOKS
Reinhold Schmieding, and Donald Grafton, both of Naples, Fla., assignors to Arthrex, Inc., Naples, Fla.
Continuation-in-part of Ser. No. 837,886, Feb. 20, 1992, Pat. No. 5,269,786. This application Feb. 18, 1993, Ser. No. 19,355
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—96 **16 Claims**

1. An adjustable drill guide for arthroscopic anterior cruciate ligament surgery, comprising:
an outrigger in the shape of an arc of a circle having a center;
a sighting device coupled to said outrigger, said sighting device having a longitudinal axis extending toward said center of said circle, said sighting device being adapted to receive a guide pin for marking a position for drilling a tibal tunnel;
a plurality of different selectable interchangeable marking hooks, each selected one of said plurality of interchangeable marking hooks having a proximal end, a distal end,

and a central axis extending from said proximal end to said distal end, said proximal end being mountable on said outrigger such that said central axis of said selected marking hook is disposed at a selected predetermined angle with respect to said longitudinal axis of said sighting device, said selected predetermined angle corresponding to said selected marking hook;

a tip located at said distal end of each of said marking hooks, said tip comprising a straight longitudinal member extending through said distal end, said tip having opposed ends projecting from opposite sides of said distal end, a first of said opposed ends extending toward said sighting device



and a second of said opposed ends extending away from said sighting device, said tip being oriented at said selected predetermined angle with respect to said central axis of said marking hook; and

means slidably coupled to said outrigger for receiving one of said plurality of different interchangeable marking hooks, said means for receiving one of said interchangeable marking hooks being slidable along said outrigger to a marked position corresponding with said selected predetermined angle, whereby said tip is automatically aligned with said guide pin so as to provide a visual indication of guide pin position and angle.

5,350,384

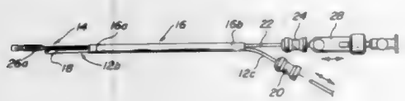
CATHETER GUIDE AND CLAMP INSTRUMENT

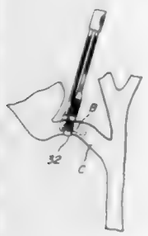
Gordon S. Clement, Norristown, and Christopher Kebert, Philadelphia, both of Pa., assignors to Pilling Co., Ft. Washington, Pa.

Continuation of Ser. No. 683,270, Apr. 10, 1991, abandoned. This application Dec. 18, 1992, Ser. No. 993,521

Int. Cl.[5] A61F *11/00*

U.S. Cl. 606—108 **13 Claims**





1. An instrument suitable for use in operative cholangiography associated with a laparoscopic cholecystectomy wherein a trocar is inserted through an incision, and a catheter is used to introduce a fluid contrast medium into the cystic duct, comprising in combination:

a catheter;

guide means for extending through said trocar for guiding a distal section of said catheter through an incision into the cystic duct, said guide means including diverting means for changing the direction of movement of the catheter so that it approaches the cystic duct in a first direction transverse to the length of the cystic duct, and is then diverted for movement along a first path within said cystic duct, said first path extending in a direction along the length of the cystic duct;

clamp means for clamping the cystic duct against the catheter; and

means for supporting said clamp means in said trocar for longitudinally sliding movement relative to said guide means along a second path which intersects said first path;

said clamp means having oppositely disposed jaws movable between an open position and a closed position, said jaws having clamping surfaces engageable with the cystic duct when the catheter extends along the length of the cystic duct, said clamping surfaces being disposed sufficiently close to each other, when the jaws are in said closed position, that the cystic duct is compressed against the catheter sufficiently tightly to prevent fluid contrast medium from flowing through the duct about the catheter;

whereby fluid contrast medium injected by said catheter extending through said guide means into the cystic duct is prevented, by said clamp means, from escaping through the incision.

5,350,385

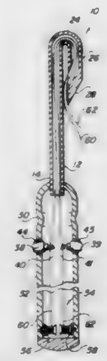
SURGICAL STAB WOUND CLOSURE DEVICE AND METHOD

William J. Christy, 1324 Sunset Dr., Winter Park, Fla. 32789

Filed Apr. 28, 1993, Ser. No. 54,856

Int. Cl.[5] A61B *17/06*

U.S. Cl. 606—139 **13 Claims**



1. A surgical suturing apparatus for closing incisions penetrating a plurality of layers of tissue, comprising:

a tubular body having an inner and an outer surface and a first and second end, and dimensioned to fit into a human hand, the first end having a hole dimensioned to hold suture material;

suture thread holding means positioned inside and attached to the inner surface of the tubular body;

releasable suture thread clamping means positioned inside and attached to the inner surface of the tubular body;

suture thread release means extending through the outer surface of the tubular body and communicating with and operable on the releasable suture thread clamping means; and

a suture needle attached to the first end of the tubular body, the suture needle having a bore dimensioned to hold suture material and having a first, proximal end and a second, distal end and with two substantially parallel straight sections each adjacent a corresponding one of the ends and with a curved middle section between the two straight sections, the straight section adjacent the distal end having a pointed tip.

5,350,386

Patent Not Issued For This Number

5,350,387

INSTRUMENT FOR APPLYING AN ADHESION PROPHYLAXIS FOR ENDOSCOPIC SURGERY

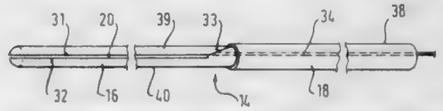
Kurt Semm, Kiel, Fed. Rep. of Germany, assignor to WISAP Gesellschaft fur wissenschaftlichen Apparatebau mbH, Sauerlach, Fed. Rep. of Germany

Filed Oct. 2, 1992, Ser. No. 955,197

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1991, 4132855

Int. Cl.[5] A61B *17/08*

U.S. Cl. 606—151 **14 Claims**



1. An instrument for the application of an adhesion prophylaxis for endoscopic surgery, comprising a circular cylindrical application sleeve (**10**) for introduction into a trocar cannula or for direct introduction into a pneumoperitoneum, said sleeve (**10**) surrounding a rod-like film carrier (**14**) receiving a film-like adhesion prophylaxis (**22**), and an axially elongated reception area (**20**) at a forward end of the film carrier for receiving and winding up the adhesion prophylaxis (**22**).

5,350,388

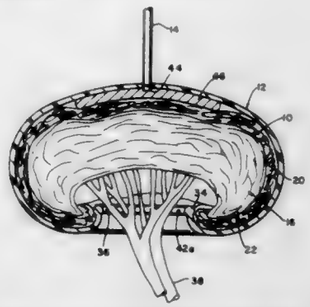
HEMOSTASIS APPARATUS AND METHOD

Adam Epstein, Brooklyn, N.Y., assignor to Albert Einstein College of Medicine of Yeshiva University, Bronx, N.Y.

Division of Ser. No. 708,101, May 28, 1991, Pat. No. 5,186,711, which is a continuation of Ser. No. 320,016, Mar. 7, 1989, abandoned. This application Jun. 3, 1992, Ser. No. 893,109

Int. Cl.[5] A61F *2/00*

U.S. Cl. 606—154 **14 Claims**



1. Knit mesh for use in effecting hemostasis of an organ comprising a mesh of semirigid bioabsorbable knit material defining two layers inseparably knit together, each of said layers defining interstices with an interstice of one layer communicating with a plurality of only partially aligned interstices of the other layer.

5,350,389

Patent Not Issued For This Number

5,350,390

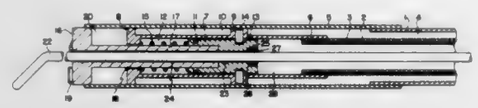
DEVICE FOR REMOVAL OF INTRALUMINAL OCCLUSIONS

Arieh Sher, 369 Congressional La., Rockville, Md. 20852

Continuation of Ser. No. 857,556, Mar. 25, 1992, abandoned. This application Jun. 30, 1993, Ser. No. 83,760

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—159 **24 Claims**



1. A device for removal of intraluminal occlusions which comprising:

a catheter having a distal end for insertion into a patient and a proximal end;

a distal piston located within said distal end of said catheter for simultaneous longitudinal and rotational movement therein, said distal piston including a closed wave-shaped groove in a circumferential surface thereof which receives at least one stationary pin fixed to an inner portion of said distal end of said catheter; and

a cutting head, said cutting head being attached to said distal piston for simultaneous longitudinal and rotational movement together with said distal piston.

5,350,391

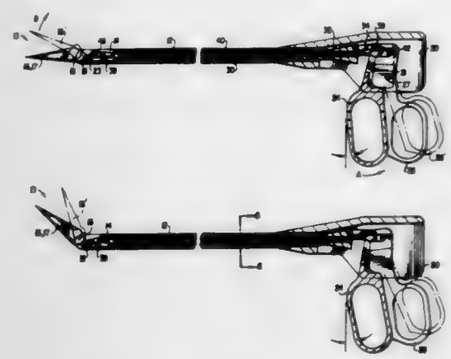
LAPAROSCOPIC INSTRUMENTS

Benedetto Iacovelli, 3400 Livingston St., Washington, D.C. 20015

Continuation-in-part of Ser. No. 962,651, Oct. 19, 1992. This application Dec. 2, 1992, Ser. No. 984,506

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—170 **58 Claims**



1. A surgical instrument, especially for use in laparoscopic surgery comprising:

an elongated shaft bearing distal and proximal ends;

a surgical implement pivotably mounted to the distal end of said shaft, said surgical implement comprising a pair of members movable with respect to one another for performing an operative step;

first and second handles pivotally mounted to the proximal end of the shaft, said handles being pivotally movable together relative to the shaft and pivotable relative to each other; said handles being operatively connected to said surgical implement such that pivotable movement of both of said handles together in one direction simultaneously pivots both of said members of said implement together in one direction relative to the shaft, and pivotable movement of said first handle relative to said second handle

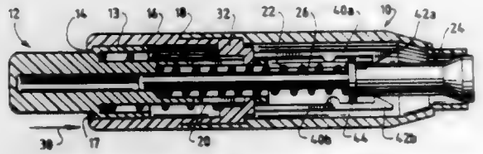
moves the members of the surgical implement relative to each other to perform said operative step.

5,350,392

LANCING DEVICE WITH AUTOMATIC COCKING

D. Glenn Purcell, Edwardsburg, Mich., and Robert C. Whitson, Osceola, Ind., assignors to Miles Inc., Elkhart, Ind.

Filed Feb. 3, 1994, Ser. No. 191,123
Int. Cl.[5] A61B *17/34*
U.S. Cl. 606—182 **6 Claims**



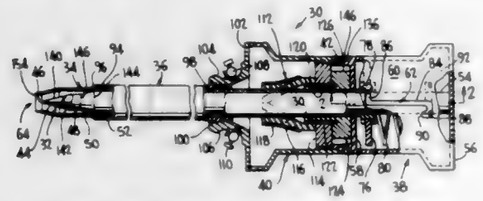
1. An automatically cocking lancing device, comprising:
a casing having a firing button opening and a plunger opening;
a firing button movably positioned in said casing through said firing button opening;
a plunger movably positioned within said casing;
a firing button spring engaging said firing button and said casing;
a drive spring engaging said firing button and said plunger; and
a latch mechanism adjacent to said plunger for engaging said plunger, said firing button engaging said latch mechanism to disengage said plunger.

5,350,393

SAFETY TROCAR PENETRATING INSTRUMENT

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Filed Jan. 6, 1992, Ser. No. 817,113
Int. Cl.[5] A61B *17/34*
U.S. Cl. 606—185 **8 Claims**



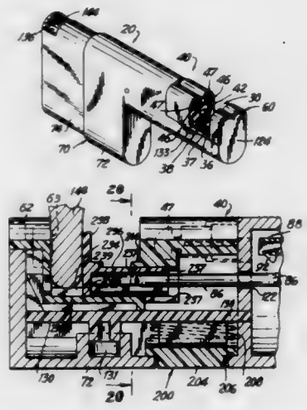
4. A safety trocar penetrating instrument comprising
an elongate, tubular portal sleeve having a distal end and a proximal end;
housing means coupled with said proximal end of said portal sleeve and having valve means therein for controlling fluid flow through said housing and said portal sleeve and for allowing passage of instruments therethrough;
a trocar disposed within said portal sleeve and having a proximal end and a solid distal end terminating at a sharp tip beyond said distal end of said portal sleeve for penetrating tissue;
a safety shield disposed between said portal sleeve and said trocar having a proximal end and a distal end and being movable between an extended position with said safety shield distal end protruding distally from said trocar tip and a retracted position with said safety shield distal end disposed proximally of said trocar tip to expose said trocar tip, said safety shield proximal end having a plate rotatably mounted thereon;
hub means abutting said housing means for receiving said proximal ends of said trocar and said safety shield, said trocar and said safety shield passing through said valve means in said housing means;
bias means for biasing said safety shield toward said extended position and for permitting said safety shield to move to said retracted position in response to a proximally directed force applied to said safety shield distal end, said bias means returning said safety shield to said extended position when the force applied to said safety shield distal end is removed, said bias means including a spring having a first end secured to said plate and a second end secured to said hub means, said spring being torsionally wound to rotatably bias said plate; and
releasable locking means for selectively locking said safety shield in said retracted position.

5,350,394

INTEGRATED DISPOSABLE EAR PIERCING EARRING AND CLUTCH CARTRIDGE WITH EAR CLAMP

Samuel J. Mann, Englewood, N.J., assignor to Inverness Corporation, Fair Lawn, N.J.

Continuation-in-part of Ser. No. 975,318, Nov. 12, 1992, Pat. No. 5,263,960. This application Apr. 29, 1993, Ser. No. 55,470
Int. Cl.[5] A61B *17/34*
U.S. Cl. 606—188 **16 Claims**



1. An ear piercing cartridge assembly comprising an ear piercing earring; ear piercing earring retaining subassembly means for releasably supporting said ear piercing earring; a clutch; clutch retaining subassembly means for releasably supporting said clutch; a floor disposed between said ear piercing earring subassembly means and said clutch assembly means forming a saddle region therebetween; clamp means movable from a first position to a second position for clamping an earlobe, disposed within said saddle region, against said clutch retaining subassembly means when said clamp means is in said second position; and clamp adjustment means for adjusting the position of said clamp means along said floor to accommodate a variety of earlobe thicknesses.

5,350,395

ANGIOPLASTY APPARATUS FACILITATING RAPID EXCHANGES

Paul G. Yock, 505 Parnassus Ave. (M-1184), San Francisco, Calif. 94143-0124

Continuation of Ser. No. 774,479, Oct. 10, 1991, abandoned, which is a continuation of Ser. No. 545,200, Jul. 5, 1990, Pat. No. 5,064,273, which is a continuation of Ser. No. 361,676, Jun. 1, 1989, abandoned, which is a continuation of Ser. No. 117,357, Oct. 27, 1987, abandoned, which is a continuation of Ser. No. 852,197, Apr. 15, 1986, abandoned. This application Nov. 2, 1992, Ser. No. 937,977
The portion of the term of this patent subsequent to Oct. 22, 2008, has been disclaimed.
Int. Cl.[5] A61M *25/00*
U.S. Cl. 606—194 **8 Claims**



1. An elongated catheter for performing an arterial procedure or diagnosis which facilitates the rapid exchange thereof over a guidewire without the utilization of exchange wires or extension wires, comprising:
a) an elongated catheter shaft which has:
proximal and distal ends,
a distal section having an inner tubular member with a first inner lumen which is adapted to slidably receive a guidewire therein and which extends between a distal guidewire port provided in the distal end of the catheter shaft and a proximal guidewire port spaced at least about 10 cm proximally from the distal guidewire port and a relatively longer distance from the proximal end of the catheter shaft, and an outer tubular member completely surrounding the inner tubular member along at least a portion of the length of the inner tubular member and permanently secured thereto and defining a second inner lumen between the inner and outer tubular members in the distal section, and
a proximal section comprising an elongated tubular member with a third inner lumen extending therein which is in fluid communication with the second inner lumen defined between the inner and outer tubular member in the distal section; and
b) means on the distal section of the catheter shaft distal to the proximal guidewire port to perform an intra-arterial procedure or diagnosis.

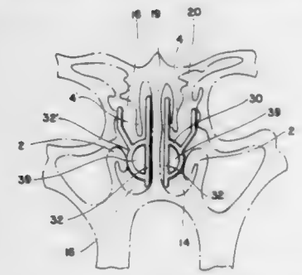
5,350,396

NASAL SPLINT

Isaac Eliachar, Pepper Pike, Ohio, assignor to Hood Laboratories, Pembroke, Mass.

Filed Apr. 15, 1993, Ser. No. 48,842
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—199 **6 Claims**

1. A nasal splint for protecting the mucoperiosteum covering the middle turbinates and the inferior turbinates in a human nasal cavity, which comprises;
(a) a base portion, which comprises a planar sheet with a first outer surface, an opposite, second outer surface, a first end, an opposite, second end and a longitudinal axis extending on a straight line from the first to the second end; said sheet surfaces being oval shaped with the length being co-extensive with the longitudinal axis; said base portion being of a size adapted to be received in a human nasal cavity with the first surface oriented towards the perpendicular plate of ethmoid bone;
(b) a hollow tube portion connected to the second surface of the base portion on a line parallel to said straight line, said hollow tube having a first open end, a second open end and a tubular body joined to the second surface of the base portion so as to form a closed portion with respect to said second surface extending between the open ends, said tubular body being of a size to bridge the space between said base portion and the inferior turbinate when said splint is received in said nasal cavity;
said tubular body defining an open lumen within the tube which lumen has a longitudinal axis on a line between the



first and second open ends, said longitudinal axis being parallel to the longitudinal axis of the base portion described above; and
(c) a wing portion connected to the base portion and extending outwardly to a wing edge, from said base portion on an angle transverse to said straight line a predetermined distance, said wing being of a size and said angle being such as to position said wing edge in the space between the middle turbinate and the middle meatus when said splint is received in said nasal cavity.

5,350,397

AXIALLY DETACHABLE EMBOLIC COIL ASSEMBLY

Thomas J. Palermo, Palo Alto, and Phong Pham, San Jose, both of Calif., assignors to Target Therapeutics, Inc., Fremont, Calif.

Filed Nov. 13, 1992, Ser. No. 975,376
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—200 **7 Claims**



1. A pusher-coil assembly for use in occluding a selected site within a vessel comprising:
(a) a vasoocclusive coil having a proximal end and a distal end and having an enlarged member with a diameter, said enlarged member fixedly attached to the coil's proximal end;
(b) a pusher housing having a distal end and having a socket at its distal end, said socket having a throat aperture diameter smaller than the diameter of the enlarged member within which the enlarged member is held; and
(c) a plunger located within the pusher housing, said plunger axially movable relative to the pusher housing and coil from a first position to a second position, which axial movement pushes the coil and the enlarged member through the socket throat and thus uncouple the coil from the pusher housing.

5,350,398

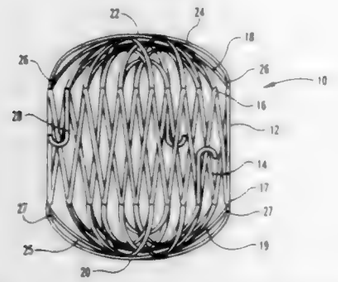
SELF-EXPANDING FILTER FOR PERCUTANEOUS INSERTION

Dusan Pavcnik, Klanec #15, Nova Gorica, Slovenija, 65000, Yugoslavia; Sidney Wallace, 3024 Pittsburg, Houston, Tex. 77005, and Kenneth C. Wright, 1802 Haver, Houston, Tex. 77006

Continuation of Ser. No. 699,190, May 13, 1991, abandoned. This application May 28, 1993, Ser. No. 68,594

Int. Cl.[5] A61M *29/00*

U.S. Cl. 606—200 | **11 Claims**



1. A filter for placement within a fluid passageway of a living body, comprising:

a self-expanding stent having an endless series of wire sections joined by bends into a closed zig-zag configuration that is compressible to a reduced diameter but being resiliently self-expanding from said reduced diameter to an enlarged diameter;

wherein said stent has a cranial end and caudal end defined by said bends;

a plurality of first wire segments attached across one end of said stent, each of said first wire segments having a first end and a second end, said first end being attached to a bend and said second end being attached to another different bend;

wherein portions of said first wire segments overlap each other;

a plurality of second wire segments attached across the other end of said stent, each of said second wire segments having a first end and a second end, said first end being attached to a bend and said second end being attached to another different bend;

wherein portions of said second wire segments overlap each other;

wherein said first wire segments define a first plurality of openings having a large filtration size; and

said second wire segments define a second plurality of openings having a relatively smaller filtration size.

5,350,399

PERCUTANEOUS ARTERIAL PUNCTURE SEAL DEVICE AND INSERTION TOOL THEREFORE

Jay Erlebacher, 55 Woodland Park Dr., Tenafly, N.J. 07670, and Richard S. Goldweit, 82 Park St., Tenafly, N.J. 07670

Continuation of Ser. No. 763,907, Sep. 23, 1991, abandoned. This application Oct. 7, 1992, Ser. No. 958,446

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—213 | **36 Claims**

19. In combination,

a first occluder for positioning in a vessel to one side of an opening therein;

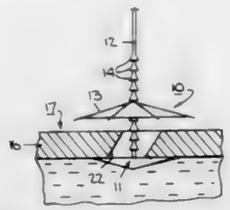
a guide extending from said occluder;

a tool having a barrel;

a positioner member slidably mounted in said barrel to define a chamber at one end thereof, said member having a bore extending longitudinally therethrough and having said guide extending therethrough;

a clamp for clamping said guide relative to said barrel;

means for moving said positioner member in a direction out of said barrel; and



a second occluder received in said chamber of said barrel in slidably mounted relation on said guide for movement along said guide in response to movement of said member in said barrel.

5,350,400

MALLEABLE, BIOABSORBABLE, PLASTIC STAPLE; AND METHOD AND APPARATUS FOR DEFORMING SUCH STAPLE

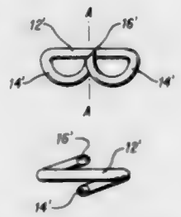
Felix F. Esposito, Stratford; John A. Conners, Fairfield; Joseph N. Logan, Trumbull; James W. Dwyer, Brookfield, all of Conn., and Laurence Crainich, Charlestown, N.H., assignors to American Cyanamid Company, Wayne, N.J.

Continuation-in-part of Ser. No. 785,295, Oct. 30, 1991, abandoned. This application Jun. 30, 1992, Ser. No. 906,455

The portion of the term of this patent subsequent to Jan. 14, 2009, has been disclaimed.

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—219 | **16 Claims**



14. A method of deforming a malleable, polymeric surgical staple having a back span, first and second legs extending in one direction from opposite ends of the back span and substantially perpendicularly thereto in an undeformed state, the first and second legs each terminating in an end point; said method comprising the steps of:

initially deforming the first and second legs inwardly toward each other;

thereafter deforming the first and second legs toward the back span in a direction generally opposed to the one direction to cause the end points respectively of the first and second legs to extend in the opposed direction past the back span.

5,350,401

IMPLANTABLE CARDIOVERTER/DEFIBRILLATOR DEVICE HAVING MEANS FOR DETERMINING AND TREATING LOW AMPLITUDE VENTRICULAR FIBRILLATION AND METHOD THEREOF

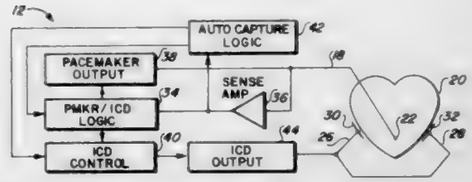
Paul A. Levine, Santa Clarita, Calif., assignor to Siemens Pacesetter, Inc., Sylmar, Calif.

Filed Mar. 26, 1993, Ser. No. 37,211

Int. Cl.[5] A61N *1/39*

U.S. Cl. 607—4 | **20 Claims**

1. A method for use within an implantable stimulation device for determining and responding to a first type of cardiac fibrillation, the implantable stimulation device having sensing means for sensing cardiac activity and pacing means for generating pacing pulses on demand, the first type of cardiac fibrillation being characterized by a low amplitude cardiac activity that cannot be sensed by the sensing means, the method comprising the steps of:



(a) generating a pacing pulse if the sensing means fails to sense cardiac activity during a preset escape interval;

(b) detecting if the pacing pulse generated in step (a) has caused capture; and

(c) determining the presence of the first type of cardiac fibrillation in the event that capture has not occurred.

5,350,402

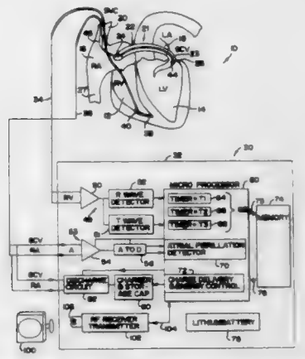
ATRIAL DEFIBRILLATOR AND METHOD FOR PROVIDING T WAVE DETECTION AND INTERVAL TIMING PRIOR TO CARDIOVERSION

Kenneth R. Infinger, Redmond; Gregory M. Ayers, Duvall; Darrell O. Wagner, Gold Bar, and John M. Adams, Issaquah, all of Wash., assignors to InControl, Inc., Redmond, Wash.

Filed May 26, 1993, Ser. No. 67,688

Int. Cl.[5] A61N *1/39*

U.S. Cl. 607—5 | **26 Claims**



1. An atrial defibrillator for providing cardioverting electrical energy to the atria of a human heart, said atrial defibrillator comprising:

detecting means for detecting R waves and T waves of the heart;

cardioverting means responsive to said detecting means for applying said cardioverting electrical energy to the atria of the heart after a T wave is detected by said detecting means and in timed relation to an R wave detected by said detecting means after said detected T wave is completed, said R wave detected after said detected T wave is completed being the first R wave detected after said detected T wave;

timing means responsive to said detecting means for timing a predetermined delay time upon the detection of said detected T wave, said cardioverting means being responsive to said timing means for applying said cardioverting electrical energy to the atria of the heart after said timing means has timed said predetermined delay time and in timed relation to said R wave detected after said detected T wave,

wherein said timing means times a predetermined time period after said predetermined delay time and wherein said cardioverting means is responsive to said timing means for withholding the application of said cardioverting electrical energy when the timing of said predetermined time period is completed before an R wave is detected, and

wherein said timing means is responsive to said detecting means detecting an initial R wave for timing a first predetermined time period and wherein said timing means only times said predetermined delay time when said detected T wave is detected within said first predetermined time period.

5,350,403

APPARATUS FOR CHARGING LIVING TISSUE WITH ELECTRICAL PULSES

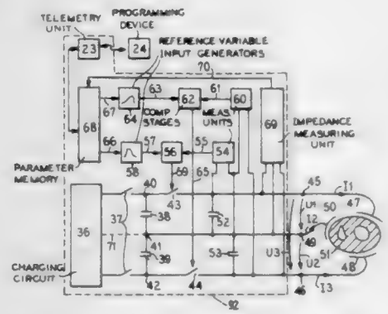
Brigitte Stroetmann, Uttenreuth; Michael Lenz, Zorneding, both of Fed. Rep. of Germany; Jakub Hirschberg, Taeby, and Hans Strandberg, Sundbyberg, both of Sweden, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 7, 1993, Ser. No. 72,112

Claims priority, application European Pat. Off., Jun. 17, 1992, 92110293.5

Int. Cl.[5] A61N *1/36*

U.S. Cl. 607—5 | **12 Claims**



1. An implantable apparatus for charging living tissue with electrical pulses comprising:

a housing adapted for implantation in a patient;

a charging capacitor and a charging circuit in said housing, said charging circuit connected across said charging capacitor for charging said charging capacitor;

at least two electrodes extending form said housing and adapted for arrangement in the region of tissue to be charged with electrical pulses;

controllable switch means in said housing electrically connected between said charging capacitor and said electrodes for, when closed, discharging said charging capacitor and thereby delivering current through said electrodes and through said tissue;

smoothing means in said housing connected between said controllable switch means and said electrodes for smoothing said electrical current through said electrodes and through said tissue;

control means in said housing for controlling said controllable switch means for opening and closing said controllable switch means at a switching frequency; and

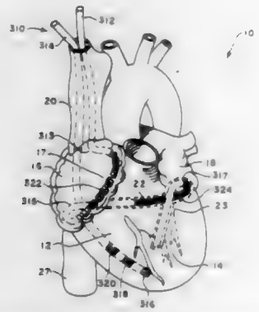
means in said housing connected to said control means for varying said switching frequency while said tissue is charged with said electrical pulses for generating a current through said electrodes and through said tissue having a selected curve which deviates from an exponentially decaying curve.

5,350,404

LEAD SYSTEM FOR USE WITH AN ATRIAL DEFIBRILLATOR AND METHOD

John M. Adams, Issaquah; Clifton A. Alferness, Redmond, and Paul E. Kreyenhagen, Bellevue, all of Wash., assignors to InControl, Inc., Redmond, Wash.

Division of Ser. No. 856,514, Mar. 24, 1992, which is a continuation-in-part of Ser. No. 685,130, Apr. 12, 1991, Pat. No. 5,282,837. This application Oct. 1, 1993, Ser. No. 130,308
The portion of the term of this patent subsequent to Feb. 1, 2011, has been disclaimed.
Int. Cl.[5] **A61N** *1/39*
U.S. Cl. 607—5 **17 Claims**



1. A device for monitoring activity of the heart and delivering cardioverting electrical energy to the atria of the heart, said device comprising:

storage means for storing said electrical energy;

atrial activity sensing means for sensing atrial activity of the heart;

electrical activation sensing means for sensing electrical activations of the heart;

a first lead including a first electrode and a second electrode, said first lead for disposing said first electrode within the right atrium of the heart and for disposing said second electrode within the coronary sinus beneath the left atrium of the heart, said first and second electrodes being coupled to said storage means for delivering said electrical energy to the atria of the heart and to said atrial activity sensing means for sensing atrial activity of the heart;

a second lead including first and second sensing electrodes, said second lead for disposing said first and second sensing electrodes within the right ventricle of the heart, said first and second sensing electrodes being coupled to said electrical activation sensing means for sensing electrical activations of the heart; and

said first and second leads being fully implantable beneath the skin of a patient.

5,350,405

METHOD AND APPARATUS FOR CAPACITOR TOLERANCE COMPENSATION IN A CARDIAC STIMULATING DEVICE

Sergiu Silvian, La Crescenta, Calif., assignor to Siemens Pacesetter, Inc., Sylmar, Calif.

Filed Sep. 16, 1992, Ser. No. 946,276
Int. Cl.[5] **A61N** *1/08*
U.S. Cl. 607—8 **26 Claims**

16. A cardiac stimulating device comprising:

a capacitor having a nominal capacitance and an actual capacitance that may differ from said nominal capacitance,

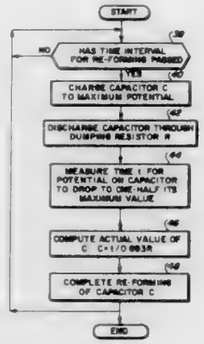
a power source coupled to said capacitor for charging said capacitor to a target potential for delivering a desired energy output,

a resistor having a known resistance switchably coupled to said capacitor for discharging said capacitor for re-forming said capacitor;

a potential measuring circuit coupled to said capacitor for measuring the potential on said capacitor;

a microprocessor for controlling operation of said cardiac stimulating device; and wherein:

said microprocessor initiates re-forming of said capacitor, by initiating charging of said capacitor from said power source to a first predetermined potential and discharging said capacitor through said resistor; and further wherein:



said microprocessor measures the time interval required for said capacitor to discharge from said first predetermined potential to a second predetermined potential; and still further wherein:

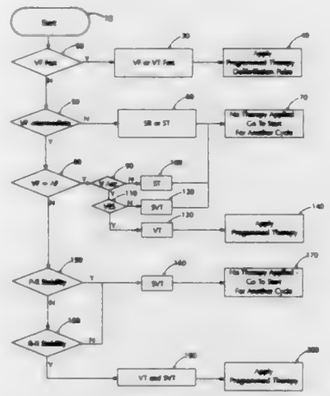
said microprocessor calculates said target potential from said first and second predetermined potentials, said time interval, said known resistance and said desire energy output.

5,350,406

APPARATUS AND METHOD OF CONTROL FOR AN IMPLANTED ANTI-TACHYCARDIA DEVICE

Remi Nitzsche, Reynes; Marcel Limousin, Montrouge; Jean-Luc Bonnet, and Christine Henry, both of Paris, all of France, assignors to ELA Medical, Montrouge, France

Filed Dec. 22, 1992, Ser. No. 995,034
Claims priority, application France, Dec. 31, 1991, 91 16364
Int. Cl.[5] **A61N** *5/00*
U.S. Cl. 607—14 **6 Claims**



1. A method of controlling an implanted anti-tachycardia device as a function of a patient's heart rhythm, comprising the steps of:

defining a slow heart rhythm below which there is no ventricular tachycardia, defining a fast heart rhythm above which ventricular fibrillation or fast ventricular tachycardia occur, and defining an intermediary rhythm between said fast and slow rhythms and for which a ventricular tachycardia is suspected;

detecting atrial P wave events and ventricular R wave events;

analyzing the detected P wave and R wave events and determining therefrom a sensed heart rhythm, an acceleration of the ventricular rhythm, an atrioventricular association ratio, an R-R interval between successive R waves, a stability of R-R intervals, a P-R interval between a P wave and the following R wave, an instability of P-R intervals, and a ventricular rhythm;

identifying a heart rhythm corresponding to said intermediary heart rhythm; and in response thereto

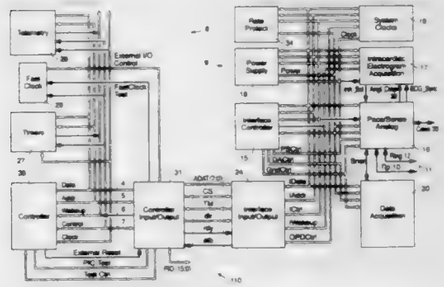
triggering said antitachycardia device to provide a preselected programmed therapy in response to one of a first condition or a second condition wherein the first condition includes a determined absence of 1:1 atrioventricular association, instability of the P-R intervals, and stability of the R-R interval; and wherein the second condition includes a determined 1:1 atrioventricular association and acceleration of the ventricular rhythm subsequent to an atrioventricular desynchronization.

5,350,407

IMPLANTABLE STIMULATOR HAVING QUIESCENT AND ACTIVE MODES OF OPERATION

Lawrence C. McClure, Parker; Kent E. Samuelson, and Daniel L. Hansen, both of Aurora, all of Colo., assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Dec. 30, 1992, Ser. No. 998,962
Int. Cl.[5] **A61N** *1/362*
U.S. Cl. 607—16 **35 Claims**



1. A method of selectively controlling an implantable stimulator having stimulator circuits which operate either in a quiescent state of operation or in an active state of operation, in response to commands from an external communicating device, said stimulator having an oscillator providing timing signals for use in switching from one of said states of operation to another of said states of operation and telemetry circuitry for communicating with the external communicating device, said method comprising the steps of:

transmitting a deactivating command from said external communicating device to said implantable stimulator;

generally disabling power to substantially all of said stimulator circuits except said oscillator and said telemetry circuitry in response to said deactivating command;

generally providing disabling signals to substantially all of said stimulator circuits except said oscillator and said telemetry circuitry while continuing to enable said quiescent state of operations in response to said deactivating command;

subsequently transmitting an activating command from an external communicating device to said implantable stimulator;

providing enabling signals to said disabled stimulator circuits in response to said activating command; and

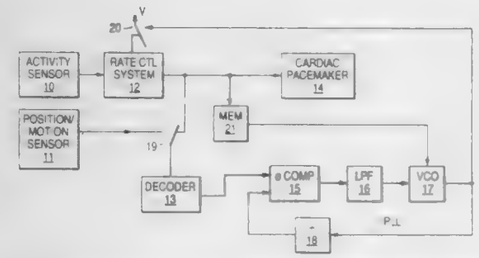
enabling power to said power-disabled stimulator circuits in response to said activating command so as to enable said active state of operation of said stimulator.

5,350,408

CARDIAC PACEMAKER

Max Schaldach, Erlangen, Fed. Rep. of Germany, assignor to Biotronik Mess- und Therapiegerate GmbH & Co. Ingenieurburo Berlin, Berlin, Fed. Rep. of Germany

PCT No. PCT/DE90/00928, § 371 Date May 29, 1992, § 102(e) Date May 29, 1992, PCT Pub. No. WO91/08019, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 29, 1990, Ser. No. 859,449
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1989, 3939899
Int. Cl.[5] **A61N** *1/00*
U.S. Cl. 607—17 **13 Claims**



1. An apparatus for use with a cardiac pacemaker having a stimulation rate, the apparatus comprising:

means for adapting the stimulation rate of the cardiac pacemaker to momentary physical stress of a patient, said means for adapting the stimulation rate of the cardiac pacemaker to the momentary physical stress of the patient being supplied with energy;

means for reducing the energy supplied to said means for adapting the stimulation rate of the cardiac pacemaker to the momentary physical stress of the patient; and

means for determining activity of the patient; wherein when the patient is inactive or when patient activity is reduced, said means for determining activity of the patient provides an output signal to said means for reducing energy supplied to said means for adapting, the output signal controlling the means for reducing energy to reduce the energy supplied to said means for adapting;

wherein the means for determining the activity of the patient outputs the output signal if a predetermined minimum activity level is not reached for a predetermined minimum period of time, and if a sum of a number of the minimum periods of time within a predetermined time interval exceeds a predetermined value.

5,350,409

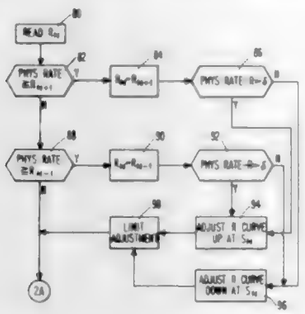
RATE ADAPTIVE PACEMAKER WITH ADJUSTMENT OF SENSOR RATE AS A FUNCTION OF SENSED SINUS RATE

Gustaaf A. Stoop, Dieren; Malcolm J. S. Begemann, Velp; Johannes van der Veen, and Marcus O. Filipovich, both of Arnhem, all of Netherlands, assignors to Vitatron Medical, B.V., Dieren, Netherlands

Filed Apr. 19, 1993, Ser. No. 49,181
Int. Cl.[5] **A61N** *1/365*
U.S. Cl. 607—17 **19 Claims**

1. (Amended). A rate responsive demand pacemaker having a pulse generator for generating and delivering stimulus pulses, rate sense means for sensing natural beats and obtaining a measure of the rate of said natural beats, a rate control for

controlling the rate of delivery of stimulus pulses by said pulse generator, rate responsive means for obtaining sensor signals indicative of desired pacing rate and for generating therefrom sensor rate signals (R) in accordance with a rate response function which is a function of said sensor signals over a de-



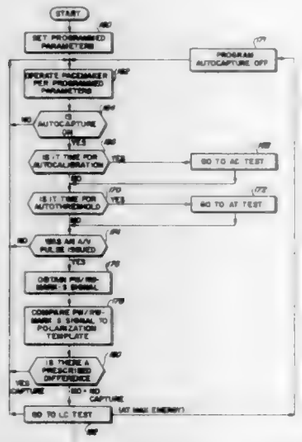
sired pacing range, said rate control circuit controlling said rate of delivery in accordance with R, characterized by first comparing means for comparing said measure of said natural beat rate and R at a predetermined rate, and adjust means operative during detection of natural beats for adjusting said rate response function as a function of said first comparison.

5,350,410

AUTOCAPTURE SYSTEM FOR IMPLANTABLE PULSE GENERATOR

Jonathan A. Kleks, Northridge; Stuart W. Buchanan, Saugus; Raymond J. Wilson, Palmdale; John W. Poore, South Pasadena, and Brian M. Mann, Beverly Hills, all of Calif., assignors to Siemens Pacesetter, Inc., Sylmar, Calif.

Filed Nov. 23, 1992, Ser. No. 980,941
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—28 **34 Claims**



1. A system for detecting capture in an implantable pulse generator on a beat-by-beat basis, the implantable pulse generator being coupled to an implantable stimulation lead in contact with the heart, the system comprising:

pulse generating means for generating stimulation pulses at a desired stimulation pulse energy;

sensing means, coupled to the stimulation lead, for sensing cardiac signals and for sensing post-stimulation signals which occur following each stimulation pulse, the sensing means including means for sensing first and second post-stimulation signals at each of a plurality of sensitivities, the first post-stimulation signals corresponding to polarization signals sensed at each of a plurality of sensitivities;

means for comparing the first and second post-stimulation signals at each respective sensitivity and producing as an output a plurality of difference signals, presence of a prescribed difference signal indicating that the heart was captured by the stimulation pulse;

means for determining an optimum sensitivity setting based on the prescribed difference signal, and for biasing the sensing means to the optimum sensitivity setting for stimulation pulses subsequently generated at the desired stimulation pulse energy; and

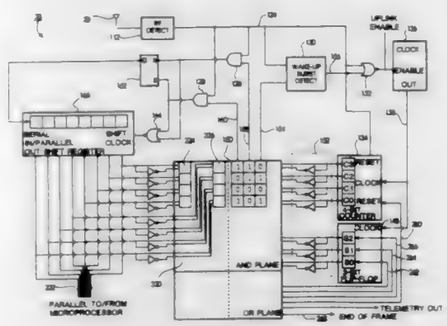
processing means for comparing post-stimulation signals sensed by the sensing means at the optimum setting with the respective polarization signal, whereby a prescribed difference signal sensed by the sensing means at the optimum sensitivity setting is used for capture detection on a beat-by-beat basis.

5,350,411

PACEMAKER TELEMETRY SYSTEM

Terrence G. Ryan, North Oaks; James W. Busacker, Buffalo, and Robert A. Hochban, Circle Pines, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jun. 28, 1993, Ser. No. 85,489
Int. Cl.[5] A61N *1/02*
U.S. Cl. 607—32 **27 Claims**



6. A telemetry system for receiving and decoding digital data encoded in a radio-frequency signal, comprising:

a telemetry coil, adapted to receive said radio-frequency signal;

a detector circuit, coupled to said coil and responsive to a first predetermined characteristic in said received radio-frequency signal to assert a wakeup signal and thereafter responsive to a second predetermined characteristic in said received radio-frequency signal to assert a detect signal;

a clock, coupled to said detector circuit and responsive to assertion of said detect signal to produce a clock signal;

a counter, coupled to said clock to receive said clock signal, and coupled to said detector circuit to receive said detect signal, said counter having a plurality of output terminals for presenting a count value thereon, said counter responsive to said clock signal to said detect signal to reset said count value and to count clock cycles of said clock signal;

a programmed logic array, having a first plurality of input terminals coupled to said counter output terminals to receive said count value, said logic array further having a plurality of output terminals, said logic array responsive to a first predetermined count value to assert a signal on a first one of said plurality of output terminals and responsive to a second predetermined count value to assert a signal on a second one of said plurality of output terminals;

a first decoding circuit, coupled to said detector circuit and to said logic array, said first decoding circuit responsive to said received signal and to assertion of said signal on said first logic array output terminal to assert a first decoder output signal;

a second decoding circuit, coupled to said detector circuit and to said logic array, said second decoding circuit responsive to said received signal and to assertion of said signal on said second logic array output terminal to assert a second decoder output signal;

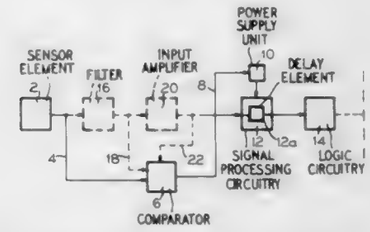
a digital data storage circuit, coupled to said first and second decoding circuits and responsive to assertion of said first decoder output signal to store a binary "0" bit and responsive to assertion of said second decoder output signal to store a binary "1" bit.

5,350,412

DEVICE FOR REDUCING POWER CONSUMPTION IN MEDICAL EQUIPMENT WHICH IS IMPLANTABLE IN THE HUMAN BODY

Kurt Hoegnelid, Vaesterhaninge, and Goran-Sven Budgifvars, Stockholm, both of Sweden, assignors to Siemens Elema AB, Sweden

Filed Apr. 26, 1993, Ser. No. 52,459
Claims priority, application Sweden, May 21, 1992, 9201602
Int. Cl.[5] A61N *1/378*
U.S. Cl. 607—34 **11 Claims**



1. A device for reducing power consumption in medical electrical equipment implantable in the human body, said device comprising:

sensor means, including a sensor element connected to sensor electronic circuitry, for sensing a parameter for use in the in vivo control of the operation of said medical electrical equipment, said sensor electronic circuitry being operable in a passive mode with low power consumption and an active mode with a higher power consumption;

said sensor electronic circuitry including a power supply unit; and

comparator means, having an output connected to said power supply unit, for comparing an output signal from said sensor element to a predetermined threshold and for controlling said power supply unit to switch said sensor electronic circuitry between said passive mode and said active mode dependent on the magnitude of said output signal of said sensor element in relation to said threshold.

5,350,413

TRANSCUTANEOUS ENERGY TRANSFER DEVICE

John A. Miller, Ottawa, Canada, assignor to The University of Ottawa, Ottawa, Canada

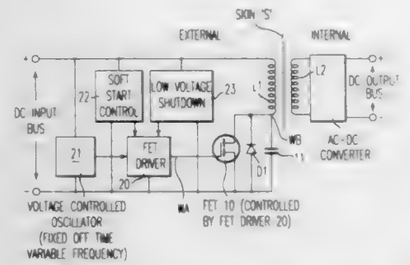
Continuation-in-part of Ser. No. 541,773, Jun. 21, 1990, abandoned. This application Jul. 22, 1991, Ser. No. 734,084
Int. Cl.[5] A61N *1/02*
U.S. Cl. 607—061 **6 Claims**

1. An improved transcutaneous energy transfer (TET) device comprising:

i) a primary winding for placement adjacent to a skin surface, said primary winding being provided with electrical connection means for connecting said primary winding to an external DC power source;

ii) a secondary winding for implantation under said skin surface and coupled with said primary winding to define a transcutaneous transformer;

iii) a field effect transistor (FET) arranged in series with said primary winding to switch said primary winding across said external DC power supply for a predetermined period of time;



iv) means to turn said FET on when voltage across it reaches zero and said primary winding ceases resonating; and

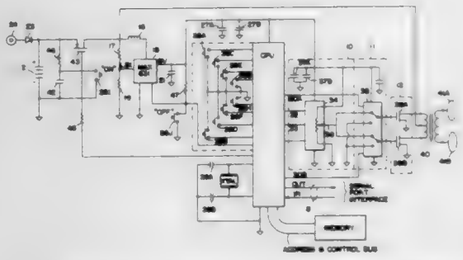
v) a tuning capacitor linked to said primary winding parallel to said FET whereby said primary winding and tuning capacitor, when said FET is turned off after said predetermined period, will resonate at their natural frequency.

5,350,414

LOCAL APPLICATION MICROPROCESSOR BASED NERVE AND MUSCLE STIMULATOR

Paul T. Kolen, Carlsbad, Calif., assignor to Electro Science Technologies, Inc., Las Vegas, Nev.

Continuation of Ser. No. 804,455, Dec. 10, 1991, abandoned. This application Oct. 22, 1993, Ser. No. 139,872
Int. Cl.[5] A61N *1/36*
U.S. Cl. 607—62 **23 Claims**



1. An electrical stimulation device for applying a stimulation signal to living tissue, said electrical stimulation device comprising:

pulse generating means for generating the stimulation signal, wherein the stimulation signal is a pulse train including a frequency and an amplitude component; and

at least a pair of electrodes for contacting living tissue,

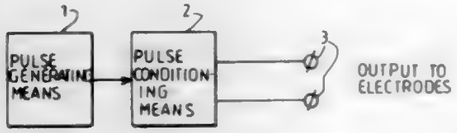
wherein said pulse generating means includes a selector so that the pulse generating means is selectively operable to generate a carrier frequency of the pulse train in accordance with the size and placement of the electrodes such that the electrodes are impedance matched to the tissue.

5,350,415

DEVICE FOR TROPHIC STIMULATION OF MUSCLES

Jozef Cywinski, 35 Hendrickson Ave., Rockville Centre, N.Y. 11570

Filed Mar. 8, 1993, Ser. No. 27,887
Int. Cl.[5] A61N *1/18*
U.S. Cl. 607—68 8 Claims



1. A device for trophic stimulation of muscles comprising:
a. a pulse generator for generating electro-optical emitter signals that are an analog of Motor Unit Action Potentials that naturally occur in muscle contractions;
b. a pulse conditioner for taking the output of said pulse generator and producing signals that are appropriate for the electrical simulation of muscles;
c. at least two electrodes for applying the electrical output of said pulse conditioner to skin overlying the muscles to be simulated;
d. a continuous low-rate firing activity that can be described mathematically as a delta function continuously pulsing at a slow base rate with interpulse intervals in a range of approximately 120 to 200 milliseconds;
e. a superimposed rectangular-like rate modulation with exponential rise and fall, with T=20 to 40 milliseconds, changes said slow base rate into a burst of high rate pulses with short interpulse intervals in a range of about 10 to 20 milliseconds; wherein said high burst rate then declines exponentially into a slower rate with interpulse intervals of approximately 60 to 80 milliseconds, and, after approximately 500 milliseconds, decreases further to said slow rate of 120 to 200 milliseconds; and wherein said high rate burst modulation, as well as the entire cycle of rate changes described herein has an approximate recurrent period of 1 plus or minus 0.2 seconds; and
f) a transformerless design using pulse voltage multiplication, wherein said pulse voltage multiplier circuit comprises cascaded transistors driving capacitors connected in series such that when said transistors are fired on, the output voltage is the sum of all the voltages stored in said capacitors.

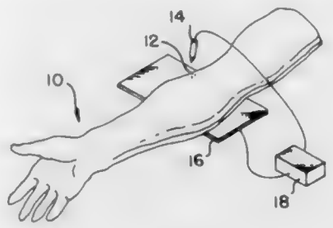
5,350,416

APPARATUS FOR TREATMENT OF TOXINS RECEIVED FROM SNAKE BITES AND THE LIKE

Ronald H. Guderian, Port Angeles, Wash., assignor to Venomex, Inc., Seattle, Wash.

Continuation of Ser. No. 277,459, Nov. 23, 1988, Pat. No. 5,074,305, which is a continuation of Ser. No. 72,864, Jul. 14, 1987, abandoned. This application Dec. 20, 1991, Ser. No. 811,329
Int. Cl.[5] A61N *1/18*
U.S. Cl. 607—72 4 Claims

1. A toxin treatment apparatus for use against toxin present in an affected area of a body, wherein the affected area of the body is at least partially in the vicinity of a penetration of the skin of the body through which the toxin is introduced into the body, comprising:
means for generating an electrical signal having sufficient voltage to overcome the resistance of the skin of the body and to produce a current in the body through the affected area; and
means connected to the electrical signal generating means for applying the electrical signal to the body, wherein said applying means includes first and second elements for contacting the body, said first and second elements being adapted, spaced and configured relative to the affected area of the body to insure that the current moves between the first and second elements through the affected area of the body and wherein the current moving through the



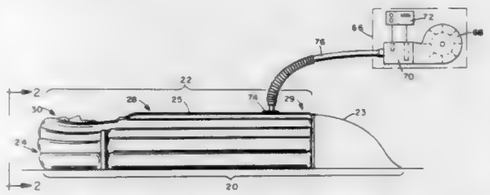
affected area of the body is characterized such that the harmful effects of the toxin are substantially neutralized, wherein the first and second elements include a grounding member and a probe, and wherein the probe has a free end which is pointed and otherwise adapted to be applied to the affected area of the body containing the toxin.

5,350,417

CONVECTIVE THERMAL BLANKET

Scott D. Augustine, Bloomington, Minn., assignor to Augustine Medical, Inc., Eden Prairie, Minn.

Filed May 18, 1993, Ser. No. 63,214
Int. Cl.[5] A61F *7/00*
U.S. Cl. 607—104 48 Claims



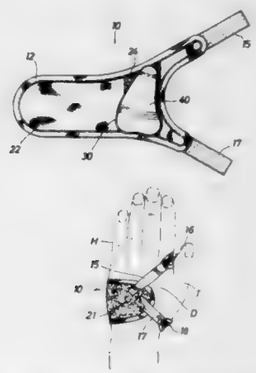
1. A convective thermal blanket comprising:
a covering having top and bottom layers of material which are adapted to cover at least a portion of a patient's chest and head areas;
the covering having longitudinally spaced apart head and foot edges and laterally spaced apart side edges, the edges being contiguously adjacent to one another so as to collectively provide the covering with a periphery;
a head portion at the head edge of the covering having a recess which forms the head portion into a pair of laterally spaced-apart flaps for receiving a patient's head therebetween, the recess providing the head edge of the covering with a recess edge portion;
each flap being formed by a respective recess edge portion and a respective side edge portion;
the top and bottom layer of the covering being sealed about the periphery so as to form a main plenum chamber and a pair of secondary plenum chambers which are in communication with respect to one another, the main plenum chamber being adapted to be in at least the chest area and each secondary plenum chamber being formed in a respective flap and adapted to be in the head area;
the covering having an inlet opening which opens into the covering for delivering a gaseous medium to inflate the main plenum chamber and the secondary plenum chambers; and
the bottom layer of the covering having a plurality of apertures which open into the main plenum chamber and the secondary plenum chambers for discharging the gaseous medium over the patient's chest and head areas when the plenum chambers are inflated.

5,350,418

GEL SHELL SPLINT

Peter K. Janevski, Novi, Mich., and Debra A. Reina, Menomonee Falls, Wis., assignors to Smith & Nephew Rolyan Inc., Menomonee Falls, Wis.

Filed May 18, 1993, Ser. No. 63,888
Int. Cl.[5] A61F *5/00*
U.S. Cl. 607—111 10 Claims



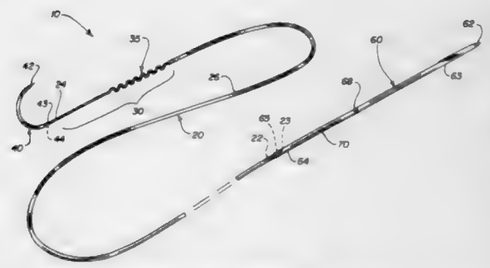
1. A gel shell splint for the hand, comprising:
a) support means for covering at least part of the center region of a human hand;
b) first securing means for releasably securing the support means to the hand;
c) a shell formed of a rigid material shaped and dimensioned to fit in the center region of a human hand with a generally concave portion facing the hand;
d) a pad formed of a compressible material shaped and dimensioned to fit in the concave portion of the shell, wherein said pad is in direct contact with the skin of the hand when the splint is positioned on the hand of the user; and
e) a second securing means for releasably securing the side of the shell opposite the concave portion to the support means.

5,350,419

CARDIAC PACING LEAD

Lee P. Bendel, Lebanon; Timothy A. Sardelis, Somerset; Leon K. Stungurys, Middlesex, and Thomas A. Astarita, Flemington, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Sep. 18, 1992, Ser. No. 947,207
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—132 44 Claims



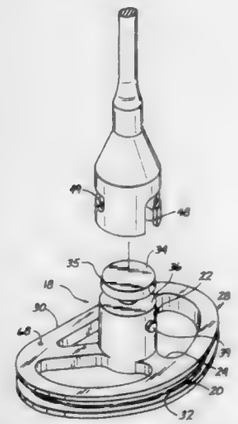
1. A cardiac pacing lead, comprising:
conductive wire means comprising a single filament of a low modulus, biocompatible metal having a modulus of elasticity less than about 2,000,000 psi, said wire means having a proximal end and a distal end; anchor means formed into the distal end of said wire means effective to anchor the pacing lead in the heart of a mammal;
surgical needle means attached to the distal end of said wire means; and
electrode means conductively attached to the proximal end of said wire means.

5,350,420

FLEXIBLE ANNULOPLASTY RING AND HOLDER

Delos M. Cosgrove, Hunting Valley, Ohio, and Than Nguyen, Huntington Beach, Calif., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 833,600, Feb. 10, 1992, abandoned, which is a continuation of Ser. No. 387,909, Jul. 31, 1989, abandoned. This application May 25, 1993, Ser. No. 68,279
The portion of the term of this patent subsequent to Aug. 20, 2008, has been disclaimed.
Int. Cl.[5] A61F *2/24*
U.S. Cl. 623—2 16 Claims



1. An assembly useful for holding an annuloplasty ring in a substantially taut position for suturing about a valve annulus comprising:
a holder body comprising groove means formed with a circumferential surface for receiving an annuloplasty ring; and
releasable retaining means for tautly holding an annuloplasty ring against said groove means circumferential surface, said releasable retaining means being operable to selectively release an annuloplasty ring from said holder body groove means.

5,350,421

PROSTHETIC HEART VALVE

Jonathan C. Stupka; Jack C. Bokros; Michael R. Emken, all of Austin; Axel D. Haubold, Liberty Hill, and T. Scott Peters, Georgetown, all of Tex., assignors to ONX, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 837,761, Feb. 18, 1992, Pat. No. 5,192,309, which is a continuation-in-part of Ser. No. 674,871, Mar. 25, 1991, Pat. No. 5,152,785. This application Oct. 6, 1992, Ser. No. 958,049
Int. Cl.[5] A61F *2/24*; F16K *15/00, 17/00, 21/04*
U.S. Cl. 623—2 17 Claims

1. A prosthetic heart valve which comprises
a generally annular valve body having an interior wall which defines a central passageway for blood flow therethrough, having a longitudinal axis,
occluder means having an inflow surface, an upstream edge

and an outflow surface, said occluder means being mounted in said valve body to alternate between an open position, which permits flow of blood therethrough in a downstream direction generally parallel to said longitudinal axis, and a closed position, which blocks the flow of blood in the reverse direction, said inflow surface facing generally upstream and said outflow surface facing generally downstream with said occluder means in the closed position, and

a pivot arrangement by which said occluder means is guided in sliding-pivoting movement between said open position and said closed position,

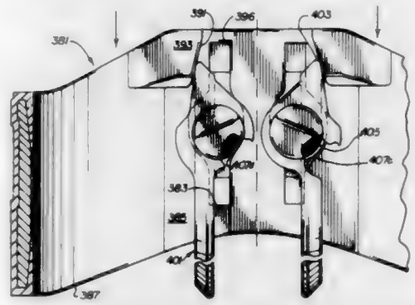
said pivot arrangement including

projection means which extends generally radially inward from said valve body interior wall at an upstream location, said occluder means engaging said projection means in said open position and sliding upstream in sliding engagement thereagainst during an initial closing movement of said occluder means, and

interengaging elements on said valve body at a second location downstream of said upstream location and on said occluder means, which elements interengage and cooperate with said projection means in guiding the closing movement of said occluder means,

said sliding engagement between said projection means and said occluder means in combination with said contact between said interengaging elements, as said occluder means is being displaced upstream when reverse flow of blood begins through said central passageway, being such as to cause said occluder means to pivot toward said closed position,

said interengaging elements being in contact with each other at a first position when blood flow is near maximum flow through said passageway, in which position said outflow and inflow surfaces of said occluder means are oriented parallel to said longitudinal axis, and



said contact between said interengaging elements shifting downstream to a second position, which is downstream of said first position, when blood flow slows prior to reversing, and as a result of said downstream shifting, said occluder means pivots toward its closed position orientation.

5,350,422

PROCESS FOR IMPROVING THE FIXATION OF DYES ON MATERIALS CONTAINING AMIDE GROUPS

Steven M. Burkinshaw, Wetherby; Roy Gordon, Bolton; David J. Marfell, Harrogate, and Kakoma D. Maseka, Leeds, all of England, assignors to Imperial Chemical Industries, PLC, London, England

Filed Feb. 4, 1993, Ser. No. 13,318

Claims priority, application United Kingdom, Feb. 5, 1992, 9202375.3

Int. Cl.[5] **D06M** *15/00;* **C09B** *67/00*

U.S. Cl. 8—115.56 **6 Claims**

1. A process which comprises submitting a polyamide microfibre textile material, which has been dyed with an acid dye and subsequently treated with an acidic syntan, to treatment at a pH of from 1.5 to 5 with a cationic agent having a plurality of groups selected from the class consisting of amino groups and quaternary ammonium groups, wherein the cationic agent is a polymer of a cationic monomer or copolymer of a cationic monomer and another comonomer.

5,350,423

FABRIC FINISHING PROCEDURE

Ellis Davis, Jr., Easley, S.C.; James E. McFarland, Mooresville, and Edward W. Teague, Raleigh, both of N.C., assignors to Burlington Industries Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 948,396, Sep. 23, 1992, abandoned. This application Sep. 14, 1993, Ser. No. 120,360

Int. Cl.[5] **C09B** *67/00*

U.S. Cl. 8—401 **19 Claims**

1. A process for providing a washed and worn appearance and softened hand to a ring dyed 100% cellulosic fabric comprising the steps of:

(a) applying to ring dyed 100% cellulosic yarns or fabric an organic acid or an acid-forming compound in an amount sufficient to embrittle the outer cellulosic fibers and render them more susceptible to subsequent abrasion, which acid or compound when activated by heat causes embrittlement of the dyed cellulosic fibers on the outer surface of the fabric;

(b) drying the thus-treated fabric;

(c) heating the fabric to a temperature in the range of about 200° F. to about 423° F. and for a time sufficient to activate the acid or acid-forming compound and cause embrittlement of the outer portions of the ring dyed cellulosic fabric; and thereafter

(d) abrading the fabric to remove the embrittled dyed cellulosic fibers therein revealing the underlying undyed portion of the cellulosic yarn to provide a fabric having a washed and worn appearance and softened hand.

5,350,424

DYESTUFF COMPOSITION FOR THE GRADUAL DYEING OF HAIR BY ATMOSPHERIC OXIDATION AND PROCESS USING THE SAME

Albert Shansky, Norwalk, Conn., assignor to Combe Incorporated, White Plains, N.Y.

Filed Oct. 13, 1992, Ser. No. 959,343

Int. Cl.[5] **A61K** *7/13*

U.S. Cl. 8—406 **13 Claims**

1. A process for gradually dyeing hair by atmospheric oxidation with an adherent gel dyestuff composition having an aqueous carrier and an air-oxidizable dye component, wherein said air-oxidizable dye component is an oxidizable primary aromatic amine or an aminophenol, and said adherent gel dyestuff composition is substantially free of surfactants and wetting agents, comprising the steps of:

(a) applying said adherent gel dyestuff composition to the surface of the hair, said dyestuff composition (i) having a pH of at least about 9 to penetrate hair fibers and (ii) containing a sufficient amount of said air-oxidizable dye component to allow said dye component to be deposited in said hair fibers;

(b) rinsing the hair to fix the deposited dye component in the hair fibers; and

(c) removing any remaining dyestuff composition from the surface of the hair, whereby gradual development of color in the hair occurs subsequent to said rinsing due to atmospheric oxidation of said deposited fixed dye component over a period of approximately 24 to 72 hours and being substantially free of chemical oxidants.

5,350,425

METHOD OF REDUCING VAT DYES AND THE PROCESS OF DYEING FABRICS THEREIN

David R. Carver, 4620 Starboard Dr., Boulder, Colo. 80302

Filed Aug. 9, 1993, Ser. No. 104,492

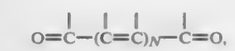
Int. Cl.[5] **C09B** *67/28, 9/04, 7/00*

U.S. Cl. 8—465 **20 Claims**

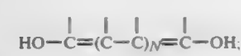
14. A process of dyeing fabric to impart a color to the fabric, the process comprising the steps of:

a) placing metal selected from the group consisting of Al, Sn, Mg, and Ca, in water in the presence of a chemical reduction facilitator to form a first solution;

b) mixing a selected vat dye having the general structure



where N is selected from the integers 1, 2, and 4, into said first solution to form a dye solution wherein substantially all of the vat dye is reduced to a soluble leuco form having the general structure



c) dyeing fabric in the dye solution; and

d) dyeing said fabric wherein said leuco form is oxidized imparting color to the fabric.

5,350,426

CHLORINE RESISTANT CATIONIC DYEABLE CARPET YARN

William G. Jenkins, Lexington, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.

Continuation of Ser. No. 892,750, Jun. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 787,220, Nov. 4, 1991, abandoned, which is a division of Ser. No. 552,178, Jul. 12, 1990, Pat. No. 5,085,667, which is a continuation-in-part of Ser. No. 519,237, May 4, 1990, abandoned. This application Aug. 11, 1993, Ser. No. 104,611

Int. Cl.[5] **D06P** *3/00*

U.S. Cl. 8—539 **8 Claims**

1. A process of dyeing and imparting improved household bleach stain resistance to cationic-dyeable nylon fibers comprising the steps of:

(a) dyeing said fibers with an acid dye or a premetalized acid dye at a pH of from about 4.0 to 6.5 and fixing the dye into the fibers, and thereafter

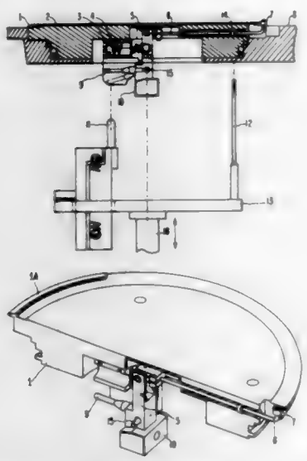
(b) heatsetting the fibers by heating the dyed fibers under dry conditions to a temperature of about 160° C. to about 220° C. and for a time sufficient to close the fiber crystalline structure and impart resistance to hypochlorite or peroxy-group containing aqueous solutions.

5,350,427

WAFER RETAINING PLATEN HAVING PERIPHERAL CLAMP AND WAFER LIFTING MEANS

Avrum Freytsis, Swampscott, and Richard J. Hertel, Boxford, both of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jun. 14, 1993, Ser. No. 76,509
Int. Cl.[5] B05C *13/00, 11/02*
U.S. Cl. 29—25.01 11 Claims



1. An apparatus for retaining a wafer on a disc, said wafer having first and second opposed edges and flat surfaces in front and back, comprising:

a platen for supporting the wafer, said platen having a fence for contacting the first edge of said wafer;

clamp means mounted on said platen for reciprocating motion with respect to said fence;

lever means pivotally attached to said clamp means;

spring means attached to said lever means for urging said clamp means to contact the second edge of said wafer to press said first edge against said fence of said platen;

pusher means, mounted for reciprocal motion, said pusher means moving in one direction into engagement with said lever means to move said clamp means away from said fence to release said wafer, and in the other direction out of engagement with said lever means so that said clamp means holds the wafer against said fence of said platen;

lifting means coupled to said pusher means for lifting said wafer from said platen after said clamp means has released the wafer.

5,350,428

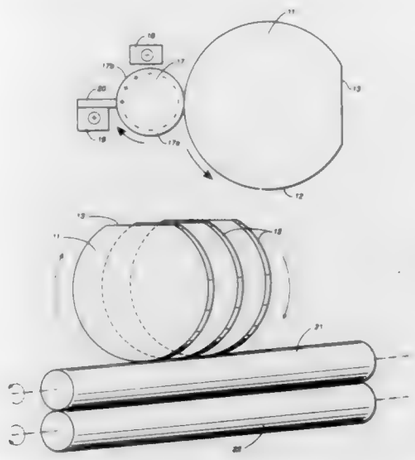
ELECTROSTATIC APPARATUS AND METHOD FOR REMOVING PARTICLES FROM SEMICONDUCTOR WAFERS

Pierre Leroux, and Bryan D. Schmidt, both of San Antonio, Tex., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Jun. 17, 1993, Ser. No. 80,165
Int. Cl.[5] H01L *21/30*
U.S. Cl. 29—25.01 33 Claims

1. An apparatus for removing particles from the edges of semiconductor wafers which comprises a particle removing means contactable with the edge of at least one semiconductor wafer which removes particles from said wafer(s) and which inhibits the return of said particles to said wafer(s), wherein said particle removing means comprises a non-metallic electrostatically charged material.

33. A method for removing particles from the edges of semiconductor wafers, comprising withdrawing particles from the edge of at least one semiconductor wafer with a particle withdrawing means and contacting said particle withdrawing means with a particle removing means which removes and retains at least a portion of said particles from the particle withdrawing means wherein said particle removing means



comprises an electrostatically charged material so as to cause a substantially unidirectional flow of particles away from said wafers.

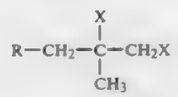
5,350,429

DIAMINOALKANES, THEIR PREPARATION AND FUELS AND LUBRICANTS CONTAINING THE DIAMINOALKANES

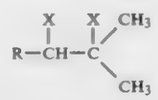
Juergen Mohr, Gruenstadt; Knut Oppenlaender, Ludwigshafen; Lothar Franz, Mutterstadt; Peter Schreyer, Weinheim, and Juergen Thomas, Fussgoenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 16, 1993, Ser. No. 31,905
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1992, 4208756
Int. Cl.[5] C10L *1/22;* C07C *211/00*
U.S. Cl. 44—412 9 Claims

1. A fuel for an internal combustion engine comprising small amounts effective as dispersant and detergent of compounds of the formulae Ia or Ib

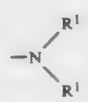


Ia



Ib

where R is an aliphatic hydrocarbon radical having alkyl side groups and a number average molecular weight of from 250 to 5,000 and X is



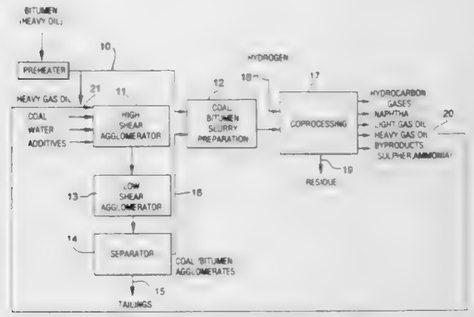
where the radicals R^1 may be identical or different and are each hydrogen, C_1–C_{10}-alkyl, C_1–C_8-hydroxyalkyl or C_1–C_8-aminoalkyl.

5,350,430

OIL/COAL COPROCESSING IN WHICH AGGLOMERATED COAL FORMS PART OF FEEDSTOCK

Richard D. Coleman, Orleans; Floyd N. Toll, Russell; Thomas W. McCracken, Orleans; C. Edward Capes, Ottawa, and Michio Ikura, Kanata, all of Canada, assignors to Energy Mines and Resources-Canada, Ottawa, Canada

Continuation-in-part of Ser. No. 935,265, Aug. 27, 1992, abandoned. This application Feb. 3, 1994, Ser. No. 190,984
Int. Cl.[5] C10L *9/00*
U.S. Cl. 44—627 5 Claims



1. In a coal/oil process in which a feed slurry comprising a mixture of (a) a heavy hydrocarbon oil at least 50% by weight of which boils above 525° C. and (b) an agglomerated product comprising coal particles and a bridging liquid, is subjected to hydrocracking and the effluents obtained are separated into separate streams including a heavy gas oil stream,

the improvement which comprises forming the agglomerated product by mixing at ambient temperature and pressure an aqueous slurry of low rank coal particles with less than 10% by weight of a bridging liquid which is a mixture of (i) about 60–77% by weight of heavy gas oil obtained from said coal/oil process and boiling in the range of 335°–525° C. and (ii) about 23–40% by weight of said heavy hydrocarbon oil feed, to thereby form agglomerates of said coal particles and separating the agglomerated coal particles from tailings containing mineral matter.

5,350,431

PROCESS FOR CHEMICAL DESULFURIZATION OF COAL

Toru Yamashita, Sodegaura, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Apr. 22, 1993, Ser. No. 51,159
Claims priority, application Japan, May 11, 1992, 4-117644
Int. Cl.[5] C10L *5/00*
U.S. Cl. 44—622 19 Claims

1. A process for chemical desulfurization of coal, which comprises bringing coal into contact with a desulfurizing agent after or while the coal is irradiated with ultraviolet light for 1 minute to 10 hours.

5,350,432

DIRT FILTERING AND COLLECTING APPARATUS FOR VACUUM CLEANER

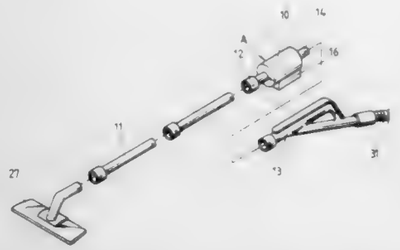
Jae I. Lee, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Apr. 22, 1993, Ser. No. 52,188
Claims priority, application Rep. of Korea, Apr. 23, 1992, 6745/1992
Int. Cl.[5] B01D *45/14*
U.S. Cl. 55—408 3 Claims

1. A dirt collecting apparatus for a vacuum cleaner, comprising;

a dirt collecting chamber which is in communication with an introduction path for dirt-laden air between a wand connected to a nozzle and a handle pipe connected to a canister body;

a cyclone part inserted in the dirt collecting chamber which comprises a cylindrical support fitted in the inner surface of the dirt collecting chamber, an inner cylinder, on which a plurality of cycloid guiding vanes are fixed and extend



radially and outwardly therefrom, rotatably inserted in the cylindrical support, and a conical core inserted in the inner cylinder; and

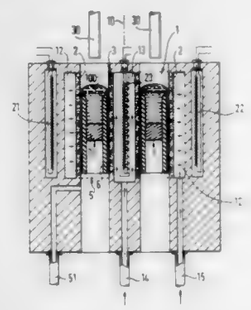
a dirt container detachably mounted on the outer surface of the dirt collecting chamber which is adapted to receive dirt separated and collected in the dirt collecting chamber.

5,350,433

METHOD OF MANUFACTURING A CYLINDRICAL PART FROM GLASS, ESPECIALLY FROM FLUORINATED GLASS BY MAINTAINING A THIN GASEOUS FILM AROUND THE CYLINDER

Pascal Baniel, Ris-Orangis, France, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Jan. 27, 1993, Ser. No. 9,643
Claims priority, application France, Jan. 28, 1992, 92 00867
Int. Cl.[5] C03B *19/09*
U.S. Cl. 65—388 13 Claims



1. Method of manufacturing a cylindrical part from glass, comprising the steps:

providing a body with an interior lining defining a vertical cylindrical cavity having an inside diameter which is a few tens of microns greater than the outside diameter of said cylindrical part, at least an upper portion of said interior lining being porous,

providing a cylindrical pedestal for supporting said part as it is being formed, said pedestal having an outside diameter such that it is free to slide in said cavity,

providing at the top of said pedestal an initial seed mass having a same composition as said glass, heating said initial seed mass until it melts,

injecting a gas into said porous lining in order to maintain between said porous lining and said molten seed mass a layer of said gas a few tens of microns thick to thereby

prevent any contact between the molten seed mass and the lining,

feeding a powder having the same composition as said glass to the molten seed mass from the top of said cavity,

simultaneous with the feeding, lowering said pedestal to thereby permit a lower portion of the seed mass in a lower portion of said cavity to solidify, and maintaining at least an upper portion of the seed mass in an upper portion of said cavity in a molten condition and thereby form said cylindrical part from said molten seed mass.

5,350,434

PROCESS AND APPARATUS FOR MAKING MOLTEN STEEL

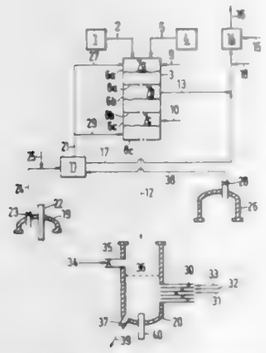
Bernt Rollinger, Taunusstein, Fed. Rep. of Germany, assignor to Metallgesellschaft AG, Frankfurt am Main, Fed. Rep. of Germany

Filed May 13, 1993, Ser. No. 61,765

Claims priority, application Fed. Rep. of Germany, May 14, 1992, 4215858

Int. Cl.[5] **C22B** *4/00*

U.S. Cl. 75—10.63 **22 Claims**



1. Process for making molten steel comprising the steps of:

a) melting preheated solid iron sources and preheated lumps of solid carbon sources loaded into a melting vessel with heat generated by an electric arc to form a carbon-containing molten material having a surface and containing 0.3 to 2.0% by weight carbon and to form an electric arc-generated exhaust gas;

b) melting additional preheated solid iron sources and additional preheated lumps of solid carbon sources loaded into the carbon-containing molten material in the melting vessel with heat generated by a combustion reaction, said combustion reaction being performed by feeding oxygen into the molten material during said reacting through nozzles, said nozzles being arranged in the melting vessel below the surface of the molten material, to form a refined molten material having a carbon content below 0.4% by weight and to form a combustion exhaust gas;

c) feeding an oxygen-containing gas into the melting vessel above the surface of the molten material during said feeding of said oxygen into the molten material in step b); and

d) preheating solid iron sources with said electric arc-generated exhaust gas formed during said step a) and with said combustion exhaust gas formed during step b) in said melting vessel to form the preheated solid iron sources.

5,350,435

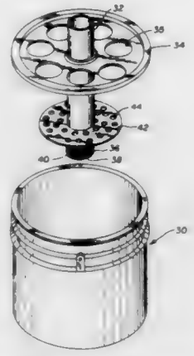
SOIL FERTILIZATION METHOD

Gene L. Kamin, Evergreen, Colo., assignor to Planet Protection Systems, Inc., Boulder, Colo.

Filed Mar. 4, 1993, Ser. No. 26,560

Int. Cl.[5] **C05B** *7/00;* **C05F** *15/00*

U.S. Cl. 71—25 **10 Claims**



1. A soil fertilization method comprising the steps of:

providing a source of ammonia-laden air;

providing fresh filter media containing phosphoric acid soaked wood particles;

passing the ammonia-laden gas through the fresh filter media to remove ammonia from the vapor and to convert the phosphoric acid soaked wood particles to ammonium phosphate coated wood particles;

collecting the filter media containing ammonium phosphate coated wood particles now referred to as spent filter media; and

applying the spent filter media to soil to fertilize the soil.

5,350,436

ALUMINUM ALLOY COMPOSITE MATERIAL FOR BRAZING

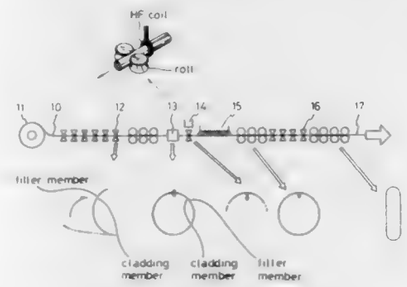
Osamu Takezoe; Jun Takigawa; Tadashi Okamoto, all of Moka; Mituo Hashiura, Kariya; Sunao Fukuda; Keizo Takeuchi, both of Handa, and Yasuaki Isobe, Nagoya, all of Japan, assignors to Kobe Alcoa Transportation Products Ltd., Tokyo and Nippondenso Co., Ltd., Kariya, both of Japan

Filed Nov. 24, 1993, Ser. No. 156,827

Claims priority, application Japan, Nov. 24, 1992, 4-337904

Int. Cl.[5] **B32B** *15/20*

U.S. Cl. 75—314 **30 Claims**



1. An aluminum alloy composite material for brazing comprising:

a core member made of an aluminum alloy consisting essentially of 0.3 to 1.3 wt. % of Si, 0.3 to 1.5 wt. % of Mn and 0.02 to 0.3 wt. % of Ti, the content of Mg being restricted to 0.2 wt. % or less and the content of Cu being restricted to 0.2 wt. % or less as impurity;

an Al—Si filler member clad on one surface of said core member; and

a cladding member of an aluminum alloy clad on the opposite side of said core member, consisting essentially of 0.3 to 3 wt. % of Mg, 5 wt. % or less of Zn and 0.1 to wt. % of Si.

5,350,437

METHOD OF MANUFACTURING AN ALLOY POWDER WITH HARD PARTICLES DISPERSED THEREIN

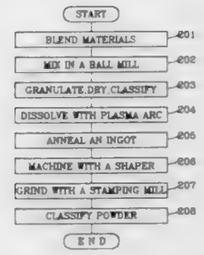
Yasushi Watanabe, Chita, and Hiroshi Endo, Kasugai, both of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Japan

Division of Ser. No. 884,400, May 18, 1992, abandoned. This application Mar. 17, 1993, Ser. No. 32,308

Claims priority, application Japan, May 27, 1991, 3-121386; Jan. 28, 1992, 4-13288

Int. Cl.[5] **B22F** *9/04*

U.S. Cl. 75—346 **16 Claims**



9. A method for manufacturing an alloy powder having hard particles dispersed therein, said method comprising the steps of:

blending one of a metal base material and a metal alloy base material, having a particle diameter between about 0.1 microns and 300 microns; a hard particle powder selected from the group consisting of metal borides, carbides, silicides, oxides, nitrides or mixtures thereof, having a particle diameter between about 0.1 microns and 50 microns; and an organic binder to form a material mixture;

granulating said material mixture into a granulated powder having a particle diameter suitable to be dissolved with one of an electric arc and a plasma arc;

heating and dissolving said granulated powder with one of said electric arc and said plasma arc until said granulated powder is formed into a fused metal which accumulates and coagulates into an ingot;

mechanically grinding said ingot into a ground powder; and classifying said ground powder.

5,350,438

METHOD AND APPARATUS FOR REMOVING PLATED METAL FROM STEEL SHEET SCRAPS

Yuji Okada, Toyota; Shunichi Fujio, Aichi; Kazuhiro Suzuki; Teruharu Shinoyama, both of Toyota, and Yasuo Takeuchi, Nishikamo, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Toyokin Kabushiki Kaisha, both of Toyota, Japan

Continuation-in-part of Ser. No. 058,034, May 7, 1993, abandoned, which is a continuation of Ser. No. 886,934, May 22, 1992, abandoned. This application Nov. 23, 1993, Ser. No. 155,810

Claims priority, application Japan, May 23, 1991, 3-146636; Nov. 26, 1991, 3-335584; Nov. 26, 1991, 3-335585; Nov. 26, 1991, 3-335586

Int. Cl.[5] **C22B** *7/00*

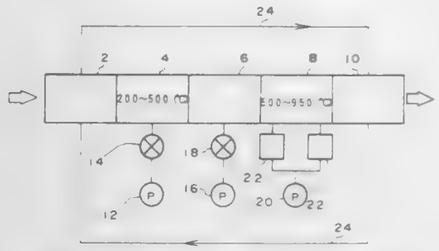
U.S. Cl. 75—401 **21 Claims**

1. A method for removing plated metal from steel sheet scraps comprising the steps of:

preheating metal plated steel sheet scraps in a preheat chamber;

heating the preheated scraps to a temperature in a range of about 200° C.–500° C. under reduced pressure in a pretreatment chamber to evaporate organic material adhered to the scraps and contained in the scraps;

capturing the evaporated organic material;



conveying the scraps through an intermediate chamber into a treatment chamber;

heating the scraps to a temperature in a range of about 500° C.–950° C. and reducing a pressure in the treatment chamber to evaporate plated metal from the scraps;

retrieving the evaporated metal; and

cooling the scraps with gas in a cooling chamber.

5,350,439

PROCESS AND APPARATUS FOR THE REPLACEMENT OF A FIRST FLOW OF GAS ACCOMPANYING A FLOW OF PARTICLES WITH A SECOND FLOW OF GAS

Jean Ducrocq, Guyancourt, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

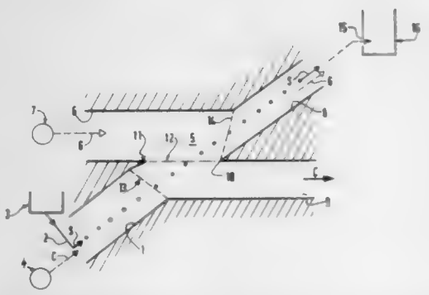
PCT No. PCT/FR93/00065, § 371 Date Jul. 26, 1993, § 102(e) Date Jul. 26, 1993, PCT Pub. No. WO93/15362, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 22, 1993, Ser. No. 94,023

Claims priority, application France, Jan. 27, 1992, 92 00811

Int. Cl.[5] **C21B** *7/16*

U.S. Cl. 75—460 **10 Claims**



1. Process for replacing a first gas flow accompanying a flow of solid particles by a second gas flow, said process comprising: sending the first gas flow at supersonic speed and the flow of particles in a first direction; intersecting in an interaction zone said first gas flow and said flow of particles with the second gas glow, said second gas glow being sent in a second direction forming an angle with the first direction; deflecting the first gas flow in a direction substantially parallel to the second direction; and deflecting the second flow of gas substantially in the first direction, so as to replace said first gas flow and accompany the flow of particles in said first direction.

5,350,440

FURNACE WITH DEFLECTING SURFACE AND METHOD OF CHARGING METAL SOLIDS

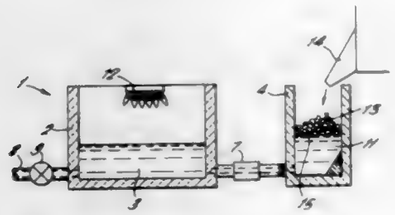
Anil Katyal; Warwick N. Brown, both of Birmingham, and Roger Howitt, Nottingham, all of United Kingdom, assignors to Cookson Group PLC, London, United Kingdom

Filed Aug. 16, 1993, Ser. No. 107,244

Claims priority, application United Kingdom, Aug. 21, 1992, 9217802

Int. Cl.[5] C22B *9/16, 21/00*

U.S. Cl. 75—686 22 Claims



1. A method of charging metal solids into a body of molten metal in a furnace comprising the step of heating a body of molten metal in a holding portion of the furnace, transferring metal from the holding portion to a well annexed to the holding portion such that a flow of metal entes the well beneath the surface of metal in the well, feeding the metal solids into contact with the surface of molten metal in the well and returning molten metal from the well into the holding portion, the method including the step of creating turbulence in the flow within the well by means of a stationary turbulator located in the path of the flow and wherein the turbulator deflects the flow by means of at least a first deflecting surface which is upwardly inclined so as to impart to the flow at least a component of motion in an upward direction.

5,350,441

FLUE GAS CONDITIONING SYSTEM

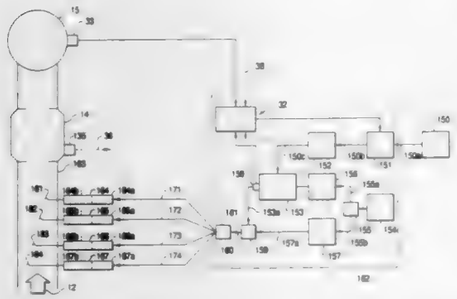
Robert A. Wright, Indianapolis, Ind., assignor to Wilhelm Environmental Technologies, Inc., Indianapolis, Ind.

Continuation of Ser. No. 919,525, Jul. 24, 1992, Pat. No. 5,196,038, which is a continuation-in-part of Ser. No. 494,234, Mar. 15, 1990, Pat. No. 5,032,154. This application Mar. 22, 1993, Ser. No. 34,273

The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.

Int. Cl.[5] B03C *3/66*

U.S. Cl. 95—58 30 Claims



10. In a method of conditioning a flow of boiler flue gas with a flow of sulfur trioxide for removal of entrained particulate matter by electrostatic means the steps of:

providing a sulfur burner with a gas-fired heater in heat transfer relationship thereto;

delivering a flow of sulfur to the sulfur burner;

providing a controlled flow of air into the sulfur burner;

combusting the sulfur in the sulfur burner to provide a flow of sulfur dioxide and air as an output;

determining the rate of sulfur flow into the sulfur burner;

calculating the concentration of sulfur dioxide in air in the output of the sulfur burner from the flows of sulfur and air into the sulfur burner;

providing a plurality of temperature controllable catalytic converters, each catalytic converter including a first stage and a second stage;

determining the temperatures between the first stages and the second stages of each of the plurality of catalytic converters; and

generating control signals to control the temperatures of each of the plurality of catalytic converters to maintain desirable temperatures between the first stages and the second stages of the plurality of catalytic converters while controlling the sulfur dioxide concentration of the sulfur burner output.

5,350,442

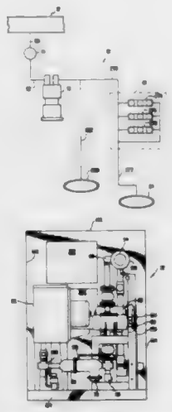
GAS HANDLING SYSTEM AND ADSORBENT DRYER REGENERATION APPARATUS

John E. Thelen, Ocala, and Sundar R. Mylavarapu, Gainesville, both of Fla., assignors to Pneumatic Products Corp., Ocala, Fla.

Filed Aug. 6, 1993, Ser. No. 103,002

Int. Cl.[5] B01D *53/04*

U.S. Cl. 95—115 20 Claims



1. A method of handling gas, said method comprising the steps of:

flowing a first gas through a first adsorbent dryer, using said dryer to dry said first gas, and subsequently compressing said first gas into a first storage vessel;

flowing a second gas through a second adsorbent dryer, using said second adsorbent dryer to dry said second gas, and subsequently compressing said second gas into a second storage vessel, said second dryer being remote from said first dryer; and

using a mobile regeneration apparatus to regenerate said first and second dryers.

6. A mobile regeneration apparatus for regenerating an adsorbent dryer, said apparatus comprising:

a conduit system for connecting said apparatus to the adsorbent dryer;

a blower for causing regenerating fluid to flow through the adsorbent dryer;

a heater for heating the regenerating fluid, said heater being connected to said blower by said conduit system;

a cooler for cooling the regenerating fluid, said cooler being connected to said heater by said conduit system; and

a separator for removing water from the regenerating fluid, said separator being located between said cooler and said heater, said separator being connected to said heater and said cooler by said conduit system.

5,350,443

FILTER SHEET MATERIAL FOR PASSENGER CABINS IN MOTOR VEHICLES

Hasso von Blücher, Parkstrasse 10, D-4006 Erkrath, and Ernest de Ruiter, Höhenstrasse 57a, D-5090 Leverkusen 3, both of Fed. Rep. of Germany

Filed Apr. 19, 1993, Ser. No. 47,473

Int. Cl.[5] B01D *53/04, 29/01*

U.S. Cl. 96—135 24 Claims

1. A filter sheet material for the removal of unpleasant odours in the passenger cabins of motor vehicles, wherein the improvement resides in that on one and the same air-permeable support material a particle filter-layer as well as an adsorption filter layer containing adsorptive material are fixed.

5,350,444

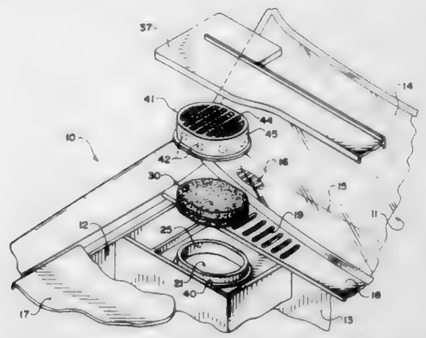
PASSENGER VEHICLE WITH A FILTERED AIR INTAKE

David Gould, Winnipeg, and Robert Wosner, Vermette, both of Canada, assignors to The Healthwise Auto Filter Inc., Winnipeg, Canada

Continuation-in-part of Ser. No. 8,588, Jan. 25, 1993, abandoned. This application Apr. 28, 1993, Ser. No. 53,224

Int. Cl.[5] B60H *3/06*

U.S. Cl. 96—154 5 Claims



1. A passenger vehicle comprising a vehicle body having a passenger compartment, an air intake duct for drawing exterior air for emission into the passenger compartment, a fan mounted in the duct for drawing air into the intake and a filter member mounted in the intake duct upstream of the fan, the filter member having a filter body arranged for extraction from air flowing therethrough of particulate materials and a filter medium in the falter body for extraction of combustion products, the filter body comprising a plurality of layers connected together to form a pillow, some of the layers comprising a non-woven mat of fibres, the duct having fastening means therein comprising at least one element adhesively fastened to a wall of the duct and having a plurality of flexible hooks carried on the element, the hooks engaging said non-woven mat of fibres to hold the filter body in place.

5,350,445

HYDROPHILIC COATING COMPOSITION AND BATH CONTAINING SAME

Fujio Mikami, Kanagawa; Kiyotada Yasuhara, Yokohama; Masahiro Kojima, and Susumu Inoue, both of Oyama, all of Japan, assignors to Nippon Paint Co., Ltd. and Showa Aluminum Corporation, both of Osaka, Japan

Filed Jun. 11, 1992, Ser. No. 896,978

Claims priority, application Japan, Jun. 12, 1991, 3-167637; Apr. 24, 1992, 4-131878

Int. Cl.[5] C09D *5/08*

U.S. Cl. 106—14.41 50 Claims

1. A hydrophilic coating composition comprising: by weight in an aqueous solution or dispersion,

(a) 0.3–6 parts by weight of polyvinyl pyrrolidone having a polymerization degree of 10–1000; and

(b) 1–10 parts by weight of polyvinyl alcohol having a saponification degree of 80% or more and a polymerization degree of 100–1000, a weight ratio of said component (a) to said component (b), (a)/[(a)+(b)], being in the range of 0.1–0.9.

5,350,446

HOT MELT IMPULSE INK JET INK WITH DISPERSED SOLID PIGMENT IN A HOT MELT VEHICLE

An-Chung R. Lin, New Town, and Theodore M. Cooke, Danbury, both of Conn., assignors to Dataproducts Corporation, Woodland Hills, Calif.

Continuation of Ser. No. 902,570, Jun. 22, 1992, abandoned, which is a continuation of Ser. No. 817,948, Jan. 3, 1992, abandoned, which is a continuation of Ser. No. 519,279, May 4, 1990, abandoned, which is a division of Ser. No. 146,211, Jan. 20, 1988, abandoned, which is a continuation of Ser. No. 6,727, Jan. 23, 1987, abandoned, which is a continuation of Ser. No. 668,095, Nov. 5, 1984, abandoned. This application Aug. 20, 1993, Ser. No. 110,481

Int. Cl.[5] C09D *11/02, 11/12*

U.S. Cl. 706—27 R 40 Claims

1. A hot melt solid ink for supply to an ink jet apparatus which heats the solid ink to an elevated jetting temperature and supplies it as liquid ink to an impulse ink jet of a small nozzle diameter, said hot melt solid ink comprising:

a vehicle selected from the group consisting of (i) a wax having a melting temperature above 65° C. and (ii) a C_{18}–C_{24} fatty acid or alcohol;

solid pigment as a recording means in an amount of no more than 10 percent of the total weight of said ink and having a particle size sufficiently small so as not to clog the nozzle and so as to minimize the terminal settling velocity of the solid pigment;

a non-evaporative carrier in which the solid pigment is suspended, the carrier being dispersed through the vehicle and compatible with the vehicle to enable the carrier and pigment to remain dispersed within the vehicle for long periods even at the jetting temperature and to enable the more efficient use of a smaller amount of said solid pigment; and

said hot melt ink having a jetting viscosity of no more than 15 cP at the jetting temperature.

5,350,447

COATING FOR CERAMIC COMPOSITES

Jane S. Copes, Inver Grove Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 684,317, Apr. 12, 1991, Pat. No. 5,260,125. This application Jun. 11, 1993, Ser. No. 75,655

Int. Cl.[5] C04B *12/02*

U.S. Cl. 106—287.17 7 Claims

1. An unfired coating composition useful for reducing the gas permeability of a silicon carbide coated aluminoborosilicate ceramic composite, said unfired coating composition consisting essentially of:

(a) an aluminum phosphate solution prepared by dissolving aluminum metal in phosphoric acid;
(b) silicon carbide in an amount sufficient to create a fired molar ratio range of silicon carbide to aluminum phosphate of about 1:1 to 50:1; and
(c) particles of aluminoborosilicate dispersed therein in the weight range of about 0.5 to 70 weight percent of the total weight of said unfired coating composition when fired.

5,350,448

ELECTRICALLY CONDUCTIVE PIGMENTS

Johann Dietz, Dietzenbach; Klaus Franz, Kelkheim; Gerhard Pfaff, Munster; Reiner Vogt, Wixhausen, all of Fed. Rep. of Germany, and Katsuhisa Nitta, Fukushimi, Japan, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Apr. 22, 1993, Ser. No. 50,797
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1992, 4213747; Dec. 19, 1992, 4243163
Int. Cl.[5] C09C *1/36*
U.S. Cl. 106—441 **9 Claims**

1. An light-colored, electrically conductive pigment comprising a substrate optionally coated with at least one metal oxide layer and thereon a conductive layer comprising halogen-doped tin oxide and/or halogen doped titanium oxide.

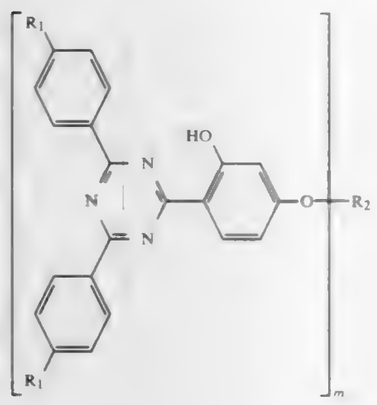
5,350,449

COATING MATERIALS STABILIZED AGAINST LIGHT-INDUCED DEGRADATION

Andreas Valet, Eimeldingen, Fed. Rep. of Germany; Jean-Luc Birbaum, Fribourg, and Mario Slongo, Tafers, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 835,657, Feb. 13, 1992, Pat. No. 5,298,067. This application Jan. 11, 1994, Ser. No. 180,020
Claims priority, application Switzerland, Feb. 21, 1991, 527/91
Int. Cl.[5] C08K *5/3492*
U.S. Cl. 106—506 **13 Claims**

1. A coating material stabilised against degradation induced by light, oxygen and heat, which comprises
a) a film-forming binder,
b) as stabiliser, at least one hydroxyphenyltriazine of formula I



I

wherein
R_1 is hydrogen or methyl,
m is 1, and
R_2 is C_1–C_{12}alkyl which is substituted by hydroxyl, by C_1–C_{12}alkoxy or by both hydroxyl and by C_1–C_{12}alkoxy.

5,350,450

ADMIXTURE FOR CONCRETE MIXES

Kenkichi Hamabe, Samukawa; Shigemi Matsuo; Hiroshi Nomachi, both of Chigasaki; Hideo Ogawa, Sagamihara, and Minoru Ueda, Samukawa, all of Japan, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 967,951, Oct. 27, 1992, abandoned, which is a continuation of Ser. No. 533,256, Jun. 4, 1990, abandoned. This application Apr. 30, 1993, Ser. No. 56,154
Claims priority, application Japan, Jun. 5, 1989, 1-142585
Int. Cl.[5] C04B *24/00*
U.S. Cl. 106—802 **15 Claims**

1. A method for applying a cementitious composition to a surface comprising:
1) creating a fluid composition which comprises the cementitious composition, plus
a) 0.001 to 5.0% of a set retarding agent;
b) 1.0 to 10% of a cement quick-setting agent;
c) 0.01 to 2% of a cement dispersing agent;
d) 0.01 to 0.2% of a slow release cement dispersing agent; and
2) applying the fluid composition to a surface while the fluid composition remains fluid.

5,350,451

BUILDING MATERIAL MADE FROM WASTE PAPER AND METHOD FOR PRODUCING THE SAME

Eric W. Patterson, 2115 Memory Lane Rd., Silver City, N. Mex. 88061

Continuation-in-part of Ser. No. 726,945, Jul. 8, 1991, abandoned. This application Aug. 10, 1992, Ser. No. 925,730
Int. Cl.[5] C04B *16/02, 18/24;* **C08L** *1/00*
U.S. Cl. 106—805 **12 Claims**

1. A building material comprising:
water,
communited paper products forming a plurality of paper particles and blended with water to form a slurry, said plurality of paper particles having a first weight, and
cement blended with said water and said plurality of paper particles so as to substantially coat said plurality of paper particles, said cement having a second weight;
wherein said first weight is about four times said second weight.

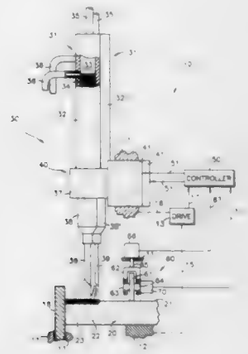
5,350,452

APPARATUS FOR APPLYING DISPERSIONS TO SELECTED FUEL CELL ELECTRODE PLATE REGIONS

Richard J. Rempe, West Hartford, and Robert C. Stewart, Jr., West Suffield, both of Conn., assignors to International Fuel Cells Corporation, South Windsor, Conn.

Division of Ser. No. 813,470, Dec. 26, 1991. This application Oct. 8, 1992, Ser. No. 958,065
Int. Cl.[5] B05C *11/00*
U.S. Cl. 118—669 **7 Claims**

1. An apparatus for applying a flowable substance onto a flat surface of a plate-shaped fuel cell comprising:
a means for supporting the flat surface,
a means for directing a fine stream and a coarse stream of flowable substance onto a predetermined area of the flat surface, wherein said fine stream applies the flowable substance to at least a portion of the perimeter of the area of the flat surface, and said coarse stream applies additional flowable substance onto the remaining predetermined area of the flat surface, and wherein the fine stream applies the flowable substance at a volumetric rate lower than the volume rate of the coarse stream,
a means for effecting relative movement between the fine and coarse streams and the flat surface in an advancement direction to position that area of the flat surface to which the flowable substance is to be applied into alignment with the fine and coarse streams to achieve the desired application, and



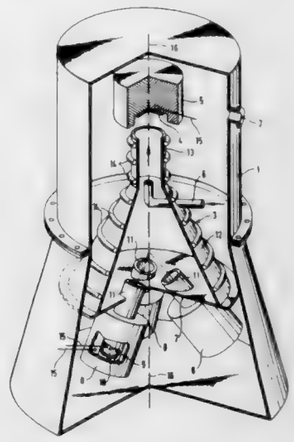
a means for controlling said directing means so that said streams are in existence only when the streams are within the predetermined area.

5,350,453

DEVICE FOR PRODUCING THIN FILMS OF MIXED METAL OXIDES FROM ORGANIC METAL COMPOUNDS ON A SUBSTRATE

Ernst-Günther Schlosser, Kelkheim/Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main

PCT No. PCT/EP91/00325, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO91/13185, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 21, 1991, Ser. No. 920,458
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1990, 4006489
Int. Cl.[5] C23C *16/00, 16/40, 16/44*
U.S. Cl. 118—719 **15 Claims**



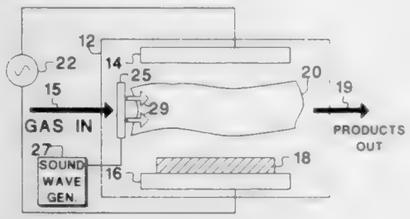
1. Device for producing thin films of mixed metal oxides from organic metal compounds on a substrate, characterized in that there is, in an evacuable housing (**1**), a truncated frustum shaped hollow body (**3**) formed from a casting (**12**), having a base (**7**) and an axis of symmetry (**16**), in which there are disposed, on a circumference of a circle that is concentric with the axis of symmetry (**16**),
a) at least three furnaces (**8**) in the base (**7**) of the hollow body which have reception devices (**9**) for the metal compounds (**10**) to be evaporated, which reception devices (**9**) are provided with guide pipes (**11**) which project into the hollow interior of the hollow body (**3**) and are inclined towards the axis of symmetry (**16**),
b) a confluence pipe (**13**), into which the truncated frustum hollow body merges, having a first and second end, and above whose second end there is disposed a heatable reception device (**5**) for the substrate (**4**), and
in the interior of the frustum shaped hollow body, a gas feed pipe terminates between the guide pipe (**11**) and the first end of the confluence pipe (**13**).

5,350,454

PLASMA PROCESSING APPARATUS FOR CONTROLLING PLASMA CONSTITUENTS USING NEUTRAL AND PLASMA SOUND WAVES

Tihiro Ohkawa, La Jolla, Calif., assignor to General Atomics, San Diego, Calif.

Filed Feb. 26, 1993, Ser. No. 23,096
Int. Cl.[5] C23C *16/00;* **H01L** *21/00*
U.S. Cl. 118—723 R **23 Claims**



1. Plasma processing apparatus comprising:
a plasma processing chamber;
means for introducing a prescribed gas into said plasma processing chamber;
means for establishing and maintaining a plasma from said gas within said plasma processing chambers, said plasma processing chamber including a workpiece to be processed by said plasma;
launching means for launching a periodic sound wave into said plasma, said sound wave being characterized by an intensity and fundamental frequency and harmonic content that includes at least a second harmonic, said sound wave interacting with a constituent within said plasma so as to impart a drift velocity thereto;
control means for controlling the characteristics of said sound wave so as to cause said constituent to move within said plasma as a result of said drift velocity in a desired direction within said plasma processing chamber;
whereby the location and flow of said constituent within said plasma may be controlled by controlling said sound wave.

5,350,455

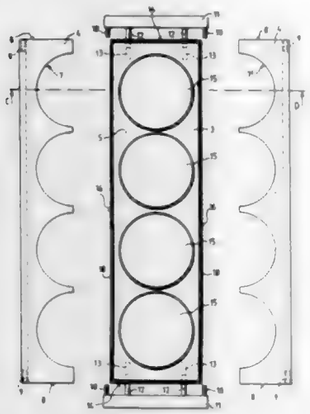
DEVICE FOR HOLDING DISK-SHAPED SUBSTRATES IN THE VACUUM CHAMBER OF A COATING OR ETCHING APPARATUS

Peter Mahler, Hainburg, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Dec. 1, 1993, Ser. No. 160,927
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1993, 4305749
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—728 **7 Claims**

1. Apparatus for holding disk-shaped substrates, said apparatus comprising
a flat rectangular substrate bed having a top surface, parallel opposed endwalls, and parallel opposed sidewalls,
a pair of clamping jaws each having an L-shaped cross section with a short limb fitted against a respective sidewall, a long limb extending halfway over said top surface, and a pair of opposed ends, each said long limb having a

plurality of semi-circular recesses which cooperate with respective said recesses of the other said limb to hold respective said substrates therebetween, and



means for positioning said clamping jaws firmly with respect to said substrate bed.

5,350,457

PROCESS FOR CLEANING ELECTRONIC OR PRECISION PARTS AND RECYCLING RINSE WASTE WATER

Kozo Kitazawa, and Eiji Kashihara, both of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Division of Ser. No. 86,460, Jul. 6, 1993, which is a continuation of Ser. No. 727,918, Jul. 10, 1991, abandoned. This application Aug. 27, 1993, Ser. No. 112,325

Claims priority, application Japan, Jul. 10, 1990, 2-182443; Sep. 11, 1990, 2-240569

Int. Cl.[5] B08B *3/08, 3/12*

U.S. Cl. 134—10 **29 Claims**

1. A process for cleaning an electronic or precision part, which comprises the steps:

(1) contacting an electronic or precision part with a detergent composition wherein said detergent composition consists essentially of 2–100% of one or more nonionic surface active agents and up to 5% by wt. of an anionic surfactant wherein a 5% by weight aqueous solution of said detergent composition has a cloud point of 5°–100° C., or with an aqueous solution of said detergent composition, wherein said contacting is carried out at a temperature below the cloud point of said detergent composition or said aqueous solution of said detergent composition, to obtain a washed electronic or precision part;

(2) rinsing said washed electronic or precision part with rinse water at a temperature of 5°–100° C., to obtain rinse waste water and a rinsed electronic or precision part; and

(3) heating said rinse waste water to a temperature above its cloud point, to obtain (a) an aqueous phase comprising purified rinse waste water and (b) an oil component phase,

wherein said rinse water in said rinsing (2) is purified rinse waste water obtained from said heating (3).

5,350,456

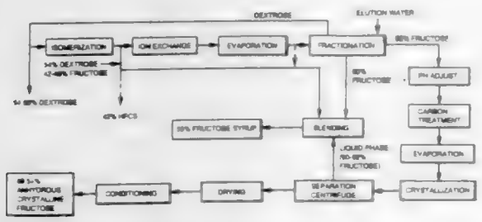
INTEGRATED PROCESS FOR PRODUCING CRYSTALLINE FRUCTOSE AND A HIGH FRUCTOSE, LIQUID-PHASE SWEETENER

Lawrence R. Schwab, Lafayette, Ind., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Division of Ser. No. 294,946, Jan. 6, 1989, abandoned, which is a continuation of Ser. No. 103,624, Oct. 1, 1987, abandoned, which is a continuation-in-part of Ser. No. 9,432, Feb. 2, 1987, abandoned. This application Aug. 20, 1991, Ser. No. 747,764

Int. Cl.[5] C13F *3/00*

U.S. Cl. 127—42 **5 Claims**



1. A process for producing a liquid-phase sweetener comprising dextrose and fructose, which process comprises:

fractionating a feed stream comprising dextrose and fructose into a dextrose-enriched raffinate, a lower-fructose extract, and a higher-fructose extract, said higher-fructose extract being greater than 90% (dsb) fructose; and

mixing the lower-fructose extract with a dextrose composition having a greater concentration (dsb) of dextrose than said lower-fructose extract to produce a liquid-phase sweetener.

5,350,458

METHOD FOR CLEANING A DIAGNOSTIC ANALYZER

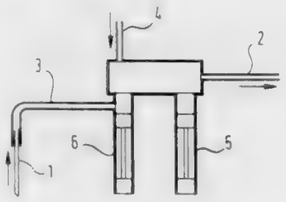
Judith Pinsl-Ober, Tutzing, and Roland Schenk, Weilheim, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 825,354, Jan. 24, 1992, abandoned, which is a division of Ser. No. 580,442, Sep. 10, 1990, abandoned. This application Feb. 19, 1993, Ser. No. 19,826

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1989, 3932641

Int. Cl.[5] B01F *17/00, 17/30;* **B08B** *3/08, 9/02*

U.S. Cl. 134—22.1 **14 Claims**



1. A method for cleaning an immunological or clinical chemistry diagnostic analyzer of proteins or other biological materials comprising

i) providing a diagnostic analyzer having a receptacle adapted to contain a liquid sample and requiring cleaning; and

ii) contacting said receptacle with an aliquot of an aqueous cleaning solution consisting of a rapidly wetting surfactant and an inorganic or organic acid, for a time sufficient that, when the aqueous cleaning solution is removed, the proteins or biological materials are also removed.

5,350,459

ORGANIC PHOTOVOLTAIC ELEMENT

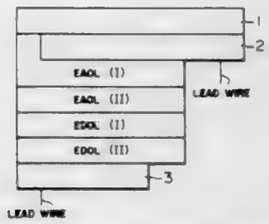
Tetsuro Suzuki; Masao Yoshikawa, both of Yokohama; Kazukiyo Nagai, and Hiroshi Ikuno, both of Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 30, 1993, Ser. No. 54,199

Claims priority, application Japan, May 1, 1992, 4-112704

Int. Cl.[5] H01L *31/06, 31/0344*

U.S. Cl. 136—263 **6 Claims**



1. An organic photovoltaic element comprising:

a first electrode,

a first electron acceptor organic layer provided on said first electrode,

a second electron acceptor organic layer which is different from said first electron acceptor organic layer, provided on said first electron acceptor organic layer,

a first electron donor organic layer provided on said second electron acceptor organic layer,

a second electron acceptor organic layer which is different from said first electron acceptor organic layer, provided on said first electron acceptor organic layer, and

a second electrode provided on said second electron acceptor organic layer, at least one of said first electrode or said second electrode being transparent.

5,350,460

HIGH TEMPERATURE PHOSPHORUS OXIDE DIFFUSION SOURCE

Gary R. Pickrell, Blacksburg, Va., and James E. Rapp, Oregon, Ohio, assignors to Techneglas, Inc., Perrysburg, Ohio

Filed Dec. 8, 1992, Ser. No. 986,656

Int. Cl.[5] H01L *21/225*

U.S. Cl. 148—33 **9 Claims**

1. A composition for a solid diffusion source to deposit a phosphorus oxide coating on a silicon wafer, the composition consisting essentially of an R_2O_3/P_2O_5 compound in which the ratio of R_2O_3 to P_2O_5 is about 1:3, and R is La, Y, Ce, Nd, Eu, Pr, Sm, Ho, Tb, Er, Yb, Tm or Dy.

5,350,461

LOW TEMPERATURE P_2O_5 OXIDE DIFFUSION SOURCE

Gary R. Pickrell, Blacksburg, Va., and James E. Rapp, Oregon, Ohio, assignors to Techneglas, Inc., Perryburg, Ohio

Filed Dec. 8, 1992, Ser. No. 986,940

Int. Cl.[5] H01L *21/225*

U.S. Cl. 148—33 **5 Claims**

1. A composition for a solid diffusion source to deposit a phosphorus oxide coating on a silicon wafer, the composition consisting essentially of an R_2O_3/P_2O_5 compound in which the ratio of R_2O_3 to P_2O_5 is about 1:5, and R is Nd Eu, Pr, Sm, Ho, Tb, Er, Yb, Tm or Dy.

5,350,462

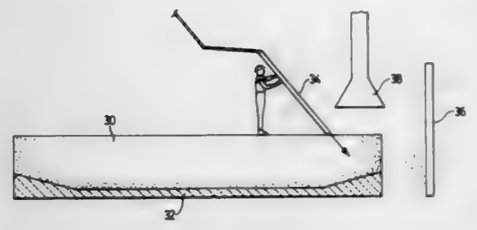
PROCESS FOR CUTTING LARGE BLOCKS OF METAL

Joseph J. Riccardi, Bristol, Wis., assignor to Southwind Enterprises Inc., Sudbury, Canada

Filed Jul. 22, 1993, Ser. No. 92,130

Int. Cl.[5] B23K *7/00*

U.S. Cl. 148—194 **8 Claims**



1. A process for cutting large blocks of ferrous and non-ferrous metals or refractory structures which melt above 1000° C. comprising the steps of:

i) introducing into a mild steel pipe having internal diameter in excess of 1.5 inches and having two opposing threaded ends, mild steel rods and aluminum rods, said rods being coextensive with said mild steel pipe and intermingled with one another, said intermingled mild steel rods and aluminum rods having diameters less than ¼ inch, and the ratio of the diameter of said mild steel rods to the diameter of said aluminum rods ranging between 1:2 and 2:1, said aluminum rods comprising up to 40 wt % of said rods within said pipe, and packing said rods such that an oxygen containing gas introduced at a pressure of at least 150 psi at one end of said pipe is capable of substantially unrestricted passage;

ii) connecting said mild steel pipe to a handle adapted to receive one end of said mild steel pipe, said handle having valve means adapted to introducing gas to said mild steel pipe at high pressure;

iii) igniting to burn said opposing end of said mild steel pipe and said rods therein, and introducing oxygen containing gas into said mild steel pipe at a pressure whereby said oxygen containing gas exits at not substantially reduced pressure at the opposing end of said mild steel pipe and at a mass flow rate which is at least capable of sustaining burning of said pipe and rods therein, thereby producing a blast of hot oxygen containing gas exiting from said mild steel pipe, said blast being capable of melting and mobilizing material from said large block, and

iv) impinging said blast of hot oxygen containing gas on the surface of a large block, thereby melting a groove into said surface of said large block and mobilizing the melted material out of said groove.

5,350,463

MAGNETICALLY GRADUATED STEEL BAR

Takashi Tsukamoto, Kitakyushu, and Masakazu Nakazato, Sagamihara, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka and Kayaba Industry Co., Ltd., Tokyo, both of Japan

Filed Aug. 10, 1992, Ser. No. 926,643

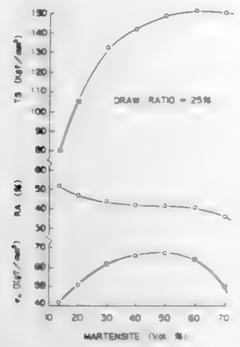
Claims priority, application Japan, Aug. 13, 1991, 3-203007

Int. Cl.[5] C22C *38/40*

U.S. Cl. 148—307 **17 Claims**

1. A magnetically graduated steel bar provided with a magnetic scale that has a steel composition consisting, on a weight basis, essentially of 0.02–0.10% C, 0.50–1.0% Mn, 0.50–1.0% Si, 17–20% Cr, 5–8% Ni, 0.05–0.20% C plus N, and the balance of Fe and incidental impurities, that contains 30–60 vol % of a cold working induced martensite and that has been given a nonmagnetic austenitic structure by local melting, the steel

bar having a tensile strength of at least 130 kgf/mm^2 and a fatigue strength of at least 60 kgf/mm^2, the magnetic scale



comprising spaced-apart areas of the nonmagnetic austenitic structure separated by areas of ferromagnetic martensite.

5,350,464

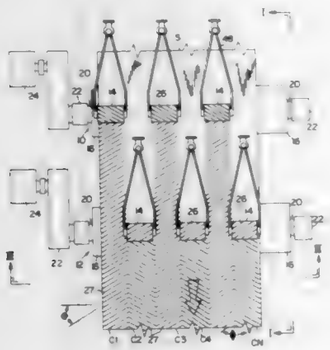
SILICON STEEL STRIP HAVING MECHANICALLY REFINED MAGNETIC DOMAIN WALL SPACINGS AND METHOD FOR PRODUCING THE SAME

James G. Benford, Pittsburgh, Pa., assignor to Allegheny Ludlum Corporation, Pittsburgh, Pa.

Filed Nov. 17, 1992, Ser. No. 978,202

Int. Cl.^{5} H01F *1/04*

U.S. Cl. 148—308 **18 Claims**



1. A grain oriented silicon steel strip having mechanically refined magnetic domain wall spacings formed by mechanically scribing a face surface of the strip, said mechanical scribing consisting of a multiplicity of closely spaced scribe lines extending generally across the width of the strip intersecting magnetic domain walls extending parallel to the rolling direction, said scribe lines being interrupted by at least one directional change across the width of the strip and defining a chevron pattern with the apexes of multiple patterns oriented in the rolling direction.

5,350,465

METHOD OF MECHANICAL STRUCTURING OF ENDLESS PRESSING BANDS AND PRODUCT THEREOF

Robert Walter, Huerth, and Walter Hueck, Luedenscheid, both of Fed. Rep. of Germany, assignors to Firma Eduard Hueck GmbH & Co. KG, Leudenscheid, Fed. Rep. of Germany

Filed Sep. 30, 1992, Ser. No. 954,919

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1991, 4134976

Int. Cl.^{5} C22C *38/34*; C23F *1/00*

U.S. Cl. 148—325 **9 Claims**

1. A method of galvanic structuring of endless pressing bands, including the steps of providing a steel band having a weld seam; treating the steel band in an acid bath; and selecting the steel band with the following alloying ingredients:

Carbon	0–0.03%
Silicon	2–4%
Manganese	0.15–0.5%
Chromium	11–14%
Nickel	6–8%,

and a balance of iron.

5,350,466

CREEP RESISTANT TITANIUM ALUMINIDE ALLOY

Donald E. Larsen, Jr., Muskegon, Mich.; Prabir R. Bhowal, Huntington, and Howard F. Merrick, Cheshire, both of Conn., assignors to Howmet Corporation, Greenwich, Conn. and Avco Corporation, Providence, R.I.

Filed Jul. 19, 1993, Ser. No. 94,297

Int. Cl.^{5} C22C *14/00*

U.S. Cl. 148—421 **10 Claims**



1. Titanium aluminide alloy composition consisting essentially of, in atomic %, about 44 to about 49 Al, about 0.5 to about 4.0 Nb, about 0.25 to about 3.0 Mn, about 0.1 to less than about 1.0 Mo, about 0.1 to less than about 1.0 W, about 0.1 to about 0.6 Si and the balance titanium.

5,350,467

METHOD OF HEAT TREATING A ZONE OF EACH OF A PLURALITY OF ARTICLES

Roy E. Evans, Wood Lane, Fordhouses, Wolverhampton, West Midlands WV10 8HN, United Kingdom

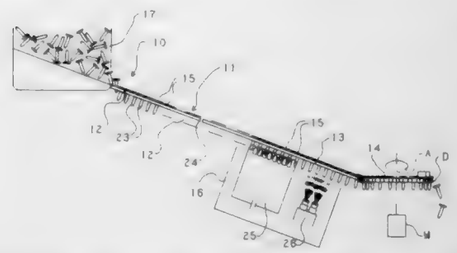
Filed Mar. 31, 1993, Ser. No. 40,929

Claims priority, application United Kingdom, Apr. 2, 1992, 9207281

Int. Cl.^{5} C21D *9/00*

U.S. Cl. 148—559 **9 Claims**

1. A method of heat treating a zone of each article of a plurality of articles comprising the steps of feeding each of the articles onto a conveyor means by which the articles are continuously conveyed towards and through a heat treatment apparatus, subjecting the zones of each of the articles to heat at the heat treatment apparatus, removing the articles from the conveyor means and conveying the articles to a delivery point, wherein the articles are conveyed in succession and in abutting



relationship with one another along the conveyor means, regulating the rate at which articles are conveyed along the conveyor means towards and through the heat treatment apparatus solely by regulating the rate at which articles are removed from the conveyor means.

5,350,468

PROCESS FOR PRODUCING AMORPHOUS ALLOY MATERIALS HAVING HIGH TOUGHNESS AND HIGH STRENGTH

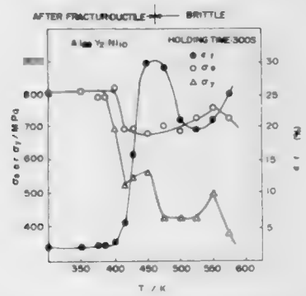
Tsuyoshi Masumoto, 3-8-22, Kamisugi, Aoba-ku, and Akihisa Inoue, 11-806, Kawauchijutaku, Mubanchi, Kawauchi, Aoba-ku, both of Sendai-shi, Miyagi, Japan, assignors to Tsuyoshi Masumoto; Akihisa Inoue, both of Miyagi and Yoshida Kogyo K.K., Tokyo, all of Japan

Filed Sep. 2, 1992, Ser. No. 939,210

Claims priority, application Japan, Sep. 6, 1991, 3-227184

Int. Cl.^{5} C22F *1/00*

U.S. Cl. 148—561 **10 Claims**



1. A process for producing an amorphous alloy material having high toughness and high strength, which comprises heating an amorphous alloy in the form of powder, thin ribbons or bulk shapes consisting of an amorphous phase up to a temperature at which intermetallic compounds or other compounds are not formed while subjecting the amorphous alloy being heated to deformation-forming, pressing or other working, and thereby causing precipitation and uniform dispersion of crystal grains consisting of a supersaturated solid solution made of a main element and additive elements and having a mean diameter of 5 nm to 500 nm in a volume percentage of 5 to 50% in an amorphous matrix, and simultaneously effecting consolidation-forming or combining.

5,350,469

PROCESS AND APPARATUS FOR ASSEMBLING INSULATING GLASS PANES FILLED WITH A GAS OTHER THAN AIR

Karl Lenhardt, Neuhausen-Hamberg, and Uwe Bogner, Pforzheim-Huchenfeld, both of Fed. Rep. of Germany, assignors to Lenhardt Maschinenbau GmbH, Neuhausen-Hamberg, Fed. Rep. of Germany

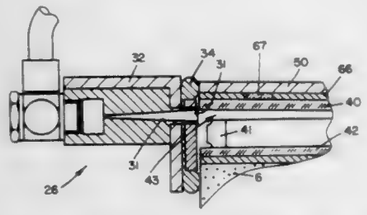
PCT No. PCT/EP91/01307, § 371 Date Jan. 20, 1993, § 102(e) Date Jan. 20, 1993, PCT Pub. No. WO92/01137, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 12, 1991, Ser. No. 965,259

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1990, 4022185

Int. Cl.^{5} B32B *17/06, 31/16*

U.S. Cl. 156—102 **33 Claims**



1. A process of assembling insulating glass panes, wherein an interior space is provided between pairs of glass plates, which are spaced apart and adhesively joined along their edges by a framelike spacer and which during their assembling are in contact on their outside planar surfaces with positioning surfaces, and wherein said interior space is filled with a gas other than air, in that

at least one of the glass plates is elastically flexed along an edge of the glass plate,

the spacer is attached to one of the glass plates (hereinafter called the "first" glass plate) before or during or after the flexing of one of the glass plates,

the spacer is attached to the other glass plate (hereinafter called the "second" glass plate) while the flexing is maintained to create and to keep open an access opening to the interior space between the glass plates,

the gas is admitted to the interior space through the access opening thus provided, and

the access opening is closed in that the resilient flexing is eliminated,

characterized in that at least one glass plate together with its respective positioning surface contacting it is flexed so that the outside surface of the glass plate is concave.

5,350,470

METHOD OF FORMING TIRE BEAD ASSEMBLY

Virgil D. Mochel, Wadsworth; Walter Tomaszewski, Canton, and Georg G. A. Bohm, Akron, all of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Nov. 30, 1993, Ser. No. 159,419

Int. Cl.^{5} B29D *30/48*; B60C *15/06*

U.S. Cl. 156—136 **13 Claims**

1. A method of forming a bead assembly comprising a bead filler and an annular bead, including the steps of:

extruding an elongated strip of elastomeric material having a pair of longitudinal end members and an intervening recess;

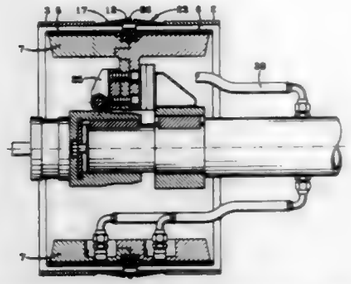
winding a predetermined length of said strip about a rigid annular supporting structure;

splicing cut ends of the strip together to form a joined annular elastomeric member;

placing an annular bead about the annular elastomeric member in radial alignment with the recess;

locking the bead within the recess by expansion of a segmented expandable mandrel;

withdrawing the rigid annular supporting structure from within the joined annular elastomeric member; and



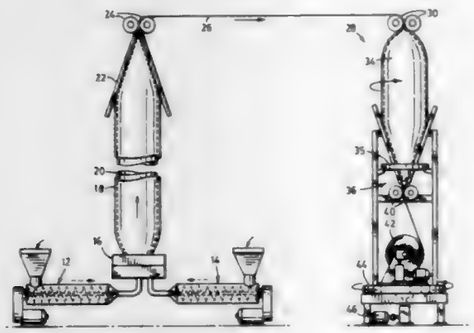
turning the two longitudinal end members around the bead and into contact with each other to form an annular bead assembly.

5,350,471

PRODUCTION OF CROSS-LAMINATED FILM FROM TUBE

Mirek Planeta, 170 Traders Blvd, Mississauga, Ontario, Canada L4Z 1W7

Filed May 3, 1993, Ser. No. 55,580
Int. Cl.[5] B29C *53/58*
U.S. Cl. 156—156 **14 Claims**



1. A method of producing a cross-oriented multi-layer laminated plastic film comprising;

providing a flattened tubular plastic film having a outer plastic film layer with a first melting temperature and an inner plastic film layer with a second melting temperature lower than the first melting temperature, said outer plastic film layer having a molecular orientation substantially in the direction of the length of the tubular plastic film,

passing said flattened tubular plastic film from an expanding station in an expanded condition along a predetermined path in the direction of the length of said film to a collapsing station in a continuous manner,

rotating the expanded tubular plastic film about the predetermined path as the film passes from the expanding station to the collapsing station to effect cross-orientation of the outer film layer in directions inclined to the direction of travel of the tubular plastic film, and

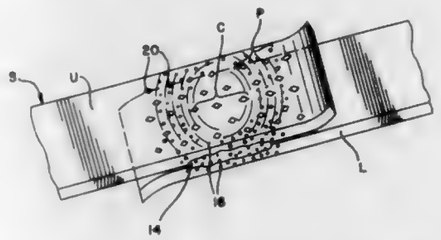
flattening the tubular plastic film at the collapsing station and applying pressure to the flattened film at a temperature high enough to soften the inner plastic film layer but low enough not to soften the outer plastic film layer to an extent to cause the outer plastic film layer to loose its molecular orientation, said pressure causing the opposite sides of the tubular plastic film to engage one another and to cause adjacent inner film layers to become bonded together and to the outer film layers to form a cross-oriented multi-layer laminated plastic film.

5,350,472

METHOD OF MAKING AN ORBITAL FRICTION FUSION A WELDED JOINT IN THERMOPLASTIC STRAP WITH DIFFERENTIAL PRESSURE

Robert J. Kobiella, Rolling Meadows, Ill., assignor to Signode Corporation, Glenview, Ill.

Division of Ser. No. 969,584, Oct. 30, 1992. This application Oct. 8, 1993, Ser. No. 133,355
Int. Cl.[5] B32B *31/20*
U.S. Cl. 156—157 **21 Claims**



1. A method for making a welded joint between first and second lengths of a thermoplastic strap disposed in an overlapping, face-to-face relationship at a location at which said welded joint is to be formed, comprising the steps of:

forcing said strap lengths into face-to-face contact under above-ambient pressure conditions along an interface comprising a central region and a peripheral region;

increasing the temperature of said strap lengths along said interface sufficiently so as to melt at least a part of the thickness of each strap length at said interface; and

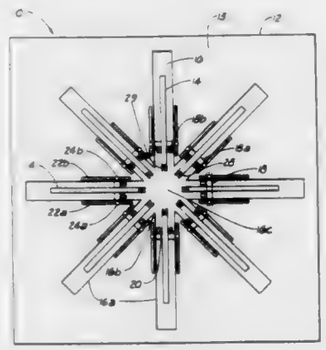
releasing said above-ambient pressure conditions firstly within said peripheral region and subsequently within said central region whereby said melted parts of said strap length along said interface are permitted to solidify so as to form said welded joint.

5,350,473

COVER FORMING APPARATUS HAVING PIVOTING FORMING MEMBERS

Donald E. Weder, Highland, Ill., and Paul Fantz, Imperial, Mo., assignors to Highland Supply Corporation, Highland, Ill.

Continuation-in-part of Ser. No. 927,891, Aug. 10, 1992, Pat. No. 5,291,721. This application Nov. 30, 1992, Ser. No. 982,921
Int. Cl.[5] B29C *63/06*
U.S. Cl. 156—212 **65 Claims**



1. A cover forming apparatus for forming a flower pot or flower pot cover about an outer surface of an object, the object

selected from a group consisting of a die, a mold, and a pot means, from a sheet of material, comprising:

support means upon which the sheet of material is disposable;

an object having an outer surface, said object supported above and near the sheet of material in a forming position;

a plurality of pivotable forming members; and

pivoting means coupled to said forming members for pivotally urging said forming members from a storage position spaced a distance from said outer surface and for moving said forming members to a closed position whereby said forming members cooperate to engage portions of the sheet of material and form the sheet material about said outer surface of said object, whereby the sheet of material is formed into the flower pot or flower pot cover; and

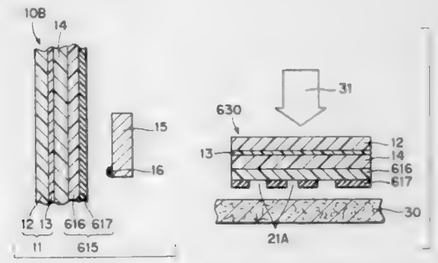
wherein said forming members include facial surfaces which engage the sheet of material, and edges on each side of said facial surfaces, and wherein said facial surfaces are sized such that, when in said closed position, gaps separate the edges of adjacent forming members, whereby as said forming members are being pivoted from said storage position to said closed position, the non-engaged portions of the material between adjacent forming members lag the movement of the engaged portions, thereby forming a plurality of outwardly directed pleats which project through said gaps when said forming members are in said closed position.

5,350,474

PRINTING METHOD FOR THERMALLY TRANSFERRING IMAGE SECTION OF PRINT SHEET TO IMAGE RECEIVING MEMBER AND PRINT SHEET MAKING DEVICE

Mitsuo Yamane, Yotsukaichi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Division of Ser. No. 682,063, Apr. 8, 1991, Pat. No. 5,244,524. This application May 21, 1993, Ser. No. 65,884
Claims priority, application Japan, Apr. 9, 1990, 2-93493; Apr. 9, 1990, 2-93494; Apr. 9, 1990, 2-93495; Apr. 24, 1990, 2-108062; Jun. 14, 1990, 2-155906; Jun. 14, 1990, 2-155907; Jun. 15, 1990, 2-158192; Jun. 18, 1990, 2-159246; Aug. 8, 1990, 2-210912
Int. Cl.[5] B44C *1/16;* **B41M** *1/00*
U.S. Cl. 156—240 **5 Claims**



1. A printing method for exclusively printing an imaging section onto an image receiving member comprising the steps of;

preparing a transfer sheet comprising a hot melting type adhesive layer and another layer formed over the hot melting type adhesive layer, the another layer being capable of being perforated upon heating, the perforated portions corresponding to an intended imaging section for providing a perforated latent image;

heating said another layer to form said perforating portion;

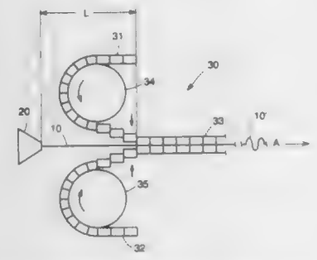
heatedly pressing the transfer sheet on the image receiving member for melting the hot melting type adhesive layer and for allowing the melted hot melting type adhesive layer to flow through the perforated portion, whereby only the imaging section can be provided on the image receiving member.

5,350,475

METHOD FOR MAKING A COMPONENT UNIT FOR HEAT EXCHANGER

Bernd Hewing, Ochtrup, and Siegfried Broda, Haltern, both of Fed. Rep. of Germany, assignors to 2H Kunststoff GmbH, Ochtrup, Fed. Rep. of Germany

Filed Feb. 9, 1993, Ser. No. 15,693
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1992, 4204041
Int. Cl.[5] B29C *47/04*
U.S. Cl. 156—244.11 **10 Claims**



1. Method for making a component unit for heat exchanger, substance exchanger and/or bioreactor systems, with at least two walls of embossed thermoplastic sheets, comprising: issuing a fusible strip from a melt shaping tool on an extruder head, passing the fusible strip through a preliminary cooling run, introducing the fusible strip into a strip molding press after the cooling run, and continuously molding the fusible strip in the strip molding press to form an embossed plastic sheet and cooling the sheet to set it, the extruder head having a slot having a width and which method includes first roughly adjusting a width of the shaped plastic sheet molded in the strip molding press by setting or selecting the width of the slot in the extruder head, and finely adjusting the width of the shaped plastic sheet by applying a tensile force to the fusible strip while being molded, the tensile force being applicable through different velocities of the fusible strip between the extruder head and the strip molding press that follows.

5,350,476

EXTRUSION COATING PROCESS FOR PRODUCING A HIGH GLOSS POLYETHYLENE COATING

Ray Edwards, Henderson, Tex., assignor to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 843,043, Feb. 28, 1992, Pat. No. 5,268,230. This application Nov. 12, 1993, Ser. No. 151,314
Int. Cl.[5] B29C *47/06*
U.S. Cl. 156—244.11 **11 Claims**

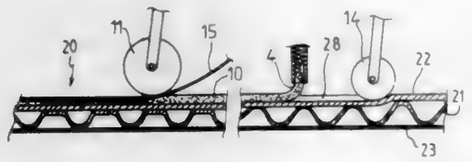
1. An extrusion coating process comprising; extrusion coating onto a substrate against a glossy chill roll, a low density polyethylene of narrow molecular weight distribution having a melt index of 2 to 4-dg/min at 190° C., a swell ratio of 1.2 to 1.3, an annealed density of 0.92 to 0.93-g/cc, and a polydispersity index of 6 to 9.

5,350,477

METHOD AND APPARATUS FOR MANUFACTURING A FIBROUS MATERIAL PRODUCT ON WHICH A DEFERRED-ACTION ADHESIVE AND A REMOVABLE PROTECTIVE STRIP ARE DISPOSED

Pierre A. Chevalier, 31, Boulevard d'Auteuil, Boulogne, Hauts de Seine 92100; Jacques P. Chevalier, Neuilly sur Seine, and Gilbert E. Veniard, Paris, all of France, assignors to Pierre A. Chevalier, Boulogne, France

PCT No. PCT/FR90/00482, § 371 Date Apr. 23, 1991, § 102(e) Date Apr. 23, 1991, PCT Pub. No. WO91/00216, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 28, 1990, Ser. No. 656,177
Claims priority, application France, Jun. 28, 1989, 89 08650
Int. Cl.[5] B32B *1/00*
U.S. Cl. 156—250 42 Claims



1. A method of manufacturing a product comprising a fibrous material substrate on which a deferred action adhesive is disposed for delayed use of said adhesive, comprising the steps of:

heating said adhesive to a temperature at which it is pasty at the limit of the liquid state;

applying said adhesive in the form of a strand to the substrate while effecting relative movement between the strand and the substrate to produce a substantially continuous, relatively thick strand across the surface of the substrate;

cooling said adhesive strand to increase its viscosity to that of a pasty consistency at the limit of the solid state;

applying a strip of removable protective material to said adhesive strand to cover it; and

pressing said strip to said adhesive strand to produce lateral spreading of said strand and to extent it longitudinally along the substrate.

5,350,478

METHOD OF MANUFACTURING A WASHABLE, DIRT BINDING NAP MAT HAVING A RUBBER BACKING AND NAP FREE RUBBER EDGES

Flemming Bøjstrup; Helle B. Petersen, both of Aarhus, and Peter H. Sorensen, Hornslet, all of Denmark, assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Nov. 5, 1992, Ser. No. 972,369
Claims priority, application Denmark, Mar. 8, 1991, 422/91
Int. Cl.[5] A47G *27/02*; B29C *35/00*
U.S. Cl. 156—299 6 Claims

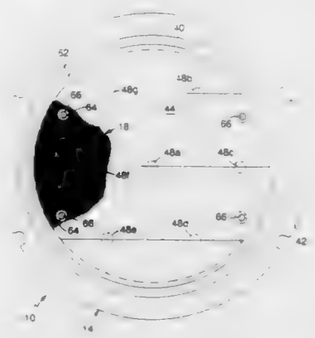
1. Method for the manufacture of a nap mat having a nap layer upper surface and a rubber backing for the nap layer with nap free rubber edge zones comprising the steps of: laying down an unvulcanized rubber backing sheet, placing a nap layer on top of said rubber sheet, placing a vulcanized strip of rubber under each edge of the unvulcanized rubber sheet with a portion of the strip extending outwardly from the unvulcanized rubber and heat vulcanizing the rubber sheet, the strips and the nap layer to form a nap mat with tear resistant unnapped edge portions.

5,350,479

ELECTROSTATIC CHUCK FOR HIGH POWER PLASMA PROCESSING

Kenneth S. Collins; John R. Trow, both of San Jose; Joshua C. W. Tsui, Santa Clara; Craig A. Roderick, San Jose; Nicolas J. Bright, Saratoga; Jeffrey Marks, San Jose, all of Calif., and Tetsuya Ishikawa, Funabashi, Japan, assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Dec. 2, 1992, Ser. No. 984,797
Int. Cl.[5] H01L *21/68*
U.S. Cl. 156—345 32 Claims



1. An electrostatic chuck for holding and gas cooling a substrate during processing in a plasma reaction chamber, said chuck comprising:

a pedestal having a metallic upper surface; and

a layer of dielectric material formed on the upper surface of said pedestal, said dielectric layer having a top surface for receiving a backside of said substrate when said substrate is placed on said chuck;

said pedestal having one or more internal cavities for distributing cooling gas, each of said one or more internal cavities being separated from said dielectric layer by an associated thin layer of pedestal material,

wherein for each of said one or more internal cavities, said dielectric layer has one or more first holes passing therethrough, and the associated thin layer of pedestal material has an equal number of second holes passing therethrough and aligned with corresponding ones of said one or more first holes, wherein said first holes have first diameters and said second holes have second diameters that are larger than the first diameters of the corresponding first holes.

5,350,480

SURFACE CLEANING AND CONDITIONING USING HOT NEUTRAL GAS BEAM ARRAY

David C. Gray, Sunnyvale, Calif., assignor to Aspect International, Inc., Pittsburgh, Pa.

Filed Jul. 23, 1993, Ser. No. 96,928
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—345 23 Claims

1. An apparatus for processing large area substrates, including semiconductor wafers, utilizing a hot neutral gas beam, said apparatus comprising:

a processing chamber having a channel plate positioned therein and dividing said processing chamber into a high pressure reservoir on a first side of said channel plate and a vacuum chamber on a second and opposite side of said channel plate;

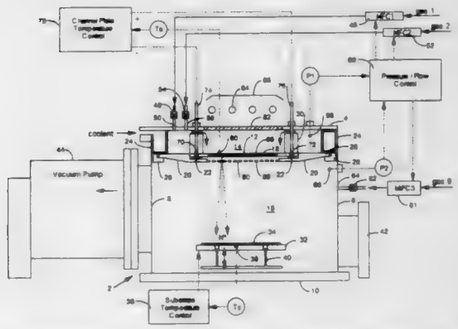
a first gas means for supplying a first parent gas to said high pressure reservoir;

a vacuum means connected to said processing chamber for generating a vacuum in said vacuum chamber;

channel plate heating means for heating said channel plate to a desired operating temperature;

said channel plate including a plurality of substantially perpendicular channels therein and each extending from said first side to said second side thereof, with said channels arranged in an array and spaced from each other, with the length of each channel substantially greater than the mean free path of the parent gas in said high pressure reservoir, and with the diameter of each channel no smaller than the mean free path of the parent gas in the high pressure reservoir;

control means for controlling the pressure in said high pressure reservoir, the temperature of said channel plate, and the vacuum in said vacuum chamber such that the parent gas molecules travel through said channels in a collisional flow in an upstream portion of said channels adjacent said high pressure reservoir and become activated through contact with said heated channel plate within said channels, such that activated parent gas molecules travel through a downstream portion of said channels adjacent said vacuum chamber to form a collimated beam wherein



substantially no contact with said channel plate occurs, such that a transition region between the collisional flow in said upstream channel portion to the collimated flow in said downstream channel portion exists within each channel, and with the channels having a pressure gradient therein such that the pressure of the activated parent gas exiting the downstream channel portion has a mean free path no less than the length of the channel and substantially larger than the diameter of the channel; and

a substrate support positioned within said vacuum chamber, substantially aligned with the second side of said channel plate, adapted to support a substrate thereon, and spaced from said channel plate by a distance not substantially greater than the mean free path of the parent gas in said vacuum chamber;

with the channels in said channel plate spaced from each other such as to generate a composite of the beams of activated, electrically neutral species of said parent gas directed toward said substrate support.

5,350,481

REPAIR DEVICE FOR ELASTOMERIC WALL

Steven M. Shepard, 23656 Hunter's La., Southfield, Mich. 48034, and William A. Moncrief, 8091 Bingham, Detroit, Mich. 48228

Filed Aug. 10, 1993, Ser. No. 105,982
Int. Cl.[5] B29C *73/14*
U.S. Cl. 156—423 16 Claims

1. A device for effecting repair impermeable to a fluid for a hole in a wall, comprising:

a plate defining an aperture;

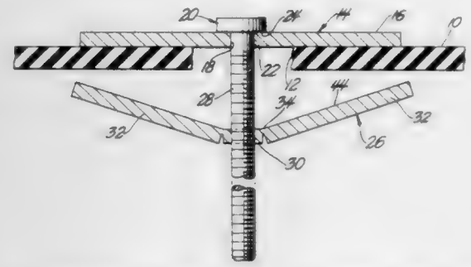
an elongate member extending through the aperture;

an intermediate member engaged to the elongate member;

clamping members movably connected to the intermediate member, the clamping members having a folded position where the clamping members are disposed along the elongate member, the clamping members movable from the folded position to a deployed position;

wall engaging surfaces on the clamping members, the wall engaging surfaces faced toward the plate during the deployed position of the clamping members;

a layer on the engaging surfaces, the layer comprised of two at least initially segregated substances, a first substance being a curable adhesive resin and a second substance being a setting agent for the resin, at least one of the substances contained in breakable capsules in the layer;



the intermediate member defining a channel having open ends;

an elastomeric body in the channel engaging the elongate member, the body being softer than the channel;

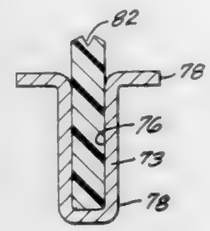
end faces of the clamping members pressing the body at the channel's open ends during the deployed position of the clamping members, thereby sealingly tightening the contact between the body and the elongate member.

5,350,482

APPARATUS AND METHOD FOR APPLYING LABELS ONTO SMALL CYLINDRICAL ARTICLES

Ian Westbury, Turlock, Calif., assignor to CMS Gilbreth Packaging Systems, Trevose, Pa.

Filed Jun. 30, 1992, Ser. No. 906,573
Int. Cl.[5] B65C *9/00*
U.S. Cl. 156—566 33 Claims



1. An apparatus for applying a thin film polymer label to small cylindrical articles such as dry cell batteries while forming a high quality seam comprising,

a label transport drum having a substantially smooth surface,

means for rotating said drum,

means for supplying a label to the surface of said label transport drum,

means for applying an adhesive onto an area adjacent the leading edge of said label while said label is rotating on said drum,

a wiper member having at least one outwardly extending and narrowly tapering, flexible tip, said tip including one V-notch on the end, said V-notch having an opening forming the end of the wiper tip which engages the label, wherein the wiper tip end is defined by the width of the notch opening, and the notch width is substantially less than the length of the wiper tip,

means for rotating said wiper member,

means for supplying solvent to said flexible tip as said wiper member is rotated,

said wiper member being positioned adjacent said label transport drum and being timed in rotation therewith such that said wiper tip and V-notch opening forming the end of said flexible tip are deflected against the area adjacent the trailing edge of the label in such manner that solvent contained on said flexible tip in said V-notch is evenly applied by controllably wiping the solvent on the area adjacent the trailing edge of the label, and

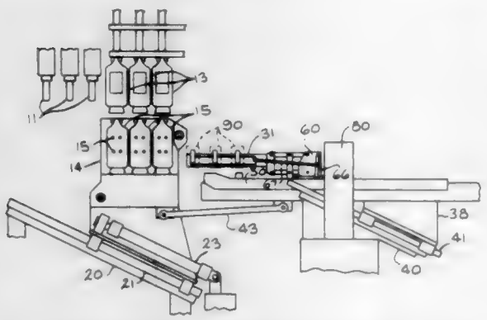
means for conveying cylindrical articles into tangential spinning engagement with said drum and into rotative engagement with the adhesive whereby said label is transferred onto said article as said label is moved into engagement with said rotating article and a high quality seam is formed at the overlap of leading and trailing edge portions.

5,350,483

IN-MOLD LABELING INSERTION APPARATUS AND METHOD

Joseph C. Yager, Toledo, and John D. Schuster, Sylvania, both of Ohio, assignors to Avery-Dennison Corporation, Pasadena, Calif.

Filed Dec. 21, 1990, Ser. No. 632,174
Int. Cl.[5] B29C *49/24*
U.S. Cl. 156—571 **28 Claims**



1. A label inserter for supplying labels to a mold of a blow-molding machine for production of in-mold labelled synthetic resin products wherein mold halves having recesses defining a blow mold cavity receive at least one inserted label therein and are closed about a resin parisan which is then blown to form a labelled product conforming to the mold cavity shape and then opened to release the labelled product, said mold halves being located on a moveable supporting base, said label inserter comprising

a label supply means;

a carriage carrying at least one label holder for removing a label from the label supply means and delivering the label to the mold, said carriage being arranged for movement longitudinally along a path for insertion of labels in said mold halves,

a moveable linear support for said carriage on which said carriage can be advanced toward and retracted from said mold, said moveable linear support extending along said label insertion path of said carriage and being physically connected to said supporting base for said mold halves to move in unison therewith in a substantially fixed spatial relation therewith throughout the cycle of the blow molding machine; and

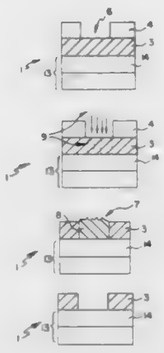
a linear electric motor drive for said carriage comprising a linear stator assembly secured to said moveable linear support and extending along said insertion path, and an armature secured to the carriage for movement along said label insertion path, wherein during operation of said carriage the armature is in non-contacting electromagnetic communication with the stator.

5,350,484

METHOD FOR THE ANISOTROPIC ETCHING OF METAL FILMS IN THE FABRICATION OF INTERCONNECTS

Donald S. Gardner, Mountain View; Xiao-Chun Mu, Saratoga, and David B. Fraser, Danville, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 8, 1992, Ser. No. 941,412
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—628 **52 Claims**



1. In the fabrication of a semiconductor device, a method is provided for etching a metal film formed over a semiconductor substrate comprising the steps of:

implanting ions into a region of the metal film to form a converted layer of metal compounds in the region; and

selectively removing the converted layer by etching the metal compounds at low temperatures with an etchant chosen to prevent substantial etching of the metal film.

5,350,485

HIGH-RESOLUTION LITHOGRAPHY AND SEMICONDUCTOR DEVICE MANUFACTURING METHOD

Hiroshi Shiraishi; Takashi Soga; Fumio Murai; Toshio Sakamizu, all of Tokyo, and Nobuaki Hayashi, Hidaka, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Co., Ltd., both of Tokyo, Japan

Filed Jan. 26, 1993, Ser. No. 9,012
Claims priority, application Japan, Jan. 28, 1992, 4-012814
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—628 **37 Claims**

1. A method for forming a mask pattern for an electronic device, comprising the steps of:

providing a substrate;

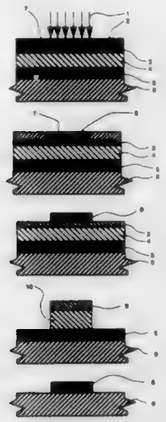
providing a first layer on said substrate;

providing a second layer on said first layer;

providing a third layer including a catalyst precursor on said second layer;

irradiating said third layer in accordance with a predetermined pattern to cause said catalyst precursor to produce a catalyst; and

heating said second and third layers to diffuse said catalyst into said second layer to cause a latent image to form in



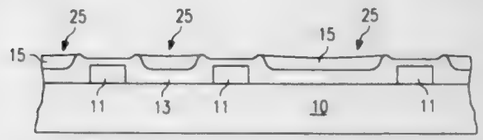
said second layer in accordance with the predetermined pattern.

5,350,486

SEMICONDUCTOR PLANARIZATION PROCESS

Kuei-Wu Huang, Irving, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 774,209, Oct. 10, 1991, Pat. No. 5,245,213.
This application May 20, 1993, Ser. No. 65,122
Int. Cl.[5] B44C *1/22*
U.S. Cl. 156—633 **15 Claims**



1. A method for planarizing an integrated circuit structure having a isolating layer overlying an oxide layer of an integrated circuit, comprising:

forming a layer of photoresist over said isolating layer;

exposing selected areas of said photoresist over portions of said oxide layer that have higher elevations than other portions of said oxide layer;

removing said exposed areas of said photoresist;

at least partially etching said isolating layer that is within said removed areas of said photoresist;

removing said layer of photoresist;

and etching said isolating layer overall.

5,350,487

METHOD OF ETCHING POLYIMIDE

Thomas J. Ameen, 6818 Glencairn Ct., Mentor, Ohio 44060; John A. Payak, 30050 Euclid Ave., G-8, Wickliffe, Ohio 44092, and Jerome M. Cangelosi, 7817 Richwood Dr., Mentor-on-the Lake, Ohio 44060

Filed May 3, 1993, Ser. No. 57,005
Int. Cl.[5] B44C *1/22*; B29C *37/00*
U.S. Cl. 156—642 **15 Claims**

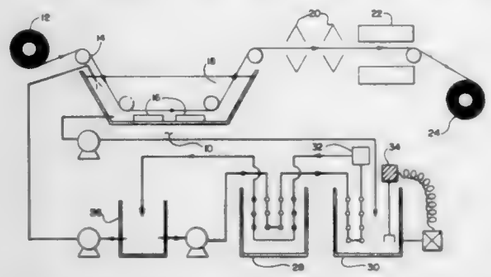
1. A method of etching polyimide from a substrate, comprising the steps of:

(a) providing a basic bath;

(b) exposing said substrate containing polyimide to said basic bath;

(c) rinsing said substrate with hot water;

(d) maintaining a high loading capacity for said basic bath after exposure of polyimide to said basic bath, comprising cooling at least a portion of said basic bath thereby forming a precipitate and separating said precipitate from said basic bath prior to reuse of said portion of said basic bath



returning said portion of said basic bath to said basic bath to maintain the high loading capacity of said basic bath; and

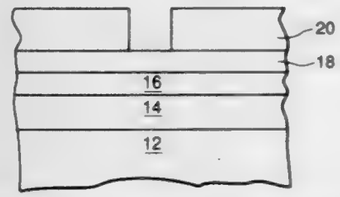
(e) recovering an etched substrate.

5,350,488

PROCESS FOR ETCHING HIGH COPPER CONTENT ALUMINUM FILMS

Elaine A. Webb, Milpitas, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Dec. 10, 1992, Ser. No. 988,661
Int. Cl.[5] C23F *1/12*
U.S. Cl. 156—643 **9 Claims**



1. A method for reactive ion etching of an aluminum alloy containing over about 0.5% of copper on a substrate which comprises etching with a precursor gas including boron trichloride and chlorine at temperatures below about 80° C. while regulating the nitrogen content of the precursor gases to prevent formation of a copper residue on the substrate.

5,350,489

TREATMENT METHOD OF CLEANING SURFACE OF PLASTIC MOLDED ITEM

Hisashi Muraoka, Yokohama, Japan, assignor to Purex Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 779,259, Oct. 18, 1991, abandoned.
This application Apr. 9, 1993, Ser. No. 46,400
Claims priority, application Japan, Oct. 19, 1990, 2-281349
Int. Cl.[5] B29C *71/00*; B05D *3/00*
U.S. Cl. 156—651 **5 Claims**

1. A treatment method of cleaning and substantially eliminating the metal impurity content of surfaces of a plastic molded item which is a polytetrafluoroethylene or tetrafluoroethylene/perfluoroalkyl vinyl ether copolymer molded item comprising the step of etching the surfaces of the plastic molded item with a strong aqueous alkaline solution having a

pH of 12 or over of an organic strong base, said etching of the surfaces being effected to the extent that the etching is just



visible with a scanning electron microscope at about 1,000 magnification.

5,350,490

FORMING A COLOR FILTER ON A SEMICONDUCTOR SUBSTRATE

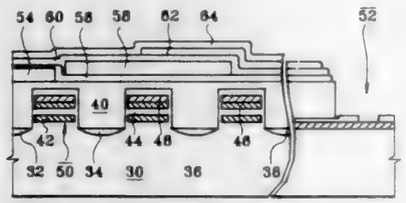
Hyung S. Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Ltd., Kyunggi-do

Filed Feb. 22, 1993, Ser. No. 24,205

Claims priority, application Rep. of Korea, Feb. 21, 1992, 92-2667

Int. Cl.[5] **B44C** *1/22;* **B29C** *37/00*

U.S. Cl. 156—655 7 Claims



1. A method for manufacturing a color filter comprising the steps of:

forming a flat layer for smoothing over an image sensor having charge coupled devices or bucket brigade device,

forming a first color filter layer and a first inter-layer of dye-proof layer on said flat layer,

alternately forming color filter layers and inter-layers in order to form a second color filter layer, a second inter-layer, a third color filter layer and a third inter-layer,

wherein each of said first, second and third inter-layer is formed of a negative photo-sensitivity resin having a relatively low thermal shrinkage.

5,350,491

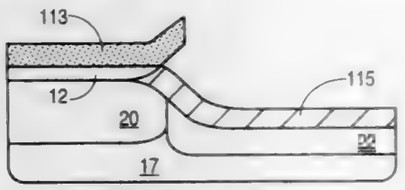
OXIDE REMOVAL METHOD FOR IMPROVEMENT OF SUBSEQUENTLY GROWN OXIDES FOR A TWIN-TUB CMOS PROCESS

Henry J. Fulford, Jr., Austin, and Mark I. Gardner, Red Rock, both of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 18, 1992, Ser. No. 947,313

Int. Cl.[5] **H01L** *21/00, 21/02;* **B44C** *1/22;* **C03C** *15/00*

U.S. Cl. 156—657 16 Claims



1. A method for removing a dielectric from the surface of a semiconductor body, wherein the dielectric comprises a first dielectric and a second dielectric in respective first and second regions of the semiconductor body, and wherein the second dielectric is thicker than the first dielectric, comprising the steps of:

providing a photoresist layer covering the first dielectric;

converting with use of a dielectric etchant the second dielectric into a third dielectric having a thickness comparable to the thickness of the first dielectric, wherein the photoresist layer masks the first dielectric from the dielectric etchant;

subsequent to the dielectric converting step, removing the photoresist layer; and

subsequent to the photoresist layer removing step, commonly etching the first and third dielectrics down to respective first and second surfaces of the semiconductor body, wherein neither the first surface nor the second surface is appreciably degraded due to over-etching.

5,350,492

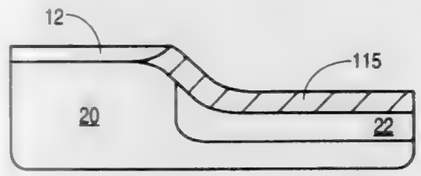
OXIDE REMOVAL METHOD FOR IMPROVEMENT OF SUBSEQUENTLY GROWN OXIDES

Steven C. Hall, Round Rock; Mark I. Gardner, Red Rock, and Henry J. Fulford, Jr., Austin, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 18, 1992, Ser. No. 947,314

Int. Cl.[5] **H01L** *21/00, 21/02;* **B44C** *1/22;* **C03C** *15/00*

U.S. Cl. 156—657 16 Claims



1. A method for removing a dielectric from the surface of a semiconductor body, wherein the dielectric comprises a first dielectric and a second dielectric in respective first and second regions of the semiconductor body, and wherein the second dielectric is thicker than the first dielectric, comprising the steps of:

providing a protective layer covering the first dielectric, the protective layer comprising a material not highly reactive to a dielectric etchant;

converting with use of the dielectric etchant the second dielectric into a third dielectric having a thickness comparable to the thickness of the first dielectric, wherein the protective layer masks the first dielectric from the dielectric etchant,

subsequent to the dielectric converting step, removing the protective layer; and

subsequent to the protective layer removing step, commonly etching the first and third dielectrics down to respective first and second surfaces of the semiconductor body, wherein neither the first surface nor the second surface is appreciably degraded due to over-etching.

5,350,493

OXYGEN DELIGNIFICATION OF OLD CORRUGATED CONTAINERS

Xuan T. Nguyen, Montreal, Canada, assignor to Domtar, Inc., Montreal, Canada

Division of Ser. No. 837,870, Feb. 18, 1992, Pat. No. 5,302,244. This application Dec. 20, 1993, Ser. No. 170,154

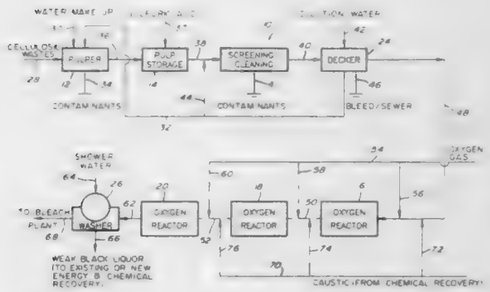
Int. Cl.[5] **D21C** *5/02*

U.S. Cl. 162—6 6 Claims

1. A process for recycling old corrugated containers to produce a cellulosic fiber pulp consisting essentially of:

i) reslushing old corrugated containers having a kappa number of 80 to 180 with water,

ii) subjecting the thus reslushed old corrugated containers from i) to oxygen delignification, in the presence of sodium hydroxide at a temperature of 80° C. to 120° C., and an oxygen pressure of 60 to 120 psig for a time effective to lower the kappa number to 20 to 30, said oxygen delignification consisting essentially of exposing said reslushed old corrugated containers in an aqueous vehicle, to oxygen gas in the presence of said sodium hydroxide, in a plurality



of sequential oxygen delignification stages, in which the reslushed old corrugated containers are exposed to said sodium hydroxide in sequentially introduced dosages of the sodium hydroxide, each dosage being not more than 50%, by dry weight, of sodium hydroxide, based on the weight of lignin in the old corrugated containers, said reslushed old corrugated containers and aqueous vehicle flowing sequentially through said stages and having a residence time in each stage to permit delignification,

iii) recovering from ii) a cellulosic fiber pulp having a kappa number of 20 to 30 and a viscosity of 10 to 15 cp.

5,350,494

ARRANGEMENT FOR CATHODIC PROTECTION

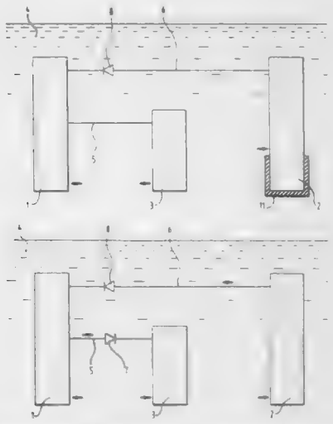
Franciscus Brummelhuis, De Peppelaar 22, 7491 DK Delden, Netherlands

Filed Apr. 5, 1993, Ser. No. 42,575

Claims priority, application Netherlands, Apr. 7, 1992, 9200653

Int. Cl.[5] **C23F** *13/00*

U.S. Cl. 204—197 16 Claims



1. An arrangement for cathodic protection from corrosion of at least first and second metal bodies surrounded by an electrolytic medium, comprising:

the first metal body;

the second metal body, with the first body having a lower electric quiescent potential in the electrolytic medium than a quiescent potential of the second body,

a metal anode body which has a lower electric quiescent potential in the electrolytic medium than the first body,

circuit means for controlling potential difference between at least the first and second metal bodies, wherein the anode body and the bodies to be protected are electrically coupled to one another by said circuit means, said circuit means comprising at least one rectifier device operating above a certain threshold voltage and providing a potential difference between the first and second metal bodies which is at least equal to said threshold voltage but is smaller than the difference in quiescent potential between the first and second bodies.

5,350,495

METHOD FOR SEPARATING IMPURITIES FROM AN AQUEOUS ALKALI METAL CHLORATE ELECTROLYTE

Stina Eriksson, Stöde, and Ulla-Kari Holmström, Sundsvall, both of Sweden, assignors to Eka Nobel AB, Bohus, Sweden

Filed May 6, 1993, Ser. No. 57,568

Claims priority, application Sweden, Mar. 9, 1993, 9300779-7

Int. Cl.[5] **C25B** *1/24;* **C01F** *11/46*

U.S. Cl. 204—95 10 Claims

1. A method for separating sulfate from a chromium-containing aqueous electrolyte in an alkali metal chlorate process, comprising the steps of withdrawing a portion of the electrolyte from said process, filtering the withdrawn portion of electrolyte to remove at least a portion of chromium compounds therefrom, thereafter adjusting the pH of said withdrawn portion of electrolyte to within the range of from 4.6 up to about 7, adding calcium ions to said withdrawn portion of electrolyte to thereby effect precipitation of calcium sulfate, regulating the temperature and ion content of said withdrawn portion of electrolyte, and the molar ratio between added calcium ions and sulfate ion content, such that the calcium sulfate essentially precipitates as $CaSO_4 * 2\ H_2O$, $CaSO_4 * \frac{1}{2}\ H_2O$ or $CaSO_4$, removing the precipitated calcium sulfate from the withdrawn portion of electrolyte, thereby purifying said withdrawn portion, and thereafter recycling the purified portion of electrolyte to the alkali metal chlorate process.

5,350,496

SOLID STATE HIGH PRESSURE OXYGEN GENERATOR AND METHOD OF GENERATING OXYGEN

William F. Smith, and James F. McElroy, both of Suffield, Conn., assignors to United Technologies Corporation, Windsor Locks, Conn.

Filed Aug. 13, 1992, Ser. No. 929,324

Int. Cl.[5] **C25B** *1/12, 9/00*

U.S. Cl. 204—129 7 Claims

1. A method for producing high pressure oxygen using an electrolysis cell having an anode, a cathode, a hygroscopic ion exchange membrane disposed therebetween, an anode chamber and a cathode chamber, consisting essentially of the steps of:

a. introducing ambient or low pressure water to said cathode chamber, said cathode chamber having a porous sheet which has multiple pore sizes ranging from about 5 to about 20 microns and a thickness of from about 0.127 to about 0.635 millimeters and which contacts said cathode, allows for a simultaneous, dual-directional flow of hydrogen and water therethrough and which imparts structural integrity to said ion exchange membrane for pressures up to about 6,000 psi;

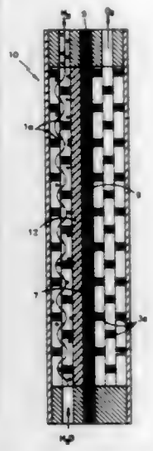
b. wicking said water contained in said cathode chamber through said porous sheet to said cathode;

c. osmotically transporting said water across said ion exchange membrane from said cathode to said anode;

d. electrolyzing said transported water to hydrogen ions and

oxygen wherein voltages between about 1.5 volts to about 3.0 volts are applied to said electrolysis cell; and

e. retaining said oxygen within said anode chamber until said oxygen reaches a desired pressure level of from greater than 200 psi to about 6,000 psi, wherein as additional oxygen is produced, said retained oxygen pressure increase; whereby said water is osmotically transported



across said ion exchange membrane against a pressure gradient formed by said increasing oxygen pressure; and wherein said cathode and said anode are conventional electrolysis catalysts consisting of supported and unsupported catalysts of noble metals and noble metal alloys selected from the group consisting of iridium, palladium, platinum, rhodium, ruthenium and alloys thereof.

5,350,497

PRODUCTION OF PERFLUORO (ALKYL VINYL ETHERS)

Ming-Hong Hung, Wilmington, Del., and Shlomo Rozen, Tel Aviv, Israel, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 21, 1993, Ser. No. 65,975

Int. Cl.[5] C07C *41/00*

U.S. Cl. 204—157.92 **16 Claims**

1. A process for the production of perfluoro(alkyl vinyl ethers), comprising, fluorinating with elemental fluorine a first compound of the formula $R^1CHX^3OCX^1X^2CX^1{}_2X^2$, to form a second compound of the formula $R^2CF_2OCFX^2CF_2X^2$, and dehalogenating said second compound to form a perfluoro(alkyl vinyl ether) of the formula $R^2CF_2OCF{=}CF_2$, wherein:

R^1 is hydrogen, a fluorinated alkyl group, or a fluorinated alkyl group containing one or more ether oxygen atoms between alkylene segments;

each X^1 and X^3 is independently hydrogen or fluorine;

in said first compound each X^2 is independently chlorine, bromine, iodine, or fluorine, provided that at least one of X^2 is chlorine;

in said second compound each X^2 is independently chlorine or fluorine, provided that at least one of X^2 is chlorine; and

R^2 is fluorine, perfluoroalkyl, or perfluoroalkyl containing one or more ether oxygen atoms between alkylene segments.

5,350,498

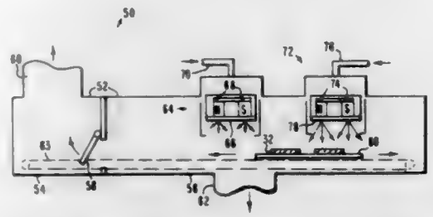
INDUCING TILTED PERPENDICULAR ALIGNMENT IN LIQUID CRYSTALS

Willis H. Smith, Jr., Newbury Park; Hugh L. Garvin, Malibu; Klaus Robinson, Woodland Hills, and Leroy J. Miller, Canoga Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 715,537, Jun. 14, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 34,626

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—192.23 **24 Claims**



1. A method for preparing a treated substrate to produce tilted perpendicular alignment of a liquid crystal on the substrate, wherein the liquid crystal is comprised of elongated molecules whose combined long molecular axes define a macroscopic director, with both tilt angle and tilt direction of the director being substantially uniform, predictable, and controllable, comprising the steps of:

moving a substrate past a source of silica;

depositing a layer of silica on the substrate from the source of silica as the substrate is moved past the source during deposition;

treating the silica-coated substrate with a long-chain alcohol; and

covering the substrate with a layer of liquid crystal, the director at all points across the surface of the substrate having an azimuthal direction that is substantially uniform, such that projection of the director onto the substrate surface is everywhere approximately parallel.

5,350,499

METHOD OF PRODUCING MICROSCOPIC STRUCTURE

Narito Shibaike, Hirakata; Michiyoshi Nagashima, Ikoma; Fumiaki Ueno, Hirakata, and Toshinori Kishi, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 757,533, Sep. 11, 1991, abandoned. This application Mar. 19, 1993, Ser. No. 34,619

Claims priority, application Japan, Sep. 17, 1990, 2-247713

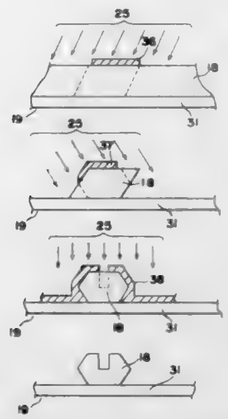
Int. Cl.[5] B44C *1/00*

U.S. Cl. 204—192.34 **2 Claims**

1. A method of producing a microscopic structure by ion etching, in which an ion beam emitted by an ion source is irradiated over a workpiece by using a plurality of kinds of resists,

wherein an angle of incidence of the ion beam relative to the workpiece is changeable,

etching of an identical layer of the workpiece being repeated while changing the angle of incidence of the ion beam relative to the workpiece each time replacement of the



resists is performed, whereby the workpiece has an irregular desired cross-sectional shape.

5,350,500

ELECTROKINETIC POTENTIAL MEASUREMENT

James C. Petzold, Reading, Great Britain, assignor to The Wiggins Teape Group Limited, Basingstoke, United Kingdom

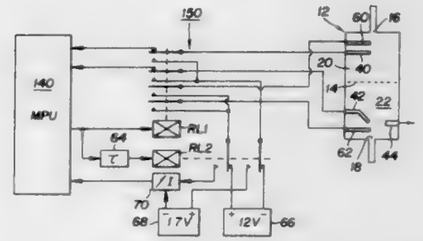
PCT No. PCT/GB91/01731, § 371 Date Apr. 5, 1993, § 102(e) Date Apr. 5, 1993, PCT Pub. No. WO92/06368, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 4, 1991, Ser. No. 39,058

Claims priority, application United Kingdom, Oct. 8, 1990, 9021830.6

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—409 **19 Claims**



1. A cell for the measurement of an electrokinetic potential comprising two compartments separated by a mesh on which a pad is to be formed and a respective measuring electrode in each compartment, characterised in that: each measuring electrode is of a metal which forms a reversible electrochemical reaction with pure water to oxidise the metal, each electrode has a film comprising an oxide of the metal electrochemically formed thereover, and the metal is selected from the group consisting of silver, lead, copper, iridium, bismuth, germanium, and alloys thereof.

5,350,501

HYDROCRACKING CATALYST AND PROCESS

John J. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 527,125, May 22, 1990, abandoned. This application Feb. 28, 1991, Ser. No. 663,242

Int. Cl.[5] C10G *47/20*

U.S. Cl. 208—111 **38 Claims**

1. A process for hydrocracking a hydrocarbon feedstock which comprises contacting said feedstock under hydrocracking conditions in an atmosphere containing no more than about 200 ppmv ammonia with a catalyst devoid of a nonzeolitic molecular sieve and comprising a hydrogenation component, zeolite Beta, and between about 15 and 50 weight percent of a Y zeolite having a unit cell size between about 24.20 and 24.35 angstroms and a water vapor sorption capacity at 25° C. and a p/p_o value of 0.10 of less than about 10 weight percent.

5,350,502

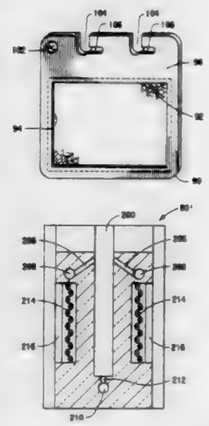
APPARATUS FOR FLUID TREATMENT OF FRAMED MEMBRANES

Donald H. Brunk, Wilmington, Del.; David J. Regester, West Grove, Pa.; Charles W. Robertson, Rockland, and Anders J. Wellings, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 29, 1992, Ser. No. 997,820

Int. Cl.[5] G01N *27/26, 27/447*; B01L *11/00*; C12Q *1/68*

U.S. Cl. 204—299 R **12 Claims**



1. Apparatus for the fluid treatment of a supported membrane having first and second sides and a region containing a latent blot image thereon, comprising:

(a) a processing chamber enclosing the membrane in the region containing the latent blot image, said chamber comprising an inlet port and an outlet port;

(b) means to uniformly introduce fluid into said chamber through said inlet port, in an amount sufficient to submerge the region of the membrane containing the latent blot image;

(c) means to circulate the fluid within said chamber such that the fluid flows uniformly across the first and second sides of the membrane and the region containing the latent blot image; and

(d) means to uniformly extract fluid from said chamber through said outlet port; wherein said processing chamber (a) further comprises first and second enclosure portions adapted to receive the supported membrane therebetween along at least one peripheral edge thereof, and means to translate the supported membrane into and out of said chamber (a).

5,350,503

METHOD OF PRODUCING CONSISTENT HIGH QUALITY COKE

Douglas A. Freymeyer, Everson; Richard L. Holloway, Bellingham; Ronald J. Kiracofe, Bellingham, and Vijay R. Sampath, Bellingham, all of Wash., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 744,559, Aug. 13, 1992, abandoned. This application Jul. 29, 1992, Ser. No. 919,397
Int. Cl.[5] C10G *9/14*
U.S. Cl. 208—131 23 Claims

1. In a delayed coking process wherein a heavy hydrocarbonaceous feedstock comprising contaminant-containing compounds, wherein said contaminant is a compound comprising sulfur, is fed to a delayed coking drum and is subjected to delayed coking conditions to form petroleum coke, the improvement comprising: determining contaminant content of said heavy hydrocarbonaceous feedstock, determining contaminant content of a hydrocarbon balancing stream and feeding to said delayed coking drum a feed of said hydrocarbon balancing stream having a different contaminant content than said heavy hydrocarbonaceous feedstock, wherein said balancing stream is a contaminant diluent selected from the group consisting of virgin unreduced crude oil, desalted unreduced crude oil, reduced crude oil which has a lower API gravity and higher contaminant content than unreduced crude and which has a higher API gravity and lower contaminant content than atmospheric tower bottoms or vacuum tower bottoms, and mixtures thereof, wherein said hydrocarbon balancing stream is fed to said delayed coking drum at a rate which is adjusted in response to changes in concentration of contaminant-containing compounds of said heavy hydrocarbonaceous feedstock to maintain a consistent concentration of contaminants in said petroleum coke so formed.

5,350,504

SHAPE SELECTIVE HYDROGENATION OF AROMATICS OVER MODIFIED NON-ACIDIC PLATINUM/ZSM-5 CATALYSTS

Ralph M. Dessau, Middlesex, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 18, 1992, Ser. No. 992,668
Int. Cl.[5] C10G *45/10, 45/44*
U.S. Cl. 208—143 13 Claims

1. A process for the shape selective preferential hydrogenation of certain aromatic components in a mixture of aromatic hydrocarbonaceous components based on molecular size comprising:

hydrotreating a feed containing a mixture of aromatic hydrocarbonaceous components under hydrotreating conditions at a temperature of from about 100° C. to about 325° C. in the presence of a non-acidic crystalline microporous ZSM-5 catalyst containing a Group VIII metal modified with a metal selected from a member of the group consisting of tin, lead, or indium for a time sufficient to convert aromatic components having a molecular size sufficient to pass through said catalyst to cycloalkanes thereby producing an effluent with a reduced aromatic content.

5,350,505

PLASTIC MEDIA FILTER

Nianfa Tang, Richmond, Hts., Ohio, assignor to Jet, Inc., Cleveland, Ohio

Filed Mar. 1, 1993, Ser. No. 24,433
Int. Cl.[5] B01D *24/46*
U.S. Cl. 210—108 38 Claims

1. A filtration system for the removal of suspended solids and biochemical oxygen demand from a fluid, comprising:

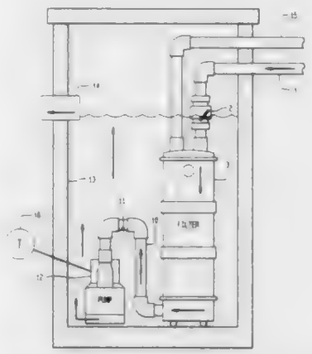
(a) a first container means having a hollow inside area;

(b) an influent line having an interface with the first container means and providing a passage for fluid to the inside area of the first container means from outside the first container means;

(c) a first effluent line having an inner end, an outer end, a hollow inside surface, and an outside surface and further having an interface with the first container means at the inner end of the first effluent line, the first effluent line providing a passage for fluid from the inside area of the first container means to outside the first container means, the first effluent line further comprising a fluid passage means for allowing the passing of fluid between the hollow inside surface of the first effluent line and the outside surface of the first effluent line;

(d) filtration media, located inside the first container means, for the removal of suspended solids from fluid in the first container means;

(e) a top screen located in the inside area of the first con-



tainer means between the influent line and the filtration media

(f) filtration media support means for supporting the filtration media, located inside the first container means between the filtration media and the first effluent line;

(g) a second effluent line having an interface with the first container means and providing a passage for fluid from the inside area of the first container means to outside the first container means, the top screen being located between the second effluent line and the filtration media; and

(h) a backwash pump for sending fluid into the first container means through the first effluent line at a controlled speed when operated, the backwash pump being connected to the first effluent line at the outer end of the first effluent line, said first effluent line including an anti-syphon hole for keeping said filtration media submerged under liquid.

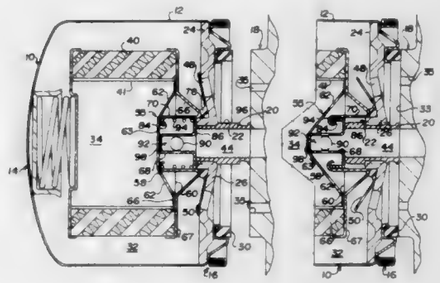
5,350,506

ANTI-DRAIN FLUID FILTER

Bruce B. Dombek, Roselle, and Theodore F. Boone, Tinley Park, both of Ill., assignors to Navistar International Transporation Corporation, Chicago, Ill.

Filed Jan. 30, 1992, Ser. No. 828,330
Int. Cl.[5] B01D *27/10*
U.S. Cl. 210—136 14 Claims

1. An anti-drain fluid filter adapted to be mounted to a filter header comprising a cylindrical housing having a fluid entrance and a fluid exit, a cylindrical filter element disposed in the housing in a manner dividing the housing into an inlet passage communicating with said entrance and an outlet passage communicating with said exit, a one-way inlet valve disposed at said entrance into said housing to said inlet passage, said inlet valve permitting fluid entry thereinto while preventing the exit of fluid therefrom, and a spring-biased, normally-closed outlet valve disposed adjacent said exit from said filter element and normally preventing fluid flow therefrom, said outlet valve including cooperative means responsive to the configuration of said header for automatically opening said outlet valve upon installation of the filter on said header and establishing a continuous fluid passage from said filter element exit to said header, said outlet valve comprising an elastic diaphragm enclosing the outlet passage and normally abutting an annular shoulder disposed on the opposite side of said dia-



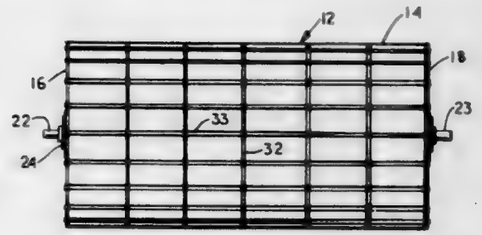
phragm from said outlet passage in fixed position about said exit from said housing, said diaphragm having openings therethrough which are disposed thereabout in a circular array radially outward of said annular shoulder, and means for displacing said diaphragm from said annular shoulder upon installation of said filter on said header.

5,350,507

CONTACT DEVICE AND CONTAINER FOR A ROTATING BIOLOGICAL CONTACTOR

Michael J. McManus, Erie, Pa., assignor to Geo-Form, Inc., Girard, Pa.

Filed Jun. 1, 1993, Ser. No. 68,773
Int. Cl.[5] C02F *3/08, 3/10*
U.S. Cl. 210—150 4 Claims



2. A biological reactor for use in the aerobic bacteriological treatment of polluted waste water comprising a rotatable drum and a tank containing said polluted waste water;

said rotatable drum being at least partially disposed within said tank;

said rotatable drum having a hollow cylindrical body;

said rotatable drum having end shields closing the ends of said body of said drum;

said reactor further comprising means for rotating said drum in said tank;

a plurality of media members being received in said body of said drum, said plurality of media members providing means for supporting bacteria;

each of said plurality of media members having a generally hemispherical body, each of said plurality of media members further having plate-like ribs fixed to said hemispherical body;

said end shields each having a stub shaft means fixed thereto and extending outwardly and not inwardly and providing a space clear of said stub shaft means between said end shields;

said reactor further comprising bearing means supporting said stub shaft means on said tank;

said drum having axially spaced partitions therein dividing said drum into a plurality of sections, said plurality of media members being disposed in each of said plurality of sections, said plurality of media members in one of said plurality of sections having a different density from the density of said plurality of media members in another of said plurality of sections;

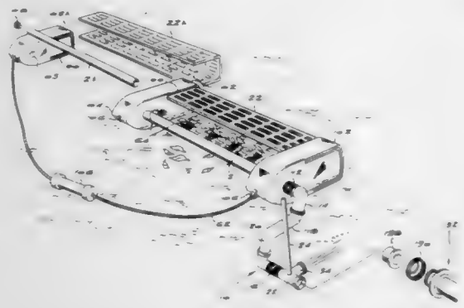
wherein said plate-like ribs of each of said plurality of media members constitute additional means for supporting bacteria.

5,350,508

POOL SKIMMING DEVICE

Lourens Van der Watt, 7 Ashley Avenue, Bryanston, Sandton, Transvaal, South Africa

Continuation-in-part of Ser. No. 66,914, May 24, 1993, abandoned, which is a continuation of Ser. No. 856,460, Mar. 24, 1992, abandoned. This application Jul. 28, 1993, Ser. No. 102,982
Int. Cl.[5] E04H *4/16*
U.S. Cl. 210—169 6 Claims



1. A swimming pool skimming device comprising:

an elongate net having an extended, open mouth and defining an open, channel-shaped volume where floating debris can accumulate,

a tubular frame member connected to said net and extending lengthwise with respect to the open mouth of the net,

float means which are buoyant in water and which are arranged to support the net and the tubular frame member at the surface of water in a swimming pool, with the mouth of the net directed laterally in a manner to receive floating debris in the channel-shaped volume thereof,

inflow connection means for connecting the tubular frame member releasably to a return flow inlet of the swimming pool so that a portion of the flow of water from the return flow inlet is directed into the tubular frame member,

spray means on the tubular frame member to produce water sprays, directed towards the open mouth of the net, when water is directed into the tubular frame member by the inflow connection means,

the inflow connection means also including an outlet means for directing another portion of the flow of water from the return flow inlet into the swimming pool in a direction to create a swirling flow of water in the swimming pool,

aeration means comprising a venturi in the outlet means and an air conduit for directing air into the outlet means under the venturi effect created when water flows through the outlet means, thereby to aerate the water flowing through the outlet means, and

a towing handle connected to said frame for towing the skimming device around the surface of water in the swimming pool when the tubular frame member is disconnected from the return flow inlet.

5,350,509
DEEP WATER DISBURSEMENT TUBE
Robert L. Nelson, 1709 Moraga Way, Roseville, Calif. 95661
Filed Nov. 18, 1993, Ser. No. 154,072
Int. Cl.[5] B01F *1/00*
U.S. Cl. 210—198.1 **1 Claim**

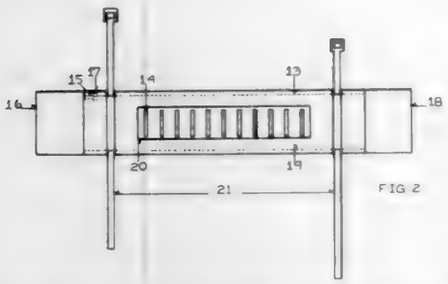
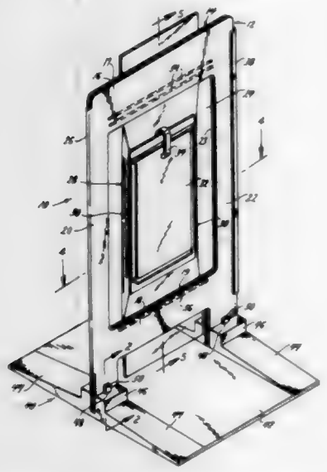


FIG 2

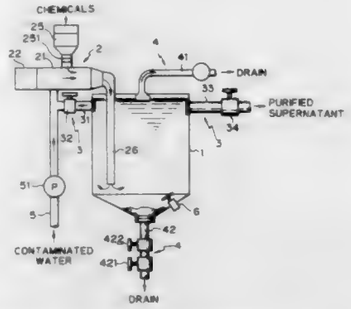
1. A dispensing apparatus for dispensing chemicals to purify the water in a swimming pool, said apparatus comprising:
a semi-transparent, plastic, main body slotted on opposing sides to allow water to flow and contact an encased water purification material; said body having an "L"-shaped slot at one end and a permanent cap fitted on an opposite end, said cap having an air chamber defined by a permanent disc to provide buoyancy; and
a semi-transparent, plastic, cylindrically shaped control tube with oblong slots, which fits over said main body to control the flow of water through the main body slots by rotating the control tube over the main body; and
a removable cap fitted with a pin to engage said "L"-shaped slot, said removable cap having an air chamber defined by a permanent disc to provide buoyancy; and
plastic straps for attachment of said apparatus to a hose.

5,350,510
APPARATUS FOR THIN LAYER CHROMATOGRAPHY
Donald W. Partney, Jr., Granite City, Ill., assignor to Granite Engineering, Inc., Granite City, Ill.
Filed Feb. 11, 1993, Ser. No. 16,789
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.3 **14 Claims**



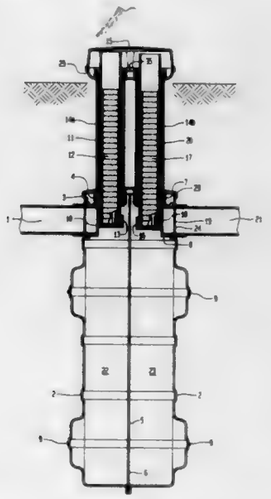
1. An apparatus for use in the performance of thin-layer chromatography, a bag sized and dimensioned for developing the chromatogram, the bag having an open upper end and a closed lower end; the apparatus comprising:
a pair of frames each having a pair of spaced apart, substantially vertical sidewalls and spaced apart, substantially horizontal upper and lower crossmembers arranged to form a central opening in each frame, the sidewalls and crossmembers having an inner surface and an outer surface;
hinge means connected between one of the sidewalls of each of the frames for pivoting the frames between an open position and a closed position, the bag being positioned between the frames when in the closed position;
means presented on the inner surface of at least one of the upper crossmembers of the frames for sealably engaging the upper end of the bag positioned between the frames when in the closed position;
means presented on the inner surface of at least one of the lower crossmembers of the frames for sealably engaging the lower end of the bag positioned between the frames when in the closed position; and
means for releasably maintaining the frames in the closed position.

5,350,511
SEWAGE PURIFICATION APPARATUS
Yasuyuki Sakurada, 6-3, Shitte 3-chome, Tsurui-ku, Yokohama-shi, Kanagawa-ken, Japan
PCT No. PCT/JP91/00103, § 371 Date Jul. 29, 1992, § 102(e) Date Jul. 29, 1992, PCT Pub. No. WO91/11243, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 29, 1991, Ser. No. 916,079
Claims priority, application Japan, Jan. 29, 1990, 2-18140
Int. Cl.[5] B01D *21/24*
U.S. Cl. 210—199 **8 Claims**



1. A purification apparatus comprising:
a purifying tank; a mixer including a casing, a screw rotatably supported and extending in said casing, and a conducting pipe communicating with and extending downwardly from an end of said casing into said purification tank;
a flow meter mounted to the end of the casing of said mixer from which said conducting pipe extends;
a hopper having a plurality of partitions dividing the interior thereof into a plurality of separated compartments, each of said compartments communicating with the interior of the casing of said mixer;
a contaminated substance induction pipe connected to and opening into the casing of said mixer;
a purified substance piping system including piping open to said purifying tank at an upper portion thereof;
and a drainage piping system including piping open to said purifying tank at both an upper portion and a bottom portion thereof.

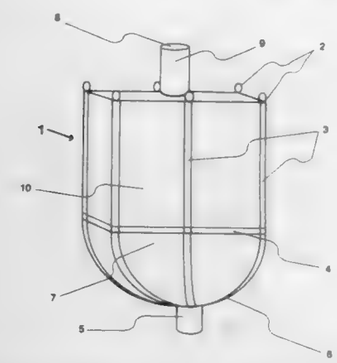
5,350,512
CHLORINATION AND DECHLORINATION APPARATUS AND METHOD
Nianfa Tang, Richmond Heights, Ohio, assignor to Jet, Inc., Cleveland, Ohio
Filed May 14, 1993, Ser. No. 61,420
Int. Cl.[5] C02F *1/76*
U.S. Cl. 210—199 **18 Claims**



1. An apparatus for the treatment of a fluid by chlorination and dechlorination, comprising:
A) a chlorinator;
B) a contact tank having an upper end and a lower end; and
C) a dechlorinator;
D) the contact tank comprising a closed hollow vessel having an inlet opening, an outlet opening a chlorinator opening, and a dechlorinator opening;
E) the contact tank further comprising a divider means for separating the contact tank into a first contact chamber and a second contact chamber, the divider means extending downwardly from the upper end of the contact tank between the chlorinator and the dechlorinator to the lower end of the contact tank;
F) the divider means having an opening proximate the lower end of the contact tank which provides a sole passage for fluids between the first contact chamber and the second contact chamber;
G) a continuous fluid passage being provided from the inlet opening, through the chlorine tablet feeder, into the first contact chamber, through the opening in the divider means, to the second contact chamber, through the dechlorination tablet feeder, and to the outlet opening; and
H) the length to width ratio of the fluid path within the contact tank being no less than about ten to one.

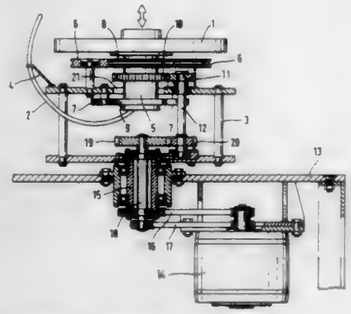
5,350,513
FLEXIBLE-WALLED ABSORBER
James P. Markowitz, Bridgeville, Pa., assignor to Calgon Carbon Corporation, Pittsburgh, Pa.
Filed Jul. 2, 1992, Ser. No. 907,966
Int. Cl.[5] B01D *29/13*
U.S. Cl. 210—264 **22 Claims**

1. A flexible-walled filter vessel comprising:
a flexible bag having an external surface and a fluid impermeable internal surface, said flexible bag being operable to enclose at least one filter medium;
at least one port in the flexible bag, said at least one port being operable to permit fluid streams to contact the filter medium;
at least one fluid permeable support member operable to position the filter medium in the flexible bag and a filler



port operable to access the at least one filter medium and a means for sealing said filler port.

5,350,514
CENTRIFUGE
Friedrich Witthaus, Wendel-Osterbruecken; Wolfram Weber, Spiesen-Elversberg; Wolfgang Biesel, Ottweiler, and Carlo Lay, Saarwellingen, all of Fed. Rep. of Germany, assignors to Fresenius AG, Bad Homburg, Fed. Rep. of Germany
Filed Jun. 18, 1993, Ser. No. 79,162
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1992, 4220232
Int. Cl.[5] B04B *5/00*
U.S. Cl. 210—360.1 **12 Claims**



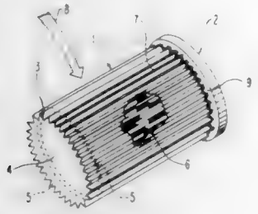
1. A centrifuge comprising:
a separation chamber, with which a duct is permanently connected,
a main rotor, on which the separation chamber is able to be bearinged, in a relatively rotatable manner with respect to the separation chamber, by means of a bearing arrangement,
a guide means on the main rotor for guiding the duct from a middle lower part of the separation chamber into a part at a higher level than the centrifuge,
bearing means having, within the main rotor, a part which is at least able to be opened in a radial direction for the introduction of the duct into the main rotor, said bearing means further having a spindle connected to the separation chamber, and furthermore a plurality of circumferentially distributed support wheels which are rotatably bearinged on the main rotor.

5,350,515

INTERNALLY POTTED END CAP FOR A PLEATED FILTER MEDIUM

Stephen Stark, Wilmington, and Raymond Wnenchak, Newark, both of Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Mar. 29, 1993, Ser. No. 38,771
Int. Cl.[5] B01D *27/06*
U.S. Cl. 210—493.2 **7 Claims**



1. A filter cartridge comprising:
(a) a cylindrically shaped, pleated filter medium closed at both ends by a potting medium;
(b) one end of said filter medium being potted into the medium,
(c) the other end being substantially entirely closed by potting medium located entirely inside the filter medium so that no potting medium forms on the outside of the filter medium nor protrudes on the outer surface of the medium, said potting medium situated such that the area between each pleat is entirely closed with potting medium and is continuous from pleat to pleat.

5,350,516

CONTROL OF ODOR AND SEPTICITY AND PURIFICATION OF SEWAGE AND WASTEWATER

Amal K. Bhadra, P.O. Box 91, Greenbelt, Md. 20768-0091

Continuation-in-part of Ser. No. 813,840, Dec. 27, 1991, Pat. No. 5,141,647. This application Aug. 21, 1992, Ser. No. 933,320
The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.
Int. Cl.[5] C02F *1/58, 3/32*
U.S. Cl. 210—602 **29 Claims**

1. A process for treating sewage or wastewater for control of odor and septicity and for purification thereof, comprising the steps of:
adding to said sewage or wastewater to be treated a source of sulfur dioxide selected from the group consisting of sulfur dioxide, sulfite, bisulfite, metabisulfite, sulfurous acid, pyrosulfite, and mixtures thereof:
adding a metal salt catalyst to said sewage or wastewater to be treated, and
aerating the sewage or wastewater.

23. A process of treating sewage or wastewater for control of odor and septicity and for purification thereof, comprising the steps of:
adding to said sewage or wastewater a source of sulfur dioxide selected from the group consisting of sulfur dioxide, sulfite, bisulfite, metabisulfite, pyrosulfite, sulfurous acid, and mixtures thereof;
adding a biologically active substance selected from the group consisting of activated sludge, algae, aquatic plants, and mixtures thereof to the sewage or wastewater after the addition of said source of sulfur dioxide, and
aerating the sewage or water.

5,350,517

METHOD OF RECYCLING PHOSPHATING SLUDGES

Willi Buchmeier, Duesseldorf, and Wolf A. Roland, Solingen, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/01925, § 371 Date Apr. 19, 1993, § 102(e) Date Apr. 19, 1993, PCT Pub. No. WO92/07106, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 10, 1991, Ser. No. 39,290
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1990, 4032956
Int. Cl.[5] B01D *11/04*
U.S. Cl. 210—638 **20 Claims**

1. A process for recycling phosphating sludge which accumulates in the zinc phosphating of metal surfaces and which, in addition to phosphate and small quantities of other metals, contains an excess of iron over zinc, said process comprising steps of:
(a) converting the phosphating sludge into an aqueous mineral acid solution using a mineral acid selected from the group consisting of hydrochloric acid, nitric acid and sulfuric acid,
(b) adjusting the pH value of the aqueous solution obtained in accordance with (a) to values of <0.85,
(c) contacting the aqueous solution obtained in accordance with (b) with an extractant consisting essentially of (i) a water-insoluble organic solvent, (ii) a complexing agent for iron(HI) ions selected from the group consisting of acids of phosphorus soluble in the organic solvent and corresponding to general formula (I):



in which R and R′ are selected from the group consisting of OH, alkyl, aralkyl, alkoxy and alkylphenoxy and R and R′ may be the same or different, but cannot both be OH, and, optionally, (iii) a solubilizer,
(d) selectively removing iron from the aqueous solution obtained after step (b) by liquid/liquid extraction with the extractant recited in step (c), and
(e) reusing the aqueous solution obtained as raffinate after the liquid/liquid extraction of step (d) in a phosphating process.

5,350,518

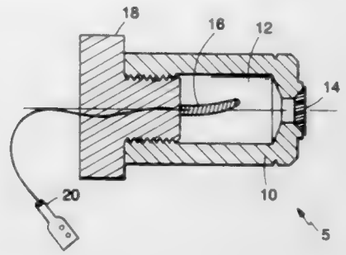
MAGNESIUM ELECTRODE

John Hiti, Danvers, and Chung C. Young, Weston, both of Mass., assignors to Nova Biomedical Corporation, Waltham, Mass.

Continuation of Ser. No. 675,407, Mar. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 671,053, Mar. 18, 1991, abandoned. This application Aug. 11, 1993, Ser. No. 105,340
Int. Cl.[5] B01D *71/06*
U.S. Cl. 210—638 **82 Claims**

1. A method of determining the magnesium ion content of a sample comprising contacting said sample with an electrode

comprising a magnesium ion selective membrane comprising, as a magnesium selective compound, a 1,10-phenanthroline



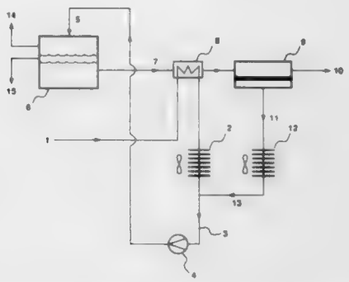
having an H group at positions 2 and 9, and reading the output of said electrode.

5,350,519

PERVAPORATION PROCESS AND USE IN TREATING WASTE STREAM FROM GLYCOL DEHYDRATOR

Jürgen Kaschemekat, Campbell, and Richard W. Baker, Palo Alto, both of Calif., assignors to Membrane Technology and Research, Inc., Menlo Park, Calif.

Filed Jul. 19, 1993, Ser. No. 93,819
Int. Cl.[5] B01D *61/36*
U.S. Cl. 210—640 **49 Claims**



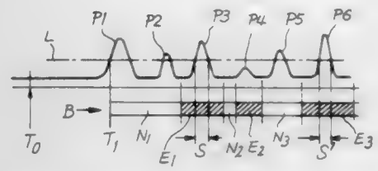
1. A process for treating a waste stream from a glycol dehydrator regeneration process, comprising the steps of:
(i) withdrawing from said regeneration process an incoming waste stream comprising steam and an organic compound;
(ii) condensing at least a portion of said waste stream;
(iii) passing at least a portion of the resulting at-least-partially condensed waste stream through a liquid-ring pump and thence to a separator wherein an over-pressure can be maintained by said liquid-ring pump;
(iv) using said over-pressure at least as part of a motive force to pass an aqueous liquid stream from said separator across the feed side of a pervaporation unit having a feed side and a permeate side, on which permeate side a reduced pressure is maintained by connecting said liquid-ring pump on its suction side to said permeate side;
(v) withdrawing from said feed side a water stream depleted in organic compound compared with said aqueous liquid stream;
(vi) withdrawing from said permeate side a permeate stream enriched in organic compound compared with said aqueous liquid stream, passing said permeate stream through said liquid-ring pump and returning it on the high-pressure side to said separator;
(vii) using said over-pressure at least as part of a motive force to withdraw uncondensed gas from said separator;
(viii) using said over-pressure at least as part of a motive force to withdraw an organic liquid phase from said separator.

5,350,520

METHOD FOR COLLECTING THE COMPONENTS OF A SAMPLE SEPARATED BY CHROMATOGRAPHY

Mamoru Kikumoto, Ukyo, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Continuation of Ser. No. 867,400, Apr. 13, 1992, abandoned. This application Nov. 1, 1993, Ser. No. 144,607
Claims priority, application Japan, Apr. 25, 1991, 3-124683
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—656 **6 Claims**



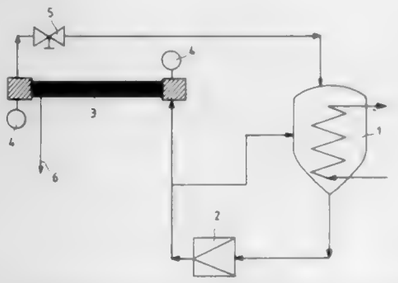
1. A method of collecting components of a sample separated by chromatography, comprising:
setting a time schedule which starts from a specific peak on a chromatogram of a sample whose components are to be separately collected;
providing said time schedule with a series of time bands of a first group, in each of which peaks on said chromatogram are to be detected for possible utilization in controlling collecting of said sample components, and a series of time bands of a second group, in each of which peaks on said chromatogram are to be neglected, said time bands of said first and second groups occurring alternately and successively;
using a units of time setting in selecting a time length of each of said time bands, individually;
introducing said sample into a chromatograph;
detecting said specific peak to start said time schedule;
detecting at least one peak on the chromatogram of said sample in at least one of said time bands of said first group;
disregarding any peaks on the chromatogram of said sample occurring in said time bands of said second group; and
collecting a component of said sample that is causing said at least one peak.

5,350,521

PROCESS FOR SEPARATING CATALYSTS FROM ORGANIC SOLUTIONS, BY MEANS OF SEMIPERMEABLE MEMBRANES

Nunzio Andriollo, Bollate; Giorgio Cassani, Arluno; Paolo D'Olimpio, Novara; Bruno Donno, Novara, and Marco Ricci, Novara, all of Italy, assignors to Eniricerche, S.p.A., Milan, Italy

Filed Aug. 24, 1993, Ser. No. 111,280
Claims priority, application Italy, Sep. 1, 1992, MI92 A 002039
Int. Cl.[5] B01D *61/00*
U.S. Cl. 210—653 **18 Claims**



1. An ultrafiltration process for separating catalyst(s) from

an organic solution in which the catalyst or catalysts are dissolved, the catalyst(s) consisting essentially of phosphotungstates or arsenotungstates as an anionic portion and ammonium or phosphonium salts as a counter-ion having surfactant characteristics, which process comprises the step of passing the catalyst-containing organic solution through an ultrafiltration membrane having an exclusion molecular weight sufficient to retain some of the catalyst(s) and to form, as a permeate, an organic solution containing a reduced concentration of the dissolved catalyst(s) and, as a retenate, an organic solution having an increased concentration of the dissolved catalyst(s).

5,350,522

EFFLUENT TREATMENT

John R. Fyson, London, United Kingdom, assignor to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP91/01680, § 371 Date Mar. 4, 1993, § 102(e) Date Mar. 4, 1993, PCT Pub. No. WO92/04660, PCT Pub. Date Mar. 19, 1992

PCT Filed Sep. 5, 1991, Ser. No. 984,415

Claims priority, application United Kingdom, Sep. 7, 1990, 9019605.6

Int. Cl.[5] **C02F** *1/28, 1/42, 1/62, 1/72*

U.S. Cl. 210—667 | **14 Claims**

1. A method of treating a photographic effluent to remove harmful pollutants, including heavy metal ions comprising silver and iron ions, comprising:

(a) providing a vessel containing a liquid photographic effluent that includes harmful pollutants;

(b) introducing into said vessel an oxidizing agent selected from the group consisting of hydrogen peroxide, a percarbonate, a permanganate, a perchromate, a persulfate, a perphosphate, or a perborate to convert reducing sulfur compounds to oxidized products;

(c) after a period of time sufficient for said oxidizing agent to convert reducing sulfur compounds to oxidized products, introducing into said vessel chemical reagents comprising a heavy metal ion precipitant selected from a metal hydroxide, oxide or carbonate, a developing agent absorbent, and a sequestering agent absorbent, thereby producing a mixture comprising a solid phase and an environmentally acceptable liquid phase;

(d) separating and removing said solid phase from said liquid phase, wherein said liquid phase has silver and iron ions in a concentration of each of no more than about 2ppm; and

(e) disposing of said solid phase.

5,350,523

ANION EXCHANGE METHOD

Masao Tomoi; Atsuo Kiyokawa, both of Yokohama; Hiromasa Ogawa; Teruo Onozuka, both of Sendai, and Tsuyoshi Ito, Machida, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo and Tohoku Electric Power Co., Inc., Sendai, both of Japan

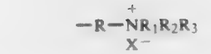
Continuation-in-part of Ser. No. 662,640, Feb. 28, 1991, abandoned. This application Aug. 28, 1992, Ser. No. 936,337

Claims priority, application Japan, Feb. 28, 1990, 2-048021; Feb. 21, 1991, 3-027472; Aug. 29, 1991, 3-244731

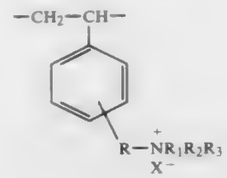
Int. Cl.[5] **C02F** *1/42;* **B01J** *41/04, 41/12*

U.S. Cl. 210—683 | **31 Claims**

1. A demineralizign process conducted at a high temperature condition of above 60° C., which comprises treating water with an ion exchanger containing a crosslinked anion exchanger wherein said crosslinked anion exchanger which comprises structural units having a quaternary ammonium group of the following formula (a) and structural units derived from an unsaturated hydrocarbon group-containing crosslinkable monomer, and of which at least 90% of anion exchange groups are present in the form of a group represented by



as defined in the following formula (a):



(a)

wherein R is a $-(CH_2)_n-$ group (n=an integer of from 3 to 18) which may include a cyclic hydrocarbon, each of R_1, R_2 and R_3 which are independent from one another, is a C_1–C_8 hydrocarbon group or a C_1–C_8 alkanol group, the benzene ring of the formula (a) may be substituted by an alkyl group or a halogen atom, or may be condensed with other aromatic ring, and X is an anion.

5,350,524

MIXED POLYSACCHARIDE PRECIPITATING AGENTS AND INSULATING ARTICLES SHAPED THEREFROM

Marie-Madeleine Besnard, Antony; Claire David, and Magali Knipper, both of Paris, France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Jul. 30, 1991, Ser. No. 737,766

Claims priority, application France, Jul. 30, 1990, 90 09670

Int. Cl.[5] **C07H** *1/06;* **C02F** *1/00*

U.S. Cl. 210—728 **32 Claims**

1. In a process for precipitating solid particulates from an aqueous dispersion thereof by adding an effective amount of a precipitating agent thereto, the improvement which comprises utilizing as such precipitating agent a mixed polysaccharide composition of matter which is capable of precipitating a dispersion of solid particles in an aqueous medium, comprising:

(i) at least one succinoglycan polysaccharide, the basic recurring structural unit of which comprises glucose, galactose and succinyl moieties, and

(ii) at least one natural polysaccharide or derivative thereof, wherein in the aqueous medium the concentration of said mixed polysaccharide composition ranges from 0.001% to 0.5%.

5,350,525

SYSTEM AND PROCESS FOR HYDROCYCLONE SEPARATION OF PARTICULATE SOLIDS AND AT LEAST ONE LIQUID PHASE FROM A MULTIPHASE LIQUID MIXTURE

Christopher K. Shaw, Houston, Tex.; Phillip C. Tuckett, Berwick, Australia, and Bill E. Bowers, The Woodlands, Tex., assignors to Conoco Specialty Products Inc., Houston, Tex.

Filed Sep. 11, 1992, Ser. No. 943,845

Int. Cl.[5] **B01D** *17/12, 17/038*

U.S. Cl. 210—744 **8 Claims**

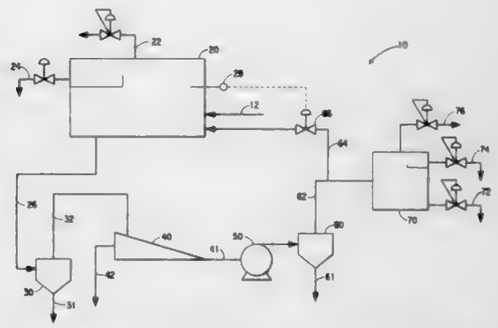
1. A process for separating a multiphase liquid mixture comprising a heavy phase liquid component, a lighter phase liquid component and a particulate solids component into a plurality of separately classifiable streams, wherein the process comprises the steps of:

(a) cyclonically separating at least a portion of the mixture into a first portion and a second portion wherein the first portion comprises a relatively greater concentration of particulate solids component compared to the multiphase liquid mixture;

(b) cyclonically separating at least a portion of the second portion into an overflow and an underflow wherein the overflow comprises a relatively greater concentration of lighter phase liquid component compared to the multiphase liquid mixture;

(c) cyclonically separating a substantial portion of any remaining particulate solids from at least a portion of said underflow; and

(d) elevating the pressure of the underflow from the cyclonically separating step prior to said step of separating remaining particulate solids;



the process excluding said first portion from step (a) being further separated in equipment provided for cyclonic separation in steps (b) or (c).

4. The process according to claim 1 further including the step of providing the multiphase liquid mixture to a vessel prior to cyclonic separation step (a), and wherein the process further comprises sensing the fluid level in the vessel and recycling at least a portion of the higher pressure underflow from downstream of the step of elevating the pressure.

5,350,526

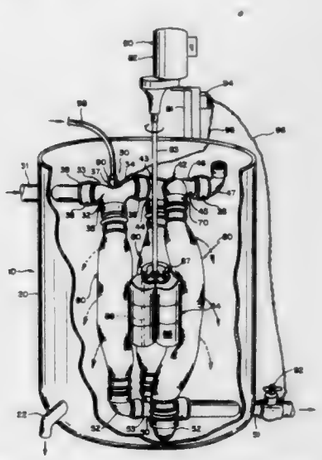
FILTRATION APPARATUS AND METHOD FOR REMOVING PARTICULATE CONTAMINANTS FROM COMMERCIAL LAUNDRY WASTE WATER

James P. Sharkey, 106 Cambon Ave., St. James, N.Y. 11780, and Richard Bonasera, Smithtown, N.Y., assignors to James P. Sharkey, St. James, N.Y.

Filed Dec. 23, 1992, Ser. No. 996,777

Int. Cl.[5] **B01D** *37/00, 29/62, 29/64*

U.S. Cl. 210—791 **9 Claims**



8. A method of filtering waste water containing particulate contaminants comprising the steps of:

introducing said waste water into a filtration apparatus having inlet manifold means for receiving waste water containing particulate contaminants, outlet manifold means for discharging particulate contaminants separated from the waste water, and mechanical filter means coupled between and interconnecting said inlet and outlet manifold means, said filter means having a first inlet end directly connected to said inlet manifold means for receiving waste water, and an outlet end directly connected to said outlet manifold means for discharging contaminants, said filter means including a pair of porous mesh filter tubes arranged one within the other to define an inner tube and an outer tube, said inner tube being of fine mesh and said outer tube being of coarse mesh, said waste water being introduced into said inlet manifold means;

filtering said waste water through said filter means to separate the particulate contaminants from the waste water, said waste water being fed directly from said inlet manifold means to said inlet end of said filter means;

agitating said filter means by impinging upon said filter means so as to prevent said mesh of said inner tube from being clogged; and

discharging the particulate contaminants separated from the waste water from said filter means via said outlet end of said filter tube, thereby discharging said contaminants directly to said outlet manifold means.

5,350,527

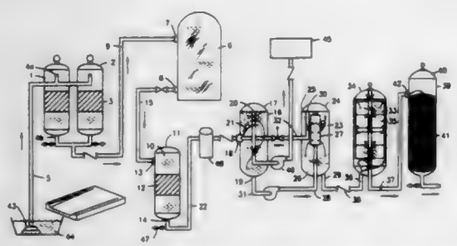
OILY WATER SEPARATION AND WATER RECLAMATION SYSTEM

John C. Kitko, 6713 Grand Bahama Dr., Tampa, Fla. 33615

Filed Sep. 14, 1993, Ser. No. 121,362

Int. Cl.[5] **C02F** *1/40*

U.S. Cl. 210—804 **18 Claims**



16. A process for separating impurities from oily water which process comprises, in order:

(a) supplying a mixture of oil and water to a first strainer bag assembly including at least one porous strainer bag;

(b) passing said mixture through at least one porous strainer bag in said first strainer bag assembly;

(c) conveying the mixture treated in step (b) to a settling tank and allowing a fraction of the oil to rise to the top of the tank, a fraction of any solid particulate matter present to settle to the bottom of the tank, and a predominantly water fraction to form in the remainder of the tank;

(d) withdrawing some of the predominantly water fraction obtained in step (c) from said settling tank, conveying it to a second cleanable strainer bag assembly, and passing it through at least one strainer bag in the second strainer bag assembly of a porosity finer than the porosity of the strainer bag of said first cleanable strainer bag assembly;

(e) conveying the product of step (d) to a heavy oil gravity separator for causing oil to separate and rise to the top of the heavy oil gravity separator, and withdrawing oil from the top of the heavy oil gravity separator;

(f) withdrawing fluids from a lower portion of said heavy oil gravity separator and conveying the withdrawn fluids to a light oil coalescer having an element for adsorbing oil and filtering solids to form an oil-rich phase in the upper portion of the light oil coalescer and a water-rich phase in the remainder of the light oil coalescer;

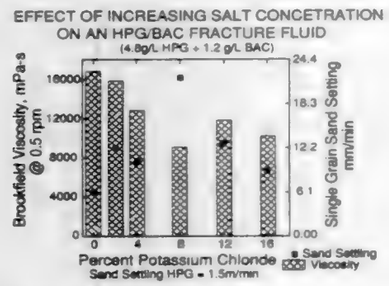
(g) withdrawing oil-rich fluid from the upper portion of the light oil coalescer;
(h) withdrawing water-rich fluid from the light oil coalescer and conveying it to a further oil separator having a filter element for filtering solids and absorbing oil in the filter element; and
(i) conveying the water-rich fluid treated in step (h) to a carbon filter assembly and passing the water rich fluid through the carbon filter.

5,350,528

METHOD OF SUPPORTING FRACTURES IN GEOLOGICAL FORMATIONS AND HYDRAULIC FLUID COMPOSITION FOR SAME

John A. Westland, Bothell, Wash.; Glenn S. Penny, Duncan, Okla.; R. Scott Stephens, Auburn, and Alan R. Winslow, Tacoma, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

PCT No. PCT/US90/07318, § 371 Date Jun. 12, 1992, § 102(e) Date Jun. 12, 1992
Continuation-in-part of Ser. No. 450,360, Dec. 13, 1989, Pat. No. 5,009,797. This PCT application Dec. 11, 1990, Ser. No. 861,801
The portion of the term of this patent subsequent to Apr. 23, 2008, has been disclaimed.
Int. Cl.[5] E21B *43/26*
U.S. Cl. 252—8.551 **20 Claims**



1. A method of preparing a hydraulic fracturing fluid composition which comprises:
providing an aqueous transport medium;
increasing the viscosity of the medium by dispersing sufficient amounts of gellant and a bacterial cellulose in said medium;
crosslinking the fracturing fluid by adding a sufficient amount of a crosslinking agent; and
suspending proppant particles in said medium whereby said bacterial cellulose decreases the settling rate of the proppant particles prior to and during transport into a drill hole and fractured geologic formation.

20. A method of fracturing a geological formation using the fracturing fluid composition of claim **11**, comprising:
drilling a drill hole which passes into said formation; and
delivering the hydraulic fracturing fluid into the drill hole and to the formation at a sufficient volumetric rate and pressure to cause fracturing and initiate and maintain cracks in said formation.

5,350,529

LOW FUME FINISH FOR WET AIR-JET TEXTURING

Fleming H. Day, Greenville, N.C., assignor to E. I. Du Pont du Nemours and Company, Wilmington, Del.

Filed Aug. 28, 1992, Ser. No. 937,253
Int. Cl.[5] D06M *15/53*
U.S. Cl. 252—8.6 **15 Claims**

1. A lubricating finish composition comprising:
65 to about 98.9 weight percent nonionic emulsifier selected from the class consisting of polyoxyalkylene condensation products having a lipophilic portion derived from an alcohol or a carboxylic acid, said emulsifier having a number average molecular weight of at least about 600 amu and a melting point less than about 25° C.;
about 1 to about 39.9 weight percent lubricant selected from the class consisting of natural and synthetic esters having a number average molecular weight of at least about 450 amu, said lubricant having at least 29 carbon atoms and a melting point less than 25° C.; and
0.1 to about 15 weight percent anionic surfactant selected from the class consisting of alkali metal salts of a sulfonated dicarboxylic acid ester.

5,350,530

COAT-FINISHING METHOD FOR POLYESTER WOVEN AND KNITTED FABRICS

Ik S. Kim, Seoul; Do Y. Chung, Kyunggido; Jeong S. Kim, Kyunggido; Nam J. Kim, Kyunggido, and Jae G. No, Kyunggido, all of Rep. of Korea, assignors to Sunkyong Industries, Kyungki-Do, Rep. of Korea

Filed May 25, 1993, Ser. No. 65,901
Claims priority, application Rep. of Korea, Oct. 19, 1992, 1992-19170
Int. Cl.[5] D06M *10/08*
U.S. Cl. 252—8.6 **9 Claims**

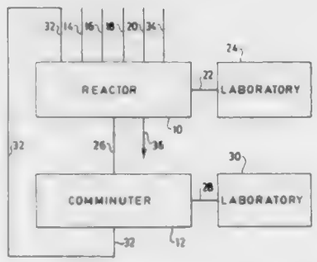
1. A coat-finishing method for dyed polyester woven and knitted fabrics comprising the steps of
(1) forming a uniform resin composition by adding a non-reductive, maltooligosaccharide to a coat-finishing resin composition comprising one or more resins selected from the group consisting of acrylic resins, urethane resins, silicone resins, fluorinated vinyl chloride resins, amide resins, cellulose resins, peptide resins and rubbers; and
(2) coating a fabric surface with said uniform resin composition.

5,350,531

PROCESS FOR PREPARING A GREASE COMPOSITION

Thomas G. Musilli, Akron, N.Y., assignor to Frey, the Wheelman, Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 922,157, Jul. 30, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 127,623
Int. Cl.[5] C10M *117/02*
U.S. Cl. 252—41 **10 Claims**



1. A process for preparing a lubricating grease, comprising the steps of:
(a) mixing 12-hydroxy stearic acid and a first portion of paraffinic oil, wherein said first portion of said paraffinic oil has an aniline point of at least about 220 degrees Fahrenheit, a viscosity index of at least about 90, a Saybolt viscosity at 100 degrees Fahrenheit of from about 100 to about 3,000 Saybolt Universal seconds, a flash point of at least about 550 degrees Fahrenheit, and a pour point of from about 10 to about 35 degrees Fahrenheit, thereby providing a first mixture;
(b) heating said first mixture to a temperature of from about 170 to about 200 degrees Fahrenheit for at least about 30 minutes, thereby providing a first heated mixture;
(c) adding lithium hydroxide saponifying agent and calcium hydroxide saponifying agent to said mixture in an amount sufficient to neutralize said 12-hydroxy stearic acid, thereby forming a second mixture, wherein:
1. from about 0.9 to about 1.1 times the theoretical amount of the stoichiometric amount of saponifying agent required to completely neutralize said 12-hydroxy stearic acid is added to said mixture in the form of said lithium hydroxide and said calcium hydroxide, and
2. from about 0.5 to about 10 moles of said lithium hydroxide are added for each mole of said calcium hydroxide added;
(d) heating said second mixture at a temperature of from about 360 to about 450 degrees Fahrenheit, thereby providing a neutralized second mixture;
(e) comminuting said neutralized second mixture until at least about 90 weight percent of the particles in said neutralized second mixture are smaller than 1 micron, thereby providing a comminuted second mixture, wherein said second neutralized mixture is comminuted while it is at a temperature of from about 160 to about 450 degrees Fahrenheit; and
(f) mixing said second comminuted mixture with a second portion of said paraffinic oil, wherein:
1. said second portion of said paraffinic oil has an aniline point of at least about 220 degrees Fahrenheit, a viscosity index of at least about 90, a Saybolt viscosity at 100 degrees Fahrenheit of from about 100 to about 3,000 Saybolt Universal seconds, a flash point of at least about 550 degrees Fahrenheit, and a pour point of from about 10 to about 35 degrees Fahrenheit,
2. the total weight of said first portion of said paraffinic oil and said second portion of said paraffinic oil is from about 65 to about 75 percent (by weight) of the total weight of said first portion of said paraffinic oil, said second portion of paraffinic oil, and said 12-hydroxy stearic acid, and
3. the weight of said first portion of said paraffinic oil is from about 25 to about 50 percent (by weight) of the total weight of said first portion of paraffinic oil and said second portion of paraffinic oil.

5,350,532

BORATED ETHYLENE ALPHA-OLEFIN POLYMER SUBSTITUTED MONO- AND DICARBOXYLIC ACID DISPERSANT ADDITIVES

Won R. Song, Short Hills; Albert Rossi, Warren, both of N.J.; Howard W. Turner, Webster; Howard C. Welborn, Houston, both of Tex.; Robert D. Lundberg, Bridgewater, N.J.; Antonio Gutierrez, Mercerville, N.J., and Robert A. Kleist, Bayonne, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 984,727, Dec. 4, 1992, Pat. No. 5,266,223, which is a continuation of Ser. No. 769,041, Sep. 30, 1991, abandoned, which is a division of Ser. No. 473,624, Feb. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 226,759, Aug. 1, 1988, abandoned. This application Oct. 5, 1993, Ser. No. 132,028
Int. Cl.[5] C10M *155/04*
U.S. Cl. 252—49.6 **23 Claims**

1. A boron-containing oil soluble dispersant mixture useful as an additive in oleaginous compositions comprising an adduct of:
(A) ethylene alpha-olefin polymer substituted with monounsaturated mono- or dicarboxylic acid producing moieties, the starting polymer from which the substituted polymer is derived comprising monomer units derived from ethylene and at least one alpha-olefin of the formula $H_2C{=}CHR^1$ wherein R^1 is an alkyl group of from 1 to 18 carbon atoms, and wherein said starting polymer has a number average molecular weight of from about 300 to 20,000 and an average of at least about 30% of said polymer chains contain terminal ethenylidene unsaturation, said acid producing moieties being derived from at least one monounsaturated carboxylic reactant selected from the group consisting of (i) monounsaturated C_4 to C_{10} dicarboxylic acids wherein (a) the carboxyl groups are attached to adjacent carbon atoms and (b) at least one of said adjacent carbon atoms is part of said monounsaturation; (ii) anhydride or C_1 to C_5 alcohol derived mono- or di-ester derivatives of (i); (iii) monounsaturated C_3 to C_{10} monocarboxylic acids wherein the carbon-carbon double bond is allylic to the carboxy group; and (iv) C_1 to C_5 alcohol derived monoester derivatives of (iii); and
(B) at least one nucleophilic reagent selected from the group consisting of amines, alcohols and mixtures thereof; and
wherein said adduct is borated.

5,350,533

PAVEMENT DEICER COMPOSITIONS

Gale L. Hubred, Brea, and Harold E. Todd, Pinole, both of Calif., assignors to General Atomics International Services Corporation, San Diego, Calif.

Filed Jan. 26, 1993, Ser. No. 9,277
Int. Cl.[5] C09K *3/18*
U.S. Cl. 252—70 **7 Claims**

1. An environmentally benign liquid deicing or anti-icing aqueous composition useful for deicing airplane runways consisting essentially of an aqueous solution containing about 40 to about 60 weight percent of potassium acetate and containing in an amount of about 1 weight percent or less of said total composition about 2200 parts per million (ppm) phosphate ion; and about 100–800 ppm soluble potassium or sodium silicates.

5,350,534

COMPOSITION BASED ON 1,1,1,3,3-PENTAFLUOROBUTANE, METHYLENE CHLORIDE AND METHANOL, FOR THE CLEANING AND/OR DRYING OF SOLID SURFACES

Pascal Michaud, Saint-Gratien, France, assignor to Elf Atochem S.A., Puteaux, France

Filed Jul. 7, 1993, Ser. No. 87,098
Claims priority, application France, Aug. 21, 1992, 92 10200
Int. Cl.[5] C11D *7/30, 7/50;* **C23G** *5/028;* **B08B** *3/20*
U.S. Cl. 252—171 **8 Claims**

1. An azeotropic composition or a composition which has about the same composition in vapor phase as in liquid phase when employed at reflux, consisting essentially of, on a weight basis, from 30 to 69% 1,1,1,3,3-pentafluorobutane and from 30 to 60% methylene chloride and from 1 to 10% methanol and optionally an effective amount of at least one stabilizer, said composition boiling at about 32.1° C. at normal atmospheric pressure.

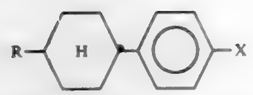
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LIQUID-CRYSTALLINE MEDIUM

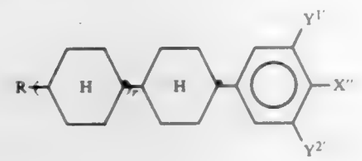
Bernhard Rieger, Yokohama, Japan; Reinhard Hittich, Modautal, Fed. Rep. of Germany; Volker Reiffenrath, Rossdorf, Fed. Rep. of Germany, and Herbert Plach, Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP91/00696, § 371 Date Jun. 10, 1991, § 102(e) Date Jun. 10, 1991, PCT Pub. No. WO91/16400, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 12, 1991, Ser. No. 688,522
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1990, 4012013; Mar. 1, 1991, 4106529
The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.
Int. Cl.[5] C09K *19/30, 19/12*
U.S. Cl. 252—299.63 **15 Claims**

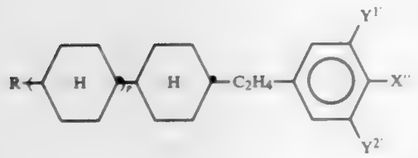
1. A liquid-crystalline medium based on a mixture of polar compounds having positive dielectric anisotropy, comprising one or more compounds of the formula I



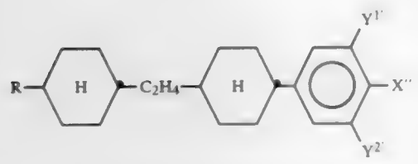
in which X is fluorine, chlorine, CF_3, OCF_3 or $OCHF_2$, and R is alkyl, oxaalkyl, fluoroalkyl or alkenyl, in each case having 1 to 7 carbon atoms, and one or more compounds of the formulae II–IV



II



III



IV

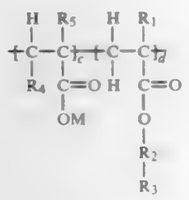
in which
the individual radical R is independently as defined above,
X'' is fluorine, chlorine, CF_3 or OCF_3,
$Y^{1'}$ and $Y^{2'}$ are in each case F, and
r is 0 to 1.

5,350,536
COPOLYMERS OF ETHYLENICALLY UNSATURATED AND POLYETHYLENE-GLYCOL MONOMETHACRYLATE MONOMERIC REPEAT UNITS USEFUL AS SCALE CONTROL AGENTS IN BOILER SYSTEMS

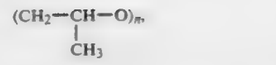
Fu Chen, Newtown; Keith A. Bair, Horsham, both of Pa., and Scott M. Boyette, Wilmington, Del., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 832,547, Feb. 7, 1992, Pat. No. 5,242,599. This application Apr. 27, 1993, Ser. No. 53,579
Int. Cl.[5] C02F *5/10*
U.S. Cl. 252—180 **3 Claims**

1. A composition comprised of (a) a water soluble polymer having the structure



wherein R_1 is H or lower (C_1–C_4) alkyl, R_2 is $(CH_2—CH_2—O)_n$,



or a mixture of both, n is an integer of from about 1 to about 40, R_3 is H, lower (C_1–C_4) alkyl or an acetate, R_4 is H or COOM, R_5 is H or lower (C_1–C_4) alkyl, M is H or a water soluble cation, "c is from 0–95 molar percent, d is from 100–4 molar percent with the proviso that c and d add up to 100 percent" and (b) at least one topping agent selected from the group consisting of morpholine, cyclohexylamine, piperazine, ammonia, diethylaminoethanol, dimethylisopropanolamine, and diethylhydroxylamine.

5,350,537
LIQUID CRYSTAL DISPLAY DEVICE

Nobuyuki Itoh, Tenri, and Tsugiko Taniguchi, Kitakatsuragi, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 581,293, Sep. 12, 1990, abandoned. This application Aug. 10, 1992, Ser. No. 927,606
Claims priority, application Japan, Sep. 14, 1989, 1-239590; Mar. 27, 1990, 2-80083
Int. Cl.[5] C09K *19/52, 19/56;* **G02F** *1/13*
U.S. Cl. 252—299.01 **2 Claims**

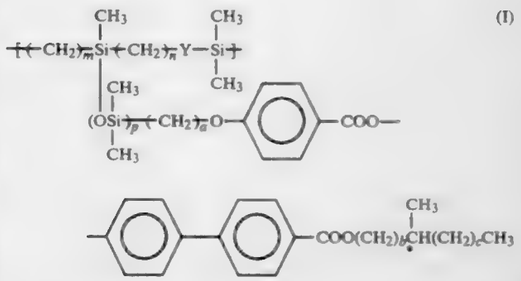
1. A liquid crystal display device comprising a pair of substrates each having transparent electrodes over the surface thereof and an orientation film over the electrode, and a liquid crystal interposed between the pair of substrates, the liquid crystal being a ferroelectric liquid crystal composition having incorporated therein a conjugated cyano compound or conjugated halogen compound serving as an electron acceptor and being uncomplexed with an electron donor in an amount of 100 to 5000 ppm based on the ferroelectric liquid crystal composition, wherein the conjugated cyano compound is dichlorodicyanoparabenzoquinone (DDQ), tetracyanoquinodimethane (TCNQ), tetracyanoethylene (TCE), tetrafluoroetetracyanoquinodimehtane (TFTCNQ), or tetracyanobenzene (TCNB), and wherein the conjugated halogen compound is dichlorodifluoroquinone, dichloroanthraquinone, tetrachlorodiphenoquineone (TCDQ) or tetrabromodiphenoquinone (TBDQ).

5,350,538
NOVEL HIGH POLYMER, FERROELECTRIC LIQUID-CRYSTALLINE COMPOSITION CONTAINING THE HIGH POLYMER AND RAW MATERIAL OF THE HIGH POLYMER

Fumio Moriwaki; Hiroyuki Endo, and Satoshi Hachiya, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

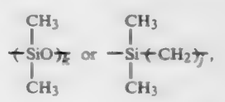
Filed Jul. 2, 1993, Ser. No. 85,093
Claims priority, application Japan, Jul. 8, 1992, 4-203173
Int. Cl.[5] C09K *19/52, 19/12;* **C08G** *77/04;* **C07F** *7/04*
U.S. Cl. 252—299.01 **18 Claims**

1. A novel high polymer comprising the repeating unit (I) represented by the following formula



(I)

wherein each of m and n is an integer of 2 to 5, p is an integer of 1 or 2, a is an integer of 4 to 20, b is an integer of 0 to 3, c is an integer of 1 to 7, * represents an asymmetric carbon atom, and Y is



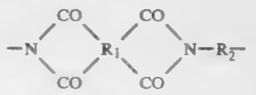
k being a number of 1 to 13 and j is an integer of 1 to 4.

5,350,539
ALIGNMENT TREATING AGENT FOR LIQUID CRYSTAL CELL

Makoto Mishina, and Toyohiko Abe, both of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

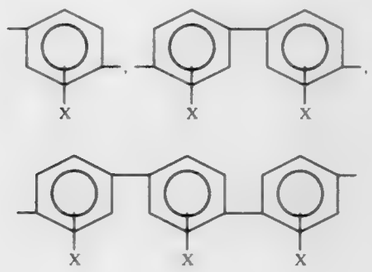
Filed Aug. 7, 1992, Ser. No. 925,670
Claims priority, application Japan, Aug. 13, 1991, 3-202917
Int. Cl.[5] C09K *19/56;* **G02F** *1/13;* **C08G** *67/08*
U.S. Cl. 252—299.4 **6 Claims**

1. An alignment treating agent for a liquid crystal cell, which comprises an organic solvent-soluble polyimide resin having a reduced viscosity of from 0.05 to 3.0 dl/g (concentration: 0.5 g/dl in N-methylpyrrolidone at 30° C.) and having the formula (1):



(1)

wherein R_1 is a tetravalent organic group constituting a tetracarboxylic acid and its derivative, R_2 is a bivalent organic group constituting a diamine and at least 10 mol. % of R_2 is a bivalent organic group selected from the group consisting of



and

-continued



wherein X is selected from the group consisting of hydrogen, methyl and methoxy.

5,350,540
METHOD OF MAKING ALKALINE EARTH METAL HALOPHOSPHATE PHOSPHOR USING METAL PHOSPHIDE REDUCING AGENT

Chung-Nin Chau, Sayre, Pa., assignor to Osram Sylvania Inc., Danvers, Mass.

Continuation-in-part of Ser. No. 965,094, Oct. 22, 1992, Pat. No. 5,268,124. This application Aug. 9, 1993, Ser. No. 104,229
Int. Cl.[5] C09K *11/73*
U.S. Cl. 252—301.6 P **3 Claims**

1. A method of improving the brightness of a calcium chlorofluoroapatite phosphor activated with antimony and manganese, comprising the steps of: forming a uniform mixture of calcium hydrogen phosphate, calcium carbonate, calcium fluoride, a source of chloride, manganese carbonate, antimony trioxide, and from about 0.001 to about 0.0035 mole of zinc phosphide, said zinc phosphide being in an amount sufficient to reduce any pentavalent antimony to the trivalent state and any tetravalent manganese to the divalent state and to maintain antimony and manganese in the trivalent and divalent states, respectively; firing said mixture at 1150° C. for two hours in a nitrogen atmosphere to obtain a phosphor cake; washing said phosphor cake in a weakly acidic solution and then in a weakly basic solution to obtain a washed phosphor; and drying and screening said phosphor, said phosphor exhibiting a higher brightness than the phosphor prepared as above, absent zinc phosphide.

5,350,541
HARD SURFACE DETERGENT COMPOSITIONS

Daniel W. Michael, Cincinnati, and Michael S. Maile, Maineville, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 744,848, Aug. 14, 1991, abandoned. This application Aug. 11, 1992, Ser. No. 928,255
Int. Cl.[5] C11D *1/83, 7/50*
U.S. Cl. 252—549 **20 Claims**

1. A hard surface detergent composition comprising: (a) from about 1% to about 15% of nonionic detergent surfactant; (b) from about 0.5% to about 15% of hydrophobic solvent that provides a cleaning function; (c) suds control system comprising from about 0.01% to about 0.3% fatty acid and from about 0.1% to about 3.5% sulfonated and/or sulfated synthetic anionic detergent surfactant the ratio of nonionic detergent surfactant to fatty acid being from about 10:1 to about 120:1 and the level of said sulfonated and/or sulfated synthetic detergent surfactant to fatty acid being from about 15:1 to about 5:1; and (d) the balance being an aqueous solvent system and minor ingredients, the pH of said composition being from about 6.0 to about 12.5.

5,350,542

NUCLEAR FUEL WITH ISOTOPICALLY DEPLETED BURNABLE ABSORBER

Leonard N. Grossman, Herculaneum, Mo., and Alf I. Jonsson, W. Suffield, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 761,438, Sep. 18, 1991, Pat. No. 5,250,231. This application Jun. 30, 1993, Ser. No. 83,523
Int. Cl.[5] C09K *11/04*
U.S. Cl. 252—636 12 Claims

1. An isotopic mixture of isotopes of an element gadolinium suitable for use as a burnable absorber, wherein:

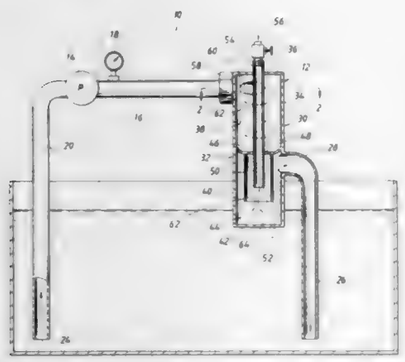
said mixture comprises a naturally occurring but depleted isotopic mixture that is selectively and substantially depleted only with respect to a first naturally occurring isotope, said first isotope having an isotope mass that is one less than a second naturally occurring isotope of said element, said second isotope having a thermal neutron cross-section which is higher than the thermal neutron cross-section of said first isotope.

5,350,543

METHOD AND APPARATUS FOR AERATING AN AQUEOUS SOLUTION

William E. Spradley, 4914 Maple, Bellaire, Tex. 77401

Filed May 14, 1992, Ser. No. 883,295
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—36.1 10 Claims



1. An apparatus for aerating an aqueous solution, comprising:

(a) a vortex cylinder having an upper vortex chamber and a lower mixing chamber;

(b) inwardly sloping wall means separating said upper vortex chamber and said lower mixing chamber, said wall means circumscribing an opening for providing fluid communication between said upper vortex chamber and said lower mixing chamber;

(c) an axially disposed discharge conduit depending downwardly from said wall means into said mixing chamber;

(d) an axially disposed air intake tube extending through said upper vortex chamber into said discharge conduit;

(e) means for tangentially injecting an aqueous solution into said vortex chamber for creating a swirling vortex of aqueous solution descending through said vortex chamber; and

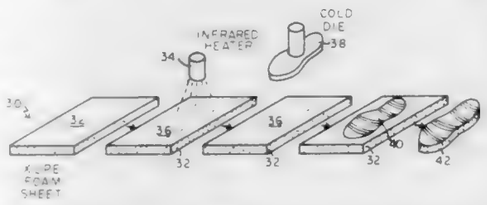
(f) pump means for drawing the aqueous solution from the bottom of a collection reservoir, pumping the aqueous solution through said vortex cylinder and discharging the aerated aqueous solution at the bottom of the reservoir.

5,350,544

METHOD OF PREPARING A CROSS-LINKED, POLYETHYLENE FOAM PRODUCT BY SURFACE EXPANSION OF A FOAM

John D. Bambara, Osterville, and Jon A. Glydon, West Barnstable, both of Mass., assignors to Earth & Ocean Sports, Inc., Hyannis, Mass.

Continuation of Ser. No. 847,318, Mar. 6, 1992, abandoned. This application Jun. 18, 1993, Ser. No. 79,167
Int. Cl.[5] B29C *67/22*
U.S. Cl. 264—25 11 Claims



1. A method for the preparation of a controlled thickness, crosslinked, thermoplastic, foam sheet product, which method comprises:

a) providing a pre-formed cross-linked, rigid, thermoplastic, olefinic, foam sheet material of varied thickness, cross-linked in an amount greater than about ten percent and containing residual blowing agents therein, the foam sheet material capable of further surface expansion;

b) surface heating only at least one surface of the rigid, cross-linked, thermoplastic, foam sheet material to a temperature greater than about 250° F. and sufficient to cause slight surface foam expansion of the foam surface of the foam sheet material, said surface foam expansion being not greater than about ¼ inch;

c) contacting the heated, post-expanded foam surface of the cross-linked foam sheet material with a cold element to form a foam sheet material of desired, controlled thickness dimensions with a thin, densified skin layer; and

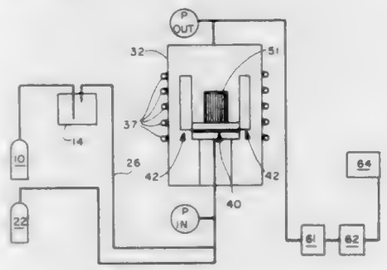
d) recovering the controlled thickness dimension foam sheet product.

5,350,545

METHOD OF FABRICATION OF COMPOSITES

Holger H. Streckert, and Kirk P. Norton, both of San Diego, Calif., assignors to General Atomics, San Diego, Calif.

Continuation-in-part of Ser. No. 694,137, May 1, 1991, abandoned. This application Mar. 5, 1993, Ser. No. 27,075
Int. Cl.[5] C04B *35/80*
U.S. Cl. 264—29.1 19 Claims



1. A method of making a fiber-reinforced ceramic matrix composite utilizing deposition of ceramic matrix material from a vaporous atmosphere without creating an array of gas channels in a supporting jig or the like, which comprises the steps of:

a) combining a preceramic resin and fibrous reinforcing material to produce a body of desired shape;

b) curing the resin at a first temperature to create a rigid preform;

c) pyrolyzing said rigid preform at a higher temperature than said first temperature so that said rigid preform has a porosity between about 30 percent and about 50 percent of total volume of said desired shade; and

d) then densifying said pyrolyzed preform by using chemical vapor infiltration to cause a vaporous substance to infiltrate pores within said pyrolyzed preform, without supporting said preform upon a device having passageways to channel said vaporous substance uniformly across the surface of said preform, and causing said vaporous substance to thermally react at locations within the pores to deposit ceramic matrix material therein and thereby produce a resulting composite having a total porosity of no greater than about 20 percent volume of the total volume of said desired shape.

5,350,546

METHOD OF SETTING CONDITIONS OF MOLDING FOR INJECTION MOLDING MACHINE

Makoto Takeuchi; Shiji Aiba; Masatake Hoshina, and Minoru Yamazaki, all of Nagano, Japan, assignors to Nissei Plastic Industrial Co., Ltd., Nagano, Japan

Filed Aug. 25, 1992, Ser. No. 934,264
Claims priority, application Japan, Aug. 30, 1991, 3-246734
Int. Cl.[5] B29C *45/76*
U.S. Cl. 264—40.1 4 Claims



1. A molding condition setting method for injection molding machines comprising the steps of:

determining a shape for a phantom molded article,

selecting a plurality of magnitudes of primary physical values which can be directly set for the phantom molded article, the primary physical values include thickness of the phantom molded article and fluid length, the fluid length being selected as a distance from an outlet of a gate for a die cavity for the article to a position in the die cavity furthest from the outlet of the gate,

inputting the magnitudes of the primary physical values into a computer,

using each of the selected magnitudes of physical values to estimate magnitudes of secondary physical values to be generated after molding, the secondary physical values include fluid pressure, hold pressure and pressure coefficient to be generated after molding,

inputting the magnitudes of secondary physical values into the computer,

graphing pseudo-correlation data according to said primary physical values and said secondary physical values, the data being determined using the computer and being stored in a memory of the computer, and

when molding is actually performed,

inputting primary physical values of a molded article to be actually molded into the computer,

determining secondary physical values corresponding to the inputted primary physical values according to the correlation data stored in said memory,

calculating and setting actual molding conditions with the computer using the inputted primary physical values and the determined secondary physical values, and

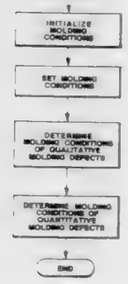
molding the article under the calculated and set molding conditions.

5,350,547

METHOD OF RETRIEVING CONDITIONS FOR MOLDING USING EXPERT SYSTEM

Hiroyoshi Yamaguchi; Shuji Murai, and Tatsuo Mimura, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Japan

Filed Nov. 30, 1992, Ser. No. 952,639
Claims priority, application Japan, May 31, 1990, 2-142555
Int. Cl.[5] B29C *45/76*
U.S. Cl. 264—40.1 6 Claims



1. A method of molding an article wherein molding conditions are determined using an expert system comprising:

a first process for inferring causes of a molding defect from countermeasure records and inputted defect occurrence situation data and for determining molding conditions through repetitive trial molding;

a second process for extracting qualitative defect data from the defect occurrence situation data, performing decision analysis over the extracted qualitative defects with use of the countermeasure records to determine a boundary of a defect occurrence region, and determining molding conditions for removal of the qualitative defects on the basis of the defect occurrence region boundary;

a third process of extracting quantitative defects from the defect occurrence situation data, executing analysis of variance based on design of experiments with respect to the extracted quantitative defects with use of the countermeasure records, and determining molding conditions for removal of the quantitative defects on the basis of the analysis of variance, the third process being performed after the completion of the second process; and

molding an article using the molding conditions for removal of the qualitative defects determined in the second process and the molding conditions for removal of the quantitative defects determined in the third process.

5,350,548

METHOD AND APPARATUS FOR MAKING TWO-LAYER TABLETS IN A TWIN ROTOR PRESSING MACHINE

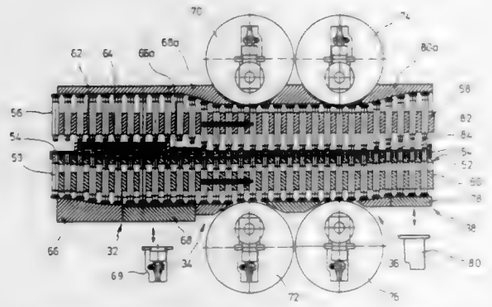
Jürgen Hinzpeter; Ingo Schmidt, both of Schwarzenbek, and Helmut Brommrowitz, Mölln, all of Fed. Rep. of Germany, assignors to Wilhelm Fette GmbH, Schwarzenbek, Fed. Rep. of Germany

Filed May 26, 1993, Ser. No. 67,635

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1992, 4218122

Int. Cl.[5] **B29C** *43/20*

U.S. Cl. 264—40.4 **8 Claims**



1. A method of making two-layer tablets or pellets in a twin rotor pressing machine, the method comprising the steps of:

a) feeding into die bores of a die rotor a first powdery or a first particulate material so as to form first layers;

b) compressing said first layers with a first compression force in a first step by plungers synchronously rotating with said die rotor so as to form first layer pressed articles;

c) feeding into said die bores including said first layer pressed articles a second powdery or second particulate material so as to form a second layer;

d) compressing commonly said first and said second layer in a second step with a second compression force by said plungers so as to form two-layer tablets or pellets;

e) removing said two-layer tablets or pellets from said bores at a main discharge station;

f) periodically subjecting the machine to an inspection period and during said inspection period:

(i) compressing said first layers with a third compression force larger than said first compression force so as to form said first article with increased compression;

ii) rejecting said first articles with increased compression through a rejection channel at an intermediate discharge station after said third compression force has been fully reached;

iii) removing said first layer pressed articles from said bores at said intermediate discharge station for inspection of said articles for one or more predetermined parameters;

iv) feeding into said die bores said second powdery or particulate material and compressing said second layer with a fourth compression force larger than said second compression force; and

v) removing said compressed second layer articles from said die bores at said main discharge station for inspection of said second layer articles for one or more predetermined parameters, or rejecting said second layer articles, respectively, through a second rejection channel.

5,350,549

SYNTHETIC AGGREGATE COMPOSITIONS DERIVED FROM SPENT BED MATERIALS FROM FLUIDIZED BED COMBUSTION AND FLY ASH

Michael J. Boyle, Aston, Pa., assignor to Valley Forge Laboratories, Inc., Devon, Pa.

Filed Apr. 15, 1993, Ser. No. 47,674

Int. Cl.[5] **B29C** *47/00;* **C04B** *7/12*

U.S. Cl. 264—40.4 **22 Claims**

1. A method of producing lightweight aggregate of spent bed material from a fluidized bed combustion process and fly ash comprising the steps of:

selecting an optimal ratio of spent bed material and fly ash;

mixing the spent bed material and fly ash to achieve a blend having the optimal ratio;

adding water to the blend to form a blend product;

transferring the blend product to a forming operation;

forming a shaped article;

saturating the shaped article with liquid water; and

curing the shaped article while maintaining the shaped articles saturated with liquid water.

5,350,550

METHOD OF PRODUCTION OF A PLASTIC LAMINATE

Kouitu Kitazawa, and Eitaro Nakamura, both of Kawasaki, Japan,.assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Jul. 21, 1993, Ser. No. 94,729

Claims priority, application Japan, Jul. 22, 1992, 4-216537

Int. Cl.[5] **B29D** *9/00*

U.S. Cl. 264—45.1 **17 Claims**

1. A method of production of a plastic laminate which comprises the steps of forming a foamable but unfoamed substrate by molding a vinyl chloride resin composition containing an organic foaming agent at a temperature lower than the decomposition temperature of the organic foaming agent; coating the surface of the thus-formed substrate with a plastisol comprising an epoxy group-containing polyvinyl chloride resin or an epoxy group-containing acrylic resin, said resin having an average particle diameter in the range of 0.05 to 5 μm; and then converting the thus-coated substrate into a foamed layer having a crosslinked protective layer on the surface thereof by heating the thus-coated unfoamed substrate to a temperature equal to or higher than the decomposition temperature of the organic foaming agent.

5,350,551

METHOD OF FIRING CERAMIC MOLDINGS CONTAINING A DIFFUSIBLE METALLIC OXIDE

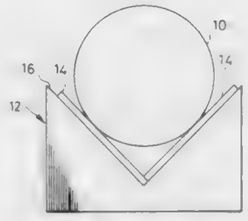
Kenji Shino, Sakado, Japan, assignor to Sanken Electric Co., Ltd., Saitama, Japan

Filed Oct. 9, 1991, Ser. No. 773,404

Claims priority, application Japan, Oct. 15, 1990, 2-275669; Oct. 17, 1990, 2-278209

Int. Cl.[5] **C04B** *35/64;* **F27D** *5/00;* **F27B** *9/14*

U.S. Cl. 264—57 **11 Claims**



1. A method of making a sintered ceramic body suitable for use as an electronic component, which method comprises:

(a) preparing a ceramic molding containing a major proportion of zinc oxide and a minor proportion of antimony oxide;

(b) preparing a diffusion retarder of sintered ceramic material containing antimony oxide;

(c) placing the ceramic molding on the diffusion retarder; and

(d) firing the ceramic molding on the diffusion retarder until the ceramic molding is sintered to maturity;

(e) whereby the effluence of antimony oxide from the ceramic molding by diffusion is prevented even if the molding is fired at a temperature above the melting point of antimony oxide.

5,350,552

METHOD FOR PREPARING POLYACRYLAMIDE AQUEOUS GEL PLATE FOR ELECTROPHORESIS

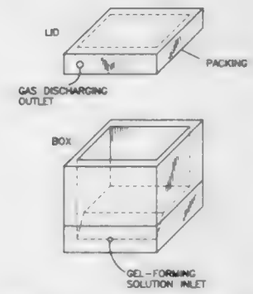
Nobuyoshi Ebata, Takizawa; Kazuaki Notsu, Abiko; Akiko Udagawa, Tokyo, and Mieko Shiratori, Abiko, all of Japan, assignors to Daiichi Pure Chemicals Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1993, Ser. No. 9,044

Claims priority, application Japan, Feb. 7, 1992, 4-022705

Int. Cl.[5] **B29C** *39/42*

U.S. Cl. 264—102 **4 Claims**



1. A batch method for preparing a polyacrylamide aqueous gel plate for electrophoresis comprising:

(1) placing a plurality of gel plate supporters in a gel-forming container which comprises:

(a) a partition rack comprised of plastic or rubber partition members which separate the gel plate supporters from each other,

(b) an inlet port,

(c) an outlet port, and

(d) an airtight lid;

(2) closing the airtight lid;

(3) eliminating oxygen from the container by evacuating air through the outlet port;

(4) charging a gel-forming solution into the container through the inlet port;

(5) allowing the gel-forming solution to gelatinize on the gel plate supporters;

(6) removing the partition rack from the container; and

(7) removing the individual gel plates from the partition rack.

5,350,553

METHOD FOR THE MANUFACTURE OF A DECORATED CHIP CARD

Arnaldo A. Gläser, Neunkirchen, and Hans-Joachim Kaufhold, Fuecht, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft A Corp of the Federal Repbulic of Germany, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 27, 1991, Ser. No. 799,554

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1990, 4038126

Int. Cl.[5] **B29C** *45/14, 45/16, 33/12*

U.S. Cl. 264—155 **6 Claims**

1. A method of producing a decorative pattern on and placing an electronic circuit in a plastic card in an injection molding machine, said method comprising the steps of:

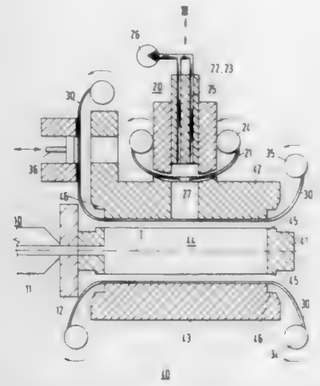
(a) introducing and positioning a first film, which has applied on at least one surface thereof a decorative pattern, over an open mold cavity in a mold of the injection molding machine;

(b) closing the mold cavity so that the first film is fixed and clamped in position therein;

(c) after tile closing of the mold cavity, inserting, an electronic circuit chip through an aperture in the mold into the mold cavity to position the chip in the cavity;

(d) subsequently injecting a support composition for the card into the mold cavity to adhere to the first film and chip and to form the card; and

(e) thereafter, removing excess material, opening the mold cavity and removing the card.



5,350,554

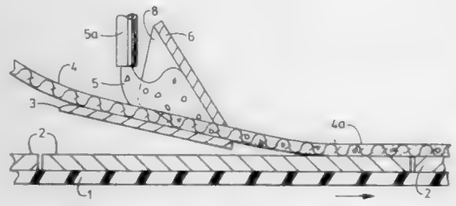
METHOD FOR PRODUCTION OF REINFORCED CEMENTITIOUS PANELS

Robert G. Miller, Bakersfield, Calif., assignor to Glascrete, Inc., Bakersfield, Calif.

Continuation-in-part of Ser. No. 807,256, Dec. 13, 1991, abandoned, which is a division of Ser. No. 728,984, Jul. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 649,468, Feb. 1, 1991, abandoned. This application Jul. 16, 1993, Ser. No. 93,319

Int. Cl.[5] **B28B** *5/00, 7/36;* **B29C** *47/06;* **B32B** *31/30*

U.S. Cl. 264—171 **6 Claims**



1. A method of producing a fabric reinforced cementitious panel web suitable for cutting into fabric reinforced cementitious panels having fabric-wrapped longitudinal edges with the fabric along said edges being open and substantially free of slurry, which comprises;

advancing a first web of pervious reinforcing fabric having an upper face, a lower face and openings therein over a first supporting member having a non-base-reactive surface with said lower face of said first web in contact with said non-base-reactive surface of said first supporting member,

depositing cementitious slurry on said upper face of said first web as said first web is advanced across said first support-

ing member so that said slurry is confined to a longitudinal central section of said first web while leaving two longitudinal margin sections of said first web substantially free of slurry, said longitudinal central section being of panel width,

spreading said slurry uniformly over said longitudinal central section of said first web in a controlled amount with a doctor means,

assuring that both said upper face and said lower face of said longitudinal central section of said first web are coated with said slurry and that said openings therein are filled with said slurry,

thereafter depositing said first web upon a carrier on a moving conveyor distinct from said first supporting member over which said first web has previously been advanced,

depositing a core layer on said longitudinal central section of said first web as it is moving on said moving conveyor,

folding each of said two longitudinal margin sections of said first web around a longitudinal edge of said core layer onto an upper face of said core layer,

applying cementitious slurry to a second web of pervious reinforcing fabric having an upper face, a lower face and openings therein, so that both said upper face and said lower face of said second web are coated with said slurry and so that said openings therein are filled with said slurry, and

depositing said second web on said upper face of said core layer to overlap and bond said folded over longitudinal margin sections of said first web to said upper face of said core layer,

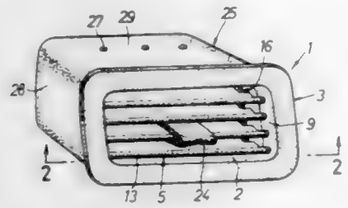
thereby forming a wrapped-edge fabric-reinforced cementitious panel web having longitudinal margin edges substantially open and free of slurry.

5,350,555

PROCESS FOR TWO STAGE INJECTION MOLDING OF AIR-CONDITIONING BLOW-OUT PORT DEVICE

Kazuhiko Tsuda, and Kazuhiro Hashimoto, both of Kawagoe, Japan, assignors to Moriroku Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1993, Ser. No. 62,839
Claims priority, application Japan, Dec. 1, 1992, 4-321959
Int. Cl.[5] B32B *1/00, 3/00, 7/04*
U.S. Cl. 264—242 **3 Claims**



1. A process for two-stage injection molding of an air-conditioning blow-out port device by use of synthetic resin, said blow-out port device comprising:

a housing which includes pairs of shaft bores provided in a coaxial arrangement in opposed wall portions of a peripheral wall of said housing to extend through said opposed wall portions, and pairs of circular-section bosses located coaxially with said shaft bores to define openings of said shaft bores at inner surfaces of said opposed wall portions, respectively; and

a plurality of blades each including a pair of protruding portions having a same outside diameter as an outside diameter of said bosses and provided at opposite ends of a blade body disposed within said housing to abut against a pair of said bosses, and a pair of support shafts projectingly provided coaxially on end faces of said protruding portions and turnably fitted in the shaft bores of said housing, respectively; wherein said process comprises the steps of:

closing opposed first and second opening-closing dies to clamp a plurality of first opposed slide dies each including a plurality of shaft bore forming cores between both said opening-closing dies, thereby defining a first cavity for forming said peripheral wall of said housing so as to include base ends of said shaft bore forming cores with their axes aligned with matched surfaces of said opening-closing dies, while fitting a plurality of semi-circular section dammed projections projectingly provided on said matched surface of said second opening-closing die into protruding portion-corresponding areas of a plurality of first semi-circular section recesses opened into said matched surface of said first opening-closing die and commonly used for forming halves of adjacent bosses and protruding portions, thereby defining a plurality of second cavities for forming said bosses around tip ends of said shaft bore forming cores abutting against end faces of said dammed projections by cooperation of boss-corresponding areas of said first recesses with a plurality of semi-circular section recesses opened into said matched surface of said second opening-closing die;

primarily injecting a synthetic resin into said first and second cavities to form said housing with said shaft bores and said bosses;

withdrawing said shaft bore forming cores of said first slide dies out of respective shaft bores of said housing, and then, opening said first and second opening-closing dies, with said housing left attached to said first opening-closing die;

closing said first opening-closing die and a third opening-closing die with the former die opposed to the latter die, thereby clamping second opposed slide dies and said peripheral wall of said housing between both said first and third opening-closing dies, while clamping said bosses between said boss-corresponding areas of said first recesses of said first opening-closing die and a plurality of second semi-circular recesses opened into a matched surface of said third opening-closing die and opposed to said first recesses, and defining a plurality of opposes third cavities for forming said protruding portions between said protruding portion-corresponding areas of said first and second recesses, defining a plurality of fourth cavities for forming said blade bodies between both said opposed third cavities; and

using said shaft bores in said housing as fifth cavities for forming said turnably fitted support shafts and secondarily injecting a synthetic resin into said third, fourth and fifth cavities to form said blades with said protruding portions and said turnably fitted support shafts.

5,350,556

METHOD FOR MANUFACTURING FIBER REINFORCED THERMOPLASTIC RESIN MOLDED ARTICLE

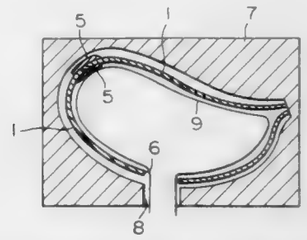
Eizi Abe, and Toshiharu Fukushima, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Jan. 8, 1993, Ser. No. 2,269
Claims priority, application Japan, Jan. 10, 1992, 4-3389
Int. Cl.[5] B29C *65/02, 67/14*
U.S. Cl. 264—248 **8 Claims**

1. A method of manufacturing a hollow molded article by joining a plurality of separate component materials consisting of fiber reinforced thermoplastic resin, said method comprising the steps of:

affixing a reinforcing member consisting of a prepreg wherein reinforcing fiber is impregnated with thermoplastic resin, to the junction along which said component materials are joined;

housing said component materials within a mold as a hollow provisional assembly; and



forming a joined unitary body by heating while increasing the internal pressure within said hollow provisional assembly.

5,350,557

IMPERMEABLE, ABRADABLE SEAL AND METHOD FOR THE PRODUCTION THEREOF

Gregory P. Jarrabet, and Lixion Lu, both of DeLand, Fla., assignors to Technetics Corp., Deland, Fla.

Filed Sep. 23, 1991, Ser. No. 764,204
Int. Cl.[5] B22F *3/26*
U.S. Cl. 419—19 **6 Claims**



1. In the production of an abradable liner material, comprising a rigid, skeleton-like matrix, the pores of which are at least partially filled with a metal or metal compound, to substantially decrease the permeability of the liner under the high temperature applications encountered in such turbomachinery, the improvement which comprises,

infiltrating the pores of said matrix to a depth beyond the surface regions of the liner with a solution or dispersion containing an effective quantity of at least one metal in elementary or combined form, said solution or dispersion having a viscosity low enough to adequately penetrate the pores of the matrix, the quantity of said metal being sufficient, such that upon heating, the gas permeability of the liner will be less than 50% of the unfilled matrix,

preventing the egress of the infiltrate from the matrix,

heating the infiltrated matrix under conditions which cause the infiltrate to form, and form a derivative which: (i) is stable at such high temperatures and (ii) adheres to the matrix material, such that it fills the pores thereof to a degree sufficient to achieve said decrease in the gas permeability of the liner.

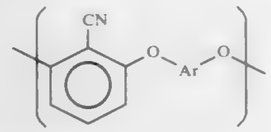
5,350,558

METHODS FOR PREPARING MAGNETIC POWDER MATERIAL AND MAGNET, PROCESS FOR PREPARATON OF RESIN COMPOSITION AND PROCESS FOR PRODUCING A POWDER MOLDED PRODUCT

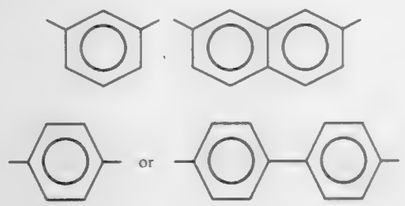
Hiroshi Kawato, and Tatsuya Tomioka, both of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Division of Ser. No. 702,396, May 20, 1991, Pat. No. 5,256,326, which is a continuation-in-part of Ser. No. 639,293, Jan. 10, 1991, abandoned, Ser. No. 606,510, Oct. 31, 1990, abandoned, and Ser. No. 556,259, Jul. 23, 1990, abandoned, which is a division of Ser. No. 374,149, Jun. 30, 1989, abandoned, said Ser. No. 606,510, is a division of Ser. No. 372,833, Jun. 29, 1989, Pat. No. 5,139,963. This application Aug. 4, 1993, Ser. No. 101,705
Claims priority, application Japan, Jul. 12, 1988, 63-171832; Jul. 14, 1988, 63-173792; Apr. 24, 1989, 1-101555; Apr. 24, 1989, 1-101556; Jan. 10, 1990, 2-1534; Aug. 14, 1990, 2-213703
Int. Cl.[5] B22F *1/00;* **B01J** *13/02;* **B05D** *7/00*
U.S. Cl. 419—35 **4 Claims**

1. A process for preparing a resin composition for powder molding, said composition comprising 50 to 97 vol % of a metal or alloy powder and 50 to 3 vol % of a thermoplastic resin having heat resistance and crystallinity, said resin comprising a polycyanoarylether having a repeating unit represented by the formula:



wherein Ar represents



and a limiting viscosity (η) in a solvent of p-chlorophenol at 60° C. of at least 0.2 dl/g, which comprises dissolving the thermoplastic resin having heat resistance and crystallinity in N-methylpyrrolidone at a temperature of at least 190° C. to form a solution and at the same time dispersing therein at least one metal or alloy powder selected from the group-consisting of iron, brass, nickel, silver, stainless steel and aluminum and having an average particle diameter of not more than 500 μm to prepare a mixture of the powder and the solution and then volatilizing or evaporating the N-methylpyrrolidone thereby precipitating the resin onto the metal or alloy powder.

5,350,559

FERRITE STEEL WHICH EXCELS IN HIGH-TEMPERATURE STRENGTH AND TOUGHNESS

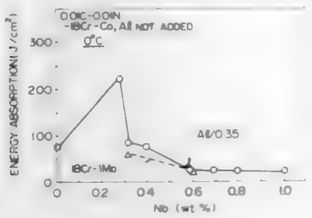
Astushi Miyazaki; Takumi Ujiro, and Fusao Togashi, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Aug. 13, 1993, Ser. No. 106,423
Int. Cl.[5] C22C *38/26, 38/30*
U.S. Cl. 420—36 **18 Claims**

1. A ferrite steel having high-temperature strength and excellent toughness comprising a composition consisting essentially of:

C: not more than about 0.02 wt %;

Si: not more than about 2.0 wt %;
Mn: not more than about 1.0 wt %;
Cr: not less than about 6.0 wt % but not more than about 23.0 wt %;
Ni: not more than about 1.0 wt %;
Nb: not less than about 0.4 wt % but not more than about 0.65 wt %;

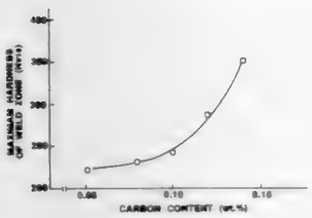


Co: not less than about 0.01 wt % but not more than about 0.5 wt %;
Al: not more than about 0.5 wt %;
N: not more than about 0.03 wt %;
and the balance substantially Fe and incidental inclusions.

5,350,560
WEAR RESISTANT ALLOY
John M. Kasiske, Katy, Tex., assignor to Triten Corporation, Houston, Tex.
Filed Jul. 12, 1993, Ser. No. 90,401
Int. Cl.[5] C22C *38/52, 38/44*
U.S. Cl. 420—38 **2 Claims**

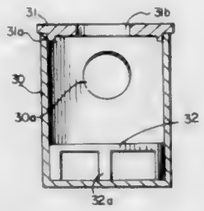
1. An iron based austenitic alloy including about 38 to about 62 percent by weight alloy elements comprising 0.02 to 0.80 carbon, having an alloy content of 20.00 to 30.00 percent chromium, 7.00 to 9.00 percent nickel, 5.00 to 9.00 percent molybdenum, 3.00 to 9.00 percent cobalt, and 0.50 to 3.00 percent manganese by weight.

5,350,561
CR-MO STEEL PIPE AND WELDING METHOD THEREOF
Toshihiro Takamura; Yukio Nishino; Motoaki Oyama, and Akiyoshi Matsushita, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan
Filed Mar. 25, 1993, Ser. No. 36,945
Claims priority, application Japan, Mar. 31, 1992, 4-103768
Int. Cl.[5] C22C *38/12, 38/06*
U.S. Cl. 420—105 **15 Claims**



1. A Cr-Mo steel pipe having a wall thickness of 5 to 25 mm, said steel pipe consisting essentially of C of 0.03 to 0.10 wt. %, Si or 0.5 to 1.0 wt. %, Mn of 0.3 to 0.6 wt. %, P of 0.02 wt. %, or less, S of 0.007 wt. % or less, Cr of 1.0 to 1.5 wt. %, Mo of 0.45 to 0.65 wt. %, Al of 0.002 to 0.01 wt. %, N of 0.002 to 0.01 wt. %, and the balance being Fe and unavoidable impurities.

5,350,562
METHOD AND APPARATUS FOR STERILIZATION AND SEPARATION OF PLASTIC AND NON-PLASTIC MEDICAL WASTES
Frank H. Anthony, 326 Atherton Dr., Metaire, La. 70005
Continuation-in-part of Ser. No. 682,069, Apr. 9, 1991, Pat. No. 5,256,861. This application Apr. 6, 1993, Ser. No. 43,649
Int. Cl.[5] A61L *2/04, 11/00;* **B03B** *1/02;* **B29B** *17/02*
U.S. Cl. 422—1 **18 Claims**

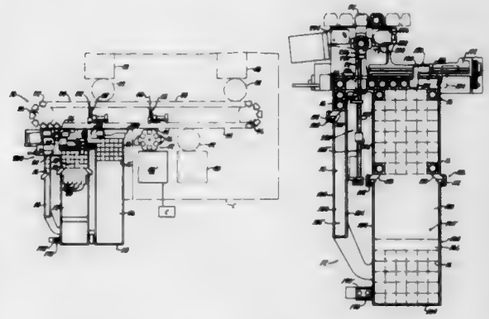


1. A method of heat treating and separating plastic and non-plastic elements of potentially infectious waste products, said method comprising the steps of:
providing waste products comprising plastic and non-plastic elements:
placing said waste products in a container having a bottom and side surfaces so that said products are positioned in a spaced relationship from the bottom of the container;
placing said container in a dry heat generating chamber;
heating said chamber, said container and its contents at a selectable temperature above tile melting point of said plastic elements but below tile flash points of said waste products; and
maintaining said temperature for a period of time sufficient to sterilize said waste products and to convert said plastic elements to a molten state;
allowing the molten plastic to flow to the container bottom to form a liquid plastic pool while maintaining said non-plastic elements in said spaced relationship from the bottom of the container,
whereby said waste products are rendered sterile and said non-plastic elements are substantially separated from said plastic elements.

5,350,563
COLD STERILANT WITH EXTENDED ACTIVE LIFE
Raymond C. Kralovic, Willoughby; David Z. Levin, Mayfield Heights, and Lorraine D. H. Lindeman, Mentor, all of Ohio, assignors to Steris Corporation, Mentor, Ohio
Continuation-in-part of Ser. No. 64,391, May 18, 1993, which is a continuation-in-part of Ser. No. 23,048, Feb. 25, 1993, which is a continuation-in-part of Ser. No. 793,589, Nov. 18, 1991, Pat. No. 5,209,909, which is a continuation-in-part of Ser. No. 681,118, Apr. 5, 1991, Pat. No. 5,217,698, and Ser. No. 342,189, Apr. 24, 1989, Pat. No. 5,116,575, said Ser. No. 681,118, is a continuation-in-part of Ser. No. 349,304, May 9, 1989, Pat. No. 5,091,343, and Ser. No. 342,189, May 9, 1989, said Ser. No. 349,304, is a continuation-in-part of Ser. No. 140,388, Jan. 4, 1988, Pat. No. 4,892,706, said Ser. No. 342,189, is a continuation-in-part of Ser. No. 229,917, Aug. 8, 1988, Pat. No. 5,077,008, which is a continuation-in-part of Ser. No. 140,388, Aug. 8, 1988, and Ser. No. 165,189, Mar. 7, 1988, Pat. No. 5,037,623, which is a continuation-in-part of Ser. No. 826,730, Feb. 6, 1986, Pat. No. 4,731,222, said Ser. No. 140,388, is a continuation-in-part of Ser. No. 826,730, Feb. 6, 1986. This application Jul. 12, 1993, Ser. No. 90,791
Int. Cl.[5] C11D *7/12*
U.S. Cl. 422—28 **19 Claims**

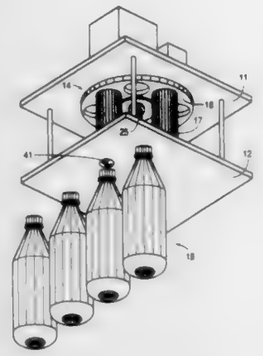
13. A method of microbial decontamination comprising:
mixing water with a perborate and a rapid acetylating agent which produces at least two acetyl groups and which rapidly causes a short term peracetic acid concentration peak, and with a slow acetylating agent which produces only a single acetyl group and which slowly causes a long term peracetic acid concentration peak, and with a buffer to form a solution with a biocidally effective concentration of peracetic acid;
immersing an item to be microbially decontaminated in the solution.

5,350,564
AUTOMATED CHEMICAL ANALYZER WITH APPARATUS AND METHOD FOR CONVEYING AND TEMPORARY STORAGE OF SAMPLE TUBES
John C. Mazza, El Toro; William A. Stark, Costa Mesa; Richard A. Scribner, Fullerton; Stephen L. Frye, El Toro, and Kempton H. Hardiman, Mission Viejo, all of Calif., assignors to Baxter Diagnostics Inc., Deerfield, Ill.
Filed Jun. 28, 1993, Ser. No. 83,733
Int. Cl.[5] G01N *35/04, 1/14*
U.S. Cl. 422—63 **31 Claims**



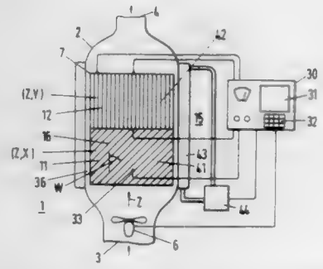
1. An automated chemical analyzer for conducting selected chemical analysis including plural substantially identical interlinkable prismatic sample carrier members for carrying a plurality of samples, at lease one analysis module portion for analysis of said samples, said carrier members including means for removably interlinking and unlinking said carrier members together side-by-side by lateral relative sliding movement, said analyzer further including conveyor apparatus comprising:
on-loading means for receiving interlinked elongate pluralities of said prismatic sample carriers;
means for unlinking individual sample carriers from said elongate pluralities of interlinked sample carriers;
conveyor means including plural substantially identical receptacles each for receiving an individual sample carrier and conveying said individual sample carrier to said analysis module portion;
means for feeding individual sample carriers into said receptacles;
means for transferring individual sample carriers between said receptacles and said analysis module;
off-loading means for transferring individual sample carriers from said receptacles toward an off-loading area; and
interlinking means cooperating with said off-loading means to interlink said sample carriers into elongate pluralities presented on said off-loading area.

5,350,565
SYSTEM FOR THE DETECTION OF NOXIOUS CONTAMINANTS IN BEVERAGE AND POTABLE WATER CONTAINERS
Richard C. Leveson, Willowdale; John D. Laslavic, Etobicoke, and Nicholas J. Barker, Mariposa Township, all of Canada, assignors to Photovac Centre, Inc., Ontario, Canada
Filed Dec. 3, 1992, Ser. No. 987,897
Int. Cl.[5] G01N *21/01, 21/47;* **B07C** *5/10*
U.S. Cl. 422—64 **19 Claims**



18. An apparatus for analyzing the gas in a container comprising:
a support structure having a first surface and a second surface parallel to said first surface;
a sample chamber interposed between said first surface and said second surface, said sample chamber having a first open end adjacent said first surface and a second open end adjacent said second surface;
an aperture in said second surface;
a sampling station;
at least one analytical station; and
means for causing motion of said sample chamber between said sampling station and said at least analytical station.

5,350,566
REACTOR FOR HETEROGENEOUS REACTIONS WITH A CATALYST MEMBER
Jean-Paul Stringaro, Bulach, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Continuation of Ser. No. 607,149, Oct. 31, 1990, abandoned. This application Jul. 21, 1993, Ser. No. 95,826
Claims priority, application Switzerland, Dec. 11, 1989, 0446/89
Int. Cl.[5] B01J *8/00*
U.S. Cl. 422—109 **21 Claims**



1. A reactor for heterogeneous reactions comprising
a heat conductive wall defining a chamber;
at least one inlet for introducing a flowable medium into said chamber;

at least one outlet for removing flowable medium from said chamber;

conveyor means for conveying a medium through said inlet into said chamber; and

a catalyst member in said chamber for effecting a heterogeneous reaction therein, said catalyst member having at least two consecutively disposed stages, each said stage having a plurality of flow guiding elements disposed in parallel to a main flow direction of the flowable medium through said chamber with said elements of one of said stages being angularly disposed relative to said elements of the other of said stages relative to said main flow direction, each said stage having a preset height (H), add a preset diameter (D) with each said flow guiding element defining subflow ducts disposed in crossing relation to the subflow ducts of an adjacent guiding element at an angle of inclination (W) of at least 10° relative to said main flow direction and with partly open flow-crossing places between facing subflow ducts, each stage having a displacement factor H/HO of at least ½ wherein HO is equal to D ctg W.

5,350,567

CENTRIFUGAL FLUIDIZING GRANULATOR FOR POWDER COATING GRANULATION

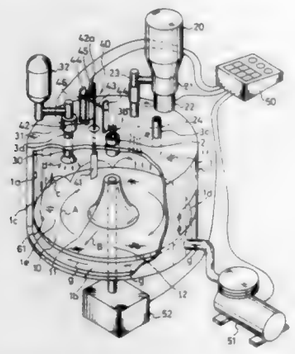
Toyohiko Takeda, Kobe; Koji Sato, Kawanishi; Yusuke Suzuki, Izumi, and Yoshitaka Tomoda, Daitoh, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Jun. 11, 1993, Ser. No. 74,478

Claims priority, application Japan, Jun. 23, 1992, 4-190083

Int. Cl.[5] **B05C** *11/00;* **B05D** *7/00;* **G01N** *11/02;* **G05D** *7/00*

U.S. Cl. 422—111 **16 Claims**



1. A centrifugal fluidizing granulator comprising:

a stationary granulating chamber of a generally cylindrical shape and having an upper and lower plate, said lower plate being supported by a vertical shaft, and said upper plate carrying a powder supply means for providing a guest power to said chamber and a liquid supplying means for providing a liquid to said chamber;

a generally disk-shaped rotor disposed near the lower plate of said granulating chamber and rotatable about said vertical shaft for carrying particulate material to be granulated and for producing a predetermined macroscopic flow of said particulate material to form granules upon rotation thereof;

a sensor supported by said granulating chamber and having a lower portion thereof disposed at a predetermined position within said macroscopic flow of said particulate material and said granules, said sensor being movable in a vertical plane parallel to said macroscopic flow of particulate material and granules at said predetermined position, said lower portion being subjected to impact of said macroscopic flow of particulate material and granules and enabling said sensor to output an electric signal in response to said impact; and

control means for controlling said powder supplying means and said liquid supplying means such that, when the output signal of said sensor is less than a first predetermined value, it terminates a dispersal of said guest powder to said chamber and enables said liquid supplying means to provide said liquid to said chamber for wetting said particles, and when the output signal of said sensor is greater than a second predetermined value, it terminates a spraying of the liquid and enables said powder supplying means to provide the guides powder for coating the wet particles with the guest powder.

5,350,568

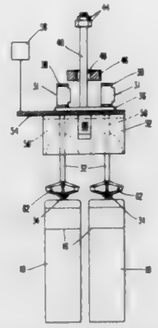
METHOD AND APPARATUS FOR STERILIZING CARTONS AND BREAKING CARTON SCORE LINES

Ronald Tuckner, White Bear Lake, Minn., and David Persells, Twin Lakes, Wis., assignors to Tetra Alfa Holdings, S.A., Pully, Switzerland

Filed Nov. 9, 1992, Ser. No. 973,300

Int. Cl.[5] **B65B** *55/04*

U.S. Cl. 422—300 **14 Claims**



1. Apparatus for sterilizing and breaking score lines on cartons comprising:

conveyor means for intermittently advancing a carton having a preformed bottom and upright walls defining an interior and score lines on the upright walls;

a spraying assembly for spraying a solution of hydrogen peroxide into the interior of the carton to sterilize the carton, said spraying assembly including a spray head, said spray head being provided with a spray nozzle through which hydrogen peroxide solution is delivered for being sprayed into the interior of the carton; and

a score line breaking assembly for breaking score lines on the carton, said score line breaking assembly including an anvil carried on the spray head for being positioned in the interior of the carton adjacent to a carton score line, a movably mounted breaker member for breaking score lines on the walls of the carton, and drive means operatively connected to said breaker member for moving said breaker member from one position in which the breaker member is spaced from an upper portion of the carton walls to another position in which the breaker member is in contact with the upper portion of the carton walls to urge the upper portion of the carton walls inwardly and thereby break the score lines on the carton walls.

5,350,569

STORAGE OF NUCLEAR MATERIALS BY ENCAPSULATION IN FULLERENES

Nicholas V. Coppa, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 30, 1993, Ser. No. 39,668

Int. Cl.[5] **C01B** *31/00*

U.S. Cl. 423—251 **5 Claims**

1. A waste product comprising:

radioactive material encapsulated inside a fullerene molecule.

5,350,570

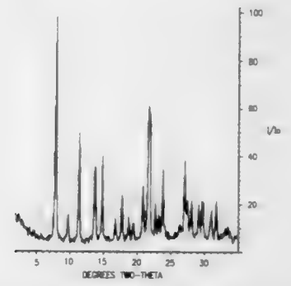
SYNTHESIS OF CRYSTALLINE ZSM-18

Kirk D. Schmitt, Pennington, N.J., assignor to Mobil Oil Corp., Fairfax, Va.

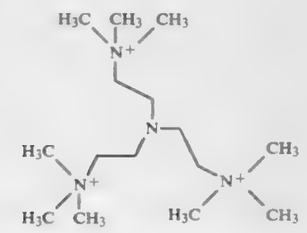
Filed Sep. 29, 1993, Ser. No. 128,170

Int. Cl.[5] **C01B** *33/34*

U.S. Cl. 423—705 **16 Claims**



1. A method for synthesizing crystalline material exhibiting a characteristic X-ray diffraction pattern including d-spacing maxima values as shown in Table I, which comprises (i) preparing a mixture capable of forming said material, said mixture comprising sources of alkali metal (M), an oxide of trivalent element (X), an oxide of tetravalent element (Y), water and triquat (T) having the formula $C_{15}H_{39}N_4^{+++}$, represented as follows:



and having a composition, in terms of mole ratios, within the following ranges:

YO_2/X_2O_3	10 to 30
H_2O/YO_2	10 to 100
OH^-/YO_2	0.10 to 0.80
M/YO_2	0.00 to 0.50
T/YO_2	0.03 to 0.30

(ii) maintaining said mixture under sufficient conditions including a temperature of from about 80° C. to about 150° C. until crystals of said material are formed; and (iii) recovering said crystalline material from step (ii), said recovered crystalline material containing said T.

5,350,571

EMULSIONS OF HIGHLY FLUORINATED ORGANIC COMPOUNDS

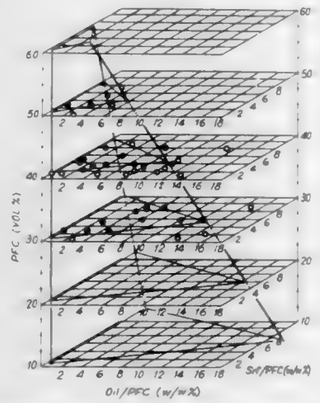
Robert J. Kaufman, and Thomas J. Richard, both of University City, Mo., assignors to HemaGen/PFC, San Francisco, Calif.

Division of Ser. No. 187,854, Apr. 29, 1988, Pat. No. 5,171,755.

This application Feb. 24, 1992, Ser. No. 840,389

Int. Cl.[5] **A61B** *5/055, 8/08;* **A61K** *49/04, 31/685*

U.S. Cl. 424—9 **9 Claims**



1. A contrast agent for biological imaging comprising a physiologically acceptable emulsion in an amount clinically effective for imaging by modalities selected from the group consisting of nuclear magnetic resonance, x-ray, ultrasound and positron emission tomography, wherein the emulsion comprises a highly fluorinated organic compound, an oil that is not substantially surface active and not significantly water soluble, and a surfactant, and wherein

(a) the highly fluorinated organic compound is present in the emulsion in an amount between about 20% and about 60% by volume and

(b) the amounts of the surfactant and oil in the emulsion are dependent on the volume percent of highly fluorinated organic compound and are present in amounts effective to produce emulsions characterized by (1) a particle size distribution of less than 400 nm after sterilization, (2) a serum stability characterized by a particle size distribution of less than 400 nm after 5 days in serum or ionic solutions, (3) an LD_{50} in rats of at least 16 ml/kg of the highly fluorinated organic compound component of the emulsion, (4) an at least 70% survival upon total exchange in rats, and (5) a shelf stability of at least several months at 4° c.

5,350,572

PERMANENT WAVING COMPOSITION

Andrew Savaides, Norwalk, and Ludwig Salce, Greenwich, both of Conn., assignors to Shiseido Co., Ltd., Tokyo, Japan

Filed Feb. 18, 1993, Ser. No. 19,207

The portion of the term of this patent subsequent to Sep. 7, 2000, has been disclaimed.

Int. Cl.[5] **A61K** *7/09, 7/06*

U.S. Cl. 424—71 **12 Claims**

1. A hair reducing or permanent waving lotion for use in the permanent waving of hair, said lotion comprising

A. between about 5% and 40% by weight of the total composition of a reducing agent comprising at least one polyoxyethyleneglycol dimercaptoalkyl-ester having the formula

$$R—OCH_2CH_2(—OCH_2CH_2)_n—OCH_2CH_2CO—R'$$

where n is 2 to 33, and

R, R' = $COCH_2SH$
= $COCH_2CH_2SH$
= $COCH_2CH_2CH_2SH$
= $COCHSHCH_3$
= $COCH(NH_2)CH_2SH$
= $COCH_2(NH_2)CH_2CH_2SH$
= $COCH_2CH(NH_2)CH_2SH$;

B. between about 2% and 6% by weight of an ionic or non-ionic detergent;

C. between about 1% and 2% by weight of ammonium chloride;

D. between about 2% and 6% by weight of a penetrating agent; and

E. the balance comprising one or more agents selected from the group consisting of protein hydrolyzates, chelating agents, wetting agents, fragrances, conditioning agents and water.

5,350,573

METHOD AND COMPOSITION FOR PREVENTING SURGICAL ADHESIONS

Eugene P. Goldberg, and Yoseph Yaacobi, both of Gainesville, Fla., assignors to University of Florida Research Foundation, Inc., Gainesville, Fla.

Continuation of Ser. No. 818,125, Jan. 8, 1992, which is a division of Ser. No. 696,960, May 8, 1991, Pat. No. 5,140,016, which is a continuation of Ser. No. 555,377, Jul. 19, 1990, Pat. No. 5,080,893, which is a continuation of Ser. No. 199,687, May 31, 1988. This application Mar. 3, 1993, Ser. No. 26,125

Int. Cl.[5] A61K *31/78, 31/79, 31/77*

U.S. Cl. 424—78.06 **5 Claims**

1. A method of preventing post-operative surgical adhesions of tissue in surgery comprising providing surfaces involved in said surgery with a wet coating of a physiologically acceptable aqueous solution of a hydrophilic, polymeric material prior to manipulation of said tissue during said surgery wherein (A) said polymeric material is a water-soluble, biocompatible, pharmaceutically acceptable member selected from the group consisting of PVP, polyethylene glycol, poly-dimethylacrylamide, salts thereof, complexes thereof and mixtures thereof; and (B) said hydrophilic, polymeric material (1) has a molecular weight of about 500,000 or above, and (2) has a concentration in said aqueous solution in the range of from about 0.01% to about 15% by weight, said molecular weight and concentration having values such that said aqueous solution is capable of providing wet coatings on said tissue.

5,350,574

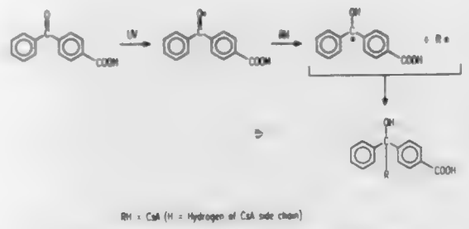
DERIVATIVES OF CYCLOSPORINA A, ANTIBODIES DIRECTED THERETO AND USES THEREOF

Bernard F. Erlanger, Whitestone; William L. Cleveland, New York, and Nicholas A. Cacalano, Irvington, all of N.Y., assignors to The Trustees of Columbia University in the City of New York, N.Y.

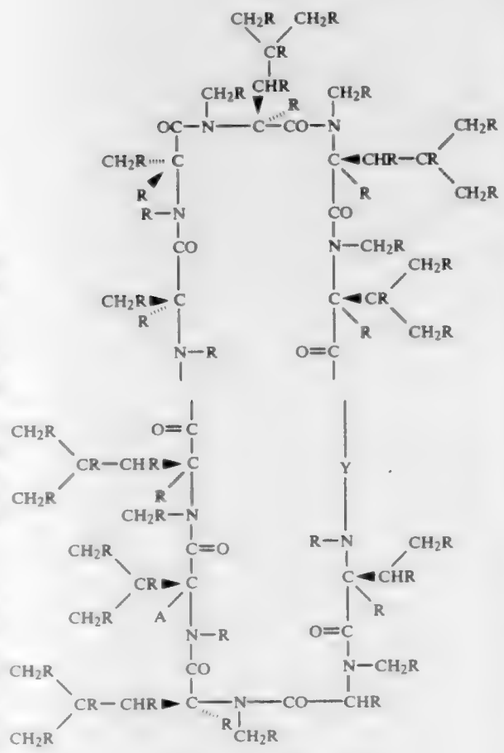
Continuation-in-part of Ser. No. 280,009, Dec. 5, 1988, abandoned. This application May 13, 1991, Ser. No. 699,468

Int. Cl.[5] A61K *39/385, 41/00, 31/48;* **C07K** *17/02, 7/64, 17/06*

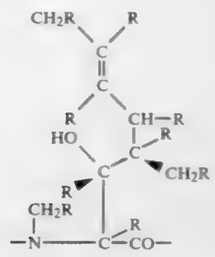
U.S. Cl. 514—9 **27 Claims**



1. A molecule having the structure: (SEQ ID NO. 1)



wherein Y is a molecule having the structure:



and each R may independently be H or X, provided that at least one R is X, where X is a ligand which is produced as the result of a photo-chemical reaction between a precursor of X containing a photochemically activatable group and a hydrogen of cyclosporine A and which comprises a reactive group.

5,350,575

IBDV VP2 EPITOPE RECOGNIZED BY VIRUS NEUTRALIZING AND PROTECTIVE MONOCLONAL ANTIBODIES

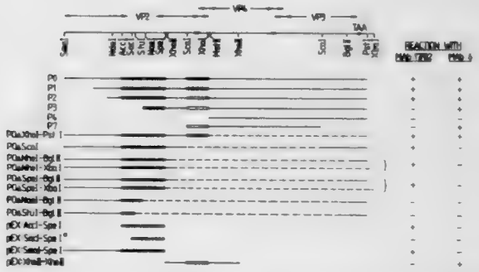
Ahmed A. Azad; Mittur N. Jagadish, and Kevin J. Fahey, all of Melbourne, Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

Continuation of Ser. No. 457,744, Feb. 26, 1990, abandoned. This application Apr. 26, 1993, Ser. No. 52,289

Claims priority, application Australia, Jun. 26, 1987, PI2727/87

Int. Cl.[5] A61K *39/12;* **C12N** *15/09, 1/21;* **C07K** *15/12*

U.S. Cl. 424—192.1 **17 Claims**



1. A recombinant DNA molecule consisting essentially of a nucleotide sequence coding for a non-full length fragment of VP2 polypeptide of IBDV including a conformational epitope of the VP2 polypeptide, said conformational epitope encoded by the AccI-SpeI fragment, optionally together with the ScaI-XhoI fragment, of the IBDV genome segment coding for the VP2 polypeptide.

5,350,576

***BACILLUS THURINGIENSIS* ISOLATES FOR CONTROLLING ACARIDES**

Jewel Payne, San Diego, Calif.; Raymond J. C. Cannon, and Angela L. Ralph, both of Kent, Great Britain, assignors to Mycogen Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 768,141, Sep. 30, 1991, Pat. No. 5,211,946, which is a continuation-in-part of Ser. No. 759,248, Sep. 13, 1991, abandoned. This application May 17, 1993, Ser. No. 63,170

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.[5] A01N *61/00;* **C12N** *1/20;* **C07K** *15/02*

U.S. Cl. 424—93.461 **8 Claims**

1. A process for controlling house dust mites (*Dermatophagodes pteronyssinus*) which comprises contacting said pests with an acarid-controlling effective amount of a *Bacillus thuringiensis* isolate selected from the group consisting of B.T. OS45B1, B.t. PS24J, G.t. PS94R3, B.t. PS17, B.t. PS62B1 and B.t. PS74G1, and toxins or mutants thereof which retain the property of activity against house dust mites.

5,350,577

ISOLATES OF BACILLUS THURINGIENSIS THAT ARE ACTIVE AGAINST NEMATODES

Jewel M. Payne, San Diego, Calif., assignor to Mycogen Corp., San Diego, Calif.

Division of Ser. No. 918,345, Jul. 21, 1992, Pat. No. 5,270,448, which is a division of Ser. No. 558,738, Jul. 27, 1990, Pat. No. 5,151,363. This application Jul. 15, 1993, Ser. No. 92,155

Int. Cl.[5] A01N *63/00;* **C12N** *1/20;* **A61K** *31/00, 37/00*

U.S. Cl. 424—93.461 **10 Claims**

1. A process for treating an animal infected with a nematode which comprises administering to said animal a nematode-controlling effective amount of a *Bacillus thuringiensis* isolated or spores, crystals or delta-endotoxins produced by said *Bacillus thuringiensis* isolate, wherein said *Bacillus thuringiensis* isolate is selected from the group consisting of *Bacillus thuringiensis* strain PS80JJ1, *Bacillus thuringiensis* strain PS158D5, *Bacillus thuringiensis* strain PS167P, *Bacillus thuringiensis* strain PS169E, *Bacillus thuringiensis* strain PS177F1, *Bacillus thuringiensis* strain PS177G, *Bacillus thuringiensis* strain PS204G4, *Bacillus thuringiensis* strain PS204G6 and mutants thereof which retain activity against said nematode.

5,350,578

INHIBITION OF ARTERIAL THROMBOTIC OCCLUSION OR THROMBOEMBOLISM

John H. Griffin; Andras Gruber, both of San Diego; Stephen R. Hanson, Encinitas, and Lawrence A. Harker, San Diego, all of Calif., assignors to Scripps Clinic and Research Foundation, La Jolla, Calif.

Continuation of Ser. No. 121,702, Nov. 17, 1987, Pat. No. 5,084,274. This application Oct. 25, 1991, Ser. No. 782,817

Int. Cl.[5] C12N *9/64;* **A61K** *37/547*

U.S. Cl. 424—94.64 **14 Claims**

1. A pharmaceutical composition for inhibiting arterial platelet deposition, acute arterial thrombotic occlusion, thromboembolism, or stenosis in coronary, cerebral or peripheral arteries or in vascular grafts the composition comprising an effective amount of isolated and purified activated protein C obtained from a plasma source, to inhibit arterial platelet deposition, acute arterial thrombotic occlusion, thromboembolism or stenosis in coronary, cerebral or peripheral arteries or in vascular grafts in a pharmaceutically acceptable carrier.

5,350,579

A87689 COMPOUNDS EMPLOYED AS A PHOSPHOLIPASE A_2 (PLA_2) INHIBITOR TO TREAT INFLAMMATORY DISEASES

Dennis R. Berry, Greenwood; Anne H. Dantzig, Crawfordsville; Manuel Debono, Indianapolis; Robert Hamill, Greenwood; R. Michael Molloy, Danville, and Raymond C. Yao, Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 878,254, May 4, 1992, Pat. No. 5,278,064, which is a continuation-in-part of Ser. No. 738,969, Aug. 1, 1991, abandoned. This application Aug. 9, 1993, Ser. No. 103,845

Int. Cl.[5] C12P *1/04;* **A61K** *35/00*

U.S. Cl. 424—122 **9 Claims**

1. A method of inhibiting PLA_2 activity in animals which comprises administering a PLA_2-inhibiting amount of a compound selected from A87689, which in its calcium salt form has the following characteristics:

Molecular weight = 1222.418

Empirical formula = $C_{66}H_{70}O_{20}Ca$

FAB-MS (M+1): Found: 1223.4175,

Calculated: 1223.4254; and

IR: as shown in FIG. 1 of the drawings, a C_1–C_6 alkyl

ether or a C_1–C_6 alkanoyl ester of A87689, or a pharmaceutically acceptable salt thereof, to said animal.

5,350,580

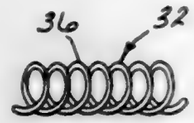
DEVICE AND METHOD FOR EXTENDED DELIVERY OF PHARMACOLOGICALLY ACTIVE AGENTS TO THE EAR

David C. Muchow, Transit Township, Sibley County, and Larry M. Sirvio, Cottage Grove, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 770,708, Oct. 3, 1991, abandoned, which is a continuation of Ser. No. 683,099, Apr. 10, 1991, abandoned, which is a continuation of Ser. No. 488,650, Mar. 5, 1990, abandoned. This application Feb. 26, 1993, Ser. No. 24,191

Int. Cl.[5] A61F *9/02*

U.S. Cl. 424—437 | 5 Claims



1. A method of treating otitis media comprising inserting into the middle ear a biodegradable, substantially permeable support device incorporating a therapeutically effective releasable amount of at least one pharmacologically active agent selected from the group consisting of antibacterials, antivirals, antifungals, fluorides, salts, glycerine and antiinflammatory medications, the characteristics of the device being that (1) the device is a cylindrical sheet or coiled filament retained or retainable in an insertable shape of initial dimensions that allow it to be surgically inserted into the middle ear; (2) upon insertion into the middle ear, the device is capable of expanding towards its original shape in order to provide a surface that substantially contacts the walls of the middle ear without substantially occluding the middle ear space; and (3) once expanded, the device is capable of providing extended release of the active agent to the middle ear.

5,350,581

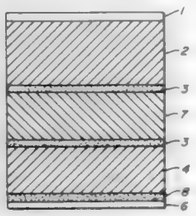
METHOD FOR MANUFACTURING TRANSDERMAL DEVICES

Frank Kochinke, Fremont, Calif., assignor to Pharmetrix Corporation, Menlo Park, Calif.

Filed Dec. 14, 1989, Ser. No. 450,409

Int. Cl.[5] A61F *13/00*

U.S. Cl. 424—443 30 Claims



1. A method for the fabrication of transdermal delivery devices comprising:

a) joining by an adhesive means, the surface most distal to the protective backing of an incipient device to,

b) the surface most distal from the release layer of a complement device, where said complement device is comprised of at least one layer in addition to a release liner and

c) recovering said transdermal device.

5,350,582

STABLE FORMULATION OF ENALAPRIL SALT, A PROCESS FOR THE PREPARATION THEREOF AND THE USE THEREOF

Marjo Merslavič, Straža; Jožica Ražen, Novo Mesto, and Aleš Rotar, Ljubljana, all of Yugoslavia, assignors to Krka, torvana Zdravil, p.o., Mesto, Spratly Islands

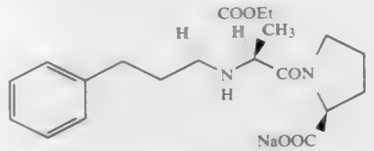
Filed Nov. 24, 1992, Ser. No. 980,956

Claims priority, application Yugoslavia, Nov. 25, 1991, 1842/91

Int. Cl.[5] A61K *9/20*

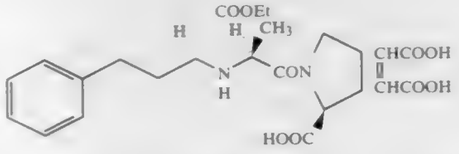
U.S. Cl. 424—464 13 Claims

1. Process for preparing stable formulation of enalapril sodium salt of the formula I



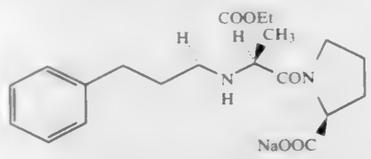
I

characterized in that enalapril mileate of formula II



II

is suspended in demineralized water and a stoichiometric amount of the corresponding sodium compound selected from the group consisting of sodium carbonate, sodium hydrogen carbonate and sodium hydroxide is added thereto, to this enalapril sodium salt prepared in situ of the formula I



I

formulating additives are added, the whole is homogenized and formulated.

5,350,583

CELL-PENETRABLE MEDICAL MATERIAL AND ARTIFICIAL SKIN

Katsutoshi Yoshizato, Ebina; Jun Konishi, Fuji; Mikio Koide, Fuji; Kaori Oyamada, Fuji; Ken-ichi Ohsaki, Fuji; Takeo Katakura, Fuji; Yuichi Mori, Tokyo, and Ken Tatebe, Fuji, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 576,494, Sep. 7, 1990, abandoned. This application Nov. 3, 1992, Ser. No. 970,955

Claims priority, application Japan, Mar. 9, 1988, 63-53836; Jul. 25, 1988, 63-183478; Sep. 6, 1988, 63-221337

The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.

Int. Cl.[5] A61F *2/10*

U.S. Cl. 424—484 19 Claims

1. Artificial skin which is suitable for application to the site of a wound comprising:

a wound-contacting layer; and

a water permeation-controlling area laminated on one side said wound-contacting layer for controlling water permeation;

said wound-contacting layer being made of denatured collagen obtained by heating cross-linked collagen in the presence of water at a temperature ranging from about 50° to



about 125° C. and wherein said denatured collagen lacks antigenicity as the antigenic moiety at the terminus of the collagen molecule has been removed.

5,350,584

SPHERONIZATION PROCESS USING CHARGED RESINS

Gregory A. McClelland, and Gaylen M. Zentner, both of Lawrence, Kans., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 26, 1992, Ser. No. 906,226

Int. Cl.[5] A61K *9/14, 9/18*

U.S. Cl. 424—501 13 Claims

1. A process for the production of microcrystalline cellulose free multiparticulate comprise a medicament and a charged resin, comprising the steps of:

(a) adding a charged resin and an excipient to a mixing vessel;

(b) mixing the charged resin and excipient of (a) to obtain a uniform formulation;

(c) adding a granulating solution to wet the dry mixture of (b);

(d) granulating the mixture until a uniform, wet granulation results;

(e) extruding the wet granulation of (d) through a screen to produce strands;

(f) spheronizing the strands of (e) to produce microcrystalline cellulose free spherical multiparticulates;

(g) collecting and drying the spherical multiparticulates.

5,350,585

EXTRUSION PROCESS FOR THE PRODUCTION OF FREEZEABLE BREADING PRODUCT

Robert D. Sunderland, Sabetha, Kans., assignor to Wenger Manufacturing, Inc., Sabetha, Kans.

Filed May 21, 1993, Ser. No. 65,872

Int. Cl.[5] A21D *13/00*

U.S. Cl. 426—19 4 Claims

1. A method of preparing a breading product, consisting essentially of the steps of:

providing a moisturized breading mixture including a major proportion of wheat flour therein, and individual amounts of active yeast and water,

said mixture-providing step consisting essentially of the steps of first providing starting ingredients consisting essentially of from about 90–98% by weight wheat flour, and from about 0.1–5% by weight of active yeast, and thereafter creating said moisturized breading mixture by passing said starting ingredients into and through a preconditioner while adding moisture thereto to achieve a moisture content of from about 20–35% by weight, and during passage of said starting ingredients and moisture through said preconditioner, subjecting the mixture thereof to a maximum temperature of up to about 100° C. and a retention time in the preconditioner of up to about 3 minutes;

passing the moisturized breading mixture from said preconditioner into and through an extruder to create an extrudate having a wet density of from about 11–16.5 lbs/ft^3, said extruder having an elongated barrel and an axially rotatable screw within said barrel, and an endmost extrusion die, said extrusion being carried out at temperature, pressure and residence time conditions within the extruder barrel during such passage at levels of up to about 250° F., up to about 400 psi, and from about 10–45 seconds, respectively; and

drying the extrudate to a moisture content of from about 8–12% by weight,

said drying step consisting essentially of the steps of first allowing said extrudate to set in ambient air for a period of from about 5–30 seconds, thereafter shredding the set extrudate, and then subjecting said shredded extrudate to drying air currents having a temperature of from about 160°–250° F. for a period to create a breading having said moisture content and a bulk density of from about 8–19 lbs/ft^3.

5,350,586

BONELESS HAM SUBSTITUTES MADE FROM WHOLE FISH FILLETS

Eric Eckholm, Juneau, Ak., and David Lustig, New Hope, Pa., assignors to Health Sea, Inc., Juneau, Ak.

Filed Mar. 1, 1993, Ser. No. 26,342

Int. Cl.[5] A23L *1/325*

U.S. Cl. 426—105 24 Claims

1. A ham substitute having the flavor, texture, aroma and consistency of a ham product, comprising a shaped mixture of:

whole muscled fish fillets, having pink or red pigmented flesh, which have been prepared by physically separating the muscles of the fish by breaking the interconnecting interstitial tissue between the principal muscle parts to form separated muscle structures; and

a ham curing mixture compressing a nitrite, salt and water;

wherein the ham curing mixture and whole muscled fish fillets have been smoked and cooked and wrapped within a casing or formed into a finished product.

5,350,587

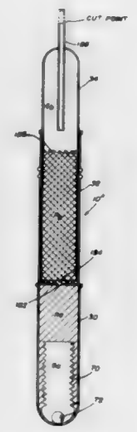
METHOD OF DISPENSING CARBONATED BEVERAGE USING A GAS GENERATOR

George Plester, Essen, Fed. Rep. of Germany, assignor to The Coca-Cola Company, Atlanta, Ga.

Continuation of Ser. No. 785,825, Oct. 31, 1991, abandoned, which is a division of Ser. No. 525,067, May 18, 1990, Pat. No. 5,186,902, which is a continuation-in-part of Ser. No. 423,697, Oct. 17, 1989, Pat. No. 5,102,627, which is a continuation of Ser. No. 108,921, Oct. 15, 1987, abandoned. This application Nov. 29, 1993, Ser. No. 158,496

Int. Cl.[5] B65B *31/02*

U.S. Cl. 426—394 7 Claims



1. A method of dispensing beverage from a container while maintaining a predetermined level of gas pressure in the con-

tainer headspace sufficient to dispense said beverage, comprising the steps of:

filling a beverage container with a predetermined amount of carbonated beverage, said container having a closure including a dispensing device, said dispensing device being coupled to a dispensing tube extending down into the beverage and substantially to the bottom of the container,

inserting a delayed carbonating gas generator in said beverage container, said gas generator comprising a body having at least one partition defining first and second reagent chambers and a first and second reagent separately contained in said first and second chamber, respectively, said partition having at least one opening formed therein and being dimensioned to allow said first reagent to pass into said second chamber and contact said second reagent when there is a pressure differential between said chambers, said first and second reagents chemically reacting to generate carbon dioxide upon contact with each other, and said generator further comprising an initially closed gas conduit which is in gaseous communication with said second chamber and which upon opening allows carbon dioxide that has built up in said second chamber from the reaction of the first and second reagents to vent from said second chamber into the headspace of said container, said first and second reagents being present in an amount sufficient to regenerate sufficient carbon dioxide gas for transfer to said container head space to maintain said predetermined level of gas pressure in the headspace of said container and sufficient to dispense said beverage when said dispensing device is operated to dispense said beverage;

said first chamber further including a pressurized flexible pouch in said first chamber of said carbonating gas generator for applying pressure against the first reagent in said first chamber so that the reagent is forced against said opening and causing the first reagent to go through the opening and mix with the second reagent and generate carbon dioxide which is collected in sad second chamber until the pressure in said second chamber equals that in said first chamber and the reagent transfer and carbon dioxide generation stops;

opening said conduit at the time of insertion of said gas generator into said container to permit gaseous communication between said generator and said container and allowing carbon dioxide gas generated in said second chamber to pass into the container headspace;

closing said container with said closure including said dispensing device to enclose both said carbonated beverage and said gas generator and said headspace containing said predetermined level of gas pressure; and

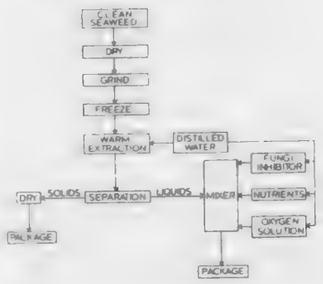
thereafter dispensing beverage from said container through said dispensing device which causes the loss of carbon dioxide and the reduction of gas pressure in the headspace of the container and replenishing said predetermined level of gas pressure in said headspace by regenerating additional carbon dioxide in said second chamber when said pressure differential between said chambers brought on by the reduction of gas pressure in the headspace due to the loss of gas therefrom during dispensing causes venting of carbon dioxide out of the second chamber and into the container headspace and forces the transfer of said first reagent through said at least one opening and into contact with the second reagent in said second chamber, said transfer continuing until equilibrium gas pressure between the chambers is reestablished after the amount of carbon dioxide gas lost during dispensing from the headspace of the container is replenished to said predetermined level of gas pressure, said replenishing step to reestablish said predetermined level of gas pressure in said headspace reoccur during subsequent beverage dispensing operations.

5,350,588

FEED AND WATER ADDITIVE AND METHOD OF MAKING SAME

William E. Campbell, Morehead City, N.C., assignor to Aqua-10 Corporation, Beaufort, N.C.

Division of Ser. No. 769,930, Sep. 30, 1991, Pat. No. 5,229,118.
This application Jan. 12, 1993, Ser. No. 3,529
Int. Cl.[5] A23L *1/20*
U.S. Cl. 426—431 7 Claims



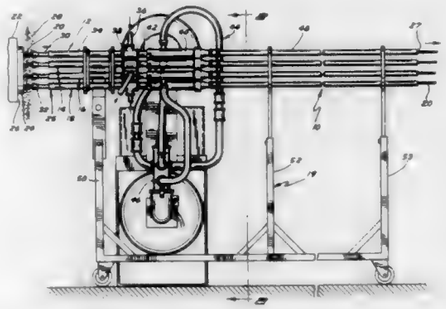
1. A method of keeping Salmonella cells from attaching to intestinal cell walls of poultry, comprising exposing the cell walls to an extract of seaweed which has been extracted by a process including about 48–200 hours of agitation of a warm aqueous seaweed slurry at a temperature between 100° to 170° F., and to which extract a peroxide component and aloe have been added.

5,350,589

PNEUMATIC CEREAL ROPE CONVEYING AND CONDITIONING METHOD

James N. Weinstein, Minneapolis, and Craig E. Zimmermann, Waconia, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Mar. 29, 1993, Ser. No. 37,699
Int. Cl.[5] A21D *6/00*
U.S. Cl. 426—496 10 Claims



1. A method for pneumatically conveying and conditioning a cooked dough rope, comprising the steps of:

A. providing a continuous cooked cereal dough rope having about 12% to 30% moisture,
a temperature of about 212° F. to 270° F. (100° to 132° C.),
a linear velocity of about 50 to 250 m/min., and
a diameter of about 0.10 to 1.50 in.;

B. continuously pneumatically conveying the dough rope to a piece forming apparatus; and

C. forming the rope into individual shaped and sized pieces.

5,350,590

PROTEIN FAT REPLACER AND METHOD OF MANUFACTURE THEREOF

Anthony J. McCarthy, Janesville, and Jack W. Maegli, Beloit, both of Wis., assignors to Beatreme Foods Inc., Beloit, Wis.

Filed Dec. 15, 1992, Ser. No. 990,610
Int. Cl.[5] A21D *13/08;* A23L *2/00;* A23C *21/00*
U.S. Cl. 426—549 45 Claims

1. A water-dispersible, heat-stable fat replacer composition for foods, comprising co-formed agglomerates of at least partially denatured whey protein and desolubilized casein, wherein the mean particle size of the agglomerates is about 0.5 μm to about 20 μm.

5,350,591

ADDITIVE FOR FOAMING COFFEE

Silvia T. Canton, North Bergen, N.J., assignor to Guantanamo Bay, Inc., Ridgewood, N.J.

Filed Sep. 11, 1992, Ser. No. 944,296
Int. Cl.[5] A23F *5/00;* A23L *2/38*
U.S. Cl. 426—564 20 Claims

1. A food additive in the form of a dry powdered mixture usable with a hot coffee beverage for forming a foamed head thereon comprising:

a sugar forming 85 to 94% by weight of said mixture;

a food-grade starch forming 3 to 7% by weight of said mixture, for enabling starch gel skin formation over said foamed head;

sodium bicarbonate forming 2 to 4% by weight of said mixture;

a two-component releasing agent forming 1 to 3% by weight of said mixture such that the total of sodium bicarbonate and said two-component releasing agent aggregates no more than 5% by weight of said mixture;

said food additive, upon addition of a predetermined amount thereof to a hot cup of coffee, forming a foamed head thereon with a starch gel skin thereover without affecting the flavor and aroma of the coffee.

5,350,592

METHOD OF STABILIZING VEGETABLE PRODUCTS IN A RETORT-PROCESSED CHEESE AND VEGETABLE PRODUCT

David F. Duval, Arlington, Tex.; Kim C. Kruhmar, Moorpark, Calif., and Charles E. Ratcliff, Bedford, Tex., assignors to Recot, Inc., Plano, Tex.

Continuation of Ser. No. 940,739, Sep. 8, 1992, abandoned, which is a continuation of Ser. No. 691,484, Apr. 25, 1991, abandoned. This application May 5, 1993, Ser. No. 56,770
Int. Cl.[5] A23C *19/09, 19/10*
U.S. Cl. 426—582 19 Claims

1. A method for producing a stable cheese-based mixture containing vegetable matter comprising:

(a) contacting acidic vegetable matter with a buffer solution and allowing the vegetable matter to equilibrate with the buffer so as to provide a pH-adjusted vegetable matter having a pH of about 5.5 or higher;

(b) mixing the pH-adjusted vegetable matter with a retort-stable low cheese content, low acid cheese base composition comprising about 5.0% to about 25% by weight of natural cheese, the remainder of the cheese base composition comprising starch, fat and water, said cheese base composition comprising less than about 1% by weight of reducing sugar and less than 40% by weight of total solids and being formulated without added gums, whereby said cheese base composition, when packaged in sealed glass jars, is stable to retort heating at a temperature about 250° F.; and (c) heat sterilizing the mixture of cheese base composition and pH-adjusted vegetable matter.

5,350,593

DIETARY FIBER DERIVED FROM TAPIOCA AND PROCESS THEREFOR

Norman L. LaCourse, Indianapolis, Ind.; Karen Chicalo, Marlton, N.J.; James P. Zallie, Hillsborough, N.J., and Paul A. Altieri, Belle Mead, N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation of Ser. No. 812,559, Dec. 23, 1991, abandoned.
This application Nov. 23, 1993, Ser. No. 157,489
Int. Cl.[5] A23L *1/0522*
U.S. Cl. 426—615 15 Claims

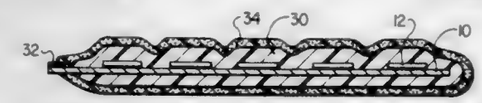
1. A dietary fiber of tapioca origin, comprising on a dry solids basis, at least 70% total dietary fiber, of which at least 12% is soluble dietary fiber, and less than 15% starch, wherein the dietary fiber has a water-holding capacity of at least 2.5 and a viscosity of at least 100 B.U. in a 5% aqueous solution.

5,350,594

CONFORMALLY COATED FARADAY CAGE

Greg R. Unruh, Amarillo, Tex., assignor to Tech Spray, Inc., Amarillo, Tex.

Filed Jan. 25, 1993, Ser. No. 8,202
Int. Cl.[5] C23C *26/00;* B05D *1/00*
U.S. Cl. 427—96 11 Claims



1. A method of coating an electronic device, comprising the steps of:

(a) applying a non-conductive conformal layer substantially covering said electronic device; and

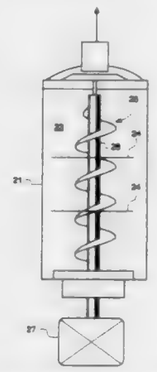
(b) applying a conductive conformal layer substantially covering said non-conductive conformal layer, wherein said conductive conformal layer is formed by addition of a conductive additive to a material of substantially the same composition as a material used to form said non-conductive conformal layer.

5,350,595

METHOD FOR CONTINUOUS MANUFACTURE OF PROCESS CHEESE-TYPE PRODUCTS

Thomas M. Hockenberry, Evanston, and Anthony J. Mack, Arlington Heights, both of Ill., assignors to Kraft General Foods, Inc., Northfield, Ill.

Continuation of Ser. No. 882,515, May 13, 1992, abandoned.
This application Dec. 17, 1993, Ser. No. 169,746
Int. Cl.[5] A23C *19/08*
U.S. Cl. 426—582 11 Claims



1. A method for manufacture of a process cheese-type formulation comprising:

(a) providing a flowing stream of a process cheese-type formulation;

(b) injecting steam into said flowing stream; and

(c) subjecting said flowing stream to a mixing process to uniformly distribute said injected steam throughout said

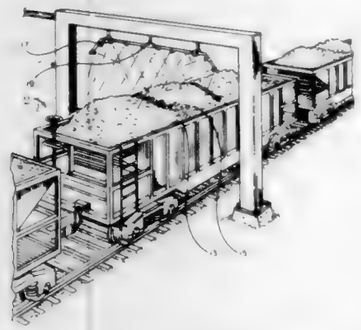
flowing stream, said mixing being accomplished by passing said flowing stream upwardly through a vertically oriented mixing chamber having a plurality of mixing sections whereby said flowing stream passes through each mixing section, each of said sections having means for imparting forward movement and shear to said flowing stream, said mixing chamber being an auger type conveyor divided into at least two mixing sections by affixing at least one circular baffle plate to the shaft of said conveyor, the residence time distribution of said flowing stream through said auger conveyor being such that no more than about 5% of the process cheese-type formulation passes through the mixing chamber in less than about 0.25 of the mean residence time of the flowing stream in the mixing chamber and at least about 95% of the process cheese-type formulation passes through the mixing chamber within about two mean residence times of the flowing stream in the mixing chamber.

5,350,596

METHOD OF CAPPING PARTICULATE MATERIALS

Daniel D. Walker, Jr., Henderson, Nev., assignor to Chemical Lime Company, Fort Worth, Tex.

Filed Dec. 8, 1992, Ser. No. 988,300
The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.
Int. Cl.[5] B05D *7/00*
U.S. Cl. 427—154 10 Claims



1. A method of capping a particulate material being transported within a container having at least one opening therein which provides an exposed surface of the particulate material which tends to become airborne due to the influence of environmental factors including wind and vibration, the method comprising the steps of:

preparing an initially liquid slurry by mixing together lime, a pozzolanic component, a sulfur containing component, a fibrous component and water;

applying the initially liquid slurry to the exposed surface of the particulate material while the particulate material is located within the transport container; and

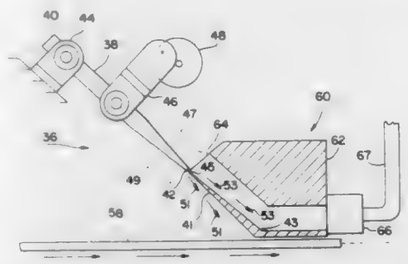
allowing the initially liquid slurry to harden to a solid mass which substantially covers the exposed surface to be capped.

5,350,597

METHOD FOR INTERMITTENTLY APPLYING PARTICULATE POWDER MATERIAL TO A FIBROUS SUBSTRATE

Kenneth A. Pelley, Hopewell, N.J., assignor to McNeil-PPC, Inc., Milltown, N.J.

Division of Ser. No. 806,954, Dec. 12, 1991, Pat. No. 5,213,817.
This application Feb. 18, 1993, Ser. No. 19,405
Int. Cl.[5] B05D *1/12*
U.S. Cl. 427—197 5 Claims



1. A method of applying particulate powder material to a fibrous substrate comprising the steps of:

moving said fibrous substrate in a horizontal path at a rate;

from a supply of particulate powder material, feeding a metered quantity of particulate powder material into an outlet of a feed hopper;

forming a continuous stream of said particulate powder material at said outlet of said feed hopper and transporting said continuous stream through a nozzle for ejection onto said fibrous substrate;

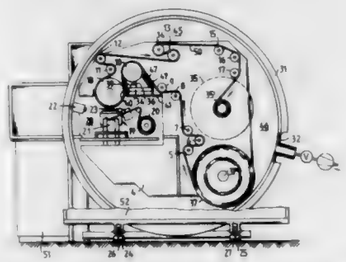
separating said continuous stream of particulate powder material exiting said nozzle into a first and a second intermittent stream of particulate powder material such that said first intermittent stream of particulate powder material is applied to said moving fibrous substrate at said rate and at a location of said fibrous substrate to form a layer of particulate powder material within a portion of said fibrous substrate.

5,350,598

APPARATUS AND METHOD FOR SELECTIVELY COATING A SUBSTRATE IN STRIP FORM

Siegfried Kleyer, Hainburg, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Dec. 13, 1993, Ser. No. 166,456
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1993, 4310085
Int. Cl.[5] C23C *16/04*
U.S. Cl. 427—255.5 13 Claims



9. Method for selectively coating a web, comprising

providing a chamber,

providing a rotatable drum having a cylindrical surface which is partially enclosed by said chamber and partially exposed from said chamber, said surface having a pattern of depressions,

exposing said partially enclosed surface in said chamber to a vaporized separating agent,

rotating said drum so that said surface has a surface speed,

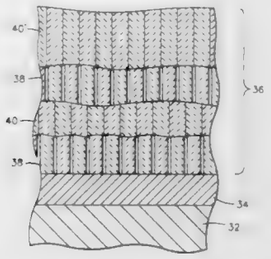
moving a web past said partially exposed surface synchrously with said surface speed so that vaporized separating agent condenses on selective areas of said web corresponding to said depressions.

5,350,599

EROSION-RESISTANT THERMAL BARRIER COATING

David V. Rigney, Cincinnati; Robert W. Bruce, and Antonio F. Maricocchi, both of Loveland, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 27, 1992, Ser. No. 966,911
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—255.7 8 Claims



1. A method for preparing an article protected by a thermal barrier coating system, comprising the steps of:

providing a substrate having an outer surface;

placing the substrate on a rotating stage adjacent a deposition source;

depositing the coating system comprising a ceramic thermal barrier coating upon the substrate surface from the deposition source by

rotating the substrate at a first rotational speed so that deposition of the ceramic coating from the deposition source continues for a period of time on a particular area of the substrate while the particular area is in a line-of-sight with the deposition source, and so that deposition is interrupted while the particular area is out of the line-of-sight with the deposition source, so that the particular area is cooler when out of the line-of-sight, and,

simultaneously with the rotating, depositing the ceramic from the deposition source as a first region on the substrate surface, and

slowing the rotating to a second rotational speed, and, while the rotating is slowed, depositing the ceramic from the deposition source overlying the first region.

5,350,600

APPARATUS FOR APPLYING A VISCOUS LIQUID MATERIAL AND METHOD OF CONTROLLING APPLICATION THEREOF

Yoshimichi Kubota, Tokyo, Japan, assignor to Three Bond Co., Ltd., Tokyo, Japan

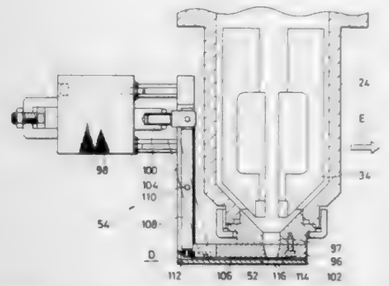
Filed Aug. 11, 1992, Ser. No. 928,271
Claims priority, application Japan, Sep. 9, 1991, 3-228936
Int. Cl.[5] B05D *5/00*; B05B *3/00*
U.S. Cl. 427—256 15 Claims

12. A method of applying a viscous liquid material to a predetermined closed track on a substantially horizontal underlying plane, using an apparatus comprising a nozzle having a port for discharging said viscous liquid material and a shutter member shiftably arranged at said port for opening and closing said port, comprising said steps of:

disposing said nozzle above said underlying plane with said port directed downwards along a vertical axis;

opening said port of said nozzle to continuously discharge a stream of said viscous liquid material from said port, said stream having an initial end;

moving said nozzle so as to trace said closed track with said stream of viscous liquid material; and



closing said port by shifting said shutter member to interrupt said stream of said viscous liquid material to form a terminal end so that said terminal end overlaps said initial end of said stream, wherein said shutter member is shifted in opposite directions perpendicular to said axis and parallel to said track between said first and second positions.

5,350,601

PROCESS FOR MAKING AND USING POLYMERIC FILM COATED WITH PRIMER COATING FOR SILICONE RELEASE APPLICATIONS

Edwin C. Culbertson, Greer, and Grover L. Farrar, Greenville, both of S.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Nov. 6, 1991, Ser. No. 788,658
Int. Cl.[5] B05D *1/36*
U.S. Cl. 427—412.1 27 Claims

12. A process for bonding a silicone release coating to a polymeric film, comprising:

a) priming a polymeric film with an aqueous-based primer coating, said primer coating comprising, before dilution:

i) from 25 to 75% by weight of a glycidoxy silane; and

ii) from 75 to 25% by weight of a copolyester mixture, said copolyester mixture comprising:

a) from about 40 to 98 mol percent isophthalic acid;

b) from about 0 to about 50 mol percent of at least one aliphatic dicarboxylic acid;

c) from about 2 to about 20 mol percent of at least one sulfomonomer containing a sulfonate group attached to a dicarboxylic nucleus;

d) about 100 mol percent of glycol having from about 2 to 11 carbon atoms;

b) drying said primer coating on said polymeric film thereby forming a dried primed film; and

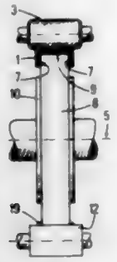
c) coating said dried primed film with a silicone release composition such that it bonds to said dried primed film, said coating applied at an effective amount to prevent an adhesive backed article from adhering to said polymeric film.

5,350,602

METHOD AND DEVICE FOR SIZING A SHAPED ELEMENT

Pierre Groult, deceased, late of Etrechy by Josette Groult, Therese Groult, Maria-Santa Groult, Vanina Groult, Henri Groult, Barthelemy Groult, heirs , and Michel Huvey, Bougival, both of France, assignors to Institut Francias du Petrole, Rueil Malmaison Cedex, France

Continuation of Ser. No. 201,447, Jun. 2, 1988, abandoned. This application Aug. 31, 1992, Ser. No. 937,154
Claims priority, application France, Jun. 2, 1987, 87 07724
Int. Cl.[5] B05D *1/28*
U.S. Cl. 427—428 1 Claim



1. A process for sizing a profiled elongated element having a longitudinal axis, a bottom surface, and two lateral surfaces parallel to said longitudinal axis and disposed substantially perpendicular to the bottom surface, the method comprising the steps of:

providing a wheel having an axis, an outer circumferential surface and at least two ring-shaped surfaces, substantially perpendicular to the axis of the wheel,

moving said profiled elongated element relative to the wheel along a plane parallel to said longitudinal axis of said profiled elongated element,

coating at least the circumferential surface of the wheel with a sizing, and

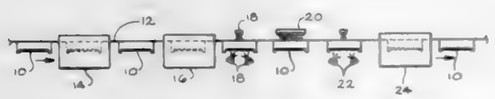
applying the sizing on the profiled elongated element by transferring the sizing from the outer circumferential surface of said wheel to said bottom surface and to the respective lateral surfaces of the profiled elongated element.

5,350,603

METHOD FOR PAINTING WINDOW LINEAL MEMBERS

Roger A. McFarland, Newark, Ohio, and Gordon P. Armstrong, Sugarloaf, Pa., assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

Filed May 15, 1992, Ser. No. 884,357
Int. Cl.[5] B05D *1/04*
U.S. Cl. 427—470 22 Claims



1. The method for electrostatically painting a plastic elongated substrate comprising heating the surface of the elongated substrate to a temperature greater than about 130° F., coating the elongated substrate with an aqueous conductive solution, drying the elongated substrate, electrostatically painting the elongated substrate, and curing the paint on the elongated substrate.

5,350,604

PHOTOCURABLE COMPOSITIONS OF POLYINDANE AND 1,3-DIISOPROPENYLBENZENE, AND COATING PROCESS

James V. Crivello, Clifton Park, N.Y., assignor to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Dec. 9, 1992, Ser. No. 988,218
Int. Cl.[5] B05D *1/26, 3/12;* C08F *12/34*
U.S. Cl. 427—512 7 Claims

1. A composition for coating comprising a mixture of:

(a) from 10 to 25 parts by weight of a polyindane;

(b) from 75 to 150 parts by weight of 1,3-diisopropenylbenzne; and

(c) from 0.05 to 5.0 mole percent, based on said 1,3-diisopropenylbenzene, of a cationic photopolymerization initiator.

5. A process for coating a substrate comprising:

(a) applying a composition according to claim 5, wherein the polyindance is poly(m-indane), to said substrate; and

(b) polymerizing said mixture to provide a coating having a glass transition temperature greater than 300° C.

5,350,605

PROCESS FOR THE PREPARATION OF AN OPTICAL STRUCTURE AND OPTICAL STRUCTURE OBTAINED THEREBY

Jean-Christophe Rostaing, Versailles, and Francois Coeuret, Guyancourt, both of France, assignors to l'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Continuation-in-part of Ser. No. 897,625, Jun. 12, 1992, abandoned. This application Nov. 8, 1993, Ser. No. 148,422
Claims priority, application France, Jun. 12, 1991, 91 07140
Int. Cl.[5] B05D *5/06*
U.S. Cl. 427—536 15 Claims

1. A process for producing an optical structure comprising a silicon-based coating on an optical polymeric substrate, comprising the following consecutive steps:

(a) plasma-activating a surface of the substrate with plasma based upon a gaseous mixture containing argon to form an activated surface;

(b) depositing a first layer of SiO_2 onto the activated surface by a plasma enhanced chemical vapor deposition technique from silane and oxygen to form a first layer having a thickness of from about 2 to 5 microns;

(c) coating said first layer by a plasma enhanced chemical vapor deposition technique while the substrate is subjected to radio-frequency biasing with a second layer formed of a silicon nitride.

5,350,606

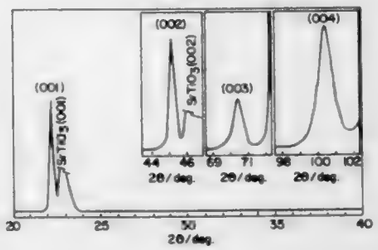
SINGLE CRYSTAL FERROELECTRIC BARIUM TITANATE FILMS

Toshio Takada; Takahito Terashima; Kenji Iijima; Kazunuki Yamamoto; Kazuto Hirata, all of Kyoto, and Yoshichika Bando, Shiga, all of Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Osaka; Nippon Steel Corporation, Tokyo; Nec Corporation, Tokyo and Seisan Kaihatsu Kagaku Kenkyusho, Kyoto, all of Japan

Division of Ser. No. 721,829, Jun. 26, 1991, which is a continuation-in-part of Ser. No. 500,247, Mar. 27, 1990, abandoned. This application Jun. 9, 1993, Ser. No. 74,159
Claims priority, application Japan, Mar. 30, 1989, 1-80700
Int. Cl.[5] B05D *3/06;* C23C *16/00, 14/00*
U.S. Cl. 427—564 9 Claims

1. A method for producing a substantially single crystal ferroelectric thin film having a thickness of not larger than 1 μm, which method comprises evaporating Ba and Ti in an atomic ratio of 1:1 from discrete evaporation sources of Ba and

Ti to deposit the evaporated Ba and Ti on a substrate in a vacuum deposition vessel while supplying oxygen gas in an



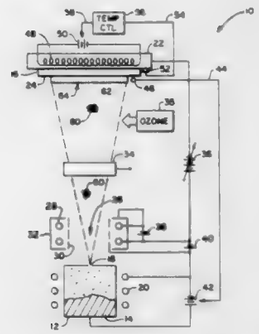
amount sufficient to maintain oxygen pressure within the vessel between 10^{-5} and 10^{-3} Torr.

5,350,607

IONIZED CLUSTER BEAM DEPOSITION OF SAPPHIRE

Scott M. Tyson; Richard Y. Kwor, and Leonard L. Levenson, all of Colorado Springs, Colo., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 2, 1992, Ser. No. 955,607
Int. Cl.[5] C23C *16/48*
U.S. Cl. 427—566 25 Claims



1. A method of depositing a layer of sapphire on a surface of a substrate, comprising the steps of:

depositing sapphire in a crucible having a nozzle;

positioning said crucible in a vacuum chamber having a first pressure level;

positioning said substrate in said vacuum chamber;

heating said crucible to a first temperature to cause said sapphire to be vaporized at a second pressure level within said crucible, said second pressure level being greater in magnitude than said first pressure level, such that said vapor is ejected through said nozzle, thereby forming clusters of sapphire by adiabatic expansion, said sapphire clusters being formed in said vacuum chamber outside of said crucible in the vicinity of said nozzle;

bombarding said sapphire clusters with electrons, thereby resulting in some number of said sapphire clusters being partially ionized along with some number of sapphire clusters remaining non-ionized; and

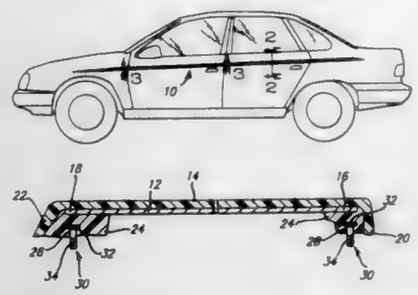
accelerating both said ionized and non-ionized sapphire clusters toward a surface of said substrate to form a deposited sapphire film thereon of a thickness.

5,350,608

DECORATIVE TRIM WITH ONE-PIECE PLASTIC COVER

Robert A. Zoller, Bay Village, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Filed Apr. 13, 1993, Ser. No. 47,260
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—31 14 Claims



1. A trim strip, comprising:

a metallic core member; and

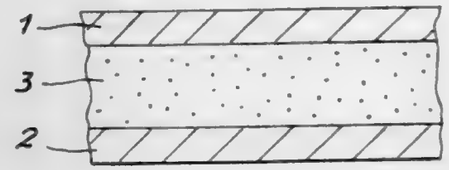
a plastic layer bonded to at least one side of said metallic core member, said plastic layer including end portions which extend beyond and at least partially overlap the ends of said metallic core, said end portions including plastic inserts which include means for attaching said trim strip to a substrate.

5,350,609

INSULATING MONOLITHIC REFRACTORY MATERIAL, MANUFACTURING PROCESS AND ARTICLE ACCORDING TO THE PROCESS

Jean L. Bouchemousse, Ferriere la Grande, France, assignor to Vesuvius Crucible Company, Pittsburgh, Pa.

Filed Mar. 13, 1992, Ser. No. 851,049
Int. Cl.[5] B32B *1/08*
U.S. Cl. 428—34.4 3 Claims



1. A refractory article for use in conveying molten metal comprising at least one molten metal contacting layer of a dense refractory material comprising fused silica having a thermal conductivity of about 0.7 W/mK at 700° C. and a layer of refractory foam material comprising fused silica having a thermal conductivity of less than about 0.2 W/mK at 700° C. bonded by a fired ceramic bond to said dense refractory layer.

5,350,610

DAMPING MATERIAL

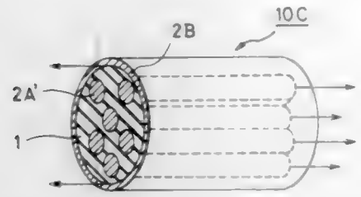
Naruhiko Mashita; Akihiko Ogino, and Yoshihide Fukahori, all of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 719,016, Jun. 21, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 997,140
Claims priority, application Japan, Jul. 2, 1990, 2-175124
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—35.7 3 Claims

1. A damping device, comprising:

a damping material including a bitumen, and 3–30% by

weight of a thermoplastic elastomer containing a crystalline polymer block having melting point of higher than 40° C. and an amorphous polymer block having glass transition temperature of 0° C. or lower, ratio of said crystalline polymer block to said amorphous polymer block being 10:90 to 80:20, said damping material having a dynamic loss tangent of 0.5 to 1.5 in 10% deformation under a condition of 25° C. and 1 Hz and a static breaking elongation of from 50 to 1500% under a condition of 25° C. and 200 mm/min, and



at least one hard material having one portion firmly attached to the damping material and the other portion attached to a supporting part, said damping material damping vibration transferred through the hard material,

wherein said hard material is formed of at least one hollow member and at least one columnar hard materials situated in the hollow member, said damping material being filled in a space in the hollow member to damp vibration applied to one of the hollow member and the columnar hard material.

5,350,611

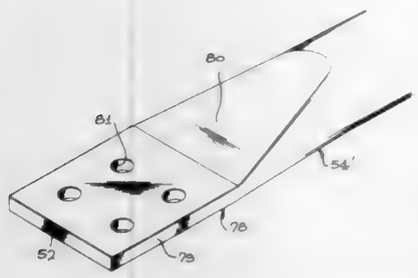
INTEGRAL END ATTACHMENT FITTING

Walter M. Franklin, III, Canyon Country; Matthew G. Swain, LaCrescenta, and Bryan W. Kreimendahl, Van Nuys, all of Calif., assignors to Lockheed Corporation, Calabasas, Calif.

Division of Ser. No. 803,805, Dec. 9, 1991, Pat. No. 5,217,555. This application Feb. 18, 1993, Ser. No. 19,250

Int. Cl.[5] B29D *22/00*

U.S. Cl. 428—36.91 **11 Claims**



1. A hollow tubular member having an integral attachment end fitting manufactured by the method comprising the steps of:

providing a first hollow tubular member made of a composite material having filamentary reinforcing material in a thermoplastic resin matrix;

providing a support member adapted to fit within said first tubular member;

installing said support member within said first tubular member a first specific distance from one end thereof and joining thereto;

providing a second hollow tubular member made of composite material having filamentary reinforcing material in a thermoplastic resin matrix, said second tubular member having a second specific length at least as long as said first specific length of said first tubular member and adapted to fit therein;

installing said second tubular member within said one end of said first tubular member such that it abuts said support member;

providing an inflatable bladder having an inflation tube attached thereto;

installing said inflatable bladder within said first and second tubular members such that it abuts said support member and said inflation tube extends out said one end;

pressurizing said bladder causing it to expand and apply pressure to said first and second tubular members;

heating said second tubular member and said specific length of said first tubular member to forming temperatures; and

forming at least a portion of both said second tubular member and said specific length of said first tubular member into a compacted solid flat rectangular cross-sectional shaped attachment end fitting.

5,350,612

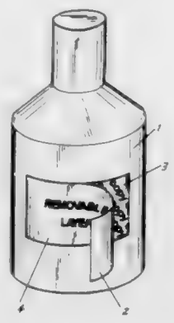
WET-STRENGTH REMOVABLE COUPON

Michael D. Stern, Medford, N.J.; Stephen G. Dudley, Coatesville, and Dale D. Reschenberg, Langhorne, both of Pa., assignors to Beckett Corporation, Pa.

Filed Aug. 4, 1992, Ser. No. 924,519

Int. Cl.[5] G09F *3/00*

U.S. Cl. 428—40 **6 Claims**



1. A multi-ply, wet-strength, removable, point-of-purchase coupon structure, comprising:

(a) a base sheet comprising a printable water-resistant, wet-strength paper having an upper side and an underside;

(b) a removable top sheet provided with printed matter on its upper side; and

(c) a non-tacky adhesive disposed between the base sheet and the top sheet for releasably adhering the top sheet to the upper side of the base sheet, the non-tacky adhesive preventing the top sheet from adhering to other objects when the top sheet is removed, the non-tacky adhesive comprising:

(i) a bonding agent containing 50–60% solids by weight and comprising 80% microcrystalline wax dispersion with a melting point of 140°–150° F., 10% inert filler extender and 10% acrylated emulsion with a glass transition temperature of −40° C.; and

(ii) a release coating disposed on the upper side of the base sheet between the bonding agent and the base sheet.

5,350,613

SAFETY WINDOWPANES MADE OF LAMINATED GLASS; PROCESSES FOR THEIR MANUFACTURE

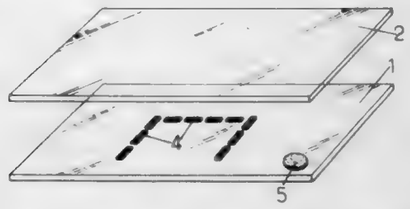
Jean-Pierre Deprez, Meyzieu, and Christian de la Rochefoucauld, Lyons, both of France, assignors to Vertal Nord Est, France

Filed Mar. 23, 1993, Ser. No. 36,030

Claims priority, application France, Mar. 26, 1992, 92 03663

Int. Cl.[5] B32B *17/10*

U.S. Cl. 428—43 **10 Claims**



1. A laminated glass safety windowpane comprising two glass layers selected from annealed, hardened or quenched glass bonded to each other by an insert sheet of synthetic material selected from the group consisting of polyvinylbutyral and ultraviolet-polymerizable transparent acrylic resin to the opposite faces of which said glasses are adhesively attached over a complete surface thereof, in which said sheet comprises in said material a line of discontinuity in mechanical strength of relatively small width, said line defining an outline of an opening in the surface area of said insert sheet which is capable of rupturing and providing an emergency exit upon breakage of said glass layers of said window pane.

5,350,614

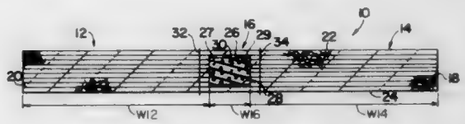
ALL COMPOSITE ARTICLE OF MANUFACTURE INCLUDING FIRST AND SECOND COMPOSITE MEMBERS JOINED BY A COMPOSITE HINGE

Vance A. Chase, Oxford, and Thomas S. Scarpati, Madison, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 735,501, Jul. 25, 1991. This application Mar. 3, 1993, Ser. No. 70,032

Int. Cl.[5] B32B *3/10, 3/14, 7/00*

U.S. Cl. 428—53 **14 Claims**



1. An article of manufacture comprising:

a. A first rigid composite member comprising a plurality of plies of high tensile strength fibers layed-up one upon the other and bonded together by a first resin matrix,

b. A second rigid composite member comprising a plurality of plies of high tensile strength fibers laid-up one upon the other and bonded together by a second resin matrix, and

c. A hinge member joining said first and second members in hinge fashion and comprising,

1. At least one hinge ply of high tensile strength fibers extending for at least a portion of the length and width of said first member and forming part thereof within said first resin matrix and further extending for at least a portion of the length and width of such second member and forming part thereof within said second resin matrix and still further including a hinge area extending between said first and second members, the width of the hinge area being determined by the spacing between said first and second members, and

2. A protective material cooperating with the hinge area of said hinge ply to provide flexibility thereto and to prevent the resin from said first and second resin matrices of said first and second members from adhering to the hinge areas of the hinge ply during curing, so as to provide a flexible hinge between said first and second members.

5,350,615

METHOD AND DEVICE FOR PRODUCING REINFORCEMENT ELEMENTS FORMED OF RESISTANT FIBERS

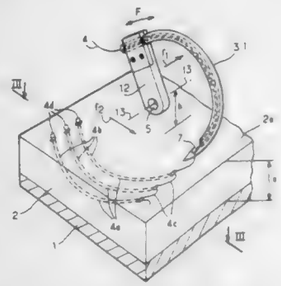
Jean-Louis Darrieux, Medard-en-Jalles, France, assignor to Societe Nationale Industrielle et Aerospatiale, Paris, France

Continuation of Ser. No. 788,587, Nov. 6, 1991, abandoned, which is a division of Ser. No. 646,094, Jan. 25, 1991, Pat. No. 5,095,833. This application Apr. 14, 1993, Ser. No. 48,080

Claims priority, application France, Feb. 26, 1990, 90 02352

Int. Cl.[5] B32B *5/22, 7/08;* **D05B** *93/00*

U.S. Cl. 428—102 **3 Claims**



1. Reinforcement element formed of fibers distributed in three dimensions, said reinforcement element comprising a substrate formed of such fibers crossed in at least two directions, and including curved fiber segments disposed in the thickness of said substrate, said segments being produced by stitching a continuous fiber in said substrate.

5,350,616

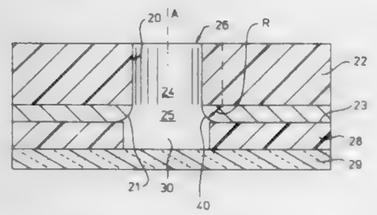
COMPOSITE ORIFICE PLATE FOR INK JET PRINTER AND METHOD FOR THE MANUFACTURE THEREOF

Alfred I. Pan, Sunnyvale, Calif., and Ellen R. Tappon, Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 16, 1993, Ser. No. 78,691

Int. Cl.[5] B32B *3/10*

U.S. Cl. 428—131 **10 Claims**



1. A composite orifice plate for a printer such as a thermal ink jet printer, comprising:

a first layer of non-wettable polymer material;

a second layer of wettable material joined to the first layer;

a barrier layer on the second layer; and

at least one orifice extending through the first layer and at least one opening extending through the second layer, the

orifice and the opening being in fluid communication and aligned in an axial direction with an ink outlet located on a surface of the first layer facing away from the second layer and an ink inlet located on a surface of the second layer facing away from the first layer, the opening being formed by converging sidewalls which converge towards the orifice;

such that the barrier layer has a surface separated from the converging sidewalls of the second layer by a dead space, which is small enough to prevent static bubbles in the ink for printing from being trapped therein.

5,350,617

WATER SHIELDABLE MATERIAL AND CABLE USING THE SAME

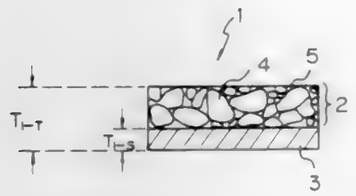
Noriaki Fujisawa, 488-53, Kominami-cho, Yamatokoriyama-shi, Nara 639-11; Yasuro Sakai, 11-2-411, Kitayanagawa-cho, Takatsuki-shi, Osaka 569; Tsuneo Kuwabara, 94, Nagasawa, Yokosuka-shi, Kanagawa 239, and Shigezou Kukita, 510, Tsukui, Yokosuka-shi, Kanagawa 239, all of Japan

PCT No. PCT/JP91/00156, § 371 Date Dec. 7, 1992, § 102(e) Date Dec. 7, 1992, PCT Pub. No. WO92/13715, PCT Pub. Date Aug. 20, 1992

PCT Filed Feb. 8, 1991, Ser. No. 955,871

Int. Cl.[5] B32B *25/10, 20/00*

U.S. Cl. 428—141 **9 Claims**



1. A water shieldable material comprising a solid substrate and a coating layer arranged on the solid substrate and comprising a high water absorption polymer particle having a water absorption magnification of ten times or more and a rubber group binder, characterized in that

(a) the density of the coating layer is between 0.65 g/cm^3 and 1.00 g/cm^3,

(b) the ratio of the total weight of the high water absorption polymer particle and the rubber group binder in the coating layer is 90% by weight or more,

(c) the weight of the high water absorption polymer particle and the rubber group binder being the total weight of polymer and binder so that the weight of the high water absorption polymer particle is between 50% by weight and 90% by weight of the total weight of polymer and binder and the weight ratio of the rubber group binder is between 10% by weight and 50% by weight of the total weight of polymer and binder, and

(d) 55% to 95% by weight of the high water absorption polymer particles have a diameter of 45 μm to 425 μm.

(e) the dropping away ratio of said high water absorption polymer particle from said water shieldable material based on the total quantity of the high water absorption polymer is 50% weight:

wherein the dropping away ratio is measured after the water shieldable material is immersed in water for 10 minutes.

5,350,618

MAGNETIC MEDIUM COMPRISING A SUBSTRATE HAVING PITS AND GROOVES OF SPECIFIC SHAPES AND DEPTHS

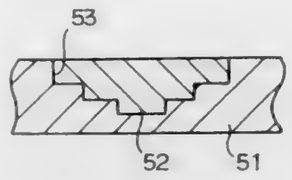
Masayuki Togawa, and Kiyoshi Toyama, both of Gifu, Japan, assignors to Teijin Seiki Co., Ltd., Osaka, Japan

Filed Feb. 26, 1992, Ser. No. 842,057

Claims priority, application Japan, Mar. 1, 1991, 3-034935; May 1, 1991, 3-099354; May 1, 1991, 3-099355

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—156 **8 Claims**



7. A magnetic medium comprising:

a substrate with a pit disposed according to predetermined patterns, said pit comprising at least three grooves adjacent to one another, the depths of said at least three grooves being increased gradually toward a center groove of said at least three grooves; and

hard magnetic substances filling said at least three grooves of said pit, the thicknesses of the hard magnetic substances being increased gradually toward a center substance of said hard magnetic substances, and said hard magnetic substances having been magnetized.

5,350,619

MAT FOR THE COLLECTION OF LIQUID

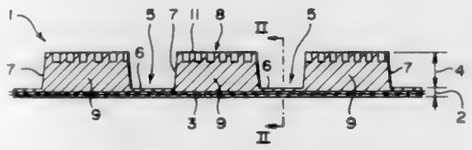
Lars B. Rasmussen, Otterup, Denmark, assignor to A/S Roulunds Fabriker, Odense S., Denmark

Filed Nov. 10, 1992, Ser. No. 949,559

Claims priority, application Denmark, May 14, 1990, 1189/90

Int. Cl.[5] B32B *3/28;* **A47G** *9/06*

U.S. Cl. 428—167 **4 Claims**



1. A mat for collecting deicing fluid during deicing of an aircraft rolled in a predetermined longitudinal direction of travel onto the mat comprising:

a bottom section made from a liquid-tight, flexible material, said bottom section including a pair of longitudinally extending edges that are spaced in a transverse direction of said mat;

an upper section made from a liquid-tight, flexible material, said upper section being formed with a plurality of grooves for drainage of deicing fluid, said grooves being longitudinally spaced and extending transversely across said mat, at least some of said grooves defining discharge outlets that open at said longitudinally extending edges; and

means for stiffening and preventing the mat from bulging, said means for stiffening and preventing bulging including a plurality of longitudinally extending, transversely spaced and substantially parallel steel wires embedded in said bottom section.

5,350,620

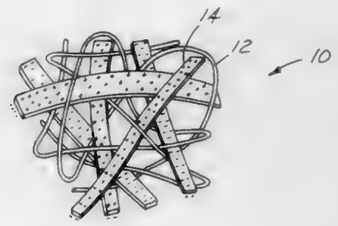
FILTRATION MEDIA COMPRISING NON-CHARGED MELTBLOWN FIBERS AND ELECTRICALLY CHARGED STAPLE FIBERS

Douglas C. Sundet, and Albert H. Fox, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing, Saint Paul, Minn.

Continuation of Ser. No. 436,236, Nov. 14, 1989, abandoned. This application Jan. 24, 1992, Ser. No. 824,994

Int. Cl.[5] B01D *39/02;* **D04H** *1/04, 1/58;* **B32B** *3/28*

U.S. Cl. 428—172 **14 Claims**



1. A web comprising:

(a) a mass of meltblown, non-charged fibers made of polymeric material; and

(b) staple, electrically charged fibers randomly dispersed among the meltblown fibers, wherein the pressure drop through the web is less than about 74.7 pascals (Pa) at 0.91 m/sec air velocity and the value of Quality Factor (Q) is from at least about 0.05 Pa^{-1} to about 5.0 Pa^{-1}, said web having a weight of from 40 g/m^2 to 150 g/m^2.

5,350,621

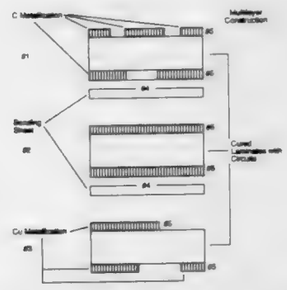
SYSTEM OF ELECTRONIC LAMINATES WITH IMPROVED REGISTRATION PROPERTIES

Donald E. Yuhas, Glen Ellyn; Carol L. Vorres; David P. Groppi, both of Mt. Prospect, and Jiri D. Konicek, Onalaska, all of Ill., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Nov. 30, 1992, Ser. No. 982,797

Int. Cl.[5] B32B *3/00, 7/00*

U.S. Cl. 428—209 **13 Claims**



1. A laminate of a thermosetting polymer reinforced with a woven fabric having a ratio of fiber volume in warp and fill directions of 1/1.08±0.10 said laminate having substantially the same coefficient of thermal expansion in both the warp and fill directions.

5,350,622

MULTILAYER STRUCTURE FOR A PACKAGE FOR SCAVENGING OXYGEN

Drew V. Speer, Columbia; Charles R. Morgan, Brookeville; William P. Roberts, Columbia, all of Md., and Andrew W. VanPutte, Greenville, S.C., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 733,901, Jun. 22, 1991, Pat. No. 5,298,849, which is a continuation-in-part of Ser. No. 679,419, Apr. 2, 1991, abandoned. This application Oct. 1, 1992, Ser. No. 955,099

Int. Cl.[5] B32B *27/18;* **B29D** *22/00*

U.S. Cl. 428—215 **17 Claims**

1. A multilayer structure for a package comprising

(a) a oxygen barrier layer or layers having an oxygen transmission rate less than or equal to 500 cc/(m^2-atm-day) at 25° C., and

(b) an oxygen scavenging layer or layers comprising an oxygen scavenging system consisting essentially of an ethylenically unsaturated hydrocarbon and a transition metal catalyst having a rate of oxygen scavenging in the presence or absence of (a) which is at least 5 cc oxygen per square meter per day at 25° C., and

wherein the multilayer structure is flexible, has a thickness of about 5 to 400 microns, and has an oxygen transmission of less than 0.5 cc O_2/(m^2-day-atm).

5,350,623

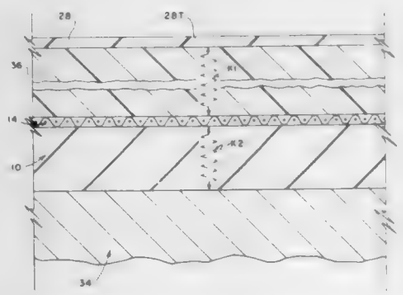
COMPRESSIBLE BLANKET ASSEMBLY

Steven L. Derrick, 12275 High Meadow, Dallas, Tex. 75234

Filed Sep. 21, 1992, Ser. No. 945,480

Int. Cl.[5] B32B *7/02*

U.S. Cl. 428—217 **9 Claims**



1. A blanket assembly for attachment to the blanket cylinder of an offset printing press comprising, in combination:

a compressible blanket having a base carrier layer, a compressible intermediate layer and an ink transfer layer; and,

a cushion layer of compressible material adapted for wrap-around assembly onto the blanket cylinder intermediate the base carrier layer of the compressible blanket and the external surface of the blanket cylinder wherein

the cushion layer has a spring modulus which is substantially less than the spring modulus of the compressible layer and

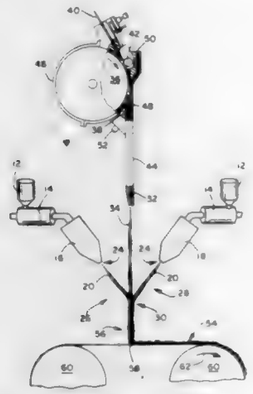
the cushion layer is not attached to, secured to, or otherwise connected to the base carrier layer whereby the compressible blanket effectively floats on the cushion layer permitting radial deflection of the blanket in response to preloading impression pressure and circumferential displacement of the blanket relative to the cylinder in response to misfeed contact.

5,350,624

ABRASION RESISTANT FIBROUS NONWOVEN COMPOSITE STRUCTURE

William A. Georger, Dunwoody, Ga.; Mark F. Jones, Huntersville, N.C.; Thomas J. Kopacz, Omro, Wis., and Gregory A. Zelazoski, Woodstock, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 5, 1992, Ser. No. 956,523
Int. Cl.[5] D04H *1/04*; F15D *1/02*; B32B *3/00*; C11D *17/00*
U.S. Cl. 428—219 10 Claims



1. A moist wipe comprising a fibrous nonwoven composite structure having a matrix of meltblown fibers having a first exterior surface, a second exterior surface, and an interior portion; and

at least one other material integrated into the meltblown fiber matrix so that the concentration of melt blown fibers adjacent each exterior surface of the nonwoven structure is at least about 60 percent, by weight, and the concentration of meltblown fibers in the interior poriton is less than about 40 percent, by weight, said moist wipe containing from about 100 to about 700 dry weight percent liquid.

5,350,625

ABSORBENT ACRYLIC SPUNLACED FABRIC

Robert H. Peterson, and James T. Summers, both of Hendersonville, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 9, 1993, Ser. No. 89,871
Int. Cl.[5] B32B *5/06*
U.S. Cl. 428—219 13 Claims

1. An improved spunlaced water-absorbent reusable fabric suitable for use to absorb fluid, be laundered and reused to absorb fluid again, wherein the improved fabric comprises a mixture of acrylic and synthetic cellulosic fibers and more particularly wherein the improved fabric consists essentially of

about 25 to less than 50 percent, by weight, of crimped acrylic fibers having a dpf of about 0.75 to about 3.0 and a length from about 0.75 to about 3.0 inches, and

about 75 to together than 50 percent of crimped, synthetic, hydrophilic cellulosic fibers having a dpf of about 0.75 to about 3.0 and a length from about 0.75 to about 3.0 inches.

5,350,626

TEXTILE BASE MATERIAL FOR THERMOBONDING INTERLINING COMPRISING IN WEFT YARNS TEXTURIZED BY AIR JET

Pierre Groshens, Peronne, and Fabrice Covet, Roisel, both of France, assignors to Lainiere de Picardie S.A., France

Filed Jun. 17, 1993, Ser. No. 78,620
Claims priority, application France, Jul. 6, 1992, 92 08952
Int. Cl.[5] D03D *15/08*; D04B *1/16*, *1/18*, *1/20*
U.S. Cl. 428—229 6 Claims

1. A base material for thermobonding interlining, constituted by a fabric or a weft knit comprising texturized synthetic yarns, wherein at least the weft of the fabric or of the weft knit is made of synthetic yarns of large voluminosity, obtained by the air-jet texturization technique from at least two multi-filament yarns, namely a first core yarn for 20 to 40% by weight and a second effect yarn for 60 to 80% by weight, the overfeeding of the core yarn being included between 10 and 25% and overfeeding of the effect yarn at least 70%.

5,350,627

COATED WEBS

Speros P. Nemphos, League City, Tex., and Gregory B. Kharas, Wilmette, Ill., assignors to Camelot Technologies, Inc., Leominster, Mass.

Filed Jun. 11, 1993, Ser. No. 75,115
Int. Cl.[5] D04H *1/58*
U.S. Cl. 428—288 33 Claims

1. A web of a cellulosic fiber in which at least a portion of the cellulose fibers are contacted with binder comprising one or more polymers having a molecular weight of greater than 30,000 comprising the residues of one or more monomers of the Formula:

$$—OCR_1R_2(CR_3R_4)_nCO—$$ I

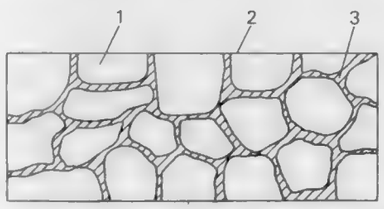
wherein in Formula I R_1, R_2, R_3, and R_4 are independently selected from the group consisting of a hydrogen atom and a C_{1-4} alkyl radical and n is 0 or an integer from 1 to 5.

5,350,628

MAGNETIC SINTERED COMPOSITE MATERIAL

Koichi Kugimiya; Yasuhiro Sugaya; Osamu Inoue; Ken Hirota, and Mitsuo Satomi, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Inc., Osaka, Japan

Division of Ser. No. 535,082, Jun. 8, 1990, Pat. No. 5,238,507. This application Nov. 19, 1992, Ser. No. 978,564
Claims priority, application Japan, Jun. 9, 1989, 1-47906; Jul. 19, 1989, 1-186423; Oct. 26, 1989, 1-280553; Nov. 6, 1989, 1-288357; Mar. 14, 1990, 2-63154
The portion of the term of this patent subsequent to Nov. 19, 2009, has been disclaimed.
Int. Cl.[5] G11B *5/00*; H01F *1/00*
U.S. Cl. 428—307.3 15 Claims



1. A magnetic sintered composite material comprising:

a discrete phase including grains made of a first substance which comprises a magnetic metal or alloy thereof; and

a continuous phase consisting essentially of a dielectric thin coating film of an oxide or nitride of a metal or alloy, said thin coating film being formed on the surface of said grains and having a mean thickness smaller than the mean particle size of said grains,

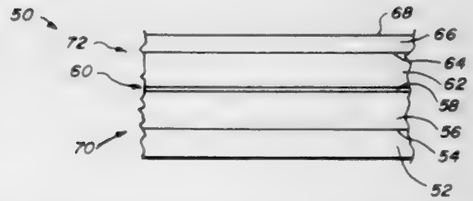
wherein said grains are separated substantially from each other by said thin coating film, said magnetic sintered composite material having an electrical resistivity on the order of at least 10^6 times that of said magnetic metal or alloy thereof, said first substance being an alloy selected from the group consisting of an iron-aluminum, an iron-silicon, an iron-nickel, an iron-nickel-molybdenum, and an iron-silicon-aluminum-cobalt.

5,350,629

MAGNETORESISTIVE DEVICE AND BARRIER FORMATION PROCESS

Yi-Shung Chaug, Boulder; Victor L. Walker, and Nripendra N. Roy, both of Westminster, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Mar. 1, 1993, Ser. No. 22,679
Int. Cl.[5] G11B *5/127*
U.S. Cl. 428—336 4 Claims



1. In a thin film device having at least one aluminum oxide layer and an iron compound layer in an overlying relationship thereto, an improvement in combination therewith comprising:

an aluminum-titanium oxidic compound layer interposed between said aluminum oxide layer and said iron compound layer, wherein said aluminum oxide layer and said aluminum titanium oxide compound layer are chemically different.

5,350,630

REPULPABLE SECURING DEVICES

Steven A. Schreiner, Woodbury; Karen M. Albertson, Eagan; Mary L. Brown, St. Paul; Camille M. Hildebrandt, Stillwater; Lacy M. Hurlocker, White Bear Lake, and Glenn C. Webster, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 719,809, Jun. 24, 1991. This application Aug. 7, 1992, Ser. No. 926,907
Int. Cl.[5] B32B *7/12*; C08F *16/06*
U.S. Cl. 428—343 2 Claims

1. A repulpable pressure sensitive adhesive tape, comprising:

a) a backing of a thermally extruded, longitudinally oriented sheet of plasticized polyvinyl alcohol, said extruded polyvinyl alcohol having a degree of hydrolysis between about 70 and 95% and a degree of crystallinity between about 10 and 45%, and having the property of being repulpable at, at least one temperature between about 0° C. (32° F.) and repulp boiling temperatures, and

b) a repulpable pressure sensitive adhesive on at least one surface of said backing,

wherein said tape has a break tensile strength of at least 8.27×10^7 Newtons/m^2 (12,000 psi).

5,350,631

WATER-BORNE LOW ADHESION BACKSIZE AND RELEASE COATING COMPOSITIONS, METHODS OF MAKING THE COMPOSITIONS, AND SHEET MATERIALS COATED THEREWITH

Chi-Ming Tseng, and Steven S. Kantner, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 732,727, Jul. 18, 1991, Pat. No. 5,225,480, which is a continuation of Ser. No. 496,598, Mar. 21, 1990, abandoned. This application Jul. 1, 1993, Ser. No. 86,323
Int. Cl.[5] B05D *3/02*
U.S. Cl. 428—343 7 Claims

1. A method of preparing a coated sheet material comprising the steps of:

a) forming a mixture comprising the following:

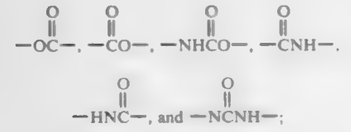
(1) about 5 to about 70 weight percent of a melted free radically polymerizable free radically polymerizable long-chain monomer of the formula

$$C_nH_{2n+1}—P—C_mH_{2m}—X—CR^1=CH_2$$

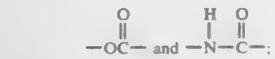
wherein

n is an integer of about 12 to about 20;

Y is a divalent polar linking group selected from the group consisting of



X is a divalent linking group selected from the group consisting of



m is an integer of about 2 to about 10; and

R^1 is selected from the group consisting of —H and —CH_3;

(2) about 30 to about 95 weight percent of deionized water; and

(3) about 0.05 to about 4 weight percent of an emulsifier;

b) homogenizing the mixture in order to form an emulsion;

c) adding to said emulsion about 0.01 to about 1 weight percent of a free radical initiator capable of initiating free radical polymerization of said monomer upon being subjected to a means of initiation;

d) initiating free-radical polymerization by subjecting said emulsion to a means of initiation while agitating said emulsion under inert atmospheric conditions;

e) sustaining said free-radical polymerization until a polymer-containing latex is produced;

f) diluting said latex to at least about 2 weight percent solids by combining said latex with an aqueous phase;

g) coating said diluted latex onto at least a portion of one major surface of a flexible sheet; and

h) evaporating said aqueous phase in order to form a coated sheet material comprising said flexible sheet coated with said polymer.

5,350,632

IMPREGNATED, DIMENSION-STABLE POLYESTER CORD

Bruno Lang, Ballwil, Switzerland, assignor to Rhone-Poulenc Viscosuisse S.A., Emmenbruecke, Switzerland

Continuation-in-part of Ser. No. 710,051, Jun. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 392,137, Aug. 19, 1989, abandoned, which is a division of Ser. No. 259,510, Oct. 14, 1988, Pat. No. 4,883,629, which is a continuation of Ser. No. 870,311, Jun. 3, 1986, abandoned. This application Feb. 12, 1993, Ser. No. 17,632

Claims priority, application Switzerland, Jun. 19, 1985, 2597/85

Int. Cl.[5] C08G *63/18;* D01F *6/62;* B32B *25/00*

U.S. Cl. 428—382 14 Claims

1. Dimension-stable impregnated polyester tire cord comprising at least 95% by weight polyethylene terephthalate and having an intrinsic viscosity of 0.70 dl/g to 0.89 dl/g for undrawn cord, a fineness of at least 1100×2 dtex, a dimension stability coefficient of at least 30'000 cN^2/tex^2, a thermal shrinkage of about 0.8 percent measured at a temperature of 160° C. with 0.1 cN/tex pre-stress and a permanent lengthening of less than 1.5 percent at a tire pressure of 2 bar and a temperature of 100° C., so as to reduce shrinkage during vulcanization and in tires heated in operation and so as to provide a quieter running tire.

5,350,633

THERMOCHROMIC COMPOSITION

Masaaki Sumii, Sakai; Fumiko Sakai, Ikoma, and Yasuyuki Yoshimura, Ibaraki, all of Japan, assignors to Sakura Color Products Corporation, Japan

Filed Aug. 10, 1993, Ser. No. 103,673

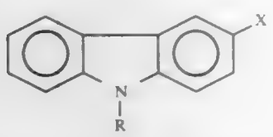
Claims priority, application Japan, Sep. 8, 1992, 4-239574

Int. Cl.[5] B41M *5/128*

U.S. Cl. 428—402.21 19 Claims

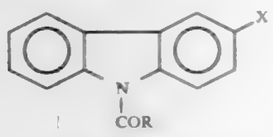
1. A thermochromic composition which comprises:
(1) an electron-donating chromogenic organic compound,
(2) an electron-accepting compound and
(3) at least one desensitizer selected from among carbazole derivatives of the following formulas:

[1]



wherein R is an alkyl group containing 1 to 22 carbon atoms, a phenyl group or a benzyl group and X is a hydrogen atom, a halogen atom, —NH_2, —NO_2 or —CHO;

[2]



wherein R is an alkyl group containing 1 to 22 carbon atoms and X is a hydrogen atom, a halogen atom, —NH_2, —NO_2 or —CHO.

5,350,634

THERMOCHROMIC COMPOSITION

Masaaki Sumii, Sakai; Fumiko Sakai, Ikoma, and Yasuyuki Yoshimura, Ibaraki, all of Japan, assignors to Sakura Color Products Corporation, Japan

Filed Aug. 10, 1993, Ser. No. 103,674

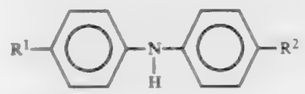
Claims priority, application Japan, Sep. 8, 1992, 4-239575

Int. Cl.[5] B41M *5/128*

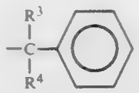
U.S. Cl. 428—402.21 19 Claims

1. A thermochromic composition which comprises:
(1) an electron-donating chromogenic organic compound,
(2) an electron-accepting compound, and
(3) at least one desensitizer selected from among diphenylamine derivatives of the following formula:

[1]



wherein R^1 and R^2 each independently is H, an alkyl group containing 1 to 22 carbon atoms,



in which R^3 and R^4 each independently is H, an alkyl group containing 1 to 4 carbon atoms.

5,350,635

CYANATE RESIN ADHESIVE FOR POLYIMIDE FILM

Richard J. Pokorny, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 22, 1992, Ser. No. 994,693

Int. Cl.[5] C08G *65/34, 59/06;* B32B *27/38*

U.S. Cl. 428—414 25 Claims

1. A method of improving the adhesion of cyanate resin to polyimide film comprising admixing an epoxy resin selected from the group consisting of methyl, ethyl hydantoin diepoxide, N,N,N', N'-tetraglycidyl-4,4'-methylenebisbenzenamine, diglycidyl ether of para-aminophenol, and mixtures thereof, with said cyanate resin in an amount of at least about 2.5 percent by weight based on the total weight of cyanate resin and epoxy resin.

5,350,636

SYNTHETIC RESIN

Klaus Huemke, Friedelsheim; Dieter Faul, Bad Duerkheim, and Gerhard Hoffmann, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Lacke + Farben Aktiengesellschaft, Muenster, Fed. Rep. of Germany

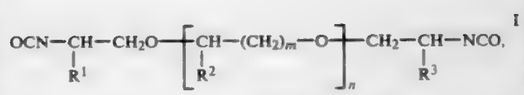
Filed Nov. 20, 1992, Ser. No. 979,314

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1991, 4138384

Int. Cl.[5] B32B *15/08*

U.S. Cl. 428—418 10 Claims

1. A synthetic resin containing, as essential components,
A) a crosslinkable binder selected from the group consisting of the polymers, polyadducts or polycondensates having reactive centers in the form of hydroxyl, thio or primary or secondary amino groups,
B) a crosslinking agent based on a polyoxyalkylene polyisocyanate of the general formula I



I

where R^1 to R^3 may be identical or different and are each hydrogen or C_1–C_6-alkyl, m is from 1 to 10 and n is from 1 to 50, and
C) a crosslinking agent which differs from (B) and is based on
γ_1) a polyfunctional isocyanate which differs from (B) or
γ_2) an organic compound which reacts at elevated temperatures with free amino groups of component (A) with amide formation or
γ_3) an organic compound which reacts at elevated temperatures with hydroxyl groups of component (A) with transesterification or
γ_4) a phenolic Mannich base or
a mixture of two or more crosslinking agents (γ_1) to (γ_4).

5,350,637

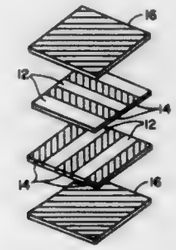
MICROLAMINATED COMPOSITES AND METHOD

Thomas D. Ketcham, Big Flats; Leroy S. Share, Corning, and Dell J. St. Julien, Watkins Glen, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Oct. 30, 1992, Ser. No. 968,667

Int. Cl.[5] B32B *18/00*

U.S. Cl. 428—539.5 18 Claims



13. A microlaminated composite article comprising:
a plurality of layers of ceramic foil partly or wholly interleaved by a plurality of metallic or intermetallic substrate layers, wherein:
the layers of ceramic foil are directly bonded to the substrate layers in contact therewith at ceramic foil-substrate interfaces therebetween;
the layers of ceramic foil and the substrate layers have thicknesses not exceeding about 250 micrometers, and at least one dimension of length or breadth in excess of 1 cm;
the ceramic foil layers and metallic substrate layers are essentially free of pin-hole defects the ceramic foil-substrate interfaces are essentially free of added adhesive interlayer material.

5,350,638

ELECTRICAL INSULATED WIRE

Kazuo Sawada; Shinji Inazawa, and Kouichi Yamada, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

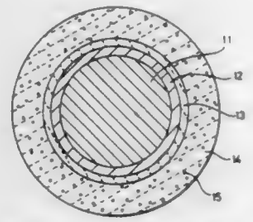
Filed Dec. 19, 1991, Ser. No. 811,459

Claims priority, application Japan, Apr. 26, 1991, 3-096987

Int. Cl.[5] H01B *7/00;* B32B *15/04*

U.S. Cl. 428—623 7 Claims

1. A flexible and high temperature resistant electrically insulated wire for prevention of cracking when wound upon a cylinder, comprising an electrically conducting base material selected from the group consisting of copper and copper alloy having an outer surface end forming an electrical conductor; a chromium oxide containing layer having a thickness of at least 1 μm formed on said outer surface of said electrical conductor; and an electrically insulating nitride layer selected from the group consisting of silicon nitride and aluminum nitride having a thickness of at least 2 μm obtained by thermal decomposition



of an organic metal polymer at a temperature within a range of 500° C. to 700° C., said electrically insulating nitride layer being formed on said chromium oxide containing layer, said electrically insulating nitride layer and said chromium oxide containing layer together having a thickness of not more than 12 μm.

5,350,639

DIELECTRIC CERAMIC FOR USE IN MICROWAVE DEVICE, A MICROWAVE DIELECTRIC CERAMIC RESONATOR DIELECTRIC CERAMICS

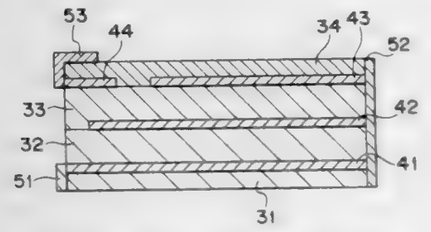
Tatsuya Inoue; Hiroshi Kagata; Junichi Kato, and Ichiro Kameyama, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 8, 1992, Ser. No. 941,961

Claims priority, application Japan, Sep. 10, 1991, 3-230158; Sep. 10, 1991, 3-230419; Feb. 28, 1992, 4-042877

Int. Cl.[5] H01P *7/00*

U.S. Cl. 428—633 12 Claims



6. A microwave dielectric resonator comprising:
first and second external electrodes;
first and second conductors electrically connected to said first and second external electrodes, respectively;
a plurality of first sheet-shaped dielectric layers and a plurality of second sheet-shaped dielectric layers both formed between said first and second conductors, said first and second dielectric layers being made of dielectric ceramics; and
a microstrip conductor formed between said plurality of first sheet-shaped dielectric layers and said plurality of second sheet-shaped dielectric layers, said microstrip conductor being electrically connected to said second external electrode,
wherein each of said first and second conductors and said microstrip conductor is made of a compound selected from a group consisting of Cu, Ag, Au, an alloy of Ag and Pt, an alloy of Ag and Pd, and an alloy of Cu and Pd, and
said dielectric ceramics of said first and second sheet-shaped dielectric layers are made of $(Bi_2O_3)_x(Nb_2O_5)_{1-x}$ including a subcomponents of CuO and V_2O_5, where the composition ratio x is within a range of $0.48 \leqq x \leqq 0.51$, an atomic ratio AR1 defined by the following equations:

AR1=(the number of Cu atoms of said CuO)/ARO. and

AR0=(the number of Bi atoms of said $(Bi_2O_3)_x(Nb_2O_5)_{1-x}$)+(the number of Nb atoms of said $(Bi_2O_3)_x(Nb_2O_5)_{1-x}$)

is within a range of $0<AR1\leqq0.01$, and another atomic ratio AR2 defined by the following equation:

AR2=(the number of V atoms of said V_2O_5)/ARO

is within a range of $0<AR2\leqq0.02$, said dielectric ceramic being fired at a temperature in a range from 875° C. to 1000° C.

5,350,640

DETACHABLE BATTERY PACKAGE WITH BUILT-IN INTEGRATING POWER METER

Keiji Masui, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 14, 1992, Ser. No. 882,829
Claims priority, application Japan, Jun. 7, 1991, 3-136413
Int. Cl.[5] H01M *10/48*
U.S. Cl. 429—7 **6 Claims**

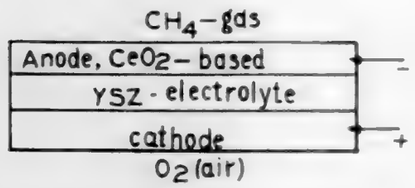
1. A battery package used in an apparatus for supplying electric power, said battery package unit being detachable from said apparatus, said package comprising:
a) a case having a hollow space;
b) a battery unit housed in said case; and
c) an electric circuit having a volatile memory circuit housed in said case, and supplied with electric power from said battery unit, said memory circuit storing information relative to electric power consumption of said portable apparatus and said electric circuit.

5,350,641

SOLID STATE FUEL CELL AND PROCESS FOR THE PRODUCTION THEREOF

Mogens Mogensen, Bjaeverskov, and Bruno Kindl, Roskilde, both of Denmark, assignors to Forskningscenter Riso, Roskilke, Denmark

PCT No. PCT/DK92/00046, § 371 Date Aug. 12, 1993, § 102(e) Date Aug. 12, 1993, PCT Pub. No. WO92/15122, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 12, 1992, Ser. No. 107,665
Claims priority, application Denmark, Feb. 13, 1991, 249/91
Int. Cl.[5] H01M *8/10*
U.S. Cl. 429—30 **16 Claims**



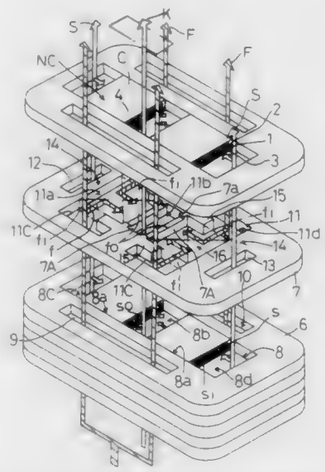
1. A solid state fuel cell for oxidation of CH_4, comprising:
a solid state electrolyte;
a thin layer of CeO_2-based ceramics fastened to said solid state electrolyte and serving as an anode, and
a surfactive metal oxide applied between said solid state layer.

5,350,642

SOLID-ELECTROLYTE FUEL CELL SYSTEM

Kosuke Akagi, Osaka, Japan, assignor to Osaka Gas Co., Ltd., Osaka, Japan

Filed May 4, 1993, Ser. No. 57,501
Claims priority, application Japan, May 8, 1992, 4-115629
Int. Cl.[5] H01M *8/04, 8/12*
U.S. Cl. 429—32 **7 Claims**



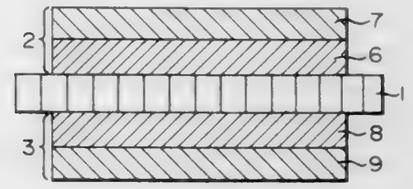
1. A solid-electrolyte fuel cell system comprising:
a plurality of fuel cells each having;
an electrolyte layer,
an oxygen electrode applied to one surface of said electrolyte layer,
a fuel electrode applied to the other surface of said electrolyte layer,
passage defining means opposed to said oxygen electrode,
an oxygen-containing gas passage defined between said oxygen electrode and said passage defining means, one end of said oxygen-containing gas passage being an oxygen-containing gas inlet and the other end of said oxygen-containing gas passage being an oxygen-containing gas outlet,
said fuel cells being stacked to form a cell assembly;
a fuel gas passage defined between each adjacently stacked pair of the fuel cells, said fuel gas passage having a fuel gas inlet opened in a direction different from said oxygen-containing gas inlet as seen in a stacking direction of said cell assembly and having a fuel gas outlet opened in the same direction as said oxygen-containing gas outlet as seen in the stacking direction of said cell assembly;
inlet defining means provided at each said fuel gas inlet for restricting said fuel gas inlet toward said oxygen-containing gas inlet as seen in the stacking direction of said cell assembly, so that fuel gas supplied through said fuel gas inlet is guided along a non-straight path toward said fuel gas outlet;
oxygen-containing gas supply passage means provided at each said oxygen-containing gas inlet to communicate with the outside of said cell assembly;
fuel gas supply passage means provided at each said fuel gas inlet to communicate with the outside of said cell assembly; and
a combustion chamber disposed outside said cell assembly and communicating with said oxygen-containing gas outlet and said fuel gas outlet to burn an oxygen-containing gas exhausted from said oxygen-containing gas outlet passage and a fuel gas exhausted from said fuel gas outlet.

5,350,643

SOLID POLYMER ELECTROLYTE TYPE FUEL CELL

Jinichi Imahashi; Tatsuo Horiba, both of Hitachi, and Yasushi Muranaka, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 1, 1993, Ser. No. 69,579
Claims priority, application Japan, Jun. 2, 1992, 4-165459
Int. Cl.[5] H01M *8/10, 4/86*
U.S. Cl. 429—33 **11 Claims**



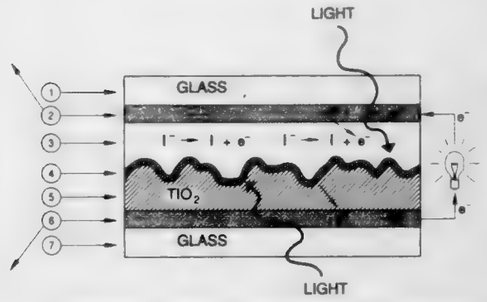
1. A solid polymer electrolyte type fuel cell which comprises a hydrogen electrode and an oxygen electrode as gas diffusion electrodes, a solid polymer electrolyte membrane interposed between said electrodes and means for feeding a hydrogen-containing gas and an oxygen-containing gas to the hydrogen electrode and the oxygen electrode, respectively, each of said gas diffusion electrodes comprising a catalyst layer comprised of a carbon carrier, an active component supported on the carrier, a proton conductor and a water-repellent binder and an electron conductor provided on an outer side of the catalyst layer and serving also as a gas diffusion layer, characterized in that the water-repellency of the catalyst layer of the hydrogen electrode is higher than that of the catalyst layer of the oxygen electrode.

5,350,644

PHOTOVOLTAIC CELLS

Michael Graetzel, St. Sulpice; Mohammad K. Nazeeruddin, Tavannes, and Brian O'Regan, Vevey, all of Switzerland, assignors to Ecole Polytechnique, Federale de Lausanne, Lausanne, Switzerland

PCT No. PCT/EP91/00734, § 371 Date Oct. 15, 1992, § 102(e) Date Oct. 15, 1992, PCT Pub. No. WO91/16719, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 17, 1990, Ser. No. 941,073
Claims priority, application United Kingdom, Apr. 17, 1990, 9008512.7; Nov. 15, 1990, 9024831.1
Int. Cl.[5] H01M *6/36*
U.S. Cl. 429—111 **8 Claims**



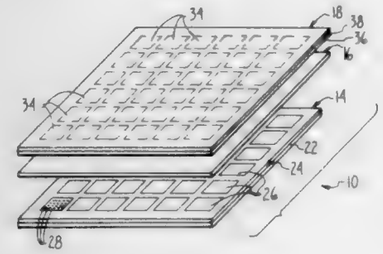
1. A solar-light-responsive photovoltaic cell comprising a first electrode comprising
i) a light transmitting electrically conductive layer deposited on a glass plate or a transparent polymer sheet;
ii) at least one porous, high surface area titanium dioxide layer applied to said light transmitting electrically conductive layer;
iii) a dopant applied to at least the outermost titanium dioxide layer, optionally also to the second to the outermost and third to the outermost layer, said dopant being selected from a divalent metal ion, trivalent metal ion, and boron; and
iv) a photosensitizer applied to the dopant-containing TiO_2 layer, said photosensitizer being attached to the TiO_2 layer by means of interlocking groups, said interlocking groups being selected from carboxylate groups, cyano groups, phosphate groups and chelating groups with II conducting character selected from oximes, dioximes, hydroxy quinolines, salicylates, and α-keto-enolates.

5,350,645

POLYMER-LITHIUM BATTERIES AND IMPROVED METHODS FOR MANUFACTURING BATTERIES

Rickie C. Lake, Boise, Id., and John R. Tuttle, Corrales, N. Mex., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Jun. 21, 1993, Ser. No. 81,007
Int. Cl.[5] H07M *2/18*
U.S. Cl. 429—124 **25 Claims**



19. A thin battery comprising:
a cathode substrate formed of a conductive material;
a cathode deposited in a discrete pattern on the cathode substrate by depositing a cathode material on the cathode substrate using a printing process;
a cathode mask formed on the cathode substrate for separating and insulating the cathode said cathode mask including studs to prevent compression and shorting of the cathode;
a separator/electrolyte layer in contact with the cathode;
an anode deposited in a discrete pattern on a conductive anode substrate in contact with the separator/electrolyte layer and formed by depositing a molten anode material onto the anode substrate; and
an anode mask formed on the anode substrate for separating and insulating the anode.

5,350,646

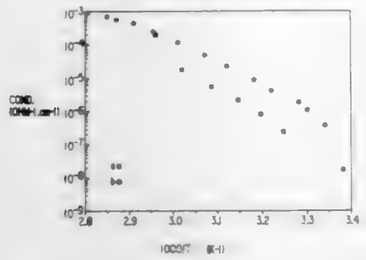
IONICALLY CONDUCTIVE POLYMERIC MATERIALS

Michel Armand, Saint-Martin-D'Uriage; Jean-Yves Sanchez, Saint Ismier, and Daniel Deroo, Grenoble, all of France, assignors to Centre National de la Recherche Scientifique, Paris, France and Hydro-Quebec, Montreal, Canada

PCT No. PCT/FR92/00198, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO92/16028, PCT Pub. Date Sep. 17, 1992
PCT Filed Mar. 4, 1992, Ser. No. 945,639
Claims priority, application France, Mar. 7, 1991, 91 02715
Int. Cl.[5] H01M *10/40*
U.S. Cl. 429—192 **20 Claims**

1. Ionically conductive material comprising a solid solution of one or more salts in a polymer, characterized in that the polymer has a framework wherein the solvating units contain at least one heteroatom selected from the group consisting of O, N, F, and S, and that the transport and the mobility of a

metal cation M^{n+} which has the valency n are provided by at least one complex anion corresponding to the general formula



$(MZ_nY_p)F^-$, wherein M is the same metal in M^{n+}, formed between an anionic ligand Z^-, an anionic ligand Y^- and the cation M^{n+}, and wherein $1 \leqq n \leqq 5$, and $1 \leqq p \leqq 3$.

5,350,647

ELECTRODES FOR ELECTROCHEMICAL DEVICES

Stephen F. Hope, and Joseph B. Kejha, both of c/o Hope Industries, Inc., Willow Grove, Pa. 19090

Continuation-in-part of Ser. No. 632,971, Dec. 24, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 983,368

Int. Cl.[5] H01M *4/40*

U.S. Cl. 429—218 **12 Claims**

1. An electrode for use in electrochemical devices which comprises

a lithium-based alloy consisting of lithium, magnesium and other compatible materials, where the magnesium is in the amount of 5% to b 50% of the total weight of the alloy, and the other materials are selected from the group consisting of silicon, aluminum, tin, cadmium, and carbon, in trace amounts to 30% of the total weight of the alloy, with magnesium present as the predominant metal by weight after lithium.

5,350,648

NONAQUEOUS SECONDARY BATTERY
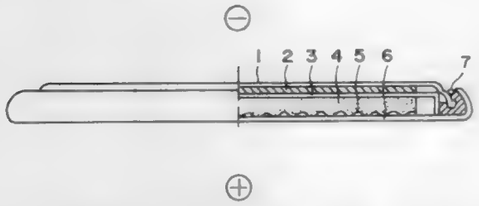
Yoshikatsu Kagawa; Shoichiro Yasunami, and Yukio Maekawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 2, 1993, Ser. No. 42,169

Claims priority, application Japan, Apr. 2, 1992, 4-081008

Int. Cl.[5] H01M *6/14, 4/58*

U.S. Cl. 429—218 **6 Claims**



1. A nonaqueous secondary battery which comprises an anode active material comprising a carbonaceous material, an electrolyte and a cathode active material comprising a lithium-containing transition metal chalcogenide;

wherein said carbonaceous material is a carbonized polyacrylonitrile obtained by burning polyacrylonitrile fiber of 0.4 to 40 denier at 2,400° to 3,500° C., said polyacrylonitrile fiber consisting essentially of a polyacrylonitrile or a copolymer of acrylonitrile and other monomers polymerizable with acrylonitrile, and wherein said carbonaceous material has length of a crystallite in c-axis direction of 75 to 250 Å and an interval of 002 faces of 3.41 to 3.44 Å, said length and said interval being determined from an X-ray diffraction spectrum thereof using Cu-Kα ray.

5,350,649

MASK FOR MANUFACTURING SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURE THEREOF

Yoshihiko Okamoto, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

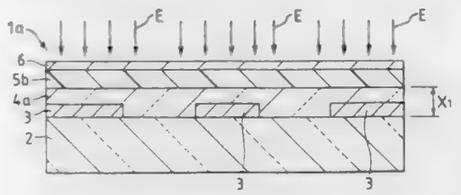
Continuation of Ser. No. 730,221, Jul. 15, 1991, abandoned, which is a continuation of Ser. No. 437,268, Nov. 16, 1989, Pat. No. 5,045,417. This application Apr. 23, 1993, Ser. No. 51,351

Claims priority, application Japan, Nov. 22, 1988, 63-295350

The portion of the term of this patent subsequent to Apr. 23, 2010, has been disclaimed.

Int. Cl.[5] G03F *9/00*

U.S. Cl. 430—5 **24 Claims**



1. An optical mask production method for manufacturing an optical mask, for a phase shifting projection exposure method for transferring a circuit pattern, on a first major surface of a transparent mask substrate, onto a photoresist film on an integrated circuit Wafer through an optical projection system by exposing the mask to a monochromatic exposure light beam, the phase shifting projection exposure method having steps of:

(a) mounting the mask substrate onto a first position in the projection system, the mask having a light shield region, a first light transmission region, and a second light transmission region adjacent to the first light transmission region, the second light transmission region being such that a phase of the transmitted exposure light beam transmitted through the second light transmission region is shifted as compared with a phase of the transmitted light beam transmitted through the first light transmission region;

(b) mounting the wafer having the photoresist film onto a second position in the projection system;

(c) exposing the mask substrate mounted on the first position to an exposure light beam having a predetermined wavelength, and having the light beam transmit through the mask substrate;

(d) focusing the transmitted light beams through the projection system so as to form a real image of the circuit pattern on the mask substrate onto the photoresist film on the wafer in such manner that the real image is made clear due to destructive interference between light beams from the first and second light transmission regions, and exposing the wafer mounted on the second position in the projection system to the focused light beams; and

(e) thereby transferring the circuit pattern, on the mask substrate, onto the photoresist film on the wafer through the projection system, wherein the optical mask production method comprises the step of:

directing a focused ion beam from the first major surface side of the mask substrate, to a first machining region to be the second light transmission region, and forming a recess region having a flat bottom and a predetermined depth.

5,350,650

METHODS FOR THE RETRIEVAL OF BLUE, GREEN AND RED EXPOSURE RECORDS OF THE SAME HUE FROM A PHOTOGRAPHIC ELEMENTS CONTAINING EMISSIVE INTERLAYERS

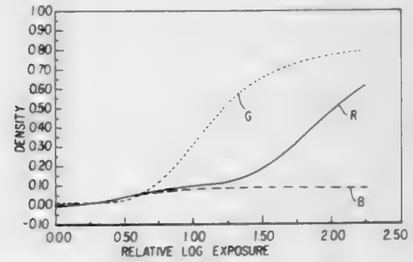
John Gasper, Hilton, N.Y.; Gareth B. Evans, Potten End, England; Christopher B. Rider, Mitcham Surrey, England, and Michael J. Simons, Ruislip, England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 16, 1993, Ser. No. 93,507

Claims priority, application United Kingdom, Feb. 12, 1993, 93002819

Int. Cl.[5] G03C *11/00, 5/16, 7/00, 5/22*

U.S. Cl. 430—21 **15 Claims**



1. A method of obtaining from an imagewise exposed photographic element separate records of the imagewise exposure to each of the blue, green and red portions of the spectrum comprising

(a) photographically processing an imagewise exposed photographic element comprised of

a support and, coated on the support,

a sequence of superimposed blue, green and red recording silver halide emulsion layer units that produce images of the same hue upon processing, one of the emulsion layer units forming a first emulsion layer unit in the sequence coated nearest the support, another of the emulsion layer units forming a last emulsion layer unit in the sequence coated farthest from the support and an intermediate emulsion layer unit located between the first and last emulsion layer units, and

(b) obtaining separate blue, green and red exposure records from the photographic element,

WHEREIN

(c) the photographic element is additionally comprised of

interposed between the first emulsion layer unit and the intermediate emulsion layer unit a first interlayer unit for transmitting to the first emulsion layer unit electromagnetic radiation this emulsion layer unit is intended to record and

interposed between the last emulsion layer unit and the intermediate emulsion layer unit a second interlayer unit for transmitting to the intermediate and first emulsion layer units electromagnetic radiation these emulsion layer units are intended to record,

one of the first and second interlayer units being capable of absorbing electromagnetic radiation within at least one wavelength region and emitting electromagnetic radiation within a longer wavelength region and the other of the first and second interlayer units being capable of reflecting or absorbing electromagnetic radiation within at least one wavelength region,

(d) the imagewise exposed photographic element is photographically processed to produce a silver image in each of the emulsion layer units,

(e) the photographic element is scanned utilizing electromagnetic radiation emitted from one of the first and second interlayer units to provide a first record of the image information in one of the first and last emulsion layer units and is scanned utilizing reflection or absorption of the remaining of the first and second interlayer units to provide a second record of the image information in one other of the emulsion layer units,

(f) the photographic element is scanned through the first and second interlayer units and all of the emulsion layer units to provide a third record representing a combination of images in all of the emulsion layer units, and

(g) separate blue, green and red exposure records are obtained from the first, second and third records.

5,350,651

METHODS FOR THE RETRIEVAL AND DIFFERENTIATION OF BLUE, GREEN AND RED EXPOSURE RECORDS OF THE SAME HUE FROM PHOTOGRAPHIC ELEMENTS CONTAINING ABSORBING INTERLAYERS

Gareth B. Evans, Potten End; Christopher B. Rider, Mitcham Surrey, and Michael J. Simons, Eastcote, all of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 16, 1993, Ser. No. 93,509

Claims priority, application United Kingdom, Feb. 12, 1993, 9302841.3

Int. Cl.[5] G03C *11/00, 7/00, 5/22, 7/04*

U.S. Cl. 430—21 **10 Claims**

1. A method of obtaining from an imagewise exposed photographic element separate records of the imagewise exposure to each of the blue, green and red portions of the spectrum comprising

(a) photographically processing an imagewise exposed photographic element comprised of

a support and, coated on the support,

a sequence of superimposed blue, green and red recording silver halide emulsion layer units that produce images of the same hue upon processing, one of the emulsion layer units forming a first emulsion layer unit in the sequence coated nearest the support, another of the emulsion layer units forming a last emulsion layer unit in the sequence coated farthest from the support and an intermediate emulsion layer unit located between the first and last emulsion layer units, and

(b) obtaining separate blue, green and red exposure records from the photographic element,

wherein

(c) the photographic element is additionally comprised of

interposed between the first emulsion layer unit and the intermediate emulsion layer unit a first interlayer for transmitting to the first emulsion layer unit electromagnetic radiation the first emulsion layer unit is intended to record and for absorbing after photographic processing scanning radiation within at least one wavelength region and

interposed between the last emulsion layer unit and the intermediate emulsion layer unit a second interlayer for transmitting to the intermediate and first emulsion layer units electromagnetic radiation these emulsion layer units are intended to record and for absorbing after photographic processing scanning radiation within at least one wavelength region,

(d) the imagewise exposed photographic element is photographically processed to produce a reflective image in each of the emulsion layer units,

(e) the photographic element is reflection scanned utilizing the absorption of the first and second interlayers to provide a first record of the image information in one of the first and last emulsion layer units and a second record of the image information in one other of the emulsion layer units, and

(f) the photographic element is scanned through the first and second interlayers and all of the emulsion layer units within a wavelength region to which the first and second interlayers are transmissive to provide a third record representing a combination of images in all of the emulsion layer units, and

(g) the first, second and third records are compared to obtain separate blue, green and red exposure records.

5,350,652

METHOD FOR OPTIMIZING TABULAR GRAIN POPULATION OF SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Michael G. Antonides, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 24, 1993, Ser. No. 127,383
Int. Cl.[5] G03C *1/015*; G01N *21/49*
U.S. Cl. 430—30 12 Claims

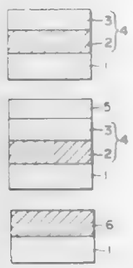
1. A method of measuring to control silver halide grain formation during nucleation and ripening comprising
combining a source of silver ions and a source of halide ions to form a suspension of nucleated particles,
removing a portion of said suspension,
treating the removed portion with a defloculant to eliminate floculation, separate flocs into individual nuclei, and allow measurement of nuclei size,
measuring turbidity of said portion,
determining floc size from the turbidity measurement, and
determining the difference between floc size and individual silver halide nuclei size, wherein said difference between floc size and nuclei size is greater than 20 nm to give a high population of tabular grains.

5,350,653

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR

Masayuki Shoshi, Yokohama; Masakatsu Shimoda, Higashikurume; Akiko Konishi, Tokyo; Megumi Kawahara, Yokohama; Akio Kojima, Mitaka; Tetsuro Suzuki, and Masao Yoshikawa, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 16, 1993, Ser. No. 18,445
Claims priority, application Japan, Mar. 2, 1992, 4-080487; May 20, 1992, 4-154548
Int. Cl.[5] G03G *5/047, 5/09*
U.S. Cl. 430—58 16 Claims



1. An electrophotographic photoconductor comprising:
an electroconductive substrate; and
a photoconductive layer formed thereon, comprising a charge generating material, and a vinylidene compound serving as a charge transporting material, which is selected from the group consisting of a vinylidene compound of formula (I):

$$Ar-CH=\underset{\displaystyle CN}{\underset{|}{C}}-X \qquad (I)$$

wherein Ar represents a metallocene group; and X represents cyano group, an alkyl group having 1 to 8 carbon atoms, or an alkoxycarbonyl group represented by $-COOC_nH_{2n+1}$, in which n is an integer of 1 to 8; and a vinylidene compound of formula (II):

$$Ar-CH=C(COOR)_2 \qquad (II)$$

wherein Ar represents a metallocene group; and R represents an alkyl group having 1 to 8 carbon atoms, which may form a ring in combination of two of said alkyl groups.

6. The electrophotographic photoconductor as claimed in claim 1, wherein said photoconductive layer comprises a charge generation layer comprising said charge generating material and a charge transport layer comprising said vinylidene compound serving as a charge transporting material, with one of said two layers being overlaid on the other.

5,350,654

PHOTOCONDUCTORS EMPLOYING SENSITIZED EXTRINSIC PHOTOGENERATING PIGMENTS

Damodar M. Pai, Fairport; Andrew R. Melnyk, and Donald J. Teney, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 11, 1992, Ser. No. 927,984
Int. Cl.[5] G03G *5/09*
U.S. Cl. 430—59 20 Claims

1. A layered photoreceptor comprised of:
a substrate;
an extrinsic pigment layer that has been sensitized by being in contact with electron donor molecules disposed over the substrate; and
a charge transport layer comprised of a charge transporting polymer layer disposed over the pigment layer.

19. A method for producing a photoreceptor comprising: depositing a layer of sensitizing electron donor material in a polymer binder on a substrate;
depositing an extrinsic pigment layer on the layer of sensitizing electron donor material; and
depositing a charge transport layer comprising a charge transporting polymer on said pigment layer.

20. An imaging process comprising;
providing an electrophotographic imaging member comprised of a sensitizer layer, a charge generating layer and a charge transport layer, said charge sensitizer layer comprising electron donor molecules in an binder;
depositing a uniform electrostatic charge on said imaging member with a corona charging device;
exposing said imaging member to activating radiation in image configuration to form an electrostatic latent image on said imaging member;
developing said electrostatic latent image with electrostatically attractable marking particles to form a toner image;
transferring said toner image to a receiving member; and
repeating said depositing, exposing, developing and transferring steps.

5,350,655

ELECTROPHOTOGRAPHIC PHOTORECEPTOR WITH TITANYL PHTHALOYCYANINE

Tomomi Oshiba, Hino; Fumitaka Mochizuki; Hajime Tadokoro, both of Hachioji; Akira Kinoshita; Kazumasa Watanabe, both of Hino; Kiyoshi Tamaki, and Yoshihide Fujimaki, both of Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Mar. 9, 1993, Ser. No. 28,385
Claims priority, application Japan, Mar. 13, 1992, 4-055247
Int. Cl.[5] G03G *5/06*
U.S. Cl. 430—78 10 Claims

1. An electrophotographic photoreceptor comprising a conductive substrate having provided thereon a photosensitive layer, said photosensitive layer comprising:
a titanylphthalocyanine having a maximum peak, in the Cu-Kα X-ray diffraction spectrum thereof, at a Bragg angle 2θ of $27.2° \pm 0.2°$,
an alkyldiol compound having 3 to 12 carbon atoms and 2 hydroxyl groups, each hydroxyl group being bonded to a different, non-adjacent carbon atom, said alkyldiol compound being present in an amount of 0.1 to 1000 parts per 100 parts by weight of said titanylphthalocyanine, and
a binder resin selected from the group consisting of polycarbonate, polycarbonate Z, acrylic resin, methacrylic resin, polyvinyl chloride, polyvinylidene chloride, polystyrene, styrene-butadiene copolymer, polyvinyl acetate, polyvinylformal, polyvinylbutyral, polyvinylacetal, polyvinylcarbazole, styrene-alkyd resin, silicone resin, silicone-alkyd resin, silicone-butyral resin, polyester, polyurethane, polyamide, epoxy resin, phenolic resin, vinylidene chloride-acrylonitrile copolymer, vinyl chloride-vinyl acetate copolymer and vinyl chloride-vinyl acetate-maleic anhydride copolymer.

5,350,656

CARRIER AND A PRODUCTION METHOD THEREOF FOR DEVELOPING AN ELECTROSTATIC IMAGE

Shigenori Kouno, Tachikawa; Ken Ohmura; Yoshiaki Koizumi, both of Hachioji, and Kenji Tsujita, Fujino, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Mar. 15, 1991, Ser. No. 669,932
Claims priority, application Japan, Mar. 20, 1990, 2-68205
Int. Cl.[5] G03G *9/00*
U.S. Cl. 430—108 14 Claims

1. An electrostatic image-developing carrier comprising a ferrite core particle and a resin coat layer provided thereon by applying repeatedly a mechanical impact force to the mixture of the ferrite core particle and a single type of coating resin particle in a dry condition,
wherein the ferrite core particle and the coating resin particle are mixed at a temperature less than the glass transition point of the resin particles for time less than or equal to 20 minutes and
wherein the temperature of the resin layer-forming process is less than or equal to about 97° C. and the stirring speed of the resin layer-forming process is 5.8 to 12.6 m/sec, and
wherein a molecular weight distribution chromatogram according to a gel permeation chromatography of a tetrahydrofuran-soluble component in the resin coat layer has at least one peak or shoulder in a molecular weight range of 1,000 to 20,000 and said peak or shoulder accounts for 5 to 65% of the area of the chromatogram.

5,350,657

TONER FOR DEVELOPING ELECTROSTATIC LATENT IMAGE

Masahiro Anno, Sakai, and Makoto Kobayashi, Settsu, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 29, 1992, Ser. No. 968,305
Claims priority, application Japan, Nov. 2, 1991, 3-315444
Int. Cl.[5] G03G *9/097*
U.S. Cl. 430—111 15 Claims

1. Toner for developing an electrostatic latent image, in which at least an organic charge-controlling agent having a BET specific surface area of 15 to 80 m^2/g and inorganic fine particles having a BET specific surface area of 10 to 150 m^2/g are fixed and/or film-formed in a uniformly dispersed state on the surface of core particles mainly composed of thermoplastic resin.

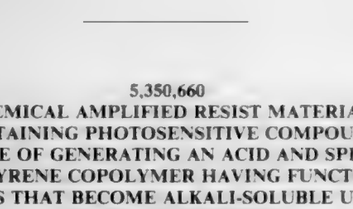
5,350,658

METHOD OF FORMING FIXED IMAGES COMPRISING SIMULTANEOUS TRANSFER AND FIXING OF IMAGE

Shin-ichiro Yasuda, Osaka; Kuniyasu Kawabe, and Mitsuhiro Sasaki, both of Wakayama, all of Japan, assignors to KAO Corporation, Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 941,324
Claims priority, application Japan, Sep. 7, 1991, 3-255764; Sep. 7, 1991, 3-255765
Int. Cl.[5] G03G *13/20*
U.S. Cl. 430—124 12 Claims

1. A method of forming fixed images comprising uniformly charging a heat resistant photoconductive film belt;
selectively exposing said heat resistant photoconductive film belt to light to form an electrostatic latent image;
developing said electrostatic latent image whereby an encapsulated toner is applied to said electrostatic latent image formed on said heat resistant photoconductive film belt to form a visible image;
transferring said formed visible toner image to a recording medium; and



fixing said transferred visible toner image onto said recording medium, wherein said transferring and fixing process steps are simultaneously carried out on said heat-resistant photoconductive film belt at a temperature of from 40° to 120° C.

5,350,659

PREPARATION OF CONDUCTIVE TONERS USING FLUIDIZED BED PROCESSING EQUIPMENT

Frank P. Lee; Sheau V. Kao; Gerald R. Allison, all of Oakville; Hadi K. Mahabadi, Etobicoke; Geroge Liebermann, Mississauga, all of Canada; Gopalan Vijayakumar, Fremont, and Robert A. Downing, San Jose, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 31, 1993, Ser. No. 40,965
Int. Cl.[5] G03G *5/00*
U.S. Cl. 430—137 17 Claims

1. A method for making conductive toner particles, comprising (A) heat treating in fluidized bed processing equipment a mixture of non-conductive toner particles comprising a thermoplastic resin and a colorant, and an effective amount of conductive powder blended with and coated on surfaces of the non-conductive toner particles, wherein said heat treatment is carried out at a temperature at or above the glass transition temperature of the resin for a period of time at least sufficient to fuse the conductive powder onto the surfaces of the non-conductive toner particles, and then (B) cooling the heated toner particles to a temperature below the glass transition temperature of the resin.

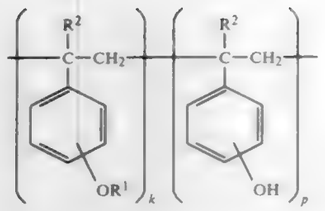
5,350,660

CHEMICAL AMPLIFIED RESIST MATERIAL CONTAINING PHOTOSENSITIVE COMPOUND CAPABLE OF GENERATING AN ACID AND SPECIFIC POLYSTYRENE COPOLYMER HAVING FUNCTIONAL GROUPS THAT BECOME ALKALI-SOLUBLE UNDER AN ACID ATMOSPHERE

Fumiyoshi Urano, Niiza; Masaaki Nakahata, Kawagoe; Hirotoshi Fujie, Saitama, and Keiji Oono, Sakado, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Jan. 28, 1991, Ser. No. 646,026
Claims priority, application Japan, Jan. 30, 1990, 2-019611; Jan. 30, 1990, 2-019612; Jan. 30, 1990, 2-019614; Jan. 30, 1990, 2-019617; Nov. 30, 1990, 2-329552
Int. Cl.[5] G03F *7/021*; G03C *1/52*
U.S. Cl. 430—176 19 Claims

1. A resist material comprising:
(a) a polymer represented by the formula:



wherein R^1 is a methyl group, an isopropyl group, a tert-butyl group, a tetrahydropyranyl group, a trimethyl-silyl group or a tert-butoxycarbonyl group; R^2 is a hydrogen atom or a methyl group; and k and p are independently an integer of 1 or more provided that $k/(k+p)=0.1$ to 0.9, said repeating units (I) having a functional group which becomes alkali-soluble by chemical change during heating in the presence of an acid generated from a photosensitive compound when exposed to light;

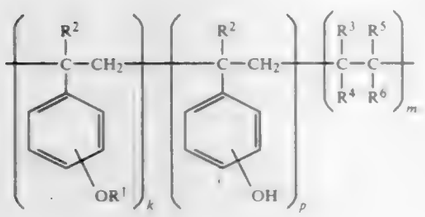
(b) a photosensitive compound capable of generating an acid, when exposure to light, in an amount of 1 to 20 parts by weight per 100 parts by weight of said polymer; and

(c) a solvent for dissolving the components (a) and (b).

10. A resist material comprising:

(a) a polymer represented by the formula:

(II)



wherein R^1 is a methyl group, and isopropyl group, a tertbutyl group, a tetrahydropyranyl group, a trimethylsilyl group or a tert-butoxycarbonyl group; R^2 is a hydrogen atom or a methyl group; R^3 and R^5 are independently a hydrogen atom or a methyl group; R^4 is a hydrogen, carboxyl group, a cyano group, or a group of the formula:

(III)



wherein R^7 is a hydrogen atom, a halogen atom or a lower alkyl group; R^6 is a hydrogen atom, a cyano group, or —$COOR^8$, R^8 is a straight-chain, branched or cyclic alkyl group having 1 to 10 carbon atoms; k', p' and m are independently an integer of 1 or more, provided that $0.1 \leqq k'/(k'+p') \leqq 0.9$ and $0.05 \leqq m/(k'+p'+m) \leqq 0.50$ said repeating units (II) having a functional group which becomes alkali-soluble by chemical change during heating in the presence of an acid generated from a photosensitive compound when exposed to light;

(b) a photosensitive compound capable of generating an acid, when exposed to light, in an amount of 1 to 20 parts by weight per 100 parts by weight of said polymer;

(c) a solvent for dissolving the components (a) and (b).

5,350,661
WATER-DEVELOPABLE PHOTOSENSITIVE PLATES ESPECIALLY SUITED FOR COMMERCIAL FLEXOGRAPHIC PRINTING

Robert W. Kelsall, San Diego, and Allyson R. Maurer, Escondido, both of Calif., assignors to Napp Systems, Inc., San Marcos, Calif.

Filed Mar. 25, 1993, Ser. No. 36,984

Int. Cl.[5] G03L *1/492*

U.S. Cl. 430—271 **12 Claims**

1. A water-developable photosensitive resin composition having a thickness increase, after photopolymerization and development thereof, upon immersion in water for 24 hours at ambient conditions, of less than about 3%, and hardness, as measured by the Shore A test, of less than about 75, said composition comprising:

(A) in the range of about 30 up to 90 wt % of a copolymer comprising in the range of:

(i) 5 up to 95 mol % of an aliphatic conjugated diene monomer,

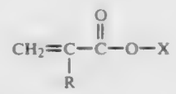
(ii) 1 up to 30 mol % of an α,β-ethylenically unsaturated carboxylic acid,

(iii) 0.1 up to 10 mol % of a polyfunctional vinyl monomer, and

(iv) 0 up to 70 mol % of a monofunctional vinyl monomer;

(B) in the range of about 0.2 up to 2 mol of a basic nitrogen-containing compound per mol of carboxyl groups in copolymer (A),

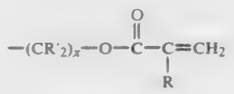
(C) in the range of about 5 up to 70 wt % of a mixture of ethylenically unsaturated monomers, wherein said mixture contains at least one ethylenically unsaturated monomer selected from each of (a), (b), (c) and (d) below, wherein each of (a), (b), (c) and (d) have the core structure:



wherein R is H or methyl, and X is selected from:

(a) an alkyl group having in the range of about 8 up to 15 carbon atoms,

(b)



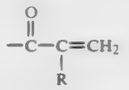
wherein each R' is independently selected from H or methyl, R is as defined above, selected independently of R of the core structure, and x is an integer falling in the range of about 2 up to 6,

(c)

$$-[(CH_2)_{x'}-O]_y-Y$$

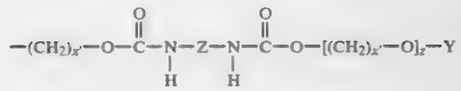
wherein x' is an integer falling in the range of about 1 up to 12, y is an integer falling in the range of about 4 up to 12, and Y is selected from:

alkyl having in the range of about 3 up to 15 carbon atoms such that two or more of the core species can be linked to one another, or



wherein R is as defined above and is selected independently of R of the core structure, and

(d)



wherein x' and Y are as defined above, Z is an aliphatic, aromatic, aliphatic-substituted aromatic, or aromatic-substituted aliphatic linker having a molecular weight in the range of about 4,000–5,000, and z is an integer which falls in the range of about 0 up to 10, and

(D) in the range of about 0.01 up to 10 wt % of at least one photopolymerization initiator.

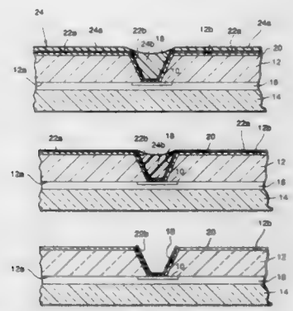
5,350,662
MASKLESS PROCESS FOR FORMING REFRACTORY METAL LAYER IN VIA HOLES OF GAAS CHIPS

Tom Y. Chi, San Gabriel, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 857,902, Mar. 26, 1992, abandoned. This application Jan. 13, 1994, Ser. No. 181,371

Int. Cl.[5] G03F *7/20*

U.S. Cl. 430—313 **12 Claims**



1. A method for providing contacts to microwave monolithic integrated circuit devices formed on a gallium arsenide wafer, said gallium arsenide wafer having a front and a back surface wherein (1) at least one via hole is formed from said back surface of said wafer through to said front surface of said wafer to expose a portion of each said device, (2) a metal layer is formed on said back surface and in each of said via holes, thereinto (3),each of said devices subsequently bonded to a metal carrier using a AuSn solder alloy, contacting said portion of each said device, said method comprising the steps of:

(a) forming a layer of a refractory metal lining each of said via holes,

(b) blanket-depositing a layer of said refractory metal on said metal layer, including in said via holes;

(c) forming a positive resist layer on said refractory metal layer and filling said via holes with said resist layer;

(d) baking said resist layer;

(e) exposing all of said resist layer to ultraviolet radiation in the absence of any mask layer;

(f) developing said resist layer to remove all of said resist layer lying over said back surface, leaving said resist layer in said via holes to thereby uncover portions of said refractory metal layer over said back surface;

(g) removing said uncovered portions of refractory metal over said back surface; and

(h) removing said resist layer remaining in said via holes, leaving said refractory metal lining said via holes, wherein said refractory metal layer is selfaligned to said via holes to prevent the intrusion of said AuSn solder.

5,350,663
PRODUCTION OF STRUCTURED LAYERS OF HEAT-RESISTANT POLYCONDENSATES

Rainer Blum; Hans-Joachim Haehnle, both of Ludwigshafen, and Gerhard Hoffmann, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Lacke+ Farben Aktiengesellschaft, Muenster, Fed. Rep. of Germany

Filed May 27, 1993, Ser. No. 67,620

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1992, 4218718

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—330 **2 Claims**

1. A process for the production of a structured coating of a heat-resistant polycondensate on a substrate which comprises, (1) providing a substrate; (2) preparing a mixture consisting essentially of a radiation-sensitive tetracarboxylic acid derivative and a compound which is polycondensible with the radiation-sensitive tetracarboxylic acid derivative by mixing (a) at least one first compound selected from the group consisting of an ester of an ethylenically unsaturated tetracarboxylic acid, an adduct of an ethylenically unsaturated tetracarboxylic acid and a salt of an ethylenically unsaturated tetracarboxylic acid, which compound has at least one free carboxylic acid group and (b) at least one compound selected from the group consisting of an ethylenically unsaturated amine, an ethylenically unsaturated amide and an ethylenically unsaturated onium compound to form the radiation-sensitive tetracarboxylic acid derivative; adding (c) at least one third compound which is polycondensible with the radiation-sensitive tetracarboxylic acid derivative and which contains at least two groups selected from group consisting of amino, isocyanate, and blocked isocyanate, and (d) at least one photoinitiator; (3) applying the mixture as a layer to the substrate; (4) exposing the thus-prepared layer to high-energy light through a negative to selectively expose portions to the layer while leaving other portions unexposed, the exposed portions forming insoluble compounds while the unexposed portions remain soluble; (5) removing the unexposed soluble portions; and (6) subjecting the substrate and remaining insoluble portions to temperatures of 300° to 400° C. form a polycondensation product of the radiation-sensitive tetracarboxylic acid derivative with the third compound on the substrate.

5,350,664
PHOTOGRAPHIC ELEMENTS FOR PRODUCING BLUE, GREEN, AND RED EXPOSURE RECORDS OF THE SAME HUE AND METHODS FOR THE RETRIEVAL AND DIFFERENTIATION OF THE EXPOSURE RECORDS

Michael J. Simons, Middlesex, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 16, 1993, Ser. No. 93,504

Claims priority, application United Kingdom, Feb. 12, 1993, 9302860

Int. Cl.[5] G03C *11/00, 7/00, 5/27, 7/04*

U.S. Cl. 430—362 **17 Claims**

1. A method of obtaining from an imagewise exposed photographic element separate records of the imagewise exposure to each of the blue, green and red portions of the spectrum comprising

(a) photographically processing an imagewise exposed photographic element comprised of

a support and, coated on the support,

a sequence of superimposed blue, green and red recording silver halide emulsion layer units at least two of which produce images of substantially the same hue upon processing, and

(b) obtaining separate blue, green and red exposure records from the photographic element,

wherein

(c) the photographic element additionally comprises

interposed between the said at least two emulsion layer units which produce images of substantially the same hut upon processing an interlayer unit capable of transmitting to the

emulsion layer unit of said two units which is nearer the support, electromagnetic radiation that this emulsion layer unit is intended to record and capable, after processing, of reflecting electromagnetic radiation within at least one wavelength region,

(d) the imagewise exposed photographic element is photographically processed to produce a silver image in the emulsion layer units,

(e) the photographic element is reflection scanned utilizing reflection from the interlayer unit to provide a first record of the image information in one of said two emulsion layer units and is reflection or transmission scanned to provide second and third records of the image information in the other two emulsion layer units, and

(f) the first, second and third records are compared to obtain blue, green and red exposure records.

5,350,665

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Kazunori Hasebe; Shigeaki Otani, and Yasuhiro Hayashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 29, 1991, Ser. No. 800,104

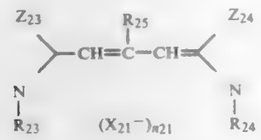
Claims priority, application Japan, Nov. 30, 1990, 2-334785; Nov. 30, 1990, 2-334788; Nov. 30, 1990, 2-334796

The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.

Int. Cl.[5] G03C *1/08*

U.S. Cl. 430—508 **9 Claims**

1. A silver halide color photographic material comprising a reflective support having thereon a yellow dye image forming silver halide emulsion layer, a magenta dye image forming silver halide emulsion layer and a cyan dye image forming silver halide emulsion layer, wherein said yellow dye image forming layer, magenta dye image forming layer and cyan dye image forming layer exhibit a maximum spectral sensitivity in the range of 400 to 490 nm, 530 to 570 nm and 660 to 720 nm, respectively, said silver halide emulsion of said cyan dye image forming layer comprises a silver chloride, silver bromochloride or silver bromochloroiodide emulsion having a silver chloride content of 90 mol % or more with a maximum spectral sensitivity given by J-band absorption of a compound represented by the general formula (I),



(I)

wherein Z_{23} and Z_{24} each represents an atomic group required to form a heterocyclic nucleus selected from the group consisting of a benzothiazole nucleus, a benzoselenazole nucleus, a naphthothiazole nucleus and a naphthoselenazole nucleus which may be substituted with one or more of a halogen atom, an alkyl group, an alkoxy group, an aryl group and a hydroxyl group, with the proviso that of said substituents, two alkyl groups may form a ring; R_{25} represents a hydrogen atom, an alkyl group or an aryl group; R_{23} and R_{24} each represents a substituted or unsubstituted alkyl group; X_{21} represents an ion for electrical neutrality; and n_{21} represents an integer 0 or 1, with the proviso that when one of R_{23} and R_{24} forms an intramolecular salt with a quaternized nitrogen atom, n_{21} is 0,

and the optical reflection density of said photographic material at 680 nm is 0.70 or more.

5,350,666

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Masuji Motoki; Atsuhiro Ohkawa, and Keiji Mihayashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

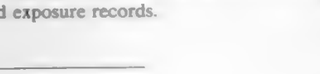
Filed Jun. 26, 1991, Ser. No. 721,006

Claims priority, application Japan, Jun. 28, 1990, 2-170832

Int. Cl.[5] G03C *7/32, 7/36, 7/38*

U.S. Cl. 430—544 **10 Claims**

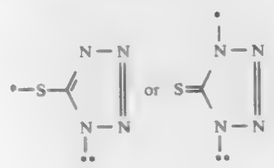
1. A silver halide photographic material comprising on a support, at least one photosensitive silver halide emulsion layer, which contains a coupler represented by formula (I) which releases a plurality of development inhibitors, each development inhibitor being represented by PUG, which are attached, either directly or through a timing group L_1, to different atoms of a timing group L_2:



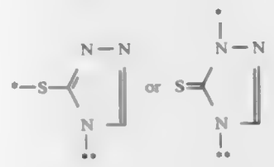
(I)

wherein A represents a coupler residual group, the timing group L_1 represents a divalent timing group, the timing group L_2 has a valence of 3 or more, and PUG represents one of formulae (INH-1) to (INH-8) and (INH-10) to (INH-13), l and n each represents 0, 1 or 2, m represents 1 or 2, and s represents a number obtained by subtracting 1 from the valence of L_2, being an integer of at least 2:

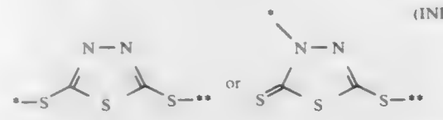
(INH-1)



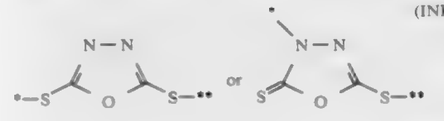
(INH-2)



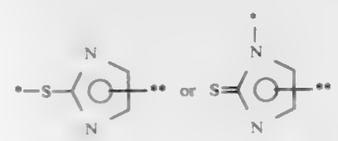
(INH-3)



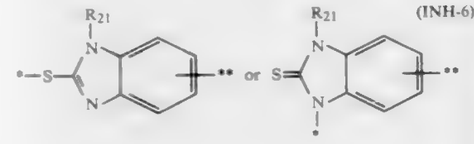
(INH-4)



(INH-5)

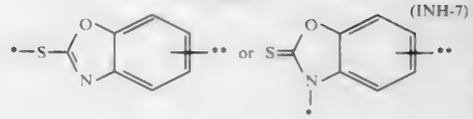


(INH-6)

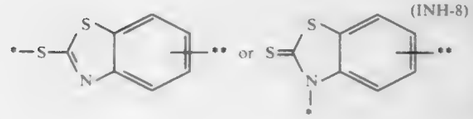


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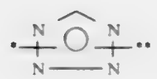
(INH-7)



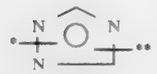
(INH-8)



(INH-10)



(INH-11)



wherein R_{21} represents a hydrogen atom or a substituted or unsubstituted hydrocarbyl group, * indicates the position at which the group represented by L_1 and L_2 of the compound represented by general formula (I) is bonded, and ** indicated a position at which a substituent group is bonded.

5,350,667

PHOTOGRAPHIC ELEMENTS CONTAINING MAGENTA COUPLERS AND PROCESS FOR USING SAME

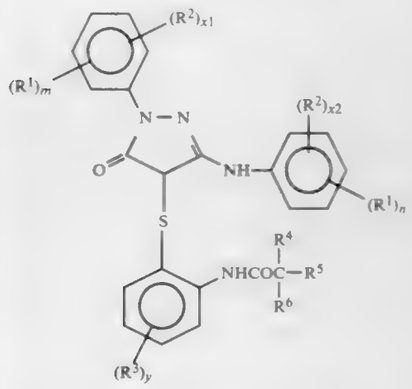
Stephen P. Singer, Spencerport; Paul B. Merkel, Rochester, both of N.Y.; Bernard Arthur J. Clark, Berkshire, and Paul Louis R. Stanley, Harrow, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 17, 1993, Ser. No. 79,538

Int. Cl.[5] G03C *7/384*

U.S. Cl. 430—387 **14 Claims**

1. A photographic element comprising a light-sensitive silver halide layer having associated therewith a coupler which is a pyrazolone compound with a coupling-off substituent at the -4-position, said compound having the formula:



wherein each R^1 is independently a substituted or unsubstituted alkylsulfonyl or arylsulfonyl group; each R^2 and R^3 is independently a substituent; R^4, R^5, and R^6 are independently hydrogen or substituted or unsubstituted alkyl groups; m and n are independently 0 or 1 but both are not 0; x1 and x2 are independently 0 to 5; and y is 0 to 3; provided that each of R^3, R^4, R^5, and R^6 is selected such that the calculated log P of the thiophenol corresponding to the substituent at the 4-position of the pyrazolone is at least 4.

13. A process of forming an image comprising contacting an exposed element as described in claim 1 with a color developing chemical.

5,350,668

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL CONTAINING TABULAR SILVER IODOBROMIDE GRAINS USING A PROCESSING SOLUTION HAVING A BLEACHING ABILITY CONTAINING AN IRON (III) COMPLEX SALT

Akira Abe; Hiroyuki Seki; Hisashi Okada, and Tadashi Inaba, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 28, 1993, Ser. No. 53,198

Claims priority, application Japan, Apr. 28, 1992, 4-134535

The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.

Int. Cl.[5] G03C *7/00, 5/42, 5/44, 1/005*

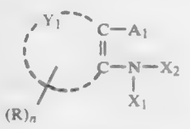
U.S. Cl. 430—393 **20 Claims**

1. A method for processing an imagewise exposed silver halide color photographic material comprising a support having thereon at least one silver halide emulsion layer, which comprises color developing in a color developing solution containing a color developing agent, and then processing with a processing solution having a bleaching ability, characterized by

a) said silver halide emulsion layer containing silver halide grains having a composition in which tabular silver iodobromide grains having an aspect ratio of not lower than 3 account for at least 50% of the entire projected area of said silver halide grains, and

b) said processing solution having a bleaching ability contains an iron (III) complex salt of a compound represented by the following general formula (I) as a bleaching agent at a concentration of 0.01 to 0.17 mol/liter:

(I)



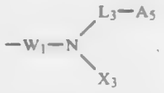
wherein Y_1 represents a non-metallic atomic group required for forming an arylene group;

R represents a substituent group selected from the group consisting of an alkyl group, an aralkyl group, an alkenyl group, an alkynyl group, an aryl group, a sulfonamide group, a ureido group, a urethane group, an aryloxy group, a sulfamoyl group, an alkylthio group, an arylthio group, a sulfonyl group, a sulfinyl group, an acyl group, a hydroxy group, a halogen atom, a cyano group, a sulfo group, a carboxyl group, a phosphono group, an aryloxycarbonyl group, an alkoxycarbonyl group; an acyloxy group, a nitro group and a hydroxamic acid group;

n represents 0 or an integer of 1 to 4, provided that when n is 2 to 4, two or more R groups may be the same or different;

X_1 represents a hydrogen atom or $—L_1—A_2$;

X_2 represents a substituent selected from the group consisting of $—L_2—A_3$ and a group of the following formula



X_3 represents a hydrogen atom, or a substituent selected

from the group consisting of a hydroxyalkyl group and —L_4—A_4;

A_1 and A_5 each represents a hydrogen atom, or a substituent selected from the group consisting of a carboxyl group, a sulfo group, an alkylthio group and S—L_5—COOH;

A_2 represents a substituent selected from the group consisting of a carboxyl group and a sulfo group;

A_3 and A_4 each represents a carboxyl group;

L_2, L_4 and L_5 each represents an alkylene group;

L_1 and L_3 each represents a substituent selected from the group consisting of an alkylene group and an arylene group; and

W_1 represents a bivalent bonding group represented by the following general formula (W)

$$-W_2\frac{}{c}X-W_3\frac{}{c} \quad (W)$$

wherein W_2 and W_3 each represents an alkylene group;

c represents an integer of 0 to 3;

X represents —O—, —S— or —N(R_3)—; and R_3 represents a hydrogen atom, an alkyl group or an aryl group.

5,350,669

SILVER-CARBOXYLATE/1,2-DIAZINE COMPOUNDS AS SILVER SOURCES IN PHOTOTHERMOGRAPHIC AND THERMOGRAPHIC ELEMENTS

David R. Whitcomb, Woodbury, and William C. Frank, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 19, 1994, Ser. No. 183,486

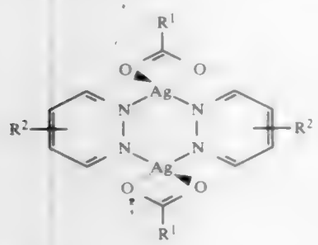
Int. Cl.[5] G03C *1/498*

U.S. Cl. 430—618 **11 Claims**

1. A photothermographic element comprising a support bearing at least one heat-developable, photosensitive, image-forming photothermographic emulsion layer comprising:

(a) a photosensitive silver halide;

(b) a non-photosensitive, reducible source of silver comprising a silver-carboxylate/1,2-diazine coordination compound of the formula:



wherein:

R^1 is either an alkyl, aralkyl, cycloalkyl, and alkenyl group of up to 29 carbon atoms; or an aryl group of up to 14 carbon atoms;

and R^2 represents either hydrogen, an alkyl group, a cycloalkyl group fused to the 1,2-diazine ring, or the atoms necessary to complete a 5- or 6-membered aromatic ring fused to the 1,2-diazine ring;

(c) a reducing agent for said non-photosensitive, reducible source of silver; and

(d) a binder.

5,350,670

COMPOSITION FOR PRESERVING NON-LIVING ANIMAL BODIES

Tso-Li Yeh, 8F-3, No. 68, Cheng-Yih N Road, San-Chung, Taiwan

Filed Jul. 15, 1992, Ser. No. 913,354

Int. Cl.[5] A01N *1/02, 1/00*

U.S. Cl. 435—1 **18 Claims**

1. A composition for preserving non-living animal bodies comprising:

A) a particulate mixture of 100% boric acid, NaCl and phenol;

B) formaldehyde; and

C) alcohol

wherein the components A, B and C are present in a ratio of 1:1:1 by weight.

5,350,671

HCV IMMUNOASSAYS EMPLOYING C DOMAIN ANTIGENS

Michael Houghton, Danville; Qui-Lim Choo, El Cerrito, and George Kuo, San Francisco, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 456,637, Dec. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 355,002, May 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 353,846, Apr. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 341,334, Apr. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 325,338, Mar. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 271,450, Nov. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 263,584, Oct. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 191,263, May 6, 1988, abandoned, which is a continuation-in-part of Ser. No. 161,072, Feb. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 139,886, Dec. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 122,714, Nov. 18, 1987, abandoned. This application Aug. 9, 1993, Ser. No. 103,961

Int. Cl.[5] C12G *1/70, 1/68;* **A61K** *37/02;* **G01N** *33/543*

U.S. Cl. 435—5 **41 Claims**

1. An immunoassay for detecting antibodies that bind to a hepatitis C virus (HCV) polypeptide comprising:

(a) providing an antigen comprising the C domain polypeptide encoded by HCV cDNA deposited under ATCC No. 40394 or an immunlogically reactive fragment thereof of at least 8 contiguous amino acid residues;

(b) incubating said antigen with a biological sample under conditions that allow for formation of an antibody-antigen complex; and

(c) detecting any antibody-antigen complexes comprised of said antigen.

5,350,672

SPECIFIC DNA PRIMERS AND METHOD TO USE SAME DETECT *EPERYTHROZOON SUIS*

Richard D. Oberst; Sharon M. Gwaltney, both of Manhattan, and Michael P. Hays, Leonardville, all of Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Jan. 22, 1993, Ser. No. 9,261

Int. Cl.[5] C12Q *1/68*

U.S. Cl. 435—6 **4 Claims**

1. A method of identifying early *Eperythrozoon suis* infection in pig blood comprising: isolating DNA from pig blood, contacting said DNA and with oligonucleotide primers consisting of the two single stranded oligonucleotide TCTTCAACTCTTCCTATGGA (SEQ ID NO: 1) and CTCATGGTAAGTTGTGTTGC (SEQ ID NO: 2), amplifying said DNA by polymerase chain reaction, and detecting an amplification product; wherein the presence of the amplification product indicates an early *Eperythrozoon suis* infection.

5,350,673

DETECTION OF A UNIQUE CHLAMYDIA STRAIN ASSOCIATED WITH ACUTE RESPIRATORY DISEASE

Lee A. Campbell; Chou-chou Kuo, and J. Thomas Grayston, all of Seattle, Wash., assignors to Washington Research Foundation, Seattle, Wash.

Continuation of Ser. No. 946,821, Sep. 16, 1992, Pat. No. 5,281,518, which is a continuation of Ser. No. 746,053, Aug. 12, 1991, abandoned, which is a continuation of Ser. No. 488,524, Feb. 28, 1990, abandoned, which is a continuation of Ser. No. 71,691, Jul. 9, 1987, abandoned, which is a continuation-in-part of Ser. No. 858,380, May 1, 1986, abandoned. This application Jan. 24, 1994, Ser. No. 186,198

The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.

Int. Cl.[5] C12Q *1/68*

U.S. Cl. 435—6 **9 Claims**

1. An isolated oligonucleotide probe that specifically hybridizes to the DNA or rRNA of the TWAR organism and not to *C. trachomatis* or *C. psittaci.*

5,350,674

INTRINSIC FACTOR - HORSE PEROXIDASE CONJUGATES AND A METHOD FOR INCREASING THE STABILITY THEREOF

Michael T. Boenisch, Owings Mills, and Erica A. Sullivan, Sparks, both of Md., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 4, 1992, Ser. No. 941,352

Int. Cl.[5] G01N *33/566;* **C12N** *9/96*

U.S. Cl. 435—7.8 **7 Claims**

1. A method for producing a stabilized HRP-SATA-SMPB-IF conjugate comprising:

(i) admixing intrinsic factor (IF) with N-ethylmaleimide (NEM) to form an NEM/IF product;

(ii) reacting said NEM/IF product with succinimidyl-4-(p-maleimidophenyl) butyrate (SMPB) to form a SMPB-IF product;

(iii) reacting horseradish peroxidase (HRP)with N-succinylimidyl-5-acetylthioacetate (SATA) to form a SATA-HRP product, and subsequently deacetylating said product to form a deacetylated SATA-HRP product;

(iv) admixing said SMPB-IF product with said deacetylated SATA-HRP product to form a HRP-SATA-SMPB-IF conjugate; and

(v) subsequently concentrating said conjugate.

5,350,675

MULTILAYER ANALYTICAL ELEMENT FOR DETERMINATION OF TOTAL CHOLESTEROL IN BLOOD

Yoshihiko Makino, and Kaoru Terashima, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

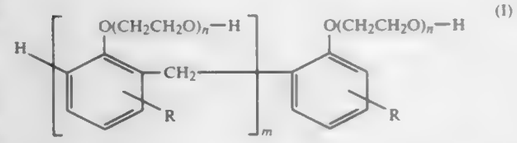
Continuation of Ser. No. 460,827, Jan. 4, 1990, abandoned. This application Sep. 8, 1992, Ser. No. 942,099

Claims priority, application Japan, Jan. 6, 1989, 64-1070

Int. Cl.[5] C12Q *1/60;* **G01N** *21/00, 1/00*

U.S. Cl. 435—11 **9 Claims**

1. In a dry type integral multilayer analytical element for the quantitative analysis of total cholesterol having at least one hydrophilic polymer layer, one porous reagent layer and one blood cell-separating composite layer for separating blood cells from blood, laminated in this order onto a light-transmissive support, said blood cell-separating composite layer containing a porous spreading layer and containing at least one enzyme having cholesterol esterase activity, cholesterol oxidase and one reagent composition producing a detectable optical change in the presence of hydrogen peroxide, the improvement which comprises said porous reagent layer containing the at least one enzyme having cholesterol esterase activity or the cholesterol oxidase and wherein a part of the at least one hydrophilic layer, the porous reagent layer or the blood cell-separating composite layer contains a condensate represented by the general formula (I):



(I)

wherein m is an integral number of 2 to 4, n is an integral number of not more than 20, and R is an alkyl group having 4 to 12 carbon atoms.

5,350,676

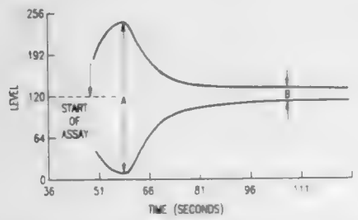
METHOD FOR PERFORMING FIBRINOGEN ASSAYS USING DRY CHEMICAL REAGENTS CONTAINING MAGNETIC PARTICLES

Bruce J. Oberhardt, Raleigh, and Nancy Gresalfi, Durham, both of N.C., assignors to Cardiovascular Diagnostics, Inc., Durham, N.C.

Continuation of Ser. No. 550,570, Jul. 10, 1990, abandoned. This application May 17, 1993, Ser. No. 62,334

Int. Cl.[5] C12Q *1/00, 1/56;* **G01N** *33/86, 33/00*

U.S. Cl. 435—13 **19 Claims**



1. A method of performing a fibrinogen assay, comprising:

(i) subjecting to an oscillating magnetic field a reaction slide bearing (1) a sample well for receiving a liquid sample and (2) a reaction chamber containing a dry reagent matrix in which is embedded a plurality of magnetic particles distributed homogeneously therethrough, wherein said reagent is a protease which acts directly on fibrinogen and induces fibrin polymerization;

said sample well and reaction chamber being in fluid connection through a transport zone of geometry such that a volume of liquid analyte sample placed in said sample well and corresponding to the volume of said reaction chamber is transported from said sample well to said reaction chamber;

(ii) under conditions suitable for conducting a fibrinogen assay, adding a whole blood or a blood-derived sample to said sample well whereby said sample is introduced into said reaction chamber, said reagent is solubilized and said particles are freed to move in an oscillating pattern induced by said oscillating magnetic field, wherein said oscillating pattern has a start time and a stop time, corresponding to a change in the degree of particle movement relative to said oscillating magnetic field, said oscillating pattern rises in a kinetic particle oscillation curve to a peak maximum amplitude of particle oscillation, decreases to a post peak minimum amplitude of particle oscillation, and said kinetic particle oscillation curve has a measurable slope and area under the oscillation curve;

(iii) optically monitoring said reaction chamber to measure one or more of the following parameters (iiia) said start time and said stop time for said fibrinogen assay, or (iiib) the maximum amplitude of said particle oscillation, A, and the subsequent residual, post peak minimum amplitude, B, of said particle oscillation, or (iiic) the slope of said parti-

cle oscillation curve or area defined by said curve in the region between A and B; and

(iv) using said start time and said stop time, or at least B, or said slope, or said area to correlate at least one of said parameters (iiia)–(iiic) to the concentration of clottable fibrinogen in standard samples to measure the concentration of clottable fibrinogen in said whole blood or blood-derived sample.

5,350,677

METHOD OF ASSAYING PHOSPHATASE WITH 3,4-DINITROPHENYLPHOSPHATE

Tatsuhiko Yagi; Ryuki Hisada, both of Shizuoka, and Hideto Shibata, Yotsukaido, all of Japan, assignors to Iatron Laboratories, Inc., Tokyo, Japan

Division of Ser. No. 971,247, Nov. 3, 1992, which is a continuation of Ser. No. 582,850, Oct. 11, 1990, abandoned. This application May 11, 1993, Ser. No. 60,366

Claims priority, application Japan, Feb. 23, 1989, 1-41597

Int. Cl.[5] C12Q *1/42;* **C07F** *9/02*

U.S. Cl. 435—21 **2 Claims**

1. A method of assaying an enzyme activity of acidic phosphatase or alkaline phosphatase from a living body comprising:

allowing a sample to be assayed derived from a living body fluid to react with a substrate solution comprising 3,4-dinitrophenylphosphoric acid or a salt thereof; and

measuring a color indication of the 3,4-dinitrophenol formed from the substrate.

5,350,678

METHOD OF DIFFERENTIAL ASSAY FOR α-AMYLASE ISOZYMES AND A KIT FOR THE SAME

Tokuji Ikenaka, Sakai, and Kaoru Omichi, Toyonaka, both of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 79,744, Jul. 30, 1987, abandoned. This application May 8, 1992, Ser. No. 884,252

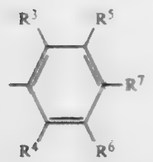
Claims priority, application Japan, Aug. 1, 1986, 61-181564

Int. Cl.[5] C12Q *1/40*

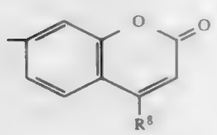
U.S. Cl. 435—22 **14 Claims**

1. A method for the differential assay of human pancreatic α-amylase and human salivary α-amylase isozymes in a sample containing at least one of said isozymes comprising:

a) i) preparing a maltooligosaccharide derivative in which the hydroxy group at the 1-position of the reducing-end glucose residue is substituted with —OR[1], wherein R[1] represents an organic residue, selected from the group consisting of compounds represented by formulae (I), (II), and (III),

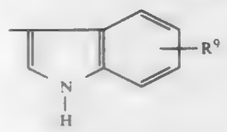


(I)



(II)

-continued



(III)

wherein R[3] to R[6] may be the same or different and are selected from the group consisting of hydrogen, a lower alkoxy group, a nitro group, a carboxyl group, a sulfonic acid group or an halogen, and R[3] together with R[5], and R[4] together with R[6], may be bonded to each other to form an aromatic ring, and R[7] represents hydrogen, a lower alkoxy group, an halogen or a nitro group, R[8] represents hydrogen, a methyl group or a trifluoromethyl group, and R[9] represents hydrogen or an halogen; and

(ii) preparing a solution of said maltooligosaccharide derivative and a first enzyme selected from the group consisting of isomaltase, β-glucosidase and β-amylase; wherein the first enzyme specifically acts on one of reducing-end modified degradation products produced from said derivative by the hydrolytic action of α-amylase(s) in said sample and in which the hydroxy group at the 1-position of the reducing-end glucose residue thereof is substituted with said—OR[1] to release a compound R[1]OH;

(iii) adding to said solution said sample containing α-amylase isozymes; and

(iv) measuring a quantity A by an optical method, the quantity A being the rate of increase in optical change corresponding to the appearance of R[1]OH as a result of the action of said first enzyme on one of the reducing-end modified degredation products produced by the action of α-amylase on said maltooligosaccharide

(v) adding at least one second enzyme that non-specifically acts on said reducing-end modified degredation products to release the compound R[1]OH;

(vi) measuring a quantity B by an optical method, the quantity B being the rate of increase in optical change corresponding to the appearance of R[1]OH as a result of the action of said second enzyme on the reducing-end modified degradation products produced by the action of α-amylase(s) on said maltooligosaccharide derivative; and

c) determining the ratio of human pancreatic α-amylases and human salivary α-amylase in said sample from the ratio A/B using a standard curve.

5,350,679

REPEAT INSULT MICROBIAL TEST METHOD

Carol A. Hess, Vassar, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jun. 14, 1993, Ser. No. 75,436

Int. Cl.[5] C12Q *1/02, 1/04;* **C12N** *11/04, 11/00*

U.S. Cl. 435—32 **14 Claims**

1. A method for conducting a repeat insult microbial test comprising the steps of (i) applying an antimicrobial agent to a porous permeable substrate selected from the group consisting of collagen film, filter paper, artificial skin, and full thickness human cadaver skin; the antimicrobial agent being applied to the porous permeable substrate in a form in which the antimicrobial agent is entrapped as an active ingredient in a nontoxic hydrophobic macroporous highly crosslinked polymer; (ii) inoculating the porous permeable substrate with at least one microorganism selected from the group consisting of *Staphylococcus aureus, Staphylococcus epidermis,* and *Escherichia coli;* (iii) incubating the inoculated porous permeable substrate for a first predetermined period of time at a first temperature which is conducive to the growth and multiplication of the microorganism; (iv) repeating the inoculating and incubating steps (ii) and (iii) a predetermined number of times but at least twice; (v) incubating the inoculated porous permeable substrate for a final predetermined period of time in excess of the first predetermined period of time at the first temperature; the final incubation step (v) being carried out following the last inoculation in step (iv); and (vi) examining and determining the amount of growth of microorganisms covering the porous permeable substrate.

5,350,680

CEPHALOSPORINASE TESTING AGENT

Matsuhisa Inoue, Seta, and Akira Sakai, Tokyo, both of Japan, assignors to Showa Yakuhin Kako Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01732, § 371 Date Feb. 2, 1993, § 102(e) Date Feb. 2, 1993, PCT Pub. No. WO92/11386, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 18, 1991, Ser. No. 976,993

Claims priority, application Japan, Dec. 21, 1990, 2-405144

Int. Cl.[5] C12Q *1/04;* **A61K** *31/43*

U.S. Cl. 435—34 **8 Claims**

1. A cephalosporinase testing agent comprising a cephalosporin antibiotic selected from the group consisting of cefalexin, cefaclor, cefaloglycin, cefadroxil, cefatrizine, cefamandole, cefradine, cefroxadine, cefapirin, cefalotin, cefaloridine, cefotiam, ceftezole, cefazolin and cefacetoril, a penicillinase inhibitor in an amount of 0.5 to 5% by weight based on the weight of the caphalosporin antibiotic, and a pH indicator.

5,350,681

ENZYMATIC MEMBRANE METHOD FOR THE SYNTHESIS AND SEPARATION OF PEPTIDES

Guillermo A. Iacobucci, Atlanta, Ga.; Daniel J. Brose, Bend, Oreg.; Roderick J. Ray, Bend, Oreg., and Paul van Eikeren, Bend, Oreg., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation of Ser. No. 342,402, Apr. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 897,679, Aug. 18, 1986, Pat. No. 5,037,741, and a continuation-in-part of Ser. No. 78,504, Jul. 28, 1987, Pat. No. 5,002,871. This application Aug. 12, 1992, Ser. No. 928,673

The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.

Int. Cl.[5] C12P *21/00*

U.S. Cl. 435—68.1 **32 Claims**

1. A method for the enzymatic synthesis of a peptide, comprising the steps of:

reacting N-acyl-(β-substituted) aspartic acid having an alpha carboxylate group with L-phenylalanine lower alkyl ester having an alpha ammonium group in the presence of thermolysin, in an aqueous reaction phase under conditions in which the alpha carboxylate group and the alpha ammonium group condense forming a protected, uncharged, peptide product;

transporting the protected, uncharged, peptide product across a water-immiscible hydrophobic phase into an aqueous product phase, wherein the water-immiscible hydrophobic phase functions as an ion rejection membrane separating the aqueous reaction phase from the aqueous product phase creating an oil/water interface with each of the aqueous phases, and

separating the protected, uncharged, peptide product from the aqueous product phase to prevent that product from back-diffusing across the water-immiscible hydrophobic phase.

5,350,682

PROCESS FOR PREPARING PEPTIDES

Hans-Dieter Jakubke, Leipzig; Matthias Schuster, Berlin, and Aavo Aaviksaar, Tallinn, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP91/00877, § 371 Date Feb. 12, 1993, § 102(e) Date Feb. 12, 1993, PCT Pub. No. WO91/19811, PCT Pub. Date Dec. 26, 1991

PCT Filed May 10, 1991, Ser. No. 956,025

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1990, 3416031

Int. Cl.[5] C12P *21/00;* **C12N** *9/76, 9/50*

U.S. Cl. 435—68.1 **4 Claims**

1. A process for preparing peptides from amino acids or corresponding peptides, which are blocked with an alpha-amino protective group and whose carbonyl function entering into the reaction carries an ester group, by reaction with amino acids, amino acid derivatives or peptides with an unprotected alpha-amino function, wherein the reaction is carried out, using catalysis by an enzyme selected from the group consisting of serine proteases and cysteine proteases in aqueous solution in a temperature range from −1° C. to −40° C., which aqueous solution optionally contains organic solvent constituents and/or buffer substances, and after completed coupling and working up the protective groups are partially or completely removed.

5,350,683

DNA ENCODING TYPE II INTERLEUKIN-1 RECEPTORS

John E. Sims, Seattle; David J. Cosman, Bainbridge; Stephen D. Lupton; Bruce A. Mosley, both of Seattle, and Steven K. Dower, Redmond, all of Wash., assignors to Immunex Corporation, Seattle, Wash.

Continuation of Ser. No. 701,415, May 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 627,071, Dec. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 573,576, Aug. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 534,193, Jun. 5, 1990, abandoned. This application Jul. 12, 1993, Ser. No. 91,519

Int. Cl.[5] C07K *13/00;* **C12N** *15/12*

U.S. Cl. 435—69.1 **9 Claims**

1. An isolated DNA selected from the group consisting of:

(a) a cDNA clone having a nucleotide sequence encoding an amino acid sequence of amino acids 1 through 385 of SEQ ID NO.:2;

(b) a DNA capable of hybridization to a clone of (a) under moderately stringent conditions and which encodes a biologically active type II IL-1R molecule; and

(c) a DNA having a sequence which is degenerate as a result of the genetic code to a DNA as defined in (a) or (b) above and which encodes biologically active type II IL-1R molecules.

5,350,684

EXTREMELY HALOPHILIC METHANOGENIC ARCHAEBACTERIA

Naoki Nakatsugawa, Wako, and Koki Horikoshi, Tokyo, both of Japan, assignors to Research Development Corporation of Japan; Mitsubishi Electric Corporation, both of Tokyo and Rikagaku Kenkysuho, Wako, all of Japan, a part interest

Division of Ser. No. 255,015, Oct. 7, 1988, Pat. No. 5,055,406. This application Mar. 12, 1991, Ser. No. 668,157

Claims priority, application Japan, Oct. 9, 1987, 62-255995

Int. Cl.[5] C12N *1/20, 5/02;* **C12P** *5/02*

U.S. Cl. 435—167 **3 Claims**

1. A method of using a biologically pure culture of Methanohalococcus alcaliphilum having an optimum growth sodium chloride concentration of from about 2.5M to about 3.0M and an optimum growth pH ranging from about 8.0 to about 8.5, and having methane production activity up to pH's of at least about pH 8.5, to produce methane, comprising cul-

turing said culture of Methanohalococcus alcaliphilum in an anaerobic medium for a time sufficient to produce methane.

5,350,685

PROCESS FOR PREPARING HYDROGEN GAS USING MICROORGANISM

Fumiaki Taguchi, Kanagawa; Masayoshi Morimoto, Tokyo; Takeshi Kyoya, Kanagawa, and Mikio Takano, Tokyo, all of Japan, assignors to Kajima Corporation, Tokyo, Japan

Continuation of Ser. No. 787,349, Nov. 4, 1991, abandoned. This application Jul. 20, 1993, Ser. No. 93,670

Claims priority, application Japan, Nov. 2, 1990, 2-295384

Int. Cl.[5] C12P *3/00;* **C12N** *1/12, 1/20, 1/00*

U.S. Cl. 435—168 **6 Claims**

1. A process for preparing hydrogen gas comprising culturing *Clostridium beijerinckii,* Ferm BP-3592 in medium containing glucose and/or polysaccharide containing a glucose unit for a time sufficient to produce hydrogen gas and recovering the hydrogen gas.

5,350,686

MICROWAVE ACCELERATION OF ENZYME-CATALYZED MODIFICATION OF MACROMOLECULES

Anil K. Jhingan, Polk County, Iowa, assignor to Pioneer Hi-Bred International, Inc., DesMoines, Iowa

Filed Apr. 16, 1992, Ser. No. 869,604

Int. Cl.[5] C12N *13/00;* **A61L** *2/00*

U.S. Cl. 435—173.2 **15 Claims**

1. A method for enzymatic modification of a biological macromolecule comprising the step of exposing a composition comprising the biological macromolecule and an enzyme for which the macromolecule is a substrate to microwaves at a frequency of from 1800 to 3000 MHz and a power of from 50 watts to 1000 watts to accelerate the activity of the enzyme.

5,350,687

ANTIBODIES WHICH BIND TO NOVEL LYMPHOKINE RELATED PEPTIDES

Karel G. Odink, Rheinfelden; Roger Clerc, Basle; Nico Cerletti, Bottmingen; Josef Brüggen, Riehen, all of Switzerland; Lajos Tarcsay, Grenzach-Wyhlen; Clemens Sorg, Münster, both of Fed. Rep. of Germany, and Walter Wiesendanger, Münchenstein, Switzerland, assignors to CIBA-GEIGY Corporation, Ardsley, N.Y.

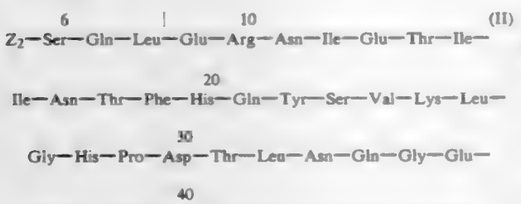
Continuation of Ser. No. 104,744, Oct. 2, 1987, abandoned. This application Nov. 21, 1990, Ser. No. 617,485

Claims priority, application United Kingdom, Oct. 3, 1986, 8623850; Nov. 27, 1986, 8628358

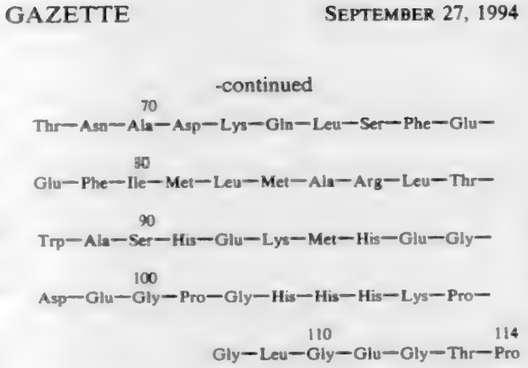
Int. Cl.[5] C07K *5/00, 15/28;* **C12N** *5/12*

U.S. Cl. 435—240.27 **5 Claims**

1. A monoclonal antibody which specifically binds to human macrophage inhibition factor related peptide MRP-14 of the formula (II)



-continued



wherein Z_2 is hydrogen, acyl or an optionally acylated peptide residue of 1 to 5 amino acids and wherein said antibody does not crossreact with human macrophage inhibition factor related peptide MRP-8 of the formula (I)



wherein Z_1 is hydrogen, acyl or the amino acid residue methionine, or a derivative of said antibody which retains the binding pattern of the parent antibody and is selected from the group consisting of antibody fragments, radioactively labelled antibodies, and conjugates of said antibody with enzymes, biotin, avidin, fluorescent markers, chemiluminescent markers and paramagnetic particles.

5,350,688

METHOD FOR REGENERATION OF RICE PLANTS

Tsukanori Matsuno, and Keiichiro Ishizaki, both of Kitsuregawa, Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 661,839, Feb. 27, 1991, abandoned, which is a continuation of Ser. No. 331,679, Mar. 30, 1989, abandoned. This application Jun. 16, 1992, Ser. No. 899,218

Claims priority, application Japan, Mar. 31, 1988, 63-80211

Int. Cl.[5] A01H *4/00*

U.S. Cl. 435—240.5 **4 Claims**

1. A method for producing a rice plant comprising:

(a) inducing in a liquid medium rice callus having embryogenic potency comprising culturing husked seed of rice (*Oryza sativa L.*) in a liquid medium substantially free of solidifying agents, said medium containing:

inorganic salts,

at least one carbon source,

at least one auxin, and

at least one member selected from the group consisting of mannitol, sorbitol and polyethylene glycol;

(b) proliferating said rice callus of step a) comprising culturing said callus in a liquid medium substantially free of solidifying agents, said medium containing:

inorganic salts,

at least one carbon source,

at least one auxin, and

at least one member selected from the group consisting of mannitol, sorbitol and polyethylene glycol;

(c) culturing said callus of step b) in a liquid medium substantially free of solidifying agents, said medium containing:

inorganic salts,

at least one carbon source,

at least one auxin,

at least one osmotic regulator selected from the group consisting of mannitol, sorbitol and polyethylene glycol,

at least one cytokinin, and

at least one member selected from the group consisting of an amino acid and casein hydrolysate,

the components of said medium provided in amounts sufficient to cause the production of a somatic embryo from said callus: and

(d) culturing said somatic embryo on a semi-solid medium containing:

inorganic salts,

at least one carbon source,

at least one auxin,

at least one cytokinin,

at least one member selected from the group consisting of an amino acid and casein hydrolysate, and

at least one solidifying agent selected from the group consisting of agar and gelrite,

the components of said medium provided in amounts sufficient to convert said somatic embryo into a rice plant.

5,350,689

ZEA MAYS PLANTS AND TRANSGENIC *ZEA MAYS* PLANTS REGENERATED FROM PROTOPLASTS OR PROTOPLAST-DERIVED CELLS

Ray Shillito, Chapel Hill; Gleta Carswell, Cary, both of N.C.; Christian Harms, Bad Krozingen, Fed. Rep. of Germany; Cindy Boyce, Raleigh now by change of name from Cindy Bowman , and Yin-Fu Chang, Hayward, both of N.C., assignors to Ciba-Geigy Corporation, Research Triangle Park, N.C.

Continuation of Ser. No. 276,210, Nov. 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 178,170, Apr. 6, 1988, abandoned, which is a continuation-in-part of Ser. No. 56,552, May 29, 1987, abandoned, and a continuation-in-part of Ser. No. 56,506, May 29, 1987, abandoned, which is a continuation-in-part of Ser. No. 53,241, May 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 52,440, May 20, 1987, abandoned. This application Mar. 1, 1993, Ser. No. 24,875

Int. Cl.[5] C12N *5/02, 5/00*

U.S. Cl. 435—240.47 **31 Claims**

13. A method for producing *Zea mays* protoplasts capable of regenerating fertile plants, which method comprises the steps of:

(a) obtaining embryogenic *Zea mays* callus that is relatively nonmucilaginous, and is granular and friable, said callus being obtained by culturing an immature *Zea mays* embryo on a callus-inducing medium comprising 2,4-D followed by the culture of said callus on a callus-maintaining medium comprising 2,4-D,

(b) transferring the callus to a liquid medium to form a suspension of cells or cell aggregates,

(c) subculturing the suspension under conditions sufficient to maintain the cells and cell aggregates in a viable state,

(d) selecting and retaining those cultures from the subcultured suspension of step (c) that contain aggregates of dense, cytoplasmic, dividing cells, sufficient to obtain, in a viable, dividing stage, *Zea mays* protoplasts capable of being regenerated into fertile plants, and

(e) removing the cell walls with suitable enzymes, and isolating *Zea mays* protoplasts.

5,350,690

SUCROSE INDUCIBLE EXPRESSION SYSTEMS

Mark M. Zukowski, Thousand Oaks, Calif., assignor to Amgen Inc., Thousand Oaks, Calif.

Continuation of Ser. No. 659,217, Feb. 22, 1991, abandoned, which is a continuation of Ser. No. 64,933, Jun. 19, 1987, abandoned. This application Apr. 28, 1992, Ser. No. 876,728

Int. Cl.[5] C12N *15/00, 15/03, 15/75*

U.S. Cl. 435—252.31 **3 Claims**

1. A plasmid vector for expressing a gene encoding a desired polypeptide in a *B. subtilis* host microorganism, said vector being selected from the group consisting of pA51S and pAMB12T5S.

5,350,691

METHOD FOR ABANDONING AN UNDERGROUND STORAGE TANK

Richard C. Hannay, 11807 S. Red Cedar Cir., The Woodlands, Tex. 77380, and Dudley B. Pate, 4406 Ingersoll, Houston, Tex. 77027

Continuation-in-part of Ser. No. 749,678, Aug. 26, 1991, Pat. No. 5,238,842. This application Jun. 11, 1993, Ser. No. 75,326

The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.

Int. Cl.[5] E02D *5/00;* **A62D** *3/00;* **C12S** *9/00, 13/00;* **B09B** *3/00*

U.S. Cl. 435—262.5 **15 Claims**

1. A method of abandoning an underground storage tank in which hydrocarbon substances have been stored comprising the steps of:

a. removing residual substances, if any, from said tank; and

b. completely filling said tank with a mixture which includes water, sand, a binding agent and a material for promoting uniform mixing of said mixture wherein said mixture forms a solid composition with a structural strength of 40 psi to 250 psi.

5,350,692

MICROORGANISMS USEFUL FOR HYDROGEN GAS PRODUCTION

Fumiaki Taguchi, Kanagawa; Masayoshi Morimoto, Tokyo; Takeshi Kyoya, Kanagawa, and Mikio Takano, Tokyo, all of Japan, assignors to Kajima Corporation, Tokyo, Japan

Division of Ser. No. 787,349, Nov. 4, 1991, abandoned. This application Jul. 15, 1993, Ser. No. 91,684

Claims priority, application Japan, Nov. 2, 1990, 2-295384

Int. Cl.[5] C12P *3/00;* **C12N** *1/12, 1/20, 1/00*

U.S. Cl. 435—252.7 **2 Claims**

1. A biologically pure culture of clostridium beijerinckii FERM BP-3592.

5,350,693

MULTICHAMBER SYRINGE DEVICE FOR FUSING CELLS

Jonathan Maimon, Rego Park; Bruce S. Schneider, Great Neck; Kenneth C. Gorray, Fresh Meadows, and Michele Mauro, Bayside, all of N.Y., assignors to Long Island Jewish Medical Center, New Hyde Park, N.Y.

Filed Apr. 8, 1993, Ser. No. 44,400

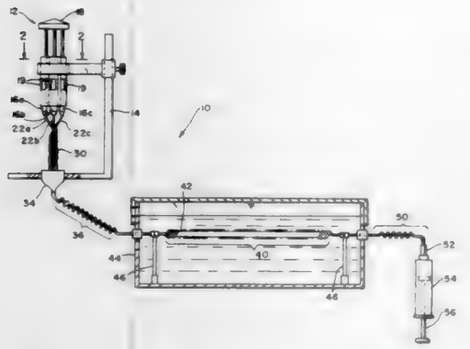
Int. Cl.[5] C12M *1/00, 1/02*

U.S. Cl. 435—287 **5 Claims**

1. Apparatus for fusing cells comprising:

(A) a multichamber syringe having a first chamber containing a suspension of cells of a first type, a second chamber containing a suspension of cells of a second type to be added to the suspension of cells of a first type, and a third

chamber containing at least 40% by volume polyethylene glycol (PEG) solution, said first, second and third chambers defining respective exit passageways braided together with the downstream ends thereof beveled and facing one another at the same level, the relative cross sections of said chambers being of sufficient dimensions to provide a desired ratio of the suspensions and solution for



forming in midair a mixture of 15%–25% PEG by volume;

(B) a substantially horizontally disposed non-linear tube in fluid communication with said syringe for receiving the mixture therefrom; and

(C) means for causing a reciprocating passage of the mixture through said non-linear tube.

5,350,694

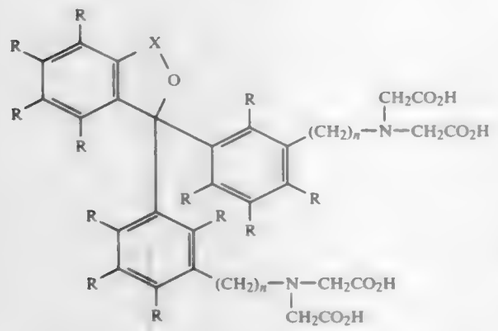
COMPOSITION METHOD AND DEVICE FOR MEASURING THE DIVALENT CATION CONCENTRATION OR SPECIFIC GRAVITY OF A TEST SAMPLE

Chris T. Zimmerle, Elkhart, Ind., assignor to Miles Inc., Elkhart, Ind.

Filed Feb. 19, 1993, Ser. No. 19,668
Int. Cl.[5] G01N *21/00, 31/22, 33/20*
U.S. Cl. 436—2 **19 Claims**

1. A composition capable of exhibiting a detectable and measurable color transition only in response to a total divalent cation concentration of an aqueous test sample, said composition comprising:

(a) about 5 to about 60 millimoles per liter of the composition of a metal-sensitive triphenylmethane dye having the structural formula:



wherein X is carbonyl or sulfonyl, n is a number from 0 to about 3, and the R substituents are selected, independently, from the group consisting of hydrogen, hydroxy, an alkyl group including one to about five carbon atoms, bromo, chloro, fluoro, iodo, sulfonate, and phosphate;

(b) a buffer;

(c) a carrier comprising water; and

(d) about 0.5 to about 4 millimoles per liter of the composition of a chelating agent selected from the group consisting of a polyhydroxy compound, a lignosulfonate, a glucoheptonate, a salicyate complex, a dithionate derivative, a polyethyleneamine, a 2,4-pentanedione, a dipyridine, a polypeptide including cysteine, glycine or histidine, a thiocrown ether, a triphenylphosphine, sorbitol, dimethylglyoxime, proline, bissalicylaldehydeethylenediimine, triethyleneamine, triethylenepyridine amine, 1,4,8,11,22,25-octathiacyclooctosane, ethylenediaminetetraacetic acid, N-(hydroxyethyl) ethylenediaminetriacetic acid, nitrilotriacetic acid, diethylenetriaminepentaacetic acid, aminotris(methylene phosphoric acid), hydroxyethylidene diphosphonic acid, hexamethylenediaminetetra(methylene phosphonate), ethylenediaminediacetic acid, iminodiacetic acid, nitrilopropionic acid, hydroxyethyliminodiacetic acid, pyrophosphoric acid, 1-hydroxyethane-1,1-diphosphonic acid, tripolyphosphoric acid, hexametaphosphoric acid, metaphosphoric acid, and mixtures thereof;

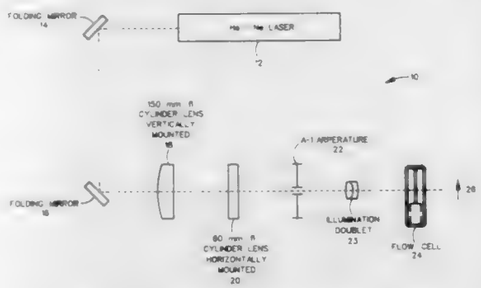
wherein the composition is buffered at a pH of at least about 7.

5,350,695

METHODS FOR THE IDENTIFICATION AND CHARACTERIZATION OF RETICULOCYTES IN WHOLE BLOOD

Gregory M. Colella, Bloomfield, N.J.; Daniel Ben-David, Shrub Oak, N.Y.; Albert Cupo, Scarsdale, N.Y.; Sophie S. Fan, Millwood, N.Y.; Gena Fischer, Harrington Park, N.J.; Grace E. Martin, Mount Kisco, and Leonard Ornstein, White Plains, both of N.Y., assignors to Miles Inc., Tarrytown and Mount Sinai School of Medicine of the City University of New York, New York, both of N.Y.

Filed Dec. 5, 1991, Ser. No. 802,593
Int. Cl.[5] G01N *33/48*
U.S. Cl. 436—63 **18 Claims**



1. A method for identifying light-absorbing subclasses of cells of interest from other subclasses of cells in a blood sample by flow cytometry which comprises the steps of:

(a) mixing an aliquot of said blood sample with an aqueous reagent composition to form a suspension, wherein the reagent composition comprises a solution containing a sphering agent which is a zwitterionic surfactant;

(b) passing said suspension of step (a) substantially a cell at a time through an area of focused optical illumination;

(c) detecting and measuring the light scattered and light absorbed by each cell; and

(d) differentiating said cells of said subclass of interest at least in part on the basis of the measured magnitudes of said scattered and absorbed light.

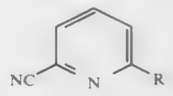
5,350,696

2-ACETYL-6-CYANOPYRIDINES AND THEIR USE AS INTERMEDIATES IN THE SYNTHESIS OF OLIGO-2,6-PYRIDINES

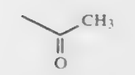
Robert A. Snow, West Chester; Daniel J. Delecki, Radnor; Chandra R. Shah, Frazer, and K. Robert Hollister, Chester Springs, all of Pa., assignors to Sterling Winthrop, Inc., New York, N.Y.

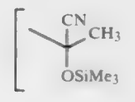
Filed Apr. 13, 1993, Ser. No. 46,221
Int. Cl.[5] C07D *405/12, 213/84*
U.S. Cl. 546—270 **3 Claims**

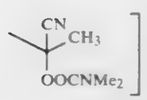
1. A compound having a structure shown in the formula:



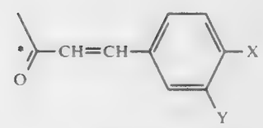
wherein —R is







or



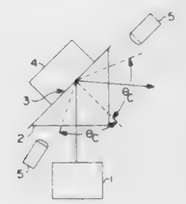
wherein X and Y are independently selected from the group consisting of H, OCH_3, and NO_2; or X and Y together form the group O—CH_2—O; and with the proviso that only one of X and Y is NO_2.

5,350,697

SCATTERED LIGHT DETECTION APPARATUS

C. Hermas Swope, Raleigh; John G. Link, and Jones M. Hyman, both of Durham, all of N.C., assignors to Akzo N.V., Arnhem, Netherlands

Filed Aug. 28, 1990, Ser. No. 574,184
Int. Cl.[5] G01N *33/552*
U.S. Cl. 436—527 **9 Claims**



1. An apparatus for conducting an immunoassay to detect an analyte ligand using a ligand labelled with light scattering particles or a first ligand binding partner labelled with light scattering particles in an aqueous solution, comprising:

(a) a receiving means for receiving and holding an aqueous solution, said receiving means coated with a reagent containing a second ligand binding partner for said analyte ligand or said ligand labelled with light scattering particles and including at least one portion consisting of an optically transmissive material, said material having a refractive index greater than that of said aqueous solution;

(b) illumination means for providing light to an interface formed between said optically transmissive material portion of the receiving means and an aqueous solution in said receiving means, wherein the light is directed to strike the interface at an angle less than the critical angle; and

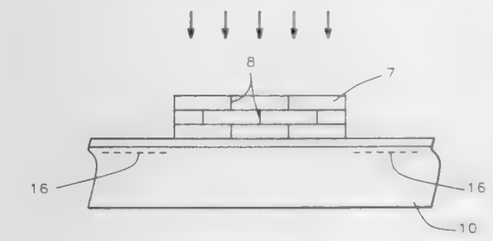
(d) photodetector means for receiving light scattered from said interface at an angle equal to or greater than the critical angle by bound light scattering particles.

5,350,698

MULTILAYER POLYSILICON GATE SELF-ALIGN PROCESS FOR VLSI CMOS DEVICE

Heng-Sheng Huang, Taipei; Kun-Luh Chen, Chu-Nan, and Gary Hong, Hsin-Chu, all of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed May 3, 1993, Ser. No. 55,567
Int. Cl.[5] H01L *21/265;* **B05D** *3/06;* **C23C** *16/00*
U.S. Cl. 437—26 **25 Claims**



1. The method of forming a self-aligned polysilicon gate in an integrated circuit comprising:

forming field silicon oxide regions in and on a semiconductor substrate;

forming a gate silicon oxide layer overlying said semiconductor substrate between said field silicon oxide regions;

depositing a first layer of polysilicon overlying said gate silicon oxide;

forming a native silicon oxide layer having a thickness greater than 5 Angstroms over said first polysilicon layer;

depositing a second layer of polysilicon over said native silicon oxide layer wherein silicon grain boundaries of said second layer of polysilicon are misaligned with silicon grain boundaries of said first layer of polysilicon;

a first annealing of said silicon substrate at a temperature of more than about 800° C. whereby silicon oxide gas from said native silicon oxide layer is exhausted effectively removing said native silicon oxide layer;

etching away said polysilicon layers not covered by a mask to form said polysilicon gate;

implanting a first set of ions into said semiconductor substrate using said gate as a mask;

forming spacers on the vertical sidewalls of said gate;

implanting a second set of ions into said substrate using said gate as a mask wherein said mask is effective because said misaligned silicon grain boundaries of said polysilicon layers do not allow said ions to diffuse into said silicon substrate under said mask;

implanting a third set of ions into said substrate using said gate as a mask;

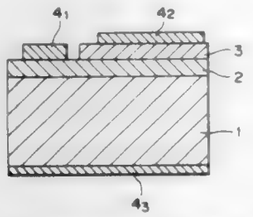
a second annealing of said semiconductor substrate to simultaneously activate said first, second, and third set of implanted ions;

depositing an insulating layer over said gate, gate silicon oxide, and field silicon oxide regions; and
providing by metallization techniques electrical connections to complete formation of said integrated circuit.

5,350,699
METHOD OF MANUFACTURING A HETERO-JUNCTION BI-POLAR TRANSISTOR

Keita Nii, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Division of Ser. No. 883,119, May 14, 1992 abandoned. This application May 11, 1993, Ser. No. 59,268
Claims priority, application Japan, Jul. 19, 1991, 3-179357
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **12 Claims**



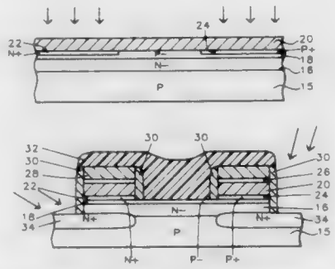
1. A method of manufacturing a hetero-junction bipolar transistor comprising the steps of:
A) forming a beta silicon carbide layer of a first type of conductivity on a top face of a beta silicon carbide substrate of a second type of conductivity which is opposite of that of the first type of conductivity, the beta silicon carbide layer of the first type of conductivity forming a base area of the transistor and the beta silicon carbide substrate of the second type of conductivity forming the collector of the transistor;
B) forming an alpha silicon carbide layer of the second type of conductivity on the beta silicon carbide layer of the first type of conductivity, the alpha silicon carbide layer of the second type of conductivity forming the emitter of the transistor;
C) selectively removing a portion of the alpha silicon carbide layer of the second type of conductivity to expose a portion of the beta silicon carbide layer of the first type of conductivity; and
D) respectively forming collector, base, and emitter electrodes on the beta silicon carbide substrate of the second type of conductivity, the beta silicon carbide layer of the first type of conductivity and the alpha silicon carbide layer of the second type of conductivity.

5,350,700
METHOD OF FABRICATING BIPOLAR TRANSISTORS WITH BURIED COLLECTOR REGION

Ming-Tzong Yang, Hsin, Chu, and Chung-Cheng Wu, I-Lan, both of Taiwan, assignors to United Micro Electronics Corporation, Hsin Chu, Taiwan

Filed Dec. 2, 1993, Ser. No. 160,243
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **16 Claims**

1. A method of fabrication a bipolar transistor having a buried subcollector comprising:
forming a collector layer in a monocrystalline semiconductor substrate having a background impurity of a first type by introducing a impurity of a second opposite type into the top surface of the substrate to a depth;
forming a base layer by introducing a first type impurity into the substrate to a depth less than the collector layer;
depositing a polycrystalline silicon layer on the substrate;
forming an emitter region in the base layer by implanting impurity ions of a second type impurity in a concentration greater than the ion concentration in the collector layer to a depth less than the thickness of the base layer;
forming a base contact region in the base layer spaced from the emitter region by implanting impurity ions of a first type in a concentration greater than the ion concentration in the base layer to a depth less than the thickness of the base layer;
forming an oxide layer on the surface of the polycrystalline silicon layer;
depositing a implant-stopping layer over the oxide layer;
masking the implant-stopping layer to define spaced areas over the emitter region and the base contact region;
anisotropically etching the unmasked areas of the implant-stopping layer, the oxide layer, and the polycrystalline silicon layer;
partially etching the base layer to a depth slightly exceeding the depth of the emitter and base contact regions, to form pedestals having vertical walls;



masking the emitter and base contact regions and the area between the emitter and base contact regions;
anisotropically etching the exposed remaining base layer, and the collector layer;
depositing a conformal implant-stopping layer over the surface of the substrate;
anisotropically etching the conformal implant-stopping layer to form implant-stopping layers on the vertical walls of the pedestals;
forming a buried subcollector beneath the pedestals by ion implanting impurity ions of a second type at an inclined angle relative to the top surface of the substrate, while rotating the substrate;
removing the implant-stopping layers on the vertical walls of the pedestals and the oxide layer;
removing the oxide layer; forming electrical contacts to the subcollector, the emitter region, and base contact region.

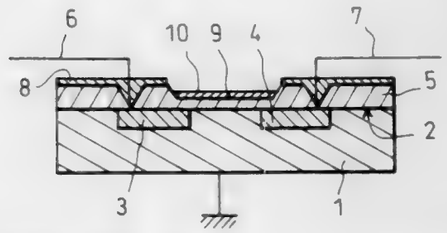
5,350,701
PROCESS FOR PRODUCING A SURFACE GATE OF AN INTEGRATED ELECTRO-CHEMICAL SENSOR, CONSISTING OF A FIELD-EFFECT TRANSISTOR SENSITIVE TO ALKALINE-EARTH SPECIES AND SENSOR OBTAINED

Nicole Jaffrezic-Renault, Ecully; Jean-Marc Chovelon, Lyons; Hubert Perrot, Saint Martin D'Auxigny; Pierre Le Perchec, Lyons, and Yves Chevalier, Irigny, all of France, assignors to Ecole Centrale de Lyon, Ecully Cedex, France

PCT No. PCT/FR91/00723, § 371 Date May 6, 1993, § 102(e) Date May 6, 1993, PCT Pub. No. WO92/05435, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 13, 1991, Ser. No. 988,912
Claims priority, application France, Sep. 14, 1990, 9011586
Int. Cl.[5] H01L *21/335;* **G01N** *27/414*
U.S. Cl. 437—40 **10 Claims**

1. A process for making a surface gate of an integrated electrochemical sensor comprising a field-effect transistor having two doped zones comprising a source and a drain and a median surface on which a surface gate is to be formed, wherein the process comprises the steps of:

subjecting the median surface to a treatment of hydroxylation in order to obtain 10^{14} to 10^{15} OH sites per cm^2,
washing and drying the surface, and further comprising the steps of:

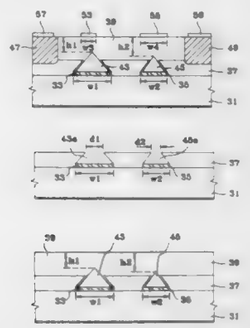


grafting the median surface with a grafting product in order to produce grafts on some or all sites on the median surface,
preparing phosphonate-based iono-sensitive molecules,
making operative one or more of the grafts using the iono-sensitive molecules.

5,350,702
METHOD FOR FABRICATING A DUAL-GATE METAL-SEMICONDUCTOR FIELD EFFECT TRANSISTOR

Seok T. Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Mar. 29, 1993, Ser. No. 38,940
Claims priority, application Rep. of Korea, Mar. 28, 1992, 92-5179
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 **8 Claims**

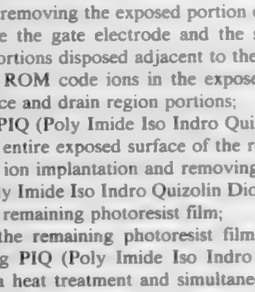


1. A method for fabricating a dual gate metal semiconductor field effect transistor comprising the steps of:
forming a first and a second insulating layers in stripe pattern on a semi-onsulating compound semiconductor substrate in different width titled against a $<\overline{110}>$ direction;
selectively growing a first semiconductor layer on said semiconductor substrate by using said first and second insulating layers in stripe pattern as a mask;
forming a first and a second voids in different height on an upper part of said first and second insulating layers in stripe pattern by selectively growing a second semiconductor layer subsequent to the selective growth of said first semiconductor layer;
forming source and drain regions by partially ion-implanting conductivity impurities to said first semiconductor layer; and
forming a first and second gate electrodes in different width on said second semiconductor layer positioned corresponding to said first and second insulating layers in stripe pattern.

5,350,703
METHOD FOR FABRICATION MASK ROM

Byoung I. Lee, Chungcheongnam-do, Rep. of Korea, assignor to Gold Star Electron Co., Ltd., Rep. of Korea

Filed Aug. 20, 1993, Ser. No. 110,651
Claims priority, application Rep. of Korea, Aug. 20, 1992, 14981/1992
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—48 **2 Claims**



1. A method for fabricating a mask read only memory, comprising the steps of:
forming a gate oxide film, a gate electrode and source and drain regions on one portion of a semiconductor substrate to form a MOS transistor;
depositing a BPSG film over the entire exposed surface of the resultant structure after the formation of the MOS transistor to smooth the structure;
forming a metal electrode on portions of the BPSG film, which portions are disposed over the source and drain regions;
forming a pad on a portion of the BPSG film, which portion is disposed over another portion of the semiconductor substrate, the pad being adapted to provide a connection with an outer circuit;
coating a nitride film over the entire exposed surface of the resultant structure after the formation of the pad and removing a portion of the nitride film disposed over the pad to expose the pad;
coating a photoresist film over the entire exposed surface of the resultant structure after the partial removal of the nitride film and removing portions of the photoresist film, which portions are disposed over the gate electrode and portions of the source and drain regions of the MOS transistor to be implanted with ROM code ions, to partially expose the nitride film and the source and drain region portions disposed adjacent to the gate electrode;
removing the exposed portion of the nitride film, to partially expose the BPSG film;
selectively removing the exposed portion of the BPSG film to expose the gate electrode and the source and drain region portions disposed adjacent to the gate electrode;
implanting ROM code ions in the exposed gate electrode and source and drain region portions;
forming a PIQ (Poly Imide Iso Indro Quizolin Dione) film over the entire exposed surface of the resultant structure after the ion implantation and removing a portion of the PIQ (Poly Imide Iso Indro Quizolin Dione) film disposed over the remaining photoresist film;
removing the remaining photoresist film; and curing the remaining PIQ (Poly Imide Iso Indro Quizolin Dione) film by a heat treatment and simultaneously forming an impurity diffusion region in a portion of the semiconductor substrate disposed beneath the gate electrode.

5,350,704

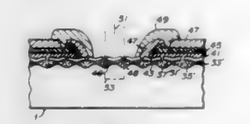
METHOD OF MAKING ADAPTIVE CONFIGURABLE GATE ARRAY BY USING A PLURALITY OF ALIGNMENT MARKERS

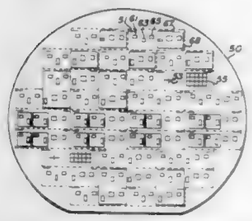
James M. Anderson, Huntington Beach; Andrew R. Coulson, Santa Monica; Vincent J. Demaioribus, Scott Valley, and Henry T. Nicholas, Redondo Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 651,068, Feb. 4, 1991, Pat. No. 5,217,916, which is a division of Ser. No. 416,635, Oct. 3, 1989, abandoned. This application Oct. 13, 1992, Ser. No. 960,496

Int. Cl.[5] H01L *21/72*

U.S. Cl. 437—51 3 Claims





1. In the process of fabricating integrated circuits on a semiconductor wafer containing alignment markers on a surface thereof in which the integrated circuits are to be formed through exposure of the semiconductor wafer using a controlled beam of energy applied by a beam control means apparatus capable of positioning said energy beam to any position on said surface; said beam control means including software program means containing initially stored information defining a circuit pattern and means for controlling the on and off status of said beam to energize the beam only at selected coordinate locations on said surface of said semiconductor wafer where said circuit pattern is to be formed, the improvement comprising the steps of:

determining the positions of said alignment markers on said surface or said semiconductor wafer;

determining if any of said alignment markers coincide with said initially stored circuit pattern on said semiconductor surface indicating an overlap;

defining an alternative mapping of said initially stored circuit pattern to produce a revised circuit pattern that is functionally equivalent to said initially stored circuit pattern without overlapping areas of said surface occupied by said alignment markers; and exposing said surface according to said alternative mapping of said circuit pattern.

5,350,705

FERROELECTRIC MEMORY CELL ARRANGEMENT HAVING A SPLIT CAPACITOR PLATE STRUCTURE

Michael P. Brassington, and Andreas G. Papaliolios, both of Sunnyvale, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 25, 1992, Ser. No. 934,949

Int. Cl.[5] H01L *29/78, 21/70, 27/00*

U.S. Cl. 257—295 44 Claims

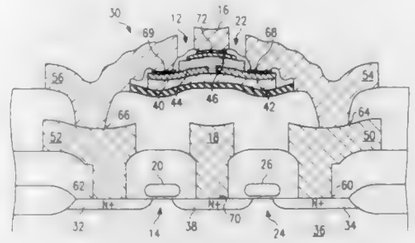
36. A ferroelectric memory, comprising:

a pair of transistors formed in a semiconductor material, each said transistor having a drain region and sharing a common source region;

a pair of first level metal interconnects formed in contact with each said drain region, and being isolated;

an insulation formed over said transistor and around said first level interconnects;

a ferroelectric capacitor structure disposed over said transistors and having a top and bottom plate with ferroelectric material formed therebetween, one said capacitor plate being split to form two laterally spaced apart plates; and



a pair of second level interconnects isolated from each other, each second level interconnect connecting one said first level interconnect to a respective capacitor plate.

5,350,706

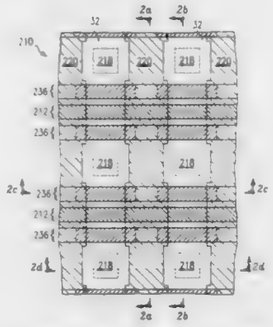
CMOS MEMORY CELL ARRAY

Dave J. McElroy, Allen; Manzur Gill, Arcola, and Pradeep L. Shah, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 30, 1992, Ser. No. 954,368

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 7 Claims



1. A method of fabricating rows and columns of CMOS memory cells in an array on a semiconductor substrate having a first conductivity type, said array having source lines parallel to said rows of cells, comprising the steps of:

forming a column-photoresist pattern on the semiconductor surface to define field oxide isolation regions between areas where said columns of cells are to be formed;

implanting a dopant of said first conductivity-type in areas not covered by said column-photoresist pattern to form a channel stop region;

removing said column-photoresist pattern;

forming a row-photoresist pattern on the semiconductor surface to define said source lines for connecting the sources of rows of said cells to be formed;

implanting said source lines with a dopant of a second conductivity-type opposite said first conductivity-type along areas not covered by said row-photoresist pattern;

removing said row-photoresist pattern; and then

growing an oxide layer for isolation in said field oxide isolation regions.

5,350,707

METHOD FOR MAKING A CAPACITOR HAVING AN ELECTRODE SURFACE WITH A PLURALITY OF TRENCHES FORMED THEREIN

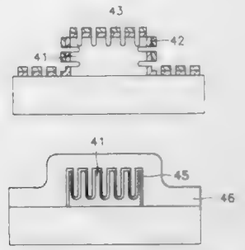
Jaehong Ko; Sungtae Kim, both of Seoul; Hyunbo Shin, and Seonghun Kang, both of Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 13, 1992, Ser. No. 974,735

Claims priority, application Rep. of Korea, Nov. 19, 1991, 91-20618; Jan. 8, 1992, 92-156; Jan. 8, 1992, 92-158

Int. Cl.[5] H01L *21/70, 27/00*

U.S. Cl. 437—52 8 Claims



1. A method for making a capacitor, comprising the steps of:

forming a first conductive layer on a major surface of a substrate;

patterning said first conductive layer, to thereby form a first patterned layer;

forming a first oxide film on said first patterned layer and exposed portions of said major surface of said substrate;

forming a silicon nitride film on said first oxide film;

oxidizing said silicon nitride film, to thereby form a second oxide film;

wherein a plurality of pinholes are formed in said silicon nitride film during said oxidizing step, to thereby form a second patterned layer;

removing said second oxide film and exposed portions of said first oxide film:

etching said first conductive layer, using said second patterned layer as a mask, to thereby form a plurality of microscopic trenches in said first conductive layer;

removing remaining portions of said first oxide film and said second patterned layer; and,

forming a dielectric film on said first patterned layer; and,

forming a second conductive layer on said dielectric film.

5,350,708

METHOD OF MAKING DYNAMIC RANDOM ACCESS SEMICONDUCTOR MEMORY DEVICE

Atsushi Yagishita; Katsuhiko Hieda, both of Yokohama; Akihiro Nitayama, Kawasaki, and Fumio Horiguchi, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 797,192, Nov. 25, 1991, Pat. No. 5,250,830. This application Jun. 18, 1993, Ser. No. 77,744

Claims priority, application Japan, Nov. 30, 1990, 2-340402; Oct. 31, 1991, 3-286258

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 3 Claims

1. A method for manufacturing a dynamic semiconductor memory device wherein a memory cell includes a MOS transistor and a capacitor around a semiconductor pillar portion, said method comprising the steps of:

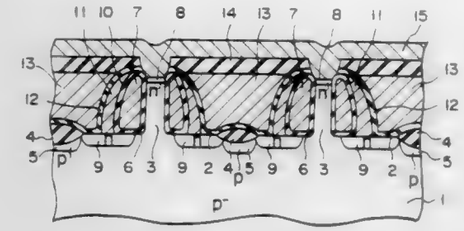
forming a plurality of semiconductor pillar portions arranged in a matrix manner by forming a groove extending in first and second directions transverse to each other in a semiconductor substrate;

forming a field isolation region in a central portion of said groove whereby said field isolation region extends along said groove;

forming a gate electrode surrounding each of said semiconductor pillar portions and extending in the first direction of said matrix after forming a gate insulating film around said semiconductor pillar portions;

forming a diffusion layer serving as a source or drain region in a groove bottom portion by use of said gate electrode as a mask;

forming a storage node of said capacitor to surround each of said semiconductor pillar portions where said gate electrode is formed and to contact said diffusion layer after forming an interlayer insulating film on the surface of said gate electrode;



burying a cell plate in said groove after forming a capacitor insulating film on the surface of said storage node;

exposing the upper surface of said semiconductor pillar portion, after covering the upper surface of said cell plate with an interlayer insulating film, to form a diffusion layer serving as a source or drain region on the exposed upper surface; and

forming a bit line extending in the second direction of said matrix by contacting the upper surface of said diffusion layer of said semiconductor pillar portions.

5,350,709

METHOD OF DOPING A GROUP III-V COMPOUND SEMICONDUCTOR

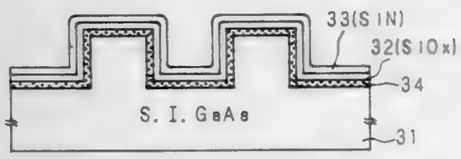
Yasoo Harada; Shigeharu Matsushita; Satoshi Terada; Emi Fujii; Takashi Kurose; Takayoshi Higashino; Takashi Yamada; Akihito Nagamatsu; Daijirou Inoue, and Kouji Matsumura, all of Moriguchi, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jun. 10, 1993, Ser. No. 75,232

Claims priority, application Japan, Jun. 13, 1992, 4-179421; Jun. 13, 1992, 4-179422; Jun. 13, 1992, 4-179423; Jun. 16, 1992, 4-183260; Jun. 18, 1992, 4-186196; Jun. 19, 1992, 4-186375; Jun. 19, 1992, 4-186376; Oct. 27, 1992, 4-312744; Oct. 30, 1992, 4-316248; Nov. 19, 1992, 4-310559; Nov. 30, 1992, 4-345473; Jan. 12, 1993, 5-3612; Jan. 14, 1993, 5-5307; Jan. 19, 1993, 5-6950; Mar. 15, 1993, 5-54053

Int. Cl.[5] H01L *21/225*

U.S. Cl. 437—161 21 Claims



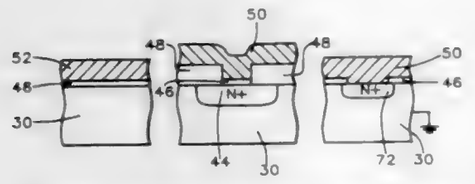
1. A method of doping a Group III-V compound semiconductor with an impurity, comprising the steps of:

successively depositing on a crystal of a Group III-V compound semiconductor an undoped silicon oxide film (an SiOx film) and a film for preventing the external diffusion of Group V atoms that constitute part of the crystal of the Group III-V compound semiconductor; and

performing at least one heat treatment on the thus prepared

sample to cause silicon (Si) in the SiOx film to diffuse into the Group III-V compound semiconductor.

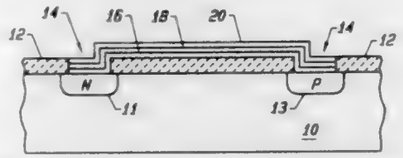
5,350,710
DEVICE FOR PREVENTING ANTENNA EFFECT ON CIRCUIT
Gary Hong, Hsin, and Joe Ko, Hsinchu, both of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan
Filed Jun. 24, 1993, Ser. No. 80,536
Int. Cl.[5] H01L *21/14*
U.S. Cl. 437—170 **18 Claims**



1. A method of forming a multi-level conductive interconnection for an integrated circuit with an antifuse device, in and on a silicon substrate, wherein there are large contact pad areas at the periphery of said interconnection, comprising:
forming an oxide layer on said silicon substrate;
forming a conductive layer on said oxide layer, connected to said integrated circuit, and also connected to a ground reference through a silicon junction in said substrate;
forming said large contact pad areas with a layer of metal;
forming a first dielectric layer on said first conductive layer;
patterning said first dielectric layer to form the dielectric for said antifuse device;
forming a second dielectric layer on said first conductive layer and over said dielectric;
patterning said second dielectric layer to form an opening to said antifuse device dielectric;
forming a second conductive layer over said second dielectric layer and said dielectric, to complete formation of said antifuse device and connect said antifuse device to said contact pad, wherein said antifuse device electrically isolates said contact pad and said integrated circuit to prevent charge build-up during subsequent processing;
further processing in a plasma environment that would normally produce electrical charge build-up at gate oxide of said integrated circuit, but wherein said antifuse device prevents said charge build-up;
applying a voltage to said antifuse device to create a low impedance element; and
completing formation of said integrated circuit.

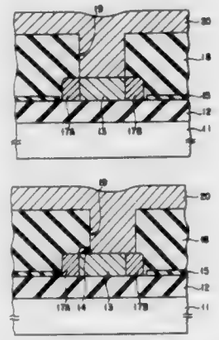
5,350,711
METHOD OF FABRICATING HIGH TEMPERATURE REFRACTORY METAL NITRIDE CONTACT AND INTERCONNECT STRUCTURE
John H. Hall, 3169 Payne Ave., San Jose, Calif. 95117
Filed Jun. 25, 1993, Ser. No. 83,844
Int. Cl.[5] H01L *21/265, 21/283*
U.S. Cl. 437—192 **5 Claims**

1. A method of fabricating an interconnect structure for a semiconductor integrated circuit comprising the steps of
providing a semiconductor substrate having an insulation layer on a surface,
selectively etching said insulation layer to form contact openings to said substrate,
depositing a first layer of a nitride of a refractory metal on said insulation layer and in said contact openings,
depositing a layer of said refractory metal on said first layer,
depositing a second layer of a nitride of said refractory metal on said layer of refractory metal, said first layer, said layer of refractory metal, and said second layer forming said interconnect structure; and



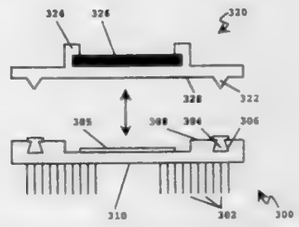
implanting boron ions in said substrate through said interconnect structure in said openings to facilitate ohmic contact between said interconnect structure and said substrate.

5,350,712
METHOD OF MANUFACTURING A SEMICONDUCTOR IC DEVICE HAVING MULTILAYER INTERCONNECTION STRUCTURE
Hideki Shibata, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 16, 1993, Ser. No. 121,554
Claims priority, application Japan, Sep. 18, 1992, 4-249697
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—195 **10 Claims**



1. A method of manufacturing a semiconductor integrated circuit device, comprising the steps of:
forming a first insulating layer on a major surface of a semiconductor substrate;
forming a first-level metal wiring layer on the first insulating layer
forming a second insulating layer on the first insulating layer and the first-level metal wiring layer;
coating the second insulating layer with a photoresist, and removing that part of the photoresist which is coated on a region of the first-level metal wiring layer containing a contact formation region;
exposing part of the first-level metal wiring layer by removing at least that part of the second insulating layer which is located on the side portion of the first-level metal wiring layer in the vicinity of the contact formation region;
increasing the width of the contact formation region of the first-level metal wiring layer by forming a metal layer on the exposed surface of the first-level metal wiring layer;
forming a third insulating layer on the second insulating layer, the first-level metal wiring layer, and the metal layer;
forming, by anisotropic etching, a through hole in that portion of the third insulating layer which is located on the contact formation region of the first-level metal wiring layer; and
forming a second-level metal wiring layer such that it fills the through hole, extends on part of the third insulating layer, and is electrically connected to the first-level metal wiring layer.

5,350,713
DESIGN AND SEALING METHOD FOR SEMICONDUCTOR PACKAGES
Louis H. Liang, Los Altos, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.
Continuation-in-part of Ser. No. 630,113, Dec. 19, 1990, Pat. No. 5,218,215, and a continuation-in-part of Ser. No. 900,137, Jun. 18, 1992, abandoned. This application Sep. 10, 1992, Ser. No. 943,260
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—217 **20 Claims**

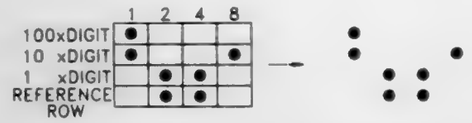


1. A method for housing an integrated circuit comprising the steps of:
forming first and second housing portions adapted to be joined together to house said integrated circuit;
forming a groove having serrated walls in said first housing portion;
insert molding a thermal plastic material into said groove of said first housing portion to form a thermal plastic joint area therein;
forming a thermal plastic joint area on said second housing portion; and
bringing said first and second housing portions together, and joining them together by ultrasonically welding together said thermal plastic joint areas of said first and second housing portions.

5,350,714
POINT-OF-USE PURIFICATION
Peter Trefonas, III, Medway, and Richard J. Carey, Sherborn, both of Mass., assignors to Shipley Company Inc., Marlborough, Mass.
Filed Nov. 8, 1993, Ser. No. 148,354
Int. Cl.[5] H01L *21/312*
U.S. Cl. 437—229 **12 Claims**

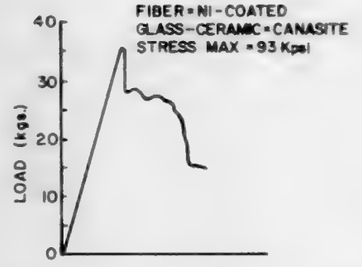
1. A process for coating a liquid organic photoresist composition onto a wafer for integrated circuit manufacture, said process comprising the steps of providing a dispensing means for dispensing said organic composition, a wafer upon which said organic composition is to be coated, and purification means disposed between said dispensing means and said wafer, said purification means comprising a module containing a member selected from the group consisting of at least one ion exchange resin, an activated carbon adsorbent and mixtures thereof, passing said organic photoresist composition from said dispensing means through said purification means to said wafer and drying said photoresist coating.

5,350,715
CHIP IDENTIFICATION SCHEME
Wui-soo Lee, Kyungki, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea
Filed Nov. 12, 1992, Ser. No. 974,423
Claims priority, application Rep. of Korea, Nov. 12, 1991, 91-20034
Int. Cl.[5] H01L *21/00*
U.S. Cl. 437—250 **8 Claims**



1. A method for determining the original location of a semiconductor chip fabricated on a wafer, comprising the step of applying a location identification mark on the chip, said location identification mark being indicative of the original location of the chip on the wafer, said location identification mark being comprised of a plurality m of rows of binary indicia and a plurality n of columns of binary indicia arranged in an m x n matrix, wherein a total coded value for said matrix is calculated by summing total row values calculated for each row by multiplying a row value assigned to that row by the sum of column values assigned to each column in that row where a "1" bit is present.

5,350,716
FIBER-REINFORCED COMPOSITES
George H. Beall, Big Flats; Kenneth Chyung, and Mark P. Taylor, both of Painted Post, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.
Filed Aug. 9, 1984, Ser. No. 638,994
Int. Cl.[5] C03C *10/04*
U.S. Cl. 501—5 **1 Claim**



1. A fiber-reinforced composite having a high degree of fracture toughness and being composed of a glass-ceramic matrix reinforced with silicon carbide fibers, the crystal phase of the matrix glass-ceramic being essentially completely canasite, and the matrix composition, in weight percent as calculated on an oxide basis, consisting essentially of 50–65% SiO_2, 15–24% CaO, 5–9% F, 3–13% Na_2O, 3–25% K_2O, 11–22% Na_2O+K_2O, 0–3% B_2O_3, 0–3% Al_2O_3, and 0–8% ZrO_2.

5,350,717

METHOD FOR TREATING BETA-SPODUMENE CERAMICS

J. Paul Day, and David L. Hickman, both of Big Flats, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Jun. 4, 1993, Ser. No. 72,547
Int. Cl.[5] C03C *10/12*; C04B *35/18*
U.S. Cl. 501—7 | 5 Claims

1. A method for treating a beta-spodumene ceramic article which comprises the steps of:

providing a source of strong acid vapor;

positioning the article at a location spaced from the source;

contacting the article with circulating vapors of a strong acid while maintaining the article and the vapor at a substantially uniform temperature above the condensation temperature of the vapor, said contact being for a time at least sufficient to form a lithium salt bloom on the surface of the article; and

recovering the salt from the surface of the article without contaminating the source with the salt.

5,350,718

GLASS FRITS, A PROCESS FOR THEIR PRODUCTION AND THEIR USE IN ENAMEL BARRIER LAYERS FOR STOPPING THE MIGRATION OF SILVER

Jerome Anquetil, Saint-Leonard-de-Noblat, and Alain Dauger, Boisseuil, both of France, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 857,369, Mar. 24, 1992, abandoned. This application Sep. 1, 1993, Ser. No. 115,034
Claims priority, application France, Mar. 25, 1991, 91 03571
Int. Cl.[5] C03C *8/04*
U.S. Cl. 501—21 | 17 Claims

1. A glass frit essentially free of lead for forming an enamel capable of preventing Ag^+ migration, said glass frit comprising 15 to 70% by weight zinc oxide, 15 to 40% by weight silicon dioxide and 5 to 25% by weight boron trioxide and containing dissolved in said glass 0.05 to 15 mol % of at least one member of the group consisting of sulfur and sulfides.

5,350,719

PREPARATION OF TITANIUM NITRIDE-CONTAINING REFRACTORY MATERIAL COMPOSITES

Chaitanya K. Narula, Ann Arbor, and Gary M. Crosbie, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 6, 1992, Ser. No. 972,333
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—96 | 14 Claims

1. A process for preparing a titanium nitride-containing refractory material solid composite, comprising the steps of:

A) contacting a titanium tetrahalide with a disilazane at a temperature and for a period of time sufficient to prepare a titanium-containing organometallic precursor;

B) mixing the titanium-containing organometallic precursor with a refractory material powder, the weight ratio of titanium-containing organometallic precursor to refractory material powder being from about 1:50 to about 1:1;

C) heating the mixture of titanium-containing organometallic precursor and refractory material powder in an inert atmosphere to a temperature of at least about 600° C. and for a period of time sufficient to pyrolyze the precursors; and

D) further heating the pyrolyzed mixture at a temperature of at least about 1,600° C. to densify the pyrolyzed mixture to a solid composite.

5,350,720

TRIPLE-LAYERED CERAMIC HEATER

Nobuo Kawada; Yoshihiro Kubota; Kesazi Harada, and Kenji Itou, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 850,690, Mar. 11, 1992, abandoned. This application Apr. 12, 1993, Ser. No. 45,934
Claims priority, application Japan, Mar. 18, 1991, 3-078514
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—97 | 3 Claims

1. A triple-layered ceramic heater which is an integral body comprising:

(a) a substrate plate made from silicon nitride having a thickness in the range from 0.1 to 10 mm;

(b) a layer of graphite having a thickness in the range from 0.5 to 500 μm form on at least one surface of the substrate plate to serve as a heater element layer; and

(c) a coating layer of silicon nitride formed by the chemical vapor-phase deposition method and having a thickness in the range from 5 to 500 μm formed on the surface of the heater element layer of graphite.

5,350,721

DIELECTRIC CERAMIC COMPOSITION CONTAINING ZNO-B203-SI02 GLASS, METHOD OF PREPARING THE SAME, AND RESONATOR AND FILTER USING THE DIELECTRIC CERAMIC COMPOSITION

Masahiro Abe; Tsutomu Nanataki, and Shinsuke Yano, all of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 102,059, Aug. 4, 1993, Pat. No. 5,304,521, which is a division of Ser. No. 948,585, Sep. 23, 1992, Pat. No. 5,264,403. This application Jan. 14, 1994, Ser. No. 181,423
Claims priority, application Japan, Sep. 27, 1991, 3-276587; Mar. 18, 1992, 4-92180; Mar. 18, 1992, 4-92182; Mar. 25, 1992, 4-98862; Sep. 21, 1992, 4-276594; Sep. 21, 1992, 4-276595; Sep. 21, 1992, 4-276596
Int. Cl.[5] C04B *35/46*
U.S. Cl. 501—139 | 8 Claims

1. A dielectric ceramic composition which consists essentially of: a main ceramic composition containing barium oxide, strontium oxide, calcium oxide, titanium oxide, rare earth oxide and bismuth oxide as major components, which composition is represented by x[(1-c-d)BaO.cSrO.dCaO].yTiO2.z[(1-e)RE_2O_3.eBi_2O_3] where RE represents at least one rare earth metal, $0.10 \leqq x \leqq 0.02$, $0.60 \leqq y \leqq 0.75$, $0.10 \leqq z \leqq 0.25$, $x+y+z=1$, $0 \leqq c \leqq 0.40$, $0 \leqq d \leqq 0.20$, $0 \leqq e \leqq 0.30$ and $0<c+d$; and a glass composition composed of ZnO, B_2O_3 and SiO_2, which is represented by k(wt. %)ZnO.m(wt. %)B_2O_3.n(wt. %)SiO2 where $30 \leqq k \leqq 85$, $5 \leqq m \leqq 50$, $2 \leqq n \leqq 40$, $k+m+n=100$, said glass composition being contained in an amount of at least 0.1 part by weight, but not more than (18–62.5e) parts by weight (where $0<e \leqq 0.2$) or not more than 5.5 parts by weight (where $0.2<e \leqq 0.3$), per 100 parts by weight of said main ceramic composition.

5,350,722

MTW-TYPE ZEOLITE AND ITS PREPARATION PROCESS

Jean-François Joly, Paris; Philippe Caullet, Illzach; Anne-Catherine Faust, Mulhouse; Jacques Baron, Mulhouse, and Jean-Louis Guth, Mulhouse, all of France, assignors to Institut Francias du Petrole, Rueil Malmaison, France

PCT No. PCT/FR91/01029, § 371 Date Aug. 20, 1992, § 102(e) Date Aug. 20, 1992, PCT Pub. No. WO92/11203, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 18, 1991, Ser. No. 920,487
Claims priority, application France, Dec. 21, 1990, 90 16256
The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.
Int. Cl.[5] B01J *29/06*
U.S. Cl. 502—64 | 10 Claims

1. Synthetic crystalline zeolite of the MTW type characterized by:

a) the following approximate general formula:

$$M_{2/n}O,\ Al_2O_3,\ xSiO_2$$

in which M represents a metal cation and/or a proton, n is the valency of M and x is a number between 14 and 800,

b) a X-ray diagram shown in table I of the description,

c) a fluorine content between approximately 0.005 and 2% by weight, said zeolite having been synthesized in a fluoride medium, accompanied by stirring.

5,350,723

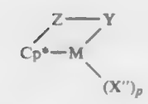
PROCESS FOR PREPARATION OF MONOCYCLOPENTADIENYL METAL COMPLEX COMPOUNDS AND METHOD OF USE

David R. Neithamer, and James C. Stevens, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 15, 1992, Ser. No. 884,966
Int. Cl.[5] C08F *4/64*
U.S. Cl. 502—104 | 5 Claims

1. A process for preparing a cationic complex comprising contacting:

a) a derivative of a Group 4 or Lanthanide metal corresponding to the formula:



wherein:

M is zirconium or titanium;

Cp^* is a cyclopentadienyl group; or a group selected from indenyl, fluorenyl and hydrogenated derivatives thereof; or one of the foregoing groups substituted with one or more alkyl, aryl or cycloalkyl moieties of up to 20 carbons, said Cp^* further being bound in an η^5 bonding mode to M;

Z is SiR^*_2, CR^*_2, $SiR^*_2SiR^*_2CR^*_2CR^*_2$, $CR^*{=}CR^*$, $CR^*_2SiR^*_2$, or GeR^*_2;

Y is a nitrogen or phosphorus containing group corresponding to the formula —N(R‴)— or —P(R‴)—; wherein:

R^* each occurrence is hydrogen or a moiety selected from alkyl, aryl, silyl, halogenated alkyl, halogenated aryl groups and combinations thereof having up to 20 non-hydrogen atoms, and R‴ is $C_{1\text{-}10}$ alkyl or $C_{6\text{-}10}$ aryl;

X′ each occurrence is halo, alkyl, aryl, alkoxy, or aryloxy of up to 20 carbons; and p is 2, with

b) a salt corresponding to the formula $©^+A^-$, wherein $©^+$ is a stable carbonium ion containing up to 30 nonhydrogen atoms and A^- is a noncoordinating compatible anion;

under conditions to cause abstraction of one X″ and formation of the neutral species, ©X″.

5,350,724

POLYOLEFIN POLYMERIZATION PROCESS, PROCESS OF PRODUCING CATALYST, AND CATALYST

Joel L. Martin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 4, 1993, Ser. No. 58,167
Int. Cl.[5] B01J *31/00*; C08F *4/64*
U.S. Cl. 502—110 | 10 Claims

1. A process for preparing a polymerization catalyst comprising

(1) contacting a magnesium compound, a 4-phenylphenol, and titanium tetrachloride to form a solid product,

wherein said magnesium compound is a dialkylmagnesium compound wherein each alkyl group contains 1 to 12 carbon atoms;

(2) contacting said solid product and an organoaluminum halide to form a first catalyst component,

wherein said organoaluminum halide contains at least one hydrocarbyl radical selected from hydrocarbyl radicals containing 1 to 12 carbon atoms per radical; and

(3) contacting said first catalyst component and an activating agent to form said catalyst,

wherein said activating agent is titanium tetrachloride, silicon tetrachloride, $C_6H_5SiCl_3$, or mixtures thereof.

5,350,725

POLYMERIZATION PROCESS

Johannes A. Van Doorn; Harry van der Heijden, and Hans A. Stil, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 934,224, Aug. 25, 1992, Pat. No. 5,247,065. This application Jun. 4, 1993, Ser. No. 72,209
Claims priority, application Netherlands, Aug. 30, 1991, 9101465
Int. Cl.[5] B01J *31/24*
U.S. Cl. 502—162 | 10 Claims

1. A catalyst composition formed from a compound of palladium, the anion of a non-hydrohalogenic acid having a pKa below 2 and a bidentate ligand of phosphorus wherein the divalent group bridging the two phosphorus atoms is 2-hydroxy-2-alkyl-1,3propylene.

5,350,726

CARBOCATIONIC CATALYSTS AND PROCESS FOR USING SAID CATALYSTS

Timothy D. Shaffer, Dickinson, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Sep. 3, 1993, Ser. No. 116,422
Int. Cl.[5] B01J *31/14*
U.S. Cl. 502—169 | 21 Claims

1. A catalyst composition comprising: an initiator comprising one or more of water, tertiary alkyl halides, tertiary aralkyl halides, tertiary alkyl esters, tertiary aralkyl esters, tertiary alkyl ethers, tertiary aralkyl ethers, tertiary alkyl carboxylic acids, tertiary aralkyl carboxylic acids, tertiary alkyl acid halides, tertiary aralkyl acid halides, wherein each alkyl is independently a linear, branched or cyclic chain alkyl and each aralkyl may be substituted or unsubstituted; and

a co-initiator of alkoxy metal halide, wherein the metal is selected from the group consisting of aluminum, boron, gallium, vanadium, chromium, manganese, iron, cobalt, nickle, copper, zinc, tin, indium.

8. The catalyst composition of claim 1 wherein the initiator is pentoxyaluminum dichloride.

5,350,727

PROCESS OF PREPARING CATALYST SUPPORTING HIGHLY DISPERSED PLATINUM PARTICLES

Kazunori Tsurumi, Kanagawa, Japan, and Paul Stonehart, Madison, Conn., assignors to Tanaka Kikinzoku Kogyo K.K., Japan and Stonehart Associates Inc., Madison, Conn.

Filed Jul. 6, 1993, Ser. No. 88,082
Claims priority, application Japan, Jul. 6, 1992, 4-202003
Int. Cl.[5] B01J *23/42*
U.S. Cl. 502—325 1 Claim



1. A process of preparing a catalyst, which comprises highly dispersed platinum particles, said process comprising the steps of:

a. preparing a platinum containing solution by dissolving dinitrodiamine platinum in nitric acid;

b. adding a supporting material for said platinum particles, in the catalyst, to the platinum containing solution;

c. adding allyl alcohol and hydrazine hydrate to the platinum containing solutions; wherein a platinum containing reaction product of the dissolved dinitroamine platinum, the allyl alcohol and the hydrazine hydrate is deposited on said supporting material; and

c. thermally treating the supporting material in a hydrogen-containing reduction gas, to reduce the reaction product to the platinum particles.

5,350,728

METHOD OF PREPARING A SOLID MASS FOR MERCURY RECOVERY

Charles Cameron, Paris; Philippe Courty, Houilles; Georges Berrebi, Bourge les Valence; Raymond Roumieu, Valence; Hans Rabehasaina, Loriol sur Drome, and Francois Eschard, Le Vesinet, all of France, assignors to Institut Francais du Petrole and Europeene de Retraitment de Catalyseurs (Eurecat), La Voulte sur Rhone, France

Continuation of Ser. No. 784,216, Oct. 30, 1991, abandoned.
This application Jul. 19, 1993, Ser. No. 92,924
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1990, 13597
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] B01J *20/08, 20/12, 20/16, 20/20*
U.S. Cl. 502—415 19 Claims

1. In a solid mercury recovery mass comprising a solid mineral aluminous dispersant or support, and copper and sulfur at least partly in the form of copper sulfide, the improvement comprising an improved long-term life of the recovery mass resulting from the production of the mass by the following stages:

(a) incorporating at least one copper compound other than a sulfide into a solid mineral aluminous dispersant or support,

(b) when said copper compound in step (a) is not a copper oxide, calcining the product obtained in stage (a) so as to convert at least in part the copper compound(s) which it contains into copper oxide (CuO and/or Cu_2O),

(c) bringing the product obtained in stage (b) or in stage (a) when there has not been a stage (b) into contact with elemental sulfur, and

(d) subjecting the product resulting from stage (c) to a heat treatment in a non-oxidizing atmosphere at a temperature and for a time sufficient to convert at least 80% of the copper to the sulfide state.

5,350,729

DEVELOPER SHEET WITH STRUCTURED CLAYS AND PROCESS THEREOF

Michael G. Londo, and Datta G. Mislankar, both of Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Mar. 2, 1993, Ser. No. 25,083
Int. Cl.[5] B41M *5/155*
U.S. Cl. 503—225 14 Claims

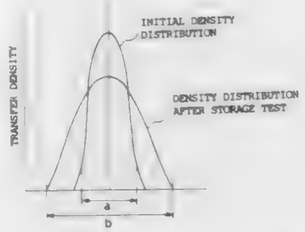
1. A developer sheet comprising a support having a developer composition on the surface thereof, said composition comprising a structured clay having a void volume greater than about 50%, a binder and a developer resin.

5,350,730

IMAGE-RECEIVING SHEET FOR THERMAL TRANSFER RECORDING

Takao Hirota, Machida; Katsuhiko Kuroda, Yokohama, and Mamika Tamaki, Machida, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Apr. 15, 1992, Ser. No. 868,655
Claims priority, application Japan, Apr. 19, 1991, 3-116814; Apr. 19, 1991, 3-116815; Apr. 19, 1991, 3-116816
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 16 Claims



1. An image receiving sheet for dye transfer-type thermal transfer recording, comprising:

a substrate, and

an image receiving layer formed on the surface of said substrate, and composed of a resin having dyeing property and an aliphatic ester having 24 or more carbon atoms per one ester group, a fatty acid ester of a polyhydric alcohol or a mixture thereof.

5,350,731

THERMALLY TRANSFERABLE FLUORINE-CONTAINING AZO DYES

Linda K. Williams; Prakob Kitipichai, both of St. Paul; Cecil V. Francis, Woodbury, and Ramaiah Muthyala, Mendota Heights, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

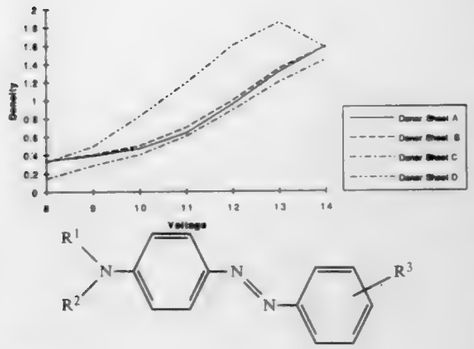
Filed Dec. 7, 1993, Ser. No. 163,375
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 17 Claims

10. A process for providing an image by a thermal transfer process comprising:

(a) providing a thermal transfer donor sheet and a thermal transfer receptor sheet in a facing relationship; and

(b) applying heat in an imagewise distributed manner to the donor sheet to cause material on the donor sheet to transfer to the receptor sheet;

wherein the donor sheet comprises a flexible substrate having coated thereon a dye donor layer containing a dye of the formula (Formula I):



wherein:

(i) R^1=a (C_{1-20})alkyl or hydroxy(C_{1-20})alkyl group;

(ii) R^2=a hydroxy(C_{1-20})alkyl or (C_{1-20})alkylene—OC(O)NH—(C_{1-20})alkylene—OC(O)—R^4 wherein R^4 is a (C_{2-20})alkenyl group or a polymerized alkenyl group;

(iii) R^3=F or CF_3; and

(iv) said dye is stable under ambient conditions for at least about 6 months.

5,350,732

SUBBING LAYER FOR DYE-DONOR ELEMENT USED IN THERMAL DYE TRANSFER

Karen M. Kosydar, Penfield; Stephen M. Neumann, Rochester; Robert G. Spahn, Webster, and Edward P. Otocka, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 17, 1994, Ser. No. 198,022
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 18 Claims

7. A process of forming a dye transfer image comprising:

(a) imagewise-heating a dye-donor element comprising a support having on one side thereof, in order, a subbing layer and a dye layer, and

(b) transferring a dye image to a dye-receiving element to form said dye transfer image, wherein said subbing layer comprises a vacuum-deposited metal oxide, and wherein either a) an infrared-absorbing material is contained in said dye layer or a layer associated therewith, or b) the other side of the support has a slipping layer thereon.

5,350,733

RECEIVING ELEMENT FOR USE IN THERMAL DYE TRANSFER

Bruce C. Campbell, and William A. Mruk, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 4, 1994, Ser. No. 205,532
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 17 Claims

12. A process of forming a dye transfer image comprising:

a) imagewise-heating a dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a binder, and

b) transferring a dye image to a dye-receiving element comprising a base having thereon a dye image-receiving layer to form said dye transfer image,

wherein said dye-receiving element base comprises a composite film laminated to a support, said dye image-receiving layer being on the composite film side of said base, said composite film comprising a microvoided thermoplastic core layer and at least one substantially void-free thermoplastic surface layer having a thickness of about 3 to about 6 μm, and said surface layer containing at least about 0.5 g/m^2 of TiO_2.

5,350,734

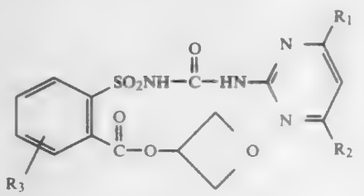
SELECTIVE HERBIDICAL COMPOSITION COMPRISING OXETAN-3-OXYCARBONYLPHENYLSULFONYLUREA HERBICIDES AND QUINOLINE DERIVATIVES AS SAFENERS

Jutta Glock, Kaisten, Switzerland, and Elmar Kerber, Görwihl, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 26, 1993, Ser. No. 97,142
Claims priority, application Switzerland, Jul. 30, 1992, 2400/92-3; Aug. 26, 1992, 2647/92-4
Int. Cl.[5] A01N *25/32, 43/20*
U.S. Cl. 504—105 14 Claims

1. A composition for the selective control of weeds in crops of useful plants, which, in addition to inert carriers and additives, comprises as active ingredient a mixture comprising

a) a herbicidally effective amount of a sulfonylurea of formula I



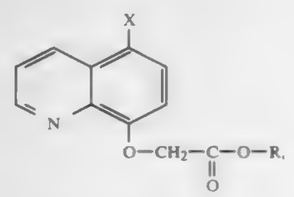
(I)

wherein

R_1 and R_2 independently of one another are methyl or methoxy;

R_3 is hydrogen, halogen, methyl or methoxy; and

b) as safener, a herbicide-antagonistically effective amount of a quinoline derivative of formula II



(II)

wherein

R is hydrogen or C_1–C_8 alkyl and

X is hydrogen or chlorine.

5,350,735

COMPOSITION AND METHOD FOR ENHANCED FERTILIZER UPTAKE BY PLANTS

Alan M. Kinnersley, Knoxville, Tenn.; Larry P. Koskan, Orland Park, Ill.; David J. Strom, New Market, Tenn., and Abdul R. Y. Meah, Justice, Ill., assignors to Donlar Corporation, Bedford Park, Ill.

Filed Nov. 5, 1992, Ser. No. 972,375
Int. Cl.[5] A01N *37/44, 59/00*
U.S. Cl. 504—147 20 Claims

1. A composition, suitable for the promotion of plant growth, and comprising a mixture of

a water-soluble, non-aromatic poly(organic acid) which is a poly(amino acid) of the group consisting of poly(aspartic acid), poly(glutamic acid), poly(glycine), poly(lysine), a copolymer of cysteine and glutamic acid, and a terpolymer of cysteine, glutamic acid and aspartic acid, said poly(amino acid) having at least about 15 repeating or-

ganic acid mers and a molecular size larger than 1,500 Daltons and
a fertilizer for said plant.

5,350,736

IMINOTHIAZOLINES, THEIR PRODUCTION AND USE AS HERBICIDES, AND INTERMEDIATES FOR THEIR PRODUCTION

Shinichi Kawamura, Osaka; Keiichi Izumi, Hyogo; Junichi Sato, Osaka; Yuzuru Sanemitsu, Hyogo, all of Japan; Ryo Sato, Durham, N.C.; Tatsuhiro Hamada, Hyogo, and Hideyuki Shibata, Osaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 21, 1992, Ser. No. 933,110

Claims priority, application Japan, Aug. 23, 1991, 3-211953

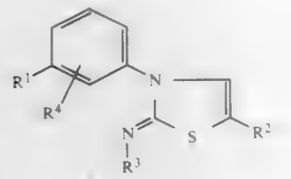
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.

Int. Cl.[5] **C07D** *277/46;* **A01N** *43/78*

U.S. Cl. 504—266 | **15 Claims**

1. An iminothiazoline compound of the formula:

(I)



wherein R^1 is halogen, halo(lower)alkyl, halo(lower)alkoxy or halo(lower)alkylthio; R^2 is lower alkyl, chlorine, bromine or iodine; R^3 is (lower alkyl)carbonyl, (lower cycloalkyl) carbonyl, (lower cycloalkoxy) carbonyl, (lower alkoxy)carbonyl or (lower alkyl)sulfonyl, all of which are optionally substituted with at least one substituent selected from halogen, lower alkyl, lower alkoxy, lower cycloalkyl and lower cycloalkoxy; and R^4 is halogen.

5,350,737

MBE PROCESS FOR PREPARING OXIDE SUPERCONDUCTING FILMS

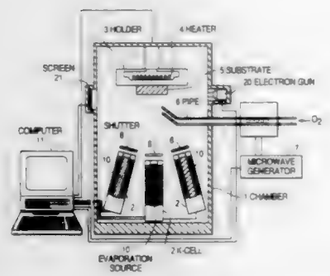
Keizo Harada; Hideo Itozaki, and Shuji Yazu, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 604,896, Oct. 31, 1990, Pat. No. 5,143,896. This application Aug. 28, 1992, Ser. No. 946,735

Claims priority, application Japan, Oct. 31, 1989, 64-284357; Oct. 31, 1989, 64-284358; Oct. 31, 1989, 64-284359; Oct. 31, 1989, 64-284360

Int. Cl.[5] **B05D** *3/06, 5/12*

U.S. Cl. 505—477 | **10 Claims**



1. A process for preparing a film of oxide superconductor having a layered crystal structure by depositing constituent layers of said layered crystal structure on a substrate successively by molecular beam epitaxy (MBE) method while an oxygen-containing gas which is excited by irradiation of microwave is introduced in the neighborhood of a surface of the substrate, comprising the steps of depositing preselected numbers of constituent layers which correspond to one unit crystal or less than one unit crystal, interrupting the film-forming operation by the MBE method temporarily, maintaining the deposited constituent layers in an activated oxygen atmosphere in order to effect a crystallization promotive operation and then restarting a next film-forming operation by the MBE method after completion of said crystallization promotive operation which is terminated when a desired pattern is observed in a reflection high energy electron diffraction (RHEED) analyzer, a combination of said film-forming operation and said crystallization promotive operation being repeated for desired times until a desired film thickness is obtained.

5,350,738

METHOD OF MANUFACTURING AN OXIDE SUPERCONDUCTOR FILM

Takashi Hase, Ichikawa; Ryusuke Kita, Urayasu; Masato Sasaki, Mitaka, and Tadataka Morishita, Ninomiyamachi-yamanishi, all of Japan, assignors to International Superconductivity Technology Center, Tokyo; Kabushiki Kaisha Kobe Seiko Sho, Kobe and Sharp Kabushiki Kaisha, Osaka, all of Japan

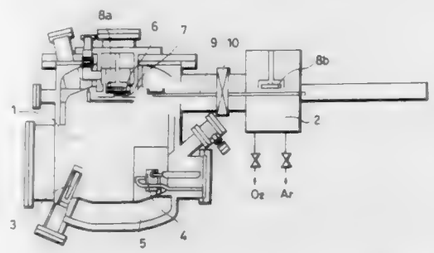
PCT No. PCT/JP92/00376, § 371 Date Nov. 27, 1992, § 102(e) Date Nov. 27, 1992, PCT Pub. No. WO92/17406, PCT Pub. Date Oct. 15, 1992

PCT Filed Mar. 27, 1992, Ser. No. 949,879

Claims priority, application Japan, Mar. 27, 1991, 3-089547

Int. Cl.[5] **C23C** *14/24;* **B32B** *9/00;* **H01L** *39/00*

U.S. Cl. 505—473 | **18 Claims**



1. A method of manufacturing an oxide superconductor film, which comprises the steps of:

vapor depositing each of elements of R, in which R represents one or more elements selected from the group consisting of Y and lanthanide series rare earth elements, Ba, and Cu, each in metallic form, onto a substrate by means of a vacuum deposition process while maintaining a high vacuum of lower than 10^{-8} Torr, thereby forming a metallic deposited film, and;

heating the metallic deposited film in an oxidizing atmosphere thereby oxidizing and crystallizing the deposited film, and

not exposing the deposited film to atmospheric air during the steps of vapor depositing and heating, thereby manufacturing said oxide superconductor film.

5,350,739

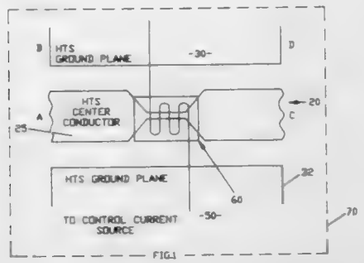
REFLECTIVE HTS SWITCH

Jon S. Martens, Albuquerque; Vincent M. Hietala, Placitas, both of N. Mex., and Gert K. G. Hohenwarter, Madison, Wis., assignors to The United States of America as repesented by the United States Department of Energy, Washington, D.C.

Filed Sep. 24, 1992, Ser. No. 950,570

Int. Cl.[5] **H01B** *12/02;* **H01L** *39/12;* **H01P** *1/10;* **H03K** *17/92*

U.S. Cl. 505—211 | **17 Claims**



1. A high temperature superconducting (HTS) microwave switch comprising:

HTS conductor means for providing a superconducting path for a microwave signal, said means including a switching portion having a reduced cross-sectional area relative to the remainder of said conductor means;

actuation means for controllably heating said portion of said conductor means sufficiently to cause said portion to have normal, and not superconducting, resistivity; and

second conductor means spaced from and parallel to said HTS conductor means, said HTS conductor means and said second conductor means comprising a transmission line for said microwave signal;

whereby said switch transmits the signal when said actuation means is not heating said portion, and reflects the signal when said actuation means is heating said portion.

5,350,740

DRILLING FLUID ADDITIVE AND METHOD FOR INHIBITING HYDRATION

Arvind D. Patel, Houston, and Henry C. McLaurine, Katy, both of Tex., assignors to M-1 Drilling Fluids Company, Houston, Tex.

Continuation-in-part of Ser. No. 866,845, Apr. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 783,368, Oct. 28, 1991, Pat. No. 5,149,690. This application May 7, 1993, Ser. No. 59,453

Int. Cl.[5] **C09K** *7/02*

U.S. Cl. 507—129 | **36 Claims**

1. A water-base drilling fluid for use in drilling walls through a formation containing a clay which swells in the presence of water, said drilling fluid comprising:

(a) a weight material selected from the group consisting of barite, iron oxide, calcium carbonate, magnesium carbonate, and combinations thereof; and

(b) the reaction product of a trihydroxy alkyl amine of the following general formula:

$$HO-(CH_2)_n-\underset{\displaystyle (CH_2)_n-OH}{\overset{\displaystyle |}{N}}-(CH_2)_n-OH$$

wherein n=1-3, with an alkyl halide of the following general formula:

$$Q-X$$

wherein Q is an alkyl radical having up to 4 carbon atoms or a water soluble quaternary amine; and X is a halogen selected from the group consisting of chlorine, bromine, iodine, or combinations thereof; said reaction product being further characterized by (1) low toxicity as demonstrated, by said reaction product having an LC_{50}, value of greater than 30,000 in the Mysid shrimp test as described in Duke, T. W., Parrish, P. R.; "Acute Toxicity of Eight Laboratory Prepared Generic Drilling Fluids to Mysids (Mysidopsis)" 1984 EPA-600/3-84-067,and (2) compatibility with anionic drilling fluid components, said compatibility being demonstrated by failure of said reaction product to yield a precipitant in the presence of anionic polymers, said reaction product being present in said drilling fluid in sufficient concentration to reduce the swelling of said clay.

6. The method of claim **1** wherein the reaction product is a trihydroxy alkyl amine alkyl halide having the following general formula:

$$OH-(CH_2)_n-\underset{\displaystyle (CH_2)_n-OH}{\overset{\displaystyle Q}{N^+}}-(CH_2)_n-OH \quad X^-$$

wherein n=1-3; Q is an alkyl radical having up to 4 carbon atoms or a water soluble quaternary amine; and X is a halogen selected from the group consisting of chlorine, bromine or iodine; said additive being further characterized by (1) low toxicity as demonstrated by said reaction product having an LC_{50}, value of greater than 30,000 in the Mysid shrimp test, and (2) compatibility with anionic drilling fluid additives, said compatibility being demonstrated by failure of said reaction product to yield a precipitant in the presence of anionic polymers.

5,350,741

ENTERIC FORMULATIONS OF PHYSIOLOGICALLY ACTIVE PEPTIDES AND PROTEINS

Kanji Takada, 618-2 Gokomachidori Gojoagaru Azuchi-chou, Shimogyo-ku, Kyoto-shi, Kyoto 600, Japan

Continuation of Ser. No. 474,089, Mar. 30, 1990, abandoned. This application May 26, 1992, Ser. No. 888,324

Claims priority, application Japan, Jul. 30, 1988, 63-191185

Int. Cl.[5] **A61K** *37/02*

U.S. Cl. 514—3 | **20 Claims**

1. A solid enteric pharmaceutical formulation consisting of a particulate intimate physical mixture of a (a) physiologically active peptide or protein, (b) a nontoxic nonionic surfactant, (c) a pharmaceutically acceptable solid organic acid selected from the group consisting of tartaric, malonic, maleic, malic, citric and cinnamic acids (d), at least 50 wt. %, based on the weight of the pharmaceutical formulation, of a pharmaceutically acceptable, enteric polymer which is soluble in a volatile organic solvent and which dissolves selectively from the mixture in duodenal juice when the mixture is ingested and, optionally, (e) either or both of a pharmaceutically acceptable solid diluent and an effervescing agent.

5,350,742

AVERMECTIN DIFLUORO DERIVATIVES

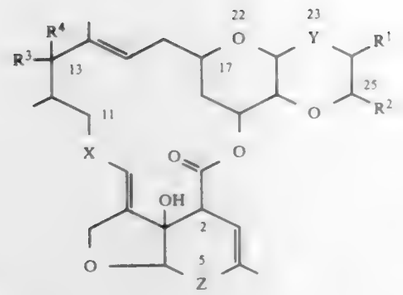
Peter T. Meinke, New York, N.Y.; Helmut Mrozik, Matawan, and Michael H. Fisher, Ringoes, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 875,486, Apr. 29, 1992, Pat. No. 5,229,416. This application Jun. 10, 1993, Ser. No. 74,763

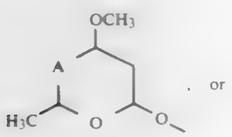
Int. Cl.[5] **A61K** *31/365;* **C07D** *493/22*

U.S. Cl. 514—28 | **7 Claims**

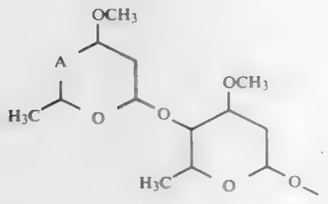
1. A compound having the formula:



Wherein:
Y is: —CF_2—;
$R^1$is:
(a) —H, or
(b) —CH_3;
$R^2$is:
(a) —H,
(b) —C_1–C_8 alkyl,
(c) —C_3–C_8 cycloalkyl,
(d) —C_2–C_8 alkenyl,
(e) —C_3–C_8 cycloalkenyl, or
(f) —aryl;
Z is:
(a) —CH(OH)—,
(b) —CO—
(c) —$CH(OCH_3)$—
(d) —C(=NOH)—, or
(e) —$C(=NOCH_3)$—;
R^3 is:
(a) —H,
(b) —$(C_1$–C_8 alkoxy)$_n$ wherein n=1, 2, or 3;



. or



Wherein:
A is:
(a) —CF_2—,
(b) —CH(OH)—,
(c) —$CHNR^5R^{5A}$—, or
(d) —$CHSR^6$—;
$R^5$and R^{5A} are independently;
(a) H,
(b) C_1–C_8 alkyl
(c) C_1–C_6 alkenyl, or
(d) C_1–C_6 alkanoyl;
R^6 is:
(a) C_1–C_3 alkoxyaminoalkyl, or
(b) C_1–C_3 alkylNR^5R^{5A};
R^4 is:
(a) —H, or
(b) —F;
X is:
(a) —CH_2—,
(b) =CH—(10, 11 double bond),
(c) —CH(OH)—, or
(d) —CHF—.

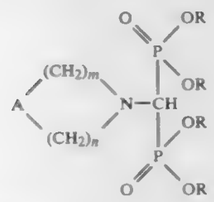
5,350,743

BISPHOSPHONIC ACID DERIVATIVES, AS BONE RESORPTION INHIBITORS

Yoshitaka Ohishi; Makoto Tamura; Mitsuo Hayashida; Satoru Ikegami; Yoshiyuki Hiyama; Takao Awa; Kiyonoshin Ichikawa; Kiyoshi Nomiyama; Keigo Hanada, and Mitsuo Mimura, all of Kyoto, Japan, assignors to Kaken Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1992, Ser. No. 831,965
Claims priority, application Japan, Feb. 7, 1991, 3-016640; Aug. 1, 1991, 3-193050
Int. Cl.^{5} C07F *9/59;* **A61K** *31/675*
U.S. Cl. 514—89 **10 Claims**

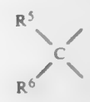
1. A bisphosphonic acid derivative of the formula (I) or a pharmaceutically acceptable salt thereof:



(I)

wherein A is

(c)



(d) wherein each of R^5 and R^6, which are the same or different, is a hydroxyl group, a halogen atom, a cyano group, a carbamoyl group, a C_{7-15} aralkyl group, a phenyl group, a mono-halogenated phenyl group, a mono-C_{1-6} alkyl substituted phenyl group, an amino group, a C_{1-6} alkylamino group, a di-C_{1-6} alkylamino group, a C_{1-6} alkoxyamino group, a di-C_{1-6} alkoxyamino group, a C_{2-6} alkenyl group, a C_{2-6} alkynyl group or a piperidino group;
each of m and n is 0 or a positive integer, provided that (m+n) is from 3 to 5; and
R is a hydrogen atom, a C_{1-8} alkyl group or a C_{7-15} aralkyl group.

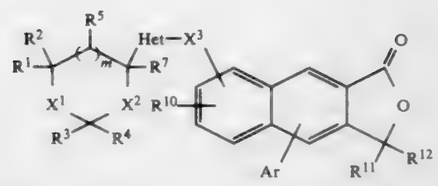
5,350,744

PHENYLNAPHTHALENE LACTONES AS INHIBITORS OF LEUKOTRIENE BIOSYNTHESIS

Yves Girard, Ile Bizard, and Pierre Hamel, Vimont, both of Canada, assignors to Merck Frosst Canada, Inc., Quebec, Canada

Filed Aug. 27, 1992, Ser. No. 937,078
Int. Cl.^{5} A61K *31/655, 31/44;* **C07D** *405/12*
U.S. Cl. 514—149 **13 Claims**

1. A compound of the formula:



I

wherein:
R^1,R^5, and R^{11} is each independently H, OH, lower alkyl, or lower alkoxy;
R^2 is H, lower alkyl, or together with R^1 forms a double bonded oxygen (=O);
R^3 is H, lower alkyl, hydroxy lower alkyl, lower alkoxy lower alkyl, or is joined to R^1 to form a carbon bridge of 2 or 3 carbon atoms or a mono-oxa carbon bridge of 1 or 2 carbon atoms, said bridge optionally containing a double bond;
R^4, R^{12}, and R^{14} is each independently H or lower alkyl;
R^6 is H or lower alkyl, or two R^6 groups on the same or adjacent carbons can form a saturated ring of 3 to 8 members;
R^7 is H, OH, lower alkyl, lower alkoxy, lower alkylthio, or lower alkylcarbonyloxy;
R^8 is H, halogen, lower alkyl, lower alkoxy, CF_3, CN, COR^{14}, or a non-bonded electron pair;
R^9 and R^{10} is each independently H, lower alkyl, lower alkoxy, hydroxy lower alkyl, lower alkoxy lower alkyl, lower alkylthio lower alkyl, lower alkylthio lower alkyl-carbonyl, (R^8)2-phenylthio lower alkyl, halogen, CN, NO_2, CF_3, N_3, $N(R^{13})_2$, $NR^{13}COR^{14}$, $NR^{13}CON(R^{13})_2$, SR^{15}, $S(O)R^{15}$, $S(O)_2R^{15}$, $S(O)_2N(R^{13})_2$, COR^{14}, $CON(R^{13})_2$, CO_2R^{14}, $C(R^{14})_2OC(R^{14})_2$-CO_2R^{14}, or $C(R^{14})_2CN$;
R^{10} is attached to either ring of the naphthalene ring system;
R^{13} is H, or lower alkyl, or two R^{13} groups attached to the same nitrogen may form a saturated ring of 5 or 6 members, optionally containing a second heteroatom chosen from O, S or NR^4;
R^{15} is lower alkyl, phenyl-(R^8)$_2$, or CF_3;
X^1 is O;
X^2 is $C(R^6)_2$;
X^3 is $C(R^6)_2O$;
Ar is phenyl(R^9)$_2$;
Het is pyridyl-(R^8)$_2$ and
m is 1;
or a pharmaceutically acceptable salt thereof.

5,350,745

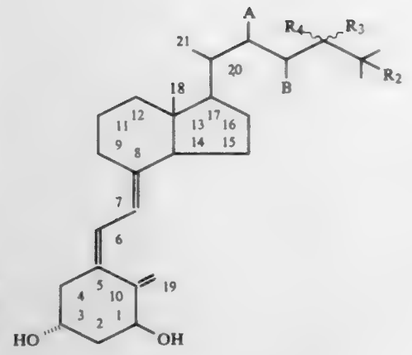
TREATMENT OF MYOCARDIAL FAILURE

Carl E. Gulbrandsen, Madison, and Richard L. Moss, Middleton, both of Wis., assignors to Lunar Corporation, Madison, Wis.

Filed Jan. 29, 1993, Ser. No. 10,823
Int. Cl.^{5} A61K *31/59*
U.S. Cl. 514—167 **4 Claims**

1. A method for preventing or treating myocardial failure in a mammal comprising administering to said mammal an effective amount of a compound of the general structure of Formula I wherein A and B are either hydrogen or a carbon to carbon bond thus forming a double bond between C22 and C23, R_2, and R_3 can be either hydrogen, hydroxy, lower alkyl, O-lower alkyl, O-lower acyl, O-aromatic acyl or flouro, and where R_4 is hydrogen or lower alkyl along with an acceptable excipient.

Formula I



5,350,746

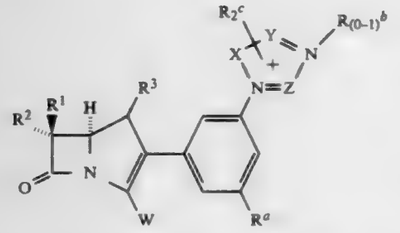
TRIAZOLYL AND TETRAZOLYL PHENYL SUBSTITUTED CARBAPENEMS, COMPOSITIONS CONTAINING SUCH COMPOUNDS AND METHODS OF USE

Alan D. Adams, Piscataway, and James V. Heck, ScotchPlains, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 14, 1993, Ser. No. 48,534
Int. Cl.^{5} A01K *43/00;* **A61K** *31/395;* **C07D** *487/00*
U.S. Cl. 514—210 **11 Claims**

1. A triazolyl or tetrazolyl phenyl substituted carbapenem represented by formula I

I



R^1 and R^2 independently represent H, CH_3—, CH_3CH_2—, $(CH_3)_2CH$—, $HOCH_2$—, $CH_3CH(OH)$—, $(CH_3)_2C(OH)$—, $FCH_2CH(OH)$—, $F_2CHCH(OH)$—, $F_3CCH(OH)$—, $CH_3CH(F)$—, CH_3CF_2— or $(CH_3)_2CF$—;
R^3 is H or methyl:
R^a is H or is selected from the group consisting of
a) —CF_3;
b) a halogen atom selected from the group consisting of: —Br, —Cl, —F and —I;
c) —OH;
d) —OC1–4 alkyl, wherein the alkyl is optionally mono-substituted by Rq, where Rq is selected from the group consisting of —OH, —OCH_3, —COOM, with M representing H, a negative charge, a metal cation or an ester forming group;
e) —NR′R″ wherein R′ and R″ independently represent H or C1–4 alkyl;
f) —$S(O)_n$—R^s, where n=0–2, and R^s is C1–4 alkyl or phenyl, each of which is optionally mono-substituted by R^q as defined above;
g) —CN;
h) —C(O)H or —$CH(OCH_3)_2$;
i) —C(O)R^s, where R^s is as defined above;
j) —C(O)OC1–4 alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;
k) —C(O)N(R^y)R^z, where R^y and R^z are independently H,

C1–4 alkyl, (optionally mono-substituted by R^q as defined above), or $N(R^y)R^z$ are taken together to represent an amino acid residue, or are taken together to represent a 4- to 5-membered alkylidene radical which forms a ring (optionally substituted with R^q as defined above), or a 3- to 4-membered alkylidene radical interrupted by —O—, —S—, —S(O)— or —$S(O)_2$—which forms a ring;

l) —$C(S)N(R^y)R^z$ where R^y and R^z are as defined above:

m) —SCN;

n) —SCF_3;

o) —OCF_3;

p) tetrazolyl, where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by hydrogen, an alkali metal or a C1–C4 alkyl;

q) a C2–C_4 alkenyl radical, optionally mono-substituted by one of the substituents a) to p) above and phenyl which is optionally substituted by R^q as defined above:

r) a C2–C4 alkynyl radical, optionally mono-substituted by one of the substituents a) to q) above;

s) a C1–C4 alkyl radical;

t) a C1–C4 alkyl group substituted with 1–3 groups R^q as defined above, or mono-substituted by one of the substituents a)–s) above;

R^b is present or absent; when R^b is absent, the nitrogen to which said group is shown optionally attached is uncharged; when R^b is present, R^b is selected from the group consisting of:

(a) —C_{1-4} alkyl; (b) —NR′R″ with R′ and R″ equal to H or C_{1-4} alkyl and (c) C_{1-4} alkyl substituted with up to three groups selected from:

hydroxy;

C1–4 alkoxy;

phenyl, nitrophenyl, methoxyphenyl or dimethoxyphenyl;

heteroaryl;

heteroaryl substituted with R^s, as defined above;

—NR′R″, with R′ and R″ as defined above;

—OC(O)R^s, where R^s is C_{1-4} alkyl or phenyl, each of which is optionally mono-substituted by R^q as defined above;

—C(O)—R^s with R^s as previously defined;

—C(O)N(R^y)R^z, where R^y and R^z are as defined above;

—C(O)OC_{1-4} alkyl, where the alkyl is optionally mono-substituted by R^q as defined above; and

COOM, with M as defined above;

one or two of X, Y and Z represent a N atom and the other variables are carbon atoms;

each R^c is independently selected from the group consisting of hydrogen, halo, C1–4 alkyl, —COOM with M as previously defined, and C1–4 alkyl substituted with from 1 to 3 groups selected from:

hydroxy;

—C(O)—Rs with Rs as previously defined;

COOM, with M as previously defined;

—O—(C1–4) alkyl, wherein the alkyl portion is optionally substituted with Rq, as defined above;

—NR′R″, with R′ and R″ as defined above;

—C(O)O(C1–4) alkyl, where the alkyl portion is optionally mono-substituted with Rq as defined above;

—C(O)N(R^y)R^z, where R^y and R^z are independently H, C1–4 alkyl (optionally mono-substituted by R^q as defined above), or $N(R^y)R^z$ are taken together to represent an amino acid residue, or are taken together to represent a 4- to 5-membered alkylidene radical which forms a ring (optionally substituted with R^q as defined above), or a 3- to 4-membered alkylidene radical interrupted by —O—, —S—, —S(O)— or —$S(O)_2$— which forms a ring;

—OC(O)N(R^y)R^z, where R^y and R^z are as defined above:

alternatively, the two R^c groups may be taken in combination to represent an aromatic ring fused to the ring to which they are attached, said aromatic 5–6 membered ring selected from the group consisting of phenyl, pyridine, pyrazine, pyrimidine, pyrrole, imidazole, thiophene, furan and thiazole;

W is selected from: —COOH, or a pharmaceutically acceptable salt or ester thereof; COORP where RP is a readily removable carboxyl covering group which is not a pharmaceutically acceptable ester; $COOM^a$ where M^a is an alkali metal, or a negative charge.

5,350,747

HETEROARYL PIPERAZINE ANTIPSYCHOTIC AGENTS

Harry R. Howard, Bristol, Conn., assignor to Pfizer Inc, New York, N.Y.

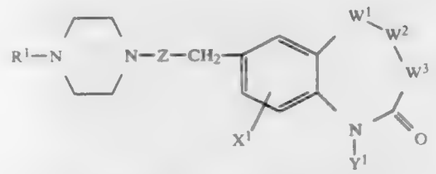
PCT No. PCT/US89/02954, § 371 Date Feb. 20, 1992, § 102(e) Date Feb. 20, 1992, PCT Pub. No. WO91/00863, PCT Pub. Date Jan. 24, 1991

PCT Filed Jul. 7, 1989, Ser. No. 836,019

Int. Cl.[5] A61K *31/55;* **C07D** *417/14*

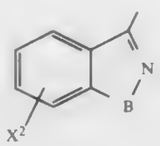
U.S. Cl. 514—213 **6 Claims**

1. A compound having the formula



wherein W^1 is CR^2R^3, W^2 is CR^4R^5, W^3 is CR^6R^7, and one of W^1, W^2 and W^3 may be absent, and wherein the broken line extending from W^1 to W^3 represents an optional double bond between either W^1 and W^2 or W^2 and W^3, in which case two of R^2, R^3, R^4, R^5, R^6 and R^7 are absent; and wherein X^1 is hydrogen, halogen (C_1–C_4) alkyl, (C_1–C_4) alkoxy, nitro, cyano, trifluoromethyl, or pentafluoroethyl; Y^1 is hydrogen, (C_1–C_4) alkyl, phenyl or substituted phenyl, wherein said substituted phenyl is substituted with one or more substituents that are independently selected from the group consisting of halogen, (C_1–C_4) alkyl, (C_1–C_4) alkoxy, nitro, cyano, trifluoromethyl or pentafluoroethyl, or when X^1 is attached to the carbon atom ortho to the carbon atom to which N-Y^1 is attached then X^1 and Y^6 together may optionally form a saturated heterocyclic ring selected from pyrrolidine, piperidine, perhyddroazepine, 3-oxazolane and morpholine;

R^1 is



wherein B is selected from the group consisting of S, O and NY^2; X^2 is hydrogen, halogen, (C_1–C_4) alkyl, (C_1–C_4) alkoxy, nitro, cyano, trifluoromethyl or pentafluoroethyl; Y^2 is hydrogen, (C_1–C_4) alkyl, phenyl or substituted phenyl, wherein said substituted phenyl is substituted with one or more substituents that are independently selected from the group consisting of halogen, (C_1–C_4) alkyl, (C_1–C_4) alkoxy, nitro, cyano, trifluoromethyl or trifluoroethyl; R^2, R^3, R^4, R^5, R^6 and R^7 are independently selected from the group consisting of hydrogen and lower alkyl, or any two of R^2, R^3, R^4, R^5, R^6 and R^7 taken together with the carbon or carbons to which they are attached form a (C_3–C_7) saturated or unsaturated carbocyclic ring; and Z is (C_1–C_6) alkyl, branched (C_1–C_6) alkyl, (C_1–C_6) alkenyl or branched (C_1–C_6) alkenyl,

and the pharmaceutically acceptable salts thereof.

6. A method for the treatment or prevention of psychosis or anxiety, comprising administering to a person in need of said treatment or prevention a compound according to claim 1 in an amount effective to treat or prevent psychosis or anxiety.

5,350,748

3-THIO OR AMINO SUBSTITUTED-BENZO[B]THIOPHENE-2-CARBOXAMIDES AND 3-OXYGEN, THIO, OR AMINO SUBSTITUTED-BENZOFURAN-2-CARBOXAMIDES AS INHIBITORS OF CELL ADHESION

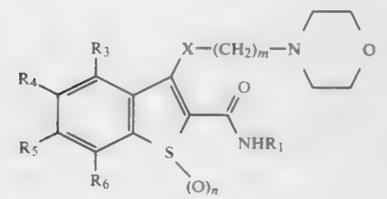
Diane H. Boschelli, Plymouth; David T. Connor, Ann Arbor, both of Mich.; James B. Kramer, Sylvania, Ohio, and Paul C. Unangst, Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 18, 1993, Ser. No. 108,951

Int. Cl.[5] A61K *31/535;* **A01N** *43/06;* **C07D** *413/06*

U.S. Cl. 514—237.2 **3 Claims**

1. A method of treating diseases mediated by inhibiting the adhesion of leukocytes to endothelial cells selected from the group consisting of rheumatoid arthritis, asthma and psoriasis comprising administering to a host in need thereof a therapeutically effective amount in unit dosage form of a compound of the formula



I

wherein R_1 is hydrogen; lower alkyl, or lower alkyl substituted by halogen; phenyl, or phenyl substituted by hydroxy, halogen, lower alkyl, lower alkoxy, or CO_2R_7 where R_7 is hydrogen or lower alkyl; benzyl, or benzyl substituted by hydroxy, halogen, lower alkyl, lower alkoxy, or CO_2R_7 as defined above;

n is an integer from 0 to 2;

m is an integer from 0 to 6;

X is $S(O)_n$ or NR_2 in which R_2 is hydrogen, lower alkyl, phenyl, benzyl, substituted lower alkyl as defined above, substituted phenyl as defined above, substituted benzyl as defined above; and

R_3, R_4, R_5, and R_6 are each independently hydrogen, hydroxy, halogen, lower alkyl, trifluoromethyl, lower alkoxy, phenyl, benzyloxy, nitro, or —NR_7R_2 in which R_7 and R_2 are as defined above;

or a pharmaceutically acceptable acid addition or base salt thereof.

5,350,749

PTERIDINE DERIVATIVES

Ronald E. Hackler, Indianapolis, and Glen P. Jourdan, Morristown, both of Ind., assignors to DowElanco, Indianapolis, Ind.

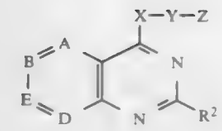
Division of Ser. No. 385,840, Jul. 27, 1989, Pat. No. 5,034,393.

This application Apr. 22, 1991, Ser. No. 690,184

Int. Cl.[5] A61K *31/495, 31/50;* **C07D** *475/02, 475/06*

U.S. Cl. 514—248 **6 Claims**

1. A compound of the formula (1)



(1)

wherein

a) A and D are N and B and E are CR^1;

b) B and D are N and A and E are CR^1;

c) E and D are N and A and B are CR^1;

d) A and E are N and B and D are CR^1;

e) A and B are N and E and D are CR^1; or

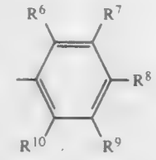
f) B and E are N and A and D are CR^1;

where R^1 and R^2 are independently H, halo, (C_1–C_4) alkyl, (C_3–C_4) branched alkyl, (C_1–C_4) alkoxy, halo (C_1–C_4) alkyl, phenyl, or substituted phenyl;

X is O, S, SO, SO_2, NR^3, or CR^4R^5 where R^3 is H, (C_1–C_4) alkyl, or (C_1–C_4) acyl, and R^4 and R^5 are independently H, (C_1–C_4) acyl, (C_1–C_4) alkyl, (C_2–C_4) alkenyl or alkynyl, CN, or OH, or R^4 and R^5 combine to form a carbocyclic ring containing four to six carbon atoms;

Y is an alkylene chain 2 to 6 carbon atoms long;

Z is a phenyl group of the formula (2)



(2)

wherein R^6 to R^{10} are independently H, halo, I, (C_1–C_{10}) alkyl, (C_3–C_8) alkenyl or -alkynyl, branched (C_3–C_6) alkyl, alkenyl or alkynyl, (C_3–C_8) cycloalkyl or cycloalkenyl, halo (C_1–C_7) alkyl, (C_1–C_7) alkoxy, (C_1–C_7) alkylthio, halo (C_1–C_7) alkoxy, phenoxy, substituted phenoxy, phenylthio, substituted phenylthio, phenyl, substituted phenyl, NO_2, acetoxy, OH, CN, $SiR^{11}R^{12}R^{13}$, $OSiR^{11}R^{12}R^{13}$, $NR^{14}R^{15}$, S(O)R^{16}, or SO_2R^{17} where R^{11}, R^{12}, and R^{13} are independently (C_1–C_4) alkyl, (C_3–C_4) branched alkyl, phenyl, or substituted phenyl, R^{14} and R^{15} are independently H, (C_1–C_4) alkyl, or (C_1–C_4) acyl, and R^{16} and R^{17} are (C_1–C_{10}) alkyl, phenyl, or substituted phenyl,

or an acid addition salt of a compound of formula (1).

5,350,750

β-CARBOLINE-3-HYDROXYALKYLCARBOXYLIC ACID ESTER DERIVATIVES, PROCESS FOR THEIR PRODUCTION AND THEIR USE IN PHARMACEUTICAL AGENTS

Andreas Huth; Martin Krüger; Dieter Seidelmann; Ralph Schmiechen; Werner Krause; Herbert Schneider, and Lechoslaw Turski, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin und Bergkamen, Fed. Rep. of Germany

PCT No. PCT/DE92/00314, § 371 Date Mar. 1, 1993, § 102(e) Date Mar. 1, 1993, PCT Pub. No. WO92/19619, PCT Pub. Date Nov. 12, 1992

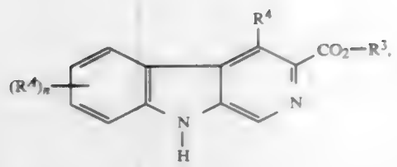
PCT Filed Apr. 15, 1991, Ser. No. 977,405

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1991, 4114397

Int. Cl.[5] A61K *31/53, 31/495, 31/50, 31/44;* **C07D** *401/00, 471/02*

U.S. Cl. 514—253 **6 Claims**

1. Compounds of formula I



I

in which
R^4 is halogen, —CHR^1—R^2 or —OR^5, and
n is 1 or 2,
wherein
R^1 is hydrogen or C_{1-4}-alkyl,
R^2 is hydrogen, C_{1-4}-alkyl, O-C_{1-4}-alkyl or a phenyl, benzyl or phenoxy radical, optionally substituted 1 to 3 times by halogen, nitro, cyano, C_{1-4}-alkyl, C_{1-4}-alkoxy, trifluoromethyl, -SO_2-C_{1-4}-alkyl, amino and C_{1-4}-alkoxycarbonyl group(s),
R^5 is hydrogen, C_{1-4}-alkyl, C_{3-7}-cycloalkyl or a phenyl, benzyl or hetaryl radical optionally substituted 1 to 3 times by halogen, nitro, cyano, C_{1-4}-alkyl, C_{1-4}-alkoxy, trifluoromethyl, -SO_2-C_{1-4}-alkyl, amion and C_{1-4}-alkoxycarbonyl group(s), wherein the hetaryl radical is a pyridine, pyrimidine, pyrazine, pyridazine, triazine, furan, thiophene, pyrrole, thiazole, imidazole, quinoline, isoquinoline or quinoxaline radical,
R^4 is hydrogen, C_{1-4}-alkyl or C_{1-4}-alkoxy-C_{1-2}-alkyl, and
R^3 is a straight-chain or branched C_{1-6}-alkyl, that is substituted one to four times with OR^6,
wherein
R^6 is hydrogen, C_{1-4}-alkyl or a hydroxy protective group, or isomers or pharmaceutically acceptable acid addition salts thereof.

5,350,751

SUBSTITUTED IMIDAZOLES, PHARMACEUTICAL COMPOSITIONS CONTAINING THESE, AND THE USE THEREOF AS ANTAGONISTS OF ANGIOTENSIN II RECEPTORS FOR THE TREATMENT OF HIGH BLOOD PRESSURE

Adalbert Wagner, Hofheim am Taunus; Rainer Henning, Hattersheim am Main; Hermann Gerhards, Hofheim am Taunus; Bernward Schölkens, Kelkheim/Taunus, all of Fed. Rep. of Germany; Jean-Paul Vevert, Pantin, and Jean-Claude Caille, Angers, both of France, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

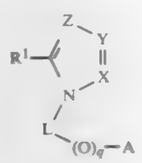
Filed Apr. 2, 1991, Ser. No. 679,233

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1990, 4010797

Int. Cl.[5] **C07D** *233/57, 401/02, 403/02, 405/02, 407/02;* **A61K** *311/415*

U.S. Cl. 514—258 | **20 Claims**

1. A compound of the formula I



(I)

in which
Z is N;
X and Y are identical or different and are CR^2;
R^1 is (C_3–C_7)-alkyl, (C_3–C_7)-alkenyl or (C_3–C_7)-alkynyl;
R^2 is independently chlorine, bromine, —$S(O)_rR^6$, —COR^8, or (C_1–C_6)-alkyl substituted by hydroxyl;
R^3 is independently hydrogen or (C_1–C_4)-alkyl;
R^5 is independently hydrogen, (C_1–C_6)-alkyl, (C_3–C_8)-cycloalkyl, phenyl, or benzyl;
R^6 is independently hydrogen, (C_1–C_4)-alkyl, (C_1–C_4)-alkanoyl, or (C_6–C_{12})-aryl,
wherein (C_6–C_{12})-aryl is unsubstituted or substituted by 1 or 2 identical or different radicals selected from halogen, hydroxyl, methoxy, nitro, cyano, CO_2R^3 and trifluoromethyl;
R^7 is independently hydrogen, (C_1–C_4)-alkyl, or (C_6–C_{12})-aryl-(C_1–C_4)-alkyl;
R^8 is independently hydrogen, (C_1–C_4)-alkyl, OR^5 or morpholino;
A is a fused heterobicyclic radical selected from a radical of benzothiophene, benzofuran, indole, isoindole, indazole, benzimidazole, quinoline, isoquinoline, phthalazine, quinoxaline, quinazoline, cinnoline, benzothiazole, benzothiazole-1,1-dioxide, coumarin, chroman, benzoxazole, benzisothiazole, benzodiazines, benzotriazole, benzotriazine, benzoxazine, imidazopyridine, imidazopyrimidine, imidazopyrazine, imidazopyridazine, imidazothiazole, pyrazolopyridine, thienopyridine and pyrrolopyrimidine, which is unsubstituted or substituted by up to 3 identical or different radicals R^{14} or —$(CH_2)_{n-1}$—$(CHR^6$—$CH_2)_{o-1}$—R^{15};
R^{14} is independently (C_1–C_4)-alkyl, (C_1–C_4)-alkoxy, cyano, amino, nitroso, nitro, fluorine, chlorine, bromine, hydroxyl, CH_2OR^7, (C_1–C_4)-alkanoyloxy, (C_1–C_4)-alkanoyl, benzoyl, —NH—CO—R^7 or tetrazolyl;
R^{15} is independently (C_6–C_{12})-aryl, cyano, chlorine, bromine, —CO_2R^3, or (C_6–C_{12})-aryl which is substituted by 1 or 2 identical or different radicals selected from halogen, cyano, nitro, NR^6R^7 and hydroxyl;
L is (C_1–C_3)-alkanediyl;
n is independently 1 or 2;
o is independently 1 or 2;
q is 0 or 1;
r is independently 0, 1 or 2,
or a physiologically tolerated salt thereof.

7. A method for the treatment of high blood pressure which comprises administering to a host in recognized need of said treatment a pharmaceutically effective amount of a compound of the formula I or a physiologically tolerated salt thereof as claimed in claim 1.

5,350,752

DIHYDROPYRIMIDINE DERIVATIVES

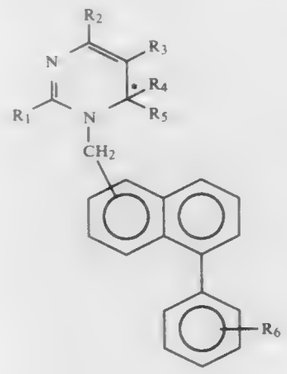
Michael A. Poss, Lawrenceville, N.J.; John Lloyd, Yardley, and Karnail S. Atwal, Newtown, both of Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 16, 1991, Ser. No. 812,235

Int. Cl.[5] **C07D** *239/90, 239/93, 257/09;* **A61K** *37/505*

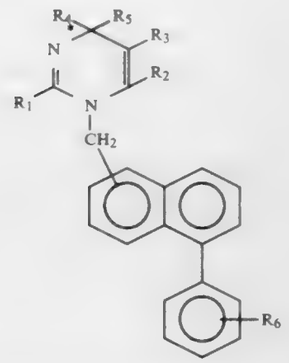
U.S. Cl. 514—259 **7 Claims**

1. A compound of the formula I



I

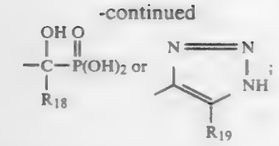
or its isomer



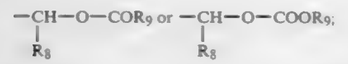
I

or a pharmaceutically acceptable salt thereof
wherein R_1 is alkyl, alkenyl or alkynyl or an alkyl, alkenyl or alkynyl group substituted with F or —CO_2R_7; cycloalkyl; (cycloalkyl)alkyl of 4 to 10 carbon atoms; (cycloalkyl-)alkenyl or (cycloalkyl)alkynyl of 5 to 10 carbon atoms; —$NR_{10}R_{11}$; —$(CH_2)_mZ(CH_2)_mR_{13}$; benzyl or benzyl substituted with 1 or 2 halogens, alkoxy of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms, haloalkyl or nitro; —SR_{14}; or —OR_{14};
R_2 and R_3 taken together with the carbon atoms to which they are attached form an aryl group;
R_4 and R_5 are independently selected from hydrogen, alkyl, alkenyl, alkynyl, aryl, arylalkyl, cycloalkyl, (cycloalkyl)alkyl, heterocyclo, (heterocyclo)alkyl, haloalkyl or —CO_2R_7;
or R_4 and R_5 taken together with the carbon atom to which they are attached form a 5- to 7-membered carbocyclic ring which may have another 5- to 7-membered ring fused thereoto;
or R_4 and R_5 taken together with the carbon atom to which they are attached form a carbonyl or a thiocarbonyl group;
R_6 is an acid moiety such as hydrogen,

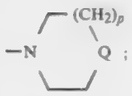
-continued



R_7 is hydrogen, alkyl, perfluoroalkyl of 1 to 8 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl, benzyl



R_8 is hydrogen, alkyl, aryl, arylalkyl or cycloalkyl;
R_9 is alkyl, aryl, alkylaryl, arylalkyl or cycloalkyl;
R_{10} and R_{11} are independently hydrogen, alkyl of 1 to 6 carbon atoms, benzyl, α-methylbenzyl, or taken together with the nitrogen atom to which they are attached form a ring of the formula



R_{12} is hydrogen, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl or benzyl;
R_{13} is hydrogen; alkyl of 1 to 6 carbon atoms; cycloalkyl; alkenyl or alkynyl of 2 to 4 carbon atoms; or the above alkyl, cycloalkyl, alkenyl or alkynyl groups optionally substituted with F or —CO_2R_7;
R_{14} is alkyl, alkenyl, alkynyl, aryl, arylalkyl, cycloalkyl, (cycloalkyl)alkyl, heterocyclo, (heterocyclo)alkyl or haloalkyl;
R_{18} is hydrogen, alkyl of 1 to 5 carbon atoms or phenyl;
R_{19} is —CN, —NO_2 or —CO_2R_7;
Q is —CH_2, —O—, or —NR_8;
Z is —O—, —S— or —NR_{12};
m is an integer of 1 to 5; and
p is 0, or the integer 1 or 2.

5,350,753

PHARMACEUTICAL COMBINATION PREPARATIONS CONTAINING CEPHALOSPORIN AND XANTHINE DERIVATIVES AND THEIR USE

Norbert Klesel, Griesheim; Michael Limbert, Hofheim am Tauns, Fed. Rep. of Germany, and Elmar Schrinner, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 18, 1991, Ser. No. 717,330

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1990, 4019571

Int. Cl.[5] **A61K** *31/52, 31/545*

U.S. Cl. 514—264 **6 Claims**

1. A composition containing an effective amount of cefotaxime and at least one xanthine derivative selected from the group consisting of
1-(5-hydroxyhexyl)-3-methyl-7-propylxanthine,
3-methyl-1-(5-oxohexyl)-7-propylxanthine,
7-propyl-1-(5-hydroxy-5-methylhexyl)-3-methylxanthine,
7-ethoxymethyl-1-(5-hydroxy-5-methylhexyl)-3-methylxanthine, 3-methyl-1-(5-oxohexyl)-7-(2-oxopropyl)-xanthine and
1-(5-hydroxy-5-methylhexyl)-3-methylxanthine.

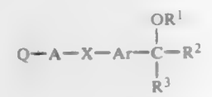
5,350,754

HETEROCYCLIC CYCLOALKANES

Graham C. Crawley, Macclesfield, United Kingdom, and Jean-Marc M. M. Girodeau, Rilly la Montagne, France, assignors to Zeneca Limited, London, England and ICI Pharma, Cergy Cedex, France

Division of Ser. No. 793,330, Nov. 15, 1991, Pat. No. 5,217,977, which is a continuation of Ser. No. 485,492, Feb. 27, 1990, abandoned. This application Mar. 1, 1993, Ser. No. 24,321
Claims priority, application France, Feb. 28, 1989, 89400559
Int. Cl.[5] C07D *215/22, 213/30;* A61K *31/44, 31/47*
U.S. Cl. 514—277 8 Claims

1. A heterocyclic cycloalkane of the formula I



wherein Q is pyridyl, or a hydrogenated derivative thereof, which may optionally bear one, two or three substituents selected from halogeno, hydroxy, oxo, carboxy, cyano, amino, (1–4C)alkyl, (1–4C)alkoxy, fluoro-(1–4C)alkyl, (1–4C)alkylamino, di-[(1–4C)alkyl]amino, hydroxy-(1–4C)alkyl, amino-(1–4C)alkyl, (1–4C)alkylamino-(1–4C)alkyl, di[(1–4C)alkyl]amino-(1–4C)alkyl, amino-(2–4C)alkoxy, (1–4C)alkylamino-(2–4C)alkoxy, di-[(1–4C)alkyl-]amino-(2–4C)alkoxy and phenyl-(1–4C)alkyl;

wherein A is (1–6C)alkylene, (3–6C)alkenylene, (3–6C)alkynylene or cyclo (3–6C)alkylene;

wherein X is oxy, thio, sulphinyl, sulphonyl or imino;

wherein Ar is phenylene which may optionally bear one or two substituents selected from halogeno, hydroxy, amino, nitro, cyano, ureido, carbamoyl, (1–4C)alkyl, (3–4C)alkenyloxy, (1–4C)alkoxy, (1–4C)alkylthio, (1–4C)alkylsulphinyl, (1–4C)alkylsulphonyl, (1–4C)alkylamino, di-[(1–4C)alkyl]amino, fluoro-(1–4C)alkyl, (1–4C)alkoxycarbonyl, N-[(1–4C)alkyl]carbamoyl, N,N-di-[(1–4C)alkyl]-carbamoyl, (2–4C)alkanoylamino, cyano-(1–4C)alkoxy, carbamoyl-(1–4C)alkoxy, amino-(2–4C)alkoxy, (1–4C)alkylamino-(2–4C)alkoxy, di-[(1–4C)alkyl]amino-(2–4C)alkoxy and (1–4C)alkoxycarbonyl-(1–4C)alkoxy;

wherein R^1 is hydrogen, (1–6C)alkyl, (3–6C)alkenyl, (3–6C-)alkynyl, cyano-(1–4C)alkyl or (2–4C)alkanoyl, or R^1 is benzoyl which may optionally bear a substituent selected from halogeno, (1–4C)alkyl and (1–4C)alkoxy; and

wherein R^2 and R^3 together form a (3–6C)alkylene group which, together with the carbon atom to which R^2 and R^3 are attached, defines a ring having 4 to 7 ring atoms, and which ring may bear one or two substituents, which may be the same or different, selected from hydroxy, (1–4C)alkyl, (1–4C)alkoxy, (1–4C)alkylthio, (1–4C)alkylsulphinyl and (1–4C)alkylsulphonyl, or which ring may bear a (1–4C)alkylenedioxy substituent;

or a pharmaceutically-acceptable salt thereof.

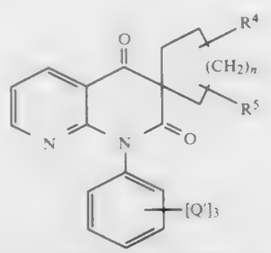
5,350,755

COMPOUNDS AND METHODS FOR TREATING HYPERPROLIFERATIVE SKIN DESEASE

David J. Blythin, North Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 686,314, Apr. 16, 1991, abandoned, which is a continuation of Ser. No. 504,704, Apr. 4, 1990, abandoned, which is a continuation of Ser. No. 207,904, Jun. 14, 1988, abandoned, which is a continuation of Ser. No. 938,217, Dec. 5, 1986, abandoned. This application Jul. 21, 1992, Ser. No. 917,925
Int. Cl.[5] A01N *43/42*
U.S. Cl. 514—278 9 Claims

1. A method of treating psoriasis or eczema in a mammal, comprising administering in combination with a pharmaceutically acceptable carrier a compound having the structural formula:



wherein n is 1, 2 or 3; R^4 and R^5 are hydrogen, methyl or ethyl and Q' is hydrogen, hydroxy, alkyl having from 1 to 6 carbon atoms, halogen, nitro, alkoxy having from 1 to 6 carbon atoms, halogen, nitro, having from 3 to 7 carbon atoms, alkenyloxy having from 3 to 6 carbon atoms, alkynyloxy having from 3 to 6 carbon atoms, $S(O)_m$-R^a {wherein m is 0, 1 or 2 and R^a is alkyl having from 1 to 6 carbon atoms}, $NHSO_2R^a$ {wherein R^a is defined herein}, $NHSO_2CF_3$, SO_2NH_2, COR^b {wherein R^b is OH, NH_2 or OR^a (wherein R^a is defined herein)}, O-B-COR^b {wherein B is alkanediyl having from 1 to 4 carbon atoms and R^b is defined herein}, or $NHCOR_c$ {wherein R^c is hydrogen, alkyl having from 1 to 6 carbon atoms, alkoxy having from 1 to 6 carbon atoms, COR^d (wherein R^d is hydroxy or alkoxy having from 1 to 6 carbons atoms) or NHR^e (wherein R^e is hydrogen or alkyl having from 1 to 6 carbon atoms)}.

5,350,756

USE OF A CYTOCHROME OXIDASE INHIBITOR TO INCREASE THE COUGH-SUPPRESSING ACTIVITY OF DEXTROMORPHAN

Richard A. Smith, 7569 Cabrillo Ave., La Jolla, Calif. 92037

Continuation-in-part of Ser. No. 717,424, Jun. 17, 1991, Pat. No. 5,166,207. This application May 28, 1992, Ser. No. 890,432
Int. Cl.[5] A61K *31/44*
U.S. Cl. 514—289 6 Claims

1. A method of treating a patient to suppress severe coughing which cannot be suppressed adequately by dextromethorphan alone, comprising administering to a patient in need thereof a combination of dextromethorphan, and a pharmaceutically acceptable second compound which inhibits enzymatic oxidation of dextromethorphan by debrisoquin hydroxylase, wherein the second compound is selected from the group consisting of quinidine, quinine, and salts and isomers thereof.

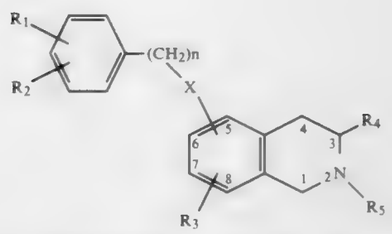
5,350,757

SUBSTITUTED 1,2,3,4-TETRAHYDROISOQUINOLINES WITH ANGIOTENSIN II RECEPTOR ANTAGONIST PROPERTIES

Clifton J. Blankley; John C. Hodges, and Sylvester Klutchko, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 885,263, May 19, 1992, Pat. No. 5,246,943. This application Jun. 11, 1993, Ser. No. 75,973
Int. Cl.[5] A61K *31/47*
U.S. Cl. 514—307 5 Claims

1. A method for treating cognitive decline in a mammal suffering therefrom comprising administering to said mammal a therapeutically effective amount of a compound of Formula I



I

or a pharmaceutically acceptable salt thereof wherein:

R_1 and R_2 are each indepdendently hydrogen, lower alkyl, halogen, hydroxy, alkoxy, amino, alkylamino, dialkylamino, acylamino, CF_3, carboxy, carboalkoxy, hydroxyalkyl, aminoalkyl, and nitro;

n is an integer from zero to 4;

X is absent, O, S, NH, N-alkyl, and is attached to the tetrahydroisoquinoline at the 5 to 6 position;

R_3 is hydrogen, alkoxy, aralkoxy, alkylthio, or halogen;

R_4 is hydrogen, alkyl, hydroxyalkyl, CO_2R_6, $CON(R_6)_2$ wherein

R_6 is hydrogen or lower alkyl; and

R_5 is alkyl, aryl, aralkyl which can be unsubstituted or substituted on the alkyl and/or on the aryl portion, diaralkyl, the aryl portion can be unsubstituted or substituted, COR_7, SO_2R_7 wherein R_7 is aralkyl, alkyl, diaralkyl, OR_8, NR_8R_9 wherein R_8 and R_9 are each independently hydrogen, alkyl, cycloalkyl, aryl, or aralkyl wherein aryl is phenyl or naphthyl and the substituents are one or more selected from: alkyl, alkoxy, hydroxy, halogen, NO_2, NH_2, NHalkyl, N(alkyl)$_2$, SCH, and SH.

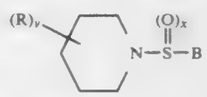
5,350,758

PIPERIDYL SULFONAMIDES AND SULFOXAMIDES AS INHIBITORS OF CHOLESTEROL BIOSYNTHESIS

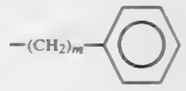
Marion W. Wannamaker, West Chester; William A. VanSickle, Cincinnati, and William R. Moore, Fairfield, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 910,604, Jul. 8, 1992, abandoned. This application Dec. 18, 1992, Ser. No. 993,497
Int. Cl.[5] C07D *211/96;* A61K *31/445*
U.S. Cl. 514—315 7 Claims

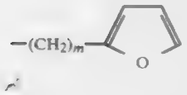
1. A compound of the formula



wherein B is a C_5–C_{14} alkyl,



or

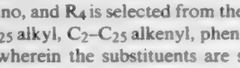


m is an integer 0 or 1;

x is an integer 1 or 2;

v is an integer 0, 1 or 2; and

R is -$(CH_2)_m$OH, with the proviso that when m is 0, R cannot be in the 2-position of the piperidine ring or a radical of the formula



wherein n is an integer 0, 1, 2 or 3; and R_1 is hydrogen, phenyl, vinyl or a C_1–C_4 alkyl.

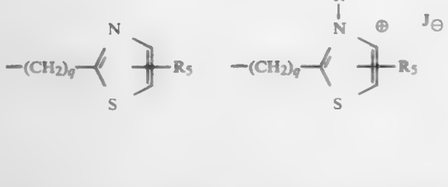
5,350,759

BIS-ARYL AMIDE ANTAGONISTS OF PLATELET ACTIVATING FACTOR

Allan Wissner, 31 Wood Ave., Ardsley, Westchester, N.Y. 10502

Division of Ser. No. 868,169, Apr. 14, 1992, Pat. No. 5,225,425, which is a division of Ser. No. 519,525, May 4, 1990, Pat. No. 5,128,351. This application Apr. 5, 1993, Ser. No. 43,054
Int. Cl.[5] A61K *31/425;* C07D *277/30*
U.S. Cl. 514—365 14 Claims

1. A compound of the formula:



wherein

(A) p is the integer 0 or 1;

(B) R_1 represents one or more substituents of the aromatic ring which may be the same or different and is selected from the group consisting of:

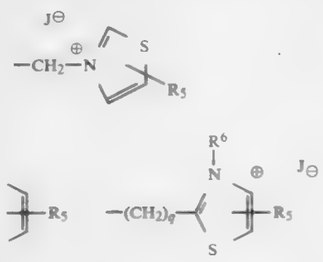
(i) C_1–C_{25} alkyl, C_2–C_{25} alkenyl, C_1–C_{25} alkoxy, C_1–C_{25} thioalkyl, C_2–C_{25} alkenyloxy, phenyl, phenoxy, substituted phenyl and substituted phenoxy wherein the substituents are selected from the group consisting of C_1–C_{20} alkyl, C_1–C_{20} alkoxy, halogen and trifluoromethyl;

(ii) hydrogen, halogen, trifluoromethyl, cyano and nitro;

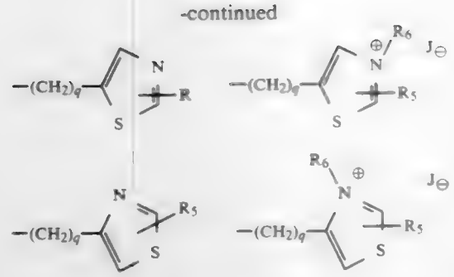
(iii) —CO_2R_4, —$CONHR_3$, —CHO, $OCONHR_4$, and —$NHCOR_4$ wherein R_3 is selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy and C_1–C_4 alkylamino, and R_4 is selected from the group consisting of C_1–C_{25} alkyl, C_2–C_{25} alkenyl, phenyl and substituted phenyl wherein the substituents are selected from the group consisting of C_1–C_{20} alkyl, C_1–C_{20} alkoxy, halogen and trifluoromethyl;

C) the moiety R_2 represents one or more substituents of the aromatic ring which may be in any position and are selected from the group consisting of hydrogen, C_1–C_5 alkyl, C_1–C_5 alkoxy and halogen; and

(D) Y represents a moiety selected from those of the formulae:



-continued



wherein the moiety R_5 is one or more substituents of the heterocyclic ring which may be the same or different and are selected from the group consisting of hydrogen, C_1–C_6 alkyl, C_1–C_6 acyl or C_1–C_6 alkoxy, R_6 is C_1–C_4 alkyl, q is 0 or 1, and $J^{\ominus}$ is a pharmacologically acceptable anion; and the pharmacologically acceptable salts thereof.

5,350,760

AZA-5,5-FUSED HETROCYCLIC ACIDS AS LEUKOTRIENE ANTAGONISTS

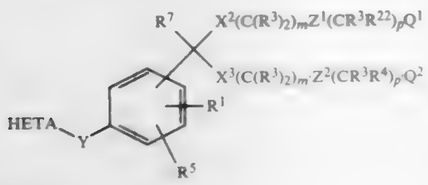
Marc LaBelle, Ile Perrot, Canada; Yibin Xiang, Lexington, Mass.; Claude Dufresne, Dollard-des-Ormeaux, and Michel Belley, Pierrefonds, both of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Filed Aug. 4, 1993, Ser. No. 101,882

Int. Cl.[5] **C07D** *513/04, 498/04;* **A61K** *31/42, 31/425*

U.S. Cl. 514—367 **14 Claims**

1. A compound of the formula:



wherein:

R^1 is H or R^2;

R^2 is lower alkyl, lower alkenyl, lower alkynyl, fluoro lower alkyl, $Ph(R^{26})_2$, $CH_2Ph(R^{26})_2$, $CH_2CH_2Ph(R^{26})_2$ or two R^2 groups joined to the same carbon can form a ring of up to 8 members containing up to 2 heteroatoms chosen from O,S, and N;

R^3 is H or R^2;

R^4 is R^3, halogen, $—NO_2$, —CN, $—CF_3$, $—OR^3$, $N(R^3)_2$, NR^3COR^7, $—SR^2$, $S(O)R^2$ or $S(O)_2R^2$;

CR^3R^{22} can be the radical of a conventional amino acid;

R^5 is H, halogen, $—NO_2$, $—N_3$, —CN, $—SR^2$, $—S(O)R^2$, $S(O)_2R^2$, $—N(R^{10})_2$, $—OR^3$, $—COR^3$, lower alkyl or fluoro lower alkyl;

R^6 is $—(CH_2)_S—C(R^7)_2—(CH_2)_S—R^8$ or $—CH_2CON(R^{20})_2$;

R^7 is H or lower alkyl;

R^8 is A) a monocyclic or bicyclic heterocyclic radical containing from 3 to 12 nuclear carbon atoms and 1 or 2 nuclear heteroatoms selected from N, S or O and with each ring in the heterocyclic radical being formed of 5 or 6 atoms, or B) the radical $W—R^9$;

R^9 contains up to 21 carbon atoms and is (1) a hydrocarbon radical or (2) an acyl radical of an organic acyclic or monocyclic carboxylic acid containing not more than 1 heteroatom in the ring;

$R^{10}$is R^{12};

R^{11} is lower alkyl, $—COR^{14}$, $Ph(R^{26})_2$, $CH_2Ph(R^{26})_2$ $CH_2CH_2Ph(R^{26})_2$;

R^{12} is H, R^{11}, or two R^{12} groups joined to the same N can form a saturated ring of 5 or 6 members containing up to two heteroatoms chosen from O, S, and N;

R^{13} is lower alkyl, lower alkenyl, lower alkynyl, $—CF_3$, $Ph(R^{26})_2$, $CH_2Ph(R^{26})_2$ or $CH_2CH_2Ph(R^{26})_2$;

R^{14} is H or R^{13};

R^{15} is H or R^{11};

R^{16} is H, lower alkyl, or OH;

R^{17} is lower alkyl, lower alkenyl, lower alkynyl, $Ph(R^{26})_2$, $CH_2Ph(R^{26})_2$ or $CH_2CH_2Ph(R^{26})_2$;

R^{18} is R^{13};

R^{19} is H, lower alkyl, lower alkenyl, lower alkynyl, $—CF_3$, Ph, CH_2Ph, or CH_2CH_2Ph;

R^{20} is H, lower alkyl, $Ph(R^{26})_2$, $CH_2Ph(R^{26})_2$, $CH_2CH_2Ph(R^{26})_2$ or two R^{20} groups joined to the same N can form a saturated ring of 5 or 6 members containing up to two heteroatoms chosen from O, S, and N;

R^{21} is H or R^{17};

R^{22} is R^4, CHR^7OR^3 or CHR^7SR^2;

R^{23}, R^{24} and R^{25} are each independently H, lower alkyl, —CN, $—CF_3$, COR^3, CO_2R^7, $CON(R^{20})_2$, OR^3, SR^2, $S(O)R^2$, $S(O)_2R^2$, $N(R^{12})_2$, halogen, or an electron pair;

R^{26} is H, lower alkyl, $—COR^7$, CO_2R^7, $CON(R^{19})_2$, —CN, CF_3, NO_2, SCF_3, SR^{27}, OR^{28}, $N(R^{28})_2$, or halogen;

R^{27} is lower alkyl, phenyl or benzyl;

R^{28} is H, R^{27} or COR^7, or two R^{28} groups joined to the same N can form a saturated ring of 5 or 6 members comprising carbon atoms and up to 2 heteroatoms chosen from O, S or N;

m and m′ are independently 0–8;

p and p′ are independently 0–8;

m+p is 1–10 when X^2 is O, S, S(O), or $S(O)_2$ and Z^1 is a bond;

m+p is 0–10 when Z^1 is $HET(R^{23}R^{24}R^{25})$;

m+p is 0–10 when X^2 is CR^3R^{16};

m′+p′ is 1–10 when X^3 is O, S, S(O), or $S(O)_2$ and Z^2 is a bond;

m′+p′ is 0–10 when Z^2 is $HET(R^{23}R^{24}R^{25})$;

m′+p′ is 0–10 when X^3 is CR^3R^{16};

s is 0–3;

Q^1 is tetrazol-5-yl, $—CO_2R^3$, $—CO_2R^6$, $—CONHS(O)_2R^{13}$, —CN, $—CON(R^{20})_2$, $NR^{21}S(O)_2R^{13}$, $—NR^{21}CON(R^{20})_2$, $—NR^{21}COR^{14}$, $OCON(R^{20})_2$, $—COR^{19}$, $—S(O)R^{18}$, $—S(O)_2R^{18}$, $—S(O)_2N(R^{12})_2$, $—NO_2$, $NR^{21}CO_2R^{17}$, $—C(N(R^{12})_2)=NR^{21}$, $—C(R^{19})=NOH$, $C(R^3)_2OR^3$; or if Q^1 is CO_2H and R^{22} is —OH, —SH, CHR^7OH or $—NHR^3$, then Q^1 and R^{22} and the carbons through which they are attached can form a heterocyclic ring by loss of water;

Q^2 is H, OR^{15}, lower alkyl, fluoro lower alkyl, halogen or Q^1;

W is O, S, or NR^3;

X^1 is O, S, —S(O)—, $—S(O)_2—$,$—NR^3$, $—C(R^3)_2—$, or a bond;

X^2 and X^3 are independently O, S, S(O), $S(O)_2$, CR^3R^{16} or a bond;

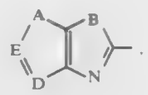
Y is $—CR^3=CR^3—$, $—C(R^3)_2—X^1—$, $—X^1—C(R^3)_2—$, $—C(R^3)_2—X^1—C(R^3)_2—$, —C≡C—, —CO—, $—NR^3CO—$, $—CONR^3—$, O, S, or NR^3;

Z^1 and Z^2 are independently $HET(R^{23}R^{24}R^{25})$ or a bond;

HET is the diradical of benzene, pyridine, furan, thiophene or 1,2,5-thiadiazole;

HETA is HE^1 or HE^2; wherein

HE^1 is



HE^2 is

each A is O, S, $S(O)_2$;

each B is independently O, S, S(O) or $S(O)_2$;

each D is independently N or CR^4;

E is CR4 except when D is N, then E is CR3; or a pharmaceutically acceptable salt thereof.

5,350,761

INDOLYL SUBSTITUTED HYDROXYLAMINE DERIVATIVES

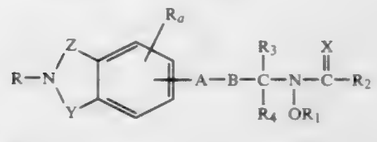
John H. Van Duzer, Asbury, and Dennis M. Roland, Basking Ridge, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 893,142, Jun. 3, 1992, Pat. No. 5,260,316, which is a continuation-in-part of Ser. No. 738,075, Jul. 30, 1991, abandoned. This application Jul. 30, 1993, Ser. No. 99,873

Int. Cl.[5] **A61K** *31/405;* **C07D** *209/12, 209/34*

U.S. Cl. 514—373 **7 Claims**

1. A compound of the formula



(I)

wherein

R represents hydrogen, lower alkyl, aryl, biaryl, C_3–C_7-cycloalkyl, aryl-lower alkyl, aryl-lower alkenyl, aryl-lower alkynyl, aryloxy-lower alkyl, arylthio-lower alkyl; C_3–C_7-cycloalkyl-lower alkyl, biaryl-lower alkyl, aryl-C_3–C_7-cycloalkyl, aryl-C_3–C_7-cycloalkyl-lower alkyl or aryloxy-aryl-lower alkyl; and aryl represents carbocyclic or heterocyclic aryl;

Z represents C_1-alkylene unsubstituted or substituted by lower alkyl;

Y represents SO_2 or CO;

A represents O, S, or a direct bond;

B represents lower alkylene; or B represents lower alkenylene provided that A represents a direct bond;

X represents oxygen or sulfur;

R_1 represents hydrogen, acyl, lower alkoxycarbonyl, aminocarbonyl, mono-or di-lower alkylaminocarbonyl, lower alkenylaminocarbonyl, lower alkynylaminocarbonyl, carbocyclic or heterocyclic aryl-lower alkylaminocarbonyl, carbocyclic or heterocyclic arylaminocarbonyl, C_3–C_7-cycloalkylaminocarbonyl or C_3–C_7-cycloalkyl-lower alkylaminocarbonyl;

R_2 represents lower alkyl, lower alkoxycarbonyl-lower alkyl, C_3–C_7-cycloalkyl, carbocyclic or heterocyclic aryl, carbocyclic or heterocyclic aryl-lower alkyl, C_3–C_7-cycloalkyl-lower alkyl, amino, mono- or di-lower alkylamino, lower alkenylamino, lower alkynylamino, carbocyclic or heterocyclic aryl-lower alkylamino, carbocyclic or heterocyclic arylamino, C_3–C_7-cycloalkylamino, C_3–C_7-cycloalkyl-lower alkylamino or lower alkoxycarbonyl-lower alkylamino;

R_3 and R_4 independently represent hydrogen or lower alkyl;

R_a represents hydrogen, lower alkyl, halo, trifluoromethyl or lower alkoxy; or a pharmaceutically acceptable salt thereof.

5,350,762

TETRAHYDROCYCLOPENT[B]INDOLE METHANAMINES AND RELATED COMPOUNDS

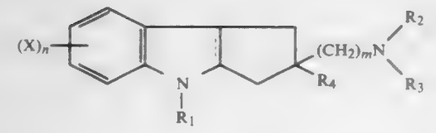
Lawrence L. Martin, Lebanon, and Larry Davis, Sergeantsville, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Filed Mar. 8, 1993, Ser. No. 28,110

Int. Cl.[5] **C07D** *209/80, 413/02;* **A61K** *31/40, 31/535*

U.S. Cl. 514—411 **24 Claims**

1. A compound of the formula



where,

R_1 is H, loweralkyl, arylloweralkyl or loweralkylcarbonyl;

R_2 is H, loweralkyl, aryl, arylloweralkyl or loweralkylcarbonyl;

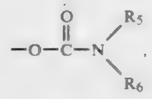
R_3 is H or loweralkyl;

R_4 is H;

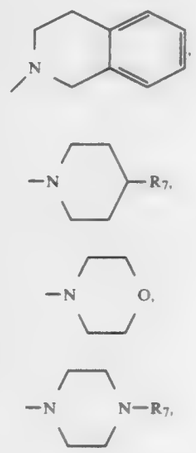
m is an integer of 1 or 2;

n is an integer of 1 or 2; and

X is loweralkoxy, arylloweralkoxy, hydroxy,



amino loweralkyamine, diloweralkylamino, loweralkylcarbonylamino or loweralkoxycarbonylamino, wherein R_5 is H or loweralkyl; and R_6 is H loweralkyl, aryllowerallkyl or aryl; or alternatively the group $—NR_5R_6$ as a whole is



R_7 being hydrogen or loweralkyl; or a pharmaceutically acceptable acid addition salt thereof.

5,350,763

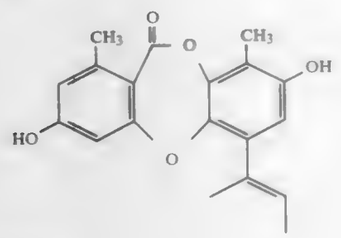
UNGUINOL AND ANALOGS ARE ANIMAL GROWTH PERMITTANTS

Scott D. Feighner, Westfield; Gino M. Salituro, Fanwood; Jack L. Smith, Colonia, and Nancy N. Tsou, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

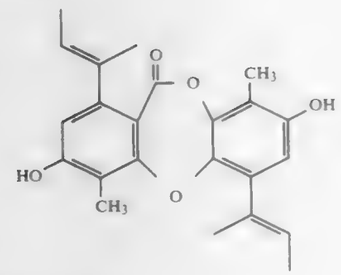
Filed Jun. 11, 1993, Ser. No. 75,253
Int. Cl.[5] A61K *31/365;* C07D *321/10*
U.S. Cl. 514—450 7 Claims

1. A method for promoting the growth of animals and for increasing the efficiency of feed utilization of such animals which comprises administering to such animals an effective amount of unguinol, or derivatives thereof having the following structures:

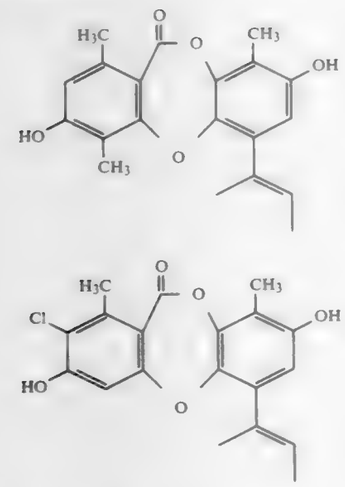
UNGUINOL



FOLIPASTATIN

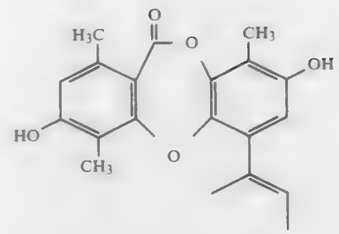


4-METHYL UNGUINOL



or mixtures thereof.

7. A compound having the formula



which is 4-methyl unguinol.

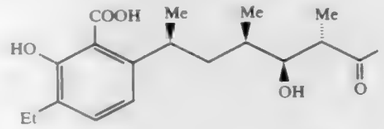
5,350,764

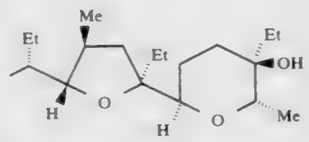
ANTICOCCIDIAL AND GROWTH PROMOTING POLYCYCLIC ETHER ANTIBIOTIC

John P. Dirlam, Gales Ferry, Conn.; Hiroshi Maeda, and Junsuke Tone, both of Chita, Japan, assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 590,891, Oct. 1, 1990, abandoned. This application Mar. 12, 1993, Ser. No. 30,055
Int. Cl.[5] A61K *31/35;* C07D *315/00*
U.S. Cl. 514—460 11 Claims

1. A compound of the formula





or a pharmaceutically acceptable cationic salt thereof, wherein Me represents CH_3 and Et represents CH_2CH_3.

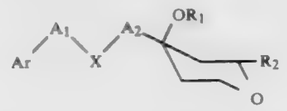
5,350,765

ETHER-CONTAINING INHIBITORS OF 5-LIPOXYGENASE

Joseph F. Dellaria, Lindenhurst; Jimmie L. Moore, Gurnee, and Dee W. Brooks, Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 935,079, Aug. 24, 1992, Pat. No. 5,268,379. This application Aug. 30, 1993, Ser. No. 113,942
Int. Cl.[5] A61K *31/35;* C07D *309/02*
U.S. Cl. 514—460 8 Claims

1. A compound having the structure



or a pharmaceutically acceptable salt thereof wherein

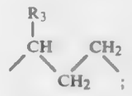
Ar is selected from the group consisting of

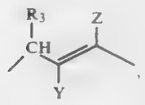
(a) carbocyclic aryl, optionally substituted with alkyl of from one to six carbon atoms, haloalkyl of from one to six carbon atoms, alkoxy of from one to six carbon atoms, or halogen;

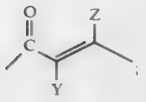
A_1 is selected from the group consisting of propynyl, methylene, and a valence bond;

X is selected from the group consisting of oxygen, sulfur, sulfonyl, and NR_4, where R_4 is as defined below; and

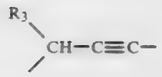
A_2 is selected from the group consisting of

(a) 

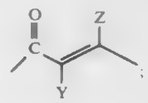
(b) 

(c) 

and

(d) 

wherein R_3 and R_4 are independently hydrogen or alkyl of from one to four carbon atoms; Y is hydrogen, halogen, or nitrile, and Z is hydrogen or alkyl of from one to four carbon atoms, with the proviso that when X is NH, A_2 is



R_1 is alkyl of from one to four carbon atoms; and

R_2 is hydrogen or alkyl of from one to four carbon atoms.

5,350,766

METHOD FOR THE PREVENTION AND/OR PALLIATION OF THE COMPLICATIONS OF DIABETES USING N-ALPHA ORGININE ACETYL

Gerardo Suarez, New Rochelle, N.Y., assignor to New York Medical College, Valhalla, N.Y.

Filed Dec. 18, 1992, Ser. No. 993,732
Int. Cl.[5] A61K *31/195, 31/21, 31/22*
U.S. Cl. 514—561 4 Claims

1. A method for the palliation of the complications of diabetes mellitus, said method comprising administering to a host who is afflicted with diabetes mellitus an effective amount of N-alpha acetyl arginine.

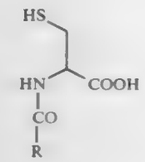
5,350,767

DERIVATIVES OF CYSTEINE

Anders R. Hallberg, Lund, and Per A. S. Tunek, Malmö both of Sweden, assignors to Aktiebolaget Draco, Lund, Sweden

Division of Ser. No. 626,391, Dec. 12, 1990, abandoned, which is a continuation of Ser. No. 272,138, Nov. 16, 1988, abandoned. This application Aug. 27, 1992, Ser. No. 936,615
Claims priority, application Sweden, Nov. 19, 1987, 8704542
Int. Cl.[5] A61K *31/195*
U.S. Cl. 514—562 3 Claims

1. A method for the treatment of lung diseases in mammals caused or maintained by oxidative stress, which comprises oral administration to a subject in need of such treatment of an effective amount of a pharmaceutical composition comprising as the active ingredient an effective amount of a compound of the formula:



(I)

wherein R is $—CH(CH_3)_2$ or $—C(CH_3)_3$ or a physiologically acceptable salt or an optical isomer thereof.

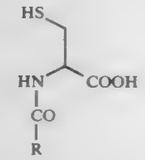
5,350,768

DERIVATIVES OF CYSTEINE

Anders R. Hallberg, Lund, and Per A. S. Tunek, Malmö, both of Sweden, assignors to Aktiebolaget Draco, Lund, Sweden

Continuation of Ser. No. 626,391, Dec. 12, 1990, abandoned, which is a continuation of Ser. No. 272,138, Nov. 16, 1988, abandoned. This application Feb. 26, 1993, Ser. No. 24,843
Claims priority, application Sweden, Nov. 19, 1987, 8704542-3
Int. Cl.[5] A61K *31/195*
U.S. Cl. 514—562 5 Claims

1. A compound of the formula



I

wherein R is $—CH(CH_3)_2$ or $—C(CH_3)_3$ or a physiologically acceptable salt or optical isomer thereof.

5,350,769

ANTIINFLAMMATORY GEL PREPARATION

Shuichi Kasai; Yasuo Ikeda; Satoru Enomoto, all of Narita; Katsumi Imamori, and Akira Iwasa, both of Yotsukaido, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP90/01392, § 371 Date May 14, 1993, § 102(e) Date May 14, 1993, PCT Pub. No. WO92/07561, PCT Pub. Date May 14, 1992
PCT Filed Oct. 30, 1990, Ser. No. 835,979
Int. Cl.[5] A61K *31/19*
U.S. Cl. 514—567 5 Claims

1. An antiinflammatory gel preparation comprising a sodium or ammonium salt of diclofenac, a nonionic polymer, an ester of dibasic acid, and a lower alcohol.

5,350,770

THERAPEUTIC PROCESS FOR THE TREATMENT OF SEPTIC SHOCK

Howard L. Elford, 3313 Gloucester Rd., Richmond, Va. 23227, and Bartholomeus van't Riet, 3419 Noble Ave., Richmond, Va. 23222

Filed Jul. 28, 1992, Ser. No. 919,907
Int. Cl.[5] A61K *31/165*
U.S. Cl. 514—575 1 Claim

1. A therapeutic process for the treatment of septicemia or septic shock comprising administering to a human suffering from septicemia or septic shock and in need of treatment an amount of N,3,4-trihydroxybenzamide or pharmaceutically acceptable salts thereof, wherein the amount is sufficient to modulate the pathological consequences caused by septicemia or septic shock.

5,350,771

METHOD AND TREATMENT FOR HYPERTENSION USING COMBINATION THERAPY INVOLVING EXOGENOUS CALCIUM AND CALCIUM CHANNEL BLOCKERS

Peter K. T. Pang, 52225 Range Rd. 232, 205 Carriage Ln., Sherwood Park, Alberta, Canada T8A 2A6 ; Richard Z. Lewanczuk, Edmonton, and Christine G. Benishin, Ardrossan, both of Canada, assignors to Peter K. T. Pang, Alberta, Canada

Continuation of Ser. No. 750,590, Aug. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 460,482, Jan. 3, 1990, abandoned. This application Dec. 28, 1992, Ser. No. 997,629

Int. Cl.[5] A61K *31/14, 33/10*

U.S. Cl. 514—643 6 Claims

1. A method of treatment of hypertensive mammals comprising the administration to a mammal in need of said treatment of

a) a blood pressure lowering effective amount of a benzeneacetonitrile; and

b) a dietary calcium supplement in an amount which is at least five times, by mole, the amount of said benzeneacetonitrile.

5,350,772

CERTAIN SUBSTITUTED PHENOXY-METHYL PHENYL-METHOXY BENZENES HAVING ANTIVIRAL ACTIVITY

Viyyoor M. Girijavallabhan, Parsippany; Ashit K. Ganguly, Upper Montclair, and Richard W. Versace, Wanaque, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 717,451, Jun. 19, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 39,532

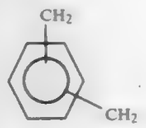
Int. Cl.[5] A61K *31/09;* C07C *43/225, 43/220*

U.S. Cl. 514—721 9 Claims

1. A compound represented by formula II

$$Ar_{1a}—O—M—O—Ar_{1b} \qquad II$$

wherein each of Ar_{1a} and Ar_{1b} is independently selected from phenyl substituted by two or three of (C_1–C_{10}) alkyl, (C_1–C_{10})alkoxy and halogen M is



and O is oxygen.

5,350,773

STABLE, LIQUID PRODUCTS CONTAINING FAT-SOLUBLE SUBSTANCES

Loni Schweikert, Ludwigshafen, and Clemens Sambale, Boehl-Iggelheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 8, 1993, Ser. No. 2,038

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1992, 4200728

Int. Cl.[5] A61K *31/015, 31/59, 31/595, 31/355, 31/34, 31/22, 31/12, 31/07*

U.S. Cl. 514—763 3 Claims

1. A stable liquid product consisting essentially of:

a) from 1 to 50% by weight, based on the liquid product, of at least one physiologically tolerated fat-soluble substance selected from vitamin A, D, E or K or derivatives thereof, carotenoids and glycerides of polyunsaturated fatty acids,

b) from 99 to 50% by weight, based on the product, of glycerol or glycerol/water in the ratio from 100:0 to 50:50, and

c) from 0.2 to 5% by weight, based on the products, of esters of ascorbic acid with fatty acids of from 16 to 18 carbons.

5,350,774

THERAPEUTIC PREPARATION FOR TOPICAL APPLICATION TO THE SKIN

Cathy Palou, 342A Marrickville Rd., Marrickville, Australia NSW 2204

Filed Jun. 29, 1992, Ser. No. 905,311

Int. Cl.[5] A61K *7/48, 9/06*

U.S. Cl. 514—783 4 Claims

1. A substantially alcohol free topical composition for topical application to the skin for the treatment of broken skin disorders comprising an effective amount of myrrh, hamamelis and chamomile in a pharmaceutically acceptable carrier selected from the group consisting of beeswax, glycerine, cream, gel, paste, and lotion.

5,350,775

BENZOPYRAN DERIVATIVE, METHOD FOR PRODUCING THE SAME AND USE THEREOF

Yutaka Ohnishi; Naoaki Misu; Yoshimasa Ishimura, all of Kanagawa, and Nobutake Mihara, Tokyo, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

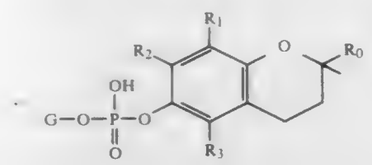
Filed Jul. 12, 1993, Ser. No. 89,561

Claims priority, application Japan, Jul. 20, 1992, 4-192480

Int. Cl.[5] A61K *31/665;* C07F *9/09*

U.S. Cl. 549—220 7 Claims

1. A benzopyran derivative represented by formula (I):



(I)

wherein R_0 represents an alkyl or alkenyl group having 10 to 20 carbon atoms; R_1 to R_3 each represent a methyl group or a hydrogen atom; and G represents a $—CH_2CH(OH)CH_2OH$ or $—CH(CH_2OH)_2$ group; or a salt thereof.

5,350,776

CAMOUFLAGE FOAMED POLYMER WITH COLORED PATTERN MASS

Eduardo A. Raad, P.O. Box 09-01-4553, Guayaquill, Ecuador

Division of Ser. No. 45,192, Apr. 13, 1993, Pat. No. 5,273,697. This application Sep. 24, 1993, Ser. No. 127,228

Int. Cl.[5] C08J *9/232, 9/24*

U.S. Cl. 521—54 16 Claims

1. A foamed elastomeric material having a nonrepetitive, visual camouflage appearance on its surface and throughout its internal mass, made from cross-linked elastomeric polymers by a curing and foaming process, which comprises:

a) compounding in a mixing means various batches of materials comprising

(1) uncured cross-linkable elastomeric polymer pieces,

(2) a coloring agent, each said batch having a single, uniform color,

(3) a blowing agent, which during a curing step forms dispersed bubbles within the elastomeric polymer pieces, and

(4) a cross-linking agent;

b) cutting the compounded batches of uncured polymer into small pieces,

c) feeding into a curing means said small pieces of uncured, compounded elastomeric polymer, each of said small pieces having a single, uniform color with different pieces having different colors,

d) curing said small pieces of uncured, compounded elastomeric polymer by simultaneously foaming and cross-linking the uncured cross-linkable elastomeric polymer pieces by compressing the materials in the curing means at a pressure of up to about 2500 psi while heating the materials to a temperature of between about 100° C. and about 500° C. to create a cured elastomeric polymer;

e) depressurizing the cured elastomeric polymer to remove excess blowing agent bubbles and to foam the material;

f) recovering a cured foamed material; and

g) removing the outer skin of the cured foamed material to obtain a nonrepetitive, visual camouflage appearance.

5,350,777

PRODUCTION AND USE OF OPEN CELL RIGID POLYURETHANE FOAM

Kiyohiro Yuge, Yawata; Hitoshi Muramatsu, Tokyo; Yasuto Masuda, Shimamoto; Kazutaka Uekado, and Yasuaki Tanimoto, both of Nishinomiya, all of Japan, assignors to Matsushita Refrigeration Company and Takeda Chemical Industries, Ltd., Japan

Filed Jul. 23, 1993, Ser. No. 95,214

Claims priority, application Japan, Jul. 27, 1992, 4-199439; Oct. 8, 1992, 4-270525

Int. Cl.[5] C08G *18/00*

U.S. Cl. 521—117 20 Claims

1. A method of producing an open cell rigid polyurethane foam which comprises reacting a polyol with a prepolymer obtained by the reaction of a polymethylene polyphenyl polyisocyanate with a monool by use of a substitute for trichlorofluoromethane as a blowing agent in the presence of a catalyst, a foam stabilizer and a cell opening agent.

5,350,778

POLYISOCYANATE BASED UPON 4,4'-AND 2,4'-DIPHENYLMETHANE DIISOCYANATES AND USE THEREOF IN A RIM PROCESS

David D. Steppan, Gibsonia, Pa.; William E. Slack, and Charles G. Beckley, both of Moundsville, W. Va., assignors to Miles Inc., Pittsburgh, Pa.

Filed Oct. 28, 1993, Ser. No. 144,269

Int. Cl.[5] C08G *18/10*

U.S. Cl. 521—159 4 Claims

1. A liquid, room temperature polyisocyanate having an isocyanate group content of from 6 to 31% by weight, prepared by reacting:

a) a methylene-bis(phenyl isocyanate) comprising

1) from 65 to 90% by weight of the 4,4'-isomer,

2) from 10 to 35% by weigh of the 2,4'-isomer, and

3) no more than 2% by weight of the 2,2'-isomer, with the percents of components a)1), a)2), and a)3) totalling 100%, and

b) a mixture comprising:

1) one or more organic compounds having molecular weights of from 400 to 6000 and containing from 2 to 8 groups selected from the group consisting of hydroxyl groups, primary amine groups and secondary amine groups, and

2) one or more organic diols having molecular weights of from 60 to 200, excluding tripropylene glycol, the weight ratio of component b)1) to b)2) being from 150:1 to 5:1.

5,350,779

LOW EXOTHERM, LOW TEMPERATURE CURING, EPOXY IMPREGNANTS

Ralph D. Hermansen, Northridge, and Steven E. Lau, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 810,640, Dec. 19, 1991, abandoned. This application Jun. 29, 1993, Ser. No. 85,244

Int. Cl.[5] C08L *63/02*

U.S. Cl. 523—428 10 Claims

1. An impregnating compound, consisting of for encapsulating high voltage devices and electrical components in a cavity filled with a mineral filler, said impregnating compound consisting essentially of, by weight:

(a) a resin component consisting essentially of the diglycidyl ether of bisphenol A and at least one reactive diluent selected from the group consisting of (a) from 0 to about 15 wt % of reactive monoepoxide diluents and (b) from 0 to about 50 wt % of reactive diepoxide diluents, said at least one reactive diluent having a viscosity less than about 200 centipoise;

(b) a stoichiometric amount of a curative comprising a mixture of cycloaliphatic diamines, with from about 20 to 80 wt % of the curative consisting essentially of at least one sterically-unhindered cycloaliphatic diamine and the balance at least one sterically-hindered cycloaliphatic diamine, said impregnating compound having a cure temperature of less than about 120° F. (49° C.) and an exotherm that avoids runaway conditions.

5,350,780

PROCESS FOR THE PREPARATION OF SUBSTANTIALLY CLOSED-CELL RIGID FOAMS CONTAINING URETHANE, UREA, BIURET, AND ISOCYANURATE GROUPS AND A METHOD OF USE THEREOF

Rainer Welte, Leverkusen, and Hans J. Scholl, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 23, 1990, Ser. No. 498,192

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1989, 3910100

Int. Cl.[5] C08G *18/00*

U.S. Cl. 521—173 12 Claims

1. A process for the preparation of a substantially closed-cell rigid foam containing urethane, urea, biuret, and isocyanurate groups comprising reacting, at an isocyanate index of greater than 110,

(a) an organic polyisocyanate with

(b) a relatively high molecular weight polyol consisting of a mixture of

(i) a polyester containing at least two hydroxyl groups and having an OH value of greater than 150 and/or a polyether containing at least two hydroxyl groups and having an OH value of greater than 200, and

(ii) a polyoxyalkylene polyether containing ethylene oxide residues and at least two hydroxyl groups and having an OH value of less than 100, in the presence of

(c) an isocyanate trimerization catalyst and

(d) water as blowing agent, and optionally, in the further presence of

(e) a chain-extending and/or crosslinking agent and

(f) one or more auxiliaries and/or additives.

5,350,781

PROCESS FOR THE PRODUCTION OF POLYURETHANE FOAMS

Ulrich Liman, Monheim; Hartwig Grammes, Leverkusen; Dirk Wegener, Monheim, and Manuel Kaiser, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 20, 1993, Ser. No. 123,951

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1992, 4232420

Int. Cl.[5] C08G *18/00*

U.S. Cl. 521—174 7 Claims

1. In a process for the production of polyurethane foams comprising reacting a reaction mixture consisting essentially of

a) a polyisocyanate component, with

b) a polyol component free from salt groups, in the presence of

c) at least one blowing agent, and

d) salts of ester-functional α,β-unsaturated carboxylic acids, the improvement comprising d) said salts of ester-func-

tional α,β-unsaturated carboxylic acids comprising the salt of the reaction products of

(i) alcohols selected from the group consisting of monohydric ether-functional alcohols having a molecular weight in the range from 250 to 1000, and polyhydric, optionally ether-functional alcohols having a molecular weight in the range from 62 to 8000, and mixtures thereof; and

(ii) α,β-unsaturated dicarboxylic acids, or intramolecular anhydrides thereof; wherein said salts contain on a statistical average, at least one alkali metal carboxylate group and at most 0.5 alcoholic hydroxyl groups per molecule, and are present in a quantity of from 0.01 to 100% by weight, based on the weight of component b).

5,350,782

DENTAL FILLING COMPOSITION

Hiroyuki Sasaki, Osaka; Tetsuro Ota, Kyoto; Eiji Hattori, Kanagawa, and Michihiro Ikeda, Fukuoka, all of Japan, assignors to Kanebo, Ltd. and Mitsubishi Kasei Corporation, both of Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 940,458

Claims priority, application Japan, Sep. 6, 1991, 3-255673

Int. Cl.[5] A61K *6/08;* **C08K** *3/18, 3/22*

U.S. Cl. 523—116 **3 Claims**

1. A dental filling composition comprising a polymerizable monomer and an inorganic filler, characterized in that the inorganic filler comprises

(A) 50% to 75% by weight of spherical inorganic oxide particles with an average particle size of from 1.0 to 3.0 μm, and

(B) 50% to 25% by weight of spherical inorganic oxide particles which have a particle size range of 0.05 μm to 0.5 μm and 20% to 50% by weight of which is in a particle size range of from 0.05 to 0.2 μm,

and the total content of the inorganic particles (A) and (B) is at least 80% by weight based on the whole filling composition.

5,350,783

COMPOSTABLE THERMOPLASTIC PRODUCTS

Murray H. Reich, Princeton, N.J., assignor to Biolan Corporation, Princeton, N.J.

Continuation of Ser. No. 796,636, Nov. 21, 1991, abandoned. This application Jun. 28, 1993, Ser. No. 82,361

Int. Cl.[5] C08K *3/00, 5/56, 5/09*

U.S. Cl. 523—124 **19 Claims**

1. Process for composing thermoplastic material including the steps of providing thermoplastic material including a thermoplastic polymer and polymeric composting promoting agent selected from the group consisting of metal complexing agents and metal complexes, and mixtures thereof, in a composting effective amount to convert in the presence of oxidizing metal selected from a group consisting of copper, iron, manganese and cobalt, to an active oxidant, contacting said thermoplastic material with a media containing oxidizing metal selected from a group consisting of garden waste, food waste, paper, wood chips, sewage sludge, mixed solid organic waste, sewage sludge and mixed solid organic waste, lime, manure, and liquid media solutions of oxidizing metals, to cause said oxidizing metal to convert said polymeric composting converting agent to said active oxidant in an amount sufficient to cause said active oxidant to thermally degrade said thermoplastic polymer to a low molecular weight material having enhanced biodegradability under composting conditions and concomitantly subjecting said thermoplastic material to composting conditions to at least partially biodegrade said low molecular material.

5,350,784

WATER DISPERSIBLE POLYAMINE-EPOXY ADDUCT AND EPOXY COATING COMPOSITION

Stuart P. Darwen, Manchester, and David A. Cornforth, Rochdale, both of England, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 893,151, Jun. 3, 1992, Pat. No. 5,246,984. This application May 13, 1993, Ser. No. 60,903

Int. Cl.[5] C08K *3/20;* **C08L** *63/02*

U.S. Cl. 523—404 **10 Claims**

1. A two component coating composition dispersed in an aqueous medium which comprises:

A. a blend comprising

(a) 0.25 to 4 weight parts of a water compatible polyamine-epoxy adduct formed by reacting a polyamine having primary amine groups with a mixture of a monoepoxide and polyepoxide wherein the monoepoxide is added in a proportion to react with from about 10 to 50% of the primary amine groups and the polyepoxide is added in an amount to react with from 5 to 65% of the remaining primary amine groups; and

(b) one weight part of a resin compatible polyamine,epoxy-adduct formed by reacting a polyamine having primary amine groups with a monoepoxide or a polyepoxide; said water compatible polyamine-epoxy adduct and said resin compatible polyamine-epoxy adduct blend having at least 25% of the remaining amine groups reacted with formaldehyde and the polyamine subsequently at least partially neutralized by reaction with an acid; and

B. a polyepoxide resin present in an amount such that there is from about 0.5 to 1.5 equivalents epoxide per amine active hydrogen in the blend.

5,350,785

STABILISED CHLORINE-CONTAINING POLYMER COMPOSITIONS

Hans J. Sander, Lorsch; Olaf-René Hartmann, Bensheim; Hermann O. Wirth, Bensheim, and Wolfgang Wehner, Zwingenberg, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 6, 1993, Ser. No. 58,853

Claims priority, application Switzerland, May 13, 1992, 1536/92

Int. Cl.[5] C08K *5/3435*

U.S. Cl. 524—100 **24 Claims**

1. A stabilised, chlorine-containing polymer composition comprising a chlorine-containing polymer derived from at least one ethylenically unsaturated monomer and a stabiliser mixture comprising:

a) at least one cyclic or noncyclic, sterically hindered piperidine amine,

b) at least one organic zinc compound and/or inorganic zinc compound from the series consisting of the carbonates, chlorides, sulfates, oxides, hydroxides, basic oxides and mixed oxides, and

c) at least one compound from the series consisting of the crystalline alkali metal/alkaline earth metal alumosilicates.

5,350,786

PROCESS OF (CO)POLYMERIZATION OF α-OLEFINES IN THE PRESENCE OF STABILIZERS

Silvestro Costanzi, San Giuliano Milanese; Damiano Gussoni, Milan, and Luciano Pallini, Fornovo Taro, all of Italy, assignors to Enichem Synthesis S.p.A., Palermo, Italy

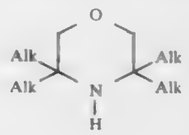
Continuation of Ser. No. 803,739, Dec. 9, 1991, abandoned, which is a continuation of Ser. No. 532,112, Jun. 1, 1990, abandoned, which is a continuation of Ser. No. 78,663, Sep. 28, 1987, abandoned. This application Mar. 4, 1993, Ser. No. 26,097

Claims priority, application Italy, Jun. 30, 1986, 21312 A/86

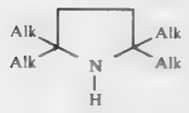
Int. Cl.[5] C08K *5/3435*

U.S. Cl. 524—102 **14 Claims**

1. Process for the preparation of thermostabilized homopolymers of α-olefins or co-polymers of different α-olefins, consisting of polymerizing or co-polymerizing α-olefins to form polyolefins in the presence of at least a stabilizer agent selected from the derivatives of tetra-alkyl-morpholine and of tetra-alkyl-pyrrolidine, respectively containing the groups (I) and (II):

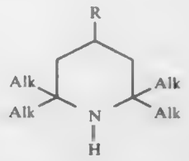


(I)



(II)

and the derivatives of tetra-alkyl-piperidine-containing the group (III)



(III)

wherein R is a paraffinic polymeric chain, or a silyl-alkoxy group, said stabilizer agent not modifying the molecular weight, viscosity or melting point of said polyolefins formed by the polymerization.

5,350,787

AQUEOUS POLYMER DISPERSION

Oral Aydin, Mannheim; Michael Portugall, Wachenheim; Josef Neutzner, Neustadt, and Walter Maechtle, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 29, 1993, Ser. No. 38,864

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1992, 4213965

Int. Cl.[5] C08L *9/08*

U.S. Cl. 524—162 **14 Claims**

1. A final aqueous polymer dispersion having a solids volume concentration of at least 50% by volume, and a polydisperse particle size distribution obtained by polymerizing at least one radical polymerizable monomer with the addition of at least one aqueous dispersion of a starting polymer in a polymerization vessel by the method of free radical aqueous emulsion polymerization in the presence of surface active substances and free radical polymerization initiators with the proviso that

a) the mass of the at least one radical polymerizable monomer relative to the total mass of the at least one radical polymerizable monomer and the starting polymer added in the form of the at least one aqueous dispersion is from 90 to 99.5%,

b) the starting polymer is present in the at least one aqueous dispersion in the form of dispersed starting polymer particles whose non-zero weight average particle diameter is equal to or less than 50 nm,

c) the total number of starting polymer particles added dispersed in the form of at least one aqueous dispersion of a starting polymer is from 10^{15} to 10^{20} starting polymer particles per liter based on the volume of the final polymer dispersion,

d) of the total amount of the at least one monomer to be polymerized either nil or at most 10% by weight is introduced into the polymerization vessel as initial charge prior to the start of the free radical aqueous emulsion polymerization,

e) of the total amount of the at least one aqueous dispersion of a starting polymer to be added the amount introduced into the polymerization vessel as initial charge prior to the start of the free radical aqueous emulsion polymerization is either nil or at most such that the total number of starting polymer particles introduced as initial charge is not more than 10% of the total starting polymer particles to be added in the form of the at least one aqueous dispersion,

f) of the total amount of the at least one monomer to be polymerized at least 90% by weight is added to the polymerization vessel after the start of the free radical aqueous emulsion polymerization, in such a way that at any time of this addition the polymerization conversion of the monomers already added previously to the polymerization vessel including the monomers introduced into the polymerization vessel as initial charge is at least 80%, based on the total amount formed of the monomers added previously to the polymerization vessel and the monomers introduced into the polymerization vessel as initial charge,

g) of the total amount of the at least one aqueous dispersion of a starting polymer to be added the proportion added to the polymerization vessel after the start of the free radical aqueous emulsion polymerization is at least such that the total number of the starting polymer particles contained in this added amount of the at least one aqueous dispersion to be added is at least 90% of the starting polymer particles to be added in total in the form of the at least one aqueous dispersion of a starting polymer and that this addition is carried out in such a way that

at any time of this addition the polymerization conversion of the monomers already added previously to the polymerization vessel including the monomers introduced into the polymerization vessel as initial charge is at least 80%, based on the total amount formed of the monomers added previously to the polymerization vessel and the monomers introduced into the polymerization vessel as initial charge;

at any time after the start of the emulsion polymerization the ratio V_e of the number of moles of the amount already added previously to the polymerization vessel of the at least one monomer including the proportion of the at least one monomer introduced into the polymerization vessel as initial charge to the number of moles of starting polymer particles already added previously to the polymerization vessel in the form of the at least one aqueous dispersion of a starting polymer, standardized for the ratio of the number of moles of the total amount of the at least one monomer to be polymerized to the number of moles of the starting polymer particles to be added in total in the form of the at least one aqueous dispersion of the starting polymer, is within the range from >0 to 10;

at any time after the start of the emulsion polymerization the ratio V_a of the number of moles of the starting polymer particles already added previously to the polymerization vessel in the form of the at least one aqueous

dispersion of a starting polymer excluding the proportion of the at least one aqueous dispersion of a starting polymer introduced into the polymerization vessel as initial charge to the number of moles of the amount of the at least one monomer already added previously to the polymerization vessel excluding the proportion of the at least one monomer introduced into the polymerization vessel as initial charge, standardized for the ratio of the number of moles of the starting polymer particles to be added in total in the form of the at least one aqueous dispersion of a starting polymer to the number of moles of the amount of the at least one monomer to be added in total after the start of the aqueous emulsion polymerization, is within the range from 0 to 10;

on completion of the addition of the at least one monomer at most 10% of the starting polymer particles to be added in total in the form of the at least one aqueous dispersion of a starting polymer are added to the polymerization vessel;

on completion of the addition of the at least one aqueous dispersion of a starting polymer at most 30% by weight of the total amount of the at least one monomer to be polymerized is added to the polymerization vessel;

h) the final aqueous polymer dispersion contains from 1 to 5% of surface active substances, based on the total mass formed of the mass of the at least one radical polymerizable monomer and the mass of starting polymer to be added in the form of the at least one aqueous dispersion,

i) of the total amount of surface active substances contained in the final polymer dispersion at most 15% by weight is introduced into the polymerization vessel as initial charge prior to the start of the free radical aqueous emulsion polymerization (aliquot A),

j) of the total amount of surface active substances contained in the final polymer dispersion at least 50% by weight are already part of the at least one aqueous dispersion to be added of a starting polymer (aliquot B),

k) the proportion of the total amount of surface active substances contained in total in the final polymer dispersion that is neither part of aliquot A nor part of aliquot B (namely aliquot C) is added to the polymerization vessel after the start of the free radical aqueous emulsion polymerization in such a way that at any time the total amount formed of the proportions of aliquots C and B already present in the polymerization vessel is less than 5% by weight, based on the total amount of monomers and polymer present in the polymerization vessel, and

l) the total amount used of free radical polymerization initiators is 0.1 to 5% by weight, based on the total amount of the at least one monomer to be polymerized, and is added to the polymerization vessel in the course of the free radical aqueous emulsion polymerization in such a way that the free radical aqueous emulsion polymerization continues to a minimum polymerization conversion of at least 90% of the total amount of the at least one monomer to be polymerized.

5,350,788

METHOD FOR REDUCING ODORS IN RECYCLED PLASTICS AND COMPOSITIONS RELATING THERETO

Donna L. Visioli, Lower Gwynedd, Pa., and Vincent Brodie, III, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 11, 1993, Ser. No. 29,747

The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.

Int. Cl.[5] C08R *5/17*

U.S. Cl. 524—251 **8 Claims**

1. A method for reducing aldehyde odor of a recycled polymeric material, said method comprising the step of incorporating into the recycled polymeric material a polyalkylene imine.

5,350,789

HOT-MELT INK COMPOSITION

Akemi Sagawa; Ren Itoh; Masahiko Sakai, and Riyuuichi Shimizu, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd. and Hitachi, Ltd., both of Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 7,783

Claims priority, application Japan, Jan. 23, 1992, 4-009780; May 8, 1992, 4-115722; Sep. 24, 1992, 4-254557

Int. Cl.[5] C08L *91/00, 23/00;* **C08K** *5/20*

U.S. Cl. 524—313 **29 Claims**

1. A hot-melt ink composition which is solid at room temperature and is liquefied by heating, comprising from 10 to 65% by weight of a polyamide resin, and from 5 to 40% by weight of a glyceride.

5,350,790

POLYCARBONATE RESIN COMPOSITION FOR OPTICAL USE

Yoshitomi Urabe; Hirosori Hayashida, both of Kitakyushu, and Yoshiaki Ohtani, Nakama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Division of Ser. No. 704,095, May 22, 1991, Pat. No. 5,254,614. This application Apr. 1, 1993, Ser. No. 41,189

Claims priority, application Japan, Jun. 8, 1990, 2-151316; Jun. 8, 1990, 2-151318

The portion of the term of this patent subsequent to Oct. 9, 2010, has been disclaimed.

Int. Cl.[5] C08J *7/14;* **C08K** *5/09;* **C08L** *69/00*

U.S. Cl. 524—321 **15 Claims**

1. A transparent polycarbonate resin composition for optical use comprising a polycarbonate resin and at least one aromatic carboxylic acid in which hydrocarbon atoms of the aromatic ring may be substituted by lower alkyl groups, hydroxyl groups, or halogen atoms, the amount of which is 5 to 1000 ppm based on the polycarbonate resin.

5,350,791

HYDROPHILICIZING TREATMENT FOR METAL OBJECTS

Chi-Fan Hsu, Farmington Hills, Mich., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 908,662, Jul. 2, 1992, abandoned. This application May 14, 1993, Ser. No. 62,091

Int. Cl.[5] C08J *7/06;* **C08K** *5/06*

U.S. Cl. 524—366 **20 Claims**

1. A concentrate composition for preparing a hydrophilicizing treatment by dilution with water, said concentrate composition consisting essentially of:

(A) from about 1.0 to about 60% by weight of a component selected from the group of water soluble polymers and copolymers of acrylic and methacrylic acids and salts thereof;

(B) from about 1.1 to about 60% by weight of a component of water soluble polyether molecules conforming to the general formula:

$$R^1—(—O—)_p—(C_nH_{2n}O)_q—R^2,$$

where each of R^1 and R^2 independently is H or an alkyl moiety containing not more than 4 carbon atom; p is either 0 or 1; n is an integer from 2 to 4 inclusive, and the value of n may be selected independently for each of the q groups present in the polymer molecule; and q is an integer with a value of at least 2; and

(C) from about 1.0 to about 40% by weight of a component of water soluble alkali metal silicates; and, optionally,

(D) an anti-microbial effective amount of a anti-microbial agent; and, optionally,

(E) up to about 20% by weight of a component of water soluble non-silicate alkalinizing agents; and, optionally.

(F) water.

5,350,792

PIGMENT-CONTAINING PLASTIC MOLDING COMPOSITION

Gerhard Hess, Hofheim am Taunus; Ulrich Haack, Aisbach, and Klaus Kurz, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 26, 1992, Ser. No. 906,266

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1991, 4121676

Int. Cl.[5] C09C *1/36*

U.S. Cl. 524—417 **12 Claims**

1. A plastic molding composition essentially comprising at least one organic polymer and at least one carbon-containing pigment, wherein (a) the polymer is a thermoplastic polymer which is at least partially transparent to light in the wavelength range from 180 to 1200 nm, (b) the pigment is animal charcoal, bone black or ivory black.

5,350,793

DAMPING MATERIAL

Atsunori Kishimoto, Higashihiroshima; Takashi Fujii, deceased, late of Hiroshima by Naoko Fujii, legal representative ; Kazutaka Ohshita, Hiroshima; Kazumi Yamamoto, Higashihiroshima; Yasuhiko Fujii, Ohtake, and Tetsuro Toda, Hiroshima, all of Japan, assignors to Toda Kogyo Corporation and Hirotani Co., Ltd., Hiroshima, Japan

Filed Nov. 16, 1992, Ser. No. 975,325

Claims priority, application Japan, Nov. 29, 1991, 3-342431; Nov. 29, 1991, 3-342432

Int. Cl.[5] C08J *5/10;* **C08K** *3/34;* **C08L** *31/04*

U.S. Cl. 524—449 **12 Claims**

1. a damping material comprising:

(a) a binder composed of 100 parts by weight of an ethylene-vinyl acetate copolymer containing 30 to 65 wt % of vinyl acetate and 160 to 330 parts by weight of a petroleum resin containing an aromatic petroleum resin as the main ingredient based on 100 parts by weight of an ethylene-vinyl acetate copolymer; and

(b) 30 to 180 parts by weight of a filler composed of a scaly powder based on 100 parts by weight of said binder.

5,350,794

ALIPHATIC POLYAMIDE COMPOSITIONS AND FIBERS

Norman Herron, Newark, and Ying Wang, Wilmington, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 22, 1993, Ser. No. 97,413

Int. Cl.[5] C08K *3/04*

U.S. Cl. 524—496 **10 Claims**

1. An aliphatic polyamide composition consisting essentially of an aliphatic polyamide, and from about 0.1 to about 20% by weight, based on the weight of the aliphatic polyamide, of a fullerene compound.

5,350,795

AQUEOUS OIL AND WATER REPELLENT COMPOSITIONS WHICH CURE AT AMBIENT TEMPERATURE

Richard S. Smith, Mendota Heights, Minn., and Frans Audenaert, Kaprijke, Belgium, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 890,669, May 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 727,878, Jul. 10, 1991, abandoned. This application Jul. 9, 1993, Ser. No. 89,041

Int. Cl.[5] C08J *3/00;* **C08K** *3/00;* **C08L** *75/00, 27/12*

U.S. Cl. 524—507 **24 Claims**

1. Fluorochemical compositions for treating textile fibers and fabrics to impart oil and water repellency without thermal treatment, comprising an aqueous, substantially organic solvent free, solution or dispersion of

(a) a fluorochemical acrylate copolymer comprising the reaction product of a fluorinated acrylate monomer, polyalkylene glycol acrylate or methacrylate, and polyalkylene glycol diacrylate or dimethacrylate; and

(b) a polyalkoxylated polyurethane having pendant perfluoralkyl groups comprised of an aliphatic or aromatic tri- or higher order isocyanate, a fluorinated alcohol, amine, or mercaptan, and a poly(oxyalkylene) diol or dithiol, said polyalkyoxylated polyurethane having a weight average molecular weight of at least 40,000.

5,350,796

WET STRENGTH RESIN COMPOSITION

David I. Devore, Langhorne; Nancy Clungeon, Wyndmoor, and Stephen A. Fischer, Yardley, all of Pa., assignors to Henkel Corporation, Ambler, Pa.

Continuation of Ser. No. 695,198, May 3, 1991, abandoned. This application Oct. 25, 1993, Ser. No. 142,642

Int. Cl.[5] C08L *77/00*

U.S. Cl. 524—514 **8 Claims**

1. A composition consisting essentially of an aminopolyamide-epichlorohydrin acid salt resin having an E/N ratio of from about 0.6 to about 2.0 and from about 1% to about 35% by weight based on the weight of said resin of polydimethyldiallylammonium chloride.

5,350,797

THERMOSETTING REACTION ADHESIVES

Kurt Stephan, Herisau; Roman Schmidt, and Hans Widmer, both of Pfäffikon, all of Switzerland, assignors to Huber & Suhner AG, Pfäffikon, Switzerland

Continuation of Ser. No. 930,984, Aug. 17, 1992, abandoned. This application Jan. 7, 1994, Ser. No. 178,451

Claims priority, application European Pat. Off., Sep. 6, 1991, 91115138.9

Int. Cl.[5] C08L *67/06;* **C08G** *63/02*

U.S. Cl. 525—28 **16 Claims**

1. Thermo-setting reaction adhesive as a mono-component system having storage stability, containing respectively at least

a) one unsaturated backbone polymer on the basis of a non-cross-linked elastomer in a concentration of 5 to 90% by weight,

b) one unsaturated polyester in a concentration of 5 to 90% by weight,

c) one unsaturated cross-linking agent in a concentration of 0.1 to 50% by weight, and

d) one setting catalyst which provides radicals in a concentration of 0.2 to 6% by weight and which is selected from at least one of tert-butylperbenzoate; tert-butylpermaleate; bis(tert-butylperoxyisopropyl)benzene; 1,1-di(tert-butylperoxy)-3,3,5-trimethyl-cyclohexane; n-butyl-4,4-di(tert-butylperoxy(valerate; ethyl-3,3-di(tert-butylperoxy)butyrate; 3,3,6,6,9,9-hexamethyl-1,2,4,5-tetraoxa-cyclohexane; 2,2-bis(tert-butylperoxy)butane; and 1,1-bis(tert-butylperoxy)cyclohexane.

5,350,798

ABSORBABLE TISSUE ADHESIVES

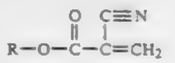
Charles L. Linden, Bethesda, Md., and Shalaby W. Shalaby, Anderson, S.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 17, 1993, Ser. No. 106,941

Int. Cl.[5] C08L *67/02*

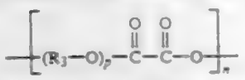
U.S. Cl. 525—41 **8 Claims**

1. A composition of matter which comprises at least one 2-cyanoacrylate ester of the general formula (I)



(I)

wherein R is selected from the group consisting of alkyl groups having from 1 to about 8 carbon atoms and alkoxyalkyl groups having the formula $R_1—O—R_2—$ wherein R_1 is an alkyl group having from 1 to about 8 carbon atoms and R_2 is an alkylene group having from 3 to about 6 carbon atoms, in admixture with from about 2 percent to about 25 percent of at least one oxalic acid polymer of the general formula (II)



(II)

wherein each R_3 is an alkylene group having from 2 to about 4 carbon atoms, each p is an integer from 1 to about 4, with the proviso that not more than about 1 of each 20 p's is 1, and n is the degree of polymerization which results in a polymer which does not initiate polymerization upon mixing with the 2-cyanoacrylate

monomer and standing for about 12 hours.

5,350,799

PROCESS FOR THE CONVERSION OF FINE SUPERABSORBENT POLYMER PARTICLES INTO LARGER PARTICLES

Guy T. Woodrum, Chesapeake, and Thomas H. Majette, Portsmouth, both of Va., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 531,194, May 31, 1990. This application May 7, 1991, Ser. No. 694,445

Int. Cl.[5] C08F *6/00;* **C08B** *31/00*

U.S. Cl. 525—54.3 **7 Claims**

1. A method of forming fine particulate superabsorbent particles into larger particles which comprises:

(a) adding fine superabsorbent polymer particles having a particle size about 75 micron or less to a superabsorbent polymer solution polymerization reaction product gel and forming a dispersion of said particles in said gel;

(b) adding water to said dispersion of said gel and said particles;

(c) mixing said water and said dispersion to form a substantially uniform mixture of said particles in said reaction gel; and

(d) drying said mixture.

5,350,800

METHOD FOR IMPROVING THE BIOCOMPATIBILITY OF SOLID SURFACES

Michel Verhoeven, Maastricht; Patrick Cahalan; Linda Cahalan, both of Schepersgats; Marc Hendriks, Baunssum, and Benedicte Foache, Maastricht, all of Netherlands, assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 19, 1993, Ser. No. 5,711

Int. Cl.[5] A61F *2/54, 2/02;* **A61K** *9/22*

U.S. Cl. 525—54.2 **10 Claims**

1. A method for improving the bioactivity of a biomaterial in contact with a body or body fluid comprising the steps of:

Attaching a biomolecule having a plurality of carboxyl groups thereon, at least some of which impart bioactivity to the biomolecule, to a solid biomaterial surface having primary amine groups thereon by a method comprising the steps of:

(a) reacting the plurality of carboxyl groups of the biomolecule with a carbodiimide to effect an activation of the plurality of carboxyl groups;

(b) reacting at least one of said carbodiimide activated carboxyl groups with the solid biomaterial surface to covalently bind the biomolecule to the solid biomaterial surface by bonding to an amine group thereon;

(c) producing, as a side product of the reactions of steps (a) and (b), groups attached to the carboxyl groups which impart bioactivity to the biomolecule, said attached groups blocking the carboxyl groups and thereby causing reduced bioactivity for the biomolecule;

(d) applying a mild hydrolysis treatment to the covalently bound biomolecule of step (b) at a pH in the range of about 8 to 11 for at least one hour to remove the attached groups of step (c) from the biomolecule while preserving the covalent bond of step (b); and placing the solid biomaterial surface with biomolecule attached according to steps (a)–(d) into contact with the body or body fluid.

5,350,801

SOLID STATE PROCESS FOR MODIFICATION OF POLYVINYL ALCOHOL USING MICHAEL-TYPE ADDITION

Amir Famili, Orefield; Lori A. Vratsanos, Breinigsville, and Finn L. Marten, Emmaus, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 7, 1993, Ser. No. 89,067

Int. Cl.[5] C08L *29/04;* **C08F** *8/00*

U.S. Cl. 525—59 **16 Claims**

1. A method for modifying polyvinyl alcohol comprising:

(a) spraying a polyvinyl alcohol powder with an amount of a solvent containing a monomer capable of Michael-type addition such that the solvent swells the polyvinyl alcohol powder but does not form a slurry with the polyvinyl alcohol powder and does not dissolve the polyvinyl alcohol powder;

(b) allowing the sprayed polyvinyl alcohol powder to swell;

(c) spraying a base catalyst onto the swollen polyvinyl alcohol powder; and

(d) raising the temperature of the swollen polyvinyl alcohol powder to initiate a Michael-type reaction between the polyvinyl alcohol and the monomer, wherein the base catalyst serves to catalyze the Michael-type reaction between the polyvinyl alcohol and the monomer.

5,350,802

IGNITION RESISTANT CARBONATE POLYMER BLENDS CONTAINING LOW MOLECULAR WEIGHT HALOGENATED EPOXY COMPOUNDS

Jack W. Muskopf, Lake Jackson, Tex.; M. Robert Christy, Midland, Mich.; Jaysn F. Jameson, deceased, late of Clute, Tex.; Jerry M. Jameson, heir; Donna R. Jameson, heiress, both of Early, Tex., and Tami S. Hallmark, Freeport, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 825,237, Jan. 24, 1992, abandoned. This application Jun. 23, 1993, Ser. No. 81,776

Int. Cl.[5] C08L *69/00, 63/02*

U.S. Cl. 525—65 **13 Claims**

1. An ignition resistant and impact resistant polymer resin consisting essentially of a polymer blend of:

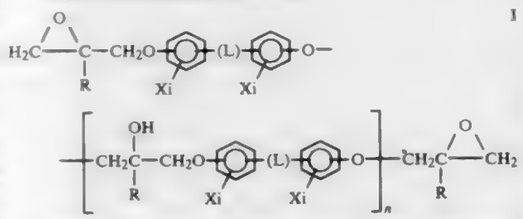
(a) from about 65 to about 98 weight percent carbonate polymer,

(b) from about 2 to about 25 percent by weight monovinylidene aromatic copolymer, and

(c) from 0 to about 10 percent by weight of a rubbery core/-shell graft copolymer impact modifier,

the weight percentages of components (a), (b), and (c) being based upon the weights of components (a), (b) and (c), which blend contains as ignition resistance additives:

(d) from about 1 to about 20 percent by weight of a low molecular weight halogenated epoxy compound according to the following Formula I,



I

where R is independently hydrogen or a hydrocarbyl group having from 1 to about 3 carbon atoms: X is independently Cl or Br; i is independently 1 or 2; L is independently a divalent hydrocarbyl group having from 1 to about 6 carbon atoms; n is from 0 to 20,

(e) from 0.01 to about 2 percent by weight of a tetrafluoroethylene polymer, and

(f) less than about 1 percent by weight antimony or bismuth additive compounds

the weight percentages of (d), (e) and (f) based upon the weights of components (a), (b), (e), (d), (e) and (f).

5,350,803

MOISTURE-CURABLE MELT-PROCESSIBLE ETHYLENE COPOLYMER ADHESIVES

George W. Prejean, Orange, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 796,508, Nov. 22, 1991, Pat. No. 5,210,150. This application Mar. 31, 1993, Ser. No. 40,811

Int. Cl.[5] C08F *8/42*

U.S. Cl. 525—100 **9 Claims**

1. A melt-processible moisture-curable copolymer comprising the reaction product of

(A) a direct copolymer from monomers comprising

(i) ethylene,

(ii) 1–5 wt. % of the direct copolymer of an alpha,beta-ethylenically unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, half esters of maleic acid and itaconic acid, and

(iii) 15–40 wt. % of the direct copolymer of an alkyl acrylate or methacrylate selected from the group consisting of methyl acrylate, methyl methacrylate, ethyl acrylate and iso-butyl acrylate, and

(B) a substantially stoichiometric amount with respect to the amount of carboxylic acid, of an epoxy-silane, wherein the melt index of the melt-processible, moisture-curable copolymer is from 30 to 1500.

5,350,804

RUBBER COMPOSITION CONTAINING RECLAIMED SILICONE RUBBER

Ken-ichi Takita, and Masaharu Takahashi, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1993, Ser. No. 99,498

Claims priority, application Japan, Jul. 31, 1992, 4-224954

Int. Cl.[5] C08L *83/00*

U.S. Cl. 525—104 **8 Claims**

1. A composite rubber composition which comprises:

(a) 100 parts by weight of an organic rubbery elastomer composition having a Mooney viscosity (ML_{1+4} 100° C.) of at least 70 forming the matrix phase of the composite rubber composition; and

(b) from 0.1 to 50 parts by weight of a cured silicone rubber as a dispersed phase in the matrix phase.

5,350,805

EPOXIDE-DIRECT GRAFTED HALOGENATED VINYL POLYMERS

Juchui R. Lin, Bedford, Mass., assignor to Koch Membrane Systems, Inc., Wilmington, Mass.

Filed Jun. 10, 1993, Ser. No. 75,229

Int. Cl.[5] C08G *59/14*

U.S. Cl. 525—121 **41 Claims**

1. A polymer comprising an epoxy-direct grafted halogenated vinyl polymer, in which an ether moiety of an epoxy-direct grafted group is bonded directly to a first carbon-chain carbon of a halogenated vinyl polymer, said first carbon adjacent a second carbon-chain carbon of the halogenated vinyl polymer, said second carbon having bonded directly thereto generally two moieties selected from the group consisting of fluoro, chloro, bromo, iodo, methyl and hydro, provided that said second carbon has bonded directly thereby at least one fluoro, chloro, bromo or iodo moiety.

5,350,806

METAL HYDROXIDE ADDITIVES FOR POLY(ARYLENE SULFIDE)

Michael C. Yu, and William H. Beever, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 27, 1991, Ser. No. 815,091

Int. Cl.[5] C08L *81/00*

U.S. Cl. 525—189 **16 Claims**

1. A composition comprising poly(arylene sulfide), a polymeric rubber, a metal hydroxide, and a carboxylic anhydride selected from the group consisting of carboxylic anhydrides having about 3 to 10 carbon atoms with at least one olefinic unsaturation and derivatives thereof, and wherein said poly-(arylene sulfine) is a water quenched and calcium acetate washed resin.

5,350,807

ETHYLENE POLYMERS

Ted M. Pettijohn, and Kevin J. Hess, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 25, 1993, Ser. No. 83,149

Int. Cl.[5] C08L *27/04, 23/18, 23/16*

U.S. Cl. 525—240 **22 Claims**

1. A polymer composition having a density in the range of from about 0.940 to about 0.790 g/cc measured according to ASTMD 1505 comprising:

(a) a narrow molecular weight distribution component having a weight average molecular weight over number average molecular weight (Mw/Mn) in the range of about 1.0 to about 2.0 comprising an ethylene homopolymer; and

(b) a broad molecular weight distribution component having a Mw/Mn greater than or equal to about 3.0 comprising an ethylene copolymer comprising ethylene and a mono-1-olefin comonomer containing 3 to 18 carbon atoms;

wherein said narrow molecular weight distribution component is present in the polymer composition in an amount of at least about 10 weight percent as based on the total weight of the polymer composition;

wherein said narrow molecular weight distribution component has a weight average molecular weight of about 500 to about 7,500; and

wherein said broad molecular weight distribution component has a weight average molecular weight of about 100,000 to about 750,000.

5,350,808

POLY(METH)ACRYLIMIDES WITH DIFFERENT N-SUBSTITUTES

Siegmund Besecke, Hameln; Andreas Deckers, Ludwigshafen, and Harald Lauke, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

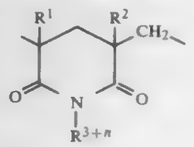
Filed Dec. 21, 1992, Ser. No. 994,251

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142573

Int. Cl.[5] C08F *8/32*

U.S. Cl. 525—330.5 **2 Claims**

1. A polymer comprising essentially at least two different repeat units of the formula I



I

where

R^1 and R^2 are each hydrogen or methyl,

n is 0 or an integer from 1 to 9, and

R^{3+n} are from mutually different groups selected from hydrogen and C_1–C_4 alkyl,

obtained by reacting a polymer based on C_1–C_{20}-alkyl esters of (meth)acrylic acid with ammonia and primary amines of the formula II

$$R^{3+n}NH_2 \qquad II$$

5,350,809

PREPARATION PROCESS OF CHLORINATED RUBBER

Hiroshi Tsuchiya; Makoto Kokura, both of Tokyo; Yutaka Ozawa, Kanagawa, and Takaaki Sugimura, Tokyo, all of Japan, assignors to Asahi Denka Kogyo K.K., Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 6,315

Claims priority, application Japan, Mar. 31, 1992, 4-108820

Int. Cl.[5] C08F *8/22*

U.S. Cl. 525—356 15 Claims

1. A process for the preparation of a chlorinated rubber wherein chlorine gas is reacted with a polyisoprene rubber to form a chlorinated rubber, the improvement comprising:

preparing an aqueous dispersion of said polyisoprene rubber;

preparing an aqueous acid solution having a high concentration of acid;

adding said aqueous dispersion of polyisoprene rubber dropwise into said aqueous acid solution while blowing chlorine gas into the said aqueous acid solution, thereby chlorinating said polyisoprene rubber and forming a chlorinated rubber product.

5,350,810

POLYESTER-ARCYLIC GRAFT POLYMERS FOR USE IN POWDER COATINGS

Henry J. DeGraaf, Stow, and Susan M. Sobek, Brunswick, both of Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Division of Ser. No. 829,510, Feb. 3, 1992, Pat. No. 5,280,089.

This application Nov. 12, 1993, Ser. No. 152,341

Int. Cl.[5] C08L *67/02;* C08F *20/62*

U.S. Cl. 525—445 7 Claims

1. A thermosetting powder paint coating composition containing a coreactive crosslinker and a polymeric binder comprising on a weight basis:

between 55% and 95% of a polyester-graft-acrylic copolymer produced by producing a hydroxyl or carboxyl functional low molecular weight polyester prepolymer comprising dodecanedioic acid esterified with glycol, then reacting the polyester prepolymer with an oxirane functional ethylenic monomer to produce a polyester intermediate polymer containing pendant double bonds followed by in-situ copolymerization with ethylenically unsaturated monomers including acrylic monomers to produce said polyester-graft-acrylic copolymer;

between 5% and 45% of a low molecular weight crystalline polyester produced by esterifyinga symmetrical glycol with a symmetrical aromatic dicarboxylic acid having from 6 to 12 even numbered carbon atoms.

5,350,811

EPOXY RESIN AND ADHESIVE COMPOSITION CONTAINING THE SAME

Nobuo Ichimura; Mitsuo Yamazaki, both of Takahagi; Kohei Fujita, Hitachi; Hidetaka Satou, Hitachi; Yasuo Miyamoto, Hitachi; Masao Kawasumi, Hitachi, and Tohru Kikuchi, Hitachi, all of Japan, assignors to Hitachi Chemical Co. Ltd., Tokyo, Japan

Division of Ser. No. 687,639, Apr. 19, 1991, Pat. No. 5,258,139.

This application Jun. 17, 1993, Ser. No. 77,657

Claims priority, application Japan, Apr. 20, 1990, 2-106293; Jun. 14, 1990, 2-156456; Jul. 27, 1990, 2-200186; Apr. 3, 1991, 3-071183

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—476 3 Claims

1. A process for producing a semiconductor device which comprises bonding a semiconductor chip to a metallic layer with an adhesive composition; said composition comprising an epoxy resin obtained by reacting a 1,3-bis(dicarboxyphenyl)-1,1,3,3-tetrasubstituted disiloxane dianhydride with an alcohol, followed by reaction with an epoxy compound having two or more epoxy groups, or an epoxy resin obtained by reacting a 1,3-bis(dicarboxyphenyl)-1,1,3,3-tetrasubstituted disiloxane with an epoxy compound having two or more epoxy groups.

5,350,812

SILANE-CROSSLINKABLE POLYMER COMPOSITION CONTAINING A SILANE COMPOUND AS A PRECURING RETARDER

Bernt-Åke Sultan, Göteborg, and Lars E. Ahlstrand, Stenungsund, both of, assignors to Neste OY, Espoo, Finland

Continuation of Ser. No. 720,535, Jun. 19, 1991, abandoned.

This application Jul. 9, 1993, Ser. No. 89,418

Claims priority, application Sweden, Dec. 23, 1988, 8804639.6

Int. Cl.[5] C08L *83/05*

U.S. Cl. 525—477 10 Claims

1. A crosslinkable polymer composition comprising:

(a) an olefin copolymer or an olefin graft copolymer with hydrolyzable silane groups thereon;

(b) a silanol condensation catalyst; and,

(c) a substance which counteracts precuring of the polymer composition and which comprises a silane compound having at least one hydrolyzable organic group;

(i) the silane compound having a compatibility with the polymer composition of at least 0.035 mole hydrolyzable groups per 1000 g polymer composition; the compatibility being defined as the residual content of moles of hydrolyzable groups per 1000 g polymer composition, determined indirectly by measuring the decrease in weight after storage for 74 hours at 60° C. in air, of a polymer composition with an initial content of 0.060 mole hydrolyzable groups per 1000 g polymer composition;

(ii) the silane compound having the general formula:

$$R^1(SiR^2{}_nX_{3-n})_m \qquad I$$

wherein:

R^1 is a monofunctional hydrocarbyl group having 13–30 carbon atoms, or a difunctional hydrocarbyl group having 4–24 carbon atoms;

R^2 which may be the same or different, is a hydrocarbyl group having 1–10 carbon atoms;

X which may be the same or different, is a hydrolyzable organic group;

n is 0, 1 or 2; and,

m is 1 or 2.

5,350,813

FLUID ASSISTED DEVOLATILIZATION

John P. Skilbeck, Lunenburg, Mass., assignor to Novacor Chemicals (International) S.A., Fribourg, Switzerland

Continuation-in-part of Ser. No. 919,877, Jul. 27, 1992, abandoned. This application May 27, 1993, Ser. No. 68,536

Int. Cl.[5] C08F *6/00;* C08J *3/00*

U.S. Cl. 528—493 11 Claims



1. A process for reducing the amount of residual monomer and solvent to less than 75 parts per million in a polymer or polymer blend, containing less than 1 weight % of such residual monomer, dimer, trimer and solvent, which process comprises:

(i) heating and maintaining said polymer or polymer blend at a temperature from 200°–270° C.;

(ii) injecting into said polymer or polymer blend an amount of an organic fluid greater than the amount of residual monomer, dimer, trimer and solvent in said polymer or polymer blend but less than 1 weight %, said injection being at temperature of from 200°–270° C. and pressures from 500 to 1500 psi and said organic fluid being selected from the group consisting of C_{1-4} alkanols and C_{1-4} ketones: and

(iii) passing said polymer or polymer blend in the form of strands vertically through a flash chamber devolatilizer maintained at a temperature from 225°–235° C. and which has a pressure maintained at less than 5 torr.

5,350,814

UNSATURATED POLYESTER-EPOXY RESIN NETWORK COMPOSITION

Frederick J. McGarry, Weston, and Ramnath Subramaniam, Cambridge, both of Mass., assignors to GenCorp Inc., Fairlawn, Ohio

Continuation of Ser. No. 874,788, Apr. 27, 1992, Pat. No. 5,248,742. This application Aug. 6, 1993, Ser. No. 103,611

The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.

Int. Cl.[5] C08F *283/01, 283/10*

U.S. Cl. 525—531 19 Claims

1. A reaction product of a mixture comprising:

a) an unsaturated polyester resin,

b) one or more ethylenically unsaturated monomers,

c) an epoxy resin having 2 or more epoxy groups per molecule,

d) an amine-terminated flexible polymer, said polymer having a tg of 0° C. or less and from about 1.7 to about 3 primary or secondary amine groups per polymer, and

e) a catalyst component for amine-epoxy reactions, and

f) a free radical initiator;

wherein said epoxy resin, said amine-terminated flexible polymer, and said catalyst component for amine-epoxy reactions are reacted in the presence of said one or more ethylenically unsaturated monomers and said unsaturated polyester resin to form a composition having a single Tg value by dynamic mechanical analysis when cured.

5,350,815

COPPER BONDING EPOXY RESIN COMPOSITIONS, RESIN COATED COPPER ARTICLES AND METHOD

Mark Markovitz, Schenectady, and William E. Tomak, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 683,289, Apr. 10, 1991, abandoned. This application May 21, 1993, Ser. No. 66,320

Int. Cl.[5] C08L *63/00*

U.S. Cl. 525—533 10 Claims

1. An article of manufacture comprising a copper wire covered by a tightly-adhering, electrically-insulating, thermosetting composition coating which is hard, glassy and cracks but does not flake when the wire is bent around a 0.50 inch mandrel, the coverd wire being made by coating the wire with a solventless clear solution of a composition consisting essentially of 35 to 65% of 3,4 epoxy cyclohexylmethyl-(3,4 epoxy) cyclohexane carboxylate resin, 65 to 35% of a hardener for the epoxy resin selected from the group consisting of a dimerized unsaturated fatty acid and a trimerized unsaturated fatty acid and mixtures thereof, and a small but effective amount of stannous octoate catalyst and 0–3% of phenolic accelerator, and curing the said composition by heating the copper wire and the coating thereon.

5,350,816

OLEFIN POLYMERIZATION PROCESS AND POLYMER PRODUCED

Ted M. Pettijohn, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 955,606, Oct. 1, 1992, Pat. No. 5,260,244, which is a division of Ser. No. 810,581, Dec. 19, 1991, Pat. No. 5,182,244. This application Jul. 29, 1993, Ser. No. 99,042

Int. Cl.[5] C08F *4/44*

U.S. Cl. 526—114 14 Claims

1. A polymerization process comprising contacting at least one alpha-olefin monomer under polymerization conditions with a catalyst system comprising:

(1) a catalyst A comprising an organometal compound and a transition metal compound,

wherein said organometal compound is selected from the group consisting of alkali metal alkyls and alkaline earth metal alkyls and mixtures thereof, and

wherein said transition metal compound is selected from the group consisting of compounds having the formula TiX_4, wherein each X is individually selected from the group consisting of halogen, alkyl, alkoxy, and aryl radicals; and

(2) a catalyst B comprising a rare earth complex having a formula $Cp_nMX_{4-n}.M'L_x$, wherein Cp is cyclopentadienyl or cyclopentadienyl substituted with an alkyl or alkyl silyl radical, M is yttrium, scandium or a rare earth metal having an atomic number in the range of 57 to 71, M′ is an alkali metal, L is a suitable electron donor ligand, X is a halogen, n is 1 or 2, and x is a number corresponding to the value needed to form a stable complex.

5,350,817

PROCESS FOR THE PREPARATION OF POLYOLEFINS HAVING A BROAD MOLECULAR WEIGHT DISTRIBUTION

Andreas Winter, Glashütten; Volker Dolle, Kelkheim am Taunus, and Walter Spaleck, Liederbach, all of Fed. Rep. of Germany, assignors to Hoechst AG, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 888,047, May 22, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 119,893

Claims priority, application Fed. Rep. of Germany, May 27, 1991, 4117259

Int. Cl.[5] C08F *4/64*

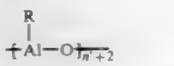
U.S. Cl. 526—119 **17 Claims**

1. A process for the preparation of a polyolefin which has a molecular weight distribution M_w/M_n of ≥ 3.0 and which may be monomodal, bimodal or multimodal, by polymerization or copolymerization of an olefin, consisting essentially of propylene, at a temperature of from −60° to 200° C., at a pressure of from 0.5 to 100 bar, in solution, in suspension or in the gas phase, in the presence of a catalyst comprising a transition-metal component (metallocene) and an aluminoxane of the formula II



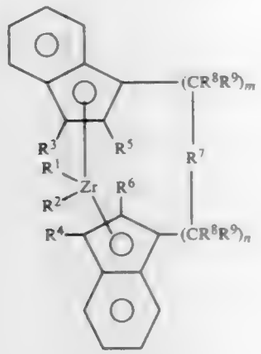
(II)

for the linear type and/or of the formula III

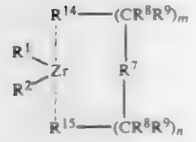


(III)

for the cyclic type, where, in the formulae II and III, the radicals R are identical or different and are a C_1–C_6-alkyl group, a C_1–C_6-fluoroalkyl group, a C_6–C_{18}-aryl group, a C_1–C_6-fluoroaryl group or hydrogen, and n is an integer from 0 to 50, or, instead of the aluminoxane, comprises a mixture of an aluminoxane of the formula II and/or of the formula III with a compound AlR_3, which comprises using, as the transition-metal component, at least one zirconocene of the formula I and at least one zirconocene of the formula Ia or alternatively at least 2 zirconocenes of the formula I



(I)



(Ia)

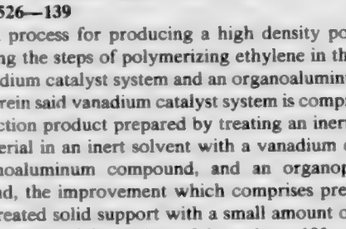
in which

R^1 and R^2 are identical or different and are a hydrogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{10}-alkoxy group, a C_6–C_{10}-aryl group, a C_6–C_{10}-aryloxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40}-alkylaryl group, a C_8–C_{40}-arylalkenyl group or a halogen atom,

R^3 and R^4 are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, which is optionally halogenated, a C_6–C_{10}-aryl group, or a $—NR_2^{10}$, $—SR^{10}$, $—OSiR_3^{10}$, $—SiR_3^{10}$ or $—PR_2^{10}$ radical, in which R^{10} is a halogen atom, a C_1—C_{10}-alkyl group or a C_6–C_{10}-aryl group,

R^5 and R^6 are identical or different and are as defined for R^3 and R^4 with the proviso that R^5 and R^6 are not hydrogen,

R^7 is



$=BR^{11}$, $=AlR^{11}$, —Ge—, —Sn, —O—, —S—, =SO, $=SO_2$, $=NR^{11}$, =CO, $=PR^{11}$ or $=P(O)R^{11}$, where

R^{11}, R^{12} and R^{13} are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{10}-fluoroalkyl group, A C_6–C_{10}-aryl group, a C_6–C_{10}-fluoroaryl group, a C_1–C_{10}-alkoxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group or a C_7–C_{40}-alkylaryl group, or R^{11} and R^{12} or R^{11} and R^{13}, together with the atoms connecting them, in each case form a ring, and

M^1 is silicon, germanium or tin,

R^8 and R^9 are identical or different and are as defined for R^{11},

R^{14} and R^{15} are identical or different and are monocyclic or polycyclic hydrocarbon radicals which can form a sandwich structure together with the zirconium atom, and

m and n are identical or different and are zero, 1 or 2, where m plus n is zero, 1 or 2.

5,350,818

PROCESS FOR PREPARING A HIGH DENSITY POLYETHYLENE OF LOW N-PARAFFIN CONTENT AND HIGH MELT INDEX RATIO

Gerald D. Malpass, Jr., Kingwood, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 981,928, Nov. 24, 1992, abandoned, which is a continuation of Ser. No. 280,605, Dec. 6, 1988, abandoned. This application Sep. 27, 1993, Ser. No. 127,462

Int. Cl.[5] C08F *4/636, 4/68, 10/02*

U.S. Cl. 526—139 **16 Claims**

1. In a process for producing a high density polyethylene comprising the steps of polymerizing ethylene in the presence of a vanadium catalyst system and an organoaluminum cocatalyst, wherein said vanadium catalyst system is comprised of the solid reaction product prepared by treating an inert solid support material in an inert solvent with a vanadium compound, an organoaluminum compound, and an organophosphorus compound, the improvement which comprises prepolymerizing the treated solid support with a small amount of ethylene, in the presence of from about 0.1 to about 100 moles of an aliphatic diene per gram of vanadium, said aliphatic diene containing at least four carbon atoms, wherein said polyethylene has less than about 0.2 weight percent C_{10} to C_{32} n-paraffin content and a melt index ratio (MIR) of at least 75.

5,350,819

CARBOCATIONIC CATALYSTS AND PROCESS FOR USING SAID CATALYSTS

Timothy D. Shaffer, Dickinson, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Continuation-in-part of Ser. No. 20,850, Feb. 19, 1993. This application Apr. 8, 1993, Ser. No. 44,529

Int. Cl.[5] C08F *4/52, 2/06*

U.S. Cl. 526—189 **27 Claims**

1. A catalyst composition comprising:

an initiator of a tertiary alkyl halide or a tertiary aralkyl halide;

a co-initiator which is an alkyl aluminum or an alkyl boron compound;

a proton scavenger; and

a solvent medium having a dielectric constant between about 2.5 and about 3.25.

5,350,820

BUTADIENESULFONIC ACID OR ISOPRENESULFONIC ACID COPOLYMER

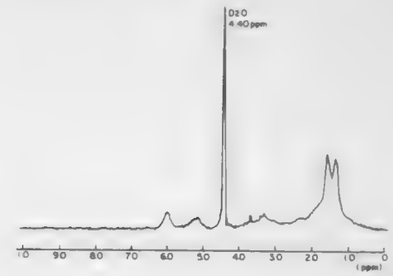
Hisao Ono, Yokkaichi; Katsumi Ito, Suzuka; Tatuo Uekawa, Yokkaichi, and Katsuhiro Ishikawa, Chiba, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Division of Ser. No. 632,631, Dec. 26, 1990, Pat. No. 5,182,343, which is a continuation of Ser. No. 333,027, Apr. 4, 1989, abandoned. This application Oct. 14, 1992, Ser. No. 960,840

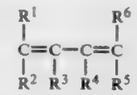
Claims priority, application Japan, Apr. 15, 1988, 63-91286

Int. Cl.[5] C08F *228/02*

U.S. Cl. 526—240 **12 Claims**

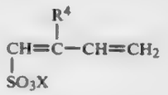


1. A water-soluble or hydrophilic copolymer of a sulfonated monomer represented by the formula (I) in combination with a monomer copolymerizable therewith in a proportion of 90% by weight or less based on the total weight of all monomers:



(I)

wherein R^1, R^2, R^3, R^5 and R^6, which may be the same or different, represent hydrogen atoms or an $—SO_3X$ group (X represents a hydrogen atom, a metal atom, and ammonium group or a quaternary ammonium group); wherein one of said R^1, R^2, R^3, R^5, and R^6 is an $—SO_3X$ group; wherein R^4 is a hydrogen atom or a methyl group; and wherein said monomer copolymerizable therewith is selected from the group consisting of acrylic acid, methacrylic acid, acrylamide, polyethylene glycol methacrylate, polyethylene glycol acrylate, and acrylonitrile, wherein said sulfonated monomer has the formula (II):



(II)

and said proportion of said monomer copolymerizable therewith is 90 to 10% by weight based on the total weight of all monomers.

5,350,821

FLUORINATED MONOMERS AND POLYMERS

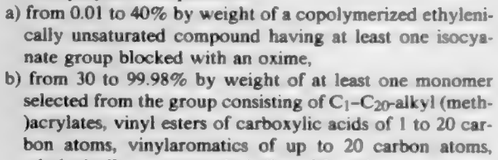
Andrew E. Feiring; Bruce E. Smart, and Zhen-Yu Yang, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 61,888, May 14, 1993, which is a continuation-in-part of Ser. No. 994,032, Dec. 21, 1992, Pat. No. 5,260,492. This application Feb. 16, 1994, Ser. No. 197,780

Int. Cl.[5] C08F *16/24*

U.S. Cl. 526—247 **7 Claims**

1. A polymer comprising the repeat unit(s)



or both, where both of X are hydrogen or chlorine.

5,350,822

HIGH REFRACTIVE INDEX PLASTIC LENS COMPOSITION

Chi-Chang Chen, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jun. 16, 1993, Ser. No. 79,359

Int. Cl.[5] C08F *224/00, 214/02, 220/40, 212/08, 4/34*

U.S. Cl. 526—266 **10 Claims**

1. A plastic lens composition prepared from a reaction mixture comprising:

(a) about 40–60 wt% first monomer which is 3,9-divinylspirobi(m-dioxane);

(b) about 60–40 wt% second monomer which is selected from the group consisting of styrene and chlorostyrene;

(c) maleic acid di-allyl ester, the amount thereof is about 3–8 wt% of an aggregate amount of said first monomer in (a) and said second monomer in (b); and

(d) a free radical polymerization initiator, the amount thereof is about 1–5 wt% of an aggregate amount of said first monomer in (a) and said second monomer in (b).

5,350,823

COPOLYMERS CROSSLINKING AT ROOM TEMPERATURE

Karl Haeberle, Neustadt; Gerhard Bauer, Weinheim, and Lothar Maempel, Bruehl, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 14, 1993, Ser. No. 135,617

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1992, 4237030

Int. Cl.[5] C08F *26/02*

U.S. Cl. 526—301 **2 Claims**

1. A copolymer composed of

a) from 0.01 to 40% by weight of a copolymerized ethylenically unsaturated compound having at least one isocyanate group blocked with an oxime,

b) from 30 to 99.98% by weight of at least one monomer selected from the group consisting of C_1–C_{20}-alkyl (meth-)acrylates, vinyl esters of carboxylic acids of 1 to 20 carbon atoms, vinylaromatics of up to 20 carbon atoms, ethylenically unsaturated nitriles of 3 to 6 carbon atoms, vinyl halides and nonaromatic hydrocarbons of 4 to 8 carbon atoms having at least 2 conjugated double bonds,

c) from 0.01 to 30% by weight of at least one comonomer having at least one keto or aldehyde group, and

d) from 0 to 50% by weight of at least one further monomer.

5,350,824

FLUOROSILICONE POLYMERS AND METHODS FOR THE PREPARATION THEREOF

Hideki Kobayashi, Chiba, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Jun. 18, 1993, Ser. No. 79,657
Claims priority, application Japan, Jun. 29, 1992, 4-194880
Int. Cl.[5] C08G *77/08*
U.S. Cl. 528—21 | **13 Claims**

1. A fluorosilicone polymer comprised of siloxane with formula

$$[F(CF_2)_aC_2H_4]_2SiO_{2/2}$$

and having a silanol group at both molecular chain terminals; where a is an integer with a value of 1 to 10.

5,350,825

AT LEAST PARTIALLY BLOCKED ORGANIC POLYISOCYANATES, A PROCESS FOR THEIR PREPARATION AND THEIR USE IN COATING COMPOSITIONS

Eberhard König, Cologne; Holger Casselmann, Bergisch Gladbach; Frank Kobelka, Leverkusen, and Keith-Allen Foster, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany and Miles Inc., Pittsburgh, Pa.

Filed Nov. 23, 1993, Ser. No. 157,350
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1992, 4240480
Int. Cl.[5] C08G *18/80*
U.S. Cl. 528—45 | **11 Claims**

1. An organic polyisocyanate which has a content of unblocked and blocked isocyanate groups (calculated as NCO) of 5 to 20 wt.%, wherein at least 95% of the isocyanate groups are present in blocked form and wherein the blocking agent consists essentially of

A) 30 to 70 equivalent-% of diisopropylamine,

B) 30 to 70 equivalent-% of at least one other blocking agent selected from CH-acidic esters and 1,2,4-triazole and

C) 0 to 20 equivalent-% of blocking agents other than those set forth in A) and B),

wherein the percentages of A), B) and C) add up to 100.

5,350,826

EPOXY RESIN COMPOSITION CONTAINING A POLYAMINOAMIDE AND A LATENT CURING AGENT FOR FIBER IMPREGNATION

Osamu Watanabe, Saitama, and Makoto Takezawa, Niiza, both of Japan, assignors to Tonen Corporation, Japan

Filed Nov. 27, 1992, Ser. No. 982,722
Claims priority, application Japan, Nov. 29, 1991, 3-342253
Int. Cl.[5] C08G *65/10*
U.S. Cl. 528—93 | **5 Claims**

1. An epoxy resin composition comprising:

an epoxy resin having at least two epoxy groups;

a latent curing agent for said epoxy resin in an amount of 0.5–3.0 equivalents per equivalent of the epoxy groups of said epoxy resin said latent curing agent having a reaction initiation temperature of 40°–115° C.; and

a reactive, viscosity-increasing agent selected from the group consisting of aromatic diamines and polyaminoamides, said reactive, viscosity-increasing agent being present in an amount of 0.2–3.0 parts by weight per 100 parts by weight of said epoxy resin, said epoxy resin composition having an initial viscosity $n_i(50)$ at 50° C. of 1,000–200,000 cP and an initial viscosity $n_i(23)$ at 23° C. of at least 10,000 cP, said reactive viscosity-increasing agent serving to increase said initial viscosity $n_i(50)$ to 50,000–1,500,000 cP when maintained at 23° C. for 7 days, said composition exhibiting a viscosity at 50° C. of no more than 50 times the initial viscosity $n_i(50)$ when maintained at 23° C. for 7 days.

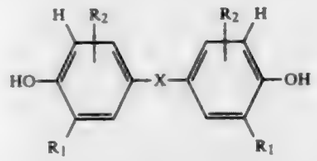
5,350,827

SELECTED STRUCTURALLY DEFINED NOVOLAK BINDER RESINS AND THEIR USE IN RADIATION-SENSITIVE COMPOSITIONS

Thomas R. Sarubbi, Providence, R.I., and Joseph J. Sizensky, Seekonk, Mass., assignors to OCG Microelectronic Materials, Inc., West Paterson, N.J.

Division of Ser. No. 787,454, Nov. 4, 1991, Pat. No. 5,306,594. This application Feb. 9, 1994, Ser. No. 194,292
Int. Cl.[5] C08G *8/04, 8/10*
U.S. Cl. 528—155 | **5 Claims**

1. A novolak resin composition consisting of the reaction product of a para-, para-bonded bisphenol having formula (A):



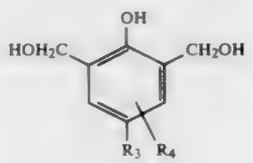
(A)

wherein R_1=lower alkyl group having 1–4 carbon atoms, halogen, or lower alkoxy group having 1–4 carbon atoms;

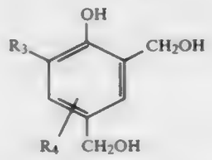
wherein R_2=hydrogen or lower alkyl group having 1–4 carbon atoms; and

wherein X is selected from the group consisting of CH_2, $CH(CH_3)$, $C(CH_3)_2$, O, and S;

with a bismethylol monomer selected from a difunctional ortho-, ortho-phenolic bismethylol of formula (B), a difunctional ortho-, para-phenolic bismethylol of formula (C), or mixtures thereof:



(B)



(C)

wherein R_3 is selected from CH_3, CH_2CH_3, Cl and Br; and wherein R_4 is selected from H and CH_3.

5,350,828

SYNTHESIS AND POLYMERIZATION OF DITHIOETHER-LINKED PHTHALONITRILE MONOMERS

Teddy M. Keller, Alexandria, Va., and Thomas R. Price, deceased, late of Fort Washington, Md. by Carolyn R. Price, legal representative, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 599,939, Oct. 19, 1990, Pat. No. 5,202,414, which is a division of Ser. No. 274,216, Nov. 21, 1988, Pat. No. 5,004,801. This application Dec. 18, 1992, Ser. No. 47,332
Int. Cl.[5] C08G *63/44, 73/02, 75/00, 83/00*
U.S. Cl. 528—183 | **7 Claims**

1. A polymer produced by polymerizing a phthalonitrile monomer represented by the formula:



wherein A is selected from the group consisting of an aliphatic hydrocarbon having from 2 to 30 carbon atoms, a cyclic hydrocarbon having from 4 to 30 carbon atoms, and mixtures thereof in the presence of an amine to form an amine-cured polymer.

5,350,829

METHOD FOR PRODUCING A POLYETHYLENE NAPHTHALATE

Fumio Kawamoto, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 13, 1993, Ser. No. 90,780
Claims priority, application Japan, Jul. 22, 1992, 4-195313
Int. Cl.[5] C08G *63/02*
U.S. Cl. 528—272 | **13 Claims**

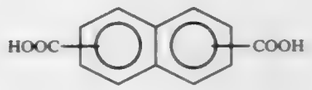
1. A method for producing a polyethylene naphthalate, which comprises reacting

(A) a naphthalenedicarboxylic acid comprising a naphthalenedicarboxylic acid represented by the following formula (I) as its main component; with

(B) a glycol comprising ethylene glycol as its main component;

in the presence of (a) at least one metal compound selected from the group consisting of glycol-soluble magnesium compounds, glycol-soluble manganese compounds, and glycol-soluble zinc compounds; (b) a nitrogen-containing basic compound; and (c) a phosphorous compound selected from the group consisting of triethylamine, tributylamine, dimethylaniline, pyridine, quinoline, tetraethylammonium hydroxide, tetrabutylammonium hydroxide, triethylbenzylammonium hydroxide, 1,8-diazabicyclo(5;4,-0)undecene; imidazole and its derivatives, and 1,4-biazacyclo(2,2,2)octane; and further in the presence of (d) a glycol-soluble germanium compound in the form of a solution in a glycol;

the amount of the metal compound, the nitrogen-containing basic compound, the phosphorous compound, and the germanium compound being such that a relationship expressed by the following expressions is satisfied: formula (I)



expressions

$$0.005 < M < 1.0 \quad (1)$$

$$0.00015 < M/P < 0.024 \quad (2)$$

$$0.01 < A/(M+G) < 0.70 \quad (3)$$

$$0.21 < G < 2.18 \quad (4)$$

wherein

M: the amount of the magnesium, manganese, and zinc atoms to be added on the basis of the polymer (g atom/-ton),

P: the amount of the phosphorous atoms to be added on the basis of the polymer (ppm),

A: the number of mols of the nitrogen-containing basic compound to be added on the basis of the polymer (mol/-ton), and

G: the amount of the germanium atoms to be added on the basis of the polymer (g atom/ton).

5,350,830

THERMOSETTING COATING COMPOSITIONS

Thauming Kuo, and Charles H. Foster, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

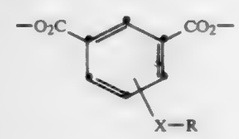
Filed Nov. 27, 1992, Ser. No. 982,545
Int. Cl.[5] C08G *63/16*
U.S. Cl. 528—302 | **6 Claims**

1. A curable polyester having a number average molecular weight of about 800 to about 6,000 and a weight average molecular weight of about 3,000 to about 40,000, comprising

(a) about 20 to about 60 mol % of diol residues, based on the total moles of components (a), (b), (c), (d), (e) and (f);

(b) 3.5 to about 20 mol % of polyol residues, based on the total moles of components (a), (b), (c), (d), (e) and (f); wherein said polyol residues are selected from the group consisting of trimethylolpropane, trimethylolethane, glycerol, 2,2-bis(hydroxymethyl)-1,3-propanediol, 1,2,3,4,5,6-hexahydroxyhexane, and bis(2,2-bis(hydroxymethyl)-3-propanol ether;

(c) about 5 to about 40 mol % of hydroxy functionalized isophthalic acid residues, based on the total moles of (a), (b), (c), (d), (e) and (f); said hydroxy functionalized residues having the formula



wherein X is selected from —O—, —S—, $—SO_2—$ or $—O—(CH_2—)_n$ wherein n is 1 to about 6; R is a phenyl radical containing 1–3 hydroxy groups with the proviso that when X is —O— or —S—, that R may also be hydrogen;

(d) about 10 to about 40 mol % of diacid residues, derived from an aromatic diacid or a cycloaliphatic diacid or a mixture thereof, based on the total moles of (a), (b), (c), (d), (e) and (f);

(e) about 0 to about 40 mol % of diacid residues derived from an aliphatic diacid based on the total moles of components (a), (b), (c), (d), (e) and (f);

(f) 0 to about 10 mol % of residues derived from trimellitic acid or trimellitic anhydride, based on the total moles of components (a), (b), (c), (d), (e) and (f).

5,350,831

METHOD OF PRODUCING AROMATIC HETEROCYCLIC COPOLYMER AND MOLECULAR COMPOSITE MATERIAL CONTAINING SAME

Hiroshi Akita, Asaka; Tatsuya Hattori, Tokyo; Kazuhiro Kagawa, Asaka, and Hiroto Kobayashi, Tokorozawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 882,018, May 13, 1992, Pat. No. 5,248,759. This application Feb. 19, 1993, Ser. No. 20,328

Claims priority, application Japan, May 13, 1991, 3-137151; May 28, 1991, 3-152417; Mar. 24, 1992, 4-97080; Mar. 24, 1992, 4-97105

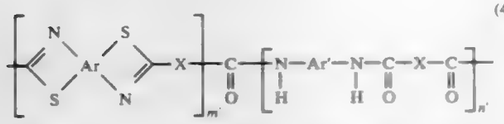
Int. Cl.[5] **C08C** *75/32;* **B32B** *27/00*

U.S. Cl. 528—337 **12 Claims**

1. A molecular composite material comprising an aromatic heterocyclic block copolymer and a matrix polymer;

wherein said aromatic heterocyclic block copolymer and said matrix polymer have at least partially common or similar structural subunits; and

wherein said aromatic heterocyclic block copolymer is represented by the formula (4):



(4)

wherein Ar and Ar′ are aromatic residues, X is a residue of a dicarboxylic acid derivative, and m′ and n′ are integers having a ratio (m′/n′) of 0.01/99.99 to 99.99/0.01

5,350,832

TRANSITION METAL COMPLEXES OF POLYARYLENE OXIDES AND SULFIDES

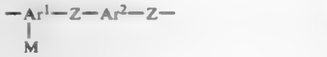
Alexa A. Dembek, Wilmington, Del., and Marianne Marsi, Washington, W. Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 14, 1992, Ser. No. 990,201

Int. Cl.[5] **C08G** *75/16*

U.S. Cl. 528—373 **8 Claims**

1. A transition metal complexed polymer consisting essentially of repeat units of the formula



wherein:

each Ar^1 and Ar^2 is independently arylene, wherein arylene is a group with two free valencies to aromatic carbon atoms with contains one or more carbocyclic aromatic rings;

M is an iron, chromium, manganese or ruthenium moiety capable of forming a π-arene complex with A^1; and each Z is independently oxygen or sulfur.

5,350,833

PROCESS FOR PRODUCTION OF POLYARYLENE SULFIDES

Hiroshi Inoue, and Toshikazu Kato, both of Mie, Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Continuation of Ser. No. 773,000, Oct. 8, 1991, abandoned. This application Jun. 25, 1993, Ser. No. 82,519

Claims priority, application Japan, Oct. 8, 1990, 2-268314

Int. Cl.[5] **C08G** *75/14*

U.S. Cl. 528—388 **13 Claims**

1. A process for preparing a polyarylene sulfide which comprises reacting, at elevated temperature, a mixture consisting essentially of an alkali metal sulfide and at least one dihaloaromatic compound in an organic amide solvent, characterized in that an anhydrous alkali metal sulfide having a purity of at least 95% by weight and containing not greater than 2% by weight of alkali metal hydrosulfide is employed; the polymerization reaction is carried out in the presence of water that has been deliberately added in a proportion of 0.1 to 0.8 moles per each mole of the alkali metal sulfide; and the alkali metal sulfide is charged in a concentration of 2.5 to 5 moles per liter.

5,350,834

TREATMENT OF POLYARYLENE SULFIDE/SULFONE POLYMERS

Rex L. Bobsein; Michael C. Yu; Roy F. Wright, and David A. Soules, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 696,451, May 6, 1991, Pat. No. 5,235,034, which is a continuation-in-part of Ser. No. 432,282, Nov. 6, 1989, abandoned. This application May 14, 1993, Ser. No. 62,641

Int. Cl.[5] **C08G** *75/16*

U.S. Cl. 528—485 **16 Claims**

1. A method of treating a poly(arylene sulfide/sulfone) polymer in order to increase said polymer's thermal stability and purity, which method comprises

a) contacting a poly(arylene sulfide/sulfone) polymer at a temperature in the range of 0° C. to 300° C., for a time period of about ½ minute to 30 hours with a water soluble zinc compound in an acidic solution;

b) then recovering said polymer.

5,350,835

CELLULAR NUCLEIC ACID BINDING PROTEIN AND USES THEREOF IN REGULATING GENE EXPRESSION AND IN THE TREATMENT OF AIDS

Richard B. Gaynor, Dallas, and Foon K. Wu, Carrollton, both of Tex., assignors to Board of Regents, University of Texas, Austin, Tex.

Filed Nov. 5, 1991, Ser. No. 788,266

Int. Cl.[5] **A61K** *37/10*

U.S. Cl. 530—358 **16 Claims**

1. A nucleic acid binding element obtained from mammalian cells susceptible to infection with HIV comprising a TRP-185 cellular protein that binds with high affinity to a TAR bulge and loop region of an HIV RNA in the presence of a cofactor fraction having a molecular weight of about 85–100 kD by sucrose gradient analysis, said TRP-185 cellular protein having a molecular weight of about 175–190 kD by sucrose gradient analysis.

5,350,836

GROWTH HORMONE ANTAGONISTS

John J. Kopchick, and Wen Y. Chen, both of Athens, Ohio, assignors to Ohio University, Athens, Ohio

Continuation-in-part of Ser. No. 693,305, May 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 419,561, Oct. 12, 1989, abandoned. This application May 4, 1992, Ser. No. 878,703

Int. Cl.[5] **C07K** *13/00;* **C12P** *21/06;* **A61K** *37/36*

U.S. Cl. 530—399 **27 Claims**

1. A vertebrate growth hormone in which the amino acid position in said vertebrate growth hormone corresponding to amino acid Gly 119 of bovine growth hormone is deleted or substituted with an amino acid, said vertebrate growth hormone having growth hormone antagonist activity.

5,350,837

COMPLEXES WITH ^{99m}TC SUITABLE FOR RADIOLABELLING MONOCLONAL ANTIBODIES OR OTHER MACRO MOLECULES

Gary J. Bridger, Bryn Mawr; Pedro E. Hernandez, Malvern; John D. Higgins, III, and Scott K. Larsen, both of West Chester, all of Pa., assignors to Johnson Matthey Public Limited Company, London, England

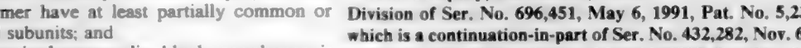
Filed May 3, 1993, Ser. No. 55,312

Claims priority, application United Kingdom, May 2, 1992, 92/09641.1

Int. Cl.[5] **C07F** *13/00*

U.S. Cl. 534—14 **9 Claims**

1. An intermediate complex for combination with antibody or antibody fragment components to produce an imaging agent, comprising ^{99m}Tc complexed with the ligand L,



L

where

R is hydrogen, hydroxyl, alkyl or hydroxyalkyl or

R and R^1 together form a mono-, di-, tri-, or tetra-methylene radical, or

R and R^3 together form a mono-, di-, tri-, or tetra-methylene radical, and

R^1 and R^2 are the same or different and are selected from hydrogen, hydroxyl, alkyl, hydroxyalkyl, carboxyl, alkylcarboxyl, alkylamine, alkylthiol, aryl or R^1 and R^2 together form a tetra- or pentamethylene radical, and

R^3 and R^4 and R^5 are the same or different and are selected from hydrogen, hydroxyl, alkyl, hydroxyalkyl, carboxyl, alkylcarboxyl, provided that at least two of R^3, R^4 and R^5 are hydroxylalkyl, and n is equal to 0, 1 or 2.

5,350,838

HIGH TEMPERATURE PROCESS FOR PREPARING FIBER REACTIVE DYES

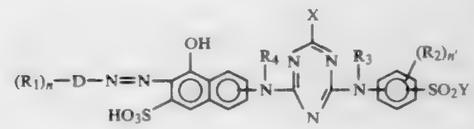
Mark A. Helle, Hope, and Walter Helmling, West Warwick, both of R.I., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Feb. 8, 1993, Ser. No. 14,905

Int. Cl.[5] **C09B** *41/00*

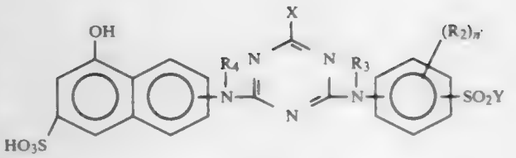
U.S. Cl. 534—638 **9 Claims**

1. A process for preparing a monoazo dye of the formula:



wherein the amino linking group may be in the 6, or 7 ring position on the naphthalene ring; the moiety D represent a phenylene or naphthylene group; R_1 and R_2 are independently selected from hydrogen, sulfo, phosphato, carboxy, hydroxy, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, aryl and halogen; R_3 and R_4 are independently selected from hydrogen and C_1 to C_4 alkyl and n and n′ are independently an integer from 1 to 3; X is selected from chloro, fluoro or —NHCN; Y is —CH=CH_2 or —CH_2—CH_2—Z wherein Z represent a leaving group capable of being split off in an alkaline medium which comprises contacting a diazonium salt of an aromatic amine and a coupling component of an amino-4-hydroxy-2-naphthalene sulfonic acid derivative at a temperature from 60° to 85° C. wherein said diazonium salt has the formula:

wherein D, R_1 and n are defined above; and wherein said a coupling component has the formula:



wherein R_2, R_3, R_4, X, Y and n′ are defined above.

5,350,839

2′-POSITION MODIFIED COMPOUND OF ERYTHROMYCIN OR ITS DERIVATIVE

Toshifumi Asaka; Yoko Misawa; Masato Kashimura; Shigeo Morimoto, all of Saitama; Yoshiaki Watanabe, Tokyo, and Katsuo Hatayama, Saitama, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

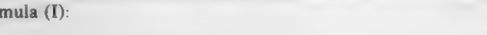
PCT No. PCT/JP91/01368, § 371 Date Apr. 15, 1992, § 102(e) Date Apr. 15, 1992, PCT Pub. No. WO92/06991, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 8, 1991, Ser. No. 39,121

Int. Cl.[5] **C07H** *17/08*

U.S. Cl. 536—7.4 **2 Claims**

1. A compound having a group represented by the following formula (I):



(I)

wherein R represents an alkyl group having from 1 to 12 carbon atoms, m represents an integer of from 2 to 4, and n represents an integer of from 1 to 7, at the 2′-position of an erythromycin or a pharmaceutically acceptable salt thereof.

5,350,840

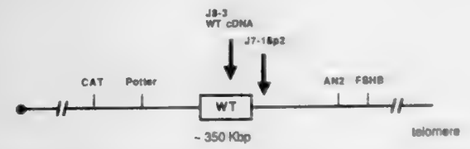
LOCALIZATION AND CHARACTERIZATION OF THE WILMS' TUMOR GENE

Katherine M. Call, Malden; Thomas M. Glaser, Cambridge, both of Mass.; Caryn Y. Ito, Cerrboro, N.C.; Alan J. Buckler, Brookline, Mass.; Jerry Pelletier, Cambridge, Mass.; Daniel A. Haber, Cambridge, Mass.; Elise A. Rose, Emeryville, Calif., and David E. Housman, Newton, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 435,780, Nov. 13, 1989, abandoned. This application Nov. 20, 1991, Ser. No. 795,323

Int. Cl.[5] **C07H** *21/02, 21/04;* **C12Q** *1/68*

U.S. Cl. 536—23.1 **8 Claims**



1. Isolated DNA consisting essentially of the 11p13 Wilm's tumor gene having the nucleotide sequence as shown in FIG. 3.

5,350,841

GANGLIOSIDE DERIVATIVES

Aurelio Romeo, Rome; Gino Toffano, and Alberta Leon, both of Padova, all of Italy, assignors to Fidia S.p.A., Abano Terme, Italy

Filed Jul. 31, 1992, Ser. No. 922,383
Claims priority, application Italy, Aug. 1, 1991, PD91A000139
Int. Cl.[5] A61K *31/70;* **C12P** *19/04;* **C07H** *5/06*
U.S. Cl. 536—53 **44 Claims**

1. A ganglioside derivative comprised of a basic natural or semisynthetic ganglioside, the carboxyl group in the sialic part of said natural or semisynthetic ganglioside being converted into a carboxylamide with an aliphatic amino acid or amino sulfonic acid, or a salt thereof with metals or organic bases on free carboxy or sulfonic groups or acid addition salts on any free amino groups.

5,350,842

DNAS ENCODING *TREPONEMA PALLIDUM* ANTIGENS

Michael V. Norgard, Plano, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 913,724, Sep. 30, 1986, Pat. No. 4,868,118, and a continuation-in-part of Ser. No. 235,351, Aug. 23, 1988, abandoned. This application Aug. 31, 1992, Ser. No. 940,245
The portion of the term of this patent subsequent to Sep. 19, 2006, has been disclaimed.
Int. Cl.[5] C12N *15/31*
U.S. Cl. 536—23.7 **15 Claims**

1. A nucleic acid molecule having a sequence encoding a 47-kDa cell surface protein of *Treponema pallidum.*

5,350,843

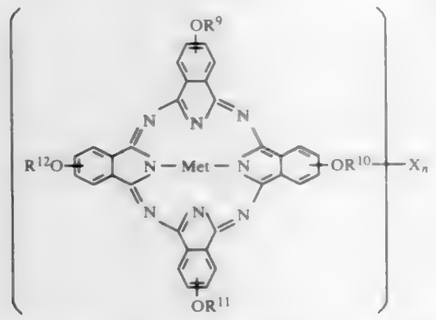
HALOGENATED PHTHALOCYANINE COMPOUND, METHOD FOR PREPARING SAME

Hisato Itoh; Takahisa Oguchi; Shin Aihara, and Kenichi Sugimoto, all of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo and Yamamoto Chemicals, Incorporated, Yao, both of Japan

PCT No. PCT/JP91/01384, § 371 Date Jul. 6, 1992, § 102(e) Date Jul. 6, 1992, PCT Pub. No. WO92/07911, PCT Pub. Date May 14, 1992
PCT Filed Oct. 11, 1991, Ser. No. 877,174
Claims priority, application Japan, Nov. 6, 1990, 2-298792
Int. Cl.[5] C07D *487/22*
U.S. Cl. 540—138 **14 Claims**

1. A method for preparing a halogenated phthalocyanine compound represented by the formula (20)

(20)

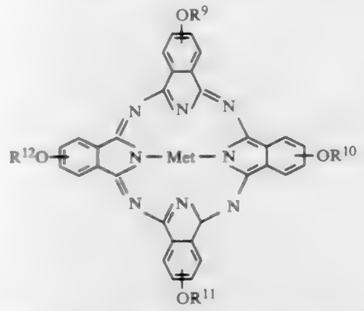


wherein each of R^9 to R^{12} independently is a substituted or unsubstituted alkyl group; and Met is two hydrogen atoms, a divalent metallic atom, a trivalent or a tetravalent metallic derivative; X is chlorine, bromine or iodine; and

n is $1 \leqq n \leqq 12$,

which comprises reacting a phthalocyanine compound represented by the formula (19)

(19)



wherein R^9 to R^{12} and Met have the same meanings as in the formula (20),
with a halogenating agent at 20° to 90° C. in a mixed solvent of an organic solvent and water.

5,350,844

PROCESSES FOR THE PREPARATION OF TITANYL PHTHALOCYANINES

Trevor I. Martin, Burlington; James D. Mayo, Toronto; Nancy A. Listigovers, Oakville; Cheng K. Hsiao, Mississauga, all of Canada; Terry L. Bluhm, New York, N.Y.; Sharon E. Normandin, Macedon, N.Y., and Kathleen M. Carmichael, Williamson, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 1, 1993, Ser. No. 24,145
Int. Cl.[5] C09B *67/50*
U.S. Cl. 540—141 **27 Claims**

1. A process for the preparation of a more perfect crystalline form of the Type I polymorph of titanyl phthalocyanine consisting essentially of dissolving a precursor titanyl phthalocyanine Type I in a solution of trihaloacetic acid and alkylene chloride; adding the resultant solution to a solvent thereby enabling precipitation of Type X titanyl phthalocyanine; separating the titanyl phthalocyanine Type X from the solution; followed by a first washing with an organic solvent and a second washing with water; slurrying the resulting Type X titanyl phthalocyanine in an organic solvent enabling conversion of said Type X to Type IV titanyl phthalocyanine; and thereafter, subjecting the Type IV titanyl phthalocyanine obtained to treatment with an organic solvent to enable said crystalline form of titanyl phthalocyanine Type I; and wherein said crystalline form of titanyl phthalocyanine possesses Bragg angles (2Θ) at 6.8, 9.2, 10.4, 12.3, 13.1, 15.0, 15.6, 16.0, 20.6, 23.2, 25.3, 26.2, 26.5, and 27.1° (±0.2°).

5,350,845

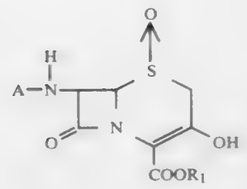
PROCESS FOR PREPARING 7-SUBSTITUTED-AMINO-3-HYDROXY-3-CEPHEM-4-PROTECTED CARBOXY-SULFOXIDE ESTERS

Frank Brown, Jr., West Lafayette, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 866,652, Apr. 8, 1992, abandoned. This application Nov. 13, 1992, Ser. No. 976,592
Int. Cl.[5] C07D *501/04*
U.S. Cl. 540—215 **18 Claims**

1. A process for the preparation of a compound of the formula

(1)

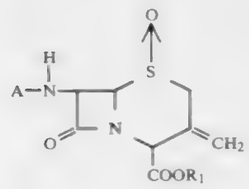


wherein A is an amino protecting group or a group of the formula



wherein R is the residue of a carboxylic acid RCOOH; and R_1 is a carboxy-protecting group, comprising the step of reacting an intermediate complex comprising a tin-containing Lewis acid-type Friedel-Crafts catalyst and a compound of the formula (2)

(2)



with ozone, under substantially anhydrous conditions.

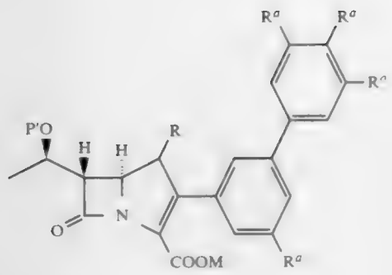
5,350,846

2-BIPHENYL-CARBAPENEMS

Frank P. DiNinno, Old Bridge, and Thomas N. Salzmann, North Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 594,767, Oct. 9, 1990, Pat. No. 5,182,385. This application Jan. 25, 1993, Ser. No. 7,934
The portion of the term of this patent subsequent to Jun. 18, 2008, has been disclaimed.
Int. Cl.[5] C07D *487/00*
U.S. Cl. 540—302 **4 Claims**

1. A compound of the formula:



wherein:
R is H or CH_3;
P′ is a removable protecting group for hydroxy;
R^a are independently selected from the group consisting of hydrogen and the radicals set out below:
a) a trifluoromethyl group which is —CF_3;
b) a halogen atom selected from the group consisting of —Br, —Cl, —F, and —I;
c) C_1–C_4 alkoxy radical which is —$OC_{1\text{-}4}$ alkyl, wherein the alkyl is optionally mono-substituted by R^q, where
R^q is a member selected from the group consisting of —OH, OP′, —OCH_3, —CN, —$C(O)NH_2$, —$OC(O)NH_2$, CHO, —$OC(O)N(CH_3)_2$, —SO_2NH_2, —$SO_2N(CH_3)_2$, —$SOCH_3$, —SO_2CH_3, —F, —CF_3, —$COOM^a$ (where M^a is hydrogen, alkali metal, methyl, phenyl or M defined below), tetrazolyl (where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by M^a as defined above) and —SO_3M^b (where M^b is hydrogen or an alkali metal or M defined below);
d) a hydroxy or protected hydroxy which is —OH or —OP′;
e) a carbonyloxy radical which is —$O(C{=}O)R^s$, where
R^s is $C_{1\text{-}4}$ alkyl or phenyl, each of which is optionally mono-substituted by R^q as defined above;
f) a carbamoyloxy radical which is —$O(C{=}O)N(R^y)R^z$ where
R^y and R^z are independently H, $C_{1\text{-}4}$ alkyl (optionally mono-substituted by R^q as defined above), together a 3- to 5-membered alkylidene radical to form a ring (optionally substituted with R^q as defined above) or together a 2- to 4-membered alkylidene radical, interrupted by —O—, —S—, —S(O)— or —$S(O)_2$—, to form a ring (where the ring is optionally mono-substituted with Rq as defined above);
g) a sulfur-containing radical which is —$S(O)_n$—R^s where n=0–2, and R^s is defined above;
h) a sulfamoyl group which is —$SO_2N(R^y)R^z$ where R^y and R^z are as defined above;
i) azido which is N_3
j) a formamido group which is —$N(R^t)(C{=}O)H$, where
R^t is H or $C_{1\text{-}4}$ alkyl, and the alkyl thereof is optionally mono-substituted by R^q as defined above;
k) a (C_1–C_4 alkyl)carbonylamino radical which is —$N(R^t)(C{=}O)C_{1\text{-}4}$ alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;
l) a (C_1–C_4 alkoxy) carbonylamino radical which is —$N(R^t)(C{=}O)OC_{1\text{-}4}$ alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;
m) a ureido group which is —$N(R^t)(C{=}O)N(R^y)R^z$ where R^t, R^y and R^z are as defined above;
n) a sulfonamido group which is —$N(R^t)SO_2R^s$, where R^s and R^t are as defined above;
o) a cyano group which is —CN;
p) a formyl or acetalized formyl radical which is —($C{=}O$)H or —$CH(OCH_3)_2$;

q) (C_1–C_4 alkyl)carbonyl radical wherein the carbonyl is acetalized which is —$C(OCH_3)_2C_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;

r) carbonyl radical which is —$(C{=}O)R^s$, where R^s is as defined above;

s) a hydroximinomethyl radical which is —$(C{=}NOR^z)R^y$ where R^y and R^z are as defined above, except they may not be joined together to form a ring;

t) a (C_1–C_4 alkoxy)carbonyl radical which is —$(C{=}O)OC_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;

u) a carbamoyl radical which is —$(C{=}O)N(R^y)R^z$ where R^y and R^z are as defined above;

v) an N-hydroxycarbamoyl or N(C_1–C_4 alkoxy)carbamoyl radical which is —$(C{=}O)$—$N(OR^y)R^z$ where R^y and R^z are as defined above, except they may not be joined together to form a ring;

w) a thiocarbamoyl group which is —$(C{=}S)N(R^y)(R^z)$ where R^y and R^z are as defined above;

x) carboxyl which is —$COOM^b$, where M^b is as defined above;

y) thiocyanate which is —SCN;

z) trifluoromethylthio which is —SCF_3;

aa) tetrazolyl, where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by hydrogen, an alkali metal or a C_1–C_4 alkyl optionally substituted by R^q as defined above;

ab) an anionic function selected from the group consisting of: phosphono [$P{=}O(OM^b)_2$]; alkylphosphono {$P{=}O(OM^b)$—[$O(C_1$–C_4 alkyl)]}; alkylphosphinyl [$P{=}O(OM^b)$—(C_1–C_4alkyl)]; phosphoramido [$P{=}O(OM^b)N(R^y)R^z$ and $P{=}O(OM^b)NHR^x$]; sulfino (SO_2M^b); sulfo (SO_3M^b); acylsulfonamides selected from the structures $CONM^bSO_2R^x$, $CONM^bSO_2N(R^y)R^z$, $SO_2NM^bCON(R^y)R^z$; and SO_2NM^bCN, where R^x is phenyl or heteroaryl, where heteroaryl is a monocyclic aromatic hydrocarbon group having 5 or 6 ring atoms, in which a carbon atom is the point of attachment, in which one of the carbon atoms has been replaced by a nitrogen atom, in which one additional carbon atom is optionally replaced by a heteroatom selected from O or S, and in which from 1 to 2 additional carbon atoms are optionally replaced by a nitrogen heteroatom, and where the phenyl and heteroaryl are optionally mono-substituted by R^q, as defined above; M^b is as defined above; and R^y and R^z are as defined above;

ac) C_5–C_7 cycloalkyl group in which one of the carbon atoms in the ring is replaced by a heteroatom selected from O, S, NH or N(C_1–C_4 alkyl) and in which one additional carbon atom may be replaced by NH or N(C_1–C_4 alkyl), and in which at least one carbon atom adjacent to each nitrogen heteroatom has both of its attached hydrogen atoms replaced by one oxygen thus forming a carbonyl moiety and there are one or two carbonyl moieties present in the ring;

ad) C_2–C_4 alkenyl radical, optionally mono-substituted by one of the substituents a) to ac) above and phenyl which is optionally substituted by R^q as defined above;

ae) C_2–C_4 alkynyl radical, optionally mono-substituted by one of the substituents a) to ac) above;

af) C_1–C_4 alkyl radical;

ag) C_1–C_4 alkyl mono-substituted by one of the substituents a)–ac) above;

ah) a 2-oxazolidinonyl moiety in which the point of attachment is the nitrogen atom of the oxazolidinone ring, the ring oxygen atom is optionally replaced by a heteroatom selected from —S— and $>NR^t$ (where R^t is as defined above) and one of the saturated carbon atoms of the oxazolidinone ring is optionally mono-substituted by one of the substituents a) to ag) above; and

M is a removable carboxyl protecting group.

5,350,847

PURIFICATION OF CAPROLACTAM

Hugo Fuchs, Ludwigshafen; Gerald Neubauer, Weinheim, and Claus-Ulrich Priester, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 30, 1993, Ser. No. 113,081

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1992, 4229915

Int. Cl.[5] C07D *201/12*

U.S. Cl. 540—540 **5 Claims**

1. A process for purifying caprolactam by oxidative treatment which comprises: adding an oxide or hydroxide of an alkali metal or alkaline earth metal to a liquid mixture containing the caprolactam to be purified and unsaturated lactams to provide an alkaline medium, and thereafter passing oxygen or an oxygen-containing gas mixture through the liquid mixture.

5,350,848

TRIAZINYLPHOSPHONIC ACIDS AND THEIR USE IN SELF-EXTINGUISHING POLYMERIC COMPOSITIONS

Roberto Cipolli, Novara; Cristina Rossi, Rome; Roberto Oriani, Milan; Enrico Masarati, Castelnuovo Valtidone, and Gilberto Nucida, San Giuliano Milanese, all of Italy, assignors to Ministero Dell'Universita' e Della Ricerca Scientifica e Technologica, Rome, Italy

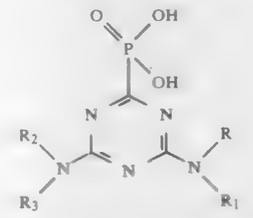
Filed Dec. 15, 1992, Ser. No. 990,519

Claims priority, application Italy, Dec. 18, 1991, MI.91-A/003400

Int. Cl.[5] C07D *251/48*

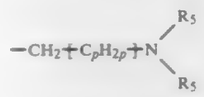
U.S. Cl. 544—195 **4 Claims**

1. A triazinylphosphonic acid of the formula (I):



(I)

wherein at least one of the radicals R, R_1, R_2 and R_3 is selected from the group consisting of —CH_2—C_mH_{2m}—O—R_4, —CH_2—C_pH_{2p}— and



m is a whole number between 1 and 7;

p is a whole number between 1 and 5;

R_4 is selected from the group consisting of H; C_1–C_8 alkyl; C_2–C_6 alkenyl; —C_qH_{2q}—O—R_6, where q is a whole number between 1 and 4 and R_6 is H or C_1–C_4 alkyl; C_6–C_{12} cycloalkyl and C_1–C_8-alkyl-C_6–C_{12}-cycloalkyl; provided that when R_4 is H, m is a whole number between 2 and 7; and

the radicals R_5, which can be the same or different, are selected from the group consisting of H; C_1–C_8 alkyl; C_2–C_6 alkenyl; C_6–C_{12} cycloalkyl; C_1–C_8-alkyl-C_6–C_{12}-cycloalkyl; and C_1–C_4 hydroxyalkyl; or

one or more pairs of radicals selected from the group consisting of (a) R and R_1, (b) R_2 and R_3, and (c) the radicals R_5 may be joined to form a heterocyclic radical selected from the group consisting of aziridine, pyrrolidine, piperidine, morpholine, thiomorpholine and piperazine, each of which may be substituted with from 1 to 4 C_1–C_2 alkyl groups, and

the remaining radicals R, R_1, R_2 and R_3, which can be the same or difference, are selected from the group consisting of H; C_1–C_8 alkyl; C_2–C_8 alkenyl; C_6–C_{16} cycloalkyl; and C_1–C_8-alkyl-C_6–C_{12}-cycloalkyl, each of which may be substituted with a hydroxyl or C_1–C_4 hydroxyalkyl group.

5,350,849

PROCESS FOR THE PREPARATION OF MELAMINE FROM UREA

Cornelis G. M. van de Moesdijk, Beek; Hendrik J. Janssen, Sittard, and Josephus C. Schroijen, Landgraaf, all of Netherlands, assignors to DSM N.V., Heerlen, Netherlands

PCT No. PCT/NL91/00240, § 371 Date Jun. 1, 1993, § 102(e) Date Jun. 1, 1993, PCT Pub. No. WO92/09585, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 28, 1991, Ser. No. 66,175

Claims priority, application Netherlands, Nov. 29, 1990, 9002606

Int. Cl.[5] C07D *251/62, 251/60*

U.S. Cl. 544—203 **11 Claims**

1. A process for treating a product gas stream having by-products therein from the preparation of melamine from urea in a reactor or from the thermal decomposition products of urea in a reactor, wherein said gas stream is the product stream leaving the reactor, comprising treating said gas stream with steam at a temperature of 100° C. to 500° C. in the presence of a shape-selected hydrolysis catalyst having micropores with an effective diameter between 0.3 and 2.0 nm and having at least 50% of active sites of the catalyst located within the micropores, whereby bi-products in said gas stream are converted into carbon dioxide and ammonia.

5,350,850

PROCESS FOR THE PREPARATION OF SUBSTITUTED TETRAHYDROFOLICO DERIVATIVES IN THE [6(R,S)(−)] FORMS AND OF THEIR ACTIVE [6(S)(−)] N^5 DIASTEREOISOMERS IN FORM OF ALKALI AND ALKALINE EARTH METAL SALTS

Giuseppe Vecchi, Aldesago, Switzerland, assignor to APR Applied Pharma Research S.A., Lugano, Switzerland

Filed Oct. 7, 1992, Ser. No. 957,176

Claims priority, application Switzerland, Oct. 10, 1991, 02 986/91-8

Int. Cl.[5] C07D *475/04*

U.S. Cl. 544—258 **18 Claims**

1. A process for the preparation of the optically active [6(S)(−)]N^5 alkaline earth metal salts of formyltetrahydrofolic acid, said process comprising the steps of:

a) mixing an aqueous solution of folic acid with a stoichiometric excess of $NaBH_4$ in aqueous alkaline solution at a temperature of 5° C. to 30° C. and for a time period of 5 to 60 minutes;

b) heating the mixture produced in step a) at a temperature of from 70° C. to 100° C. and for a time of 20 to 30 minutes to reduce the folic acid;

c) acidifying the product of step b) to cause tetrahydrofolic acid to precipitate;

d) dissolving the precipitate produced in step c) and reacting the resulting solution with formic aldehyde at a temperature less than 90° C.;

e) treating the product of step d) with a strong acid and adjustment of the pH of the resulting solution to about 7 to cause precipitation of inorganic salts from solution;

f) adding to the solution obtained in step e) an aqueous solution of a salt of an alkaline earth metal salt while maintaining the solution obtained at pH 7 and at a temperature of −5° C. to 10° C.; and

g) allowing the optically active [6(S)(−)]N^5 alkaline earth metal salt of formyltetrahydrofolic acid to crystallize.

5,350,851

INTERMEDIATES AND A PROCESS FOR SYNTHESIS OF TETRAHYDROPTERIDINE C6-STEREOISOMERS, INCLUDING (6S)-TETRAHYDROFOLATE AND N5-FORMYL-(6S)-TETRAHYDROFOLATE

Steven W. Bailey, and June E. Ayling, both of Mobile, Ala., assignors to South Alabama Medical Science Foundation, Mobile, Ala.

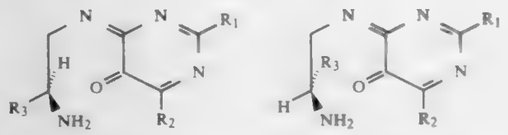
Division of Ser. No. 851,733, Mar. 16, 1992, Pat. No. 5,198,547. This application Nov. 25, 1992, Ser. No. 981,778

Int. Cl.[5] C07D *475/04*

U.S. Cl. 544—258 **8 Claims**

3. A process for preparing 6-monosubstituted tetrahydropteridine C6-enantiomers comprising the steps of

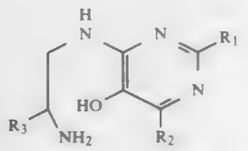
(a) cooling a solution of less than 0.025M, of a 5-keto-pyrimidine 2'-enantiomer of the formula



to a low temperature of less than 5° C. but greater than the freezing point of said solution, said solution being free of compounds that catalyze the tautomerization of quinoid dihydropteridines to 7,8-dihydropteridines to the extent that said tautomerization is slower than 0.01 per minute, and

(b) adjustment of the pH of a solution by addition of an alkali or alkaline-earth hydroxide to between pH 8 and pH 12, and

(c) waiting for a time period subsequent to the completion of said adjustment of the pH, such that after reduction the production of a 7,8-dihydropteridine and a 5-hydroxypyrimidine of the formula



is minimal and that of said 6-monosubstituted tetrahydropteridine C6-enantiomer is maximal, and

(d) addition of a reductant to said solution, said reductant being capable of reducing quinoid dihydropteridines to tetrahydropteridines to near completion faster than within an additional increment of said time period, said reductant not being capable of reducing said 7,8-dihydropteridine at temperatures of less than 5° C., resulting in said 6-monosubstituted tetrahydropteridine enantiomer possessing greater than 95% C6 enantiomeric purity, wherein R_1 and R_2 are the same or different and represent hydrogen, methyl, amino, C_1–C_4 alkyl or dialkylamino, hydroxy, C_1–C_6 alkoxy, benzyloxy, or benzylthio with the proviso that both R_1 and R_2 cannot both be hydrogen; R_3 represents

(1) alkyl of 1 to 6 carbons;

(2) alkene of 2 to 4 carbons;

(3) alkyne of 2 to 4 carbons;

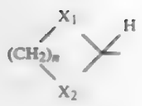
(4) cycloalkyl, saturated or unsaturated, of 3 to 7 carbons with 3 to 7 carbons in the ring;

(5) benzyl, thienylmethyl, furylmethyl, or pyridylmethyl;

(6) alkyl of 1 to 6 carbons, substituted with 1, 2, or 3 of hydroxy, acetoxy, benzyloxy, methoxy, ethoxy, methylthio, ethylthio, or benzylthio;

(7) alkyl of 1 to 6 carbons, substituted with 1 of amino, carboxy, oxo, or phosphate, and 0, 1, or 2 of hydroxy, acetoxy, or benzyloxy;

(8)

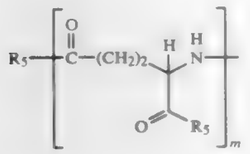


wherein X_1 and X_2 are the same or different and represent —O— or —S—, and n=2 or 3;

(9)



wherein R_4 represents hydrogen, formyl, alkyl of 1–3 carbons, or an alkenyl or alkynyl of 2–3 carbons, n=1 or 2, and ZZ is R_5 or represents the residue of L-glutamic acid or L-glutamic acid polymer of the formula



wherein R_5 represents OH, C_1–C_4 alkoxy, and $1 \leqq m \leqq 7$.

5,350,852

ARYLALKYLAMINES, PROCESS FOR PREPARING THEM AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Xavier Emonds-Alt, Combaillaux; Pierre Goulaouic, Montpellier; Vincenzo Proietto, Saint George d'Orques, and Didier Van Broeck, Murviel les Montpellier, all of France, assignors to Sanofi, Paris, France

Division of Ser. No. 755,454, Sep. 5, 1991, Pat. No. 5,236,921. This application Aug. 13, 1993, Ser. No. 105,677

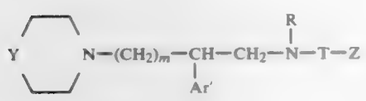
Claims priority, application France, Sep. 5, 1990, 90 11039; Jun. 25, 1991, 91 07824

Int. Cl.[5] C07D *211/32, 241/00;* **A01N** *43/40*

U.S. Cl. 544—336 **11 Claims**

1. Process for the preparation of a compound of Formula (I):

(I)

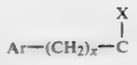


wherein

Y represents either

a group Cy—N in which Cy represents a phenyl, unsubstituted or substituted one or more times with a substituent selected from the group consisting of hydrogen, a halogen atom, a hydroxyl , a C_1–C_4 alkoxy, a C_1–C_4 alkyl, a trifluoromethyl, the said substituents being identical or different; a C_3–C_7 cycloalkyl group, a pyrimidinyl group or a pyridyl group; or

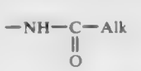
a group



in which Ar represents a phenyl, pyridyl or thienyl group, said phenyl group being unsubstituted or substituted one or more times with a substituent selected from the group consisting of hydrogen, a halogen atom, a hydroxyl, a C_1–C_4 alkoxy, a trifluoromethyl, a C_1–C_4 alkyl, the said substituents being identical or different;

x is zero or one; and

X represents a hydroxyl, a C_1–C_4 alkoxy; a hydroxyalkyl in which the alkyl is a C_1–C_3 group; a C_1–C_4 acyloxy; a phenacyloxy; a carboxyl; a C_1–C_4 carbalkoxy; a cyano; an aminoalkylene in which the alkylene is a C_1–C_3 group; a group —N—$(X_1)_2$ in which the groups X_1 independently represent hydrogen or C_1–C_4 alkyl; a group



in which Alk represents a C_1–C_6 alkyl;

a group

in which Alk_1 is a C_1–C_3 alkylene and Alk'_1 is a C_1–C_3 alkyl; a C_1–C_4 acyl; a group —S—X_2 in which X_2 represents hydrogen or C_1–C_4 alkyl;

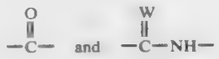
or alternatively X is a double bond between the carbon atom to which it is linked and the adjacent carbon in the heterocycle;

m is 2 or 3;

Ar' represents a phenyl, unsubstituted or substituted one or more times with a substituent selected from the group consisting of hydrogen, a halogen atom, a trifluoromethyl, a C_1–C_4 alkoxy, a C_1–C_4 alkyl, the said substituents being identical or different; a thienyl; a benzothienyl; a naphthyl; an indolyl; or an indolyl N-substituted with a C_1–C_3 alkyl;

R represents hydrogen or C_1–C_4 alkyl;

T represents a group selected from

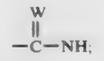


W being an oxygen or sulphur atom, and

Z represents either hydrogen, or M or OM when T represents a



group, or M when T represents a group



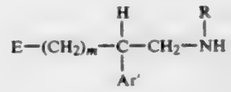
M representing a C_1–C_6 alkyl; a phenylalkyl in which the alkyl is a C_1–C_3 group, optionally substituted on the aromatic ring with a halogen, a trifluoromethyl, a C_1–C_4 alkyl, a hydroxyl, a C_1–C_4 alkoxy; a pyridyl alkyl in which the alkyl is a C_1–C_3 group; a naphthylalkyl in which the alkyl is a C_1–C_3 group, optionally substituted on the naphthyl ring-system with a halogen, a trifluoromethyl, a C_1–C_4 alkyl, a hydroxyl, a C_1–C_4 alkoxy; a hydroxyalkyl in which the alkyl is a C_1–C_3 group; a C_1–C_4 alkoxy, a C_1–C_4 alkyl, a pyridylthioalkyl in which the alkyl is a C_1–C_3 group; a styryl; or an optionally substituted mono-, di- or tricyclic aromatic or heteroaromatic group;

or a salt of a compound of Formula I with an inorganic or organic acid;

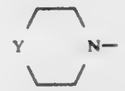
the process comprising the steps of:

(a) reacting a free amine of Formula (II)

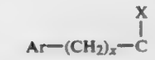
(II)



in which m, Ar' and R are as defined above and E represents an O-protecting group or a group



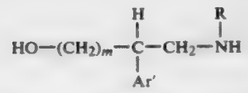
in which Y is defined as above wherein, when Y represents a group



in which X is a hydroxyl, this hydroxyl may be protected; or

a free amine of Formula (II''')

(II''')



in which m, Ar' and R are as defined above, with either a functional derivative of an acid of formula

HO—CO—Z (III)

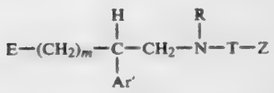
in which Z is as defined above when a compound of Formula (I) in which T is —CO— is to be prepared, or an iso(thio)cyanate of formula:

W=C=N—Z (III')

in which W and Z are as defined above, when a compound of Formula (I) in which T is —C(W)—NH— is to be prepared,

to form the compound of Formula (IV)

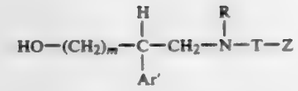
(IV)



(b) then, when E represents tetrahydropyranyloxy as an O-protecting group, removing the tetrahydropyranyl group by the action of an acid, said deprotection optionally being carried out directly on the compound of Formula (II) in order to yield a compound of Formula (II'') which is then treated with a compound of Formula (III) or (III');

(c) reacting the N-substituted alkanolamine thereby obtained, of formula:

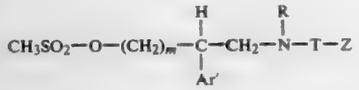
(V)



with methanesulphonyl chloride;

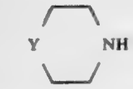
(d) reacting the mesylate thereby obtained, of formula:

(VI)



with a secondary amine of formula:

(VII)



in which Y is as defined above; and

(e) after deprotection, where appropriate, of the hydroxyl represented by X, optionally converting the product thereby obtained to one of its salts.

5,350,853

PREPARATION OF DIANTHRAQUINONE-N,N'-DIHYDROAZINE AND ITS CHLORINATION PRODUCTS

Michael Schmitt, Worms, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 30, 1993, Ser. No. 54,235

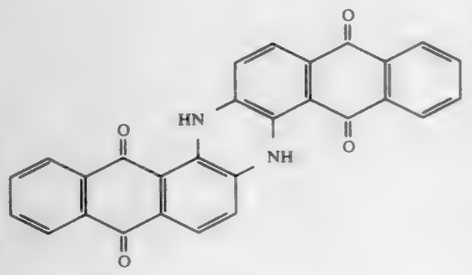
Claims priority, application Fed. Rep. of Germany, May 30, 1992, 4217954

Int. Cl.[5] C07D *241/46*

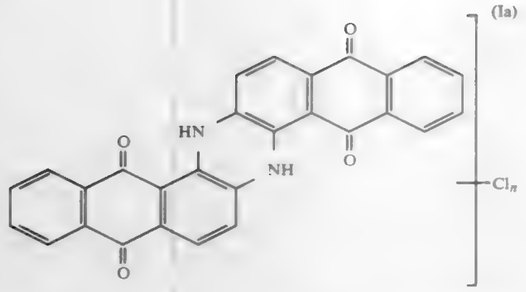
U.S. Cl. 544—339 **1 Claim**

1. A process for preparing dianthraquinone-N,N'-dihydroazine (I)

(I)



and its chlorination products (Ia)



where n is 1 or 2, by condensation of 1-aminoanthraquinone (II) in the presence of an alkaline condensing aid, an oxidizing agent and a cyclic urea derivative at from 80° to 150° C. and subsequent purification and/or chlorination, which comprises using N,N'-dimethylpropyleneurea as the urea derivative.

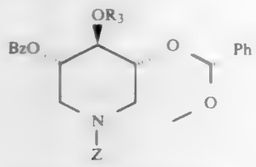
5,350,854

2-SUBSTITUTED TERTIARY CARBINOL DERIVATIVE OF 1,5-IMINOSUGARS

Ish K. Khanna, Vernon Hills; Richard A. Mueller, Glencoe, and Richard M. Weier, Lake Bluff, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Division of Ser. No. 861,058, Apr. 1, 1992, Pat. No. 5,258,518. This application Jul. 12, 1993, Ser. No. 89,919
Int. Cl.[5] C07D *491/04, 491/06, 491/056*
U.S. Cl. 546—115 **27 Claims**

1. A compound of the formula



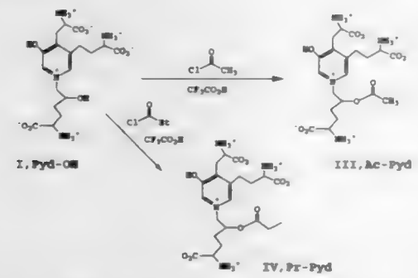
wherein R_3=MEM, SEM, TBDMS or CH_3, and Z is $COOCH_2Ph$.

5,350,855

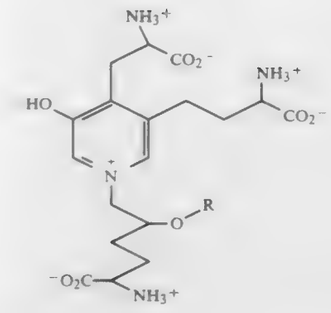
DERIVATIZED D-ACYL PYRIDINIUM REAGENT

Yuri Daniloff, Mountain View, Calif.; Simon P. Robins, Aberdeen, Scotland; Brian J. Evans, Santa Clara, Calif.; David A. Pratt, Aberdeen, Scotland, and Robert Lungard, Portola Valley, Calif., assignors to Metra Biosystems, Inc., Palo Alto, Calif.

Filed Sep. 30, 1992, Ser. No. 954,790
Int. Cl.[5] C07D *213/55, 401/12*
U.S. Cl. 546—291 **4 Claims**



1. An O-acylated pyridinium compound having the following structure:



where R is an acyl group.

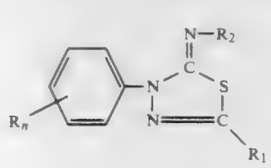
5,350,856

2-(SUBSTITUTED IMINO)-1,3,4-DIHYDROTHIADIAZOLES

Raymond A. Felix, Richmond, Calif., assignor to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 215,281, Jul. 8, 1988, Pat. No. 4,911,745, which is a continuation-in-part of Ser. No. 77,477, Jul. 24, 1987, abandoned. This application Jan. 10, 1990, Ser. No. 463,190
Int. Cl.[5] C07D *285/135*
U.S. Cl. 548—138 **3 Claims**

1. A process for producing a compound of the formula



in which

R is halo, trihalomethyl, pentahaloethyl, mono- or difluoromethyl, mono-, di-, tri- or tetrafluoroethyl, fluoroalkylthio, fluoroalkoxy, methylthio, methylsulfonyl, halomethylsulfonyl, C_1–C_2 alkyl, or methoxy;

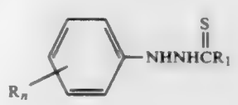
n is 1 or 2, provided that:

(a) is n is 1 and R is other than fluoro, the substituent R is located at the 3-position on the phenyl ring; and

(b) if n is 2, the substituents R are located at the 3- and 4-positions on the phenyl ring;

R_1 is hydrogen, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_2 alkyl thio, C_3–C_4 alkenylthio, cyano, carbamyl, C_1–C_4 monoalkylcarbamyl, C_1–C_2 carboalkoxy, or NR_3R_4 in which R_3 and R_4 are independently hydrogen, C_1–C_4 alkyl or C_2–C_4 alkenyl; and

R_2 is hydrogen, comprising reacting a compound having the formula



with cyanogen chloride or cyanogen bromide.

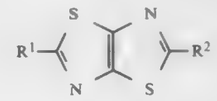
5,350,857

THIAZOLO[5,4-D]THIAZSOLE COLOR-FORMERS

Nusrallah Jubran, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 817,386, Jan. 6, 1992, Pat. No. 5,284,812. This application Jan. 3, 1994, Ser. No. 176,846
Int. Cl.[5] C07D *513/04*
U.S. Cl. 548—153 **4 Claims**

1. A composition capable of forming colored complexes with transition metal salts, said composition comprising a 2,5-bis(substituted aryl)thiazolo[5,4-d]thiazole compound carried in an organic cosolvent vehicle, said compound having the formula:



wherein R^1 is o-hydroxy-substituted aryl group and R^2 is selected from the group consisting of aryl and hydrogen; and wherein an N-(monosubstituted)dithiooxamide, an N,N'-(disubstituted)dithiooxamide, or a mixture thereof, is also contained in the organic cosolvent.

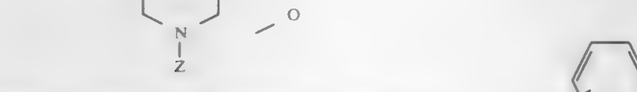
5,350,858

NOVEL IMIDAZOLINIUM ESTER QUATERNARY COMPOUNDS

Antony J. O'Lenick, Jr., 743 Ridgeview Dr., Lilburn, Ga. 30247

Division of Ser. No. 901,200, Jun. 19, 1992, Pat. No. 5,298,656, which is a continuation-in-part of Ser. No. 813,449, Dec. 26, 1991, Pat. No. 5,153,294. This application Jan. 24, 1994, Ser. No. 183,754
Int. Cl.[5] C07D *403/12*
U.S. Cl. 548—313.7 **12 Claims**

1. A quaternary compound which conforms to the following structure;

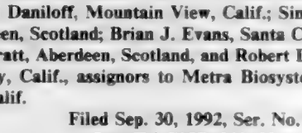


wherein:

R^2 is —C(O)—CH_2—R^{10};

a, b c and d are independently integers from 0 to 100, with the proviso that a+b+c+d be greater than 2;

R^{10} is



where in;

R_9 is alkyl having from 6 to 20 carbon atoms.

5,350,859

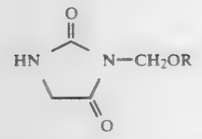
PROCESS FOR PRODUCING 3-HYDROXYMETHYL-1-PROPARGYLIMIDAZOLIDINE-2, 4-DIONE

Yoo Tanabe; Masanari Murakami, both of Nishinomiya, and Hitomi Yamamoto, Osaka, all of Japan, assignors to Sumotomo Chemical Company, Ltd., Osaka, Japan

Filed Feb. 22, 1993, Ser. No. 20,739
Claims priority, application Japan, Mar. 10, 1992, 4-051365
Int. Cl.[5] C07D *233/74*
U.S. Cl. 548—319.1 **11 Claims**

1. A process for producing 3-hydroxymethyl-1-propargylimidazolidine -2,4-dione which comprises:

(i) reacting a compound of the formula (I)

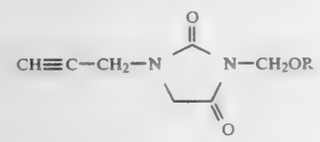


(I)

wherein R represents an alkyl, alkoxyalkyl or aralkyl group with a compound of the formula (II)

$$CH{\equiv}C{-}CH_2{-}X \quad \text{(II)}$$

wherein X represents a halogen atom or sulfonic acid residue in the presence of a base to give a 1-propargylimidazolidine -2,4-dione derivative of the formula (III)



(III)

wherein R is as defined above, and

(ii) hydrolyzing this derivative of the formula (III).

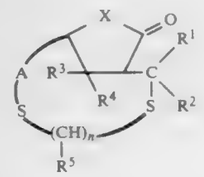
5,350,860

BICYCLIC COMPOUNDS

Shiro Mita, Ashiya; Yoichi Kawashima, Kyoto; Ken-ichi Fujimura, Osaka; Hiroshi Suhara, Osaka, and Masahiro Okamoto, Uji, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jan. 19, 1993, Ser. No. 5,611
Claims priority, application Japan, Jan. 31, 1992, 4-060887
Int. Cl.[5] C07D *497/04*; C07G *495/04*
U.S. Cl. 548—453 **15 Claims**

1. A compound of the formula [I] and pharmaceutically acceptable salts thereof,



[I]

wherein

R^1 and R^2 are the same or different and each is hydrogen or a straight or branched chain alkyl having 1 to 6 carbon atoms;

R^3 and R^4 are the same or different and each is hydrogen, a straight or branched chain alkyl having 1 to 6 carbon atoms, carboxy or lower alkoxycarbonyl;

R^5 is hydrogen or straight or branched chain alkyl having 1 to 6 carbon atoms;

X is oxygen or NR^6;

R^6 is hydrogen, lower alkyl, lower alkoxy, phenyl lower alkyl or phenyl lower alkoxy, and the said lower alkyl can be substituted by carboxy, lower alkoxycarbonyl, amino, lower alkylamino, lower alkoxycarbonylamino or phenyl lower alkylamino, and the phenyl ring of the said phenyl lower alkyl, phenyl lower alkoxy or phenyl lower alkylamino can be substituted by lower alkyl, lower alkoxy, fluorine, chlorine, bromine, iodine, carboxy or lower alkoxycarbonyl wherein each lower alkyl is a straight or branched alkyl having 1 to 6 carbon atoms, and each

lower alkoxy is a straight or branched alkoxy having 1 to 6 carbon atoms;
A is straight or branched alkylene having 1 to 6 carbon atoms,
n is 0 to 1.

5,350,861

SUBSTITUTED 3-ARYL-PYRROLIDINE-2,4-DIONES

Reiner Fischer, Monheim; Hermann Uhr, Leverkusen; Arno Widdig, Odenthal-Blecher; Stefan Dutzmann, Hilden; Christoph Erdelen, Leichlingen; Ulrike Wachendorff-Neumann, Monheim, and Klaus Schaller, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

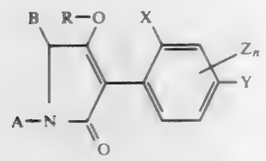
Filed Jan. 16, 1992, Ser. No. 821,801

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1991, 4102339

Int. Cl.[5] C07D *207/38, 207/40;* **A01N** *43/36*

U.S. Cl. 548—544 **6 Claims**

1. Substituted 3-aryl-4-hydroxy-2-ones of the formula (I)



(I)

in which
X represents hydrogen, C_{1-6}-alkyl, halogen or C_{1-6}-alkoxy,
Y represents hydrogen, C_{1-6}-alkyl, halogen, C_{1-6}-alkoxy or C_{1-3}-halogenoalkyl,
Z represents C_{1-6}-alkyl, halogen or C_{1-6}-alkoxy,
n represents a number from 0–3,
R represents hydrogen (Ia) or the groups of the formula

—CO—R^1 (Ib)

or

—CO—O—R^2 (Ic)

in which
R^1 represents optionally halogen-substituted C_{1-20}-alkyl, C_{2-20}-alkenyl, C_{1-8}-alkoxy-C_{2-8}-alkyl, C_{1-8}-alkylthio-C_{2-8}-alkyl, C_{1-8}-polyalkoxy-C_{2-8}-alkyl or cycloalkyl which has 3–8 ring atoms and which can be interrupted by 1–2 oxygen and/or sulphur atoms,
or represents phenyl which is optionally substituted by halogen, nitro, C_{1-6}-alkyl, C_{1-6}-alkoxy, C_{1-6}-halogenoalkyl or C_{1-6}-halogenolakoxy,
or represents phenyl-C_{1-6}-alkyl which is optionally substituted by halogen, C_{1-6}-alkyl, C_{1-6}-alkoxy, C_{1-6}-halogenoalkyl or C_{1-6}-halogenoalkoxy,
or represents phenoxy-C_{1-6}-alkyl which is optionally substituted by halogen or C_{1-6}-alkyl,
R^2 represents optionally halogen-substituted C_{1-20}-alkyl, C_{2-20}-alkenyl, C_{1-16}-alkoxy-C_{2-6}-alkyl or C_{1-8}-polyalkoxy-C_{2-8}-alkyl,
or represents phenyl which is optionally substituted by halogen, nitro, C_{1-6}-alkyl, C_{1-6}-alkoxy or C_{1-6}-halogenoalkyl,
A represents optionally halogen-substituted straight-chain or branched C_{1-12}-alkyl, C_{3-8}-alkenyl, C_{3-8}-alkinyl, C_{1-10}-alkoxy-C_{2-8}-alkyl, C_{1-8}-polyalkoxy-C_{2-8}-alkyl, C_{1-10}-alkylthio-C_{2-8}-alkyl, cycloalkyl which has 3–8 ring atoms and which can be interrupted by 1–2 oxygen and/or sulphur atoms, or represents aryl-C_{1-6}-alkyl which is optionally substituted by halogen, C_{1-6}-alkyl, C_{1-6}-halogenoalkyl, C_{1-6}-alkoxy or nitro,
B represents phenyl or benzyl which are optionally monosubstituted or disubstituted by identical or different substituents selected from the group consisting of nitro, halogen, or in each case optionally halogen-substituted C_{1-4}-alkyl or C_{1-4}-alkoxy,
and the pure enantiomeric forms of compounds of the formula (I).

5,350,862

PROCESS FOR THE PREPARATION OF ETHYLENE GLYCOL CARBONATE

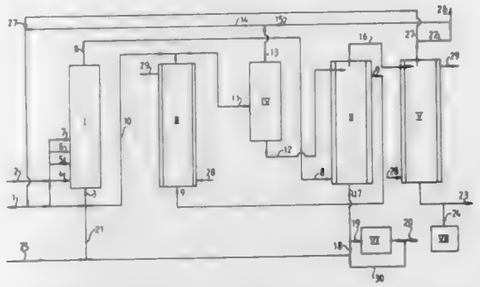
Paul Wagner, Duesseldorf; Hans-Josef Buysch, Krefeld; Alexander Klausener, Stolberg; Franz-Josef Mais, Duesseldorf, and Christine Mendoza-Frohn, Erkrath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 3, 1992, Ser. No. 984,789

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1991, 4141189

Int. Cl.[5] C07D *317/36, 317/38*

U.S. Cl. 549—230 **19 Claims**



1. A process for the catalytic preparation of ethylene glycol carbonate by reaction of ethylene oxide and carbon dioxide in ethylene glycol carbonate as the reaction medium at elevated temperature and elevated pressure with work-up to separate the resulting ethylene glycol carbonate from the catalyst, wherein
a) the process is carried out continuously and adiabatically at a pressure of 2 to 200 bar and within a temperature range of 110° to 200° C., with an adiabatic temperature increase of 5 to 80° C, the inlet temperature being selected in such a manner that the adiabatic temperature increase remains within the temperature range mentioned,
b) the ethylene glycol carbonate running into the reactor per unit of time as reaction medium is 10 to 120 times the ethylene glycol carbonate formed in this unit of time,
c) 1.01 to 1.3 mol of carbon dioxide are used per mole of ethylene oxide and a carbon dioxide excess is maintained at all sites of the reactor.
d) 80 to 98% by weight of the total reaction mixture is returned to the inlet of the reactor and the remainder is worked up to give ethylene glycol carbonate.

5,350,863

PREPARATION OF 3-(2'-OXYETHYL)DIHYDRO-2(3H)FURANONES

Thomas Kuekenhoehner, Boehl-Iggelheim; Norbert Goetz, Worms; Rolf Fischer, Heidelberg; Werner Schnurr, Herxheim, and Dirk Borchers, Birkenheide, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

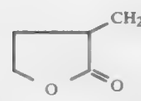
Filed Sep. 14, 1993, Ser. No. 120,439

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1992, 4231297

Int. Cl.[5] C07D *307/20*

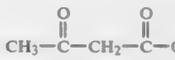
U.S. Cl. 549—323 **8 Claims**

1. A process for preparing 3-(2'-oxyethyl)dihydro-2(3H) furanones of the general formula I



(I)

where R^1 is hydrogen or acetyl, by reacting ethylene oxide with acetoacetic acid esters of the general formula II



(II)

where R^2 is C_1–C_4-alkyl, which comprises carrying out the reaction in alcoholic solutions in the presence of alkali metal alkoxides at from 20 to 100° C. and from 1 to 20 bar.

5,350,864

AMINOALKYLCARBAMYL DERIVATIVES OF FORSKOLIN AS INTERMEDIATES FOR THE SYNTHESIS OF USEFUL FORSKOLIN DERIVATIVES

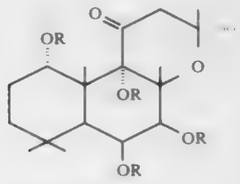
Kenneth B. Seamon, Silver Spring; Joan Robbins, Chevy Chase, and Antonio Laurenza, Bethesda, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed May 3, 1990, Ser. No. 518,719

Int. Cl.[5] C07D *311/92*

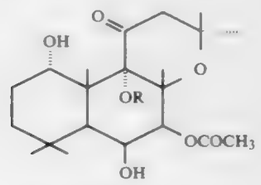
U.S. Cl. 549—389 **5 Claims**

1. A carbamate derivative of forskolin of the formula:



wherein R is $CONH(R_1)NH_2$;
R_1 is a hydrocarbon group of the formula $(CH_2)_n$ or $CH_2CH{=}CH(CH_2)_n$; and
n=1, 2, 4, 5 or 7.

5. A 9-carbamate derivative of forskolin of the formula:



wherein R is $CONH(R_1)NH_2$;
R_1 is a hydrocarbon group of the general formula $(CH_2)_n$ or $CH_2CH{=}CH(CH_2)_n$; and
n=1, 2, 4, 5, or 7.

5,350,865

PROCESS FOR THE PREPARATION OF DIFLUOROBENZODIOXOLE AND CHLOROFLUOROBENZODIOXOLE

Karl-Erwin Schnalke, Leverkusen; Josef Heinrich, Solingen-Wald, and Fritz Döring, Odenthal-Gloebusch, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

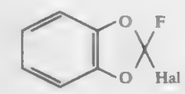
Filed Sep. 24, 1993, Ser. No. 126,823

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1992, 4233199

Int. Cl.[5] C07D *317/46*

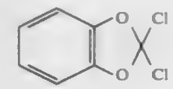
U.S. Cl. 549—434 **3 Claims**

1. A process for the preparation of a benzodioxole of the formula (I)



(I)

in which
Hal is a chlorine atom or a fluorine atom, which comprises metering into a dichlorobenzodioxole of the formula (II)



(II)

a stoichiometric quantity of anhydrous hydrofluoric acid at a temperature between −10° and room temperature and under pressure of between 1 and 10 bar.

5,350,866

10-DESACETOXYTAXOL DERIVATIVES

Robert A. Holton, Tallahassee, Fla.; Shu-Hui Chen, New Haven, and Vittorio Farina, West Hartford, both of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y. and Florida State University, Tallahassee, Fla.

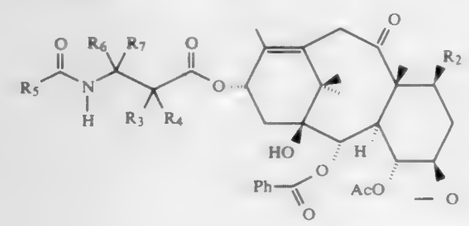
Continuation-in-part of Ser. No. 863,849, Apr. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 763,805, Sep. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 900,408, Jun. 18, 1992, abandoned. This application Sep. 22, 1992, Ser. No. 949,449

The portion of the term of this patent subsequent to Sep. 26, 2010, has been disclaimed.

Int. Cl.[5] C07D *305/14*

U.S. Cl. 549—510 **20 Claims**

1. A compound of the formula



wherein R_2 is hydroxy or a protected hydroxy group; R_3 and R_4 are independently hydrogen, hydroxy, a protected hydroxy group, methyl, —SH, $—NH_2$, or $—NR_8R_9$; R_5 is R_{10}, or $—OR_{10}$; R_6 and R_7 are independently hydrogen, alkyl, or aryl; R_8 and R_9 are independently hydrogen, alkyl, alkenyl, alkynyl, or aryl; and R_{10} is alkoxy, alkyl, alkenyl, alkynyl, or aryl.

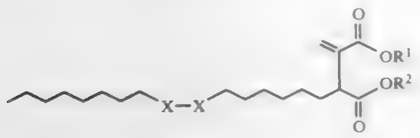
5,350,867

INHIBITORS OF FARNESYL PROTEIN TRANSFERASE

Sheo B. Singh, Edison, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 807,694, Dec. 16, 1991, Pat. No. 5,245,061.
This application Jun. 9, 1993, Ser. No. 74,257
Int. Cl.[5] C07C *59/147, 59/185, 69/34, 57/02*
U.S. Cl. 554—121 3 Claims

1. A compound, which inhibits farnesyl-protein transferase, of the formula:



II

wherein:
X—X is
CH=CH(cis);
CH=CH(trans); or
CH_2CH_2;
R^1 and R^2 are each independently selected from:
a) H;
b) C_{1-5}alkyl;
c) C_{1-5}alkyl substituted with a member of the group consisting of:
i) phenyl;
ii) phenyl substituted with methyl, methoxy, halogen, (Cl, Br, F, I) or hydroxy;
or a pharmaceutically acceptable salt of a compound of formula (II) in which at least one of R^1 and R^2 is hydrogen.

5,350,868

ω-HYDROXY-(ω-3)-KETONITRILE AND METHOD FOR PREPARING ω-HYDROXYALIPHATIC ACID

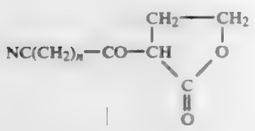
Hiroshi Yoshida; Noboru Kakeya, and Masanori Kashiwagi, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube and Soda Aromatic Co., Ltd., Tokyo, both of Japan

Filed Feb. 19, 1993, Ser. No. 20,296
Int. Cl.[5] C07C *253/30*
U.S. Cl. 554—154 20 Claims

6. A method for preparing an ω-hydroxy fatty acid represented by the following formula (IV):

$$HOOC(CH_2)_{n+4}—OH \quad (IV)$$

wherein n is an integer of 7 to 11, which comprises
(a) reacting an (ω-cyanoalkanoyl)-γ-butyrolactone represented by the following formula (II):



(II)

wherein n has the same meaning as defined above, in the presence of 1 to less than 2 mole of an alkali metal hydroxide per mole of the butyrolactone in an aqueous medium to obtain an ω-hydroxy-(ω-3)-ketonitrile represented by the following formula (I):

$$NC(CH_2)_n—CO—(CH_2)_3OH \quad (I)$$

wherein n has the same meaning as defined above, and
(b) reacting the resulting ω-hydroxy-(ω-3)-ketonitrile with hydrazine or hydrated hydrazine in an aqueous solution of an alkali metal hydroxide.

5,350,869

PURIFICATION OF TRIALKYLGALLIUM, SYNTHESIS OF TRIALKYLGALLIUM

Ravindra K. Kanjolia, North Andover; Benjamin C. Hui, Peabody, both of Mass., and William B. Grant, Hampton, N.H., assignors to CVD, Incorporated, Woburn, Mass.

Filed Jul. 27, 1993, Ser. No. 98,483
Int. Cl.[5] C07F *5/00*
U.S. Cl. 556—1 12 Claims

1. A method of removing group II B impurities in the form of dialkyl group II B compounds from a trialkyl group III A compound having unacceptably high levels of said impurities, including zinc impurities, the method comprising contacting said trialkyl group III A compound with a metallic gallium-containing melt which comprises at least about 10 wt. % indium for a time sufficient to reduce the level of zinc to about 0.5 ppm or below.

6. A method of removing group II B impurities in the form of dialkyl group II B compounds from a trialkyl group III A compound having unacceptably high levels of said impurities, including zinc impurities, the method comprising contacting said trialkyl group III A compound with a metallic gallium-containing melt which further contains an oxygen-gettering metal for a time sufficient to reduce the level of zinc to about 0.5 ppm or below.

10. A method of producing a trialkylgallium comprising contacting a dialkyl group II B compound with a melt containing at least a stoichiometric amount of gallium for a time sufficient to react substantially all of said dialkyl group II B compound with gallium to produce trialkylgallium and metallic group II B element.

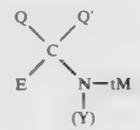
5,350,870

THERMAL IMAGING METHODS AND MATERIALS

Roger A. Boggs, Wayland, Mass.; Richard L. Cournoyer, San Jose, Calif.; Ernest W. Ellis, Leverett, Mass.; Sandra E. Russo-Rodriguez, Englewood, Colo.; Stephen J. Telfer, Arlington, Mass.; David P. Waller, Lexington, Mass., and Michael J. Zuraw, Arlington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 696,151, May 6, 1991, Pat. No. 5,236,884.
This application Apr. 12, 1993, Ser. No. 45,133
Int. Cl.[5] C07C *229/26, 237/20*
U.S. Cl. 560—27 28 Claims

1. A compound represented by



wherein:
E represents a thermally removable leaving group;
tM represents a thermally migratable acyl group;
Q, Q′ and C taken together represent a dye-forming coupler moiety wherein C is the coupling carbon of said coupler moiety;
and, (Y) taken together with N represents an aromatic amino color developer moiety,
one of said Q, Q′ and (Y) containing an atom selected from the atoms comprising Group 5A/Group 6A of the Periodic Table.

5,350,871

METHOD OF PREPARING OPTICALLY ACTIVE CYANOHYDRINS

Hendrik W. Geluk, and Wybrand T. Loos, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Filed Dec. 8, 1992, Ser. No. 986,784
Claims priority, application European Pat. Off., Dec. 11, 1991, 91203241.4
Int. Cl.[5] C07C *253/00, 253/30*
U.S. Cl. 558—351 12 Claims

1. A method of preparing an optically active cyanohydrin by addition of hydrogen cyanide to a carbonyl compound, selected from aldehydes and ketones which allow addition of hydrogen cyanide, in a biphasic solvent system, comprising a homogeneous aqueous solution of hydroxynitrile lyase, and a suitable organic solvent which is at least substantially immiscible with water, said method being characterized in that said homogeneous aqueous solution is buffered with a buffer solution having a pH between 3 and 6, said buffer solution being selected from an acetate buffer and a non-acetate buffer, wherein said acetate buffer has a buffer concentration of between 0.005 and 0.1 mole per liter and wherein said non-acetate buffer is selected from citrate, succinate, glutamate and phthalate buffers, that the volume ratio organic phase:aqueous phase is between approx. 5:1 and approx, 1:5, and that a solution of hydrogen cyanide and said carbonyl compound in said organic solvent is properly mixed to ensure sufficient interfacial area between the phases during the reaction period with said homogeneous aqueous solution of hydroxynitrile lyase.

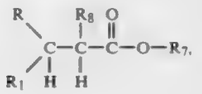
5,350,872

PROCESS FOR THE PREPARATION OF CARBOXYLIC ACIDS AND DERIVATIVES OF THEM

György Tóth, Nyiregyháza; János Bálint, Debrecen; Klára Elek née Herczik, Debrecen; Zsuzsanna Móricz née Garai, Debrecen, and Éva Mudra née Kántor, Ebes, all of Hungary, assignors to Biogal Gyogyszergrar, Debrecen, Hungary

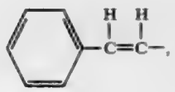
Division of Ser. No. 928,247, Aug. 11, 1992. This application Oct. 29, 1993, Ser. No. 143,124
Int. Cl.[5] C07C *69/76*
U.S. Cl. 560—55 9 Claims

1. A process for the preparation of carboxylic acids, and their derivatives, of the formula

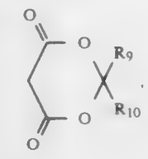


I

wherein
R means hydrogen, or a C_{1-4}alkyl or a (C_{1-5}alkoxy)carbonyl group,
R_1 stands for a C_{1-6}alkyl group, a (C_{1-5}alkoxy)-carbonyl group, a (C_{1-5}alkyl)carbonyl group, a (C_{1-5}alkoxy)carbonyl(C_{1-5}alkyl) group, a phenyl group, optionally monosubstituted by a C_{1-4}alkyl or C_{2-4}alkenyl group, di- or trisubstituted by C_{1-4}alkoxy groups, monosubstituted by a nitro group, disubstituted by C_{1-4}alkoxy and hydroxy groups, monosubstituted by a C_{1-4}alkylthio group, mono- or disubstituted by one or two di(C_{1-4}alkyl) amino groups or monosubstituted by halogen, for a furyl group, for a thiofuryl group, for a thienyl group, or for a group of the formula

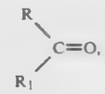


or R and R_1 together form a straight-chain C_{4-5}alkylene group,
R_7 stands for hydrogen or a C_{1-7}alkyl group and
R_8 means hydrogen or a carboxyl group,
which process comprises reacting a 1,3-dioxane-4,6-dione derivative of the formula



III

wherein
R_9 stands for a C_{1-4}alkyl group or a phenyl group, optionally monosubstituted by halogen, and
R_{10} stands for hydrogen or a C_{1-5}alkyl group, or
R_9 and R_{10} together form a pentamethylene group,
and an aldehyde or ketone of the formula



II

wherein
R and R_1 are as defined above,
in the presence of formic acid and of 1 or more members selected from the group consisting of secondary amines and tertiary amines and, optionally of an alcohol of the formula

$$R_7—OH \quad VI,$$

wherein
R_7 is a C_{1-7}alkyl group,
at a temperature of 20° to 140° C. optionally in the presence of an inert organic solvent.

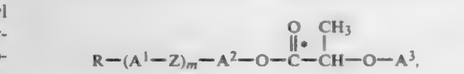
5,350,873

OPTICALLY ACTIVE PHENOXYPROPIONIC ESTERS

Volker Bach, Neustadt; Wolfgang Brox, Heidelberg; Karl-Heinz Etzbach, Frankenthal; Axel Paul, Lampertheim, and Karl Siemensmeyer, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

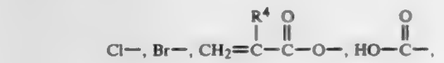
Filed Aug. 13, 1992, Ser. No. 928,568
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1991, 4126996.9
Int. Cl.[5] C07C *69/76*
U.S. Cl. 560—60 17 Claims

1. An optically active compound of the formula I

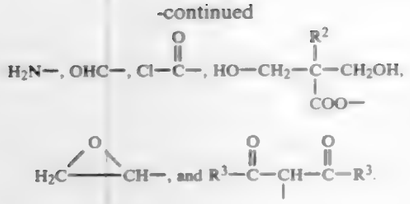


(I)

where
R is C_1–C_{12}-alkyl or -perfluoroalkyl in which each of one or two non-adjacent CH_2 or CF_2 groups can be replaced by —O—, —CO—, —CO—O—, —CH=CH—, —CH-halogen—, —O—CO—CHCN—, or is C_1–C_{12}-alkyl which can have a terminal chemically reactive group selected from the group consisting of CH_2=CH—, HO—,



-continued



where
R^2 is H, CH_3 or C_2H_5,
R^3 is —OH or —Cl, and
R^4 is H, Cl or CH_3.
and in which a CH_2 group can be replaced by —O—.
A^1 and A^2 are each, independently of the other:
1,4-phenylene which is unsubstituted or substituted by one or two members of the group consisting of F, Cl, Br, CH_3 and CN groups and in which one or two CH groups of the phenylene ring can be replaced by N;
1,4-cyclohexylene in which one or two non-adjacent CH_2 groups can be replaced by —O— or —S—;
1,4-piperidinediyl;
1,4-bicyclo[2.2.2]octylene;
2,6-naphthalenediyl;
decahydro-2,6-naphthalenediyl; or
1,2,3,4-tetrahydro-2,6-naphthalenediyl,
A^3 is unsubstituted or substituted phenyl,
Z is —CO—O—, —O—CO—, $—CH_2CH_2—$, $OCH_2—$, $—CH_2O$, —C≡C—, or a single bond, and
m is 1, 2, or 3,
with the proviso that when m is 2 or 3, the radicals A^1 and Z in the individual $—(A^1—Z)$ groups can be identical or different.

5,350,874

PROCESS FOR PREPARING DIESTERS OF NAPHTHALENEDICARBOXYLIC ACIDS

Paul K. Behrens, Warrenville; Juergen K. Holzhauer, Naperville; Gregory P. Hussmann, Batavia, and David L. Sikkenga, Wheaton, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Nov. 24, 1992, Ser. No. 981,184
Int. Cl.[5] C07C *67/08*
U.S. Cl. 560—80 **19 Claims**

1. A continuous process for preparing a dialkylester of a naphthalenedicarboxylic acid comprising passing a liquid phase reaction mixture comprising a low molecular weight alcohol, a naphthalenedicarboxylic acid and a dialkylester of a naphthalenedicarboxylic acid at a temperature in the range of about 500° F. to about 700° F. and at a pressure in the range of about 5 to about 250 atmospheres absolute through series arranged reaction zones while introducing a naphthalenedicarboxylic acid and a low molecular weight alcohol to an upstream reaction zone, agitating at least one reaction zone, and removing a product comprising a dialkylester formed by the reaction of the naphthalenedicarboxylic acid with the low molecular weight alcohol from a downstream reaction zone.

5,350,875

MICHAEL REACTION

Govindarajulu Kumar, and Mahmood Sabahi, both of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 34,950, Mar. 22, 1993, abandoned. This application Nov. 23, 1993, Ser. No. 156,755
Int. Cl.[5] C07C *69/34*
U.S. Cl. 560—190 **2 Claims**

1. A process which comprises reacting in the presence of an undissolved basic compound as a catalyst at least one Michael donor corresponding to the formula Z'—CH(E)(E'') in which Z' is hydrogen, alkyl, or cycloalkyl and E'' is hydrogen or an electron withdrawing group is reacted with at least one Michael acceptor corresponding to the formula CTT'=CT''G to form product molecules corresponding to the formula Z—C(E)(E')$_p$—Q_s in which Z is alkyl, cycloalkyl, or —(CT-T'—CT''G)$_w$—CTT'—CHT''G; Q is —(CTT'—CT''G)$_t$—CT-T'—CHT''G; p is zero or one; s is respectively two or one; and each of t and w represents zero or a positive integer such that the compound contains at least acceptor moiety—T, T' and T'' in the above formulas being independently selected from hydrogen, G', and organic groups of up to 20 carbons; and E, E', G, and G' being independently selected from electron withdrawing groups.

5,350,876

CARBONYLATION OF CONJUGATED DIENES

Eit Drent, and Willem W. Jager, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 24, 1993, Ser. No. 82,213
Claims priority, application European Pat. Off., Jun. 29, 1992, 92201941
Int. Cl.[5] C07C *67/36*
U.S. Cl. 560—207 **10 Claims**

1. A process for the preparation of alkenoic acid derivatives comprising reacting an aliphatic conjugated diene with carbon monoxide and a hydroxyl group-containing compound in a reaction medium having a calculated dielectric constant at 25° C. ϵ_{calc} of below a value of 8 in the presence of a catalyst system comprising a palladium compound, a multidentate phosphine ligand, and optionally a protonic acid.

5,350,877

PROCESS FOR THE IMPROVED PRODUCTION OF (METH)ACRYLIC ACID ESTERS OF POLYHYDRIC ALCOHOLS (I)

Wolfgang Ritter, Haan; Hans-Dieter Sitz, Rommerskirchen, and Ludwig Speitkamp, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP89/01549, § 371 Date Jun. 24, 1991, § 102(e) Date Jun. 24, 1991, PCT Pub. No. WO90/07486, PCT Pub. Date Jul. 12, 1990
PCT Filed Dec. 15, 1989, Ser. No. 720,443
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1988, 3843854
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] C07C *69/52*
U.S. Cl. 560—224 **22 Claims**

1. In a process for the production of (meth)acrylic acid esters of polyhydric alcohols by the reaction of (meth)acrylic acid with a polyhydric alcohol in the presence of an acidic esterification catalyst and a polymerization inhibitor, the improvement wherein:
A. the reaction mixture is liquid at room temperature,
B. the reaction mixture is free from added solvents and azeotropic entraining agents, and
C. the water of condensation which forms in the reaction is removed from the reaction zone.

5,350,878

FLUORINATED COMPOUNDS CONTAINING HETERO ATOMS AND POLYMERS THEREOF

Gerardo Caporiccio, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 718,663, Jun. 21, 1991, abandoned, and a continuation-in-part of Ser. No. 385,119, Jul. 26, 1989, abandoned. This application Feb. 10, 1993, Ser. No. 15,737
Int. Cl.[5] C07C *69/63*
U.S. Cl. 560—227 **2 Claims**

1. Fluorinated compounds represented by the formula

$R^3(R^2R^1)_i$

wherein R^1 is selected from the group consisting of
(a) monovalent telomers of a fluorinated olefin selected from the group consisting of chlorotrifluoroethylene, vinylidene fluoride and trifluoroethylene, and
(b) monovalent cotelomers of combinations selected from the group consisting of
(1) chlorotrifluoroethylene and a fluoropropene selected from the group consisting of hexafluoropropene and 2-hydropentafluoropropene,
(2) chlorotrifluoroethylene and hexafluoropropene,
(3) chlorotrifluoroethylene and vinylidene fluoride,
(4) chlorotrifluoroethylene and tetrafluoroethylene,
(5) chlorotrifluoroethylene, tetrafluoroethylene and a fluoropropene selected form the group consisting of hexafluoropropene and 2-hydropentafluoropropene,
(6) vinylidene fluoride and a fluoropropene selected from the group consisting of hexafluoropropene, 1-hydropentafluoroproene and 2-hydropentafluoropropene
(7) vinylidene fluoride, chlorotrifluoroethylene and hexafluoropropene,
(8) tetrafluoroethylene, vinylidene fluoride and chlorotrifluoroethylene, and
(9) tetrafluoroethylene, vinylidene fluoride and a fluoropropene selected from the group consisting of hexafluoropropene, 1-hydropentafluoropropene and 2-hydropentafluoropropene,
R^2 represents a bivalent radical connecting R^1 with R^3, and is selected from the group consisting of oxoethylene, oxotrimethylene, and oxotetramethylene;
R^3 is a polyvalent radical selected from the group consisting of 2,2-dimethyl-1,3-propylenedioxy, 1,1,1-tris(methyloxy)ethane, 1,1,1-tris(methyloxy)propane, and tetra(methyloxy)methane; and i is from 2 to 4, inclusive.

5,350,879

TRANSESTERIFICATION USING METAL OXIDE SOLID SOLUTIONS AS THE BASIC CATALYST

Dusan J. Engel, Barrington; Thomas P. Malloy, Lake Zurich, and Peter K. Nickl, Prospect Heights, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Nov. 17, 1993, Ser. No. 153,409
Int. Cl.[5] C07C *67/02, 27/10*
U.S. Cl. 560—234 **23 Claims**

1. A method of transesterifying a first ester with a first alcohol to form a second ester and a second alcohol as the transesterification reaction products comprising reacting the first ester with the first alcohol in the presence of a metal oxide solid solution of formula $A_aB_bO_{(a+b)}(OH)_b$ at a temperature between about 100° and 350° C. and recovering at least one of the transesterification reaction products.

5,350,880

APPARATUS FOR VARYING THE SOUND OF MUSIC AS IT IS AUTOMATICALLY PLAYED

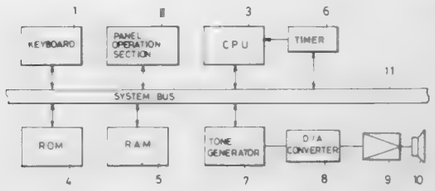
Takehisa Sato, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Continuation of Ser. No. 779,423, Oct. 17, 1991, abandoned. This application Oct. 14, 1992, Ser. No. 960,666

Claims priority, application Japan, Oct. 18, 1990, 2-277889

Int. Cl.[5] **G10H** *1/057, 1/06, 1/40*

U.S. Cl. 84—609 **7 Claims**



1. An apparatus for automatically playing musical pieces, comprising:

automatic means for replaying a musical piece more than two times;

automatic means for varying said musical piece each time it is replayed so that a player's intervention is not required to cause a variation in each relay;

said automatic means for varying said musical piece each time it is replayed including a plurality of storage means for storing tone information, said tone information including note information for reproducing a musical tone and parameter information for varying said musical tone each time it is reproduced;

said parameter information including a plurality of differing parameters;

each storage means of said plurality of storage means having differing parameter information so that each automatic playback of a musical piece varies from other automatic playbacks thereof; and

control means for sequentially reading out said tone information from said plurality of storage means and subjecting said read-out tone information to a tone-ON process to thereby automatically play a musical piece in a different form each time it is replayed.

5,350,881

PORTABLE ELECTRONIC APPARATUS

Yukio Kashio, Tokyo, and Yoneaki Arai, Hanno, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Division of Ser. No. 606,116, Oct. 31, 1990, Pat. No. 5,157,213, which is a division of Ser. No. 401,526, Aug. 29, 1989, Pat. No. 4,995,294, which is a continuation of Ser. No. 53,384, May 22, 1987, abandoned. This application Jul. 10, 1992, Ser. No. 890,543

Claims priority, application Japan, May 26, 1986, 61-120724; Jun. 30, 1986, 61-98967[U]; Jul. 9, 1986, 61-104238[U]; Sep. 10, 1986, 61-138883[U]

Int. Cl.[5] **G10H** *7/00*

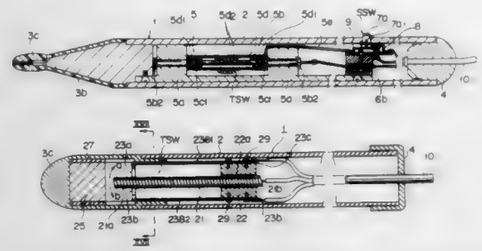
U.S. Cl. 84—622 **8 Claims**

1. An electronic percussion instrument, comprising:

a drum sound generator having an electronic circuit and energizable in response to momentary electrical trigger signal to effect generating of audible drum-like sound outputs in response to a trigger signal;

a normally open switch connected to the electronic circuit and being momentarily closable for developing the momentary electrical trigger signal for effecting energizing of the drum sound generator when momentarily closed and generating the drum-like sound outputs; and

a drumstick mounting the switch and movable in a striking motion in any desired direction momentarily at will while moving in said any direction for effectively generating the electrical trigger signal;



wherein said switch having effecting means for effecting momentary closing of the switch and for effecting generating of the momentary electrical trigger signal.

5,350,882

AUTOMATIC PERFORMANCE APPARATUS WITH OPERATED ROTATION MEANS FOR TEMPO CONTROL

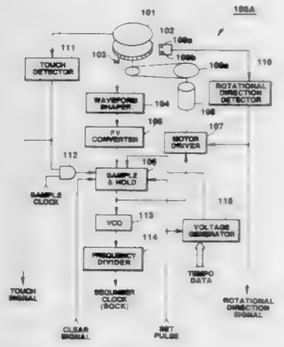
Satoru Koguchi, Tokyo, and Yoshiki Negoro, Ome, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 1, 1992, Ser. No. 984,103

Claims priority, application Japan, Dec. 4, 1991, 3-320327; Dec. 4, 1991, 3-320328; Dec. 10, 1991, 3-350092

Int. Cl.[5] **G10H** *7/00*

U.S. Cl. 84—636 **13 Claims**



1. An automatic performance apparatus comprising:

operated rotation means which is operable by a user for rotating purposes;

operated state detecting means for detecting whether the user is operating said operated rotation means;

rotational speed detecting means for detecting the rotational speed of said operated rotation means;

clock output means for outputting a clock signal having a frequency corresponding to the rotational speed detected by said rotational speed detecting means;

automatic performance data storage means for storing data on an automatic performance; and

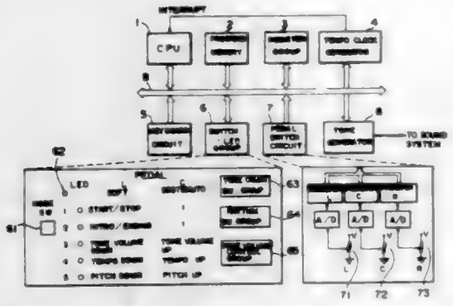
automatic performance control means for giving an automatic performance while controlling a timing at which the data on the automatic performance is read out from said data storage means in units of a time corresponding to the frequency of the clock signal.

5,350,883

ELECTRONIC MUSICAL INSTRUMENT WITH A PEDAL

Minoru Kitamura, and Makoto Iwabayashi, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 436,486, Nov. 14, 1989, abandoned.
This application Jul. 16, 1992, Ser. No. 914,997
Claims priority, application Japan, Nov. 15, 1988, 63-286746
Int. Cl.[5] G10H *1/32*
U.S. Cl. 84—644 12 Claims



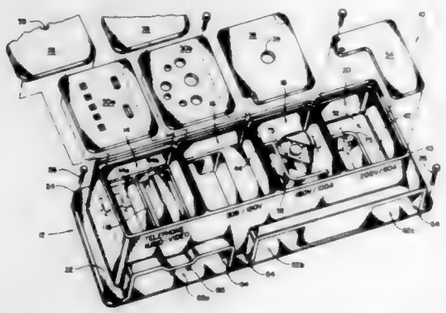
1. An electronic musical instrument with a pedal, comprising:
- a mode switch for selecting a mode from among plural modes;
- parameter designating means for designating a parameter, to be controlled by said pedal, from among plural parameters according to said mode selected by said mode switch;
- a depression sensing means coupled to the pedal for sensing a depression degree of the pedal and outputting an analog signal representing the detected depression degree;
- analog-to digital converting means for converting the outputted analog signal into a digital signal corresponding thereto, the digital signal has a value; and
- control means for changing a value of the designated parameter in multi-stages by comparing the value of the digital signal with a plurality of threshold values when a first mode is selected by the mode switch, and for changing a value of the designated parameter in an on state and an off state by comparing the value of the outputted digital signal with one of the plurality of threshold values when a second mode is selected by the mode switch.

5,350,884

EXHIBITION HALL ELECTRICAL FLOOR BOX

Gary L. Littrell, 1403 Carlisle Dr., Inverness, Ill. 60010

Filed Oct. 26, 1992, Ser. No. 966,720
Int. Cl.[5] H02G *3/12*
U.S. Cl. 174—48 40 Claims



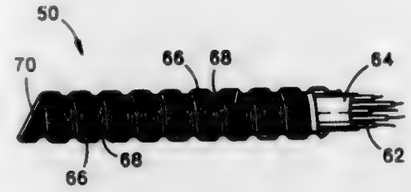
1. An exhibition hall floor electrical box comprising a housing in the form of a short rectangular box having a base mounting flange about a bottom surface thereof, said housing being divided into a plurality of adjacent chambers and having passages therein through which cable, passed through conduit engaged to said box, may extend into appropriate ones of said chambers, at least one of said chambers being adapted to engage a cylinder type connector via a fitting which is provided in a bottom corner of said chamber and is angled relative to the corner in such a manner as to cause the cylinder type connector to lie across opposite corners of the chamber at an angle in both the horizontal and vertical planes.

5,350,885

ARMORED CABLE

James W. Falciglia, East Greenwich, R.I., and Anthony J. Mauro, Ansonet, Mass., assignors to Monogram Industries, Inc., New Bedford, Mass.

Filed Apr. 8, 1992, Ser. No. 865,334
Int. Cl.[5] H01B *7/36*
U.S. Cl. 174—112 33 Claims



1. An armored cable sheath comprising
- a conductive tubular structure comprising crowns and valleys of a helically wound strip and having an internal passage, an outer surface, a first end, and a second end, the internal passage being sized and configured to enclose one or more conductors, said tubular structure being made of a material having a first visual appearance, and
- a pattern of visible indicia, of different visual appearance from said first visual appearance, applied on said outer surface, said pattern being repeated along the length of said sheath, said pattern leaving exposed a substantial portion of said strip where edges of said strip along said crowns contact a surface of said strip at said valleys.

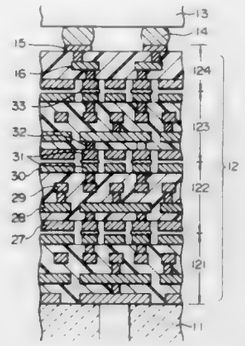
5,350,886

MOUNTING SUBSTRATE

Kunio Miyazaki, Hitachi; Yutaka Sugita, Tokorozawa; Akio Mukoh, Mito; Tadahiko Miyoshi; Osamu Miura, both of Hitachi; Akio Takahashi, Hitachiota; Shunichi Numata, Hitachi; Satoru Ogihara, Hitachi; Kazuji Yamada, Hitachi; Hirokazu Inoue, Ibaraki, and Fumiyuki Kobayashi, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 25, 1991, Ser. No. 659,672
Claims priority, application Japan, Feb. 26, 1990, 2-042468
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—250 23 Claims

1. A mounting substrate for LSIs having a multi-layered thin film wiring portion formed on a silicon or ceramic substrate, wherein said thin film wiring portion includes a vertically stacked arrangement of plural, preformed wiring units, each wiring unit having first and second, opposing main surfaces and including wirings composed of a plurality of wiring layers provided as a multilevel arrangement of conductive layers, each wiring layer within a wiring unit being isolated by an insulator from an adjacent, higher level wiring layer except for portions thereof extending vertically via through holes of said insulator and provided for interconnecting said wiring layer and said adjacent, higher level wiring layer thereof, said wirings between respective wiring units being electrically connected through connecting pads formed at the main surfaces thereof, the pads at a main surface of said wiring unit being provided from a same level layer of said multilevel arrangement as that of a corresponding surface conductive layer of said wiring unit, each said wiring unit except for an uppermost wiring unit of said vertically stacked arrangement including two, internally provided signal line layers, a power supply layer and a ground layer, said power supply layer and said ground layer are formed at said opposing, main surfaces thereof, respectively, and which surfaces correspond to substantially flat, upper and lower surfaces of the insulator associated with said wiring unit, and interconnections of the respective layers of said wiring unit are provided via through holes in said insulator.

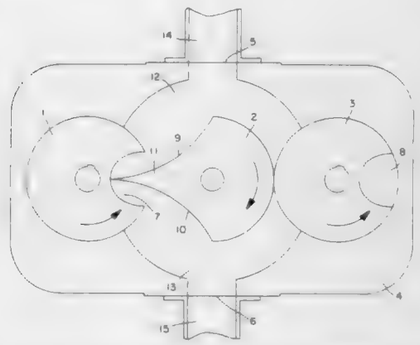


5,350,887

METHOD AND APPARATUS FOR THE GENERATION OF LOW FREQUENCY SOUND

Roland Sandström, Saltsjö-Boo, Sweden, assignor to Infrasonik AB, Nacka, Sweden

PCT No. PCT/SE91/00352, § 371 Date Oct. 27, 1992, § 102(e) Date Oct. 27, 1992, PCT Pub. No. WO91/17841, PCT Pub. Date Nov. 28, 1991
PCT Filed May 16, 1991, Ser. No. 940,865
Claims priority, application Sweden, May 16, 1990, 9001768
Int. Cl.[5] G10K *5/00*
U.S. Cl. 181—142 8 Claims



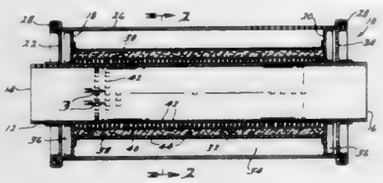
1. Feeder unit for a low frequency sound generator, said low frequency sound generator comprising a feeder part including said feeder unit and a resonator part for the excitation of a low frequency, standing, gas borne sound wave inside the resonator part, said feeder unit being provided with means for controlled generation of periodic changes of the gas volume inside the resonator part, said means comprising a plurality of rotating rotors located in a casing and wherein the rotation of said rotors in combination with their geometric designs work to achieve volume changes in the gas inside the resonator part.

5,350,888

BROAD BAND LOW FREQUENCY PASSIVE MUFFLER

Robert L. Sager, Jr., Grass Lake, and Leon A. Kraai, Jackson, both of Mich., assignors to Tennessee Gas Pipeline Company, Lincolnshire, Ill.

Continuation of Ser. No. 877,458, May 1, 1992, abandoned. This application Dec. 16, 1993, Ser. No. 168,574
Int. Cl.[5] F01N *1/00, 1/10*
U.S. Cl. 181—247 18 Claims



1. An acoustic muffler for attenuating sound waves, comprising:
- an elongated, continuous, straight through tubular member;
- an annular sound absorbing chamber surrounding said tubular member, said sound absorbing chamber containing sound absorbing material;
- an annular resonating chamber surrounding said sound absorbing chamber, said sound absorbing chamber and said resonating chamber being of substantially equal length and defining a first and second end, said tubular member transversing said length of said chambers;
- a first and second imperforate annular end chamber, each surrounding said tubular member and each being disposed adjacent to one of said first and second ends of said sound absorbing and resonating chambers respectively, said tubular member extending continuously from a first outer end of said first end chamber to a second outer end of said second end chamber;
- a plurality of apertures formed on said tubular member allowing fluid communication between the volume within said tubular member and said sound absorbing chamber; and
- a plurality of apertures allowing fluid communication between said sound absorbing chamber and said resonating chamber.

5,350,889

MULTIPLE CIRCUIT SWITCHING ASSEMBLY

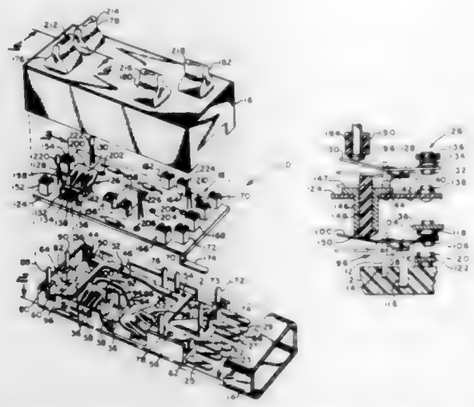
Richard L. Lauritsen, Hoffman Estates, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 2, 1993, Ser. No. 25,450
Int. Cl.[5] H01H *9/00*
U.S. Cl. 200—1 B 8 Claims

1. An electrical switching assembly comprising:
- (a) housing means including a base member formed of molded insulating material and having at least one first level electrically conductive strip embedded therein with an end portion of said strip extending outwardly from the edge of said base member for connection thereto, said base member having portions thereof voided to expose intermediate portions of said strip enabling insert contact with said strip;
- (b) at least one second level electrical strip disposed on the surface of said base member and having an end portion extending outwardly from the edge of said base member for connection thereto;
- (c) at least one electrical switching means mounted on said base member and connected to said first and second level strips;
- (d) actuator means mounted on said housing means and operable upon user movement for effecting actuation and de-actuation of said switch means.

2. The switch assembly defined in claim 1, further compris-

ing: a circuit board; other portions of said strips extending generally at right angles thereto and inserted into said board for making electrical connection therewith; a second electrical switching means mounted on said board and disposed for



actuation and de-actuation by said actuator means; and, a sliding member extending through said board and operable upon user continued movement of said actuator means after actuation of said second switching means to effect actuation of one of said at least one of said base mounted switching means.

5,350,890

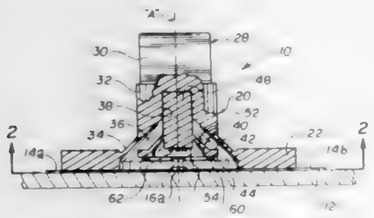
CONTACT SWITCH DEVICE

Brian Fairbrother, Leigh-On-The-Sea; Paul Rose, and Richard Farman, both of Ilford, all of England, assignors to Gould Instrument Systems, Inc., Valley View, Ohio

Filed Oct. 1, 1992, Ser. No. 954,531

Int. Cl.[5] H01H *1/10, 9/26*

U.S. Cl. 200—5 A **15 Claims**



1. A contact-type key switch comprised of:

a base member,

circuit means including a plurality of conductors which are to be electrically connected,

an outer membrane extending over said base plate, said membrane having an actuating key at the upper end thereof, a support pad at the lower end thereof and a wall portion flaring outwardly from said actuating key to said support pad, said wall portion having a predetermined collapse load characteristic,

an inner membrane separate from said outer membrane, said inner membrane being smaller than said outer membrane and having an upper end, a lower end, and a wall portion flaring outwardly from said upper end to said lower end, said wall portion having a predetermined collapse load characteristic, said inner membrane mounted to said outer membrane below said actuating key wherein said lower end of said inner membrane is a predetermined distance above said circuit means,

a first electric conductor member mounted to said lower end of said inner member,

a second electric conductor member mounted within said wall portion of said inner membrane and below said upper end of said inner membrane, and

said first electric conductor on said inner membrane electrically connecting selected ones of said conductors in said circuit means when said outer membrane exceeds its collapse load characteristic and said second electric conductor connecting other conductors in said circuit means when said inner membrane exceeds its collapse load characteristic.

5,350,891

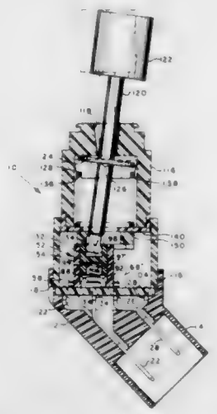
SERVOMOTOR REMOTE CONTROL SWITCH

Albert F. Ditzig, Hoffman Estates, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 28, 1993, Ser. No. 98,677

Int. Cl.[5] H01H *9/29, 25/04*

U.S. Cl. 200—6 A **5 Claims**



1. A Servomotor remote control switch comprising:

(a) housing means including circuit board means having a plurality of pairs of spaced contacts disposed thereon and a plurality of connector terminals connected to said board means and adapted for external electrical connection thereto;

(b) slider means including first and second shorting bar means operable upon movement along one of two orthogonal axes to cause said first shorting bar means to complete a circuit between a first pair of contacts and upon movement along the other of said orthogonal axes to complete a circuit between a second pair of contacts, said slider means operable upon rotation about an axis normal to said orthogonal axes to cause said second shorting bar to complete a circuit between a third pair of contacts; and

(c) wobble stick means mounted for pivotal movement on said housing means with one end extending exteriorly of said housing with the opposite end thereof engaging said slider means, said stick means operable upon user movement to effect said movement of said slider means in said orthogonal directions, said stick means operable upon user rotation about its longitudinal direction to effect said rotation of said slider means about said normal axis, wherein said second shorting bar is lifted from said circuit board in a neutral position intermediate a clockwise and a counterclockwise position.

5,350,892

MEDIUM TENSION CIRCUIT-BREAKER FOR INDOOR OR OUTDOOR USE

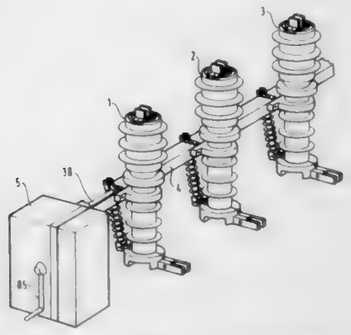
Paul Rozier, Chalon sur Saone, France, assignor to GEC Alsthom SA, Paris, France

Filed Nov. 17, 1992, Ser. No. 977,785

Claims priority, application France, Nov. 20, 1991, 91 14312

Int. Cl.[5] H01H *33/42, 33/52*

U.S. Cl. 200—144 B **20 Claims**



1. A multi-pole medium-voltage circuit-breaker comprising one pole per phase, said circuit-breaker further comprising for each pole, an insulating feedthrough including a cylindrical first portion containing a vacuum bottle, said vacuum bottle comprising an insulating case closed by first and second metal endplates, the first metal endplate carrying a first terminal outside the case and a fixed contact inside the case, the second endplate having a moving metal rod passing therethrough in sealed manner and carrying a moving contact, the second endplate being electrically connected to said moving rod, the insulating feedthrough further including a second cylindrical portion having a metal tube disposed coaxially therein, said metal tube being mechanically connected to the vacuum bottle and electrically connected to said moving rod, said metal tube comprising a drive rod connected to said moving metal rod, the insulating feedthroughs of the poles being fixed to a common metal bar disposed substantially at the junction between the first and second portions of each feedthrough, said bar containing a control shaft common to the poles and connected to a drive mechanism, the drive rod of each pole being mechanically connected to said shaft by means of a lever hinged on an endpiece that is secured to the metal tube, and an insulating arm having a first end hinged to said lever and having a second end hinged to a crank secured to said shaft, said endpiece being mechanically and electrically connected to said metal tube and constituting a second terminal of the pole.

5,350,893

LEVER SWITCH

Kanji Yamauchi, and Akio Kurihara, both of Shizuoka, Japan, assignors to Yazaki Corporation, Japan

Filed Jul. 22, 1993, Ser. No. 95,414

Claims priority, application Japan, Jul. 23, 1992, 4-051950[U]

Int. Cl.[5] H01H *15/06*

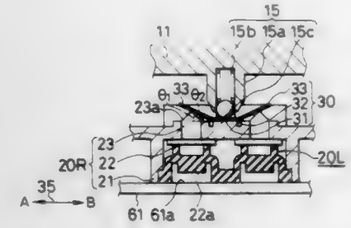
U.S. Cl. 200—547 **10 Claims**

1. A lever switch comprising:

a lever with a contact actuating part, said contact actuating part movable in a first direction by shifting of said lever;

a movable contact including a rigid presser pin having a top portion, said top portion depressable in a second direction substantially at right angles to the first direction while being pressed by a pressing force caused by movement of said contact actuating part; and

a plate provided between said contact actuating part and said top portion of the movable contact to convey the pressing force to said movable contact, said plate having a central part and two side parts each extending from opposite sides of said central part at an apex wherein each apex defines a separate axis of rotation of the plate, said contact actuating part initially transferring said pressing force



through a side part to said movable contact before said contact actuating part is positioned in opposing relationship thereto.

5,350,894

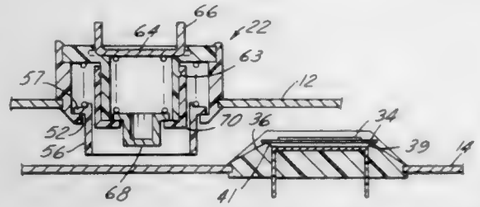
TWO PIECE SWITCH ASSEMBLY FOR MEMBERS THAT MOVE RELATIVE TO ONE ANOTHER IN A FIXED MANNER

Johnny H. Allison, Redford, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 28, 1993, Ser. No. 82,563

Int. Cl.[5] H01H *15/06*

U.S. Cl. 200—549 **15 Claims**



1. A slide plate switch assembly comprising: a stationary member including guide means for defining a slide path, and including a power terminal disposed in a predetermined relation to said slide path; and

a sliding member including follower means for mating with said guide means, including contact means disposed in said predetermined relation to said slide path for contacting said power terminal when said sliding member is moved in relation to said stationary member, including an electrical load for receiving power when said contact means is electrically connected to said power terminal and including a second housing means mounted thereon for retractably securing said contact means and including a retractable sleeve means for surrounding said contact, said retractable sleeve being retracted when said sliding member mates with said stationary member.

5,350,895

POWER PROPELLED WELDING DEVICE

Fuminao Tanitomi, Ueki, Japan, assignor to Yugen Kaisha Kaisei Shoko, Ueki, Japan

Filed May 20, 1992, Ser. No. 886,696

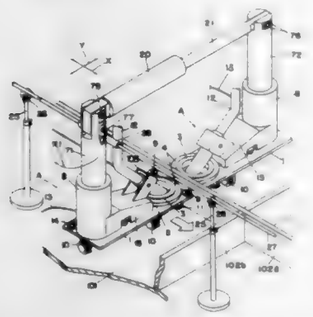
Claims priority, application Japan, May 21, 1991, 3-145632; Jun. 12, 1991, 3-167703; Oct. 22, 1991, 3-167704; Oct. 22, 1991, 3-302320; Apr. 28, 1992, 4-136364

Int. Cl.[5] B23K *9/12*

U.S. Cl. 219—124.31 **17 Claims**

11. A unit for welding connecting parts between a bottom plate and at least one standing plate arranged in angular relation to said bottom plate, comprising:

a plurality of wheels in rotatable contact with said bottom plate;
a pair of rollers, including means for rotatably mounting said pair of rollers to said unit;
said pair of rollers disposed one on each of opposite sides of said at least one standing plate;
means for urging said pair of rollers into contact with said at least one standing plate;



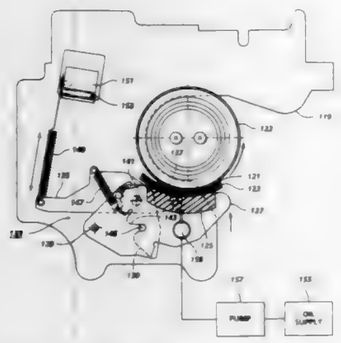
at least one of said pair of rollers defining a central opening therethrough;
at least one torch positioned on a side of said at least one standing plate;
said at least one torch passing through said central opening; and
driving means for imparting rotational movement to said pair of rollers whereby said unit for welding is propelled along said standing plate during a welding operation.

5,350,896

DUAL LAMP FUSER

Mark S. Amico, Rochester; Mark A. Scheuer, Williamson; Irwin Wagman, Pittsford; Dale E. Seeley, Rochester; David M. Thompson; Dawn M. Kelsch, both of Webster, and Wayne D. Drinkwater, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 22, 1993, Ser. No. 156,145
Int. Cl.[5] G03G *15/20*
U.S. Cl. 219—216 **20 Claims**



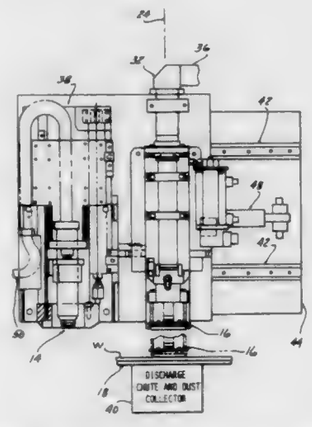
1. A method of controlling the surface temperature of a heated fuser member having a plurality of heating elements operatively supported internally thereof, said method including the steps of:
heating said heated fuser member using two heating elements supported internally thereof;
energizing only one of said heating elements at a time for elevating the surface temperature of said fuser member to a predetermined temperature;
measuring the surface temperature of said heated fuser roll at two locations; and
using the temperature measured at one of said two locations to determine which heating element is energized and using the temperature measured at the other of said two locations to control the operation of the heating element energized.

5,350,897

HYBRID LASER-PLASMA ARC CUTTING APPARATUS COMBINED WITH A PUNCH PRESS

Victor L. Chun, Charlotte, N.C., assignor to Murata Machinery, Ltd., Kyoto, Japan

Filed Jul. 15, 1993, Ser. No. 92,265
Int. Cl.[5] B23K *10/00, 9/013, 26/00*
U.S. Cl. 219—121.39 **4 Claims**



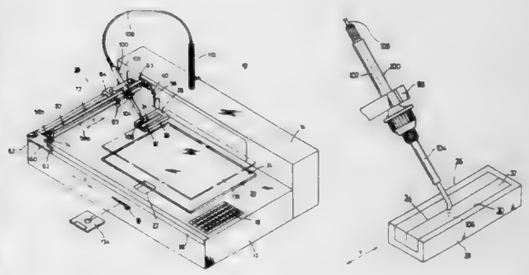
1. A hybrid cutting apparatus for cutting sheet material workpieces comprising:
a workpiece support table;
a cutting station located above said support table;
a carriage-gripper means engageable with a sheet material workpiece and adapted to controllably move said workpiece on said table so as to position a selected point on said workpiece at said cutting station;
a laser beam cutting head;
a laser beam source generating a high energy cutting laser beam;
beam transport means for directing said generated laser beam to said laser beam cutting head;
a plasma arc cutting head;
power supply means for providing electrical energy to said plasma arc cutting head for operation thereof;
a vertically disposed carrier plate positioned above said cutting station;
said laser beam and plasma arc cutting heads mounted side-by-side on said carrier plate;
support means supporting said carrier shuttle plate for horizontal reciprocal movement between first and second shifted positions bringing one or the other of said laser beam or plasma arc cutting heads respectively into alignment with said cutting station in said first and second shifted positions of said carrier shuttle plate;
a common discharge chute at said cutting station for receiving the cutting debris produced by either said laser beam cutting head or said plasma arc cutting head; and
actuator means for powering said movement of said shuttle carrier plate whereby either said laser beam or plasma arc cutting head may be selectively employed at said cutting station.

5,350,898

CUTTING APPARATUS FOR FABRICS AND THE LIKE UTILIZING A HEATED CUTTER WITH CLEANING MEANS

Shigeji Higashiguchi, Tokyo, Japan, assignor to Kabushiki Kaisha Tokyo Horaisha, Tokyo, Japan

Continuation of Ser. No. 568,730, Aug. 17, 1990, Pat. No. 5,262,617. This application Jul. 14, 1993, Ser. No. 91,129
The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.
Int. Cl.[5] D05B *1/00, 3/00;* **D06H** *7/00*
U.S. Cl. 219—221 **11 Claims**



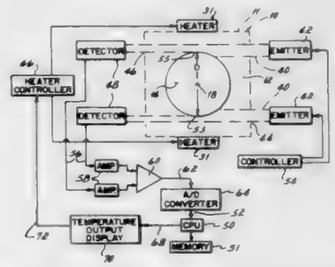
1. A cutting apparatus for cutting a sheet material such as a fabric or the like for a mark, which comprises:
a work bench on which the material is placed;
a moving mechanism movable in two axial directions on an orthogonal coordinate system along the work bench;
a cutting means attached to the moving mechanism for cutting a desired mark out of the material; and
a cleaning means comprising an absorbent cleaning member for automatically cleaning the cutting means, wherein the cutting means is inserted in the absorbent cleaning member and displaced in one of said axial directions through the absorbent cleaning member by moving the cutting means under operation of the moving mechanism.

5,350,899

SEMICONDUCTOR WAFER TEMPERATURE DETERMINATION BY OPTICAL MEASUREMENT OF WAFER EXPANSION IN PROCESSING APPARATUS CHAMBER

Hiroichi Ishikawa, 127 Vreeland Ct., Mahwah, N.J. 10920, and Michael S. Kolesa, 25 Grand St., No. 232, Norwalk, Conn. 06851

Filed Apr. 15, 1992, Ser. No. 869,241
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—494 **20 Claims**



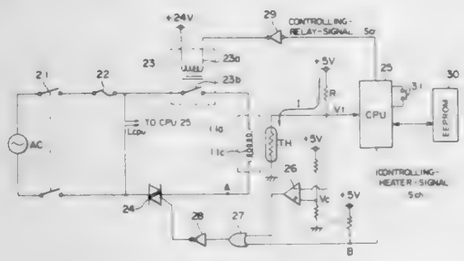
1. A method of determining the temperature of and thermally processing wafers, of a material having a known coefficient of thermal expansion, stacked in parallel planes on an axis in a vacuum processing chamber of a wafer processing apparatus, the method comprising the steps of:
placing a wafer stack in the chamber at a reference temperature;
passing a spaced pair of beams of parallel light from at least one light source and along respective paths such that at least a portion of the light from each light beam is interrupted by opposite edges of one wafer of the stack when at the reference temperature, the paths being inclined at an angle to the axis and the planes;
sensing with at least one light sensor, the amount of uninterrupted light from the beams that arrives opposite the edge from the light source, and generating a reference signal, representative of the positions of the edges, in response to the sensed light;
storing the reference signal;
changing the temperature of the wafers of the stack to a processing temperature;
further passing a spaced pair of beams of parallel light along the paths from the source and through the chamber such that at least a portion of the light from each light beam is interrupted by the opposite edges of the one wafer when at the processing temperature;
sensing with the sensor the amount of uninterrupted light from the beams arriving opposite the edge from the light source, when at the processing temperature, and generating, in response to the sensed light, a measurement signal representative of the positions of the edges:
generating, from the stored reference and the processing signals, a dimension change signal responsive to the difference between the dimensions of the one wafer at the reference temperature and at the processing temperature; and
deriving the processing temperature from the known coefficient of expansion of the material and the dimension change signal.

5,350,900

TEMPERATURE CONTROL HAVING IMPROVED RELIABILITY AS A RESULT OF HAVING PLURALITY OF CONTROL MEANS AND DISABLING MEANS

Osamu Inage, Yokohama, and Kazuyuki Shimada, Choufu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 914,774
Claims priority, application Japan, Jul. 25, 1991, 3-186402
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—508 **9 Claims**



1. A temperature control system comprising:
a central processing unit processing information concerning a detection signal obtained from a temperature detection element and related to the temperature of an object so as to produce a heater control signal for controlling operation of a heater used for heating said object and the temperature of said object so as to make the temperature of said object substantially equal to a first predetermined temperature; and

a control unit, which compares a detection voltage based on said detection signal with a predetermined reference voltage so as to produce a heating control signal for controlling operation of said heater independently of said central processing unit, for stopping heating of said object if the temperature of said object increases to a second predetermined temperature because said central processing unit is substantially disabled, said second predetermined temperature being higher than said first predetermined temperature.

5,350,901

ELECTROMAGNETIC INDUCTION STEAM GENERATOR

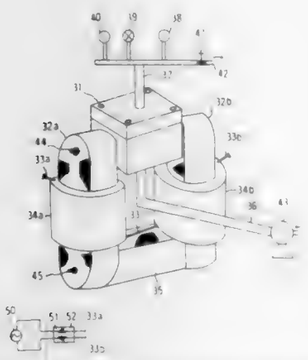
Atsushi Iguchi, and Kuniaki Iguchi, both of Kyoto, Japan, assignors to Nikko Corporation Ltd., Kyoto and Senko Denki Corporation Ltd., Kyoto, Japan

Filed Jan. 13, 1993, Ser. No. 4,118

Claims priority, application Japan, Jul. 27, 1992, 4-200032; Oct. 21, 1992, 4-282739

Int. Cl.[5] H05B *6/10*

U.S. Cl. 219—630 **9 Claims**



1. An electromagnetic induction steam generator comprising:

at least two leg iron cores wrapped by electric wires to form a coil around each core, said coil receiving a low-frequency alternating current from a power supply connected to said electric wires;

and a closed magnetic circuit directly connecting the inner side of each said leg iron core, at least one part of said closed magnetic circuit being a heater made of a metallic material to permit flux permeation and to resist corrosion which can be heated by Joule heat,

wherein said heater has a fluid supply port and a steam output port, and said heater has a hollow chamber in its central portion and uses a gas-liquid separator, wherein said heater is capable of producing steam from fluid supplied to said hollow chamber through said fluid supply port.

5,350,902

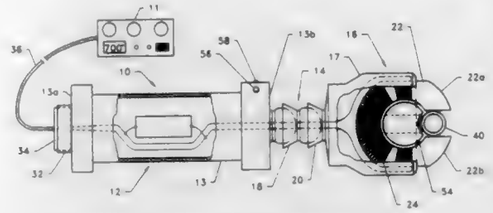
INDUCTION HEATING COUPLER

Robert L. Fox, Hayes; Copeland, Carl E., Yorktown; Robert J. Swaim, Seaford; Robert H. Coultrip; David F. Johnston, both of Yorktown; W. Morris Phillips, Newport News; Samuel D. Johnson, Yorktown; James R. Dinkins, Grafton, and John D. Buckley, Newport News, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 12, 1993, Ser. No. 60,940

Int. Cl.[5] H05B *6/14*

U.S. Cl. 219—633 **5 Claims**



1. An induction heating device comprising:

a handle having a hollow interior and two opposite ends;

a wrist connected to one end of the handle;

a U-shaped pole piece having two spaced apart ends for receiving a susceptor, the distance between the ends being at least as large as the width of the susceptor and the depth of the space between the ends being at least as large as the height of the susceptor;

a tank circuit including an induction coil wrapped around the pole piece and a capacitor connected to the induction coil;

a head connected to the wrist and including a housing for receiving the U-shaped pole piece, the two spaced apart ends of the pole piece extending outwardly beyond the housing; and

a power source connected to the tank circuit for delivering electrical energy to the tank circuit, whereby when the tank circuit is energized and the susceptor is placed in juxtaposition to the ends of the U-shaped pole piece, the susceptor is heated by induction heating due to a magnetic flux passing between the two ends of the pole piece and symmetry in shrinkage of the susceptor is attained.

5,350,903

COOKING APPLIANCE HAVING A COOLING MECHANISM AND METHOD OF OPERATION

Tamotsu Takei, Aichi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 9, 1993, Ser. No. 88,355

Claims priority, application Japan, Jul. 21, 1992, 4-193772

Int. Cl.[5] H05B *6/68*

U.S. Cl. 219—716 **9 Claims**

1. A cooking appliance, comprising;

a) a cooking compartment for receiving food;

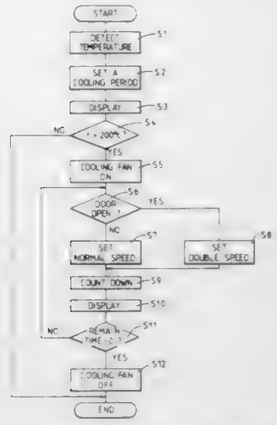
b) a door, which is coupled to the cooking compartment, for accessing the cooking compartment;

c) means, coupled to the cooking compartment, for heating food received in the cooking compartment;

d) a cooling fan for cooling the cooking compartment;

e) means for determining how long the door is open; and

f) means, responsive to the determining means, for changing period for operating the cooling fan in relation to how



long the determining means determines that the door is open.

5,350,904

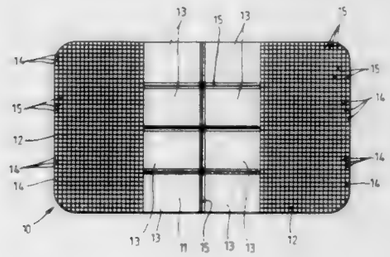
SUSCEPTORS HAVING DISRUPTED REGIONS FOR DIFFERENTIAL HEATING IN A MICROWAVE OVEN

Jonathan D. Kemske, New Brighton; James R. Consaul, Plymouth; Diane R. Rosenwald, Shoreview; Robert B. Shomo, Jr., Circle Pines, and Dan J. Wendt, Lino Lakes, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation of Ser. No. 798,357, Nov. 21, 1991, Pat. No. 5,220,143, which is a continuation of Ser. No. 197,634, May 23, 1988, abandoned. This application Jul. 20, 1992, Ser. No. 874,107

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—730 **2 Claims**



1. A microwave heatable sheet for cooking food stuff comprising:

(a) a base layer;

(b) a microwave receptor material layer which is attached to and extends over an area of said base layer and which heats up in the presence of microwave energy, said microwave receptor material layer having at least one selected mechanically embossed region in said area which is formed into small pieces to reduce the heating characteristic such that the base layer remains structurally intact, said at least one selected region defining a subarea less than said area and having a different heating characteristic in comparison with the remainder of said area.

5,350,905

MAGNETRON FOR A MICROWAVE OVEN

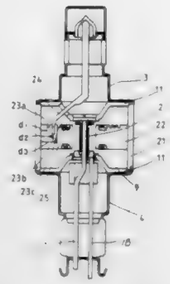
Byoung T. Choi, Kyungsangbook, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Nov. 19, 1992, Ser. No. 978,485

Claims priority, application Rep. of Korea, Nov. 20, 1991, 19970/1991

Int. Cl.[5] H05B *6/64;* **H01J** *25/50*

U.S. Cl. 219—761 **2 Claims**



1. A magnetron for a microwave oven comprising a plurality of vanes as an anode, an antenna feeder mounted to the vanes, and a plurality of radially spaced grooves on the vanes for enabling selective fixing of said antenna feeder at a desired position and for obtaining a desired magnetron output by the selection of said grooves.

5,350,906

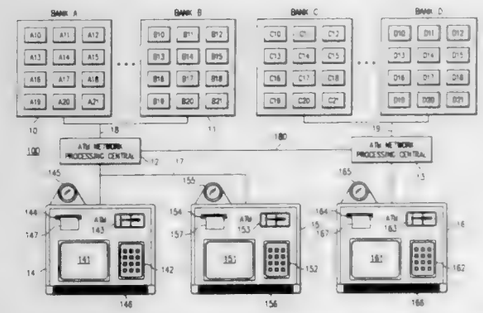
CURRENCY TRANSFER SYSTEM AND METHOD USING FIXED LIMIT CARDS

Bill E. Brody, 9254 Forest La., Apt. 904, Dallas, Dallas County, Tex. 75243, and David H. Tannenbaum, 14860 Oaks North Pl., Addison, Dallas County, Tex. 75001

Filed Nov. 25, 1992, Ser. No. 981,758

Int. Cl.[5] G06F *15/30*

U.S. Cl. 235—379 **6 Claims**



1. The method for currency management between a sender and a recipient using the existing ATM network, said method comprising the steps of:

accepting at an ATM from any one of said senders a temporary ATM card having a permanently preestablished currency value associated therewith; and

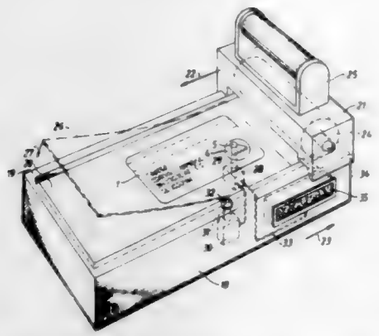
entering said preestablished amount as a credit in an existing ATM network accessible account and for thereupon establishing a password with respect to said established credit amount.

5,350,907

HANDLING SYSTEM FOR INFORMATION CARRIERS

Hans O. Sjöblom, Stockholm, Sweden, assignor to Utvecklings AB Jonic, Stockholm, Sweden

PCT No. PCT/SE90/00032, § 371 Date Jul. 8, 1992, § 102(e) Date Jul. 8, 1992, PCT Pub. No. WO91/10971, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 15, 1990, Ser. No. 910,098
Int. Cl.[5] G06K 5/00
U.S. Cl. 235—380 11 Claims



1. Handling system for information carriers, in particular so called credit cards and the like, comprising:
information storing means being externally communicated;
a first state imparting device;
a second state receiving and digesting device;
said information storing means being brought to communicate with the first and second devices in such a way that said first device imparts to the information storing means at least one state which, when the information storing means cooperates with said second device, is read and computed by said second device;
wherein the information storing means includes a chip circuit having a signal processing unit, and a memory circuit;
wherein said first state imparting device is arranged as a signal transmitter, the signal transmitter being in cooperation with the information storing means to activate the information storing means by inputting a code of authority state through operation means, the code of authority being arranged to be released by a sequential actuation of operating means; and
said second receiving and digesting device including an information reader and a signal transmitter, the information reader and the chip circuit initiating an elimination code to eliminate a state signal in the memory circuit of the information storing means upon detecting and reading a correct authority code.

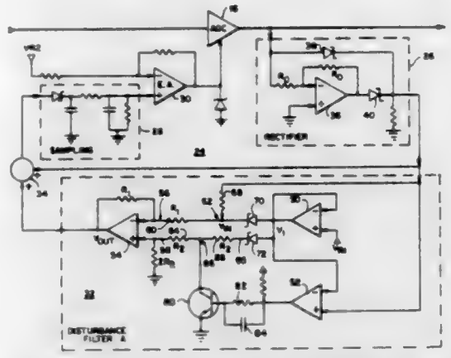
5,350,908

AUTOMATIC GAIN CONTROL CIRCUIT HAVING DISTURBANCE CANCELLATION CAPABILITIES

Richard D. Bechtel, Waukesha County, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Jun. 30, 1992, Ser. No. 906,333
Int. Cl.[5] H03G 3/32; G06K 7/10
U.S. Cl. 235—462 18 Claims

12. A disturbance filter for processing signals containing large amplitude disturbance events, comprising:
a differencing amplifier having a first input coupled for receiving an input signal, a second opposite polarity input connected to a level switching network and an output for supplying an output signal including only disturbance events;
means for clamping coupled to said first input to said differencing amplifier for clamping this input to a fixed voltage level when said input signal is below said fixed voltage level; and
a level shifting network coupled to the second input of said differencing amplifier for supplying a voltage signal to



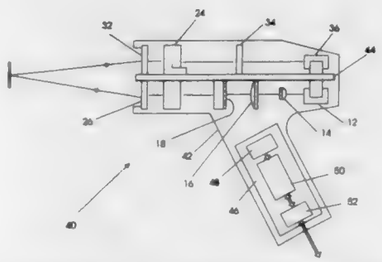
said second input and shifting the level of this voltage signal from said fixed voltage level to ground whenever said input signal exceeds said fixed voltage level and from ground to said fixed voltage level whenever said input signal is below said fixed voltage level.

5,350,909

OPTICAL SCANNER FOR BAR CODE SCANNING

Kenneth E. Powell, Boca Raton, and Deborah A. Mallory, Lantana, both of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 14, 1992, Ser. No. 960,656
Int. Cl.[5] G06K 7/10
U.S. Cl. 235—472 12 Claims



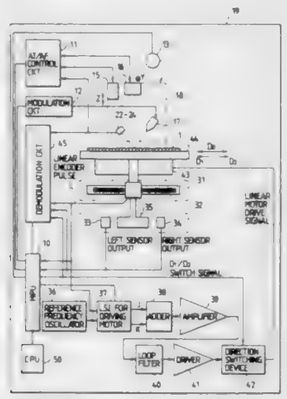
1. An optical scanner for scanning bar code data comprising:
a) a source of a beam of radiation;
b) optical means for deflecting the beam of radiation along an axis normal to the beam;
c) an electronic shutter element, optically coupled with the optical means, said shutter element defining a plurality of adjacent regions, each region independently capable of assuming a substantially transparent state;
d) digital logic, coupled to said shutter element, for causing said adjacent regions of said electronic shutter to assume said substantially transparent state, in a sequential, directional manner along said axis to affect directional transmission of less than all of the deflected beam onto the target;
e) a detector for detecting the presence of radiation reflected from the target;
f) second optical means, optically coupled to the detector, for converting the radiation reflected from the target to a beam and for focusing the beam on the detector; and
g) a baffle optically isolating the detector from the source, said baffle further optically partitioning each of said plurality of regions of the electronic shutter element into an emission subregion and a detection subregion to affect simultaneous transmission through one of said regions the deflected beam toward the target and said reflected radiation toward said detector.

5,350,910

OPTICAL CARD PROCESSING APPARATUS WITH MEANS FOR DETERMINING A RELATIVE POSITION BETWEEN HEAD AND CARD

Hiroto Kitai, and Takashi Nakahara, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 895,242, Jun. 8, 1992, abandoned, which is a continuation of Ser. No. 413,692, Sep. 28, 1989, abandoned. This application Oct. 19, 1993, Ser. No. 137,814
Claims priority, application Japan, Sep. 30, 1988, 63-244480; Nov. 29, 1988, 63-299729
Int. Cl.[5] G06K 13/067, 7/10
U.S. Cl. 235—479 11 Claims



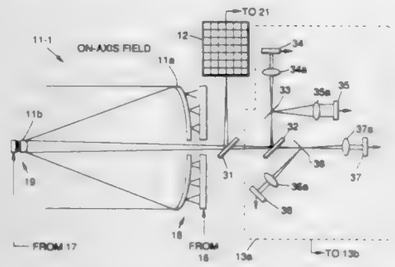
1. An information processing apparatus comprising:
a head for effecting at least one of recording of information on and reproducing of information from a recording medium;
a carriage loaded with the recording medium thereon and movable in a moving direction with respect to said head;
a first detector for determining an amount of shift between a position of the recording medium loaded on said carriage and a reference position on said carriage in the moving direction of said carriage, and for outputting a shift amount determination signal corresponding to the shift amount;
a second detector for detecting that said carriage is positioned at a first predetermined position, in the moving direction, and for outputting a position detection signal; and
an output circuit for receiving the shift amount determination signal and the position detection signal, and for outputting a signal indicating that the recording medium is positioned at a second predetermined position, with respect to said head, based on the shift amount determination signal and the position detection signal.

5,350,911

WAVEFRONT ERROR ESTIMATION DERIVED FROM OBSERVATION OF ARBITRARY UNKNOWN EXTENDED SCENES

Gerard L. Rafanelli, Fountain Valley, Calif.; Brent L. Ellerbroek, Albuquerque, N. Mex.; Susan B. Mount, Toorance, and Mark J. Rehfield, Ranch Palos Verde, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 9, 1993, Ser. No. 45,841
Int. Cl.[5] G01J 1/20
U.S. Cl. 250—201.9 12 Claims



1. A cross-correlation, extended scene, wavefront sensing method for use with an adaptive system for determining and correcting system wavefront errors from observation of unknown extended scenes, and wherein the adaptive system comprises a receiver, detection means coupled to the receiver, and processing means coupled to the detection means for producing signals that are adapted to correct for system wavefront errors, said wavefront sensing method comprising the steps of:
processing measured intensity distributions derived from signals received by the receiver and detection means to produce a spatially filtered transmitted intensity and a spatially filtered reflected intensity;
differencing the measured intensity distributions to form intensity difference signals;
generating a temporal cross-correlation, between each subaperture of the receiver and detection means and a reference subaperture from the intensity difference signals;
matched filtering the cross-correlated signals;
comparing the output of all of the matched filters and selecting the value of lead/lag time corresponding to the matched filter with maximum peak output to determine the wavefront slope difference; and
reconstructing the wavefront slope differences to produce an error estimate that is adapted to correct for the system wavefront errors.

5,350,912

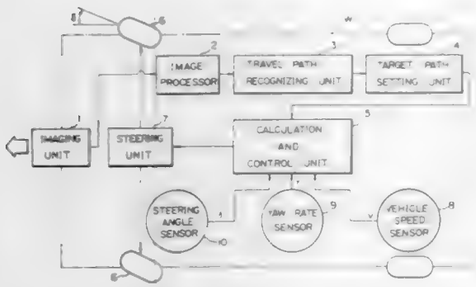
SYSTEM FOR CONTROLLING MOVEMENT OF A MOBILE BODY ALONG A TARGET PATH

Shinnosuke Ishida, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1993, Ser. No. 5,026
Claims priority, application Japan, Jan. 17, 1992, 4-006894
Int. Cl.[5] G05B 1/00
U.S. Cl. 250—202 11 Claims

1. A system for controlling movement of a mobile body substantially along a target path, comprising:
means for determining a target point on the target path;
means for determining a control quantity which will cause said mobile body to reach said target point from an original position;
means for determining a direction in which to move said mobile body toward said target point based on said control quantity;
means for determining an angular difference between said direction and said target path at the target point as a target point angular difference;

means for determining a target control quantity for the mobile body by correcting the control quantity such that the mobile body reaches the target point based on said target point angular difference; and



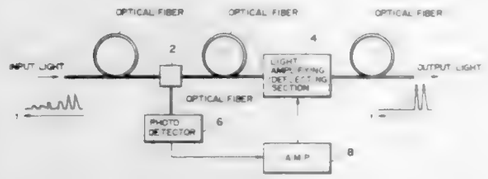
means for controlling said mobile body based on said target control quantity.

5,350,913

LIGHT PULSE INTENSITY REGENERATOR, LIGHT TRANFORMING REPEATER, PRE-AMPLIFIER FOR LIGHT SIGNAL, LIGHT INTENSITY CHANGE MEASURING APPARATUS, AND STABILIZED LIGHT SOURCE

Shinichiro Aoshima, and Isuke Hirano, both of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Apr. 23, 1993, Ser. No. 51,688
Claims priority, application Japan, Apr. 24, 1992, 4-106687
Int. Cl.[5] G01J *1/32*
U.S. Cl. 250—205 **28 Claims**



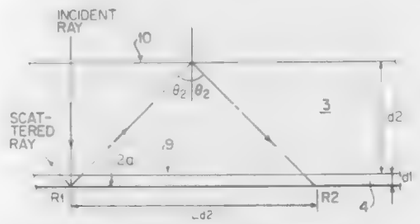
1. A light pulse intensity regenerating apparatus comprising:
separating means for separating incident light into a first beam and a second beam;
light detecting means for receiving said first beam from said separating means;
a light amplifying section for amplifying the second beam from said separating means in accordance with an amplitude of an electric signal output from said light detecting means;
a light deflecting section for deflecting the second beam in accordance with an amplitude of an electric signal output from said light detecting means; and
light limiting means for permitting only light having a deflection angle within a predetermined range out of output light from said light deflecting section to pass therethrough;
wherein control timings of said light amplifying section and of said light deflection section are adjusted with the electric signal from said light detecting means such that an amplification amount in said light amplifying section and a deflection amount in said light deflecting section reflect an intensity of light passing through said light amplifying section and an intensity of light through said light deflecting sections respectively.

5,350,914

IMAGE READING APPARATUS

Hiroyuki Hotta, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1992, Ser. No. 924,905
Claims priority, application Japan, Aug. 9, 1991, 3-223536
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **6 Claims**



1. An image reading apparatus comprising:
a substrate;
a plurality of photoelectric elements arranged in substantially the same plane on said substrate;
an adhesive layer of a transparent adhesive material formed on said photoelectric elements and a remaining portion of said substrate not underlying said photoelectric elements; and
a protective plate disposed on said adhesive layer, there being thus a lower boundary separating said protective plate and said adhesive layer and an upper boundary separating said protective plate and outside air, said protective plate made of a transparent material having a refractive index substantially equal to that of said adhesive layer;
wherein the following expression is satisfied,

$$d \geq L((n^2-1)^{\frac{1}{2}}/(4 \sin 0.9A))$$

where n is a refractive index common to said adhesive layer and said protective plate, d is the sum of the thicknesses of said adhesive layer and said protective plate, A represents as a percentage the ratio of the amount of light of secondary incidence on said photoelectric elements to the amount of light that originates from scattering at and around said photoelectric elements and then is totally reflected at said upper boundary, and L is the length of each of said photoelectric elements in the slow scan direction, wherein A is not more than 10%.

5,350,915

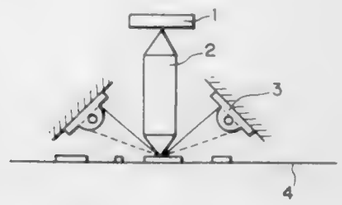
IMAGE SENSOR USING ORGANIC PHOTOCONDUCTOR

Kei Ishihara, Yokohama; Kiyoshi Matsuda, Yamato; Atsushi Tamaki, Machida; Masatoshi Katoh, Fujisawa; Tadahiko Hamaguchi, Kamakura, and Takashi Takeda, Kamakura, all of Japan, assignors to Mitsubishi Kasei Corporation and Mitsubishi Electric Corporation, both of Tokyo, Japan

Filed Jun. 17, 1993, Ser. No. 77,443
Claims priority, application Japan, Jun. 18, 1992, 4-159783
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **14 Claims**

1. An image sensor using an image reading element formed by integrating pixels for converting image information to an electric signal in which a common electrode common to all the pixels and an individual electrode corresponding to each of the pixels are disposed through at least an organic photoconductive layer;

a crosstalk capacitance between the individual electrodes being equal to or smaller than 35% of a sum of an electric



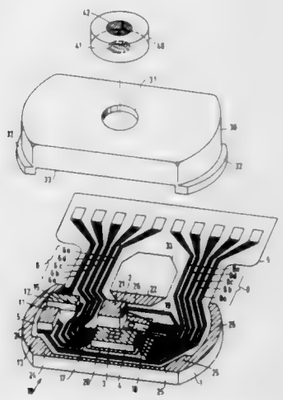
capacitance of each of the pixels and an output capacitance of the individual electrode.

5,350,916

OPTOELECTRONIC DEVICE AND METHOD OF MANUFACTURING SAME WITH AN ELECTRICALLY INSULATING MEDIUM HAVING A STRIP-SHAPED FLEXIBLE FOIL

Martinus P. M. Bierhoff; Peter Coops; Dirk C. Van Eck, and Joannes H. F. C. Sieben, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 30, 1993, Ser. No. 85,513
Claims priority, application European Pat. Off., Jul. 1, 1992, 92201960.9
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214.1 **13 Claims**



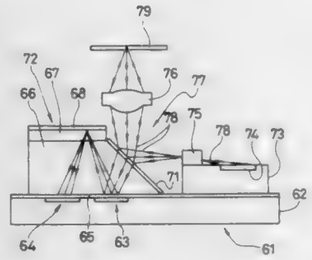
1. An optoelectronic device (**10**) comprising a thermally well-conducting carrier plate (**1**) provided with at least one optoelectronic component (**2**) comprising at least one semiconductor diode laser (**2**), which carrier plate (**1**) is provided with connection conductors (**6**, **8**) which are separated from the carrier plate (**1**) by means of an electrically insulating medium (**5**) and to which the optoelectronic components (**2**) provided on the carrier plate (**1**) are connected by means of electrical connections (**19**, **21**), characterized in that the electrically insulating medium (**5**) comprises a strip-shaped flexible foil (**5**) in which the connection conductors (**6**, **8**) are present in the form of conductor tracks (**6**,**8**), while the flexible foil (**5**) extends beyond and above the carrier plate (**1**), is fastened thereon, and comprises a void (**20**) above the carrier plate (**1**), within which void at least the semiconductor diode laser (**2**) is present.

5,350,917

OPTO-MAGNETIC RECORDING POLARIZATION OPTICAL APPARATUS INCLUDING A LASER DIODE AND A LIGHT ABSORBING FILM

Tadashi Taniguchi, and Chiaki Kojima, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 996,149
Claims priority, application Japan, Dec. 27, 1991, 3-359406; Jan. 21, 1992, 4-030044; Jan. 24, 1992, 4-034205
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—216 **4 Claims**



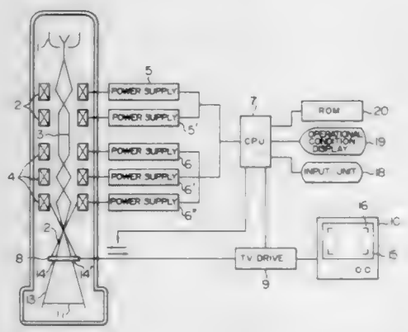
1. An optical apparatus comprising a structure in which a plurality of light-receiving elements are mounted on a substrate, a prism mounted on said plurality of light-receiving elements, and an optical semitransparent film mounted between said light-receiving elements and said prism, and
a light-absorbing film mounted between said light-receiving element and said optical semitransparent film.

5,350,918

TRANSMISSION ELECTRON MICROSCOPE

Sadao Terakado, Katsuta; Hiroyuki Kobayashi, Mito, and Morioki Kubozoe, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Science Systems, Ltd., Katsuta, both of Japan

Filed Aug. 27, 1992, Ser. No. 936,008
Claims priority, application Japan, Aug. 30, 1991, 3-219592
Int. Cl.[5] H01J *37/26*
U.S. Cl. 250—311 **8 Claims**



1. A transmission electron microscope comprising an electron gun, an illuminating lens system for irradiating an electron beam from said electron gun onto a specimen, an image formation lens system for forming an enlarged transmission image of said specimen on a record surface of image photographing record means, an image observing display apparatus having a display screen for displaying the enlarged transmission image of said specimen, a photographing view field range detecting apparatus for determining a specimen image range to be recorded by said image photographing record means, and a manifesting apparatus for showing on said display screen said specimen image range to be recorded.

5,350,919

QUANTITATIVE ANALYZING METHOD BY A SECONDARY ION MASS SPECTROMETRIC METHOD AND A SECONDARY ION MASS SPECTROMETER

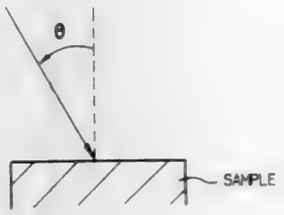
Takashi Hirano; Takeshige Tanigaki, and Hideki Kimura, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 1, 1993, Ser. No. 84,476

Claims priority, application Japan, Sep. 17, 1991, 3-265172; Jul. 7, 1992, 4-202975

Int. Cl.[5] H01J *49/26*

U.S. Cl. 250—282 **3 Claims**



1. A quantitative analyzing method by a secondary ion mass spectrometric method whereby a target element in a sample to be analyzed is quantitatively analyzed by the secondary ion mass spectrometric method, comprising the steps of:

quantitatively analyzing said target element by the secondary ion mass spectrometric method with respect to a plurality of ion-implanted standard samples, while changing an implantation energy; and

correcting a secondary ion intensity which is obtained with respect to said target element in the surface layer of said sample to be analyzed by the secondary ion mass spectrometric method on the basis of the results of the quantitative analyses with respect to said plurality of standard samples.

5,350,920

ION BEAM ANALYZING APPARATUS

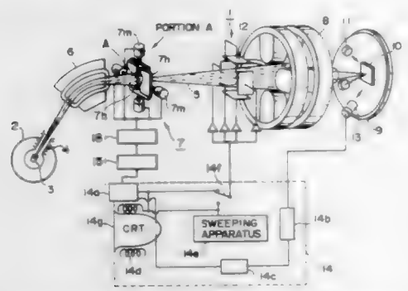
Hirofumi Fukuyama; Tatuya Noguchi; Kenichi Inoue; Kiyotaka Ishibashi, and Shigeto Adachi, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Dec. 22, 1992, Ser. No. 994,953

Claims priority, application Japan, Dec. 25, 1991, 3-343358; Nov. 19, 1992, 4-310360

Int. Cl.[5] H01J *37/28*

U.S. Cl. 250—309 **7 Claims**



1. An ion beam analyzing apparatus for irradiating an ion beam upon a specimen to analyze a small area of the specimen, comprising:

an ion accelerator for accelerating ions generated from an ion source to form an ion beam;

a vacuum chamber for accommodating therein a specimen to be analyzed, said vacuum chamber including a secondary electron detector;

an objective collimator interposed between said ion accelerator and said vacuum chamber for varying a size of a slit of a slit device to restrict the ion beam;

a magnetic lens interposed between said ion accelerator and said vacuum chamber for converging and irradiating the ion beam upon the specimen in said vacuum chamber to form a beam spot on the specimen;

a deflecting electrode device disposed between said ion accelerator and said vacuum chamber for scanning the beam spot on the specimen when a high frequency potential is applied thereto or a high frequency current is supplied thereto;

display means for displaying thereon a position of the beam spot on the specimen and a detection signal detected by said secondary electron detector in synchronism with the deflecting electrode device as a secondary electron image; and

calculating means for calculating dimensions of the beam spot in accordance with size data of said slit of said slit device and displaying on the display means an image in accordance with the thus calculated dimensions of the beam spot.

5,350,921

ANALYTICAL ELECTRON MICROSCOPE AND A METHOD OF OPERATING SUCH AN ELECTRON MICROSCOPE

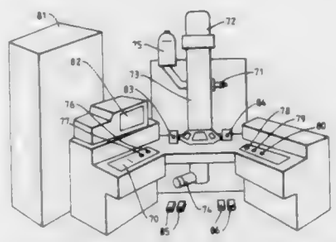
Takashi Aoyama, Tokai, and Yutaka Misawa, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 23, 1993, Ser. No. 94,955

Claims priority, application Japan, Jul. 29, 1992, 4-202314

Int. Cl.[5] H01J *37/26;* **G01N** *23/00*

U.S. Cl. 250—311 **26 Claims**



1. An analytical electron microscope, comprising:

means for specifying a desired object of a sample to be detected by said analytical electron microscope;

means for generating an electron beam and for causing said electron beam to be incident on the sample;

means for detecting the effect of said sample on said electron beam thereby to detect detected objects in said sample; and

analysis means for identifying automatically at least one of:

i) object shape

ii) change of thickness

iii) change of element for each of said detected objects, and for determining which of said detected objects corresponds to said desired object on the basis of the automatic identification.

5,350,922

UNDERWATER LIGHT SCATTERING SENSOR

Robert Bartz, 353356 Riverside Dr., Albany, Oreg. 97321

Filed Mar. 22, 1993, Ser. No. 35,256

Int. Cl.[5] G01N *21/49*

U.S. Cl. 260—388.5 **16 Claims**

1. A light scattering sensor that detects forward scattered light, back scattered light and multiple scattered light to measure suspended particle concentrations in water, comprising:

a support;

a light source mounted on the support so as to radiate light radiation into water at all angles within a first angle of radiance distribution;

a light detector mounted on the support so as to receive light radiation from the water at all angles within a second angle of irradiance distribution; and

a light stop mounted between the light source and the light detector to block any direct transmission of light from the light source to the light detector;

said first and second angles defining a particle sensing region for sensing forward scattered light, back scattered light and multiple scattered light.

5,350,923

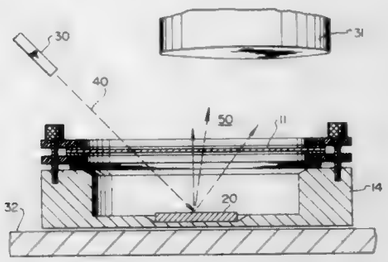
APPARATUS FOR USE WITH ANALYTICAL MEASURING INSTRUMENTS USING ELECTROMAGNETIC RADIATION ANALYSIS METHODS

Isabella C. Bassignana, and Tibor F. I. Kovats, both of Ottawa, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 833,470, Feb. 6, 1992, abandoned. This application Dec. 23, 1992, Ser. No. 996,411

Int. Cl.[5] H01J *37/20*

U.S. Cl. 250—453.11 **9 Claims**



1. An apparatus for use in performing non contact analytical evaluation of a semiconductor wafer, comprising a sealable container having wall means defining a chamber, which upon sealing the container is then isolated; the sealable container also comprising:

window means into the sealable container, the window means comprising a planar membrane composed solely of a substantially non-crystalline organic polymer, the window means being capable of allowing a probe beam of radiant energy of wavelengths corresponding to X-ray, visible light, or ultra-violet light frequency bands, suitable for non contact analytical evaluation of the semiconductor wafer to pass therethrough into the isolated chamber while non-substantially affecting diffraction and attentuation of the beam and which is capable of passing radiant energy outwardly from the isolated chamber while non-substantially affecting the diffraction and attenuation of the radiant energy;

releasable securing means to secure the window means to the wall means and over an opening to the chamber and to enable removal of the window means to allow for insertion of a wafer through the opening and into the chamber;

sealing means to seal the window means to the wall means when the window means is secured to the wall means; and

positioning means for positioning the semiconductor wafer within the isolated chamber in a location aligned with the window means to allow the probe beam of radiant energy to be directed through the window means at the semiconductor wafer and to allow radiant energy to pass outwardly from the semiconductor wafer within the chamber.

5,350,924

ION-OPTICAL IMAGING SYSTEM

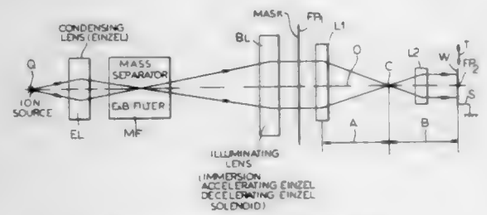
Gerhard Stengl, Karnten, and Alfred Chalupka, Vienna, both of Austria, assignors to IMS Ionen Mikrofabrikations Systems Gesellschaft m.b.H., Vienna, Austria

Filed Jul. 10, 1992, Ser. No. 912,099

Claims priority, application Austria, Jul. 10, 1991, 1388/91

Int. Cl.[5] H01J *37/317*

U.S. Cl. 250—492.2 **12 Claims**



1. An ion-optical imaging system, comprising:

a mask having a structure to be imaged upon a wafer and including at least one opening;

means for supporting the wafer upon which said structure is to be imaged at a distance from said mask along an optical axis; and

a lens system disposed between said mask and said wafer and essentially consisting of a set of two collecting lenses including a first collecting lens following said mask along said axis in a direction of ion beam travel toward said wafer, and a second collecting lens spaced from the first collecting lens along said axis in said direction,

said mask being disposed approximately in an object-side focal plane of the first collecting lens,

the wafer being positioned in a vicinity of an image-side focal plane of the second collecting lens following the mask, and

the set is constituted of one of the following lens-type sets:

(a) two accelerating Einzel lenses;

(b) an accelerating immersion lens and a decelerating immersion lens wherein the accelerating immersion lens is the first collecting lens following the mask;

(c) an accelerating immersion lens and a decelerating asymmetric Einzel lens wherein the accelerating immersion lens is the first collecting lens following the mask;

(d) an accelerating asymmetric Einzel lens and a decelerating immersion lens wherein the accelerating asymmetric Einzel lens is the first collecting lens following the mask; and

(e) an accelerating asymmetric Einzel lens and a decelerating asymmetric Einzel lens wherein the accelerating asymmetric Einzel lens is the first collecting lens following the mask.

5,350,925

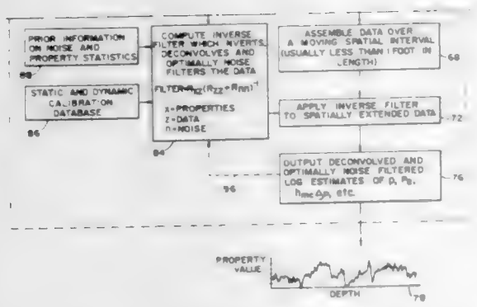
METHODS FOR DETERMINING VALUES FOR EARTH FORMATION PROPERTIES

Charles C. Watson, Danbury, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 568,282, Aug. 16, 1990, Pat. No. 5,282,133, which is a continuation-in-part of Ser. No. 281,577, Dec. 8, 1988, Pat. No. 4,958,073. This application Dec. 22, 1993, Ser. No. 171,503

Int. Cl.[5] G01V *5/00*

U.S. Cl. 250—269.3 **17 Claims**



1. A method for determining values for at least one earth formation property or at least one borehole environmental property at at least one depth in a formation, utilizing a borehole tool having a nuclear source, a first gamma ray detector spaced apart from said nuclear source by a first distance, and a second gamma ray detector spaced from said nuclear source by a second distance, and utilizing a data processing means and means for providing to said data processing means from said borehole tool spectral data indicative of gamma rays detected by said first and second gamma ray detectors in a plurality of energy channels over a plurality of periods of time, said method comprising:

a) running said borehole tool in a borehole and obtaining sets of data indicative of radiation detected by said first and second gamma ray detectors in a plurality of energy channels over a plurality of periods of time relating to a plurality of locations of said borehole tool in said borehole;

b) compressing said sets of data indicative of radiation detected by said first and second gamma ray detectors at a plurality of locations to obtain first sets of compressed data for said first gamma ray detector and second sets of compressed data for said second gamma ray detector; and

c) applying a first plurality of said first sets of compressed data and a second plurality of said second sets of said compressed data to an inverse filter comprised of a spatial deconvolution inversion matrix representing the relationship of said at least one earth formation property to the distribution of said spectral data in said plurality of energy channels, and obtaining therefrom at least one value for said at least one earth formation property,

wherein said first plurality of first sets of compressed data and said second plurality of second sets of compressed data represent data collected at non-coextensive periods of time.

5,350,926

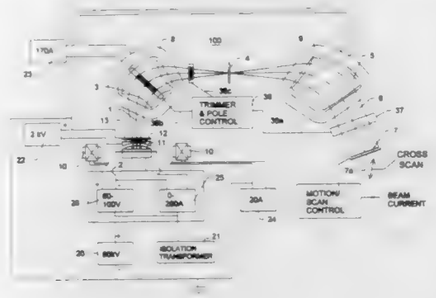
COMPACT HIGH CURRENT BROAD BEAM ION IMPLANTER

Nicholas R. White, Wenham, Mass.; Manny Sieradzki, Gloucester, and Anthony Renau, West Newbury, all of Mass., assignors to Diamond Semiconductor Group, Inc., Gloucester, Mass.

Filed Mar. 11, 1993, Ser. No. 29,766

Int. Cl.[5] H01J *37/317*

U.S. Cl. 250—492.21 **23 Claims**



1. A ion implanter apparatus for implanting a uniform dose of ions into a workpiece, such apparatus comprising:

an ion source that produces a beam having a shape with transverse length and width dimensions, the beam diverging in both length and width directions and being substantially uniform in current density in at least one transverse dimension,

an analyzing magnet to refocus said beam through a resolving aperture and reject unwanted components of said beam,

a second magnet to accept, deflect and shape the beam after transmission through said resolving aperture, into an output beam for implanting a workpiece,

said analyzing magnet and second magnet together expanding and altering trajectories of the beam produced by the ion source such that the output beam is a ribbon shaped beam of substantially parallel ion trajectories, and is longer than the workpiece in one of said transverse dimensions, substantially smaller in the other of said transverse dimensions, and substantially uniform in current density along said longer dimension.

5,350,927

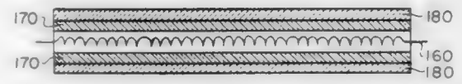
RADIATION EMITTING CERAMIC MATERIALS AND DEVICES CONTAINING SAME

Roustam K. Rakhimov, and Elena V. Kim, both of Tashkent, Uzbekistan, assignors to Mitech Scientific Corp., Flanders, N.J.

Filed Jun. 17, 1992, Ser. No. 900,228

Int. Cl.[5] H05B *3/10*

U.S. Cl. 250—504 R **23 Claims**



1. An apparatus for drying or sterilizing articles comprising:

a chamber for receiving articles to be dried or sterilized;

means for providing energy within the chamber; and

a first ceramic material comprising a rare earth chromium oxide composition and a stabilizing composition comprising sufficient amounts of an alkaline earth spinel and an alkaline earth chromate which, in combination, stabilize the rare earth chromium oxide composition, wherein said ceramic material is associated with the chamber for receiving and absorbing energy from the providing means and for emitting infrared radiation of one or more selective wavelengths which radiation is directed toward the articles for drying or sterilization thereof.

5,350,928

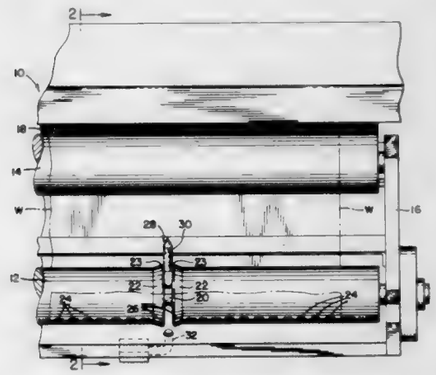
APPARATUS AND METHOD FOR DETECTING PERFORATIONS

Peter J. Hatchell, New Franken; Danford C. Anderson, Green Bay, and Ronald L. Lotto, Bonduel, all of Wis., assignors to FMC Corporation, Chicago, Ill.

Filed Feb. 11, 1993, Ser. No. 16,340

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—548 **4 Claims**



1. An apparatus for use in a system for making bags from a continuous web or sheet of film material, the system including means for imparting series of transverse perforations onto the web at regularly spaced intervals, which comprises:

a spreader roll having a reduced diameter portion between two enlarged diameter portions;

wherein the enlarged diameter portions cause a portion of each series Of perforations to pull apart and form a gap as the web is drawn over the spreader roll; and

switch means located adjacent the reduced diameter portion for detecting each gap.

5,350,929

ALIGNMENT SYSTEM FOR MULTIPLE COLOR PEN CARTRIDGES

William D. Meyer, Ramona; Jeffrey A. Sunamoto, and Mark W. Majette, both of San Diego, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 878,958, May 4, 1992, Pat. No. 5,276,467. This application Oct. 4, 1993, Ser. No. 131,795

Int. Cl.[5] G01D *18/00;* **G01V** *9/04*

U.S. Cl. 250—573 **4 Claims**

1. An optical ink drop detector for detecting the presence of an ink drop that passes through an aperture plate, comprising:

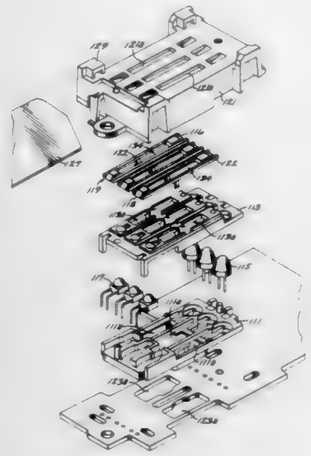
a light source for providing source illumination directed toward the aperture plate;

optical means for bending said source illumination to provide detection illumination that is parallel to and adjacent to said aperture plate;

second optical means spaced from said first optical means for bending said detection illumination to provide sensor illumination directed away from the aperture plate; and

an optical sensor responsive to said sensor illumination;

whereby said detection beam defines a detection zone adjacent to the aperture plate and whereby the presence of an ink drop in the detection zone is detected by a decrease in the amount of sensor illumination detected by said optical sensor.



5,350,930

CLUSTER COMPOUND MICROELECTRONIC COMPONENT

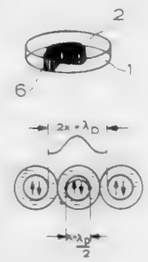
Günter Schmid, Klippe 39 B, 5620 Velbert 11; Günter Schön, Lieversbank 16, 4300 Essen 13, and Ulrich Simon, Ottenkämperweg 36, 4300 Essen 12, all of Fed. Rep. of Germany

Filed Mar. 31, 1993, Ser. No. 41,239

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1992, 4212220; Dec. 15, 1992, 4242367

Int. Cl.[5] H01L *27/12, 29/161*

U.S. Cl. 257—14 **38 Claims**



1. Microelectronic component having a component body comprised of at least one molecular cluster of a cluster compound, said molecular cluster having a metallic cluster nucleus and an insulating ligand shell externally shielding and stabilizing the cluster nucleus in a manner enabling excitation of free electrons in the cluster nucleus by action of an external excitation parameter on the at least one molecular cluster and means for applying said external excitation parameter to the component body.

5,350,931

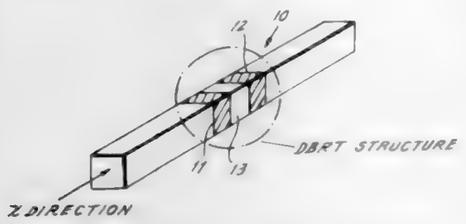
DOUBLE BARRIER RESONANT PROPAGATION FILTER

James F. Harvey, Tinton Falls, and Robert A. Lux, Toms River, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 736,886, Jul. 29, 1991, abandoned. This application May 19, 1993, Ser. No. 64,774

Int. Cl.[5] H01L *29/161, 27/12, 29/68*

U.S. Cl. 257—14 6 Claims



1. A resonant propagation filter for applications in quantum wire waveguide comprising:

first and second regions of a first semiconductor material having a first conduction band edge energy; and

a third region of a second semiconductor material with a second conduction band edge energy which is lower than that of said first and second regions, the third region being disposed between said first and second regions;

a first quantum wire waveguide having a conduction band edge energy similar to the third region;

wherein the first, second and third regions form a resonant tunneling structure and wherein said resonant tunneling structure is disposed within said electron waveguide such that the lateral dimensions of the resonant tunneling structure are constrained thereby permitting only a predetermined range of electron momenta in a direction of electron propagation and only discrete values of momentum in the lateral directions;

said filter permitting predetermined propagating modes to pass through said waveguide.

5,350,932

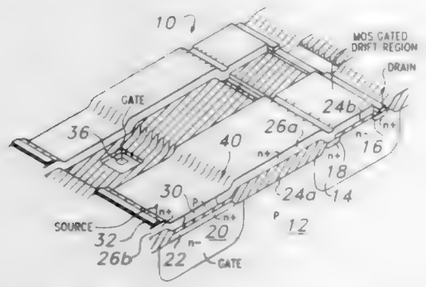
HIGH VOLTAGE STRUCTURES WITH OXIDE ISOLATED SOURCE AND RESURF DRIFT REGION IN BULK SILICON

Satwinder Malhi, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 92,664, Jul. 15, 1993, abandoned, which is a continuation of Ser. No. 857,861, Mar. 26, 1992, abandoned. This application Dec. 17, 1993, Ser. No. 169,731

Int. Cl.[5] H04L *29/10*

U.S. Cl. 257—67 15 Claims



1. A high voltage power transistor, comprising:

a source isolated, embedded gate MOS transistor having a gate region formed in a semiconductor substrate, and having a source region, a drain region, and a channel region, wherein the source region and the drain region are separated by the channel region which is located above the gate region and the source region, drain region and channel region overlie an insulating layer covering a portion of the substrate; and

a bulk semiconductor drain drift region connected to the drain region through an opening in the insulating layer of the source isolated, embedded gate MOS transistor.

5,350,933

SEMICONDUCTOR CMOS STATIC RAM WITH OVERLAPPING THIN FILM TRANSISTORS

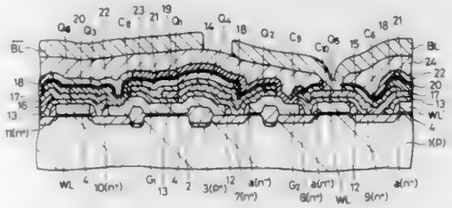
Ikuo Yoshihara, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Feb. 19, 1991, Ser. No. 656,596

Claims priority, application Japan, Feb. 21, 1990, 2-40666; Oct. 26, 1990, 2-290162

Int. Cl.[5] H01L *29/10*

U.S. Cl. 257—69 4 Claims



1. A semiconductor memory comprising a memory cell having a flip-flop circuit consisting of a pair of driver transistors of a first conductivity type channel and a pair of load transistors of a second conductivity type channel, and a pair of access transistors,

wherein said pair of load transistors of the second conductivity type channel are formed by semiconductor thin films wherein each of the pair of load transistors have a channel region and a drain region such that the drain region of one of said pair of load transistors of the second conductivity type channel overlaps the channel region of the other of the pair of load transistors through a gate insulating film and the drain region of the other of the pair of load transistors overlap the channel region of the one of the pair of load transistors through the gate insulating film.

5,350,934

CONDUCTIVITY MODULATION TYPE INSULATED GATE FIELD EFFECT TRANSISTOR

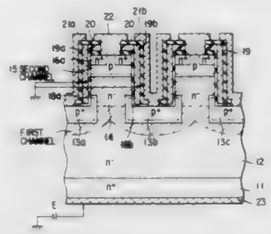
Tadashi Matsuda, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 4, 1993, Ser. No. 26,420

Claims priority, application Japan, Mar. 5, 1992, 4-048316

Int. Cl.[5] H01L *29/10*

U.S. Cl. 257—139 2 Claims



1. A conductivity modulation type insulated gate field effect transistor comprising:

a semiconductor substrate of a first conductivity type;

a first low concentration impurity layer of the first conductivity type formed on one major surface of the semiconductor substrate;

a pair of first gates oppositely formed in the first low concentration impurity layer, with a first channel region of a given width therebetween, and having a high concentration impurity of a second conductivity type;

a second low concentration impurity layer of the first conductivity type formed over the first channel region and first gates;

a second channel region of the second conductivity type formed on the second low concentration impurity layer;

a pair of sources oppositely formed in the second channel region with their center aligned with a center of the first gates, each of said sources being formed of a high concentration impurity layer of the first conductivity type;

a pair of gate oxide films which are oppositely formed, said gate oxide films surrounding the sources, second channel region, and second low concentration impurity layer and partially sandwiching the first gates therebetween;

a pair of second gate electrodes formed on the gate oxide films, respectively;

a pair of first gate electrodes formed in ohmic contact with the first gates, respectively;

a source electrode formed in ohmic contact with each of said sources and second channel region; and

a drain electrode formed on the other major surface of the semiconductor substrate in an ohmic contact fashion.

5,350,935

SEMICONDUCTOR DEVICE WITH IMPROVED TURN-OFF CAPABILITY

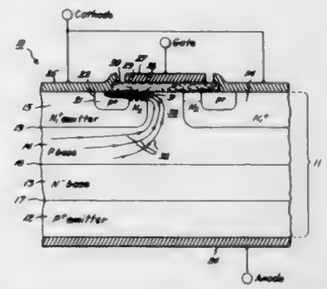
Victor A. K. Temple, Clifton Park, N.Y., assignor to Harris Corporation, Melbourne, Fla.

Continuation-in-part of Ser. No. 663,780, Mar. 4, 1991, Pat. No. 5,111,268, which is a continuation of Ser. No. 707,309, Mar. 1, 1985, which is a continuation of Ser. No. 391,620, Jun. 24, 1982, abandoned, which is a continuation-in-part of Ser. No. 331,049, Dec. 16, 1981, abandoned. This application Mar. 6, 1992, Ser. No. 847,789

The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.

Int. Cl.[5] H01L *27/082, 29/70, 29/74*

U.S. Cl. 257—147 2 Claims



1. A metal-oxide-semiconductor turn-off thyristor comprising:

a body of semiconductor material comprising first, second, and third layers of semiconductor material wherein said first and third layers are of one type conductivity and said second layer is of an opposite type conductivity,

a fourth region of said opposite type conductivity disposed within said third layer,

a fifth region of said one type conductivity disposed within said fourth region and connected to said third layer by a channel through said fourth region,

a first electrode making electrical contact with said first layer,

a second electrode making electrical contact with said fourth and fifth regions, and

an insulated gate electrode disposed over a portion of said third layer and said fourth and fifth regions to control conduction through said channel for coupling one type conductivity carriers from said third layer through the channel to said fifth region and thereby control conduction in a bypass current path from said third layer through said fourth region into said fifth region;

said thyristor having an ON-state current path extending from said first electrode through said first layer, said second layer, said third layer and said fourth region to said second electrode;

said fourth region having a small enough lateral extent and said third layer and said channel having a low enough resistance under appropriate gate bias conditions to divert enough ON-state current into said bypass current path to turn said thyristor off;

said gate electrode being insulated from said portion of said third layer.

5,350,936

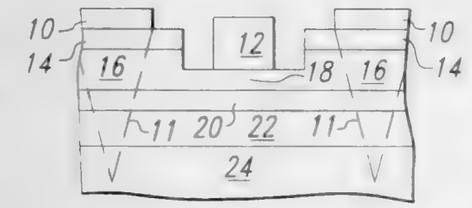
LINEAR FIELD EFFECT TRANSISTOR

Pertti K. Ikalainen, Allen, and Larry C. Witkowski, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 19, 1993, Ser. No. 93,376

Int. Cl.[5] H01L *29/80*

U.S. Cl. 257—194 15 Claims



1. A field effect transistor comprising:

a channel between a source and a drain, said channel comprising:

a first region of a first semiconductor material having a first doping concentration;

a second region of a second semiconductor material having a second doping concentration, said second region lying above said first region;

a third region of said first semiconductor material having a third doping concentration, said third region lying above said second region, wherein said first doping concentration is higher than said second and third doping concentrations; and

a gate electrode lying above said third region, whereby an electrical current flows in said channel primarily in said first region or primarily in said second region by varying a voltage on said gate electrode.

5,350,937

NON-VOLATILE MEMORY DEVICE HAVING A FLOATING GATE

Shunpei Yamazaki, Tokyo, and Yasuhiko Takemura, Kanagawa, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Oct. 7, 1992, Ser. No. 957,095

Claims priority, application Japan, Oct. 8, 1991, 3-290720

Int. Cl.[5] H01L *29/68, 29/78, 27/10*

U.S. Cl. 257—316 12 Claims

12. A semiconductor device comprising:

a semiconductor substrate having a plurality of protrusions

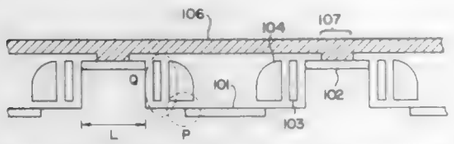
in the form of a matrix, each of said protrusion having an upper portion and a side surface;

non-volatile memory devices associated with said protrusions, wherein each of said memory device comprises:

a first impurity region formed in the upper portion of said protrusion;

a second impurity region formed in a surface portion of said semiconductor substrate adjacent to said protrusion;

a floating gate formed adjacent to the side surface of said protrusion with a first insulating layer therebetween; and



as gate electrode formed adjacent to said floating gate with a second insulating film therebetween,

a plurality of first lines connected with the first impurity regions arranged in one of a column and row direction of said matrix;

a plurality of second lines connected with the second impurity regions arranged in the other of said row and column directions along which the first lines extend;

a plurality of gate lines connected with the gate electrodes arranged in one of said column and row directions.

5,350,938

NONVOLATILE SEMICONDUCTOR MEMORY CIRCUIT WITH HIGH SPEED READ-OUT

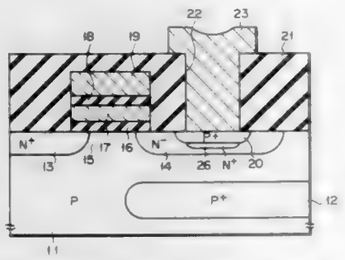
Naohiro Matsukawa, Kamakura, and Junichi Miyamoto, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 26, 1991, Ser. No. 721,702

Claims priority, application Japan, Jun. 27, 1990, 2-166913

Int. Cl.[5] H01L *29/68*

U.S. Cl. 257—378 **13 Claims**



1. A nonvolatile semiconductor memory device, comprising:

a semiconductor body of a first conductivity type having a major surface;

a MOS transistor, comprising:

first and second spaced regions of a second conductivity type in said major surface of said semiconductor body, each of said first and second spaced regions having a surface;

a first insulating layer on said major surface of said semiconductor body and extending at least between said first and second spaced regions;

a first gate on said first insulating layer;

a second insulating layer on said first gate; and

a second gate on said second insulating layer:

a bipolar transistor, comprising:

an emitter region of the first conductivity type, said emitter region formed on said surface of said second spaced region and in contact therewith, said second spaced region comprising a base of said bipolar transistor, and said semiconductor body comprising a collector of said bipolar transistor;

a semiconductor layer containing an impurity of the first conductivity type on said emitter region;

a collector contact region comprising a buried region of the first conductivity type within said semiconductor body and spaced from said major surface thereof; and

a voltage supply circuit for supplying a first voltage having a first polarity to said second gate, a second voltage having the first polarity to said first spaced region, and a third voltage to said emitter region, the third voltage having a second polarity and a value approximately equal to a reverse junction breakdown voltage between said emitter region and said second spaced region, to thereby generate a channel current between said first and second spaced regions and inject hot carriers generated by the channel current into said first gate for data writing.

5,350,939

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THEREOF

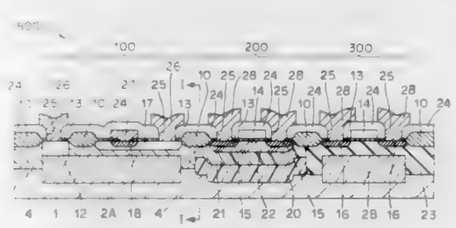
Hiroki Honda; Kimiharu Uga; Masahiro Ishida, and Yoshiyuki Ishigaki, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1993, Ser. No. 37,141

Claims priority, application Japan, Apr. 3, 1992, 4-082483; Feb. 1, 1993, 5-014890

Int. Cl.[5] H01L *27/02*

U.S. Cl. 257—378 **9 Claims**



1. A semiconductor device, comprising:

a semiconductor substrate of a first conductivity type;

an epitaxial layer of a second conductivity type formed on the main surface of the semiconductor substrate;

an isolation oxide film formed surrounding an active region in the surface of the epitaxial layer;

a well of a first conductivity type formed having a predetermined depth from the surface of said epitaxial layer of said active region;

a channel stop layer of a first conductivity type formed having the peripheral top portion contacting the bottom face of said isolation oxide film, surrounding the bottom face of said well of a first conductivity type, and having the bottom face of said channel stop layer of a first conductivity type positioned higher than the main surface of said semiconductor substrate; and

a buried layer of a first conductivity type buried having the top face contacting the bottom face of said channel stop layer of a first conductivity type and the bottom face of said buried layer of a first conductivity type positioned lower than the main surface of said semiconductor substrate,

wherein the well has a peak impurity concentration located at a depth below its top face and above its bottom face, the channel stop layer has a peak impurity concentration located at a depth below its top face and above its bottom face, and the buried layer has a peak impurity concentration located at a depth below its top face and above its bottom face, and

further wherein the bottom face of the well and the top face of the channel stop layer are located where a decrease in the impurity concentration from the maximum in the well ends and an increase in the impurity concentration toward the maximum in the channel stop layer begins, and the bottom face of the channel stop layer and the top face of the buried layer are located where a decrease in the impurity concentration from the maximum in the channel stop layer ends and an increase in the impurity concentration toward the maximum in the buried layer begins.

5,350,940

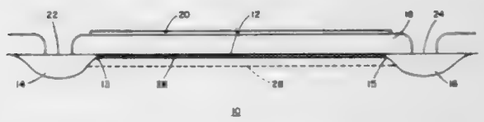
ENHANCED MOBILITY METAL OXIDE SEMICONDUCTOR DEVICES

Mehmet Rona, Belmont, Mass., assignor to Fastran, Inc., Boston, Mass.

Continuation of Ser. No. 492,700, Mar. 13, 1990, abandoned, which is a continuation of Ser. No. 62,002, Jun. 12, 1987, abandoned, which is a continuation of Ser. No. 576,345, Feb. 2, 1984, abandoned. This application Dec. 6, 1991, Ser. No. 804,334

Int. Cl.[5] H01L *29/72*

U.S. Cl. 257—402 **8 Claims**



1. A semiconductor device comprising:

a bulk of semiconductor material, having a predetermined concentration of impurity atoms selected from the group consisting of donors and acceptors, and having a substantially planar surface thereon and spaced apart source and drain regions embedded therein at said planar surface, said source and drain regions having a predetermined concentration of impurity atoms consisting of the impurity atoms in said Bulk of semiconductor material and the source and drain regions spaced one from the other defining a channel, of about 2.0 micrometers to 3.5 micrometers length, therebetween having a planar surface thereon;

A layer of substantially undoped semiconductor material contiguous with said channel and deposited on said channel planar surface with said layer of undoped semiconductor material having a thickness of about 100A to about 500A said bulk semiconductôr material and said undoped semiconductor material being made of silicon;

an electrically insulating layer contiguous with said undoped layer and deposited thereon, and at most a portion of said electrically insulating layer contiguous with and deposited on said source and drain regions; and

an electrical charge conduction layer deposited on said electrically insulating layer and electrically separate from said source and drain regions.

5,350,941

TRENCH ISOLATION STRUCTURE HAVING A TRENCH FORMED IN A LOCOS STRUCTURE AND A CHANNEL STOP REGION ON THE SIDEWALLS OF THE TRENCH

Sudhir K. Madan, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 23, 1992, Ser. No. 949,656

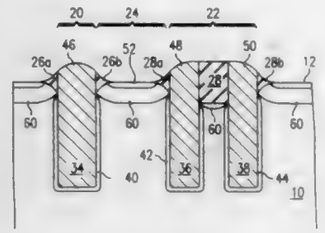
Int. Cl.[5] H01L *27/02*

U.S. Cl. 257—647 **15 Claims**

1. An isolation structure formed in a semiconductor layer between first and second active regions in order to electrically isolate the first and second active regions one from the other, the semiconductor layer comprising an outer surface, the isolation structure comprising:

a LOCOS structure formed on the outer surface, said LOCOS structure comprising a first bird's beak structure disposed laterally adjacent the first active region and a second bird's beak structure disposed laterally adjacent the second active region;

a trench plug disposed in a trench formed through said LOCOS structure between said first and second bird's



beak structures and in said semiconductor layer, said trench comprising sidewalls defining an interface between said trench plug and the semiconductor layer; and a channel stop region located in said sidewalls of said trench.

5,350,942

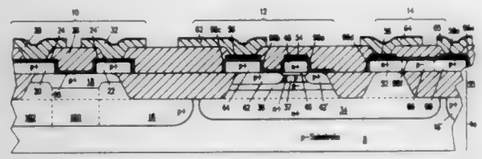
LOW RESISTANCE SILICIDED SUBSTRATE CONTACT

Rick C. Jerome, Puyallup, Wash., and Frank Marazita, San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 887,515, May 21, 1992, abandoned, which is a division of Ser. No. 503,344, Apr. 2, 1990, Pat. No. 5,139,966. This application Aug. 9, 1993, Ser. No. 104,386

Int. Cl.[5] H01L *23/48, 29/44, 29/54, 29/60*

U.S. Cl. 257—648 **4 Claims**



1. In an integrated circuit a substrate contact comprising:

a p+ doped channel stop region formed in a substrate and spaced apart from a top surface of said substrate;

a p+ doped extrinsic region located within the substrate adjacent a top surface of said substrate and contacting said channel stop region;

a first p+ doped polysilicon region formed on the top surface of said substrate adjacent said p+ doped extrinsic region;

a second p+ doped polysilicon region formed on the top surface of said substrate adjacent said first p+ doped extrinsic region, and spaced from said first p+ doped polysilicon region;

an oxide layer formed on the top surface of the substrate and spanning a distance between said first and said second p+ doped polysilicon regions; and

said p+ doped extrinsic region including an extended region located under said oxide layer and extending deeper into said channel stop region than a remaining portion of said p+ doped extrinsic region.

5,350,943

SEMICONDUCTOR ASSEMBLY, IN PARTICULAR A REMOTE CONTROL RECEPTION MODULE

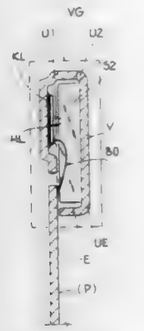
Jörg Angerstein, Flein; Siegfried Giebler, Wüstenrot-Neuhütten; Thomas Mistele, Ilsfeld; Werner Schairer, Weinsberg, and Helmut Scheidle, Neuenstadt, all of Fed. Rep. of Germany, assignors to Temic Telefunken microelectronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Mar. 22, 1993, Ser. No. 35,168

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1992, 4212948

Int. Cl.[5] H01L *25/04, 23/34*

U.S. Cl. 257—659 17 Claims



1. A semiconductor assembly comprising:

a metal frame configuration having at least two strip segments, one of which is a ground strip segment for connection to ground, with said ground strip segment having a carrier section and an extension section;

at least one semiconductor component attached to an upper part of said ground strip segment on said carrier section of said ground strip segment;

a casting enclosing the upper part of said strip segment; and wherein

said extension section of said ground strip segment extends beyond said carrier section and is both folded over in relation to said carrier section and of sufficient length such that it covers said semiconductor component to electromagnetically shield said semiconductor component.

5,350,944

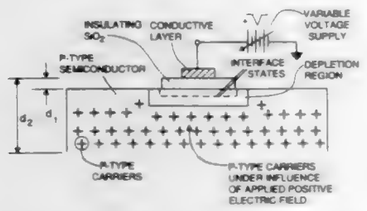
INSULATOR FILMS ON DIAMONDS

Michael W. Geis, Acton, and Daniel L. Smythe, Swampscott, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 293,880, Jan. 3, 1989, abandoned. This application Feb. 20, 1992, Ser. No. 839,487

Int. Cl.[5] H01L *27/01, 29/00, 29/78*

U.S. Cl. 257—77 19 Claims



1. A semiconductor diamond field-effect transistor device that is substantially free of operational effects from interface states, comprising:

a diamond semiconductor substrate having mobile semiconductor charge carriers,

a CVD-deposited non-epitaxial silicon dioxide insulating film having a thickness of about 0.1 μm or less on said diamond substrate, and

a conducting layer on said insulating film for imposing an electric field in said substrate through said film,

said film enabling the formation of a predetermined depletion region in said substrate for control of said mobile carriers when electrical fields are imposed through said film by said conducting layer,

said device being substantially free of operational effects due to interface states as characterized by a capacitance versus bias voltage relationship that is substantially unaffected by a change in the frequency of said bias voltage over about 4 KHz to 10 MHz.

5,350,945

COIN-SHAPED INTEGRATED CIRCUIT MEMORY DEVICE

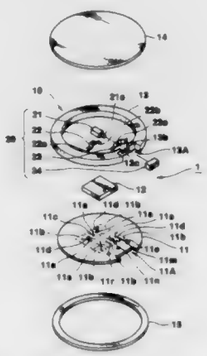
Tomihiro Hayakawa, Sayama, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1992, Ser. No. 992,866

Claims priority, application Japan, Dec. 18, 1991, 3-354600; Dec. 27, 1991, 3-113869[U]

Int. Cl.[5] H01L *23/02*

U.S. Cl. 257—679 12 Claims



7. An integrated circuit memory device without a battery adapted to be stored in an electronic device having a changeover switch for setting one of a data-writing allowable state and a data-writing preventive state, comprising:

a circuit substrate with two surfaces and having a data terminal, power terminals for a power source and a data-writing terminal for writing data, such terminals being formed on one of said two surfaces, connecting terminals formed on the other of said two surfaces, and through holes formed, respectively, between said data terminal, power terminals and data-writing terminal and said connecting terminals, said connecting terminals being, respectively, connected with said data terminal, said power terminals and said data-writing terminal through one of said through holes;

a non-volatile integrated circuit memory chip having electrodes connected with said data terminal, power terminals and data-writing terminal, respectively, and being selectively changeable in a data-writing state and in a data-reading state in accordance with a data-writing signal and a data-reading signal respectively supplied to said data-writing terminal of said circuit substrate, said non-volatile integrated circuit memory chip being mounted on said circuit substrate; and

a case including a core member and a cover bonded to one surface of said core member, said cover being formed by a thin metal plate, said core member having a ring shape for storing therein said non-volatile integrated circuit memory chip and a perimeter having substantially a circular outer surface, said core member including a piece which is movable or removable from said core member;

whereby the changeover switch sets the device in a data-writing preventive state depending on a movement or a removal of said piece of said core member.

5,350,946

SEMICONDUCTOR DEVICE WITH CORRECT CASE PLACEMENT FEATURE

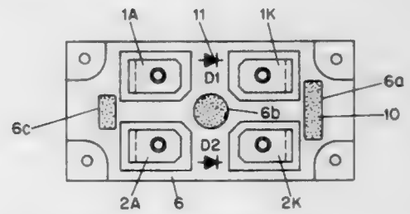
Yukio Murakami, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jun. 11, 1993, Ser. No. 75,748

Claims priority, application Japan, Jun. 29, 1992, 4-169730

Int. Cl.[5] H01L *23/48, 29/46, 29/62, 29/64*

U.S. Cl. 257—693 5 Claims



1. A semiconductor device comprising:

a case having a top face;

at least first and second semiconductor chips contained within said case, each chip having first and second main electrodes;

first and second externally drawn terminals which are connected to respective main electrodes of each semiconductor chip, said externally drawn terminals being arranged side by side and drawn out through the top face of each case, said externally drawn terminals having the same polarity being arranged in straight rows and said rows of the terminals being arranged in parallel with terminals of different polarities; wherein:

each of said first and second externally drawn terminals includes a riser portion having predetermined width below said top face of said case and an extended portion having predetermined width above said top face of said case,

the width of said riders portion of the first externally drawn terminal is equal to the width of said extended portion of said first externally drawn terminal,

the width of said riser portion of the second externally drawn terminal is greater than the width of said extended portion of said externally drawn terminal,

the width of said rider position of the first externally drawn terminal is equal to the width of said extended portion of said first externally drawn terminal,

said first and second externally drawn terminals extend through respective first and second openings formed in the top face of said case,

said first opening width corresponds to the width of said first extended portion, and

said second opening width corresponds either to said second riser portion or else to said second extended portion with said case having a groove that corresponds to the width of said second riser.

5,350,947

FILM CARRIER SEMICONDUCTOR DEVICE

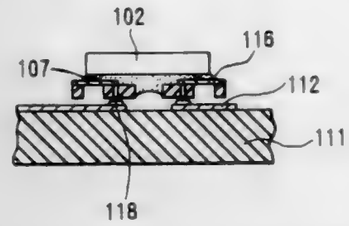
Kouichi Takekawa, and Michitaka Urushima, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 28, 1992, Ser. No. 967,790

Claims priority, application Japan, Nov. 12, 1991, 3-295326; Mar. 11, 1992, 4-052100

Int. Cl.[5] H01L *23/48*

U.S. Cl. 257—702 11 Claims



1. A film carrier semiconductor device comprising:

a film carrier tape consisting of a tape-like insulating material and having carrying and positioning sprocket holes in both edge portions thereof;

an outer lead bonding bump mounting portion formed in a central portion of said film carrier tape;

said film carrier tape having inner lead bonding holes formed around said outer lead bonding bump mounting portion;

a semiconductor chip mounted on said outer lead bonding bump mounting portion and having electrode bumps outwardly projecting from a surface of the semiconductor chip;

inner lead bonding leads formed into a predetermined pattern on said film carrier tape and bonded to said electrode bumps at locations opposing said inner lead bonding holes; and

outer lead bonding bumps formed on said outer lead bonding bump mounting portion, to each of which one end of a corresponding one of said inner lead bonding leads is connected,

said outer lead bonding bump mounting portion having a resin encapsulating hole formed therein and a resin material received in said encapsulating hole and encapsulating said semiconductor chip from a lower surface of said film carrier tape,

wherein said outer lead bonding bumps are formed on a lower surface of said film carrier tape and connected to said outer lead bonding bumps through conductive through holes.

5,350,948

SEMICONDUCTOR DEVICE

Masaaki Maehara, Ohme, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 21, 1993, Ser. No. 49,361

Claims priority, application Japan, Apr. 23, 1992, 4-109422

Int. Cl.[5] H01L *23/48*

U.S. Cl. 257—763 6 Claims

1. A semiconductor device comprising:

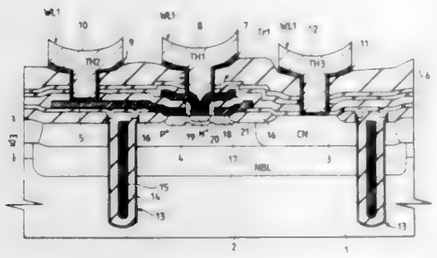
a semiconductor substrate;

a plurality of bipolar transistors provided on said semiconductor substrate, each of said plurality of bipolar transistors comprising:

a collector region of a first conductivity type formed on said semiconductor substrate;

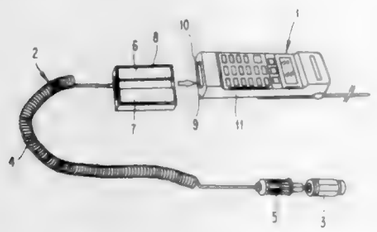
a base region of a second conductivity type which is opposite said first conductivity type formed on said collector region, said base region including an intrinsic base region and an extrinsic base region surrounding said intrinsic base region;

a field oxide layer formed on said semiconductor substrate and surrounding said base region;
an emitter region of said first conductivity type formed on said intrinsic base region;
a base polysilicon of said second conductivity type contacting said extrinsic base region and extending on said field oxide layer, an inner surface of said base polysilicon surrounding said intrinsic base region and defining a region where said intrinsic base region is formed;
an emitter polysilicon of said first conductivity type contacting said emitter region and extending on said base polysilicon, said emitter polysilicon and said base polysilicon being electrically isolated from each other by a side wall spacer formed on said inner side surface of said base polysilicon; and
a first insulating film formed on said base polysilicon, said side wall spacer defining a region where said emitter region is formed;



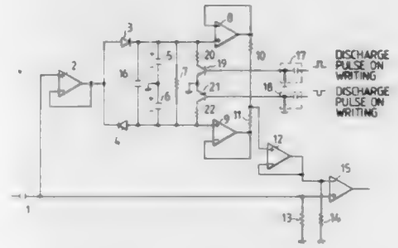
a second insulating film provided over said bipolar transistors; and
a first wiring layer provided on said second insulating film, said first wiring layer being electrically connected to said bipolar transistors via a plurality of connection holes formed in said second insulating film, said first wiring layer including a first tungsten film and a second tungsten film formed over said first tungsten film, said first tungsten film contacting said second insulating film at said connection holes;
a third insulating film formed over said first wiring layer; and
a second wiring layer formed on said third insulating film, said second wiring layer including an aluminum film and electrically connected to said first wiring layer via a connection hole formed in said third insulating film.

5,350,949
POWER SUPPLY INTERFACE
Amar Yazi, Malmö , Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Continuation of Ser. No. 715,587, Jun. 14, 1991, abandoned. This application Nov. 30, 1993, Ser. No. 159,111
Int. Cl.[5] H02J *7/00*
U.S. Cl. 307—150 **6 Claims**



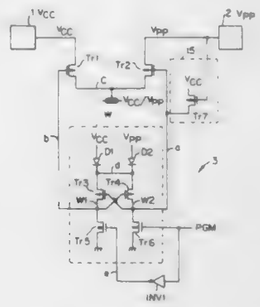
1. A power supply adapter for a mobile telephone unit having an operating voltage range between a maximum and a minimum operating voltage, said power supply adapter comprising:
a cable having two ends, one end being connected to an external voltage source supplying power to the mobile telephone unit, the terminal voltage of said external voltage source being higher than the maximum operating voltage, and the other end being connected to a voltage regulator unit delivering a controlled output voltage within the permitted operating voltage range, said voltage regulator unit being provided in a housing adapted to be connected to the mobile telephone unit, wherein said cable is a resistive cable the resistance and length thereof being such that when the mobile telephone is subjected to a maximum load over extended periods a major part of the power losses arising from the voltage to be dropped by the cable and the voltage regulator will be absorbed by the resistive cable and the remaining power losses are absorbed by the voltage regulator.

5,350,950
SETTING CIRCUIT OF BINARY THRESHOLD VALUE
Naoto Inaba, Tokyo, and Shinichi Tanaka, Kamakura, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Dec. 1, 1992, Ser. No. 983,736
Claims priority, application Japan, Dec. 4, 1991, 3-320240
Int. Cl.[5] H03K *5/153*
U.S. Cl. 307—236 **11 Claims**



1. A binary threshold value setting circuit comprising:
a first detecting section to detect the positive polarity side of an input signal;
a second detecting section to detect the negative polarity side of said signal;
a first envelope detecting section connected to said first detecting section to perform an envelope detection to the signal detected by the first detecting section;
a second envelope detecting section connected to said second detecting section to perform an envelope detection to the signal detected by the second detecting section;
a threshold value setting section connected to said first and second envelope detecting sections to generate a signal at a level between the level of the signal which has been envelope detected by the first envelope detecting section and the level of the signal which has been envelope detected by the second envelope detecting section;
a capacitor connected between an output side of the first detecting section and an output side of the second detecting section;
a controllable discharge section, connected between an output side of the first envelope detecting section and an output side of the second envelope detecting section, for allowing the charges charged in the first and second envelope detecting sections to be discharged; and
said controllable discharge section including first and second switching devices connected for respectively discharging each of said first and second envelope detecting section.

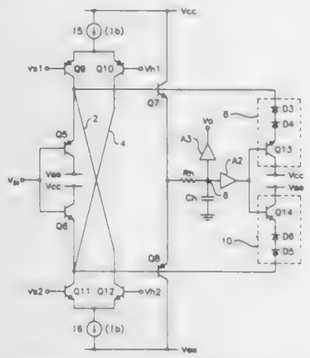
5,350,951
VOLTAGE CHANGE CIRCUIT FOR A MICROCOMPUTER
Kiyoshi Adachi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 29, 1992, Ser. No. 922,125
Claims priority, application Japan, Oct. 7, 1991, 3-287090
Int. Cl.[5] H03K *17/16, 17/06*
U.S. Cl. 307—296.4 **3 Claims**



1. A voltage change circuit for a microcomputer comprising:
a first terminal driven at a first voltage;
a first switching element, coupled to said first terminal and to a common wire, for switching said first voltage to said common wire;
a second terminal driven at a second voltage, said second voltage being one of 0 volts and a voltage higher than said first voltage;
a second switching element, coupled to said second terminal and to said common wire, for switching said second voltage to said common wire, said second switching element having a control input; and
selecting means, coupled to said first and second switching elements, for closing a selected one of said first and second switching elements, and
leak current preventing means, receiving said second voltage as input and coupled to said second switching element, for generating a leak current preventing signal for said control input of said second switching element, said leak current preventing signal for preventing said second switching element from closing when said second voltage is 0, preventing current from flowing to said second terminal through said second switching element.

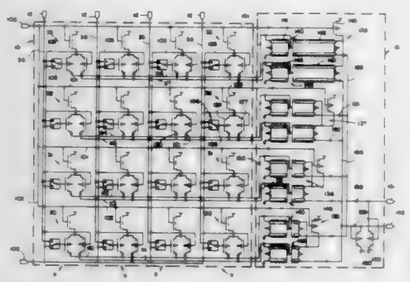
5,350,952
SAMPLE AND HOLD CIRCUIT WITH PUSH-PULL OUTPUT CHARGING CURRENT
William W. Cheng, Redondo Beach, and Lloyd F. Linder, Agoura Hills, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jul. 6, 1992, Ser. No. 909,286
Int. Cl.[5] H03K *17/60;* **G11C** *27/02*
U.S. Cl. 307—352 **18 Claims**

1. A class AB sample and hold circuit comprising:
a load dependent current source,
an input terminal,
an output terminal,
a sample gate comprising a pair of complementary bipolar input transistors that are characterized by respective standing currents and are connected to receive an input voltage signal at said input terminal, and a pair of complementary bipolar output transistors connected to provide to said output terminal (a) an output voltage signal which tracks said input signals, and (b) a current from said load dependent current source that is not limited to said input transistor standing currents, and
a control circuit that actuates said input and output transistors during a track mode and deactuates said input and output transistors during a hold mode, said control circuit including a pair of bias current sources, a first pair of complementary bipolar transistors for directing the bias current source currents through respective input transistors during a track mode, a second pair of complementary



bipolar transistors for diverting said bias current source currents away from said input transistors during a hold mode, and a pair of complementary emitter-follower diode circuits connected to be driven by a signal held at said output terminal substantially independent of the input signal to complete respective circuit paths for said diverted currents during a hold mode.

5,350,953
DIGITALLY WEIGHTED NEURON FOR ARTIFICIAL NEURAL NETWORK
Richard M. Swenson, P.O. Box 470, Ridgecrest, Calif. 93555; John C. Cole, III, 7417 92nd Pl. S.E., Mercer Island, Wash. 98040; Steve L. Holmes, 2514 230th Ave. NE., Redmond, Wash. 98053, and Paul B. Ekas, 11810 28th Ave. SW., Seattle, Wash. 98146
Filed May 28, 1993, Ser. No. 69,943
Int. Cl.[5] H03K *19/23, 19/08*
U.S. Cl. 307—464 **12 Claims**



1. A neuron for an artificial neural network receiving a plurality of input signals representing values in a predetermined range, the neuron weighting each of the input signals by weight digits corresponding to numerals at digit positions in a predetermined number system and comprising:
a plurality of synapses, each of said synapses receiving one of said input signals and having a plurality of synapse digit weighting means, which correspond individually to said digit positions and which store single digit weight values corresponding to said numerals, for generating synapse digit position signals individually corresponding to the products of each of the values of single digit weight values and said one input signal
a plurality of digit summing means, which correspond indi-

vidually to said digit positions and which receive the synapse digit position signals generated by the synapse digit weighting means corresponding to the same digit positions as the digit summing means, for providing digit position sum signals representing the sums of the synapse digit position signals corresponding to each of said digit positions; and

digit position weighting means for receiving said digit position sum signals and for generating therefrom a neuron sum signal corresponding to the sum of the products of each of said digit position sum signals and the positional value in said number system of the digit position corresponding to the digit position sum signal,

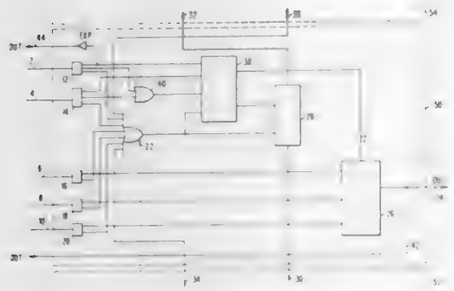
whereby said neuron sum signal represents the sum of the products of the values of each of said input signals and a weight represented in said number system by the weight digits of the synapse receiving the input signal.

5,350,954

MACROCELL WITH FLEXIBLE PRODUCT TERM ALLOCATION

Rakesh H. Patel, Santa Clara, Calif., assignor to Altera Corporation, San Jose, Calif.

Filed Mar. 29, 1993, Ser. No. 39,927
Int. Cl.[5] H03K *19/177*
U.S. Cl. 307—465 46 Claims



1. Programmable logic array apparatus comprising a plurality of macrocells each of which receives a finite number of multiple input signals, each macrocell comprising:

a first logic gate for producing a first logical function of a first number of the input signals, the first number being from zero to the finite number;

a second logic gate for producing a second logical function of a second number of the input signals, the second number being from zero to the finite number, such that the first number added to the second number is finite number; and

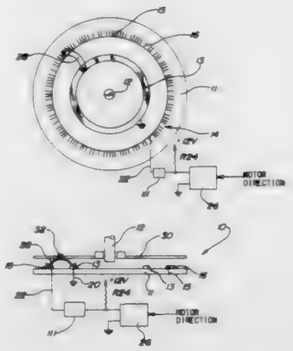
allocation logic for receiving the first logical function of the first number of input signals from the first logic gate and allocating the first logical function of the first number of input signals to another macrocell, wherein when the first logical function of a first macrocell is allocated to a second macrocell, the first logic gate of the second macrocell receives the first logical function of the first macrocell the second logical function of the first macrocell is retained by the first macrocell.

5,350,955

APPARATUS FOR POSITION DETECTION AND VERIFICATION THEREOF USING PULSE PATTERNS HAVING SEQUENTIALLY UNIQUE PROPERTIES

Thomas Street, Southgate, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Aug. 3, 1992, Ser. No. 924,122
Int. Cl.[5] G01P *3/22*
U.S. Cl. 307—515 15 Claims



1. An apparatus for detecting the rotary position of a shaft, comprising:

a radially extending member (**11**) fixed with respect to said shaft (**12**);

said member (**11**) having a dielectric surface;

a first annular portion (**13**) disposed on said surface defining a continuous conductive path formed coaxial to said rotary shaft (**12**);

a second annular portion (**15**) disposed on said surface defining a conductive path coaxial to said first annular portion (**13**);

a third annular portion disposed on said surface including spaced radially extending conductive portions (**16**);

wherein said radially extending portions of said third portion comprise a first such subgroup including one radially extending portion sequentially followed by a second subgroup including two radially extending portions and said first subgroup and said second subgroup repeat to form a complete pattern about said third portion;

said second and said third portions disposed in electrically conductive connection to one another;

first means for conductive connection (**20**) to said first annular portion and ground potential;

second means for conductive connection (**22**) to said second annular portion;

third means for slidable conductive connection (**28**) between said first annular portion (**13**) and said third annular portion **16** and drivingly connected to said shaft (**12**) for rotation therewith; and

means for providing a voltage potential to said second annular portion through said second means for conductive connection (**22**).

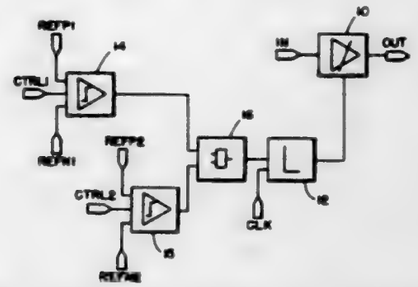
5,350,956

DEVIATION LIMITING TRANSMISSION CIRCUIT

Mika J. Gronroos, Piispanristi, Finland, assignor to Nokia Mobile Phones Ltd., Finland

Filed Nov. 20, 1992, Ser. No. 979,292
Claims priority, application Finland, Nov. 29, 1991, 915661
Int. Cl.[5] H03K *3/01;* **H01P** *1/22*
U.S. Cl. 307—556 7 Claims

1. A deviation limiting transmission circuit comprising a soft clipper coupled to a filter such that a signal output from the soft clipper is transmitted to the input of the filter which in time produces an output signal characterized by the soft clipper being capable of measuring the magnitude of both the signal output from the soft clipper and the signal output from



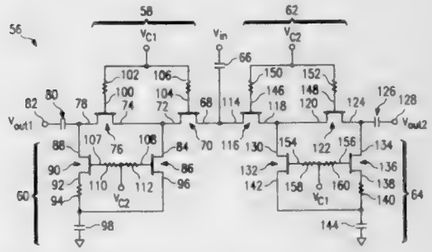
the filter and capable of substantially limiting the magnitude of both of the measured signals to less than a predetermined maximum value.

5,350,957

ELECTRONIC SWITCH CONTROLLED BY PLURAL INPUTS

Steven W. Cooper, Dallas, and George A. Truitt, Allen, both of Tex., assignors to Texas Instrument Incorporated, Dallas, Tex.

Continuation of Ser. No. 704,689, May 17, 1991, which is a continuation of Ser. No. 424,490, Oct. 20, 1989, abandoned. This application Jul. 14, 1993, Ser. No. 91,420
Int. Cl.[5] A03K *17/687, 17/56*
U.S. Cl. 307—571 19 Claims



1. A switching circuit, comprising:

(a) an input terminal and an output terminal;

(b) a first switch having a current path coupled to said input terminal and said output terminal and having an input for receiving a first control voltage;

(c) a second switch having a current path coupled to said current path of said first switch and to said output terminal and having an input for receiving a second control voltage, only one of said first switch and said second switch operable to conduct in response to a voltage difference between said first and second control voltages;

(d) a first capacitor coupled between said input terminal and said current path of said first switch; and

(e) a second capacitor coupled between said output terminal and said current path of said first switch;

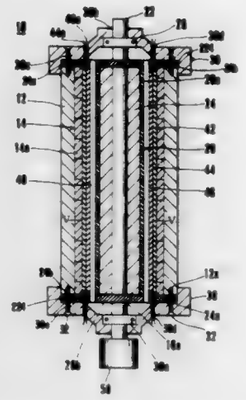
(f) wherein said first switch comprises a first and second transistor each having a gate, said first and second transistor gates coupled together as said input for said first switch, and said second switch comprises a third and fourth transistor each having a gate, said third and fourth transistor gates coupled together as said input for said second switch.

5,350,958

SUPERCONDUCTING ROTATING MACHINE, A SUPERCONDUCTING COIL, AND A SUPERCONDUCTING GENERATOR FOR USE IN A LIGHTING EQUIPMENT USING SOLAR ENERGY

Yoshihiro Ohnishi, 710, 432-103, Tenado-machi, Hachioji City, Tokyo, Japan

Filed Jan. 17, 1992, Ser. No. 975,445
Claims priority, application Japan, Jan. 17, 1991, 3-072630; Jan. 17, 1991, 3-142324
Int. Cl.[5] H02K *9/00*
U.S. Cl. 310—52 5 Claims



1. A superconducting rotating apparatus, comprising:

a cylindrical frame having an inner peripheral surface;

a cylindrical stator disposed in said cylindrical frame around said inner peripheral surface thereof, said cylindrical stator comprising a plurality of permanent magnet rings, wherein each said permanent magnet ring comprises three arcuate permanent magnets that have outer arcuate surfaces with a radius approximately equal to a radius of said inner peripheral surface of said cylindrical frame, and wherein said three arcuate permanent magnets have said outer arcuate surfaces thereof engaging said inner peripheral surface of said cylindrical frame, and a pair of end covers at opposite ends of said cylindrical stator;

said cylindrical stator having an inner surface;

a stator coil disposed around said inner surface of said cylindrical stator, said stator coil comprising a primary coil and a secondary coil, said primary coil comprising extra fine Cu filaments and said secondary coil comprising extra fine filaments of superconducting alloy containing Cu, Nb_3Sn, V_3Ga, V_3Ge, Bi, Ca, CuO, and Sr, said secondary coil being covered with a Cu layer, and said Cu layer being covered with an insulating layer;

a rotor disposed concentrically and rotatably inside said cylindrical stator, said rotor having a cylindrical clearance around an outer periphery thereof spacing said rotor from said stator coil, and said rotor comprising a non-magnetic shaft, a cylindrical non-magnetic holder integral with and disposed around said non-magnetic shaft, a plurality of permanent magnet rings disposed around said non-magnetic shaft, wherein each said permanent magnet ring of said rotor comprises a pair of arcuate permanent magnets, and a pair of non-magnetic end disks at opposite ends of said rotor;

a pair of non-magnetic disk end covers on opposite ends of said cylindrical frame, each said disk end cover comprising a bearing supporting an end of said non-magnetic shaft of said rotor; and

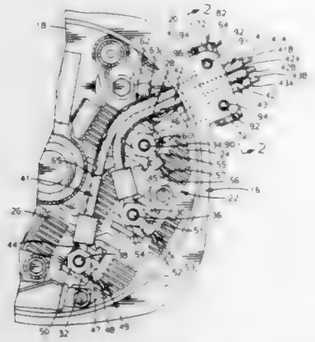
an auxiliary motor connected with one said end of said non-magnetic shaft of said rotor.

5,350,959

ELECTRICAL CONNECTOR FOR ALTERNATING CURRENT GENERATORS

Keith F. Flaminio, Fishers, and Larry McReynolds, Muncie, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 20, 1993, Ser. No. 64,303
Int. Cl.[5] H02K *11/00*
U.S. Cl. 310—71 12 Claims



1. In combination, an alternating current generator having an end frame and a polyphase output winding, an opening in said end frame that extends entirely therethrough, a bridge rectifier having AC input terminals connected to said output winding, a plurality of electrical conductors extending from the interior of said end frame to the exterior thereof for feeding alternating current to an electrical load that is located outside of said generator, said conductors extending through said opening in said end frame, each said conductor having a terminal that is connected to a respective said AC input terminal of said bridge rectifier, a conductor support formed of plastic material secured to end frame, said conductor support extending from said opening in said end frame to said bridge rectifier and rib means on said conductor support engaging said electrical conductors to secure said conductors to said conductor support.

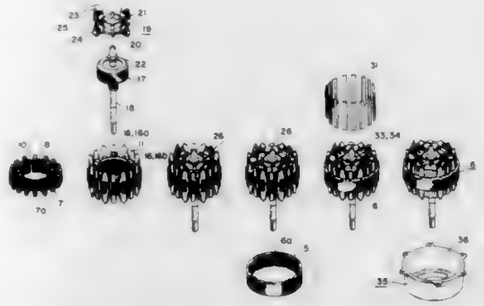
5,350,960

ELECTRIC MOTOR WITH BOBBIN COLUMNS TO PREVENT BULGING COILS

Shuichi Kiri; Kouki Kieda; Shunichi Kachi; Yukinori Takekoshi; Yasunari Takada, all if Gifu; Yuji Nakahara, and Tomoyuki Nishinaka, both of Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,410
Claims priority, application Japan, Feb. 17, 1992, 4-029702; Nov. 16, 1992, 4-328967
Int. Cl.[5] H02K *11/00*
U.S. Cl. 310—194 18 Claims

1. An electric motor comprising:
an outer ring yoke portion forming an outer ring;
a stator core in which an inner ring magnetic pole portion is fitted in said outer ring yoke portion, said inner ring magnetic pole portion including slots and a plurality of magnetic pole pieces;
an insulating portion covering said inner ring magnetic pole portion of said stator core;
a funnel-shaped insulating resin formed integrally with said insulating portion and covering said inner ring magnetic pole portion of said stator core;
a funnel-shaped insulating resin formed integrally with said insulating portion and covering one end face of said inner ring magnetic pole portion, said funnel-shaped insulating resin including a first through hole for a rotational shaft, said first through hole communicating with a center of said inner ring magnetic pole portion;
coil guards protuberantly formed on said plurality of magnetic pole pieces, said coil guards formed integrally with said funnel-shaped insulating resin;
a rotor inserted into said inner ring magnetic pole portion;
a funnel-shaped insulating cover including a second through hole for said rotational shaft, said funnel-shaped insulating



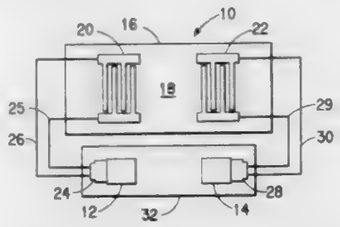
cover covering said rotor, said second through hole communicating with said first through hole;
bobbin columns having pins protuberantly formed on an end face of said funnel-shaped insulting cover, said bobbin columns located between a side of said coil guards and the center of said inner ring magnetic pole portion; and
coils wound in a space formed between said bobbin columns and the center of said inner ring magnetic pole portion, said coils having terminals connected to said pins.

5,350,961

ACOUSTIC WAVE DEVICES FOR CONTROLLING HIGH FREQUENCY SIGNALS

David K. Chu, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 31, 1992, Ser. No. 924,691
Int. Cl.[5] H01L *41/04, 41/193*
U.S. Cl. 310—313 A 10 Claims



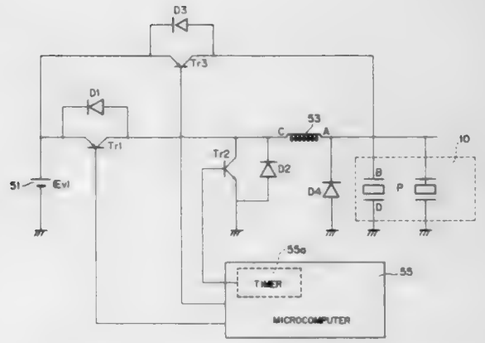
1. A device for controlling high frequency signals by generation of Bleustein-Gulyaev acoustic waves, comprising:
(a) an x-cut or y-cut bulk crystalline substrate of $MTiOXO_4$, wherein M is selected from the group consisting of K, Rb, Tl and NH_4 and mixtures thereof and X is selected from the group consisting of P and As and mixtures thereof, wherein the crystalline substrate of $MTiOXO_4$ has mm2 crystal symmetry and a surface with a receiving area; and
(b) an input interdigital transducer deposited on the signal receiving area of said substrate surface, suitable for connection to a source of electric signal and for inverse piezoelectrically generating Bleustein-Gulyaev acoustic waves in the crystalline substrate.

5,350,962

DRIVING DEVICE FOR PIEZOELECTRIC ELEMENT

Atsuo Sakaida, Gifu; Yoshihumi Suzuki, Ena; Yoshiyuki Ikezaki, Nagoya; Akira Iriguchi, Nagoya, and Masashi Suzuki, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 728,592, Jul. 11, 1991, abandoned. This application Mar. 30, 1993, Ser. No. 41,300
Claims priority, application Japan, Jul. 11, 1990, 2-186260; Jul. 11, 1990, 2-186261
Int. Cl.[5] H01L *41/09;* B41J *2/30*
U.S. Cl. 310—316 14 Claims



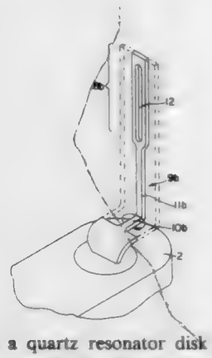
1. A driving device for driving a piezoelectric element having first and second terminals, comprising:
power supplying means:
a coil having a first terminal electrically connected to the first terminal of said piezoelectric element, and a second terminal;
first switching means interposed between said power supplying means and the second terminal of said coil and selectively rendered ON and OFF to selectively supply electrical energy from said power supplying means to said coil;
second switching means selectively rendered ON and OFF, said second switching means electrically connecting the second terminal of said coil to the second terminal of said piezoelectric element when said second switching means is ON, thereby forming a resonance circuit with said piezoelectric element and said coil;
connecting means for allowing the electrical energy to return from the second terminal of said coil to said power supplying means; and
control means for controlling said first and second switching means, wherein said control means controls said first switching means to render ON to instruct displacement of said piezoelectric element and further controls said first switching means to render OFF and said second switching means to render ON to instruct restoration of said piezoelectric element from a displaced condition, and wherein said control means controls said second switching means to render OFF after expiration of a predetermined period of time from a time when said second switching means is rendered ON to allow the electrical energy retained in said piezoelectric element to appear in said coil and feed back the electrical energy to said power supplying means through said connecting means, wherein said predetermined period of time is defined by $\pi/3\ (LC)^{\frac{1}{2}}$ where L is an inductance of said coil and C is an electrostatic capacitance of said piezoelectric element.

5,350,963

HOLDER FOR QUARTZ RESONATOR DISKS AND PROCESS FOR THE PRODUCTION OF SUCH HOLDERS

Dieter Heimerl, Landshut, and Johann Piegendorfer, Altfraunhofen, both of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed May 14, 1993, Ser. No. 61,355
Claims priority, application Fed. Rep. of Germany, May 15, 1992, 4216035
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—353 13 Claims



1. A holder for a quartz resonator disk having opposed electrodes for energizing the disk, the holder comprising:
a pair of lugs passing through glass seals in a supporting base and being unitary with pins on an opposite of the supporting base, each lug being flattened on one side of the base to form a web divided into a first web section, a second web section and mounting section;
the first web sections starting at a location spaced from the glass seals and extending in opposite directions, the first web sections being of a first reduced width;
the second web sections extending parallel to one another and being joined to the first web sections by bends, the second web sections having the same widths as the first web sections; and
the mounting sections extending from the second web sections, the mounting sections having second widths greater than the widths of the first and second web sections and the mounting sections each having longitudinal slots for receiving edges of the quartz resonator disk and contacting the electrodes thereon.

5,350,964

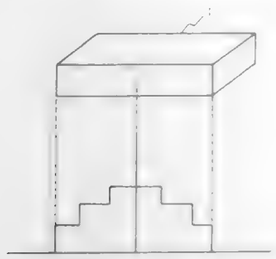
ULTRASONIC TRANSDUCER AND METHOD OF MANUFACTURING THE SAME

Yasushi Hara, Kawasaki; Kazuhiro Watanabe, Tokyo; Hiroshi Ishikawa; Kiyoto Matsui, both of Kawasaki; Kenji Kawabe, Yokohama, and Takaki Shimura, Machida, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP90/01314, § 371 Date Mar. 8, 1991, § 102(e) Date Mar. 8, 1991, PCT Pub. No. WO91/13524, PCT Pub. Date Sep. 5, 1991
PCT Filed Oct. 11, 1990, Ser. No. 651,390
Claims priority, application Japan, Feb. 28, 1990, 2-047477
Int. Cl.[5] H04R *31/00;* H01L *41/08, 41/22*
U.S. Cl. 310—357 7 Claims

1. An ultrasonic transducer having a plurality of arranged vibrators, each having a center and end portions, said plurality of arranged vibrators formed by piezoelectric materials, wherein polarization of the piezoelectric materials of said plurality of arranged vibrators is conducted using a staircase

function to gradually reduce the polarization in steps from the centers of said plurality of arranged vibrators to the end portions in a direction orthogonally crossing an arrangement direction of the plurality of arranged vibrators.

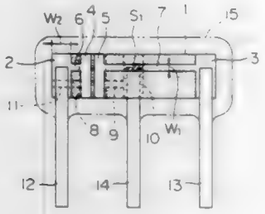


5,350,965

PIEZOELECTRIC RESONATOR

Kazuyuki Noto, and Takasi Yosinaga, both of Nagaokakyo, Japan, assignors to Myrata Manufacturing Co., Ltd., Japan

Filed Jul. 6, 1993, Ser. No. 88,512
Claims priority, application Japan, Jul. 7, 1992, 4-202953
Int. Cl.[5] H03H *9/17*; H01L *41/08*
U.S. Cl. 310—366 **5 Claims**



1. A piezoelectric resonator vibrating in a thickness shear-slide mode, comprising:

an elongated ceramic piezoelectric substrate;

a first terminal electrode and a second terminal electrode formed on end portions of a front major surface of said piezoelectric substrate;

a third terminal electrode formed at an intermediate position of a rear major surface of said piezoelectric substrate;

a first vibrating electrode and a second vibrating electrode adjacently formed on said front major surface of said piezoelectric substrate at intermediate positions between said first terminal electrode and a portion of said piezoelectric substrate opposed to said third terminal electrode;

a first extracting electrode and a second extracting electrode formed on said front major surface of said piezoelectric substrate for connecting said first and second terminal electrodes with said first and second vibrating electrodes respectively, said second extracting electrode being arranged to be partially opposed to said third terminal electrode with said piezoelectric substrate therebetween;

a third vibrating electrode formed on said rear major surface of said piezoelectric substrate in a position opposed to said first and second vibrating electrodes;

a third extracting electrode formed on said rear major surface of said piezoelectric substrate for connecting said third terminal electrode with said third vibrating electrode;

an auxiliary electrode extending from said third vibrating electrode to a position opposed to said first terminal electrode and being formed on said rear major surface of said piezoelectric substrate; wherein

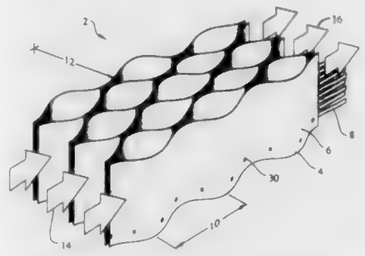
an overlap area of said auxiliary electrode and said first terminal electrode is substantially equal to an overlap area of said second extracting electrode and said third terminal electrode.

5,350,966

PIEZOCELLULAR PROPULSION

Gordon W. Culp, Van Nuys, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Continuation of Ser. No. 790,787, Nov. 12, 1991, abandoned.
This application Sep. 23, 1993, Ser. No. 124,677
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—328 **13 Claims**



1. A fluid forcing and acoustical interaction device comprising:

a support;

a plurality of membranes, each membrane having a front end, a back end and two opposing surfaces, the front end attached to the support, the membranes having;

a plurality of electrodeformable cells, each cell having;

a least one layer of electrodeformable material which changes length in response to an applied electric potential, thereby bending the membrane as a function of the potential applied;

a means of applying a potential to each cell to produce movement of each cell;

a means of controlling the potential applied to each cell to yield a coordinated wave motion of the membranes, whereby the membranes are immersed in a fluid and the wave motion of the membrane's opposing surfaces interact with the fluid.

5,350,967

INLINE ELECTRON GUN WITH NEGATIVE ASTIGMATISM BEAM FORMING AND DYNAMIC QUADRUPOLE MAIN LENS

Hsing-Yao Chen, Barrington, Ill., assignor to Chunghwa Picture Tubes, Ltd., Taoyuan, Taiwan

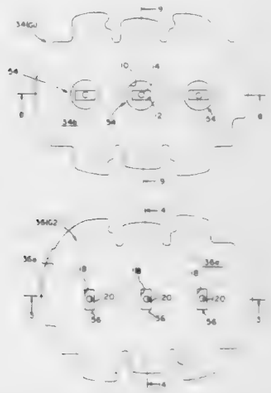
Filed Oct. 28, 1991, Ser. No. 783,196
Int. Cl.[5] H01J *29/58*
U.S. Cl. 313—413 **27 Claims**

16. For use in a color cathode ray tube (CRT) including three inline cathodes for providing three groups of energetic electrons and having a display screen and a self-converging magnetic deflection yoke for deflecting a plurality of electron beams across said display screen in a raster-like manner, wherein said deflection yoke imparts a negative astigmatism in a beam deflection zone to the beams incident on the screen, giving rise to beam horizontal under-focusing, said CRT further including a high voltage lens portion including a dynamic electrostatic quadrupole for focusing the beams on the screen, a low voltage electron beam forming arrangement comprising:

a first charged electrode having a first plurality of inline through-hole circular apertures each aligned with a respective one of said cathodes and having an associated aligned rectangular indentation; and

a second charged electrode having a second plurality of inline through-hole circular apertures each aligned with a respective one of said first plurality of apertures in said first charged electrode, wherein each of said aligned first and second pluralities of through-hole circular apertures and said aligned rectangular indentation receives one of said three groups of energetic electrons and forms said energetic electrons into an electron beam and provides said electron beam to the high voltage lens portion of the CRT, wherein said first charged electrode is a G_1 control electrode maintained at a first voltage V_{F1} and said second charged electrode is a G_2 control electrode maintained at a second voltage V_{F2}, and wherein $V_{F2} > V_{F1}$ and said G_1 control electrode and said G_2 screen electrode comprise a static electrostatic quadrupole;

wherein said electrodes apply a fixed negative astigmatism to each of the electron beams in a horizontal overfocusing of the electron beams to reduce the horizontal beam size in the deflection zone and improve the deflected electron beam's horizontal resolution.

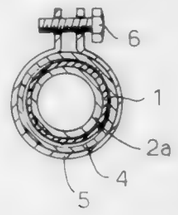


5,350,968

DEFLECTION YOKE MOUNTING APPARATUS FOR A COLOR PICTURE TUBE

Soo K. Kwon, Kumi-si, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 28, 1992, Ser. No. 935,887
Claims priority, application Rep. of Korea, Aug. 29, 1991, 13908/1991
Int. Cl.[5] H01J *29/70*
U.S. Cl. 313—440 **2 Claims**



1. A deflection yoke mounting apparatus for a picture tube having a deflection yoke and a funnel with a neck portion comprising:

a thermal shrinkage tube inserted over an outer periphery of said neck portion and thermally contracted into close contact with said neck portion;

a neck contact member having a plurality of protrusions formed on its inner surface, said neck contact member being engaged with an outer periphery of said thermal shrinkage tube;

means engaged with an outer periphery of said neck contact member for fastening said neck contact member to said thermal shrinkage tube, said fastening means fixing said yoke to said neck portion; and

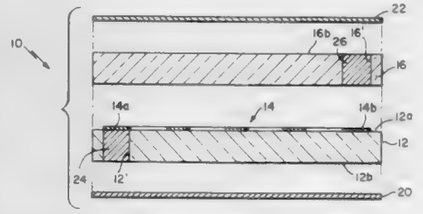
said thermal shrinkage tube further contracting onto the neck portion when the neck portion is heated by an electron gun during operation of the color picture tube.

5,350,969

CATHODE HEATER AND CATHODE ASSEMBLY FOR MICROWAVE POWER TUBES

Todd R. Gattuso, Boston, Mass., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 3, 1991, Ser. No. 802,076
Int. Cl.[5] H01J *29/04, 1/22*
U.S. Cl. 313—446 **8 Claims**



1. A cathode heater, comprising:

a dielectric;

a patterned strip conductor embedded in said dielectric;

first and second conductors disposed over opposing surfaces of said dielectric; and

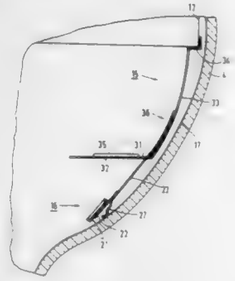
means for coupling the first one of said conductors to a first portion of said patterned strip conductor, and for coupling said second conductor to a second, different portion of said patterned strip conductor.

5,350,970

DISPLAY TUBE HAVING A DETACHABLE GETTER

Johannus A. Vennix, and Johannes J. M. Overbeek, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 16, 1992, Ser. No. 976,825
Claims priority, application European Pat. Off., Nov. 18, 1991, 91202980.8
Int. Cl.[5] H01J *29/84, 31/00*
U.S. Cl. 313—481 **8 Claims**



1. A display tube comprising

(a) an envelope including a neck, a cone and a display window;

(b) an electron gun accommodated in the neck;

(c) an internal magnetic shield arranged between said electron gun and said display window, said magnetic shield including an inwardly extending portion at an end facing said neck, said inwardly extending portion having an aperture;

(d) an electrically conductive layer present on an inner wall of said cone; and

(e) a detachable getter structure electrically contacting said conductive layer,

said getter structure having a first portion projecting through said aperture and being clamped therein, said getter structure having a second portion electrically contacting said electrically conductive layer by pressing against said inner wall of said cone, and said getter structure having a third portion pressing against an inner wall of said magnetic shield,

wherein said aperture is situated between said second and third portions.

5,350,971

BLUE-EMITTING PHOSPHOR FOR USE IN FLUORESCENT LAMPS AND FLUORESCENT LAMP EMPLOYING THE SAME

Il-hyeok Jeong, Seoul, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 11, 1993, Ser. No. 74,543

Claims priority, application Rep. of Korea, Feb. 18, 1993, 1993 2255

Int. Cl.[5] C09K *11/80;* H01J *1/63*

U.S. Cl. 313—487 13 Claims

1. A blue-emitting phosphor of europium-activated barium magnesium aluminate expressed by the following general formula:

$$Ba_aMg_bAl_cLa_xO_{a+b+3(c+x)/2}Eu_d$$

where $0.1 \leqq a \leqq 2.4$, $0.1 \leqq b \leqq 5$, $8 \leqq c \leqq 64$, $0.001 \leqq x \leqq 0.2$, and $0.1 \leqq d \leqq 4$, exhibiting a more uniform particle size distribution than said phosphor absent La.

5,350,972

UV ABSORBING LAMP GLASS

Gerald L. Bucher, Canonsburg, Pa.; Christopher H. Welker, Lyndhurst, Ohio; Edward E. Hammer, Mayfield Village, Ohio; Curtis E. Scott, Mentor, Ohio, and Thomas F. Soules, Richmond Heights, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 25, 1993, Ser. No. 66,642

Int. Cl.[5] H01J *5/02;* C03C *3/095, 3/087, 4/08*

U.S. Cl. 313—636 6 Claims



1. An electric arc discharge lamp having an arc discharge light source which emits both visible light radiation and UV radiation enclosed within a soda-lime glass envelope having a transmission of not more than about 25% of said UV radiation, wherein at least a portion of said UV radiation emitted has a wavelength between 280–320 nm, said soda-lime glass comprising cerium oxide, predominantly in the form of CeO_2, present in an amount of from 0.02 to 0.1 wt. % of said glass composition and iron oxide, predominantly in the form of Fe_2O_3, present in an amount of from 0.02 to 0.06 wt. % of said glass composition

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5,350,973

CATHODE-RAY TUBE APPARATUS HAVING A REDUCED LEAK OF MAGNETIC FLUXES

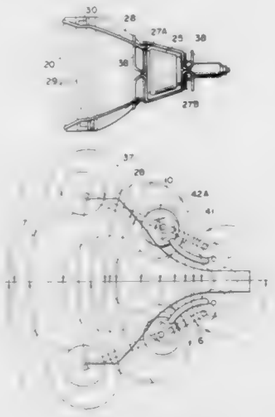
Masahiro Yokota, Fukaya; Kiyoshi Oyama, Yokohama, and Hideo Mori, Fukaya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 856,810, Jun. 26, 1990, abandoned, which is a continuation of Ser. No. 543,398, Jun. 26, 1990, abandoned. This application May 21, 1993, Ser. No. 65,451

Claims priority, application Japan, Aug. 31, 1989, 1-225649

Int. Cl.[5] H01F *13/00*

U.S. Cl. 315—8 26 Claims



1. A cathode-ray tube apparatus wherein unwanted leakage magnetic fluxes are controlled, comprising:

electron beam emitting means for emitting electron beams;

light ray producing means for producing light rays when irradiated with the electron beams;

an envelope having an axis and enclosing said electron beam emitting means and said light ray producing means;

deflection magnetic field generating means located outside said envelope and having a curved front section and a rear section, the front section located at a light ray producing means side of said deflection magnetic field generating means and said rear section located at an electron beam emitting side of said deflection magnetic field generating means, said deflection field generating means for generating and applying effective magnetic fluxes into said envelope to deflect the electron beam in a horizontal direction, said deflection magnetic field generating means also generating leakage magnetic fluxes extending in a direction different from that of the effective magnetic fluxes; and

passive control means for controlling said leakage magnetic fluxes, said passive control means having a section curved along the curved front section of said deflection magnetic field generating means and directly mounted on the curved front section so that said passive control means is located across the leakage magnetic fluxes, said leak magnetic fluxes generated from the curved front section, inducing a current in said passive control means resulting in compensating magnetic fluxes being produced, said compensating magnetic fluxes controlling said leakage magnetic fluxes, said passive control means being located such that said compensating magnetic fluxes do not adversely affect said effective magnetic fluxes.

5,350,974

COAXIAL ELECTROMAGNETIC WAVE INJECTION AND ELECTRON CYCLOTRON RESONANCE ION SOURCE

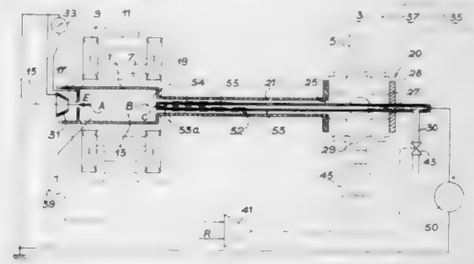
Bernard Jacquot, Novy-Chevrieres, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 28, 1992, Ser. No. 937,516

Claims priority, application France, Sep. 11, 1991, 91 11206

Int. Cl.[5] H01J *7/24*

U.S. Cl. 315—111.81 8 Claims



1. Electron cyclotron resonance (ECR) ion source comprising:

an enclosure (**1**) containing a plasma of ions and electrons formed by electron cyclotron resonance,

a magnetic structure (**11**) surrounding the enclosure and creating, within the latter, two magnetic fields which are respectively radial and axial ensuring a confinement in the enclosure,

a system for extracting the ions from the enclosure connected to an electric power supply (**33**),

a transition cavity (**20**) connected to an electromagentic wave generator (**3**),

a first conductive duct (**21**) connecting in vacuum-tight manner the enclosure and the cavity and

a second duct (**52**), which is at least partly conductive, axially traversing the first duct and the cavity and which issues into the enclosure, characterized in that the second duct, in which a resonance is produced at a resonance point C, is connected to a second electric power supply (**50**).

5,350,975

Patent Not Issued For This Number

5,350,976

FLUORESCENT LAMP STARTER

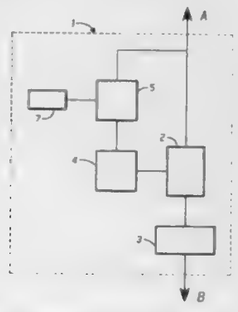
Norberto M. Mulieri, Buenos Aires, Argentina, assignor to Compania Kelmas S.A., Uruguay

Filed May 29, 1992, Ser. No. 890,947

Claims priority, application Argentina, May 31, 1991, 319828

Int. Cl.[5] H05B *41/14*

U.S. Cl. 315—290 9 Claims



1. A fluorescent lighting system including:

an electronic starter comprising (a) a hybrid solid state switch energized by a line and filtering detector unit connected in series with a pulse restrictor, the inputs of said hybrid solid state switch and said line and filtering detector unit being connected to a first terminal, and (b) a pulse generator connected to the output of said hybrid solid state switch, the output of said pulse generator being connected to a second terminal;

a fluorescent light tube having bridged terminals, and

a ballast,

wherein said electronic starter is connectable through said first and second terminals to a power source, and connected in parallel to said bridged terminals and in series to said ballast.

5,350,977

LUMINAIRE OF VARIABLE COLOR TEMPERATURE FOR OBTAINING A BLEND COLOR LIGHT OF A DESIRED COLOR TEMPERATURE FROM DIFFERENT EMISSION-COLOR LIGHT SOURCES

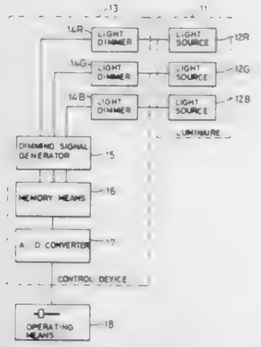
Katunobu Hamamoto, and Shigeo Gotoh, both of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jun. 8, 1993, Ser. No. 73,373

Claims priority, application Japan, Jun. 15, 1992, 4-040833

Int. Cl.[5] G05F *1/00*

U.S. Cl. 315—291 14 Claims



1. A luminaire of variable color temperature for obtaining a blended color light of a desired color temperature from different emission-color light sources, comprising:

a luminaire section including a plurality of light sources of mutually different and respectively predetermined emission colors, and means for lighting said plurality of light sources respectively in said predetermined emission colors, for emitting a blended color light with said emission colors of said light sources blended; and

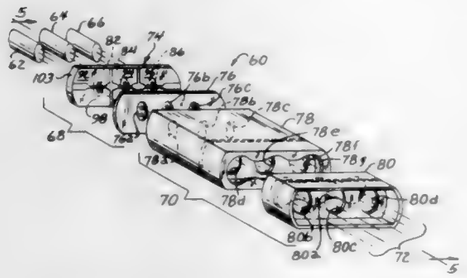
a control section for transmitting to said lighting means of said luminaire section color-temperature control signals for varying a state in which the emission colors are blended to vary said blended color light from one of a plurality of blended color lights to another, said color-temperature control signals representing respectively a color temperature of each light source desired for obtaining said predetermined emission color of each light source, and respective differences in values of the color temperatures when represented by the reciprocal color temperatures of respective two adjacent stages of said control signals in a desired variation range of the color temperature being substantially equalized at any level of said variation range.

5,350,978

MULTI-BEAM GROUP ELECTRON GUN FOR COLOR CRT

Hsing-Yao Chen, Barrington, Ill., assignor to Chunghwa Picture Tubes, Ltd., Taoyuan, Taiwan

Filed Feb. 10, 1993, Ser. No. 16,575
Int. Cl.[5] H01J *29/51, 29/56, 29/50*
U.S. Cl. 315—368.15 25 Claims



1. An inline electron gun for a multi-beam color cathode ray tube (CRT) including a display green whereon a video image is formed by sweeping a plurality of horizontally aligned electron beams over a plurality of vertically spaced, horizontal scan lines in a raster-like manner, wherein each electron beam provides one of the three primary colors of red, green or blue of the video image, said electron gun comprising:

cathode means for providing energetic electrons;

a beam forming region (BFR) disposed adjacent to said cathode means and including first and second spaced, charged, grids respectively having first and second arrays of spaced apertures for forming the energetic electrons into a plurality of beams, wherein each of said first and second arrays of apertures include upper and lower horizontally aligned apertures for passing horizontally aligned electron beams providing the three primary colors of red, green and blue for upper and lower horizontal scan lines, respectively, and wherein the apertures in said first and second arrays are further grouped in vertical alignment so as to form three pairs of vertically aligned, grouped apertures for passing first and second vertically aligned electron beams in each vertical group for each of the primary colors of red, green and blue on a respective horizontal scan line;

lens means disposed intermediate said BFR and the CRT's display screen for focusing the electron beams on the display screen; and

convergence means disposed intermediate said lens means and the display screen for converging the electron beams into an upper and a lower spot on the display green, wherein said upper and lower spots are swept over adjacent upper and lower horizontal scan lines, respectively.

5,350,979

METHOD OF ANALYZING TELEVISION CIRCUITS AND INSTRUMENTATION THEREFOR

Glen Kropuenske, Humboldt, and Scott A. Schlag, Sioux Falls, both of S. Dak., assignors to Sencore, Inc., Sioux Falls, S. Dak.

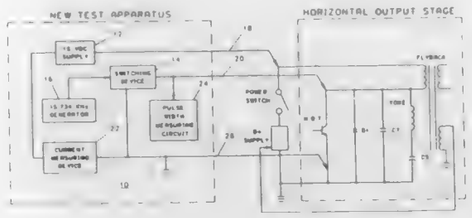
Filed Nov. 18, 1992, Ser. No. 978,433
Int. Cl.[5] H01J *29/70*
U.S. Cl. 315—411 7 Claims

1. A method of testing the horizontal output stage of a television receiver, comprising the steps of

disconnecting said television receiver from the principle power source to denergize the B+ power supply of said television receiver,

connecting a source of low DC voltage to said horizontal output stage,

connecting a switching device in series with said source of low DC voltage and said primary winding to open and close the series circuit including said low voltage DC voltage source and said primary winding at the horizontal sweep frequency of said horizontal output stage, and



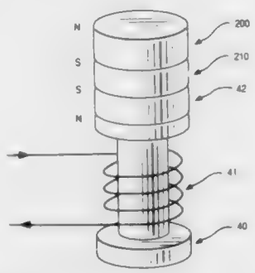
measuring and displaying the DC current through said primary winding of said flyback transformer.

5,350,980

NONLINEAR INDUCTOR WITH MAGNETIC FIELD REDUCTION

Malcom Dye, Southampton; Terence K. Gibbs, Portsmouth; Ian D. Mercer, Southampton, and Graham Luck, Chichester, all of United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 1, 1992, Ser. No. 938,977
Claims priority, application United Kingdom, Sep. 2, 1991, 09118739
Int. Cl.[5] G09G *1/04;* H01J *29/06;* H01F *21/00*
U.S. Cl. 315—370 5 Claims



1. A nonlinear inductor comprising:

a bobbin carrying an inductive coil;

a first permanent magnet adjacent to and coaxial with the coil; and

a second permanent magnet fixedly positioned to the coaxial with the first magnet and oriented relative to the first magnet in such a manner that the magnetic field generated by the nonlinear inductor is effectively cancelled by the magnetic field of said second permanent magnet.

5,350,981

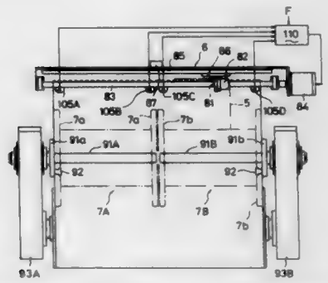
METHOD AND APPARATUS FOR WINDING A CORD CONTINUOUSLY IN DIP TREATING APPARATUS

Toshiharu Taniguchi, and Takaaki Ueda, both of Kobe, Japan, assignors to Bando Chemical Industries, Ltd., Kobe-shi, Japan

Division of Ser. No. 753,881, Sep. 3, 1991, Pat. No. 5,221,879.
This application Mar. 9, 1993, Ser. No. 28,150
Claims priority, application Japan, Sep. 21, 1990, 2-252917; Sep. 28, 1990, 2-261103; Sep. 28, 1990, 2-261104; Sep. 28, 1990, 2-261105
Int. Cl.[5] B65H *54/22*
U.S. Cl. 318—7 2 Claims

1. A bobbin switching apparatus in a continuous cord winding apparatus for winding a cord from a first cheese to a first bobbin and a cord from a second cheese to a second bobbin, wherein said cord is wound around said first and said second cheeses in a cord supply side and said first and said second bobbins are provided coaxially in a row in a cord wind side, said bobbin switching apparatus comprising:

joint part detection means for detecting a joint part where a tail end of said cord of said first cheese joints a front end of said cord of said second cheese;



cord moving means for moving said cord from said cord supply side along axes of said first and said second bobbins; and

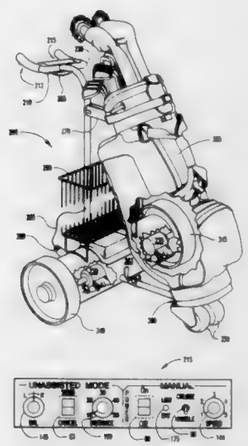
winding changing means for changing winding automatically from a bobbin which is winding said cord to another bobbin by receiving outputs from said joint part detection means and by controlling said cord moving means by detecting said joint part.

5,350,982

MOTORIZED GOLF BAG CART CIRCUIT AND APPARATUS

James N. Seib, Rte. 1, Williams, Ind. 47470

Filed Dec. 16, 1992, Ser. No. 991,866
Int. Cl.[5] H02P *1/54, 3/08*
U.S. Cl. 318—139 21 Claims



1. An electrical circuit apparatus for use with a motorized cart having first and second wheels separated by a cart body and located along a first axis and additionally having a third wheel located along an axis perpendicular to said first axis, said cart suitable for carrying golf clubs, comprising:

motor means for moving said first and second wheels of said cart;

switch means for enabling in a first mode of operation said motor means to move said cart only while said switch means is held closed by a cart operator;

first timer means for enabling in a second mode of operation said motor means to move said cart for a predetermined amount of time without further assistance from said cart operator; and

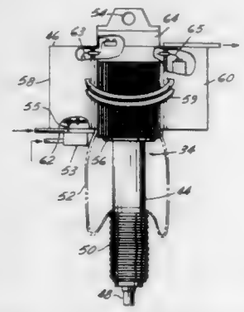
distance timer means separate from said first timer means for enabling in a third mode of operation said motor means to move said cart a distance determined by said cart operator and without further assistance from said cart operator.

5,350,983

SUSPENSION DAMPER WITH INTEGRATED CONTROLS

John M. Miller, Saline, and Venkateswara A. Sankaran, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1992, Ser. No. 993,561
Int. Cl.[5] B60G *17/015*
U.S. Cl. 318—254 9 Claims



1. An electrically powered suspension unit for an automotive vehicle, comprising:

a housing having a predetermined volume;

electric motor means disposed in said housing;

control means electrically connected to said motor means for dynamically developing current commands for said motor means in response to operating parameters of said motor means, said control means disposed adjacent said motor means in said housing;

power module means electrically connected to said motor means and said control means for synthesizing an input current to said motor means in response to said current commands, said power module means disposed in said housing adjacent said motor means; and

cooling means for regulating the temperature in said housing, whereby said motor means, said control means and said power module means are integrated into said housing.

5,350,984

METHOD AND APPARATUS FOR STARTING A BRUSHLESS DC MOTOR

Francesco Carobolante, Portola Valley, Calif., and Ermanno Pace, Phoenix, Ariz., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Mar. 12, 1993, Ser. No. 30,846
Int. Cl.[5] H02R *23/00*
U.S. Cl. 318—254 20 Claims

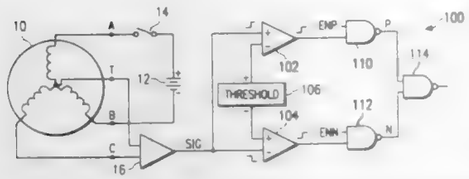
1. A method for aligning a rotor of a brushless and sensorless DC motor, the motor having a stator with at least two coils, the coils being selectively energizable by a power source connected to the motor, the method comprising steps of:

energizing a first coil of the at least two coils;

generating a signal indicating whether the rotor has been rotated at a rotary speed greater than a predetermined rotary speed while the first coil was energized; and

when the signal indicates that the rotor has not been rotated

at the rotary speed greater than the predetermined rotary speed, commutating the connection between the power



source and the motor and energizing a second coil of the at least two coils.

5,350,985

ELECTRIC BRAKING FOR VEHICLES WITH TWO PARALLEL ELECTRIC MOTORS

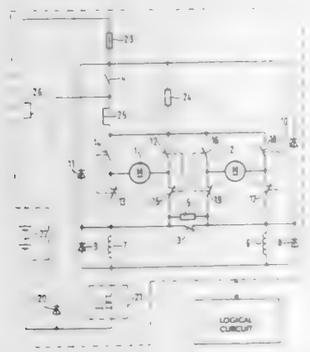
Harald Konrad, Hausen; Siegfried Puschel, Aschaffenburg, and Gerald Stein, Hosbach, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 23, 1992, Ser. No. 980,536

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1991, 4139569

Int. Cl.[5] **B60L** *7/22*; **H02P** *3/08*

U.S. Cl. 318—370 | **11 Claims**



1. A process for the low-loss braking of an electrically driven vehicle by providing braking circuit means wherein two electric motors are connected in parallel and assigned to each side of the vehicle and which are controlled by pulse control, comprising the steps of continuously detecting the rpm of both electric motors (1,2) and the positions of travel direction inducers and, at the moment braking of the vehicle is commenced as indicated by the positions of the travel direction inducers, utilizing said braking circuit means to brake the vehicle by regenerative braking above a prescribed threshold value for the rpm of both electric motors (1,2) and utilizing said braking circuit means to brake the vehicle by dynamic braking below said threshold value.

5,350,986

VEHICLE POWER DOOR SPEED CONTROL

Joseph D. Long, Waterford; Robert S. Strother, St. Clair Shores, and Gary D. Bree, Clarkston, all of Mich., assignors to General Motors Corp., Detroit, Mich.

Filed May 20, 1993, Ser. No. 63,627

Int. Cl.[5] **G05B** *5/01*

U.S. Cl. 318—432 | **2 Claims**

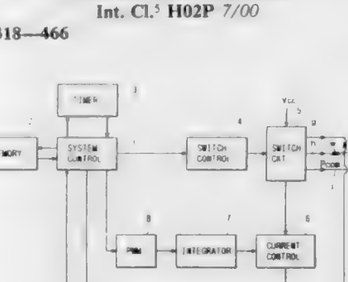
1. A door control method for a door controller for a vehicle door, the door controller including an electric drive means and a power source for supplying a pulse width modulated control voltage at a controlled duty cycle to the electric drive means for energizing the electric drive means to drive the vehicle door to a closed position, the electric drive means having a torque output varying in direct relationship to the controlled duty cycle, the method comprising the steps of:

sensing door movement;

sensing door speed;

determining a distance of sensed door movement while the sensed door speed is continuously less than a desired speed since a last increase in the controlled duty cycle;

determining a distance of sensed door movement while the sensed door speed is continuously greater than the desired speed since a last decrease in the controlled duty cycle;



increasing the controlled duty cycle to increase the torque output of the electric drive means to increase door speed when the determined distance of sensed door movement while the sensed door speed is continuously less than the desired speed since a last increase in the controlled duty cycle exceeds a first predetermined distance; and

decreasing the controlled duty cycle to decrease the torque output of the electric drive means to decrease door speed when the determined distance of sensed door movement while the sensed door speed is continuously greater than the desired speed since a last decrease in the controlled duty cycle exceeds a second predetermined distance, whereby the door speed is controlled to the desired speed.

5,350,987

DETECTION OF POSITION OF ROTOR IN BRUSHLESS DC MOTOR

Yasuhiro Ueki, Sagamihara, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 965,035, Oct. 22, 1992, Pat. No. 5,254,912, which is a continuation of Ser. No. 709,601, Jun. 5, 1991, abandoned. This application Dec. 30, 1992, Ser. No. 998,227

Claims priority, application Japan, Jun. 8, 1990, 2-150627

The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.

Int. Cl.[5] **H02P** *7/00*

U.S. Cl. 318—466 | **18 Claims**

1. A method of detecting a position of a rotor in a brushless dc motor when the rotor is stationary, the motor comprising a rotor magnet provided with a plurality of magnetic poles spaced by equal angular intervals, and a stator having a core divided into a plurality of segments spaced by equal angular intervals, the stator having polyphase stator windings provided on the core segments respectively, the stator windings having first ends and second ends, the first ends being connected to each other at a common junction, the second ends being separate from each other, wherein a total number of the core segments differs from a total number of the magnetic poles, and wherein the core segments corresponding to one phase substantially face centers of the magnetic poles of a same type while the core segments corresponding to other phases face positions offset from centers of the magnetic poles, the method comprising the steps of:

feeding test currents to the stator windings via the second ends sequentially in different current-feed patterns;

detecting voltages at a given measurement point which occur in correspondence with the different current-feed patterns respectively;

detecting differences between a predetermined reference voltage and the detected voltages at the given measurement point which correspond to the different current-feed patterns respectively;

detecting a maximal difference from among the detected differences;

determining a current-feed pattern from among the different current-feed patterns which corresponds to the detected maximal difference; and

detecting a position of the rotor relative to the stator in response to the feed current corresponding to the determined current-feed pattern.

5,350,988

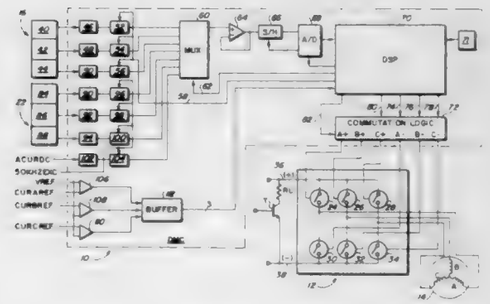
DIGITAL MOTOR CONTROLLER

Dong T. Le, Lakewood, Calif., assignor to AlliedSignal, Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 550,410, Jul. 10, 1990, abandoned. This application Jul. 2, 1991, Ser. No. 724,647

Int. Cl.[5] **H02P** *5/40, 8/00*

U.S. Cl. 318—618 | **38 Claims**



1. Apparatus for controlling a brushless motor having a rotor, stator windings and sensing means for providing analog position signals indicative of the position of said rotor with respect to said stator windings, comprising:

digitizing means, responsive to said sensing means, for digitizing said analog position signals;

digital signal processing means for selecting said windings to be energized, said digital signal processing means is responsive to said digitizing means, for processing said digitized signals into digital position signals;

commutation means, responsive to said digital position signals, for generating commutation commands;

inverter means, responsive to said commutation commands, for energizing the windings selected by said digital signal processing means;

direction command means for providing direction commands that command direction of motor rotation; and wherein said driving means includes first drive means for providing a first set of commutation commands that cause said rotor to be driven in a first direction, second drive means for providing a second set of commutation commands that cause said rotor to be driven in a second direction, and first selecting means, responsive to said direction command, for selecting either said first set or said second set of commutation commands to be provided on said outputs of said digital signal processing means; and wherein said digital signal processor means further provides a drive command that commands asia motor to either drive or brake; wherein said braking means includes first brake means for providing a third set of commutation commands that cause said rotor to bake while said rotor is rotating in said first direction, and second brake means for providing a fourth set of commutation commands that cause said rotor to brake while said rotor is rotating in said second direction; and wherein said first selecting means is also responsive to said drive command, said first selecting means selecting either said first, second, third or fourth sets of commutation commands to be provided to said inverter means.

5,350,989

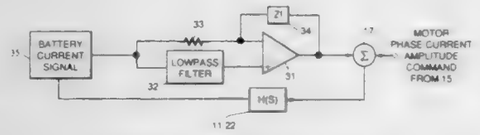
TORQUE OSCILLATION COMPENSATION UTILIZING BATTERY CURRENT SENSING

Robert S. Wedeen, Manhattan Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 13, 1993, Ser. No. 61,413

Int. Cl.[5] **G05B** *5/00*

U.S. Cl. 318—632 | **8 Claims**



1. A torque oscillation compensation system for use with a power source, an electric motor and a controller coupled between the power source and the motor, said system comprising:

an input source for providing a motor phase current amplitude command input signal for causing the controller to drive the motor;

a summing device having an output and having a first input coupled to the input source for receiving the motor phase current amplitude command input signal and having an output coupled to the controller;

current sensing means coupled to the power source for sensing the current supplied by the power source;

a low pass filter coupled to the current sensing means for coupling a DC component of the current from the power source;

an error amplifier having a first input coupled to the low pass filter and having a second input coupled to the resistor and having an output coupled to a second input of the summing device and wherein the error amplifier generates a compensation signal that is combined with the motor phase current amplitude command input signal that stabilizes the current from the power source to a DC level and thus compensates for torque oscillations present in the electric motor and thereby eliminate motor torque fluctuations;

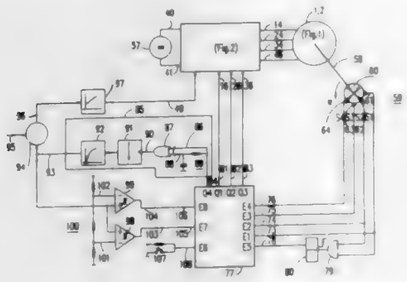
a resistor coupled to the current sensing means for coupling the current from the power source to the error amplifier;

an impedance coupled in a feedback manner between the output of the error amplifier and a selected input of the error amplifier that determines a complex gain for the error amplifier.

5,350,990
CIRCUIT ARRANGEMENT FOR COMMUTATING A RELUCTANCE MOTOR

Ralf Austermann, Rietberg, and Heinz van der Broeck, Zülpich, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 11, 1991, Ser. No. 758,939
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1990, 4029335
Int. Cl.[5] H02P *7/63*
U.S. Cl. 318—701 **16 Claims**



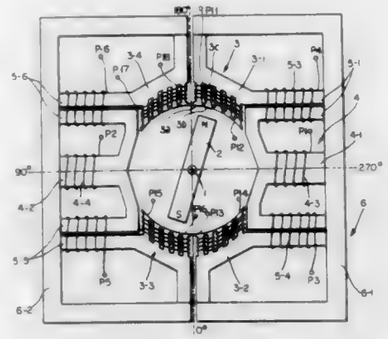
1. A circuit arrangement for commutating a reluctance motor having a stator and a rotor, the rotor traveling along a motion coordinate path relative to the stator, comprising:
- a plurality of stator windings; and
- current generating means for producing a first cyclic sequence of current pulses resulting in the rotor traveling a predetermined distance along the motion coordinate path and for producing a second cyclic sequence of current pulses resulting in the rotor traveling at least approximately twice the predetermined distance along the motion coordinate path, said stator windings being supplied with said second cyclic sequence of current pulses when rotor speed exceeds a predetermined level;
- wherein said second cyclic sequence of current pulses is formed by omitting predetermined current pulses from said first cyclic sequence.

5,350,991
MAGNETIC INDUCTION METHOD AND MAGNETIC CIRCUIT OF ROTATOR FOR GENERATING MECHANICAL AND ELECTRIC POWER

Youn S. Bae, 603-1, Anyang-dong, Anyang-si, Kyungki-do, Rep. of Korea

PCT No. PCT/KR90/00007, § 371 Date Aug. 17, 1992, § 102(e) Date Aug. 17, 1992, PCT Pub. No. WO91/11051, PCT Pub. Date Jul. 25, 1991
PCT Filed Jul. 20, 1990, Ser. No. 910,074
Claims priority, application Rep. of Korea, Jan. 12, 1990, 90-382
Int. Cl.[5] H02K *47/20, 47/00, 57/00*
U.S. Cl. 318—727 **12 Claims**

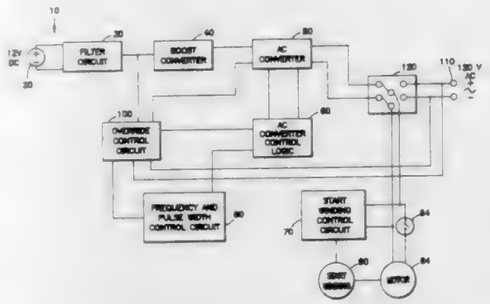
1. A magnetic circuit of a rotating apparatus for simultaneously generating an electric power and a mechanical power, comprising:
- a revolving field magnet (2) installed on an axis therein, rotated by the attractive and repulsive forces of a magnetic field;
- means (3) for generating mechanical power to apply a rotating magnetic field to said revolving field magnet (2), said means including a plurality of armatures (3-1, 3-2, 3-3, 3-4) wound with coils (3c) and a plurality of conductors (3a, 3b) of slot-type at the magnetic pole sides thereof for generating the mechanical power;
- means (4) for generating electric power formed by conductors, said means including a plurality of armatures (4-1, 4-2) to receive a magnetic flux generated when said revolving field magnet (2) rotates, and coils wound around said armatures (4-1, 4-2) for generating the electric power; and
- magnetic flux induction means including an induction electromagnet (5) for controlling the flow of a magnetic flux according to the position of said revolving field magnet (2) and a circulation conductor (6) for circulating an inducted flux by said induction electromagnet (5).



5,350,992
MOTOR CONTROL CIRCUIT

Jeffrey B. Colter, Minneapolis, Minn., assignor to Micro-Trak Systems, Inc., Mankato, Minn.

Filed Sep. 17, 1991, Ser. No. 761,328
Int. Cl.[5] H02P *5/40*
U.S. Cl. 318—807 **21 Claims**



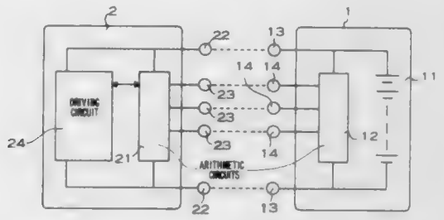
13. A control circuit for controlling the activation of an induction motor comprising:
- (a) a thermostat, connected to monitor an external temperature, and connected in series between a first end of the induction motor and a power source for providing a closed circuit connection between the induction motor and the power source when the temperature detected by the thermostat is within a preselected range and an open circuit between the induction motor and the power source when the temperature detected by the thermostat is within a preselected range and an open circuit between the induction motor and the power source when the temperature detected by the thermostat is within a second range;
- (b) first voltage generating circuit means connected to the thermostat and induction motor for generating a first voltage signal when the thermostat provides a closed circuit connection;
- (c) a second voltage generating circuit means connected to the thermostat for providing a second voltage signal when the thermostat provides an open circuit connection; and
- (d) voltage comparator means, connected to receive the first and second voltage signals, for generating a first control signal when the first voltage signal is received and a second control signal when the second voltage is received;

- (e) control means, connected to said voltage comparator means, for activating the induction motor power source upon receipt of the first voltage signal.

5,350,993
POWER SUPPLY

Shoichi Toya, Mihara, and Tetsuya Okada, Sumoto, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jan. 14, 1993, Ser. No. 4,574
Claims priority, application Japan, Jan. 20, 1992, 4-007955
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—2 **6 Claims**

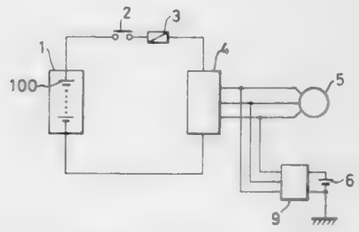


1. A battery pack comprising:
- rechargeable batteries;
- charge and discharge battery terminals selectively connectably to input terminals of electrical equipment such that the equipment can be supplied with electrical power from said batteries and to charger output terminals of a battery recharger such that the batteries can be recharged by the battery recharger;
- an arithmetic circuit including a memory in which information indicative of characteristics of said rechargeable batteries is stored and which circuit generates a signal representative of said information when either one of the electrical equipment and the battery recharger are connected to the battery pack; and
- signal terminals operatively electrically connected to said arithmetic circuit and selectively connectable to the electrical equipment and to the battery recharger, the signal generated by said arithmetic circuit being output from the battery pack from said signal terminals.

5,350,994
ELECTRIC SYSTEM FOR AN ELECTRIC VEHICLE

Shigenori Kinoshita; Takao Yanase; Kouetsu Fujita; Osamu Motoyoshi, and Yoshio Ito, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Jun. 3, 1993, Ser. No. 70,776
Claims priority, applicatica Japan, Jun. 5, 1992, 4-171788; Jul. 10, 1992, 4-207126
Int. Cl.[5] H02J *7/10*
U.S. Cl. 320—15 **16 Claims**

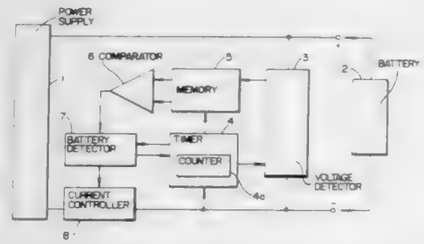


1. An electric system for an electric vehicle comprising:
- a main battery used for driving the vehicle, said main battery having a plurality of unit batteries and providing a first voltage;
- an auxiliary battery used for accessories of the vehicle, said auxiliary battery having the same kind of unit battery as said main battery and providing a second voltage, said first voltage being n times said voltage;
- an AC motor for driving one or more wheels of the vehicle;
- an inverter for converting DC power supplied from said main battery to AC power for supply to said AC motor; and
- charging means for charging said auxiliary battery by using the AC power from said inverter, said charging means for the auxiliary battery comprising a step-down insulating transformer for reducing the output voltage of said inverter to the charging voltage of said auxiliary battery, a rectifier and a smoothing circuit which are in turn connected to an AC output side of said inverter,
- wherein a turns ratio of said step-down insulating transformer is n.

5,350,995
BATTERY CHARGER FOR CHARGING BOTH A FREQUENTLY AND INFREQUENTLY USED BATTERY

Kouhei Iketani, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1993, Ser. No. 91,046
Claims priority, application Japan, Jul. 17, 1992, 4-212329
Int. Cl.[5] H02J *7/04*
U.S. Cl. 320—15 **11 Claims**



1. A battery charger for charging a battery, comprising:
- means for detecting a voltage across said battery;
- means for determining whether said battery is a frequently used battery or a long storage battery, based upon a variation in said voltage detected by said detector means during a first predetermined time period after said battery starts charging; and
- means for charging said battery with a first predetermined charging routine if said battery is determined to be a frequently used battery by said determining means, and for charging said battery with a second predetermined charging routine if said battery is determined to be a long storage battery by said determining means.

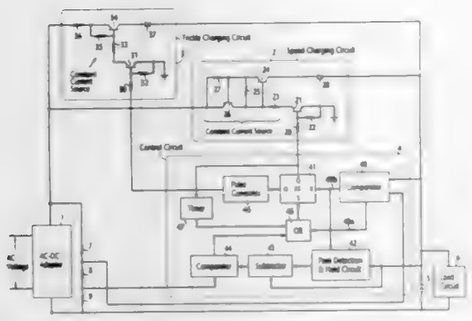
5,350,996
METHOD AND CIRCUIT FOR CHARGING BATTERY OF PORTABLE APPARATUS

Takaaki Tauchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 9, 1992, Ser. No. 973,695
Claims priority, application Japan, Nov. 8, 1991, 3-321310
Int. Cl.[5] H02J *7/10*
U.S. Cl. 320—22 **6 Claims**

1. A circuit arrangement for charging a rechargeable battery using a DC voltage source, comprising:
- a first constant current source connected between said DC voltage source and said battery for producing a current of low value;
- a second constant current source connected between said DC voltage source and said battery for producing a current of high value;
- means for detecting battery voltage; and
- control means responsive to the detected battery voltage for

causing said first constant current source to supply the current of low value to said battery when the voltage of said battery is lower than a reference level, causing said second constant current source to supply said current of



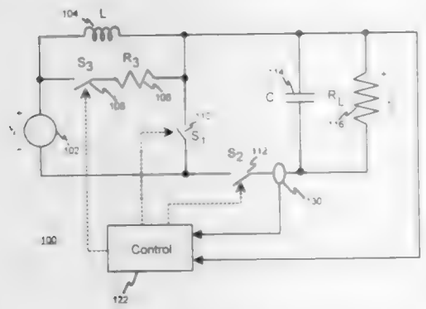
high value to said battery for a period of time after the voltage of the battery becomes higher than said reference level, and causing said first constant current source to intermittently supply said current of low value upon termination of said period.

5,350,997

STEP-UP VOLTAGE CONVERTER WITH OVERCURRENT PROTECTION

Mohammad-Reza Ghotbi, Rochester, Minn., and Tony R. Larson, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1992, Ser. No. 990,997
Int. Cl.[5] G05F *1/44*
U.S. Cl. 323—268 19 Claims



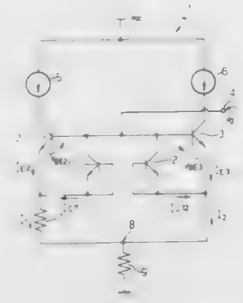
1. A circuit for converting a first voltage to a second voltage and driving a load, the circuit comprising:
a voltage source;
an inductance coupled to the voltage source;
a capacitance coupled between the voltage source and the inductance, the capacitance being coupled in parallel with the load;
a first switching means coupled between the inductance and the voltage source;
a second switching means coupled between the first switching means and the capacitance;
a resistance means coupled to the inductance;
a third switching means coupled to the resistance means and the voltage source;
means for controlling the first, second, and third switching means, the controlling means during normal operation causes the first and second switching means to switch in a complementary fashion and causes the third switching means to remain open, the controlling means during a first soft start cycle step causing the first switching means to remain open and causing the second and third switching means to operate in a complementary fashion, the controlling means during a second soft start cycle step causing the third switching means to remain open and causing the first and second switches to operate in a complementary manner until steady state operation is achieved; and
an overcurrent protection circuit, the overcurrent protection circuit including means for sensing the output current of the converting circuit and providing that sensed signal to the controlling means; and means for modifying the operation of the converting circuit if an overcurrent condition is sensed.

5,350,998

STRUCTURE FOR TEMPERATURE COMPENSATING THE INVERSE SATURATION CURRENT OF BIPOLAR TRANSISTORS

Fabio Marchió, Sedriano; Enrico Novarini, Certosa Di Pavia, and Giorgio Rossi, Nerviano, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Apr. 23, 1992, Ser. No. 872,462
Claims priority, application Italy, Apr. 24, 1991, T091A 000311
Int. Cl.[5] G05F *3/16*
U.S. Cl. 323—312 12 Claims



1. A circuit for temperature compensating the reverse saturation current of a first bipolar transistor having collector, base and emitter regions defining a base-emitter junction; comprising a diode element parallel connected in reverse configuration, to said base-emitter junction of said bipolar transistor and having substantially the same saturation current.

5,350,999

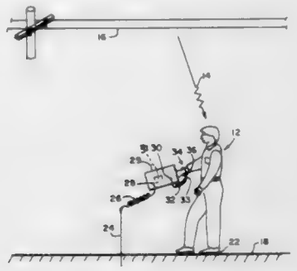
MEASUREMENT SYSTEM AND METHOD FOR DETERMINING THE AMOUNT OF ELECTROMAGNETIC RADIATION ENERGY BEING ABSORBED BY LIVING BEINGS

Daniel D. Brunda, 106 W. Upper Ferry, W. Trenton, N.J. 08628

Continuation of Ser. No. 858,626, Mar. 27, 1992, abandoned.
This application Oct. 19, 1993, Ser. No. 137,983
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—72 4 Claims

1. A measurement system for determining the amount of radiation absorbed by living beings comprises:
a) measurement means for measuring the amount of radiation emanating from power lines and any other source of radiation of electromagnetic energy at a particular location, said measurement means including;
i) grounding means for obtaining an adequate electrical ground connection,
ii) a meter having a ground terminal and a measurement terminal for measuring electromagnetic energy,
b) a first electrical conductor connected between said grounding means and said ground terminal of said measurement meter;

c) an electrically conducting expandable cuff adapted to be affixed on an appendage of said living beings for making electrically conductive contact with said living beings;
d) a second electrical conductor connected between said expandable cuff and said measurement terminal of said meter; and



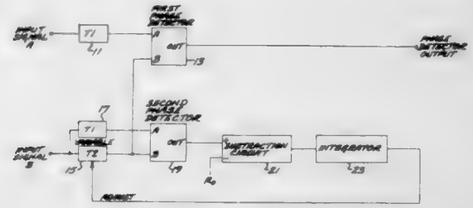
e) subtracting means connected to said measurement terminal of said meter for subtracting the value obtained when said electrically conductive expandable cuff is not making contact with said living being from the value obtained when electrically conducting expandable cuff is making electrically conductive contact with said living being;
thereby yielding the amount of radiation being absorbed by said living beings.

5,351,000

METHOD OF CANCELLING OFFSET ERRORS IN PHASE DETECTORS

William D. Farwell, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 30, 1993, Ser. No. 99,886
Int. Cl.[5] G01R *19/00*
U.S. Cl. 324—76.77 3 Claims



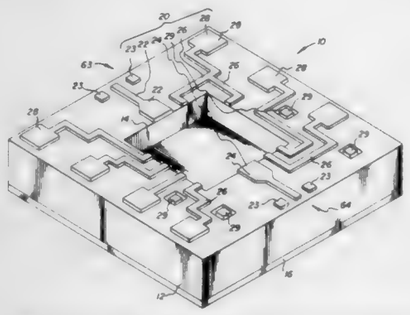
1. A phase detector circuit for comparing the phase of first and second input signals, comprising:
first fixed delay means responsive to the first input signal for producing a fixedly delayed first signal which is a replica of the first input signal and delayed relative thereto by a fixed delay;
second fixed delay means responsive to the second input signal for producing a fixedly delayed second signal which is a replica of the second input signal and delayed relative thereto by the fixed delay;
controlled delay means responsive to the second input signal for producing a controllably delayed second signal which is a replica of the second input signal and delayed relative thereto by a controlled delay;
a first phase detector responsive to said fixedly delayed first signal and said adjustably delayed second signal for providing a first phase detector output that comprises the output of the phase detector circuit;
a second phase detector responsive to said fixedly delayed second signal and said adjustably delayed second signal for providing a second phase detector output, said first and second phase detectors having substantially identical respective offset errors; and
control means responsive to said second phase detector output for controlling said controlled delay means to set said controlled delay such that said second phase detector output indicates zero phase error;
whereby said controlled delay compensates the offset error of said first phase detector.

5,351,001

MICROWAVE COMPONENT TEST METHOD AND APPARATUS

William P. Kornrumpf, Albany, and David A. Bates, Fayetteville, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 5, 1990, Ser. No. 504,803
Int. Cl.[5] G01R *1/04*; H01L *23/48*
U.S. Cl. 324—158.1 17 Claims



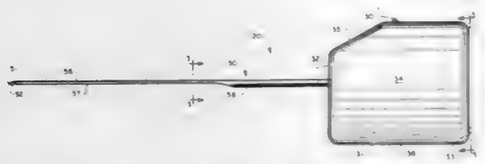
1. A method of pre-testing microwave components comprising the steps of:
providing a test fixture comprising a test substrate including:
a mounting location for a component to be tested,
first and second microwave transmission lines for connection to said component to be tested when said component to be tested is disposed at said mounting location, said first and second microwave transmission lines each having first and second ends, each of said first ends being disposed in the vicinity of said mounting location and each of said second ends being disposed remote from said mounting location, and
a power supply terminal for connection to said component to be tested;
disposing said component to be tested at said mounting location;
connecting said first end of said first microwave transmission line to a first microwave port of said component to be tested, said first end of said second microwave transmission line to a second microwave port of said component to be tested and said power supply terminal to a power supply terminal of said component to be tested by the steps of:
bonding a dielectric overlay layer to said test fixture and said component to be tested,
providing an aperture in said dielectric overlay layer to expose conductive material on said component to be tested, and
disposing a pattern of conductors on said dielectric overlay layer in ohmic contact with said power supply and control signal terminals, said first and second transmission lines and said conductive material on said component to be tested;
applying power and a test signal to said component to be tested; and
determining the response of said component to be tested to said test signal.

5,351,002

TEST PROBE

Gary S. Wollert; Timothy J. Albo, and Robert D. Braun, all of Kenosha, Wis., assignors to Snap-on Incorporated, Kenosha, Wis.

Filed Aug. 20, 1990, Ser. No. 569,618
Int. Cl.[5] G01R *1/06*
U.S. Cl. 324—754 12 Claims



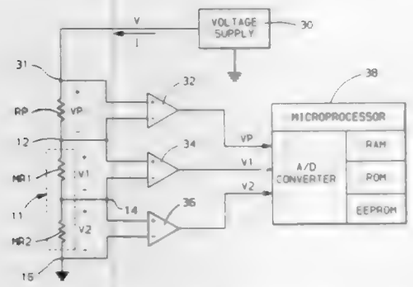
1. An electrical test probe comprising: a handle, and a one-piece metal rod including a free end and an opposite end fixedly secured in said handle, a substantial portion of said rod including a longitudinally extending generally flat conductive face extending substantially parallel to the longitudinal axis of said rod, said face and said portion having the same length, said rod being adapted to be disposed against an electrical terminal to be tested such that said flat face abuts the terminal.

5,351,003

TEMPERATURE COMPENSATED MAGNETORESISTIVE POSITION SENSOR

Harry J. Bauer, Troy, and Ronald T. Golebiewski, Romeo, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 2, 1993, Ser. No. 42,228
Int. Cl.[5] G01B *7/14*; G01R *33/06*; G01D *5/18*
U.S. Cl. 324—207.12 6 Claims



1. A magnetoresistive position sensor compensated to operate at different temperatures, the sensor comprising:

a first magnetoresistor element having a first resistance and a second magnetoresistor element having a second resistance, the first and second magnetoresistor elements being electrically connected in series;

magnetic biasing means for directing magnetic flux through each magnetoresistor element;

means for electrically exciting the series connected first and second magnetoresistive elements to cause a current to flow therethrough;

a magnetically permeable member having a defined range of movement relative to the first and second magnetoresistors for varying the magnetic flux passing through each magnetoresistor element and changing the respective resistance thereof, while maintaining a sum of the respective resistances of the first and second magnetoresistor elements at a substantially constant value determined by the sensor operating temperature;

means for determining the respective resistances of the first and second magnetoresistor elements based upon the current flowing therethrough, and the sum of the respective resistances at the sensor operating temperature;

means for determining a value for a ratio at the sensor operating temperature with the magnetically permeable member located at a position within the defined range of movement, the ratio being substantially equal to the determined resistance of one of the magnetoresistive elements divided by the determined sum of the respective resistances of the first and second magnetoresistive elements;

means for transforming the value for the ratio at the sensor operating temperature to a corresponding compensated value for the ratio at a defined temperature based upon the sum of the respective resistances of the first and second magnetoresistors; and

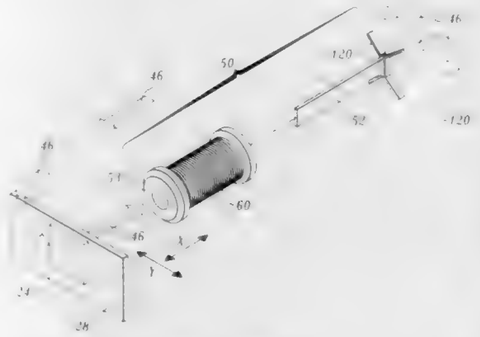
means for determining the position of the magnetically permeable member relative to the first and second magnetoresistors in accordance with the compensated value for the ratio at the defined temperature.

5,351,004

SATURABLE CORE PROXIMITY SENSOR INCLUDING A FLUX DIRECTOR AND A MAGNETIC TARGET ELEMENT

Ted M. Daniels, Edmonds, and Bernard J. Burreson, Seattle, both of Wash., assignors to Eldec Corporation, Lynnwood

Continuation-in-part of Ser. No. 777,663, Oct. 15, 1991, Pat. No. 5,285,154. This application Sep. 11, 1992, Ser. No. 944,197
Int. Cl.[5] G01B *7/14*
U.S. Cl. 324—207.13 21 Claims



1. A saturable core sensor comprising:

a magnetic target that includes:

a magnet having a front face and a back face that produces a magnetic field in front of, in back of, and to the sides of the magnet;

a plate positioned adjacent the magnet for reducing the magnetic field in the back of and at the sides of the magnet and for increasing the distance at which the magnetic field extends in a direction perpendicular to the front face of the magnet;

sensor means for detecting said magnetic field and for indicating when said sensor means is positioned within a predetermined proximity of said magnetic target, said sensor means including:

a core having a distal end and a proximal end and a longitudinal axis that is aligned substantially perpendicular to the front face of the magnet, wherein said core has a cross-sectional area in a plane perpendicular to the longitudinal axis that is substantially smaller than a cross-sectional area of the core along the longitudinal axis, said core becoming magnetically saturated when exposed to magnetic fields of a predetermined flux density that extend along the longitudinal axis of the core, but not saturating when exposed to magnetic fields of the predetermined flux density that extend in a direction substantially deviating from the longitudinal axis of the core;

an inductive element surrounding said core that produces a second magnetic field that flows through the core and through an air gap that exists between the distal and proximal ends of the core; and

a flux director disposed at the distal end of the core to intercept a fringing portion of the magnetic field of the magnetic target,

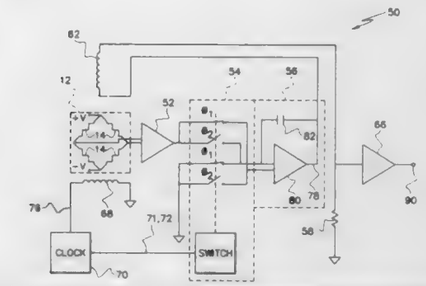
wherein said core and inductive element have an inductance that decreases when said core is saturated by the magnetic field produced by the magnet and an inductance that increases when said core is not saturated by the magnetic field produced by the magnet, said change in inductance providing an indication of the proximity of the sensor means to the magnet target.

5,351,005

RESETTING CLOSED-LOOP MAGNETORESISTIVE MAGNETIC SENSOR

Gordon F. Rouse, Arden Hills, and Howard B. French, Falcon Heights, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 31, 1992, Ser. No. 999,246
Int. Cl.[5] G01R *33/06*; G01C *17/02*
U.S. Cl. 324—252 4 Claims



3. A resetting closed-loop magnetoresistive sensor (**50**) comprising:

magnetoresistive means, having a magnetic axis, for sensing a magnetic field and outputting a first signal in the presence of the magnetic field;

a clock means for providing a signal having a frequency;

resetting means, connected to said clock means and magnetically coupled to said magnetoresistive means, for reversing the magnetic axis at the frequency of said clock means;

switching means, connected to said magnetoresistive means and to said clock means, having first and second outputs, for switching the first signal alternatively to the first and second outputs at the frequency of said clock means;

an integrating means, having an inverting input connected to the first output of said switching means and having a non-inverting input connected to the second output of said switching means, and having an output with a second signal that is an integrated first signal, having a polarity changing at the frequency of said clock means in synchronism with the reversing of the magnetic axis; and

a feedback means, connected to the output of said integrating means and magnetically coupled to said magnetoresistive means, for counter-reacting magnetically to the magnetic field sensed by said magnetoresistive means and nulling the first signal;

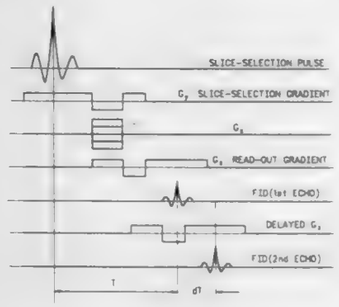
an output means, connected to said feedback means, for outputting a third signal indicative of the magnetic field sensed.

5,351,006

METHOD AND APPARATUS FOR CORRECTING SPATIAL DISTORTION IN MAGNETIC RESONANCE IMAGES DUE TO MAGNETIC FIELD INHOMOGENEITY INCLUDING INHOMOGENEITY DUE TO SUSCEPTIBILITY VARIATIONS

Thilaka S. Sumanaweera, Palo Alto; Gary H. Glover, Menlo Park, and John R. Adler, Stanford, all of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation of Ser. No. 834,178, Feb. 7, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 135,143
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—309 10 Claims



1. A method of correcting spatial distortion in magnetic resonance images due to magnetic field inhomogeneity including inhomogeneity due to susceptibility variations in an object being imaged comprising the steps of

a) placing the object in a magnetic field (B_o) oriented along an axis in a three axis coordinate system;

b) applying first RF pulses to said object and a magnetic gradient along a first axis;

c) applying first magnetic gradients along at least one axis in a plurality of first read-out of sequences,

d) detecting a plurality of magnetic resonance signals in response to said plurality of first read-out sequences;

e) processing said plurality of magnetic resonance signals to obtain a first complex image in an image plane;

f) repeating steps b) through e) for second RF pulses, second magnetic gradients, and second read-out sequences and obtaining a second complex image in said image plane;

g) obtaining a position-error profile for pixels from said complex images; and

h) remapping the locations of pixels in the image plane using said position-error profile of said pixels.

5,351,007

SUPERCONDUCTING MAGNETIC RESONANCE PROBE COIL

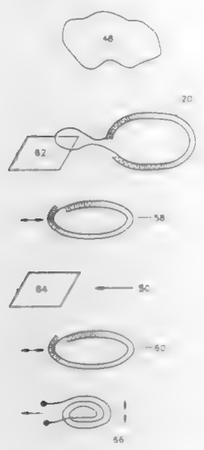
Richard S. Withers, Sunnyvale, and Guo-Chun Liang, Cupertino, both of Calif., assignors to Conductus, Inc., Sunnyvale, Calif.

Filed Jun. 1, 1992, Ser. No. 891,591
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—322 23 Claims

1. A broadband matching network for coupling a magnetic resonance probe coil to a preamplifier, comprising:

at least one matching coil having an inductive element and a capacitive element, said inductive element and said capacitive element both made of superconducting material,

said matching coil being inductively coupled to said magnetic resonance probe coil and



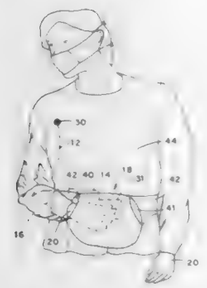
said matching coil being inductively coupled to said preamplifier.

5,351,008

PORTABLE AND DISPOSABLE DEVICE FOR DETECTING HOLES OR LEAKS IN A SURGICAL OR EXAMINATION GLOVE

Eddie D. Leach, and Marjorie E. Leach, both of Jonesborough, Tenn., assignors to Associated Enterprises, Inc., Jonesboroughs, Tenn.

Filed Jan. 25, 1993, Ser. No. 8,219
Int. Cl.[5] G01R *31/12;* **G01M** *3/04;* **A41D** *13/12*
U.S. Cl. 324—557 **7 Claims**



1. An apparatus for detecting holes or leaks in a surgical or examination glove worn on the hand of a user, said apparatus comprising:

a first electrically conductive lead having a first end connected to an electrical power test unit and a second end in electrical contact with the body of the user;

a second electrically conductive lead having a first end connected to said power test unit and a second end in electrical contact with an absorbent material positioned within a fluid impervious covering worn on the body of the user, said absorbent material being capable of absorbing and containing an electrolyte solution;

an opening extending through said covering and in communication with a cavity defined in said absorbent material for insertion of the gloved hand therein for contacting said electrolyte solution to test for leaks in the glove; and

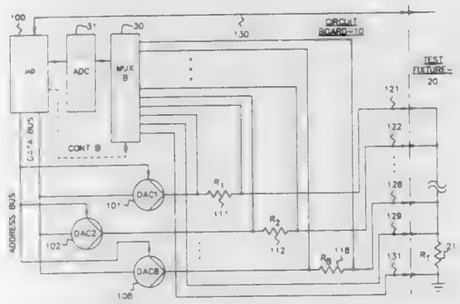
means for measuring electrical properties between said first lead and said second lead when the electrolyte solution enters said glove through a leak in said glove and causes a completion of an electrical circuit between said first lead and said second lead, said means for measuring being in electrical continuity with said first lead and said second lead and producing an output signal in response to the completed electrical circuit indicative of a leak in the glove.

5,351,009

METHOD FOR CALIBRATING COMPONENTS PERMITTING THE USE OF LOW COST COMPONENTS

Frederick S. Hutch, Pipersville, Pa., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Mar. 8, 1993, Ser. No. 27,993
Int. Cl.[5] G01R *27/00*
U.S. Cl. 324—601 **6 Claims**



1. A method for calibrating components on a circuit board, said components including at least one digital to analog converter (DAC) and a corresponding DAC resistor for each DAC, each DAC resistor being connected to a corresponding output terminal, the circuit board interfacing with a test fixture having a precision test resistor, each output terminal being connected to the same precision test resistor, the circuit board further including a controller for controlling the calibration method, the method comprising the steps of:

a) loading a predetermined DAC with a corresponding first load value, the first load value initially corresponding to a nominal value of a corresponding first predetermined current;

b) reading a resistor voltage value across the precision resistor of the test fixture;

c) calculating a DAC current value being outputted from the DAC using the value of the precision resistor and the resistor voltage value read in step (b);

d) if the DAC current value equals the first predetermined current,

i) saving the first load value; otherwise

ii) modifying the first load value and proceed

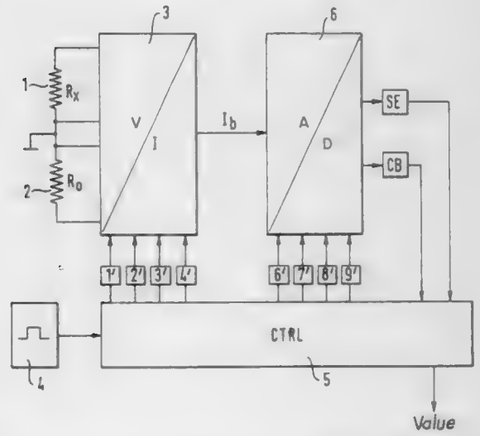
e) when all the DACs have been processed to determined each corresponding first load value, which corresponds to a corresponding, first predetermined count value for each respective DAC, repeating the method at step (a) utilizing a corresponding second load value to determine a corresponding second predetermined count value, thereby defining a line for each respective DAC such that for any value of DAC output current desired from a predetermined DAC a count value to be loaded into the predetermined DAC can be calculated for the preselected DAC, thus calibrating each DAC.

5,351,010

RESISTANCE RATIO MEASUREMENT UTILIZING MEASURING CURRENTS OF OPPOSITE PLURAL DIRECTION

Hans Leopold, Sonnleitenweg 17, A-8043 Graz; Hans Stabinger, Peterstaistrasse 156, A-8042, and Klaus P. Schröcker, all of Graz, Austria, assignors to Hans Leopold and Hans Stabinger, Graz, Austria

Filed Aug. 14, 1992, Ser. No. 928,483
Claims priority, application Austria, Aug. 16, 1991, 1623/91
Int. Cl.[5] G01R *27/14*
U.S. Cl. 324—704 **11 Claims**



1. A method for using a difference in characteristics between a measuring resistor and a reference resistor for determining a characteristic of the measuring resistor, comprising the steps of:

passing a first current through a measuring resistor in a first direction, and measuring a first value relating to a resulting first voltage across the measuring resistor based only on said first current passing through only said measuring resistor, and through no other resistors;

subsequently passing a second current through the measuring resistor in a second direction opposite to said first direction, and measuring a second value relating to a resulting second voltage across the measuring resistor based only on said second current passing through only said measuring resistor, and through no other resistors;

subsequently passing said first current through a reference resistor only in said first direction and measuring a third value relating to a resulting third voltage across the reference resistor based only on said first current passing through only said reference resistor, and through no other resistors;

subsequently passing said second current through the reference resistor only in said second direction and measuring a fourth value relating to a resulting fourth voltage across the reference resistor based only on said second current passing through only said reference resistor, and through no other resistors;

determining a first difference between the first value and the second value;

determining a second difference between the third value and the fourth value;

determining a quotient of the first difference and the second difference to produce a value signal; and

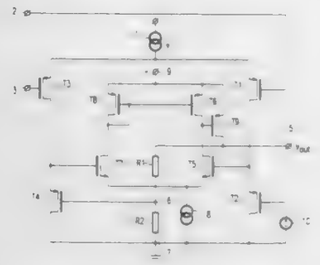
using the value signal to determine the characteristic of at least one of the measuring resistor and the environment.

5,351,011

LOW NOISE, LOW DISTORTION MOS AMPLIFIER CIRCUIT

Evert Seevinck, Eindhoven, and Jacob H. Bolt, Hengelo, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1993, Ser. No. 152,566
Claims priority, application European Pat. Off., Nov. 17, 1992, 92203520.9
Int. Cl.[5] H03F *3/45, 1/26*
U.S. Cl. 330—253 **4 Claims**



1. An MOS amplifier circuit comprising:

a first series combination of main current paths of a first and a second MOS transistor, wherein an input of the amplifier circuit is coupled to a gate electrode of the first transistor, and a gate electrode of the second transistor is coupled to its drain electrode; and

a second series combination of main current paths of a third and a fourth MOS transistor that is identical to the first series combination, wherein another input of the amplifier circuit is coupled to a gate electrode of the third MOS transistor, source electrodes of the first and third MOS transistors are intercoupled and are coupled to a first current source, drain electrodes of the second and fourth MOS transistors being intercoupled, drain electrodes of the first and third transistors being connected to a differential amplifier, an output of the deferential amplifier being coupled to an output of the amplifier circuit and also, via a series combination of a first and a second resistor, to the drain electrodes of the second and fourth MOS transistors, and a junction of the first and second resistors is coupled to a gate electrode of the fourth transistor, and in that the first to fourth MOS transistors are mutually identical.

5,351,012

LOW INPUT RESISTANCE CURRENT-MODE FEEDBACK OPERATIONAL AMPLIFIER INPUT STAGE

Christofer Toumazou, Oxford, United Kingdom, assignor to Elantec, Inc., Milpitas, Calif.

Filed Apr. 2, 1993, Ser. No. 41,936
Int. Cl.[5] H03F *3/30*
U.S. Cl. 330—264 **6 Claims**

6. A low input resistance current feedback operational amplifier input stage comprising:

a first pair of FETs of complimentary conductivity types, each having a source, drain and gate, and a second pair of FETs of complimentary conductivity types, each having a source, drain and gate, the first and second pairs of FETs forming a voltage buffer having a non-inverting input formed by the gates of the first pair of FETs, and an inverting input formed by a common connection of the sources of the second pair of FETs for replicating a voltage applied to the noninverting input of the voltage buffer at the inverting input;

a pair of current sources, each of which is coupled to the drain of one of the first pair of FETs, for providing bias current to the non-inverting input of the voltage buffer;

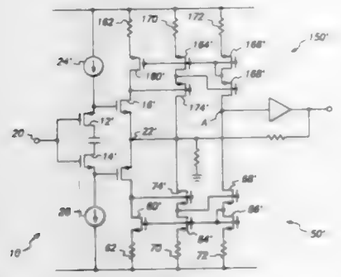
a supply voltage; and

a pair of dual output current mirrors, each dual output current mirror comprising:

first, second, and third current-scaling resistors;

a first FET having a gate, drain, and source, the drain being connected to the drain of one of the second pair of FETs of the voltage buffer, and the source being connected to the supply voltage through the first current-scaling resistor, for sensing drain current at the inverting input of the voltage buffer;

second, third, and fourth FETs connected in a Wilson-type current mirror configuration, each FET having a gate, drain, and source, the second FET having its source connected to the supply voltage through the second current-scaling resistor, its gate connected to the



gates of the first and third FETs, and its collector connected to the inverting input of the amplifier through a current buffer FET, the third FET having its source connected to the supply voltage through the third current-scaling resistor and its gate and drain connected to the source of the fourth FET, and the fourth FET having its gate connected to the drain of the second FET and its drain forming a high gain node of the amplifier input stage, the first FET being effective to detect current at the inverting input and to generate corresponding currents in the second and third FETs, the currents being determined according to the relative sized of the first, second, and third current scaling resistors.

5,351,013

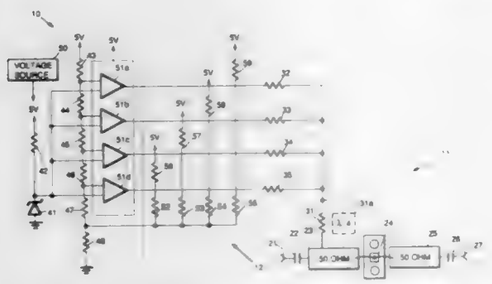
STEP ATTENUATOR USING PIN DIODES

Raul I. Alidio, Lawndale, and Clinton O. Holter, Long Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 10, 1993, Ser. No. 29,075

Int. Cl.[5] H03G *3/10*

U.S. Cl. 320—284 **14 Claims**



1. A step attenuator circuit for stepwise controlling the current applied to a microwave circuit, said step attenuator circuit comprising:

a driver circuit that comprises:

a temperature sensor;

a comparator circuit coupled to the temperature sensor for comparing the temperature value sensed by the temperature sensor to predetermined reference voltages and for providing a plurality of output signals that are indicative of a respective plurality of temperature values sensed by the temperature sensor; and

a resistor network coupled to the comparator circuit for setting the respective values of current provided by the driver circuit; and

an attenuator circuit coupled to the driver circuit that comprises:

a PIN diode coupled to the microwave circuit and having the temperature sensor coupled thereto;

a plurality of resistors respectively coupled to receive the plurality of output signals from the comparator circuit; and

coupling means coupled between the plurality of resistors and the PIN diode.

5,351,014

VOLTAGE CONTROL OSCILLATOR WHICH SUPPRESSES PHASE NOISE CAUSED BY INTERNAL NOISE OF THE OSCILLATOR

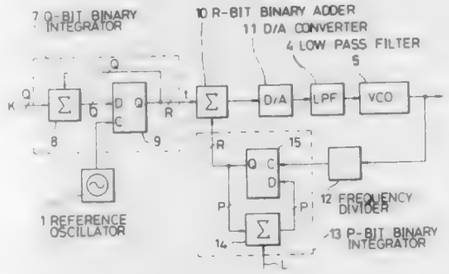
Osamu Ichiyoshi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 2, 1993, Ser. No. 101,386

Claims priority, application Japan, Aug. 5, 1992, 208651

Int. Cl.[5] H03L *7/085, 7/16*

U.S. Cl. 331—1 A **3 Claims**



1. A frequency synthesizer in which a generated frequency signal is controlled by an externally provided numerical figure, comprising:

a Q-bit binary numerical integration circuit that integrates a given numerical value K provided from the outside in the form of a Q-bit binary coded number by a Q-bit binary adder and a latch driven by the timing of a highly stable reference oscillator;

a voltage-controlled oscillator (VCO) that generates an output signal with a frequency controlled by an applied control voltage as a reference frequency,

a frequency divider that divides the frequency of the output of said VCO to generate a pulse signal output at a frequency proper for subsequent processings;

a P-bit binary integration circuit that integrates a fixed numerical value L driven by the timing of the pulse signal output of said frequency divider;

an R-bit binary adder that inputs the most significant R bits of said Q-bit binary integration circuit and of said P-bit binary integration circuit and outputs the difference therebetween;

a D/A converter that converts a digital coded value of an output of said R-bit binary adder into an analog output voltage; and

a low pass filter that smooths the analog output voltage of said D/A converter and provides the control voltage to the VCO.

5,351,015

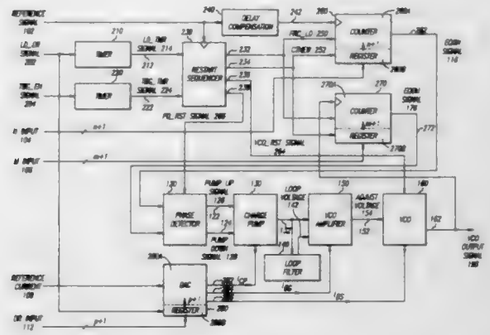
TIME BASED DATA SEPARATOR ZONE CHANGE SEQUENCE

Rodney T. Masumoto, Tustin; Shunsaku Ueda, Carlsbad; Jenn-Gang Chern, Yorba Linda, and Kirby Lam, Santa Margarita, all of Calif., assignors to Silicon Systems, Inc., Tustin, Calif.

Filed Feb. 3, 1993, Ser. No. 12,914

Int. Cl.[5] H03L *7/00*

U.S. Cl. 331—1 R **21 Claims**



1. A method for reducing transients in a frequency synthesizer circuit by controlling the startup sequence comprising the steps of:

loading an initial data value into a digital-to-analog converting means, said digital-to-analog converting means being coupled to a phase comparison means, an amplification means and a voltage controlled oscillator means;

loading new data values into a first and second register means of a corresponding first and second counting means, respectively, said first and second counting means being coupled to said phase comparison means;

resetting said voltage controlled oscillator means to a predetermined state wherein said oscillating means is coupled to said second counting means;

disabling said phase comparing means;

pausing for a predetermined period of time for said digital-to-analog converting means to stabilize;

reactuating said first and second counting means; and

restarting said phase comparing means and said voltage controlled oscillator means.

5,351,016

ADAPTIVELY SELF-CORRECTING MODULATION SYSTEM AND METHOD

Paul W. Dent, Stehag, Sweden, assignor to Ericsson GE Mobile Communications Inc., Research Triangle Park, N.C.

Filed May 28, 1993, Ser. No. 68,087

Int. Cl.[5] H03C *3/00, 3/02*

U.S. Cl. 332—103 **25 Claims**

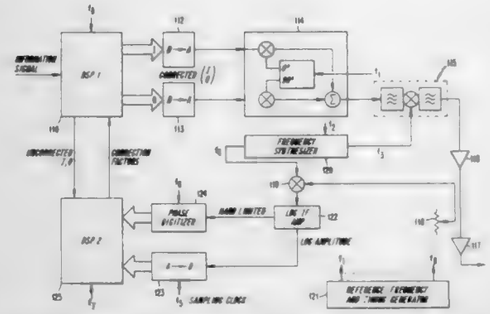
1. An adaptively precompensated quadrature modulator for accurately forming a modulated transmitted signal, comprising:

first digital signal processing means for applying correction factors to uncorrected samples of an in-phase modulation waveform and a quadrature modulation waveform to generate corrected samples and for converting corrected samples into a corrected in-phase modulation waveform and a corrected quadrature modulation waveform;

a quadrature modulator for impressing the corrected in-phase modulation waveform on a substantially cosinusoidal carrier wave and for impressing the corrected quadrature modulation waveform on a substantially sinusoidal carrier wave, the quadrature modulator producing a modulated output signal;

transmitter means for upconverting and amplifying the modulated output signal of said quadrature modulator to a predetermined transmission frequency and power level, the transmitter means producing the modulated transmitted signal;

modulation assessment receiving means, coupled to said transmitter means, for generating digitized samples of the modulated transmitted signal; and



second digital signal processing means, in communication with said first digital signal processing means and with said modulation assessment receiving means, for determining the correction factors based on said digitized samples generated by said modulation assessment receiving means and on the uncorrected samples and for communicating the correction factors to the first digital signal processing means.

5,351,017

FIXING DEVICE FOR A NOISE ABSORBER

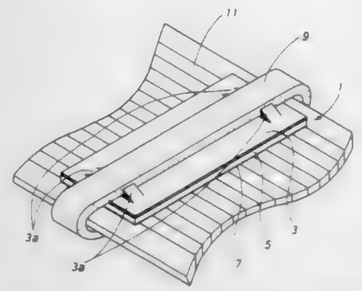
Tsurayuki Yano, Tokyo; Yasuo Yamazaki, Tougane, and Tsutomu Yasaku, Tokyo, all of Japan, assignors to Kitagawa Industries Co., Ltd., Japan

Filed Feb. 14, 1992, Ser. No. 837,378

Claims priority, application Japan, Feb. 20, 1991, 3-007569[U]

Int. Cl.[5] H04B *3/28*

U.S. Cl. 333—12 **16 Claims**



1. A fixing device in combination with an electrical noise absorber for securing the electrical noise absorber to an exterior surface of a wire, said combination comprising:

a ferrite core electrical noise absorber having an aperture extending therethrough, the aperture being sized for accommodating a wire and a base member therein, and the aperture having an inner surface;

the base member being insertable into a space formed between the exterior surface of the wire and the inner surface of the aperture, once the noise absorber surrounds the wire;

at least one pair of opposed projections formed in a first surface of said base member for intimately engaging opposed axial side edges of the noise absorber, after insertion of said base member into the space; and

securing means, supported by said base member, for securing

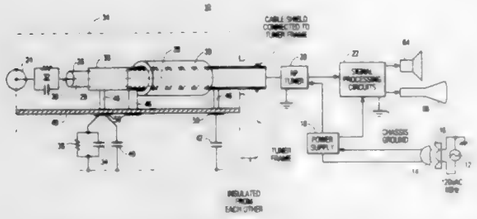
a second surface of said base member to the exterior surface of the wire.

5,351,018

ANTENNA ISOLATION ASSEMBLY FOR HOT CHASSIS RECEIVER

William L. Lehmann, and William H. Bose, both of Indianapolis, Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Nov. 25, 1992, Ser. No. 982,286
Int. Cl.[5] H01P 3/06; H04B 1/10
U.S. Cl. 333—12 6 Claims



1. An RF receiver including a radio frequency tuner coupled to a radio frequency signal source by a coaxial cable having inner and outer conductors, said coaxial cable comprising:

an inner conductor having longitudinal length,

an electrical insulation means having longitudinal length and circumposed about the inner conductor over a portion of its longitudinal length, and

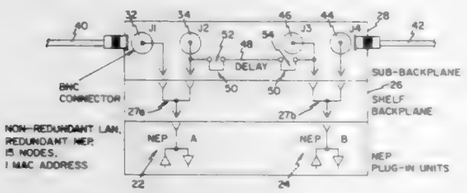
an outer conductor having longitudinal length and circumposed about the electrical insulation means over a portion of its longitudinal length for shielding the inner conductor, said outer conductor being made from electrically conductive sheet metal and a portion of the outer conductor enclosing a portion of the outer perimeter of the electrical insulation means in a close fitting friction fit, said outer conductor having unitary legs for mounting to a support means and electrically coupling the outer conductor to a reference potential.

5,351,019

LOCAL AREA NETWORK INTERFACE AND INTERFACING METHOD FOR NETWORK ELEMENT

Thomas J. McHugh; Claude M. Hurlocker, and Larry W. Lemonds, all of Raleigh, N.C., assignors to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Dec. 15, 1992, Ser. No. 990,436
Int. Cl.[5] H03H 5/00
U.S. Cl. 333—24 R 4 Claims



2. A method of providing a network element interface for a local area network, comprising the steps of:

providing a separate pair of connectors for each of a plurality of network element processors;

connecting each separate pair of connectors to a correspondingly separate node within the network element;

connecting each node to a corresponding network element processor; and

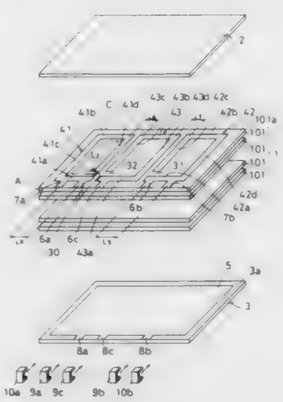
connecting a connectable delay line between a first pair of connectors and a second pair of connectors for providing a selected delay between the corresponding network element processors used as redundant processors wherein one of the first pair of connectors is for connection to an input line of the local area network and wherein one of the second pair of connectors is for connection to an output line of the local area network.

5,351,020

BAND-PASS FILTER HAVING THREE OR MORE LOOP-SHAPED ELECTRODES

Hisatake Okamura; Masahiro Kasahara; Ken Tonegawa, and Tetsuo Taniguchi, all of Nagaokakyo, Japan, assignors to Myrata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 832,786, Feb. 7, 1992, abandoned. This application Aug. 26, 1993, Ser. No. 112,629
Claims priority, application Japan, Feb. 15, 1991, 3-021875; Jun. 11, 1991, 3-138839; Jan. 10, 1992, 4-021749; Jan. 10, 1992, 4-021750
Int. Cl.[5] H03H 7/09
U.S. Cl. 333—175 11 Claims



1. A band-pass filter comprising:

at least three first electrodes formed in a loop shape and disposed so as to be magnetically coupled with each other;

a second electrode formed in a plane shape and opposed to said first electrodes, with a plate comprising a dielectric material being disposed between said first electrodes and said second electrode, said plate having two ends;

a respective first earth terminal being drawn out from each of said first electrodes toward a selected edge of said plate;

a pair of input/output terminals being drawn out respectively from a pair of said first electrodes which are disposed toward said first electrodes which are disposed toward said ends of said plate, each said input/output terminal being formed at a distance from the corresponding earth terminal of the respective first electrode so as to provide a predetermined impedance with respect to said earth terminal; and

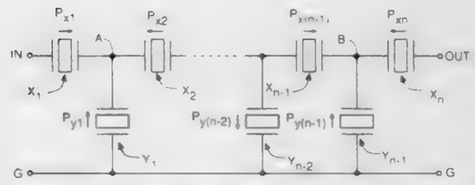
at least one second earth terminal being drawn out from said second electrode toward said selected edge of said plate.

5,351,021

LADDER-TYPE PIEZOELECTRIC FILTER

Kimio Masaie, and Minoru Sakamoto, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 973,557, Nov. 9, 1992, abandoned, which is a continuation of Ser. No. 642,532, Jan. 17, 1991, abandoned. This application Jul. 6, 1993, Ser. No. 88,488
Claims priority, application Japan, Feb. 8, 1990, 2-29871
Int. Cl.[5] H03H 9/58
U.S. Cl. 333—189 15 Claims



1. A ladder-type piezoelectric filter comprising an input terminal, an output terminal and a plurality of resonators each having a positive plate, a negative plate and a piezoelectric plate which is sandwiched between said positive and negative plates and is polarized in a direction defined by said positive plate to said negative plate;

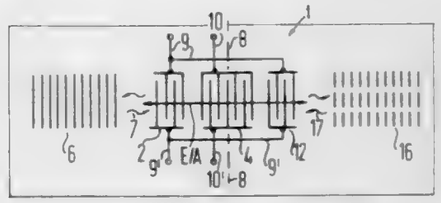
some of said resonators being series resonators connected in series between said input and output terminals, nodes being defined as junction points between mutually adjacent pairs of said series resonators; one or more others of said resonators being parallel resonators connected to respective ones of said nodes; said series resonators including two end resonators at both ends of said series, the piezoelectric plate of one of said end resonators and the piezoelectric plate of one of said parallel resonators connected thereto being polarized in a same direction relative to the node therebetween.

5,351,022

SURFACE ACOUSTIC WAVE REFLECTOR FILTER

Werner Ruile; Jürgen Machui, both of Munich, and Giuliano Visintini, Unterhaching, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/EP90/02192, § 371 Date Jun. 22, 1992, § 102(e) Date Jun. 22, 1992, PCT Pub. No. WO91/09464, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 14, 1990, Ser. No. 862,566
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1989, 3942148
Int. Cl.[5] H03H 9/64
U.S. Cl. 333—195 7 Claims



1. A surface acoustic wave reflector filter comprising:

a substrate for propagation of surface acoustic waves;

an input transducer disposed on said substrate;

an output transducer disposed on said substrate;

a single 180° reflector disposed on said substrate and which is arranged for acoustically coupling surface acoustic wave signals between said input transducer and said output transducer;

said filter defining a main propagation direction for surface acoustic wave signal propagation along which said input and output transducers and said reflector are disposed;

both of said input and output transducers having a respective transducer configuration, each transducer configuration comprised of a plurality of individual transducers, each said input transducer configuration and each said output transducer configuration being arranged in an input/output transducer system and sharing a common mid-line, said common mid-line coinciding with a middle axis of said input/output transducer system, said middle axis being oriented perpendicularly to the main propagation direction, one of said input and output transducer configurations being oriented substantially asymmetrically relative to said middle axis and another of said input and output transducer configurations being oriented substantially symmetrically relative to said middle axis; and

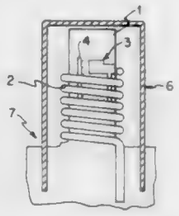
wherein a surface acoustic wave propagating along said propagation direction from said input transducer to said output transducer in a first direction along a direct path between said input and output transducers is cancelled and wherein a surface acoustic wave propagating along said main propagation direction in a second direction, opposite said first direction, is transmitted via one of said reflectors back to said output transducer.

5,351,023

HELIX RESONATOR

Erkki O. Niiranen, Saukonkuja, Finland, assignor to LK-Products OY, Kempele, Finland

Filed Apr. 21, 1993, Ser. No. 50,917
Claims priority, application Finland, Apr. 21, 1992, 921762
Int. Cl.[5] H01P 1/20, 7/00
U.S. Cl. 333—202 14 Claims



9. A helix resonator filter having at least one helix resonator comprising:

a printed board of electrically insulating material,

a helically wound electrical conductor having a low impedance end and a high impedance end, said high impedance end ending in a terminating end of the conductor, said helically wound electrical conductor being wound around said printed board and being connected to said printed board at a connection point arranged in a region along the conductor within two conductor turns from said terminating end, and

reactive means comprised of a strip line of predetermined length disposed on said printed board of electrically insulating material, wherein

said strip line is coupled to said helically wound electrical conductor at said connection point, and

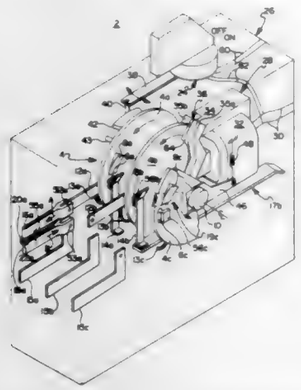
said strip line has such a form and extends in such a direction in relation to the helically wound electrical conductor that at least part of the strip line is situated on said printed board in a region between said terminating end and said low impedance end of the helically wound electrical conductor, said at least part of the strip line extending toward the low impedance end so that the helically wound electrical conductor also is wound around the at least one part of the strip line.

5,351,024

ELECTRICAL CONTACTOR AND INTERRUPTER EMPLOYING A ROTARY DISC

Mark A. Juds, New Berlin; Bruce C. Beihoff, Wauwatosa; Richard G. Smith, Caledonia; William R. Nelson, Waukesha; Daniel A. Wycklendt, Milwaukee; Peter J. Theisen, West Bend; Jerome K. Hastings, Sussex, and Peter K. Moldovan, Cascade, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 8, 1993, Ser. No. 27,972
Int. Cl.[5] H01H 75/00
U.S. Cl. 335—16 14 Claims



1. An electrical contactor for controlling the flow of electrical power comprising:
a case for enclosing said electrical contactor;
control means for signalling said electric contactor to commence and terminate the conduction of electrical power;
a disc rotatably mounted on said frame member formed of an electrically insulating material;
a first electrical disc contact affixed to said disc;
actuation means for rotating said disc upon receiving an energization signal from said control means;
spring means for rotating said disc in a direction opposing that produced by energization of said actuation means;
a ramp affixed to said disc relatively close to said electrical disc contact, said ramp having a thin first edge and a thicker second edge, said thin first edge being adjacent to said first electrical disc contact and said ramp extending in a substantially radial direction opposite to the direction of rotation of said disc when rotated by the energization of said actuation means;
a second electrical disc contact having a first end to be connected to a source of electrical power and a second end having a disc contact portion directly opposed to said first electrical disc contact when said actuation means is energized and where said disc contact portion encounters said ramp being forced away from said disc thereby when said actuation means is non-energized; and
a circuit protection contact having a first arm rotatably mounted to said case and electrically connected to said first electrical disc contact said first arm having a first electrical contact portion and a second arm rotatably mounted to said case having a second electrical contact portion loaded against said first arm where said first arm electrical portion contacts said second arm electrical portion allowing electrical power to flow therebetween when said electrical power is within the desired operating limit and where said first arm moves away from said second arm against said spring load when said electrical power is at a very high level thereby interrupting the flow of electrical power from said first electrical contact portion to said second electrical contact portion.

5,351,025

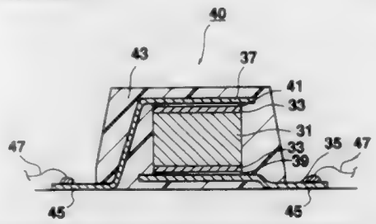
Patent Not Issued For This Number

5,351,026

THERMISTOR AS ELECTRONIC PART

Shigeru Kanbara, Kyoto, and Hitoshi Fukui, Takasago, both of Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Feb. 18, 1993, Ser. No. 19,309
Claims priority, application Japan, Feb. 25, 1992, 4-037879
Int. Cl.[5] H01C 7/10, 1/14
U.S. Cl. 338—22 R 5 Claims



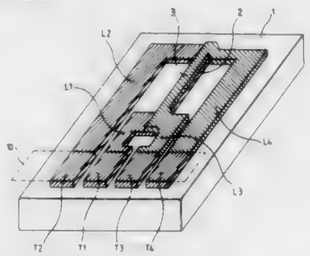
1. A thermistor as an electronic part comprising:
a rectangular parallelepiped thermistor element, said thermistor element having a top surface and a bottom surface;
a first electrode formed over the entirety of said top surface of said thermistor element, and a second electrode formed over the entirety of said bottom surface of said thermistor element;
a first lead connected to said first electrode, said first lead including a contacting portion in contact with said first electrode and a connecting portion for deriving signals, and a second lead connected to said second electrode, said second lead including a contacting portion in contact with said second electrode and a connecting portion for deriving signals, said first and second leads being bent such that said connecting portion of said first lead and said connecting portion of said second lead are positioned on substantially the same plane, thereby allowing said thermistor to be mounted on a substrate; and
a sealing resin completely surrounding said thermistor element, said first and second electrodes, and all of said first and second leads except for said connecting portions.

5,351,027

MAGNETIC SENSOR

Syooichi Kawamata; Tadashi Takahashi, and Shigeki Morinaga, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1992, Ser. No. 852,663
Claims priority, application Japan, Mar. 20, 1991, 3-56296
Int. Cl.[5] H01L 43/00
U.S. Cl. 338—32 R 24 Claims



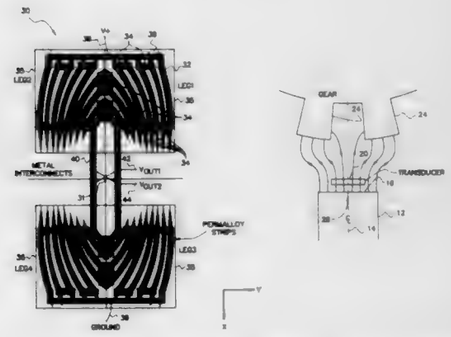
1. A magnetic sensor comprising:
an elongate sensor region, said elongate sensor region comprising an elongate magneto-resistive element having first and second ends and an elongate conductive element overlapping said elongate magneto-resistive element and having first and second ends; and
a plurality of terminals electrically connected to said elongate sensor region for providing respective electrical connection to said first and second ends of said elongate magneto-resistive element and said elongate conductive element;
wherein said terminals together form an array which is spaced from said elongate sensor region in a predetermined direction of elongation of said elongate magneto-resistive element.

5,351,028

MAGNETORESISTIVE PROXIMITY SENSOR

Donald R. Krahn, Eagan, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 14, 1993, Ser. No. 76,511
Int. Cl.[5] H01L 43/08
U.S. Cl. 338—32 R 10 Claims



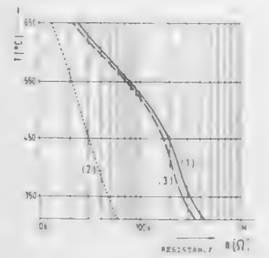
1. Apparatus for detecting the position of a ferromagnetic object, comprising:
a magnetic field source having an end and an axis, said magnetic field source producing a radial magnetic field component in a direction perpendicular to said axis, said magnetic field component having an effective center from which said radial magnetic field component emanates, said effective center having a location;
a magnetoresistive transducer lying in a plane perpendicular to said axis and interposed between said end of said magnetic field source and said ferromagnetic object, said position of said ferromagnetic object determining said location of said effective center of said radial magnetic field component and said magnetoresistive transducer being responsive to said location of said effective center, said magnetoresistive transducer comprising a first bridge leg, a second bridge leg, and additional bridge components, said first and second bridge legs each having at least one magnetoresistive strip electrically connected to said additional bridge components to form an electrical bridge circuit, said radial magnetic field having an angle of intersection with said at least one magnetoresistive strip and said at least one magnetoresistive strip being curved to provide a predetermined value for said angle of intersection with segments of said at least one magnetoresistive strips for said balanced bridge condition, with said first and second bridge legs arranged within said transducer to provide a balanced bridge condition when said first and second bridge legs are symmetrically positioned relative to said effective center, with said bridge circuit having an output representative of said location of said effective center of said radial magnetic field component.

5,351,029

SENSOR FOR DETERMINING CARBON MONOXIDE

Gerhard Huth, Gerlingen, and Detlef Baresel, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00986, § 371 Date Jun. 22, 1993, § 102(e) Date Jun. 22, 1993, PCT Pub. No. WO92/13270, PCT Pub. Date Aug. 6, 1992
PCT Filed Dec. 18, 1991, Ser. No. 78,291
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1991, 4100915
Int. Cl.[5] H01C 7/00
U.S. Cl. 338—34 5 Claims



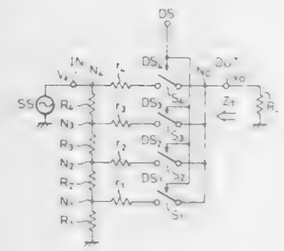
1. A sensor for the determination of carbon monoxide in a gas mixture comprising a doped n-type metal oxide whose electric conductivity is a function of the composition of the gas mixture, dopants for said metal oxide comprising (a) from 0.01 to 0.2 mol % of an oxide of another metal having a maximum valency <4 together with (b) from 0.01 to 0.2 mol % of an oxide of a metal, which catalyses the reaction of carbon monoxide to carbon dioxide and (c) from 0.001 to 0.1 mol % of an oxide of a metal of the 5th subgroup of the Periodic Table of the Elements.

5,351,030

VARIABLE ATTENUATOR FOR ATTENUATING GAIN OF ANALOG SIGNAL IN ACCORDANCE WITH DIGITAL SIGNAL

Osamu Kobayashi, and Kunihiko Gotoh, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

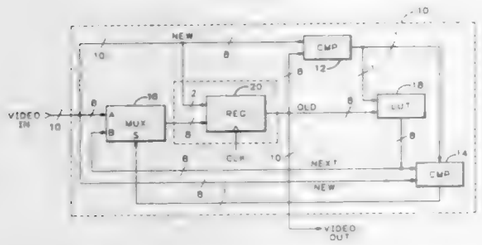
Filed Jul. 27, 1993, Ser. No. 96,993
Claims priority, application Japan, Oct. 5, 1992, 4-265884
Int. Cl.[5] H01C 7/22; H03H 7/25
U.S. Cl. 338—295 9 Claims



1. A variable attenuator comprising:
a plurality of attenuation resistor means, connected in series, for attenuating an input signal;
a plurality of switching means provided for said attenuation resistor means, and an optional one of said switching means being selected in accordance with a digital control signal supplied from an external source; and
a plurality of impedance compensation resistor means each connected in series with said respective switching means

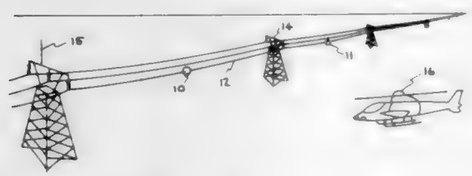
for compensating an output impedance to a specific value regardless of a state of said plurality of switching means.

5,351,031
NON-LINEAR SLEW RATE LIMITER
Michael J. Henderson, Grass Valley, Calif., assignor to The Grass Valley, Group, Inc., Nevada City, Calif.
Filed Feb. 16, 1993, Ser. No. 17,928
Int. Cl.[5] G06F *7/02*
U.S. Cl. 340—146.2 **7 Claims**



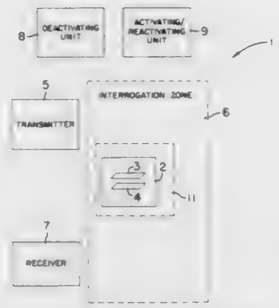
1. A non-linear slew rate limiter for a digital signal comprising:
means for comparing the slew rate of the digital signal with the slew rate of a reference waveform having a frequency spectrum determined by the passband of a reconstruction filter for a digital to analog converter; and
means for replacing samples of the digital signal with samples of the reference waveform when the slew rate of the digital signal exceeds the slew rate of the reference waveform to produce an output digital signal.

5,351,032
POWER LINE DETECTION SYSTEM
Victor R. Latorre, and Donald B. Watwood, both of Tracy, Calif., assignors to Regents of the University of California, Oakland, Calif.
Filed Feb. 19, 1993, Ser. No. 19,696
Int. Cl.[5] H04M *11/04*
U.S. Cl. 340—310 R **8 Claims**



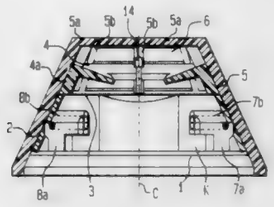
1. A power line detection system for air borne vehicles, said system including at least one transmission line, said system comprising:
at least one radio-frequency (RF) transmitter mounted on said at least one transmission line;
a RF receiver located on board an aircraft wherein said receiver is tuned to receive a transmission from said at least one RF transmitter, wherein said RF receiver comprises:
a RF antenna;
a first receiver channel to receive a first frequency from said RF antenna;
a second receiver channel to receive a second frequency from said RF antenna; and
a first comparator to compare signals from said first receiver channel and said second receiver channel wherein said first comparator sends a signal that is the stronger receiver channel signal of the compare signals to a display and alarm system:
the display and alarm system located on-board the aircraft, said display and alarm system receiving the stronger receiver channel signal from said first comparator, said display and alarm system comprising:
a first display to indicate a power line altitude signal and identification number of said at least one transmitter;
a barometric pressure corrected altimeter producing an aircraft altitude signal;
a second display to indicate said aircraft altitude signal;
a second comparator to compare said aircraft altitude signal with said power line altitude signal;
a third display to indicate the difference between said aircraft altitude signal and said power line altitude signal plus a margin of error; and
an audio and visual alarm that receives signals from said second comparator, wherein said audio and visual alarm is triggered when said aircraft altitude is less than said power line altitude plus said margin of error.

5,351,033
SEMI-HARD MAGNETIC ELEMENTS AND METHOD OF MAKING SAME
Nen-Chin Liu, Parkland, Fla.; Robert C. O'Handley, Andover, Mass.; Wing Ho, Deerfield Beach, and Richard Copeland, Boca Raton, both of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.
Filed Oct. 1, 1992, Ser. No. 955,319
Int. Cl.[5] G08B *13/181*
U.S. Cl. 340—572 **42 Claims**



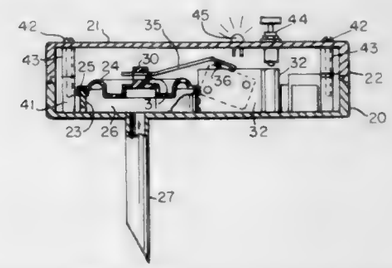
36. An electronic article surveillance system for detecting the presence of a tag in an interrogation zone comprising:
a tag comprising: a signal generating first magnetic element having an activated state in which the signal generating first magnetic element is able to interact with a magnetic field and a deactivated state in which the signal generating first magnetic element is disabled from interacting with said magnetic field; and a second magnetic element disposed adjacent said signal generating first magnetic element for placing said signal generating first magnetic element in said activated and deactivated states, said second magnetic element comprising an amorphous magnetically soft iron-metalloid material at least a part of the bulk of which has been crystallized to give the overall second magnetic element semi-hard magnetic properties, said amorphous magnetically soft iron-metalloid material containing at least 50 atomic percent iron;
means for transmitting said magnetic field into the interrogation zone; and
means for receiving a signal resulting from said signal generating first magnetic element of said tag interacting with said magnetic field.

5,351,034
FIRE DETECTOR
Horst Berger, Kaarst; Tido Krippendorf, Düsseldorf, and Heiner Politze, Neuss, all of Fed. Rep. of Germany, assignors to Esser Sicherheitstechnik GmbH, Neuss, Fed. Rep. of Germany
Filed Mar. 4, 1992, Ser. No. 845,916
Int. Cl.[5] G08B *17/12*
U.S. Cl. 340—577 **7 Claims**



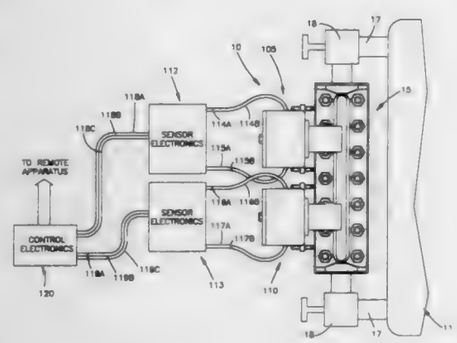
1. A fire detector, comprising:
a housing having a base and a lid, said housing being provided with a plurality of circumferentially spaced air inlet openings;
a wall extending along a portion of the inside of said housing about the circumference of said base so as to define a compartment which defines a center axis and has an open top spaced from said lid and allowing inflow of air entering through said air inlet openings;
a wire grating covering said top of said compartment;
a scattered light detector unit and a ionization detector unit arranged together in said compartment, said scattered light detector including a light source defining a principal axis and a receiver defining a principal axis, with said light source and said receiver opposing each other such that their principal axes intersect in a point of intersection which is eccentric to the center axis of said compartment; and
a plastic body positioned between said light source and said receiver along the center axis of said compartment for providing a light trap,
said ionization detector unit including a holder for a preparation to be ionized, with said holder being attached to a side of said plastic body facing away from said point of intersection of said principal axes of said light source and said receiver.

5,351,035
CLOGGED FILTER INDICATOR
Lonnie R. Chrisco, Fresno, Calif., assignor to Ben A. Everson, Fresno, Calif.
Filed Feb. 22, 1993, Ser. No. 20,995
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—607 **5 Claims**



1. In an air handling system wherein an air filter is situated upstream of the intake of an air blower in a duct system, a sensor mounted externally on the duct with a probe extending internally of the duct between the filter and blower to sense the pressure drop caused by dirt accumulating on the filter surface, said sensor comprising a molded plastic container having an external mounting surface and an interior housing portion, an integrally formed circular well in said housing portion, said circular well having a top peripheral portion, a plastic bellows bonded to said top peripheral portion of said circular well, said probe being of rigid construction and bonded to said external mounting surface to project outwardly therefrom into said duct, said probe being in fluid communication with said bellows, an operating arm linked to said bellows and being responsive to movement of said bellows, a switch operated by said arm, a battery mounted within said interior housing, a signaling device mounted on said container, circuitry connecting said battery, said switch and said signaling device whereby a drop in pressure in said duct will be sensed by said bellows to actuate said switch thereby energizing said signaling device, said probe having an end cut at an angle to facilitate penetration of a Fiberglass duct; and including adhesive strips attached to said external mounting surface to adhesively secure said sensor container directly to said duct with the probe extending into said duct.

5,351,036
MICROWAVE-BASED POINT LIQUID LEVEL MONITORING SYSTEM
David P. Brown, Brunswick; Michael J. Kett, Middleburg Hts., both of Ohio, and Stephen P. Hebeisen, Salem, N.H., assignors to Clark-Reliance Corporation, Strongsville, Ohio
Filed Dec. 10, 1991, Ser. No. 805,297
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—618 **36 Claims**

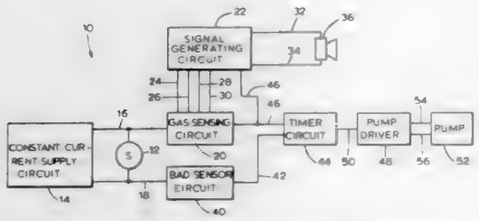


1. A system for monitoring a point liquid level comprising:
a liquid level device having liquid in a cavity thereof and having a window which is transparent to microwaves,
a microwave transmitter contained in a housing mounted to the liquid level device at a predetermined level to direct a microwave signal through the window and into the cavity in the device,
a reflector located on a side of said cavity opposite said window for reflecting said microwave signal, and
a receiver contained in said housing to receive the reflected microwave signal through the window, the microwave signal being attenuated between said transmitter and said receiver when liquid is present in the cavity at or above the predetermined level and not attenuated between said transmitter and receiver when liquid is absent in the cavity at the predetermined level, thereby to provide a continuous means of monitoring whether or not liquid is present at such predetermined level based upon whether or not the microwave signal is attenuated when received.

5,351,037
REFRIGERANT GAS LEAK DETECTOR

Dennis Martell, Naperville, and Jan Krcma, Elk Grove Village, both of Ill., assignors to J and N Associates, Inc., Valparaiso, Ind.

Filed Jan. 22, 1993, Ser. No. 7,594
Int. Cl.[5] G08B *17/10*
U.S. Cl. 340—632 | **32 Claims**



1. A method of detecting the location of a refrigerant gas leak in an atmosphere having a background concentration of refrigerant gas in which a high voltage is applied to a pair of electrodes to generate a substantially constant corona current through said electrodes, said method comprising the steps of:

(a) applying a high voltage to one of said electrodes to generate a corona current across said pair of electrodes;

(b) continuously adjusting said high voltage applied to said one of said electrodes based on the magnitude of said corona current, said high voltage being continuously adjusted so that the magnitude of said corona current remains substantially constant at all times, regardless of the concentration of refrigerant gas in the vicinity of said pair of electrodes;

(c) detecting the magnitude of said high voltage applied to said one of said of electrodes;

(d) based on the magnitude of said high voltage detected during said step (c), generating a first signal indicative of the background concentration of refrigerant gas present in the vicinity of said pair of electrodes;

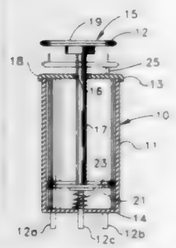
(e) based on the magnitude of the high voltage detected during said step (c), generating a second signal indicative of the relatively instantaneous concentration of refrigerant gas present in the vicinity of said pair of electrodes; and

(f) generating a gas concentration signal based on the difference between the magnitude of said first signal generated during said step (d) and the magnitude of said second signal generated during said step (e).

5,351,038
QUICK TRIP CIRCUIT BREAKER LOCATOR

Arnold Goldberg, 1519 Elmary Pl., Fairlawn, N.J. 07410

Filed Dec. 28, 1992, Ser. No. 997,347
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—644 | **6 Claims**



1. A circuit breaker locator for use with circuits having a plurality of receptacles and corresponding circuit breakers comprising:

a housing having an elongated body portion and a transverse cover portion at each end,

a plunger extending outwardly through the cover from one end of the housing and axially within the housing, said plunger being reciprocably moveable within said housing,

resilient means engaging the plunger within the housing to maintain the plunger in a predetermined position within said housing,

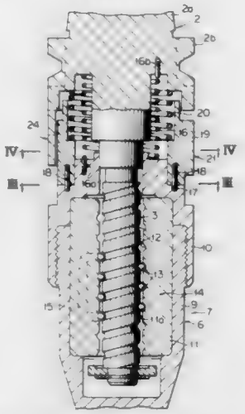
a pair of electrical contacts for insertion into a receptacle and a ground contact extending outwardly from the other end of the housing wherein the ground contact is coupled to the plunger within the housing said plunger being actuated to thereby move the ground contact outwardly from the housing, and

a fuse having a higher rating than the corresponding circuit breaker for the outlet mounted within the housing between the pair of electrical contacts wherein the pair of contacts are inserted into a receptacle and the plunger actuated causing the ground contact to engage the receptacle and the corresponding circuit breaker to trip.

5,351,039
TOOLHOLDER DEVICE FOR MACHINE TOOLS

Tetsuya Oketani, Gifu; Hirotaka Nishikawa, Ichinomiya; Yoshiaki Mase, Gifu, and Yukihiro Sakakibara, Handa, all of Japan, assignors to Howa Machinery, Ltd., Aichi, Japan

Filed Jan. 28, 1992, Ser. No. 827,227
Claims priority, application Japan, Jan. 30, 1991, 3-031893
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—680 | **14 Claims**



1. A tool holder device for a machine tool having a drive spindle for imparting rotation to a cutting tool, comprising:

a) a holder body to be coaxially coupled to the drive spindle for joint rotation therewith;

b) a driven toolholder coupled to the holder body for coaxial rotation with the holder body and for axial movement relative to the holder body, said tool holder including means for coaxially holding the cutting tool;

c) spring means disposed between the holder body and the driven toolholder for yielding axially to cause the toolholder to axially displace relative to the holder body only when an axial thrust force exceeding a set value is applied to the cutting tool;

d) a set of first displacement detecting elements on the holder body at circumferentially spaced locations about an axis of the holder body and the toolholder;

e) a set of second displacement detecting elements on the toolholder at circumferentially spaced locations about said axis and arranged interdigitatingly with said first displacement detecting elements with clearances therebetween;

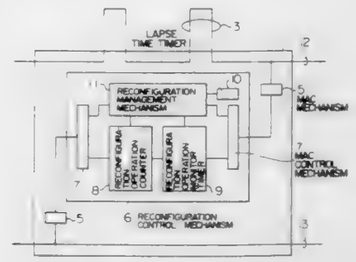
f) displacement translation means between the holder body and the toolholder and having sloping surface means for converting an axial displacement of the toolholder due to said axial thrust force exceeding the set value into a circumferential displacement of the toolholder, said sloping surface means being disposed in a region radially inward of said first and second displacement detecting elements such that said circumferential displacement of the tool holder in the region of said sloping surface means will cause an enlarged circumferential displacement of said second displacement detecting elements of the toolholder relative to the first displacement detecting elements of the holder body; and

g) means for sensing said enlarged circumferential displacement to detect at least said axial thrust force exceeding the set value.

5,351,040
CONTROL SYSTEM FOR CONFIGURING RING LAN WITH IMPROVED RECONFIGURATION OPERATION

Fumiaki Matsuura, Hadano; Kazuhiro Ushijima, Kanagawa; Hisashi Matsumura, Odawara; Masahide Kouhei, Miyagi, and Tsutomu Koita, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo; Hitachi Software Eng. Co. Ltd., Yokohama; Hitachitelecom Tech. Ltd., Koriyama and Hitachi Computer Eng. Co., Ltd., Hadano, all of Japan

Filed Sep. 5, 1991, Ser. No. 755,118
Claims priority, application Japan, Sep. 5, 1990, 2-233136
Int. Cl.[5] H04Q *3/00*
U.S. Cl. 340—825.05 | **6 Claims**



1. In a control system for controlling a reconfiguration function of a configuration control unit serially connected to a dual ring transmission line of a ring LAN system, said configuration control unit comprises:

transmission line reconfiguration means for disconnecting a fault point upon detection of a fault occurring on the transmission line and, after recovery of said fault, reconnecting the disconnected point;

reconfiguration suspension means for suspending operation of said transmission line reconfiguration means if operation of said transmission line reconfiguration means is performed more than a predetermined number of times within a predetermined time period; and

start up suspension means for suspending operation of said reconfiguration suspension means during a preselected time period after starting up said configuration control unit.

5,351,041
METHOD OF DATA COMMUNICATION IN COMMUNICATION NETWORK ON AUTOMOBILE

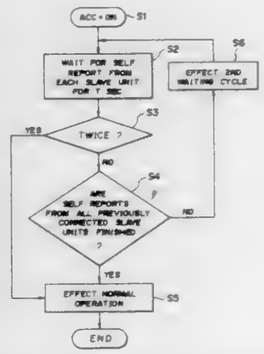
Yoshikatsu Ikata; Yasunao Gou; Toshiyuki Kimura, and Hiroshi Shimotsuma, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 24, 1991, Ser. No. 782,382
Claims priority, application Japan, Oct. 25, 1990, 2-288215; Oct. 25, 1990, 2-288218
Int. Cl.[5] H04J *3/02*
U.S. Cl. 340—825.24 | **11 Claims**

1. A method of data communication in a communication network, which occasionally starts and stops operating cycles, on an automobile, including a master unit and at least one slave unit which are connected to a common communication bus, said method comprising the steps of:

transmitting connection confirmation request information on said common communication bus from one slave unit to the master unit each time the communication network starts an operating cycle;

controlling the master unit to await connection confirmation



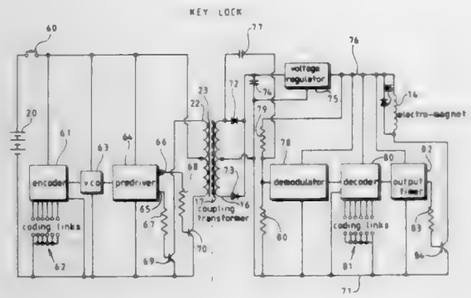
request information from said one slave unit for a predetermined period of time after the communication network starts an operating cycle; and

extending said predetermined period of time if reception of connection confirmation request information by said master unit from a slave unit that was connected when the communication network stopped operating in a cycle of operation immediately previous to said operating cycle is not completed.

5,351,042
LOCK, KEY AND COMBINATION OF LOCK AND KEY

Walter J. Aston, Dudley, England, assignor to Yale Securtiy Products Limited, Willenhall, England

Filed Mar. 16, 1992, Ser. No. 851,565
Claims priority, application United Kingdom, Mar. 19, 1991, 9105835.4
Int. Cl.[5] H04Q *1/00;* **G06K** *19/06;* **E05B** *47/06*
U.S. Cl. 340—825.31 | **10 Claims**



1. A batteryless electronic lock comprising:

a cylindrical body having a bore disposed therein;

a barrel rotatably disposed in the bore of the cylindrical body, the barrel having a recess with a central cam portion disposed therein;

a key slot disposed in the barrel, the key slot usable for receiving a blade of a coacting key;

a locking element disposed in the cylindrical body wherein

the locking element may enter the recess and limit rotation of the barrel relative to the cylindrical body;

electromagnetic release means for controlling the locking element in response to an identification signal, the identification signal provided by the coacting key when the blade of the coacting key is disposed in the key slot wherein the central cam portion retains the locking element in a rest position in which an air gap between the locking element and the electromagnetic release means is minimized and wherein rotation of the barrel in either direction when the electromagnetic release means is not energized will cause the locking element to enter the recess and prevent further rotation of the barrel relative to the cylindrical body;

means for acquiring electrical power for the electromagnetic release means from the coacting key.

5,351,043

QUEUEING PROTOCOL

John L. Hullett, 75 Selby Street, Daglish, Western Australia, and Robert M. Newman, 52 Davallia Road, Duncraig, Western Australia, both of Australia, assignors to Robert M. Newman; John L. Hullett and The University of Western Australia, Australia

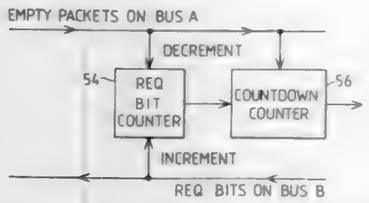
Continuation of Ser. No. 490,478, Mar. 8, 1990, Pat. No. 5,051,742, which is a continuation of Ser. No. 899,223, Jul. 11, 1986, Pat. No. 4,922,244. This application Aug. 6, 1991, Ser. No. 741,113

Claims priority, application Australia, Dec. 3, 1984, PG8394

The portion of the term of this patent subsequent to May 1, 2007, has been disclaimed.

Int. Cl.[5] H04Q *1/00*

U.S. Cl. 340—825.5 **45 Claims**



1. A method of queuing data packets for transmission from access units in a network having first and second oppositely directed buses with a plurality of access units coupled between the buses, said method including the steps, when an access unit has a data packet for transmission, of:

(a) determining on which one of the buses the data packet is to be transmitted,

(b) transmitting a request flag on the other of the buses, and

(c) selecting an empty or available data packet on said one bus for transmission of the data packet from the access unit with reference to the number of empty or available packets received at the access unit on said one bus and the number of request flags received at the access unit on said other bus.

5,351,044

VEHICLE LANE POSITION DETECTION SYSTEM

Bimal P. Mathur; H. Taichi Wang, both of Thousand Oaks, Calif., and Richard S. Haendel, Iowa City, Iowa, assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Aug. 12, 1992, Ser. No. 928,819

Int. Cl.[5] G08G *1/00;* **G06K** *9/68*

U.S. Cl. 340—901 **13 Claims**

1. A highway lane position detecting system for an automotive vehicle, comprising:

a sensor array comprising a plurality of sensor elements mounted on the vehicle for generating an image of the highway lane ahead of the vehicle, said image comprising data values input from said plurality of sensor elements;

a resistive network comprising a plurality of nodes connected to said sensor array for receiving said input data values and providing smoothed data values on said nodes;

a plurality of data paths, each of said data paths including a data path switch connecting one of said sensor elements to a corresponding network node;



means connected to each of said data paths for opening said data path switch when the difference between said sensor input data value and said smoothed data value on said corresponding node exceeds a predetermined value;

a microprocessor connected to said resistive network for determining position of said open switches in said image; and

said microprocessor using said open switch positions in said image for computing and outputting data in real time indicating position of the vehicle in the highway lane.

5,351,045

LOW-LEVEL WIND-SHEAR ALERT SYSTEM

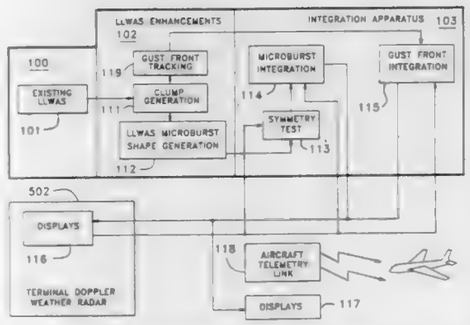
Lawrence B. Cornman, Boulder, Colo., assignor to University Corporation for Atmospheric Research, Boulder, Colo.

Division of Ser. No. 718,345, Jun. 19, 1991, Pat. No. 5,257,021. This application Mar. 13, 1992, Ser. No. 851,466

The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.

Int. Cl.[5] G08B *23/00*

U.S. Cl. 340—968 **18 Claims**



1. A method of identifying the presence and locus of wind shear in a predefined area based on wind measurements taken at a plurality of wind sensing loci located in said predetermined area, each of said measurements being indicative of a wind magnitude and direction at a corresponding one of said loci said method comprising the steps of:

collecting said wind measurements from said plurality of loci;

producing wind shear shape data indicative of the bounds of a wind shear event within said predetermined area based on said collected wind measurements to identify the presence and locus of wind shear in said predefined area, comprising:

creating a grid having a plurality of points that maps said predetermined area into said plurality of points,

converting each of said wind measurements taken at said plurality of wind sensing loci into divergence values indicative of wind divergence at each of said plurality of wind sensing loci, as computed between selected pairs and triples of said wind sensing loci;

mapping each of said divergence values onto said grid to create corresponding wind data points, each of which has a value representative of a wind divergence at a corresponding one of said plurality of points in said predetermined area,

deleting all said mapped wind data points whose mapped value does not exceed a predetermined threshold from said grid, and

bounding all contiguous ones of said mapped wind data points that remain in said grid following said step of deleting within a boundary of predetermined shape to identify the presence and locus of a wind shear event.

5,351,046

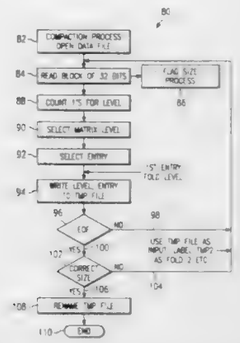
METHOD AND SYSTEM FOR COMPACTING BINARY CODED DECIMAL DATA

Thomas A. Adcox, 3621 Sherrye Pl., Plano, Tex. 75074

Filed May 28, 1993, Ser. No. 68,899

Int. Cl.[5] H03M *7/12*

U.S. Cl. 341—62 **15 Claims**



1. A method for generating a compacted binary coded decimal (BCD) data set from a digital data stream, the method comprising the steps of:

partitioning the digital data stream into a plurality of BCD blocks each comprising a pre-determined equal number of digits;

creating a translation matrix having a plurality of level rows such that each of said plurality of level rows has a unique row number corresponding to a possible number of 1's in said BCD block, said translation matrix further having a plurality of identifier columns equal in number to said number of digits and further such that each of said identifier columns uniquely corresponds to the relative position of one of the digits in said BCD block and further such that said translation matrix comprises a plurality of identifiers where each of said identifiers uniquely associates with one of said level rows and one of said identifier columns;

setting a fold level parameter to 1;

generating said compacted BCD data set from said plurality of BCD blocks and using said translation matrix by sequentially performing the following steps on each of said BCD blocks:

(a) reading said BCD block;

(b) determining the number of 1's in said BCD block;

(c) identifying a corresponding level row of said translation matrix that corresponds to the number of 1's in said BCD block;

(d) locating a set of identifiers in said corresponding level row such that each of said identifiers is within an identifier column that corresponds to the position of a 1 in said BCD block;

(e) adding said set of identifiers to form a unique identifier number;

(f) storing said fold level parameter, said corresponding unique row number and said unique identifier number in combination as a resulting BCD number, said resulting BCD number having fewer digits than said BCD block and being in sequence with any previously stored resulting BCD number; and

(g) repeating steps (a) through (f) to form said compacted BCD data set.

5,351,047

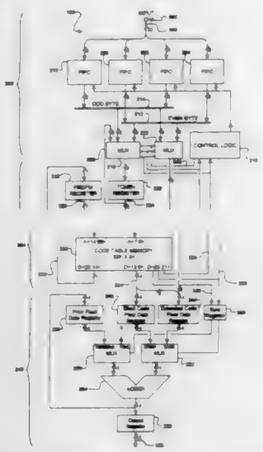
DATA DECODING METHOD AND APPARATUS

Frederick M. Behlen, Chicago, Ill., assignor to Laboratory Automation, Inc., Chicago, Ill.

Filed Sep. 21, 1992, Ser. No. 948,409

Int. Cl.[5] H03M *7/40*

U.S. Cl. 341—67 **7 Claims**



1. A device for decoding unaligned variable length code words comprising:

(a) input means for receiving an input data stream; said data stream comprising a plurality of fixed-length data fragments; said data fragments collectively forming a plurality of variable-length code words arranged adjacently in said data stream; each of said code words being encoded from a source symbol according to a predefined relationship; and

(b) code translation means including:

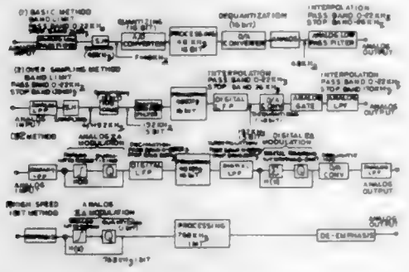
(i) means for defining a plurality of sequential operational cycles including a current cycle and at least one previously occurring cycle and at least one subsequently occurring cycle;

(ii) means for decoding a data fragment of said data stream, said data fragment including at least a portion of a current code word; and

(iii) means for generating during said current cycle a residual word representing but not identical to at least a portion of a code word to be decoded in a subsequent cycle;

said means for decoding said data fragment producing a source symbol corresponding to said current code word responsive exclusively to said current code word portion of said data fragment and to a residual word generated in a previous cycle.

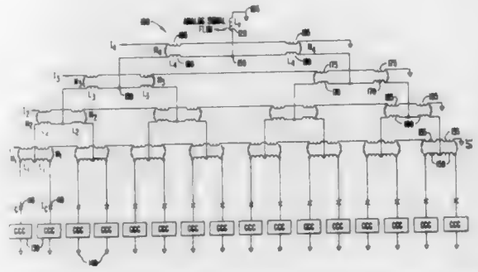
5,351,048
ONE BIT HIGH SPEED SIGNAL PROCESSING SYSTEM UTILIZING CONTROLLED SPECTRUM OF QUANTIZATION NOISE
Yoshio Yamasaki, 5-19-29, Koishikawa, Bun Kyo-ku, Tokyo, Japan
Filed Apr. 9, 1992, Ser. No. 866,316
Int. Cl.[5] H03M *3/02*
U.S. Cl. 341—110 12 Claims



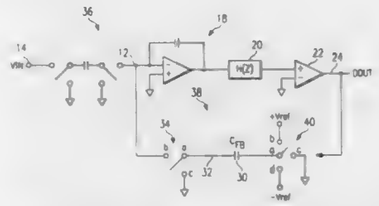
1. A 1-bit high speed analog-to-digital and digital-to-analog conversion system for improved digital-to-analog conversion at higher speed and over a wider frequency range comparable to relatively lower speed and narrower frequency range conversion systems, said system comprising:
input circuit means for receiving an analog input signal;
analog-to-digital conversion means for quantizing said analog input signal using a controlled spectrum of quantizing noise to produce a 1-bit high speed digital signal so that quantization noise of said 1-bit high speed digital signal is concentrated at a high frequency band, the frequency of the high frequency band being higher than the frequency band of said analog input signal; and
digital-to-analog conversion means for receiving and band-limiting said 1-bit high speed digital signal to produce an analog output signal of a form substantially similar to the form of the analog input signal, wherein said analog-to-digital conversion means comprises:
an integration circuit, comprising a plurality of cascaded integrators, for integrating the analog input signal,
a 1-bit quantizer connected to the integration circuit for quantizing the output signal of the integration circuit, and
a delay circuit for delaying the output signal of the 1-bit quantizer and supplying the delayed signal to the integration circuit.

5,351,049
SUPERCONDUCTING QUANTIZER AND A/D CONVERTER SYSTEM
Gregory S. Lee, and Herbert L. Ko, both of Mountain View, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Aug. 26, 1992, Ser. No. 936,196
Int. Cl.[5] H03M *1/12*
U.S. Cl. 341—133 16 Claims

1. A quantizer circuit for transforming an analog input signal into a periodic function of the analog input signal, said circuit including a superconducting ground, said circuit comprises:
a phase wheel comprising a rim and a plurality of spokes connected to the rim and a center node, each spoke including a Josephson junction and inductor, connected to the superconducting ground;
means for applying the analog signal to the center node and a reference phase to the rim, said analog signal causing Josephson currents in the spokes, said Josephson junction in each said spoke having a flux bias that is different from the flux biases in the remaining spokes, said Josephson currents in half of the spokes being positive and the Josephson currents in the remaining spokes being negative, wherein an indicator position is defined in reference to the maximum positive Josephson current, said indicator position rotating at a rate proportional to the slew rate of said analog signal.

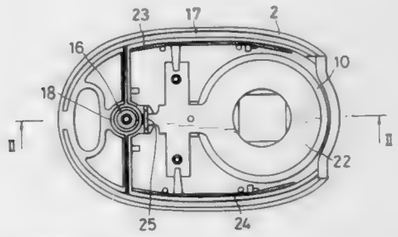


5,351,050
DETENT SWITCHING OF SUMMING NODE CAPACITORS OF A DELTA-SIGMA MODULATOR
Charles D. Thompson, Austin, and Eric J. Swanson, Buda, both of Tex., assignors to Crystal Semiconductor Corporation, Austin, Tex.
Filed Nov. 3, 1992, Ser. No. 970,693
Int. Cl.[5] H03M *3/00*
U.S. Cl. 341—143 12 Claims



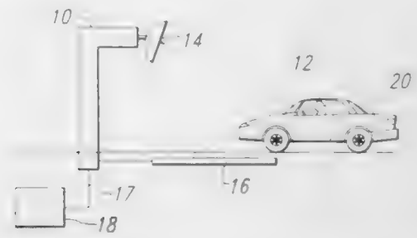
1. A delta-sigma modulator for receiving an analog input signal and providing a digital output signal comprising:
a) a summing node for summing the input signal and a feedback signal;
b) an integrator for integrating the signal at said summing node;
c) a loop filter for filtering the signal out of said integrator;
d) a quantizer for digitizing the signal out of said loop filter, the output of the quantizer forming the digital output of the modulator; and
e) a first switched capacitor circuit having a first capacitor coupled between an input terminal and an output terminal wherein the input terminal is switched to N different increasing voltages or N different decreasing voltages during a sampling period in response to said digital output of the modulator, where N is greater than 2, and the output terminal is switched between a reference voltage and said feedback signal once during said sampling period whereby the voltage stress across the output terminal during each switch to a different voltage is reduced compared to the stress which would occur if the contact were switched directly from the first of said N voltages directly to the last of said N voltages.

5,351,051
TRANSMISSION DEVICE
Tsunenori Yano, and Munemasa Matsushita, both of Miyazaki, Japan, assignors to Honda Lock Mfg. Co., Ltd., Miyazaki, Japan
Filed Jun. 25, 1992, Ser. No. 903,907
Claims priority, application Japan, Jun. 25, 1991, 3-78685[U]
Int. Cl.[5] G08C *19/12*
U.S. Cl. 341—176 8 Claims



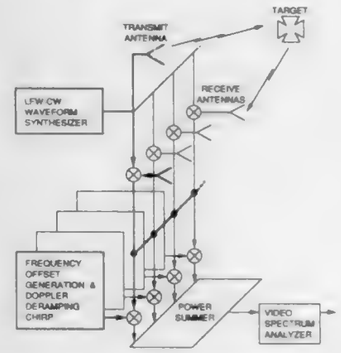
1. A transmission device comprising:
a transmission circuit for transmitting a remote control signal for locking and unlocking a vehicle door;
a casing containing said transmission circuit;
at least two portions of said casing having lower dielectric strengths than at least one other portion of said casing;
a plurality of grounding plates between said transmission circuit and said casing;
each of said at least two portions being adjacent to at least one of said plurality of grounding plates;
means for electrically interconnecting said plurality of ground plates, whereby a conductive path joining said at least two portions is established.

5,351,052
TRANSPONDER SYSTEMS FOR AUTOMATIC IDENTIFICATION PURPOSES
Loek D'Hont, Almelo; Anne Tip, Overdinkel, both of Netherlands, and Herbert Meier, Moosburg, Fed. Rep. of Germany, assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jun. 28, 1993, Ser. No. 83,808
Claims priority, application United Kingdom, Sep. 28, 1992, 9220412
Int. Cl.[5] G01S *13/74*
U.S. Cl. 342—42 19 Claims



1. A method of communicating between an interrogator and a plurality of transponders, at least a first and a second of said transponders separately located within a first and a second vehicle travelling within a first and a second traffic lane, respectively, the method comprising the steps of:
a) providing a first and a second LF antenna associated with and in proximity to said first and said second traffic lane, respectively;
b) transmitting from each of said first and second LF antennas a continuous LF subcarrier to serve as a clock signal for each antenna's associated transponder;
c) sending a wake-up signal by each of said LF antennas to its associated transponder;
d) sending a unique lane code by each of said LF antennas to its associated transponder;
e) storing said unique lane code in a memory in each of said transponders; and
f) sending a UHF response by each of said transponders in a pre-determined, mutually exclusive, time period depending on said unique lane code stored in each of said transponders whereby interference between responding transponders is avoided.

5,351,053
ULTRA WIDEBAND RADAR SIGNAL PROCESSOR FOR ELECTRONICALLY SCANNED ARRAYS
Michael C. Wicks, Utica, and Russell D. Brown, Holland Patent, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jul. 30, 1993, Ser. No. 100,649
Int. Cl.[5] G01S *13/42*; H01Q *3/22, 3/42*
U.S. Cl. 342—158 4 Claims

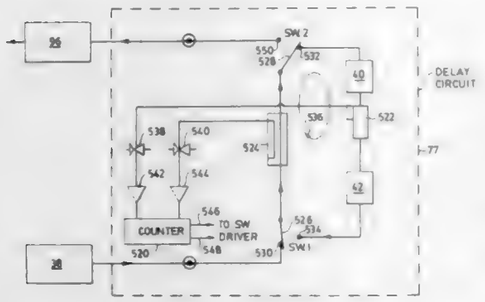


1. An ultra-wideband radar tracking system for tracking a moving target, said ultra-wideband radar tracking system comprising:
a multi-octave signal generator which generates an ultra-wideband chirped pulse signal, said ultra-wideband chirped pulse signal comprising a signal which is at least an octave in bandwidth;
a phased array antenna which is electrically connected with said multi-octave signal generator, said phased array antenna receiving said ultra-wideband chirped pulse signal from said multi-octave signal generator, and transmitting it into space, said phased array antenna having a plurality of radiating antenna elements;
a means for processing signals which is electrically connected to said phased array antenna, said signal processing means using frequency offset generation to electronically steer the ultra-wideband chirped pulse signal emitted by said phased array antenna, said signal processing means providing a frequency offset between said radiating antenna elements for said ultra-wideband chirped pulse signal to electrically steer the ultra-wideband chirped pulse signal by frequency offset mixing.

5,351,054
RADAR TARGET WITH DELAYED REPLY MEANS
Duane G. Fredericks, 63 Woodbury Dr., Lockport, N.Y. 14094, and Herbert W. Rosebrock, N. Tonawanda, N.Y., assignors to Duane G. Fredericks, Lockport, N.Y.
Continuation-in-part of Ser. No. 774,040, Oct. 7, 1991, Pat. No. 5,164,734. This application Sep. 25, 1992, Ser. No. 951,156
Int. Cl.[5] G01S *7/40*
U.S. Cl. 342—172 11 Claims

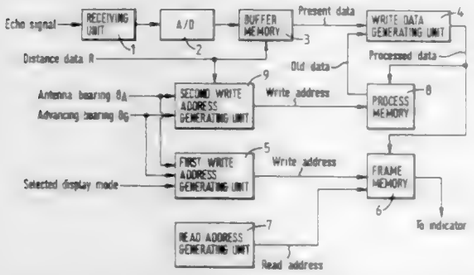
1. An apparatus for producing an electromagnetic signal, wherein said apparatus is comprised of:

(a) means for receiving a radar signal which has a frequency of from about 1 to about 94 gigacycles;
(b) modulation means for modifying said radar signal, thereby producing a modulated signal;
(c) means for dividing said modulated signal into at least a first divided signal and a second divided signal;
(d) means for producing a Doppler composite signal produced by combining a third signal, and a fourth signal;
(e) means for reducing the velocity of propagation of said radar signal thereby producing a delayed radar signal;



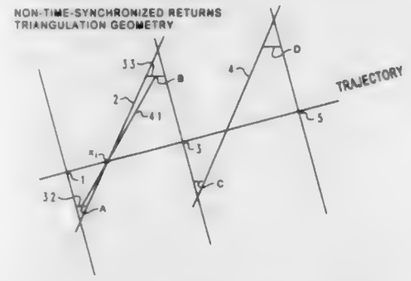
(f) means for modulating said composite Doppler signal with said delayed radar signal, thereby producing a modulated delayed radar signal;
(g) means for attenuating said modulated delayed radar signal, thereby producing an attenuated modulated delayed radar signal; and
(h) means for combining said delayed radar signal and said composite Doppler signal, thereby producing a combined signal; and
(i) means for transmitting said combined signal to a radar source.

5,351,055
RADAR APPARATUS
Takumi Fujikawa, Takarazuka, and Motoji Kondo, Kobe, both of Japan, assignors to Furuno Electric Co., Ltd., Hyogo, Japan
Continuation of Ser. No. 721,547, Jul. 18, 1991, abandoned. This application May 26, 1993, Ser. No. 67,165
Claims priority, application Japan, Nov. 21, 1989, 1-304188; Nov. 25, 1989, 1-305835
Int. Cl.[5] G01S *7/66*
U.S. Cl. 342—184 **49 Claims**



1. A radar apparatus for successively radiating search signals in different directions, receiving echo signals and displaying the signals so that surrounding conditions in a wide range of directions are displayed, comprising:
a receiving unit for receiving echo signals;
a buffer memory for storing the received echo signals based on one search signal, said echo signals being supplied from the receiving unit;
a first memory for storing echo signals coming from a wide range of directions in memory elements thereof, the memory elements being determined with respect to a bearing;
correlation means for performing a correlation process upon signals supplied by said buffer memory and signals read from said first memory and for outputting resultant processed signals;
said first memory storing said resultant processed signals;
a second memory for storing said resultant processed signals outputted by said correlation means in memory elements thereof, said memory elements being determined by a selected display mode; and
an indicator for displaying signals read from said second memory;
said first and second memories functioning in combination to remove unwanted sea clutter.

5,351,056
TARGET TRACKING IN CLUTTER DEGRADED SCENES USING CENTRAL LEVEL STEREO PROCESSING
Joseph C. Sawyer, Boulder, Colo., assignor to International Business Machines Corp., Armonk, N.Y.
Filed Jun. 21, 1993, Ser. No. 80,800
Int. Cl.[5] G01S *5/02, 5/12;* **H04B** *7/185*
U.S. Cl. 342—195 **9 Claims**



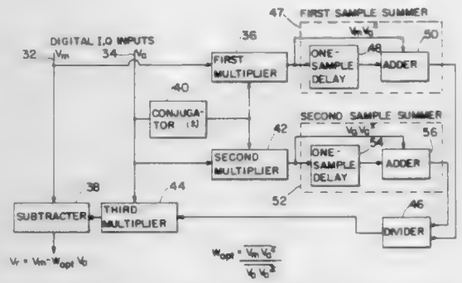
1. In a target tracking system, including a first tracking station and a second tracking station, said first tracking station and said second tracking station operatively connected to a data processing system, a computer method for determining the track of a target comprising the steps of:
(a) receiving at said first tracking station a first return, said first return comprised of first angle measurement of the position of a target as observed from said first tracking station, said first return being received at a first point in time;
(b) receiving at said second tracking station a second return, said second return comprised of second angle measurement of the position of said target as observed from said second tracking station, said second return being received at a second point in time, said second point in time being later than said first point in time;
(c) receiving at said first tracking station a third return, said third return comprised of third angle measurement of the position of said target as observed from said first tracking station, said third return being received at a third point in time, said third point in time being later than said second point in time;
(d) receiving at said second tracking station a fourth return, said fourth return comprised of fourth angle measurement of the position of said target as observed from said second tracking station, said fourth return being received at a fourth point in time, said fourth point in time being later than said third point in time;
(e) calculating a first point by triangulating between said first return and said second return;
(f) calculating a second point by triangulating between said second return and said third return;

(g) calculating a third point by triangulating between said third return and said fourth return;
(h) associating said first point and said second point on the basis that said first point and said second point were each calculated using said second return;
(i) associating said second point and said third point on the basis that said second point and said third point were each calculated using said third return;
(j) determining a first vector whose end points are said first point and said second point;
(k) determining a second vector whose end points are said second point and said third point;
(l) determining a first track point, said first track point being the point on said first vector such that ratio between the distance from said first track point to said first point and the distance from said first track point to said second point is equal to a characteristic ratio; and
(m) determining a second track point, said second track point being the point on said second vector such that ratio between the distance from said second track point to said second point and the distance from said second track point to said third point is equal to said characteristic ratio.

5,351,057
DIRECTIVE OPTIMIZATION OF COHERENT SIDELOBE CANCELLER SYSTEMS
James P. Hansen, Waldorf, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 25, 1974, Ser. No. 528,194
Int. Cl.[5] G01S *3/16, 3/28*
U.S. Cl. 342—378 **8 Claims**

1. A method for improving interference suppression comprising:
positioning a primary receiving sensor in a multiple signal source environment;
placing a plurality of auxiliary receiving sensors about said primary sensor;
receiving signals from desired and interference sources at said primary sensor to form a main channel output;
receiving signals primarily from interference sources at said auxiliary sensors;
supplying said primary and auxiliary sensor interference signals to a canceller system and cancelling interference in said main channel output;
establishing a dominant azimuthal direction of interference source position along a horizontal line of sight through said primary sensor; and
arranging said auxiliary sensors about said primary sensor such that a horizontal line of sight through any two auxiliary sensors is not substantially parallel to the horizontal line indicating said azimuthal direction when viewed in the same horizontal plane.

5,351,058
GENERAL PURPOSE SIDELOBE CANCELLER SYSTEM
Frank F. Kretschmer, Jr., Laurel, and Bernard L. Lewis, Oxon Hill, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 26, 1979, Ser. No. 25,952
Int. Cl.[5] G01S *3/16, 3/28*
U.S. Cl. 342—384 **3 Claims**



1. A system for cancelling barrage interference and false-target interference from M-1 barrage interference sources and one or more false-target interference sources, comprising:
a main channel having a main radar antenna and an analog-to-digital (A/D) converter for producing a digital, complex, main input signal, a number, M, of serially connected digital open-loop canceller means each having a main terminal, an auxiliary terminal and an output terminal, the first of said serially connected canceller means receiving the output of said A/D converter at its main terminal and the remainder of said canceller means each receiving the output from the output terminal of the preceeding canceller at its main terminal; and
a series of M auxiliary channels each having an auxiliary antenna and an A/D converter for producing a digital, complex, auxiliary input signal which auxiliary input signal and said main input signal may have correlated interference signal components, the first auxiliary channel providing a first auxiliary-channel signal to one of said digital open-loop cancellers of said main channel, the remaining auxiliary channels each having, respectively, a number of serially connected digital open-loop canceller means in an amount equal to one less than its number in the series, each said canceller means having a main terminal, an auxiliary terminal and an output terminal, the first serially connected canceller means of each auxiliary channel receiving the output of the A/D converter for the respective channel and the remainder of the serially connected canceller means each receiving the output from the output terminal of the preceeding canceller means at its main terminal, the last serial, open-loop canceller means for each auxiliary channel providing the auxiliary channel output, each canceller means of an auxiliary channel receiving at its auxiliary terminal the auxiliary channel output from a different one of the preceeding auxiliary channels, the auxiliary channel outputs also each being provided to the auxiliary terminal of a different one of the main-channel canceller means,
each said digital open-loop canceller means acting to sample the signal at its main terminal and the signal at its auxiliary terminal and to decorrelate the signal at the main terminal from the signal at the auxiliary terminal,
each said serially connected canceller means of said main channel, except the last, and the serially connected canceller means of said auxiliary channels acting to cancel said

barrage interference correlated between said main input signal and said auxiliary input signals and to provide a residue main signal output and an auxiliary signal output, said last succeeding canceller means of said main channel acting to cancel said false-target interference correlated between said main input signal and said auxiliary input signals.

5,351,059

NAVIGATION SYSTEM AND METHOD THEREFOR

Toshio Tsuyuki, 865-1-3-352, Kajiya, Yugawaracho, Ashigarashimo-Gun, Kanagawa-Ken, Japan

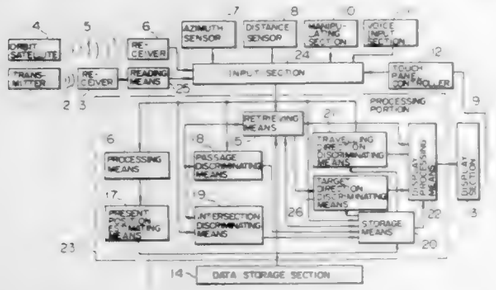
PCT No. PCT/JP90/01064, § 371 Date Feb. 14, 1992, § 102(e) Date Feb. 14, 1992, PCT Pub. No. WO91/02943, PCT Pub. Date Mar. 7, 1991

PCT Filed Aug. 21, 1990, Ser. No. 834,552

Claims priority, application Japan, Aug. 24, 1989, 1-216159; Sep. 14, 1989, 1-236845; Oct. 5, 1989, 1-258831; Nov. 30, 1989, 1-309259; Nov. 30, 1989, 1-309260; Dec. 13, 1989, 1-321557; Apr. 6, 1990, 2-90298

Int. Cl.[5] G01S *3/02*

U.S. Cl. 342—457 **39 Claims**



1. A navigation system that displays a road on which an object is located, without displaying a route to a target comprising a main unit including a storage device, a central processing device, an input device and a display device, said main unit being mounted on the moving object and including:

road information receiving means for receiving information about a shape and a position of a road through which said moving object is moving from at least one of an external device positioned externally of said main unit and an auxiliary device provided for said main unit, said shape of said road being determined assuming that said moving object moves along said road without changing said road;

a target information indicating means for indicating information about the target for said moving object to reach on a screen of said display device;

travelling line generating means for generating a single travelling line representing only said shape of said road through which said moving object is moving on the basis of said information about the shape and the position of said road that said road information receiving means receives, said travelling line generating means changing said single travelling line when said road information receiving means receives information indicating that the moving object has changed roads; and

a display processing means for displaying said generated single travelling line on the screen of said display device while indicating the positional relationship of said single travelling line with said information about said target, said display processing means displaying said single travelling line so that said single travelling line is highlighted with respect to other lines displayed on said screen, wherein said single travelling line displayed on said screen is changed when said moving object changes roads.

5,351,060

ANTENNA

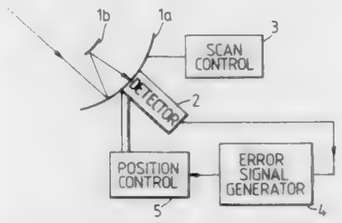
Gerald A. Bayne, Le Couvert Les Adrets-de-L'Esterel, 83600 Frejus, France

Filed Feb. 24, 1992, Ser. No. 840,498

Claims priority, application France, Feb. 25, 1991, 91 400507

Int. Cl.[5] H01Q *3/00*

U.S. Cl. 343—766 **12 Claims**



1. A rotary speed control system for controlling rotation of a rotatable component rotated at a rotary speed comprising:

rotary position signal generator means for generating a periodically varying signal having an average level related to the rotary speed,

reference signal generator means for generating a corresponding reference signal,

comparator means for generating an output corresponding to a difference between said periodically varying signal and said reference signal, such that said comparator means generates a pulsed output having a width which is modulated to stabilize said rotary speed when the rotary speed approximates a desired speed, and said comparator output remains constant to adjust said rotary speed when said rotary speed diverges substantially from said desired speed.

5,351,061

ANTENNA WITH PARABOLIC REFLECTOR

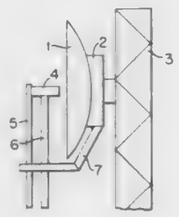
Batto Madaus, Burgwedel; Horst Antony, Wietze; Bernd Anger, Holle, and Paul Thiele, Laatzen, all of Fed. Rep. of Germany, assignors to kabelmetal electro Gesellschaft mit beschränkter Haftung, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 785,322, Oct. 28, 1991, abandoned. This application Jul. 9, 1993, Ser. No. 90,362

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1991, 9014875

Int. Cl.[5] H01Q *19/12*

U.S. Cl. 343—840 **11 Claims**



1. An antenna comprising:

a parabolic reflector and a tubular exciter for illuminating said reflector;

at least one waveguide connected to said exciter and supporting said exciter for conducting electromagnetic waves to or from said exciter;

a mechanically stable mount supporting said reflector and located on a rear side of said reflector facing away from said exciter;

wherein said mount has an extension which extends beyond an edge of said reflector in generally transverse attitude to a central axis of said reflector, and a support arm of generally planar configuration which extends in a forward direction from said extension towards a front side of said reflector and beyond said reflector, said support arm being distant from said exciter,

said at least one waveguide extends in a generally transverse direction of said support arm and is fastened to said support arm at an end thereof distant from said mount, said mount being of one-piece construction for supporting said reflector and said at least one waveguide; and

a width of said generally planar support arm tapers from a maximum width at said mount extension to a minimum width at said one waveguide.

5,351,062

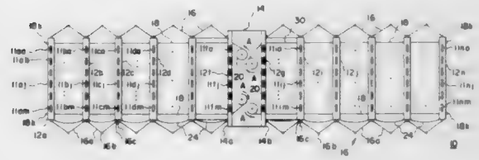
RETRACTABLE DISTRIBUTED ARRAY ANTENNA

John R. Knapp, Cazenovia; John D. Reale, Syracuse; Donald P. Miller, and David L. Binsley, both of Liverpool, all of N.Y., assignors to General Electric Company, Philadelphia, Pa.

Filed Sep. 8, 1992, Ser. No. 941,814

Int. Cl.[5] H01Q *1/08*

U.S. Cl. 343—880 **13 Claims**



1. A retractable distributed array antenna, comprising:

a multiplicity of radiative elements arranged in a beam-forming array of desired configuration and resolvable into a plurality C of columns, each having at least one of the antenna radiative elements;

a plurality P, not exceeding C in number, of elongated column members, each supporting the antenna elements of an associated column and arranged with their elongated dimension generally parallel to one another;

a plurality H of hinge means, each joining end portions of a pair of juxtaposed column members and adapted for urging the joined column member end portions away form each other, to place the columns of elements into the desired distributed array antenna configuration, and with at least one of the plurality of hinge means including a pair of arms each having opposed first and second ends, with each first end pivotally mounted to one another and each different arm second end pivotally mounted to different ones of said members, and forcing means, including at least one spring, for urging the second ends of the pair of arms in opposite directions; and

means for controllably drawing the joined column member end portions towards each other, against the action of the hinge means, to collapse the array into a smaller volume than the volume occupied by the array when expanded.

5,351,063

ULTRA-WIDEBAND HIGH POWER PHOTON TRIGGERED FREQUENCY INDEPENDENT RADIATOR WITH EQUIANGULAR SPIRAL ANTENNA

Anderson H. Kim, Toms River; Leo D. DiDomenico, Spotswood; Maurice Weiner, Ocean, all of N.J.; Louis J. Jasper, Jr., Fulton, Md., and Robert J. Youmans, Brick, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

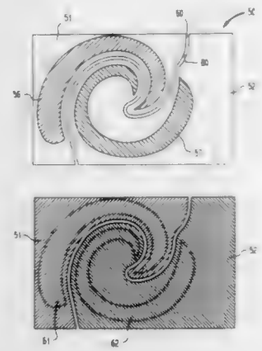
Filed May 19, 1993, Ser. No. 64,525

Int. Cl.[5] H01Q *1/36*

U.S. Cl. 343—895 **6 Claims**

1. An ultra wideband RF radiator, comprising:

an electrical energy storage device coupled to a source of electrical voltage, said device comprised of a dielectric medium consisting of first and second dielectric pieces each having an upper and lower surface, said upper and lower surfaces of each said dielectric piece having a metalized electrode resting thereon, said upper surface electrode of each said dielectric piece forming a spiral arm, said dielectric pieces separated by a predetermined gap distance and positioned with respect to each other such their spiral arms form a spiral antenna; and



a photoconductive switch electrically connected to said spiral arms, said switch becoming conductive upon the application of a predetermined type of light energy such that the energy stored by said storage device discharges through a load, said discharge generating a time varying electromagnetic wave comprising a relatively high amplitude, narrow output pulse of nanosecond pulsewidth dimension.

5,351,064

CRT/FLAT PANEL DISPLAY CONTROL SYSTEM

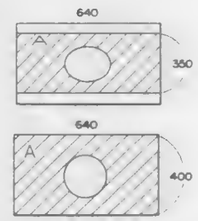
Hiroki Zenda, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 882,256, May 8, 1992, abandoned, which is a continuation of Ser. No. 652,392, Feb. 6, 1991, abandoned, which is a continuation of Ser. No. 517,443, Apr. 25, 1990, abandoned, which is a continuation of Ser. No. 207,986, Jun. 17, 1988, abandoned. This application Dec. 13, 1993, Ser. No. 165,524

Claims priority, application Japan, Jun. 19, 1987, 62-152701; Nov. 18, 1987, 62-289501; Nov. 18, 1987, 62-289502

Int. Cl.[5] G09G *1/00*

U.S. Cl. 345—3 **5 Claims**



1. A display control system for a flat panel display apparatus wherein said display control system may also optionally be used for a CRT display apparatus and wherein said display control system is coupled to a VRAM, each of said display apparatus having a display screen and having a capability to generate, from display data stored in the VRAM, a display image in a selected one of a plurality of display resolutions each having a resolution data and each including a plurality of raster lines, said display control system including a display controller for alternately driving said flat panel display apparatus and said CRT display apparatus in a plurality of display

modes, including a stretch-enable display mode, said display control system comprising:

stretch designation means for generating a stretch instruction that the display image to be generated on said display screen of said flat panel display apparatus be stretched;

first storage means for storing the stretch instruction;

second storage means for storing data for use in determining whether the display image can be stretched;

discriminating means for discriminating, in response to the stretch instruction stored in said first storage means and based on the data stored in said second storage means, whether the display image of said flat panel display apparatus can be stretched when the display image is to be generated on said display screen of said flat panel display apparatus; and

image stretch means for, when said discriminating means discriminates that the display image can be stretched, reading and displaying display data from the VRAM a plurality of times at evenly distributed intervals so as to add at least one extra raster line to said display image, thereby stretching said display image.

5,351,065

INDICATOR DEVICE

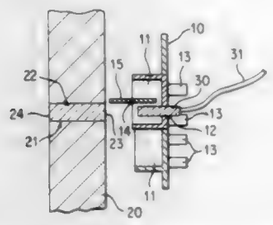
Erich Killinger, Gaggenau, Fed. Rep. of Germany, assignor to Dambach-Werke GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 731,057, Jul. 16, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 23,801

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1990, 4022649

Int. Cl.[5] **G09G** *3/16*

U.S. Cl. 345—109 **8 Claims**



1. In an indicator device for an indicator formed of individual indicator elements, having an optical fiber with a corresponding bore in an indicator board located in front of the indicator elements for each of the indicator elements, a plurality of switching elements positioned between the ends of the optical fibers and the corresponding bores of the indicator board, each of said switching elements corresponding to the individual optical fibers, said switching elements selectively brought by a plurality of electromagnets into one of a non-indicating position, where they cover the end of the corresponding optical fibers, and an indicating position, where the optical fiber is uncovered,

the improvement comprising:

each said optical fiber (**31**) closed off by a reflecting body (**30**), a housing (**10**) comprising a plate and a plurality of walls extending from a surface of said plate and forming a plurality of indicator compartments (**11**) approximately square in cross-section and open in a direction toward the indicator board (**20**), each said reflecting body (**30**) extending into each of said indicator compartments (**11**) through a bore (**12**) formed by the plate in each of said indicator compartments (**11**),

the switch elements comprising a flat flap (**15**), rotatably seated with a rotational axis (**14**) in an area of said open side of the indicator compartment (**11**) which in a non-indicating position is pivoted into the plane of the open side, covering the open side of the indicator compartment (**11**) and, together with the walls and the plate of the housing (**10**), enclosing the reflecting body (**30**) within the indicator compartment (**11**),

the reflecting body (**30**) disposed outside of the rotational axis (**14**) of the flat flap (**15**) and used laterally as a stop for limiting a rotational movement of the flat flap (**15**) to approximately 90°, about one half of said flap (**15**) being pivoted into the indicator compartment (**11**) in an indicating position, uncovering an end of the reflecting body (**30**), and

a light collector (**22**) fixed in a corresponding bore (**21**) of the indicator board (**20**), said light collector (**22**) comprising a section of a solid body made of one of glass or a transparent plastic material and having at least a first face (**23**) facing the reflecting body (**30**) which is polished.

5,351,066

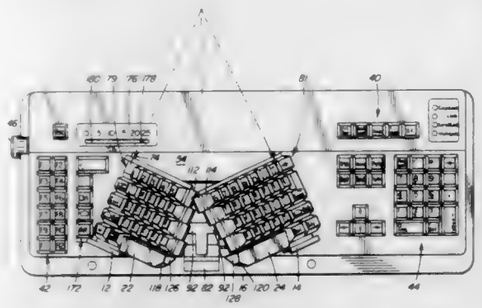
ROTATING PLANE KEYBOARD

Lance M. Rucker; Keith W. Hoyle, both of Vancouver, and Allen B. Hepworth, Coquitlam, all of Canada, assignors to Ergologic Enterprises Inc., Vancouver, Canada

Filed Jul. 8, 1991, Ser. No. 727,810

Int. Cl.[5] **B41J** *5/08;* **H01H** *13/70*

U.S. Cl. 345—168 **29 Claims**



1. An adjustable keyboard for data input, comprising:

(a) a base member for contact with a support surface, said base member defining a longitudinal base plane extending through said base member, said base member having a distal side intended for orientation away from a user and a proximate side intended for orientation adjacent a user and first and second ends joining said distal and proximate sides;

(b) a first demi-board means having a distal side for orientation away from a user and a proximate side for orientation adjacent a user, defining a first demi-board plane extending longitudinally through said first demi-board means, pivotably connected to said base member and constrained for pivotal movement of said first demi-board means for reproducing a pre-determined arc and reproducible positions between a retracted position in which said first demi-board plane is substantially co-planar and parallel with said base plane and an extended position in which said first demi-board means extends at an acute angle with respect to said base member;

(c) a plurality of user activated keys extending from a face of said first demi-board means, said keys facing away from said base member;

(d) a second demi-board means having a distal side for orientation away from a user and a proximate side for orientation adjacent a user, defining a second demi-board plane extending longitudinally through said second demi-board means, pivotably connected to said base member and constrained for pivotal movement of said second demi-board means for reproducing a predetermined arc and reproducible positions between a retracted position in which said second demi-board plane is substantially co-planar and parallel with said base plane and an extended position in which said second demi-board means extends at an acute angle with respect to said base member;

(e) a plurality of user activated keys extending from a face of said second demi-board means, said keys facing away from said base member;

(f) when in said extended position said base plane, first demi-board plane, second demi-board plane and proximate sides of said first and second demi-board means forming a tetrahedral shape wherein:

(i) the distal side of one of said demi-board means is located closer to the other demi-board means than the proximate side of said one of said demi-board means;

(ii) said first and second planes each intersect with said base plane to form an acute angle;

(iii) said first and second intersect with each other at an apex intersecting line in space, said apex intersecting line being in non-parallel alignment with the base plane; and

(iv) said first, second and base planes intersect with each other at an intersecting point in space beyond the distal side of said base member.

5,351,067

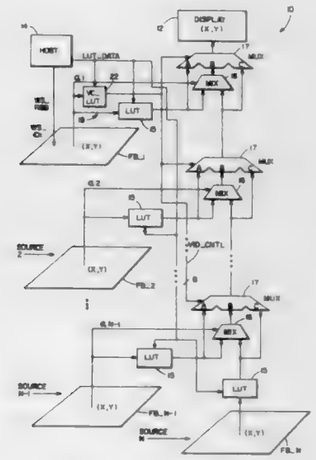
MULTI-SOURCE IMAGE REAL TIME MIXING AND ANTI-ALIASING

Leon Lumelsky, Stamford, Conn.; Sung M. Choi, White Plains, N.Y.; Alan W. Peevers, Berkeley, Calif., and John L. Pittas, Bethel, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 22, 1991, Ser. No. 733,766

Int. Cl.[5] **G09G** *1/02, 1/06*

U.S. Cl. 345—191 **18 Claims**



13. An integrated circuit device for processing image pixel data, said integrated circuit device comprising a first input port for coupling to an output of a first source of image pixel values, a second input port for coupling to an output of a second source of image pixel values, and a third input port for coupling to an output of a source of image pixel transparency values that are associated with the image pixel values output from the first source, said integrated circuit device further comprising means, responsive to a predetermined state of a control signal applied to a control input port, for selectively mixing together image pixel values received from said first input port and from said second input port, said means for selectively mixing comprising first means for subtracting an image pixel value received from the first input port from an image pixel value received from the second input port, second means for multiplying a difference value output from said first means times an image pixel transparency value received from the third input port, and third means for adding a product value output from said second means to the image pixel value received from the second input port, said integrated circuit device further comprising an output port, coupled to an output of said third means, for outputting a resultant image pixel value.

5,351,068

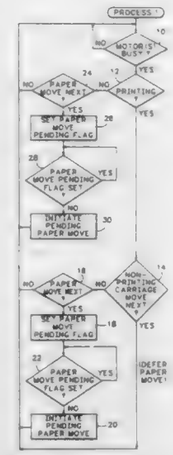
INK-JET PRINTER CARRIAGE AND PAPER MOTION OVERLAP METHOD AND APPARATUS

Eva-Maria Moon, Washougal, Wash., and Steven B. Elgee, Portland, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 30, 1992, Ser. No. 954,834

Int. Cl.[5] **B41J** *13/00, 25/304*

U.S. Cl. 347—101 **5 Claims**



1. An automatic printer control method implemented in a printer's controller for increasing printer throughput, the method comprising the steps of:

first determining while printing whether there is pending a non-printing carriage movement; and if so then

deferring paper movement until a later time when non-printing carriage travel has reached full speed; and if not then

determining whether there is pending a paper movement and if so then

initiating paper movement substantially immediately after printing stops.

5,351,069

SUBLIMATION TYPE THERMAL TRANSFER PRINTER AND INK SHEET USED WITH THE SAME

Kiyoshi Koike; Jyunichi Aizawa; Hiroshi Nakao, and Kunihiko Nakagawa, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 983,235

Claims priority, application Japan, Jan. 27, 1992, 4-012003; Jan. 28, 1992, 4-012875

Int. Cl.[5] **B41J** *2/325*

U.S. Cl. 366—76 PH **21 Claims**

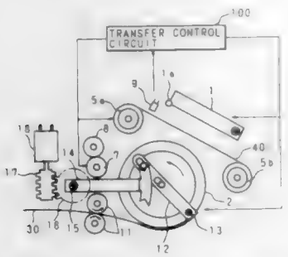
1. A sublime type transfer printer comprising:

an ink sheet having an image receive coating area coated with a fixing agent of a sublimation ink and an ink area coated with the sublimation ink wherein the image receive coating area and the ink area are alternatively formed a plurality of times;

a pair of reels for transporting sequentially the image receive coating area and then the ink area of the ink sheet to a transfer position;

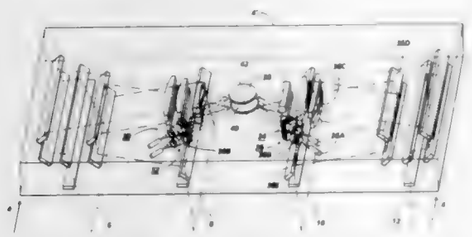
a pair of rollers for transporting a printing paper, onto which

an image is to be transferred, to the transfer position by holding the printing paper therebetween, the printing paper having first and second opposed sides;
a platen having a surface for holding the printing paper thereon;
a thermal head for thermally transferring an image by pressing the ink sheet onto the printing paper held on the platen; and



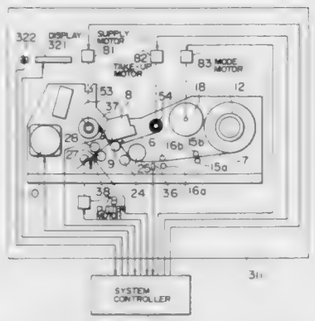
a transfer control circuit for controlling transferring of the fixing agent on the image receive coating area of the ink sheet onto a fixing agent transferred area of the printing paper and then transferring the image onto the fixing agent transferred area of the printing paper by subliming the ink of the ink area, wherein
the transfer control circuit individually controls a transfer speed and a transfer time of the fixing agent on the image receive coating area and a transfer speed and a transfer time of the sublimation ink on the ink area, respectively.

5,351,070
SINGLE PASS COLOR PRINTER HAVING IMPROVED PROCESS AND SLOW REGISTRATION
John H. Hinton, Ontario; William J. Nowak, and Daniel W. Costanza, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 24, 1992, Ser. No. 825,463
Int. Cl.[5] H04M *1/21*
U.S. Cl. 346—108 **5 Claims**



1. An imaging system for forming image exposure frames on a photoreceptor belt moving in a process direction during a single pass including:
a plurality of Raster Output Scanners (ROS) units, each ROS unit generating image-modulated scan lines which are transmitted along an optical path to form said image exposure frames, said ROS units located in a common housing and positioned symmetrically on opposite sides of two polygon scanners mounted vertically on a common rotating shaft, said ROS units each comprising:
a diode laser for generating a beam output,
means for modulating the beam output of said laser with input video data,
optical means for collimating and expanding the modulated laser beam output and directing the collimated and expanded output against an associated polygon scanner,
post polygon lens group for correcting $f\theta$ and distortion in the reflected beam thereby producing a corrected scanning beam,
a 90° roof mirror assembly mounted on a movable mirror carriage which folds the corrected scanning beam from the post polygon lens group in a 180° path reversal and
a folding mirror for directing the corrected scanning beam out of the common housing and onto the photoreceptor belt, each scanning beam being parallel to each other,
the improvement wherein said roof mirror carriage is integrally mounted to a focus carriage and secured to the common housing at a position providing an optically focused scan line at the photoreceptor belt surface, means for incrementally moving, said roof mirror carriage to provide a skew registration correction to the scan line at the photoreceptor belt surface, and to provide a process registration direction correction to the scan line at the photoreceptor surface;

5,351,071
THERMAL PRINTER
Yasuhiro Matsuda; Takashi Yoshida; Isao Shimizu; Katsumi Watanabe, all of Ibaraki; Akira Shimizu, Katsuta, and Masashi Yoshida, Nakaminato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 7, 1990, Ser. No. 578,459
Claims priority, application Japan, Sep. 8, 1989, 1-231609
Int. Cl.[5] B41J *15/00*
U.S. Cl. 346—136 **18 Claims**

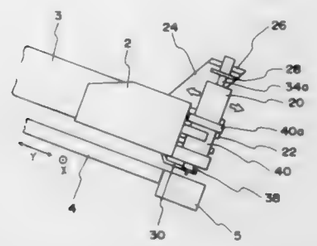


1. A thermal printer comprising a printing-paper supply roll having a printing paper wound therearound in a roll, transporting means for transporting the printing paper supplied from said printing-paper supply roll, a thermal head including an array of heat generating elements for printing an image on the printing paper, a cylindrical platen roller disposed opposite to the heat generating elements of said thermal head, and driving means for driving said printing paper, wherein said printing paper is taken up on said printing-paper supply roll by driving said printing-paper supply roll when said thermal printer is placed in a standby mode for more than a predetermined period of time.

5,351,072
AUTOMATIC LEAD SUPPLY APPARATUS FOR PLOTTER
Hiroshi Oguchi, Tokyo, Japan, assignor to Mutoh Industries Ltd., Tokyo, Japan
Filed Jul. 5, 1991, Ser. No. 726,178
Claims priority, application Japan, Aug. 28, 1990, 2-225586
Int. Cl.[5] G01D *15/16*
U.S. Cl. 346—139 C **8 Claims**

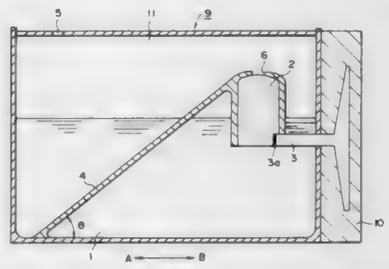
1. An automatic lead supply apparatus for a plotter having a linear Y-rail and a Y-motor for moving a drawing head along the linear Y-rail, said apparatus comprising:

a pen holder adapted to be mounted to the drawing head so as to be movable therewith along the Y-rail;
a multi-lead knocking type pencil holder engaged with said pen holder for movement therewith along the Y-rail, said pencil holder including a chuck member, a knocking pipe, a lead housing part, and a lead guiding member for guiding lead from said lead housing part to said chuck member; and



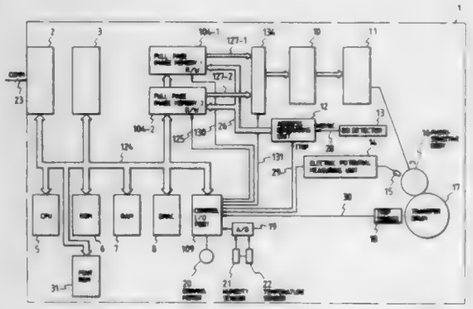
oscillation means for operating the Y-motor to move the drawing head back and forth along the Y-rail to cause oscillation of said pencil holder along a longitudinal direction of the Y-rail during a lead feeding operation.

5,351,073
INK JET CARTRIDGE WITH AN INK TANK HAVING AN INK OUTLET IN A SLOPED SURFACE
Tetsuto Kageyama, Koshigaya; Shigeru Yoshimura, and Eiichi Motai, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 23, 1992, Ser. No. 872,363
Claims priority, application Japan, Apr. 25, 1991, 3-095350
Int. Cl.[5] B41J *2/175*
U.S. Cl. 347—87 **14 Claims**



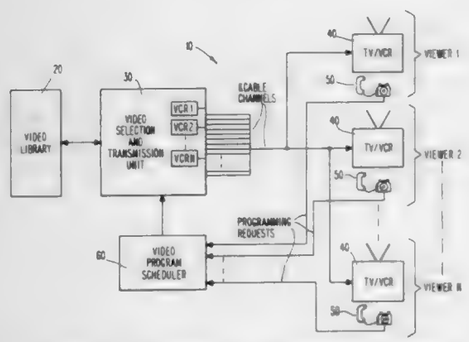
1. An exchangeable ink jet cartridge for mounting on a scanning carriage of an ink jet apparatus comprising a recording head portion having a discharging port for discharging ink, wherein said cartridge includes:
an ink tank portion having a sloped surface inclined at a predetermined angle to a scanning direction of said carriage, said sloped surface having an opening section communicating with an ink supply path for supplying ink from said ink tank portion to said recording head portion; and
a negative pressure generating member provided in said ink supply path.

5,351,074
APPARATUS FOR FORMING A COLOR IMAGE USING TWO MEMORIES
Toshihiro Kadowaki, and Masanori Sakai, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 556,413, Jul. 24, 1990, Pat. No. 5,168,292, which is a continuation of Ser. No. 436,800, Nov. 15, 1989, Pat. No. 4,963,898, which is a continuation of Ser. No. 299,064, Jan. 19, 1989. This application Oct. 13, 1992, Ser. No. 959,555
Claims priority, application Japan, Jan. 19, 1988, 63-10135; Jan. 19, 1988, 63-10136; Jan. 19, 1988, 63-10140; Jan. 19, 1988, 63-10142
Int. Cl.[5] G03G *15/01;* **H04N** *1/23*
U.S. Cl. 346—157 **8 Claims**



1. An interface for inputting color image information into a color printer, comprising:
a first memory for storing the color image information;
a second memory provided separately from said first memory, for storing the color image information; and
control means for storing the image information in sequence into said first and second memories,
wherein said first and second memories store the same kind of color information, and said control means stores the image information alternatively into said first and said second memories synchronously with printing operation of the color printer.

5,351,075
HOME VIDEO CLUB TELEVISION BROADCASTING SYSTEM
Frederick Herz, P.O. Box 42891, Philadelphia, Pa. 19101, and Michael Negin, 1909 Hollinshed Rd., Pennsauken, N.J. 08110
Filed Mar. 20, 1990, Ser. No. 497,105
Int. Cl.[5] H04B *17/00*
U.S. Cl. 348—1 **34 Claims**



1. A system for providing to a plurality of viewers with viewer operated video recording systems selective access to a plurality of prerecorded video programs which may be re-

corded and played back at each viewer's convenience, comprising:

scheduling means for defining a plurality of future viewing periods in which selected prerecorded video programs will be transmitted, for receiving viewer video program preferences from said plurality of viewers for video programs to be transmitted to each of said plurality of viewers during said future viewing periods, and for selecting the prerecorded video programs to be transmitted to each of said plurality of viewers during each of said defined future viewing periods in accordance with a selection priority determined by tabulating all of the viewer video program preferences during a predetermined time period, said scheduling means subsequently establishing, responsive to the tabulated viewer video program preferences, when and how often each selected prerecorded video program is to be transmitted during said future viewing periods; and

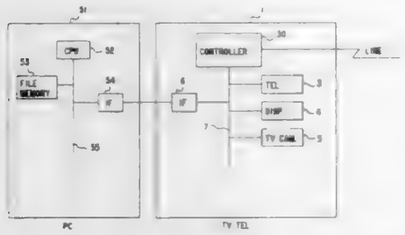
means responsive to said scheduling means for transmitting the selected prerecorded video programs to each of said plurality of viewers during respective future viewing periods in accordance with said selection priority.

5,351,076

TERMINAL SYSTEM HAVING VIDEO TELEPHONE EQUIPMENT COOPERATING WITH COMPUTER SYSTEM

Masahiro Hata; Teruo Tobe, and Hiroshi Oki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 7, 1992, Ser. No. 925,924
Claims priority, application Japan, Aug. 9, 1991, 3-225096
Int. Cl.[5] H04M *11/00*
U.S. Cl. 348—14 **11 Claims**



1. A terminal system, comprising a video telephone equipment; and a computer system, wherein said video telephone equipment comprises:

a communication unit connected to a line,

a telephone unit for communicating with a remote station by speech via said communication unit and said line,

a camera unit for taking pictures and outputting video signals corresponding to the pictures, said video signals being transmitted to the remote station via said communication unit and said line,

a display unit for displaying images corresponding video signals, and

a processor for controlling said communication unit, said telephone unit, said camera unit and said display unit,

wherein said communication unit, said telephone unit, said camera unit, said display unit and said processor unit are coupled to each other by a first bus, wherein said computer system comprises:

a processor, coupled to an external unit by a second bus, for processing data supplied thereto via said second bus, and wherein said terminal system comprises:

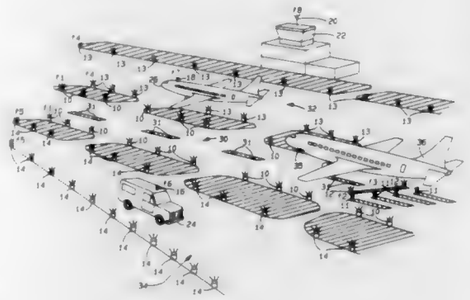
interface means, coupled to said first and second buses, for intermediating between said video telephone equipment and said computer system so that data is transmitted from between said computer system and said video telephone equipment via said interface means.

5,351,077

MICROWAVE AIRCRAFT LANDING SYSTEM USING NARROW BANDWIDTH FILTERING

Paul S. C. Lee, La Palma, and Jay S. Pearlman, Rancho Palos Verdes, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 19, 1992, Ser. No. 963,338
Int. Cl.[5] H04N *7/18*; **G01S** *1/16*
U.S. Cl. 348—117 **19 Claims**



1. A locating system comprising:

source means located on known features and radiating modulated microwave carrier signals having predetermined modulated frequencies selected so as to identify each of said known features; and

camera means remote from said source means for sensing said microwave carrier signals within a field of view and providing a visual perspective image of said known features, said camera means including:

an array of receivers arranged in a focal plane for sensing said microwave carrier signals from separate portions of said field of view;

bandwidth filter means coupled to each of said array of receivers for identifying the modulated frequency associated with each received microwave carrier signal as one of the predetermined modulated frequencies and providing an output signal to identify each detected known feature; and

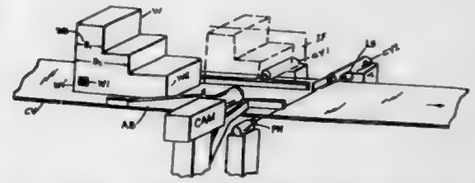
a visual display for generating said visual perspective image of the detected known features in response to said output signals and which distinguishes between each of said detected known features, wherein said visual display includes a plurality of pixels, and each of said pixels receives output signals generated by one of said receivers and the bandwidth filter means coupled thereto.

5,351,078

APPARATUS AND METHODS FOR AUTOMATED OBSERVATION OF OBJECTS

Jerome H. Lemelson, Incline Village, Nev., assignor to Lemelson Medical, Education & Research Foundation Limited Partnership, Incline Village, Nev.

Continuation of Ser. No. 78,681, Jun. 16, 1993, Pat. No. 5,283,641, which is a continuation of Ser. No. 826,617, Jan. 28, 1992, Pat. No. 5,249,045, which is a continuation of Ser. No. 426,080, Oct. 24, 1989, Pat. No. 5,119,190, which is a division of Ser. No. 906,969, Sep. 15, 1986, Pat. No. 4,984,073, which is a continuation of Ser. No. 723,183, Apr. 15, 1985, Pat. No. 4,660,086, which is a continuation of Ser. No. 394,946, Jul. 2, 1982, Pat. No. 4,511,918, which is a division of Ser. No. 13,608, Feb. 16, 1979, Pat. No. 4,338,626, which is a division of Ser. No. 778,331, Mar. 16, 1977, Pat. No. 4,148,061, which is a continuation of Ser. No. 254,710, May 18, 1972, Pat. No. 4,118,730, which is a continuation-in-part of Ser. No. 267,377, Mar. 11, 1963, abandoned, which is a continuation-in-part of Ser. No. 626,211, Dec. 4, 1956, Pat. No. 3,081,379, and a continuation-in-part of Ser. No. 477,467, Dec. 24, 1954, abandoned. This application Sep. 16, 1993, Ser. No. 122,888
The portion of the term of this patent subsequent to Apr. 16, 2002, has been disclaimed.
Int. Cl.[5] H04N *7/18*, *7/00*
U.S. Cl. 348—135 **68 Claims**



1. A method for automatically observing objects comprising:

(a) supporting an object at an observation station, and employing an imaging device to control the positioning of said object relative to the observation station;

(b) causing the object to modulate electromagnetic energy signals;

(c) detecting electromagnetic energy signals modulated by a first portion of said object;

(d) detecting electromagnetic energy signals modulated by a second portion of said object;

(e) computer-processing the detected energy signals and generating and storing electronic image signals representing a physical characteristic of the object;

(f) computer-analyzing the stored image signals and generating code signals representing further physical characteristics of the object; and

(g) storing a plurality of command control signals at selectable locations of a signal storage device, and reproducing and using selected of said stored command control signals to control at least one of the positioning, detecting, computer-processing, and computer-analyzing acts.

5,351,079

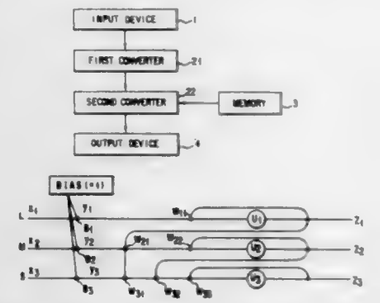
COLOR BALANCE ADJUSTING APPARATUS USING A DECORRELATING NEURAL NETWORK

Shiro Usui, Takashijyutaku #5-504, 2-1, Higashiura, Kitayamacho, Toyohasi, Aichi, 441, Japan, assignor to Shiro Usui, Aichi and Toyo Ink Manufacturing Co., Ltd., Tokyo, both of Japan

Filed Nov. 17, 1992, Ser. No. 977,598
Claims priority, application Japan, Nov. 21, 1991, 3-305940
Int. Cl.[5] H04N *9/73*
U.S. Cl. 348—223 **18 Claims**

1. A color balance adjusting apparatus comprising:

decorrelating means for receiving first color component signals which indicate a color image obtained under an illuminant and which are correlated with one another and converting the first color component signals into second color component signals of reduced correlation, the decorrelating means comprising a neural network which is formed of neuron units having feedback connections and being learned so as to reduce the correlation among the first color component signals; and



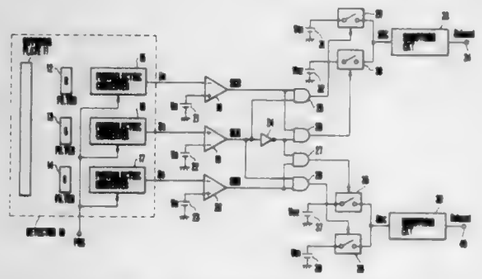
conversion means for converting the second color component signal output from the decorrelating means into signals indicating a color image having the same color balance as a color image obtained under a standard illuminant, said conversion means utilizing an inverse matrix of a transfer matrix of the neural network having been learned under the standard illuminant.

5,351,080

COLOR TEMPERATURE CONTROL BY COMPARING CHROMINANCE SIGNALS WITH REFERENCE LEVELS

Kenji Kyuma; Teruo Hieda; Kazunori Masuda, all of Kanagawa, and Hirohumi Takei, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 672,750, Mar. 21, 1991, Pat. No. 5,153,713. This application Jul. 31, 1992, Ser. No. 923,305
Claims priority, application Japan, Feb. 21, 1986, 61-037714; Apr. 30, 1986, 61-098049; Jan. 22, 1987, 62-011412; Feb. 9, 1987, 62-026239
Int. Cl.[5] H04N *9/73*
U.S. Cl. 348—225 **8 Claims**



1. A color image pick-up apparatus, comprising:

(a) image pick-up means for producing color image signals;

(b) light sensing means for producing chrominance signals of plurality of kinds;

(c) color temperature control means for producing color temperature control signals according to a binary combination of comparison results obtained by a binary gate circuit which receives comparison output signals obtained by comparing levels of said chrominance signals with respective predetermined reference levels; and

(d) correcting means for correcting said color image signals according to said color temperature control signals.

5,351,081

SOLID-STATE IMAGING DEVICE HAVING A LIGHT BARRIER LAYER

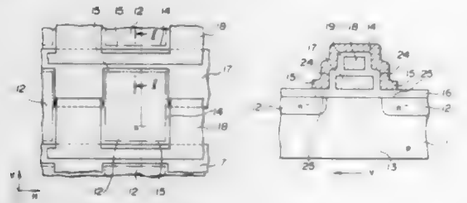
Hiromichi Matsui; Kazuomi Ezoe, both of Kanagawa, and Toshiro Kurusu, Kagoshima, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 788,169, Nov. 5, 1991, abandoned. This application Dec. 23, 1993, Ser. No. 173,955

Claims priority, application Japan, Nov. 16, 1990, 2-308513

Int. Cl.[5] H04N *3/14*

U.S. Cl. 348—249 | **4 Claims**



1. A CCD comprising:

a plurality of pixels arrayed in a plurality of vertical columns.

a plurality of vertical transfer sections arrayed parallel to said columns of pixels and completely covered with a light-barrier layer,

a plurality of vertical pixel isolating regions adapted for vertically isolating said pixels from one another, by means of a potential barrier formed in a semiconductor substrate and a light-barrier layer, and said vertical pixel isolating regions each having a down slope of potential in the direction of said transfer section and arrayed between rows of said pixels, wherein said light-barrier layer completely covers the whole of said vertical pixel isolating region.

5,351,082

SIGNAL-CONVERTING DEVICE

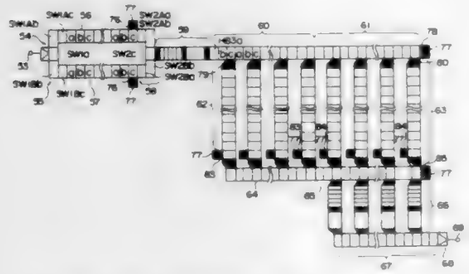
Yoshitaka Kasagi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 676,352, Mar. 28, 1991, abandoned. This application May 7, 1993, Ser. No. 58,036

Claims priority, application Japan, Mar. 30, 1990, 2-81345

Int. Cl.[5] H04N *3/14, 5/335*

U.S. Cl. 348—294 **4 Claims**



1. An analog video signal converting device comprising:

a plurality of input CCD transfer lines having substantially the same structure, said input CCD transfer lines being arranged in parallel with one another on a semiconductor substrate and having transfer stages on which transfer electrodes of substantially the same size are formed, said plurality of input CCD transfer lines being supplied with charges representative of a video signal,

a plurality of operation CCD transfer lines having substantially the same structure, said operation CCD transfer lines being arranged in parallel with one another on the semiconductor substrate and being connected in series to said plurality of input CCD transfer lines, respectively;

each of said plurality of operation CCD transfer lines including an input stage, a plurality of dividing stages formed contiguous with the input stage, a separating stage formed contiguous with the plurality of dividing stages, and a mixing stage formed contiguous with the separating stage,

said dividing stages, said separating stage, and said mixing stage being serially arranged to transfer the charges in one direction,

said plurality of dividing stages having a plurality of small electrodes which are smaller than the transfer electrodes,

said separating stage having a separating electrode separating a charge, and

said mixing stage having a mixing electrode whose size is equal to that of each of the transfer electrodes;

a plurality of output CCD transfer lines having substantially the same structure, said plurality of output CCD transfer lines being arranged in parallel with one another on the semiconductor substrate and being connected in series to said plurality of operation CCD transfer lines, respectively, and including transfer stages on which transfer electrodes of substantially the same size which are as large as the transfer electrodes of said plurality of input CCD transfer lines are formed;

drive voltage applying means for applying operation drive voltages in a different sequence from that of drive voltages supplied to the transfer electrodes of said plurality of input CCD transfer lines and said plurality of output CCD transfer lines, said operation drive voltages being applied to the small electrodes of said plurality of operation CCD transfer lines, the separating electrodes, and the mixing electrode;

a first CCD horizontal buffer supplying charges representing horizontal lines of video information, said CCD horizontal buffer being connected to output sections of said plurality of input CCD transfer lines; and

a second CCD horizontal buffer receiving charges representing horizontal lines of video information from said plurality of output CCD transfer lines, said second CCD horizontal buffer being connected to output sections of said plurality of output CCD transfer lines.

5,351,083

PICTURE ENCODING AND/OR DECODING SYSTEM

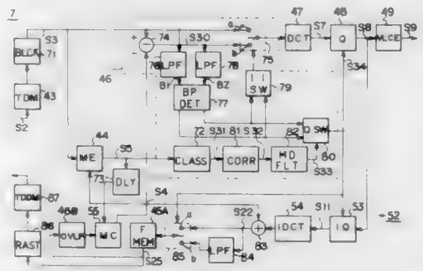
Ikuo Tsukagoshi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 7, 1992, Ser. No. 957,481

Claims priority, application Japan, Oct. 17, 1991, 3-296529; Dec. 27, 1991, 3-360698; Dec. 27, 1991, 3-360699

Int. Cl.[5] H04N *7/137, 7/133*

U.S. Cl. 348—384 **9 Claims**



1. A motion adaptive picture encoder comprising:

blocking means for dividing input picture data into blocks, each of which includes n pixels in both horizontal and vertical directions (n × n) in spatial allocation;

orthogonal transformation means for orthogonally transforming each of said blocks of the picture data;

quantizing means for quantizing orthogonally transformed coefficients of orthogonally transformed picture data from said orthogonal transformation means;

inverse quantizing means for inversely quantizing the orthogonally transformed coefficients of the picture data from said quantizing means;

inverse orthogonal transformation means for inversely orthogonally transforming the orthogonally transformed coefficients of the picture data from said inverse quantizing means;

storage means for storing one frame of the inversely orthogonally transformed picture data from said inverse orthogonal transformation means;

motion vector detection means for detecting a motion vector for each of said blocks from the respective input picture data and from the respective inversely orthogonally transformed picture data in said storage means, each said motion vector determining either a fast or a slow mode of motion for the respective one of said blocks;

classifying means for classifying said blocks into classes comprised of blocks of a fast motion picture region and blocks of a slow motion picture region, respectively, on the basis of the motion vector detected by said motion vector detection means for the respective block;

differential computing means for computing, for each of said blocks, a difference data between the respective input picture data and the respective inversely orthogonally transformed picture data from said storage means;

block power calculating means for calculating a power of each of said blocks of the input picture data and of the respective difference data; and

quantizing step width control means for adaptively changing the quantization step width of said quantizing means and said inverse quantizing means on the basis of the powers calculated by said block power calculating means for each of said blocks of the input picture data and of the respective difference data and on the basis of the one of said classes into which the respective block is classified by said classifying means, so as to assign a rough quantizing step width to blocks of the fast motion picture region and a fine quantizing step width to blocks of the slow motion picture region.

5,351,084

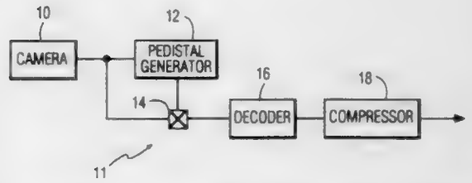
COMPRESSED VIDEO BIT RATE REDUCTION SYSTEM

Bruce A. Blair, San Diego, Calif., assignor to Global Telecommunications Industries, Inc., Washington, D.C.

Filed Jul. 2, 1992, Ser. No. 909,062

Int. Cl.[5] H04N *7/13*

U.S. Cl. 348—390 **10 Claims**



1. A compressed video bit rate reduction system comprising:

a. transmission means including a source of video analog signals that include an original number of gray scale levels, and first means for digitizing and compressing said digital signals for transmission through a medium,

b. receiving means including decompression means for receiving and decompressing digital video signals, second means for converting digital video signals into video display signals,

c. preprocessing means coupled to the first means for applying an error level to at least some of the analog video signals before they are digitized by said first means,

d. post processing means coupled to said second means for processing each video signal that includes the error information with a video signal that does not include the error information,

e. said preprocessing means includes means for applying said error level to all analog signals representing pixels of one video unit, and

f. said post processing means derives gray scale level information from processing each pixel representing signal of said one video unit with the corresponding pixel signal of another video unit which said corresponding pixel signal does not include an error level information.

5,351,085

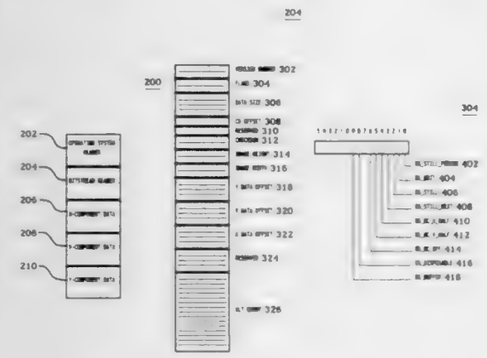
METHOD AND SYSTEM FOR GENERATING COMPRESSED IMAGE SIGNALS

Rohan Coelho; Stuart Golin, both of Hillsboro; Brian Nickerson, Aloha, and Michael Keith, Beaverton, all of Oreg., assignors to Intel Corporation, Hillsboro, Oreg.

Filed Jun. 16, 1993, Ser. No. 78,931

Int. Cl.[5] H04N *7/12*

U.S. Cl. 348—391 **41 Claims**



1. A method for processing an image, comprising the steps of:

(a) generating an analog image signal corresponding to said image;

(b) generating unencoded three-component image data from said analog image signal;

(c) generating an OPERATING SYSTEM header for said unencoded image data;

(d) generating a BITSTREAM header in accordance with said unencoded image data;

(e) generating at least one component data field in accordance with said unencoded image data; and

(f) storing said OPERATING SYSTEM header, said BITSTREAM header, and said at least one component data field.

5,351,086

LOW-BIT RATE INTERFRAME VIDEO ENCODER WITH ADAPTIVE TRANSFORMATION BLOCK SELECTION

Hakjae Park, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 28, 1992, Ser. No. 997,227

Claims priority, application Rep. of Korea, Dec. 31, 1991, 91-25872

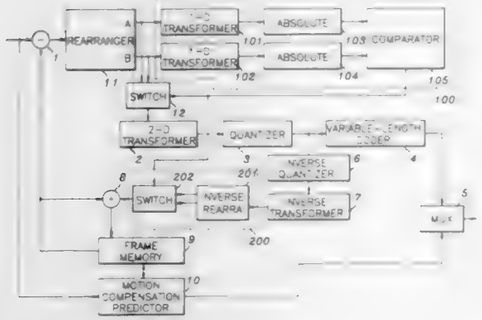
Int. Cl.[5] H04N *7/133, 7/137*

U.S. Cl. 348—402 **4 Claims**

1. An interframe video encoder for encoding an input block of pel elements from a video frame comprising:

means for generating a differential block of pel elements by differentially combining the pel elements of the input

block with the pel elements of a block from a previous frame, which most closely matches the input block;
means for transferring the differential block to an output terminal and a rearranged block of pel elements to another output terminal, said rearranged block being generated by rearranging the pel elements of the differential block;
means for comparing a vertical correlation of the differential block with a vertical correlation of the rearranged block and for generating a control signal based on said means for comparing;
means for transforming either the differential or the rearranged block of pel elements into a block of transform



coefficients by using a two-dimensional signal transformation;
means for connecting either the differential block or the rearranged block to said transforming means according to the control signal;
means for quantizing the block of transform coefficients into a block of quantized transform coefficients;
means for reconstructing the differential block from the block of quantized transform coefficients according to the control signal; and
means for encoding the quantized transform coefficients for their transmission in a data stream.

5,351,087

TWO STAGE INTERPOLATION SYSTEM

Todd J. Christopher; Karl F. Horlander, and Timothy W. Saeger, all of Indianapolis, Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

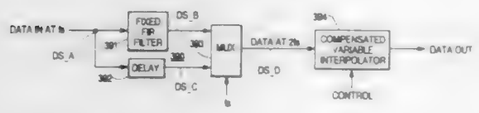
PCT No. PCT/US91/03734, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992, PCT Pub. No. WO91/19393, PCT Pub. Date Dec. 12, 1991

PCT Filed May 29, 1991, Ser. No. 938,233

Claims priority, application United Kingdom, Jun. 1, 1990, 9012326

Int. Cl.[5] H04N *7/01*

U.S. Cl. 548—441 **20 Claims**



1. An interpolation system, comprising:
a finite impulse response filter for generating from a first signal of digital samples a second signal of digital samples representing signal points between said samples of said first signal, said first signal representing information having a frequency content;
means for delaying said first signal;
means for interleaving said second signal and said delayed first signal to produce a third signal of digital values having a sample density twice that of said first signal; and,
a compensated variable interpolator for deriving from said third signal a fourth signal of digital samples in which said frequency content of said information represented by said first signal has been changed.

5,351,088

IMAGE DISPLAY APPARATUS FOR DISPLAYING IMAGES OF A PLURALITY OF KINDS OF VIDEO SIGNALS WITH ASYNCHRONOUS SYNCHRONIZING SIGNALS AND A TIMING CORRECTION CIRCUIT

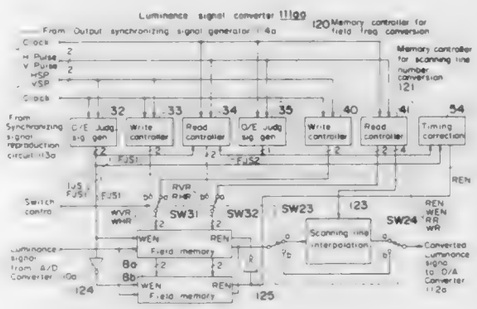
Yutaka Nio, Hirakata, and Matsuura Ryuji, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 855,797, Mar. 23, 1992. This application Aug. 23, 1993, Ser. No. 109,998

Claims priority, application Japan, Mar. 22, 1991, 3-58661

Int. Cl.[5] H04N *7/01, 11/20, 5/46*

U.S. Cl. 348—441 **7 Claims**



1. An image display apparatus comprising:
a first synchronizing signal generating means for reproducing and generating first vertical and horizontal synchronizing signals in response to an inputted video signal, said inputted video signal of one frame being composed of an odd field and an even field each field including a plurality of scanning lines;
a second synchronizing signal generating means for generating second vertical and horizontal synchronizing signals for deflection of a display so that said generated second vertical and horizontal synchronizing signals are respectively asynchronous with said vertical and horizontal synchronizing signals generated by said first synchronizing signal generating means;
a display means for displaying an image of an inputted video signal thereon with a predetermined field frequency and a predetermined number of scanning lines, said display means being controlled by a deflection which is responsive to said second vertical and horizontal synchronizing signals outputted from said second synchronizing signal generating means;
a first converting means for converting an inputted first video signal, having a first field frequency which is lower than said predetermined field frequency and having said predetermined number of scanning lines, into an output second video signal having said predetermined field frequency and said predetermined number of scanning lines, using said first and second vertical and horizontal synchronizing signals generated by said first and second synchronizing signal generating means, and for outputting said output second video signal to said display means; and
a second converting means for converting an inputted third video signal, having a first number of scanning lines which is smaller than said predetermined number of scanning lines and having said predetermined field frequency, into an output fourth video signal having said predetermined field frequency and said predetermined number of scanning lines, using said first and second vertical and horizontal synchronizing signals generated by said first and second synchronizing signal generating means, and for outputting said output fourth video signal to said display means.

5,351,089

VIDEO SIGNAL PROCESSING DEVICE AND METHOD

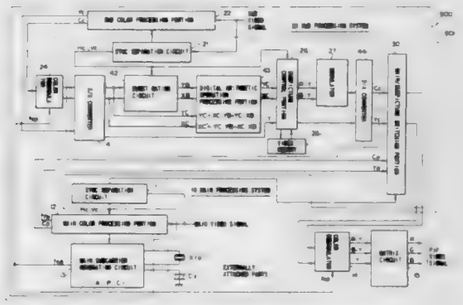
Yoshiyuki Matsumoto, Manshon Fukutomi 106, 716-2, Kaminakaimachi, Takasaki-shi, and Makoto Furihata, 1186-13, Kamishindenmachi, Maebashi-shi, both of Japan

Filed Feb. 4, 1993, Ser. No. 13,376

Claims priority, application Japan, Feb. 10, 1992, 4-57568; Feb. 10, 1992, 4-57569

Int. Cl.[5] H04N *9/45, 9/66*

U.S. Cl. 348—497 **52 Claims**



1. A video signal processing device comprising:
means for extracting a first color burst signal from a first video signal;
means for generating a first subcarrier in synchronism with said first color burst signal extracted from said first video signal;
means for extracting a second chrominance signal and a second color burst signal from a second video signal;
means for demodulating said second chrominance signal and said second color burst signal on the basis of said first subcarrier to obtain a demodulated second color signal and a demodulated second color burst signal; and
operating means for performing operation process of said demodulated second color signal on the basis of the demodulated second color burst signal in a manner such that the demodulated second color signal is converted into a corrected color signal which is substantially the same as an imaginal second color signal which is obtained on the assumption that the second chrominance signal is demodulated on the basis of a second subcarrier synchronized with the second color burst signal extracted from the second video signal.

5,351,090

VIDEO AND AUDIO SIGNAL MULTIPLEXING APPARATUS AND SEPARATING APPARATUS

Kazuhiko Nakamura, Osaka, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

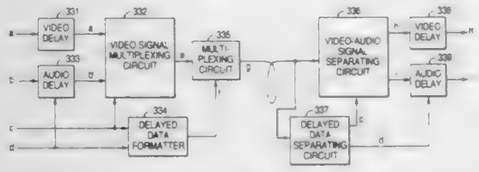
Filed Nov. 10, 1993, Ser. No. 149,944

Claims priority, application Japan, Nov. 17, 1992, 4-306706; Apr. 13, 1993, 5-085948; Apr. 13, 1993, 5-085949

Int. Cl.[5] H04N *7/08*

U.S. Cl. 348—484 **15 Claims**

1. A signal multiplexing apparatus for multiplexing a digital audio signal on a digital video signal, comprising:
a buffer memory for temporarily storing an input digital audio signal for time axis adjustment;
means for generating a multiplexing timing signal by detecting a sync signal period of an input digital video signal;
an audio signal formatter for packeting a digital audio signal outputted from the buffer memory into a packet in a format suited to multiplexing according to the multiplexing timing signal;
a multiplexing circuit for multiplexing the packet on the input digital video signal according to the multiplexing timing signal to obtain a multiplexed digital video signal;
means for generating a field timing in every n fields (n being a positive integer) of the video signal;



audio data quantity detecting means for detecting the number of audio data samples in the buffer memory at the field timing; and
address presetting means for presetting a read address or a write address of the buffer memory so as to keep constant the number of audio data samples in the buffer memory in every n fields when the detected number of audio data samples is out of a specified range or different from a specified value, whereby a time delay of the multiplexed audio signal with respect to the video signal is kept constant.

5,351,091

BURST PHASE CORRECTING CIRCUIT

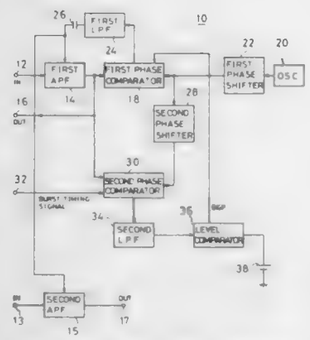
Nobukazu Hosoya, Nara, and Yoshichika Hirao, Neyagawa, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jan. 12, 1993, Ser. No. 3,385

Claims priority, application Japan, Jan. 14, 1992, 4-004929; Feb. 14, 1992, 4-061379; Feb. 28, 1992, 4-043860

Int. Cl.[5] H04N *9/455*

U.S. Cl. 348—505 **13 Claims**



1. A burst phase correcting circuit, comprising:
first variable delay means which receives a chrominance signal, and delays said chrominance signal with a delay time according to a control signal, and outputs the chrominance signal;
reference signal generating means for generating a reference signal;
first phase-shifting means for phase-shifting said reference signal by 90 degrees;
timing signal applying means for applying a timing signal;
first phase-comparing means for comparing a phase of an

output of said first variable delay means with a phase of an output of said first phase-shifting means in response to said timing signal to output a signal according to a difference between the both phases;

a first low-pass filter for receiving said signal from said first phase-comparing means; and

a capacitor for applying only an alternating current component included in an output of said first low-pass filter to said first variable delay means as said control signal;

wherein said timing signal applying means includes burst signal demodulating means for applying a burst gate signal which is obtained by demodulating a burst signal included in the output of said first variable delay means to said first phase-comparing means.

5,351,092

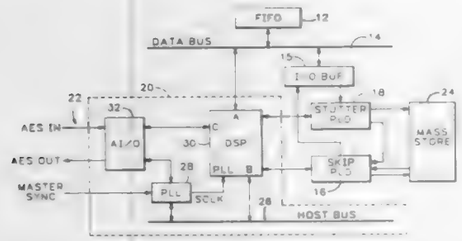
SYNCHRONIZATION OF DIGITAL AUDIO WITH DIGITAL VIDEO

Michael Poimboeuf, Vacaville, and Kevin D. Windrem, Grass Valley, both of Calif., assignors to The Grass Valley Group, Inc., Nevada City, Calif.

Filed Jul. 23, 1993, Ser. No. 96,356

Int. Cl.[5] H04N *5/04*

U.S. Cl. 348—512 **4 Claims**



1. A method of synchronizing a digital audio signal with a corresponding digital video signal comprising the steps of:

associating for transmission an integer number of samples of the digital audio signal obtained at an audio sample rate with each video field of the digital video signal, the number of digital audio samples per video field being determined by the audio sample rate and duration of each video field rounded up to the nearest integer; and

for each N video fields, where N is the number of video fields for which there is an integer number of digital audio samples as a function of the audio sample rate, resynchronizing the digital audio signal with the digital video signal by repeating the digital audio samples at the end of the Nth video field that correspond to the digital audio samples at the beginning of the N+1st video field.

5,351,093

PHASE ALTERNATING LINE VIDEO SIGNAL PROCESSING APPARATUS

David J. Brown, Ringwood; David C. Conway-Jones, Winchester; Jong-Han Kim, Morden, and Peter M. Smith, Winchester, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 10, 1993, Ser. No. 60,084

Claims priority, application European Pat. Off., May 8, 1992, 92304175.0

Int. Cl.[5] H04N *9/465, 11/16*

U.S. Cl. 348—530 **6 Claims**

1. Signal processing apparatus comprising:

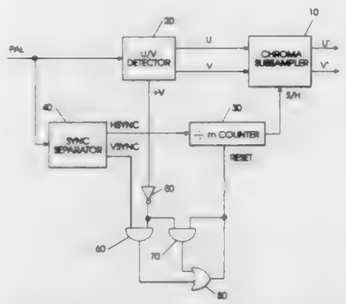
a chrominance subsampler for sampling the U and V components of a PAL video signal in response to an enable signal;

a counter responsive to the horizontal synchronization pulses of the PAL video signal for generating the enable signal upon detection of a predetermined number of horizontal synchronization pulses of the PAL video signal;

first logic circuitry responsive to the vertical synchronization pulses of the PAL video signal for disabling the counter upon each detection of a vertical synchronization pulse of the PAL video signal; and

second logic circuitry for restarting the counter from a reset state upon detection of a predetermined polarity in the V component of the PAL video signal.

6. A method of subsampling a PAL video signal, the method comprising:



generating, via a counter, an enable signal upon detection of a predetermined number of horizontal synchronization pulses in the horizontal synchronization component of the PAL video signal;

sampling the U and V components of the video signal in response to the enable signal;

resetting and disabling the counter upon detection of a vertical synchronization pulse in the vertical synchronization component of the PAL video signal; and

restarting the counter from a reset state upon detection of a predetermined polarity in the V component of the PAL video signal.

5,351,094

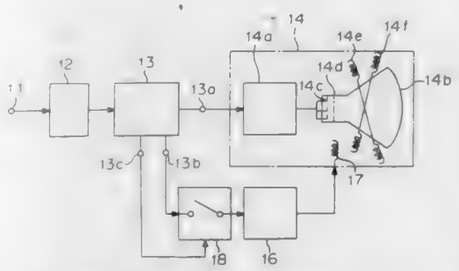
TELEVISION RECEIVER WITH SCAN VELOCITY MODULATION BEING ADJUSTED ACCORDING TO ASPECT RATIO

Takao Washino, Daito, Japan, assignor to Funai Electric Co., Ltd., Daito, Japan

Filed Jan. 21, 1993, Ser. No. 6,618

Int. Cl.[5] H04N *3/32, 5/46*

U.S. Cl. 348—626 **6 Claims**



1. A TV signal receiver which comprises:

an image conversion means for compressing each horizontal period scanning time of an input TV signal proportionately to the increasing ratio of an aspect ratio of a CRT screen surface in said TV receiver, supplying a converted compressed image signal plus dark level image signal corresponding to a compressed time at front and rear portions of each said compressed image signal, and generating a luminance signal of said converted image signal and a control signal from a time wherein a first fixed time is added to said compressed image signal of said each horizontal periodic scanning time to a time which reduces a second fixed time from the completed time of said compressed image signal;

a velocity modulation circuit and a velocity modulation coil connected to an output of said velocity modulation circuit, said velocity modulation coil generating a horizontal magnetic field for CRT electron beam scanning which improves the sharpness of the image; and

a velocity modulation switch circuit between said image conversion means and said velocity modulation circuit which transmits said luminance signal generated from said image conversion means to said velocity modulation circuit during the period wherein a control signal is generated by said image conversion means, whereby

said input TV signal system may have a different aspect ratio from a TV signal system of said TV receiver, the input TV signal is input into said image conversion means after being converted into the TV signal system of said TV receiver.

5,351,095

METHOD AND DEVICE FOR ESTIMATING AND HIERARCHICALLY CODING THE MOTION OF SEQUENCES OF IMAGES

Michel Kerdranvat, Rennes, France, assignor to Thomson Consumer Electronics, Courbevoie, France

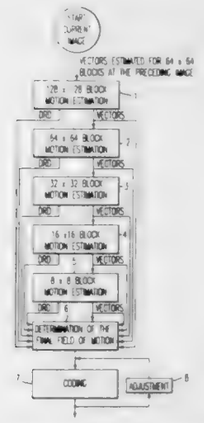
PCT No. PCT/FR90/00628, § 371 Date Apr. 29, 1991, § 102(e) Date Apr. 29, 1991, PCT Pub. No. WO91/03797, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 24, 1990, Ser. No. 678,278

Claims priority, application France, Aug. 29, 1989, 89 11328

Int. Cl.[5] H04N *7/137*

U.S. Cl. 348—699 **11 Claims**



1. A method for estimating and hierarchically coding the motion of sequences of images, comprising the steps of:

at a first step, partitioning a current image into $2^{P+1}\times 2^{P+1}$ pixel macroblocks, where p is an integer, and determining first field of motion vectors, which is associated with this partition into macroblocks, by using an iterative and recursive estimation algorithm initialized by field of motion vectors estimated for a preceding image;

at a second step, partitioning into quadrants each of the macroblocks and determining, for the blocks which result therefrom, second field of motion vectors by using the interactive and recursive estimation algorithm but initialized by vectors from the field of motion vectors which were estimated at the preceding level;

at an ith step, i=3 to D, where n is an integer, partitioning each of the blocks of the i−1 level into quadrants and determining, for the blocks which result therefrom, an ith field of motion vector by using the iterative and recursive estimation algorithm initialized by vectors from the field of motion vectors which were estimated at the preceding level, the blocks of minimum size being $2^{l+1}\times 2^{l+1}$ pixel blocks, where l is an integer;

determining a final motion vector field from the n resulting field of motion vectors by choosing a lowest level of partition for which the field of motion vector associated with the corresponding block leads to a minimization of a criterion reflecting differences of brightness between blocks communicating in the successive images via the estimated displacement vectors.

5,351,096

REMOTE CONTROL CIRCUIT FOR VIDEO CASSETTE TAPE RECORDER

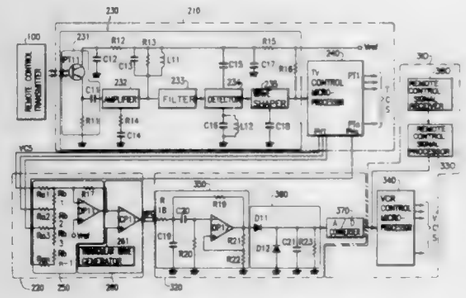
Chung S. Park, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 26, 1992, Ser. No. 857,829

Claims priority, application Rep. of Korea, Mar. 27, 1991, 4811/1991

Int. Cl.[5] H04N *5/44*

U.S. Cl. 348—734 **2 Claims**



1. A remote control circuit comprising:

a TV system including,

remote control receiving means for receiving and processing a remote control signal from a remote control transmitter,

TV control microprocessor means for analyzing the remote control signal from the remote control receiving means so as to control said TV system and separate a VCR remote control signal from the remote control signal,

VCR remote control signal transmitting means for modulating the pulse width of the VCR remote control signal separated by said TV control microprocessor means and transmitting the modulated VCR remote control signal to a VCR system, via a radio frequency cable; a VCR system including,

remote control signal processing means for receiving and processing the VCR remote control signal from said TV control microprocessor means, and

VCR control microprocessor means for controlling the VCR system based on the VCR remote control signal from said remote control signal processing means and a control signal input from a remote control signal receiver from the VCR system,

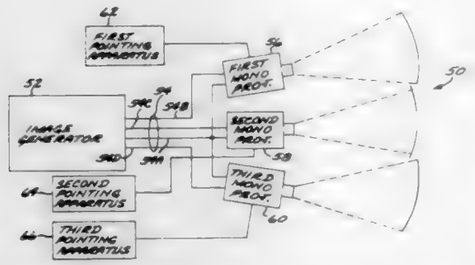
said remote control signal processing unit including,

a band-pass filter for filtering the VCR remote control signal input from the TV system via the radio frequency cable,

a rectifier for rectifying an output signal from the band-pass filter, and

an A/D converter for converting an output signal from the rectifier into a digital signal.

5,351,097
TARGET IMAGE RENDERING WITH COLOR TRANSPARENCIES
Kenneth R. Brooke, Arlington, Tex., assignor to Hughes Training, Inc., Arlington, Tex.
Filed Apr. 8, 1993, Ser. No. 47,126
Int. Cl.[5] H04N *9/31, 7/18*
U.S. Cl. 348—744 8 Claims



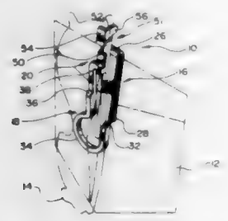
1. An image projecting system for projecting three independent monochromatic images using a single color image generation channel, comprising:

a single full color image generation channel comprising a color image generator for generating red, green and blue video signals nominally representing the color components of a single full color image, and a synchronization signal;

first, second and third monochrome image projection means each responsive to a given one of said red, green or blue video signals and to said synchronization signal for projecting first, second and third independent monochrome foreground images corresponding to said respective red, green and blue video signals;

wherein said color image generator further comprises image transparency generation means for rendering transparent, only with respect to operations of said image generator, each image component represented by said red, green, and blue video signals so that each image component may be seen through the others, and wherein color other than that of the foreground image component is made to mix in an additive sense so that superimposed monochromatic images yield composite colors over the overlapped portions of the foreground image component.

5,351,098
POCKET RETAINER FOR EYEGLASSES
Barry P. McDaniels, and Deborah A. McDaniels, both of 12900 Washburn Ct., Burnsville, Minn. 55337
Filed May 13, 1992, Ser. No. 882,314
Int. Cl.[5] A44B *21/00*
U.S. Cl. 351—112 4 Claims

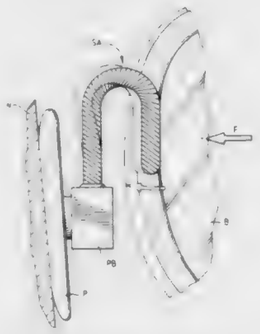


1. An eyeglasses retaining clip for use in a pocket for releasably receiving and retaining a pair of eyeglasses in the pocket, said clip comprising:

a generally U-shaped pocket clip base including two generally rectangular, thin, flat parallel leaf members, each having two ends and being joined at one end by a resilient curved connecting portion, one of said members carrying an outstanding fixed eyeglasses contacting jaw; and

a spring arm having two ends, a first end connected to one of said leaf members and a second end carrying a moveable eyeglasses contacting jaw, wherein said fixed and moveable jaws each have an eyeglasses contacting surface, said spring arm includes a curved portion and an angled portion, wherein said eyeglasses contacting surfaces are generally parallel, and further wherein said curved portion is between a first beveled shoulder connected to said one member carrying said fixed eyeglasses contacting jaw and a second beveled shoulder adjacent to said angled portion.

5,351,099
NOSE PAD SUPPORT ARM FOR EYEGLASSES
Rolf Winkler, Eisingen; Bruno Herter, Konigsbach, and Manfred Kappler, Pforzheim, all of Fed. Rep. of Germany, assignors to Frey & Windler GmbH & Co., Konigbach-Stein, Fed. Rep. of Germany
Filed Jul. 30, 1992, Ser. No. 921,741
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1992, 4206018
Int. Cl.[5] G02C *5/12*
U.S. Cl. 351—137 11 Claims



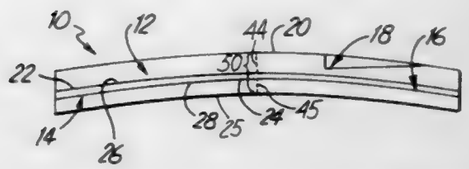
1. In a pair of eyeglasses having frames, two nose pads, and two holders each holding a respective nose pad, the improvement comprising a nose pad support arm for supporting each holder, said support arm having two opposed ends, with one opposed end connected to a respective frame of the eyeglasses and the other opposed end connected to a respective one of the holders, wherein said support arm has a length, between said two opposed ends, and comprises, over at least part of its length, a core of a hard material and a jacket composed of at least two layers of metal wires or bands wound spirally around said core, said core and said wires or bands each being made of a material such that said support arm is resiliently deformable in response to external strains imposed on the frame, and further wherein said jacket comprises an inner wound layer of metal wires or bands wound around said core and an outer wound layer of metal wires or bands wound around said inner wound layer, said metal wires or bands of each of said layers being disposed parallel to, and in contact with, one another and said outer wound layer being wound around said core in an opposite winding sense from said inner wound layer.

5,351,100
GLASS MULTIFOCAL OPHTHALMIC LENS WITH POLARIZING ELEMENT AND METHOD OF MAKING
Ray D. Schwenzfeier, and Donald W. Hanson, both of St. Cloud, Minn., assignors to BMC Industries, Inc., Minneapolis, Minn.
Filed Dec. 9, 1992, Ser. No. 987,737
Int. Cl.[5] G02C *7/06, 7/12*
U.S. Cl. 351—164 7 Claims

1. A multifocal glass light polarizing ophthalmic lens comprising:

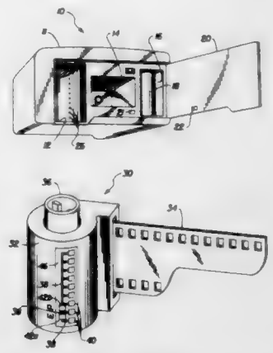
a glass multifocal lens portion having a convex outer surface, a concave inner surface and a multifocal element fused to the convex outer surface;

a glass single vision lens portion having a convex inner surface and a concave outer surface; and



a light polarizing film having a convex surface that adheres the concave inner surface of the glass multifocal lens portion and having a concave surface that adheres the convex inner surface of the glass single vision lens portion.

5,351,101
PHOTOGRAPHIC CAMERA AND FILM CARTRIDGE WITH DOUBLE EXPOSURE PREVENTION
Wilbert F. Janson, Jr., Shortsville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 31, 1993, Ser. No. 115,283
Int. Cl.[5] G03B *7/00*
U.S. Cl. 354—21 10 Claims

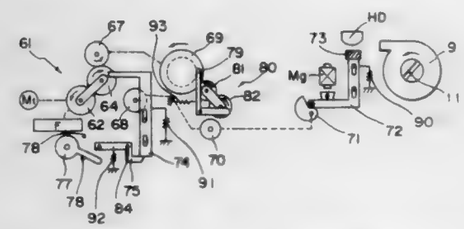


1. Film cartridge having a housing with an outer surface and having provision thereon for indication of the usage condition of film in the cartridge, the cartridge comprising:

resistance means on the outer surface of the cartridge including at least one resistive element formed of a material normally having a first resistance value, the material being responsive to an applied electrical stimulus to change to a second resistance value to indicate a predetermined change in usage condition of film in the cartridge; and

terminals on the outer surface in electrical contact with the resistive element and adapted to engage a detector circuit and a power supply circuit in a photographic film camera, whereby the resistive element provides an electrically detectable indication of the film usage condition for control purposes in the camera.

5,351,102
FILM APPARATUS HAVING MAGNETIC RECORDING SURFACE
Sadafusa Tsuji, Tondabayashi; Manabu Inoue, Kobe; Shigeru Wada, Kishiwada, and Michihiro Iwata, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Division of Ser. No. 680,734, Apr. 5, 1991, Pat. No. 5,258,793.
This application Jul. 30, 1993, Ser. No. 99,311
Claims priority, application Japan, Apr. 6, 1990, 2-92579; Jul. 27, 1990, 2-199687; Jul. 27, 1990, 2-199688
Int. Cl.[5] G03B *17/24*
U.S. Cl. 354—106 4 Claims



1. An apparatus using a film having a magnetic surface for recording magnetic data thereon comprising:

a magnetic head for writing magnetic data onto said magnetic surface or for reading said magnetic data recorded on said magnetic surface;

a pad relatively movable with respect to said magnetic head so that said film can be inserted between said magnetic head and said pad;

driving means for generating driving force to feed said film between said magnetic head and said pad; and

control means, energized by the driving force generated by said driving means, for reducing an interval between said magnetic head and said pad so that said film is sandwiched between said magnetic head and said pad.

5,351,103
AUTOMATIC DEVELOPING MACHINE FOR SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS
Yoshimasa Komatsu; Shigeharu Koboshi, and Masao Ishikawa, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan
PCT No. PCT/JP92/00566, § 371 Date Oct. 27, 1992, § 102(e) Date Oct. 27, 1992, PCT Pub. No. WO92/20013, PCT Pub. Date Dec. 11, 1992
PCT Filed Apr. 30, 1992, Ser. No. 940,945
Claims priority, application Japan, May 1, 1991, 3-128401; May 17, 1991, 3-141425; May 21, 1991, 3-146757
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 35 Claims

1. An automatic processing machine for a light-sensitive silver halide photogrpahic material, comprising:

a processing tank for containing a processing solution;

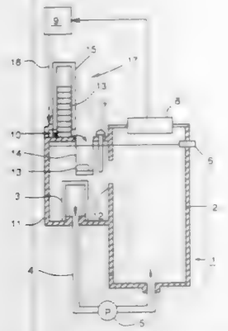
stocking means for stocking a solid processing agent;

supplying means for supplying said solid processing agent to said processing tank;

detecting means for detecting information as to the amount of processing of said light-sensitive silver halide photographic material;

control means for controlling said supplying means according to said information as to the amount of processing of said light-sensitive silver halide photographic material, to

control the supplying of said solid processing agent to said processing tanks; and



filtering means for filtering an insoluble substance from said solid processing agent to prevent flaws on said light-sensitive silver halide photographic material.

5,351,104

PHOTOGRAPHIC PROCESSING APPARATUS

Edward C. T. S. Glover, London; Peter D. Marsden, and James I. Dunlop, both of Middlesex, all of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

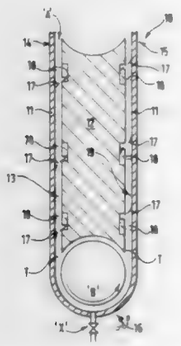
PCT No. PCT/EP91/01935, § 371 Date Apr. 15, 1993, § 102(e) Date Apr. 15, 1993, PCT Pub. No. WO92/07301, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 11, 1991, Ser. No. 39,257

Claims priority, application United Kingdom, Oct. 19, 1990, 9022779

Int. Cl.[5] G03B *3/04*

U.S. Cl. 354—328 | **6 Claims**



1. Processing apparatus comprising a tank and a plurality of agitation members mounted within the tank characterized in that the agitation members are positioned in the tank so as to be totally submerged by processing solution and in that the agitation members are moved by motion of the material being processed as at least the emulsion surface of the material being processed contacts with the agitation members.

5,351,105

AUTO FOCUS CAMERA

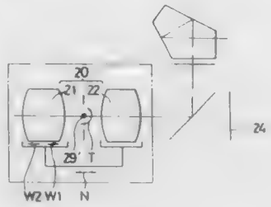
Isamu Hirai, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 871,054, Apr. 20, 1992, abandoned, which is a continuation of Ser. No. 546,855, Jul. 2, 1990, Pat. No. 5,168,298. This application May 21, 1993, Ser. No. 65,454

Claims priority, application Japan, Jul. 5, 1989, 1-173670

Int. Cl.[5] G03B *13/36*

U.S. Cl. 354—402 **14 Claims**



1. An autofocus camera comprising a plurality of object distance measuring zones, and a detector that detects a distribution pattern of objects in said plurality of object distance measuring zones, said detector further comprising means for detecting said distribution pattern of objects in said plurality of object distance measuring zones and means for simultaneously setting a focus on objects in at least two of said plurality of object distance measuring zones, by adjusting a field of curvature to bring said plurality of object distance measuring zones into focus.

5,351,106

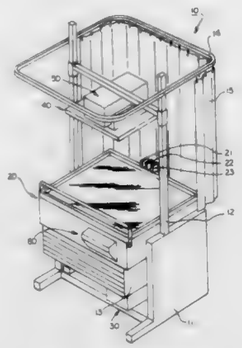
EXPOSURE SYSTEM

Robert J. Lesko, Newton, and Ira J. Pitel, Morristown, both of N.J., assignors to Amergraph Corporation, Sparta, N.J.

Filed Jul. 1, 1991, Ser. No. 724,336

Int. Cl.[5] G03B *27/80*

U.S. Cl. 355—83 **42 Claims**



1. An exposure system for light sensitive materials comprising

a vacuum frame to hold the light sensitive materials

a light source to provide light to expose said light sensitive materials

a filter housing interposed between said light source and said vacuum frame, said filter housing having at least three filters selectively positionable between said light source and light sensitive materials in said vacuum frame,

including means to position said filters between said light and said vacuum frame singularly or in multiples and having opposed channels facing one another across an open area and wherein said positioning means for each filter includes a frame for said filter having opposed sides and mounted for reciprocation in opposed channels of said housing and a cable connected to either side of said frame and passing through said housing to be driven to position said frame.

5,351,107

IMAGE FORMING APPARATUS AND METHOD HAVING IMAGE DENSITY CORRECTING FUNCTION

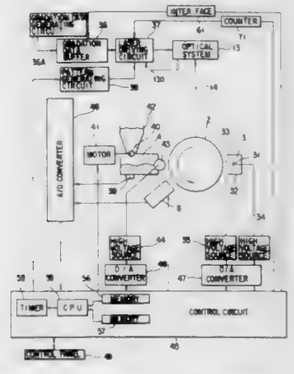
Rintaro Nakane, Yokohama, and Jiro Egawa, Yokosuka, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 23, 1993, Ser. No. 35,952

Claims priority, application Japan, Sep. 24, 1992, 4-255009; Sep. 24, 1992, 4-280688; Sep. 25, 1992, 4-280440

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—208 **11 Claims**



1. An image forming apparatus comprising:

means for forming a latent image on an image carrier under a predetermined exposure conditions including light emission intensity and light emission time width being changed, said latent image corresponding to high and low density image data to be formed;

means for developing the latent image formed by said exposure means with a developing agent including toner under a predetermined image forming condition;

means for applying a developing bias voltage to said developing means;

means for detecting the amounts of the toner attached to the image carrier and corresponding to the high and low density images;

first calculation means for calculating difference values between those amounts of the toner corresponding to the high and low density images detected by said detecting means and preset target values, respectively;

second calculation means for calculating first renewal amount data relating to a renewal amount of a contrast potential corresponding to a difference between the developing bias voltage applied by said applying means and a potential of an exposed portion of the image carrier and second renewal amount data relating to a renewal amount of a background potential which is a difference between the developing bias voltage applied by said applying means and an unexposed-portion potential of the image carrier in accordance with the first and second difference values calculated by said calculating means, when the first and second difference values fall outside the predetermined ranges; and

control means for setting exposure conditions of said forming means in accordance with the first renewal amount data calculated by said second calculating means, the developing bias voltage applied by said applying means being applied in accordance with the second renewal amount data calculated by said second calculating means.

5,351,108

CONVEYOR ROLLER CLEANING DEVICE

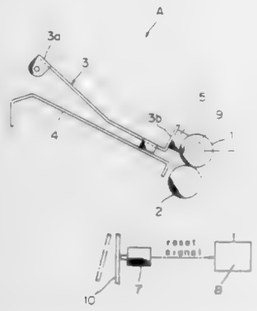
Naoki Mizutani, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jan. 19, 1993, Ser. No. 5,332

Claims priority, application Japan, Jan. 20, 1992, 4-007819

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—215 **26 Claims**



1. A conveyor roller cleaning device to be mounted on the body of an image forming apparatus for cleaning a peripheral surface of a conveyor roller which is included in a transfer sheet conveyor unit for conveying a transfer sheet and which is rotatably mounted on the body of the image forming apparatus, said conveyor roller cleaning device comprising:

an elastic member adapted to be pressed into contact with delete the conveyor roller for cleaning the peripheral surface thereof;

an attaching member having a base end and a tip end, with said elastic member connected to said tip end, said base end adapted to be pivotably supported by the body of the image forming apparatus to permit pivoting of said attaching member around said base end between a setting position in which said elastic member is pressed into contact with the conveyor roller and a retreat position in which said elastic member is retracted away from the conveyor roller, said attaching member being maintained at said setting position by a reaction force corresponding to the pressing-contact force of said elastic member against the conveyor roller;

drive means for driving the conveyor roller;

drive control means for controlling said drive means such that, before paper to be conveyed by the transfer sheet conveyor unit reaches the conveyor roller, said drive means rotates the conveyor roller in a predetermined direction for a predetermined period of time, producing between the peripheral surface of the conveyor roller and said elastic member a frictional force by which said attaching member is biased to said setting position.

5,351,109

MAGNETIC BRUSH FOR CHARGING AND CLEANING AN IMAGING SURFACE

Satoshi Haneda, Hachioji, Japan, assignor to Konica Corporation, Japan

Continuation of Ser. No. 754,969, Sep. 4, 1991, abandoned. This application Nov. 16, 1992, Ser. No. 976,686

Claims priority, application Japan, Sep. 7, 1990, 2-238478; Sep. 27, 1990, 2-258486

Int. Cl.[5] G03G *15/02, 21/00*

U.S. Cl. 355—219 **39 Claims**

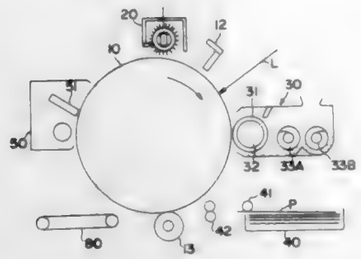
1. An apparatus for charging an imaging surface of an image carrying member comprising

a rotatable cylinder;

a magnet in said cylinder member;

a magnetic brush comprising spherical magnetic particles

formed on said cylinder by a magnetic field generated by said magnet, and



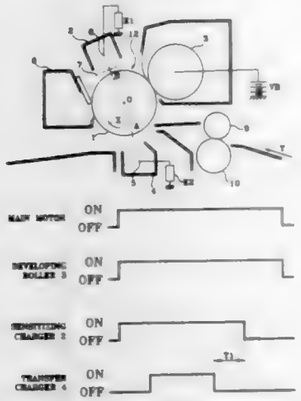
a bias for applying a bias voltage to said magnetic brush, said bias voltage comprising a DC voltage component and an AC voltage component.

5,351,110

IMAGE FORMING APPARATUS ADAPTED FOR REVERSAL DEVELOPING PROCESS WHICH IS DIMINISHED IN OZONE AND NITROGEN OXIDE EMISSIONS

Hitoshi Saito, Machida, and Katsutoshi Konishi, Toyono, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 869,534, Apr. 15, 1992, abandoned. This application Aug. 4, 1993, Ser. No. 101,955
Claims priority, application Japan, Apr. 19, 1991, 3-088533
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—221 **8 Claims**



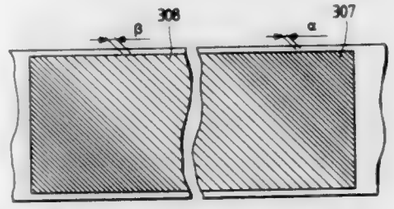
1. An image forming apparatus, comprising:
a drivingly rotatable image bearing member;
means for charging the image bearing member to a predetermined polarity;
means for forming an electrostatic latent image on the charged image bearing member;
means for developing the electrostatic latent image with toner by reversal development;
charge erasing means for erasing a charge on the image bearing member; and
control means for turning off the charge erasing means after the rear end of the image area of said image bearing member where the latent image is formed has moved past the charge erasing means, subsequently turning off the charging means after the rear end of the image area has moved past the charging means and stopping the rotation of the image bearing member a predetermined period of time after the charging means is turned off.

5,351,111

CORONA DISCHARGE DEVICE

Akihiro Takafuji, and Osamu Shimizu, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1993, Ser. No. 142,990
Claims priority, application Japan, Oct. 30, 1992, 4-293335
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—221 **7 Claims**



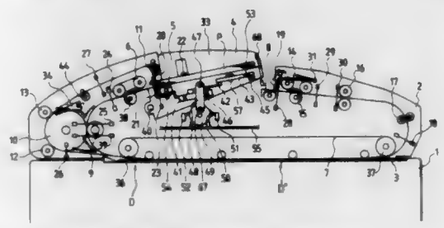
1. A corona discharge device, comprising:
a corona discharge electrode; and
a control electrode interposed between said corona discharge electrode and a target object to be corona discharged, said control electrode controlling a surface potential of said target object;
wherein said control electrode comprises a film coating processed portion with a conductive dry film coating and an unprocessed portion with no film coating, and said unprocessed portion of said control electrode is disposed in at least one of two end portions of said control electrode in a longitudinal direction of said control electrode.

5,351,112

ORIGINAL FEEDING APPARATUS AND IMAGE FORMING SYSTEM WITH IT

Masataka Naito, Kawasaki; Yuji Takahashi, Tokyo; Masakazu Hiroi, Yokohama; Yoshinori Isobe, Tokyo; Akimaro Yoshida, Yokohama; Hitoshi Fujimoto, Kawasaki, and Tomohito Nakagawa, Matsudo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1993, Ser. No. 2,135
Claims priority, application Japan, Jan. 13, 1992, 4-024615; Jan. 13, 1992, 4-024616
Int. Cl.[5] B65H *85/00*; **G03G** *15/04, 15/00*
U.S. Cl. 355—233 **34 Claims**



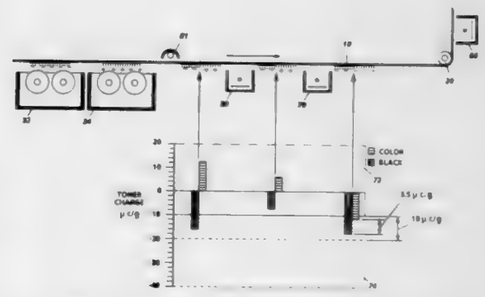
1. An original feeding apparatus, comprising:
first original feeding means for directing an original to an original reading station from one side thereof in an original-stationary scanning mode in which the original is read while fixing the original at said original reading station; and
second original feeding means for directing the original to said original reading station from the other side thereof in an original-through scanning mode in which the original is read while shifting the original along said original reading station.

5,351,113

PRE-PRETRANSFER TREATMENT TO INCREASE TRANSFER LATITUDE IN TRI-LEVEL XEROGRAPHY

Kenneth W. Pietrowski, Penfield; Larry G. Hogestyn, Ontario, and Delmer G. Parker, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 10, 1994, Ser. No. 179,176
Int. Cl.[5] G03G *15/16*
U.S. Cl. 355—273 **26 Claims**



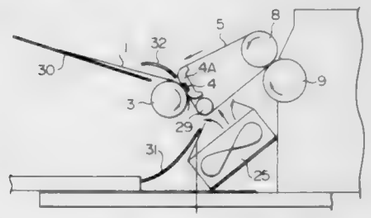
1. A method of creating multiple toner images and enhancing the transfer thereof from a charge retentive surface to a final substrate, said method including the steps of:
forming a multiple toner image on a charge retentive surface, said multiple toner image comprising a plurality of images having different charge levels;
reducing the charge level of each of said images prior to a pretransfer treatment;
subjecting said images to a pretransfer treatment;
subjecting said images to a transfer treatment and transferring said toner images to a final substrate.

5,351,114

ELECTROPHOTOGRAPHIC COPYING APPARATUS HAVING RIBBON-SHAPED TONER IMAGE CARRIER

Junichi Matsuno, Toride, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 17, 1992, Ser. No. 870,297
Claims priority, application Japan, Apr. 22, 1991, 3-090552; Jun. 26, 1991, 3-154350
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **21 Claims**



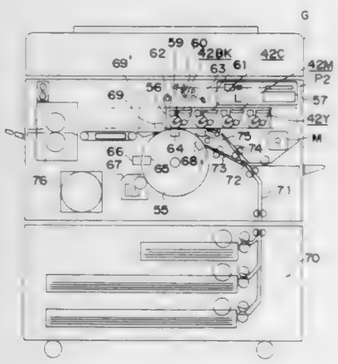
1. An electrophotographic apparatus, comprising:
a photosensitive member;
developing means for forming, on said photosensitive member, a toner image of information to be recorded;
transfer means for transferring said toner image from said photosensitive member to a ribbon-shaped toner image carrier comprising a heat-resistant endless belt which includes a web of metal;
carrier driving means for driving said toner image carrier to a heat-fixing position, said carrier driving means including a driving drum engaging with an inner surface of a loop of said heat-resistant endless belt;
recording medium feeding means for feeding a sheet-type recording medium to said heat-fixing position;
transfer/fixing means disposed in said heat-fixing position for superposing said recording medium and said toner-image carrier one on the other and for applying heat and pressure to said toner image carrier and said recording medium thereby transferring said toner image from said toner-image carrier to said recording medium, and fixing the transferred image to said recording medium, said transfer/fixing means including a plate-like heating member spaced from said driving drum and disposed adjacent the inner surface of said loop of said heat-resistant endless belt and a pressure roller which is disposed to oppose said heating member so as to press the superposed sheet-type recording medium and said endless belt against said heating member at least during the toner-image transferring and fixing operation; and
cooling means for cooling the portion of said heat-resistant endless belt which has passed through said heat-fixing position and has been separated from said sheet-type recording medium, said cooling means being disposed adjacent a path of travel of said portion of said endless belt from said heat-fixing position to said photosensitive member to protect said photosensitive member against heat applied by said heating member to said endless belt portion.

5,351,115

COLOR ELECTROPHOTOGRAPHIC METHOD AND APPARATUS EMPLOYED THEREFOR

Hajime Yamamoto, Ibaragi, and Hiroshi Terada, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 22, 1992, Ser. No. 872,187
Claims priority, application Japan, May 23, 1991, 3-118266; May 23, 1991, 3-118269; May 23, 1991, 3-118284; Jul. 16, 1991, 3-175079
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 R **11 Claims**



1. A color electrophotographic apparatus which comprises a plurality of movable image forming units each having at least a photosensitive member and a developing unit, a transfer paper holding member for holding transfer paper so as to transfer toner image onto the transfer paper, and an exposure means, with the respective developing units of said image forming units having toner in a plurality of colors each of said image forming units having a first image forming position confronting said transfer paper holding member, and a second image forming position different from said first image forming position.

5,351,116
VELOCIMETERS

James S. Barton, 33 Temple Village, Gorebridge, Midlothian EH23 4SQ; William K. D. Borthwick, 46 Dreghorn Loan, Colinton, Edinburgh EH13 ODD; David Harvey, Bennachie, 43 Brackenbrae Road, Bishopbriggs, Glasgow G64 2EX; Julian D. C. Jones, 3 Peggies Knowe, Dolphinton, West Linton Pebblesshire EH46 7AL, and Roy McBride, 11/7 Duddingston Mills, Edinburgh EH8 7TU, all of Scotland

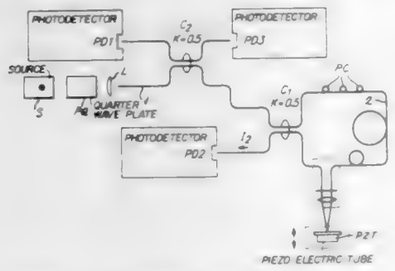
PCT No. PCT/GB91/01114, § 371 Date Jan. 6, 1993, § 102(e) Date Jan. 6, 1993, PCT Pub. No. WO92/01230, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 8, 1991, Ser. No. 961,905

Claims priority, application United Kingdom, Jul. 6, 1990, 9014989

Int. Cl.[5] G01P *3/36;* **G01B** *9/02*

U.S. Cl. 356—28.5 **10 Claims**



1. Apparatus for measuring velocity comprising:

an interferometer including a loop of fibre optic radiation guide;

means for launching optical signals from a source of radiation in opposite directions around said loop;

probe means located within said loop and adapted to launch said optical signals from said radiation guide towards a moveable target, and to receive said optical signals after reflection from said target, and to re-direct said received optical signals into said radiation guide.

5,351,117
SENSING A NARROW FREQUENCY BAND AND GEMSTONES

Andrew D. G. Stewart, Ashampstead; Robin W. Smith, Croydon; Martin P. Smith, Wargrave; Martin Cooper, Marlow; Christopher M. Welbourn, Maidenhead, and Paul M. Spear, Reading, all of England, assignors to Gersan Establishment, Liechtenstein

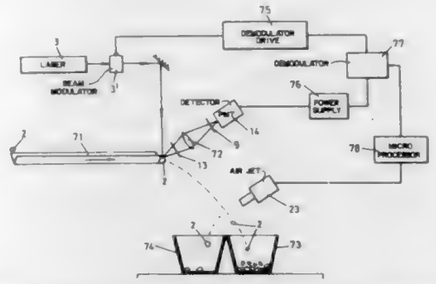
Division of Ser. No. 810,355, Dec. 18, 1991, Pat. No. 5,206,699, which is a continuation of Ser. No. 349,265, May 8, 1989, abandoned. This application Mar. 15, 1993, Ser. No. 31,585

Claims priority, application United Kingdom, May 6, 1988, 8810723.0; May 6, 1988, 8810724.8; Jul. 5, 1988, 8815941.3; Jul. 7, 1988, 8816156.7; Jul. 7, 1988, 8816157.5; Jul. 7, 1988, 8816164.1; Jul. 7, 1988, 8816165.8; Jul. 7, 1988, 8816167.4; Nov. 9, 1988, 8826225.8; Mar. 23, 1989, 8906853.0

Int. Cl.[5] G01N *21/65, 21/87*

U.S. Cl. 356—30 **15 Claims**

1. A method of identifying a diamond or other specific luminescing mineral, comprising irradiating the diamond or mineral with high-frequency-modulated radiation of substantially constant wave length, thereby causing anti-Stokes radiation to be emitted from the diamond or mineral, and isolating the emitted anti-Stokes radiation from any emitted radiation having a long rise and/or decay time by detecting emitted



radiation which is modulated at a frequency corresponding to the frequency of modulation of said modulated radiation.

5,351,118
APPARATUS AND METHOD FOR ANALYZING PARTICLES SUSPENDED IN A LIQUID

Max Spinell, Hilleroed, Denmark, assignor to Biometic ApS c/o Dansk Udviklingsfinansiering A/S, Soeborg, Denmark

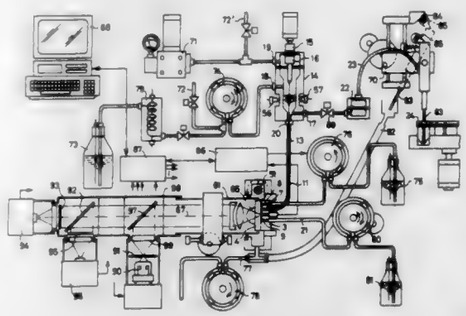
PCT No. PCT/DK91/00120, § 371 Date Jun. 10, 1991, § 102(e) Date Jun. 10, 1991, PCT Pub. No. WO91/17422, PCT Pub. Date Nov. 14, 1991

PCT Filed May 6, 1991, Ser. No. 688,545

Claims priority, application Denmark, May 4, 1990, 1119/90

Int. Cl.[5] G01N *21/01, 21/05*

U.S. Cl. 356—72 **40 Claims**



1. An apparatus for analyzing particles suspended in a fluid medium, said particles being capable of emitting radiation characteristic of said particles when exposed to radiation, and comprising:

a cuvette, in which an elongated flow area having the shape of a passage is provided for guiding said fluid medium in a first direction through said elongated flow area of said cuvette,

means for feeding said fluid medium to said elongated flow area,

means for discharging said fluid medium from said elongated flow area,

means for exposing said fluid medium to said radiation in a second direction defining an angle relative to said first direction,

means for picking up at least part of said radiation characteristic of said particles and emitted by said particles when exposed to radiation,

said cuvette comprising a first body member having a planar facial surface and a second body member having a planar facial surface,

said first and second body members being movable relative to one another between a first position, in which said planar facial surfaces are positioned closely adjoining one another, and a second position, in which said planar facial surfaces are positioned spaced apart,

at least said facial surface of said first body member being provided with an elongated groove defining together with said adjoining facial surface of said second body member said elongated flow area having the shape of said passage when said body members are in said first position,

said means for feeding said fluid medium to said elongated flow area comprising an inlet provided in one of said body members and extending from the exterior relative to said cuvette to an inlet aperture of said elongated flow area,

said means for discharging said fluid medium comprising an outlet provided in one of said body members and extending from an outlet aperture of said elongated flow area to the exterior relative to said cuvette, and

at least one of said body members being transparent to said radiation to which said fluid medium is exposed and to said radiation emitted by said particles.

5,351,119
METHOD AND APPARATUS FOR MEASURING A LENS

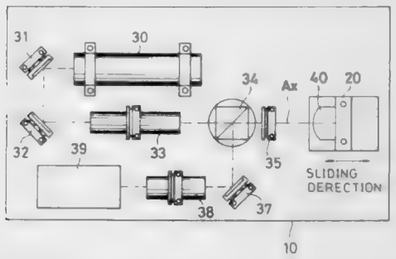
Takehiro Nakatsue, Kanagawa, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 406,522, Sep. 13, 1989, abandoned. This application Jun. 16, 1992, Ser. No. 899,301

Claims priority, application Japan, Sep. 13, 1988, 63-229260; Sep. 13, 1988, 63-229261

Int. Cl.[5] G01B *9/00*

U.S. Cl. 356—124 **15 Claims**



1. A method for measuring an anamorphic lens including:

a first step of converging a beam of light emitted by a light source towards a reference standard and adjusting the position of said reference standard along the progressing direction of the beam of light so that the beam of light reflected by said reference standard forms a point spread function image or a line spread function image on a focal plane;

a second step of replacing said reference standard with an anamorphic lens to be tested, and adjusting the position of said anamorphic lens such that the beam of light reflected by said anamorphic lens forms a line spread function image on the focal plane; and

a third step of measuring said anamorphic lens by comparing said first step with said second step.

5,351,120
SPECTROSCOPIC CELL DESIGN

Benjamin Jurcik, Willowbrook; Michael Brandt, Chicago; Ronald Inman, Berwyn, and James McAndrew, Lockport, all of Ill., assignors to American Air Liquide, Walnut Creek, Calif.

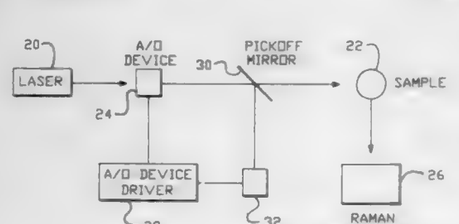
Filed Jul. 12, 1993, Ser. No. 90,883

Int. Cl.[5] G01N *21/05*

U.S. Cl. 356—246 **14 Claims**

1. In a spectroscopic sample cell for the analysis of trace impurities in sample gases having a gas inlet, a gas outlet and a volume for confirming said sample gases for analysis, the improvements comprising:

(a) providing two mirrors, a first mirror proximate the gas inlet and a second mirror proximate the gas outlet, said first mirror having a hole at its radial center;



(b) providing a conically-shaped cell profile substantially at said gas inlet, the diverging angle of said profile being less than approximately 40°; wherein the location and sizes of said mirrors and conically-shaped cell profile are such as to substantially prevent the formation of vortices in said sample cell upstream of or in the region where said analysis of trace impurities takes place.

5,351,121
SOLID-STATE LASER FOURIER-TRANSFORM RAMAN SPECTROMETER

Thomas M. Baer; Kelly A. Cox; Phillip Gooding, all of Mountain View; John Cole, Sunnyvale; David F. Head, Los Gatos, and Gregory J. Kintz, Mountain View, all of Calif., assignors to Spectra-Physics Laser Diode Systems, Mountain View, Calif.

Filed Jan. 27, 1993, Ser. No. 9,454

Int. Cl.[5] G01N *21/65;* **G01J** *3/44*

U.S. Cl. 356—301 **10 Claims**

1. A Fourier Transform Raman Spectrometer system comprising:

a laser producing an output emission along an optical path;

a tuneable filter comprising an acousto-optic device disposed along said optical path and positioned so as to intersect an output beam from said laser;

means for tuning said tunable filter to a narrow band of colors around a selected laser emission line of radiation from said laser;

means for disposing a sample to be analyzed in a path of said output beam from said tuneable filter; and

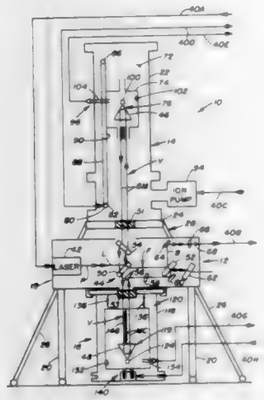
a raman spectrometer positioned to receive light scattered from said sample.

5,351,122

ABSOLUTE GRAVITY INLINE MEASURING APPARATUS INCORPORATING IMPROVED OPERATING FEATURES

Timothy M. Niebauer; William J. Hollander, and James E. Faller, all of Boulder, Colo., assignors to Micro-g Solutions, Inc., Arvada, Colo.

Filed May 22, 1992, Ser. No. 887,466
Int. Cl.[5] G01P *3/38*; G01B *9/02*
U.S. Cl. 356—345 22 Claims



1. An absolute gravity inline measuring apparatus, comprising:

(a) an interferometer arrangement defining variable and fixed length legs of a light beam path and including means for generating a light beam, splitting and recombining means for splitting the light beam into first and second split beam portions for travel respectively along said fixed and variable legs and for recombining the first and second split beam portions into a recombined light beam, and upper and lower reflecting means facing toward one another and being disposed on opposite sides of said splitting and recombining means for receiving said second split beam portion and reflecting said second split beam portion toward one another, said upper and lower reflecting means defining with said splitting and recombining means an upper gravity measuring portion and a lower motion compensating portion of said variable leg of said interferometer arrangement extending in opposite directions from said splitting and recombining means and in substantially vertical alignment with one another, said splitting and recombining means including a first beam splitter for receiving and splitting said light beam into first and second split beam portions and a second beam splitter for receiving and recombining said first and second split beam portions into a recombined light beam, said first beam splitter being disposed between and in vertical alignment with said upper and lower reflecting means, said second beam splitter being offset laterally from said first beam splitter and from said vertical alignment between said upper and lower reflecting means and first beam splitter;

(b) a test mass tracking system including a test mass incorporating said upper reflecting means in said upper gravity measuring portion of said variable leg of said interferometer arrangement, said tracking system also including means for selecting one of a plurality of possible predetermined modes of operation for tracking and measuring movement of said test mass to make absolute gravity measurements; and

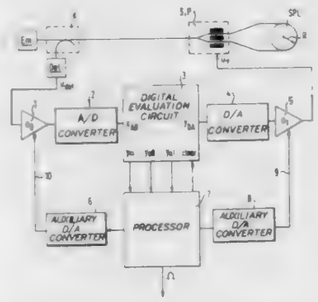
(c) a superspring mechanism including an inertial mass incorporating said lower reflecting means of said lower motion compensating portion of said variable leg of said interferometer arrangement, a motion compensating means incorporating an elongated spring means interconnected to said inertial mass and providing a long period active suspension being operable to maintain said inertial mass in a motionless state, and a temperature-responsive lever mechanism connected to said spring means and being operable to compensate for temperature-induced changes in the length of said spring means.

5,351,123

METHOD AND APPARATUS FOR STABILIZING CONTROL LOOP SCALE FACTOR AND GAIN IN A FIBER OPTIC SAGNAC INTERFEROMETER

Günter Spahlinger, Stuttgart, Fed. Rep. of Germany, assignor to LITEF GmbH, Freiburg im Breisgau, Fed. Rep. of Germany

Filed Nov. 9, 1992, Ser. No. 973,761
Claims priority, application European Pat. Off., Jan. 13, 1992, 92100460.2
Int. Cl.[5] G01C *19/72*
U.S. Cl. 356—350 10 Claims



1. In a method for rotational speed measurement by means of a fiber-optic Sagnac interferometer with phase resetting of the type in which two polarized light beams originating from a single light source and generated by beam splitting are irradiated in opposite directions into a fiber coil and subsequently reunited; the interference pattern produced in the process is detected, and an electrical signal corresponding to the light intensity of the interference pattern is generated; and in which the two light beams are modulated by a control signal composed of a plurality of variable components, of which a first signal component is a resetting signal which is generated via a digital control process and which compensates non-reciprocal, incremental phase shifts in the two light beams, and of which a second signal component, controlled by a first random number generator, assumes in each case for a time T_o the values 0 or π, T_o corresponding to the transit time of each of the two light beams through the fiber coil in the quiescent state, the improvement comprising the steps of:

a) adding a third signal component to the control signal (u_ϕ), said third signal component being controlled by a second random number generator and assuming the values $\pi/2+d$ or $\pi/2-d$ for the time T_o where d is a predetermined small test variable; and

b) subjecting the combined control signal to an integration process with modulo-2π resetting, in which both the resetting signal and the second and the third signal components are supplied before the joint integration process.

5,351,124

BIREFRINGENT COMPONENT AXIS ALIGNMENT DETECTOR

Clarence E. Laskoskie, Scottsdale, and Bogdan Szafraniec, Cave Creek, both of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 29, 1992, Ser. No. 998,312
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—351 11 Claims

1. A nulling detector for indicating a forty-five degree axis alignment between birefringent axes of two optical components, comprising:

a polarized light source;

a first optical component having birefringent axes and having first and second ends;

a polarizer having an input connected to the second end of said first optical component and having an output; and

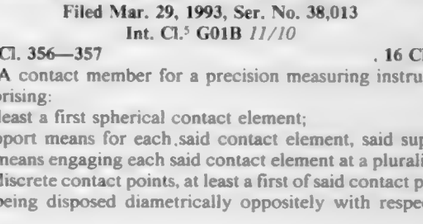
an interferometer having an input connected to the output of said polarizer, and having an output; and

wherein:

a to be attained forty-five degree axis alignment is between a second optical component, having at least one birefringent axis, and having first and second ends, and a third optical component, having at least one birefringent axis, and having first and second ends;

the second optical component has a first end connected to the output of said polarized light source such that the major portion of polarized light from said light source is capable of propagating through the at least one birefringent axis from the first end to the second end of the second optical component;

the third optical component has the first end proximate to



the second end of the second optical component and the second end proximate to the first end of said first optical component such that light from the third optical component is capable of entering both first and second axes of said first optical component;

the at least one axis at the second end of the second optical component and the at least one axis at the first end of the third optical component have an alignment that is indicated by a nulling indicator;

light from both first and second axes at the second end of said first optical component, is capable of going through said polarizer and into the input of said interferometer;

said interferometer has first and second light paths and the first and second light paths have optical lengths that differ so as to compensate for the phase delay that occurs between light in the first and second axes of said first optical component; and

the output of said interferometer is connected to the nulling indicator which is capable of providing an indication of a forty-five degree axis alignment between the birefringent axes at the second end of the second optical component and the first end of the third optical component, upon a null determination by the nulling indicator.

5,351,125

GAGING FINGER FOR PRECISION MEASURING INSTRUMENTS

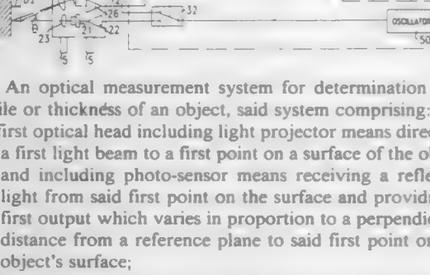
Ralph E. Karanian, Wethersfield; Stephen R. Noonan, Glastonbury, and John M. Vecchitto, Portland, all of Conn., assignors to Moore Products, Inc., Plainville, Conn.

Filed Mar. 29, 1993, Ser. No. 38,013
Int. Cl.[5] G01B *11/10*
U.S. Cl. 356—357 16 Claims

1. A contact member for a precision measuring instrument comprising:

at least a first spherical contact element;

support means for each said contact element, said support means engaging each said contact element at a plurality of discrete contact points, at least a first of said contact points being disposed diametrically oppositely with respect to the point on the spherical contact element where contact with an object to be measured is to be established, each said contact element being supported so as to extend outwardly beyond the periphery of said support means; and



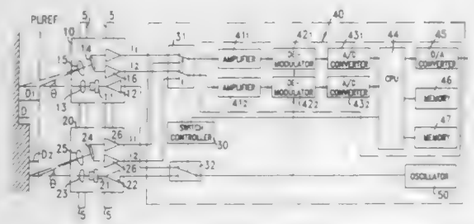
means removably attached to said support means for maintaining said discrete point contacts between said contact element and said support means, said removable contact maintaining means engaging each said contact element at a further discrete point of contact.

5,351,126

OPTICAL MEASUREMENT SYSTEM FOR DETERMINATION OF AN OBJECT'S PROFILE OR THICKNESS

Yuji Takada, Kyoto; Hiroshi Matsuda, Hirakata; Toshiki Yamane, Sakai, and Yoshihiko Sugimoto, Hirakata, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Oct. 28, 1992, Ser. No. 967,601
Claims priority, application Japan, Oct. 31, 1991, 3-313532; Oct. 31, 1991, 3-313533; Dec. 20, 1991, 3-339041
Int. Cl.[5] G01B *11/06, 11/24*
U.S. Cl. 356—376 9 Claims



1. An optical measurement system for determination of a profile or thickness of an object, said system comprising:

a first optical head including light projector means directing a first light beam to a first point on a surface of the object and including photo-sensor means receiving a reflected light from said first point on the surface and providing a first output which varies in proportion to a perpendicular distance from a reference plane to said first point on the object's surface;

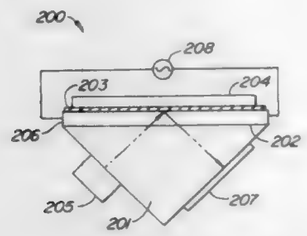
a second optical head including light projector means directing a second light beam to a second point on a surface of the object and including photo-sensor means receiving a reflected light from said second point on the surface and providing a second output which varies in proportion to a perpendicular distance from a reference plane to said second point on the object's surface;

switch means selectively connecting said first and second outputs to a single processing circuit,

said single processing circuit operating to process said first and second outputs in sequence to measure by triangulation the perpendicular distances of said first and second points from said reference plane and to analyze a surface

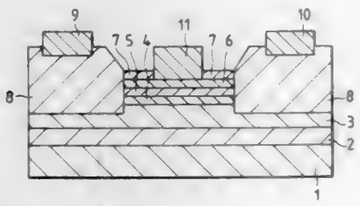
or thickness of the object based upon thus measured perpendicular distances.

5,351,127
SURFACE PLASMON RESONANCE MEASURING INSTRUMENTS
David A. King, Palo Alto, Calif., and Jens-Peter Seher, Stuttgart, Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jun. 17, 1992, Ser. No. 900,217
Int. Cl.[5] G01N *21/55, 21/63*
U.S. Cl. 356—445 **21 Claims**



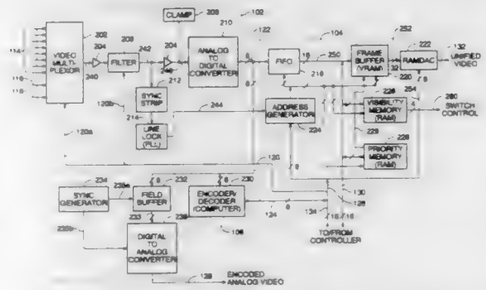
1. A surface plasmon resonance (SPR) instrument, comprising:
a block of material transparent to an electromagnetic beam, the block of material having a first surface;
a crystalline material having an amplitude that is electrically modulated, the amplitude corresponding to an adjustable index of refraction, having a second surface for providing internal reflection of the electromagnetic beam;
a source of electricity supplying electricity with adjustable amplitude to modulate the adjustable index of refraction of said crystalline material; a conductive layer adjacent to the second surface, the conductive layer adapted to contact a sample;
an electromagnetic beam radiating to the second surface to produce internal reflection; and
a detector of electromagnetic radiation coupled to the block for detecting reflection of the source beam from the second surface.

5,351,128
SEMICONDUCTOR DEVICE HAVING REDUCED CONTACT RESISTANCE BETWEEN A CHANNEL OR BASE LAYER AND A CONTACT LAYER
Shigeo Goto, Tsukuba; Hidetoshi Matsumoto, Kodaira; Masamitsu Yazawa, Yokohama; Yasunari Umemoto, Tokorozawa; Yoko Uchida, Kawasaki, and Kenji Hiruma, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 27, 1992, Ser. No. 919,676
Claims priority, application Japan, Aug. 2, 1991, 3-194164
Int. Cl.[5] H01L *29/16, 29/205*
U.S. Cl. 257—192 **34 Claims**



1. A semiconductor device comprising:
a first n-type semiconductor layer;
a second undoped or acceptor impurity doped semiconductor layer formed in contact with one side of said first semiconductor layer;
a third undoped or acceptor impurity doped semiconductor layer formed on a side of said second semiconductor layer opposite to said first semiconductor layer; and
a fourth n-type semiconductor layer which is a separate body from said first semiconductor layer;
wherein said first semiconductor layer and said second semiconductor layer are equal in electron affinity, said third semiconductor layer is smaller in electron affinity than said second semiconductor layer, said second semiconductor layer acts as a carrier bypass path forming layer, and said first or second semiconductor layer is in direct contact with said fourth semiconductor layer.

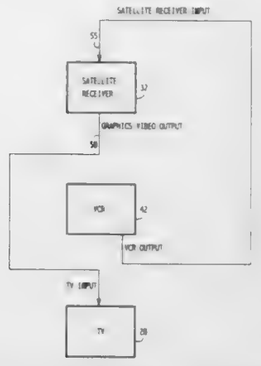
5,351,129
VIDEO MULTIPLEXOR-ENCODER AND DECODER-CONVERTER
Patrick Lai, Alameda, Calif., assignor to RGB Technology D/B/A RGB Spectrum, Alameda, Calif.
Filed Mar. 24, 1992, Ser. No. 856,584
Int. Cl.[5] H04N *5/262, 5/272, 9/74*
U.S. Cl. 348—584 **29 Claims**



1. A video multiplexor-encoder for receiving, time-division multiplexing and encoding a plurality of video signals representing a plurality of video imaged for transfer and simultaneous display thereof in a pattern of a plurality of video windows on a video display device, the video multiplexor-encoder comprising:
multiplexor means for receiving and selectively time-division multiplexing a plurality of asynchronous video signals which represent a plurality of corresponding video images to produce a corresponding multiplexed video signal; and
encoder means coupled to the multiplexor means for receiving and selectively encoding the multiplexed video signal so as to include display control data.

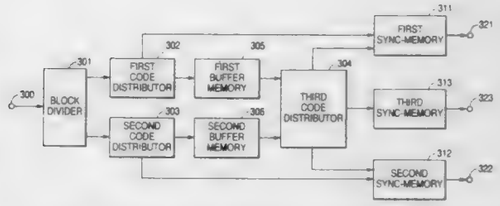
5,351,130
SATELLITE RECEIVER WITH IMPROVED MEMORY BACK-UP AND LOADING CAPABILITIES
Michael T. Dugan, Parker; Joseph T. Cilke, Highlands Ranch, and Bruce S. Petrie, Denver, all of Colo., assignors to Houston Satellite Systems, Inc., Englewood, Colo.
Filed Jan. 28, 1993, Ser. No. 10,429
Int. Cl.[5] H04N *5/44*
U.S. Cl. 358—725 **2 Claims**

2. A satellite receiver system that is capable of receiving a television signal comprising:
a satellite receiver with a digital memory that can be programmed with information that is used in the operation of the satellite receiver;
a video cassette recorder in communication with said satellite receiver; and
a television in communication with said satellite receiver;
said satellite receiver including means for translating information between a digital format and a television signal format so that information from said digital memory can be stored using said video cassette recorder and information provided by said video cassette recorder can be stored in said digital memory;



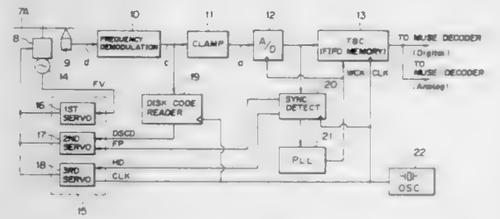
said satellite receiver includes means for allowing a user to input data to said satellite receiver relating to the operation of said means for translating;
said satellite receiver includes means for use in outputting data to a user that relates to said means for translating.

5,351,131
APPARATUS FOR RECORDING AND REPRODUCING BAND-COMPRESSION CODED VIDEO DATA
Masakazu Nishino, Kashiwara; Tatsuro Juri, Osaka, and Hideki Ohtaka, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 23, 1991, Ser. No. 780,986
Claims priority, application Japan, Oct. 25, 1990, 2-289126; Nov. 13, 1990, 2-307389
Int. Cl.[5] H04N *5/91*
U.S. Cl. 358—335 **7 Claims**



1. A video signal recording apparatus comprising;
an orthogonal transformation means for dividing a video signal into a plurality of blocks and for transforming each of the plurality of blocks by orthogonal transformation to obtain a plurality of orthogonal transformed data blocks;
a coding means for coding the plurality of orthogonal transformed data blocks by variable length coding to obtain a plurality of coded data blocks so that data quantity in a specific number of coded data blocks is constant;
a formatting means for allocating the plurality of coded data blocks into a plurality of sync blocks each containing a sync signal, an identification data and coded data blocks; and
a recording means for recording the plurality of sync blocks on a recording medium;
wherein said formatting means includes;
a block dividing means for dividing the plurality of coded data blocks into first and second groups; and
a block distributing means for allocating the coded data blocks in said first and second groups to continuous first through third sync blocks such that coded data blocks in said first group are allocated to the first sync block sequentially in the order from coded data blocks corresponding to lowest frequency component of the video signal to coded data blocks corresponding to higher frequency components of the video signal, coded data blocks in said second group are allocated to the second sync block sequentially in the order from coded data blocks corresponding to lowest frequency component of the video signal to coded data blocks corresponding to higher frequency components of the video signal, and the remaining coded data blocks in said first and second groups are allocated to the third sync block, whereby coded data corresponding to lower frequency components of the video signal are always distributed in the first and second sync blocks.

5,351,132
METHOD OF RECORDING AND REPRODUCING INFORMATION ON A VIDEO DISK UTILIZING TABLE OF CONTENTS DATA
Takao Sawabe; Ryuichi Todoroki, and Takashi Sakakibara, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Sep. 9, 1992, Ser. No. 942,745
Claims priority, application Japan, Sep. 9, 1991, 3-257051
Int. Cl.[5] G11B *7/00*
U.S. Cl. 358—342 **9 Claims**



1. A method of recording and reproducing information on a video disk having a program area and a lead-in area, in which a plurality of frames are arranged in a circular direction, comprising the steps of:
recording a video signal on the program area of the video disk;
recording table-of-contents data, to control reproduction of the recorded video signal, on each of the plurality of frames in the lead-in area of the video disk, said table-of-contents data including at least chapter number information and frame number information for all chapter numbers and frame numbers of the recorded video signal in the program area and having a data structure which is completed in each of said plurality of frames in the lead-in area and the table-of-contents data is identically repeated in each of said plurality of frames adjacent to each other;
reading the table-of-contents data from one of the plurality of frames and storing the read table-of-contents data before reproducing the video signal; and
performing chapter number search and frame number search on the basis of the stored table-of-contents data, to reproduce the video signal from the program area.

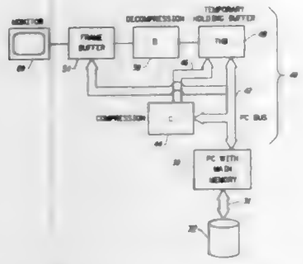
5,351,133
COLOR VIDEO DISPLAY WITH BUILT-IN COLOR DECOMPRESSION SYSTEM
Steve M. Blonstein, San Jose, Calif., assignor to Ricoh Corporation, Menlo Park, Calif. and Ricoh Co., Ltd., Japan
Continuation of Ser. No. 487,414, Mar. 1, 1990, abandoned. This application Oct. 26, 1992, Ser. No. 966,892
Int. Cl.[5] H04N *1/41, 1/46*
U.S. Cl. 358—426 **2 Claims**

1. A method for sequential display of a first region and a

second region of a true-color high-resolution image on an image display means, said image display means comprising a video display monitor having an array of display pixels, said image being stored as compressed image data in a memory means, comprising the steps of:

(a) decompression of a portion of said compressed image data substantially corresponding only to said first region of said image to provide a first decompressed data package;

(b) storage of said first decompressed data package in a first portion of a frame buffer means, the storage capacity of said first portion of said frame buffer means being approximately equal to at least the size of said first decompressed data package and less than the size of the entirety of said compressed image data when decompressed;



(c) display of said first decompressed data package in said frame buffer means on substantially the entirety of said display pixels of said video display monitor;

(d) decompression of a portion of said compressed image data substantially corresponding only to said second region of said image to provide a second decompressed data package, said first region and said second region having substantially equal size;

(e) storage of said second decompressed data package in a second portion of said frame buffer means, the storage capacity of said second portion of said frame buffer means being approximately equal to at least the size of said second decompressed data package; and

(f) display of said second decompressed data package in said frame buffer means on substantially the entirety of said display pixels of said video display monitor.

5,351,134

IMAGE COMMUNICATION SYSTEM, AND IMAGE COMMUNICATION APPARATUS AND MODEM USED IN THE SYSTEM

Tatsuya Yaguchi, Kanagawa, and Takehiro Yoshida, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 887,598, May 21, 1992, abandoned, which is a continuation of Ser. No. 445,674, Dec. 7, 1989, abandoned. This application Dec. 21, 1992, Ser. No. 994,471

Claims priority, application Japan, Apr. 7, 1988, 63-84178; Apr. 7, 1988, 63-84179; Jun. 30, 1988, 160688; Sep. 29, 1988, 63-245103; Sep. 29, 1988, 63-245104; Feb. 10, 1989, 1-30028

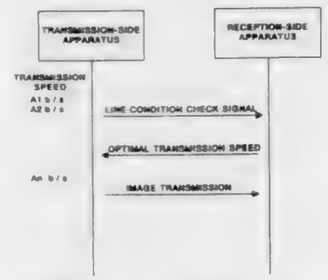
Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—435 **60 Claims**

1. A data communication system for performing communication by selecting one of a plurality of transmission speeds, comprising:

a transmission-side apparatus that transmits line check data for determining a transmission speed to a reception-side apparatus, and

the reception-side apparatus which receives the line check data, said reception-side apparatus measuring the number of times of receiving the line check data correctly or the period of receiving the line check data correctly, wherein said transmission-side apparatus or said reception-side apparatus performs subsequent communication at a selected optimal one of the transmission speeds based on the measured number of times or the measured period.



5,351,135

MANAGING LETTERBOX SIGNALS WITH LOGOS

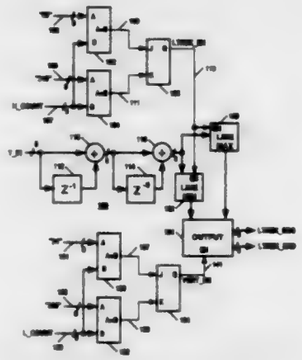
Timothy W. Saeger, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 817,236, Jan. 6, 1992, Pat. No. 5,249,049. This application May 5, 1993, Ser. No. 57,026

Claims priority, application United Kingdom, Jun. 1, 1990, 9012326

Int. Cl.[5] H04N *7/04, 7/08, 5/278*

U.S. Cl. 348—435 **20 Claims**



1. A video display control system, comprising:

a video display means having a wide format display ratio;

a letterbox processor for determining when a picture represented by an input video signal has a letterbox format, said letterbox format picture sometimes having auxiliary information disposed in a border area; and,

means for controlling operation of said letterbox processor to ignore a certain type of said auxiliary information when present.

5,351,136

FACSMILE APPARATUS AND METHOD FOR SENDING AND RECEIVING PRIVATE INFORMATION

T. C. Wu; Ray-Ten Chen, both of Hsinchu, and Wen-Pin Chang, Tao Yuan Hsien, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jul. 10, 1992, Ser. No. 912,968

Int. Cl.[5] H04N *1/00, 7/167, 1/44;* **H04M** *11/00*

U.S. Cl. 358—440 **5 Claims**

1. A FAX machine for sending and receiving secret information comprising:

a network control interface for connecting said FAX machine and a telephone line;

a reception-selection module to set said FAX machine in a transmitting or reception state via said network control interface said telephone line in accordance with instructions from another FAX machine that has been connected to said FAX machine;

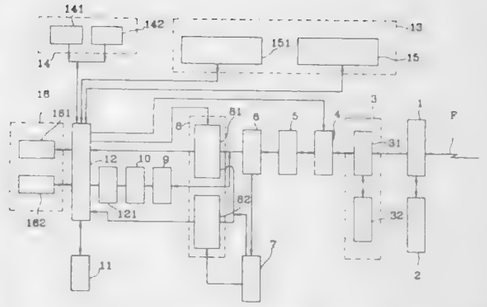
a micro-processor and a video-processing unit;

a first information transmission channel unit for transmitting-/receiving non-secret information to or from said reception-selection module, and for transmitting said non-secret information to said micro-processor, said micro-processor being connected to said video-processing unit o said FAX machine for sending information thereto;

a second information transmission channel unit for receiving secret information from said reception-selection module, and for transmitting said secret information into said micro-processor;

a first memory for storing said secret information from said second information transmission channel unit;

a second memory for storing a cross-reference list between identifying codes and passwords, and for storing the identifying code and memory address in said first memory of



said secret information received through said second information transmission channel unit;

an identifying module connected to said first and second information transmission channel units for detecting whether information transmitted to said FAX machine contains an identifying code or not and for identifying said information as secret information or non-secret information according to whether said identifying code is present; said identifying module being adapted to control on/off of said first and second information transmission channel units to thereby direct non-secret information to pass through said first information transmission channel unit, and secret information to pass through said second information channel unit; and

an i/o operation module and a secret information i/o module in said i/o operation module, said i/o operation module being connected to said micro-processor and said secret information i/o module including a keyboard unit and a card scanner, which allows a receiver to use said keyboard unit or said card scanner to enter said identifying code and its matching password to thus retrieve said secret information from said first memory.

5,351,137

PIXEL DENSITY CONVERTING APPARATUS

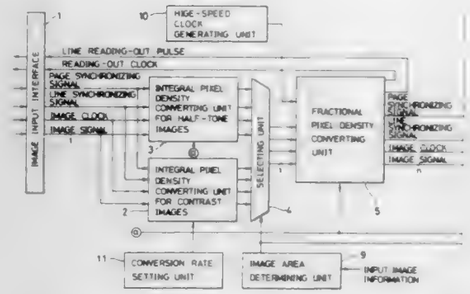
Masami Kato, Sagamihara; Takao Kato, and Yasunori Hashimoto, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 492,490, Mar. 12, 1990, Pat. No. 5,289,293. This application Nov. 30, 1993, Ser. No. 159,206

Claims priority, application Japan, Mar. 14, 1989, 1-059601; Mar. 14, 1989, 1-059608; Jun. 8, 1989, 1-145479; Jun. 8, 1989, 1-145480; Jun. 9, 1989, 1-145471; Jun. 9, 1989, 1-145472; Jun. 9, 1989, 1-145473; Jun. 9, 1989, 1-145474; Jun. 9, 1989, 1-145475; Jun. 9, 1989, 1-145476; Jun. 9, 1989, 1-145477; Jun. 9, 1989, 1-145478

Int. Cl.[5] G06K *9/00*

U.S. Cl. 358—457 **27 Claims**



1. A pixel density converting apparatus for converting a pixel density of a binary image in which a pseudo half-tone processed image and characters or line drawings are present in a mixed state, comprising:

a converted pixel operation means for operating a tone or luminance of a converted pixel from a tone or luminance of a predetermined original pixel in said binary image and a positional relation between said original pixel and said converted pixel; and

a binarization means for binarizing the tone or luminance of said converted pixel which is the operation results while correcting a quantizing error generated when surrounding pixels have been binarized.

5,351,138

IMAGE AREA DISCRIMINATING DEVICE

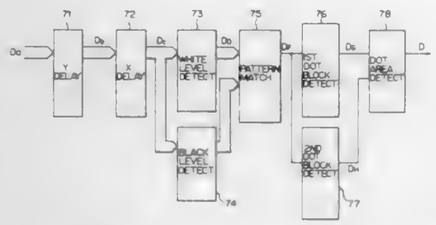
Tomio Sasaki; Shinji Kobayashi, and Masahito Obata, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 23, 1991, Ser. No. 688,930

Claims priority, application Japan, Apr. 24, 1990, 2-106492; Jun. 11, 1990, 2-149807

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—462 **10 Claims**

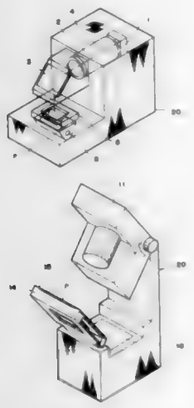


1. A device for discriminating an image area, comprising:

a) MTF (Modulation Transfer Function) correcting means for executing MTF correction with input image data; and

b) record dot and non-record dot detecting means including:
1) means for receiving an MTF corrected image signal outputted by said MTF correcting means as input image data;
2) means for comparing (1) a bi-dimensional pattern of said input image data with (2) a predetermined detection pattern, so as to detect a record dot and a non-record dot; and
3) means for producing a result of comparison.

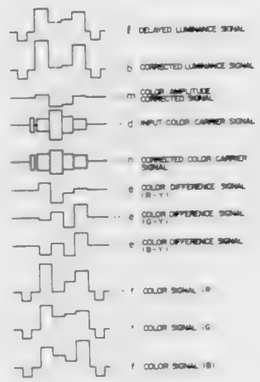
5,351,139
APPARATUS FOR PHOTOGRAPHING PHOTOGRAPHED FILM
Kazuhiko Miyahara, Yokohama; Takao Kinoshita, Tokyo; Kenichi Kawamoto, Komae; Toshiya Kurihashi, Kokubunji, and Kaneyoshi Tokano, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 27, 1992, Ser. No. 982,576
Claims priority, application Japan, Nov. 28, 1991, 3-314565; Mar. 25, 1992, 4-067066; Jun. 18, 1992, 4-182812; Jun. 25, 1992, 4-190164; Aug. 24, 1992, 4-247250
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—487 **1 Claim**



1. An apparatus comprising:
objective lens means for receiving an image;
sensor means for reading the image obtained by said objective lens means;
illumination means for illuminating a film;
a main body containing said objective lens means, said sensor means and said illumination means;
a rotatable member rotating around a predetermined axis relating to said main body, said rotatable member provided with a guide portion for guiding said film and a holding portion for holding a printed object; and
a supporting means for supporting a reflection member wherein said supporting means is detachable from said main body and said reflection member introduces light coming from said film onto said objective lens means when the supporting means is attached to said main body.

5,351,140
Patent Not Issued For This Number

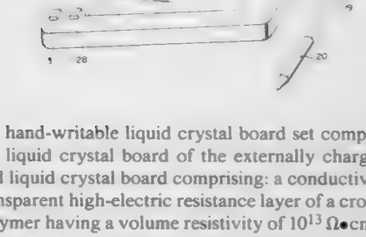
5,351,141
VIDEO SIGNAL CORRECTION SYSTEM
Toshiaki Tsuji, Kobe, and Atsuhisa Kageyama, Ibaraki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jan. 6, 1993, Ser. No. 1,529
Claims priority, application Japan, Jan. 9, 1992, 4-001920
Int. Cl.[5] H04N *9/78*
U.S. Cl. 358—520 **6 Claims**



1. A video signal correction system for correcting the saturation of a color signal comprising:
a luminance signal correction circuit for correcting the tone of an input luminance signal;
an average picture level detection circuit for detecting the average picture level of the luminance signal;
a coefficient calculation circuit for effecting corrective calculations on the basis of an output signal of the average picture level detection circuit;
an adder for adding an output signal of the luminance signal correction circuit and an output signal of the coefficient calculation circuit to each other;
a delay circuit for delaying the luminance signal;
a limiter circuit for limiting the low limit level of an output signal of the delay circuit;
a divider circuit for dividing an output signal of the adder by an output signal of the limiter circuit;
a multiplier circuit for controlling the amplitude of an input color carrier signal by an output signal of the divider circuit; and
a coefficient control circuit for controlling the coefficient calculation circuit and the limiter circuit.

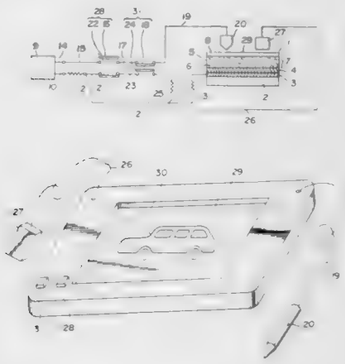
5,351,142
SEMI-TRANSPARENT REFLECTIVE LAYER FOR A PHASE HOLOGRAM
Peter Cueli, Belle Mead, N.J., assignor to Crown Roll Leaf, Inc., Paterson, N.J.
Filed Apr. 16, 1993, Ser. No. 48,769
Int. Cl.[5] G03H *1/00, 1/02;* **B42D** *15/00*
U.S. Cl. 359—2 **16 Claims**

12. An authenticated document, comprising:
(a) a substrate bearing encoded data; and
(b) a holographic overlay having a semi-transparent reflective layer of tin tungsten oxide affixed to said substrate overlying at least a portion of said encoded data to prevent non-destructive separation of said overlay from said substrate, said overlay being at least semi-transparent to



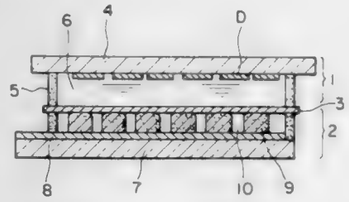
permit visualization of said encoded data through said overlay.

5,351,143
HAND-WRITABLE POLYMER DISPERSED LIQUID CRYSTAL BOARD SET WITH HIGH RESISTANCE LAYER OF CROSSLINKING POLYMER ADJACENT CONDUCTIVE LAYER
Morio Sato, Fujisawa; Yutaka Abe, Hiratsuka; Jun Takano, Chigasaki; Hirokazu Ishii, Kamakura, and Yasuzo Murata, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Pilot, Tokyo, Japan
Filed Jan. 25, 1993, Ser. No. 8,735
Claims priority, application Japan, Feb. 7, 1992, 4-056088; Apr. 2, 1992, 4-108372
Int. Cl.[5] G02F *1/13, 1/1333*
U.S. Cl. 359—51 **40 Claims**



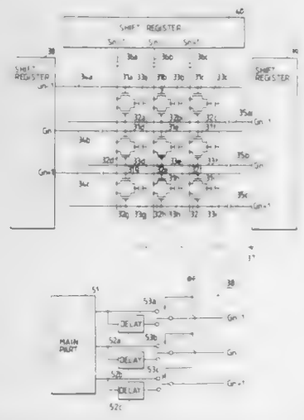
17. A hand-writable liquid crystal board set comprising:
(A) a liquid crystal board of the externally charging type, said liquid crystal board comprising: a conductive layer; a transparent high-electric resistance layer of a cross-linking polymer having a volume resistivity of 10^{13} Ω•cm or more in 20° C. air at a relative humidity of 90%; a liquid crystal-dispersed polymer layer in which liquid crystal is finely dispersed in a polymer matrix, said liquid crystal-dispersed polymer layer having a volume resistivity of 10^{13} Ω•cm or more in 20° C. air at a relative humidity of 90%; and a transparent insulator layer having a volume resistivity of 10^{13} Ω•cm or more in 20° C. air at a relative humidity of 90%, wherein all of said layers are successively layered in the order presented;
(B) display means for displaying at least one recorded image onto a surface of said liquid crystal board;
(C) erasing means for erasing said recorded image, said erasing means having an erasing member electrically connected to said conductive layer;
(D) a power source for generating a surface potential between the surface of said liquid crystal board and said conductive layer; and
(E) a writing member electrically connected to one terminal of said power source, said power source having another terminal connected to said conductive layer.

5,351,144
PLASMA ADDRESSED ELECTRO-OPTICAL DEVICE WITH NON-CONTINUOUS BARRIER RIBS
Shoichi Tanamachi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 10,890, Jan. 29, 1993, abandoned. This application Nov. 24, 1993, Ser. No. 158,044
Claims priority, application Japan, Feb. 4, 1992, 4-47970
Int. Cl.[5] G02F *1/1343;* **G09G** *3/22, 3/10;* **G11C** *11/14*
U.S. Cl. 359—54 **15 Claims**



12. An addressing structure comprising:
a substrate having a plurality of electrodes on a major surface thereof, each electrode having a plurality of barrier ribs periodically disposed thereon;
a dielectric material layer opposed to the substrate; and
an ionizable gaseous medium filled between the substrate and the dielectric material layer.

5,351,145
ACTIVE MATRIX SUBSTRATE DEVICE AND RELATED METHOD
Yutaka Miyata, Ikoma; Mamoru Furuta, Osaka; Tatsuo Yoshioka, Osaka; Hiroshi Tsutsu, Osaka, and Tetsuya Kawamura, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 9, 1992, Ser. No. 818,573
Claims priority, application Japan, Jan. 14, 1991, 3-002640
Int. Cl.[5] G02F *1/133*
U.S. Cl. 359—57 **16 Claims**



1. A method of driving an active matrix substrate comprising a transparent substrate, pairs each having an n-type thin-film transistor and a p-type thin-film transistor formed on the trans-

parent substrate, gate bus lines and source bus lines connected to said n-type and p-type transistors for controlling said n-type and p-type transistors, and pixel-corresponding electrodes controlled by said transistor pairs respectively, wherein drains of an n-type transistor and a p-type transistor in each of said pairs are connected to each other via a related pixel corresponding electrode, the method comprising the steps of:

applying first pulses to gates of said n-type transistors in one field interval;

applying second pulses to gates of said p-type transistors in said one field interval; and

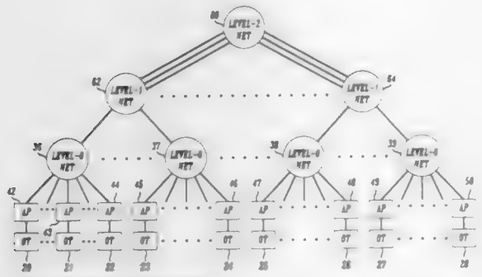
providing a difference in phase between said first pulses and said second pulses.

5,351,146

ALL-OPTICAL NETWORK ARCHITECTURE

Vincent W. S. Chan, Lincoln; Robert G. Gallager, Winchester, both of Mass.; Alan J. Kirby, Hollis, N.H., and Adel A. M. Saleh, Holmdel, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.; Digital Equipment Corporation, Maynard and Massachusetts Institute of Technology, Cambridge, both of Mass.

Filed Mar. 1, 1993, Ser. No. 24,655
Int. Cl.[5] H04B *10/20*
U.S. Cl. 359—118 **29 Claims**



1. A network comprising

a first all-optical broadcasting local area network having down access ports and at least one up access port,

a first optical terminal coupled to a first one of the down access ports for sending/receiving optical signals having at least one wavelength component,

a second optical terminal coupled to a second one of the down access ports for sending/receiving optical signals having at least one wavelength component,

a third optical terminal coupled to a third one of the down access ports for sending/receiving optical signals having at least one wavelength component,

said optical terminals include optical transmitters and optical receivers for transmitting and receiving, respectively, optical signals,

means coupled to the optical terminals to tune a transmitter at one of the optical terminals and a receiver at another of the optical terminals to a selected wavelength, and

local bypass means coupled to the up access port to block all but at least one wavelength component of an optical signal from being transmitted from the first all-optical broadcasting local area network.

5,351,147

PULSE FREQUENCY DIVISION MULTIPLEXING

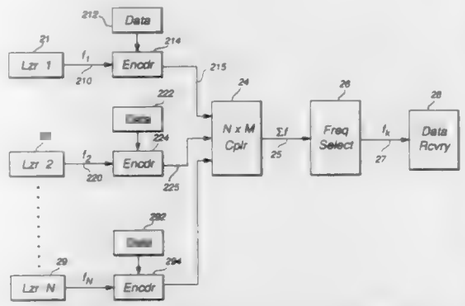
Anatoly Frenkel, Somerville, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Oct. 27, 1992, Ser. No. 966,784
Int. Cl.[5] H04J *14/02*
U.S. Cl. 359—124 **10 Claims**

1. A communications system comprising means for generating a plurality of light pulse streams wherein the frequency of pulses in each said stream is fixed at a different rate; means for combining said pulse streams to form a multiplexed pulse stream; means for transmitting said multiplexed pulse stream to a receiver; means at said receiver for selecting from said multiplexed pulse stream a light pulse stream having a predetermined one of said frequencies; means for encoding data into at least the light pulse stream having said predetermined frequency; and means at said receiver for recovering said encoded data

characterized in that said selecting means comprises:

a) means for replicating said multiplexed pulse stream to yield a plurality of similar multiplexed pulse streams;



b) means for delaying at least one of said multiplexed pulse streams by a time equal to the period of said predetermined frequency;

c) at least a first optical logic gate; and

d) means for directing to said gate as input said delayed pulse stream and at least one of said multiplexed pulse streams,

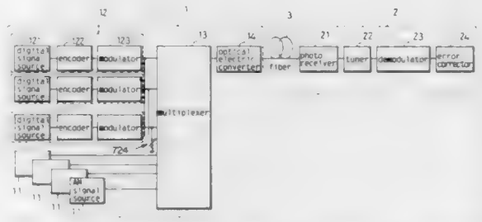
whereby the output of said gate consists essentially of a pulse stream having said predetermined frequency.

5,351,148

OPTICAL TRANSMISSION SYSTEM

Kazuki Maeda, Sakai; Naoki Ishiyama, Osaka, and Hiroaki Nakata, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 26, 1993, Ser. No. 67,217
Claims priority, application Japan, Jan. 25, 1993, 5-9725
Int. Cl.[5] A04J *14/02*
U.S. Cl. 359—124 **17 Claims**



9. An optical transmission system including a transmitting station that light intensity modulates a plurality of modulation signals, including at least one digital modulation signal, whose total sum of modulation indices is beyond 1, and a receiving station having a receiver comprising:

modulation means for generating a plurality of modulation signals;

frequency division multiplex means for frequency division multiplexing all of the modulation signals;

light intensity modulation means for light intensity modulating the frequency division multiplexed signals; and

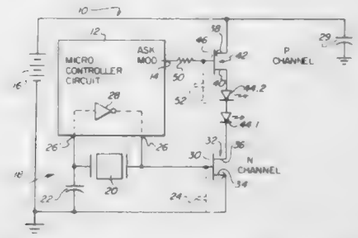
modulation index adjustment means for adjusting the light modulation index of the digital modulation signal , prior to the light intensity modulation means, to a set value that marks an onset of diverging from an error rate given by a ratio between receiver thermal noise power and received signal power, while maintaining a light modulation index within a usable transmission margin.

5,351,149

ASK OPTICAL TRANSMITTER

James W. Crimmins, Wilton, Conn., assignor to K and M Electronics, Inc., West Springfield, Mass.

Filed Mar. 25, 1993, Ser. No. 36,993
Int. Cl.[5] H04B *10/04*
U.S. Cl. 359—181 **15 Claims**



1. An amplitude-shift-keyed (ASK) optical transmitter for producing ASK modulated light signals and wherein a DC source powers a microcircuit to generate an ASK modulation signal on an output terminal and wherein an oscillator signal is used to operate the circuit, comprising:

a light emitting semiconductor element;

first and second semiconductor switches connected in series relationship with the light emitting element located therebetween and effectively across the DC source; said semiconductor switches each having an activating gate to render the switches conducting or non-conducting as a function of a voltage applied to their respective gates;

means for coupling the ASK modulation signal at the output terminal to the gate of the first switch;

means for coupling the oscillator signal to the gate of the second switch to turn the latter switch on and off at a rate commensurate with a desired carrier frequency;

whereby, when said ASK modulation signal renders the first switch conductive, the light emitting element produces light signals at said carrier frequency and when said first switch is rendered non-conductive by said ASK modulation signal no light is emitted by the element.

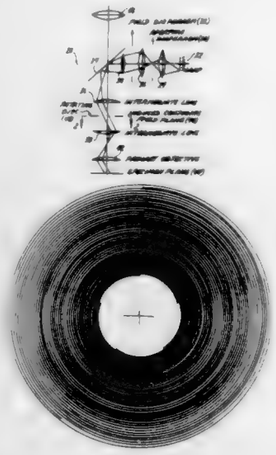
5,351,150

ROTATING SLIT APERTURE FOR SCANNING MICROSCOPY

Jeffrey W. Lichtman, and Lew Thomas, both of St. Louis, Mo., assignors to Washington University, St. Louis, Mo.

Continuation of Ser. No. 427,761, Oct. 26, 1989, Pat. No. 5,101,295, which is a continuation-in-part of Ser. No. 243,354, Sep. 14, 1988, Pat. No. 4,884,881, which is a continuation-in-part of Ser. No. 120,641, Nov. 16, 1987, abandoned, which is a continuation-in-part of Ser. No. 100,468, Sep. 24, 1987, abandoned. This application Oct. 28, 1991, Ser. No. 783,515
Int. Cl.[5] G02B *26/02, 21/06*
U.S. Cl. 359—232 **7 Claims**

6. In a scanning microscope having an incident light path and a returning light path for creating an image representative of at least a portion of a specimen, the improvement comprising an improved aperture for masking the light in at least one



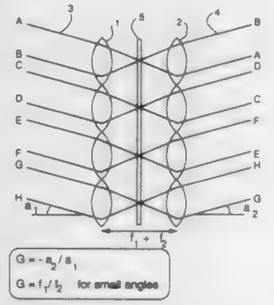
of said light paths, said aperture including at least one substantially curvilinear slit.

5,351,151

OPTICAL FILTER USING MICROLENS ARRAYS

George S. Levy, 3980 Del Mar Meadows, San Diego, Calif. 92130

Filed Feb. 1, 1993, Ser. No. 11,743
Int. Cl.[5] G02B *27/10, 23/00*
U.S. Cl. 359—240 **78 Claims**



1. An optical filter device comprised of:

a first array of lenses arranged to approximate a first surface,

a second array of lenses arranged to approximate a second surface, with each lens in said second array positioned approximately face to face with a corresponding lens in said first array such that the optical axis of the lens in said second array is colinear with the optical axis of the corresponding lens in said first array, each lens and its colinear corresponding lens forming an ensemble defining a pixel and separated by approximately the sum of their focal lengths, said first and second arrays sharing a common focal plane located between them, said arrangement of said first array and said second array defining a transflector

c) an electromagnetic wave modulating means herein called the smart layer, inserted at said common focal surface between said arrays, for modulating at least a portion of the electromagnetic wave passing through said device, combination of said smart layer and said transflector defining a smart transflector.

5,351,152

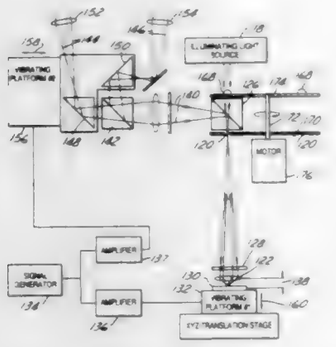
DIRECT-VIEW STEREOSCOPIC CONFOCAL MICROSCOPE

Pao-Kuang Kuo, Troy; Robert L. Thomas; Lawrence D. Favro, both of Huntington Woods, and Li Chen, Detroit, all of Mich., assignors to The Board of Governers of Wayne State University, Detroit, Mich.

Continuation-in-part of Ser. No. 734,398, Jul. 23, 1991, Pat. No. 5,162,941. This application Aug. 14, 1992, Ser. No. 930,927

Int. Cl.[5] G02B *21/22*

U.S. Cl. 359—376 12 Claims



1. A direct-view stereoscopic confocal microscope, comprising:

a light source for illuminating a portion of a specimen,

an aperture plate optically disposed between said light source and said specimen, said aperture plate including an aperture for passing a portion of the light emanating from said light source onto the portion of said specimen,

means, optically coupled to said illuminated portion of said specimen, for collecting an image created by said illuminated portion of said specimen,

first vibrating means coupled to said specimen for vibrating said specimen along a first axis, and

second vibrating means coupled to said collecting means for vibrating said collecting means along a second axis.

5,351,153

PSEUDO-LUMINOUS PANEL, SUBSTRATE THEREFOR, AND DISPLAY ELEMENT AND DEVICE USING THE PSEUDO-LUMINOUS PANEL

Yoshimasa Wakatake, Tokyo, Japan, assignor to Masayuki Wakatake, Happy Valley, Hong Kong

Filed Feb. 24, 1992, Ser. No. 839,432

Claims priority, application Japan, Feb. 24, 1991, 3-050636

Int. Cl.[5] G02B *5/02*; G09F *13/00*; A47F *11/04*

U.S. Cl. 359—599 4 Claims



1. A pseudo-luminous panel comprising:

a substrate; and

a thin film optical color filter formed all over the main surface of said substrate;

wherein:

said main surface of said substrate is formed by a surface in which obliquely downward band-like surface portions and obliquely upward band-like surface portions are alternately arranged side by side in a vertical direction;

said obliquely downward band-like surface portions of said substrate are each a smooth and convex downward reflecting surface;

said obliquely upward band-like surface portions of said substrate are each a reflecting surface;

obliquely downward band-like surface portions on said obliquely downward band-like surface portions of said substrate, forming the surface of said thin film optical color filter on the opposite side from said substrate, are each a smooth and convex downward surface corresponding to each of the obliquely downward band-like surface portions of said substrate; and

obliquely upward band-like surface portions on said obliquely upward band-like surface portions of said substrate, forming the surface of said thin film optical color filter on the opposite side from said substrate, are each a irregular or uneven reflecting surface.

5,351,154

MAGNETIC RECORDING AND REPRODUCING APPARATUS

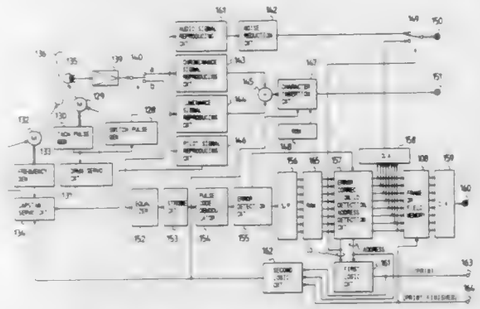
Atsushi Yoshioka, Ebina, and Iwao Aizawa, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 24, 1991, Ser. No. 645,395

Claims priority, application Japan, Jan. 24, 1990, 2-12548

Int. Cl.[5] H04N *5/78*

U.S. Cl. 360—35.1 10 Claims



1. A magnetic recording and reproducing apparatus comprising:

a rotary drum;

a magnetic head mounted to said rotary drum;

a mechanism for traveling a magnetic tape so that it winds round the rotary drum at an angle of more than 180°;

means for recording a moving picture signal and an audio signal following the moving picture on a first area in a recording track inclined to a traveling direction of the magnetic tape;

means for recording digital data indicating a one-cut still picture signal corresponding to a frame or a field on a second area in said recording track;

means for reproducing said moving picture signal;

means for reproducing said audio signal following said moving picture;

means for reproducing said still picture signal;

means for detecting that digital data indicating the still picture is reproduced by an amount of data corresponding to the one-cut still picture;

a switch which is operated by a person who monitors pictures so as to instruct restart of the magnetic tape; and

a logic circuit;

wherein, in a reproducing mode, said logic circuit generates an instruction for switching the reproduced signal output from moving pictures to still pictures on the basis of the output of said means for detecting and an instruction for rewinding the magnetic tape to near the recording start position of the digital data indicating the still picture and stopping the magnetic tape there, and generates an instruction for switching the reproduced signal output from still pictures to moving pictures when said switch is operated and an instruction for restarting the magnetic tape so as to travel at the general traveling speed for reproducing the moving picture signal.

5,351,155

MAGNETIC HEAD DRIVING DEVICE WITH PRE-RECORDING ENERGIZATION WITH TWO INDUCTORS SHARING A COMMON MAGNETIC CORE

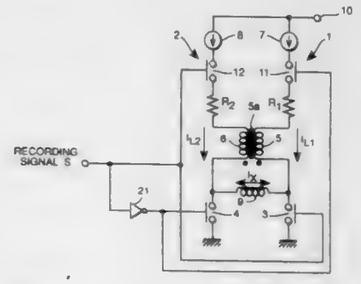
Mitsuo Ishii, Nabari, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1992, Ser. No. 993,728

Claims priority, application Japan, Dec. 24, 1991, 3-341428

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—46 11 Claims



7. A magnetic head driving device, comprising:

an inductor for generating a magnetic field, said inductor having a pair of terminals;

first storing for storing electromagnetic energy, said first storing means being connected to one of said terminals of said inductor at a first node;

second storing means for storing an electromagnetic energy, said second storing means being connected to the other terminal of said inductor at a second node;

first switching means connected to said first node;

second switching means connected to said second node; and

control means for receiving a signal indicating the direction of a magnetic field generated by said inductor, and for controlling said first and second switching means, in accordance with said signal;

wherein said first storing means and said second storing means have a common medium for receiving said electromagnetic energies released therefrom.

5,351,156

METHOD AND APPARATUS FOR CLEANING DISKS

Thomas A. Gregory; Christopher G. Keller, both of Rochester, and James M. Severson, Byron, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 25, 1992, Ser. No. 857,354

Int. Cl.[5] G11B *15/18*

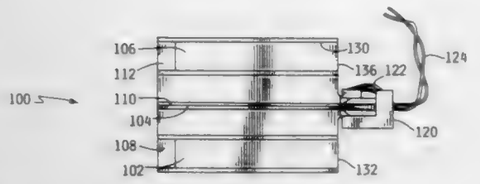
U.S. Cl. 360—74.1 40 Claims

1. A data storage device comprising:

a disk having a data storing surface;

means for controllably rotating said disk in first and second directions;

a slider supported adjacent the data storing surface of said disk, said slider transducing data when said disk is rotated in the first direction; and



means for moving the slider to remove debris from the data storing surface when said disk is rotated in the second direction.

5,351,157

MAGNETIC-TAPE CASSETTE APPARATUS HAVING A HEAD SUPPORT ACTUATION MECHANISM WITH A SEGMENTED TOOTHED WHEEL

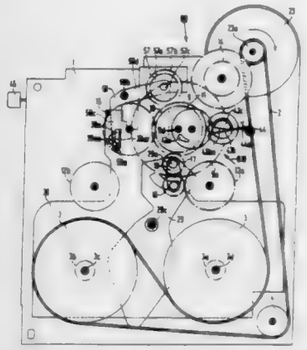
Norbert Kunze, Ehringshausen, and Georg Weber, Lohra-Weipoltshausen, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 8, 1992, Ser. No. 941,477

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1991, 4130404

Int. Cl.[5] G11B *5/54, 15/10, 15/24*

U.S. Cl. 360—105 11 Claims



1. A magnetic tape cassette apparatus, comprising:

a) a head support which is moveable between a play position and an eject position, said head support including a blocking face;

b) biasing means for biasing said head support towards said eject position;

c) a toothed rotatable drive wheel;

d) a segmental wheel which includes (i) a first, segmented wheel portion having a toothed portion driveable by said drive wheel and a toothless portion, said segmental wheel not being driveable by said drive wheel when the toothless portion faces said drive wheel, and (ii) a second wheel portion;

e) a traction wheel driveable by said second wheel portion of said segmental wheel and including a pin engageable with said head support;

f) latching means for latching said traction wheel with said toothless portion of said segmental wheel facing said drive wheel in the play and eject positions of said head support and for selectively unlatching said traction wheel; and

g) a spring engaging said segmental wheel for rotating said toothed portion of said segmented wheel portion into

engagement with said drive wheel when said segmental wheel is unlatched by said latching means;

said traction wheel and head support being arranged such that, when said traction wheel is unlatched by said latching means and said toothed portion of said first, segmented portion is driven by said drive wheel, said pin engages said head support and moves said head support from said eject position into said play position and such that, when said head support reaches said play position, said pin engages said blocking face of said head support whereupon said traction wheel is blocked against rotation, and

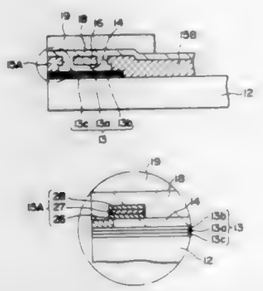
said traction wheel and said second wheel portion of said segmental wheel having a drive ratio selected such that with said pin engaged against said blocking face of said head support, said toothless portion of said first wheel portion of said segmental wheel faces said drive wheel and said segmental wheel and traction wheel are not driven by said drive wheel.

5,351,158

MAGNETORESISTANCE EFFECT THIN FILM HEAD WITH INTERCONNECTED ELECTRODE STRUCTURE

Takuji Shibata, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 28, 1991, Ser. No. 706,257
Claims priority, application Japan, May 30, 1990, 2-140685
Int. Cl.[5] G11B *5/39*
U.S. Cl. 360—113 **1 Claim**



1. A magnetoresistance-effect thin film head comprising: a substrate; an elongate magnetic field sensing element provided on the substrate; an electrode layer having portions respectively extending from first and second opposite ends of the magnetic field sensing element to supply a sensing current to the magnetic field sensing element so that the sense current will flow in the direction of a signal magnetic field; an insulating layer formed over the magnetic field sensing element; a bias magnetic field creating conductor formed on the insulating layer so as to extend across the magnetic field sensing element; and a magnetic shielding layer formed over the magnetic field sensing element;

characterized in that the electrode layer consists of a laminated structure containing a principal conductive metal conductor and a moisture-resistant conductor, and

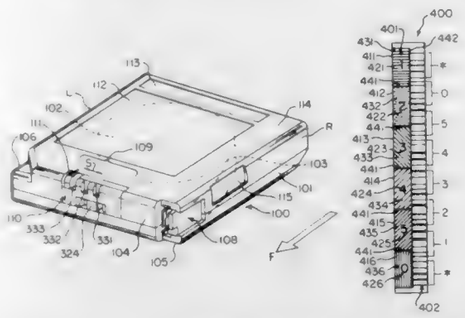
a single portion of the electrode layer adjacent said first end of said sensing element is contiguous with the sliding surface and said single portion is formed only of the moisture-resistant conductor.

5,351,159

MAGNETIC TAPE CARTRIDGE HAVING MEDIA IDENTIFICATION

William C. Dodt, Broomfield; Jerry L. Donze, Arvada; Michael L. Leonhardt, Longmont; Charles A. Milligan, Golden; Hari S. Narahari, Boulder; John C. Owens, Arvada, and Kurt W. Pyatt, Boulder, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Jun. 17, 1992, Ser. No. 899,759
Int. Cl.[5] G11B *23/02*
U.S. Cl. 360—132 **19 Claims**



1. A magnetic tape cartridge comprising:

an exterior housing having a top side, a bottom side, a back side and a front side thereto for enclosing a single reel of magnetic tape;

first recess means of predetermined dimensions located on said back side of said exterior housing for receiving a label identifying data storage characteristics of said magnetic tape;

second recess means of predetermined dimensions, located on said back side of said exterior housing juxtaposed to said first recess means, for receiving a label identifying said magnetic tape cartridge; and

means, mechanically imprinted into said front side of said exterior housing for defining data storage characteristics of said magnetic tape.

5,351,160

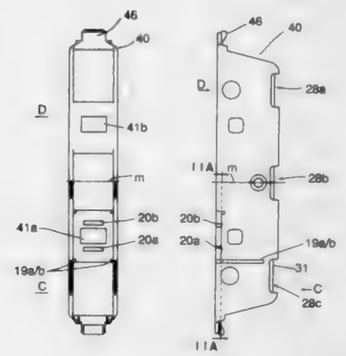
MAGNETIC TAPE CASSETTES AND A SEPARATE HOUSING PART THEREFOR

Klaus Schoettle, Heidelberg; Joachim Eberhard, Kippenheim; Kurt Schmidts, Schwanau, and Bozidar Pavelka, Willstaett, all of Fed. Rep. of Germany, assignors to BASF Magnetics GmbH, Mannheim, Fed. Rep. of Germany

Division of Ser. No. 780,503, Oct. 22, 1991, Pat. No. 5,293,292.
This application Sep. 24, 1993, Ser. No. 125,763
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1990, 9014777[U]
The portion of the term of this patent subsequent to Mar. 8, 2011, has been disclaimed.
Int. Cl.[5] G11B *23/12*
U.S. Cl. 242—347.2 **13 Claims**

1. A separable housing part in a magnetic tape cassette comprising bottom, lid, front, back and side walls and comprising two rotatably mounted coplanar hubs and a magnetic tape to be wound and unwound between the hubs and to be scanned by a least one magnetic head on a cassette apparatus, and a housing having first and second housing parts of molded plastic comprising bottom and lid walls and tape guide elements, said housing having a raised portion adjacent to the front wall of the housing parts for accepting the at least one head, said tape guide elements being located within the contour of the raised portion of the housing, said first and second housing parts forming the bottom and lid walls respectively have been molded as essentially planar parts without any inhomogeneities affecting the planarity of their inner surfaces, said essentially planar parts having molded thereon said back and side walls

and said guide elements, said separable housing part forming said raised portion and substantially said front wall of the



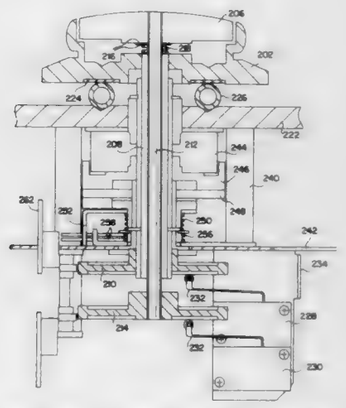
housing and having been molded in a U-shape for at least partially connecting said first and second housing parts together.

5,351,161

VARIABLE SCALE ROTARY SWITCH

Michael T. MacKay, Vallejo; Robert Duffy, Milpitas; Lee A. Cotterill, San Jose; William Herz, Newark, and Joe McArdle, Mountain View, all of Calif., assignors to Sony Electronics, Inc., Park Ridge, N.J.

Continuation-in-part of Ser. No. 679,745, Apr. 3, 1991, Pat. No. 5,187,630. This application Sep. 13, 1991, Ser. No. 759,399
The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
Int. Cl.[5] G11B *33/00, 15/50*
U.S. Cl. 360—137 **32 Claims**



1. A variable rotary switch assembly, comprising:

a first knob adapted to rotate about a vertical axis, said first knob having a first point of origin that rotates into a plurality of first radial positions about said vertical axis, said first knob being adapted to move from a first vertical position to a second vertical position;

a second knob within said first knob, said second knob being adapted to rotate about said vertical axis relative to said first knob, said second knob having a second point of origin that rotates into a plurality of second radial positions about said vertical axis, said second knob being adapted to move from a third vertical position to a fourth vertical position;

a hollow first shaft attached to said first knob that rotates with said first knob about said vertical axis, said first shaft extending along said vertical axis;

a second shaft attached to said second knob that rotates with said second knob about said vertical axis, said second shaft being coaxial with said first shaft;

first sensor means operatively connected to said first shaft for determining said first radial position of said first point of origin of said first knob;

second sensor means operatively connected to said second shaft for determining said second radial position of said second point of origin of said second knob;

third sensor means operatively connected to said first knob for sensing when said first knob is in said first and second vertical positions;

fourth sensor means operatively connected to said second knob for sensing when said second knob is in said third and fourth vertical positions; and,

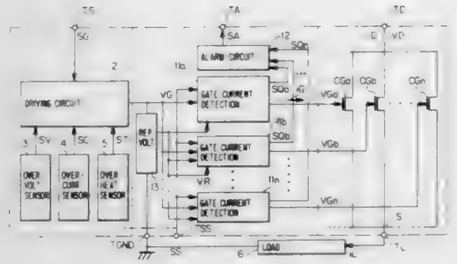
magnetic clutch means operatively connected to said first shaft and said first sensor for engaging said first shaft when said first point of origin of said first knob is in a predetermined first radial position.

5,351,162

HIGH POWER MOS DEVICE WITH PROTECTIVE CIRCUIT AGAINST OVERCURRENT OR THE LIKE

Yukimasa Koishikawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 5, 1992, Ser. No. 894,433
Claims priority, application Japan, Jun. 6, 1991, 3-134546
Int. Cl.[5] G05F *1/59, 1/569;* **H02H** *11/00*
U.S. Cl. 361—18 **6 Claims**



1. A power MOS device comprising a plurality of MOS transistors each having a first electrode serving as one of source and drain thereof and connected to a first terminal, a second electrode serving as the other of said source and drain and connected to a second terminal and a gate electrode, a drive circuit producing a drive signal at an output node thereof, said drive signal having a first level that renders each of said MOS transistors conductive and a second level that renders each of said MOS transistors nonconductive, and a plurality of current detection and interrupt circuits each connected between said output node of said drive circuit and said gate electrode of an associated one of said MOS transistors, each of said current detection and interrupt circuits including a resistor inserted in series into a signal path for transferring said drive signal from said output node of said drive circuit to said gate electrode of said associated one of said MOS transistors, detection means coupled to said resistor and responsive to a voltage produced by said resistor for detecting whether or not a current due to a short circuit between said gate and first electrodes of said associated one of said MOS transistors flows through said resistor, and interrupt means coupled to said detection means for preventing said drive signal from being transferred from said output node of said drive circuit to said gate electrode of said associated one of said MOS transistors when said detection means detects that said current due to said short circuit flows through said resistor, said associated one of said MOS transistors being thereby kept into a nonconductive state irrespective of said drive signal.

5,351,163

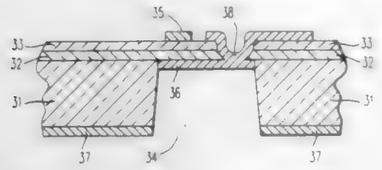
HIGH Q MONOLITHIC MIM CAPACITOR

Dale E. Dawson, Glen Burnie; Albert A. Burk, Jr., Sykesville; Harlan C. Cramer, Columbia; Ronald C. Brooks, Bel Air, and Howell G. Henry, Baltimore, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 30, 1992, Ser. No. 998,219

Int. Cl.[5] H01G *4/10*

U.S. Cl. 361—321.1 **9 Claims**



1. A capacitor comprising:
a substrate having a cavity therein;
a dielectric membrane disposed on said substrate and spanning said cavity;
a first conductor disposed on a top surface of said membrane opposed said cavity;
a second conductor disposed on a bottom surface of said membrane within said cavity.

5,351,164

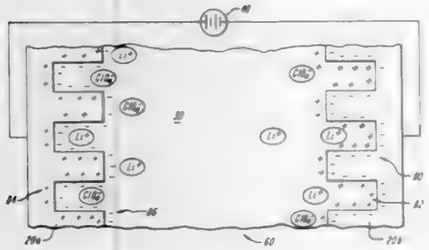
ELECTROLYTIC DOUBLE LAYER CAPACITOR

Ivan I. Grigortchak, Ivano-Frankovsk Region; Kornei D. Tovstjuk, Lvov; Zahar D. Kovalyuk, Cheznovtsy; Ivan D. Kozmik, Chernovtsy, and Bogdan P. Bahmatyuk, Ivano-Frankovsk Region, all of Ukraine, assignors to T.N. Frantsevich Institute for Problems in Materials Science, Kiev,

Continuation-in-part of Ser. No. 960,251, Oct. 13, 1992, which is a continuation of Ser. No. 783,850, Oct. 29, 1991, abandoned. This application Oct. 29, 1992, Ser. No. 968,185

Int. Cl.[5] H01G *9/00*

U.S. Cl. 361—502 **22 Claims**



1. A double layer electrolytic capacitor comprising two electrodes each in contact with a common liquid electrolyte, at least one of said electrodes comprising a crystalline material characterized by the presence of van der Waals channels, the van der Waals channels being adapted to accommodate the electrolyte within the channels, whereby a double layer of charge is formed at interfaces of the van der Waals channels and the electrolyte when a voltage is applied between the two electrodes.

5,351,165

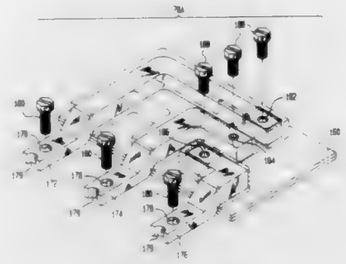
MAIN CIRCUIT BREAKER OR OTHER CIRCUIT PROTECTIVE DEVICE CONNECTOR INSTALLATION KIT FOR PANELBOARDS

Drew S. Hancock, Zebulon, N.C., assignor to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed Dec. 31, 1992, Ser. No. 999,447

Int. Cl.[5] H02B *1/20*

U.S. Cl. 361—637 **14 Claims**



5. In a panelboard of the type having:
a main circuit breaker; and
at least one busbar for transmitting electrical power to branch circuit breakers connected thereto, the busbar having a dimple projecting therefrom;
a main circuit breaker connector installation kit for connecting a load terminal of the main circuit breaker to the busbar comprising:
a. a self-supporting, insulator housing having at least one recess defined therein; and
b. at least one phase connector retained within the housing recess, having a first portion connected to a load terminal of the main circuit breaker, and a second portion connected to the at least one busbar and having a notch for capture of the busbar dimple in order to inhibit relative rotation therebetween.

5,351,166

COOLING APPARATUS OF MAGNETRONS

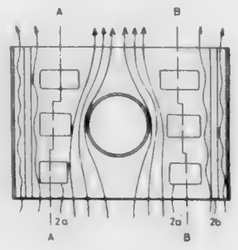
Seong T. Kang, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Dec. 30, 1992, Ser. No. 998,374

Claims priority, application Rep. of Korea, Dec. 30, 1991, 25014/1991

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—690 **5 Claims**



1. Cooling apparatus for a magnetron comprising an anode and a plurality of interconnecting cooling fins for radiating high temperature heat generated by the anode of the magnetron, characterized in that each said cooling fin includes:
an anode support boss tightly receiving and supporting said anode;
a pair of erected walls provided at both sides of said cooling fin; and
a plurality of embossments on said fin for causing cooling airflow to be forced toward a rear surface of said anode and providing a cooling air passage, said embossments being provided between said anode support boss and said erected walls, and said embossments being disposed in pairs which are symmetrical to each other on opposed sides of said anode support boss, and each said pair of embossments being separated by a distance which gradually decreases for successive ones of said pairs so that it is shortest at a rear side of said anode.

5,351,167

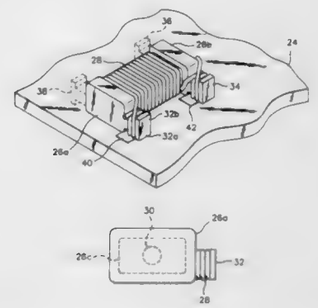
SELF-LEADED SURFACE MOUNTED ROD INDUCTOR

Ka K. Wai, and Aurelio J. Gutierrez, both of San Diego, Calif., assignors to Pulse Engineering, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 825,148, Jan. 24, 1992, Pat. No. 5,212,345, and a continuation-in-part of Ser. No. 825,986, Jan. 27, 1992, Pat. No. 5,262,745. This application May 17, 1993, Ser. No. 62,936

Int. Cl.[5] H05K *7/02;* **H01F** *15/10*

U.S. Cl. 361—760 **17 Claims**



1. An electronic component adapted for surface mounting, comprising:
an elongated bobbin made of a dielectric material and having a winding support surface, a pair of shoulders at opposite ends of the winding support surface, the shoulders having lower co-planar surfaces defining a sitting plane and for supporting the bobbin on a surface of a PC board;
a coil of wire wound about the winding support surface of the bobbin and having a pair of lead terminations; and
a pair of lead termination support members each extending from the bobbin and one of the lead terminations wrapped therearound, the support members positioning the wrapped lead terminations about 0.001 to about 0.003 inches above the sitting plane.

5,351,168

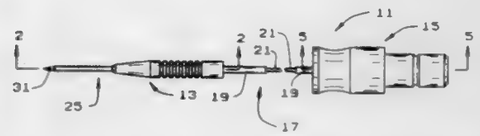
ILLUMINATION DEVICE FOR SURGERY

James C. Easley, St. Charles, Mo., assignor to Infinitech, Inc., Chesterfield, Mo.

Filed Apr. 16, 1993, Ser. No. 49,092

Int. Cl.[5] F21V *5/04, 8/00;* **B24B** *1/00*

U.S. Cl. 362—32 **15 Claims**



11. In an illumination device for use in surgery on the human body, said illumination device including a handpiece adapted to allow manipulation thereof by a user, a light source connector adapted for connection to a light source, a hollow probe extending from a distal end of the handpiece and fixedly connected thereto, said probe being sized to fit within one or more cavities in the human body, and at least one optical fiber extending from the light source connector to the probe for transmitting light from the light source through the probe, the improvement comprising:
an exposed tip optically connected to the optical fiber, said tip being disposed at the distal end of the optical fiber, said tip being substantially bullet shaped and having a cross-sectional area which decreases substantially continuously distally from the distal end of the optical fiber.

5,351,169

LIGHTING DEVICE

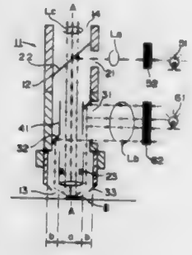
Seiji Ishikawa, and Hajime Murakami, both of Chigasaki, Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Apr. 23, 1993, Ser. No. 51,618

Claims priority, application Japan, Apr. 23, 1992, 4-129282

Int. Cl.[5] G02B *21/06*

U.S. Cl. 362—32 **4 Claims**



1. A lighting device comprising:
a tube body including a cylindrical barrel;
said cylindrical barrel having a central optical axis defined therein and being formed at a lower end portion thereof with an objective opening in a manner to face a surface of an observed section of a specimen sample;
a light guide cylinder arranged in a lower portion of said cylindrical barrel so that a central axis thereof is aligned with said optical axis;
said objective opening being divided into a central region in which a light field area is defined and a peripheral region which is defined outside said central region and in which a dark field area is defined;
said cylindrical barrel being formed at an upper portion thereof with a light field light inlet opening through which light field light of which the quantity is adjusted is introduced into said cylindrical barrel;
a semitransparent reflection mirror provided in said cylindrical barrel so as to positionally correspond to said light field light inlet opening, wherein a plane of said semitransparent reflection mirror intersects said optical axis.
said semitransparent reflection mirror reflecting said introduced light field light to form vertically projected light irradiated on said light field area, to thereby light a longitudinal surface portion of said surface of said observed section of said specimen sample;
said cylindrical barrel being formed at a lower portion thereof with a dark field light inlet opening through which dark field light of which the quantity is adjusted is introduced into said cylindrical barrel;
a first reflection mirror arranged on an outer periphery of said light guide cylinder in said cylindrical barrel so as to positionally correspond to said dark field light inlet opening and reflecting said introduced dark field light to form vertically projected light directed through a space between said light guide cylinder and said cylindrical barrel to said dark field area; and
a second reflection mirror arranged on an inner periphery of a lower end of said cylindrical barrel and reflecting said vertically projected dark field light to form laterally pro-

jected light directed to said light field area, to thereby light a lateral surface portion of said surface of said observed section of said specimen sample;

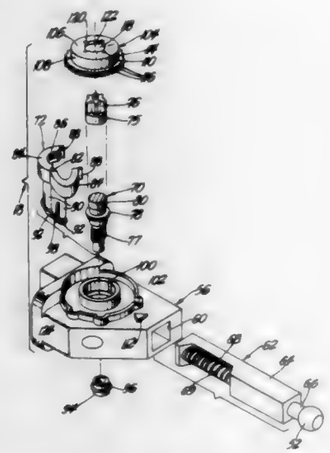
wherein either said light field light or dark field light can be selected and adjusted in the luminescent thereof whereby any one of illumination by both light field light and dark field light of each of which the quantity is adjusted as required, illumination by only the light field light, and illumination by only the dark field light is selected as desired.

5,351,170

VEHICLE HEADLAMP ASSEMBLY

William E. Nagengast; David R. McMahan; Jan A. Wisler; Luis A. Mateos, all of Anderson, and Michael W. Ballentine, Daleville, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 20, 1993, Ser. No. 169,464
Int. Cl.[5] B60Q *1/04*; **F21M** *3/20*
U.S. Cl. 362—66 **6 Claims**



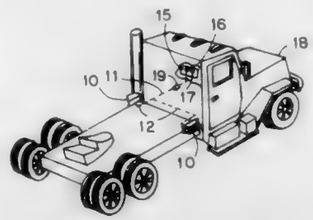
1. In combination with a headlamp assembly having a lamp unit mounted on a support panel and supporting a light source, a first adjustment device and a second adjustment device located between said support panel and said lamp unit for adjusting said lamp unit in a vertical plane and in a horizontal plane, respectively, for aiming a light beam emitted by said light source, said second adjustment device comprising a housing secured to said support panel and supporting an axially movable shaft which provides a ball pivot for one end of said headlamp unit, a driver member rotatably supported in said housing and drivingly connected to said pivot member, said driver member and said shaft each having screw threads formed thereon which engage each other so that rotation of said driver member causes simultaneous axial movement of said shaft and results in movement of said lamp unit fore and aft in said horizontal plane for aiming purposes, a zero ("0") marking on said housing for indicating an adjusted aim position of said lamp unit in said horizontal plane, a position indicator mounted on said driver member for adjustable movement relative thereto and having a pointer formed therewith so that upon establishing the desired aimed position of said lamp unit by rotating said driver member, said position indicator is located with said pointer in line with said zero ("0") marking so as to indicate to an observer the aimed position of said headlamp in said horizontal plane, said position indicator comprising a disk member having the outer periphery thereof formed with a plurality of teeth, an annular wall formed with said housing and surrounding said disk member so as to shield the latter and prevent accidental movement of said position indicator after said headlamp unit is aimed and said pointer is in line with said zero ("0") marking on said housing.

5,351,171

WIDE-ANGLE-VIEWING SAFETY LIGHT FOR TOWING VEHICLES

Ronald P. Bushey, 77 Sweet Hill Rd., Plaistow, N.H. 03865

Filed Dec. 21, 1992, Ser. No. 994,263
Int. Cl.[5] B60Q *1/02*
U.S. Cl. 362—80 **13 Claims**



1. A wide-angle high intensity safety lighting system for lighting the entire turning area of towing vehicles, wherein each towing vehicle is towing a trailer, wherein the towing vehicle has a right side and a left side, wherein the towing vehicle and trailer cover a wide turning area in turning right or left in backward and forward movements, and wherein the wide-angle high intensity safety lighting system comprises:

at least two high intensity beam driving lights mounted on and protruding from each of two sides of a towing vehicle, wherein the high intensity lights are positioned side by side at diverging light-directing angles, directing light in a 180 degree sweep on each of the two sides of the towing vehicle, wherein light from the lighting system extends outwardly from the towing vehicle to encompass an entire turning area of the towing vehicle and trailer.

a housing means for protecting the lights and electrically insulating the lights;

an electrical connecting means connecting lights to a control panel inside a driving compartment of the vehicle;

a switching means for activating and deactivating the lights exclusive of other lights on the vehicle.

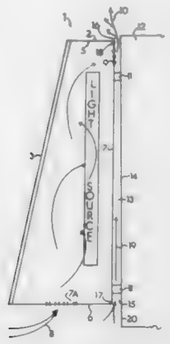
5,351,172

BACK-LIGHTED DISPLAY PANEL FOR COOLERS

Russell C. Attree, 8 Kindswood Rd., Toronto, Ontario, Canada M4E 3N5 ; Julian Attree, 398 Cermonial Drive, Missisauga, Ontario, Canada L5R 2E3 , and David P. Atkinson, 1264 Abbey Court, Burlington, Ontario, Canada L7P 3R4

Filed Mar. 8, 1993, Ser. No. 28,918
Int. Cl.[5] F21V *15/00, 29/00*
U.S. Cl. 362—92 **8 Claims**

1. A back-lighted illuminated sign comprising a vented light sign cabinet having a light-transmitting front panel, with two side panels, a top panel, a bottom panel, and a rear cabinet panel enclosing a cabinet interior having a light source contained therein; and wherein said bottom panel includes passive vent means for admitting a substantially unrestricted thermally induced draw of cooler ambient air flow there through into said cabinet's interior; and wherein said rear cabinet panel includes vent means arranged adjacent said top panel, for exhausting thermally-induced air flow, at a first temperature, from said cabinet's interior; and wherein said cabinet includes spacer means adapted to space said cabinet from an adjacent freezer in chimney defining relation between said rear cabinet panel and an exterior panel on said freezer with air flow admitting and exhausting openings at the lower and upper ends, respectively, of said chimney; wherein said chimney is thereby adapted to channel a secondary thermally-induced air flow,



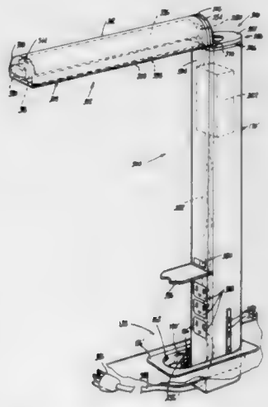
having a second temperature lower than said first temperature, between said rear cabinet panel and said freezer panel.

5,351,173

RETRACTABLE ENERGY CENTER WITH LIGHTING

Norman R. Byrne, 2736 Honey Creek, N.E., Ada, Mich. 49301

Filed Oct. 22, 1993, Ser. No. 141,825
Int. Cl.[5] A47B *23/06*
U.S. Cl. 362—127 **27 Claims**



17. An energy center adapted to be mounted to a desk or other furniture item having a work surface with a slot extending therethrough, said energy center comprising:

a stationary housing mounted within said slot and having an aperture therethrough;

an elongated carriage received within said aperture and vertically movable with respect to said housing between a closed, retracted position and an extended, open position;

detent means between side walls of said carriage and said housing for selectively maintaining said carriage in said extended, open position; and

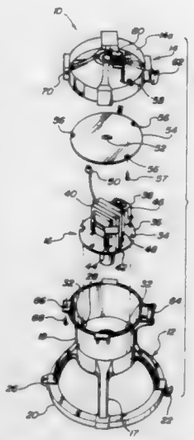
a lighting element interconnected with an upper portion of said carriage for selectively providing illumination in the vicinity of said energy center, said lighting being substantially hidden from view below an upper portion of said work surface when said carriage is in said closed, retracted position, and said lighting element being fully accessible to a user when said carriage is in said extended, open position.

5,351,174

MODULAR LUMINAIRE ASSEMBLY

Robert L. Ewing, Newark, Ohio, assignor to Holophane Lighting, Inc., Newark, Ohio

Continuation-in-part of Ser. No. 954,326, Sep. 30, 1992, Pat. No. 5,243,508. This application Sep. 2, 1993, Ser. No. 115,985
Int. Cl.[5] H01R *33/00*
U.S. Cl. 362—226 **16 Claims**



13. A modular luminaire assembly, comprising:

a top mounting assembly;

an optical assembly affixable to said top mounting assembly wherein said top mounting assembly is pivotable from a closed operating position to an open repair position; and

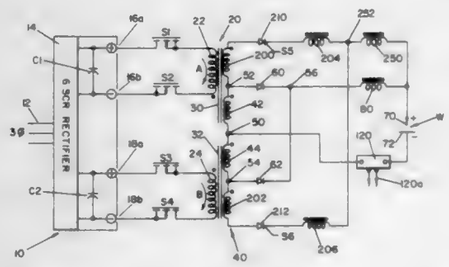
an electrical assembly removably affixable to said optical assembly and mechanically coupled to said top mounting assembly by quick disconnect.

5,351,175

INVERTER POWER SUPPLY FOR WELDING

George D. Blankenship, Chardon, Ohio, assignor to The Lincoln Electric Company, Cleveland, Ohio

Filed Feb. 5, 1993, Ser. No. 14,261
Int. Cl.[5] B23K *9/10*
U.S. Cl. 363—16 **15 Claims**



1. A high frequency power supply for supplying a welding current through a choke to a welding station including an electrode element and a workpiece element, said power supply including a transformer means for creating a first current pulse in a first secondary winding and a second current pulse in a second secondary winding and means for connecting said secondary windings to pass said current pulses through said choke and across said elements, said transformer means including a first transformer with a first core and means for receiving on said first core said first secondary winding with said first core being magnetized in a first flux direction upon creation of

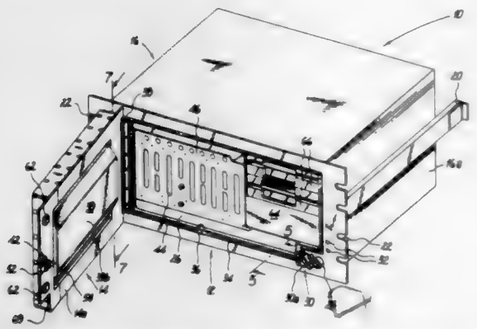
said first pulse, a second transformer with a second core and means for receiving on said second core said second secondary winding with said second core being magnetized in a second flux direction upon creation of said second pulse, said first transformer being operated by a first capacitor means for applying a first voltage to said first transformer upon operation of a first switch means, said second transformer being operated by a second capacitor means for applying second voltage to said second transformer upon operation of a second switch means, a single rectifier for charging said first and second capacitor means to a given total voltage and control means for maintaining said first and second voltages generally equal, said control means including means for creating a first voltage signal indicative of said first voltage, creating a first reference voltage signal comparing said first voltage signal and said first reference voltage signal to obtain a first error signal and adjusting said first pulse in accordance with said first error signal.

5,351,176

PANEL FOR A COMPUTER INCLUDING A HINGED DOOR WITH INTEGRAL DISPLAY

Smith Stephen W., South Lyon, and Mark T. Oliver, Dexter, both of Mich., assignors to North Atlantic Industries, Inc., Hauppauge, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,216
Int. Cl.[5] H05K *5/03;* **H04N** *5/64;* **G06F** *1/16*
U.S. Cl. 361—681 **28 Claims**



1. A front panel assembly for a computer, said front panel assembly comprising:

panel means releasably securable to a computer, and having an opening formed therein so as to provide access to internal components of the computer; and

a display for displaying images, pivotably secured to said panel means such that when said display is pivoted to an open position said opening in said panel means is exposed to a user and when said display is pivoted to a closed position access to said opening in said panel means is inhibited.

26. A computer assembly comprising:

panel means monolithically formed to a computer housing, said computer housing encloses at least a processor, stored programs for controlling the operation of said processor, memory for short term and long term storage of data, at least one disk drive and user interface circuitry, said panel means having an opening formed therein so as to provide access to components within said computer housing; and

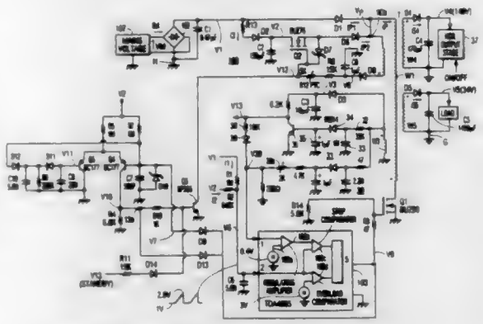
a display for displaying images, said display being dimensioned to occupy substantially an entire front portion of said panel means, and pivotably secured to said panel means such that when said display is pivoted to an open position said components including said disk drive are accessible to a user and when said display is pivoted to a closed position, access to said components is inhibited.

5,351,177

SWITCH MODE POWER SUPPLY WITH STANDBY MODE OPERATION

Magdy Megeid, Zurich, Switzerland, assignor to RCA Thomson Licensing Corporation, Princeton, N.J.

Filed Jul. 23, 1993, Ser. No. 95,388
Claims priority, application United Kingdom, Sep. 17, 1992, 9219663.3; Dec. 18, 1992, 9226381.3
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—21 **7 Claims**



1. A switch mode power supply, comprising:

a source of an AC, mains supply voltage;

a load circuit;

a regulating power stage coupled to said source and responsive to a pulse-width modulated, switching signal for generating an output supply voltage, during both power-on and standby operations and for regulating in a feedback manner said output supply voltage developed in said load circuit during said power-on operation;

a source of a first on/off control signal that is coupled to said load circuit for significantly reducing an output supply current of said power supply in said load circuit when said on/off control signal is indicative of said standby operation;

means coupled to said load circuit for generating a feedback signal that is indicative of a magnitude of at least one of said output supply voltage and said output supply current;

a modulator responsive to said feedback signal for generating said switching signal, during both said power-on and standby operations, that is modulated in accordance with said feedback signal such that, in said standby operation, an interval between transition edges of said switching signal is substantially different than in said power-on operation; and

a detector responsive to said switching signal for generating a second on/off control signal in accordance with said interval between the transition edges of said switching signal.

5,351,178

ACTIVE POWER LINE CONDITIONER WITH A DERIVED LOAD CURRENT FUNDAMENTAL SIGNAL FOR FAST DYNAMIC RESPONSE

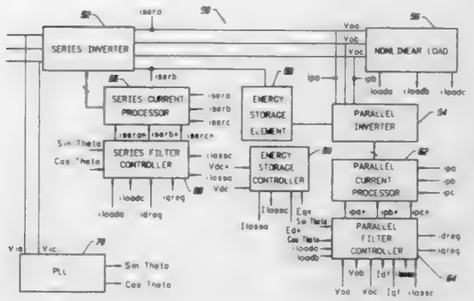
Michael B. Brennen, and Steven A. Moran, both of Pittsburgh, Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 30, 1992, Ser. No. 969,344
Int. Cl.[5] H02M *1/12, 5/40;* **G05F** *1/70*
U.S. Cl. 363—40 **29 Claims**

1. A method of operating an active power line conditioner which provides a load current, which includes a fundamental component, to a load, said active power line conditioner being of the type which includes a series inverter coupled to said load, said method comprising the steps of:

deriving a load current fundamental signal corresponding to said fundamental component of said load current;

establishing an active power line conditioner voltage output-/input ratio; and



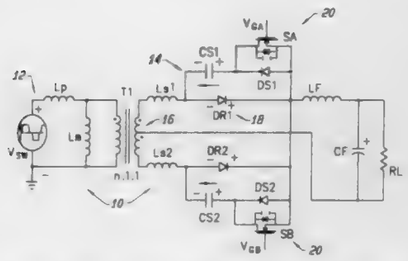
multiplying said load current fundamental signal and said voltage output/input ratio to produce a current reference signal which is applied to said series inverter.

5,351,179

LOSSLESS ACTIVE SNUBBER FOR HALF-BRIDGE OUTPUT RECTIFIERS

Fu Sheng Tsai, Northboro, and Dhaval B. Dalal, Shrewsbury, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 5, 1993, Ser. No. 27,031
Int. Cl.[5] H02M *7/06*
U.S. Cl. 363—53 **18 Claims**



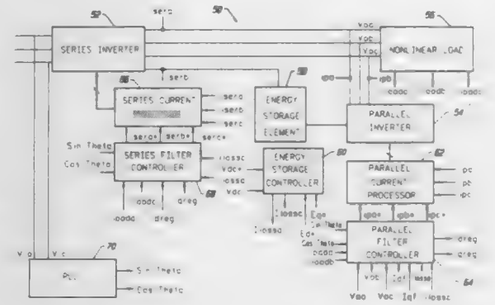
1. A pulse width modulated direct current—direct current converter circuit, which comprises a bridge-type primary switching circuit having an input for a direct current at a first voltage and having an output supplying a chopped alternating current signal derived from the direct current, a transformer including a primary winding connected to the output of the primary circuit and a center-tapped secondary winding, a half-bridge rectifier including first and second rectifier diodes connected to each of two end terminals of said center-tapped secondary winding, and a snubber circuit connected across said first and second rectifier diodes, said snubber circuit including a first snubber diode connected in a reverse direction to said first rectifier diode, a first snubber capacitor serially connected to said first snubber diode, said first snubber diode and first snubber capacitor being connected across said first rectifier diode, a first controllable switch connected across said first snubber diode, a second snubber diode connected in a reverse direction to said second rectifier diode and a first control signal input connected to said first controllable switch to turn said first controllable switch ON during a maximum magnitude of a first polarity in a pulse of the chopped alternating current signal.

5,351,180

HIGHLY FAULT TOLERANT ACTIVE POWER LINE CONDITIONER

Michael B. Brennen; Steven A. Moran, both of Pittsburgh, Pa., and Scott K. Suko, Elkridge, Md., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 30, 1992, Ser. No. 969,772
Int. Cl.[5] H02M *1/12;* **G05F** *1/70*
U.S. Cl. 363—71 **29 Claims**



1. A method of operating an active power line conditioner which includes a series inverter coupled to a parallel inverter through an energy storage link, said method comprising the steps of:

utilizing said parallel inverter for current control functions within said active power line conditioner;

employing said series inverter for instantaneous output voltage regulation functions within said active power line conditioner;

limiting the current to said parallel inverter to satisfy a predetermined output voltage total harmonic distortion requirement; and

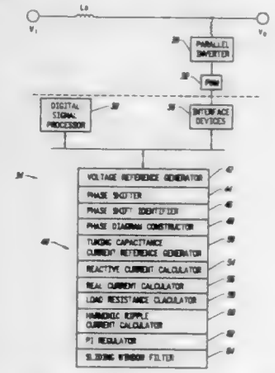
restricting the current to said series inverter at a predetermined value slightly above a peak input current fundamental value.

5,351,181

LOW COST ACTIVE POWER LINE CONDITIONER

Michael B. Brennen; Steven A. Moran, and Laszlo Gyugyi, all of Pittsburgh, Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Mar. 12, 1993, Ser. No. 30,783
Int. Cl.[5] H02M *1/12;* **G05F** *1/70*
U.S. Cl. 363—71 **18 Claims**



1. An active power line conditioner comprising:

an input node connected to an input line including a series inductor;

an output node connected to an output line;

a parallel inverter coupled to said output node, said parallel inverter including a dc-link; and

a parallel inverter controller coupled to said input node, said output node, and said parallel inverter, said parallel inverter controller forcing said parallel inverter to act as a variable capacitor, said parallel inverter controller including

means for generating a desired phase shift value between an active power line conditioner voltage output signal and an active power line conditioner voltage input signal, said desired phase shift resulting in voltage control of said dc-link, and

means for producing a tuning capacitance current reference signal to reduce voltage magnitude errors of said output voltage.

5,351,182

LEVEL SHIFT CIRCUIT AND INVERTER APPARATUS USING THE SAME

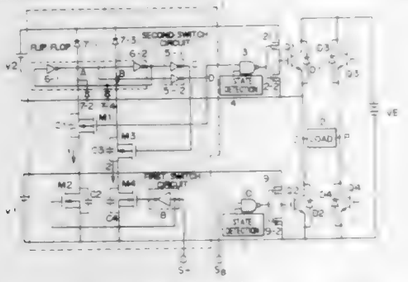
Hideki Miyazaki, Hitachi; Tsunehiro Endo, Narashino; Kouzou Watanabe; Yuhachi Takakura, both of Hitachi, and Koichi Suda, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1993, Ser. No. 143,136

Claims priority, application Japan, Nov. 2, 1992, 4-294323

Int. Cl.[5] H02M *7/5387*

U.S. Cl. 363—132 **7 Claims**



1. An inverter apparatus comprising:

arms including first and second power switching devices connected in series between terminals of a high voltage power source;

first and second driver means for selectively supplying outputs of first and second low voltage power sources disposed in respective arms to control electrodes of said first and second power switching devices;

step-up level shift means for converting an input signal having a potential of one of electrodes of said first low voltage power source as a reference potential to a signal having a potential of one of electrodes of said second low voltage power source as a reference potential and transmitting the converted signal to said driver means;

said step-up level shift means including flip-flop means connected to said second low voltage power source, first and second trigger generator means connected between said first low voltage power source and said second low voltage power source so as to responsive to said input signal to supply a set or reset signal to said flip-flop means;

each of said first and second trigger generator means having a series circuit including voltage clamping means, a first switching device, and a second switching device;

first switch means responsive to said input signal to turn on the second switching device of either said first trigger generator means or said second trigger generator means; and

second switch means using output signals of said flip-flop means to switch on/off states of said first switching devices of said first and second trigger generator means complementarily to the second switching devices respectively connected in series with said first switching devices.

5,351,183

INK DROPLET EJECTION DEVICE FOR A DROP-ON-DEMAND TYPE PRINTER

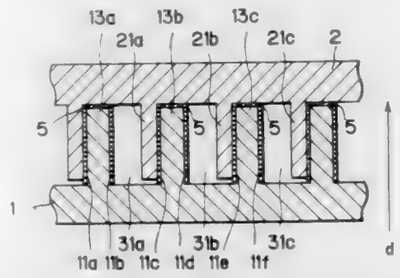
Yoshikazu Takahashi, Kasugai; Masahiko Suzuki, Nagoya; Hiroto Sugahara, Aichi, and Takahiro Kanegae, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 21, 1992, Ser. No. 953,534

Claims priority, application Japan, Sep. 19, 1991, 3-239183; Sep. 20, 1991, 3-241500

Int. Cl.[5] B41J *2/045*

U.S. Cl. 347—69 **10 Claims**



1. An array of ink droplet ejection devices, comprising:

a piezoelectric transducer having a first end and a second end and being formed with a plurality of grooves on one surface thereof, the grooves extending from the first end to the second end in parallel to one another at equally spaced intervals, each of said grooves being defined by two side walls and a bottom surface, each of said side walls having side surfaces and a top surface;

first and second electrodes separately provided on the side surfaces of each of said side walls;

a driving unit for applying an electric field between said first and second electrodes;

a cover plate having a first end and a second end and being formed with a plurality of grooves on one surface thereof, the grooves of said cover plate extending from the first end to the second end in parallel to one another at equally spaced intervals that are off set from those of said piezoelectric transducer to permit mating with said piezoelectric transducer, each of said grooves of said cover plate being defined by two side walls and a bottom surface, each of said side walls of said cover plate having side surfaces and a top surface;

an orifice plate attached to the first end of both said piezoelectric transducer and said cover plate, said orifice plate being formed with a plurality of orifices; and

an ink tank connected to the second end of both said piezoelectric transducer and said cover plate,

wherein the groove-formed surfaces of said piezoelectric transducer and said cover plate are engaged with each other so that the side walls of said piezoelectric transducer and said cover plate are alternately arranged to form a plurality of ink channels, wherein said piezoelectric transducer and said cover plate are in surface contact with each other at the side surfaces of the respective side walls, a contacting side wall of said piezoelectric transducer being uni-directionally deformable to be substantially out of surface contact with a side wall of said cover plate when the electric field is applied between the first and second electrodes of the side wall of said piezoelectric transducer, and wherein each of said ink channels is defined by a side surface of the side wall of said piezoelectric transducer, a side surface of the side wall of said cover plate, and the bottom surfaces of both said piezoelectric transducer and said cover plate.

5,351,184

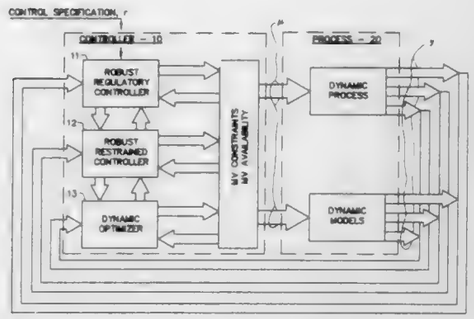
METHOD OF MULTIVARIABLE PREDICTIVE CONTROL UTILIZING RANGE CONTROL

Zhuxin J. Lu, Glendale; J. Ward MacArthur, Scottsdale, and Brian C. Horn, Phoenix, all of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 26, 1993, Ser. No. 9,491

Int. Cl.[5] G06F *15/46;* **G05B** *13/02*

U.S. Cl. 364—165 **3 Claims**



1. In a process control system having a controller for providing robust control to a process, the process further having at least one manipulated variable and at least one process variable, a method for providing the robust control of a process, comprising the steps of:

a) initializing the controller to have predetermined constraints of the manipulated variables and the process variables;

b) obtaining present values of the manipulated variables and the process variables said process variables corresponding to measurement parameters of the process;

c) calculating new values of the process variables for a predetermined number of points in the future in order to have the values of the process variables within the predetermined range to obtain an optimal robustness of the resultant controller, the manipulated variables being within predetermined constraints, and the process variables falling within a predetermined range when controller; otherwise, keeping process variable constraint violations to a minimum;

d) from a plurality of solutions, selecting a most robust solution; and

e) controlling the process in accordance with the most robust solution.

5,351,185

MALFUNCTION CHECKING CONTROL SYSTEM WHICH CHECKS IDENTIFICATION DATA STORED IN RAM

Kunihiro Takeuchi; Hideki Ishizuka, and Hideyuki Kaneko, all of Saitama, Japan, assignors to Airbag Systems Company Ltd., Gumma, Japan

Filed May 6, 1992, Ser. No. 878,977

Claims priority, application Japan, May 17, 1991, 3-141438

Int. Cl.[5] B60R *21/02*

U.S. Cl. 364—184 **7 Claims**

1. A control system for a vehicle safety device comprising:

an acceleration sensor;

a microcomputer; and

reset means for outputting a reset instruction signal in order to reset said microcomputer,

said reset means including a power-on reset circuit and a watch dog timer and

said microcomputer comprising:

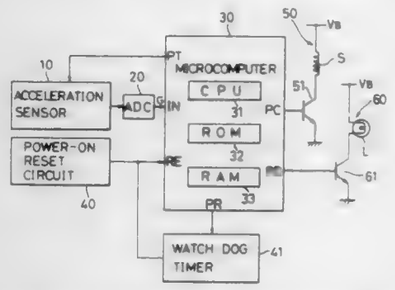
(a) a RAM;

(b) first judgment means for judging whether or not an identification data is stored in a specific area of said RAM after said microcomputer is reset responsive to the reset instruction signal;

(c) failure judgment means for judging whether or not said acceleration sensor is subjected to a failure when said first judgment means judges "NO" that there are no identification data stored in the specific area of said RAM;

(d) writing means for writing the identification data into the specific area of said RAM when said first judgment means judges "NO"; and

(e) acceleration evaluation means for integrating an acceleration data from said acceleration sensor to obtain an integral value, judging whether or not a collision of said vehicle has occurred based on said integral value, and outputting a trigger signal to activate said vehicle safety device when said acceleration evaluation means judges that a collision of said vehicle has occurred; said acceleration evaluation means being executed after said failure judgment means is effected when said first judgment means judges "NO", said acceleration evaluation means being executed without said failure judgment means being effected when said first judgment means judges "YES", that there are identification data stored in the specific area of said RAM.



5,351,186

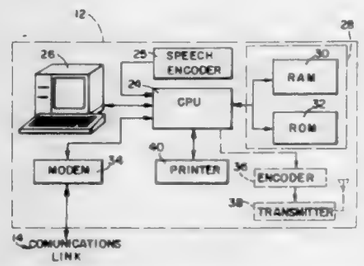
SYSTEM AND METHOD FOR OBTAINING INFORMATION CONCERNING A PRODUCT OR A SERVICE

Wayne J. Bullock, Paoli; Kenneth S. Fertner, Richboro, and Eugene Klein, Philadelphia, all of Pa., assignors to Bullock Communications, Inc., Malvern, Pa.

Filed Jan. 16, 1991, Ser. No. 642,257

Int. Cl.[5] G06F *15/21*

U.S. Cl. 364—401 **15 Claims**



1. A system for providing product or service information to a user within a facility upon an affirmative request by the user comprising in combination:

a remotely located source of computer-based information for generating and transmitting encoded data, including encoded audio data, pertaining to a plurality of particular products or services;

an on-site computer within the facility and in communication with said remote information source for receiving and storing the data from said remote information source; and

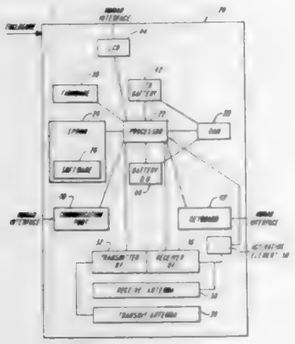
a plurality of user units within the facility, each unit being in communication with the on-site computer for receiving and storing data from said on-site computer which pertains to a single particular product or service, the unit being secured adjacent to and being exclusively associated with the single particular product or service, the unit adapted to provide audible product or service information for the single particular product or service to the user, the unit providing such information only upon an affirmative activation of the unit by the user.

5,351,187

AUTOMATIC DEBITING PARKING METER SYSTEM

John J. Hassett, Marblehead, Mass., assignor to AT/COMM Incorporated, Marblehead, Mass.

Filed Dec. 30, 1992, Ser. No. 998,369
Int. Cl.[5] G06F *15/21*; G07B *15/00*; G08G *1/00*
U.S. Cl. 364—401 **29 Claims**



1. Apparatus for automatically debiting vehicular parking fees in a specified area comprising,

a stationary transmitter broadcasting a signal over said specified area including zones for pay parking, wherein said broadcast signal includes information indicating a monetary fee per unit time for parking in said zones, and

a portable transponder to be carried by a vehicle, said transponder including,

a) a receiver for receiving said broadcast signal,

b) a read/write memory for storing information indicative of a monetary amount,

c) means for providing information external to said transponder of said monetary amount in said memory at a given time, and

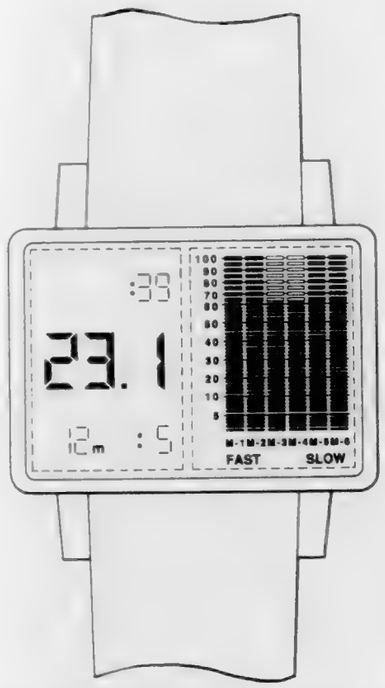
d) a data processor coupled to both said read/write memory and said receiver, said data processor responding to said broadcast signal being sensed by said receiver by decreasing said monetary amount in said memory by said monetary fee per unit time for the time duration of parking, said memory providing a specific output signal indicative of the status of said monetary amount in said memory, or said parking status being invalid, said data processor providing for entering into said memory a signal indicative of a specified monetary value in response to an externally applied signal.

5,351,188

ELECTRONIC DEPTH METER

Hiroshi Sato, Hamura, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1992, Ser. No. 976,399
Claims priority, application Japan, Nov. 20, 1991, 3-332424; Nov. 20, 1991, 3-332425; Aug. 7, 1992, 4-231587; Aug. 7, 1992, 4-231588
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.31 **41 Claims**



1. An electronic depth meter comprising:

pressure sensing means for sensing the ambient pressure of the depth meter to generate data representative of the sensed pressure;

diving data generating means for receiving the data representative of the pressure generated from said pressure sensing means to generate data representative of the levels of an inert gas dissolved in a plurality of body tissues under water;

limit value data storage means for storing data representative of respective limit values for the plurality of tissues within which limit values the corresponding tissues can ascend to the surface of water without decompression;

remaining time data generating means for receiving data representative of the respective levels of an inert gas dissolved in the plurality of tissues from said diving data generating means and data representative of the corresponding limit values from said limit value data storage means to generate data representative of the respective remaining times up to the corresponding limit values at which the respective tissues are required to be decompressed;

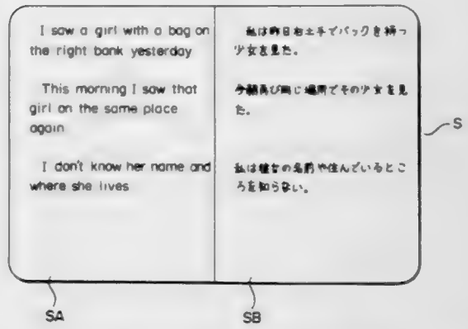
display means for simultaneously and graphically displaying data on the respective remaining times for the plurality of tissues generated by said remaining time data generating means.

5,351,189

MACHINE TRANSLATION SYSTEM INCLUDING SEPARATED SIDE-BY-SIDE DISPLAY OF ORIGINAL AND CORRESPONDING TRANSLATED SENTENCES

Miwako Doi, Kawasaki; Shin-ya Amano, Yokohama; Seiji Miike, Yokohama; Hiroyasu Nogami, Yokohama; Akira Kumano, Yokohama; Kimihito Takeda, Odawara; Hisahiro Adachi, Chigasaki; Isamu Iwai, Kawasaki; Toshio Okamoto, Tokyo; Noriko Yamanaka, Fujisawa, and Tsutomu Kawada, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Continuation of Ser. No. 650,993, Feb. 4, 1991, abandoned, which is a continuation of Ser. No. 388,755, Aug. 3, 1989, abandoned, which is a continuation of Ser. No. 844,611, Mar. 27, 1986, abandoned. This application Oct. 1, 1993, Ser. No. 130,416
Claims priority, application Japan, Mar. 29, 1985, 60-63456
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.02 **4 Claims**



1. A machine translation apparatus comprising:

translation means for translating an original sentence, using a translation dictionary;

display means having left and right screen sections, one serving as an original sentence display region for displaying the original sentence, and the other as a translated sentence display region for displaying a translated sentence;

control means for controlling said display means to display the translated sentence and the original sentence corresponding to the translated sentence in juxtaposition on said translated sentence display region and said original sentence display region with the first lines of said translated sentence and said original sentence being horizontally aligned to each other so as to correspond to each other for each unit of sentence; and

scroll means including scroll designating means for designating a scrolling mode in which said original sentence and said translated sentence which are displayed on said original sentence display region and said translated sentence display region, respectively, are scrolled downwards;

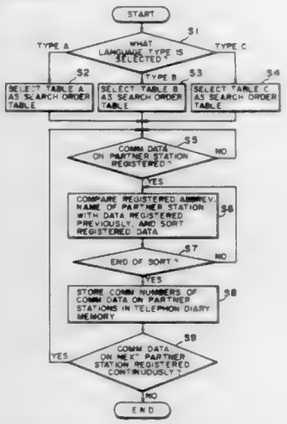
wherein, when said scrolling mode is designated by said scroll designating means, if a line of each of the original sentence and the translated sentence which is other than the first line thereof, is displayed on the uppermost line of each of said original sentence display region and said translated sentence display region, said scroll means scrolls said original sentence and said translated sentence in association with each other until the first lines are displayed on the uppermost lines of said original sentence display region and said translated sentence display region.

5,351,190

COMMUNICATION APPARATUS AND METHOD ESTABLISHING A LANGUAGE DEPENDENT SORT ORDER SEARCH

Masaya Kondo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 10, 1991, Ser. No. 774,244
Claims priority, application Japan, Oct. 17, 1990, 2-279709
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.08 **9 Claims**



1. A search apparatus comprising:

first memory means for storing telephone numbers of a plurality of communication destinations together with destination data including character information such as a destination name;

second memory means for storing a plurality of separate orders of search characters, each separate order corresponding to a different one of a plurality of languages;

selection means for selecting one of the plurality of languages; and

search means for searching the destination data stored in said first memory in accordance with the order of search characters stored in said second memory means regarding the one of the plurality of languages selected by said selection means.

5,351,191

Patent Not Issued For This Number

5,351,192

SLIPPAGE CONTROL SYSTEM USING ESTIMATED ROAD SURFACE RESISTANCES

Toshiaki Tsuyama, Higashihiroshima, and Toru Onaka, Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 28, 1992, Ser. No. 997,486
Claims priority, application Japan, Dec. 25, 1991, 3-357243
Int. Cl.[5] B60K *26/00*; B60T *8/34*
U.S. Cl. 364—426.03 **21 Claims**

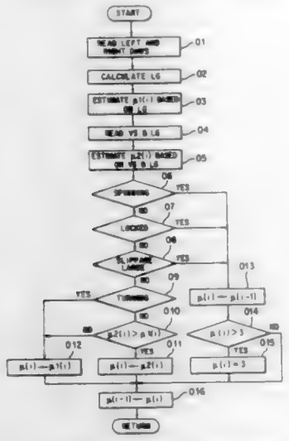
1. A slippage control system for an automotive vehicle, in which wheel drive torque is controlled to prevent the drive wheels from slippage excessively on a road and is regulated in accordance with road surface resistances, said slippage control system comprising:

slippage detecting means for detecting slippage of at least one of said drive wheels;

lateral gravitational acceleration detecting means for detecting a lateral gravitational acceleration of the automotive vehicle while it is running;

rectilinear gravitational acceleration detecting means for detecting a rectilinear gravitational acceleration of the automotive vehicle while it is running;

control means for determining when the automotive vehicle is spinning, estimating a first road surface resistance on the basis of the lateral gravitational acceleration of the automotive vehicle detected by said lateral gravitational acceleration detecting means, estimating a second road surface resistance on the basis of the rectilinear gravitational acceleration of the automotive vehicle detected by said rectilinear gravitational acceleration detecting means, and obtaining an effective road surface resistance from one of



said first and second road surface resistances and an alternative road surface resistance used when said automotive vehicle is spinning; and

torque regulating means for decreasing wheel drive torque based on the slippage of said at least one driving wheel detected and the effective road surface resistance obtained.

5,351,193

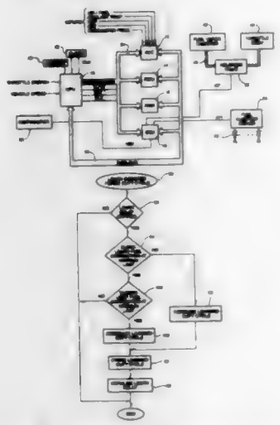
CANISTER PURGE CONTROL METHOD

David C. Poirier, Troy; John C. Haraf; George T. Stephens, both of Livonia; Robert C. Simon, Jr., Novi, all of Mich., and Edward G. Himes, Luxembourg, Luxembourg, assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 722,479, Jul. 1, 1991, abandoned. This application Aug. 9, 1993, Ser. No. 103,324

Int. Cl.[5] G06F *15/50;* **F02M** *33/02*

U.S. Cl. 364—431.01 **2 Claims**



1. A method of controlling a solenoid valve to control a purge flow rate from a fuel vapor collection canister to an internal combustion engine having a system for delivering a mixture of air and fuel to the engine and a closed loop fuel controller for adjusting the fuel delivered to the engine in a fuel increasing or decreasing direction so as to maintain a predetermined air/fuel ratio, the method comprising the steps of:

enabling purge of the fuel vapor collection canister during engine operation, and

when purge of the fuel vapor collection canister is enabled:

recalling a learned purge duty cycle stored in a keep-alive memory that stores the learned purge duty cycle while the engine is operated and while the engine is turned off;

operating the solenoid valve at an operating purge duty cycle in accordance with the recalled learned purge duty cycle from the keep-alive memory to admit fuel vapor from the canister to the engine at a rate established by the operating purge duty cycle;

sensing the closed loop fuel controller adjustment of the fuel delivered to the engine; and

updating the learned purge duty cycle stored in the keep-alive memory by increasing the stored learned purge duty cycle when the sensed closed loop fuel controller adjustment of the fuel is less than a threshold value and by decreasing the learned purge duty stored when the sensed closed loop fuel controller adjustment of the fuel is above the threshold value.

5,351,194

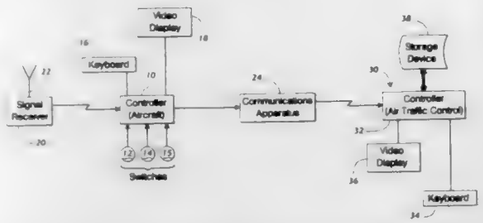
APPARATUS AND METHOD FOR CLOSING FLIGHT PLANS AND LOCATING AIRCRAFT

John Ross, Marietta, and Tom Farmakis, Sharpsburg, both of Ga., assignors to World Wide Notification Systems, Inc., Marietta, Ga.

Filed May 14, 1993, Ser. No. 62,406

Int. Cl.[5] G01S *3/02*

U.S. Cl. 364—449 **20 Claims**



1. An apparatus for monitoring a status and location of an aircraft, comprising:

a receiver attached to an aircraft for receiving a positioning signal from each of a plurality of transmitters located at separate known locations;

a switch located on the aircraft and indicating a status of the aircraft;

a controller operatively connected to the receiver and the switch for determining the location of the aircraft based upon the positioning signals, said controller detecting the status of the aircraft by sensing the switch;

a communicator operatively connected to the controller for communicating a signal to the air traffic control center to report the status and location of the aircraft in response to the switch.

5,351,195

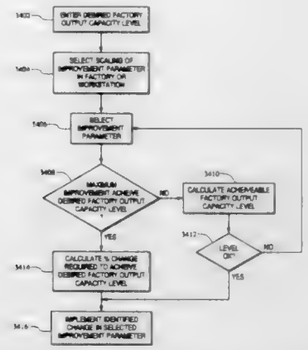
METHOD FOR IMPROVING MANUFACTURING PROCESSES

Mark A. Sherman, Richardson, Tex., assignor to The George Group, Dallas, Tex.

Continuation-in-part of Ser. No. 384,292, Jul. 24, 1989, Pat. No. 5,195,041. This application Mar. 12, 1993, Ser. No. 30,859

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—468 **1 Claim**



1. A method for improving the output capacity level of a factory, the factory having a plurality of workstations performing one or more functions, each function operating on a batch of materials, the method comprising the steps of:

inputting an output capacity level for the factory and a selected parameter for improvement;

determining whether the maximum possible variation of the selected parameter would achieve the output capacity level;

determining an achievable capacity output level when the maximum possible improvement of the parameter does not allow for the desired improved output capacity level;

determining the amount of improvement required to achieve the output capacity level when the maximum possible improvement meets or exceeds the output capacity level; and

adjusting the processes of one or more workstations of the factory to implement the parameter improvements.

5,351,196

METHOD AND APPARATUS FOR SOLIDS BASED MACHINING

Richard M. Sowar, Boulder; William C. Heiny, Arvada; Paul C. Olsen, Broomfield; Mark R. Hotchkiss, Louisville; Thomas L. Dixon, Broomfield; Charles W. Richard, Jr., and Michael D. Raines, both of Boulder, all of Colo., assignors to Spacial Technology, Inc., Boulder, Colo.

Continuation of Ser. No. 669,943, Mar. 15, 1991, abandoned. This application Oct. 14, 1993, Ser. No. 138,816

Int. Cl.[5] G06F *15/46, 15/60*

U.S. Cl. 364—474.24 **64 Claims**

1. A process for manufacturing a part comprising the steps of:

(1) obtaining a computer model of the part using a solid modeler;

(2) obtaining a computer model of a stock piece using the solid modeler;

(3) obtaining a process plan for manufacturing the part;

(4) associating manufacturing attributes with the model of the part;

(5) determining at least one delta volume to be removed from the stock piece by subtracting the model of the part from the model of the stock and migrating the manufacturing attributes from the model of the part to a corresponding face of the at least one delta volume;

(6) obtaining a model of a manufacturing setup;

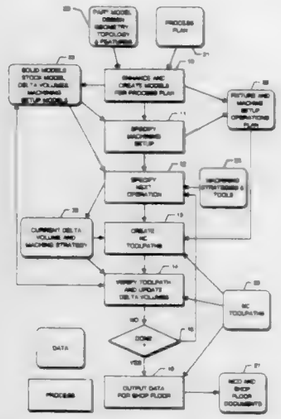
(7) obtaining a machining strategy;

(8) computing tool paths for numerically controlled manufacturing equipment having a cutting tool from the at least one delta volume in accordance with the machining strategy and the model of the manufacturing setup;

(9) computing at least one tool volume representing the total volume of space swept out by the cutting tool;

(10) subtracting the at least one tool volume from the at least one delta volume to obtain a new delta volume;

(11) subtracting the at least one tool volume from the model of the stock piece, thus modeling the machining of the tool



paths and verifying that the tool paths have not intruded into the model of the part and thus that the cutting tool will not gouge the part;

(12) repeating steps (7) through (11) until the removal of the at least one delta volume has been modeled; and

(13) manufacturing the part according to the process plan by transferring the tool paths to the numerically controlled manufacturing equipment, wherein steps (1) through (7) may generally be carried out in any order provided that step (1) must precede step (4), steps (1) and (2) must precede step (5), and steps (1) through (7) must precede step (8).

5,351,197

METHOD AND APPARATUS FOR DESIGNING THE LAYOUT OF A SUBCIRCUIT IN AN INTEGRATED CIRCUIT

Michael D. Upton, Seattle; Thomas F. Rossman, Kirkland; Dean P. Frazier, Bellevue; Jay S. Fuller, and Kendall C. Russell, both of Issaquah, all of Wash., assignors to Cascade Design Automation Corporation, Bellevue, Wash.

Continuation of Ser. No. 337,232, Apr. 13, 1989, abandoned. This application Jan. 21, 1992, Ser. No. 824,707

Int. Cl.[5] G06F *15/60*

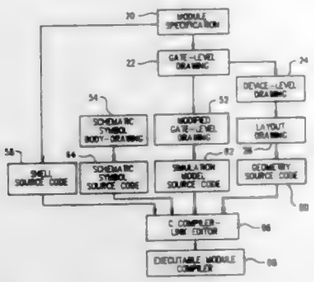
U.S. Cl. 364—491 **9 Claims**

1. A computer implemented method for designing the layout of a subcircuit on an integrated circuit, the layout comprising one or more layers of circuit features subject to one or more constraints, including geometric constraints, the subcircuit including internal cells and the layers being formed with respect to a two-dimensional surface of a substrate in accordance with a specified process technology, the method comprising the steps of:

a. establishing the constraints among the layers of circuit features that are determined by the specified process technology;

b. creating a description of a layout geometry for the subcircuit according to the constraints;

c. using a computer to generate one or more simulation models for the described layout geometry; and



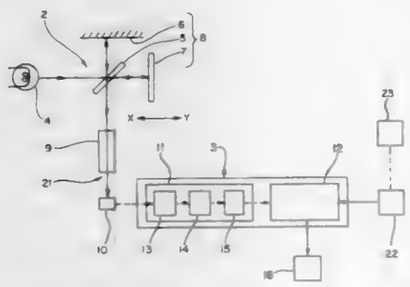
d. using a computer to generate a connectivity test model for the described layout geometry.

5,351,198

QUANTITATIVE ANALYTICAL METHOD AND APPARATUS FOR DETERMINING A PLURALITY OF INGREDIENTS WITH SPECTROMETRIC ANALYSIS

Masayuki Adachi, Kyoto; Yutaka Yamagishi, Shiga, and Kaori Inoue, Hirakata, all of Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Feb. 14, 1992, Ser. No. 837,235
Int. Cl.[5] G01N *21/00*
U.S. Cl. 364—498 **12 Claims**



1. A quantitative analytical method of using spectrometric analysis, in which a sample is irradiated with light, and a plurality of ingredients contained in the sample to be measured are quantitatively determined on the basis of absorptivities at a plurality of appointed wave number points in an absorption spectrum obtained at that time, comprising:

establishing groups of ingredients to be measured suitable to a plurality of kinds of samples to be measured, those groups having ingredients which can be approximately estimated;

determining groups of wave number points corresponding to the respective groups of ingredients;

storing the groups of wave number points;

measuring the value of a sample across an absorption spectrum containing the groups of wave number points;

using one of the groups of wave number points to calculate the concentration of the values of the ingredients in the sample;

determining if the calculated concentration of ingredients is appropriate for the group of wave number points used and if not, selecting a different group of stored wave number points until the appropriate group of wave number points is used to calculate the concentration of the ingredients; and

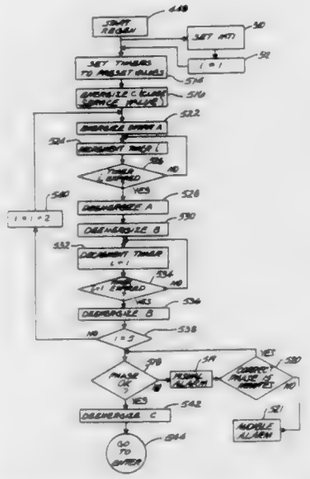
providing the concentration of the ingredients.

5,351,199

PROGRAMMABLE WATER TREATMENT CONTROLLER FOR PROGRESSIVE FLOW SYSTEMS

James E. Ticcioni, Mequon, and Robert W. Colburn, Green Bay, both of Wis., assignors to Brun Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 371,546, Jun. 26, 1989, Pat. No. 5,060,167. This application Jun. 26, 1991, Ser. No. 721,180
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—510 **8 Claims**



1. A method for providing treated water on a continuous basis with a variable water demand employing a progressive flow water treatment system having a first treatment tank and a second treatment tank, and having a controller programmable by input from an operator, the method comprising the steps of:

receiving an input designating a progressive flow program type;

receiving an input for a total volume for a regeneration parameter;

receiving an input for a flow rate trip level value;

directing water flow to provide treated water through the first treatment tank;

monitoring the flow rate of water through the first treatment tank;

comparing the flow rate to the received flow rate trip level value;

additionally directing water flow through the second treatment tank if the flow rate exceeds the flow rate trip level value;

monitoring the total volume through each treatment tank; and,

initiating a regeneration of each treatment tank when total volume exceeds the input total volume regeneration parameter.

5,351,200

PROCESS FACILITY MONITOR USING FUZZY LOGIC

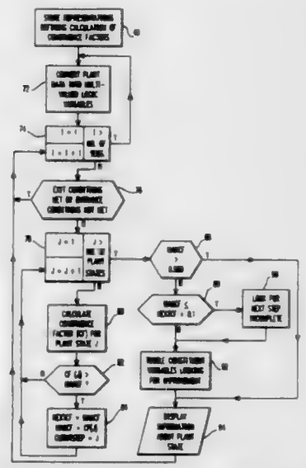
Albert J. Impink, Jr., Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 22, 1991, Ser. No. 796,291
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—550 **17 Claims**

1. A method for monitoring operation of a process facility comprising the steps of:

(a) storing at least one planned sequence of hypothesized plant states using multi-valued logic to define calculation of a congruence factor for each of the hypothesized plant states; wherein said storing in step (a) includes storing relationships between the multi-valued logic variables defined by a maximum value function when any of the multi-valued logic variables in a first relationship may be true and defined by an average function when all of the multi-valued logic variables in a second relationship are expected to be true;

(b) converting data representing the process facility into values of multi-valued logic variables; wherein said converting in step (b) assigns to the multi-valued logic variables numerical values corresponding to likelihood of truth;



(c) calculating the congruence factor from the multi-valued logic for each of the hypothesized plant states in step (a) in the at least one planned sequence using the multi-valued logic variables; and

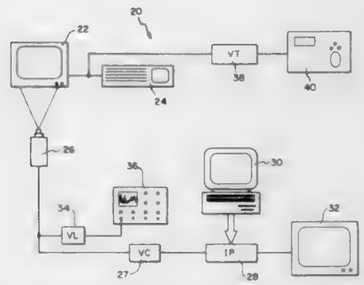
(d) identifying a current plant state by comparing the congruence factor of each of the hypothesized plant states to each other and choosing the plant state having the highest congruency factor.

5,351,201

METHOD AND APPARATUS FOR AUTOMATIC PERFORMANCE EVALUATON OF ELECTRONIC DISPLAY DEVICES

John H. Harshbarger, Jr., Xenia, and Michael W. Shellhause, Vandalia, both of Ohio, assignors to MTL Systems, Inc., Dayton, Ohio

Filed Aug. 19, 1992, Ser. No. 932,364
Int. Cl.[5] G01B *11/00*
U.S. Cl. 364—551.01 **21 Claims**



1. A method for automatically evaluating the performance of an electronic audio/video device, the method comprising the steps of:

generating test stimuli and inputting the stimuli to the audio/video device for outputting by the audio/video device;

providing a sensor coupled to an output of the audio/video device;

imbedding a code within the test stimuli which is detectable by said sensor, said code indicative of test parameters;

detecting the outputted test stimuli and code and outputting data representative thereof;

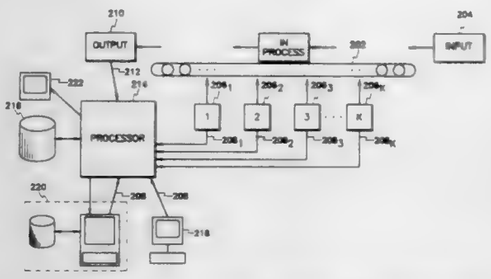
by means of a processor coupled to said sensor, receiving said data representative of the outputted test stimuli and said code and analyzing said data in accordance with said code to evaluate performance of the audio/video device and providing an indication of performance degradation thereof.

5,351,202

EVALUATION AND RANKING OF MANUFACTURING LINE NON-NUMERIC INFORMATION

Jerome M. Kurtzberg, and Menachem Levanoni, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 27, 1992, Ser. No. 843,048
Int. Cl.[5] G06F *15/46, 15/20*
U.S. Cl. 364—552 **1 Claim**



1. A system for quantitatively ranking the performance of non-numeric attributes of a manufacturing or process line, comprising:

a. a processor for determining a quantitative weight for each attribute contributing to a manufacturing process by selecting manufacturing runs in which each attribute participated and determining initial and refined weights for each attribute for said ranking, said processor comprising:

1) an input portion which receives attribute ID signals and manufacturing run measure signals,

2) an output portion for transmitting signals to an output device, said signals indicative of the measure of particular manufacturing runs, attribute's ID, and weights assigned to each attribute, and

3) an interface portion which transmits and receives signals to and from a database;

b. a database for storing information relating to attribute ID signals and manufacturing measure signals; and

c. an output device for receiving signals from the output portion of said processor and outputting said ranking.

5,351,203

ONLINE TOMOGRAPHIC GAUGING OF SHEET METAL

Carvel D. Hoffman, Bethlehem; Charles J. Romberger, Coopersburg, both of Pa.; Hunter Ellinger; Thomas W. Stephens, both of Austin, Tex., and Richard D. Savage, San Jose, Calif., assignors to Bethlehem Steel Corporation, Bethlehem, Pa. and Scientific Measurement Systems, Inc., Austin, Tex.

Filed Aug. 3, 1992, Ser. No. 924,105
Int. Cl.[5] G01B *15/00*
U.S. Cl. 364—560 **36 Claims**

1. A method of determining the dimensions of an object

having a left edge and a right edge, said method comprising the steps of:

a) generating a plurality of fan shaped beams of radiation from a respective plurality of distinct stationary physical locations, wherein each one of said plurality of fan shaped beams is divided into a plurality of fan ray elements;

b) alternately directing each one of said plurality of fan shaped beams towards said object and respective ones of a plurality of detectors, wherein each one of said plurality of fan shaped beams penetrates said object from said left edge of said object to said right edge of said object;



c) detecting several fan ray elements from each of said plurality of fan shaped beams, said several fan ray elements being detected by the plurality of detectors;

d) producing a plurality of data signals corresponding to said detected fan ray elements;

e) correlating each of said plurality of data signals with a physical location corresponding to a respective one of said plurality of detectors to determine the dimensions of the object.

5,351,204

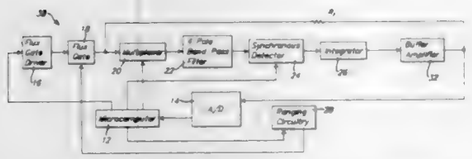
SCALING SYSTEM AND METHOD FOR AN ELECTRONIC COMPASS

Rafi A. Al-Attar, Troy, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 27, 1991, Ser. No. 815,347

Int. Cl.[5] G01C *17/38*

U.S. Cl. 364—571.03 **2 Claims**



1. A scaling compensation method for use in a vehicle electronic compass control circuit that includes a microcomputer, a flux-gate having an output voltage dependent upon a strength of the earth's magnetic field and a magnetic field of the vehicle incorporating the electronic compass control circuit and their direction, and an integrator having a fixed output voltage range and producing an output containing heading information; the control circuit employing a scaling compensation circuit that includes a multi-bit analog-to-digital converter coupled between the output of said integrator and said microcomputer and a ranging circuit, said ranging circuit employing variable resistance negative feedback connected to the output of said integrator, said electronic compass adapted to determine vehicle heading as a function of the earth's magnetic field wherein the earth's magnetic field is distorted by the magnetic field of the vehicle, said scaling compensation method comprising:

(a) monitoring said integrator output for 360° of vehicle headings;

(b) partitioning said integrator output into a predetermined number of discrete ranges;

(c) converting the discrete ranges into digital values;

(d) counting the number of digital values and comparing the number to a predetermined number of digital values;

(e) decreasing the resistance of said variable resistance negative feedback to a predetermined level and decreasing the number of discrete ranges if the digital value is less than or equal to the predetermined number of digital values; and

(f) converting said digital values into digital vehicle heading information.

5,351,205

METHOD FOR FILTERING DIGITAL SIGNALS WHICH VARIES THE FILTER LENGTH

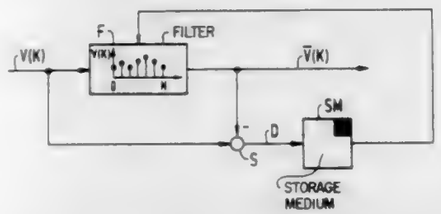
Gerd Hoos, Erlangen-Kosbach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 763,662, Sep. 18, 1991, abandoned. This application Sep. 7, 1993, Ser. No. 116,926

Claims priority, application European Pat. Off., Sep. 27, 1990, 90118609.8

Int. Cl.[5] G06F *15/31*

U.S. Cl. 364—724.01 **28 Claims**



1. A numerical control method for controlling a velocity of a numerically controlled machine, comprising the steps of:

a) producing velocity signals as digital inputs signals (V(K)) of a filter using an interpolator;

b) storing a number of the digital input signals (V(K)) corresponding to a specifiable filter length (N) in the filter;

c) generating an output signal ($\overline{V}$(K) of the filter from a sum of a number of the input signals (V(K)), divided by the filter length (N);

d) calculating a signal difference (D) between each digital input signal (V(K)) and its corresponding output signal ($\overline{V}$(K));

e) storing the signal difference (D) in a storage medium;

f) modifying the filter length (N) to a modified filter length (N');

g) determining values of a plurality of modified digital signals V'(K)) when a specifiable change occurs in the filter length to the modified filter length (N') in response to the modifying step f) by doubling the signal difference (D) stored in the storage medium, and then dividing the result by the modified filter length (N') less one;

h) storing a number, corresponding to the modified filter length (N'), of said plurality of modified digital signals (V'(K)) in the filter; and

i) providing the numerically controlled machine with the output signals ($\overline{V}$(K)) to control the velocity of the numerically controlled machine;

j) controlling the velocity of the numerically controlled machine using the output signals $\overline{V}$(K).

5,351,206

SIGNED TWO'S COMPLEMENT CONSTANT MULTIPLIER COMPILER

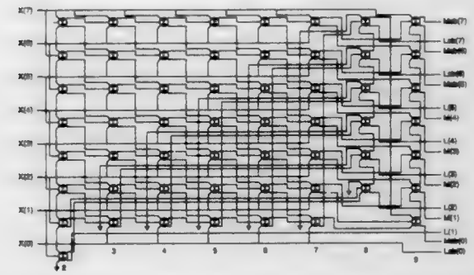
Lin Yang, Fremont, and Chun-Ling Liu, Milpitas, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Nov. 12, 1992, Ser. No. 976,233

The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.

Int. Cl.[5] G06F *7/52*

U.S. Cl. 364—757 **1 Claim**



1. A signed two's complement constant multiplier circuit for computing a product of a multi-bit multiplicand and a multi-bit constant that uses full adders each having three input terminals and two output terminals, a Sum output terminal and a Carry output terminal, certain ones of said input terminals and said output terminals being weighted so as to represent positive and negative numbers, the circuit comprising:

an interconnected array of full adders logically arranged in rows and columns, full adders in an input column each receiving different ones of said bits of said multi-bit multiplicand, full adders in each of two output columns each producing a product bit, each column besides said output columns producing a partial product, with each full adder in each row in columns besides said output columns receiving a same one of said bits of said multi-bit multiplicand;

wherein, for multi-bit constants that are neither all ones nor all zeros, a number of columns is less than said number of bits of said multiplicand, said array of full adders being interconnected such that partial products corresponding to zeros in said constant are not produced.

5,351,207

METHODS AND APPARATUS FOR SUBTRACTION WITH 3:2 CARRY-SAVE ADDERS

Luke Girard, San Jose, and Jonathan Sweedler, Sunnyvale, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Aug. 31, 1992, Ser. No. 938,293

Int. Cl.[5] G06F *7/50*

U.S. Cl. 364—786 **16 Claims**

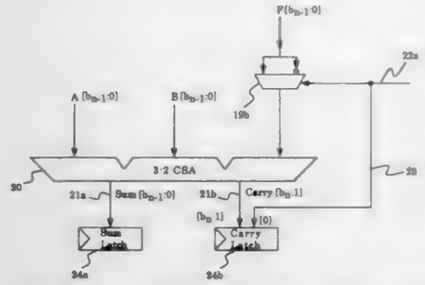
1. A circuit for subtraction in a computer system, comprising:

circuit for generating a one's complement value of a first datavalue;

carry-save adder receiving said one's complement value and a set of input datavalues, said carry-save adder generating a first result in a redundant form comprising a sum vector and a first carry vector by adding said one's complement value and said input datavalues;

first register coupled to receive said sum vector; and

second register coupled to receive said first carry vector, said second register generating a second carry vector by incrementing said first carry vector by one such that said sum vector and said second carry vector represent in said redundant form a second result equal to a sum of said input datavalues minus said first datavalue.



5,351,208

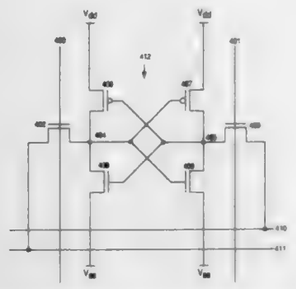
CONTENT ADDRESSABLE MEMORY

Ching-Lin Jiang, Palo Alto, Calif., assignor to Integrated Information Technology, Inc., Santa Clara, Calif.

Filed Apr. 27, 1992, Ser. No. 874,489

Int. Cl.[5] G11C *15/00*

U.S. Cl. 365—49 **20 Claims**



1. A content addressable memory operable at different times in respectively a read mode, a write mode, and a compare mode, comprising:

a memory cell for storing a logic state;

a first plurality of lines which function as word lines during the write mode, as bit lines during the read mode, and as match lines during the comparison mode;

a plurality of switching devices for controllably connecting the memory cell to the first plurality of lines in accordance with logic states on respective control terminals thereof; and

a second plurality of lines respectively coupled to the control terminals of the switching devices, the second plurality of lines functioning as bit lines during the write mode, as word lines during the read mode, and as bit lines during the comparison mode.

5,351,209

APPARATUS FOR CONVERTING OPTICAL INFORMATION INTO ELECTRICAL INFORMATION SIGNAL, INFORMATION STORAGE ELEMENT AND METHOD FOR STORING INFORMATION IN THE INFORMATION STORAGE ELEMENT

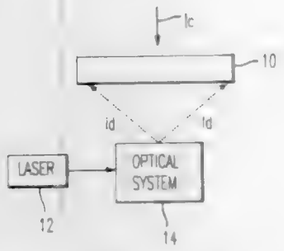
Yutaka Hayashi, Tsukuba; Iwao Hamaguchi, Yamato, and Shunsuke Fujita, Kanagawa, all of Japan, assignors to Ricoh Company, Inc. and Agency of Industrial Science & Technology, both of Tokyo, Japan

Division of Ser. No. 503,046, Apr. 2, 1990, Pat. No. 5,079,415. This application Oct. 15, 1991, Ser. No. 776,643

Claims priority, application Japan, Apr. 3, 1989, 1-84281; Apr. 3, 1989, 1-84282; Apr. 3, 1989, 1-84283

Int. Cl.[5] G11C *13/04*

U.S. Cl. 365—112 **18 Claims**



1. An apparatus for converting optical information into an electrical information signal, comprising:

a first photoelectric conversion structure having a plurality of photoelectric conversion elements which are actually arranged into a line or matrix or configured so as to be substantially equivalent to an arrangement in which said plurality of photoelectric conversion elements are arranged in a line or matrix, each of said plurality of photoelectric conversion elements having a light receiving surface onto which information light is projected;

a second photoelectric conversion structure having a plurality of photoelectric conversion elements which are actually arranged into a line or matrix or configured so as to be substantially equivalent to an arrangement in which said plurality of photoelectric conversion elements are arranged into a line or matrix, each of said plurality of photoelectric conversion elements having a scanning sweep light receiving surface onto which said scanning sweep light is projected, and each of said plurality of photoelectric conversion elements electrically coupled to a corresponding one of said plurality of photoelectric conversion elements of said first photoelectric conversion structure; and

a third photoelectric conversion structure having a plurality of photoelectric conversion elements which are actually arranged into a line or matrix or configured so as to be substantially equivalent to an arrangement in which said plurality of photoelectric conversion elements are arranged into a line or matrix, each of said plurality of photoelectric conversion elements having a synchronizing sweep light receiving surface onto which said synchronizing sweep light is projected, said synchronizing sweep light being in synchronism with said scanning sweep light, an electrical synchronizing signal being generated by said third photoelectric conversion structure,

said electrical information signal being read out from said plurality of photoelectric conversion elements provided in said first photoelectric conversion structure together with said electrical synchronizing signal when said sweep light is projected onto said plurality of photoelectric conversion elements provided in said second photoelectric conversion structure.

5,351,210

SERIALLY ACCESSIBLE SEMICONDUCTOR MEMORY WITH MULTIPLE LEVEL STORAGE CELLS

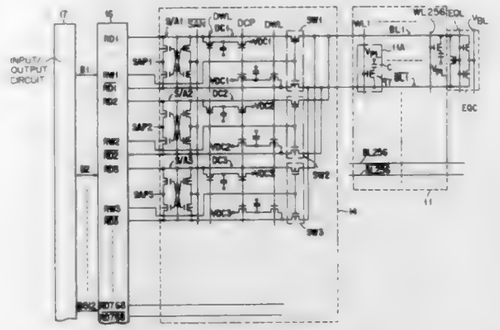
Shozo Saito, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 27, 1991, Ser. No. 799,296

Claims priority, application Japan, Nov. 28, 1990, 2-328463

Int. Cl.[5] G11C *7/00, 7/02*

U.S. Cl. 365—189.01 **22 Claims**



1. A semiconductor memory comprising:

a memory cell array including memory cells arranged in a matrix having row lines and column lines, each of the memory cells being connected to one of the row lines and one of the column lines, each of the memory cells storing a potential corresponding to multi-level data having at least two bits, wherein the memory cells connected to a selected row line simultaneously output the potentials to the corresponding column lines when the selected row line is selected;

an amplifier circuit connected to the memory cell array, the amplifier circuit including a plurality of sense amplifiers, at least two of said sense amplifiers being connected in parallel to one of said column lines, the sense amplifiers detecting the potential read from the memory cells in accordance with different reference potentials supplied to respective sense amplifiers in data read access, each of the sense amplifiers supplied with one of a plurality of potentials corresponding to the multi-level data in data write access;

a data converter connected to the amplifier circuit, the data converter converting potentials output from the amplifier circuit into data having a plurality of bits in data read access and selecting one of the sense amplifiers in accordance with write data having a plurality of bits in data write access, the selected sense amplifier supplying the potential to the respective column line; and

an input/output circuit connected to the data converter, the input/output circuit serially outputting data supplied from the data converter in data read access and supplying external write data to the data converter in data write access.

5,351,211

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING CIRCUIT INSPECTION FUNCTION

Keiichi Higeta; Sohei Omori; Yasuhiro Fujimura, all of Ome; Etsuko Iwamoto, Hamura, and Akihisa Uchida, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 23, 1993, Ser. No. 95,204

Claims priority, application Japan, Jul. 23, 1992, 4-196646

Int. Cl.[5] G11C *7/00, 29/00*

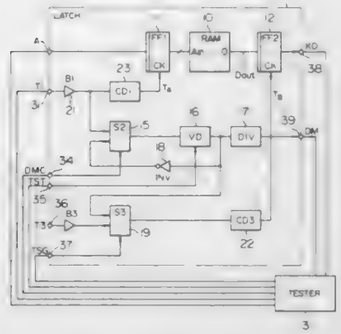
U.S. Cl. 365—189.05 **20 Claims**

8. A semiconductor integrated circuit device having a circuit delay time inspection function, comprising:

a first latch circuit, having a timing input, for latching an address signal;

a memory circuit for outputting data accessed on receiving said address signal from said first latch circuit;

a second latch circuit, having a timing input, for latching an output from said memory circuit; and



a ring oscillator connected between the timing inputs of said first and second latch circuits, and containing a variable delay circuit in a loop thereof:

wherein a delay output of said delay circuit is connected as a latch timing signal to said second latch circuit.

5,351,212

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE EQUIPPED WITH HIGH-SPEED SENSE AMPLIFIER UNIT

Kiyokazu Hashimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

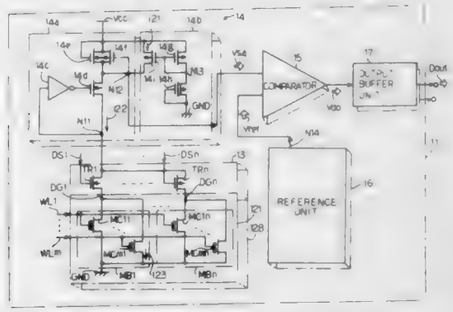
Division of Ser. No. 774,216, Oct. 9, 1991, Pat. No. 5,293,333. This application Aug. 19, 1993, Ser. No. 108,541

Claims priority, application Japan, Oct. 11, 1990, 2-272571

The portion of the term of this patent subsequent to Mar. 8, 2011, has been disclaimed.

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—189.09 **4 Claims**



1. A non-volatile semiconductor memory device fabricated on a single semiconductor chip, comprising:

a) a plurality of memory cells each selectively entering first and second states for changing the amount of current passing therethrough;

b) a selecting means for selecting one of said plurality of memory cells;

c) a sense amplifier unit for producing an output voltage level indicative of one of said first and second states, and having an input node coupled with said one of said plurality of memory cells, a gate means shifted between on and off states depending upon the state of said one of said plurality of memory cells for controlling a current path between said input node and an output node, a current supplying circuit for controlling the amount of current supplied from a first source of voltage level to said output node depending upon the voltage level at said output node, and a make-up circuit having a current mirror configuration for constantly supplementing current to said output node until said output node reaches a predetermined voltage level as high as said first source of voltage level regardless of fluctuations in the voltage level in said first source;

d) a reference unit for producing a reference voltage level at an output node thereof; and

e) a comparator means having a first input node coupled with said output node of said sense amplifier unit and a second input node coupled with said output node of said reference unit, and operative to compare the output voltage level with said reference voltage level for producing an output voltage signal indicative of said one of said first and second states.

5,351,213

INTEGRATED SEMICONDUCTOR MEMORY DEVICE UTILIZING A TEST CIRCUIT

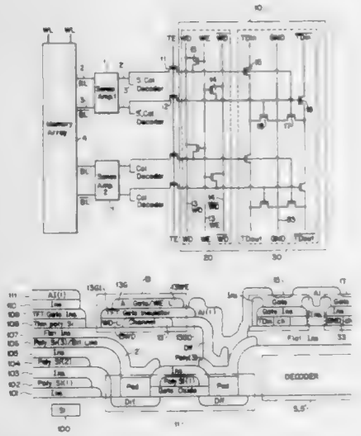
Takashi Nakashima, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyounggi, Rep. of Korea

Filed Feb. 28, 1992, Ser. No. 843,260

Claims priority, application Rep. of Korea, Oct. 14, 1991, 91-18043

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—201 **4 Claims**



1. An integrated semiconductor memory device including a memory block, a peripheral circuit portion and a test circuit portion, said memory block having therein a plurality of sense amplifiers, said test circuit portion performing testing of said memory block and including a semiconductive layer including a channel part and a conductor part, said semiconductive layer being disposed over a substrate having formed thereon said memory block and said peripheral circuit portion, said test circuit portion further including:

a plurality of channels derived from said channel part and having a turn-off resistance and a turn-on resistance;

a plurality of gate electrodes respectively coupled to said channels; and

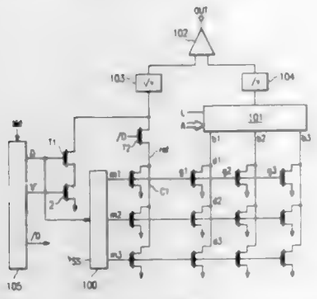
a plurality of conductors derived from said conductor part electrically connecting adjacent ones of said channels together such that said gate electrodes can electrically switch a thin film FET having said channels and said gate electrodes.

5,351,214

MEMORY WITH ON-CHIP DETECTION OF BIT LINE LEAKS

Olivier Rouy, Aix-en-Provence, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly Cedex, France

Filed Apr. 28, 1993, Ser. No. 55,536
Claims priority, application France, Apr. 30, 1992, 92 05420
Int. Cl.[5] G11C *16/00, 13/00*
U.S. Cl. 365—210 **16 Claims**



1. An integrated circuit, comprising:
an array of memory cells organized in rows and columns, wherein each said cell includes a floating gate transistor;
address decode logic, connected to access a selected one of said rows of cells, and to connect a selected column for sensing, in accordance with an externally received address;
a sense amplifier, connected to differentially compare the current drawn on said selected column, by a cell in said selected row, with the current supplied by a read reference current source;
a leakage-detect current source, connected to supply a leakage reference current which is less than the current supplied by said read reference current source; and
test logic, configured and connected to differentially compare said leakage reference current with, for each successive column, the current drawn on said each successive column while no rows are selected.

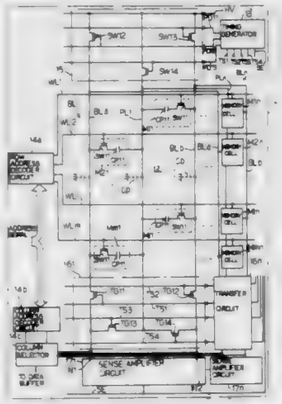
5,351,215

DYNAMIC RANDOM ACCESS MEMORY DEVICE HAVING A TRANSFER CIRCUIT FOR COUPLING A SENSE AMPLIFIER CIRCUIT WITH AN ACCESSED CELL AND A PLATE LINE

Akira Tanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 1, 1993, Ser. No. 11,734
Claims priority, application Japan, Feb. 4, 1992, 4-018006
Int. Cl.[5] G11C *11/34*
U.S. Cl. 365—203 **9 Claims**

1. A dynamic random access memory device fabricated on a semiconductor chip, comprising:
a) a plurality of memory cells arranged in rows and columns, and respectively fabricated from storage capacitors respectively coupled in series with first switching transistors, every two columns of memory cells forming a column pair so that said columns of said plurality of memory cells are divided into a plurality of column pairs;
b) a plurality of bit lines respectively associated with said columns of said plurality of memory cells, each of said plurality of bit lines being coupled with drain nodes of said respective first switching transistors of the associated column, every two adjacent bit lines being paired with each other for forming a plurality of bit line pairs;
c) a plurality of plate lines respectively associated with said plurality of column pairs and with said plurality of bit line pairs, each of said plurality of plate lines being coupled with counter electrodes of said storage capacitors of the associated column pair;
d) a plurality of word lines respectively associated with said rows of said plurality of memory cells, each of said plurality of word lines being coupled with gate electrodes of said first switching transistors of the associated row for selectively coupling said storage capacitors with the associated bit lines at a first timing;
e) a precharging means operative to supply a middle voltage level between a high voltage level and a low voltage level to said plurality of bit lines and to said plurality of plate lines at a second timing before said first timing;
f) a plurality of sense amplifier circuits respectively associated with said plurality of column pairs, and operative to develop small differential voltages on said respective bit line pairs at a third timing after said first timing; and
g) a plurality of transfer circuits respectively coupled between said plurality of bit line pairs and input node pairs of said respective plurality of senses amplifier circuits, each of said plurality of transfer circuits having a first transfer



gate responsive to a first timing signal for coupling one of the bit lines of the associated bit line pair with one of the input nodes of the associated input node pair, a second transfer gate responsive to a second timing signal for coupling the other of said bit lines with the other of said associated input nodes, a third transfer gate responsive to a third timing signal for coupling the associated plate line with said one of said input nodes, and a fourth transfer gate responsive to a fourth timing signal for coupling said associated plate line with said other of said input nodes, said first and fourth timing signals being produced when said plurality of word lines couple one of the storage capacitors with said one of said bit lines between said second timing and said first timing, said second and third timing signals being produced between said second timing and said first timing when said plurality of word lines couple one of the storage capacitors with said other of said bit lines.

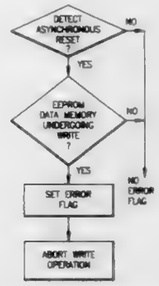
5,351,216

PREMATURE TERMINATION OF MICROCONTROLLER EEPROM WRITE

Tom Salt, Chandler; Rodney Drake, Mesa, and Ray Allen, Mesa, all of Ariz., assignors to Microchip Technology Incorporated, Chandler, Ariz.

Filed Mar. 5, 1993, Ser. No. 26,908
Int. Cl.[5] G06K *5/00*
U.S. Cl. 365—230.01 **7 Claims**

1. A semiconductor microcontroller device fabricated in a single integrated circuit chip for controlling the operation of an external system, comprising:
a central processing unit (CPU),
a program memory adapted to store instructions for execution by the CPU to control the operation of said external system,
an electrically erasable programmable read only memory (EEPROM) adapted to be written to during a write cycle for temporarily storing data in predetermined address locations for selective retrieval by the CPU in conjunction with the control function of the CPU,
logic means for setting an error flag whenever an asynchronous reset of the device occurs while the EEPROM is being written to, and
means responsive to an asynchronous reset of the device for re-initializing execution of instructions by the CPU, the CPU including means for evaluating conditions at a point during execution at which the reset occurred as designated by the error flag to determine disposition of the temporary data that was written to the EEPROM up to that point in the write cycle.

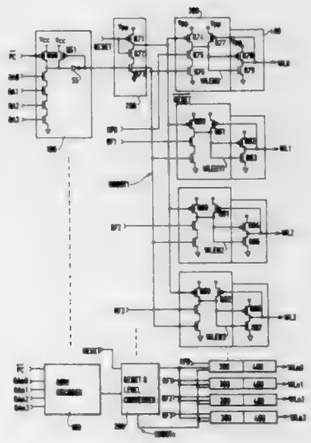


5,351,217

WORD LINE VOLTAGE SUPPLY CIRCUIT

Yong W. Jeon, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Dec. 23, 1992, Ser. No. 996,304
Claims priority, application Rep. of Korea, Dec. 24, 1991, 91-23687
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—230.06 **13 Claims**



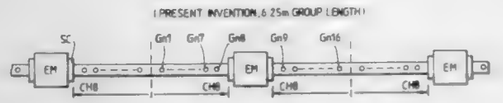
1. A word line voltage supply circuit of a memory device comprising:
a row decoder receiving a voltage Vcc from a first power supply and receiving address signals and outputting an RDout signal of a voltage on the order of voltage Vcc, wherein the RDout signal selects a predetermined number of word lines of a word line group;
a reset level converter receiving a voltage Vpp from a second power supply, wherein the voltage Vpp is a higher voltage level than voltage Vcc, the reset level converter also receiving the RDout signal and a RESET signal for resetting the word line and outputting a RESET signal of a voltage on the order of Vpp;
a word line driver controller receiving a voltage on the order of Vpp from the second power supply and receiving the RDout signal, RESET signal and a pre-decoder signal as inputs and outputting a word line control signal WLEN; and
a word line driver receiving a voltage on the order of Vpp from the second power supply and applying a voltage on the order of Vpp to a selected word line in response to the WLEN signal.

5,351,218

METHOD FOR RECONNECTION AND CONNECTION OF SENSOR GROUPS

Kjell Hatteland, Royken, and Jan-Åge Langeland, Garnes, both of Norway, assignors to Geco A.S., Stavanger, Norway

Continuation of Ser. No. 825,608, Jan. 24, 1992, abandoned. This application Jul. 7, 1993, Ser. No. 90,243
Claims priority, application Norway, Feb. 1, 1991, 910387
Int. Cl.[5] G01V *1/38*
U.S. Cl. 367—20 **15 Claims**



1. A method for reconnection and connection of hydrophone sensor groups i a seismic streamer having a plurality of active sections connected with electronic modules via connector plugs, comprising:
connecting together a specific number of hydrophone groups on each side of each electronic module to form a first active section on one side of said electronic module and a second active section on the other side of said electronic module, each active section comprising a forward section and a rearward section, said forward section of said first active section being symmetrical with said rearward section of said second active section, so that the number of hydrophone groups in said forward section and said rearward section on each side of each electronic module is identical; and
automatically performing a summation of a set of hydrophone groups in at least one respective first and second active section by connecting said at least one respective active section with another respective active section.

5,351,219

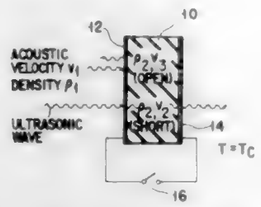
ACOUSTIC DEVICE

Hideo Adachi, Iruma, and Yoshihiro Ishibashi, Nagoya, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 4, 1992, Ser. No. 830,947
Claims priority, application Japan, Feb. 8, 1991, 3-017984
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—140 **17 Claims**

1. An acoustic device comprising:
an acoustic wave propagating medium made of a material having an elastic coefficient which changes rapidly at a Curie temperature;
a pair of electrodes provided on said acoustic wave propagating medium; and

control means, connected to said pair of electrodes, for controlling a state of conduction between said pair of



electrodes, without applying an external electric field across said acoustic wave propagating medium.

5,351,220

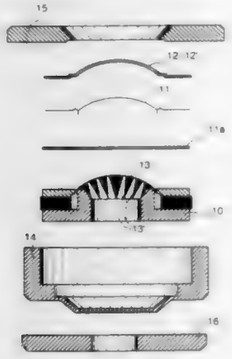
MOVING-COIL ELECTRODYNAMIC ELECTROACOUSTICAL TRANSDUCER

Guido Noselli, Fiero, Italy, assignor to Online S.N.C. Di Noselli G. & C., Fiero, Italy

Filed Jun. 23, 1993, Ser. No. 81,624

Int. Cl.[5] H05K *5/00*

U.S. Cl. 367—175 **6 Claims**



1. Moving-coil electrodynamic acoustical transducer for medium and high frequencies, usable for either direct radiation of sound or for an indirect radiation of sound via connection to a horn, the transducer comprising:

a compound body;

a diaphragm connected to said compound body, said diaphragm having a convex part with an outer convex side and an inner concave side;

a washer interposed between said diaphragm and said compound body;

a disk formed of non-magnetic hard material, said disk being superimposed on said diaphragm and adopting a shape of said diaphragm, aid disk having openings for the output of sound and defining direct-radiation transducer power-factor-improvement device/super charger means for direct-radiation configuration of said transducer;

indirect radiation power-factor-improvement device/super charger means formed of non-magnetic material arranged in a concavity on said concave side of said diaphragm between said diaphragm and said compound body, said indirect means having annular concentric ducts with a conical shape, aid indirect radiation power-factor-improvement device/super charger means for forcing sound waves to a given distance in a indirect radiation configuration of said transducer and for forming an adjustable damper of said diaphragm in a direct-radiation configuration of said transducer;

a cover formed of non-magnetic material serving as a lid of said transducer in each of said direct radiation configuration an said indirect radiation configuration, said cover being applied to said body facing said concave side of said diaphragm in said direct-radiation configuration and said cover being applied to said body facing said convex side in an indirect radiation configuration; and

a flange connected about said non-magnetic disk in said direct-radiation configuration and connected to said compound body at a side of said compound body opposite said non-magnetic disk in said indirect-radiation configuration.

5,351,221

APPARATUS FOR APPLYING BIAS MAGNETIC FIELD INCLUDING A ROTATABLE MAGNET AND A PLURALITY OF COILS FOR CONTROLLING THE ROTATION OF THE MAGNET

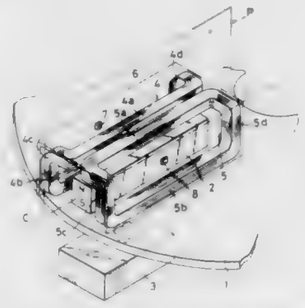
Takehide Ohno, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 617,875, Nov. 26, 1990, abandoned. This application Aug. 24, 1993, Ser. No. 111,017

Claims priority, application Japan, Dec. 8, 1989, 1-319786; Dec. 13, 1989, 1-323559; Aug. 30, 1990, 2-228593; Sep. 21, 1990, 2-253123

Int. Cl.[5] G11B *5/03, 13/04, 11/14*

U.S. Cl. 369—13 **7 Claims**



1. An apparatus for applying a bias magnetic field comprising:

an elongated permanent magnet polarized in a direction perpendicular to a longitudinal axis thereof and having two polar faces;

a support for rotatably supporting said magnet around an axis parallel to a face of a magnetooptic disk;

a coil section comprising a first coil having: (a) a first portion parallel to said face of said magnetooptic disk and located on a side opposite to the magnetooptic disk with respect to said magnet, (b) a second portion parallel to said face of said magnetooptic disk and arranged between said magnet and the magnetooptic disk, and (c) a third portion for connecting both ends of said first and second portions;

an auxiliary coil having a first auxiliary portion parallel to said face of said magnetooptic disk and disposed on a side of at least one side face of said first coil so as to face said magnet, said side face of the first coil being perpendicular to said face of the magnetooptic disk; and

a power source for supplying current to said coil section for controlling the rotation of said magnet and for supplying current to said auxiliary coil so as to apply compensating rotational torque to said magnet at rotational positions at which said two polar faces of said magnet are located respectively away from said first portion and second portion of said first coil.

5,351,222

DISK STORAGE APPARATUS INCLUDING A SINGLE POWER SUPPLY HYSTERESIS COMPARATOR HAVING A SYMMETRICAL CHARACTERISTIC

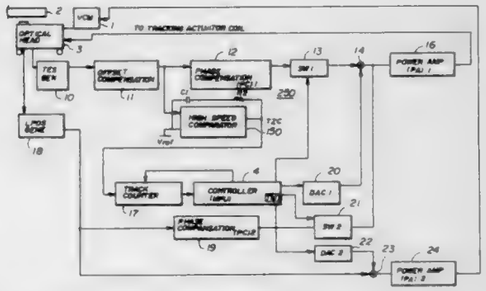
Toru Ikeda, and Shigenori Yanagi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Oct. 6, 1992, Ser. No. 957,521

Claims priority, application Japan, Oct. 8, 1991, 3-260317; Oct. 9, 1991, 3-262016

Int. Cl.[5] G11B *7/085*

U.S. Cl. 369—32 **11 Claims**



1. A disk storage apparatus comprising:

an optical scanning system movable with respect to a disk-shaped medium, said optical scanning system generating an electric read signal obtained by optically scanning the disk-shaped medium;

reproducing means, coupled to said optical scanning system, for reproducing information from the electric read signal;

seek control means, coupled to said optical scanning system, for controlling a seek speed so that the optical scanning system can move to a target track on the disk-shaped medium;

position error signal generating means for generating a position error signal from said electric signal, said position error signal indicating an error in a position of tracking by means of said optical scanning system; and

a rectangular wave generator,

said rectangular wave generator including:

a comparator having a first input terminal receiving said position error signal, a second input terminal, and an output terminal, the comparator slicing the position error signal at a hysteresis voltage so that a rectangular wave corresponding to said seek control signal is output via the output terminal; and

a feedback circuit connected between the output terminal and the second input terminal, said feedback circuit including means for changing a feedback quantity in accordance with variations of the seek speed.

5,351,223

TRACKING INDUCTION SYSTEM AND METHOD FOR OPTICAL DISC DRIVERS

Sung C. Park, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Jun. 30, 1993, Ser. No. 85,022

Claims priority, application Rep. of Korea, Jul. 7, 1992, 92 12089

Int. Cl.[5] G11B *7/085*

U.S. Cl. 369—44.28 **4 Claims**

1. A tracking induction system for an optical disc driver, comprising:

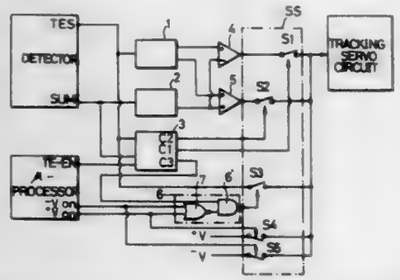
peak detection means for detecting a peak value of a tracking error signal which is a position error signal from a detector of an optical disc driver for sensing a laser beam reflected by a disc;

a gain controller for controlling the amplitude of a sum signal with a phase shift of 90° from said position error signal, to be the same as said tracking error signal;

switching circuit means having first to third output stages and for switching a tracking error enable signal supplied from a microprocessor, the tracking error signal and the sum signal when the laser beam is approaching a target track;

a deductor and an adder for performing a deduction and an addition for outputs from said peak detection means and said gain controller, respectively;

logic circuit means for controlling the switching of the tracking error signal, based on −V on signal and +V on



signal outputted orderly from said microprocessor at intervals of ±½ track pitches from said target track and adapted to switch −V and +V, and a signal from said third output stage of said switching circuit means; and

a switching unit for selecting one from a group consisting of outputs from the deductor and adder, the tracking error signal, the +V and the −V, at each interval, based on the tracking error signal, the sum signal, the tracking error enable signal, the −V on signal and the +V on signal, and thus generating an artificial tracking induction signal enabling a tracking induction at intervals of ±½ track pitches or more from said target track.

5,351,224

ADJUSTMENT OF TRACKING SERVO AND FOCUSING SERVO IN OPTICAL DATA RECORDING/REPRODUCING APPARATUS

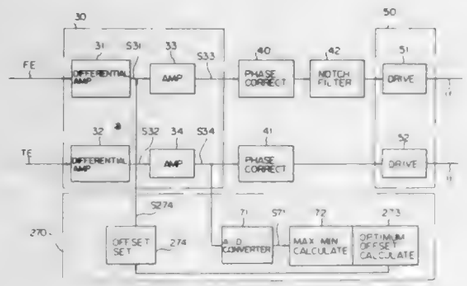
Shizuo Nagata; Yasuhiro Suzuki; Tutomu Tabata, and Masahiro Takahashi, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 665,231, Mar. 6, 1991, abandoned. This application Aug. 27, 1993, Ser. No. 112,655

Claims priority, application Japan, Mar. 8, 1990, 2-57068; Mar. 8, 1990, 2-57069; Mar. 9, 1990, 2-59482

Int. Cl.[5] G11B *7/09*

U.S. Cl. 369—44.29 **8 Claims**



1. A focus offset adjusting device comprising:

an optical pickup means for emitting a light beam onto a recording medium and for outputting, in response to a reflection from said recording medium, a first and a sec-

ond signal joining in focusing servo control and tracking servo control, respectively, and a third signal representative of data recorded in said medium;

a signal generating means for outputting, in response to said first signal and said second signal, a focusing servo error signal assigned to focusing servo control and a tracking servo error signal assigned to tracking servo control;

a drive means for outputting, in response to said focusing and tracking servo error signals, a first drive current and a second drive current assigned to focusing and tracking, respectively;

an actuator means for moving said optical pickup means in a focusing direction and a tracking direction in response to said first drive current and said second drive current, respectively; and

an adjusting means operative in response to either one of said second signal which appears immediately after the focus servo control is started and said third signal which appears while the tracking servo is effected for providing said drive means with a focus offset signal representative of a value of a focus offset, and for determining when a difference between a maximum and a minimum of the one signal is approximately at its maximum;

said drive means being further operative in response to the focus offset signal thus provided to correct the first and second drive currents;

said adjusting means maintaining, after having determined when the difference is approximately at its maximum, the focus offset signal representative of the value of the focus offset produced when the difference is approximately at its maximum, to thereby minimize the focus offset.

5,351,225

OPTICAL RECORDING AND REPRODUCING APPARATUS HAVING A PLURALITY OF LIGHT SPOTS

Takashi Ishida, Osaka; Shunji O'Hara, Higashiosaka; Kenzo Ishibashi, Moriguchi, and Toshio Satoh, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

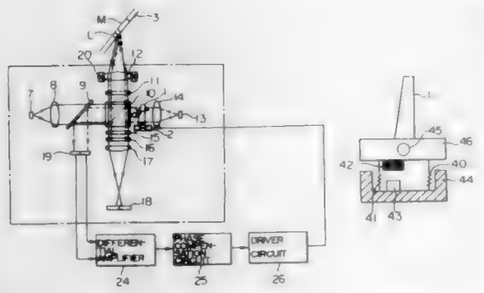
Division of Ser. No. 3,801, Jan. 16, 1987. This application May 1, 1992, Ser. No. 877,429

Claims priority, application Japan, Jan. 21, 1986, 61-10818; Mar. 4, 1986, 61-46530

The portion of the term of this patent subsequent to Dec. 27, 2009, has been disclaimed.

Int. Cl.[5] G11B *7/09*

U.S. Cl. 369—44.32 **2 Claims**



1. An optical recording and reproducing apparatus having a plurality of light spots, comprising:

light spot forming means for forming at least a first light spot and a second light spot on one track of an optical recording medium,

first deviation detection means for detecting a first deviation of the first light spot from said track,

first drive means for moving the first light spot and the second light spot together in accordance with the first deviation,

second deviation detection means for detecting a second deviation of the second light spot from said track,

second drive means for moving the second light spot relative to the first light spot in accordance with second deviation, and

limit means for limiting a movable range of the second light spot by said second drive means to less than one half of a track pitch, normal to said track, less an allowable error of the positions of the first and second light spots formed by said light spot forming means, from the position of the second light spot taken when said second drive means is at a neutral position.

5,351,226

METHOD AND APPARATUS FOR REPRODUCING INFORMATION FROM A RECORDABLE OPTICAL DISC REGARDLESS OF WHETHER AN INDEX AREA IS DETECTED AS BEING PRESENT ON THE DISK AND A METHOD OF GENERATING INDEX INFORMATION DURING REPRODUCTION OF THE INFORMATION ON THE DISK

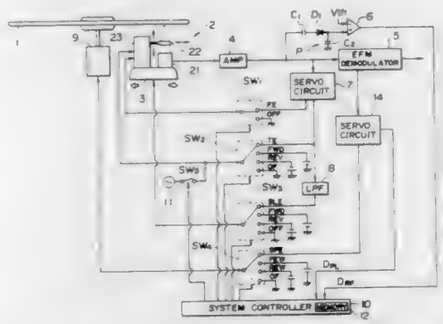
Katsuji Mizumoto, and Mutsumi Kono, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 2, 1992, Ser. No. 908,160

Claims priority, application Japan, Aug. 1, 1991, 3-193218; Aug. 1, 1991, 3-193219

Int. Cl.[5] G11B *5/09, 7/00*

U.S. Cl. 369—47 **11 Claims**



1. An apparatus for reproducing information from a recordable optical disc having an information recording area for recording a plurality of information and an index information with respect to said plurality of information pieces, said apparatus comprising:

a driving means for rotationally driving said optical disc;

a pickup for irradiating a light beam onto said optical disc so as to read information recorded on said optical disc;

a transferring means for transferring said pickup means in a radial direction of said optical disc;

a memory means for storing a temporary index information;

a discriminating means for discriminating whether or not the index information is recorded in the index information recording area while the rotation of the optical disc is stopped; and

a control means for controlling said driving means, said pickup means and said transferring means and for producing said temporary index information into said memory means on the basis of a read information read by said pickup means,

wherein said control means products and stores said temporary index information into said memory means when it is discriminated that no index information is recorded in the index information recording area by the discriminating means.

5,351,227

OPTICAL RECORDING/REPRODUCING APPARATUS IN WHICH DATA WILL NOT BECOME UNABLE TO BE READ OUT IN CASE AN SDL FAILS TO BE RENEWED

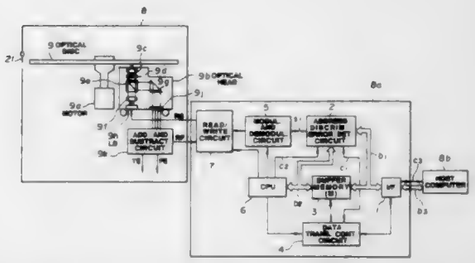
Hitoshi Ichikawa, Machida; Osao Miyazawa, Hachioji, and Masanobu Nakamura, Hoya, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1991, Ser. No. 661,957

Claims priority, application Japan, Feb. 28, 1990, 2-51127

Int. Cl.[5] G11B *7/00, 3/90*

U.S. Cl. 369—58 **7 Claims**



1. A controlling information judging method for an optical recording/reproducing apparatus having an optical recording medium comprising:

a first process of recording information in an information recording part of a target recording area;

a second process of reproducing the information recorded in said information recording part of said target recording area in said first process, comparing it with the unrecorded information and judging whether the recorded information coincides with the unrecorded information within a predetermined error correcting range;

a third process of recording said information recorded in said information recording part of said target recording area in an alternating information recording part of said alternating recording area whenever the recorded information does not coincide with the unrecorded information within said predetermined error correcting range, and recording controlling information including address information of said information recording part and of said alternating information recording part in a controlling information recording part;

a fourth process of judging whether or not said controlling information can be reproduced by whether or not said controlling information having reproduced said controlling information recorded in said controlling information recording part by said third process coincides with said controlling information before the recording within a predetermined error correcting range; and

a fifth process of recording data memorized in a buffer memory written in said controlling information recording part of said optical recording medium in case said controlling information is judged in the fourth process to be unable to be reproduced, reproducing said data recorded in said information recording part, comparing it with that before the recording, judging whether or not said optical recording medium is abnormal or said optical recording-/reproducing apparatus is abnormal by collating said reproduced data to determine whether data to be recorded coincides with said reproduced data within a predetermined error correcting range and initializing said optical recording medium in case said optical recording medium is abnormal.

5,351,228

OPTICAL DISK DRIVE UNIT

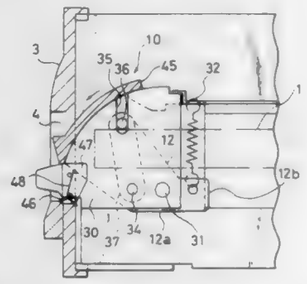
Tetsuo Kanno, Ebina, and Akihiko Okamoto, Yokohama, both of Japan, assignors to Ricoh Company Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 747,529, Aug. 20, 1991, abandoned. This application Jul. 28, 1992, Ser. No. 921,300

Claims priority, application Japan, Sep. 20, 1990, 2-248913; Apr. 18, 1991, 3-086732; Aug. 20, 1991, 3-231151

Int. Cl.[5] G11B *17/04*

U.S. Cl. 369—77.2 **21 Claims**



1. An optical disk drive unit comprising:

an opening portion formed in a body case to insert an optical disk cartridge having an optical disk therein into the body case and take the optical disk cartridge out of the body case;

driving means for receiving and rotating said optical disk; and

a rotatable shutter for opening and closing said opening portion and formed such that a center of rotation of the shutter is located on a side of the driving means within said body case,

wherein said shutter is constructed by a first door and a second door.

5,351,229

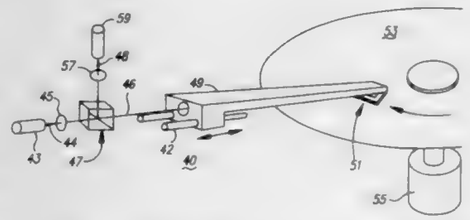
TRIBO-ATTRACTIVE CONTACT SLIDER FOR AN OPTICAL READ/WRITE SYSTEM

Blasius Brezoczky, San Jose; Gary M. McClelland, Palo Alto, and Hajime Seki, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1991, Ser. No. 814,722

Int. Cl.[5] G11B *13/04*

U.S. Cl. 369—99 **30 Claims**



1. An optical head apparatus for use with an optical storage medium having a surface layer of a selected material, comprising:

focusing means for focusing a light beam onto said optical storage medium; and

support means maintained in sliding physical contact with said optical storage medium, said support means being fabricated of a material, wherein said surface layer of the optical storage medium and said material of the support means have a characteristic that a tribo-attractive force is generated between the support means and the optical

storage medium as a result of sliding contact therebetween, said focusing means rigidly mounted on said support means in close proximity to a major surface of said optical storage medium.

5,351,230

OPTICAL INFORMATION SYSTEM FOCAL POINT DISPLACEMENT DETECTING MEANS HAVING FRESNEL ZONE PLATES WITH RECTILINEAR GRATING

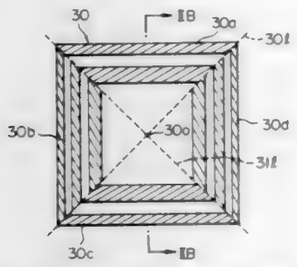
Tadashi Takeda, Nagano; Hiroyuki Wada, Tokyo; Kenji Fukui, Tokyo; Ricardo M. Okamoto, Tokyo, and Shohei Hashiguchi, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 22, 1992, Ser. No. 964,964

Claims priority, application Japan, Oct. 23, 1991, 3-304068; Oct. 23, 1991, 3-304069

Int. Cl.[5] G11B *7/00, 7/09*

U.S. Cl. 369—112 **7 Claims**



1. A displacement detecting device for an optical head emitting an irradiation light converging on a convergence position onto an irradiated face of an optical recording medium which reflects said irradiation light to provide reflected rays, said device including:

optical means for focusing said reflected rays from said irradiated face at more than one different focal point position; and

detecting means for detecting displacement of said irradiation light with respect to said irradiated face on the basis of the respective focal point positions of the reflected rays;

said optical means being integrally formed by a plurality of converging members for focusing said reflected rays on a different focal point, each of said converging members having a Fresnel zone plate member having a single focal point formed by a rectilinear grating; and

said detecting means having;

a photodetector for detecting a focusing shape of said reflected rays focused by said converging member and generating a detection signal; and

means for detecting displacement between said convergence position of said irradiation light and said irradiated face on the basis of said detection signal.

5,351,231

PROGRAMMABLE MARK DETECTION AND WINDOWING FOR OPTICAL DISK CONTROLLERS

Larry King, Boulder; Trent Dudley, Littleton, and Roger McPherson, Westminster, all of Colo., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Apr. 13, 1992, Ser. No. 868,011

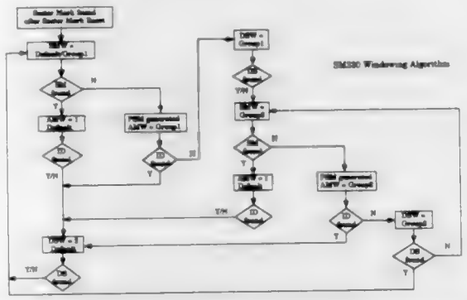
Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—124 **14 Claims**

1. A method of detecting a Data Sync Mark in an ISO optical track format having one or more errors therein comprising the steps of;

(a) segmenting the expected Data Sync Mark pattern into a sequence of 12 expected four-bit groups;

(b) comparing each four-bit group of the Data Sync Mark detector data stream with its expected four-bit group value to determine whether they match;



(c) comparing the total number of the four-bit groups matching their expected four-bit group values with a threshold number of four-bit groups to determine if a Data Sync Mark was detected.

5,351,232

PATH MONITORING SYSTEM FOR CROSS-CONNECT SYSTEM

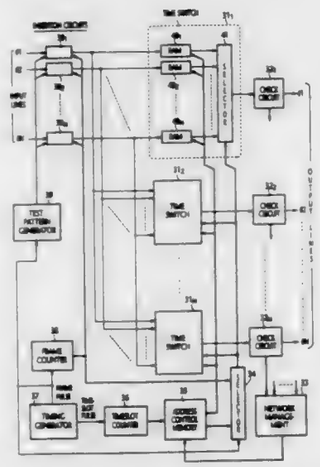
Hiroshi Yamashita, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 5, 1993, Ser. No. 27,194

Claims priority, application Japan, Mar. 5, 1992, 4-083406

Int. Cl.[5] H04J *3/14;* **H04L** *1/24*

U.S. Cl. 370—14 **3 Claims**



1. A cross-connect system having N input lines and N output lines, each of said N input lines supporting a sequence of frames each containing an idle time slot and data time slots, comprising:

a test pattern generator for generating a single test pattern;

timing means for cyclically generating an incremental count value at frame intervals, said count value identifying each of said input lines;

N insertion means connected respectively to corresponding ones of said input lines for receiving the N frame sequences therefrom and said test pattern from said test pattern generator, each of the insertion means being responsive to said count value for inserting the received test pattern into the idle time slot of one of the frames of the received sequence when the corresponding input line is identified

by said count value, so that N test patterns are sequentially and respectively inserted into the N frame sequences;

a plurality of time switches, each having N inlets corresponding respectively to said input lines for receiving said N sequences of frames respectively from said N insertion means, and an outlet;

control means for controlling each of said time switches for transferring the data time slots of each frame on a per time slot basis from any of the inlets of the time switch to the outlet thereof according to an address pattern and transferring one of said N test patterns contained in N frame sequences from one of the N inlets of the time switch to the outlet thereof when the input line corresponding to said one of the N inlets is identified by said count value; and

a plurality of test pattern check circuits connected respectively between the outlets of said time switches and said output lines for examining the test patterns from the time switches to evaluate the quality of paths from said N input lines to said N outputs lines,

said control means making a change in said address pattern according to the quality of said paths evaluated by the test pattern check circuits.

5,351,233

Patent Not Issued For This Number

5,351,234

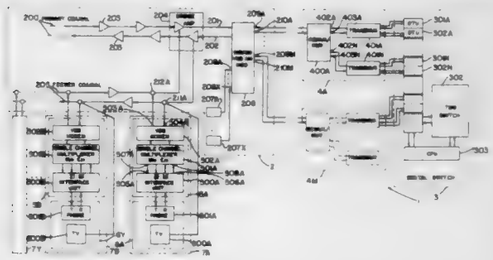
SYSTEM FOR INTEGRATED DISTRIBUTION OF SWITCHED VOICE AND TELEVISION ON COAXIAL CABLE

John D. Beierle, Danbury, Conn., and William C. G. Ortel, New York, N.Y., assignors to Nynex Corporation, Del.

Filed Dec. 28, 1990, Ser. No. 635,751

Int. Cl.[5] H04J *4/00*

U.S. Cl. 370—49.5 **31 Claims**



1. A system comprising:

a plurality of telephone subscriber locations, each telephone subscriber location including means for establishing an RF transmitting channel and an RF receiving channel associated with the subscriber location for conveying signalling and analog voice information from and to, respectively, the subscriber location;

the RF transmitting channels of said subscriber locations forming one or more transmitting frequency-division-multiplexed signals and the RF receiving channels of said subscriber locations forming one or more receiving FDM signals;

a broad band cable network for carrying the RF receiving and transmitting channels of said subscriber locations via said one or more transmitting frequency-division-multiplexed signals and said one or more receiving frequency-division-multiplexed signals;

and central switch means responsive to said cable network for enabling each RF transmitting channel in the one or more transmitting frequency-division-multiplexed signals on the cable network to be selectively coupled to any of the RF receiving channels in the one or more receiving frequency-division-multiplexed signals on the cable network, whereby voice communication between the subscriber locations of the coupled channels is enabled, said central switch means including: first means for establishing for each RF transmitting channel a transmitting digital channel for carrying digital voice information corresponding to the analog voice information carried by the RF transmitting channel and for establishing first digital control channels for carrying the signalling information of the RF transmitting channels, said transmitting digital channels and said first digital control channels forming one or more transmitting time-division-multiplexed signals each of which containing a number of transmitting digital channels and a first control channel carrying the signalling information for said number of transmitting digital channels, said first means including transmultiplexer means for converting said one or more transmitting frequency-division-multiplexed signals into said one or more transmitting time-division-multiplexed signals; digital switch means for establishing for each RF receiving channel a receiving digital channel for carrying digital voice information corresponding to the analog voice information carried by the RF receiving channel and for establishing one or more second digital control channels for carrying the signalling information of the RF receiving channels, said receiving digital channels and said second digital control channels forming one or more receiving time-division-multiplexed signals each of which containing a number of receiving digital channels and a second control channel carrying the signalling information for said number of receiving digital channels, said digital switch means selectively coupling each transmitting digital channel in said one or more transmitting time-division-multiplexed signals to any of the receiving digital channels in said one or more receiving time-division-multiplexed signals; and said transmultiplexer means of said first means converting said one or more receiving time-division-multiplexed signals to said one or more receiving frequency-division-multiplexed signals.

5,351,235

METHOD FOR RELAYING INFORMATION IN AN INTEGRATED SERVICES NETWORK

Pekka Lahtinen, Kauniainen, Finland, assignor to Telenokia Oy, Espoo, Finland

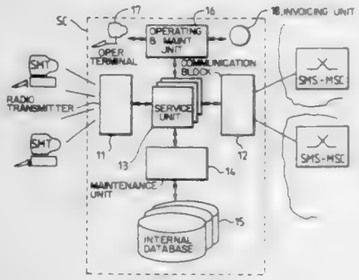
PCT No. PCT/FIG2/00035, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO92/14329, PCT Pub. Date Aug. 20, 1992

PCT Filed Feb. 11, 1992, Ser. No. 937,839

Claims priority, application Finland, Feb. 12, 1991, 910682

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 370—58.1 **11 Claims**



1. A method for relaying information in an integrated services network in which network a message switching service is operative between terminal equipment units connected to the network, said method comprising the steps of:

using a terminal equipment unit of the network to send a query message to inquire information, via the network, of another terminal equipment unit connected to the network, said query message including at least a replay address;

said another terminal equipment unit generating a reply message in response to the query message; and

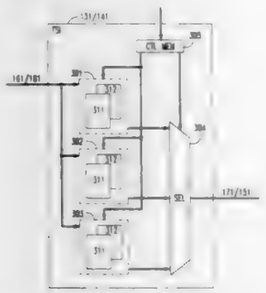
automatically transmitting the replay message to the reply address via the message switching service of the network; the query message being one of a plurality of query types on the basis of which said another terminal equipment unit can identify the type of query messages being transmitted on the network by any of the terminal equipment units, said query message containing identification information corresponding to the type of query message with which it is related.

5,351,236

MULTIRATE, SONET-READY, SWITCHING ARRANGEMENT

Robert L. Pawelski, Lisle, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 20, 1992, Ser. No. 963,976
Int. Cl.[5] H04Q *11/04*; H04L *12/50*
U.S. Cl. 370—58.1 **29 Claims**



3. Apparatus for switching connections having a hierarchy of data rates comprising a lowest rate corresponding to one time slot of a time-division multiplex (TDM) frame of time slots and at least one higher rate corresponding to a plurality of time slots within said TDM frame, said apparatus comprising:

means, responsive to a command to establish a given connection having a higher rate of said at least one higher rate, said command specifying only one time slot within said TDM frame and a data rate for said given connection, for determining from said specified time slot and data rate a set of a plurality of time slots within said TDM frame for said given connection;

control memory means having locations corresponding to said TDM frame of time slots;

means coupled to the means for determining a set of a plurality of time slots for said given connection, for determining locations in said control memory means that correspond to determined said set of a plurality of time slots;

means coupled to the means for determining a set of a plurality of time slots for said given connection, for writing information defining said given connection into determined said locations of said control memory means; and

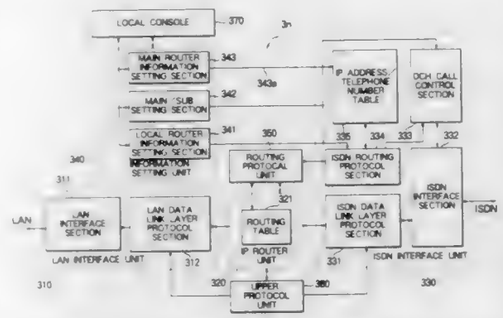
switching means responsive to reading of said connection-defining information written into said determined locations of said control memory means for establishing said given connection having said higher rate.

5,351,237

NETWORK SYSTEM COMPRISING A PLURALITY OF LANS CONNECTED TO AN ISDN VIA A PLURALITY OF ROUTERS, EACH CAPABLE OF AUTOMATICALLY CREATING A TABLE FOR STORING ROUTER INFORMATION

Takahiro Shinohara, Tokyo, and Yuji Ito, Shizuoka, both of Japan, assignors to NEC Corporation, Japan

Filed Jun. 4, 1993, Ser. No. 71,776
Claims priority, application Japan, Jun. 5, 1992, 4-145905
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—58.3 **4 Claims**



1. In a network system comprising a plurality of LANs (Local Area Networks) connected to an ISDN (Integrated Services Digital Network) via first through N-th routers where N represents a predetermined natural number which is not less than three, said LANs being divided into first through N-th LAN groups which are connected to said first through said N-th routers, respectively, each of said first through said N-th LAN groups comprising at least one of said LANs, an n-th router being for connecting an n-th LAN group through said ISDN with at least one of said first through said N-th LAN groups except for said n-th LAN group, where n represents each of 1 through N, said n-th router including a table for storing router information, in connection with all of said first through said N-th routers except for said n-th router, the improvement wherein said n-th router comprises:

local router information setting means for receiving local router setting, information indicative of an n-th router IP (Internet Protocol) address and an n-th router telephone number both of which are assigned to said n-th router; and

main/sub setting means for receiving n-th main/sub setting information indicating whether said n-th router should be operable as either a main router or one of sub-routers, whereby a particular one of said first through said N-th routers is operable as said main router while remaining routers except for said main router are operable as said sub-routers.

5,351,238

METHOD OF CONTROLLING A FRAME PHASE OF A TIME-DIVISION SWITCH AND FRAME PHASE VARIABLE TIME-DIVISION SWITCH

Yoshihiro Ashi, Yokohama; Yukio Nakano, Hachioji, and Kenji Takeda, Nagoya, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Communication System Inc., Yokohama

Filed Jun. 24, 1991, Ser. No. 719,912
Claims priority, application Japan, Jun. 25, 1990, 2-164143
Int. Cl.[5] H04Q *11/04*
U.S. Cl. 370—66 **24 Claims**

14. A frame phase variable time-division switch comprising:

a plurality of input highways;

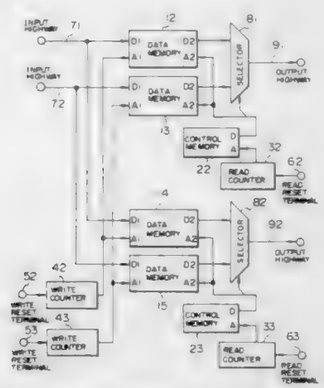
data memories for storing data multiplexed on said data highways, each of said data memories being at least three times the data exchange extent;

more than one output highway to which data read out of said data memories are outputted;

control memories provided for each of output addresses for storing write addresses or read addresses of said data memories;

write counters provided for each of said highways for generating a write pulse;

a read counter for generating a read pulse;



write reset terminals provided for each of said write counters for inputting a pulse for controlling the phase of said write counter; and

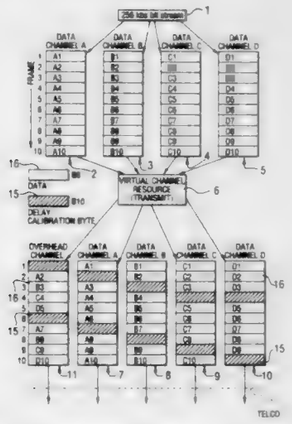
read reset terminals for inputting a pulse controlling the phase of said read counters.

5,351,239

DIGITAL DATA TRANSMISSION SYSTEM

David H. A. Black, Ottawa; Peter Musgrave, Montreal, and Sabino R. Ventola, Woodlawn, all of Canada, assignors to Newbridge Networks Corporation, Kanata, Canada

PCT No. PCT/CA91/00079, § 371 Date Nov. 16, 1992, § 102(e) Date Nov. 16, 1992, PCT Pub. No. WO91/14319, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 15, 1991, Ser. No. 949,233
Claims priority, application Canada, Mar. 16, 1990, 2012361; Sep. 20, 1990, 2025866
Int. Cl.[5] H04J *3/06, 3/16, 3/22*
U.S. Cl. 370—84 **15 Claims**



1. A method of transmitting super-rate data signals having a bit-rate higher than a predetermined bit-rate through a digital data transmission system normally providing channels having said predetermined bit-rate, said channels being subject to different propagation delay characteristics through said system, comprising;

allocating a group of k said channels (where k is an integer) in said data transmission system as a virtual channel for the transmission of said super-rate signals;

dividing said super-rate signals into n sub-signals, where n is an integer and n≦k, having a bit-rate equal to or less than said predetermined bit-rate;

defining an overhead channel in at least one of said channels;

transmitting said n sub-signals over said channels;

transmitting overhead signals at intervals in said channels in slots normally containing data signals, said overhead signals temporarily displacing the data signals normally occupying said slots;

transmitting said displaced data signals over said overhead channel in slots normally occupied by the overhead signals displacing them; and

reassembling said n sub-signals to reconstitute said original super-rate data signals with the aid of said overhead signals after transmission through said channels:

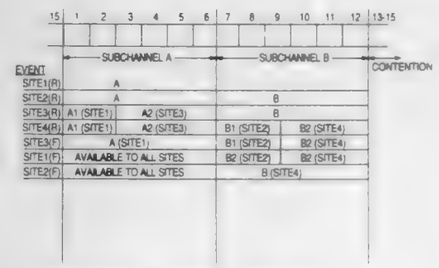
wherein one of the channels, which has a free bit position not required for transmitting data, provides said overhead channel at a sub-rate of the predetermined bit-rate, and the overhead signals are transmitted by inserting respective individual bits thereof on a rotational basis into the respective data channels, each bit of the overhead signals being inserted into the free bit position of said one channel or into data bit positions of the other n-1 channels, the data bit that would normally be sent in a bit position occupied by a data calibration bit being sent in the free bit position of said one channel while its bit position is occupied by an overhead bit.

5,351,240

COMMUNICATION LINK HAVING DYNAMICALLY ALLOCATABLE AUXILIARY CHANNEL FOR DATA BURSTS

William Highsmith, Indialantic, Fla., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Division of Ser. No. 880,209, May 8, 1992, abandoned. This application Dec. 14, 1993, Ser. No. 165,829
Int. Cl.[5] H04J *3/22*
U.S. Cl. 370—84 **19 Claims**



1. A communication network comprising:

a master and a plurality of remotes, said remotes supporting a plurality of co-services and being operative to share access to at least one inbound frequency by way of which information signals are transmitted from said remotes to said master;

means for detecting a need by a remote for an extraordinary amount of bandwidth in excess of bandwidth of said at least one inbound frequency;

means for allocating to said remote a reserved spillover frequency from a set of frequencies in response to said means for detecting said need for extraordinary bandwidth for said remote;

means for detecting when said need for extraordinary bandwidth by said remote has ended; and

means for reallocating said remote, which has been allocated to said reserved spillover frequency, to one of the remain-

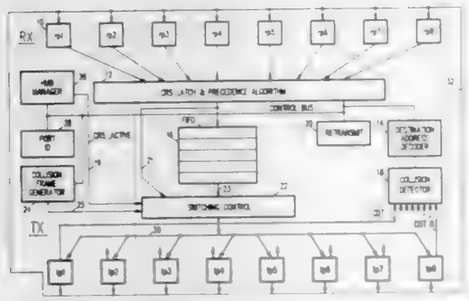
ing frequencies when the need for extraordinary bandwidth for said remote has ended.

5,351,241

TWISTED PAIR ETHERNET HUB FOR A STAR LOCAL AREA NETWORK

Mivtza Yehonatan, Haifa, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 24, 1992, Ser. No. 996,699
Int. Cl.[5] H04L *12/44*
U.S. Cl. 370—85.3 **7 Claims**



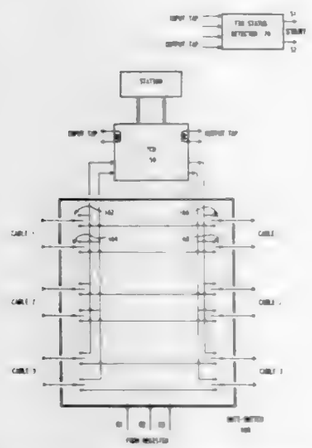
2. The combination in accordance with claim 1 wherein said buffer means for storing said preferred station frame from said preferred station is comprised of a first-in first-out buffer of a minimum depth equal to the number of preferred station frames that are receivable from said plurality of stations attached to said hub.

5,351,242

METHOD AND APPARATUS FOR CONFIGURING AND MAINTAINING TOKEN RING NETWORKS

Marian Kramarczyk, 22 Lancaster Dr., Suffern, N.Y. 10501; David Foni, 300 Winston Dr., Apt. #1921, Cliffside Park, N.J. 07010, and Haim Jacobson, 20 Inness Rd., Tenafly, N.J. 07670

Filed Apr. 14, 1992, Ser. No. 868,761
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—85.5 **11 Claims**



10. In a method for configuring and maintaining token ring network of the type including a plurality of trunk coupling units each adapted to receive a cable connection from a station and being serially connected on a common trunk cable to permit selective connection of a connected station to the cable, the steps of:

sensing an input signal applied from the connected station to the trunk coupling unit;

sensing an output signal provided from the trunk coupling unit to the connected station; and

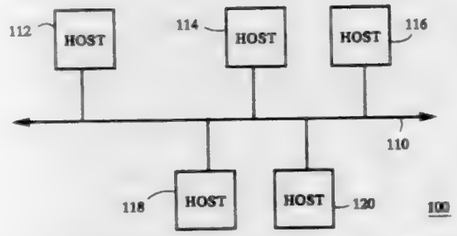
differentially processing the amplitudes of the signals sensed in the preceding two steps to produce a signal indicative of the traffic in-out (TIO) status of the connected station.

5,351,243

MONITOR FOR PACKETS ON A COMMUNICATIONS NETWORK

Ramesh S. Kalkunte, Lexington; Satish L. Rege, Groton, both of Mass., and Santosh K. Hasani, Nashua, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 27, 1991, Ser. No. 814,996
Int. Cl.[5] H04J *3/24*
U.S. Cl. 370—92 **14 Claims**



1. An apparatus for monitoring a plurality of packets on a local area network, wherein the local area network couples a host computer to a plurality of other hose computers with each packet of said plurality of packets comprising a plurality of bit fields including a header field, said header field identifying the source of said packet and the destination of said packet, said apparatus for monitoring packets comprising:

a memory containing monitoring data, said monitoring data including a plurality of data category fields identifying a plurality of types of data to be monitored;

means, coupled to said local area network and said memory, for receiving at least one of said plurality of packets from said local area network;

means for providing forwarding data responsive to said plurality of fields of said packet, said forwarding data including a category field identifying a data type of said received packet and a destination field identifying the destination of said packet; and

means, responsive to said data category fields in said memory and said category field of said forwarding data, for monitoring packets on said local area network and for indicating whether said packets on said local area network have fields corresponding to said plurality of data category fields stored in said memory.

5,351,244

SEISMIC TRANSMISSION METHOD AND DEVICE FOR A VERY LOW ERROR RATE

Joseph Rialan, Meudon, and Christian Grouffal, Rueil-Malmaison, both of France, assignors to Institut Francais du Petrole, Malmaison Cedex, France

Continuation of Ser. No. 839,999, Feb. 24, 1992, abandoned. This application Dec. 7, 1993, Ser. No. 162,384
Claims priority, application France, Feb. 22, 1991, 91 02243
Int. Cl.[5] G06F *11/00, 11/10;* **H03M** *13/00*
U.S. Cl. 371—2.1 **7 Claims**

6. A system for obtaining seismic records of a subterranean zone with a low error rate, comprising:

a seismic assembly unit including:

(a) a receiver for receiving a series of seismic signals resulting from passage of a seismic signal through the subterranean zone;

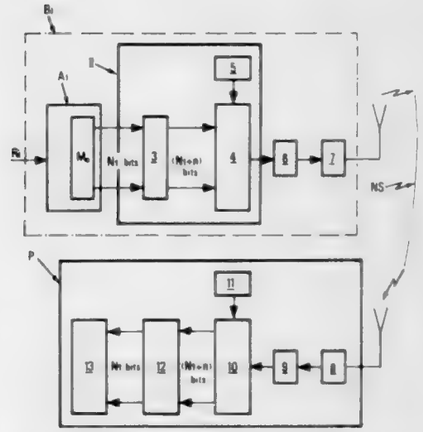
(b) a first memory for storing the received seismic signals, together with synchronizing digital words, to provide digitized samples of N1 bits each;

(c) a first coding apparatus for encoding the stored digitalize samples by adding to the N1 bits of each digitalize sample a group of n check bits to form a set of encoded digital words;

(d) a second memory for sequentially storing the encoded digital words in successive blocks of N2 stored digital words;

(e) a first controller for successively reading the stored digital words from the second memory by interleaving the blocks of stored digital words to provide (N1+n) digital words of N2 bits each;

(f) a second coding apparatus for adding to the (N1+n) digital words synchronizing data, including preamble data made up of sequences of bits likely to introduce known phase or frequency shifts during transmission, and for encoding the resulting (N1+n) digital words into digital symbols by combining the digital words, with weighting of successive bits of the (N1+n) digital words according to a TFM code; and



(g) a transmitter for transmitting successive digital symbols, said transmitter including a carrier signal source and means for modulating the carrier signal successively in accordance with the preamble data to introduce known phase or frequency shifts to the carrier signal, and in accordance with the digital symbols; and

a central control unit including:

(h) a receiver for receiving the transmitted digital symbols;

(i) a detector for phase or frequency detecting the received digital symbols by reversing the known phase or frequency shifts;

(j) a first decoder for decoding the detected digital symbols to restore the interleaved blocks of (N1+n) digital words of N2 bits each;

(k) a third memory for storing the restored interleaved blocks;

(l) a second controller for reconstituting the blocks of N2 digital words of (N1+n) bits each by reverse interleaving the stored digital words from the third memory;

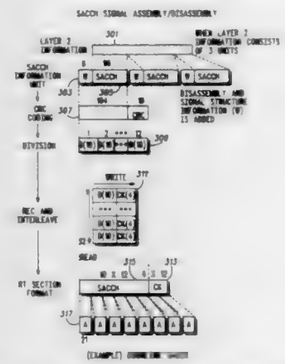
(m) a second decoder for decoding the n check bits of the digital words in the reconstituted blocks to correct any errors in the digital words and to suppress the n check bits of each digital word in the reconstituted blocks, thereby providing received digital samples.

5,351,245

BIT ERROR RATE DETECTION METHOD

Gary J. Pregont, Dundee; David G. Cason, Palatine, and Jeffrey D. Goetsch, Lindenhurst, all of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 770,199, Oct. 2, 1991, abandoned. This application Nov. 15, 1993, Ser. No. 152,951
Int. Cl.[5] G11B *11/00;* **H04B** *7/00*
U.S. Cl. 371—5.1 **2 Claims**



1. A method for determining bit error rate in a digital radio communication system, the communication transmitting and receiving radio frequency (RF) signals, the RF signals formatted into multiple frames, each frame having a first predetermined number of data bits having a predetermined pattern and a second predetermined number of data bits encoded with error correction code, the method comprising the steps of:

transmitting a first frame of the RF signals including transmitting said first and second predetermined number of data bits;

receiving said first frame, extracting said first predetermined number of data bits and second encoded predetermined number of data bits;

comparing the extracted first predetermined number of data bits with the predetermined pattern;

incrementing a first counter value by 1, responsive to said step of comparing, for each data bit of the first predetermined number of data bits that is unmatched to said predetermined pattern;

decoding said encoded second predetermined number of data bits, thereby determining that said second predetermined number of received data bits contains a number of errors chosen from the group of 0, 1 and more than 1;

incrementing said first counter value, responsive to said step of decoding, by a value chosen from the group of 1 and 2 when the second predetermined number of data bits is determined to contain a number of errors chosen from the group of 1 and more than 1, respectively; and

determining a bit error rate of the first frame at a predetermined confidence level using the first counter value and the total number of data bits included in the transmitted first frame.

2. A method for determining bit error rate in a time division multiple access (TDMA) radio communication system, the TDMA radio communication system sending and receiving radio frequency (RF) signals containing data to and from multiple radios, the RF signals are formatted before transmission and after reception, the format of the RF signals includes superframes, each superframe contains 36 frames, the frames each contains 280 data bits, 20 of 280 data bits are a synchronization word having a known pattern of data bits, 4 of the 36 frames contain a 21 data bit Radio Channel (RCH) field, the remaining 32 of 36 frames contain a 21 bit Slow Associated Control Channel (SACCH) field, the SACCH and RCH fields are encoded using the Bose, Chaudhuri, and Hocquenghen (BCH) code on sub-sections of the fields prior to formatting

the data into the 21-bit SACCH and RCH fields, the BER determination method comprising the steps of:

transmitting a first superframe of data;

receiving said first superframe of data, including extracting the synchronization words, the RCH fields, and the SACCH fields to form extracted synchronization words, extracted RCH and SACCH fields;

comparing each data bit of the extracted synchronization words to the known pattern of data bits;

after comparing, incrementing a counter value when a data bit of the extracted synchronization words is found not equal to the known pattern of data bits;

formatting the RCH and SACCH fields into sub-sections;

decoding each of the RCH and SACCH sub-sections using said BCH code, thereby determining if each of said RCH and SACCH sub-sections contains 0, 1 or more than 1 error;

incrementing said counter value of the previous step of incrementing by 1 or 2, respectively, in response to said 1 or more than 1 error in said each of said RCH and SACCH sub-sections determined by said decoding step; and

determining a bit error rate of said received first superframe using said counter value.

5,351,246

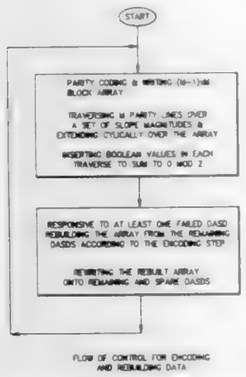
METHOD AND MEANS FOR CODING AND REBUILDING THAT DATA CONTENTS OF UNAVAILABLE DASDS OR REBUILDING THE CONTENTS OF DASDS IN ERROR IN THE PRESENCE OF REDUCED NUMBER OF UNAVAILABLE DASDS IN A DASD ARRAY

Miguel M. Blaum, and Ron M. Roth, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 718,724, Jun. 21, 1991, abandoned. This application Jan. 3, 1994, Ser. No. 177,633

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—10.1 **9 Claims**



FLOW OF CONTROL FOR ENCODING AND REBUILDING DATA

8. An external storage subsystem having a plurality of DASDs and a control unit for attaching a subset of said plurality to a processor in the form of an array of M DASDs, said array of M DASDs including P DASDs for storing parity blocks and M−P DASDs for storing data blocks, logically related ones of said data and parity blocks forming addressable parity groups, no two blocks from the same parity group being stored on the same DASD, said processor sending sequences of read and write commands to said control unit for selectively accessing at least one data block and one parity block from the same parity group, M being at least equal to two and P being at least equal to one, a subset of S DASDs of said plurality being available as spares for inclusion in said array, S being at least equal to P, wherein said control unit comprises:

(a) means for parity coding and writing a (M−1)×M array of data and parity blocks onto the M DASDs, each block being uniform in extent and at least one bit in length, said array data and parity blocks being coded and written onto the M DASDs, said parity coding and writing means include

(1) means for traversing M parity lines projected onto said data and parity block array for each one of a set of slopes consisting of slope magnitudes 0, 1, 2, . . . , P−1, and extending cyclically over said data and parity block array; and

(2) means for inserting Boolean values into the (M−1)×M data and parity group array in counterpart DASD array locations during each traverse such that data and parity blocks in said data and parity block array encountered over each traverse sum to zero modulo 2 (even parity), M being a prime number, said data and parity block array being fully encoded in M*(P−1) parity line traverses; and

(b) means responsive to any unavailability of R DASDs distributed among the M−P data and P parity DASDs for

(1) rebuilding the data and parity block array by said control unit by coding the data and parity blocks from M−R available DASD's according to the parity coding and writing means in which those data and parity blocks as stored on the R unavailable DASDs are assumed to exhibit a uniform default value, and,

(2) rewriting the rebuilt data and parity block array onto a DASD array formed from M−R available DASDs and R of the S spare DASDs.

5,351,247

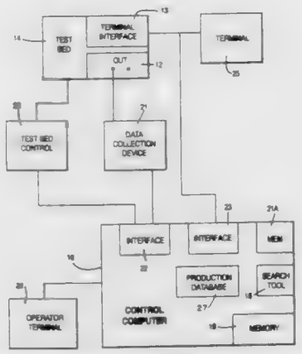
ADAPTIVE FAULT IDENTIFICATION SYSTEM

Howard E. Dow, Lexington; Ruby Li, Chelmsford, and Terry W. Potter, Acton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 376,498, Jul. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 292,436, Dec. 30, 1988, abandoned. This application Feb. 18, 1993, Ser. No. 20,030

Int. Cl.[5] G06F *15/18*

U.S. Cl. 371—15.1 **65 Claims**



1. A computer-based method for identifying faults in a system, the system comprising a plurality of mechanical or electrical components that operate in a plurality of states, the components of the system being arranged to output data indicative of their respective performance during any given state, the method comprising the steps of:

a) capturing data representative of a state of the system when a fault occurs;

b) processing the captured data into a recall data pattern;

c) providing a production database comprising a plurality of data entries, each data entry representative of one or more instances when the system is faulting in a particular state, each data entry having associated with it a label that identifies a proper response to correct at least one system fault for the particular state, the production database having associated with it a similarity criteria being a measure of similarity and comprising parameters within which the recall data pattern is considered similar to a data entry;

d) comparing the recall data pattern with each one of the plurality of data entries in the production database to determine an ordered recommendation list of data entries, each data entry in the ordered recommendation list satisfying the similarity criteria when compared with the recall data pattern;

e) returning the ordered recommendation list of data entries and each label from the production database associated with each data entry in the ordered recommendation list;

f) accepting as input to the computer additional information concerning actions to take to correct a fault in a given state, when there is no data entry in the production database satisfying the similarity criteria when compared with the recall data pattern;

g) creating a new data entry in the production database using the captured information on a fault for a given state of the system and associating with the new data entry a new label comprising the additional information concerning the actions to take to correct the fault; and

h) training the production database by adjusting the parameters of similarity criteria corresponding to the data entries, according to a preselected learning scheme, said learning scheme utilizing the new data entry when adjusting the parameters.

5,351,248

FREE ELECTRON LASER WITH ADVANCED WIGGLER

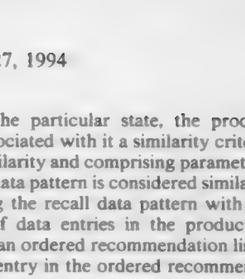
Daniel Iracane, Palaiseau, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 24, 1992, Ser. No. 918,022

Claims priority, application France, Aug. 7, 1991, 91 10042

Int. Cl.[5] H01S *3/00*

U.S. Cl. 372—2 **10 Claims**



1. Free electron laser including means to form a beam of electrons and introduce this beam along the axis of a wiggler, this wiggler including means to generate along the axis of the wiggler a transverse magnetic field whose direction alternates periodically along the axis of the wiggler, wherein the wiggler includes means for generating the magnetic field so that said magnetic field is the superposition of one first field whose direction alternates with one first periodicity along the axis of the wiggler and a second field whose direction alternates with a second periodicity along the axis of the wiggler.

5,351,249

TRELLIS CODED FM DIGITAL COMMUNICATIONS SYSTEM AND METHOD

Gary R. Lomp, New York, and Donald L. Schilling, Sands Point, both of N.Y., assignors to InterDigital Technology Corporation, Wilmington, Del.

Filed Jul. 19, 1991, Ser. No. 732,200

Int. Cl.[5] G06F *11/10*

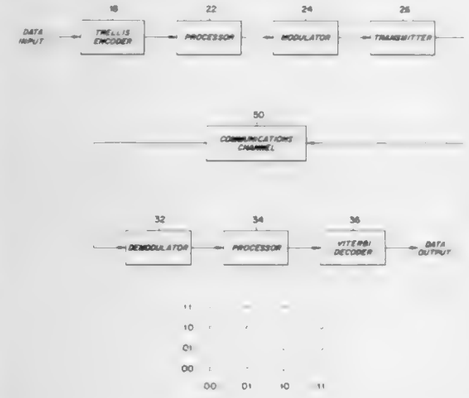
U.S. Cl. 371—43 **20 Claims**

1. A method for encoding and convolutionally decoding a data word of a data word sequence, each data word having k bits, with k being a number of bits in each data word, comprising the steps of:

selecting, for each data word of the data word sequence, using a first processor with a trellis encoding algorithm and a previous data word of the data word sequence, a 2^k subset of signal points from a square set of M by M signal points having M X coordinates and M Y coordinates, with M being a number of indices of the X and Y coordinates, wherein the square set of M by M signal points includes a constellation of 2^{k+1} signal points;

selecting, using said first processor, using the data word, a signal point from the selected subset of signal points;

generating, using a modulator, a first frequency-shift-keying (FSK) signal from an M-ary FSK signalling scheme of an X coordinate of said selected signal point;



generating, using a modulator, a second FSK signal from the M-ary FSK signalling scheme of a Y coordinate of said selected signal point;

transmitting, using a transmitter, the first FSK signal and the second FSK signal over a communications channel;

demodulating, using a demodulator, the first FSK signal as a received X coordinate and the second FSK signal as a received Y coordinate;

estimating, using a second processor, a 2^k received subset of signal points using a convolutionally decoding algorithm and a previously received data word; and

estimating, using said second processor, a received data word from the received X coordinate, the received Y coordinate, and the estimated-received subset of signal points.

5,351,250

OPTICAL BEAM STEERING DEVICE

Andrew M. Scott, Worcestershire, England, assignor to The Secretary of State for Defence in Her Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, United Kingdom

PCT No. PCT/GB90/00550, § 371 Date Oct. 21, 1991, § 102(e) Date Oct. 21, 1991, PCT Pub. No. WO90/13056, PCT Pub. Date Nov. 1, 1990

PCT Filed Apr. 11, 1990, Ser. No. 768,960

Claims priority, application United Kingdom, Apr. 27, 1989, 8909711

Int. Cl.[5] H01S *3/30*

U.S. Cl. 372—3 **8 Claims**

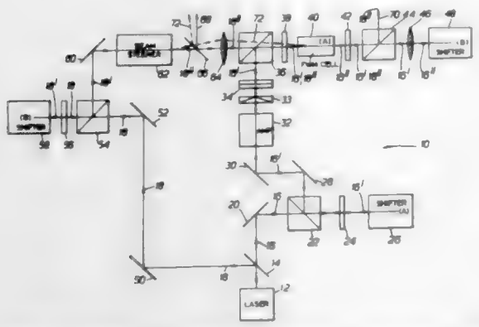
1. An optical steering device including:

delivering means for providing a low power light beam;

means for steering said low power light beam relative to said delivering means; and

phase conjugating means, responsive to the steered low

power light beam, for generating a high power phase conjugate of said low power light beam wherein the phase conjugating means includes a Brillouin four wave mixing cell and said cell comprising a means for providing Brillouin four wave mixing; and



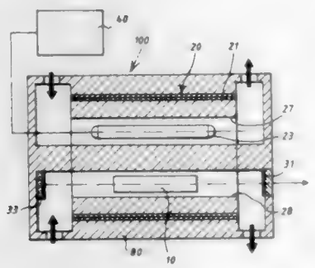
pumping means for providing the phase conjugating means with counterpropagating laser pump beams having frequencies for producing four wave mixing in combination with the steered low power beam.

5,351,251

LASER APPARATUS

Norman Hodgson, Plainsboro, N.J., assignor to Carl Zeiss, Inc., Thornwood, N.Y.

Filed Mar. 30, 1993, Ser. No. 40,132
Int. Cl.[5] H01S *3/30*
U.S. Cl. 372—4 **54 Claims**



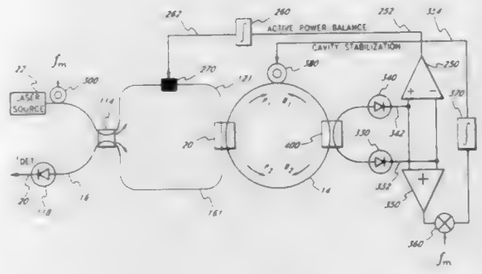
1. A long wavelength neodymium laser which comprises:
a housing comprising a reflective optical cavity;
an active laser material disposed in the optical cavity, the active laser material being comprised of a crystalline or glass host being doped with neodymium;
pumping means, disposed in the housing, for pumping the active laser material with radiation;
drive means for adjustably driving the pumping means to produce pulses of the radiation;
wavelength selective resonator means for producing relatively high reflection in a range of wavelengths substantially between about 1.4 μm and about 1.5 μm and for producing relatively low reflection substantially at predetermined other ranges of wavelength;
wherein the wavelength selective resonator means for producing relatively low reflection comprises means having reflectivity: (a) less than about 0.076 for wavelengths substantially equal to 1.064 μm; (b) less than about 0.652 for wavelengths substantially equal to 1.338 μm; (c) less than about 0.797 for wavelengths substantially equal to 1.335 μm; (d) less than about 0.85 for wavelengths substantially equal to 1.33 μm; and (e) less than about 0.907 for wavelengths substantially equal to 1.321 μm.

5,351,252

TECHNIQUE OF REDUCING THE KERR EFFECT AND EXTENDING THE DYNAMIC RANGE IN A BRILLOUIN FIBER OPTIC GYROSCOPE

Keiichiro Toyama, Los Altos, Calif.; Byoung Y. Kim, Seoul, Rep. of Korea; Shangyuan Huang, Willowdale, Canada, and Herbert J. Shaw, Stanford, Calif., assignors to The Board of Trustees of the Leland Stanford University, Stanford, Calif.

Filed Feb. 26, 1993, Ser. No. 23,672
Int. Cl.[5] H01S *3/083*
U.S. Cl. 372—29 **12 Claims**



12. An apparatus for measuring rotation, comprising:
a loop comprising optical fibers, said loop configured to form a resonant cavity for propagation of light in opposite directions therein;
a source of input pump light waves optically coupled to produce a pair of counterpropagating pump light waves in said loop, said pump light waves resonating in said loop at an intensity sufficient to generate a pair of rotation sensing waves in said loop, each of said pump light waves having an effective path length through said loop, said effective path length varying in accordance with the Sagnac effect when said loop is rotating such that the effective path length for one of said pump light waves is lengthened while the effective path length for the other of said pump light waves is shortened, the intensities of said rotation sensing waves being dependent upon said variations in the effective path length through said loop; and
a feedback circuit for controlling the length of said loop to thereby control the effective path lengths for said pump light waves during rotation of said loop, said feedback circuit connected to sense light that has travelled in both directions in said loop, said circuit responsively altering the length of said loop such that the differential intensity of said rotation sensing waves is substantially independent of said rotation, wherein said feedback circuit is additionally connected to alter the intensity of the input pump light waves such that the counterpropagating rotation sensing waves are substantially equalized in intensity.

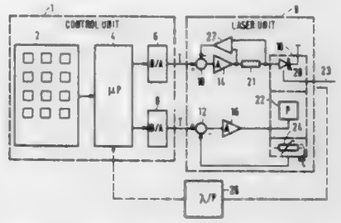
5,351,253

CONTINUOUSLY TUNABLE LASER OSCILLATOR AND METHOD OF CONTROLLING THE SAME

Ching K. Wong, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 26, 1992, Ser. No. 936,146
Claims priority, application European Pat. Off., Aug. 30, 1991, 91202205.0
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 **22 Claims**

1. A laser oscillator, comprising:
light producing means for producing a laser light; and
control means for applying at least one control signal to said light producing means to control at least one physical characteristic of the laser light, said control means including calculating means for calculating a value for the at least one control signal which will cause the at least one physical characteristic to be at a predetermined value on the basis of the predetermined value and a continuous relation between values for the at least one control signal



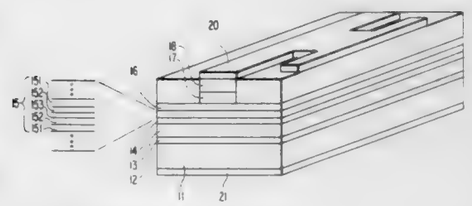
and values for the at least one physical characteristic within a working range of said light producing means.

5,351,254

SEMICONDUCTOR LASER

Akihisa Tomita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 982,966
Claims priority, application Japan, Nov. 28, 1991, 3-339665
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **9 Claims**



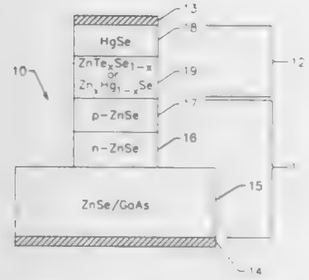
1. A semiconductor laser comprising:
a semiconductor body having a top and bottom surfaces, first and second side surfaces extending between said top and bottom surfaces to form a resonant cavity, and third and fourth side surfaces extending between said first and second side surfaces.
said semiconductor body consisting of a plurality of semiconductor layers including an active layer extending between said first and second side surfaces, said active layer having a multi-quantum well structure comprising:
a pair of barrier layers;
a well layer located between said pair of barrier layers; and
a pair of spacer layers sandwiched between said pair of barrier layers such that said well layer is sandwiched between said a pair of spacer layers, each of said spacer layers having a thickness of 2 and 4 nm; and
first and second electrodes formed on said top and bottom surfaces, respectively.

5,351,255

INVERTED INTEGRATED HETEROSTRUCTURE OF GROUP II-VI SEMICONDUCTOR MATERIALS INCLUDING EPITAXIAL OHMIC CONTACT AND METHOD OF FABRICATING SAME

Jan F. Schetzina, Cary, N.C., assignor to North Carolina State University of Raleigh, Raleigh, N.C.

Continuation-in-part of Ser. No. 934,190, Aug. 21, 1992, Pat. No. 5,294,833, which is a continuation-in-part of Ser. No. 881,599, May 12, 1992. This application Apr. 28, 1993, Ser. No. 54,040
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **26 Claims**



1. A semiconductor device formed of Group II-VI compound semiconductor materials comprising:
an optical emission heterostructure formed of group II-VI compound semiconductor materials, having first and second opposing faces and including a layer of p-type zinc selenide (ZnSe) or an alloy thereof at said first face thereof;
a zinc mercury selenide ($Zn_xHg_{1-x}Se$) layer or a zinc telluride selenide ($ZnTe_xSe_{1-x}$) layer on said layer of p-type ZnSe or an alloy thereof, where $O<x<1$;
a mercury selenide (HgSe) layer on said $Zn_xHg_{1-x}Se$ layer or said $ZnTe_xSe_{1-x}$ layer, opposite said optical emission heterostructure;
an ohmic electrode on said HgSe layer, opposite said $Zn_xHg_{1-x}Se$ layer or said $ZnTe_xSe_{1-x}$ layer; and
a transparent ohmic electrode on said second face of said optical emission heterostructure, for allowing optical emissions from said optical emission heterostructure to pass therethrough.

5,351,256

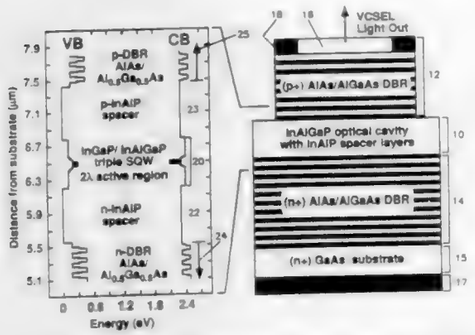
ELECTRICALLY INJECTED VISIBLE VERTICAL CAVITY SURFACE EMITTING LASER DIODES

Richard P. Schneider, and James A. Lott, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 28, 1993, Ser. No. 55,178
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **24 Claims**

1. An electrically injected vertical cavity laser diode for emitting light at a visible wavelength comprising:
a III–V compound substrate of a first conductivity type connected to a first electrode;
a first multiplicity of distributed Bragg reflectors (DBRs) being of the first conductivity type formed above the substrate;
an optical cavity formed above the first DBRs and comprising a first optical phase matching spacer layer located adjacent the first DBRs and of the same conductivity, an active region having an active lasing means located adjacent to and above the first spacer layer, and a second optical phase matching spacer layer adjacent to and above the active region and of the opposite conductivity type from the first spacer layer, wherein each spacer layer has

a thickness of between one wavelength and three wavelengths of the emitted light;



a second multiplicity of distributed Bragg reflectors (DBRs) of the opposite conductivity type formed above the optical cavity; and

a second electrode means located above the active region.

5,351,257

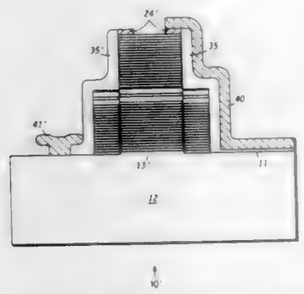
VCSEL WITH VERTICAL OFFSET OPERATING REGION PROVIDING A LATERAL WAVEGUIDE AND CURRENT LIMITING AND METHOD OF FABRICATION

Michael S. Lebby, Apache Junction; Chan-Long Shieh, Paradise Valley, both of Ariz., and Donald E. Ackley, Lambertville, N.J., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 8, 1993, Ser. No. 28,015

Int. Cl.[5] H01S *3/05, 3/19*

U.S. Cl. 372—46 **26 Claims**



1. A vertical cavity surface emitting laser having an opening wavelength at which light emission occurs, the laser comprising:

a supporting substrate having a surface lying in a first plane and a substantially centrally located offset area of the surface lying in a second plane parallel to the first plane and spaced therefrom, the offset area defining therein a generally circular area with a diameter approximately equal to a mode size for a lowest order of operating mode for the vertical cavity surface emitting laser, and the offset area being spaced from the surface of the substrate approximately an odd multiple of a quarter wavelength of the operating frequency;

a first mirror stack positioned on the surface of the substrate so as to overlie the offset area and a portion of the surface surrounding the offset area;

an active region including at least a layer positioned parallel and in overlying abutting engagement with the first mirror stack and substantially coextensive therewith;

a second mirror stack positioned parallel and in overlying abutting engagement with the active region and substantially overlying only the offset area; and

first portions of the active region and the first mirror stack being offset from second surrounding portions of the active region and the first mirror stack by the offset area in the surface of the substrate so as to define a lateral waveguide generally aligned with the second mirror stack.

5,351,258

SEMICONDUCTOR LASER DEVICE

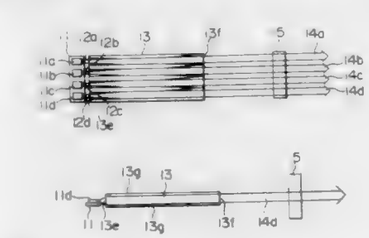
Toshiyuki Okumura, Tenri; Fumihiro Konushi, Nara; Tatsuya Morioka, Tenri, and Naribito Matsumoto, Yokohama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 29, 1993, Ser. No. 99,206

Claims priority, application Japan, Jul. 30, 1992, 4-204026; Feb. 26, 1993, 5-39047

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—46 **12 Claims**



1. A semiconductor laser device comprising:

a semiconductor substrate having a top face and a bottom face;

a multi-layered structure formed on the top face of the semiconductor substrate, the multi-layered structure including an active layer;

a stripe-shaped ridge portion which is formed on a first region of a top face of the multi-layered structure and which extends along a cavity length direction;

a current blocking layer which covers both side faces of the ridge portion and a second region of the top face of the multi-layered structure;

a first electrode formed at least on a top face of the ridge portion; and

a second electrode formed on the bottom face of the semiconductor substrate,

wherein the current blocking layer includes an insulating film and a resin film formed on the insulating film.

5,351,259

SEMICONDUCTOR LASER-PUMPED SOLID-STATE LASER WITH PLURAL BEAM OUTPUT

Akira Ishimori; Takashi Yamamoto, and Tetsuo Kojima, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,716

Claims priority, application Japan, Oct. 24, 1991, 3-277547; Oct. 29, 1991, 3-283188

Int. Cl.[5] H01S *3/07, 3/094, 3/16*

U.S. Cl. 372—75 **11 Claims**

1. A semiconductor-laser-pumped solid-state laser apparatus comprising:

a semiconductor laser device for generating pump light;

a solid state thin plate laser medium pumped by the pump light disposed adjacent to said semiconductor laser device, said laser medium efficiently confining the pump light therein by repeated reflection of the pump light on both an upper and lower surface of said laser medium; and

laser resonator means having a pair of reflecting surfaces facing each other with said solid state laser medium interposed therebetween, said laser resonator means being for emitting a plurality of laser light beams;

wherein said semiconductor laser device has a plurality of emission points which are arranged on a straight line and from which the pump light is generated, and said laser resonator means is disposed in correspondence with the emission points such that said plurality of laser light beams are emitted.

5,351,260

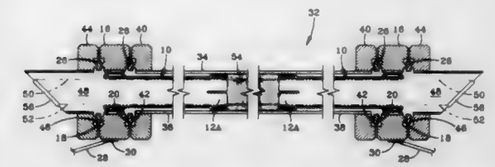
THORIATED-TUNGSTEN, SPLIT-RING, HOLLOW-CATHODE ELECTRODE FOR DISCHARGE DEVICES

Edward J. Seibert, Chalfont; Gerald D. Ferguson, Yardley, and Marie E. Taylor, Chalfont, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 14, 1994, Ser. No. 209,345

Int. Cl.[5] H01S *3/097*

U.S. Cl. 372—84 **10 Claims**



1. An electrode assembly for use in a discharge device comprising:

a) a hollow cylindrical member comprising thoriated tungsten with an alloy composition of tungsten (W) and from about 2% to about 3% of thorium dioxide ThO2 and having a tip and a base, said tip comprising at least one groove and at least one slot therein;

b) a metallic spacer that is I-shaped in cross-section and that is connected to the base of said cylindrical member;

c) sealing means for enclosing a vacuum and having at least one flange which is attached to said I-shaped spacer.

5,351,261

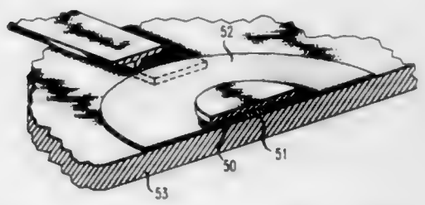
INTEGRATED OPTICS

Louis D. Lanzerotti, Morristown; Samuel L. McCall, Chatham, and Bernard Yurke, Plainfield, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 14, 1993, Ser. No. 48,533

Int. Cl.[5] H01S *3/08*

U.S. Cl. 372—98 **23 Claims**



1. Apparatus including at least one element including a path for an electromagnetic wave within a body of high refractive index for such energy relative to refractive index of surrounding ambient, at least some portion of the path being curved to a curvature defined by a local radius as bounded at an interface between such body and ambient, the interface defining a convex surface of the high index material, retention of energy within such path being at least partially due to small angle incidence of the energy at the interface, relative refractive indices and curvature at incidence being such as to result in loss by direct radiation from the body, po1 CHARACTERIZED IN THAT

an interfering mirror is provided as spaced from the body and of such extent that a portion of the radiation is reflected, thereby increasing the path length for reflected radiation, so that it destructively interferes with direct radiation and thereby decreases radiation loss.

5,351,262

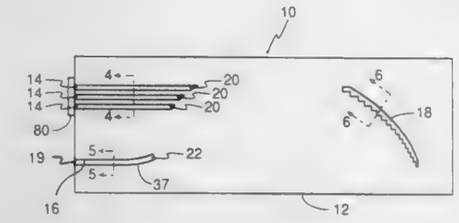
MULTI-STRIPE ARRAY GRATING INTEGRATED CAVITY LASER

Kai R. Poguntke, Tinton Falls, and Julian B. D. Soole, Atlantic Highlands, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Sep. 10, 1992, Ser. No. 943,273

Int. Cl.[5] H01S *3/08*

U.S. Cl. 372—102 **10 Claims**



1. A multi-wavelength laser comprising

a substrate;

a plurality of individually activable laser waveguides formed on said substrate;

a single passive output waveguide formed on said substrate; and

a diffraction grating formed on said substrate and operatively linking said laser waveguides and said single passive output waveguide, each laser waveguide, said grating, and said single passive output waveguide comprising a lasing optical resonant cavity whereby lasing wavelengths of said laser waveguides are determined by a geometrical relationship of said laser waveguides, said single passive output waveguide, and said diffraction grating.

5,351,263

APPARATUS FOR A POWER LASER INCLUDING SOLID OPTICAL BENCH

Michael von Borstel, Burenstr. 26, 70435 Stuttgart; Michael Häcker, Sonnenweg 5, 71299 Wimsheim; Heinz J. Prokop, Am Rehbaum 18, 46282 Dorsten, and Reinhard Wollermann-Windgasse, Tannenweg 3, 75433 Maulbronn, all of Fed. Rep. of Germany

Filed Jul. 1, 1993, Ser. No. 86,633

Int. Cl.[5] H01S *3/08, 3/00*

U.S. Cl. 372—107 **43 Claims**

1. Apparatus for a power laser of polygonal configuration,

with mirror blocks in the corner regions, which mirror blocks have an essentially monolithic body,

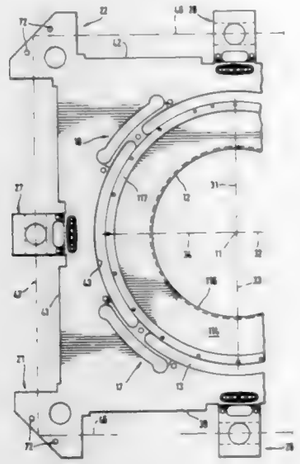
with intermediate blocks in the straight paths between the mirror blocks, which intermediate blocks have an essentially monolithic body,

with at least one straight partial bore in each mirror block, with a respective through bore in each intermediate block, the mirror blocks and the intermediate blocks being fine-

machined for the gas-tight and centered mounting of laser tubes, and also with an optical bench having corresponding corners, which carries the mirror blocks and the intermediate blocks on its periphery,

characterized by the following features:

(a) the optical bench is solid and monolithic,



(b) the mirror blocks and intermediate blocks are at least in their majority connected in a mechanically rigid manner to the optical bench, so that they do not permanently deform relative to the bench during chip-removing machining processes, at least during fine machining processes on the mirror blocks.

5,351,264

OPTICAL APPARATUS FOR EMITTING LIGHT AND AUTOMATIC ADJUSTMENT APPARATUS THEREFOR

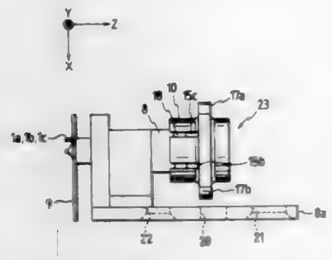
Masatoshi Kato; Yozo Tobo, both of Yokohama; Fumio Ichikawa, Kamakura; Jun Azuma, Kawasaki, and Hideaki Uemura, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,288

Claims priority, application Japan, Feb. 14, 1992, 4-028416

Int. Cl.[5] H01S *3/101*

U.S. Cl. 372—107 **5 Claims**



2. An optical apparatus for emitting light, comprising:

a semi-conductor laser light source;

a fixation holder for holding said semi-conductor laser light source;

a collimator lens for collimating a laser beam emitted from said semi-conductor laser light source; and

a lens-barrel being a substantially hollow member formed of a transparent material, for incorporating and holding said collimator lens, having collars on an outer surface thereof, being formed with slits extending in an optical axis direction on a portion opposite to said collimator lens with respect to said collars, and being fitted onto said fixation holder via a predetermined gap at the portion where the slits are formed so that said lens-barrel is movable in the optical axis direction and in two-dimensional directions on a plane perpendicular to the optical axis direction,

wherein said lens-barrel is positioned and fixed to said fixation holder by curing an adhesive filled in the gap in the fitting portion between said lens-barrel and said fixation holder.

5,351,265

GAS LASER OSCILLATION DEVICE AND AN OPTICAL AXIS ALIGNMENT METHOD THEREFOR

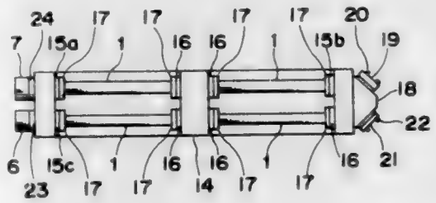
Hitoshi Hongu, Kobe, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 811,031, Dec. 20, 1991, abandoned. This application Nov. 24, 1993, Ser. No. 156,977

Claims priority, application Japan, Dec. 20, 1990, 2-404183

Int. Cl.[5] H01S *3/08*

U.S. Cl. 372—107 **4 Claims**



1. A gas laser oscillation device comprising:

an optical bench;

a plurality of discharge tube columns, each of which includes a natural number n of discharge tubes mounted to said optical bench, each of said discharge tubes having a longitudinal axis;

an optical bending means, mounted to said optical bench, for optically connecting said discharge tube columns in series and thereby forming at least part of an optical path having first and second ends;

a partial reflection mirror mounted to said optical bench at said first end of said optical path;

a total reflection mirror mounted to said optical bench at said second end of said optical path;

a plurality of clamps mounted to said optical bench along said optical path at opposing ends of said discharge tubes, respectively, for mounting said discharge tubes to said optical bench;

wherein said optical bending means comprises a bending unit body, a movable total-reflection mirror unit movably mounted to said bending unit body to allow for adjustment of an orientation of said total-reflection mirror unit in said optical path, and a non-movable total-reflection mirror unit substantially non-movably mounted to said bending unit body.

wherein said clamps along said optical path are sequentially designated by natural numbers beginning with clamp no. **1** which is mounted at an end of one of said discharge tubes which is nearest said first end of said optical path;

wherein clamp nos. **1** and **2**•n•x, where x=a sequential series of natural numbers beginning at 1, are non-movable clamps non-movably secured to said optical bench, a reference optical axis being defined through centers of said non-movable clamps; and

wherein clamps, of said plurality of clamps, other than clamp nos. **1** and **2**•n•x are movable clamps adjustably mounted to said optical bench, such that each of said movable clamps is adjustable to align its center with said reference optical axis and comprises an alignment means for adjusting an orientation of the longitudinal axis of one of said discharge tubes.

5,351,266

PROCESS FOR CONTINUOUS MANUFACTURE OF IMPURITY AND IRON-FREE ELECTRODES FOR ELECTRIC ARC FURNACES

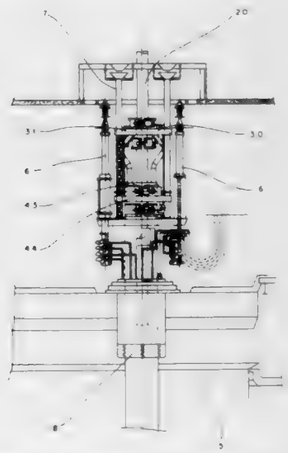
Francisco J. Bullon Camarasa; Juan J. Ropero Beltran, and Juan A. Benedit del Burgo, all of La Coruna, Spain, assignors to Ferroatlantica, S.L., Madrid, Spain

Filed Oct. 29, 1992, Ser. No. 968,517

Claims priority, application Spain, Oct. 30, 1991, 91 02414

Int. Cl.[5] H05B *7/09*

U.S. Cl. 373—89 **5 Claims**



1. A process for the continuous manufacture of an impurity and iron-free electrode for an electric arc furnace, comprising steps of sliding a prebaked graphite core downwardly within a casing above the furnace, introducing within the casing and surrounding the core a paste which is to bake to form the electrode, providing a contact plate for transmitting an electric current to the electrode, and sliding the electrode by means of a pair of sliding means in succession, including a first sliding means for retaining the casing, and a second sliding means for sliding the graphite core, the second sliding means comprising a pair of circumferential, internally fluted, toothed or embossed rings including successive opening and closing clamps, said rings engraving the graphite core with circumferential ridges for improved penetration of the paste and binding of the paste to the graphite core.

5,351,267

PROCESS FOR ELECTRODE CONTROL OF A DC ARC FURNACE, AND AN ELECTRODE CONTROL DEVICE

Eduard Strebel, Nussbaumen, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Feb. 5, 1992, Ser. No. 831,474

Claims priority, application Switzerland, Feb. 8, 1991, 406/91

Int. Cl.[5] H05B *7/148*

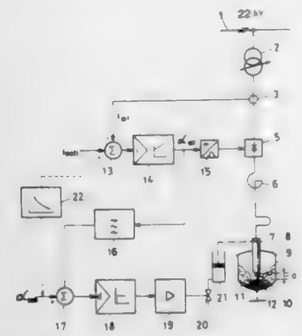
U.S. Cl. 373—105 **18 Claims**

7. An electrode control device for a direct current arc furnace, comprising:

at least one adjustable electrode connected with a rectifier controlled by a direct current regulator, and

an electrode adjustment device for setting an electrode distance between the at least one electrode and a melting bath of the arc furnace, the electrode adjustment device being controlled by an electrode controller,

an input of the electrode controller receiving an output of the current regulator, wherein a difference signal between an electrode control reference input signal and a rectifier control signal is supplied to the input of the electrode controller, the electrode control reference input signal



corresponding to a firing angle set value in the range between 15° and 50°.

5,351,268

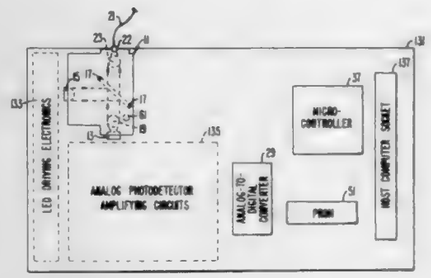
MODULAR LUMINESCENCE-BASED MEASURING SYSTEM USING FAST DIGITAL SIGNAL PROCESSING

Earl M. Jensen, Sunnyvale; Mei H. Sun, Los Altos; David L. Vecht, San Jose, and Robert E. Melen, Saratoga, all of Calif., assignors to Luxtron Corporation, Santa Clara, Calif.

Division of Ser. No. 621,900, Dec. 4, 1990, Pat. No. 5,107,445. This application Oct. 8, 1991, Ser. No. 773,039

Int. Cl.[5] G01K *11/20*

U.S. Cl. 374—131 **17 Claims**



9. An opto-electronic assembly for use with a luminescent sensor of a quantity related to a parameter, comprising the following formed on a single self-supporting substrate in the form of a printed circuit board:

an optical system attached to said substrate and including:

a diode having a light radiation output,

a photodetector, and

means for providing optical communication between the sensor and each of said diode and photodetector in a manner that said diode radiation output is directed toward said sensor to excite luminescence thereof and said luminescence is directed to said photodetector, a first group of electronic components carried by said substrate in an area adjacent said photodetector and connected to receive and amplify an electrical output from said photodetector,

a second group of electronic components carried by said substrate in an area adjacent said diode and electrically connected to drive said diode,

an electronic analog-to-digital signal converter positioned on said substrate adjacent said first group of electronic components and receiving an amplified photodetector output therefrom, thereby to provide a digitized amplified photodetector output,

means carried by said substrate and electrically connected

with at least said second group of electronic components and said signal converter for synchronizing operation of the second group of electronic components and analyzing the digitized amplified photodetector signal in a manner to calculate the quantity related to said parameter, and

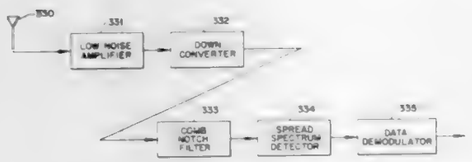
a connector electrically connected with at least said synchronizing and analyzing means, thereby providing connectability of the assembly within a system wherein the parameter related quantity may be utilized to provide an indication of said parameter.

5,351,269

OVERLAYING SPREAD SPECTRUM CDMA PERSONAL COMMUNICATIONS SYSTEM

Donald L. Schilling, Sands Point, N.Y., assignor to SCS Mobilecom, Inc., Port Washington, N.Y.

Filed Dec. 5, 1990, Ser. No. 622,235
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 **23 Claims**



1. A spread spectrum CDMA communications system for communicating data, including digitized voice signals, between a plurality of PCN units, said spread spectrum communications system located within a same geographical region as occupied by a mobile cellular system with each cell of the mobile cellular system having a cellular bandwidth divided into predetermined channels and guard bands between the predetermined channels, and having cellular-users communicating on the predetermined channels, said spread spectrum CDMA communications system communicating on the predetermined channels, comprising:

a plurality of PCN-base stations located within the mobile cellular system for communicating data to the plurality of PCN units, each of said PCN-base stations including,

base means for converting the format of the data into a form suitable for communicating over radio waves;

base-product means for spread spectrum processing the data; and

base means for transmitting across the cellular bandwidth, the spread spectrum processed converted data from the PCN-base station to a PCN unit;

a plurality of PCN units, each of said PCN units including,

a PCN antenna; and

PCN detection means coupled to said PCN antenna and including PCN-spread-spectrum-processing means, for recovering data communicated from said PCN-base station.

5,351,270

PORTABLE CELLULAR TELEPHONE USING SPREAD SPECTRUM COMMUNICATION WITH MOBILE TRANSCEIVER

Hatch Graham, Fremont, Calif.; Charles Moses, Catonville; Leonard Schuchman, Potomax, both of Md., and Ronald Bruno, Arlington, Va., assignors to Stanford Telecommunications, Inc., Santa Clara, Calif.

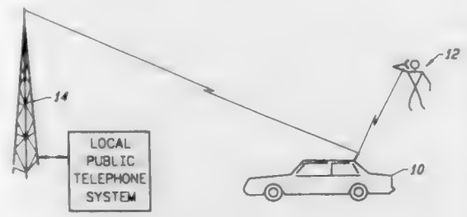
Filed May 20, 1993, Ser. No. 64,629
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 **6 Claims**

1. A portable cellular telephone system comprising:

a stationary transceiver for radio communication with a plurality of mobile transceivers within a geographic cell;

a mobile transceiver within said geographic cell and having sufficient power to communicate with said stationary transceiver; and

a portable transceiver for personal transport and use, said portable transceiver having sufficient power for radio communication with said mobile transceiver when located within a limited distance of said mobile transceiver but



insufficient power to communicate directly with said stationary transceiver, said mobile transceiver providing a radio link between said portable transceiver and said stationary transceiver,

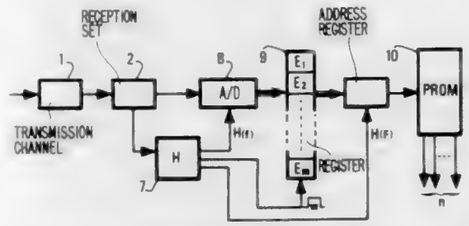
said portable transceiver communicating with said mobile transceiver by spread spectrum communication using frequency bands allocated for unlicensed use.

5,351,271

METHOD AND DEVICE FOR MEASURING THE SUCCESSIVE AMPLITUDE LEVELS OF SIGNALS RECEIVED ON A TRANSMISSION CHANNEL

Patrick Coquerel, Sartrouville, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Filed Dec. 17, 1992, Ser. No. 992,531
Claims priority, application France, Dec. 19, 1991, 91 15974
Int. Cl.[5] H04L *7/02*
U.S. Cl. 375—10 **21 Claims**



6. A device for measuring the successive amplitude levels of a periodic signal of variable amplitude received on a transmission channel, said device comprising clock restitution means adapted to generate a local signal synchronous with the frequency of the received periodic signal; analog-to-digital conversion means (**8**) for digitizing a fixed number m of samples from the signal received during a determined sampling time interval into n-bit digital words; and selection means (**9, 10**) for allocating to each set of digital words a weighted average value taking account of transmission capabilities of said transmission channel.

5,351,272

COMMUNICATIONS APPARATUS AND METHOD FOR TRANSMITTING AND RECEIVING MULTIPLE MODULATED SIGNALS OVER ELECTRICAL LINES

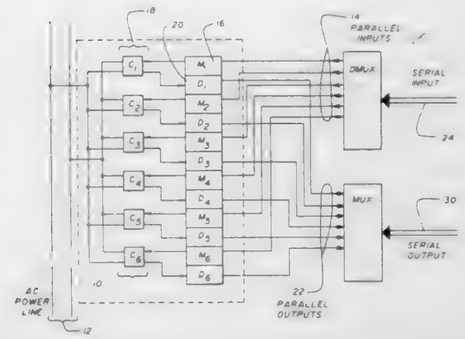
Karoly C. Abraham, 506 S. 41st St., Apartment 3E, Philadelphia, Pa. 19104

Filed May 18, 1992, Ser. No. 884,123
Int. Cl.[5] H04K *1/10;* **H04L** *27/28;* **H04M** *11/04*
U.S. Cl. 375—38 **31 Claims**

1. A communication apparatus which transmits and receives multiple modulated signals over an electrical line which comprises:

a first station and a second station;

said first station capable of receiving high speed data and converting the high speed data into multiple modulated signals for sending simultaneously over the electrical line



to said second station, said second station being capable of simultaneously demodulating the multiple modulated signals and converting the signals back into high speed data; and

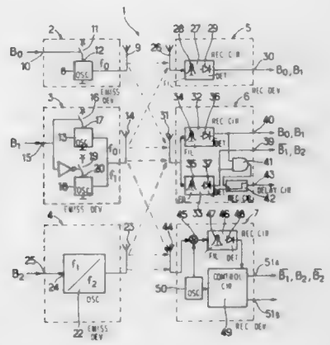
each said station incorporating dielectric core couplers for coupling the multiple modulated signals between the electrical line and each station.

5,351,273

PROCESS AND SYSTEM FOR THE TRANSMISSION OF A SIGNAL

Gilles Morey, Le Bas Bernin Cidex 55, Bernin F-38190 Brignoud, France

Continuation of Ser. No. 436,241, Nov. 14, 1989, abandoned. This application Aug. 28, 1992, Ser. No. 936,322
Claims priority, application France, Nov. 14, 1988, 88 14782
Int. Cl.[5] H04L *27/10*
U.S. Cl. 375—48 **12 Claims**



1. A system for transmission of an information signal having at least two conditions which indicate transmittable information, said system comprising:

a signal emission device which has an input for receiving a signal to be transmitted, and oscillator means for transmitting a first transmission signal on a first carrier frequency when the information signal is in a first of its at least two conditions and transmitting a second transmission signal on a second carrier frequency when the information signal is in a second of its at least two conditions, each of the first and second transmission signals containing the transmittable information, each of the first and second carrier frequencies forming an independent transmission channel to provide said signal emission device with two independent transmission channels; and

a receiving device for providing an output signal which contains the information of the information signal whenever one of the transmission signals is received thereby, the receiving device including two independent channel detecting means for respectively receiving the first and second transmission signals over the first and second carrier frequencies, a first means for reconstructing the information signal in response to reception of only the first transmission signal, a second means for reconstructing the information signal in response to reception of only the second transmission signal, and an output means, connected to the first and second reconstructing means, for providing a reconstructed information signal from the first means for reconstructing or the second means for reconstructing,

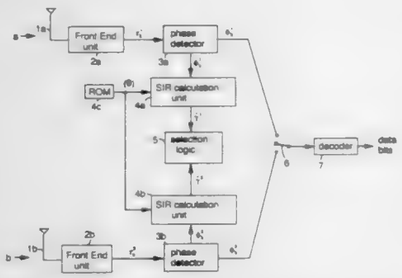
whereby the transmittable information is provided by the output means as a result of reconstruction of the information signal by either the first reconstructing means or the second reconstructing means, even when one of the transmission channels is disturbed.

5,351,274

POST DETECTION SELECTION COMBINING DIVERSITY RECEIVERS FOR MOBILE AND INDOOR RADIO CHANNELS

Sandeep Chennakeshu, Schenectady; Stephen M. Hladik, Albany; Gary J. Saulnier, Rexford; Ravinder D. Koilpillai, and Raymond L. Toy, both of Latham, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 20, 1993, Ser. No. 109,556
Int. Cl.[5] H04L *1/06;* **H04B** *7/04*
U.S. Cl. 375—100 **19 Claims**



1. A selection combining receiver for decoding message bits transmitted as symbol phase angles each selected from a set of symbol constellation phase points $\{\theta\}$ in a signal through a channel comprising:

a) a plurality of receive branches, each branch comprising:

i. an antenna "i" for receiving the transmitted signal;

ii. a front end for converting the received signal to an intermediate frequency signal and converting the intermediate frequency signal into a stream of baseband signal samples;

iii. a phase detector for detecting a plurality of phase angles $\phi_k{}^i$ from the samples;

iv. a signal-to-impairment ratio (SIR) calculation unit for determining an SIR value from the detected phase angles $\phi_k{}^i$ described by the equation:

$$\gamma^i = \frac{1}{\frac{1}{N}\sum_{k=1}^{N} 2\sin^2(\theta_k - \phi_k{}^i)},$$

where θ_k is a transmitted phase angle from the set of symbol constellation phase points $\{\theta\}$ which is closest

to ϕ_k' and N is a number of symbols over which the SIR is desired to be averaged;

b) a decoder adapted for decoding the detected phase angles ϕ_k' into message bits;

c) a branch selection device capable of connecting a receive branch to the decoder;

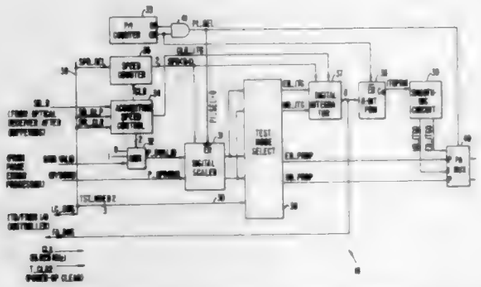
d) a selection logic unit coupled to the SIR calculation units and the branch selection device for determining from the SIR values from each receive branch, the receive branch pertaining to the best channel quality and causing the branch selection device to connect the decoder to this receive branch causing the signal from that branch to be decoded.

5,351,275

DIGITAL SERIAL LOOP FILTER FOR HIGH SPEED CONTROL SYSTEMS

Hee Wong, and Tsun-Kit Chin, both of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 15, 1991, Ser. No. 729,973
Int. Cl.[5] H03D *3/24*
U.S. Cl. 375—120 **18 Claims**



17. A digital serial loop filter for high frequency, second order phase-locked loop (PLL) applications comprising:

a proportional path including a digital scaler with two inputs and two outputs, for scaling pulse densities of a serial input signal;

an integral path including a digital integrator having two inputs coupled to said digital scaler outputs, and a plurality of outputs;

a multi-bit pulse density modulator to convert said plurality of digital integrator outputs to a single serial signal;

a smoothing circuit to convert said single serial signal generated by said pulse density modulator into two signals compatible to said scaler outputs;

a multiplexer for time-multiplexing two outputs of the filter between said digital scaler outputs and said smoothing circuit outputs; and

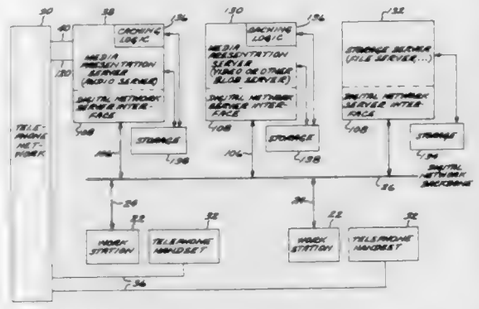
a 2-bit counter for generating 4-time-slot sequences to control said multiplexer.

5,351,276

DIGITAL/AUDIO INTERACTIVE COMMUNICATION NETWORK

William J. Doll, Jr., San Diego; Murray S. Judy, Carlsbad, both of Calif.; Albert H. Kirchner, III, Great Falls, Va.; Thomas J. Krier, San Diego, Calif.; Rudolph M. McVicker, San Diego, Calif.; Brian E. Monroe, San Diego, Calif.; Meldon L. Pettitt, Poway, Calif.; Danny R. Reiswig, San Diego, Calif.; Alan Watchorn, Encinitas, Calif.; Jerry A. Wesley, San Diego, Calif., and John C. Wirfel, San Diego, Calif., assignors to Simpact Associates, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 655,107, Feb. 11, 1991, Pat. No. 5,127,003. This application Feb. 10, 1992, Ser. No. 823,851
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] H04M *1/64*; H04J *3/02*
U.S. Cl. 379—67 **20 Claims**



9. A communication system, comprising:

a digital electronic network having at least one work station at which a human being can process information in the digital network;

an audio communications network including at least one audio input/output device at which a human being can provide acoustic audio information to, and receive acoustic audio information from, the audio communications network;

an audio communications network server in communication with the at least one audio input/output device through the audio communications network, the audio communications network server including

a digital network server interface that communicates with the at least one work station through the digital network, and

an audio communications network server memory that stores digitized audio information; and

an audio network server instruction set accessible from the digital network that operates the audio communications network server, the instruction set being operable by a user of the at least one work station.

5,351,277

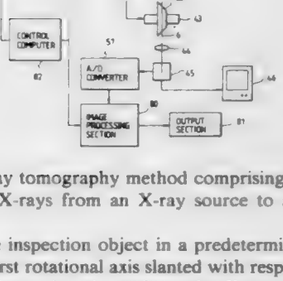
METHOD OF CONSTRUCTING TOP SLAB OF NUCLEAR REACTOR CONTAINER AND NUCLEAR REACTOR CONTAINER CONSTRUCTED BY THE METHOD

Hiroshi Goto, Hitachi, and Tadao Suzuki, Kure, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 15, 1991, Ser. No. 684,981
Claims priority, application Japan, Apr. 13, 1990, 2-98517
Int. Cl.[5] G21C *9/00*
U.S. Cl. 376—293 **8 Claims**

1. A method of constructing a top slab of a nuclear reactor container having a sleeve with a flange and a prefabricated doughnut-shaped steel reinforcement structure wherein the outermost diameter of said flange is greater than the innermost diameter of said prefabricated doughnut-shaped steel-reinforcement structure, comprising the steps of:

placing a container sleeve separate from said flange, at a position where said top slab is to be constructed;



lifting said prefabricated doughnut-shaped steel reinforcement structure and placing this structure at a position where it forms said top slab; and

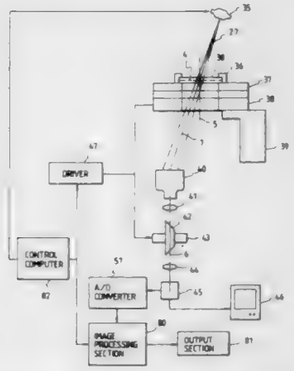
welding said flange to said container sleeve for mounting a top head of said nuclear reactor container on said flange.

5,351,278

X-RAY TOMOGRAPHY METHOD AND APPARATUS THEREOF

Hiroya Koshishiba, Yokohama, and Mihoko Yoshimura, Kamakura, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 9, 1993, Ser. No. 29,041
Claims priority, application Japan, Mar. 9, 1992, 4-050788; Jun. 17, 1992, 4-158121
Int. Cl.[5] G01N *23/00*
U.S. Cl. 378—22 **14 Claims**



11. An X-ray tomography method comprising the steps of:

irradiating X-rays from an X-ray source to an inspection object;

rotating the inspection object in a predetermined direction about a first rotational axis slanted with respect an optical axis of X-rays irradiated from the X-ray source by an inspection object rotation arrangement, the inspection object having a focal plane perpendicular to the first rotational axis and passing through an intersection of the optical axis and the first rotational axis;

detecting, in a state of superposition of a plurality of focal plane X-ray images on the focal plane and of a plurality of nonfocal plane X-ray images outside of the focal plane sequentially transmitted through the inspection object which is rotated in the predetermined direction about the first rotational axis by the inspection object rotating arrangement, by still X-ray detecting arrangement, and converting the X-ray images into a plurality of optical images;

collimating optical rays of the optical images outputted from the still X-ray detecting arrangement to substantially parallel rays by a collimator lens;

rotating the optical images by refracting the parallel rays by an optical image rotating prism in synchronization with the rotated inspection object in a direction reversed to the predetermined direction about a second rotational axis in parallel to the first rotational axis so as to remove the plurality of nonfocal plane X-ray images by superposition in a state of moving the plurality of nonfocal plane X-ray images against the optical axis of X-rays;

focusing the optical images outputted from the still X-ray detecting arrangement by a focusing optical lens; and

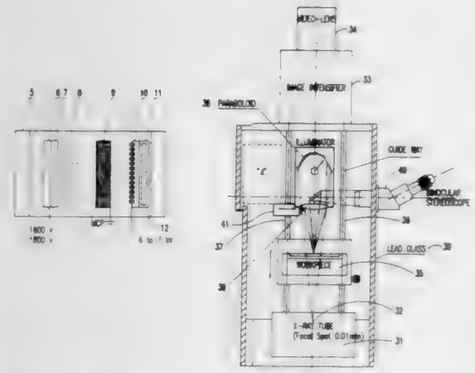
receiving the optical images rotated by the optical image rotating prism and focused by the focusing optical lens so as to be superposed and for outputting a clear image signal corresponding to the focal plane X-ray image on an X-ray tomographic images by photo-electric converting arrangement so that the focal plane X-ray image on the X-ray tomographic image is obtained as the clear image signal having the plurality of nonfocal plane X-ray images from the photoelectric converting arrangement removed.

5,351,279

X-RAY MICROSCOPE WITH A DIRECT CONVERSION TYPE X-RAY PHOTOCATHODE

Yongzheng She; Shizheng Chen, both of Shanghai, China; Weilou Cao, and Yanhua Shih, both of Ellicott City, Md., assignors to CSL Opto-Electronics Corporation, Ellicott City, Md.

Division of Ser. No. 937,213, Aug. 28, 1992, Pat. No. 5,285,061. This application Oct. 25, 1993, Ser. No. 143,091
Int. Cl.[5] G21K *7/00*
U.S. Cl. 378—43 **2 Claims**



1. A portable projection type real time X-ray microscope, comprising:

an X-ray source having a micron focal spot size;

a workpiece for holding an item to be investigated;

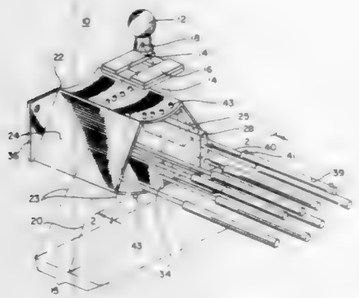
an X-ray direct conversion type image intensifier;

a movable parabolic illuminator in optical alignment with the X-ray image intensifier, for optically aligning the X-ray image intensifier with the object under investigation on the test workpiece, whereby upon moving the illuminator out of the alignment path of the X-ray source the X-ray test may be conducted on the test object;

illuminator moving means for moving the illuminator out of the alignment path during X-ray testing of the test object;

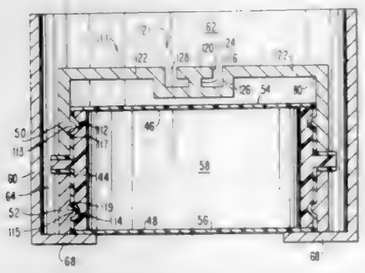
adjustment means for vertically moving said workpiece between the X-ray source and the parabolic illuminator for controlling the magnification of the X-ray image.

5,351,280
MULTI-LEAF RADIATION ATTENUATOR FOR RADIATION THERAPY
Stuart Swerdloff; Thomas R. Mackie, and Timothy Holmes, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.
Continuation-in-part of Ser. No. 865,521, Apr. 9, 1992. This application Jun. 9, 1993, Ser. No. 71,743
Int. Cl.[5] A61N *5/10*
U.S. Cl. 378—65 17 Claims



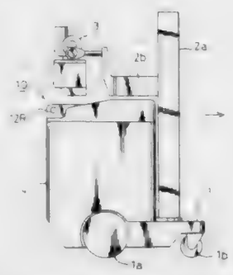
1. In a radiation therapy machine having a radiation source for producing a radiation beam directed toward a patient at a gantry angle, the beam including a plurality of adjacent rays, a compensator comprising:
a plurality of radiation attenuating leaves;
a supporting structure for guiding the leaves between:
a closed state centered within the radiation beam, the leaf thus occluding one ray of the beam;
a first open state with the leaf displaced outside of the radiation beam on a first side of the one ray; and
a second open state with the leaf displaced outside of the radiation beam on a second side of the one ray;
motivation means for independently moving each leaf alternately between the open and closed state and between the closed and second open states; and
timing means communicating with the motivation means for controlling the ratio of the period of time during which each leaf is in the closed state to the period during which each leaf is in one of the first and second open states to control the average fluence of each ray of the beam.

5,351,281
HANDLING SUPPORT FOR X-RAY SPECTROSCOPIC ANALYSIS
Angelo M. Torrisi, 10 Anpell Dr., Scarsdale, N.Y. 10583, and Roland Urbano, Tuckahoe, N.Y., assignors to Angelo M. Torrisi, Scarsdale, N.Y.
Filed Apr. 15, 1993, Ser. No. 47,315
Int. Cl.[5] G01N *23/20*
U.S. Cl. 378—79 9 Claims



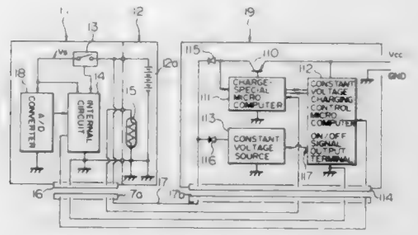
1. A sample holder for a sample material for X-ray spectroscopic analysis, comprising, in combination,
cell means for containing the sample material and having top and bottom rims defining opposed top and bottom open faces, respectively,
analytic film means positioned across said bottom open face of said cell means for containing said sample material,
film securing means for mounting said analytic film means across said bottom open face of said cell means and for maintaining a taut film surface for said sample material for X-ray analysis,
microporous film means positioned across said top open face of said cell means for passing gases generated by X-rays striking the sample material from said cell means but not passing harmful materials contained in said cell means,
microporous film securing means for mounting said microporous film means across said top open face of said cell means, and
handling support means for providing a grip for a tool used in the process of raising or lowering said sample holder without interfering with the integrity of the face of said microporous film means and for allowing concurrently the gases to escape from said cell means at a maximum rate of evacuation through said microporous film means across said top face of said cell means, said handling support means being connected to said microporous film securing means.

5,351,282
MOBILE X-RAY APPARATUS
Toshio Kadowaki, Kyoto, and Shojiro Yamaguchi, Uji, both of Japan, assignors to Shimadzu Corporation, Kyoto, Japan
Filed Mar. 24, 1993, Ser. No. 36,275
Claims priority, application Japan, Mar. 31, 1992, 4-109028; Jun. 29, 1992, 4-51784[U]
Int. Cl.[5] H05G *1/02*
U.S. Cl. 378—198 8 Claims



1. A mobile X-ray apparatus having a power-driven carriage with a pair of drive wheels and at least one swivelable auxiliary wheel, an X-ray tube movably supported on the carriage, and an X-ray tube control unit and a carriage drive unit mounted on the carriage, said apparatus comprising:
a pair of control bars arranged opposite each other in a control section provided on said carriage, each of said control bars being separate from each other and supported to be independently pivotable about an axis, such that said control bars are displaceable independently from each other and substantially in a direction of movement of said carriage;
a neutralizing mechanism for maintaining each of said control bars in a neutral position when the control bar is free from an external force;
position detecting means for detecting displacements of said control bars in directions to drive said carriage forward and backward, respectively; and
drive means responsive to detection signals received from said position detecting means for controlling opposite rotations of each of said drive wheels.

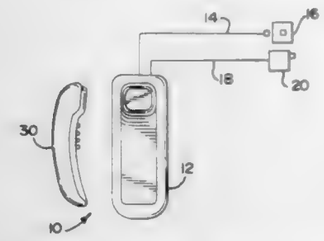
5,351,283
VEHICLE-MOUNTED CHARGING APPARATUS FOR PORTABLE TELEPHONE SETS
Kouichi Kunitomo, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Dec. 8, 1992, Ser. No. 986,745
Claims priority, application Japan, Dec. 9, 1991, 3-324434
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 3 Claims



1. A vehicle-mounted charging apparatus for a portable telephone set comprising:
a portable telephone set and a vehicle-mounted charger in combination, said portable telephone set comprising:
a temperature sensor for sensing temperatures within a battery pack connectable to said telephone set,
an analog/digital converter for converting a voltage of the battery pack to a digital signal, and
an internal circuit for receiving an output from the analog/digital converter and information on the state of power supply from the battery pack to said telephone set and outputting a digital signal representing an operating state of said telephone set;
and said vehicle-mounted charger comprising:
a constant current drive transistor for supplying a charging current to the battery pack,
a charge-special microcomputer for receiving a sensing output signal from the temperature sensor to control the constant current drive transistor in accordance with the operating state of said telephone set,
a constant voltage source for providing an emergency power source to said telephone set, and
a constant voltage charging control microcomputer for receiving the digital signal from the internal circuit and an output from the charge-special microcomputer to control operation of the constant voltage source to provide emergency power to said telephone set in response to said telephone set not receiving sufficient power from said battery pack when a switch for applying power to said portable telephone set is in the ON state.

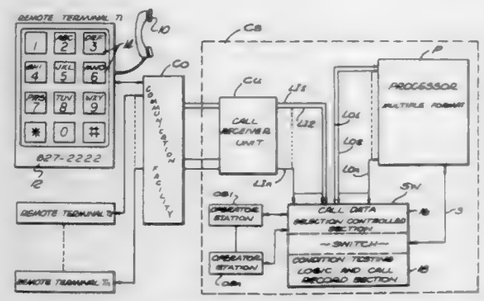
5,351,284
ANTENNA FOR A BASE UNIT OF A CORDLESS TELEPHONE SYSTEM
Max W. Rogers, Franklin Park, Ill., assignor to Dynascan Corporation, Chicago, Ill.
Filed Jan. 21, 1992, Ser. No. 823,177
Int. Cl.[5] H04M *11/00;* H04H *1/02;* H04B *1/38*
U.S. Cl. 379—61 14 Claims

1. In a telephone system comprising a base unit and a portable handset coupled to the base unit by a duplex radio communication link and which is devoid of any antenna which extends or can be extended to project substantially from the handset, said base unit having a power cord having power conductors insertable into a commercial power line receptacle and a telephone cord including telephone wires to be connected to a telephone distribution system, and an antenna for the base unit for transmitting and receiving the duplex radio communication, the antenna being a wire integrally part of one of said power cord or telephone cord, but separate and distinct from



said power conductor and said telephone wires by being spaced therefrom.

5,351,285
MULTIPLE FORMAT TELEPHONIC INTERFACE CONTROL SYSTEM
Ronald A. Katz, Los Angeles, Calif., assignor to First Data Resources Inc., Omaha, Nebr.
Continuation of Ser. No. 509,691, Apr. 16, 1990, abandoned, and a continuation-in-part of Ser. No. 640,337, Jan. 11, 1991, which is a continuation of Ser. No. 335,923, Apr. 10, 1989, which is a continuation of Ser. No. 194,258, May 16, 1988, Pat. No. 4,845,739, which is a continuation-in-part of Ser. No. 18,244, Feb. 24, 1987, Pat. No. 4,792,968, which is a continuation-in-part of Ser. No. 753,299, Jul. 10, 1985, abandoned, said Ser. No. 509,691, is a continuation-in-part of Ser. No. 260,104, Oct. 20, 1988, Pat. No. 4,930,150, which is a continuation-in-part of Ser. No. 18,244, Feb. 24, 1987, Pat. No. 4,792,968, which is a continuation-in-part of Ser. No. 753,299, Jul. 10, 1985, abandoned. This application Apr. 13, 1993, Ser. No. 47,241
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—94 67 Claims



1. An interface control system for use with, (1) a communication facility including remote terminals for individual callers, wherein said remote terminals may comprise a conventional telephone instrument including voice communication means and digital input means for providing data, (2) a multiple port, multiple format processor for interfacing a substantial number of callers in any of a plurality of formats to concurrently process data, and (3) a plurality of live operator stations with prompting capability for a plurality of formats, said interface control system comprising:
call data means for receiving signal-represented call data from said terminals including DNIS automatically provided by said telephonic communication system;
selection means coupled to said call data means for selecting one of said formats under control of said call data including DNIS to thereby further specify imposed conditions that must exist for a connection of a call either to said multiple port, multiple format processor or one of said live operator stations in accordance with said select one of said

formats, at least one of said formats having at least one imposed condition; and

interconnect switch means for providing format data and controlling connections from a calling remote terminal to a port of said multiple port, multiple format processor or one of said live operator stations under control of said selection means.

5,351,286

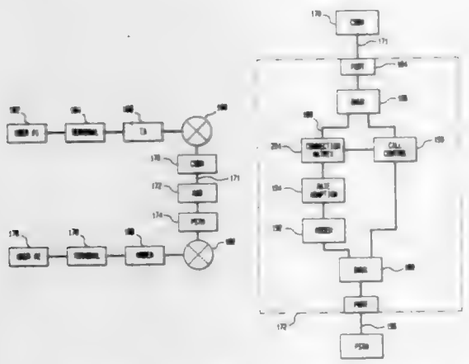
METHOD AND SYSTEM FOR BILLING AN ISDN DATA USER INTERCONNECTION TO THE PUBLIC SWITCHED TELEPHONE NETWORK

Richard J. Nici, Tinton Falls, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Continuation-in-part of Ser. No. 21,383, Feb. 23, 1993, abandoned. This application Jul. 6, 1993, Ser. No. 87,441

Int. Cl.[5] H04M *11/00, 15/00, 17/00*

U.S. Cl. 379—94 **26 Claims**



1. A method for connecting and billing a first user on a packet network being capable of transmitting packet communications, the first user having a billing identification corresponding to a billing account, to a second user on a voice-band network, the voice-band network being capable of allocating the costs of a voice-band call, the method comprising the steps of:

decoding a data packet from a packet communication initiated by the first user to determine the first user's billing identification;

establishing a voice-band call to the second user over the voice-band network; and

transmitting the billing identification to the voice-band network for use by the voice-band network to allocate the cost of said voice band call to the first user's billing account.

5,351,287

METHOD AND APPARATUS FOR DATA EVIDENCE COLLECTION

Ranendra K. Bhattacharyya, Monmouth Junction, Middlesex County; Timothy C. Feustel, Cedar Knolls, Morris County, and Henry M. Kluepfel, Mendham, Morris County, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Dec. 11, 1992, Ser. No. 988,987

Int. Cl.[5] H04M *1/66*

U.S. Cl. 379—95 **15 Claims**

1. An apparatus for collecting evidence of unauthorized access to equipment connected to the telecommunications network from a telephone subscriber line suspected of being a possible source of calls resulting in unauthorized access, said apparatus comprising:

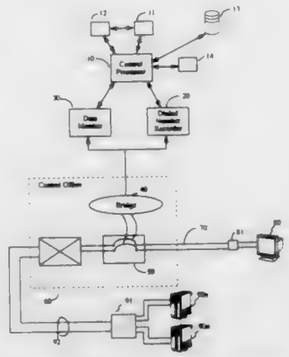
a high-impedance bridge coupled to the suspect telephone line for unobtrusively tapping all signals on the suspect telephone subscriber line;

a data monitor connected to said high-impedance bridge for receiving said signals and for converting said signals into a stream of characters;

a buffer memory,

an analysis processor,

a control processor connected to said data monitor for receiving said stream of characters and for routing said



stream of characters to said buffer memory for capturing all data traffic on the suspect telephone line and to said analysis processor for finding a match between strings of data in said buffer memory and known data strings; and

a non-volatile memory into which said control processor writes all data from said buffer memory into a call record when said analysis processor finds a match between strings of data in said buffer memory and said known strings of data.

5,351,288

VOICE BRIDGE FOR A RELAY CENTER

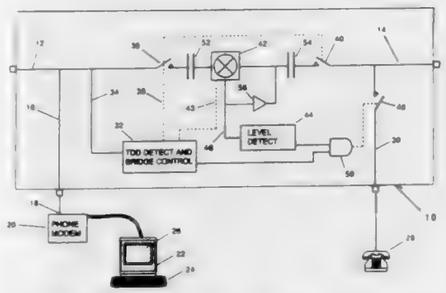
Robert M. Engelke, Madison; Kevin Colwell, Middleton; Edward Gisske, Verona, and Ronald Schultz, Madison, all of Wis., assignors to Ultratec, Inc., Madison, Wis.

Continuation-in-part of Ser. No. 616,720, Nov. 16, 1990, Pat. No. 5,081,673, which is a continuation of Ser. No. 255,357, Oct. 11, 1988, abandoned. This application Jan. 9, 1992, Ser. No. 842,943

The portion of the term of this patent subsequent to Jan. 14, 2009, has been disclaimed.

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—98 **11 Claims**



1. A voice bridge for a relay center, the voice bridge comprising:

(a) first and second telephone lines;

(b) a modem capable of receiving and transmitting data signals over the first telephone line:

(c) a terminal having a keyboard and a display, the terminal

converting the data signals received by the modem into readable characters and projecting the characters upon the display, and the terminal transmitting data signals that are entered upon the keyboard through the modem to the first telephone line;

(d) a telephone that connects with the second telephone line, the telephone being positioned in such proximity to the keyboard and the display that an operator may read the characters exhibited on the display and voice any message formed by the characters into the telephone and the operator may transcribe any vocal message received on the telephone into the keyboard; and

(e) means responsive to the presence of digital signals on the first telephone line for preventing transmission of digital signals from the first telephone line to the second telephone line while allowing voice signals to pass between the first and second telephone lines.

5,351,289

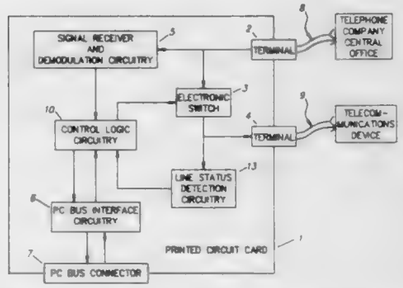
CALLER ID TELEPHONE SECURITY DEVICE

William K. Logsdon, 4003 Northumberland Dr., Louisville, Ky. 40245, and Elden E. DuRand, III, 6601 Old Zaring Rd., Crestwood, Ky. 40014

Filed Sep. 17, 1992, Ser. No. 946,286

Int. Cl.[5] H04M *1/56, 1/64, 1/66*

U.S. Cl. 379—142 **5 Claims**



1. Apparatus to selectively pass or block telephone calls by controlling telephone company power ring signals; comprising: electronic switch means having a first terminal means and a second terminal means, whereby electrical continuity between said first terminal means and said second terminal means is controlled, said apparatus including:

data signal reception and demodulation means for receiving and demodulating frequency shift keyed signals and responsive to telephone company caller identification data transmitted by the telephone company during the silent interval between the first and second power ring signals of an incoming call and conveyed via a telephone line connected to said first terminal means;

control logic circuitry means responsive to said data signal reception and demodulation means to retrieve and process said telephone company caller identification data, and actuate said electronic switch means;

means for comparing said telephone company caller identification data with a stored list of preselected caller identification data, wherein each preselected caller identification data item further includes electronic switch control information;

where said second terminal means is connected to a telecommunication device;

where said control logic circuitry means maintains said electronic switch means in the non-conductive state to prevent the passage of telephone company power ring signals to said telecommunication device until said telephone company caller identification data is received and processed.

5,351,290

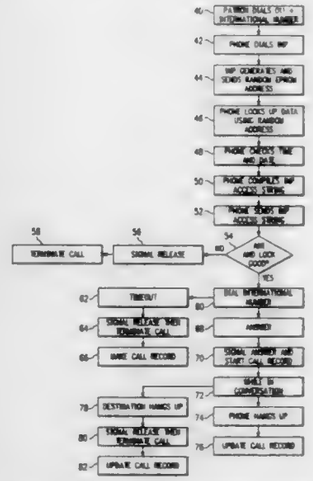
TELECOMMUNICATIONS FRAUD PREVENTION SYSTEM AND METHOD

Abdolreza S. Naeini, Dallas; Lindsey D. Owen, Carrollton, and Harold E. A. Hansen, Plano, all of Tex., assignors to Intellicall, Inc., Carrollton, Tex.

Filed Sep. 11, 1992, Ser. No. 944,166

Int. Cl.[5] H04M *17/00, 15/00, 3/00*

U.S. Cl. 379—145 **2 Claims**



2. A method for processing a telephone call from a local telecommunications device through a telecommunications network comprising a network peripheral system, the method comprising the steps of:

receiving a destination telephone number from a patron of the local telecommunications device;

establishing a communication path between the local telecommunications device and the network peripheral system through the telecommunications network;

generating a random address value in the network peripheral system;

transmitting the address value to the local telecommunications device through the communication path;

accessing first data stored in the local telecommunications device using the address value received from the network peripheral system;

transmitting the first data from the local telecommunications device to the network peripheral system using the communication path;

accessing second data stored in the network peripheral system using the address value;

comparing the first and second data in the network peripheral system;

placing the telephone call using the destination number responsive to said step of comparing, a valid comparison indicating an authorized use by the local telecommunications device of the network peripheral system;

transmitting the time the call is placed from the local telecommunications device to the network peripheral system through said communications path; and

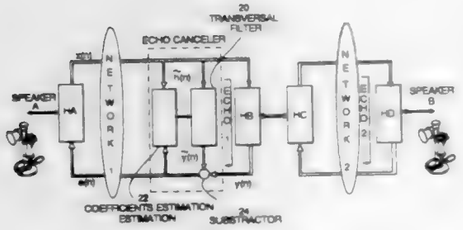
comparing the time received from the local telecommunications devices to the actual time of the call, said step of placing the telephone call additionally responsive to said step of comparing the time prior to placement of the call such that signals transmitted between a local telecommunications device and a network peripheral system recorded at one time may not be used to place calls through the network peripheral system at a later time.

5,351,291

ADAPTIVE ECHO CANCELLATION METHOD AND DEVICE FOR IMPLEMENTING SAID METHOD

Jean Menez, Cagnes Sur Mer; Michele Rosso, Saint Jeannet, and Paolo Scotton, Vence, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 7, 1992, Ser. No. 927,690
Claims priority, application European Pat. Off., Sep. 6, 1991, 91480144.4
Int. Cl.[5] H04M 9/00
U.S. Cl. 379—410 9 Claims



1. In a telephone system for providing a communication path between a first and a second telephone and having a pair of unidirectional conductors for carrying digital telephone signals in opposite directions between the first and second telephones, first and second bidirectional conductors and first and second hybrid transformers for respectively connecting the said first and second telephones to opposite ends of the said pair of unidirectional conductors to provide a complete signal path between the said first and second telephones, at least one transversal filter having an input connected to one of the said unidirectional conductors and having a plurality of coefficients taps for generating a replica of the echo signal present in the said other unidirectional conductor, and means responsive to the filter output and the signal present on the said other unidirectional conductor for subtracting the replica generated in the filter from the signal present on the said other unidirectional conductor to cancel the echo present in the said other unidirectional conductor, a method for setting the coefficients of the transversal filter comprising the steps:

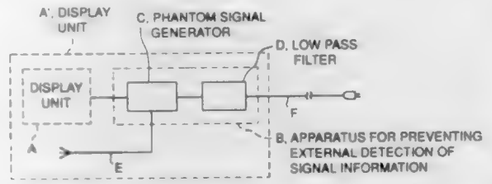
a) setting a coefficient threshold (Thrshld) to a predefined value;
b) setting initial relative sampling time limits for defining initial coefficient boundaries;
c) setting initial filter coefficients to predefined values;
d) subtracting the echo replica provided by the transversal filter from the signal present on the said other unidirectional conductor and deriving therefrom an updated error signal e(n);
e) deriving a new set of coefficients using the updated error signal e(n) and replacing the filter coefficients with the new set of coefficients;
f) repeating steps d) and e) for a predetermined number of periods T of the digital telephone signal present on the said one unidirectional conductor;
g) after the said predetermined number of periods T redefining the coefficient boundaries based on the current coefficient threshold value and dropping those filter coefficients outside of said threshold to define an updated coefficient set; and
h) computing a new coefficient threshold value for subsequent use in step g) based on said updated coefficient set and repeating steps d) through h).

5,351,292

METHOD AND APPARATUS FOR PREVENTING EXTERNAL DETECTION OF SIGNAL INFORMATION

Per Lindholm, Stockholm, Sweden, assignor to Cominvest Research AB, Stockholm, Sweden

Continuation of Ser. No. 721,632, Sep. 23, 1991, Pat. No. 5,157,725. This application Sep. 14, 1992, Ser. No. 944,427
Claims priority, application Sweden, Jan. 26, 1989, 8900288-5
The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.
Int. Cl.[5] H04L 9/00
U.S. Cl. 380—10 14 Claims



2. Apparatus for preventing external detection of signal information in video signals, comprising:

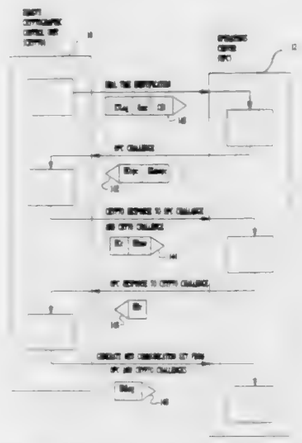
(a) means for emitting video signals containing a bit signal sequence, from a video circuit via electromagnetic waves;
(b) means for generating a phantom signal with at least one pseudo-random bit signal sequence and having properties similar to said bit signal sequence of said video signals emitted from said video circuit and emitting said phantom signal via electromagnetic waves within a temporally overlapping time interval and spatially overlapping region as said video signals are being emitted; said means for generating a phantom signal further including a maximum recurrence length shift register with an adjustable maximum length; and
(c) means for varying bit frequencies of each said pseudo-random bit signal sequence.

5,351,293

SYSTEM METHOD AND APPARATUS FOR AUTHENTICATING AN ENCRYPTED SIGNAL

John R. Michener, and Benjamin Samit, both of Princeton, N.J., assignors to Wave Systems Corp.

Filed Feb. 1, 1993, Ser. No. 11,883
Int. Cl.[5] H04L 9/00; H03K 3/84
U.S. Cl. 380—21 14 Claims



1. In a cryptographic communication system including first and second terminals, said first and second terminals being connected via a telecommunications link, a method for authenticating encrypted signals between said first and second terminals, wherein said first terminal stores a user secret key and wherein said second terminal includes a keyset library memory for storing said user secret key, said method comprising:

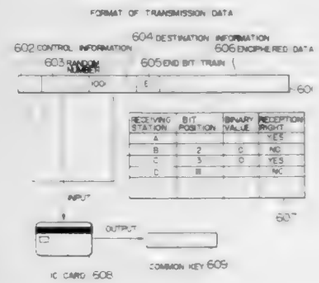
sending a first cryptographic challenge block including a first variable, from said second terminal to said first terminal;
receiving said first cryptographic challenge block at said first terminal;
responding to said first cryptographic challenge block by sending from said first terminal a first cryptographic challenge block response based on said first variable received in said first cryptographic challenge block and said user secret key stored in said first terminal;
receiving said first cryptographic challenge block response at said second terminal;
computing at said second terminal an expected first cryptographic challenge block response;
comparing said received first cryptographic challenge block response to said expected first cryptographic challenge block response in said second terminal; and
disconnecting said telecommunications link between said first and second terminals if said received first cryptographic challenge block response is not substantially equal to said expected first cryptographic challenge block response;
whereby said first terminal authenticates to said second terminal responsive to said cryptographic challenge block that said first terminal stores the same secret key as said second terminal;
sending a second cryptographic challenge block including a second variable, from said first terminal to said second terminal;
receiving said second cryptographic challenge block including said second variable, at said second terminal;
responding to said second cryptographic challenge block by sending from said second terminal a second cryptographic challenge block response based on said first variable in said first cryptographic challenge block, said received second variable in said second cryptographic challenge block and said user secret key stored in said keyset library of said second terminal;
receiving said second cryptographic challenge block response at said first terminal;
computing at said first terminal an expected second cryptographic challenge block response using said first variable received in said first cryptographic challenge block, said second variable in said second cryptographic challenge block and said user secret key stored in said first terminal;
comparing said received second cryptographic challenge block response to said expected second cryptographic challenge block response in said first terminal; and
disconnecting said telecommunications link between said second and first terminals if said received second cryptographic challenge block response is not substantially equal to said expected second cryptographic challenge block response;
whereby said second terminal authenticates to said first terminal responsive to said second cryptographic challenge block that said second terminal stores the same user secret key as said first terminal.

5,351,294

LIMITED BROADCAST SYSTEM

Hiroshi Matsumoto, Sagamihara; Kazuo Takaragi, Ebina, and Yasuko Fukuzawa, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Chubu Software Ltd., Nagoya, both of Japan

Continuation of Ser. No. 802,724, Dec. 5, 1991, Pat. No. 5,218,638. This application Mar. 23, 1993, Ser. No. 35,956
Claims priority, application Japan, Dec. 7, 1990, 2-400806
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[5] H04K 1/00
U.S. Cl. 380—23 23 Claims



1. A receiving station for receiving enciphered service information together with destination information from an information service station of a limited broadcast system, said destination information designating destination stations to which a data reception right for the enciphered service information is given, said enciphered service information being produced by enciphering service information by a common key generated from said destination information, comprising:

means for receiving said enciphered service information and said destination information transmitted from said service station;
means for confirming data reception right by referring said destination information received by said receiving means;
means for generating a common key by using said received destination information in response to the confirmation result of said data reception right; and
means for deciphering said received enciphered service information by using said contmon key.

5,351,295

SECURE METHOD OF NEIGHBOR DISCOVERY OVER A MULTIACCESS MEDIUM

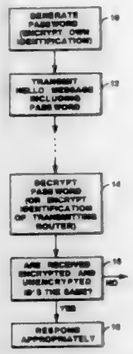
Radia J. Perlman, Acton, and Charles W. Kaufman, Northborough, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 1, 1993, Ser. No. 86,596
Int. Cl.[5] H04L 9/32, 9/00
U.S. Cl. 380—23 6 Claims

1. An apparatus for communicating to a station in a communication network addresses of other stations within said communication network which said station is capable of communicating with directly, said other stations being referred to as neighbors of said station, said apparatus comprising:

means for implementing a message protocol for exchanging identifying messages between said station and said neighbors of said station to identify said neighbors to said station;
means for including a password with each of said identifying messages; and

means for restricting communications between said station and said neighbors of said station to those of said neigh-



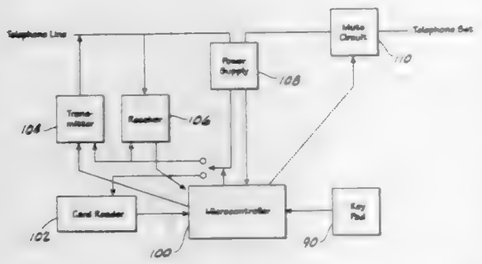
bors of said station identified to said station through identifying messages containing said password.

5,351,296

FINANCIAL TRANSMISSION SYSTEM

Mark K. Sullivan, Joplin, Mo., assignor to Niobrara Research & Development Corporation, Joplin, Mo.

Filed Mar. 29, 1993, Ser. No. 38,895
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—24 **49 Claims**



1. A device for performing financial transactions in conjunction with a telephone over a communications link in a communications network with a computer at a remote location, using a financial card having an account code, the device comprising:

control means for controlling operation of the device;

reader means for determining the account code of the financial card;

means for transmitting the account code over the communications link of the communications network to the computer at the remote location;

receiver means for receiving information sent by the computer over the communications link;

a communications connector adapted to connect to the communications network and the telephone so that voice communications can be performed by the telephone over the communications link and so that the device can transmit and receive data to and from the computer at the remote location, respectively, over the communications link used by the telephone to perform voice communications; and

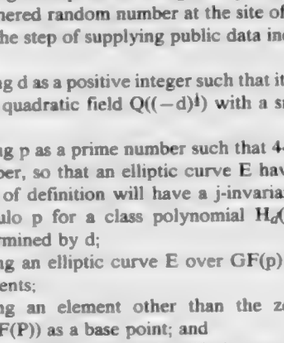
a power supply connecting to the communications network to provide power to the device solely from the power of communications network.

5,351,297

METHOD OF PRIVACY COMMUNICATION USING ELLIPTIC CURVES

Atsuko Miyaji, Kawachinagano, and Makoto Tatebayashi, Takarazuka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 904,944, Jun. 26, 1992, Pat. No. 5,272,755. This application Apr. 16, 1993, Ser. No. 48,478
Claims priority, application Japan, Jun. 28, 1991, 3-158205
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—28 **12 Claims**



1. A method of applying a public key encryption network system to users from a provider by using an elliptic curve, comprising the steps of:

supplying on the network system, public data to each of the users from the provider;

selecting a first privacy key at a terminal of a first user and selecting a second privacy key at a terminal of a second user wherein the first and second privacy keys are different;

notifying a number calculated with the public data and the first privacy key to the second user from the first user, and notifying a number calculated with the public data and the second privacy key to the first user from the second user;

generating a random number at the site of one of the first and second users who wishes to transmit a message and subsequently ciphering the random number with the public data;

ciphering the message to be transmitted at the site of one of the first and second users who wishes to transmit the message by using the random number and the number notified from the other user;

transmitting the ciphered random number and the ciphered message from the site of one of the first and second users who wishes to transmit the message to the other user; and

deciphering the ciphered message using the privacy key and the ciphered random number at the site of the other user;

wherein the step of supplying public data includes the steps of:

choosing d as a positive integer such that it gives an imaginary quadratic field $Q((-d)^{\frac{1}{2}})$ with a small class number;

choosing p as a prime number such that $4 \cdot p-1=d \cdot$square number, so that an elliptic curve E having GF(p) as a field of definition will have a j-invariant as a solution modulo p for a class polynomial $H_d(x)=0$ which is determined by d;

choosing an elliptic curve E over GF(p) having exact p elements;

choosing an element other than the zero element of E(GF(P)) as a base point; and

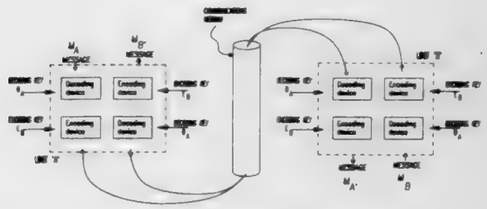
supplying each user with the elliptic curve E (GF(p)) and the base point.

5,351,298

CRYPTOGRAPHIC COMMUNICATION METHOD AND APPARATUS

Peter J. Smith, 25 Lawrence Street, Herne Bay, Auckland, New Zealand

Filed Sep. 30, 1992, Ser. No. 953,832
Claims priority, application New Zealand, Sep. 30, 1991, 240019
Int. Cl.[5] H04L *9/28, 9/30*
U.S. Cl. 380—30 **10 Claims**



10. A method of providing a digital signature for a communicated electronic signal message comprising the steps of:

providing a public verification key, including two verification numbers e and N;

generating a secret signing key including a set of numbers D wherein the numbers of the set D are derived from e and the prime factors of N such that the secret signing key is directly related to and computationally infeasible to generate from the public verification key;

processing the message to be transmitted and the secret signing key at the transmitter to generate a digital signature at said transmitter by transforming a representation of the message with the secret signing key, by calculating the Lucas function of the set of numbers D such that the digital signature is computationally infeasible to generate from the public verification key;

communicating the public verification key to the receiver;

transmitting the message and the digital signature from the transmitter to the receiver;

receiving the message and the digital signature at the receiver and transforming said digital signature with the public verification key by calculating the Lucas function of e to generate a representation of the message; and

validating the digital signature by comparing the similarity of the message to the representation of the message generated from the digital signature.

5,351,299

APPARATUS AND METHOD FOR DATA ENCRYPTION WITH BLOCK SELECTION KEYS AND DATA ENCRYPTION KEYS

Natsume Matsuzaki, Mino, and Makoto Tatebayashi, Takarazuka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 4, 1993, Ser. No. 71,546
Claims priority, application Japan, Jun. 5, 1992, 4-145964; Oct. 9, 1992, 4-271273
Int. Cl.[5] H04K *1/04*
U.S. Cl. 380—37 **30 Claims**

1. A data encryption apparatus for encrypting input data after dividing the input data into N blocks of data each consisting of M bits, wherein N is an integer greater than 2 and M is an integer greater than 1, the data encryption apparatus comprising:

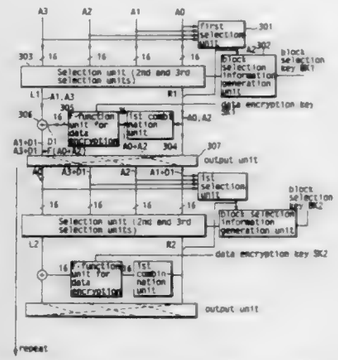
a first selection unit for selecting **1** to N-**1** blocks among the N blocks, using a block selection key;

a second selection unit for selecting all the other blocks;

a first combination unit for combining the blocks of data selected in the first selection unit into a single block of data and outputting the M-bit data;

an F-function unit for encrypting the M-bit data outputted from the first combination unit using a data encryption key and outputting resultant M-bit data:

a second combination unit for combining the M-bit data outputted from the F-function unit with each of the blocks of data selected in the second selection unit; and



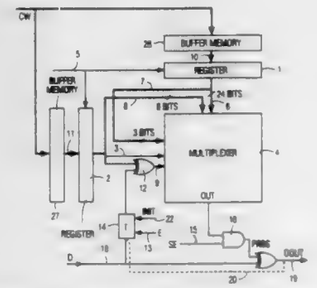
an output unit for outputting N blocks of data arranged in the same order as the initial N blocks, the blocks selected in the first selection unit being outputted without any change and the other blocks being the outputs of the second combination unit.

5,351,300

METHOD OF MODIFYING PSEUDO-RANDOM SEQUENCES AND DEVICE FOR SCRAMBLING OR DESCRAMBLING INFORMATION COMPONENTS

Jean-Jacques Quisquater, Rhode-St-Genese, Belgium, and Issa Rakhodai, Montigny le Bretonneux, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 6, 1993, Ser. No. 87,647
Claims priority, application France, Jul. 29, 1992, 92 09400
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—46 **9 Claims**



1. A method of dynamically modifying a pseudo-random sequence produced by a pseudo-random sequence generator, which sequence is used for scrambling or descrambling information components at least one part of which is provided in the form of a digital signal divided into packets, the scrambling or descrambling being obtained by combining said pseudo-random sequence with said digital signal, said pseudo-random sequence generator being re-initialized at each start of the packet by means of an initialization word, wherein said digital signal is derived, delayed and combined with a series of bits present in the pseudo-random sequence generator for modifying said series of bits and in that the derived digital signal is modified by submitting it to a logic operation of the "EXCLUSIVE-OR" type before it is combined with a series of bits present in the pseudo-random sequence generator, one of the operands being the signal itself and the other operand being the signal which emanates from said operation and is delayed by a

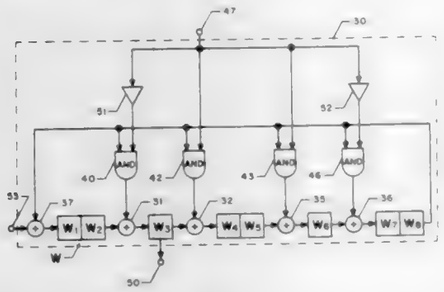
time which is equal to the shift between the instant when the digital signal is derived and the instant when its combination with a series of bits present in the pseudo-random sequence generator has a retroactive effect on the digital signal.

5,351,301

AUTHENTICATOR CIRCUIT

Ronald M. Benincasa, Pasadena, Md., assignor to The United States of America as represented by the Director of National Security Agency, Washington, D.C.

Filed Mar. 3, 1980, Ser. No. 129,047
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—50 **7 Claims**



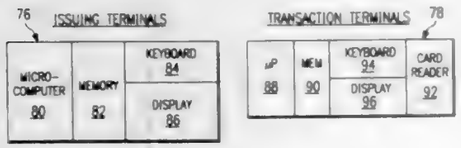
1. An apparatus, comprising:
a plurality of delay stages connected to form a shift register;
a first mod-2 adder inserted between two consecutive stages of said register, the output of the preceeding stage forming one input of said adder and the output of the adder forming the input to the succeeding stage;
a first terminal for providing information to said apparatus;
a second terminal for providing information to said apparatus;
a second mod-2 adder having an input from said first terminal, an input from the last stage of said register, and an output connected to the first stage of said register;
means controlled by data provided on said second terminal for selectively switching either the information in the last delay stage or a zero to the second input of said first adder; and
an output terminal connected to a selected one of said register stages.

5,351,302

METHOD FOR AUTHENTICATING OBJECTS IDENTIFIED BY IMAGES OR OTHER IDENTIFYING INFORMATION

Frank T. Leighton, 15 Charlesden Pk., Newtonville, Mass. 02160, and Silvio Micali, 459 Chestnut Hill Ave., Brookline, Mass. 02146

Filed May 26, 1993, Ser. No. 67,493
Int. Cl.[5] H04L *9/30, 9/32*
U.S. Cl. 380—30 **9 Claims**



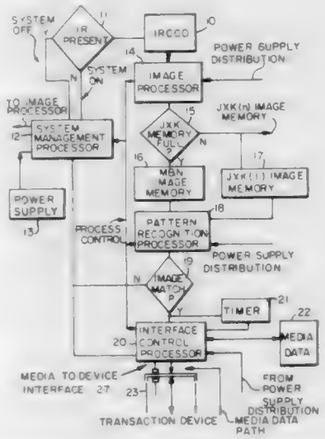
1. A method for authenticating an object identified by a data string, the data string including a digitized image of the object, comprising the steps of:
generating a signature of the data string using a private key of a public-key cryptosystem pair, the public-key cryptosystem pair also having a public key M;
decrypting the signature using the public key M of the public-key cryptosystem pair; and
comparing the decrypted signature with the digitized image to thereby authenticate the object.

5,351,303

INFRA-RED IMAGING AND PATTERN RECOGNITION SYSTEM

Michael R. Willmore, 144 Meadow Dr., Leonardtown, Md. 20650

Filed Feb. 25, 1993, Ser. No. 22,104
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—2 **10 Claims**



1. An identification and verification interface system for use between a transaction media and a transaction device said interface system comprising:
a single application specific integrated circuit, said circuit including
an infra-red charge coupled device for sensing infra-red energy emanating from only a large concentration of nerve endings and associated blood vessels, and charge coupled device sending a signal indicating a detection of the large concentration of nerve endings and associated blood vessels;
a system management processor connected to said infra-red charge coupled device and receiving said indicating signal, said system management processor for controlling the identification and verification interface;
an image processor connected to said system management processor and receiving a power up signal from said system management processor based on receipt of said indicating signal, said image processor sending a sample of each infra-red energy level signal to said infra-red charge coupled device;
conversion means for receiving each sampled infra-red energy level from said infra-red charge coupled device and for converting each sampled infra-red energy level into a scaler value;
memory means for storing infra-red image records of only said large concentration of nerve endings and associated blood vessels authorized to utilize the transaction device;
comparison means connected to said conversion means and to said memory means, said comparison means comparing the scaler values with said stored infra-red image record and sending a comparison result signal to said system management processor; and
interface control processor connected to said system management processor for receiving power upon receipt of

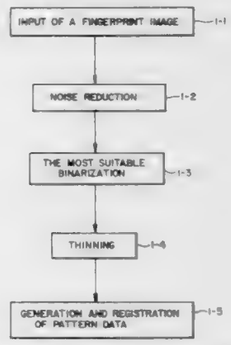
said comparison result signal, said interface control processor issuing a coupling signal to couple the transaction media with the transaction device for a specific time period if said comparison result signal is favorable and issuing a power down signal if said comparison result signal is unfavorable.

5,351,304

FINGERPRINT DATA REGISTRATION METHOD

Makoto Yamamoto, Tokyo, Japan, assignor to Yozan, Inc., Tokyo, Japan

Continuation of Ser. No. 877,199, May 1, 1992, abandoned. This application Dec. 22, 1993, Ser. No. 171,966
Claims priority, application Japan, May 7, 1991, 3-131887
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—5 **4 Claims**



1. A fingerprint data registering method comprising the steps of:
thinning a fingerprint image;
for each pixel in said thinned image, determining:
(1) a value representing the minutia data for the pattern formed by both said pixel and the pixels which are adjacent to said pixel; and
(2) a value representing the specific pixel arrangement of said adjacent pixels; and
storing said minutia data value and said pixel arrangement value.

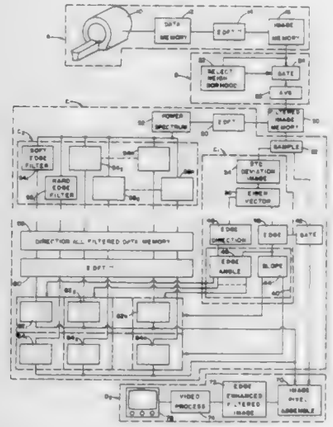
5,351,305

CONCURRENT SMOOTHING AND EDGE ENHANCEMENT OF MEDICAL DIAGNOSTIC IMAGES

Christopher H. Wood, Cleveland; Fares Hajjar, Cleveland Hts.; Anthony Apicella, Willoughby, and Kevin E. Matthews, Brecksville, all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Continuation-in-part of Ser. No. 791,855, Nov. 14, 1991, Pat. No. 5,273,040. This application Jun. 5, 1992, Ser. No. 893,785
Int. Cl.[5] G06K *9/40*
U.S. Cl. 382—6 **9 Claims**

1. A magnetic resonance imaging system comprising:
a scanner for generating phase and frequency encoded magnetic resonance data;
a reconstruction processor for reconstructing the magnetic resonance data into a diagnostic image of a selected spatial region;
a filter for smoothing the diagnostic image, the smoothed diagnostic image being defined by a rectangular array of pixels;
a transform processor for transforming the smoothed diagnostic image into frequency domain data;
a plurality of directional filters for filtering the frequency domain data to generate a corresponding plurality of directionally filtered data sets, the plurality of directional filters filtering along each of a plurality of directions;
an inverse transform processor for transforming the plurality of directionally filtered data sets into a corresponding plurality of directionally filtered images of the selected spatial region, the directionally filtered images being filtered in a plurality of directions to enhance edge sharpness parallel to the filtering direction, the directionally filtered images each being defined by a rectangular array of directionally filtered image pixels;
a directionally filtered image emory for storing the plurality of directionally filtered images;
an edge determining means for determining whether each



pixel of the smoothed diagnostic image is adjacent an edge and a direction of each adjacent edge;
an edge enhanced filtered image assembler for assembling (i) pixels that are not adjacent an edge from the smoothed diagnostic image and (ii) pixels that are adjacent an edge from the directionally filtered images stored in the directionally filtered image memory into an edge enhanced filtered image memory;
a display for converting the assembled pixels in the edge enhanced filtered image memory into a human-readable diagnostic display of the selected spatial region.

5,351,306

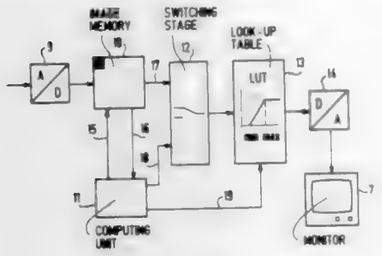
APPARATUS FOR REPRODUCING VIDEO SIGNALS ON A MONITOR

Klaus Finkler, Erlangen, and Volker Heer, Bamberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 1, 1992, Ser. No. 938,605
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1991, 4129656
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—6 **9 Claims**

1. An apparatus for reproducing video signals on a monitor comprising:
means for generating a video signal;
a monitor on which an image corresponding to said video signal is to be displayed;
conversion means for converting grayscale values associated with said video signal into imaging signals, based on a conversion standard applied to all of said grayscale values, for use in creating said image to be displayed;
means for identifying a plurality of regions of interest having fixed locations within said image; and
computing means for making statistical evaluations of the distribution of said grayscale values in said regions of interest in said image to be displayed to obtain a set of statistical values for each region of interest and for comparing said statistical values to a threshold, and for select-

ing only regions of interest having a statistical value with a designated relationship to said threshold, and for recalculating, based exclusively on said selected regions of interest, said conversion standard for completely utilizing



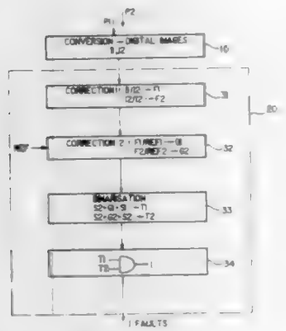
the full dynamic range of said grayscale values within a region of interest to be displayed, said computing means being connected to said conversion means for supplying the recalculated conversion standard thereto.

5,351,307

PROCESS AND APPARATUS FOR THE ACQUISITION AND PROCESSING OF SCREEN IMAGES

Véronique H. M. P. Prejean-Lefevre, Sceaux, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.", Paris, France

Filed Oct. 28, 1992, Ser. No. 967,437
Claims priority, application France, Nov. 15, 1991, 91 14068
Int. Cl.[5] G06K 9/00; G01B 15/06; G01N 21/00
U.S. Cl. 382—8 12 Claims



1. Process for the detection of faults and defects in material used in the formation of a mechanical part comprising the following stages:

a. X-ray irradiating the part at least twice under identical conditions and in accordance with the same view of the part;

b. obtaining at least two X-ray screen images for each view of the part to be inspected;

c. conversion of these screen images into digital video images coded on several grey levels; d. processing each image, said processing involving the following substages i. to iv. including:

i. correction by digital filtering of each image compared with itself;

ii. correction of the filtered images by comparison with a reference image;

iii. binarization of the images by the comparison of each image with a threshold in order to only retain the image points which are equal to or higher than said threshold and which are liable to correspond to a fault in the part; and

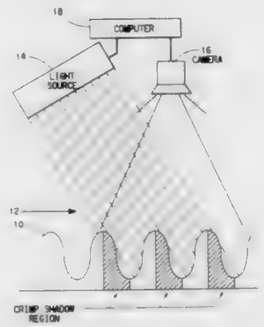
iv. superimposing the images in order to determine the image points which correspond to faults thus detecting the faults in the part.

5,351,308

METHOD AND APPARATUS FOR MEASURING CRIMP FREQUENCY OF A WEB

Jon J. Kaminer, Richmond, Va.; Gary F. Nevers, Lynn, Mass., and Edgar V. Sellers, Wilmington, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 729,548, Jul. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 552,548, Jul. 16, 1990, abandoned. This application Dec. 6, 1993, Ser. No. 163,383
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—8 2 Claims



1. An inspection system for characterizing inherent crimp features in a moving web of crimped fibrous material comprising:

a) stepping motor controller controlling the movement of a stroboscopic light source relative to said moving web, and using the emission Of light from said stroboscopic light source to create an apparent stop-motion view of said web;

b) a video camera capable of capturing variations in reflected light intensity from said web and a video frame grabber for performing analog to digital conversion, all connected to a digital computer capable of storing two-dimensional digitized images of at least a portion of said moving web in realtime;

c) means for measuring and storing the locations and the frequencies of spatial variations in the intensity of the reflected light two-dimensional image of said web;

d) means for classifying said stored locations and frequencies of spatial variations in the intensity of the reflected light two-dimensional image into categories of base crimp, low frequency oscillations, high frequency oscillations, edge oscillations and unconfirmed oscillations;

e) means for processing sequentially said stored locations and frequencies of spatial variations in intensity of reflected light two-dimensional image to segment the full width of the web into categories of base crimp, low frequency oscillations, high frequency oscillations, edge oscillations and unconfirmed oscillations;

f) means for locating said base crimp, low frequency oscillations, high frequency oscillations, edge oscillations and unconfirmed oscillations in realtime with respect to the moving web; and

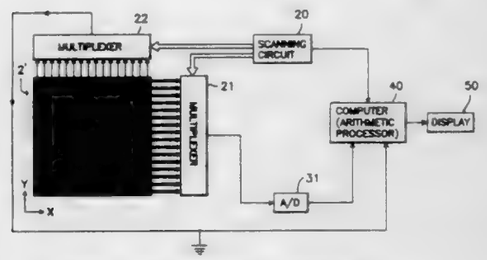
g) means for displaying said base crimp, low frequency oscillations, high frequency oscillations, edge oscillations and unconfirmed oscillations with respect to the moving web.

5,351,309

IMAGE EDGE SENSOR

Si-Chen Lee, and Wen-Jyh Sah, both of Taipei, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Jun. 30, 1992, Ser. No. 906,737
Int. Cl.[5] G06K 9/48, 9/20
U.S. Cl. 382—22 7 Claims



1. A pattern recognition system, comprising:

(a) an image sensor including an array of photo-sensing cells for detecting images, each photo-sensing cell consisting of four identically shaped photo-sensing surfaces, each photo-sensing surface being shaped into a plane trapezoid having a base side, a top side parallel to and shorter than the base side, and a pair of equilateral sides, the equilateral sides intersecting the base side with 45° angles, said four photo-sensitive surfaces being arranged with a topology in which the four base sides thereof form a first square and the four top sides thereof form a second square enclosing an area of non-photosensitive region, said photo-sensing cell being capable of generating electrical signals in proportion to the areas of illuminated portions upon said photo-sensitive surfaces when portions of said image sensor are illuminated by light beams representing images; and

(b) means, responsive to the electrical signals generated by said array of photo-sensing cells, for extracting edges of images detected by said image sensors;

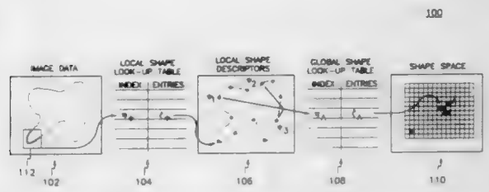
(c) means, response to the electrical signals generated by said array of photo-sensing cells and said edge extracting means, for determining the orientations of edge points of the extracted image edges.

5,351,310

GENERALIZED SHAPE AUTOCORRELATION FOR SHAPE ACQUISITION AND RECOGNITION

Andrea Califano, and Rakesh Mohan, both of New York, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 705,037, May 21, 1991, abandoned. This application Dec. 8, 1993, Ser. No. 162,966
Int. Cl.[5] G06K 9/52
U.S. Cl. 382—22 10 Claims



1. A computer-implemented method for recognizing objects and for automatic acquisition of models of objects, comprising the steps of:

(1) acquiring a model of an object, comprising,

(a) digitizing said object to generate a digitized image;

(b) detecting local shapes in said digitized image;

(c) grouping three or more noncontinuous combinations of said local shapes to generate a first index;

(d) generating an entry for each group of local shapes consisting of a name of said digitized image, and information about the translation, rotation, and scale of said digitized image; and

(c) storing said entry in a shape table at said first index; and

(2) recognizing a target object that appears in a physical scene, comprising,

(a) digitizing said target object to generate a digitized target image;

(b) detecting global shapes in said digitized target image;

(c) grouping three or more noncontinuous combinations of said global shapes to generate a second index;

(d) accessing said shape table and retrieving entries from said shape table that correspond to said second index;

(e) collecting said retrieved entries from said shape table into a vote table; and

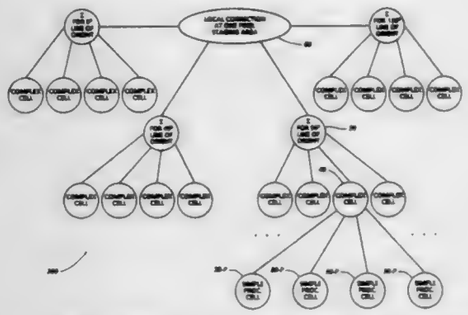
(f) selecting said retrieved entry with a highest vote in order to recognize said target image.

5,351,311

NEURAL NETWORK FOR DETECTION AND CORRECTION OF LOCAL BOUNDARY MISALIGNMENTS BETWEEN IMAGES

George W. Rogers, King George; Jeffrey L. Solka, Fredericksburg, both of Va.; Donald Vermillion, Riverdale, Md.; Carey E. Priebe, King George, and Wendy L. Poston, Fredericksburg, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 28, 1992, Ser. No. 920,700
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—45 9 Claims



1. A neural network for correction of boundary misalignments between a monochrome reference image and a monochrome transformed image that is related to the reference image by an unknown transformation, the reference and transformed images further being defined within a given pixel space wherein, for each pixel in the given pixel space, the neural network comprises: an input layer having a plurality of input laver sections, each of the input layer section containing a plurality of input nodes encompassing at least one pixel within the given pixel space divided along a predetermined orientation into first and second sections of a cell; each of said input nodes having, processor means for detecting a unique contrast gradient defined by a digital state comparison between the pixels of the cell sections selected from a group consisting of; i) the first and second sections viewed with respect to only the reference image, ii) the first and second sections viewed with respect to only the transformed image, iii) the first sections viewed with respect to the reference and transformed images, and iv) the second sections viewed with respect to the reference and transformed images, wherein each of said input nodes outputs a first signal defining one of a presence or absence of the detected contrast gradient as measured by the selected cell sections; a second layer having a plurality of second layer

sections respective associated with one of said input layer sections and containing a plurality of second layer nodes respectively responsive to the outputs of a predetermined combination of said input nodes to output a second signal defining a local boundary misalignment between the reference and transformed images when said first signal from each of said input nodes defines the presence of the measured contrast gradient; a third layer having a plurality of third layer nodes respectively associated with one of said second layer sections and responsive to the outputs thereof for weighting and combining the outputs of said associated second layer nodes to output a local correctional signal defining a direction to shift the transformed image perpendicular to the predetermined orientation associated with said one of said input layer sections; and means weighting and averaging the local correctional signal outputs of said third layer for calculating a fourth signal defining global misalignment between the reference and transformed images of the given pixel space.

5,351,312

SPATIAL FILTER OF AN IMAGE SIGNAL PROCESSOR PROVIDING ALTERNATING LINE IMAGES WITHOUT MOIRE

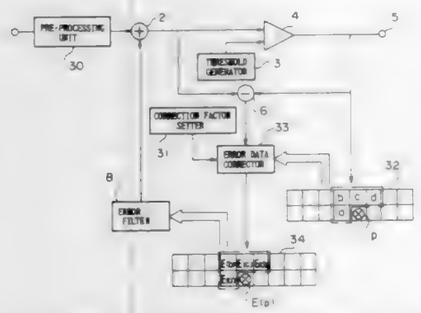
Shinichi Sato, Yokohama, and Kazuto Kobayashi, Tokyo, both of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Continuation of Ser. No. 767,719, Sep. 30, 1991, abandoned. This application Aug. 19, 1993, Ser. No. 109,113

Claims priority, application Japan, Oct. 9, 1990, 2-271145; Oct. 9, 1990, 2-271146

Int. Cl.[5] **G06K** *9/36, 9/38, 9/40*

U.S. Cl. 382—50 **6 Claims**



1. A spatial filter of an image signal processor for preprocessing image signals Sd, Sc, Sb, Sh, Sp, Sa, Sg, Sf and Se of pixels sampled in that order in alternating line images to prevent moire from occurring, comprising:

first and second 1-line buffer memories arranged in series for respectively storing a group of image signals of pixels which are arranged in a line directed in a main scan direction, a group of image signals of a line stored in the first 1-line buffer memory being transferred to the second 1-line buffer memory each time another group of image signals of another line is transferred to the first 1-line buffer memory, the image signals Sb, Sc, Sd of pixels arranged in a first line being stored in the second 1-line buffer memory as pieces of pixel information Ib, Ic, Id, and the image signals Sa, Sp, Sh of pixels arranged in a second line being stored in the first 1-line buffer memory as pieces of pixel information Ia, Ip, Ih;

first and second latch circuits for respectively latching one of the pixel information stored in the second 1-line buffer memory, a piece of pixel information stored in the first latch circuit being transferred to the second latch circuit each time another piece of pixel information is transferred to the first latch circuit, the pixel information Ic being stored in the first latch circuit, and the pixel information Id being stored in the second latch circuit;

third and fourth latch circuits for respectively latching one of the pixel information stored in the first 1-line buffer memory, a piece of pixel information stored in the third latch circuit being transferred to the fourth latch circuit each time another piece of pixel information is transferred to the third latch circuit, the pixel information Ip of a pixel of interest being stored in the third latch circuit, and the pixel information Ih being stored in the fourth latch circuit;

fifth and sixth latch circuits for respectively latching one of the image signals of pixels arranged in a third line, an image signal stored in the fifth latch circuit being transferred to the sixth latch circuit each time another image signal is transferred to the fifth latch circuit, the image signal Sf being stored in the fifth latch circuit as a piece of pixel information If, and the image signal Sg being stored in the sixth latch circuit as a piece of pixel information Ig;

first adding means for adding the pixel information Ia, Ih of pixels adjoining the pixel of interest in the main scan direction to obtain a first information sum, and the pixel information Ic, if of pixels adjoining the pixel of interest in a sub scan direction perpendicular to the main scan direction, the pixel information Ia being output from the first 1-line buffer, the pixel information Ih being output from the fourth latch circuit, the pixel information Ic being output from the first latch circuit, and the pixel information If being output from the fifth latch circuit;

second adding means for adding the pixel information Ib, Id, Ig and the image signal Se of pixels adjoining the pixel of interest in diagonal directions to obtain a second information sum, the pixel information Ib being output from the second 1-line buffer, the pixel information Id being output from the second latch circuit, the image signal Se being sent through a signal line in a last order to be treated as a piece of pixel information Ie, and the pixel information Ig being output from the sixth latch circuit;

a first multiplier for multiplying the first information sum obtained in the first adding means with a first filter coefficient A to obtain a first multiplied sum;

a second multiplier for multiplying the second information sum obtained in the second adding means with a second filter coefficient −B to obtain a second multiplied sum;

a third multiplier for multiplying the pixel information Ip of the pixel of interest with a third filter coefficient C to obtain a third multiplied sum; and

third adding means for adding the first multiplied sum obtained in the first multiplied, the second multiplied sum obtained in the second multiplier and the third multiplied sum obtained in the third multiplier to obtain a result of a preprocessing of the image signals Sd, Sc, Sb, Sh, Sp, Sa, Sg, Sf and Se.

5,351,313

BINARIZATION METHOD

Goroh Bessho, and Michiyoshi Tachikawa, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 457,933, Dec. 27, 1989, Pat. No. 5,097,520. This application Dec. 13, 1991, Ser. No. 806,628

Claims priority, application Japan, Jan. 20, 1989, 1-11478; Jun. 30, 1989, 1-169034

Int. Cl.[5] **G06K** *9/38*

U.S. Cl. 382—51 **6 Claims**

1. A binarization method of obtaining an optimum threshold value for binarization which is used when converting multilevel image data which describes an input image into black-and-white hi-level image data, said binarization method comprising the steps of:

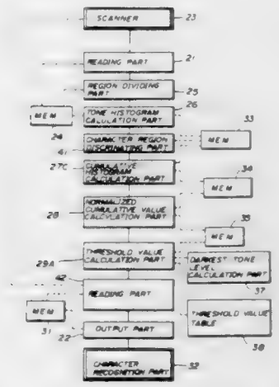
a) dividing the input image into a plurality of regions;

b) discriminating whether or not each region is a character region which constitutes a portion of a character;

c) integrating regions which are discriminated as character regions into an integrated region when a number of regions which are discriminated as the character regions exceeds a predetermined value;

d) counting a first number of black picture elements within the integrated region by varying a threshold value from a darkest tone level to a lightest tone level;

e) counting a second number of picture elements having a tone level other than the lightest tone level within the integrated region;



f) obtaining a percentage of the first number with respect to the second number for each of the varied threshold values so as to normalize a density of the input image within the integrated region; and

g) determining the optimum threshold value for binarization with respect to the integrated region based on the percentage which is obtained for each of the varied threshold values.

5,351,314

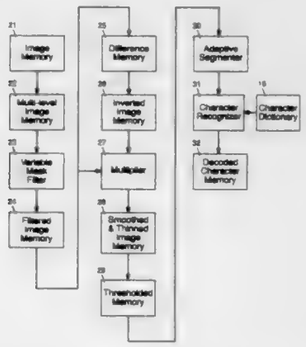
METHOD AND APPARATUS FOR IMAGE ENHANCEMENT USING INTENSITY DEPENDENT SPREAD FILTERING

Mehrzad R. Vaezi, Irvine, Calif., assignor to Canon Information Systems, Inc., Costa Mesa, Calif.

Filed Oct. 4, 1991, Ser. No. 771,220

Int. Cl.[5] **G06K** *9/36, 9/44*

U.S. Cl. 382—54 **30 Claims**



1. A method of recognizing a character in an image in the form of pixel data, comprising the steps of:

smoothing and thinning the pixel data;

segmenting adjacent characters in the smoothed and thinned data; and

identifying a segmented character based on a comparison of the segmented character to a dictionary of characters,

wherein said smoothing and thinning step comprises the steps of

applying to each pixel a filter whose spread depends on variations in image intensity in surrounding pixels to convert inputted image data into filtered image data;

obtaining differential data of the filtered image data;

deriving inverted image data from the differential data of the filtered image data; and

multiplying the inverted image data and the filtered image data to obtain smoothed and thinned image data.

5,351,315

APPARATUS FOR SMOOTHING OUTLINES OF IMAGES

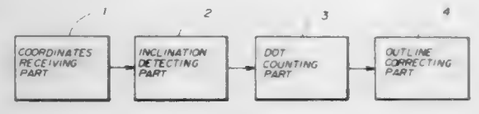
Naofumi Ueda, Yokohama, and Yoshiaki Hanyu, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 654,592, Feb. 13, 1991. This application Jun. 18, 1992, Ser. No. 900,448

Claims priority, application Japan, Feb. 21, 1990, 2-16305

Int. Cl.[5] **G09G** *1/06*

U.S. Cl. 382—54 **8 Claims**



1. An apparatus for smoothing an outline of an image including a plurality of dots, the apparatus comprising:

A) detection means for quantitatively measuring a degree of inclination of an outline with respect to a predetermined direction, and for outputting a measured quantitative inclination of the outline;

B) dot counting means, responsive to the measured quantitative inclination supplied from the detection means, for selectively calculating:

a) the number of successive dots aligned along a horizontal line and ending with a change of one dot in a vertical direction; or

b) the number of successive dots aligned along a vertical line and ending with a change of one dot in a horizontal direction; and

C) correction means, responsive to the dot counting means, the correction means including:

a) means for generating a plurality of correction dots at locations determined by the calculated number of successive dots:

1) along a new horizontal line lying immediately above or below said horizontal line; or

2) along a new vertical line lying immediately to the left of or immediately to the right of said vertical line;

wherein the means for generating a plurality of correction dots includes:

1) means for arranging the plurality of correction dots as a plurality of sets of dots, which sets of dots are placed along either the new horizontal line or the new vertical line, sets of dots being separated from other sets of dots by different intervals; and

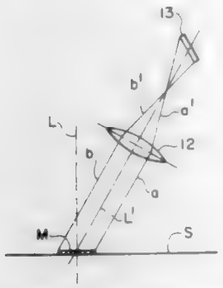
b) means for supplying said plurality of correction dots to an output memory so as to produce a visually smooth outline of the image data in the output memory.

5,351,316

IMAGE PROCESSING APPARATUS

Masakazu Kakimoto, Aichi, Japan, assignor to Ushio Co., Ltd., Aichi, Japan

Continuation of Ser. No. 818,909, Jan. 10, 1992, abandoned. This application Aug. 23, 1993, Ser. No. 110,211
Claims priority, application Japan, Feb. 18, 1991, 3-023311
Int. Cl.[5] G06K *9/20*
U.S. Cl. 382—65 **4 Claims**



1. An image processing apparatus comprising:
a machine tool disposed for actuation along a line which is perpendicular to a plane along which a detection mark lies, wherein the detection mark also intersects said line which is perpendicular to said plane;
a camera unit including a lens system through which light from the detection mark is received; and
a photodetecting device disposed in the optical axis of said lens system; wherein the optical axis of said lens system is inclined at a predetermined angle to said perpendicular line to a plane along which the detection mark lies so as not to interfere with the actuation of said machine tool, and the detection mark intersects the optical axis of said lens system, wherein said photodetecting device is inclined at a predetermined angle to the optical axis of said lens system of said camera unit;
wherein said predetermined angle of inclination of said photodetecting device to the optical axis of said lens system is determined so that $(a+a')=(b+b')$, where a is the length of a section of a light path between a portion of the detection mark on the side of said camera unit and said lens system of said camera unit, a' is the length of a section of the same light path between said lens system and said photodetecting device, b is the length of a section of a light path between a portion of the detection mark diametrically opposite the portion of the side of said camera unit with respect to the center of the detection mark and said lens system, and b' is the length of a section of the same light path between said lens system and said photodetecting device.

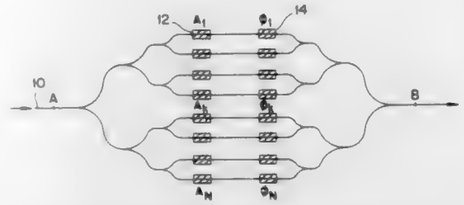
5,351,317

INTERFEROMETRIC TUNABLE OPTICAL FILTER

Jean-Pierre Weber, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Aug. 14, 1992, Ser. No. 929,450
Int. Cl.[5] G02B *6/10;* **G02F** *1/035*
U.S. Cl. 385—3 **15 Claims**

1. An interferometric tunable optical filter comprising:
a semiconductor substrate having a first electrode provided on a first surface thereof;
a waveguide formed in and laterally defined within the surface of said substrate for carrying lightwaves, wherein a section of said waveguide is split into more than two parallel branches, each branch having a different length, wherein each branch of said waveguide contains a phase control means for changing the effective index of waveguide;
means for splitting said lightwaves into said branches of said waveguide; and



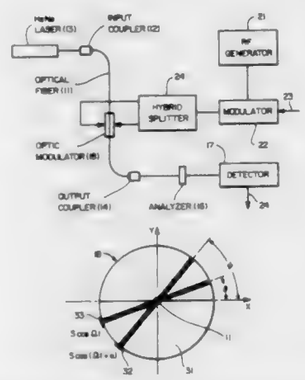
means for recombining said lightwaves after said split section of said waveguide.

5,351,318

FIBER OPTIC COMMUNICATION SYSTEM AND FIBER OPTIC MODULATOR

Michial D. Howell, Stanford, and Gordon S. Kino, Santa Clara County, both of Calif., assignors to The Board of Trustees of the Leland Stanford Jr./University, Palo Alto, Calif.

Filed Apr. 5, 1993, Ser. No. 42,721
Int. Cl.[5] G02F *1/125*
U.S. Cl. 385—3 **14 Claims**



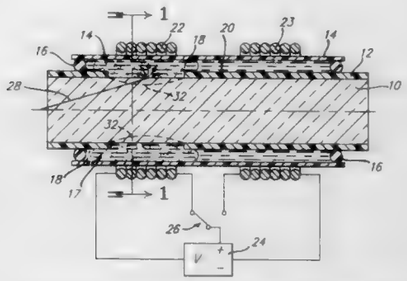
1. A modulator responsive to an electrical signal for changing the polarization state of a light wave transmitted along an optical fiber in accordance with said electrical signal including:
first and second acoustic transducers for generating first and second acoustic waves, respectively;
means for acoustically coupling said first and second acoustic transducers to said optical fiber for causing the first and second acoustic waves to travel across said optical fiber to compress and decompress the optical fiber;
said first and second acoustic transducers positioned so that said first and second acoustic waves travel across said optical fiber at a nonzero spatial angle that is not an integer multiple of 90 degrees with respect to one another; and
means for exciting said first and second acoustic transducers with said electrical signal, said first and second acoustic transducers positioned and said electrical signal conditioned so that the first and second acoustic waves travel through the fiber with a predetermined nonzero phase relationship, said phase relationship being less than 180 degrees.

5,351,319

FERROFLUID SWITCH FOR A LIGHT PIPE

John M. Ginder, Plymouth; Jeffrey T. Remillard, and Willes H. Weber, both of Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 15, 1993, Ser. No. 151,675
Int. Cl.[5] G02B *6/20*
U.S. Cl. 385—6 **20 Claims**



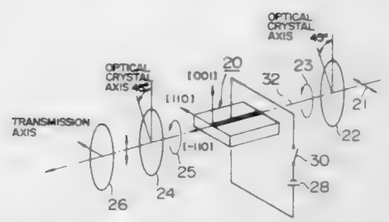
1. A device for modulating light output of a light pipe comprising:
a light pipe having a first index of refraction;
fluid responsive to a magnetic field having a second index of refraction;
retaining means concentrically located around at least a portion of said light pipe for retaining said fluid so that said fluid is capable of assuming two configurations, one adjacent to said light pipe and one separate from said light pipe; and
controllable magnetic field means for transferring said magnetically responsive fluid between said two configurations,
whereby the output of said light pipe is reduced when said fluid is adjacent to said light pipe.

5,351,320

OPTICAL MODULATOR DEPRESSING OPTICAL FEEDBACK AND OPTICAL MODULATING ELEMENT AND CHANNEL OPTICAL WAVEGUIDE USED THEREFORE

Tatsuo Kanetake, Kokubunji; Masashi Kiguchi, Saitama, and Yoshio Taniguchi, Hino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 24, 1993, Ser. No. 82,220
Claims priority, application Japan, Jun. 25, 1992, 4-167227
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—8 **9 Claims**



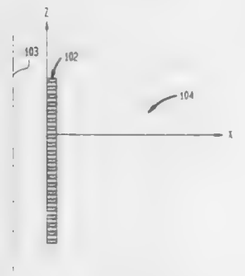
1. An optical modulating element comprising:
a core layer; and
first and second cladding layers sandwiching said core layer,
wherein said core layer and said first and second cladding layers constitute a waveguide for propagating light,
said core layer is selected from the group consisting of (a) a superlattice layer made of a gallium arsenide layer and a mixed crystal layer of aluminum arsenide and gallium arsenide, said superlattice layer having a heterojunction parallel to the (001) plane of crystal, (b) a superlattice layer made of a mixed crystal layer of indium arsenide and gallium arsenide and a mixed crystal layer of indium arsenide and aluminum arsenide, said superlattice layer having a heterojunction parallel to the (001) plane of crystal, and (c) a superlattice layer made of a mixed crystal layer of indium arsenide and gallium arsenide and an indium phosphide layer, said superlattice layer having a heterojunction parallel to the (001) place of crystal,
a difference between an index of refraction of said core layer and an index of refraction of said first cladding layer, a difference between the index of refraction of said core layer and an index of refraction of said second cladding layer, a thickness of said core layer and a width of said waveguide are set so that said core layer has TM_{00} and TE_{00} propagation modes,
a direction of said waveguide is set to be parallel to the [110] or [−110] direction of crystal orientation so that the propagation direction of light of said TM_{00} and TE_{00} propagation modes is parallel to the [110] or [−110] direction of crystal orientation, and
electrodes to apply an electrical field to said core layer in the direction parallel to the [001] direction of crystal orientation,
wherein a difference between the index of refraction of said core layer when applying the electric field to said core layer and the index of refraction of said core layer when not applying the electric field to said core layer is different for said Tm_{00} and TE_{00} propagation modes.

5,351,321

BRAGG GRATING MADE IN OPTICAL WAVEGUIDE

Elias Snitzer, 8 Smoke Tree Close, Piscataway, N.J. 08854, and John D. Prohaska, P.O. Box 785, Piscataway, N.J. 08855

Filed Oct. 20, 1992, Ser. No. 963,839
Int. Cl.[5] G02B *5/18*
U.S. Cl. 385—10 **18 Claims**



13. An optical waveguide with a core having an axis, said waveguide having a Bragg grating therein, said grating being formed by periodic variation in index along the axis, the variation having a desired repeat length,
said waveguide having a core made of material exhibiting change in index when exposed to radiation of an actuating frequency, and
said desired repeat length being less than one-half of a wavelength of radiation of said actuating frequency.

5,351,322

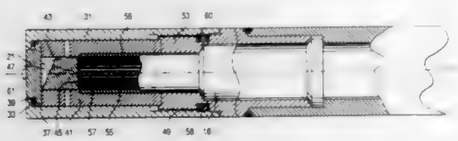
FIBER OPTIC PROBE

Kenneth P. VonBargen, Berwyn Heights, Md., assignor to NIR-Systems Incorporated, Silver Spring, Md.

Division of Ser. No. 931,783, Aug. 18, 1992, Pat. No. 5,278,412. This application Oct. 15, 1993, Ser. No. 136,283
Int. Cl.[5] G02B *6/26, 6/32*
U.S. Cl. 385—12 **6 Claims**

1. A fiber optic probe comprising a fiber optic cable having optical fibers terminating in a planar end face perpendicular to the axes of said optical fibers at said end face, a light transmit-

ting rod having a planar proximal end face perpendicular to the axes of said optical fibers and abutting the end face of said optical fibers, said rod having a distal planar end face positioned at an angle to said proximal planar end face, and a window positioned adjacent to said distal end face of said rod



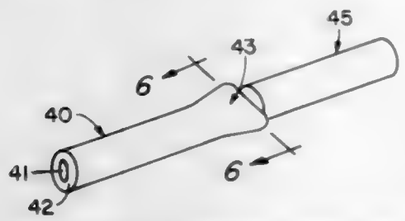
to transmit light transmitted through transmitting optical fibers of said cable and through said rod and to transmit diffusely reflected light to said rod to be transmitted thereby to receiving optical fibers in said cable, said window having inner and outer planar surfaces perpendicular to said axes of said optical fibers.

5,351,323

OPTICAL FIBER FOR COUPLING TO ELLIPTICALLY-SHAPED SOURCE

William J. Miller, Corning; Robert A. Modavis, Painted Post, and Thomas W. Webb, Horseheads, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Nov. 8, 1993, Ser. No. 148,291
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—28 **11 Claims**



1. An optical system for efficiently coupling light from a source to a circularly symmetric fiber, said system comprising
a radiation source for generating a beam of light having an elliptical mode field,
an optical fiber having a core that is elliptically-shaped in cross-section, said optical fiber having input and output ends, said input end being situated in light receiving relationship with respect to said source, said fiber being oriented with respect to said source such that the mode field of said source is aligned with said fiber core to provide maximum overlap of the mode field of said elliptical core fiber with the mode field of said source,
a single-mode circularly symmetric fiber, and
means for coupling light from the output end of said elliptical core fiber to said circularly symmetric fiber without coupling through an intermediate fiber.

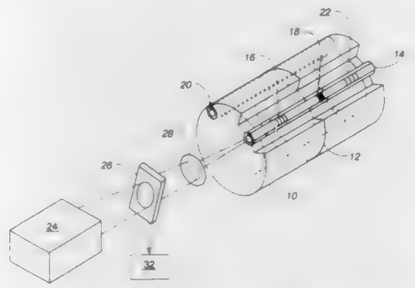
5,351,324

FIBER OPTIC SECURITY SEAL INCLUDING PLURAL BRAGG GRATINGS

Peter R. Forman, Los Alamos, N. Mex., assignor to The Regents of the University of California, Office of Technology Transfer, Alameda, Calif.

Filed Sep. 10, 1993, Ser. No. 120,113
Int. Cl.[5] G02B *6/34;* **G01B** *11/16;* **H01J** *5/16*
U.S. Cl. 385—37 **2 Claims**

1. A fiber optic security seal system, comprising:
an optical fiber having a plurality of reflective Bragg gratings induced in the fiber, where each grating has a unique location and wavelength for reflecting incident light;
a light source means for providing input light to said fiber at all of said wavelengths for reflecting light from said gratings;
a time domain reflectometer for receiving reflected light



from said gratings and outputting a signal functionally related to said unique location and wavelength for reflecting incident light for each said grating; and
a coating over an end of said optical fiber receiving said incident light said coating having a crystal pattern that produces a unique holographic image to verify an identity of said optical fiber.

5,351,325

NARROW BAND MACH-ZEHNDER FILTER

William J. Miller, and Daniel A. Nolan, both of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Apr. 29, 1993, Ser. No. 52,523
Int. Cl.[5] G02B *6/26;* **G01B** *9/02*
U.S. Cl. 385—42 **13 Claims**



1. A Mach-Zehnder filter for passing a signal, the wavelength spectrum of which is centered about a wavelength λ_f, said filter comprising
input coupler means for splitting an input signal into N equal simultaneously propagating output signals, where $N>2$,
combining means for combining N optical signals into a single output signal,
N optical waveguide paths for connecting said N outputs to said combining means, each of said N waveguides subjecting the light propagating therethrough to a delay that is different from the delay experienced by light propagating through each of the other waveguides.

5,351,326

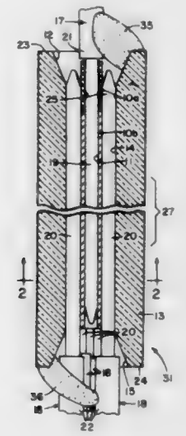
METHOD OF AFFIXING OPTICAL FIBER TO COUPLER

William J. Miller, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Oct. 13, 1992, Ser. No. 959,610
Int. Cl.[5] G02B *6/36, 7/26*
U.S. Cl. 385—43 **18 Claims**

14. A fiber optic coupler comprising
an elongated glass body having a solid midregion and first and second opposite end portions which respectively extend from said midregion to the first and second ends of said body, said body including spacer tube means surrounded by an outer glass tube that is concentric with said spacer tube means, a first portion of a first optical fiber

disposed in a bore in said spacer tube means, the remaining portion of said first fiber extending beyond said first end of said body, the first portions of N optical fibers disposed between said outer tube and said spacer tube means, the remaining portions of said N fibers extending beyond said second end of said body, the first portions of said first fiber and said N fibers extending through the midregion of said body,
said first fiber, spacer means, N fibers and outer tube being fused together in the midregion of said body,



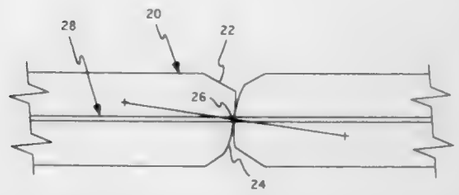
the central portion of said midregion having a diameter smaller than the diameter of the remainder of said glass body, the cores of said optical fibers being closer together in the central portion of said midregion than in the remainder of said glass body, the improvement wherein the bore of said spacer tube means forms an inner surface; wherein the bare surface of said first fiber is glued to the inner surface of that end of said spacer tube means adjacent the remaining portion of said first fiber; and wherein said spacer tube means is glued to the first end of said outer tube.

5,351,327

POLISHED FIBER OPTIC FERRULES

Edward B. Lurie, Matawan, N.J., and Raman K. Selli, Bracknell, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 25, 1993, Ser. No. 82,985
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—78 **7 Claims**



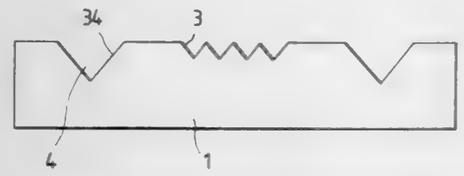
7. In an optical fiber connector having a ferrule, the ferrule having a distal end and a central bore which receives an optical fiber terminating at said distal end, said distal end further having a chamfered surface and a generally spherical end face adjacent said chamfered surface, said spherical end face being inclined with respect to said bore, defining a plane of inclination, and said optical fiber having an end face whose shape is generally spherical and continuous with said spherical end face of said ferrule, the improvement comprising:
said spherical end face defining a tangent at said bore which is generally parallel with said plane of inclination.

5,351,328

OPTICAL CONNECTOR WITH V-GROOVES HAVING AN OXIDE FILM

Toshiaki Kakii; Makoto Honjo; Hidetoshi Ishida; Hiroshi Katsura; Toru Yamanishi; Kazumichi Miyabe; Yoshikyo Tamekuni, all of Kanagawa; Tadashi Haibara, Ibaraki; Michito Matsumoto, Ibaraki, and Shinji Nagasawa, Ibaraki, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Nippon Telegraph & Telephone Corporation, Tokyo, both of Japan

Division of Ser. No. 942,061, Sep. 9, 1992. This application Dec. 6, 1993, Ser. No. 161,346
Claims priority, application Japan, Sep. 9, 1991, 3-258482; Sep. 9, 1991, 2-258483; Aug. 17, 1992, 4-241313
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—83 **5 Claims**



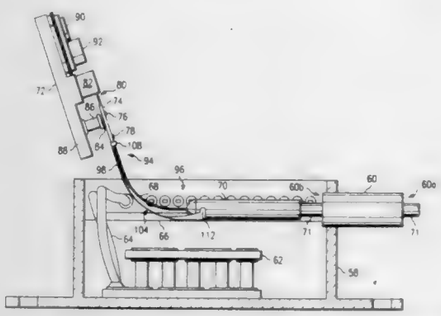
1. An optical connector for coupling optical fibers, comprising:
a connection member made of silicon and having V-grooves by which guide pins and optical fibers are positioned and fixed; and
an oxide film formed on said V-grooves of said connection member at least in the vicinity of contact points between said guide pins and said V-grooves.

5,351,329

METHOD AND APPARATUS FOR AFFIXING AN OPTIC FIBER TIP IN POSITION WITH RESPECT TO A FIBER COMMUNICATIONS CIRCUIT OUTSIDE AN OPTICS PACKAGE

Andrew J. Moore; David L. Ma; Robert L. Bontz, and Charles C. Burns, all of Plano, Tex., assignors to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Dec. 22, 1992, Ser. No. 994,709
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—92 **13 Claims**



1. A method of installing an optic fiber in an optics package, wherein said fiber has a tip extending from a sleeve, comprising the steps of:
affixing a point of said fiber proximate said fiber tip in a

retaining member adjacent a device for communicating signals through said fiber;

connecting a first point of a flexible member to said retaining member and a second point of said flexible member to said sleeve, such that said flexible member is parallel to said fiber and in axial alignment with said fiber, said flexible member having a selective flexibility between said first and second points; and

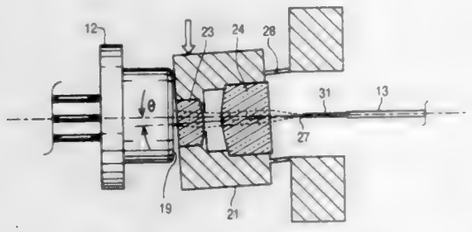
positioning said fiber tip, said flexible member and said device for communicating signals in said optics package after said affixing step such that said flexible member selectively flexes at a flex point between said first and second points causing a corresponding flex along said fiber between said retaining member and said sleeve proximate said flex point of said flexible member.

5,351,330

LASER DIODE-LENS ALIGNMENT

Erik N. Jongewaard, Sunnyvale, Calif., assignor to Uniphase Corporation, San Jose, Calif.

Filed Apr. 8, 1993, Ser. No. 44,822
Int. Cl.[5] G02B *6/42*
U.S. Cl. 385—93 **16 Claims**



1. In an optical alignment structure for coupling output optical radiation from a source of the same to an optical receiving device, the combination comprising:

(a) a rigid outer block having an opening for the receipt of optical radiation to flow within a cavity therein;

(b) a lens holder within said cavity for positioning coupling optics to interact with optical radiation flowing on an optic axis within said cavity;

(c) a flex connection physically attaching said lens holder to said block with said lens holder suspended in said cavity on said optic axis; and

(d) means for adjusting the position of said holder within said block.

5,351,331

METHOD AND APPARATUS FOR SPLICING OPTICAL FIBERS WITH SIGNAL I/O

Christopher K. Y. Chun, Gilbert; Davis H. Hartman, Phoenix; Shun-Meen Kuo, Chandler, and Michael S. Lebby, Apache Junction, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 17, 1993, Ser. No. 122,673
Int. Cl.[5] G02B *6/38, 6/26;* **B65H** *69/02*
U.S. Cl. 385—97 **10 Claims**

1. A method of splicing a pair of optical fibers comprising the steps of:

providing first and second optical fibers, each having an end to be spliced to the other;

molding a base with a groove therein extending from a first fiber receiving inlet to a second fiber receiving inlet;

positioning the end of the first optical fiber in the first fiber receiving inlet of the groove in the base;

positioning the end of the second optical fiber in the second fiber receiving inlet of the groove in the base;

introducing an index matching fluid into the groove;

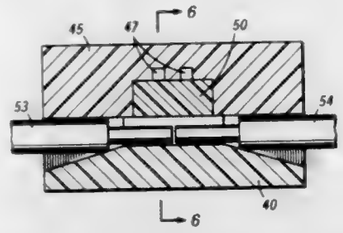
curing the fluid to hold the fibers fixedly in the groove and form an optical link therebetween; and

providing a cover having a groove formed therein which, when the cover is placed in sealing engagement over the groove in the base, is positioned perpendicular to the groove in the base and a photonic device positioned in the groove in the cover, and fixedly positioning the cover in sealing engagement over the groove in the base.

6. A pair of spliced optical fibers comprising:

first and second optical fibers, each having an end to be spliced to the other;

a molded base with a groove therein extending from a first fiber receiving inlet to a second fiber receiving inlet, the groove in the base including a tapered portion at each of the first and second receiving inlets to act as a guide during the positioning of the first and second ends, each of



the tapered portions having a larger cross-section at an outer edge of the base and a smaller cross-section within the base;

the end of the first optical fiber being positioned in the first fiber receiving inlet of the groove in the base and the end of the second optical fiber being positioned in the second fiber receiving inlet of the groove in the base;

introducing an index matching fluid into the groove; and

curing the fluid to hold the fibers fixedly in the groove and form an optical link therebetween; and

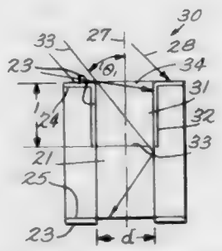
a cover fixedly positioned in sealing engagement over the groove in the base, the cover including a groove formed therein which, when the cover is placed in sealing engagement over the groove in the base, is positioned perpendicular to the groove in the base and a photonic device positioned in the groove in the cover.

5,351,332

WAVEGUIDE ARRAYS AND METHOD FOR CONTRAST ENHANCEMENT

Lee M. Cook, Spencer, Mass., assignor to Galileo Electro-Optics Corporation, Sturbridge, Mass.

Continuation-in-part of Ser. No. 853,238, Mar. 18, 1992, Pat. No. 5,259,057. This application Feb. 17, 1993, Ser. No. 18,576
Int. Cl.[5] G02B *6/08*
U.S. Cl. 385—116 **35 Claims**



1. A fiber optic array for transferring an image with increased contrast comprising:

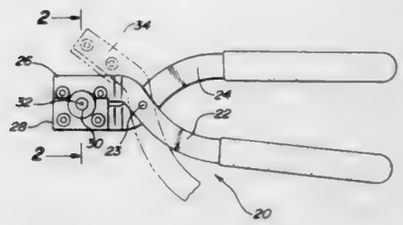
a plurality of optical waveguides disposed in a coherent array of a selected length, said array being free of extramural absorbers (EMA), each waveguide having a core and cladding, said array having opposite optically finished, fused together end portions exposing corresponding end surface portions of the core and the cladding, at least one of the end portions of the array having a treated darkened cladding surface layer to a depth sufficient to absorb incident radiation directed at the cladding without producing secondary emission to thereby render the exposed portions of the cladding substantially opaque to said incident radiation, and said array having, as a result of such treatment, at least one of a contrast characteristic independent of array length and wavelength; and a transmission characteristic greater than an untreated array and an array with EMA.

5,351,333

OPTICAL FIBER CLEAVER

Arthur E. Chambers, 19737 Parke La., Grosse Ile, Mich. 48138

Filed Sep. 28, 1993, Ser. No. 127,826
Int. Cl.[5] B26D *3/08*
U.S. Cl. 385—134 **20 Claims**



1. An optical fiber cleaver comprising:

first and second handle portions, said first and second handle portions being pivotally connected, and having holder portions, the holder portion of one of said first and second handle portions carrying a blade, and the other of said holder portions being adapted to hold an optical fiber such that when the handle portions are pivoted together to a closed position, said blade contacts the optical fiber held on said other holder portion; and

said blade being biased towards said other holder portion when in said closed position by a pre-set force such that when said pre-set force is overcome, said blade does not move further against an optical fiber, said preset force being supplied by a spring.

5,351,334

ROTATION AND ALIGNMENT DEVICE FOR ASSEMBLING OF OPTICAL FIBER CONNECTOR WITH LOWER CONNECTION LOSS

Oh G. Chun; Seung H. Ahn; Myung Y. Jeong, and Tae G. Choy, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon and Korea Telecommunication Authority, Seoul, both of Rep. of Korea

Filed Dec. 28, 1993, Ser. No. 174,414
Claims priority, application Rep. of Korea, Dec. 29, 1992, 1992-26076
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—134 **5 Claims**

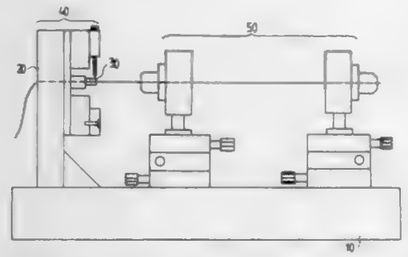
1. A rotation and alignment device for assembling of an optical fiber connector with a lower connection loss comprising:

rotation and marking means for controlling a rotational position of a marker with respect to a ferrule and marking an optical peak intensity point on a cylindrical outer surface of said ferrule;

ferrule fixing means coupled to said rotation and marking means, said ferrule fixing means fixing said ferrule such that said cylindrical outer surface of the ferrule is marked with said optical peak intensity point by said marker;

vertical supporting means erected on support rail means for supporting said rotation and marking means and said ferrule fixing means;

optical system and fiber alignment means mounted on said support rail means for magnifying and aligning an end surface of an optical fiber of said ferrule; and



said support rail means for assuring said rotation and marking means and said optical system and alignment means of a desired horizontal location.

5,351,335

OPTICAL FIBER FOR OPTICAL AMPLIFIER

Yasutake Ohishi; Terutoshi Kanamori; Yoshiki Nishida; Atsushi Mori, and Shoichi Sudo, all of Mito, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Aug. 25, 1992, Ser. No. 934,242
Claims priority, application Japan, Aug. 26, 1991, 3-213568; Mar. 30, 1992, 4-074394; Apr. 21, 1992, 4-101424; Jun. 15, 1992, 4-155386; Jun. 16, 1992, 4-157058
Int. Cl.[5] G02B *6/00*
U.S. Cl. 385—142 **23 Claims**

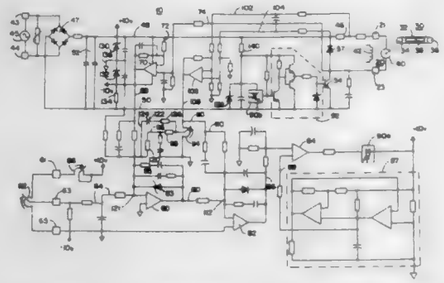
1. A fluoride glass optical fiber for an optical amplifier having a core and a cladding, and containing rare earth metal ions in a core glass, wherein the relative refractive index difference (Δ_n) between the core and the cladding is at least 1.4%, and the core glass contains PbF_2 in a proportion which is not greater than 25 mol % based on the total composition of the core glass.

5,351,336

MOTOR CONTROL HAVING IMPROVED SPEED REGULATION UNDER INTERMITTENT LOADING

Alan W. Wilkerson, W61 N14280 Taunton Ave., P.O. Box 191, Cedarburg, Wis. 53012

Filed Jul. 17, 1992, Ser. No. 916,037
Int. Cl.[5] H02P *5/17*
U.S. Cl. 388—811 **11 Claims**



1. A control for energizing a DC motor by applying an armature voltage thereto, said control providing improved speed regulation under transient conditions, said control comprising:

a regulating means having an output signal controlling the armature voltage applied to the motor;

means for providing a speed reference signal corresponding

to the desired speed of said motor to said regulating means;

means for providing an input armature voltage feedback signal to said regulating means, said armature voltage feedback signal being supplied to subtract from said speed reference signal to produce an error signal for operating said regulating means to establish the armature voltage of the motor;

means for sensing the armature current of the motor;

means coupled to said current sensing means for providing an IR compensating signal to said regulating means to compensate for the voltage drop resulting from the resistance of the armature circuit, said signal being provided in a manner that is additive to said speed reference signal for altering the output of said regulating means in a manner tending to establish the speed of said motor at that corresponding to said speed reference signal; and

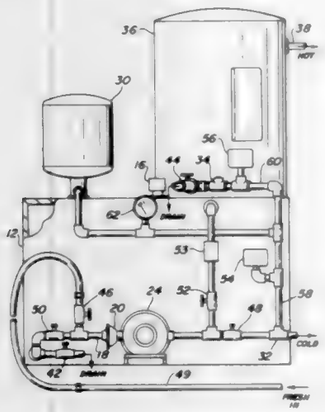
means coupled to said armature current sensing means for obtaining a signal corresponding to an additional voltage drop resulting from the inductance of the armature circuit during transient conditions and for providing said signal to said regulating means in a manner that is additive to said speed reference signal for altering the output of said regulating means in a manner tending to establish the speed of said motor at that corresponding to said speed reference signal.

5,351,337

SELF-CONTAINED PRESSURIZED WATER DELIVERY SYSTEM

Joseph J. Deutsch, 86 Pine Dr., Mariners Cove, Millsboro, Del. 19966

Filed Sep. 25, 1992, Ser. No. 950,948
Int. Cl.[5] F24H *1/00*
U.S. Cl. 392—450 **7 Claims**



1. An improved self-contained pressurized water system of the type comprising a source of electric power, an air-vented limited capacity cold water reservoir, a hot water heater including a limited capacity hot water storage tank, a pressure surge tank for maintaining the output pressure of the water system and pump means for drawing a supply of water from said reservoir and providing said supply either to said hot water storage tank or to one or more user operated outlets, all of these components being interconnected with associated inlet and outlet piping and valves to control the rate and time of the output flow of hot or cold water from said system, wherein the improvement comprises:

(a) a low pressure switched valve in the outlet line from said reservoir adapted to close the outlet from said reservoir and to shut off said pump means whenever the output pressure from said reservoir falls below a preset level;

(b) a low pressure actuated switch in the inlet line to said hot water heater adapted to shut off the power to a heating element in said hot water storage tank whenever the inlet water pressure to said storage tank falls below a preset level; and

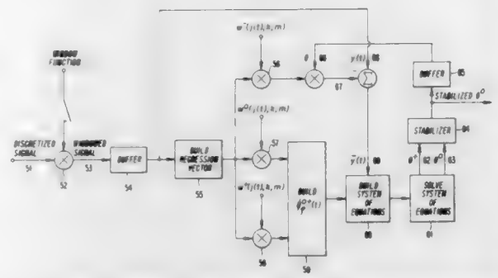
(c) means for circulating and aerating the water in said cold water reservoir.

5,351,338

TIME VARIABLE SPECTRAL ANALYSIS BASED ON INTERPOLATION FOR SPEECH CODING

Torbjorn K. Wigren, Uppsala, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jul. 6, 1992, Ser. No. 909,012
Int. Cl.[5] G10L *9/02*
U.S. Cl. 395—2.28 **71 Claims**



1. A method of linear predictive coding analysis and interpolation of uninterpolated input signal frames using time variable spectral models, the method comprising the steps of:

sampling a signal to obtain a series of discrete samples and constructing therefrom a series of frames;

modeling the spectrum of said signal using a filter model utilizing interpolation of parameter signals between a previous, present and next frame for forming estimated parameters;

calculating regressor signals from said estimated parameters;

smoothing the spectrum by combining the regressor signals with a smoothing parameter to obtain smoothed regressor signals;

combining said smoothed regressor signals with weighting factors to produce a first set of signals;

combining parameter signals from the previous frame with said smoothed regressor signals, a signal sample and a weighting factor to produce a second set of signals;

calculating parameter signals for the present frame and the next frame from the first and second set of signals;

determining whether the filter model is stable after each frame; and

stabilizing the filter model if the filter model is determined to be unstable.

DESIGN PATENTS

GRANTED SEP. 27, 1994

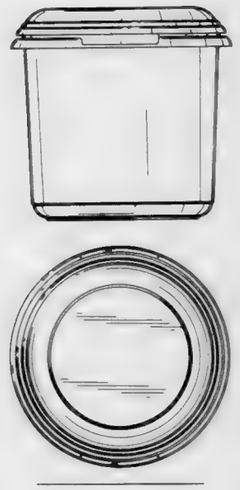
ERRATA

For CLASS	See PATENT NO.
013-142	D 350,916
013-142	D 350,917
013-146	D 350,955
016-315	D 350,967
06-5250	D 351,042
025-124	D 351,044

DESIGNS

SEPTEMBER 27, 1994

350,843
CANISTER
Terry L. VanValkenburg, Elk River, Minn.; Bradley W. Andress, Hudson, Wis.; Gregg M. Davis, and John W. Koenig, both of Columbus, Ohio, assignors to Plastics, Inc., St. Paul, Minn.
Filed Mar. 22, 1993, Ser. No. 6,043
Term of patent 14 years
U.S. Cl. D7—614



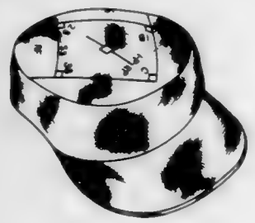
350,844
TIE
John Calcagno, New York, N.Y., assignor to Chanel Inc., New York, N.Y.
Filed Mar. 11, 1992, Ser. No. 849,682
Term of patent 14 years
U.S. Cl. D2—605



350,845
TROUSERS
Michael M. Mahan, 403 W. Madison St., Decatur, Ind. 46733
Filed May 12, 1993, Ser. No. 8,237
Term of patent 14 years
U.S. Cl. D2—742



350,846
NOVELTY CAP
Delmar E. Cooper, 2505 Vigus Rd., Maryland Heights, Mo. 63043
Filed Dec. 4, 1992, Ser. No. 2,129
Term of patent 14 years
U.S. Cl. D2—869



350,847
COMBINED HEADWRAP AND CAP
Phelan R. Thomas, 4500 Bel Aire Rd., Des Moines, Iowa 50310
Filed Mar. 15, 1993, Ser. No. 5,977
Term of patent 14 years
U.S. Cl. D2—882



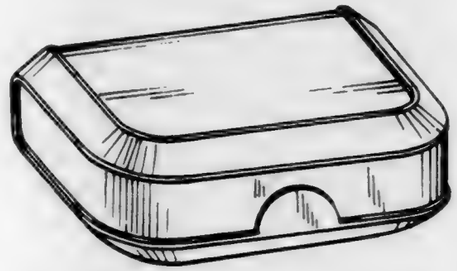
350,848
FOOTWEAR INSOLE
Andreas C. Tzenos, Stoney Creek, Canada, assignor to Chamberlain Phipps Canada Limited, Hamilton, Canada
Filed Apr. 16, 1993, Ser. No. 9,995
Claims priority, application Canada, Oct. 16, 1992, 16-10-92-13
Term of patent 14 years
U.S. Cl. D2—961



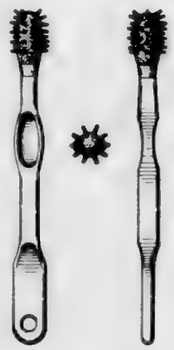
350,849
COMBINED NAIL AND TOOL BELT
Michael Dancyger, 811 W. 58th St., Los Angeles, Calif. 90037
Filed Apr. 14, 1992, Ser. No. 869,419
The portion of the term of this patent subsequent to Jul. 26, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—228



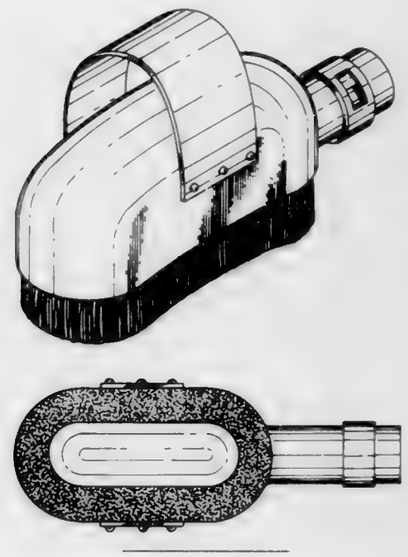
350,850
JEWELRY CASE
Lamberto Angelini, Bologna, Italy, assignor to Paolo Maniglio, Bologna, Italy
Filed Apr. 20, 1993, Ser. No. 9,561
Term of patent 14 years
U.S. Cl. D3—273



350,851
INFANT MASSAGER TOOTHBRUSH
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed May 13, 1992, Ser. No. 883,706
The portion of the term of this patent subsequent to Mar. 15, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D4—104



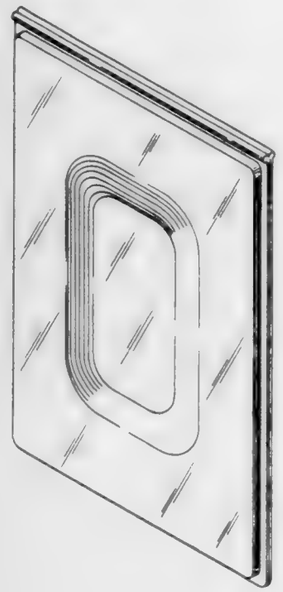
350,852
VACUUM CLEANER ATTACHABLE DOG BRUSH
Lorne Ferrazzutti, 924 Condor Drive, Burlington Ontario, CN, Canada L7T 3A9
Filed Apr. 30, 1992, Ser. No. 877,047
Term of patent 14 years
U.S. Cl. D4—129



350,853
BLUSH BRUSH
David Basque, Brooklyn, N.Y., assignor to L'Oreal, France
Filed Jun. 30, 1992, Ser. No. 906,561
Term of patent 14 years
U.S. Cl. D4—135



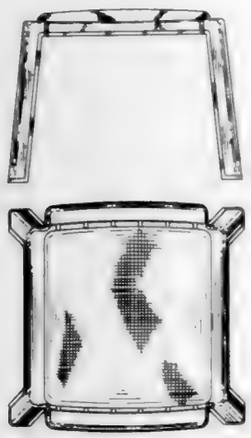
350,854
DISPLAY CONTAINER FOR PERIODICALS
Timothy C. Collins, 14225 Foothills Rd., Golden, Colo. 80401
Filed Apr. 9, 1993, Ser. No. 7,928
Term of patent 14 years
U.S. Cl. D6—300



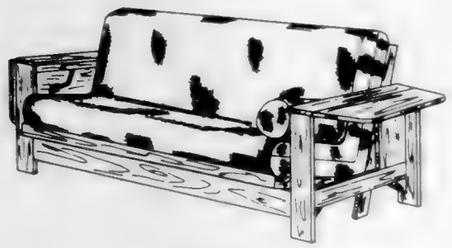
350,855
GLIDER
Charles Pomeroy, and John T. Bycraft, both of South Bend, Ind., assignors to Jack-Post Corporation, Buchanan, Mich.
Filed Oct. 15, 1991, Ser. No. 777,094
Term of patent 14 years
U.S. Cl. D6—344



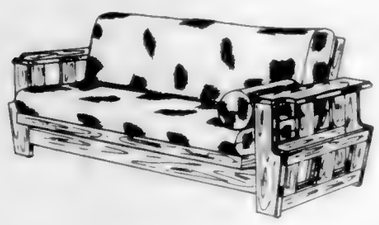
350,856
OTTOMAN
Michael W. Greene, Incline Village, Nev., assignor to Resinform, Inc., Incline Village, Nev.
Filed Nov. 2, 1992, Ser. No. 1,024
Term of patent 14 years
U.S. Cl. D6—349



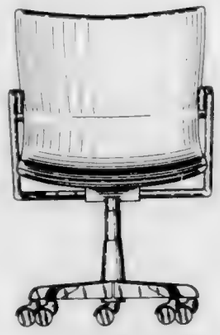
350,857
SEAT
Nancy Warren, Greensboro, N.C., assignor to H. Thomas Keller, High Point, N.C.
Filed Jun. 7, 1993, Ser. No. 9,243
Term of patent 14 years
U.S. Cl. D6—381



350,858
SEAT
Nancy Warren, Greensboro, N.C., assignor to H. Thomas Keller, High Point, N.C.
Filed Jun. 7, 1993, Ser. No. 9,242
Term of patent 14 years
U.S. Cl. D6—381



350,859
PADDED ARMCHAIR ON WHEELS
Emilio Ambasz, 295 Central Park West, New York, N.Y. 10024
Filed Apr. 22, 1991, Ser. No. 689,323
Claims priority, application Italy, Oct. 24, 1990, 22007B/90
Term of patent 14 years
U.S. Cl. D6—366



350,860
SEAT
Donald N. Greeson, Greensboro, N.C., assignor to Uwharrie Chair Company, High Point, N.C.
Filed May 25, 1993, Ser. No. 8,748
Term of patent 14 years
U.S. Cl. D6—370



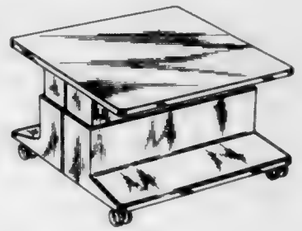
350,861
CUSHIONED SOFA
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex Sarl, Oyonnax, France
Filed Oct. 31, 1990, Ser. No. 606,453
Claims priority, application Int'l Pat. Institute, Jun. 21, 1990, DMA/001260
The portion of the term of this patent subsequent to Sep. 14, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—381



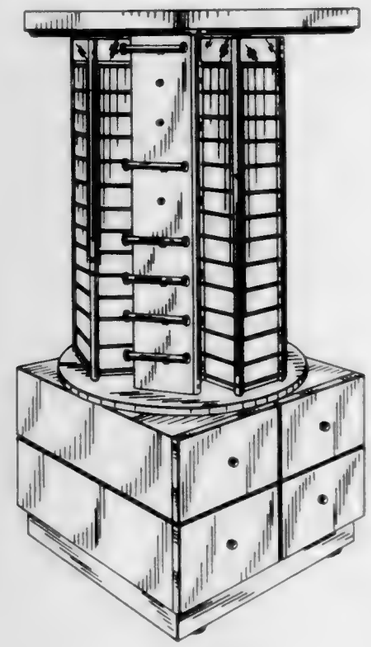
350,862
FOLDING TABLE
Frank W. Beller, Aurora, Ill., assignor to Belson Manufacturing Co., Inc., North Aurora, Ill.
Filed Jan. 21, 1993, Ser. No. 3,882
Term of patent 14 years
U.S. Cl. D6—429



350,863
ADJUSTABLE STAND FOR MACHINES
Masaki Takahashi, Kawasaki, Japan, assignor to Canon Kaboshiki Kaisha, Tokyo, Japan
Filed Apr. 30, 1993, Ser. No. 7,676
Claims priority, application Japan, Nov. 6, 1992, 4-32757
Term of patent 14 years
U.S. Cl. D6—429



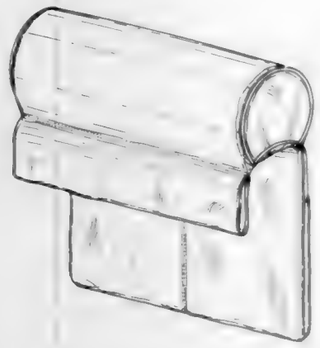
350,864
JEWELRY DISPLAY FIXTURE
Elizabeth Kane, New York, N.Y.; Steven W. Brunner, Atlanta, Ga., and John S. Leafstedt, New York, N.Y., assignors to Liz Claiborne, Inc., New York, N.Y.
Filed Jul. 21, 1993, Ser. No. 10,908
Term of patent 14 years
U.S. Cl. D6—438

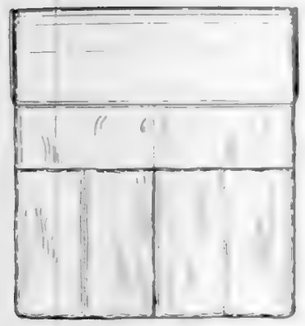


350,865
TABLE
Marshall B. Ward, High Point, N.C., assignor to Cal-Style Furniture Mfg. Co., Compton, Calif.
Filed Apr. 29, 1993, Ser. No. 7,716
Term of patent 14 years
U.S. Cl. D6—484

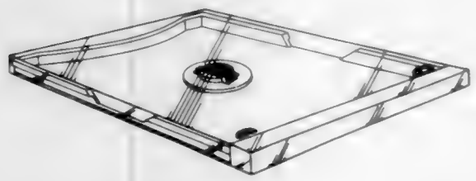


350,866
ARM SUPPORT FOR A CHAIR
Christopher J. Miller; Judith A. Miller, both of Holland, Ohio, and M. Anthony Villarreal, Houston, Tex., assignors to Proteus Design Group, Holland, Ohio
Filed Dec. 13, 1993, Ser. No. 16,298
Term of patent 14 years
U.S. Cl. D6—501

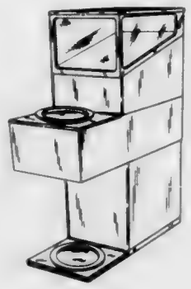




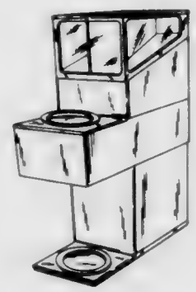
350,867
COMPACT DISC CASE
Jin-kyu Lim, Room 9 1503, Sampung Apartment, Sucho-dong, Sucho-ku, Seoul, Rep. of Korea
Filed Aug. 4, 1992, Ser. No. 924,821
Term of patent 14 years
U.S. Cl. D6—631



350,868
SINGLE HOPPER COFFEE BEAN GRINDER AND BREWER
Brian D. Newman, Louisville, Ky., assignor to Gridmaster Corporation, Louisville, Ky.
Filed Jul. 6, 1992, Ser. No. 908,361
Term of patent 14 years
U.S. Cl. D7—305



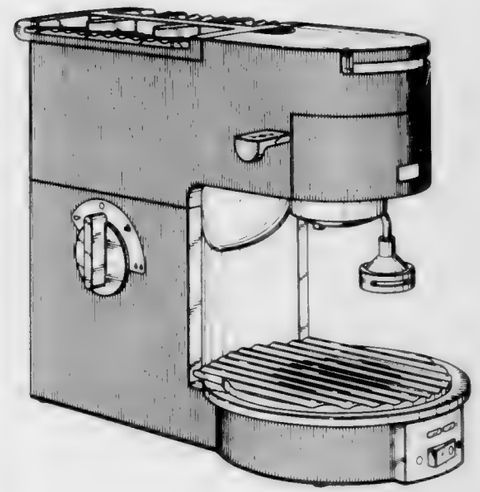
350,869
DUAL HOPPER COFFEE BEAM GRINDER AND BREWER WITH WARMER PLATES
Brian D. Newnan, Louisville, Ky., assignor to Grindmaster Corporation, Louisville, Ky.
Filed Jul. 6, 1992, Ser. No. 909,450
Term of patent 14 years
U.S. Cl. D7—305



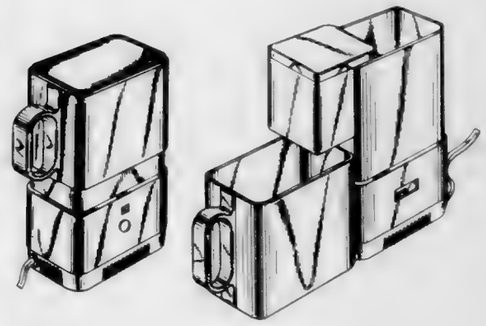
350,870
FILTERED WATER DISPENSER
George M. Hansen, Medina, Minn., assignor to Water Horse Inc., Golden Valley, Minn.
Filed Mar. 29, 1993, Ser. No. 6,446
Term of patent 14 years
U.S. Cl. D7—306



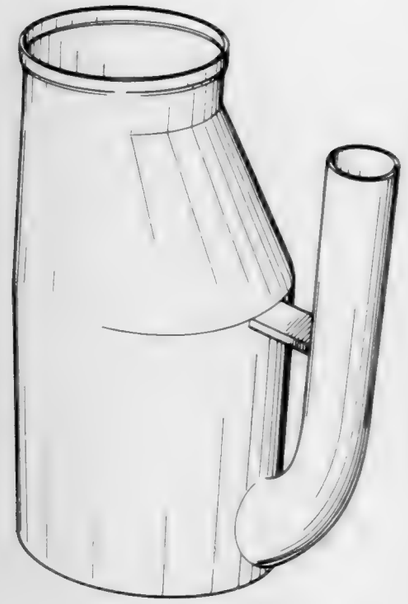
350,871
ESPRESSOMACHINE
Ludwig Littmann, Schwalbach, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Jan. 22, 1993, Ser. No. 3,957
Claims priority, application Hague, Aug. 31, 1992, DMA/001889
Term of patent 14 years
U.S. Cl. D7—309



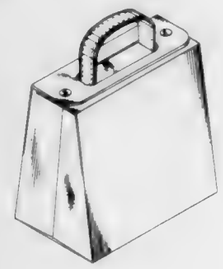
350,872
HOT-BEVERAGE MAKER
Noel E. Zeller, 630 S. Columbus Ave., Harrison, N.Y. 10551-4445
Filed Apr. 24, 1992, Ser. No. 873,554
Term of patent 14 years
U.S. Cl. D7—310



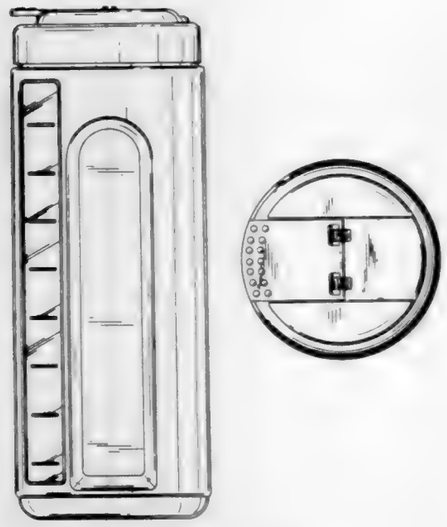
350,873
DRINKING CUP
Richard L. Duffy, Louisville, Ky., assignor to Creative Alliance, Inc., Louisville, Ky.
Filed Nov. 6, 1992, Ser. No. 1,194
Term of patent 14 years
U.S. Cl. D7—533



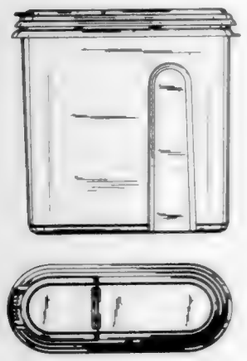
350,874
COOLER
Charles E. Gowin, 1730 Bruton Rd., Balch Springs, Tex. 75180
Filed Jul. 27, 1992, Ser. No. 920,044
Term of patent 14 years
U.S. Cl. D7—606



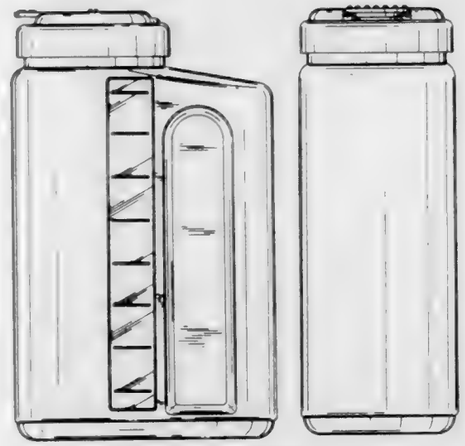
350,875
CONTAINER
Terry L. VanValkenburg, Elk River, Minn.; Bradley W. Andress, Hudson, Wis.; Gregg M. Davis, and John W. Koenig, both of Columbus, Ohio, assignors to Plastics, Inc., St. Paul, Minn.
Filed Mar. 22, 1993, Ser. No. 6,052
Term of patent 14 years
U.S. Cl. D7—612



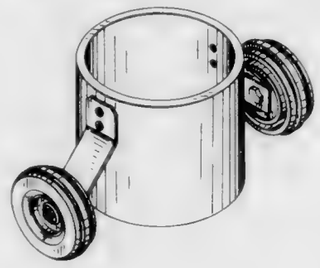
350,876
DRY FOOD STORAGE CONTAINER
Terry L. VanValkenburg, Elk River, Minn.; Bradley W. Andress, Hudson, Wis.; Gregg M. Davis, and John W. Koenig, both of Columbus, Ohio, assignors to Plastics, Inc., St. Paul, Minn.
Filed Mar. 22, 1993, Ser. No. 6,054
Term of patent 14 years
U.S. Cl. D7—612



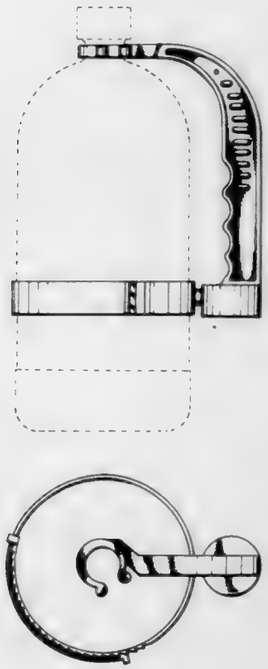
350,877
BOTTLE
Terry L. VanValkenburg, Elk River, Minn.; Bradley W. Andress, Hudson, Wis.; Gregg M. Davis, and John W. Koenig, both of Columbus, Ohio, assignors to Plastics, Inc., St. Paul, Minn.
Filed Mar. 22, 1993, Ser. No. 6,045
Term of patent 14 years
U.S. Cl. D7—612



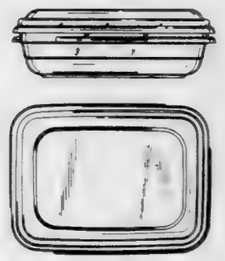
350,878
HOLDER FOR SINGLE BEVERAGE CONTAINER
Arthur L. Hoekstra, 1545 Hudson Rd., St. Paul, Minn. 55106
Filed Mar. 29, 1993, Ser. No. 6,439
Term of patent 14 years
U.S. Cl. D7—619



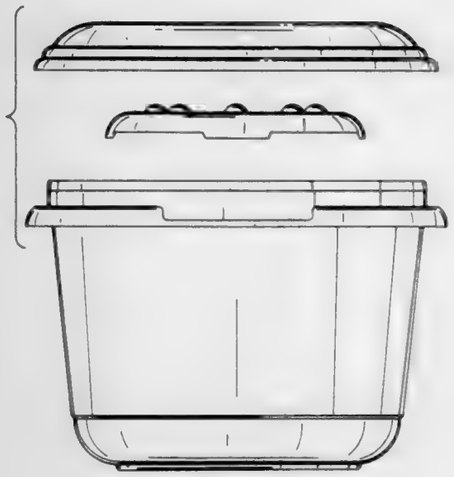
350,879
BOTTLE HANDLE
Timothy J. Gelston, 158 Great North Road, Whangarei, New Zealand
Filed Mar. 22, 1993, Ser. No. 6,139
Term of patent 14 years
U.S. Cl. D7—622



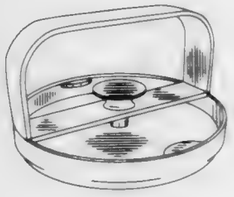
350,880
FOOD STORAGE CONTAINER
Terry L. VanValkenburg, Elk River, Minn.; Bradley W. Andress, Hudson, Wis.; Gregg M. Davis, and John W. Koenig, both of Columbus, Ohio, assignors to Plastics, Inc., St. Paul, Minn.
Filed Mar. 22, 1993, Ser. No. 6,046
Term of patent 14 years
U.S. Cl. D7—629



350,881
LETTUCE CONTAINER
Terry L. VanValkenburg, Elk River, Minn.; Bradley W. Andress, Hudson, Wis.; Gregg M. Davis, and John W. Koenig, both of Columbus, Ohio, assignors to Plastics, Inc., St. Paul, Minn.
Filed Mar. 22, 1993, Ser. No. 6,042
Term of patent 14 years
U.S. Cl. D7—629



350,882
MEAT PATTY MOLD
Cyril Charland, 1515 V.F.W. Pkwy., West Roxbury, Mass. 02132
Filed Jan. 2, 1993, Ser. No. 826
Term of patent 14 years
U.S. Cl. D7—672



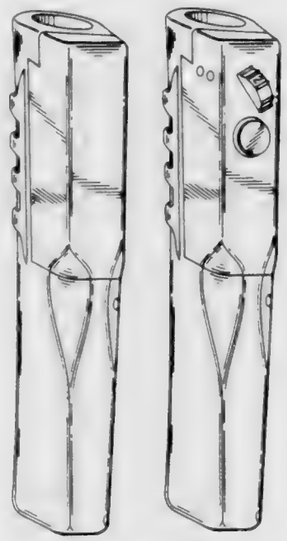
350,883
CARPET STRIPPER
Patrick Heavrin, 1575 Marionville Drive, Mississauga, Ontario, Canada L5E 2Y4
Filed Apr. 21, 1993, Ser. No. 7,257
Claims priority, application Canada, Dec. 31, 1992, 31-12-92-2
Term of patent 14 years
U.S. Cl. D8—14



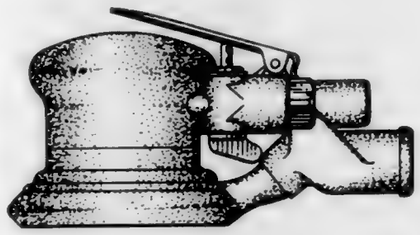
350,884
COMBINED CUTTING AND WELDING TORCH HANDLE
Hermann Sperling, Gau-Bischofsheim, and Axel Bode, Ortenberg, both of Fed. Rep. of Germany, assignors to Alexander Binzel GmbH & Co. KG, Fed. Rep. of Germany
Filed Sep. 10, 1993, Ser. No. 12,797
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1993, M9302169.0
Term of patent 14 years
U.S. Cl. D8—30



350,885
COMBINED CUTTING AND WELDING TORCH HANDLE
Hermann Sperling, Gau-Bischofsheim, and Axel Bode, Ortenberg, both of Fed. Rep. of Germany, assignors to Alexander Binzel GmbH & Co. KG, Fed. Rep. of Germany
Filed Sep. 10, 1993, Ser. No. 12,804
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1993, M 93 02 169.0
Term of patent 14 years
U.S. Cl. D8—30



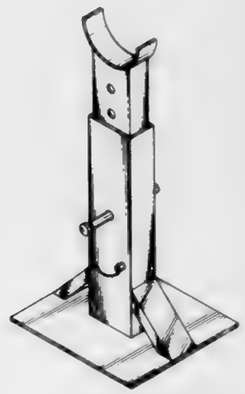
350,886
RANDOM ORBITAL SANDER
Paul W. Huber, Lancaster, and David G. Heckmiller, Jr., Orchard Park, both of N.Y., assignors to Dynabrade, Inc., Clarence, N.Y.
Division of Ser. No. 126, Oct. 6, 1992. This application Nov. 15, 1993, Ser. No. 15,408
Term of patent 14 years
U.S. Cl. D8—62



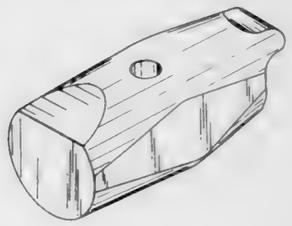
350,887
GRINDING CUP
Robert Sjölander, Oakville, Canada, and Dag Stenmark, Stenungsund, Sweden, assignors to C. M. E. Blasting and Mining Equipment Ltd., Oakville, Canada
Filed Jun. 8, 1993, Ser. No. 9,202
Claims priority, application Sweden, Feb. 26, 1993, 93-0497
Term of patent 14 years
U.S. Cl. D8—70



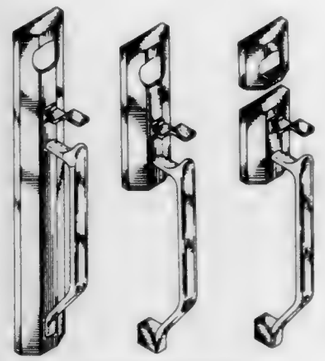
350,888
FOOT OR HAND OPERATED LUG NUT WRENCH HOLDER
Gerald Perry, 19339 Maple Ave., Weed, Calif. 96094
Filed Jun. 24, 1993, Ser. No. 9,801
Term of patent 14 years
U.S. Cl. D8—71



350,889
MALLET HEAD
Michael Frierman, 5453 Houston Dr., Lakeland, Fla. 33809-4235
Filed Jan. 21, 1993, Ser. No. 3,893
Term of patent 14 years
U.S. Cl. D8—78



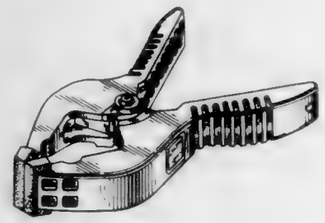
350,890
DOOR HANDLE UNIT
Maria C. M. Boeri, Milan, Italy, assignor to Fusital S.p.A., Asso, Italy
Filed Oct. 16, 1992, Ser. No. 576
Term of patent 14 years
U.S. Cl. D8—302



350,891
COVER FOR A SLIDING DOOR OPERATOR
Joseph Loria, Mantoloking, N.J., assignor to Besam, Inc., East Windsor, N.J.
Filed Jul. 27, 1992, Ser. No. 919,860
Term of patent 14 years
U.S. Cl. D8—330



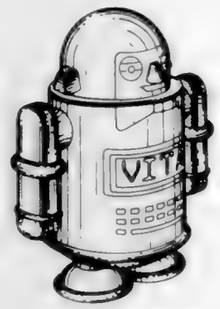
350,892
SPRING CLAMP
Joseph A. Sorensen, Lincoln, Nebr., assignor to Petersen Manufacturing Co. Inc., Dewitt, Nebr.
Filed Jun. 10, 1993, Ser. No. 8,769
Term of patent 14 years
U.S. Cl. D8—395



350,893
FOLDING DISPENSING PACKAGE FOR TELEPHONE SHIELDS
John M. Sinanis, 28880 Willow Creek, Farmington Hills, Mich. 48331, and Donald E. Bogard, Dearborn Heights, Mich., assignors to John M. Sinanis, Farmington Hills, Mich.
Filed May 27, 1993, Ser. No. 8,832
Term of patent 14 years
U.S. Cl. D9—304



350,894
DRINK CONTAINER
Pang S. Meng, Singapore, Singapore, assignor to Mirror-Water Pte. Ltd., Singapore, Singapore
Filed Nov. 16, 1992, Ser. No. 1,571
Term of patent 14 years
U.S. Cl. D9—307



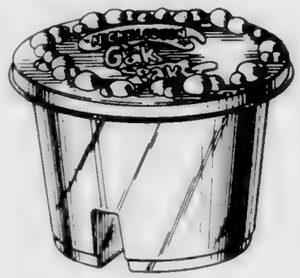
350,895
DISPENSING CONTAINER FOR COSMETIC PRODUCT
Frank J. Lang, Henderson, Nev., and Robert Chadfield, Bradenton, Fla., assignors to Federal Package Ltd., Chaska, Minn.
Continuation-in-part of Ser. No. 705,560, May 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 613,285, Nov. 15, 1990, abandoned. This application Apr. 13, 1992, Ser. No. 867,621
Term of patent 14 years
U.S. Cl. D9—338



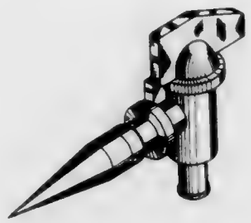
350,896
DISPENSING CONTAINER FOR COSMETIC PRODUCT
Frank J. Lang, Henderson, Nev., and Robert Chadfield, Bradenton, Fla., assignors to Federal Package Ltd., Chaska, Minn.
Continuation-in-part of Ser. No. 705,560, May 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 613,285, Jan. 15, 1990, abandoned. This application Apr. 13, 1992, Ser. No. 867,619
Term of patent 14 years
U.S. Cl. D9—338



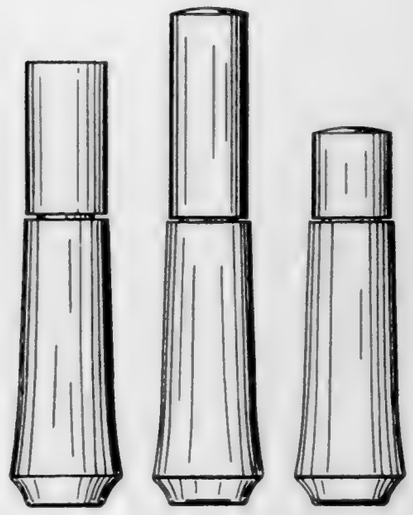
350,897
SEGMENTED CONTAINER
Mark Barthold, Redondo Beach, Calif., assignor to Mattel, Inc., El Segundo, Calif.
Filed Jul. 28, 1992, Ser. No. 920,358
Term of patent 14 years
U.S. Cl. D9—425



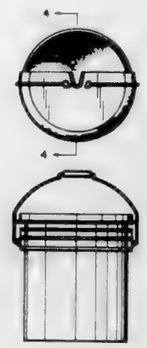
350,898
TAPPING COCK ASSEMBLY FOR PLASTIC CONTAINERS
Ake Söderberg, Björkhaga, Kalvsvik, S-355 90 Växjö , Sweden
Filed Aug. 8, 1991, Ser. No. 742,681
Term of patent 14 years
U.S. Cl. D9—437



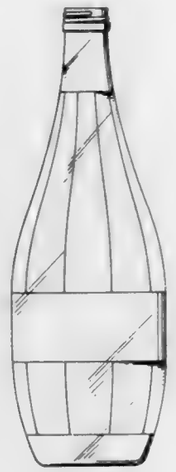
350,899
COSMETICS CONTAINER
Martin M. Vasas, Fairfield, Conn., assignor to The Brideport Metal Goods Manufacturing Co., Bridgeport, Conn.
Filed Jan. 31, 1992, Ser. No. 828,600
Term of patent 14 years
U.S. Cl. D9—503



350,900
BUCKET FOR STORING AND MERCHANDISING CHAIN
Charles R. Goetz, Carnegie, Pa., assignor to Advanced Products Inc., Carnegie, Pa.
Filed Mar. 2, 1992, Ser. No. 844,407
Term of patent 14 years
U.S. Cl. D9—502



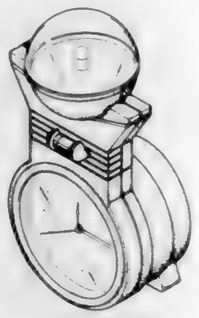
350,901
BOTTLE FOR WATER
Barbara Pellew-Harvey, Mill Valley, Calif., assignor to Fonte Sole Holding AG, Zug, Switzerland
Filed Sep. 27, 1991, Ser. No. 767,094
Claims priority, application Italy, Mar. 27, 1991, BS/91/0/000013
Term of patent 14 years
U.S. Cl. D9—553



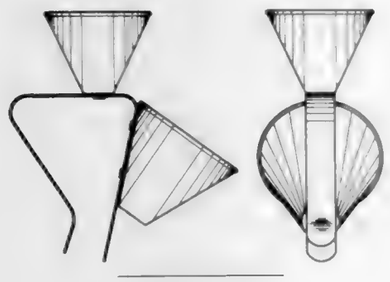
350,902
WRISTWATCH
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Nov. 25, 1992, Ser. No. 1,942
Term of patent 14 years
U.S. Cl. D10—32



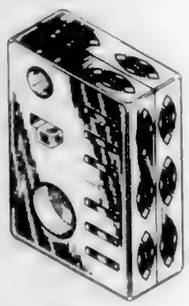
350,903
COMBINED EARTHQUAKE WARNING INDICATION AND ANTI-THEFT CLOCK
Wen-Bin Chern, No. 122, Kuang Ming Rd., Ta Chia Chen, Taichung Hsien, Taiwan
Filed May 25, 1993, Ser. No. 8,699
Term of patent 14 years
U.S. Cl. D10—4



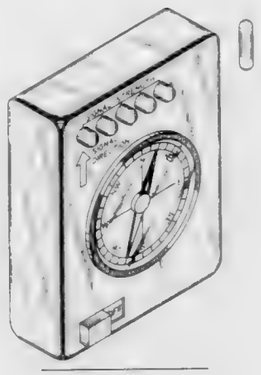
350,904
HANDS-FREE JIGGER
William A. Cary, 3146 Grove Rd., Palm Beach Gardens, Fla. 33410
Filed Mar. 23, 1993, Ser. No. 6,067
Term of patent 14 years
U.S. Cl. D10—46.3



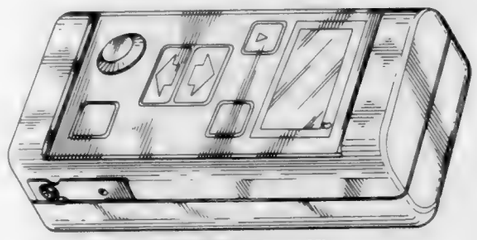
350,905
FUSE CONDITION INDICATOR
Lorenz S. Kiernicki, 21 Princeway Drive, St. Catharines, Ontario, Canada L2N-2X7
Filed Feb. 8, 1993, Ser. No. 5,103
Term of patent 14 years
U.S. Cl. D10—77



350,906
ELECTRONIC GAME FINDER RECEIVER AND TRANSMITTER
Stephen M. Passio, 3608 Drumore Dr., Philadelphia, Pa. 19154
Filed May 3, 1993, Ser. No. 7,777
Term of patent 14 years
U.S. Cl. D10—65



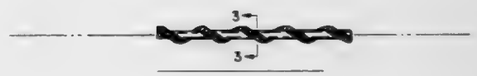
350,907
PACHYMETER
Richard A. Villasenor, 11550 Indian Hills Rd. #341, Mission Hills, Calif. 91345
Filed Jun. 10, 1993, Ser. No. 9,350
Term of patent 14 years
U.S. Cl. D10—78



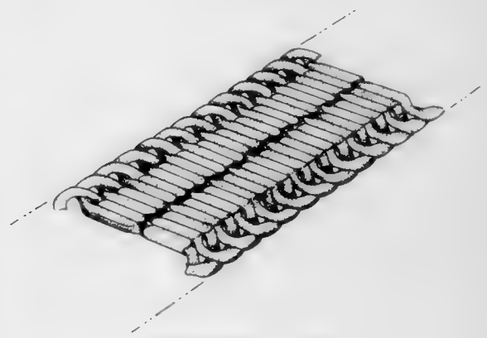
350,908
WHISTLE
Elias Tamez, P.O. Box 532, Mabton, Wash. 98935
Filed Feb. 14, 1994, Ser. No. 18,745
Term of patent 14 years
U.S. Cl. D10—119



350,909
ORNAMENTAL CHAIN
Silverio Cerato, Mussolente, Italy, assignor to Silmar S.p.a., Romano d'Ezzelino, Italy
Filed Nov. 30, 1992, Ser. No. 2,009
Claims priority, application Italy, Jun. 5, 1992, VI920000046
Term of patent 14 years
U.S. Cl. D11—13



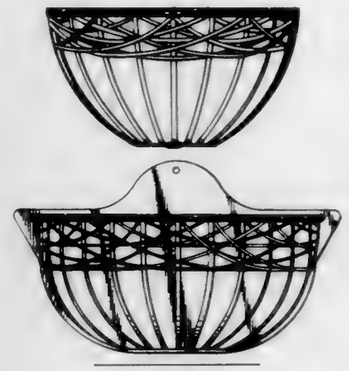
350,910
BRACELET
Silverio Cerato, Mussolente, Italy, assignor to Silmar S.p.a., Romano d'Ezzelino, Italy
Filed Dec. 3, 1993, Ser. No. 16,025
Term of patent 14 years
U.S. Cl. D11—13



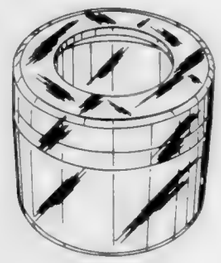
350,911
EXPANSION BRACELET
Raymond R. Bert, Cranston, R.I., assignor to Textron Inc., Providence, R.I.
Filed Feb. 11, 1993, Ser. No. 4,718
Term of patent 14 years
U.S. Cl. D11—19



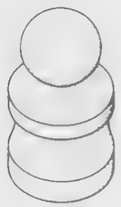
350,912
PLANT HANGER
Richard A. Stansfield, 9 Brookfield Dr., Sparta, N.J. 07871
Filed Aug. 30, 1993, Ser. No. 12,361
Term of patent 14 years
U.S. Cl. D11—152



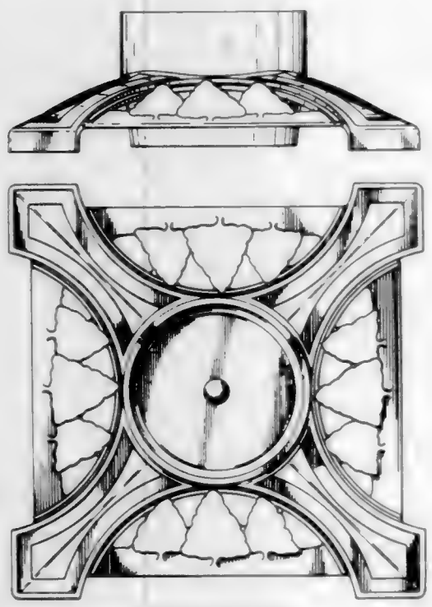
350,913
PLANT WATER CONTAINER
Norwin G. Heimos, St. Louis, Mo., assignor to Micky's Mini-Flora Express, Ltd., St. Louis, Mo.
Filed Mar. 29, 1991, Ser. No. 677,745
The portion of the term of this patent subsequent to Oct. 27, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



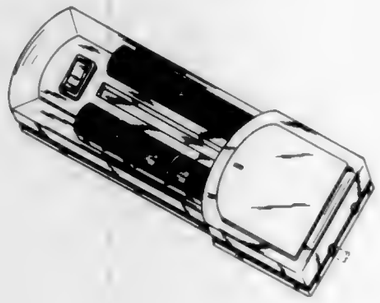
350,914
LOCKING BURR
Bruce Gershenson, 26645 Irving, Franklin, Mich. 48034
Continuation-in-part of Ser. No. 855,935, Mar. 23, 1992, Pat. No. Des. 340,007, which is a continuation-in-part of Ser. No. 645,453, Jan. 23, 1991, Pat. No. 5,097,570. This application Nov. 30, 1992, Ser. No. 2,035
Term of patent 14 years
U.S. Cl. D11—200



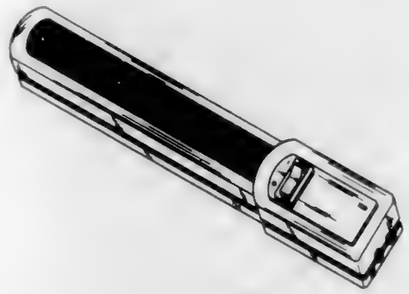
350,915
CHRISTMAS TREE STAND
Barbara J. Stork, Jersey City, N.J., assignor to Donsco, Inc., Wrightsville, Pa.
Filed Nov. 10, 1992, Ser. No. 1,318
Term of patent 14 years
U.S. Cl. D11—130.1



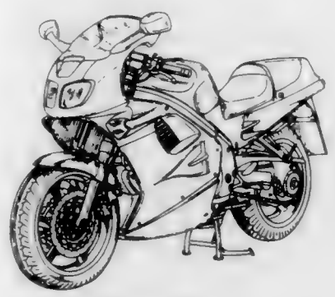
350,916
MULTIPLE OUTLET SURGE PROTECTOR
Jon R. Rossman, Chelmsford, and Bryan R. Hotaling, Arlington, both of Mass., assignors to Curtis Manufacturing Company, Inc., Jaffrey, N.H.
Filed Mar. 25, 1993, Ser. No. 6,281
Term of patent 14 years
U.S. Cl. D13—142



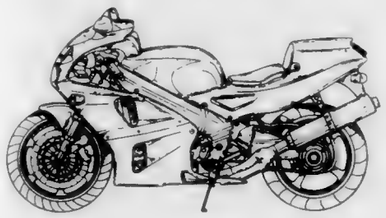
350,917
MULTIPLE OUTLET SURGE PROTECTOR
Jon R. Rossman, Chelmsford, and Bryan R. Hotaling, Arlington, both of Mass., assignors to Curtis Manufacturing Company, Inc., Jaffrey, N.H.
Filed Mar. 12, 1993, Ser. No. 5,785
Term of patent 14 years
U.S. Cl. D13—142



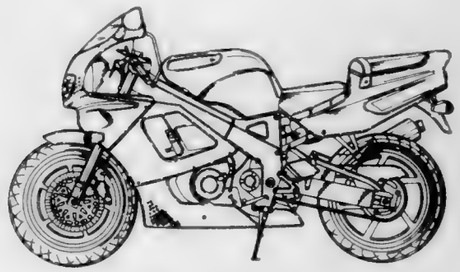
350,918
MOTORCYCLE
Mitsuyoshi Kohama; Yoshiaki Muta, both of Saitama, and Yuuji Watanuki, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 18, 1993, Ser. No. 9,596
Claims priority, application Japan, Dec. 18, 1992, 4-37092
Term of patent 14 years
U.S. Cl. D12—110



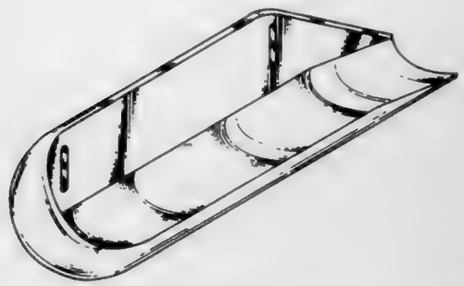
350,919
MOTORCYCLE
Toshiaki Kishi, and Takahiro Asakawa, both of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 30, 1992, Ser. No. 3,168
Claims priority, application Japan, Sep. 22, 1992, 4-27778
Term of patent 14 years
U.S. Cl. D12—110



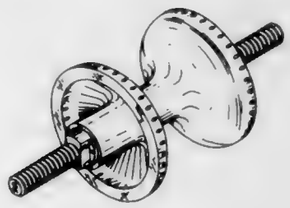
350,920
MOTORCYCLE
Hiroaki Tsukui, Tokyo, and Tetsuya Nakazawa, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 30, 1993, Ser. No. 10,132
Claims priority, application Japan, Feb. 8, 1993, 5-03056
Term of patent 14 years
U.S. Cl. D12—110



350,921
LEG SUPPORT FOR A MOTORCYCLE
Shane E. Carroll, 129 West "F" St., Lincoln, Nebr. 68508
Filed Mar. 15, 1993, Ser. No. 5,940
Term of patent 14 years
U.S. Cl. D12—114



350,922
BICYCLE HUB
Shujiro Inatani, Osaka, Japan, assignor to Rays Engineering Co., Ltd., Osaka, Japan
Filed Jun. 30, 1993, Ser. No. 10,109
Claims priority, application Japan, Jan. 13, 1993, 5-762
Term of patent 14 years
U.S. Cl. D12—115



350,923
JOGGING INFANT STROLLER
Thomas J. Schmidlin, Newport, Ky., and David Eyman, Cincinnati, Ohio, assignors to TRI Industries, Inc., Bloomington, Minn.
Filed Mar. 12, 1993, Ser. No. 5,845
Term of patent 14 years
U.S. Cl. D12—12



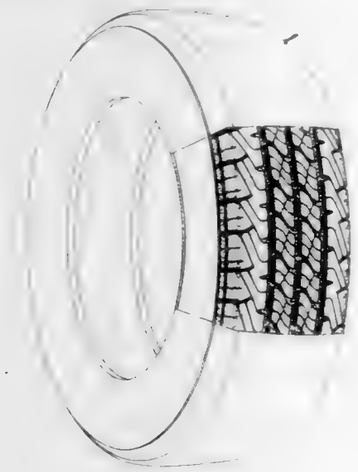
350,924
TIRE TREAD
Paul B. Maxwell, Mamer, Luxembourg, and Sean D. Montag, Westerville, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jun. 28, 1993, Ser. No. 10,073
Term of patent 14 years
U.S. Cl. D12—146



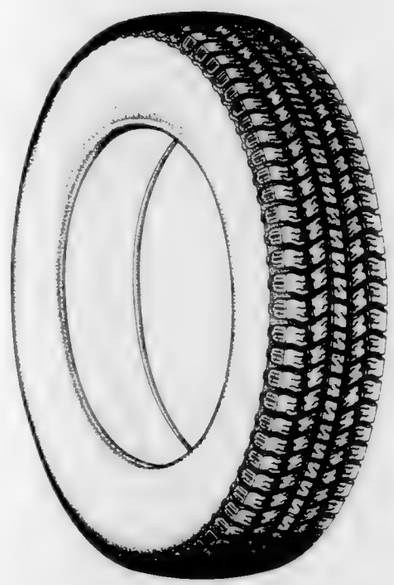
350,925
TIRE
Miroslav Manestar, Barberton, Ohio, assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Apr. 30, 1993, Ser. No. 7,761
Term of patent 14 years
U.S. Cl. D12—147



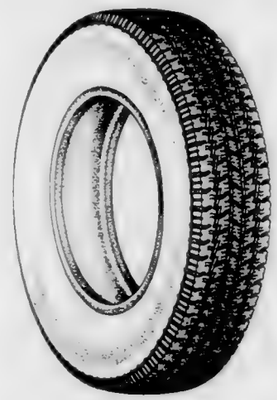
350,926
TIRE
John A. Hutz, Greer, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Mar. 30, 1993, Ser. No. 6,480
Term of patent 14 years
U.S. Cl. D12—147



350,927
TIRE
Miroslav Manestar, Barberton, Ohio, assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed May 24, 1993, Ser. No. 8,675
Term of patent 14 years
U.S. Cl. D12—147



350,928
TIRE
Miroslav Manestar, Barberton, Ohio, assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Apr. 30, 1993, Ser. No. 7,757
Term of patent 14 years
U.S. Cl. D12—147



350,929
TIRE TREAD
John S. Attinello, Hartville; Norman D. Anderson; Samuel P. Landers, both of Uniontown, and Dale G. Freygang, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 8, 1993, Ser. No. 6,828
Term of patent 14 years
U.S. Cl. D12—147



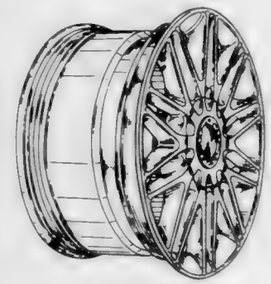
350,930
AUTOMOBILE TIRE
Sonoko Sugimoto, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Jan. 19, 1993, Ser. No. 3,831
Claims priority, application Japan, Jul. 21, 1992, 4-21891
Term of patent 14 years
U.S. Cl. D12—147



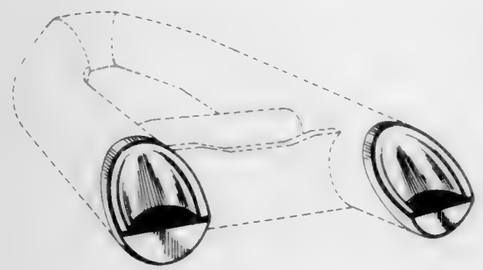
350,931
WHEEL TRIM
Terry P. Dawson, Lot 1, Old Hume Hwy., Seymour, Victoria 3660, Australia
Filed Dec. 30, 1992, Ser. No. 3,170
Claims priority, application Australia, Jun. 30, 1992, 1694/92
Term of patent 14 years
U.S. Cl. D12—206



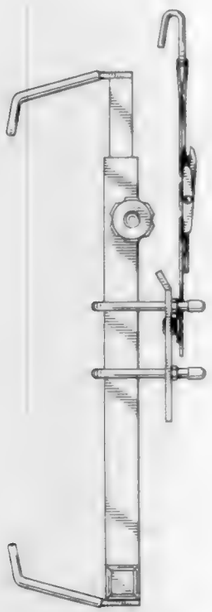
350,932
VEHICLE WHEEL
Alberto Echazabel, Hialeah Gardens, Fla., and Claudio Bernoni, Albano Terma, Italy, assignors to Motoring Accessories, Inc., Miami, Fla.
Filed Jan. 21, 1993, Ser. No. 4,500
The portion of the term of this patent subsequent to Jun. 28, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—211



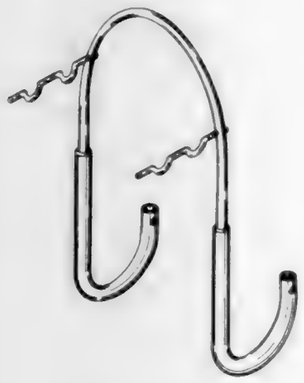
350,933
HULL CAP FOR INFLATABLE BOATS
Carlo Scarambone, Rasha Koh Sireh, Thailand, assignor to Skip Roland, Phuket Island, Thailand
Filed Nov. 9, 1992, Ser. No. 1,305
Term of patent 14 years
U.S. Cl. D12—317



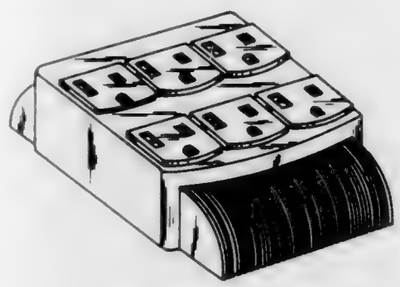
350,934
ADJUSTABLE ALL TERRAIN VEHICLE TREE STAND CARRIER
Darrell T. Talley, P.O. Box 594, S. Pittsburgh, Tenn. 37380
Filed Nov. 15, 1993, Ser. No. 15,402
Term of patent 14 years
U.S. Cl. D12—406



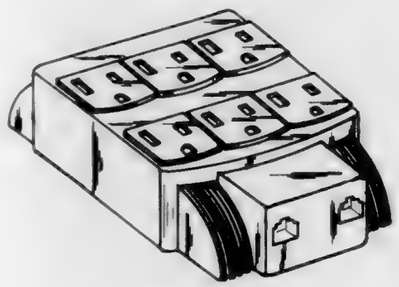
350,935
CARRIER FOR MULTIPLE BICYCLES
Siegmund B. Stach, 21-2081 Winfield Drive, Abbotsford, B.C., Canada V3 1C7
Filed May 19, 1993, Ser. No. 8,459
Term of patent 14 years
U.S. Cl. D12—408



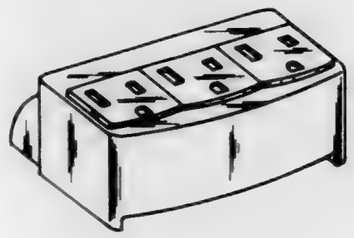
350,936
MULTIPLE OUTLET SURGE PROTECTOR
Jon R. Rossman, Chelmsford, and Bryan R. Hotaling, Arlington, both of Mass., assignors to Curtis Manufacturing Company, Inc., Jaffrey, N.H.
Filed Mar. 25, 1993, Ser. No. 6,280
Term of patent 14 years
U.S. Cl. D13—139



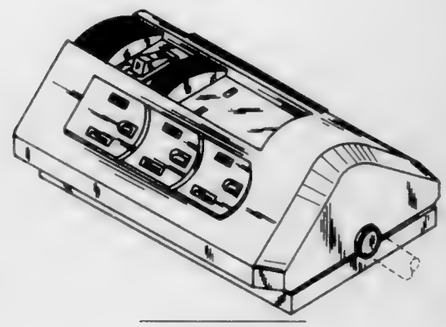
350,937
MULTIPLE OUTLET SURGE PROTECTOR
Jon R. Rossman, Chelmsford, and Bryan R. Hotaling, Arlington, both of Mass., assignors to Curtis Manufacturing Company, Inc., Jaffrey, N.H.
Filed Mar. 12, 1993, Ser. No. 5,784
Term of patent 14 years
U.S. Cl. D13—139



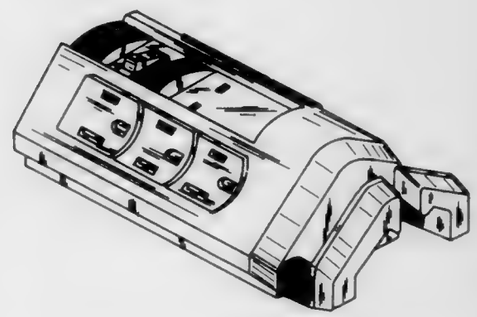
350,938
MULTIPLE OUTLET SURGE PROTECTOR
Jon R. Rossman, Chelmsford, and Bryan R. Hotaling, Arlington, both of Mass., assignors to Curtis Manufacturing Company, Inc., Jaffrey, N.H.
Filed Mar. 12, 1993, Ser. No. 5,783
Term of patent 14 years
U.S. Cl. D13—139



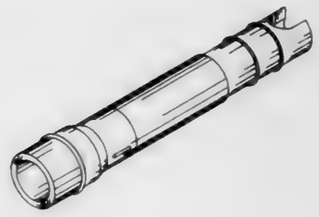
350,939
MULTIPLE OUTLET SURGE PROTECTOR
Jon R. Rossman, Chelmsford, and Bryan R. Hotaling, Arlington, both of Mass., assignors to Curtis Manufacturing Company, Inc., Jaffrey, N.H.
Filed Mar. 12, 1993, Ser. No. 5,782
Term of patent 14 years
U.S. Cl. D13—142



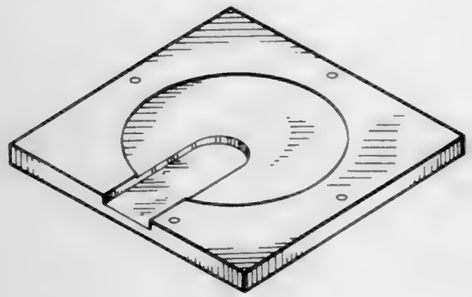
350,940
MULTIPLE OUTLET SURGE PROTECTOR WITH CABLE MANAGEMENT
Jon R. Rossman, Chelmsford, and Bryan R. Hotaling, Arlington, both of Mass., assignors to Curtis Manufacturing Company, Inc., Jaffrey, N.H.
Filed Mar. 12, 1993, Ser. No. 5,842
Term of patent 14 years
U.S. Cl. D13—142



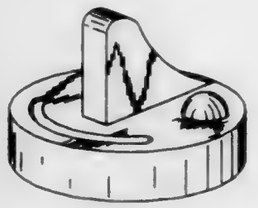
350,941
THREE PIECE PLASTIC TUBE FOR IGNITION WIRE
Dwayne L. Davis, 3004 62nd Ave., East, Bradenton, Fla. 34203
Filed Oct. 14, 1992, Ser. No. 430
Term of patent 14 years
U.S. Cl. D13—155



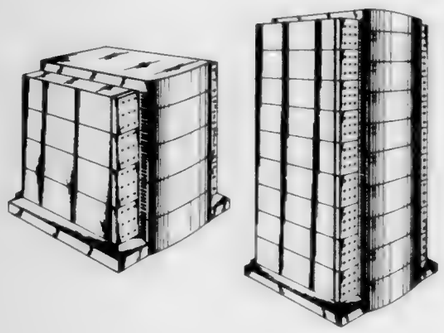
350,942
SEMICONDUCTOR WAFER SUPPORT
Carrie Pellet, and Craig Donaldson, both of Charlotte, N.C., assignors to Particle Solutions, Charlotte, N.C.
Filed Aug. 25, 1992, Ser. No. 935,365
Term of patent 14 years
U.S. Cl. D13—182



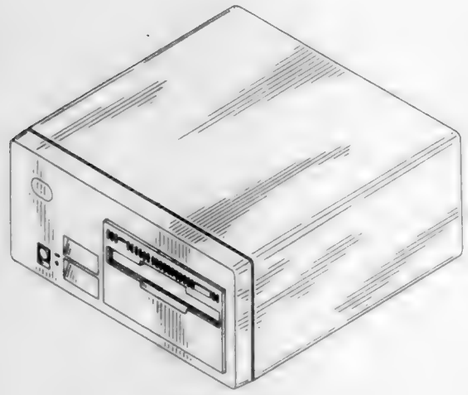
350,943
MAGNET
William E. Adams, and Marc Peoples, both of Portersville, Pa., assignors to Adams Mfg. Co., Portersville, Pa.
Filed Mar. 2, 1992, Ser. No. 843,083
Term of patent 14 years
U.S. Cl. D13—183



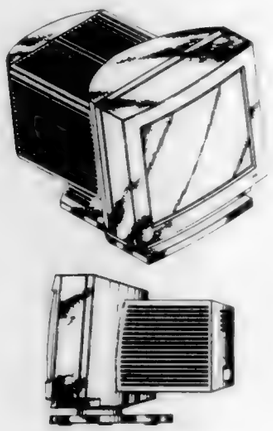
350,944
EXPANDABLE MODULAR DISK DRIVE ARRAY
Donald E. Shewmon, Thousand Oaks; Martin E. Smith, Camarillo, and Michael L. Steen, Newburg Park, all of Calif., assignors to Micropolis Corporation, Chatsworth, Calif.
Filed Mar. 8, 1993, Ser. No. 5,597
Term of patent 14 years
U.S. Cl. D14—102



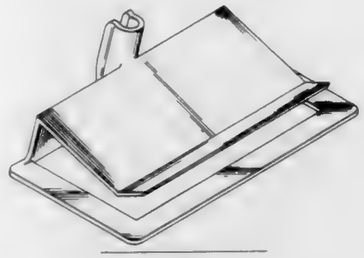
350,945
OPTICAL DISK DRIVE FOR A DATA PROCESSING SYSTEM
David W. Hill, and Tim K. Murphy, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 27, 1992, Ser. No. 936,960
Term of patent 14 years
U.S. Cl. D14—109



350,946
CATHODE RAY TUBE DISPLAY
James R. Stewart, San Jose; Ronald J. Moller, Boulder Creek, and Mark A. Biasotti, San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Jan. 13, 1993, Ser. No. 3,570
Term of patent 14 years
U.S. Cl. D14—113



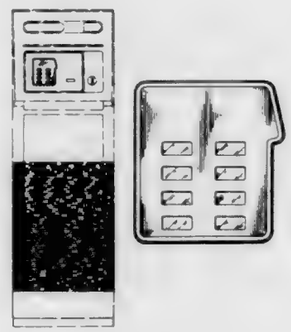
350,947
COMBINED MOUSE CORD HOLDER AND CLIP
Robert C. Klinger, 311 Shady Nook Rd., Harleysville, Pa. 19438, and Troy E. Bergstrom, 105 Cypress Dr., Quakertown, Pa. 18951
Filed Sep. 21, 1992, Ser. No. 948,897
Term of patent 14 years
U.S. Cl. D14—114



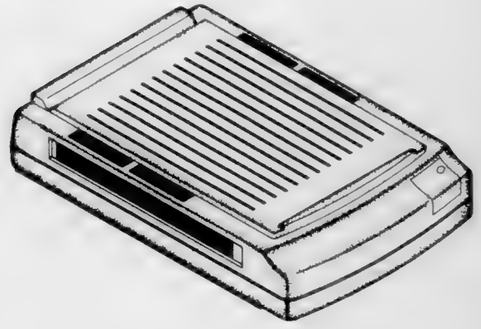
350,948
KEYBOARD FOR COMPUTERS
Ronald A. Smith, Apex, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 29, 1993, Ser. No. 7,654
Term of patent 14 years
U.S. Cl. D14—115



350,949
ILLUMINATED DISPLAY PANEL FOR INDICATING DISK DRIVE ACTIVITY
George R. Daniels, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.
Filed Nov. 13, 1990, Ser. No. 611,872
Term of patent 14 years
U.S. Cl. D14—115



350,950
DESK SCANNER
Ted Liu, Taoyuan Hsien, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan
Filed Nov. 18, 1992, Ser. No. 1,545
Term of patent 14 years
U.S. Cl. D14—116



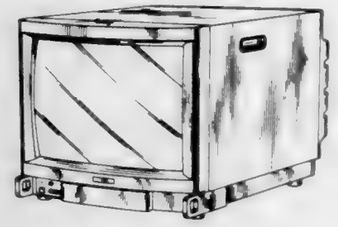
350,951
VIDEO CASSETTE FOR A PORTABLE VIDEO GAME
Ching-Jung Tseng, No. 13-2, Lane 778, Hua Cheng Rd., Hsin Chuang City, Taipei Hsien, Taiwan
Filed May 4, 1993, Ser. No. 7,819
Term of patent 14 years
U.S. Cl. D14—121



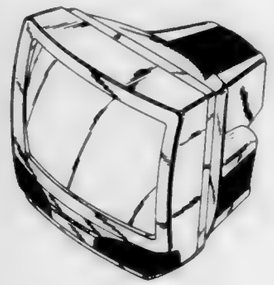
350,952
AUDIO TAPE CASSETTE
Noriko Katayama, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 19, 1993, Ser. No. 8,580
Claims priority, application Japan, Dec. 25, 1992, 4-38245
Term of patent 14 years
U.S. Cl. D14—121



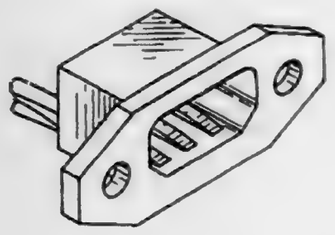
350,953
MONITOR TELEVISION RECEIVER
Yoshinori Harada, and Muneyuki Nagai, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 8, 1993, Ser. No. 16,117
Claims priority, application Japan, Jun. 10, 1993, 5-17440
Term of patent 14 years
U.S. Cl. D14—126



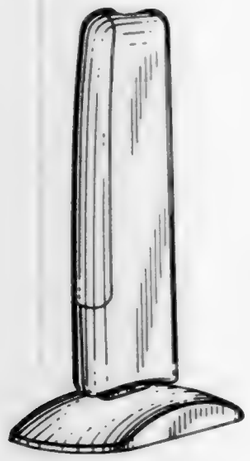
350,954
TELEVISION
Kwang C. Park, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Nov. 17, 1993, Ser. No. 15,419
Claims priority, application Rep. of Korea, Jul. 26, 1993, 14956/1993
Term of patent 14 years
U.S. Cl. D14—126



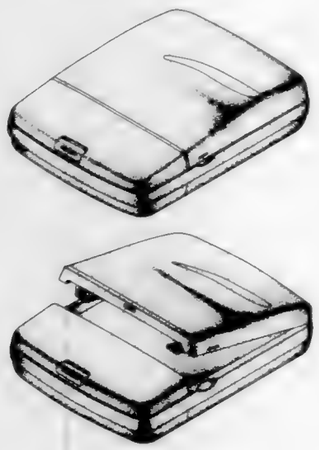
350,955
ELECTRICAL RECEPTACLE
Franco G. Pucci; Michael D. Wythe, both of Durban, and Kevin E. Moulder, Westville, all of South Africa, assignors to Control Logic (Proprietary) Limited, Natal Province, South Africa
Filed Dec. 23, 1992, Ser. No. 2,971
Claims priority, application South Africa, Jun. 26, 1992, 92/0648
Term of patent 14 years
U.S. Cl. D13—146



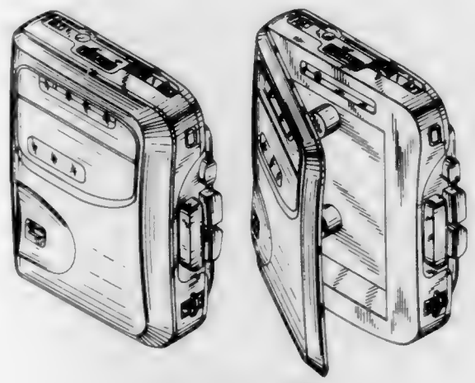
350,956
INFRARED TRANSMITTER
Shinichi Sumikawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 23, 1992, Ser. No. 855,942
Claims priority, application Japan, Oct. 30, 1991, 3-32844
Term of patent 14 years
U.S. Cl. D14—155



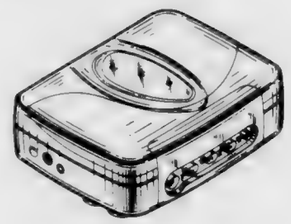
350,957
DIGITAL DISK PLAYER
Keiji Sakata, and Hirokazu Shibata, both of Hiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 10, 1993, Ser. No. 5,804
Claims priority, application Japan, Sep. 18, 1992, 4-27488
Term of patent 14 years
U.S. Cl. D14—156



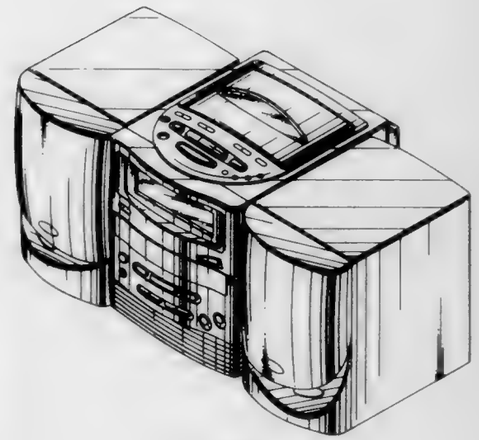
350,958
TAPE PLAYER COMBINED WITH A RADIO RECEIVER
Yonzoh Matsuzaka, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 8, 1993, Ser. No. 16,129
Term of patent 14 years
U.S. Cl. D14—163



350,959
TAPE PLAYER COMBINED WITH A RADIO TUNER
Shinichi Sumikawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 3, 1992, Ser. No. 938,657
Claims priority, application Japan, Apr. 21, 1992, 4-11801
Term of patent 14 years
U.S. Cl. D14—163



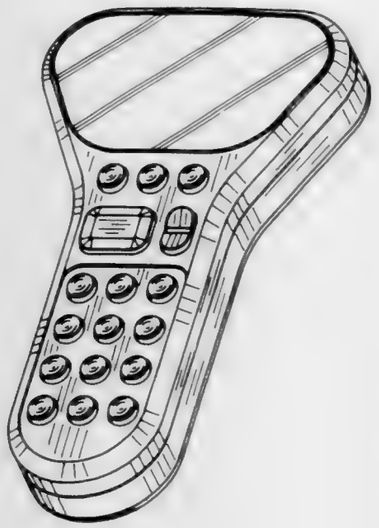
350,960
COMBINED DIGITAL AUDIO DISC PLAYER, RADIO TUNER AND TAPE RECORDER
Keiji Sakata; Hirokazu Shibata, and Akihiko Hotta, all of Hiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 8, 1992, Ser. No. 913,530
Claims priority, application Japan, Jan. 18, 1992, 4-167
Term of patent 14 years
U.S. Cl. D14—168



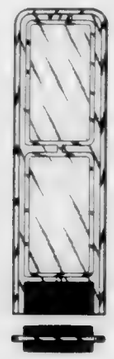
350,961
EARPHONE
Koji Nakamura, Narashino, Japan, assignor to Aiwa Co., Ltd., Tokyo, Japan
Filed Nov. 13, 1992, Ser. No. 477
Claims priority, application Japan, May 25, 1992, 4-15155
Term of patent 14 years
U.S. Cl. D14—205



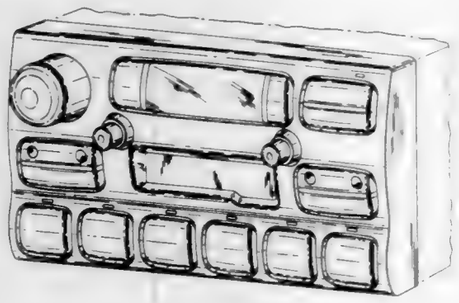
350,962
HAND HELD TELEVISION CONTROLLER
John D. Reardon, Fairfield, Conn.; Susan K. Marshall, Greenwood Village, Colo.; Maureen E. Carroll, Atlanta, Ga.; Devin Moore, Decator, Ga., and David S. Rowley, Smyrna, Ga., assignors to Zing Systems, L.P., Englewood, Colo.
Filed Dec. 4, 1992, Ser. No. 2,324
Term of patent 14 years
U.S. Cl. D14—218



350,963
ANTENNA PEDESTAL
Hans Witzky, Pompano Beach, Fla., assignor to Sensormatic Electronics Corporation, Deerfield Beach, Fla.
Filed Oct. 7, 1992, Ser. No. 228
Term of patent 14 years
U.S. Cl. D14—230



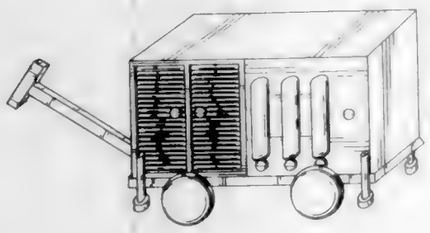
350,964
CONTROL PANEL FOR AN AUTOMOTIVE RADIO/CASSETTE
James H. Fowler, Dearborn, and Nevenka Schumaker, Bloomfield Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Aug. 14, 1992, Ser. No. 929,569
The portion of the term of this patent subsequent to Feb. 1, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—258



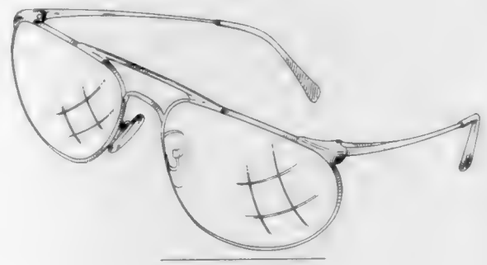
350,965
HEAD SUPPORT FOR A TELEPHONE HANDSET
Bruce Schulz, 7085 Monaco, Commerce City, Colo. 80028
Filed Apr. 16, 1993, Ser. No. 7,147
Term of patent 14 years
U.S. Cl. D14—253



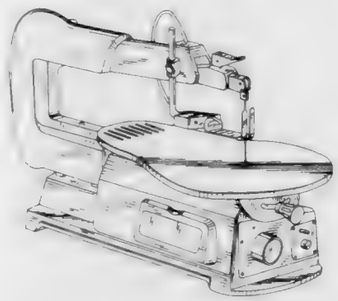
350,966
AUTOMATIC FEED APPARATUS FOR DISPENSING TAR
Louis T. Crispino, 2215 Cross Country Blvd., Baltimore, Md. 21209
Filed May 27, 1993, Ser. No. 8,825
Term of patent 14 years
U.S. Cl. D15—13



350,967
EYEWEAR FRAMES
Sergio Cereda, Varese, Italy, assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed May 12, 1993, Ser. No. 8,259
Term of patent 14 years
U.S. Cl. D16—315



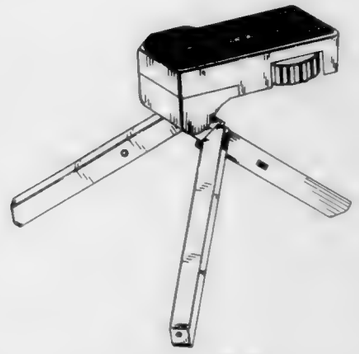
350,968
ELECTRIC SAW
Chiu-Tsun Chang, Taichung, Taiwan, assignor to P & F Brother Industrial Corporation, Taichung, Taiwan
Filed Jun. 16, 1993, Ser. No. 9,615
Term of patent 14 years
U.S. Cl. D15—133



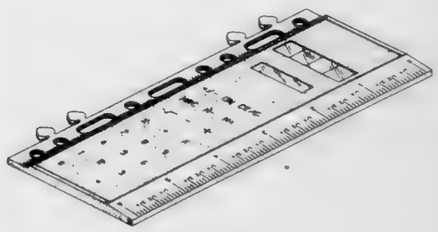
350,969
COLLAPSIBLE FUNNEL
Larry L. Chrisco, Fairland, Okla., assignor to Blitz U.S.A. Inc., Miami, Okla.
Filed Feb. 23, 1993, Ser. No. 5,462
Term of patent 14 years
U.S. Cl. D15—150



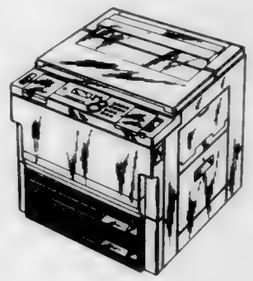
350,970
TRIPOD FOR A CAMERA
Hisaichi Usui, Tama, Japan, assignor to Hakuba Shashin Sangyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 16, 1992, Ser. No. 822,560
Term of patent 14 years
U.S. Cl. D16—244



350,971
CALCULATOR FOR SPIRAL BOUND/RING BINDER NOTEBOOK ORGANIZER
Katrina A. Lassberg, 13502 Alchester La., Houston, Tex. 77079
Filed Dec. 7, 1992, Ser. No. 2,289
Term of patent 14 years
U.S. Cl. D18—2



350,972
COPYING MACHINE
Takeshi Komada; Masataka Isomoto; Noriyuki Suzuki, all of Yokohama, and Masaaki Ishibashi, Kunitachi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 12, 1992, Ser. No. 928,210
Claims priority, application Japan, Feb. 13, 1992, 4-3780
Term of patent 14 years
U.S. Cl. D18—36



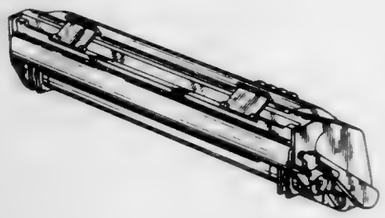
350,973
COPYING MACHINE
Louis J. H. Lucker, Belfeld, Netherlands, assignor to OCE-Nederland, B.V., Venlo, Netherlands
Filed Aug. 14, 1992, Ser. No. 930,212
Claims priority, application Netherlands, Feb. 14, 1992, 67359-00
Term of patent 14 years
U.S. Cl. D18—39



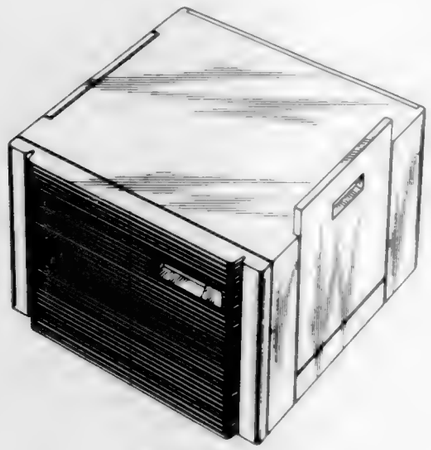
350,974
CHARGER FOR PRINTERS
Kyouichi Inoue, Akishima, and Yukitaka Kumagai, Hachiouji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed May 26, 1992, Ser. No. 889,087
Claims priority, application Japan, Oct. 28, 1991, 32584/91
Term of patent 14 years
U.S. Cl. D18—40



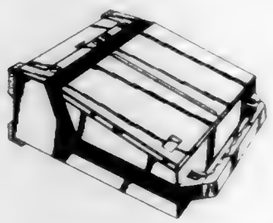
350,975
IMAGE FORMING APPARATUS
Ryoko Mizuta, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 14, 1992, Ser. No. 429
Claims priority, application Japan, Apr. 24, 1992, 4-12484
Term of patent 14 years
U.S. Cl. D18—43



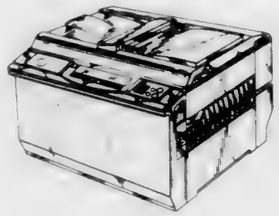
350,976
PAPER SUPPLYING MACHINE BODY FOR ELECTRONIC COPYING MACHINE
Masataka Isomoto, Yokohama, and Takeshi Komada, Yokosuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 29, 1992, Ser. No. 952,768
Claims priority, application Japan, Apr. 17, 1992, 4-11544
Term of patent 14 years
U.S. Cl. D18—44



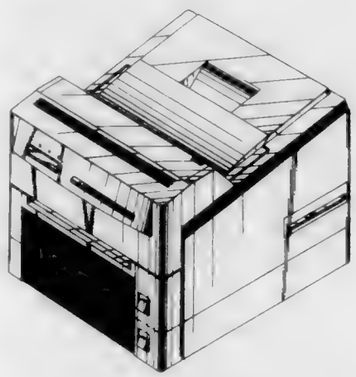
350,977
PORTABLE PRINTER
Kim R. Lewis, Stow; Gary L. Elston, Akron, both of Ohio; Jack P. Hall, Palo Alto, and Dennis Kerkhof, Rio del Mar, both of Calif., assignors to Telxon Corporation, Akron, Ohio
Filed Aug. 28, 1991, Ser. No. 751,216
Term of patent 14 years
U.S. Cl. D18—50



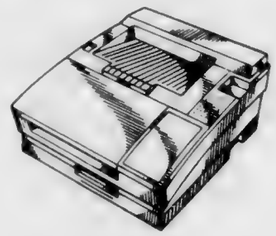
350,978
DIGITAL PRINTER
Yoshihisa Minakawa, Chiba, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Dec. 18, 1992, Ser. No. 2,660
Claims priority, application Japan, Jun. 19, 1992, 018377/1992
Term of patent 14 years
U.S. Cl. D18—50



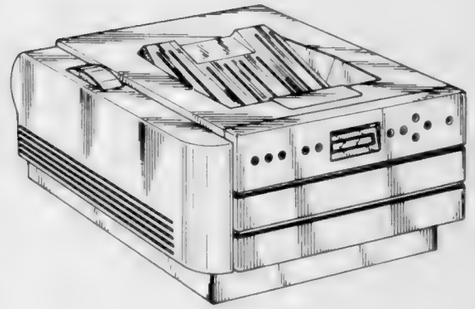
350,979
PRINTER FOR COMPUTER
Tomoyuki Hirose, Nabari, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sep. 8, 1992, Ser. No. 939,527
Claims priority, application Japan, Mar. 5, 1992, 4-6333
Term of patent 14 years
U.S. Cl. D18—55



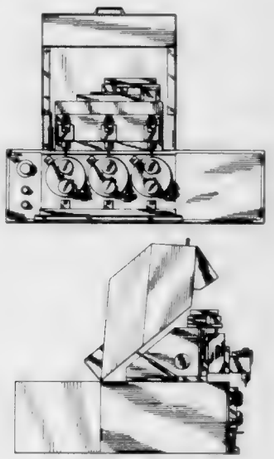
350,980
PRINTER FOR A PERSONAL COMPUTER
Makoto Kobayashi, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan
Filed Dec. 15, 1992, Ser. No. 2,648
Claims priority, application Japan, Jun. 18, 1992, 4-18071
Term of patent 14 years
U.S. Cl. D18—55



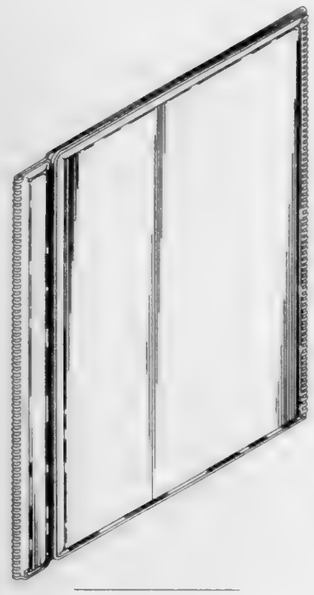
350,981
PRINTER
Takashi Matsuda, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 7, 1993, Ser. No. 7,995
Claims priority, application Japan, Nov. 11, 1992, 4-33223
Term of patent 14 years
U.S. Cl. D18—55



350,982
ENGRAVING MACHINE
Andre Joye, Jongny, Switzerland, assignor to Genex S.A., Chene-bourg, Switzerland
Filed Feb. 28, 1992, Ser. No. 844,004
Claims priority, application Switzerland, Aug. 29, 1991, 119198
Term of patent 14 years
U.S. Cl. D18—57



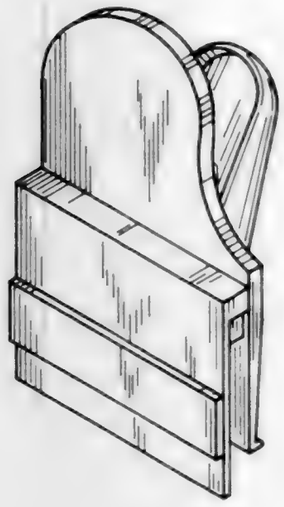
350,983
PORTABLE WRITING LEDGER
Scott R. Penniman, Spring House, Pa., assignor to R. E. P. Industries, Inc., Lansdale, Pa.
Filed Apr. 6, 1992, Ser. No. 863,667
Term of patent 14 years
U.S. Cl. D19—26



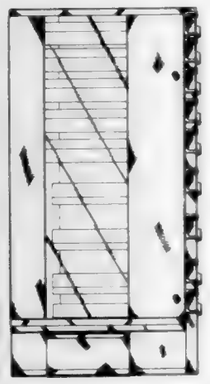
350,984
TOY PEN
Peter Huang, No. 14 Alley 13 Lane 292 Pao Ping Road, Yung Ho, Taiwan
Filed May 4, 1993, Ser. No. 7,912
Term of patent 14 years
U.S. Cl. D19—42



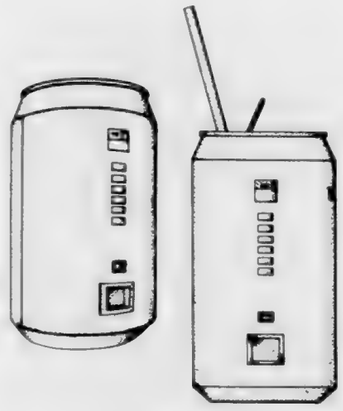
350,985
PAGE CLIP
Thomas O. Schimke, 504 Lake Forest Pkwy., Louisville, Ky. 40245
Filed Jun. 17, 1993, Ser. No. 9,699
Term of patent 14 years
U.S. Cl. D19—65



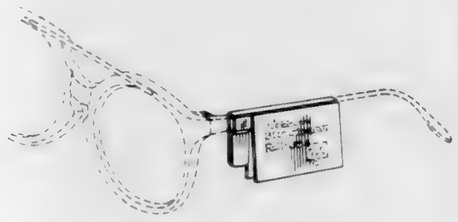
350,986
VENDING MACHINE
Dallas Humphrey, Plymouth, Minn., assignor to Edina Technical Products Inc., Plymouth, Minn.
Filed Jun. 18, 1992, Ser. No. 902,276
Term of patent 14 years
U.S. Cl. D20—4



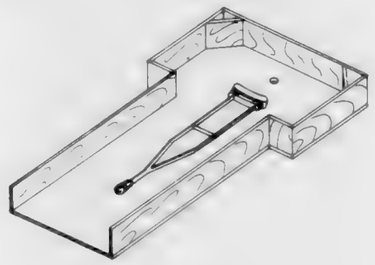
350,987
VENDING MACHINE
Christopher B. Wright, San Francisco, Calif., assignor to Wright Food Systems, Inc., San Francisco, Calif.
Filed Jan. 22, 1992, Ser. No. 823,563
Term of patent 14 years
U.S. Cl. D20—5



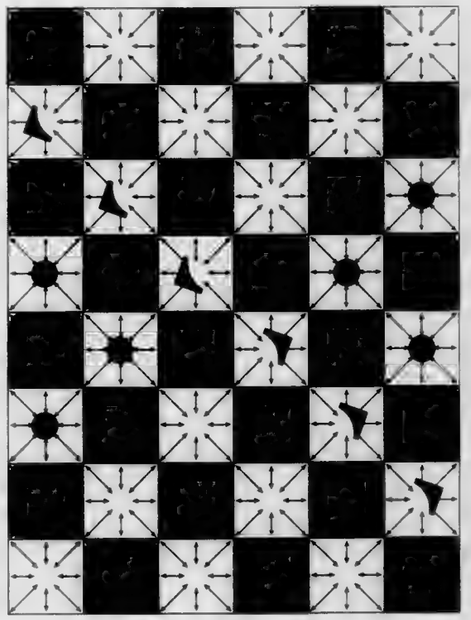
350,988
FOLDED TAG FOR EYEGLASSES
Jeffrey L. Kravitz, 280 Park Ave. S., New York, N.Y. 10010
Filed Nov. 8, 1993, Ser. No. 14,988
Term of patent 14 years
U.S. Cl. D20—22



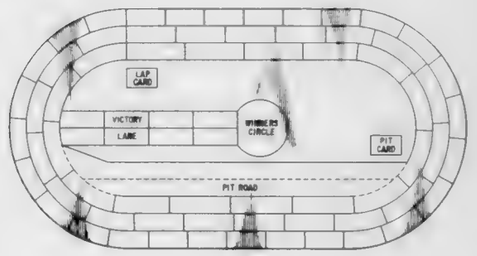
350,989
MINIATURE GOLF COURSE UNIT
Philip S. Lanier, Apt. #6, 175 N. Keats Ave., Louisville, Ky. 40206
Filed Jan. 2, 1992, Ser. No. 817,821
Term of patent 14 years
U.S. Cl. D21—11



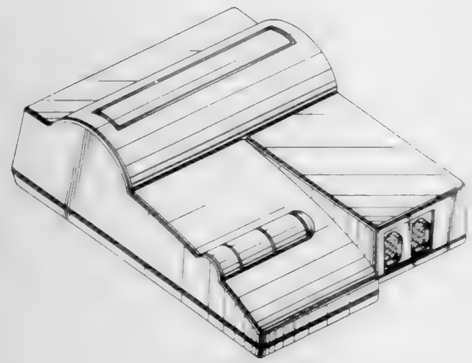
350,990
GAME BOARD
David K. Taylor, 622 Joyner St., Greensboro, N.C. 27403
Filed Apr. 29, 1993, Ser. No. 7,755
Term of patent 14 years
U.S. Cl. D21—24



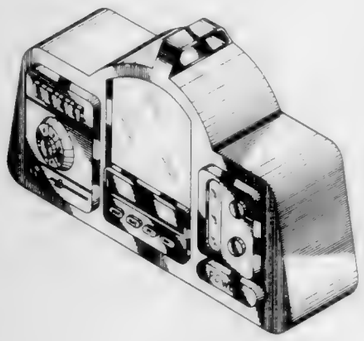
350,991
RACE CAR GAME BOARD
Daniel A. Goyette, 22 Copperfield Ave., Piedmont, S.C. 29673
Filed Aug. 23, 1993, Ser. No. 12,119
Term of patent 14 years
U.S. Cl. D21—27



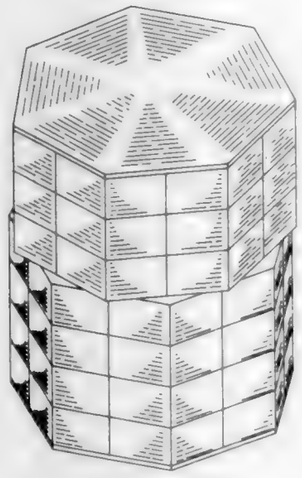
350,992
ELECTRONIC GAME HOUSING
Lance Barr, Renton, Wash., assignor to Nintendo Co. Ltd., Kyoto, Japan
Filed May 24, 1993, Ser. No. 8,633
Term of patent 14 years
U.S. Cl. D21—48



350,993
ELECTRONIC ACTIVITY CENTER
Steven P. Black, 505 4th Ave., South Souix City, Nebr. 68776
Filed Jun. 25, 1992, Ser. No. 903,185
Term of patent 14 years
U.S. Cl. D21—59



350,994
TOY PUZZLE
Luciano Conotter, Piazza Leonardo da Vinci, 4, 38100 Trento, Italy
Filed Dec. 7, 1989, Ser. No. 447,245
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1989, DM/013750
Term of patent 14 years
U.S. Cl. D21—104



350,995
AMUSEMENT CASTLE
Anthony W. Baxter, 7635 Silver Dollar La., Anaheim Hills, Calif. 92807; Thomas K. Morris, 2025 Fathom La., Anaheim, Calif. 92801, and Mark A. Lescault, 5535 Shady Creek La., Yorba Linda, Calif. 92687
Filed Mar. 20, 1992, Ser. No. 854,272
Term of patent 14 years
U.S. Cl. D21—115



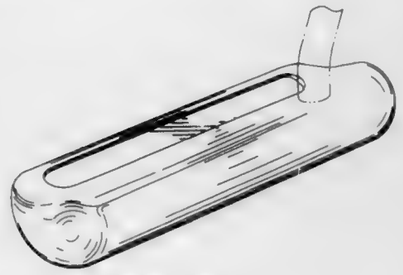
350,996
REINDEER DOLL
George Kennedy, Granada Hills, Calif., assignor to Fact Games, Ltd., San Jose, Calif.
Filed Dec. 16, 1992, Ser. No. 2,593
Term of patent 14 years
U.S. Cl. D21—148



350,997
HAND-HELD EXERCISE APPARATUS
William L. Connelly, III, 1650 Northern Ave., Kingman, Ariz. 86401
Filed Nov. 18, 1992, Ser. No. 1,631
Term of patent 14 years
U.S. Cl. D21—198



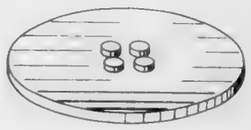
350,998
GOLF PUTTER HEAD
Wayne R. Wooten, Hazlehurst, Ga., assignor to The Teardrop Putter Corporation, Hilton Head, S.C.
Filed Aug. 27, 1992, Ser. No. 936,246
Term of patent 14 years
U.S. Cl. D21—217



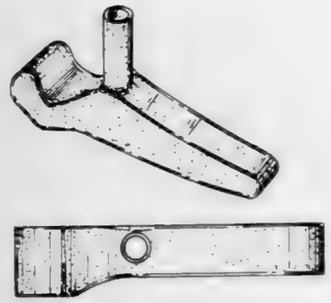
350,999
SOFT LACROSSE STICK
Bien-Horn Chen, 4F, No. 10, Lane 8, Sec. 2, Roosevelt Road, Taipei, Taiwan
Filed Mar. 15, 1993, Ser. No. 5,864
Term of patent 14 years
U.S. Cl. D21—210



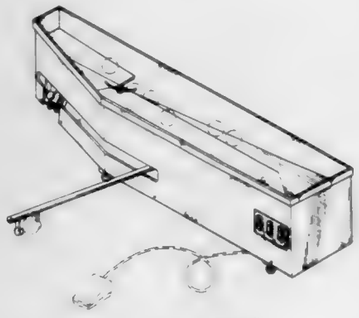
351,000
ELEMENT FOR A TOY BUILDING SET
Lene Köhler, Jelling, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,304
Term of patent 14 years
U.S. Cl. D21—108



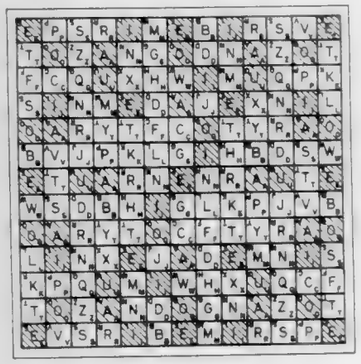
351,001
PUTTER HEAD
Henry A. Bickler, 45-750 Pueblo Rd., Indian Wells, Calif. 92210
Filed Nov. 30, 1992, Ser. No. 2,197
Term of patent 14 years
U.S. Cl. D21—217



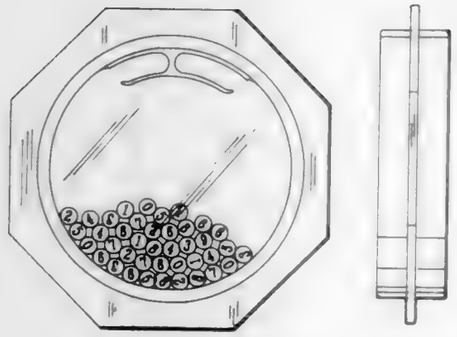
351,002
GOLF BALL DISPENSER
Sang W. Park, 142-1 Garak-Dong, Misung Apt 6-1106 Songpa-Ku, Seoul, Rep. of Korea
Filed Aug. 5, 1991, Ser. No. 740,483
Term of patent 14 years
U.S. Cl. D21—234



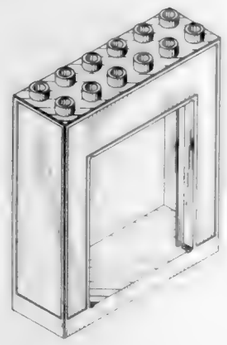
351,003
GAME BOARD FOR WORD GAMES
Gene D. Cohen, 1915 Biltmore St. NW., Washington, D.C. 20009
Filed Nov. 24, 1992, Ser. No. 1,845
Term of patent 14 years
U.S. Cl. D21—24



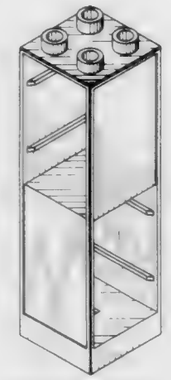
351,004
COMBINED COASTER AND DUAL COMPARTMENT LOTTERY PICKER
Robert Adell, 31800 S. Brandingham, Franklin, Mich. 48025
Filed Jan. 31, 1994, Ser. No. 18,123
The portion of the term of this patent subsequent to Apr. 26, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—37



351,005
ELEMENT FOR A TOY BUILDING SET
Charlotte K. H. Hojlund, Virum, and Berit Holmstrom, Gadstrup, both of Denmark, assignors to Interlego A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,293
Term of patent 14 years
U.S. Cl. D21—108



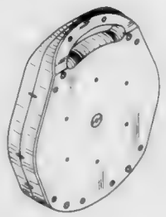
351,006
ELEMENT FOR A TOY BUILDING SET
Lotte M. Nielsen, Copenhagen, and Berit Holmstrom, Gadstrup, both of Denmark, assignors to Interlego A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,383
Term of patent 14 years
U.S. Cl. D21—108



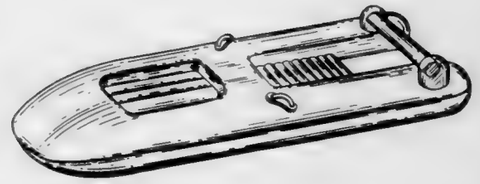
351,007
WATER SQUIRTING TOY
William E. Bednar, 3322 Eucalyptus, and Terry S. Whitlock, 1302 Papago Dr., both of Medford, Oreg. 97504
Filed Mar. 1, 1993, Ser. No. 5,296
Term of patent 14 years
U.S. Cl. D21—147



351,008
SKI ROPE RETRACTOR
James V. Sickmeyer, Rte. 1, Box 54B, Campbell Hill, Ill. 62916
Filed Oct. 12, 1993, Ser. No. 14,050
Term of patent 14 years
U.S. Cl. D21—230



351,009
RECREATIONAL FLOATATION DEVICE FOR A PLURALITY OF USERS WITH CROSS-BAR
Henry Wolfe, Palmetto, Fla., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Sep. 2, 1993, Ser. No. 12,500
Term of patent 14 years
U.S. Cl. D21—237



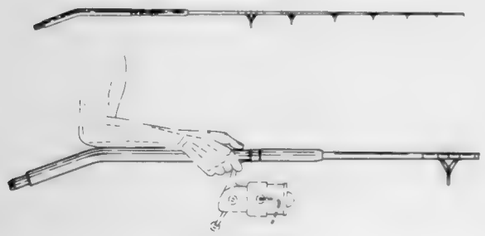
351,010
SAFETY DEVICE FOR SWIMMING POOLS
Carl T. Buttler, 9047 N. 37th Ave., Phoenix, Ariz. 85051
Filed Sep. 27, 1993, Ser. No. 13,487
Term of patent 14 years
U.S. Cl. D21—237



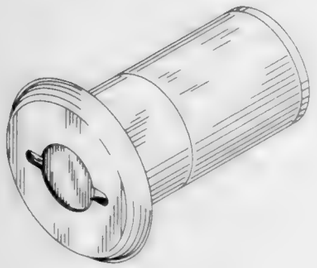
351,011
TENT STRUCTURE
Joon-Shin Tsai, Taipei, Taiwan, assignor to Tai Chung Canvas Co., Ltd., Taipei, Taiwan
Filed Aug. 3, 1993, Ser. No. 11,354
Term of patent 14 years
U.S. Cl. D21—253



351,012
FISHING ROD
Gary Burghoff, 5800 Overseas Hwy., Ste. 35-143, Marathon, Fla. 33050
Filed May 13, 1991, Ser. No. 699,232
Term of patent 14 years
U.S. Cl. D22—142



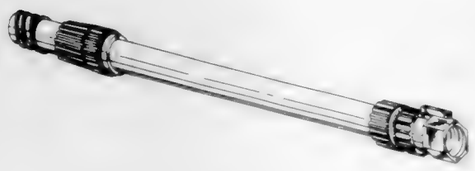
351,013
MECHANICAL INSPECTION AND SEALING PLUG FOR A MONITORING WELL
Allen D. Mathison, Richfield, and Bryan R. Benson, North Branch, both of Minn., assignors to Cherne Industries Incorporated, Minneapolis, Minn.
Filed Jan. 15, 1992, Ser. No. 821,596
Term of patent 14 years
U.S. Cl. D23—260



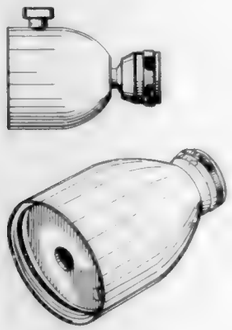
351,014
COMBINED WATER DISPENSER AND FILTER
George M. Hansen, Medina, Minn., assignor to Water Horse Inc., Golden Valley, Minn.
Filed Apr. 1, 1993, Ser. No. 6,582
Term of patent 14 years
U.S. Cl. D23—209



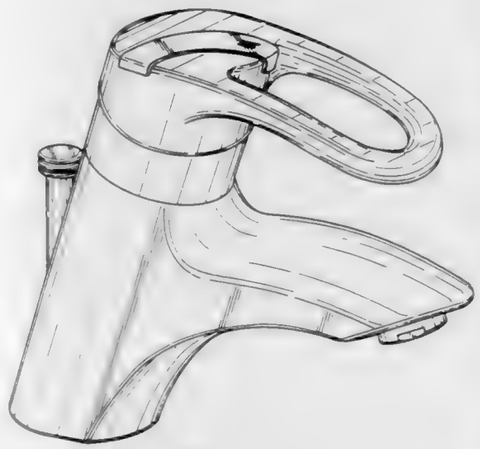
351,015
WATERING WAND
Peter B. Caceres, Pleasant Hill; Robert D. Newman, Sr.; Robert D. Newman, Jr., both of Greenwood, and John W. Stodgell, Pleasant Hill, all of Mo., assignors to Mr. Longarm, Inc., Greenwood, Mo.
Filed Oct. 9, 1992, Ser. No. 347
Term of patent 14 years
U.S. Cl. D23—213



351,016
SHOWER HEAD
Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to I. W. Industries, Inc., Melville, N.Y.
Filed Nov. 27, 1992, Ser. No. 1,991
Term of patent 14 years
U.S. Cl. D23—213



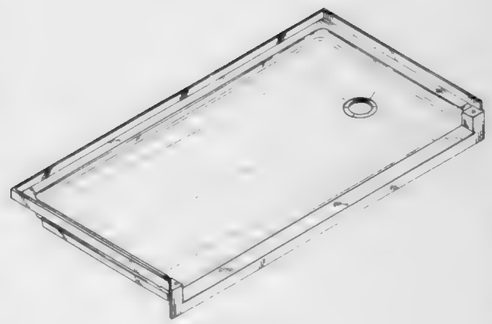
351,017
FAUCET
Adolf Gottwald, Iserlohn, Fed. Rep. of Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Fed. Rep. of Germany
Filed May 13, 1992, Ser. No. 882,636
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1991, M9108292.7
The portion of the term of this patent subsequent to Sep. 6, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—238



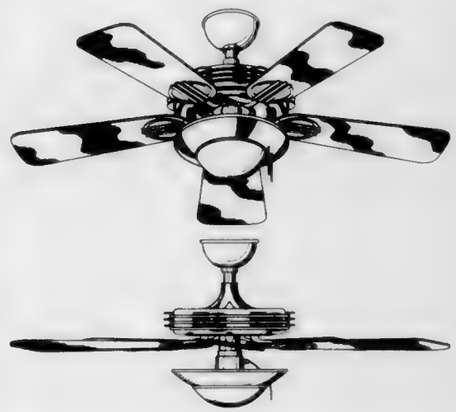
351,018
BATHTUB FOR INVALIDS
Elroy E. Bourgraf, Cincinnati; John R. Zellner, Kings Mills, and John C. Coons, Cincinnati, all of Ohio, assignors to Ferno-Washington, Inc., Wilmington, Ohio
Filed Feb. 11, 1993, Ser. No. 4,720
Term of patent 14 years
U.S. Cl. D23—279



351,019
SHOWER BASE
John W. Moore, St. Louis, Mo., and Anthony Buonaura, Bluford, Ill., assignors to The Swan Corporation, St. Louis, Mo.
Filed Oct. 29, 1992, Ser. No. 967
Term of patent 14 years
U.S. Cl. D23—283



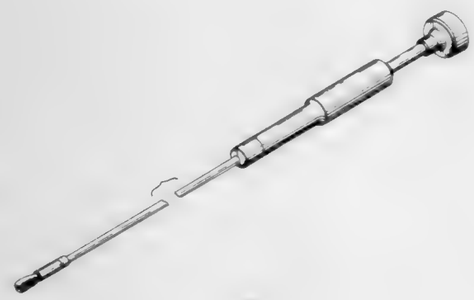
351,020
COMBINED CEILING FAN AND LIGHT FIXTURE
Anthony K. Arnold, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.
Filed Jul. 30, 1993, Ser. No. 11,218
Term of patent 14 years
U.S. Cl. D23—377



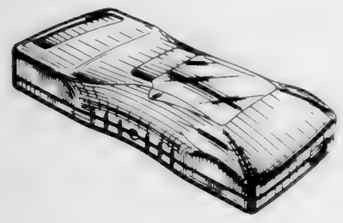
351,021
SAFETY RESTRAINT FOR A TOILET SEAT COVER
Lisa E. Martin, 1002 Bennett Ave., Glenwood Springs, Colo. 81601
Filed Jan. 8, 1993, Ser. No. 3,401
Term of patent 14 years
U.S. Cl. D23—309



351,022
DOUBLE BLADE VALVULOTOME
Tatsuya Saito, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jan. 27, 1993, Ser. No. 4,088
Term of patent 14 years
U.S. Cl. D24—146



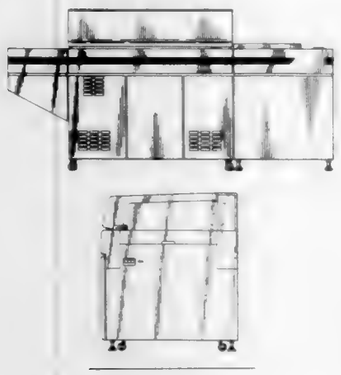
351,023
HAND HELD OXIMETER
Glenn T. Walters, Port Washington, Wis., assignor to Biochem International Inc., Waukesha, Wis.
Filed Jan. 19, 1993, Ser. No. 3,850
Term of patent 14 years
U.S. Cl. D24—169



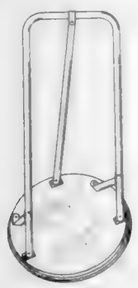
351,024
MASSAGER
Jen-Chung Chou, Taipei Hsien, Taiwan, assignor to Ko Chien Electric Co., Ltd., Taipei Hsien, Taiwan
Filed Jun. 24, 1993, Ser. No. 9,885
Term of patent 14 years
U.S. Cl. D24—215



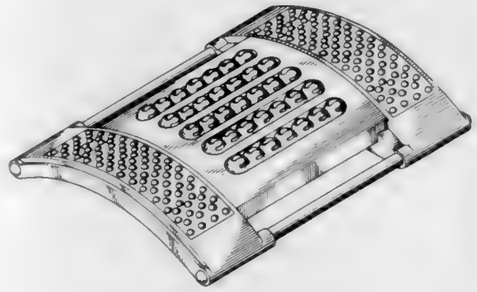
351,025
AUTOMATIC BLOOD ANALYZER
Shigeru Yamashita, Ina, and Yasuo Hattori, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Oct. 20, 1992, Ser. No. 781
Claims priority, application Japan, Apr. 22, 1992, 4-012034
Term of patent 14 years
U.S. Cl. D24—186



351,026
MEDICAL AID
Michael J. Madera, 1413 Harvey Ave., Severn, Md. 21144
Filed Aug. 13, 1991, Ser. No. 667,079
Term of patent 14 years
U.S. Cl. D24—183



351,027
MASSAGER FOR THE SOLE OF A FOOT
Ching-Ting Chen, No. 1, Chu Wei Lane, Erh Lin Chen, Changhua Hsien, Taiwan
Filed Nov. 9, 1993, Ser. No. 15,182
Term of patent 14 years
U.S. Cl. D24—213



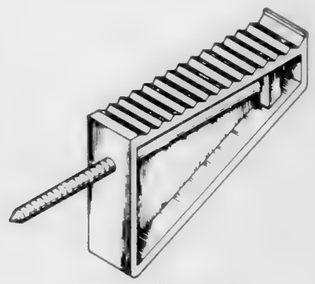
351,028
AWNING SUPPORT
Richard Orrell, Sr., 1215-B Linda Vista Dr., San Marcos, Calif. 92069
Filed Aug. 10, 1992, Ser. No. 926,956
Term of patent 14 years
U.S. Cl. D25—57



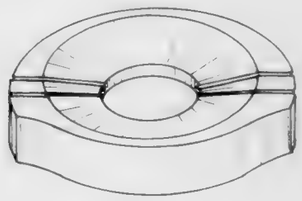
351,029
PET DOOR FRAME
George N. Davlantes, 21457 Iglesia Dr., Woodland Hills, Calif. 91364
Continuation-in-part of Ser. No. 661,083, Feb. 22, 1991, Pat. No. D. 334,431. This application Jan. 11, 1993, Ser. No. 3,507
Term of patent 14 years
U.S. Cl. D25—60



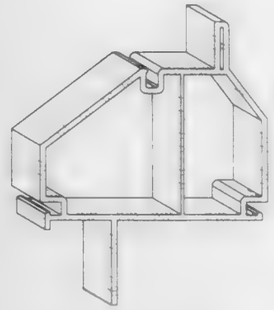
351,030
TREE CLIMBER
Michael K. Laughlin; Jerry K. Laughlin, both of Paw Paw, and Victor A. Laughlin, Gobles, all of Mich., assignors to Outback Products, Inc., Gobles, Mich.
Filed Sep. 25, 1992, Ser. No. 951,700
Term of patent 14 years
U.S. Cl. D25—69



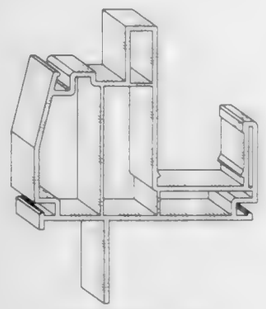
351,031
RETAINING WALL STONE
John L. Crawford; John M. Sowder, and Winnie M. G. Crawford, all of St. Louis, Mo., assignors to Infinity Stone, Inc., St. Louis, Mo.
Filed Oct. 28, 1992, Ser. No. 902
Term of patent 14 years
U.S. Cl. D25—117



351,032
WINDOW COMPONENT EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Apr. 22, 1993, Ser. No. 7,421
Term of patent 14 years
U.S. Cl. D25—124



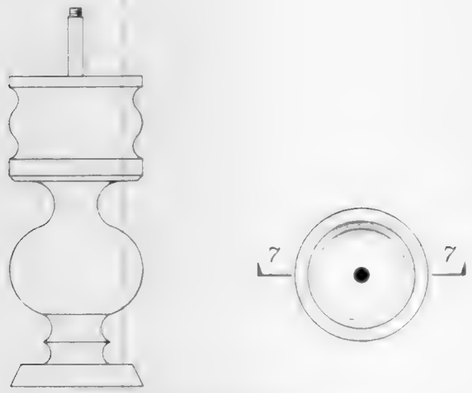
351,033
WINDOW COMPONENT EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Apr. 22, 1993, Ser. No. 7,424
Term of patent 14 years
U.S. Cl. D25—124



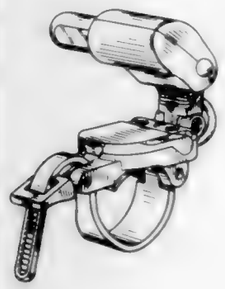
351,034
OIL LAMP
David R. Perkins, Manchester, Mass., assignor to Glass Dimensions, Inc., Essex, Mass.
Filed May 19, 1993, Ser. No. 8,509
Term of patent 14 years
U.S. Cl. D26—11



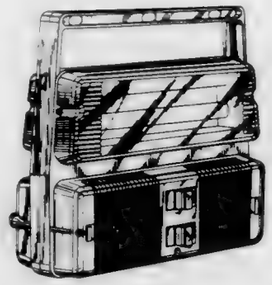
351,035
OIL LAMP
Matthew A. Dobbs, Sr., and Michelle A. Dobbs, both of 1383 Leonard Rd., Gardnerville, Nev. 89410
Filed Sep. 15, 1993, Ser. No. 12,979
Term of patent 14 years
U.S. Cl. D26—11



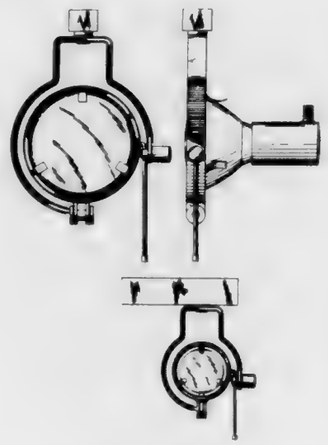
351,036
ADJUSTABLE CLIP-ON LIGHT FOR ILLUMINATING A BICYCLE SPEEDOMETER
Masao Tsushi, Osaka, Japan, assignor to Cateye Co., Ltd., Osaka, Japan
Filed Oct. 19, 1993, Ser. No. 14,337
Claims priority, application Japan, Apr. 23, 1993, 5-12190
Term of patent 14 years
U.S. Cl. D26—29



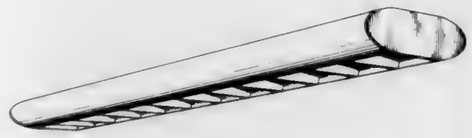
351,037
COMBINED FLASHER AND FLUORESCENT LANTERN
Tit W. Poon, Chai Wan, Hong Kong, assignor to Flying Dragon Development Limited, Chai Wan, Hong Kong
Filed Sep. 29, 1992, Ser. No. 952,777
Claims priority, application United Kingdom, Mar. 31, 1992, 2021973
Term of patent 14 years
U.S. Cl. D26—42



351,038
ADJUSTABLE TRACK LIGHT
Phillip J. Snoke; Lionel D. Gillespie, and Steven C. Gamper, all of Atlanta, Ga., assignors to Cooper Industries, Houston, Tex.
Filed Feb. 4, 1992, Ser. No. 830,244
Term of patent 14 years
U.S. Cl. D26—65



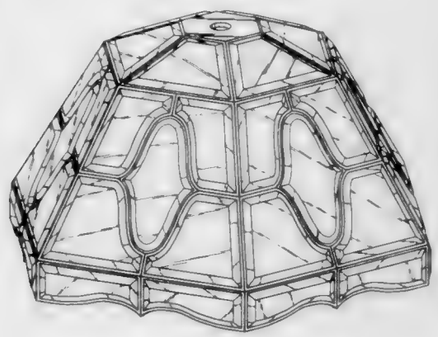
351,039
FLUORESCENT LIGHTING FIXTURE
John M. Cole, Jr., Hingham, Mass., assignor to Lite Control Corp., Hanson, Mass.
Filed Feb. 8, 1993, Ser. No. 4,530
Term of patent 14 years
U.S. Cl. D26—77



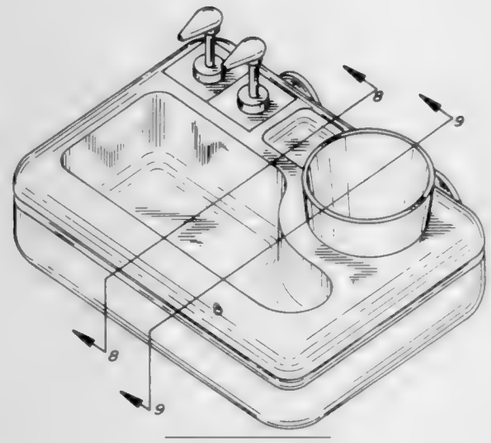
351,040
TABLE LAMP
Michael Lin, 4F1, No. 9, Lane 83 Sec. 1, Kuangfu Road, Sanc-gung, Taiwan
Filed Jan. 22, 1993, Ser. No. 3,953
Claims priority, application China, Jul. 24, 1992, 92 3 04751.4
Term of patent 14 years
U.S. Cl. D26—108



351,041
GLASS CHANDELIER SHADE
David H. Porter, Chagrin Falls, Ohio, assignor to The L.D. Kichler Co., Cleveland, Ohio
Filed May 14, 1993, Ser. No. 8,414
Term of patent 14 years
U.S. Cl. D26—130



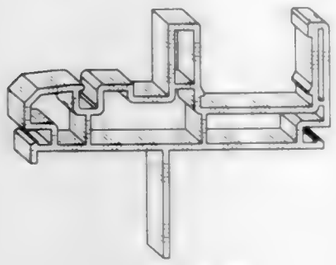
351,042
BATHING ACCESSORIES CADDY
Patricia M. Sulezich, 4049 Phoenix St., Concord, Calif. 94521
Continuation-in-part of Ser. No. 195,538, May 18, 1988, abandoned. This application Sep. 23, 1991, Ser. No. 764,373
Term of patent 14 years
U.S. Cl. D6—525



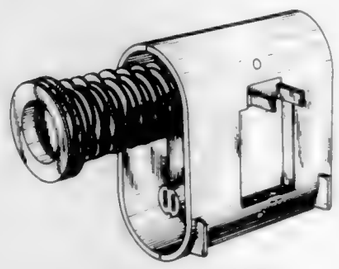
351,043
LIGHTER
Nancy D. Parker, 4401 N. Lake Rd., West Farmington, Ohio 44491, and Jimi E. Amos, 980 ½ Columbia Pl., Warren, Ohio 44484
Filed Dec. 13, 1993, Ser. No. 16,314
Term of patent 14 years
U.S. Cl. D27—154



351,044
WINDOW COMPONENT EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Apr. 22, 1993, Ser. No. 7,431
Term of patent 14 years
U.S. Cl. D25—124



351,045
COMBINED HAIR CURLER AND HEATING UNIT
Albert W. Gebhard, 2101 E. Alameda, Denver, Colo. 80209
Filed May 21, 1992, Ser. No. 886,758
Term of patent 14 years
U.S. Cl. D28—35



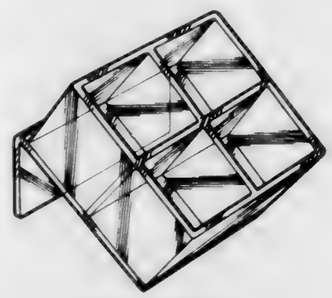
351,046
MINIATURE HAIR TRIMMER WITH RING ATTACHMENT FOR FINGER SUPPORT
James E. McCambridge, Polo, and Andrew Elston, Sterling, both of Ill., assignors to Wahl Clipper Corporation, Sterling, Ill.
Continuation-in-part of Ser. No. 661,443, Feb. 26, 1991, Pat. No. Des. 340,783. This application Jul. 13, 1992, Ser. No. 912,910
Term of patent 14 years
U.S. Cl. D28—53



351,047
DENTAL FLOSS DISPENSER
David L. Hendren, 2596 Petworth Ct., Reading, Ohio 45236
Filed Jun. 18, 1993, Ser. No. 9,754
Term of patent 14 years
U.S. Cl. D28—64



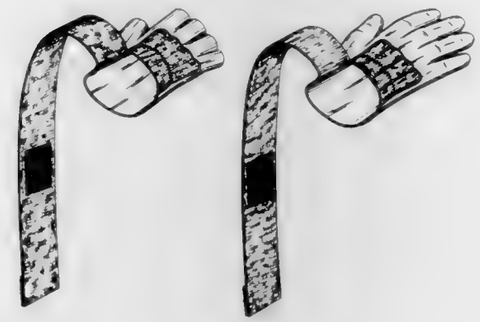
351,048
MANICURIST SUPPLY STAND
Lawrence D. Gaynor, West Bloomfield, Mich., assignor to Nailco, Inc., Livonia, Mich.
Filed Nov. 23, 1992, Ser. No. 1,756
Term of patent 14 years
U.S. Cl. D28—61



351,049
COSMETIC COMPACT ASSEMBLY
Andrea C. Schlueter, Rancho Santa Fe, Calif., assignor to Galaxy Network, Inc., Rancho Santa Fe, Calif.
Filed Dec. 22, 1992, Ser. No. 2,883
Term of patent 14 years
U.S. Cl. D28—77



351,050
SPORTS GLOVE
Dennis Sheldon, 25834 Avatar, Laguna Niguel, Calif. 92677
Filed Jun. 3, 1992, Ser. No. 893,348
Term of patent 14 years
U.S. Cl. D29—113



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF SEPTEMBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See—*
Schwab, Lawrence R., 5,350,456, Cl. 127-42.000.

A/S Roulunds Fabriker: *See—*
Rasmussen, Lars B., 5,350,619, Cl. 428-167.000.

Aaviksaar, Aavo: *See—*
Jakubke, Hans-Dieter; Schuster, Matthias; and Aaviksaar, Aavo, 5,350,682, Cl. 435-68.100.

Abb Flakt AB: *See—*
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ABB Vetco Gray Inc.: *See—*
Henderson, Herman O., Jr., 5,350,017, Cl. 166-208.000.

Abbasi, Hamid A.: *See—*
Khinkis, Mark J.; Abbasi, Hamid A.; and Cygan, David F., 5,350,293, Cl. 431-116.000.

Abbott Laboratories: *See—*
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Abe, Akira; Seki, Hiroyuki; Okada, Hisashi; and Inaba, Tadashi, to Fuji Photo Film Co., Ltd. Method for processing silver halide color photographic material containing tabular silver iodobromide grains using a processing solution having a bleaching ability containing an iron (III) complex salt. 5,350,668, Cl. 430-393.000.

Abe, Eizi; and Fukushima, Toshiharu, to Yamaha Corporation. Method for manufacturing fiber reinforced thermoplastic resin molded article. 5,350,556, Cl. 264-248.000.

Abe, Masahiro; Nanataki, Tsutomu; and Yano, Shinsuke, to NGK Insulators, Ltd. Dielectric ceramic composition containing ZNO-B203-SI02 glass, method of preparing the same, and resonator and filter using the dielectric ceramic composition. 5,350,721, Cl. 501-139.000.

Abe, Mitsutoshi: *See—*
Yoshimura, Hiroshi; Sasaki, Kazuo; Kurisu, Kenji; Fujiwara, Takuji; and Abe, Mitsutoshi, 5,349,885, Cl. 477-61.000.

Abe, Toyohiko: *See—*
Mishina, Makoto; and Abe, Toyohiko, 5,350,539, Cl. 252-299.400.

Abe, Yutaka: *See—*
Sato, Morio; Abe, Yutaka; Takano, Jun; Ishii, Hirokazu; and Murata, Yasuzo, 5,351,143, Cl. 359-51.000.

Able, Adriane H.: *See—*
Tennis, John M.; Able, Adriane H.; Coleman, Marilyn C.; Hough, Mark; and Mahon, Kaye M., 5,349,967, Cl. 128-888.000.

Abraham, Karoly C. Communications apparatus and method for transmitting and receiving multiple modulated signals over electrical lines. 5,351,272, Cl. 375-38.000.

Abukawa, Yukihiro; Takase, Hiraji; and Shinji, Yasuhisa, to Yazaki Corporation; and Isuzu Motors Limited. Connector with a protective cover. 5,350,309, Cl. 439-138.000.

Ackley, Donald E.: *See—*
Lebby, Michael S.; Shieh, Chan-Long; and Ackley, Donald E., 5,351,257, Cl. 372-46.000.

Acock, Joseph. Remotely controlled target system with optionally selectible power drives such as fluid pressure and electrical power drives. 5,350,180, Cl. 273-406.000.

Acumen Co., Ltd: *See—*
Shou-Jen, Huang, 5,350,219, Cl. 300-21.000.

Adachi, Hideo; and Ishibashi, Yoshihiro, to Olympus Optical Co., Ltd. Acoustic device. 5,351,219, Cl. 367-140.000.

Adachi, Hisahiro: *See—*
Doi, Miwako; Amano, Shin-ya; Miike, Seiji; Nogami, Hiroyasu; Kumano, Akira; Takeda, Kimihito; Adachi, Hisahiro; Iwai, Isamu; Okamoto, Toshio; Yamanaka, Noriko; and Kawada, Tsutomu, 5,351,189, Cl. 364-419.020.

Adachi, Kiyoshi, to Mitsubishi Denki Kabushiki Kaisha. Voltage change circuit for a microcomputer. 5,350,951, Cl. 307-296.400.

Adachi, Masayuki; Yamagishi, Yutaka; and Inoue, Kaori, to Horiba, Ltd. Quantitative analytical method and apparatus for determining a plurality of ingredients with spectrometric analysis. 5,351,198, Cl. 364-498.000.

Adachi, Shigeto: *See—*
Fukuyama, Hirofumi; Noguchi, Tatuya; Inoue, Kenichi; Ishibashi, Kiyotaka; and Adachi, Shigeto, 5,350,920, Cl. 250-309.000.

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Adams, John M.: *See—*
Infinger, Kenneth R.; Avers, Gregory M.; Wagner, Darrell O.; and Adams, John M., 5,350,402, Cl. 607-5.000.

Adcox, Thomas A. Method and system for compacting binary coded decimal data. 5,351,046, Cl. 341-62.000.

Adenheuer, Frank: *See—*
Deters, Ludger A.; and Adenheuer, Frank, 5,350,128, Cl. 242-35.50A.

Adler, John R.: *See—*
Sumanaweera, Thilaka S.; Glover, Gary H.; and Adler, John R., 5,351,006, Cl. 324-309.000.

Adnan, Sarmad: *See—*
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Advanced Micro Devices, Inc.: *See—*
Fulford, Henry J., Jr.; and Gardner, Mark I., 5,350,491, Cl. 156-657.000.
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Sieber, L. Aryn, 5,350,096, Cl. 224-209.000.

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Walsh, Brian J.; and Lefere, Robert M., 5,349,988, Cl. 138-107.000.

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Hayashi, Yutaka; Hamaguchi, Iwao; and Fujita, Shunsuke, 5,351,209, Cl. 365-112.000.

Aghajanian, Michael K.: *See—*
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Agwu, David E. Cleaning and storage device. 5,350,069, Cl. 206-454.000.

Ahls, Hermann W.; Kruse, Michael; and Borchers, Peter, to Otis Elevator Company. Wear resistant safety coating for people moving device treadplates. 5,350,049, Cl. 198-333.000.

Ahlstrand, Lars E.: *See—*
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Ahn, Seung H.: *See—*
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Ahuja, Deepak P.: *See—*
Beeghly, Craig W.; Ahuja, Deepak P.; Mehrotra, Pankaj K.; and Niebauer, Kenneth L., 5,350,258, Cl. 407-119.000

Aiba, Shiji: *See—*
Takeuchi, Makoto; Aiba, Shiji; Hoshina, Masatake; and Yamazaki, Minoru, 5,350,546, Cl. 264-40.100.

Aihara, Shin: *See—*
Itoh, Hisato; Oguchi, Takahisa; Aihara, Shin; and Sugimoto, Kenichi, 5,350,843, Cl. 540-138.000.

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Darwen, Stuart P.; and Cornforth, David A., 5,350,784, Cl. 523-404.000.
Famili, Amir; Vratsanos, Lori A.; and Marten, Finn L., 5,350,801, Cl. 525-59.000.

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Takeuchi, Kunihiro; Ishizuka, Hideki; and Kaneko, Hideyuki, 5,351,185, Cl. 364-184.000.

Airway Industries, Inc.: *See—*
Falloon, Thomas; and Kim, Hyun S., 5,350,046, Cl. 190-115.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Ito, Sadao, 5,350,216, Cl. 297-362.000.

Aizawa, Iwao: *See—*
Yoshioka, Atsushi; and Aizawa, Iwao, 5,351,154, Cl. 360-35.100.

Aizawa, Jyunichi: *See—*
Koike, Kiyoshi; Aizawa, Jyunichi; Nakao, Hiroshi; and Nakagawa, Kunihiko, 5,351,069, Cl. 366-76.0PH.

Akagi, Kosuke, to Osaka Gas Co., Ltd. Solid-electrolyte fuel cell system. 5,350,642, Cl. 429-32.000

Akahori, Masakazu; and Yuge, Masaaki, to Ohi Seisakusho Co., Ltd. Automotive door lock device. 5,350,206, Cl. 292-336.300.

Akasi, Osamu: *See—*
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Akazaki, Shusuke: *See—*
Hasegawa, Yusuke; Akazaki, Shusuke; Komoriya, Isao; Maki, Hidetaka; and Hirota, Toshiaki, 5,349,933, Cl. 123-486.000.

Akita, Hiroshi; Hattori, Tatsuya; Kagawa, Kazuhiro; and Kobayashi, Hiroto, to Honda Giken Kogyo Kabushiki Kaisha. Method of producing aromatic heterocyclic copolymer and molecular composite material containing same. 5,350,831, Cl. 528-337.000.

Aktiebolaget Draco: *See—*
Hallberg, Anders R.; and Tunek, Per A. S., 5,350,767, Cl. 514-562.000.
Hallberg, Anders R.; and Tunek, Per A. S., 5,350,768, Cl. 514-562.000.

Akzo N.V.: *See—*
Swope, C. Hermas; Link, John G.; and Hyman, Jones M., 5,350,697, Cl. 436-527.000

Al-Attar, Rafi A., to Chrysler Corporation. Scaling system and method for an electronic compass. 5,351,204, Cl. 364-571.030.

Albemarle Corporation: *See—*
Kumar, Govindarajulu; and Sabahi, Mahmood, 5,350,875, Cl. 560-190.000.

Albert Einstein College of Medicine of Yeshiva University: *See—*
Epstein, Adam, 5,350,388, Cl. 606-154.000.

Alberta Oil Sands Technology and Research Authority: *See—*
McKay, Alexander S., 5,350,014, Cl. 166-263.000.

Albertson, Karen M.: *See—*
Schreiner, Steven A.; Albertson, Karen M.; Brown, Mary L.; Hildebrandt, Camille M.; Hurlocker, Lacy M.; and Webster, Glenn C., 5,350,630, Cl. 428-343.000.

Alcatel Network Systems, Inc.: *See—*
McHugh, Thomas J.; Hurlocker, Claude M.; and Lemonds, Larry W., 5,351,019, Cl. 333-24.00R.
Moore, Andrew J.; Ma, David L.; Bontz, Robert L.; and Burns, Charles C., 5,351,329, Cl. 385-92.000

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Baniel, Pascal, 5,350,433, Cl. 65-388.000.

Aldridge, Lewis L.; and Sawyer, Kenneth W., to EWAL Manufacturing Company, Inc. High pressure gas fitting for repeated connection and disconnection. 5,350,205, Cl. 285-328.000.

Alferness, Clifton A.: *See—*
Adams, John M.; Alferness, Clifton A.; and Kreyenhagen, Paul E., 5,350,404, Cl. 607-5.000.

Alfred Teves GmbH: *See—*
Burgdorf, Jochen; Reinartz, Hans-Dieter; Steffes, Helmut; Ocvirk, Norbert; Volz, Peter; Weise, Lutz; Fennel, Helmut; Wupper, Hans; Bleckmann, Hans-Wilhelm; Beck, Erhard; Dinkel, Dieter; and Haupt, Karlheinz, 5,350,226, Cl. 303-116.200.
Thiel, Rudolf, 5,350,042, Cl. 188-71.900.

Alho, Timothy J.: *See—*
Wollert, Gary S.; Alho, Timothy J.; and Braun, Robert D., 5,351,002, Cl. 324-754.000.

Alidio, Raul I.; and Holter, Clinton O., to Hughes Aircraft Company. Step attenuator using pin diodes. 5,351,013, Cl. 320-284.000.

Allegheny Ludlum Corporation: *See—*
Benford, James G., 5,350,464, Cl. 148-308.000.

Allen-Bradley Company, Inc.: *See—*
Bechtel, Richard D., 5,350,908, Cl. 235-462.000.

Allen, Ray: *See—*
Salt, Tom; Drake, Rodney; and Allen, Ray, 5,351,216, Cl. 365-230.010.

Allen, Terrence C.: *See—*
Weinheimer, Jacek M.; Taylor, Michael T.; and Allen, Terrence C., 5,349,984, Cl. 137-543.210.

Alliant Techsystems Inc.: *See—*
Taylor, Michael A.; and Chambers, Steven R., 5,349,892, Cl. 86-21.000.

Allied-Signal Inc.: *See—*
Yuhas, Donald E.; Vorres, Carol L.; Groppi, David P.; and Konicek, Jiri D., 5,350,621, Cl. 428-209.000.

AlliedSignal, Inc.: *See—*
Le, Dong T., 5,350,988, Cl. 318-618.000.

Allison, Gerald R.: *See—*
Lee, Frank P.; Kao, Sheau V.; Allison, Gerald R.; Mahabadi, Hadi K.; Liebermann, Geroge; Vijayakumar, Gopalan; and Downing, Robert A., 5,350,659, Cl. 430-137.000.

Allison, Johnny H., to Ford Motor Company. Two piece switch assembly for members that move relative to one another in a fixed manner 5,350,894, Cl. 200-549.000.

Allweiler AG: *See—*
Wehling, Werner, 5,350,284, Cl. 417-474.000.

Almblade, Gary P.: *See—*
Duke, Daniel G.; Emody, Kenneth J.; and Almblade, Gary P., 5,349,825, Cl. 62-69.000.

Alpern, Marvin; and Cerwin, Robert, to Ethicon, Inc. Procedure kit and package. 5,350,060, Cl. 206-63.300.

Alphadent: *See—*
De Buck, Vincent, 5,350,301, Cl. 433-173.000.

Alpine Technology, Inc.: *See—*
Mitchell, James T.; Mitchell, James L.; and Woods, Mark A., 5,350,118, Cl. 239-551.000.

Altera Corporation: *See—*
Patel, Rakesh H., 5,350,954, Cl. 307-465.000.

Altieri, Paul A.: *See—*
LaCourse, Norman L.; Chicalo, Karen; Zallie, James P.; and Altieri, Paul A., 5,350,593, Cl. 426-615.000.

Aluminum Company of America: *See—*
Verbofsky, David W., 5,349,801, Cl. 52-518.000
Weykamp, Robert E.; and Evert, Robert P., 5,349,839, Cl. 72-296.000.

Amada Company, Limited: *See—*
Fujiwara, Takayuki; and Popp, Konrad, 5,350,347, Cl. 483-29.000.

Amano, Shin-ya: *See—*
Doi, Miwako; Amano, Shin-ya; Miike, Seiji; Nogami, Hiroyasu; Kumano, Akira; Takeda, Kimihito; Adachi, Hisahiro; Iwai, Isamu; Okamoto, Toshio; Yamanaka, Noriko; and Kawada, Tsutomu, 5,351,189, Cl. 364-419.020.

Ameen, Thomas J.; Payak, John A.; and Cangelosi, Jerome M. Method of etching polyimide. 5,350,487, Cl. 156-642.000

Amergraph Corporation: *See—*
Lesko, Robert J.; and Pitel, Ira J., 5,351,106, Cl. 355-83.000.

American Air Liquide: *See—*
Jurcik, Benjamin; Brandt, Michael; Inman, Ronald; and McAndrew, James, 5,351,120, Cl. 356-246.000.

American Cyanamid Company: *See—*
Esposito, Felix F.; Conners, John A.; Logan, Joseph N.; Dwyer, James W.; and Cramich, Laurence, 5,350,400, Cl. 606-219.000.

American Dental Technologies, Inc.: *See—*
Gallant, Ben J., 5,350,299, Cl. 433-88.000.

AMF Machinery Systems, Inc.: *See—*
Honings, Kenneth C., 5,350,290, Cl. 425-311.000.

Amgen Inc.: *See—*
Zukowski, Mark M., 5,350,690, Cl. 435-252.310.

Amico, Mark S.; Scheuer, Mark A.; Wagman, Irwin; Seeley, Dale E.; Thompson, David M.; Kelsch, Dawn M.; and Drinkwater, Wayne D., to Xerox Corporation. Dual lamp fuser. 5,350,896, Cl. 219-216.000

Amoco Corporation: *See—*
Behrens, Paul K.; Holzhauer, Juergen K.; Hussmann, Gregory P.; and Sikkenga, David L., 5,350,874, Cl. 560-80.000.

Anderson, Danford C.: *See—*
Hatchell, Peter J.; Anderson, Danford C.; and Lotto, Ronald L., 5,350,928, Cl. 250-548.000.

Anderson, James M.; Coulson, Andrew R.; Demaioribus, Vincent J.; and Nicholas, Henry T., to TRW Inc. Method of making adaptive configurable gate array by using a plurality of alignment markers. 5,350,704, Cl. 437-51.000.

Anderson, Richard N.; Hurt, Dan; Burtnett, Dave; Gaskins, Jay; and Wall, Jim, to Hunter Douglas Inc. Mehtod and apparatus for assembling blinds. 5,349,730, Cl. 29-24.500.

Anderson, Smity A.: *See—*
Mawhinney, James G.; and Anderson, Smity A., 5,350,030, Cl. 180-19.300.

Andersson, Roland, to Saab Automobile Aktiebolag. Distributor device for a ventilation system in a vehicle. 5,350,335, Cl. 454-121.000.

Andert, Gary W.; Botts, Rollin D.; and Shea, Andrew J., to Sico Incorporated. Multi-level folding stage. 5,349,789, Cl. 52-7.000.

Andriollo, Nunzio; Cassani, Giorgio; D'Olimpio, Paolo; Donno, Bruno; and Ricci, Marco, to Eniricerche, S.p.A. Process for separating catalysts from organic solutions, by means of semipermeable membranes. 5,350,521, Cl. 210-653.000.

Anger, Bernd: *See—*
Madaus, Batto; Antony, Horst; Anger, Bernd; and Thiele, Paul, 5,351,061, Cl. 343-840.000.

Angerstein, Jorg; Giebler, Siegfried; Mistele, Thomas; Schairer, Werner; and Scheidle, Helmut, to Temic Telefunken microelectronic GmbH. Semiconductor assembly, in particular a remote control reception module. 5,350,943, Cl. 257-659.000.

Anno, Masahiro; and Kobayashi, Makoto, to Minolta Camera Kabushiki Kaisha. Toner for developing electrostatic latent image. 5,350,657, Cl. 430-111.000.

Anquetil, Jerome; and Dauger, Alain, to Degussa Aktiengesellschaft. Glass frits, a process for their production and their use in enamel barrier layers for stopping the migration of silver. 5,350,718, Cl. 501-21.000.

Anthony, Frank H. Method and apparatus for sterilization and separation of plastic and non-plastic medical wastes. 5,350,562, Cl. 422-1.000.

Anthony, Thomas R.; and Fleischer, James F., to General Electric Company. Free standing diamond sheet and method and apparatus for making same. 5,349,922, Cl. 117-204.000.

Anton, Joseph G.; Frederickson, Dale W.; and Rasmussen, Glenn O., to Pillsbury Company, The. Slicing guide marker. 5,349,759, Cl. 33-524.000.

Antoniades, Michael G., to Eastman Kodak Company. Method for optimizing tabular grain population of silver halide photographic emulsions. 5,350,652, Cl. 430-30.000.

Antony, Horst: *See—*
Madaus, Batto; Antony, Horst; Anger, Bernd; and Thiele, Paul, 5,351,061, Cl. 343-840.000.

AOC, Inc.: *See—*
Tsimerman, Alexandre, 5,349,829, Cl. 62-314.000.

Aoki, Satoshi, to Matsushita Electric Industrial Co., Ltd. Load supporting apparatus. 5,350,151, Cl. 248-615.000.

Aoki, Yoshiaki: *See—*
Kondo, Fumio; Aoki, Yoshiaki; Imaida, Tsuyoshi; Nozoe, Hiroki; Maki, Yuji; and Watabe, Shin, 5,350,337, Cl. 454-189.000.

Aoshima, Shinichiro; and Hirano, Isuke, to Hamamatsu Photonics K.K. Light pulse intensity regenerator, light tranforming repeater, preamplifier for light signal, light intensity change measuring apparatus, and stabilized light source. 5,350,913, Cl. 250-205.000.

Aoyama, Takashi; and Misawa, Yutaka, to Hitachi, Ltd. Analytical electron microscope and a method of operating such an electron microscope. 5,350,921, Cl. 250-311.000.

Apicella, Anthony: *See—*
Wood, Christopher H.; Hajjar, Fares; Apicella, Anthony; and Matthews, Kevin E., 5,351,305, Cl. 382-6.000.

Apogee Medical Products, Inc.: *See—*
Bonutti, Peter M., 5,349,956, Cl. 128-653.100.

Applied Materials, Inc.: *See—*
Collins, Kenneth S.; Trow, John R.; Tsui, Joshua C. W.; Roderick, Craig A.; Bright, Nicolas J.; Marks, Jeffrey; and Ishikawa, Tetsuya, 5,350,479, Cl. 156-345.000.
Webb, Elaine A., 5,350,488, Cl. 156-643.000.

APR Applied Pharma Research S.A.: *See—*
Vecchi, Giuseppe, 5,350,850, Cl. 544-258.000.

Aqua-10 Corporation: *See—*
Campbell, William E., 5,350,588, Cl. 426-431.000.

Arai, Yoneaki: *See—*
Kashio, Yukio; and Arai, Yoneaki, 5,350,881, Cl. 84-622.000.

Arch Environmental Equipment, Inc.: *See—*
Archer, Neil, 5,350,053, Cl. 198-525.000.

Archer, Neil, to Arch Environmental Equipment, Inc. Belt conveyor input station. 5,350,053, Cl. 198-525.000.

Arma-Lok Pty Ltd.: *See—*
Stamatopoulos, Michael; and Silverio, George, 5,350,070, Cl. 211-64.000.

Armand, Michel; Sanchez, Jean-Yves; and Deroo, Daniel, to Centre National de la Recherche Scientifique; and Hydro-Quebec. Ionically conductive polymeric materials. 5,350,646, Cl. 429-192.000.

Armstrong, Gordon P.: *See—*
McFarland, Roger A.; and Armstrong, Gordon P., 5,350,603, Cl. 427-470.000.

Armstrong, Jerrold E. A. Surgical cutting guide. 5,350,382, Cl. 606-87.000.

Armstrong World Industries, Inc.: *See—*
Nute, Ernest B., Jr., 5,349,803, Cl. 52-573.100.

Arnold, Finn: *See—*
Kamen, Dean L.; Seale, Joseph B.; Briggs, Joseph; and Arnold, Finn, 5,349,852, Cl. 73-149.000.

Arnold, Kurt; Hauck, Wolfgang; Klein, Reiner; Mertel, Bernhard; Walther, Karl-Heinz; and Zinssmeister, Horst, to G.M. Aktiengesellschaft. Process and device for monitoring the bobbin thread on stitch-forming machines. 5,350,127, Cl. 242-20.000.

Arthrex, Inc.: *See—*
Schmieding, Reinhold; and Grafton, Donald, 5,350,383, Cl. 606-96.000.

Asahi Denka Kogyo K.K.: *See—*
Tsuchiya, Hiroshi; Kokura, Makoto; Ozawa, Yutaka; and Sugimura, Takaaki, 5,350,809, Cl. 525-356.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Hirai, Isamu, 5,351,105, Cl. 354-402.000.
Iketani, Kouhei, 5,350,995, Cl. 320-15.000.
Nakatsue, Takehiro, 5,351,119, Cl. 356-124.000.

Asaka, Toshifumi; Misawa, Yoko; Kashimura, Masato; Morimoto, Shigeo; Watanabe, Yoshiaki; and Hatayama, Katsuo, to Taisho Pharmaceutical Co., Ltd. 2'-position modified compound of erythromycin or its derivative. 5,350,839, Cl. 536-7.400.

Asea Brown Boveri Ltd.: *See—*
Strebel, Eduard, 5,351,267, Cl. 373-105.000.

Ashi, Yoshihiro; Nakano, Yukio; and Takeda, Kenji, to Hitachi, Ltd.; and Hitachi Communication System Inc. Method of controlling a frame phase of a time-division switch and frame phase variable time-division switch. 5,351,238, Cl. 370-66.000.

Ashida, Eiji: *See—*
Kawabe, Takashi; Ashida, Eiji; Fuyama, Moriaki; Iwakura, Tadayuki; Fukui, Hiroshi; Tsuji, Yoshikazu; Kuwatsuka, Shunichiro; Saito, Harunobu; Hagiwara, Yoshiki; Takemoto, Issei; and Fujisawa, Masayasu, 5,349,745, Cl. 29-603.000.

Aspect International, Inc.: *See—*
Gray, David C., 5,350,480, Cl. 156-345.000.

Associated Enterprises, Inc.: *See—*
Leach, Eddie D.; and Leach, Marjorie E., 5,351,008, Cl. 324-557.000.

Astarita, Thomas A.: *See—*
Bendel, Lee P.; Sardelis, Timothy A.; Stungurys, Leon K.; and Astarita, Thomas A., 5,350,419, Cl. 607-132.000.

Aston, Walter J., to Yale Securtiy Products Limited. Lock, key and combination of lock and key. 5,351,042, Cl. 340-825.310.

AT/COMM Incorporated: *See—*
Hassett, John J., 5,351,187, Cl. 364-401.000.

AT&T Bell Laboratories: *See—*
Chan, Vincent W. S.; Gallager, Robert G.; Kirby, Alan J.; and Saleh, Adel A. M., 5,351,146, Cl. 359-118.000.
Fox, David S.; Jagadish, Hosagrahar V.; O'Gorman, Lawrence; and Story, Guy A., 5,350,303, Cl. 434-118.000.
Grader, Gideon S.; Johnson, David W., Jr.; Roy, Apurba; and Thomson, John, Jr., 5,349,743, Cl. 29-602.100
Lanzerotti, Louis D.; McCall, Samuel L.; and Yurke, Bernard, 5,351,261, Cl. 372-98.000.
Pawelski, Robert L., 5,351,236, Cl. 370-58.100.

Atkins, George. Retraction locking device for restraining belt. 5,350,196, Cl. 280-808.000.

Atkinson, David P.: *See—*
Attree, Russell C.; Attree, Julian; and Atkinson, David P., 5,351,172, Cl. 362-92.000.

Atlantic Promotions Inc.: *See—*
Primeau, Mario, 5,349,720, Cl. 15-262.000.

Atlantic Richfield Company: *See—*
Freymeyer, Douglas A.; Holloway, Richard L.; Kiracofe, Ronald J.; and Sampath, Vijay R., 5,350,503, Cl. 208-131.000.
Thornton, Willie H., Jr., 5,350,016, Cl. 166-120.000.

Attree, Julian: *See—*
Attree, Russell C.; Attree, Julian; and Atkinson, David P., 5,351,172, Cl. 362-92.000.

Attree, Russell C.; Attree, Julian; and Atkinson, David P. Back-lighted display panel for coolers. 5,351,172, Cl. 362-92.000

Atwal, Karnail S.: *See—*
Poss, Michael A.; Lloyd, John; and Atwal, Karnail S., 5,350,752, Cl. 514-259.000.

Atwell, Robert J., Jr., to Chrysler Corporation. Vehicle wheel with balance weights. 5,350,220, Cl. 301-5.210.

Audenaert, Frans: *See—*
Smith, Richard S.; and Audenaert, Frans, 5,350,795, Cl. 524-507.000.

Augat Inc.: *See—*
DelPrete, Stephen D.; and Santos, Donald, 5,350,306, Cl. 439-69.000.

Augustine Medical, Inc.: *See—*
Augustine, Scott D., 5,350,417, Cl. 607-104.000.

Augustine, Scott D., to Augustine Medical, Inc. Convective thermal blanket. 5,350,417, Cl. 607-104.000.

Aura Systems, Inc.: *See—*
Morinigo, Fernando B.; Blaire, William C.; and Bulgatz, Dennis, 5,350,153, Cl. 251-129.160.

Aust, Norbert: *See—*
Schmid, Norbert; and Aust, Norbert, 5,350,274, Cl. 415-55.100.

Austermann, Ralf; and van der Broeck, Heinz, to U.S. Philips Corporation. Circuit arrangement for commutating a reluctance motor. 5,350,990, Cl. 318-701.000.

Automated Medical Instruments, Inc.: *See—*
Sklar, Martin J., 5,350,355, Cl. 604-23.000.

Avco Corporation: *See—*
Larsen, Donald E., Jr.; Bhowal, Prabir R.; and Merrick, Howard F., 5,350,466, Cl. 148-421.000.
Stickler, David B.; Swallom, Daniel W.; Reich, Judith E.; Goldfarb, Victor M.; and Sadovnik, Isaac, 5,349,811, Cl. 60-39.060.

Avers, Gregory M.: *See—*
Infinger, Kenneth R.; Avers, Gregory M.; Wagner, Darrell O.; and Adams, John M., 5,350,402, Cl. 607-5.000.

Avery-Dennison Corporation: *See—*
Yager, Joseph C.; and Schuster, John D., 5,350,483, Cl. 156-571.000.

Awa, Takao: *See—*
Ohishi, Yoshitaka; Tamura, Makoto; Hayashida, Mitsuo; Ikegami, Satoru; Hiyama, Yoshiyuki; Awa, Takao; Ichikawa, Kiyonoshin; Nomiyama, Kiyoshi; Hanada, Keigo; and Mimura, Mitsuo, 5,350,743, Cl. 514-89.000.

Aydin, Oral; Portugall, Michael; Neutzner, Josef; and Maechtle, Walter, to BASF Aktiengesellschaft. Aqueous polymer dispersion. 5,350,787, Cl. 524-162.000.

Ayling, June E.: *See—*
Bailey, Steven W.; and Ayling, June E., 5,350,851, Cl. 544-258.000

Azad, Ahmed A.; Jagadish, Mittur N.; and Fahey, Kevin J., to Commonwealth Scientific and Industrial Research Organisation. IBDV VP2 epitope recognized by virus neutralizing and protective monoclonal antibodies. 5,350,575, Cl. 424-192.100.

Azuhata, Shigeru: *See—*
Taniguchi, Masayuki; Kobayashi, Hironobu; Narato, Kiyoshi; Murakami, Tadayoshi; Azuhata, Shigeru; Kuroda, Michio; and Hayashi, Noriyuki, 5,349,812, Cl. 60-39.230.

Azuma, Jun: *See—*
Kato, Masatoshi; Tobo, Yozo; Ichikawa, Fumio; Azuma, Jun; and Uemura, Hideaki, 5,351,264, Cl. 372-107.000.

Azuma, Yusaku; Ishihara, Katsumi; and Shibata, Masaru, to Canon Kabushiki Kaisha. Work pick-up apparatus. 5,350,269, Cl. 414-416.000.

Baba, Shigeki: *See—*
Maruyama, Shigeru; Shimasaki, Yuichi; Kanehiro, Masaki; Ishioka, Takuji; Baba, Shigeki; and Hisaki, Takashi, 5,349,930, Cl. 123-143.00C.

Bach, Volker; Brox, Wolfgang; Etzbach, Karl-Heinz; Paul, Axel; and Siemensmeyer, Karl, to BASF Aktiengesellschaft. Optically active phenoxypropionic esters. 5,350,873, Cl. 560-60.000.

Bae, Youn S. Magnetic induction method and magnetic circuit of rotator for generating mechanical and electric power. 5,350,991, Cl. 318-727.000.

Baer, Thomas M.; Cox, Kelly A.; Gooding, Phillip; Cole, John; Head, David F.; and Kintz, Gregory J., to Spectra-Physics Laser Diode Systems. Solid-state laser fourier-transform raman spectrometer. 5,351,121, Cl. 356-301.000.

Bahmatyuk, Bogdan P.: *See—*
Grigortchak, Ivan I.; Tovstjuk, Kornei D.; Kovalyuk, Zahar D.; Kozmik, Ivan D.; and Bahmatyuk, Bogdan P., 5,351,164, Cl. 361-502.000.

Bailey, Steven W.; and Ayling, June E., to South Alabama Medical Science Foundation. Intermediates and a process for synthesis of tetrahydropteridine C6-stereoisomers, including (6S)-tetrahydrofolate and N5-formyl-(6S)-tetrahydrofolate. 5,350,851, Cl. 544-258.000.

Baines, W. Douglas: *See—*
Newhouse, Michael T.; and Baines, W. Douglas, 5,349,947, Cl 128-203.210.

Bair, Keith A.: *See—*
Chen, Fu; Bair, Keith A.; and Boyette, Scott M., 5,350,536, Cl. 252-180.000.

Baker, Richard W.: *See—*
Kaschemekat, Jurgen; and Baker, Richard W., 5,350,519, Cl. 210-640.000.

Baldus, Hans-Dieter: *See—*
Lohnherr, Ludger; Pingel, Herbert; Kimmeyer, Ludger; and Baldus, Hans-Dieter, 5,350,124, Cl. 241-119.000.

Bales, Thomas O.; Gottlieb, Saul; Kortenbach, Jurgen A.; Ryan, Dana W.; Smith, Kevin W.; and Solar, Matthew S., to Symbiosis Corporation. Endoscopic suction-irrigation instrument with insertable probe lockable in partially withdraw position. 5,350,356, Cl. 604-27.000.

Balint, Janos: *See*—
Toth, Gyorgy; Balint, Janos; Elek n/e, Klara, cu/e/ e Herczik; Moricz nee Garai, Zsuzsanna; and Mudra nee Kantor, Eva, 5,350,872, Cl. 560-55.000.

Ballentine, Michael W.. *See*—
Nagengast, William E.; McMahan, David R.; Wisler, Jan A.; Mateos, Luis A.; and Ballentine, Michael W., 5,351,170, Cl. 362-66.000.

Bambara, John D.; and Glydon, Jon A., to Earth & Ocean Sports, Inc. Method of preparing a cross-linked, polyethylene foam product by surface expansion of a foam. 5,350,544, Cl. 264-25.000.

Ban, Masuo: *See*—
Hitomi, Yasuhiro; Sakaguchi, Noboru; and Ban, Masuo, 5,350,130, Cl. 242-241.000

Bando Chemical Industries, Ltd.: *See*—
Taniguchi, Toshiharu; and Ueda, Takaaki, 5,350,981, Cl. 318-7.000.

Bando, Yoshichika: *See*—
Takada, Toshio; Terashima, Takahito; Iijima, Kenji; Yamamoto, Kazunuki; Hirata, Kazuto; and Bando, Yoshichika, 5,350,606, Cl. 427-564.000.

Baniel, Pascal, to Alcatel N.V. Method of manufacturing a cylindrical part from glass, especially from fluorinated glass by maintaining a thin gaseous film around the cylinder. 5,350,433, Cl. 65-388.000.

Baresel, Detlef: *See*—
Huth, Gerhard; and Baresel, Detlef, 5,351,029, Cl. 338-34.000

Barglof, Dale L.: *See*—
Ripley, Brian D.; Boston, James L.; Luehrmann, Edward G.; and Barglof, Dale L., 5,350,140, Cl. 248-27.100.

Barker, Nicholas J.: *See*—
Leveson, Richard C.; Laslavic, John D.; and Barker, Nicholas J., 5,350,565, Cl. 422-64.000.

Barmag, AG: *See*—
Deters, Ludger A.; and Adenheuer, Frank, 5,350,128, Cl. 242-35.50A.
Lorenz, Hellmut, 5,349,808, Cl. 57-339.000.

Barnett, Robert B.; and Wisniewski, Stanley J., to Sea-Land Service, Inc. Apparatus for securing shore crane spreaders to auxiliary frames. 5,350,210, Cl. 294-81.530.

Baron, Jacques: *See*—
Joly, Jean-Francois; Caullet, Philippe; Faust, Anne-Catherin; Baron, Jacques; and Guth, Jean-Louis, 5,350,722, Cl. 502-64.000.

Barraclough, Keith G.; and Series, Robert W., to United Kingdom of Great Britain and Northern Ireland, Her Majesty the Queen in right of Canada, as represented by The Secretary of State for Defence in Her Britannic Majesty's Government of the. Growing semiconductor crystalline materials. 5,349,921, Cl. 117-13.000.

Barron, Thomas D.: *See*—
Hillenbrand, Christopher F.; Barron, Thomas D.; and Nugent, David M., 5,349,916, Cl. 114-312.000.

Barton, James S.; Borthwick, William K. D.; Harvey, David; Jones, Julian D. C.; and McBride, Roy. Velocimeters. 5,351,116, Cl. 356-28.500.

Bartz, Robert. Underwater light scattering sensor. 5,350,922, Cl. 260-388.500.

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Aydin, Oral; Portugall, Michael; Neutzner, Josef; and Maechtle, Walter, 5,350,787, Cl. 524-162.000.
Bach, Volker; Brox, Wolfgang; Etzbach, Karl-Heinz; Paul, Axel; and Siemensmeyer, Karl, 5,350,873, Cl. 560-60.000
Besecke, Siegmund; Deckers, Andreas; and Lauke, Harald, 5,350,808, Cl. 525-330.500.
Fuchs, Hugo; Neubauer, Gerald; and Priester, Claus-Ulrich, 5,350,847, Cl. 540-540.000.
Haeberle, Karl; Bauer, Gerhard; and Maempel, Lothar, 5,350,823, Cl. 526-301.000.
Kuekenhoehner, Thomas; Goetz, Norbert; Fischer, Rolf; Schnurr, Werner; and Borchers, Dirk, 5,350,863, Cl. 549-323.000.
Mohr, Juergen; Oppenlaender, Knut; Franz, Lothar; Schreyer, Peter; and Thomas, Juergen, 5,350,429, Cl. 44-412.000.
Schmitt, Michael, 5,350,853, Cl. 544-339.000
Schweikert, Loni; and Sambale, Clemens, 5,350,773, Cl. 514-763.000.

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Blum, Rainer; Haehnle, Hans-Joachim; and Hoffmann, Gerhard, 5,350,663, Cl. 430-330.000.

BASF Lacke+Farben Aktiengesellschaft: *See*—
Huemke, Klaus; Faul, Dieter; and Hoffmann, Gerhard, 5,350,636, Cl. 428-418.000

BASF Magnetics GmbH: *See*—
Schoettle, Klaus; Eberhard, Joachim; Schmidts, Kurt; and Pavelka, Bozidar, 5,351,160, Cl. 242-347.200.

Bassignana, Isabella C.; and Kovats, Tibor F. I., to Northern Telecom Limited. Apparatus for use with analytical measuring instruments using electromagnetic radiation analysis methods. 5,350,923, Cl 250-453.110.

Basta, Joseph C.: *See*—
Weaver, Robert J.; Brittingham, Dennis C.; Basta, Joseph C.; and Daynes, John C., 5,350,317, Cl. 439-500.000.

Bates, David A.: *See*—
Kornrumpf, William P.; and Bates, David A., 5,351,001, Cl. 324-158.100.

Battelle Memorial Institute: *See*—
Thomas, David L.; and Legue, Ronald L., 5,349,915, Cl 114-124.000

Bauer, Fred P.: *See*—
Sanders, Stuart E.; and Bauer, Fred P., 5,350,292, Cl. 439-733.000.
Van Wagener, Raymond H.; Kulka, Robert A.; Hoogmoed, Richard; Sanders, Stuart E.; and Bauer, Fred P., 5,350,316, Cl. 439-460.000.

Bauer, Gerhard: *See*—
Haeberle, Karl; Bauer, Gerhard; and Maempel, Lothar, 5,350,823, Cl. 526-301.000.

Bauer, Harry J.; and Golebiewski, Ronald T., to General Motors Corporation. Temperature compensated magnetoresistive position sensor. 5,351,003, Cl. 324-207.120.

Baumgartner, Walter; and Hamann, Dieter, to D.A.M. Deutsche Angelgerate Manufaktur Hellmuth Kuntze GmbH & Co. KG. Fishing reels with a spool receiving the fishing line. 5,350,131, Cl. 242-242.000.

Baxter Diagnostics Inc.: *See*—
Mazza, John C.; Stark, William A.; Scribner, Richard A.; Frye, Stephen L.; and Hardiman, Kempton H., 5,350,564, Cl. 422-63.000.

Baxter International Inc.: *See*—
Cosgrove, Delos M.; and Nguyen, Than, 5,350,420, Cl. 623-2.000.

Bayer Aktiengesellschaft: *See*—
Fischer, Reiner; Uhr, Hermann; Widdig, Arno; Dutzmann, Stefan; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; and Schaller, Klaus, 5,350,861, Cl. 548-544.000.
Konig, Eberhard; Casselmann, Holger; Kobelka, Frank; and Foster, Keith-Allen, 5,350,825, Cl. 528-45.000.
Liman, Ulrich; Grammes, Hartwig; Wegener, Dirk; and Kaiser, Manuel, 5,350,781, Cl. 521-174.000
Schnalke, Karl-Erwin; Heinrich, Josef; and Doring, Fritz, 5,350,865, Cl. 549-434.000.
Wagner, Paul; Buysch, Hans-Josef; Klausener, Alexander; Mais, Franz-Josef; and Mendoza-Frohn, Christine, 5,350,862, Cl. 549-230.000.
Welte, Rainer; and Scholl, Hans J., 5,350,780, Cl. 521-173.000.

Bayes, Ronald C., to Weldform Components Limited. Cavity tray. 5,349,792, Cl. 52-62.000.

Bayne, Gerald A. Antenna. 5,351,060, Cl. 343-766.000.

Beall, George H.; Chyung, Kenneth; and Taylor, Mark P., to Corning Incorporated. Fiber-reinforced composites. 5,350,716, Cl. 501-5.000.

Bear, Michael. Woodworking square having multiple uses. 5,349,758, Cl. 33-417.000.

Beard, Vernon D.: *See*—
Ozarowski, Ryszard S.; Hand, Barry D.; Novack, Robert C.; Beard, Vernon D., Threlkeld, James O.; and Sutton, William T., 5,349,983, Cl. 137-487.500.

Beatreme Foods Inc.: *See*—
McCarthy, Anthony J.; and Maegli, Jack W., 5,350,590, Cl. 426-549.000.

Bechdolt, C. Park: *See*—
Hull, Harold L.; Hammer, Dick; and Bechdolt, C. Park, 5,350,186, Cl. 280-480.100.

Bechtel, Richard D., to Allen-Bradley Company, Inc. Automatic gain control circuit having disturbance cancellation capabilities. 5,350,908, Cl. 235-462.000.

Beck, Erhard: *See*—
Burgdorf, Jochen; Reinartz, Hans-Dieter; Steffes, Helmut; Ocvirk, Norbert; Volz, Peter; Weise, Lutz; Fennel, Helmut; Wupper, Hans; Bleckmann, Hans-Wilhelm; Beck, Erhard; Dinkel, Dieter; and Haupt, Karlheinz, 5,350,226, Cl. 303-116.200.

Becker, Kurt J.: *See*—
Rocazella, Michael A.; Becker, Kurt J.; and Aghajanian, Michael K., 5,350,004, Cl. 164-97.000.

Beckett Corporation: *See*—
Stern, Michael D.; Dudley, Stephen G.; and Reschenberg, Dale D., 5,350,612, Cl. 428-40.000

Beckley, Charles G.: *See*—
Steppan, David D.; Slack, William E.; and Beckley, Charles G., 5,350,778, Cl. 521-159.000.

Beckmann, Otto; Loidl, Helmut; and Petraschek, Ernst, to Semperit Reifen Aktiengesellschaft. Tire having a tread surface with fine cut-outs at the tire tread surface. 5,350,001, Cl. 152-209.00R.

Becton, Dickinson and Company: *See*—
Boenisch, Michael T.; and Sullivan, Erica A., 5,350,674, Cl. 435-7.800.

Beeghly, Craig W.; Ahuja, Deepak P.; Mehrotra, Pankaj K.; and Niebauer, Kenneth L., to Kennametal Inc. Ceramic cutting tool with chip control. 5,350,258, Cl. 407-119.000.

Beetles, Keith; and Fulford, David, to Lexsuco Canada Limited. Roof pipe entry hatch. 5,349,790, Cl. 52-19.000.

Beever, William H.: *See*—
Yu, Michael C.; and Beever, William H., 5,350,806, Cl. 525-189.000.

Begemann, Malcolm J. S.: *See*—
Stoop, Gustaaf A.; Begemann, Malcolm J. S.; van der Veen, Johannes; and Filipovich, Marcus O., 5,350,409, Cl. 607-17.000.

Behlen, Frederick M., to Laboratory Automation, Inc. Data decoding method and apparatus. 5,351,047, Cl. 341-67.000.

Behrens, Paul K.; Holzhauer, Juergen K.; Hussmann, Gregory P.; and Sikkenga, David L., to Amoco Corporation. Process for preparing diesters of naphthalenedicarboxylic acids. 5,350,874, Cl. 560-80.000.

Beierle, John D.; and Ortel, William C. G., to Nynex Corporation. System for integrated distribution of switched voice and television on coaxial cable. 5,351,234, Cl. 370-49.500.

Beihoff, Bruce C.: *See*—
Juds, Mark A.; Beihoff, Bruce C.; Smith, Richard G.; Nelson, William R.; Wycklendt, Daniel A.; Theisen, Peter J.; Hastings, Jerome K.; and Moldovan, Peter K., 5,351,024, Cl. 335-16.000.

Bekkering, Mark W., to Benteler Industries, Inc. Air gap manifold port flange connection. 5,349,817, Cl. 60-322.000.

Bell Communications Research, Inc.: *See*—
Bhattacharyya, Ranendra K.; Feustel, Timothy C.; and Kluepfel, Henry M., 5,351,287, Cl. 379-95.000.
Frenkel, Anatoly, 5,351,147, Cl. 359-124.000.
Nici, Richard J., 5,351,286, Cl. 379-94.000.
Poguntke, Kai R.; and Soole, Julian B. D., 5,351,262, Cl. 372-102.000.

Belley, Michel: *See*—
LaBelle, Mark; Xiang, Yibin; Dufresne, Claude; and Belley, Michel, 5,350,760, Cl. 514-367.000.

Belli, Remo D., to Remo, Inc. Convertible drumhead. 5,349,891, Cl. 84-411.00R.

Beltran, Patricio H. Packaging system. 5,350,067, Cl. 206-440.000.

Bemis Manufacturing Company: *See*—
Bemis, Peter F.; and Otte, Timothy J., 5,350,057, Cl. 206-44.00R.

Bemis, Peter F.; and Otte, Timothy J., to Bemis Manufacturing Company. Display device. 5,350,057, Cl. 206-44.00R.

Ben-David, Daniel: *See*—
Colella, Gregory M.; Ben-David, Daniel; Cupo, Albert; Fan, Sophie S.; Fischer, Gena; Martin, Grace E.; and Ornstein, Leonard, 5,350,695, Cl. 436-63.000.

Ben-Dror, Michael, to Paskal Avizarey Kshira Ltd. Adjustable clasp for suspending plants. 5,349,779, Cl. 47-44.000.

Bendel, Lee P.; Sardelis, Timothy A.; Stungurys, Leon K.; and Astarita, Thomas A., to Ethicon, Inc. Cardiac pacing lead. 5,350,419, Cl. 607-132.000.

Benedit del Burgo, Juan A.: *See*—
Bullon Camarasa, Francisco J.; Ropero Beltran, Juan J.; and Benedit del Burgo, Juan A., 5,351,266, Cl. 373-89.000.

Benford, James G., to Allegheny Ludlum Corporation. Silicon steel strip having mechanically refined magnetic domain wall spacings and method for producing the same. 5,350,464, Cl. 148-308.000.

Benincasa, Ronald M., to United States of America, National Security Agency. Authenticator circuit. 5,351,301, Cl. 380-50.000.

Benishin, Christine G.: *See*—
Pang, Peter K. T.; Lewanczuk, Richard Z.; and Benishin, Christine G., 5,350,771, Cl. 514-643.000.

Bennett, Norman T.: *See*—
Evans, Ernest B., Jr.; Fulk, Hines E., Jr.; Bennett, Norman T.; and Wilkerson, Dana R., 5,350,149, Cl. 248-523.000.

Benteler Industries, Inc.: *See*—
Bekkering, Mark W., 5,349,817, Cl. 60-322.000.

Berdan, Clarke, II, to Owens-Corning Fiberglas Technology Inc. Cartwheelable shipping package for insulation. 5,350,063, Cl. 206-321.000.

Berger, Horst; Krippendorf, Tido; and Politze, Heiner, to Esser Sicherheitstechnik GmbH. Fire detector. 5,351,034, Cl. 340-577.000.

Bergman, Frederick C.: *See*—
Daniel, Edward A.; and Bergman, Frederick C., 5,349,902, Cl. 100-48.000.

Bergstresser, William A.: *See*—
Stiehl, Mark A.; Sisto, Eugene; Bergstresser, William A.; and Vacek, Ronald R., 5,350,367, Cl. 604-232.000.

Bergstrom, John S., to Siemens Automotive L.P. Clad metal orifice disk for fuel injectors. 5,350,119, Cl. 239-585.400.

Bernardo, Richard G. Apparatus for positioning, latching and locking a retractable truck bed cover. 5,350,213, Cl. 296-98.000.

Bernecker, Otto, to GAO Gesellschaft fur Automation und Organisation mbH. Recording medium with colored picture information, in particular a check card or identity card. 5,350,198, Cl. 283-77.000.

Bernstein, Jonathan J.; and Weinberg, Marc S., to Charles Stark Draper Laboratory, Inc., The. Comb drive micromechanical tuning fork gyro. 5,349,855, Cl. 73-505.000.

Berrebi, Georges: *See*—
Cameron, Charles; Courty, Philippe; Berrebi, Georges; Roumieu, Raymond; Rabehasaina, Hans; and Eschard, Francois, 5,350,728, Cl. 502-415.000.

Berry, Dennis R.; Dantzig, Anne H.; Debono, Manuel; Hamill, Robert; Molloy, R. Michael; and Yao, Raymond C., to Eli Lilly and Company. A87689 compounds employed as a phospholipase A_2 (PLA_2) inhibitor to treat inflammatory diseases. 5,350,579, Cl. 424-122.000.

Besecke, Siegmund; Deckers, Andreas; and Lauke, Harald, to BASF Aktiengesellschaft. Poly(meth)acrylimides with different n-substitutes. 5,350,808, Cl. 525-330.500.

Besnard, Marie-Madeleine; David, Claire; and Knipper, Magali, to Rhone-Poulenc Chimie. Mixed polysaccharide precipitating agents and insulating articles shaped therefrom. 5,350,524, Cl. 210-728.000.

Bespak PLC: *See*—
Cater, Miro S., 5,350,116, Cl. 239-333.000.

Bessho, Goroh; and Tachikawa, Michiyoshi, to Ricoh Company, Ltd. Binarization method. 5,351,313, Cl. 382-51.000.

Bethlehem Steel Corporation: *See*—
Hoffman, Carvel D.; Romberger, Charles J.; Ellinger, Hunter; Stephens, Thomas W.; and Savage, Richard D., 5,351,203, Cl. 364-560.000.

Bettle, Griscom, III: *See*—
Potts, Jo Lee B.; Miller, Joann H.; Hodge, Marvin W.; and Bettle, Griscom, III, 5,350,078, Cl. 215-100.00A.

Betz Laboratories, Inc.: *See*—
Chen, Fu; Bair, Keith A.; and Boyette, Scott M., 5,350,536, Cl. 252-180.000.

Bhadra, Amal K. Control of odor and septicity and purification of sewage and wastewater. 5,350,516, Cl. 210-602.000.

Bhattacharyya, Ranendra K.; Feustel, Timothy C.; and Kluepfel, Henry M., to Bell Communications Research, Inc. Method and apparatus for data evidence collection. 5,351,287, Cl. 379-95.000.

Bhowal, Prabir R.: *See*—
Larsen, Donald E., Jr.; Bhowal, Prabir R.; and Merrick, Howard F., 5,350,466, Cl. 148-421.000.

Biagi, Carl: *See*—
Ritchie, Steve; and Biagi, Carl, 5,350,174, Cl. 273-121.00A.

Bidan, Pierre: *See*—
Boverie, Serge; and Bidan, Pierre, 5,349,932, Cl. 123-399.000.

Bierhoff, Martinus P. M.; Coops, Peter; Van Eck, Dirk C.; and Sieben, Joannes H. F. C., to U.S. Philips Corporation. Optoelectronic device and method of manufacturing same with an electrically insulating medium having a strip-shaped flexible foil. 5,350,916, Cl. 250-214.100.

Biesel, Wolfgang: *See*—
Witthaus, Friedrich; Weber, Wolfram; Biesel, Wolfgang; and Lay, Carlo, 5,350,514, Cl. 210-360.100.

Big Sky Racks, Inc.: *See*—
Morford, Ted, 5,350,094, Cl. 224-42.45R.

Bigelow, Floyd E., Jr. Building system. 5,349,793, Cl. 52-143.000.

Billman, Fred L.; and Wortley, Russell B., to S. C. Johnson & Son, Inc. Stand-up pouch having cross-seal feature and method of making. 5,350,240, Cl. 383-104.000.

Billmers, Robert L., to National Starch and Chemical Investment Holding Corporation. Water-disposable tampon applicators and biodegradable composition for use therein. 5,350,354, Cl. 604-11.000.

Binsley, David L.: *See*—
Knapp, John R.; Reale, John D.; Miller, Donald P.; and Binsley, David L., 5,351,062, Cl. 343-880.000.

Biogal Gyogyszergrar: *See*—
Toth, Gyorgy; Balint, Janos; Elek n/e, Klara, cu/e/ e Herczik; Moricz nee Garai, Zsuzsanna; and Mudra nee Kantor, Eva, 5,350,872, Cl. 560-55.000.

Biolan Corporation: *See*—
Reich, Murray H., 5,350,783, Cl. 523-124.000.

Biometic ApS c/o Dansk Udviklingsfinansiering A/S: *See*—
Spinell, Max, 5,351,118, Cl. 356-72.000.

Biotronik Mess- und Therapiegerate GmbH & Co. Ingenieurburo Berlin: *See*—
Schaldach, Max, 5,350,408, Cl. 607-17.000.

Birbaum, Jean-Luc: *See*—
Valet, Andreas; Birbaum, Jean-Luc; and Slongo, Mario, 5,350,449, Cl. 106-506.000.

Bird, Paul R.: *See*—
Butkus, John J.; and Bird, Paul R., 5,349,890, Cl. 83-171.000.

Black, David H. A.; Musgrave, Peter; and Ventola, Sabino R., to Newbridge Networks Corporation. Digital data transmission system. 5,351,239, Cl. 370-84.000.

Black & Decker Inc.: *See*—
Nickels, Richard C., Jr.; and Rider, David M., 5,349,785, Cl. 451-357.000.
Stirm, Michael, 5,349,752, Cl. 30-124.000

Blair, Bruce A., to Global Telecommunications Industries, Inc. Compressed video bit rate reduction system. 5,351,084, Cl. 348-390.000.

Blaire, William C.: *See*—
Morinigo, Fernando B.; Blaire, William C.; and Bulgatz, Dennis, 5,350,153, Cl. 251-129.160.

Blankenship, George D., to Lincoln Electric Company, The. Inverter power supply for welding. 5,351,175, Cl. 363-16.000.

Blankley, Clifton J.; Hodges, John C.; and Klutchko, Sylvester, to Warner-Lambert Company. Substituted 1,2,3,4-tetrahydroisoquinolines with angiotensin II receptor antagonist properties. 5,350,757, Cl. 514-307.000.

Blaum, Miguel M.; and Roth, Ron M., to International Business Machines Corporation. Method and means for coding and rebuilding that data contents of unavailable DASDs or rebuilding the contents of DASDs in error in the presence of reduced number of unavailable DASDs in a DASD array. 5,351,246, Cl. 371-10.100.

Bleckmann, Hans-Wilhelm: *See*—
Burgdorf, Jochen; Reinartz, Hans-Dieter; Steffes, Helmut; Ocvirk, Norbert; Volz, Peter; Weise, Lutz; Fennel, Helmut; Wupper, Hans; Bleckmann, Hans-Wilhelm; Beck, Erhard; Dinkel, Dieter; and Haupt, Karlheinz, 5,350,226, Cl. 303-116.200.

Blom, Mikko, to Tamfelt Oy Ab. Apparatus for measuring the condition of a felt in a paper machine. 5,349,845, Cl. 73-38.000

Blonstein, Steve M., to Ricoh Corporation; and Ricoh Co., Ltd. Color video display with built-in color decompression system. 5,351,133, Cl. 358-426.000.

Bluhm, Terry L.: *See*—
Martin, Trevor I.; Mayo, James D.; Listigovers, Nancy A., Hsiao, Cheng K.; Bluhm, Terry L.; Normandin, Sharon E., and Carmichael, Kathleen M., 5,350,844, Cl. 540-141.000.

Blum GmbH: *See*—
Nolle, Eugen, 5,349,742, Cl. 29-598.000.

Blum, Rainer; Haehnle, Hans-Joachim; and Hoffmann, Gerhard, to BASF Lacke+ Farben Aktiengesellschaft. Production of structured layers of heat-resistant polycondensates. 5,350,663, Cl. 430-330.000.

Blumenstock, Andreas: *See*—
Mezger, Manfred; Blumenstock, Andreas; and Frank, Rainer, 5,349,935, Cl. 123-520.000.

Blumenthal, Jack L., to TRW Vehicle Safety Systems Inc. Inflator assembly 5,350,192, Cl. 280-737.000.

Blythin, David J., to Schering Corporation. Compounds and methods for treating hyperproliferative skin desease. 5,350,755, Cl. 514-278.000.

BMC Industries, Inc.: *See—*
Schwenzfeier, Ray D.; and Hanson, Donald W., 5,351,100, Cl. 351-164.000

Board of Governers of Wayne State University, The: *See—*
Kuo, Pao-Kuang; Thomas, Robert L.; Favro, Lawrence D. and Chen, Li, 5,351,152, Cl. 359-376.000.

Board of Regents, The University of Texas System: *See—*
Norgard, Michael V., 5,350,842, Cl. 536-23.700.

Board of Regents, University of Texas: *See—*
Gaynor, Richard B.; and Wu, Foon K., 5,350,835, Cl. 530-358.000.

Bobsein, Rex L.; Yu, Michael C.; Wright, Roy F.; and Soules, David A., to Phillips Petroleum Company. Treatment of polyarylene sulfide/-sulfone polymers. 5,350,834, Cl. 528-485.000.

BOC Group, Inc., The: *See—*
Lee, Ron C.; and Kirschner, Mark J., 5,349,828, Cl. 62-303.000.

Bodenseewerk Geratetechnik GmbH: *See—*
Renker, Horst, 5,349,757, Cl. 33-316.000.

Bodier, Rudiger; and Schmidt, Hartmut, to Messerschmitt-Boelkow-Blohm GmbH. Antihydroplaning system for a motor vehicle 5,350,035, Cl. 180-271.000

Boehringer Mannheim GmbH: *See—*
Pinsl-Ober, Judith; and Schenk, Roland, 5,350,458, Cl. 134-22.100.

Boeing Company, The: *See—*
Renzelmann, Michael E.; and Smith, Mark H., 5,350,135, Cl. 244-49.000

Boenisch, Michael T.; and Sullivan, Erica A., to Becton, Dickinson and Company. Intrinsic factor - horse peroxidase conjugates and a method for increasing the stability thereof. 5,350,674, Cl. 435-7.800.

BOGE Aktiengesellschaft: *See—*
Gelhausen, Ingo, 5,350,044, Cl. 188-322.120.

Boggs, Roger A.; Cournoyer, Richard L.; Ellis, Ernest W.; Russo-Rodriguez, Sandra E.; Telfer, Stephen J.; Waller, David P.; and Zuraw, Michael J., to Polaroid Corporation. Thermal imaging methods and materials. 5,350,870, Cl. 560-27.000.

Bogner, Uwe: *See—*
Lenhardt, Karl; and Bogner, Uwe, 5,350,469, Cl. 156-102.000.

Bohm, Georg G. A.: *See—*
Mochel, Virgil D.; Tomaszewski, Walter; and Bohm, Georg G. A., 5,350,470, Cl. 156-136.000

Boissel, Jacques; Delhalle, Joseph; LeCayon, Geard; and Viel, Pascal, to Commissariat a l'Energie Atomique; and Souriau et Cie. Contact for an electrical connector protected by a polymer film and its production process. 5,350,323, Cl. 439-886.000.

Bojstrup, Flemming; Petersen, Helle B.; and Sorensen, Peter H., to Milliken Research Corporation. Method of manufacturing a washable, dirt binding nap mat having a rubber backing and nap free rubber edges. 5,350,478, Cl. 156-299.000

Bokros, Jack C.: *See—*
Stupka, Jonathan C.; Bokros, Jack C.; Emken, Michael R.; Haubold, Axel D.; and Peters, T. Scott, 5,350,421, Cl. 623-2.000

Bolt, Jacob H.: *See—*
Seevinck, Evert; and Bolt, Jacob H., 5,351,011, Cl. 330-253.000.

Bolton, Geoffrey A., to Learoyd Packaging Limited. Security bags. 5,350,238, Cl. 383-5.000

Bonasera, Richard: *See—*
Sharkey, James P.; and Bonasera, Richard, 5,350,526, Cl 210-791.000

Bonin, Viviane; and Serrano, Jean-Francois, to Valeo Equipements Electriques Moteur S.A. Method of making a starter head for an internal combustion engine, and a starter head made by such a method. 5,349,877, Cl. 74-6.000

Bonnet, Jean-Luc: *See—*
Nitzsche, Remi; Limousin, Marcel; Bonnet, Jean-Luc; and Henry, Christine, 5,350,406, Cl. 607-14.000.

Bontz, Robert L.: *See—*
Moore, Andrew J.; Ma, David L.; Bontz, Robert L.; and Burns, Charles C., 5,351,329, Cl. 385-92.000

Bonutti, Peter M., to Apogee Medical Products, Inc. Apparatus and method for use in medical imaging. 5,349,956, Cl. 128-653.100

Boone, Theodore F.: *See—*
Dombek, Bruce B.; and Boone, Theodore F., 5,350,506, Cl. 210-136.000

Booth, Inc.: *See—*
Kidd, Robert P.; and Long, Jerry A., 5,350,085, Cl. 222-146.600.

Borchers, Dirk: *See—*
Kuckenhoehner, Thomas; Goetz, Norbert; Fischer, Rolf; Schnurr, Werner; and Borchers, Dirk, 5,350,863, Cl. 549-323.000

Borchers, Peter: *See—*
Ahls, Hermann W.; Kruse, Michael; and Borchers, Peter, 5,350,049, Cl. 198-333.000.

Borgen, Gary S.: *See—*
Sullivan, James L.; and Borgen, Gary S., 5,349,986, Cl. 137-625.330.

Borgianni, Stephen A.: *See—*
Sher, Samuel E.; Borgianni, Stephen A.; Carpenter, Robert E.; Santora, Scott; and Scavuzzo, William S., 5,349,875, Cl. 73-864.650

Bormann, Heinz: *See—*
Hafenrichter, Karl; and Bormann, Heinz, 5,349,763, Cl. 34-104.000

Borthwick, William K. D.: *See—*
Barton, James S.; Borthwick, William K. D.; Harvey, David; Jones, Julian D. C.; and McBride, Roy, 5,351,116, Cl. 356-28.500.

Boschelli, Diane H.; Connor, David T.; Kramer, James B.; and Unangst, Paul C., to Warner-Lambert Company. 3-thio or amino substituted-benzo[b]thiophene-2-carboxamides and 3-oxygen, thio, or amino substituted-benzofuran-2-carboxamides as inhibitors of cell adhesion. 5,350,748, Cl. 514-237.200.

Bose, William H.: *See—*
Lehmann, William L.; and Bose, William H., 5,351,018, Cl 333-12.000

Boston, James L.: *See—*
Ripley, Brian D.; Boston, James L.; Luehrmann, Edward G.; and Barglof, Dale L., 5,350,140, Cl. 248-27.100.

Botts, Rollin D.: *See—*
Andert, Gary W.; Botts, Rollin D.; and Shea, Andrew J., 5,349,789, Cl. 52-7.000

Bouchemousse, Jean L., to Vesuvius Crucible Company. Insulating monolithic refractory material, manufacturing process and article according to the process. 5,350,609, Cl. 428-34.400

Boulet, Jean, to Institut Francais du Petrole. Device for adjusting the path of a rotary drilling tool. 5,350,028, Cl. 175-26.000.

Boverie, Serge; and Bidan, Pierre, to Siemens Aktiengesellschaft. Method and device for control of the richness of the air/fuel feed mixture of an internal combustion engine. 5,349,932, Cl. 123-399.000.

Bowers, Bill E.: *See—*
Shaw, Christopher K.; Tuckett, Phillip C.; and Bowers, Bill E., 5,350,525, Cl. 210-744.000

Bowlin, William P. Automatic stick laying apparatus. 5,350,272, Cl. 414-789.500.

Boyce, Cindy: *See—*
Shillito, Ray; Carswell, Gleta; Harms, Christian; Boyce, Cindy; and Chang, Yin-Fu, 5,350,689, Cl. 435-240.470.

Boyette, Scott M.: *See—*
Chen, Fu; Bair, Keith A.; and Boyette, Scott M., 5,350,536, Cl. 252-180.000

Boyle, Michael J., to Valley Forge Laboratories, Inc. Synthetic aggregate compositions derived from spent bed materials from fluidized bed combustion and fly ash. 5,350,549, Cl. 264-40.400.

Bracco Barcina, Mario; and Miro Domenech, Enrique. Hermetic seal for liquid containers. 5,349,724, Cl. 24-30.50R.

Bracque, Gilles; Dehaine, Francois; Gourbier, Jean-Pierre; Grelaud, Alain; Guillard, Alain; Mouliney, Michel; and Rieth, Norbert, to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude. Process for the construction of a cryogenic unit for the separation of gas, cryogenic unit, subassembly and transportable assembly for the construction of such a unit 5,349,827, Cl. 62-298.000.

Bradford, John O.: *See—*
Swearingen, John R.; Jardine, Richard K.; Bradford, John O.; and Rathbun, Loren L., 5,349,806, Cl. 56-341.000.

Brandt, Michael: *See—*
Jurcik, Benjamin; Brandt, Michael; Inman, Ronald; and McAndrew, James, 5,351,120, Cl. 356-246.000

Brass Eagle Inc.: *See—*
Perrone, Aldo, 5,349,939, Cl. 124-76.000.

Brassington, Michael P.; and Papaliolios, Andreas G., to National Semiconductor Corporation. Ferroelectric memory cell arrangement having a split capacitor plate structure. 5,350,705, Cl. 257-295.000.

Braun, Robert D.: *See—*
Wollert, Gary S.; Alho, Timothy J.; and Braun, Robert D., 5,351,002, Cl. 324-754.000

Braunbach, Karl-Heinz: *See—*
Wuensch, Steffen; Kemmner, Claus; Braunbach, Karl-Heinz; and Haerle, Vinzenz, 5,349,754, Cl. 30-369.000

Bree, Gary D.: *See—*
Long, Joseph D.; Strother, Robert S.; and Bree, Gary D., 5,350,986, Cl. 318-432.000

Brennen, Michael B.; and Moran, Steven A., to Electric Power Research Institute, Inc. Active power line conditioner with a derived load current fundamental signal for fast dynamic response. 5,351,178, Cl. 363-40.000

Brennen, Michael B.; Moran, Steven A.; and Suko, Scott K., to Electric Power Research Institute, Inc. Highly fault tolerant active power line conditioner. 5,351,180, Cl. 363-71.000.

Brennen, Michael B.; Moran, Steven A.; and Gyugyi, Laszlo, to Electric Power Research Institute, Inc. Low cost active power line conditioner. 5,351,181, Cl. 363-71.000.

Brezoczky, Blasius; McClelland, Gay M.; and Seki, Hajime, to International Business Machines Corporation. Tribo-attractive contact slider for an optical read/write system. 5,351,229, Cl. 369-99.000

Bridger, Gary J.; Hernandez, Pedro E.; Higgins, John D., III; and Larsen, Scott K., to Johnson Matthey Public Limited Company Complexes with ^{99m}Tc suitable for radiolabelling monoclonal antibodies or other macro molecules. 5,350,837, Cl. 534-14.000.

Bridgestone Corporation: *See—*
Mashita, Naruhiko; Ogino, Akihiko; and Fukahori, Yoshihide, 5,350,610, Cl. 428-35.700.
Mochel, Virgil D.; Tomaszewski, Walter; and Bohm, Georg G. A., 5,350,470, Cl. 156-136.000

Briggs, Joseph: *See—*
Kamen, Dean L.; Seale, Joseph B.; Briggs, Joseph; and Arnold, Finn, 5,349,852, Cl. 73-149.000

Bright, Nicolas J.: *See—*
Collins, Kenneth S.; Trow, John R.; Tsui, Joshua C. W.; Roderick, Craig A.; Bright, Nicolas J.; Marks, Jeffrey; and Ishikawa, Tetsuya, 5,350,479, Cl. 156-345.000

Bristol-Myers Squibb Company: *See—*
Holton, Robert A.; Chen, Shu-Hui; and Farina, Vittorio, 5,350,866, Cl. 549-510.000.

British Technology Group Limited: *See—*
Heron, Roger A., 5,349,849, Cl. 73-61.730.

Brittain, Charles; Ross, Gilbert; and Brittain, Jack D. Apparatus for the treatment of oil filters for low contaminant recycle. 5,349,901, Cl. 100-37.000.

Brittain, Jack D.: *See—*
Brittain, Charles; Ross, Gilbert; and Brittain, Jack D., 5,349,901, Cl. 100-37.000.

Brittingham, Dennis C.: *See—*
Weaver, Robert J.; Brittingham, Dennis C.; Basta, Joseph C.; and Daynes, John C., 5,350,317, Cl. 439-500.000.

Broda, Siegfried: *See—*
Hewing, Bernd; and Broda, Siegfried, 5,350,475, Cl. 156-244.110.

Brodie, Vincent, III: *See—*
Visioli, Donna L.; and Brodie, Vincent, III, 5,350,788, Cl. 524-251.000.

Brody, Bill E.; and Tannenbaum, David H. Currency transfer system and method using fixed limit cards. 5,350,906, Cl. 235-379.000.

Brommrowitz, Helmut: *See—*
Hinzpeter, Jurgen; Schmidt, Ingo; and Brommrowitz, Helmut, 5,350,548, Cl. 264-40.400.

Brooke, Kenneth R., to Hughes Training, Inc. Target image rendering with color transparencies. 5,351,097, Cl. 348-744.000.

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Dellaria, Joseph F.; Moore, Jimmie L.; and Brooks, Dee W., 5,350,765, Cl. 514-460.000.

Brooks, John J., to Santa Barbara Research Center. High-accuracy discrete positioning device. 5,349,879, Cl. 74-96.000.

Brooks, Ronald C.: *See—*
Dawson, Dale E.; Burk, Albert A., Jr.; Cramer, Harlan C.; Brooks, Ronald C.; and Henry, Howell G., 5,351,163, Cl. 361-321.100.

Brose, Daniel J.: *See—*
Iacobucci, Guillermo A.; Brose, Daniel J.; Ray, Roderick J.; and van Eikeren, Paul, 5,350,681, Cl. 435-68.100.

Brother Kogyo Kabushiki Kaisha: *See—*
Funamoto, Masaya, 5,350,247, Cl. 400-696.000.
Ichinomiya, Yoshio; Yamaguchi, Koshiro; and Kato, Nobuo, 5,350,243, Cl. 400-208.000.
Sakaida, Atsuo; Suzuki, Yoshihumi; Ikezaki, Yoshiyuki; Iriguchi, Akira; and Suzuki, Masashi, 5,350,962, Cl. 310-316.000.
Takahashi, Yoshikazu; Suzuki, Masahiko; Sugahara, Hiroto; and Kanegae, Takahiro, 5,351,183, Cl. 347-69.000.
Yamane, Mitsuo, 5,350,474, Cl. 156-240.000.

Broughton, Donald L.: *See—*
Lee, Chun D.; and Broughton, Donald L., 5,349,847, Cl. 73-54.280.

Brown, David J.; Conway-Jones, David C.; Kim, Jong-Han; and Smith, Peter M., to International Business Machines Corporation. Phase alternating line video signal processing apparatus. 5,351,093, Cl. 348-530.000.

Brown, David P.; Kett, Michael J.; and Hebeisen, Stephen P., to Clark-Reliance Corporation. Microwave-based point liquid level monitoring system. 5,351,036, Cl. 340-618.000.

Brown, Dennis; and Kern, Dale G., to HyClone Laboratories. Multi-access port for use in a cell culture media system. 5,350,080, Cl. 220-465.000.

Brown, Frank, Jr., to Eli Lilly and Company. Process for preparing 7-substituted-amino-3-hydroxy-3-cephem-4-protected carboxy-sulfoxide esters. 5,350,845, Cl. 540-215.000.

Brown, James A.: *See—*
Smit, Kenneth J.; and Brown, James A., 5,349,909, Cl. 108-107.000.

Brown, Joseph D., to CeramOptec, Inc. Optical controller device. 5,350,376, Cl. 606-12.000.

Brown, Louis R., to TRW Vehicle Safety Systems Inc. Device for clamping seat belt webbing. 5,350,195, Cl. 280-806.000.

Brown, Mary L.: *See—*
Schreiner, Steven A.; Albertson, Karen M.; Brown, Mary L.; Hildebrandt, Camille M.; Hurlocker, Lacy M.; and Webster, Glenn C., 5,350,630, Cl. 428-343.000.

Brown, Robert S., to Milliken Research Corporation. Method to control drawing of a plurality of synthetic yarns. 5,349,729, Cl. 28-243.000.

Brown, Roy L., to Ortho-Flex Saddle Co., Inc. Breastplate assembly with elastic tiedown. 5,349,805, Cl. 54-35.000.

Brown, Russell D.: *See—*
Wicks, Michael C.; and Brown, Russell D., 5,351,053, Cl. 342-158.000.

Brown, Scott B.; and Maxwell, Hugh A., to Labatt Brewing Company Limited. Paperboard carton handholds. 5,350,109, Cl. 229-117.160.

Brown, Warwick N.: *See—*
Katyal, Anil; Brown, Warwick N.; and Howitt, Roger, 5,350,440, Cl. 75-686.000.

Brox, Wolfgang: *See—*
Bach, Volker; Brox, Wolfgang; Etzbach, Karl-Heinz; Paul, Axel; and Siemensmeyer, Karl, 5,350,873, Cl. 560-60.000.

Bruce, Robert W.: *See—*
Rigney, David V.; Bruce, Robert W.; and Maricocchi, Antonio F., 5,350,599, Cl. 427-255.700.

Bruggen, Josef: *See—*
Odink, Karel G.; Clerc, Roger; Cerletti, Nico; Bruggen, Josef; Tarcsay, Lajos; Sorg, Clemens; and Wiesendanger, Walter, 5,350,687, Cl. 435-240.270.

Brummelhuis, Franciscus. Arrangement for cathodic protection. 5,350,494, Cl. 204-197.000.

Brun Corporation: *See—*
Ticcioni, James E.; and Colburn, Robert W., 5,351,199, Cl. 364-510.000.

Brunda, Daniel D. Measurement system and method for determining the amount of electromagnetic radiation energy being absorbed by living beings. 5,350,999, Cl. 324-72.000.

Brunk, Donald H.; Regester, David J.; Robertson, Charles W.; and Wellings, Anders J., to Du Pont de Nemours, E. I., and Company. Apparatus for fluid treatment of framed membranes. 5,350,502, Cl. 204-299.00R.

Bruno, Ronald: *See—*
Graham, Hatch; Moses, Charles; Schuchman, Leonard; and Bruno, Ronald, 5,351,270, Cl. 375-1.000.

Buchanan, Harry C., Jr.: *See—*
Patterson, Douglas D.; Buchanan, Harry C., Jr.; and McClain, Michael J., 5,349,717, Cl. 15-250.040.

Buchanan, Stuart W.: *See—*
Kleks, Jonathan A.; Buchanan, Stuart W.; Wilson, Raymond J.; Poore, John W.; and Mann, Brian M., 5,350,410, Cl. 607-28.000.

Bucher, Gerald L.; Welker, Christopher H.; Hammer, Edward E.; Scott, Curtis E.; and Soules, Thomas F., to General Electric Company. UV absorbing lamp glass. 5,350,972, Cl. 313-636.000

Buchholtz, Gerhard; and Mahler, Matthias, to Siemens Aktiengesellschaft. Acoustic pressure pulse generator. 5,350,352, Cl. 601-4.000.

Buchmeier, Willi; and Roland, Wolf A., to Henkel Kommanditgesellschaft auf Aktien. Method of recycling phosphating sludges. 5,350,517, Cl. 210-638.000.

Buckler, Alan J.: *See—*
Call, Katherine M.; Glaser, Thomas M.; Ito, Caryn Y.; Buckler, Alan J.; Pelletier, Jerry; Haber, Daniel A.; Rose, Elise A.; and Housman, David E., 5,350,840, Cl. 536-23.100.

Buckley, John D.: *See—*
Fox, Robert L.; Copeland, Carl E.; Swaim, Robert J.; Coultrip, Robert H.; Johnston, David F.; Phillips, W. Morris; Johnson, Samuel D.; Dinkins, James R.; and Buckley, John D., 5,350,902, Cl. 219-633.000.

Budd Company, The: *See—*
Nelson, Kirk A.; and Byrnes, William A., 5,350,114, Cl. 237-2.00A.
Steele, David R.; and Stimson, Thomas B., 5,350,041, Cl. 188-18.00R.

Budgifvars, Goran-Sven: *See—*
Hoegnelid, Kurt; and Budgifvars, Goran-Sven, 5,350,412, Cl. 607-34.000.

Buhrke Industries, Inc.: *See—*
Hubball, Martin M., 5,349,843, Cl. 72-344.000.

Bulgatz, Dennis: *See—*
Morinigo, Fernando B.; Blaire, William C.; and Bulgatz, Dennis, 5,350,153, Cl. 251-129.160.

Bullivant, Kenneth W.: *See—*
Preiser, Friedrich W.; Bullivant, Kenneth W.; and Peyer, Marcel, 5,350,089, Cl. 222-413.000.

Bullock Communications, Inc.: *See—*
Bullock, Wayne J.; Fertner, Kenneth S.; and Klein, Eugene, 5,351,186, Cl. 364-401.000.

Bullock, Wayne J.; Fertner, Kenneth S.; and Klein, Eugene, to Bullock Communications, Inc. System and method for obtaining information concerning a product or a service. 5,351,186, Cl. 364-401.000.

Bullon Camarasa, Francisco J.; Ropero Beltran, Juan J.; and Benedit del Burgo, Juan A., to Ferroatlantica, S.L. Process for continuous manufacture of impurity and iron-free electrodes for electric arc furnaces. 5,351,266, Cl. 373-89.000.

Bundy Corporation: *See—*
McNaughton, James; Liimatta, Walfred J.; and Ketcham, Mark G., 5,350,203, Cl. 285-319.000.

Burgdorf, Jochen; Reinartz, Hans-Dieter; Steffes, Helmut; Ocvirk, Norbert; Volz, Peter; Weise, Lutz; Fennel, Helmut; Wupper, Hans; Bleckmann, Hans-Wilhelm; Beck, Erhard; Dinkel, Dieter; and Haupt, Karlheinz, to Alfred Teves GmbH. Anti-lock hydraulic brake system. 5,350,226, Cl. 303-116.200.

Burge, Joseph C., to United States of America, Air Force. Joining means for rotor discs. 5,350,278, Cl. 416-198.00A.

Burk, Albert A., Jr.: *See—*
Dawson, Dale E.; Burk, Albert A., Jr.; Cramer, Harlan C.; Brooks, Ronald C.; and Henry, Howell G., 5,351,163, Cl. 361-321.100.

Burk, Lowell E. Wire holding fence post attachment assembly. 5,350,155, Cl. 256-48.000.

Burke, Inc.: *See—*
Workman, James P.; and Hargest, Thomas S., 5,350,369, Cl. 604-327.000.

Burkinshaw, Steven M.; Gordon, Roy; Marfell, David J.; and Maseka, Kakoma D., to Imperial Chemical Industries, PLC. Process for improving the fixation of dyes on materials containing amide groups. 5,350,422, Cl. 8-115.560.

Burling, Michael R. Torque free bow with improved handle grip assembly. 5,349,937, Cl. 124-25.600.

Burlington Industries Inc.: *See—*
Davis, Ellis, Jr.; McFarland, James E.; and Teague, Edward W., 5,350,423, Cl. 8-401.000.
Jenkins, William G., 5,350,426, Cl. 8-539.000.

Burnett, Kenneth, to Midwest Tropical, Inc. Rising bubble display device. 5,349,771, Cl. 40-406.000.

Burns, Charles C.: *See—*
Moore, Andrew J.; Ma, David L.; Bontz, Robert L.; and Burns, Charles C., 5,351,329, Cl. 385-92.000.

Burnworth, Douglas J.; and Lungershausen, Joachim H., to Vermont American Corporation. Lawn sprinkler with cam-controlled variable spray pattern. 5,350,115, Cl. 239-242.000.

Burreson, Bernard J.: *See—*
Daniels, Ted M.; and Burreson, Bernard J., 5,351,004, Cl. 324-207.130.

Bursey, Roy; and Carlos, Michel. Frame display arrangement for displaying thin, flat objects. 5,349,770, Cl. 40-124.200.

Burtnett, Dave: *See—*
Anderson, Richard N.; Hurt, Dan; Burtnett, Dave; Gaskins, Jay; and Wall, Jim, 5,349,730, Cl. 29-24.500.

Busacker, James W.: *See—*
Ryan, Terrence G.; Busacker, James W.; and Hochban, Robert A., 5,350,411, Cl. 607-32.000

Bushey, Ronald P. Wide-angle-viewing safety light for towing vehicles 5,351,171, Cl. 362-80.000.

Butkus, John J.; and Bird, Paul R., to Scovill Fasteners Inc. Apparatus for severing off pieces from an endless web. 5,349,890, Cl. 83-171.000

Buttner, Gunter, to TA Triumph-Adler AG. Keyboard for typewriter and the like. 5,350,244, Cl. 400-496.000

Buysch, Hans-Josef: *See—*
Wagner, Paul; Buysch, Hans-Josef; Klausener, Alexander; Mais, Franz-Josef; and Mendoza-Frohn, Christine, 5,350,862, Cl 549-230.000

Bynum, Kurt K., to Moeller Manufacturing Co., Inc. Separable connector external capture device. 5,350,201, Cl. 285-92.000

Byrne, Norman R. Retractable energy center with lighting. 5,351,173, Cl. 362-127.000

Byrnes, William A.: *See—*
Nelson, Kirk A.; and Byrnes, William A., 5,350,114, Cl. 237-2.00A

Cacalano, Nicholas A.: *See—*
Erlanger, Bernard F.; Cleveland, William L.; and Cacalano, Nicholas A., 5,350,574, Cl. 514-9.000.

Cady, Raymond C.: *See—*
Sheehan, Terrence M.; Mukherjee, Jyoti; Cady, Raymond C.; Comstock, Gary L.; and Soroka, Daniel P., 5,349,731, Cl. 29-27.00R

Cahalan, Linda: *See—*
Verhoeven, Michel; Cahalan, Patrick; Cahalan, Linda; Hendriks, Marc; and Foache, Benedicte, 5,350,800, Cl. 525-54.200

Cahalan, Patrick: *See—*
Verhoeven, Michel; Cahalan, Patrick; Cahalan, Linda; Hendriks, Marc; and Foache, Benedicte, 5,350,800, Cl. 525-54.200

Caille, Jean-Claude: *See—*
Wagner, Adalbert; Henning, Rainer; Gerhards, Hermann; Scholkens, Bernward; Vevert, Jean-Paul; and Caille, Jean-Claude, 5,350,751, Cl. 514-258.000

Cain, Ronald: *See—*
Ratte, Robert W.; Cain, Ronald; and Peterson, Norman E., 5,349,840, Cl. 72-327.000.

Calabrese, Frank A.: *See—*
McCarney, David A.; Calabrese, Frank A.; and Shockey, Kenneth B., 5,349,926, Cl. 119-721.000.

Calgon Carbon Corporation: *See—*
Markowitz, James P., 5,350,513, Cl. 210-264.000

Califano, Andrea; and Mohan, Rakesh, to International Business Machines Corporation. Generalized shape autocorrelation for shape acquisition and recognition. 5,351,310, Cl. 382-22.000

Call, Katherine M.; Glaser, Thomas M.; Ito, Caryn Y.; Buckler, Alan J.; Pelletier, Jerry; Haber, Daniel A.; Rose, Elise A.; and Housman, David E., to Massachusetts Institute of Technology. Localization and characterization of the Wilms' tumor gene. 5,350,840, Cl. 536-23.100.

Cambridge, Inc.: *See—*
Hager, Michael L., 5,350,056, Cl. 198-778.000.

Camelot Technologies, Inc.: *See—*
Nemphos, Speros P.; and Kharas, Gregory B., 5,350,627, Cl. 428-288.000

Cameron, Charles; Courty, Philippe; Berrebi, Georges; Roumieu, Raymond; Rabehasaina, Hans; and Eschard, Francois, to Institut Francais du Petrole and Europeene de Retraitment de Catalyseurs (Eurecat). Method of preparing a solid mass for mercury recovery. 5,350,728, Cl. 502-415.000

Camilleri, Charles: *See—*
Rogers, Richard D.; Camilleri, Charles; and Wood, Raymond, 5,350,072, Cl. 211-123.000

Campbell, Blair H. Animal protective collar. 5,349,927, Cl. 119-815.000.

Campbell, Bruce C.; and Mruk, William A., to Eastman Kodak Company. Receiving element for use in thermal dye transfer. 5,350,733, Cl. 503-227.000

Campbell, Lee A.; Kuo, Chou-chou; and Grayston, J. Thomas, to Washington Research Foundation. Detection of a unique Chlamydia strain associated with acute respiratory disease. 5,350,673, Cl. 435-6.000.

Campbell, Paul B.; Kimberlin, Robert R.; O'Malley, Sean M.; and Holt, Roland P., to Ingersoll-Rand Company. Nonrotary piston for jackhammer and removable splined nut therefor. 5,350,025, Cl. 173-111.000

Campbell, William E., to Aqua-10 Corporation. Feed and water additive and method of making same. 5,350,588, Cl. 426-431.000.

Cangelosi, Jerome M.: *See—*
Ameen, Thomas J.; Payak, John A.; and Cangelosi, Jerome M., 5,350,487, Cl. 156-642.000.

Cannon, Raymond J. C.: *See—*
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Canon Information Systems, Inc.: *See—*
Vaezi, Mehrzad R., 5,351,314, Cl. 382-54.000.

Canon Kabushiki Kaisha: *See—*
Azuma, Yusaku; Ishihara, Katsumi; and Shibata, Masaru, 5,350,269, Cl. 414-416.000
Hiroi, Masakazu; Hoshi, Akimitsu; Iida, Noriyoshi; Kitajima, Tadayuki; and Uto, Nobutaka, 5,350,169, Cl. 271-213.000
Kadowaki, Toshihiro; and Sakai, Masanori, 5,351,074, Cl 346-157.000
Kageyama, Tetsuto; Yoshimura, Shigeru; and Motai, Eiichi, 5,351,073, Cl. 347-87.000
Kato, Masami; Kato, Takao; and Hashimoto, Yasunori, 5,351,137, Cl. 358-457.000
Kato, Masatoshi; Tobo, Yozo; Ichikawa, Fumio; Azuma, Jun; and Uemura, Hideaki, 5,351,264, Cl. 372-107.000
Kawase, Toshimitsu; Yamano, Akihiko; Kuroda, Ryo; Nose, Hiroyasu; and Miyazaki, Toshihiko, 5,349,735, Cl. 29-407.000.
Kitai, Hiroto; and Nakahara, Takashi, 5,350,910, Cl. 235-479.000.
Kondo, Masaya, 5,351,190, Cl. 364-419.080.
Kyuma, Kenji; Hieda, Teruo; Masuda, Kazunori; and Takei, Hirohumi, 5,351,080, Cl. 348-225.000.
Miyahara, Kazuhiko; Kinoshita, Takao; Kawamoto, Kenichi; Kurihashi, Toshiya; and Tokano, Kaneyoshi, 5,351,139, Cl 358-487.000
Naito, Masataka; Takahashi, Yuji; Hiroi, Masakazu; Isobe, Yoshinori; Yoshida, Akimaro; Fujimoto, Hitoshi; and Nakagawa, Tomohito, 5,351,112, Cl. 355-233.000.
Shimizu, Satoshi; Kudo, Tomohiro; and Suzuki, Kenichi, 5,350,166, Cl. 271-14.000.
Yagi, Takayuki; Hirai, Yutaka; Takamatsu, Osamu; Nakayama, Masaru; Nose, Hiroyasu; Shinjo, Katsuhiko; and Simada, Yasuhiro, 5,349,858, Cl. 73-517.00A.
Yaguchi, Tatsuya; and Yoshida, Takehiro, 5,351,134, Cl. 358-435.000

Canton, Silvia T., to Guantanamo Bay, Inc. Additive for foaming coffee. 5,350,591, Cl. 426-564.000.

Cao, Weilou: *See—*
She, Yongzheng; Chen, Shizheng; Cao, Weilou; and Shih, Yanhua, 5,351,279, Cl. 378-43.000.

Capes, C. Edward: *See—*
Coleman, Richard D.; Toll, Floyd N.; McCracken, Thomas W.; Capes, C. Edward; and Ikura, Michio, 5,350,430, Cl. 44-627.000.

Caporiccio, Gerardo, to Dow Corning Corporation. Fluorinated compounds containing hetero atoms and polymers thereof. 5,350,878, Cl. 560-227.000

Cardiovascular Diagnostics, Inc.: *See—*
Oberhardt, Bruce J.; and Gresalfi, Nancy, 5,350,676, Cl. 435-13.000.

Carey, Richard J.: *See—*
Trefonas, Peter, III; and Carey, Richard J., 5,350,714, Cl. 437-229.000

Carl Zeiss, Inc.: *See—*
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Carlo, Robert: *See—*
Sadowski, Kazimierz; Ziemendorf, Donald; Carlo, Robert; and Kochems, Gary, 5,350,012, Cl. 165-152.000

Carlos, Michel: *See—*
Bursey, Roy; and Carlos, Michel, 5,349,770, Cl. 40-124.200

Carmichael, George H. Derailleur pulley for use with bicycle derailleur systems. 5,350,339, Cl. 474-79.000.

Carmichael, Kathleen M.: *See—*
Martin, Trevor I.; Mayo, James D.; Listigovers, Nancy A.; Hsiao, Cheng K.; Bluhm, Terry L.; Normandin, Sharon E.; and Carmichael, Kathleen M., 5,350,844, Cl. 540-141.000

Carobolante, Francesco; and Pace, Ermanno, to SGS-Thomson Microelectronics, Inc. Method and apparatus for starting a brushless DC motor. 5,350,984, Cl. 318-254.000.

Carpenter, Robert E.: *See—*
Sher, Samuel E.; Borgianini, Stephen A.; Carpenter, Robert E.; Santora, Scott; and Scavuzzo, William S., 5,349,875, Cl. 73-864.650.

Carraway, Debra L.: *See—*
Martinson, Scott D.; Gray, David L.; Carraway, Debra L.; and Reda, Daniel C., 5,349,851, Cl. 73-147.000.

Carriker, Richard, to James Clem Corporation. Geosynthetic clay liner with modified edges for improved sealing. 5,350,255, Cl. 405-270.000.

Carroll, John B., to Westinghouse Air Brake Company. Auxiliary stabilizer valve for VX vent valve. 5,350,222, Cl. 303-82.000.

Carswell, Gleta: *See—*
Shillito, Ray; Carswell, Gleta; Harms, Christian; Boyce, Cindy; and Chang, Yin-Fu, 5,350,689, Cl. 435-240.470.

Carver, David R. Method of reducing vat dyes and the process of dyeing fabrics therein. 5,350,425, Cl. 8-465.000.

Cascade Design Automation Corporation: *See—*
Upton, Michael D.; Rossman, Thomas F.; Frazier, Dean P.; Fuller, Jay S.; and Russell, Kendall C., 5,351,197, Cl. 364-491.000.

Casey, Joseph B., to Polster, Lieder, Woodruff & Lucchesi, LC. Beverage dispensing apparatus and retrofitting kit. 5,349,993, Cl. 141-94.000

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Hayakawa, Tomihiro, 5,350,945, Cl. 257-679.000.
Kashio, Yukio; and Arai, Yoneaki, 5,350,881, Cl. 84-622.000.
Koguchi, Satoru; and Negoro, Yoshiki, 5,350,882, Cl. 84-636.000.
Sato, Hiroshi, 5,351,188, Cl. 364-413.310.

Cason, David G.: *See—*
Pregont, Gary J.; Cason, David G.; and Goetsch, Jeffrey D., 5,351,245, Cl. 371-5.100

Cassani, Giorgio: *See—*
Andriollo, Nunzio; Cassani, Giorgio; D'Olimpio, Paolo; Donno, Bruno; and Ricci, Marco, 5,350,521, Cl. 210-653.000.

Casselmann, Holger: *See—*
Konig, Eberhard; Casselmann, Holger; Kobelka, Frank; and Foster, Keith-Allen, 5,350,825, Cl. 528-45.000.

Cater, Miro S., to Bespak PLC. Dispensing apparatus. 5,350,116, Cl. 239-333.000.

Caterpillar Inc.: *See—*
Hutchison, Eric A.; and Krone, John J., 5,350,152, Cl. 251-30.050.

Catot, Bernard; Del Fabbro, Valerio; and Stevenot, Guy, to Valdunes. Device for automatically measuring the residual stresses in the rim of one wheel of a railway wheelset. 5,349,861, Cl. 73-598.000.

Caullet, Philippe: *See—*
Joly, Jean-Francois; Caullet, Philippe; Faust, Anne-Catherin; Baron, Jacques; and Guth, Jean-Louis, 5,350,722, Cl. 502-64.000.

Cedarapids, Inc.: *See—*
Clark, Roger M., 5,350,125, Cl. 241-208.000.
Musil, Joseph E.; and McFarland, William D., 5,350,252, Cl. 405-128.000

Ceka Electrowerkzeuge AG & Co. KG: *See—*
Markus, Heule; and Othmar, Gerschwiler, 5,350,026, Cl. 173-178.000.

Centea, Mark E.: *See—*
Miller, Kenneth L.; and Centea, Mark E., 5,350,084, Cl. 222-137.000.

Centre National de la Recherche Scientifique: *See—*
Armand, Michel; Sanchez, Jean-Yves; and Deroo, Daniel, 5,350,646, Cl. 429-192.000.

CeramOptec, Inc.: *See—*
Brown, Joseph D., 5,350,376, Cl. 606-12.000.

Cerletti, Nico: *See—*
Odink, Karel G.; Clerc, Roger; Cerletti, Nico; Bruggen, Josef; Tarcsay, Lajos; Sorg, Clemens; and Wiesendanger, Walter, 5,350,687, Cl. 435-240.270.

Cerwin, Robert: *See—*
Alpern, Marvin; and Cerwin, Robert, 5,350,060, Cl. 206-63.300.

Chalupka, Alfred: *See—*
Stengl, Gerhard; and Chalupka, Alfred, 5,350,924, Cl. 250-492.200.

Chambers, Arthur E. Optical fiber cleaver. 5,351,333, Cl. 385-134.000.

Chambers, Steven R.: *See—*
Taylor, Michael A.; and Chambers, Steven R., 5,349,892, Cl. 86-21.000.

Chan, Vincent W. S.; Gallager, Robert G.; Kirby, Alan J.; and Saleh, Adel A. M., to AT&T Bell Laboratories; Digital Equipment Corporation; and Massachusetts Institute of Technology. All-optical network architecture. 5,351,146, Cl. 359-118.000.

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Chang, Wen-Pin: *See—*
Wu, T. C.; Chen, Ray-Ten; and Chang, Wen-Pin, 5,351,136, Cl. 358-440.000.

Chang, Yin-Fu: *See—*
Shillito, Ray; Carswell, Gleta; Harms, Christian; Boyce, Cindy; and Chang, Yin-Fu, 5,350,689, Cl. 435-240.470.

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Bernstein, Jonathan J.; and Weinberg, Marc S., 5,349,855, Cl. 73-505.000.

Chase, Vance A.; and Scarpati, Thomas S., to United Technologies Corporation. All composite article of manufacture including first and second composite members joined by a composite hinge. 5,350,614, Cl. 428-53.000.

Chau, Chung-Nin, to Osram Sylvania Inc. Method of making alkaline earth metal halophosphate phosphor using metal phosphide reducing agent. 5,350,540, Cl. 252-301.60P.

Chaug, Yi-Shung; Walker, Victor L.; and Roy, Nripendra N., to Storage Technology Corporation. Magnetoresistive device and barrier formation process. 5,350,629, Cl. 428-336.000.

Chayer, Steven. Methods of and apparatus for containing and evacuating fluids (II). 5,349,722, Cl. 15-353.000.

Chemical Lime Company: *See—*
Walker, Daniel D., Jr., 5,350,596, Cl. 427-154.000.

Chen, Anselm V. K. Toothbrush with extendible brushing element. 5,350,248, Cl. 401-195.000.

Chen, Chi-Chang, to Industrial Technology Research Institute. High refractive index plastic lens composition. 5,350,822, Cl. 526-266.000.

Chen, Fu; Bair, Keith A.; and Boyette, Scott M., to Betz Laboratories, Inc. Copolymers of ethylenically unsaturated and polyethyleneglycol monomethacrylate monomeric repeat units useful as scale control agents in boiler systems. 5,350,536, Cl. 252-180.000.

Chen, Hsing-Hai; Tseng, Hsiao-Pin; and Lu, Chih-Yuan, to Industrial Technology Research Institute. Building and method for manufacture of integrated semiconductor circuit devices. 5,350,336, Cl. 454-187.000.

Chen, Hsing-Yao, to Chunghwa Picture Tubes, Ltd. Inline electron gun with negative astigmatism beam forming and dynamic quadrupole main lens. 5,350,967, Cl. 313-413.000.

Chen, Hsing-Yao, to Chunghwa Picture Tubes, Ltd. Multi-beam group electron gun for color CRT. 5,350,978, Cl. 315-368.150.

Chen, Ken-Ching. Socket terminal. 5,350,310, Cl. 439-188.000.

Chen, Kun-Luh: *See—*
Huang, Heng-Sheng; Chen, Kun-Luh; and Hong, Gary, 5,350,698, Cl. 437-26.000.

Chen, Li: *See—*
Kuo, Pao-Kuang; Thomas, Robert L.; Favro, Lawrence D.; and Chen, Li, 5,351,152, Cl. 359-376.000.

Chen, Ray-Ten: *See—*
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Chen, Shizheng: *See—*
She, Yongzheng; Chen, Shizheng; Cao, Weilou; and Shih, Yanhua, 5,351,279, Cl. 378-43.000.

Chen, Shu-Hui: *See—*
Holton, Robert A.; Chen, Shu-Hui; and Farina, Vittorio, 5,350,866, Cl. 549-510.000.

Chen, Wen Y.: *See—*
Kopchick, John J.; and Chen, Wen Y., 5,350,836, Cl. 530-399.000.

Cheng, Tzu-Ling: *See—*
Cheng, You-Jen; and Cheng, Tzu-Ling, 5,350,315, Cl. 439-419.000.

Cheng, William W.; and Linder, Lloyd F., to Hughes Aircraft Company. Sample and hold circuit with push-pull output charging current. 5,350,952, Cl. 307-352.000.

Cheng, Yen-Cheng: *See—*
Liu, Jia-Chin; Chang, Shu-Fahr; Wu, Shyue-Sheng; and Cheng, Yen-Cheng, 5,350,008, Cl. 164-440.000.

Cheng, Ying-Hsiung, to Top Fortune Ltd. Elevated floorboard frame for a playpen and baby bed. 5,349,709, Cl. 5-93.100.

Cheng, You-Jen; and Cheng, Tzu-Ling. Lamp socket for a Christmas tree light. 5,350,315, Cl. 439-419.000.

Chennakeshu, Sandeep; Hladik, Stephen M.; Saulnier, Gary J.; Koilpillai, Ravinder D.; and Toy, Raymond L., to General Electric Company. Post detection selection combining diversity receivers for mobile and indoor radio channels. 5,351,274, Cl. 375-100.000.

Chern, Jenn-Gang: *See—*
Masumoto, Rodney T.; Ueda, Shunsaku; Chern, Jenn-Gang; and Lam, Kirby, 5,351,015, Cl. 331-1.00R.

Chester, Bruce E.; and Cleary, James D., to Minnesota Mining and Manufacturing Company. Dental dispensing system. 5,350,059, Cl. 206-63.500.

Chevalier, Jacques P.: *See—*
Chevalier, Pierre A.; Chevalier, Jacques P.; and Veniard, Gilbert E., 5,350,477, Cl. 156-250.000.

Chevalier, Pierre A.; Chevalier, Jacques P.; and Veniard, Gilbert E., to Chevalier, Pierre A. Method and apparatus for manufacturing a fibrous material product on which a deferred-action adhesive and a removable protective strip are disposed. 5,350,477, Cl. 156-250.000.

Chevalier, Yves: *See—*
Jaffrezic-Renault, Nicole; Chovelon, Jean-Marc; Perrot, Hubert; Le Perchec, Pierre; and Chevalier, Yves, 5,350,701, Cl. 437-40.000.

Chi, Tom Y., to Hughes Aircraft Company. Maskless process for forming refractory metal layer in via holes of GaAs chips. 5,350,662, Cl. 430-313.000.

Chiang, Tzung-Nan, to Shih Yang Tso. Clamp for fastening a trackball-containing shell to laptop computer keyboards. 5,350,146, Cl. 248-231.400.

Chiba, Syusaku: *See—*
Yanagi, Kunio; and Chiba, Syusaku, 5,349,820, Cl. 60-562.000

Chicalo, Karen: *See—*
LaCourse, Norman L.; Chicalo, Karen; Zallie, James P.; and Altieri, Paul A., 5,350,593, Cl. 426-615.000.

Chieng, Walter. Rotary 3½" diskette storage box. 5,350,068, Cl. 206-444.000.

Chin, Tsun-Kit: *See—*
Wong, Hee; and Chin, Tsun-Kit, 5,351,275, Cl. 375-120.000.

Chippendale, Kevan E.; Corbett, John S.; Hart, John L.; and Walkley, Geraldine, to Fisons plc. Inhalation devices with a reduced risk of blockage. 5,349,944, Cl. 128-200.140.

Chiron Corporation: *See—*
Houghton, Michael; Choo, Qui-Lim; and Kuo, George, 5,350,671, Cl. 435-5.000.

Chiu, R. Paul: *See—*
Jacala, Ariel C. P.; and Chiu, R. Paul, 5,350,277, Cl. 416-90.00R.

Choi, Byoung T., to Goldstar Co., Ltd. Magnetron for a microwave oven. 5,350,905, Cl. 219-761.000.

Choi, Sung M.: *See—*
Lumelsky, Leon; Choi, Sung M.; Peevers, Alan W.; and Pittas, John L., 5,351,067, Cl. 345-191.000.

Choo, Qui-Lim: *See—*
Houghton, Michael; Choo, Qui-Lim; and Kuo, George, 5,350,671, Cl. 435-5.000.

Chovelon, Jean-Marc: *See—*
Jaffrezic-Renault, Nicole; Chovelon, Jean-Marc; Perrot, Hubert; Le Perchec, Pierre; and Chevalier, Yves, 5,350,701, Cl. 437-40.000.

Choy, Tae G.: *See—*
Chun, Oh G.; Ahn, Seung H.; Jeong, Myung Y.; and Choy, Tae G., 5,351,334, Cl. 385-134.000.

Chrisco, Lonnie R., to Everson, Ben A. Clogged filter indicator. 5,351,035, Cl. 340-607.000.

Chrisp, David: *See—*
Oakley, Gary A.; and Chrisp, David, 5,350,098, Cl. 225-2.000.

Christopher, Todd J.; Horlander, Karl F.; and Saeger, Timothy W., to Thomson Consumer Electronics, Inc. Two stage interpolation system. 5,351,087, Cl. 548-441.000.

Christy, M. Robert: *See—*
Muskopf, Jack W.; Christy, M. Robert; Jameson, Jaysn F., deceased; Jameson, Jerry M., heir; Jameson, Donna R., heiress; and Hallmark, Tami S., 5,350,802, Cl. 525-65.000.

Christy, William J. Surgical stab wound closure device and method. 5,350,385, Cl. 606-139.000.

Chrysler Corporation: *See—*
Al-Attar, Rafi A., 5,351,204, Cl. 364-571.030.
Atwell, Robert J., Jr., 5,350,220, Cl. 301-5.210.
Werner, Lawrence E.; and Klotz, James R., 5,349,884, Cl. 74-606.00R.

Chu, Cheng. Vortex tube for exterminating organisms. 5,349,778, Cl. 43-124.000.

Chu, David K., to Du Pont de Nemours, E. I., and Company. Acoustic wave devices for controlling high frequency signals. 5,350,961, Cl 310-313.00A.

Chubachi, Noriyoshi; and Kanai, Hiroshi. Apparatus for measuring the velocity of ultrasonic sound in terms of V(Z) characteristics and ultrasonic microscope using that apparatus. 5,349,862, Cl. 73-602.000

Chun, Christopher K. Y.; Hartman, Davis H.; Kuo, Shun-Meen; and Lebby, Michael S., to Motorola, Inc. Method and apparatus for splicing optical fibers with signal I/O. 5,351,331, Cl. 385-97.000

Chun, Oh G.; Ahn, Seung H.; Jeong, Myung Y.; and Choy, Tae G., to Electronics and Telecommunications Research Institute; and Korea Telecommunication Authority. Rotation and alignment device for assembling of optical fiber connector with lower connection loss. 5,351,334, Cl. 385-134.000.

Chun, Victor L., to Murata Machinery, Ltd. Hybrid laser-plasma arc cutting apparatus combined with a punch press. 5,350,897, Cl. 219-121.390.

Chung, Do Y.: *See—*
Kim, Ik S.; Chung, Do Y.; Kim, Jeong S.; Kim, Nam J.; and No, Jae G., 5,350,530, Cl. 252-8.600.

Chunghwa Picture Tubes, Ltd.: *See—*
Chen, Hsing-Yao, 5,350,967, Cl. 313-413.000
Chen, Hsing-Yao, 5,350,978, Cl. 315-368.150.

Chyung, Kenneth: *See—*
Beall, George H.; Chyung, Kenneth; and Taylor, Mark P., 5,350,716, Cl. 501-5.000.

Ciba-Geigy Corporation: *See—*
Glock, Jutta; and Kerber, Elmar, 5,350,734, Cl. 504-105.000.
Odink, Karel G.; Clerc, Roger; Cerletti, Nico; Bruggen, Josef; Tarcsay, Lajos; Sorg, Clemens; and Wiesendanger, Walter, 5,350,687, Cl. 435-240.270.
Sander, Hans J.; Hartmann, Olaf-Rene ; Wirth, Hermann O.; and Wehner, Wolfgang, 5,350,785, Cl. 524-100.000
Shillito, Ray; Carswell, Gleta; Harms, Christian; Boyce, Cindy; and Chang, Yin-Fu, 5,350,689, Cl. 435-240.470.
Valet, Andreas; Birbaum, Jean-Luc; and Slongo, Mario, 5,350,449, Cl. 106-506.000.
Van Duzer, John H.; and Roland, Dennis M., 5,350,761, Cl. 514-373.000.

Cilke, Joseph T.: *See—*
Dugan, Michael T.; Cilke, Joseph T.; and Petrie, Bruce S., 5,351,130, Cl. 358-725.000.

Ciokajlo, John J.; and O'Brien, Michael T., to General Electric Company. Air-start assembly and method. 5,349,814, Cl. 60-226.100.

Cipolli, Roberto; Rossi, Cristina; Oriani, Roberto; Masarati, Enrico; and Nucida, Gilberto, to Ministero Dell'Universita' e Della Ricerca Scientifica e Technologica. Triazinylphosphonic acids and their use in self-extinguishing polymeric compositions. 5,350,848, Cl. 544-195.000.

Cirrus Logic, Inc.: *See—*
King, Larry; Dudley, Trent; and McPherson, Roger, 5,351,231, Cl. 369-124.000.

Citizens Gas & Coke Utility: *See—*
Michaelis, Ronald E.; and Selburg, Oscar F., 5,350,262, Cl. 409-178.000.

Clark, Bernard Arthur J.: *See—*
Singer, Stephen P.; Merkel, Paul B.; Clark, Bernard Arthur J.; and Stanley, Paul Louis R., 5,350,667, Cl. 430-387.000.

Clark-Reliance Corporation: *See—*
Brown, David P.; Kett, Michael J.; and Hebeisen, Stephen P., 5,351,036, Cl. 340-618.000.

Clark, Roger M., to Cedarapids, Inc. Cone crusher with peripherally driven gyratory head. 5,350,125, Cl. 241-208.000.

Cleary, James D.: *See—*
Chester, Bruce E.; and Cleary, James D., 5,350,059, Cl. 206-63.500.

Clement, Gordon S.; and Kebert, Christopher, to Pilling Co. Catheter guide and clamp instrument. 5,350,384, Cl. 606-108.000.

Clendenning, Charles: *See—*
Launder, Richard L.; and Clendenning, Charles, 5,350,022, Cl. 172-700.000.

Clerc, Roger: *See—*
Odink, Karel G.; Clerc, Roger; Cerletti, Nico; Bruggen, Josef; Tarcsay, Lajos; Sorg, Clemens; and Wiesendanger, Walter, 5,350,687, Cl. 435-240.270.

Cleveland, William L.: *See—*
Erlanger, Bernard F.; Cleveland, William L.; and Cacalano, Nicholas A., 5,350,574, Cl. 514-9.000.

Clungeon, Nancy: *See—*
Devore, David I.; Clungeon, Nancy; and Fischer, Stpehen A., 5,350,796, Cl. 524-514.000

CMS Gilbreth Packaging Systems: *See—*
Westbury, Ian, 5,350,482, Cl. 156-566.000.

Coca-Cola Company, The: *See—*
Iacobucci, Guillermo A.; Brose, Daniel J.; Ray, Roderick J.; and van Eikeren, Paul, 5,350,681, Cl. 435-68.100.
Plester, George, 5,350,587, Cl. 426-394.000.

Coelho, Rohan; Golin, Stuart; Nickerson, Brian; and Keith, Michael, to Intel Corporation. Method and system for generating compresser image signals. 5,351,085, Cl. 348-391.000.

Coermann, Georg: *See—*
Nell, Joachim; Steiner, Manfred; and Coermann, Georg, 5,350,224, Cl. 303-113.300.

Coeuret, Francois: *See—*
Rostaing, Jean-Christophe; and Coeuret, Francois, 5,350,605, Cl. 427-536.000

Coffin, Paul: *See—*
Crane, Roger M.; and Coffin, Paul, 5,349,738, Cl. 29-434.000

Cohen, Robert N. Method and apparatus for recording the position of dental implants. 5,350,297, Cl. 433-76.000.

Colburn, Robert W.: *See—*
Ticcioni, James E.; and Colburn, Robert W., 5,351,199, Cl. 364-510.000

Cole, J. Dean; and Justin, Daniel F. Posterior external pelvic fixator. 5,350,378, Cl. 606-57.000

Cole, John: *See—*
Baer, Thomas M.; Cox, Kelly A.; Gooding, Phillip; Cole, John; Head, David F.; and Kintz, Gregory J., 5,351,121, Cl. 356-301.000

Cole, John C., III: *See—*
Swenson, Richard M.; Cole, John C., III; Holmes, Steve L.; and Ekas, Paul B., 5,350,953, Cl. 307-464.000

Colella, Gregory M.; Ben-David, Daniel; Cupo, Albert; Fan, Sophie S.; Fischer, Gena; Martin, Grace E.; and Ornstein, Leonard, to Miles Inc.; and Mount Sinai School of Medicine of the City University of New York. Methods for the identification and characterization of reticulocytes in whole blood. 5,350,695, Cl. 436-63.000.

Coleman, Marilyn C.: *See—*
Tennis, John M.; Able, Adriane H.; Coleman, Marilyn C.; Hough, Mark; and Mahon, Kaye M., 5,349,967, Cl. 128-888.000.

Coleman, Richard D.; Toll, Floyd N.; McCracken, Thomas W.; Capes, C. Edward; and Ikura, Michio, to Energy Mines and Resources-Canada. Oil/coal coprocessing in which agglomerated coal forms part of feedstock. 5,350,430, Cl. 44-627.000.

Colligan, Francis D., to United States Surgical Corporation. Apparatus for attaching surgical suture components. 5,350,373, Cl. 606-1.000.

Collins, John M.: *See—*
Stephens, Randy R.; Collins, John M.; Farra, Robert; and Pichon, Dean, 5,350,364, Cl. 604-167.000.

Collins, Kenneth S.; Trow, John R.; Tsui, Joshua C. W.; Roderick, Craig A.; Bright, Nicolas J.; Marks, Jeffrey; and Ishikawa, Tetsuya, to Applied Materials, Inc. Electrostatic chuck for high power plasma processing. 5,350,479, Cl. 156-345.000.

Collver, Donald L.: *See—*
Franke, Walter K., 5,350,050, Cl. 198-347.100.

Colter, Jeffrey B., to Micro-Trak Systems, Inc. Motor control circuit. 5,350,992, Cl. 318-807.000.

Columbia University in the City of New York, The Trustees of: *See—*
Erlanger, Bernard F.; Cleveland, William L.; and Cacalano, Nicholas A., 5,350,574, Cl. 514-9.000.

Colwell, Kevin: *See—*
Engelke, Robert M.; Colwell, Kevin; Gisske, EDward; and Schultz, Ronald, 5,351,288, Cl. 379-98.000.

Combe Incorporated: *See—*
Shansky, Albert, 5,350,424, Cl. 8-406.000.

Combustion Engineering, Inc.: *See—*
Grossman, Leonard N.; and Jonsson, Alf I., 5,350,542, Cl. 252-636.000.
Perrotti, Patrick A., 5,350,161, Cl. 267-160.000.

Cominvest Research AB: *See—*
Lindholm, Per, 5,351,292, Cl. 380-10.000.

Commissariat a l'Energie Atomique: *See—*
Boissel, Jacques; Delhalle, Joseph; LeCayon, Geard; and Viel, Pascal, 5,350,323, Cl. 439-886.000.
Iracane, Daniel, 5,351,248, Cl. 372-2.000.
Jacquot, Bernard, 5,350,974, Cl. 315-111.810.

Commonwealth Scientific and Industrial Research Organisation: *See—*
Azad, Ahmed A.; Jagadish, Mittur N.; and Fahey, Kevin J., 5,350,575, Cl. 424-192.100.

Compania Kelmas S.A.: *See—*
Mulieri, Norberto M., 5,350,976, Cl. 315-290.000

Comstock, Gary L.: *See—*
Sheehan, Terrence M.; Mukherjee, Jyoti; Cady, Raymond C.; Comstock, Gary L.; and Soroka, Daniel P., 5,349,731, Cl. 29-27.00R.

Conductus, Inc.: *See—*
Withers, Richard S.; and Liang, Guo-Chun, 5,351,007, Cl. 324-322.000

Congdon, William C., Jr.: *See—*
Lockard, Joan S.; DuCharme, Larry L.; Congdon, William C., Jr.; and Kalk, Douglas F., 5,349,962, Cl. 128-732.000.

Connector Set Limited Partnership: *See—*
Glickman, Joel I., 5,350,331, Cl. 446-126.000.

Connelly, John M., Jr.: *See—*
Delaney, William E., III; Connelly, John M., Jr.; and Sicker, Fred C., 5,349,896, Cl. 92-98.00R.

Conner, John P.: *See—*
Stallard, David W.; and Conner, John P., 5,350,270, Cl. 414-276.000

Conners, John A.: *See—*
Esposito, Felix F.; Conners, John A.; Logan, Joseph N.; Dwyer, James W.; and Crainich, Laurence, 5,350,400, Cl. 606-219.000.

Connor, David T.: *See—*
Boschelli, Diane H.; Connor, David T.; Kramer, James B.; and Unangst, Paul C., 5,350,748, Cl. 514-237.200.

Conoco Specialty Products Inc.: *See—*
Shaw, Christopher K.; Tuckett, Phillip C.; and Bowers, Bill E., 5,350,525, Cl. 210-744.000.

Consaul, James R.: *See—*
Kemske, Jonathan D.; Consaul, James R.; Rosenwald, Diane R.; Shomo, Robert B., Jr.; and Wendt, Dan J., 5,350,904, Cl. 219-730.000.

Consolidated Engineering Company: *See—*
Crafton, Paul M.; and Crafton, Scott P., 5,350,160, Cl. 266-252.000.

Control Rain Systems, Inc.: *See—*
Goldsmith, Peter J., 5,349,982, Cl. 137-454.500.

Conway-Jones, David C.: *See—*
Brown, David J.; Conway-Jones, David C.; Kim, Jong-Han; and Smith, Peter M., 5,351,093, Cl. 348-530.000

Coogan, James J., to Landis & Gyr Powers, Inc. Air flow control system and method for a dual duct system. 5,350,113, Cl. 236-13.000.

Cook, Lee M., to Galileo Electro-Optics Corporation. Waveguide arrays and method for contrast enhancement. 5,351,332, Cl. 385-116.000

Cooke, Theodore M.: *See—*
Lin, An-Chung R.; and Cooke, Theodore M., 5,350,446, Cl. 706-27.00R.

Cookson Group PLC: *See—*
Katyal, Anil; Brown, Warwick N.; and Howitt, Roger, 5,350,440, Cl. 75-686.000.

Coombs, Peter M., to Gradco (Japan) Ltd. Sorter operated jogger. 5,350,164, Cl. 270-53.000.

Cooper, Martin: *See—*
Stewart, Andrew D. G.; Smith, Robin W.; Smith, Martin P.; Cooper, Martin; Welbourn, Christopher M.; and Spear, Paul M., 5,351,117, Cl. 356-30.000.

Cooper, Renee R.: *See—*
Cooper, Ricky N.; Cooper, Renee R.; Pendleton, Charles P.; Rinehart, Steven R.; Turano, Louis R.; and Webb, Richard N., 5,350,051, Cl. 198-396.000.

Cooper, Ricky N.; Cooper, Renee R.; Pendleton, Charles P.; Rinehart, Steven R.; Turano, Louis R.; and Webb, Richard N., to Philip Morris Incorporated. Agitator apparatus for cylindrical articles. 5,350,051, Cl. 198-396.000.

Cooper, Steven W.; and Truitt, George A., to Texas Instrument Incorporated. Electronic switch controlled by plural inputs. 5,350,957, Cl. 307-571.000.

Coops, Peter: *See—*
Bierhoff, Martinus P. M.; Coops, Peter; Van Eck, Dirk C.; and Sieben, Joannes H. F. C., 5,350,916, Cl. 250-214.100.

Copeland, Carl E.: *See—*
Fox, Robert L.; Copeland, Carl E.; Swaim, Robert J.; Coultrip, Robert H.; Johnston, David F.; Phillips, W. Morris; Johnson, Samuel D.; Dinkins, James R.; and Buckley, John D., 5,350,902, Cl. 219-633.000.

Copeland, Richard: *See—*
Liu, Nen-Chin; O'Handley, Robert C.; Ho, Wing; and Copeland, Richard, 5,351,033, Cl. 340-572.000.

Copes, Jane S., to Minnesota Mining and Manufacturing Company. Coating for ceramic composites. 5,350,447, Cl. 106-287.170.

Coppa, Nicholas V., to United States of America, Energy. Storage of nuclear materials by encapsulation in fullerenes. 5,350,569, Cl. 423-251.000.

Coquerel, Patrick, to Institut Francais du Petrole. Method and device for measuring the successive amplitude levels of signals received on a transmission channel. 5,351,271, Cl. 375-10.000.

Corbett, John S.: *See—*
Chippendale, Kevan E.; Corbett, John S.; Hart, John L.; and Walkley, Geraldine, 5,349,944, Cl. 128-200.140.

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Goode, Roberta D.; and Weinstein, Lawrence A., 5,350,363, Cl. 604-167.000.

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Hanrahan, Lawrence M.; and Kinney, Lawrence P., 5,349,958, Cl. 128-660.010.

Corn, Jack E. Vehicle sunvisor. 5,350,212, Cl. 296-97.400.

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Beall, George H.; Chyung, Kenneth; and Taylor, Mark P., 5,350,716, Cl. 501-5.000.
Day, J. Paul; and Hickman, David L., 5,350,717, Cl. 501-7.000.
Ketcham, Thomas D.; Share, Leroy S.; and St. Julien, Dell J., 5,350,637, Cl. 428-539.500.
Miller, William J.; Modavis, Robert A.; and Webb, Thomas W., 5,351,323, Cl. 385-28.000.
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Sims, John E.; Cosman, David J.; Lupton, Stephen D.; Mosley, Bruce A.; and Dower, Steven K., 5,350,683, Cl. 435-69.100.

Cosmos Entwicklungs-und Forschungsanstalt: *See—*
Fischer, Gerhard, 5,349,985, Cl. 137-607.000.

Costanza, Daniel W.: *See—*
Hinton, John H.; Nowak, William J.; and Costanza, Daniel W., 5,351,070, Cl. 346-108.000.

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Cote, Ravnald; and Cote, Victor. Mechanical connection device for assembling a railing. 5,350,156, Cl. 256-65.000.

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MacKay, Michael T.; Duffy, Robert; Cotterill, Lee A.; Herz, William; and McArdle, Joe, 5,351,161, Cl. 360-137.000.

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Anderson, James M.; Coulson, Andrew R.; Demaioribus, Vincent J.; and Nicholas, Henry T., 5,350,704, Cl. 437-51.000.

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Boggs, Roger A.; Cournoyer, Richard L.; Ellis, Ernest W.; Russo-Rodriguez, Sandra E.; Telfer, Stephen J.; Waller, David P.; and Zuraw, Michael J., 5,350,870, Cl. 560-27.000.

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Cameron, Charles; Courty, Philippe; Berrebi, Georges; Roumieu, Raymond; Rabehasaina, Hans; and Eschard, Francois, 5,350,728, Cl. 502-415.000.

Covet, Fabrice: *See—*
Groshens, Pierre; and Covet, Fabrice, 5,350,626, Cl. 428-229.000.

Cox, Kelly A.: *See—*
Baer, Thomas M.; Cox, Kelly A.; Gooding, Phillip; Cole, John; Head, David F.; and Kintz, Gregory J., 5,351,121, Cl. 356-301.000.

Cox, Thomas L.: *See—*
Kiriakides, Alex, Jr.; and Cox, Thomas L., 5,350,082, Cl. 221-1.000

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Esposito, Felix F.; Conners, John A.; Logan, Joseph N.; Dwyer, James W.; and Crainich, Laurence, 5,350,400, Cl. 606-219.000.

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Dawson, Dale E.; Burk, Albert A., Jr.; Cramer, Harlan C.; Brooks, Ronald C.; and Henry, Howell G., 5,351,163, Cl. 361-321.100.

Crane, Roger M.; and Coffin, Paul, to United States of America, Navy. Attachment methodology for composite cylinder assembly. 5,349,738, Cl. 29-434.000.

Crawford, Ian D., to GEC Ferranti Defence Systems Limited. Target identification systems. 5,350,134, Cl. 244-3.160.

Crawley, Graham C.; and Girodeau, Jean-Marc M. M., to Zeneca Limited; and ICI Pharma. Heterocyclic cycloalkanes. 5,350,754, Cl. 514-277.000.

Creco Corporation: *See—*
Espey, Carl R.; and Fischer, Donald A., 5,350,266, Cl. 411-431.000.

Crewson Brunner Inc.: *See—*
Crewson, Gary; and Dimond, Darryl F., 5,350,043, Cl. 188-79.550.

Crewson, Gary; and Dimond, Darryl F., to Crewson Brunner Inc. Automatic slack adjuster. 5,350,043, Cl. 188-79.550.

Crimmins, James W., to K and M Electronics, Inc. ASK optical transmitter. 5,351,149, Cl. 359-181.000.

Crivello, James V., to Rensselaer Polytechnic Institute. Photocurable compositions of polyindane and 1,3-diisopropenylbenzene, and coating process. 5,350,604, Cl. 427-512.000.

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Narula, Chaitanya K.; and Crosbie, Gary M., 5,350,719, Cl. 501-96.000.

Crown Roll Leaf, Inc.: *See—*
Cuelli, Peter, 5,351,142, Cl. 359-2.000.

Croyle, Noreen A. Toy doll. 5,350,333, Cl. 446-370.000.

Crystal Semiconductor Corporation: *See—*
Thompson, Charles D.; and Swanson, Eric J., 5,351,050, Cl. 341-143.000.

CSL Opto-Electronics Corporation: *See—*
She, Yongzheng; Chen, Shizheng; Cao, Weilou; and Shih, Yanhua, 5,351,279, Cl. 378-43.000.

Cuelli, Peter, to Crown Roll Leaf, Inc. Semi-transparent reflective layer for a phase hologram. 5,351,142, Cl. 359-2.000.

Culbertson, Edwin C.; and Farrar, Grover L., to Hoechst Celanese Corporation. Process for making and using polymeric film coated with primer coating for silicone release applications. 5,350,601, Cl. 427-412.100.

Culbertson, Philip E.; Rogers, Thomas F.; and Ware, Randolph H., to University Corporation for Atmospheric Research. Low-cost shuttle-derived space station. 5,350,138, Cl. 244-159.000.

Culp, Gordon W., to Rockwell International Corporation. Piezocellular propulsion. 5,350,966, Cl. 310-328.000.

Cunningham, John. Method for supporting distribution means. 5,350,253, Cl. 405-154.000.

Cupo, Albert: *See—*
Colella, Gregory M.; Ben-David, Daniel; Cupo, Albert; Fan, Sophie S.; Fischer, Gena; Martin, Grace E.; and Ornstein, Leonard, 5,350,695, Cl. 436-63.000.

Curioni Sun S.r.l.: *See—*
Maccalli, Giacomo, 5,350,350, Cl. 493-221.000.

Cushing, Meredith K. Apparatus for assembling reinforcing bar pier cages. 5,350,162, Cl. 269-13.000.

CVD, Incorporated: *See—*
Kanjolia, Ravindra K.; Hui, Benjamin C.; and Grant, William B., 5,350,869, Cl. 556-1.000.

Cygan, David F.: *See—*
Khinkis, Mark J.; Abbasi, Hamid A.; and Cygan, David F., 5,350,293, Cl. 431-116.000.

Cywinski, Jozef. Device for trophic stimulation of muscles. 5,350,415, Cl. 607-68.000.

D.A.M. Deutsche Angelgerate Manufaktur Hellmuth Kuntze GmbH & Co. KG: *See—*
Baumgartner, Walter; and Hamann, Dieter, 5,350,131, Cl. 242-242.000.

Daewoo Electronics Co., Ltd.: *See—*
Park, Hakjae, 5,351,086, Cl. 348-402.000.

Daido Tokushuko Kabushiki Kaisha: *See—*
Watanabe, Yasushi; and Endo, Hiroshi, 5,350,437, Cl. 75-346.000.

Daiho Industrial Co., Ltd.: *See—*
Kimoto, Hidetoshi; and Shihota, Isao, 5,350,288, Cl. 425-136.000.

Daiichi Pure Chemicals Co., Ltd.: *See—*
Ebata, Nobuyoshi; Notsu, Kazuaki; Udagawa, Akiko; and Shiratori, Mieko, 5,350,552, Cl. 264-102.000.

Daikoku, Takahiro; and Inouye, Hiroshi, to Hitachi, Ltd. Apparatus for cooling heat generating members. 5,349,831, Cl. 62-376.000.

Daimichi Mold Manufacturing Co., Ltd.: *See—*
Kimoto, Hidetoshi; and Shihota, Isao, 5,350,288, Cl. 425-136.000.

Dalal, Dhaval B.: *See—*
Tsai, Fu Sheng; and Dalal, Dhaval B., 5,351,179, Cl. 363-53.000.

Dambach-Werke GmbH: *See—*
Killinger, Erich, 5,351,065, Cl. 345-109.000.

Dan Lynn Industries, Inc.: *See—*
Posner, Scott, 5,349,764, Cl. 36-50.100.

Dana Corporation: *See—*
Shealy, Noah A., 5,350,183, Cl. 280-96.100.

Daniel, Edward A.; and Bergman, Frederick C., to Minster Machine Company, The. Press shutheight adjustment mechanism. 5,349,902, Cl. 100-48.000.

Daniel, William H., to Purdue Research Foundation. Planted surface moisture control system. 5,350,251, Cl. 405-37.000.

Daniels, Ted M.; and Burreson, Bernard J., to Eldec Corporation. Saturable core proximity sensor including a flux director and a magnetic target element. 5,351,004, Cl. 324-207.130.

Daniloff, Yuri; Robins, Simon P.; Evans, Brian J.; Pratt, David A.; and Lungard, Robert, to Metra Biosystems, Inc. Derivatized D-acyl pyridinium reagent. 5,350,855, Cl. 546-291.000

Danno, Yoshiaki: *See—*
Sanbayashi, Daisuke; Hirako, Osamu; Danno, Yoshiaki; and Koga, Kazuo, 5,349,816, Cl. 60-277.000.

Danowski, Thomas J.: *See—*
Larson, Douglas A.; Danowski, Thomas J.; and Voss, Roy, 5,350,079, Cl. 220-264.000.

Dantzig, Anne H.: *See—*
Berry, Dennis R.; Dantzig, Anne H.; Debono, Manuel; Hamill, Robert; Molloy, R. Michael; and Yao, Raymond C., 5,350,579, Cl. 424-122.000.

Darrey, John J. Tool and hardware carrier for bucket. 5,350,065, Cl 206-373.000

Darrieux, Jean-Louis, to Societe Nationale Industrielle et Aerospatiale Method and device for producing reinforcement elements formed of resistant fibers. 5,350,615, Cl. 428-102.000.

Darwen, Stuart P.; and Cornforth, David A., to Air Products and Chemicals, Inc. Water dispersible polyamine-epoxy adduct and epoxy coating composition. 5,350,784, Cl. 523-404.000

DaSilva, Elias S. Multi-functional hand gripping device. 5,350,343, Cl. 482-106.000.

Dataproducts Corporation: *See—*
Lin, An-Chung R.; and Cooke, Theodore M., 5,350,446, Cl. 706-27.00R

Dauger, Alain: *See—*
Anquetil, Jerome; and Dauger, Alain, 5,350,718, Cl. 501-21.000.

Davenport, Le Roi D. Survival saw. 5,349,756, Cl. 30-506.000.

David, Claire: *See—*
Besnard, Marie-Madeleine; David, Claire; and Knipper, Magali, 5,350,524, Cl. 210-728.000.

Davida Enterprises, Inc.: *See—*
Levy, Davida, 5,349,725, Cl. 24-303.000.

Davidge, Gregory M., to Tortoise Products, Inc. Adhesively mounted security system. 5,349,834, Cl. 70-18.000.

Davis, Ellis, Jr.; McFarland, James E.; and Teague, Edward W., to Burlington Industries Inc. Fabric finishing procedure. 5,350,423, Cl 8-401.000.

Davis, Larry: *See—*
Martin, Lawrence L.; and Davis, Larry, 5,350,762, Cl. 514-411.000

Dawson, Dale E.; Burk, Albert A., Jr.; Cramer, Harlan C.; Brooks, Ronald C.; and Henry, Howell G., to Westinghouse Electric Corporation. High Q monolithic MIM capacitor. 5,351,163, Cl. 361-321.100.

Day, Fleming H., to E. I. Du Pont du Nemours and Company. Low fume finish for wet air-jet texturing. 5,350,529, Cl. 252-8.600.

Day, J. Paul; and Hickman, David L., to Corning Incorporated. Method for treating beta-spodumene ceramics. 5,350,717, Cl. 501-7.000.

Daynes, John C.. *See—*
Weaver, Robert J.; Brittingham, Dennis C.; Basta, Joseph C.; and Daynes, John C., 5,350,317, Cl. 439-500.000.

de la Rochefoucauld, Christian: *See—*
Deprez, Jean-Pierre; and de la Rochefoucauld, Christian, 5,350,613, Cl. 428-43.000.

Debono, Manuel: *See—*
Berry, Dennis R.; Dantzig, Anne H.; Debono, Manuel; Hamill, Robert; Molloy, R. Michael; and Yao, Raymond C., 5,350,579, Cl. 424-122.000.

De Buck, Vincent, to Alphadent. Method and apparatus for applying a direction-adjusting extension piece in a dental implant. 5,350,301, Cl. 433-173.000.

Deckelbaum, Lawrence I.; and Scott, John J., to Yale University. Methods for laser induced fluorescence intensity feedback control during laser angioplasty. 5,350,375, Cl. 606-7.000.

Deckers, Andreas: *See—*
Besecke, Siegmund; Deckers, Andreas; and Lauke, Harald, 5,350,808, Cl. 525-330.500.

Deere & Company: *See—*
Mendoza, Ramon C.; and Vonderhaar, Michael J., 5,350,066, Cl. 206-386.000.

De Godoy Moreira, Roberto. Surgical instrument for injecting/removing non-solid substances. 5,350,365, Cl. 604-187.000.

DeGraaf, Henry J.; and Sobek, Susan M., to Ferro Corporation. Polyester-arcylic graft polymers for use in powder coatings. 5,350,810, Cl. 525-445.000

Degussa Aktiengesellschaft: *See—*
Anquetil, Jerome; and Dauger, Alain, 5,350,718, Cl. 501-21.000.

Dehaine, Francois: *See—*
Bracque, Gilles; Dehaine, Francois; Gourbier, Jean-Pierre; Grelaud, Alain; Guillard, Alain; Mouliney, Michel; and Rieth, Norbert, 5,349,827, Cl. 62-298.000.

Deitrich, Eric A.: *See—*
Sheaffer, John E.; and Deitrich, Eric A., 5,349,923, Cl. 119-15.000.

Deka Products Limited Partnership: *See—*
Kamen, Dean; Spencer, Geoffrey P.; and Vincent, Douglas E., 5,350,357, Cl. 604-29.000.
Kamen, Dean L.; Seale, Joseph B.; Briggs, Joseph; and Arnold, Finn, 5,349,852, Cl. 73-149.000.

Delaire, Jacques, to Micro Mega SA. Method and canal instrument for filling and/or coating the walls of an endodontic canal. 5,350,298, Cl. 433-81.000.

Delalle, Jacques; Mahrez, Ouaniche; Lamothe, Michele; Passa, Frederic; and Roucaute, Philippe. Solder connector device. 5,350,105, Cl. 228-56.300.

Delaney, William E., III; Connelly, John M., Jr.; and Sicker, Fred C., to W. L. Gore & Associates, Inc. Pump diaphragm. 5,349,896, Cl. 92-98.00R.

Delecki, Daniel J.: *See—*
Snow, Robert A.; Delecki, Daniel J.; Shah, Chandra R.; and Hollister, K. Robert, 5,350,696, Cl. 546-270.000.

Del Fabbro, Valerio: *See—*
Catot, Bernard; Del Fabbro, Valerio; and Stevenot, Guy, 5,349,861, Cl. 73-598.000.

Delhalle, Joseph: *See—*
Boissel, Jacques; Delhalle, Joseph; LeCayon, Geard; and Viel, Pascal, 5,350,323, Cl. 439-886.000.

Dellaria, Joseph F.; Moore, Jimmie L.; and Brooks, Dee W., to Abbott Laboratories. Ether-containing inhibitors of 5-lipoxygenase. 5,350,765, Cl. 514-460.000.

DELMAG Maschinenfabrik Reinhold Dornfeld GmbH & Co.: *See—*
Mauch, Magnus; and Kehrberger, Achim, 5,350,027, Cl. 173-216.000.

DelPrete, Stephen D.; and Santos, Donald, to Augat Inc. Stackable . interconnection socket. 5,350,306, Cl. 439-69.000.

Deluhery, James G.: *See—*
Wiener, Scott A.; and Deluhery, James G., 5,349,959, Cl. 128-660.060.

Demaioribus, Vincent J.: *See—*
Anderson, James M.; Coulson, Andrew R.; Demaioribus, Vincent J.; and Nicholas, Henry T., 5,350,704, Cl. 437-51.000.

DeMars, Robert A. Leisure chair. 5,350,215, Cl. 297-194.000.

Dembek, Alexa A.; and Marsi, Marianne, to Du Pont de Nemours, E. I., and Company. Transition metal complexes of polyarylene oxides and sulfides. 5,350,832, Cl. 528-373.000

de Muijnck, Andries C.; and Herman de Groot, Johan W., to Hoogovens Groep BV. Wire transport apparatus. 5,350,102, Cl. 226-186.000.

Dennis, Michael E., to I.S.T. Laboratories, Ltd. Method of making module for automotive electrical systems. 5,349,747, Cl. 29-840.000.

Dent, Paul W., to Ericsson GE Mobile Communications Inc. Adaptively self-correcting modulation system and method. 5,351,016, Cl. 332-103.000.

Deprez, Jean-Pierre; and de la Rochefoucauld, Christian, to Vertal Nord Est. Safety windowpanes made of laminated glass; processes for their manufacture. 5,350,613, Cl. 428-43.000.

Depuy Inc.: *See—*
Goble, E. Marlowe; and Lower, Jerry L., 5,350,380, Cl. 606-80.000.

Deroo, Daniel: *See—*
Armand, Michel; Sanchez, Jean-Yves; and Deroo, Daniel, 5,350,646, Cl. 429-192.000.

Derrick, Steven L. Compressible blanket assembly. 5,350,623, Cl. 428-217.000.

de Ruiter, Ernest: *See—*
von Blucher, Hasso; and de Ruiter, Ernest, 5,350,443, Cl. 96-135.000.

Design Tech International, Inc.: *See—*
Gottlieb, Mark; and Powell, Harry, 5,349,931, Cl. 123-179.200.

Dessau, Ralph M., to Mobil Oil Corporation. Shape selective hydrogenation of aromatics over modified non-acidic platinum/ZSM-5 catalysts. 5,350,504, Cl. 208-143.000.

Deters, Ludger A.; and Adenheuer, Frank, to Barmag, AG. Apparatus for loading winding tubes. 5,350,128, Cl. 242-35.50A.

Deutsch, Joseph J. Self-contained pressurized water delivery system. 5,351,337, Cl. 392-450.000.

Devaux, Dominique; Hellio, Caroline; and Misse, Jean-Gabriel, to Luchaire Defense SA. Cartridge tube for rifle grenade capable of retaining the bullet fragments. 5,349,906, Cl. 102-485.000.

DeVito, Vincent. Measuring and cutting tool. 5,349,760, Cl. 33-760.000.

Devlin, Thomas: *See—*
Ulrich, Karl; and Devlin, Thomas, 5,349,950, Cl. 128-207.160.

Devore, David I.; Clungeon, Nancy; and Fischer, Stpehen A., to Henkel Corporation. Wet strength resin composition. 5,350,796, Cl. 524-514.000.

D'Hont, Loek; Tip, Anne; and Meier, Herbert, to Texas Instruments Incorporated. Transponder systems for automatic identification purposes. 5,351,052, Cl. 342-42.000.

Diamond Semiconductor Group, Inc.: *See—*
White, Nicholas R.; Sieradzki, Manny; and Renau, Anthony, 5,350,926, Cl. 250-492.210.

Diaz, Thomas P.; Dunning, Gail E.; and LeBlanc, Ronald E., to General Electric Company. Welded nickel alloy double-cantilever beam crack growth sensor and method for its fabrication. 5,349,869, Cl. 73-799 000.

DiCarlo, Leonard J., to McNeil (Ohio) Corporation. Air motor control. 5,349,895, Cl. 91-221.000.

DiCerbo, Charles. Sports racket. 5,350,173, Cl. 273-73.00G.

DiDomenico, Leo D.: *See—*
Kim, Anderson H.; DiDomenico, Leo D.; Weiner, Maurice; Jasper, Louis J., Jr.; and Youmans, Robert J., 5,351,063, Cl. 343-895.000.

Dietz, Johann; Franz, Klaus; Pfaff, Gerhard; Vogt, Reiner; and Nitta, Katsuhisa, to Merck Patent Gesellschaft Mit Beschrankter Haftung. Electrically conductive pigments. 5,350,448, Cl. 106-441.000.

Digital Equipment Corporation: *See—*
Chan, Vincent W. S.; Gallager, Robert G.; Kirby, Alan J.; and Saleh, Adel A. M., 5,351,146, Cl. 359-118.000.
Dow, Howard E.; Li, Ruby; and Potter, Terry W., 5,351,247, Cl. 371-15.100.
Kalkunte, Ramesh S.; Rege, Satish L.; and Hasani, Santosh K., 5,351,243, Cl. 370-92.000.
Perlman, Radia J.; and Kaufman, Charles W., 5,351,295, Cl. 380-23.000.
Tsai, Fu Sheng; and Dalal, Dhaval B., 5,351,179, Cl. 363-53.000.

DiLullo, Dean; and Jorasch, James, to DiLullo, Dean. Betting game method of play. 5,350,175, Cl. 273-146.000.

Dimond, Darryl F.: *See—*
Crewson, Gary; and Dimond, Darryl F., 5,350,043, Cl. 188-79.550.

DiNinno, Frank P.; and Salzmann, Thomas N., to Merck & Co., Inc. 2-biphenyl-carbapenems. 5,350,846, Cl. 540-302.000.

Dinkel, Dieter: *See—*
Burgdorf, Jochen; Reinartz, Hans-Dieter; Steffes, Helmut; Ocvirk, Norbert; Volz, Peter; Weise, Lutz; Fennel, Helmut; Wupper, Hans; Bleckmann, Hans-Wilhelm; Beck, Erhard; Dinkel, Dieter; and Haupt, Karlheinz, 5,350,226, Cl. 303-116.200.

Dinkins, James R.: *See—*
Fox, Robert L.; Copeland, Carl E.; Swaim, Robert J.; Coultrip, Robert H.; Johnston, David F.; Phillips, W. Morris; Johnson, Samuel D.; Dinkins, James R.; and Buckley, John D., 5,350,902, Cl. 219-633.000.

Dirksing, Robert S.; and Miller, David T., to Procter & Gamble Company, The. Dual wiper mascara package having residual chamber with bypass channel. 5,349,972, Cl. 132-218.000.

Dirlam, John P.; Maeda, Hiroshi; and Tone, Junsuke, to Pfizer Inc. Anticoccidial and growth promoting polycyclic ether antibiotic. 5,350,764, Cl. 514-460.000.

Ditzig, Albert F., to Eaton Corporation. Servomotor remote control switch. 5,350,891, Cl. 200-6.00A.

Dixon, Thomas L.: *See—*
Sowar, Richard M.; Heiny, William C.; Olsen, Paul C.; Hotchkiss, Mark R.; Dixon, Thomas L.; Richard, Charles W., Jr.; and Raines, Michael D., 5,351,196, Cl. 364-474.240.

Dodt, William C.; Donze, Jerry L.; Leonhardt, Michael L.; Milligan, Charles A.; Narahari, Hari S.; Owens, John C.; and Pyatt, Kurt W., to Storage Technology Corporation. Magnetic tape cartridge having media identification. 5,351,159, Cl. 360-132.000.

Doi, Miwako; Amano, Shin-ya; Miike, Seiji; Nogami, Hiroyasu; Kumano, Akira; Takeda, Kimihito; Adachi, Hisahiro; Iwai, Isamu; Okamoto, Toshio; Yamanaka, Noriko; and Kawada, Tsutomu, to Kabushiki Kaisha Toshiba. Machine translation system including separated side-by-side display of original and corresponding translated sentences. 5,351,189, Cl. 364-419.020.

D'Olimpio, Paolo: *See—*
Andriollo, Nunzio; Cassani, Giorgio; D'Olimpio, Paolo; Donno, Bruno; and Ricci, Marco, 5,350,521, Cl. 210-653.000.

Doll, William J., Jr.; Judy, Murray S.; Kirchner, Albert H., III; Krier, Thomas J.; McVicker, Rudolph M.; Monroe, Brian E.; Pettitt, Meldon L.; Reiswig, Danny R.; Watchorn, Alan; Wesley, Jerry A.; and Wirfel, John C., to Simpact Associates, Inc. Digital/audio interactive communication network. 5,351,276, Cl. 379-67.000.

Dolle, Volker: *See—*
Winter, Andreas; Dolle, Volker; and Spaleck, Walter, 5,350,817, Cl. 526-119.000.

Dombek, Bruce B.; and Boone, Theodore F., to Navistar International Transporation Corporation. Anti-drain fluid filter. 5,350,506, Cl. 210-136.000.

Domenig, Georg. Adjustable mounting bracket with a tongueless drawer guide. 5,349,723, Cl. 16-94.00R.

Domtar, Inc.: *See—*
Nguyen, Xuan T., 5,350,493, Cl. 162-6.000.

Donahue, Frederick A.: *See—*
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Donlar Corporation: *See—*
Kinnersley, Alan M.; Koskan, Larry P.; Strom, David J.; and Meah, Abdul R. Y., 5,350,735, Cl. 504-147.000.

Donno, Bruno: *See—*
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Donze, Jerry L.: *See—*
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Doring, Fritz: *See—*
Schnalke, Karl-Erwin; Heinrich, Josef; and Doring, Fritz, 5,350,865, Cl. 549-434.000.

Dorrah, James M. Apparatus and method for producing and oscillating, an orbiting and a vibrating movement on a disc body. 5,349,786, Cl. 451-357.000.

Doskocil Manufacturing Company, Inc.: *See—*
Fiore, Joseph F., 5,350,150, Cl. 248-552.000.

Douglass, James M., to Outboard Marine Corporation. Recreational boat. 5,349,919, Cl. 114-56.000.

Dover Corporation: *See—*
Koeninger, Robert C., 5,349,994, Cl. 141-94.000.

Dow Chemical Company, The: *See—*
Muskopf, Jack W.; Christy, M. Robert; Jameson, Jaysn F., deceased; Jameson, Jerry M., heir; Jameson, Donna R., heiress; and Hallmark, Tami S., 5,350,802, Cl. 525-65.000.
Neithamer, David R.; and Stevens, James C., 5,350,723, Cl. 502-104.000.
Stultz, Jeffrey H., 5,349,797, Cl. 52-396.050.

Dow Corning Corporation: *See—*
Caporiccio, Gerardo, 5,350,878, Cl. 560-227.000.
Hagen, Peter, 5,350,234, Cl. 366-162.000.
Hess, Carol A., 5,350,679, Cl. 435-32.000.

Dow Corning Toray Silicone Co., Ltd.: *See—*
Kobayashi, Hideki, 5,350,824, Cl. 528-21.000.

Dow, Howard E.; Li, Ruby; and Potter, Terry W., to Digital Equipment Corporation. Adaptive fault identification system. 5,351,247, Cl 371-15.100.

DowElanco: *See—*
Hackler, Ronald E.; and Jourdan, Glen P., 5,350,749, Cl. 514-248.000.

Dowell Schlumberger Incorporated: *See—*
Sorem, Robert M.; Eslinger, David M.; Thomeer, Hubertus V.; Willauer, Darrin; and Adnan, Sarmad, 5,350,018, Cl. 166-250.000.

Dower, Steven K.: *See—*
Sims, John E.; Cosman, David J.; Lupton, Stephen D.; Mosley, Bruce A.; and Dower, Steven K., 5,350,683, Cl. 435-69.100.

Downing, Robert A.: *See—*
Lee, Frank P.; Kao, Sheau V.; Allison, Gerald R.; Mahabadi, Hadi K.; Liebermann, Geroge; Vijayakumar, Gopalan; and Downing, Robert A., 5,350,659, Cl. 430-137.000.

Draghetti, Fiorenzo: *See—*
Rizzoli, Salvatore; and Draghetti, Fiorenzo, 5,349,968, Cl. 131-94.000.

Drake, Rodney: *See—*
Salt, Tom; Drake, Rodney; and Allen, Ray, 5,351,216, Cl. 365-230.010.

Drent, Eit; and Jager, Willem W., to Shell Oil Company. Carbonylation of conjugated dienes. 5,350,876, Cl. 560-207.000.

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Dutton, Vance D., 5,349,766, Cl. 37-397.000.

Drinkwater, Wayne D.: *See—*
Amico, Mark S.; Scheuer, Mark A.; Wagman, Irwin; Seeley, Dale E.; Thompson, David M.; Kelsch, Dawn M.; and Drinkwater, Wayne D., 5,350,896, Cl. 219-216.000.

Driver, Benjamin K. Consistency measuring apparatus including elastomeric member for improved reliability. 5,349,848, Cl. 73-54.280.

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van de Moesdijk, Cornelis G. M.; Janssen, Hendrik J.; and Schroijen, Josephus C., 5,350,849, Cl. 544-203.000.

Du, Benjamin R. Condiment dispensing device. 5,350,083, Cl. 222-134.000.

DuCharme, Larry L.: *See—*
Lockard, Joan S.; DuCharme, Larry L.; Congdon, William C., Jr.; and Kalk, Douglas F., 5,349,962, Cl. 128-732.000.

Ducrocq, Jean, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process and apparatus for the replacement of a first flow of gas accompanying a flow of particles with a second flow of gas. 5,350,439, Cl. 75-460.000

Dudley, Stephen G.: *See—*
Stern, Michael D.; Dudley, Stephen G.; and Reschenberg, Dale D., 5,350,612, Cl. 428-40.000.

Dudley, Trent: *See—*
King, Larry; Dudley, Trent; and McPherson, Roger, 5,351,231, Cl. 369-124.000

Duffy, Robert. *See—*
MacKay, Michael T.; Duffy, Robert; Cotterill, Lee A.; Herz, William; and McArdle, Joe, 5,351,161, Cl. 360-137.000.

Dufresne, Claude: *See—*
LaBelle, Mark; Xiang, Yibin; Dufresne, Claude; and Belley, Michel, 5,350,760, Cl. 514-367.000

Dugan, Michael T.; Cilke, Joseph T.; and Petrie, Bruce S., to Houston Satellite Systems, Inc. Satellite receiver with improved memory back-up and loading capabilities. 5,351,130, Cl. 358-725.000.

Duke, Daniel G.; Emody, Kenneth J.; and Almblade, Gary P., to H. C. Duke & Son, Inc. System and method for dispensing a confectionery product using a peristaltic pump. 5,349,825, Cl. 62-69.000.

Dumont, Jean-Pierre; and Riviere Daniel, to Societe Nationale Industrielle et Aerospatiale. Shock sensor and devices to which the latter is applied. 5,349,863, Cl. 73-651.000

Dunlop Coflexip Umbilicals Limited: *See—*
Legallais, Lucien, 5,349,989, Cl. 138-111.000

Dunlop, James I.: *See—*
Glover, Edward C. T. S.; Marsden, Peter D.; and Dunlop, James I., 5,351,104, Cl. 354-328.000

Dunn, Eric S. Impact absorbing armor. 5,349,893, Cl. 89-36.050

Dunn, William P. Flexible bag retaining device. 5,349,710, Cl. 5-503.100

Dunning, Gail E.: *See—*
Diaz, Thomas P.; Dunning, Gail E.; and LeBlanc, Ronald E., 5,349,869, Cl. 73-799.000.

Duphar International Research B.V.: *See—*
Geluk, Hendrik W.; and Loos, Wybrand T., 5,350,871, Cl. 558-351.000

Du Pont de Nemours, E. I., and Company: *See—*
Brunk, Donald H.; Regester, David J.; Robertson, Charles W.; and Wellings, Anders I., 5,350,502, Cl. 204-299.00R
Chu, David K., 5,350,961, Cl. 310-313.00A.
Dembek, Alexa A.; and Marsi, Marianne, 5,350,832, Cl. 528-373.000
Feiring, Andrew E.; Smart, Bruce E.; and Yang, Zhen-Yu, 5,350,821, Cl. 526-247.000
Herron, Norman; and Wang, Ying, 5,350,794, Cl. 524-496.000
Hung, Ming-Hong; and Rozen, Shlomo, 5,350,497, Cl. 204-157.920.
Kaminer, Jon J.; Nevers, Gary F.; and Sellers, Edgar V., 5,351,308, Cl. 382-8.000
Peterson, Robert H.; and Summers, James T., 5,350,625, Cl. 428-219.000
Prejean, George W., 5,350,803, Cl. 525-100.000.
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DuRand, Elden E., III: *See—*
Logsdon, William K.; and DuRand, Elden E., III, 5,351,289, Cl. 379-142.000

Dutton, Vance D., to Dresser Industries, Inc. Boom support pendant pin retainer. 5,349,766, Cl. 37-397.000.

Dutzmann, Stefan. *See—*
Fischer, Reiner; Uhr, Hermann; Widdig, Arno; Dutzmann, Stefan; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; and Schaller, Klaus, 5,350,861, Cl. 548-544.000.

Duval, David F.; Kruhmar, Kim C.; and Ratcliff, Charles E., to Recot, Inc. Method of stabilizing vegetable products in a retort-processed cheese and vegetable product. 5,350,592, Cl. 426-582.000.

Dwyer, James W.: *See—*
Esposito, Felix F.; Conners, John A.; Logan, Joseph N.; Dwyer, James W.; and Crainich, Laurence, 5,350,400, Cl. 606-219.000

Dye, Malcom; Gibbs, Terence K.; Mercer, Ian D.; and Luck, Graham, to International Business Machines Corporation. Nonlinear inductor with magnetic field reduction. 5,350,980, Cl. 315-370.000

Dyke, David E., to Dyke, David E.; and Dyke, Janet M. Ribbed plant support poles. 5,349,780, Cl. 47-47.000

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Dyke, David E., 5,349,780, Cl. 47-47.000.

Dynascan Corporation: *See—*
Rogers, Max W., 5,351,284, Cl. 379-61.000.

E. I. Du Pont du Nemours and Company: *See—*
Day, Fleming H., 5,350,529, Cl. 252-8.600.

E. R. Squibb & Sons, Inc.: *See—*
Poss, Michael A.; Lloyd, John; and Atwal, Karnail S., 5,350,752, Cl. 514-259.000.

Earth & Ocean Sports, Inc.: *See—*
Bambara, John D.; and Glydon, Jon A., 5,350,544, Cl. 264-25.000

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Eastman Chemical Company: *See—*
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Kuo, Thauming; and Foster, Charles H., 5,350,830, Cl. 528-302.000.

Eastman Kodak Company: *See—*
Antoniades, Michael G., 5,350,652, Cl. 430-30.000.
Campbell, Bruce C.; and Mruk, William A., 5,350,733, Cl. 503-227.000
Evans, Gareth B.; Rider, Christopher B.; and Simons, Michael J., 5,350,651, Cl. 430-21.000
Fyson, John R., 5,350,522, Cl. 210-667.000.
Gasper, John; Evans, Gareth B.; Rider, Christopher B.; and Simons, Michael J., 5,350,650, Cl. 430-21.000
Glover, Edward C. T. S.; Marsden, Peter D.; and Dunlop, James I., 5,351,104, Cl. 354-328.000
Janson, Wilbert F., Jr., 5,351,101, Cl. 354-21.000.
Kosydar, Karen M.; Neumann, Stephen M.; Spahn, Robert G.; and Otocka, Edward P., 5,350,732, Cl. 503-227.000.
Simons, Michael J., 5,350,664, Cl. 430-362.000.
Singer, Stephen P.; Merkel, Paul B.; Clark, Bernard Arthur J.; and Stanley, Paul Louis R., 5,350,667, Cl. 430-387.000.

Eaton Corporation: *See—*
Ditzig, Albert F., 5,350,891, Cl. 200-6.00A.
Juds, Mark A.; Beihoff, Bruce C.; Smith, Richard G.; Nelson, William R.; Wycklendt, Daniel A.; Theisen, Peter J.; Hastings, Jerome K.; and Moldovan, Peter K., 5,351,024, Cl. 335-16.000.
Lauritsen, Richard L., 5,350,889, Cl. 200-1.00B.

Ebata, Nobuyoshi; Notsu, Kazuaki; Udagawa, Akiko; and Shiratori, Mieko, to Daiichi Pure Chemicals Co., Ltd. Method for preparing polyacrylamide aqueous gel plate for electrophoresis. 5,350,552, Cl 264-102.000

Eberhard, Joachim: *See—*
Schoettle, Klaus; Eberhard, Joachim; Schmidts, Kurt; and Pavelka, Bozidar, 5,351,160, Cl. 242-347.200.

Eckholm, Eric; and Lustig, David, to Health Sea, Inc. Boneless ham substitutes made from whole fish fillets. 5,350,586, Cl. 426-105.000

Ecole Centrale de Lyon: *See—*
Jaffrezic-Renault, Nicole; Chovelon, Jean-Marc; Perrot, Hubert; Le Perchec, Pierre; and Chevalier, Yves, 5,350,701, Cl. 437-40.000

Ecole Polytechnique, Federale de Lausanne: *See—*
Graetzel, Michael; Nazeeruddin, Mohammad K.; and O'Regan, Brian, 5,350,644, Cl. 429-111.000.

Edo Sports Inc.: *See—*
Pearce, Terry V.; and Pearce, Tony M., 5,350,221, Cl. 301-104.000.

Eduard Hueck GmbH & Co. KG, Firma: *See—*
Walter, Robert; and Hueck, Walter, 5,350,465, Cl. 148-325.000.

Edwards, Ray, to Eastman Chemical Company. Extrusion coating process for producing a high gloss polyethylene coating. 5,350,476, Cl. 156-244.110.

Edwards, Roger: *See—*
Mocilnikar, Gabriel C.; Edwards, Roger; and Tipton, James, 5,349,703, Cl. 4-250.000

EG&G Idaho, Inc.: *See—*
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Egawa, Jiro: *See—*
Nakane, Rintaro; and Egawa, Jiro, 5,351,107, Cl. 355-208.000.

Egner-Walter, Bruno. Yoke for wiper arm. 5,349,719, Cl. 15-250.350.

Eigruber, Horst, to Friedrich Theysohn GmbH. Double worm extruder with meshing screws. 5,350,231, Cl. 366-85.000.

Eisinger, Frantisek L., to Foster Wheeler Energy Corporation. Vibration of systems comprised of hot and cold components. 5,349,813, Cl 60-39.511

Eka Nobel AB: *See—*
Eriksson, Stina; and Holmstrom, Ulla-Kari, 5,350,495, Cl 204-95.000

Ekas, Paul B.: *See—*
Swenson, Richard M.; Cole, John C., III; Holmes, Steve L.; and Ekas, Paul B., 5,350,953, Cl. 307-464.000.

ELA Medical: *See—*
Nitzsche, Remi; Limousin, Marcel; Bonnet, Jean-Luc; and Henry, Christine, 5,350,406, Cl. 607-14.000.

Elantec, Inc.: *See—*
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Eldec Corporation: *See—*
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Electric Power Research Institute, Inc.: *See—*
Brennen, Michael B.; and Moran, Steven A., 5,351,178, Cl. 363-40.000
Brennen, Michael B.; Moran, Steven A.; and Suko, Scott K., 5,351,180, Cl. 363-71.000.
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Electro Science Technologies, Inc.: *See—*
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Electronics and Telecommunications Research Institute: *See—*
Chun, Oh G.; Ahn, Seung H.; Jeong, Myung Y.; and Choy, Tae G., 5,351,334, Cl. 385-134.000.

Elek n/e, Klara, cu/e/ e Herczik: *See—*
Toth, Gyorgy; Balint, Janos; Elek n/e, Klara, cu/e/ e Herczik; Moricz nee Garai, Zsuzsanna; and Mudra nee Kantor, Eva, 5,350,872, Cl. 560-55.000.

Elf Atochem S.A.: *See—*
Michaud, Pascal, 5,350,534, Cl. 252-171.000

Elford, Howard L.; and van't Riet, Bartholomeus. Therapeutic process for the treatment of septic shock. 5,350,770, Cl. 514-575.000.

Elgee, Steven B.: *See—*
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Eli Lilly and Company: *See—*
Berry, Dennis R.; Dantzig, Anne H.; Debono, Manuel; Hamill, Robert; Molloy, R. Michael; and Yao, Raymond C., 5,350,579, Cl. 424-122.000
Brown, Frank, Jr., 5,350,845, Cl. 540-215.000.

Eliachar, Isaac, to Hood Laboratories. Nasal splint. 5,350,396, Cl. 606-199.000

Elie, Christian, to Pelican International. Modular twin hull boat 5,349,918, Cl. 114-352.000

Elison, Hans-Dieter: *See—*
Reik, Wolfgang; and Elison, Hans-Dieter, 5,349,883, Cl. 74-574.000.

Ellerbroek, Brent L.: *See—*
Rafanelli, Gerard L.; Ellerbroek, Brent L.; Mount, Susan B.; and Rehfield, Mark J., 5,350,911, Cl. 250-201.900.

Ellinger, Hunter: *See—*
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Ellingwood, John C.: *See—*
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Ellis, Ernest W.: *See—*
Boggs, Roger A.; Cournoyer, Richard L.; Ellis, Ernest W.; Russo-Rodriguez, Sandra E.; Telfer, Stephen J.; Waller, David P.; and Zuraw, Michael J., 5,350,870, Cl. 560-27.000.

Emigh, Jon; and Qutub, Motaz. Roller gap setting system. 5,350,170, Cl. 271-273.000.

Emken, Michael R.: *See—*
Stupka, Jonathan C.; Bokros, Jack C.; Emken, Michael R.; Haubold, Axel D.; and Peters, T. Scott, 5,350,421, Cl. 623-2.000.

Emody, Kenneth J.: *See—*
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Emonds-Alt, Xavier; Goulaouic, Pierre; Proietto, Vincenzo; and Van Broeck, Didier, to Sanofi. Arylalkylamines, process for preparing them and pharmaceutical compositions containing them. 5,350,852, Cl. 544-336.000.

Endo, Hiroshi: *See—*
Watanabe, Yasushi; and Endo, Hiroshi, 5,350,437, Cl. 75-346.000.

Endo, Hiroyuki: *See—*
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Endo, Tsunehiro: *See—*
Miyazaki, Hideki; Endo, Tsunehiro; Watanabe, Kouzou; Takakura, Yuhachi; and Suda, Koichi, 5,351,182, Cl. 363-132.000.

Energy Mines and Resources-Canada: *See—*
Coleman, Richard D.; Toll, Floyd N.; McCracken, Thomas W.; Capes, C. Edward; and Ikura, Michio, 5,350,430, Cl. 44-627.000.

Engel, Dusan J.; Malloy, Thomas P.; and Nickl, Peter K., to UOP. Transesterification using metal oxide solid solutions as the basic catalyst. 5,350,879, Cl. 560-234.000.

Engelke, Robert M.; Colwell, Kevin; Gisske, EDward; and Schultz, Ronald, to Ultratec, Inc. Voice bridge for a relay center. 5,351,288, Cl. 379-98.000.

Enichem Synthesis S.p.A.: *See—*
Costanzi, Silvestro; Gussoni, Damiano; and Pallini, Luciano, 5,350,786, Cl. 524-102.000.

Eniricerche, S.p.A.: *See—*
Andriollo, Nunzio; Cassani, Giorgio; D'Olimpio, Paolo; Donno, Bruno; and Ricci, Marco, 5,350,521, Cl. 210-653.000.

Enomoto, Satoru: *See—*
Kasai, Shuichi; Ikeda, Yasuo; Enomoto, Satoru; Imamori, Katsumi; and Iwasa, Akira, 5,350,769, Cl. 514-567.000.

Ensminger, William D.; and Gavin, Robert F., to Michigan TransTech Corporation. Implantable access devices. 5,350,360, Cl. 604-93.000.

Epstein, Adam, to Albert Einstein College of Medicine of Yeshiva University. Hemostasis apparatus and method. 5,350,388, Cl. 606-154.000.

Erdelen, Christoph: *See—*
Fischer, Reiner; Uhr, Hermann; Widdig, Arno; Dutzmann, Stefan; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; and Schaller, Klaus, 5,350,861, Cl. 548-544.000.

Ergologic Enterprises Inc.: *See—*
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Ericsson GE Mobile Communications Inc.: *See—*
Dent, Paul W., 5,351,016, Cl. 332-103.000

Eriksson, Stina; and Holmstrom, Ulla-Kari, to Eka Nobel AB. Method for separating impurities from an aqueous alkali metal chlorate electrolyte. 5,350,495, Cl. 204-95.000.

Erlanger, Bernard F.; Cleveland, William L.; and Cacalano, Nicholas A., to Columbia University in the City of New York, The Trustees of. Derivatives of cyclosporina A, antibodies directed thereto and uses thereof. 5,350,574, Cl. 514-9.000.

Erlebacher, Jay; and Goldweit, Richard S. Percutaneous arterial puncture seal device and insertion tool therefore. 5,350,399, Cl. 606-213.000.

Eschard, Francois: *See—*
Cameron, Charles; Courty, Philippe; Berrebi, Georges; Roumieu, Raymond; Rabehasaina, Hans; and Eschard, Francois, 5,350,728, Cl. 502-415.000.

Eskelinen, Paavo, to Sanhill Oy. Method and apparatus for measuring muscle fatigue. 5,349,963, Cl. 128-733.000.

Eslinger, David M.: *See—*
Sorem, Robert M.; Eslinger, David M.; Thomeer, Hubertus V.; Willauer, Darrin; and Adnan, Sarmad, 5,350,018, Cl. 166-250.000.

Espey, Carl R.; and Fischer, Donald A., to Creco Corporation. Plastic capped nut. 5,350,266, Cl. 411-431.000.

Esposito, Felix F.; Conners, John A.; Logan, Joseph N.; Dwyer, James W.; and Crainich, Laurence, to American Cyanamid Company. Malleable, bioabsorbable, plastic staple; and method and apparatus for deforming such staple. 5,350,400, Cl. 606-219.000.

Esser Sicherheitstechnik GmbH: *See—*
Berger, Horst; Krippendorf, Tido; and Politze, Heiner, 5,351,034, Cl. 340-577.000.

Ethicon, Inc.: *See—*
Alpern, Marvin; and Cerwin, Robert, 5,350,060, Cl. 206-63.300.

Bendel, Lee P.; Sardelis, Timothy A.; Stungurys, Leon K.; and Astarita, Thomas A., 5,350,419, Cl. 607-132.000.
Main, Lauren O.; and Grant, Richard L., 5,350,104, Cl. 227-179.000.
Stephens, Randy R.; Collins, John M.; Farra, Robert; and Pichon, Dean, 5,350,364, Cl. 604-167.000.

Etzbach, Karl-Heinz: *See—*
Bach, Volker; Brox, Wolfgang; Etzbach, Karl-Heinz; Paul, Axel; and Siemensmeyer, Karl, 5,350,873, Cl. 560-60.000.

Evans, Brian J.: *See—*
Daniloff, Yuri; Robins, Simon P.; Evans, Brian J.; Pratt, David A.; and Lungard, Robert, 5,350,855, Cl. 546-291.000.

Evans, Ernest B., Jr.; Fulk, Hines E., Jr.; Bennett, Norman T.; and Wilkerson, Dana R., to Symple Products, Inc. Christmas tree stand. 5,350,149, Cl. 248-523.000.

Evans, Gareth B.; Rider, Christopher B.; and Simons, Michael J., to Eastman Kodak Company. Methods for the retrieval and differentiation of blue green and red exposure records of the same hue from photographic elements containing absorbing interlayers. 5,350,651, Cl. 430-21.000.

Evans, Gareth B.: *See—*
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Evans, Roy E. Method of heat treating a zone of each of a plurality of articles. 5,350,467, Cl. 148-559.000.

Everson, Ben A.: *See—*
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Evert, Robert P.: *See—*
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EWAL Manufacturing Company, Inc.: *See—*
Aldridge, Lewis L.; and Sawyer, Kenneth W., 5,350,205, Cl. 285-328.000.

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Exxon Chemical Patents Inc.: *See—*
Malpass, Gerald D., Jr., 5,350,818, Cl. 526-139.000.
Shaffer, Timothy D., 5,350,726, Cl. 502-169.000.
Shaffer, Timothy D., 5,350,819, Cl. 526-189.000.
Song, Won R.; Rossi, Albert; Turner, Howard W.; Welborn, Howard C.; Lundberg, Robert D.; Gutierrez, Antonio; and Kleist, Robert A., 5,350,532, Cl. 252-49.600.

Eycott, Robin W.: *See—*
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Ezoe, Kazuomi: *See—*
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F. L. Smidth & Co. A/S: *See—*
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Fabricating Packaging Materials, Inc.: *See—*
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Fahey, Kevin J.: *See—*
Azad, Ahmed A.; Jagadish, Mittur N.; and Fahey, Kevin J., 5,350,575, Cl. 424-192.100.

Fahr, Markus, to Georg Fischer Rohrleitungssysteme AG. Pipe cutoff apparatus. 5,349,751, Cl. 30-102.000.

Fairbrother, Brian; Rose, Paul; and Farman, Richard, to Gould Instrument Systems, Inc. Contact switch device. 5,350,890, Cl. 200-5.00A.

Falciglia, James W.; and Mauro, Anthony J., to Monogram Industries, Inc. Armored cable. 5,350,885, Cl. 174-112.000.

Falcon United Ltd.: *See—*
Vitunac, Edward A.; and Zawadzki, Edward A., 5,350,121, Cl. 241-14.000.

Faller, James E.: *See—*
Niebauer, Timothy M.; Hollander, William J.; and Faller, James E., 5,351,122, Cl. 356-345.000.

Falloon, Thomas; and Kim, Hyun S., to Airway Industries, Inc. Luggage case with pull handle. 5,350,046, Cl. 190-115.000.

Famili, Amir; Vratsanos, Lori A.; and Marten, Finn L., to Air Products and Chemicals, Inc. Solid state process for modification of polyvinyl alcohol using Michael-type addition. 5,350,801, Cl. 525-59.000.

Fan, Sophie S.: *See—*
Colella, Gregory M.; Ben-David, Daniel; Cupo, Albert; Fan, Sophie S.; Fischer, Gena; Martin, Grace E.; and Ornstein, Leonard, 5,350,695, Cl. 436-63.000.

Fantz, Paul: *See—*
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Fareed, Ali S.: *See—*
Sonuparlak, Birol; Johnson, William B.; and Fareed, Ali S., 5,350,003, Cl. 164-91.000.

Farina, Vittorio: *See—*
Holton, Robert A.; Chen, Shu-Hui; and Farina, Vittorio, 5,350,866, Cl. 549-510.000.

Farmakis, Tom: *See—*
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Farman, Richard: *See—*
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Farra, Robert: *See—*
Stephens, Randy R.; Collins, John M.; Farra, Robert; and Pichon, Dean, 5,350,364, Cl. 604-167.000.

Farrar, Grover L.: *See—*
Culbertson, Edwin C.; and Farrar, Grover L., 5,350,601, Cl 427-412.100
Farrell, Kenneth R. Reciprocatable barrel pneumatic gun. 5,349,938, Cl. 124-73.000.
Farwell, William D., to Hughes Aircraft Company. Method of cancelling offset errors in phase detectors. 5,351,000, Cl. 324-76.770.
Fastran, Inc.: *See—*
Rona, Mehmet, 5,350,940, Cl. 257-402.000.
Faul, Dieter: *See—*
Huemke, Klaus; Faul, Dieter; and Hoffmann, Gerhard, 5,350,636, Cl. 428-418.000
Faust, Anne-Catherin: *See—*
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Favro, Lawrence D.: *See—*
Kuo, Pao-Kuang; Thomas, Robert L.; Favro, Lawrence D.; and Chen, Li, 5,351,152, Cl. 359-376.000.
Fedeli, Giancarlo, to Gifam S.r.l. Toolhead for chip-forming machine tools. 5,350,263, Cl. 409-231.000
Feighner, Scott D.; Salituro, Gino M.; Smith, Jack L.; and Tsou, Nancy N., to Merck & Co., Inc. Unguinol and analogs are animal growth permittants. 5,350,763, Cl. 514-450.000
Feiring, Andrew E.; Smart, Bruce E.; and Yang, Zhen-Yu, to Du Pont de Nemours, E. I., and Company. Fluorinated monomers and polymers. 5,350,821, Cl. 526-247.000.
Felix, Raymond A., to ICI Americas Inc. 2-(substituted imino)-1,3,4-dihydrothiadiazoles. 5,350,856, Cl. 548-138.000.
Fennel, Helmut: *See—*
Burgdorf, Jochen; Reinartz, Hans-Dieter; Steffes, Helmut; Ocvirk, Norbert; Volz, Peter; Weise, Lutz; Fennel, Helmut; Wupper, Hans; Bleckmann, Hans-Wilhelm; Beck, Erhard; Dinkel, Dieter; and Haupt, Karlheinz, 5,350,226, Cl. 303-116.200
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Fetchko, Eric B.: *See—*
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Romeo, Aurelio; Toffano, Gino; and Leon, Alberta, 5,350,841, Cl. 536-53.000
Fiedler, Leslie C. Process for forming a monolithic composite plate. 5,349,749, Cl. 29-897.000.
Figueroa, Hector D. Automobile emergency accessory. 5,350,029, Cl. 180-11.000.
Filipovich, Marcus O.: *See—*
Stoop, Gustaaf A.; Begemann, Malcolm J. S.; van der Veen, Johannes; and Filipovich, Marcus O., 5,350,409, Cl. 607-17.000
Finkler, Klaus; and Heer, Volker, to Siemens Aktiengesellschaft. Apparatus for reproducing video signals on a monitor. 5,351,306, Cl. 382-6.000.
Fiore, Joseph F., to Doskocil Manufacturing Company, Inc. Wall mounting bracket for carrying case. 5,350,150, Cl. 248-552.000.
Fiorelli, Jack: *See—*
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Katz, Ronald A., 5,351,285, Cl. 379-94.000.
Fischer, Donald A.: *See—*
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Fischer, Gerhard, to Cosmos Entwicklungs-und Forschungsanstalt Plumbing fixture. 5,349,985, Cl. 137-607.000.
Fischer, Reiner; Uhr, Hermann; Widdig, Arno; Dutzmann, Stefan; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; and Schaller, Klaus, to Bayer Aktiengesellschaft. Substituted 3-aryl-pyrrolidine-2,4-diones. 5,350,861, Cl. 548-544.000
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Flaminio, Keith F.; and McReynolds, Larry, to General Motors Corporation. Electrical connector for alternating current generators. 5,350,959, Cl. 310-71.000.
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Fogal, Rich, to Micron Semiconductor, Inc. Semiconductor wire bonding method. 5,350,106, Cl. 228-103.000.
Fohl, Artur, to TRW Repa GmbH. Linear drive for vehicle restraining systems. 5,350,194, Cl. 280-805.000.
Foni, David: *See—*
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Foo, Man Y., to Singer Company N.V., The. Steam ironing press including pump and heating control circuits. 5,349,767, Cl. 38-16.000.
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Allison, Johnny H., 5,350,894, Cl. 200-549.000.
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Miller, John M.; and Sankaran, Venkateswara A., 5,350,983, Cl. 318-254.000
Narula, Chaitanya K.; and Crosbie, Gary M., 5,350,719, Cl. 501-96.000.
Forman, Peter R., to University of California, Office of Technology Transfer, The Regents of the. Fiber optic security seal including plural Bragg gratings. 5,351,324, Cl. 385-37.000.
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Forsyth, Joseph L.: *See—*
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Foster-Miller, Inc.: *See—*
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Foster, Raymond K. Ball block for mounting linear motor. 5,350,054, Cl. 198-750.000
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Eisinger, Frantisek L., 5,349,813, Cl. 60-39.511.
Fox, Albert H.: *See—*
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Fox, David S.; Jagadish, Hosagrahar V.; O'Gorman, Lawrence; and Story, Guy A., to AT&T Bell Laboratories. Method for accessing information in a computer. 5,350,303, Cl. 434-118.000.
Fox, Robert L.; Copeland, Carl E.; Swaim, Robert J.; Coultrip, Robert H.; Johnston, David F.; Phillips, W. Morris; Johnson, Samuel D.; Dinkins, James R.; and Buckley, John D., to United States of America, National Aeronautics and Space Administration. Induction heating coupler. 5,350,902, Cl. 219-633.000.
Francis, Cecil V.: *See—*
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Frank, William C.: *See—*
Whitcomb, David R.; and Frank, William C., 5,350,669, Cl. 430-618.000
Franke, Walter K., to Collver, Donald L., a part interest. Continuous vertical conveyor. 5,350,050, Cl. 198-347.100.
Franklin, Walter M., III; Swain, Matthew G.; and Kreimendahl, Bryan W., to Lockheed Corporation. Integral end attachment fitting. 5,350,611, Cl. 428-36.910.
Franz, Klaus: *See—*
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Frazier, Alan D.; and Leweis, Richard P., to Scott Paper Company. Secured disposable liquid soap dispenser. 5,350,087, Cl. 222-153.000.
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Fredericks, Duane G.; and Rosebrock, Herbert W., to Fredericks, Duane G. Radar target with delayed reply means. 5,351,054, Cl. 342-172.000.

Frederickson, Dale W.: *See—*
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Freed, David I.: *See—*
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Rouse, Gordon F.; and French, Howard B., 5,351,005, Cl. 324-252.000.
French, Terry L.; and Johnson, Steven C. Width-adjustable stairway step tread and method for constructing a stairway therewith. 5,349,795, Cl. 52-183.000.
Frenkel, Anatoly, to Bell Communications Research, Inc. Pulse frequency division multiplexing. 5,351,147, Cl. 359-124.000
Fresenius AG: *See—*
Witthaus, Friedrich; Weber, Wolfram; Biesel, Wolfgang; and Lay, Carlo, 5,350,514, Cl. 210-360.100.
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Frey, Mark. Exercise apparatus for the upper arm. 5,350,345, Cl 482-105.000
Frey, the Wheelman, Inc.: *See—*
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Frey & Windler GmbH & Co.: *See—*
Winkler, Rolf; Herier, Bruno; and Kappler, Manfred, 5,351,099, Cl. 351-137.000.
Freymeyer, Douglas A.; Holloway, Richard L.; Kiracofe, Ronald J.; and Sampath, Vijay R., to Atlantic Richfield Company. Method of producing consistent high quality coke. 5,350,503, Cl. 208-131.000.
Freytsis, Avrum; and Hertel, Richard J., to Varian Associates, Inc. Wafer retaining platen having peripheral clamp and wafer lifting means. 5,350,427, Cl. 29-25.010.
Friar, C. Edward; Jones, M. Lee; Robinson, H. English, Jr.; and King, Douglas N., to Why Wrap Incorporated. Self-locking box. 5,350,108, Cl. 229-102.000
Friedrich Theysohn GmbH: *See—*
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Fritz, Peter J.; Houle, Timothy H.; McCoy, Michael L.; Miller, Wayne A.; and Nyberg, Paul M., to Smith Fiberglass Products Inc. Method and apparatus for attaching lengths of fiberglass reinforced plastic pipe. 5,350,202, Cl. 285-174.000
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Fuji Photo Film Co., Ltd.: *See—*
Abe, Akira; Seki, Hiroyuki; Okada, Hisashi; and Inaba, Tadashi, 5,350,668, Cl. 430-393.000.
Hasebe, Kazunori; Otani, Shigeaki; and Hayashi, Yasuhiro, 5,350,665, Cl. 430-508.000.
Kagawa, Yoshikatsu; Yasunami, Shoichiro; and Maekawa, Yukio, 5,350,648, Cl. 429-218.000.
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Makino, Yoshihiko; and Terashima, Kaoru, 5,350,675, Cl. 435-11.000.
Motoki, Masuji; Ohkawa, Atsuhiro; and Mihayashi, Keiji, 5,350,666, Cl. 430-544.000.
Sawada, Hirokazu; Kakei, Tsutomu; Matsuki, Masaya; and Uesugi, Akio, 5,350,010, Cl. 164-476.000
Takiguchi, Miho; Katayama, Noriko; Itoh, Aya; Ohama, Kaori; and Tanaka, Yasuo, 5,350,062, Cl. 206-316.200.
Fuji Xerox Co., Ltd.: *See—*
Hotta, Hiroyuki, 5,350,914, Cl. 250-208.100.
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Harada, Yasoo; Matsushita, Shigeharu; Terada, Satoshi; Fujii, Emi; Kurose, Takashi; Higashino, Takayoshi; Yamada, Takashi; Nagamatsu, Akihito; Inoue, Daijirou; and Matsumura, Kouji, 5,350,709, Cl. 437-161.000.
Fujii, Naoko, legal representative: *See—*
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Fujii, Takashi, deceased: *See—*
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Fujii, Yasuhiko: *See—*
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Fujikawa, Takumi; and Kondo, Motoji, to Furuno Electric Co., Ltd Radar apparatus. 5,351,055, Cl. 342-184.000
Fujikiko Kabushiki Kaisha: *See—*
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Fujimaki, Yoshihide: *See—*
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Fujimura, Ken-ichi: *See—*
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Fujio, Shunichi: *See—*
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Fujisawa, Masayasu: *See—*
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Fujisawa, Noriaki; Sakai, Yasuro; Kuwabara, Tsuneo; and Kukita, Shigezou. Water shieldable material and cable using the same. 5,350,617, Cl. 428-141.000
Fujita, Kohei: *See—*
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Fujita, Kouetsu: *See—*
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Hara, Yasushi; Watanabe, Kazuhiro; Ishikawa, Hiroshi; Matsui, Kiyoto; Kawabe, Kenji; and Shimura, Takaki, 5,350,964, Cl 310-357.000.
Hata, Masahiro; Tobe, Teruo; and Oki, Hiroshi, 5,351,076, Cl. 348-14.000
Ikeda, Toru; and Yanagi, Shigenori, 5,351,222, Cl. 369-32.000.
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Fujiwara, Takayuki; and Popp, Konrad, to Amada Company, Limited. Turret punch press. 5,350,347, Cl. 483-29.000.
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Fukuzawa, Yasuko: *See—*
Matsumoto, Hiroshi; Takaragi, Kazuo; and Fukuzawa, Yasuko, 5,351,294, Cl. 380-23.000.
Fula, Karen A.; and Krippendorf, Carl E., to Smith & Nephew Rolyan, Inc. Method of rehabilitating muscles and neurological pathways in a patient using a multifunctional therapeutic workstation kit. 5,350,304, Cl. 434-258.000.

Fulford, David: *See—*
Beetles, Keith; and Fulford, David, 5,349,790, Cl. 52-19.000
Fulford, Henry J., Jr.; and Gardner, Mark I., to Advanced Micro Devices, Inc. Oxide removal method for improvement of subsequently grown oxides for a twin-tub CMOS process. 5,350,491, Cl. 156-657.000
Fulford, Henry J., Jr.: *See—*
Hall, Steven C.; Gardner, Mark I.; and Fulford, Henry J., Jr., 5,350,492, Cl. 156-657.000.
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Washino, Takao, 5,351,094, Cl. 348-626.000.
Funami, Yasuo; and Miura, Nobuo, to Kabushiki Kaisha Showa Seisakusho. Hydraulic pressure generating device for power steering apparatus for outboard engine. 5,350,326, Cl. 440-61.000
Funamoto, Masaya, to Brother Kogyo Kabushiki Kaisha. Printer having erasing mechanism for repeated erasure. 5,350,247, Cl. 400-696.000.
Furbush, Norman C., Jr. Golf club swing training apparatus. 5,350,177, Cl. 273-191.00R
Furihata, Makoto: *See—*
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Furomoto, Yoshiyuki; Yoshikawa, Osamu; and Sugawara, Kenichi, to Shimano Inc. Spinning reel having balancing means. 5,350,129, Cl. 242-231.000
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Furuno Electric Co., Ltd.: *See—*
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Futagawa, Hitoshi: *See—*
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Futurefilte Corporation: *See—*
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Kawabe, Takashi; Ashida, Eiji; Fuyama, Moriaki; Iwakura, Tadayuki; Fukui, Hiroshi; Tsuji, Yoshikazu; Kuwatsuka, Shunichiro; Saito, Harunobu; Hagiwara, Yoshiki; Takemoto, Issei; and Fujisawa, Masayasu, 5,349,745, Cl. 29-603.000.
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Goldberg, Arnold. Quick trip circuit breaker locator. 5,351,038, Cl. 340-644.000
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Gulbrandsen, Carl E.; and Moss, Richard L., to Lunar Corporation. Treatment of myocardial failure. 5,350,745, Cl. 514-167.000

Gunn, Andrew L. Container systems for school supplies. 5,350,061, Cl. 206-214.000

Guot, Bernard. Modular machine for making cardboard packages. 5,350,348, Cl. 493-34.000.

Gupta, Niraj: *See—*
Park, Kyong M.; and Gupta, Niraj, 5,349,864, Cl. 73-724.000.

Gussoni, Damiano: *See—*
Costanzi, Silvestro; Gussoni, Damiano; and Pallini, Luciano, 5,350,786, Cl. 524-102.000.

Guth, Jean-Louis: *See—*
Joly, Jean-Francois; Caullet, Philippe; Faust, Anne-Catherin; Baron, Jacques; and Guth, Jean-Louis, 5,350,722, Cl. 502-64.000

Gutierrez, Antonio: *See—*
Song, Won R.; Rossi, Albert; Turner, Howard W.; Welborn, Howard C.; Lundberg, Robert D.; Gutierrez, Antonio; and Kleist, Robert A., 5,350,532, Cl. 252-49.600.

Gutierrez, Aurelio J.: *See—*
Wai, Ka K.; and Gutierrez, Aurelio J., 5,351,167, Cl. 361-760.000.

Gwaltney, Sharon M.: *See—*
Oberst, Richard D.; Gwaltney, Sharon M.; and Hays, Michael P., 5,350,672, Cl. 435-6.000.

Gyugyi, Laszlo: *See—*
Brennen, Michael B.; Moran, Steven A.; and Gyugyi, Laszlo, 5,351,181, Cl. 363-71.000.

H. C. Duke & Son, Inc.: *See—*
Duke, Daniel G.; Emody, Kenneth J.; and Almblade, Gary P., 5,349,825, Cl. 62-69.000

H & L Tooth Company: *See—*
Launder, Richard L.; and Clendenning, Charles, 5,350,022, Cl. 172-700.000

Ha, Bao; and Garnier, Catherine, to Liquid Air Engineering Corporation. Process for the mixed production of high and low purity oxygen. 5,349,824, Cl. 62-24.000.

Haack, Ulrich: *See—*
Hess, Gerhard; Haack, Ulrich; and Kurz, Klaus, 5,350,792, Cl. 524-417.000.

Haber, Daniel A.: *See—*
Call, Katherine M.; Glaser, Thomas M.; Ito, Caryn Y.; Buckler, Alan J.; Pelletier, Jerry; Haber, Daniel A.; Rose, Elise A.; and Housman, David E., 5,350,840, Cl. 536-23.100.

Hachiya, Satoshi: *See—*
Moriwaki, Fumio; Endo, Hiroyuki; and Hachiya, Satoshi, 5,350,538, Cl. 252-299.010.

Hacker, Michael: *See—*
von Borstel, Michael; Hacker, Michael; Prokop, Heinz J.; and Wollermann-Windgasse, Reinhard, 5,351,263, Cl. 372-107.000.

Hackler, Ronald E.; and Jourdan, Glen P., to DowElanco. Pteridine derivatives. 5,350,749, Cl. 514-248.000

Haeberle, Karl; Bauer, Gerhard; and Maempel, Lothar, to BASF Aktiengesellschaft. Copolymers crosslinking at room temperature. 5,350,823, Cl. 526-301.000.

Haehnle, Hans-Joachim: *See—*
Blum, Rainer; Haehnle, Hans-Joachim; and Hoffmann, Gerhard, 5,350,663, Cl. 430-330.000

Haendel, Richard S.: *See—*
Mathur, Bimal P.; Wang, H. Taichi; and Haendel, Richard S., 5,351,044, Cl. 340-901.000.

Haerle, Vinzenz: *See—*
Wuensch, Steffen; Kemmner, Claus; Braunbach, Karl-Heinz; and Haerle, Vinzenz, 5,349,754, Cl. 30-369.000

Hafenrichter, Karl; and Bormann, Heinz. Apparatus for drying hoses, particularly fire hoses. 5,349,763, Cl. 34-104.000.

Haga, Hiromitu: *See—*
Mizoguchi, Toshiaki; Shio, Kiyomi; Ueshima, Yoshiyuki; Yasuda, Kazumi; Morimoto, Yoshio; Haga, Hiromitu; and Miyazawa, Kenichi, 5,350,009, Cl. 164-454.000.

Hagen, Matthias: *See—*
Hagen, Peter; and Hagen, Matthias, 5,350,235, Cl. 366-168.000.

Hagen, Peter, to Dow Corning Corporation. Process for continuously mixing two or more materials with non-pulsating mixing and filling storage containers. 5,350,234, Cl. 366-162.000.

Hagen, Peter; and Hagen, Matthias, to Sealex, Inc. In line dynamic mixer with folding elements and perforated plates. 5,350,235, Cl. 366-168.000

Hager, Michael L., to Cambridge, Inc.; and York Food Systems, Inc. Self-supporting conveyor belt with wire-formed spacers. 5,350,056, Cl. 198-778.000.

Hagiwara, Yoshiki: *See—*
Kawabe, Takashi; Ashida, Eiji; Fuyama, Moriaki; Iwakura, Tadayuki; Fukui, Hiroshi; Tsuji, Yoshikazu; Kuwatsuka, Shunichiro; Saito, Harunobu; Hagiwara, Yoshiki; Takemoto, Issei; and Fujisawa, Masayasu, 5,349,745, Cl. 29-603.000.

Hagshenas, Behzad, to Sundstrand Corporation. Fan with secondary air passage for motor cooling. 5,350,281, Cl. 417-371.000.

Haibara, Tadashi: *See—*
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Tamekuni, Yoshikyo; Haibara, Tadashi; Matsumoto, Michito; and Nagasawa, Shinji, 5,351,328, Cl. 385-83.000.

Haida, Munetaka: *See—*
Ito, Yoshitoshi; Kawaguchi, Fumio; Shinohara, Yukito; and Haida, Munetaka, 5,349,951, Cl. 128-633.000.

Hailey, Charles D. Rotary downhole cutting tool. 5,350,015, Cl. 166-55.800.

Hajjar, Fares: *See—*
Wood, Christopher H.; Hajjar, Fares; Apicella, Anthony; and Matthews, Kevin E., 5,351,305, Cl. 382-6.000.

Halasz, Andrew; and Praturlon, Sylvan. Method and apparatus for processing containers. 5,349,837, Cl. 72-94.000.

Halkey-Roberts Corporation: *See—*
Weinheimer, Jacek M.; Taylor, Michael T.; and Allen, Terrence C., 5,349,984, Cl. 137-543.210.

Hall, John H. Method of fabricating high temperature refractory metal nitride contact and interconnect structure. 5,350,711, Cl. 437-192.000.

Hall, Steven C.; Gardner, Mark I.; and Fulford, Henry J., Jr., to Advanced Micro Devices, Inc. Oxide removal method for improvement of subsequently grown oxides. 5,350,492, Cl. 156-657.000

Hallberg, Anders R.; and Tunek, Per A. S., to Aktiebolaget Draco. Derivatives of cysteine. 5,350,767, Cl. 514-562.000.

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Hallmark, Tami S.: *See—*
Muskopf, Jack W.; Christy, M. Robert; Jameson, Jaysn F., deceased; Jameson, Jerry M., heir; Jameson, Donna R., heiress; and Hallmark, Tami S., 5,350,802, Cl. 525-65.000.

Hamabe, Kenkichi; Matsuo, Shigemi; Nomachi, Hiroshi; Ogawa, Hideo; and Ueda, Minoru, to Sandoz Ltd. Admixture for concrete mixes. 5,350,450, Cl. 106-802.000.

Hamada, Tatsuhiro: *See—*
Kawamura, Shinichi; Izumi, Keiichi; Sato, Junichi; Sanemitsu, Yuzuru; Sato, Ryo; Hamada, Tatsuhiro; and Shibata, Hideyuki, 5,350,736, Cl. 504-266.000.

Hamaguchi, Iwao: *See—*
Hayashi, Yutaka; Hamaguchi, Iwao; and Fujita, Shunsuke, 5,351,209, Cl. 365-112.000.

Hamaguchi, Tadahiko: *See—*
Ishihara, Kei; Matsuda, Kiyoshi; Tamaki, Atsushi; Katoh, Masatoshi; Hamaguchi, Tadahiko; and Takeda, Takashi, 5,350,915, Cl. 250-208.100.

Hamamatsu Photonics K.K.: *See—*
Aoshima, Shinichiro; and Hirano, Isuke, 5,350,913, Cl. 250-205.000.

Hamamoto, Katunobu; and Gotoh, Shigeo, to Matsushita Electric Works, Ltd. Luminaire of variable color temperature for obtaining a blend color light of a desired color temperature from different emission-color light sources. 5,350,977, Cl. 315-291.000.

Haman, David F., to Outboard Marine Corporation. Flushing system for outboard motor. 5,350,329, Cl. 440-88.000.

Hamann, Dieter: *See—*
Baumgartner, Walter; and Hamann, Dieter, 5,350,131, Cl. 242-242.000.

Hamel, Pierre: *See—*
Girard, Yves; and Hamel, Pierre, 5,350,744, Cl. 514-149.000.

Hamill, Robert: *See—*
Berry, Dennis R.; Dantzig, Anne H.; Debono, Manuel; Hamill, Robert; Molloy, R. Michael; and Yao, Raymond C., 5,350,579, Cl. 424-122.000.

Hammer, Dick: *See—*
Hull, Harold L.; Hammer, Dick; and Bechdolt, C. Park, 5,350,186, Cl. 280-480.100.

Hammer, Edward E.: *See—*
Bucher, Gerald L.; Welker, Christopher H.; Hammer, Edward E.; Scott, Curtis E.; and Soules, Thomas F., 5,350,972, Cl. 313-636.000

Hammer, James, to Westblock Products, Inc. Interlocking retaining walls blocks and system. 5,350,256, Cl. 405-286.000

Hanada, Keigo: *See—*
Ohishi, Yoshitaka; Tamura, Makoto; Hayashida, Mitsuo; Ikegami, Satoru; Hiyama, Yoshiyuki; Awa, Takao; Ichikawa, Kiyonoshin; Nomiyama, Kiyoshi; Hanada, Keigo; and Mimura, Mitsuo, 5,350,743, Cl. 514-89.000.

Hanano Corporation: *See—*
Hanano, Takashi, 5,350,006, Cl. 164-267.000.

Hanano, Takashi, to Hanano Corporation. Device for spraying mold release agent and feeding molten metal. 5,350,006, Cl. 164-267.000.

Hancock, Drew S., to Siemens Energy & Automation, Inc. Main circuit breaker or other circuit protective device connector installation kit for panelboards. 5,351,165, Cl. 361-637.000

Hand, Barry D.: *See—*
Ozarowski, Ryszard S.; Hand, Barry D.; Novack, Robert C.; Beard, Vernon D.; Threlkeld, James O.; and Sutton, William T., 5,349,983, Cl. 137-487.500.

Haneda, Satoshi, to Konica Corporation. Magnetic brush for charging and cleaning an imaging surface. 5,351,109, Cl. 355-219.000

Hannay, Richard C.; and Pate, Dudley B. Method for abandoning an underground storage tank. 5,350,691, Cl. 435-262.500.

Hanrahan, Lawrence M.; and Kinney, Lawrence P., to Core Medical Technologies, Inc. Method and device for cutaneous marking of the venous anatomy. 5,349,958, Cl. 128-660.010.

Hansch, Egon, to Ferag AG. Apparatus for transporting sheet-like products. 5,350,167, Cl. 271-82.000.

Hansen, Daniel L.: *See—*
McClure, Lawrence C.; Samuelson, Kent E.; and Hansen, Daniel L., 5,350,407, Cl. 607-16.000

Hansen, Harold E. A.: *See—*
Naeini, Abdolreza S.; Owen, Lindsey D.; and Hansen, Harold E. A., 5,351,290, Cl. 379-145.000

Hansen, James P., to United States of America, Navy. Directive optimization of coherent sidelobe canceller systems. 5,351,057, Cl. 342-378.000

Hanson, Donald W.: *See—*
Schwenzfeier, Ray D.; and Hanson, Donald W., 5,351,100, Cl. 351-164.000.

Hanson, Stephen R.: *See—*
Griffin, John H.; Gruber, Andras; Hanson, Stephen R.; and Harker, Lawrence A., 5,350,578, Cl. 424-94.640.

Hanyu, Yoshiaki: *See—*
Ueda, Naofumi; and Hanyu, Yoshiaki, 5,351,315, Cl. 382-54.000.

Hara, Minoru: *See—*
Moriyama, Hitoshi; Itoh, Kiyoshi; Hara, Minoru; and Inagaki, Masahisa, 5,349,903, Cl. 101-93.050

Hara, Nobuo, to Fuji Oozx, Inc. Method of manufacturing a tappet for an internal combustion engine. 5,349,748, Cl. 29-888.430.

Hara, Yasushi; Watanabe, Kazuhiro; Ishikawa, Hiroshi; Matsui, Kiyoto; Kawabe, Kenji; and Shimura, Takaki, to Fujitsu Limited. Ultrasonic transducer and method of manufacturing the same. 5,350,964, Cl. 310-357.000.

Harada, Keizo; Itozaki, Hideo; and Yazu, Shuji, to Sumitomo Electric Industries, Ltd. MBE process for preparing oxide superconducting films. 5,350,737, Cl. 505-477.000.

Harada, Kesazi: *See—*
Kawada, Nobuo; Kubota, Yoshihiro; Harada, Kesazi; and Itou, Kenji, 5,350,720, Cl. 501-97.000.

Harada, Yasoo; Matsushita, Shigeharu; Terada, Satoshi; Fujii, Emi; Kurose, Takashi; Higashino, Takayoshi; Yamada, Takashi; Nagamatsu, Akihito; Inoue, Daijirou; and Matsumura, Kouji, to Sanyo Electric Co., Ltd. Method of doping a group III-V compound semiconductor. 5,350,709, Cl. 437-161.000

Haraf, John C.: *See—*
Poirier, David C.; Haraf, John C.; Stephens, George T.; Simon, Robert C., Jr.; and Himes, Edward G., 5,351,193, Cl. 364-431.010.

Hardiman, Kempton H.: *See—*
Mazza, John C.; Stark, William A.; Scribner, Richard A.; Frye, Stephen L.; and Hardiman, Kempton H., 5,350,564, Cl. 422-63.000.

Hardinge Brothers, Inc.: *See—*
Sheehan, Terrence M.; Mukherjee, Jyoti; Cady, Raymond C.; Comstock, Gary L.; and Soroka, Daniel P., 5,349,731, Cl. 29-27.00R.

Hargest, Thomas S.: *See—*
Workman, James P.; and Hargest, Thomas S., 5,350,369, Cl. 604-327.000

Harker, Lawrence A.: *See—*
Griffin, John H.; Gruber, Andras; Hanson, Stephen R.; and Harker, Lawrence A., 5,350,578, Cl. 424-94.640

Harms, Christian: *See—*
Shillito, Ray; Carswell, Gleta; Harms, Christian; Boyce, Cindy; and Chang, Yin-Fu, 5,350,689, Cl. 435-240.470

Harris Corporation: *See—*
Temple, Victor A. K., 5,350,935, Cl. 257-147.000.

Harshbarger, John H., Jr.; and Shellhause, Michael W., to MTL Systems, Inc. Method and apparatus for automatic performance evaluation of electronic display devices. 5,351,201, Cl. 364-551.010

Hart, John: *See—*
Rubino, Michael; and Hart, John, 5,349,736, Cl. 29-426.500

Hart, John L.: *See—*
Chippendale, Kevan E.; Corbett, John S.; Hart, John L.; and Walkley, Geraldine, 5,349,944, Cl. 128-200.140.

Hart to Sensible Products, Inc.: *See—*
Rubino, Michael; and Hart, John, 5,349,736, Cl. 29-426.500.

Hartman, Davis H.: *See—*
Chun, Christopher K. Y.; Hartman, Davis H.; Kuo, Shun-Meen; and Lebby, Michael S., 5,351,331, Cl. 385-97.000.

Hartmann, Olaf-Rene : *See—*
Sander, Hans J.; Hartmann, Olaf-Rene ; Wirth, Hermann O.; and Wehner, Wolfgang, 5,350,785, Cl. 524-100.000.

Harvey, David: *See—*
Barton, James S.; Borthwick, William K. D.; Harvey, David; Jones, Julian D. C.; and McBride, Roy, 5,351,116, Cl. 356-28.500.

Harvey, James F.; and Lux, Robert A., to United States of America, Army. Double barrier resonant propagation filter. 5,350,931, Cl. 257-14.000

Harvey, William O.: *See—*
Voss, Mark G.; and Harvey, William O., 5,350,039, Cl. 184-6.160.

Hasani, Santosh K.: *See—*
Kalkunte, Ramesh S.; Rege, Satish L.; and Hasani, Santosh K., 5,351,243, Cl. 370-92.000.

Hase, Hiroyuki: *See—*
Shoji, Rihito; Hase, Hiroyuki; and Wakamiya, Masayuki, 5,349,868, Cl. 73-728.000.

Hase, Takashi; Kita, Ryusuke; Sasaki, Masato; and Morishita, Tadataka, to International Superconductivity Technology Center; Kabushiki Kaisha Kobe Seiko Sho; and Sharp Kabushiki Kaisha. Method of manufacturing an oxide superconductor film. 5,350,738, Cl. 505-473.000

Hasebe, Kazunori; Otani, Shigeaki; and Hayashi, Yasuhiro, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 5,350,665, Cl. 430-508.000.

Hasegawa, Toshiaki: *See—*
Kuno, Hiromichi; Sekimori, Toshiyuki; Inaba, Shigemitsu; and Hasegawa, Toshiaki, 5,350,312, Cl. 439-310.000.

Hasegawa, Yusuke; Akazaki, Shusuke; Komoriya, Isao; Maki, Hidetaka; and Hirota, Toshiaki, to Honda Giken Kogyo Kabushiki Kaisha. Fuel metering control system in internal combustion engine. 5,349,933, Cl 123-486.000.

Hashiguchi, Shohei: *See—*
Takeda, Tadashi; Wada, Hiroyuki; Fukui, Kenji; Okamoto, Ricardo M.; and Hashiguchi, Shohei, 5,351,230, Cl. 369-112.000.

Hashimoto, Kazuhiro: *See—*
Tsuda, Kazuhiko; and Hashimoto, Kazuhiro, 5,350,555, Cl 264-242.000

Hashimoto, Kiyokazu, to NEC Corporation. Non-volatile semiconductor memory device equipped with high-speed sense amplifier unit. 5,351,212, Cl. 365-189.090.

Hashimoto, Yasunori: *See—*
Kato, Masami; Kato, Takao; and Hashimoto, Yasunori, 5,351,137, Cl. 358-457.000.

Hashiura, Mituo: *See—*
Takezoe, Osamu; Takigawa, Jun; Okamoto, Tadashi; Hashiura, Mituo; Fukuda, Sunao; Takeuchi, Keizo; and Isobe, Yasuaki, 5,350,436, Cl. 75-314.000

Hashizawa, Shigemi; and Tsuchiya, Shinichi, to Yazaki Corporation. Electrical connector. 5,350,320, Cl. 439-752.000

Hassett, John J., to AT/COMM Incorporated. Automatic debiting parking meter system. 5,351,187, Cl. 364-401.000

Hastings, Jerome K.: *See—*
Juds, Mark A.; Beihoff, Bruce C.; Smith, Richard G.; Nelson, William R.; Wycklendt, Daniel A.; Theisen, Peter J.; Hastings, Jerome K.; and Moldovan, Peter K., 5,351,024, Cl. 335-16.000.

Hata, Masahiro; Tobe, Teruo; and Oki, Hiroshi, to Fujitsu Limited Terminal system having video telephone equipment cooperating with computer system. 5,351,076, Cl. 348-14.000.

Hatakeyama, Kazuma: *See—*
Kimura, Koichi; Hatakeyama, Kazuma; and Furukawa, Hideo, 5,350,047, Cl. 192-87.130.

Hatayama, Katsuo: *See—*
Asaka, Toshifumi; Misawa, Yoko; Kashimura, Masato; Morimoto, Shigeo; Watanabe, Yoshiaki; and Hatayama, Katsuo, 5,350,839, Cl. 536-7.400.

Hatchell, Peter J.; Anderson, Danford C.; and Lotto, Ronald L., to FMC Corporation. Apparatus and method for detecting perforations. 5,350,928, Cl. 250-548.000

Hatteland, Kjell; and Langeland, Jan-Åge, to Geco A.S. Method for reconnection and connection of sensor groups. 5,351,218, Cl 367-20.000

Hattori, Eiji: *See—*
Sasaki, Hiroyuki; Ota, Tetsuro; Hattori, Eiji; and Ikeda, Michihiro, 5,350,782, Cl. 523-116.000.

Hattori, Tatsuya: *See—*
Akita, Hiroshi; Hattori, Tatsuya; Kagawa, Kazuhiro; and Kobayashi, Hiroto, 5,350,831, Cl. 528-337.000

Haubold, Axel D.: *See—*
Stupka, Jonathan C.; Bokros, Jack C.; Emken, Michael R.; Haubold, Axel D.; and Peters, T. Scott, 5,350,421, Cl. 623-2.000.

Hauck, Wolfgang: *See—*
Arnold, Kurt; Hauck, Wolfgang; Klein, Reiner; Mertel, Bernhard; Walther, Karl-Heinz; and Zinssmeister, Horst, 5,350,127, Cl. 242-20.000.

Haupt, Karlheinz: *See—*
Burgdorf, Jochen; Reinartz, Hans-Dieter; Steffes, Helmut; Ocvirk, Norbert; Volz, Peter; Weise, Lutz; Fennel, Helmut; Wupper, Hans; Bleckmann, Hans-Wilhelm; Beck, Erhard; Dinkel, Dieter; and Haupt, Karlheinz, 5,350,226, Cl. 303-116.200.

Haw Company: *See—*
Stein, Matthew I., 5,350,112, Cl. 236-12.130.

Hayakawa, Tomihiro, to Casio Computer Co., Ltd. Coin-shaped integrated circuit memory device. 5,350,945, Cl. 257-679.000.

Hayano, Makoto: *See—*
Yajima, Toshiya; Hirayama, Takuya; Sakata, Hirotsugu; Hayano, Makoto; Okuda, Masayuki; Morozumi, Naoya; Kumazawa, Takeshi; and Kobuna, Teruo, 5,350,280, Cl. 417-310.000.

Hayashi, Nobuaki: *See—*
Shiraishi, Hiroshi; Soga, Takashi; Murai, Fumio; Sakamizu, Toshio; and Hayashi, Nobuaki, 5,350,485, Cl. 156-628.000.

Hayashi, Noriyuki: *See—*
Taniguchi, Masayuki; Kobayashi, Hironobu; Narato, Kiyoshi; Murakami, Tadayoshi; Azuhata, Shigeru; Kuroda, Michio; and Hayashi, Noriyuki, 5,349,812, Cl. 60-39.230.

Hayashi, Yasuhiro: *See—*
Hasebe, Kazunori; Otani, Shigeaki; and Hayashi, Yasuhiro, 5,350,665, Cl. 430-508.000

Hayashi, Yutaka; Hamaguchi, Iwao; and Fujita, Shunsuke, to Ricoh Company, Inc.; and Agency of Industrial Science & Technology. Apparatus for converting optical information into electrical information signal, information storage element and method for storing information in the information storage element. 5,351,209, Cl. 365-112.000

Hayashida, Hironori: *See—*
Urabe, Yoshitomi; Hayashida, Hironori; and Ohtani, Yoshiaki, 5,350,790, Cl. 524-321.000.

Hayashida, Mitsuo: *See—*
Ohishi, Yoshitaka; Tamura, Makoto; Hayashida, Mitsuo; Ikegami, Satoru; Hiyama, Yoshiyuki; Awa, Takao; Ichikawa, Kiyonoshin; Nomiyama, Kiyoshi; Hanada, Keigo; and Mimura, Mitsuo, 5,350,743, Cl. 514-89.000.

Hayman, John J., Jr.: *See—*
Kleinberger, Itamar; and Hayman, John J., Jr., 5,350,117, Cl. 239-428 500.

Hays, Michael P.: *See—*
Oberst, Richard D.; Gwaltney, Sharon M.; and Hays, Michael P., 5,350,672, Cl. 435-6.000.

Haywood, Carl R. Portable remote drum opening device. 5,349,755, Cl. 30-443.000

Head, David F.: *See—*
Baer, Thomas M.; Cox, Kelly A.; Gooding, Phillip; Cole, John; Head, David F.; and Kintz, Gregory J., 5,351,121, Cl. 356-301.000

Health Sea, Inc.: *See—*
Eckholm, Eric; and Lustig, David, 5,350,586, Cl. 426-105.000.

Healthwise Auto Filter Inc., The: *See—*
Gould, David; and Wosner, Robert, 5,350,444, Cl. 96-154.000.

Hebeisen, Stephen P.: *See—*
Brown, David P.; Kett, Michael J.; and Hebeisen, Stephen P., 5,351,036, Cl. 340-618.000.

Heck, James V.: *See—*
Adams, Alan D.; and Heck, James V., 5,350,746, Cl. 514-210.000.

Hector, Francis N., Jr.: *See—*
Hector, Francis N., Sr.; and Hector, Francis N., Jr., 5,350,273, Cl. 415-4.100.

Hector, Francis N., Sr.; and Hector, Francis N., Jr. Wind energy collection system. 5,350,273, Cl. 415-4.100.

Heer, Volker: *See—*
Finkler, Klaus; and Heer, Volker, 5,351,306, Cl. 382-6.000.

Heidelberger Druckmaschinen AG: *See—*
Ganter, Udo, 5,349,904, Cl. 101-227.000.

Heimberger, Rudolf, to Richard Wolf GmbH. Flexible endoscope. 5,349,942, Cl. 126-4.000.

Heimerl, Dieter; and Piegendorfer, Johann, to Schott Glaswerke. Holder for quartz resonator disks and process for the production of such holders. 5,350,963, Cl. 310-353.000.

Heinrich, Josef: *See—*
Schnalke, Karl-Erwin; Heinrich, Josef; and Doring, Fritz, 5,350,865, Cl. 549-434.000.

Heinrichson, Dante C. Animal waste pickup and disposal unit. 5,350,208, Cl. 294-1.400

Heiny, William C.: *See—*
Sowar, Richard M.; Heiny, William C.; Olsen, Paul C.; Hotchkiss, Mark R.; Dixon, Thomas L.; Richard, Charles W., Jr.; and Raines, Michael D., 5,351,196, Cl. 364-474.240

Heitze, Gerhard, to SMS Schloemann-Siemag Aktiengesellschaft. Cooling device for the pressing tools of an upsetting press and method for operating the cooling device. 5,349,842, Cl. 72-342.300.

Helle, Mark A.; and Helmling, Walter, to Hoechst Celanese Corporation. High temperature process for preparing fiber reactive dyes. 5,350,838, Cl. 534-638.000.

Hellio, Caroline: *See—*
Devaux, Dominique; Hellio, Caroline; and Misse, Jean-Gabriel, 5,349,906, Cl. 102-485.000

Hellman, Robert R., Jr. Vault ventilator system. 5,350,338, Cl. 454-195.000

Helmling, Walter: *See—*
Helle, Mark A.; and Helmling, Walter, 5,350,838, Cl. 534-638.000.

HemaGen/PFC: *See—*
Kaufman, Robert J.; and Richard, Thomas J., 5,350,571, Cl. 424-9.000.

Henderson, Herman O., Jr., to ABB Vetco Gray Inc. Elastomeric seal with reinforcing ring. 5,350,017, Cl. 166-208.000.

Henderson, Michael J., to Grass Valley, Group, Inc., The. Non-linear slew rate limiter. 5,351,031, Cl. 340-146.200.

Hendriks, Marc: *See—*
Verhoeven, Michel; Cahalan, Patrick; Cahalan, Linda; Hendriks, Marc; and Foache, Benedicte, 5,350,800, Cl. 525-54.200.

Henkel Corporation: *See—*
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Hitachi Chemical Co. Ltd.: *See—*
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Hiti, John; and Young, Chung C., to Nova Biomedical Corporation Magnesium electrode. 5,350,518, Cl. 210-638.000.
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Wagner, Adalbert; Henning, Rainer; Gerhards, Hermann; Scholkens, Bernward; Vevert, Jean-Paul; and Caille, Jean-Claude, 5,350,751, Cl. 514-258.000.
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Helle, Mark A.; and Helmling, Walter, 5,350,838, Cl. 534-638.000.
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Hoelle, James S.: *See—*
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Hohenwarter, Gert K. G.: *See—*
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Hasegawa, Yusuke; Akazaki, Shusuke; Komoriya, Isao; Maki, Hidetaka; and Hirota, Toshiaki, 5,349,933, Cl. 123-486.000
Ishida, Shinnosuke, 5,350,912, Cl. 250-202.000.
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Kimura, Koichi; Hatakeyama, Kazuma; and Furukawa, Hideo, 5,350,047, Cl. 192-87.130.
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Honda Lock Mfg. Co., Ltd.: *See—*
Yano, Tsunenori; and Matsushita, Munemasa, 5,351,051, Cl. 341-176.000.
Honda, Minoru: *See—*
Ikeda, Koji; Futagawa, Hitoshi; Kikuchi, Toshihiro; Honda, Minoru; and Iwasa, Masanobu, 5,350,372, Cl. 604-414.000.
Honeywell, Inc.: *See—*
Hutch, Frederick S., 5,351,009, Cl. 324-601.000.
Krahn, Donald R., 5,351,028, Cl. 338-32.00R.
Laskoskie, Clarence E.; and Szafraniec, Bogdan, 5,351,124, Cl. 356-351.000
Lu, Zhuxin J.; MacArthur, J. Ward; and Horn, Brian C., 5,351,184, Cl. 364-165.000.
Rouse, Gordon F.; and French, Howard B., 5,351,005, Cl 324-252.000.
Hong, Gary; and Ko, Joe, to United Microelectronics Corporation. Device for preventing antenna effect on circuit. 5,350,710, Cl. 437-170.000.
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Huang, Heng-Sheng; Chen, Kun-Luh; and Hong, Gary, 5,350,698, Cl. 437-26.000.
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Honings, Kenneth C., to AMF Machinery Systems, Inc. Manifold and valving arrangement for dough divider. 5,350,290, Cl. 425-311.000
Honjo, Makoto: *See—*
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Eliachar, Isaac, 5,350,396, Cl. 606-199.000.
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Van Wagener, Raymond H.; Kulka, Robert A.; Hoogmoed, Richard; Sanders, Stuart E.; and Bauer, Fred P., 5,350,316, Cl. 439-460.000.
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de Muijnck, Andries C.; and Herman de Groot, Johan W., 5,350,102, Cl. 226-186.000
Hooper, Eugene J., Jr. Animal kennel. 5,349,924, Cl. 119-19.000
Hoos, Gerd, to Siemens Aktiengesellschaft. Method for filtering digital signals which varies the filter length. 5,351,205, Cl. 364-724.010.
Hope, Stephen F.; and Kejha, Joseph B. Electrodes for electrochemical devices. 5,350,647, Cl. 429-218.000
Hopkinson, Gordon R.: *See—*
Webber, Martin J.; and Hopkinson, Gordon R., 5,349,870, Cl. 73-808.000.
Hori, Koichiro, to Oktas. Cleanable endoscope. 5,349,941, Cl 128-4.000
Horiba, Ltd.: *See—*
Adachi, Masayuki; Yamagishi, Yutaka; and Inoue, Kaori, 5,351,198, Cl. 364-498.000.
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Horio, Kimihide: *See—*
Takama, Kenichiro; Horio, Kimihide; Miyasaka, Michihiko; Tsurumaru, Takafumi; and Takenishi, Shinsuke, 5,350,154, Cl 251-305.000.
Horlander, Karl F.: *See—*
Christopher, Todd J.; Horlander, Karl F.; and Saeger, Timothy W., 5,351,087, Cl. 548-441.000.
Horn, Brian C.: *See—*
Lu, Zhuxin J.; MacArthur, J. Ward; and Horn, Brian C., 5,351,184, Cl. 364-165.000.
Horve, Leslie A., to SKF USA Inc. Pumping feature on wear sleeve for unitized seal. 5,350,181, Cl. 277-35.000.
Hoshi, Akimitsu: *See—*
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Hoshina, Masatake: *See—*
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Hoshino Gakki Co., Ltd.: *See—*
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Hoshino, Yoshiki, to Hoshino Gakki Co., Ltd. Collapsible stand for guitars or the like. 5,350,143, Cl. 248-166.000
Hosoya, Nobukazu; and Hirao, Yoshichika, to Sanyo Electric Co., Ltd Burst phase correcting circuit. 5,351,091, Cl. 348-505.000
Hotchkiss, Mark R.: *See—*
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Hotra, Zenon: *See—*
Roy, Dhirendra C.; and Hotra, Zenon, 5,350,311, Cl. 439-273.000.
Hotta, Hiroyuki, to Fuji Xerox Co., Ltd. Image reading apparatus. 5,350,914, Cl. 250-208.100.
Hough, Mark: *See—*
Tennis, John M.; Able, Adriane H.; Coleman, Marilyn C.; Hough, Mark; and Mahon, Kaye M., 5,349,967, Cl. 128-888.000
Houghton, Michael; Choo, Qui-Lim; and Kuo, George, to Chiron Corporation. HCV immunoassays employing C domain antigens. 5,350,671, Cl. 435-5.000
Houle, Timothy H.: *See—*
Fritz, Peter J.; Houle, Timothy H.; McCoy, Michael L.; Miller, Wayne A.; and Nyberg, Paul M., 5,350,202, Cl. 285-174.000
Houseman Limited: *See—*
Schapira, Simon F. D.; Eycott, Robin W.; Richardson, William P.; and Robinson, Jim S., 5,349,874, Cl. 73-864.000
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Call, Katherine M.; Glaser, Thomas M.; Ito, Caryn Y.; Buckler, Alan J.; Pelletier, Jerry; Haber, Daniel A.; Rose, Elise A.; and Housman, David E., 5,350,840, Cl. 536-23.100
Houston Satellite Systems, Inc.: *See—*
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Howa Machinery, Ltd.: *See—*
Oketani, Tetsuya; Nishikawa, Hirotaka; Mase, Yoshiaki; and Sakakibara, Yukihiro, 5,351,039, Cl. 340-680.000
Howard, Harry R., to Pfizer Inc. Heteroaryl piperazine antipsychotic agents. 5,350,747, Cl. 514-213.000.
Howell, Michial D.; and Kino, Gordon S., to Leland Stanford Jr./University, The Board of Trustees of the. Fiber optic communication system and fiber optic modulator. 5,351,318, Cl. 385-3.000
Howitt, Roger: *See—*
Katyal, Anil; Brown, Warwick N ; and Howitt, Roger, 5,350,440, Cl. 75-686.000
Howmet Corporation: *See—*
Larsen, Donald E., Jr.; Bhowal, Prabir R.; and Merrick, Howard F., 5,350,466, Cl. 148-421.000
Hoyle, Keith W.: *See—*
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Hsiao, Cheng K.: *See*—
Martin, Trevor I.; Mayo, James D.; Listigovers, Nancy A.; Hsiao, Cheng K.; Bluhm, Terry L.; Normandin, Sharon E.; and Carmichael, Kathleen M., 5,350,844, Cl. 540-141.000
Hsu, Chi-Fan, to Henkel Corporation. Hydrophilicizing treatment for metal objects. 5,350,791, Cl. 524-366.000.
Huang, Heng-Sheng; Chen, Kun-Luh; and Hong, Gary, to United Microelectronics Corporation. Multilayer polysilicon gate self-align process for VLSI CMOS device. 5,350,698, Cl. 437-26.000.
Huang, Kuei-Wu, to SGS-Thomson Microelectronics, Inc. Semiconductor planarization process. 5,350,486, Cl. 156-633.000
Huang, Shangyuan: *See*—
Toyama, Keiichiro; Kim, Byoung Y.; Huang, Shangyuan; and Shaw, Herbert J., 5,351,252, Cl. 372-29.000
Huang, Tien-Tsai. Digital pressure gauge. 5,349,866, Cl. 73-727.000
Hubball, Martin M., to Buhrke Industries, Inc. Overhead belt discharge apparatus for container end closures. 5,349,843, Cl. 72-344.000.
Huber & Suhner AG: *See*—
Stephan, Kurt; Schmidt, Roman; and Widmer, Hans, 5,350,797, Cl. 525-28.000
Hubred, Gale L.; and Todd, Harold E., to General Atomics International Services Corporation. Pavement deicer compositions 5,350,533, Cl. 252-70.000
Hueck, Walter: *See*—
Walter, Robert; and Hueck, Walter, 5,350,465, Cl. 148-325.000.
Huemke, Klaus; Paul, Dieter; and Hoffmann, Gerhard, to BASF Lacke+Farben Aktiengesellschaft. Synthetic resin. 5,350,636, Cl. 428-418.000
Hughes Aircraft Company: *See*—
Alidio, Raul I.; and Holter, Clinton O., 5,351,013, Cl. 320-284.000
Cheng, William W.; and Linder, Lloyd F., 5,350,952, Cl. 307-352.000
Chi, Tom Y., 5,350,662, Cl. 430-313.000.
Farwell, William D., 5,351,000, Cl. 324-76.770.
Hermansen, Ralph D.; and Lau, Steven E., 5,350,779, Cl. 523-428.000
Martinez, Erasmo; and Walmsley, Steven E., 5,349,846, Cl. 73-40.000
Rafanelli, Gerard L.; Ellerbroek, Brent L.; Mount, Susan B.; and Rehfield, Mark J., 5,350,911, Cl. 250-201.900
Smith, Willis H., Jr.; Garvin, Hugh L.; Robinson, Klaus; and Miller, Leroy J., 5,350,498, Cl. 204-192.230.
Wedeen, Robert S., 5,350,989, Cl. 318-632.000
Hughes Training, Inc.: *See*—
Brooke, Kenneth R., 5,351,097, Cl. 348-744.000.
Hui, Benjamin C.: *See*—
Kanjolia, Ravindra K.; Hui, Benjamin C.; and Grant, William B., 5,350,869, Cl. 556-1.000
Hull, Harold L.; Loftis, Ronald D.; and Loftis, Carolyn I. Bicycle tow-bar for wheelchairs. 5,350,184, Cl. 280-204.000
Hull, Harold L.; Hammer, Dick; and Bechdolt, C. Park. Towline reel attachable to a trailer hitch receptacle. 5,350,186, Cl. 280-480.100
Hullett, John L.; and Newman, Robert M., to Newman, Robert M.; Hullett, John L.; and University of Western Australia, The. Queueing protocol. 5,351,043, Cl. 340-825.500.
Hundebol, Soren, to F. L. Smidth & Co. A/S. Method and apparatus for incinerating waste in a cement kiln plant. 5,349,910, Cl. 110-346.000
Hundt, Vincent G.; and Peltz, Frederick G. Waste recycling device. 5,350,122, Cl. 241-29.000
Hung, Ming-Hong; and Rozen, Shlomo, to Du Pont de Nemours, E. I., and Company. Production of Perfluoro (alkyl vinyl ethers). 5,350,497, Cl. 204-157.920
Hunter Douglas Inc.: *See*—
Anderson, Richard N.; Hurt, Dan; Burtnett, Dave; Gaskins, Jay; and Wall, Jim, 5,349,730, Cl. 29-24.500.
Hurlocker, Claude M.: *See*—
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Hurlocker, Lacy M.: *See*—
Schreiner, Steven A.; Albertson, Karen M.; Brown, Mary L.; Hildebrandt, Camille M.; Hurlocker, Lacy M.; and Webster, Glenn C., 5,350,630, Cl. 428-343.000
Hurst, Jack W., to UNR Industries, Inc. Shopping cart having undercarriage tray with integral basket. 5,350,182, Cl. 280-33.996
Hurt, Dan: *See*—
Anderson, Richard N.; Hurt, Dan; Burtnett, Dave; Gaskins, Jay; and Wall, Jim, 5,349,730, Cl. 29-24.500
Hussmann, Gregory P.: *See*—
Behrens, Paul K.; Holzhauer, Juergen K.; Hussmann, Gregory P.; and Sikkenga, David L., 5,350,874, Cl. 560-80.000
Hutch, Frederick S., to Honeywell, Inc. Method for calibrating components permitting the use of low cost components. 5,351,009, Cl 324-601.000
Hutchison, Eric A.; and Krone, John J., to Caterpillar Inc. Displacement controlled hydraulic proportional valve. 5,350,152, Cl 251-30.050.
Huth, Andreas; Kruger, Martin; Seidelmann, Dieter; Schmiechen, Ralph; Krause, Werner; Schneider, Herbert; and Turski, Lechoslaw, to Schering Aktiengesellschaft. β-carboline-3-hydroxyalkylcarboxylic acid ester derivatives, process for their production and their use in pharmaceutical agents. 5,350,750, Cl. 514-253.000
Huth, Gerhard; and Baresel, Detlef, to Robert Bosch GmbH. Sensor for determining carbon monoxide. 5,351,029, Cl. 338-34.000
Huvey, Michel: *See*—
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HyClone Laboratories: *See*—
Brown, Dennis; and Kern, Dale G., 5,350,080, Cl. 220-465.000.
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Hyman, Jones M.: *See*—
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Hyundai Electronics Industries Co., Ltd.: *See*—
Park, Sung C., 5,351,223, Cl. 369-44.280
I.S.T. Laboratories, Ltd.: *See*—
Dennis, Michael E., 5,349,747, Cl. 29-840.000
Iacobucci, Guillermo A.; Brose, Daniel J.; Ray, Roderick J.; and van Eikeren, Paul, to Coca-Cola Company, The. Enzymatic membrane method for the synthesis and separation of peptides. 5,350,681, Cl 435-68.100
Iacovelli, Benedetto. Laparoscopic instruments. 5,350,391, Cl 606-170.000
Iatron Laboratories, Inc.: *See*—
Yagi, Tatsuhiko; Hisada, Ryuki; and Shibata, Hideto, 5,350,677, Cl 435-21.000
Ichikawa, Fumio: *See*—
Kato, Masatoshi; Tobo, Yozo; Ichikawa, Fumio; Azuma, Jun; and Uemura, Hideaki, 5,351,264, Cl. 372-107.000.
Ichikawa, Hitoshi; Miyazawa, Osao; and Nakamura, Masanobu, to Olympus Optical Co., Ltd. Optical recording/reproducing apparatus in which data will not become unable to be read out in case an SDL fails to be renewed. 5,351,227, Cl. 369-58.000
Ichikawa, Kiyonoshin: *See*—
Ohishi, Yoshitaka; Tamura, Makoto; Hayashida, Mitsuo; Ikegami, Satoru; Hiyama, Yoshiyuki; Awa, Takao; Ichikawa, Kiyonoshin; Nomiyama, Kiyoshi; Hanada, Keigo; and Mimura, Mitsuo, 5,350,743, Cl. 514-89.000.
Ichimura, Nobuo; Yamazaki, Mitsuo; Fujita, Kohei; Satou, Hidetaka; Miyamoto, Yasuo; Kawasumi, Masao; and Kikuchi, Tohru, to Hitachi Chemical Co. Ltd. Epoxy resin and adhesive composition containing the same. 5,350,811, Cl. 525-476.000.
Ichinomiya, Yoshio; Yamaguchi, Koshiro; and Kato, Nobuo, to Brother Kogyo Kabushiki Kaisha. Tape cassette. 5,350,243, Cl. 400-208.000.
Ichiyoshi, Osamu, to NEC Corporation. Voltage control oscillator which suppresses phase noise caused by internal noise of the oscillator. 5,351,014, Cl. 331-1.00A
ICI Americas Inc.: *See*—
Felix, Raymond A., 5,350,856, Cl. 548-138.000.
ICI Pharma: *See*—
Crawley, Graham C.; and Girodeau, Jean-Marc M. M., 5,350,754, Cl. 514-277.000
Idemitsu Kosan Co., Ltd.: *See*—
Kawato, Hiroshi; and Tomioka, Tatsuya, 5,350,558, Cl. 419-35.000.
Moriwaki, Fumio; Endo, Hiroyuki; and Hachiya, Satoshi, 5,350,538, Cl. 252-299.010.
Yamashita, Toru, 5,350,431, Cl. 44-622.000
Igarashi, Akira, to Nohmi Bosai Kogyo Kabushiki Kaisha. Fire protection system. 5,350,019, Cl. 169-61.000
Iguchi, Atsushi; and Iguchi, Kuniaki, to Nikko Corporation Ltd.; and Senko Denki Corporation Ltd. Electromagnetic induction steam generator. 5,350,901, Cl. 219-630.000.
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Iguchi, Atsushi; and Iguchi, Kuniaki, 5,350,901, Cl. 219-630.000.
Iida, Eiichiro: *See*—
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Iida, Noriyoshi: *See*—
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Iida, Yosikazu, to Kioritz Corporation. Fan apparatus. 5,349,721, Cl 15-330.000
Iijima, Kenji: *See*—
Takada, Toshio; Terashima, Takahito; Iijima, Kenji; Yamamoto, Kazunuki; Hirata, Kazuto; and Bando, Yoshichika, 5,350,606, Cl 427-564.000
Ikalainen, Pertti K.; and Witkowski, Larry C., to Texas Instruments Incorporated. Linear field effect transistor. 5,350,936, Cl 257-194.000
Ikata, Yoshikatsu; Gou, Yasunao; Kimura, Toshiyuki; and Shimotsuma, Hiroshi, to Pioneer Electronic Corporation. Method of data communication in communication network on automobile. 5,351,041, Cl. 340-825.240.
Ikeda, Koji; Futagawa, Hitoshi; Kikuchi, Toshihiro; Honda, Minoru; and Iwasa, Masanobu, to Nissho Corporation. Solvent container with a connecter for communicating with a drug vial. 5,350,372, Cl. 604-414.000
Ikeda, Michihiro: *See*—
Sasaki, Hiroyuki; Ota, Tetsuro; Hattori, Eiji; and Ikeda, Michihiro, 5,350,782, Cl. 523-116.000
Ikeda, Toru; and Yanagi, Shigenori, to Fujitsu Limited. Disk storage apparatus including a single power supply hysteresis comparator having a symmetrical characteristic. 5,351,222, Cl. 369-32.000.
Ikeda, Yasuo: *See*—
Kasai, Shuichi; Ikeda, Yasuo; Enomoto, Satoru; Imamori, Katsumi; and Iwasa, Akira, 5,350,769, Cl. 514-567.000.
Ikeda, Yukio: *See*—
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Ikegami, Satoru: *See*—
Ohishi, Yoshitaka; Tamura, Makoto; Hayashida, Mitsuo; Ikegami, Satoru; Hiyama, Yoshiyuki; Awa, Takao; Ichikawa, Kiyonoshin; Nomiyama, Kiyoshi; Hanada, Keigo; and Mimura, Mitsuo, 5,350,743, Cl. 514-89.000.
Ikenaka, Tokuji; and Omichi, Kaoru, to Wako Pure Chemical Industries, Ltd. Method of differential assay for α-amylase isozymes and a kit for the same. 5,350,678, Cl. 435-22.000.
Iketani, Kouhei, to Asahi Kogaku Kogyo Kabushiki Kaisha. Battery charger for charging both a frequently and infrequently used battery. 5,350,995, Cl. 320-15.000.
Ikezaki, Yoshiyuki: *See*—
Sakaida, Atsuo; Suzuki, Yoshihumi; Ikezaki, Yoshiyuki; Iriguchi, Akira; and Suzuki, Masashi, 5,350,962, Cl. 310-316.000.
Ikuno, Hiroshi: *See*—
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Ikura, Michio: *See*—
Coleman, Richard D.; Toll, Floyd N.; McCracken, Thomas W.; Capes, C. Edward; and Ikura, Michio, 5,350,430, Cl. 44-627.000.
Illinois Tool Works Inc.: *See*—
Van Erden, Donald L.; Rathgeber, Juergen O.; Vadhar, Parimal M.; and Wojcik, John P., 5,349,804, Cl. 52-747.000.
Illy, Ernesto, to Illycaffe' S.p.A. System for controlling the grinding of roast coffee. 5,350,123, Cl. 241-37.000.
Illycaffe' S.p.A.: *See*—
Illy, Ernesto, 5,350,123, Cl. 241-37.000.
Ilma S.r.l. Industria Lavorazioni Meccaniche Autoaccessori: *See*—
Fabbri Corsarini, Luciano, 5,350,145, Cl. 248-201.000.
Imahashi, Jinichi; Horiba, Tatsuo; and Muranaka, Yasushi, to Hitachi, Ltd. Solid polymer electrolyte type fuel cell. 5,350,643, Cl. 429-33.000.
Imai, Masao: *See*—
Tominaga, Seigo; Akasi, Osamu; Imai, Masao; Sugita, Koji; Suzuki, Setuko; Maeda, Akira; Isiguro, Kazumasa; Uchida, Masahiro; and Sato, Makoto, 5,349,899, Cl. 99-646.00R.
Imaida, Tsuyoshi: *See*—
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Imamori, Katsumi: *See*—
Kasai, Shuichi; Ikeda, Yasuo; Enomoto, Satoru; Imamori, Katsumi; and Iwasa, Akira, 5,350,769, Cl. 514-567.000.
Immunex Corporation: *See*—
Sims, John E.; Cosman, David J.; Lupton, Stephen D.; Mosley, Bruce A.; and Dower, Steven K., 5,350,683, Cl. 435-69.100.
Imperial Chemical Industries, PLC: *See*—
Burkinshaw, Steven M.; Gordon, Roy; Marfell, David J.; and Maseka, Kakoma D., 5,350,422, Cl. 8-115.560.
Impink, Albert J., Jr., to Westinghouse Electric Corporation. Process facility monitor using fuzzy logic. 5,351,200, Cl. 364-550.000.
Imran, Mir A.; Zadno-Azizi, Gholam-Reza; and Pomeranz, Mark L., to Intelliwire, Inc. Device having an electrically actuatable section with a portion having a current shunt and method. 5,349,964, Cl. 128-772.000
IMS Ionen Mikrofabrikations Systems Gesellschaft m.b.H.: *See*—
Stengl, Gerhard; and Chalupka, Alfred, 5,350,924, Cl. 250-492.200.
Inaba, Naoto; and Tanaka, Shinichi, to Nikon Corporation. Setting circuit of binary threshold value. 5,350,950, Cl. 307-236.000.
Inaba, Shigemitsu: *See*—
Kuno, Hiromichi; Sekimori, Toshiyuki; Inaba, Shigemitsu; and Hasegawa, Toshiaki, 5,350,312, Cl. 439-310.000.
Inaba, Tadashi: *See*—
Abe, Akira; Seki, Hiroyuki; Okada, Hisashi; and Inaba, Tadashi, 5,350,668, Cl. 430-393.000.
Inagaki, Masahisa: *See*—
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Inage, Osamu; and Shimada, Kazuyuki, to Ricoh Company, Ltd. Temperature control having improved reliability as a result of having plurality of control means and disabling means. 5,350,900, Cl. 219-508.000.
Inazawa, Shinji: *See*—
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InControl, Inc.: *See*—
Adams, John M.; Alferness, Clifton A.; and Kreyenhagen, Paul E., 5,350,404, Cl. 607-5.000.
Infinger, Kenneth R.; Avers, Gregory M.; Wagner, Darrell O.; and Adams, John M., 5,350,402, Cl. 607-5.000.
Industrial Automation Technologies, Inc.: *See*—
McCarney, David A.; Calabrese, Frank A.; and Shockey, Kenneth B., 5,349,926, Cl. 119-721.000.
Industrial Tech. Research Institute: *See*—
Liu, Jia-Chin; Chang, Shu-Fahr; Wu, Shyue-Sheng; and Cheng, Yen-Cheng, 5,350,008, Cl. 164-440.000.
Industrial Technology Research Institute: *See*—
Chen, Chi-Chang, 5,350,822, Cl. 526-266.000
Chen, Hsing-Hai; Tseng, Hsiao-Pin; and Lu, Chih-Yuan, 5,350,336, Cl. 454-187.000.
Wu, T. C.; Chen, Ray-Ten; and Chang, Wen-Pin, 5,351,136, Cl. 358-440.000.
Infinger, Kenneth R.; Avers, Gregory M.; Wagner, Darrell O.; and Adams, John M., to InControl, Inc. Atrial defibrillator and method for providing T wave detection and interval timing prior to cardioversion. 5,350,402, Cl. 607-5.000.
Infintech, Inc.: *See*—
Easley, James C., 5,351,168, Cl. 362-32.000.
Infrasonik AB: *See*—
Sandstrom, Roland, 5,350,887, Cl. 181-142.000
Ing. G. Klemm Bohrtechnik GmbH: *See*—
Klemm, Guenter W., 5,350,023, Cl. 173-17.000
Ingersoll-Rand Company: *See*—
Campbell, Paul B.; Kimberlin, Robert R.; O'Malley, Sean M.; and Holt, Roland P., 5,350,025, Cl. 173-111.000.
Inman, Ronald: *See*—
Jurcik, Benjamin; Brandt, Michael; Inman, Ronald; and McAndrew, James, 5,351,120, Cl. 356-246.000.
Innovatex Materials Handling GmbH: *See*—
Gebald, Gregor; and Langen, Manfred, 5,350,052, Cl. 198-465.200.
Inoue, Akihisa: *See*—
Masumoto, Tsuyoshi; and Inoue, Akihisa, 5,350,468, Cl. 148-561.000.
Inoue, Daijirou: *See*—
Harada, Yasoo; Matsushita, Shigeharu; Terada, Satoshi; Fujii, Emi; Kurose, Takashi; Higashino, Takayoshi; Yamada, Takashi; Nagamatsu, Akihito; Inoue, Daijirou; and Matsumura, Kouji, 5,350,709, Cl. 437-161.000.
Inoue, Hirokazu: *See*—
Miyazaki, Kunio; Sugita, Yutaka; Mukoh, Akio; Miyoshi, Tadahiko; Miura, Osamu; Takahashi, Akio; Numata, Shunichi; Ogihara, Satoru; Yamada, Kazuji; Inoue, Hirokazu; and Kobayashi, Fumiyuki, 5,350,886, Cl. 174-250.000.
Inoue, Hiroshi; and Kato, Toshikazu, to Tosoh Corporation. Process for production of polyarylene sulfides. 5,350,833, Cl. 528-388.000.
Inoue, Kaori: *See*—
Adachi, Masayuki; Yamagishi, Yutaka; and Inoue, Kaori, 5,351,198, Cl. 364-498.000.
Inoue, Kenichi: *See*—
Fukuyama, Hirofumi; Noguchi, Tatuya; Inoue, Kenichi; Ishibashi, Kiyotaka; and Adachi, Shigeto, 5,350,920, Cl. 250-309.000.
Inoue, Manabu: *See*—
Tsuji, Sadafusa; Inoue, Manabu; Wada, Shigeru; and Iwata, Michihiro, 5,351,102, Cl. 354-106.000.
Inoue, Matsuhisa; and Sakai, Akira, to Showa Yakuhin Kako Co., Ltd. Cephalosporinase testing agent. 5,350,680, Cl. 435-34.000
Inoue, Osamu: *See*—
Kugiyama, Koichi; Sugaya, Yasuhiro; Inoue, Osamu; Hirota, Ken; and Satomi, Mitsuo, 5,350,628, Cl. 428-307.300.
Inoue, Susumu: *See*—
Mikami, Fujio; Yasuhara, Kiyotada; Kojima, Masahiro; and Inoue, Susumu, 5,350,445, Cl. 106-14.410.
Inoue, Tatsuya; Kagata, Hiroshi; Kato, Junichi; and Kameyama, Ichiro, to Matsushita Electric Industrial Co., Ltd. Dielectric ceramic for use in microwave device, a microwave dielectric ceramic resonator dielectric ceramics. 5,350,639, Cl. 428-633.000.
Inouye, Hiroshi: *See*—
Daikoku, Takahiro; and Inouye, Hiroshi, 5,349,831, Cl. 62-376.000.
Instant Pierce, Inc.: *See*—
Zeien, Terri; and Rahn, Richard, 5,349,979, Cl. 137-318.000.
Institut Francais du Petrole: *See*—
Boulet, Jean, 5,350,028, Cl. 175-26.000
Coquerel, Patrick, 5,351,271, Cl. 375-10.000.
Rialan, Joseph; and Grouffal, Christian, 5,351,244, Cl. 371-2.100
Institut Francais du Petrole and Europeene de Retraitment de Catalyseurs (Eurecat): *See*—
Cameron, Charles; Courty, Philippe; Berrebi, Georges; Roumieu, Raymond; Rabehasaina, Hans; and Eschard, Francois, 5,350,728, Cl. 502-415.000.
Institut Francias du Petrole: *See*—
Groult, Pierre, deceased; and Huvey, Michel, 5,350,602, Cl. 427-428.000.
Joly, Jean-Francois; Caullet, Philippe; Faust, Anne-Catherin; Baron, Jacques; and Guth, Jean-Louis, 5,350,722, Cl. 502-64.000.
Institute of Gas Technology: *See*—
Khinkis, Mark J.; Abbasi, Hamid A.; and Cygan, David F., 5,350,293, Cl. 431-116.000.
Integrated Information Technology, Inc.: *See*—
Jiang, Ching-Lin, 5,351,208, Cl. 365-49.000.
Intel Corporation: *See*—
Coelho, Rohan; Golin, Stuart; Nickerson, Brian; and Keith, Michael, 5,351,085, Cl. 348-391.000
Gardner, Donald S.; Mu, Xiao-Chun; and Fraser, David B., 5,350,484, Cl. 156-628.000.
Girard, Luke; and Sweedler, Jonathan, 5,351,207, Cl. 364-786.000
Solomon, Raymond, 5,349,823, Cl. 62-6.000
Yehonatan, Mivtza, 5,351,241, Cl. 370-85.300.
Intellicall, Inc.: *See*—
Naeini, Abdolreza S.; Owen, Lindsey D.; and Hansen, Harold E. A., 5,351,290, Cl. 379-145.000.
Intelliwire, Inc.: *See*—
Imran, Mir A.; Zadno-Azizi, Gholam-Reza; and Pomeranz, Mark L., 5,349,964, Cl. 128-772.000.
InterDigital Technology Corporation: *See*—
Lomp, Gary R.; and Schilling, Donald L., 5,351,249, Cl. 371-43.000.
Interlego A.G.: *See*—
Poulsen, Ole V.; Michaelsen, Carsten; and Jensen, Kurt, 5,349,734, Cl. 29-239.000.
International Business Machines Corporation: *See*—
Blaum, Miguel M.; and Roth, Ron M., 5,351,246, Cl. 371-10.100.

Brezoczky, Blasius; McClelland, Gay M.; and Seki, Hajime, 5,351,229, Cl. 369-99.000.
Brown, David J.; Conway-Jones, David C.; Kim, Jong-Han; and Smith, Peter M., 5,351,093, Cl. 348-530.000
Califano, Andrea; and Mohan, Rakesh, 5,351,310, Cl. 382-22.000.
Dye, Malcom; Gibbs, Terence K.; Mercer, Ian D.; and Luck, Graham, 5,350,980, Cl. 315-370.000
Ghotbi, Mohammad-Reza; and Larson, Tony R., 5,350,997, Cl 323-268.000
Gregory, Thomas A.; Keller, Christopher G.; and Severson, James M., 5,351,156, Cl. 360-74.100.
Kurtzberg, Jerome M.; and Levanoni, Menachem, 5,351,202, Cl. 364-552.000
Lumelsky, Leon; Choi, Sung M.; Peevers, Alan W.; and Pittas, John L., 5,351,067, Cl. 345-191.000
Menez, Jean; Rosso, Michele; and Scotton, Paolo, 5,351,291, Cl 379-410.000
Powell, Kenneth E.; and Mallory, Deborah A., 5,350,909, Cl. 235-472.000
Sawyer, Joseph C., 5,351,056, Cl. 342-195.000
Schringer, Lawrence T., 5,350,246, Cl. 400-613.200.
International Fuel Cells Corporation: *See*—
Rempe, Richard J.; and Stewart, Robert C., Jr., 5,350,452, Cl. 118-669.000.
International Superconductivity Technology Center: *See*—
Hase, Takashi; Kita, Ryusuke; Sasaki, Masato; and Morishita, Tadataka, 5,350,738, Cl. 505-473.000.
Intertechnique: *See*—
Schegerin, Robert, 5,349,949, Cl. 128-206.240.
Interventional Technologies Inc.: *See*—
Godlewski, Peter P., 5,350,101, Cl. 226-129.000
Inverness Corporation: *See*—
Mann, Samuel J., 5,350,394, Cl. 606-188.000
Iracane, Daniel, to Commissariat a l'Energie Atomique. Free electron laser with advanced wiggler. 5,351,248, Cl. 372-2.000.
Iriguchi, Akira: *See*—
Sakaida, Atsuo; Suzuki, Yoshihumi; Ikezaki, Yoshiyuki; Iriguchi, Akira; and Suzuki, Masashi, 5,350,962, Cl. 310-316.000.
Irikura, Takayuki, to Japan Tobacco, Inc. Shredding device for paper web used in the manufacture of cigarettes with filters. 5,350,126, Cl. 241-235.000
Ishibashi, Kenzo: *See*—
Ishida, Takashi; O'Hara, Shunji; Ishibashi, Kenzo; and Satoh, Toshio, 5,351,225, Cl. 369-44.320.
Ishibashi, Kiyotaka: *See*—
Fukuyama, Hirofumi; Noguchi, Tatuya; Inoue, Kenichi; Ishibashi, Kiyotaka; and Adachi, Shigeto, 5,350,920, Cl. 250-309.000
Ishibashi, Yoshihiro: *See*—
Adachi, Hideo; and Ishibashi, Yoshihiro, 5,351,219, Cl 367-140.000
Ishida, Hidetoshi: *See*—
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Tamekuni, Yoshikyo; Haibara, Tadashi; Matsumoto, Michito; and Nagasawa, Shinji, 5,351,328, Cl. 385-83.000.
Ishida, Masahiro: *See*—
Honda, Hiroki; Uga, Kimiharu; Ishida, Masahiro; and Ishigaki, Yoshiyuki, 5,350,939, Cl. 257-378.000.
Ishida, Shinnosuke, to Honda Giken Kogyo Kabushiki Kaisha. System for controlling movement of a mobile body along a target path 5,350,912, Cl. 250-202.000.
Ishida, Takashi; O'Hara, Shunji; Ishibashi, Kenzo; and Satoh, Toshio, to Matsushita Electric Industrial Co., Ltd. Optical recording and reproducing apparatus having a plurality of light spots. 5,351,225, Cl 369-44.320.
Ishigaki, Yoshiyuki: *See*—
Honda, Hiroki; Uga, Kimiharu; Ishida, Masahiro; and Ishigaki, Yoshiyuki, 5,350,939, Cl. 257-378.000.
Ishihara, Hidetoshi; Ueda, Atsushi; and Kojima, Kunio, to Mitsubishi Jukogyo Kabushiki Kaisha. Clamp and toothed belt conveyor for carrying linens. 5,349,768, Cl. 38-143.000.
Ishihara, Katsumi: *See*—
Azuma, Yusaku; Ishihara, Katsumi; and Shibata, Masaru, 5,350,269, Cl. 414-416.000
Ishihara, Kei; Matsuda, Kiyoshi; Tamaki, Atsushi; Katoh, Masatoshi, Hamaguchi, Tadahiko; and Takeda, Takashi, to Mitsubishi Kasei Corporation; and Mitsubishi Electric Corporation. Image sensor using organic photoconductor. 5,350,915, Cl. 250-208.100.
Ishii, Hirokazu: *See*—
Sato, Morio; Abe, Yutaka; Takano, Jun; Ishii, Hirokazu; and Murata, Yasuzo, 5,351,143, Cl. 359-51.000
Ishii, Mitsuo, to Sharp Kabushiki Kaisha. Magnetic head driving device with pre-recording energization with two inductors sharing a common magnetic core. 5,351,155, Cl. 360-46.000.
Ishikawa, Hiroichi; and Kolesa, Michael S. Semiconductor wafer temperature determination by optical measurement of wafer expansion in processing apparatus chamber. 5,350,899, Cl. 219-494.000.
Ishikawa, Hiroshi: *See*—
Hara, Yasushi; Watanabe, Kazuhiro; Ishikawa, Hiroshi; Matsui, Kiyoto; Kawabe, Kenji; and Shimura, Takaki, 5,350,964, Cl. 310-357.000
Ishikawa, Katsuhiro: *See*—
Ono, Hisao; Ito, Katsumi; Uekawa, Tatuo; and Ishikawa, Katsuhiro, 5,350,820, Cl. 526-240.000.
Ishikawa, Masao: *See*—
Komatsu, Yoshimasa; Koboshi, Shigeharu; and Ishikawa, Masao, 5,351,103, Cl. 354-324.000.
Ishikawa, Sadanori: *See*—
Miki, Isao; Isogai, Hisao; Saito, Masao; Yamanashi, Toru; Kawai, Toshiyuki; Saito, Akinami; Ishikawa, Sadanori; Konno, Masahiko; and Okada, Keiichi, 5,350,007, Cl. 164-316.000
Ishikawa, Seiji; and Murakami, Hajime, to Mitsubishi Kasei Corporation. Lighting device. 5,351,169, Cl. 362-32.000
Ishikawa, Tetsuya: *See*—
Collins, Kenneth S.; Trow, John R.; Tsui, Joshua C. W.; Roderick, Craig A.; Bright, Nicolas J.; Marks, Jeffrey; and Ishikawa, Tetsuya, 5,350,479, Cl. 156-345.000.
Ishimaru, Hajime, to Zaidan Houjin Shinku Kagaku Kenkyujo. Turbomolecular pump having vanes with ceramic and metallic surfaces. 5,350,275, Cl. 415-90.000
Ishimori, Akira; Yamamoto, Takashi; and Kojima, Tetsuo, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor laser-pumped solid-state laser with plural beam output. 5,351,259, Cl. 372-75.000
Ishimura, Yoshimasa: *See*—
Ohnishi, Yutaka; Misu, Naoaki; Ishimura, Yoshimasa; and Mihara, Nobutake, 5,350,775, Cl. 549-220.000.
Ishioka, Takuji: *See*—
Maruyama, Shigeru; Shimasaki, Yuichi; Kanehiro, Masaki; Ishioka, Takuji; Baba, Shigeki; and Hisaki, Takashi, 5,349,930, Cl. 123-143.00C
Ishiyama, Naoki: *See*—
Maeda, Kazuki; Ishiyama, Naoki; and Nakata, Hiroaki, 5,351,148, Cl. 359-124.000.
Ishizaki, Keiichiro: *See*—
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Ishizuka, Hideki: *See*—
Takeuchi, Kunihiro; Ishizuka, Hideki; and Kaneko, Hideyuki, 5,351,185, Cl. 364-184.000.
Isiguro, Kazumasa: *See*—
Tominaga, Seigo; Akasi, Osamu; Imai, Masao; Sugita, Koji; Suzuki, Setuko; Maeda, Akira; Isiguro, Kazumasa; Uchida, Masahiro; and Sato, Makoto, 5,349,899, Cl. 99-646.00R
Isobe, Yasuaki: *See*—
Takezoe, Osamu; Takigawa, Jun; Okamoto, Tadashi; Hashiura, Mituo; Fukuda, Sunao; Takeuchi, Keizo; and Isobe, Yasuaki, 5,350,436, Cl. 75-314.000.
Isobe, Yoshinori: *See*—
Naito, Masataka; Takahashi, Yuji; Hiroi, Masakazu; Isobe, Yoshinori; Yoshida, Akimaro; Fujimoto, Hitoshi; and Nakagawa, Tomohito, 5,351,112, Cl. 355-233.000
Isogai, Hisao: *See*—
Miki, Isao; Isogai, Hisao; Saito, Masao; Yamanashi, Toru; Kawai, Toshiyuki; Saito, Akinami; Ishikawa, Sadanori; Konno, Masahiko; and Okada, Keiichi, 5,350,007, Cl. 164-316.000.
Isuzu Motors Limited: *See*—
Abukawa, Yukihiro; Takase, Hiraji; and Shinji, Yasuhisa, 5,350,309, Cl. 439-138.000
Italdis S.p.A.: *See*—
Libardi, Mario, 5,349,781, Cl. 49-47.000.
Ito, Caryn Y.: *See*—
Call, Katherine M.; Glaser, Thomas M.; Ito, Caryn Y.; Buckler, Alan J.; Pelletier, Jerry; Haber, Daniel A.; Rose, Elise A.; and Housman, David E., 5,350,840, Cl. 536-23.100.
Ito, Hiroyoshi: *See*—
Nakazeki, Tsugito; and Ito, Hiroyoshi, 5,350,283, Cl. 417-423.700.
Ito, Katsumi: *See*—
Ono, Hisao; Ito, Katsumi; Uekawa, Tatuo; and Ishikawa, Katsuhiro, 5,350,820, Cl. 526-240.000.
Ito, Sadao, to Aisin Seiki Kabushiki Kaisha. Reclining seat apparatus. 5,350,216, Cl. 297-362.000.
Ito, Tosikazu: *See*—
Yada, Yukihiko; and Ito, Tosikazu, 5,350,211, Cl. 296-93.000.
Ito, Tsuyoshi: *See*—
Tomoi, Masao; Kiyokawa, Atsuo; Ogawa, Hiromasa; Onozuka, Teruo; and Ito, Tsuyoshi, 5,350,523, Cl. 210-683.000.
Ito, Yoshio: *See*—
Kinoshita, Shigenori; Yanase, Takao; Fujita, Kouetsu; Motoyoshi, Osamu; and Ito, Yoshio, 5,350,994, Cl. 320-15.000.
Ito, Yoshitoshi; Kawaguchi, Fumio; Shinohara, Yukito; and Haida, Munetaka, to Hitachi, Ltd.; and Tokai University. Optical CT imaging device. 5,349,951, Cl. 128-633.000
Ito, Yuji: *See*—
Shinohara, Takahiro; and Ito, Yuji, 5,351,237, Cl. 370-58.300.
Itoh, Aya: *See*—
Takiguchi, Miho; Katayama, Noriko; Itoh, Aya; Ohama, Kaori; and Tanaka, Yasuo, 5,350,062, Cl. 206-316.200
Itoh, Hisato; Oguchi, Takahisa; Aihara, Shin; and Sugimoto, Kenichi, to Mitsui Toatsu Chemicals, Incorporated; and Yamamoto Chemicals, Incorporated 03. Halogenated phthalocyanine compound, method for preparing same. 5,350,843, Cl. 540-138.000.
Itoh, Kiyoshi: *See*—
Moriyama, Hitoshi; Itoh, Kiyoshi; Hara, Minoru; and Inagaki, Masahisa, 5,349,903, Cl. 101-93.050.
Itoh, Nobuyuki; and Taniguchi, Tsugiko, to Sharp Kabushiki Kaisha Liquid crystal display device. 5,350,537, Cl. 252-299.010.
Itoh, Ren: *See*—
Sagawa, Akemi; Itoh, Ren; Sakai, Masahiko; and Shimizu, Riyuuichi, 5,350,789, Cl. 524-313.000

Itoh, Yasuhito: *See*—
Sorimachi, Kenichi; Tozawa, Hirokazu; Ochi, Toshiaki; and Itoh, Yasuhito, 5,350,005, Cl. 164-154.100.
Itou, Atsushi: *See*—
Kato, Shigekazu; Nishihata, Kouji; Tsubone, Tsunehiko; and Itou, Atsushi, 5,349,762, Cl. 34-406.000
Itou, Kenji: *See*—
Kawada, Nobuo; Kubota, Yoshihiro; Harada, Kesazi; and Itou, Kenji, 5,350,720, Cl. 501-97.000.
Itozaki, Hideo: *See*—
Harada, Keizo; Itozaki, Hideo; and Yazu, Shuji, 5,350,737, Cl. 505-477.000
ITT Automotive Electrical Systems, Inc.: *See*—
Patterson, Douglas D.; Buchanan, Harry C., Jr.; and McClain, Michael J., 5,349,717, Cl. 15-250.040.
Iwabayashi, Makoto: *See*—
Kitamura, Minoru; and Iwabayashi, Makoto, 5,350,883, Cl 84-644.000
Iwagami, Minoru: *See*—
Nezu, Takashi; Iwagami, Minoru; and Kawashima, Hisayoshi, 5,350,077, Cl. 213-75.00R.
Iwahori, Masayuki. Lighter. 5,350,294, Cl. 431-153.000.
Iwai, Isamu: *See*—
Doi, Miwako; Amano, Shin-ya; Miike, Seiji; Nogami, Hiroyasu; Kumano, Akira; Takeda, Kimihito; Adachi, Hisahiro; Iwai, Isamu; Okamoto, Toshio; Yamanaka, Noriko; and Kawada, Tsutomu, 5,351,189, Cl. 364-419.020.
Iwakura, Tadayuki: *See*—
Kawabe, Takashi; Ashida, Eiji; Fuyama, Moriaki; Iwakura, Tadayuki; Fukui, Hiroshi; Tsuji, Yoshikazu; Kuwatsuka, Shunichiro; Saito, Harunobu; Hagiwara, Yoshiki; Takemoto, Issei; and Fujisawa, Masayasu, 5,349,745, Cl. 29-603.000.
Iwami, Hideo, to Naigai Special Dying Co., Ltd. Cloth treatment method. 5,349,711, Cl. 8-152.000
Iwamoto, Etsuko: *See*—
Higeta, Keiichi; Omori, Sohei; Fujimura, Yasuhiro; Iwamoto, Etsuko; and Uchida, Akihisa, 5,351,211, Cl. 365-189.050.
Iwasa, Akira: *See*—
Kasai, Shuichi; Ikeda, Yasuo; Enomoto, Satoru; Imamori, Katsumi; and Iwasa, Akira, 5,350,769, Cl. 514-567.000
Iwasa, Masanobu: *See*—
Ikeda, Koji; Futagawa, Hitoshi; Kikuchi, Toshihiro; Honda, Minoru; and Iwasa, Masanobu, 5,350,372, Cl. 604-414.000.
Iwasaki, Tokuji: *See*—
Murakami, Fumio; Morita, Eiichi; Iwasaki, Tokuji; Suzuki, Yasushi; and Fujimoto, Kouha, 5,349,728, Cl. 28-107.000.
Iwata, Michihiro: *See*—
Tsuji, Sadafusa; Inoue, Manabu; Wada, Shigeru; and Iwata, Michihiro, 5,351,102, Cl. 354-106.000.
Iwinski, Dean J.: *See*—
Mellits, Kirk E.; and Iwinski, Dean J., 5,349,733, Cl. 29-227.000.
Izumi, Keiichi: *See*—
Kawamura, Shinichi; Izumi, Keiichi; Sato, Junichi; Sanemitsu, Yuzuru; Sato, Ryo; Hamada, Tatsuhiro; and Shibata, Hideyuki, 5,350,736, Cl. 504-266.000
J and N Associates, Inc.: *See*—
Martell, Dennis; and Krcma, Jan, 5,351,037, Cl. 340-632.000
Jacala, Ariel C. P.; and Chiu, R. Paul, to General Electric Company Closed-circuit steam-cooled bucket with integrally cooled shroud for gas turbines and methods of steam-cooling the buckets and shrouds. 5,350,277, Cl. 416-90.00R
Jackson, David M.; and Matthews, Billie J., to Kimberly-Clark Corporation. High wicking liquid absorbent composite. 5,350,370, Cl. 604-367.000
Jacobson, Haim: *See*—
Kramarczyk, Marian; Foni, David; and Jacobson, Haim, 5,351,242, Cl. 370-85.500.
Jacquot, Bernard, to Commissariat a l'Energie Atomique. Coaxial electromagnetic wave injection and electron cyclotron resonance ion source. 5,350,974, Cl. 315-111.810.
Jaffrezic-Renault, Nicole; Chovelon, Jean-Marc; Perrot, Hubert; Le Perchec, Pierre; and Chevalier, Yves, to Ecole Centrale de Lyon Process for producing a surface gate of an integrated electro-chemical sensor, consisting of a field-effect transistor sensitive to alkaline-earth species and sensor obtained. 5,350,701, Cl. 437-40.000.
Jagadish, Hosagrahar V.: *See*—
Fox, David S.; Jagadish, Hosagrahar V.; O'Gorman, Lawrence; and Story, Guy A., 5,350,303, Cl. 434-118.000
Jagadish, Mittur N.: *See*—
Azad, Ahmed A.; Jagadish, Mittur N.; and Fahey, Kevin J., 5,350,575, Cl. 424-192.100.
Jager, Willem W.: *See*—
Drent, Eit; and Jager, Willem W., 5,350,876, Cl. 560-207.000
Jakubke, Hans-Dieter; Schuster, Matthias; and Aaviksaar, Aavo, to Hoechst Aktiengesellschaft. Process for preparing peptides. 5,350,682, Cl. 435-68.100.
James Clem Corporation: *See*—
Carriker, Richard, 5,350,255, Cl. 405-270.000.
Jameson, Donna R., heiress: *See*—
Muskopf, Jack W.; Christy, M. Robert; Jameson, Jaysn F., deceased; Jameson, Jerry M., heir; Jameson, Donna R., heiress; and Hallmark, Tami S., 5,350,802, Cl. 525-65.000.
Jameson, Jaysn F., deceased: *See*—
Muskopf, Jack W.; Christy, M. Robert; Jameson, Jaysn F., deceased; Jameson, Jerry M., heir; Jameson, Donna R., heiress; and Hallmark, Tami S., 5,350,802, Cl. 525-65.000
Jameson, Jerry M., heir: *See*—
Muskopf, Jack W.; Christy, M. Robert; Jameson, Jaysn F., deceased; Jameson, Jerry M., heir; Jameson, Donna R., heiress; and Hallmark, Tami S., 5,350,802, Cl. 525-65.000
Janevski, Peter K.; and Reina, Debra A., to Smith & Nephew Rolyan Inc. Gel shell splint. 5,350,418, Cl. 607-111.000.
Jani, Bill; Garay, Thomas; and Ravensbergen, John, to Variperm (Canada) Limited. Mandrel operated torque anchor. 5,350,013, Cl. 166-217.000
Janson, Wilbert F., Jr., to Eastman Kodak Company. Photographic camera and film cartridge with double exposure prevention. 5,351,101, Cl. 354-21.000.
Janssen, Hendrik J.: *See*—
van de Moesdijk, Cornelis G. M.; Janssen, Hendrik J.; and Schroijen, Josephus C., 5,350,849, Cl. 544-203.000.
Japan Electronic Control Systems Co., Ltd.: *See*—
Sato, Hideyuki, 5,350,034, Cl. 180-197.000.
Japan Synthetic Rubber Co., Ltd.: *See*—
Ono, Hisao; Ito, Katsumi; Uekawa, Tatuo; and Ishikawa, Katsuhiro, 5,350,820, Cl. 526-240.000.
Japan Tobacco, Inc.: *See*—
Irikura, Takayuki, 5,350,126, Cl. 241-235.000.
Jardine, Richard K.: *See*—
Swearingen, John R.; Jardine, Richard K.; Bradford, John O.; and Rathbun, Loren L., 5,349,806, Cl. 56-341.000.
Jarrabet, Gregory P.; and Lu, Lixion, to Technetics Corp. Impermeable, abradable seal and method for the production thereof. 5,350,557, Cl. 419-19.000
Jasper, Louis J., Jr.: *See*—
Kim, Anderson H.; DiDomenico, Leo D.; Weiner, Maurice; Jasper, Louis J., Jr.; and Youmans, Robert J., 5,351,063, Cl. 343-895.000.
Jasperson, Steve J.; and Jerila, Torsti T. T., to Stanley Works, The. Twin wheel guide for sliding doors. 5,349,783, Cl. 49-425.000.
Jenkins, William G., to Burlington Industries, Inc. Chlorine resistant cationic dyeable carpet yarn. 5,350,426, Cl. 8-539.000.
Jensen, Earl M.; Sun, Mei H.; Vecht, David L.; and Melen, Robert E., to Luxtron Corporation. Modular luminescence-based measuring system using fast digital signal processing. 5,351,268, Cl. 374-131.000
Jensen, Kurt: *See*—
Poulsen, Ole V.; Michaelsen, Carsten; and Jensen, Kurt, 5,349,734, Cl. 29-239.000.
Jeon, Yong W., to Goldstar Electron Co., Ltd. Word line voltage supply circuit. 5,351,217, Cl. 365-230.060.
Jeong, Il-hyeok, to Samsung Electron Devices Co., Ltd. Blue-emitting phosphor for use in fluorescent lamps and fluorescent lamp employing the same. 5,350,971, Cl. 313-487.000.
Jeong, Myung Y.: *See*—
Chun, Oh G.; Ahn, Seung H.; Jeong, Myung Y.; and Choy, Tae G., 5,351,334, Cl. 385-134.000.
Jerila, Torsti T. T.: *See*—
Jasperson, Steve J.; and Jerila, Torsti T. T., 5,349,783, Cl. 49-425.000.
Jerome, Rick C.; and Marazita, Frank, to National Semiconductor Corporation. Low resistance silicided substrate contact. 5,350,942, Cl. 257-648.000.
Jet, Inc.: *See*—
Tang, Nianfa, 5,350,505, Cl. 210-108.000.
Tang, Nianfa, 5,350,512, Cl. 210-199.000.
Jet Sew Technologies Inc.: *See*—
Olewicz, Tadeusz A.; and Schramayr, Ernst, 5,349,912, Cl. 112-262.200
Schramayr, Ernst; and Olewicz, Tadeusz A., 5,349,913, Cl. 112-265.100.
Jhingan, Anil K., to Pioneer Hi-Bred International, Inc. Microwave acceleration of enzyme-catalyzed modification of macromolecules. 5,350,686, Cl. 435-173.200.
Jiang, Ching-Lin, to Integrated Information Technology, Inc. Content addressable memory. 5,351,208, Cl. 365-49.000.
Jidosha Kiki Co., Ltd.: *See*—
Yanagi, Kunio; and Chiba, Syusaku, 5,349,820, Cl. 60-562.000.
Jin, Soo W. Hand screw driver. 5,349,886, Cl. 81-37.000.
JMK International, Inc.: *See*—
Gibbon, Robert M., 5,349,718, Cl. 15-250.360.
John L. Runckel, Trust: *See*—
Runckel, John L., 5,349,702, Cl. 2-68.000.
Johnson, David P.: *See*—
Hill, Ronald D.; Marglon, Adam G.; and Johnson, David P., 5,350,179, Cl. 273-249.000.
Johnson, David W., Jr.: *See*—
Grader, Gideon S.; Johnson, David W., Jr.; Roy, Apurba; and Thomson, John, Jr., 5,349,743, Cl. 29-602.100.
Johnson Matthey Public Limited Company: *See*—
Bridger, Gary J.; Hernandez, Pedro E.; Higgins, John D., III; and Larsen, Scott K., 5,350,837, Cl. 534-14.000.
Johnson, Samuel D.: *See*—
Fox, Robert L.; Copeland, Carl E.; Swaim, Robert J.; Coultrip, Robert H.; Johnston, David F.; Phillips, W. Morris; Johnson, Samuel D.; Dinkins, James R.; and Buckley, John D., 5,350,902, Cl. 219-633.000.
Johnson, Steven C.: *See*—
French, Terry L.; and Johnson, Steven C., 5,349,795, Cl. 52-183.000.
Johnson, Thomas M.; and Ellingwood, John C., to Maytag Corporation. Mullion bar assembly with enhanced heat transfer barrier characteristics. 5,349,832, Cl. 62-447.000

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Sonuparlak, Birol; Johnson, William B.; and Fareed, Ali S., 5,350,003, Cl. 164-91.000.
Johnston, David F.: *See*—
Fox, Robert L.; Copeland, Carl E.; Swaim, Robert J.; Coultrip, Robert H.; Johnston, David F.; Phillips, W. Morris; Johnson, Samuel D.; Dinkins, James R.; and Buckley, John D., 5,350,902, Cl. 219-633.000.
Joly, Jean-Francois; Caullet, Philippe; Faust, Anne-Catherin; Baron, Jacques; and Guth, Jean-Louis, to Institut Francias du Petrole MTW-type zeolite and its preparation process. 5,350,722, Cl. 502-64.000
Jones, Julian D. C.: *See*—
Barton, James S.; Borthwick, William K. D.; Harvey, David; Jones, Julian D. C.; and McBride, Roy, 5,351,116, Cl. 356-28.500
Jones, M. Lee: *See*—
Friar, C. Edward; Jones, M. Lee; Robinson, H. English, Jr.; and King, Douglas N., 5,350,108, Cl. 229-102.000
Jones, Mark F.: *See*—
Georger, William A.; Jones, Mark F.; Kopacz, Thomas J.; and Zelazoski, Gregory A., 5,350,624, Cl. 428-219.000.
Jongewaard, Erik N., to Uniphase Corporation. Laser diode-lens alignment. 5,351,330, Cl. 385-93.000.
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Grossman, Leonard N.; and Jonsson, Alf I., 5,350,542, Cl. 252-636.000
Jorasch, James: *See*—
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Hackler, Ronald E.; and Jourdan, Glen P., 5,350,749, Cl 514-248.000
Jubran, Nusrallah, to Minnesota Mining and Manufacturing Company. Thiazolo[5,4-D]thiazsole Color-formers. 5,350,857, Cl. 548-153.000.
Juds, Mark A.; Beihoff, Bruce C.; Smith, Richard G.; Nelson, William R.; Wycklendt, Daniel A.; Theisen, Peter J.; Hastings, Jerome K.; and Moldovan, Peter K., to Eaton Corporation. Electrical contactor and interrupter employing a rotary disc. 5,351,024, Cl. 335-16.000.
Judy, Murray S.: *See*—
Doll, William J., Jr.; Judy, Murray S.; Kirchner, Albert H., III; Krier, Thomas J.; McVicker, Rudolph M.; Monroe, Brian E.; Pettitt, Meldon L.; Reiswig, Danny R.; Watchorn, Alan; Wesley, Jerry A.; and Wirfel, John C., 5,351,276, Cl. 379-67.000.
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Jung, Gordon: *See*—
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Jurcik, Benjamin; Brandt, Michael; Inman, Ronald; and McAndrew, James, to American Air Liquide. Spectroscopic cell design. 5,351,120, Cl. 356-246.000.
Juri, Tatsuro: *See*—
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Justin, Daniel F.: *See*—
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Crimmins, James W., 5,351,149, Cl. 359-181.000.
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Preiser, Friedrich W.; Bullivant, Kenneth W.; and Peyer, Marcel, 5,350,089, Cl. 222-413.000.
kabelmetal electro Gesellschaft mit beschrankter Haftung: *See*—
Madaus, Batto; Antony, Horst; Anger, Bernd; and Thiele, Paul, 5,351,061, Cl. 343-840.000
Kabushiki Kaisha Daikin Seisakusho: *See*—
Kamio, Takenori, 5,349,882, Cl. 74-572.000
Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
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Fukuyama, Hirofumi; Noguchi, Tatuya; Inoue, Kenichi; Ishibashi, Kiyotaka; and Adachi, Shigeto, 5,350,920, Cl. 250-309.000.
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Kabushiki Kaisha Komatsu Seisakusho: *See*—
Yamaguchi, Hiroyoshi; Murai, Shuji; and Mimura, Tatsuo, 5,350,547, Cl. 264-40.100
Kabushiki Kaisha Naekawa Seisakusho: *See*—
Kisi, Takayuki; and Kasahara, Keisuke, 5,350,286, Cl. 418-150.000.
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Kabushiki Kaisha Showa Seisakusho: *See*—
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Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See*—
Sato, Koki, 5,350,188, Cl. 280-739.000.
Kabushiki Kaisha Tokyo Horaisha: *See*—
Higashiguchi, Shigeji, 5,350,898, Cl. 219-221.000.
Kabushiki Kaisha Toshiba: *See*—
Doi, Miwako; Amano, Shin-ya; Miike, Seiji; Nogami, Hiroyasu; Kumano, Akira; Takeda, Kimihito; Adachi, Hisahiro; Iwai, Isamu; Okamoto, Toshio; Yamanaka, Noriko; and Kawada, Tsutomu, 5,351,189, Cl. 364-419.020.
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Nakane, Rintaro; and Egawa, Jiro, 5,351,107, Cl. 355-208.000.
Saito, Shozo, 5,351,210, Cl. 365-189.010.
Shibata, Hideki, 5,350,712, Cl. 437-195.000.
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Yajima, Toshiya; Hirayama, Takuya; Sakata, Hirotsugu; Hayano, Makoto; Okuda, Masayuki; Morozumi, Naoya; Kumazawa, Takeshi; and Kobuna, Teruo, 5,350,280, Cl. 417-310.000.
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Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
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Omura, Yoshiteru; Tsukada, Kouji; Nonomura, Yutaka; and Morikawa, Takeshi, 5,349,873, Cl. 73-862.680.
Kachi, Shunichi: *See*—
Kiri, Shuichi; Kieda, Kouki; Kachi, Shunichi; Takekoshi, Yukinori; Takada, Yasunari; Nakahara, Yuji; and Nishinaka, Tomoyuki, 5,350,960, Cl. 310-194.000.
Kadowaki, Toshihiro; and Sakai, Masanori, to Canon Kabushiki Kaisha. Apparatus for forming a color image using two memories. 5,351,074, Cl. 346-157.000
Kadowaki, Toshio; and Yamaguchi, Shojiro, to Shimadzu Corporation. Mobile x-ray apparatus. 5,351,282, Cl. 378-198.000.
Kagata, Hiroshi: *See*—
Inoue, Tatsuya; Kagata, Hiroshi; Kato, Junichi; and Kameyama, Ichiro, 5,350,639, Cl. 428-633.000.
Kagawa, Kazuhiro: *See*—
Akita, Hiroshi; Hattori, Tatsuya; Kagawa, Kazuhiro; and Kobayashi, Hiroto, 5,350,831, Cl. 528-337.000.
Kagawa, Yoshikatsu; Yasunami, Shoichiro; and Maekawa, Yukio, to Fuji Photo Film Co., Ltd. Nonaqueous secondary battery. 5,350,648, Cl. 429-218.000.
Kageyama, Atsuhisa: *See*—
Tsuji, Toshiaki; and Kageyama, Atsuhisa, 5,351,141, Cl. 358-520.000.
Kageyama, Tetsuto; Yoshimura, Shigeru; and Motai, Eiichi, to Canon Kabushiki Kaisha. Ink jet cartridge with an ink tank having an ink outlet in a sloped surface. 5,351,073, Cl. 347-87.000
Kahlman, Sture. Arrangement for controlling the direction of movement of a load hoist trolley. 5,350,075, Cl. 212-159.000.
Kaiser, Manuel: *See*—
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Kajima Corporation: *See*—
Taguchi, Fumiaki; Morimoto, Masayoshi; Kyoya, Takeshi; and Takano, Mikio, 5,350,685, Cl. 435-168.000.
Taguchi, Fumiaki; Morimoto, Masayoshi; Kyoya, Takeshi; and Takano, Mikio, 5,350,692, Cl. 435-252.700
Kakei, Tsutomu: *See*—
Sawada, Hirokazu; Kakei, Tsutomu; Matsuki, Masaya; and Uesugi, Akio, 5,350,010, Cl. 164-476.000
Kaken Pharmaceutical Co., Ltd.: *See*—
Ohishi, Yoshitaka; Tamura, Makoto; Hayashida, Mitsuo; Ikegami, Satoru; Hiyama, Yoshiyuki; Awa, Takao; Ichikawa, Kiyonoshin; Nomiyama, Kiyoshi; Hanada, Keigo; and Mimura, Mitsuo, 5,350,743, Cl. 514-89.000
Kakeya, Noboru: *See*—
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Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Tamekuni, Yoshikyo; Haibara, Tadashi; Matsumoto, Michito; and Nagasawa, Shinji, to Sumitomo Electric Industries, Ltd.; and Nippon Telegraph & Telephone Corporation. Optical connector with V-grooves having an oxide film. 5,351,328, Cl. 385-83.000
Kakimoto, Masakazu, to Ushio Co., Ltd. Image processing apparatus. 5,351,316, Cl. 382-65.000.
Kalan, Brian A., to Whiting Corporation. Bridge crane electric motor control system. 5,350,076, Cl. 212-209.000.
Kalk, Douglas F.: *See*—
Lockard, Joan S.; DuCharme, Larry L.; Congdon, William C., Jr.; and Kalk, Douglas F., 5,349,962, Cl. 128-732.000.
Kalkunte, Ramesh S.; Rege, Satish L.; and Hasani, Santosh K., to Digital Equipment Corporation. Monitor for packets on a communications network. 5,351,243, Cl. 370-92.000.
Kalotay, Paul Z.; and Van Cleve, Craig B., to Micro Motion, Inc. Stationary coils for a coriolis effect mass flowmeter. 5,349,872, Cl. 73-861.380
Kamen, Dean; Spencer, Geoffrey P.; and Vincent, Douglas E., to Deka Products Limited Partnership. Peritoneal dialysis systems employing a liquid distribution and pumping cassette that emulates gravity flow. 5,350,357, Cl. 604-29.000.
Kamen, Dean L.; Seale, Joseph B.; Briggs, Joseph; and Arnold, Finn, to Deka Products Limited Partnership. Pump controller using acoustic spectral analysis. 5,349,852, Cl. 73-149.000.
Kameyama, Ichiro: *See*—
Inoue, Tatsuya; Kagata, Hiroshi; Kato, Junichi; and Kameyama, Ichiro, 5,350,639, Cl. 428-633.000.

Kamin, Gene L., to Planet Protection Systems, Inc. Soil fertilization method. 5,350,435, Cl. 71-25.000
Kaminer, Jon J.; Nevers, Gary F.; and Sellers, Edgar V., to Du Pont de Nemours, E. I., and Company. Method and apparatus for measuring crimp frequency of a web. 5,351,308, Cl. 382-8.000
Kamio, Takenori, to Kabushiki Kaisha Daikin Seisakusho. Clutch wear-compensating compound flywheel assembly. 5,349,882, Cl. 74-572.000.
Kanai, Hiroshi: *See*—
Chubachi, Noriyoshi; and Kanai, Hiroshi, 5,349,862, Cl. 73-602.000.
Kanamori, Terutoshi: *See*—
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Kanbara, Shigeru; and Fukui, Hitoshi, to Rohm Co., Ltd. Thermistor as electronic part. 5,351,026, Cl. 338-22.00R.
Kanebo, Ltd.: *See*—
Sasaki, Hiroyuki; Ota, Tetsuro; Hattori, Eiji; and Ikeda, Michihiro, 5,350,782, Cl. 523-116.000.
Kanegae, Takahiro: *See*—
Takahashi, Yoshikazu; Suzuki, Masahiko; Sugahara, Hiroto; and Kanegae, Takahiro, 5,351,183, Cl. 347-69.000.
Kanegafuchi Chemical Industry Co., Ltd.: *See*—
Takada, Toshio; Terashima, Takahito; Iijima, Kenji; Yamamoto, Kazunuki; Hirata, Kazuto; and Bando, Yoshichika, 5,350,606, Cl 427-564.000
Kanehiro Co., Ltd.: *See*—
Tominaga, Seigo; Akasi, Osamu; Imai, Masao; Sugita, Koji; Suzuki, Setuko; Maeda, Akira; Isiguro, Kazumasa; Uchida, Masahiro; and Sato, Makoto, 5,349,899, Cl. 99-646.00R.
Kanehiro, Masaki: *See*—
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Kaneko, Hideyuki: *See*—
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Kanetake, Tatsuo; Kiguchi, Masashi; and Taniguchi, Yoshio, to Hitachi, Ltd. Optical modulator depressing optical feedback and optical modulating element and channel optical waveguide used therefore 5,351,320, Cl. 385-8.000
Kang, Seong T., to Goldstar Co., Ltd. Cooling apparatus of magnetrons. 5,351,166, Cl. 361-690.000
Kang, Seonghun: *See*—
Ko, Jaehong; Kim, Sungtae; Shin, Hyunbo; and Kang, Seonghun, 5,350,707, Cl. 437-52.000.
Kanigowski, Andrew S., to Futureflite Corporation. Diamond shaped armrests for airline passenger seats. 5,350,217, Cl. 297-411.200
Kanjolia, Ravindra K.; Hui, Benjamin C.; and Grant, William B., to CVD, Incorporated. Purification of trialkylgallium, synthesis of trialkylgallium. 5,350,869, Cl. 556-1.000
Kanno, Tetsuo; and Okamoto, Akihiko, to Ricoh Company Ltd. Optical disk drive unit. 5,351,228, Cl. 369-77.200
Kansas State University Research Foundation: *See*—
Oberst, Richard D.; Gwaltney, Sharon M.; and Hays, Michael P., 5,350,672, Cl. 435-6.000.
Kantner, Steven S.: *See*—
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Kao Corporation: *See*—
Kitazawa, Kozo; and Kashihara, Eiji, 5,350,457, Cl. 134-10.000.
Yasuda, Shin-ichiro; Kawabe, Kuniyasu; and Sasaki, Mitsuhiro, 5,350,658, Cl. 430-124.000.
Kao, Sheau V.: *See*—
Lee, Frank P.; Kao, Sheau V.; Allison, Gerald R.; Mahabadi, Hadi K.; Liebermann, Geroge; Vijayakumar, Gopalan; and Downing, Robert A., 5,350,659, Cl. 430-137.000
Kappler, Manfred: *See*—
Winkler, Rolf; Herier, Bruno; and Kappler, Manfred, 5,351,099, Cl 351-137.000
Karanian, Ralph E.; Noonan, Stephen R.; and Vecchitto, John M., to Moore Products, Inc. Gaging finger for precision measuring instruments. 5,351,125, Cl. 356-357.000
Kariniemi, Stephen D. Positioner/fastener. 5,349,802, Cl. 52-543.000.
Kasagi, Yoshitaka, to Kabushiki Kaisha Toshiba. Signal-converting device. 5,351,082, Cl. 348-294.000
Kasahara, Keisuke: *See*—
Kisi, Takayuki; and Kasahara, Keisuke, 5,350,286, Cl. 418-150.000
Kasahara, Masahiro: *See*—
Okamura, Hisatake; Kasahara, Masahiro; Tonegawa, Ken; and Taniguchi, Tetsuo, 5,351,020, Cl. 333-175.000.
Kasai, Shuichi; Ikeda, Yasuo; Enomoto, Satoru; Imamori, Katsumi; and Iwasa, Akira, to SS Pharmaceutical Co., Ltd. Antiinflammatory gel preparation. 5,350,769, Cl. 514-567.000.
Kasanami, Tohru; Nakamura, Takeshi; Okano, Keiichi; and Morishita, Yoshiko, to Murata Manufacturing Co., Ltd. Vibratory gyroscope. 5,349,857, Cl. 73-505.000.
Kaschemekat, Jurgen; and Baker, Richard W., to Membrane Technology and Research, Inc. Pervaporation process and use in treating waste stream from glycol dehydrator. 5,350,519, Cl. 210-640.000.
Kashihara, Eiji: *See*—
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Kashimura, Masato: *See*—
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Kashio, Yukio; and Arai, Yoneaki, to Casio Computer Co., Ltd. Portable electronic apparatus. 5,350,881, Cl. 84-622.000.
Kashiwagi, Masanori: *See*—
Yoshida, Hiroshi; Kakeya, Noboru; and Kashiwagi, Masanori, 5,350,868, Cl. 554-154.000
Kasiske, John M., to Triten Corporation. Wear resistant alloy. 5,350,560, Cl. 420-38.000.
Katakura, Takeo: *See*—
Yoshizato, Katsutoshi; Konishi, Jun; Koide, Mikio; Oyamada, Kaori; Ohsaki, Ken-ichi; Katakura, Takeo; Mori, Yuichi; and Tatebe, Ken, 5,350,583, Cl. 424-484.000
Katayama, Noriko: *See*—
Takiguchi, Miho; Katayama, Noriko; Itoh, Aya; Ohama, Kaori; and Tanaka, Yasuo, 5,350,062, Cl. 206-316.200
Kato, Akira: *See*—
Takagishi, Takashi; Suzuki, Nobuhiko; and Kato, Akira, 5,350,307, Cl. 439-79.000.
Kato, Junichi: *See*—
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Kato, Masami; Kato, Takao; and Hashimoto, Yasunori, to Canon Kabushiki Kaisha. Pixel density converting apparatus. 5,351,137, Cl. 358-457.000
Kato, Masatoshi; Tobo, Yozo; Ichikawa, Fumio; Azuma, Jun; and Uemura, Hideaki, to Canon Kabushiki Kaisha. Optical apparatus for emitting light and automatic adjustment apparatus therefor 5,351,264, Cl. 372-107.000
Kato, Nobuo: *See*—
Ichinomiya, Yoshio; Yamaguchi, Koshiro; and Kato, Nobuo, 5,350,243, Cl. 400-208.000.
Kato, Shigekazu; Nishihata, Kouji; Tsubone, Tsunehiko; and Itou, Atsushi, to Hitachi, Ltd. Vacuum processing apparatus and operating method therefor. 5,349,762, Cl. 34-406.000
Kato, Takao: *See*—
Kato, Masami; Kato, Takao; and Hashimoto, Yasunori, 5,351,137, Cl. 358-457.000
Kato, Toshikazu: *See*—
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Katoh, Masatoshi: *See*—
Ishihara, Kei; Matsuda, Kiyoshi; Tamaki, Atsushi; Katoh, Masatoshi; Hamaguchi, Tadahiko; and Takeda, Takashi, 5,350,915, Cl. 250-208.100
Katsumata, Takeshige: *See*—
Nakano, Tetsuo, deceased; Katsumata, Takeshige; Tanaka, Megumu; Narushima, Isao; Hirano, Yoshiharu; and Nakano, Kazuko, 5,349,860, Cl. 73-597.000.
Katsura, Hiroshi: *See*—
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi, Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Tamekuni, Yoshikyo; Haibara, Tadashi; Matsumoto, Michito; and Nagasawa, Shinji, 5,351,328, Cl. 385-83.000
Katyal, Anil; Brown, Warwick N.; and Howitt, Roger, to Cookson Group PLC. Furnace with deflecting surface and method of charging metal solids. 5,350,440, Cl. 75-686.000
Katz, Howard S., to Robern, Inc. Spacer for filling a space between two adjacent modular cabinets. 5,350,227, Cl. 312-198.000
Katz, Ronald A., to First Data Resources Inc. Multiple format telephonic interface control system. 5,351,285, Cl. 379-94.000.
Kaufhold, Hans-Joachim: *See*—
Glaser, Arnaldo A.; and Kaufhold, Hans-Joachim, 5,350,553, Cl 264-155.000
Kaufman, Charles W.: *See*—
Perlman, Radia J.; and Kaufman, Charles W., 5,351,295, Cl 380-23.000
Kaufman, Robert J.; and Richard, Thomas J., to HemaGen/PFC. Emulsions of highly fluorinated organic compounds. 5,350,571, Cl. 424-9.000
Kavli, Fred; and Park, Kyong M., to Kavlico Corporation. Wide-pressure-range, adaptable, simplified pressure transducer. 5,349,865, Cl. 73-724.000
Kavlico Corporation: *See*—
Kavli, Fred; and Park, Kyong M., 5,349,865, Cl. 73-724.000
Park, Kyong M.; and Gupta, Niraj, 5,349,864, Cl. 73-724.000.
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Kawabe, Kenji: *See*—
Hara, Yasushi; Watanabe, Kazuhiro; Ishikawa, Hiroshi; Matsui, Kiyoto; Kawabe, Kenji; and Shimura, Takaki, 5,350,964, Cl 310-357.000
Kawabe, Kuniyasu: *See*—
Yasuda, Shin-ichiro; Kawabe, Kuniyasu; and Sasaki, Mitsuhiro, 5,350,658, Cl. 430-124.000.
Kawabe, Takashi; Ashida, Eiji; Fuyama, Moriaki; Iwakura, Tadayuki; Fukui, Hiroshi; Tsuji, Yoshikazu; Kuwatsuka, Shunichiro; Saito, Harunobu; Hagiwara, Yoshiki; Takemoto, Issei; and Fujisawa, Masayasu, to Hitachi, Ltd. Method of fabricating thin-film magnetic head. 5,349,745, Cl. 29-603.000
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Sorimachi, Kenichi; Tozawa, Hirokazu; Ochi, Toshiaki; and Itoh, Yasuhito, 5,350,005, Cl. 164-154.100.

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Ichimura, Nobuo; Yamazaki, Mitsuo; Fujita, Kohei; Satou, Hidetaka; Miyamoto, Yasuo; Kawasumi, Masao; and Kikuchi, Tohru, 5,350,811, Cl. 525-476.000

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Murashima, Mitsuaki; Takahashi, Sakae; Ikeda, Yukio; Kobari, Hirokazu; Shiota, Michio; and Kazumi, Takashi, 5,350,193, Cl. 280-741.000

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Kejha, Joseph B.: *See*—
Hope, Stephen F.; and Kejha, Joseph B., 5,350,647, Cl. 429-218.000

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Amico, Mark S.; Scheuer, Mark A.; Wagman, Irwin; Seeley, Dale E.; Thompson, David M.; Kelsch, Dawn M.; and Drinkwater, Wayne D., 5,350,896, Cl. 219-216.000

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Wuensch, Steffen; Kemmner, Claus; Braunbach, Karl-Heinz; and Haerle, Vinzenz, 5,349,754, Cl. 30-369.000

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Beeghly, Craig W.; Ahuja, Deepak P.; Mehrotra, Pankaj K.; and Niebauer, Kenneth L., 5,350,258, Cl. 407-119.000.

Keough, Katherine A. Chambered enclosure for maintaining a toy in a dry condition. 5,350,058, Cl. 206-45.340.

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Kerdranvat, Michel, to Thomson Consumer Electronics. Method and device for estimating and hierarchically coding the motion of sequences of images. 5,351,095, Cl. 348-699.000

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Brown, Dennis; and Kern, Dale G., 5,350,080, Cl. 220-465.000

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McNaughton, James; Liimatta, Walfred J.; and Ketcham, Mark G., 5,350,203, Cl. 285-319.000

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Kiri, Shuichi; Kieda, Kouki; Kachi, Shunichi; Takekoshi, Yukinori; Takada, Yasunari; Nakahara, Yuji; and Nishinaka, Tomoyuki, 5,350,960, Cl. 310-194.000

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Ikeda, Koji; Futagawa, Hitoshi; Kikuchi, Toshihiro; Honda, Minoru; and Iwasa, Masanobu, 5,350,372, Cl. 604-414.000.

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Kim, Elena V.: *See*—
Rakhimov, Roustam K.; and Kim, Elena V., 5,350,927, Cl. 250-504.00R

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Falloon, Thomas; and Kim, Hyun S., 5,350,046, Cl. 190-115.000

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Brown, David J.; Conway-Jones, David C.; Kim, Jong-Han; and Smith, Peter M., 5,351,093, Cl. 348-530.000.

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Kurtzman, Michael R.; and Kim, Meehyun, 5,350,142, Cl 248-99.000

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Campbell, Paul B.; Kimberlin, Robert R.; O'Malley, Sean M.; and Holt, Roland P., 5,350,025, Cl. 173-111.000.

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Georger, William A.; Jones, Mark F.; Kopacz, Thomas J.; and Zelazoski, Gregory A., 5,350,624, Cl. 428-219.000.
Jackson, David M.; and Matthews, Billie J., 5,350,370, Cl. 604-367.000.
McCarver, Stacey G., 5,349,965, Cl. 128-846.000.
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Ikata, Yoshikatsu; Gou, Yasunao; Kimura, Toshiyuki; and Shimotsuma, Hiroshi, 5,351,041, Cl. 340-825.240.

Kindl, Bruno: *See*—
Mogensen, Mogens; and Kindl, Bruno, 5,350,641, Cl. 429-30.000.

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Kinoshita, Akira: *See*—
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Baer, Thomas M.; Cox, Kelly A.; Gooding, Phillip; Cole, John; Head, David F.; and Kintz, Gregory J., 5,351,121, Cl. 356-301.000.

Kioritz Corporation: *See*—
Iida, Yosikazu, 5,349,721, Cl. 15-330.000.

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Matsuno, Tsukanori; and Ishizaki, Keiichiro, 5,350,688, Cl. 435-240.500.

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Lee, Ron C.; and Kirschner, Mark J., 5,349,828, Cl. 62-303.000.

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Yano, Tsurayuki; Yamazaki, Yasuo; and Yasaku, Tsutomu, 5,351,017, Cl. 333-12.000.

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Lee, Gregory S.; and Ko, Herbert L., 5,351,049, Cl. 341-133.000

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Kobari, Hirokazu: *See—*
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Taniguchi, Masayuki; Kobayashi, Hironobu; Narato, Kiyoshi; Murakami, Tadayoshi; Azuhata, Shigeru; Kuroda, Michio; and Hayashi, Noriyuki, 5,349,812, Cl. 60-39.230.

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Terakado, Sadao; Kobayashi, Hiroyuki; and Kubozoe, Morioki, 5,350,918, Cl. 250-311.000.

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Anno, Masahiro; and Kobayashi, Makoto, 5,350,657, Cl 430-111.000.

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Sasaki, Tomio; Kobayashi, Shinji; and Obata, Masahito, 5,351,138, Cl. 358-462.000.

Kobe Alcoa Transportation Products Ltd.: *See—*
Takezoe, Osamu; Takigawa, Jun; Okamoto, Tadashi; Hashiura, Mituo; Fukuda, Sunao; Takeuchi, Keizo; and Isobe, Yasuaki, 5,350,436, Cl. 75-314.000.

Kobelka, Frank: *See—*
Konig, Eberhard; Casselmann, Holger; Kobelka, Frank; and Foster, Keith-Allen, 5,350,825, Cl. 528-45.000

Koblella, Robert J., to Signode Corporation. Method of making an orbital friction fusion a welded joint in thermoplastic strap with differential pressure. 5,350,472, Cl. 156-157.000.

Koboshi, Shigeharu: *See—*
Komatsu, Yoshimasa; Koboshi, Shigeharu; and Ishikawa, Masao, 5,351,103, Cl. 354-324.000

Kobuna, Teruo: *See—*
Yajima, Toshiya; Hirayama, Takuya; Sakata, Hirotsugu; Hayano, Makoto; Okuda, Masayuki; Morozumi, Naoya; Kumazawa, Takeshi; and Kobuna, Teruo, 5,350,280, Cl. 417-310.000

Koch Membrane Systems, Inc.: *See—*
Lin, Juchui R., 5,350,805, Cl. 525-121.000

Kochems, Gary: *See—*
Sadowski, Kazimierz; Ziemendorf, Donald; Carlo, Robert; and Kochems, Gary, 5,350,012, Cl. 165-152.000.

Kochinke, Frank, to Pharmetrix Corporation. Method for manufacturing transdermal devices. 5,350,581, Cl. 424-443.000.

Koeninger, Robert C., to Dover Corporation. Control system for filling tanks with liquids. 5,349,994, Cl. 141-94.000

Koga, Kazuo: *See—*
Sanbayashi, Daisuke; Hirako, Osamu; Danno, Yoshiaki; and Koga, Kazuo, 5,349,816, Cl. 60-277.000.

Koguchi, Satoru; and Negoro, Yoshiki, to Casio Computer Co., Ltd. Automatic performance apparatus with operated rotation means for tempo control. 5,350,882, Cl. 84-636.000.

Koide, Mikio: *See—*
Yoshizato, Katsutoshi; Konishi, Jun; Koide, Mikio; Oyamada, Kaori; Ohsaki, Ken-ichi; Katakura, Takeo; Mori, Yuichi; and Tatebe, Ken, 5,350,583, Cl. 424-484.000

Koike, Kiyoshi; Aizawa, Jyunichi; Nakao, Hiroshi; and Nakagawa, Kunihiko, to Mitsubishi Denki Kabushiki Kaisha. Sublimation type thermal transfer printer and ink sheet used with the same. 5,351,069, Cl. 366-76.0PH.

Koilpllai, Ravinder D.: *See—*
Chennakeshu, Sandeep; Hladik, Stephen M.; Saulnier, Gary J.; Koilpllai, Ravinder D.; and Toy, Raymond L., 5,351,274, Cl. 375-100.000.

Koishikawa, Yukimasa, to NEC Corporation. High power MOS device with protective circuit against overcurrent or the like. 5,351,162, Cl. 361-18.000

Koita, Tsutomu: *See—*
Matsuura, Fumiaki; Ushijima, Kazuhiro; Matsumura, Hisashi; Kouhei, Masahide; and Koita, Tsutomu, 5,351,040, Cl. 340-825.050.

Koizumi, Toshio. Safety reflector marker. 5,349,920, Cl. 116-28.00R.

Koizumi, Yoshiaki: *See—*
Kouno, Shigenori; Ohmura, Ken; Koizumi, Yoshiaki; and Tsujita, Kenji, 5,350,656, Cl. 430-108.000.

Kojima, Akio: *See—*
Shoshi, Masayuki; Shimoda, Masakatsu; Konishi, Akiko; Kawahara, Megumi; Kojima, Akio; Suzuki, Tetsuro; and Yoshikawa, Masao, 5,350,653, Cl. 430-58.000.

Kojima, Chiaki: *See—*
Taniguchi, Tadashi; and Kojima, Chiaki, 5,350,917, Cl. 250-216.000.

Kojima, Kunio: *See—*
Ishihara, Hidetoshi; Ueda, Atsushi; and Kojima, Kunio, 5,349,768, Cl. 38-143.000

Kojima, Masahiro: *See—*
Mikami, Fujio; Yasuhara, Kiyotada; Kojima, Masahiro; and Inoue, Susumu, 5,350,445, Cl. 106-14.410.

Kojima, Tetsuo: *See—*
Ishimori, Akira; Yamamoto, Takashi; and Kojima, Tetsuo, 5,351,259, Cl. 372-75.000.

Kokeguchi, Akira; and Zushi, Takayasu, to Takata Corporation. Lid of an air bag device for a passenger. 5,350,191, Cl. 280-752.000.

Kokura, Makoto: *See—*
Tsuchiya, Hiroshi; Kokura, Makoto; Ozawa, Yutaka; and Sugimura, Takaaki, 5,350,809, Cl. 525-356.000.

Kolen, Paul T., to Electro Science Technologies, Inc. Local application microprocessor based nerve and muscle stimulator. 5,350,414, Cl 607-62.000

Kolesa, Michael S.: *See—*
Ishikawa, Hiroichi; and Kolesa, Michael S., 5,350,899, Cl 219-494.000

Komatsu, Yoshimasa; Koboshi, Shigeharu; and Ishikawa, Masao, to Konica Corporation. Automatic developing machine for silver halide photographic light-sensitive materials. 5,351,103, Cl. 354-324.000.

Komoriya, Isao: *See—*
Hasegawa, Yusuke; Akazaki, Shusuke; Komoriya, Isao; Maki, Hidetaka; and Hirota, Toshiaki, 5,349,933, Cl. 123-486.000

Kondo, Fumio; Aoki, Yoshiaki; Imaida, Tsuyoshi; Nozoe, Hiroki; Maki, Yuji; and Watabe, Shin, to Mitsubishi Jukogyo Kabushiki Kaisha. Zone-forming apparatus. 5,350,337, Cl. 454-189.000.

Kondo, Hiroyuki, to Yazaki Corporation. Bulb socket terminal. 5,350,322, Cl. 439-862.000

Kondo, Masaya, to Canon Kabushiki Kaisha. Communication apparatus and method establishing a language dependent sort order search. 5,351,190, Cl. 364-419.080

Kondo, Motoji: *See—*
Fujikawa, Takumi; and Kondo, Motoji, 5,351,055, Cl. 342-184.000.

Konica Corporation: *See—*
Haneda, Satoshi, 5,351,109, Cl. 355-219.000
Komatsu, Yoshimasa; Koboshi, Shigeharu; and Ishikawa, Masao, 5,351,103, Cl. 354-324.000
Kouno, Shigenori; Ohmura, Ken; Koizumi, Yoshiaki; and Tsujita, Kenji, 5,350,656, Cl. 430-108.000.
Oshiba, Tomomi; Mochizuki, Fumitaka; Tadokoro, Hajime; Kinoshita, Akira; Watanabe, Kazumasa; Tamaki, Kiyoshi; and Fujimaki, Yoshihide, 5,350,655, Cl. 430-78.000

Konicek, Jiri D.: *See—*
Yuhas, Donald E.; Vorres, Carol L.; Groppi, David P.; and Konicek, Jiri D., 5,350,621, Cl. 428-209.000

Konig, Eberhard; Casselmann, Holger; Kobelka, Frank; and Foster, Keith-Allen, to Bayer Aktiengesellschaft; and Miles Inc. At least partially blocked organic polyisocyanates, a process for their preparation and their use in coating compositions. 5,350,825, Cl. 528-45.000.

Konishi, Akiko: *See—*
Shoshi, Masayuki; Shimoda, Masakatsu; Konishi, Akiko; Kawahara, Megumi; Kojima, Akio; Suzuki, Tetsuro; and Yoshikawa, Masao, 5,350,653, Cl. 430-58.000.

Konishi, Jun: *See—*
Yoshizato, Katsutoshi; Konishi, Jun; Koide, Mikio; Oyamada, Kaori; Ohsaki, Ken-ichi; Katakura, Takeo; Mori, Yuichi; and Tatebe, Ken, 5,350,583, Cl. 424-484.000.

Konishi, Katsutoshi: *See—*
Saito, Hitoshi; and Konishi, Katsutoshi, 5,351,110, Cl. 355-221.000

Konno, Masahiko: *See—*
Miki, Isao; Isogai, Hisao; Saito, Masao; Yamanashi, Toru; Kawai, Toshiyuki; Saito, Akinami; Ishikawa, Sadanori; Konno, Masahiko; and Okada, Keiichi, 5,350,007, Cl. 164-316.000.

Kono, Mutsumi: *See—*
Mizumoto, Katsuji; and Kono, Mutsumi, 5,351,226, Cl. 369-47.000.

Konrad, Harald; Puschel, Siegfried; and Stein, Gerald, to Linde Aktiengesellschaft. Electric braking for vehicles with two parallel electric motors. 5,350,985, Cl. 318-370.000.

Konushi, Fumihiro: *See—*
Okumura, Toshiyuki; Konushi, Fumihiro; Morioka, Tatsuya; and Matsumoto, Narihito, 5,351,258, Cl. 372-46.000.

Kopacz, Thomas J.: *See—*
Georger, William A.; Jones, Mark F.; Kopacz, Thomas J.; and Zelazoski, Gregory A., 5,350,624, Cl. 428-219.000.

Kopchick, John J.; and Chen, Wen Y., to Ohio University. Growth hormone antagonists. 5,350,836, Cl. 530-399.000.

Korbonski, John A.; and Greenwood, Eugene C., to Systems Division Incorporated. Sheet cleaning apparatus. 5,349,714, Cl. 15-3.000

Korea Telecommunication Authority: *See—*
Chun, Oh G.; Ahn, Seung H.; Jeong, Myung Y.; and Choy, Tae G., 5,351,334, Cl. 385-134.000.

Kornrumpf, William P.; and Bates, David A., to General Electric Company. Microwave component test method and apparatus. 5,351,001, Cl. 324-158.100.

Kortenbach, Jurgen A.: *See—*
Bales, Thomas O.; Gottlieb, Saul; Kortenbach, Jurgen A.; Ryan, Dana W.; Smith, Kevin W.; and Solar, Matthew S., 5,350,356, Cl 604-27.000.

Koshishiba, Hiroya; and Yoshimura, Mihoko, to Hitachi, Ltd. X-ray tomography method and apparatus thereof. 5,351,278, Cl. 378-22.000.

Koskan, Larry P.: *See—*
Kinnersley, Alan M.; Koskan, Larry P.; Strom, David J.; and Meah, Abdul R. Y., 5,350,735, Cl. 504-147.000.

Koster, Marinus P.; and Kruijer, Casparus W., to U.S. Philips Corporation. Transmission with variable mechanical prestress. 5,349,880, Cl. 74-399.000

Kosydar, Karen M.; Neumann, Stephen M.; Spahn, Robert G.; and Otocka, Edward P., to Eastman Kodak Company. Subbing layer for dye-donor element used in thermal dye transfer. 5,350,732, Cl. 503-227.000

Kouhei, Masahide: *See—*
Matsuura, Fumiaki; Ushijima, Kazuhiro; Matsumura, Hisashi; Kouhei, Masahide; and Koita, Tsutomu, 5,351,040, Cl. 340-825.050

Kouno, Shigenori; Ohmura, Ken; Koizumi, Yoshiaki; and Tsujita, Kenji, to Konica Corporation. Carrier and a production method thereof for developing an electrostatic image. 5,350,656, Cl. 430-108.000

Kovalyuk, Zahar D.: *See—*
Grigortchak, Ivan I.; Tovstjuk, Kornei D.; Kovalyuk, Zahar D.; Kozmik, Ivan D.; and Bahmatyuk, Bogdan P., 5,351,164, Cl. 361-502.000

Kovats, Tibor F. I.: *See—*
Bassignana, Isabella C.; and Kovats, Tibor F. I., 5,350,923, Cl 250-453.110.

Kowa Company Ltd.: *See—*
Suzuki, Takayoshi, 5,349,955, Cl. 128-645.000.

Kozmik, Ivan D.: *See—*
Grigortchak, Ivan I.; Tovstjuk, Kornei D.; Kovalyuk, Zahar D.; Kozmik, Ivan D.; and Bahmatyuk, Bogdan P., 5,351,164, Cl 361-502.000

Kraai, Leon A.: *See—*
Sager, Robert L., Jr.; and Kraai, Leon A., 5,350,888, Cl. 181-247.000

Kraft, Brett W. Robotic inspection vehicle. 5,350,033, Cl. 180-167.000.

Kraft General Foods, Inc.: *See—*
Hockenberry, Thomas M.; and Mack, Anthony J., 5,350,595, Cl. 426-582.000

Krahn, Donald R., to Honeywell Inc. Magnetoresistive proximity sensor. 5,351,028, Cl. 338-32.00R.

Kralovic, Raymond C.; Levin, David Z.; and Lindeman, Lorraine D H., to Steris Corporation. Cold sterilant with extended active life. 5,350,563, Cl. 422-28.000

Kramarczyk, Marian; Foni, David; and Jacobson, Haim. Method and apparatus for configuring and maintaining token ring networks. 5,351,242, Cl. 370-85.500.

Kramer, James B.: *See—*
Boschelli, Diane H.; Connor, David T.; Kramer, James B.; and Unangst, Paul C., 5,350,748, Cl. 514-237.200

Krause, Werner: *See—*
Huth, Andreas; Kruger, Martin; Seidelmann, Dieter; Schmiechen, Ralph; Krause, Werner; Schneider, Herbert; and Turski, Lechoslaw, 5,350,750, Cl. 514-253.000

Krcma, Jan: *See—*
Martell, Dennis; and Krcma, Jan, 5,351,037, Cl. 340-632.000

Kreimendahl, Bryan W.: *See—*
Franklin, Walter M., III; Swain, Matthew G.; and Kreimendahl, Bryan W., 5,350,611, Cl. 428-36.910.

Kretschmer, Frank F., Jr.; and Lewis, Bernard L., to United States of America, Navy. General purpose sidelobe canceller system. 5,351,058, Cl. 342-384.000

Kreuziger, Wolf-Dieter. Device for mixing, homogenizing or reacting at least two components. 5,350,232, Cl. 366-139.000.

Kreyenhagen, Paul E.: *See—*
Adams, John M.; Alferness, Clifton A.; and Kreyenhagen, Paul E., 5,350,404, Cl. 607-5.000.

Krier, Thomas J.: *See—*
Doll, William J., Jr.; Judy, Murray S.; Kirchner, Albert H., III; Krier, Thomas J.; McVicker, Rudolph M.; Monroe, Brian E.; Pettitt, Meldon L.; Reiswig, Danny R.; Watchorn, Alan; Wesley, Jerry A.; and Wirfel, John C., 5,351,276, Cl. 379-67.000.

Krippendorf, Carl E.: *See—*
Fula, Karen A.; and Krippendorf, Carl E., 5,350,304, Cl. 434-258.000.

Krippendorf, Tido: *See—*
Berger, Horst; Krippendorf, Tido; and Politze, Heiner, 5,351,034, Cl. 340-577.000

Krka, torvana Zdravil, p.o.: *See—*
Merslavic, Marjo; Razen, Jozica; and Rotar, Ales, 5,350,582, Cl. 424-464.000

Krone, John J.: *See—*
Hutchison, Eric A.; and Krone, John J., 5,350,152, Cl. 251-30.050.

Kropuenske, Glen; and Schlag, Scott A., to Sencore, Inc. Method of analyzing television circuits and instrumentation therefor. 5,350,979, Cl. 315-411.000.

Kruger, Martin: *See—*
Huth, Andreas; Kruger, Martin; Seidelmann, Dieter; Schmiechen, Ralph; Krause, Werner; Schneider, Herbert; and Turski, Lechoslaw, 5,350,750, Cl. 514-253.000.

Kruhmar, Kim C.: *See—*
Duval, David F.; Kruhmar, Kim C.; and Ratcliff, Charles E., 5,350,592, Cl. 426-582.000.

Kruijer, Casparus W.: *See—*
Koster, Marinus P.; and Kruijer, Casparus W., 5,349,880, Cl 74-399.000.

Krupp Polysius AG: *See—*
Lohnherr, Ludger; Pingel, Herbert; Kimmeyer, Ludger; and Baldus, Hans-Dieter, 5,350,124, Cl. 241-119.000.

Kruse, Michael: *See—*
Ahls, Hermann W.; Kruse, Michael; and Borchers, Peter, 5,350,049, Cl. 198-333.000.

Kubota, Yoshihiro: *See—*
Kawada, Nobuo; Kubota, Yoshihiro; Harada, Kesazi; and Itou, Kenji, 5,350,720, Cl. 501-97.000

Kubota, Yoshimichi, to Three Bond Co., Ltd. Apparatus for applying a viscous liquid material and method of controlling application thereof 5,350,600, Cl. 427-256.000.

Kubozoe, Morioki: *See—*
Terakado, Sadao; Kobayashi, Hiroyuki; and Kubozoe, Morioki, 5,350,918, Cl. 250-311.000.

Kudo, Katsuhiko: *See—*
Sago, Hiroyoshi; Fujiyama, Shigemi; Kudo, Katsuhiko; and Kumazawa, Hirotsugu, 5,349,978, Cl. 134-153.000.

Kudo, Tomohiro: *See—*
Shimizu, Satoshi; Kudo, Tomohiro; and Suzuki, Kenichi, 5,350,166, Cl. 271-14.000.

Kuekenhoehner, Thomas; Goetz, Norbert; Fischer, Rolf; Schnurr, Werner; and Borchers, Dirk, to BASF Aktiengesellschaft. Preparation of 3-(2'-oxyethyl)dihydro-2(3H)furanones. 5,350,863, Cl. 549-323.000.

Kugiyama, Koichi; Sugaya, Yasuhiro; Inoue, Osamu; Hirota, Ken; and Satomi, Mitsuo, to Matsushita Electric Industrial Company, Inc Magnetic sintered composite material. 5,350,628, Cl. 428-307.300

Kukita, Shigezou: *See—*
Fujisawa, Noriaki; Sakai, Yasuro; Kuwabara, Tsuneo; and Kukita, Shigezou, 5,350,617, Cl. 428-141.000

Kulka, Robert A.: *See—*
Van Wagener, Raymond H.; Kulka, Robert A.; Hoogmoed, Richard; Sanders, Stuart E.; and Bauer, Fred P., 5,350,316, Cl. 439-460.000

Kumano, Akira: *See—*
Doi, Miwako; Amano, Shin-ya; Miike, Seiji; Nogami, Hiroyasu; Kumano, Akira; Takeda, Kimihito; Adachi, Hisahiro; Iwai, Isamu; Okamoto, Toshio; Yamanaka, Noriko; and Kawada, Tsutomu, 5,351,189, Cl. 364-419.020

Kumar, Govindarajulu; and Sabahi, Mahmood, to Albemarle Corporation. Michael reaction. 5,350,875, Cl. 560-190.000.

Kumazawa, Hirotsugu: *See—*
Sago, Hiroyoshi; Fujiyama, Shigemi; Kudo, Katsuhiko; and Kumazawa, Hirotsugu, 5,349,978, Cl. 134-153.000

Kumazawa, Takeshi: *See—*
Yajima, Toshiya; Hirayama, Takuya; Sakata, Hirotsugu; Hayano, Makoto; Okuda, Masayuki; Morozumi, Naoya; Kumazawa, Takeshi; and Kobuna, Teruo, 5,350,280, Cl. 417-310.000

Kunitomo, Kouichi, to Matsushita Electric Industrial Co., Ltd. Vehicle-mounted charging apparatus for portable telephone sets. 5,351,283, Cl. 379-58.000

Kuno, Hiromichi; Sekimori, Toshiyuki; Inaba, Shigemitsu; and Hasegawa, Toshiaki, to Yazaka Corporation; and Toyota Jidosha Kabushiki Kaisha. Feeder connector. 5,350,312, Cl. 439-310.000

Kunze, Norbert; and Weber, Georg, to U.S. Philips Corporation. Magnetic-tape cassette apparatus having a head support actuation mechanism with a segmented toothed wheel. 5,351,157, Cl. 360-105.000

Kuo, Chou-chou: *See—*
Campbell, Lee A.; Kuo, Chou-chou; and Grayston, J. Thomas, 5,350,673, Cl. 435-6.000.

Kuo, George: *See—*
Houghton, Michael; Choo, Qui-Lim; and Kuo, George, 5,350,671, Cl. 435-5.000

Kuo, Pao-Kuang; Thomas, Robert L.; Favro, Lawrence D.; and Chen, Li, to Board of Governers of Wayne State University, The. Direct-view stereoscopic confocal microscope. 5,351,152, Cl. 359-376.000.

Kuo, Shun-Meen: *See—*
Chun, Christopher K. Y.; Hartman, Davis H.; Kuo, Shun-Meen; and Lebby, Michael S., 5,351,331, Cl. 385-97.000.

Kuo, Thauming; and Foster, Charles H., to Eastman Chemical Company. Thermosetting coating compositions. 5,350,830, Cl 528-302.000.

Kurihara, Akio: *See—*
Yamauchi, Kanji; and Kurihara, Akio, 5,350,893, Cl. 200-547.000

Kurihashi, Toshiya: *See—*
Miyahara, Kazuhiko; Kinoshita, Takao; Kawamoto, Kenichi; Kurihashi, Toshiya; and Tokano, Kaneyoshi, 5,351,139, Cl. 358-487.000.

Kurisu, Kenji: *See—*
Yoshimura, Hiroshi; Sasaki, Kazuo; Kurisu, Kenji; Fujiwara, Takuji; and Abe, Mitsutoshi, 5,349,885, Cl. 477-61.000.

Kuroda, Katsuhiko: *See—*
Hirota, Takao; Kuroda, Katsuhiko; and Tamaki, Mamika, 5,350,730, Cl. 503-227.000

Kuroda, Michio: *See—*
Taniguchi, Masayuki; Kobayashi, Hironobu; Narato, Kiyoshi; Murakami, Tadayoshi; Azuhata, Shigeru; Kuroda, Michio; and Hayashi, Noriyuki, 5,349,812, Cl. 60-39.230.

Kuroda, Ryo: *See—*
Kawase, Toshimitsu; Yamano, Akihiko; Kuroda, Ryo; Nose, Hiroyasu; and Miyazaki, Toshihiko, 5,349,735, Cl. 29-407.000

Kurose, Takashi: *See—*
Harada, Yasoo; Matsushita, Shigeharu; Terada, Satoshi; Fujii, Emi; Kurose, Takashi; Higashino, Takayoshi; Yamada, Takashi; Nagamatsu, Akihito; Inoue, Daijirou; and Matsumura, Kouji, 5,350,709, Cl. 437-161.000

Kurtzberg, Jerome M.; and Levanoni, Menachem, to International Business Machines Corporation. Evaluation and ranking of manufacturing line non-numeric information. 5,351,202, Cl. 364-552.000.

Kurtzman, Michael R.; and Kim, Meehyun. Support frame for flexible bags with handles. 5,350,142, Cl. 248-99.000.

Kurusu, Toshiro: *See—*
Matsui, Hiromichi; Ezoe, Kazuomi; and Kurusu, Toshiro, 5,351,081, Cl. 348-249.000.

Kurz, Klaus: *See—*
Hess, Gerhard; Haack, Ulrich; and Kurz, Klaus, 5,350,792, Cl 524-417.000.

Kutschenreuter, Paul H., Jr., to General Electric Company. Scramjet combustor having a two-part, aft-facing step. 5,349,815, Cl. 60-270.100.

Kuwabara, Tsuneo: *See—*
Fujisawa, Noriaki; Sakai, Yasuro; Kuwabara, Tsuneo; and Kukita, Shigezou, 5,350,617, Cl. 428-141.000.

Kuwatsuka, Shunichiro: *See—*
Kawabe, Takashi; Ashida, Eiji; Fuyama, Moriaki; Iwakura, Tadayuki; Fukui, Hiroshi; Tsuji, Yoshikazu; Kuwatsuka, Shunichiro; Saito, Harunobu; Hagiwara, Yoshiki; Takemoto, Issei; and Fujisawa, Masayasu, 5,349,745, Cl. 29-603.000

Kwon, Soo K., to Gold Star Co., Ltd. Deflection yoke mounting apparatus for a color picture tube. 5,350,968, Cl. 313-440.000.

Kwor, Richard Y.: *See—*
Tyson, Scott M.; Kwor, Richard Y.; and Levenson, Leonard L., 5,350,607, Cl. 427-566.000.

Kyoya, Takeshi: *See—*
Taguchi, Fumiaki; Morimoto, Masayoshi; Kyoya, Takeshi; and Takano, Mikio, 5,350,685, Cl. 435-168.000
Taguchi, Fumiaki; Morimoto, Masayoshi; Kyoya, Takeshi; and Takano, Mikio, 5,350,692, Cl. 435-252.700.

Kyuma, Kenji; Hieda, Teruo; Masuda, Kazunori; and Takei, Hirohumi, to Canon Kabushiki Kaisha. Color temperature control by comparing chrominance signals with reference levels. 5,351,080, Cl. 348-225.000.

L. H. Carbide Corporation: *See—*
Neuenschwander, Thomas R., 5,349,740, Cl. 29-596.000.
Neuenschwander, Thomas R., 5,349,741, Cl. 29-598.000

Lab Products: *See—*
Sheaffer, John E.; and Deitrich, Eric A., 5,349,923, Cl. 119-15.000.

Labatt Brewing Company Limited: *See—*
Brown, Scott B.; and Maxwell, Hugh A., 5,350,109, Cl. 229-117.160.

LaBelle, Mark; Xiang, Yibin; Dufresne, Claude; and Belley, Michel, to Merck Frosst Canada, Inc. Aza-5,5-fused hetrocyclic acids as leukotriene antagonists. 5,350,760, Cl. 514-367.000.

Laboratory Automation, Inc.: *See—*
Behlen, Frederick M., 5,351,047, Cl. 341-67.000

LaCourse, Norman L.; Chicalo, Karen; Zallie, James P.; and Altieri, Paul A., to National Starch and Chemical Investment Holding Corporation. Dietary fiber derived from tapioca and process therefor. 5,350,593, Cl. 426-615.000

Lahtinen, Pekka, to Telenokia Oy. Method for relaying information in an integrated services network. 5,351,235, Cl. 370-58.100

Lai, Patrick, to RGB Technology D/B/A RGB Spectrum. Video multiplexor-encoder and decoder-converter. 5,351,129, Cl. 348-584.000.

Lamiere de Picardie S.A.: *See—*
Groshens, Pierre; and Covet, Fabrice, 5,350,626, Cl. 428-229.000

L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude: *See—*
Bracque, Gilles; Dehaine, Francois; Gourbier, Jean-Pierre; Grelaud, Alain; Guillard, Alain; Mouliney, Michel; and Rieth, Norbert, 5,349,827, Cl. 62-298.000
Ducrocq, Jean, 5,350,439, Cl. 75-460.000.
Rostaing, Jean-Christophe; and Coeuret, Francois, 5,350,605, Cl. 427-536.000.

Lake, Rickie C.; and Tuttle, John R., to Micron Semiconductor, Inc Polymer-lithium batteries and improved methods for manufacturing batteries. 5,350,645, Cl. 429-124.000.

Lam, Kirby: *See—*
Masumoto, Rodney T.; Ueda, Shunsaku; Chern, Jenn-Gang; and Lam, Kirby, 5,351,015, Cl. 331-1.00R

Lamothe, Michele: *See—*
Delalle, Jacques; Mahrez, Ouaniche; Lamothe, Michele; Passa, Frederic; and Roucaute, Philippe, 5,350,105, Cl. 228-56.300.

Landalv, Ingvar, to Nykomb Synergetics Aktiebolag. Humid air turbine (HAT) cycle power process. 5,349,810, Cl. 60-39.020

Landis & Gyr Powers, Inc.: *See—*
Coogan, James J., 5,350,113, Cl. 236-13.000.

Lang, Bruno, to Rhone-Poulenc Viscosuisse S.A. Impregnated, dimension-stable polyester cord. 5,350,632, Cl. 428-382.000

Langeland, Jan-Åge: *See—*
Hatteland, Kjell; and Langeland, Jan-Åge, 5,351,218, Cl. 367-20.000

Langen, Manfred: *See—*
Gebald, Gregor; and Langen, Manfred, 5,350,052, Cl. 198-465.200.

Lanxide Technology Company, LP: *See—*
Rocazella, Michael A.; Becker, Kurt J.; and Aghajanian, Michael K., 5,350,004, Cl. 164-97.000.
Sonuparlak, Birol; Johnson, William B.; and Fareed, Ali S., 5,350,003, Cl. 164-91.000.

Lanzerotti, Louis D.; McCall, Samuel L.; and Yurke, Bernard, to AT&T Bell Laboratories. Integrated optics. 5,351,261, Cl 372-98.000

Lapo, Robert M.; and Spector, George. Leakproof oil super-tanker 5,349,914, Cl. 114-74.00R

Larsen, Donald E., Jr.; Bhowal, Prabir R.; and Merrick, Howard F., to Howmet Corporation; and Avco Corporation. Creep resistant titanium aluminide alloy. 5,350,466, Cl. 148-421.000.

Larsen, Scott K.: *See—*
Bridger, Gary J., Hernandez, Pedro E.; Higgins, John D., III; and Larsen, Scott K., 5,350,837, Cl. 534-14.000.

Larson, Douglas A.; Danowski, Thomas J.; and Voss, Roy, to Safety-Kleen Corp. Safety cover assembly for open container. 5,350,079, Cl 220-264.000

Larson, Tony R.: *See—*
Ghotbi, Mohammad-Reza; and Larson, Tony R., 5,350,997, Cl 323-268.000

Lary, Fredric C. Mounting fixture for a hand-held hair dryer. 5,350,144, Cl. 248-183.000.

Laska, Joseph E.; Oakley, John T.; and Reinert, Francis R., to United States of America, Navy. Elastomeric electrical connector. 5,350,308, Cl. 439-91.000

Laskoskie, Clarence E.; and Szafraniec, Bogdan, to Honeywell Inc. Birefringent component axis alignment detector. 5,351,124, Cl. 356-351.000

Laslavic, John D.: *See—*
Leveson, Richard C.; Laslavic, John D.; and Barker, Nicholas J., 5,350,565, Cl. 422-64.000.

Last, Harry J. Split stop for automatic swimming pool covers with a hydraulic drive system. 5,349,707, Cl. 4-502.000.

Latorre, Victor R.; and Watwood, Donald B., to University of California, Regents of the. Power line detection system. 5,351,032, Cl 340-310.00R.

Latour & Fils S.A.: *See—*
Latour, Yves, 5,349,838, Cl. 72-219.000

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Lau, Steven E.: *See—*
Hermansen, Ralph D.; and Lau, Steven E., 5,350,779, Cl. 523-428.000.

Lauke, Harald: *See—*
Besecke, Siegmund; Deckers, Andreas; and Lauke, Harald, 5,350,808, Cl. 525-330.500

Launder, Richard L.; and Clendenning, Charles, to H & L Tooth Company. Attachment assembly for wear caps ripper teeth. 5,350,022, Cl. 172-700.000

Laurel Bank Machines Co., Ltd.: *See—*
Nagamoto, Masayuki, 5,350,165, Cl. 271-9.000.

Laurenza, Antonio: *See—*
Seamon, Kenneth B.; Robbins, Joan; and Laurenza, Antonio, 5,350,864, Cl. 549-389.000.

Lauritsen, Richard L., to Eaton Corporation. Multiple circuit switching assembly. 5,350,889, Cl. 200-1.00B.

Law, Brian R.: *See—*
Wass, Anthony C. L.; and Law, Brian R., 5,349,945, Cl 128-200.230.

Lay, Carlo: *See—*
Witthaus, Friedrich; Weber, Wolfram; Biesel, Wolfgang; and Lay, Carlo, 5,350,514, Cl. 210-360.100.

Lazarus, Jonathan F. Foldable extension ladder and ladder sections therefor. 5,350,038, Cl. 182-163.000

Le, Dong T., to AlliedSignal, Inc. Digital motor controller. 5,350,988, Cl. 318-618.000.

Le Laboratoire Metallurgique: *See—*
Poirier, Jacques; Provost, Gilbert; Martin, Jean; and Rozieres, Jean, 5,350,157, Cl. 266-44.000

Leach, Eddie D.; and Leach, Marjorie E., to Associated Enterprises, Inc. Portable and disposable device for detecting holes or leaks in a surgical or examination glove. 5,351,008, Cl. 324-557.000.

Leach, Marjorie E.: *See—*
Leach, Eddie D.; and Leach, Marjorie E., 5,351,008, Cl. 324-557.000

Learoyd Packaging Limited: *See—*
Bolton, Geoffrey A., 5,350,238, Cl. 383-5.000.

Lebby, Michael S.; Shieh, Chan-Long; and Ackley, Donald E., to Motorola, Inc. VCSEL with vertical offset operating region providing a lateral waveguide and current limiting and method of fabrication. 5,351,257, Cl. 372-46.000.

Lebby, Michael S.: *See—*
Chun, Christopher K. Y.; Hartman, Davis H.; Kuo, Shun-Meen; and Lebby, Michael S., 5,351,331, Cl. 385-97.000.

LeBlanc, Ronald E.: *See—*
Diaz, Thomas P.; Dunning, Gail E.; and LeBlanc, Ronald E., 5,349,869, Cl. 73-799.000.

LeCayon, Geard: *See—*
Boissel, Jacques; Delhalle, Joseph; LeCayon, Geard; and Viel, Pascal, 5,350,323, Cl. 439-886.000

Lecrone, Dale S., to LeMatic, Inc. Conveyor mechanism having selectively positionable pushing fingers and having finger positioning cam arrangement. 5,350,055, Cl. 198-718.000.

Lee, Byoung I., to Gold Star Electron Co., Ltd. Method for fabrication mask ROM. 5,350,703, Cl. 437-48.000.

Lee, Chun D.; and Broughton, Donald L., to Quantum Chemical Corporation. Releasable stationary plate for rheometer. 5,349,847, Cl. 73-54.280.

Lee, Frank P.; Kao, Sheau V.; Allison, Gerald R.; Mahabadi, Hadi K.; Liebermann, Geroge; Vijayakumar, Gopalan; and Downing, Robert A., to Xerox Corporation. Preparation of conductive toners using fluidized bed processing equipment. 5,350,659, Cl. 430-137.000.

Lee, Gregory S.; and Ko, Herbert L., to Hewlett-Packard Company Superconducting quantizer and A/D converter system. 5,351,049, Cl. 341-133.000

Lee, Hae-Sup. Foldable kitchen sink. 5,349,708, Cl. 4-638.000

Lee, Harry W., Jr., to Reynolds Metals Company. Method and apparatus for minimizing plug diameter variation in spin flow necking process. 5,349,836, Cl. 72-84.000.

Lee, Hyung S., to Samsung Electronics Ltd. Forming a color filter on a semiconductor substrate. 5,350,490, Cl. 156-655.000

Lee, Jae I., to Goldstar Co., Ltd. Dirt filtering and collecting apparatus for vacuum cleaner. 5,350,432, Cl. 55-408.000.

Lee, Paul S. C.; and Pearlman, Jay S., to TRW Inc. Microwave aircraft landing system using narrow bandwidth filtering. 5,351,077, Cl. 348-117.000

Lee, Ron C.; and Kirschner, Mark J., to BOC Group, Inc., The. Conveyor belt cleaning apparatus for food freezing. 5,349,828, Cl. 62-303.000.

Lee Rowan Company: *See—*
Rogers, Richard D.; Camilleri, Charles; and Wood, Raymond, 5,350,072, Cl. 211-123.000.

Lee, Si-Chen; and Sah, Wen-Jyh, to National Science Council. Image edge sensor. 5,351,309, Cl. 382-22.000.

Lee, Wui-soo, to Samsung Electronics Co., Ltd. Chip identification scheme. 5,350,715, Cl. 437-250.000.

Leete, Jeremy S.; and Ring, Christopher A. Fuel pouring nozzle 5,350,091, Cl. 222-529.000.

Lefere, Robert M.: *See—*
Walsh, Brian J.; and Lefere, Robert M., 5,349,988, Cl. 138-107.000.

Legacy International, Inc.: *See—*
Martinez, Guillermo, 5,350,346, Cl. 482-142.000.

Legallais, Lucien, to Dunlop Coflexip Umbilicals Limited. Fluid transportation multiconduit umbilical. 5,349,989, Cl. 138-111.000.

Le Gigan, Dominique, to Star Partners. Measurement apparatus and method for bulk products, including at least one weight measurement. 5,349,876, Cl. 73-866.000.

Legue, Ronald L.: *See—*
Thomas, David L.; and Legue, Ronald L., 5,349,915, Cl 114-124.000.

Lehmann, William L.; and Bose, William H., to Thomson Consumer Electronics, Inc. Antenna isolation assembly for hot chassis receiver 5,351,018, Cl. 333-12.000.

Leighton, Frank T.; and Micali, Silvio. Method for authenticating objects identified by images or other identifying information. 5,351,302, Cl. 380-30.000

Leland Stanford Jr./University, The Board of Trustees of the: *See—*
Howell, Michial D.; and Kino, Gordon S., 5,351,318, Cl. 385-3.000

Leland Stanford Junior University, Board of Trustees of the: *See—*
Sumanaweera, Thilaka S.; Glover, Gary H.; and Adler, John R., 5,351,006, Cl. 324-309.000

Leland Stanford University, The Board of Trustees of the: *See—*
Toyama, Keiichiro; Kim, Byoung Y.; Huang, Shangyuan; and Shaw, Herbert J., 5,351,252, Cl. 372-29.000

LeMatic, Inc.: *See—*
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Lemelson, Jerome H., to Lemelson Medical, Education & Research Foundation Limited Partnership. Apparatus and methods for automated observation of objects. 5,351,078, Cl. 348-135.000

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Lemelson, Jerome H., 5,351,078, Cl. 348-135.000.

Lemonds, Larry W.: *See—*
McHugh, Thomas J.; Hurlocker, Claude M.; and Lemonds, Larry W., 5,351,019, Cl. 333-24.00R.

Lenhardt, Karl; and Bogner, Uwe, to Lenhardt Maschinenbau GmbH Process and apparatus for assembling insulating glass panes filled with a gas other than air. 5,350,469, Cl. 156-102.000

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Lenhardt, Karl; and Bogner, Uwe, 5,350,469, Cl. 156-102.000.

Lenz, Michael: *See—*
Stroetmann, Brigitte; Lenz, Michael; Hirschberg, Jakub; and Strandberg, Hans, 5,350,403, Cl. 607-5.000.

Leon, Alberta: *See—*
Romeo, Aurelio; Toffano, Gino; and Leon, Alberta, 5,350,841, Cl. 536-53.000.

Leonhardt, Michael L.: *See—*
Dodt, William C.; Donze, Jerry L.; Leonhardt, Michael L.; Milligan, Charles A.; Narahari, Hari S.; Owens, John C.; and Pyatt, Kurt W., 5,351,159, Cl. 360-132.000

Leopold, Hans; Stabinger, Hans; and Schrocker, Klaus P., to Leopold, Hans; and Stabinger, Hans. Resistance ratio measurement utilizing measuring currents of opposite plural direction. 5,351,010, Cl. 324-704.000.

Le Perchec, Pierre: *See—*
Jaffrezic-Renault, Nicole; Chovelon, Jean-Marc; Perrot, Hubert; Le Perchec, Pierre; and Chevalier, Yves, 5,350,701, Cl 437-40.000.

Leroux, Pierre; and Schmidt, Bryan D., to VLSI Technology, Inc Electrostatic apparatus and method for removing particles from semiconductor wafers. 5,350,428, Cl. 29-25.010.

Lesko, Robert J.; and Pitel, Ira J., to Amergraph Corporation. Exposure system. 5,351,106, Cl. 355-83.000.

Levanoni, Menachem: *See—*
Kurtzberg, Jerome M.; and Levanoni, Menachem, 5,351,202, Cl. 364-552.000.

Levenson, Leonard L.: *See—*
Tyson, Scott M.; Kwor, Richard Y.; and Levenson, Leonard L., 5,350,607, Cl. 427-566.000.

Leveson, Richard C.; Laslavic, John D.; and Barker, Nicholas J., to Photovac Centre, Inc. System for the detection of noxious contaminants in beverage and potable water containers. 5,350,565, Cl. 422-64.000.

Levin, David Z.: *See—*
Kralovic, Raymond C.; Levin, David Z.; and Lindeman, Lorraine D. H., 5,350,563, Cl. 422-28.000

Levine, Paul A., to Siemens Pacesetter, Inc. Implantable cardioverter/defibrillator device having means for determining and treating low amplitude ventricular fibrillation and method thereof. 5,350,401, Cl 607-4.000.

Levy, Davida, to Davida Enterprises, Inc. Jewelry closure having a magnetic clasp with safety features. 5,349,725, Cl. 24-303.000

Levy, George S. Optical filter using microlens arrays. 5,351,151, Cl. 359-240.000.

Lewanczuk, Richard Z.: *See—*
Pang, Peter K. T.; Lewanczuk, Richard Z.; and Benishin, Christine G., 5,350,771, Cl. 514-643.000.

Leweis, Richard P.: *See—*
Frazier, Alan D.; and Leweis, Richard P., 5,350,087, Cl. 222-153.000.

Lewis, Bernard L.: *See—*
Kretschmer, Frank F., Jr.; and Lewis, Bernard L., 5,351,058, Cl. 342-384.000.

Lewis, Gary D.: *See—*
Stoddart, Hugh F.; and Lewis, Gary D., 5,349,961, Cl. 128-665.000.

Lewis, John C., Jr., to Tucel Industries, Inc. Brush fabric cleaner. 5,349,715, Cl. 15-114.000

Lexsuco Canada Limited: *See—*
Beetles, Keith; and Fulford, David, 5,349,790, Cl. 52-19.000

Leybold Aktiengesellschaft: *See—*
Kleyer, Siegfried, 5,350,598, Cl. 427-255.500.
Mahler, Peter, 5,350,455, Cl. 118-728.000

Leyderman, Mikhail, to Minnesota Mining and Manufacturing Company. Mandrel for making a rigid tubular article. 5,350,139, Cl. 249-177.000.

Li, Ruby: *See—*
Dow, Howard E.; Li, Ruby; and Potter, Terry W., 5,351,247, Cl. 371-15.100.

Liang, Guo-Chun: *See—*
Withers, Richard S.; and Liang, Guo-Chun, 5,351,007, Cl 324-322.000.

Liang, Louis H., to VLSI Technology, Inc. Design and sealing method for semiconductor packages. 5,350,713, Cl. 437-217.000.

Liao, Wu-chang. Cylindrical lock. 5,349,835, Cl. 70-491.000.

Libardi, Mario, to Italdis S.p.A. Simulation-preventing turnstile. 5,349,781, Cl. 49-47.000.

Lichtenberg, Wilfried. Clamp with pivoting and sliding jaws. 5,350,163, Cl. 269-156.000.

Lichtman, Jeffrey W.; and Thomas, Lew, to Washington University. Improved rotating slit aperture for scanning microscopy. 5,351,150, Cl. 359-232.000

Liebermann, Geroge: *See—*
Lee, Frank P.; Kao, Sheau V.; Allison, Gerald R.; Mahabadi, Hadi K.; Liebermann, Geroge; Vijayakumar, Gopalan; and Downing, Robert A., 5,350,659, Cl. 430-137.000.

Liimatta, Walfred J.: *See—*
McNaughton, James; Liimatta, Walfred J.; and Ketcham, Mark G., 5,350,203, Cl. 285-319.000

Lilienfeld, Pedro, to TRC Companies, Inc. System and method for resonant filter mass monitoring. 5,349,844, Cl. 73-28.010

Liman, Ulrich; Grammes, Hartwig; Wegener, Dirk; and Kaiser, Manuel, to Bayer Aktiengesellschaft. Process for the production of polyurethane foams. 5,350,781, Cl. 521-174.000.

Limbert, Michael: *See—*
Klesel, Norbert; Limbert, Michael; and Schrinner, Elmar, 5,350,753, Cl. 514-264.000.

Limousin, Marcel: *See—*
Nitzsche, Remi; Limousin, Marcel; Bonnet, Jean-Luc; and Henry, Christine, 5,350,406, Cl. 607-14.000

Lin, An-Chung R.; and Cooke, Theodore M., to Dataproducts Corporation. Hot melt impulse ink jet ink with dispersed solid pigment in a hot melt vehicle. 5,350,446, Cl. 706-27.00R.

Lin, Juchui R., to Koch Membrane Systems, Inc. Epoxide-direct grafted halogenated vinyl polymers. 5,350,805, Cl. 525-121.000

Lincoln Electric Company, The: *See—*
Blankenship, George D., 5,351,175, Cl. 363-16.000.

Linde Aktiengesellschaft: *See—*
Konrad, Harald; Puschel, Siegfried; and Stein, Gerald, 5,350,985, Cl. 318-370.000.

Lindeman, Lorraine D. H.: *See—*
Kralovic, Raymond C.; Levin, David Z.; and Lindeman, Lorraine D. H., 5,350,563, Cl. 422-28.000.

Linden, Charles L.; and Shalaby, Shalaby W., to United States of America, Army. Absorbable tissue adhesives. 5,350,798, Cl. 525-41.000.

Linder, Lloyd F.: *See—*
Cheng, William W.; and Linder, Lloyd F., 5,350,952, Cl. 307-352.000.

Lindholm, Per, to Cominvest Research AB. Method and apparatus for preventing external detection of signal information. 5,351,292, Cl. 380-10.000.

Link, John G.: *See—*
Swope, C. Hermas; Link, John G.; and Hyman, Jones M., 5,350,697, Cl. 436-527.000.

Liquid Air Engineering Corporation: *See—*
Ha, Bao; and Garnier, Catherine, 5,349,824, Cl. 62-24.000.

Liquid Control Corporation: *See—*
Miller, Kenneth L.; and Centea, Mark E., 5,350,084, Cl. 222-137.000

Liskow, Uwe; Thoennissen, Jochen; Loistl, Uwe; and Wahl, Oliver, to Robert Bosch GmbH. Aggregate for feeding fuel from supply tank to internal combustion engine of motor vehicle. 5,350,285, Cl. 418-15.000.

Listigovers, Nancy A.: *See—*
Martin, Trevor I.; Mayo, James D.; Listugovers, Nancy A.; Hsiao, Cheng K.; Bluhm, Terry L.; Normandin, Sharon E.; and Carmichael, Kathleen M., 5,350,844, Cl. 540-141.000

LITEF GmbH: *See—*
Spahlinger, Gunter, 5,351,123, Cl. 356-350.000.

Litton Systems, Inc.: *See—*
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Littrell, Gary L. Exhibition hall electrical floor box. 5,350,884, Cl. 174-48.000

Liu, Chun-Ling: *See—*
Yang, Lin; and Liu, Chun-Ling, 5,351,206, Cl. 364-757.000

Liu, Jia-Chin; Chang, Shu-Fahr; Wu, Shyue-Sheng; and Cheng, Yen-Cheng, to Industrial Tech. Research Institute; and OCC Research Center Inc. Mold assembly for thermo-mold continuous casting. 5,350,008, Cl. 164-440.000

Liu, Nen-Chin; O'Handley, Robert C.; Ho, Wing; and Copeland, Richard, to Sensormatic Electronics Corporation. Semi-hard magnetic elements and method of making same. 5,351,033, Cl. 340-572.000

LK-Products OY: *See—*
Niiranen, Erkki O., 5,351,023, Cl. 333-202.000.

Lloyd, John: *See—*
Poss, Michael A.; Lloyd, John; and Atwal, Karnail S., 5,350,752, Cl. 514-259.000

Lockard, Joan S.; DuCharme, Larry L.; Congdon, William C., Jr.; and Kalk, Douglas F., to University of Washington. Method and apparatus for detecting epileptic seizures. 5,349,962, Cl. 128-732.000

Lockheed Corporation: *See—*
Franklin, Walter M., III; Swain, Matthew G.; and Kreimendahl, Bryan W., 5,350,611, Cl. 428-36.910.

Loftis, Carolyn I.: *See—*
Hull, Harold L.; Loftis, Ronald D.; and Loftis, Carolyn I., 5,350,184, Cl. 280-204.000.

Loftis, Ronald D.: *See—*
Hull, Harold L.; Loftis, Ronald D.; and Loftis, Carolyn I., 5,350,184, Cl. 280-204.000.

Logan, Joseph N.: *See—*
Esposito, Felix F.; Conners, John A.; Logan, Joseph N.; Dwyer, James W.; and Crainich, Laurence, 5,350,400, Cl. 606-219.000

Logsdon, William K.; and DuRand, Elden E., III. Caller ID telephone security device. 5,351,289, Cl. 379-142.000.

Lohnherr, Ludger; Pingel, Herbert; Kimmeyer, Ludger; and Baldus, Hans-Dieter, to Krupp Polysius AG. Roll mill. 5,350,124, Cl. 241-119.000

Loidl, Helmut: *See—*
Beckmann, Otto; Loidl, Helmut; and Petraschek, Ernst, 5,350,001, Cl. 152-209.00R

Loistl, Uwe: *See—*
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Lomp, Gary R.; and Schilling, Donald L., to InterDigital Technology Corporation. Trellis coded FM digital communications system and method. 5,351,249, Cl. 371-43.000.

Londo, Michael G.; and Mislankar, Datta G., to Mead Corporation, The. Developer sheet with structured clays and process thereof. 5,350,729, Cl. 503-225.000

Long Island Jewish Medical Center: *See—*
Maimon, Jonathan; Schneider, Bruce S.; Gorray, Kenneth C.; and Mauro, Michele, 5,350,693, Cl. 435-287.000.

Long, James A. Method for separating spot-welded sheet metal parts 5,349,737, Cl. 29-426.400.

Long, Jerry A.: *See—*
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Long, Joseph D.; Strother, Robert S.; and Bree, Gary D., to General Motors Corp. Vehicle power door speed control. 5,350,986, Cl. 318-432.000

Long, Michael S.: *See—*
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Loos, Wybrand T.: *See—*
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Lott, James A.: *See—*
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Lotto, Ronald L.: *See—*
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Loud Engineering & Manufacturing: *See—*
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Lower, Jerry L.: *See—*
Goble, E. Marlowe; and Lower, Jerry L., 5,350,380, Cl. 606-80.000.

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Lu, Lixion: *See—*
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Lu, Zhuxin J.; MacArthur, J. Ward; and Horn, Brian C., to Honeywell Inc. Method of multivariable predictive control utilizing range control. 5,351,184, Cl. 364-165.000.

Lucas, Mark H. Artificial fishing lure. 5,349,776, Cl. 43-42.390.

Luchaire Defense SA: *See—*
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Luck, Graham: *See—*
Dye, Malcom; Gibbs, Terence K.; Mercer, Ian D.; and Luck, Graham, 5,350,980, Cl. 315-370.000.

Luehrmann, Edward G.: *See—*
Ripley, Brian D.; Boston, James L.; Luehrmann, Edward G.; and Barglof, Dale L., 5,350,140, Cl. 248-27.100.

Luk Lamellen und Kupplungsbau: *See—*
Reik, Wolfgang; and Elison, Hans-Dieter, 5,349,883, Cl. 74-574.000.

Lumelsky, Leon; Choi, Sung M.; Peevers, Alan W.; and Pittas, John L., to International Business Machines Corporation. Multi-source image real time mixing and anti-aliasing. 5,351,067, Cl. 345-191.000.

Lunar Corporation: *See—*
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Wiener, Scott A.; and Deluhery, James G., 5,349,959, Cl. 128-660.060.

Lundberg, Robert D.: *See—*
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Lungard, Robert: *See—*
Daniloff, Yuri; Robins, Simon P.; Evans, Brian J.; Pratt, David A.; and Lungard, Robert, 5,350,855, Cl. 546-291.000.

Lungershausen, Joachim H.: *See—*
Burnworth, Douglas J.; and Lungershausen, Joachim H., 5,350,115, Cl. 239-242.000

Lupton, Stephen D.: *See—*
Sims, John E.; Cosman, David J.; Lupton, Stephen D.; Mosley, Bruce A.; and Dower, Steven K., 5,350,683, Cl. 435-69.100.

Lurie, Edward B.; and Selli, Raman K., to Minnesota Mining and Manufacturing Company. Polished fiber optic ferrules. 5,351,327, Cl. 385-78.000

Lustig, David: *See—*
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Lux, Robert A.: *See—*
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Luxtron Corporation: *See—*
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M-1 Drilling Fluids Company: *See—*
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M & W Gear Company: *See—*
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Ma, David L.: *See—*
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Mac Equipment, Inc.: *See—*
Newbolt, Richard E.; and Remmers, Theodore L., 5,350,257, Cl. 406-75.000

MacArthur, J. Ward: *See—*
Lu, Zhuxin J.; MacArthur, J. Ward; and Horn, Brian C., 5,351,184, Cl. 364-165.000.

Maccalli, Giacomo, to Curioni Sun S.r.l. Apparatus for forming and applying handles to bags. 5,350,350, Cl. 493-221.000.

Machui, Jurgen: *See—*
Ruile, Werner; Machui, Jurgen; and Visintini, Giuliano, 5,351,022, Cl. 333-195.000.

Mack, Anthony J.: *See—*
Hockenberry, Thomas M.; and Mack, Anthony J., 5,350,595, Cl. 426-582.000

MacKay, Michael T.; Duffy, Robert; Cotterill, Lee A.; Herz, William; and McArdle, Joe, to Sony Electronics, Inc. Variable scale rotary switch. 5,351,161, Cl. 360-137.000.

Mackle, Thomas R.: *See—*
Swerdloff, Stuart; Mackle, Thomas R.; and Holmes, Timothy, 5,351,280, Cl. 378-65.000.

MacLeod, Richard J.: *See—*
Schiedegger, Charles E.; and MacLeod, Richard J., 5,349,799, Cl. 52-473.000.

Madan, Sudhir K., to Texas Instruments Incorporated. Trench isolation structure having a trench formed in a LOCOS structure and a channel stop region on the sidewalls of the trench. 5,350,941, Cl. 257-647.000

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Maeda, Akira: *See—*
Tominaga, Seigo; Akasi, Osamu; Imai, Masao; Sugita, Koji; Suzuki, Setuko; Maeda, Akira; Isiguro, Kazumasa; Uchida, Masahiro; and Sato, Makoto, 5,349,899, Cl. 99-646.00R.

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Maegli, Jack W.: *See—*
McCarthy, Anthony J.; and Maegli, Jack W., 5,350,590, Cl. 426-549.000

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Kagawa, Yoshikatsu; Yasunami, Shoichiro; and Maekawa, Yukio, 5,350,648, Cl. 429-218.000.

Maempel, Lothar: *See—*
Haeberle, Karl; Bauer, Gerhard; and Maempel, Lothar, 5,350,823, Cl. 526-301.000.

Magnetek: *See—*
Sanders, Stuart E.; and Bauer, Fred P., 5,350,292, Cl. 439-733.000

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Van Wagener, Raymond H.; Kulka, Robert A.; Hoogmoed, Richard; Sanders, Stuart E.; and Bauer, Fred P., 5,350,316, Cl 439-460.000.

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Lee, Frank P.; Kao, Sheau V.; Allison, Gerald R.; Mahabadi, Hadi K.; Liebermann, Geroge; Vijayakumar, Gopalan; and Downing, Robert A., 5,350,659, Cl. 430-137.000.

Mahler, Matthias: *See—*
Buchholtz, Gerhard; and Mahler, Matthias, 5,350,352, Cl 601-4.000

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Tennis, John M.; Able, Adriane H.; Coleman, Marilyn C.; Hough, Mark; and Mahon, Kaye M., 5,349,967, Cl. 128-888.000.

Mahrez, Ouaniche: *See—*
Delalle, Jacques; Mahrez, Ouaniche; Lamothe, Michele; Passa, Frederic; and Roucaute, Philippe, 5,350,105, Cl. 228-56.300.

Maile, Michael S.: *See—*
Michael, Daniel W.; and Maile, Michael S., 5,350,541, Cl. 252-549.000.

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Mais, Franz-Josef: *See—*
Wagner, Paul; Buysch, Hans-Josef; Klausener, Alexander; Mais, Franz-Josef; and Mendoza-Frohn, Christine, 5,350,862, Cl. 549-230.000

Majette, Mark W.: *See—*
Meyer, William D.; Sunamoto, Jeffrey A.; and Majette, Mark W., 5,350,929, Cl. 250-573.000

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Woodrum, Guy T.; and Majette, Thomas H., 5,350,799, Cl. 525-54.300.

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Maki, Hidetaka: *See—*
Hasegawa, Yusuke; Akazaki, Shusuke; Komoriya, Isao; Maki, Hidetaka; and Hirota, Toshiaki, 5,349,933, Cl. 123-486.000

Maki, Yuji: *See—*
Kondo, Fumio; Aoki, Yoshiaki; Imaida, Tsuyoshi; Nozoe, Hiroki; Maki, Yuji; and Watabe, Shin, 5,350,337, Cl. 454-189.000.

Makino, Yoshihiko; and Terashima, Kaoru, to Fuji Photo Film Co., Ltd. Multilayer analytical element for determination of total cholesterol in blood. 5,350,675, Cl. 435-11.000.

Malhi, Satwinder, to Texas Instruments Incorporated. High voltage structures with oxide isolated source and resurf drift region in bulk silicon. 5,350,932, Cl. 257-67.000.

Mallory, Deborah A.: *See—*
Powell, Kenneth E.; and Mallory, Deborah A., 5,350,909, Cl. 235-472.000

Malloy, Thomas P.: *See—*
Engel, Dusan J.; Malloy, Thomas P.; and Nickl, Peter K., 5,350,879, Cl. 560-234.000.

Malpass, Gerald D., Jr., to Exxon Chemical Patents Inc. Process for preparing a high density polyethylene of low n-paraffin content and high melt index ratio. 5,350,818, Cl. 526-139.000.

Mangone, Peter G., Jr. Apparatus for mounting relatively rigid objects 5,350,267, Cl. 411-442.000.

Mann, Brian M.: *See—*
Kleks, Jonathan A.; Buchanan, Stuart W.; Wilson, Raymond J.; Poore, John W.; and Mann, Brian M., 5,350,410, Cl. 607-28.000.

Mann, Samuel J., to Inverness Corporation. Integrated disposable ear piercing earring and clutch cartridge with ear clamp. 5,350,394, Cl 606-188.000.

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Fisk, Allan T.; Freed, David I.; and Mann, Thomas H., 5,350,254, Cl. 405-184.000.

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Glaser, Arnaldo A.; and Kaufhold, Hans-Joachim, 5,350,553, Cl. 264-155.000.

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Mansur, Pierre G., 5,349,974, Cl. 134-107.000.

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Marazita, Frank: *See—*
Jerome, Rick C.; and Marazita, Frank, 5,350,942, Cl. 257-648.000

Marchio, Fabio; Novarini, Enrico; and Rossi, Giorgio, to SGS-Thomson Microelectronics S.r.l. Structure for temperature compensating the inverse saturation current of bipolar transistors. 5,350,998, Cl. 323-312.000.

Marfell, David J.: *See—*
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Margittai, Thomas B. Apparatus for generating high pressure water in response to water weight changes caused by waves. 5,349,819, Cl 60-398.000

Marglon, Adam G.: *See—*
Hill, Ronald D.; Marglon, Adam G.; and Johnson, David P., 5,350,179, Cl. 273-249.000.

Margolin, Mark: *See—*
Grois, Igor; Makhlin, Ilya; and Margolin, Mark, 5,349,784, Cl 451-314.000.

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Rigney, David V.; Bruce, Robert W.; and Maricocchi, Antonio F., 5,350,599, Cl. 427-255.700.

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May, Billy D., 5,349,917, Cl. 114-347.000.

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Markowitz, James P., to Calgon Carbon Corporation. Flexible-walled absorber. 5,350,513, Cl. 210-264.000.

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Tiemann, Jerome J.; and Marks, Fay A., 5,349,954, Cl. 128-634.000.

Marks, Jeffrey: *See—*
Collins, Kenneth S.; Trow, John R.; Tsui, Joshua C. W.; Roderick, Craig A.; Bright, Nicolas J.; Marks, Jeffrey; and Ishikawa, Tetsuya, 5,350,479, Cl. 156-345.000.

Markus, Heule; and Othmar, Gerschwiler, to Ceka Electrowerkzeuge AG & Co. KG. Power-driven electrical hand tool. 5,350,026, Cl. 173-178.000.

Marlin, Gerald M. Implant collar and post system. 5,350,302, Cl. 433-174.000

Marsden, Peter D.: *See—*
Glover, Edward C. T. S.; Marsden, Peter D.; and Dunlop, James I., 5,351,104, Cl. 354-328.000

Marsi, Marianne: *See—*
Dembek, Alexa A.; and Marsi, Marianne, 5,350,832, Cl. 528-373.000

Martell, Dennis; and Krcma, Jan, to J and N Associates, Inc. Refrigerant gas leak detector. 5,351,037, Cl. 340-632.000.

Marten, Finn L.: *See—*
Famili, Amir; Vratsanos, Lori A.; and Marten, Finn L., 5,350,801, Cl. 525-59.000

Martens, Jon S.; Hietala, Vincent M.; and Hohenwarter, Gert K. G., to United States of America, Energy. Reflective HTS switch. 5,350,739, Cl. 505-211.000.

Martin, Annette L.: *See—*
Thakur, Randhir P. S.; Sandhu, Gurtej S.; and Martin, Annette L., 5,350,236, Cl. 374-161.000.

Martin, Donald M.: *See—*
Strand, Olaf; and Martin, Donald M., 5,350,239, Cl. 383-7.000.

Martin, Geoffrey S., to Med-Pro Design, Inc. Bent co-axial catheter. 5,350,358, Cl. 604-43.000.

Martin, Grace E.: *See—*
Colella, Gregory M.; Ben-David, Daniel; Cupo, Albert; Fan, Sophie S.; Fischer, Gena; Martin, Grace E.; and Ornstein, Leonard, 5,350,695, Cl. 436-63.000

Martin, Herman H.; and Long, Michael S., to Wilshire Partners. Ice chest beverage dispenser having a pre-chill coil. 5,350,086, Cl. 222-146.600

Martin, Jean: *See—*
Poirier, Jacques; Provost, Gilbert; Martin, Jean; and Rozieres, Jean, 5,350,157, Cl. 266-44.000

Martin, Joel L., to Phillips Petroleum Company. Polyolefin polymerization process, process of producing catalyst, and catalyst. 5,350,724, Cl. 502-110.000.

Martin, Lawrence L.; and Davis, Larry, to Hoechst-Roussel Pharmaceuticals Incorporated. Tetrahydrocyclopent[B]indole methanamines and related compounds. 5,350,762, Cl. 514-411.000.

Martin, Roger G., to Master Unit Die Products, Inc. Quick change system for mold bases. 5,350,289, Cl. 425-190.000.

Martin, Trevor I.; Mayo, James D.; Listigovers, Nancy A.; Hsiao, Cheng K.; Bluhm, Terry L.; Normandin, Sharon E.; and Carmichael, Kathleen M., to Xerox Corporation. Processes for the preparation of titanyl phthalocyanines. 5,350,844, Cl. 540-141.000.

Martinez, Erasmo; and Walmsley, Steven E., to Hughes Aircraft Company. Portable leak/flow test equipment for night vision equipment 5,349,846, Cl. 73-40.000.

Martinez, Guillermo, to Legacy International, Inc. Weight bench with slidable seat construction. 5,350,346, Cl. 482-142.000

Martinson, Scott D.; Gray, David L.; Carraway, Debra L.; and Reda, Daniel C., to United States of America, National Aeronautics and Space Administration. Active thermal isolation for temperature responsive sensors. 5,349,851, Cl. 73-147.000

Maruyama, Shigeru; Shimasaki, Yuichi; Kanehiro, Masaki; Ishioka, Takuji; Baba, Shigeki; and Hisaki, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. High tension cord cover with misfire detecting capacitor for internal combustion engine. 5,349,930, Cl. 123-143.00C

Masaie, Kimio; and Sakamoto, Minoru, to Murata Manufacturing Co., Ltd. Ladder-type piezoelectric filter. 5,351,021, Cl. 333-189.000.

Masarati, Enrico: *See*—
Cipolli, Roberto; Rossi, Cristina; Oriani, Roberto; Masarati, Enrico; and Nucida, Gilberto, 5,350,848, Cl. 544-195.000

Mase, Yoshiaki: *See*—
Oketani, Tetsuya; Nishikawa, Hirotaka; Mase, Yoshiaki; and Sakakibara, Yukihiro, 5,351,039, Cl. 340-680.000.

Maseka, Kakoma D.: *See*—
Burkinshaw, Steven M.; Gordon, Roy; Marfell, David J.; and Maseka, Kakoma D., 5,350,422, Cl. 8-115.560.

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Massachusetts Institute of Technology: *See*—
Call, Katherine M.; Glaser, Thomas M.; Ito, Caryn Y.; Buckler, Alan J.; Pelletier, Jerry; Haber, Daniel A.; Rose, Elise A.; and Housman, David E., 5,350,840, Cl. 536-23.100
Chan, Vincent W. S.; Gallager, Robert G.; Kirby, Alan J.; and Saleh, Adel A. M., 5,351,146, Cl. 359-118.000
Geis, Michael W.; and Smythe, Daniel L., 5,350,944, Cl. 257-77.000

Mast, Martin: *See*—
Gruenwald, Werner; Schmid, Kurt; and Mast, Martin, 5,349,746, Cl. 29-620.000.

Master Unit Die Products, Inc.: *See*—
Martin, Roger G., 5,350,289, Cl. 425-190.000.

Masters, Charles, to Wilson Sportiong Goods Co. Football jersey with tailored sleeve. 5,349,704, Cl. 2-115.000.

Masuda, Kazunori: *See*—
Kyuma, Kenji; Hieda, Teruo; Masuda, Kazunori; and Takei, Hirohumi, 5,351,080, Cl. 348-225.000

Masuda, Yasuto: *See*—
Yuge, Kiyohiro; Muramatsu, Hitoshi; Masuda, Yasuto; Uekado, Kazutaka; and Tanimoto, Yasuaki, 5,350,777, Cl. 521-117.000.

Masui, Keiji, to NEC Corporation. Detachable battery package with built-in integrating power meter. 5,350,640, Cl. 429-7.000

Masumoto, Rodney T.; Ueda, Shunsaku; Chern, Jenn-Gang; and Lam, Kirby, to Silicon Systems, Inc. Time based data separator zone change sequence. 5,351,015, Cl. 331-1.00R

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Mateos, Luis A.: *See*—
Nagengast, William E.; McMahan, David R.; Wisler, Jan A.; Mateos, Luis A.; and Ballentine, Michael W., 5,351,170, Cl. 362-66.000

Mathur, Bimal P.; Wang, H. Taichi; and Haendel, Richard S., to Rockwell International Corporation. Vehicle lane position detection system. 5,351,044, Cl. 340-901.000.

Matsuda, Hiroshi: *See*—
Takada, Yuji; Matsuda, Hiroshi; Yamane, Toshiki; and Sugimoto, Yoshihiko, 5,351,126, Cl. 356-376.000.

Matsuda, Kiyoshi: *See*—
Ishihara, Kei; Matsuda, Kiyoshi; Tamaki, Atsushi; Katoh, Masatoshi; Hamaguchi, Tadahiko; and Takeda, Takashi, 5,350,915, Cl 250-208.100

Matsuda, Tadashi, to Kabushiki Kaisha Toshiba. Conductivity modulation type insulated gate field effect transistor. 5,350,934, Cl. 257-139.000

Matsuda, Yasuhiro; Yoshida, Takashi; Shimizu, Isao; Watanabe, Katsumi; Shimizu, Akira; and Yoshida, Masashi, to Hitachi, Ltd. Thermal printer. 5,351,071, Cl. 346-136.000

Matsui, Hiromichi; Ezoe, Kazuomi; and Kurusu, Toshiro, to Sony Corporation. Solid-state imaging device having a light barrier layer. 5,351,081, Cl. 348-249.000.

Matsui, Kiyoto: *See*—
Hara, Yasushi; Watanabe, Kazuhiro; Ishikawa, Hiroshi; Matsui, Kiyoto; Kawabe, Kenji; and Shimura, Takaki, 5,350,964, Cl. 310-357.000

Matsukawa, Naohiro; and Miyamoto, Junichi, to Kabushiki Kaisha Toshiba. Nonvolatile semiconductor memory circuit with high speed read-out. 5,350,938, Cl. 257-378.000

Matsuki, Masaya: *See*—
Sawada, Hirokazu; Kakei, Tsutomu; Matsuki, Masaya; and Uesugi, Akio, 5,350,010, Cl. 164-476.000

Matsumoto, Hidetoshi: *See*—
Goto, Shigeo; Matsumoto, Hidetoshi; Yazawa, Masamitsu; Umemoto, Yasunari; Uchida, Yoko; and Hiruma, Kenji, 5,351,128, Cl. 257-192.000

Matsumoto, Hiroshi; Takaragi, Kazuo; and Fukuzawa, Yasuko, to Hitachi, Ltd.; and Hitachi Chubu Software Ltd. Limited broadcast system. 5,351,294, Cl. 380-23.000.

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Tsuchitani, Shigeki; Suzuki, Seiko; Miki, Masayuki; and Matsumoto, Masahiro, 5,350,189, Cl. 280-728.00R.

Matsumoto, Michito: *See*—
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Tamekuni, Yoshikyo; Haibara, Tadashi; Matsumoto, Michito; and Nagasawa, Shinji, 5,351,328, Cl. 385-83.000.

Matsumoto, Narihito: *See*—
Okumura, Toshiyuki; Konushi, Fumihiro; Morioka, Tatsuya; and Matsumoto, Narihito, 5,351,258, Cl. 372-46.000

Matsumoto, Yoshiyuki; and Furihata, Makoto. Video signal processing device and method. 5,351,089, Cl. 348-497.000.

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Matsuura, Fumiaki; Ushijima, Kazuhiro; Matsumura, Hisashi; Kouhei, Masahide; and Koita, Tsutomu, 5,351,040, Cl. 340-825.050.

Matsumura, Kouji: *See*—
Harada, Yasoo; Matsushita, Shigeharu; Terada, Satoshi; Fujii, Emi; Kurose, Takashi; Higashino, Takayoshi; Yamada, Takashi; Nagamatsu, Akihito; Inoue, Daijirou; and Matsumura, Kouji, 5,350,709, Cl. 437-161.000

Matsuno, Junichi, to Hitachi, Ltd. Electrophotographic copying apparatus having ribbon-shaped toner image carrier. 5,351,114, Cl. 355-285.000

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Hamabe, Kenkichi; Matsuo, Shigemi; Nomachi, Hiroshi; Ogawa, Hideo; and Ueda, Minoru, 5,350,450, Cl. 106-802.000.

Matsushita, Akiyoshi: *See*—
Takamura, Toshihiro; Nishino, Yukio; Oyama, Motoaki; and Matsushita, Akiyoshi, 5,350,561, Cl. 420-105.000.

Matsushita Electric Industrial Company, Inc.: *See*—
Kugiyama, Koichi; Sugaya, Yasuhiro; Inoue, Osamu; Hirota, Ken; and Satomi, Mitsuo, 5,350,628, Cl. 428-307.300.

Matsushita Electric Industrial Co., Ltd.: *See*—
Aoki, Satoshi, 5,350,151, Cl. 248-615.000
Hongu, Hitoshi, 5,351,265, Cl. 372-107.000.
Inoue, Tatsuya; Kagata, Hiroshi; Kato, Junichi; and Kameyama, Ichiro, 5,350,639, Cl. 428-633.000.
Ishida, Takashi; O'Hara, Shunji; Ishibashi, Kenzo; and Satoh, Toshio, 5,351,225, Cl. 369-44.320.
Kunitomo, Kouichi, 5,351,283, Cl. 379-58.000.
Maeda, Kazuki; Ishiyama, Naoki; and Nakata, Hiroaki, 5,351,148, Cl. 359-124.000
Matsuzaki, Natsume; and Tatebayashi, Makoto, 5,351,299, Cl. 380-37.000
Miyaji, Atsuko; and Tatebayashi, Makoto, 5,351,297, Cl 380-28.000
Miyata, Yutaka; Furuta, Mamoru; Yoshioka, Tatsuo; Tsutsu, Hiroshi; and Kawamura, Tetsuya, 5,351,145, Cl. 359-57.000.
Nakamura, Kazuhiko, 5,351,090, Cl. 348-484.000
Nio, Yutaka; and Ryuji, Matsuura, 5,351,088, Cl. 348-441.000.
Nishino, Masakazu; Juri, Tatsuro; and Ohtaka, Hideki, 5,351,131, Cl. 358-335.000.
Shibaike, Narito; Nagashima, Michiyoshi; Ueno, Fumiaki; and Kishi, Toshinori, 5,350,499, Cl. 204-192.340.
Tsuji, Toshiaki; and Kageyama, Atsuhisa, 5,351,141, Cl. 358-520.000.
Yamamoto, Hajime; and Terada, Hiroshi, 5,351,115, Cl. 355-326.00R

Matsushita Electric Industries Co., Ltd.: *See*—
Shoji, Rihito; Hase, Hiroyuki; and Wakamiya, Masayuki, 5,349,868, Cl. 73-728.000

Matsushita Electric Works, Ltd.: *See*—
Hamamoto, Katunobu; and Gotoh, Shigeo, 5,350,977, Cl. 315-291.000
Takada, Yuji; Matsuda, Hiroshi; Yamane, Toshiki; and Sugimoto, Yoshihiko, 5,351,126, Cl. 356-376.000.

Matsushita Graphic Communication Systems, Inc.: *See*—
Sato, Shinichi; and Kobayashi, Kazuto, 5,351,312, Cl. 382-50.000

Matsushita, Munemasa: *See*—
Yano, Tsunenori; and Matsushita, Munemasa, 5,351,051, Cl 341-176.000

Matsushita Refrigeration Company: *See*—
Yuge, Kiyohiro; Muramatsu, Hitoshi; Masuda, Yasuto; Uekado, Kazutaka; and Tanimoto, Yasuaki, 5,350,777, Cl. 521-117.000.

Matsushita, Shigeharu: *See*—
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Matsuura, Fumiaki; Ushijima, Kazuhiro; Matsumura, Hisashi; Kouhei, Masahide; and Koita, Tsutomu, to Hitachi, Ltd.; Hitachi Software Eng. Co. Ltd.; Hitachitelecom Tech. Ltd.; and Hitachi Computer Eng. Co., Ltd. Control system for configuring ring lan with improved reconfiguration operation. 5,351,040, Cl. 340-825.050

Matsuzaki, Natsume; and Tatebayashi, Makoto, to Matsushita Electric Industrial Co., Ltd. Apparatus and method for data encryption with block selection keys and data encryption keys. 5,351,299, Cl 380-37.000

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Jackson, David M.; and Matthews, Billie J., 5,350,370, Cl 604-367.000

Matthews, Kevin E.: *See*—
Wood, Christopher H.; Hajjar, Fares; Apicella, Anthony; and Matthews, Kevin E., 5,351,305, Cl. 382-6.000

Mauch, Magnus; and Kehrberger, Achim, to DELMAG Maschinenfabrik Reinhold Dornfeld GmbH & Co. Drill machine table. 5,350,027, Cl. 173-216.000.

Maurer, Allyson R.: *See*—
Kelsall, Robert W.; and Maurer, Allyson R., 5,350,661, Cl 430-271.000.

Mauro, Anthony J.: *See*—
Falciglia, James W.; and Mauro, Anthony J., 5,350,885, Cl 174-112.000

Mauro, Michele: *See*—
Maimon, Jonathan; Schneider, Bruce S.; Gorray, Kenneth C.; and Mauro, Michele, 5,350,693, Cl. 435-287.000

Mawhinney, James G.; and Anderson, Smity A. Wheelbarrow 5,350,030, Cl. 180-19.300.

Maxpat Trading & Marketing (Far East) Limited: *See*—
Po Wo Cheung, Paul, 5,349,898, Cl. 99-417.000.

Maxwell, Hugh A.: *See*—
Brown, Scott B.; and Maxwell, Hugh A., 5,350,109, Cl. 229-117.160.

May, Billy D., to Marine Research and Development, Inc. Unitary aluminum watercraft and method of production of same. 5,349,917, Cl. 114-347.000.

Mayo, James D.: *See*—
Martin, Trevor I.; Mayo, James D.; Listigovers, Nancy A.; Hsiao, Cheng K.; Bluhm, Terry L.; Normandin, Sharon E.; and Carmichael, Kathleen M., 5,350,844, Cl. 540-141.000.

Maytag Corporation: *See*—
Johnson, Thomas M.; and Ellingwood, John C., 5,349,832, Cl. 62-447.000.

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Tsuyama, Toshiaki; and Onaka, Toru, 5,351,192, Cl. 364-426.030.
Yamauchi, Makoto; and Iida, Eiichiro, 5,350,214, Cl. 296-204.000.
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Mazza, John C.; Stark, William A.; Scribner, Richard A.; Frye, Stephen L.; and Hardiman, Kempton H., to Baxter Diagnostics Inc. Automated chemical analyzer with apparatus and method for conveying and temporary storage of sample tubes. 5,350,564, Cl. 422-63.000.

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Jurcik, Benjamin; Brandt, Michael; Inman, Ronald; and McAndrew, James, 5,351,120, Cl. 356-246.000.

McArdle, Joe: *See*—
MacKay, Michael T.; Duffy, Robert; Cotterill, Lee A.; Herz, William; and McArdle, Joe, 5,351,161, Cl. 360-137.000.

McBeth, James B.: *See*—
McFadyen, Andrew W., McBeth, James B.; and Fetchko, Eric B., 5,349,818, Cl. 60-385.000

McBride, Roy: *See*—
Barton, James S.; Borthwick, William K. D.; Harvey, David; Jones, Julian D. C.; and McBride, Roy, 5,351,116, Cl. 356-28.500.

McCall, Samuel L.: *See*—
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Colella, Gregory M.; Ben-David, Daniel; Cupo, Albert; Fan, Sophie S.; Fischer, Gena; Martin, Grace E.; and Ornstein, Leonard, 5,350,695, Cl. 436-63.000
Konig, Eberhard; Casselmann, Holger; Kobelka, Frank; and Foster, Keith-Allen, 5,350,825, Cl. 528-45.000.
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Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
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Kondo, Fumio; Aoki, Yoshiaki; Imaida, Tsuyoshi; Nozoe, Hiroki; Maki, Yuji; and Watabe, Shin, 5,350,337, Cl. 454-189.000.

Mitsubishi Kasei Corporation: *See—*
Hirota, Takao; Kuroda, Katsuhiko; and Tamaki, Mamika, 5,350,730, Cl. 503-227.000
Ishihara, Kei; Matsuda, Kiyoshi; Tamaki, Atsushi; Katoh, Masatoshi; Hamaguchi, Tadahiko; and Takeda, Takashi, 5,350,915, Cl. 250-208.100
Ishikawa, Seiji; and Murakami, Hajime, 5,351,169, Cl. 362-32.000.
Sasaki, Hiroyuki; Ota, Tetsuro; Hattori, Eiji; and Ikeda, Michihiro, 5,350,782, Cl. 523-116.000.
Tomoi, Masao; Kiyokawa, Atsuo; Ogawa, Hiromasa; Onozuka, Teruo; and Ito, Tsuyoshi, 5,350,523, Cl. 210-683.000
Urabe, Yoshitomi; Hayashida, Hironori; and Ohtani, Yoshiaki, 5,350,790, Cl. 524-321.000.

Mitsubishi Materials Corporation: *See—*
Takaya, Sueji; Takasaki, Kazuo; and Tone, Kazuaki, 5,350,261, Cl. 408-229.000

Mitsui Toatsu Chemicals, Incorporated: *See—*
Itoh, Hisato; Oguchi, Takahisa; Aihara, Shin; and Sugimoto, Kenichi, 5,350,843, Cl. 540-138.000

Miura, Nobuo: *See—*
Funami, Yasuo; and Miura, Nobuo, 5,350,326, Cl. 440-61.000

Miura, Osamu: *See—*
Miyazaki, Kunio; Sugita, Yutaka; Mukoh, Akio; Miyoshi, Tadahiko; Miura, Osamu; Takahashi, Akio; Numata, Shunichi; Ogihara, Satoru; Yamada, Kazuji; Inoue, Hirokazu; and Kobayashi, Fumiyuki, 5,350,886, Cl. 174-250.000.

Miyabe, Kazumichi: *See—*
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Tamekuni, Yoshikyo; Haibara, Tadashi; Matsumoto, Michito; and Nagasawa, Shinji, 5,351,328, Cl. 385-83.000

Miyahara, Kazuhiko; Kinoshita, Takao; Kawamoto, Kenichi; Kurihashi, Toshiya; and Tokano, Kaneyoshi, to Canon Kabushiki Kaisha. Apparatus for photographing photographed film. 5,351,139, Cl. 358-487.000

Miyaji, Atsuko; and Tatebayashi, Makoto, to Matsushita Electric Industrial Co., Ltd. Method of privacy communication using elliptic curves. 5,351,297, Cl. 380-28.000

Miyamoto, Junichi: *See—*
Matsukawa, Naohiro; and Miyamoto, Junichi, 5,350,938, Cl. 257-378.000

Miyamoto, Yasuo: *See—*
Ichimura, Nobuo; Yamazaki, Mitsuo; Fujita, Kohei; Satou, Hidetaka; Miyamoto, Yasuo; Kawasumi, Masao; and Kikuchi, Tohru, 5,350,811, Cl. 525-476.000

Miyano, Hideyo, to Honda Giken Kogyo K.K. Evaporative emission control system for internal combustion engines. 5,349,934, Cl. 123-519.000

Miyasaka, Michihiko: *See—*
Takama, Kenichiro; Horio, Kimihide; Miyasaka, Michihiko; Tsurumaru, Takafumi; and Takenishi, Shinsuke, 5,350,154, Cl. 251-305.000

Miyata, Yutaka; Furuta, Mamoru; Yoshioka, Tatsuo; Tsutsu, Hiroshi; and Kawamura, Tetsuya, to Matsushita Electric Industrial Co., Ltd. Active matrix substrate device and related method. 5,351,145, Cl 359-57.000

Miyazaki, Astushi; Ujiro, Takumi; and Togashi, Fusao, to Kawasaki Steel Corporation. Ferrite steel which excels in high-temperature strength and toughness. 5,350,559, Cl. 420-36.000

Miyazaki, Hideki; Endo, Tsunehiro; Watanabe, Kouzou; Takakura, Yuhachi; and Suda, Koichi, to Hitachi, Ltd. Level shift circuit and inverter apparatus using the same. 5,351,182, Cl. 363-132.000

Miyazaki, Kunio; Sugita, Yutaka; Mukoh, Akio; Miyoshi, Tadahiko; Miura, Osamu; Takahashi, Akio; Numata, Shunichi; Ogihara, Satoru; Yamada, Kazuji; Inoue, Hirokazu; and Kobayashi, Fumiyuki, to Inoue, Hirokazu; and Kobayashi, Fumiyuki, to Hitachi, Ltd. Mounting substrate. 5,350,886, Cl. 174-250.000

Miyazaki, Toshihiko: *See*—
Kawase, Toshimitsu; Yamano, Akihiko; Kuroda, Ryo; Nose, Hiroyasu; and Miyazaki, Toshihiko, 5,349,735, Cl. 29-407.000

Miyazawa, Kenichi: *See*—
Mizoguchi, Toshiaki; Shio, Kiyomi; Ueshima, Yoshiyuki; Yasuda, Kazumi; Morimoto, Yoshio; Haga, Hiromitu; and Miyazawa, Kenichi, 5,350,009, Cl. 164-454.000

Miyazawa, Osao: *See*—
Ichikawa, Hitoshi; Miyazawa, Osao; and Nakamura, Masanobu, 5,351,227, Cl. 369-58.000

Miyazawa, Toshiki: *See*—
Honma, Kensaku; Sakaguchi, Masahide; and Miyazawa, Toshiki, 5,349,841, Cl. 72-333.000

Miyoshi, Tadahiko: *See*—
Miyazaki, Kunio; Sugita, Yutaka; Mukoh, Akio; Miyoshi, Tadahiko; Miura, Osamu; Takahashi, Akio; Numata, Shunichi; Ogihara, Satoru; Yamada, Kazuji; Inoue, Hirokazu; and Kobayashi, Fumiyuki, 5,350,886, Cl. 174-250.000.

Mizoguchi, Toshiaki; Shio, Kiyomi; Ueshima, Yoshiyuki; Yasuda, Kazumi; Morimoto, Yoshio; Haga, Hiromitu; and Miyazawa, Kenichi, to Nippon Steel Corporation. Twin roll-type sheet continuous casting method and apparatus. 5,350,009, Cl. 164-454.000.

Mizumoto, Katsuji; and Kono, Mutsumi, to Pioneer Electronic Corporation. Method and apparatus for reproducing information from a recordable optical disc regardless of whether an index area is detected as being present on the disk and a method of generating index information during reproduction of the information on the disk 5,351,226, Cl. 369-47.000.

Mizutani, Naoki, to Mita Industrial Co., Ltd. Conveyor roller cleaning device. 5,351,108, Cl. 355-215.000

Mobil Oil Corporation: *See*—
Dessau, Ralph M., 5,350,504, Cl. 208-143.000.
Schmitt, Kirk D., 5,350,570, Cl. 423-705.000.

Mochel, Virgil D.; Tomaszewski, Walter; and Bohm, Georg G. A., to Bridgestone Corporation. Method of forming tire bead assembly. 5,350,470, Cl. 156-136.000.

Mochizuki, Fumitaka: *See*—
Oshiba, Tomomi; Mochizuki, Fumitaka; Tadokoro, Hajime; Kinoshita, Akira; Watanabe, Kazumasa; Tamaki, Kiyoshi; and Fujimaki, Yoshihide, 5,350,655, Cl. 430-78.000

Mocilnikar, Gabriel C.; Edwards, Roger; and Tipton, James. Toilet lid for flushing a toilet. 5,349,703, Cl. 4-250.000

Modavis, Robert A.: *See*—
Miller, William J.; Modavis, Robert A.; and Webb, Thomas W., 5,351,323, Cl. 385-28.000

Moeller Manufacturing Co., Inc.: *See*—
Bynum, Kurt K., 5,350,201, Cl. 285-92.000.

Mogensen, Mogens; and Kindl, Bruno, to Forskningscenter Riso. Solid state fuel cell and process for the production thereof. 5,350,641, Cl 429-30.000

Mohan, Rakesh: *See*—
Califano, Andrea; and Mohan, Rakesh, 5,351,310, Cl. 382-22.000

Mohr, Juergen; Oppenlaender, Knut; Franz, Lothar; Schreyer, Peter; and Thomas, Juergen, to BASF Aktiengesellschaft. Diaminoalkanes, their preparation and fuels and lubricants containing the diaminoalkanes. 5,350,429, Cl. 44-412.000

Moldovan, Peter K.: *See*—
Juds, Mark A.; Beihoff, Bruce C.; Smith, Richard G.; Nelson, William R.; Wycklendt, Daniel A.; Theisen, Peter J.; Hastings, Jerome K.; and Moldovan, Peter K., 5,351,024, Cl. 335-16.000.

Molex Incorporated: *See*—
Grois, Igor; Makhlin, Ilya; and Margolin, Mark, 5,349,784, Cl. 451-314.000

Molloy, R. Michael: *See*—
Berry, Dennis R.; Dantzig, Anne H.; Debono, Manuel; Hamill, Robert; Molloy, R. Michael; and Yao, Raymond C., 5,350,579, Cl. 424-122.000

Monacelli, Umberto. Easy fastener jam removal tool. 5,350,103, Cl. 227-8.000

Moncrief, William A.: *See*—
Shepard, Steven M.; and Moncrief, William A., 5,350,481, Cl. 156-423.000

Mondares, Valentino G. Adjustable ground-inserted fishing rod holder 5,349,775, Cl. 43-21.200

Monogram Aerospace Fasteners, Inc.: *See*—
Stencel, Edgar L., 5,350,264, Cl. 411-55.000.

Monogram Industries, Inc.: *See*—
Falciglia, James W.; and Mauro, Anthony J., 5,350,885, Cl 174-112.000

Monroe Auto Equipment Company: *See*—
Shinozaki, David M., 5,350,187, Cl. 280-707.000.

Monroe, Brian E.: *See*—
Doll, William J., Jr.; Judy, Murray S.; Kirchner, Albert H., III; Krier, Thomas J.; McVicker, Rudolph M.; Monroe, Brian E.; Pettitt, Meldon L.; Reiswig, Danny R.; Watchorn, Alan; Wesley, Jerry A.; and Wirfel, John C., 5,351,276, Cl. 379-67.000.

Moon, Eva-Maria; and Elgee, Steven B., to Hewlett-Packard Company Ink-jet printer carriage and paper motion overlap method and apparatus. 5,351,068, Cl. 347-101.000.

Moore, Andrew J.; Ma, David L.; Bontz, Robert L.; and Burns, Charles C., to Alcatel Network Systems, Inc. Method and apparatus for affixing an optic fiber tip in position with respect to a fiber communications circuit outside an optics package. 5,351,329, Cl. 385-92.000

Moore, Glenn A.: *See*—
Wright, Richard N.; Wright, Julie K.; and Moore, Glenn A., 5,350,107, Cl. 228-198.000.

Moore, Jimmie L.: *See*—
Dellaria, Joseph F.; Moore, Jimmie L.; and Brooks, Dee W., 5,350,765, Cl. 514-460.000.

Moore Products, Inc.: *See*—
Karanian, Ralph E.; Noonan, Stephen R.; and Vecchitto, John M., 5,351,125, Cl. 356-357.000.

Moore, William R.: *See*—
Wannamaker, Marion W.; VanSickle, William A.; and Moore, William R., 5,350,758, Cl. 514-315.000.

Moran, Steven A.: *See*—
Brennen, Michael B.; and Moran, Steven A., 5,351,178, Cl. 363-40.000
Brennen, Michael B.; Moran, Steven A.; and Suko, Scott K., 5,351,180, Cl. 363-71.000
Brennen, Michael B.; Moran, Steven A.; and Gyugyi, Laszlo, 5,351,181, Cl. 363-71.000.

Morey, Gilles. Process and system for the transmission of a signal 5,351,273, Cl. 375-48.000

Morford, Ted, to Big Sky Racks, Inc. Vehicle mounted locking firearm support. 5,350,094, Cl. 224-42.45R

Morgan, Charles R.: *See*—
Speer, Drew V.; Morgan, Charles R.; Roberts, William P.; and VanPutte, Andrew W., 5,350,622, Cl. 428-215.000.

Morgan Marshall Industries, Inc.: *See*—
Rosenband, Philip A., 5,350,074, Cl. 211-192.000.

Mori, Atsushi: *See*—
Ohishi, Yasutake; Kanamori, Terutoshi; Nishida, Yoshiki; Mori, Atsushi; and Sudo, Shoichi, 5,351,335, Cl. 385-142.000.

Mori, Hideo: *See*—
Yokota, Masahiro; Oyama, Kiyoshi; and Mori, Hideo, 5,350,973, Cl. 315-8.000.

Mori, Yuichi: *See*—
Yoshizato, Katsutoshi; Konishi, Jun; Koide, Mikio; Oyamada, Kaori; Ohsaki, Ken-ichi; Katakura, Takeo; Mori, Yuichi; and Tatebe, Ken, 5,350,583, Cl. 424-484.000.

Moricz nee Garai, Zsuzsanna: *See*—
Toth, Gyorgy; Balint, Janos; Elek n/e, Klara, cu/e/ e Herczik; Moricz nee Garai, Zsuzsanna; and Mudra nee Kantor, Eva, 5,350,872, Cl. 560-55.000

Morikawa, Takeshi: *See*—
Omura, Yoshiteru; Tsukada, Kouji; Nonomura, Yutaka; and Morikawa, Takeshi, 5,349,873, Cl. 73-862.680.

Morimoto, Masayoshi: *See*—
Taguchi, Fumiaki; Morimoto, Masayoshi; Kyoya, Takeshi; and Takano, Mikio, 5,350,685, Cl. 435-168.000.
Taguchi, Fumiaki; Morimoto, Masayoshi; Kyoya, Takeshi; and Takano, Mikio, 5,350,692, Cl. 435-252.700.

Morimoto, Shigeo: *See*—
Asaka, Toshifumi; Misawa, Yoko; Kashimura, Masato; Morimoto, Shigeo; Watanabe, Yoshiaki; and Hatayama, Katsuo, 5,350,839, Cl. 536-7.400.

Morimoto, Shinichi, to Shimano Inc. Fishing reel having an improved clutch mechanism. 5,350,133, Cl. 242-261.000.

Morimoto, Yoshio: *See*—
Mizoguchi, Toshiaki; Shio, Kiyomi; Ueshima, Yoshiyuki; Yasuda, Kazumi; Morimoto, Yoshio; Haga, Hiromitu; and Miyazawa, Kenichi, 5,350,009, Cl. 164-454.000.

Morinaga, Shigeki: *See*—
Kawamata, Syooichi; Takahashi, Tadashi; and Morinaga, Shigeki, 5,351,027, Cl. 338-32.00R.

Morinigo, Fernando B.; Blaire, William C.; and Bulgatz, Dennis, to Aura Systems, Inc. Core design for electromagnetically actuated valve. 5,350,153, Cl. 251-129.160.

Morioka, Tatsuya: *See*—
Okumura, Toshiyuki; Konushi, Fumihiro; Morioka, Tatsuya; and Matsumoto, Narihito, 5,351,258, Cl. 372-46.000.

Moriroku Kabushiki Kaisha: *See*—
Tsuda, Kazuhiko; and Hashimoto, Kazuhiro, 5,350,555, Cl. 264-242.000

Morishita, Tadataka: *See*—
Hase, Takashi; Kita, Ryusuke; Sasaki, Masato; and Morishita, Tadataka, 5,350,738, Cl. 505-473.000.

Morishita, Yoshiko: *See*—
Kasanami, Tohru; Nakamura, Takeshi; Okano, Keiichi; and Morishita, Yoshiko, 5,349,857, Cl. 73-505.000.

Morita, Eiichi: *See*—
Murakami, Fumio; Morita, Eiichi; Iwasaki, Tokuji; Suzuki, Yasushi; and Fujimoto, Kouha, 5,349,728, Cl. 28-107.000

Moriwaki, Fumio; Endo, Hiroyuki; and Hachiya, Satoshi, to Idemitsu Kosan Co., Ltd. Novel high polymer, ferroelectric liquid-crystalline composition containing the high polymer and raw material of the high polymer. 5,350,538, Cl. 252-299.010.

Moriyama, Hitoshi; Itoh, Kiyoshi; Hara, Minoru; and Inagaki, Masahisa, to Fujitsu Limited. Printing head in wire-dot printer 5,349,903, Cl. 101-93.050.

Morozumi, Naoya: *See*—
Yajima, Toshiya; Hirayama, Takuya; Sakata, Hirotsugu; Hayano, Makoto; Okuda, Masayuki; Morozumi, Naoya; Kumazawa, Takeshi; and Kobuna, Teruo, 5,350,280, Cl. 417-310.000

Moses, Charles: *See*—
Graham, Hatch; Moses, Charles; Schuchman, Leonard; and Bruno, Ronald, 5,351,270, Cl. 375-1.000

Mosley, Bruce A.: *See*—
Sims, John E.; Cosman, David J.; Lupton, Stephen D.; Mosley, Bruce A.; and Dower, Steven K., 5,350,683, Cl. 435-69.100.

Moss, Richard L.: *See*—
Gulbrandsen, Carl E.; and Moss, Richard L., 5,350,745, Cl. 514-167.000

Motai, Eiichi: *See*—
Kageyama, Tetsuto; Yoshimura, Shigeru; and Motai, Eiichi, 5,351,073, Cl. 347-87.000.

Motoki, Masuji; Ohkawa, Atsuhiro; and Mihayashi, Keiji, to Fuji Photo Film Co., Ltd. Silver halide photographic materials. 5,350,666, Cl. 430-544.000

Motorola, Inc.: *See*—
Chun, Christopher K. Y.; Hartman, Davis H.; Kuo, Shun-Meen; and Lebby, Michael S., 5,351,331, Cl. 385-97.000.
Lebby, Michael S.; Shieh, Chan-Long; and Ackley, Donald E., 5,351,257, Cl. 372-46.000
Pregont, Gary J.; Cason, David G.; and Goetsch, Jeffrey D., 5,351,245, Cl. 371-5.100.

Motoyoshi, Osamu: *See*—
Kinoshita, Shigenori; Yanase, Takao; Fujita, Kouetsu; Motoyoshi, Osamu; and Ito, Yoshio, 5,350,994, Cl. 320-15.000

Mouliney, Michel: *See*—
Bracque, Gilles; Dehaine, Francois; Gourbier, Jean-Pierre; Grelaud, Alain; Guillard, Alain; Mouliney, Michel; and Rieth, Norbert, 5,349,827, Cl. 62-298.000

Mount Sinai School of Medicine of the City University of New York: *See*—
Colella, Gregory M.; Ben-David, Daniel; Cupo, Albert; Fan, Sophie S.; Fischer, Gena; Martin, Grace E.; and Ornstein, Leonard, 5,350,695, Cl. 436-63.000.

Mount, Susan B.: *See*—
Rafanelli, Gerard L.; Ellerbroek, Brent L.; Mount, Susan B.; and Rehfield, Mark J., 5,350,911, Cl. 250-201.900.

Mrozik, Helmut: *See*—
Meinke, Peter T.; Mrozik, Helmut; and Fisher, Michael H., 5,350,742, Cl. 514-28.000.

Mruk, William A.: *See*—
Campbell, Bruce C.; and Mruk, William A., 5,350,733, Cl. 503-227.000

MTL Systems, Inc.: *See*—
Harshbarger, John H., Jr.; and Shellhause, Michael W., 5,351,201, Cl. 364-551.010.

Mu, Xiao-Chun: *See*—
Gardner, Donald S.; Mu, Xiao-Chun; and Fraser, David B., 5,350,484, Cl. 156-628.000.

Muchow, David C.; and Sirvio, Larry M., to Minnesota Mining and Manufacturing Company. Device and method for extended delivery of pharmacologically active agents to the ear. 5,350,580, Cl. 424-437.000.

Mudra nee Kantor, Eva: *See*—
Toth, Gyorgy; Balint, Janos; Elek n/e, Klara, cu/e/ e Herczik; Moricz nee Garai, Zsuzsanna; and Mudra nee Kantor, Eva, 5,350,872, Cl. 560-55.000.

Mueller, Richard A.: *See*—
Khanna, Ish K.; Mueller, Richard A.; and Weier, Richard M., 5,350,854, Cl. 546-115.000.

Mukherjee, Jyoti: *See*—
Sheehan, Terrence M.; Mukherjee, Jyoti; Cady, Raymond C.; Comstock, Gary L.; and Soroka, Daniel P., 5,349,731, Cl. 29-27.00R.

Mukoh, Akio: *See*—
Miyazaki, Kunio; Sugita, Yutaka; Mukoh, Akio; Miyoshi, Tadahiko; Miura, Osamu; Takahashi, Akio; Numata, Shunichi; Ogihara, Satoru; Yamada, Kazuji; Inoue, Hirokazu; and Kobayashi, Fumiyuki, 5,350,886, Cl. 174-250.000.

Mulieri, Norberto M., to Compania Kelmas S.A. Fluorescent lamp starter. 5,350,976, Cl. 315-290.000.

Muller, Erwin. Method for joining paper layers. 5,350,268, Cl. 412-1.000.

Murai, Fumio: *See*—
Shiraishi, Hiroshi; Soga, Takashi; Murai, Fumio; Sakamizu, Toshio; and Hayashi, Nobuaki, 5,350,485, Cl. 156-628.000.

Murai, Shuji: *See*—
Yamaguchi, Hiroyoshi; Murai, Shuji; and Mimura, Tatsuo, 5,350,547, Cl. 264-40.100.

Murakami, Fumio; Morita, Eiichi; Iwasaki, Tokuji; Suzuki, Yasushi; and Fujimoto, Kouha, to Nippon Felt Co., Ltd. Magnetic position marker and control system for production of felt. 5,349,728, Cl. 28-107.000

Murakami, Hajime: *See*—
Ishikawa, Seiji; and Murakami, Hajime, 5,351,169, Cl. 362-32.000.

Murakami, Masanari: *See*—
Tanabe, Yoo; Murakami, Masanari; and Yamamoto, Hitomi, 5,350,859, Cl. 548-319.100.

Murakami, Tadayoshi: *See*—
Taniguchi, Masayuki; Kobayashi, Hironobu; Narato, Kiyoshi; Murakami, Tadayoshi; Azuhata, Shigeru; Kuroda, Michio; and Hayashi, Noriyuki, 5,349,812, Cl. 60-39.230.

Murakami, Yukio, to Fuji Electric Co., Ltd. Semiconductor device with correct case placement feature. 5,350,946, Cl. 257-693.000

Muramatsu, Hitoshi: *See*—
Yuge, Kiyohiro; Muramatsu, Hitoshi; Masuda, Yasuto; Uekado, Kazutaka; and Tanimoto, Yasuaki, 5,350,777, Cl. 521-117.000

Muranaka, Yasushi: *See*—
Imahashi, Jinichi; Horiba, Tatsuo; and Muranaka, Yasushi, 5,350,643, Cl. 429-33.000.

Muraoka, Hisashi, to Purex Co., Ltd. Treatment method of cleaning surface of plastic molded item. 5,350,489, Cl. 156-651.000.

Murasaki, Ryuichi: *See*—
Okawa, Mitsuhisa; and Murasaki, Ryuichi, 5,349,991, Cl. 139-391.000

Murashima, Mitsuaki; Takahashi, Sakae; Ikeda, Yukio; Kobari, Hirokazu; Shiota, Michio; and Kazumi, Takashi, to Nippon Koki Co., Ltd. Air bag inflation gas generator. 5,350,193, Cl. 280-741.000.

Murata Kikai Kabushiki Kaisha: *See*—
Kawarabashi, Tsukasa; Mima, Hiroshi; and Suzuki, Tadashi, 5,349,807, Cl. 57-261.000.

Murata Machinery, Ltd.: *See*—
Chun, Victor L., 5,350,897, Cl. 219-121.390.

Murata Manufacturing Co., Ltd.: *See*—
Kasanami, Tohru; Nakamura, Takeshi; Okano, Keiichi; and Morishita, Yoshiko, 5,349,857, Cl. 73-505.000.
Masaie, Kimio; and Sakamoto, Minoru, 5,351,021, Cl. 333-189.000
Nakamura, Takeshi, 5,349,856, Cl. 73-505.000.

Murata, Yasuzo: *See*—
Sato, Morio; Abe, Yutaka; Takano, Jun; Ishii, Hirokazu; and Murata, Yasuzo, 5,351,143, Cl. 359-51.000.

Musgrave, Peter: *See*—
Black, David H. A.; Musgrave, Peter; and Ventola, Sabino R., 5,351,239, Cl. 370-84.000

Musil, Joseph E.; and McFarland, William D., to Cedarapids, Inc. Single drum multiple soil remediation and classification apparatus and method. 5,350,252, Cl. 405-128.000.

Musilli, Thomas G., to Frey, the Wheelman, Inc. Process for preparing a grease composition. 5,350,531, Cl. 252-41.000.

Muskopf, Jack W.; Christy, M. Robert; Jameson, Jaysn F., deceased; Jameson, Jerry M., heir; Jameson, Donna R., heiress; and Hallmark, Tami S., to Dow Chemical Company, The. Ignition resistant carbonate polymer blends containing low molecular weight halogenated epoxy compounds. 5,350,802, Cl. 525-65.000

Muthyala, Ramaiah: *See*—
Williams, Linda K.; Kitipichai, Prakob; Francis, Cecil V.; and Muthyala, Ramaiah, 5,350,731, Cl. 503-227.000.

Mutoh Industries Ltd.: *See*—
Oguchi, Hiroshi, 5,351,072, Cl. 346-139.00C.

Mycogen Corporation: *See*—
Payne, Jewel; Cannon, Raymond J. C.; and Ralph, Angela L., 5,350,576, Cl. 424-93.461.
Payne, Jewel M., 5,350,577, Cl. 424-93.461.

Mylavarapu, Sundar R.: *See*—
Thelen, John E.; and Mylavarapu, Sundar R., 5,350,442, Cl. 95-115.000.

Myrata Manufacturing Co., Ltd.: *See*—
Noto, Kazuyuki; and Yosinaga, Takasi, 5,350,965, Cl. 310-366.000
Okamura, Hisatake; Kasahara, Masahiro; Tonegawa, Ken; and Taniguchi, Tetsuo, 5,351,020, Cl. 333-175.000.

Naeini, Abdolreza S.; Owen, Lindsey D.; and Hansen, Harold E. A., to Intellicall, Inc. Telecommunications fraud prevention system and method. 5,351,290, Cl. 379-145.000.

Nagai, Kazukiyo: *See*—
Suzuki, Tetsuro; Yoshikawa, Masao; Nagai, Kazukiyo; and Ikuno, Hiroshi, 5,350,459, Cl. 136-263.000.

Nagamatsu, Akihito: *See*—
Harada, Yasoo; Matsushita, Shigeharu; Terada, Satoshi; Fujii, Emi; Kurose, Takashi; Higashino, Takayoshi; Yamada, Takashi; Nagamatsu, Akihito; Inoue, Daijirou; and Matsumura, Kouji, 5,350,709, Cl. 437-161.000.

Nagamoto, Masayuki, to Laurel Bank Machines Co., Ltd. Sheet feeding apparatus. 5,350,165, Cl. 271-9.000.

Nagamura, Takashi; and Yamamoto, Takao, to Teisan Kabushiki Kaisha. Method and apparatus for the production of ultra-high purity nitrogen. 5,349,822, Cl. 62-39.000.

Naganuma, Mikio, to TEAC Corporation. Load sensing device having improved load sensing ability. 5,349,871, Cl. 73-862.635

Nagasawa, Shinji: *See*—
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Tamekuni, Yoshikyo; Haibara, Tadashi; Matsumoto, Michito; and Nagasawa, Shinji, 5,351,328, Cl. 385-83.000.

Nagashima, Michiyoshi: *See*—
Shibaike, Narito; Nagashima, Michiyoshi; Ueno, Fumiaki; and Kishi, Toshinori, 5,350,499, Cl. 204-192.340.

Nagata, Shizuo; Suzuki, Yasuhiro; Tabata, Tutomu; and Takahashi, Masahiro, to Oki Electric Industry Co., Ltd. Adjustment of tracking servo and focusing servo in optical data recording/reproducing apparatus. 5,351,224, Cl. 369-44.290.

Nagengast, William E.; McMahan, David R.; Wisler, Jan A.; Mateos, Luis A.; and Ballentine, Michael W., to General Motors Corporation. Vehicle headlamp assembly. 5,351,170, Cl. 362-66.000

Nagler, Jurgen. Quick coupling of a front work attachment on excavators. 5,350,250, Cl. 403-316.000.

Naigai Special Dying Co., Ltd.: *See*—
Iwami, Hideo, 5,349,711, Cl. 8-152.000.

Naito, Masataka; Takahashi, Yuji; Hiroi, Masakazu; Isobe, Yoshinori; Yoshida, Akimaro; Fujimoto, Hitoshi; and Nakagawa, Tomohito, to Canon Kabushiki Kaisha. Original feeding apparatus and image forming system with it. 5,351,112, Cl. 355-233.000

Nakagawa, Kunihiko: *See—*
Koike, Kiyoshi; Aizawa, Jyunichi; Nakao, Hiroshi; and Nakagawa, Kunihiko, 5,351,069, Cl. 366-76.0PH

Nakagawa, Tomohito: *See—*
Naito, Masataka; Takahashi, Yuji; Hiroi, Masakazu; Isobe, Yoshinori; Yoshida, Akimaro; Fujimoto, Hitoshi; and Nakagawa, Tomohito, 5,351,112, Cl. 355-233.000.

Nakahara, Takashi: *See—*
Kitai, Hiroto; and Nakahara, Takashi, 5,350,910, Cl. 235-479.000.

Nakahara, Yuji: *See—*
Kiri, Shuichi; Kieda, Kouki; Kachi, Shunichi; Takekoshi, Yukinori; Takada, Yasunari; Nakahara, Yuji; and Nishinaka, Tomoyuki, 5,350,960, Cl. 310-194.000

Nakahata, Masaaki: *See—*
Urano, Fumiyoshi; Nakahata, Masaaki; Fujie, Hirotoshi; and Oono, Keiji, 5,350,660, Cl. 430-176.000

Nakamura, Eitaro: *See—*
Kitazawa, Kouitu; and Nakamura, Eitaro, 5,350,550, Cl. 264-45.100.

Nakamura, Kazuhiko, to Matsushita Electric Industrial Co. Ltd. Video and audio signal multiplexing apparatus and separating apparatus. 5,351,090, Cl. 348-484.000.

Nakamura, Masanobu: *See—*
Ichikawa, Hitoshi; Miyazawa, Osao; and Nakamura, Masanobu, 5,351,227, Cl. 369-58.000

Nakamura, Takeshi, to Murata Manufacturing Co., Ltd. Vibratory gyroscope. 5,349,856, Cl. 73-505.000.

Nakamura, Takeshi: *See—*
Kasanami, Tohru; Nakamura, Takeshi; Okano, Keiichi; and Morishita, Yoshiko, 5,349,857, Cl. 73-505.000

Nakane, Rintaro; and Egawa, Jiro, to Kabushiki Kaisha Toshiba. Image forming apparatus and method having image density correcting function. 5,351,107, Cl. 355-208.000

Nakano, Kazuko: *See—*
Nakano, Tetsuo, deceased; Katsumata, Takeshige; Tanaka, Megumu; Narushima, Isao; Hirano, Yoshiharu; and Nakano, Kazuko, 5,349,860, Cl. 73-597.000.

Nakano, Kazuko, legal representative: *See—*
Nakano, Tetsuo, deceased; Katsumata, Takeshige; Tanaka, Megumu; Narushima, Isao; Hirano, Yoshiharu; and Nakano, Kazuko, 5,349,860, Cl. 73-597.000

Nakano, Tetsuo, deceased (by Nakano, Kazuko, legal representative); Katsumata, Takeshige; Tanaka, Megumu; Narushima, Isao; Hirano, Yoshiharu; and Nakano, Kazuko, to NKK Corporation. Apparatus for measuring the thickness of clad material. 5,349,860, Cl. 73-597.000

Nakano, Yukio: *See—*
Ashi, Yoshihiro; Nakano, Yukio; and Takeda, Kenji, 5,351,238, Cl. 370-66.000.

Nakao, Hiroshi: *See—*
Koike, Kiyoshi; Aizawa, Jyunichi; Nakao, Hiroshi; and Nakagawa, Kunihiko, 5,351,069, Cl. 366-76.0PH

Nakashima, Takashi, to Samsung Electronics Co., Ltd. Integrated semiconductor memory device utilizing a test circuit. 5,351,213, Cl. 365-201.000

Nakata, Hiroaki: *See—*
Maeda, Kazuki; Ishiyama, Naoki; and Nakata, Hiroaki, 5,351,148, Cl. 359-124.000.

Nakatsue, Takehiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Method and apparatus for measuring a lens. 5,351,119, Cl. 356-124.000

Nakatsugawa, Naoki; and Horikoshi, Koki, to Research Development Corporation of Japan; Mitsubishi Electric Corporation; and Rikagaku Kenkyusho, a part interest. Extremely halophilic methanogenic archaebacteria. 5,350,684, Cl. 435-167.000

Nakayama, Masaru: *See—*
Yagi, Takayuki; Hirai, Yutaka; Takamatsu, Osamu; Nakayama, Masaru; Nose, Hiroyasu; Shinjo, Katsuhiko; and Simada, Yasuhiro, 5,349,858, Cl. 73-517.00A.

Nakazato, Masakazu: *See—*
Tsukamoto, Takashi; and Nakazato, Masakazu, 5,350,463, Cl. 148-307.000.

Nakazeki, Tsugito; and Ito, Hiroyoshi, to NTN Corporation. Clean pump. 5,350,283, Cl. 417-423.700

Nanami, Masayoshi, to Sanshin Kogyo Kabushiki Kaisha. Water injection propulsion device. 5,350,325, Cl. 440-41.000.

Nanataki, Tsutomu: *See—*
Abe, Masahiro; Nanataki, Tsutomu; and Yano, Shinsuke, 5,350,721, Cl. 501-139.000.

Napp Systems, Inc.: *See—*
Kelsall, Robert W.; and Maurer, Allyson R., 5,350,661, Cl. 430-271.000

Narahari, Hari S.: *See—*
Dodt, William C.; Donze, Jerry L.; Leonhardt, Michael L.; Milligan, Charles A.; Narahari, Hari S.; Owens, John C.; and Pyatt, Kurt W., 5,351,159, Cl. 360-132.000.

Narato, Kiyoshi: *See—*
Taniguchi, Masayuki; Kobayashi, Hironobu; Narato, Kiyoshi; Murakami, Tadayoshi; Azuhata, Shigeru; Kuroda, Michio; and Hayashi, Noriyuki, 5,349,812, Cl. 60-39.230.

Nartron Corporation: *See—*
Voss, Mark G.; and Harvey, William O., 5,350,039, Cl. 184-6.160.

Narula, Chaitanya K.; and Crosbie, Gary M., to Ford Motor Company. Preparation of titanium nitride-containing refractory material composites. 5,350,719, Cl. 501-96.000.

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National Science Council: *See—*
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National Semiconductor Corporation: *See—*
Brassington, Michael P.; and Papaliolios, Andreas G., 5,350,705, Cl. 257-295.000.
Jerome, Rick C.; and Marazita, Frank, 5,350,942, Cl. 257-648.000.
Wong, Hee; and Chin, Tsun-Kit, 5,351,275, Cl. 375-120.000

National Starch and Chemical Investment Holding Corporation: *See—*
Billmers, Robert L., 5,350,354, Cl. 604-11.000.
LaCourse, Norman L.; Chicalo, Karen; Zallie, James P.; and Altieri, Paul A., 5,350,593, Cl. 426-615.000

Navistar International Transporation Corporation: *See—*
Dombek, Bruce B.; and Boone, Theodore F., 5,350,506, Cl. 210-136.000

Nazeeruddin, Mohammad K.: *See—*
Graetzel, Michael; Nazeeruddin, Mohammad K.; and O'Regan, Brian, 5,350,644, Cl. 429-111.000

NEC Corporation: *See—*
Hashimoto, Kiyokazu, 5,351,212, Cl. 365-189.090.
Ichiyoshi, Osamu, 5,351,014, Cl. 331-1.00A
Koishikawa, Yukimasa, 5,351,162, Cl. 361-18.000.
Masui, Keiji, 5,350,640, Cl. 429-7.000
Shinohara, Takahiro; and Ito, Yuji, 5,351,237, Cl. 370-58.300.
Takada, Toshio; Terashima, Takahito; Iijima, Kenji; Yamamoto, Kazunuki; Hirata, Kazuto; and Bando, Yoshichika, 5,350,606, Cl. 427-564.000.
Takekawa, Kouichi; and Urushima, Michitaka, 5,350,947, Cl. 257-702.000.
Tanabe, Akira, 5,351,215, Cl. 365-203.000.
Tauchi, Takaaki, 5,350,996, Cl. 320-22.000.
Tomita, Akihisa, 5,351,254, Cl. 372-45.000
Yamashita, Hiroshi, 5,351,232, Cl. 370-14.000.

Nedo, Werner; Thonig, Harry; and Walden, Mathias, to Saechsische Werkzeug und Sondermaschinen GmbH. Apparatus for catching residual water jet in water jet cutting apparatus. 5,349,788, Cl. 451-75.000.

Nees, Terry S., to Minnesota Mining and Manufacturing Company. Biomedical electrical connector using a socket receptacle having a resilient sheath. 5,350,318, Cl. 439-593.000

Neet, John M.: *See—*
Winston, Thomas R.; and Neet, John M., 5,350,377, Cl. 606-15.000.

Negin, Michael: *See—*
Herz, Frederick; and Negin, Michael, 5,351,075, Cl. 348-1.000.

Negoro, Yoshiki: *See—*
Koguchi, Satoru; and Negoro, Yoshiki, 5,350,882, Cl. 84-636.000.

Neithamer, David R.; and Stevens, James C., to Dow Chemical Company, The. Process for preparation of monocyclopentadienyl metal complex compounds and method of use. 5,350,723, Cl. 502-104.000.

Nell, Joachim; Steiner, Manfred; and Coermann, Georg, to Mercedes-Benz AG. Brake-pressure control device for a road vehicle. 5,350,224, Cl. 303-113.300.

Nell, Joachim: *See—*
Steiner, Manfred; and Nell, Joachim, 5,350,225, Cl. 303-113.400.

Nelson, Kirk A.; and Byrnes, William A., to Budd Company, The Microprocessor controller for diesel fuel fired heater. 5,350,114, Cl. 237-2.00A.

Nelson, Robert L. Deep water disbursement tube. 5,350,509, Cl 210-198.100

Nelson, William R.: *See—*
Juds, Mark A.; Beihoff, Bruce C.; Smith, Richard G.; Nelson, William R.; Wycklendt, Daniel A.; Theisen, Peter J.; Hastings, Jerome K.; and Moldovan, Peter K., 5,351,024, Cl. 335-16.000.

Nemphos, Speros P.; and Kharas, Gregory B., to Camelot Technologies, Inc. Coated webs. 5,350,627, Cl. 428-288.000.

Neste OY: *See—*
Sultan, Bernt-Åke; and Ahlstrand, Lars E., 5,350,812, Cl 525-477.000

Neubauer, Gerald: *See—*
Fuchs, Hugo; Neubauer, Gerald; and Priester, Claus-Ulrich, 5,350,847, Cl. 540-540.000.

Neuenschwander, Thomas R., to L. H. Carbide Corporation. Method and progressive die assembly with separate blanking and stacking for the manufacture of laminated parts. 5,349,740, Cl. 29-596.000

Neuenschwander, Thomas R., to L.H. Carbide Corporation. Method of making an interlocked core spaced for anneal penetration. 5,349,741, Cl. 29-598.000

Neumann, Stephen M.: *See—*
Kosydar, Karen M.; Neumann, Stephen M.; Spahn, Robert G.; and Otocka, Edward P., 5,350,732, Cl. 503-227.000.

Neutzner, Josef: *See—*
Aydin, Oral; Portugall, Michael; Neutzner, Josef; and Maechtle, Walter, 5,350,787, Cl. 524-162.000.

Nevers, Gary F.: *See—*
Kaminer, Jon J.; Nevers, Gary F.; and Sellers, Edgar V., 5,351,308, Cl. 382-8.000.

New England Redemption of Connecticut, Inc.: *See—*
Melchionna, Carmine M., 5,350,120, Cl. 241-5.000

New York Medical College: *See—*
Suarez, Gerardo, 5,350,766, Cl. 514-561.000.

Newbolt, Richard E.; and Remmers, Theodore L., to Mac Equipment, Inc. Pneumatic conveyor for granular materials. 5,350,257, Cl. 406-75.000.

Newbridge Networks Corporation: *See—*
Black, David H. A.; Musgrave, Peter; and Ventola, Sabino R., 5,351,239, Cl. 370-84.000.

Newhouse, Michael T.; and Baines, W. Douglas. Dry powder inhaler and process that explosively discharges a dose of powder and gas from a soft plastic pillow. 5,349,947, Cl. 128-203.210.

Newman, Robert M.: *See—*
Hullett, John L.; and Newman, Robert M., 5,351,043, Cl. 340-825.500

Nezu, Takashi; Iwagami, Minoru; and Kawashima, Hisayoshi, to Taichi-S Co., Ltd. Method and device for coupling a self-propelled truck with a carrying truck. 5,350,077, Cl. 213-75.00R

NGK Insulators, Ltd.: *See—*
Abe, Masahiro; Nanataki, Tsutomu; and Yano, Shinsuke, 5,350,721, Cl. 501-139.000.

Nguyen, Than: *See—*
Cosgrove, Delos M.; and Nguyen, Than, 5,350,420, Cl. 623-2.000.

Nguyen, Xuan T., to Domtar, Inc. Oxygen delignification of old corrugated containers. 5,350,493, Cl. 162-6.000.

Nicholas, Henry T.: *See—*
Anderson, James M.; Coulson, Andrew R.; Demaioribus, Vincent J.; and Nicholas, Henry T., 5,350,704, Cl. 437-51.000.

Nici, Richard J., to Bell Communications Research, Inc. Method and system for billing an ISDN data user interconnection to the public switched telephone network. 5,351,286, Cl. 379-94.000.

Nickels, Richard C., Jr.; and Rider, David M., to Black & Decker Inc. Motor support for orbital polisher. 5,349,785, Cl. 451-357.000.

Nickerson, Brian: *See—*
Coelho, Rohan; Golin, Stuart; Nickerson, Brian; and Keith, Michael, 5,351,085, Cl. 348-391.000.

Nickl, Peter K.: *See—*
Engel, Dusan J.; Malloy, Thomas P.; and Nickl, Peter K., 5,350,879, Cl. 560-234.000.

Niebauer, Kenneth L.: *See—*
Beeghly, Craig W.; Ahuja, Deepak P.; Mehrotra, Pankaj K.; and Niebauer, Kenneth L., 5,350,258, Cl. 407-119.000

Niebauer, Timothy M.; Hollander, William J.; and Faller, James E., to Micro-g Solutions, Inc. Absolute gravity inline measuring apparatus incorporating improved operating features. 5,351,122, Cl 356-345.000

Niebergall, Glenn. Storage container for cremation ashes. 5,349,727, Cl. 27-1.000.

Nii, Keita, to Rohm Co., Ltd. Method of manufacturing a hetero-junction bi-polar transistor. 5,350,699, Cl. 437-31.000.

Niiranen, Erkki O., to LK-Products OY. Helix resonator. 5,351,023, Cl. 333-202.000

Nikko Corporation Ltd.: *See—*
Iguchi, Atsushi; and Iguchi, Kuniaki, 5,350,901, Cl. 219-630.000.

Nikon Corporation: *See—*
Inaba, Naoto; and Tanaka, Shinichi, 5,350,950, Cl. 307-236.000

Nio, Yutaka; and Ryuji, Matsuura, to Matsushita Electric Industrial Co., Ltd. Image display apparatus for displaying images of a plurality of kinds of video signals with asynchronous synchronizing signals and a timing correction circuit. 5,351,088, Cl. 348-441.000

Niobrara Research & Development Corporation: *See—*
Sullivan, Mark K., 5,351,296, Cl. 380-24.000

Nippon Cable System Inc.: *See—*
Yagi, Mikiya, 5,350,328, Cl. 440-84.000.

Nippon Felt Co., Ltd.: *See—*
Murakami, Fumio; Morita, Eiichi; Iwasaki, Tokuji; Suzuki, Yasushi; and Fujimoto, Kouha, 5,349,728, Cl. 28-107.000.

Nippon Koki Co., Ltd.: *See—*
Murashima, Mitsuaki; Takahashi, Sakae; Ikeda, Yukio; Kobari, Hirokazu; Shiota, Michio; and Kazumi, Takashi, 5,350,193, Cl 280-741.000

Nippon Light Metal Co., Ltd.: *See—*
Miki, Isao; Isogai, Hisao; Saito, Masao; Yamanashi, Toru; Kawai, Toshiyuki; Saito, Akinami; Ishikawa, Sadanori; Konno, Masahiko; and Okada, Keiichi, 5,350,007, Cl. 164-316.000.

Nippon Paint Co., Ltd.: *See—*
Mikami, Fujio; Yasuhara, Kiyotada; Kojima, Masahiro; and Inoue, Susumu, 5,350,445, Cl. 106-14.410

Nippon Steel Corporation: *See—*
Mizoguchi, Toshiaki; Shio, Kiyomi; Ueshima, Yoshiyuki; Yasuda, Kazumi; Morimoto, Yoshio; Haga, Hiromitu; and Miyazawa, Kenichi, 5,350,009, Cl. 164-454.000
Takada, Toshio; Terashima, Takahito; Iijima, Kenji; Yamamoto, Kazunuki; Hirata, Kazuto; and Bando, Yoshichika, 5,350,606, Cl. 427-564.000.
Takeda, Tadashi; Wada, Hiroyuki; Fukui, Kenji; Okamoto, Ricardo M.; and Hashiguchi, Shohei, 5,351,230, Cl. 369-112.000

Nippon Telegraph & Telephone Corporation: *See—*
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Tamekuni, Yoshikyo; Haibara, Tadashi; Matsumoto, Michito; and Nagasawa, Shinji, 5,351,328, Cl. 385-83.000.
Ohishi, Yasutake; Kanamori, Terutoshi; Nishida, Yoshiki; Mori, Atsushi; and Sudo, Shoichi, 5,351,335, Cl. 385-142.000.

Nippon Zeon Co., Ltd.: *See—*
Kitazawa, Kouitu; and Nakamura, Eitaro, 5,350,550, Cl. 264-45.100

Nippondenso Co., Ltd.: *See—*
Takezoe, Osamu; Takigawa, Jun; Okamoto, Tadashi; Hashiura, Mituo; Fukuda, Sunao; Takeuchi, Keizo; and Isobe, Yasuaki, 5,350,436, Cl. 75-314.000

NIRSystems Incorporated: *See—*
VonBargen, Kenneth P., 5,351,322, Cl. 385-12.000.

Nishida, Yoshiki: *See—*
Ohishi, Yasutake; Kanamori, Terutoshi; Nishida, Yoshiki; Mori, Atsushi; and Sudo, Shoichi, 5,351,335, Cl. 385-142.000.

Nishihata, Kouji: *See—*
Kato, Shigekazu; Nishihata, Kouji; Tsubone, Tsunehiko; and Itou, Atsushi, 5,349,762, Cl. 34-406.000.

Nishikawa, Hirotaka: *See—*
Oketani, Tetsuya; Nishikawa, Hirotaka; Mase, Yoshiaki; and Sakakibara, Yukihiro, 5,351,039, Cl. 340-680.000.

Nishinaka, Tomoyuki: *See—*
Kiri, Shuichi; Kieda, Kouki; Kachi, Shunichi; Takekoshi, Yukinori; Takada, Yasunari; Nakahara, Yuji; and Nishinaka, Tomoyuki, 5,350,960, Cl. 310-194.000.

Nishino, Masakazu; Juri, Tatsuro; and Ohtaka, Hideki, to Matsushita Electric Industrial Co., Ltd. Apparatus for recording and reproducing band-compression coded video data. 5,351,131, Cl. 358-335.000.

Nishino, Yukio: *See—*
Takamura, Toshihiro; Nishino, Yukio; Oyama, Motoaki; and Matsushita, Akiyoshi, 5,350,561, Cl. 420-105.000

Nissan Chemical Industries Ltd.: *See—*
Mishina, Makoto; and Abe, Toyohiko, 5,350,539, Cl. 252-299.400

Nissan Motor Company, Ltd.: *See—*
Kawai, Nobuyuki; Noji, Ikutaro; and Fukubayashi, Makoto, 5,349,826, Cl. 62-133.000

Nissei Plastic Industrial Co., Ltd.: *See—*
Takeuchi, Makoto; Aiba, Shiji; Hoshina, Masatake; and Yamazaki, Minoru, 5,350,546, Cl. 264-40.100.

Nissho Corporation: *See—*
Ikeda, Koji; Futagawa, Hitoshi; Kikuchi, Toshihiro; Honda, Minoru; and Iwasa, Masanobu, 5,350,372, Cl. 604-414.000

Nitayama, Akihiro: *See—*
Yagishita, Atsushi; Hieda, Katsuhiko; Nitayama, Akihiro; and Horiguchi, Fumio, 5,350,708, Cl. 437-52.000

Nitta, Katsuhisa: *See—*
Dietz, Johann; Franz, Klaus; Pfaff, Gerhard; Vogt, Reiner; and Nitta, Katsuhisa, 5,350,448, Cl. 106-441.000

Nitzsche, Remi; Limousin, Marcel; Bonnet, Jean-Luc; and Henry, Christine, to ELA Medical. Apparatus and method of control for an implanted anti-tachycardia device. 5,350,406, Cl. 607-14.000

NKK Corporation: *See—*
Nakano, Tetsuo, deceased; Katsumata, Takeshige; Tanaka, Megumu; Narushima, Isao; Hirano, Yoshiharu; and Nakano, Kazuko, 5,349,860, Cl. 73-597.000.
Takamura, Toshihiro; Nishino, Yukio; Oyama, Motoaki; and Matsushita, Akiyoshi, 5,350,561, Cl. 420-105.000

No, Jae G.: *See—*
Kim, Ik S.; Chung, Do Y.; Kim, Jeong S.; Kim, Nam J.; and No, Jae G., 5,350,530, Cl. 252-8.600

Nogami, Hiroyasu: *See—*
Doi, Miwako; Amano, Shin-ya; Miike, Seiji; Nogami, Hiroyasu; Kumano, Akira; Takeda, Kimihito; Adachi, Hisahiro; Iwai, Isamu; Okamoto, Toshio; Yamanaka, Noriko; and Kawada, Tsutomu, 5,351,189, Cl. 364-419.020

Noguchi, Tatuya: *See—*
Fukuyama, Hirofumi; Noguchi, Tatuya; Inoue, Kenichi; Ishibashi, Kiyotaka; and Adachi, Shigeto, 5,350,920, Cl. 250-309.000

Nohmi Bosai Kogyo Kabushiki Kaisha: *See—*
Igarashi, Akira, 5,350,019, Cl. 169-61.000

Noji, Ikutaro: *See—*
Kawai, Nobuyuki; Noji, Ikutaro; and Fukubayashi, Makoto, 5,349,826, Cl. 62-133.000

Nokia Mobile Phones Ltd.: *See—*
Gronroos, Mika J., 5,350,956, Cl. 307-556.000

Nolan, Daniel A.: *See—*
Miller, William J.; and Nolan, Daniel A., 5,351,325, Cl. 385-42.000

Nolle, Eugen, to Blum GmbH. Method of making a secondary for use in induction motors. 5,349,742, Cl. 29-598.000

Nomachi, Hiroshi: *See—*
Hamabe, Kenkichi; Matsuo, Shigemi; Nomachi, Hiroshi; Ogawa, Hideo; and Ueda, Minoru, 5,350,450, Cl. 106-802.000

Nomiyama, Kiyoshi: *See—*
Ohishi, Yoshitaka; Tamura, Makoto; Hayashida, Mitsuo; Ikegami, Satoru; Hiyama, Yoshiyuki; Awa, Takao; Ichikawa, Kiyonoshin; Nomiyama, Kiyoshi; Hanada, Keigo; and Mimura, Mitsuo, 5,350,743, Cl. 514-89.000.

Nonomura, Yutaka: *See—*
Omura, Yoshiteru; Tsukada, Kouji; Nonomura, Yutaka; and Morikawa, Takeshi, 5,349,873, Cl. 73-862.680.

Noonan, Stephen R.: *See—*
Karanian, Ralph E.; Noonan, Stephen R.; and Vecchitto, John M., 5,351,125, Cl. 356-357.000

Norgard, Michael V., to Board of Regents, The University of Texas System. DNAs encoding *Treponema pallidum* antigens. 5,350,842, Cl 536-23.700

Normandin, Sharon E.: *See—*
Martin, Trevor I.; Mayo, James D.; Listigovers, Nancy A.; Hsiao, Cheng K.; Bluhm, Terry L.; Normandin, Sharon E.; and Carmichael, Kathleen M., 5,350,844, Cl. 540-141.000

Norsk Hydro A.S.: *See—*
Strand, Olaf; and Martin, Donald M., 5,350,239, Cl. 383-7.000

North Atlantic Industries, Inc.: *See*—
Smith Stephen W.; and Oliver, Mark T., 5,351,176, Cl. 361-681.000.
North Carolina State University of Raleigh: *See*—
Schetzina, Jan F., 5,351,255, Cl. 372-45.000.
Northern Telecom Limited: *See*—
Bassignana, Isabella C.; and Kovats, Tibor F. I., 5,350,923, Cl. 250-453.110.
Guilbert, Paul-Andre, 5,350,324, Cl. 439-894.000.
Norton Company: *See*—
Sher, Samuel E.; Borgianini, Stephen A.; Carpenter, Robert E.; Santora, Scott; and Scavuzzo, William S., 5,349,875, Cl. 73-864.650.
Norton, Kirk P.: *See*—
Streckert, Holger H.; and Norton, Kirk P., 5,350,545, Cl. 264-29.100.
Nose, Hiroyasu: *See*—
Kawase, Toshimitsu; Yamano, Akihiko; Kuroda, Ryo; Nose, Hiroyasu; and Miyazaki, Toshihiko, 5,349,735, Cl. 29-407.000.
Yagi, Takayuki; Hirai, Yutaka; Takamatsu, Osamu; Nakayama, Masaru; Nose, Hiroyasu; Shinjo, Katsuhiko; and Simada, Yasuhiro, 5,349,858, Cl. 73-517.00A.
Noselli, Guido, to Online S.N.C. Di Noselli G. & C. Moving-coil electrodynamic electroacoustical transducer. 5,351,220, Cl 367-175.000.
Noto, Kazuyuki; and Yosinaga, Takasi, to Myrata Manufacturing Co., Ltd. Piezoelectric resonator. 5,350,965, Cl. 310-366.000.
Notsu, Kazuaki: *See*—
Ebata, Nobuyoshi; Notsu, Kazuaki; Udagawa, Akiko; and Shiratori, Mieko, 5,350,552, Cl. 264-102.000
Nova Biomedical Corporation: *See*—
Hiti, John; and Young, Chung C., 5,350,518, Cl. 210-638.000
Novack, Robert C.: *See*—
Ozarowski, Ryszard S.; Hand, Barry D.; Novack, Robert C.; Beard, Vernon D.; Threlkeld, James O.; and Sutton, William T., 5,349,983, Cl. 137-487.500
Novacor Chemicals (International) S.A.: *See*—
Skilbeck, John P., 5,350,813, Cl. 528-493.000.
Novarini, Enrico: *See*—
Marchio, Fabio; Novarini, Enrico; and Rossi, Giorgio, 5,350,998, Cl. 323-312.000.
Nowak, William J.: *See*—
Hinton, John H.; Nowak, William J.; and Costanza, Daniel W., 5,351,070, Cl. 346-108.000.
Nozoe, Hiroki: *See*—
Kondo, Fumio; Aoki, Yoshiaki; Imaida, Tsuyoshi; Nozoe, Hiroki; Maki, Yuji; and Watabe, Shin, 5,350,337, Cl. 454-189.000.
NTN Corporation: *See*—
Nakazeki, Tsugito; and Ito, Hiroyoshi, 5,350,283, Cl. 417-423.700.
Nucida, Gilberto: *See*—
Cipolli, Roberto; Rossi, Cristina; Oriani, Roberto; Masarati, Enrico; and Nucida, Gilberto, 5,350,848, Cl. 544-195.000.
Nuclear Metals, Inc.: *See*—
Walz, Mark; and Schoon, Richard J., 5,349,908, Cl. 102-307.000.
Nugent, David M.: *See*—
Hillenbrand, Christopher F.; Barron, Thomas D.; and Nugent, David M., 5,349,916, Cl. 114-312.000
Numata, Shunichi: *See*—
Miyazaki, Kunio; Sugita, Yutaka; Mukoh, Akio; Miyoshi, Tadahiko; Miura, Osamu; Takahashi, Akio; Numata, Shunichi; Ogihara, Satoru; Yamada, Kazuji; Inoue, Hirokazu; and Kobayashi, Fumiyuki, 5,350,886, Cl. 174-250.000.
Nute, Ernest B., Jr., to Armstrong World Industries, Inc. Lanced fire-rated runner. 5,349,803, Cl. 52-573.100.
Nyberg, Paul M.: *See*—
Fritz, Peter J.; Houle, Timothy H.; McCoy, Michael L.; Miller, Wayne A.; and Nyberg, Paul M., 5,350,202, Cl. 285-174.000
Nykomb Synergetics Aktiebolag: *See*—
Landalv, Ingvar, 5,349,810, Cl. 60-39.020.
Nynex Corporation: *See*—
Beierle, John D.; and Ortel, William C. G., 5,351,234, Cl 370-49.500
Oakley, Gary A.; and Chrisp, David, to Oakley Industries, Incorporated. Severing a workpiece by scoring and breaking thereof. 5,350,098, Cl. 225-2.000
Oakley Industries, Incorporated: *See*—
Oakley, Gary A.; and Chrisp, David, 5,350,098, Cl. 225-2.000.
Oakley, John T.: *See*—
Laska, Joseph E.; Oakley, John T.; and Reinert, Francis R., 5,350,308, Cl. 439-91.000.
Obata, Masahito: *See*—
Sasaki, Tomio; Kobayashi, Shinji; and Obata, Masahito, 5,351,138, Cl. 358-462.000
Oberhardt, Bruce J.; and Gresalfi, Nancy, to Cardiovascular Diagnostics, Inc. Method for performing fibrinogen assays using dry chemical reagents containing magnetic particles. 5,350,676, Cl. 435-13.000
Oberst, Richard D.; Gwaltney, Sharon M.; and Hays, Michael P., to Kansas State University Research Foundation. Specific DNA primers and method to use same detect *Eperythrozoon suis*. 5,350,672, Cl. 435-6.000
O'Brien, Michael T.: *See*—
Ciokajlo, John J.; and O'Brien, Michael T., 5,349,814, Cl. 60-226.100
OCC Research Center Inc.: *See*—
Liu, Jia-Chin; Chang, Shu-Fahr; Wu, Shyue-Sheng; and Cheng, Yen-Cheng, 5,350,008, Cl. 164-440.000.
OCG Microelectronic Materials, Inc.: *See*—
Sarubbi, Thomas R.; and Sizensky, Joseph J., 5,350,827, Cl. 528-155.000.
Ochi, Toshiaki: *See*—
Sorimachi, Kenichi; Tozawa, Hirokazu; Ochi, Toshiaki; and Itoh, Yasuhito, 5,350,005, Cl. 164-154.100.
Ocvirk, Norbert: *See*—
Burgdorf, Jochen; Reinartz, Hans-Dieter; Steffes, Helmut; Ocvirk, Norbert; Volz, Peter; Weise, Lutz; Fennel, Helmut; Wupper, Hans; Bleckmann, Hans-Wilhelm; Beck, Erhard; Dinkel, Dieter; and Haupt, Karlheinz, 5,350,226, Cl. 303-116.200.
Odink, Karel G.; Clerc, Roger; Cerletti, Nico; Bruggen, Josef; Tarcsay, Lajos; Sorg, Clemens; and Wiesendanger, Walter, to CIBA-GEIGY Corporation. Antibodies which bind to novel lymphokine related peptides. 5,350,687, Cl. 435-240.270.
Oehler, Kenneth L. Apparatus and method for measuring and calculating exterior and interior ballistics. 5,349,853, Cl. 73-167.000.
Ogawa, Hideo: *See*—
Hamabe, Kenkichi; Matsuo, Shigemi; Nomachi, Hiroshi; Ogawa, Hideo; and Ueda, Minoru, 5,350,450, Cl. 106-802.000.
Ogawa, Hiromasa: *See*—
Tomoi, Masao; Kiyokawa, Atsuo; Ogawa, Hiromasa; Onozuka, Teruo; and Ito, Tsuyoshi, 5,350,523, Cl. 210-683.000.
Ogihara, Satoru: *See*—
Miyazaki, Kunio; Sugita, Yutaka; Mukoh, Akio; Miyoshi, Tadahiko; Miura, Osamu; Takahashi, Akio; Numata, Shunichi; Ogihara, Satoru; Yamada, Kazuji; Inoue, Hirokazu; and Kobayashi, Fumiyuki, 5,350,886, Cl. 174-250.000
Ogino, Akihiko: *See*—
Mashita, Naruhiko; Ogino, Akihiko; and Fukahori, Yoshihide, 5,350,610, Cl. 428-35.700.
O'Gorman, Lawrence: *See*—
Fox, David S.; Jagadish, Hosagrahar V.; O'Gorman, Lawrence; and Story, Guy A., 5,350,303, Cl. 434-118.000
Oguchi, Hiroshi, to Mutoh Industries Ltd. Automatic lead supply apparatus for plotter. 5,351,072, Cl. 346-139.00C.
Oguchi, Takahisa: *See*—
Itoh, Hisato; Oguchi, Takahisa; Aihara, Shin; and Sugimoto, Kenichi, 5,350,843, Cl. 540-138.000.
Ohama, Kaori: *See*—
Takiguchi, Miho; Katayama, Noriko; Itoh, Aya; Ohama, Kaori; and Tanaka, Yasuo, 5,350,062, Cl. 206-316.200.
O'Handley, Robert C.: *See*—
Liu, Nen-Chin; O'Handley, Robert C.; Ho, Wing; and Copeland, Richard, 5,351,033, Cl. 340-572.000.
O'Hara, Shunji: *See*—
Ishida, Takashi; O'Hara, Shunji; Ishibashi, Kenzo; and Satoh, Toshio, 5,351,225, Cl. 369-44.320.
Ohi Seisakusho Co., Ltd.: *See*—
Akahori, Masakazu; and Yuge, Masaaki, 5,350,206, Cl. 292-336.300.
Ohio University: *See*—
Kopchick, John J.; and Chen, Wen Y., 5,350,836, Cl. 530-399.000.
Ohishi, Yasutake; Kanamori, Terutoshi; Nishida, Yoshiki; Mori, Atsushi; and Sudo, Shoichi, to Nippon Telegraph and Telephone Corporation. Optical fiber for optical amplifier. 5,351,335, Cl. 385-142.000.
Ohishi, Yoshitaka; Tamura, Makoto; Hayashida, Mitsuo; Ikegami, Satoru; Hiyama, Yoshiyuki; Awa, Takao; Ichikawa, Kiyonoshin; Nomiyama, Kiyoshi; Hanada, Keigo; and Mimura, Mitsuo, to Kaken Pharmaceutical Co., Ltd. Bisphosphonic acid derivatives, as bone resorption inhibitors. 5,350,743, Cl. 514-89.000.
Ohkawa, Atsuhiro: *See*—
Motoki, Masuji; Ohkawa, Atsuhiro; and Mihayashi, Keiji, 5,350,666, Cl. 430-544.000
Ohkawa, Tihiro, to General Atomics. Plasma processing apparatus for controlling plasma constituents using neutral and plasma sound waves. 5,350,454, Cl. 118-723.00R.
Ohmura, Ken: *See*—
Kouno, Shigenori; Ohmura, Ken; Koizumi, Yoshiaki; and Tsujita, Kenji, 5,350,656, Cl. 430-108.000.
Ohnishi, Yoshihiro. Superconducting rotating machine, a superconducting coil, and a superconducting generator for use in a lighting equipment using solar energy. 5,350,958, Cl. 310-52.000.
Ohnishi, Yutaka; Misu, Naoaki; Ishimura, Yoshimasa; and Mihara, Nobutake, to Showa Denko K.K. Benzopyran derivative, method for producing the same and use thereof. 5,350,775, Cl. 549-220.000
Ohno, Takehide, to Ricoh Company, Ltd. Apparatus for applying bias magnetic field including a rotatable magnet and a plurality of coils for controlling the rotation of the magnet. 5,351,221, Cl. 369-13.000.
Ohsaki, Ken-ichi: *See*—
Yoshizato, Katsutoshi; Konishi, Jun; Koide, Mikio; Oyamada, Kaori; Ohsaki, Ken-ichi; Katakura, Takeo; Mori, Yuichi; and Tatebe, Ken, 5,350,583, Cl. 424-484.000
Ohshita, Kazutaka: *See*—
Kishimoto, Atsunori; Fujii, Takashi, deceased; Ohshita, Kazutaka; Yamamoto, Kazumi; Fujii, Yasuhiko; and Toda, Tetsuro, 5,350,793, Cl. 524-449.000
Ohtaka, Hideki: *See*—
Nishino, Masakazu; Juri, Tatsuro; and Ohtaka, Hideki, 5,351,131, Cl. 358-335.000
Ohtani, Yoshiaki: *See*—
Urabe, Yoshitomi; Hayashida, Hironori; and Ohtani, Yoshiaki, 5,350,790, Cl. 524-321.000.
Okada, Hisashi: *See*—
Abe, Akira; Seki, Hiroyuki; Okada, Hisashi; and Inaba, Tadashi, 5,350,668, Cl. 430-393.000.

Okada, Keiichi: *See*—
Miki, Isao; Isogai, Hisao; Saito, Masao; Yamanashi, Toru; Kawai, Toshiyuki; Saito, Akinami; Ishikawa, Sadanori; Konno, Masahiko; and Okada, Keiichi, 5,350,007, Cl. 164-316.000.
Okada, Tetsuya: *See*—
Shoichi, Toya; and Okada, Tetsuya, 5,350,993, Cl. 320-2.000.
Okada, Yuji; Fujio, Shunichi; Suzuki, Kazuhiro; Shinoyama, Teruharu; and Takeuchi, Yasuo, to Toyota Jidosha Kabushiki Kaisha; and Toyokin Kabushiki Kaisha. Method and apparatus for removing plated metal from steel sheet scraps. 5,350,438, Cl. 75-401.000.
Okamoto, Akihiko: *See*—
Kanno, Tetsuo; and Okamoto, Akihiko, 5,351,228, Cl. 369-77.200.
Okamoto, Masahiro: *See*—
Mita, Shiro; Kawashima, Yoichi; Fujimura, Ken-ichi; Suhara, Hiroshi; and Okamoto, Masahiro, 5,350,860, Cl. 548-453.000.
Okamoto, Ricardo M.: *See*—
Takeda, Tadashi; Wada, Hiroyuki; Fukui, Kenji; Okamoto, Ricardo M.; and Hashiguchi, Shohei, 5,351,230, Cl. 369-112.000
Okamoto, Tadashi: *See*—
Takezoe, Osamu; Takigawa, Jun; Okamoto, Tadashi; Hashiura, Mituo; Fukuda, Sunao; Takeuchi, Keizo; and Isobe, Yasuaki, 5,350,436, Cl. 75-314.000.
Okamoto, Toshio: *See*—
Doi, Miwako; Amano, Shin-ya; Mitike, Seiji; Nogami, Hiroyasu; Kumano, Akira; Takeda, Kimihito; Adachi, Hisahiro; Iwai, Isamu; Okamoto, Toshio; Yamanaka, Noriko; and Kawada, Tsutomu, 5,351,189, Cl. 364-419.020.
Okamoto, Yoshihiko, to Hitachi, Ltd. Mask for manufacturing semiconductor device and method of manufacture thereof. 5,350,649, Cl. 430-5.000.
Okamura, Hisatake; Kasahara, Masahiro; Tonegawa, Ken; and Taniguchi, Tetsuo, to Myrata Manufacturing Co., Ltd. Band-pass filter having three or more loop-shaped electrodes. 5,351,020, Cl. 333-175.000
Okano, Keiichi: *See*—
Kasanami, Tohru; Nakamura, Takeshi; Okano, Keiichi; and Morishita, Yoshiko, 5,349,857, Cl. 73-505.000
Okawa, Mitsuhisa; and Murasaki, Ryuichi, to Yoshida Kogyo K.K. Woven surface fastener construction. 5,349,991, Cl. 139-391.000.
Oketani, Tetsuya; Nishikawa, Hirotaka; Mase, Yoshiaki; and Sakakibara, Yukihiro, to Howa Machinery, Ltd. Toolholder device for machine tools. 5,351,039, Cl. 340-680.000.
Oki Electric Industry Co., Ltd.: *See*—
Nagata, Shizuo; Suzuki, Yasuhiro; Tabata, Tutomu; and Takahashi, Masahiro, 5,351,224, Cl. 369-44.290.
Oki, Hiroshi: *See*—
Hata, Masahiro; Tobe, Teruo; and Oki, Hiroshi, 5,351,076, Cl. 348-14.000
Okola, Frank. Image presentation card. 5,349,769, Cl. 40-124.100.
Oktas: *See*—
Hori, Koichiro, 5,349,941, Cl. 128-4.000.
Okuda, Masayuki: *See*—
Yajima, Toshiya; Hirayama, Takuya; Sakata, Hirotsugu; Hayano, Makoto; Okuda, Masayuki; Morozumi, Naoya; Kumazawa, Takeshi; and Kobuna, Teruo, 5,350,280, Cl. 417-310.000.
Okumura, Toshiyuki; Konushi, Fumihiro; Morioka, Tatsuya; and Matsumoto, Narihito, to Sharp Kabushiki Kaisha. Semiconductor laser device. 5,351,258, Cl. 372-46.000.
O'Lenick, Antony J., Jr. Novel imidazolinium ester quaternary compounds. 5,350,858, Cl. 548-313.700.
Olewicz, Tadeusz A.; and Schramayr, Ernst, to Jet Sew Technologies Inc. Pocket setter for flat and tabular garments. 5,349,912, Cl. 112-262.200
Olewicz, Tadeusz A.: *See*—
Schramayr, Ernst; and Olewicz, Tadeusz A., 5,349,913, Cl. 112-265.100.
Oliver, Mark T.: *See*—
Smith Stephen W.; and Oliver, Mark T., 5,351,176, Cl. 361-681.000.
Olorenshaw, Christine J., executor: *See*—
Olorenshaw, George M., deceased; and Olorenshaw, Christine J., executor, 5,349,881, Cl. 74-471.0XY.
Olorenshaw, George M., deceased; and by Olorenshaw, Christine J., executor. Multi-axial centering spring mechanism. 5,349,881, Cl 74-471.0XY.
Olsen, Paul C.: *See*—
Sowar, Richard M.; Heiny, William C.; Olsen, Paul C.; Hotchkiss, Mark R.; Dixon, Thomas L.; Richard, Charles W., Jr.; and Raines, Michael D., 5,351,196, Cl. 364-474.240.
Olympus Optical Co., Ltd.: *See*—
Adachi, Hideo; and Ishibashi, Yoshihiro, 5,351,219, Cl. 367-140.000
Gondo, Masahiko, 5,349,960, Cl. 128-661.090.
Ichikawa, Hitoshi; Miyazawa, Osao; and Nakamura, Masanobu, 5,351,227, Cl. 369-58.000.
Takahashi, Ichiro; Tanaka, Yasundo; and Sakiyama, Katsunori, 5,349,940, Cl. 128-4.000.
O'Malley, Sean M.: *See*—
Campbell, Paul B.; Kimberlin, Robert R.; O'Malley, Sean M.; and Holt, Roland P., 5,350,025, Cl. 173-111.000.
Omichi, Kaoru: *See*—
Ikenaka, Tokuji; and Omichi, Kaoru, 5,350,678, Cl. 435-22.000.
Omori, Sohei: *See*—
Higeta, Keiichi; Omori, Sohei; Fujimura, Yasuhiro; Iwamoto, Etsuko; and Uchida, Akihisa, 5,351,211, Cl. 365-189.050.
Omura, Yoshiteru; Tsukada, Kouji; Nonomura, Yutaka; and Morikawa, Takeshi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Force transducer and pressure detecting circuit using the same. 5,349,873, Cl. 73-862.680.
Onaka, Toru: *See*—
Tsuyama, Toshiaki; and Onaka, Toru, 5,351,192, Cl. 364-426.030
Online S.N.C. Di Noselli G. & C.: *See*—
Noselli, Guido, 5,351,220, Cl. 367-175.000.
Ono, Hisao; Ito, Katsumi; Uekawa, Tatuo; and Ishikawa, Katsuhiro, to Japan Synthetic Rubber Co., Ltd. Butadienesulfonic acid or isoprenesulfonic acid copolymer. 5,350,820, Cl. 526-240.000.
Onozuka, Teruo: *See*—
Tomoi, Masao; Kiyokawa, Atsuo; Ogawa, Hiromasa; Onozuka, Teruo; and Ito, Tsuyoshi, 5,350,523, Cl. 210-683.000.
ONX, Inc.: *See*—
Stupka, Jonathan C.; Bokros, Jack C.; Emken, Michael R.; Haubold, Axel D.; and Peters, T. Scott, 5,350,421, Cl. 623-2.000.
Oono, Keiji: *See*—
Urano, Fumiyoshi; Nakahata, Masaaki; Fujie, Hirotoshi; and Oono, Keiji, 5,350,660, Cl. 430-176.000.
Oppenlaender, Knut: *See*—
Mohr, Juergen; Oppenlaender, Knut; Franz, Lothar; Schreyer, Peter; and Thomas, Juergen, 5,350,429, Cl. 44-412.000.
O'Regan, Brian: *See*—
Graetzel, Michael; Nazeeruddin, Mohammad K.; and O'Regan, Brian, 5,350,644, Cl. 429-111.000.
Oriani, Roberto: *See*—
Cipolli, Roberto; Rossi, Cristina; Oriani, Roberto; Masarati, Enrico; and Nucida, Gilberto, 5,350,848, Cl. 544-195.000
Ornstein, Leonard: *See*—
Colella, Gregory M.; Ben-David, Daniel; Cupo, Albert; Fan, Sophie S.; Fischer, Gena; Martin, Grace E.; and Ornstein, Leonard, 5,350,695, Cl. 436-63.000.
Ortel, William C. G.: *See*—
Beierle, John D.; and Ortel, William C. G., 5,351,234, Cl. 370-49.500.
Ortho-Flex Saddle Co., Inc.: *See*—
Brown, Roy L., 5,349,805, Cl. 54-35.000.
Orton, Keith, to Rolls-Royce plc. Assembly and method for making a pattern of a hollow component. 5,350,002, Cl. 164-24.000
Osaka Gas Co., Ltd.: *See*—
Akagi, Kosuke, 5,350,642, Cl. 429-32.000.
Oshiba, Tomomi; Mochizuki, Fumitaka; Tadokoro, Hajime; Kinoshita, Akira; Watanabe, Kazumasa; Tamaki, Kiyoshi; and Fujimaki, Yoshihide, to Konica Corporation. Electrophotographic photoreceptor with titanyl phthaloycyanine. 5,350,655, Cl. 430-78.000.
Osram Sylvania Inc.: *See*—
Chau, Chung-Nin, 5,350,540, Cl. 252-301.60P.
O'Sullivan Corporation: *See*—
Ray, Timothy L., 5,350,230, Cl. 366-75.000
Ota, Tetsuro: *See*—
Sasaki, Hiroyuki; Ota, Tetsuro; Hattori, Eiji; and Ikeda, Michihiro, 5,350,782, Cl. 523-116.000.
Otani, Shigeaki: *See*—
Hasebe, Kazunori; Otani, Shigeaki; and Hayashi, Yasuhiro, 5,350,665, Cl. 430-508.000.
Othmar, Gerschwiler: *See*—
Markus, Heule; and Othmar, Gerschwiler, 5,350,026, Cl. 173-178.000.
Otis Elevator Company: *See*—
Ahls, Hermann W.; Kruse, Michael; and Borchers, Peter, 5,350,049, Cl. 198-333.000.
Garrido, Alfonso; and Sevilleja, Jose, 5,349,854, Cl. 73-490.000.
Otocka, Edward P.: *See*—
Kosydar, Karen M.; Neumann, Stephen M.; Spahn, Robert G.; and Otocka, Edward P., 5,350,732, Cl. 503-227.000.
Otte, Timothy J.: *See*—
Bemis, Peter F.; and Otte, Timothy J., 5,350,057, Cl. 206-44.00R.
Outboard Marine Corporation: *See*—
Douglass, James M., 5,349,919, Cl. 114-56.000.
Haman, David F., 5,350,329, Cl. 440-88.000
Overbeek, Johannes J. M.: *See*—
Vennix, Johannus A.; and Overbeek, Johannes J. M., 5,350,970, Cl. 313-481.000.
Owen, Lindsey D.: *See*—
Naeini, Abdolreza S.; Owen, Lindsey D.; and Hansen, Harold E. A., 5,351,290, Cl. 379-145.000
Owens-Corning Fiberglas Technology Inc.: *See*—
Berdan, Clarke, II, 5,350,063, Cl. 206-321.000
McFarland, Roger A.; and Armstrong, Gordon P., 5,350,603, Cl. 427-470.000
Owens, John C.: *See*—
Dodt, William C.; Donze, Jerry L.; Leonhardt, Michael L.; Milligan, Charles A.; Narahari, Hari S.; Owens, John C.; and Pyatt, Kurt W., 5,351,159, Cl. 360-132.000.
Oyama, Kiyoshi: *See*—
Yokota, Masahiro; Oyama, Kiyoshi; and Mori, Hideo, 5,350,973, Cl. 315-8.000.
Oyama, Motoaki: *See*—
Takamura, Toshihiro; Nishino, Yukio; Oyama, Motoaki; and Matsushita, Akiyoshi, 5,350,561, Cl. 420-105.000
Oyamada, Kaori: *See*—
Yoshizato, Katsutoshi; Konishi, Jun; Koide, Mikio; Oyamada, Kaori; Ohsaki, Ken-ichi; Katakura, Takeo; Mori, Yuichi; and Tatebe, Ken, 5,350,583, Cl. 424-484.000.
Ozarowski, Ryszard S.; Hand, Barry D.; Novack, Robert C.; Beard, Vernon D.; Threlkeld, James O.; and Sutton, William T., to SSI

Medical Services, Inc. Proportional control valve for patient support system. 5,349,983, Cl. 137-487.500

Ozawa, Yutaka: *See—*
Tsuchiya, Hiroshi; Kokura, Makoto; Ozawa, Yutaka; and Sugimura, Takaaki, 5,350,809, Cl. 525-356.000

Pace, Ermanno: *See—*
Carobolante, Francesco; and Pace, Ermanno, 5,350,984, Cl. 318-254.000

Paganus, Thomas J. Omnipositional pod for camera. 5,350,147, Cl. 248-346.000

Pai, Damodar M.; Melnyk, Andrew R.; and Teney, Donald J., to Xerox Corporation. Photoconductors employing sensitized extrinsic photogenerating pigments. 5,350,654, Cl. 430-59.000

Palermo, Thomas J.; and Pham, Phong, to Target Therapeutics, Inc. Axially detachable embolic coil assembly. 5,350,397, Cl. 606-200.000

Pallay, Joseph A.: *See—*
Pallay, Robert V., Sr.; Pallay, Robert V., Jr.; and Pallay, Joseph A., 5,349,777, Cl. 43-44.990

Pallay, Robert V., Jr.: *See—*
Pallay, Robert V., Sr.; Pallay, Robert V., Jr.; and Pallay, Joseph A., 5,349,777, Cl. 43-44.990

Pallay, Robert V., Sr.; Pallay, Robert V., Jr.; and Pallay, Joseph A. Chunk dispensing rig. 5,349,777, Cl. 43-44.990.

Pallini, Luciano: *See—*
Costanzi, Silvestro; Gussoni, Damiano; and Pallini, Luciano, 5,350,786, Cl. 524-102.000

Palou, Cathy. Therapeutic preparation for topical application to the skin. 5,350,774, Cl. 514-783.000

Pan, Alfred I.; and Tappon, Ellen R., to Hewlett-Packard Company. Composite orifice plate for ink jet printer and method for the manufacture thereof. 5,350,616, Cl. 428-131.000

Pang, Peter K. T.; Lewanczuk, Richard Z.; and Benishin, Christine G., to Pang, Peter K. T. Method and treatment for hypertension using combination therapy involving exogenous calcium and calcium channel blockers. 5,350,771, Cl. 514-643.000

Papadopoulos, Christos: *See—*
Thornley, Robert S.; and Papadopoulos, Christos, 5,350,073, Cl. 211-187.000

Papaliolios, Andreas G.: *See—*
Brassington, Michael P.; and Papaliolios, Andreas G., 5,350,705, Cl. 257-295.000

Pardee, Michael A.; and Yoong, Matthias J. C., to Xontech, Inc. Cryotrap for air pollution analyzer. 5,349,833, Cl. 62-55.500.

Pardue, Jon P., to Patterson's Mobile Media, Inc. Flexible frame mobile display. 5,349,772, Cl. 40-590.000

Park, Chung S., to Goldstar Co., Ltd. Remote control circuit for video cassette tape recorder. 5,351,096, Cl. 348-734.000

Park, Hakjae, to Daewoo Electronics Co., Ltd. Low-bit rate interframe video encoder with adaptive transformation block selection. 5,351,086, Cl. 348-402.000.

Park, Kyong M.; and Gupta, Niraj, to Kavlico Corporation. System for comparing a reference signal with a filtered signal to detect pressure discontinuity. 5,349,864, Cl. 73-724.000.

Park, Kyong M., to Kavlico Corporation. Sensitive resistive pressure transducer. 5,349,867, Cl. 73-727.000

Park, Kyong M.: *See—*
Kavli, Fred; and Park, Kyong M., 5,349,865, Cl. 73-724.000.

Park, Sung C., to Hyundai Electronics Industries Co., Ltd. Tracking induction system and method for optical disc drivers. 5,351,223, Cl. 369-44.280

Parker, Delmer G.: *See—*
Pietrowski, Kenneth W.; Hogestyn, Larry G.; and Parker, Delmer G., 5,351,113, Cl. 355-273.000

Parker, Irvin L., to Westinghouse Electric Corporation. On/off valve apparatus for use in conjunction with electromagnetic flow control device controlling the flow of liquid metal through an orifice. 5,350,159, Cl. 266-237.000

Parra, Jorge M., to Seaway Technologies, Inc. Method and apparatus for separating dolphin from tuna. 5,349,774, Cl. 43-9.200.

Partney, Donald W., Jr., to Granite Engineering, Inc. Apparatus for thin layer chromatography. 5,350,510, Cl. 210-198.300.

Paskal Avizarey Kshira Ltd.: *See—*
Ben-Dror, Michael, 5,349,779, Cl. 47-44.000

Passa, Frederic: *See—*
Delalle, Jacques; Mahrez, Ouaniche; Lamothe, Michele; Passa, Frederic; and Roucaute, Philippe, 5,350,105, Cl. 228-56.300

Pate, Dudley B.: *See—*
Hannay, Richard C.; and Pate, Dudley B., 5,350,691, Cl. 435-262.500

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Patel, Rakesh H., to Altera Corporation. Macrocell with flexible product term allocation. 5,350,954, Cl. 307-465.000

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Patterson, Eric W. Building material made from waste paper and method for producing the same. 5,350,451, Cl. 106-805.000.

Patterson's Mobile Media, Inc.: *See—*
Pardue, Jon P., 5,349,772, Cl. 40-590.000

Paul, Axel. *See—*
Bach, Volker; Brox, Wolfgang; Etzbach, Karl-Heinz; Paul, Axel; and Siemensmeyer, Karl, 5,350,873, Cl. 560-60.000.

Paul, Michael; Wilks, Eberhard; and Sigl, Peter, to ZF Friedrichshafen AG. Lockable differential gear. 5,350,340, Cl. 475-237.000.

Pavcnik, Dusan; Wallace, Sidney; and Wright, Kenneth C. Self-expanding filter for percutaneous insertion. 5,350,398, Cl. 606-200.000.

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Schoettle, Klaus; Eberhard, Joachim; Schmidts, Kurt; and Pavelka, Bozidar, 5,351,160, Cl. 242-347.200

Pawelski, Robert L., to AT&T Bell Laboratories. Multirate, sonet-ready, switching arrangement. 5,351,236, Cl. 370-58.100.

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Ameen, Thomas J.; Payak, John A.; and Cangelosi, Jerome M., 5,350,487, Cl. 156-642.000

Payne, Jewel; Cannon, Raymond J. C.; and Ralph, Angela L., to Mycogen Corporation. *Bacillus thuringiensis* isolates for controlling acarides. 5,350,576, Cl. 424-93.461

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Pearce, Terry V.; and Pearce, Tony M., to Edo Sports Inc. Fiber reinforced spoke for wheels of bicycles, wheelchairs and the like, and method of making same. 5,350,221, Cl. 301-104.000.

Pearce, Tony M.: *See—*
Pearce, Terry V.; and Pearce, Tony M., 5,350,221, Cl. 301-104.000.

Pearlman, Jay S.: *See—*
Lee, Paul S. C.; and Pearlman, Jay S., 5,351,077, Cl. 348-117.000.

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Lumelsky, Leon; Choi, Sung M.; Peevers, Alan W.; and Pittas, John L., 5,351,067, Cl. 345-191.000.

Pelican International. *See—*
Elie, Christian, 5,349,918, Cl. 114-352.000

Pelletier, Jerry: *See—*
Call, Katherine M.; Glaser, Thomas M.; Ito, Caryn Y.; Buckler, Alan J.; Pelletier, Jerry; Haber, Daniel A.; Rose, Elise A.; and Housman, David E., 5,350,840, Cl. 536-23.100

Pelley, Kenneth A., to McNeil-PPC, Inc. Method for intermittently applying particulate powder material to a fibrous substrate. 5,350,597, Cl. 427-197.000

Peltz, Frederick G.: *See—*
Hundt, Vincent G.; and Peltz, Frederick G., 5,350,122, Cl. 241-29.000

Pemko Manufacturing Company: *See—*
Sanders, Vernard W., 5,350,207, Cl. 292-335.000

Pendleton, Charles P.: *See—*
Cooper, Ricky N.; Cooper, Renee R.; Pendleton, Charles P.; Rinehart, Steven R.; Turano, Louis R.; and Webb, Richard N., 5,350,051, Cl. 198-396.000

Peng, Sen-Ming. Ceiling frame joint structure. 5,349,800, Cl. 52-506.060

Penny, Glenn S.: *See—*
Westland, John A.; Penny, Glenn S.; Stephens, R. Scott; and Winslow, Alan R., 5,350,528, Cl. 252-8.551.

Perez, Fernando. Used oil collecting device. 5,349,995, Cl. 141-98.000

Perkins, Julian B. Knockdown furniture structure. 5,350,218, Cl. 297-440.100.

Perlman, Radia J.; and Kaufman, Charles W., to Digital Equipment Corporation. Secure method of neighbor discovery over a multiaccess medium. 5,351,295, Cl. 380-23.000

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Perrault, Frederick; and Perrault, Raymond E., 5,350,141, Cl. 248-59.000

Perrone, Aldo, to Brass Eagle Inc. Semi-automatic gun. 5,349,939, Cl. 124-76.000

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Jaffrezic-Renault, Nicole; Chovelon, Jean-Marc; Perrot, Hubert; Le Perchec, Pierre; and Chevalier, Yves, 5,350,701, Cl. 437-40.000

Perrotti, Patrick A., to Combustion Engineering, Inc. Nuclear reactor grid strip cantilever spring with nonuniform material characteristics. 5,350,161, Cl. 267-160.000

Persells, David: *See—*
Tuckner, Ronald; and Persells, David, 5,350,568, Cl. 422-300.000.

Peters, Grant H. Binder pocket. 5,350,249, Cl. 402-4.000.

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Stupka, Jonathan C.; Bokros, Jack C.; Emken, Michael R.; Haubold, Axel D.; and Peters, T. Scott, 5,350,421, Cl. 623-2.000.

Petersen, Helle B.: *See—*
Bojstrup, Flemming; Petersen, Helle B.; and Sorensen, Peter H., 5,350,478, Cl. 156-299.000

Peterson, Arnold N.; and Sprague, Larry A., to Peterson Pacific Corp. Mobile combination debarking/chipping machine. 5,349,999, Cl. 144-208.00J

Peterson, Ivan H.; Hoelle, James S.; and Wakeman, Thomas G., to General Electric Company. Tube coupling assembly. 5,350,200, Cl. 285-92.000

Peterson, Norman E.: *See—*
Ratte, Robert W.; Cain, Ronald; and Peterson, Norman E., 5,349,840, Cl. 72-327.000

Peterson Pacific Corp.: *See—*
Peterson, Arnold N.; and Sprague, Larry A., 5,349,999, Cl. 144-208.00J

Peterson, Robert H.; and Summers, James T., to Du Pont de Nemours, E. I., and Company. Absorbent acrylic spunlaced fabric. 5,350,625, Cl. 428-219.000

Petraschek, Ernst: *See—*
Beckmann, Otto; Loidl, Helmut; and Petraschek, Ernst, 5,350,001, Cl. 152-209.00R.

Petrie, Bruce S.: *See—*
Dugan, Michael T.; Cilke, Joseph T.; and Petrie, Bruce S., 5,351,130, Cl. 358-725.000.

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Pettijohn, Ted M.; and Hess, Kevin J., to Phillips Petroleum Company. Ethylene polymers. 5,350,807, Cl. 525-240.000.

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Pettitt, Meldon L.: *See—*
Doll, William J., Jr.; Judy, Murray S.; Kirchner, Albert H., III; Krier, Thomas J.; McVicker, Rudolph M.; Monroe, Brian E.; Pettitt, Meldon L.; Reiswig, Danny R.; Watchorn, Alan; Wesley, Jerry A.; and Wirfel, John C., 5,351,276, Cl. 379-67.000.

Petzold, James C., to Wiggins Teape Group Limited, The. Electrokinetic potential measurement. 5,350,500, Cl. 204-409.000.

Peyer, Marcel: *See—*
Preiser, Friedrich W.; Bullivant, Kenneth W.; and Peyer, Marcel, 5,350,089, Cl. 222-413.000.

Pfaff, Gerhard: *See—*
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Pfizer Inc: *See—*
Howard, Harry R., 5,350,747, Cl. 514-213.000.

Pfizer Inc.: *See—*
Dirlam, John P.; Maeda, Hiroshi; and Tone, Junsuke, 5,350,764, Cl. 514-460.000

Pham, Phong: *See—*
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Pharmetrix Corporation: *See—*
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Philip Morris Incorporated: *See—*
Cooper, Ricky N.; Cooper, Renee R.; Pendleton, Charles P.; Rinehart, Steven R.; Turano, Louis R.; and Webb, Richard N., 5,350,051, Cl. 198-396.000.

Phillips Petroleum Company: *See—*
Bobsein, Rex L.; Yu, Michael C.; Wright, Roy F.; and Soules, David A., 5,350,834, Cl. 528-485.000.
Martin, Joel L., 5,350,724, Cl. 502-110.000.
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Yu, Michael C.; and Beever, William H., 5,350,806, Cl. 525-189.000.

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Fox, Robert L.; Copeland, Carl E.; Swaim, Robert J.; Coultrip, Robert H.; Johnston, David F.; Phillips, W. Morris; Johnson, Samuel D.; Dinkins, James R.; and Buckley, John D., 5,350,902, Cl. 219-633.000

Photovac Centre, Inc.: *See—*
Leveson, Richard C.; Laslavic, John D.; and Barker, Nicholas J., 5,350,565, Cl. 422-64.000.

Physio-Control Corporation: *See—*
Weaver, Robert J.; Brittingham, Dennis C.; Basta, Joseph C.; and Daynes, John C., 5,350,317, Cl. 439-500.000.

Pichon, Dean: *See—*
Stephens, Randy R.; Collins, John M.; Farra, Robert; and Pichon, Dean, 5,350,364, Cl. 604-167.000.

Picker International, Inc.: *See—*
Wood, Christopher H.; Hajjar, Fares; Apicella, Anthony; and Matthews, Kevin E., 5,351,305, Cl. 382-6.000.

Pickrell, Gary R.; and Rapp, James E., to Techneglas, Inc. High temperature phosphorus oxide diffusion source. 5,350,460, Cl. 148-33.000.

Pickrell, Gary R.; and Rapp, James E., to Techneglas, Inc. Low temperature P_2O_5 oxide diffusion source. 5,350,461, Cl. 148-33.000.

Pidancet, Jean, to Socop, S.A. Combination lamp and socket. 5,350,305, Cl. 439-56.000.

Piegendorfer, Johann: *See—*
Heimerl, Dieter; and Piegendorfer, Johann, 5,350,963, Cl. 310-353.000.

Pietrowski, Kenneth W.; Hogestyn, Larry G.; and Parker, Delmer G., to Xerox Corporation. Pre-pretransfer treatment to increase transfer latitude in tri-level xerography. 5,351,113, Cl. 355-273.000.

Pilling Co.: *See—*
Clement, Gordon S.; and Kebert, Christopher, 5,350,384, Cl. 606-108.000.

Pillsbury Company, The: *See—*
Anton, Joseph G.; Frederickson, Dale W.; and Rasmussen, Glenn O., 5,349,759, Cl. 33-524.000.
Kemske, Jonathan D.; Consaul, James R.; Rosenwald, Diane R.; Shomo, Robert B., Jr.; and Wendt, Dan J., 5,350,904, Cl. 219-730.000.

Pingel, Herbert: *See—*
Lohnherr, Ludger; Pingel, Herbert; Kimmeyer, Ludger; and Baldus, Hans-Dieter, 5,350,124, Cl. 241-119.000.

Pinsl-Ober, Judith; and Schenk, Roland, to Boehringer Mannheim GmbH. Method for cleaning a diagnostic analyzer. 5,350,458, Cl. 134-22.100.

Pioneer Electronic Corporation: *See—*
Ikata, Yoshikatsu; Gou, Yasunao; Kimura, Toshiyuki; and Shimotsuma, Hiroshi, 5,351,041, Cl. 340-825.240.
Mizumoto, Katsuji; and Kono, Mutsumi, 5,351,226, Cl. 369-47.000.
Sawabe, Takao; Todoroki, Ryuichi; and Sakakibara, Takashi, 5,351,132, Cl. 358-342.000.

Pioneer Hi-Bred International, Inc.: *See—*
Jhingan, Anil K., 5,350,686, Cl. 435-173.200.

Pitel, Ira J.: *See—*
Lesko, Robert J.; and Pitel, Ira J., 5,351,106, Cl. 355-83.000

Pitney Bowes Inc.: *See—*
Gallagher, Dennis M., 5,350,245, Cl. 400-582.000

Pittas, John L.: *See—*
Lumelsky, Leon; Choi, Sung M.; Peevers, Alan W.; and Pittas, John L., 5,351,067, Cl. 345-191.000

Plach, Herbert: *See—*
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Planet Protection Systems, Inc.: *See—*
Kamin, Gene L., 5,350,435, Cl. 71-25.000.

Planeta, Mirek. Production of cross-laminated film from tube. 5,350,471, Cl. 156-156.000.

Platis, Gary W. Floating marker for an anchor line. 5,350,330, Cl. 441-6.000.

Player, James E. Clipper comb. 5,349,971, Cl. 132-213.100.

Plester, George, to Coca-Cola Company, The. Method of dispensing carbonated beverage using a gas generator. 5,350,587, Cl. 426-394.000.

Pneumatic Products Corp.: *See—*
Thelen, John E.; and Mylavarapu, Sundar R., 5,350,442, Cl. 95-115.000.

Po Wo Cheung, Paul, to Maxpat Trading & Marketing (Far East) Limited. Vegetable steamer arrangement. 5,349,898, Cl. 99-417.000

Poguntke, Kai R.; and Soole, Julian B. D., to Bell Communications Research, Inc. Multi-stripe array grating integrated cavity laser. 5,351,262, Cl. 372-102.000.

Poimboeuf, Michael; and Windrem, Kevin D., to Grass Valley Group, Inc., The. Synchronization of digital audio with digital video. 5,351,092, Cl. 348-512.000

Poirier, David C.; Haraf, John C.; Stephens, George T.; Simon, Robert C., Jr.; and Himes, Edward G., to General Motors Corporation. Canister purge control method. 5,351,193, Cl. 364-431.010.

Poirier, Jacques; Provost, Gilbert; Martin, Jean; and Rozieres, Jean, to Sollac; and Le Laboratoire Metallurgique. Method for lining a continuous casting distributor with a refractory material, distributor and refractory material resulting from said method. 5,350,157, Cl. 266-44.000.

Pokorny, Richard J., to Minnesota Mining and Manufacturing Company. Cyanate resin adhesive for polyimide film. 5,350,635, Cl. 428-414.000.

Polaroid Corporation: *See—*
Boggs, Roger A.; Cournoyer, Richard L.; Ellis, Ernest W.; Russo-Rodriguez, Sandra E.; Telfer, Stephen J.; Waller, David P.; and Zuraw, Michael J., 5,350,870, Cl. 560-27.000.

Politze, Heiner: *See—*
Berger, Horst; Krippendorf, Tido; and Politze, Heiner, 5,351,034, Cl. 340-577.000.

Polster, Lieder, Woodruff & Lucchesi, LC.: *See—*
Casey, Joseph B., 5,349,993, Cl. 141-94.000.

Pomeranz, Mark L.: *See—*
Imran, Mir A.; Zadno-Azizi, Gholam-Reza; and Pomeranz, Mark L., 5,349,964, Cl. 128-772.000.

Pond, Kelan B. Suspendable tray. 5,350,071, Cl. 211-70.600.

Poore, John W.: *See—*
Kleks, Jonathan A.; Buchanan, Stuart W.; Wilson, Raymond J.; Poore, John W.; and Mann, Brian M., 5,350,410, Cl. 607-28.000.

Popp, Konrad: *See—*
Fujiwara, Takayuki; and Popp, Konrad, 5,350,347, Cl. 483-29.000.

Portugall, Michael: *See—*
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Poss, Michael A.; Lloyd, John; and Atwal, Karnail S., to E. R. Squibb & Sons, Inc. Dihydropyrimidine derivatives. 5,350,752, Cl. 514-259.000.

Poston, Wendy L.: *See—*
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Potter, Terry W.: *See—*
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Potts, Jo Lee B.; Miller, Joann H.; Hodge, Marvin W.; and Bettle, Griscom, III, to Tropicana Products, Inc. Beverage bottle. 5,350,078, Cl. 215-100.00A.

Poulsen, Ole V.; Michaelsen, Carsten; and Jensen, Kurt, to Interlego A.G. Tool for use in the separation of elements in a building set. 5,349,734, Cl. 29-239.000.

Powell, Harry: *See—*
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Powell, Kenneth E.; and Mallory, Deborah A., to International Business Machines Corp. Optical scanner for bar code scanning. 5,350,909, Cl. 235-472.000.

Pratt, David A.: *See—*
Daniloff, Yuri; Robins, Simon P.; Evans, Brian J.; Pratt, David A.; and Lungard, Robert, 5,350,855, Cl. 546-291.000.

Praturlon, Sylvan: *See—*
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Pregont, Gary J.; Cason, David G.; and Goetsch, Jeffrey D., to Motorola Inc. Bit error rate detection method. 5,351,245, Cl. 371-5.100.

Preiser, Friedrich W.; Bullivant, Kenneth W.; and Peyer, Marcel, to K-Tron Technologies, Inc. Feeder for dispensing flowable substances. 5,350,089, Cl. 222-413.000

Prejean, George W., to Du Pont de Nemours, E. I., and Company Moisture-curable melt-processible ethylene copolymer adhesives. 5,350,803, Cl. 525-100.000

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Prentice, Ian F.; and Juenger, Jerome A., to General Electric Company Gas turbine engine blade retainer sub-assembly. 5,350,279, Cl. 416-220.00R.

Price, Carolyn R., legal representative: *See*—
Keller, Teddy M., and Price, Thomas R., deceased, 5,350,828, Cl 528-183.000

Price, Thomas R., deceased: *See*—
Keller, Teddy M.; and Price, Thomas R., deceased, 5,350,828, Cl 528-183.000

Price, Trudy. Nail file protector device. 5,349,969, Cl. 132-76.500.

Priebe, Carey E.: *See*—
Rogers, George W.; Solka, Jeffrey L.; Vermillion, Donald; Priebe, Carey E.; and Poston, Wendy L., 5,351,311, Cl. 382-45.000.

Priester, Claus-Ulrich: *See*—
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Primeau, Mario, to Atlantic Promotions Inc. Mop wringer. 5,349,720, Cl. 15-262.000

Primrose, Inc.: *See*—
Szigethy, Attila, 5,350,190, Cl. 280-728.00A.

Procter & Gamble Company, The: *See*—
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Michael, Daniel W.; and Maile, Michael S., 5,350,541, Cl. 252-549.000.

Prohaska, John D.: *See*—
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Proietto, Vincenzo: *See*—
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Prokop, Heinz J.: *See*—
von Borstel, Michael; Hacker, Michael; Prokop, Heinz J.; and Wollermann-Windgasse, Reinhard, 5,351,263, Cl. 372-107.000

Prosser, Harold T.; Forsyth, Joseph L.; and Frost, Lewis J., to United Technologies Corporation. Nacelle arrangement. 5,350,136, Cl 244-129.400

Provost, Gilbert: *See*—
Poirier, Jacques; Provost, Gilbert; Martin, Jean; and Rozieres, Jean, 5,350,157, Cl. 266-44.000

Public Works Research Institute, Ministry of Construction: *See*—
Kawashima, Kazuhiko; Unjoh, Shigeki; and Shimizu, Hideyuki, 5,349,712, Cl. 14-73.500

Pulse Engineering, Inc.: *See*—
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Purcell, D. Glenn; and Whitson, Robert C., to Miles Inc. Lancing device with automatic cocking. 5,350,392, Cl. 606-182.000

Purdue Research Foundation: *See*—
Daniel, William H., 5,350,251, Cl. 405-37.000

Purex Co., Ltd.: *See*—
Muraoka, Hisashi, 5,350,489, Cl. 156-651.000

Puschel, Siegfried: *See*—
Konrad, Harald; Puschel, Siegfried; and Stein, Gerald, 5,350,985, Cl. 318-370.000.

Pyatt, Kurt W.: *See*—
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Quantum Chemical Corporation: *See*—
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Qube, Inc.: *See*—
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Quickie Manufacturing Corporation: *See*—
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Quisquater, Jean-Jacques; and Rakhodai, Issa, to U.S. Philips Corporation. Method of modifying pseudo-random sequences and device for scrambling or descrambling information components. 5,351,300, Cl 380-46.000

Qutub, Motaz: *See*—
Emigh, Jon; and Qutub, Motaz, 5,350,170, Cl. 271-273.000

Raad, Eduardo A. Camouflage foamed polymer with colored pattern mass. 5,350,776, Cl. 521-54.000.

Rabehasaina, Hans: *See*—
Cameron, Charles; Courty, Philippe; Berrebi, Georges; Roumieu, Raymond; Rabehasaina, Hans; and Eschard, Francois, 5,350,728, Cl. 502-415.000.

Rafanelli, Gerard L.; Ellerbroek, Brent L.; Mount, Susan B.; and Rehfield, Mark J., to Hughes Aircraft Company. Wavefront error estimation derived from observation of arbitrary unknown extended scenes 5,350,911, Cl. 250-201.900

Ragan, Thomas G., to Shelby Group International Inc. Firefighter's glove and method of manufacture. 5,349,705, Cl. 2-161.600

Rahn, Richard: *See*—
Zeien, Terri; and Rahn, Richard, 5,349,979, Cl. 137-318.000.

Raines, Michael D.: *See*—
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Rakhimov, Roustam K.; and Kim, Elena V., to Mitech Scientific Corp Radiation emitting ceramic materials and devices containing same. 5,350,927, Cl. 250-504.00R

Rakhodai, Issa: *See*—
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Ralph, Angela L.: *See*—
Payne, Jewel; Cannon, Raymond J. C.; and Ralph, Angela L., 5,350,576, Cl. 424-93.461

Randolph, Art: *See*—
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Rapp, James E.: *See*—
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Pickrell, Gary R.; and Rapp, James E., 5,350,461, Cl. 148-33.000.

Rasmussen, Glenn O.: *See*—
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Rasmussen, Lars B., to A/S Roulunds Fabriker. Mat for the collection of liquid. 5,350,619, Cl. 428-167.000.

Ratcliff, Charles E.: *See*—
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Rathbun, Loren L.: *See*—
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Rathgeber, Juergen O.: *See*—
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Ratte, Robert W.; Cain, Ronald; and Peterson, Norman E., to Water Gremlin Company. Method of making a high torque battery terminal 5,349,840, Cl. 72-327.000.

Ravensbergen, John: *See*—
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Rawson, Ray: *See*—
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Iacobucci, Guillermo A.; Brose, Daniel J.; Ray, Roderick J.; and van Eikeren, Paul, 5,350,681, Cl. 435-68.100.

Ray, Timothy L., to O'Sullivan Corporation. Door locking mechanism for batch mixers. 5,350,230, Cl. 366-75.000.

Razen, Jozica: *See*—
Merslavic, Marjo; Razen, Jozica; and Rotar, Ales, 5,350,582, Cl 424-464.000

Razzouq, Peter Y. Method for foiling hair. 5,349,970, Cl. 132-208.000.

RCA Thomson Licensing Corporation: *See*—
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Reagent Chemical & Research, Inc.: *See*—
Sonntag, Donald W.; and Skeuse, Brian, 5,350,233, Cl. 366-160.000.

Reale, John D.: *See*—
Knapp, John R.; Reale, John D.; Miller, Donald P.; and Binsley, David L., 5,351,062, Cl. 343-880.000.

Recot, Inc.: *See*—
Duval, David F.; Kruhmar, Kim C.; and Ratcliff, Charles E., 5,350,592, Cl. 426-582.000.

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Rege, Satish L.: *See*—
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Rafanelli, Gerard L.; Ellerbroek, Brent L.; Mount, Susan B.; and Rehfield, Mark J., 5,350,911, Cl. 250-201.900.

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Reinert, Francis R.: *See*—
Laska, Joseph E.; Oakley, John T.; and Reinert, Francis R., 5,350,308, Cl. 439-91.000.

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Ginder, John M.; Remillard, Jeffrey T.; and Weber, Willes H., 5,351,319, Cl. 385-6.000.

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Newbolt, Richard E.; and Remmers, Theodore L., 5,350,257, Cl. 406-75.000

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Renker, Horst, to Bodenseewerk Geratetechnik GmbH. Tape-suspended meridian gyro. 5,349,757, Cl. 33-316.000.

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Renzelmann, Michael E.; and Smith, Mark H., to Boeing Company, The. Latch pin inhibitor for folding wing-tip aircraft. 5,350,135, Cl 244-49.000

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Stern, Michael D.; Dudley, Stephen G.; and Reschenberg, Dale D., 5,350,612, Cl. 428-40.000.

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Nakatsugawa, Naoki; and Horikoshi, Koki, 5,350,684, Cl 435-167.000.

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Lee, Harry W., Jr., 5,349,836, Cl. 72-84.000.

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Lai, Patrick, 5,351,129, Cl. 348-584.000

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Besnard, Marie-Madeleine; David, Claire; and Knipper, Magali, 5,350,524, Cl. 210-728.000.

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Riccardi, Joseph J., to Southwind Enterprises Inc. Process for cutting large blocks of metal. 5,350,462, Cl. 148-194.000

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Richard, Charles W., Jr.: *See*—
Sowar, Richard M.; Heiny, William C.; Olsen, Paul C.; Hotchkiss, Mark R.; Dixon, Thomas L.; Richard, Charles W., Jr.; and Raines, Michael D., 5,351,196, Cl. 364-474.240.

Richard, Thomas J.: *See*—
Kaufman, Robert J.; and Richard, Thomas J., 5,350,571, Cl. 424-9.000

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Heimberger, Rudolf, 5,349,942, Cl. 126-4.000.

Richardson, William P.: *See*—
Schapira, Simon F. D.; Eycott, Robin W.; Richardson, William P.; and Robinson, Jim S., 5,349,874, Cl. 73-864.000.

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Hayashi, Yutaka; Hamaguchi, Iwao; and Fujita, Shunsuke, 5,351,209, Cl. 365-112.000.

Ricoh Company, Ltd.: *See*—
Bessho, Goroh; and Tachikawa, Michiyoshi, 5,351,313, Cl. 382-51.000.
Blonstein, Steve M., 5,351,133, Cl. 358-426.000.
Inage, Osamu; and Shimada, Kazuyuki, 5,350,900, Cl. 219-508.000.
Ohno, Takehide, 5,351,221, Cl. 369-13.000
Sasaki, Tomio; Kobayashi, Shinji; and Obata, Masahito, 5,351,138, Cl. 358-462.000.
Shoshi, Masayuki; Shimoda, Masakatsu; Konishi, Akiko; Kawahara, Megumi; Kojima, Akio; Suzuki, Tetsuro; and Yoshikawa, Masao, 5,350,653, Cl. 430-58.000
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Ueda, Naofumi; and Hanyu, Yoshiaki, 5,351,315, Cl. 382-54.000

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Kanno, Tetsuo; and Okamoto, Akihiko, 5,351,228, Cl. 369-77.200.

Ricoh Corporation: *See*—
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Evans, Gareth B.; Rider, Christopher B.; and Simons, Michael J., 5,350,651, Cl. 430-21.000.
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Nickels, Richard C., Jr.; and Rider, David M., 5,349,785, Cl. 451-357.000.

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Nakatsugawa, Naoki; and Horikoshi, Koki, 5,350,684, Cl. 435-167.000.

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Cooper, Ricky N.; Cooper, Renee R.; Pendleton, Charles P.; Rinehart, Steven R.; Turano, Louis R.; and Webb, Richard N., 5,350,051, Cl. 198-396.000

Ring, Christopher A.: *See*—
Leete, Jeremy S.; and Ring, Christopher A., 5,350,091, Cl. 222-529.000

Ripley, Brian D.; Boston, James L.; Luehrmann, Edward G.; and Barglof, Dale L., to White Consolidated Industries, Inc. Universal control console. 5,350,140, Cl. 248-27.100.

Ritchie, Steve; and Biagi, Carl, to Williams Electronics Games, Inc. Below the playfield ball delivery system for a pinball game. 5,350,174, Cl. 273-121.00A.

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Rizzoli, Salvatore; and Draghetti, Fiorenzo, to G.D Societa' per Azioni. Method of producing filter-tipped cigarettes. 5,349,968, Cl 131-94.000.

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Kienzle, Timothy, 5,350,099, Cl. 225-34.000.

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Seamon, Kenneth B.; Robbins, Joan; and Laurenza, Antonio, 5,350,864, Cl. 549-389.000.

Robern, Inc.: *See*—
Katz, Howard S., 5,350,227, Cl. 312-198.000.

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Gruenwald, Werner; Schmid, Kurt; and Mast, Martin, 5,349,746, Cl. 29-620.000.
Huth, Gerhard; and Baresel, Detlef, 5,351,029, Cl. 338-34.000
Liskow, Uwe; Thoennissen, Jochen; Loistl, Uwe; and Wahl, Oliver, 5,350,285, Cl. 418-15.000.
Mezger, Manfred; Blumenstock, Andreas; and Frank, Rainer, 5,349,935, Cl. 123-520.000
Wuensch, Steffen; Kemmner, Claus; Braunbach, Karl-Heinz; and Haerle, Vinzenz, 5,349,754, Cl. 30-369.000.

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Millar, Robert W., 5,349,716, Cl. 15-245.000

Roberts, Joseph A., to Miraco, Inc. High-density printed circuit connector. 5,350,319, Cl. 439-632.000.

Roberts, William P.: *See*—
Speer, Drew V.; Morgan, Charles R.; Roberts, William P.; and VanPutte, Andrew W., 5,350,622, Cl. 428-215.000

Robertson, Charles W.: *See*—
Brunk, Donald H.; Regester, David J.; Robertson, Charles W.; and Wellings, Anders J., 5,350,502, Cl. 204-299.00R.

Robertson, Todd. Compartmented storage container. 5,350,045, Cl 190-110.000.

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Daniloff, Yuri; Robins, Simon P.; Evans, Brian J.; Pratt, David A.; and Lungard, Robert, 5,350,855, Cl. 546-291.000.

Robinson, H. English, Jr.: *See*—
Friar, C. Edward; Jones, M. Lee; Robinson, H. English, Jr.; and King, Douglas N., 5,350,108, Cl. 229-102.000.

Robinson, Jim S.: *See*—
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Robinson, Klaus: *See*—
Smith, Willis H., Jr.; Garvin, Hugh L.; Robinson, Klaus; and Miller, Leroy J., 5,350,498, Cl. 204-192.230

Robinson, Russell. Bicycle shock absorber. 5,350,185, Cl. 280-276.000.

Rocazella, Michael A.; Becker, Kurt J.; and Aghajanian, Michael K., to Lanxide Technology Company, LP. Rigidized filler materials for metal matrix composites and precursors to supportive structural refractory molds. 5,350,004, Cl. 164-97.000

Rockwell International Corporation: *See*—
Culp, Gordon W., 5,350,966, Cl. 310-328.000
Mathur, Bimal P.; Wang, H. Taichi; and Haendel, Richard S., 5,351,044, Cl. 340-901.000.
Street, Thomas, 5,350,955, Cl. 307-515.000.
White, Mark D.; and Freund, Roger, 5,349,878, Cl. 74-89.140.

Roderick, Craig A.: *See*—
Collins, Kenneth S.; Trow, John R.; Tsui, Joshua C. W.; Roderick, Craig A.; Bright, Nicolas J.; Marks, Jeffrey; and Ishikawa, Tetsuya, 5,350,479, Cl. 156-345.000.

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Rogers, Max W., to Dynascan Corporation. Antenna for a base unit of a cordless telephone system. 5,351,284, Cl. 379-61.000.

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Culbertson, Philip E.; Rogers, Thomas F.; and Ware, Randolph H., 5,350,138, Cl. 244-159.000.
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Kanbara, Shigeru; and Fukui, Hitoshi, 5,351,026, Cl. 338-22.00R.
Nii, Keita, 5,350,699, Cl. 437-31.000
Roland, Dennis M.: *See*—
Van Duzer, John H.; and Roland, Dennis M., 5,350,761, Cl 514-373.000.
Roland, Wolf A.: *See*—
Buchmeier, Willi; and Roland, Wolf A., 5,350,517, Cl. 210-638.000.
Rollinger, Bernt, to Metallgesellschaft AG. Process and apparatus for making molten steel. 5,350,434, Cl. 75-10.630.
Rolls-Royce plc: *See*—
Orton, Keith, 5,350,002, Cl. 164-24.000
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Hoffman, Carvel D.; Romberger, Charles J.; Ellinger, Hunter; Stephens, Thomas W.; and Savage, Richard D., 5,351,203, Cl. 364-560.000.
Romeo, Aurelio; Toffano, Gino; and Leon, Alberta, to Fidia S.p.A. New ganglioside derivatives. 5,350,841, Cl. 536-53.000.
Rona, Mehmet, to Fastran, Inc. Enhanced mobility metal oxide semiconductor devices. 5,350,940, Cl. 257-402.000
Ropero Beltran, Juan J.: *See*—
Bullon Camarasa, Francisco J.; Ropero Beltran, Juan J.; and Benedit del Burgo, Juan A., 5,351,266, Cl. 373-89.000
Rose, Elise A.: *See*—
Call, Katherine M.; Glaser, Thomas M.; Ito, Caryn Y.; Buckler, Alan J.; Pelletier, Jerry; Haber, Daniel A.; Rose, Elise A.; and Housman, David E., 5,350,840, Cl. 536-23.100.
Rose, Paul: *See*—
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Rosebrock, Herbert W.: *See*—
Fredericks, Duane G.; and Rosebrock, Herbert W., 5,351,054, Cl. 342-172.000
Rosenband, Philip A., to Morgan Marshall Industries, Inc. Pallet rack lock. 5,350,074, Cl. 211-192.000.
Rosenwald, Diane R.: *See*—
Kemske, Jonathan D.; Consaul, James R., Rosenwald, Diane R.; Shomo, Robert B., Jr.; and Wendt, Dan J., 5,350,904, Cl. 219-730.000
Ross, Gilbert: *See*—
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Ross, John; and Farmakis, Tom, to World Wide Notification Systems, Inc. Apparatus and method for closing flight plans and locating aircraft. 5,351,194, Cl. 364-449.000
Rossi, Albert: *See*—
Song, Won R.; Rossi, Albert; Turner, Howard W.; Welborn, Howard C.; Lundberg, Robert D.; Gutierrez, Antonio; and Kleist, Robert A., 5,350,532, Cl. 252-49.600.
Rossi, Cristina: *See*—
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Rossi, Giorgio: *See*—
Marchio, Fabio; Novarini, Enrico; and Rossi, Giorgio, 5,350,998, Cl. 323-312.000.
Rossman, Thomas F.: *See*—
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Rosso, Michele: *See*—
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Rostaing, Jean-Christophe; and Coeuret, Francois, to l'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process for the preparation of an optical structure and optical structure obtained thereby. 5,350,605, Cl. 427-536.000
Rotar, Ales: *See*—
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Roth, Ron M.: *See*—
Blaum, Miguel M.; and Roth, Ron M., 5,351,246, Cl. 371-10.100
Rottler, Donald B. Dual-axis table assembly. 5,349,900, Cl. 100-4.000
Roucaute, Philippe: *See*—
Delalle, Jacques; Mahrez, Ouaniche; Lamothe, Michele; Passa, Frederic; and Roucaute, Philippe, 5,350,105, Cl. 228-56.300
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Rouse, Gordon F.; and French, Howard B., to Honeywell Inc. Resetting closed-loop magnetoresistive magnetic sensor. 5,351,005, Cl 324-252.000
Rouy, Olivier, to SGS-Thomson Microelectronics, S.A. Memory with on-chip detection of bit line leaks. 5,351,214, Cl. 365-210.000.
Roy, Apurba: *See*—
Grader, Gideon S.; Johnson, David W., Jr.; Roy, Apurba; and Thomson, John, Jr., 5,349,743, Cl. 29-602.100
Roy, Dhirendra C.; and Hotra, Zenon, to United Technologies Automotive, Inc. Seal for an automotive electrical connector assembly. 5,350,311, Cl. 439-273.000
Roy, Nripendra N.: *See*—
Chaug, Yi-Shung; Walker, Victor L.; and Roy, Nripendra N., 5,350,629, Cl. 428-336.000.
Rozen, Shlomo: *See*—
Hung, Ming-Hong; and Rozen, Shlomo, 5,350,497, Cl. 204-157.920
Rozier, Paul, to GEC Alsthom SA. Medium tension circuit-breaker for indoor or outdoor use. 5,350,892, Cl. 200-144.00B.
Rozieres, Jean: *See*—
Poirier, Jacques; Provost, Gilbert; Martin, Jean; and Rozieres, Jean, 5,350,157, Cl. 266-44.000.
Rubino, Michael; and Hart, John, to Hart to Sensible Products, Inc. Method and tool for pulling clutch from washing-machine motor. 5,349,736, Cl. 29-426.500.
Rucker, Lance M.; Hoyle, Keith W.; and Hepworth, Allen B., to Ergologic Enterprises Inc. Rotating plane keyboard. 5,351,066, Cl. 345-168.000
Ruile, Werner; Machui, Jurgen; and Visintini, Giuliano, to Siemens Aktiengesellschaft. Surface acoustic wave reflector filter. 5,351,022, Cl. 333-195.000
Ruiz, Ernest, to Hennepin Faculty Associates. Mirror laryngoscope blade. 5,349,943, Cl. 128-11.000.
Rumpel, Peter, to Siemens Nixdorf Informationssysteme AG. Paper feed device for the transfer station of a printing device with latent character image generation. 5,350,100, Cl. 226-74.000.
Runckel, John L., to John L. Runckel, Trust, John Runckel and Markie W. Runckel, Cotrustees. Leak-proof cap with improved seal construction. 5,349,702, Cl. 2-68.000
Russell, Kendall C.: *See*—
Upton, Michael D.; Rossman, Thomas F.; Frazier, Dean P.; Fuller, Jay S.; and Russell, Kendall C., 5,351,197, Cl. 364-491.000.
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Ryan, Dana W.: *See*—
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Ryan, Terrence G.; Busacker, James W.; and Hochban, Robert A., to Medtronic, Inc. Pacemaker telemetry system. 5,350,411, Cl. 607-32.000
Ryuji, Matsuura: *See*—
Nio, Yutaka; and Ryuji, Matsuura, 5,351,088, Cl. 348-441.000.
S. C. Johnson & Son, Inc.: *See*—
Billman, Fred L.; and Wortley, Russell B., 5,350,240, Cl. 383-104.000
Saab Automobile Aktiebolag: *See*—
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Saba, Toshikazu, to Sumitomo Wiring Systems, Ltd. Anti-rotation connector. 5,350,314, Cl. 439-378.000.
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Sadovnik, Isaac: *See*—
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Sadowski, Kazimierz; Ziemendorf, Donald; Carlo, Robert; and Kochems, Gary, to Voss Manufacturing, Inc. Rotary fin machine. 5,350,012, Cl. 165-152.000
Saechsishe Werkzeug und Sondermaschinen GmbH: *See*—
Nedo, Werner; Thonig, Harry; and Walden, Mathias, 5,349,788, Cl. 451-75.000.
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Saeger, Timothy W.: *See*—
Christopher, Todd J.; Horlander, Karl F.; and Saeger, Timothy W., 5,351,087, Cl. 548-441.000.
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Larson, Douglas A.; Danowski, Thomas J.; and Voss, Roy, 5,350,079, Cl. 220-264.000
Saffer, Edmund, to Siemens Aktiengesellschaft. Medical treatment installation having an imaging system and a therapy field transmitter for treating a subject. 5,350,351, Cl. 601-2.000.
Sagawa, Akemi; Itoh, Ren; Sakai, Masahiko; and Shimizu, Riyuuichi, to Hitachi Koki Co., Ltd.; and Hitachi, Ltd. Hot-melt ink composition. 5,350,789, Cl. 524-313.000.
Sager, Robert L., Jr.; and Kraai, Leon A., to Tennessee Gas Pipeline Company. Broad band low frequency passive muffler. 5,350,888, Cl. 181-247.000
Sago, Hiroyoshi; Fujiyama, Shigemi; Kudo, Katsuhiko; and Kumazawa, Hirotsugu, to Tokyo Ohka Kogyo Co., Ltd. Cleaning device for cleaning planar workpiece. 5,349,978, Cl. 134-153.000.
Sah, Wen-Jyh: *See*—
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St. Julien, Dell J.: *See*—
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Saito, Akinami: *See*—
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Saito, Harunobu: *See*—
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Miki, Isao; Isogai, Hisao; Saito, Masao; Yamanashi, Toru; Kawai, Toshiyuki; Saito, Akinami; Ishikawa, Sadanori; Konno, Masahiko; and Okada, Keiichi, 5,350,007, Cl. 164-316.000
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Sakai, Masahiko: *See*—
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Kadowaki, Toshihiro; and Sakai, Masanori, 5,351,074, Cl. 346-157.000.
Sakai, Yasuro: *See*—
Fujisawa, Noriaki; Sakai, Yasuro; Kuwabara, Tsuneo; and Kukita, Shigezou, 5,350,617, Cl. 428-141.000
Sakaida, Atsuo; Suzuki, Yoshihumi; Ikezaki, Yoshiyuki; Iriguchi, Akira; and Suzuki, Masashi, to Brother Kogyo Kabushiki Kaisha. Driving device for piezoelectric element. 5,350,962, Cl. 310-316.000.
Sakakibara, Takashi: *See*—
Sawabe, Takao; Todoroki, Ryuichi; and Sakakibara, Takashi, 5,351,132, Cl. 358-342.000.
Sakakibara, Yukihiro: *See*—
Oketani, Tetsuya; Nishikawa, Hirotaka; Mase, Yoshiaki; and Sakakibara, Yukihiro, 5,351,039, Cl. 340-680.000.
Sakamizu, Toshio: *See*—
Shiraishi, Hiroshi; Soga, Takashi; Murai, Fumio; Sakamizu, Toshio; and Hayashi, Nobuaki, 5,350,485, Cl. 156-628.000
Sakamoto, Minoru: *See*—
Masaie, Kimio; and Sakamoto, Minoru, 5,351,021, Cl. 333-189.000.
Sakata, Hirotsugu: *See*—
Yajima, Toshiya; Hirayama, Takuya; Sakata, Hirotsugu; Hayano, Makoto; Okuda, Masayuki; Morozumi, Naoya; Kumazawa, Takeshi; and Kobuna, Teruo, 5,350,280, Cl. 417-310.000.
Sakiyama, Katsunori: *See*—
Takahashi, Ichiro; Tanaka, Yasundo; and Sakiyama, Katsunori, 5,349,940, Cl. 128-4.000.
Sakura Color Products Corporation: *See*—
Sumii, Masaaki; Sakai, Fumiko; and Yoshimura, Yasuyuki, 5,350,633, Cl. 428-402.210.
Sumii, Masaaki; Sakai, Fumiko; and Yoshimura, Yasuyuki, 5,350,634, Cl. 428-402.210.
Sakurada, Yasuyuki. Sewage purification apparatus. 5,350,511, Cl. 210-199.000.
Salce, Ludwig: *See*—
Savaides, Andrew; and Salce, Ludwig, 5,350,572, Cl. 424-71.000.
Saleh, Adel A. M.: *See*—
Chan, Vincent W. S.; Gallager, Robert G.; Kirby, Alan J.; and Saleh, Adel A. M., 5,351,146, Cl. 359-118.000.
Salituro, Gino M.: *See*—
Feighner, Scott D.; Salituro, Gino M.; Smith, Jack L.; and Tsou, Nancy N., 5,350,763, Cl. 514-450.000.
Salt, Tom; Drake, Rodney; and Allen, Ray, to Microchip Technology Incorporated. Premature termination of microcontroller EEPROM write. 5,351,216, Cl. 365-230.010.
Salzmann, Thomas N.: *See*—
DiNinno, Frank P.; and Salzmann, Thomas N., 5,350,846, Cl. 540-302.000.
Sambale, Clemens: *See*—
Schweikert, Loni; and Sambale, Clemens, 5,350,773, Cl. 514-763.000.
Samit, Benjamin: *See*—
Michener, John R.; and Samit, Benjamin, 5,351,293, Cl. 380-21.000
Sampath, Vijay R.: *See*—
Freymeyer, Douglas A.; Holloway, Richard L.; Kiracofe, Ronald J.; and Sampath, Vijay R., 5,350,503, Cl. 208-131.000.
Samsung Electron Devices Co., Ltd.: *See*—
Jeong, Il-hyeok, 5,350,971, Cl. 313-487.000.
Samsung Electronics Co., Ltd.: *See*—
Kim, Seok T., 5,350,702, Cl. 437-40.000.
Ko, Jaehong; Kim, Sungtae; Shin, Hyunbo; and Kang, Seonghun, 5,350,707, Cl. 437-52.000.
Lee, Wui-soo, 5,350,715, Cl. 437-250.000.
Nakashima, Takashi, 5,351,213, Cl. 365-201.000
Samsung Electronics Ltd.: *See*—
Lee, Hyung S., 5,350,490, Cl. 156-655.000.
Samuelson, Kent E.: *See*—
McClure, Lawrence C.; Samuelson, Kent E.; and Hansen, Daniel L., 5,350,407, Cl. 607-16.000.
Sanbayashi, Daisuke; Hirako, Osamu; Danno, Yoshiaki; and Koga, Kazuo, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Exhaust emission control system. 5,349,816, Cl. 60-277.000.
Sanchez, Jean-Yves: *See*—
Armand, Michel; Sanchez, Jean-Yves; and Deroo, Daniel, 5,350,646, Cl. 429-192.000.
Sander, Hans J.; Hartmann, Olaf-Rene ; Wirth, Hermann O.; and Wehner, Wolfgang, to Ciba-Geigy Corporation. Stabilised chlorine-containing polymer compositions. 5,350,785, Cl. 524-100.000.
Sanders, Stuart E.; and Bauer, Fred P., to Magnetek. Electrical half connector with contact-centering vanes. 5,350,292, Cl. 439-733.000.
Sanders, Stuart E.: *See*—
Van Wagener, Raymond H.; Kulka, Robert A.; Hoogmoed, Richard; Sanders, Stuart E.; and Bauer, Fred P., 5,350,316, Cl. 439-460.000.
Sanders, Vernard W., to Pemko Manufacturing Company. Locking astragal. 5,350,207, Cl. 292-335.000.
Sandhu, Gurtej S.: *See*—
Thakur, Randhir P. S.; Sandhu, Gurtej S.; and Martin, Annette L., 5,350,236, Cl. 374-161.000.
Sandoz Ltd.: *See*—
Hamabe, Kenkichi; Matsuo, Shigemi; Nomachi, Hiroshi; Ogawa, Hideo; and Ueda, Minoru, 5,350,450, Cl. 106-802.000
Sandstrom, Roland, to Infrasonik AB. Method and apparatus for the generation of low frequency sound. 5,350,887, Cl. 181-142.000
Sanemitsu, Yuzuru: *See*—
Kawamura, Shinichi; Izumi, Kenichi; Sato, Junichi; Sanemitsu, Yuzuru; Sato, Ryo; Hamada, Tatsuhiro; and Shibata, Hideyuki, 5,350,736, Cl. 504-266.000.
Sanhill Oy: *See*—
Eskelinen, Paavo, 5,349,963, Cl. 128-733.000
Sankaran, Venkateswara A.: *See*—
Miller, John M.; and Sankaran, Venkateswara A., 5,350,983, Cl. 318-254.000.
Sanken Electric Co., Ltd.: *See*—
Shino, Kenji, 5,350,551, Cl. 264-57.000
Sanofi: *See*—
Emonds-Alt, Xavier; Goulaouic, Pierre; Proietto, Vincenzo; and Van Broeck, Didier, 5,350,852, Cl. 544-336.000
Sanshin Kogyo Kabushiki Kaisha: *See*—
Nanami, Masayoshi, 5,350,325, Cl. 440-41.000.
Takahashi, Masatetsu; and Torigai, Katsumi, 5,349,928, Cl. 123-73.00A.
Santa Barbara Research Center: *See*—
Brooks, John J., 5,349,879, Cl. 74-96.000.
Santen Pharmaceutical Co., Ltd.: *See*—
Mita, Shiro; Kawashima, Yoichi; Fujimura, Ken-ichi; Suhara, Hiroshi; and Okamoto, Masahiro, 5,350,860, Cl. 548-453.000
Santora, Scott: *See*—
Sher, Samuel E.; Borgianini, Stephen A.; Carpenter, Robert E.; Santora, Scott; and Scavuzzo, William S., 5,349,875, Cl. 73-864.650.
Santos, Donald: *See*—
DelPrete, Stephen D.; and Santos, Donald, 5,350,306, Cl. 439-69.000.
Sanyo Electric Co., Ltd.: *See*—
Harada, Yasoo; Matsushita, Shigeharu; Terada, Satoshi; Fujii, Emi; Kurose, Takashi; Higashino, Takayoshi; Yamada, Takashi; Nagamatsu, Akihito; Inoue, Daijirou; and Matsumura, Kouji, 5,350,709, Cl. 437-161.000.
Hosoya, Nobukazu; and Hirao, Yoshichika, 5,351,091, Cl. 348-505.000
Shoichi, Toya; and Okada, Tetsuya, 5,350,993, Cl. 320-2.000.
Sardelis, Timothy A.: *See*—
Bendel, Lee P.; Sardelis, Timothy A.; Stungurys, Leon K.; and Astarita, Thomas A., 5,350,419, Cl. 607-132.000.
Sarubbi, Thomas R.; and Sizensky, Joseph J., to OCG Microelectronic Materials, Inc. Selected structurally defined novolak binder resins and their use in radiation-sensitive compositions. 5,350,827, Cl. 528-155.000.
Sasaki, Hiroyuki; Ota, Tetsuro; Hattori, Eiji; and Ikeda, Michihiro, to Kanebo, Ltd.; and Mitsubishi Kasei Corporation. Dental filling composition. 5,350,782, Cl. 523-116.000.
Sasaki, Kazuo: *See*—
Yoshimura, Hiroshi; Sasaki, Kazuo; Kurisu, Kenji; Fujiwara, Takuji; and Abe, Mitsutoshi, 5,349,885, Cl. 477-61.000.
Sasaki, Masato: *See*—
Hase, Takashi; Kita, Ryusuke; Sasaki, Masato; and Morishita, Tadataka, 5,350,738, Cl. 505-473.000.
Sasaki, Mitsuhiro: *See*—
Yasuda, Shin-ichiro; Kawabe, Kuniyasu; and Sasaki, Mitsuhiro, 5,350,658, Cl. 430-124.000
Sasaki, Tomio; Kobayashi, Shinji; and Obata, Masahito, to Ricoh Company, Ltd. Image area discriminating device. 5,351,138, Cl 358-462.000.
Sato, Hideyuki, to Japan Electronic Control Systems Co., Ltd. Apparatus for controlling opening angle of throttle valve in internal combustion engine. 5,350,034, Cl. 180-197.000.
Sato, Hiroshi, to Casio Computer Co., Ltd. Electronic depth meter. 5,351,188, Cl. 364-413.310.

Sato, Junichi: *See—*
Kawamura, Shinichi; Izumi, Keiichi; Sato, Junichi; Sanemitsu, Yuzuru; Sato, Ryo; Hamada, Tatsuhiro; and Shibata, Hideyuki, 5,350,736, Cl. 504-266.000

Sato, Koji: *See—*
Takeda, Toyohiko; Sato, Koji; Suzuki, Yusuke; and Tomoda, Yoshitaka, 5,350,567, Cl. 422-111.000

Sato, Koki, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Bag suitable for use in air bag apparatus. 5,350,188, Cl. 280-739.000

Sato, Makoto: *See—*
Tominaga, Seigo; Akasi, Osamu; Imai, Masao; Sugita, Koji; Suzuki, Setuko; Maeda, Akira; Isiguro, Kazumasa; Uchida, Masahiro; and Sato, Makoto, 5,349,899, Cl. 99-646.00R

Sato, Morio; Abe, Yutaka; Takano, Jun; Ishii, Hirokazu; and Murata, Yasuzo, to Kabushiki Kaisha Pilot. Hand-writable polymer dispersed liquid crystal board set with high resistance layer of crosslinking polymer adjacent conductive layer. 5,351,143, Cl. 359-51.000

Sato, Ryo: *See—*
Kawamura, Shinichi; Izumi, Keiichi; Sato, Junichi; Sanemitsu, Yuzuru; Sato, Ryo; Hamada, Tatsuhiro; and Shibata, Hideyuki, 5,350,736, Cl. 504-266.000

Sato, Shinichi; and Kobayashi, Kazuto, to Matsushita Graphic Communication Systems, Inc. Spatial filter of an image signal processor providing alternating line images without moire. 5,351,312, Cl. 382-50.000.

Sato, Takehisa, to Kabushiki Kaisha Kawai Gakki Seisakusho. Apparatus for varying the sound of music as it is automatically played 5,350,880, Cl. 84-609.000.

Satoh, Toshio: *See—*
Ishida, Takashi; O'Hara, Shunji; Ishibashi, Kenzo; and Satoh, Toshio, 5,351,225, Cl. 369-44.320

Satomi, Mitsuo: *See—*
Kugiyama, Koichi; Sugaya, Yasuhiro; Inoue, Osamu; Hirota, Ken; and Satomi, Mitsuo, 5,350,628, Cl. 428-307.300

Satou, Hidetaka: *See—*
Ichimura, Nobuo; Yamazaki, Mitsuo; Fujita, Kohei; Satou, Hidetaka; Miyamoto, Yasuo; Kawasumi, Masao; and Kikuchi, Tohru, 5,350,811, Cl. 525-476.000.

Saulnier, Gary J.: *See—*
Chennakeshu, Sandeep; Hladik, Stephen M.; Saulnier, Gary J.; Koilpillai, Ravinder D.; and Toy, Raymond L., 5,351,274, Cl. 375-100.000.

Savage, Richard D.: *See—*
Hoffman, Carvel D.; Romberger, Charles J.; Ellinger, Hunter; Stephens, Thomas W.; and Savage, Richard D., 5,351,203, Cl. 364-560.000

Savaides, Andrew; and Salce, Ludwig, to Shiseido Co., Ltd. Permanent waving composition. 5,350,572, Cl. 424-71.000

Sawabe, Takao; Todoroki, Ryuichi; and Sakakibara, Takashi, to Pioneer Electronic Corporation. Method of recording and reproducing information on a video disk utilizing table of contents data. 5,351,132, Cl. 358-342.000.

Sawada, Hirokazu; Kakei, Tsutomu; Matsuki, Masaya; and Uesugi, Akio, to Fuji Photo Film Co., Ltd. Method of producing planographic printing plate support. 5,350,010, Cl. 164-476.000

Sawada, Kazuo; Inazawa, Shinji; and Yamada, Kouichi, to Sumitomo Electric Industries, Ltd. Electrical insulated wire. 5,350,638, Cl. 428-623.000.

Sawyer, Joseph C., to International Business Machines Corp. Target tracking in clutter degraded scenes using central level stereo processing. 5,351,056, Cl. 342-195.000.

Sawyer, Kenneth W.: *See—*
Aldridge, Lewis L.; and Sawyer, Kenneth W., 5,350,205, Cl. 285-328.000.

Scarpati, Thomas S.: *See—*
Chase, Vance A.; and Scarpati, Thomas S., 5,350,614, Cl. 428-53.000

Scatterday, Mark A. Deformable grip. 5,350,342, Cl. 482-49.000

Scavuzzo, William S.: *See—*
Sher, Samuel E.; Borgianini, Stephen A.; Carpenter, Robert E.; Santora, Scott; and Scavuzzo, William S., 5,349,875, Cl. 73-864.650.

Schairer, Werner: *See—*
Angerstein, Jorg; Giebler, Siegfried; Mistele, Thomas; Schairer, Werner; and Scheidle, Helmut, 5,350,943, Cl. 257-659.000

Schaldach, Max, to Biotronik Mess- und Therapiegerate GmbH & Co Ingenieurburo Berlin. Cardiac pacemaker. 5,350,408, Cl. 607-17.000.

Schaller, Klaus: *See—*
Fischer, Reiner; Uhr, Hermann; Widdig, Arno; Dutzmann, Stefan; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; and Schaller, Klaus, 5,350,861, Cl. 548-544.000

Schapira, Simon F. D.; Eycott, Robin W.; Richardson, William P.; and Robinson, Jim S., to Houseman Limited. Method for microbiological monitoring. 5,349,874, Cl. 73-864.000

Schegerin, Robert, to Intertechnique. Face mask with lip, fold, and resilient spring means to improve seal. 5,349,949, Cl. 128-206.240

Scheidle, Helmut: *See—*
Angerstein, Jorg; Giebler, Siegfried; Mistele, Thomas; Schairer, Werner; and Scheidle, Helmut, 5,350,943, Cl. 257-659.000.

Schenk, Roland: *See—*
Pinsl-Ober, Judith; and Schenk, Roland, 5,350,458, Cl. 134-22.100.

Schering Aktiengesellschaft: *See—*
Huth, Andreas; Kruger, Martin; Seidelmann, Dieter; Schmiechen, Ralph; Krause, Werner; Schneider, Herbert; and Turski, Lechoslaw, 5,350,750, Cl. 514-253.000

Schering Corporation: *See—*
Blythin, David J., 5,350,755, Cl. 514-278.000
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; and Versace, Richard W., 5,350,772, Cl. 514-721.000

Schetzina, Jan F., to North Carolina State University of Raleigh. Inverted integrated heterostructure of group II-VI semiconductor materials including epitaxial ohmic contact and method of fabricating same. 5,351,255, Cl. 372-45.000

Scheuer, Mark A.: *See—*
Amico, Mark S.; Scheuer, Mark A.; Wagman, Irwin; Seeley, Dale E.; Thompson, David M.; Kelsch, Dawn M.; and Drinkwater, Wayne D., 5,350,896, Cl. 219-216.000

Schiedegger, Charles E.; and MacLeod, Richard J., to Mid-America Building Products Corporation. Plastic gable vent. 5,349,799, Cl. 52-473.000

Schilling, Donald L., to SCS Mobilecom, Inc. Overlaying spread spectrum CDMA personal communications system. 5,351,269, Cl 375-1.000

Schilling, Donald L.: *See—*
Lomp, Gary R.; and Schilling, Donald L., 5,351,249, Cl. 371-43.000

Schlag, Scott A.: *See—*
Kropuenske, Glen; and Schlag, Scott A., 5,350,979, Cl. 315-411.000

Schlosser, Ernst-Gunther, to Hoechst Aktiengesellschaft. Device for producing thin films of mixed metal oxides from organic metal compounds on a substrate. 5,350,453, Cl. 118-719.000

Schlosser, Mark S.; and Goldring, Lionel S., to SpaceLabs Medical, Inc. Storage device with positive displacement dispenser by means of egress through a pierced septem. 5,350,366, Cl. 604-203.000.

Schlumberger Technology Corporation: *See—*
Watson, Charles C., 5,350,925, Cl. 250-269.300.

Schmid, Gunter; Schon, Gunter; and Simon, Ulrich. Cluster compound microelectronic component. 5,350,930, Cl. 257-14.000.

Schmid, Karlheinz, to Gebr. Heller Maschinenfabrik Gesellschaft mit beschrankter Haftung. Method for machining surfaces or revolution at workpieces and disk-shaped tool for performing same. 5,349,888, Cl. 82-1.110.

Schmid, Kurt: *See—*
Gruenwald, Werner; Schmid, Kurt; and Mast, Martin, 5,349,746, Cl. 29-620.000

Schmid, Norbert; and Aust, Norbert, to Siemens Aktiengesellschaft. Self-cleaning side channel machine having at least one impeller rotatably mounted in the housing of the machine. 5,350,274, Cl. 415-55.100

Schmidt, Bryan D.: *See—*
Leroux, Pierre; and Schmidt, Bryan D., 5,350,428, Cl. 29-25.010.

Schmidt, Hartmut: *See—*
Bodier, Rudiger; and Schmidt, Hartmut, 5,350,035, Cl. 180-271.000.

Schmidt, Ingo: *See—*
Hinzpeter, Jurgen; Schmidt, Ingo; and Brommrowitz, Helmut, 5,350,548, Cl. 264-40.400

Schmidt, Roman: *See—*
Stephan, Kurt; Schmidt, Roman; and Widmer, Hans, 5,350,797, Cl. 525-28.000

Schmidt, Scott A. Shopping list and discount coupon correlator. 5,350,197, Cl. 283-56.000.

Schmidts, Kurt: *See—*
Schoettle, Klaus; Eberhard, Joachim; Schmidts, Kurt; and Pavelka, Bozidar, 5,351,160, Cl. 242-347.200.

Schmiechen, Ralph: *See—*
Huth, Andreas; Kruger, Martin; Seidelmann, Dieter; Schmiechen, Ralph; Krause, Werner; Schneider, Herbert; and Turski, Lechoslaw, 5,350,750, Cl. 514-253.000

Schmieding, Reinhold; and Grafton, Donald, to Arthrex, Inc. Adjustable drill guide with interchangeable marking hooks. 5,350,383, Cl. 606-96.000

Schmitt, Kirk D., to Mobil Oil Corp. Synthesis of crystalline ZSM-18. 5,350,570, Cl. 423-705.000

Schmitt, Michael, to BASF Aktiengesellschaft. Preparation of dianthraquinone-N,N'-dihydroazine and its chlorination products 5,350,853, Cl. 544-339.000.

Schmucki, Peter; and Wey, Paul, to Geberit AG. Drain valve for a flush tank. 5,349,981, Cl. 137-436.000.

Schnalke, Karl-Erwin; Heinrich, Josef; and Doring, Fritz, to Bayer Aktiengesellschaft. Process for the preparation of difluorobenzodioxole and chlorofluorobenzodioxole. 5,350,865, Cl. 549-434.000.

Schneck, Gary G., to Gendex Corporation. Disposable container for cleaning and lubricating a dental handpiece. 5,350,064, Cl. 206-368.000.

Schneider, Bruce S.: *See—*
Maimon, Jonathan; Schneider, Bruce S.; Gorray, Kenneth C.; and Mauro, Michele, 5,350,693, Cl. 435-287.000.

Schneider, Herbert: *See—*
Huth, Andreas; Kruger, Martin; Seidelmann, Dieter; Schmiechen, Ralph; Krause, Werner; Schneider, Herbert; and Turski, Lechoslaw, 5,350,750, Cl. 514-253.000.

Schneider, Richard P.; and Lott, James A., to United States of America, Energy. Electrically injected visible vertical cavity surface emitting laser diodes. 5,351,256, Cl. 372-45.000.

Schnurr, Werner: *See—*
Kuekenhoehner, Thomas; Goetz, Norbert; Fischer, Rolf; Schnurr, Werner; and Borchers, Dirk, 5,350,863, Cl. 549-323.000.

Schoettle, Klaus; Eberhard, Joachim; Schmidts, Kurt; and Pavelka, Bozidar, to BASF Magnetics GmbH. Magnetic tape cassettes and a separate housing part therefor. 5,351,160, Cl. 242-347.200.

Scholkens, Bernward: *See—*
Wagner, Adalbert; Henning, Rainer; Gerhards, Hermann; Scholkens, Bernward; Vevert, Jean-Paul; and Caille, Jean-Claude, 5,350,751, Cl. 514-258.000.

Scholl, Hans J.: *See—*
Welte, Rainer; and Scholl, Hans J., 5,350,780, Cl. 521-173.000.

Schon, Gunter: *See—*
Schmid, Gunter; Schon, Gunter; and Simon, Ulrich, 5,350,930, Cl. 257-14.000

Schoon, Richard J.: *See—*
Walz, Mark; and Schoon, Richard J., 5,349,908, Cl. 102-307.000.

Schott Glaswerke: *See—*
Heimerl, Dieter; and Piegendorfer, Johann, 5,350,963, Cl. 310-353.000.

Schrage, Dean S., to United States of America, National Aeronautics and Space Administration. Augmented thermal bus wih multiple thermoelectric devices individually controlled. 5,349,821, Cl. 62-3.700.

Schramayr, Ernst; and Olewicz, Tadeusz A., to Jet Sew Technologies Inc. Method and apparatus for attaching sleeves to tubular shirt bodies. 5,349,913, Cl. 112-265.100.

Schramayr, Ernst: *See—*
Olewicz, Tadeusz A.; and Schramayr, Ernst, 5,349,912, Cl. 112-262.200.

Schreiner, Steven A.; Albertson, Karen M.; Brown, Mary L.; Hildebrandt, Camille M.; Hurlocker, Lacy M.; and Webster, Glenn C., to Minnesota Mining and Manufacturing Company. Repulpable securing devices. 5,350,630, Cl. 428-343.000.

Schreyer, Peter: *See—*
Mohr, Juergen; Oppenlaender, Knut; Franz, Lothar; Schreyer, Peter; and Thomas, Juergen, 5,350,429, Cl. 44-412.000.

Schrinner, Elmar: *See—*
Klesel, Norbert; Limbert, Michael; and Schrinner, Elmar, 5,350,753, Cl. 514-264.000.

Schrocker, Klaus P.: *See—*
Leopold, Hans; Stabinger, Hans; and Schrocker, Klaus P., 5,351,010, Cl. 324-704.000.

Schroijen, Josephus C.: *See—*
van de Moesdijk, Cornelis G. M.; Janssen, Hendrik J.; and Schroijen, Josephus C., 5,350,849, Cl. 544-203.000.

Schuchman, Leonard: *See—*
Graham, Hatch; Moses, Charles; Schuchman, Leonard; and Bruno, Ronald, 5,351,270, Cl. 375-1.000.

Schultz, Ronald: *See—*
Engelke, Robert M.; Colwell, Kevin; Gisske, EDward; and Schultz, Ronald, 5,351,288, Cl. 379-98.000.

Schuster, John D.: *See—*
Yager, Joseph C.; and Schuster, John D., 5,350,483, Cl. 156-571.000

Schuster, Matthias: *See—*
Jakubke, Hans-Dieter; Schuster, Matthias; and Aaviksaar, Aavo, 5,350,682, Cl. 435-68.100.

Schwab, Lawrence R., to A. E. Staley Manufacturing Company. Integrated process for producing crystalline fructose and a high fructose, liquid-phase sweetener. 5,350,456, Cl. 127-42.000.

Schweikert, Loni; and Sambale, Clemens, to BASF Aktiengesellschaft. Stable, liquid products containing fat-soluble substances. 5,350,773, Cl. 514-763.000.

Schwenzfeier, Ray D.; and Hanson, Donald W., to BMC Industries, Inc. Glass multifocal ophthalmic lens with polarizing element and method of making. 5,351,100, Cl. 351-164.000.

Scientific-Atlanta, Inc.: *See—*
Highsmith, William, 5,351,240, Cl. 370-84.000.

Scientific Engineering Instruments, Inc.: *See—*
Kleppe, John A., 5,349,959, Cl. 73-597.000.

Scientific Measurement Systems, Inc.: *See—*
Hoffman, Carvel D.; Romberger, Charles J.; Ellinger, Hunter; Stephens, Thomas W.; and Savage, Richard D., 5,351,203, Cl. 364-560.000.

Scott, Andrew M., to Secretary of State for Defence in Her Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, The. Optical beam steering device. 5,351,250, Cl. 372-3.000.

Scott, Curtis E.: *See—*
Bucher, Gerald L.; Welker, Christopher H.; Hammer, Edward E.; Scott, Curtis E.; and Soules, Thomas F., 5,350,972, Cl. 313-636.000.

Scott, John J.: *See—*
Deckelbaum, Lawrence I.; and Scott, John J., 5,350,375, Cl. 606-7.000.

Scott Paper Company: *See—*
Frazier, Alan D.; and Leweis, Richard P., 5,350,087, Cl. 222-153.000.

Scotton, Paolo: *See—*
Menez, Jean; Rosso, Michele; and Scotton, Paolo, 5,351,291, Cl. 379-410.000.

Scovill Fasteners Inc.: *See—*
Butkus, John J.; and Bird, Paul R., 5,349,890, Cl. 83-171.000.

Scribner, Richard A.: *See—*
Mazza, John C.; Stark, William A.; Scribner, Richard A.; Frye, Stephen L.; and Hardiman, Kempton H., 5,350,564, Cl. 422-63.000.

Scripps Clinic and Research Foundation: *See—*
Griffin, John H.; Gruber, Andras; Hanson, Stephen R.; and Harker, Lawrence A., 5,350,578, Cl. 424-94.640.

SCS Mobilecom, Inc.: *See—*
Schilling, Donald L., 5,351,269, Cl. 375-1.000.

Sea-Land Service, Inc.: *See—*
Barnett, Robert B.; and Wisniewski, Stanley J., 5,350,210, Cl. 294-81.530.

Seale, Joseph B.: *See—*
Kamen, Dean L.; Seale, Joseph B.; Briggs, Joseph; and Arnold, Finn, 5,349,852, Cl. 73-149.000.

Sealex, Inc.: *See—*
Hagen, Peter; and Hagen, Matthias, 5,350,235, Cl. 366-168.000.

Seamon, Kenneth B.; Robbins, Joan; and Laurenza, Antonio, to United States of America, Health and Human Services. Aminoalkylcarbamyl derivatives of forskolin as intermediates for the synthesis of useful forskolin derivatives. 5,350,864, Cl. 549-389.000.

Seaway Technologies, Inc.: *See—*
Parra, Jorge M., 5,349,774, Cl. 43-9.200

Secord, Denver. Rotary engine and cam-operated working member assembly. 5,350,287, Cl. 418-245.000.

Secretary of State for Defence in Her Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, The: *See—*
Scott, Andrew M., 5,351,250, Cl. 372-3.000.

Seeley, Dale E.: *See—*
Amico, Mark S.; Scheuer, Mark A.; Wagman, Irwin; Seeley, Dale E.; Thompson, David M.; Kelsch, Dawn M.; and Drinkwater, Wayne D., 5,350,896, Cl. 219-216.000

Seevinck, Evert; and Bolt, Jacob H., to U.S. Philips Corporation. Low noise, low distortion MOS amplifier circuit. 5,351,011, Cl. 330-253.000.

Seher, Jens-Peter: *See—*
King, David A.; and Seher, Jens-Peter, 5,351,127, Cl. 356-445.000.

Sehringer, Lawrence T., to International Business Machines Corporation. High speed continuous-forms printer. 5,350,246, Cl. 400-613.200.

Seib, James N. Motorized golf bag cart circuit and apparatus. 5,350,982, Cl. 318-139.000.

Seibert, Edward J.; Ferguson, Gerald D.; and Taylor, Marie E., to United States of America, Navy. Thoriated-tungsten, split-ring, hollow-cathode electrode for discharge devices. 5,351,260, Cl. 372-84.000.

Seidelmann, Dieter: *See—*
Huth, Andreas; Kruger, Martin; Seidelmann, Dieter; Schmiechen, Ralph; Krause, Werner; Schneider, Herbert; and Turski, Lechoslaw, 5,350,750, Cl. 514-253.000.

Seisan Kaihatsu Kagaku Kenkyusho: *See—*
Takada, Toshio; Terashima, Takahito; Iijima, Kenji; Yamamoto, Kazunuki; Hirata, Kazuto; and Bando, Yoshichika, 5,350,606, Cl. 427-564.000.

Seki, Hajime: *See—*
Brezoczky, Blasius; McClelland, Gay M.; and Seki, Hajime, 5,351,229, Cl. 369-99.000.

Seki, Hiroyuki: *See—*
Abe, Akira; Seki, Hiroyuki; Okada, Hisashi; and Inaba, Tadashi, 5,350,668, Cl. 430-393.000.

Sekimori, Toshiyuki: *See—*
Kuno, Hiromichi; Sekimori, Toshiyuki; Inaba, Shigemitsu; and Hasegawa, Toshiaki, 5,350,312, Cl. 439-310.000.

Selburg, Oscar F.: *See—*
Michaelis, Ronald E.; and Selburg, Oscar F., 5,350,262, Cl. 409-178.000.

Self, Robert W.; and Styron, Karl. Device to permit an outboard motor boat to operate in shallow water. 5,350,327, Cl. 440-66.000.

Sellers, Edgar V.: *See—*
Kaminer, Jon J.; Nevers, Gary F.; and Sellers, Edgar V., 5,351,308, Cl. 382-8.000.

Selli, Raman K.: *See—*
Lurie, Edward B.; and Selli, Raman K., 5,351,327, Cl. 385-78.000

Semiconductor Energy Laboratory Co., Ltd.: *See—*
Yamazaki, Shunpei; and Takemura, Yasuhiko, 5,350,937, Cl. 257-316.000.

Semm, Kurt, to WISAP Gesellschaft fur wissenschaftlichen Apparatebau mbH. Instrument for applying an adhesion prophylaxis for endoscopic surgery. 5,350,387, Cl. 606-151.000.

Semperit Reifen Aktiengesellschaft: *See—*
Beckmann, Otto; Loidl, Helmut; and Petraschek, Ernst, 5,350,001, Cl. 152-209.00R.

Sencore, Inc.: *See—*
Kropuenske, Glen; and Schlag, Scott A., 5,350,979, Cl. 315-411.000.

Senko Denki Corporation Ltd.: *See—*
Iguchi, Atsushi; and Iguchi, Kuniaki, 5,350,901, Cl. 219-630.000.

Sensormatic Electronics Corporation: *See—*
Liu, Nen-Chin; O'Handley, Robert C.; Ho, Wing; and Copeland, Richard, 5,351,033, Cl. 340-572.000.

Sensormedics Corp.: *See—*
McCarthy, Rex; and Smith, Robert, 5,349,952, Cl. 128-633.000.
McCarthy, Rex; and Smith, Robert, 5,349,953, Cl. 128-633.000.

Series, Robert W.: *See—*
Barraclough, Keith G.; and Series, Robert W., 5,349,921, Cl. 117-13.000.

Serrano, Jean-Francois: *See—*
Bonin, Viviane; and Serrano, Jean-Francois, 5,349,877, Cl. 74-6.000.

Severson, James M.: *See—*
Gregory, Thomas A.; Keller, Christopher G.; and Severson, James M., 5,351,156, Cl. 360-74.100.

Sevilleja, Jose: *See—*
Garrido, Alfonso; and Sevilleja, Jose, 5,349,854, Cl. 73-490.000.

SGS-Thomson Microelectronics, Inc.: *See*—
Carobolante, Francesco; and Pace, Ermanno, 5,350,984, Cl. 318-254.000.
Huang, Kuei-Wu, 5,350,486, Cl. 156-633.000
SGS-Thomson Microelectronics S.r.l.: *See*—
Marchio, Fabio; Novarini, Enrico; and Rossi, Giorgio, 5,350,998, Cl. 323-312.000
SGS-Thomson Microelectronics, S.A.: *See*—
Rouy, Olivier, 5,351,214, Cl. 365-210.000
Shaffer, Thomas H.; and Wolfson, Marla R., to Temple University of the Commonwealth System of Higher Education. Control, treatment and/or diagnosis of physiological conditions with degassed perfluorocarbon liquid. 5,350,359, Cl. 604-51.000
Shaffer, Timothy D., to Exxon Chemical Patents Inc. Carbocationic catalysts and process for using said catalysts. 5,350,726, Cl. 502-169.000
Shaffer, Timothy D., to Exxon Chemical Patents Inc. Carbocationic catalysts and process for using said catalysts. 5,350,819, Cl 526-189.000
Shah, Chandra R.: *See*—
Snow, Robert A.; Delecki, Daniel J.; Shah, Chandra R.; and Hollister, K. Robert, 5,350,696, Cl. 546-270.000
Shah, Pradeep L.: *See*—
McElroy, Dave J.; Gill, Manzur; and Shah, Pradeep L., 5,350,706, Cl. 437-52.000
Shalaby, Shalaby W.: *See*—
Linden, Charles L.; and Shalaby, Shalaby W., 5,350,798, Cl 525-41.000
Shansky, Albert, to Combe Incorporated. Dyestuff composition for the gradual dyeing of hair by atmospheric oxidation and process using the same. 5,350,424, Cl. 8-406.000
Shapiro, Eduardo M. Fastening closure system. 5,349,726, Cl. 24-713.600
Share, Leroy S.: *See*—
Ketcham, Thomas D.; Share, Leroy S.; and St. Julien, Dell J., 5,350,637, Cl. 428-539.500
Sharkey, James P.; and Bonasera, Richard, to Sharkey, James P. Filtration apparatus and method for removing particulate contaminants from commercial laundry waste water. 5,350,526, Cl. 210-791.000.
Sharp Kabushiki Kaisha: *See*—
Hase, Takashi; Kita, Ryusuke; Sasaki, Masato; and Morishita, Tadataka, 5,350,738, Cl. 505-473.000.
Ishii, Mitsuo, 5,351,155, Cl. 360-46.000
Itoh, Nobuyuki; and Taniguchi, Tsugiko, 5,350,537, Cl 252-299.010
Okumura, Toshiyuki; Konushi, Fumihiro; Morioka, Tatsuya; and Matsumoto, Narihito, 5,351,258, Cl. 372-46.000.
Shaw, Christopher K.; Tuckett, Phillip C.; and Bowers, Bill E., to Conoco Specialty Products Inc. System and process for hydrocyclone separation of particulate solids and at least one liquid phase from a multiphase liquid mixture. 5,350,525, Cl. 210-744.000.
Shaw, Herbert J.: *See*—
Toyama, Keiichiro; Kim, Byoung Y.; Huang, Shangyuan; and Shaw, Herbert J., 5,351,252, Cl. 372-29.000
She, Yongzheng; Chen, Shizheng; Cao, Weilou; and Shih, Yanhua, to CSL Opto-Electronics Corporation. X-ray microscope with a direct conversion type x-ray photocathode. 5,351,279, Cl. 378-43.000
Shea, Andrew J.: *See*—
Andert, Gary W.; Botts, Rollin D.; and Shea, Andrew J., 5,349,789, Cl. 52-7.000
Sheaffer, John E.; and Deitrich, Eric A., to Lab Products. Ventilated cage and open rack system. 5,349,923, Cl. 119-15.000
Shealy, Noah A., to Dana Corporation. Steerable axle assembly with preloaded kingpin drawkeys. 5,350,183, Cl. 280-96.100
Sheehan, Terrence M.; Mukherjee, Jyoti; Cady, Raymond C.; Comstock, Gary L.; and Soroka, Daniel P., to Hardinge Brothers, Inc. Temperature compensated and shock resistant machine tool. 5,349,731, Cl. 29-27.00R
Sheely, Shawn M. Cargo binder. 5,350,093, Cl. 224-34.000.
Shelby Group International Inc.: *See*—
Ragan, Thomas G., 5,349,705, Cl. 2-161.600.
Shell Oil Company: *See*—
Drent, Eit; and Jager, Willem W., 5,350,876, Cl. 560-207.000
Van Doorn, Johannes A.; van der Heijden, Harry; and Stil, Hans A., 5,350,725, Cl. 502-162.000.
Shellhause, Michael W.: *See*—
Harshbarger, John H., Jr.; and Shellhause, Michael W., 5,351,201, Cl. 364-551.010
Shepard, Steven M.; and Moncrief, William A. Repair device for elastomeric wall. 5,350,481, Cl. 156-423.000
Sher, Arieh. Device for removal of intraluminal occlusions. 5,350,390, Cl. 606-159.000.
Sher, Samuel E.; Borgianini, Stephen A.; Carpenter, Robert E.; Santora, Scott; and Scavuzzo, William S., to Norton Company. Universal sampling device for high and low viscosity substances. 5,349,875, Cl 73-864.650.
Sheridan, Kevin M., to Xerox Corporation. Corrugated fang for multi media feeder. 5,350,168, Cl. 271-122.000
Sherman, Mark A., to George Group, The. Method for improving manufacturing processes. 5,351,195, Cl. 364-468.000
Shibaike, Narito; Nagashima, Michiyoshi; Ueno, Fumiaki; and Kishi, Toshinori, to Matsushita Electric Industrial Co., Ltd. Method of producing microscopic structure. 5,350,499, Cl. 204-192.340.
Shibata, Hideki, to Kabushiki Kaisha Toshiba. Method of manufacturing a semiconductor IC device having multilayer interconnection structure. 5,350,712, Cl. 437-195.000
Shibata, Hideto: *See*—
Yagi, Tatsuhiko; Hisada, Ryuki; and Shibata, Hideto, 5,350,677, Cl. 435-21.000
Shibata, Hideyuki: *See*—
Kawamura, Shinichi; Izumi, Keiichi; Sato, Junichi; Sanemitsu, Yuzuru; Sato, Ryo; Hamada, Tatsuhiro; and Shibata, Hideyuki, 5,350,736, Cl. 504-266.000.
Shibata, Masaru: *See*—
Azuma, Yusaku; Ishihara, Katsumi; and Shibata, Masaru, 5,350,269, Cl. 414-416.000
Shibata, Takuji, to Sony Corporation. Magnetoresistance effect thin film head with interconnected electrode structure. 5,351,158, Cl 360-113.000
Shieh, Chan-Long: *See*—
Lebby, Michael S.; Shieh, Chan-Long; and Ackley, Donald E., 5,351,257, Cl. 372-46.000
Shieh, Ming-Dang. Faucet with a movable extension nozzle. 5,349,987, Cl. 137-801.000
Shields, Jack W. Tethered butterfly needle trap. 5,350,368, Cl 604-263.000
Shih Yang Tso: *See*—
Chiang, Tzung-Nan, 5,350,146, Cl. 248-231.400.
Shih, Yanhua: *See*—
She, Yongzheng; Chen, Shizheng; Cao, Weilou; and Shih, Yanhua, 5,351,279, Cl. 378-43.000
Shihota, Isao: *See*—
Kimoto, Hidetoshi; and Shihota, Isao, 5,350,288, Cl. 425-136.000.
Shillito, Ray; Carswell, Gleta; Harms, Christian; Boyce, Cindy; and Chang, Yin-Fu, to Ciba-Geigy Corporation. *Zea mays* plants and transgenic *Zea mays* plants regenerated from protoplasts or protoplast-derived cells. 5,350,689, Cl. 435-240.470
Shima, Hideaki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho Deadman brake assembly for cargo vehicles. 5,350,036, Cl 180-273.000.
Shimada, Kazuyuki: *See*—
Inage, Osamu; and Shimada, Kazuyuki, 5,350,900, Cl. 219-508.000
Shimadzu Corporation: *See*—
Kadowaki, Toshio; and Yamaguchi, Shojiro, 5,351,282, Cl. 378-198.000
Kikumoto, Mamoru, 5,350,520, Cl. 210-656.000
Shimano Inc.: *See*—
Furomoto, Yoshiyuki; Yoshikawa, Osamu; and Sugawara, Kenichi, 5,350,129, Cl. 242-231.000.
Hitomi, Yasuhiro; Sakaguchi, Noboru; and Ban, Masuo, 5,350,130, Cl. 242-241.000
Hitomi, Yasuhiro, 5,350,132, Cl. 242-247.000.
Morimoto, Shinichi, 5,350,133, Cl. 242-261.000.
Shimasaki, Yuichi: *See*—
Maruyama, Shigeru; Shimasaki, Yuichi; Kanehiro, Masaki; Ishioka, Takuji; Baba, Shigeki; and Hisaki, Takashi, 5,349,930, Cl. 123-143.00C.
Shimizu, Akira: *See*—
Matsuda, Yasuhiro; Yoshida, Takashi; Shimizu, Isao; Watanabe, Katsumi; Shimizu, Akira; and Yoshida, Masashi, 5,351,071, Cl 346-136.000
Shimizu Construction Co., Ltd.: *See*—
Taga, Masayasu, 5,349,794, Cl. 52-167.0CB.
Shimizu, Hideyuki: *See*—
Kawashima, Kazuhiko; Unjoh, Shigeki; and Shimizu, Hideyuki, 5,349,712, Cl. 14-73.500.
Shimizu, Isao: *See*—
Matsuda, Yasuhiro; Yoshida, Takashi; Shimizu, Isao; Watanabe, Katsumi; Shimizu, Akira; and Yoshida, Masashi, 5,351,071, Cl 346-136.000
Shimizu, Kiyoshi; and Fujiyoshi, Yoshihiro, to Honda Giken Kogyo Kabushiki Kaisha. Valve controller for controlling the suction valve of an internal-combustion engine. 5,349,929, Cl. 123-90.160
Shimizu, Osamu: *See*—
Takafuji, Akihiro; and Shimizu, Osamu, 5,351,111, Cl. 355-221.000.
Shimizu, Riyuuichi: *See*—
Sagawa, Akemi; Itoh, Ren; Sakai, Masahiko; and Shimizu, Riyuuichi, 5,350,789, Cl. 524-313.000.
Shimizu, Satoshi; Kudo, Tomohiro; and Suzuki, Kenichi, to Canon Kabushiki Kaisha. Sheet separating mechanism and method of flexing a sheet to facilitate separation from a stack. 5,350,166, Cl. 271-14.000.
Shimoda, Masakatsu: *See*—
Shoshi, Masayuki; Shimoda, Masakatsu; Konishi, Akiko; Kawahara, Megumi; Kojima, Akio; Suzuki, Tetsuro; and Yoshikawa, Masao, 5,350,653, Cl. 430-58.000.
Shimotsuma, Hiroshi: *See*—
Ikata, Yoshikatsu; Gou, Yasunao; Kimura, Toshiyuki; and Shimotsuma, Hiroshi, 5,351,041, Cl. 340-825.240.
Shimura, Takaki: *See*—
Hara, Yasushi; Watanabe, Kazuhiro; Ishikawa, Hiroshi; Matsui, Kiyoto; Kawabe, Kenji; and Shimura, Takaki, 5,350,964, Cl 310-357.000
Shin-Etsu Chemical Co., Ltd.: *See*—
Kawada, Nobuo; Kubota, Yoshihiro; Harada, Kesazi; and Itou, Kenji, 5,350,720, Cl. 501-97.000.
Takita, Ken-ichi; and Takahashi, Masaharu, 5,350,804, Cl 525-104.000
Shin, Hyunbo: *See*—
Ko, Jaehong; Kim, Sungtae; Shin, Hyunbo; and Kang, Seonghun, 5,350,707, Cl. 437-52.000.

Shinji, Yasuhisa: *See*—
Abukawa, Yukihiro; Takase, Hiraji; and Shinji, Yasuhisa, 5,350,309, Cl. 439-138.000.
Shinjo, Katsuhiko: *See*—
Yagi, Takayuki; Hirai, Yutaka; Takamatsu, Osamu; Nakayama, Masaru; Nose, Hiroyasu; Shinjo, Katsuhiko; and Simada, Yasuhiro, 5,349,858, Cl. 73-517.00A.
Shino, Kenji, to Sanken Electric Co., Ltd. Method of firing ceramic moldings containing a diffusible metallic oxide. 5,350,551, Cl. 264-57.000
Shinohara, Takahiro; and Ito, Yuji, to NEC Corporation. Network system comprising a plurality of lans connected to an ISDN via a plurality of routers, each capable of automatically creating a table for storing router information. 5,351,237, Cl. 370-58.300.
Shinohara, Yukito: *See*—
Ito, Yoshitoshi; Kawaguchi, Fumio; Shinohara, Yukito; and Haida, Munetaka, 5,349,951, Cl. 128-633.000.
Shinoyama, Teruharu: *See*—
Okada, Yuji; Fujio, Shunichi; Suzuki, Kazuhiro; Shinoyama, Teruharu; and Takeuchi, Yasuo, 5,350,438, Cl. 75-401.000.
Shinozaki, David M., to Monroe Auto Equipment Company. Adjustable damping system. 5,350,187, Cl. 280-707.000.
Shio, Kiyomi: *See*—
Mizoguchi, Toshiaki; Shio, Kiyomi; Ueshima, Yoshiyuki; Yasuda, Kazumi; Morimoto, Yoshio; Haga, Hiromitu; and Miyazawa, Kenichi, 5,350,009, Cl. 164-454.000.
Shionogi & Co., Ltd.: *See*—
Takeda, Toyohiko; Sato, Koji; Suzuki, Yusuke; and Tomoda, Yoshitaka, 5,350,567, Cl. 422-111.000
Shiota, Michio: *See*—
Murashima, Mitsuaki; Takahashi, Sakae; Ikeda, Yukio; Kobari, Hirokazu; Shiota, Michio; and Kazumi, Takashi, 5,350,193, Cl. 280-741.000
Shipley Company Inc.: *See*—
Trefonas, Peter, III; and Carey, Richard J., 5,350,714, Cl. 437-229.000.
Shiraishi, Hiroshi; Soga, Takashi; Murai, Fumio; Sakamizu, Toshio; and Hayashi, Nobuaki, to Hitachi, Ltd.; and Hitachi Chemical Co., Ltd. High-resolution lithography and semiconductor device manufacturing method. 5,350,485, Cl. 156-628.000.
Shiratori, Mieko: *See*—
Ebata, Nobuyoshi; Notsu, Kazuaki; Udagawa, Akiko; and Shiratori, Mieko, 5,350,552, Cl. 264-102.000.
Shiseido Co., Ltd.: *See*—
Savaides, Andrew; and Salce, Ludwig, 5,350,572, Cl. 424-71.000.
Shockey, Kenneth B.: *See*—
McCarney, David A.; Calabrese, Frank A.; and Shockey, Kenneth B., 5,349,926, Cl. 119-721.000.
Shoichi, Toya; and Okada, Tetsuya, to Sanyo Electric Co., Ltd. Power supply. 5,350,993, Cl. 320-2.000.
Shoji, Rihito; Hase, Hiroyuki; and Wakamiya, Masayuki, to Matsushita Electric Industries Co., Ltd. Pressure sensor including bridge circuit for detecting permeability of a magnetic layer. 5,349,868, Cl. 73-728.000
Shomo, Robert B., Jr.: *See*—
Kemske, Jonathan D.; Consaul, James R.; Rosenwald, Diane R.; Shomo, Robert B., Jr.; and Wendt, Dan J., 5,350,904, Cl. 219-730.000.
Shoshi, Masayuki; Shimoda, Masakatsu; Konishi, Akiko; Kawahara, Megumi; Kojima, Akio; Suzuki, Tetsuro; and Yoshikawa, Masao, to Ricoh Company, Ltd. Electrophotographic photoconductor. 5,350,653, Cl. 430-58.000.
Shou-Jen, Huang, to Acumen Co., Ltd. Toothbrush without metal gasket. 5,350,219, Cl. 300-21.000.
Showa Aluminum Corporation: *See*—
Mikami, Fujio; Yasuhara, Kiyotada; Kojima, Masahiro; and Inoue, Susumu, 5,350,445, Cl. 106-14.410.
Showa Denko K.K.: *See*—
Ohnishi, Yutaka; Misu, Naoaki; Ishimura, Yoshimasa; and Mihara, Nobutake, 5,350,775, Cl. 549-220.000.
Showa Yakuhin Kako Co., Ltd.: *See*—
Inoue, Matsuhisa; and Sakai, Akira, 5,350,680, Cl. 435-34.000.
Sicker, Fred C.: *See*—
Delaney, William E., III; Connelly, John M., Jr.; and Sicker, Fred C., 5,349,896, Cl. 92-98.00R.
Sico Incorporated: *See*—
Andert, Gary W.; Botts, Rollin D.; and Shea, Andrew J., 5,349,789, Cl. 52-7.000.
Sieben, Joannes H. F. C.: *See*—
Bierhoff, Martinus P. M.; Coops, Peter; Van Eck, Dirk C.; and Sieben, Joannes H. F. C., 5,350,916, Cl. 250-214.100.
Sieber, L. Aryn, to Advanced Pro-Formance, Inc. Ski carrier. 5,350,096, Cl. 224-209.000.
Siemens Aktiengesellschaft: *See*—
Boverie, Serge; and Bidan, Pierre, 5,349,932, Cl. 123-399.000.
Buchholtz, Gerhard; and Mahler, Matthias, 5,350,352, Cl. 601-4.000.
Finkler, Klaus; and Heer, Volker, 5,351,306, Cl. 382-6.000.
Hoos, Gerd, 5,351,205, Cl. 364-724.010.
Ruile, Werner; Machui, Jurgen; and Visintini, Giuliano, 5,351,022, Cl. 333-195.000.
Saffer, Edmund, 5,350,351, Cl. 601-2.000.
Schmid, Norbert; and Aust, Norbert, 5,350,274, Cl. 415-55.100.
Stroetmann, Brigitte; Lenz, Michael; Hirschberg, Jakub; and Strandberg, Hans, 5,350,403, Cl. 607-5.000.
Siemens Automotive L.P.: *See*—
Bergstrom, John S., 5,350,119, Cl. 239-585.400.
Siemens Elema AB: *See*—
Hoegnelid, Kurt; and Budgifvars, Goran-Sven, 5,350,412, Cl. 607-34.000.
Siemens Energy & Automation, Inc.: *See*—
Hancock, Drew S., 5,351,165, Cl. 361-637.000.
Siemens Nixdorf Informationssysteme AG: *See*—
Rumpel, Peter, 5,350,100, Cl. 226-74.000.
Siemens Pacesetter, Inc.: *See*—
Kleks, Jonathan A.; Buchanan, Stuart W.; Wilson, Raymond J.; Poore, John W.; and Mann, Brian M., 5,350,410, Cl. 607-28.000.
Levine, Paul A., 5,350,401, Cl. 607-4.000.
Silvian, Sergiu, 5,350,405, Cl. 607-8.000.
Siemensmeyer, Karl: *See*—
Bach, Volker; Brox, Wolfgang; Etzbach, Karl-Heinz; Paul, Axel; and Siemensmeyer, Karl, 5,350,873, Cl. 560-60.000.
Sieradzki, Manny: *See*—
White, Nicholas R.; Sieradzki, Manny; and Renau, Anthony, 5,350,926, Cl. 250-492.210.
Sigl, Peter: *See*—
Paul, Michael; Wilks, Eberhard; and Sigl, Peter, 5,350,340, Cl. 475-237.000.
Signode Corporation: *See*—
Koblella, Robert J., 5,350,472, Cl. 156-157.000.
Sikkenga, David L.: *See*—
Behrens, Paul K.; Holzhauer, Juergen K.; Hussmann, Gregory P.; and Sikkenga, David L., 5,350,874, Cl. 560-80.000.
Silicon Systems, Inc.: *See*—
Masumoto, Rodney T.; Ueda, Shunsaku; Chern, Jenn-Gang; and Lam, Kirby, 5,351,015, Cl. 331-1.00R.
Silverio, George: *See*—
Stamatopoulos, Michael; and Silverio, George, 5,350,070, Cl. 211-64.000.
Silvian, Sergiu, to Siemens Pacesetter, Inc. Method and apparatus for capacitor tolerance compensation in a cardiac stimulating device. 5,350,405, Cl. 607-8.000.
Simada, Yasuhiro: *See*—
Yagi, Takayuki; Hirai, Yutaka; Takamatsu, Osamu; Nakayama, Masaru; Nose, Hiroyasu; Shinjo, Katsuhiko; and Simada, Yasuhiro, 5,349,858, Cl. 73-517.00A.
Simon, Robert C., Jr.: *See*—
Poirier, David C.; Haraf, John C.; Stephens, George T.; Simon, Robert C., Jr.; and Himes, Edward G., 5,351,193, Cl. 364-431.010.
Simon, Ulrich: *See*—
Schmid, Gunter; Schon, Gunter; and Simon, Ulrich, 5,350,930, Cl. 257-14.000.
Simonin, Jean C., to Tornos-Bechler SA. Lathe. 5,349,889, Cl. 82-118.000.
Simons, Michael J., to Eastman Kodak Company. Photographic elements for producing blue, green, and red exposure records of the same hue and methods for the retrieval and differentiation of the exposure records. 5,350,664, Cl. 430-362.000
Simons, Michael J.: *See*—
Evans, Gareth B.; Rider, Christopher B.; and Simons, Michael J., 5,350,651, Cl. 430-21.000
Gasper, John; Evans, Gareth B.; Rider, Christopher B.; and Simons, Michael J., 5,350,650, Cl. 430-21.000.
Simpact Associates, Inc.: *See*—
Doll, William J., Jr.; Judy, Murray S.; Kirchner, Albert H., III; Krier, Thomas J.; McVicker, Rudolph M.; Monroe, Brian E.; Pettitt, Meldon L.; Reiswig, Danny R.; Watchorn, Alan; Wesley, Jerry A.; and Wirfel, John C., 5,351,276, Cl. 379-67.000.
Sims, John E.; Cosman, David J.; Lupton, Stephen D.; Mosley, Bruce A.; and Dower, Steven K., to Immunex Corporation. DNA encoding type II interleukin-1 receptors. 5,350,683, Cl. 435-69.100
Singer Company N.V., The: *See*—
Foo, Man Y., 5,349,767, Cl. 38-16.000
Singer, Stephen P.; Merkel, Paul B.; Clark, Bernard Arthur J.; and Stanley, Paul Louis R., to Eastman Kodak Company. Photographic elements containing magenta couplers and process for using same 5,350,667, Cl. 430-387.000.
Singh, Sheo B., to Merck & Co., Inc. Inhibitors of farnesyl protein transferase. 5,350,867, Cl. 554-121.000.
Sira Limited: *See*—
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Suarez, Gerardo, to New York Medical College. Method for the prevention and/or palliation of the complications of diabetes using N-alpha orginine acetyl. 5,350,766, Cl. 514-561.000

Subramaniam, Ramnath: *See—*
McGarry, Frederick J.; and Subramaniam, Ramnath, 5,350,814, Cl 525-531.000.

Suda, Koichi: *See—*
Miyazaki, Hideki; Endo, Tsunehiro; Watanabe, Kouzou; Takakura, Yuhachi; and Suda, Koichi, 5,351,182, Cl. 363-132.000.

Sudo, Shoichi: *See—*
Ohishi, Yasutake; Kanamori, Terutoshi; Nishida, Yoshiki; Mori, Atsushi; and Sudo, Shoichi, 5,351,335, Cl. 385-142.000

Sugahara, Hiroto: *See—*
Takahashi, Yoshikazu; Suzuki, Masahiko; Sugahara, Hiroto; and Kanegae, Takahiro, 5,351,183, Cl. 347-69.000.

Sugawara, Kenichi: *See—*
Furomoto, Yoshiyuki; Yoshikawa, Osamu; and Sugawara, Kenichi, 5,350,129, Cl. 242-231.000

Sugaya, Yasuhiro: *See—*
Kugiyama, Koichi; Sugaya, Yasuhiro; Inoue, Osamu; Hirota, Ken; and Satomi, Mitsuo, 5,350,628, Cl. 428-307.300

Sugimoto, Kenichi: *See—*
Itoh, Hisato; Oguchi, Takahisa; Aihara, Shin; and Sugimoto, Kenichi, 5,350,843, Cl. 540-138.000

Sugimoto, Yoshihiko: *See—*
Takada, Yuji; Matsuda, Hiroshi; Yamane, Toshiki; and Sugimoto, Yoshihiko, 5,351,126, Cl. 356-376.000

Sugimura, Takaaki: *See—*
Tsuchiya, Hiroshi; Kokura, Makoto; Ozawa, Yutaka; and Sugimura, Takaaki, 5,350,809, Cl. 525-356.000

Sugita, Koji: *See—*
Tominaga, Seigo; Akasi, Osamu; Imai, Masao; Sugita, Koji; Suzuki, Setuko; Maeda, Akira; Isiguro, Kazumasa; Uchida, Masahiro; and Sato, Makoto, 5,349,899, Cl. 99-646.00R

Sugita, Yutaka: *See—*
Miyazaki, Kunio; Sugita, Yutaka; Mukoh, Akio; Miyoshi, Tadahiko; Miura, Osamu; Takahashi, Akio; Numata, Shunichi; Ogihara, Satoru; Yamada, Kazuji; Inoue, Hirokazu; and Kobayashi, Fumiyuki, 5,350,886, Cl. 174-250.000

Sugiyama, Takeshi; and Kitamura, Yutaka, to Mitsubishi Denki Kabushiki Kaisha. Plural generator apparatus for an electric hybrid automobile. 5,350,031, Cl. 180-65.400.

Suhara, Hiroshi: *See—*
Mita, Shiro; Kawashima, Yoichi; Fujimura, Ken-ichi; Suhara, Hiroshi; and Okamoto, Masahiro, 5,350,860, Cl. 548-453.000.

Suko, Scott K.: *See—*
Brennen, Michael B.; Moran, Steven A.; and Suko, Scott K., 5,351,180, Cl. 363-71.000

Sullivan, Erica A.: *See—*
Boenisch, Michael T.; and Sullivan, Erica A., 5,350,674, Cl 435-7.800

Sullivan, James L.; and Borgen, Gary S., to United States of America, Navy. Valve mechanism for an acoustic modulator. 5,349,986, Cl. 137-625.330.

Sullivan, Mark K., to Niobrara Research & Development Corporation Financial transmission system. 5,351,296, Cl. 380-24.000

Sultan, Bernt-Åke; and Ahlstrand, Lars E., to Neste OY. Silane-cross-linkable polymer composition containing a silane compound as a precuring retarder. 5,350,812, Cl. 525-477.000.

Sulzer Brothers Limited: *See—*
Stringaro, Jean-Paul, 5,350,566, Cl. 422-109.000.

Sulzer Rueti AG: *See—*
Gacsay, Lorant, 5,349,990, Cl. 139-194.000.

Sumanaweera, Thilaka S.; Glover, Gary H.; and Adler, John R., to Leland Stanford Junior University, Board of Trustees of the. Method and apparatus for correcting spatial distortion in magnetic resonance images due to magnetic field inhomogeneity including inhomogeneity due to susceptibility variations. 5,351,006, Cl. 324-309.000

Sumii, Masaaki; Sakai, Fumiko; and Yoshimura, Yasuyuki, to Sakura Color Products Corporation. Thermochromic composition 5,350,633, Cl. 428-402.210.

Sumii, Masaaki; Sakai, Fumiko; and Yoshimura, Yasuyuki, to Sakura Color Products Corporation. Thermochromic composition. 5,350,634, Cl. 428-402.210

Sumitomo Chemical Company, Limited: *See—*
Kawamura, Shinichi; Izumi, Keiichi; Sato, Junichi; Sanemitsu, Yuzuru; Sato, Ryo; Hamada, Tatsuhiro; and Shibata, Hideyuki, 5,350,736, Cl. 504-266.000

Sumitomo Electric Industries, Ltd.: *See—*
Harada, Keizo; Itozaki, Hideo; and Yazu, Shuji, 5,350,737, Cl. 505-477.000
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Tamekuni, Yoshikyo; Haibara, Tadashi; Matsumoto, Michito; and Nagasawa, Shinji, 5,351,328, Cl. 385-83.000.
Kenji, Takeuchi, 5,350,295, Cl. 432-5.000
Sawada, Kazuo; Inazawa, Shinji; and Yamada, Kouichi, 5,350,638, Cl. 428-623.000

Sumitomo Heavy Industries, Ltd.: *See—*
Kitajima, masaya, 5,350,291, Cl. 425-593.000.
Sorimachi, Kenichi; Tozawa, Hirokazu; Ochi, Toshiaki; and Itoh, Yasuhito, 5,350,005, Cl. 164-154.100.

Sumitomo Metal Industries, Ltd.: *See—*
Tsukamoto, Takashi; and Nakazato, Masakazu, 5,350,463, Cl 148-307.000

Sumitomo Wiring Systems, Ltd.: *See—*
Saba, Toshikazu, 5,350,314, Cl. 439-378.000.

Summers, James T.: *See—*
Peterson, Robert H.; and Summers, James T., 5,350,625, Cl. 428-219.000

Summit Packaging Systems, Inc.: *See—*
Smith, Jeremy P., 5,350,088, Cl. 222-402.190.

Sumotomo Chemical Company, Ltd.: *See—*
Tanabe, Yoo; Murakami, Masanari; and Yamamoto, Hitomi, 5,350,859, Cl. 548-319.100.

Sun, Mei H.: *See—*
Jensen, Earl M., Sun, Mei H.; Vecht, David L.; and Melen, Robert E., 5,351,268, Cl. 374-131.000

Sunamoto, Jeffrey A.: *See—*
Meyer, William D.; Sunamoto, Jeffrey A.; and Majette, Mark W., 5,350,929, Cl. 250-573.000

Sunderland, Robert D., to Wenger Manufacturing, Inc. Extrusion process for the production of freezeable breading product. 5,350,585, Cl. 426-19.000

Sundet, Douglas C.; and Fox, Albert H., to Minnesota Mining and Manufacturing. Filtration media comprising non-charged meltblown fibers and electrically charged staple fibers. 5,350,620, Cl. 428-172.000

Sundstrand Corporation: *See—*
Hagshenas, Behzad, 5,350,281, Cl. 417-371.000

Sunkyong Industries: *See—*
Kim, Ik S.; Chung, Do Y.; Kim, Jeong S.; Kim, Nam J.; and No, Jae G., 5,350,530, Cl. 252-8.600.

Sutton, William T.: *See—*
Ozarowski, Ryszard S.; Hand, Barry D.; Novack, Robert C.; Beard, Vernon D.; Threlkeld, James O.; and Sutton, William T., 5,349,983, Cl. 137-487.500.

Suwa, Kaye. Tubular pipe wrench. 5,349,887, Cl. 81-128.000.

Suzuki, Kazuhiro: *See—*
Okada, Yuji; Fujio, Shunichi; Suzuki, Kazuhiro; Shinoyama, Teruharu; and Takeuchi, Yasuo, 5,350,438, Cl. 75-401.000.

Suzuki, Kenichi: *See—*
Shimizu, Satoshi; Kudo, Tomohiro; and Suzuki, Kenichi, 5,350,166, Cl. 271-14.000

Suzuki, Masahiko: *See—*
Takahashi, Yoshikazu; Suzuki, Masahiko; Sugahara, Hiroto; and Kanegae, Takahiro, 5,351,183, Cl. 347-69.000.

Suzuki, Masashi: *See—*
Sakaida, Atsuo; Suzuki, Yoshihumi; Ikezaki, Yoshiyuki; Iriguchi, Akira; and Suzuki, Masashi, 5,350,962, Cl. 310-316.000

Suzuki, Nobuhiko: *See—*
Takagishi, Takashi; Suzuki, Nobuhiko; and Kato, Akira, 5,350,307, Cl. 439-79.000.

Suzuki, Seiko: *See—*
Tsuchitani, Shigeki; Suzuki, Seiko; Miki, Masayuki; and Matsumoto, Masahiro, 5,350,189, Cl. 280-728.00R

Suzuki, Setuko: *See—*
Tominaga, Seigo; Akasi, Osamu; Imai, Masao; Sugita, Koji; Suzuki, Setuko; Maeda, Akira; Isiguro, Kazumasa; Uchida, Masahiro; and Sato, Makoto, 5,349,899, Cl. 99-646.00R

Suzuki, Tadao: *See—*
Goto, Hiroshi; and Suzuki, Tadao, 5,351,277, Cl. 376-293.000.

Suzuki, Tadashi: *See—*
Kawarabashi, Tsukasa; Mima, Hiroshi; and Suzuki, Tadashi, 5,349,807, Cl. 57-261.000

Suzuki, Takayoshi, to Kowa Company Ltd. Tonometer. 5,349,955, Cl. 128-645.000.

Suzuki, Tetsuro; Yoshikawa, Masao; Nagai, Kazukiyo; and Ikuno, Hiroshi, to Ricoh Company, Ltd. Organic photovoltaic element. 5,350,459, Cl. 136-263.000.

Suzuki, Tetsuro: *See—*
Shoshi, Masayuki; Shimoda, Masakatsu; Konishi, Akiko; Kawahara, Megumi; Kojima, Akio; Suzuki, Tetsuro; and Yoshikawa, Masao, 5,350,653, Cl. 430-58.000.

Suzuki, Yasuhiro: *See—*
Nagata, Shizuo; Suzuki, Yasuhiro; Tabata, Tutomu; and Takahashi, Masahiro, 5,351,224, Cl. 369-44.290.

Suzuki, Yasushi: *See—*
Murakami, Fumio; Morita, Eiichi; Iwasaki, Tokuji; Suzuki, Yasushi; and Fujimoto, Kouha, 5,349,728, Cl. 28-107.000.

Suzuki, Yoshihumi: *See—*
Sakaida, Atsuo; Suzuki, Yoshihumi; Ikezaki, Yoshiyuki; Iriguchi, Akira; and Suzuki, Masashi, 5,350,962, Cl. 310-316.000.

Suzuki, Yusuke: *See—*
Takeda, Toyohiko; Sato, Koji; Suzuki, Yusuke; and Tomoda, Yoshitaka, 5,350,567, Cl. 422-111.000.

Swaim, Robert J.: *See—*
Fox, Robert L.; Copeland, Carl E.; Swaim, Robert J.; Coultrip, Robert H.; Johnston, David F.; Phillips, W. Morris; Johnson, Samuel D.; Dinkins, James R.; and Buckley, John D., 5,350,902, Cl. 219-633.000.

Swain, Matthew G.: *See—*
Franklin, Walter M., III; Swain, Matthew G.; and Kreimendahl, Bryan W., 5,350,611, Cl. 428-36.910.

Swallom, Daniel W.: *See—*
Stickler, David B.; Swallom, Daniel W.; Reich, Judith E.; Goldfarb, Victor M.; and Sadovnik, Isaac, 5,349,811, Cl. 60-39.060.

Swanson, Eric J.: *See—*
Thompson, Charles D.; and Swanson, Eric J., 5,351,050, Cl. 341-143.000.

Swearingen, John R.; Jardine, Richard K.; Bradford, John O.; and Rathbun, Loren L., to M & W Gear Company. Wrapping mechanism for round balers. 5,349,806, Cl. 56-341.000.

Sweedler, Jonathan: *See—*
Girard, Luke; and Sweedler, Jonathan, 5,351,207, Cl. 364-786.000.

Swenson, Richard M.; Cole, John C., III; Holmes, Steve L.; and Ekas, Paul B. Digitally weighted neuron for artificial neural network. 5,350,953, Cl. 307-464.000.

Swerdloff, Stuart; Mackle, Thomas R.; and Holmes, Timothy, to Wisconsin Alumni Research Foundation. Multi-leaf radiation attenuator for radiation therapy. 5,351,280, Cl. 378-65.000

Swope, C. Hermas; Link, John G.; and Hyman, Jones M., to Akzo N.V. Scattered light detection apparatus. 5,350,697, Cl. 436-527.000.

Sylvester, Robert L., to Westinghouse Electric Corporation. Device and method for thermally insulating a structure to prevent thermal shock therein. 5,350,011, Cl. 165-135.000.

Symbiosis Corporation: *See—*
Bales, Thomas O.; Gottlieb, Saul; Kortenbach, Jurgen A.; Ryan, Dana W.; Smith, Kevin W.; and Solar, Matthew S., 5,350,356, Cl. 604-27.000.

Symple Products, Inc.: *See—*
Evans, Ernest B., Jr.; Fulk, Hines E., Jr.; Bennett, Norman T.; and Wilkerson, Dana R., 5,350,149, Cl. 248-523.000.

Systems Division Incorporated: *See—*
Korbonski, John A.; and Greenwood, Eugene C., 5,349,714, Cl. 15-3.000.

Szafraniec, Bogdan: *See—*
Laskoskie, Clarence E.; and Szafraniec, Bogdan, 5,351,124, Cl. 356-351.000.

Szigethy, Attila, to Primrose, Inc. Air bag assembly mount including snap-fit horn attachment. 5,350,190, Cl. 280-728.00A.

T.N. Frantsevich Institute for Problems in Materials Science: *See—*
Grigortchak, Ivan I.; Tovstjuk, Kornei D.; Kovalyuk, Zahar D.; Kozmik, Ivan D.; and Bahmatyuk, Bogdan P., 5,351,164, Cl. 361-502.000.

TA Triumph-Adler AG: *See—*
Buttner, Gunter, 5,350,244, Cl. 400-496.000.

Tabata, Tutomu: *See—*
Nagata, Shizuo; Suzuki, Yasuhiro; Tabata, Tutomu; and Takahashi, Masahiro, 5,351,224, Cl. 369-44.290.

Tachikawa, Michiyoshi: *See—*
Bessho, Goroh; and Tachikawa, Michiyoshi, 5,351,313, Cl. 382-51.000.

Tadokoro, Hajime: *See—*
Oshiba, Tomomi; Mochizuki, Fumitaka; Tadokoro, Hajime; Kinoshita, Akira; Watanabe, Kazumasa; Tamaki, Kiyoshi; and Fujimaki, Yoshihide, 5,350,655, Cl. 430-78.000

Taga, Masayasu, to Shimizu Construction Co., Ltd. Wall for damping vibration. 5,349,794, Cl. 52-167.0CB.

Taguchi, Fumiaki; Morimoto, Masayoshi; Kyoya, Takeshi; and Takano, Mikio, to Kajima Corporation. Process for preparing hydrogen gas using microorganism. 5,350,685, Cl. 435-168.000.

Taguchi, Fumiaki; Morimoto, Masayoshi; Kyoya, Takeshi; and Takano, Mikio, to Kajima Corporation. Microorganisms useful for hydrogen gas production. 5,350,692, Cl. 435-252.700.

Taichi-S Co., Ltd.: *See—*
Nezu, Takashi; Iwagami, Minoru; and Kawashima, Hisayoshi, 5,350,077, Cl. 213-75.00R.

Taisho Pharmaceutical Co., Ltd.: *See—*
Asaka, Toshifumi; Misawa, Yoko; Kashimura, Masato; Morimoto, Shigeo; Watanabe, Yoshiaki; and Hatayama, Katsuo, 5,350,839, Cl. 536-7.400.

Takada, Kanji. Enteric formulations of physiologically active peptides and proteins. 5,350,741, Cl. 514-3.000.

Takada, Toshio; Terashima, Takahito; Iijima, Kenji; Yamamoto, Kazunuki; Hirata, Kazuto; and Bando, Yoshichika, to Kanegafuchi Chemical Industry Co., Ltd.; Nippon Steel Corporation; Nec Corporation; and Seisan Kaihatsu Kagaku Kenkyusho. Single crystal ferroelectric barium titanate films. 5,350,606, Cl. 427-564.000.

Takada, Yasunari: *See—*
Kiri, Shuichi; Kieda, Kouki; Kachi, Shunichi; Takekoshi, Yukinori; Takada, Yasunari; Nakahara, Yuji; and Nishinaka, Tomoyuki, 5,350,960, Cl. 310-194.000

Takada, Yuji; Matsuda, Hiroshi; Yamane, Toshiki; and Sugimoto, Yoshihiko, to Matsushita Electric Works, Ltd. Optical measurement system for determination of an object's profile or thickness. 5,351,126, Cl. 356-376.000.

Takafuji, Akihiro; and Shimizu, Osamu, to Fuji Xerox Co., Ltd. Corona discharge device. 5,351,111, Cl. 355-221.000

Takagishi, Takashi; Suzuki, Nobuhiko; and Kato, Akira, to Yazaki Corporation. Connector for printed circuit board. 5,350,307, Cl 439-79.000.

Takahashi, Akio: *See—*
Miyazaki, Kunio; Sugita, Yutaka; Mukoh, Akio; Miyoshi, Tadahiko; Miura, Osamu; Takahashi, Akio; Numata, Shunichi; Ogihara, Satoru; Yamada, Kazuji; Inoue, Hirokazu; and Kobayashi, Fumiyuki, 5,350,886, Cl. 174-250.000

Takahashi, Ichiro; Tanaka, Yasundo; and Sakiyama, Katsunori, to Olympus Optical Co., Ltd. Endoscope system with a rotating treatment adapter at the end. 5,349,940, Cl. 128-4.000.

Takahashi, Masaharu: *See—*
Takita, Ken-ichi; and Takahashi, Masaharu, 5,350,804, Cl. 525-104.000

Takahashi, Masahiro: *See—*
Nagata, Shizuo; Suzuki, Yasuhiro; Tabata, Tutomu; and Takahashi, Masahiro, 5,351,224, Cl. 369-44.290

Takahashi, Masatetsu; and Torigai, Katsumi, to Sanshin Kogyo Kabushiki Kaisha. Air intake arrangement for a two-cycle engine. 5,349,928, Cl. 123-73.00A.

Takahashi, Ryoichi, to Kabushiki Kaisha Toshiba. Gradient coil and gradient coil unit for MRI and methods of manufacturing the same. 5,349,744, Cl. 29-602.100.

Takahashi, Sakae: *See—*
Murashima, Mitsuaki; Takahashi, Sakae; Ikeda, Yukio; Kobari, Hirokazu; Shiota, Michio; and Kazumi, Takashi, 5,350,193, Cl. 280-741.000

Takahashi, Tadashi: *See—*
Kawamata, Syooichi; Takahashi, Tadashi; and Morinaga, Shigeki, 5,351,027, Cl. 338-32.00R.

Takahashi, Yoshikazu; Suzuki, Masahiko; Sugahara, Hiroto; and Kanegae, Takahiro, to Brother Kogyo Kabushiki Kaisha. Ink droplet ejection device for a drop-on-demand type printer. 5,351,183, Cl. 347-69.000.

Takahashi, Yuji: *See—*
Naito, Masataka; Takahashi, Yuji; Hiroi, Masakazu; Isobe, Yoshinori; Yoshida, Akimaro; Fujimoto, Hitoshi; and Nakagawa, Tomohito, 5,351,112, Cl. 355-233.000

Takakura, Yuhachi: *See—*
Miyazaki, Hideki; Endo, Tsunehiro; Watanabe, Kouzou; Takakura, Yuhachi; and Suda, Koichi, 5,351,182, Cl. 363-132.000.

Takama, Kenichiro; Horio, Kimihide; Miyasaka, Michihiko; Tsurumaru, Takafumi; and Takenishi, Shinsuke, to Toyota Jidosha Kabushiki Kaisha. Support structure for a ceramic valve assembly. 5,350,154, Cl. 251-305.000

Takamatsu, Osamu: *See—*
Yagi, Takayuki; Hirai, Yutaka; Takamatsu, Osamu; Nakayama, Masaru; Nose, Hiroyasu; Shinjo, Katsuhiko; and Simada, Yasuhiro, 5,349,858, Cl. 73-517.00A.

Takamura, Toshihiro; Nishino, Yukio; Oyama, Motoaki; and Matsushita, Akiyoshi, to NKK Corporation. CR-MO steel pipe and welding method thereof. 5,350,561, Cl. 420-105.000.

Takano, Jun: *See—*
Sato, Morio; Abe, Yutaka; Takano, Jun; Ishii, Hirokazu; and Murata, Yasuzo, 5,351,143, Cl. 359-51.000

Takano, Mikio: *See—*
Taguchi, Fumiaki; Morimoto, Masayoshi; Kyoya, Takeshi; and Takano, Mikio, 5,350,685, Cl. 435-168.000.
Taguchi, Fumiaki; Morimoto, Masayoshi; Kyoya, Takeshi; and Takano, Mikio, 5,350,692, Cl. 435-252.700.

Takaragi, Kazuo: *See—*
Matsumoto, Hiroshi; Takaragi, Kazuo; and Fukuzawa, Yasuko, 5,351,294, Cl. 380-23.000

Takasaki, Kazuo: *See—*
Takaya, Sueji; Takasaki, Kazuo; and Tone, Kazuaki, 5,350,261, Cl. 408-229.000

Takase, Hiraji: *See—*
Abukawa, Yukihiro; Takase, Hiraji; and Shinji, Yasuhisa, 5,350,309, Cl. 439-138.000.

Takata Corporation: *See—*
Kokeguchi, Akira; and Zushi, Takayasu, 5,350,191, Cl. 280-752.000.

Takaya, Sueji; Takasaki, Kazuo; and Tone, Kazuaki, to Mitsubishi Materials Corporation. Twist drill. 5,350,261, Cl. 408-229.000

Takeda Chemical Industries, Ltd.: *See—*
Yuge, Kiyohiro; Muramatsu, Hitoshi; Masuda, Yasuto; Uekado, Kazutaka; and Tanimoto, Yasuaki, 5,350,777, Cl. 521-117.000

Takeda, Kenji: *See—*
Ashi, Yoshihiro; Nakano, Yukio; and Takeda, Kenji, 5,351,238, Cl. 370-66.000

Takeda, Kimihito: *See—*
Doi, Miwako; Amano, Shin-ya; Muke, Seiji; Nogami, Hiroyasu; Kumano, Akira; Takeda, Kimihito; Adachi, Hisahiro; Iwai, Isamu; Okamoto, Toshio; Yamanaka, Noriko; and Kawada, Tsutomu, 5,351,189, Cl. 364-419.020

Takeda, Tadashi; Wada, Hiroyuki; Fukui, Kenji; Okamoto, Ricardo M.; and Hashiguchi, Shohei, to Nippon Steel Corporation. Optical information system focal point displacement detecting means having Fresnel zone plates with rectilinear grating. 5,351,230, Cl 369-112.000.

Takeda, Takashi: *See—*
Ishihara, Kei; Matsuda, Kiyoshi; Tamaki, Atsushi; Katoh, Masatoshi; Hamaguchi, Tadahiko; and Takeda, Takashi, 5,350,915, Cl. 250-208.100

Takeda, Toyohiko; Sato, Koji; Suzuki, Yusuke; and Tomoda, Yoshitaka, to Shionogi & Co., Ltd. Centrifugal fluidizing granulator for powder coating granulation. 5,350,567, Cl. 422-111.000

Takei, Hirohumi: *See—*
Kyuma, Kenji; Hieda, Teruo; Masuda, Kazunori; and Takei, Hirohumi, 5,351,080, Cl. 348-225.000

Takei, Tamotsu, to Kabushiki Kaisha Toshiba. Cooking appliance having a cooling mechanism and method of operation. 5,350,903, Cl. 219-716.000.

Takekawa, Kouichi; and Urushima, Michitaka, to NEC Corporation Film carrier semiconductor device. 5,350,947, Cl. 257-702.000.

Takekoshi, Yukinori: *See—*
Kiri, Shuichi; Kieda, Kouki; Kachi, Shunichi; Takekoshi, Yukinori; Takada, Yasunari; Nakahara, Yuji; and Nishinaka, Tomoyuki, 5,350,960, Cl. 310-194.000.

Takemoto, Issei: *See—*
Kawabe, Takashi; Ashida, Eiji; Fuyama, Moriaki; Iwakura, Tadayuki; Fukui, Hiroshi; Tsuji, Yoshikazu; Kuwatsuka, Shunichiro; Saito, Harunobu; Hagiwara, Yoshiki; Takemoto, Issei; and Fujisawa, Masayasu, 5,349,745, Cl. 29-603.000.

Takemura, Yasuhiko: *See—*
Yamazaki, Shunpei; and Takemura, Yasuhiko, 5,350,937, Cl 257-316.000.

Takenishi, Shinsuke: *See—*
Takama, Kenichiro; Horio, Kimihide; Miyasaka, Michihiko; Tsurumaru, Takafumi; and Takenishi, Shinsuke, 5,350,154, Cl. 251-305.000

Takenouchi, Kenji, to Yazaki Corporation. Female terminal. 5,350,321, Cl. 439-839.000

Takeuchi, Keizo: *See—*
Takezoe, Osamu; Takigawa, Jun; Okamoto, Tadashi; Hashiura, Mituo; Fukuda, Sunao; Takeuchi, Keizo; and Isobe, Yasuaki, 5,350,436, Cl. 75-314.000.

Takeuchi, Kunihiro; Ishizuka, Hideki; and Kaneko, Hideyuki, to Airbag Systems Company Ltd. Malfunction checking control system which checks identification data stored in RAM. 5,351,185, Cl. 364-184.000

Takeuchi, Makoto; Aiba, Shiji; Hoshina, Masatake; and Yamazaki, Minoru, to Nissei Plastic Industrial Co., Ltd. Method of setting conditions of molding for injection molding machine. 5,350,546, Cl. 264-40.100.

Takeuchi, Yasuo: *See—*
Okada, Yuji; Fujio, Shunichi; Suzuki, Kazuhiro; Shinoyama, Teruharu; and Takeuchi, Yasuo, 5,350,438, Cl. 75-401.000.

Takezawa, Makoto: *See—*
Watanabe, Osamu; and Takezawa, Makoto, 5,350,826, Cl 528-93.000.

Takezoe, Osamu; Takigawa, Jun; Okamoto, Tadashi; Hashiura, Mituo; Fukuda, Sunao; Takeuchi, Keizo; and Isobe, Yasuaki, to Kobe Alcoa Transportation Products Ltd.; and Nippondenso Co., Ltd. Aluminum alloy composite material for brazing. 5,350,436, Cl. 75-314.000.

Takigawa, Jun: *See—*
Takezoe, Osamu; Takigawa, Jun; Okamoto, Tadashi; Hashiura, Mituo; Fukuda, Sunao; Takeuchi, Keizo; and Isobe, Yasuaki, 5,350,436, Cl. 75-314.000

Takiguchi, Miho; Katayama, Noriko; Itoh, Aya; Ohama, Kaori; and Tanaka, Yasuo, to Fuji Photo Film Co., Ltd. Wrapper of film unit with lens. 5,350,062, Cl. 206-316.200.

Takita, Ken-ichi; and Takahashi, Masaharu, to Shin-Etsu Chemical Co., Ltd. Rubber composition containing reclaimed silicone rubber. 5,350,804, Cl. 525-104.000.

Tamaki, Atsushi: *See—*
Ishihara, Kei; Matsuda, Kiyoshi; Tamaki, Atsushi; Katoh, Masatoshi; Hamaguchi, Tadahiko; and Takeda, Takashi, 5,350,915, Cl 250-208.100

Tamaki, Kiyoshi: *See—*
Oshiba, Tomomi; Mochizuki, Fumitaka; Tadokoro, Hajime; Kinoshita, Akira; Watanabe, Kazumasa; Tamaki, Kiyoshi; and Fujimaki, Yoshihide, 5,350,655, Cl. 430-78.000.

Tamaki, Mamika: *See—*
Hirota, Takao; Kuroda, Katsuhiko; and Tamaki, Mamika, 5,350,730, Cl. 503-227.000.

Tamekuni, Yoshikyo: *See—*
Kakii, Toshiaki; Honjo, Makoto; Ishida, Hidetoshi; Katsura, Hiroshi; Yamanishi, Toru; Miyabe, Kazumichi; Tamekuni, Yoshikyo; Haibara, Tadashi; Matsumoto, Michito; and Nagasawa, Shinji, 5,351,328, Cl. 385-83.000.

Tamfelt Oy Ab: *See—*
Blom, Mikko, 5,349,845, Cl. 73-38.000.

Tamura, Makoto: *See—*
Ohishi, Yoshitaka; Tamura, Makoto; Hayashida, Mitsuo; Ikegami, Satoru; Hiyama, Yoshiyuki; Awa, Takao; Ichikawa, Kiyonoshin; Nomiyama, Kiyoshi; Hanada, Keigo; and Mimura, Mitsuo, 5,350,743, Cl. 514-89.000

Tanabe, Akira, to NEC Corporation. Dynamic random access memory device having a transfer circuit for coupling a sense amplifier circuit with an accessed cell and a plate line. 5,351,215, Cl. 365-203.000.

Tanabe, Yoo; Murakami, Masanari; and Yamamoto, Hitomi, to Sumotomo Chemical Company, Ltd. Process for producing 3-hydroxymethyl-1-propargylimidazolidine-2, 4-dione. 5,350,859, Cl. 548-319.100

Tanaka Kikinzoku Kogyo K.K.: *See—*
Tsurumi, Kazunori; and Stonehart, Paul, 5,350,727, Cl. 502-325.000.

Tanaka, Megumu: *See—*
Nakano, Tetsuo, deceased; Katsumata, Takeshige; Tanaka, Megumu; Narushima, Isao; Hirano, Yoshiharu; and Nakano, Kazuko, 5,349,860, Cl. 73-597.000.

Tanaka, Shinichi: *See—*
Inaba, Naoto; and Tanaka, Shinichi, 5,350,950, Cl. 307-236.000.

Tanaka, Yasundo: *See—*
Takahashi, Ichiro; Tanaka, Yasundo; and Sakiyama, Katsunori, 5,349,940, Cl. 128-4.000.

Tanaka, Yasuo: *See—*
Takiguchi, Miho; Katayama, Noriko; Itoh, Aya; Ohama, Kaori; and Tanaka, Yasuo, 5,350,062, Cl. 206-316.200

Tanamachi, Shoichi, to Sony Corporation. Plasma addressed electro-optical device with non-continuous barrier ribs. 5,351,144, Cl 359-54.000

Tang, Nianfa, to Jet, Inc. Plastic media filter. 5,350,505, Cl. 210-108.000.

Tang, Nianfa, to Jet, Inc. Chlorination and dechlorination apparatus and method. 5,350,512, Cl. 210-199.000.

Tanigaki, Takeshige: *See—*
Hirano, Takashi; Tanigaki, Takeshige; and Kimura, Hideki, 5,350,919, Cl. 250-282.000

Taniguchi, Masayuki; Kobayashi, Hironobu; Narato, Kiyoshi; Murakami, Tadayoshi; Azuhata, Shigeru; Kuroda, Michio; and Hayashi, Noriyuki, to Hitachi, Ltd. Gas turbine combustor and gas turbine generating apparatus. 5,349,812, Cl. 60-39.230.

Taniguchi, Tadashi; and Kojima, Chiaki, to Sony Corporation. Optomagnetic recording polarization optical apparatus including a laser diode and a light absorbing film. 5,350,917, Cl. 250-216.000.

Taniguchi, Tetsuo: *See—*
Okamura, Hisatake; Kasahara, Masahiro; Tonegawa, Ken; and Taniguchi, Tetsuo, 5,351,020, Cl. 333-175.000.

Taniguchi, Toshiharu; and Ueda, Takaaki, to Bando Chemical Industries, Ltd. Method and apparatus for winding a cord continuously in dip treating apparatus. 5,350,981, Cl. 318-7.000.

Taniguchi, Tsugiko: *See—*
Itoh, Nobuyuki; and Taniguchi, Tsugiko, 5,350,537, Cl. 252-299.010

Taniguchi, Yoshio: *See—*
Kanetake, Tatsuo; Kiguchi, Masashi; and Taniguchi, Yoshio, 5,351,320, Cl. 385-8.000.

Tanimoto, Yasuaki: *See—*
Yuge, Kiyohiro; Muramatsu, Hitoshi; Masuda, Yasuto; Uekado, Kazutaka; and Tanimoto, Yasuaki, 5,350,777, Cl. 521-117.000

Tanitomi, Fuminao, to Yugen Kaisha Kaisei Shoko. Power propelled welding device. 5,350,895, Cl. 219-124.310.

Tannenbaum, David H.: *See—*
Brody, Bill E.; and Tannenbaum, David H., 5,350,906, Cl. 235-379.000

Tappon, Ellen R.: *See—*
Pan, Alfred I.; and Tappon, Ellen R., 5,350,616, Cl. 428-131.000.

Tarcsay, Lajos: *See—*
Odink, Karel G.; Clerc, Roger; Cerletti, Nico; Bruggen, Josef; Tarcsay, Lajos; Sorg, Clemens; and Wiesendanger, Walter, 5,350,687, Cl. 435-240.270.

Target Therapeutics, Inc.: *See—*
Palermo, Thomas J.; and Pham, Phong, 5,350,397, Cl. 606-200.000

Tatebayashi, Makoto: *See—*
Matsuzaki, Natsume; and Tatebayashi, Makoto, 5,351,299, Cl 380-37.000
Miyaji, Atsuko; and Tatebayashi, Makoto, 5,351,297, Cl 380-28.000.

Tatebe, Ken: *See—*
Yoshizato, Katsutoshi; Konishi, Jun; Koide, Mikio; Oyamada, Kaori; Ohsaki, Ken-ichi; Katakura, Takeo; Mori, Yuichi; and Tatebe, Ken, 5,350,583, Cl. 424-484.000

Tauchi, Takaaki, to NEC Corporation. Method and circuit for charging battery of portable apparatus. 5,350,996, Cl. 320-22.000.

Taylor, Marie E.: *See—*
Seibert, Edward J.; Ferguson, Gerald D.; and Taylor, Marie E., 5,351,260, Cl. 372-84.000

Taylor, Mark P.: *See—*
Beall, George H.; Chyung, Kenneth; and Taylor, Mark P., 5,350,716, Cl. 501-5.000.

Taylor, Michael A.; and Chambers, Steven R., to Alliant Techsystems Inc. Propellant stick kerfing apparatus and method. 5,349,892, Cl. 86-21.000.

Taylor, Michael T.: *See—*
Weinheimer, Jacek M.; Taylor, Michael T., and Allen, Terrence C., 5,349,984, Cl. 137-543.210.

Taylor, Thomas N.; and Donahue, Frederick A., to Xeox Corporation. Method and apparatus for controlling peak power requirements of a printer. 5,349,905, Cl. 101-488.000.

TEAC Corporation: *See—*
Naganuma, Mikio, 5,349,871, Cl. 73-862.635.

Teague, Edward W.: *See—*
Davis, Ellis, Jr.; McFarland, James E.; and Teague, Edward W., 5,350,423, Cl. 8-401.000

Tech Spray, Inc.: *See—*
Unruh, Greg R., 5,350,594, Cl. 427-96.000.

Techneglas, Inc.: *See—*
Pickrell, Gary R.; and Rapp, James E., 5,350,460, Cl. 148-33.000.
Pickrell, Gary R.; and Rapp, James E., 5,350,461, Cl. 148-33.000

Technetics Corp.: *See—*
Jarrabet, Gregory P.; and Lu, Lixion, 5,350,557, Cl. 419-19.000

Teijin Seiki Co., Ltd.: *See—*
Togawa, Masayuki; and Toyama, Kiyoshi, 5,350,618, Cl. 428-156.000.

Teisan Kabushiki Kaisha: *See—*
Nagamura, Takashi; and Yamamoto, Takao, 5,349,822, Cl. 62-39.000

Telectronics Pacing Systems, Inc.: *See—*
McClure, Lawrence C.; Samuelson, Kent E.; and Hansen, Daniel L., 5,350,407, Cl. 607-16.000.

Teleflex (Canada) Limited: *See—*
McFadyen, Andrew W.; McBeth, James B.; and Fetchko, Eric B., 5,349,818, Cl. 60-385.000

Telefonaktiebolaget L M Ericsson: *See—*
Weber, Jean-Pierre, 5,351,317, Cl. 385-3.000.
Wigren, Torbjorn K., 5,351,338, Cl. 395-2.280.
Yazi, Amar, 5,350,949, Cl. 307-150.000.

Telenokia Oy: *See—*
Lahtinen, Pekka, 5,351,235, Cl. 370-58.100.

Telfer, Stephen J.: *See—*
Boggs, Roger A.; Cournoyer, Richard L.; Ellis, Ernest W.; Russo-Rodriguez, Sandra E.; Telfer, Stephen J.; Waller, David P.; and Zuraw, Michael J., 5,350,870, Cl. 560-27.000.

Temic Telefunken microelectronic GmbH: *See—*
Angerstein, Jorg; Giebler, Siegfried; Mistele, Thomas; Schairer, Werner; and Scheidle, Helmut, 5,350,943, Cl. 257-659.000

Temple University of the Commonwealth System of Higher Education: *See—*
Shaffer, Thomas H.; and Wolfson, Marla R., 5,350,359, Cl. 604-51.000.

Temple, Victor A. K., to Harris Corporation. Semiconductor device with improved turn-off capability. 5,350,935, Cl. 257-147.000.

Tenenbaum, Jeff: *See—*
Hochstein, Peter; and Tenenbaum, Jeff, 5,350,176, Cl. 273-148.00B.

Teney, Donald J.: *See—*
Pai, Damodar M.; Melnyk, Andrew R.; and Teney, Donald J., 5,350,654, Cl. 430-59.000.

Tennessee Gas Pipeline Company: *See—*
Sager, Robert L., Jr.; and Kraai, Leon A., 5,350,888, Cl. 181-247.000.

Tennis, John M.; Able, Adriane H.; Coleman, Marilyn C.; Hough, Mark; and Mahon, Kaye M. Shield for use by health care personnel during skin injections. 5,349,967, Cl. 128-888.000.

Terada, Hiroshi: *See—*
Yamamoto, Hajime; and Terada, Hiroshi, 5,351,115, Cl. 355-326.00R.

Terada, Satoshi: *See—*
Harada, Yasoo; Matsushita, Shigeharu; Terada, Satoshi; Fujii, Emi; Kurose, Takashi; Higashino, Takayoshi; Yamada, Takashi; Nagamatsu, Akihito; Inoue, Daijirou; and Matsumura, Kouji, 5,350,709, Cl. 437-161.000.

Terakado, Sadao; Kobayashi, Hiroyuki; and Kubozoe, Morioki, to Hitachi, Ltd.; and Hitachi Science Systems, Ltd. Transmission electron microscope. 5,350,918, Cl. 250-311.000.

Terashima, Kaoru: *See—*
Makino, Yoshihiko; and Terashima, Kaoru, 5,350,675, Cl. 435-11.000

Terashima, Takahito: *See—*
Takada, Toshio; Terashima, Takahito; Iijima, Kenji; Yamamoto, Kazunuki; Hirata, Kazuto; and Bando, Yoshichika, 5,350,606, Cl. 427-564.000.

Terumo Kabushiki Kaisha: *See—*
Yoshizato, Katsutoshi; Konishi, Jun; Koide, Mikio; Oyamada, Kaori; Ohsaki, Ken-ichi; Katakura, Takeo; Mori, Yuichi; and Tatebe, Ken, 5,350,583, Cl. 424-484.000.

Tetra Alfa Holdings, S.A.: *See—*
Tuckner, Ronald; and Persells, David, 5,350,568, Cl. 422-300.000

Texas Instrument Incorporated: *See—*
Cooper, Steven W.; and Truitt, George A., 5,350,957, Cl. 307-571.000.

Texas Instruments Incorporated: *See—*
D'Hont, Loek; Tip, Anne; and Meier, Herbert, 5,351,052, Cl. 342-42.000
Ikalainen, Pertti K.; and Witkowski, Larry C., 5,350,936, Cl. 257-194.000.
Madan, Sudhir K., 5,350,941, Cl. 257-647.000.
Malhi, Satwinder, 5,350,932, Cl. 257-67.000.
McElroy, Dave J.; Gill, Manzur; and Shah, Pradeep L., 5,350,706, Cl. 437-52.000.

Thakur, Randhir P. S.; Sandhu, Gurtej S.; and Martin, Annette L., to Micron Semiconductor, Inc. Method for repeatable temperature measurement using surface reflectivity. 5,350,236, Cl. 374-161.000.

Theisen, Peter J.: *See—*
Juds, Mark A.; Bethoff, Bruce C.; Smith, Richard G.; Nelson, William R.; Wycklendt, Daniel A.; Theisen, Peter J.; Hastings, Jerome K.; and Moldovan, Peter K., 5,351,024, Cl. 335-16.000.

Thelen, Johr. E.; and Mylavarapu, Sundar R., to Pneumatic Products Corp. Gas handling system and adsorbent dryer regeneration apparatus. 5,350,442, Cl. 95-115.000.

Thiel, Rudolf, to Alfred Teves GmbH. Automatic adjusting apparatus for a disc brake. 5,350,042, Cl. 188-71.900.

Thiele, Paul: *See—*
Madaus, Batto; Antony, Horst; Anger, Bernd; and Thiele, Paul, 5,351,061, Cl. 343-840.000.

Thoennissen, Jochen: *See—*
Liskow, Uwe; Thoennissen, Jochen; Loistl, Uwe; and Wahl, Oliver, 5,350,285, Cl. 418-15.000.

Thomas, David L.; and Legue, Ronald L., to Battelle Memorial Institute. Submersible trim system. 5,349,915, Cl. 114-124.000.

Thomas, Juergen: *See—*
Mohr, Juergen; Oppenlaender, Knut; Franz, Lothar; Schreyer, Peter; and Thomas, Juergen, 5,350,429, Cl. 44-412.000.

Thomas, Lew: *See—*
Lichtman, Jeffrey W.; and Thomas, Lew, 5,351,150, Cl. 359-232.000.

Thomas, Robert L.: *See—*
Kuo, Pao-Kuang; Thomas, Robert L.; Favro, Lawrence D.; and Chen, Li, 5,351,152, Cl. 359-376.000.

Thomeer, Hubertus V.: *See—*
Sorem, Robert M.; Eslinger, David M.; Thomeer, Hubertus V.; Willauer, Darrin; and Adnan, Sarmad, 5,350,018, Cl. 166-250.000.

Thompson, Charles D.; and Swanson, Eric J., to Crystal Semiconductor Corporation. Detent switching of summing node capacitors of a delta-sigma modulator. 5,351,050, Cl. 341-143.000.

Thompson, David M.: *See—*
Amico, Mark S.; Scheuer, Mark A.; Wagman, Irwin; Seeley, Dale E.; Thompson, David M.; Kelsch, Dawn M.; and Drinkwater, Wayne D., 5,350,896, Cl. 219-216.000

Thomson Consumer Electronics: *See—*
Kerdranvat, Michel, 5,351,095, Cl. 348-699.000.

Thomson Consumer Electronics, Inc.: *See—*
Christopher, Todd J.; Horlander, Karl F.; and Saeger, Timothy W., 5,351,087, Cl. 548-441.000
Lehmann, William L.; and Bose, William H., 5,351,018, Cl. 333-12.000
Saeger, Timothy W., 5,351,135, Cl. 348-435.000.

Thomson, John, Jr.: *See—*
Grader, Gideon S.; Johnson, David W., Jr.; Roy, Apurba; and Thomson, John, Jr., 5,349,743, Cl. 29-602.100

Thonig, Harry: *See—*
Nedo, Werner; Thonig, Harry; and Walden, Mathias, 5,349,788, Cl. 451-75.000.

Thornley, Robert S.; and Papadopoulos, Christos, to McKechnie (UK) Limited. Free-standing shelving system. 5,350,073, Cl. 211-187.000.

Thornton, Willie H., Jr., to Atlantic Richfield Company. Wellbore anchor. 5,350,016, Cl. 166-120.000.

Three Bond Co., Ltd.: *See—*
Kubota, Yoshimichi, 5,350,600, Cl. 427-256.000.

Threlkeld, James O.: *See—*
Ozarowski, Ryszard S.; Hand, Barry D.; Novack, Robert C.; Beard, Vernon D.; Threlkeld, James O.; and Sutton, William T., 5,349,983, Cl. 137-487.500.

Ticcioni, James E.; and Colburn, Robert W., to Brun Corporation. Programmable water treatment controller for progressive flow systems. 5,351,199, Cl. 364-510.000.

Tiemann, Jerome J.; and Marks, Fay A., to General Electric Company. Tumor tissue characterization apparatus and method. 5,349,954, Cl. 128-634.000.

Ting, Chi-Hung. Pneumatic tin sucker. 5,350,282, Cl. 417-402.000.

Tip, Anne: *See—*
D'Hont, Loek; Tip, Anne; and Meier, Herbert, 5,351,052, Cl. 342-42.000.

Tipton, James: *See—*
Mocilnikar, Gabriel C.; Edwards, Roger; and Tipton, James, 5,349,703, Cl. 4-250.000

Tobe, Teruo: *See—*
Hata, Masahiro; Tobe, Teruo; and Oki, Hiroshi, 5,351,076, Cl 348-14.000
Tobo, Yozo: *See—*
Kato, Masatoshi; Tobo, Yozo; Ichikawa, Fumio; Azuma, Jun; and Uemura, Hideaki, 5,351,264, Cl. 372-107.000.
Toda Kogyo Corporation: *See—*
Kishimoto, Atsunori; Fujii, Takashi, deceased; Ohshita, Kazutaka; Yamamoto, Kazumi; Fujii, Yasuhiko; and Toda, Tetsuro, 5,350,793, Cl. 524-449.000.
Toda, Tetsuro: *See—*
Kishimoto, Atsunori; Fujii, Takashi, deceased; Ohshita, Kazutaka; Yamamoto, Kazumi; Fujii, Yasuhiko; and Toda, Tetsuro, 5,350,793, Cl. 524-449.000.
Todd, Harold E.: *See—*
Hubred, Gale L.; and Todd, Harold E., 5,350,533, Cl. 252-70.000.
Todoroki, Ryuichi: *See—*
Sawabe, Takao; Todoroki, Ryuichi; and Sakakibara, Takashi, 5,351,132, Cl. 358-342.000.
Toffano, Gino: *See—*
Romeo, Aurelio; Toffano, Gino; and Leon, Alberta, 5,350,841, Cl. 536-53.000.
Togashi, Fusao: *See—*
Miyazaki, Astushi; Ujiro, Takumi; and Togashi, Fusao, 5,350,559, Cl. 420-36.000.
Togawa, Masayuki; and Toyama, Kiyoshi, to Teijin Seiki Co., Ltd. Magnetic medium comprising a substrate having pits and grooves of specific shapes and depths. 5,350,618, Cl. 428-156.000
Tohoku Electric Power Co., Inc.: *See—*
Tomoi, Masao; Kiyokawa, Atsuo; Ogawa, Hiromasa; Onozuka, Teruo; and Ito, Tsuyoshi, 5,350,523, Cl. 210-683.000
Tokai Kogyo Kabushiki Kaisha: *See—*
Yada, Yukihiko; and Ito, Tosikazu, 5,350,211, Cl. 296-93.000.
Tokai University: *See—*
Ito, Yoshitoshi; Kawaguchi, Fumio; Shinohara, Yukito; and Haida, Munetaka, 5,349,951, Cl. 128-633.000.
Tokano, Kaneyoshi: *See—*
Miyahara, Kazuhiko; Kinoshita, Takao; Kawamoto, Kenichi; Kurihashi, Toshiya; and Tokano, Kaneyoshi, 5,351,139, Cl. 358-487.000.
Tokyo Ohka Kogyo Co., Ltd.: *See—*
Sago, Hiroyoshi; Fujiyama, Shigemi; Kudo, Katsuhiko; and Kumazawa, Hirotsugu, 5,349,978, Cl. 134-153.000.
Toll, Floyd N.: *See—*
Coleman, Richard D.; Toll, Floyd N.; McCracken, Thomas W.; Capes, C. Edward; and Ikura, Michio, 5,350,430, Cl. 44-627.000.
Tomak, William E.: *See—*
Markovitz, Mark; and Tomak, William E., 5,350,815, Cl. 525-533.000.
Tomaszewski, Walter: *See—*
Mochel, Virgil D.; Tomaszewski, Walter; and Bohm, Georg G. A., 5,350,470, Cl. 156-136.000
Tominaga, Seigo; Akasi, Osamu; Imai, Masao; Sugita, Koji; Suzuki, Setuko; Maeda, Akira; Isiguro, Kazumasa; Uchida, Masahiro; and Sato, Makoto, to Kanehiro Co., Ltd. Natural thawing pan. 5,349,899, Cl. 99-646.00R.
Tomioka, Tatsuya: *See—*
Kawato, Hiroshi; and Tomioka, Tatsuya, 5,350,558, Cl. 419-35.000.
Tomita, Akihisa, to NEC Corporation. Semiconductor laser. 5,351,254, Cl. 372-45.000.
Tomoda, Yoshitaka: *See—*
Takeda, Toyohiko; Sato, Koji; Suzuki, Yusuke; and Tomoda, Yoshitaka, 5,350,567, Cl. 422-111.000.
Tomoi, Masao; Kiyokawa, Atsuo; Ogawa, Hiromasa; Onozuka, Teruo; and Ito, Tsuyoshi, to Mitsubishi Kasei Corporation; and Tohoku Electric Power Co., Inc. Anion exchange method. 5,350,523, Cl. 210-683.000.
Tone, Junsuke: *See—*
Dirlam, John P.; Maeda, Hiroshi; and Tone, Junsuke, 5,350,764, Cl. 514-460.000.
Tone, Kazuaki: *See—*
Takaya, Sueji; Takasaki, Kazuo; and Tone, Kazuaki, 5,350,261, Cl 408-229.000.
Tonegawa, Ken: *See—*
Okamura, Hisatake; Kasahara, Masahiro; Tonegawa, Ken; and Taniguchi, Tetsuo, 5,351,020, Cl. 333-175.000.
Tonen Corporation: *See—*
Watanabe, Osamu; and Takezawa, Makoto, 5,350,826, Cl. 528-93.000.
Top Fortune Ltd.: *See—*
Cheng, Ying-Hsiung, 5,349,709, Cl. 5-93.100.
Torigai, Katsumi: *See—*
Takahashi, Masatetsu; and Torigai, Katsumi, 5,349,928, Cl. 123-73.00A.
Tornos-Bechler SA: *See—*
Simonin, Jean C., 5,349,889, Cl. 82-118.000.
Torrisi, Angelo M.; and Urbano, Roland, to Torrisi, Angelo M. Handling support for X-ray spectroscopic analysis. 5,351,281, Cl 378-79.000
Tortoise Products, Inc.: *See—*
Davidge, Gregory M., 5,349,834, Cl. 70-18.000.
Tosoh Corporation: *See—*
Inoue, Hiroshi; and Kato, Toshikazu, 5,350,833, Cl. 528-388.000.
Toth, Gyorgy; Balint, Janos; Elek n/e, Klara, cu/e/ e Herczik· Moricz nee Garai, Zsuzsanna; and Mudra nee Kantor, Eva, to Biogal Gyogyszergrar. Process for the preparation of carboxylic acids and derivatives of them. 5,350,872, Cl. 560-55.000.
Toumazou, Christofer, to Elantec, Inc. Low input resistance current-mode feedback operational amplifier input stage. 5,351,012, Cl. 330-264.000.
Tovstjuk, Kornei D.: *See—*
Grigortchak, Ivan I.; Tovstjuk, Kornei D.; Kovalyuk, Zahar D.; Kozmik, Ivan D.; and Bahmatyuk, Bogdan P., 5,351,164, Cl. 361-502.000.
Townsend Engineering Company: *See—*
Holms, Donald D., 5,350,334, Cl. 452-127.000.
Toy, Raymond L.: *See—*
Chennakeshu, Sandeep; Hladik, Stephen M.; Saulnier, Gary J.; Koilpllai, Ravinder D.; and Toy, Raymond L., 5,351,274, Cl. 375-100.000.
Toyama, Keiichiro; Kim, Byoung Y.; Huang, Shangyuan; and Shaw, Herbert J., to Leland Stanford University, The Board of Trustees of the. Technique of reducing the Kerr effect and extending the dynamic range in a Brillouin fiber optic gyroscope. 5,351,252, Cl. 372-29.000
Toyama, Kiyoshi: *See—*
Togawa, Masayuki; and Toyama, Kiyoshi, 5,350,618, Cl. 428-156.000.
Toyo Ink Manufacturing Co., Ltd.: *See—*
Usui, Shiro, 5,351,079, Cl. 348-223.000.
Toyokin Kabushiki Kaisha: *See—*
Okada, Yuji; Fujio, Shunichi; Suzuki, Kazuhiro; Shinoyama, Teruharu; and Takeuchi, Yasuo, 5,350,438, Cl. 75-401.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Kuno, Hiromichi; Sekimori, Toshiyuki; Inaba, Shigemitsu; and Hasegawa, Toshiaki, 5,350,312, Cl. 439-310.000.
Okada, Yuji; Fujio, Shunichi; Suzuki, Kazuhiro; Shinoyama, Teruharu; and Takeuchi, Yasuo, 5,350,438, Cl. 75-401.000.
Takama, Kenichiro; Horio, Kimihide; Miyasaka, Michihiko; Tsurumaru, Takafumi; and Takenishi, Shinsuke, 5,350,154, Cl. 251-305.000.
Tozawa, Hirokazu: *See—*
Sorimachi, Kenichi; Tozawa, Hirokazu; Ochi, Toshiaki; and Itoh, Yasuhito, 5,350,005, Cl. 164-154.100.
TRC Companies, Inc.: *See—*
Lilienfeld, Pedro, 5,349,844, Cl. 73-28.010.
Trefonas, Peter, III; and Carey, Richard J., to Shipley Company Inc. Point-of-use purification. 5,350,714, Cl. 437-229.000.
Triten Corporation: *See—*
Kasiske, John M., 5,350,560, Cl. 420-38.000.
Tropicana Products, Inc.: *See—*
Potts, Jo Lee B.; Miller, Joann H.; Hodge, Marvin W.; and Bettle, Griscom, III, 5,350,078, Cl. 215-100.00A.
Trow, John R.: *See—*
Collins, Kenneth S.; Trow, John R.; Tsui, Joshua C. W.; Roderick, Craig A.; Bright, Nicolas J.; Marks, Jeffrey; and Ishikawa, Tetsuya, 5,350,479, Cl. 156-345.000.
Truitt, George A.: *See—*
Cooper, Steven W.; and Truitt, George A., 5,350,957, Cl. 307-571.000.
TRW Inc.: *See—*
Anderson, James M.; Coulson, Andrew R.; Demaioribus, Vincent J.; and Nicholas, Henry T., 5,350,704, Cl. 437-51.000.
Lee, Paul S. C.; and Pearlman, Jay S., 5,351,077, Cl. 348-117.000.
TRW Repa GmbH: *See—*
Fohl, Artur, 5,350,194, Cl. 280-805.000.
TRW Vehicle Safety Systems Inc.: *See—*
Blumenthal, Jack L., 5,350,192, Cl. 280-737.000.
Brown, Louis R., 5,350,195, Cl. 280-806.000.
Tsai, Fu Sheng; and Dalal, Dhaval B., to Digital Equipment Corporation. Lossless active snubber for half-bridge output rectifiers. 5,351,179, Cl. 363-53.000.
Tseng, Chi-Ming; and Kantner, Steven S., to Minnesota Mining and Manufacturing Company. Water-borne low adhesion backsize and release coating compositions, methods of making the compositions, and sheet materials coated therewith. 5,350,631, Cl. 428-343.000.
Tseng, Hsiao-Pin: *See—*
Chen, Hsing-Hai; Tseng, Hsiao-Pin; and Lu, Chih-Yuan, 5,350,336, Cl. 454-187.000.
Tseng, Mingchih M., to Gillette Company, The. Shaving system. 5,349,750, Cl. 30-41.000.
Tsimerman, Alexandre, to AOC, Inc. Method and apparatus for evaporatively cooling gases and/or fluids. 5,349,829, Cl. 62-314.000.
Tsou, Nancy N.: *See—*
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Tsuda, Kazuhiko; and Hashimoto, Kazuhiro, to Moriroku Kabushiki Kaisha. Process for two stage injection molding of air-conditioning blow-out port device. 5,350,555, Cl. 264-242.000.

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Collins, Kenneth S.; Trow, John R.; Tsui, Joshua C. W.; Roderick, Craig A.; Bright, Nicolas J.; Marks, Jeffrey; and Ishikawa, Tetsuya, 5,350,479, Cl. 156-345.000.
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Tsukashima, Ross; Jordan, Matthew; and Jung, Gordon, to Medtronic, Inc. Tri-fold balloon for dilatation catheter and related method. 5,350,361, Cl. 604-96.000.
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Tsuyuki, Toshio. Navigation system and method therefor. 5,351,059, Cl 342-457.000
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Tuckett, Phillip C.: *See—*
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Hallberg, Anders R.; and Tunek, Per A. S., 5,350,768, Cl. 514-562.000.
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Unangst, Paul C.: *See—*
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United Kingdom of Great Britain and Northern Ireland, Her Majesty the Queen in right of Canada, as represented by The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
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United Micro Electronics Corporation: *See—*
Yang, Ming-Tzong; and Wu, Chung-Cheng, 5,350,700, Cl. 437-31.000
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Martinson, Scott D.; Gray, David L.; Carraway, Debra L.; and Reda, Daniel C., 5,349,851, Cl. 73-147.000.
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Navy: *See—*
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Rogers, George W.; Solka, Jeffrey L.; Vermillion, Donald; Priebe, Carey E.; and Poston, Wendy L., 5,351,311, Cl 382-45.000.
Seibert, Edward J.; Ferguson, Gerald D.; and Taylor, Marie E., 5,351,260, Cl. 372-84.000.
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U.S. Philips Corporation: *See—*
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Bierhoff, Martinus P. M.; Coops, Peter; Van Eck, Dirk C.; and Sieben, Joannes H. F. C., 5,350,916, Cl. 250-214.100
Koster, Marinus P.; and Kruijer, Casparus W., 5,349,880, Cl. 74-399.000.
Kunze, Norbert; and Weber, Georg, 5,351,157, Cl. 360-105.000
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United Technologies Corporation: *See—*
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Culbertson, Philip E.; Rogers, Thomas F.; and Ware, Randolph H., 5,350,138, Cl. 244-159.000
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Unjoh, Shigeki: *See—*
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Urabe, Yoshitomi; Hayashida, Hironori; and Ohtani, Yoshiaki, to Mitsubishi Kasei Corporation. Polycarbonate resin composition for optical use. 5,350,790, Cl. 524-321.000.
Urano, Fumiyoshi; Nakahata, Masaaki; Fujie, Hirotoshi; and Oono, Keiji, to Wako Pure Chemical Industries, Ltd. Chemical amplified resist material containing photosensitive compound capable of generating an acid and specific polystyrene copolymer having functional groups that become alkali-soluble under an acid atmosphere. 5,350,660, Cl. 430-176.000.
Urbano, Roland: *See—*
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van de Moesdijk, Cornelis G. M.; Janssen, Hendrik J.; and Schroijen, Josephus C., to DSM N.V. Process for the preparation of melamine from urea. 5,350,849, Cl. 544-203.000.
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Van der Watt, Lourens. Pool skimming device. 5,350,508, Cl. 210-169.000
Vandever, Billie C.; and Vandever, Vicki. Multi-crop harvester/windrower implement. 5,350,020, Cl. 171-26.000.
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Variperm (Canada) Limited: *See—*
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Vecchi, Giuseppe, to APR Applied Pharma Research S.A. Process for the preparation of substituted tetrahydrofolico derivatives in the [6(R,S)(−)] forms and of their active [6(S)(−)] N^5 diastereoisomers in form of alkali and alkaline earth metal salts. 5,350,850, Cl. 544-258.000.
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Willmore, Michael R. Infra-red imaging and pattern recognition system. 5,351,303, Cl. 382-2.000.
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Yoshioka, Atsushi; and Aizawa, Iwao, to Hitachi, Ltd. Magnetic recording and reproducing apparatus. 5,351,154, Cl. 360-35.100.
Yoshioka, Tatsuo: *See*—
Miyata, Yutaka; Furuta, Mamoru; Yoshioka, Tatsuo; Tsutsu, Hiroshi; and Kawamura, Tetsuya, 5,351,145, Cl. 359-57.000
Yoshizato, Katsutoshi; Konishi, Jun; Koide, Mikio; Oyamada, Kaori; Ohsaki, Ken-ichi; Katakura, Takeo; Mori, Yuichi; and Tatebe, Ken, to Terumo Kabushiki Kaisha. Cell-penetrable medical material and artificial skin. 5,350,583, Cl. 424-484.000.
Yosinaga, Takasi: *See*—
Noto, Kazuyuki; and Yosinaga, Takasi, 5,350,965, Cl. 310-366.000.
Youmans, Robert J.: *See*—
Kim, Anderson H.; DiDomenico, Leo D.; Weiner, Maurice; Jasper, Louis J., Jr.; and Youmans, Robert J., 5,351,063, Cl. 343-895.000
Young, Aurelia G.; and Hochstein, Peter A. Security facsimile paper. 5,350,199, Cl. 283-91.000.
Young, Chung C.: *See*—
Hiti, John; and Young, Chung C., 5,350,518, Cl. 210-638.000.
Young, Joseph C., to General Electric Company. Instrumentation light probe holder. 5,349,850, Cl. 73-116.000.
Yozan, Inc.: *See*—
Yamamoto, Makoto, 5,351,304, Cl. 382-5.000
Yu, Chien P.; and Yu, I C. Combined toy bat and windmill. 5,350,332, Cl. 446-217.000.
Yu, I C.: *See*—
Yu, Chien P.; and Yu, I C., 5,350,332, Cl. 446-217.000
Yu, Michael C.; and Beever, William H., to Phillips Petroleum Company. Metal hydroxide additives for poly(arylene sulfide). 5,350,806, Cl. 525-189.000.
Yu, Michael C.: *See*—
Bobsein, Rex L.; Yu, Michael C.; Wright, Roy F.; and Soules, David A., 5,350,834, Cl. 528-485.000
Yudelson, Joseph S., to Sterling Winthrop Inc. Preparation and magnetic properties of very small magnetite-dextran particles. 5,349,957, Cl. 128-653.400.
Yuge, Kiyohiro; Muramatsu, Hitoshi; Masuda, Yasuto; Uekado, Kazutaka; and Tanimoto, Yasuaki, to Matsushita Refrigeration Company; and Takeda Chemical Industries, Ltd. Production and use of open cell rigid polyurethane foam. 5,350,777, Cl. 521-117.000
Yuge, Masaaki: *See*—
Akahori, Masakazu; and Yuge, Masaaki, 5,350,206, Cl. 292-336.300.
Yugen Kaisha Kaisei Shoko: *See*—
Tanitomi, Fuminao, 5,350,895, Cl. 219-124.310
Yuhas, Donald E.; Vorres, Carol L.; Groppi, David P.; and Konicek, Jiri D., to Allied-Signal Inc. System of electronic laminates with improved registration properties. 5,350,621, Cl. 428-209.000
Yulkowski, Leon B. Door construction having improved locking assembly. 5,349,782, Cl. 49-366.000.
Yurke, Bernard: *See*—
Lanzerotti, Louis D.; McCall, Samuel L.; and Yurke, Bernard, 5,351,261, Cl. 372-98.000.
Zadno-Azizi, Gholam-Reza: *See*—
Imran, Mir A.; Zadno-Azizi, Gholam-Reza; and Pomeranz, Mark L., 5,349,964, Cl. 128-772.000.
Zaidan Houjin Shinku Kagaku Kenkyujo: *See*—
Ishimaru, Hajime, 5,350,275, Cl. 415-90.000.
Zaleski, Joseph D. Snow guard and its application. 5,349,791, Cl. 52-24.000.
Zallie, James P.: *See*—
LaCourse, Norman L.; Chicalo, Karen; Zallie, James P.; and Altieri, Paul A., 5,350,593, Cl. 426-615.000.
Zawadzki, Edward A.: *See*—
Vitunac, Edward A.; and Zawadzki, Edward A., 5,350,121, Cl. 241-14.000.
Zeien, Terri; and Rahn, Richard, to Instant Pierce, Inc. Line tapping and clamping assembly for refrigeration systems. 5,349,979, Cl. 137-318.000.
Zelazoski, Gregory A.: *See*—
Georger, William A.; Jones, Mark F.; Kopacz, Thomas J.; and Zelazoski, Gregory A., 5,350,624, Cl. 428-219.000.
Zenda, Hiroki, to Kabushiki Kaisha Toshiba. CRT/flat panel display control system. 5,351,064, Cl. 345-3.000.
Zeneca Limited: *See*—
Crawley, Graham C.; and Girodeau, Jean-Marc M. M., 5,350,754, Cl. 514-277.000
Zentner, Gaylen M.: *See*—
McClelland, Gregory A.; and Zentner, Gaylen M., 5,350,584, Cl. 424-501.000.
Zerato, Louis; and Randolph, Art. Animal feeder device. 5,349,925, Cl. 119-62.000
ZF Friedrichshafen AG: *See*—
Paul, Michael; Wilks, Eberhard; and Sigl, Peter, 5,350,340, Cl. 475-237.000
Ziemendorf, Donald: *See*—
Sadowski, Kazimierz; Ziemendorf, Donald; Carlo, Robert; and Kochems, Gary, 5,350,012, Cl. 165-152.000
Zimmerle, Chris T., to Miles Inc. Composition method and device for measuring the divalent cation concentration or specific gravity of a test sample. 5,350,694, Cl. 436-2.000.
Zimmermann, Craig E.: *See*—
Weinstein, James N.; and Zimmermann, Craig E., 5,350,589, Cl. 426-496.000.
Zinssmeister, Horst: *See*—
Arnold, Kurt; Hauck, Wolfgang; Klein, Reiner; Mertel, Bernhard; Walther, Karl-Heinz; and Zinssmeister, Horst, 5,350,127, Cl. 242-20.000.
Zoland, Martin. Expanding device for collapsible articles. 5,350,241, Cl. 383-127.000
Zoller, Robert A., to Standard Products Company, The. Decorative trim with one-piece plastic cover. 5,350,608, Cl. 428-31.000.
Zukowski, Mark M., to Amgen Inc. Sucrose inducible expression systems. 5,350,690, Cl. 435-252.310.
Zuma Coffee Technologies, Inc.: *See*—
King, Brian L.; and King, Paul A., 5,349,897, Cl. 99-289.00R.
Zuraw, Michael J.: *See*—
Boggs, Roger A.; Cournoyer, Richard L.; Ellis, Ernest W.; Russo-Rodriguez, Sandra E.; Telfer, Stephen J.; Waller, David P.; and Zuraw, Michael J., 5,350,870, Cl. 560-27.000.
Zushi, Takayasu: *See*—
Kokeguchi, Akira; and Zushi, Takayasu, 5,350,191, Cl. 280-752.000.
2H Kunststoff GmbH: *See*—
Hewing, Bernd; and Broda, Siegfried, 5,350,475, Cl. 156-244.110.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF SEPTEMBER, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Andermo, Mils I., to Mitutoyo Corporation. Electrode structure for capacitance-type measurement transducers. Re. 34,741, Cl. 324-690.000
Brady, Jack R. Concealed portable display device fastener. Re. 34,738, Cl. 24-577.000
Dow Chemical Company, The: *See*—
Lysenko, Zenon, Re. 34,745, Cl. 564-418.000.
Dri Steem Humidifier Co.: *See*—
Nelson, Kirk A.; and Loniello, Peter J., Re. 34,739, Cl. 126-113.000.
Eastman Kodak Company: *See*—
Maier, Larry K.; Priebe, Elizabeth K.; Lee, Jong S.; Woodgate, Paul E.; and Smith, Glen C., Re. 34,742, Cl. 428-36.500
Ishige, Kazuo: *See*—
Ogasawara, Yasukichi; Ishige, Kazuo; and Ogata, Keizo, Re. 34,743, Cl. 428-195.000.
Japane Vilkene Company, Ltd.: *See*—
Kawabata, Nariyoshi; Minami, Akinori; and Yo, Tadahira, Re. 34,740, Cl. 526-265.000.
Kawabata, Nariyoshi; Minami, Akinori; and Yo, Tadahira, to Japane Vilkene Company, Ltd. Adsorptive resin for microorganisms. Re. 34,740, Cl. 526-265.000.
Lee, Jong S.: *See*—
Maier, Larry K.; Priebe, Elizabeth K.; Lee, Jong S.; Woodgate, Paul E.; and Smith, Glen C., Re. 34,742, Cl. 428-36.500.
Loniello, Peter J.: *See*—
Nelson, Kirk A.; and Loniello, Peter J., Re. 34,739, Cl. 126-113.000.
Lysenko, Zenon, to Dow Chemical Company, The. High purity process for the preparation of 4,6-diamino-1,3-benzenediol. Re. 34,745, Cl. 564-418.000
Maier, Larry K.; Priebe, Elizabeth K.; Lee, Jong S.; Woodgate, Paul E.; and Smith, Glen C., to Eastman Kodak Company. Shaped articles from orientable polymers and polymer microbeads. Re. 34,742, Cl. 428-36.500.
Minami, Akinori: *See*—
Kawabata, Nariyoshi; Minami, Akinori; and Yo, Tadahira, Re. 34,740, Cl. 526-265.000.
Mitutoyo Corporation: *See*—
Andermo, Mils I., Re. 34,741, Cl. 324-690.000.
Nelson, Kirk A.; and Loniello, Peter J., to Dri Steem Humidifier Co. Seal retaining configuration for humidifier. Re. 34,739, Cl. 126-113.000.
Ogasawara, Yasukichi; Ishige, Kazuo; and Ogata, Keizo, to Toyo Ink Manufacturing Co., Ltd. Decorative plate. Re. 34,743, Cl. 428-195.000
Ogata, Keizo: *See*—
Ogasawara, Yasukichi; Ishige, Kazuo; and Ogata, Keizo, Re. 34,743, Cl. 428-195.000.
Priebe, Elizabeth K.: *See*—
Maier, Larry K.; Priebe, Elizabeth K.; Lee, Jong S.; Woodgate, Paul E.; and Smith, Glen C., Re. 34,742, Cl. 428-36.500.
Smith, Glen C.: *See*—
Maier, Larry K.; Priebe, Elizabeth K.; Lee, Jong S.; Woodgate, Paul E.; and Smith, Glen C., Re. 34,742, Cl. 428-36.500
Sykes, Charles A. Anti-corrosive battery terminal. Re. 34,744, Cl. 439-202.000.
Toyo Ink Manufacturing Co., Ltd.: *See*—
Ogasawara, Yasukichi; Ishige, Kazuo; and Ogata, Keizo, Re. 34,743, Cl. 428-195.000.
Woodgate, Paul E.: *See*—
Maier, Larry K.; Priebe, Elizabeth K.; Lee, Jong S.; Woodgate, Paul E.; and Smith, Glen C., Re. 34,742, Cl. 428-36.500
Yo, Tadahira: *See*—
Kawabata, Nariyoshi; Minami, Akinori; and Yo, Tadahira, Re. 34,740, Cl. 526-265.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Andersson, Matts: *See*—
Rangert, Bo; Joneus, Lars; Holmberg, Claes; and Andersson, Matts, B1 5,069,622, Cl. 433-173.000.
Check, Frank T.; and Sansome, Ronald P., to Pitney Bowes Inc. Apparatus and method for generating images by producing light spots of different sizes. B1 4,809,021, 9-27-94, Cl. 346-108.000.
Donn Incorporated: *See*—
Shirey, Richard; Koski, Gerald L.; Teli, Jonathan P.; and Mieyal, David F., B1 4,779,394, Cl. 52-667.000.
Holmberg, Claes: *See*—
Rangert, Bo; Joneus, Lars; Holmberg, Claes; and Andersson, Matts, B1 5,069,622, Cl. 433-173.000.
Joneus, Lars: *See*—
Rangert, Bo; Joneus, Lars; Holmberg, Claes; and Andersson, Matts, B1 5,069,622, Cl. 433-173.000.
Koski, Gerald L.: *See*—
Shirey, Richard; Koski, Gerald L.; Teli, Jonathan P.; and Mieyal, David F., B1 4,779,394, Cl. 52-667.000
Mieyal, David F.: *See*—
Shirey, Richard; Koski, Gerald L.; Teli, Jonathan P.; and Mieyal, David F., B1 4,779,394, Cl. 52-667.000
Muller, Hans. Cassette for cleaning the heads of a magnetic tape recorder. B1 4,706,147, 9-27-94, Cl. 360-128.000.
Nobelpharma AB: *See*—
Rangert, Bo; Joneus, Lars; Holmberg, Claes; and Andersson, Matts, B1 5,069,622, Cl. 433-173.000.
Pitney Bowes Inc.: *See*—
Check, Frank T.; and Sansome, Ronald P., B1 4,809,021, Cl 346-108.000
Rangert, Bo; Joneus, Lars; Holmberg, Claes; and Andersson, Matts, to Nobelpharma AB. Spacer. B1 5,069,622, 9-27-94, Cl. 433-173.000.
Sansome, Ronald P.: *See*—
Check, Frank T.; and Sansome, Ronald P., B1 4,809,021, Cl. 346-108.000.
Shirey, Richard; Koski, Gerald L.; Teli, Jonathan P.; and Mieyal, David F., to Donn Incorporated. Connector for suspension ceiling grid. B1 4,779,394, 9-27-94, Cl. 52-667.000.
Teli, Jonathan P.: *See*—
Shirey, Richard; Koski, Gerald L.; Teli, Jonathan P.; and Mieyal, David F., B1 4,779,394, Cl. 52-667.000

LIST OF DESIGN PATENTEES

Adams Mfg. Co.: *See—*
Adams, William E.; and Peoples, Marc, 350,943, Cl. D13-183.000
Adams, William E.; and Peoples, Marc, to Adams Mfg. Co. Magnet 350,943, 9-27-94, Cl. D13-183.000.
Adell, Robert. Combined coaster and dual compartment lottery picker. 351,004, 9-27-94, Cl. D21-37.000.
Advanced Products Inc.: *See—*
Goetz, Charles R., 350,900, Cl. D9-502.000.
Atwa Co., Ltd.: *See—*
Nakamura, Koji, 350,961, Cl. D14-205.000
Alexander Binzel GmbH & Co. KG: *See—*
Sperling, Hermann; and Bode, Axel, 350,884, Cl. D8-30.000
Sperling, Hermann; and Bode, Axel, 350,885, Cl. D8-30.000.
Ambasz, Emilio. Padded armchair on wheels. 350,859, 9-27-94, Cl. D6-366.000.
Amos, Jimi E.: *See—*
Parker, Nancy D.; and Amos, Jimi E., 351,043, Cl. D27-154.000.
Anderson, Norman D.: *See—*
Attinello, John S.; Anderson, Norman D.; Landers, Samuel P.; and Freygang, Dale G., 350,929, Cl. D12-147.000.
Andress, Bradley W.: *See—*
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregory G.; and Koenig, John W., 350,843, Cl. D7-614.000.
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregg M.; and Koenig, John W., 350,875, Cl. D7-612.000.
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregg M.; and Koenig, John W., 350,876, Cl. D7-612.000.
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregg M.; and Koenig, John W., 350,877, Cl. D7-612.000
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregg M.; and Koenig, John W., 350,880, Cl. D7-629.000.
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregg M.; and Koenig, John W., 350,881, Cl. D7-629.000
Angelini, Lamberto, to Maniglio, Paolo. Jewelry case. 350,850, 9-27-94, Cl. D3-273.000.
Apple Computer, Inc.: *See—*
Stewart, James R.; Moller, Ronald J.; and Biasotti, Mark A., 350,946, Cl. D14-113.000.
Aqua-Leisure Industries, Inc.: *See—*
Wolfe, Henry, 351,009, Cl. D21-237.000.
Arnold, Anthony K., to Hunter Fan Company. Combined ceiling fan and light fixture. 351,020, 9-27-94, Cl. D23-377.000
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Matsuda, Takashi, 350,981, Cl. D18-55.000.
Asakawa, Takahiro: *See—*
Kishi, Toshiaki; and Asakawa, Takahiro, 350,919, Cl. D12-110.000.
Attinello, John S.; Anderson, Norman D.; Landers, Samuel P.; and Freygang, Dale G., to Goodyear Tire & Rubber Company, The. Tire tread. 350,929, 9-27-94, Cl. D12-147.000
Barr, Lance, to Nintendo Co. Ltd. Electronic game housing. 350,992, 9-27-94, Cl. D21-48.000
Barthold, Mark, to Mattel, Inc. Segmented container. 350,897, 9-27-94, Cl. D9-425.000
Basque, David, to L'Oreal. Blush brush. 350,853, 9-27-94, Cl. D4-135.000.
Bausch & Lomb Incorporated: *See—*
Cereda, Sergio, 350,967, Cl. D16-315.000
Baxter, Anthony W.; Morris, Thomas K.; and Lescault, Mark A. Amusement castle. 350,995, 9-27-94, Cl. D21-115.000
Bednar, William E.; and Whitlock, Terry S. Water squirting toy 351,007, 9-27-94, Cl. D21-147.000
Beller, Frank W., to Belson Manufacturing Co., Inc. Folding table. 350,862, 9-27-94, Cl. D6-429.000.
Belson Manufacturing Co., Inc.: *See—*
Beller, Frank W., 350,862, Cl. D6-429.000.
Benson, Bryan R.: *See—*
Mathison, Allen D.; and Benson, Bryan R., 351,013, Cl. D23-260.000.
Bergstrom, Troy E.: *See—*
Klinger, Robert C.; and Bergstrom, Troy E., 350,947, Cl. D14-114.000
Bernoni, Claudio: *See—*
Echazabel, Alberto; and Bernoni, Claudio, 350,932, Cl. D12-211.000
Bert, Raymond R., to Textron Inc. Expansion bracelet. 350,911, 0-27-94, Cl. D11-19.000.
Besam, Inc.: *See—*
Loria, Joseph, 350,891, Cl. D8-330.000.
Biasotti, Mark A.: *See—*
Stewart, James R.; Moller, Ronald J.; and Biasotti, Mark A., 350,946, Cl. D14-113.000
Bickler, Henry A. Putter head. 351,001, 9-27-94, Cl. D21-217.000
Biochem International Inc.: *See—*
Walters, Glenn T., 351,023, Cl. D24-169.000
Black, Steven P. Electronic activity center. 350,993, 9-27-94, Cl. D21-59.000
Blitz U.S.A. Inc.: *See—*
Chrisco, Larry L., 350,969, Cl. D15-150.000.
Bode, Axel: *See—*
Sperling, Hermann; and Bode, Axel, 350,884, Cl. D8-30.000
Sperling, Hermann; and Bode, Axel, 350,885, Cl. D8-30.000
Boeri, Maria C. M., to Fusital S.p.A. Door handle unit. 350,890, 9-27-94, Cl. D8-302.000
Bogard, Donald E.: *See—*
Sinanis, John M.; and Bogard, Donald E., 350,893, Cl. D9-304.000.
Bourgraf, Elroy E.; Zellner, John R.; and Coons, John C., to Ferno-Washington, Inc. Bathtub for invalids. 351,018, 9-27-94, Cl. D23-279.000
Braun Aktiengesellschaft: *See—*
Littmann, Ludwig, 350,871, Cl. D7-309.000.
Brideport Metal Goods Manufacturing Co., The: *See—*
Vasas, Martin M., 350,899, Cl. D9-503.000.
Brunner, Steven W.: *See—*
Kane, Elizabeth; Brunner, Steven W.; and Leafstedt, John S., 350,864, Cl. D6-438.000.
Buonaura, Anthony: *See—*
Moore, John W.; and Buonaura, Anthony, 351,019, Cl. D23-283.000
Burghoff, Gary. Fishing rod. 351,012, 9-27-94, Cl. D22-142.000.
Buttler, Carl T. Safety device for swimming pools. 351,010, 9-27-94, Cl. D21-237.000
Bycraft, John T.: *See—*
Pomeroy, Charles; and Bycraft, John T., 350,855, Cl. D6-344.000.
C. M. E. Blasting and Mining Equipment Ltd.: *See—*
Sjolander, Robert; and Stenmark, Dag, 350,887, Cl. D8-70.000.
Caceres, Peter B.; Newman, Robert D., Sr.; Newman, Robert D., Jr.; and Stodgell, John W., to Mr. Longarm, Inc. Watering wand 351,015, 9-27-94, Cl. D23-213.000.
Cal-Style Furniture Mfg. Co.: *See—*
Ward, Marshall B., 350,865, Cl. D6-484.000.
Calcagno, John, to Chanel Inc. Tie. 350,844, 9-27-94, Cl. D2-605.000.
Canon Kaboshiki Kaisha: *See—*
Takahashi, Masaki, 350,863, Cl. D6-429.000.
Canon Kabushiki Kaisha: *See—*
Isomoto, Masataka; and Komada, Takeshi, 350,976, Cl. D18-44.000.
Komada, Takeshi; Isomoto, Masataka; Suzuki, Noriyuki; and Ishibashi, Masaaki, 350,972, Cl. D18-36.000.
Mizuta, Ryoko, 350,975, Cl. D18-43.000.
Carroll, Maureen E.: *See—*
Reardon, John D.; Marshall, Susan K.; Carroll, Maureen E.; Moore, Devin; and Rowley, David S., 350,962, Cl. D14-218.000.
Carroll, Shane E. Leg support for a motorcycle. 350,921, 9-27-94, Cl. D12-114.000.
Cary, William A. Hands-free jigger. 350,904, 9-27-94, Cl. D10-46.300
Cateye Co., Ltd.: *See—*
Tsushi, Masao, 351,036, Cl. D26-29.000.
Cerato, Silverio, to Silmar S.p.a. Ornamental chain. 350,909, 9-27-94, Cl. D11-13.000.
Cerato, Silverio, to Silmar S.p.a. Bracelet. 350,910, 9-27-94, Cl. D11-13.000
Cereda, Sergio, to Bausch & Lomb Incorporated. Eyewear frames. 350,967, 9-27-94, Cl. D16-315.000.
Chadfield, Robert: *See—*
Lang, Frank J.; and Chadfield, Robert, 350,895, Cl. D9-338.000.
Lang, Frank J.; and Chadfield, Robert, 350,896, Cl. D9-338.000.
Chamberlain Phipps Canada Limited: *See—*
Tzenos, Andreas C., 350,848, Cl. D2-961.000.
Chanel Inc.: *See—*
Calcagno, John, 350,844, Cl. D2-605.000
Chang, Chiu-Tsun, to P & F Brother Industrial Corporation. Electric saw. 350,968, 9-27-94, Cl. D15-133.000.
Charland, Cyril. Meat patty mold. 350,882, 9-27-94, Cl. D7-672.000
Chen, Bien-Horn. Soft lacrosse stick. 350,999, 9-27-94, Cl. D21-210.000.
Chen, Ching-Ting. Massager for the sole of a foot. 351,027, 9-27-94, Cl. D24-213.000
Chern, Wen-Bin. Combined earthquake warning indication and anti-theft clock. 350,903, 9-27-94, Cl. D10-4.000.
Cherne Industries Incorporated: *See—*
Mathison, Allen D.; and Benson, Bryan R., 351,013, Cl. D23-260.000.
Chou, Jen-Chung, to Ko Chien Electric Co., Ltd. Massager. 351,024, 9-27-94, Cl. D24-215.000.
Chrisco, Larry L., to Blitz U.S.A. Inc. Collapsible funnel. 350,969, 9-27-94, Cl. D15-150.000
Cohen, Gene D. Game board for word games. 351,003, 9-27-94, Cl. D21-24.000
Cole, Douglas L., to Mikron Industries. Window component extrusion. 351,032, 9-27-94, Cl. D25-124.000
Cole, Douglas L., to Mikron Industries. Window component extrusion 351,033, 9-27-94, Cl. D25-124.000.
Cole, Douglas L., to Mikron Industries. Window component extrusion. 351,044, 9-27-94, Cl. D25-124.000.
Cole, John M., Jr., to Lite Control Corp. Fluorescent lighting fixture. 351,039, 9-27-94, Cl. D26-77.000
Collins, Timothy C. Display container for periodicals. 350,854, 9-27-94, Cl. D6-300.000
Compaq Computer Corporation: *See—*
Daniels, George R., 350,949, Cl. D14-115.000
Connelly, William L., III. Hand-held exercise apparatus. 350,997, 9-27-94, Cl. D21-198.000
Conotter, Luciano. Toy puzzle. 350,994, 9-27-94, Cl. D21-104.000

Control Logic (Proprietary) Limited: *See—*
Pucci, Franco G.; Wythe, Michael D.; and Moulder, Kevin E., 350,955, Cl. D13-146.000
Coons, John C.: *See—*
Bourgraf, Elroy E.; Zellner, John R.; and Coons, John C., 351,018, Cl. D23-279.000
Cooper, Delmar E. Novelty cap. 350,846, 9-27-94, Cl. D2-869.000.
Cooper Industries: *See—*
Snoke, Phillip J.; Gillespie, Lionel D.; and Gamper, Steven C., 351,038, Cl. D26-65.000
Crawford, John L.; Sowder, John M.; and Crwaford, Winnie M. G., to Infinity Stone, Inc. Retaining wall stone. 351,031, 9-27-94, Cl. D25-117.000
Creative Alliance, Inc.: *See—*
Duffy, Richard L., 350,873, Cl. D7-533.000.
Crispino, Louis T. Automatic feed apparatus for dispensing tar. 350,966, 9-27-94, Cl. D15-13.000
Crwaford, Winnie M. G.: *See—*
Crawford, John L.; Sowder, John M.; and Crwaford, Winnie M. G., 351,031, Cl. D25-117.000.
Curtis Manufacturing Company, Inc.: *See—*
Rossman, Jon R.; and Hotaling, Bryan R., 350,916, Cl. D13-142.000
Rossman, Jon R.; and Hotaling, Bryan R., 350,917, Cl. D13-142.000.
Rossman, Jon R.; and Hotaling, Bryan R., 350,936, Cl. D13-139.000.
Rossman, Jon R.; and Hotaling, Bryan R., 350,937, Cl. D13-139.000.
Rossman, Jon R.; and Hotaling, Bryan R., 350,938, Cl. D13-139.000
Rossman, Jon R.; and Hotaling, Bryan R., 350,939, Cl. D13-142.000
Rossman, Jon R.; and Hotaling, Bryan R., 350,940, Cl. D13-142.000
Dancyger, Michael. Combined nail and tool belt. 350,849, 9-27-94, Cl D3-228.000
Daniels, George R., to Compaq Computer Corporation. Illuminated display panel for indicating disk drive activity. 350,949, 9-27-94, Cl. D14-115.000
Davis, Dwayne L. Three piece plastic tube for ignition wire. 350,941, 9-27-94, Cl. D13-155.000.
Davis, Gregg M.: *See—*
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregg M.; and Koenig, John W., 350,875, Cl. D7-612.000.
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregg M.; and Koenig, John W., 350,876, Cl. D7-612.000.
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregg M.; and Koenig, John W., 350,877, Cl. D7-612.000.
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregg M.; and Koenig, John W., 350,880, Cl. D7-629.000.
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregg M.; and Koenig, John W., 350,881, Cl. D7-629.000.
Davis, Gregory G.: *See—*
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregory G.; and Koenig, John W., 350,843, Cl. D7-614.000.
Davlantes, George N. Pet door frame. 351,029, 9-27-94, Cl. D25-60.000.
Dawson, Terry P. Wheel trim. 350,931, 9-27-94, Cl. D12-206.000.
Dobbs, Matthew A., Sr.; and Dobbs, Michelle A. Oil lamp. 351,035, 9-27-94, Cl. D26-11.000
Dobbs, Michelle A.: *See—*
Dobbs, Matthew A., Sr.; and Dobbs, Michelle A., 351,035, Cl D26-11.000
Donaldson, Craig: *See—*
Pellet, Carrie; and Donaldson, Craig, 350,942, Cl. D13-182.000.
Donsco, Inc.: *See—*
Stork, Barbara J., 350,915, Cl. D11-130.100
Duffy, Richard L., to Creative Alliance, Inc. Drinking cup. 350,873, 9-27-94, Cl. D7-533.000.
Dynabrade, Inc.: *See—*
Huber, Paul W.; and Heckmiller, David G., Jr., 350,886, Cl. D8-62.000
Echazabel, Alberto; and Bernoni, Claudio, to Motoring Accessories, Inc. Vehicle wheel. 350,932, 9-27-94, Cl. D12-211.000.
Edina Technical Products Inc.: *See—*
Humphrey, Dallas, 350,986, Cl. D20-4.000.
Elston, Andrew: *See—*
McCambridge, James E.; and Elston, Andrew, 351,046, Cl. D28-53.000.
Elston, Gary L.: *See—*
Lewis, Kim R.; Elston, Gary L.; Hall, Jack P.; and Kerkhof, Dennis, 350,977, Cl. D18-50.000
Eyman, David: *See—*
Schmidlin, Thomas J.; and Eyman, David, 350,923, Cl. D12-12.000.
Fact Games, Ltd.: *See—*
Kennedy, George, 350,996, Cl. D21-148.000.
Federal Package Ltd.: *See—*
Lang, Frank J.; and Chadfield, Robert, 350,895, Cl. D9-338.000.
Lang, Frank J.; and Chadfield, Robert, 350,896, Cl. D9-338.000.
Ferno-Washington, Inc.: *See—*
Bourgraf, Elroy E.; Zellner, John R.; and Coons, John C., 351,018, Cl. D23-279.000.
Ferrazzutti, Lorne. Vacuum cleaner attachable dog brush. 350,852, 9-27-94, Cl. D4-129.000
Flying Dragon Development Limited: *See—*
Poon, Tit W., 351,037, Cl. D26-42.000.
Fonte Sole Holding AG: *See—*
Pellew-Harvey, Barbara, 350,901, Cl. D9-553.000.
Ford Motor Company: *See—*
Fowler, James H.; and Schumaker, Nevenka, 350,964, Cl. D14-258.000.
Fowler, James H.; and Schumaker, Nevenka, to Ford Motor Company. Control panel for an automotive radio/cassette. 350,964, 9-27-94, Cl. D14-258.000.
Freygang, Dale G.: *See—*
Attinello, John S.; Anderson, Norman D.; Landers, Samuel P.; and Freygang, Dale G., 350,929, Cl. D12-147.000.
Friedrich Grohe Aktiengesellschaft: *See—*
Gottwald, Adolf, 351,017, Cl. D23-238.000
Frierman, Michael. Mallet head. 350,889, 9-27-94, Cl. D8-78.000
Fuji Photo Film Co., Ltd.: *See—*
Katayama, Noriko, 350,952, Cl. D14-121.000.
Fusital S.p.A.: *See—*
Boeri, Maria C. M., 350,890, Cl. D8-302.000.
Galaxy Network, Inc.: *See—*
Schlueter, Andrea C., 351,049, Cl. D28-77.000
Gamper, Steven C.: *See—*
Snoke, Phillip J.; Gillespie, Lionel D.; and Gamper, Steven C., 351,038, Cl. D26-65.000
Gaynor, Lawrence D., to Nailco, Inc. Manicurist supply stand. 351,048, 9-27-94, Cl. D28-61.000.
Gebhard, Albert W. Combined hair curler and heating unit. 351,045, 9-27-94, Cl. D28-35.000.
Gelston, Timothy J. Bottle handle. 350,879, 9-27-94, Cl. D7-622.000.
Genex S.A.: *See—*
Joye, Andre, 350,982, Cl. D18-57.000.
Gershenson, Bruce. Locking burr. 350,914, 9-27-94, Cl. D11-200.000.
Gillespie, Lionel D.: *See—*
Snoke, Phillip J.; Gillespie, Lionel D.; and Gamper, Steven C., 351,038, Cl. D26-65.000.
Glass Dimensions, Inc.: *See—*
Perkins, David R., 351,034, Cl. D26-11.000.
Goetz, Charles R., to Advanced Products Inc. Bucket for storing and merchandising chain. 350,900, 9-27-94, Cl. D9-502.000
Goldstar Co., Ltd.: *See—*
Park, Kwang C., 350,954, Cl. D14-126.000.
Goodyear Tire & Rubber Company, The: *See—*
Attinello, John S.; Anderson, Norman D.; Landers, Samuel P.; and Freygang, Dale G., 350,929, Cl. D12-147.000
Maxwell, Paul B.; and Montag, Sean D., 350,924, Cl. D12-146.000
Gottwald, Adolf, to Friedrich Grohe Aktiengesellschaft. Faucet. 351,017, 9-27-94, Cl. D23-238.000.
Gowin, Charles E. Cooler. 350,874, 9-27-94, Cl. D7-606.000.
Goyette, Daniel A. Race car game board. 350,991, 9-27-94, Cl. D21-27.000
Greene, Michael W., to Resinform, Inc. Ottoman. 350,856, 9-27-94, Cl. D6-349.000.
Greeson, Donald N., to Uwharrie Chair Company. Seat. 350,860, 9-27-94, Cl. D6-370.000.
Gridmaster Corporation: *See—*
Newman, Brian D., 350,868, Cl. D7-305.000.
Grindmaster Corporation: *See—*
Newnan, Brian D., 350,869, Cl. D7-305.000
Grosfillex, Raymond, to Grosfillex Sarl. Cushioned sofa. 350,861, 9-27-94, Cl. D6-381.000.
Grosfillex Sarl: *See—*
Grosfillex, Raymond, 350,861, Cl. D6-381.000.
Hakuba Shashin Sangyo Kabushiki Kaisha: *See—*
Usui, Hisaichi, 350,970, Cl. D16-244.000.
Hall, Jack P.: *See—*
Lewis, Kim R.; Elston, Gary L.; Hall, Jack P.; and Kerkhof, Dennis, 350,977, Cl. D18-50.000
Hansen, George M., to Water Horse Inc. Filtered water dispenser. 350,870, 9-27-94, Cl. D7-306.000
Hansen, George M., to Water Horse Inc. Combined water dispenser and filter. 351,014, 9-27-94, Cl. D23-209.000
Harada, Yoshinori; and Nagai, Muneyuki, to Matsushita Electric Industrial Co., Ltd. Monitor television receiver. 350,953, 9-27-94, Cl. D14-126.000.
Hattori, Yasuo: *See—*
Yamashita, Shigeru; and Hattori, Yasuo, 351,025, Cl. D24-186.000.
Heavrin, Patrick. Carpet stripper. 350,883, 9-27-94, Cl. D8-14.000.
Heckmiller, David G., Jr.: *See—*
Huber, Paul W.; and Heckmiller, David G., Jr., 350,886, Cl. D8-62.000
Heimos, Norwin G., to Micky's Mini-Flora Express, Ltd. Plant water container. 350,913, 9-27-94, Cl. D11-164.000
Hendren, David L. Dental floss dispenser. 351,047, 9-27-94, Cl. D28-64.000
Hill, David W.; and Murphy, Tim K., to International Business Machines Corporation. Optical disk drive for a data processing system. 350,945, 9-27-94, Cl. D14-109.000
Hirose, Tomoyuki, to Sharp Kabushiki Kaisha. Printer for computer. 350,979, 9-27-94, Cl. D18-55.000
Hoekstra, Arthur L. Holder for single beverage container. 350,878, 9-27-94, Cl. D7-619.000.
Hojlund, Charlotte K. H.; and Holmstrom, Berit, to Interlego A.G Element for a toy building set. 351,005, 9-27-94, Cl. D21-108.000.
Holmstrom, Berit: *See—*
Hojlund, Charlotte K. H.; and Holmstrom, Berit, 351,005, Cl. D21-108.000.
Nielsen, Lotte M.; and Holmstrom, Berit, 351,006, Cl. D21-108.000

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Kishi, Toshiaki; and Asakawa, Takahiro, 350,919, Cl. D12-110.000.
Kohama, Mitsuyoshi; Muta, Yoshiaki; and Watanuki, Yuuji, 350,918, Cl. D12-110.000.
Tsukui, Hiroaki; and Nakazawa, Tetsuya, 350,920, Cl. D12-110.000.

Hotaling, Bryan R.: *See—*
Rossman, Jon R.; and Hotaling, Bryan R., 350,916, Cl. D13-142.000.
Rossman, Jon R.; and Hotaling, Bryan R., 350,917, Cl. D13-142.000.
Rossman, Jon R.; and Hotaling, Bryan R., 350,936, Cl. D13-139.000.
Rossman, Jon R.; and Hotaling, Bryan R., 350,937, Cl. D13-139.000.
Rossman, Jon R.; and Hotaling, Bryan R., 350,938, Cl. D13-139.000.
Rossman, Jon R.; and Hotaling, Bryan R., 350,939, Cl. D13-142.000.
Rossman, Jon R.; and Hotaling, Bryan R., 350,940, Cl. D13-142.000.

Hotta, Akihiko: *See—*
Sakata, Keiji; Shibata, Hirokazu; and Hotta, Akihiko, 350,960, Cl D14-168.000.

Huang, Peter. Toy pen. 350,984, 9-27-94, Cl. D19-42.000.

Huber, Paul W.; and Heckmiller, David G., Jr., to Dynabrade, Inc Random orbital sander. 350,886, 9-27-94, Cl. D8-62.000.

Humphrey, Dallas, to Edina Technical Products Inc. Vending machine. 350,986, 9-27-94, Cl. D20-4.000.

Hunter Fan Company: *See—*
Arnold, Anthony K., 351,020, Cl. D23-377.000.

Hutz, John A., to Michelin Recherche et Technique S.A. Tire. 350,926, 9-27-94, Cl. D12-147.000.

I. W. Industries, Inc.: *See—*
Warshawsky, Jerome, 351,016, Cl. D23-213.000.

Inatani, Shujiro, to Rays Engineering Co., Ltd. Bicycle hub. 350,922, 9-27-94, Cl. D12-115.000.

Infinity Stone, Inc.: *See—*
Crawford, John L.; Sowder, John M.; and Crwaford, Winnie M G., 351,031, Cl. D25-117.000

Inoue, Kyouichi; and Kumagai, Yukitaka, to Olympus Optical Co., Ltd. Charger for printers. 350,974, 9-27-94, Cl. D18-40.000.

Interlego A.G.: *See—*
Hojlund, Charlotte K. H.; and Holmstrom, Berit, 351,005, Cl D21-108.000
Kohler, Lene, 351,000, Cl. D21-108.000
Nielsen, Lotte M.; and Holmstrom, Berit, 351,006, Cl. D21-108.000.

International Business Machines Corporation: *See—*
Hill, David W.; and Murphy, Tim K., 350,945, Cl. D14-109.000.
Smith, Ronald A., 350,948, Cl. D14-115.000.

Ishibashi, Masaaki: *See—*
Komada, Takeshi; Isomoto, Masataka; Suzuki, Noriyuki; and Ishibashi, Masaaki, 350,972, Cl. D18-36.000.

Isomoto, Masataka; and Komada, Takeshi, to Canon Kabushiki Kaisha. Paper supplying machine body for electronic copying machine. 350,976, 9-27-94, Cl. D18-44.000.

Isomoto, Masataka: *See—*
Komada, Takeshi; Isomoto, Masataka; Suzuki, Noriyuki; and Ishibashi, Masaaki, 350,972, Cl. D18-36.000

Jack-Post Corporation: *See—*
Pomeroy, Charles; and Bycraft, John T., 350,855, Cl. D6-344.000.

Joye, Andre, to Genex S.A. Engraving machine. 350,982, 9-27-94, Cl. D18-57.000

Kane, Elizabeth; Brunner, Steven W.; and Leafstedt, John S., to Liz Claiborne, Inc. Jewelry display fixture. 350,864, 9-27-94, Cl. D6-438.000.

Kaneko, Ryoichi, to Seikosha Co., Ltd. Wristwatch. 350,902, 9-27-94, Cl. D10-32.000

Katayama, Noriko, to Fuji Photo Film Co., Ltd. Audio tape cassette. 350,952, 9-27-94, Cl. D14-121.000.

Keller, H. Thomas: *See—*
Warren, Nancy, 350,857, Cl. D6-381.000
Warren, Nancy, 350,858, Cl. D6-381.000.

Kennedy, George, to Fact Games, Ltd. Reindeer doll. 350,996, 9-27-94, Cl. D21-148.000.

Kerkhof, Dennis: *See—*
Lewis, Kim R.; Elston, Gary L., Hall, Jack P.; and Kerkhof, Dennis, 350,977, Cl. D18-50.000

Kiernicki, Lorenz S. Fuse condition indicator. 350,905, 9-27-94, Cl. D10-77.000

Kishi, Toshiaki; and Asakawa, Takahiro, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 350,919, 9-27-94, Cl. D12-110.000

Klinger, Robert C.; and Bergstrom, Troy E. Combined mouse cord holder and clip. 350,947, 9-27-94, Cl. D14-114.000.

Ko Chien Electric Co., Ltd.: *See—*
Chou, Jen-Chung, 351,024, Cl. D24-215.000.

Kobayashi, Makoto, to Seiko Epson Corporation. Printer for a personal computer. 350,980, 9-27-94, Cl. D18-55.000.

Koenig, John W.: *See—*
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregory G.; and Koenig, John W., 350,843, Cl. D7-614.000.
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregg M.; and Koenig, John W., 350,875, Cl. D7-612.000
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregg M.; and Koenig, John W., 350,876, Cl. D7-612.000.
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregg M.; and Koenig, John W., 350,877, Cl. D7-612.000.
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregg M.; and Koenig, John W., 350,880, Cl. D7-629.000.
VanValkenburg, Terry L.; Andress, Bradley W.; Davis, Gregg M.; and Koenig, John W., 350,881, Cl. D7-629.000.

Kohama, Mitsuyoshi; Muta, Yoshiaki; and Watanuki, Yuuji, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 350,918, 9-27-94, Cl. D12-110.000.

Kohler, Lene, to Interlego A.G. Element for a toy building set. 351,000, 9-27-94, Cl. D21-108.000

Komada, Takeshi; Isomoto, Masataka; Suzuki, Noriyuki; and Ishibashi, Masaaki, to Canon Kabushiki Kaisha. Copying machine. 350,972, 9-27-94, Cl. D18-36.000.

Komada, Takeshi: *See—*
Isomoto, Masataka; and Komada, Takeshi, 350,976, Cl. D18-44.000.

Kravitz, Jeffrey L. Folded tag for eyeglasses. 350,988, 9-27-94, Cl. D20-22.000

Kumagai, Yukitaka: *See—*
Inoue, Kyouichi; and Kumagai, Yukitaka, 350,974, Cl. D18-40.000.

L.D. Kichler Co., The: *See—*
Porter, David H., 351,041, Cl. D26-130.000.

Landers, Samuel P.: *See—*
Attinello, John S.; Anderson, Norman D.; Landers, Samuel P.; and Freygang, Dale G., 350,929, Cl. D12-147.000

Lang, Frank J.; and Chadfield, Robert, to Federal Package Ltd. Dispensing container for cosmetic product. 350,895, 9-27-94, Cl. D9-338.000

Lang, Frank J.; and Chadfield, Robert, to Federal Package Ltd. Dispensing container for cosmetic product. 350,896, 9-27-94, Cl. D9-338.000

Lanier, Philip S. Miniature golf course unit. 350,989, 9-27-94, Cl. D21-11.000.

Lassberg, Katrina A. Calculator for spiral bound/ring binder notebook organizer. 350,971, 9-27-94, Cl. D18-2.000.

Laughlin, Jerry K.: *See—*
Laughlin, Michael K.; Laughlin, Jerry K.; and Laughlin, Victor A., 351,030, Cl. D25-69.000

Laughlin, Michael K.; Laughlin, Jerry K.; and Laughlin, Victor A., to Outback Products, Inc. Tree climber. 351,030, 9-27-94, Cl. D25-69.000

Laughlin, Victor A.: *See—*
Laughlin, Michael K.; Laughlin, Jerry K.; and Laughlin, Victor A., 351,030, Cl. D25-69.000.

Leafstedt, John S.: *See—*
Kane, Elizabeth; Brunner, Steven W.; and Leafstedt, John S., 350,864, Cl. D6-438.000.

Lescault, Mark A.: *See—*
Baxter, Anthony W.; Morris, Thomas K.; and Lescault, Mark A., 350,995, Cl. D21-115.000

Lewis, Kim R.; Elston, Gary L.; Hall, Jack P.; and Kerkhof, Dennis, to Telxon Corporation. Portable printer. 350,977, 9-27-94, Cl. D18-50.000.

Lim, Jin-kyu. Compact disc case. 350,867, 9-27-94, Cl. D6-631.000.

Lin, Michael. Table lamp. 351,040, 9-27-94, Cl. D26-108.000.

Lisco, Inc.: *See—*
Spence, Meredith, Jr., 350,851, Cl. D4-104.000.

Lite Control Corp.: *See—*
Cole, John M., Jr., 351,039, Cl. D26-77.000.

Littmann, Ludwig, to Braun Aktiengesellschaft. Espressomachine 350,871, 9-27-94, Cl. D7-309.000

Liu, Ted, to Silitek Corporation. Desk scanner. 350,950, 9-27-94, Cl. D14-116.000

Liz Claiborne, Inc.: *See—*
Kane, Elizabeth; Brunner, Steven W.; and Leafstedt, John S., 350,864, Cl. D6-438.000.

L'Oreal: *See—*
Basque, David, 350,853, Cl. D4-135.000.

Loria, Joseph, to Besam, Inc. Cover for a sliding door operator 350,891, 9-27-94, Cl. D8-330.000

Lucker, Louis J. H., to OCE-Nederland, B.V. Copying machine. 350,973, 9-27-94, Cl. D18-39.000.

Madera, Michael J. Medical aid. 351,026, 9-27-94, Cl. D24-183.000.

Mahan, Michael M. Trousers. 350,845, 9-27-94, Cl. D2-742.000.

Manestar, Miroslav, to Michelin Recherche et Technique S.A. Tire. 350,925, 9-27-94, Cl. D12-147.000

Manestar, Miroslav, to Michelin Recherche et Technique S.A. Tire. 350,927, 9-27-94, Cl. D12-147.000

Manestar, Miroslav, to Michelin Recherche et Technique S.A. Tire. 350,928, 9-27-94, Cl. D12-147.000

Maniglio, Paolo: *See—*
Angelini, Lamberto, 350,850, Cl. D3-273.000.

Marshall, Susan K.: *See—*
Reardon, John D.; Marshall, Susan K.; Carroll, Maureen E.; Moore, Devin; and Rowley, David S., 350,962, Cl. D14-218.000.

Martin, Lisa E. Safety restraint for a toilet seat cover. 351,021, 9-27-94, Cl. D23-309.000.

Mathison, Allen D.; and Benson, Bryan R., to Cherne Industries Incorporated. Mechanical inspection and sealing plug for a monitoring well. 351,013, 9-27-94, Cl. D23-260.000

Matsuda, Takashi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Printer. 350,981, 9-27-94, Cl. D18-55.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Harada, Yoshinori; and Nagai, Muneyuki, 350,953, Cl. D14-126.000.

Matsuzaka, Youzoh, to Sony Corporation. Tape player combined with a radio receiver. 350,958, 9-27-94, Cl. D14-163.000.

Mattel, Inc.: *See—*
Barthold, Mark, 350,897, Cl. D9-425.000.

Maxwell, Paul B.; and Montag, Sean D., to Goodyear Tire & Rubber Company, The. Tire tread. 350,924, 9-27-94, Cl. D12-146.000.

McCambridge, James E.; and Elston, Andrew, to Wahl Clipper Corporation. Miniature hair trimmer with ring attachment for finger support. 351,046, 9-27-94, Cl. D28-53.000.

Meng, Pang S., to Mirror-Water Pte. Ltd. Drink container. 350,894, 9-27-94, Cl. D9-307.000

Michelin Recherche et Technique S.A.: *See—*
Hutz, John A., 350,926, Cl. D12-147.000.
Manestar, Miroslav, 350,925, Cl. D12-147.000.
Manestar, Miroslav, 350,927, Cl. D12-147.000.
Manestar, Miroslav, 350,928, Cl. D12-147.000.

Micky's Mini-Flora Express, Ltd.: *See—*
Heimos, Norwin G., 350,913, Cl. D11-164.000.

Micropolis Corporation: *See—*
Shewmon, Donald E.; Smith, Martin E.; and Steen, Michael L., 350,944, Cl. D14-102.000.

Mikron Industries: *See—*
Cole, Douglas L., 351,032, Cl. D25-124.000.
Cole, Douglas L., 351,033, Cl. D25-124.000.
Cole, Douglas L., 351,044, Cl. D25-124.000.

Miller, Christopher J., Miller, Judith A.; and Villarreal, M. Anthony, to Proteus Design Group. Arm support for a chair. 350,866, 9-27-94, Cl. D6-501.000.

Miller, Judith A.: *See—*
Miller, Christopher J.; Miller, Judith A.; and Villarreal, M. Anthony, 350,866, Cl. D6-501.000.

Minakawa, Yoshihisa, to Ricoh Company, Ltd. Digital printer. 350,978, 9-27-94, Cl. D18-50.000.

Mirror-Water Pte. Ltd.: *See—*
Meng, Pang S., 350,894, Cl. D9-307.000.

Mr. Longarm, Inc.: *See—*
Caceres, Peter B.; Newman, Robert D., Sr.; Newman, Robert D., Jr.; and Stodgell, John W., 351,015, Cl. D23-213.000.

Mizuta, Ryoko, to Canon Kabushiki Kaisha. Image forming apparatus. 350,975, 9-27-94, Cl. D18-43.000.

Moller, Ronald J.: *See—*
Stewart, James R.; Moller, Ronald J.; and Biasotti, Mark A., 350,946, Cl. D14-113.000.

Montag, Sean D.: *See—*
Maxwell, Paul B.; and Montag, Sean D., 350,924, Cl. D12-146.000.

Moore, Devin: *See—*
Reardon, John D.; Marshall, Susan K.; Carroll, Maureen E.; Moore, Devin; and Rowley, David S., 350,962, Cl. D14-218.000.

Moore, John W.; and Buonaura, Anthony, to Swan Corporation, The. Shower base. 351,019, 9-27-94, Cl. D23-283.000.

Morris, Thomas K.: *See—*
Baxter, Anthony W.; Morris, Thomas K.; and Lescault, Mark A., 350,995, Cl. D21-115.000.

Motoring Accessories, Inc.: *See—*
Echazabel, Alberto; and Bernoni, Claudio, 350,932, Cl. D12-211.000.

Moulder, Kevin E.: *See—*
Pucci, Franco G.; Wythe, Michael D.; and Moulder, Kevin E., 350,955, Cl. D13-146.000.

Murphy, Tim K.: *See—*
Hill, David W.; and Murphy, Tim K., 350,945, Cl. D14-109.000.

Muta, Yoshiaki: *See—*
Kohama, Mitsuyoshi; Muta, Yoshiaki; and Watanuki, Yuuji, 350,918, Cl. D12-110.000.

Nagai, Muneyuki: *See—*
Harada, Yoshinori; and Nagai, Muneyuki, 350,953, Cl. D14-126.000.

Nailco, Inc.: *See—*
Gaynor, Lawrence D., 351,048, Cl. D28-61.000.

Nakamura, Koji, to Aiwa Co., Ltd. Earphone. 350,961, 9-27-94, Cl. D14-205.000.

Nakazawa, Tetsuya: *See—*
Tsukui, Hiroaki; and Nakazawa, Tetsuya, 350,920, Cl. D12-110.000.

Newman, Brian D., to Grindmaster Corporation. Single hopper coffee bean grinder and brewer. 350,868, 9-27-94, Cl. D7-305.000.

Newman, Robert D., Jr.: *See—*
Caceres, Peter B.; Newman, Robert D., Sr.; Newman, Robert D., Jr.; and Stodgell, John W., 351,015, Cl. D23-213.000.

Newman, Robert D., Sr.: *See—*
Caceres, Peter B.; Newman, Robert D., Sr.; Newman, Robert D., Jr.; and Stodgell, John W., 351,015, Cl. D23-213.000.

Newnan, Brian D., to Grindmaster Corporation. Dual hopper coffee beam grinder and brewer with warmer plates. 350,869, 9-27-94, Cl. D7-305.000.

Nielsen, Lotte M.; and Holmstrom, Berit, to Interlego A.G. Element for a toy building set. 351,006, 9-27-94, Cl. D21-108.000.

Nintendo Co. Ltd.: *See—*
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296 5,349,839
327 5,349,840
333 5,349,841
342.3 5,349,842
344 5,349,843

CLASS 73

28.01 5,349,844
38 5,349,845
40 5,349,846
54.28 5,349,847
5,349,848
61.73 5,349,849
116 5,349,850
147 5,349,851
149 5,349,852
167 5,349,853
490 5,349,854
505 5,349,855
5,349,856
5,349,857
517 A 5,349,858
597 5,349,859
5,349,860
598 5,349,861
602 5,349,862
651 5,349,863
724 5,349,864
5,349,865
727 5,349,866
5,349,867
728 5,349,868
799 5,349,869
808 5,349,870
861.38 5,349,872
862.635 5,349,871
862.68 5,349,873
864 5,349,874
864.65 5,349,875
866 5,349,876

CLASS 74

6 5,349,877
89.14 5,349,878
96 5,349,879
399 5,349,880
471 XY 5,349,881
572 5,349,882
574 5,349,883
606 R 5,349,884

CLASS 75

10.63 5,350,434
314 5,350,436
346 5,350,437
401 5,350,438
460 5,350,439
686 5,350,440

CLASS 81

37 5,349,886
128 5,349,887

CLASS 82

1.11 5,349,888
118 5,349,889

CLASS 83

171 5,349,890

CLASS 84

411 R 5,349,891
609 5,350,880
622 5,350,881
636 5,350,882
644 5,350,883

CLASS 86

21 5,349,892

CLASS 89

36.05 5,349,893

CLASS 91

43 5,349,894
221 5,349,895

CLASS 92

98 R 5,349,896

CLASS 95

58 5,350,441
115 5,350,442

CLASS 96

135 5,350,443
154 5,350,444

CLASS 99

289 R 5,349,897
417 5,349,898
646 R 5,349,899

CLASS 100

4 5,349,900
37 5,349,901
48 5,349,902

CLASS 101

93.05 5,349,903
227 5,349,904
488 5,349,905

CLASS 102

307 5,349,908
485 5,349,906
506 5,349,907

CLASS 106

14.41 5,350,445
287.17 5,350,447
441 5,350,448
506 5,350,449
802 5,350,450
805 5,350,451

CLASS 108

107 5,349,909

CLASS 110

346 5,349,910

CLASS 111

139 5,349,911

CLASS 112

262.2 5,349,912
265.1 5,349,913

CLASS 114

56 5,349,919
74 R 5,349,914
124 5,349,915
312 5,349,916
347 5,349,917
352 5,349,918

CLASS 116

28 R 5,349,920

CLASS 117

13 5,349,921
204 5,349,922

CLASS 118

669 5,350,452
719 5,350,453
723 R 5,350,454
728 5,350,455

CLASS 119

15 5,349,923
19 5,349,924
62 5,349,925
721 5,349,926
815 5,349,927

CLASS 123

73 A 5,349,928
90.16 5,349,929
143 C 5,349,930
179.2 5,349,931
399 5,349,932
486 5,349,933
519 5,349,934
520 5,349,935
676 5,349,936

CLASS 124

25.6 5,349,937
73 5,349,938
76 5,349,939

CLASS 126

4 5,349,942
113 Re.34,739

CLASS 127

42 5,350,456

CLASS 128

4 5,349,940
5,349,941
11 5,349,943
200.14 5,349,944
200.23 5,349,945
203.17 5,349,946
203.21 5,349,947
206.24 5,349,949
207.16 5,349,950
633 5,349,951
5,349,952
5,349,953
634 5,349,954
645 5,349,955
653.1 5,349,956
653.4 5,349,957
660.01 5,349,958
660.06 5,349,959
661.09 5,349,960
665 5,349,961
732 5,349,962
733 5,349,963
772 5,349,964
846 5,349,965
879 5,349,966
888 5,349,967

CLASS 131

94 5,349,968

CLASS 132

76.5 5,349,969
208 5,349,970
213.1 5,349,971
218 5,349,972

CLASS 134

10 5,350,457
22.1 5,350,458
107 5,349,974
153 5,349,978

CLASS 135

16 5,349,975
25.4 5,349,976
67 5,349,977

CLASS 136

263 5,350,459

CLASS 137

1 5,349,980
318 5,349,979
436 5,349,981
454.5 5,349,982
487.5 5,349,983
543.21 5,349,984
607 5,349,985
625.33 5,349,986
801 5,349,987

CLASS 138

107 5,349,988
111 5,349,989

CLASS 139

194 5,349,990
391 5,349,991

CLASS 141

18 5,349,992
94 5,349,993
5,349,994
98 5,349,995
314 5,349,996
331 5,349,997
351 5,349,998

CLASS 144

208 J 5,349,999

CLASS 148

33 5,350,460
5,350,461
194 5,350,462
307 5,350,463
308 5,350,464
325 5,350,465
421 5,350,466
559 5,350,467
561 5,350,468

CLASS 150

166 5,350,000

CLASS 152

209 R 5,350,001

CLASS 156

102 5,350,469
136 5,350,470
156 5,350,471
157 5,350,472
212 5,350,473
240 5,350,474
244.11 5,350,475
5,350,476
250 5,350,477
299 5,350,478
345 5,350,479
5,350,480
423 5,350,481
566 5,350,482
571 5,350,483
628 5,350,484
5,350,485
633 5,350,486
642 5,350,487
643 5,350,488
651 5,350,489
655 5,350,490
657 5,350,491
5,350,492

CLASS 162

6 5,350,493

CLASS 164

24 5,350,002
91 5,350,003
97 5,350,004
154.1 5,350,005
267 5,350,006
316 5,350,007
440 5,350,008
454 5,350,009
476 5,350,010

CLASS 165

135 5,350,011
152 5,350,012

CLASS 166

55.8 5,350,015
120 5,350,016
208 5,350,017
217 5,350,013
250 5,350,018
263 5,350,014

CLASS 169

61 5,350,019

CLASS 171

26 5,350,020

CLASS 172

13 5,350,021
700 5,350,022

CLASS 173

17 5,350,023
111 5,350,025
178 5,350,026
216 5,350,027

CLASS 174

48 5,350,884
112 5,350,885
250 5,350,886

CLASS 175

26 5,350,028
323 5,350,024

CLASS 180

11 5,350,029
19 3 5,350,030
65 4 5,350,031
65 6 5,350,032
167 5,350,033
197 5,350,034
271 5,350,035
273 5,350,036

CLASS 181

142 5,350,887
247 5,350,888

CLASS 182

3 5,350,037
163 5,350,038

CLASS 184

6.16 5,350,039
105.2 5,350,040

CLASS 188

18 R 5,350,041
71.9 5,350,042
79.55 5,350,043
322.12 5,350,044

CLASS 190

110 5,350,045
115 5,350,046

CLASS 192

87.13 5,350,047

CLASS 193

35 A 5,350,048

CLASS 198

333 5,350,049
347.1 5,350,050
396 5,350,051
465.2 5,350,052
525 5,350,053
718 5,350,055
750 5,350,054
778 5,350,056

CLASS 200

1 B 5,350,889
5 A 5,350,890
6 A 5,350,891
144 B 5,350,892
547 5,350,893
549 5,350,894

CLASS 204

95 5,350,495
129 5,350,496
157.92 5,350,497
192.23 5,350,498
192.34 5,350,499
197 5,350,494
299 R 5,350,502
409 5,350,500

CLASS 206

44 R 5,350,057
45 34 5,350,058
63 3 5,350,060
63 5 5,350,059
214 5,350,061
316 2 5,350,062
321 5,350,063
368 5,350,064
373 5,350,065
386 5,350,066
440 5,350,067
444 5,350,068
454 5,350,069

CLASS 208

111 5,350,501
131 5,350,503
143 5,350,504

CLASS 210

108 5,350,505
136 5,350,506
150 5,350,507
169 5,350,508
198.1 5,350,509
198.3 5,350,510
199 5,350,511
5,350,512
264 5,350,513
360 1 5,350,514
493 2 5,350,515
602 5,350,516
638 5,350,517
5,350,518
640 5,350,519
653 5,350,521
656 5,350,520
667 5,350,522
683 5,350,523
728 5,350,524
744 5,350,525
791 5,350,526
804 5,350,527

CLASS 211

64 5,350,070
70.6 5,350,071
123 5,350,072
187 5,350,073
192 5,350,074

CLASS 212

159 5,350,075
209 5,350,076

CLASS 213

75 R 5,350,077

CLASS 215

100 A 5,350,078

CLASS 219

121.39 5,350,897
124 31 5,350,895
216 5,350,896
221 5,350,898
494 5,350,899
508 5,350,900
630 5,350,901
633 5,350,902
716 5,350,903
730 5,350,904
761 5,350,905

CLASS 220

264 5,350,079
465 5,350,080
737 5,350,081

CLASS 221

1 5,350,082

CLASS 222

134 5,350,083
137 5,350,084
146 6 5,350,085
5,350,086
153 5,350,087
402 19 5,350,088
413 5,350,089
511 5,350,090
529 5,350,091

CLASS 223

96 5,350,092

CLASS 224

34 5,350,093
42 45 R 5,350,094
5,350,095
209 5,350,096
315 5,350,097

CLASS 225

2 5,350,098
34 5,350,099

CLASS 226

74 5,350,100
129 5,350,101
186 5,350,102

CLASS 227

8 5,350,103
179 5,350,104

CLASS 228

56.3 5,350,105
103 5,350,106
198 5,350,107

CLASS 229

102 5,350,108
117.16 5,350,109
125.15 5,350,110
162 5,350,111

CLASS 235

379 5,350,906
380 5,350,907
462 5,350,908
472 5,350,909
479 5,350,910

CLASS 236

12.13 5,350,112
13 5,350,113

CLASS 237

2 A 5,350,114

CLASS 239

242 5,350,115
333 5,350,116
428.5 5,350,117
551 5,350,118
585.4 5,350,119

CLASS 241

5 5,350,120
14 5,350,121
29 5,350,122
37 5,350,123
119 5,350,124
208 5,350,125
235 5,350,126

CLASS 242

20 5,350,127
35.50 A 5,350,128
231 5,350,129
241 5,350,130
242 5,350,131
247 5,350,132
261 5,350,133
347.2 5,351,160

CLASS 244

3.16 5,350,134
49 5,350,135
129.4 5,350,136
158 R 5,350,137
159 5,350,138

CLASS 248

27 1 5,350,140
59 5,350,141
99 5,350,142
166 5,350,143
183 5,350,144
201 5,350,145
231 4 5,350,146
346 5,350,147
430 5,350,148
523 5,350,149
552 5,350,150
615 5,350,151

CLASS 249

177 5,350,139

CLASS 250

201 9 5,350,911
202 5,350,912
205 5,350,913
208 1 5,350,914
5,350,915
214.1 5,350,916
216 5,350,917
269 3 5,350,925
282 5,350,919
309 5,350,920
311 5,350,918
5,350,921
453.11 5,350,923
492.2 5,350,924
492 21 5,350,926
504 R 5,350,927
548 5,350,928
573 5,350,929

CLASS 251

30.05 5,350,152
129.16 5,350,153
305 5,350,154

CLASS 252

8 551 5,350,528
8 6 5,350,529
5,350,530
41 5,350,531
49 6 5,350,532
70 5,350,533
171 5,350,534
180 5,350,536
299 01 5,350,537
5,350,538
299 4 5,350,539
299 63 5,350,535
301.6 P 5,350,540
549 5,350,541
636 5,350,542

CLASS 256

48 5,350,155
65 5,350,156

CLASS 257

14 5,350,930
5,350,931
67 5,350,932
69 5,350,933
77 5,350,944
139 5,350,934
147 5,350,935
192 5,350,936
194 5,350,705
295 5,350,937
316 5,350,938
378 5,350,939
5,350,940
402 5,350,941
647 5,350,942
648 5,350,943
659 5,350,945
679 5,350,946
693 5,350,947
702 5,350,948
763

CLASS 260

388.5 5,350,922

CLASS 261

36.1 5,350,543

CLASS 264

25 5,350,544
29 1 5,350,545
40 1 5,350,546
5,350,547
40 4 5,350,548
5,350,549
45 1 5,350,550
57 5,350,551
102 5,350,552
155 5,350,553
171 5,350,554
242 5,350,555
248 5,350,556

CLASS 266

44 5,350,157
46 5,350,158
237 5,350,159
252 5,350,160

CLASS 267

160 5,350,161

CLASS 269

13 5,350,162
156 5,350,163

CLASS 270

53 5,350,164

CLASS 271

9 5,350,165
14 5,350,166
82 5,350,167
122 5,350,168
213 5,350,169
273 5,350,170

CLASS 273

26 A 5,350,172
73 G 5,350,173
121 A 5,350,174
146 5,350,175
148 B 5,350,176
191 R 5,350,177
246 5,350,178
249 5,350,179
406 5,350,180

CLASS 277

35 5,350,181

CLASS 280

33.996 5,350,182
96 1 5,350,183
204 5,350,184
276 5,350,185
480 1 5,350,186
707 5,350,187
728 A 5,350,190
728 R 5,350,189
737 5,350,192
739 5,350,188
741 5,350,193
752 5,350,191
805 5,350,194
806 5,350,195
808 5,350,196

CLASS 283

56 5,350,197
77 5,350,198
91 5,350,199

CLASS 285

92 5,350,200
5,350,201
174 5,350,202
319 5,350,203
323 5,350,204
328 5,350,205

CLASS 292

335 5,350,207
336 3 5,350,206

CLASS 294

1.4 5,350,208
16 5,350,209
81 53 5,350,210

CLASS 296

93 5,350,211
97.4 5,350,212
98 5,350,213
204 5,350,214

CLASS 297

194 5,350,215
362 5,350,216
411.2 5,350,217
440.1 5,350,218

CLASS 300

21 5,350,219

CLASS 301

5.21 5,350,220
104 5,350,221

CLASS 303

82 5,350,222
84 2 5,350,223
113.3 5,350,224
113.4 5,350,225
116.2 5,350,226

CLASS 307

150 5,350,949
236 5,350,950
296.4 5,350,951
352 5,350,952
464 5,350,953
465 5,350,954
515 5,350,955
556 5,350,956
571 5,350,957

CLASS 310

52 5,350,958
71 5,350,959
194 5,350,960
313 A 5,350,961
316 5,350,962
328 5,350,966
353 5,350,963
357 5,350,964
366 5,350,965

CLASS 312

198 5,350,227
223.1 5,350,228
334.23 5,350,229

CLASS 313

413 5,350,967
440 5,350,968
446 5,350,969
481 5,350,970
487 5,350,971
636 5,350,972

CLASS 315

8 5,350,973
111.81 5,350,974
290 5,350,976
291 5,350,977
368.15 5,350,978
370 5,350,980
411 5,350,979

CLASS 318

7 5,350,981
139 5,350,982
254 5,350,983
5,350,984
370 5,350,985
432 5,350,986
466 5,350,987
618 5,350,988
632 5,350,989
701 5,350,990
727 5,350,991
807 5,350,992

CLASS 320

2 5,350,993
15 5,350,994
5,350,995
22 5,350,996
284 5,351,013

CLASS 323

268 5,350,997
312 5,350,998

CLASS 324

72 5,350,999
76.77 5,351,000
158.1 5,351,001
207.12 5,351,003
207.13 5,351,004
252 5,351,005
309 5,351,006
322 5,351,007
557 5,351,008
601 5,351,009
690 Re 34,741
704 5,351,010
754 5,351,002

CLASS 330

253 5,351,011
264 5,351,012

CLASS 331

1 A 5,351,014
1 R 5,351,015

CLASS 332

103 5,351,016

CLASS 333

12 5,351,017
5,351,018
24 R 5,351,019
175 5,351,020
189 5,351,021
195 5,351,022
202 5,351,023

CLASS 335

16 5,351,024

CLASS 338

22 R 5,351,026
32 R 5,351,027
5,351,028
34 5,351,029
295 5,351,030

CLASS 340

146.2 5,351,031
310 R 5,351,032
572 5,351,033
577 5,351,034
607 5,351,035
618 5,351,036
632 5,351,037
644 5,351,038
680 5,351,039
825 05 5,351,040
825 24 5,351,041
825.31 5,351,042
825.5 5,351,043
901 5,351,044
968 5,351,045

CLASS 341

62 5,351,046
67 5,351,047
110 5,351,048
133 5,351,049
143 5,351,050
176 5,351,051

CLASS 342

42 5,351,052
158 5,351,053
172 5,351,054
184 5,351,055
195 5,351,056
378 5,351,057
384 5,351,058
457 5,351,059

CLASS 343

766 5,351,060
840 5,351,061
880 5,351,062
895 5,351,063

CLASS 345

3 5,351,064
109 5,351,065
168 5,351,066
191 5,351,067

CLASS 346

108 5,351,070
B1 4,809,021
136 5,351,071
139 C 5,351,072
157 5,351,074

CLASS 347

69 5,351,183
87 5,351,073
101 5,351,068

CLASS 348

1 5,351,075
14 5,351,076
117 5,351,077
135 5,351,078
223 5,351,079
225 5,351,080
249 5,351,081
294 5,351,082
384 5,351,083

390 5,351,084
391 5,351,085
402 5,351,086
435 5,351,135
441 5,351,088
484 5,351,090
497 5,351,089
505 5,351,091
512 5,351,092
530 5,351,093
584 5,351,129
626 5,351,094
699 5,351,095
734 5,351,096
744 5,351,097

CLASS 351

112 5,351,098
137 5,351,099
164 5,351,100

CLASS 354

21 5,351,101
106 5,351,102
324 5,351,103
328 5,351,104
402 5,351,105

CLASS 355

83 5,351,106
208 5,351,107
215 5,351,108
219 5,351,109
221 5,351,110
5,351,111
233 5,351,112
273 5,351,113
285 5,351,114
326 R 5,351,115

CLASS 356

28.5 5,351,116
30 5,351,117
72 5,351,118
124 5,351,119
246 5,351,120
301 5,351,121
345 5,351,122
350 5,351,123
351 5,351,124
357 5,351,125
376 5,351,126
445 5,351,127

CLASS 358

335 5,351,131
342 5,351,132
426 5,351,133
435 5,351,134
440 5,351,136
457 5,351,137
462 5,351,138
487 5,351,139
520 5,351,141
725 5,351,130

CLASS 359

2 5,351,142
51 5,351,143
54 5,351,144
57 5,351,145
118 5,351,146
124 5,351,147
5,351,148
181 5,351,149
232 5,351,150
240 5,351,151
376 5,351,152
599 5,351,153

CLASS 360

35.1 5,351,154
46 5,351,155
74.1 5,351,156
105 5,351,157
113 5,351,158
128 B1 4,706,147
132 5,351,159
137 5,351,161

CLASS 361

18 5,351,162
321.1 5,351,163
502 5,351,164
637 5,351,165
681 5,351,176
690 5,351,166
760 5,351,167

CLASS 362

32 5,351,168
5,351,169
66 5,351,170
80 5,351,171
92 5,351,172
127 5,351,173
226 5,351,174

CLASS 363

16 5,351,175
21 5,351,177
40 5,351,178
53 5,351,179
71 5,351,180
5,351,181
132 5,351,182

CLASS 364

165 5,351,184
184 5,351,185
401 5,351,186
5,351,187
413.31 5,351,188
419.02 5,351,189
419.08 5,351,190
426.03 5,351,192
431.01 5,351,193
449 5,351,194
468 5,351,195
474.24 5,351,196
491 5,351,197
498 5,351,198
510 5,351,199
550 5,351,200
551.01 5,351,201
552 5,351,202
560 5,351,203
571.03 5,351,204
724.01 5,351,205
757 5,351,206
786 5,351,207

CLASS 365

49 5,351,208
112 5,351,209
189.01 5,351,210
189.05 5,351,211
189.09 5,351,212
201 5,351,213
203 5,351,215
210 5,351,214
230.01 5,351,216
230.06 5,351,217

CLASS 366

75 5,350,230
76 PH 5,351,069
85 5,350,231
139 5,350,232
160 5,350,233
162 5,350,234
168 5,350,235

CLASS 367

20 5,351,218
140 5,351,219
175 5,351,220

CLASS 369

13 5,351,221
32 5,351,222
44.28 5,351,223
44.29 5,351,224
44.32 5,351,225
47 5,351,226
58 5,351,227
77.2 5,351,228
99 5,351,229
112 5,351,230
124 5,351,231

CLASS 370

14 5,351,232
49.5 5,351,234
58.1 5,351,235
5,351,236
58.3 5,351,237
66 5,351,238
84 5,351,239
5,351,240
85.3 5,351,241
85.5 5,351,242
92 5,351,243

CLASS 371

2.1 5,351,244
5.1 5,351,245
10.1 5,351,246
15.1 5,351,247
43 5,351,249

CLASS 372

2 5,351,248
3 5,351,250
4 5,351,251
29 5,351,252
38 5,351,253
45 5,351,254
5,351,255
5,351,256
46 5,351,257
5,351,258
75 5,351,259
84 5,351,260
98 5,351,261
102 5,351,262
107 5,351,263
5,351,264
5,351,265

CLASS 373

89 5,351,266
105 5,351,267

CLASS 374

131 5,351,268
161 5,350,236
183 5,350,237

CLASS 375

1 5,351,269
5,351,270
10 5,351,271
38 5,351,272
48 5,351,273
100 5,351,274
120 5,351,275

CLASS 376

293 5,351,277

CLASS 378

22 5,351,278
43 5,351,279
65 5,351,280
79 5,351,281
198 5,351,282

CLASS 379

58 5,351,283
61 5,351,284
67 5,351,276
94 5,351,285
5,351,286
95 5,351,287
98 5,351,288
142 5,351,289
145 5,351,290
410 5,351,291

CLASS 380

10 5,351,292
21 5,351,293
23 5,351,294
5,351,295
24 5,351,296
28 5,351,297
30 5,351,298
5,351,302
37 5,351,299
46 5,351,300
50 5,351,301

CLASS 382

2 5,351,303
5 5,351,304
6 5,351,305
5,351,306
8 5,351,307
5,351,308
22 5,351,309
5,351,310
45 5,351,311
50 5,351,312
51 5,351,313
54 5,351,314
5,351,315
65 5,351,316

CLASS 383

5 5,350,238
7 5,350,239
104 5,350,240
127 5,350,241

CLASS 384

97 5,350,242

CLASS 385

3 5,351,317
5,351,318
6 5,351,319
8 5,351,320
10 5,351,321
12 5,351,322
28 5,351,323
37 5,351,324
42 5,351,325
43 5,351,326
78 5,351,327
83 5,351,328
92 5,351,329
93 5,351,330
97 5,351,331
116 5,351,332
134 5,351,333
5,351,334
142 5,351,335

CLASS 388

811 5,351,336
93.461 5,350,576
5,350,577
94.64 5,350,578
122 5,350,579
192.1 5,350,575
437 5,350,580
443 5,350,581
464 5,350,582
484 5,350,583
501 5,350,584

CLASS 425

136 5,350,288
190 5,350,289
311 5,350,290
593 5,350,291

CLASS 426

19 5,350,585
105 5,350,586
394 5,350,587
431 5,350,588
496 5,350,589
549 5,350,590
564 5,350,591
582 5,350,592
5,350,595
615 5,350,593

CLASS 427

96 5,350,594
154 5,350,596
197 5,350,597
255.5 5,350,598
255.7 5,350,599
256 5,350,600
412.1 5,350,601
428 5,350,602
470 5,350,603
512 5,350,604
536 5,350,605
564 5,350,606
566 5,350,607

CLASS 428

31 5,350,608
34.4 5,350,609
35.7 5,350,610
36.5 Re.34,742
36.91 5,350,611
40 5,350,612
43 5,350,613
53 5,350,614
102 5,350,615
131 5,350,616
141 5,350,617
156 5,350,618
167 5,350,619
172 5,350,620
195 Re.34,743
209 5,350,621
215 5,350,622
217 5,350,623
219 5,350,624
5,350,625
229 5,350,626
288 5,350,627
307.3 5,350,628
336 5,350,629
343 5,350,630
5,350,631
382 5,350,632
402.21 5,350,633
5,350,634
414 5,350,635
418 5,350,636
539.5 5,350,637
623 5,350,638
633 5,350,639

CLASS 429

7 5,350,640
30 5,350,641
32 5,350,642
33 5,350,643
111 5,350,644
124 5,350,645
192 5,350,646
218 5,350,647
5,350,648

CLASS 430

5 5,350,649
21 5,350,650
5,350,651
30 5,350,652
58 5,350,653
59 5,350,654
78 5,350,655
108 5,350,656
111 5,350,657
124 5,350,658
137 5,350,659
176 5,350,660
271 5,350,661
313 5,350,662
330 5,350,663
362 5,350,664
387 5,350,667
393 5,350,668
508 5,350,665
544 5,350,666
618 5,350,669

CLASS 431

116 5,350,293
153 5,350,294

CLASS 432

5 5,350,295
80 5,350,296

CLASS 433

76 5,350,297
81 5,350,298
88 5,350,299
173 5,350,300
5,350,301
B1 5,069,622
174 5,350,302

CLASS 434

118 5,350,303
258 5,350,304

CLASS 435

1 5,350,670
5 5,350,671
6 5,350,672
5,350,673
7.8 5,350,674
11 5,350,675
13 5,350,676
21 5,350,677
22 5,350,678
32 5,350,679
34 5,350,680
68.1 5,350,681
5,350,682
69 1 5,350,683
167 5,350,684
168 5,350,685
173.2 5,350,686
240.27 5,350,687
240.47 5,350,689
240.5 5,350,688
252 31 5,350,690
252 7 5,350,692
262.5 5,350,691
287 5,350,693

CLASS 436

2 5,350,694
63 5,350,695
527 5,350,697

CLASS 437

26 5,350,698
31 5,350,699
5,350,700
40 5,350,701
5,350,702
48 5,350,703
51 5,350,704
52 5,350,706
5,350,707
5,350,708
161 5,350,709
170 5,350,710
192 5,350,711
195 5,350,712
217 5,350,713
229 5,350,714
250 5,350,715

CLASS 439

56 5,350,305
69 5,350,306
79 5,350,307
91 5,350,308
138 5,350,309
188 5,350,310
202 Re.34,744
273 5,350,311
310 5,350,312
347 5,350,313
378 5,350,314
419 5,350,315
460 5,350,316
500 5,350,317
593 5,350,318
632 5,350,319
733 5,350,292
752 5,350,320
839 5,350,321
862 5,350,322
886 5,350,323
894 5,350,324

CLASS 440

41 5,350,325
61 5,350,326
66 5,350,327
84 5,350,328

88	5,350,329
CLASS 441	
6	5,350,330
CLASS 446	
126	5,350,331
217	5,350,332
370	5,350,333
CLASS 451	
75	5,349,788
314	5,349,784
357	5,349,785
	5,349,786
550	5,349,787
CLASS 452	
127	5,350,334
CLASS 454	
121	5,350,335
187	5,350,336
189	5,350,337
195	5,350,338
CLASS 473	
1	5,350,171
CLASS 474	
79	5,350,339
CLASS 475	
237	5,350,340
CLASS 477	
61	5,349,885
CLASS 482	
35	5,350,341
49	5,350,342
98	5,350,344
105	5,350,345
106	5,350,343
142	5,350,346
CLASS 483	
29	5,350,347
CLASS 493	
34	5,350,348
154	5,350,349
221	5,350,350
CLASS 501	
5	5,350,716
7	5,350,717
21	5,350,718
96	5,350,719
97	5,350,720
139	5,350,721
CLASS 502	
64	5,350,722
104	5,350,723
110	5,350,724
162	5,350,725
169	5,350,726
325	5,350,727
415	5,350,728
CLASS 503	
225	5,350,729
227	5,350,730
	5,350,731
	5,350,732
	5,350,733
CLASS 504	
105	5,350,734
147	5,350,735
266	5,350,736
CLASS 505	
211	5,350,739
473	5,350,738
477	5,350,737
CLASS 507	
129	5,350,740
CLASS 514	
3	5,350,741
9	5,350,574
28	5,350,742
89	5,350,743
149	5,350,744
167	5,350,745
210	5,350,746
213	5,350,747
237.2	5,350,748
248	5,350,749
253	5,350,750
258	5,350,751
259	5,350,752
264	5,350,753
277	5,350,754
278	5,350,755
289	5,350,756
307	5,350,757
315	5,350,758
365	5,350,759
367	5,350,760
373	5,350,761
411	5,350,762
450	5,350,763
460	5,350,764
	5,350,765
561	5,350,766
562	5,350,767
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567	5,350,769
575	5,350,770
643	5,350,771
721	5,350,772
763	5,350,773
783	5,350,774
CLASS 521	
54	5,350,776
117	5,350,777
159	5,350,778
173	5,350,780
174	5,350,781
CLASS 523	
116	5,350,782
124	5,350,783
404	5,350,784
428	5,350,779
CLASS 524	
100	5,350,785
102	5,350,786
162	5,350,787
251	5,350,788
313	5,350,789
321	5,350,790
366	5,350,791
417	5,350,792
449	5,350,793
496	5,350,794
507	5,350,795
514	5,350,796
CLASS 525	
28	5,350,797
41	5,350,798
54.2	5,350,800
54.3	5,350,799
59	5,350,801
65	5,350,802
100	5,350,803
104	5,350,804
121	5,350,805
189	5,350,806
240	5,350,807
330.5	5,350,808
356	5,350,809
445	5,350,810
476	5,350,811
477	5,350,812
531	5,350,814
533	5,350,815
CLASS 526	
114	5,350,816
119	5,350,817
139	5,350,818
189	5,350,819
240	5,350,820
247	5,350,821
265	Re.34,740
266	5,350,822
301	5,350,823
CLASS 528	
21	5,350,824
45	5,350,825
93	5,350,826
155	5,350,827
183	5,350,828
272	5,350,829
302	5,350,830
337	5,350,831
373	5,350,832
388	5,350,833
485	5,350,834
493	5,350,813
CLASS 530	
358	5,350,835
399	5,350,836
CLASS 534	
14	5,350,837
638	5,350,838
CLASS 536	
7.4	5,350,839
23.1	5,350,840
23.7	5,350,842
53	5,350,841
CLASS 540	
138	5,350,843
141	5,350,844
215	5,350,845
302	5,350,846
540	5,350,847
CLASS 544	
195	5,350,848
203	5,350,849
258	5,350,850
	5,350,851
336	5,350,852
339	5,350,853
CLASS 546	
115	5,350,854
270	5,350,696
291	5,350,855
CLASS 548	
138	5,350,856
153	5,350,857
313.7	5,350,858
319.1	5,350,859
441	5,351,087
453	5,350,860
544	5,350,861
CLASS 549	
220	5,350,775
230	5,350,862
323	5,350,863
389	5,350,864
434	5,350,865
510	5,350,866
CLASS 554	
121	5,350,867
154	5,350,868
CLASS 556	
1	5,350,869
CLASS 558	
351	5,350,871
CLASS 560	
27	5,350,870
55	5,350,872
60	5,350,873
80	5,350,874
190	5,350,875
207	5,350,876
224	5,350,877
227	5,350,878
234	5,350,879
CLASS 564	
418	Re.34,745
CLASS 601	
2	5,350,351
4	5,350,352
CLASS 604	
11	5,350,354
23	5,350,355
27	5,350,356
29	5,350,357
43	5,350,358
51	5,350,359
93	5,350,360
96	5,350,361
167	5,350,362
	5,350,363
	5,350,364
187	5,350,365
203	5,350,366
232	5,350,367
263	5,350,368
327	5,350,369
367	5,350,370
398	5,350,371
414	5,350,372
CLASS 606	
1	5,350,373
5	5,350,374
7	5,350,375
12	5,350,376
15	5,350,377
57	5,350,378
63	5,350,379
80	5,350,380
85	5,350,381
87	5,350,382
96	5,350,383
108	5,350,384
139	5,350,385
151	5,350,387
154	5,350,388
159	5,350,390
170	5,350,391
182	5,350,392
185	5,350,393
188	5,350,394
194	5,350,395
199	5,350,396
200	5,350,397
	5,350,398
213	5,350,399
219	5,350,400
CLASS 607	
4	5,350,401
5	5,350,402
	5,350,403
	5,350,404
8	5,350,405
14	5,350,406
16	5,350,407
17	5,350,408
	5,350,409
28	5,350,410
32	5,350,411
34	5,350,412
62	5,350,414
68	5,350,415
72	5,350,416
061	5,350,413
104	5,350,417
111	5,350,418
132	5,350,419
CLASS 623	
2	5,350,420
	5,350,421
CLASS 706	
27 R	5,350,446

CLASSIFICATION OF DESIGNS

D2—	605	350,844		614	350,843		130.1	350,915		113	350,946		57	350,982		238	351,017
	742	350,845		619	350,878		152	350,912		114	350,947	D19—	26	350,983		260	351,013
	869	350,846		622	350,879		164	350,913		115	350,948		42	350,984		279	351,018
	882	350,847		629	350,880		200	350,914			350,949		65	350,985		283	351,019
	961	350,848			350,881	D12—	12	350,923		116	350,950	D20—	4	350,986		309	351,021
D3—	228	350,849		672	350,882		110	350,918		121	350,951		5	350,987		377	351,020
	273	350,850	D8—	14	350,883			350,919			350,952		22	350,988	D24—	146	351,022
D4—	104	350,851		30	350,884			350,920		126	350,953	D21—	11	350,989		169	351,023
	129	350,852			350,885		114	350,921			350,954		24	350,990		183	351,026
	135	350,853		62	350,886		115	350,922		155	350,956			351,003		186	351,025
D6—	300	350,854		70	350,887		146	350,924		156	350,957		27	350,991		213	351,027
	344	350,855		71	350,888		147	350,925		163	350,958		37	351,004		215	351,024
	349	350,856		78	350,889			350,926			350,959		48	350,992	D25—	57	351,028
	366	350,859		302	350,890			350,927		168	350,960		59	350,993		60	351,029
	370	350,860		330	350,891			350,928		205	350,961		104	350,994		69	351,030
	381	350,857		395	350,892			350,929		218	350,962		108	351,000		117	351,031
		350,858	D9—	304	350,893			350,930		230	350,963			351,005		124	351,032
		350,861		307	350,894		206	350,931		253	350,965			351,006			351,033
	429	350,862		338	350,895		211	350,932		258	350,964		115	350,995			351,044
		350,863			350,896		317	350,933	D15—	13	350,966		147	351,007	D26—	11	351,034
	438	350,864		425	350,897		406	350,934		133	350,968		148	350,996			351,035
	484	350,865		437	350,898		408	350,935		150	350,969		198	350,997		29	351,036
	501	350,866		502	350,900	D13—	139	350,936	D16—	244	350,970		210	350,999		42	351,037
	525	351,042		503	350,899			350,937		315	350,967		217	350,998		65	351,038
	631	350,867		553	350,901			350,938	D18—	2	350,971			351,001		77	351,039
D7—	305	350,868	D10—	4	350,903		142	350,916		36	350,972		230	351,008		108	351,040
		350,869		32	350,902			350,917		39	350,973		234	351,002		130	351,041
	306	350,870		46.3	350,904			350,939		40	350,974		237	351,009	D27—	154	351,043
	309	350,871		65	350,906			350,940		43	350,975			351,010	D28—	35	351,045
	310	350,872		77	350,905		146	350,955		44	350,976		253	351,011		53	351,046
	533	350,873		78	350,907		155	350,941		50	350,977			351,012		61	351,048
	606	350,874		119	350,908		182	350,942			350,978	D22—	142	351,014		64	351,047
	612	350,875	D11—	13	350,909		183	350,943		55	350,979	D23—	209	351,015		77	351,049
		350,876			350,910	D14—	102	350,944			350,980		213	351,016	D29—	113	351,050
		350,877		19	350,911		109	350,945			350,981						

CLASSIFICATION OF PLANTS

P—	18	8,910	42.1	8,912	68.1	8,914		8,915	87.6	8,916		8,917
	20	8,911	43.1	8,913								

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	5,349,755		5,350,153		5,350,779		5,350,407	12 :	5,349,725		5,349,739
	5,350,210		5,350,164		5,350,855		5,350,425		5,349,774		5,349,771
	5,350,851		5,350,170		5,350,856		5,350,435		5,349,796		5,349,784
02	5,350,586		5,350,179		5,350,911		5,350,607		5,349,848		5,349,804
04	5,350,342		5,350,185		5,350,929		5,350,629		5,349,917		5,349,806
	5,351,124		5,350,192		5,350,952		5,351,045		5,349,919		5,349,825
	5,351,184		5,350,197		5,350,953		5,351,056		5,349,974		5,349,832
	5,351,216		5,350,207		5,350,954		5,351,122		5,349,984		5,349,837
	5,351,257		5,350,215		5,350,966		5,351,130		5,349,995		5,349,843
	5,351,331		5,350,217		5,350,984		5,351,159		5,350,011		5,349,956
05 :	5,349,925		5,350,264		5,350,988		5,351,196		5,350,032		5,350,064
06	5,349,703		5,350,265		5,350,989		5,351,231		5,350,048		5,350,066
	5,349,707		5,350,271		5,351,000	09 :	5,349,787		5,350,065		5,350,076
	5,349,709		5,350,281		5,351,006		5,349,791		5,350,074		5,350,079
	5,349,714		5,350,330		5,351,007		5,349,890		5,350,078		5,350,086
	5,349,732		5,350,333		5,351,013		5,350,116		5,350,213		5,350,113
	5,349,749		5,350,361		5,351,015		5,350,120		5,350,278		5,350,152
	5,349,775		5,350,368		5,351,031		5,350,136		5,350,346		5,350,174
	5,349,778		5,350,395		5,351,032		5,350,161		5,350,356		5,350,181
	5,349,823		5,350,397		5,351,035		5,350,245		5,350,363		5,350,249
	5,349,824		5,350,401		5,351,044		5,350,260		5,350,378		5,350,293
	5,349,833		5,350,405		5,351,049		5,350,316		5,350,383		5,350,329
	5,349,846		5,350,410		5,351,077		5,350,338		5,350,385		5,350,349
	5,349,864		5,350,414		5,351,084		5,350,345		5,350,442		5,350,472
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	5,349,894		5,350,498		5,351,161		5,350,496		5,351,240		5,350,854
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	5,350,021		5,350,576		5,351,268		5,351,149		5,350,160		5,351,037
	5,350,022		5,350,577		5,351,270		5,351,234		5,350,255		5,351,047
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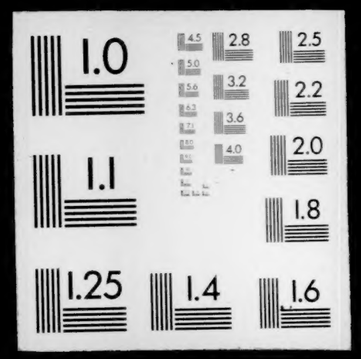
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